

967

Operating Instructions



IMPORTANT
READ CAREFULLY BEFORE USE
KEEP FOR FUTURE REFERENCE

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1 About these instructions

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

Should you notice any discrepancies or if you have improvement requests, then we would be glad to receive your feedback through **Customer Service** ( p. 111).

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

1.1 For whom are these instructions intended?

These instructions are intended for:

- **Operators:**
This group is familiar with the machine and has access to the instructions. Specifically, chapter **Operation** ( p. 21) is important for the operators.
- **Specialists:**
This group has the appropriate technical training for performing maintenance or repairing malfunctions. Specifically, the chapter **Setup** ( p. 87) is important for specialists.

Service Instructions are supplied separately.

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

1.2 Representation conventions – symbols and characters

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



Proper setting

Specifies proper setting.



Disturbances

Specifies the disturbances that can occur from an incorrect setting.



Cover

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



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



Steps to be performed for service, maintenance, and installation



Steps to be performed via the software control panel

The individual steps are numbered:

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



Result of performing an operation

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



Important

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



Information

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



Order

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

References



Reference to another section in these instructions.

Safety

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

Location information

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

1.3 Other documents

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

1.4 Liability

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

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

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

Transport

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

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

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

2 Safety

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



2.1 Basic safety instructions

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

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

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

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

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

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

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

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

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

All the warnings and safety signs on the machine must always be in legible condition. Do not remove!

Missing or damaged warnings and safety signs must be replaced immediately.

Requirements to be met by the personnel

Only qualified specialists may:

- set up the machine
- perform maintenance work and repairs
- perform work on electrical equipment

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

Operation

Check the machine during operating for any externally visible damage. Stop working if you notice any changes to the machine. Report any changes to your supervisor. Do not use a damaged machine any further.

Safety equipment

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

2.2 Signal words and symbols used in warnings

Warnings in the text are distinguished by color bars. The color scheme is based on the severity of the danger. Signal words indicate the severity of the danger.

Signal words Signal words and the hazard they describe:

Signal word	Meaning
DANGER	(with hazard symbol) If ignored, fatal or serious injury will result
WARNING	(with hazard symbol) If ignored, fatal or serious injury can result

CAUTION	(with hazard symbol) If ignored, moderate or minor injury can result
CAUTION	(with hazard symbol) If ignored, environmental damage can result
NOTICE	(without hazard symbol) If ignored, property damage can result

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

Symbol	Type of danger
	General
	Electric shock
	Puncture
	Crushing
	Environmental damage

Examples Examples of the layout of warnings in the text:

DANGER



Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

WARNING



Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

CAUTION



Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

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.

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.

3 Machine description

3.1 Components of the machine

Fig. 1: Components of the machine (1), machines with standard arm

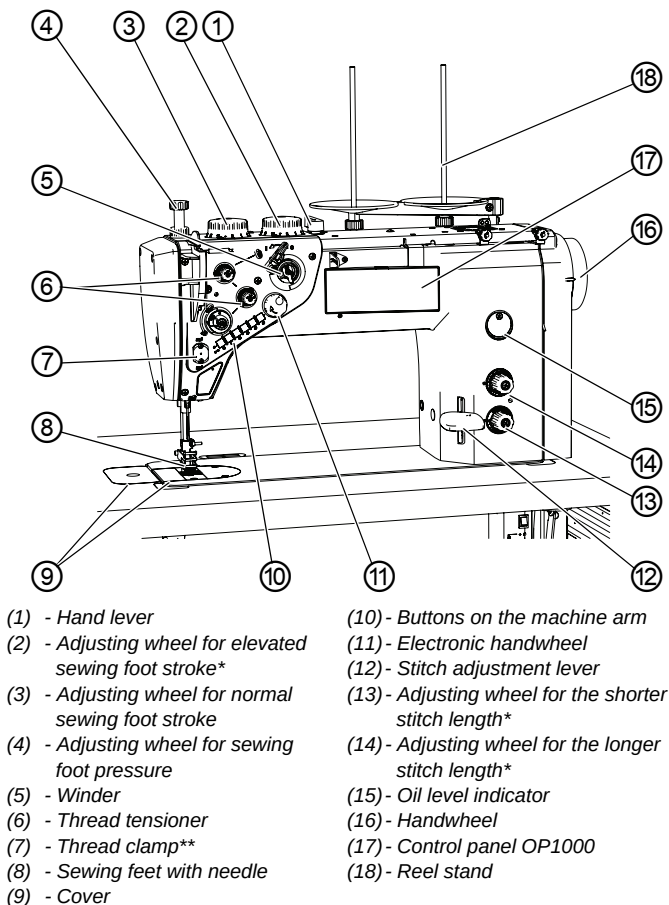
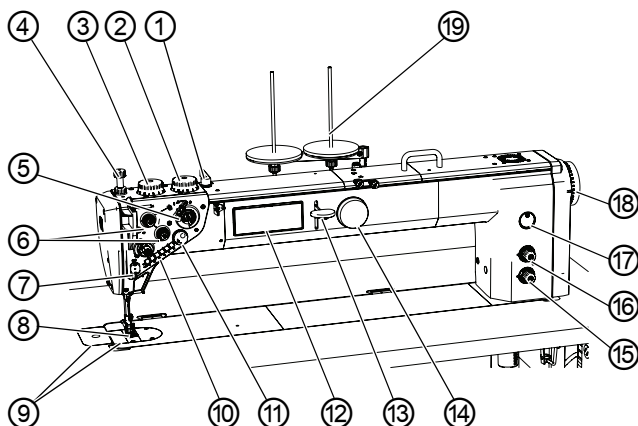
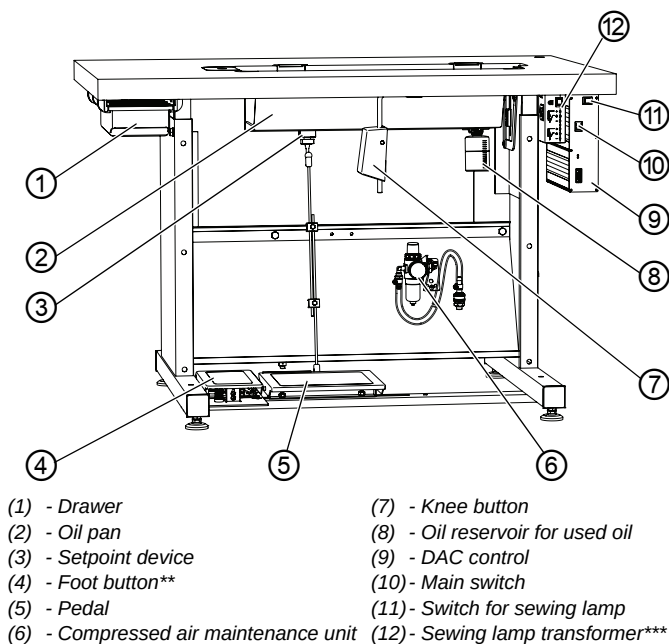


Fig. 2: Components of the machine (2), machines with long arm



- | | |
|--|---|
| (1) - Hand lever | (10) - Buttons on the machine arm |
| (2) - Adjusting wheel for elevated sewing foot stroke* | (11) - Electronic handwheel |
| (3) - Adjusting wheel for normal sewing foot stroke | (12) - Control panel OP1000 |
| (4) - Adjusting wheel for sewing foot pressure | (13) - Stitch adjustment lever |
| (5) - Winder | (14) - Additional handwheel |
| (6) - Thread tensioner | (15) - Adjusting wheel for the shorter stitch length* |
| (7) - Thread clamp** | (16) - Adjusting wheel for the longer stitch length* |
| (8) - Sewing feet with needle | (17) - Oil level indicator |
| (9) - Cover | (18) - Handwheel |
| | (19) - Reel stand |

Fig. 3: Components of the machine (3), stand



*) Only subclasses in *Classic* model

**) Optional equipment, not included with the *Classic* subclass unless requested

***) Lighting can be ordered separately for the *Eco* equipment option

3.2 Proper use

WARNING



Risk of injury from live, moving and cutting parts as well as from sharp parts!

Improper use can result in electric shock, crushing, cutting and punctures.

Follow all instructions provided.

NOTICE

Non-observance will lead to property damage!

Improper use can result in material damage at the machine.

Follow all instructions provided.

The machine may only be used with sewing material that satisfies the requirements of the specific application at hand.

The machine is intended only for use with dry sewing material. The sewing material must not contain any hard objects.

The needle thicknesses permissible for the machine are listed in the **Technical Data** (📖 p. 123) chapter.

The seam must be completed with a thread that satisfies the requirements of the specific application at hand.

The machine is intended for industrial use.

The machine may only be set up and operated in dry conditions on well-maintained premises. If the machine is operated on premises that are not dry and well-maintained, then further measures may be required which must be compatible with DIN EN 60204-31.

Only authorized persons may work on the machine.

Dürkopp Adler cannot be held liable for damages resulting from improper use.

3.3 Declaration of Conformity

The machine complies with European regulations ensuring health, safety, and environmental protection as specified in the declaration of conformity or in the declaration of incorporation.



4 Operation

The operating sequence consists of several different steps. Fault-free operation is necessary in order to achieve a good sewing result.

4.1 Preparing the machine for operation

WARNING



Risk of injury from moving, cutting and sharp parts!

Crushing, cutting and punctures are possible.

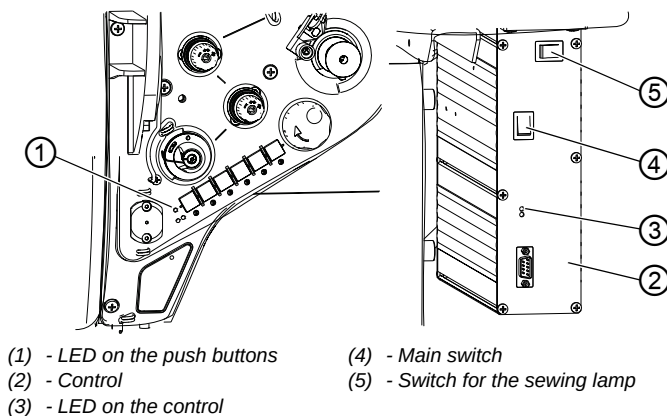
If possible, make preparations only when the machine is switched off.

Complete the following steps in preparation of sewing before starting to work:

- Inserting/changing the needle
- Threading the needle thread
- Inserting and winding on the hook thread
- Setting the thread tension

4.2 Switching on and off the machine

Fig. 4: Switching on and off the machine



Switching on the machine



To switch on the machine:

1. Press the main switch (4) on the control (2) to position **I**.
 LEDs (1) and (3) illuminate.

Switching off the machine



To switch off the machine:

1. Press the main switch (4) on the control (2) to position **0**.
 LEDs (1) and (3) turn off.

4.3 Inserting/changing the needle

CAUTION



Risk of injury from sharp and moving parts!

Punctures possible.

Switch off the machine before you insert or change the needle.

Do not reach into the needle tip.

NOTICE

Property damage may occur!

There is a risk of machine damage, needle breakage or damage to the thread if the distance between hook and needle is incorrect.

Check and, if necessary, readjust the distance to the hook tip and the loop support after inserting a needle with a different size.

Check and, if necessary, readjust the height of the needle bar after inserting a needle with a different needle system. Adjust the distance piece between driver and loop support after inserting a needle with a different size ( *Service Instructions*).



Order

After switching to a different needle thickness, adjust the distance between hook and needle and change the distance piece for the loop support. If using a different needle system, you need to adjust the height of the needle bar ( *Service Instructions*).



Disturbance

Disturbance after inserting a thinner needle:

- Missing stitches
- Thread damage

Disturbance after inserting a thicker needle:

- Damage to the hook tip
- Damage to the needle
- Damage to the loop support

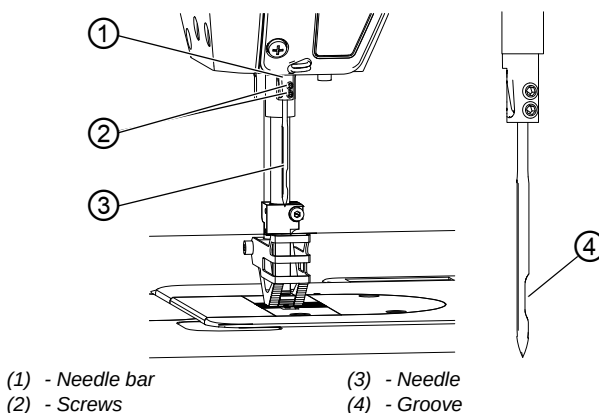
Disturbance after inserting a shorter needle:

- Damage to the hook tip
- Damage to the needle
- Missing stitches

After inserting a longer needle:

- Damage to the hook tip
- Damage to the needle
- Missing stitches

Fig. 5: Inserting/changing the needle



To insert or change the needle:

1. Turn the handwheel until the needle (3) reaches the upper end position.
2. Loosen the screws (2).
3. Pull the needle (3) down and out.
4. Insert the new needle.



Important

Align the needle in such a way that the groove (4) faces the hook.

5. Tighten the screws (2).

4.4 Threading the needle thread

CAUTION



Risk of injury from sharp and moving parts!

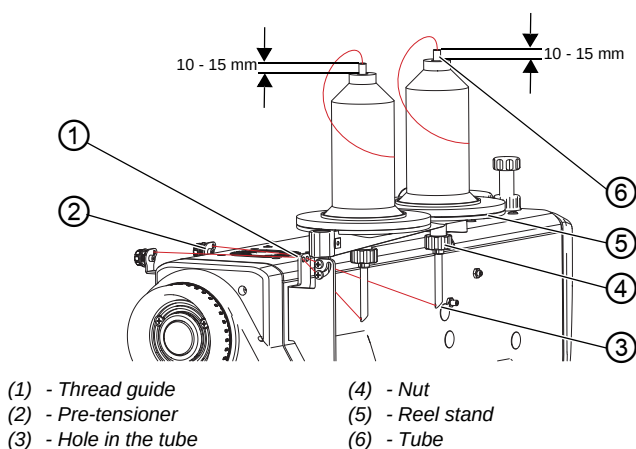
Puncture or crushing possible.

Switch off the machine before threading the needle thread.

Do not reach into the needle tip.

Feeding the needle thread from the thread reel to the machine

Fig. 6: Feeding the needle thread from the thread reel to the machine



In all machines the thread from the thread reel is fed to the machine via the reel stand.



To thread the needle thread:

1. Switch off the machine.
2. Fit the thread reel on the reel stand (5).
3. Loosen the nut (4).
4. Set the tube (6) to the height specified above.
5. Turn the tube so that the opening (3) faces the thread guide (1).
6. Tighten the nut (4).

NOTICE

Property damage may occur!

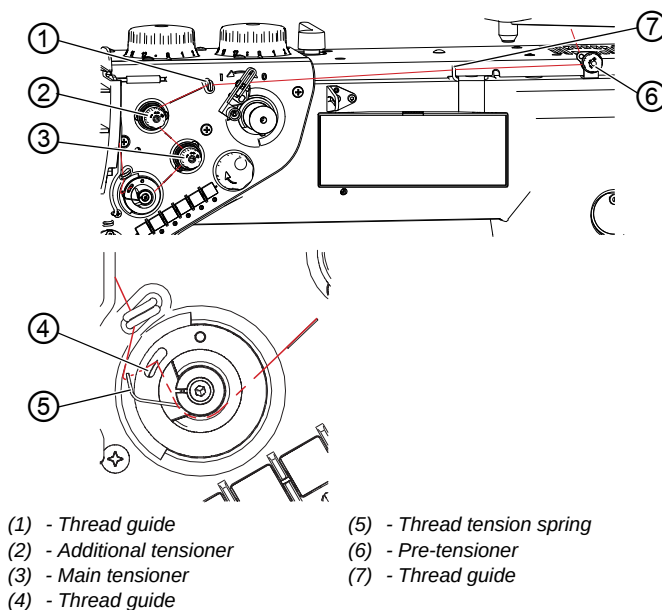
An incorrect tube height setting may lead to tension deviations as a result of the thread becoming caught or jammed. As a result, the seam becomes uneven, and the needle is pulled out of the needle after cutting.

Set the height of the tube as specified above.

7. Feed the needle thread to the pre-tensioner (2) by inserting it through the tube (6), the opening (3) and the thread guide (1).

Threading the needle thread

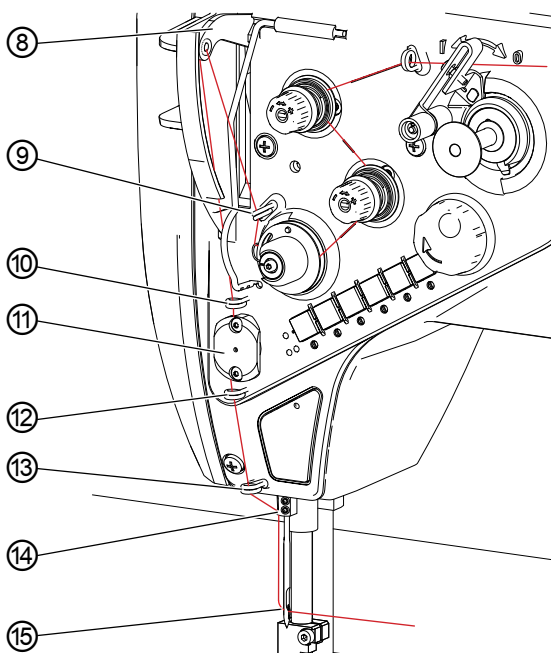
Fig. 7: Threading the needle thread (1)





8. Turn handwheel until the thread lever is at the top dead center.
9. Thread the needle thread clockwise from the rear around the pre-tensioner (7).
10. Feed the needle thread through thread guides (7) and (1).
11. Guide the needle thread counterclockwise through the additional tensioner (2).
12. Feed the needle thread clockwise through the main tensioner (4).
13. Guide the needle thread through the thread guide (5) and under the thread tension spring (5).
The thread tension spring (5) pulls the needle thread down.

Fig. 8: Threading the needle thread (2)



- (8) - Thread lever
(9) - Thread guide
(10) - Thread guide
(11) - Thread clamp
(12) - Thread guide

- (13) - Thread guide
(14) - Thread guide on the
Needle bar
(15) - Needle eye



14. Feed the needle thread through thread guide (9).
15. Feed the needle thread through the thread lever (8).
16. Feed the needle thread through thread guide (10).
17. Feed the needle thread through the thread clamp (11)
(optional if thread clamp is fitted).
18. Feed the needle thread through thread guides (12) and (13).
19. Feed the needle thread through the thread guide on the needle
bar (14).
20. Feed the needle thread through the needle eye (15) from the
left.
To ensure proper sewing, the needle thread should be at least
70 mm long.

**Information**

The thread clamp (11) is part of the optional equipment and can
be supplied on request.

4.5 Winding the hook thread

CAUTION



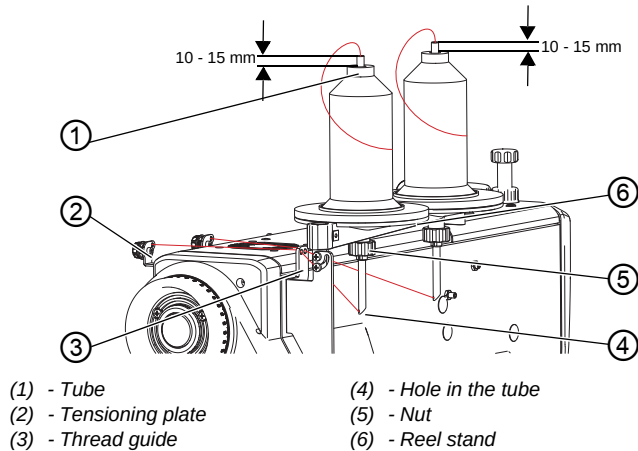
Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Switch off the machine before winding the hook thread.

Do not reach into the needle tip.

Fig. 9: Winding the hook thread (1)



To wind the hook thread:

1. Fit the thread reel on the reel stand (6).
2. Loosen the nut (5).
3. Set the tube (1) to the height specified above.
4. Turn the tube so that the opening (4) faces the thread guide (3).
5. Tighten the nut (5).

NOTICE

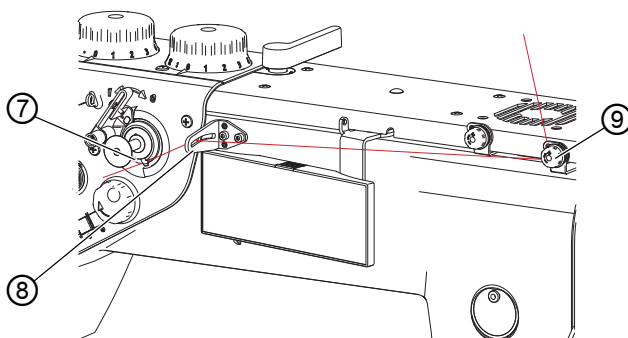
Property damage may occur!

An incorrect tube height setting may lead to tension deviations as a result of the thread becoming caught or jammed.
The hook thread is wound on unevenly.

Set the height of the tube as specified above.

6. Feed the hook thread to the tensioning plate (2) by inserting it through the tube (1), the opening (4) and the thread guide (3).

Fig. 10: Winding the hook thread (2)



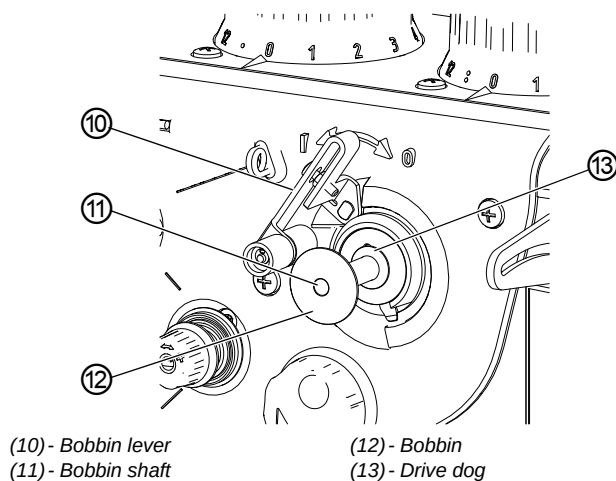
(7) - Thread-pulling knife
(8) - Thread guide

(9) - Thread tension plate



7. Feed the hook thread clockwise through the thread tension plate (9).
8. Feed the hook thread through thread guide (8).
9. Clamp the hook thread under the thread-pulling knife (7) and tear off the protruding remaining thread.

Fig. 11: Winding the hook thread (3)



10. Fit the bobbin (12) onto bobbin shaft (11) and drive dog (13).
11. Switching on the machine
12. Press the bobbin lever (10) to the I position.



Information

An internal motor causes the winder to start the winding process as soon as the bobbin lever is switched on. Winding stops automatically as soon as the bobbin is full.

It is possible to wind during sewing or when the sewing process is stopped.

4.6 Changing the bobbin

CAUTION

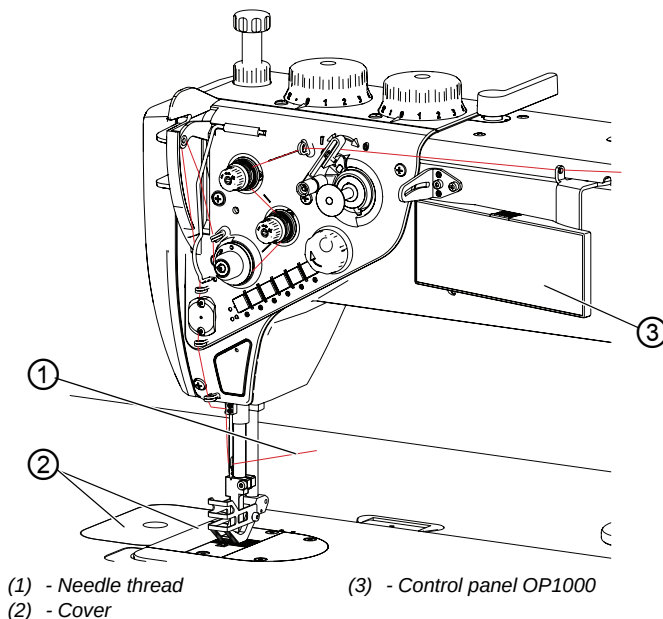


Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Switch off the machine before changing the bobbin.

Fig. 12: Changing the bobbin (1)



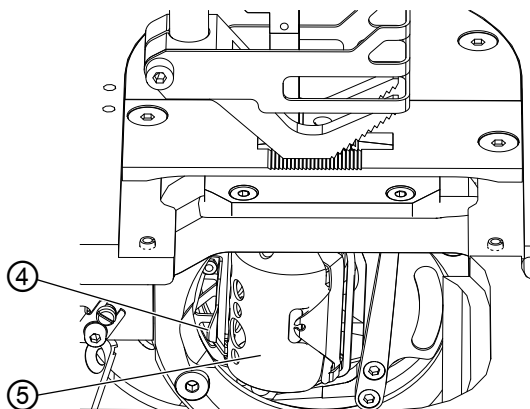
To change the bobbin:

1. Press the **F** button on the OP1000 control panel (3).
- ✎ The machine rotates automatically to the position necessary for the bobbin change.



2. Switch off the machine.
3. Remove the cover (2).

Fig. 13: Changing the bobbin (2)



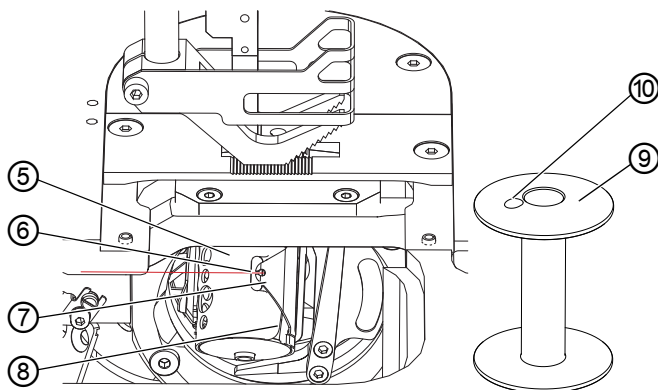
(4) - Latch

(5) - Bobbin case



4. Open the latch (4).
- ↳ The bobbin case (5) opens, and the bobbin is pushed out.

Fig. 14: Changing the bobbin (3)



(5) - Bobbin case

(6) - Slot

(7) - Thread tension spring

(8) - Slot

(9) - Bobbin

(10) - Driver hole



5. Remove the empty bobbin (9).
6. Insert the full bobbin into the bobbin case (5).
Make sure that the driver hole (10) is pointing to the bobbin case.
7. Press in the bobbin case (5) until the latch engages.
8. Feed the hook thread through the slot (8).
9. Feed the hook thread under the thread tension spring (7) and to the slot (6).
10. Pull the hook thread out 100 mm to 150 mm through the slot (6).
11. Put the cover back on.
12. Hold the needle thread in place until the thread lever is at top dead center and the hook thread is tied to the needle thread.
13. Elongate needle thread and hook thread.
14. Shorten needle thread and hook thread to 70 mm.
15. Switch on the machine.

**Important**

Hold both threads in place when starting to sew for the first time.

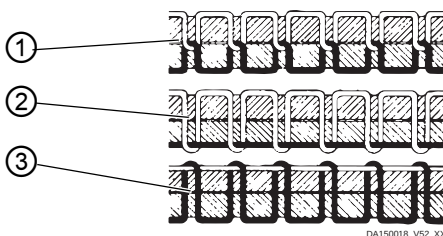
4.7 Thread tension

Together with the hook thread tension, the needle thread tension influences the final seam pattern. With thin sewing material, excessive thread tension can lead to undesired gathering and thread breakage.

**Proper setting**

If the tension of needle thread and hook thread is identical, the thread interlacing lies in the middle of the sewing material. Set the needle thread tension so that the desired seam pattern is achieved with the lowest possible tension.

Fig. 15: Thread tension



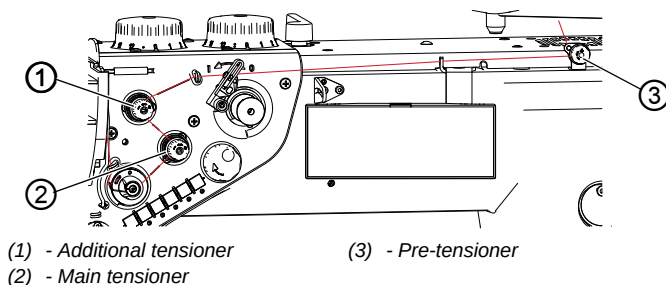
- (1) - Identical needle thread and hook thread tension
 (2) - Hook thread tension higher than needle thread tension
 (3) - Needle thread tension higher than hook thread tension

4.7.1 Setting the needle thread tension

The needle thread tension is determined by the 3 adjusting wheels of the tensioning screws.

In the basic position, the top of the adjusting wheel is flush with the screw in the center.

Fig. 16: Setting the needle thread tension

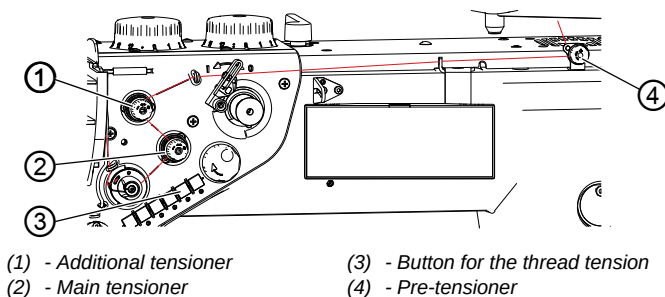


To set the needle thread tension:

1. Turn the adjusting wheel to the desired tension.
 - To increase the tension: Turn the adjusting wheel clockwise
 - To reduce the tension: Turn the adjusting wheel counter-clockwise

Checking the needle thread tension

Fig. 17: Checking the needle thread tension



To check the needle thread tension:

1. Sew a seam and check the following:
Deviations require an adjustment of the individual tensioner elements.

Pre-tensioner

The pre-tensioner (4) holds the thread in position if the main tensioner (2) and additional tensioner (1) are completely open.



Information

In machines equipped with an automatic thread cutter the pre-tensioner (4) determines the length of the initial thread for the new seam.

2. Turn the pre-tensioner adjusting wheel (4)
 - Shorter initial thread: Turn the adjusting wheel clockwise
 - Longer initial thread: Turn the adjusting wheel counter-clockwise
- ✎ The length of the initial thread should be approx. 60 - 80 mm.

Main tensioner

The main tensioner (2) determines the normal thread tension during sewing.



Proper setting

The main tensioner (2) should be set as low as possible. The thread interlacing should be exactly in the middle of the sewing material.



Disturbance

Due to excessively high tension:

- Ruffling on the seam
- Thread breaking
- Needle thread pops out of the tensioning plate



3. Press the button for the thread tension (3) to deactivate the additional tensioner.

Machines fitted with ECO equipment do NOT possess this feature

↵ The additional tensioner is active when the button is lit.

Additional tensioner

The additional tensioner (1) increases the needle thread tension during sewing, e.g. for thickened seams.



Proper setting

The additional tensioner (1) must always be set lower than the main tensioner (2).



Disturbance

Due to excessively high tension:

- Ruffling on the seam
- Thread breaking
- The needle thread pops out of the tensioning plate

4.7.2 Setting the hook thread tension

CAUTION



Risk of injury from moving parts!

Crushing possible.

Switch off the machine before you set the hook thread tension.

NOTICE

Property damage may occur!

If set incorrectly, the thread pulling direction can result in faulty tensioning results.

Be sure to pull the hook thread in the proper direction.

NOTICE

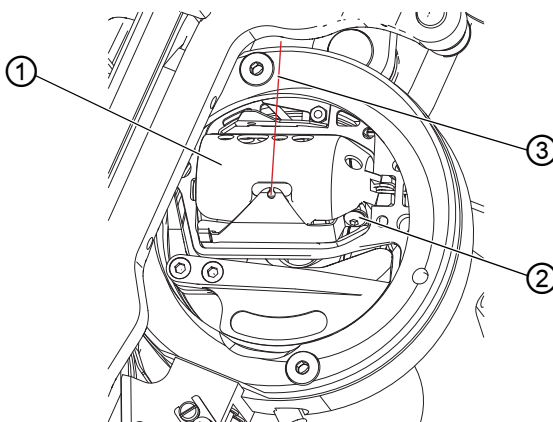
Property damage may occur!

If the hook thread tension is set too low, the thread interlacing will shift from the middle of the sewing material. This may result in sewing issues and loose stitches when operating at increased speed.

Set a sufficient hook thread tension or reduce the sewing speed.

The hook thread tension has been set to 350 to 400 cN at the factory (1 cN = 1 g).

Fig. 18: Setting the hook thread tension



(1) - Bobbin case
(2) - Adjusting screw

(3) - Hook thread

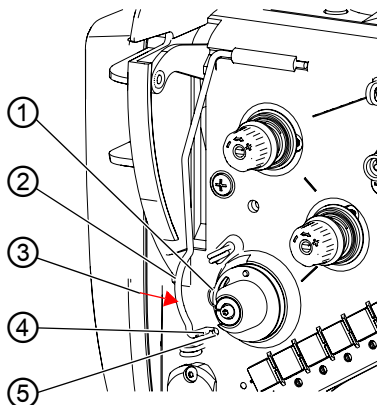


To set the hook thread tension:

1. Tilt the machine head.
2. Turn the handwheel until the bobbin case (1) has reached the position shown above.
3. Pull the hook thread (3) off the bobbin.
Ensure that the hook thread is, as shown above, pulled off as close to the bobbin case (1) as possible.
4. Turn the adjusting screw (2).
 - Increase the hook thread tension: Turn the adjusting screw (2) clockwise
 - Reduce the hook thread tension: Turn the adjusting screw (2) counterclockwise

4.7.3 Setting the needle thread regulator

Fig. 19: Setting the needle thread regulator



- | | |
|-------------------------------|--|
| (1) - Thread tension spring | (4) - Positions of the needle thread regulator |
| (2) - Needle thread regulator | (5) - Opening |
| (3) - Opening direction | |

The needle thread regulator determines the tension applied to guide the needle thread around the hook.



Proper setting

The loop of the needle thread slides at low tension over the thickest point of the hook.



To set the needle thread regulator:

1. Press the needle thread regulator (2) toward the opening (5) in opening direction (3).
2. Adjust the needle thread regulator (2).
 - To increase the tension: Pull out the needle thread regulator (2)
 - To reduce the tension: Push in the needle thread regulator (2)
3. Move the needle thread regulator to the desired position (4).
4. Press the needle thread regulator against the opening direction (3) to lock it.
5. Check the setting of the needle thread regulator by sewing.

4.8 Positioning the needle

CAUTION



Risk of injury from sharp and moving parts!

Puncture or crushing possible.

Do not reach into the needle tip.

Do not reach into the thread lever.

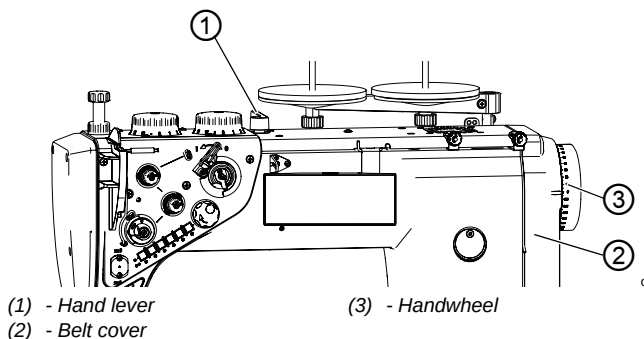
Do not reach into the sewing feet.

The machine is equipped with manual, semi-automatic and automatic needle positioning.

4.8.1 Positioning the needle manually

Machines with standard arm

Fig. 20: Machines with standard arm



To position the needle manually:

1. Use the hand lever (1) to lift the sewing feet and remove the existing sewing material.
2. Turn the handwheel (3) until the desired position has been reached.

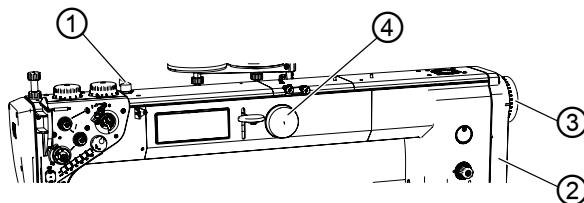


Important

The proper direction of rotation is counterclockwise.
The position is indicated by the scale on the handwheel and an arrow marking on the belt cover (2).

Machines with long arm

Fig. 21: Machines with long arm



(1) - Hand lever

(2) - Belt cover

(3) - Handwheel

(4) - Additional electronic handwheel



To position the needle manually:

1. Use the hand lever (1) to lift the sewing feet and remove the existing sewing material.
2. Turn handwheel (3) or (4) until the desired position has been reached.

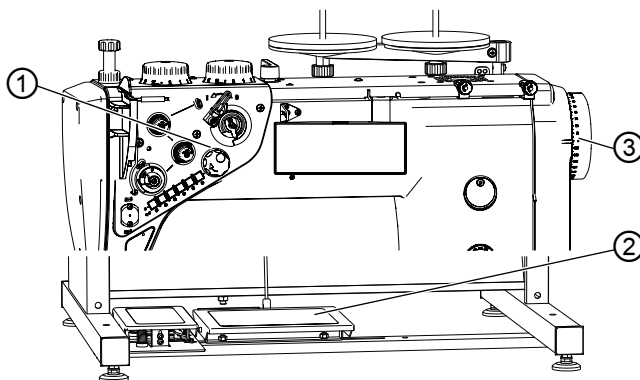


Important

The proper direction of rotation is counterclockwise.
The position is indicated by the scale on the handwheel and an arrow marking on the belt cover (2).

4.8.2 Positioning the needle semi-automatically

Fig. 22: Positioning the needle semi-automatically



(1) - Electronic handwheel

(3) - Handwheel

(2) - Pedal



Information

The needle can only be positioned semi-automatically by turning the electronic handwheel (1).

The electronic handwheel (1) is activated by briefly pressing the pedal (2) or by turning the handwheel (3).

The movement will not be detected if the electronic handwheel (1) is turned too fast or too slowly.



To position the needle semi-automatically:

1. Switch on the machine.
 - ↗ The electronic handwheel (1) is inactive.
2. Press the pedal (2) or turn the handwheel (3).
 - ↗ The electronic handwheel (1) is active.
3. Turn the electronic handwheel (1) until the needle has reached the desired position.



Information

The control will stop the machine at 2 preset needle positions.

The standard positions are:

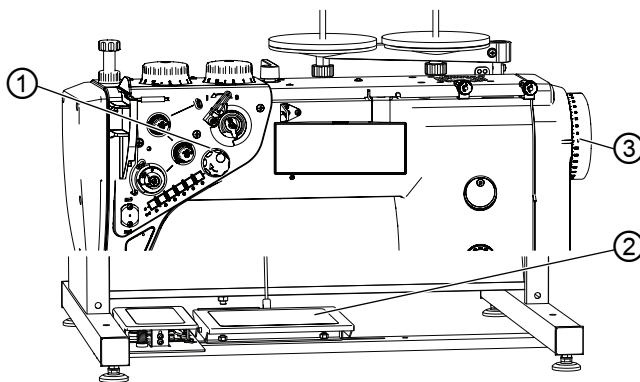
- the needle remains in the sewing material at a stop in the seam
- the needle is outside of the sewing material (pedal at position -2) after the thread has been cut

4.8.3 Positioning the needle automatically

The electronic handwheel (1) can be used to set a point position. This function makes it possible to set the needle to any freely defined position.

A press on the electronic handwheel (1) will trigger a move to the defined position.

Fig. 23: Positioning the needle automatically



(1) - Electronic handwheel

(3) - Handwheel

(2) - Pedal



To position the needle automatically:

1. Switch on the machine.
 - ↳ The electronic handwheel (1) is inactive.
2. Press the pedal (2) or turn the handwheel (3).
 - ↳ The electronic handwheel (1) is active.

3. Turn the electronic handwheel (1) until a numerical value appears on the display.
4. Press the electronic handwheel (1) until the needle has reached the desired position.
5. Press the electronic handwheel (1) to save the position reached.

4.9 Sewing feet

CAUTION



Risk of injury from moving parts!

Crushing possible.

Do not reach under the sewing feet.

NOTICE

Property damage may occur!

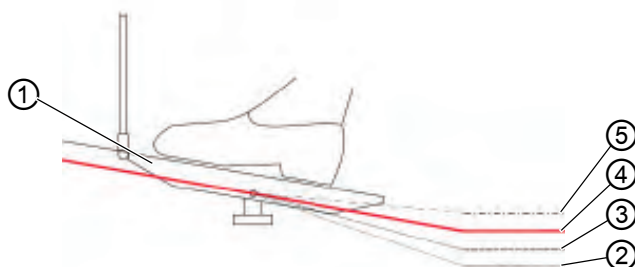
Possible collision with the needle bar.

Before lifting the sewing feet, set the needle bar to the top or bottom dead center.

4.9.1 Lifting the sewing feet electropneumatically

The machine is equipped with an electropneumatic sewing foot lift that is controlled using the pedal.

Fig. 24: Lifting the sewing feet electropneumatically



- | | |
|--|---------------------------------|
| (1) - Pedal | (4) - Position 0: Rest position |
| (2) - Position -2: Cutting and Bar tacking | (5) - Position +1: Sewing |
| (3) - Position -1: Lifting the sewing feet | |



To lift the sewing feet electropneumatically:

1. Press the pedal to position **-1**.
 - ✎ The machine stops and lifts the sewing feet. The sewing feet remain up as long as the pedal is set to position **-1**.

OR

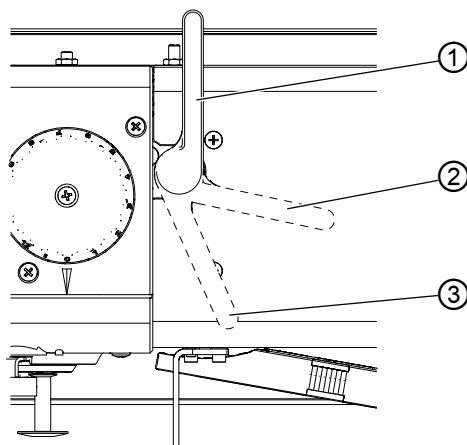


1. Press the pedal to position **-2**.
 - ✎ The machine stops, the thread cutter is activated, and the sewing feet are raised.

4.9.2 Lifting the sewing feet manually

There is a lever on top of the machine for holding the sewing feet at top dead center.

Fig. 25: Lifting the sewing feet manually



(1) - Lever in position 0

(2) - Lever in position 1

(3) - Lever in position 2

Lifting the sewing feet



To lift the sewing feet manually:

1. Turn the lever to position 1 (2).
 The sewing feet are raised by 14 mm.
2. Turn the lever to position 2 (3).
 The sewing feet are raised by 20 mm.

Lowering the sewing feet



To lower the sewing feet:

1. Turn the lever to position 0 (1).
 The lock is canceled.

OR



1. Press the pedal to position **-1**.



The sewing feet are lifted to the maximum, and the lock is canceled.

4.9.3 Setting the sewing foot pressure



Proper setting

The sewing material does not slip and is correctly transported.



Disturbance

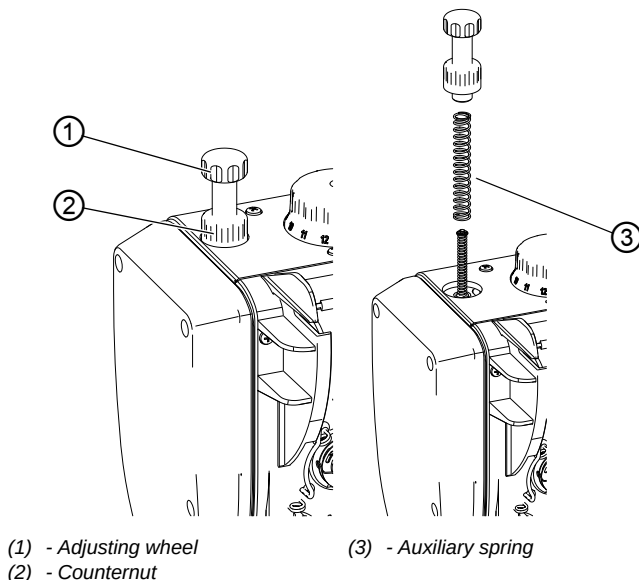
Excessively high sewing foot pressure:

- Tearing of the sewing material
- Sewing feet impressions on the sewing material

Excessively low sewing foot pressure:

- Slipping of the sewing material

Fig. 26: Setting the sewing foot pressure





To set the sewing foot pressure:

1. Loosen the counternut (2).
2. Turn the adjusting wheel (1).
 - Increase sewing foot pressure: turn clockwise
 - Reduce sewing foot pressure: turn counterclockwise
3. Tighten the counternut (2).



Information

If the sewing foot pressure is insufficient, an auxiliary spring (3) can be used to increase the sewing foot pressure.

WARNING



Risk of injury from spring force!

Risk of injuries to the eyes.

When removing the adjusting wheel, make sure that it will not pop out toward you on account of the spring force.

ALWAYS hold the sewing feet in place at the lower position.

1. Unscrew the adjusting wheel (1).
2. Insert the auxiliary spring (3).
3. Screw in the adjusting wheel (1) and set the desired sewing foot pressure.

4.9.4 Setting the sewing foot stroke

NOTICE

Property damage may occur!

Machine can be damaged if the adjusting wheels are forced. The machine is designed in such a way that the sewing foot stroke at the right adjusting wheel cannot be set lower than at the left adjusting wheel.

Do not attempt to use force to set a smaller sewing foot stroke at the right adjusting wheel.

Depending on the equipment the machine has 1 or 2 adjusting wheels for the sewing foot stroke. The sewing foot stroke is continuously adjustable over a range of 1–12 mm by turning the adjusting wheel.

On machines with 2 adjusting wheels, the left adjusting wheel sets the normal sewing foot stroke and the right adjusting wheel sets the elevated sewing foot stroke.



Proper setting

The sewing foot stroke (2) should be set as low as possible. The material is transported with a consistent stitch length.



Disturbance

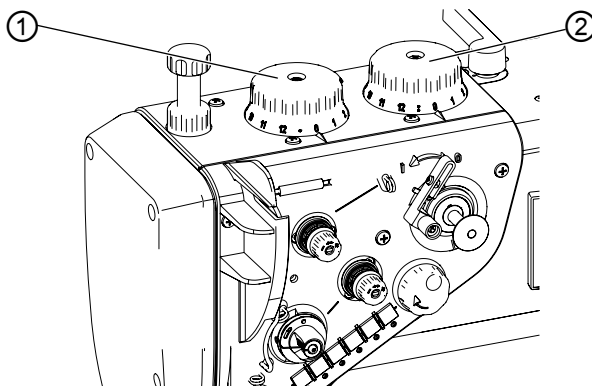
Excessively high sewing foot stroke:

- abrupt impact of the sewing feet
- increased noise level
- the machine is damaged by the excess stress

Excessively low sewing foot stroke:

- Stitch shortening
- Hindered transport of the sewing material
- Damage to the sewing material

Fig. 27: Setting the sewing foot stroke



- (1) - Adjusting wheel for the normal Sewing foot stroke (2) - Adjusting wheel for the elevated Sewing foot stroke



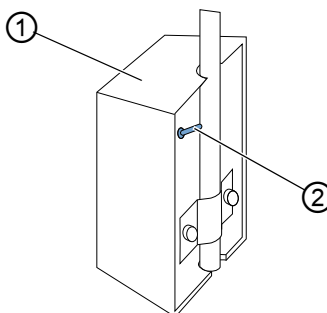
To set the sewing foot stroke:

1. Turn the desired adjusting wheel.
 - Increase sewing foot stroke: turn clockwise
 - Reduce sewing foot stroke: turn counterclockwise

4.9.5 Activating quick stroke adjustment via the knee button

On machines where quick stroke adjustment is activated via a knee button, the elevated sewing foot stroke is switched on and off using the knee button. The toggle switch on the rear side of the knee button determines whether the elevated sewing foot stroke is switched on permanently or only while the knee button is pressed.

Fig. 28: Setting quick stroke adjustment via the knee button



(1) - Knee button

(2) - Toggle switch

Permanent conversion to quick stroke adjustment



To permanently convert to quick stroke adjustment:

1. Set the toggle switch (2) to the upper position.
 - To activate elevated sewing foot stroke: Push the knee button (1) to the right
 - To switch elevated sewing foot stroke off: Push the knee button (1) to the right again

Temporary conversion to quick stroke adjustment



To temporarily convert to quick stroke adjustment:

1. Set the toggle switch (1) to the lower position.
 - To activate elevated sewing foot stroke: Push the knee button (1) to the right and keep it pressed
- ↳ The elevated sewing foot stroke is retained as long as the knee button (1) is pushed to the right.
The elevated sewing foot stroke is switched off as soon as the knee button (1) is released.

4.10 Stitch length

NOTICE

Property damage may occur!

Machine can be damaged if the adjusting wheels are forced. The machine is designed so the top adjusting wheel cannot be set at a lower stitch length than the bottom adjusting wheel.

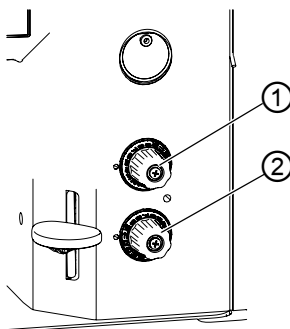
Do not attempt to force the top adjusting wheel to set a lower stitch length.

4.10.1 Setting the stitch length

Depending on the equipment, the machine has 1 or 2 adjusting wheels for stitch length.

The stitch length can be adjusted continuously between 0 and 15 mm.

Fig. 29: Setting the stitch length



(1) - Adjusting wheel for the longer Stitch length (2) - Adjusting wheel for the shorter Stitch length



To set the stitch length:

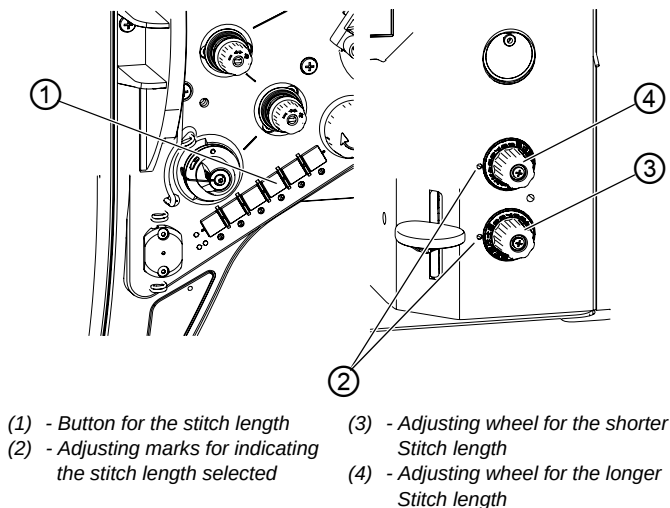
1. Turn the desired adjusting wheel.
 - Reduce stitch length: turn clockwise
 - Increase stitch length: turn counterclockwise

4.10.2 Sewing with 2 stitch lengths

On machines with 2 stitch length adjusting wheels the upper adjusting wheel is for the longer stitch length and the lower adjusting wheel is for the shorter stitch length. The adjusting mark on the wheel indicates the stitch length selected.

Switching between the two stitch lengths is not possible unless the machine is switched on.

Fig. 30: Sewing with 2 stitch lengths



To sew with the 2nd stitch length:

1. Press the button for the stitch length (1).
 - ✎ The stitch length changes from the current length to the 2nd stitch length.
The button lights up, and the stitch length set at the adjusting wheel (4) will be used.
2. Press the button for the stitch length (1) again.
 - ✎ The button is no longer lit, and the stitch length set at the adjusting wheel (3) will be used.

4.10.3 Reverse sewing and bar tacking

Bar tacking involves a reversal of the sewing direction.

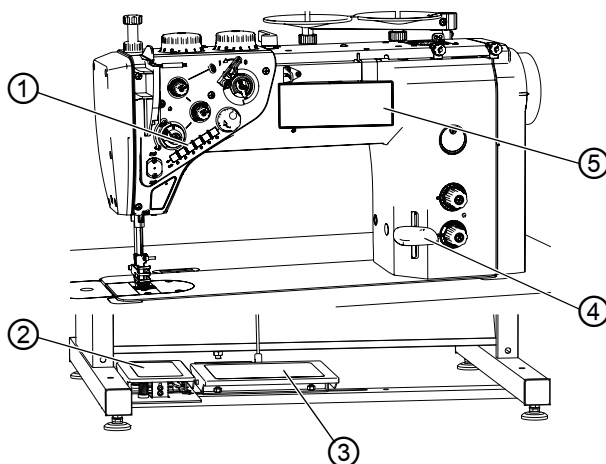
Bar tacking can be activated in different ways.

The Classic models of the machine are equipped with semi-automatic and automatic bar tacking.

The Eco models of the machine only allow for manual bar tacking.

The bartack can be sewn both with the machine running and with the machine at a standstill.

Fig. 31: Reverse sewing and bar tacking



(1) - Button for bar tacking

(2) - Foot button

(3) - Pedal

(4) - Stitch adjustment lever

(5) - Control panel OP1000

Manual bar tacking



To complete a manual bartack:

1. Push the stitch adjustment lever (4) down.

✎ Reverse sewing will remain active for as long as the stitch adjustment lever (4) is pushed down.



Information

If the stitch adjustment lever is only pushed down lightly, the stitch length will be reduced proportionally with the angular position. The stitch length is 0 when the stitch adjustment lever is at the center.

If the stitch adjustment lever is pushed down further, the stitch length will turn negative, causing the machine to sew in reverse.

Semi-automatic bar tacking



To complete a semi-automatic bartack:

1. Press the button for bar tacking (1).
- ↳ Reverse sewing will remain active for as long as the button is pressed.

Semi-automatic bar tacking with foot button (optional)



To complete a semi-automatic bartack using the foot button:

1. Press the foot button (2).
- ↳ Reverse sewing will remain active for as long as the foot button is pressed.

Fully automatic bar tacking

Fully automatic bar tacking is activated on the OP1000 control panel (5). For programming instructions, see  *Instructions for use DAC basic/classic*.



To complete a fully automatic bartack:

1. Activate start and end bartack including the corresponding number of stitches.



2. Press the pedal (3).
- ↳ The machine automatically sews a start bartack.
3. To complete the seam, press the pedal (3) backwards.
- ↳ The machine automatically sews an end bartack and completes the seam.

Selecting the bartack variety

The OP1000 control panel (5) lets you select single, double and multiple bartacks.

For instructions on how to set the bartack variety, see  *Instructions for use DAC basic/classic*.

Selecting the tacking type

You can select between a normal bartack and an ornamental-stitch bartack.

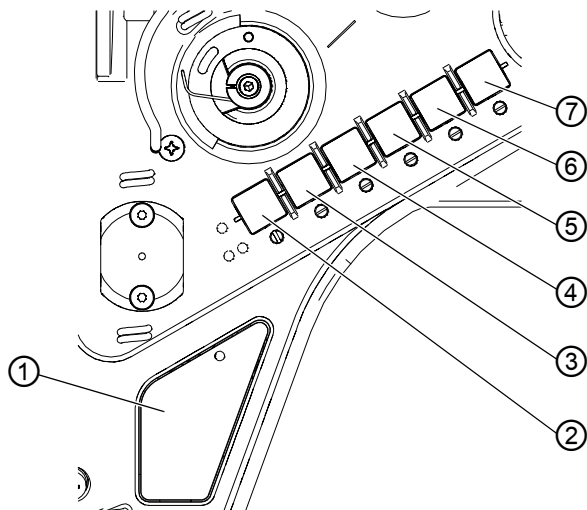
The ornamental-stitch bartack has a cleaner look as each stitch penetrates into the previous stitches in the bartack.

4.11 Quick functions on the push buttons

The functions of the individual buttons included in the push button bar depend on whether you are working with the *Classic* or the *Eco* model.

4.11.1 Quick functions on the push buttons (Classic)

Fig. 32: Quick functions on the push buttons (Classic)



(1) - Favorite button

Buttons for:

(2) - Bartack

(3) - Needle position

(4) - Bartack suppression

(5) - Stitch length

(6) - Additional thread tensioner

(7) - Optional equipment function

Favorite button (1)

When this button is activated, the set function will be activated, and the button will light up.

Bartack (2)

When this button is activated, the machine sews in reverse.

Needle positioning button (3)

When this button (3) is activated, the needle moves to a specific position. This position is determined individually via the parameter settings. For more information, read the  *Service Instructions*. The machine comes configured so that selecting the button (3) will bring the needle up.

Bartack suppression button (4)

This button (4) cancels the general setting for sewing start and end bartacks. If bartacks are on, pressing the button (4) skips the next bartack. If bartacks are off, pressing the button (4) sews the next bartack. For general settings for sewing start and end bartacks, read the  *Instructions for use for the DAC basic/classic control*.

Stitch length button (5)

When this button (5) is activated, the machine sews with the longer stitch length set on the upper stitch adjusting wheel.

Auxiliary thread tensioning button (6)

This button (6) activates the auxiliary thread tensioner.

Button for assigning an optional equipment function (7)

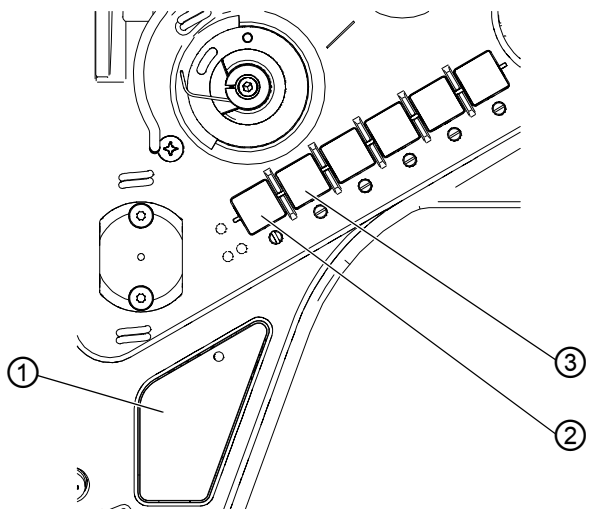
The control of the machine can be used to assign this button an optional equipment function (e.g. needle cooling).

4.11.2 Quick functions on the push buttons (Eco)

On the Eco models of the machine, only 2 buttons have been assigned a function.

It is not possible to freely assign a function to the favorite button.

Fig. 33: Quick functions on the push buttons (Eco)



(1) - Favorite button

(3) - Optional equipment function

Buttons for:

(2) - Needle position

Favorite button (1)

If the optional equipment *Kit for bar tacking* has been assembled to the machine, the favorite button (1) will activate the backward stitch.

Needle positioning button (2)

When this button (2) is activated, the needle moves to a specific position. This position is determined individually via the parameter settings. For more information, read the  *Service Instructions*. The machine comes configured so that selecting the button (2) will bring the needle up.

Button for assigning an optional equipment function (3)

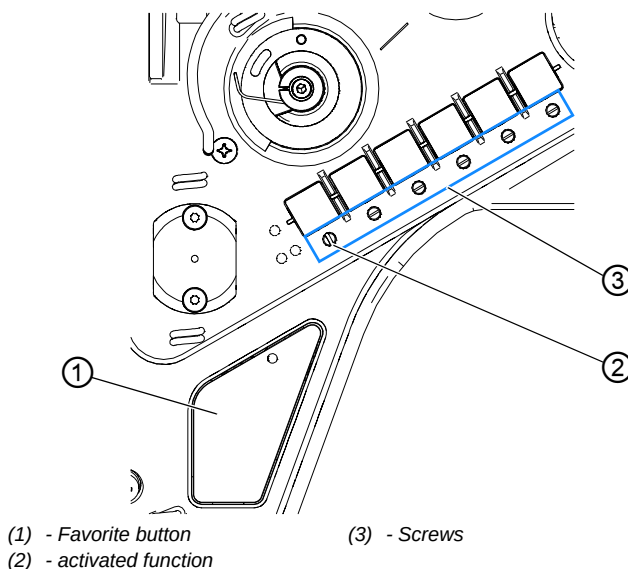
The control of the machine can be used to assign this button an optional equipment function (e.g. needle cooling).

4.11.3 Transferring a button function to the favorite button (Classic only)

You can assign one of the button functions to the favorite button. Select a function that you frequently use so that you can switch it on faster while sewing.

This function is only available on machines fitted with *Classic* equipment.

Fig. 34: Transferring a button function to the favorite button



The button function is assigned by turning the screw under the button until it is vertical (2). Only one function at a time can be assigned to the favorite button (1). Therefore, only one of the screws (3) may be in the vertical position. All screws must be turned back to their original horizontal position before a new function is assigned.



To transfer a button function to the favorite button:

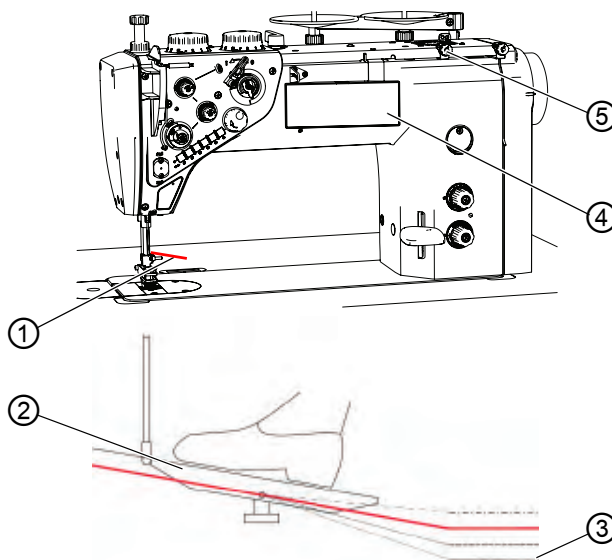
1. Turn all screws (3) to their initial position so that the slots are horizontal.
2. Turn the screw under the desired button 90° so that the slot is vertical.

4.12 Thread cutting and seam securement

Machines fitted with the *Classic* equipment come standard with a thread cutter. The thread cutter is located under the throat plate and cuts the threads at the seam end. The hook thread is clamped by a spring to ensure that the next seam is sewn on securely.

4.12.1 Cutting off the thread

Fig. 35: Cutting off the thread



- | | |
|--|----------------------------|
| (1) - Length of thread end in needle | (4) - Control panel OP1000 |
| (2) - Pedal | (5) - Pre-tensioner |
| (3) - Position -2: Cutting and Bar tacking | |

Using the thread cutter



To use the thread cutter:

1. Press the pedal to position -2 (3).
The thread can be cut both with the machine running and with the machine at a standstill.

**Important**

If set incorrectly, the thread cutter may prevent a proper sewing start after the thread has been cut.

If a proper sewing start following the cutting of the thread is not possible, check the following:

- Check and, if necessary, readjust the thread tension
- Activate soft start (see  *Instructions for use DAC basic/classic*)
- Increase the number of stitches during soft start (see  *Instructions for use DAC basic/classic*)
- Increase the length of the needle thread end by setting the pre-tensioner (5).

When the machine is at its upper automatic position, the length of the needle thread end should be 60-80 mm.

The longer the needle thread end is, the less likely is the occurrence of skipped stitches.

**Information**

The shorter the needle thread is, the more likely the machine is not to start sewing.

Activating or deactivating the thread cutter

To activate or deactivate the thread cutter:

1. Press the button for the thread cutter on the OP1000.

↗ When the thread cutter is activated, the LED on the OP1000 will be on.

When the thread cutter is deactivated, the LED on the OP1000 will be off.

4.12.2 Seam securement

When using yarn of exceptional thickness, you may find that one bartack is not enough to secure the thread. In this case, it is advisable to tie the ends of the yarn together in order to attain a secure and stable seam end.



To secure the seam by tying the ends of the yarn together:

1. When finished sewing, pull the end of the thread at the beginning of the seam to the underside of the sewing material.
2. Tie the ends of the thread together.

4.13 Sewing speed

The sewing speed has been set to the maximum speed at the factory. The maximum speed cannot be exceeded.

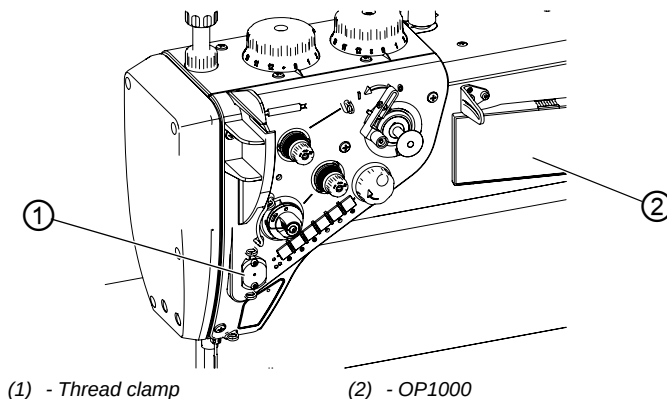
The sewing speed increases and decreases proportionally with the angle of the pedal when the pedal is pressed.

The sewing speed and the response of the setpoint device can be adjusted using parameters (see  *Parameter list 967*). The OP1000 control panel can be used to lower the speed (see  *Instructions for use DAC basic/classic*).

4.14 Thread clamp (optional)

The thread clamp is used to pull the sewn threads under the sewing material at each beginning of the seam. The thread clamp clamps the thread during the first stitch, while the sewing feet are raised briefly.

Fig. 36: Thread clamp

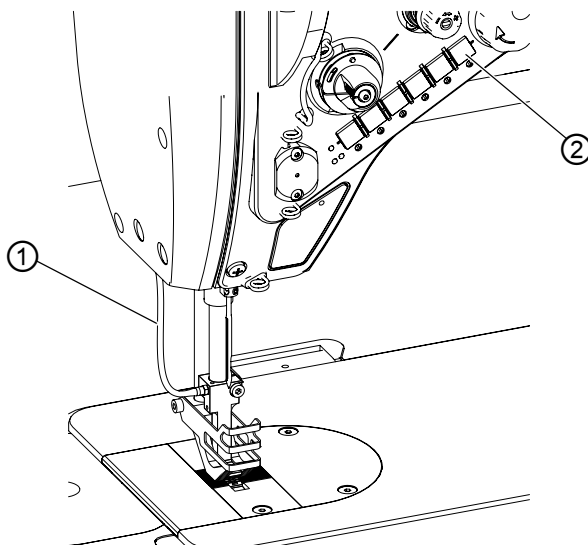


To activate or deactivate the thread clamp:

1. Press the button for the thread clamp on the OP1000 (2).
- ↳ When the thread clamp is activated, the LED on the OP1000 will be on.
When the thread clamp is deactivated, the LED on the OP1000 will be off.

4.15 Needle cooling (optional)

Fig. 37: Needle cooling



(1) - Air supply hose

(2) - Button for needle cooling

Needle cooling is supposed to prevent the needle thread from being burnt off.

Needle cooling will be active during sewing and can be activated or deactivated on the OP1000 control panel and by pressing the needle cooling button (see  *Parameter list 967*,  *Instructions for use DAC basic/classic*).

4.16 Sewing

CAUTION

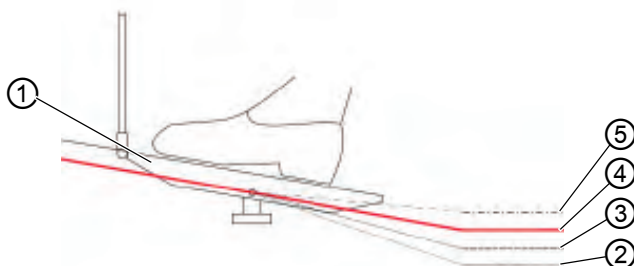


Risk of injury from sharp parts!

Punctures possible.

Take care not to accidentally press the pedal.
Do NOT reach into the needle area.

Fig. 38: Sewing



(1) - Pedal

(2) - Position -2: Cutting and
Bar tacking

(3) - Position -1: Lifting the sewing feet

(4) - Position 0: Rest position

(5) - Position +1: Sewing

Initial situation

• Pedal position 0:

↪ The machine is at a standstill, the needle is up, and the sewing feet are down.

Positioning the sewing material



To position the sewing material:

1. Press the pedal halfway back in pedal position -1:

↪ The sewing feet are lifted.

2. Push the sewing material into the initial position.

Sewing



To sew:

1. Press the pedal forwards in pedal position **+1**:



The machine sews.

The sewing speed increases the further forward the pedal is pressed.

Interrupt sewing



To interrupt sewing:

1. Release the pedal in pedal position 0:



The machine stops, and needle and sewing feet are down.

Continue sewing



To continue sewing:

1. Press the pedal forwards in pedal position **+1**:



The machine continues to sew.

Sew over thicker parts of the sewing material



To sew over thicker parts of the sewing material:

1. Switch on the elevated sewing foot stroke with the knee lever ( p. 50).

Changing the stitch length



To change the stitch length:

1. 2nd stitch length must be switched on using the quick function button ( p. 59), ( p. 61).

Increasing the thread tension



To increase the thread tension:

1. Switch on the auxiliary thread tensioner using the quick function button ( p. 59), ( p. 61).

Sewing an intermediate bartack



To sew an intermediate bartack:

1. Reverse sewing with the stitch adjustment lever or the quick function button ( p. 56).

Finishing the seam



To finish the seam:

1. Press the pedal back completely in pedal position -2:
 The machine sews the end bartack, and the thread cutter cuts the thread.
The machine stops, and needle and sewing feet are up.
2. Remove the sewing material.

5 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.

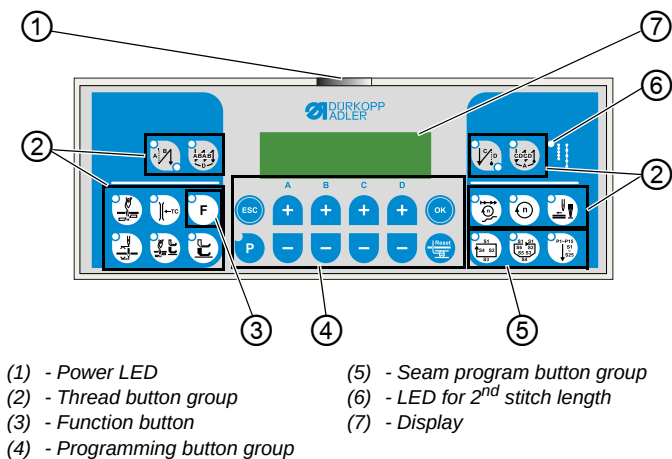


Information

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. 39: Programming



OP1000 buttons and functions

Button	Function
Thread button group	
 Start bartack	• Sets the start bartack
 Multiple start bartack	• Sets the multiple start bartack
 End bartack	• Sets the end bartack
 Multiple end bartack	• Sets the multiple end bartack
 Thread cutter	• Activates or deactivates the thread cutter
 Thread clamp	• Activates or deactivates the thread clamp
 Needle position after sewing stop	• Sets the needle position after sewing stops
 Sewing foot lift after thread cutter	• Activates or deactivates the sewing foot lift after the thread cutter
 Sewing foot lift after sewing stop	• Activates or deactivates the sewing foot lift after sewing stops
 Soft start	• Activates or deactivates the soft start

Button	Function
 Speed	• Reduces the motor speed
 Function button	• Activates or deactivates any stored function
Programming button group	
 ESC	• Ends parameter mode
 A+	• Increases parameter • Changes user level • Selects subprogram
 B+	• Increases parameter • Changes to next higher category • Selects subprogram
 C+	• Increases parameter • Selects subprogram
 D+	• Increases parameter • Selects subprogram
 OK	• Calls parameters or saves them • Confirms parameters
 P	• Starts or ends the parameter mode

Button	Function
 A-	• Decreases parameter • Changes user level • Selects subprogram
 B-	• Decreases parameter • Changes to next lower category • Selects subprogram
 C-	• Decreases parameter • Selects subprogram
 D-	• Decreases parameter • Selects subprogram
 Reset	• Resets the (piece) counter

Button	Function
Seam program button group	
	Seam program I • Activates seam program I
	Seam program II • Activates seam program II
	Seam program III • Sets seam program III

Create seam program

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

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

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

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

6 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.

Advanced maintenance work may only be carried out by qualified specialists ( *Service Instructions*).

Maintenance interval

Work to be carried out	Operating hours			
	8	40	160	500
Removing lint and thread remnants	●			
Check the oil level	●			
Servicing the pneumatic system	●			

6.1 Cleaning

WARNING



Risk of injury from flying particles!

Flying particles can enter the eyes, causing injury.

Wear safety goggles.

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

Make sure no particles fly into the oil pan.

NOTICE

Property damage from soiling!

Lint and thread remnants can impair the operation of the machine.

Clean the machine as described.

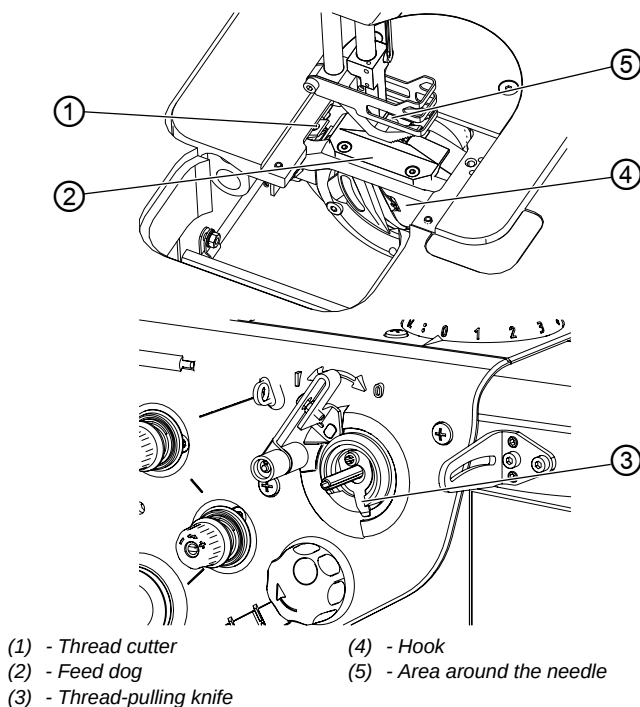
NOTICE

Property damage from solvent-based cleaners!

Solvent-based cleaners will damage paintwork.

Use only solvent-free substances for cleaning.

Fig. 40: Cleaning

**Points that need to be cleaned particularly thoroughly:**

- Thread-pulling knife (3)
- Area between throat plate and feed dog (2)
- Hook (4)
- Thread cutter (1)
- Area around the needle (5)



To clean the machine:

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

6.2 Lubricating

CAUTION



Risk of injury from contact with oil!

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

Avoid skin contact with oil.

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

NOTICE

Property damage from incorrect oil!

Incorrect oil types can result in damage to the machine.

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

CAUTION



Risk of environmental damage from oil!

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

Carefully collect up used oil.

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

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

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

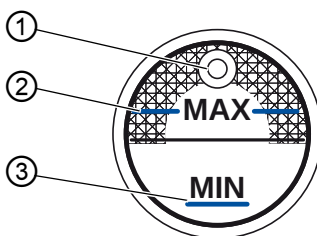
- Viscosity at 40 °C: 10 mm²/s
- Flash point: 150 °C

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

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

Checking the oil level

Fig. 41: Checking the oil level



(1) - Oil filler opening

(2) - Maximum level marking

(3) - Minimum level marking



Proper setting

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



Information

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



To top off the oil:

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

6.3 Servicing the pneumatic system

6.3.1 Setting the operating pressure

NOTICE

Property damage from incorrect setting!

Incorrect operating pressure can result in damage to the machine.

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

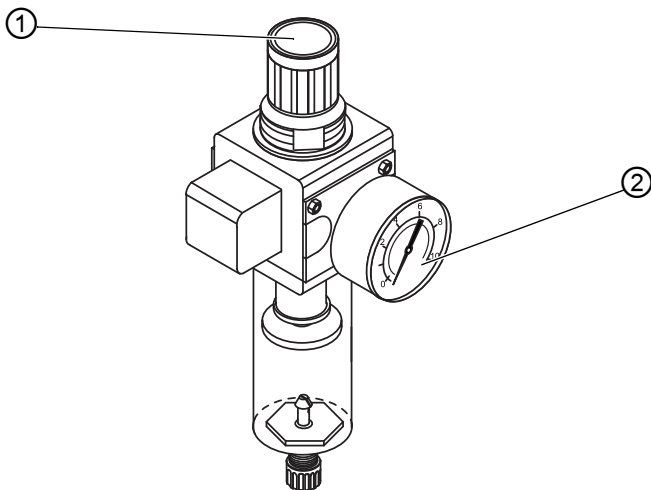


Proper setting

Refer to the **Technical data** ( p. 123) 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. 42: Setting the operating pressure



(1) - Pressure controller

(2) - Pressure gage



To set the operating pressure:

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

6.3.2 Draining the water condensation

NOTICE

Property damage from excess water!

Excess water can cause damage to the machine.

Drain water as required.

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

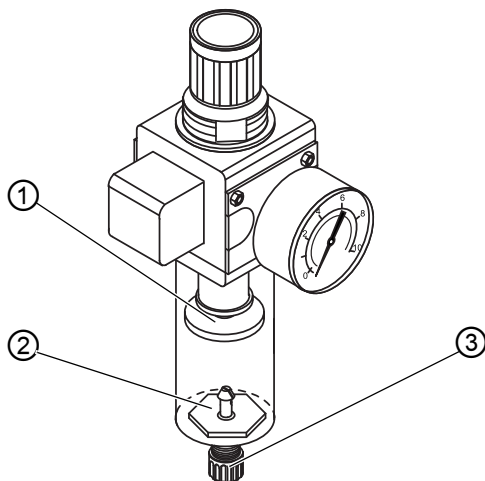


Proper setting

Water condensation must not rise up to the level of the filter element (1).

Check the water level in the water separator (2) on a daily basis.

Fig. 43: Draining the water condensation



(1) - Filter element

(2) - Water separator

(3) - Drain screw



To drain water condensation:

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

5. Tighten the drain screw (3).
6. Connect the machine to the compressed air supply.

6.3.3 Cleaning the filter element

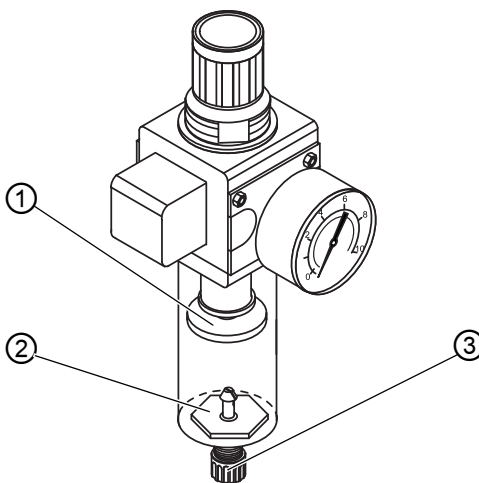
NOTICE

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. 44: Cleaning the filter element



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

(3) - Drain screw



To clean the filter element:

1. Disconnect the machine from the compressed air supply.
2. Drain the water condensation ( p. 84).
3. Loosen the water separator (2).
4. Loosen the filter element (1).
5. Blow out the filter element (1) using the compressed air gun.

6. Wash out the filter tray using benzine.
7. Tighten the filter element (1).
8. Tighten the water separator (2).
9. Tighten the drain screw (3).
10. Connect the machine to the compressed air supply.

6.4 Parts list

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

www.duerkopp-adler.com



7 Setup

WARNING



Risk of injury from cutting parts!

Cutting injuries may be sustained while unpacking and setting up the machine.

Only qualified specialists may set up the machine.
Wear safety gloves

WARNING



Risk of injury from moving parts!

Crushing injuries may be sustained while unpacking and setting up the machine.

Only qualified specialists may set up the machine.
Wear safety shoes.

7.1 Checking the scope of delivery

The scope of delivery depends on your specific order. Check that the scope of delivery is correct after taking delivery.

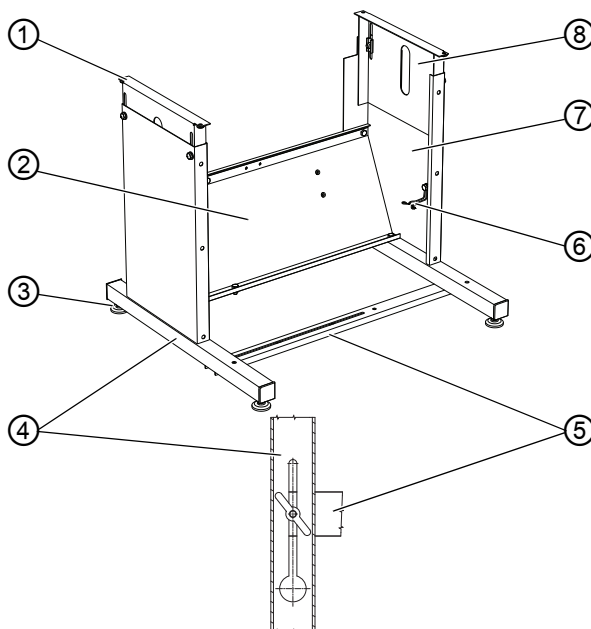
7.2 Removing the transport locks

Remove all transport locks before setting up the machine:

- Lashing straps and wooden blocks from the machine head
- Lashing straps and wooden blocks from the table
- Lashing straps and wooden blocks from the stand
- Supporting wedges between machine arm and throat plate

7.3 Assembling the stand

Fig. 45: Assembling the stand



- (1) - Head section
- (2) - Cross member
- (3) - Foot
- (4) - Foot strut

- (5) - Cross strut
- (6) - Oil can holder
- (7) - Stand bar
- (8) - Inner bar



To assemble the stand:

1. Screw the cross member (2) to the stand bars (7).
2. Screw the oil can holder (6) to the stand bar (7).
3. Screw the cross strut (5) to the foot strut (4).
4. Tighten the inner bar (8) to the stand bar (7) so that the head sections (1) are at the same height.



Important

Turn the feet (3) so that the stand has even contact with the ground.

7.4 Tabletop

Ensure that the tabletop has sufficient load-bearing capacity and strength. If you want to make your own tabletop, use the dimensions given in the diagram **Appendix** ( p. 127) as a template.

7.4.1 Completing the tabletop

Fig. 46: Completing the tabletop (1), machines with standard arm

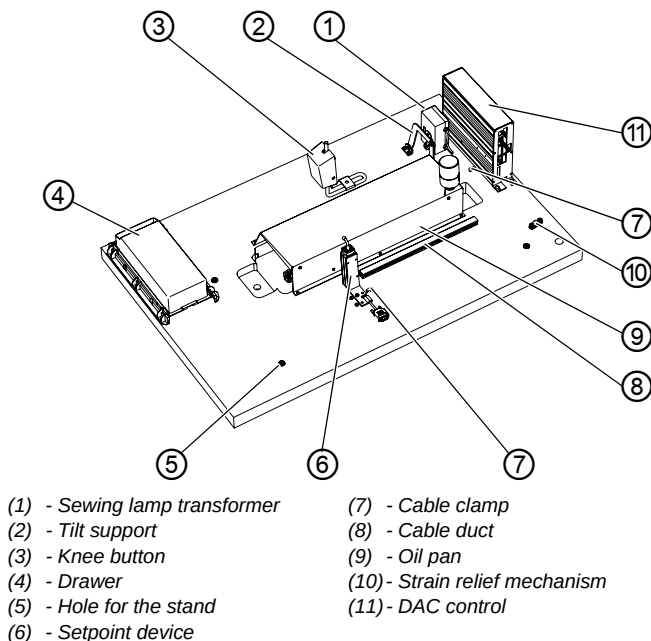
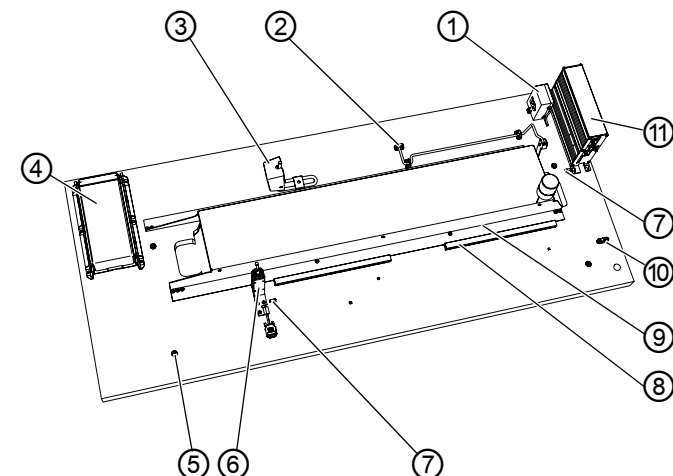


Fig. 47: Completing the tabletop (1), machines with long arm



- | | |
|-------------------------------|--------------------------------|
| (1) - Sewing lamp transformer | (7) - Cable clamp |
| (2) - Tilt support | (8) - Cable duct |
| (3) - Knee button | (9) - Oil pan |
| (4) - Drawer | (10) - Strain relief mechanism |
| (5) - Hole for the stand | (11) - DAC control |
| (6) - Setpoint device | |



Information

If the machine is equipped with a sewing lamp, start by connecting the sewing lamp transformer (1) to the control (11).

The connection terminal strip is only accessible when removed.

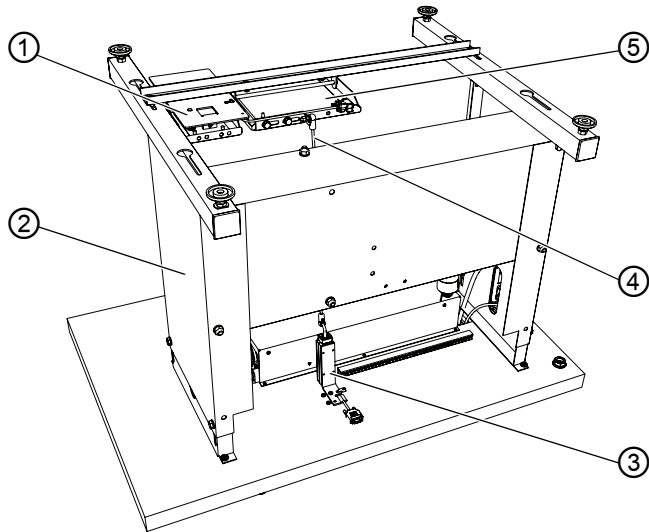


To complete the tabletop:

1. Turn the tabletop over so the underside is facing up.
2. Assemble all components to the underside of the tabletop as shown above.
3. Assemble the connecting cable with strain relief mechanism (10) to the tabletop.
4. Assemble loose cables (7) to the tabletop using cable clamps.
5. Drill the holes for the stand (5) as provided in the drawing.

7.4.2 Assembling the tabletop

Fig. 48: Assembling the tabletop



- (1) - Foot button
(2) - Stand
(3) - Setpoint device

- (4) - Pull rod
(5) - Pedal



To assemble the tabletop:

1. Place the stand (2) on the tabletop as shown above.
2. Screw the stand (2) into the previously drilled holes.
3. Screw the foot button (1) in as close to the left bar of the stand's cross member as possible.
4. Press the lugs at the end of the pull rod (4) onto the round pin of the setpoint device (3) and the pedal (5).
5. Screw on the pedal (5).

7.5 Setting the working height

WARNING



Risk of injury from moving parts!

The tabletop can sink under its own weight when the screws on the stand bars are loosened. Crushing possible.

Ensure that your hands are not jammed when loosening the screws.

CAUTION



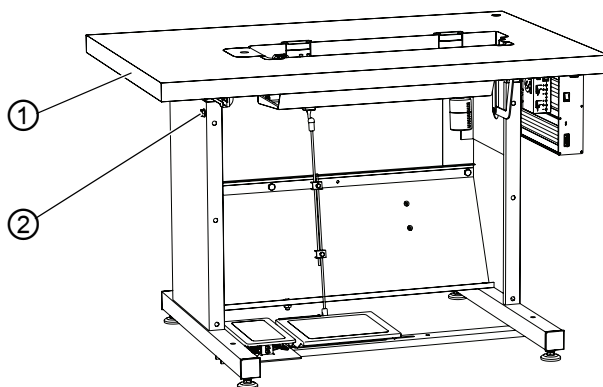
Risk of musculoskeletal damage from incorrect setting!

The operator can sustain musculoskeletal damage if failing to comply with the ergonomic requirements.

Adjust the working height to the body height of the person who will operate the machine.

The working height can be set continuously within a range between 770 mm and 910 mm.

Fig. 49: Setting the working height



(1) - Tabletop

(2) - Screw



To set the working height:

1. Loosen the screws (2) on both sides of the stand.
2. Set the tabletop (1) to the desired height.



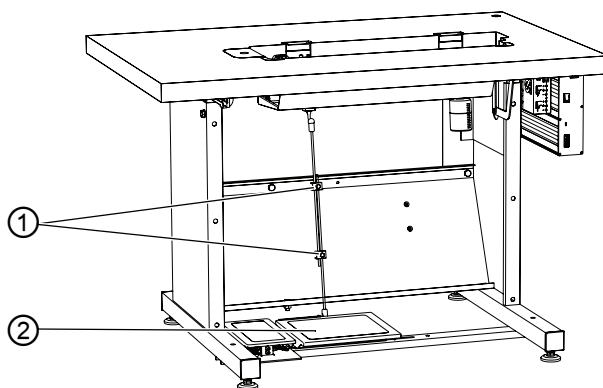
Important

Ensure that the tabletop is level.

3. Tighten the screws (2).

7.6 Setting the pedal

Fig. 50: Setting the pedal



(1) - Connecting piece on the
Pull rod

(2) - Pedal



To set the pedal:

1. Set the pedal (2) so that it is centered relative to the axis of the needle.
2. Set the connecting piece of the pull rod (1) so that the pedal (2) has the desired angular position.

7.7 Inserting the machine head

WARNING



Risk of injury from moving parts!

Crushing possible.

Ensure that your hands are not jammed when inserting the machine head.

NOTICE

Property damage may occur!

Possible damage to the machine head from impact with the tabletop or the ground.

After it has been inserted, the machine head must not tip until the tilt mechanism has been assembled.

Fig. 51: Inserting the machine head (1), machines with standard arm

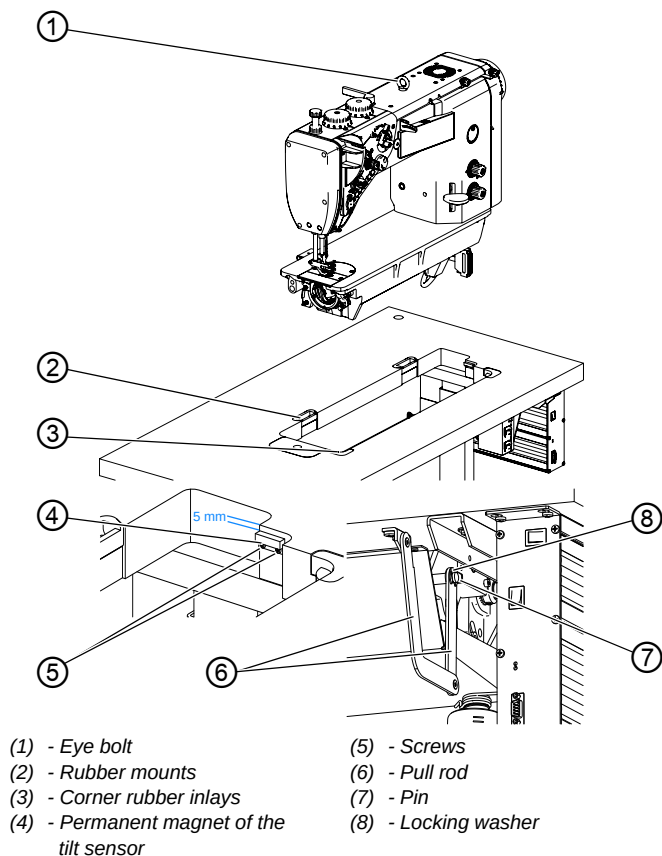
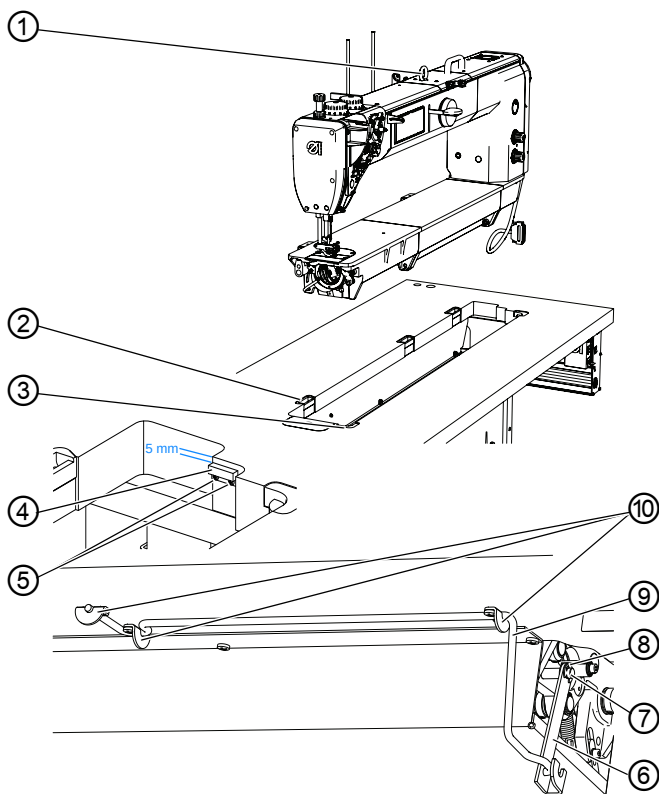


Fig. 52: Inserting the machine head (2), machines with long arm



- | | |
|---|----------------------|
| (1) - Eye bolt | (6) - Pull rod |
| (2) - Rubber mounts | (7) - Pin |
| (3) - Corner rubber inlays | (8) - Locking washer |
| (4) - Permanent magnet of the tilt sensor | (9) - Torsion spring |
| (5) - Screws | (10) - Clips |



To insert the machine head:

1. Insert the rubber mounts (2) and tighten.
2. Insert the rubber corner inlays (3).
3. Tighten the permanent magnet of the tilt sensor (4) using the screws (5).
4. Insert the eye bolt (1) into the machine head.
5. Use a crane to insert the machine head into the tabletop cutout.

6. Connect the pull rod (6) of the tilt mechanism to the pin (7) of the machine and secure it using the locking washer (8).



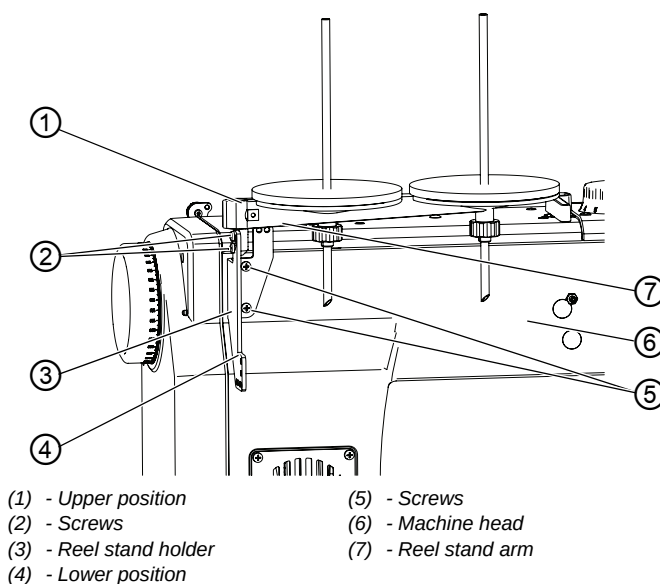
Important

Machines with a long arm require that you insert the pull rod (7) with the torsion spring (9) as shown above.

7. Screw the torsion spring (9) with the clips (10) in place under the tabletop.

7.8 Assembling the reel stand

Fig. 53: Assembling the reel stand



To assemble the reel stand:

1. Tighten the reel stand holder (3) to the machine head (6) using screws (5).
2. Fit the reel stand arm (7) to the reel stand holder (3).
 - upper position (1): with inclination adjustment
 - lower position (4): without inclination adjustment
3. Tighten the reel stand arm (7) using the screws (2).

4. Set the desired angle of inclination at the upper position (1).

7.9 Electrical connection

DANGER



Risk of death from live components!

Unprotected contact with electricity can result in serious injuries or death.

Only qualified specialists may perform work on electrical equipment.

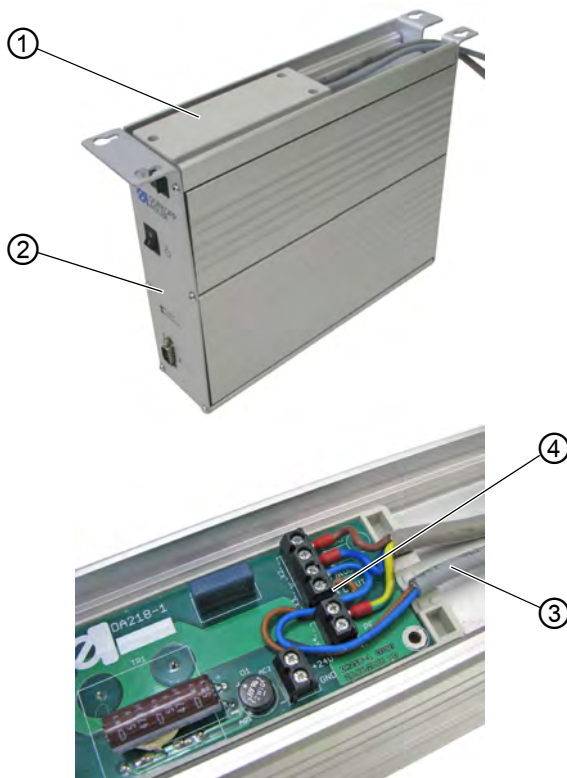


Important

The voltage on the type plate of the sewing motor must correspond to the mains voltage.

7.9.1 Connecting the sewing lamp

Fig. 54: Connecting the sewing lamp (1)



(1) - Housing cover
(2) - Control

(3) - Cable
(4) - Terminal strip



To connect the sewing lamp:

1. Remove the control (2) if the control (2) has already been assembled.
2. Open the housing cover (1).
3. Connect the cable (3) to contacts **3** and **4** on the terminal strip (4).
4. Close the housing cover (1).

Fig. 55: Connecting the sewing lamp (2)



(5) - Plug connection



5. Connect the plug connection (5) of the cable (3) with the cable of the sewing lamp inside the machine head.

7.9.2 Connecting the control

Connect the control as follows:

- Insert the plug of all cables into the sockets on the back of the control.
- Connect the equipotential bonding
- Use the power cable to connect the control to the mains grid.

Fig. 56: Connecting the control



Refer to the  *Instructions for use DAC basic/classic* for the correct assignment.

The pictograms on the control correspond to the pictograms of the corresponding cables.

7.10 Pneumatic connection

NOTICE

Property damage from oily compressed air!

Oil particles in the compressed air can cause malfunctions of the machine and soil the sewing material.

Ensure that no oil particles enter the compressed air supply.

NOTICE

Property damage from incorrect setting!

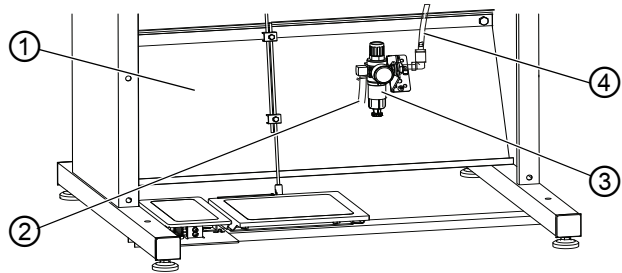
Incorrect system pressure can result in damage to the machine.

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

The pneumatic system of the machine and of the additional equipment must be supplied with dry and oil-free compressed air. The supply pressure must lie between 8 and 10 bar.

7.10.1 Assembling the compressed air maintenance unit

Fig. 57: Assembling the compressed air maintenance unit



- | | |
|--|---------------------------------------|
| (1) - Cross member | (3) - Compressed air maintenance unit |
| (2) - Connection hose of the compressed air maintenance unit | (4) - Connection hose of the machine |



To assemble the compressed air maintenance unit:

1. Use a mounting bracket to screw the compressed air maintenance unit (3) to the cross member.
2. Connect the connection hose of the machine (4) to the compressed air maintenance unit (3).
3. Connect the connection hose of the compressed air maintenance unit (2) to the compressed air supply using a hose coupling R 1/4".

7.10.2 Setting the operating pressure

NOTICE

Property damage from incorrect setting!

Incorrect operating pressure can result in damage to the machine.

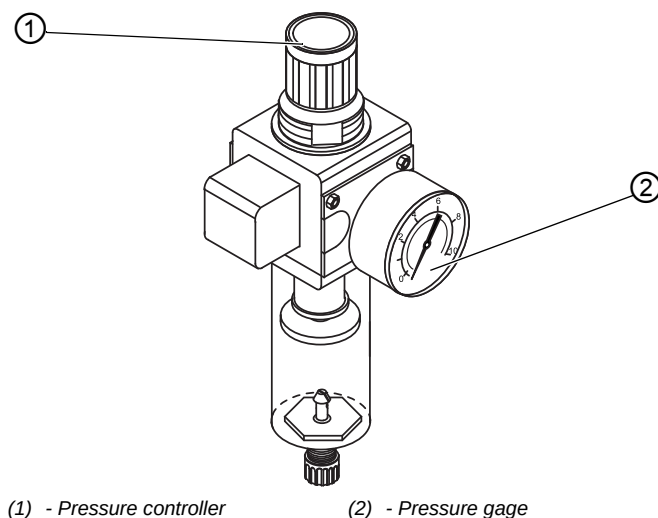
Ensure that the machine is only used when the operating pressure is set correctly.



Proper setting

Refer to the **Technical data** (📖 p. 123) chapter for the permissible operating pressure. The operating pressure cannot deviate by more than ± 0.5 bar.

Fig. 58: Setting the operating pressure



To set the operating pressure:

1. Pull the pressure controller (1) up.

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

7.11 Checking the lubrication

All wicks and felt bits of the machine head are soaked in oil at the factory. The oil is conveyed to the reservoir during use.

This is why you should avoid filling too much oil during initial filling ( p. 80).

7.12 Performing a test run

When setup is complete, perform a test run to check the functionality of the machine.

8 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.

9 Disposal

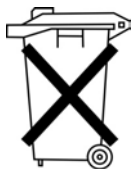
CAUTION



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.

10 Troubleshooting

10.1 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



10.2 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.

10.2.1 Information messages

Code	Possible cause	Remedial action
1203	Position not reached	• Check and, if necessary, change controller settings • Make mechanical changes to the machine (e.g. thread cutting setting, belt tension) • Check the position (thread lever at top dead center)
2020	DACextension box not responding	• Check connection cables • Check LEDs of DACextension box • Perform software update
2021	Sewing motor encoder plug (Sub-D, 9-pin) not connected to DACextension box	• Connect encoder cable to DACextension box using the correct connection
2120	DA stepper card 1 not responding	• Check connection cables • Check LEDs on DACextension box • Perform software update
2121	DA stepper card 1 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection

Code	Possible cause	Remedial action
2122	DA stepper card 1 flywheel position not found	• Check connection cables • Check stepper motor 1 for stiff movement
2220	DA stepper card 2 not responding	• Check connection cables • Check LEDs on DACextension box • Perform software update
2221	DA stepper card 2 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2222	DA stepper card 2 flywheel position not found	• Check connection cables • Check stepper motor 2 for stiff movement
3103	Low voltage failure (1 st threshold) (mains voltage < 180 V AC)	• Check the mains voltage • Stabilize the mains voltage • Use generator
3104	Pedal is not in position 0	• Do not press the pedal when switching on the control
3108	Speed limited due to insufficient mains voltage	• Check the mains voltage
3150	Maintenance necessary	• Lubricating the machine
3151	Maintenance necessary (operation cannot continue unless parameter $t_{51\ 14}$ is reset)	• Service is required,  <i>Service Instructions</i>
3155	No release for sewing process	• Parameter $t_{51\ 20} - t_{51\ 33} = 25$ • Input signal for sewing process release required

Code	Possible cause	Remedial action
5160	Stitch loosening device	• Stitch loosening cannot be performed
3215	Bobbin stitch counter (info value 0 reached)	• Change bobbin, set counter value
3216	Remaining thread monitor left	• Change the left bobbin
3217	Remaining thread monitor right	• Change the right bobbin
3218	Remaining thread monitor left and right	• Change the left and right bobbin
3223	Skip stitch detected	-
3224	Bobbin failed to rotate	-
6360	No valid data on external EEPROM (internal data structures are not compatible with the external data storage device)	• Perform software update
6361	No external EEPROM connected	• Connect machine ID
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 on the machine again • Perform 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 on the machine again • Perform software update

Code	Possible cause	Remedial action
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 on the machine again • Perform software update
6365	Internal EEPROM defective	• Replace the control
6366	Internal EEPROM defective and external data not valid (emergency operating features only)	• Replace the control
6367	Internal EEPROM defective and external EEPROM not connected (emergency operating features only)	• Replace the control
7202	DACextension box boot error	• Check connection cables • Perform software update • Replace DACextension box
7203	Checksum error during update	• Check connection cables • Perform software update • Replace DACextension box
7212	DA stepper card 1 boot error	• Check connection cables • Perform software update • Replace DACextension box
7213	Checksum error occurred while updating DA stepper card 2	• Check connection cables • Perform software update • Replace DACextension box

Code	Possible cause	Remedial action
7222	DA stepper card 2 boot error	• Check connection cables • Perform software update • Replace DACextension box
7223	Checksum error occurred while updating DA stepper card 2	• Check connection cables • Perform software update • Replace DACextension box
7801	Software version error (DACclassic only; only the functions of the DACbasic will remain available)	• Perform software update • Replace the control
7802	Software update error (DACclassic only; only the functions of the DACbasic will remain available)	• Perform software update again • Replace the control
7803	Communication error (DACclassic only; only the functions of the DACbasic will remain available)	• Restart the control • Perform software update • Replace the control

10.2.2 Error messages

Code	Possible cause	Remedial action
1000	Sewing motor encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
1001	Sewing motor error: Sewing motor plug (AMP) not connected	• Check connection and plug in, if necessary • Test sewing motor phases ($R = 2.8 \Omega$, high impedance to PE) • Replace the encoder • Replace sewing motor • Replace the control
1002	Sewing motor insulation fault	• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace sewing motor
1004	Sewing motor error: Incorrect sewing motor direction of rotation	• Replace the encoder • Check plug assignment and change, if necessary • Test motor phases and check for correct value
1005	Motor blocked	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace the motor
1006	Maximum speed exceeded	• Replace the encoder • Perform reset • Check machine class (parameter t 51 04)
1007	Error in the reference run	• Replace the encoder • Eliminate stiff movement in the sewing machine
1008	Encoder error	• Replace the encoder

Code	Possible cause	Remedial action
1010	External synchronizer plug (Sub-D, 9-pin) not connected	• Connect cable of external synchronizer to control, use correct connection (<i>Sync</i>) • Only required for machines with transmission!
1011	Encoder Z pulse missing	• Switch off the control, use handwheel to turn, and switch on the control again • If error is not corrected, check encoder
1012	Synchronizer fault	• Replace the synchronizer
1052	Sewing motor overcurrent, internal current increase >25 A	• Check selection of class • Replace the control • Replace sewing motor • Replace the encoder
1053	Sewing motor overvoltage	• Check selection of class • Replace the control
1054	Internal short circuit	• Replace the control
1055	Sewing motor overload	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace sewing motor
2101	DA stepper card 1 reference run timeout	• Check reference sensor
2103	DA stepper card 1 step losses	• Check for stiff movement
2155	DA stepper card 1 overload	• Check for stiff movement
2201	DA stepper card 2 reference run timeout	• Check reference sensor

Code	Possible cause	Remedial action
2203	DA stepper card 2 step losses	• Check for stiff movement
2255	DA stepper card 2 overload	• Check for stiff movement
3100	AC-RDY timeout, intermediate circuit voltage did not reach the defined threshold in the specified time	• Check the mains voltage • If the mains voltage is OK, replace the control
3101	High voltage fault, mains voltage, longer duration >290 V	• Check mains voltage, if nominal voltage is continuously exceeded: stabilize it or use a generator
3102	Low voltage failure (2 nd threshold) (mains voltage <150 V AC)	• Check the mains voltage • Stabilize the mains voltage • Use generator
3105	U24 V short circuit	• Disconnect 37-pin plug; if error persists, replace control • Test inputs/outputs for 24 V short circuit
3106	U24 V (I^2T) overload	• One or several magnets defective
3107	Pedal not connected	• Connect analog pedal
3109	Operation lock	• Check tilt sensor on machine
6353	Internal EEPROM communication error	• Switch off the control, wait until the LEDs are off and then switch on again

Code	Possible cause	Remedial action
6354	External EEPROM communication error	• Switch off the control, wait until the LEDs are off, check connection for machine ID, switch on control again
8401	Watchdog	• Perform software update • Perform a machine ID reset • Replace the control
8402 - 8405	Internal error	• Perform software update • Perform a machine ID reset • Replace the control
8406	Checksum error	• Perform software update • Replace the control
8501	Software protection	• The DA tool must always be used for software updates

10.3 Errors in sewing process

Error	Possible cause	Remedial action
Unthreading at seam beginning	Needle thread tension is too firm	Check pretension
	Needle thread was cut at the wrong time	 <i>Service Instructions</i>
	Needle thread tension too high during cutting	 <i>Service Instructions</i>
Thread breaking	Needle thread and hook thread have not been threaded correctly	Check threading path of needle thread and hook thread
	Needle is • bent • sharp-edged • not properly inserted	Insert new needle
	Yarn is • knobby • hard • too thick	Use recommended yarn
	Thread tension is set too firm	Check thread tension
	Thread-guiding parts are sharp-edged	Check the thread path
	Throat plate or hook has been damaged by the needle	Have parts replaced

Error	Possible cause	Remedial action
Skip stitch	Needle is • blunt • bent • not properly inserted	Insert new needle
	Needle thread and hook thread have not been threaded correctly	Check threading path of needle thread and hook thread
	Thread tension is set too firm	Check thread tension
	Sewing material is not held correctly	Check sewing foot pressure
	Needle thickness is incorrect	Use recommended needle thickness
	Throat plate or hook has been damaged by the needle	Have parts replaced
	Hook is set incorrectly	 <i>Service Instructions</i>
Loose stitch	Thread tension not adjusted to • Sewing material • Sewing material thickness • Thread	Check thread tension
	Needle thread and hook thread have not been threaded correctly	Check threading path of needle thread and hook thread
	Thread tension spring not working	 <i>Service Instructions</i>
Needle breakage	Needle thickness not suitable for • Sewing material • Sewing material thickness • Thread	Alter needle thickness

11 Technical data

Data and characteristic values

Technical Data	Unit	967-100180	967-100180 (with option Heavy Transport)	967-100382	967-100382 (with option Heavy Transport)	967-100180-100	967-100382-100
Type of stitches		Lockstitch 301					
Hook type		Barrel shuttle hook					
Number of needles		1					
Needle system		794/7x23/328/1000H					
Needle strength	[Nm]	120 - 280	200 - 330	120 - 280	200 - 330	120 - 280	
Needle thread strength	[Nm]	40/3 - 5/3	40/3 - 5/3 + braided yarn 1,6	40/3 - 5/3	40/3 - 5/3 + braided yarn 1,6	40/3 - 5/3	
Hook thread strength	[Nm]	60/3 - 8/3	60/3 - 5/3	60/3 - 8/3	60/3 - 5/3	60/3 - 8/3	
Stitch length	[mm]	15/15					
Speed maximum	[min ⁻¹]	1000	800	1250	800	1000	
Speed on delivery	[min ⁻¹]	1000	800	1000	800	700	
Mains voltage	[V]	230					
Mains frequency	[Hz]	50/60					
Operating pressure	[bar]	6					
Length	[mm]	700				1300	

Technical Data	Unit	967-100180	967-100180 (with option Heavy Transport)	967-100382	967-100382 (with option Heavy Transport)	967-100180-100	967-100382-100
Width	[mm]	250				290	
Height	[mm]	420				420	
Weight	[kg]	standard arm: 90 Long arm: 145					

Characteristics

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

Technical features Eco and Classic:

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

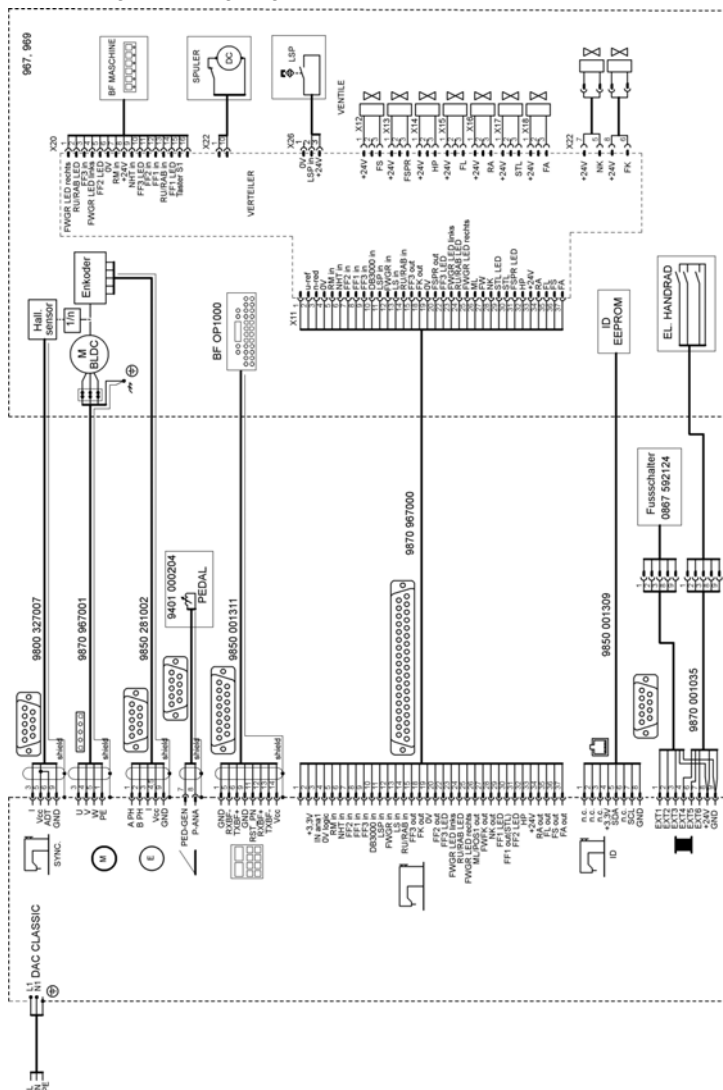
Additional features for Classic model:

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

12 Appendix

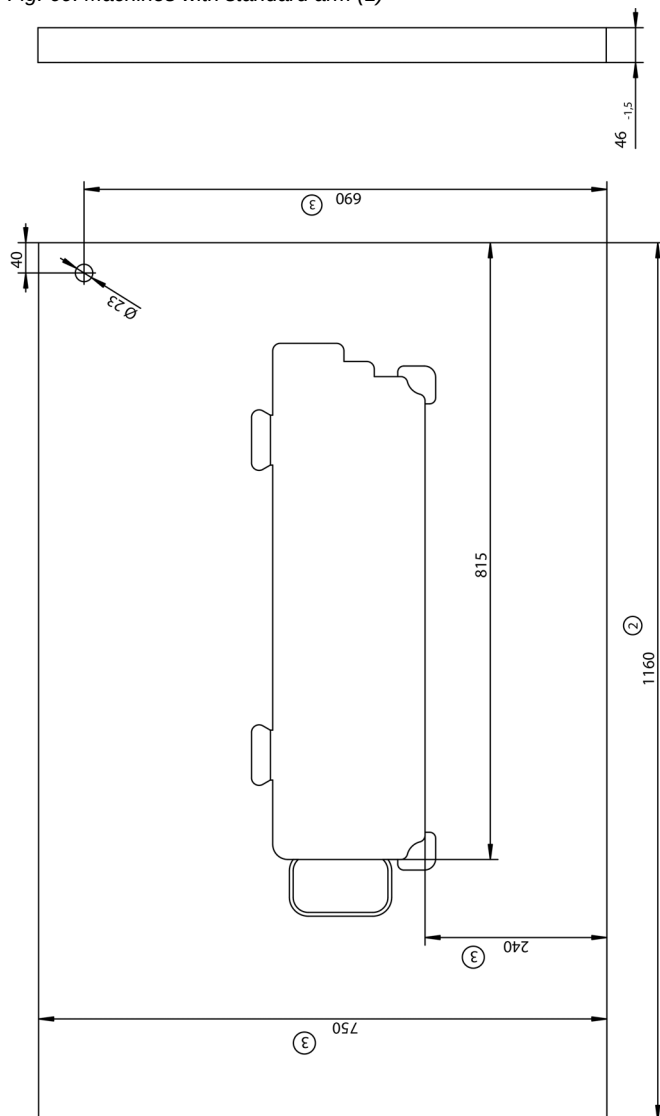
12.1 Wiring diagram

Fig. 59: Wiring diagram



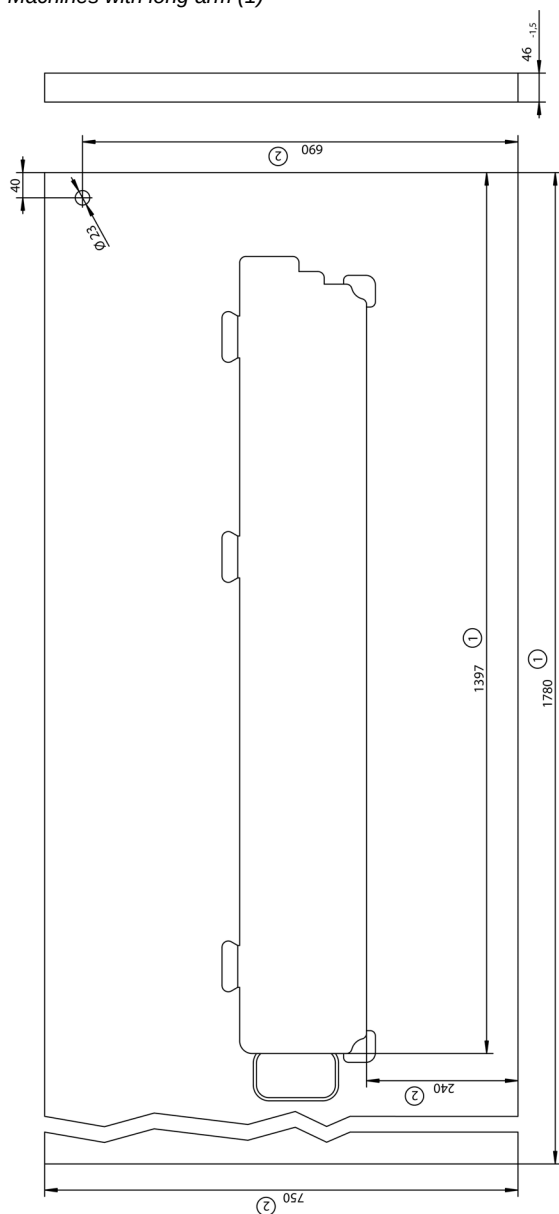
12.2 Tabletop drawings

Fig. 60: Machines with standard arm (1)



[illegible]

Fig. 62: Machines with long arm (1)



Technical drawing of a mechanical part, showing a side view and a cross-section A-A.

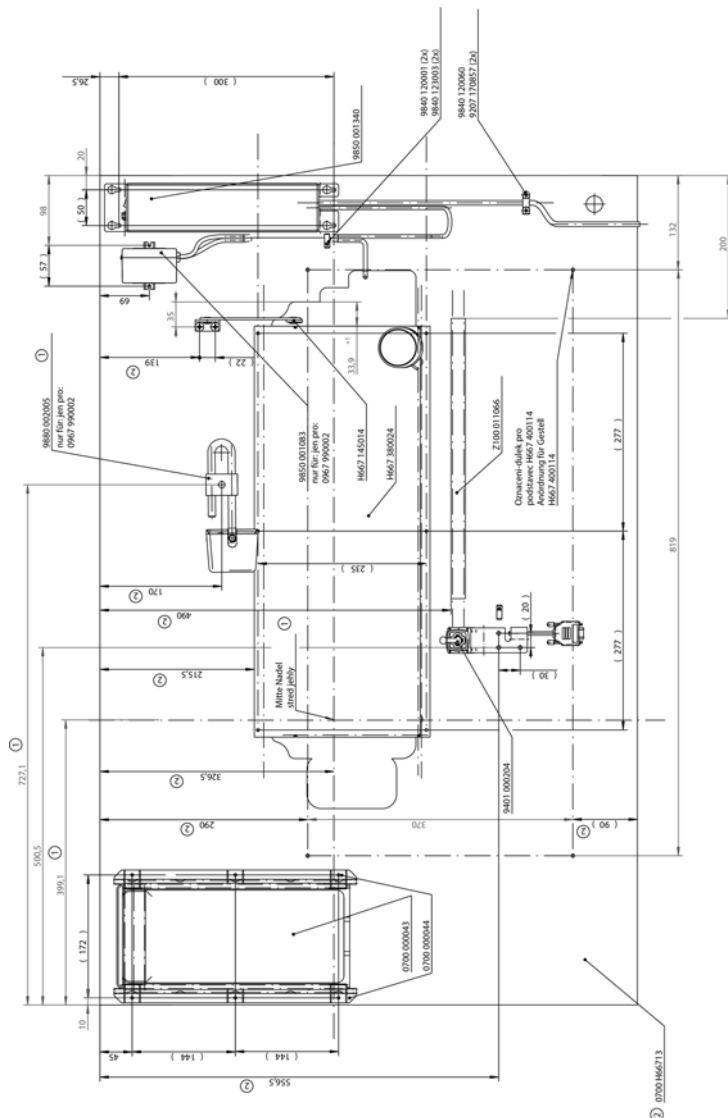
Side View Dimensions:

- Overall length: 1264
- Mounting hole center-to-center distance: 1220
- Distance from left edge to first mounting hole: 201
- Distance between mounting holes: 204
- Distance from second mounting hole to right edge: 135
- Distance from left edge to first mounting hole (alternative): 111.5
- Radius: R 10
- Radius: R 20
- Radius: R 25
- Chamfer: 30°
- Fillet: 6
- Note: hier Einlegeblech 0200 D103500 eintragen

Cross-section A-A Dimensions:

- Overall width: 107
- Central slot width: 50.3
- Slot depth: 67
- Radius: R 10
- Radius: R 15
- Radius: R 20
- Radius: R 25
- Chamfer: 30°
- Fillet: 6

Fig. 64: Machines with standard arm



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