DÜRKOPP ADLER

767 classic

Service manual

IMPORTANT
READ CAREFULLY BEFORE USE
KEEP TO CONSULT LATER

1 About these Service Instructions

This manual for sewing machine 767 classic was compiled with the utmost care. It contains information and notes in order to ensure long-term and reliable operation.

1.1 Scope

This manual describes the setting and maintenance work on the 767 classic sewing machine. It applies to all submodels.
The intended use and set-up is described in the 🕮 *Operating manual*.

1.2 Representation conventions – symbols and characters

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

Correct setting
Indicates proper setting.

Malfunctions
Specifies the faults that can occur due to an incorrect setting.

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

Steps to be performed for servicing, maintenance, and installation

Steps to be performed via the software control panel

The individual steps are numbered:

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

- Lists are identified by bullet points.

Result of performing an operation
Change to the machine or in the display.

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

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

Order
Specifies the work to be performed before or after a setting.

References

Reference to another section in the manual.

Safety Important warnings for the machine operator are specially designated. Since safety is of particular importance, hazard symbols, levels of danger and their signal words are described separately in 🕮 *3 Safety Information*.

Orientation If the figure is unclear, indications of “right” and “left” are always from the operator's point of view.

1.3 Other documents

This equipment 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 these components is described in each manufacturer's manual.

1.4 Liability

All information in these service instructions was compiled with consideration to the state of the art, and applicable standards and regulations.

The manufacturer cannot be held liable for damages resulting from:

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

2 Safety information

This section contains basic information for your safety.
Read the information carefully before setting up, programming, maintaining, or operating the machine.

Make sure to follow the information included in this section. Failure to do so can result in serious injury and damage to the machine.

2.1 Basic safety instructions

Only authorized personnel should use the machine. Anyone working on the machine should read the operating manual first.

The machine should only be set up in accordance with the manual.

The operating manual should be available at the machine's location at all times.

Observe the generally applicable safety and accident prevention regulations and the legal regulations concerning industrial safety and environmental protection.

If you use parts from suppliers, observe the safety information and operating manual provided by the manufacturer.

All warnings on the machine must always be in legible condition and may not be removed. Missing or damaged labels should be replaced immediately.

In the following situations, the machine must be disconnected from the power supply using the main switch or by disconnecting the power plug:

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

Inspect the machine while in use for any externally visible damage. Stop working as soon as you notice any changes to the machine. Report any changes to your supervisor. A damaged machine should no longer be used.

Machines or machine parts that have reached the end of their service life must not continue to be used. They have to be disposed of correctly and in accordance with the applicable statutory provisions.

Only qualified specialists may set up the machine. Anyone setting up the machine should read the operating manual first.

Only qualified specialists may perform maintenance work and repairs. Anyone maintaining or setting up the machine must read the service manual first.

Safety equipment should not be removed or deactivated. If this cannot be avoided for a repair operation or service setting, the safety equipment must be refitted and put back into service immediately afterwards.

Only qualified electrical specialists may perform work on electrical equipment.

The power cable must have a plug authorized for the country in which the machine is being used. The power plug may only be connected to the power cable by a qualified specialist.

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

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

2.2 Signal words and symbols used in warnings

Warnings in the text are distinguished by color bars. The color scheme is oriented towards the severity of the danger. Signal words indicate the degree of risk:

Signal words

Signal words and the hazard that they describe:

Signal word	Hazard
DANGER	Will result in serious injury or death.
WARNING	Can result in serious injury or death.
CAUTION	Can result in minor or moderate injury.
ATTENTION	Can result in property damage.

Symbols The following symbols indicate the type of risk to personnel:

Symbol	Type of danger
	General risk
	Risk of electric shock
	Risk of puncturing
	Risk of crushing

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

DANGER

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

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 risk

Consequences of non-observance

Measures for avoiding the risk

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

CAUTION

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

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 risk

Measures for avoiding the risk

This is a warning note for a hazard that could result in environmental damage if ignored.

ATTENTION

Type and source of risk

Measures for avoiding the risk

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

3 Working basis

3.1 Sequence of the settings

Observe the sequence!

The setting positions for the sewing machine are interdependent.

Always adhere to the specified sequence for the individual setting steps.

Always observe all information on requirements and following settings marked at the side with  .

ATTENTION

Machine damage possible due to incorrect sequence.
Always adhere to the working sequence specified in this manual.

3.2 Cable routing

Tying cables together

Ensure that all cables in the machine are laid such that moving parts are not impaired in their ability to function correctly.

1. Lay any excess cabling neatly in proper cable snakes.
2. Tie the snakes together using a cable tie.

   If possible, bind the snakes to fixed parts.
   The cables must be fixed firmly in place.
3. Cut off any protruding part of the cable tie.

ATTENTION

Machine damage and malfunctions can be caused by laying the cables incorrectly.
Excess cabling may obstruct moving machine parts in their ability to function correctly. This will affect the sewing function and may cause damage.

Lay excess cabling as described above.

3.3 Removing the covers

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch the sewing machine off before you remove the covers or refit them

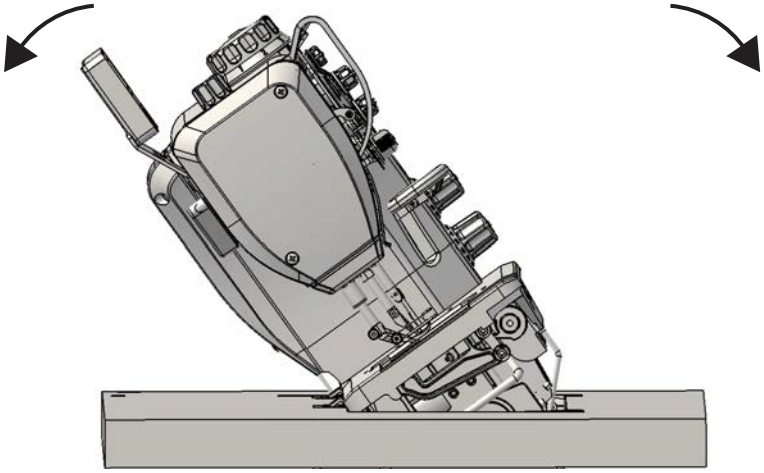
In many types of setting work, you will have to remove the machine covers first in order to access the components.

Described here is how to remove the individual covers and how to refit them. Just the cover that needs to be removed is then specified in the text for that particular type of setting work.

3.3.1 Access to the machine bottom section

In order to access the components at the machine bottom section, you must first tilt the machine upper section.

Fig. 1: Tilting and erecting the machine upper section



Tilting the machine upper section

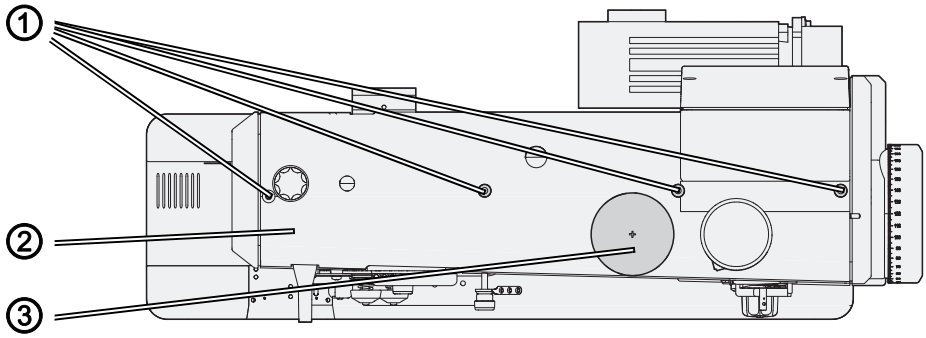
1. Tilt the machine upper section as far as it will go.

Erecting the machine upper section

1. Raise the machine upper section.

3.3.2 Removing and fitting the arm cover

Fig. 2: Removing and fitting the arm cover



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

Removing the arm cover

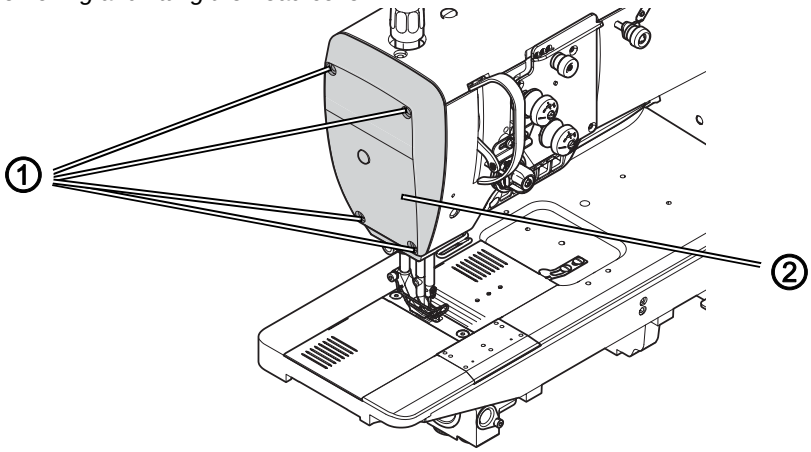
1. Turn the adjusting wheel for the sewing foot stroke (3) to 2.
2. Loosen the screws (1).
3. Hold the arm cover (2) on the adjusting wheel and remove it.

Fitting the arm cover

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

3.3.3 Removing and fitting the head cover

Fig. 3: Removing and fitting the head cover



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

Removing the head cover

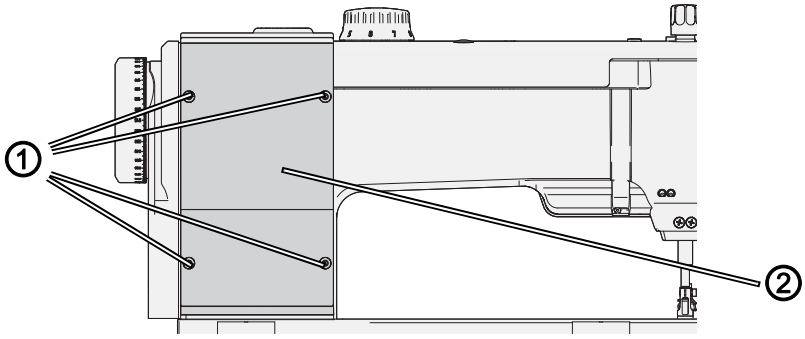
1. Loosen the screws (1).
2. Remove the head cover (2).

Fitting the head cover

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

3.3.4 Removing and fitting the valve cover

Fig. 4: Removing and fitting the valve cover



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

Removing the valve cover

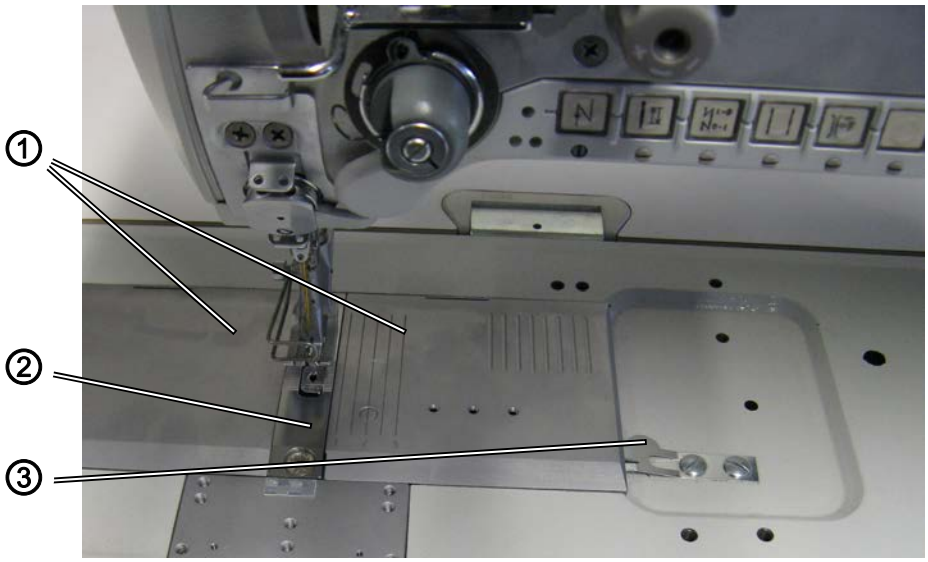
1. Undo all four screws (1).
2. Remove the valve cover (2).

Fitting the valve cover

1. Fit the valve cover (2).
2. Tighten all four screws (1).

3.3.5 Opening and closing the throat plate slide

Fig. 5: Opening and closing the throat plate slide



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

Opening the throat plate slide

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

Closing the throat plate slide

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

3.3.6 Removing and installing the throat plate

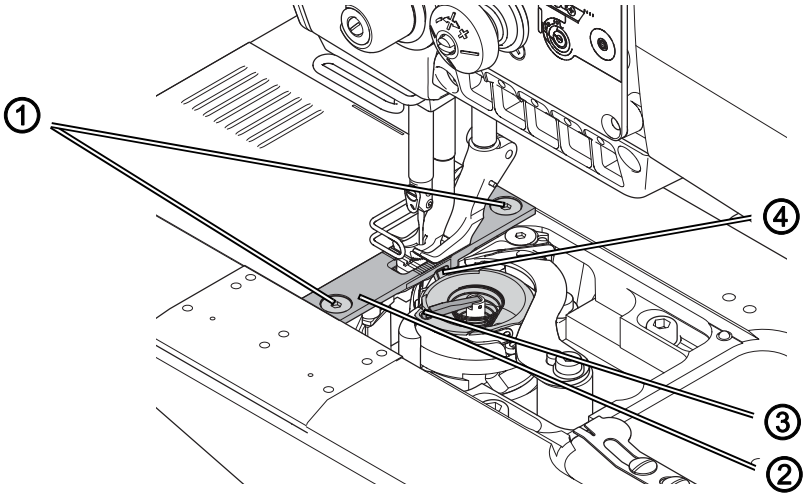
WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch the sewing machine off before you remove or install the throat plate.

Fig. 6: Removing and installing the throat plate



(1) - Screws
(2) - Throat plate
(3) - Bobbin housing
(4) - Nose

Removing the throat plate

1. Open the throat plate slide (📖 page 13).
2. Loosen both screws (1).
3. Remove the throat plate (2).

Installing the throat plate

1. Insert the throat plate (2), ensuring that the nose (4) of the bobbin housing (3) is in the cutout of the throat plate.
2. Tighten both screws (1).
3. Close the throat plate slide (📖 page 13).

3.3.7 Removing and installing the feed-dog

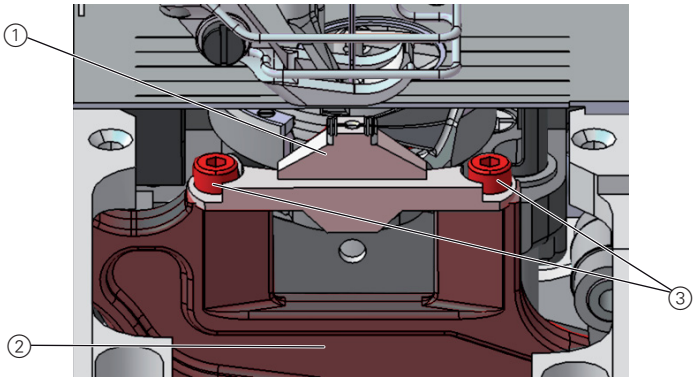
WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch the sewing machine off before you remove or install the feed-dog.

Fig. 7: Removing and installing the feed-dog



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

Removing the feed-dog

1. Remove the throat plate (📖 page 14).
2. Loosen the screws (3).
3. Take the feed-dog (1) off the feed-dog carrier (2).

Installing the feed-dog

1. Place the feed-dog (1) onto the feed-dog carrier (2).
2. Tighten the screws (3).
3. Insert the throat plate (📖 page 14)

Important: Check the feed-dog position in its movement at maximum stitch length (depending on the equipment: 6, or 9) by turning on the handwheel. The feed-dog must have an even distance from the throat plate. The needle must be positioned in the center of the needle hole on insertion.

Order

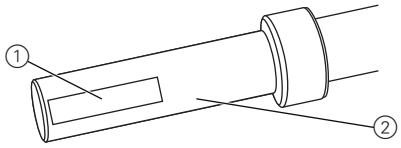
Then check the following setting:

Feed-dog (📖 *9.1.1 Moving the feed-dog*, page 28)

3.4 Flats on shafts

Screw the screw on to the flat

Fig. 8: Flats on shafts



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

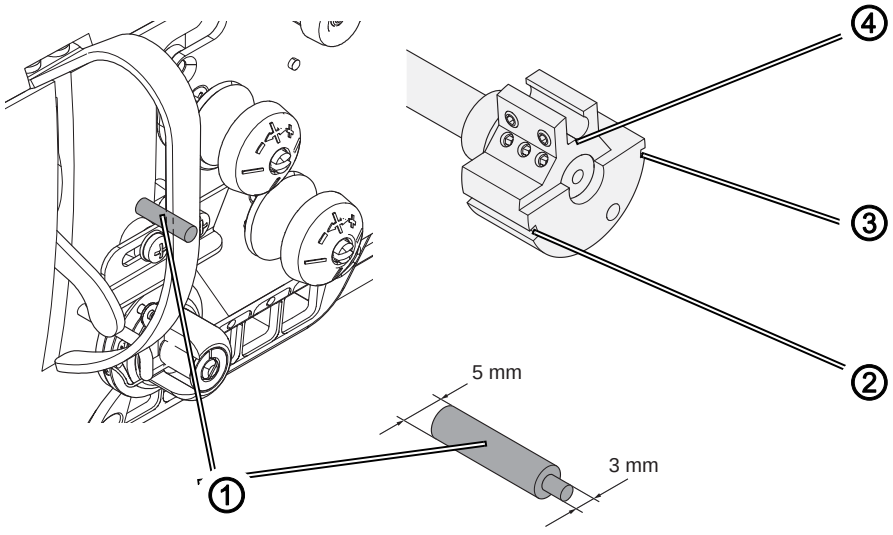
Some shafts have flat surfaces at those points where the components are screwed on. This stabilizes the connection and makes adjustment easier.

Always ensure that the screws lie completely on the surface.

3.5 Locking the sewing machine in place

For some settings, the machine has to be locked in place. To do this, the locking peg from the accessory pack is inserted into a groove on the arm shaft crank to block the arm shaft.

Fig. 9: Locking peg and arresting grooves on the arm shaft crank

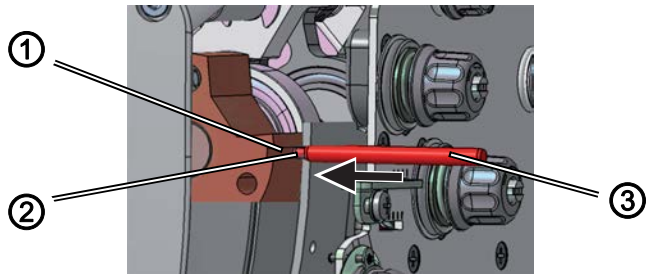


(1) - Locking peg
(2) - Large arresting groove
(3) - Small arresting groove
(4) - Arm shaft crank

There are 2 securing positions:

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

Fig. 10: Locking the sewing machine in place



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

Locking the machine in place

1. Remove the plug from the locking opening (2).
2. Turn the handwheel until the appropriate groove (1) is in front of the locking opening (2):
   - Small groove at handwheel position 0°
   - Large groove at handwheel position 200 – 205°
3. Insert the locking peg (3) with the appropriate end in the groove (1).

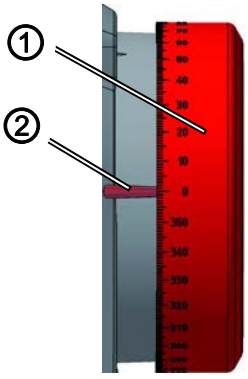
Removing the locking mechanism

1. Pull the locking peg (3) out of the groove (1).
2. Insert the plug into the locking opening (2).

3.6 Putting the handwheel into position

With some settings, the graduated scale on the handwheel has to be put into a certain position.

Fig. 11: Putting the handwheel into position



(1) - Graduated scale
(2) - Marking

Setting steps

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

4 Setting the handwheel scale

WARNING

Risk of injury.

Crushing injuries from moving parts.

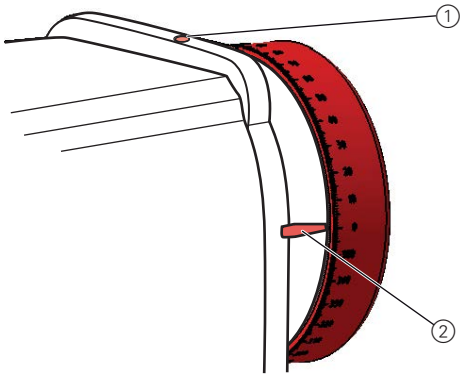
Switch the sewing machine off before you check and set the position of the handwheel on the arm shaft.

Checking the correct setting

1. Lock the machine in place at position 2 (📖 page 16).

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

Fig. 12: Setting the handwheel scale



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

Setting steps

The handwheel is fastened using two setscrews, which you can see through the screw opening (1).

1. Turn handwheel until the first setscrew is under the opening (1)
2. Release the setscrew through the opening (1).
3. Turn the handwheel by 50° such that the second setscrew is under the opening (1)
4. Release the setscrew through the opening (1).
5. Lock the machine in place at position 2 (📖 page 16).
6. Turn the handwheel scale so that the 0° is at the center of the marking (2).
7. Tighten the setscrew through the opening (1).
8. Remove the lock (📖 page 17).
9. Put the handwheel into the 50° position.
10. Tighten the setscrew through the opening (1).

5 Positioning the arm shaft

WARNING

Risk of injury.

Crushing injuries from moving parts.

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

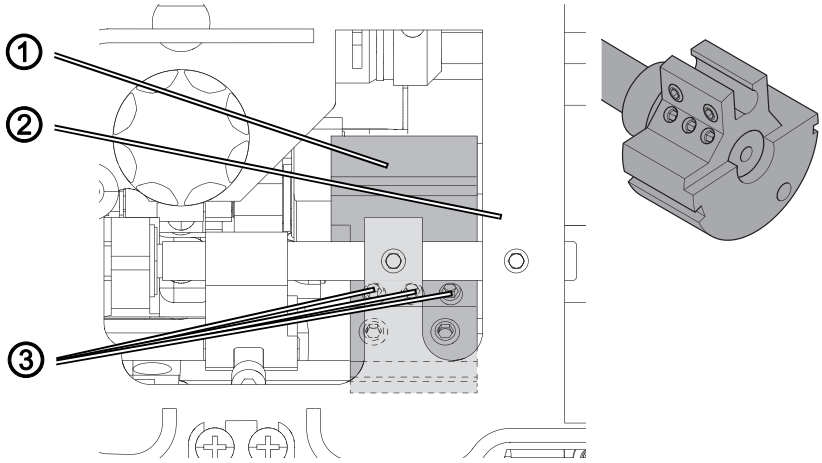
Correct setting

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

Cover

- Arm cover (*3.3.2 Removing and fitting the arm cover*, page 11)

Fig. 13: Setting the arm shaft crank



(1) - Arm shaft crank
(2) - Machine casting
(3) - Setscrews

Setting steps

1. Release all the setscrews (3) on the arm shaft crank (1).
2. Turn the arm shaft crank (1) such that the setscrews (3) are seated flush on the flat of the arm shaft.
3. Push the arm shaft (1) to the right as far as it will go and flush with the machine casting.
4. Tighten all the setscrews (3) on the arm shaft crank (1).

6 Positioning the toothed belt pulleys

The two toothed belt wheels must be positioned one on top of the other such that the toothed belt can run correctly.

Order

- Always check the position of the other toothed belt pulley after making a change on either of the toothed belt pulleys.

6.1 Upper toothed belt pulley

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch the sewing machine off before you check and set the upper toothed belt wheel.

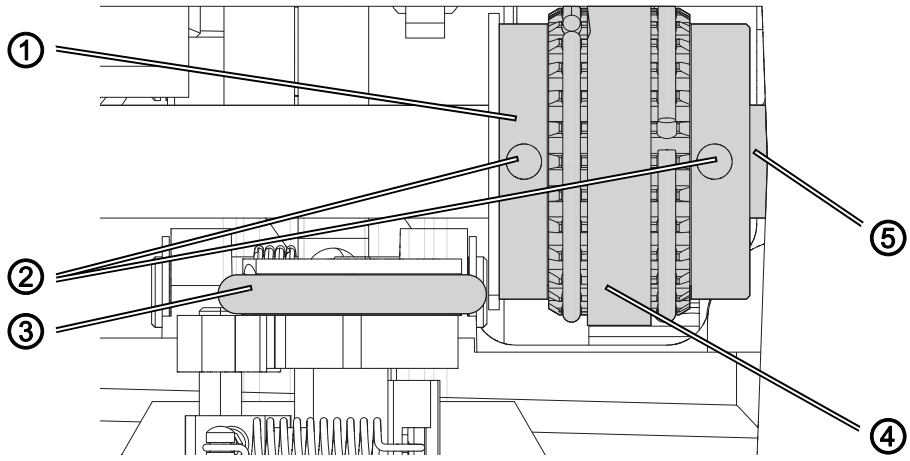
Correct setting

The 2 setscrews for the upper toothed belt pulley are seated flush on the flat. The distance between the winder wheel and the upper toothed belt wheel is 0.8 mm.

Cover

- Arm cover (*3.3.2 Removing and fitting the arm cover*, page 11)

Fig. 14: Setting the upper toothed belt pulley



(1) - Upper toothed belt pulley
(2) - Setscrews
(3) - Winder wheel
(4) - Toothed belt
(5) - Surface of arm shaft

Setting steps

1. Loosen the setscrews (2).
2. Turn the upper toothed belt pulley (1) such that the setscrews (2) are seated flush on the flat (5) of the arm shaft.

3. Move the upper toothed belt wheel (1) to the side such that the distance to the winder wheel (3) is 0.8 mm.
4. Tighten the setscrews (2).

6.2 Lower toothed belt pulley

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch the sewing machine off before you check and set the lower toothed belt wheel.

Correct setting

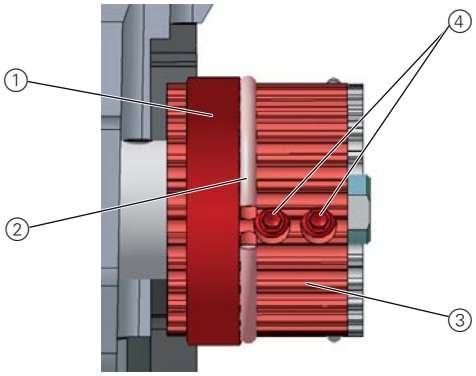
The 2 setscrews for the lower toothed belt pulley are seated flush on the flat of the lower shaft.

The toothed belt runs correctly without running against the retaining ring or slipping off.

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 15: Setting the lower toothed belt pulley



(1) - Toothed belt
(2) - Retaining ring
(3) - Lower toothed belt pulley

Setting steps

1. Using the screwdriver, push the toothed belt (1) sufficiently far to the side that the 2 setscrews (4) can be reached.
2. Loosen the setscrews (4).
3. Turn the lower toothed belt pulley (3) such that the setscrews (4) are seated on the flat of the arm shaft.

4. Move the lower toothed belt pulley (3) sufficiently far to the side that the toothed belt (1) makes contact with the retaining ring (2) without being pushed away.
5. Tighten the setscrews (4).
6. Use the screwdriver to push the toothed belt (1) back again.

7 Setting the stitch length adjusting wheel

WARNING

Risk of injury.

Crushing injuries from moving parts.

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

Correct setting

Stitch length adjusting wheel to 0:

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

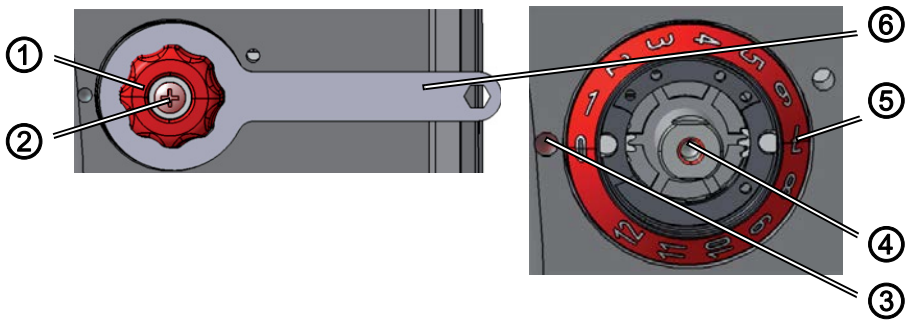
Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Setting steps

1. Switch off the machine at the main switch.

Fig. 16: Setting the stitch length adjusting wheel I



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

2. Hold the stitch length adjusting wheel (1) using a key (6).
3. Loosen the screw (2).
4. Remove the stitch length adjusting wheel (1) from the shaft (4).

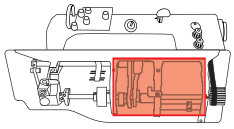
ATTENTION

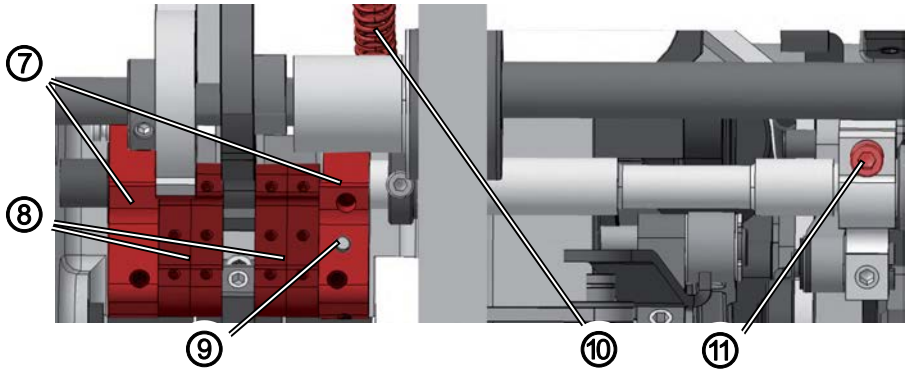
Machine damage possible if the shaft is turned too strongly.
If you turn the shaft too far, then parts on the stitch regulator gear could bend or get stuck.

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

5. Carefully turn the shaft (4) clockwise using a 10 mm wrench.

Fig. 17: Setting the stitch length adjusting wheel II





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

6. Check whether the frame (7) for the stitch regulator gear can be moved. Insert the locking peg or a hex key into the opening (9) and try to move the frame (7) up and down.
7. As soon as the frame (7) no longer moves: Remove the wrench from the shaft (4).
8. Turn the scale (5) such that the 0 is exactly next to the adjusting mark (3).
9. Place the stitch length adjusting wheel (1) onto the shaft (4) and tighten it with a wrench (6).
10. Screw down the stitch length adjusting wheel (1) using screw (2).
11. Check whether the plates for the stitch regulator gear (8) are parallel to one another.

If the plates (8) are not parallel to one another:

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

8 Setting the stitch length limit

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before setting the maximum stitch length limit.

9 or 6 mm can be selected as the maximum stitch length. In doing so, the appropriate throat plate has to be selected for the respective maximum stitch length. The throat plate cut-out must be large enough that the feed-dog does not hit against the edges of the throat plate at the front and rear dead center.

If during the sewing operation not all stitch lengths are available, then you do have the option to limit the maximum stitch length that can be set.

ATTENTION

Risk of damaging the feed-dog due to incorrect throat plate size
If the throat plate cut-out is too small, then the feed-dog can hit against the edges.

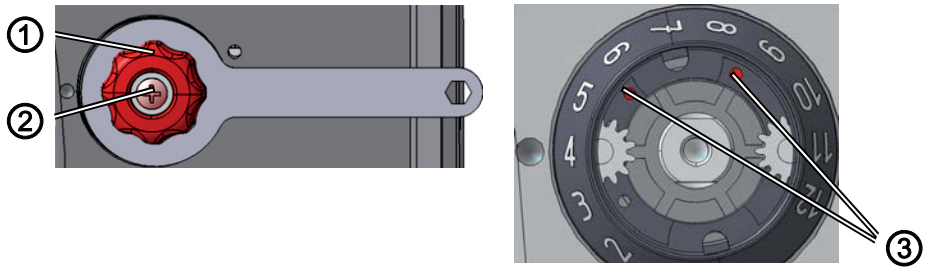
Make sure that an appropriate throat plate is used for the maximum stitch length set.

Correct setting

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

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

Fig. 18: Setting the stitch length limit



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

Setting steps

1. Position the stitch length adjusting wheel (1) to 0.
2. Hold the stitch length adjusting wheel (1) using a key.
3. Loosen the screw (2).

4. Remove the stitch length adjusting wheel (1).
5. Remove the setscrew from one of the two mark-off openings (3).
6. Screw the setscrew into the mark-off opening for the required maximum stitch length. The openings are given numbers for the stitch length:
7. Turn the scale such that the 0 is exactly next to the adjusting mark.
8. Fit the stitch length adjusting wheel (1) and hold it using a key.
9. Tighten the screw (2).

8.1 Setting the eccentric for the forward and backward stitches

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before setting the eccentric.

Correct setting

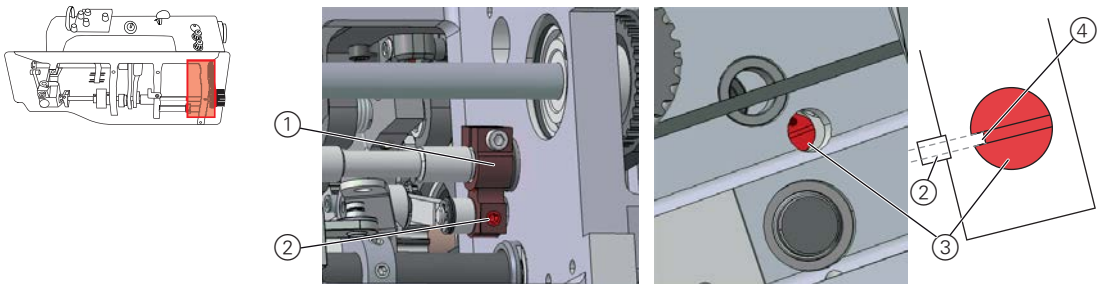
The forward and backward stitches are the same length.

As a test, sew a seam forwards, stop, and sew a seam backwards. The insertions of the forward and backward stitches have to lie within each other.

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

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



(1) - Clamp
(2) - Setscrew
(3) - Eccentric screw
(4) - Recess

Setting steps

1. Unscrew the setscrew (2).
2. Turn the eccentric screw (3) from the right through the opening in the base plate:

Basic position:
The slot in the eccentric screw (3) is parallel to the setscrew (2), the recess (4) faces the front.

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

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

3. Tighten the setscrew (2).

9 Setting the feed-dog

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

Order

First check the following setting:

- Needle bar linkage (📖 *10 Aligning the needle bar linkage*, page 33)

9.1 Setting the feed-dog position

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before setting the feed-dog position.

Correct setting

The feed-dog is exactly in the center of the throat plate cut-out, both sideways and in the sewing direction.

If the stitch length is 0, the needle pierces exactly in the center of the needle hole.

Various settings can be made depending on how far the position of the feed-dog differs from the correct setting:

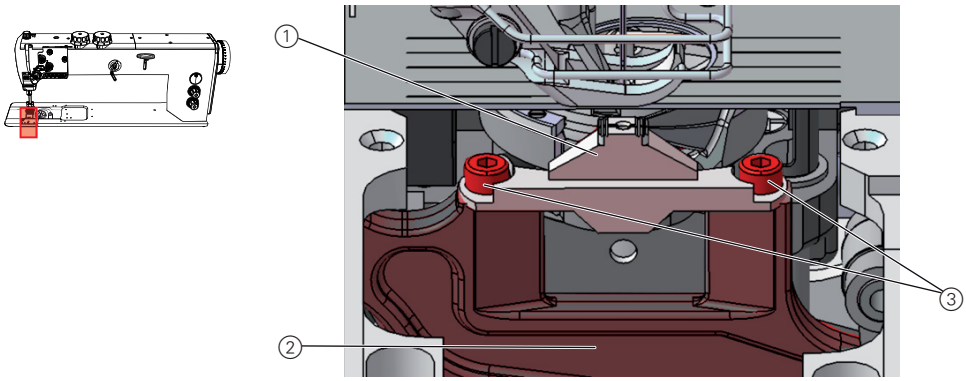
- For minimal deviations, it suffices to move the feed-dog on the carrier (📖 *9.1.1 Moving the feed-dog*, page 28).
- If this is not sufficient, move the entire feed-dog carrier on the sliding shaft
  (📖 *9.1.2 Moving the feed-dog carrier*, page 29).

9.1.1 Moving the feed-dog

Cover

- Throat plate (📖 *3.3.6 Removing and installing the throat plate*, page 14)

Fig. 20: Moving the feed-dog on the feed-dog carrier



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

Setting steps

1. Loosen the screws (3).
2. Move the feed-dog (1) on the feed-dog carrier (2) such that the needle pierces exactly in the center of the needle hole for the feed-dog.
   Place the removed throat plate next to it as an aid for orientation so that the feed-dog can be screwed on straight.
3. Tighten the screws (3).

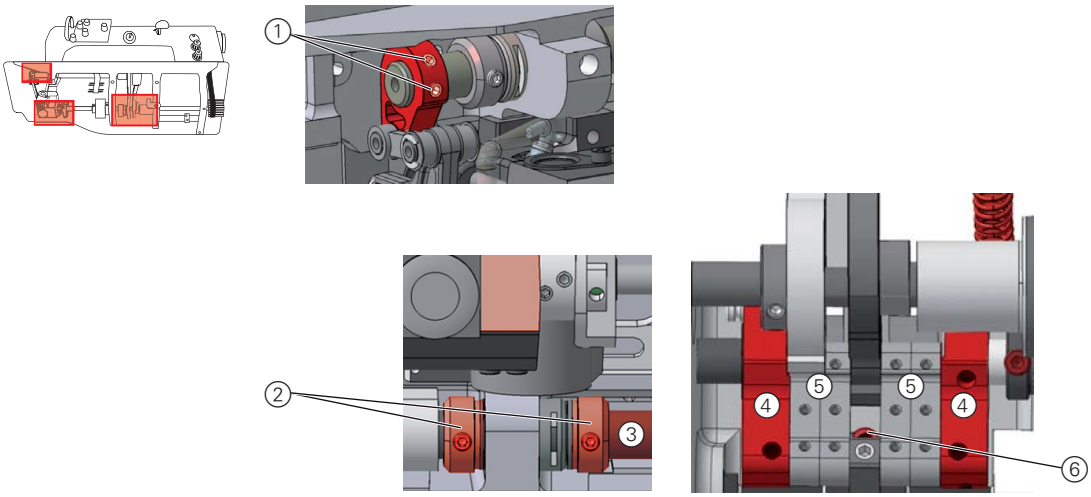
9.1.2 Moving the feed-dog carrier

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 upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 21: Moving the feed-dog carrier



(1) - Screws
(2) - Adjusting screws
(3) - Sliding shaft
(4) - Assembly frame
(4) - Plates
(5) - Screw

Setting steps

1. Position the upper stitch length adjusting wheel to 0.
2. Loosen the connection to the tie rod (1) on both screws, ensuring that the adjusting rings are not twisted vertically.
3. Loosen the rear screw (6).
4. Loosen the setscrews for the adjusting rings (2).
5. Move the feed-dog carrier cross-line to the sewing direction such that the feed-dog is exactly in the center of the throat plate cut-out.
6. Push the adjusting rings (2) toward each other as far as they will go.

   Make sure that the sliding shaft (3) is tightened by the clamping rings.
7. Tighten the setscrews for the adjusting rings (2).
8. Move the feed-dog carrier in the sewing direction such that the feed-dog is exactly in the center of the throat plate cut-out.
9. Tighten the rear screw (6).
10. Tighten the connection to the tie rod using the screws (1).

    In the process, make sure that the feed-dog height has the correct setting.
    (📖 *9.2.2 Setting the feed-dog height in the top dead center*, page 31).

9.2 Setting the feed-dog movement

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

Order

First check the following setting:

- Feed-dog(📖 *9.1 Setting the feed-dog position*, page 27)

9.2.1 Setting the feed movement

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch the sewing machine off before you check and set the feed movement of the feed-dog.

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

Correct setting

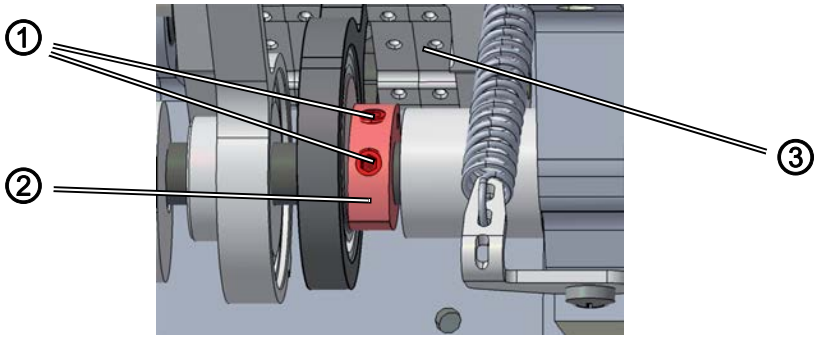
Handwheel at the 190° position and set the stitch length adjusting wheel to the maximum stitch length.

↳ If the drive is moved manually, the feed-dog stops.

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 22: Setting the feed movement for the feed-dog



(1) - Setscrews
(2) - Pusher eccentric
(3) - Drive

Setting steps

1. Set the stitch length adjusting wheel to the maximum stitch length.
2. Unscrew the setscrews (1).
3. Put the handwheel into the 190° position.

4. Move the drive (3) forwards and backwards and observe the feed-dog and needle in the process.
5. Turn the pusher eccentric (2) such that the feed-dog and needle no longer move when the stitch adjustment lever (3) is pressed.
6. Tighten the setscrews (1).

9.2.2 Setting the feed-dog height in the top dead center

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before checking and setting the feed-dog height.

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

Correct setting

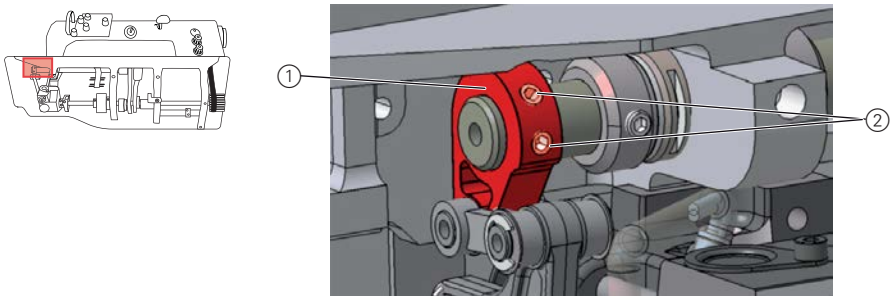
Place the feed-dog in the uppermost position by turning the handwheel.

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

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 23: Setting the feed-dog height



(1) - Lever *(2) - Setscrews*

Setting steps

1. Put the handwheel into the 190° position.
2. Loosen the setscrews (2) on the lever (1) at the left, above the hook.
3. Turn the lever (1) such that the upper edge of the feed-dog protrudes 0.5 mm above the throat plate.
4. Tighten the setscrews (2).

9.2.3 Setting the stroke movement

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch the sewing machine off before you check and set the stroke movement of the feed-dog.

Order

First check the following setting:

- Feed-dog height (📖 *9.2.2 Setting the feed-dog height in the top dead center*, page 31)

Correct setting

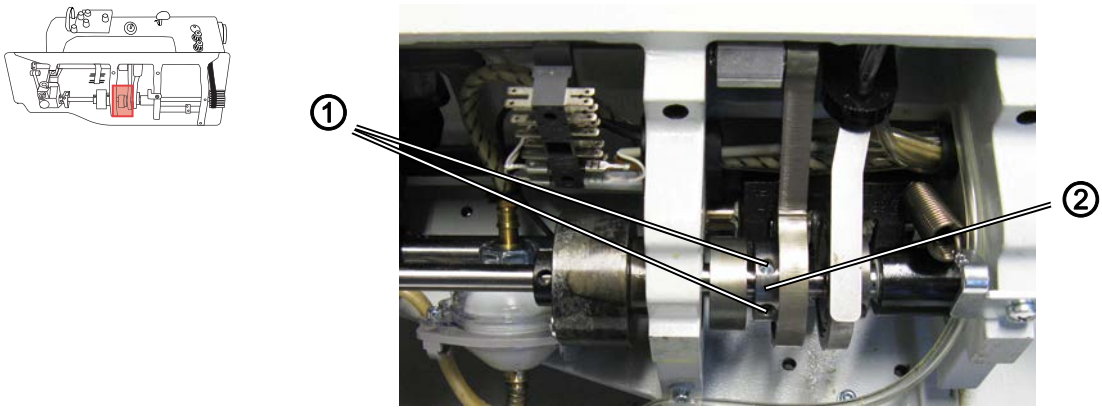
At the front dead center (handwheel position 90°) and at the rear dead center (handwheel position 270°) for the feed-dog, the upper edge of the feed-dog is at the same height as the upper edge of the throat plates.

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

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 24: Setting the feed-dog lift



(1) - Setscrews *(2) - Stroke eccentric*

Setting steps

1. Unscrew the setscrews (1).
2. Put the handwheel into the 90° position.
3. Turn the stroke eccentric (2) such that the upper edge of the feed-dog is in the upward movement and at the same height as the upper edge of the throat plates.
4. Tighten the setscrews (1).

10 Aligning the needle bar linkage

Order

First check the following setting:

- A straight and undamaged needle must be inserted (📖 *Operating manual section, Inserting and replacing the needle*)

Correct setting

Set stitch length adjusting wheel to 0.

↳ The needle pierces exactly in the center of the feed-dog needle hole.

10.1 Moving the needle bar linkage sideways

WARNING

Risk of injury.

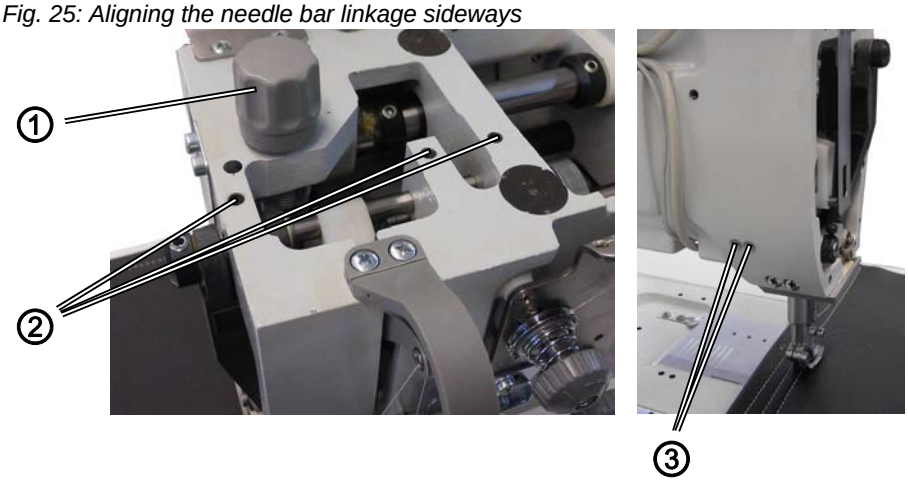
Crushing injuries from moving parts.

Switch off the sewing machine before aligning the needle bar linkage sideways.

Cover

- Arm cover (📖 *3.3.2 Removing and fitting the arm cover*, page 11)
- Head cover (📖 *3.3.3 Removing and fitting the head cover*, page 12)

Fig. 25: Aligning the needle bar linkage sideways



(1) - Adjusting wheel for the sewing foot pressure
(2) - Setscrews
(3) - Openings

Setting steps

1. Position the stitch length adjusting wheel to 0.
2. Loosen the adjusting wheel for the sewing foot pressure (1):
3. Undo all 3 setscrews (2).
4. Remove the plugs of the openings (3).
5. Release the setscrews behind the plug/opening (3).
6. Move the needle bar linkage sideways such that the needle pierces exactly in the center of the needle hole for the feed-dog.
7. Tighten the setscrews behind the plug/opening (3).
8. Insert the plugs in the openings (3).
9. Tighten all 3 setscrews (2).
10. Tighten the adjusting wheel for the sewing foot pressure (1):

Order

Then check the following settings:

- Loop stroke position (📖 *11.2 Setting the loop stroke position*, page 38)
- Distance of the hook to the needle (📖 *11.1 Setting the hook side clearance*, page 36)

10.2 Aligning the needle bar linkage in the sewing direction

WARNING

Risk of injury.

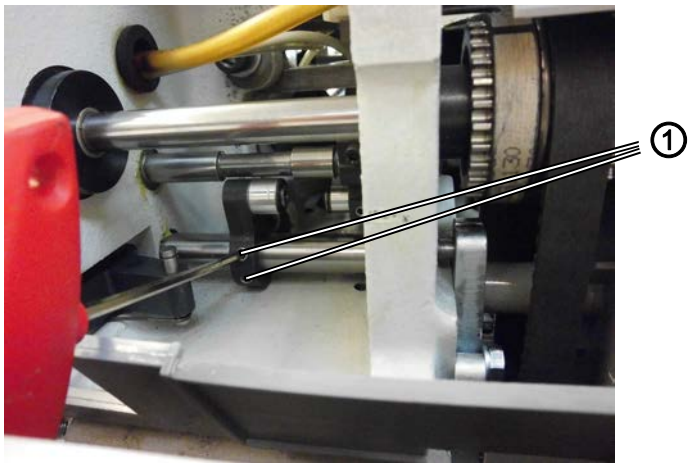
Crushing injuries from moving parts.

Switch the sewing machine off before you check and set the position of the needle bar linkage in the sewing direction.

Cover

- Valve cover (📖 *3.3.4 Removing and fitting the valve cover*, page 12)
- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 26: Aligning the needle bar linkage in the sewing direction



(1) - Setscrews

Correct setting

Stitch length adjusting wheel to 0.

↳ Needle pierces in the center of the needle hole for the feed-dog.

Setting steps

1. Position the stitch length adjusting wheel to 0.
2. Loosen the setscrews (1).
3. Align the needle in the center of the needle hole for the feed-dog.
4. Tighten the setscrews (1).

Order

Then check the following setting:

- Loop stroke position (📖 *11.2 Setting the loop stroke position*, page 38)

11 Position of the hook and needle

11.1 Setting the hook side clearance

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before checking and setting the hook side clearance.

Order

First check the following settings:

- A straight and undamaged needle has to be inserted (📖 *Operating manual section, Inserting and replacing the needle*)
- Needle bar linkage (📖 *10 Aligning the needle bar linkage*, page 33)
- Loop stroke position (📖 *11.2 Setting the loop stroke position*, page 38)

ATTENTION

Damage to the machine, needle breakage, or thread damage due to an incorrect clearance between the needle and hook tip

Check the distance to the hook tip after inserting a new needle with a different size.

Reset distance if necessary.

Correct setting

Machine locked in place at position 1 (📖 page 16).

↳ Maximum 0.1 mm distance between the hook tip and the groove for the needle.

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)
- Throat plate slide (📖 *3.3.5 Opening and closing the throat plate slide*, page 13)

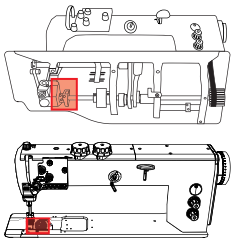
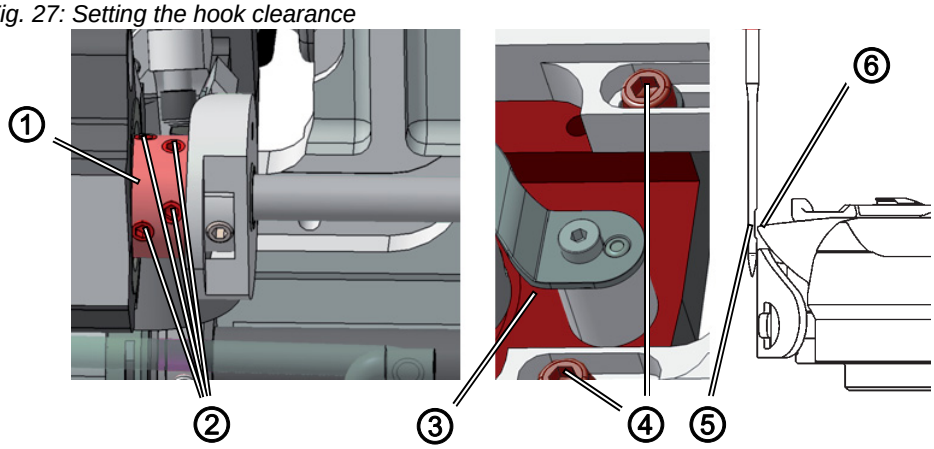


Fig. 27: Setting the hook clearance



(1) - Clamping ring
(2) - Setscrews
(3) - Hook support
(4) - Screws
(5) - Needle groove
(6) - Hook tip

1. Machine locked in place at position 1 (📖 page 16).
2. Loosen the screws (4) for the hook support (3).
3. Loosen the setscrews (2) for the hook clamping ring (1).
4. Move the hook support (3) sideways such that the distance between the hook tip (6) and the groove for the needle (5) is 0.1 mm at most, without the hook tip (6) touching the needle.
5. Tighten the screws (4) for the hook support (3).
6. Check the loop stroke position (📖 page 38).
7. Tighten the setscrews (2) for the clamping ring (1).
8. Remove the lock (📖 page 17).

Order

Then check the following setting:

- Position of the needle guard (📖 *11.3 Adjusting the needle guard*, page 40)

11.2 Setting the loop stroke position

WARNING

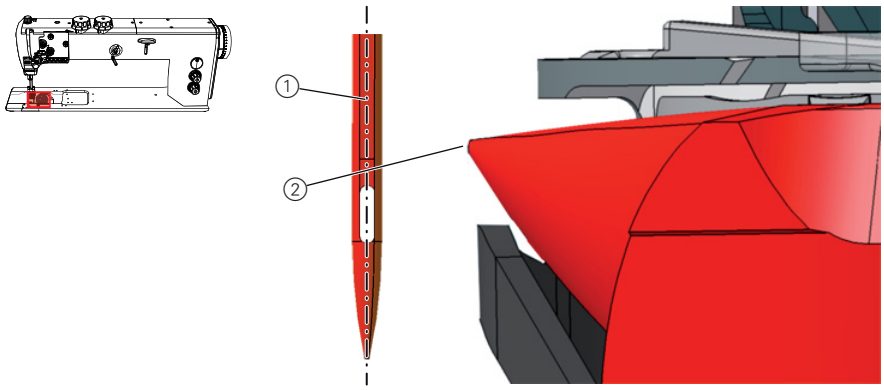
Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch off the sewing machine before checking and setting the loop stroke position.

The loop stroke is the path length from the lower dead center of the needle bar up to the position where the hook tip is exactly on the vertical center line of the groove for the needle.

Fig. 28: Loop stroke position - position of the hook tip



(1) - Vertical center line of the needle
(2) - Hook tip

The loop stroke is precisely 2 mm.

Order

First check the following settings:

- Needle bar linkage (📖 *10 Aligning the needle bar linkage*, page 33)
- A straight and undamaged needle must be inserted (📖 *Operating manual section, Inserting and replacing the needle*)

Correct setting

Machine is locked in place at position 1 (📖 page 16).

↳ The hook tip (2) points exactly to the vertical center line (1) of the needle.

Fault caused by an incorrect setting

- Missing stitches

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)
- Feed-dog (📖 *3.3.7 Removing and installing the feed-dog*, page 15)

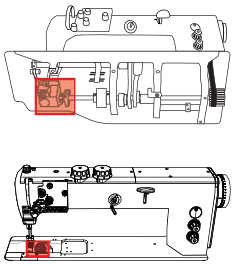
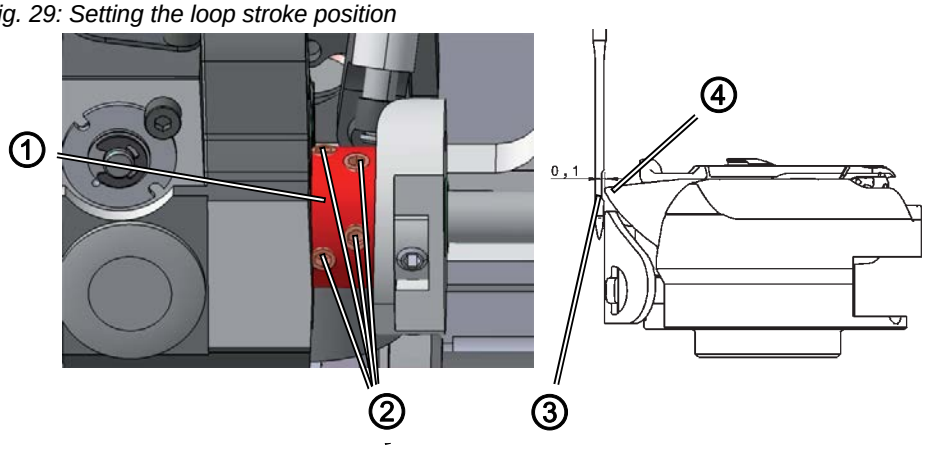


Fig. 29: Setting the loop stroke position



(1) - Clamping ring
(2) - Setscrews
(3) - Needle groove
(4) - Hook tip

Setting steps

1. Lock the machine in place at position 1 (📖 page 16).
2. Position the stitch length adjusting wheel to 0.
3. Loosen all four setscrews (2) for the hook clamping ring (1).
4. Turn the hook such that the hook tip (4) points exactly to the vertical center line of the needle (3).
5. Tighten the setscrews (2) for the clamping ring (1).
6. Remove the lock (📖 page 17).

Order

Then check the following settings:

- Position of the needle guard (📖 *11.3 Adjusting the needle guard*, page 40)
- Timing of cutting by the thread cutter (📖 *16.4 Adjusting the needle thread tension*, page 61)

11.3 Adjusting the needle guard

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch off the sewing machine before checking and adjusting the needle guard.

The needle guard prevents contact between needle and hook tip.

Order

First check the following settings:

- Loop stroke position (📖 *11.2 Setting the loop stroke position*, page 38)
- Hook side clearance (📖 *11.1 Setting the hook side clearance*, page 36)
- Needle bar height (📖 *11.4 Setting the needle bar height*, page 41)
- A straight and undamaged needle must be inserted (📖 *Operating manual section, Inserting and replacing the needle*)

ATTENTION

Damage to the machine, needle breakage, or thread damage due to an incorrect clearance between the needle and hook tip
Check the distance to the hook tip after inserting a new needle with a different size.
Reset distance if necessary.

Correct setting

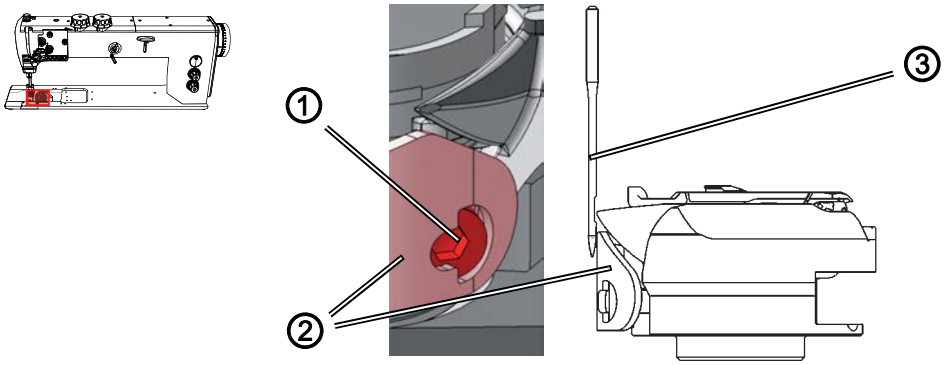
Machine locked in place at position 1 (📖 page 16).

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

Cover

- Feed-dog (📖 *3.3.7 Removing and installing the feed-dog*, page 15)

Fig. 30: Adjusting the needle guard



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

Setting steps

1. Turn the handwheel and check how far the needle guard (2) pushes the needle away.
2. Turn the screw (1) such that the needle guard (2) just pushes the needle (3) far away enough so that it cannot be touched by the hook tip:
   - **For pushing away more:** Turn it counterclockwise
   - **For pushing away less:** Turn it clockwise

11.4 Setting the needle bar height

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch off the sewing machine before checking and setting the needle bar height.

Order

First check the following settings:

- Loop stroke position (🕮 *11.2 Setting the loop stroke position*, page 38)
- A straight and undamaged needle must be inserted (🕮 *Operating manual section, Inserting and replacing the needle*)

Correct setting

Machine locked in place in position 1 (🕮 page 16) and stitch length adjusting wheel set to 0.

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

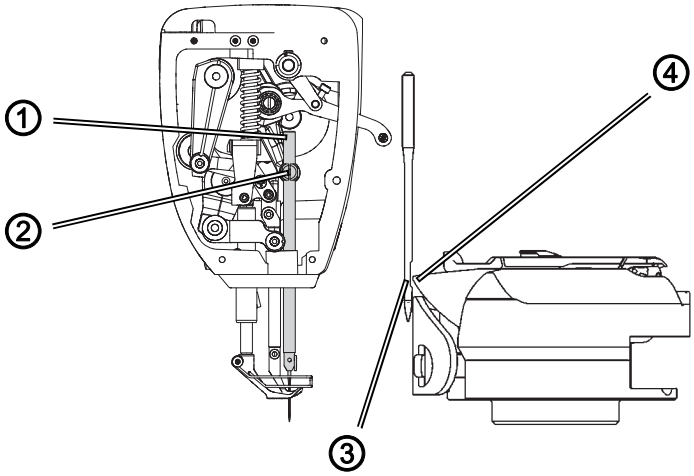
Faults caused by an incorrect needle bar height

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

Cover

- Head cover (📖 *3.3.3 Removing and fitting the head cover*, page 12)

Fig. 31: Setting the needle bar height



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

Setting steps

1. Lock the machine in place at position 1 (📖 page 16).
2. Position the stitch length adjusting wheel to 0.
3. Loosen the screw (2) for the needle bar (1).
4. Move the height of the needle bar (1) such that the hook tip (4) is in the lower third of the groove for the needle.

   Do not twist the needle to the side in doing so. The groove (3) must face towards the hook.
5. Tighten the screw (2) for the needle bar (1).
6. Remove the lock *(*📖 page 17*).*

Order

Then check the following setting:

- Position of the needle guard (📖 *11.3 Adjusting the needle guard*, page 40)

12 Setting the bobbin housing lifter

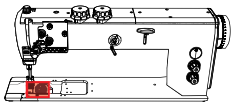
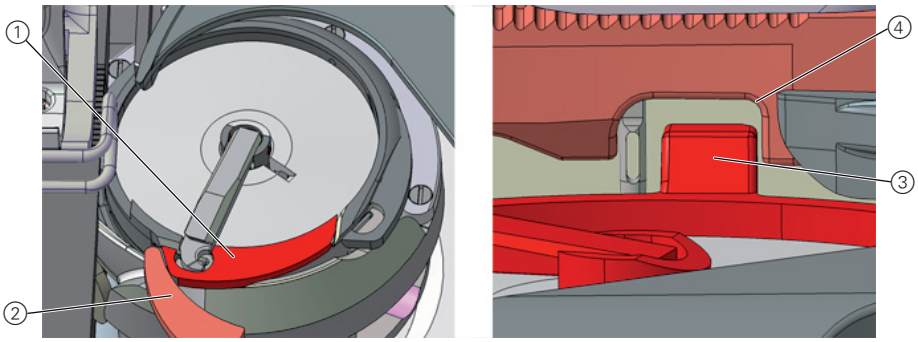


Fig. 32: Bobbin housing lifter



(1) - Bobbin housing
(2) - Bobbin housing lifter
(3) - Spool housing nose
(4) - Recess in the throat plate

The hook pulls the needle thread through between the nose of the spool housing (3) and the recess in the throat plate (4).

The bobbin housing lifter (2) now pushes the bobbin housing (1) away so that a gap appears for the thread.

If the hook tip is located below the bobbin housing lifter, then the bobbin housing lifter must open so that the thread can also slide past in that position.

So that the thread can slip through without a problem, the width of the lifting gap and the timing of opening have to be set.

Faults caused by an incorrect setting:

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

12.1 Setting the lifting gap

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before setting the width of the lifting gap.

Order

Always check the width of the lifting gap after making changes to the needle thread size. The correct width of the lifting gap depends on the thickness of the needle thread.

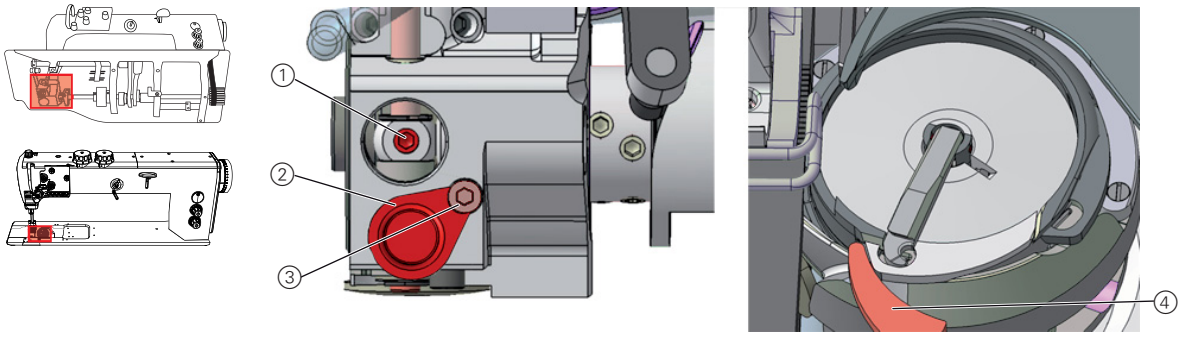
Correct setting

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

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)
- Throat plate slide (📖 *3.3.5 Opening and closing the throat plate slide*, page 13)

Fig. 33: Setting the lifting gap



(1) - Setscrew
(2) - Cover
(3) - Screw
(4) - Bobbin housing lifter

Setting steps

1. Loosen the screw (3).
2. Push the cover (2) downwards.
3. Loosen the setscrew (1).
4. Set the spool housing lifter such that the gap between the nose of the spool housing and the recess in the throat plate is just big enough to allow the needle thread to slip through without a problem.

   While doing so, ensure that the gap is not so big that the middle part of the hook swings to and fro, hitting the recess in the throat plate.
5. Tighten the setscrew (1).
6. Push the cover (2) upwards.
7. Tighten the screw (3).

12.2 Setting the timing for opening

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before checking and setting the point in time of opening.

Correct setting

The bobbin housing lifter starts to open exactly at that point when the hook tip is located below the bobbin housing lifter after the loop is taken up.

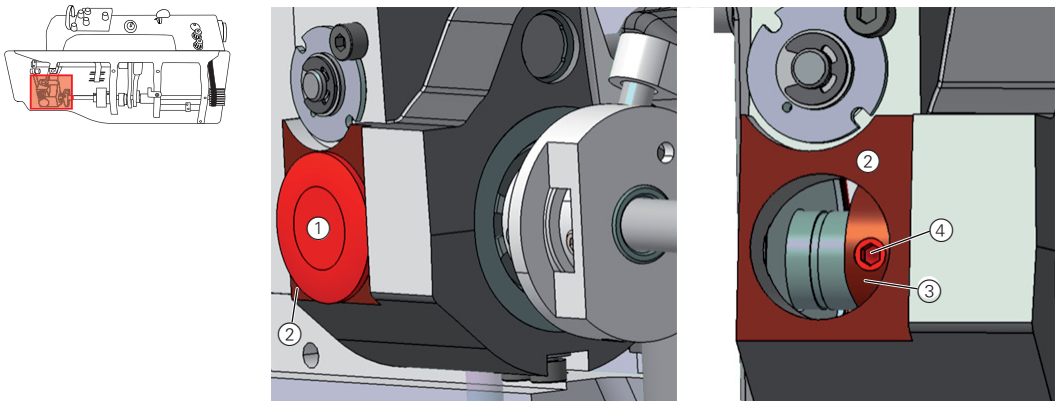
In 1-needle machines, this happens when the handwheel position is approx. 100°.
In 2-needle machines, this happens when the handwheel position is approx. 100° for the right-hand hook, and when the handwheel position is approx. 300° for the left-hand hook.

For 100° or 300°, the control cam setscrew (4) is exactly in the middle of the opening. (insert hex key in the setscrew for orientation)

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 34: Setting the timing for lifting



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

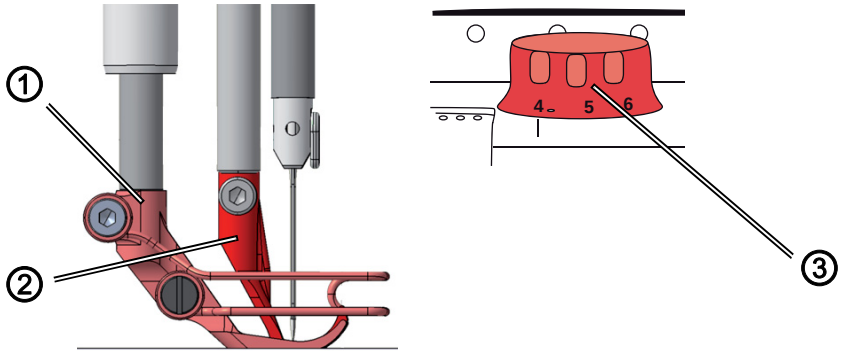
Setting steps

1. Remove the plug (1) on the bottom side of the hook housing (2).
2. Loosen the control cam setscrew (4) through the opening.
3. Turn the handwheel until the hook tip is exactly below the spool housing lifter.
4. Use the hex key to turn the control cam (3) such that the spool housing lifter opens at the correct point in time.
5. Tighten the setscrew (4).
6. Insert the plug (1) into the opening.

13 Sewing feet

The adjusting wheel (3) on the machine arm determine how high the presser foot (1) and feeding foot (2) are raised during the sewing process.

Fig. 35: Presser foot stroke adjusting wheels



(1) - Presser foot
(2) - Feeding foot

(3) - Presser foot stroke adjusting wheel

13.1 Setting an even sewing foot stroke

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch off the sewing machine before checking and setting the sewing foot stroke.

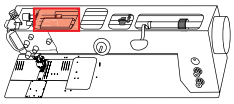
Correct setting

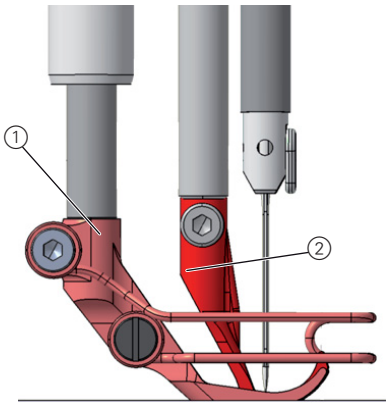
For sewing foot stroke 3, the presser foot and feeding foot are raised by the same height.

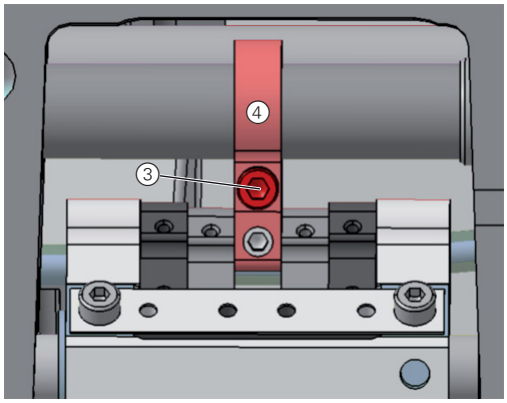
Cover

- Arm cover (📖 *3.3.2 Removing and fitting the arm cover*, page 11)

Fig. 36: Setting an even sewing foot stroke







(1) - Presser foot
(2) - Feeding foot
(3) - Screw
(4) - Sewing foot lever

Performing the setting steps

1. Set the handwheel to the 0° position.
2. Loosen the screw (3).
3. Lower the presser foot (1) and feeding foot (2) together down to the throat plate.

   While doing so, make sure that the feeding foot is only lowered down to the throat plate. Do not inadvertently lower the feeding foot through the throat plate cut-out down to the feed-dog.
4. Tighten the screw (3).

13.2 Setting the stroke movement for the feeding foot

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch the sewing machine off before you check and set the stroke movement for the feeding foot.

For correct feed, the stroke movement for the feeding foot must be aligned to the stroke movement for the feed-dog.

Order

First check the following settings:

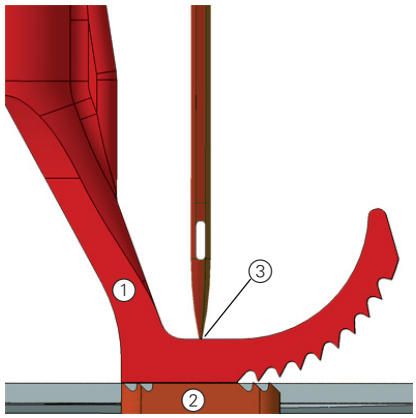
- Feed-dog movement (📖 *9.2 Setting the feed-dog movement*, page 30)
- Even sewing foot stroke (📖 *13.1 Setting an even sewing foot stroke*, page 46)

Correct setting

Stitch length adjusting wheel set to 0.

↳ The feeding foot (1) touches down exactly on the feed-dog (2) when the downwards movement of the needle tip (3) reaches the upper edge of the feeding foot. This will occur when the handwheel is in the 95° position.

Fig. 37: Stroke movement for the feeding foot and feed-dog

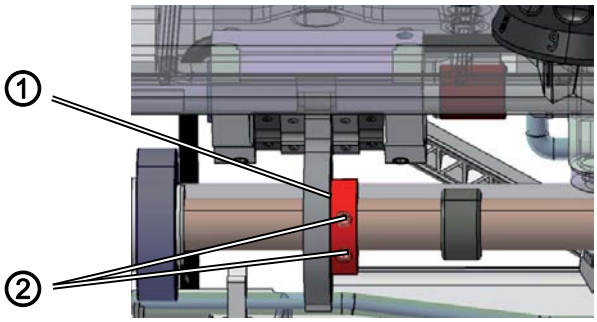


(1) - Feeding foot
(2) - Feed-dog
(3) - Needle tip

Cover

- Arm cover (📖 *3.3.2 Removing and fitting the arm cover*, page 11)

Fig. 38: Setting the point in time for when the feeding foot touches down



(1) - Stroke eccentric
(2) - Setscrews

Setting steps

1. Position the stitch length adjusting wheel to 0.
2. Loosen the setscrews (2).
3. Turn the stroke eccentric (1) such that the feeding foot touches down on the feed-dog when the handwheel is in the 95° position.

   In doing so, do not move the stroke eccentric (1) laterally on the axle.
4. Tighten the setscrews (2).

13.3 Setting presser foot pressure

The left adjusting wheel on the machine arm determines the pressure for the sewing feet on the material to be sewn. The pressure can be adjusted continuously by turning the adjusting wheel.

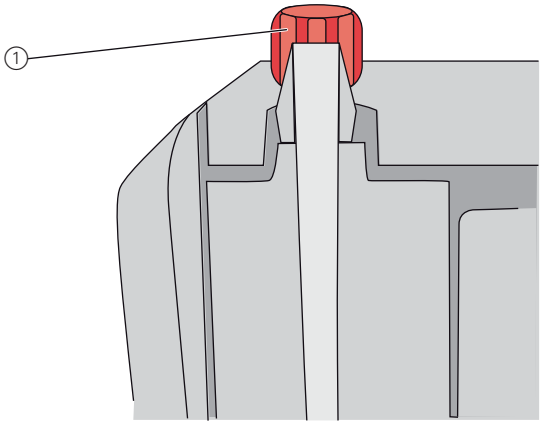
The correct pressure depends on the material to be sewn:

- Lower pressure for soft materials, e.g. silk
- Higher pressure for harder materials, e.g. leather

Correct setting

The material being sewn does not slip and is correctly transported.

Fig. 39: Setting presser foot pressure



(1) - Adjusting wheel for the sewing foot pressure

Setting steps

1. Turn the adjusting wheel for the sewing foot pressure (1):
   - **Clockwise**: more pressure
   - **Counter-clockwise**: less pressure

13.4 Setting the sewing foot lifting height

WARNING

Risk of injury.

The sewing machine must remain switched on so that the sewing feet can be raised.

Work very carefully when you check and set the lifting height for the sewing feet.

Do not put your hands under the sewing feet when they are being lowered.

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

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

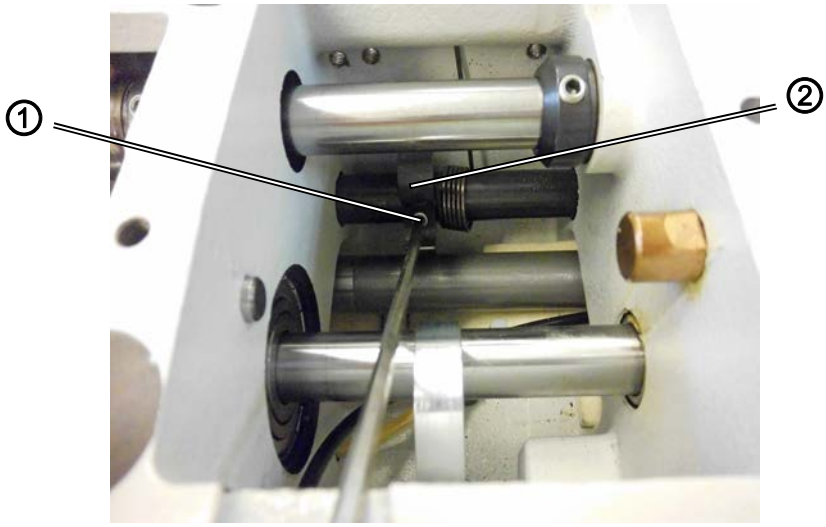
Correct setting

The distance between the raised sewing feet and the throat plate is preset to 20 mm on delivery.

Cover

Arm cover (📖 *3.3.2 Removing and fitting the arm cover*, page 11)

Fig. 40: Setting the sewing foot lifting height



(1) - Setscrew
(2) - Lever

Setting steps

1. Loosen the adjusting wheel for the sewing foot pressure:
2. Loosen the setscrews (1).
3. Turn the lever (1) to set the distance between the raised sewing feet and the throat plate:
   - **To raise the sewing feet to a lesser height:** Turn it clockwise
   - **To raise the sewing feet higher:** Turn it counterclockwise
4. Tighten the setscrews (1).

14 Setting the needle thread tension

14.1 Setting the thread regulator

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch off the sewing machine before checking and setting the thread regulator.

The thread regulator determines the tension applied to guide the needle thread around the hook. The required tension depends on the thickness of the material to be sewn, thread strength, and stitch length.

Lower thread tension for

- thin material
- low thread strengths

Greater thread tension for

- thick material
- high thread strengths

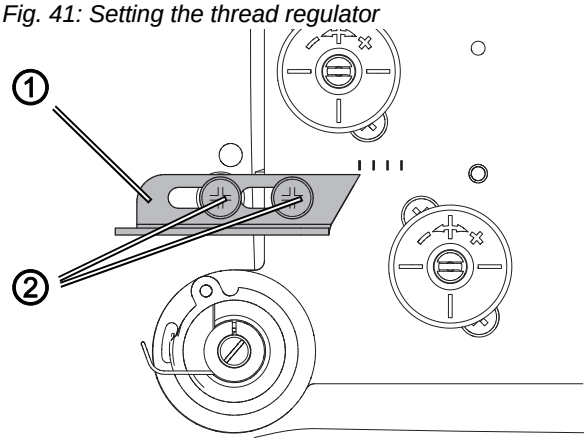
Correct setting

The loop of the needle thread slides at low tension over the thickest point of the hook, without forming loops or snagging.

Cover

- Throat plate slide (📖 *3.3.5 Opening and closing the throat plate slide*, page 13)

Fig. 41: Setting the thread regulator



(1) - Thread regulator *(2) - Screw*

Setting steps

1. Turn the handwheel and observe the cycle of the needle thread around the hook.
2. Loosen the screw (2).
3. Move the thread regulator
   - **To reduce the tension:** Slide it to the left
   - **To increase the tension:** Slide it to the right
4. Tighten the screw (2).

14.2 Setting the thread tensioning spring

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch off the sewing machine before checking and setting the thread tensioning spring.

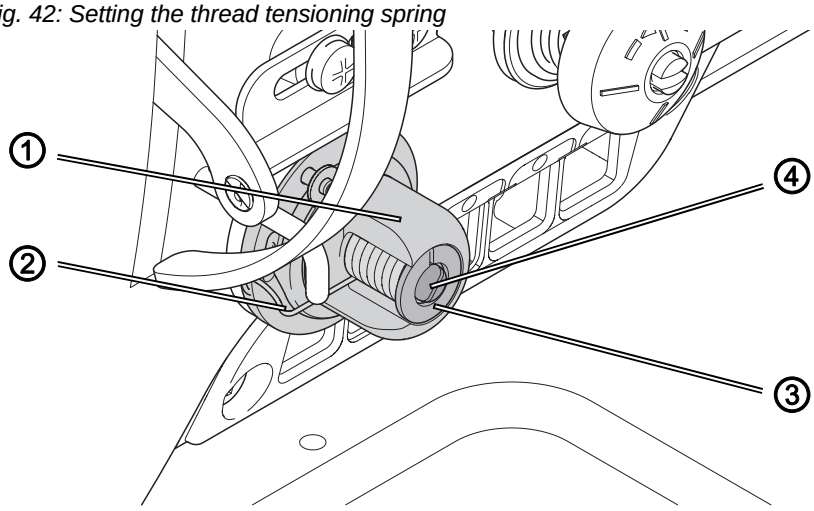
The thread tensioning spring holds the needle thread under tension from the upper position of the thread lever up to the point when the needle eye plunges into the material being sewn.

Correct setting

Basic setting: The thread tensioning spring does not contact the stop until the needle eye has plunged into the material being sewn.

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

Fig. 42: Setting the thread tensioning spring



(1) - Stop collar
(2) - Spring
(3) - Tensioning spring
(4) - Screw

Setting steps

1. Loosen the screw (4).
2. **Setting the spring travel:** Turn the stop collar (1):
   - **Longer spring travel:** Turn anticlockwise:
   - **Shorter spring travel:** Turn clockwise:
3. **Setting the spring tension:** Turn the tension disc (3):
   - **Greater spring tension:** Turn anticlockwise:
   - **Less spring tension:** Turn clockwise:

   Do not twist the stop collar in doing so.
4. Tighten the screw (4).

15 Winder

15.1 Setting the winder

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before setting the winder.

Correct setting

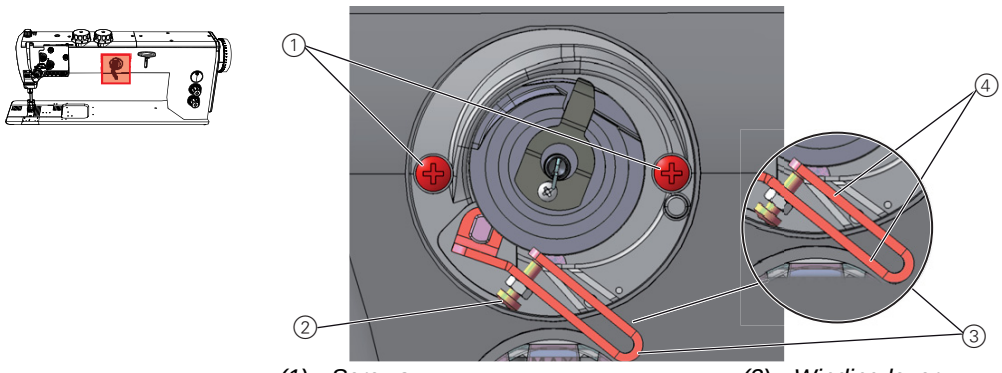
The winder wheel runs smoothly and without axial play.

The winding process will stop automatically when the required filling quantity of the bobbin is reached.

Cover

- Arm cover (*3.3.2 Removing and fitting the arm cover*, page 11)

Fig. 43: Removing the winder and setting the winder filling quantity



(1) - Screws
(2) - Setting screw
(3) - Winding lever
(4) - Arm

Removing the winder

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

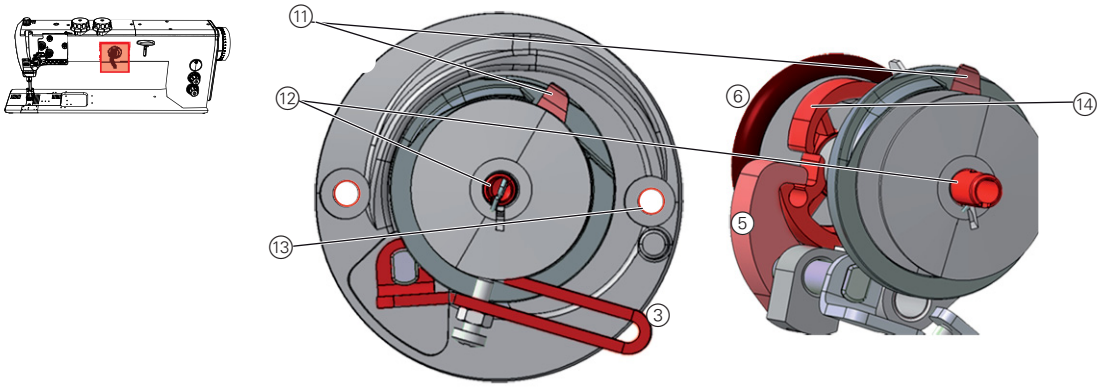
Setting the winder filling quantity

The position of the arms on the setting screw (2) determines the filling quantity:

- **Parallel:** Automatic winding stop at 0.5 mm under the edge of the winder
- **Closer together:** Automatic stop with larger filling quantity
- **Further apart from each other:** Automatic stop with smaller filling quantity

3. Turn the setting screw (2):
   - **For a larger filling quantity:** Turn it counterclockwise
   - **For a smaller filling quantity:** Turn it clockwise
4. Put the completely filled bobbin onto the winder.
5. Fold the winder lever (3) upwards as far as it will go to the thread.

Fig. 44: Setting the winder spacing



(3) - Winding lever
(5) - Clamp
(6) - Winder wheel
(11) - Tear-off knife
(12) - Winder spindle
(13) - Right -hand screw hole
(14) - Locking disc

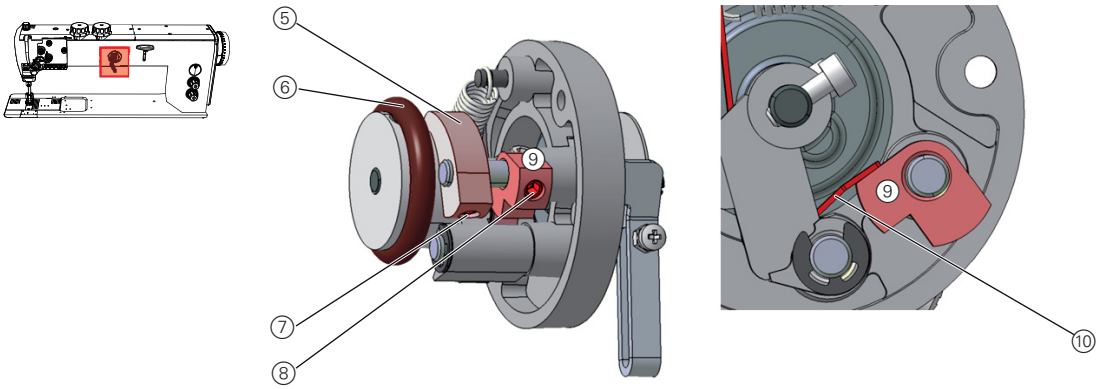
Setting the winder spacing

6. Turn the winder spindle (12) such that the tear-off knife (11) is at the top right and is facing the right-hand screw hole (13).
7. Loosen the setscrew in the clamp (5).
8. Set the winder lever (3) such that the upper arm is above the marking for the XXL hook (15).

↳ The distance between the winder lever and the outer thread on the bobbin is 2 – 3 mm.

9. Set the clamp (5) such that it is resting against the locking disc (14).
10. Set the clamp (5) such that its distance to the winder wheel (6) is 0.5 mm.
11. Tighten the setscrew in the clamp (5).

Fig. 45: Setting the winder run and automatic stop

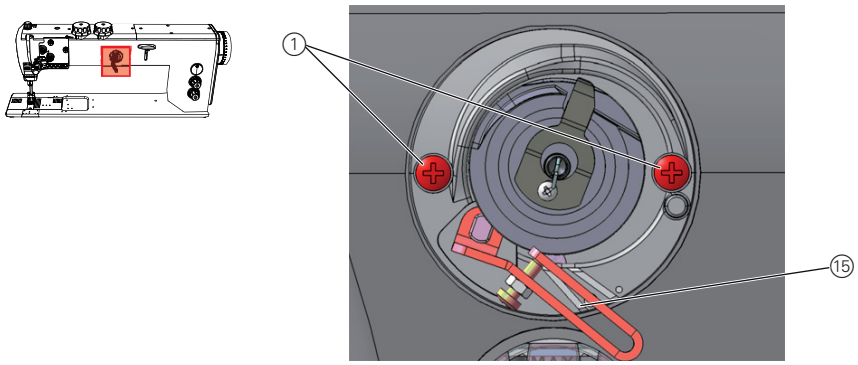


(15) - Clamp
(16) - Winder wheel
(17) - Setscrew
(18) - Setscrew
(19) - Switch cam
(20) - Leaf spring

Setting the winder run

12. Loosen the setscrew (8).
13. Set the switch cam (9) such that it is just contacting the leaf spring (10) when the clamp (5) has engaged in the locking disc.
14. Set the switch cam (9) such that the winder lever (3) has no axial play.
15. Tighten the setscrew (8).

Fig. 46: Installing the winder



(1) - Screws
(15) - Marking for XXL hook

Installing the winder

16. Fit the winder on the machine arm.
17. Tighten the screws (1).

15.2 Setting the hook thread guide

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

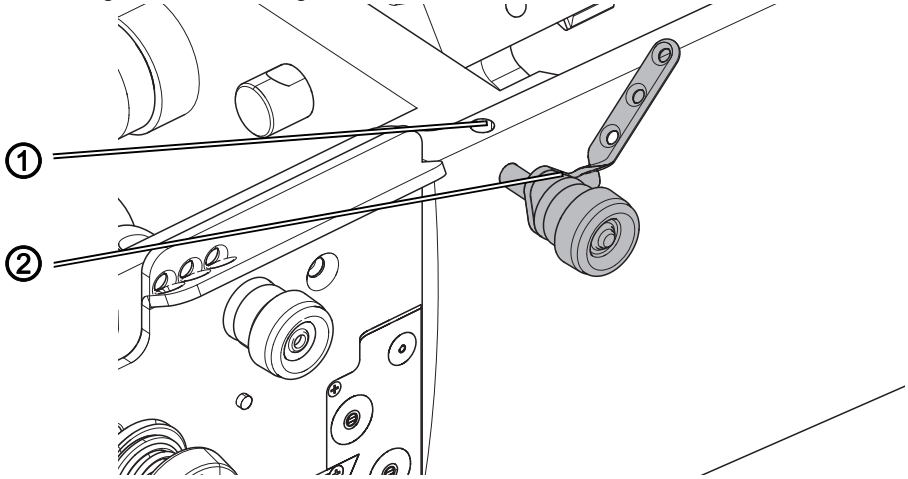
Correct setting

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

Cover

Arm cover (📖 *3.3.2 Removing and fitting the arm cover*, page 11)

Fig. 47: Setting the hook thread guide



(1) - Screw

(2) - Hook thread guide

Setting steps

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

16 Thread cutter

16.1 Setting the height of the thread-pulling knife

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch the sewing machine off before you check and set the height of the thread-pulling knife.

The height of the thread-pulling knife is factory-set such that the distance (5) between the upper edge of the knife carrier (4) and the hook bearing screw-on surface (3) is 10.7±0.05 mm. Fine adjustment is made by means of washers between the knife carrier (4) and the thread-pulling knife (2).

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

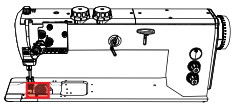
Correct setting

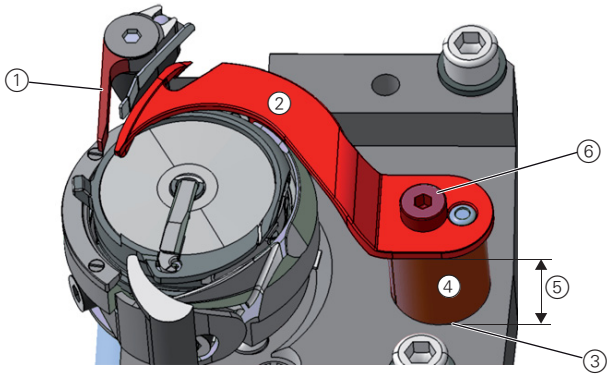
The thread-pulling knife (2) pivots as close as possible above the hook and is at the same height as the counter-blade (1).

Cover

- Throat plate slide (📖 *3.3.5 Opening and closing the throat plate slide*, page 13)

Fig. 48: Setting the height of the thread-pulling knife





(1) - Counter-blade
(2) - Thread-pulling knife
(3) - Hook bearing mounting surface
(4) - Thread-pulling knife
(5) - Distance
(6) - Screw

Setting steps

1. Loosen the screw (6).
2. Remove the thread-pulling knife (2).
3. Place as many washers between the thread-pulling knife (2) and knife carrier (4) that the upper edges of the counter-blade (1) and thread-pulling knife (2) are at the same height.
4. Non-required washers on the top side between the thread-pulling knife (2) and screw (6) should be kept.
5. Screw down the thread-pulling knife (2) using screw (6).

16.2 Setting the cutoff curve

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch off the sewing machine before aligning the thread-pulling knife sideways.

Correct setting

The control cam (4) makes direct contact with the clamping ring (1).

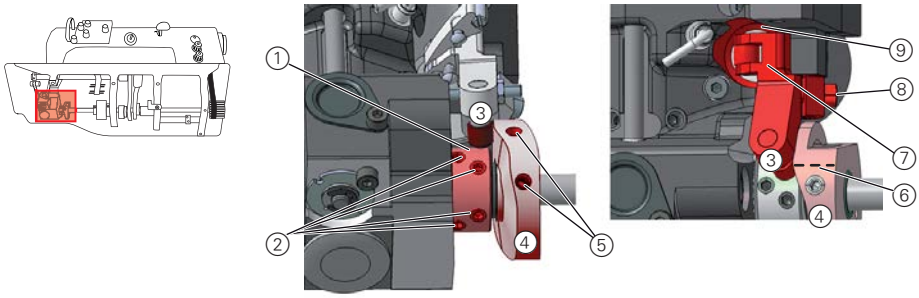
The distance between the widest extent (6) of the control cam (4) and the roller (3) is 0.1 mm at most.

In resting position, the circle mark on the cutting edge of the thread-pulling knife is exactly next to the tip of the counter-blade.

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)
- Throat plate slide (📖 *3.3.5 Opening and closing the throat plate slide*, page 13)

Fig. 49: Aligning the thread-pulling knife sideways - Part 1



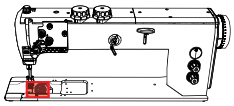
(1) - Clamping ring
(2) - Setscrews
(3) - Roller
(4) - Control cam
(5) - Setscrews
(6) - Widest extent
(7) - Actuating lever
(8) - Clamping ring
(9) - Solenoid

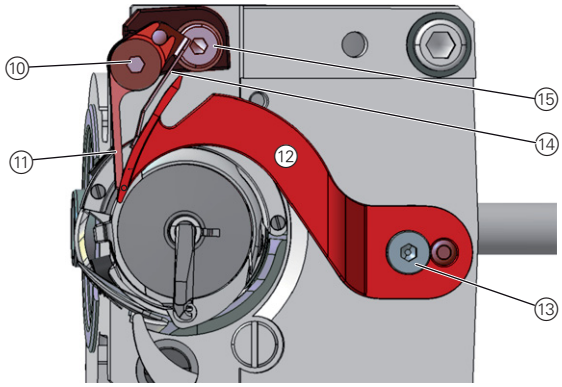
Setting steps

1. Loosen all four setscrews (2) on the clamping ring (1).
2. Push the clamping ring (1) as far as it will go to the left.
3. Tighten all four setscrews (2) on the clamping ring (1).

   Screw the four setscrews (2) tightly in place on the clamping ring (1) before you loosen the setscrews (5). The clamping ring (1) and control cam (4) are both mutually used as a stop and should not be undone at the same time.
4. Loosen the setscrews (5).
5. Press the actuating lever (7) against the solenoid (9).
6. Turn the control cam (4) such that its widest extent (6) is at the top, next to the roller (3).
7. Move the control cam (4) such that the distance between its widest extent (6) and the roller (3) is 0.1 mm at most.
8. Tighten the setscrews (5).
9. Loosen the clamping screw (8) on the actuating lever (7).

Fig. 50: Aligning the thread-pulling knife sideways - Part 2





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

10. Turn the thread-pulling knife (12) such that the circle mark is exactly next to the tip of the counter-blade (11).
11. Tighten the clamping screw (8) on the actuating lever (7) such that the actuating lever (7) has no axial play.
12. Loosen all four setscrews (2) on the clamping ring (1).
13. Push the clamping ring (1) to the right as far as it will go and against the control cam (4).
14. Check the loop stroke position (📖 page 38).
15. Tighten all four setscrews (2) on the clamping ring (1).

16.3 Setting the cutting pressure

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch the sewing machine off before you check and set the counter-blade and the hook thread clamp.

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

Correct setting

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

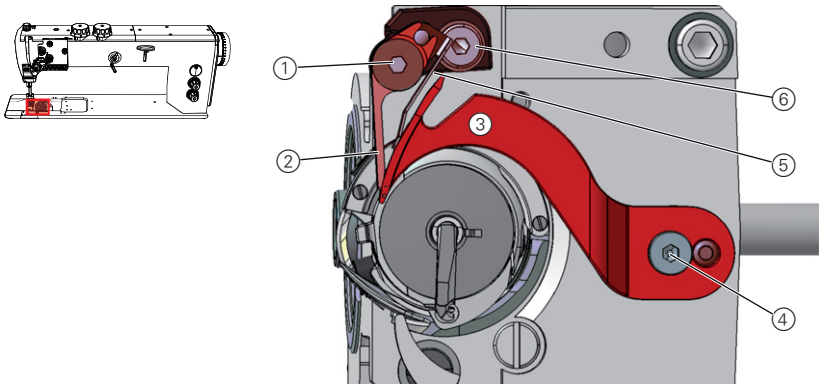
Faults caused by an incorrect setting

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

Cover

- Throat plate slide (📖 *3.3.5 Opening and closing the throat plate slide*, page 13)

Fig. 51: Setting the cutting pressure



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

Setting steps

1. Turn the handwheel until the thread-pulling knife (3) can be swung out by hand.
2. Loosen the screw (6).

3. Turn the clamp until the thread-pulling knife (3) is positioned such that the arrow mark is exactly next to the tip of the counter-blade (2).
4. Tighten the screw (6).
5. Loosen the screw (1).
6. Turn the hook thread clamp (5) such that it rests against the thread-pulling knife (3).
7. Tighten the screw (1).
8. Check the position of the cutters, since the counter-blade can easily become warped when the screw is being tightened.

16.4 Adjusting the needle thread tension

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

Switch off the sewing machine before checking and setting the point in time for cutting.

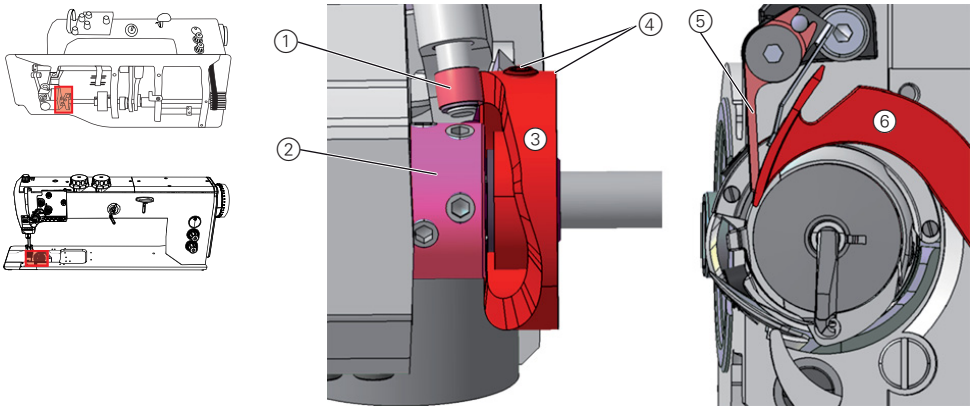
Correct setting

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

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)
- Throat plate slide (📖 *3.3.5 Opening and closing the throat plate slide*, page 13)

Fig. 52: Setting point in time for cutting



(1) - Roller
(2) - Clamping ring
(3) - Control cam
(4) - Setscrews
(5) - Counter-blade
(6) - Thread-pulling knife

Setting steps

1. Loosen the setscrews (4).
2. Turn the handwheel until the thread-pulling knife (6) can be swung out by hand.
3. Pivot the thread-pulling knife (6) as far forward until the circle mark is exactly next to the tip of the counter-blade (5).
4. Set the handwheel position to 60°.
5. Push the control cam (3) to the left as far as it will go and against the clamping ring (2).
6. Turn the control cam (3) such that the roller (1) runs up at the contour of control cam (3) and the widest extent of the control cam is at handwheel position 60° at the highest point.
7. Tighten the setscrews (4).
8. Check setting:
   - Insert the thread into thread-pulling knife (6) and slowly turn the handwheel.
   - Determine the handwheel position at which the thread is cut.
   - If necessary, repeat setting steps 1 – 7 until the cut takes place at 60°.

17 Setting the potentiometer

WARNING

Increased risk of injury
The machine remains switched on when the potentiometer is set.

Carry out all work with extreme caution.

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

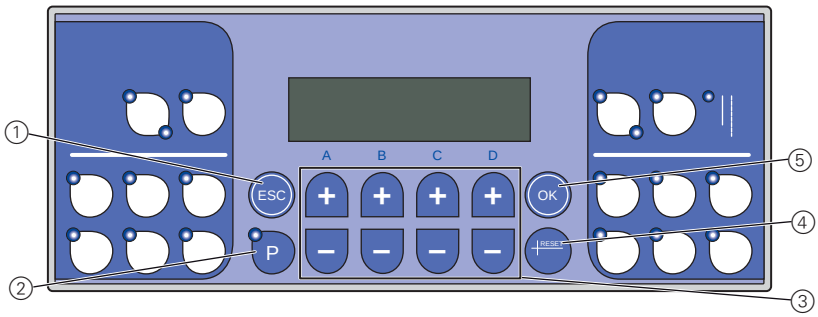
Correct setting

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

Cover

- Arm cover (📖 *3.3.2 Removing and fitting the arm cover*, page 11)

Fig. 53: Control panel



(1) - ESC key
(2) - P key
(3) - Plus/Minus keys
(4) - Reset key
(5) - OK key

Setting steps

1. Switch off the machine at the main switch.
2. Keep the P key (2) and Reset key (3) pressed down simultaneously and switch on the machine at the main power switch in doing so.

↳ The display starts.

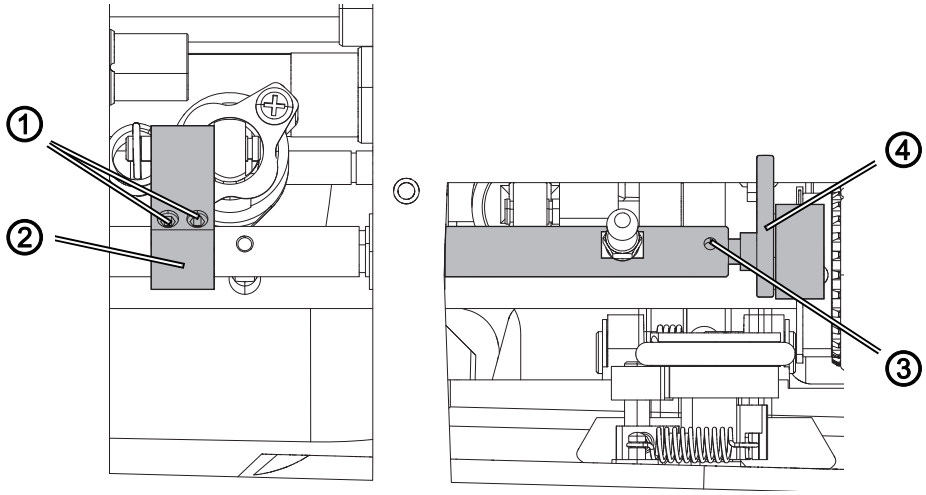
3. Release the P key (2) and the reset key (3).

↳ The display indicates the current level.

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

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

Fig. 54: Setting the potentiometer



(1) - Setscrews
(2) - Connecting clamp for lifting cylinder
(3) - Setscrew for the setting shaft
(4) - Potentiometer

6. Check whether the lifting gear plates are flush.
   If the plates are not flush:
   7. Loosen the setscrews (1).
   8. Set the connecting clamp (2) for the lifting cylinder such that the plates are flush.
   9. Tighten the setscrews (1).
10. Loosen the setscrew (3).
11. Turn the potentiometer axle such that the left display shows *1* in the first instance and the relevant maximum speed next to it.
12. Tighten the setscrew (3) without changing the value shown in the display.
13. Press the ESC key two times.

Important:

14. Switch off the machine at the main switch.
15. Switch on the machine at the main switch.

↳ Switching off and on will save the setting.

18 Setting the safety snap-on coupling

The safety snap-on coupling disengages in the event of the thread jamming and thus prevents the hook from being misadjusted or damaged.

18.1 Attaching the safety snap-on coupling

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before you reattach the safety snap-on coupling after the thread has jammed.

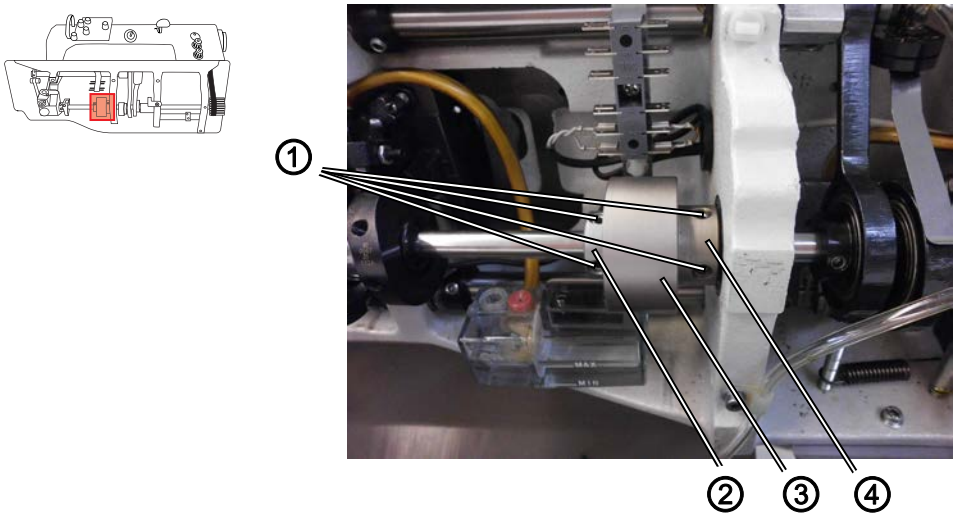
Correct setting

The four setscrews (1) on the two adjusting rings next to the safety snap-on coupling (3) must be parallel to one another. After the coupling has disengaged, they are no longer parallel.

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 55: Attaching the safety snap-on coupling



(1) - Setscrews
(2) - Left-hand adjusting ring
(3) - Safety snap-on coupling
(4) - Right-hand adjusting ring

Setting steps

1. Fix a setscrew (1) of the left adjusting ring (2), with an Allen key, for example.
2. Turn handwheel until the safety snap-on coupling (3) engages.

↳ The setscrews (1) are parallel to each other.

18.2 Setting the torque

WARNING

Risk of injury.

Crushing injuries from moving parts.

Switch off the sewing machine before checking and setting the safety snap-on coupling.

ATTENTION

Machine damage due to incorrect torque

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

Do not change the factory setting and make sure that the torque remains at 8 Nm.

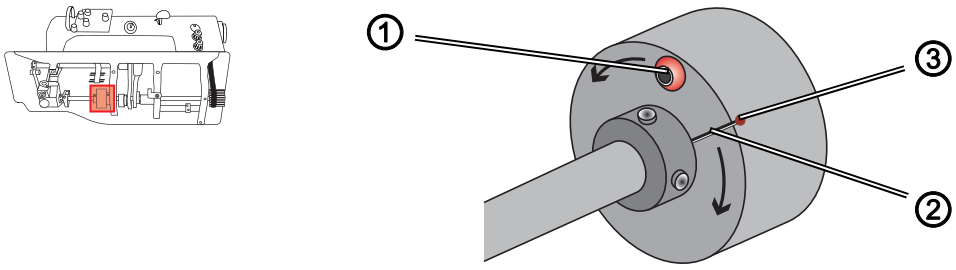
Correct setting

The machine is set at the factory such that the torque is 8 Nm when the marking point (6) is exactly above the setting slot (5) of the disc.

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 56: Setting the torque for the safety snap-on coupling



(1) - Screw
(2) - Setting slot
(3) - Marking point

Restoring the correct torque:

1. Loosen the screw (1).
2. Using the screwdriver, turn the disc on the setting slot (2) such that 8 Nm is reached for the torque:
   - **To increase the force**: Turn in the + direction
   - **To reduce the force**: Turn in the - direction
3. Tighten the screw (1).

19 Maintenance work

19.1 Lubrication

WARNING

Risk of injuries due to contact with oil.

Contact with oil can cause irritation, rashes, allergies or skin injuries.

ALWAYS avoid long-term contact with oil.

ALWAYS thoroughly wash the affected areas if contact with oil occurs.

CAUTION

Risk of environmental damage from oil.

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

Carefully collect waste oil and dispose of the waste oil and oil-contaminated machine parts in the legally prescribed manner.

ATTENTION

Machine damage possible due to incorrect oil.
An incorrect oil type can cause damage to the machine.

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

Required oil:
Only DA 10 or equivalent oil should be used for the machine, which has the following properties:

- Viscosity at 40 °C: 10 mm²/s – ISO VG10
- Flash point: 150 °C

DA 10 can be obtained under the following part number at DA sales offices:

- 9047 000011 – 250 ml
- 9047 000012 – 1 l
- 9047 000013 – 2 l
- 9047 000014 – 5 l

19.1.1 Lubrication of the upper part of the machine

The oil lubrication supplies all bearing points automatically with oil from the reservoir.

ATTENTION

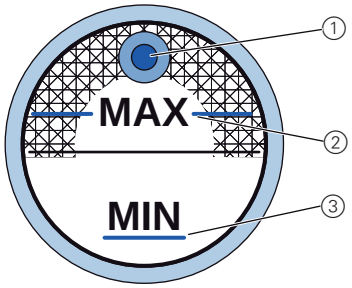
Machine damage due to incorrect oil level
Too little or too much oil can result in damages to the machine.

Check the oil level every day and top up the oil, if necessary.

Correct setting

The oil level is between the minimum level marking and the maximum level marking.

Fig. 57: Lubrication of the upper part of the machine



(1) - Refill opening

(2) - Maximum level mark
(3) - Minimum level mark

Setting steps

1. Check the oil level indicator every day.
2. If the oil level is below the minimum level marking (3):
   Pour oil through the refill opening (1) but no higher than the maximum level marking (2).

19.1.2 Hook lubrication

The hook lubrication supplies the hook with oil from the reservoir.

ATTENTION

Machine damage due to incorrect oil level
Too little or too much oil can result in damages to the machine.
Check the oil level every day and top up the oil, if necessary.

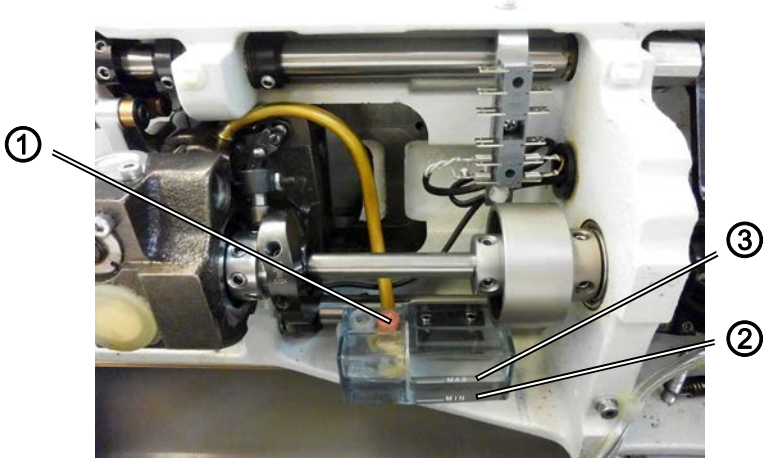
Correct setting

The oil level is between the minimum level marking and the maximum level marking.

Cover

- Tilt the upper section (📖 *3.3.1 Access to the machine bottom section*, page 10)

Fig. 58: Hook lubrication



(1) - Refill opening
(2) - Minimum level mark
(3) - Maximum level mark

Setting steps

1. Check the oil level indicator every day.
2. If the oil level is below the minimum level marking (2):
   Pour oil through the refill opening (1) but no higher than the maximum level marking (3).

19.1.3 Setting the hook lubrication

WARNING

Risk of injury.

Risk of crushing injuries and stab wounds from moving and sharp parts.

When holding the blotting paper, make sure that you do not reach into the hook or underneath the area of the needle and sewing feet.

Switch off the sewing machine before adjusting the hook lubrication.

The approved amount of oil for hook lubrication is a factory specification. Hold a sheet of blotting paper near to the hook when sewing.

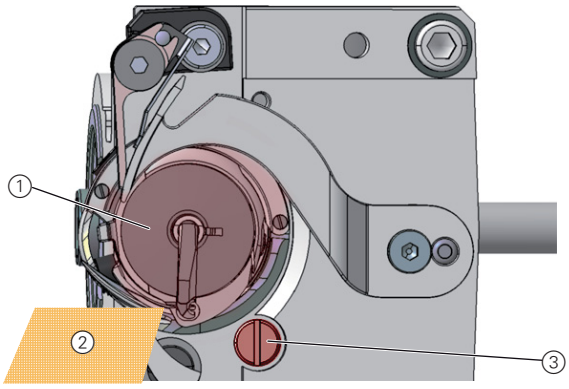
Correct setting

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

Cover

- Throat plate slide (📖 *3.3.5 Opening and closing the throat plate slide*, page 13)

Fig. 59: Setting the hook lubrication



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

Setting steps

1. Turn the screw (3):
   - **Turn counter-clockwise:** more oil is released
   - **Turn clockwise:** less oil is released

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

19.2 Pneumatic system

19.2.1 Setting operating pressure

Correct setting

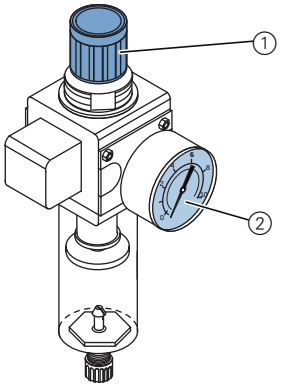
The operating pressure is 6 bar.

Check the pressure on the pressure indicator every day. The pressure cannot deviate by more than 1 bar.

ATTENTION

Machine damage due to incorrect pressure
Incorrect pressure can result in damage to the machine. Make sure that the machine is only used when the operating pressure is set correctly.

Fig. 60: Setting operating pressure



(1) - Rotary handle *(2) - Pressure indica-*

Setting steps

1. Pull the adjustment knob (1) up.
2. Turn the turning handle until the pressure indicator (2) indicates 6 bar:
   - **clockwise**: to increase pressure
   - **counterclockwise**: to reduce pressure
3. Push the adjustment knob (1) down.

19.2.2 Draining the water condensation

Water condensation may accumulate in the water separator of the pressure controller.

Correct setting

Water condensation cannot rise up to the filter element (1).

Check the water level in the water separator on a daily basis.

WARNING

Risk of injury.

Switch off the machine at the main power switch and disconnect it from the pneumatic network before you drain the water from the water separator.

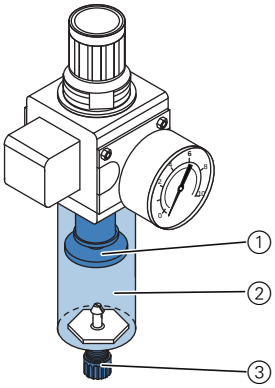
ATTENTION

Machine damage due to too much water

Too much water can result in damage to the machine.

Check the water level every day and drain water, if necessary.

Fig. 61: Draining the water condensation



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

Maintenance steps

1. Place the collection tray under the drain screw (3).
2. Unscrew the drain screw (3) completely.
3. Allow water to drain into the collection tray.
4. Tighten the drain screw (3).

19.2.3 Cleaning the filter element

WARNING

Risk of injury.

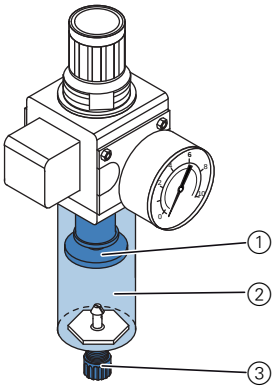
Switch off the machine at the main power switch and disconnect it from the pneumatic network before you clean the filter element.

ATTENTION

Damage to the paintwork due to solvent-based cleaners.
Solvent-based cleaners damage the filter.

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

Fig. 62: Cleaning the filter element



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

Cleaning steps

1. Drain the water condensation (📖 page 72).
2. Unscrew the water separator (2).
3. Unscrew the filter element (1).
4. Blow out the filter element (1) using a compressed air gun.
5. Wash out the filter tray using benzine.
6. Tighten the filter element (1).
7. Tighten the water separator (2).
8. Tighten the drain screw (3).

19.3 Cleaning work

19.3.1 Cleaning the machine

Sewing dust and fiber residues must be removed every 8 hours of operation with a compressed air gun or a brush. If very fluffy material is being sewn the machine must be cleaned more frequently.

WARNING

Risk of injury.

Switch off the machine at the main power switch before cleaning the machine.

Flying particles can get in the eyes, causing injury.

Hold the compressed air gun so that the particles do not fly close to people.

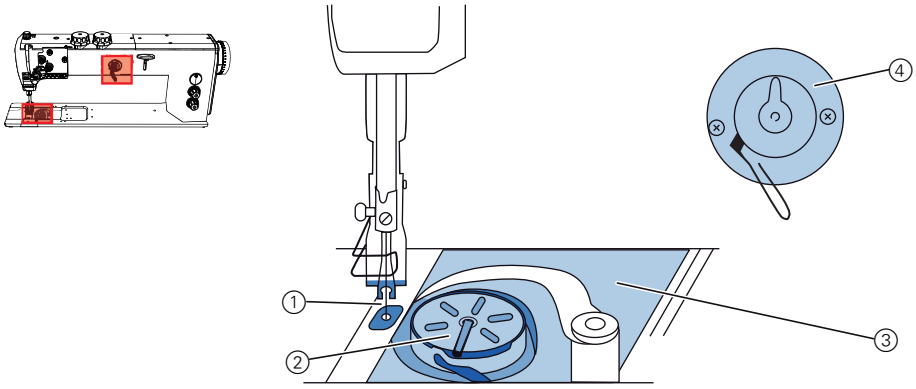
Make sure no particles fly into the oil pan.

ATTENTION

Damage to the paintwork due to solvent-based cleaners.
Solvent-based cleaners will damage paintwork.

Only use solvent-free substances for cleaning.

Fig. 63: Areas requiring special cleaning



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

Areas particularly susceptible to soiling:

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

Cleaning steps

1. Dust and fiber residues must be removed with a compressed air gun or a brush.

19.3.2 Cleaning the motor fan mesh

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

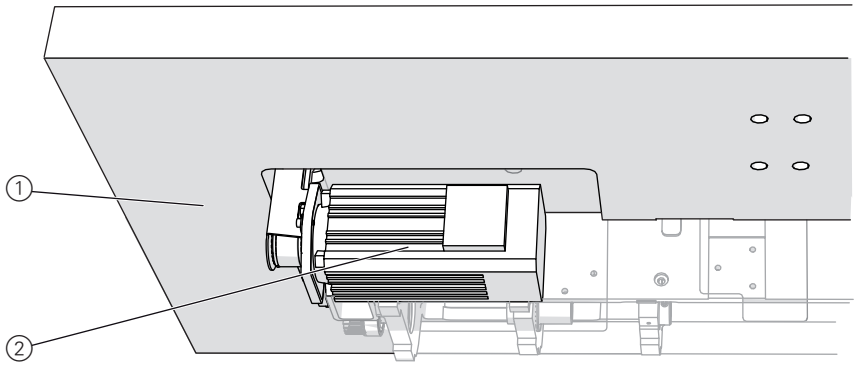
WARNING

Risk of injury
Switch off the machine at the main power switch before cleaning the motor fan mesh.

Flying particles can get in the eyes, causing injury.

Hold the compressed air gun so that the particles do not fly close to people.

Fig. 64: Cleaning the motor fan mesh



(1) - Table plate *(2) - Motor fan sieve*

Cleaning steps

1. Sewing dust and fiber residues must be removed with a compressed air gun.

19.4 Checking the toothed belt

WARNING

Risk of injury
Crushing injuries from moving parts.

Switch off the machine before checking the condition of the toothed belt.

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

A damaged toothed belt must be replaced immediately.

Correct setting

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

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Subject to design changes – Printed in Germany – © Dürkopp Adler AG – Service Instructions – 0791 767650 EN – 01.0 – 10/2015