867  Service Instructions
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1 About these instructions

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

Should you notice any discrepancies or if you have improvement requests, then we would be glad to receive your feedback through Customer Service (p. 129).

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

1.1 For whom are these instructions intended?

These instructions are intended for:

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

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

1.2 Representation conventions – symbols and characters

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

- **Proper setting**
  Specifies proper setting.

- **Disturbances**
  Specifies the disturbances that can occur from an incorrect adjustment.

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

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

- **Steps to be performed for service, maintenance, and installation**

- **Steps to be performed via the software control panel**

The individual steps are numbered:

1. First step
2. Second step
...

The steps must always be followed in the specified order.
Lists are marked by bullet points.

Result of performing an operation
Change to the machine or on the display/control panel.

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

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

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

References
Reference to another section in these instructions.

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

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

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

All information and notes in these instructions have been compiled in accordance with the latest technology and the applicable standards and regulations.

Dürkopp Adler cannot be held liable for any damage resulting from:

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

Transport

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

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

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

This chapter contains basic information for your safety. Read the instructions carefully before setting up or operating the machine. Make sure to follow the information included in the safety instructions. Failure to do so can result in serious injury and property damage.

2.1 Basic safety instructions

The machine may only be used as described in these instructions.

These instructions must be available at the machine's location at all times.

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

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

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

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

Transport

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

Setup

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

Obligations of the operator

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

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

Requirements to be met by the personnel

Only qualified specialists may:

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

Only authorized persons may work on the machine and must first have understood these instructions.
**Operation**
Check the machine during operating for any externally visible damage. Stop working if you notice any changes to the machine. Report any changes to your supervisor. Do not use a damaged machine any further.

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

### 2.2 Signal words and symbols used in warnings
Warnings in the text are distinguished by color bars. The color scheme is based on the severity of the danger. Signal words indicate the severity of the danger.

**Signal words**
Signal words and the hazard they describe:

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER</td>
<td>(with hazard symbol) If ignored, fatal or serious injury will result</td>
</tr>
<tr>
<td>WARNING</td>
<td>(with hazard symbol) If ignored, fatal or serious injury can result</td>
</tr>
<tr>
<td>CAUTION</td>
<td>(with hazard symbol) If ignored, moderate or minor injury can result</td>
</tr>
<tr>
<td>CAUTION</td>
<td>(with hazard symbol) If ignored, environmental damage can result</td>
</tr>
<tr>
<td>NOTICE</td>
<td>(without hazard symbol) If ignored, property damage can result</td>
</tr>
</tbody>
</table>

**Symbols**
The following symbols indicate the type of danger to personnel:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Type of danger</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="symbol.png" alt="Exclamation Mark" /></td>
<td>General</td>
</tr>
<tr>
<td><img src="symbol.png" alt="Electric Shock" /></td>
<td>Electric shock</td>
</tr>
</tbody>
</table>
Examples of the layout of warnings in the text:

**DANGER**

Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.

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

**WARNING**

Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.

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

**CAUTION**

Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.

- This is what a warning looks like for a hazard that could result in moderate or minor injury if the warning is ignored.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Type of danger</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Puncture" /></td>
<td>Puncture</td>
</tr>
<tr>
<td><img src="image2.png" alt="Crushing" /></td>
<td>Crushing</td>
</tr>
<tr>
<td><img src="image3.png" alt="Environmental damage" /></td>
<td>Environmental damage</td>
</tr>
</tbody>
</table>
CAUTION
Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.

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

NOTICE
Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.

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

3.1 Order of the adjustments

Order
The adjustment positions for the machine are interdependent.
Always comply with the order of individual adjustment steps as specified.
It is absolutely essential that you follow all notices regarding prerequisites
and subsequent settings that are marked with ☢️ in the margin.

NOTICE

Property damage may occur!
Risk of machine damage from incorrect order.
It is essential to follow the working order specified in these instructions.

3.2 Laying the cables

NOTICE

Property damage may occur!
Excess cables can impair the functioning of moving machine parts.
This impairs the sewing function and can result in damage.
Lay excess cable as described above.

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

To lay the cables:

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

Important

Tie loops wherever possible to fixed parts.
The cables must be secured firmly.
3. Cut off any overlapping cable ties.
3.3 Removing the covers

**WARNING**

Risk of injury!
Crushing injuries from moving parts.
Switch off the machine before you remove the covers or refit them.

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

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

### 3.3.1 Tilting the machine head

In order to access the components on the underside of the machine, you must first tilt the machine head.

**Fig. 1: Tilting the machine head**

**Tilting the machine head**

To tilt the machine head:
1. Tilt the machine head as far as it will go.

**Erecting the machine head**

To erect the machine head:
1. Erect the machine head.
3.3.2 Assembling and disassembling the arm cover

Disassembling the arm cover

To disassemble the arm cover:

1. Position the left adjusting wheel for the sewing foot stroke (2) to 2.
2. Loosen the screws (1).
3. Hold the arm cover (3) at the adjusting wheels and remove it.

Assembling the arm cover

To assemble the arm cover:

1. Position the left adjusting wheel for the sewing foot stroke (2) to 2.
2. Assemble the arm cover (3).
3. Tighten the screws (1).
3.3.3 Assembling and disassembling the head cover

Fig. 3: Assembling and disassembling the head cover

Disassembling the head cover
To disassemble the head cover:
1. Loosen the screws (1).
2. Disassemble the head cover (2).

Assemble the head cover
To assemble the head cover:
1. Assemble the head cover (2).
2. Tighten the screws (1).
3.3.4 Assembling and disassembling the valve cover

Fig. 4: Assembling and disassembling the valve cover

Disassembling the valve cover

To disassemble the valve cover:

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

Important
Make sure not to tear off any cables.

Assembling the valve cover

To assemble the valve cover:

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

Important
Make sure not to pinch any cables.
3.3.5 Opening and closing the throat plate slides

Fig. 5: Opening and closing the throat plate slides

Opening the throat plate slides

To open the throat plate slides:

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

Closing the throat plate slides

To close the throat plate slides:

1. Push the throat plate slides (1) up to the throat plate (2).
### 3.3.6 Assembling and disassembling the throat plate

**WARNING**

Risk of injury from sharp and moving parts!
Puncture or crushing possible.
Switch off the machine before you assemble or disassemble the throat plate.

---

**Fig. 6: Assembling and disassembling the throat plate**

![Image of throat plate with labels](image)

- **(1) - Screws**
- **(2) - Throat plate**
- **(3) - Nose of the bobbin case**

**Disassembling the throat plate**

To disassemble the throat plate:

1. Open the throat plate slides (p. 18).
2. Loosen the screws (1).
3. Disassemble the throat plate (2).

**Assembling the throat plate**

To assemble the throat plate:

1. Insert the throat plate (2).
   Ensure that the nose of the bobbin case (3) is in the cutout of the throat plate.
2. Tighten the screws (1).
3. Close the throat plate slides (p. 18).
3.3.7 Assembling and disassembling the feed dog

**WARNING**

Risk of injury from sharp and moving parts!
Puncture or crushing possible.
Switch off the machine before you assemble or disassemble the feed dog.

**Fig. 7: Assembling and disassembling the feed dog**

Disassembling the feed dog

To disassemble the feed dog:

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

Assembling the feed dog

To assemble the feed dog:

1. Place the feed dog (1) onto the feed dog carrier (2).
2. Tighten the screws (3).
3. Assemble the throat plate ([p. 19](#)).

**Important**

Check the feed dog position in its movement at maximum stitch length (depending on the equipment: 6, 9 or 12) by turning the handwheel.
The feed dog must not hit against the throat plate.

(1) - Feed dog  
(2) - Feed dog carrier  
(3) - Screws
Order
Then check the following adjustment:
• Feed dog (p. 35)

3.4 Flats on shafts

Fig. 8: Flats on shafts

(1) - Flat (2) - Shaft

Some shafts have flat surfaces at the points where the components are screwed on. This stabilizes the connection and makes adjusting easier. For all adjustments on the surface, the first screw in the direction of rotation is screwed onto the surface.

Important
Always ensure that the screw faces are completely flush with the surface.
3.5  Locking the machine in place

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

Fig. 9: Locking the machine in place (1)

There are 2 securing positions:

- **Position 1:** Looping stroke position
  - 5 mm end in the large slot
  - Adjusting the loop stroke and needle bar height

- **Position 2:** Handwheel zero position
  - 3 mm end in the small slot
  - Adjusting the handwheel position and checking the top dead center for the needle bar
Locking the machine in place

To lock the machine in place:

1. Remove the plug from the locking slot (5).
2. Turn the handwheel until the appropriate slot is in front of the locking opening (5):
   • Small slot at handwheel position 0°
   • Large slot at handwheel position 200 – 205°
3. Insert the locking peg (1) with the appropriate end into the slot.

Removing the lock

To remove the lock:

1. Pull the locking peg (1) out of the slot.
2. Insert the plug into the locking opening (5).
3.6 Adjusting the handwheel into position

Fig. 11: Adjusting the handwheel into position

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

To adjust the handwheel into position:

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

**WARNING**

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before you adjust the handwheel scale.

Proper setting

1. Lock the machine in place at position 2 (p. 22).
   - The handwheel is at position 0°.
     If a different degree number is next to the marking (2) then you will have to reset the graduated scale.

Fig. 12: Adjusting the handwheel scale

The handwheel is fastened using 2 threaded pins, which you can see through the slot (1).

To adjust the handwheel scale:

1. Turn the handwheel until the 1\textsuperscript{st} threaded pin is under the slot (1).
2. Loosen the threaded pin through the opening (1).
3. Turn the handwheel by 50° such that the 2\textsuperscript{nd} threaded pin is under the slot (1).
4. Loosen the threaded pin through the opening (1).
5. Lock the machine in place at position 2 (p. 22).
6. Turn the handwheel scale so that the 0° is at the center of the marking (2).
7. Tighten the threaded pin through the opening (1).
8. Remove the lock (p. 23).
9. Move the handwheel into the 50° position.
10. Tighten the threaded pin through the opening (1).
5 Positioning the arm shaft

WARNING

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before positioning the arm shaft.

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

**Fig. 13: Positioning the arm shaft**

To position the arm shaft:
1. Disassemble the arm cover (**p. 15**).
2. Loosen the threaded pins (3).
3. Turn the arm shaft crank (1) such that the threaded pins (3) are seated completely on the flat of the arm shaft.
4. Push the arm shaft with the arm shaft crank (1) to the right as far as it will go and flush with the machine casting.
5. Tighten the threaded pins (3).
6 Toothed belt wheels

The two toothed belt wheels must be positioned above each other so that the toothed belt can run correctly. In machines with normal lengths, the winder wheel is directly next to the upper toothed belt wheel and determines its alignment. In long arm machines, the winder wheel is fastened farther away in the center of the arm.

Order

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

Differences between long arm machines and machines with normal lengths

In long arm machines, the winder wheel on the driver wheel is aligned in the center of the arm (p. 64). It is irrelevant for the toothed belt wheels. Therefore, in long arm machines, it does not matter which toothed belt wheel you check first.

In machines with normal lengths, the position of the upper toothed belt wheel is defined by the distance to the winder wheel.

Important

Therefore, you must first align the upper toothed belt wheel on the winder wheel and then align the lower toothed belt wheel so that the toothed belt runs correctly over both wheels.

6.1 Positioning the upper toothed belt wheel

**WARNING**

Risk of injury from moving parts!
Crushing possible.

Switch off the machine before you position the upper toothed belt wheel.

Proper setting

The 2 threaded pins for the upper toothed belt wheel are seated flush on the flat.

Information

Additional checks for machines with normal lengths:

The distance between the winder wheel and the upper toothed belt wheel is 0.8 mm.
To position the upper toothed belt wheel:

1. Disassemble the arm cover (p. 15).
2. Using the screwdriver, push the toothed belt (4) sufficiently far to the side so that the threaded pins (2) can be reached.
3. Loosen the threaded pins (2).
4. Turn the upper toothed belt wheel (1) such that the threaded pins (2) are seated flush on the flat (5) of the arm shaft.

Information

Additional setting step for machines with normal lengths:

Move the upper toothed belt wheel (1) to the side so that the distance to the winder wheel (3) is 0.8 mm.

5. Tighten the threaded pins (2).
6. Use the screwdriver to push the toothed belt (4) back again.
6.2 Positioning the lower toothed belt wheel

**WARNING**

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before you position the lower toothed belt wheel.

**Proper setting**

The threaded pins for the lower toothed belt wheel are seated flush on the flat of the lower shaft.
The toothed belt runs correctly without running against the retaining ring or slipping off.

*Fig. 15: Adjusting the lower toothed belt wheel*

To position the lower toothed belt wheel:

1. Tilt the machine head (p. 14).
2. Loosen the threaded pins (4).
3. Turn the lower toothed belt wheel (3) such that the threaded pins (4) are seated on the flat of the arm shaft.
4. Move the lower toothed belt wheel (3) sufficiently far to the side so that the toothed belt (1) makes contact with the snap ring (2) without being pushed away.
5. Tighten the threaded pins (4).
7 Adjusting the stitch length adjusting wheels

CAUTION

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before you adjust the stitch length adjusting wheel.

NOTICE

Property damage may occur!
If you turn the shaft too far, parts on the stitch regulator gear may bend or get stuck.
Turn the shaft carefully and stop as soon as you feel a slight resistance.

Fig. 16: Adjusting the stitch length adjusting wheels

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

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

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

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

(1) Button for the stitch length
(2) Lower stitch length adjusting wheel
(3) Upper stitch length adjusting wheel
To switch over between the stitch lengths: Press the button for the stitch length on the machine arm (1).

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

**Order**
Adjust the upper stitch length adjusting wheel first before adjusting the lower stitch length adjusting wheel.

### 7.1 Adjusting the upper stitch length adjusting wheel

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

*Fig. 17: Adjusting the upper stitch length adjusting wheel*

1. Switch on the machine.
2. Unthread the needle thread.
3. Press the button $\square$ on the machine arm.
   - The button lights up.
   - The machine switches over to the upper stitch length adjusting wheel.
4. Hold the upper stitch length adjusting wheel (1) in place using a wrench (6).
5. Loosen the screw (2).
6. Remove the upper stitch length adjusting wheel (1) from the shaft (4).
7. To set the stitch length, use a size 10 wrench to carefully turn the shaft (4).
   - to set a shorter stitch length: turn clockwise
   - to set a longer stitch length: turn counterclockwise
8. Perform a sewing test with a sheet of paper and readjust if necessary.
9. Turn the scale (5) so that the number indicating the stitch length is exactly next to the adjusting mark (3).
10. Place the upper stitch length adjusting wheel (1) onto the shaft (4) and tighten it with the wrench (6).
11. Tighten the screw (2).

7.2 Adjusting the lower stitch length adjusting wheel

Proper setting

Sew with 2 different stitch lengths.

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

Fig. 18: Adjusting the lower stitch length adjusting wheel

To adjust the lower stitch length adjusting wheel:

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

7. To set the stitch length, use a size 10 wrench to carefully turn the shaft (4).
   • to set a shorter stitch length: turn counterclockwise
   • to set a longer stitch length: turn clockwise

8. Perform a sewing test with a sheet of paper and readjust if necessary.

9. Turn the scale (5) so that the number indicating the stitch length is exactly next to the adjusting mark (3).

10. Place the lower stitch length adjusting wheel (2) onto the shaft (4) and tighten it with the wrench (6).

11. Tighten the screw (1).

7.3 Adjusting the stitch length limit

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

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

Proper setting

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

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

Fig. 19: Adjusting the stitch length limit

To adjust the stitch length limit:

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

7.4 Adjusting the eccentric for the forward and backward stitches

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

Fig. 20: Adjusting the eccentric for the forward and backward stitches

To adjust the eccentric for forward and backward stitches:
1. Tilt the machine head (p. 14).
2. Loosen the threaded pin (3).
3. Turn the eccentric screw (1) from the right through the slot in the base plate:
   Initial position:
The slot in the eccentric screw (1) is parallel to the axle of the machine, and the recess (2) faces down.
   If the forward and backward stitches are not the same length:
   • Turn clockwise: the forward stitch becomes larger, the backward stitch smaller.
   • Turn counterclockwise: the forward stitch becomes smaller, the backward stitch larger.
4. Tighten the threaded pin (3).
8 Feed dog

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

Order

First, check the following setting:

• Needle bar linkage (p. 45)

8.1 Adjusting the feed dog position

**WARNING**

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before you set the feed dog position.

Proper setting

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

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

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

• For minimal deviations, it suffices to move the feed dog on the carrier (p. 36)
• If this is not sufficient, move the entire feed dog carrier on the pusher shaft (p. 37)
8.1.1 Moving the feed dog

To move the feed dog:

1. Disassemble the throat plate (p. 19).
2. Loosen the screws (3).
3. Move the feed dog (1) on the feed dog carrier (2).
   Place the removed throat plate next to it as an aid for orientation, so that the feed dog can be screwed on straight.
4. Tighten the screws (3).
8.1.2 Moving the feed dog carrier

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

Fig. 22: Moving the feed dog carrier

1. Tilt the machine head (p. 14).
2. Set the upper stitch length adjusting wheel to 0.
3. Loosen the connection to the pull rod using the two screws (1).
4. Loosen the screw (6).
5. Unscrew threaded pins for the set collars (2).
6. Move the feed dog carrier perpendicular to the sewing direction so that the feed dog is exactly in the center of the throat plate cutout.
7. Push the set collars (2) toward each other as far as they will go.

Important
Make sure that the pusher shaft (3) is tightened by the set collars.

8. Tighten the threaded pins for the set collars (2).
9. Move the feed dog carrier in the sewing direction such that the feed dog is exactly in the center of the throat plate cutout.
10. Tighten the rear screw (6).
11. Tighten the connection to the pull rod using the screws (1).

Important
In the process, make sure that the feed dog height has the correct setting (p. 39).
8.2 Adjusting the feed dog movement

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

Order

First, check the following setting:

- Feed dog (p. 35)

8.2.1 Adjusting the feed movement

**WARNING**

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before you adjust the feed movement.

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

**Proper setting**

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

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

*Fig. 23: Adjusting the feed movement*

To adjust the feed movement:

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

8.2.2 Adjusting the feed dog height at top dead center

**WARNING**

**Risk of injury from moving parts!**
Crushing possible.
Switch off the machine before you adjust the feed dog height.

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

**Proper setting**
Place the feed dog in the uppermost position by turning the handwheel.

- The upper edge of the feed dog protrudes 0.5 mm above the throat plate.
- In machines with short thread cutters (KFA), the upper edge of the feed dog protrudes 0.8 mm above the throat plate.

*Fig. 24: Adjusting the feed dog height at top dead center*

To adjust the feed dog height at top dead center:
1. Tilt the machine head (p. 14).
2. Move the handwheel into the 190° position.
3. Loosen the threaded pins (2) on the lever (1) at the left, above the hook.
4. Turn the lever (1) such that the upper edge of the feed dog protrudes 0.5 mm (KFA = 0.8 mm) above the throat plate.
5. Tighten the threaded pins (2).
8.3 Feed dog lift (default)

**WARNING**

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before adjusting the feed dog lift.

8.3.1 Adjusting the stroke movement

**Order**
First, check the following setting:

- Feed dog height (p. 39)

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

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

*Fig. 25: Adjusting the stroke movement*

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

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

5. Tighten the threaded pins (1).

8.3.2 Adjusting the compensating weight

Proper setting

Handwheel position 210°:

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

Fig. 26: Adjusting the compensating weight

To adjust the compensating weight:

1. Tilt the machine head (p. 14).
2. Move the handwheel into the 210° position.
3. Unscrew the threaded pin (1) and leave the allen key inserted in the threaded pin.
4. Turn the compensating weight (2) such that the threaded pin (1) is parallel to the base plate (3). Use the allen key inserted in the threaded pin as a means of orientation.
5. Tighten the threaded pin (1).
8.4 Feed dog lift (adjustable stroke eccentric)

**WARNING**

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before adjusting the feed dog lift.

8.4.1 Adjusting the stroke movement

**Order**
First, check the following setting:

- Feed dog height (p. 39)

**Proper setting**
At the front dead center (handwheel position 90°) and at the rear dead center (handwheel position 270°) for the feed dog, the upper edge of the feed dog is at the same height as the upper edge of the throat plate.
At 90°, the feed dog is in the upward movement; at 270°, in the downward movement.

*Fig. 27: Adjusting the stroke movement*

To adjust the stroke movement:

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

**NOTICE**

*Property damage may occur!*

The feed dog may damage the thread-pulling knife on machines with a short thread cutter.

Make sure the feed dog does not sink too deeply into the throat plate to prevent damage to the thread-pulling knife.

---

To adjust the stroke eccentric:

1. Tilt the machine head (p. 14).
2. Loosen the screws (1).
3. Turn the disk (3).
   - Grain (2) in the + range: Increase the feed dog lift
   - Grain (2) in the - range: Reduce the feed dog lift
   - Grain (2) on the center line: Default feed dog lift
4. Tighten the screws (1).
5. Erect the machine head.
6. Check the feed dog lift and readjust it if necessary.
Important

The higher the feed dog lift, the deeper the feed dog plunges into the throat plate and may damage the thread-pulling knife or the hook tip. Making sure that the feed dog lift is not set too high is particularly important on machines with a short thread cutter (setting in the + range) in order to keep the thread-pulling knife from sustaining damage.

7. Check the setting.
   • Position the feed dog at top bottom center
   • Slide a sheet of paper between feed dog and thread-pulling knife

⚠️ If the sheet of paper can be slid effortlessly between feed dog and thread-pulling knife, the feed dog lift is set correctly. If the sheet of paper cannot be slid or is crushed between feed dog and thread-pulling knife, the feed dog lift must be reduced.
9 Aligning the needle bar linkage

Proper setting
Position the upper and lower stitch length adjusting wheel to 0.

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

9.1 Aligning the needle bar linkage sideways

WARNING
Risk of injury from moving parts!
Crushing possible.

Switch off the machine before aligning the needle bar linkage.

To align the needle bar linkage sideways:
1. Disassemble the arm cover (p. 15).
2. Disassemble the head cover (p. 16).
3. Set the upper and lower stitch length adjusting wheel to 0.
4. Loosen the threaded pins (1) on the two set collars (2) at the right-hand end of the shaft for the needle bar linkage.
5. Loosen the threaded pins (6) on the arm shaft crank (5). Make sure that the threaded pins stay on the surface.

**Important**

6. Move the needle bar linkage (4) sideways such that the needle pierces exactly in the center of the needle hole (3) for the feed dog.

7. Push the set collars (2) inwards as far as they will go and tighten them.

8. Tighten the threaded pins (1).

9. Align the thread lever (7) exactly in the middle of the slot.

10. Tighten the threaded pins (6).

**Order**

Then check the following settings:

- Looping stroke position (p. 50)
- Distance between hook and needle (p. 49)
9.2 Aligning the needle bar linkage in the sewing direction

**WARNING**

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before aligning the needle bar linkage.

**Fig. 31: Aligning the needle bar linkage in the sewing direction**

1. Disassemble the valve cover (p. 17).
2. Tilt the machine head (p. 14).
3. Set the lower stitch length adjusting wheel to 0.
4. Set the upper stitch length adjusting wheel to 0.
5. Loosen the threaded pins (4).
6. Loosen the screw (5).
7. Position the lever (2).
8. Tighten the threaded pins (4).
9. Tighten the screw (5).
Order

Then check the following setting:

• Looping stroke position (p. 50)
10 Position of the hook and needle

WARNING
Risk of injury from sharp and moving parts!
Puncture or crushing possible.
Move the machine into the service routine before adjusting the position of the hook and the needle.

NOTICE
Property damage may occur!
There is a risk of machine damage, needle breakage or damage to the thread if the distance between needle groove and hook tip is incorrect.
Check and, if necessary, readjust the distance to the hook tip after inserting a new needle with a different size.

10.1 Adjusting the hook side clearance

Order
First, check the following settings:
- Needle bar linkage is aligned correctly (p. 45)
- Looping stroke position (p. 50)

Proper setting
Machine is locked in place at position 1 (p. 22).
The distance between the hook tip and the groove of the needle is no greater than 0.1 mm.

Fig. 32: Adjusting the hook side clearance

(1) - Set collar
(2) - Threaded pins
(3) - Hook support
(4) - Screws
(5) - Needle groove
(6) - Hook tip
To adjust the hook side clearance:

1. Tilt the machine head (p. 14).
2. Open the throat plate slides (p. 18).
3. Lock the machine in place at position 1 (p. 22).
4. Loosen the screws (4) for the hook support (3).
5. Loosen the threaded pins (2) for the set collar (1).
6. Shift the hook support (3) laterally.
7. The distance between the hook tip (6) and the groove of the needle (5) is maximum 0.1 mm. The hook tip (6) does not touch the needle.
8. Tighten the screws (4) for the hook support (3).
9. Check the looping stroke position (p. 50).
10. Tighten the threaded pins (2) for the set collar (1).
11. Remove the lock.

Order

Then check the following setting:

• Position of the needle guard (p. 52)

10.2 Adjusting the looping stroke position

Fig. 33: Adjusting the looping stroke position (1)

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

The looping stroke is precisely 2 mm.

Order

First, check the following settings:

• Needle bar linkage is aligned correctly (p. 45)
Proper setting

Machine is locked in place at position 1 (p. 22).
The hook tip (2) points exactly to the vertical center line of the needle (1).

Fig. 34: Adjusting the looping stroke position (2)

To adjust the looping stroke position:

1. Tilt the machine head (p. 22).
2. Disassemble the throat plate (p. 19).
3. Disassemble the feed dog (p. 20).
4. Lock the machine in place at position 1 (p. 22).
5. Loosen the threaded pins (2) for the set collar (1).
6. Turn the hook such that the hook tip (4) points exactly to the vertical center line of the needle (3).
7. Tighten the threaded pins (2) for the set collar (1).
8. Remove the lock.

Order

Then, check the following settings:

- Position of the needle guard (p. 52)
- Timing of cutting by the thread trimmer (p. 73), (p. 81)
10.3 Adjusting the needle guard

The needle guard prevents contact between needle and hook tip.

**Order**

First, check the following settings:

- Looping stroke position (p. 50)
- Hook side clearance (p. 49)
- Needle bar height (p. 53)

**Proper setting**

Machine is locked in place at position 1 (p. 22).

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

*Fig. 35: Adjusting the needle guard*

To adjust the needle guard:

1. Disassemble the throat plate (p. 19).
2. Disassemble the feed dog (p. 20).
3. Turn the handwheel and check how far the needle guard (3) pushes the needle (1) away.
4. Turn the screw (2) such that the needle guard (3) just pushes the needle (1) far away enough so that it cannot be touched by the hook tip:
   - **Pushing away more strongly:** turn counterclockwise
   - **Pushing away less strongly:** turn clockwise
10.4 Adjusting the needle bar height

Order
First, check the following settings:

• Looping stroke position (p. 50)

Proper setting
Machine is locked in place at position 1 (p. 22).

Disturbance
Disturbances caused by an incorrect needle bar height

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

Fig. 36: Adjusting the needle bar height

To adjust the needle bar height:
1. Disassemble the head cover (p. 16).
2. Loosen the screw (2) of the needle bar (1).
3. Move the height of the needle bar (1) such that the hook tip (4) is in the middle of the lower third of the groove for the needle. When doing so, take care not to twist the needle to the side. The groove (3) must face toward the hook.
4. Tighten the screw (2) for the needle bar (1).

Order
Then, check the following settings:

• Position of the needle guard (p. 52)
11 Adjusting the bobbin case lifter

**WARNING**

Risk of injury from moving parts!
Crushing possible.

Switch off the machine before adjusting the bobbin case lifter.

---

*Fig. 37: Adjusting the bobbin case lifter*

The hook pulls the needle thread through between the nose of the bobbin case (3) and the slot in the throat plate (4).

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

If the hook tip is located below the bobbin case lifter (2), the bobbin case lifter (2) must open so that the thread can also slide past in that position.

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

**Disturbance**

Disturbances caused by an incorrect setting of the bobbin case lifter:

- Thread breaking
- Formation of loops on the bottom side of the seam
- Loud machine noise
11.1 Adjusting the lifting gap

Fig. 38: Adjusting the lifting gap (1)

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

Proper setting

The needle thread slides through unobstructed between the nose of the bobbin case (1) and the slot in the throat plate (2).

To adjust the lifting gap:

1. Tilt the machine head (p. 14).
2. Open the throat plate slides (p. 18).

Fig. 39: Adjusting the lifting gap (2)

3. Loosen the screw (5).
4. Push the cover (4) downwards.
5. Loosen the threaded pin (3).
6. Set the bobbin case lifter (6) so that the gap between the nose of the bobbin case (1) and the slot in the throat plate (2) is just large enough to allow the needle thread to slip through without a problem.

Important

Ensure that the gap is not too big. The middle part of the hook must not swing back and forth, hitting the slot in the throat plate (2).
7. Tighten the threaded pin (3).
8. Push the cover (4) upwards.
9. Tighten the screw (5).

11.2 Adjusting the timing for lifting

Fig. 40: Adjusting the timing for lifting

Proper setting
-The bobbin case lifter starts to open exactly at the point when the hook tip is located below the bobbin case lifter after the loop is taken up.

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

For 100° or 300°, the threaded pin (4) is exactly in the middle of the opening. (Insert allen key in the threaded pin for orientation.)

To adjust the timing for lifting:
1. Tilt the machine head (p. 14).
2. Remove the plug (1) on the bottom side of the hook housing (2).
3. Loosen the threaded pin (4) through the opening.
4. Turn the handwheel until the hook tip is exactly below the bobbin case lifter.
5. Use the allen key to turn the control cam (3) so that the bobbin case lifter opens at the correct point in time.
6. Tighten the threaded pin (4).
7. Insert the plug (1) into the opening.
8. Perform a sewing test.
12 Sewing Feet

**WARNING**

Risk of injury from sharp and moving parts!
Puncture or crushing possible.
Switch off the machine before you adjust the sewing feet.

**NOTICE**

Property damage may occur!
Machine can be damaged if the adjusting wheels are forced.
Do not attempt to use force to set a lower sewing foot stroke at the right adjusting wheel.

**Fig. 41: Sewing Feet**

The 2 adjusting wheels (3) on the machine arm determine how high the presser foot (1) and walking foot (2) are raised when sewing. The left adjusting wheel determines the normal sewing foot stroke. The right adjusting wheel determines the increased sewing foot stroke. The increased sewing foot stroke must NOT be lower than the normal sewing foot stroke.
12.1 Adjusting an even sewing foot stroke

Proper setting
For sewing foot stroke 3, the presser foot and walking foot are raised by the same height.

Fig. 42: Adjusting an even sewing foot stroke

To set an even sewing foot stroke:
1. Disassemble the arm cover (p. 15).
2. Move the handwheel into the 0° position.
3. Loosen the screw (3).
4. Lower the presser foot (1) and walking foot (2) together down to the throat plate.

Important
While doing so, make sure that the walking foot is only lowered down to the throat plate. Do not inadvertently lower the walking foot through the throat plate cutout down to the feed dog.
5. Tighten the screw (3).
12.2 Adjusting the stroke movement for the walking foot

**Fig. 43: Adjusting the stroke movement for the walking foot (1)**

**Order**
First, check the following adjustment:

- Even sewing foot stroke (p. 58)
- The feed dog stroke movement (p. 40)

**Proper setting**
The walking foot (1) touches down exactly on the feed dog (2) when the downward movement of the needle tip (3) reaches the upper edge of the walking foot. This occurs at handwheel position 95°.

**Fig. 44: Adjusting the stroke movement for the walking foot (2)**

To adjust the stroke movement for the walking foot:

1. Disassemble the arm cover (p. 15).
2. Screw in the threaded pin (6) so that there is a stroke.
3. Set the upper stitch length adjusting wheel to 0.
4. Loosen the threaded pins (5).
5. Turn the stroke eccentric (4) such that the walking foot touches down on the feed dog when the handwheel is in the 95° position.

**Important**
When doing so, ensure not to move the stroke eccentric (4) laterally on the axle.

6. Tighten the threaded pins (5).
7. Unscrew the threaded pin (6) far enough so that there is no longer any contact with the clamp.

### 12.3 Adjusting the sewing foot pressure

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

The correct pressure depends on the sewing material:

- Lower pressure for soft materials
- Higher pressure for durable materials

*Fig. 45: Adjusting the sewing foot pressure*

![Adjusting wheel for the sewing foot pressure](image)

(1) - Adjusting wheel for the sewing foot pressure

To adjust the sewing foot pressure:

1. Turn the adjusting wheel for the sewing foot pressure (1):
   - **greater pressure**: turn clockwise
   - **lower pressure**: turn counterclockwise
12.4 Adjusting the sewing foot lifting height

**CAUTION**

Risk of injury from moving parts!
Crushing possible.
The machine must remain switched on so that the sewing feet can be raised.
Exercise particular caution when adjusting the sewing foot lifting height.
Do NOT place your hands under the sewing feet when they are being lowered.

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

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

**Proper setting**
The distance between the raised sewing feet and the throat plate is preset to 25 mm on delivery.

*Fig. 46: Adjusting the sewing foot lifting height*

| (1) | Screw |
| (2) | Counternut |

To adjust the lifting height of the sewing foot:
1. Loosen the counternut (2).
2. Turn the screw (1) to adjust the distance between the raised sewing feet and the throat plate:
   - **Raise the sewing feet to a lesser height**: turn clockwise
   - **Raise the sewing feet higher**: turn counterclockwise
3. Tighten the counternut (2).
13 Adjusting the needle thread tension

**CAUTION**

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before adjusting the needle thread tension.

13.1 Adjusting the needle thread regulator

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

**Lower thread tension for**
- thin sewing material
- low thread strengths

**Greater thread tension for**
- thick sewing material
- high thread strengths

**Proper setting**

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

*Fig. 47: Adjusting the needle thread regulator*

1. Open the throat plate slides (p. 18).
2. Turn the handwheel and observe the cycle of the needle thread around the hook.
3. Loosen the screw (1).
4. Move the needle thread regulator (2)
   • Reduce needle thread tension: slide to the left
   • Increase needle thread tension: slide to the right
5. Tighten the screw (1).

13.2 Adjusting the thread tensioning spring

Fig. 48: Adjusting the thread tensioning spring

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

**Proper setting**
The thread tensioning spring does not contact the stop until the needle eye has plunged into the sewing material.

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

To adjust the thread tensioning spring:

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

**Important**
Do not twist the stop collar in doing so.
4. Tighten the screw (4).
14 Winder

**WARNING**
Risk of injury from moving parts!
Crushing possible.
Switch off the machine before adjusting the winder.

14.1 Adjusting the winder wheel and the driver wheel (long arm machines)

*Fig. 49: Adjusting the winder wheel and the driver wheel*

Proper setting

The distance between the winder wheel and the driver wheel is 0.8 mm.

To adjust the winder wheel and driver wheel:

1. Disassemble the arm cover ([p. 15](#)).
2. Loosen the threaded pins (1).
3. Move the driver wheel (2) to the right or left so that the distance to the winder wheel (3) is exactly 0.8 mm.
4. Tighten the threaded pins (1).
14.2 Adjusting the winder

**Fig. 50: Adjusting the winder (1)**

1. **Disassemble the arm cover ([p. 15](#)).**

**Disassembling the winder**
2. Loosen the screws (1).
3. Remove the winder.

**Adjusting the winder filling quantity**

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

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

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

To adjust the winder spacing:

7. Turn the winder spindle (6) such that the thread-pulling knife (5) is at the top right and is facing the right-hand screw hole (7).
8. Loosen the threaded pin in the block (8).
9. Adjust the winder lever (3) such that the upper arm is above the marking for the XXL hook (11).
   - The distance between the winder lever and the outer thread on the bobbin is 2 – 3 mm.
10. Adjust the block (8) such that it is resting against the locking disk (9).
11. Adjust the block (8) such that its distance to the winder wheel (10) is 0.5 mm.
12. Tighten the threaded pin in the block (8).
Adjusting the winder run

Fig. 53: Adjusting the winder (4)

To adjust the winder run:

13. Loosen the threaded pin (13).
14. Adjust the switch cam (14) such that it is just contacting the leaf spring (15) when the block (8) has engaged in the locking disk.
15. Adjust the switch cam (14) such that the winder lever (3) has no axial play.
16. Tighten the threaded pin (13).

Assembling the winder

Fig. 54: Adjusting the winder (5)

To assemble the winder:

17. Place the winder on the machine arm.
18. Tighten the screws (1).
14.3 Adjusting the hook thread guide

Fig. 55: Adjusting the hook thread guide

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

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

Proper setting

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

To adjust the bobbin thread guide:

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

**WARNING**

Risk of injury from sharp and moving parts!
Cutting and crushing possible.
Switch off the machine before adjusting the thread trimmer.

15.1 Adjusting the height of the thread-pulling knife

*Fig. 56: Adjusting the height of the thread-pulling knife*

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

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

**Proper setting**
The thread-pulling knife (2) pivots as closely as possible above the hook and is at the same height as the counter blade (1).
To adjust the height of the thread-pulling knife:

1. Open the throat plate slides (p. 18).
2. Loosen the screw (5).
3. Remove the thread-pulling knife (2).
4. Place as many washers between thread-pulling knife (2) and knife carrier (4) as necessary to ensure that the upper edges of the counter blade (1) and thread-pulling knife (2) are at the same height.
5. Keep any non-required washers on the top side between the thread-pulling knife (2) and screw (5).
6. Tighten the thread-pulling knife (2) using the screw (5).

15.2 Adjusting the cutoff curve

*Fig. 57: Adjusting the cutoff curve (1)*

![Diagram of cutoff curve](image)

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

**Proper setting**

The control cam (4) makes direct contact with the set collar (2). The distance between the widest extent (6) of the control cam (4) and the roller (1) is 0.1 mm at most. In resting position, the circle mark on the cutting edge of the thread-pulling knife is exactly next to the tip of the counter blade.

To adjust the cutoff curve:

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

Screw the 4 threaded pins (3) tightly in place on the set collar (2) before you loosen the threaded pins (5). The set collar (2) and control cam (4) are both mutually used as a stop and must not be loosened at the same time.

6. Loosen the threaded pins (5).
7. Press the actuating lever (7) against the solenoid (9).
8. Turn the control cam (4) such that its widest extent (6) is at the top, next to the roller (1).
9. Move the control cam (4) such that the distance between its widest extent (6) and the roller (1) is 0.1 mm at most.
10. Tighten the threaded pins (5).
11. Loosen the clamping screw (8) on the actuating lever (7).

Fig. 58: Adjusting the cutoff curve (2)

12. Turn the thread-pulling knife (12) so that the circle mark is exactly next to the tip of the counter blade (11).
13. Tighten the clamping screw (8) on the actuating lever (7) such that the actuating lever (7) has no axial play.
14. Loosen the threaded pins (3) on the set collar (2).
15. Push the set collar (2) to the right as far as it will go and against the control cam (4).
16. Check the looping stroke position (p. 50).
17. Tighten the threaded pins (3) on the set collar (2).
15.3 Adjusting the cutting pressure

Fig. 59: Adjusting the cutting pressure

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

**Proper setting**

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

**Disturbance**

Disturbances caused by an incorrect setting:

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

To adjust the cutting pressure:

1. Open the throat plate slides (p. 18).
2. Turn the handwheel until the thread-pulling knife (3) can be swung out by hand.
3. Loosen the screw (1).
4. Position the thread-pulling knife (3) so that the arrow mark is exactly next to the tip of the counter blade (2).
5. Turn the hook thread clamp (5) so that it rests against the thread-pulling knife (3).
6. Turn the counter blade (2) so that it rests against the thread-pulling knife (3).
7. Tighten the screw (1).
8. Check the position of the knife, as the counter blade can easily become warped when the screw is being tightened.
15.4 Adjusting point in time for cutting

Fig. 60: Adjusting point in time for cutting

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

To adjust the point in time for cutting:

1. Tilt the machine head (p. 14).
2. Open the throat plate slides (p. 18).
3. Loosen the threaded pins (6).
4. Turn the handwheel until the thread-pulling knife (4) can be swung out by hand.
5. Swivel the thread-pulling knife (4) forward until the circle mark is exactly next to the tip of the counter blade (5).
6. Adjust the handwheel position to 60°.
7. Push the control cam (3) to the left as far as it will go and against the set collar (2).
8. Turn the control cam (3) such that the roller (1) runs up at the contour of control cam (3) and the widest extent of the control cam is at handwheel position 60° at the highest point.
9. Tighten the threaded pins (6).
10. Check adjustment:
    • Insert the thread into thread-pulling knife (4) and slowly turn the handwheel.
    • Check the handwheel position at which the thread is cut.
11. If necessary, repeat adjustment steps 1 – 7 until the cut takes place at 60°.
16 Short thread cutter (KFA)

**WARNING**

Risk of injury from sharp and moving parts!  
Cutting and crushing possible. 
Switch off the machine before adjusting the short thread cutter.

**NOTICE**

Property damage may occur!  
Damage to the machine from missing thread-pulling knife.  
Risk of breakage.  
The reverse-motion lock for the bobbin case is on the thread-pulling knife.  
Use the machine only with a fitted thread-pulling knife.

**Order**

Correct setup of the short thread cutter (KFA) requires that the necessary work steps be performed in the order given in this chapter.

**Cover**

- Open the throat plate slides (p. 18)
- Disassemble the throat plate (p. 19)
- Disassemble the feed dog (p. 20)
16.1 General information

Information
For videos of KFA settings, visit our YouTube channel.

Important
The needle bar must be at the top dead center when the handwheel is at 0° (p. 45).
The hook bearing must be set correctly (p. 49).
The height of the thread-pulling knife is determined by the height of the counter blade. The upper edges of the two knives must be on the same level.

Thread-pulling knife height
The height of the thread-pulling knife has been set at the factory using adjusting washers between thread-pulling knife (1) and knife carrier (3). When changing the knives make sure that you do not lose the adjusting washers.
Thread-pulling knife position

The thread-pulling knife (1) cannot be moved on the knife carrier (3). Therefore, you will not have to adjust the cutting pressure after replacing the thread-cutting knife (1).

The knife carrier (3) can be installed in 2 different positions: Large hook and XXL hook. To do this, the knife carrier (3) is rotated by 180°.

In rest position, the thread-pulling knife (1) completely covers the cutting edge of the counter blade (2). This prevents the needle thread from being damaged.

The pivot range of the thread-pulling knife is 23°.

Fig. 62: General information (2)

The control cam (5) is designed for operating with the large hook and the XXL hook.

The control cam (5) can be on the right-hand side (label is right side up) or on the left side (label is upside down) of the set collar (4).

Proper setting

The control cam (5) makes contact with the set collar (4). The label of the control cam (5) is correct in accordance with the installation situation.
16.2 Adjusting the locking latch

Fig. 63: Adjusting the locking latch

To adjust the locking latch:

1. Loosen the nut (4).
2. Turn the screw (5) and adjust the distance.
3. Tighten the nut (4).

Checking the adjustment of the locking latch

To check the setting of the locking latch:

1. Turn the handwheel until the roller (2) is at the highest point of the control cam (3).
2. Press the roller (2) against the control cam (3).
   - The locking latch (1) can be swung out without clamping.
   - The distance between the locking latch (1) and locking pin (6) is not greater than 0.1 mm.
16.3 Adjusting the thread-pulling knife

Proper setting

When the thread-pulling knife (1) is at rest, the distance between the highest point of the control cam (7) and the roller (5) is 0.1 mm.

The control cam (7) makes contact with the set collar (6).

The marking (3) on the thread-pulling knife (1) is adjacent to the cutting edge of the counter blade (2).

The knife carrier (4) has no axial play, but can still run smoothly.

To adjust the thread-pulling knife:

1. Loosen all 4 screws on the set collar (6) and push the set collar (6) toward the hook bearing.
2. Tighten all 4 screws on the set collar (6).
3. Loosen both threaded pins on the control cam (7).
4. Turn the lever (8) as far as it will go against the screw (10).
5. Set the distance between the roller (5) and the highest point of the control cam (7) to 0.1 mm.
6. Tighten both threaded pins on the control cam (7).
7. Loosen the clamping screw (9) on the lever (8).
8. Turn the thread-pulling knife (1) until the marking (3) on the cutting edge of the counter blade (2) is adjacent to it.
9. Tighten the clamping screw (9). Take care to ensure that there is no axial play.
10. Loosen all 4 screws (6) on the set collar and push the set collar (6) as far as it will go and against the control cam (7).
11. Tighten all 4 screws on the set collar (6).
12. Check the loop stroke (p. 50).

16.4 Adjusting the counter blade

**Fig. 65: Adjusting the counter blade (1)**

**Proper setting**

The thread must be reliably cut using little pressure. The pressure is built up starting at the marking (2). Any 2 threads with the greatest strength used for sewing can be neatly cut simultaneously.

**Checking the proper setting**

To check the proper setting of the counter blade:

1. Turn the handwheel until the thread-pulling knife (1) can be swung out after the latch is triggered.
2. Swing out the thread-pulling knife (1) manually. To do this, press the lever with the roller (3) to the right against the control cam (4).
3. Insert 2 threads into the thread-pulling knife (1).
4. Turn the handwheel until the knife swivels down.
5. Check whether the sewing threads have been cleanly cut and pressure is built up starting at the marking (2).

**Disturbance**

Disturbances caused by an incorrect setting:

- Increased knife wear when the pressure is too great
- Problems in cutting the thread
Adjusting the cutting pressure

The shape of the thread-pulling knife automatically creates the required cutting pressure as soon as both cutting edges are on top of one another.

To adjust the cutting pressure:

1. Open the throat plate slides (p. 18).
2. Disassemble the throat plate (p. 19).
3. Disassemble the feed dog (p. 20).

Fig. 66: Adjusting the counter blade (2)

4. Swing out the thread-pulling knife (3) until the marking (2) is next to the cutting edge of the counter blade (1).
5. Loosen the screw (4).
6. Place the counter blade (1) in position against the thread-pulling knife (3).
7. Tighten the screw (4).
16.5 Adjusting point in time for cutting

Fig. 67: Adjusting point in time for cutting

Proper setting

The default is that the time for cutting is at 65° on the handwheel (thread lever at top dead center). When the machine is at the 65° position on the handwheel, the control cam (5) is at its highest point.

Cover

- Open the throat plate slides (p. 18)
- Disassemble the throat plate (p. 19)
- Disassemble the feed dog (p. 20)

Checking the proper setting

To check the proper setting:

1. Turn the handwheel to the 0° position (needle bar at top dead center).
2. Loosen the locking latch (8).
3. Press the lever (7) with the roller (3) to the right against the control cam (5).
4. Swing out the thread-pulling knife (1) manually.
5. Insert thread into the thread-pulling knife (1).
6. Use the handwheel to turn the machine until the thread is cut shortly before reaching the marking (2).
7. Check if the cut was made at the 65° position on the handwheel.
Adjusting point in time for cutting

To adjust the point in time for cutting:

1. Loosen the threaded pins (6) on the control cam (5).
2. Move the control cam (5) towards the set collar (4) until it makes contact and correct the position of the control cam (5).
3. Tighten the threaded pins (6) on the control cam (5).
4. Check and, if necessary, correct the cutting position.
17 Adjusting the potentiometer

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

Proper setting

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

Fig. 68: Adjusting the potentiometer (1)

To adjust the potentiometer:
1. Switch off the machine.
2. Disassemble the arm cover (p. 15).
3. Keep the buttons P (2) and Reset (4) pressed down simultaneously and switch on the machine when doing so.
   - The display starts.
4. Release the buttons P (2) and Reset (4).
   - The display indicates the current level.

The potentiometer is set at technician level t 10 04. If the display indicates a different level:
5. Calling the technician level using the Plus/Minus buttons (3):
   - As the case may be, press the Plus or Minus button below the letter or the number until the display indicates t 10 04.
6. Press the OK button.
7. Check whether the lifting gear plates are flush.

If the plates are not flush:

8. Loosen the threaded pins (6).
9. Adjust the block (7) for the lifting cylinder such that the plates are flush.
10. Tighten the threaded pins (6).
11. Loosen the threaded pin (8).
12. Turn the potentiometer axle such that the left display shows 1 in the first instance and the relevant maximum speed next to it.
13. Tighten the threaded pin (8) without changing the value shown in the display.
14. Press the ESC button two times.

**Important**

15. Switch off the machine.
16. Switch on the machine.
   - Switching off and on will save the adjustment.
18 Adjusting the safety snap-on coupling

**WARNING**

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before you adjust the safety release clutch.

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

### 18.1 Attaching the safety release clutch

*Fig. 70: Attaching the safety release clutch*

![Diagram showing safety release clutch components](image)

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

#### Proper setting

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

To latch the safety release clutch:

1. Tilt the machine head (p. 14).
2. Turn the left set collar (2) such that the threaded pins (1) are parallel to one another.
   - The safety release clutch latches into place.
18.2 Adjusting the torque

**NOTICE**

**Property damage may occur!**

If you change the torque, it could be that the coupling will not disengage although this would be required. This could cause machine damage, e.g. in the event of the thread jamming. Do NOT change the factory adjustment. Make sure that the torque remains at 8 Nm.

*Fig. 71: Adjusting the torque*

Proper setting

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

To adjust the torque:

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

**DANGER**

Risk of injury from electricity!
Unprotected contact with electricity can result in serious injuries or death.

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

**WARNING**

Risk of injury from moving parts!
Crushing possible.

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

19.1 Overview of the components

*Fig. 72: Overview of the components*

1. - Handwheel  
2. - Handwheel flange  
3. - Encoder  
4. - Encoder disk  
5. - Cover plate  
6. - Stator  
7. - Ring  
8. - Rotor
19.2 Disassembling the drive

19.2.1 Disassembling the handwheel and handwheel flange

*Fig. 73: Disassembling the handwheel and handwheel flange*

To disassemble the handwheel and handwheel flange:

1. Loosen the screws (2).
2. Disassemble the handwheel (1).
3. Loosen the threaded pins (3).
4. Disassemble the handwheel flange (4).
19.2.2 Disassembling the cover

Fig. 74: Disassembling the cover

To disassemble the cover:

1. Loosen the screws (1).
2. Carefully remove the upper cover (2) from the side, paying attention to the adjusting wheel (3) in doing so.

If there is a lower cover mounted:

3. Loosen the screws (5).
4. Remove the lower cover (4).
19.2.3 Disassembling the encoder

Fig. 75: Disassembling the encoder

To disassemble the encoder:

1. Disconnect plugs L1, L2, and L3 (5).
2. Disconnect the encoder plug (4).
3. Unscrew the plate (3).
4. Loosen the screws on the encoder (2).
5. Loosen the screw on the encoder disk (1).
6. Carefully and uniformly pull the encoder (2) and encoder disk (1) away from the shaft.

(1) - Encoder disk
(2) - Encoder
(3) - Plate
(4) - Encoder plug
(5) - Plugs L1, L2, L3
19.2.4 Disassembling the stator

Fig. 76: Disassembling the stator

To disassemble the stator:

1. Loosen the screws (1).
2. Pull off the plate (2).
3. Remove the stator with ring (3).
19.2.5 Disassembling the rotor

**Fig. 77: Disassembling the rotor**

To disassemble the rotor:

1. Disassemble the arm cover (p. 15).
2. Loosen threaded pins (1) and (2).
3. Remove the rotor with deep groove ball bearing (3).
19.3 Assembling the drive

19.3.1 Assembling the rotor

Fig. 78: Assembling the rotor

To assemble the rotor:

1. Push the rotor with deep groove ball bearing (3) onto the shaft until the deep groove ball bearing is resting against the stop.
2. Tighten threaded pins (1) and (2).
   Observe the surface of the shaft in doing so: Tighten the 1st screw in the direction of rotation firmly in place on the surface.
19.3.2 Assembling the stator

**NOTICE**

Property damage may occur!
The stator can be attracted by applying magnetic force.
Work carefully and in a controlled manner.

![Assembling the stator](image)

Fig. 79: Assembling the stator

(1) - Screws  
(2) - Plate  
(3) - Stator with ring

To assemble the stator:

1. Push the stator with ring (3) onto the shaft. In doing so, pay attention to the ring gap for the cable. Place the plate (2).
2. Evenly tighten the screws (1) firmly in place so that a uniform gap exists between the plate (2) and shaft.
19.3.3 Assembling the encoder

To assemble the encoder:

1. Push the encoder (2) and encoder disk (1) onto the shaft.
2. Align the encoder disk (1) such that it runs in the middle of the encoder (2).
3. Screw the encoder disk (1) and encoder (2) firmly in place.
4. Tighten the plate (3).
5. Insert plugs L1, L2, and L3 (5).
6. Insert the encoder plug (4).
19.3.4 Assembling the cover

Fig. 81: Assembling the cover

To assemble the cover:
1. Carefully attach the upper cover (2) from the side. Pay attention to the adjusting wheel (3) in doing so.
2. Tighten the screws (1).
3. Attach the lower cover (5).
4. Tighten the screws (4).
19.3.5 Locking the machine in place

Fig. 82: Locking the machine in place (1)

To lock the machine in place:

1. Lock the machine in place using the locking peg (1) (Ø 3 mm).
   • The needle is in the top dead center position.

19.3.6 Assembling the handwheel flange

Fig. 83: Assembling the handwheel flange

(1) - Locking peg

To lock the machine in place:

1. Lock the machine in place using the locking peg (1) (Ø 3 mm).
   • The needle is in the top dead center position.
To assemble the handwheel flange:

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

19.3.7 Assembling the handwheel

Fig. 84: Assembling the handwheel

To assemble the handwheel:

1. Attach the handwheel (1).
2. Tighten the screws (2).
3. Adjust the reference position via the control; see Instructions for use DAC basic/classic.
19.4 Replacing the fuse of the sewing light transformer

Fig. 85: Replacing the fuse of the sewing light transformer

1. Pull off plugs.
2. Loosen the screws (1) for the carrier plate of the PCB.
3. Replace the PCB (2).
4. Tighten the screws (1).
5. Insert plugs.

Important

Ensure that the motor is correctly connected!

19.5 Replacing the PCB

Fig. 86: Replacing the PCB

To replace the PCB:

1. Pull off plugs.
2. Loosen the screws (1) for the carrier plate of the PCB.
3. Replace the PCB (2).
4. Tighten the screws (1).
5. Insert plugs.

Important

Ensure that the motor is correctly connected!
20 Special machines

20.1 Machines with switchable needle bars

20.1.1 Adjusting the needle bar height

**WARNING**

Risk of injury from sharp and moving parts!
Puncture or crushing possible.
Switch off the machine before you adjust the needle bar height.

The needle bar height cannot be adjusted for machines with switchable needles. The height of the needles in relation to the hook tip is adjusted using the needle holders (1).

**Proper setting**

The height of the needle holders (1) should be set such that the hook tip is in the lower third of the groove when the stitch length is 0 and in looping stroke position.

**Disturbances caused by an incorrect setting**

- Damage to the hook tip
- Jamming of the needle thread between the needle and the needle guard
- Skip stitches and thread breaking

Fig. 87: Adjusting the needle bar height (1)

To adjust the needle bar height:

1. Set the stitch length adjusting wheel to 0.
2. Lock the machine in place at position 1 (p. 22).
3. Check the position of the needle to the hook tip.

*Fig. 88: Adjusting the needle bar height (2)*

4. Set the stitch length adjusting wheel to 0.

5. Loosen the threaded pins (3).

6. Remove the needle holder (1).

7. Using an allen key (SW 2.5), turn the threaded pin (4) in the needle bar (2).

   - The threaded pin serves as a stop for the needle holder (1).

8. Insert the needle holder (1) into the needle bar (2) and push it upwards as far as it will go.

   - In doing so, ensure that the hexagonal pin (5) on the needle holder (1) rests in the hexagon socket of the threaded pin (4).

9. Tighten the threaded pins (3).

**Order**

After correcting the needle bar height, check the position of the needle guard (p. 52).
20.1.2 Adjusting the slide

**WARNING**
Risk of injury from sharp and moving parts!
Puncture or crushing possible.
Switch off the machine before adjusting the slide.

**Proper setting**
The position of the slide (2) must be adjusted such that the center of the pin (4) of the slide (2) is exactly on the pin (3) when the slide is in zero position (both needles switched on).

*Fig. 89: Adjusting the needle bar slide*

![Diagram of needle bar slide with labeled parts]

- (1) - Screws
- (2) - Slide
- (3) - Pin
- (4) - Center of pin

To adjust the slide:
1. Loosen the screws (1).
2. Adjust slide (2).
3. Tighten the screws (1).
4. Check whether the needle bars switch cleanly.
20.2 Machines with moving binder

**WARNING**
Risk of injury from sharp and moving parts!
Puncture or crushing possible.
Switch off the machine before adjusting the binder.

Machines with a moving binder allow the edge of the sewing material to be bound simultaneously.

**Proper setting**
The binder (1) operates in sync with the feed. You can use the **Plus/Minus** buttons to adjust the binder for more width or less feed.

*Fig. 90: Machines with moving binder*

---

(1) - Binder  
(2) - Clamping block  
(3) - Screw  
(4) - Lever  
(5) - Shaft  
(6) - Hook shaft

**Basic setting for synchronous operation**
To adjust the basic setting for synchronous operation:

1. Set the handwheel to 100°.
2. The shaft (5) must be parallel to the hook shaft (6).
3. Remove the shaft (5).
4. Check for synchronous operation.
Fine adjustment of synchronous operation

To perform the basic adjustment of synchronous operation:

1. Loosen the screw (3).
2. Remove the lever (4).
3. Adjust the clamp (2) on the shaft (5).
   The clamp can be adjusted to the right or left as well as up or down.

20.3 Machines with edge trimmer

**WARNING**

Risk of injury from sharp and moving parts!
Puncture or crushing possible.
Switch off the machine before adjusting the edge trimmer.

Machines with an edge trimmer allow the sewing material to be cut during the sewing process. The edge trimmer is disabled each time the sewing feet are pneumatically lifted. When the knee lever is actuated, it is only disabled after the second/third lifting.

20.3.1 Adjusting the time for knife movement

**Proper setting**
The knife cuts the sewing material when material is not being fed.

*Fig. 91: Adjusting the time for knife movement*

(1) - Threaded pins  
(2) - Edge trimmer  
(3) - Toothed belt wheel
To adjust the time for the knife movement:
1. Disassemble the head cover (p. 16).
2. Loosen the threaded pins (1).
3. Adjust the toothed belt wheel (3) such that the knife only cuts when no material is being fed.
4. Tighten the threaded pins (1).

### 20.3.2 Adjusting the knife stroke

**Fig. 92: Adjusting the knife stroke**

![Image of machine parts labeled 1, 2, 3, 4 with corresponding labels: (1) Cover, (2) Knife, (3) Nut, (4) Screw]

The stroke height of the knife (1) can be adjusted. This is necessary if the knife was reground and is now shorter.

To adjust the knife stroke:
1. Disassemble the cover (1).
2. Loosen the nut (3).
3. Turn the screw (4):
   - **Increase the knife stroke**: Turn screw upwards
   - **Reduce the knife stroke**: Turn screw downwards
4. Tighten the nut (3).
20.3.3 Adjusting the blade overlap

Proper setting

If the knife (2) is at the bottom dead center, the overlap is 0.5 mm.

To adjust the blade overlap:

1. Loosen the screw (2).
2. Push the knife (1) down until it overlaps with the counter blade (3) by 0.5 mm.
3. Tighten the screw (2).

20.3.4 Adjusting the position and pressure of the cutting edges

The knife (2) should be somewhat diagonal to the counter blade (3). The knife (2) should cut reliably with the least possible pressure.
21 Programming

All software settings are performed using the OP1000 control panel.

The control panel is composed of a display and buttons.

Using the control panel you can:

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

Information

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

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

Fig. 95: Programming

(1) - Power LED
(2) - Thread button group
(3) - Function button
(4) - Programming button group
(5) - Seam program button group
(6) - LED for 2nd stitch length
(7) - Display
## OP1000 buttons and functions

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thread button group</strong></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Start bartack • Sets the start bartack</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Multiple start bartack • Sets the multiple start bartack</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>End bartack • Sets the end bartack</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Multiple end bartack • Sets the multiple end bartack</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Thread trimmer • Activates or deactivates the thread trimmer</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Thread clamp • Activates or deactivates the thread clamp</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Needle position after sewing stop • Sets the needle position after sewing stop</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Sewing foot lift after thread trimmer • Activates or deactivates the sewing foot lift after the thread trimmer</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Sewing foot lift after sewing stop • Activates or deactivates the sewing foot lift after sewing stops</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Soft start • Activates or deactivates the soft start</td>
</tr>
<tr>
<td><img src="image" alt="Thread button group" /></td>
<td>Speed • Reduces the motor speed</td>
</tr>
</tbody>
</table>

| **Function button** | |
| ![Function button](image) | • Activates or deactivates any stored function |

<p>| <strong>Programming button group</strong> | |
| <img src="image" alt="Programming button group" /> | ESC • Ends parameter mode |</p>
<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>• Increases parameter</td>
</tr>
<tr>
<td></td>
<td>• Changes user level</td>
</tr>
<tr>
<td></td>
<td>• Selects subprogram</td>
</tr>
<tr>
<td>B+</td>
<td>• Increases parameter</td>
</tr>
<tr>
<td></td>
<td>• Changes to next higher category</td>
</tr>
<tr>
<td></td>
<td>• Selects subprogram</td>
</tr>
<tr>
<td>C+</td>
<td>• Increases parameter</td>
</tr>
<tr>
<td></td>
<td>• Selects subprogram</td>
</tr>
<tr>
<td>D+</td>
<td>• Increases parameter</td>
</tr>
<tr>
<td></td>
<td>• Selects subprogram</td>
</tr>
<tr>
<td>OK</td>
<td>• Calls parameter or saves it</td>
</tr>
<tr>
<td>P</td>
<td>• Starts or ends the parameter mode</td>
</tr>
<tr>
<td>A-</td>
<td>• Decreases parameter</td>
</tr>
<tr>
<td></td>
<td>• Changes user level</td>
</tr>
<tr>
<td></td>
<td>• Selects subprogram</td>
</tr>
<tr>
<td>B-</td>
<td>• Decreases parameter</td>
</tr>
<tr>
<td></td>
<td>• Changes to next lower category</td>
</tr>
<tr>
<td></td>
<td>• Selects subprogram</td>
</tr>
<tr>
<td>C-</td>
<td>• Decreases parameter</td>
</tr>
<tr>
<td></td>
<td>• Selects subprogram</td>
</tr>
</tbody>
</table>
### Button Function

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
</table>
| ![D-](image) | • Decreases parameter  
• Selects subprogram |
| ![Reset](image) | • Resets the (piece) counter |

#### Seam program button group

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Seam program I" /></td>
<td>• Activates seam program I</td>
</tr>
<tr>
<td><img src="image" alt="Seam program II" /></td>
<td>• Activates seam program II</td>
</tr>
<tr>
<td><img src="image" alt="Seam program III" /></td>
<td>• Sets seam program III</td>
</tr>
</tbody>
</table>
21.1 Activating the tensioner lift

**NOTICE**

Production of loose stitches!

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

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

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

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

To activate the tensioner lift:

1. Press the and buttons at the same time.
   - You are on the technician level.
2. Use the buttons under the display to select the parameter t0900.
3. Use +/- to enter the desired value (Parameter list 867).
4. Confirm with .
21.2 Activating the NSB

Fig. 96: Activating the NSB

To activate the NSB:

1. Check the software version.

Important
The software version must be \textbf{B03.50} or later.
You can download the latest machine software on the Internet

2. Update to the latest software version if necessary.

3. Press and hold the buttons \textbf{P} and \textbf{ at the same time.}

4. Open parameter t 01 30.

5. Enter the value 2.

\textbullet\hspace{1em} The NSB has been activated in the software.

6. Check all NSB parameters and adjust them if necessary
(See Parameter list 867).

7. To activate the NSB during sewing, press the \textbf{ button.
22 Maintenance

**WARNING**

Risk of injury from sharp parts!
Punctures and cutting possible.
Prior to any maintenance work, switch off the machine or set the machine to threading mode.

**WARNING**

Risk of injury from moving parts!
Crushing possible.
Prior to any maintenance work, switch off the machine or set the machine to threading mode.

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

### Maintenance intervals

<table>
<thead>
<tr>
<th>Work to be carried out</th>
<th>Operating hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine head</td>
<td></td>
</tr>
<tr>
<td>Removing lint and thread remnants</td>
<td>●</td>
</tr>
<tr>
<td>Check the oil level</td>
<td>●</td>
</tr>
<tr>
<td>Check the hook lubrication</td>
<td>●</td>
</tr>
<tr>
<td>Pneumatic system</td>
<td></td>
</tr>
<tr>
<td>Adjusting the operating pressure</td>
<td>●</td>
</tr>
<tr>
<td>Draining the water-oil mixture</td>
<td>●</td>
</tr>
<tr>
<td>Cleaning the filter element</td>
<td>●</td>
</tr>
<tr>
<td>Specific components</td>
<td></td>
</tr>
<tr>
<td>Cleaning the motor fan mesh</td>
<td>●</td>
</tr>
<tr>
<td>Checking the toothed belt</td>
<td>●</td>
</tr>
</tbody>
</table>
22.1 Cleaning

**WARNING**

Risk of injury from flying particles!
Flying particles can enter the eyes, causing injury.

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

**NOTICE**

Property damage from soiling!  
Lint and thread remnants can impair the operation of the machine.  
Clean the machine as described.

**NOTICE**

Property damage from solvent-based cleaners!  
Solvent-based cleaners will damage paintwork.  
Use only solvent-free substances for cleaning.

Lint and thread remnants should be removed after every 8 operating hours using a compressed air gun or a brush. If very fluffy sewing material is being sewn the machine must be cleaned more frequently.
Fig. 97: Cleaning

Areas particularly susceptible to soiling:
- Knife on the winder (4)
- Area under the throat plate (3)
- Hook (2)
- Area around the needle (1)

To clean the machine:
1. Remove any lint and thread remnants using a compressed air gun or a brush.
22.2 Lubricating

**CAUTION**

**Risk of injury from contact with oil!**
Oil can cause a rash if it comes into contact with skin.

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

---

**NOTICE**

**Property damage from incorrect oil!**
Incorrect oil types can result in damage to the machine.

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

---

**CAUTION**

**Risk of environmental damage from oil!**
Oil is a pollutant and must not enter the sewage system or the soil.

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

---

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

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

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

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

<table>
<thead>
<tr>
<th>Container</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 ml</td>
<td>9047 000011</td>
</tr>
<tr>
<td>1 l</td>
<td>9047 000012</td>
</tr>
<tr>
<td>2 l</td>
<td>9047 000013</td>
</tr>
<tr>
<td>5 l</td>
<td>9047 000014</td>
</tr>
</tbody>
</table>
22.2.1 Lubricating the machine head

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

To top off the oil:
1. Fill oil through the oil filler opening (1) up to the MAX marking (2).
2. Turn the machine off, then on again after refilling oil. The red light will turn off.
22.2.2 Adjusting the hook lubrication

Fig. 99: Adjusting the hook lubrication

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

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

To adjust the hook lubrication:
1. Open the throat plate slides (𝑖 p. 18).
2. Turn the screw (3):
   • Release more oil: turn counterclockwise
   • Release less oil: turn clockwise

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

22.3.1 Adjusting the operating pressure

**NOTICE**

Property damage from incorrect adjustment!
Incorrect operating pressure can result in damage to the machine.
Ensure that the machine is only used when the operating pressure is set correctly.

**Proper setting**

Refer to the Technical data (p. 137) chapter for the permissible operating pressure. The operating pressure cannot deviate by more than ± 0.5 bar.

Check the operating pressure on a daily basis.

*Fig. 100: Adjusting the operating pressure*

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

![Diagram of pressure regulator](image-url)
22.3.2 Draining the water-oil mixture

**NOTICE**

**Property damage from excess liquid!**
Too much liquid can result in damage to the machine.
Drain liquid as required.

The collection tray (2) of the pressure regulator will show accumulation of a water-oil mixture.

**Proper setting**
The water-oil mixture must not rise up to the level of the filter element (1).

Check the level of the water-oil mixture in the collection tray (2).

*Fig. 101: Draining the water-oil mixture*

To drain the water-oil mixture:

1. Disconnect the machine from the compressed air supply.
2. Place the vessel under the drain screw (3).
3. Loosen the drain screw (3) completely.
4. Allow the water-oil mixture to drain into the vessel.
5. Tighten the drain screw (3).
6. Connect the machine to the compressed air supply.
22.3.3 Cleaning the filter element

**NOTICE**

Damage to the paintwork from solvent-based cleaners!
Solvent-based cleaners damage the filter.
Use only solvent-free substances for washing out the filter tray.

Fig. 102: Cleaning the filter element

(1) - Filter element
(2) - Collection tray
(3) - Drain screw

To clean the filter element:
1. Disconnect the machine from the compressed air supply.
2. Drain the water-oil mixture (p. 120).
3. Unscrew the collection tray (2).
4. Unscrew the filter element (1).
5. Blow out the filter element (1) using the compressed air gun.
6. Wash out the filter tray using benzine.
7. Tighten the filter element (1).
8. Tighten the collection tray (2).
9. Tighten the drain screw (3).
10. Connect the machine to the compressed air supply.
22.4 Servicing specific components

22.4.1 Cleaning the motor fan mesh

**WARNING**

Risk of injury from flying particles!
Flying particles can enter the eyes, causing injury.
Wear safety goggles.
Hold the compressed air gun so that the particles do not fly close to people.
Make sure no particles fly into the oil pan.

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

*Fig. 103: Cleaning the motor fan mesh*

![Diagram of Tabletop and Motor Fan Mesh]

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

To clean the motor fan mesh:

1. Remove any lint and thread remnants using a compressed air gun.
22.4.2 Checking the toothed belt

**WARNING**

Risk of injury from moving parts!
Crushing possible.
Switch off the machine before checking the toothed belt.

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

**Important**

A damaged toothed belt must be replaced immediately.

**Proper setting**

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

22.5 Parts list

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

www.duerkopp-adler.com
23 Decommissioning

**WARNING**
Risk of injury from a lack of care!
Serious injuries may occur.

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

**CAUTION**
Risk of injury from contact with oil!
Oil can cause a rash if it comes into contact with skin.

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

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

CAUTION

Risk of environmental damage from improper disposal!

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

ALWAYS comply with the national regulations regarding disposal.

The machine must not be disposed of in the normal household waste. The machine must be disposed of in a suitable manner in accordance with all applicable national regulations. When disposing of the machine, be aware that it consists of a range of different materials (steel, plastic, electronic components, etc.). Follow the national regulations when disposing these materials.
25 Troubleshooting

25.1 Customer Service
Contact for repairs and issues with the machine:

Dürkopp Adler AG
Potsdamer Str. 190
33719 Bielefeld, Germany
Tel. +49 (0) 180 5 383 756
Fax +49 (0) 521 925 2594
Email: service@duerkopp-adler.com
Internet: www.duerkopp-adler.com

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

25.2.1 Information messages

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
<th>Remedial action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1203</td>
<td>Position not reached (during thread cutting, reversal, etc.)</td>
<td>• Check the controller settings and change them if required; make mechanical changes to the machine (e.g. thread trimmer, setting for belt tension, etc.) • Check position (thread lever at top dead center)</td>
</tr>
<tr>
<td>2020</td>
<td>DACextension box not responding</td>
<td>• Check connection cables • Check LEDs of DACextension box • Software update</td>
</tr>
<tr>
<td>2021</td>
<td>Sewing motor encoder plug (Sub-D, 9-pin) not connected to DACextension box</td>
<td>• Connect encoder cable to DACextension box using the correct connection</td>
</tr>
<tr>
<td>2120</td>
<td>DA stepper card 1 not responding</td>
<td>• Check connection cables • Check LEDs of DACextension box • Software update</td>
</tr>
<tr>
<td>Code</td>
<td>Type</td>
<td>Remedial action</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2121</td>
<td>DA stepper card 1 encoder plug (Sub-D, 9-pin) not connected</td>
<td>• Connect encoder cable to the control, use correct connection</td>
</tr>
<tr>
<td>2122</td>
<td>DA stepper card 1 rotor position not found</td>
<td>• Check connection cables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Check stepper motor 1 for stiff movement</td>
</tr>
<tr>
<td>2220</td>
<td>DA stepper card 2 not responding</td>
<td>• Check connection cables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Check LEDs of DACextension box</td>
</tr>
<tr>
<td>2221</td>
<td>DA stepper card 2 encoder plug (Sub-D, 9-pin) not connected</td>
<td>• Connect encoder cable to the control, use correct output</td>
</tr>
<tr>
<td>2222</td>
<td>DA stepper card 2 rotor position not found</td>
<td>• Check connection cables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Check stepper motor 2 for stiff movement</td>
</tr>
<tr>
<td>3103</td>
<td>Low voltage warning (1st threshold)</td>
<td>• Check mains voltage</td>
</tr>
<tr>
<td></td>
<td>Mains voltage &lt; 180 V AC</td>
<td>• Stabilize the mains voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use generator</td>
</tr>
<tr>
<td>3108</td>
<td>Speed limited due to insufficient mains voltage</td>
<td>• Check mains voltage</td>
</tr>
<tr>
<td>3150</td>
<td>Maintenance necessary</td>
<td>• Information on lubricating the machine</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="#">Service Instructions</a></td>
</tr>
<tr>
<td>3155</td>
<td>No release for sewing process</td>
<td>• Parameter $t_{51} 20 - t_{51} 33 = 25$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Input signal for sewing process release required</td>
</tr>
<tr>
<td>3160</td>
<td>Stitch loosening device</td>
<td>• Stitch loosening cannot be performed</td>
</tr>
<tr>
<td>3215</td>
<td>Bobbin stitch counter (info value 0 reached)</td>
<td>• Change bobbin, set counter value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Press counter reset button</td>
</tr>
<tr>
<td>3216</td>
<td>Remaining thread monitor left</td>
<td>• Change the left bobbin</td>
</tr>
<tr>
<td>3217</td>
<td>Remaining thread monitor right</td>
<td>• Change the right bobbin</td>
</tr>
<tr>
<td>3218</td>
<td>Remaining thread monitor left and right</td>
<td>• Change the left and right bobbin</td>
</tr>
<tr>
<td>3223</td>
<td>Skip stitch detected</td>
<td></td>
</tr>
<tr>
<td>3224</td>
<td>Bobbin failed to rotate</td>
<td></td>
</tr>
<tr>
<td>6360</td>
<td>No valid data on external EEprom (internal data structures are not</td>
<td>• Software update</td>
</tr>
<tr>
<td></td>
<td>compatible with the external data storage device)</td>
<td></td>
</tr>
<tr>
<td>6361</td>
<td>No external EEprom connected</td>
<td>• Connect machine ID</td>
</tr>
<tr>
<td>Code</td>
<td>Type</td>
<td>Remedial action</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 6362  | No valid data on internal EEPROM (internal data structures are not compatible with the external data storage device) | • Check machine ID connection  
• Switch off the control, wait until the LEDs are off, and then switch the control on again  
• Software update |
| 6363  | No valid data on internal and external EEPROM (software version is not compatible with the internal data storage device, emergency operating features only) | • Check machine ID connection  
• Switch off the control, wait until the LEDs are off, and then switch the control on again  
• Software update |
| 6364  | No valid data on internal EEPROM and no external EEPROM connected (the internal data structures are not compatible with the external data storage device, emergency operating features only) | • Check machine ID connection  
• Switch off the control, wait until the LEDs are off, and then switch the control on again  
• Software update |
| 6365  | Internal EEPROM defective                                            | • Replace control                                                                |
| 6366  | Internal EEPROM defective and external data not valid (emergency operating features only) | • Replace control                                                                |
| 6367  | Internal EEPROM defective and external EEPROM not connected (emergency operating features only) | • Replace control                                                                |
| 7202  | DAC extension box boot error                                         | • Check connection cables  
• Software update  
• Replace DAC extension box |
| 7203  | Checksum error during update                                         | • Check connection cables  
• Software update  
• Replace DAC extension box |
| 7212  | DA stepper card 1 boot error                                         | • Check connection cables  
• Software update  
• Replace DAC extension box |
| 7213  | Checksum error occurred while updating DA stepper card 2              | • Check connection cables  
• Software update  
• Replace DAC extension box |
| 7222  | DA stepper card 2 boot error                                         | • Check connection cables  
• Software update  
• Replace DAC extension box |
| 7223  | Checksum error occurred while updating DA stepper card 2              | • Check connection cables  
• Software update  
• Replace DAC extension box |
### 25.2.2 Error Messages

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
<th>Meaning</th>
<th>Remedial action</th>
</tr>
</thead>
</table>
| 7801 | Error | Software version error (DAC classic only; only the functions of the DAC basic will remain available) | • Software update  
• Replace control |
| 7802 | Error | Software update error (DAC classic only; only the functions of the DAC basic will remain available) | • Software update  
• Replace control |
| 7803 | Error | Communication error (DAC classic only; only the functions of the DAC basic will remain available) | • Restart of the control  
• Software update  
• Replace control |

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
<th>Meaning</th>
<th>Remedial action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>Error</td>
<td>Sewing motor encoder plug (Sub-D, 9-pin) not connected</td>
<td>• Connect encoder cable to the control, use correct connection</td>
</tr>
</tbody>
</table>
| 1001 | Error | Sewing motor error: Sewing motor plug (AMP) not connected | • Check connection and plug in, if necessary  
• Test sewing motor phases (R= 2.8 Ω, high impedance to PE)  
• Replace encoder  
• Replace sewing motor  
• Replace control |
| 1002 | Error | Sewing motor insulation fault | • Check sewing motor phase and PE for low-impedance connection  
• Replace encoder  
• Replace sewing motor |
| 1004 | Error | Sewing motor error: Incorrect sewing motor direction of rotation | • Replace encoder  
• Check plug assignment and change, if necessary  
• Check wiring in machine distributor and change it, if necessary  
• Test sewing motor phases and check for correct value |
| 1005 | Error | Sewing motor blocked | • Eliminate stiff movement in the machine  
• Replace encoder  
• Replace sewing motor |
<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
<th>Meaning</th>
<th>Remedial action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1006</td>
<td>Error</td>
<td>Maximum speed exceeded</td>
<td>• Replace encoder&lt;br&gt;• Perform reset&lt;br&gt;• Check class (t 51 04)</td>
</tr>
<tr>
<td>1007</td>
<td>Error</td>
<td>Error in the reference run</td>
<td>• Replace encoder&lt;br&gt;• Eliminate stiff movement in the machine</td>
</tr>
<tr>
<td>1008</td>
<td>Error</td>
<td>Encoder error</td>
<td>• Replace encoder</td>
</tr>
<tr>
<td>1010</td>
<td>Error</td>
<td>External synchronizer plug (Sub-D, 9-pin) not connected</td>
<td>• Connect cable of external synchronizer to control; use correct connection (Sync)&lt;br&gt;• Only required for machines with transmission!</td>
</tr>
<tr>
<td>1011</td>
<td>Error</td>
<td>Encoder Z pulse missing</td>
<td>• Switch off the control, adjust the handwheel, and switch the control on again&lt;br&gt;• If error is not corrected, check encoder</td>
</tr>
<tr>
<td>1012</td>
<td>Error</td>
<td>Synchronizer fault</td>
<td>• Replace synchronizer</td>
</tr>
<tr>
<td>1052</td>
<td>Error</td>
<td>Sewing motor overcurrent, internal current increase &gt;25 A</td>
<td>• Check selection of class&lt;br&gt;• Replace control&lt;br&gt;• Replace sewing motor&lt;br&gt;• Replace encoder</td>
</tr>
<tr>
<td>1053</td>
<td>Error</td>
<td>Sewing motor overvoltage</td>
<td>• Check selection of class&lt;br&gt;• Replace control</td>
</tr>
<tr>
<td>1054</td>
<td>Error</td>
<td>Internal short circuit</td>
<td>• Replace control</td>
</tr>
<tr>
<td>1055</td>
<td>Error</td>
<td>Sewing motor overload</td>
<td>• Eliminate stiff movement in the machine&lt;br&gt;• Replace encoder&lt;br&gt;• Replace sewing motor</td>
</tr>
<tr>
<td>2101</td>
<td>Error</td>
<td>DA stepper card 1 reference run timeout</td>
<td>• Check reference sensor</td>
</tr>
<tr>
<td>2103</td>
<td>Error</td>
<td>DA stepper card 1 step losses</td>
<td>• Check for stiff movement</td>
</tr>
<tr>
<td>2155</td>
<td>Error</td>
<td>DA stepper card 1 overload</td>
<td>• Check for stiff movement</td>
</tr>
<tr>
<td>2201</td>
<td>Error</td>
<td>DA stepper card 2 reference run timeout</td>
<td>• Check reference sensor</td>
</tr>
<tr>
<td>2203</td>
<td>Error</td>
<td>DA stepper card 2 step losses</td>
<td>• Check for stiff movement</td>
</tr>
<tr>
<td>2255</td>
<td>Error</td>
<td>DA stepper card 2 overload</td>
<td>• Check for stiff movement</td>
</tr>
<tr>
<td>Code</td>
<td>Type</td>
<td>Meaning</td>
<td>Remedial action</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 3100   | Error     | AC-RDY timeout, intermediate circuit voltage did not reach the defined threshold in the specified time | • Check mains voltage  
• If the mains voltage is OK, replace the control                                    |
| 3101   | Error     | High voltage fault, mains voltage > 290 V for an extended period          | • Check mains voltage, if nominal voltage is continuously exceeded  
• Stabilize it or use a generator                                                     |
| 3102   | Error     | Low voltage failure (2nd threshold), mains voltage < 150 V AC            | • Check mains voltage  
• Stabilize the mains voltage  
• Use generator                                                                              |
| 3104   | Warning   | Pedal is not in position 0                                               | • When switching the control on, take your foot off the pedal                   |
| 3105   | Error     | U24 V short circuit                                                     | • Disconnect 37-pin plug  
• Replace control if error is not corrected  
• Test inputs/outputs for 24 V short circuit                                             |
| 3106   | Error     | U24 V (I2T) overload                                                    | • One or several magnets defective                                               |
| 3107   | Error     | Pedal not connected                                                     | • Connect analog pedal                                                            |
| 3109   | Warning   | Operation lock                                                          | • Check tilt sensor on machine                                                   |
| 3151   | Warning   | Maintenance necessary (operation cannot continue unless parameter t 51 14 is reset) | • Service is urgently required  
• Service Instructions                                                                  |
| 6353   | Error     | Internal EEPROM communication error                                      | • Switch off the control  
• Wait until the LEDs are off  
• Switch the machine back on                                                          |
| 6354   | Error     | External EEPROM communication error                                      | • Switch off the control  
• Wait until the LEDs are off  
• Check machine ID connection  
• Switch the control back on                                                          |
| 8401   | Error     | Watchdog                                                                | • Software update  
• Machine ID reset  
• Replace control                                                                          |
25.3 Errors in sewing process

<table>
<thead>
<tr>
<th>Error</th>
<th>Possible causes</th>
<th>Remedial action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unthreading at seam</td>
<td>Needle thread tension is too firm</td>
<td>Check needle thread tension</td>
</tr>
<tr>
<td>beginning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread breaking</td>
<td>Needle thread and hook thread have not been threaded correctly</td>
<td>Check threading path</td>
</tr>
<tr>
<td></td>
<td>Needle is bent or sharp-edged</td>
<td>Replace needle</td>
</tr>
<tr>
<td></td>
<td>Needle is not inserted correctly into the needle bar</td>
<td>Insert the needle correctly into the needle bar</td>
</tr>
<tr>
<td></td>
<td>The thread used is unsuitable</td>
<td>Use recommended thread</td>
</tr>
<tr>
<td></td>
<td>Thread tensions are too tight for the thread used</td>
<td>Check thread tensions</td>
</tr>
<tr>
<td></td>
<td>Thread-guiding parts, such as thread tube, thread guide or thread take-up disk, are sharp-edged</td>
<td>Check threading path</td>
</tr>
<tr>
<td></td>
<td>Throat plate, hook or spread have been damaged by the needle</td>
<td>Have parts reworked by qualified specialists</td>
</tr>
<tr>
<td>Error</td>
<td>Possible causes</td>
<td>Remedial action</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Skip stitches</td>
<td>Needle thread and hook thread have not been threaded correctly</td>
<td>Check threading path</td>
</tr>
<tr>
<td></td>
<td>Needle is blunt or bent</td>
<td>Replace needle</td>
</tr>
<tr>
<td></td>
<td>Needle is not inserted correctly into the needle bar</td>
<td>Insert the needle correctly into the needle bar</td>
</tr>
<tr>
<td></td>
<td>The needle thickness used is unsuitable</td>
<td>Use recommended needle thickness</td>
</tr>
<tr>
<td></td>
<td>The reel stand is assembled incorrectly</td>
<td>Check the assembly of the reel stand</td>
</tr>
<tr>
<td></td>
<td>Thread tensions are too tight</td>
<td>Check thread tensions</td>
</tr>
<tr>
<td></td>
<td>Throat plate, hook or spread have been damaged by the needle</td>
<td>Have parts reworked by qualified specialists</td>
</tr>
<tr>
<td>Loose stitches</td>
<td>Thread tensions are not adjusted to the sewing material, the sewing material thickness or the thread used</td>
<td>Check thread tensions</td>
</tr>
<tr>
<td></td>
<td>Needle thread and hook thread have not been threaded correctly</td>
<td>Check threading path</td>
</tr>
<tr>
<td>Needle breakage</td>
<td>Needle thickness is unsuitable for the sewing material or the thread</td>
<td>Use recommended needle thickness</td>
</tr>
</tbody>
</table>
26 Technical data

26.1 Noise emission

Workplace-specific emission value as per DIN EN ISO 10821:

$L_{PA} = 79 \text{ dB (A)}; K_{PA} = \pm 0.64 \text{ dB (A)}$ at

- Stitch length: 6.0 mm
- Alternating sewing foot stroke: 1.5 mm
- Speed: 2200 rpm
- Sewing material: 4-layer material G1 DIN 23328
## 26.2 Data overview by subclasses

### 1-needle machines with large hook (L)

<table>
<thead>
<tr>
<th>Subclasses: 867-</th>
<th>-160122</th>
<th>-190020 ECO</th>
<th>-190122</th>
<th>-190125</th>
<th>-190322</th>
<th>-190425</th>
<th>-160426</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of stitches</td>
<td>Double lockstitch 301</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hook type</td>
<td>Vertical hook, large (L)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of needles</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needle system</td>
<td>134-35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum needle strength [Nm]</td>
<td>130</td>
<td>180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum sewing thread size</td>
<td>120/3-30/3</td>
<td>80/3-10/3 (up to 15/3 with short thread cutter)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stitch length, forwards / backwards [mm]</td>
<td>7/7</td>
<td>12/12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of adjustable stitch lengths</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum s.p.m.</td>
<td>3800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of stitches on delivery</td>
<td>3400</td>
<td>3000</td>
<td>3400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum stroke height (&quot;only with reversing mechanism&quot;)</td>
<td>16*</td>
<td>20</td>
<td>20*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum sewing foot stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Positive operating pressure [bar]</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air consumption [NL]</td>
<td>0.7</td>
<td>0.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length/width/height [mm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>690/220/460</td>
<td></td>
</tr>
<tr>
<td>Weight/with direct drive [kg]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>55/59</td>
<td></td>
</tr>
<tr>
<td>Rated voltage [V, Hz]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>230, 50/60</td>
<td></td>
</tr>
<tr>
<td>Rated power [kVA]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.75</td>
<td></td>
</tr>
</tbody>
</table>
## 1-needle machines with extra-large hook (XXL)

<table>
<thead>
<tr>
<th>Subclasses: 867-160446 160146 190040 ECO 190146 190342 190445 392040 ECO 392342 393342 394342</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of stitches</strong></td>
</tr>
<tr>
<td><strong>Hook type</strong></td>
</tr>
<tr>
<td><strong>Number of needles</strong></td>
</tr>
<tr>
<td><strong>Needle system</strong></td>
</tr>
<tr>
<td><strong>Maximum needle strength [Nm]</strong></td>
</tr>
<tr>
<td><strong>Maximum sewing thread size</strong></td>
</tr>
<tr>
<td><strong>Stitch length, forwards/backwards [mm]</strong></td>
</tr>
<tr>
<td><strong>Number of adjustable stitch lengths</strong></td>
</tr>
<tr>
<td><strong>Maximum s.p.m.</strong></td>
</tr>
<tr>
<td><strong>Number of stitches on delivery</strong></td>
</tr>
<tr>
<td>*<em>Maximum fan height (<em>only with reversing mechanism)</em></em></td>
</tr>
<tr>
<td><strong>Maximum sewing foot stroke</strong></td>
</tr>
<tr>
<td><strong>Positive operating pressure [bar]</strong></td>
</tr>
<tr>
<td><strong>Air consumption [NL]</strong></td>
</tr>
<tr>
<td><strong>Length/width/height [mm]</strong></td>
</tr>
<tr>
<td><strong>Weight/with direct drive [kg]</strong></td>
</tr>
<tr>
<td><strong>Rated voltage [V, Hz]</strong></td>
</tr>
<tr>
<td><strong>Rated power [kVA]</strong></td>
</tr>
</tbody>
</table>
# Technical data

## 2-needle machines with large/extra-large hook (L/XXL)

<table>
<thead>
<tr>
<th>Subclasses: 867-</th>
<th>-260122</th>
<th>-290020 ECO</th>
<th>-290040 ECO</th>
<th>-290122</th>
<th>-290142</th>
<th>-290322</th>
<th>-290342</th>
<th>-290445</th>
<th>-490322</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of stitches</td>
<td>Double lockstitch 301</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical hook, large (L)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical hook, extra-large (XXL)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of needles</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needle system</td>
<td>134-35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum needle strength [Nm]</td>
<td>130</td>
<td>180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum sewing thread size</td>
<td>80/3-10/3 (up to 15/3 with short thread cutter)</td>
<td>15/3</td>
<td>80/3-10/3 (up to 15/3 with short thread cutter)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stitch length, forwards/backwards [mm]</td>
<td>7/7</td>
<td>12/12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of adjustable stitch lengths</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum s.p.m.</td>
<td>3400**</td>
<td>3500**</td>
<td>3200**</td>
<td>3500**</td>
<td>3200**</td>
<td>3000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of stitches on delivery</td>
<td>3400</td>
<td>3000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum fan height (*only with reversing mechanism)</td>
<td>16*</td>
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**For 2-needle machines equipped with the DC1550-DA321G and a motor assembled to the machine head, the maximum possible speed is 3,000 rpm.**
# Technical Data

## 1 and 2-needle long arm machines

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### Technical Specifications

- **Type of stitches**: Double lockstitch 301
- **Set of needles**
  - 1 needle
  - 2 needles
- **Needle system**: 134-35
- **Maximum needle strength [Nm]**: 180
- **Maximum sewing thread thickness**: 80/3-10/3
- **Stitch length**
  - Forwards/backwards [mm]: 12/12
- **Number of adjustable stitch lengths**: 1, 2, 1, 2
- **Maximum s.p.m.**
  - 1 needle: 3000
  - 2 needles: 2500
- **Number of stitches on delivery**
  - 1 needle: 3000
  - 2 needles: 2500
- **Maximum fan height (*only with reversing mechanism)**
  - 1 needle: 20
  - 2 needles: 20*
- **Maximum sewing foot stroke**: 9
- **Positive operating pressure [bar]**: 6
- **Air consumption [NL]**: 0.7, 0.7
- **Length/width/height [mm]**
  - 1 needle: 1090/220/460
  - 2 needles: 1390/220/460
- **Weight/with direct drive [kg]**
  - 1 needle: 85/89
  - 2 needles: 95/99
- **Rated voltage [V, Hz]**: Depends on the drive package
- **Rated power [W]**: Depends on the drive package
## 1-needle machines with integrated motor

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142 Service Instructions 867 - 04.0 - 10/2019
### Technical data

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#### 1 and 2-needle machines with integrated motor

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### 1-needle long arm machines with integrated motor (-M)

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<tr>
<td>Air consumption [NL]</td>
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<tr>
<td>Length/width/height [mm]</td>
<td>1090/220/460</td>
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<td>Weight/with direct drive [kg]</td>
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<tr>
<td>Rated voltage [V, Hz]</td>
<td>230, 50/60</td>
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<td>Rated power [W]</td>
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# Technical data

## 2-needle long arm machines with integrated motor (-M)

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<tr>
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<td>Positive operating pressure [bar]</td>
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26.3 Permissible maximum speeds

To ensure safe operation, optimum sewing results and a long service life of the machine, do NOT exceed the permissible maximum speeds:

1-needle machines with large hook (L)

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<th>Stitch length 0-6 Stroke 1-3</th>
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<th>190020 ECO</th>
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<th>-190125</th>
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<td>2500</td>
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<td>2500</td>
<td>2500</td>
</tr>
<tr>
<td>Stroke 6-9</td>
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### 1-needle machines with extra-large hook (XXL)

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<th>-190142</th>
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<th>-392040 ECO</th>
<th>-392342</th>
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### 2-needle machines with large/extra-large hook (L/XXL)

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<tr>
<td>Stroke 6-9</td>
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### 1 and 2-needle long arm machines

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### Stitch length 6-9

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### Stitch length 9-12

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### 1-needle machines with integrated motor and large hook (L)

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### Stitch length 6-9

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### Stitch length 9-12

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### 1-needle machines with integrated motor and extra-large hook (XXL)

#### Technical data

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### 2-needle machines with integrated motor (-M)

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### 1-needle long arm machines with integrated motor (-M)

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## Technical data

### 2-needle long arm machines with integrated motor (-M)

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## 26.4 Requirements for fault-free operation

Compressed air quality must conform to ISO 8573-1: 2010 [7:4:4].
27 Appendix

Wiring diagram

Fig. 104: Wiring diagram
Fig. 106: Wiring diagram
Fig. 108: Wiring diagram
Fig. 109: Wiring diagram
Fig. 111: Wiring diagram