DÜRKOPP ADLER

967

Operating Instructions

1 About this Manual

Please contact us if you find any discrepancies or have any suggestions, 🕮 *6.4 Customer service*, p. 74.

Consider this operating manual part of the product and keep it on hand at all times. Be sure to read the manual completely before using the product for the first time. Only give the product to someone else along with the operating manual.

1.1 Scope

This manual describes the proper use and set up of the 967 special sewing machine.

1.2 For whom is this operating manual?

This operating manual is for:

- Operators:
  This group is familiar with the machine and has access to the operating manual. Specifically, 🕮 *Chapter 5: Operation* is intended for this group.
- Technicians:
  This group has the appropriate technical training for performing maintenance on the sewing machine or repairing malfunctions. Specifically, 🕮 *Chapter 6: Setup* is intended for this group. A service manual will be provided separately.

Regarding minimum qualifications and other personnel requirements, be sure to also observe 🕮 *Chapter 3: Safety Information.*

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:

Proper setting

Indicates proper setting.

Malfunctions

Indicates malfunctions that can occur through improper settings.

Process steps during operation (sewing and preparation)

Process steps during servicing, maintenance and assembly

Process steps using software control panel

Each process step is numbered:

1. 1. First process step
2. 2. Second process step

etc. The order of steps must strictly be followed.

Result of process

Changes to machine or display

Important

This information must be specifically observed during 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

📖 Reference to another section in the manual.

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

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

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 was compiled with consideration to the state of the art, and applicable standards and regulations.

The manufacturer cannot be held liable for damages resulting from:

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

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 967 is intended for sewing heavy to very heavy material (max. material thickness is 20 mm). Heavy to very heavy material requires a needle thickness of 120-180 Nm.

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

The seam 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 on well-maintained premises. If the machine is operated on premises that are not dry and well-maintained, then further measures may be required which must be compatible with EN 60204-31:1999.

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.
Please observe all instructions in the manual.

ATTENTION

Improper use can result in property damage.
Please observe all instructions in the manual.

2 Technical Specifications

2.1 Characteristics

The Dürkopp Adler 967 is an extra heavy-duty flatbed 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 installation declaration.

CE

2.3 Technical data

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

Lc = 74 dB (A) ± 0.83 dB (A), given:

- Stitch length: 12.0 mm
- Presser foot stroke: 6 mm
- Speed: 1,000 min^{-1}
- Material: Strip with a width of 15 mm

Characteristic	967-100180	967-100382
Stitch type	301	
Hook type	Horizontal barrel shuttle, large (XL)	
Number of needles	1	
Needle system	794 (1,000 hrs)	
Needle strength [Nm]	120 - 180	
Needle thread	20/3 - 5/3	
Hook thread	40/3 - 5/3	
Stitch length, forwards/backwards [mm]	15/15	
Maximum stitch count [min^{-1}]	1,250	
Stitch count ex works [min^{-1}]	1,000	
Presser foot stroke [mm]	0 - 12	
Presser foot stroke, manual [mm]	14/20	
Presser foot stroke, pneumatic [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)	
Output [kVA]	375	

The table shows the configurable range of the machine's parameters. The actual values for min. stitch count/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	967-100180	967-100382
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	Electro-pneumatic bar tack kit	o	●
0967 590024	Electro-pneumatic top-down needle cooler	o	o
0967 590034	Thread clamp with thread wiper function (TC kit)	o	o

Order number	Additional equipment	967-100180	967-100382
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	Memo dongle, external memory, for data transmission with classic DAC control unit	o	o
9850 001211	Dongle connector, USB to dongle interface	o	o
9081 300002	Tool set for H-type	o	o
MG58 400484	Frame kit Table plate, 1,200 x 600 mm with pedal (MG58-3)	o	o

For more information, visit us at:

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 do so can result in serious injury and damage to the machine.

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

Check the machine during use for any visible external damage. Stop working if you notice any changes to the machine. Report any changes to your supervisor. A damaged machine should no longer be used.

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

The machine should only be set up by qualified technicians.

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

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

Electrical equipment should only be serviced by qualified electricians.

The power cable must have a plug authorized for the country in which the machine is being used. Only qualified electricians should attach plugs to power cables.

Working on live components and equipment is prohibited. Exceptions are regulated by DIN VDE 0105.

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.
CAUTION	Can result in minor or moderate injury.
ATTENTION	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 puncturing
	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 hazard note looks like for a risk that will result in serious injury or death if not observed.

WARNING

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 could result in serious injury or death if not observed.

CAUTION

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 could result in minor or moderate injury if not observed.

ATTENTION

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 could result in property damage if not observed.

ENVIRONMENTAL PROTECTION

Type and source of risk

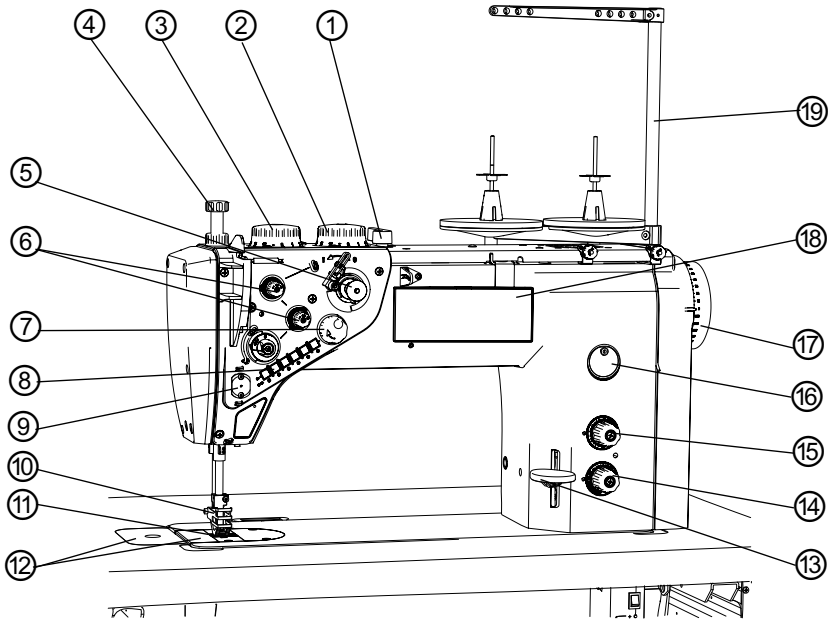
Consequences of non-observance

Measures for avoiding the risk

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

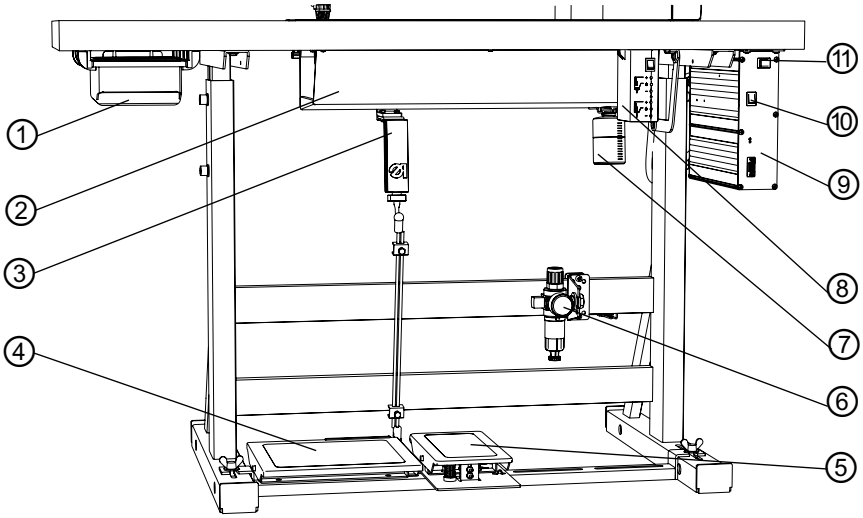
4 Machine Description

Fig. 1: General overview – part 1



(1) – Hand lever
(2) – Adjusting wheel for increased presser foot stroke
(3) – Adjusting wheel for normal presser foot stroke
(4) – Adjusting wheel for presser foot pressure
(5) – Bobbin winder for hook thread
(6) – Thread tensioners
(7) – Electronic handwheel
(8) – Keypad on machine arm
(9) – Thread clamp
(10) – Presser foot with needle
(11) – Hook
(12) – Cover
(13) – Stitch adjustment lever
(14) – Adjusting wheel, large
(15) – Adjusting wheel, small
(16) – Oil level indicator
(17) – Handwheel
(18) – OP 1000 control panel
(19) – Reel holders

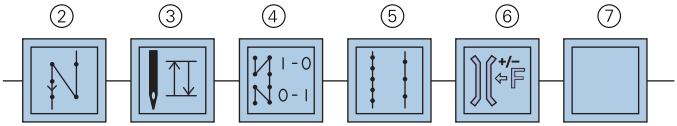
Fig. 2: General overview – part 2



(1) – Drawer
(2) – Oil pan
(3) – Setpoint device
(4) – Operating pedal
(5) – Foot switch
(6) – Maintenance unit
(7) – Oil container for used oil
(8) – Sewing lamp transformer
(9) – DAC control unit
(10) – Power switch
(11) – Sewing lamp switch

Function key assignment

Fig. 3: Function keys

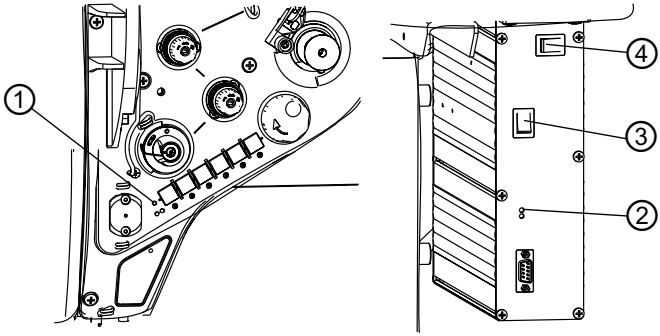


Key	Function
Reverse sewing key (2):	When this key (2) is selected, the machine sews in reverse.
Needle positioning key (3):	When this key (3) is selected, the needle moves to a specific position. This position is determined individually via the parameter settings. The machine comes configured so that selecting the key (3) will bring the needle up. There are two needle positions that can be configured on the control unit for stopping during a stitch and after a stitch (). The key (3) allows the operator to manually switch from one position to the other.
Start and end bar tack key (4)	This key (4) cancels the general setting for sewing start and end bar tacks. 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 general settings for sewing start and end bar tacks, read the 🕮 *Operating manual* for the eco/classic DAC control unit.
Key for the stitch length (5)	If the key (5) is selected, the machine sews using the larger stitch length selected at the upper adjusting wheel for the stitch length.
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 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 control unit
(3) – Power switch
(4) – Sewing lamp switch

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 off the sewing machine 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 defects:

After inserting a shorter needle:

- Damage to the hook tip
- Damage to the needle

After inserting a longer needle:

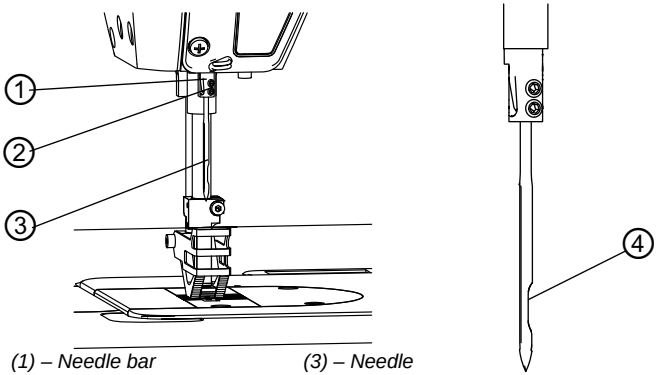
- Damage to the hook tip
- Damage to the needle

Changing needle

ATTENTION

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

Fig. 5: Changing needle



(1) – Needle bar
(2) – Fastening screws
(3) – Needle
(4) – Needle groove

1. Turn handwheelhandwheel 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 (4) is facing the hook and is parallel to the hook tip's direction of movement.
6. Tighten screws (2).

5.3 Threading needle thread

WARNING

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

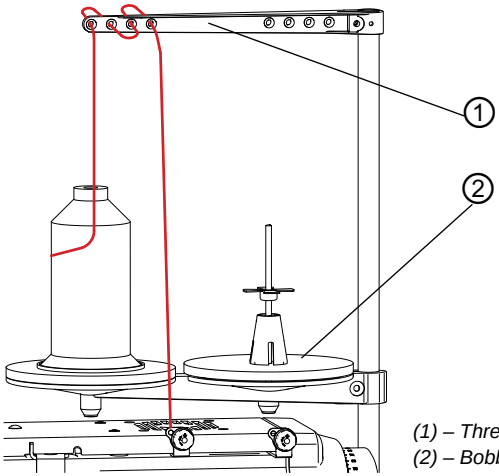
5.3.1 Threading thread in reel holder

ATTENTION

Incorrectly threading the thread can result in an uneven seam, a malfunction in the cutter and automatic unraveling of the thread from the bobbin due to the thread's own weight.
Make sure the thread is properly threaded.

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

Fig. 6: Threading thread in reel holder

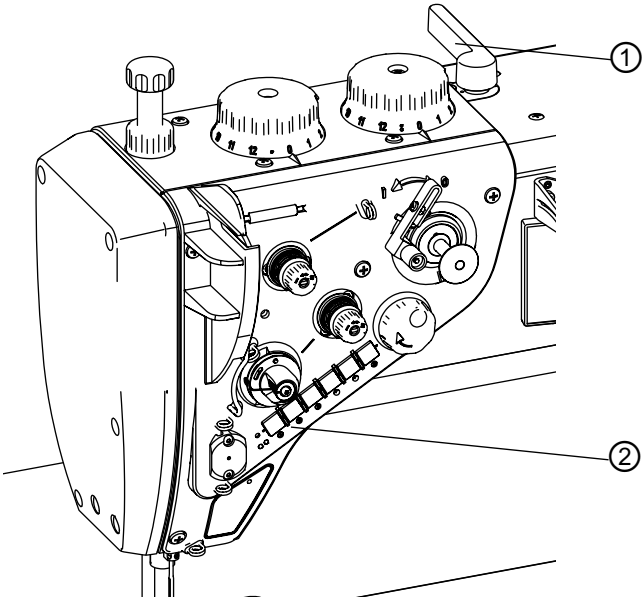


(1) – Thread guide
(2) – Bobbin

1. Slide reel on bobbin (2).
2. **Important:** Feed thread into the thread guide (1) openings as shown above.

5.3.2 Threading thread in machine

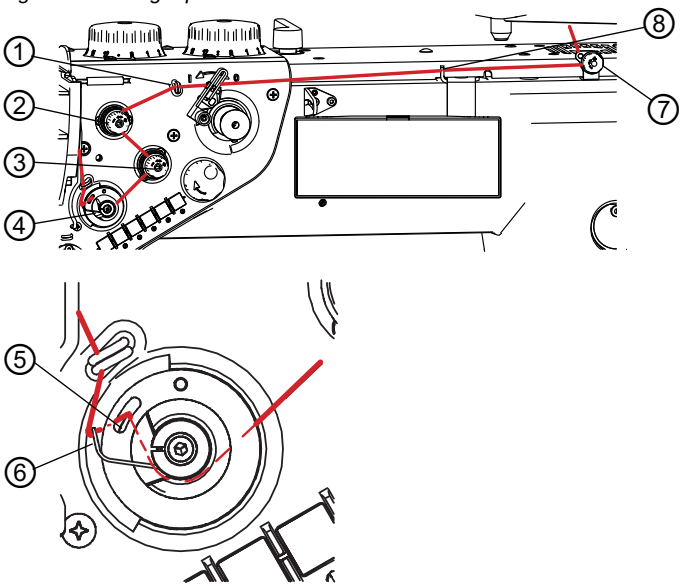
Fig. 7: Threading thread in machine



(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*, p. 32.
3. Turn off machine power switch.

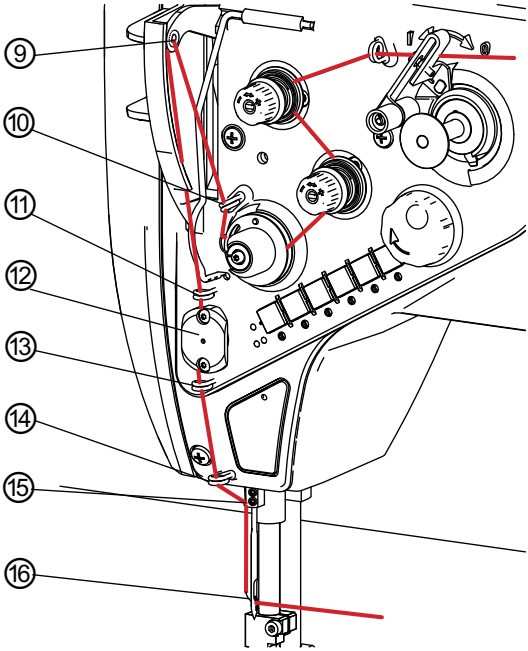
Fig. 8: Threading – part 1



(1) – Thread guide
(2) – Auxiliary tensioner
(3) – Primary tensioner
(4) – Balancing spring
(5) – Thread guide
(6) – Balancing spring arm
(7) – Pre-tensioner
(8) – Thread guide

4. Guide thread through pre-tensioner (7).
5. Guide thread through guides (8) and (1).
6. Run thread counterclockwise over auxiliary tensioner (2).
7. Run thread clockwise over primary tensioner (3).
8. Guide thread into thread guide (5): Turn 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 take-up lever
(10) – Thread guide
(11) – Thread guide
(12) – Thread clamp
(13) – Thread guide
(14) – Thread guide
(15) – Thread guide on needle bar
(16) – Needle eye

9. Guide thread through thread guide (10).
10. Pass thread through eyelet of thread take-up lever (9).
11. Guide thread through thread guide (11).
12. Wrap thread counterclockwise around thread clamp (12).
13. Guide thread through thread guides (13) and (14).
14. Pull thread behind thread guides until it moves into the thread clamp (12).
15. Guide thread into the thread guide of the needle bar (15).
16. Run the thread through the needle eye (16) from left to right.

5.4 Threading and winding on hook thread

WARNING

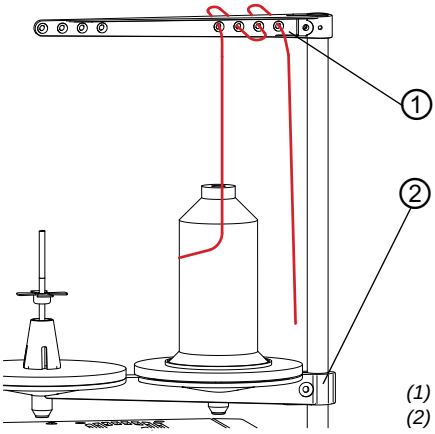
Risk of injury from needle and moving parts.
Turn off the machine before threading the thread.

ATTENTION

Incorrectly threading the thread can result in automatic unraveling of the thread from the bobbin due to the thread's own weight.
Make sure the thread is properly threaded.

Threading hook thread

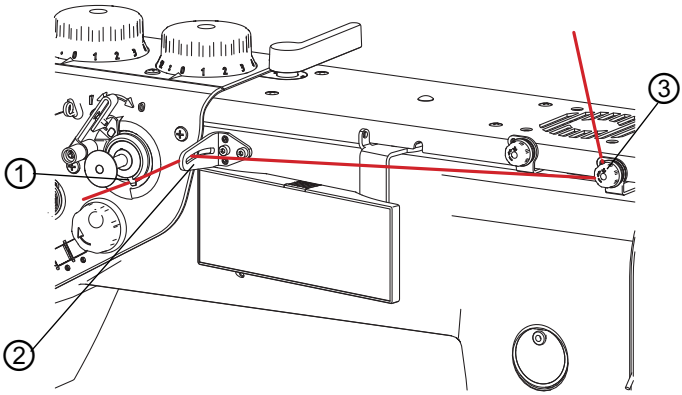
Fig. 10: Threading thread in reel holder



(1) – Thread guide
(2) – Bobbin

1. Slide reel on bobbin (2)
2. **Important:** Run thread through thread guide (1) exactly as shown in fig. 10.

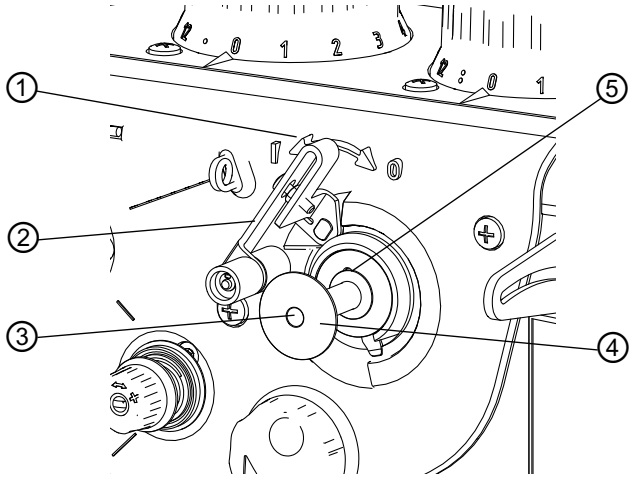
Fig. 11: Threading hook thread



(1) – Cutter
(2) – Thread guide
(3) – Thread tensioner

3. Guide thread through tensioner (3).
4. Guide thread through thread guide (2).
5. 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.

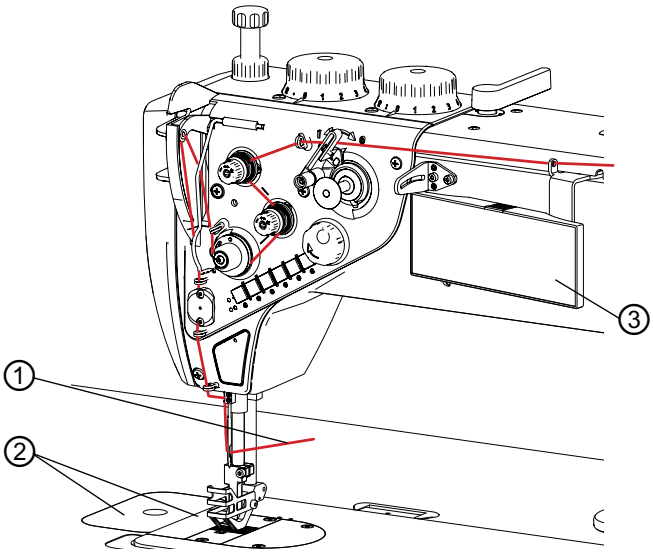
Once the bobbin winder starts, the thread will begin winding automatically – the bobbin winder is driven by a separate motor. You can still sew while the hook thread is winding.

5.5 Replacing hook thread bobbin

WARNING

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

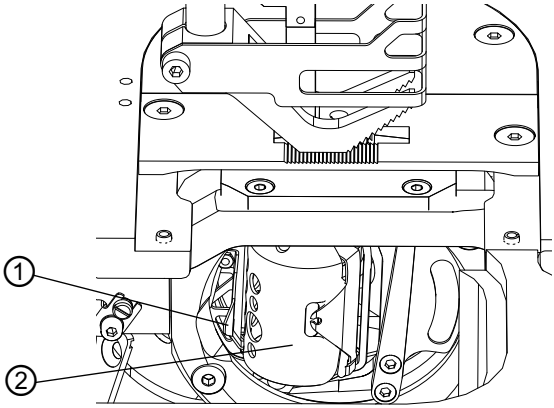
Fig. 13: Replacing hook thread bobbin



(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. Pull the needle thread further through the needle eyelet by hand until the thread end (1) is approx. 200 mm long.
3. Remove the cover (2) on the opening for changing the hook thread bobbin.

Fig. 14: Replacing hook thread bobbin – part 1

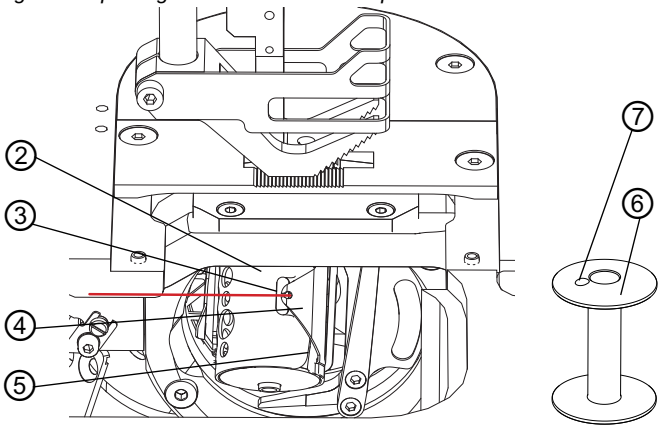


(1) – Flexible snap
(2) – Bobbin housing

4. Press the flexible snap (1) while holding the bobbin housing (2) in place with your other hand.

   ↳ The bobbin housing (2) tilts and the internal spring pushes the bobbin housing (2) downward and off.

Fig. 15: Replacing hook thread bobbin – part 2



(2) – Bobbin housing
(3) – Pressure spring slot
(4) – Hook thread pressure spring
(5) – Slot in bobbin housing
(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. Thread the end of the hook thread through the slot (5) under the pressure spring (4) until its slot (3) is reached – hold the hook thread bobbin in place with your finger while doing this.
9. Pull on the hook thread so a 100 to 150 mm section comes out of the slot (3).
10. Place the opening cover for changing the hook back to its original position.
11. Hold the end of the needle thread with one hand and turn the handwheel with the other until the needle disappears, comes back out from the needle plate and the thread lever is at top dead center.
12. Pull on the end of the needle thread and pull out the end of the hook thread above the lever.
13. Cut both ends to approx. 70 mm by hand.
14. Press the **F** key again.

↳ The machine is ready for use again.

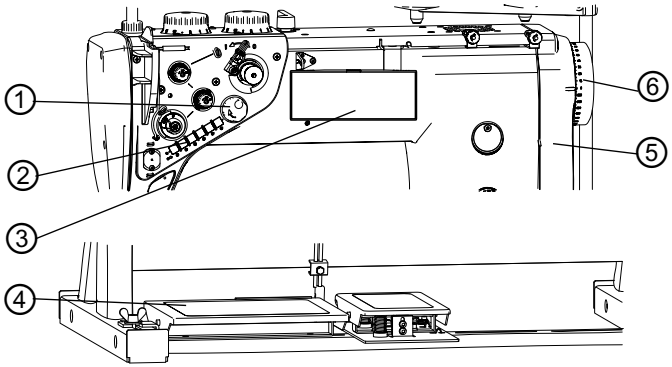
5.6 Needle positioning

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 moving needle upward/downward
(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.
Turn the machine off before manually positioning the needle so the machine cannot accidentally start while positioning.

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. Press the power switch to turn the sewing machine on.
   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 down.
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).

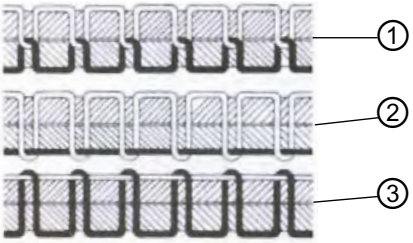
1. Press down on electronic handwheel (1).
2. Only let go once the tip of the needle is at the desired height.
3. Confirm the new setting by pressing down on the wheel again.

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) – Equal tension of needle and hook threads
(2) – Hook thread tension greater than needle thread tension
(3) – Needle thread tension greater than hook thread tension

Thread tension for decorative stitching

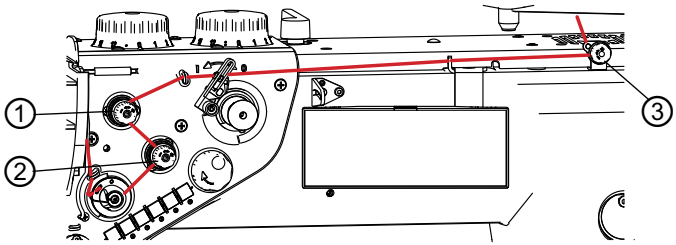
When using a decorative stitch, a thicker thread is normally used with a relatively thinner material. Then the thread interlace is not buried in the material.
In this instance, the tension is set so the threads interlace on the back side – see (2).

5.7.1 Setting needle thread tension

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

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

Fig. 17: Setting needle thread tension



(1) – Auxiliary tensioner
(2) – Primary tensioner
(3) – Pre-tensioner

General

To increase tension:

1. Turn regulator clockwise.

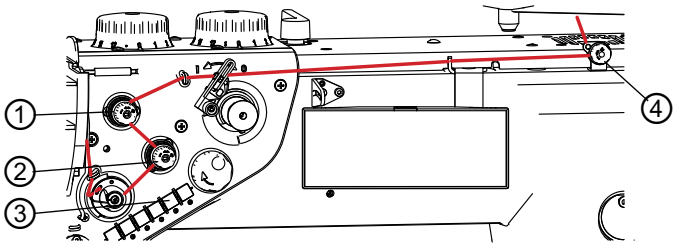
To reduce tension:

1. Turn regulator counterclockwise.

Setting needle thread tension on Classic machines

For 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) – Auxiliary tensioner
(2) – Primary tensioner
(3) – Key on keypad for switching thread tension
(4) – Pre-tensioner

1. Set the tension on the auxiliary 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:
Gradually reduce the tension on the auxiliary tensioner until the desired length is reached.
If the thread is longer:
Gradually increase the tension on the auxiliary 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) will release pneumatically.

3. Sew on material requiring a low needle thread tension and regulate the tension on the primary tensioner (2) until the proper thread interlacing is reached.
4. Press key (3) to switch thread tension.

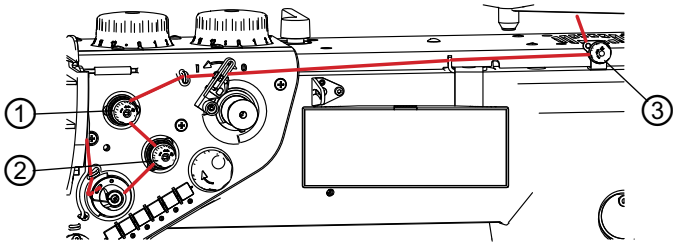
↳ The key illuminates and the auxiliary tensioner (1) engages.

5. Sew on material requiring a high needle thread tension and regulate the tension on the auxiliary tensioner (1) until the proper thread interlacing is reached.

Setting 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: Setting needle thread tension on Eco-machines



(1) – Auxiliary tensioner
(2) – Primary tensioner
(3) – Pre-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.

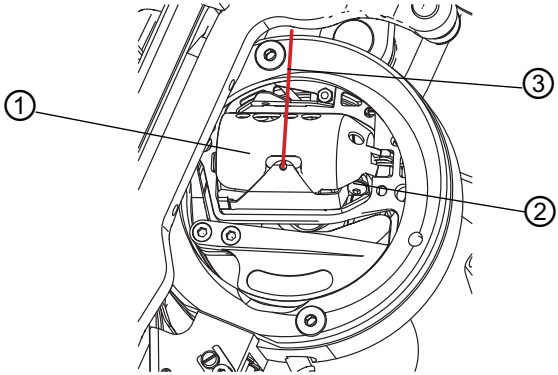
ATTENTION

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: Setting hook thread tension



(1) – Bobbin housing
(2) – Adjustment screw
(3) – Hook thread

1. Swing upper machine section out.
2. Turn the handwheel until the bobbin housing (1) is in the position shown above.

Increasing tension:

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

Reducing tension:

1. Turn the adjustment screw (2) 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

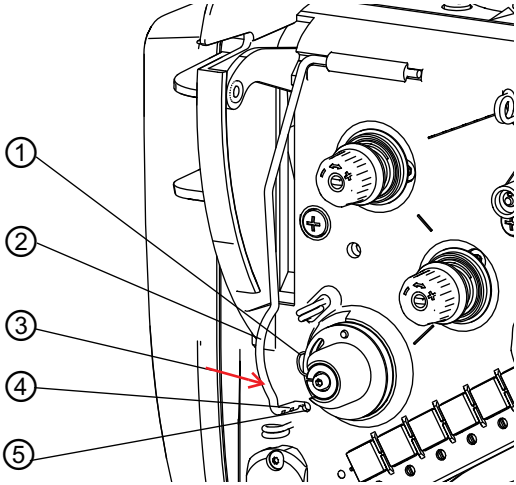
Risk to injury to finger from moving thread lever.
Turn off the machine before setting the thread limiter.

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: Setting thread limiter



(1) – Balancing spring
(2) – Thread limiter
(3) – Direction to press when unlocking limiter
(4) – Limiter slots
(5) – Limiter opening

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.

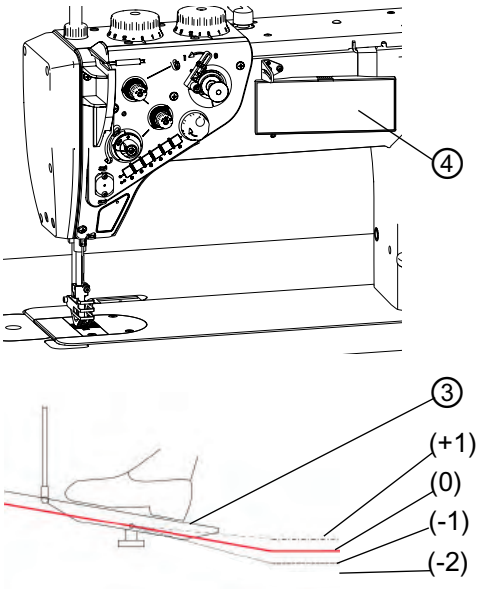
   - **For thin materials:**
     Move the thread limiter (2) out of the machine.
   - **For thick materials:**
     Move the thread limiter (2) into the machine.

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

5.9 Raising 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 with the pedal, position the needle in the upper or lower idle position using the electronic control panel.

Standard operating mode: presser foot is always lowered.

1. Turn off keys (13) and (14) on the OP1000 control panel (4), 📖 *5.16 Operating control unit*, p. 63.

↳ Their signal diodes turn off – see 📖 *Operating manual* for eco/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 cutting the thread before the seam is finished by unintentionally pressing the pedal to 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.

↳ Its signal diodes turns on – see 📖 *Operating manual* for eco/classic DAC control panel. Presser foot rises.

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

↳ Presser foot lowers and machine engages.

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 engages.

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 keys on the OP1000 control panel (4) for presser foot position.

↳ Their signal diodes turn on – see 🕮 *Operating manual* for eco/classic DAC control panel. Presser foot rises.

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

↳ Presser foot lowers and machine engages.

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 engages.

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 eco/classic DAC control panel.

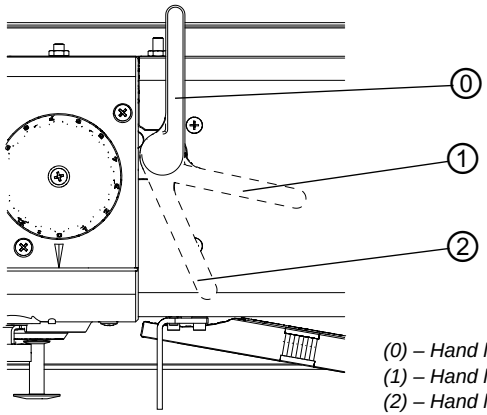
5.10 Raising presser foot with hand lever

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 the machine or to remove the material from under the presser foot in an emergency once 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, hand lever lock disengages and the internal spring moves the hand lever back to position (0).

5.11 Setting presser foot pressure

The regulator on the top left of the machine arm determines the pressure the presser foot applies to the material. The pressure can be adjusted continuously by turning the regulator.

WARNING

Risk to injury to eyes.
Loosening the regulator too much can cause it to unscrew and be shot off by the spring underneath.
Never unscrew the regulator more than H = 55 mm, see fig. 24.

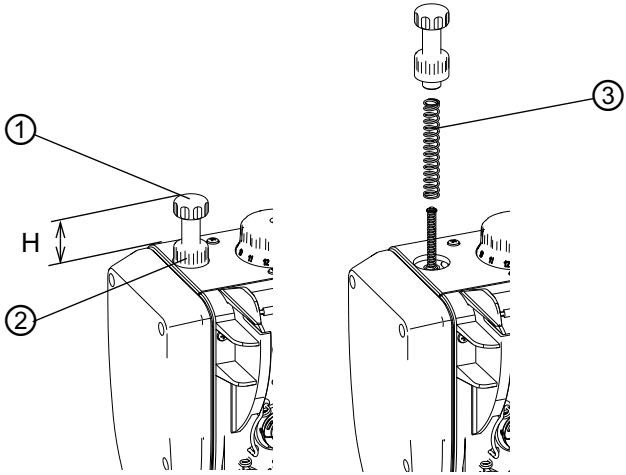
Correct setting

Set the pressure of the presser foot as low as possible, but 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 noisy.
- 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 wheel
(2) – Counternut
(3) – Auxiliary spring

To increase presser foot pressure:

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

WARNING

Risk to injury to eyes.
Loosening the regulator 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. Tighten regulator (1) and set presser foot pressure.
7. Tighten counternut (2).

Reducing pressure:

1. Loosen counternut (2).
2. Turn regulator (1) to the left until the desired pressure is reached.
3. Tighten counternut (2).

5.12 Setting presser foot stroke

The presser foot stroke has 12 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 regulator. Specifically, the machine does not feed the material properly in places where its thickness changes suddenly.

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: Maximum machine speed*, p. 99.

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 material thickness according to the table, 📖 *Table: Maximum presser foot stroke*, p. 99.

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 two adjusting wheels for setting presser foot stroke.

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

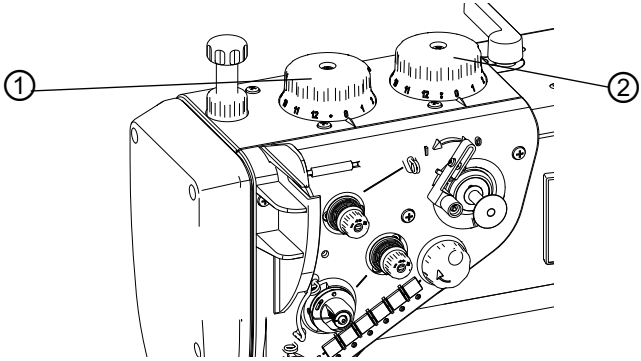
Normal stroke is designed for high sewing speed. Increased stroke is designed for sewing over thicker areas in the material. Eco machines only have the left adjusting wheel.

Important: The increased presser foot stroke should not be lower than the normal presser foot stradjusting wheelsoke. 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 normal presser foot stroke
(2) – Adjusting wheel for increased presser foot stroke

To increase presser foot stroke:

1. Turn adjusting wheel clockwise.

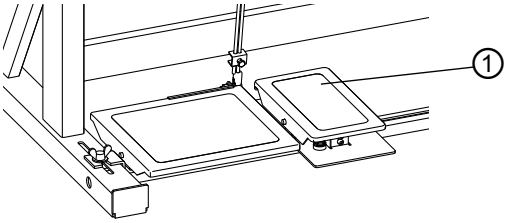
To reduce presser foot stroke:

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, it can be used to quickly switch 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) back with heel.

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

Deactivating increased presser foot stroke

- Release foot switch (1).

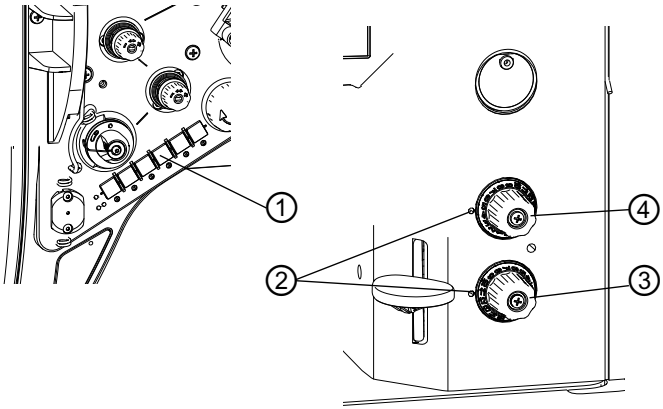
5.13 Stitch length

5.13.1 Setting stitch length

Depending on the equipment, the machine has one or two adjusting wheels for stitch length.

Stitch length can be set to anywhere between 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 longer stitches

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:

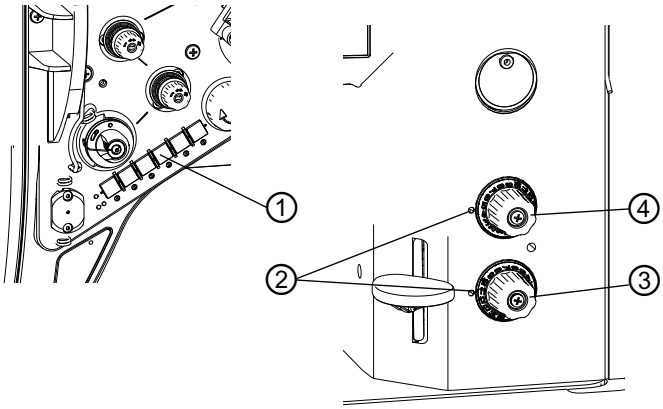
1. Turn adjusting wheel counterclockwise.

To increase stitch length:

1. Turn adjusting wheel clockwise.

5.13.2 Sewing with two stitch lengths

Fig. 28: Sewing with two stitch lengths



(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 longer stitches

On machines with adjusting wheels for two stitch lengths, the top adjusting wheel (4) is for longer 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 shorter stitch length on the top adjusting wheel (4) than 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 off or on.

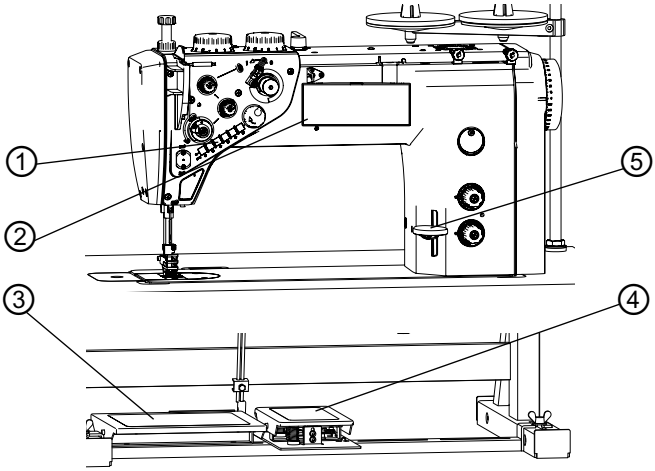
1. Press the key (1).

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

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 any instance, seams bar tacking can be activated while the machine is on or off.

Fig. 29: Operating seam bar tacker



(1) – Key on keypad for seam bar tacking
(2) – OP1000 control panel
(3) – Operating pedal
(4) – Foot switch
(5) – Stitch adjustment lever

Manual seam bar tacking:

1. Move stitch regulator (5) to the bottom.

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

Partially depressing the stitch regulator (5) shortens the stitch length in proportion to the distance of the regulator 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 is selected using 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 the 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 (4) 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. Read the 🕮 *Operating manual* for the eco/classic DAC control unit.

1. Enter seam bar tacking at seam start and seam end on the control panel (2).
2. Press operating pedal (3) down with toes.

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

3. Finish the seam, then press the operating pedal (3) completely back 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 eco/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.

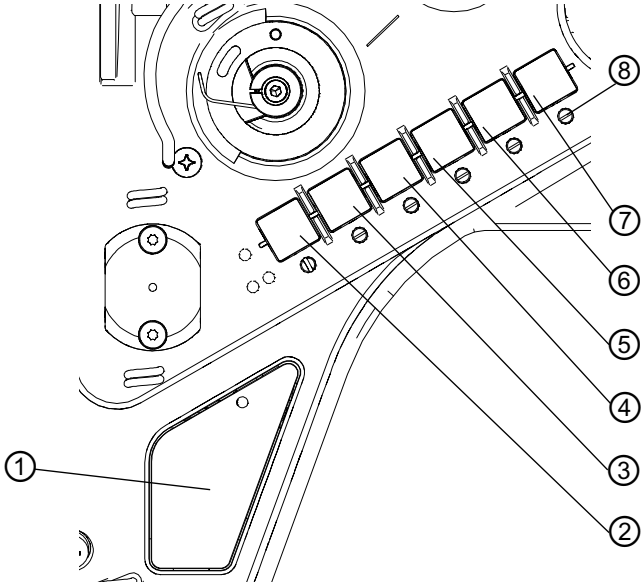
The seam bar tacking style can be selected using the electronic control panel parameters – see 🕮 *Operating manual* for eco/classic DAC control unit.

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) – Auxiliary thread tensioner
(7) – Auxiliary function (optional)
(8) – Screw for activating auxiliary switch (1)

Activating a key function

1. Press the key.

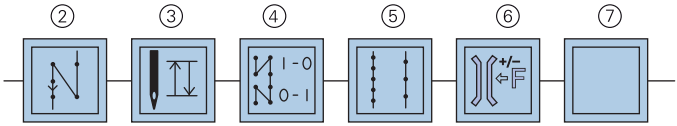
↳ The function is activated. The key illuminates.

Deactivating a key function

1. Press the key again.

↳ The function is deactivated. The key turns off.

Fig. 31: Function keys

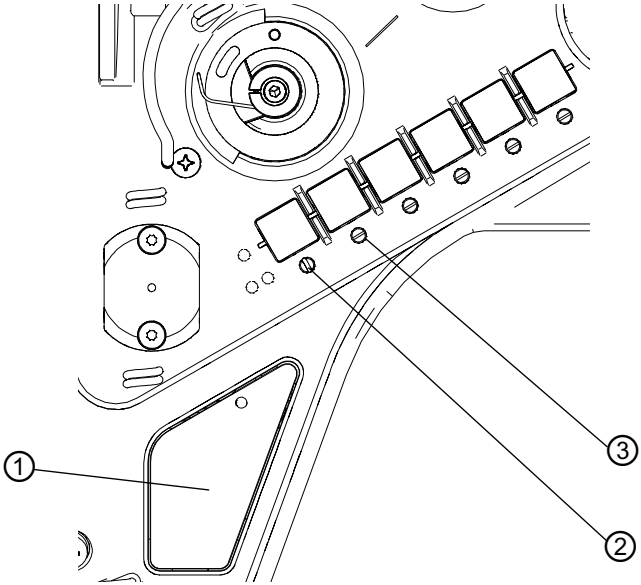


Key	Function
Reverse sewing key (2):	When this key (2) is selected, the machine sews in reverse.
Needle positioning key (3):	When this key (3) is selected, the needle moves to a specific position. This position is determined individually via the parameter settings. The machine comes configured so that selecting the key (3) will bring the needle up. There are two needle positions that can be configured on the control unit for stopping during a stitch and after a stitch, 📖 *Needle positioning*, p. 32. The key (3) allows the operator to manually switch from one position to the other.
Start and end bar tack key (4)	This key (4) cancels the general setting for sewing start and end bar tacks. 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 general settings for sewing start and end bar tacks, read the 📖 *Operating manual* for the eco/classic DAC control unit.
Key for the stitch length (5)	If the key (5) is selected, the machine sews using the larger stitch length selected at the upper adjusting wheel for the stitch length.
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 to be able to 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 transferred 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.

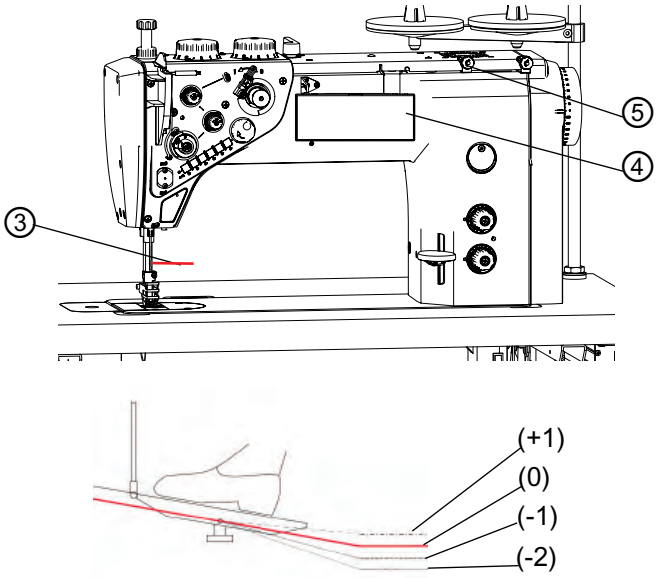
To transfer a key function:

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

5.15 Thread cutting and securing against unraveling

Classic machines have a cutter underneath the needle plate for cutting both threads when the seam is finished. Thread ends no longer have to be held when starting a new seam. Sewing conditions must be adjusted accordingly in order to do this.

Fig. 33: Cutting thread



(3) – Length of thread end in needle (4) – OP1000 control panel
(-2) – Operating pedal in position (-2) (5) – Pre-tensioner

Starting the cut:

1. Press the pedal completely back 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.

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 control unit

The machine is operated with the eco/classic DAC control unit. Operating the control unit is described in its own 🕮 *Operating manual*.

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

5.16.1 Control panel

The eco/classic DAC control unit is equipped with the OP 1000 control panel.

Fig. 34: Control unit panel

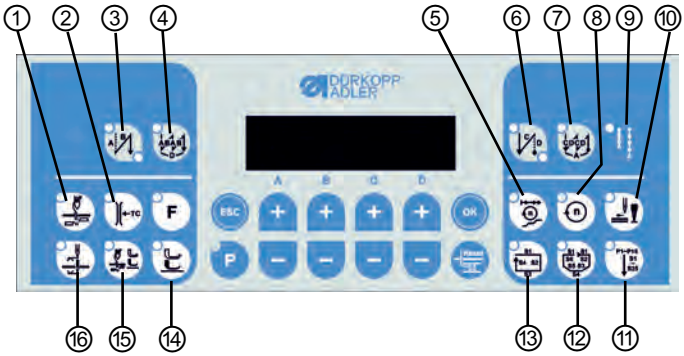


Table overview below.

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	LEDs 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	LEDs 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 thread is cut	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 value		
-	Decrease value		
OK	Confirmation		
Reset	Bobbin supply		

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. Advanced maintenance work should only be carried out by qualified technicians. This advanced maintenance work is described in the 🕮 *Service manual*.

6.1 Cleaning the machine

Lint and thread remnants should be removed after every eight hours of operation using a compressed-air pistol or a brush. When sewing very fluffy material, the machine should be cleaned more frequently.

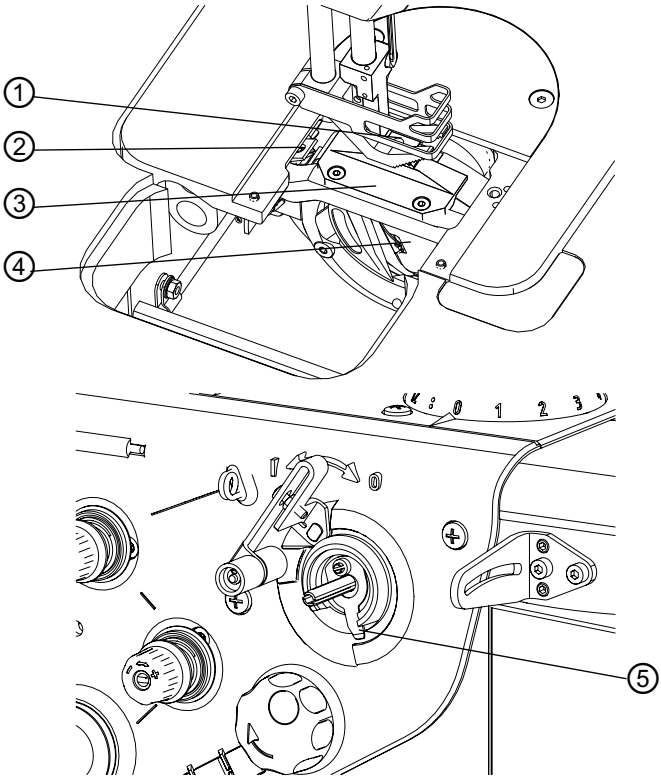
WARNING

Risk of injury from flying particles.
Turn off the power switch before cleaning.
Flying particles can get in the eyes, causing 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 as described in the manual.

Fig. 35: Areas requiring special cleaning



(1) – Area around needle
(2) – Thread cutter
(3) – Feed dogs
(4) – hook
(5) – Winder cutter

Areas particularly susceptible to soiling:

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

Cleaning steps:

1. Shut off power by turning off power switch.
2. Unscrew needle plate.
3. Remove any lint and thread remnants using a compressed-air pistol or a brush.

ATTENTIO

Damage to paintwork may occur when using 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

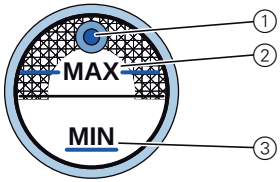
WARNING

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 result in damages to 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. 36: Oil level indicator



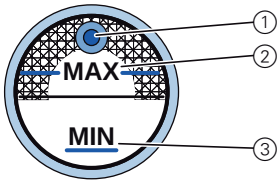
(1) – Filling point
(2) – Maximum level mark
(3) – Minimum level mark

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. 37: Oil level indicator



(1) – Filling point
(2) – Maximum level mark
(3) – Minimum level mark

Refilling oil

Pour in oil through the filling point (1) as required:

1. Press the power switch to turn off the sewing machine.
2. Add oil up to but not past 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:
If the oil level drops below the minimum level mark (3) on a CLASSIC machine, the oil level indicator will show red.

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

↳ The red light will turn off.

Required oil:

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

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

ATTENTION

Machine damage possible due to incorrect oil.
Incorrect oil types can result in damage to the machine.
Only use oil specified in the operating manual.

ENVIRONMENTAL PROTECTION

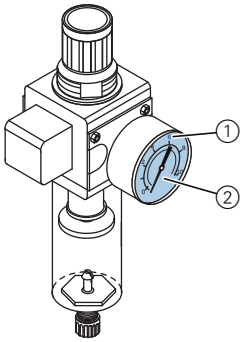
Risk of environmental damage from oil.
Oil is a pollutant and must not enter the sewage system or the soil.
Carefully collect waste oil and dispose of the waste oil and oil-contaminated machine parts in the legally prescribed manner.

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 reset by qualified technicians if it deviates from the standard level.

Fig. 38: Pressure indicator on maintenance unit



(1) – Standard level: 6 bar
(2) – Pressure indicator

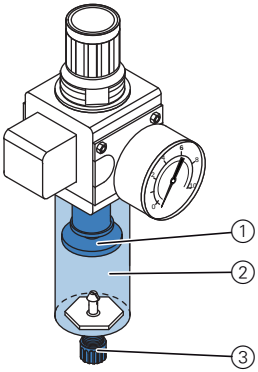
Check pressure:

1. Check the pressure every day on the pressure indicator (2). Standard level: 6 bar.

Important: The pressure cannot deviate from the standard pressure by more than 1 bar.

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

Fig. 39: 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 cannot 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. Press the power switch to turn off the sewing machine.
2. Place the collection tray under the drain screw (3).
3. Remove the compressed air hose from the compressed air supply.
4. Unscrew the drain screw (3) completely.
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
Phone +49 (0) 180 5 383 756
Fax +49 (0) 521 925 2594
E-mail: service@duerkopp-adler.com
Internet: www.duerkopp-adler.com

7 Setup

WARNING

Risk of injury.
The machine should 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.

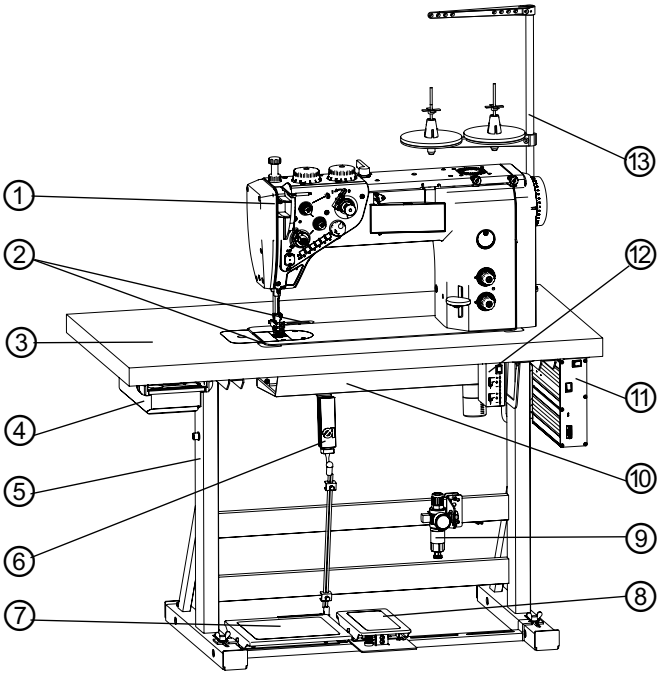
Standard equipment:

- Upper machine section (1)
- Accessories – tool (not pictured)
- Rubber buffers (2)
- Oil pan (10)
- Sewing lamp transformer (classic) (12)
- DAC control unit (11)
- Thread reel holders (13)
- Connectors (not pictured)

Optional equipment:

- Table plate (3)
- Drawer (4)
- Frame (5)
- Pedal (7)
- Foot switch (8)
- Compressed air regulator unit (9)
- Sewing lamp transformer (eco) (12)

Fig. 40: Scope of delivery



(1) – Upper machine section
(2) – Rubber buffers
(3) – Table plate
(4) – Drawer
(5) – Frame
(6) – Setpoint device
(7) – Pedal
(8) – Foot switch
(9) – Compressed air regulator unit
(10) – Oil pan
(11) – DAC control unit
(12) – Sewing lamp transformer
(13) – Reel holders

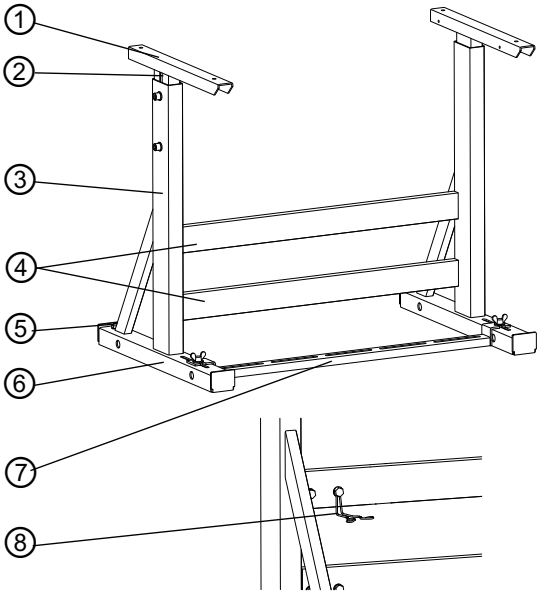
7.2 Removing transport securing devices

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 frame components

Fig. 41: Assembling frame components



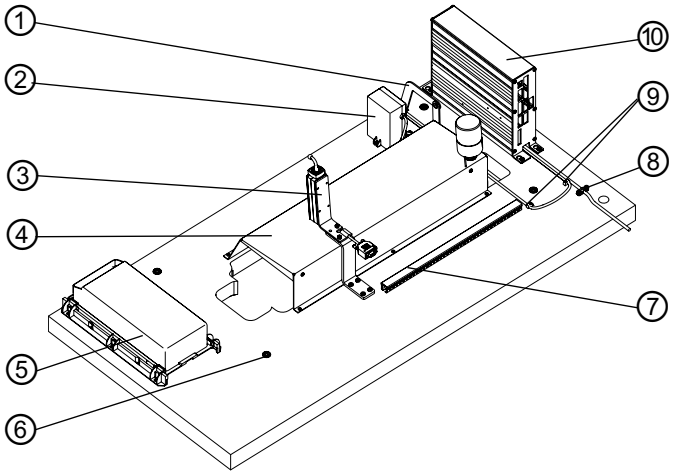
(1) – Inner bar headpiece
(2) – Inner bar
(3) – Frame bar
(4) – Cross bars
(5) – Adjustment screw
(6) – Frame foot strut
(7) – Cross strut
(8) – Oil can holder

1. Screw the cross bars (4) to the frame bars (3).
2. Screw the oil can holder (8) to the upper cross bar (4).
3. Screw the cross strut (7) to the foot struts (6).
4. Insert the inner bars (2) so that the longer ends of the headpieces (1) are over the longer ends of the foot struts (6).
5. Screw the inner bars (2) down so that both headpieces (1) are at the same height.
6. **Important:** Turn the adjustment screw (5) so the frame is standing evenly on the floor.

7.4 Assembling components on underside of table plate

Table plate is optional.
If you wish to build your own table plate, the drawing can be found in the Appendix, *Drawings for creating table plate*, p. 95.

Fig. 42: Assembling components on underside of table plate



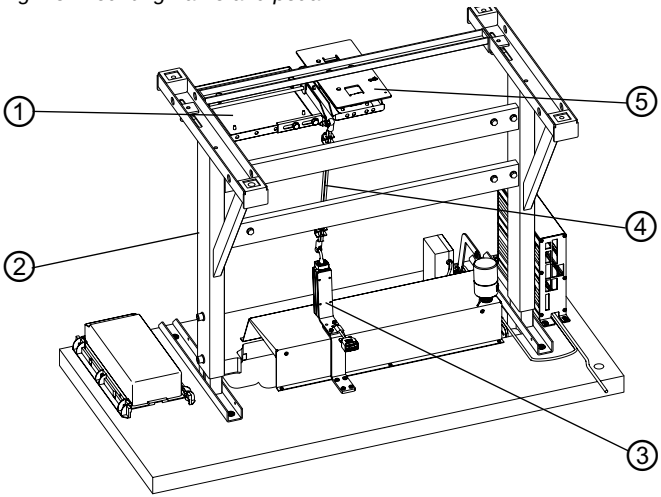
(1) – Hinge connecting rod
(2) – Sewing lamp transformer
(3) – Setpoint device
(4) – Oil pan
(5) – Drawer
(6) – Frame mounting holes
(7) – Cable duct
(8) – Screw-mounted power cable mounting clamp
(9) – Nailed clips
(10) – DAC control unit

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*, p. 97.
3. Fasten the power cable mounting clamp (8) screws.
4. Nail down the cable clips (9).
5. Predrill the holes in the plate for mounting the frame (6) according to the drawing, *Component layout on underside of table plate*, p. 97.

If the machine is equipped with a sewing lamp, first connect the sewing lamp transformer to the control unit, 📖 *Connecting sewing lamp*, p. 85. Then screw the control unit to the table plate (the connection terminal is only accessible if the control unit is removed).

7.5 Assembling frame on table plate and assembling pedal

Fig. 43: Mounting frame and pedal



(1) – Pedal
(2) – Frame
(3) – Setpoint device
(4) – Pedal connecting rod
(5) – Foot switch

1. Screw the frame (2) down in the predrilled holes.
2. Screw the pedal (1) to the frame cross strut as close to the left frame bar as possible.
3. Connect the lugs on the ends of the connecting rod (4) to the ball pins on the sensor (3) and pedal (1).
4. Mount foot switch (5).

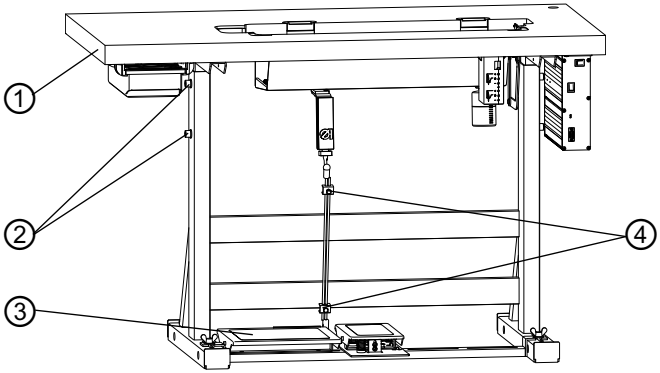
7.6 Setting frame height and pedal position

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.
Mount the pedal so the middle is no more than 15 mm to either side of being directly in line with the needle.

Frame can be set to any height between 770 to 910 mm.

Fig. 44: 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.

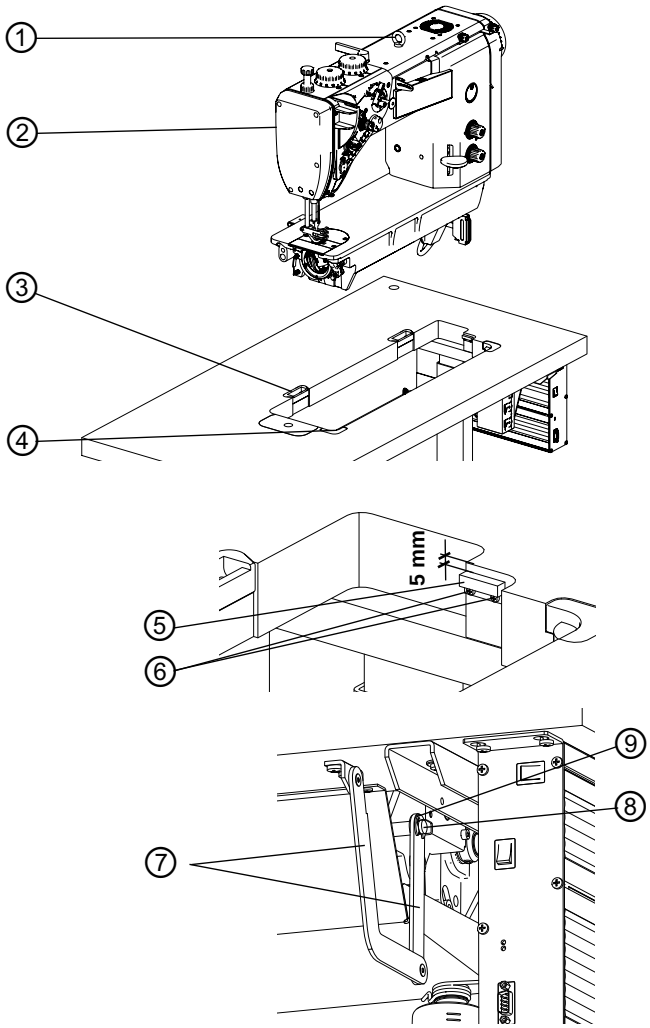
1. Loosen the adjustment screws (2) on the frame bars.
2. Set the table plate (1) to the desired height.

Important: Use a tape measure to make sure the table plate is level.

3. Tighten the adjustment screws (2) on the frame bars.
4. Set pedal (3) so that the middle is directly in line with the needle, 📖 *Assembling frame on table plate and assembling pedal*, p. 79.
5. Use the pedal connecting rod (4) couplings to set the angle as desired by the machine operator.

7.7 Mounting upper machine section

Fig. 45: Mounting upper machine section on frame – part 1



(1) – Suspension screw with eyelet
(2) – Upper machine section
(3) – Rubber base for mounting bracket
(4) – Rubber bracket inlays
(5) – Permanent magnet for tilt sensor
(6) – Permanent magnet screws
(7) – Folding mechanism connecting rod
(8) – Bolts
(9) – Retaining ring

CAUTION

Risk of crushing
The upper machine section is very heavy.
Make sure your hand does not get crushed while mounting the upper machine section.

1. Fasten the rubber mounting bracket base (3) using screws.
2. Insert rubber bracket inlays (4).
3. Use screws (6) to attach the permanent tilt sensor magnet of the upper machine section (5).
4. 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.

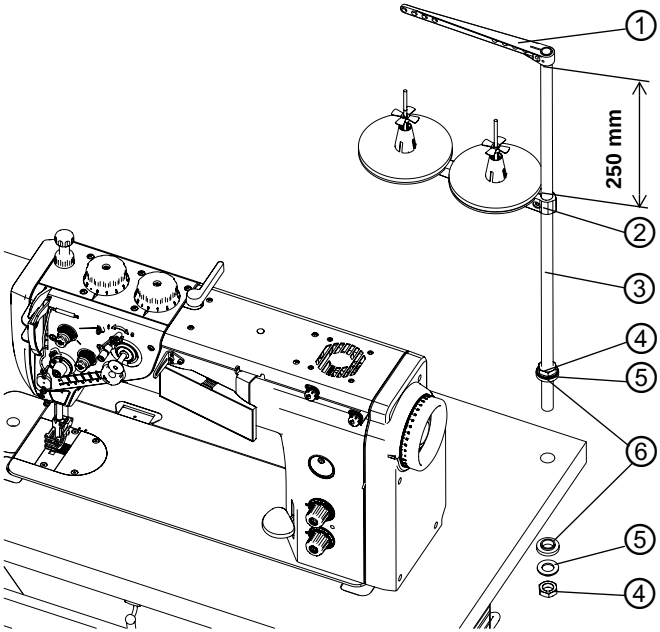
ATTENTION

Risk of damage to upper machine section.
Once the upper machine section has been mounted onto the machine, it cannot be allowed to tilt unless the connecting rod is installed as described in Step 6. The upper machine section could fall off the mounting bracket.

5. Use a lifting device to mount the upper machine section (2) into the cutout in the table plate so that it sits on the rubber bases and inlays.
6. Remove the retaining clip (9) from the bolt (8), set the connecting rod (7) on the bolt and secure it with the retaining clip (9).

7.8 Assembling thread reel holder

Fig. 46: Assembling thread reel holder



(1) – Thread guide
(2) – Bobbin
(3) – Tube
(4) – Nut
(5) – Washer
(6) – Rubber inlay

1. Assemble the tube (3) with bobbin (2) and thread guide (1) as shown in image.
2. Screw the thread reel holder to the table plate using the nuts (4), washers (5) and rubber inlays (6) as shown in the image.
3. Set up the bobbin and thread guide along the horizontal axis of the machine as shown in the image.

7.9 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.

7.9.1 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.

7.9.2 Connecting sewing lamp

Connecting transformer to 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.

7.9.3 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:

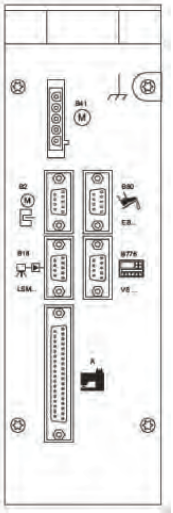
- Insert the plug of each connecting cable into the sockets on the back of the control unit.

  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.
It can also be found in the "Downloads" section of *www.duerkopp-adler.com*.

Fig. 47: CLASSIC DAC connection sockets



7.10 Checking pneumatic system

7.10.1 Assembling maintenance unit

The pneumatic connection package is available for this, *Additional equipment*, p. 9. It includes:

- System connection hose
  (length: 5 m; diameter: 9 mm)
- Hose connectors and hose clamps
- Coupling socket and coupling plug

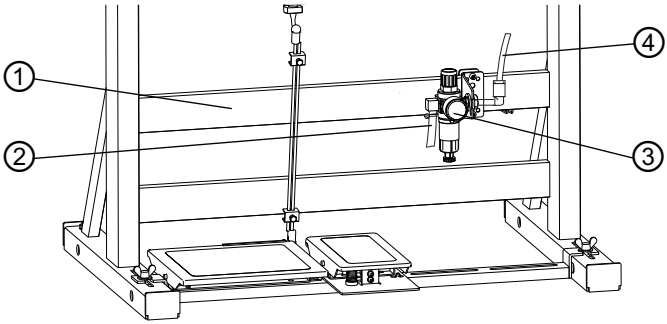
Correct setting

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. 48: Assembling pneumatic system maintenance unit



(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. Connect the machine hose (4) coming out of the upper section to the maintenance unit (3) at top right.
3. Connect the system connection tube (2) to the pneumatic system.

7.10.2 Setting operating pressure

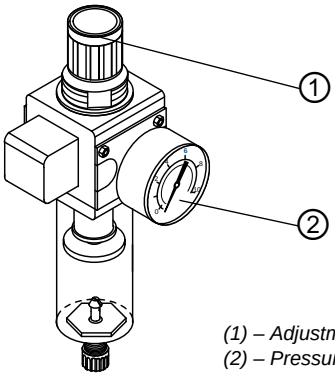
Correct setting

The operating pressure in 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. 49: Setting operating pressure



(1) – Adjustment knob
(2) – Pressure indicator

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.

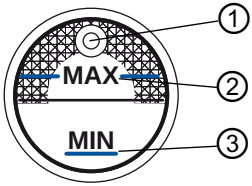
7.11 Lubrication

WARNING

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

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

Fig. 50: Oil level indicator



(1) – Filling point
(2) – Maximum level mark
(3) – Minimum level mark

1. Pour oil through the filling point (1) at most up to 2 mm below the maximum level mark (2).

ATTENTION

Machine damage possible due to incorrect oil level.
Too little or too much oil can result in damages to the machine.
When first adding oil, fill up to no more than 2 mm below the maximum level mark.

Required oil:

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

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

ATTENTION

Machine damage possible due to incorrect oil.
Incorrect oil types can result in 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.
Collect waste oil carefully and dispose of it and oily machine parts in accordance with legal regulations.

7.12 Sewing test

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

To do this, read the appropriate chapter in this *operating manual*. If the results of the sewing test do not meet requirements, read the appropriate chapter in the 🕮 *Service manual* on how to make changes to the machine settings.

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 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 selected quick function from keypad to auxiliary switch.
12. Start sewing test at low speed.
13. Gradually increase sewing speed until working speed is reached.

8 Disposal

Do not dispose of the machine in common 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.

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

Always observe legal regulations for disposal.

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

Observe the applicable national regulations for disposal.

9 Appendix

9.1 Drawings for creating table plate

Fig. 51: Drawing of table plate, part 1

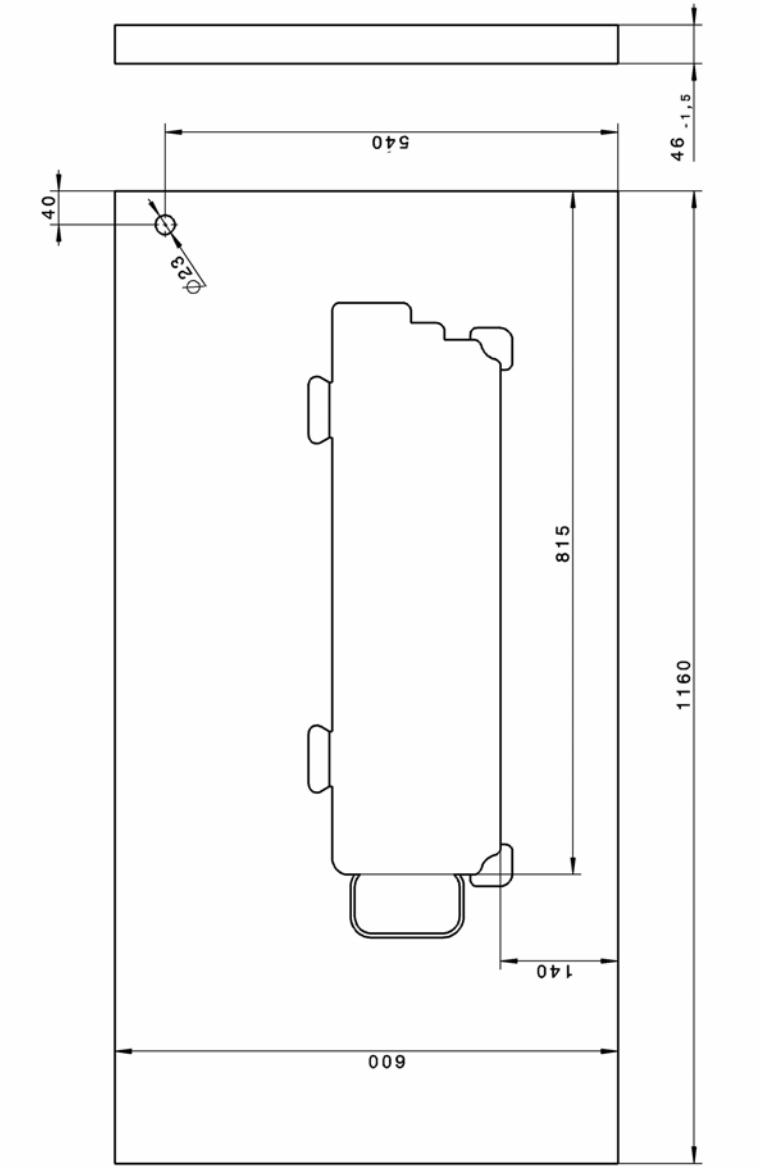
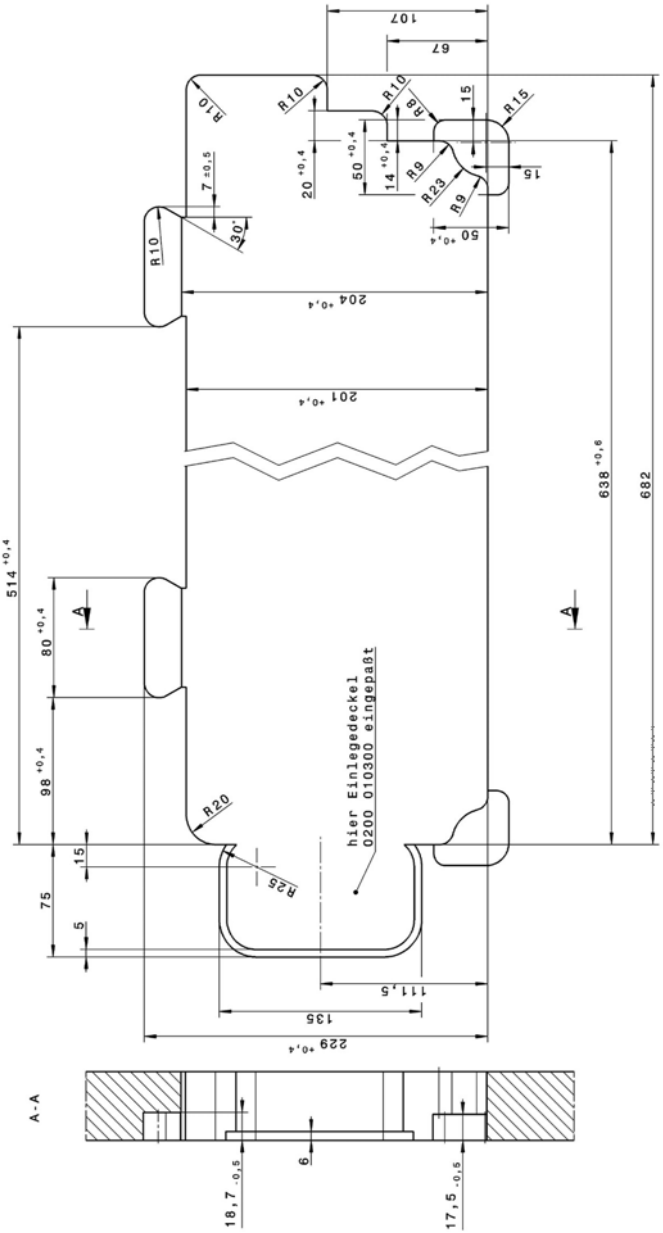
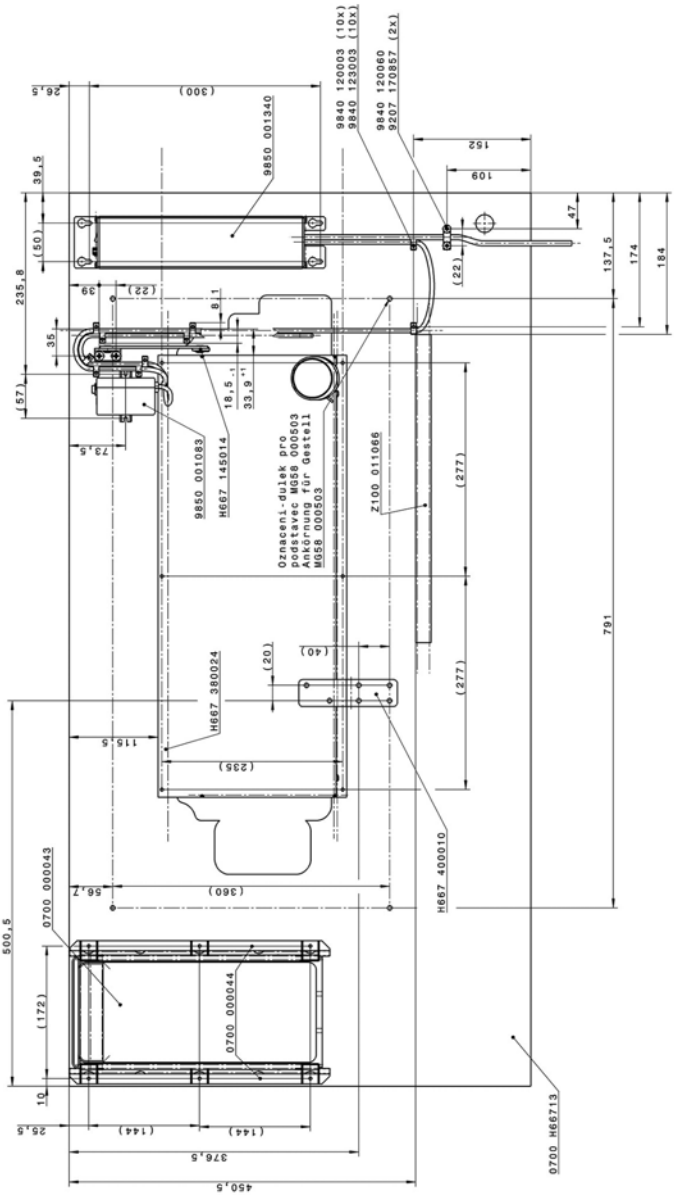


Fig. 52: Drawing of table plate, part 2



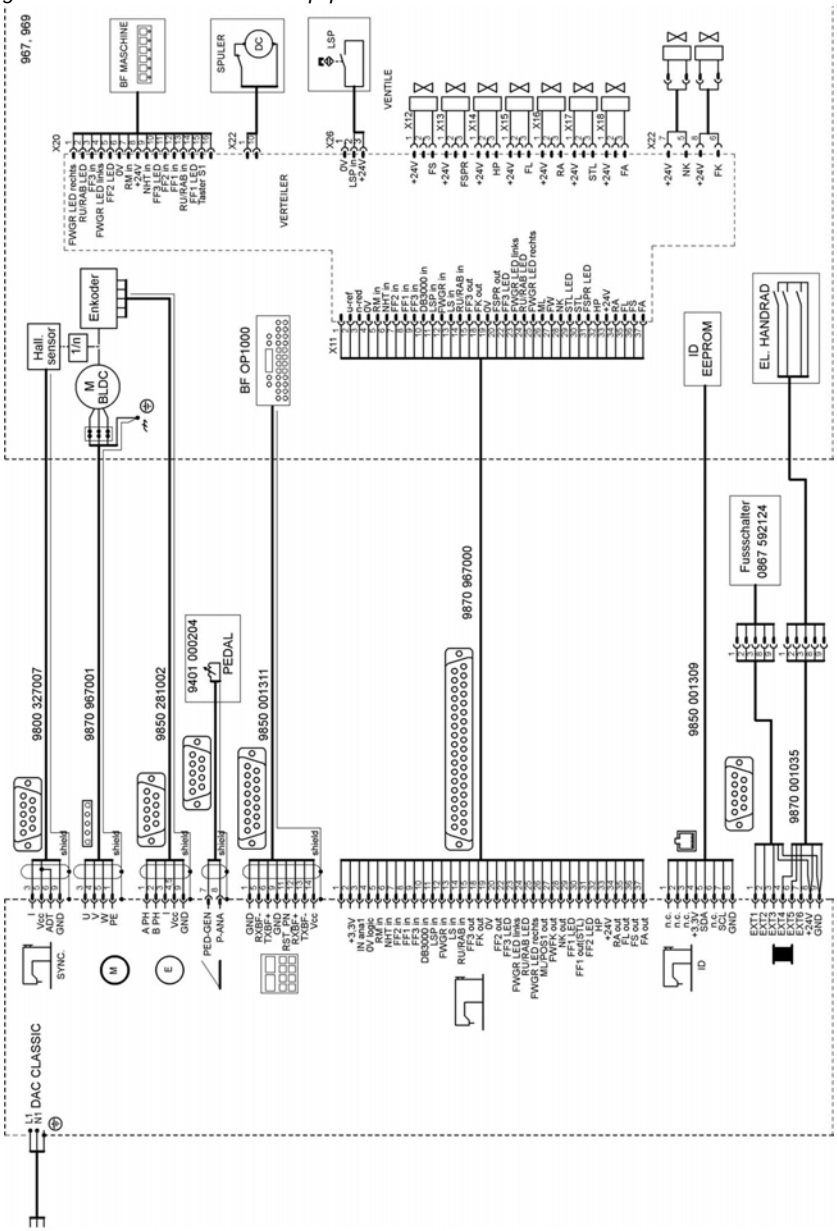
9.2 Component layout on underside of table plate

Fig. 53: Components on underside of table plate



9.3 Electric diagram

Fig. 54: Connection of electrical equipment



9.4 Table: Maximum machine speed

Presser foot stroke [mm]	2 - 7	7 - 9	9 - 11	11 - 12
Maximum machine speed [min^{-1}]	1,250	1,100	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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