DÜRKOPP ADLER

969 ECO / CLASSIC Operating manual

1 About this manual

Please contact us if you find any discrepancies or have any suggestions, 🕮 *6.4 Customer Service*, page 77.

The operating manual is to be regarded as part of the product and must be stored in a readily accessible location. Be sure to read the manual completely before using the product for the first time. If you pass the product on to someone else, please be sure to give them the operating manual.

1.1 Scope

This manual describes the intended use and the set-up of the special sewing machine 969.

1.2 For whom is this operating manual intended?

The operating manual is intended for the following persons:

- Operators:
  This group of persons is familiar with the machine and has access to the operating manual. Especially 🕮 *Chapter 5: Operation* is important for this group of persons.
- Technicians:
  This group has the appropriate technical training qualifying them for performing maintenance on the sewing machine or repairing malfunctions. Especially 🕮 *Chapter 6 Installation* is important for this group of persons. A service manual will be provided separately.

Also observe the information in 🕮 *Chapter 3 Safety Information* with regard to the minimum qualifications required and other requirements placed on the operating personnel.

1.3 Representation conventions – symbols and characters

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

☑ **Correct setting**

Indicates proper setting.

Malfunctions

Lists the malfunctions that can occur if the setting is incorrect.

Process steps during operation (preparing the machine and sewing with the machine)

Steps to be performed for servicing, maintenance, and installation

Steps to be performed via the software control panel

The individual steps are numbered:

1. 1. First step
2. 2. Second step
... The steps must always be performed in the specified sequence.

Result of performing the task

Changes to machine or display

Attention

Special attention must be paid to this information when performing the process step.

Additional information

Additional information, such as alternative operating options.

Order

Indicates what work must be performed before or after configuring settings.

References

Indicates a reference to another section of text.

Safety Important warnings for the machine operator are specially designated. Since safety is of special importance, the safety symbols, safety levels and associate keywords are specially described in  *Chapter 3 Safety Information*.

Orientation If an illustration does not provide any explicit orientation information then "right" or "left" are always with respect to the position of the operator.

1.4 Other documents

This equipment includes components from other manufacturers. Each manufacturer has performed a hazard assessment for these purchased parts and confirmed their design compliance with applicable European and national regulations. The proper use of these components is described in each manufacturer's manual.

1.5 Liability

All information in this operating manual has been compiled with consideration to the state of the art, and applicable standards and regulations.

The manufacturer cannot be held liable for damages resulting from:

- Breakage or other damage occurring during transport
- Failure to observe the operating manual
- Improper use
- Unauthorized modifications to the machine
- Use of untrained personnel
- Use of unapproved replacement parts

1.5.1 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 applies even if the packaging is undamaged.

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 complains to Dürkopp Adler immediately after receiving the product.

1.5.2 Proper use

The Dürkopp Adler 969 machine is intended for sewing heavy to very heavy material (max. material thickness is 20 mm). Heavy and very heavy material require a needle strength of 120-280 Nm.

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

The stitching is produced using core spun threads, polyester fibers, or cotton threads.

The sewing machine is intended for industrial use.

The machine may only be set up and operated in dry conditions in well-maintained premises. If you operate the machine in rooms that are not dry and are not maintained then additional measures as per the EN 60204-31:1999 standard may need to be taken.

Only authorized/trained personnel may operate the machine.

The manufacturer cannot be held liable for damages resulting from improper use.

WARNING

Risk of electric shock, crushing and punctures!
Improper use can result in injury.
Be sure to observe all instructions in the manual.

ATTENTION

Improper use can result in material damage.
Be sure to observe all instructions in the manual.

2 Technical Specifications

2.1 Characteristics

The Dürkopp Adler 969 is an extra heavy-duty arm sewing machine for double lockstitches.

Upper machine section

- Single-needle double lockstitch

2.2 Declaration of conformity

The machine complies with the EU regulations specified in the declaration of conformity or in the declaration of incorporation.

2.3 Technical data

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

Lc = 74 dB (A) ± 0.83 dB (A) using the following parameters:

- Stitch length: 9.6 mm
- Presser foot stroke: 6 mm
- Speed: 1,000 rpm
- Material: Band with a thickness of 15 mm

Characteristic	969-190180	969-190382
Stitch type	301	
Hook type	Horizontal barrel shuttle, large (XL)	
Number of needles	1	
Needle system	794 (1,000 hrs)	
Needle strength [Nm]	120 - 280	
Needle thread	20/3 - 5/3	
Hook thread	20/3 - 5/3	
Stitch length, forwards/backwards [mm]	15 / 15	
Maximum stitch count [min^{-1}]	1250	
Stitch count when delivered [min^{-1}]	1000	
Presser foot stroke [mm]	0 - 12	
Manual presser foot stroke [mm]	14/20	
Pneumatic presser foot stroke [mm]	30	
Operating pressure [bar]	6	
Air consumption [NL]	0.7	
Length/width/height [mm]	700/250/420	
Weight [kg]	100/145	
Voltage [V/Hz]	230/(50/60)	
Power consumption [kVA]	375	

The table shows the configurable range of the machine's parameters. The actual values for stitch count/min. or presser foot stroke must be adjusted through a practical sewing test to suit the properties of the material and thread. Improper parameter values can be determined through increased noise or needle heating and thread burn-out.

2.4 Additional equipment

A flexible system of additional equipment allows the special sewing machine to be optimally equipped for any application at low cost.

● = Standard equipment

o = Optional expansion

Order number	Additional equipment	969-190180	969-190382
9780 000108	WE-8 maintenance unit for additional pneumatic equipment	o	o
0797 003031	Pneumatic connection package for connecting frames with maintenance unit	o	o
9822 510003	Halogen sewing lamp for upper sewing machine section	o	o
9880 867100	Sewing lamp attachment kit	o	o
0798 500088	Sewing lamp transformer for halogen sewing lamp	o	o
9880 867103	Single-diode sewing lamp with attachments	o	o
9880 967001	Integrated diode sewing lamp	o	●
9850 001089	Power supply for integrated sewing lamp and single-diode sewing lamp	o	●
9850 867001	Circuit board for oil monitoring	o	●
0967 590014	Set for electro-pneumatic reverse sewing	o	●
0967 590024	Electro-pneumatic top-down needle cooler	o	o
0967 590034	Thread clamp with thread wiper function (Set FK)	o	o

Order number	Additional equipment	969-190180	969-190382
N800 080040	Edge stop, right, with roller, vertical pivot	o	o
N800 080041	Combined roller and straight stop, right, vertical pivot, vertically adjustable	o	o
N800 080042	Edge stop, right, vertical pivot	o	o
N800 080022	Ruler, for mounting on base plate	o	o
9835 901005	MemoDongle, external storage for data transfer and the DAC classic control unit	o	o
9850 001211	Dongle connector, USB to dongle interface	o	o
9081 300002	Tool set for H-type	o	o
MG56 400094	Folding frame Table plate 1160 x 600 mm with pedal (MG 56-2)	o	o
MG58 400534	Frame with cutout Table plate 1160 x 600 mm with pedal (MG 58-3)	o	o

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www.duerkopp-adler.com

3 Safety information

This section contains basic information for your safety. Read the information carefully before setting up, programming, maintaining, or operating the machine. Make sure to follow the information included in this section. Failure to follow these instructions can lead to severe injuries and damage to property.

3.1 General safety information

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

The machine should only be used as described in this manual.

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

Also observe the safety information and operating manual provided by the drive motor's manufacturer.

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

All warnings on the machine should be kept in legible condition at all times and should not be removed. Missing or damaged labels should be replaced immediately.

The machine must be deactivated either by pressing the power switch or removing the power cable from the socket when performing the following work:

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

When using the machine, inspect it for externally visible signs of damage. Stop working if you notice any changes to the machine.

Report any changes to your supervisor. A damaged machine must no longer be used.

Machines or machine parts whose working life has expired must no longer be used.
They must be properly disposed of according to legal regulations.

The machine may only be set up by qualified technicians.

Maintenance work and repairs may only be carried out by qualified technicians.

Safety equipment must not be removed or disabled. If this hinders repair, safety equipment must be immediately reinstalled and reactivated once repairs are complete.

Electrical equipment may only be serviced by qualified electricians.

The power cable must be fitted with a power plug approved for use in the respective country where the machine is used Only qualified electricians may attach plugs to power cables.

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

Incorrect or defective replacement parts can negatively affect safety and damage the machine. Make sure you only use original replacement parts from the manufacturer.

3.2 Signal words and symbols used in safety information

Safety information is outlined by colored bars.

Signal words indicate the degree of risk:

Signal word	Degree of risk
DANGER	Will result in serious injury or death.
WARNING	Can result in serious injury or death.
ATTENTION	Can result in minor or moderate injury.
NOTE	Can result in property damage.

The following symbols indicate the type of risk to personnel:

Signal word	Type of risk
	General risk
	Risk of electric shock
	Risk of puncture injuries from pointed objects
	Risk of crushing

Examples of safety information layout in manual:

DANGER

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

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

WARNING

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

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

WARNING

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

This is what a warning looks like for a hazard that can result in moderate or light injury if ignored.

NOTE

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

This is what a hazard note looks like for a hazard that can result in property damage if the note is not observed.

ENVIRONMENTAL PROTECTION

Type and source of risk

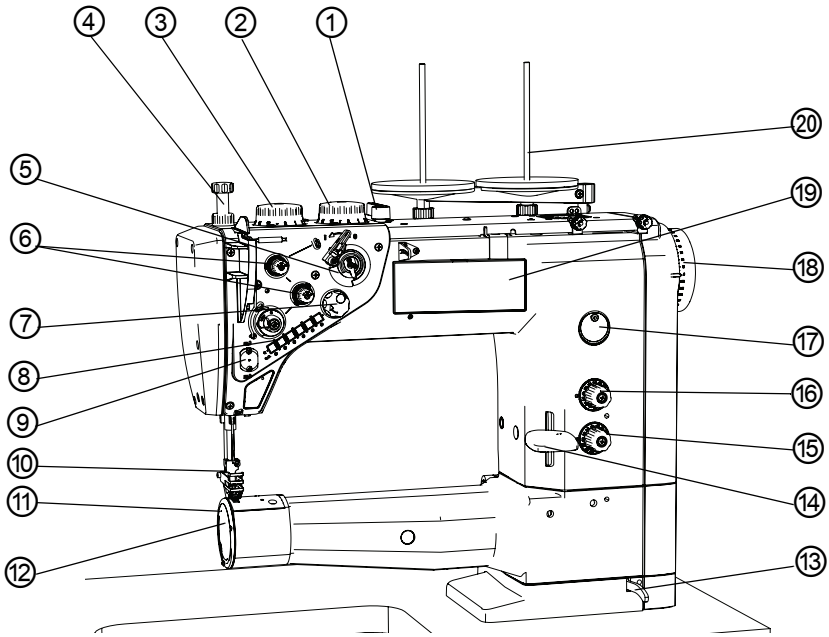
Consequences of non-observance

Measures for avoiding the risk

This is what an environmental protection note looks like for a hazard that could result in environmental damage if the note is not observed.

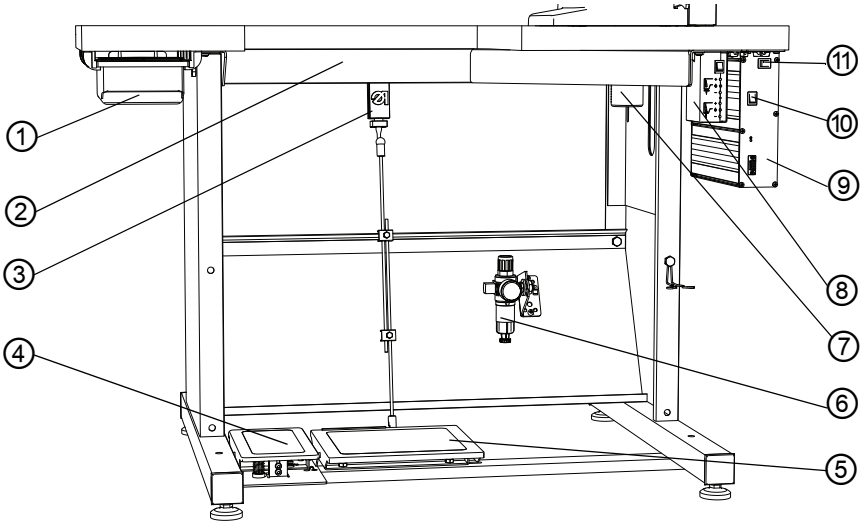
4 Machine Description

Fig. 1: General overview – part 1



(1) - Hand lever
(2) - Adjusting wheel for the increased sewing foot stroke
(3) - Adjusting wheel for the normal sewing foot stroke
(4) - Adjusting wheel for the sewing foot pressure
(5) - Bobbin winder for the hook thread
(6) - Thread tensioners
(7) - Electronic handwheel
(8) - Keypad on the machine arm
(9) - Thread clamp
(10) - Sewing foot with needle
(11) - Hook
(12) - Cover
(13) - Locking lever for the machine head in the working position
(14) - Stitch adjustment lever
(15) - Adjusting wheel for the larger stitch length
(16) - Adjusting wheel for shorter stitch length
(17) - Sight glass for the oil level
(18) - Handwheel
(19) - OP 1000 control panel
(20) - Thread reel holders

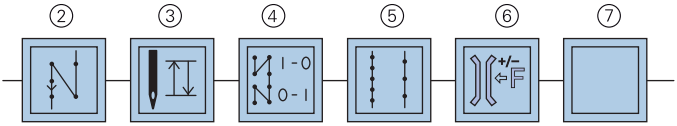
Fig. 2: General overview – part 2



(1) - Drawer
(2) - Plate bracket
(3) - Setpoint transducer
(4) - Foot switch
(5) - Operating pedal
(6) - Maintenance unit
(7) - Oil container for used oil
(8) - Sewing lamp transformer
(9) - DAC control unit
(10) - Main power switch
(11) - Switch for the sewing lamp

Function key assignment

Fig. 3: Function keys

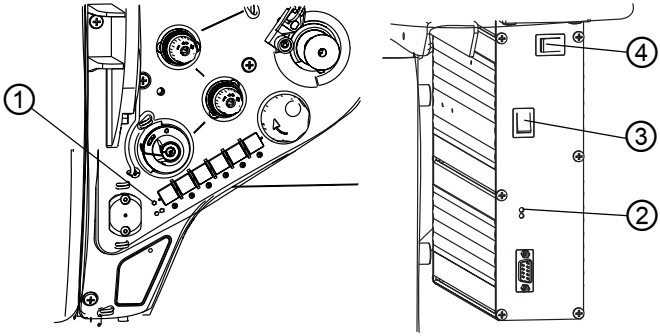


Key	Function
Reverse sewing key (2)	When this key (2) is activated, the machine sews in reverse.
Needle positioning key (3)	When this key(3) is activated, the needle moves to a specific position. This position is individually defined by the setting of the parameters. The machine is supplied configured so that activating key (3) will raise the needle. There are two needle positions that can be defined via the control unit, one for the position when stopping during sewing of the seam and one for the position after ending the seam (🕮 *Needle positioning*, page 33). You can use key (3) to manually switch from one position to the other.
Start and end bar tack key (4)	The key (4) disables the basic setting for sewing the start and end bartacks. When reverse sewing is set then the key (4) suppresses further reverse sewing. If reverse sewing is nit enables then pressing the key (4) will initiate another reverse sewing. For information on the general settings for sewing start and end bartacks read the 🕮 *Operating Manual* for the DAC basic/classic control unit.
Stitch length key (5)	When this key (5) is selected, the machine sews with the larger stitch length set on the upper stitch adjusting wheel.
Key for the additional thread tension (6)	The key (6) switches on the additional thread tension.
Key for an additional function associated with optional equipment (7)	Using the machine's electronic control unit, this key can be assigned to activate any optional equipment. For example, a needle cooler.

5 Operation

5.1 Switching power supply on and off

Fig. 4: Switching power supply on and off



(1) - Indicator lamp on machine arm
(2) - Indicator lamp on the controller
(3) - Main power switch
(4) - Switch for the sewing lamp

To switch power on:

1. Turn the power switch (3) to the **I** position.

↳ Indicator lamps (1) and (2) illuminate.

To switch power off:

1. Turn the power switch (3) to the **0** position.

↳ Indicator lamps (1) and (2) turn off.

5.2 Inserting and replacing needle

WARNING

Risk of injury from needle and moving parts.
Turn the sewing machine off before replacing the needle.
Do not touch the tip of the needle.

Order

After switching to a different needle size, adjust the distance between the hook and the needle (📖 *Service manual*).

ATTENTION

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

Incorrectly setting the needle height can damage the machine.
Checking needle height is absolutely necessary when changing the needle for another system.

Incorrectly setting the allowance for clearance between needle and hook tip can result in the following defects:

After inserting a thinner needle:

- Missing stitches
- Thread damage

After inserting a thicker needle:

- Damage to the hook tip
- Damage to the needle

Incorrectly setting needle bar height can result in the following malfunctions:

After inserting a shorter needle:

- Damage to the hook tip
- Damage to the needle

After inserting a longer needle:

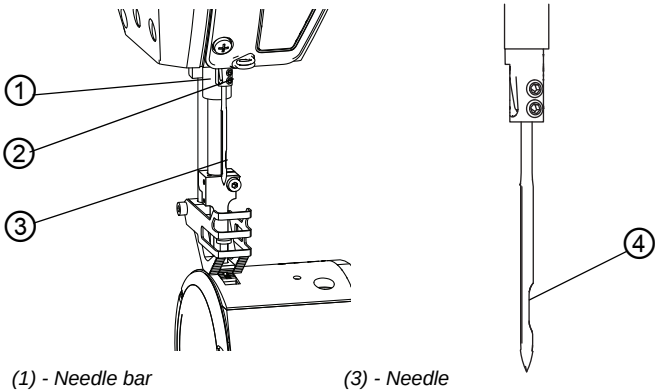
- Damage to the hook tip
- Damage to the needle

Changing the needle

ATTENTION

Incorrect alignment of the needle can damage the machine.
Make sure the hook tip does not come into contact with the needle.

Fig. 5: Changing the needle



(1) - Needle bar
(2) - Fastening screws
(3) - Needle
(4) - Groove for the needle

1. Turn handwheel until the needle (3) is at top dead center.
2. Loosen the screws (2).
3. Pull the needle (3) down and out.
4. Insert the new needle.
5. **Important:** Align the needle so the groove in the needle shaft (4) is facing the hook and is parallel to the hook tip's direction of movement.
6. Tighten the screws (2).

5.3 Threading the needle

WARNING

Risk of injury from needle and moving parts.
Turn off the sewing machine before threading the thread.

5.3.1 Threading thread in reel holder

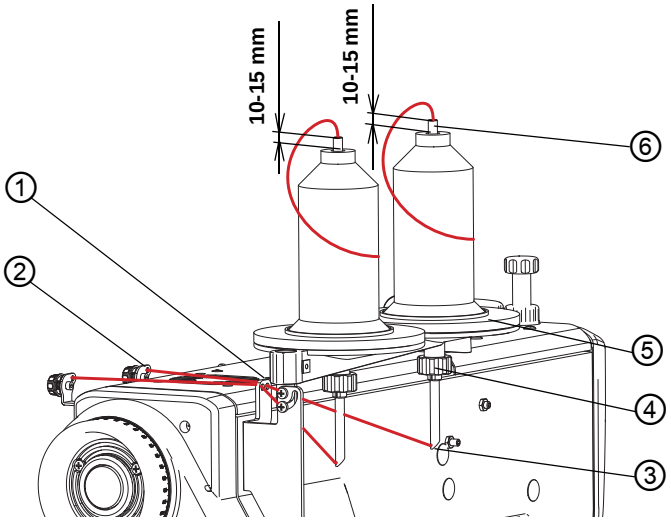
ATTENTION

An incorrect tube height causes the thread to wind onto the needle tube resulting in irregular needle thread tension. This can result in an uneven seam and uneven thread lengths after cutting!

Check that the tube height is set correctly.

On all submodels, the thread is fed through the machine from a reel on a reel holder.

Fig. 6: Threading thread in reel holder

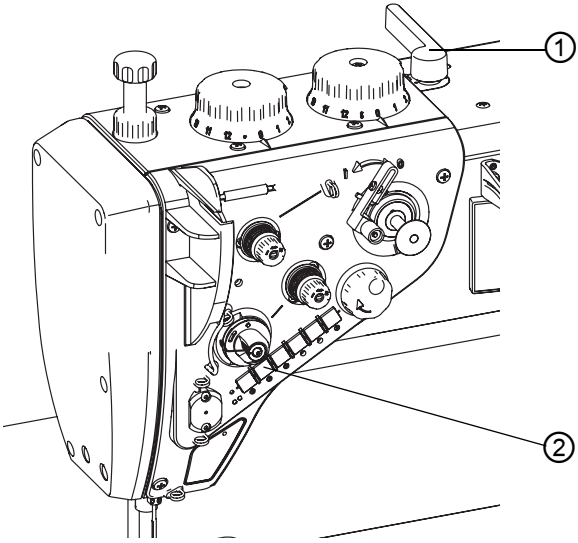


(1) - Thread guide
(2) - Hole in the pre-tensioner
(3) - Hole in the tube
(4) - Nut
(5) - Bobbin
(6) - Tube

1. Slide reel on bobbin (5)
2. Release the nut (4).
3. **Important:** Adjust the height of the tube (6) according to the illustration, so that it projects 10 to 15 mm above the thread bobbin.
4. Turn the tube so that the opening in the tube (3) faces the thread guide (1).
5. Tighten the nut (4).
6. Feed the thread into the pipe (6), through the opening (3), through the thread guide (1) and into the opening on the pre-tensioner (2).

5.3.2 Threading thread in machine

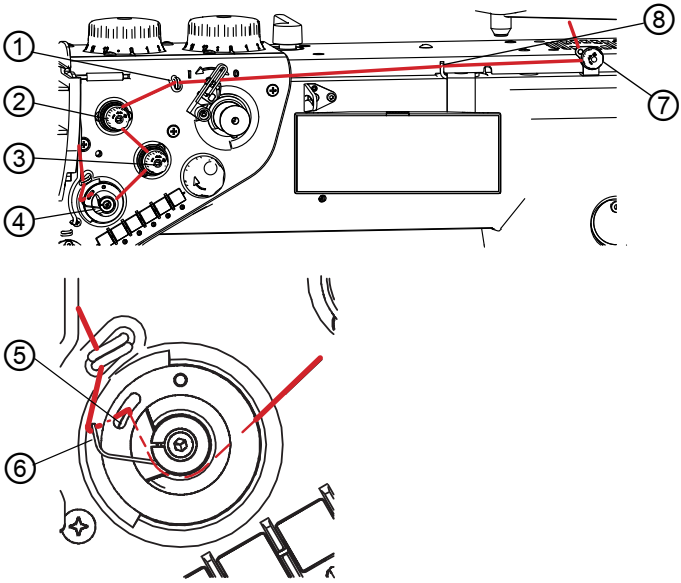
Fig. 7: Threading thread in machine



(1) - Hand lever for lifting presser foot
(2) - Positioning key

1. Lift presser foot with hand lever (1).
2. Use the positioning key (2) to set the upper needle position, 🕮 *Needle positioning*, page 33.
3. Turn off machine power switch.

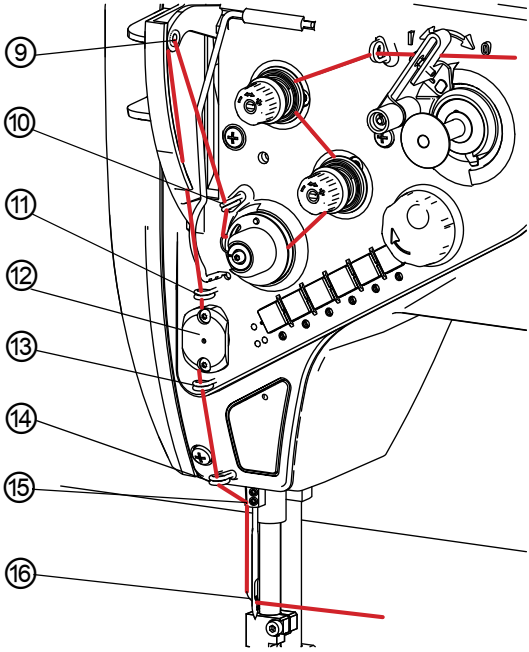
Fig. 8: Threading – part 1



(1) - Thread guide
(2) - Additional tensioner
(3) - Primary tensioner
(4) - Balancing spring
(5) - Thread guide
(6) - Balancing spring arm
(7) - Preliminary tensioner
(8) - Thread guide

4. Guide thread through the pre-tensioner (7).
5. Guide thread through guides (8)and (1).
6. Feed the thread counter-clockwise over the auxiliary tensioner (2).
7. Feed the thread clockwise over the main tensioner (3).
8. Feed the thread into the thread guide (5): Feed the thread clockwise and run around the axle of the balancing spring (4) until the balancing spring arm(6) turns and the thread moves behind the thread guide (5).

Fig. 9: Threading – part 2



(9) - Thread lever
(10) - Thread guide
(11) - Thread guide
(12) - Thread clamp
(13) - Thread guide
(14) - Thread guide
(15) - Thread guide on the needle bar
(16) - Needle eye

9. Feed the thread through thread guide (10).
10. Feed the thread through the eyelet of thread take-up lever (9).
11. Feed the thread through the thread guide (11).
12. Feed the thread counterclockwise around the thread clamp (12).
13. Feed the thread through the guides (13) and (14).
14. Pull the thread behind the thread guide so that it latches into place in the thread clamp (12).
15. Feed the thread into the guide on the needle bar (15).
16. Feed the thread through the needle eye (16) from left to right.

5.4 Threading and winding on the hook thread

WARNING

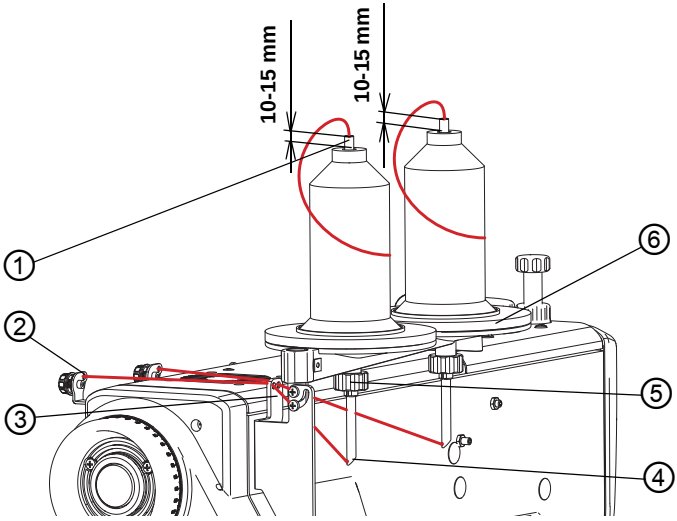
Risk of injury from needle and moving parts.
Turn off the machine before threading the thread.

ATTENTION

An incorrect height can cause the thread to wind onto the tube!
Check that the tube height is set correctly.

Threading hook thread

Fig. 10: Threading thread in reel holder

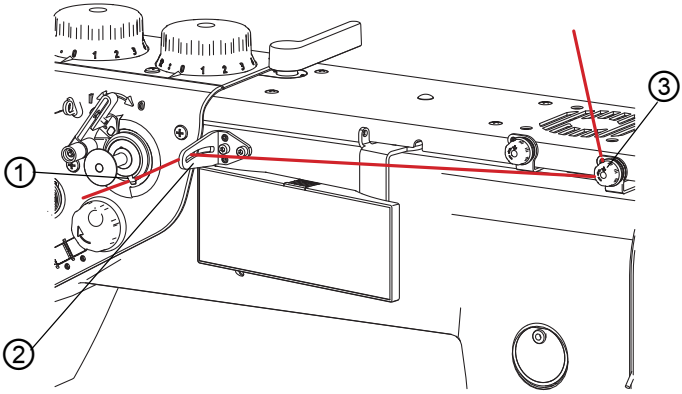


(1) - Tube
(2) - Hole in the pre-tensioner
(3) - Thread guide
(4) - Hole in the tube
(5) - Nut
(6) - Bobbin

1. Slide reel on bobbin (6)
2. Release the nut (5).

3. **Important:** Adjust the height of the tube (1) according to the illustration, so that it projects 10 to 15 mm above the thread bobbin.
4. Turn the tube so that the opening in the tube (4) faces the thread guide (3).
5. Tighten the nut (5).
6. Feed the thread into the tube (1), through the opening (4), through the thread guide (3) and into the opening on the pre-tensioner (2).

Fig. 11: Threading hook thread

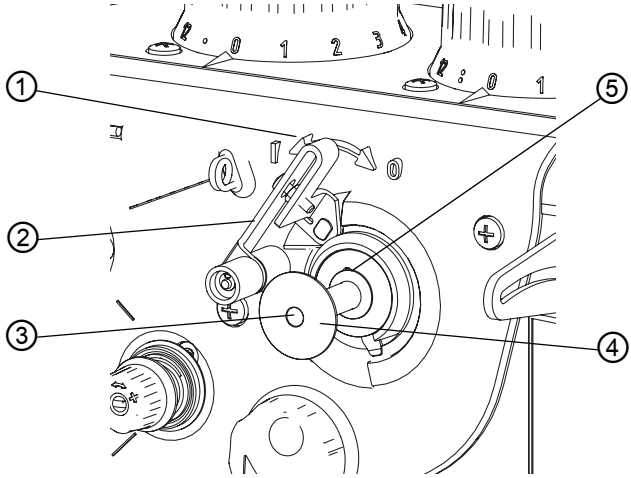


(1) - Cutter
(2) - Thread guide
(3) - Tensioner

7. Guide thread through tensioner (3).
8. Guide thread through thread guide (2).
9. Press the thread onto the tensioner (3) by hand, move the end of it underneath the cutter (1) and cut it by pulling it against the blade of the cutter (1).

Winding

Fig. 12: Winding hook thread



(1) - Symbol for turning bobbin winder on/off
(2) - Bobbin winder switch
(3) - Bobbin winder shaft
(4) - Bobbin
(5) - Bobbin driving pin

1. Place the bobbin (4) onto the bobbin winder shaft (3)and onto the bobbin driving pin (5).
2. Bring the bobbin winder to position **I** according to symbol (1) by pressing the bobbin winder switch (2).

↳ Bobbin winder starts.

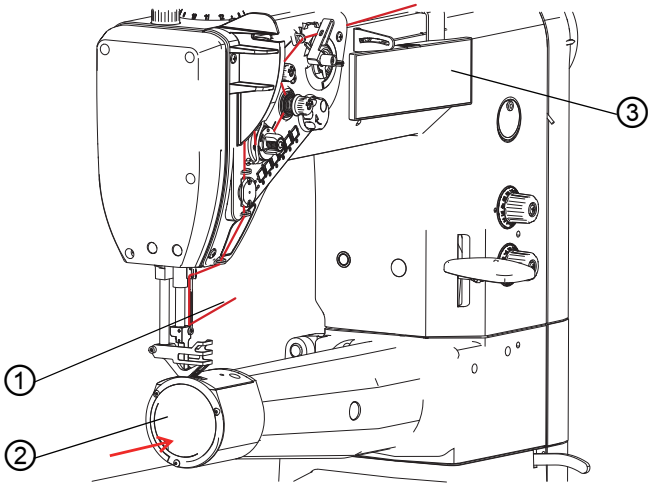
Once the bobbin winder starts, the thread will begin winding automatically – the bobbin winder is driven by a separate motor. You can still sew while the hook thread is winding.

5.5 Replacing the hook thread bobbin

WARNING

Risk of injury from needle and moving parts.
Turn off the sewing machine before replacing the bobbin.

Fig. 13: Changing the hook thread bobbin



(1) - Thread end in needle
(2) - Cover
(3) - OP1000 control panel

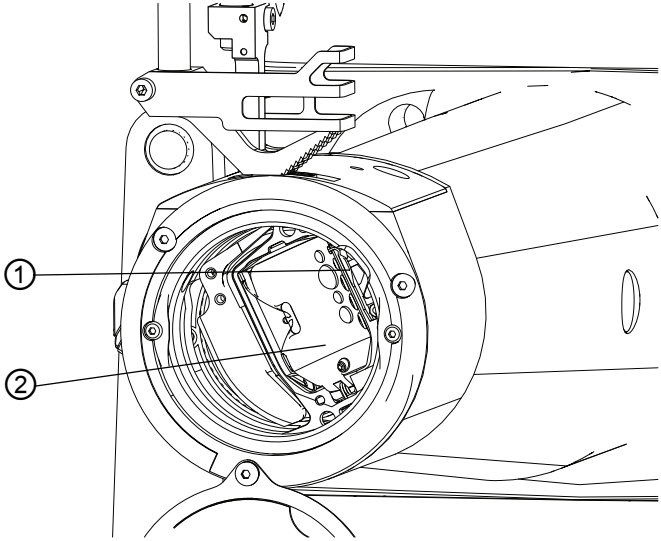
1. Press the**F** key on the OP1000 control panel (3).

↳ The machine automatically turns to the position required for changing the hook thread bobbin. It is not possible to operate the machine with the pedal at this time (Safe Stop).

2. Manually pull the needle thread out of the needle eye until the end of the thread (1) is approx. 200 mm long.
3. Press the cover (2) at the position marked with an arrow until it bends and can be turned.

↳ An opening for replacing the hook thread bobbin opens.

Fig. 14: Replacing hook thread bobbin – part 1

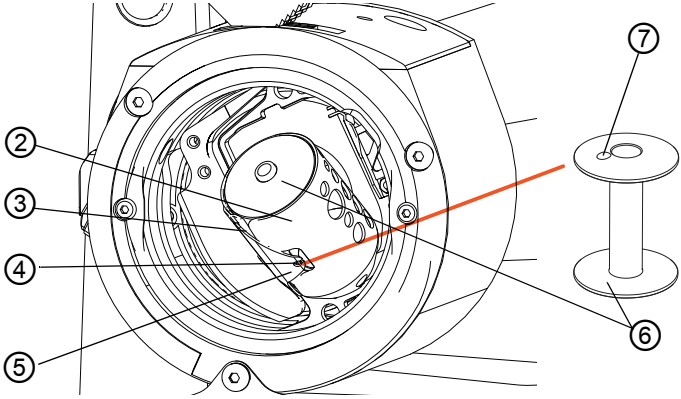


(1) - Flexible snap
(2) - Bobbin housing

4. Press on the elastic latch (1).

The bobbin housing (2) tilts and the internal spring pushes the bobbin housing (2) upwards.

Fig. 15: Replacing hook thread bobbin – part 2



(2) - Bobbin housing
(3) - Slot in bobbin housing
(4) - Pressure spring slot
(5) - Hook thread pressure spring
(6) - Hook thread bobbin
(7) - Bobbin hole

5. Remove the empty hook thread bobbin.
6. Insert the wound hook thread bobbin (6) with the bobbin hole (7) facing up.
7. Press on the bobbin housing (2) until the snap clicks into place.
8. Feed the end of the hook thread into the slot (5) under the pressure spring (4) up to the slot (3).
   Hold the hook thread bobbin with a finger while doing this.
9. Pull out the hook thread until 100 to 150 mm protrudes out of the slot (3).
10. Place the opening cover for changing the hook thread back to its original position.
11. Use your fingers to hold the end of the needle thread and turn the handwheel until the needle disappears in the needle plate, keep turning until the needle reappears and the thread lever is at the top dead point.
12. Pull on the end of the needle thread and pull out the end of the hook thread.
13. Cut both ends to approx. 70 mm by hand.
14. Press the **F** key again.

↳ The machine is ready for use again.

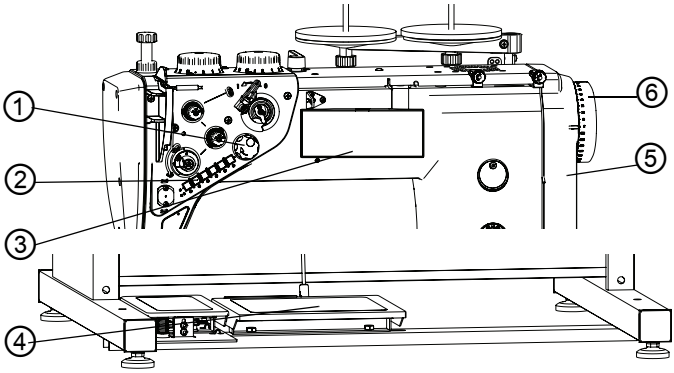
5.6 Needle positioning

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

WARNING

Risk of injury from needle and moving parts.
Protect yourself against accidents caused by the needle tip and moving foot.

Fig. 16: Needle positioning



(1) - Electronic handwheel
(2) - Key for positioning the needle up/down
(3) - OP1000 control panel
(4) - Operating pedal
(5) - Belt cover
(6) - Handwheel

Manual needle positioning

Manual needle positioning is primarily intended for machine setup.

WARNING

Risk of injury from needle and moving parts.
Switch off the machine before manually positioning the needle so that it cannot accidentally start during the positioning procedure.

1. Raise the presser foot using the hand lever and remove any material so the machine can run out.
2. Turn the handwheel (6) until the needle is correctly positioned.

Important: The correct direction of rotation is marked from the back by an arrow on the belt cover (5).

Semi-automatic needle positioning

Works when the machine is on by using the electronic handwheel (1) and is used to power the machine while the operating pedal (4) is released.

Turning the electronic handwheel drives the machine using the motor's torque. This allows you, e. g., to sew a seam to the desired position without the risk of going too far.

1. Switch on the machine at the main switch.
   Important: The electronic handwheel is not immediately activated once the machine is turned on. Therefore:
2. Activate the electronic handwheel (1) either with a one-quarter turn or by briefly pressing the operating pedal forwards.
3. Turn the electronic handwheel (1) until the needle is correctly positioned.

Automatic needle positioning for seam start

The needle should be very close to the material before starting in order to find the exact position for the start of the seam. In order to adjust the needle height to the material thickness, the needle can be slowly lowered downward by pressing on the electronic handwheel (1) in the axis direction of the needle.

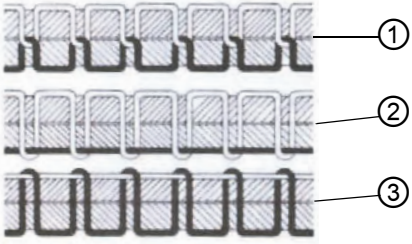
1. Press down on electronic handwheel (1).
2. Only let go once the tip of the needle is at the desired height.
3. Confirm the new setting by pressing down on the wheel again.

5.7 Thread tension

The tension of the needle thread and hook thread determines where the thread interlaces.

Correct setting

The threads should normally interlace in the exact middle of the material. When setting, typically only the tension of the needle thread is altered, while the tension of the hook thread remains unchanged.



(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

Thread tension for decorative stitching

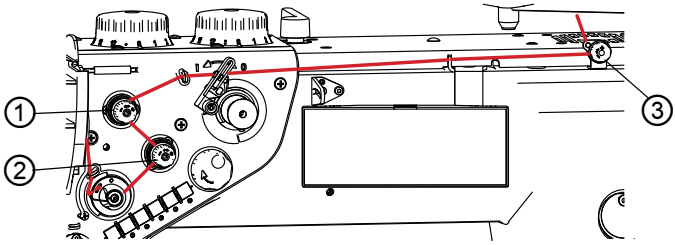
When using a decorative stitch, a thicker thread is normally used with a relatively thinner material. Then the thread interlace is not buried in the material.
In this instance, the tension is set so the threads interlace on the back side – see (2).

5.7.1 Setting the needle thread tension

The 3 adjusting wheels on the tensioning screw triangle determine the needle tension.

On the basic setting, the top side of one adjusting wheel is flush with the screw in the middle.

Fig. 17: Setting the needle thread tension



(1) - Additional tensioner
(2) - Primary tensioner
(3) - Preliminary tensioner

General

To increase the tension:

1. Turn adjusting wheel clockwise.

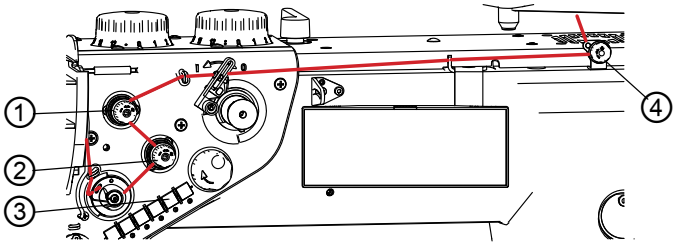
To reduce the tension:

1. Turn adjusting wheel counterclockwise.

Setting needle thread tension on Classic machines

On Classic machines, the key (3) can be used while sewing to switch to a second thread tension, e.g. if different material should be used in the middle of a seam.

Fig. 18: Setting needle thread tension on Classic machines



(1) - Additional tensioner
(2) - Primary tensioner
(3) - Key on keypad for switching thread tension
(4) - Preliminary tensioner

1. Set the tension on the pre-tensioner (4), sew a test seam and cut the thread.

↳ The end of the thread in the needle should be between 60 - 80 mm.
If the thread is shorter than this:
Gradually reduce the tension on the auxiliary tensioner until the desired length is reached.
If the thread is longer than this:
Gradually increase the tension on the pre-tensioner until the desired length is reached.

2. Press the key for switching thread tension (3) until the LED turns off.

↳ The auxiliary tensioner (1) is automatically activated.

3. Sew the material requiring a lower needle tension and regulate the tension on the main tensioner (2) until the correct thread interlace is achieved.
4. Press the key (3) for switching the thread tension.

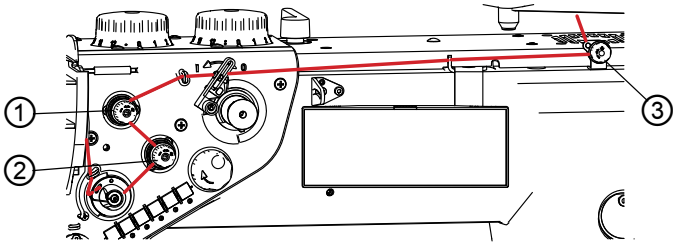
↳ The key lights up and activates the auxiliary tensioner (1).

5. Sew the material requiring a higher needle tension and regulate the tension on the main tensioner (1) until the correct thread interlace is achieved.

Adjusting the needle thread tension on Eco machines

On Eco machines, a second tension can be activated while sewing. Thread tension is always the total tension of all three tensioners.

Fig. 19: Adjusting the needle thread tension on Eco machines



(1) - Additional tensioner
(2) - Primary tensioner
(3) - Preliminary tensioner

1. Set the pre-tensioner (3) so the needle thread is slightly tensioned after it.
2. Set the auxiliary tensioner (1) so the tension it creates is always much less than the tension created by the primary tensioner (2).

ATTENTION

Risk of thread popping out if auxiliary tension is too high.
If the auxiliary tensioner (1) applies too much tension, the thread can pop out of the auxiliary tensioner while sewing, which suddenly reduces overall tension.
Make sure the auxiliary tensioner (1) is not set too high.

5.7.2 Setting hook thread tension

WARNING

Risk of injury from moving parts.
Turn off the machine before tensioning the hook thread.

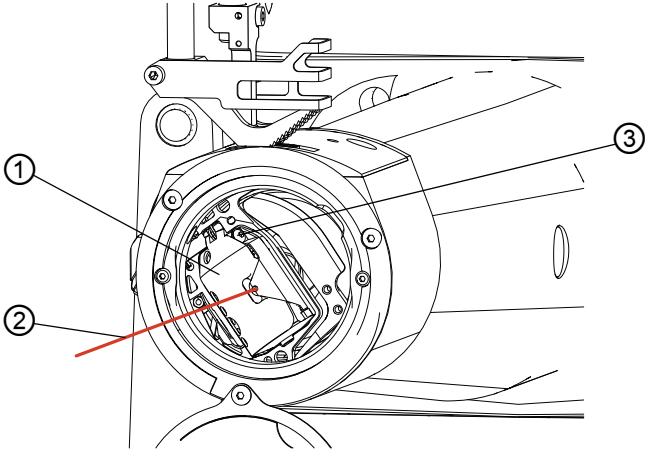
ATTENTION

Pulling the thread in the wrong direction while measuring tension can result in incorrect tension measurement results.
Be sure to pull the thread in the proper direction.

ATTENTION

If the needle thread tension is too low, the tension of the hook thread will also be too low. At higher sewing speeds, the needle thread will not be pulled properly and will get stuck in the hook. This manifests itself through increased noise and can result in damage to the machine.
Set the lower tension properly or reduce sewing speed.

Fig. 20: Adjusting the hook thread tension



(1) - Bobbin housing
(2) - Hook thread
(3) - Adjusting screw

1. Turn the handwheel until the bobbin housing (1) is in the illustrated position.

To increase the tension:

1. Turn the adjustment screw (3) clockwise (the 2 mm hexagonal screwdriver included in the machine accessories can be used for this).

To reduce the tension:

1. Turn the adjustment screw (3) counterclockwise.

The hook thread tension is set at the factory to 350 to 400 cN.

1 cN = 1 g

5.8 Setting thread limiter

WARNING

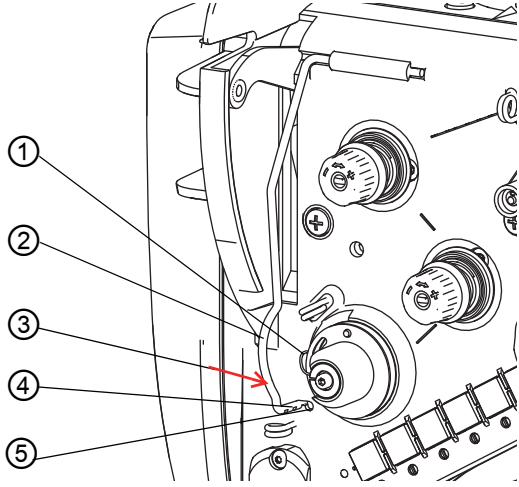
Risk to injury to finger from moving thread lever.
Turn off the machine before setting the thread limiter.

Together with the balancing spring, the thread limiter produces suitable tension on the needle thread as it moves over the bobbin housing. The thread is limited more when sewing thin materials and less when sewing thick materials.

Correct setting:

The needle thread should be slightly tensioned when threading the loop over the bobbin housing. Slight movement in the balancing spring indicates proper tensioning.

Fig. 21: Adjusting the thread limiter



(1) - Balancing spring
(2) - Thread limiter
(3) - Direction to press when unlocking limiter
(4) - Limiter slot
(5) - Limiter hole

1. Turn the thread limiter (2) in direction (3) until it moves to the right side of the opening (5).
2. Move the thread limiter (2) into or out of the machine.

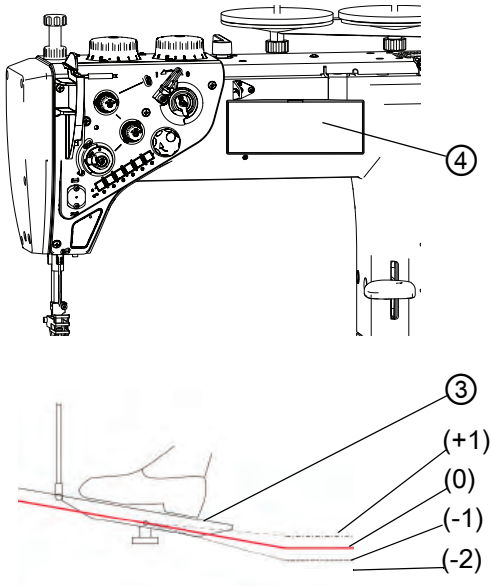
   - **For thin materials:**
     Move the thread limiter (2) out of the machine.
   - **For thick materials:**
     Move the thread limiter (2) into the machine.

3. Adjust the thread limiter (2) so that the slot (5) clicks into the tensioning plate.
4. Sew to test whether or not the thread limiter setting is correct.

5.9 Raise the presser foot

The foot pedal is used while sewing to raise the presser foot, e.g., to move the material. The machine's electronic control unit allows various operating modes to be preset.

Fig. 22: Pneumatically raising presser foot with pedal



(+1) - Sewing position
(0) - Idle position
(-1) - Presser foot raised position
(-2) - Cutting and bar tacking position
(3) - Pedal
(4) - OP1000 control panel

ATTENTION

Risk of damage to machine from collision between needle bar and presser foot.

Before raising the presser foot, use the electronic control panel to position the needle in the upper or lower idle position.

Standard operating mode: The presser foot always remains lowered.

1. Turn off keys (13) and (14) on the OP1000 control panel (4), 🕮 *5.16 Operating the controller*, page 63.

↳ Their signal diodes turn off – see 🕮 *Operating manual*for Basic/Classic DAC control panel.

2. Press the pedal (3) to position (-1).

↳ Presser foot rises.

3. Release the pedal to position (0).

↳ Presser foot lowers.

4. When a seam is complete, press the pedal to position (-2).

↳ The machine cuts the thread and the presser foot rises.

5. Release the pedal to position (0).

↳ Presser foot lowers.

ATTENTION

Avoid premature cutting of the thread before the seam is finished through unintentional pressing of the pedal into position -2.
Otherwise the seam will not be properly finished.

Operating mode: After completing the seam, the presser foot rises automatically.

1. Press the key on the OP1000 control panel (4) to raise the presser foot after the thread is cut.

↳ Their signal diodes turn off – see 🕮 *Operating manual*for Basic/Classic DAC control panel. Presser foot rises.

2. Press the pedal (3) to position (+1).

↳ Presser foot lowers and machine starts up.

3. Release the pedal to position (0).

↳ Machine stops.

4. Press the pedal to position (-1).

↳ Presser foot rises.

5. Press the pedal to position (+1).

↳ Presser foot lowers and machine starts up.

6. Press the pedal to position (–2).

↳ Thread is cut and presser foot rises.

7. Release the pedal to position (0).

↳ Presser foot remains raised until another seam is started.

Operating mode: Presser foot rises automatically every time the machine stops.

1. Press both presser foot position keys on the OP1000 control panel (4).

↳ Their signal diodes light up – see 🕮 *Operating manual*for Basic/Classic DAC control panel. Presser foot rises.

2. Press the pedal (3) to position (+1).

↳ Presser foot lowers and machine starts up.

3. Release the pedal to position (0).

↳ Machine stops and presser foot automatically rises.

4. Press the pedal to position (+1).

↳ Presser foot lowers and machine starts up.

5. Press the pedal to position (-2).

↳ Thread is cut and presser foot rises.

6. Release the pedal to position (0).

↳ Presser foot remains raised until another seam is started.

There is a time delay between starting the presser foot and the machine starting in order to ensure the material is pressed by the presser foot by the time sewing begins. This delay can be set using operating parameters – see 🕮 *Operating manual* for Basic/Classic DAC control panel.

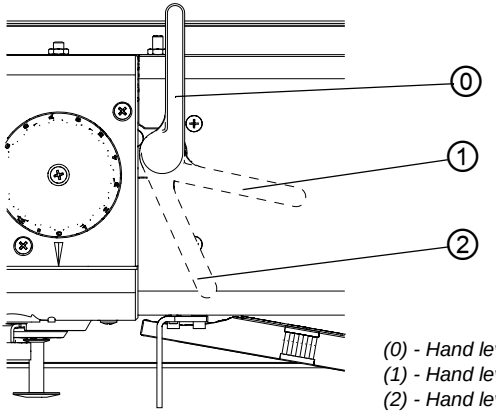
5.10 Raising presser foot with hand lever

CAUTION

Risk of crushing when lowering the sewing foot.
Make sure your hand is not underneath the presser foot when it is lowered by the pedal or lever.

The presser foot can be manually raised when setting up the machine or to remove the material from under the presser foot in an emergency if the compressed air supply has been disconnected from the machine.

Fig. 23: Raising presser foot with hand lever



(0) - Hand lever at position 0
(1) - Hand lever at position 1
(2) - Hand lever at position 2

Raising presser foot:

1. Turn the hand lever from position (0) to position (1).

↳ Presser foot rises up to 14 mm above the needle plate and remains raised. The machine can be run at idle while in this position.

2. Turn the hand lever to position (2).

↳ Presser foot rises up to 20 mm above the needle plate and remains raised.

Lowering presser foot:

The presser foot can be lowered in two ways:

1. Manually turn hand lever to position(0).
2. Raise presser foot with pedal. Presser foot rises slightly, the hand lever lock disengages and the internal spring moves the hand lever back to position (0).

5.11 Setting presser foot pressure

The adjusting wheel at the top left of the machine arm determines the contact pressure of the sewing foot on the material to be sewn. The pressure can be adjusted continuously by turning the adjusting wheel.

WARNING

Risk to injury to eyes.
Loosening the adjusting wheel too much can cause it to unscrew and be shot off by the spring underneath.
Never exceed a value of H = 55 mm, see fig. 24.

Correct setting

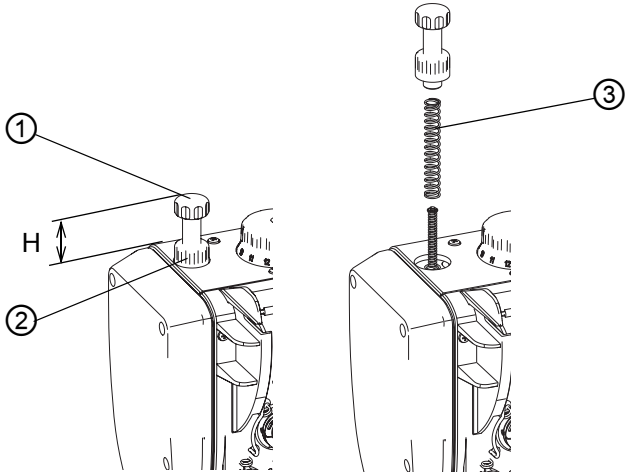
Set the pressure of the presser foot as low as possible, but high enough so that the material can pass through evenly without slipping through.

Defects due to incorrect setting

- Pressure too high:

  Material is torn by the feed dogs. Feed is very loud.
- Pressure too low:
  - Material slipping through causes an uneven stitch length.
  - When moving up, the needle also takes some of the material from the presser foot due to friction.

Fig. 24: Setting presser foot pressure



(1) - Adjusting screw
(2) - Counternut
(3) - Auxiliary spring

To increase presser foot pressure:

1. Release the counternut (2).
2. Turn adjusting wheel (1) to the right until the desired pressure is reached.
3. If the pressure is insufficient even when the adjusting wheel is fully tightened, use the auxiliary spring (3) provided in the machine accessories.
4. Completely unscrew adjusting wheel (1).

WARNING

Risk to injury to eyes.
Loosening the adjusting wheel too much can cause it to unscrew and be shot off by the spring underneath.
Always loosen with the presser foot lowered (less spring tension).
Loosen the screw with one hand, pressing down with the other to prevent it from coming off.

ATTENTION

The auxiliary spring greatly increases pressure depending on material thickness. This can cause defects when sewing soft material or sewing over thicker areas in the material.

If an auxiliary spring is not absolutely necessary due to the presser foot rising when the needle moves up, do not use one.

5. Insert auxiliary spring (3).
6. Screw in adjusting screw (1) and adjust the presser foot pressure.
7. Tighten the counternut (2).

ATTENTION

The use of the auxiliary spring in conjunction with maximum machine speed can damage the machine.

Limit the maximum machine speed when using the auxiliary spring.

Reducing pressure:

1. Release the counternut (2).
2. Turn adjusting wheel (1) to the left until the desired pressure is reached.

ATTENTION

Unscrewing the adjusting wheel too far will damage the machine.

A slot on this screw indicates the maximum distance that the adjusting wheel may be unscrewed. This slot must never be higher than the upper edge of the counternut (2).

3. Tighten the counternut (2).

5.12 Setting presser foot stroke

The presser foot stroke has twelve levels of 1 mm each.

Correct presser foot stroke setting

Set the presser foot stroke as low as possible, but enough so that the material can pass through evenly with a consistent stitch length. In general, the thicker the material and the greater the changes in thickness over the course of the seam, the higher the pressure foot stroke should be.

Defects due to incorrect setting

- Stroke too high:
  The heavy impact of the presser foot can damage the material and the machine is unusually loud.
- Stroke too low:
  Stitch is shortened – its length is much shorter than the length set by the adjusting wheel. Specifically, the machine does not feed material properly at places where the material thickness suddenly changes.

5.12.1 Limitation of sewing speed

If the pressure foot stroke is high, the operator must limit sewing speed to the maximum RPM according to the table, regardless of material, 📖 *Table of maximum machine speeds*, page 110.

ATTENTION

The machine can be damaged if the sewing speed is too high for the presser foot stroke.

Make sure the permitted sewing speed in the table in the Appendix is not exceeded.

5.12.2 Limiting presser foot stroke

When the pressure foot contacts the material, dynamic force is generated that increases with thinner and harder materials. This force puts great strain on the machine and manifests itself through noise. The operator can adjust the pressure foot stroke to suit the material thickness according to the table, 🕮 *Table: Maximum presser foot stroke*, page 110.

ATTENTION

The machine can be damaged if the presser foot stroke is too high for the thickness and hardness of the material.
Test presser foot stroke when sewing thinner materials and reduce it accordingly.

5.12.3 Setting presser foot stroke

Classic machines have 2 adjusting wheels for adjusting the presser foot stroke.

The left adjusting wheel (1) adjusts the normal presser foot stroke. The right adjusting wheel (2) adjusts the increased presser foot stroke.

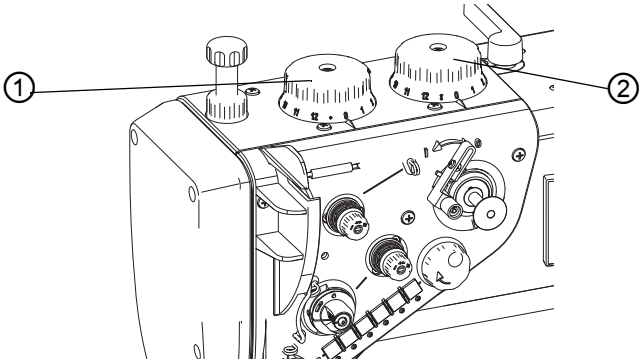
Normal stroke is designed for high sewing speed. Increased stroke is designed for sewing over thicker areas in the material. Eco machines only have the left adjusting wheel.

Important: The increased presser foot stroke should not be lower than the normal presser foot stroke. The machine is designed so the right adjusting wheel cannot set a lower stroke than the left adjusting wheel.

ATTENTION

Machine can be damaged if the adjusting wheels are forced.
Do not attempt to force the right adjusting wheel to set a lower stroke than the left adjusting wheel.

Fig. 25: Presser foot stroke adjusting wheels



(1) -Adjusting wheel for the normal sewing foot stroke
(2) -Adjusting wheel for the increased sewing foot stroke

To increase presser foot stroke:

1. Turn adjusting wheel clockwise.

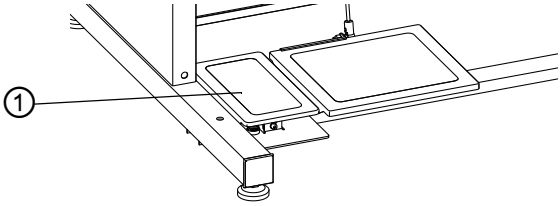
To reduce presser foot stroke:

1. Turn adjusting wheel counterclockwise.

5.12.4 Quickly switching presser foot stroke with foot switch

If the machine is equipped with an optional foot switch, this can be used to quickly switch the presser foot stroke between two preset levels without having to stop sewing.

Fig. 26: Foot switch



(1) - Foot switch

Activating increased presser foot stroke

- Press foot switch (1) backwards with heel.

↳ Increased stroke remains engaged as long as the foot switch is depressed.

Deactivating increased presser foot stroke

- Release foot switch (1).

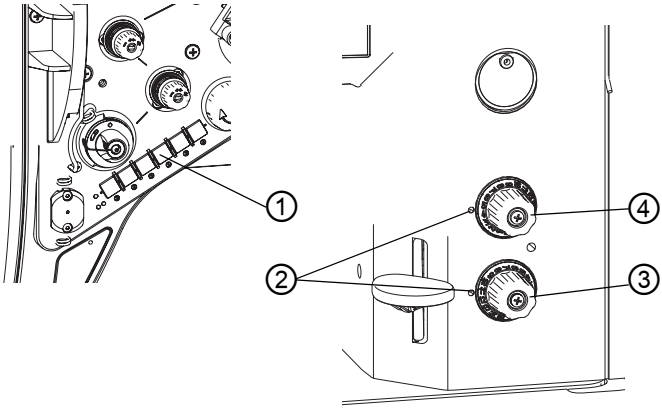
5.13 Stitch length

5.13.1 Setting stitch length

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

The stitch length is continuously adjustable over a range of 0–15 mm.

Fig. 27: Stitch length adjusting wheels



(1) - Key on keypad for stitch length
(2) - Marks labeling selected stitch lengths
(3) - Bottom adjusting wheel for shorter stitches
(4) - Top adjusting wheel for the larger stitch length

Top adjusting wheel

To reduce stitch length:

1. Turn adjusting wheel clockwise.

To increase stitch length:

1. Turn adjusting wheel counterclockwise.

Bottom adjusting wheel

To reduce stitch length:

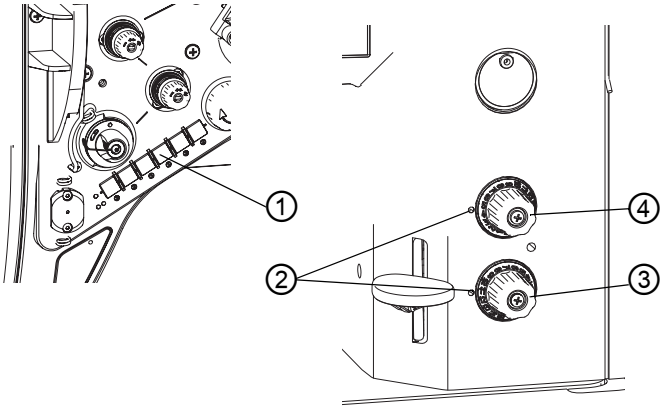
1. Turn adjusting wheel counterclockwise.

To increase stitch length:

1. Turn adjusting wheel clockwise.

5.13.2 Sewing with 2 stitch lengths

Fig. 28: Sewing with 2 stitch lengths



(1) – Stitch length key on keypad
(2) - Marks labeling selected stitch lengths
(3) - Bottom adjusting wheel for shorter stitches
(4) - Top adjusting wheel for the larger stitch length

On machines with adjusting wheels for 2 stitch lengths, the top adjusting wheel (4) is for longer stitch lengths and the bottom adjusting wheel (3) is for shorter stitch lengths. The mark (2) on the left of the adjusting wheel indicates the stitch length selected.

Important: The larger stitch length must not be shorter than the smaller stitch length. Do not set a stitch length on the top adjusting wheel (4) that is shorter than the stitch length on the bottom adjusting wheel (3).

ATTENTION

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.

Switching stitch length:

Stitch length can be switched between the values set on the adjusting wheels (3) and (4) while the machine is stopped or running.

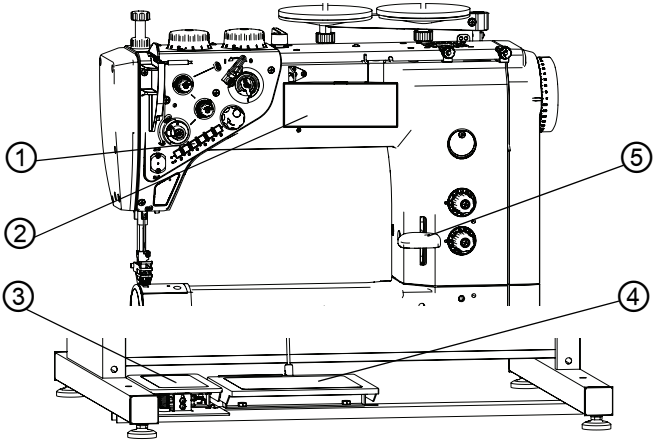
1. Press the key (1).

↳ Stitch length switches from the current length to the second length and the key illuminates/turns off. If the key illuminates, the longer stitch length set on the top adjusting wheel (4) is used.

5.13.3 Reverse sewing and seam bar tacking

On Eco machines, seam bar tacking can only be done by hand. If desired, Eco machines can be retrofitted with an automatic bar tacker. In all cases the seam bartacking can be activated when the machine is stopped and also when the machine is running.

Fig. 29: Operating the seam bar tacker



(1) – Seam bar tacker key on keypad
(2) - OP1000 control panel
(3) - Foot switch
(4) - Operating pedal
(5) - Stitch adjustment lever

Manual seam bar tacking:

1. Move stitch adjusting wheel (5) to the bottom.

↳ The machine feeds the material in reverse as long as the adjusting wheel is depressed.

Partially depressing the stitch adjustment lever (5) shortens the stitch length in proportion to the distance of the adjustment lever from its middle position.
In middle position, feed is stopped completely.
In the lower end position, the machine sews in reverse with the stitch length currently set at the adjusting wheels.

Automatic seam bar tacking:

Only Classic machines come with semi-automatic and automatic seam bar tacking. If desired, Eco machines can also be retrofitted.

Semi-automatic seam bar tacking:

1. Press key (1) on the machine keypad.

↳ The machine feeds the material in reverse as long as the key is depressed.

Semi-automatic seam bar tacking with foot switch

1. Press foot switch (3) forward with toes.

↳ The machine feeds the material in reverse as long as the foot switch is depressed.

Automatic seam bar tacking:

The machine's electronic control unit allows automatic seam bar tacking to be activated.
To do this, read the 🕮 *Operating manual* for the DAC basic/ classic control system.

1. Enter seam bartacking at the start of the seam and end of the seam via the control panel (2).
2. Press operating pedal (4) down with toes.

↳ Machine automatically sews a bar tack at the start of the seam.

3. Finish the seam, then press the operating pedal (4) completely backwards at the end of the seam.

↳ Machine automatically sews a bar tack at the end of the seam.

Selecting type of seam bar tacking and stitch count with automatic seam bar tacking:

The machine's control unit **allows selection between a single, double or multiple (quadruple) bar tack.** The type of bar tack is selected using the keys on the OP1000 control panel – see 🕮 *Operating manual* for Basic/Classic DAC control unit.

Selecting seam bar tacking style with automatic seam bar tacking:

Seams can be bar tacked either normally or decoratively.

Decorative style With a decorative seam bar tack, all forward and backward needle stitches in the bar tack area go in the same needle holes while sewing.

Normal style With a normal seam bar tack, the insertions can be offset from one another. Since normal seam bar tacking is faster, the machine is delivered with normal seam bar tacking preset by default.

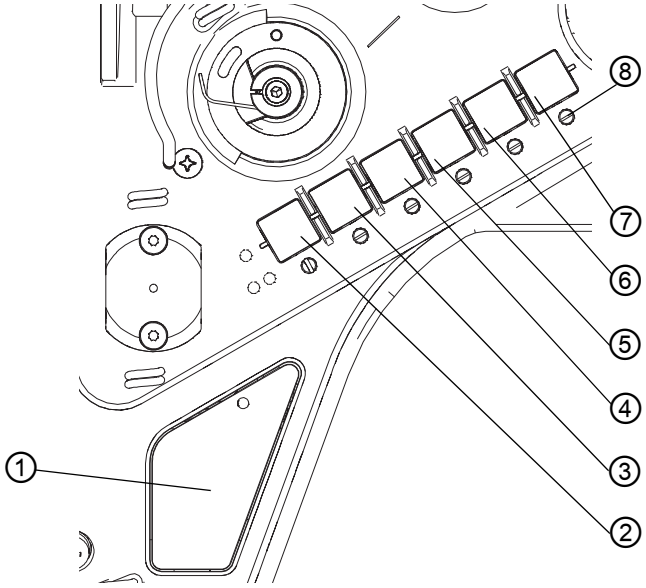
The seam bar tacking style can be selected using the electronic control panel parameters – see 🕮 *Operating manual* for Basic/ Classic DAC control unit.

5.14 Quick functions on keypad

Depending on the submodel, the machine has a keypad on the machine arm for activating specific functions while sewing.

5.14.1 Activating function keys

Fig. 30: Keypad for quick functions



(1) - Auxiliary switch
Keys for:
(2) - Reverse sewing
(3) - Needle position
(4) - Start and end bar tack
(5) - Stitch length
(6) - Additional thread tension
(7) - Additional function (optional)
(8) - Screws for the assignment of the additional switch (1)

Activating a key function

1. Press the key.

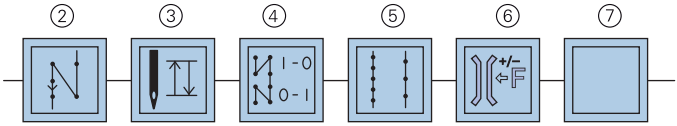
↳ The function is activated. The key illuminates.

Deactivating a key function

1. Press the key again.

↳ The function is deactivated. The key turns off.

Fig. 31: Function keys

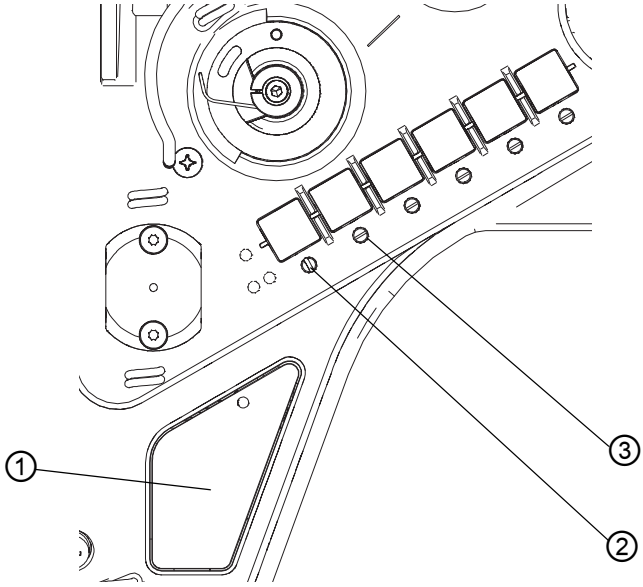


Key	Function
Reverse sewing key (2)	When this key (2) is activated, the machine sews in reverse.
Needle positioning key (3)	When this key(3) is activated, the needle moves to a specific position. This position is determined individually via the parameter settings. The machine is supplied configured so that activating key (3) will raise the needle. There are two needle positions that can be configured on the control unit for stopping during a seam and after a seam, 🕮 *Needle positioning*, page 33. The key (3) allows the operator to manually switch from one position to the other.
Start and end bar tack key (4)	The key (4) disables the basic setting for sewing the start and end bartacks. If bar tacks are on, pressing the key (4) skips the next bar tack. If bar tacks are off, pressing the key (4) sews the next bar tack. For the general setting for sewing start and end bartacks, refer to the 🕮 *Operating Manual* for the DAC basic/ classic control system.
Stitch length key (5)	When this key (5) is selected, the machine sews with the larger stitch length set on the upper stitch adjusting wheel.
Auxiliary thread tensioning key (6)	This key (6) activates the auxiliary thread tensioner.
Auxiliary function key for optional equipment (7)	Using the machine's electronic control unit, this key can be assigned to activate any optional equipment. For example, the needle cooler.

5.14.2 Transferring a key function to the auxiliary switch

You can transfer one of the key functions to the auxiliary switch. Select a function that you frequently use so that you can switch it on faster while sewing.

Fig. 32: Keypad for quick functions



(1) - Auxiliary switch
(2) - Screw activates auxiliary switch
(3) - Original position

The key function is transferred by turning the screw under the key until it is vertical.
Only one function can be assigned to the auxiliary switch (1). Thus, only one screw can be set vertically.
All screws must be turned back to their original horizontal position before transferring a new function.

To transfer a key function:

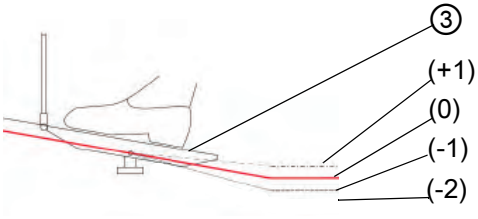
1. Bring all screws to their original positions (3), so that the slots are horizontal.
2. Turn the screw under the desired key by 90° so that the slot is vertical (2 threads and protection against separation)

5.15 Thread cutting and securing against unraveling

1. Press the pedal completely backwards to position (-2) at the end of the seam.

↳ If the machine was idle, it will perform a half or full rotation, cut both threads and then stop.

Fig. 33: Cutting the thread



(+1) - Sewing position
(0) - Idle position
(-1) - Presser foot raised position
(-2) - Cutting and bar tacking position
(3) - Pedal
(4) - OP1000 control panel

Cutting can also be started while the machine is running. In this case, the machine first reduces speed when the pedal is pressed back. Once the machine has reached cutting speed, the thread is cut and the machine stops.

5.16 Operating the controller

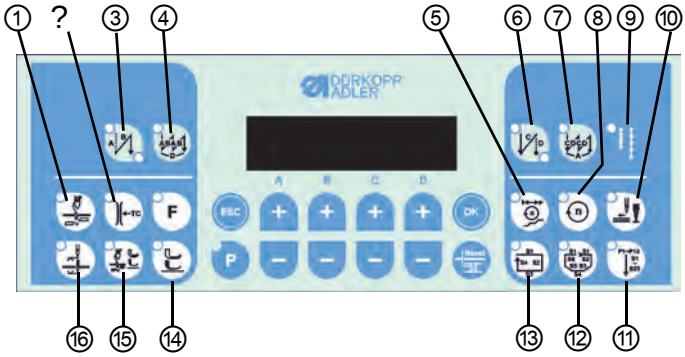
The machine is operated with the Basic/Classic DAC control unit. Operating the controller is described in an individual 🕮 *Operating Manual*.

The Basic/Classic DAC operating manual is included in the control unit pack. It can also be found in the "Downloads" section at *www.duerkopp-adler.com.*

5.16.1 Control panel

The Basic/Classic DAC control unit is equipped with the OP1000 control panel.

Fig. 34: Control unit panel



Overview table provided below.

Switch on/off function

1. Press the appropriate key.

↳ The LED on the key indicates the status.

Important: The functions on the machine only work if the proper equipment is available.

Overview of control panel functions

Key	Function	Status	LED display
1	Thread cutter	Off	LED off
		On	LED on
2	Thread clamp	Off	LED off
		On	LED on
3	Start bar tack	Off	LED off
		Single bar tack	Lower right LED on
		Double bar tack	Both LEDs on
4	Multiple start bar tack	Off	LED off
		On	LED on
5	Soft start	Off	LED off
		On	LED on
6	End bar tack	Off	LED off
		Single bar tack	LED top left on
		Double bar tack	Both LEDs on
7	Multiple end bar tack	Off	LED off
		On	LED on
8	Reduced sewing speed Input with +/- keys	Off	LED off
		On	LED on
9	2nd stitch length	Off	LED off
		On	LED on
10	Sewing program I	Off	LED off
		On	LED on
11	Sewing program II	Off	LED off
		On	LED on
12	Sewing program III	Off	LED off
		On	LED on
13	Light barrier	Off	LED off
		On	LED on
14	Presser foot rises after sewing stop	Presser foot down	LED off
		Presser foot up	LED on
15	Presser foot position after cutting the thread	Presser foot down	LED off
		Presser foot up	LED on
16	Needle position after sewing stop	Needle down	LED off
		Needle up	LED on
F	Threading help		

Key	Function	Status	LED display
ESC	Escape key, cancel		
P	Programming key	Ready to be programmed	LED on
+	Increase the value		
-	Decrease the value		
OK	Confirmation		
Reset	Bobbin supply		

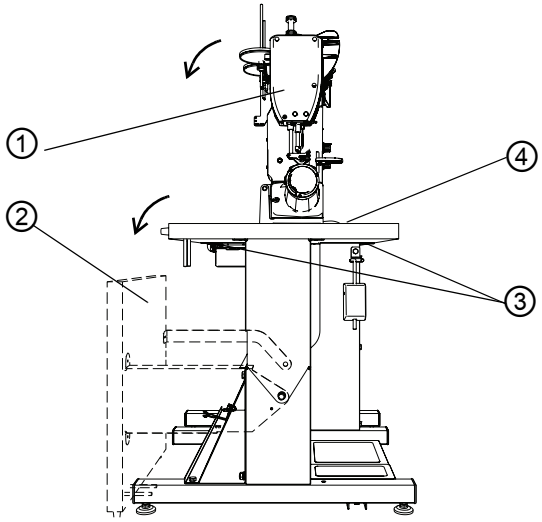
5.17 Swinging out the table plate

If the machine is equipped with a special frame, part of the table plate can be folded down to create space under the lower arm for sewing larger pieces.

WARNING

Risk of injury from moving parts.
Switch off the machine before swinging out the table plate.

Fig. 35: Swinging out the table plate



(1) - Machine head
(2) - Swingable part of the table plate
(3) - Clamp
(4) - Fixed part of the table plate

1. Fold the machine head (1) to the rear in the direction of the arrow.
2. Release both clamps (3) fastening the folding part of the table plate (2) to the fixed part of the plate (4).

3. Slide the folding part of the table plate (2) approx. 10 mm to the left and then fold it to the rear in the direction of the arrow.
4. Fold the machine head (1) back to the working position.

ATTENTION

When returning the folding part of the plate (2) back to the normal working position, set the position of the clamps (3) so that the plate is not damaged by colliding with the clamps.

6 Maintenance

This section describes simple maintenance work that needs to be carried out on a regular basis. This maintenance work can be carried out by the operating personnel. Additional maintenance work may only be performed by specially trained and qualified technicians. The additional maintenance work is described in the 🕮 *Service manual*.

6.1 Cleaning the machine

Lint and thread remnants must be removed after every 8 hours of operation, using a compressed-air pistol or a brush. When sewing very fluffy materials the machine must be cleaned more often.

WARNING

Risk of injury from flying particles.

Turn off the power switch before cleaning.

Swirled up dirt particles can get into the eyes and cause injury.

Hold the compressed-air pistol so that particles do not fly toward persons.

Make sure no particles fly into the oil pan.

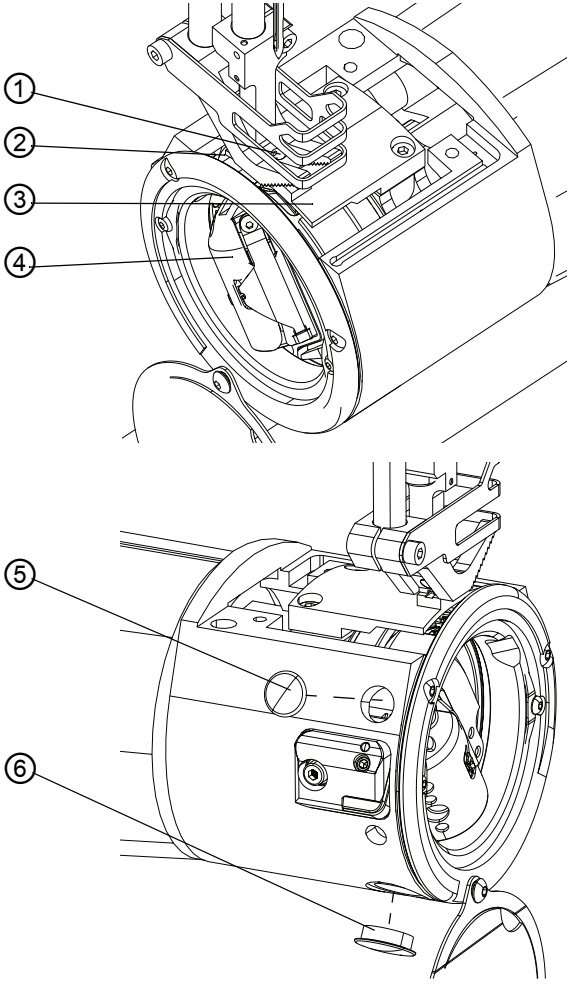
ATTENTION

Malfunctions can occur due to a dirty machine.

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

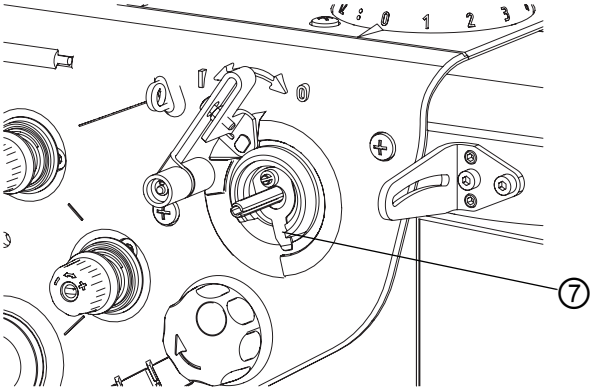
Clean the machine at regular intervals according to the instructions in the manual.

Fig. 36: Areas requiring special attention when cleaning- Part 1



(1) - Area around the needle
(2) - Thread cutter
(3) - Feed-dog
(4) - Hook
(5) - Cover
(6) - Cover

Fig. 37: Areas requiring special attention when cleaning- Part 2



(7) - Winder cutter

Areas particularly susceptible to soiling:

- Winder cutter (7)
- Area between needle plate and feed dogs (3)
- Hook (4)
- Cutters (2), (5)
- Area around the needle (1)

Cleaning steps:

1. Shut off power by turning off power switch.
2. Unscrew needle plate.
3. Remove the covers (5) and (6) so that dust and thread remnants can fall out of the normally covered openings.
4. Remove any lint and thread remnants using a compressed-air pistol or a brush.

ATTENTION

Damage to the paintwork due to solvent-based cleaners.
Solvent-based cleaners will damage paintwork on the machine.
Only use solvent-free substances when cleaning the machine.

6.2 Checking oil level

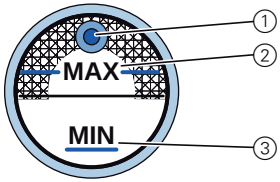
WARNING

Skin damage due to contact with oil.
Oil can cause a rash if it comes into contact with skin.
Avoid any skin contact with the oil.
If oil gets on your skin, wash the affected areas thoroughly.

ATTENTION

Machine damage possible due to incorrect oil level.
Too little or too much oil can damage the machine.
Check the oil level on a daily basis, adding enough oil so oil level is always between the minimum and maximum marks.

Fig. 38: Oil level indicator



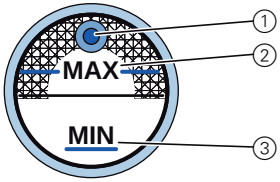
(1) - Filler opening
(2) - Maximum level marking
(3) - Minimum level marking

Checking oil level

1. Check the oil level indicator every day:

Important: The oil level must always be between the minimum level mark (3) and the maximum level mark (2).

Fig. 39: Oil level indicator



(1) - Filler opening
(2) - Maximum level marking
(3) - Minimum level marking

Refilling oil

Pour in oil through the filler opening (1) as required:

1. Switch off the sewing machine at the main power switch.
2. Top up the oil to the maximum level mark (2).
3. Press the power switch again to turn the sewing machine back on.

CLASSIC equipment

Note for machines with CLASSIC equipment:
On CLASSIC machines, if the oil level falls below the minimum level marking (3), the oil level indicator lights up red.

1. Turn the sewing machine off, then on again after refilling oil.

↳ The red light will turn off.

Required oil:

The machine should only be filled with DA10 lubricating oil or equivalent, with the following properties:

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

ATTENTION

Machine damage possible due to incorrect oil.

An incorrect oil type can cause damage to the machine.

Only use oil specified in the operating manual.

ENVIRONMENTAL PROTECTION

Risk of environmental damage from oil.

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

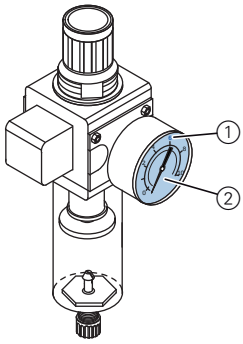
Carefully collect waste oil and dispose of the waste oil and oil-contaminated machine parts in the legally prescribed manner.

6.3 Checking pneumatic system

ATTENTION

Machine damage possible due to incorrect pressure.
Incorrect pressure can result in damage to the machine.
Check the pressure on a daily basis.
Have the pressure adjusted by qualified specialists if the pressure deviates from the reference value.

Fig. 40: Pressure indicator on maintenance unit



(1) - Standard value: 6 bar
(2) - Pressure gage

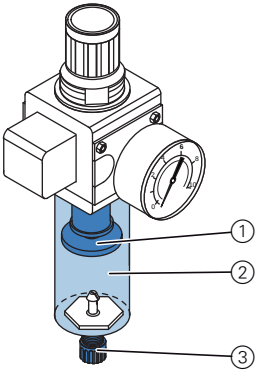
Check pressure:

1. Check the pressure and pressure gage (2) every day.
   Standard value: 6 bar

Important: The pressure must never deviate from the standard value by more than 1 bar.

Water condensation will accumulate in the water separator of the maintenance unit.

Fig. 41: Water level in the maintenance unit



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

Check water level:

1. Check the water level every day.

Important: Water condensation must not rise up to the filter element (1).

ATTENTION

Machine damage possible if there is too much water.
Too much water can result in damage to the machine.
Check the water level every day and drain the condensation water if there is too much water in the water separator.

Drain water as required:

1. Switch off the sewing machine at the main power switch.
2. Place the collection tray under the drain screw (3).
3. Remove the compressed air hose from the compressed air supply.
4. Completely unscrew the drain screw (3)
5. Allow water to drain into the collection tray.

6. Re-tighten the drain screw (3).
7. Connect the compressed air hose to the compressed air supply.
8. Press the power switch again to turn the sewing machine back on.

6.4 Customer Service

Contact for repairs if machine is damaged:

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

7 Installation

WARNING

Risk of injury.
The machine may only be set up by qualified technicians.

7.1 Checking delivery

Important: The scope of delivery depends on the order.
Delivery consists of standard equipment and optional equipment.

1. Check that all parts are present before setup.

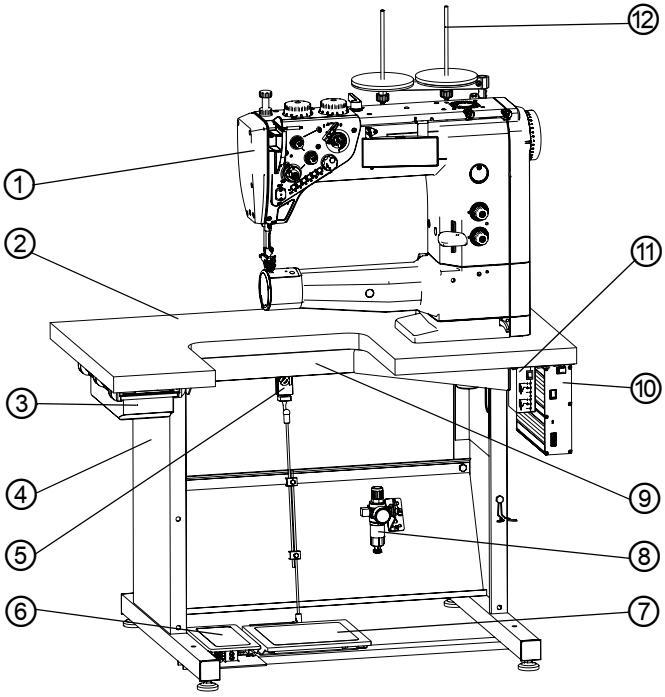
Standard equipment:

- Machine upper section (1)
- Accessories – tools (not illustrated)
- Plate bracing (9)
- Lighting transformer (with the CLASSIC version) (11)
- DAC control unit (10)
- Thread reel holders (12)
- Connectors (not illustrated)

Optional equipment:

- Table plate (2)
- Drawer (3)
- Frame (4)
- Foot switch (6)
- Pedal (7)
- Compressed air regulator unit (8)
- Lighting transformer (with the Eco version) (11)

Fig. 42: Scope of delivery



(1) - Machine upper section
(2) - Table plate
(3) - Drawer
(4) - Frame
(5) - Setpoint transducer
(6) - Foot switch
(7) - Pedal
(8) - Compressed air regulator unit
(9) - Oil pan
(10) - DAC control unit
(11) - Lighting transformer
(12) - Thread reel holder

7.2 Removing transport securing devices

All transport securing devices must be removed prior to setup.

1. Remove the lashing straps and wooden blocks from the upper machine section, table and frame.
2. Remove the support wedges between the machine arm and needle plate.

7.3 Assembling the frame

Two different types of frame can be supplied with the machine, depending on the version ordered:

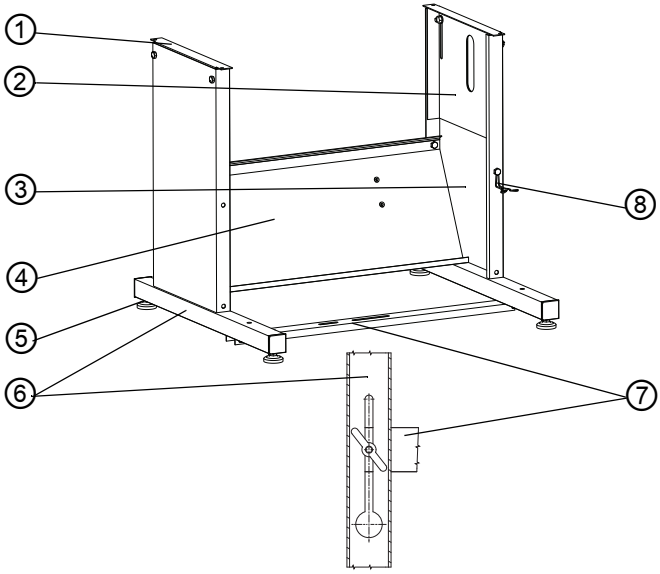
- Standard frame with fixed table plate
- Special frame with partially swingable table plate

The frame can be supplied assembled or dismantled.

7.4 Assembling the standard frame

7.4.1 Assembling frame components

Fig. 43: Assembling frame components



(1) - Head sections of the inner bars
(2) - Inner bars
(3) - Frame bars
(4) - Cross bars
(5) - Adjusting screw
(6) - Frame foot struts
(7) - Cross strut
(8) - Oil can holder

1. Screw the cross bars(4) to the frame bars (3).
2. Screw the oil can holder (8) to the frame bar (3).
3. Screw the cross strut (7) to the foot struts (6).

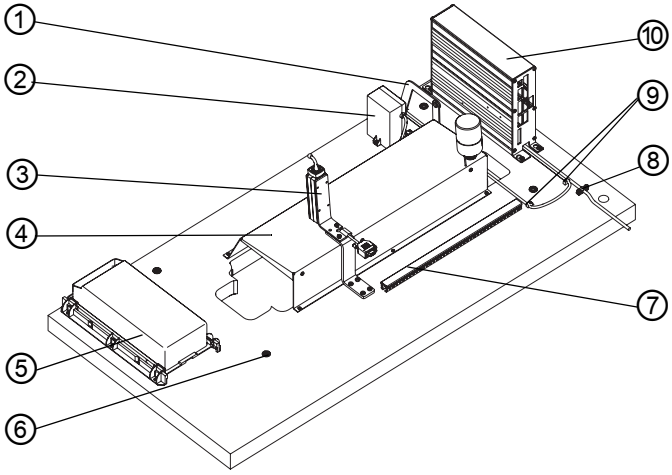
4. Screw the inner bars (2) to the frame bar (3) so that both headpieces (1) are at the same height.

5. **Important:** Turn the adjustment screw (5) so the frame is standing evenly on the floor.

7.4.2 Assembling components on underside of table plate

The table plate is optional.
If you wish to manufacture your own table plate then use the drawing provided in the appendix, *Drawings for creating table plate*, page 105.

Fig. 44: Assembling components on underside of table plate



(1) - Hinge connecting rod
(2) - Lighting transformer
(3) - Setpoint transducer
(4) - Oil pan
(5) - Drawer
(6) - Frame mounting holes
(7) - Cable duct
(8) - Screw-mounted power cable mounting clamp
(9) - Nailed mounting clamps
(10) - DAC control unit

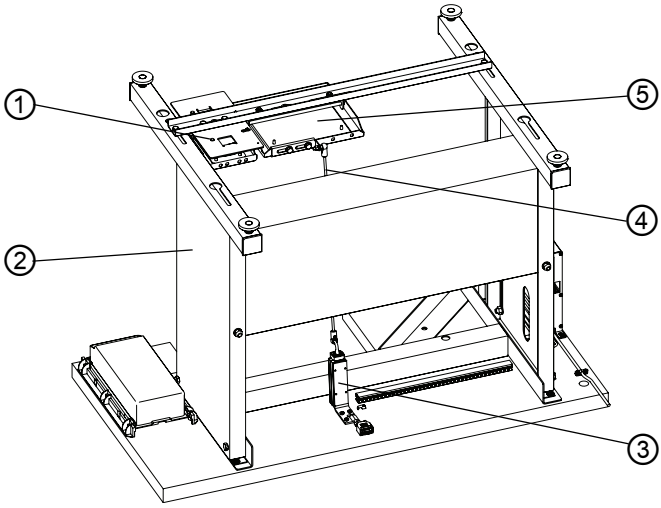
1. Turn the table plate over so the underside is facing up.
2. Fasten the components as shown in the image. The position of each component is to scale on the drawing, *Component layout on underside of table plate*, page 107.

3. Fasten the power cable mounting clamp (8) screws.
4. Nail down the cable clamps (9).
5. Pre-drill the holes in the plate for mounting the frame (6) according to the drawing, 🕮 *Component layout on underside of table plate*, page 107.

If the machine is equipped with a sewing lamp, first connect the sewing lamp transformer to the control unit, 🕮 *Connecting the lighting*, page 95. Then screw the control unit to the table plate (the connection terminal is only accessible when the control unit is removed).

7.4.3 Mounting the frame on the table plate and mounting the pedal

Fig. 45: Mounting frame and pedal



(1) - Foot switch
(2) - Frame
(3) - Setpoint transducer
(4) - Pedal connecting rod
(5) - Pedal

1. Screw the frame (2) at the pre-drilled holes.
2. Screw the foot switch (1) to the vertical cross bar of the frame, as close as possible to the left bar.
3. Screw on the pedal (5).

4. Connect the lugs on the ends of the connecting rod (4) to the ball pins on the sensor (3) and pedal (5).

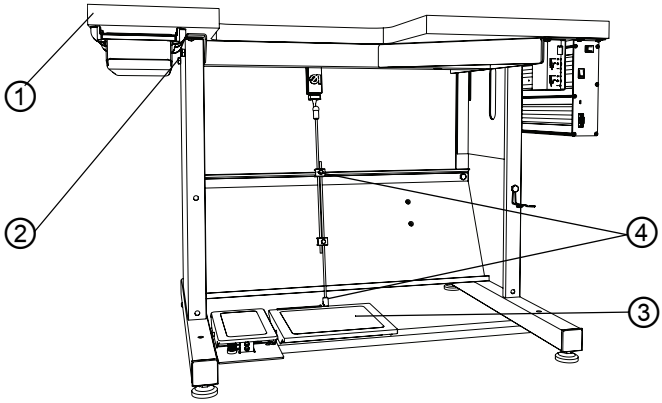
7.4.4 Setting frame height and pedal position

WARNING

Risk of occupational illness (musculoskeletal damage) to operating personnel from failure to comply with ergonomic requirements.
Adjust the frame height to the height of the person operating the machine.
Position the pedal so that the middle of the pedal lies in the axis of the needle with a maximum deviation of 15 mm.

The frame can be adjusted continuously to any height between 770 and 910 mm.

Fig. 46: Setting frame height and pedal position



(1) - Table plate
(2) - Frame height adjustment screws
(3) - Pedal
(4) - Pedal connecting rod couplings

WARNING

Risk of crushing

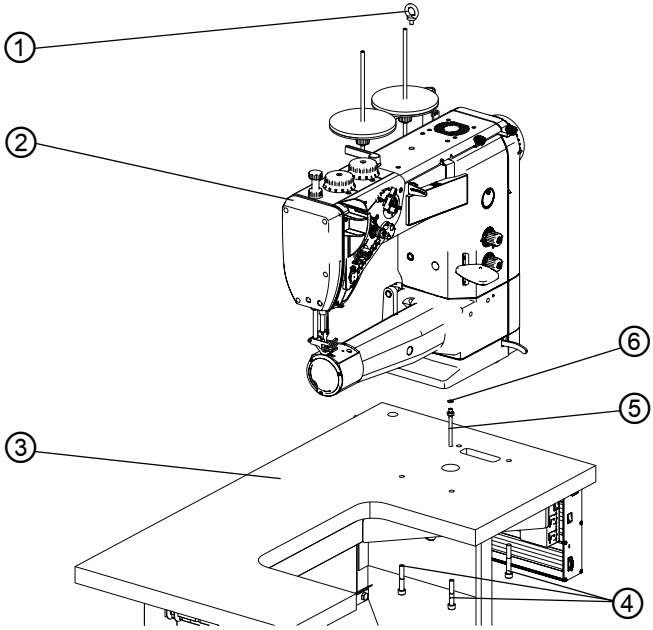
Loosening the screws on the lower frame bars can result in the table plate collapsing under its own weight. This is more likely if the upper machine section has already been mounted.
Make sure your hand does not get crushed while loosening the screws.

1. Loosen the adjustment screws (2) on the frame bars.
2. Set the table plate (1) to the desired height.

   Important: Use a tape measure to make sure the table plate is level.
3. Tighten the screws (2) on the frame bars.
4. Set pedal (3) so that the middle is directly in line with the needle – 🕮 *Mounting the frame on the table plate and mounting the pedal*, page 83.
5. Use the pedal connecting rod (4) couplings to set the angle as desired by the machine operator.

7.4.5 Placing the machine upper section on the frame

Fig. 47: Placing the machine upper section on the frame



(1) - Suspension screw with eyelet
(2) - Machine upper section
(3) - Table plate
(4) - Fastening screws
(5) - Oil hose with end piece
(6) - Fabric washer

CAUTION

Risk of crushing

The upper machine section is very heavy.

Make sure your hands do not get crushed while mounting the upper machine section.

1. Remove the plug from the top of the upper machine section (2) and screw in the suspension screw with eyelet (1) included in the machine accessories.

WARNING

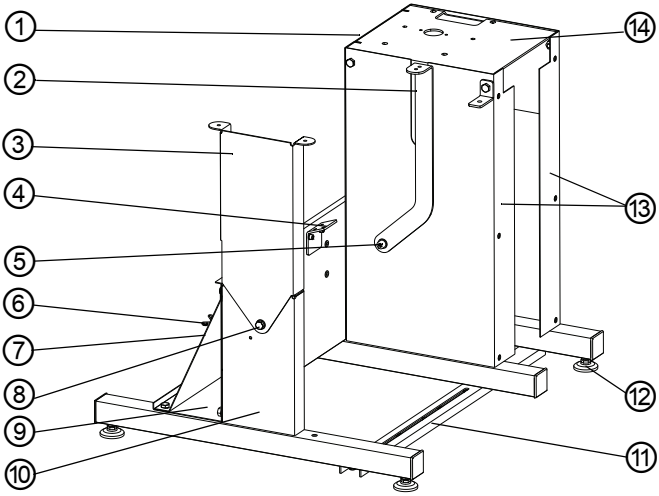
Risk of injury.
The eyebolt is only designed for lifting the machine head. Lifting the entire machine including the frame via this eyebolt is not permitted.

2. Lift the machine upper section with a crane and, from below, screw on the hose with the end piece (4) and the fabric washer (5) included in the machine accessories.
3. Lower the machine upper section (2) onto the table plate (3) and fasten using the screws (4) included in the machine accessories.

7.5 Assembling the special frame

7.5.1 Assembling frame components

Fig. 48: Assembling frame components



(1) - Rear bar plate
(2) - Table plate folding holder
(3) - Upper left side plate
(4) - Holder for the setpoint transducer
(5) - Plate holder hinge
(6) - Oil can holder
(7) - Rear cross bar
(8) - Hinge for the left side plate
(9) - Front cross bar
(10) - Lower left side plate
(11) - Cross strut
(12) - Adjustment support
(13) - Side plates of the frame bar
(14) - Head piece

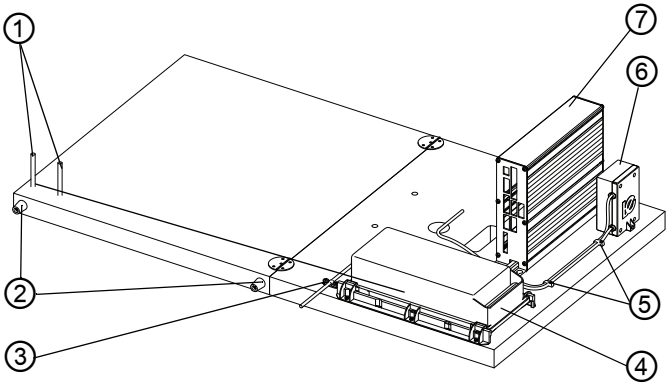
1. Screw both frame bar plates (13) to the rear bar plate (1) and the front cross bar (9) and the lower left side plate (10) using only the lower screws and screw these tight.
2. Screw on the head piece (14).
3. Screw on the rear cross bar (7) and screw in all screws in the rear bar plate (1).
4. Screw on the plate holder hinge (5) including the folding table plate holder (2).

5. Screw on the hinge for the upper left side plate (8).
6. Screw on the holder for the setpoint transducer (4).
7. Turn the frame with the underside upwards and screw the cross bar (11) to the frame side plates.
8. **Important**: Set the adjustment support (12) so that the frame stands level on the floor.
9. From the rear, screw on the oil can holder (6).

7.5.2 Assembling components on underside of table plate

The table plate is optional.
If you wish to manufacture your own table plate then use the drawing provided in the appendix, *Drawings for creating table plate*, page 105.

Fig. 49: Assembling components on underside of table plate



(1) - Pins
(2) - Buffer
(3) - Fastening clamps for the high voltage connection
(4) - Drawer
(5) - Fastening clamps
(6) - Lighting transformer
(7) - DAC control unit

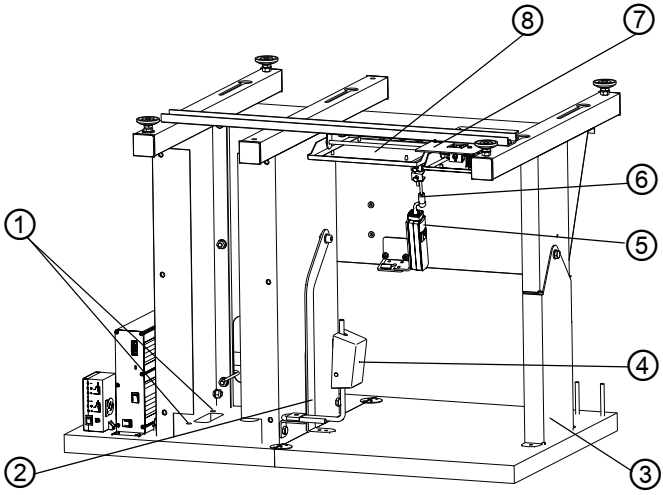
1. Turn the table plate over so the underside is facing up.
2. Hammer in the pin (1).
1. Fasten the components as shown in the image. The position of each component is to scale on the drawing, *Component layout on underside of table plate*, page 107.

2. Fasten the power cable mounting clamp (3) screws.
3. Fasten the cable clamps (5) with nails.

If the machine is equipped with a sewing lamp, first connect the sewing lamp transformer to the control unit, *Connecting the lighting*, page 95. Then screw the control unit to the table plate (the connection terminal is only accessible if the control unit is removed).

7.5.3 Mounting the frame on the table plate and mounting the pedal

Fig. 50: Mounting the frame on the table plate and mounting the pedal



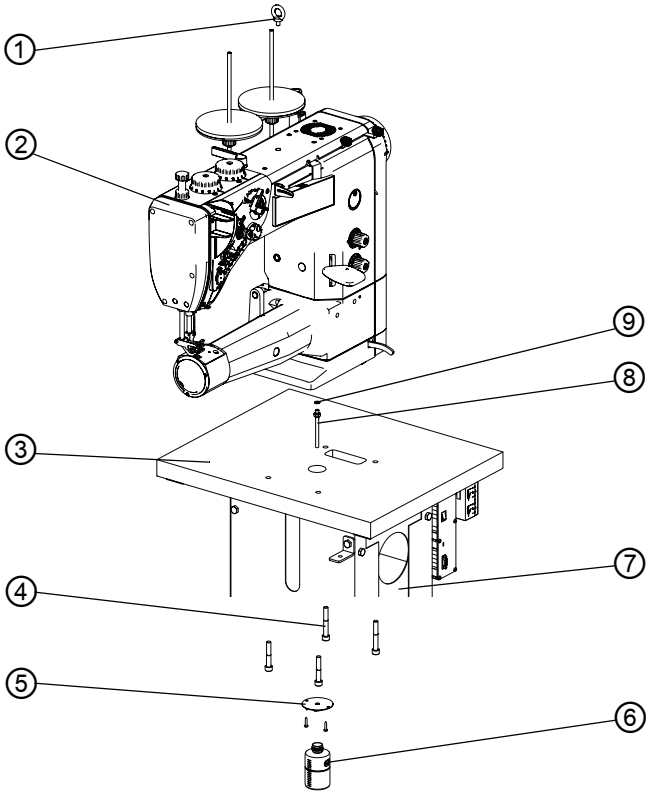
(1) - Holes for fastening the machine upper section to the frame
(2) - Table plate folding holder
(3) - Left side plate
(4) - Knee switch
(5) - Setpoint transducer
(6) - Pedal connecting rod
(7) - Foot switch
(8) - Pedal

1. Turn the table plate over so the underside is facing up.
2. Screw the left side plate (3) and the folding holder of the table plate (2) to the plate so that the holes for fastening the machine upper section (1) lie in the same axis as the holes in the table plate.

3. Screw on the foot switch (7) as close as possible to the left side plate (3).
4. Screw on the pedal (8) as close as possible to the foot switch (7). If the machine is equipped with a pedal then the middle of the pedal must lie in the axis of the needle.
5. Screw the setpoint transducer (5) onto the holder.
6. Install the pedal connecting rod (6) and the move the pedal ball pin holder so that the connecting rod lies in the axis of the setpoint transducer (5).
7. Screw on the knee switch (4).

7.5.4 Placing the machine upper section on the frame

Fig. 51: Placing the machine upper section on the frame



(1) - Eyebolt
(2) - Machine upper section
(3) - Table plate
(4) - Fastening screws
(5) - Holder for the reservoir
(6) - Used oil reservoir
(7) - Front frame bar plate
(8) - Oil hose with end piece
(9) - Fabric washer

CAUTION

Risk of crushing

The upper machine section is very heavy.

Make sure your hands do not get crushed while mounting the upper machine section.

1. Remove the plug from the top of the upper machine section (2) and screw in the eyebolt (1) included in the machine accessories.

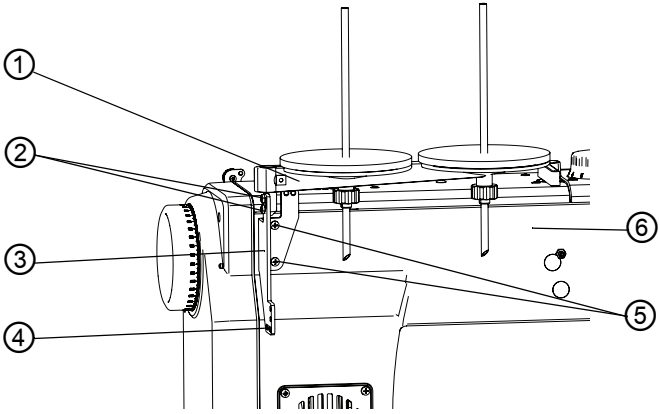
WARNING

Risk of injury.
The eyebolt is only designed for lifting the machine head. Lifting the entire machine including the frame via this eyebolt is not permitted.

2. Lift the machine upper section with a crane and, from below, screw on the hose with the end piece (8) and the fabric washer (9) included in the machine accessories.
3. Lower the machine upper section (2) onto the table plate (3) and fasten using the screws (4) included in the machine accessories.
4. Screw on the reservoir holder (5)
5. Screw on the used oil reservoir (6).
6. Slide in the front frame bar plate (7) at an angle and screw in place.

7.6 Assembling thread reel holder

Fig. 52: Assembling thread reel holder



(1) - Thread reel holder arm
(2) - Thread reel holder arm screws
(3) - Thread reel holder
(4) - Holes in thread reel holder
(5) - Thread reel holder screws
(6) - Machine upper section

1. Use the screws (5) included in the machine accessories. to fasten the thread reel holders (3) to the machine upper section (6).
2. After loosening the screws (2) the thread reel holder arm (1) can be tilted for operating the machine.
   The thread reel holder arm (1) can also be slid into a lower position and screw tight in the holes (4).

7.7 Electrical connection

DANGER

Risk of death from electric shock.
The machine should only be connected to power by qualified electricians.
Disconnect the power plug before carrying out work on the electrical equipment.
Make sure the power plug is not accidentally plugged back in.
The voltage on the type plate of the sewing drive must correspond to the mains voltage.

7.7.1 Checking mains voltage

Important: The voltage on the type plate of the sewing drive must correspond to the mains voltage.

1. Check mains voltage before connecting the machine.

7.7.2 Connecting the lighting

Connecting the transformer to the control unit

DANGER

Risk of death from electric shock.
Supply voltage for the sewing lamp remains on even if the sewing machine is turned off through the power switch.
Unplug the sewing machine before assembling and connecting the sewing lamp to the transformer.
Make sure the power plug is not accidentally plugged back in.

1. Remove the control unit (2)
2. Unscrew the cover (1).
3. Connect the cable as specified in the circuit diagram.
4. Screw on the cover (1).

7.7.3 Connecting control unit

DANGER

Risk of death from electric shock.
Disconnect the power plug before connecting the control unit.
Make sure the power plug is not accidentally plugged back in.

Connect the control unit as follows:

- Insert the plug of each connecting cable into the sockets on the back of the control unit.

  The sockets for each connector plug are labeled with pictograms.

- Connect the control unit to the power supply using the power cable.

Important: Read the 🕮 *Operating Manual* for the eco/classic DAC control unit.
The manual is included with the control unit.
The Operating Manual is also available in the document download area at *www.duerkopp-adler.com*.

7.8 Connecting the pneumatic system

7.8.1 Fitting the maintenance unit

A pneumatic connection package for connecting the pneumatic maintenance unit is available, 🕮 *Additional equipment*, page 9. It includes:

- System connection hose
  (length 5 m, diameter 9 mm)
- Hose glands and couplings
- Connection plugs and sockets

Correct setting

The pressure in the pneumatic system network is 8 – 10 bar.

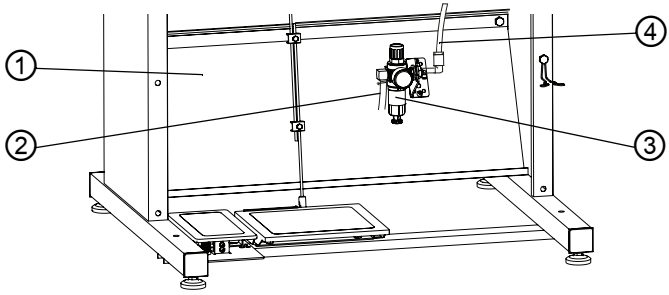
ATTENTION

Machine damage possible due to incorrect pressure.

Incorrect pressure can result in damage to the machine.

Make sure that the system pressure is set to 8 – 10 bar before mounting the pneumatic system.

Fig. 53: Installing the maintenance unit pneumatic system



(1) - Cross bar
(2) - System connection hose
(3) - Maintenance unit
(4) - Machine hose

1. Attach the maintenance unit (3) to the upper cross bar (1) of the frame using the bracket, screws and clip.
2. Plug the hose (4) coming out of the machine upper section securely into the upper right of the maintenance unit (3).
3. Connect the system supply hose (2) to the pneumatic system.

7.8.2 Setting operating pressure

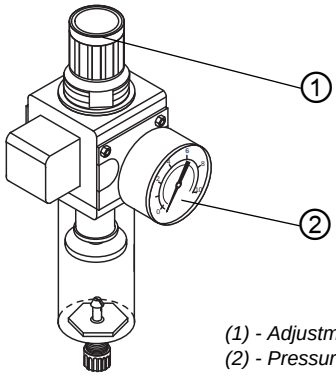
Correct setting

The operating pressure of the pneumatic system is 6 bar.

ATTENTION

Machine damage possible due to incorrect pressure.
Incorrect pressure can result in damage to the machine.
Make sure the operating pressure is set correctly before starting the machine.

Fig. 54: Setting operating pressure



(1) - Adjustment knob
(2) - Pressure gage

1. Pull the adjustment knob (1) up.
2. Set the operating pressure so the pressure indicator (2) shows 6 bar:
   - **To increase pressure:** Turn the adjustment knob (1) clockwise.
   - **To reduce pressure:** Turn the adjustment knob (1) counterclockwise.
3. Push the adjustment knob (1) down.

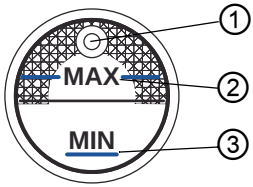
7.9 Lubrication

WARNING

Skin damage due to contact with oil.
Oil can cause a rash if it comes into contact with skin.
Avoid any skin contact with the oil.
If oil gets on your skin, wash the affected areas thoroughly.

All rope and felt bits of the upper section are soaked in oil at the factory.

Fig. 55: Oil level indicator



(1) - Filler opening
(2) - Maximum level marking
(3) - Minimum level marking

1. Fill oil through the filler hole (1) to a maximum of 2 mm below the maximum level mark (2).

ATTENTION

Machine damage possible due to incorrect oil level.
Too little or too much oil can damage the machine.
During initial filling, only pour in oil up to 2 mm below the maximum level mark.

Required oil:

The machine should only be filled with DA 10 lubricating oil or equivalent, with the following properties:

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

ATTENTION

Machine damage possible due to incorrect oil.

An incorrect oil type can cause damage to the machine.

Only use oil specified in the operating manual.

ENVIRONMENTAL PROTECTION

Risk of environmental damage from oil.

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

Carefully collect the used oil in a container and dispose of the old oil and machine parts containing oil in accordance with the legal regulations.

7.10 Sewing test

Conduct a sewing test before starting up the machine. Set the machine to meet the requirements of the material being processed.

Read the corresponding chapter of this *Operating Manual*. If the sewing result does not satisfy your requirements and you wish to change the machine settings then read the corresponding chapter of the 🕮 *Service Manual*.

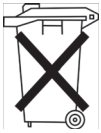
WARNING

Risk of injury from needle and moving parts.
Turn off the sewing machine before changing the needle, threading thread, inserting the bobbin, setting the hook thread tension or thread limiter.

Performing sewing test

1. Insert needle.
2. Wind hook thread on bobbin.
3. Insert the bobbin.
4. Thread hook thread.
5. Thread needle thread.
6. Set thread tension to material being sewn.
7. Set thread limiter to material being sewn.
8. Set presser foot pressure to material being sewn.
9. Set presser foot stroke to material being sewn.
10. Set stitch length.
11. Transfer the desired quick function from the keypad to the additional switch.
12. Start sewing test at low speed.
13. Gradually increase sewing speed until working speed is reached.

8 Disposal



The machine must not be disposed of in the general household waste.

The machine must be disposed of in an appropriate and proper manner according to national regulations.

ATTENTION

Risk of environmental damage due to improper disposal.

Incorrect disposal of the machine can result in severe environmental damage.

Always adhere to the applicable statutory regulations on waste disposal.

When disposing of the machine, be aware that it consists of a range of different materials (e.g. plastic, electronic components...).

Observe the respectively applicable national regulations for disposing of these materials.

9 Appendix

9.1 Drawings for creating table plate

Fig. 56: Drawing of the fixed table plate with cutout

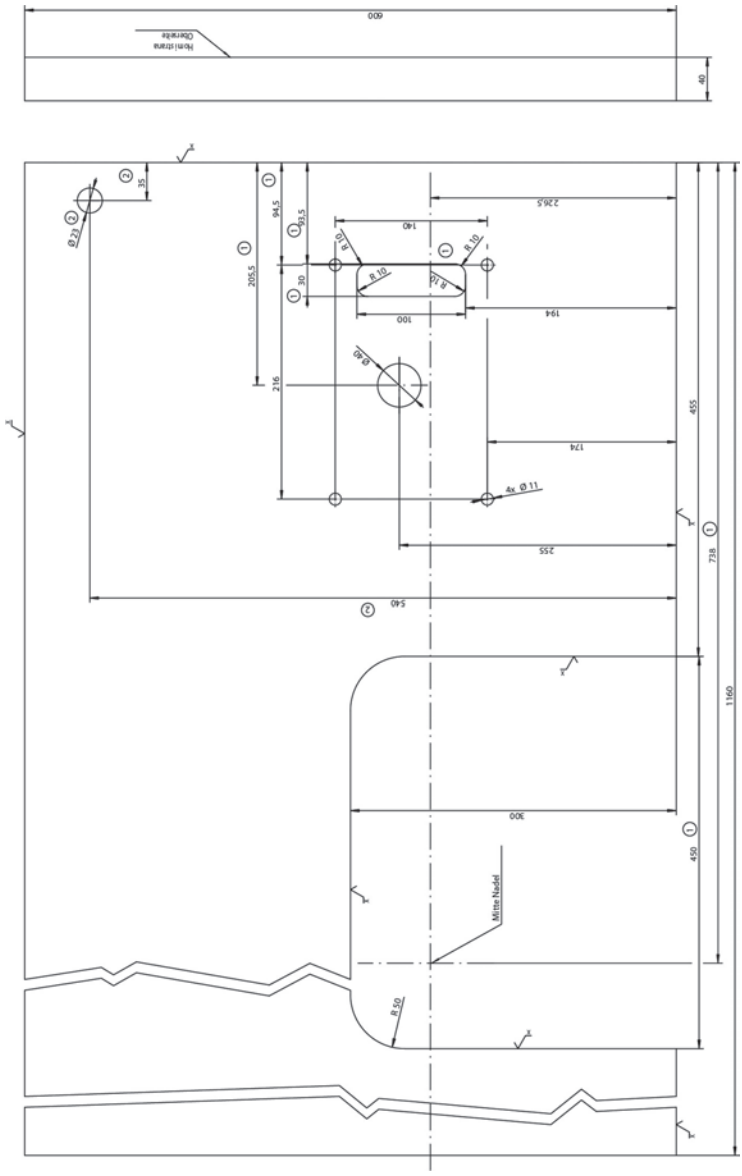
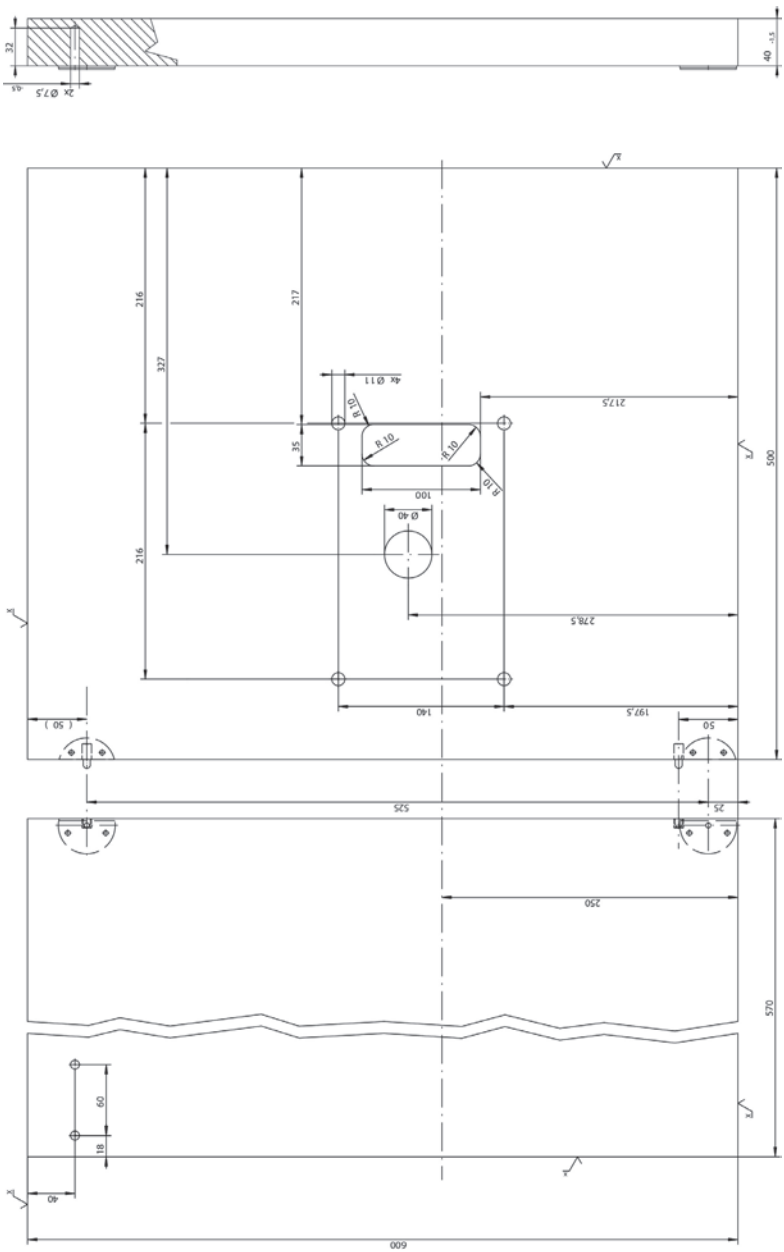


Fig. 57: Drawing of the folding table plate



9.2 Component layout on underside of table plate

Fig. 58: Components on the underside of the fixed table plate with cutout

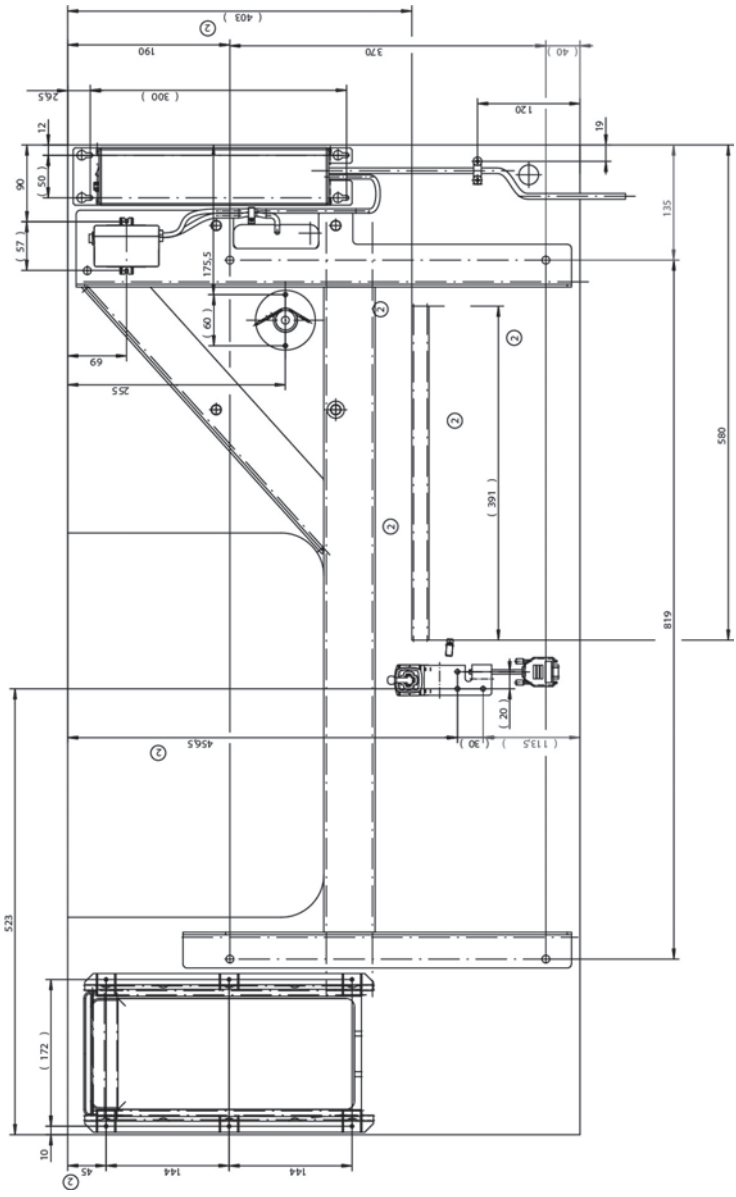
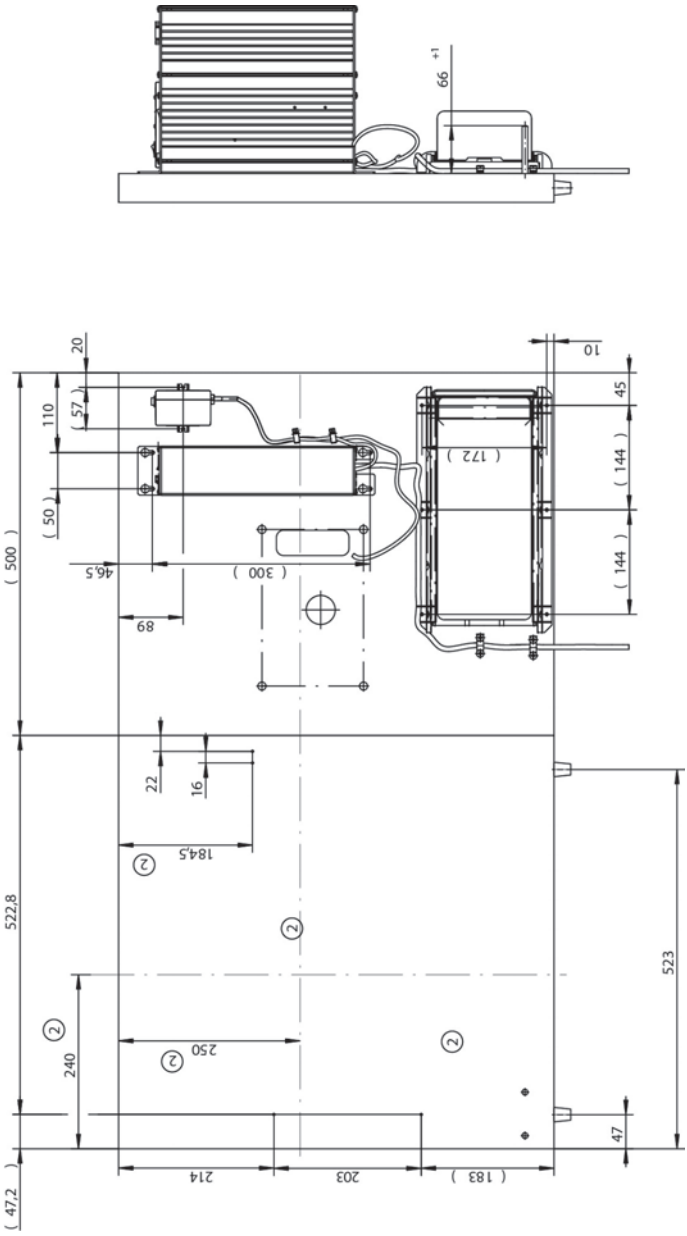
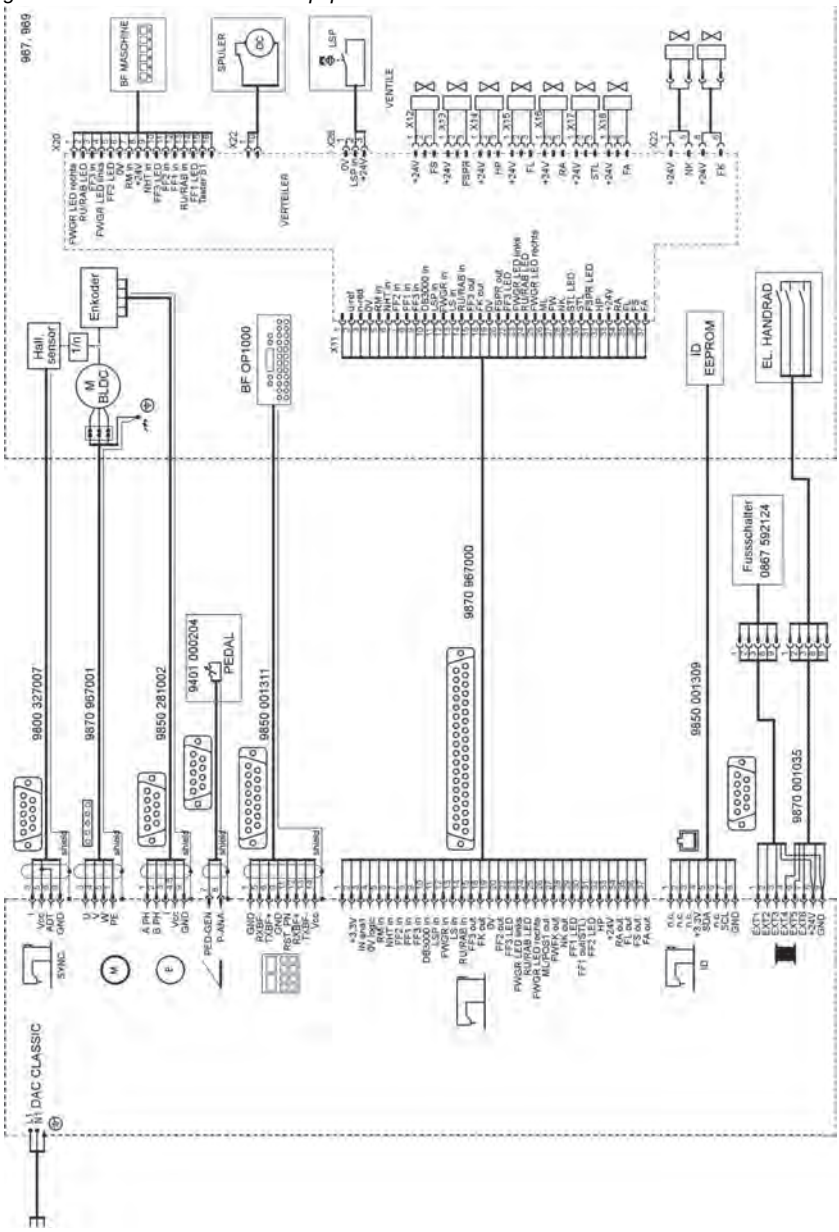


Fig. 59: Components on underside of the folding table plate



9.3 Wiring diagram

Fig. 60: Connection of electrical equipment



9.4 Table of maximum machine speeds

Presser foot stroke [mm]	2 - 7	7 - 9	9 - 11	11 - 12
Maximum machine speeds [min^{-1}]	1250	1100	900	700

9.5 Table: Maximum presser foot stroke

This table applies at a maximum machine speed of 1,250 [min^{-1}].

Material thickness [mm]	2 - 3	3 - 5	5 - 8	8 - 20
Max. presser foot stroke [mm]	3.5	5	6	7

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