

IMPORTANT
READ CAREFULLY BEFORE USE
KEEP FOR FUTURE REFERENCE

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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. 107).

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

1.1 For whom are these instructions intended?

These instructions are intended for:

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

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

1.2 Representation conventions – symbols and characters

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



Proper setting

Specifies proper setting.



Disturbances

Specifies the disturbances that can occur from an incorrect setting.



Cover

Specifies which covers must be disassembled in order to access the components to be set.



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



Steps to be performed for service, maintenance, and installation



Steps to be performed via the software control panel

The individual steps are numbered:

1. First step
 2. Second step
 - ... The steps must always be followed in the specified order.
- Lists are marked by bullet points.



Result of performing an operation

Change to the machine or on the display/control panel.



Important

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



Information

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



Order

Specifies the work to be performed before or after 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 connection cable must have a power plug approved in the relevant country. The power plug may only be assembled to the connection cable by qualified specialists.
Obligations of the operator	<p>Follow the country-specific safety and accident prevention regulations and the legal regulations concerning industrial safety and the protection of the environment.</p> <p>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.</p>
Requirements to be met by the personnel	<p>Only qualified specialists may:</p> <ul style="list-style-type: none"> • Setting up the machine • Performing maintenance work and repairs • Performing work on electrical equipment <p>Only authorized persons may work on the machine and must first have understood these instructions.</p>

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

The setting positions for the sewing 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.

NOTICE

Property damage may occur!

Machine damage from incorrect order.

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

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 cables as described.



To lay the cables:

1. Lay any excess cabling neatly in proper cable snakes.
2. Bind together the cable loops with cable ties.
Tie loops wherever possible to fixed parts.



Important

The cables must be secured firmly.

3. Cut off any overlapping cable ties.

3.3 Removing and assembling covers

CAUTION



Risk of injury from moving parts!

Crushing possible.

Switch off the machine before removing or re-assembling covers.

For many types of setting work, you will have to remove the machine covers first in order to access the components. Each explanation of a setting step includes information on which cover to remove.

This chapter describes how to remove the individual covers. The covers need to be refitted in reverse order. Re-installation will, therefore, not be described unless special requirements have to be followed.

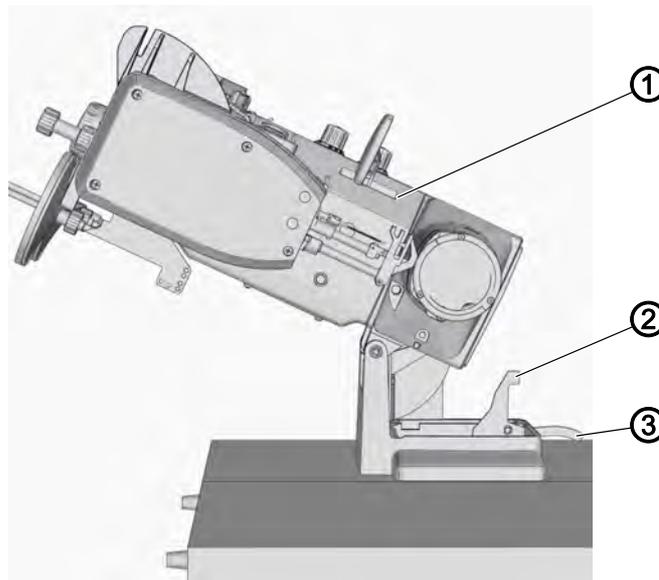
3.3.1 Access to the underside of the machine



Cover

To access the components on the underside of the machine, swivel up the machine head.

Fig. 1: Access to the underside of the machine



(1) - Machine head

(2) - Bartack

(3) - Lever

Tilting the machine head



To tilt the machine head:

1. Lift the lever (3).
2. Tilt the machine head (1) as far as it will go.

Erecting the machine head



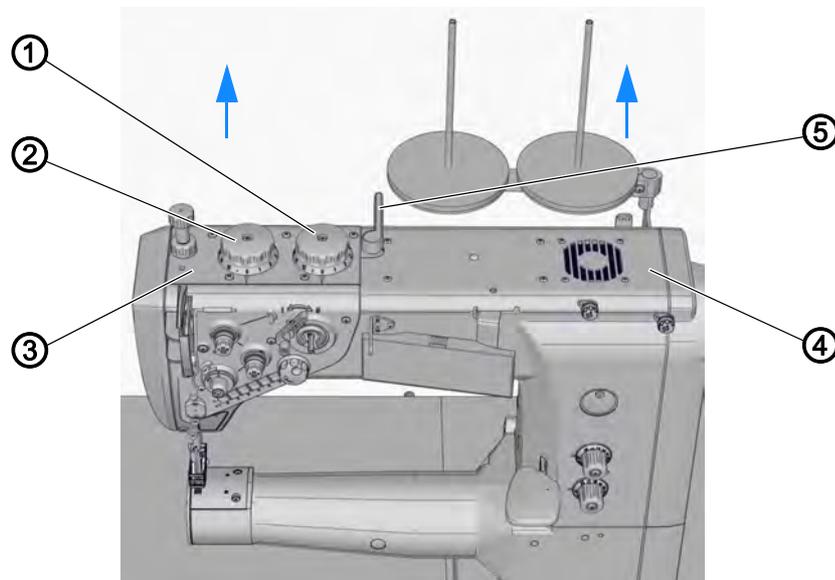
To erect the machine head:

1. Erect the machine head.
For safety reasons, the machine head (1) is stopped by the bolt (2).
2. Lift the lever (3) and erect the machine head (1) completely.

3.3.2 Removing the arm cover

If necessary, each of the two covers can be removed separately.

Fig. 2: Removing the arm cover



(1) - Right adjusting wheel
(2) - Left adjusting wheel
(3) - Left arm cover

(4) - Right arm cover
(5) - Lever

Removing the left arm cover



To remove the left arm cover:

1. Turn left adjusting wheel (2) to position **0**.
2. Turn right adjusting wheel (1) to position **8**.



Important

The cover cannot be disassembled unless the adjusting wheels are set to the proper position.

3. Loosen the screws on the left arm cover (3).
4. Lift the left arm cover (3) up and off.

Removing the right arm cover

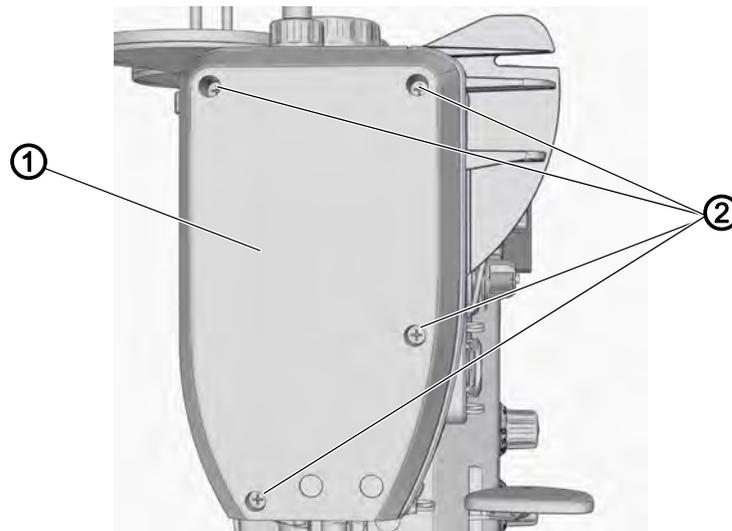


To remove the right arm cover:

1. Loosen the screws on the right arm cover (4).
2. Raise the right arm cover (4) and disconnect the power plug for the fan that is attached to the underside of the cover.
3. Lift the right arm cover (4) up and off.

3.3.3 Removing the head cover

Fig. 3: Removing the head cover



(1) - Head cover

(2) - Screws

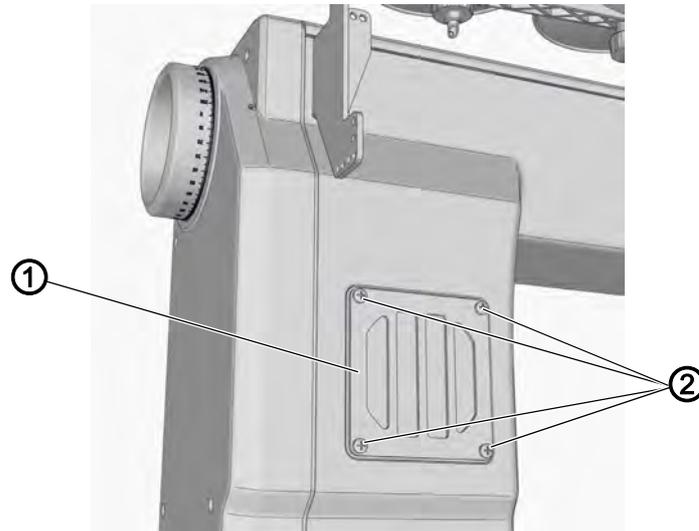


To remove the head cover:

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

3.3.4 Removing the cover plate

Fig. 4: Removing the cover plate



(1) - Cover plate

(2) - Screws

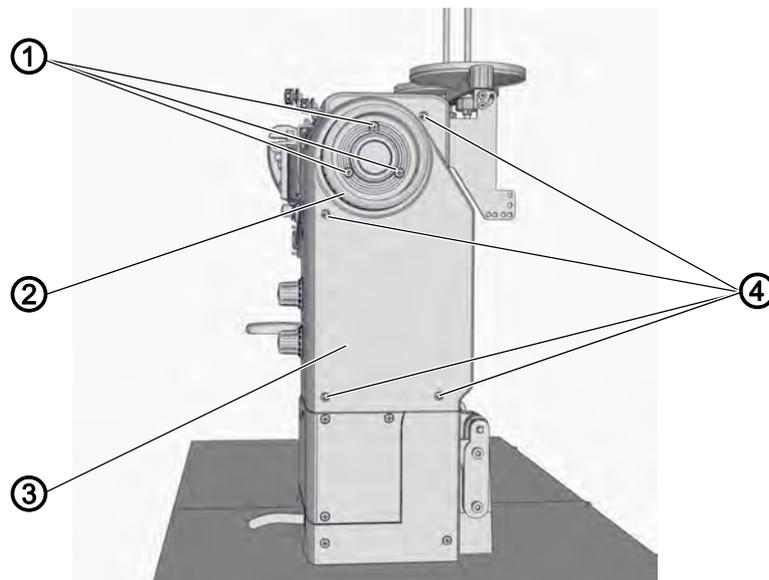


To remove the cover plate:

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

3.3.5 Removing the belt cover

Fig. 5: Removing the belt cover



(1) - Screws

(2) - Handwheel

(3) - Belt cover

(4) - Screws



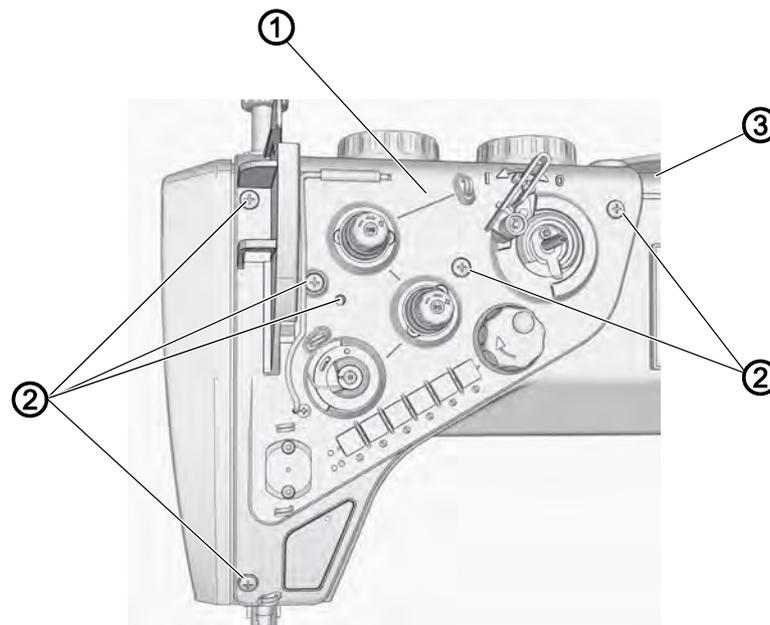
To remove the belt cover:

1. Loosen the screws (1).

2. Remove the handwheel (2).
3. Loosen the screws (4).
4. Remove the belt cover (3).

3.3.6 Removing the thread tension plate

Fig. 6: Removing the thread tension plate



(1) - Thread tension plate
(2) - Screws

(3) - Right arm cover



To remove the thread tension plate:

1. Remove the right arm cover (3) (📖 p. 15).



Important

The thread tension plate is connected to cables and hoses that are attached below the upper right arm cover.

2. Loosen the screws (2).
3. Remove the thread tension plate (1).

3.3.7 Disassembling the throat plate

CAUTION

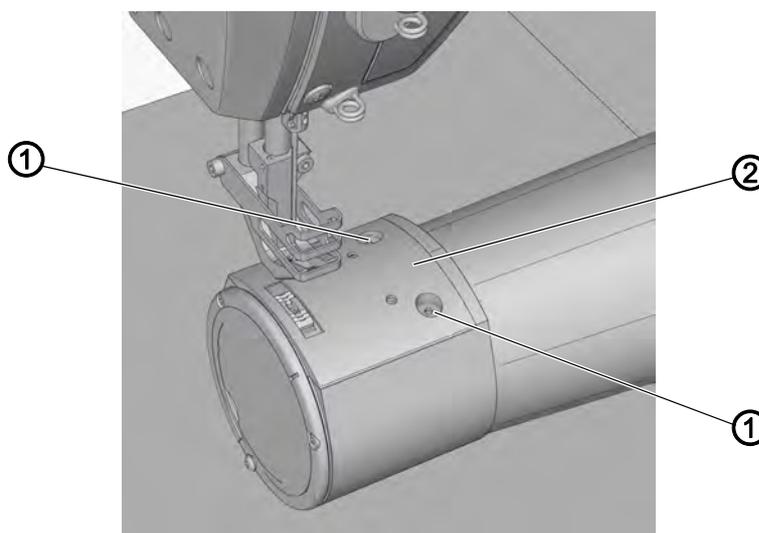


Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Switch off the machine before you disassemble the throat plate.

Fig. 7: Disassembling the throat plate



(1) - Screws

(2) - Throat plate



To disassemble the throat plate:

1. Swivel up the sewing foot.
2. Loosen the screws (1).
3. Remove the throat plate (2).

3.3.8 Disassembling and assembling the feed dog

CAUTION

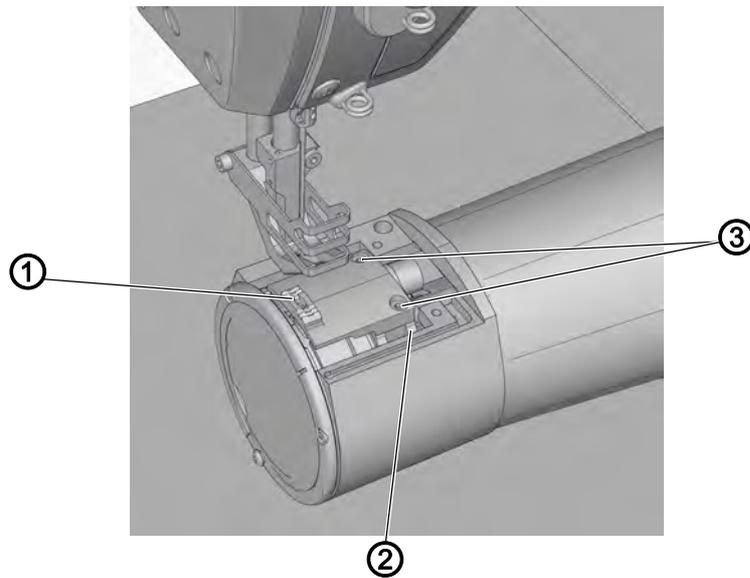


Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Switch off the machine before disassembling the feed dog.

Fig. 8: Disassembling and assembling the feed dog



(1) - Feed dog

(2) - Feed dog carrier

(3) - Screws

Disassembling the feed dog



To disassemble the feed dog:

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

Assembling the feed dog

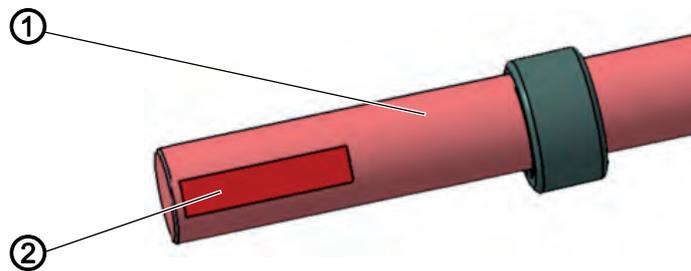


To assemble the feed dog:

1. Insert the feed dog (1)
2. Slightly tighten the screws (3).
3. Assemble the throat plate.
4. Set the feed dog (1) so that it has an equal amount of play on both sides when inside the throat plate.
5. Tighten the screws (3).

3.4 Flats on shafts

Fig. 9: Flats on shafts



(1) - Shaft

(2) - Flat

Some shafts (1) have flat surfaces (2) at the points where components are screwed on with adjusting screws. These flats increase the stability of the connection and allow the component to be assembled to the shaft at an angle.

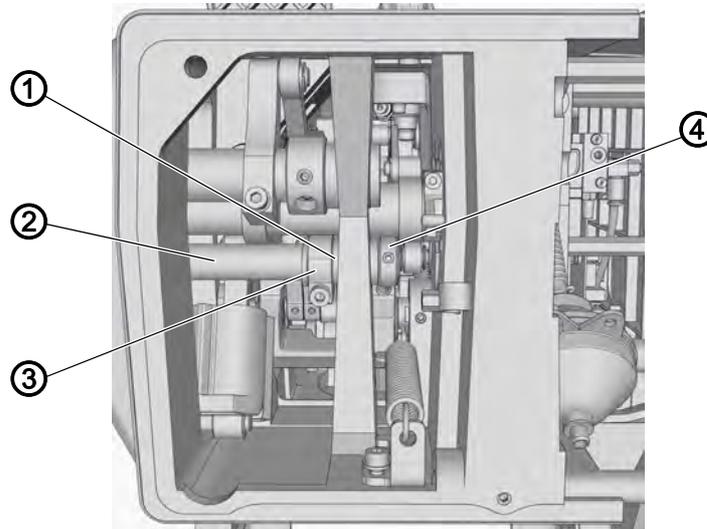


Important

Always ensure that the screw faces are completely flush with the surface. If the component to be assembled has several screws all around, while the shaft only possesses one flat, the first screw should be located in the shaft's direction of rotation.

3.5 Axial play for shafts running in plain bearings

Fig. 10: Axial play for shafts running in plain bearings



(1) - Plain bearing
(2) - Shaft

(3) - Lever
(4) - Adjusting ring

Shafts (2) running in plain bearings (1) are axially adjusted when the lever (3) and the adjusting ring (4) touch the front face of the plain bearing (1).



Important

When setting components mounted on shafts running in plain bearings, always ensure that the axial play of these shafts is as small as possible, or **0**.

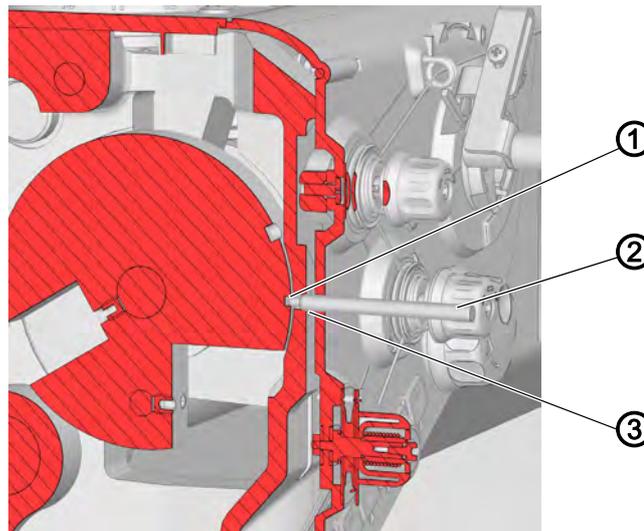
3.6 Locking the machine in place

Some settings allow for the sewing machine to be locked in place at the setting position. To do this, the locking peg from the accessory pack is inserted into a slot on the arm shaft crank, blocking the arm shaft.

There are 2 locking positions:

- **Position 1:** Loop stroke position
 - 5 mm end in the large slot
 - Setting the loop stroke and needle bar height
- **Position 2:** Handwheel zero position
 - 3 mm end in the small slot
 - Setting the handwheel position and checking the bottom dead center for the needle bar

Fig. 11: Locking the machine in place



(1) - Slot

(2) - Locking peg

(3) - Locking opening

Locking the machine in place



To lock the machine in place:

1. Turn the handwheel until the appropriate slot (1) is in front of the locking opening (3):
 - Smaller slot at handwheel position **180°**
 - Larger slot at handwheel position **206°**
2. Insert the locking peg (2) with the appropriate end into the slot (1).

Removing the lock



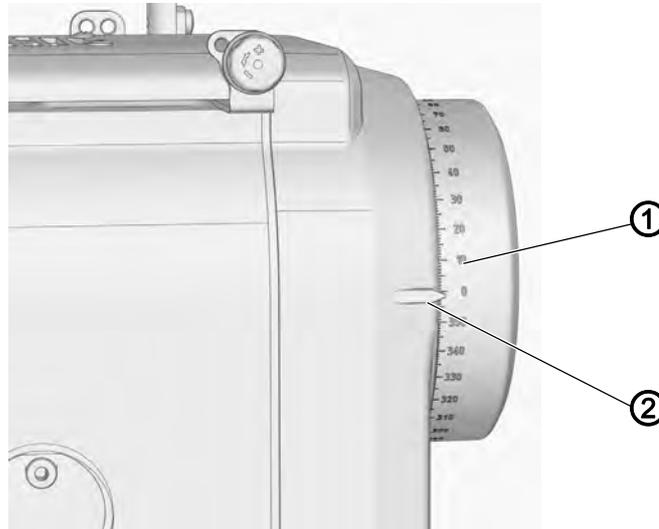
To remove the lock:

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

3.7 Setting the handwheel into position

Some settings require that the specified handwheel position be set using the angle scale.

Fig. 12: Setting the handwheel into position



(1) - Scale

(2) - Marking



To set the handwheel into position:

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

4 Positioning the arm shaft

CAUTION



Risk of injury from moving parts!

Crushing possible.

Switch off the machine before positioning the arm shaft.



Proper setting

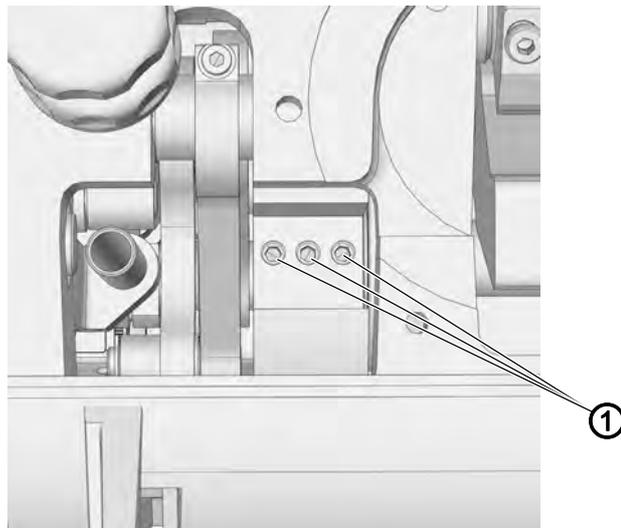
The threaded pins (1) are seated flush on the flat of the arm shaft. The arm shaft crank is flush with the machine casting.



Cover

- left arm cover (📖 p. 15).

Fig. 13: Positioning the arm shaft



(1) - Threaded pins



To position the arm shaft:

1. Loosen the threaded pins (1) on the arm shaft crank.
2. Turn the arm shaft crank so that the threaded pins (1) are seated flush on the flat of the arm shaft.
3. Tighten the threaded pins (1).

5 Setting the handwheel scale

CAUTION



Risk of injury from moving parts!

Crushing possible.

Switch off the machine before you set the handwheel scale.



Proper setting

The machine is locked in place at position **2** by the locking peg (📖 p. 22).

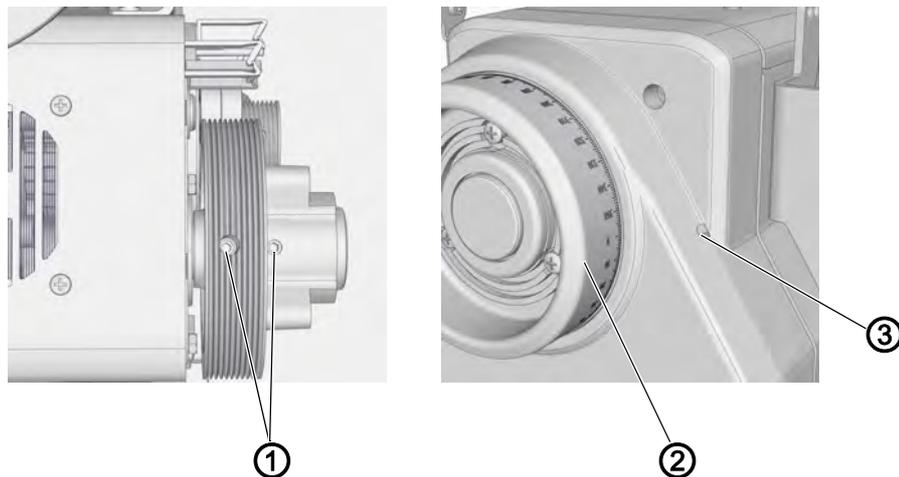
↪ The handwheel is at the **180°** position.



Cover

• Belt cover (📖 p. 17)

Fig. 14: Setting the handwheel scale



(1) - Screws

(2) - Handwheel

(3) - Slot



To set the handwheel scale:

1. Disassemble the V-ribbed belt (📖 p. 27).
2. Loosen the screws (1).
3. Assemble belt cover and handwheel.
4. Lock the machine in place at position **2** (📖 p. 22).
5. Move the handwheel into the **180°** position.
6. Slide a hexagonal wrench through the slot (3) and tighten the adjusting screw.
7. Remove belt cover and handwheel (📖 p. 17).
8. Tighten the screws (1).
9. Assemble the V-ribbed belt.
10. Assemble belt cover and handwheel.

6 Setting the drive

CAUTION



Risk of injury from moving parts!

Crushing possible.

Switch off the machine before setting the drive.

6.1 Setting the drive ratio (Classic)

The machine is equipped with a 2-step pulley, which can be used to adjust the drive ratio between the drive motor and the machine, and increase the penetration force of the needle.

In order to change the ratio, the drive belts must be disassembled and the pulley changed to the opposite position. The drive belt is then refitted and tensioned.

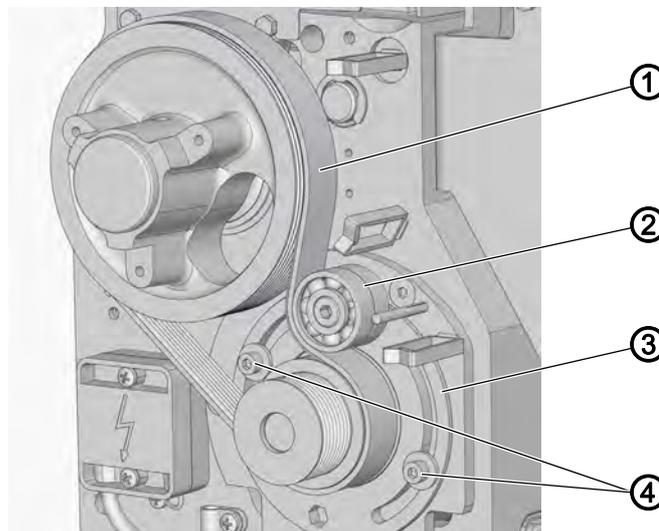


Cover

- Belt cover ( p. 17)

6.1.1 Disassembling the V-ribbed belt

Fig. 15: Disassembling the V-ribbed belt



- (1) - V-ribbed belt
(2) - Tensioning roller

- (3) - Belt tensioner
(4) - Screws



To disassemble the V-ribbed belt:

1. Loosen the screws (4).
2. Rotate the tensioning roller (2) and belt tensioner (3).
3. Remove the V-ribbed belt (1).

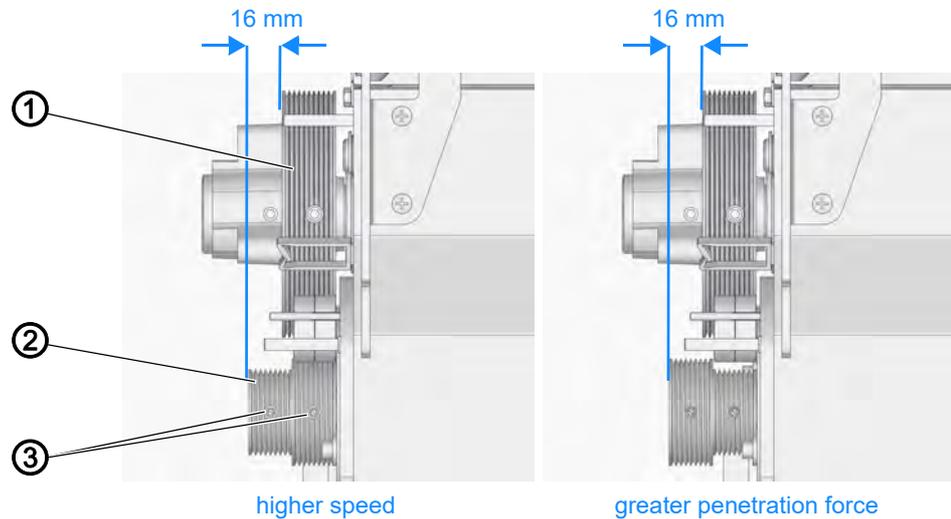
6.1.2 Setting the drive pulley



Proper setting

Regardless of which side of the drive pulley (2) is being used, there is a difference in height of **16 mm** between the faces of the two pulleys.

Fig. 16: Setting the drive pulley



(1) - Driven pulley
(2) - Drive pulley

(3) - Screws



To set the drive pulley:

1. Loosen the screws (3).
2. Pull the drive pulley (2) off the motor shaft and put it back on the other way round.
3. Set a height difference of **16 mm** between the faces of the drive pulley (2) and the driven pulley (1).
4. Tighten the screws (3).

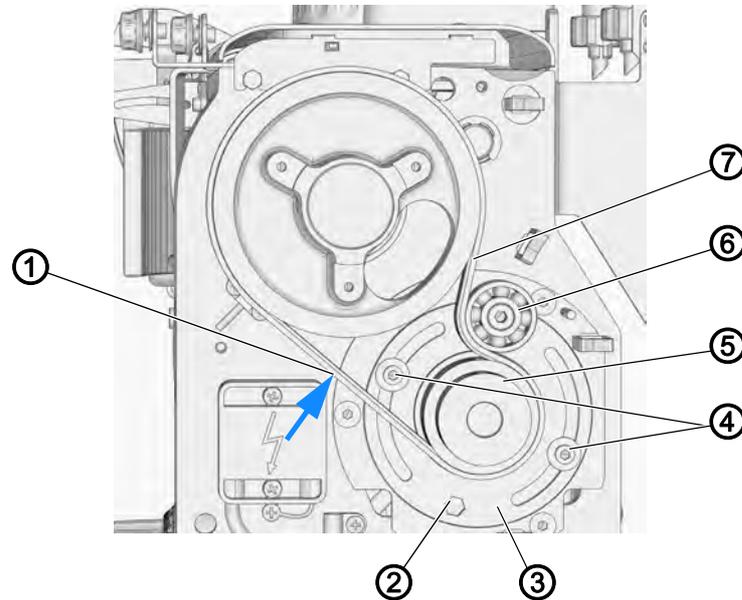
6.1.3 Setting the belt tension



Proper setting

The belt must be tight enough not to deflect by more than approx. **2 mm** if pressure is exerted at the checking point.

Fig. 17: Setting the belt tension



(1) - Checking point
(2) - Hexagon slot
(3) - Belt tensioner
(4) - Screws

(5) - Drive pulley
(6) - Tensioning roller
(7) - V-ribbed belt



To set the belt tension:

1. Insert the V-ribbed belt (7).
2. Turn the tensioning roller (6) with the belt tensioner (3) against the V-ribbed belt (7).
3. Insert a hexagonal wrench into the hexagon slot (2).
4. Tension the V-ribbed belt (7).
5. Tighten the screws (4).
6. Check and, if necessary, correct the belt tension.

6.2 Setting the drive ratio (heavy transport)

The machine is equipped with a 1-step pulley.

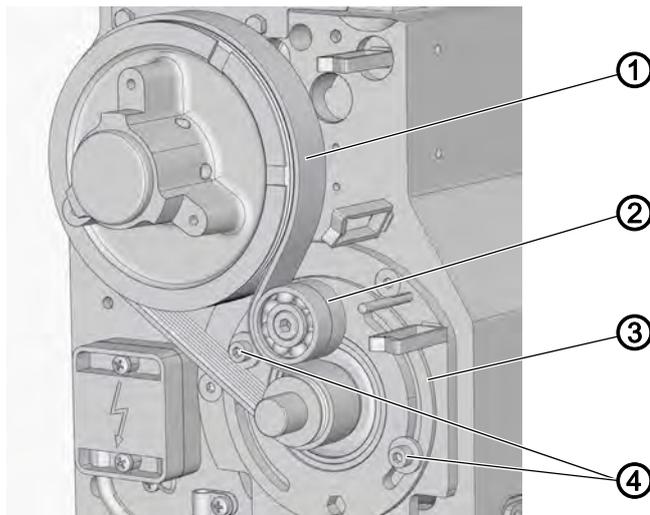


Cover

- Belt cover (📖 p. 17).

6.2.1 Disassembling the V-ribbed belt

Fig. 18: Disassembling the V-ribbed belt



(1) - V-ribbed belt
(2) - Tensioning roller

(3) - Belt tensioner
(4) - Screws



To disassemble the V-ribbed belt:

1. Loosen the screws (4).
2. Rotate the tensioning roller (2) and belt tensioner (3).
3. Remove the V-ribbed belt (1).

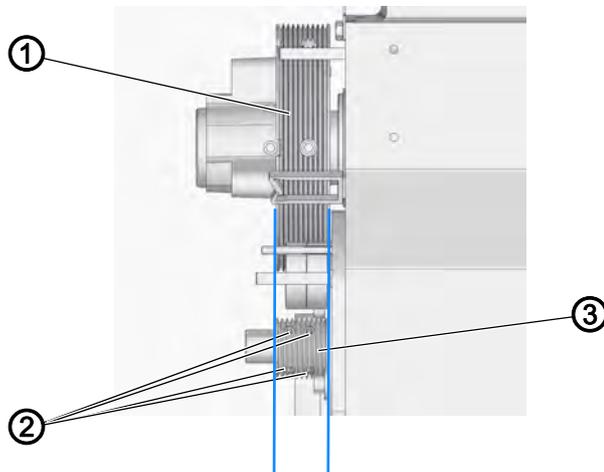
6.2.2 Setting the drive pulley



Proper setting

The pulleys are in alignment.

Fig. 19: Setting the drive pulley



(1) - Driven pulley
(2) - Screws

(3) - Drive pulley



To set the drive pulley:

1. Loosen the screws (3).
2. Pull the drive pulley (2) off the motor shaft and put it back on the other way round.
3. The drive pulley (2) and the driven pulley (1) are in alignment.
4. Tighten the screws (3).

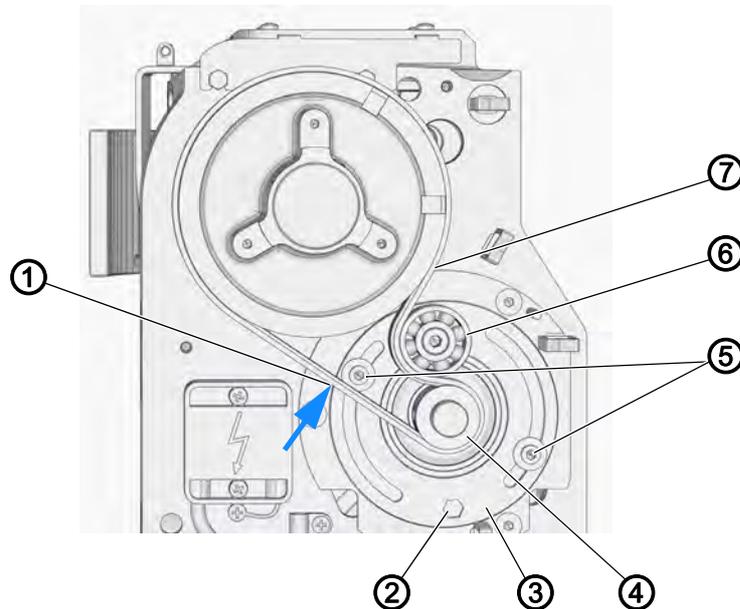
6.2.3 Setting the belt tension



Proper setting

The belt must be tight enough not to deflect by more than approx. **1.5 mm** if pressure is exerted at the checking point.

Fig. 20: Setting the belt tension



- (1) - Checking point
- (2) - Hexagon slot
- (3) - Belt tensioner
- (4) - Drive pulley

- (5) - Screws
- (6) - Tensioning roller
- (7) - V-ribbed belt



To set the belt tension:

1. Insert the V-ribbed belt (7).
2. Turn the tensioning roller (6) with the belt tensioner (3) against the V-ribbed belt (7).
3. Insert a hexagonal wrench into the hexagon slot (2).
4. Tension the V-ribbed belt (7).
5. Tighten the screws (5).
6. Check and, if necessary, correct the belt tension.

6.3 Setting the positioning of the machine

The machine will stop automatically at two angular positions on the main shaft (of the handwheel). To ensure that the machine stops properly at these positions, you need to set the reference position for the handwheel. In order to ensure that the reference position is set properly, the drive ratio between motor and main shaft must be entered correctly into the control program of the machine.

6.3.1 Importing the drive ratio into the control program

Fig. 21: Importing the drive ratio into the control program



(1) - Control panel OP1000

(2) - Handwheel



To import the drive ratio into the control program:

1. Select parameter setting mode on the OP1000 control panel (1) and set the parameter $t\ 08\ 19$ ( *Instructions for use DAC basic/classic*).
2. Manually rotate the handwheel (2) by at least 2 turns.
 The display on the control panel will show a new value for the drive ratio.
3. Press the **OK** button to confirm this new parameter value.

6.3.2 Setting the reference position of the handwheel



Proper setting

The reference position is at **105°** on the handwheel scale (2).

Fig. 22: Setting the reference position of the handwheel



(1) - Control panel OP1000

(2) - Handwheel



To set the reference position of the handwheel:

1. Select parameter setting mode on the OP1000 control panel (1) and set the parameter $t\ 08\ 10$ ( *Instructions for use DAC basic/classic*).
2. Manually rotate the handwheel (2) by at least one turn.
3. Set the value **105°** on the handwheel.
4. Press the **OK** button to confirm the set position.
5. Press the **ESC** button to exit parameter setting mode.
6. Switch off and on the machine again.

7 Setting the stitch length adjusting wheel

CAUTION



Risk of injury from moving parts!

Crushing possible.

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

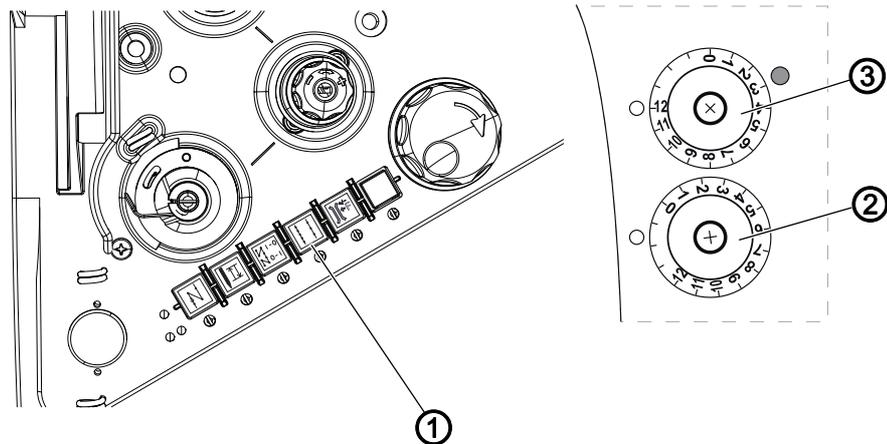
NOTICE

Property damage may occur!

If you turn the shaft too far, parts on the stitch regulator gear may bend or get stuck.

Turn the shaft carefully and stop as soon as you feel a slight resistance.

Fig. 23: Setting the stitch length adjusting wheels



(1) - Button for the stitch length

(2) - Lower stitch length adjusting wheel

(3) - Upper stitch length adjusting wheel

The 2 adjusting wheels on the machine column determine the stitch length.

- Upper adjusting wheel: large stitch length
- Lower adjusting wheel: small stitch length

It is not possible to set a larger stitch length on the lower adjusting wheel than on the upper adjusting wheel.

It is not possible to set a larger stitch length on the upper adjusting wheel than on the lower adjusting wheel.

To switch over between the stitch lengths: Press the button for the stitch length on the machine arm (1).

↳ If the upper adjusting wheel is activated, then the button (1) lights up. Upon switching on the machine, the stitch length adjusting wheel activated most recently is always active.



Order

Set the upper stitch length adjusting wheel first before setting the lower stitch length adjusting wheel.

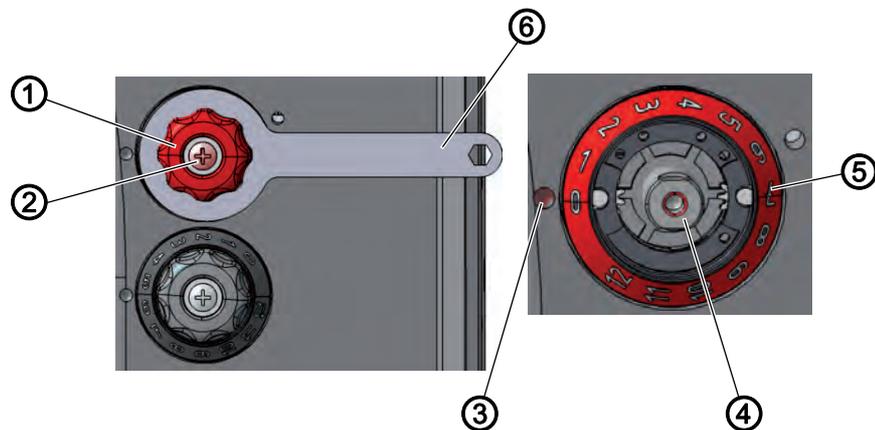
7.1 Setting the upper stitch length adjusting wheel



Proper setting

The upper stitch length adjusting wheel is set to the maximum stitch length that can be achieved with the built-in sewing equipment.

Fig. 24: Setting the upper stitch length adjusting wheel



- | | |
|---|-------------|
| (1) - Upper stitch length adjusting wheel | (4) - Shaft |
| (2) - Screw | (5) - Scale |
| (3) - Adjusting mark | (6) - Key |



To set the upper stitch length adjusting wheel:

1. Switch on the machine.
2. Unthread the needle thread.
3. Press the button  on the machine arm.
- ↳ The button lights up. The machine switches over to the upper stitch length adjusting wheel.
4. Hold the upper stitch length adjusting wheel (1) in place using a wrench (6).
5. Loosen the screw (2).
6. Remove the upper stitch length adjusting wheel (1) from the shaft (4).
7. To set the stitch length, use a size 10 wrench to carefully turn the shaft (4).
 - to set a shorter stitch length: turn clockwise
 - to set a longer stitch length: turn counterclockwise

8. Perform a sewing test with a sheet of paper and readjust if necessary.
9. Turn the scale (5) so that the number indicating the stitch length is exactly next to the adjusting mark (3).
10. Place the upper stitch length adjusting wheel (1) onto the shaft (4) and tighten it with the wrench (6).
11. Tighten the screw (2).

7.2 Setting the lower stitch length adjusting wheel

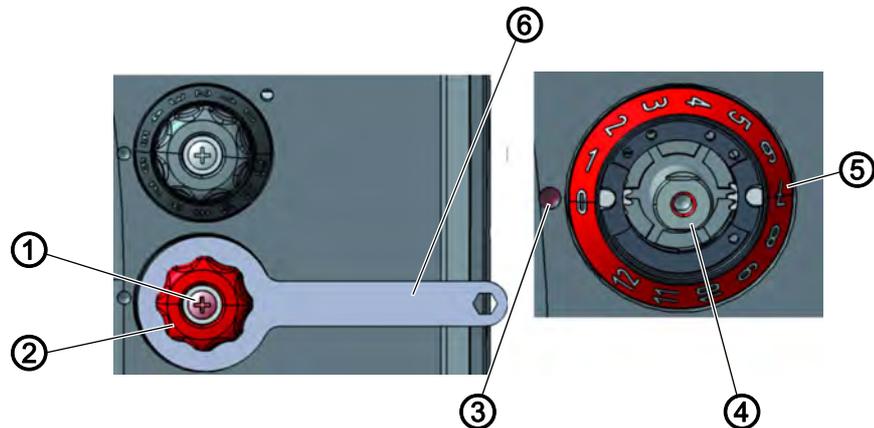


Proper setting

Sew with 2 different stitch lengths.

- ↳ The stitch lengths on the seam correspond with the set stitch lengths. The lower stitch length adjusting wheel can only be turned up to the stitch length set on the upper stitch length adjusting wheel.

Fig. 25: Setting the lower stitch length adjusting wheel



- | | |
|---|-------------|
| (1) - Screw | (4) - Shaft |
| (2) - Lower stitch length adjusting wheel | (5) - Scale |
| (3) - Adjusting mark | (6) - Key |



To set the lower stitch length adjusting wheel:

1. Switch on the machine.
2. Unthread the needle thread.
3. Press the button  on the machine arm.
- ↳ The button turns off. The machine switches over to the lower stitch length adjusting wheel.
4. Hold the lower stitch length adjusting wheel (2) in place using the wrench (6).
5. Loosen the screw (1).
6. Remove the lower stitch length adjusting wheel (2) from the shaft (4).

7. To set the stitch length, use a size 10 wrench to carefully turn the shaft (4).
 - **to set a shorter stitch length:** turn counterclockwise
 - **to set a longer stitch length:** turn clockwise
8. Perform a sewing test with a sheet of paper and readjust if necessary.
9. Turn the scale (5) so that the number indicating the stitch length is exactly next to the adjusting mark (3).
10. Place the lower stitch length adjusting wheel (2) onto the shaft (4) and tighten it with the wrench (6).
11. Tighten the screw (1).

7.3 Setting the stitch length limit

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

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

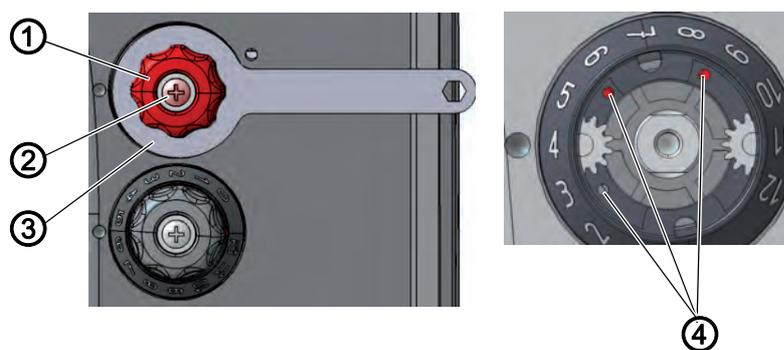


Proper setting

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

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

Fig. 26: Setting the stitch length limit



- | | |
|---|----------------------|
| (1) - Upper stitch length adjusting wheel | (3) - Key |
| (2) - Screw | (4) - Mark-off slots |



To set the stitch length limit:

1. Position the upper stitch length adjusting wheel (1) to 0.
2. Hold the upper stitch length adjusting wheel (1) in place using the wrench (3).
3. Loosen the screw (2).
4. Remove the upper stitch length adjusting wheel (1).

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

7.4 Setting the eccentric for the forward and backward stitches



Proper setting

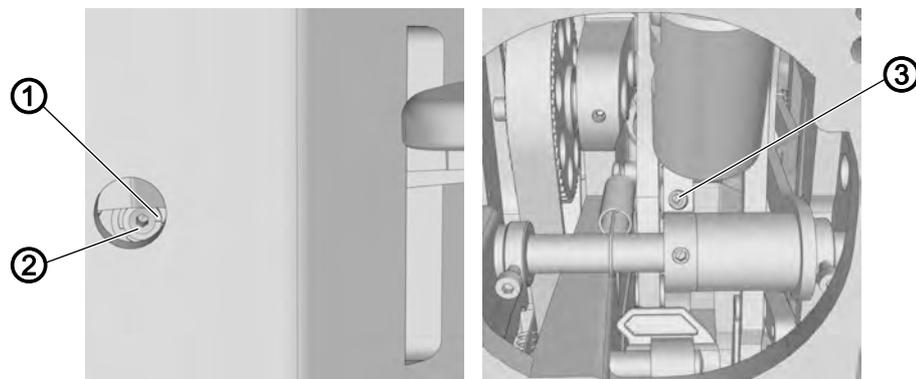
The forward and backward stitches are the same length.
To test the setting, unthread the needle thread and insert a sheet of paper. Sew a seam forward, stop, slightly shift the sheet sideways, and sew a seam backward. The punctures of the forward and backward stitches have to lie exactly next to one another.



Cover

- Tilt the machine head (📖 p. 14)

Fig. 27: Setting the eccentric for the forward and backward stitches



(1) - Eccentric slot
(2) - Eccentric

(3) - Threaded pin



To set the eccentric for forward and backward stitches:

1. Loosen the threaded pin (3).
2. Turn the eccentric screw (2) from the right through the slot in the base plate:

Initial position:

The slot in the eccentric (1) is parallel to the axle of the machine, and the recess faces down.

If the forward and backward stitches are not the same length:

- **Turn clockwise:** the forward stitch becomes larger, the backward stitch smaller.
- **Turn counterclockwise:** the forward stitch becomes smaller, the backward stitch larger.

3. Tighten the threaded pin (3).

8 Setting the feed dog

CAUTION



Risk of injury from moving parts!

Crushing possible.

Switch off the machine before setting the feed dog.

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



Information

The adjustment notes given below refer to both Classic machines and machines equipped with the option *Heavy Transport*.



Order

First, check the following setting:

- Needle bar linkage ( p. 48)

8.1 Setting the feed dog position



Proper setting

When the stitch length is set to **0** and the needle is at the bottom dead center, the center of the feed dog opening lines up with the axis of the needle.



Cover

- Tilt the machine head ( p. 14)

8.1.1 Moving the feed dog carrier in sewing direction

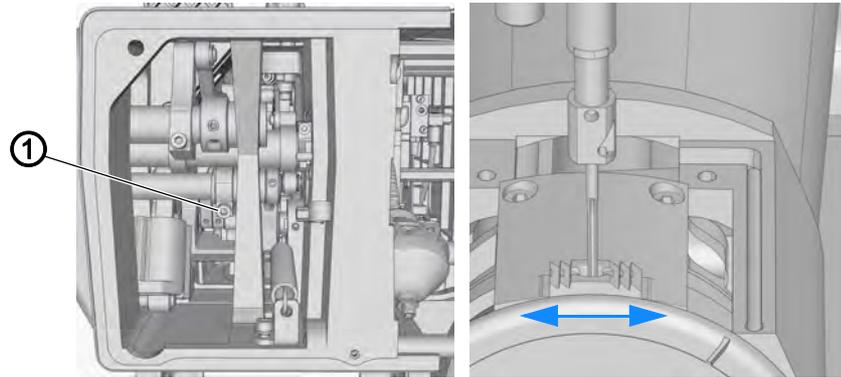
The feed dog carrier is connected to the stitch regulator gear via the sliding shaft, and can be moved on this shaft.



Cover

- Tilt the machine head (📖 p. 14)

Fig. 28: Moving the feed dog carrier in sewing direction



(1) - Screw

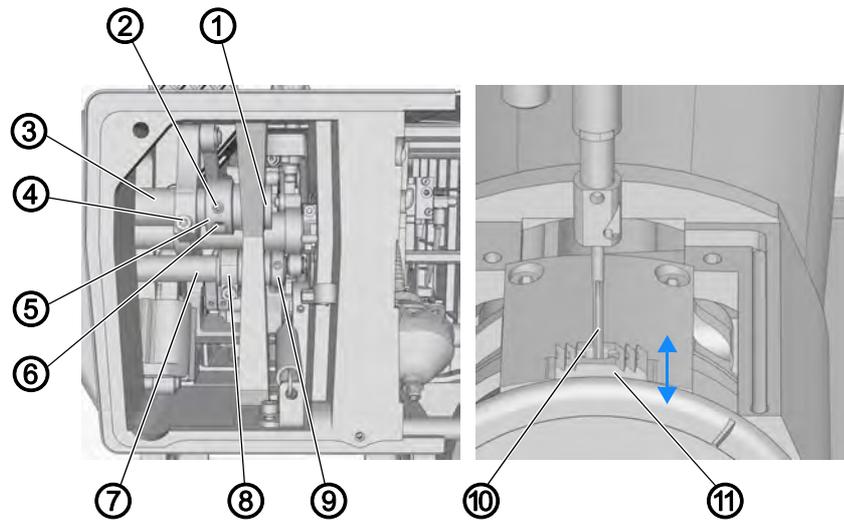


To move the feed dog carrier in sewing direction:

1. Set the upper stitch length adjusting wheel to **0**.
2. Loosen the screw (1).
3. Move the feed dog carrier in the sewing direction such that the feed dog is exactly in the center of the throat plate cutout.
4. Tighten the screw (1).

8.1.2 Moving the feed dog sideways

Fig. 29: Moving the feed dog sideways



- | | |
|----------------------|----------------------|
| (1) - Pin | (7) - Sliding shaft |
| (2) - Threaded pin | (8) - Clamp |
| (3) - Stroke shaft | (9) - Adjusting ring |
| (4) - Screw | (10) - Needle |
| (5) - Adjusting ring | (11) - Feed dog |
| (6) - Threaded pin | |



To move the feed dog carrier sideways:

1. Loosen the screw (4).
2. Loosen the threaded pin (2).
3. Loosen the threaded pin (6).
4. Pull the pin (1) out slightly.
5. Move the feed dog carrier sideways so that the needle (10) pierces into the center.
6. Tighten the screw (4).



Important

When doing this, make sure that the sliding shaft (7) is held firmly in place by the clamp (8) and the adjusting ring (9).

7. Press the adjusting ring (5) against the casting and tighten the threaded pin (2).



Important

When doing this, make sure that the stroke shaft (3) is held firmly in place by the adjusting ring (5) and the pin (1).

8. Push the pin (1) all the way in and tighten the threaded pin (6).

8.2 Setting the feed dog movement

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



Order

First, check the following setting:

- Feed dog position ( p. 40)

8.2.1 Setting the feed movement

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



Proper setting

Set the handwheel to the **190°** position and the upper stitch length adjusting wheel to the maximum stitch length.

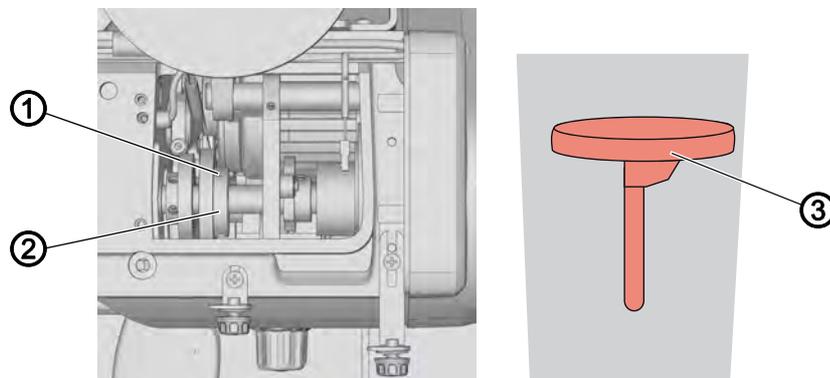
⚠ When the stitch regulator is pressed down, the feed dog stops.



Cover

- right arm cover ( p. 15)

Fig. 30: Setting the feed movement



(1) - Threaded pins
(2) - Pusher eccentric

(3) - Stitch adjustment lever



To set the feed movement:

1. Set the upper stitch length adjusting wheel to the maximum stitch length.
2. Loosen the threaded pins (1).
3. Move the handwheel into the **190°** position.
4. Press the stitch adjustment lever (3) down and observe how the feed dog and needle respond.
5. Turn the pusher eccentric (2) so that the feed dog and needle no longer move when the stitch adjustment lever (3) is pressed.
6. Tighten the threaded pins (1).

8.2.2 Setting the feed dog height at top dead center



Proper setting

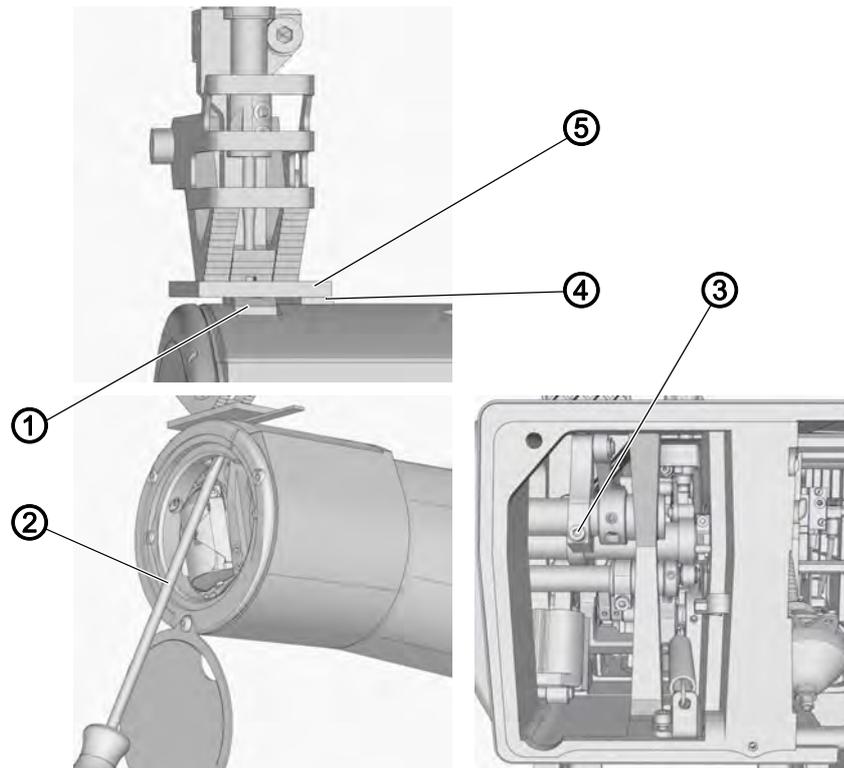
When the handwheel scale and the sewing foot stroke are set to, respectively, **200°** and **0**, the feed dog protrudes **1.3 mm** above the throat plate.



Cover

- Tilt the machine head (📖 p. 14)

Fig. 31: Setting the feed dog height at top dead center



- (1) - Feed dog
(2) - Screwdriver
(3) - Screw

- (4) - Feeler gage
(5) - Plate



To set the feed dog height at top dead center:

1. Position the feed dog (1) at top dead center.
2. Loosen the screw (3).
3. Push up the feed dog (1), as shown, using a thin screwdriver (2).
4. Move the feed dog (1) until it protrudes **1.3 mm** from the throat plate.
5. Tighten the screw (3).
6. Check the feed dog height at top dead center.
To do so, use, for instance, a plate (4) and a feeler gage (5).

8.2.3 Setting the feed dog stroke movement



Order

First, check the following setting:

- Set the feed dog height at top dead center ( p. 44)



Proper setting

The upper edge of the feed dog must be at the same height when the feed dog is at front dead center (handwheel position **90°**) as when it is at the rear dead center (handwheel position **270°**).

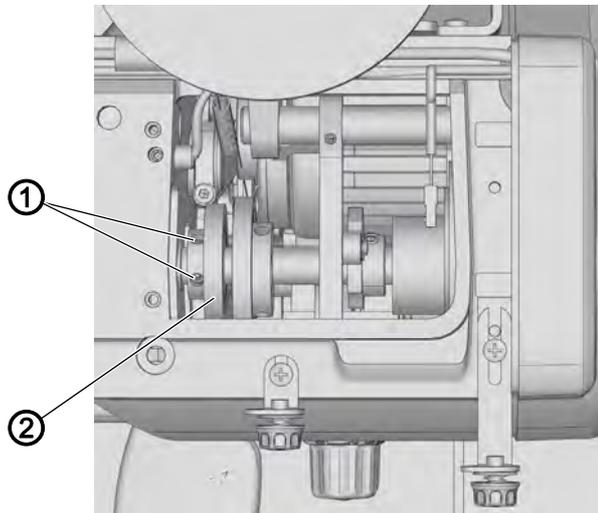
At **90°**, the feed dog is in the upward movement; at **270°**, in the downward movement.



Cover

- right arm cover ( p. 15)

Fig. 32: Setting the feed dog stroke movement



(1) - Threaded pins

(2) - Stroke eccentric



To set the feed dog stroke movement:

1. Loosen the threaded pins (1).
2. Move the handwheel into the **90°** position.
3. Turn the stroke eccentric (2) such that the upper edge of the feed dog is at the same height as the upper edge of the throat plate during the upward movement.
4. Tighten the threaded pins (1).
5. Check if the feed dog is at the same height at **90°** and **270°**; adjust if necessary.

8.3 Setting the feeding eccentric with adjusting tube

CAUTION



Risk of injury from moving parts!

Crushing possible.

Switch off the machine before setting the feeding eccentric.



Proper setting

When the adjusting tube on one of the eccentrics (1), (5) or (6) is pushed all the way to the edge of the arm slot, the handwheel scale will show the following value:

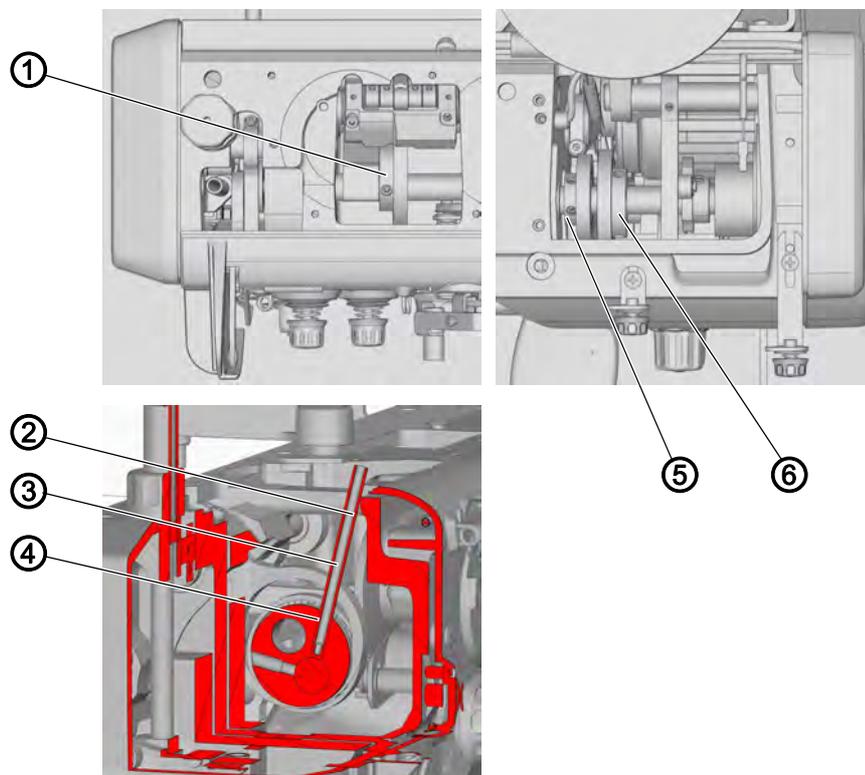
- Stroke eccentric sewing feet (1): 23°
- Stroke eccentric feed dog (5): 5°
- Pusher eccentric feed dog (6): 230°



Cover

- left and right arm cover (📖 p. 15)

Fig. 33: Setting the feeding eccentric with adjusting tube



- | | |
|------------------------------------|---|
| (1) - Stroke eccentric sewing feet | (4) - First hole in direction of rotation |
| (2) - Edge of the arm slot | (5) - Stroke eccentric feed dog |
| (3) - Adjusting tube | (6) - Pusher eccentric feed dog |

Setting the stroke eccentric of the sewing feet



To set the stroke eccentric of the sewing feet (1):

1. Loosen the threaded pins on the stroke eccentric (1).
2. Insert the adjusting tube (3) into the first hole in the direction of rotation (4).
3. Press the adjusting tube (3) against the front edge of the machine arm.
4. Set the handwheel to **23°**.
5. Tighten the threaded pins on the stroke eccentric (1).

Setting the pusher eccentric of the feed dog



To set the pusher eccentric of the feed dog (6):

1. Loosen the threaded pins on the pusher eccentric (6).
2. Insert the adjusting tube (3) into the first hole in the direction of rotation (4).
3. Press the adjusting tube (3) against the front edge of the machine arm.
4. Set the handwheel to **230°**.
5. Tighten the threaded pins on the pusher eccentric (6).

Setting the stroke eccentric of the feed dog



To set the stroke eccentric of the feed dog (5):

1. Loosen the threaded pins on the stroke eccentric (5).
2. Insert the adjusting tube (3) into the first hole in the direction of rotation (4).
3. Press the adjusting tube (3) against the front edge of the machine arm.
4. Set the handwheel to **5°**.
5. Tighten the threaded pins on the stroke eccentric (5).

9 Aligning the needle bar linkage

CAUTION



Risk of injury from moving parts!

Crushing possible.

Switch off the machine before aligning the needle bar linkage.

The axial movement of pins and shafts running in plain bearings must be properly restricted before setting begins ( p. 22).

9.1 Moving the needle bar linkage sideways



Proper setting

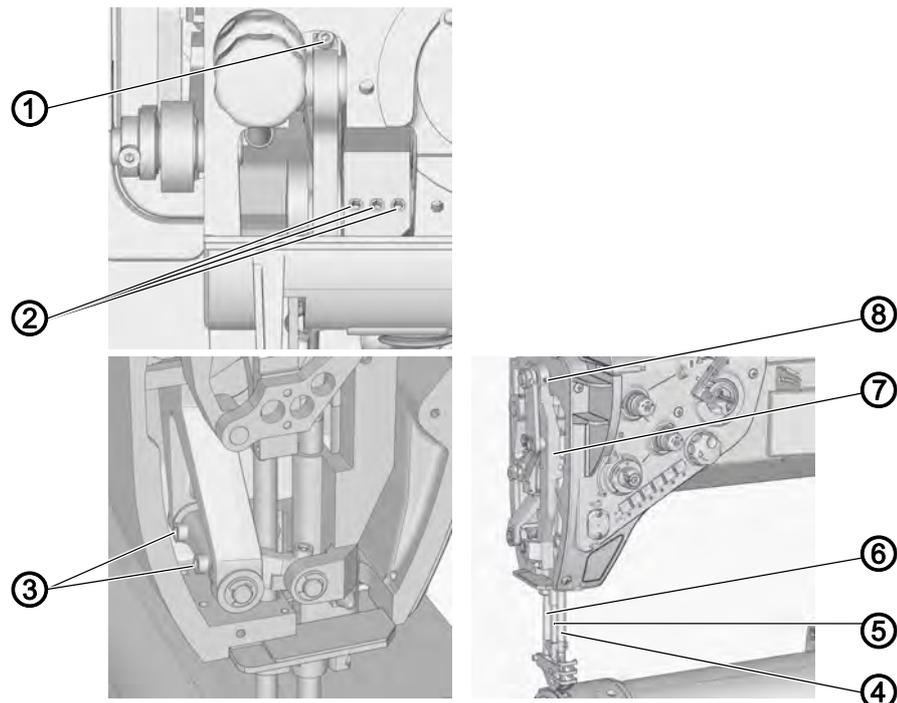
When the stitch length is set to **0** and the value set on the handwheel scale is **90°**, needle bar, the sewing foot bar and the presser foot bar are in a line.



Cover

- left and right arm cover ( p. 15)
- Head cover ( p. 16)

Fig. 34: Moving the needle bar linkage sideways



- (1) - Screw
 (2) - Screws
 (3) - Screws
 (4) - Needle bar

- (5) - Feeding foot bar
 (6) - Presser foot bar
 (7) - Needle bar linkage
 (8) - Screw



To move the needle bar linkage sideways:

1. Set the stitch length to **0**.
2. Move the handwheel into the **90°** position.
3. Loosen the screw (1).
4. Loosen the screws (2).
5. Loosen the screws (3).
6. Loosen the screw (8).
7. Move the needle bar linkage (7) sideways so that needle bar (4), feeding foot bar (5) and presser foot bar (6) are all in a line.
8. Tighten screws (1), (2), (3), and (8).

9.2 Aligning the needle bar linkage in the sewing direction



Proper setting

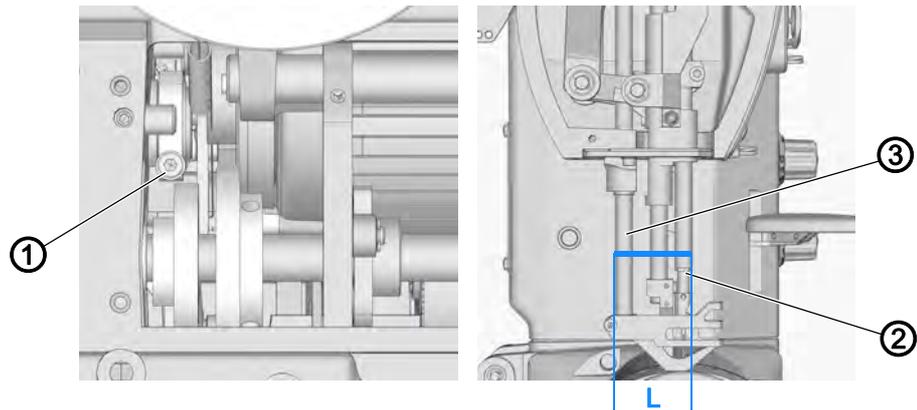
When the stitch length is set to **0** and the value set on the handwheel scale is **90°**, the needle bar is parallel to the presser foot bar.



Cover

- left and right arm cover (📖 p. 15)

Fig. 35: Aligning the needle bar linkage in the sewing direction



- (1) - Screw top feed lever
(2) - Needle bar

- (3) - Presser foot bar



To align the needle bar linkage in the sewing direction:

1. Loosen the screw for the top feed lever (1).
2. Turn the needle bar (2) until it is parallel to the presser foot bar (3).
3. Set the distance between the bars to **L = 44 mm**.
4. Tighten the screw (1).
5. Check the axial play (📖 p. 22).

10 Position of the hook and needle

CAUTION



Risk of injury from sharp and moving parts!

Puncture and crushing possible.

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

10.1 Tensioning the hook drive toothed belt

A special measurement tool is required to achieve the proper setting. Follow the information below when setting the belt tension:

- if the tension is too high, the service life of the toothed belt and ball bearings is reduced
- if the tension is too low, the toothed belt may slip off the pulleys



Proper setting

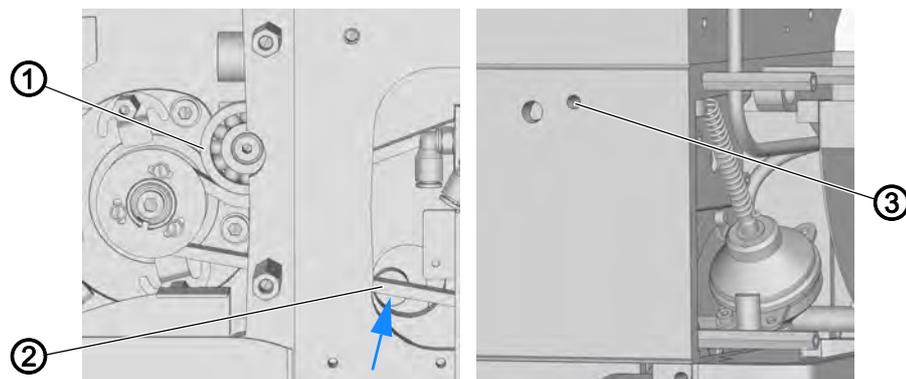
When you press down on the toothed belt approximately in the center between the pulleys with a force of **10 N** in the direction of the arrow, the belt should deflect about **3 mm**.



Cover

- Belt cover ( p. 17)
- Tilt the machine head ( p. 14)

Fig. 36: Tensioning the hook drive toothed belt



(1) - Eccentric pin
(2) - Toothed belt

(3) - Screw



To tension the hook drive toothed belt:

1. Loosen the screw (3).
2. Turn the eccentric pin (1) with the tensioning pulley and tension the toothed belt (2).
3. Tighten the screw (3).



Important

Note that a low tightening torque when turning the eccentric pin (1) can lead to a high tension of the toothed belt (2).

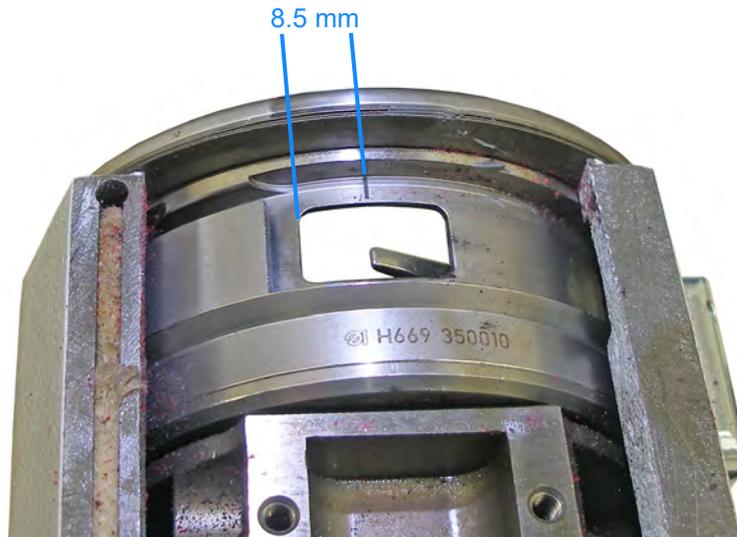
4. Check and, if necessary, adjust the toothed belt tension.

10.2 Setting the dead center of the reciprocating hook movement



Proper setting

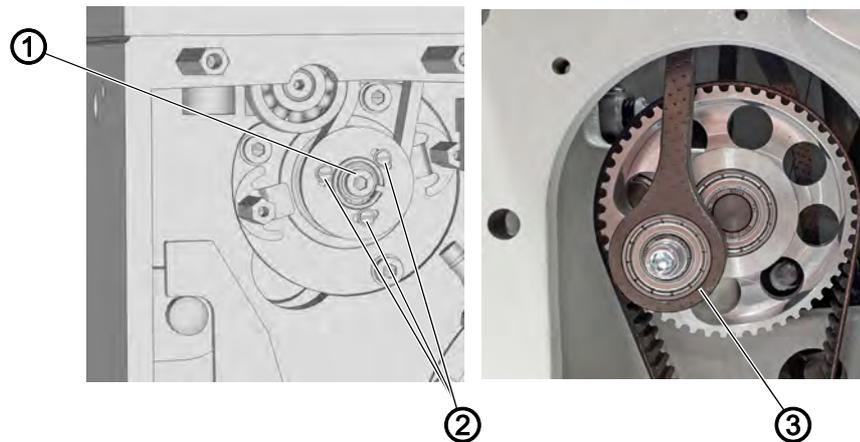
Fig. 37: Setting the dead center of the reciprocating hook movement (1)



Cover

- Belt cover (📖 p. 17)
- Tilt the machine head (📖 p. 14)

Fig. 38: Setting the dead center of the reciprocating hook movement (2)



- (1) - Screw
- (2) - Screws

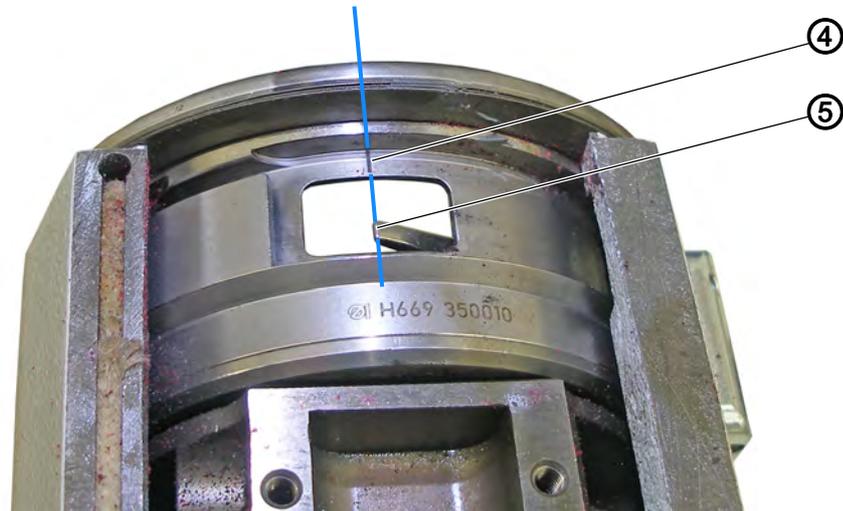
- (3) - Pull rod



To set the dead center of the reciprocating hook movement:

1. Use the handwheel to turn the pull rod (3) to the lower dead center.
2. Loosen screws (1) and (2).

Fig. 39: Setting the dead center of the reciprocating hook movement (3)



(4) - Marking

(5) - Driver nose



3. Set the driver sideways.
↳ The driver nose (5) points exactly to the marking (4).
4. Tighten screws (1) and (2).
5. Turn the pull rod to the lower dead center and check if the driver nose (5) points exactly to the marking (4).
6. Readjust if necessary.

10.3 Setting the loop stroke position



Proper setting

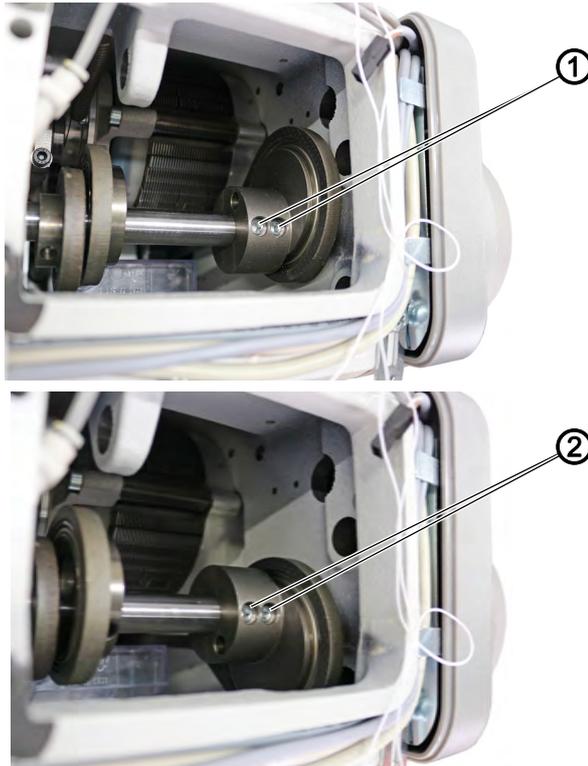
When the stitch length is set to **0** and the machine is locked in place at position **1**, the hook tip is at the center in relation to the needle axis.



Cover

- right arm cover (📖 p. 15)

Fig. 40: Setting the loop stroke position (1)



(1) - Screws

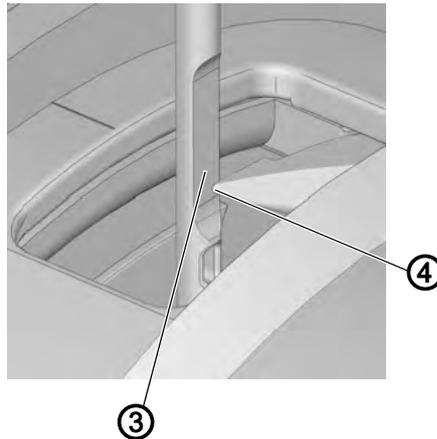
(2) - Screws



To set the loop stroke position:

1. Set the stitch length to **0**.
2. Loosen the screws (1).
3. Lock the machine in place at position **1**.
4. Loosen the screw (2).

Fig. 41: Setting the loop stroke position (2)



(3) - Groove

(4) - Hook tip



5. Turn the tip of the hook (4) so that it is central to the axis of the needle.
- ↳ The hook tip is situated in the lower third of the needle groove (3).
6. Tighten the screws (2).
7. Remove the lock.
8. Tighten the screws (1).

10.4 Setting the hook clearance



Proper setting

Lock the machine in place at position 1.

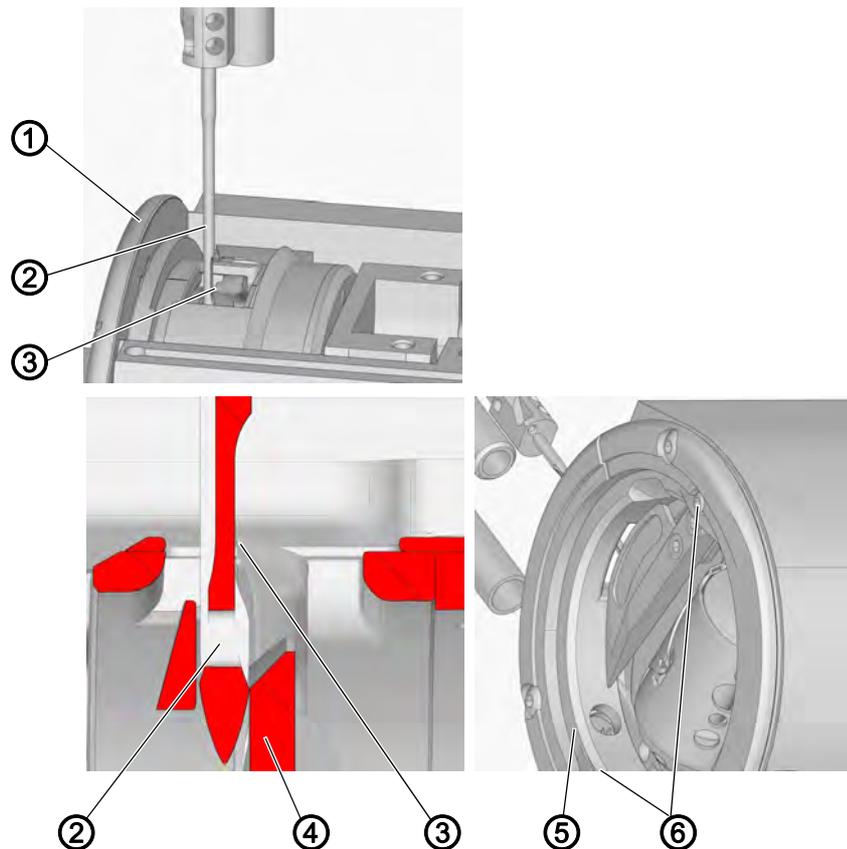
- ↳ The maximum distance between hook tip and groove is **0.1 mm**.
The hook tip must not touch the needle when moving past the needle.



Cover

- Disassemble the throat plate ( p. 19)
- Remove the feed dog ( p. 20)
- Tilt the machine head ( p. 14)

Fig. 42: Setting the hook clearance



(1) - Hook cage
(2) - Needle
(3) - Hook tip

(4) - Driver
(5) - Cover ring
(6) - Screws



To set the hook clearance:

1. Lock the machine in place at position 1.
2. Check the distance between the groove of the needle (2) and the hook tip (3).
3. Position the needle (2) at top dead center.
4. Loosen the screws (6) of the cover ring (5).
5. Remove the cover ring (5).
6. Remove the hook.
7. Loosen and remove the loop support.
8. Loosen the screw for the hook cage (1).
9. Remove the hook cage (1).



Important

When removing the hook cage, make sure not to damage the oil wick.

The hook cage (1) cannot be removed unless the driver and the slot in the hook cage (1) are in alignment.

10. Insert spacer rings.
The spacer rings are contained in the accessory pack for the machine.
11. Assemble the hook again.
12. Lock the machine in place at **1** and check the distance between the groove of the needle (2) and the hook tip (3).
Readjust the setting if necessary.

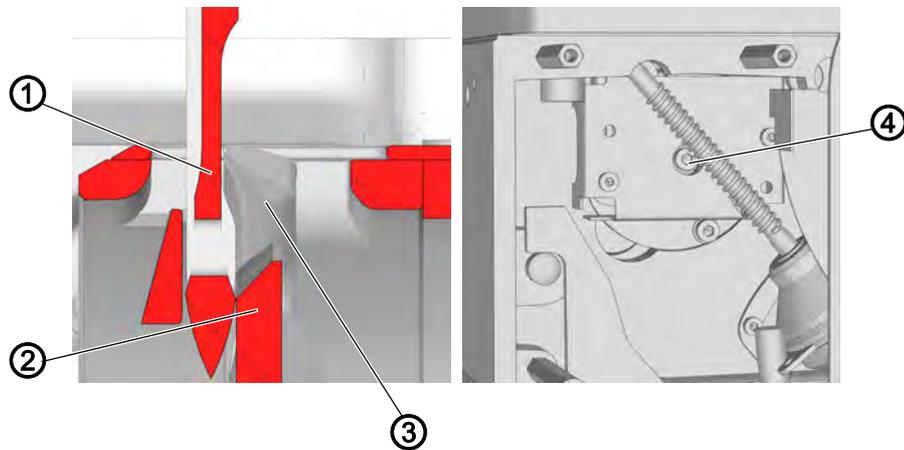
10.5 Setting the needle guard



Proper setting

The needle guard touches the needle lightly, preventing the needle from colliding with the hook when pressure is exerted on the needle.

Fig. 43: Setting the needle guard



(1) - Needle
(2) - Driver

(3) - Hook
(4) - Screw



To set the needle guard:

1. Move the machine to loop stroke position.
2. Press the needle (1) toward the hook (3).
3. Check the distance between needle (1) and hook (3).
4. Loosen the screw (4).
5. Shift the driver (2).
 - Increase the distance: Slide the driver (2) to the left
 - Reduce the distance: Slide the driver (2) to the right
6. Tighten the screw (4).
7. Check if the distance between needle (1) and hook (3) is greater than **0.1 mm** and, if so, correct the setting.

10.6 Setting the loop former

NOTICE

Property damage may occur!

Damage to the hook if the loop former is set incorrectly.

After fitting the hook, check that the needle has sufficient clearance to pass between the hook drive dog and the loop former.

Insert the appropriate distance piece.

The loop former guides the thread loop in the needle toward the tip of the hook, thus increasing the chance of the thread catching. The lateral position of the loop former must be adjusted to suit the thickness of the needle using the distance piece.



Information

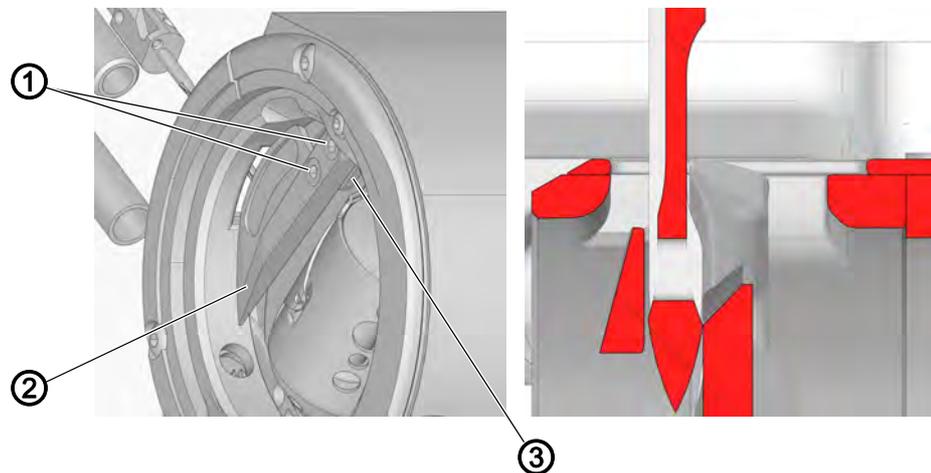
The needle thickness has been engraved on the distance piece. There is a matching distance piece for every needle thickness, which must be inserted accordingly.



Cover

- Tilt the machine head ( p. 14)

Fig. 44: Setting the loop former



- (1) - Screws
(2) - Loop former

- (3) - Distance piece



To set the loop former:

1. Loosen the screws (1).
2. Take out the loop former (2) and distance piece (3).

3. Select the appropriate distance piece for the needle thickness used. Distance pieces are contained in the accessory pack for the machine.
4. Insert distance piece (3) and loop former (2).
5. Tighten the screws (1).

10.7 Setting the needle bar height



Order

First, check the following settings:

- Loop stroke position ( p. 54)
- A straight and undamaged needle has to be inserted ( *Operating Instructions*)



Proper setting

The machine is locked in place at position **1**, and the upper stitch length adjusting wheel is set to **0**.

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



Disturbance

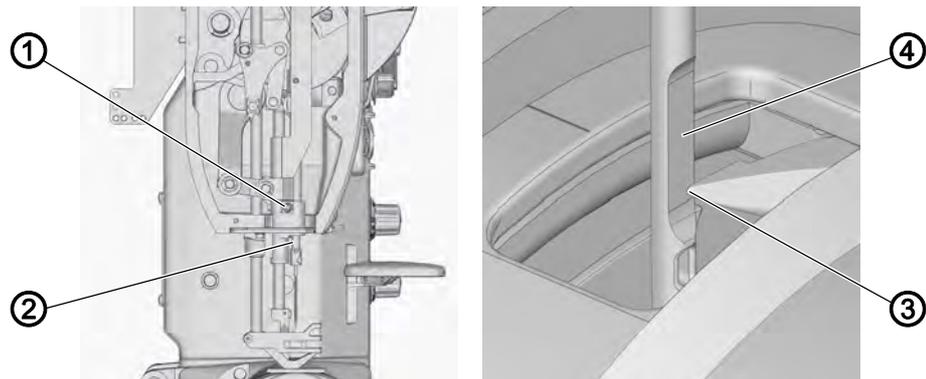
- Damage to the hook tip
- Jamming of the needle thread
- Missing stitches
- Thread breaking
- Needle breakage



Cover

- Remove the head cover ( p. 16)

Fig. 45: Setting the needle bar height



(1) - Screw
(2) - Needle bar

(3) - Hook tip
(4) - Groove



To set the needle bar height:

1. Lock the machine in place at position **1**.
2. Set the upper stitch length adjusting wheel to **0**.
3. Loosen the screw (1).

4. Move the height of the needle bar (2) such that the hook tip (3) is in the middle of the lower third of the groove (4) for the needle.

**Important**

Do not twist the needle to the side.
The groove (4) must face toward the hook.

5. Tighten the screw (1).
6. Remove the lock.
7. Check the height of the needle bar at maximum stitch length when sewing forward and in reverse; adjust it again if necessary.

11 Setting the sewing feet

CAUTION



Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Switch off the machine before you set the sewing feet.

11.1 Setting the sewing foot feed

11.1.1 Setting the zero stroke of the sewing feet and the tension force of the torsion spring



Proper setting

The connecting rods are in a line.

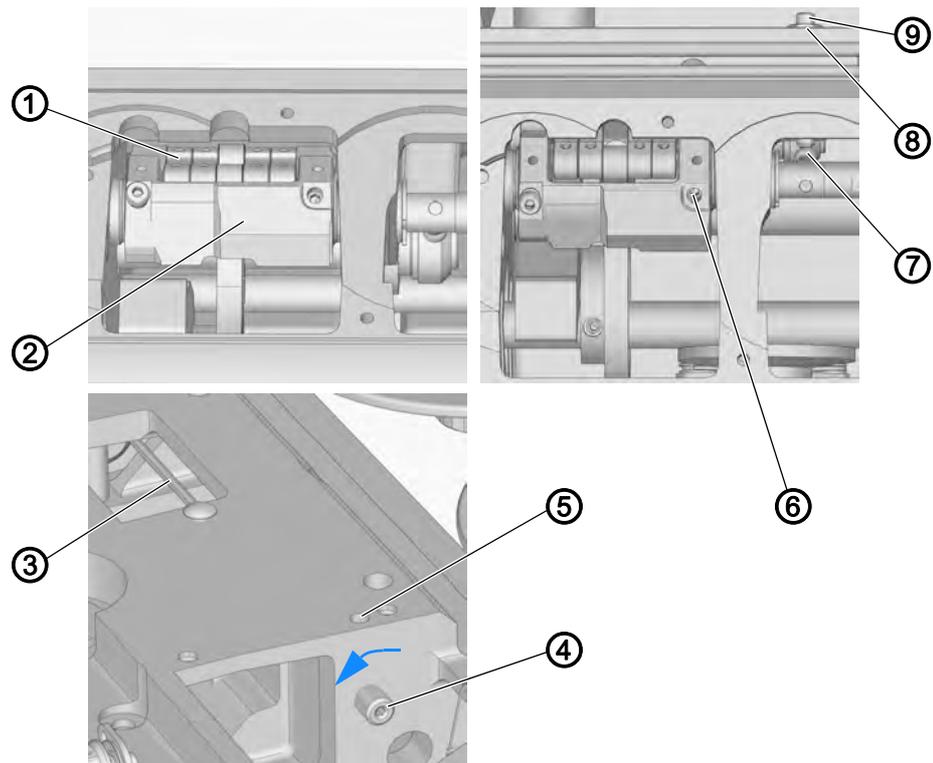
- ↘ The ball pin is touching the stop screw.
The torsion spring is twisted **15° - 20°**.



Cover

- left and right arm cover ( p. 15)

Fig. 46: Setting the zero stroke of the sewing feet and the tension force of the torsion spring



- (1) - Plates
- (2) - Frame
- (3) - Torsion spring
- (4) - Pin
- (5) - Slot

- (6) - Screw
- (7) - Ball pin
- (8) - Counternut
- (9) - Stop screw



To set the zero stroke of the sewing feet and the tension force of the torsion spring:

1. Loosen the screw in the slot (5).
2. Loosen the counternut (8).
3. Rotate the frame (2) so that the clips (1) are in a line.
4. Turn the stop screw (9) so that the ball pin (7) is in contact with it and the clips (1) remain in a line.
5. Tighten the counternut (8).
6. Turn the torsion spring (3) with the pin (4) **15° - 20°** in the direction of the arrow.
7. Tighten the screw in the slot (5).

11.1.2 Setting the drive dog of the presser foot bar



Proper setting

The stitch length is set to **0**, and sewing foot and presser foot are at the same height.

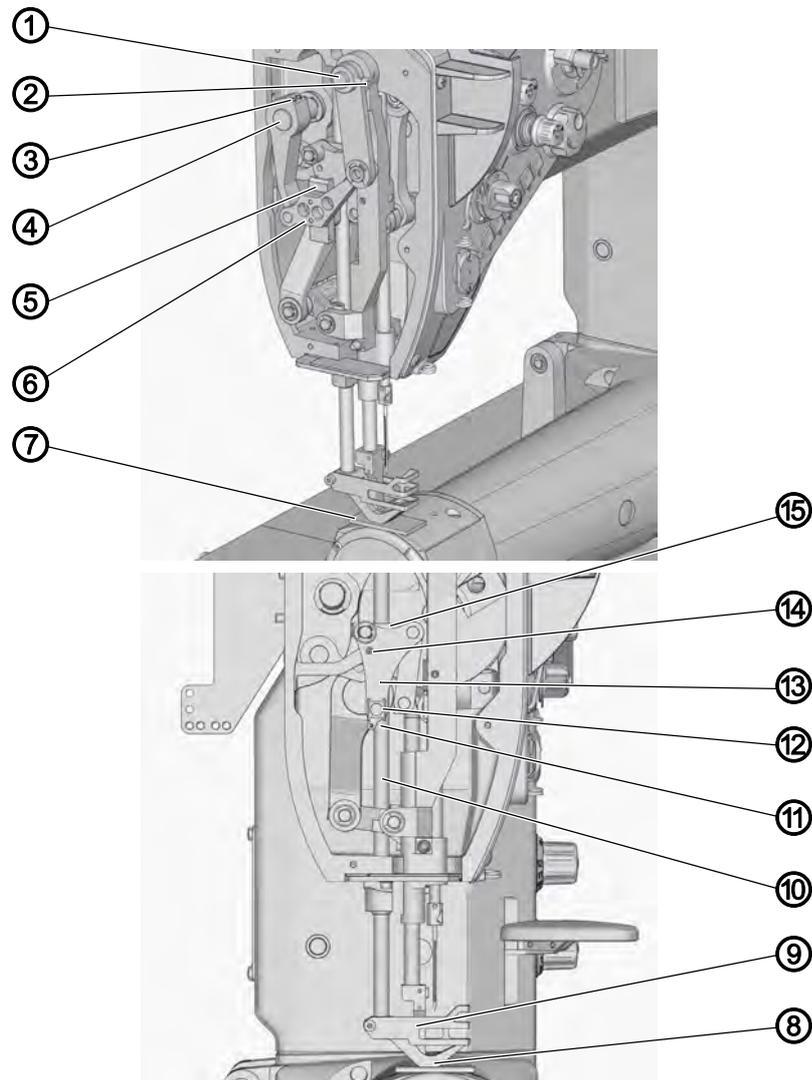
↘ The drive dog is assembled to the presser foot bar in such a position that the needle shaft touches the presser foot bar.



Cover

- left and right arm cover (📖 p. 15)
- Head cover (📖 p. 16)

Fig. 47: Setting the drive dog of the presser foot bar



- (1) - Pin
- (2) - Screw
- (3) - Screws
- (4) - Shaft
- (5) - Gully
- (6) - Assembly
- (7) - Plate
- (8) - Presser foot

- (9) - Feeding foot
- (10) - Presser foot bar
- (11) - Slot
- (12) - Sliding block
- (13) - Lever
- (14) - Drive dog screw
- (15) - Drive dog



To set the drive dog of the presser foot bar:

1. Move the handwheel into the **0°** position.
2. Set the stitch length to **0**.
3. Loosen the screws (3).
4. Loosen the screw (1).
5. Remove the assembly (6) from the shaft (4) and the pin (1).
6. Loosen the drive dog screw (14).
7. Place the plate (7) under the sewing feet.
8. Insert the needle shaft into the slot (11).
9. Turn the lever (13) so that the needle shaft touches the presser foot bar (10) and that presser foot (8) and feeding foot (9) press onto the plate (7).
10. Tighten the drive dog screw (14).
11. Assemble the assembly (6).
Ensure there is an axial play of **0.2 - 0.3 mm** between the sliding block (12) and the floor of the gully (5).

11.1.3 Setting the feed stroke of presser foot and sewing foot

This setting is used to ensure that, at the start of feeding, the presser foot is lifted above the sewing material and the material feeding movement is not obstructed by the sewing foot.



Proper setting

The stitch length is set to **0**, and the stroke of presser foot and sewing foot is set to **0**.

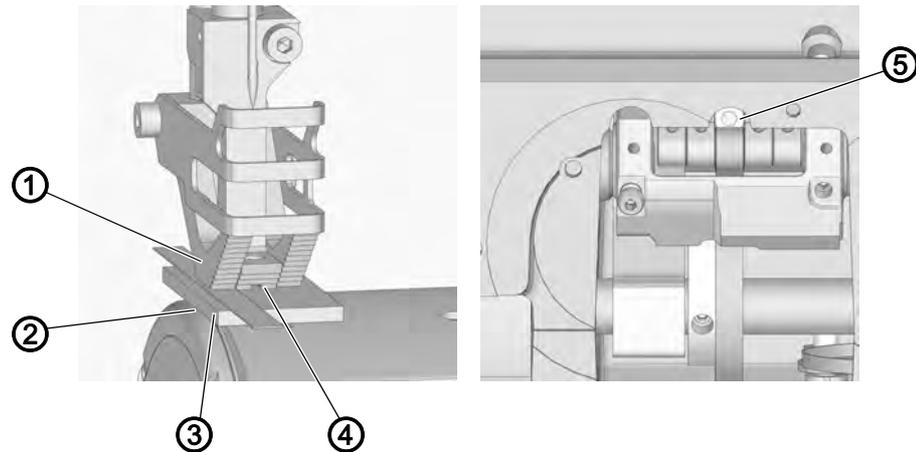
- ↳ The lever is attached to the lift bar of the feet in such a way that the presser foot is positioned **0.3 mm** higher than the sewing foot.



Cover

- left and right arm cover ( p. 15)
- head cover ( p. 16)

Fig. 48: Setting the feed stroke of presser foot and sewing foot



(1) - Presser foot
 (2) - Working position
 (3) - Plate

(4) - Feeding foot
 (5) - Screw



To set the feed stroke of presser foot and feeding foot:

1. Move the handwheel into the **0°** position.
2. Set the stitch length to **0**.
3. Set the zero stroke of the feet (📖 p. 61).
4. Loosen the screw (5).
5. Place the plate (3) under the feet so that the feeding foot (4) is **0.3 mm** lower than the presser foot (1).
6. Manually move both feet down as far as they will go.
7. Tighten the screw (5).

11.1.4 Setting the stroke movement for the feeding foot

In order to ensure a correct feed, the stroke movement for the feeding foot must be aligned to the stroke movement for the feed dog.



Proper setting

The left adjusting wheel for the sewing foot stroke is set to maximum stroke.

The upper stitch length adjusting wheel is set to **0**.

↙ The feeding foot touches down exactly on the feed dog when the downward movement of the needle tip reaches the upper edge of the feeding foot.

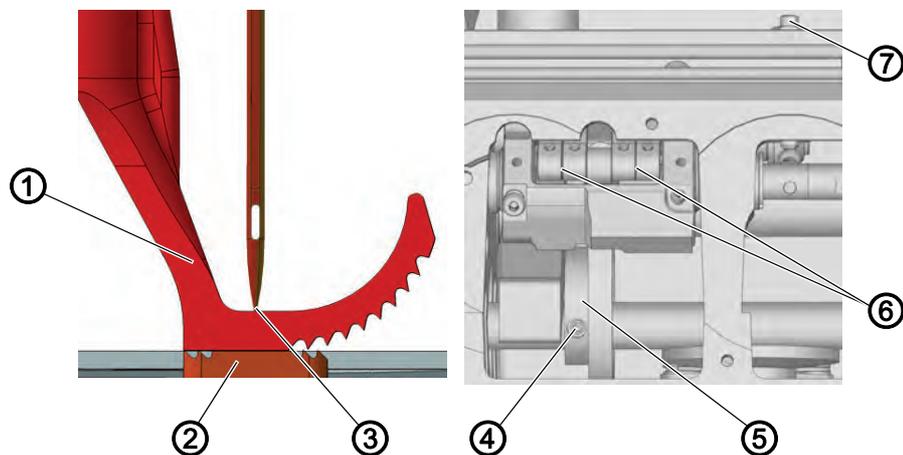
This occurs at handwheel position **95°**.



Cover

- left and right arm cover (📖 p. 15)

Fig. 49: Setting the stroke movement for the feeding foot



- (1) - Feeding foot
- (2) - Feed dog
- (3) - Needle tip
- (4) - Threaded pins

- (5) - Stroke eccentric
- (6) - Plates
- (7) - Threaded pin



To set the stroke movement for the feeding foot:

1. Screw in the threaded pin (7) so that there is a stroke.
2. Set the upper stitch length adjusting wheel to **0**.
3. Loosen the threaded pins (4).
4. Turn the stroke eccentric (5) so that the feeding foot (1) touches down on the feed dog (2) when the handwheel is in the **95°** position and the tip of the needle (3) is at the height of the upper edge of the feeding foot (1).



Important

Ensure not to move the stroke eccentric (5) laterally on the axle.

5. Tighten the threaded pins (4).
6. Loosen the threaded pin (7) far enough so that the clips (6) are in a line again.

11.2 Setting the foot stroke

11.2.1 Setting the foot stroke using the hand lever

The hand lever allows the feet to be raised to the heights of **14 mm** and **20 mm**.



Proper setting

The presser foot rests on the throat plate.
The hand lever is in the inactive position.

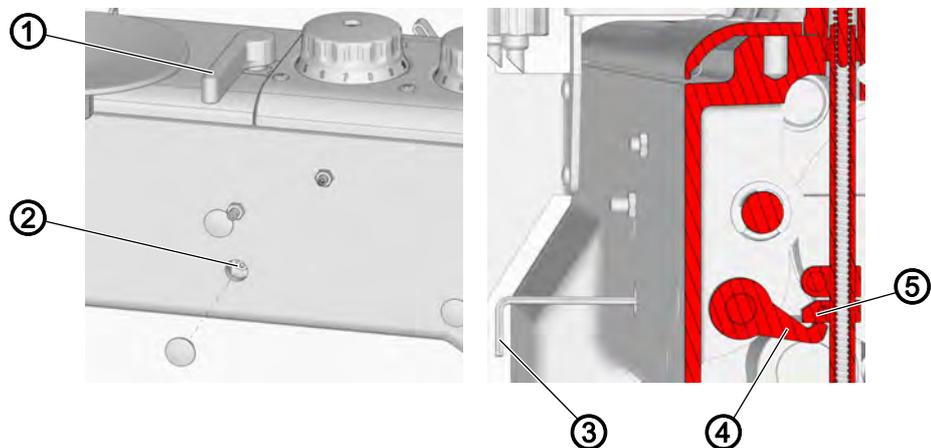
↪ There is a guaranteed clearance of **0.3 - 0.5 mm** between the stroke lever and the drive dog.



Cover

- Head cover ( p. 16)

Fig. 50: Setting the foot stroke using the hand lever



- (1) - Hand lever
(2) - Screw
(3) - Hexagonal wrench

- (4) - Stroke lever
(5) - Drive dog



To set the foot stroke using the hand lever:

1. Move the handwheel into the **0°** position.
- ↪ The presser foot rests on the throat plate.
2. Loosen the screw (2) and leave the hexagonal wrench (3) inserted.
3. Turn the stroke lever (4) so that there is a clearance of **0.3 - 0.5 mm** between the stroke lever (4) and the drive dog (5).
4. Tighten the screw (2).

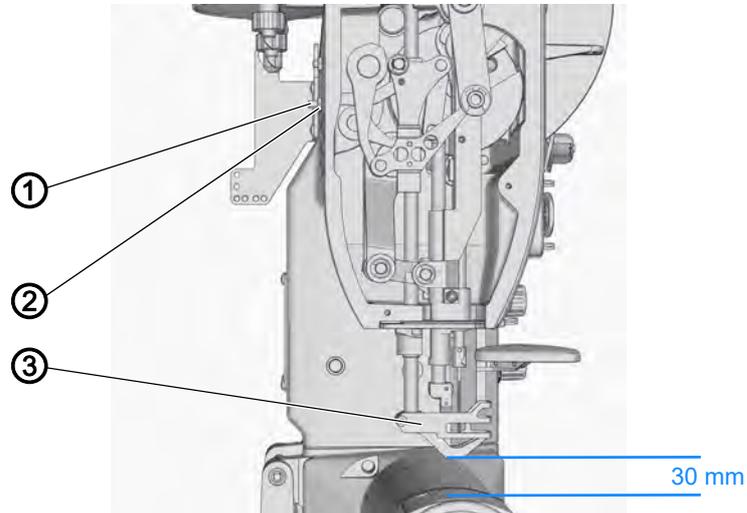
11.2.2 Setting the foot stroke using the pneumatic cylinder



Proper setting

When set by pneumatic cylinder, the presser foot stroke is **30 mm**.

Fig. 51: Setting the foot stroke using the pneumatic cylinder



(1) - Screw

(2) - Counternut

(3) - Presser foot



To set the foot stroke using the pneumatic cylinder:

1. Move the handwheel into the **0°** position.
- ↳ The presser foot rests on the throat plate.
2. Loosen the counternut (2).
3. Activate the pneumatic foot lift (*Operating Instructions*).
- ↳ The presser foot is lifted.
4. Turn the screw (1) until the presser foot (3) is positioned **30 mm** above the throat plate.
5. Tighten the counternut (2).

12 Setting the thread system

CAUTION



Risk of injury from moving parts!

Crushing possible.

Switch off the machine before you set the thread system.

12.1 Setting the thread tension spring

The thread tension spring tensions the needle thread before the needle penetrates the material, so that the needle thread cannot slip under the needle and be pierced by it.



Important

If the thickness of the material is very thin or very thick, the setting of the spring travel must be adjusted accordingly.

- thin material: normal spring travel (initial position: horizontal)
- thick material: long spring travel (initial position: vertically downward)

Standard setting

The initial position of the thread tension spring is horizontal. When at its initial position, the spring is turned by **90°**.

Fig. 52: Setting the thread tension spring



(1) - Screw
(2) - Thread tension spring

(3) - Body
(4) - Sleeve



To set the thread tension spring:

1. Loosen the screw (1).
2. Turn the body (3).
3. Turn the sleeve (4) counterclockwise.
The further you turn the sleeve (4), the greater the spring force will become.
4. Hold the sleeve (4) and body (3) in place, and tighten the screw (1).

12.2 Setting the winder

The winder is driven by its own electric motor. After it has wound the bobbin, it switches off automatically.



Proper setting

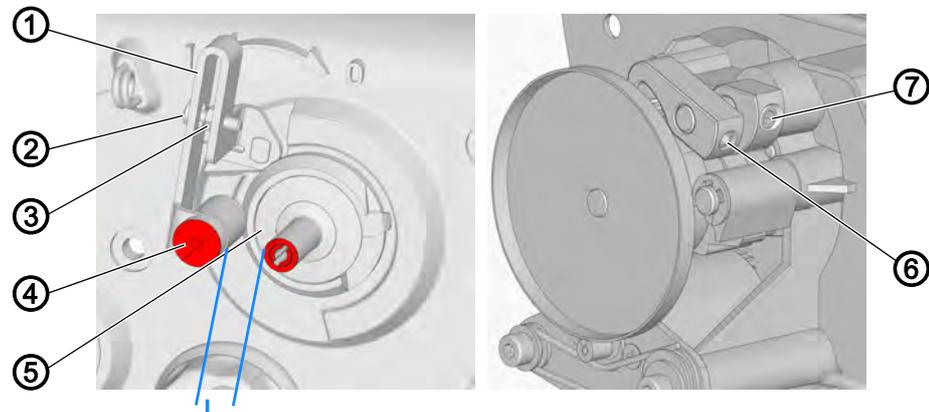
The adjusting screw is tightened in such a way both winder levers are approximately parallel to one another.
The winder is switched off mechanically when the winder pulley reaches a distance of **L = 8 mm** from the internal diameter of the bobbin. The roller is approx. **1 mm** below the outer diameter of the bobbin.
When the winder is switched off and locked in place at its initial position, the winder wheel is at a distance of **L = 14 mm** from the internal diameter of the bobbin.



Cover

- Thread tension plate (📖 p. 18)

Fig. 53: Setting the winder (1)



- | | |
|-----------------------|--------------|
| (1) - Winder lever | (5) - Bobbin |
| (2) - Adjusting screw | (6) - Screw |
| (3) - Counternut | (7) - Screw |
| (4) - Winder wheel | |

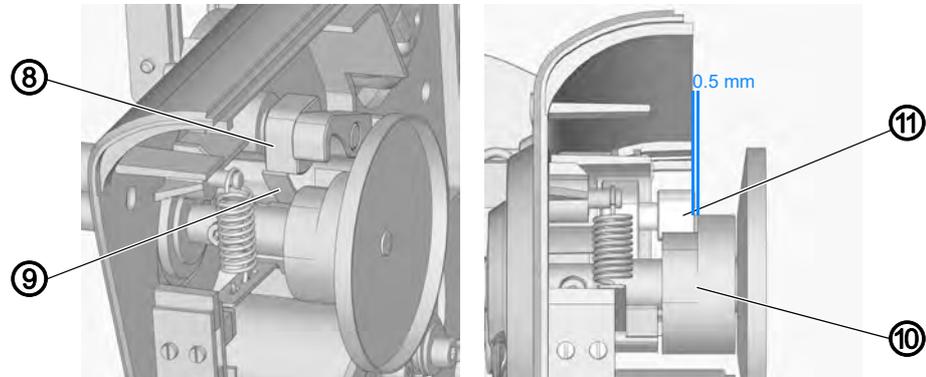


To set the winder:

1. Loosen the counternut (3).
2. Loosen or tighten the adjusting screw (2) so that the arms of the winder levers (1) are approximately parallel.

3. Set the winder pulley (4) to a distance of **L = 8 mm** from the internal diameter of the bobbin (5).
4. Loosen the screw (7).

Fig. 54: Setting the winder (2)



(8) - Switch-off lever
(9) - Spring

(10) - Blocking cam
(11) - Blocking lever



5. Swing the switch-off lever (8) into the switch-off position.
 - ↳ The edge of the spring (9) rests against the edge of the switch-off lever (8).
6. Tighten the screw (7).
7. Check that the winder switches off when the winder pulley (4) reaches **8 mm** from the internal diameter of the bobbin (5). Correct the setting if necessary.
8. Turn the winder lever (1) to the **0** position.
 - ↳ The winder is switched off.
9. Loosen the screw (6).
10. Set the blocking lever (11) to the base of the slot in the blocking cam (10).
11. Set the axial play of the blocking cam (10) to approx. **0.5 mm**.
12. Keep the blocking cam (10) in the set position.
13. Set the winder pulley (5) to a distance of **L = 14 mm** from the internal diameter of the bobbin.
14. Tighten the screw (7).



Proper setting

If the winder is switched off, the distance between the friction disk and the rubber pulley is **0.5 mm**.

The drive motor is not switched off by the microswitch until the friction disk is out of contact with the rubber pulley.

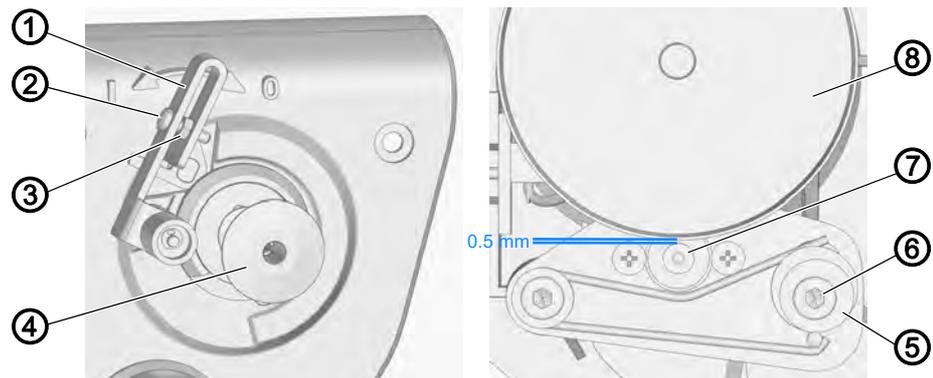
The winder is switched off when the thread has been wound up to **0.5 - 1 mm** below the outer diameter of the bobbin.



Cover

- Thread tension plate ( p. 18)

Fig. 55: Setting the winder (3)



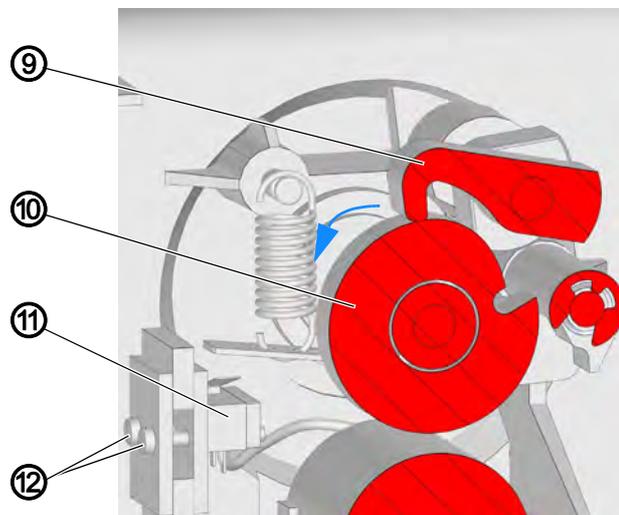
- (1) - Winder lever
- (2) - Screw
- (3) - Counternut
- (4) - Bobbin

- (5) - Eccentric
- (6) - Screw
- (7) - Rubber pulley
- (8) - Friction disk



1. Turn the winder lever to position **0**.
↙ The winder is switched off.
2. Loosen the screw (6).
3. Turn the eccentric (5) so that there is a gap of **0.5 mm** between the friction disk (8) and the rubber pulley (9).
4. Tighten the screw (6).

Fig. 56: Setting the winder (4)



- (9) - Blocking lever
- (10) - Blocking cam

- (11) - Microswitch
- (12) - Screws



5. Loosen the screws (12).
6. Set the position of the microswitch (11).
7. Tighten the screws (12).

8. Turn the blocking cam (10) in the direction of the arrow and switch on the winder so that the blocking lever (9) rests on the outer diameter of the blocking cam (10).
 - ↪ The microswitch (11) must not switch off.
A clicking within the microswitch (11) indicates when the microswitch (11) switches off.
9. Turn the winder shaft until the blocking lever (9) engages in the slot in the blocking cam (10).
 - ↪ At this position, the microswitch (11) must switch the motor off.
If the microswitch (11) fails to switch off the motor, correct the position of the microswitch (11).
10. Assemble the thread tension plate together with the winder.
11. Test the winder for correct operation.
Check if the winder (4) switches off when the thread has been wound up to **0.5 - 1 mm** below the outer diameter of the bobbin (4).
If the winder (4) fails to do so, tighten the screw (2) further or loosen it and repeat the test.
12. Once the desired result has been obtained, tighten the counternut (3).

12.3 Setting the hook thread guide



Proper setting

The distance between the tensioner element and the machine arm is set so that the bobbin is wound equally on both ends.

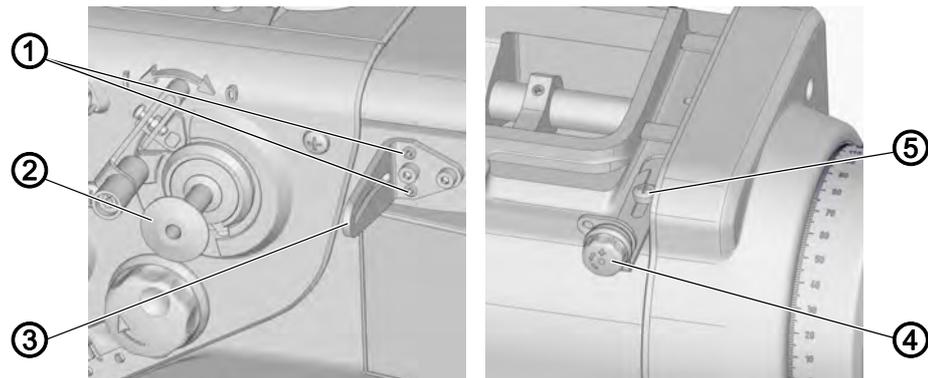
If, due to the position of the tensioner element, the bobbin cannot be wound equally, the inclination of the hook thread guide must be changed.



Cover

- right arm cover (📖 p. 15)

Fig. 57: Setting the hook thread guide



- (1) - Threaded pins
- (2) - Bobbin
- (3) - Hook thread guide

- (4) - Tensioner element
- (5) - Screw



To set the hook thread guide:

1. Insert and wind on the hook thread.

If the hook thread is concentrated at one end of the bobbin:

2. Loosen the screw (5).
3. Align the tensioner element (4) so that it is central to the hook thread guide (3).
4. Tighten the screw (5).
5. If the hook thread is still concentrated at one end of the bobbin, adjust the inclination of the hook thread guide (3) using the threaded pins (1).

13 Setting the thread cutter

CAUTION



Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Switch off the machine before setting the thread cutter.

13.1 Setting the thread cutter timing



Proper setting

The left edge of the lever must be at a distance of **80 mm** from the right edge of the arm.

The control cam is located at a distance of **1 mm** from the lever.

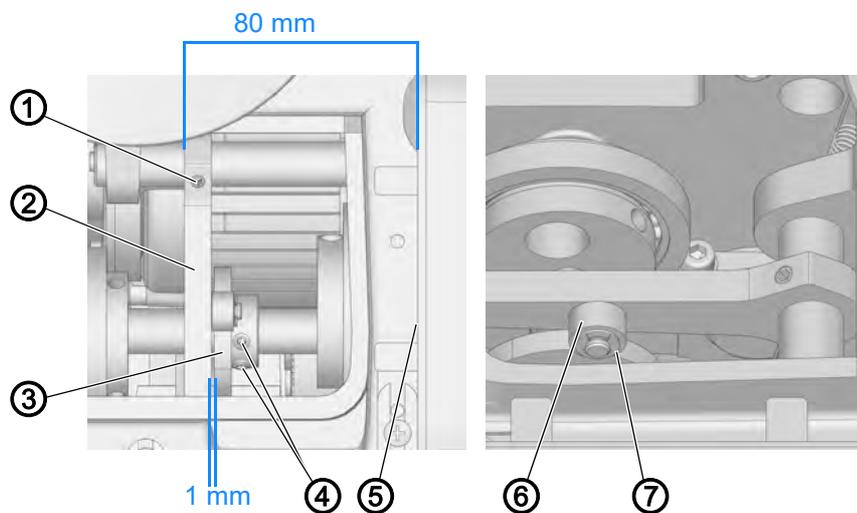
When the pulley is engaged in the setting groove of the control cam, the handwheel scale indicates **120°**.



Cover

- right arm cover ( p. 15)

Fig. 58: Setting the thread cutter timing



- (1) - Screw
(2) - Lever
(3) - Control cam
(4) - Screws

- (5) - Edge of the arm
(6) - Roll
(7) - Setting groove



To set the thread cutter timing:

1. Loosen the screw (1).
2. Adjust the lever (2) to a distance of **80 mm** from the right edge of the arm.
3. Tighten the screw (1).

4. Loosen the screws (4).
5. Set the handwheel position to **120°**.
6. Adjust the control cam (3) to a distance of **1 mm** from the lever (2).
7. Press the lever (2) down manually.
8. Turn the control cam (3) manually until the roller (6) latches into place exactly in the setting groove (7).
9. Tighten the screws (4).

13.2 Setting the initial position of the thread cutter and the position of the thread-pulling knife



Proper setting

When the lever is moved up against the pin

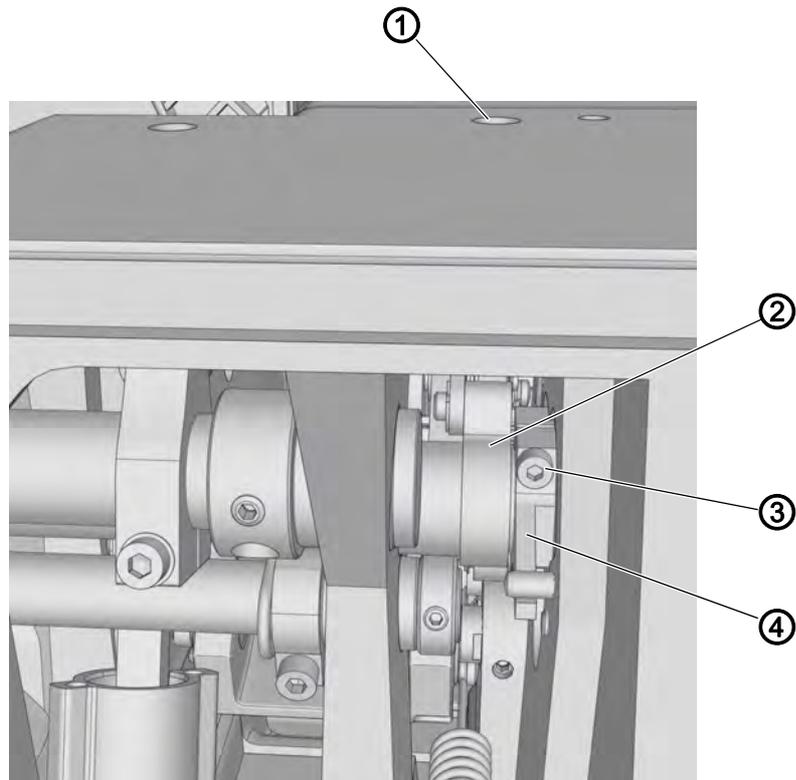
- the gap between roller and cutoff curve is 0.1 - 0.15 mm when the handwheel is at the 80° position
- the thread cutter shaft has no axial play
- the marking of the thread-pulling knife and the blade of the fixed knife line up on top of each other



Cover

- right arm cover ( p. 15)
- throat plate ( p. 19)
- feed dog ( p. 20)
- tilt the machine head ( p. 14)

Fig. 59: Setting the initial position of the thread cutter and the position of the thread-pulling knife (1)



(1) - Assembly opening
(2) - Lever

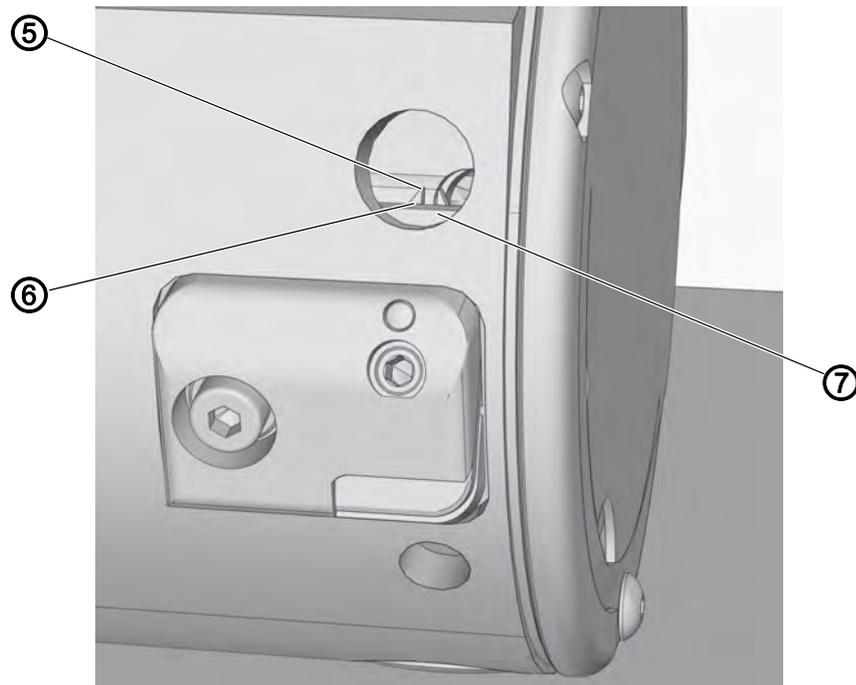
(3) - Screw
(4) - Lever



To set the initial position of the thread cutter and the position of the thread-pulling knife:

1. Move the handwheel into the **80°** position.
2. Loosen the screw on the lever (2) through the assembly opening (1).
3. Loosen the screw (3) on the lever (4).

Fig. 60: Setting the initial position of the thread cutter and the position of the thread-pulling knife (2)



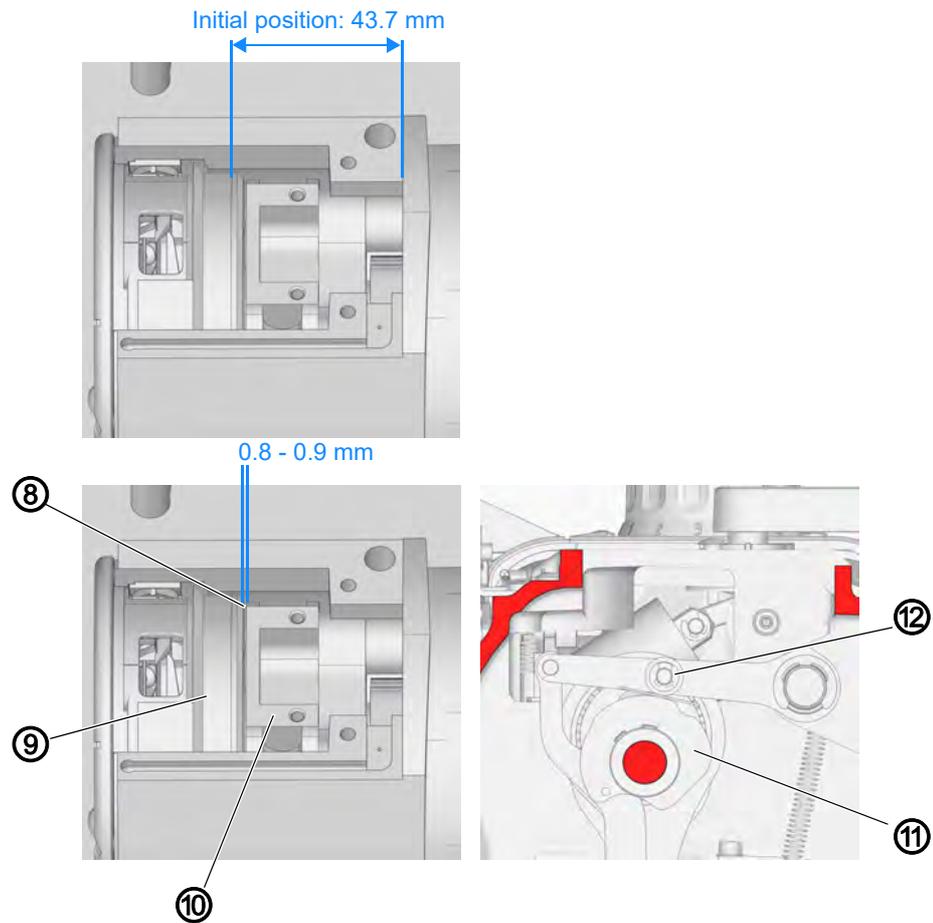
(5) - Thread-pulling knife
(6) - Marking

(7) - Fixed knife



4. Set the thread-pulling knife (5) such that the marking (6) lines up with the blade of the fixed knife (7).
5. Extend the thread-pulling knife (5).

Fig. 61: Setting the initial position of the thread cutter and the position of the thread-pulling knife (3)

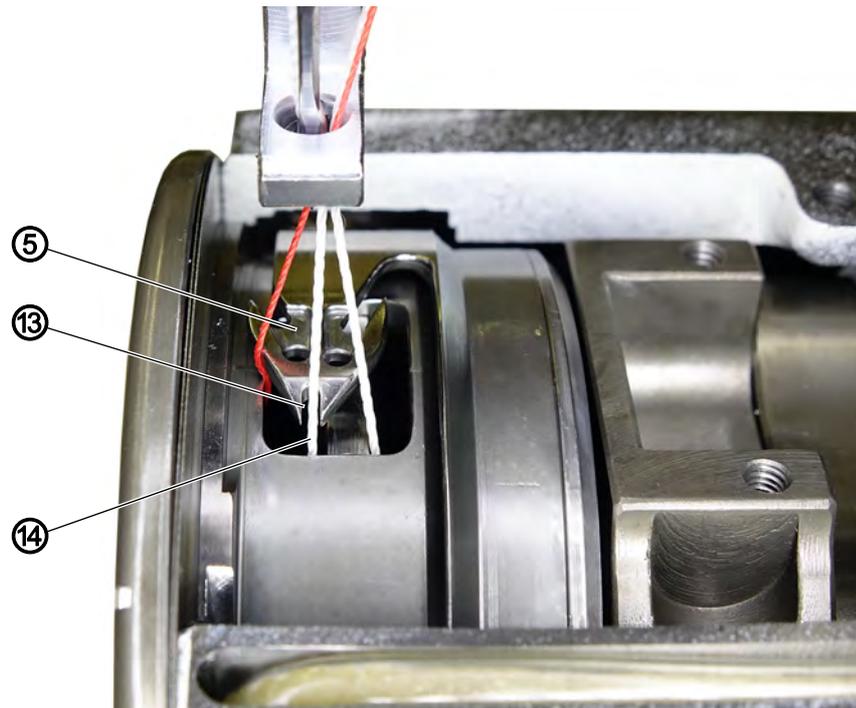


- | | |
|--------------------------------|---------------------|
| (8) - Gap | (11) - Cutoff curve |
| (9) - Knife carrier | (12) - Roll |
| (10) - Feed dog mounting plate | |



6. Insert a feeler gage (0.9 mm) into the gap (8).
7. Push the knife carrier (9) to the right against feeler gage and feed dog mounting plate (10).
8. Push the lever (2) to the left.
9. Place a feeler gage (0.1 mm) between roll (12) and cutoff curve (11) at handwheel position 80°.
10. Push the roll (12) down.
11. Tighten the screw on the lever (2) through the assembly opening (1).
12. Push the lever (4) to the right.
13. Tighten the screw (3).

Fig. 62: Setting the initial position of the thread cutter and the position of the thread-pulling knife (4)



(5) - Thread-pulling knife
(13) - Slot

(14) - Needle thread



14. Carry out a cutting test manually: The thread-pulling knife (5) must catch the needle thread (14), preventing it from being cut.



Important

The needle thread (14) must be positioned in the slot (13) of the thread-pulling knife (5).

15. If necessary, adjust the position of the thread-pulling knife (5) to the left or the right until the needle thread (14) is positioned in the slot (13) of the thread-pulling knife (5).

16. Perform a sewing test with a sheet of paper at normal speed and read-just if necessary.

13.3 Setting the pneumatic cylinder lever



Proper setting

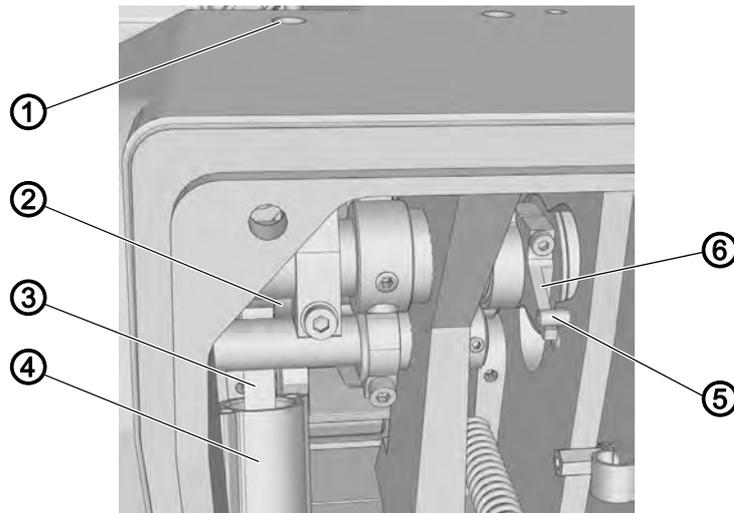
When the thread cutter is in its initial position, the distance between the piston and the base of the pneumatic cylinder is **0.5 - 1 mm**.



Cover

- Tilt the machine head ( p. 14)

Fig. 63: Setting the pneumatic cylinder lever



(1) - Assembly opening

(2) - Lever

(3) - Piston

(4) - Pneumatic cylinder

(5) - Pin

(6) - Lever



To set the pneumatic cylinder lever:

1. Turn the lever (6) such that it rests against the pin (5).
2. Loosen the screw for the lever (2) through the assembly opening (1).
3. Turn the lever (2) until the piston (3) makes contact with the base of the pneumatic cylinder (4).
4. Turn the lever (2) slightly back until there is gap between the piston (3) and the base of the pneumatic cylinder (4) that is approx. **0.5 - 1 mm** wide.
5. Tighten the screw for the lever (2) through the assembly opening (1).

13.4 Setting the cutting pressure



Proper setting

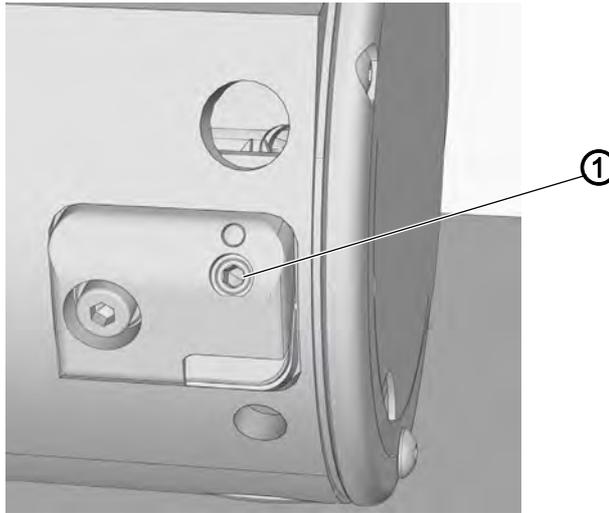
While it should be as low as possible, the cutting pressure must allow for the thread to be cut in a reliable manner.



Disturbance

- Very rapid wear of the knife if the pressure is set too high

Fig. 64: Setting the cutting pressure



(1) - Screw



To set the cutting pressure:

1. Turn the screw (1).
 - Increase the cutting pressure: Turn screw (1) clockwise
 - Reduce the cutting pressure: Turn screw (1) counterclockwise
2. Sew and cut off the thread.
3. Readjust the cutting pressure if necessary.

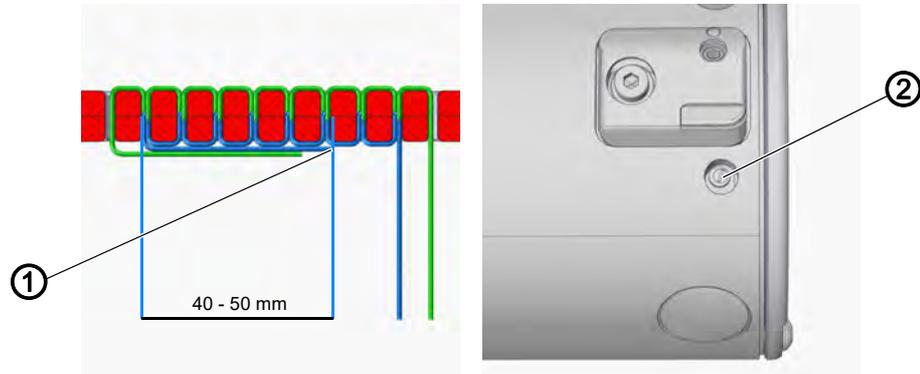
13.5 Setting the hook thread clamp



Proper setting

If the pressure of the hook thread clamp is correct, the end of the hook thread at the beginning of the seam is **40 - 50 mm** long.

Fig. 65: Setting the hook thread clamp



(1) - End of the hook thread

(2) - Screw



To set the hook thread clamp:

1. Complete a few short seams including thread cutting at the seam end.
2. Measure the length of the hook thread end (1) at the start of the seams.



Hook thread end (1) shorter than 40 mm:

1. Turn the screw (2) clockwise to increase the clamping force.



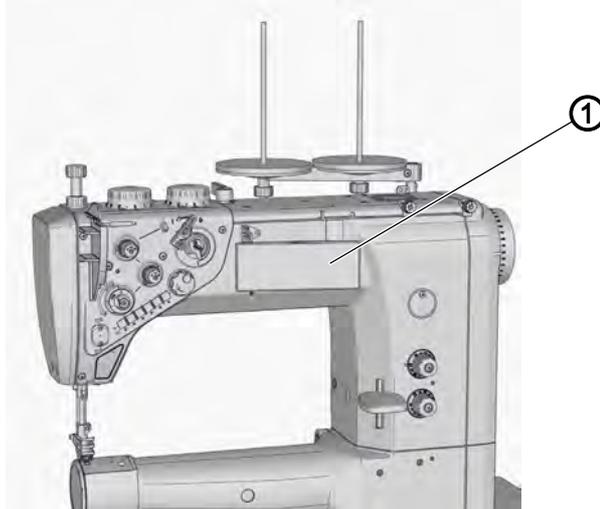
Hook thread end (1) longer than 50 mm:

1. Turn the screw (2) counterclockwise to reduce the clamping force.

14 Soft start

The soft start system allows the machine to start at low speed and build up to maximum speed over a defined number of stitches.

Fig. 66: Soft start



(1) - Control panel OP1000



To activate soft start:

1. Activate the soft start setting on the OP1000 control panel (1) ( *Instructions for use DAC basic/classic*).

15 Programming

All software settings are performed using the OP1000 control panel.

The control panel is composed of a display and buttons.

Using the control panel you can:

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

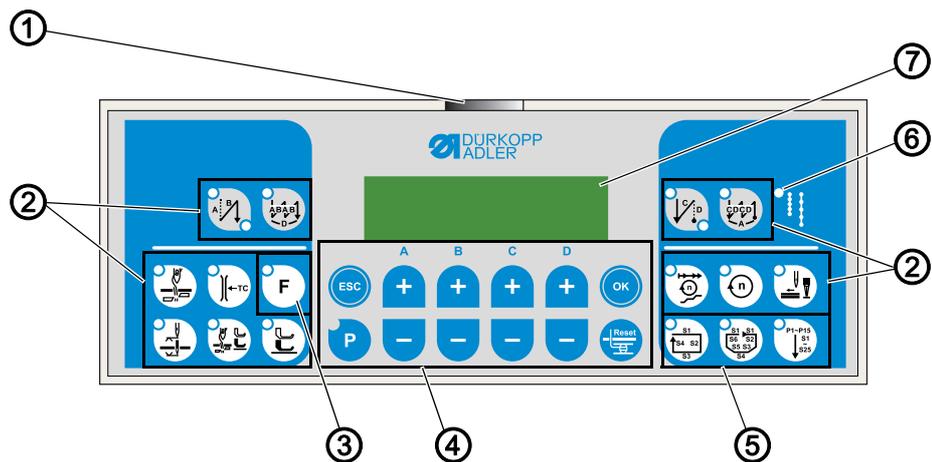


Information

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

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

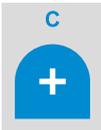
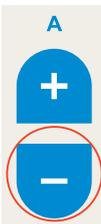
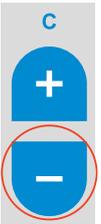
Fig. 67: Programming



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

Button	Function
Thread button group	
	Start bartack <ul style="list-style-type: none"> • Sets the start bartack
	Multiple start bartack <ul style="list-style-type: none"> • Sets the multiple start bartack

Button	Function
	End bartack <ul style="list-style-type: none"> • Sets the end bartack
	Multiple end bartack <ul style="list-style-type: none"> • Sets the multiple end bartack
	Thread trimmer <ul style="list-style-type: none"> • Activates or deactivates the thread cutter
	Thread clamp <ul style="list-style-type: none"> • Activates or deactivates the thread clamp
	Needle position after sewing stop <ul style="list-style-type: none"> • Sets the needle position after sewing stops Needle up/down
	Sewing foot lift after thread cutter <ul style="list-style-type: none"> • Activates or deactivates the sewing foot lift after the thread cutter
	Sewing foot lift after sewing stop <ul style="list-style-type: none"> • Activates or deactivates the sewing foot lift after sewing stops
	Soft start <ul style="list-style-type: none"> • Activates or deactivates the soft start
	Speed <ul style="list-style-type: none"> • Reduces the motor speed
	Function button <ul style="list-style-type: none"> • Activates or deactivates any stored function
Programming button group	
	ESC <ul style="list-style-type: none"> • Ends parameter mode
	A+ <ul style="list-style-type: none"> • Increases parameter • Changes user level • Selects subprogram

Button	Function
	<ul style="list-style-type: none"> Increases parameter Changes to next higher category Selects subprogram
	<ul style="list-style-type: none"> Increases parameter Selects subprogram
	<ul style="list-style-type: none"> Increases parameter Selects subprogram
	<ul style="list-style-type: none"> Calls parameters or saves them Confirms parameters
	<ul style="list-style-type: none"> Starts or ends the parameter mode
	<ul style="list-style-type: none"> Decreases parameter Changes user level Selects subprogram
	<ul style="list-style-type: none"> Decreases parameter Changes to next lower category Selects subprogram
	<ul style="list-style-type: none"> Decreases parameter Selects subprogram

Button	Function
	<ul style="list-style-type: none"> • Decreases parameter • Selects subprogram
	<ul style="list-style-type: none"> • Resets the (piece) counter
Seam program button group	
	<ul style="list-style-type: none"> • Activates seam program I
	<ul style="list-style-type: none"> • Activates seam program II
	<ul style="list-style-type: none"> • Sets seam program III

Creating a seam program

For some work processes - such as sewing on labels - you will find it useful to create seam programs that let you save a sewing process for repeated use.

It is possible to create seam programs consisting of 4 or 6 seam sections and up to 25 freely programmable seam sections.

The following parameters can be set for each individual seam section:

- Soft start
- Thread clamp
- Locking mechanism
- Sewing backwards
- Thread trimmer
- Automatic sewing foot lift
- Needle position
- Speed reduction
- Number of stitches
- Stitch length (upper and lower adjusting wheel)

16 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
Removing lint and thread remnants	●			
Checking the oil level	●			
Servicing the pneumatic system	●			
Lubricating the needle bar				●

16.1 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.

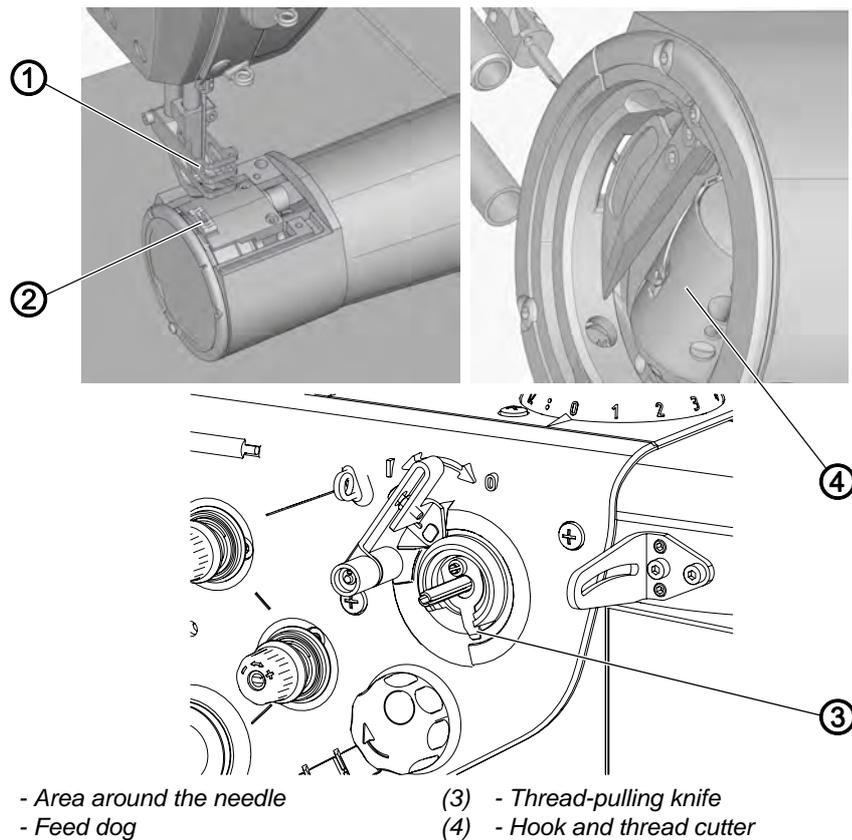
NOTICE

Property damage from solvent-based cleaners!

Solvent-based cleaners will damage paintwork.

Use only solvent-free substances for cleaning.

Fig. 68: Cleaning


Points that need to be cleaned particularly thoroughly:

- Area around the needle (1)
- Feed dog (2)
- Thread-pulling knife (3)
- Hook and thread cutter (4)



To clean the machine:

1. Switch off the machine.
2. Disassemble the throat plate ( p. 19).
3. Remove any lint and thread remnants using a brush or compressed air gun.

16.2 Lubricating

CAUTION



Risk of injury from contact with oil!

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

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

NOTICE

Property damage from incorrect oil!

Incorrect oil types can result in damage to the machine.

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

CAUTION



Risk of environmental damage from oil!

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

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

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

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

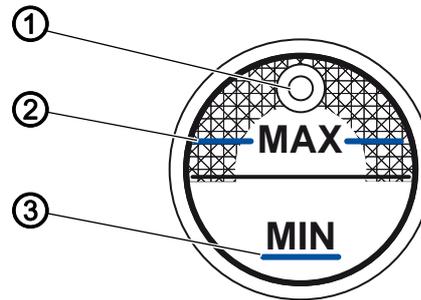
- Viscosity at 40 °C: 10 mm²/s
- Flash point: 150 °C

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

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

Checking the oil level

Fig. 69: Checking the oil level



(1) - Oil filler opening

(2) - Maximum level marking

(3) - Minimum level marking



Proper setting

The oil level must not rise above the maximum level marking (2) or drop below the minimum level marking (3).



Information

In the *Classic* equipment version of the machine, the oil level indicator will light up red if the oil level has dropped below the minimum level marking.



To top off the oil:

1. Switch off the machine.
2. Fill oil through the oil filler opening (1) no higher than the maximum level marking (2).
3. Switch on the machine again.

16.3 Servicing the pneumatic system

16.3.1 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.

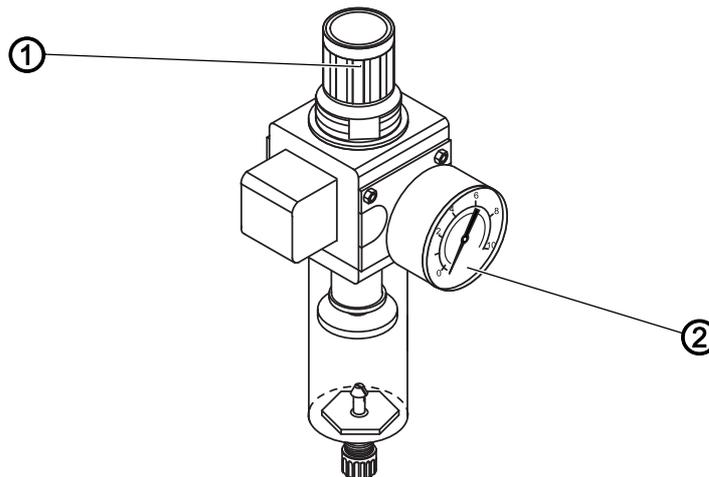


Proper setting

Refer to the **Technical data** (📖 p. 115) 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. 70: 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.

16.3.2 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.

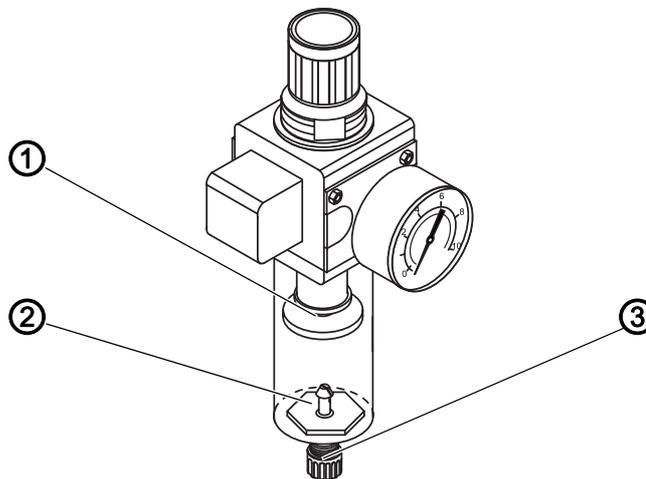


Proper setting

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. 71: Draining the water condensation



(1) - Filter element

(2) - Water separator

(3) - Drain screw



To drain water condensation:

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

16.3.3 Cleaning the filter element

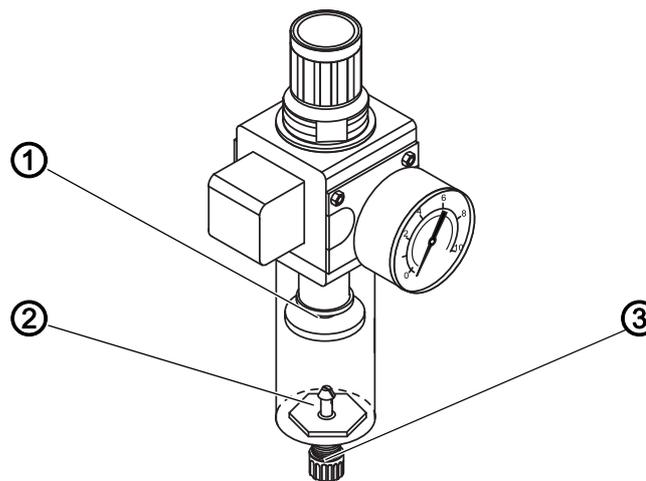
NOTICE

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. 72: Cleaning the filter element



(1) - Filter element
(2) - Water separator

(3) - Drain screw

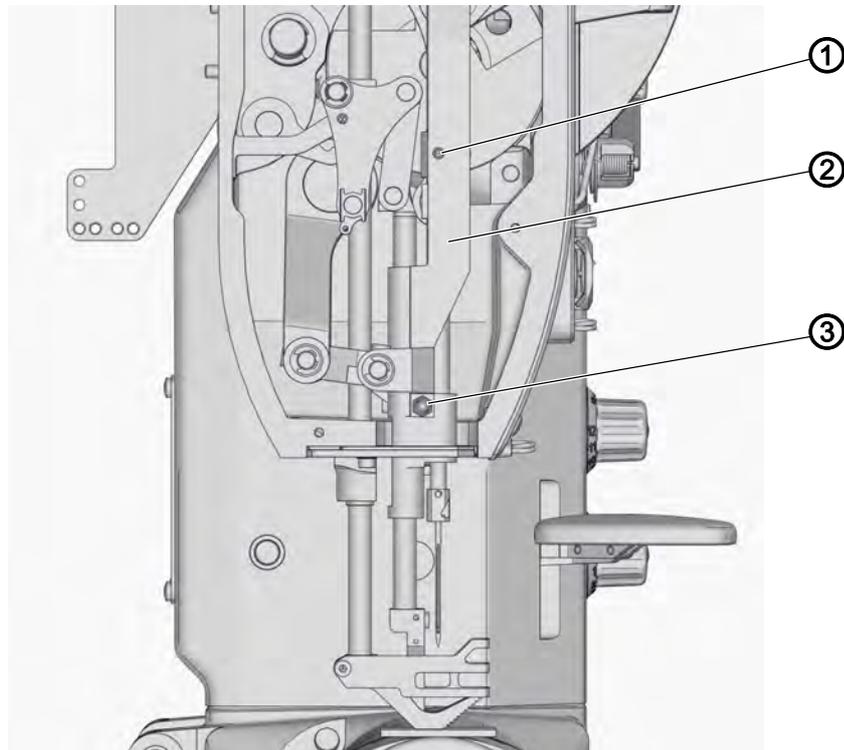


To clean the filter element:

1. Disconnect the machine from the compressed air supply.
2. Drain the water condensation ( p. 97).
3. Loosen the water separator (2).
4. Loosen the filter element (1).
5. Blow out the filter element (1) using the compressed air gun.
6. Wash out the filter tray using benzine.
7. Tighten the filter element (1).
8. Tighten the water separator (2).
9. Tighten the drain screw (3).
10. Connect the machine to the compressed air supply.

16.4 Lubricating the needle bar

Fig. 73: Lubricating the needle bar



(1) - Lubricating nipple
(2) - Needle bar linkage

(3) - Lubricating nipple



To lubricate the needle bar:

1. Remove the head cover ( p. 16).
2. Place the grease gun onto the lubricating nipple (3) on the needle bar frame (2) and keep pressing until the flow of grease stops.
- ↙ The lubricating nipple (3) is used to lubricate the needle bar and the feeding bar of the presser foot.
3. Place the grease gun onto the lubricating nipple (1) on the needle bar frame and keep pressing until the flow of grease stops.
- ↙ The lubricating nipple (1) is used to lubricate the upper part of the needle bar.

4. Assemble the head cover.



5. Press the buttons **P** and **Reset** on the control panel at the same time.
6. Use the buttons **+** and **-** to set the parameter **t 51 14**.
7. Set parameter **t 51 14** to the value **1** and press **OK** to confirm.
8. Switch off the machine.
9. Switch on the machine again.
- ↙ The machine is ready for sewing, and the counter has been reset.

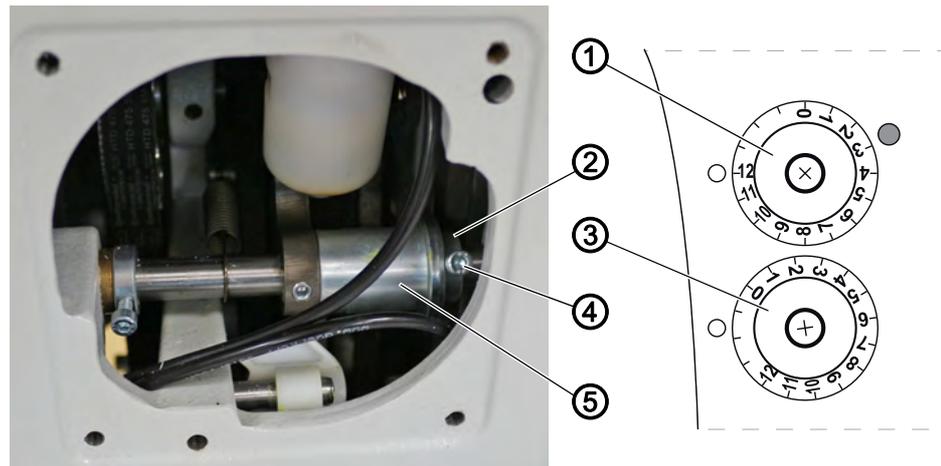
16.5 Securing the shafts of the stitch length adjusting wheels



Information

If the stitch length shifts by itself after frequent bartacking, the shafts of the stitch length adjusting wheels need to be secured.

Fig. 74: Securing the shafts of the stitch length adjusting wheels (1)



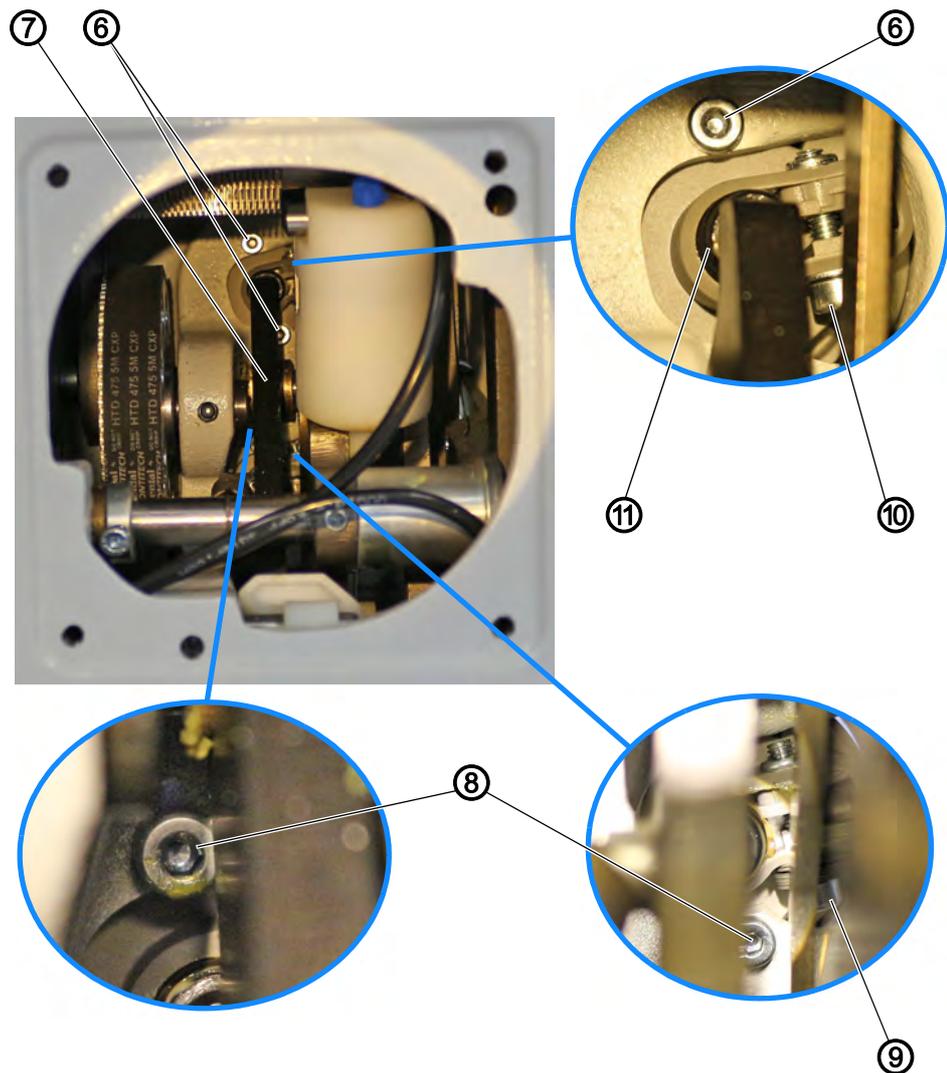
- | | |
|---|-------------------------------|
| (1) - Upper stitch length adjusting wheel | (4) - Screw |
| (2) - Clamping ring | (5) - Stitch adjustment lever |
| (3) - Lower stitch length adjusting wheel | |



To secure the shafts of the stitch length adjusting wheels:

1. Remove the ventilation grid (📖 p. 17).
2. Loosen the screw (4).
3. Slide the clamping ring (2) to the right.
4. Slide the stitch adjustment lever (5) to the right.

Fig. 75: Securing the shafts of the stitch length adjusting wheels (2)



- (6) - Screws
 (7) - Lever
 (8) - Screws

- (9) - Screw
 (10) - Screw
 (11) - Bolt



5. To secure the **upper stitch length adjusting wheel**:

- Slide the lever (7) to the left
- Loosen the screws (6)
- Remove the upper stitch length adjusting wheel (1)
- Tighten the screw (10)

Only tighten the screw (10) far enough to secure the shaft, making sure that the shaft cannot move easily, but the stitch length can still be set.

↪ The shaft of the upper stitch length adjusting wheel has been secured.

- Place the upper stitch length adjusting wheel (1)
- Tighten the screws (6)

6. To secure the **lower stitch length adjusting wheel**:
 - Slide the lever (7) to the right
 - Loosen the screws (8)
 - Remove the lower stitch length adjusting wheel (3)
 - Tighten the screw (9)
Only tighten the screw (10) far enough to secure the shaft, making sure that the shaft cannot move easily, but the stitch length can still be set.
- ↳ The shaft of the lower stitch length adjusting wheel has been secured.
 - Place the lower stitch length adjusting wheel (3)
 - Tighten the screws (8)
7. Align the lever (7) such that it is seated in the center on top of the bolt (11).
8. Slide the stitch adjustment lever (5) back to the left.
9. Push the clamping ring (2) up against it.
10. Tighten the screw (4).

**Order**

Next, set the stitch length adjusting wheels ( p. 35).

16.6 Parts list

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

www.duerkopp-adler.com



17 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.

18 Disposal

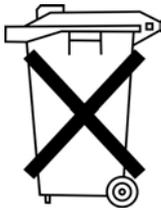
CAUTION



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.

19 Troubleshooting

19.1 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



19.2 Messages of the software

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

Code	Possible cause	Remedial action
1000	Sewing motor encoder plug (Sub-D, 9-pin) not connected	<ul style="list-style-type: none"> • Connect encoder cable to the control, use correct connection
1001	Sewing motor error: Sewing motor plug (AMP) not connected	<ul style="list-style-type: none"> • Check connection and plug in, if necessary • Test sewing motor phases (R = 2.8 Ω, high impedance to PE) • Replace encoder • Replace sewing motor • Replace control
1002	Sewing motor insulation fault	<ul style="list-style-type: none"> • Check motor phase and PE for low-impedance connection • Replace encoder • Replace sewing motor

Code	Possible cause	Remedial action
1004	Sewing motor error: incorrect sewing motor direction of rotation	<ul style="list-style-type: none"> • Replace encoder • Check plug assignment and change, if necessary • Check wiring in machine distributor and change it, if necessary • Test motor phases and check for correct value
1005	Motor blocked	<ul style="list-style-type: none"> • Eliminate stiff movement in the sewing machine • Replace encoder • Check class (t 51 04)
1006	Maximum speed exceeded	<ul style="list-style-type: none"> • Replace encoder • Perform reset • Check class (t 51 04)
1007	Error in the reference run	<ul style="list-style-type: none"> • Replace encoder • Eliminate stiff movement in the sewing machine
1008	Encoder error	<ul style="list-style-type: none"> • Replace encoder
1010	External synchronizer plug (Sub-D, 9-pin) not connected	<ul style="list-style-type: none"> • Connect cable of external synchronizer to control, use correct connection (Sync) • Only required for machines with transmission!
1011	Encoder Z pulse missing	<ul style="list-style-type: none"> • Switch off the control, use handwheel to turn, and switch on the control again • If error is not corrected, check encoder
1012	Synchronizer fault	<ul style="list-style-type: none"> • Replace synchronizer
1052	Sewing motor overcurrent, internal current increase > 25 A	<ul style="list-style-type: none"> • Check selection of class • Replace control • Replace sewing motor • Replace encoder
1053	Sewing motor overvoltage	<ul style="list-style-type: none"> • Check selection of class • Replace control
1054	Internal short circuit	<ul style="list-style-type: none"> • Replace control
1055	Sewing motor overload	<ul style="list-style-type: none"> • Eliminate stiff movement in the sewing machine • Replace encoder • Replace sewing motor

Code	Possible cause	Remedial action
1203	Position not reached	<ul style="list-style-type: none"> • Check and, if necessary, change controller settings • Make mechanical changes to the machine (e.g. thread cutting setting, belt tension) • Check the position (thread lever at top dead center)
2020	DACextension box not responding	<ul style="list-style-type: none"> • Check connection cables • Check LEDs of DACextension box • Performing a software update
2021	Sewing motor encoder plug (Sub-D, 9-pin) not connected to DACextension box	<ul style="list-style-type: none"> • Connect encoder cable to DACextension box using the correct connection
2101	DA stepper card 1 reference run timeout	<ul style="list-style-type: none"> • Check reference sensor
2103	DA stepper card 1 step losses	<ul style="list-style-type: none"> • Check for stiff movement
2120	DA stepper card 1 not responding	<ul style="list-style-type: none"> • Check connection cables • Check LEDs of DACextension box • Performing a software update
2121	DA stepper card 1 encoder plug (Sub-D, 9-pin) not connected	<ul style="list-style-type: none"> • Connect encoder cable to the control, use correct connection
2122	DA stepper card 1 flywheel position not found	<ul style="list-style-type: none"> • Check connection cables • Check stepper motor 1 for stiff movement
2155	DA stepper card 1 overload	<ul style="list-style-type: none"> • Check for stiff movement
2201	DA stepper card 2 reference run timeout	<ul style="list-style-type: none"> • Check reference sensor
2203	DA stepper card 2 step losses	<ul style="list-style-type: none"> • Check for stiff movement
2220	DA stepper card 2 not responding	<ul style="list-style-type: none"> • Check connection cables • Check LEDs of DACextension box • Performing a software update
2221	DA stepper card 2 encoder plug (Sub-D, 9-pin) not connected	<ul style="list-style-type: none"> • Connect encoder cable to the control, use correct connection
2222	DA stepper card 2 flywheel position not found	<ul style="list-style-type: none"> • Check connection cables • Check stepper motor 2 for stiff movement
2255	DA stepper card 2 overload	<ul style="list-style-type: none"> • Check for stiff movement

Code	Possible cause	Remedial action
3100	AC-RDY timeout, intermediate circuit voltage did not reach the defined threshold in the specified time	<ul style="list-style-type: none"> • Check mains voltage • If the mains voltage is OK, replace the control
3101	High voltage fault, mains voltage, longer duration >290 V	<ul style="list-style-type: none"> • Check mains voltage • If nominal voltage is continuously exceeded, stabilize it or use a generator
3102	Low voltage failure (2 nd threshold) (mains voltage < 150 V AC)	<ul style="list-style-type: none"> • Check mains voltage • Stabilize the mains voltage • Use generator
3103	Low voltage warning (1 st threshold) (mains voltage < 180 V AC)	<ul style="list-style-type: none"> • Check mains voltage • Stabilize the mains voltage • Use generator
3104	Pedal is not in position 0	<ul style="list-style-type: none"> • When switching the control on, take your foot off the pedal
3105	U24 V short circuit	<ul style="list-style-type: none"> • Disconnect 37-pin plug; if error persists, replace control • Test inputs/outputs for 24 V short circuit
3106	U24 V (I ² T) overload	<ul style="list-style-type: none"> • One or several magnets defective
3107	Pedal not connected	<ul style="list-style-type: none"> • Connect analog pedal
3108	Speed limited due to insufficient mains voltage	<ul style="list-style-type: none"> • Check mains voltage
3109	Operation lock	<ul style="list-style-type: none"> • Check tilt sensor on machine
3150	Maintenance necessary	<ul style="list-style-type: none"> • Lubricating the needle bar
3151	Maintenance necessary (operation cannot continue unless parameter $t_{51\ 14}$ is reset)	<ul style="list-style-type: none"> • Service is required  p. 99.
3155	No release for sewing process	<ul style="list-style-type: none"> • Parameter $t_{51\ 20} - t_{51\ 33} = 25$
3160	Stitch loosening device	<ul style="list-style-type: none"> • Stitch loosening cannot be performed
3215	Bobbin stitch counter (info value 0 reached)	<ul style="list-style-type: none"> • Change bobbin, set counter value
3216	Remaining thread monitor left	<ul style="list-style-type: none"> • Change the left bobbin
3217	Remaining thread monitor right	<ul style="list-style-type: none"> • Change the right bobbin
3218	Remaining thread monitor left and right	<ul style="list-style-type: none"> • Change the left and right bobbin

Code	Possible cause	Remedial action
3223	Skip stitch detected	-
3224	Bobbin failed to rotate	-
6353	Internal EEPROM communication error	<ul style="list-style-type: none"> Switch off the control, wait until the LEDs are off and then switch on again
6354	External EEPROM communication error	<ul style="list-style-type: none"> Switch off the control, wait until the LEDs are off, check connection for machine ID, switch on control again
6360	No valid data on external EEPROM (internal data structures are not compatible with the external data storage device)	<ul style="list-style-type: none"> Perform a software update
6361	No external EEPROM connected	<ul style="list-style-type: none"> Connect machine ID
6362	No valid data on internal EEPROM (internal data structures are not compatible with the external data storage device)	<ul style="list-style-type: none"> Check machine ID connection Switch off the control, wait until the LEDs are off and then switch on again Perform a software update
6363	No valid data on internal and external EEPROM (software version is not compatible with the internal data storage device, emergency operating features only)	<ul style="list-style-type: none"> Check machine ID connection Switch off the control, wait until the LEDs are off and then switch on again Perform a software update
6364	No valid data on internal EEPROM and no external EEPROM connected (the internal data structures are not compatible with the external data storage device, emergency operating features only)	<ul style="list-style-type: none"> Check machine ID connection Switch off the control, wait until the LEDs are off and then switch on again Perform a software update
6365	Internal EEPROM defective	<ul style="list-style-type: none"> Replace control
6366	Internal EEPROM defective and external data not valid (emergency operating features only)	<ul style="list-style-type: none"> Replace control
6367	Internal EEPROM defective and external EEPROM not connected (emergency operating features only)	<ul style="list-style-type: none"> Replace control
7202	Checksum error during update	<ul style="list-style-type: none"> Check connection cables Perform a software update Replace DACextension box

Code	Possible cause	Remedial action
7203	Checksum error during update	<ul style="list-style-type: none"> • Check connection cables • Performing a software update • Replace DACextension box
7212	DA stepper card 1 boot error	<ul style="list-style-type: none"> • Check connection cables
7213	Checksum error occurred while updating DA stepper card 2	<ul style="list-style-type: none"> • Check connection cables • Performing a software update • Replace DACextension box
7222	DA stepper card 2 boot error	<ul style="list-style-type: none"> • Check connection cables • Performing a software update • Replace DACextension box
7223	Checksum error occurred while updating DA stepper card 2	<ul style="list-style-type: none"> • Check connection cables • Performing a software update • Replace DACextension box
7801	Software version error (DAC classic only; only the functions of the DAC basic will remain available)	<ul style="list-style-type: none"> • Performing a software update • Replace control
7802	Software update error (DAC classic only; only the functions of the DAC basic will remain available)	<ul style="list-style-type: none"> • Perform software update again • Replace control
7803	Communication error (DAC classic only; only the functions of the DAC basic will remain available)	<ul style="list-style-type: none"> • Restart the control • Performing a software update • Replace control
8401	Watchdog	<ul style="list-style-type: none"> • Performing a software update • Machine ID reset • Replace control
8402 - 8405	Internal error	<ul style="list-style-type: none"> • Performing a software update • Machine ID reset • Replace control
8406	Checksum error	<ul style="list-style-type: none"> • Performing a software update • Replace control
8501	Software protection	<ul style="list-style-type: none"> • The DA tool must always be used for software updates

19.3 Errors in sewing process

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

Error	Possible causes	Remedial action
Loose stitches	Thread tensions are not adjusted to the sewing material, the sewing material thickness or the thread used	Check thread tensions
	Needle thread and hook thread have not been threaded correctly	Check threading path
Needle breakage	Needle thickness is unsuitable for the sewing material or the thread	Use recommended needle thickness

20 Technical data

Data and characteristic values

Technical data	Unit	969-190180	969-190180 (with option Heavy Transport)	969-190382	969-190382 (with option Heavy Transport)	969190180-100	969-190382-100
Type of stitches		Lockstitch 301					
Hook type		Barrel shuttle, XL (large)					
Number of needles		1					
Needle system		794 (7x23/328/1000H)					
Needle strength	[Nm]	140 - 280	200 - 330	140 - 280	200 - 330	140 - 280	
Needle thread thickness	[Nm]	40/3 - 5/3	40/3 - 5/3 + braided thread 1.6	40/3 - 5/3	40/3 - 5/3 + braided thread 1.6	40/3 - 5/3	
Hook thread thickness	[Nm]	60/3 - 8/3	60/3 - 5/3	60/3 - 8/3	60/3 - 5/3	60/3 - 8/3	
Stitch length	[mm]	12/12					
Speed maximum	[min ⁻¹]	1000	800	1250	800	1000	
Speed on delivery	[min ⁻¹]	1000	800	1000	800	700	
Mains voltage	[V]	230					
Mains frequency	[Hz]	50/60					
Operating pressure	[bar]	6					
Length	[mm]	700				1300	
Width	[mm]	250				290	
Height	[mm]	420				420	
Weight	[kg]	Standard arm: 92 Long arm: 145					

Characteristics

Single-needle double lockstitch free-arm sewing machine with bottom feed, bottom feed stroke, needle feed and alternating foot-top feed and with automatic lifter and direct drive.

Technical features Eco and Classic:

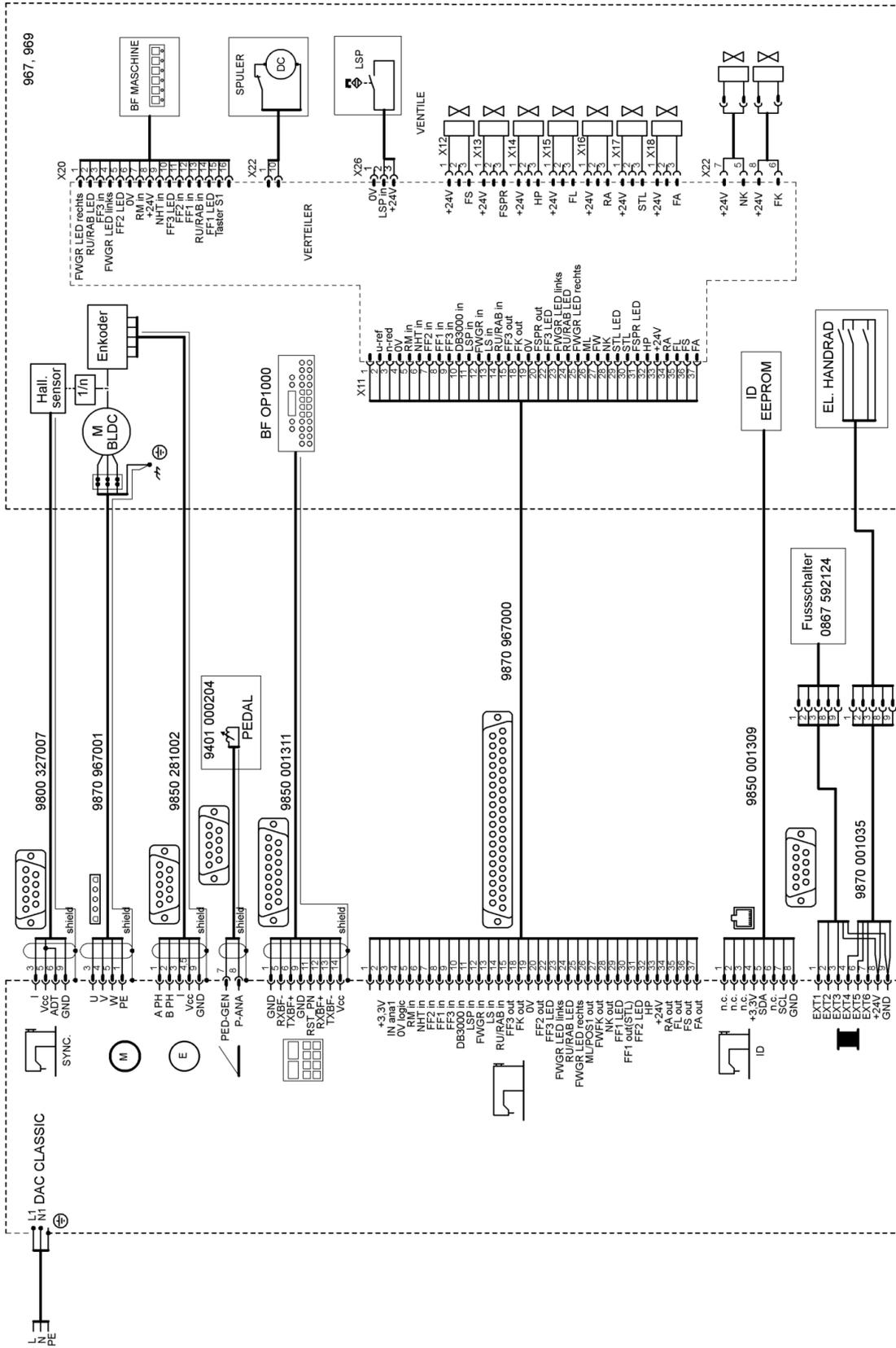
- The machines are equipped with an extra large, XL, barrel shuttle hook.
- Needle system 794 (alternatively, 328, 7x23 or 1000H)
- pneumatic sewing foot lift: The clearance under the sewing feet when lifted is max. 30mm with needle system 794, with needle system 7x23, with needle system 1000H, and with needle system 328 (stitch length max. 12mm)
- DC drive with reversing mechanism in order to position the needle above the feet.
- Electronic handwheel which can be turned to move the machine/arm shaft forward or back by drive motor power.
- Initial alignment stitch by pressing the electronic handwheel.
- Automatic wick lubrication with an inspection glass housed in the arm for lubricating the machine and one inspection glass in the base plate for lubricating the hook.
- DAC Classic control including DA direct drive with OP1000 control panel built into the machine.

Additional features for Classic model:

- Automatic thread cutter with remaining thread length of approx. 40 mm.
- 2nd switchable stitch length, 2nd switchable thread tension, quick stroke adjustment via knee button, automatic bartack.
- integrated dimmable sewing lamp.
- 6 push buttons with programmable favorite button. An additional button panel has been placed within easy reach of the sewer and allows the sewer to assign the same 6 functions of the buttons housed in the button bar. Possible operating functions are manual bartack, needle up/down, bartack suppression, second stitch length, and switchable thread tension

21 Appendix

Fig. 76: Wiring diagram





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