

650-16

Service instructions



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1 General information

1.1 Scope of this Guide

This guide describes settings and maintenance work on the Custom Machine 650-16 for sewing in sleeves. It applies to all subclasses. Intended use and installation are described in the  *Operating instructions*.

1.2 Declaration of conformity

The machine conforms with the European regulations stated in the declaration of conformity or incorporation.

1.3 Applicable documents

The machine contains built-in components by other manufacturers, e.g. drive motors. The respective manufacturers have performed risk assessment for these supply parts and declared the conformity of their design with pertinent European and national regulations. Intended use of the built-in components is described in the individual third party manufacturers' guides.

1.4 Transport damage

Dürkopp Adler is not liable for breakage and transport damage. Please check the deliver carefully immediately on receipt. Claim against the forwarder for damage. This also applies if the packaging is undamaged.

Leave the machine device and packaging material in the state it was in when you ascertained the damage. This will help you assert your claim against the forwarder.

Report all other complaints without delay after receipt of delivery to Dürkopp Adler.

1.5 Limited liability

All details and information in this guide were compiled taking the current state of the art and applicable standards and regulations into consideration.

The manufacturer accepts no liability in case of damage due to:

- failure to observe this guide
- unintended use
- unauthorized modifications to the machine
- use of untrained staff
- breakage and transport damage
- use of non-approved spare parts

2 Safety instructions

This chapter contains basic instructions for your safety. Read these instructions carefully before you install, program, maintain or operate the machine.

Always follow the provisions in the safety instructions. Failure to observe can lead to severe injury and damage to property.



2.1 General safety precautions

Unauthorized persons must not work on or with the machine. Every person working on or with the machine must read the operating instructions before doing so.

Use the machine in line with the guide only.

The operating instructions must be kept at the machine's place of use.

Observe the general safety and accident protection regulations and legal requirements on occupational safety and environmental protection.

If you use supply parts, always observe the safety instructions and operating guides by the third party manufacturers.

All warning signs on the machine must always be kept in legible state and must not be removed. Missing or damaged signs must be replaced immediately.

In the following situations, always de-energize the machine at the main switch or by unplugging the mains plug:

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

Check the machine during use for signs of visible damage. Interrupt your work if you notice any change in the machine's behavior. Report all changes to your superior. Do not continue to use a damaged machine.

Machines or machine parts that have reached the end of their service life must not be operated. Dispose of these machines in line with environmental legislation.

Only qualified and trained staff are allowed to install the machine. Any person installing the machine must read the installation instructions before doing so.

Only qualified and trained staff are allowed to perform servicing, maintenance and repairs. Any person maintaining or adjusting the machine must

read the service instructions before doing so.

Do not remove or disable safety equipment. If this is unavoidable for repairs or servicing, immediately replace and enable the safety equipment after completing the work.

Work on the machine's electrical equipment must be performed by a qualified electrician.

The connecting cable must have a plug with country-specific approval. Only qualified and trained staff are allowed to connect the plug to the power cable.

Work on live parts and equipment is prohibited. Exceptions are regulated in DIN VDE 0105.

Only use original spare parts by the manufacturer. Incorrect or faulty spare parts can impair safety and damage the machine.

2.2 Marking of safety instructions

Colored bars highlight the safety instructions in the text.

Signal words indicate the severity of the risk:

- **Danger:**
Certainty of serious or fatal injury.
- **Warning:**
Risk of serious or fatal injury.
- **Caution:**
Risk of moderate or minor injury.
- **Attention:**
Risk of damage.

In case of dangers for persons, these symbols indicate the type of danger:



General danger



Danger due to electric shock



Danger due to pointed objects



Danger due to crushing

Examples for marking of safety instructions in the text:

Danger



Type and source of danger

Consequences in case of failure to observe

Measures for preventing the danger

Danger notice where failure to observe will lead to fatal or serious injury.

Warning



Type and source of danger

Consequences in case of failure to observe

Measures for preventing the danger

Danger notice where failure to observe can lead to fatal or serious injury.

Caution



Type and source of danger

Consequences in case of failure to observe

Measures for preventing the danger

Danger notice where failure to observe can lead to moderate or minor injury.

Attention

Type and source of danger

Consequences in case of failure to observe

Measures for preventing the danger

Danger notice where failure to observe can lead to damage to property.

3 Environmental protection notes

3.1 General environmental protection notes

Dispose of machines or machine parts that have reached the end of their service life responsibly, observing the legal requirements on environmental protection.

Use consumables conservatively and dispose of them responsibly, observing the legal requirements on environmental protection.

3.2 Highlighting of environmental protection notes

Green bars mark environmental protection notes in the text.

The following symbols state the type of environmental measure:



Note on responsible disposal

Example for marking of environmental protection notes in the text

Environmental

Type and source of danger



Consequences in case of failure to observe

Measures for preventing the danger

Danger notice where failure to observe can lead to damage to property.

4 Work principles

4.1 Symbols in the text

The following symbols at the margins and in the text show what type of information the text includes.



Correct setting

Indicates the correct setting.



Malfunctions

Indicates malfunctions that can occur in case of incorrect settings.



Cover

States which covers you need to remove to access the components to be adjusted.



Steps for servicing, maintenance and installation



Steps via the software control panel

The individual steps are numbered:

1. 1. First individual step
2. 2. Second individual step
3. 3. Third individual step, etc.
- ...

You must observe the order of the individual steps.

Results of an action



If a change to the machine is made in an individual step, or a new message appears in the display, which is important for you as feedback, this change is indicated by an arrow: ①



Important

Shows you what to pay attention to in the current step.



Information

Provides additional information.



Order

States which work you must perform before or after the setting.

References



This is followed by a reference to another part of the text.

4.2 Order of settings

- Observe order** Always observe the stated order for the individual setting steps.
Always observe all notes marked with a  in the margin on preconditions and follow-up settings.

Attention

Damage to machine possible due to incorrect order.

Always keep to the work order stated in this guide.

4.3 Cable routing

- Bundle cables** Make sure that all cables are routed in the machine that they do not interfere with the function of moving parts.



1. Lay over length cables in tidy loops.
2. Tie up loops with cable ties.



Attach loops to stationary parts where possible. The cables must be fixed in place.

3. Cut off protruding cable ties.

Attention

Machine damage and functional impairment possible due to incorrect cable routing.

Excess cable can impair the function of moving machine parts. This impairs the sewing function and can cause damage.

Route excess cable as described above.

4.4 Bolts in safety covers

There is no need to fully remove bolts in safety cover from their holes. As soon as the bolts have been loosened sufficiently for you to remove the cover, you can remove the cover. The bolts either stay in the housing or in the cover. In the text, these bolts are marked with the supplement (*safety cover*).

4.5 Removing covers

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you remove or replace covers.

For many adjustments you first need to remove the machine covers to access the components.

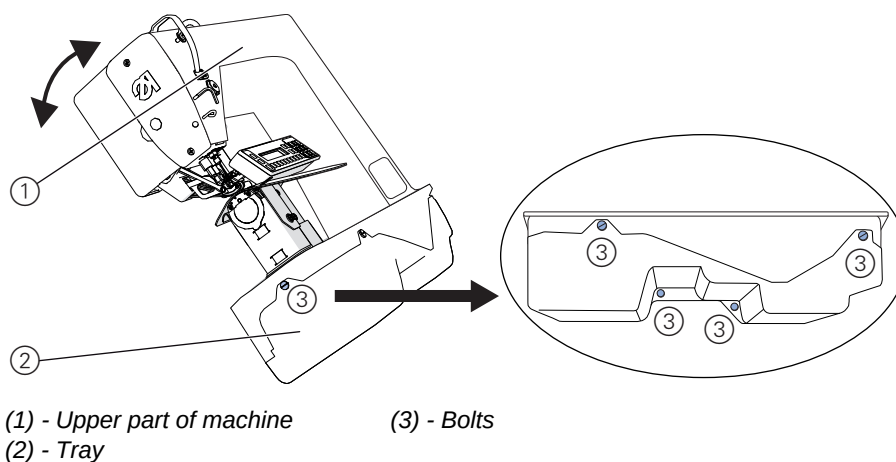
This describes how to remove and replace the covers. The text for the individual settings then simply states which cover you need to remove.

4.5.1 Access to the underside of the machine



To access the components on the underside of the machine, you must tilt the upper part of the machine back.

Figure 1: Tilting the machine upper part back and returning to upright position



Tilting the machine upper part back



1. Tilt the upper part of the machine (1) back to the stop
2. Release all 5 bolts (3) (*Safety cover*  p. 9).
3. Remove the tray (2) in downward direction.

Returning the machine upper part to upright position

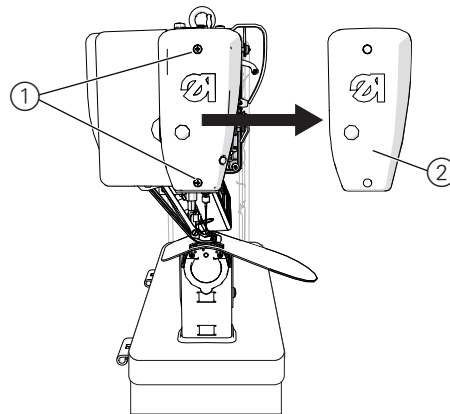


1. Replace the tray (2).
2. Tighten all 5 bolts (3) (*Safety cover*  p. 9).
3. Prop up the machine upper part (1).

4.5.2 Removing and replacing the top cover



Figure 2: Removing and replacing the top cover



(1) - Top cover bolts

(2) - Top cover

Removing the top cover



1. Loosen both top cover bolts (1)
2. Remove the top cover (2)

Replacing the top cover

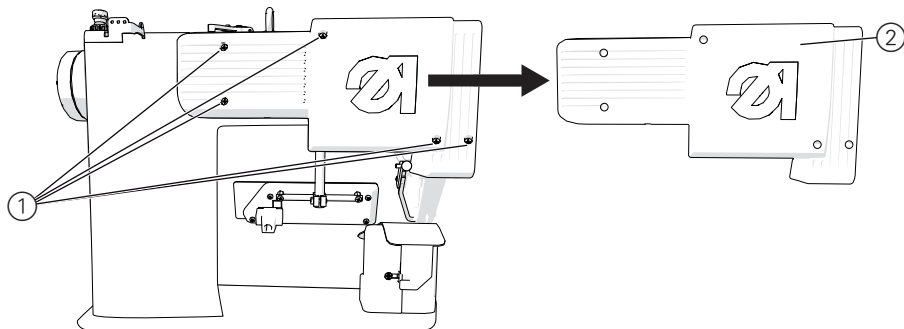


1. Replace the top cover (2)
2. Tighten both top cover bolts (1)

4.5.3 Removing and replacing the rear arm cover



Figure 3: Removing and replacing the rear arm cover



(1) - Bolts

(2) - Rear arm cover

Removing the rear arm cover



1. Release all 5 bolts (1) (*Safety cover*  p. 9) on the rear arm cover.
2. Remove the rear arm cover (2).

Replacing the rear arm cover

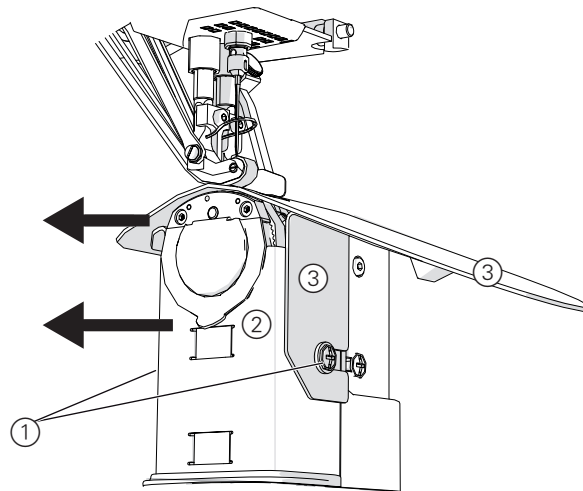


1. Replace the rear arm cover (2).
2. Tighten all 5 bolts (1) (*Safety cover*  p. 9) on the rear arm cover.

4.5.4 Removing and replacing the fabric base and column cover



Figure 4: Removing and replacing the fabric base and column cover



- (1) - Bolts
(2) - Column cover
(3) - Fabric base



Removing the fabric base and column cover

1. Release both bolts (1) (Safety cover  p. 9).
2. Slightly raise the fabric base (3) and pull off to the left.
3. Slightly raise the column cover (2) and pull off to the left.

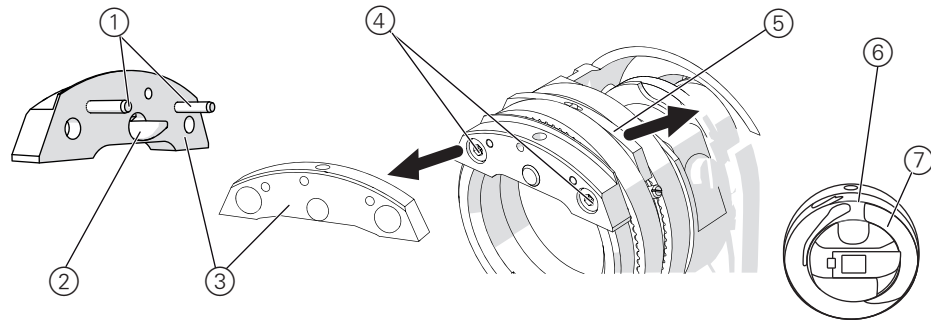


Replacing the fabric base and column cover

1. Replace the column cover (2) from the top left.
2. Replace the fabric base (3) from the top left.
3. Tighten both bolts (1) (Safety cover  p. 9).

4.5.5 Removing and replacing the needle plate

Figure 5: Removing and replacing the needle plate



(1) - Pins
(2) - Centre part holder
(3) - Guide piece
(4) - Bolts

(5) - Needle plate
(6) - Recess
(7) - Hook



Removing the needle plate

1. Remove the fabric base and column cover. (📖 Chap. 4.5.4, p. 12)
2. Loosen the bolts (4)
3. Remove the guide piece (3)
4. Take off the needle plate (5) in upward direction.



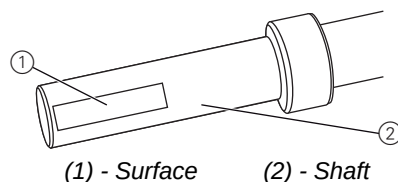
Replacing the needle plate

1. Replace the needle plate (5) from the top.
2. Insert the guide piece (3) so that the pins (1) lock into the needle plate (5) and the central part holder (2) fits into the recess (6) on the hook (7).
3. Secure the guide piece (3) with bolts (4).
4. Replacing the fabric base and column cover. (📖 Chap. 4.5.4, p. 12)

4.6 Surfaces on shafts

Bolt onto the surface

Figure 6: Surfaces on shafts



Some shafts have flat surfaces at the parts where the components are bolted on. This makes the connection more stable and adjustment easier.

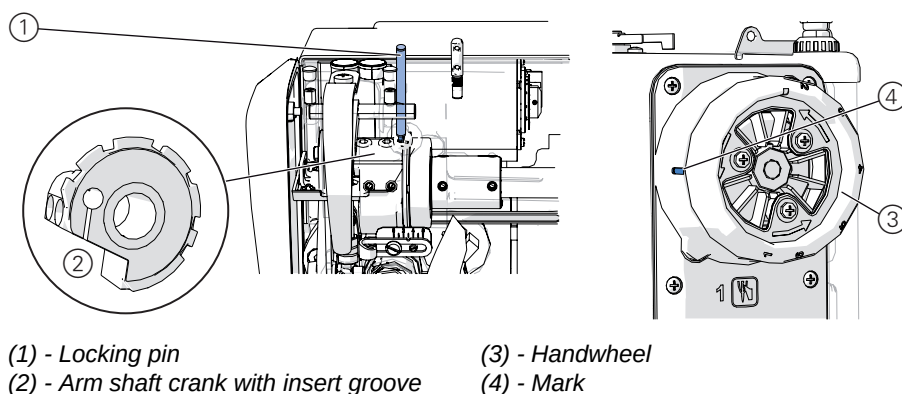


Always take care that the bolts are fully seated on the surface.

4.7 Blocking the sewing machine

For some adjustments, the machine must be blocked. To do so, insert the blocking pin from the accessory kit into a groove on the arm shaft crank to block the arm shaft.

Figure 7: Locking pin and insert groove on the arm shaft crank



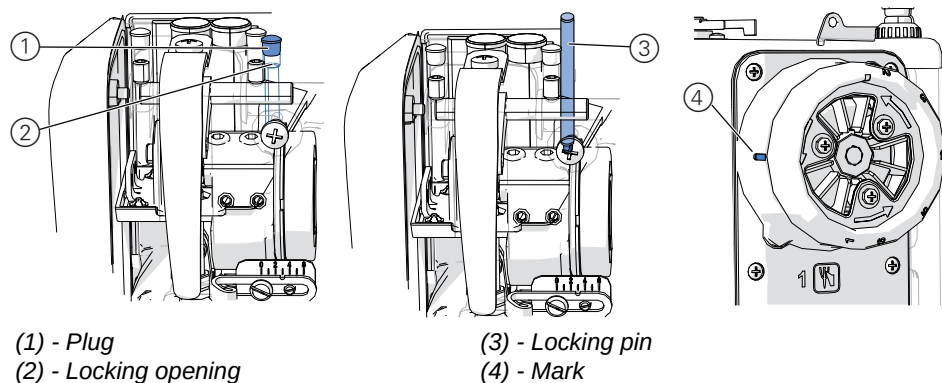
The handwheel (3) is marked with numbers for orientation. If you turn the handwheel to a position where one of the number is next to the mark (4), the corresponding groove on the arm shaft crank (2) is located below the opening for the locking pin (1).

There are 3 locking positions for the following settings:

- **Position 1**
 - Loop stroke position
 - Hook clearance to needle
- **Position 4**
 - Control curve for thread cutter
- **Position 6**
 - Reference position for control unit with needle at top dead centre

Positions 2, 3 and 5 are not used.

Figure 8: Blocking the sewing machine



Blocking the machine

1. Pull the plug (1) out of the locking opening (2)
2. Turn the handwheel until the number for the desired locking position is next to the mark (4).
3. Push the locking pin (3) through the locking opening (2) into the groove on the arm shaft crank.



The numbers on the handwheel provide rough orientation. To hit the groove precisely, you might need to turn the handwheel slightly.



Releasing the lock

1. Remove the locking pin (3)
2. Insert the plug (1) into the locking opening (2)

5 Adjusting the lightbeam sensor disk

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you adjust the lightbeam sensor disk

The lightbeam sensor disk is used as a reference for positioning by the control unit.

It must be adjusted so that the incoming edge of the 180° disk lines up precisely at the height of the lightbeam slot - in rotational direction of the machine - when the needle is at bottom dead centre.



Check the correct setting

Lock the machine in *Position 6* ( p. 15).

↩ The 180° disk points to the front and its lower edge is precisely lined up with the lightbeam slot.



Malfunctions in case of incorrect settings.

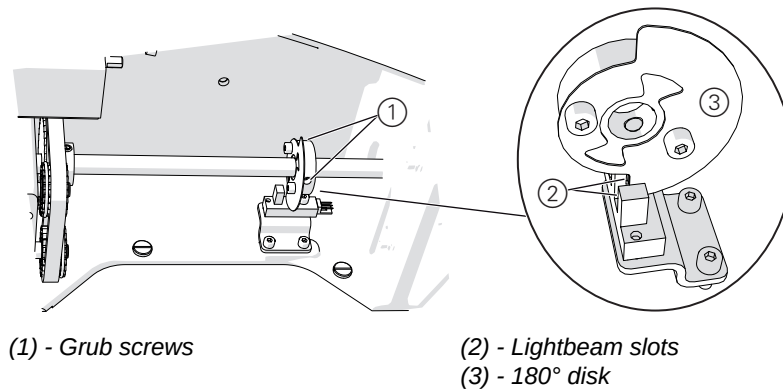
- Damage to fabric, wrinkling
- Incorrect needle position, needle jams in hole
- Incorrect transport times
- Incorrect thread trimming
- Poor sewing results



Cover

- Access to the underside of the machine ( Chap. 4.5.1, p. 10)

Figure 9: Adjusting the lightbeam sensor disk



Adjusting steps

1. Lock the machine in *Position 6* (📖 p. 15).
2. Remove both grub screws (1) on the sensor disk.
3. Turn the sensor disk so that the 180° disk (3) points to the front and its lower edge is precisely lined up with the lightbeam slot (2).



Important: The sensor disk must be aligned laterally so that the 180° disk (3) does not touch the lightbeam housing.

4. Tighten both grub screws (1) without changing the position of the sensor disk.
5. *Release the lock* (📖 p. 15).

6 Adjusting the hook and the needle bar

The following 3 settings must be adjusted to match one another:

- Loop stroke position
- Hook clearance to needle
- Height of needle bar

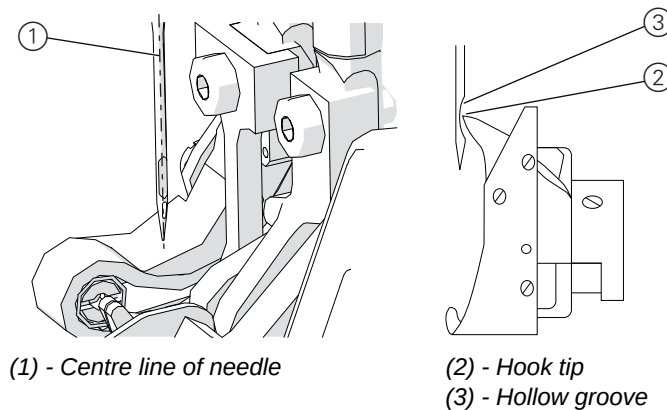


Loop stroke position and loop stroke

The **loop stroke position** is the position of the hook at which the hook tip points precisely at the centre line of the needle.

The **looper stroke** is the length of the stroke from bottom dead centre of the needle bar to the height at which the hook is in looper stroke position. The looper stroke on the 650-16 is 1.8 mm.

Figure 10: Loop stroke position



Check the correct setting

When the machine is locked in looper stroke position (*locking position 1*) (📖 p. 15), the hook tip must point directly at the centre line of the needle. The needle must be aligned so that the surface of the hollow groove is parallel to the running direction of the hook tip. In terms of height, the hook tip must be in the lower third of the hollow groove.



Malfunctions in case of incorrect settings.

- Damage to the hook
- Damage to the needle
- Incorrect sewing
- Thread break



Order

Preconditions:

- Make sure a straight and undamaged needle is fitted (📖 *Operating instructions Chap. 8.7 Replacing the needle*)

6.1 Adjusting the looping stroke position and hook spacing

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

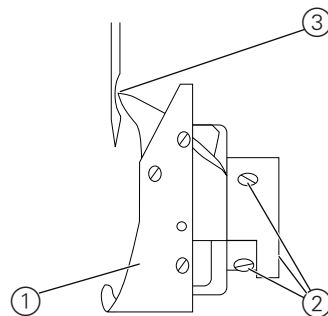
Switch off the sewing machine before adjusting the looping stroke position and hook spacing



Cover

- Remove the fabric base and column cover (📖 Chap. 4.5.4, p. 12)
- Remove the needle plate (📖 Chap. 4.5.5, p. 13)

Figure 11: Adjust the looping stroke position and hook spacing



(1) - Hook

(2) - Fastening screws

(3) - Hook tip



Adjusting steps

1. Lock the machine in *Position 1* (📖 p. 15).
2. Loosen the 3 fastening screws (2) on the hook.
3. Adjust the **looper stroke position**:
Turn the hook (1) so that the hook tip (3) points precisely at the centre line of the needle.
4. Adjust **the hook distance**:
Move the hook laterally so that the distance between the hook tip (3) and the hollow groove on the needle is between 0.05 – 0.1 mm.
5. Tighten the 3 fastening screws (2) on the hook without changing the looper stroke position or the hook clearance.



Order

After changing the looper stroke position or the hook clearance, check the needle bar height (📖 Chap. 6.2 *Adjusting the needle bar height*, p. 20).

6. After finally aligning the looper stroke position, hook clearance and needle bar: *release the lock* (📖 p. 15).

6.2 Adjusting the needle bar height

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

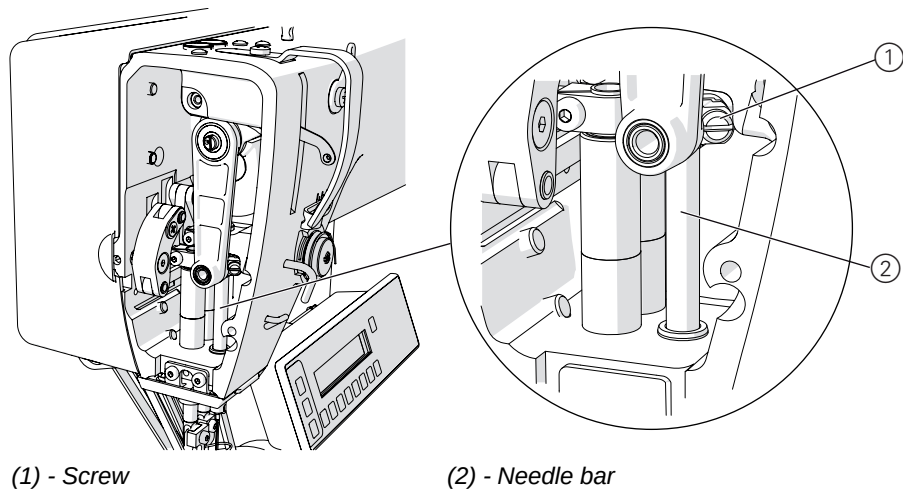
Switch off the sewing machine before you adjust the needle bar height.



Cover

- Top cover (📖 Chap. 4.5.2, p. 11)

Figure 12: Adjusting the needle bar height



(1) - Screw

(2) - Needle bar



Adjusting steps

1. Lock the machine in *Position 1* (📖 p. 15).
2. Release the screw (1).
3. Adjust the needle bar (2) height so that the hook tip is in the lower third of the hollow groove on the needle.



Important: Do not turn the needle bar laterally in doing so.

4. Tighten the screw (1)



Order

After changing the needle bar height, also check the looper stroke position and hook clearance (📖 Chap. 6.1 *Adjusting the looping stroke position and hook spacing*, p. 19).

5. After finally aligning the looper stroke position, hook clearance and needle bar: *release the lock* (📖 p. 15).

7 Adjusting the thread passage on the centre part holder

Warning



Risk of injury

Crushing hazard due to moving parts

Switch the sewing machine off before adjusting the thread passage on the centre part holder



Check the correct setting

The centre part holder must only be inserted up to a certain depth in the hook centre part so that the thread can pass freely through the centre part holder and the recess on the hook.



Malfunctions in case of incorrect settings.

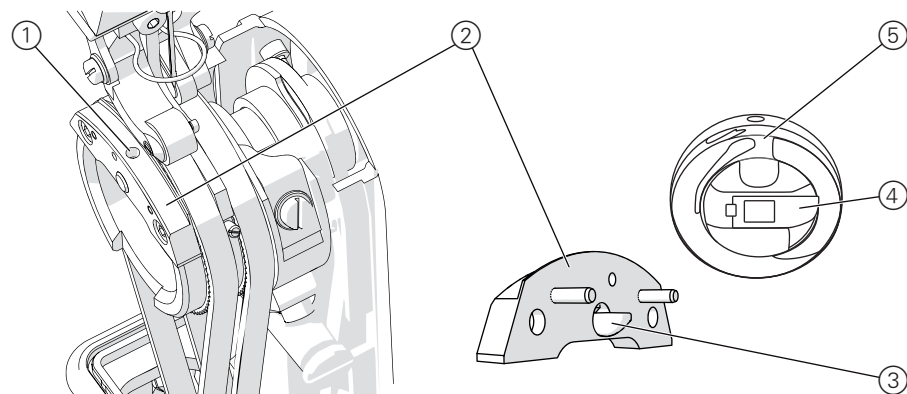
- Thread break
- Loops forming



Cover

- Remove the fabric base and column cover (📖 Chap. 4.5.4, p. 12)

Figure 13: Adjusting the thread passage on the centre part holder



(1) - Grub screw
(2) - Guide piece

(3) - Centre part holder
(4) - Hook
(5) - Recess



Adjusting steps

1. Turn the handwheel and check the thread passage.
2. Loosen the grub screw (1).
3. Push or pull out the centre part holder (3) so that the thread can pass freely between the centre part holder (3) and the hook recess (5) without the gap becoming unnecessarily large.
4. Tighten the grub screw (1).

8 Adjusting the needle plate position

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

Switch off the sewing machine before you adjust the needle plate position.



Check the correct setting

The needle must pass precisely through the hole in the needle plate.



Malfunctions in case of incorrect settings.

- Poor sewing results

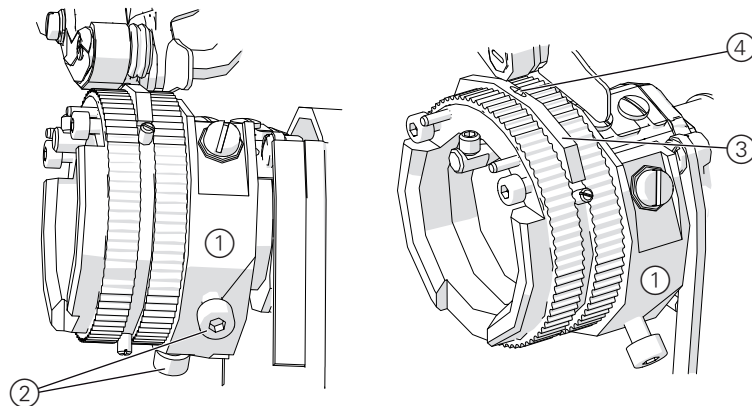
Because the needle plate is anchored on the column head, the position of the needle plate is set by turning and displacing the column head.



Cover

- Remove the fabric base and column cover (📖 Chap. 4.5.4, p. 12)

Figure 14: Adjusting the position of the needle plate



(1) - Column head
(2) - Fastening screws

(3) - Needle plate
(4) - Hole



Adjusting steps

1. Remove the lower transport belts (📖 Chap. 13.1 Replacing the bottom transport belts, p. 39) to be able to turn the column head (1).
2. Loosen both fastening screws (2).
3. Turn down the needle with the handwheel so that you can test that the needle is punching into the hole.
4. Turn the column head (1) and displace laterally so that the needle passes precisely through the hole (4) in the needle plate (3).
5. Tighten both fastenings screws (2) without changing the position of the column head (1).

9 Adjusting the thread trimmer

For the thread trimmer to work correctly, you must set the control curve and the thread puller blade and the counter-blade.

9.1 Adjusting the control curve

The control curve defines the path and timing of the blade movement and syncs the blade movement with the needle movement. For the correct setting, the position of the control curve and the distance between the control curve and the roller must be set.

9.1.1 Position of the control curve

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you adjust the position of the control curve.

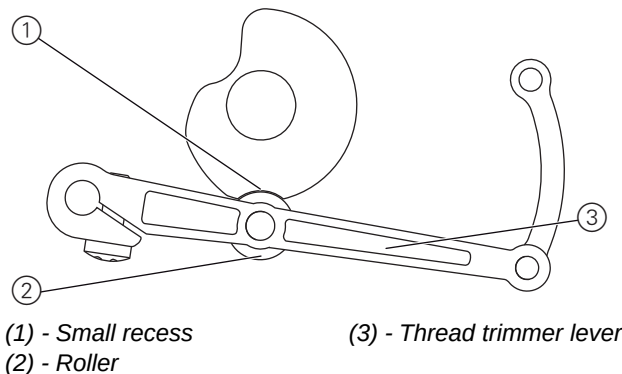


Check the correct setting

Lock the machine in *Position 4* (📖 p. 15).

- 👉 When you push the thread trimmer lever (3) upward, the roller (2) latches precisely in the small recess (1) in the control curve.

Figure 15: Correct position of the control curve



Malfunctions in case of incorrect settings.

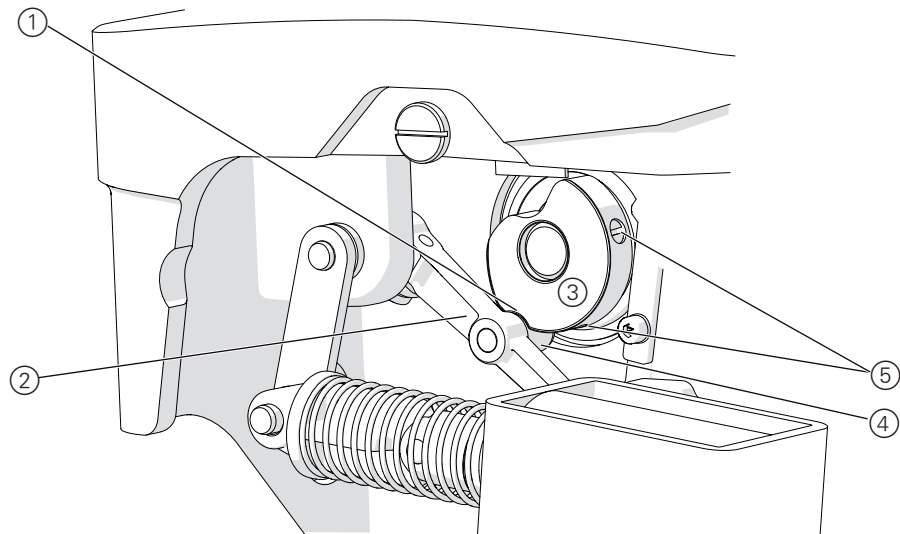
- Damage to the needle
- Threads are not cut



Cover

- Access to the underside of the machine(📖 Chap. 4.5.1, p. 10)

Figure 16: Adjusting the position of the control curve



(1) - Small recess
(2) - Thread trimmer lever
(3) - Control curve

(4) - Roller
(5) - Control curve grub screws



Adjusting steps

1. Lock the machine in *Position 4* (📖 p. 15).
2. Release the control curve grub screws (5).
3. Push the thread trimmer lever (2) upward and turn the control curve (3) so that the roller (4) latches precisely in the small recess (1).
4. Tighten both control curve grub screws (5) without changing the position of the control curve.
5. *Release the lock* (📖 p. 15).

9.1.2 Distance between control curve and roller

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you adjust the position between the control curve and the roller.



Check the correct setting

In idle position of the thread trimmer, the distance between the roller and the control curve at its maximum diameter is 0.2 mm.



Important: The distance must not be measured at one of the recesses. For checking and adjusting, thus turn the control curve so that the recesses do not point towards the roller.



Malfunctions in case of excessive gap

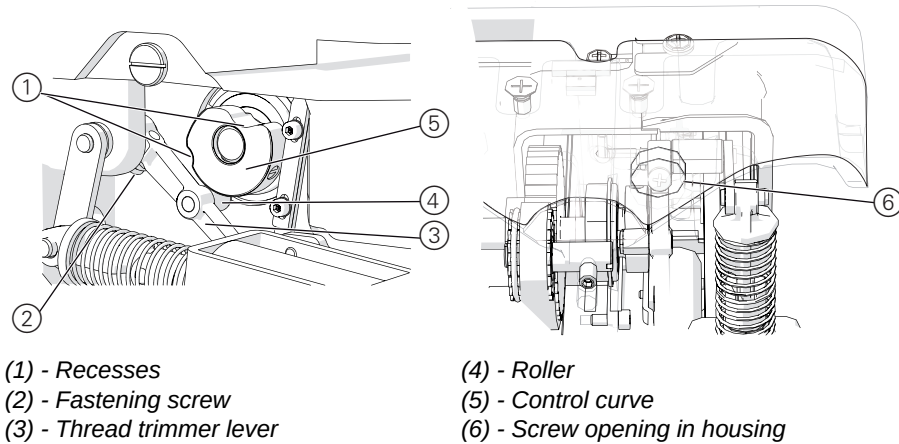
- Thread puller blade and counter-blade can jam



Cover

- Access to the underside of the machine( Chap. 4.5.1, p. 10)

Figure 17: Adjusting the distance between the control curve and the roller



Adjusting steps

1. Turn the handwheel so that the recesses (1) on the control curve (5) do not point towards the roller (4).
2. Loosen the fastening screw (2) on the thread trimmer lever (3) through the screw opening (6) in the housing.
3. Push the thread trimmer lever (3) upward or downward until the distance between the roller (4) and the control curve (5) at its maximum diameter is 0.2 mm.



Important: The anchor of the thread trimmer solenoid must be fully extended.

4. Tighten the fastening screw (2) on the thread trimmer lever (3) through the screw opening (6) in the housing without changing the lever position.

9.2 Replacing and adjusting thread puller blades

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

Switch off the sewing machine before you replace and adjust the position of the thread puller blades.



Check the correct setting

Push the cutouts on the thread puller blade up to the stop against the fastening screws.



Malfunctions in case of incorrect settings.

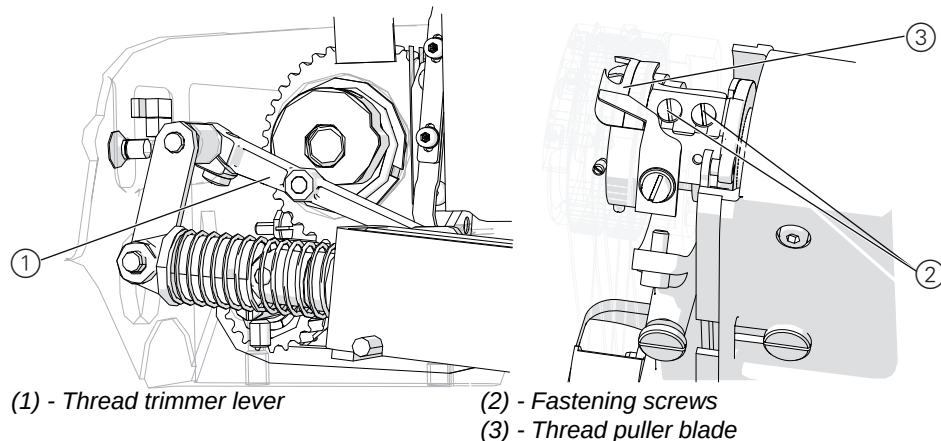
- Threads are not cut
- Cut threads are too long



Cover

- Access to the underside of the machine (📖 Chap. 4.5.1, p. 10)
- Remove the fabric base and column cover (📖 Chap. 4.5.4, p. 12)
- Remove the needle plate (📖 Chap. 4.5.5, p. 13)

Figure 18: Replacing and adjusting thread puller blades



Adjusting steps

1. Push the thread trimmer lever (1) up and turn the handwheel until the thread puller blade (3) swivels forward and the fastening screws (2) are accessible.
2. Loosen the fastening screws (2).
3. Pull the old thread puller blade out to the back and release the thread trimmer lever (1) downward while doing so.
4. Insert a new thread puller blade
5. Push the thread puller blade (3) up to the front stop against the fastening screws (2)
6. Tighten the fastening screws (2).

9.3 Replacing the counter-blade

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

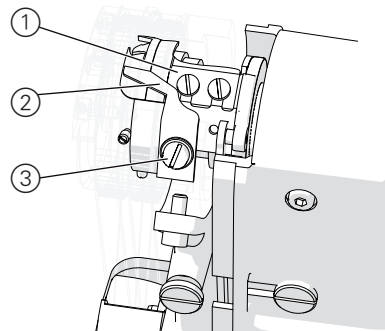
Switch off the sewing machine before you replace the counter-blade.



Cover

- Remove the fabric base and column cover (📖 Chap. 4.5.4, p. 12)

Figure 19: Replacing the counter-blade



- (1) - Thread puller blade
(2) - Counter-blade
(3) - Counter-blade screw



Adjusting steps

1. Fully unscrew the counter-blade screw (3).
2. Pull out the old counter-blade to the front.
3. Insert a new counter-blade
4. Tighten the counter-blade screw (3).

9.4 Adjusting the counter-blade and cutting pressure

Wear on blades in case of excessive pressure

The shape of the thread puller blade and counter-blade causes a scissor effect. The aim is to cut the threads with the lowest possible pressure. Do not set the pressure higher than needed. The higher the pressure is, the more wear there is on the blades.

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

Switch off the sewing machine before you adjust the counter-blade and cutting pressure.



Check the correct setting

2 threads with the largest thickness to be used for sewing are cleanly cut at the same time.



Malfunctions in case of incorrect settings.

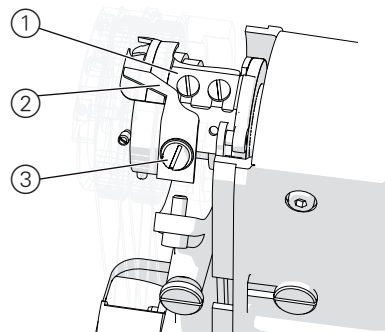
- Increased wear on blades
- Threads are not cut, or not cut correctly



Cover

- Access to the underside of the machine (📖 Chap. 4.5.1, p. 10)
- Remove the fabric base and column cover (📖 Chap. , p. 12)
- Remove the needle plate (📖 Chap. , p. 13)

Figure 20: Adjusting the counter-blade and cutting pressure



- (1) - Thread puller blade
(2) - Counter-blade
(3) - Counter-blade screw



Adjusting steps

1. Push the thread trimmer lever up and turn the handwheel until the thread puller blade (1) swivels forward.
2. Release the (3) counter-blade screw
3. Displace the counter-blade (2) upward or downward so that the blades on the thread-puller (1) and counter-blade (2) touch but do not jam.
4. Tighten the counter-blade screw (3).
5. Perform a cutting test and repeat steps 2 to 4 if needed.

9.5 Adjusting the thread puller blade stroke

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

Switch off the sewing machine before you adjust the thread puller blade stroke.



Check the correct setting

If the thread puller blade is not swiveled out, the tips of the thread puller blade and counter blade are precisely lined up one on top of the other.



Malfunctions in case of incorrect settings.

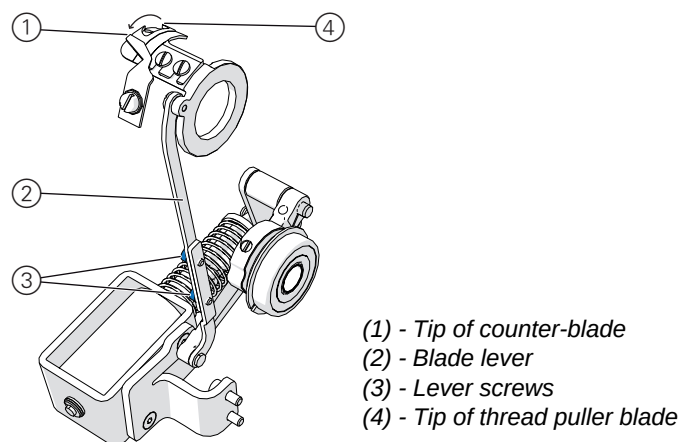
- Threads are not cut
- Cut threads are too long



Cover

- Access to the underside of the machine(📖 Chap. 4.5.1, p. 10)
- Remove the fabric base and column cover(📖 Chap. 4.5.4, p. 12)
- Remove the needle plate(📖 Chap. 4.5.5, p. 13)

Figure 21: Adjusting the thread puller blade stroke



Adjusting steps

1. Release the lever screws (3).
2. Push the blade lever (2) up or down so that the tip of the thread puller blade (4) lines up precisely with the tip of the counter-blade (1).
3. Tighten the lever screws (3).
4. Perform a cutting test and repeat steps 1 to 3 if needed.
 - ↳ If the threads are cut too long: push the thread puller blade further back.
 - ↳ If the threads are not cut, pull the thread puller blade toward the front.

10 Adjusting the central foot

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you adjust the central foot.

In as-delivered state, the clearance between the needle plate (3) and the central foot (2) is exactly 0.6 mm.



Correct setting

The correct height of the central foot depends on the fabric thickness.

- Thick fabric: set the central foot higher
- Thin fabric: set the central foot lower



Malfunctions in case of incorrect settings.

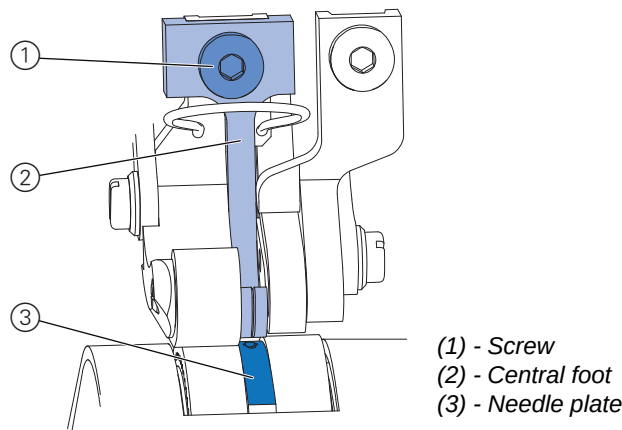
Foot too low with thick fabric:

- Curve support does not work properly
- Additional width is not worked in correctly.
- Crinkled seams
- Unsuitable stitch length

Foot too high with thin fabric:

- Crinkled seams

Figure 22: Adjusting the central foot



Adjusting steps

1. Removing the needle ( *Operating instructions Chap. 8.7*).
2. Release the screw (1).
3. Push the central foot (2) up or down so that the height matches the fabric thickness.
4. Tighten the screw (1)

11 Adjusting the toothed belt

11.1 Toothed belt between top and bottom shaft

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you adjust the toothed belt between the top and bottom shaft.



Correct setting

On the front loop, the toothed belt tension is 60 – 80 Hz.



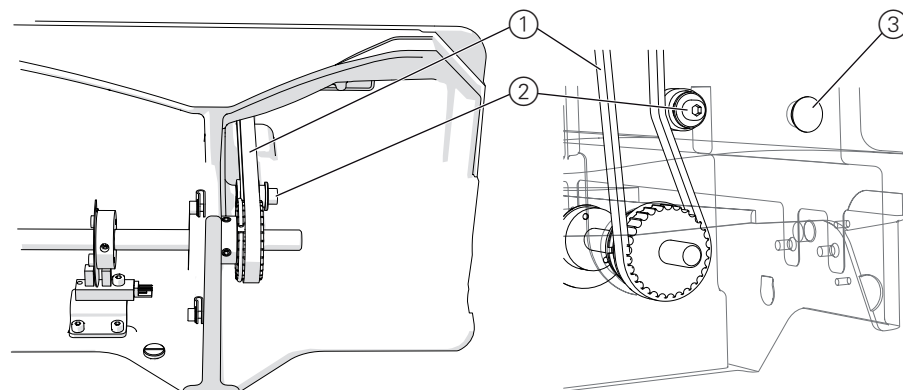
Cover

- Access to the underside of the machine (📖 Chap. 4.5.1, p. 10)

Figure 23: Adjusting the toothed belt between top and bottom shaft

View from underside

View from side



(1) - Toothed belt (front loop)

(2) - Tensioning pulley screw

(3) - Plug in housing opening

Adjusting steps



1. Remove the plug (3)
2. Insert a spanner from the right through the housing opening into the tensioning pulley screw (2).
3. Release the tensioning pulley screw (2).
4. Use the tensioning pulley to change the tension:
 - **Greater tension:** Adjust the pulley to be closer to the belt
 - **Less tension:** Adjust the pulley to be further away from the belt
5. Tighten the tensioning pulley screw (2).



Order

After replacing a toothed belt between the top and bottom shafts, you must complete the following settings:

- Adjusting the lightbeam sensor disk (📖 Chap. 5, p. 16)
- Hook position (📖 Chap. 6.1 *Adjusting the looping stroke position and hook spacing*, p. 19)

11.2 Toothed belt for hook drive

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you adjust the toothed belt for the hook drive.



Correct setting

On the front loop, the toothed belt tension is 55 Hz.

The toothed belt is centred on the top belt pulley and on the large belt pulley.

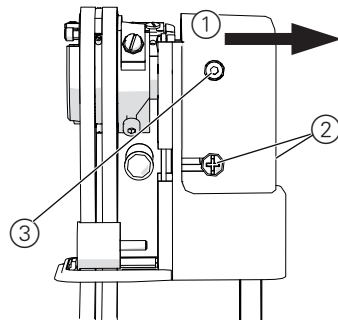
The toothed belt has a clearance of 1 mm each to the securing rings on the lower belt pulleys.



Cover

- Access to the underside of the machine ( Chap. 4.5.1, p. 10)
- Remove the fabric base and column cover ( Chap. , p. 12)

Figure 24: Toothed belt for hook drive - removing the cover



(1) - Cover

(2) - Fastening screws

(3) - Screw (do not release)



Adjusting steps

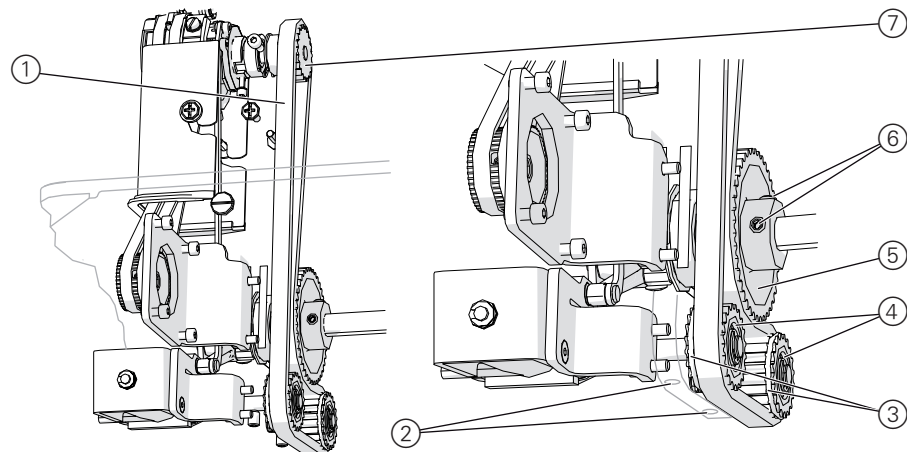
1. Release the fastening screws (2) on the front and back of the hook toothed belt cover (1).



Important: Do not loosen screw (3). If you loosen screw (3), you must readjust the hook ( Chap. 6.1 *Adjusting the looping stroke position and hook spacing*, p. 19).

2. Slightly raise the cover (1) and pull off to the right.

Figure 25: Toothed belt for hook drive - aligning the belt pulleys



- (1) - Toothed belt
(2) - Screw openings
(3) - Securing rings
(4) - Lower belt pulleys

- (5) - Large belt pulley
(6) - Grub screws
(7) - Upper belt pulley



3. Release the axle retainer on the lower belt pulleys (4) through the screw openings (2).
4. Release the grub screw (6) on the large belt pulley (5).
5. Align the belt pulleys:
 - displace the lower belt pulleys (4) with their axles
 - displace the large belt pulley (5) on the shaft
 Displace the 3 pulleys so that:
 - ↳ the toothed belt is centred on the top belt pulley (7) and on the large belt pulley (5).
 - ↳ the toothed belt on the lower belt pulleys (4) has a clearance of 1 mm each to the retaining rings (3).
6. Tighten the grub screw (6) on the large belt pulley (5).
7. Tighten the axle retainer on the lower belt pulleys (4) through the screw openings (2).
8. Replace the cover from the top right.
9. Tighten the fastening screws on the cover front and rear.



Order

After replacing a toothed belt or releasing the large pulley, you must always check the following settings:

- Hook position (📖 Chap. 6.1 *Adjusting the looping stroke position and hook spacing*, p. 19)

12 Replacing and adjusting the top transport belts

12.1 Replacing the top transport belts

Warning



Risk of injury

Crushing hazard due to moving parts

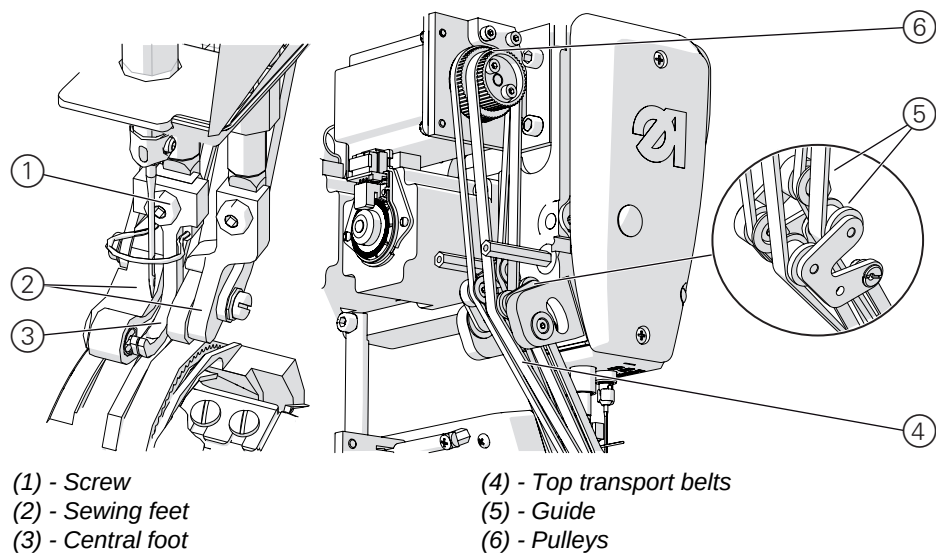
Switch off the sewing machine before you replace the top transport belts.



Cover

- Rear arm cover (Chap. 4.5.3, p. 11)

Figure 26: Remove the top transport belts



Remove the top transport belts

Adjusting steps



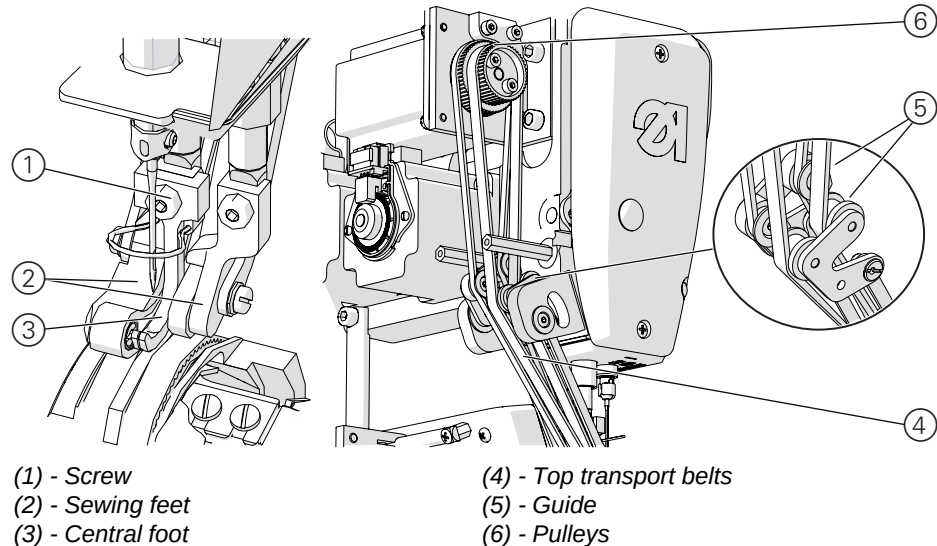
1. Remove the needle (Operating instructions Chap. 8.7).
2. Release the screw (1).
3. Remove the central foot (3).
4. Push the right sewing foot up.
5. Remove the left transport belt from the sewing foot.
6. Take the left transport belt off the pulley (6) and remove from the guide (5).
7. Push the left sewing foot up and the right sewing foot down.
8. Remove the right transport belt from the sewing foot.
9. Take the right transport belt off the pulley (6) and remove from the guide (5).

Fitting the top transport belts



Important: When fitting new transport belts, observe the arrow marks: the arrows must point in direction of rotation.

Figure 27: Fitting the top transport belts



Adjusting steps

1. Push the right sewing foot down and the left sewing foot up.
2. Insert the right transport belt in the right sewing foot.
3. Route the right transport belt through the guide (5).
4. Place the right transport belt on the larger of the two pulleys (6).
5. Turn the transport belt wheel (6) slowly so that the belt lines up.
6. Push the right sewing foot up and the left sewing foot down.
7. Insert the left transport belt in the left sewing foot.
8. Insert the central foot (3) and secure with screw (1).
9. Route the left transport belt through the guide (5).
10. Place the left transport belt on the smaller of the two pulleys (6).
11. Turn the pulley (6) slowly so that the belt lines up.



Order

After replacing the top transport belts you must adjust the central foot ( Chap. 10 *Adjusting the central foot*, p. 31).

12.2 Adjusting the top transport belts

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you adjust the top transport belts.



Check the correct setting

The transport belt tension should be as low as possible without the belts drooping.

The run-off protection must not impair the right transport belts run. The correct distance between the run-off protection and the right transport belt is 0.2 – 0.3 mm.



Checking via software

Test options for the transport belt step motors are in the software's Multitest menu ( Section *Test Step Motor*, p. 67).



Malfunctions in case of incorrect settings.

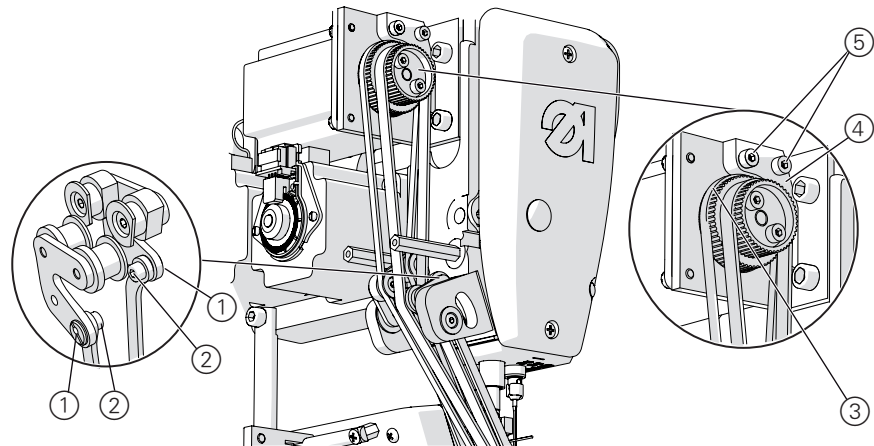
- Irregular stitch length in case of insufficient tension
- Transport problems and wrinkling in case of excessive tension
- Incomplete lowering of the feet
- Increased wear on belts and feet



Cover

- Rear arm cover( Chap. 4.5.3, p. 11)

Figure 28: Adjusting the top transport belts



(1) - Eccentric (was?)
(2) - Fastening screws

(3) - Top right transport belt
(4) - Run-off protection
(5) - Screws



Adjusting steps

Adjusting the tension

1. Loosen the fastening screw (2).
2. Turn the corresponding eccentric was? (1) with a standard screwdriver in order to change the tension.
3. Tighten the fastening screw (2).
4. Repeat steps 1 – 3 for the other transport belt

Setting the distance to the run-off protection

1. Release both screws (5) on the run-off protection (4).
2. Push the run-off protection (4) up or down until the clearance to the top right transport belt (3) is 0.2 – 0.3 mm.
3. Tighten both screws (5) on the run-off protection (4).

13 Replacing and adjusting the bottom transport belts

13.1 Replacing the bottom transport belts

Warning



Risk of injury

Crushing hazard due to moving parts

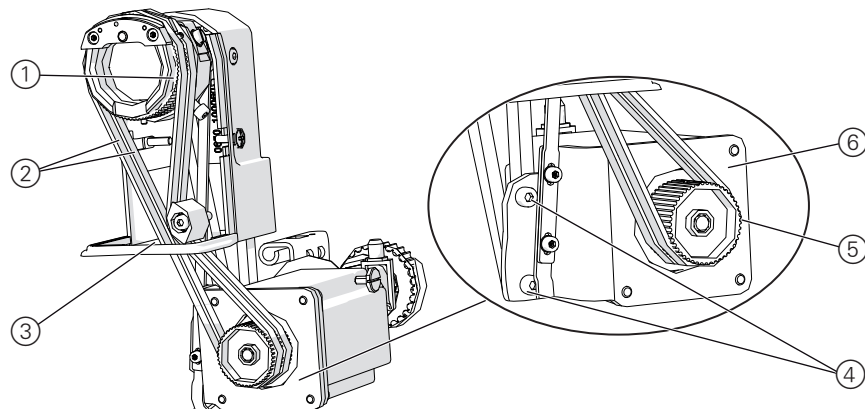
Switch off the sewing machine before you replace the bottom transport belts.



Cover

- Access to the underside of the machine (📖 Chap. 4.5.1, p. 10)
- Remove the fabric base and column cover (📖 Chap. 4.5.4, p. 12)
- Remove the needle plate (📖 Chap. 4.5.5, p. 13)

Figure 29: Removing the bottom transport belts



- (1) - Sprockets
(2) - Bottom transport belts
(3) - Base plate cut-out

- (4) - Fastening screws
(5) - Bottom pulley
(6) - Mounting brackets



Adjusting steps

Removing the bottom transport belts

1. Move the needle up by turning the handwheel.
2. Pull both transport belts (2) off the lower pulley (5).

Tip: Release the fastening screws (4) and push the mount brackets (6) up so that you can remove the belts more easily.



Important: Then re-adjust the position of the mount bracket (6) (📖 Chap. 13.2 *Adjusting the bottom transport belts*, p. 41).

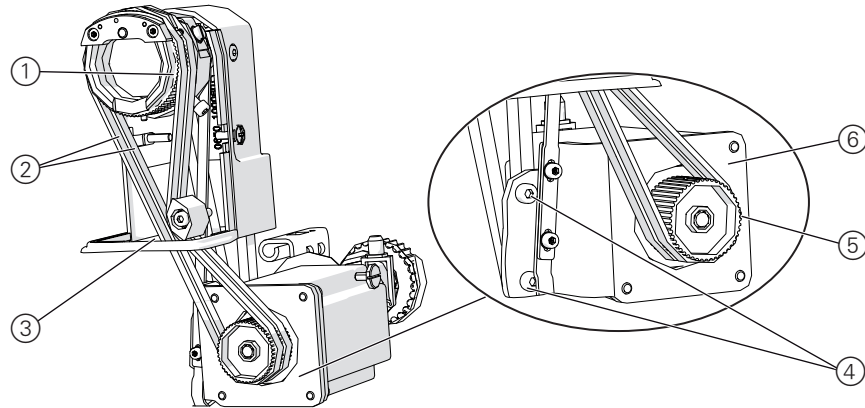
3. Pull the transport belts (2) up through the cut-out in the base plate (3).
4. Pull both transport belts one after another off the sprockets on the needle plate (1).

Fitting new transport belts



Important: When fitting new transport belts, observe the arrow marks: the arrows must point in direction of rotation.

Figure 30: Fitting the lower transport belts



- (1) - Sprockets
- (2) - Bottom transport belts
- (3) - Base plate cut-out

- (4) - Fastening screws
- (5) - Bottom pulley
- (6) - Mounting brackets



Adjusting steps

1. Pull the right transport belt over the right sprocket (1).
2. Route the transport belt down through the base plate cut-out (3).
3. Pull the transport belt over the lower sprocket (5).
4. Repeat steps 1 – 3 for the left transport belt.

13.2 Adjusting the bottom transport belts

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you adjust the bottom transport belts.



Correct setting

The transport belt tension should be as low as possible without the belts drooping.



Malfunctions in case of incorrect settings.

- Irregular stitch length in case of insufficient tension
- Transport problems and wrinkling in case of excessive tension
- Increased wear on belts



Checking via software

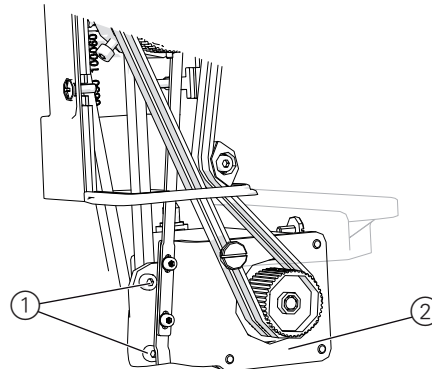
Test options for the transport belt step motors are in the software's Multitest menu ( *Test Step Motor*, p. 67).



Cover

- Access to the underside of the machine ( Chap. 4.5.1, p. 10)
- Remove the fabric base and column cover ( Chap. , p. 12)

Figure 31: Adjusting the bottom transport belts



(1) - Fastening screws

(2) - Mounting brackets



Adjusting steps

1. Loosen the fastening screws (1) on the mounting brackets (2).
2. Move the mounting brackets (2) with the wheels and transport belts up or down:
 - **Increase tension:** push the unit down.
 - **Reduce tension:** push the unit up.
3. Tighten the mounting bracket (2) with the fastening screws (1).

13.3 Replacing sprockets

Warning



Risk of injury

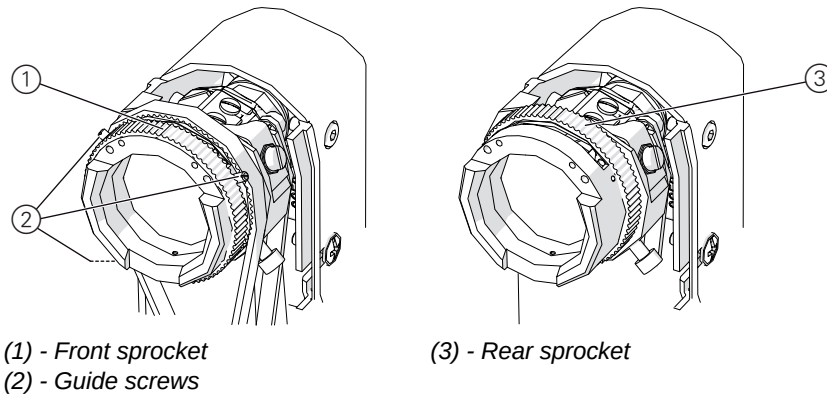
Crushing hazard due to moving parts

Switch off the sewing machine before you replace the sprockets.

Cover

- Access to the underside of the machine (📖 Chap. 4.5.1, p. 10)
- Remove the fabric base and column cover (📖 Chap. 4.5.4, p. 12)
- Remove the needle plate (📖 Chap. 4.5.5, p. 13)

Figure 32: Replacing sprockets



Removing the sprockets

Adjusting steps

1. Remove the bottom transport belts (📖 Chap. 13.1, p. 39).
2. Pull off the front sprocket (1) to the left
3. Release all 3 guide screws (2).
4. Pull off the rear sprocket (3) to the left



Fitting sprockets

Adjusting steps

1. Push on the rear sprocket (3) from the left
2. Tighten all 3 guide screws (2).
3. Push on the front sprocket (1) from the left
4. Fitting the lower transport belts (📖 Chap. 13.1, p. 39)

14 Checking the sewing foot lifting gear

Warning



Risk of injury

Crushing hazard due to moving parts

Switch off the sewing machine before you adjust the sewing foot lifting gear.



Check the correct setting

1. Switch off the machine.
2. Move the sewing feet manually up and down.
↳ The sewing feet must move up and down easily.



Checking and adjusting the sewing foot lifting gear via software

You can adjust the following sewing foot settings via the software:

- Sewing foot lifting ( Section *Submenu Foot*, p. 61)
- Sewing foot calibration ( Section *Subitem Foot Calib*, p. 69)

Test options for the step motors are available in the software's Multitest menu ( Section *Test Step Motor*, p. 67).



Checking for mechanical problems

1. Remove the lifting gear as described below.
2. Check components for defects.
3. Fit the lifting gear as described below.



Malfunctions in case of incorrect settings.

- Curve support does not work properly
- Foot jams



Order

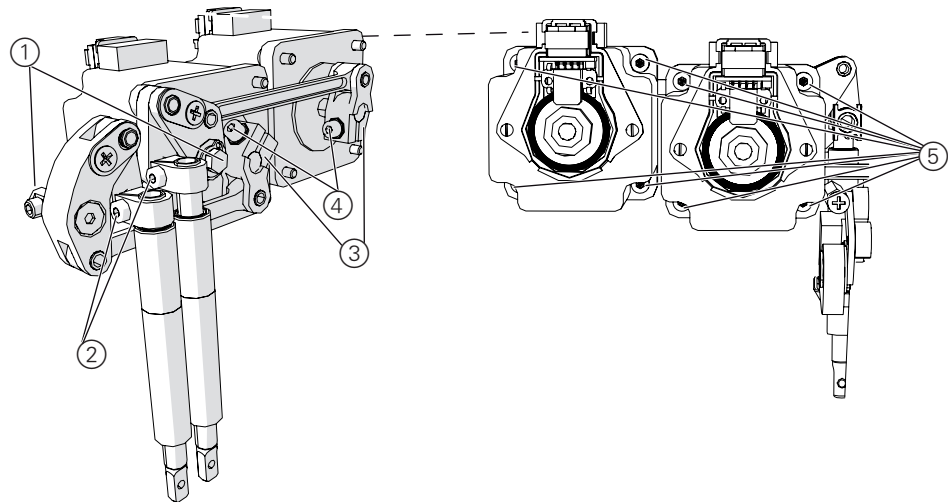
- After checking for mechanical problems, you must recalibrate the sewing feet in the software ( Section *Subitem Foot Calib*, p. 69).



Cover

- Rear arm cover ( Chap. 4.5.3, p. 11)
- Top cover ( Chap. 4.5.2, p. 11)

Figure 33: Removing the lifting gear



- (1) - Bearing points
- (2) - Clamping screws
- (3) - Clamping blocks

- (4) - Screws on clamping blocks
- (5) - Motor fastening screws



Removing the gearbox

Adjusting steps

1. Push the right sewing foot up for free access.
2. Release the screws (4) on the clamping blocks (3). Access is via the machine head.
3. Release the 8 fastening screws (5) on the step motors from the rear.
4. Pull off the step motors towards the rear.
5. Release the clamping screws (2).
6. Remove the electrical thread tensioner to be able to access the right gearbox bearing point. There is no need to unplug the cable on the thread tensioner to do so. (📖 Chap. 15.1 *Fitting and removing the electrical thread tensioner*, p. 46)



Important: When pulling out the thread tensioner, make sure that you do not damage the cable.

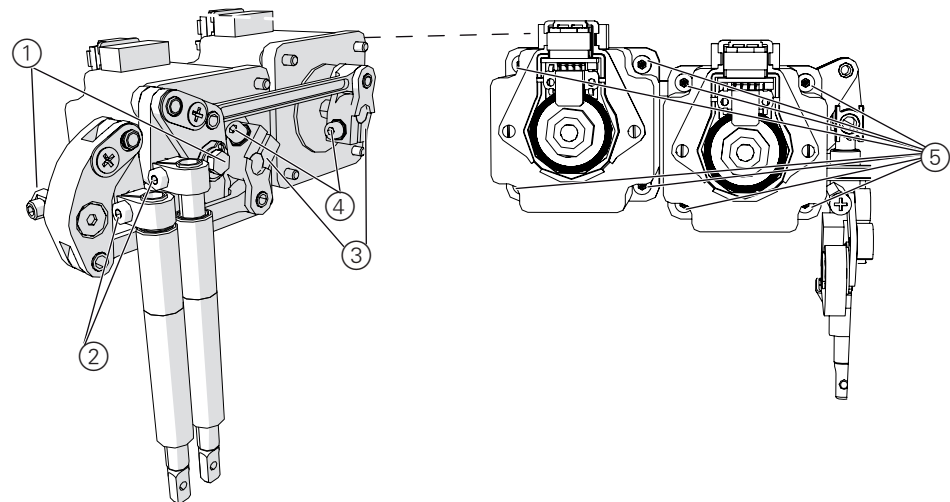
7. Release the bearing points (1).
Access for the left gearbox is via the machine head. Access for the right gearbox is possible via the opening for the removed thread tensioner.
8. Remove the gearbox.



Check the gearbox:

1. Move all joints on the gearbox:
↳ All rotation and bearing points must move freely and must be free of play.

Figure 34: Fitting the sewing foot lifting gear



- (1) - Bearing points
- (2) - Clamping screws
- (3) - Clamping blocks

- (4) - Screws on clamping blocks
- (5) - Motor fastening screws



Installing the gearbox

Adjusting steps

1. Put the gearbox back into position.
2. Tighten the bearing points (1)
Access for the left gearbox is via the machine head. Access for the right gearbox is possible via the opening for the removed thread tensioner.
3. Fitting the electrical thread tensioner

(📖 Chap. 15.1 *Fitting and removing the electrical thread tensioner*, p. 46)



Important: When fitting the thread tensioner, make sure that you do not damage the cable, and that over-length cables are routed tidily.

4. Tighten the clamping screws (2).



Important: The top edge of the clamping block must be flush with the top end of the sewing foot bar.

5. Place the step motor in position.
6. Place the clamping block (3) on the step motor shaft.
7. Secure the step motors from the rear with 8 fastening screws (5).



Important: Before fastening into place, move the gearbox slightly back and forth to ensure that it is not skewed, but still moves freely after securing.

8. Tighten the clamping blocks (3) with the screws (4). Access is via the machine head.



Order

After mechanical work on the sewing foot lifting gear, always calibrate the sewing feet with the software (📖 *Subitem Foot Calib*, p. 69).

15 Electrical thread tensioner

15.1 Fitting and removing the electrical thread tensioner

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

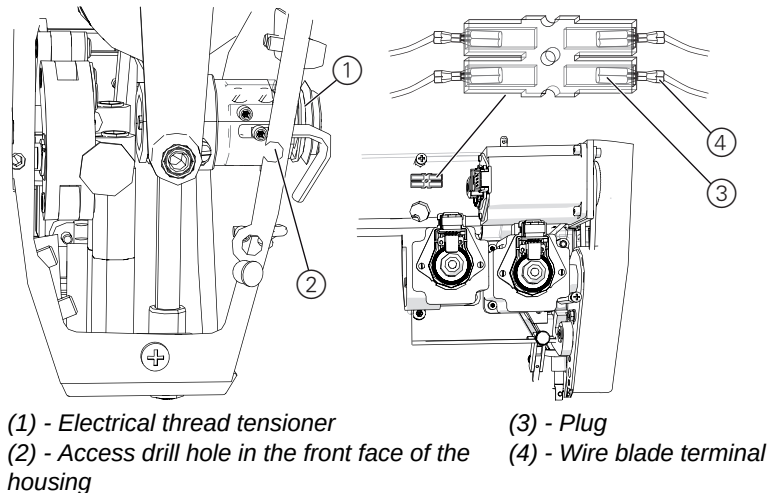
Switch the sewing machine off before removing and fitting the electrical thread tensioner



Cover

- Top cover (📖 Chap. 4.5.2, p. 11)
- Rear arm cover (📖 Chap. 4.5.3, p. 11)

Figure 35: Removing the electrical thread tensioner



Removing the thread tensioner

1. Release the grub screw through the access drill hole (2).
2. Pull out the electrical thread tensioner (1) approx. 1 cm and rotate anti-clockwise so that the cables are pointing down and can be pulled out through the cable passageway.



Important: Pull out the thread tensioner carefully to ensure that you do not damage the cable.

3. Pull out the electrical thread tensioner (1) as far as the cable length allows you to do so.

You can now perform the following settings:

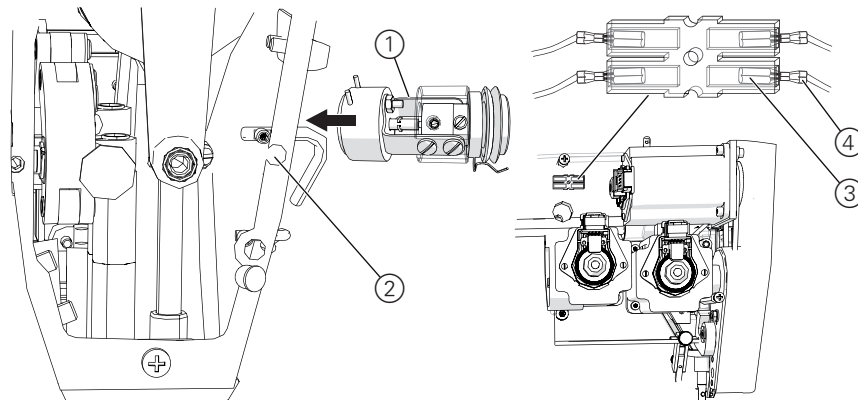
- Checking the lifting gear (📖 Chap. 14, p. 43)
- Replacing the thread tensioning spring (📖 Chap. 15.2, p. 48)
- Adjusting the spring force (📖 Chap. 15.3, p. 50)

To fit a new thread tensioner, you must pull out the thread tensioner completely:

4. Pull out the blade terminals (4) from the transparent plugs (3) on the rear above the step motors.
5. Carefully pull out the cable to the front.

Only when fitting a new thread tensioner

Figure 36: Fitting the electrical thread tensioner



(1) - Thread tensioner

(2) - Access drill hole in the front face of the housing

(3) - Plug

(4) - Wire blade terminal



Adjusting steps

Fitting the thread tensioner

1. Pull the cable on the thread tensioner through the opening in the machine arm and route back to the transparent plug (3).
2. Insert the thread tensioner (1).
3. Plus the blade terminals (4) into the transparent plug (3).
4. Make sure that all over-length cables are routed in loops so they do not interfere with the function of moving machine parts.
5. Tie up cable loops with cable ties.
6. Tighten the grub screw through the access drill hole (2).



Thread tension factory preset



New thread tensioner as a spare part

If you purchase a new thread tensioner as a Dürkopp Adler genuine spare part, it is pre-calibrated. The adjusting screw for thread tension is locked.

You only need to enter the values specified on the label for calibration points 2 and 1 in the software.

( Section *Subitem Thread Calib*, p. 69)

Cutting tension



Adjusting the tension for thread trimming in the software

The thread tension for thread trimming is set in the software ( Section *Submenu Thread Trim*, p. 60).

15.2 Replacing the thread tensioning spring

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

Switch off the sewing machine before you replace the thread tensioner spring.

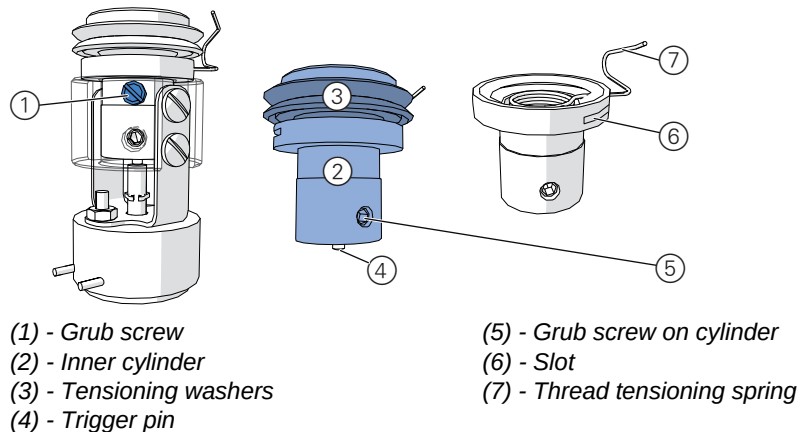
The thread tensioner spring needs to keep the needle thread tensioned until the tip of the needle penetrates the fabric.



Cover

- Top cover (Chap. 4.5.2, p. 11)

Figure 37: Removing the thread tensioning spring



Removing the spring

Adjusting steps



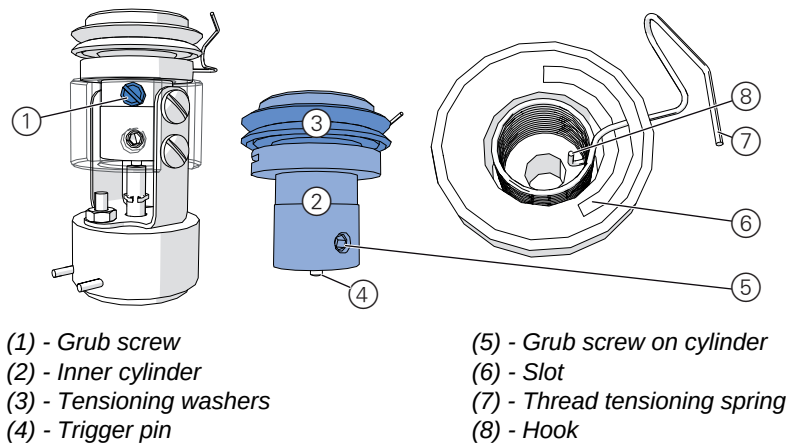
1. Removing the thread tensioner (Chap. 15.1, p. 46).
2. Loosen the grub screw (1).
3. Pull out the entire inner cylinder (2).



Important: Make sure you do not lose the trigger pin (4).

4. Release the grub screw (5) on the cylinder.
5. Remove the tensioning bolt and tensioning washers (3).
6. Remove the thread tensioning spring (7) from the cylinder. To do so, pull out the spring thread from the inside with a screwdriver.
7. Pull the open end of the spring through the slot (6).

Figure 38: Fitting a thread tensioning spring



Installing the spring

Adjusting steps



1. Pull the loose end of the thread tensioning spring (7) through the slot (6).
2. Insert the thread tensioning spring (7) into the cylinder.
3. Insert the tensioning bolt and tensioning washers (3) into the cylinder.



Important: There is a groove on the bottom of the tensioning bolt. This must be pushed onto the hook (8) on the spring.

4. Tighten the grub screw on the cylinder (5).
5. Push the inner cylinder (2) into the housing on the thread tensioner.



Important: The trigger pin (4) must be at the bottom of the cylinder.

6. Tighten the grub screw (1).
7. Fitting the thread tensioner (📖 Chap. 15.1, p. 46).

Tensioning washer order



Important: Leave the tensioner washers on the tensioner bolt.

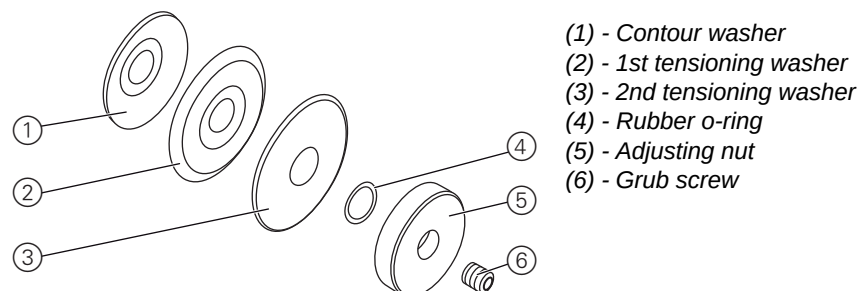


If the tensioner washers are removed, you must recalibrate the thread tension in the software (📖 Section *Subitem Thread Calib*, p. 69).

If the tensioning washers are removed from the tensioning bolt, replace the elements in the following order:

Tensioning washers

Figure 39: Tensioning washer order



15.3 Adjusting the spring force

Warning



Risk of injury

Crushing hazard and puncturing injuries due to moving and sharp parts

Switch off the sewing machine before you adjust the spring force.



Check the correct setting

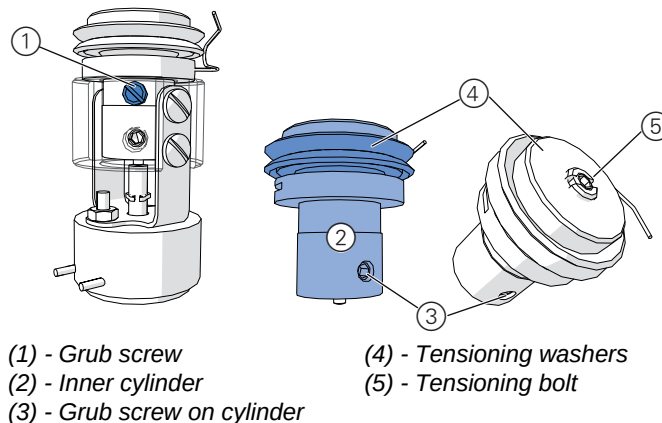
The spring force must be between 20 and 50 cN (1 cN = 1 g). The precise setting depends on the fabric and the thread thickness.



Cover

- Top cover (📖 Chap. 4.5.2, p. 11)

Figure 40: Adjusting the spring force



Adjusting steps

1. Removing the electrical thread tensioner (📖 Chap. 15.1, p. 46)
2. Release the slotted screw (1).
3. Pull the inner cylinder (2) out of the thread tensioner.
4. Loosen the grub screw on the cylinder (3).
5. Twist the tensioning bolt (5) and tensioning washers (4).
 - **Greater tension:** Turn clockwise
 - **Less tension:** Turn anticlockwise
6. Tighten the grub screw on the cylinder (3).
7. Insert the inner cylinder (2) into the thread tensioner.
8. Tighten the grub screw (1).
9. Fitting the electrical thread tensioner (📖 Chap. 15.1, p. 46).

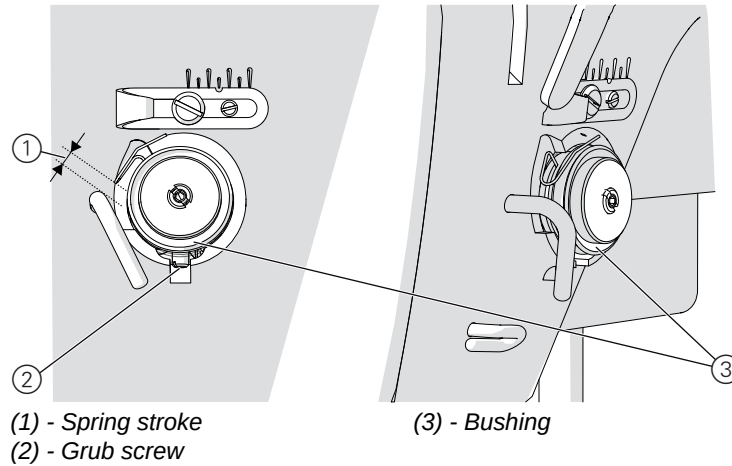
15.4 Adjusting the spring stroke



Check the correct setting

The recommended spring stroke length (1) is 6.5 mm. The precise setting depends on the fabric and the thread thickness.

Figure 41: Adjusting the spring stroke on the thread tensioner



Adjusting steps

1. Loosen the grub screw (2).
2. Turn the complete bushing (3) to achieve the desired spring stroke:
 - **Longer spring stroke:** Turn clockwise
 - **Shorter spring stroke:** Turn anticlockwise
3. Tighten the grub screw (2).

16 Adjusting the thread regulator

The thread regulator decides what needle thread length is fed around the hook. The required thread length depends on the thickness of the fabric and thread and the stitch length.

Greater thread length for

- thick fabric
- thick thread
- long stitches

Lesser thread length for

- thin fabric
- thin thread
- short stitches



Check the correct setting

Remove the fabric base and column cover (📖 Chap. 4.5.4, p. 12) and observe the thread running around the hook:

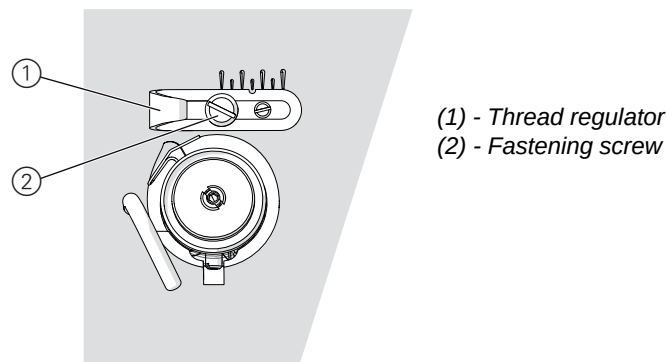
- 👉 The needle thread loop runs without surplus and without jumping around the largest hook diameter.



Malfunctions in case of incorrect settings.

- Poor sewing results

Figure 42: Adjusting the thread regulator



Adjusting steps

1. Turn the handwheel and monitor the thread running around the hook.
2. Loosen the fastening screw (2).
3. Displace the thread regulator (1).
 - **Larger thread length:** Push regulator to left
 - **Shorter thread length:** Push regulator to right
4. Tighten the fastening screw (2).

17 Adjusting the bobbin winder

17.1 Setting the fill volume



Correct setting

1. Winding onto an empty bobbin ( *Operating instructions Chap. 8.4*).
 ↳ Winding stops automatically when the bobbin is filled to approx. 0.5 mm below the bobbin edge.

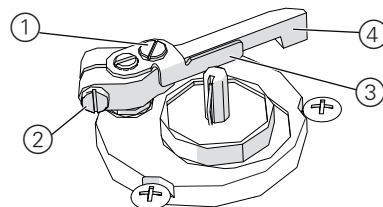
Attention

Damage to machine possible due to winding without sewing.

When running without thread, the sewing feet and bobbin case in the hook can be damaged.

Enable winding mode ( *Operating instructions Chap. 9.4 Manual Mode*) and remove the bobbin case from the hook to perform test winding.

Figure 43: Setting the bobbin winder fill volume



(1) - Adjusting screw
(2) - Clamping screw

(3) - Thread guide plate
(4) - Actuating lever



Adjusting steps

Rough setting

1. Release the clamping screw (2).
2. Align the actuating lever (4).
 - **Smaller fill volume:** Push towards bobbin
 - **Larger fill volume:** Push away from bobbin
3. Tighten the clamping screw (2).

Fine adjustment

4. Release the adjusting screw (1).
5. Move the thread guide plate (3).
 - **Smaller fill volume:** Push towards bobbin
 - **Larger fill volume:** Push away from bobbin
6. Tighten the adjusting screw (1).

17.2 Setting the winding form of the bobbin winder

The height of the joint determines how the hook thread is wound on the bobbin.

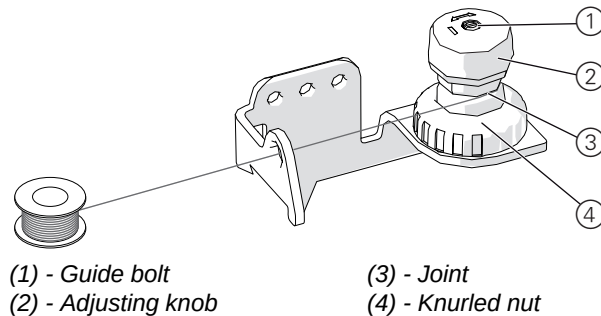


Correct setting

The thread is wound evenly over the entire height of the bobbin.

The thread runs in a straight line without kinds from the joint through the thread guide to the bobbin.

Figure 44: Setting the winding form of the bobbin winder



Adjusting steps

1. Release the knurled nut (4).
2. Turn the guide bolt (1) with a standard screwdriver:
 - **Set the joint deeper:** Turn clockwise
 - **Set the joint higher:** Turn anticlockwise



Important: Do not turn the adjusting knob (2) while doing this.

3. Tighten the knurled nut (4).

17.3 Setting the winding tension

Correct setting



The correct winding tension depends on the anti-friction capability and thickness of the thread.



Malfunctions in case of incorrect settings.

- Wrinkled seams
- Poor sewing results



Adjusting steps

1. Turn the adjusting knob (2):
 - **Greater tension:** Turn clockwise
 - **Less tension:** Turn anticlockwise

18 Service settings via software

This chapter describes service settings, such as

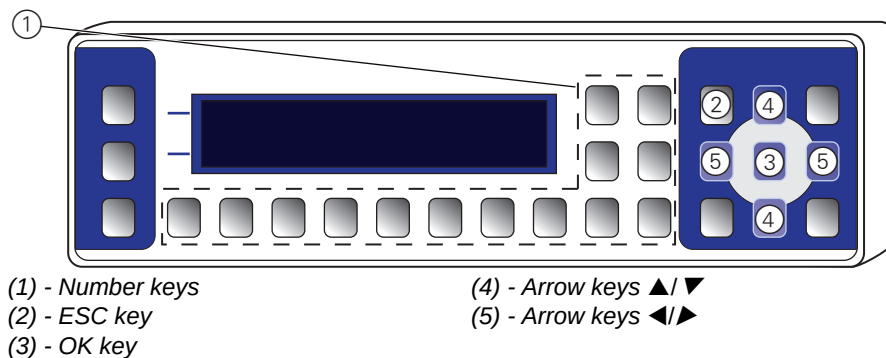
- the basic machine configuration.
- Test functions for individual machine components
- Calibration functions
- Presets for programs and functions

Changes to the stitch length, thread tension, curve support, etc., as well as calling and creating sewing programs are described in the Operating instructions ( *Operating instructions Chap 9 Operating the controls and programming*).

18.1 Basic software operation

The software is controlled via the control panel.

Figure 45: Display and control panel for software



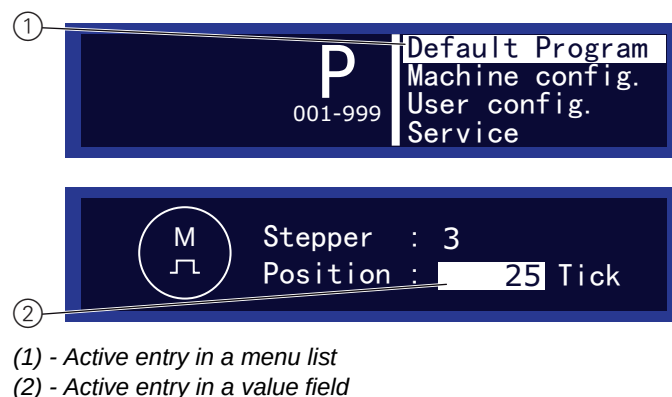
Displaying and selecting

The display shows the menu items of value fields that you can select.

The active entry is always highlighted (brighter).

**Active entry high-
lighted**

Figure 46: Active menu entries and value fields



**Moving with the
arrow keys**

The arrow keys let you move from entry to entry:

- ▲/▼ in a list of menu items
- ◀/▶ adjacently in value fields

	Back to menu level
Back with ◀	Pressing ◀ takes you to the previous menu level.
Cancelling a menu with <i>ESC</i>	Cancelling in menu lists If you press <i>ESC</i> in a menu list, you are taken to the user level.
Entering values with numeric keys or ▲/▼	Changing values In active fields you can enter a value with the number keys or change it step by step with ▲/▼.
Entering incorrect values	If you have entered a value that is not within the preset value range, the software automatically applies the limit value from the value range that is closest to your input.
Confirming with <i>OK</i>	Pressing <i>OK</i> applies the active entry: ↳ In a menu list, this opens the select menu item.
Cancelling a value entry with <i>ESC</i>	Cancelling processing of values If you press <i>ESC</i> when editing a value field, this cancels the entry without applying your changes.

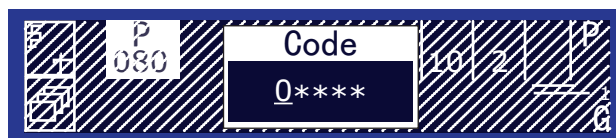
18.2 Accessing technician level

All settings in the service area are performed at technical level.

Pedal inactive **The pedal is inactive in technician mode**

For safety reasons, the pedal is inactive in technician mode. Although you can test the pedal inputs in the *Multitest* menu, the sewing motor is not activated by pressing the pedal.

Figure 47: Input field for technician code



Accessing technician level



1. Press the *P* key and *S* key at the same time.
↳ The display shows the input mask for the code.
2. Enter the technician code 25483 with the numeric keys.
↳ After each keypress with a number, the input cursor automatically moves to the next position. For safety reasons, the figures are not displayed. A 0 is displayed at the entry point, and an asterisk at all other points. You can press ◀/▶ to move from one entry point to another.

Directly after entering the code, the display shows the 4 menu items for technician level:

- **Default Program**
Presets for new programs to be created
- **Machine config.**
Start and end tack, thread trimmer, speeds, stop positions, sewing foot lifting
- **User config.**
Audible signal between program steps, left pedal function, program cancel with pedal, change between right and left sleeve
- **Service**
Test functions for solenoids and drives, calibration of transport, sewing feet and thread tension, reset functions

Access after an error message

After some error messages it may be impossible to access menus or programs. Even after switching the machine off and back on, the machine boots with an error message and does not continue into the programs.

For this case, there is the option of sending the machine to technician mode directly on booting, in order to perform *Multitest* diagnostics or of issuing a *Reset all* to restore the factory defaults.



Operating steps

1. Switch off the machine at the main switch.
2. Hold down the *F* key and switch on the machine at the main switch.
 - ↳ The machine boots and the display shows the input mask for the code.
3. Enter the technician code 25483 (📖 Chap. 18.2, p. 56).
 - ↳ Only the two submenus *Multitest* and *Reset* are available.
 - *Multitest*: Tests for error diagnostics (📖 p. 63)
 - *Reset all*: Reset the machine to the factory defaults (📖 p. 72)

18.3 Menu items at technician level

18.3.1 Menu item *default program*

In this menu item you can define the default values when a new program is created.

Select values that can be kept in as many programs as possible depending on the sewing requirements; this makes it easier to create new programs.

Figure 48: Parameters in the menu item *default program*



Default program

Parameters in the menu item *Default program*

Icon	Entry	Meaning	Permissible value range	Default value
	Stichlen.	Stitch length	1.0 – 5.5 mm	2.5
	Curve	Curve support	0 – 6	2
	Foot Press.	Sewing foot pressure	1 – 15	9
	Thr. Tens.	Thread tension	1 – 99	40
	Fullness	Working in fullness	-6 – 16	0
	Alternate	Alternating: The sewing foot is lifted by this height for every stitch	0 – 2.5 mm	0
	Start Tack	Start tack	0 = No tack 1 = Tack on	0
	Start Tack	End tack	0 = No tack 1 = Tack on	0
	Thread Trim	Thread trimmer	0 = Thread trimmer off 1 = Thread trimmer on	1
	Teach Side	Sleeve side to be programmed first	R = Start with right sleeve L = Start with left sleeve	R
	Action	Action after programming the 1st sleeve side, to create the 2nd sleeve side	• nothing = no 2nd sleeve side • mirror = mirror sleeve side • teach = After programming the 1st sleeve side, also program the 2nd sleeve side • ask = After programming the 1st sleeve side, the selection mask for nothing, mirror or teach appears	mirror

18.3.2 Menu item *Machine config*

This menu lets you define the basic settings for the machine that apply in all programs.

The menu item has the submenus:

**Submenus in
*Machine
config.***

- **Start Tack** - Settings for the start tack
- **End Tack** - Settings for the end tack
- **Thread Trim** - Settings for the thread trimmer
- **Speed** - Start, positioning and maximum speed
- **Stop Positions** - Sets the stop positions
- **Foot** - Sets sewing foot lifting

Submenu *Start Tack*

This submenu lets you determine how to sew the start tack.

Figure 49: Parameters in the submenu *Start Tack*



Start Tack Parameters in the submenu *Start Tack*

Icon	Entry	Meaning	Permissible value range	Default value
	Repetitions	Number of repetitions in the tack	1 – 10	2
	t Changes	Wait time when switching between forward and reverse stitch	0 – 5000	0
	Stitches ↑	Number of forward stitches in the tack	1 – 50	3
	Stitches ↓	Number of reverse stitches in the tack	1 – 50	3
	Speed	Speed for sewing the tack	50 – 2000	1000

Submenu *End Tack*

End Tack This submenu is identical to the submenu *Start Tack*. The same settings are made for the end tack. (📖 Section *Submenu Start Tack*, p. 59)

Submenu *Thread Trim*

In this submenu you can define settings for thread trimming.

Figure 50: Parameters in the submenu *Thread Trim*



Thread Trim Parameters in the submenu *Thread Trim*

Icon	Entry	Meaning	Permissible value range	Default value
	Speed	Speed for thread trimming	50 – 250	180
	Thr. Tens.	Thread tension for thread trimming	1 – 99 The bigger the value, the shorter the thread is trimmed	10
	Turn Back	After trimming, the machine automatically turns back to a position where the needle is slightly higher.	0 = No automatic turn back 1 = Automatic turn back	1

Submenu *Speed*

In this submenu, you can determine the speed for certain situations.

Figure 51: Parameters in the submenu *Speed*



Speed Parameters in the submenu *Speed*

Icon	Entry	Meaning	Permissible value range	Default value
	Speed	Maximum speed when the pedal is fully depressed	100 – 4000	4000
	Pos. Speed	Speed for positioning	10 – 700	400
	Soft Speed	Speed for softstart stitches	10 – 1000	500
	N Stitches	Number of softstart stitches	1 – 10	1

Submenu *Stop Positions*

This menu item lets you define the needle position on stopping.

The position is given in degrees. The needle position at top dead centre is 0°. The other handwheel positions are derived from this. 360° is a complete turn of the handwheel.

Figure 52: Parameters in the submenu *Stop Positions*



Stop Positions

Parameters in the submenu *Stop Positions*

Icon	Entry	Meaning	Permissible value range	Default value
	StopIdle°	Handwheel setting after thread trimming and turning back	0° – 359°	35°
	StopTop°	Handwheel setting for top stop position of the needle on stopping in the seam	0° – 15°	0°
	StopBottom°	Handwheel setting for bottom stop position of the needle on stopping in the seam	0° – 359°	130°

Submenu *Foot*

In this submenu you can define settings for sewing foot lifting.

Figure 53: Parameters in the submenu *Foot*



Foot

Parameters in the submenu *Foot*

Icon	Entry	Meaning	Permissible value range	Default value
	FL AtStop	Foot lifting on stop during sewing	0 = No sewing foot lifting 1 = Sewing foot lifting	0
	FL After-Trip	Sewing foot lifting after thread trimming	0 = No sewing foot lifting 1 = Sewing foot lifting	0
	FL height	Height of lifted foot	0 – 999	30

18.3.3 Menu item *User config*

In this menu you can define more settings for the machine.

Figure 54: Parameters in the menu item *User config*



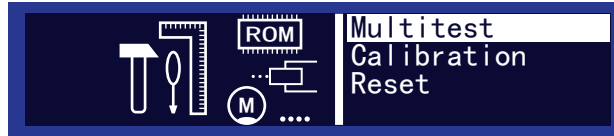
User config. Parameters in the submenu *User config*

Icon	Entry	Meaning	Permissible value range	Default value
	Forward Sound	Audible signal on transition between program steps	0 = Signal off 1 = Signal on	1
	AutoForw-Side	Automatic change between right/left during sewing	0 = No automatic change 1 = Automatic change	1
	Pedal Abort	Program cancel with main pedal	0 = No cancel with main pedal 1 = Cancel with main pedal	1
	Mode Pedal	Function of the optional additional pedal	0 = Additional pedal no function 1 = Change in fullness 2 = Change in curve support	1

18.3.4 Menu item *Service*

In this menu you can perform function tests, calibrate the machine or reset to the factory defaults.

Figure 55: Submenus in the menu item *Service*



The menu item has the submenus:

Submenus in *Service*

- **Multitest** - Test functions for solenoids and drives
- **Calibration** - Calibrate transport, feet, thread tension
- **Reset** - Reset all programs or parameters to the factory defaults

Menu structure *Service*

The submenus have additional subitems:

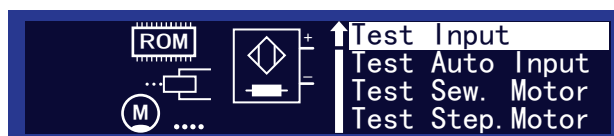
Menu item	Submenu	Subitem
Service	Multitest	Test output
		Test PWM
		Test Input
		Test Auto Input
		Test Sew. Motor
		Test Step.Motor
	Calibration	Feed sync.
		Foot Calib.
		Thread Calib.
	Reset	Reset programs
		Reset all

Submenu *Multitest*

Submenu *Multitest*

In this submenu you can use the software to test if specific solenoids, drives or inputs are functional.

Figure 56: Subitems in the submenu *Multitest*



Subitem *Test output*

Do not select this menu item. The menu item has no assignment on this machine.

Test PWM Subitem Test PWM

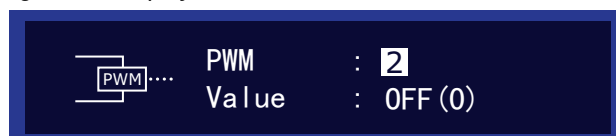
In this subitem you can test the solenoids for the thread trimmer and thread tensioner.

Use ▲/▼ in the *PWM* field to select the element you want to test:

- **2 = Thread trimmer solenoid**
- **4 = Thread tensioning solenoid**

**Test steps thread trimmer solenoid**

Figure 57: Display in subitem Test PWM - Thread trimmer solenoid



1. Press *OK*.
 ↳ The display for *Value* changes between *ON* and *OFF*.
2. Monitor the thread trimmer and check whether the thread trimmer really is triggered when you press *OK*. (📖 Chap. 9 *Adjusting the thread trimmer*, p. 23)

**Test steps thread tensioning solenoid**

Figure 58: Display in subitem Test PWM - Thread tensioner solenoid



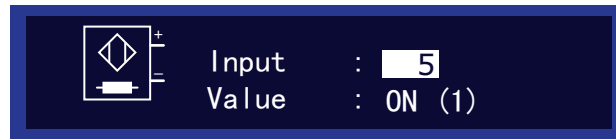
1. Press *OK*.
 ↳ The display shows a field for entering a % value.
2. Thread on up to the thread lever. (📖 *Operating instructions Chap. 8.1 Threading the needle thread*)
3. Press ▲/▼ to change the value in the % field.
4. Pull the loose end of the thread and monitor whether the thread tension increases or is reduced in line with the change in the % field.



Important: The values shown in the % field do **not** correspond to the calibrated thread tension values(📖 Section *Subitem Thread Calib*, p. 69), but only give you some orientation as to the extent to which the tension increases or drops.

Subitem *Test Input*

Figure 59: Display in subitem *Test Input*



Test steps

1. Use ▲/▼ in the *Input* field to select the element you want to test:
2. Actuate the element as described in the *Test method* column (see table later on).
3. Monitor the display.
 - ↳ If the element is functional, the display for *Value* changes between *ON* and *OFF*.

Test Input

Input	Element	Test method
1	Tilt sensor	Tilt the machine back and return to upright position
2 – 4	not used	-----
5	Main pedal input A	Depress the pedal to various positions.
6	Main pedal input B	
7	Main pedal input C	
8	Main pedal input D	
9*	Knee switch in switch position 1*	Press the knee switch
10*	Knee switch in switch position 2*	Press the knee switch
* It is sufficient to test the knee switch in one of the two switch positions.		
11 – 12	not used	-----
13	Mode pedal input A	Depress the pedal to various positions.
14	Mode pedal input B	
15	Mode pedal input C	
16	Mode pedal input D	
90	Reference sensor disk for sewing motor	Turn the handwheel State change at top and bottom dead centre of needle.

Test
Auto Input

Subitem Test Auto Input

Figure 60: Display in subitem Test Auto Input



In this subitem you can perform the same tests as in *Test Input*, without needing to select the element beforehand in the display.

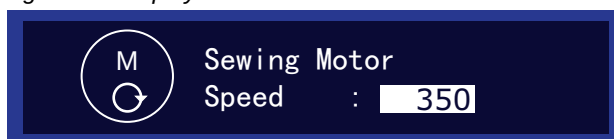
**Test steps**

1. Actuate the element as described in the *Test method* column (p. 65).
- ↳ The display shows the last element to be changed for *Input*. If the element is functional, the display for *Value* changes between *ON* and *OFF*.

Test
Sew. Motor

Subitem Test Sew. Motor

Figure 61: Display in subitem Test Sew. Motor



This subitem tests the sewing motor.

**Test steps**

1. Press *OK*.
↳ The machine is referenced.
2. For *Speed* press ▲/▼ to enter a speed in steps of 50.
3. Press *OK*.
↳ The motor runs at the set speed.

To quit:

1. Press *ESC*.

Subitem *Test Step Motor*

Figure 62: Display in Subitem *Test Step Motor*



This subitem tests the step motors for the sewing feet and transport belts.



Test steps

1. Press ▲/▼ in the *Stepper* field to select the motor you want to test:
2. Press *OK*.
3. Press ▲/▼ to test the motor in question.

↪ If the motor is working correctly, the behavior shown in the table can be observed.

Test Step Motor

Stepper no.	Motor	Behavior for functional motor
1	Upper drive for both transport belts	The belts move.
2	Height of right top transport foot	The height changes.
3	Height of left top transport foot	The height changes.
4	Lower drive for both transport belts	The belts move.

Notes for the step motor encoders

Test also includes the encoders

There is no separate test for the step motor encoders. They are tested along with the step motors. If the results for the step motors are OK, the encoders are functional.

Submenu *Calibration***Submenu *Calibration***

In this submenu you can sync the transport and sewing feed, or calibrate thread tension.

Feed sync.**Subitem *Feed sync.***

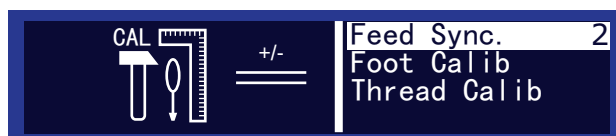
In this subitem you can set the synchronous run of the top and bottom transports.

**Check the correct setting**

1. Switch off the machine at the main switch.
2. Removing the needle ( *Operating instructions Chap. 8.7*).
3. Switch on the machine at the main switch.
4. Switch to manual mode ( *Operating instructions Chap. 9.4 Manual mode*).
5. Press   to select the parameter *Curve support*.
6. Press  to set 0 as the curve support value.
7. Press the numeric key 0 as the fullness.
8. Place 2 identical sheets of cardboard on top of one another on the fabric support.
9. Press the pedal and observe the cardboard being fed:
 Both pieces must stay aligned.

If the pieces of cardboard are not aligned, you must synchronize the top and bottom transport in *Feed sync.* in technician level.

Figure 63: Synchronizing the top and bottom transport

**Synchronization steps**

1. Access technical level ( Chap. 18.2, p. 56).
2. Select the menu item *Service*
3. Select the submenu *Calibration*.
4. Select the subitem *Feed sync.* by pressing *OK*.
 An input box with a numeric value appears on the right.
5. Change the value in this field by pressing  :
 - **Increase top transport:** Increase value
 - **Reduce top transport:** Reduce value
6. Repeat the test with the pieces of cardboard.
7. Repeat steps 1 to 6 if needed.

Foot Calib. Subitem *Foot Calib*

Figure 64: Display in subitem *Foot Calib*



The control unit must know the top and bottom positions of the sewing feet. The top position is sent on switching on the machine.

The bottom position is determined by calibrating in this subitem.



Order

Always calibrate the sewing feet after changing settings on the sewing foot gear (📖 Chap. 14 *Checking the sewing foot lifting gear*, p. 43).



Calibration steps

1. Access the subitem *Foot Calib*.
2. Press *OK*.

👉 The machine is calibrated automatically: both sewing feet move up and down once. This completes the calibration.

Thread Calib. Subitem *Thread Calib*

Figure 65: Display in subitem *Thread Calib*



In this subitem you can calibrate the thread tensioner.

You need an external tension measuring device for calibration.

Only calibrate thread tension once



The thread tension only needs to be calibrated once. Even after a complete reset (📖 Section *Submenu Reset*, p. 72) and after loading new software, (📖 Section *Installing software with a dongle*, p. 73) the values are kept.

The thread tension only needs to be calibrated after changing the control unit.

Calibration points

You must set the calibration points 3 – 1 one after another:

- **Point 3** - maximum tension (300 g)
- **Point 2** - medium tension (150 g)
- **Point 1** - minimum tension (5 g)

Calibration steps



1. Set calibration point 3

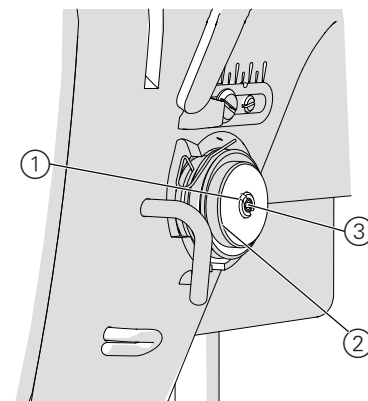
1. Thread on up to the thread lever ( *Operating instructions Chap. 8.1 Threading the needle thread*)
2. After the thread lever, thread into the measuring device.
3. Press ▲/▼ to select calibration point 3

Figure 66: Calibration point 3



4. Press *OK*.

Figure 67: Calibrating the thread tension - setting calibration point 3



(1) - Adjusting nut

(2) - Tensioning washers

(3) - Grub screw



5. Fully release the grub screw (3) at the centre of the thread tensioner.
6. Turn in the adjusting nut (1) as far as possible without pressing the tensioning washers (2) against each other.
7. Slowly turn the adjusting (1) nut out and monitor the display on the tension measuring device.
8. At the point where the measuring device shows a value of 300 g: tighten the grub screw (3) without changing the position of the adjusting nut (1).
9. Press *OK*.



2. Set calibration point 2

1. Press ▲/▼ to select calibration point 2
2. Press *OK*.
3. Change the thread tension with ▲/▼ until the measuring device reads 150 g.
4. Press *OK*.



3. Set calibration point 1

1. Press ▲/▼ to select calibration point 1
2. Press *OK*.
3. Change the thread tension with ▲/▼ until the measuring device reads 5 g.
4. Press *OK*.

**Submenu
Reset**
Submenu Reset

Figure 68: Submenu Reset



In this submenu you, you can reset programs or parameters to the factory defaults. For safety reasons, you are first prompted to enter the technician password.


Call Reset with password

1. Press ▲/▼ to select the *Reset* submenu.
 ↳ The display shows the input mask for the password.
2. Enter the technician code 25483 with the numeric keys (📖 Chap. 18.2 *Accessing technician level*, p. 56).
- ↳ You are in the *Reset* submenu and can press ▲/▼ to access the desired subitem.

**Reset
programs**
Subitem Reset programs

In this subitem, you first delete all your own programs. Only the standard programs are kept, and they are reset to their factory defaults.

If you want to do this:



1. Press to select ▲/▼ *Reset programs*.
2. Press *OK*.
 ↳ All of your own programs are deleted. Only the standard programs are kept, and they are reset to their factory defaults.

Reset all
Subitem Reset all

In this submenu you reset all programs or parameters to the factory defaults.

Only the calibration values for thread tension and the sewing feet are kept.

If you want to do this:



1. Press to select ▲/▼ *Reset all*.
2. Press *OK*.
 ↳ All programs and parameters (except for the calibration values for thread tension and the sewing feet) are reset to the factory defaults.

18.4 Installing software with a dongle

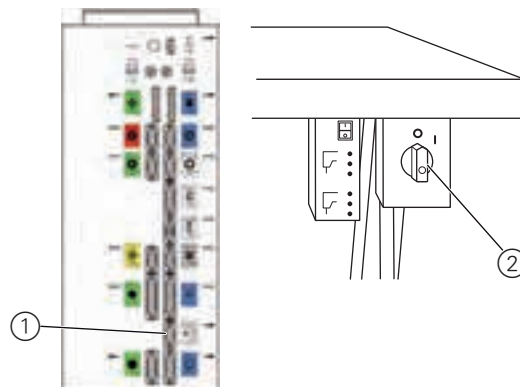
When a new software version becomes available, you can download it from www.duerkopp-adler.com and use a dongle to install it. All machine settings are kept.

Not for copying programs

Dongle transmission only for software

You can only use the dongle to transfer software. Sewing programs cannot be copied from one machine to another - neither with a dongle nor using a USB stick - instead they must be created again on the machine (*Operating instructions Chap. 9.7 Editing mode and 9.8 Programming mode*).

Figure 69: Installing software with a dongle



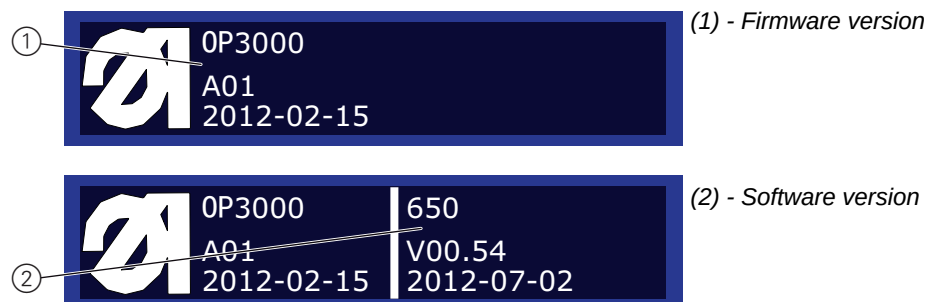
(1) - Connector for dongle (2) - Main switch



Transfer steps

1. Switch off the machine at the main switch (2).
 2. Insert the dongle into the connector (1) on the rear of the control unit.
 3. Switch on the machine at the main switch (2).
- ↳ The machine boots and automatically starts to transfer the software. During this process the display only shows the firmware version for the control panel on the left. Once the transfer has been completed, the display additionally shows the machine software version on the right. The machine is referenced.

Figure 70: Firmware and software version display



4. Remove the dongle.
- ↳ This completes the software transfer. The machine is ready for sewing.

Behavior in case of a missing software version display

In some cases the machine fails to display the software version on the right side of the display despite completing the transfer.

If no software version appears after 2 minutes:



1. Switch off the machine at the main switch.
2. Remove the dongle.
3. Switch on the machine at the main switch.
 - ↳ Once the transfer has been completed, the display additionally shows the machine software version on the right. The machine is referenced.
 - ↳ The machine is ready for sewing.

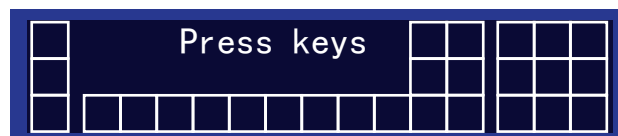
18.5 Checking the key functionality at the control panel

Test steps



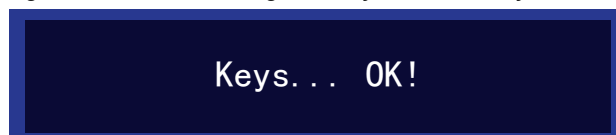
1. Switch off the machine at the main switch.
2. Hold down the *ESC* key and switch on the machine at the main switch.
- ↳ The display shows the following:

Figure 71: Screen for testing keys on the control panel



3. Press all the keys in the control panel except *ESC* in any order.
 - ↳ If a key is functional, the corresponding field in the display is filled and lit. If the key is not functional the field stays empty.
4. Finally, press the *ESC* key.
 - **If all keys are functional:**
 - ↳ The display shows the following status message:

Figure 72: Status message for fully functional keys



5. Press *OK*.

- **If one or more keys are not functional:**
 - ↳ The display shows the following status message: *Keys ... NOT OK!*
 - ↳ The control panel must be replaced.

19 Maintenance work

19.1 Lubrication

Environmental



Environmental damage due to lubricating grease

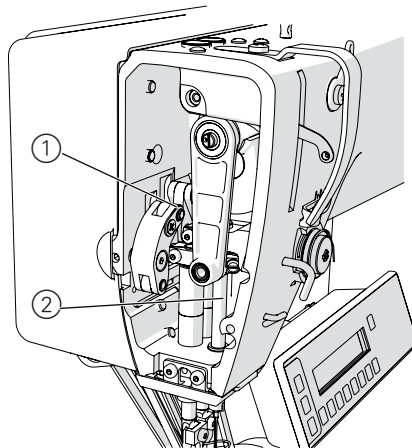
Lubricating grease is a hazardous material and must not enter the drains or the ground. Collect residual lubricants carefully and dispose of them and of greased machine parts in line with legal requirements.

Observe all of the lubricant manufacturer's safety and environmental instructions.

Once a year, you must lubricate the following areas of the machine head with grease:

- Joints on the gearbox:
- Needle bar

Figure 73: Lubricating the joints on the machine head



- (1) - Joints on the gearbox:
(2) - Needle bar



19.2 Cleaning

Sewing dust and residual thread must be removed every 8 operating hours with a compressed air gun or a brush.

Areas requiring particular cleaning:

- Hook
- Needle plate
- Handwheel screen

This cleaning work is described in the Operating instructions ( *Operating instructions Chap. 10 Maintenance*).

Attention

Damage to paint due to solvent-based cleaning agents

Solvent-based cleaning agents will damage the machine's paint

Only use solvent-free substances to clean the machine.

20 Appendix

20.1 Software error messages

Perform the remedies in the stated order.

Error	Meaning	Possible causes	Remedies Perform in the stated order!
1051	Sewing motor timeout	• Cable to sewing motor reference switch defective • Reference switch defective	• Replace cable • Replace reference switch (9815 935006)
1052	Sewing motor overcurrent	• Sewing motor cable defective • Sewing motor defective • Control unit defective	• Replace sewing motor cable • Replace sewing motor • Replace control unit (9850 650002)
1053	Mains voltage too high	• Mains voltage too high	• Check mains voltage
1055	Sewing motor overload	• Sewing motor not running freely or blocked • Sewing motor defective • Control unit defective	• Resolve obstruction/blockage • Replace sewing motor • Replace control unit (9850 650002)
1056	Sewing motor excess temperature	• Sewing motor not running freely • Sewing motor defective • Control unit defective	• Resolve obstruction • Replace sewing motor • Replace control unit (9850 650002)
1058	Sewing motor speed above set value	• Reference sensor defective • Sewing motor defective	• Replace reference sensor (9815 935006 or 0911 490140) • Replace sewing motor
1062	Sewing motor IDMA auto-increment	• Fault	• Switch machine off and back on.
1302	Sewing motor power fault	• Sewing motor blocked • Encoder cable not connected or defective • Encoder defective	• Resolve blockage • Check/replace encoder cable • Replace sewing motor
1342 - 1344	Sewing motor fault	• Internal fault	• Switch machine off and back on. • Perform software update • Contact DA Service
1410	Sewing motor: Thread cutting speed not reached	• Encoder defective • Sewing motor defective	• Switch machine off and back on. • Replace encoder • Replace sewing motor • Contact DA Service
1411	Sewing motor: Thread cutting position not reached	• Thread cutting position not reached	• Switch machine off and back on. • Perform software update • Contact DA Service
1412	Sewing motor: Stop position not reached after turning back	• Stop position not reached after turning back	• Switch machine off and back on. • Perform software update • Contact DA Service
1420	Sewing motor power fault	• Sewing motor blocked • Encoder cable not connected or defective • Encoder defective	• Resolve blockage • Check/replace encoder cable • Replace sewing motor

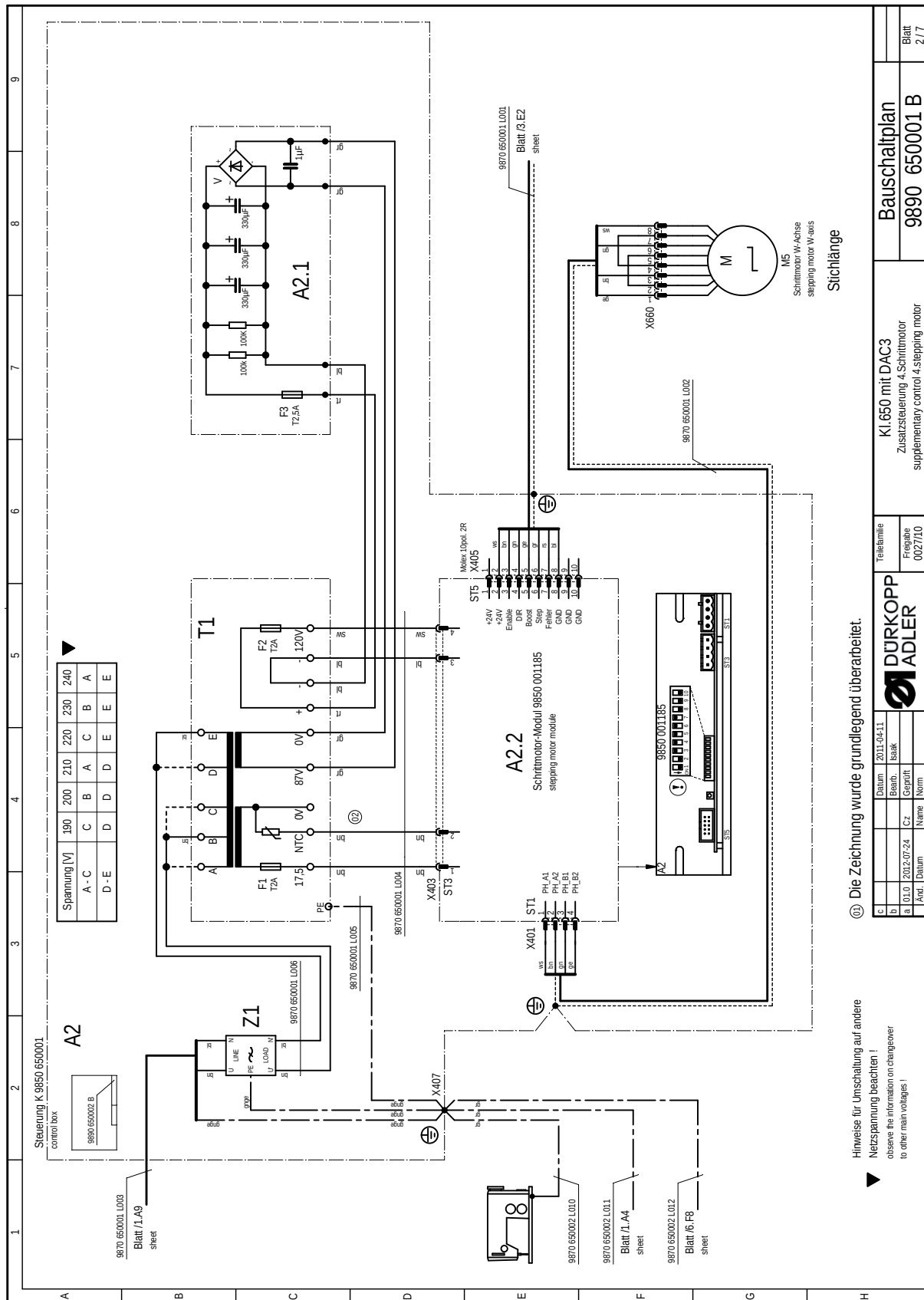
Error	Meaning	Possible causes	Remedies Perform in the stated order!
1421	Sewing motor timeout	- Cable to sewing motor reference switch defective - Reference switch defective	- Replace cable - Replace reference switch (9815 935006)
1430	Sewing motor: Positioning speed not reached	- Encoder defective - Sewing motor defective	- Switch machine off and back on. - Replace encoder - Replace sewing motor - Contact DA Service
1431	Sewing motor: Stop position	Stop position not reached or exceeded	- Positioning speed not reached - Perform software update
1450	Internal sewing motor fault	Internal sewing motor fault	- Switch machine off and back on. - Perform software update - Replace control unit (9850 650002) - Contact DA Service
1498 - 1499	Internal sewing motor fault	Internal sewing motor fault	- Switch machine off and back on. - Perform software update - Replace control unit (9850 650002) - Contact DA Service
21 ...	Step motor X-axis: belt top transport		
22 ...	Step motor Y-axis: right foot		
23 ...	Step motor Z-axis: left foot		
... 02	Step motor power fault	- Step motor not running freely or blocked - Encoder cable not connected or defective - Step motor cable not connected or defective - Encoder defective - Step motor defective	- Resolve obstruction/blockage - Check/replace encoder cable - Replace encoder - If the step motor is not energized: - Check/replace step motor cable - Replace step motor
... 03	Step motor step loss	Not running freely mechanically, or blockage	Resolve obstruction/blockage
... 52	Step motor overcurrent		- Replace step motor - Replace control unit (9850 650002)
... 53	Step motor overvoltage	Mains voltage too high	Checking mains voltage
... 55	Step motor overload	- Step motor not running freely or blocked - Step motor defective - Control unit defective	- Resolve obstruction/blockage - Replace step motor - Replace control unit (9850 650002)
... 56	Step motor excess temperature	- Step motor not running freely - Step motor defective - Control unit defective	- Resolve obstruction - Replace step motor - Replace control unit (9850 650002)
... 62	Step motor IDMA auto-increment	Fault	Switch machine off and back on.
2551	Communication with additional control	Signal from additional control does not exist	- Check/replace cable to additional control - Replace additional control (9850 650001) - Replace control unit (9850 650002)

Error	Meaning	Possible causes	Remedies Perform in the stated order!
3100 - 3103	Machine voltage error	• Short-term mains voltage drop	• Check mains voltage and stabilise if needed
3107	Control unit: Excess temperature	• Air vents blocked • Ventilation grating soiled • Ambient temperature too high	• Check air vents • Clean ventilation grating • Allow control unit to cool down
4202	Communication with memory card	• Access to memory card in controller not possible	• Format/replace memory card
4440 - 4459	Control panel OP3000	• Fault	• Switch machine off and back on. • Perform software update • Replace control panel (9850 001069)
6000 - 6299	Driver error	• Internal fault	• Switch machine off and back on. • Perform software update • Contact DA Service
6351 - 6354	Error I ² C	• Control unit defective	• Replace control unit (9850 650002)
6400 - 6999	Driver error	• Internal fault	• Switch machine off and back on. • Perform software update • Contact DA Service
7551 - 7559	Communication with control panel interface	• Internal fault • Cable fault • Cable to control panel defective	• Switch machine off and back on. • Switch off interference source • Perform software update • Replace cable • Contact DA Service
7651 - 7659	Communication with control panel interface	• Internal fault • Cable fault • Cable to control panel defective	• Switch machine off and back on. • Switch off interference source • Perform software update • Replace cable • Contact DA Service
8151 - 8161	IDMA error	• Internal fault • Fault • Control unit defective	• Switch machine off and back on. • Perform software update • Replace control unit (9850 650002) • Contact DA Service
8251 - 8258	Error on ADSP boot or boot	• Internal fault • Fault	• Switch machine off and back on. • Perform software update • Contact DA Service
9110	Communication with foot pedal	• Foot pedal not in idle position • Setpoint generator defective	• Do not depress the pedal while booting the machine • Replace setpoint generator (9800 330012)
9210	Thread tensioner: Initialization error	• Plug 120t not plugged in to DAC3 or X502 on PCB, or defective • Cable 120t-L021A defective • Distributor board defective	• Check plug and cable and replace as needed • Replace distributor board (9850 650000)

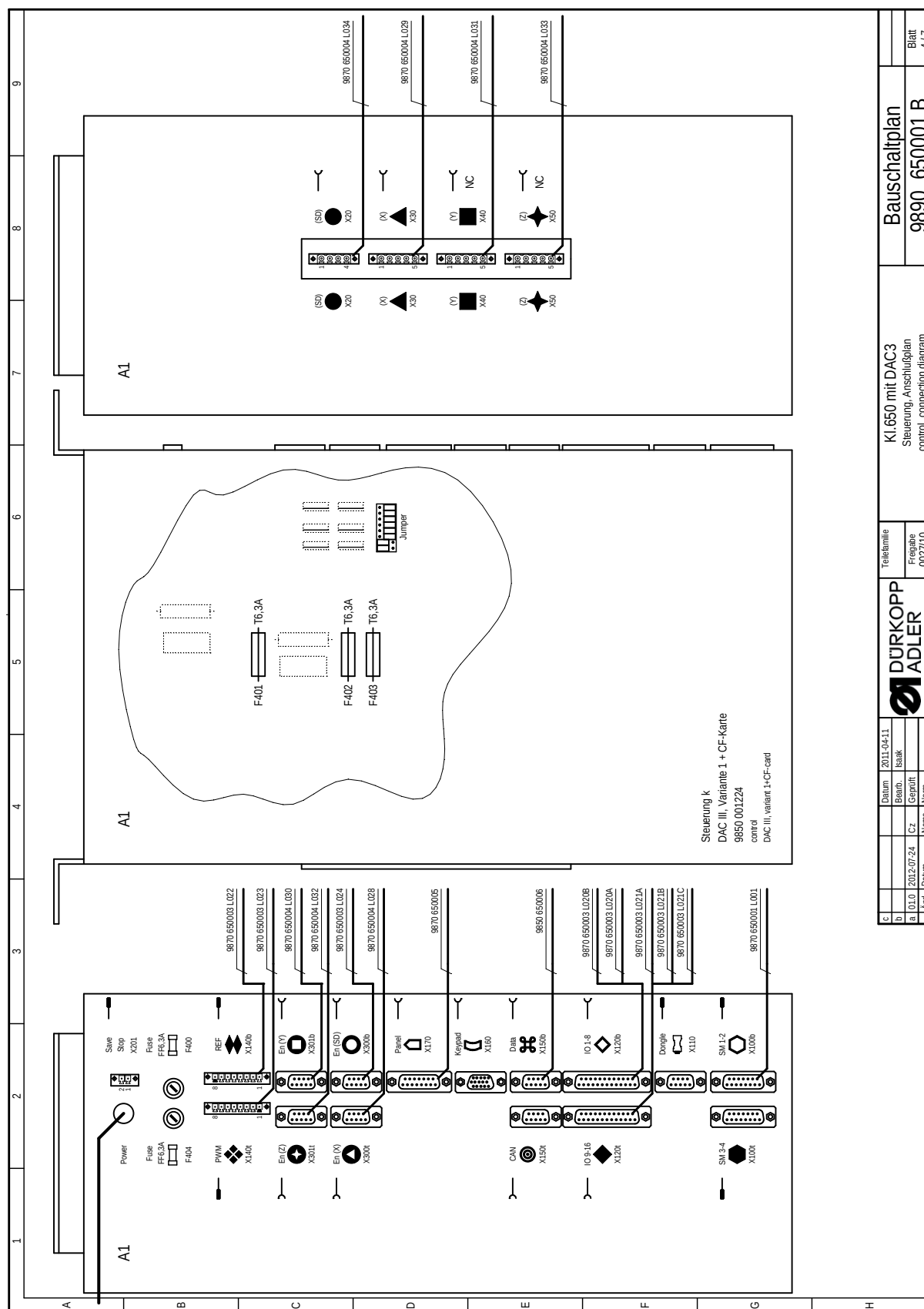
Error	Meaning	Possible causes	Remedies Perform in the stated order!
9220	Communication with electrical thread tensioner	• Thread tensioning solenoid defective • Plug from distributor board to thread tensioner solenoid not plugged in or defective, or cable defective • Plug 140t not plugged in to DAC3 or X503 on PCB, or defective, or cable X140t-L023 defective • Distributor board defective	• Check cables and plugs from solenoid to distributor board and from distributor board to control unit and replace as needed • Replace thread tensioner (0650 110094) • Replace distributor board (9850 650000)

						DURKOPP ADLER	Telefonie	KI.650 mit DAC3 Steuerung, Nähnator, Schrittmotore control, sewing motor, stepping motors	Bauschaltplan	
c										
b										
a	01.0	2012-07-24	Cz	Gedruckt			Friedgite 0027710		9890_650001 B	Blatt 1 / 7
		Avt.	Datum	Name	Norm					

Circuit diagram - Sheet 2



Circuit diagram - Sheet 4



Top Section Components:

- Motor:** 9870 650004 LG08, 9870 650004 LG05, 9870 650004 LG06
- LEDs:** 9850 650000 S, 9850 650003 L02A, 9850 650003 L02B, 9850 650003 L02C, 9850 650003 L02D, 9850 650003 L02E, 9850 650003 L02F, 9850 650003 L02G, 9850 650003 L02H, 9850 650003 L02I, 9850 650003 L02J, 9850 650003 L02K, 9850 650003 L02L, 9850 650003 L02M, 9850 650003 L02N, 9850 650003 L02O, 9850 650003 L02P, 9850 650003 L02Q, 9850 650003 L02R, 9850 650003 L02S, 9850 650003 L02T, 9850 650003 L02U, 9850 650003 L02V, 9850 650003 L02W, 9850 650003 L02X, 9850 650003 L02Y, 9850 650003 L02Z
- Connectors:** X10, X11, X12, X13, X14, X15, X16, X17, X18, X19, X20, X21, X22, X23, X24, X25, X26, X27, X28, X29, X30, X31, X32, X33, X34, X35, X36, X37, X38, X39, X40, X41, X42, X43, X44, X45, X46, X47, X48, X49, X50, X51, X52, X53, X54, X55, X56, X57, X58, X59, X60, X61, X62, X63, X64, X65, X66, X67, X68, X69, X70, X71, X72, X73, X74, X75, X76, X77, X78, X79, X80, X81, X82, X83, X84, X85, X86, X87, X88, X89, X90, X91, X92, X93, X94, X95, X96, X97, X98, X99, X100
- Other Components:** 9850 650000 S, 9850 650003 L02A, 9850 650003 L02B, 9850 650003 L02C, 9850 650003 L02D, 9850 650003 L02E, 9850 650003 L02F, 9850 650003 L02G, 9850 650003 L02H, 9850 650003 L02I, 9850 650003 L02J, 9850 650003 L02K, 9850 650003 L02L, 9850 650003 L02M, 9850 650003 L02N, 9850 650003 L02O, 9850 650003 L02P, 9850 650003 L02Q, 9850 650003 L02R, 9850 650003 L02S, 9850 650003 L02T, 9850 650003 L02U, 9850 650003 L02V, 9850 650003 L02W, 9850 650003 L02X, 9850 650003 L02Y, 9850 650003 L02Z

Bottom Section Components:

- Motor:** 9870 650004 LG08, 9870 650004 LG05, 9870 650004 LG06
- LEDs:** 9850 650000 S, 9850 650003 L02A, 9850 650003 L02B, 9850 650003 L02C, 9850 650003 L02D, 9850 650003 L02E, 9850 650003 L02F, 9850 650003 L02G, 9850 650003 L02H, 9850 650003 L02I, 9850 650003 L02J, 9850 650003 L02K, 9850 650003 L02L, 9850 650003 L02M, 9850 650003 L02N, 9850 650003 L02O, 9850 650003 L02P, 9850 650003 L02Q, 9850 650003 L02R, 9850 650003 L02S, 9850 650003 L02T, 9850 650003 L02U, 9850 650003 L02V, 9850 650003 L02W, 9850 650003 L02X, 9850 650003 L02Y, 9850 650003 L02Z
- Connectors:** X10, X11, X12, X13, X14, X15, X16, X17, X18, X19, X20, X21, X22, X23, X24, X25, X26, X27, X28, X29, X30, X31, X32, X33, X34, X35, X36, X37, X38, X39, X40, X41, X42, X43, X44, X45, X46, X47, X48, X49, X50, X51, X52, X53, X54, X55, X56, X57, X58, X59, X60, X61, X62, X63, X64, X65, X66, X67, X68, X69, X70, X71, X72, X73, X74, X75, X76, X77, X78, X79, X80, X81, X82, X83, X84, X85, X86, X87, X88, X89, X90, X91, X92, X93, X94, X95, X96, X97, X98, X99, X100
- Other Components:** 9850 650000 S, 9850 650003 L02A, 9850 650003 L02B, 9850 650003 L02C, 9850 650003 L02D, 9850 650003 L02E, 9850 650003 L02F, 9850 650003 L02G, 9850 650003 L02H, 9850 650003 L02I, 9850 650003 L02J, 9850 650003 L02K, 9850 650003 L02L, 9850 650003 L02M, 9850 650003 L02N, 9850 650003 L02O, 9850 650003 L02P, 9850 650003 L02Q, 9850 650003 L02R, 9850 650003 L02S, 9850 650003 L02T, 9850 650003 L02U, 9850 650003 L02V, 9850 650003 L02W, 9850 650003 L02X, 9850 650003 L02Y, 9850 650003 L02Z

Circuit diagram - Sheet 6

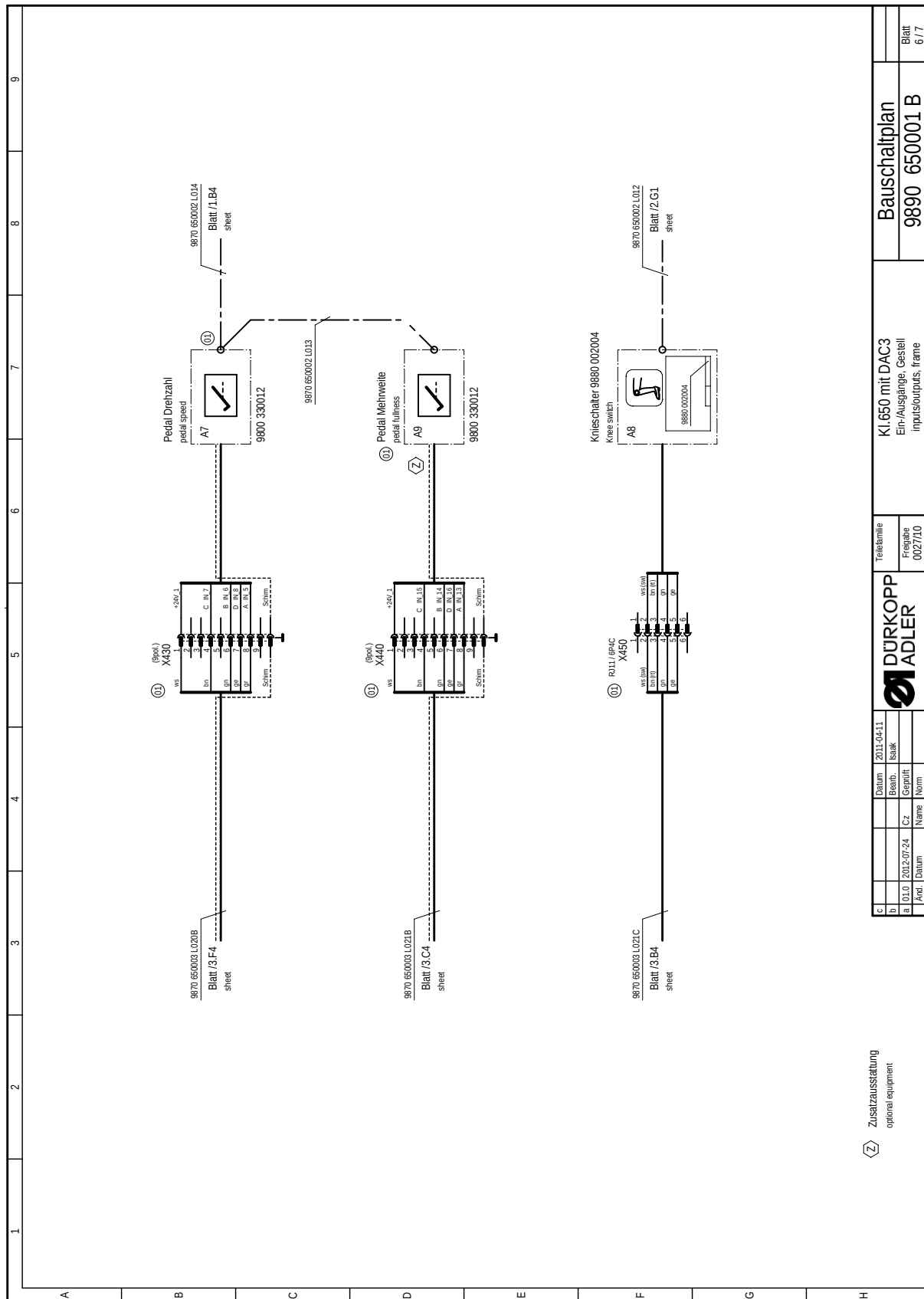


Diagram 1: Electrical wiring diagram for the sewing machine.

The diagram shows the connection of the sewing machine to the mains supply and the control system.

Components and Labels:

- Q0:** Hauptschalter (mains switch)
- T2:** Netzteil LED-Nähleuchte (Power supply LED sewing light)
- X0:** Netzstecker (mains plug)
- X499:** Leitung k 9870 745159
- X498:** Leitung k 9870 650019
- A1:** Hauptsteuerung DAC3 (main control DAC3)
- A2:** Zusatzsteuerung (supplementary control)
- T41:** Transformer (220-240V, 25VA)
- A41:** Nähleuchte (Sewing light)
- T3:** M01.6750G (798 460121)
- 798 500088:** Component label

Wiring Details:

- The mains supply (230V, +10%/-20%, 50/60Hz) is connected to the X0 plug.
- The plug is connected to the Q0 switch.
- The Q0 switch is connected to the X499 and X498 lines.
- The X499 line is connected to the T2 power supply.
- The T2 power supply is connected to the T41 transformer.
- The T41 transformer is connected to the A41 sewing light.
- The A41 sewing light is connected to the A1 main control DAC3.
- The A1 main control DAC3 is connected to the A2 supplementary control.

Notes:

- Observe the information on the sewing machine's nameplate.
- Observe the information on the control system's nameplate.
- Observe the information on the sewing machine's nameplate.

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