DÜRKOPP ADLER

878-M PREMIUM

Operating Instructions

1 About these instructions

1.1 Scope of the instructions

These instructions describe the intended use and the setup of the special sewing machine 878-M PREMIUM. It applies to all sub-models listed in chapter 🕮 *3.5 Technical data*, S. 16.

1.2 Applicable documentation

The device contains built-in components from other manufacturers, e.g. drive motors. 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 instructions.

1.3 Damage during transport

Dürkopp Adler cannot be held liable for any damage during transport. 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 complaints to Dürkopp Adler immediately after receiving the product.

1.4 Limitation of liability

All information in these operating instructions was compiled with consideration to the state of the art, and applicable standards and regulations.

The manufacturer accepts no liability for any damage due to:

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

1.5 Symbols used

Proper setting

Indicates proper setting.

Malfunctions

Specifies the faults that can occur due to an incorrect setting.

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

Steps to be performed for service, maintenance, and installation

Steps to be performed via the software control panel

The individual steps are numbered:

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

etc. The sequence of the steps must always be followed.

Result of performing an operation

Change to the machine or on the display

Important

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

Information

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

Sequence

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

References

Reference to another section in these instructions.

1.6 Figures

Depending on the submodel, the appearance of the machine varies in the following items:
Length of the machine arm, number of adjusting wheels, position of the stitch adjustment lever, presence of the keypad, etc.
When this makes no difference to the handling steps, the figures show only *one* machine version as an example.

2 Safety

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

2.1 Basic safety instructions

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

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

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

For the following work, the machine must be disconnected from the power supply using the main switch or by disconnecting the power plug:

- Replacing the needle or other sewing tools
- Leaving the workplace
- Performing maintenance work and repairs
- Threading (can be used the lock button)

Missing or faulty spare parts could impair safety and damage the machine. Make sure you only use original replacement parts from the manufacturer.

Transport Use a sturdy lifting carriage or stacker for transporting the machine. Raise the machine max. 20 mm and secure it against slipping off.

Setup The power cable must have a plug authorized for the country in which the machine is being used. The power plug may only be connected to the power cable by a qualified specialist.

Obligations of the operator

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

All warnings and safety signs on the machine must always be in legible condition and may not be removed. Missing or damaged labels should be replaced immediately.

Requirements to be met by the personnel

The machine may only be set up by qualified technicians.

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

Work on electrical equipment may only be carried out by qualified specialists.

Only authorized persons may work on the machine. Every person who works on the machine must first have understood these instructions.

Operation

Inspect the machine while in use for any externally visible 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.

Safety equipment

Safety equipment should not be removed or deactivated. If this cannot be avoided for a repair operation, the safety equipment must be refitted and put back into service immediately afterwards.

2.2 Signal words and symbols used in warnings

Warnings in the text are distinguished by color bars. The color scheme is oriented towards the severity of the danger. Signal words indicate the severity of the danger:

Signal words Signal words and the hazard that they describe:

Signal word	Hazard
DANGER	Will result in serious injury or death.
WARNING	Can result in serious injury or death.
CAUTION	Can result in minor or moderate injury.
NOTICE	Can result in material damage.
CAUTION	Pollution can result

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

Symbol	Type of danger
	General
	Electric shock
	Pointed objects
	Crushing

Symbol	Type of danger
	Pollution

Examples Examples of the layout of the warnings in the text:

DANGER

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

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

WARNING

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

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

CAUTION

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

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

NOTICE

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

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

CAUTION

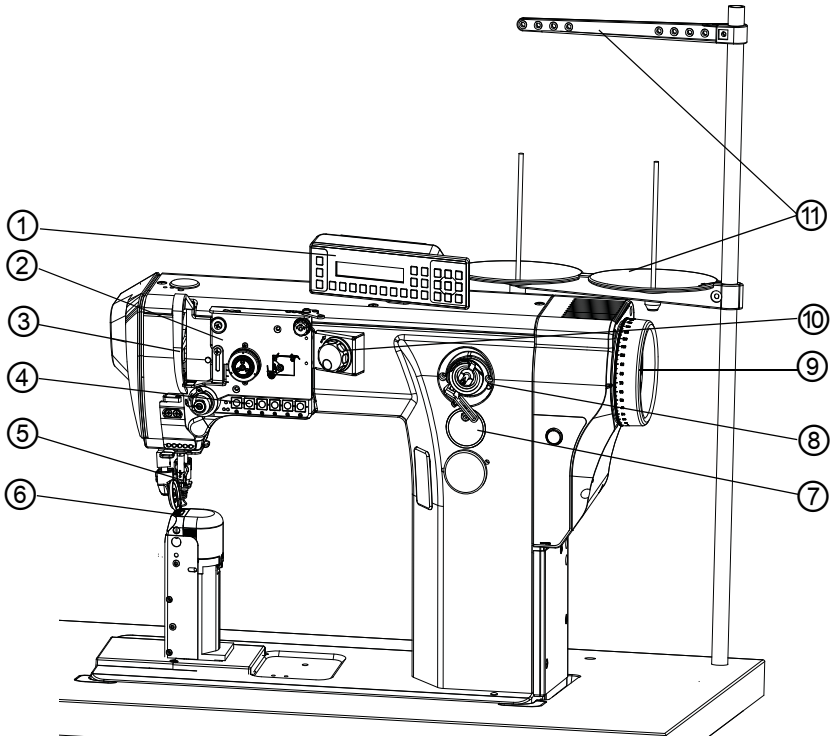
Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.

This is a warning note for a hazard that could result in pollution if ignored.

3 Machine description

3.1 Components of the machine

Pic. 1: Components of the machine



(1) - Control panel OP3000
(2) - Tension plate
(3) - Thread lever
(4) - Keypad on the machine arm
(5) - Top roller with needle
(6) - Hook (under throat plate)
(7) - Oil level indicator
(8) - Winder
(9) - Hand wheel
(10) - Electronic hand wheel
(11) - Reel stand

3.2 Characteristics

The Dürkopp Adler 878-M PREMIUM is a post bed sewing machine for double lockstitches.

General technical characteristics

- 1-needle or 2-needles machine
- Large vertical hook
- Transport: Bottom wheel feed with driven top roller, without needle transport
- Programmable setting of the stitch length on control panel with the possibility of differential between the top and bottom feed.
- Programmable stroke adjustment of the top roller via stepper motor
- Programmable top roller pressure via stepper motor
- Programmable, electronically regulated thread tension (ETT) - on request
- Electronic handwheel (jog dial)
- Direct drive for all subclasses
- Safety snap-on coupling for preventing any misadjustment of or damage to the hook in the event of a thread jamming
- Automatic wick lubrication for machine and hook
- Maximum passage with lifted the top roller: 13 mm
- Electromagnetic thread cutter (length of remaining thread approx. 10 mm, after short thread cutting approx. 5 mm)
- Keypad on the machine arm and favorite button for quick functions
- Thread monitor for the hook thread - on request

3.3 Declaration of Conformity

The machine complies with the European regulations specified in the Declaration of Conformity or in the Declaration of Incorporation.

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3.4 Proper use

The Dürkopp Adler 878-M PREMIUM is intended for sewing light to heavy material.

Depending on the subclass the following needle sizes are to be used:

- Light to moderately heavy material: 70 – 80 Nm
- Moderately heavy material: 90 – 110 Nm
- Heavy material: 120 – 160 Nm

The maximum thickness of the sewing material thickness is 8 mm when pressed together under the top roller.

The machine is intended only for use with dry sewing material.

The sewing material must not contain any hard objects.

The sewing machine is intended for industrial use.

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

3.5 Technical data

3.5.1 Data overview by subclasses

Subclasses: 878-M PREMIUM	**-160722-M**	**-160725-M**	**-260722-M**
Stitch type	Double lockstitch 301		
Hook type	Vertical hook, large (L)		
Number of needles	1		2
Needle system	134		
Needle strength [Nm]	70 - 160	70 - 120	70 - 160
Maximum thread strength [Nm]	80/3 - 10/3	80/3 - 20/3	80/3 - 10/3
Stitch length, forwards / backwards [mm]	7/7	5/5	7/7
Maximum s.p.m. [min^{-1}] according to stitch length [mm]	2500/0-3.5; 2300/3.6-4; 2100/4.1-4.5; 2000/4.6-5; 1800/5.1-6; 1600/6.1-6.5; 1500/6.6-7		
Maximum sewing foot stroke [mm]	13		
Maximum material thickness [mm]	8		
Mains voltage [V]	230		
Mains frequency [Hz]	50 / 60		
Length/width/height [mm]	640/220/550		
Weight [kg]	55		

3.5.2 Additional equipment

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

● = Standard equipment

O = Optional enhancement

Order number	Additional equipment	878-160722-M	878-160725-M	878-260722-M
0888 220334	Top roller ∅ 25 mm knurled	O	O	O
0888 220344	Top roller ∅ 25 mm smooth	O	O	O
0888 220354	Top roller ∅ 25 mm rubberized	O	O	O
0888 220364	Top roller ∅ 35 mm knurled	O	O	O
0888 220374	Top roller ∅ 35 mm smooth	O	O	O
0888 220384	Top roller ∅ 35 mm rubberized	O	O	O
0888 220394	Top roller ∅ 45 mm, width 3.8 mm	O	O	O
0888 220404	Top roller ∅ 45 mm, width 2.0 mm	O	O	O
9880 888100	Diode sewing light 3W	O	O	O
0867 113504	Tension plate electronic	O	O	
0867 113604	Tension plate electronic			O
0888 150234	Remaining thread monitor for the hook thread	O		
0888 150544	Remaining thread monitor for the hook thread			O
0888 150534	Blocking machine	O		O
9780 000108	WE-8, maintenance unit for the pneum. optional equipment			
0797 003031	Pneum. connection kit			
0867 593504	Compressed air gun (feeding the thread through the hose guide, cleaning the machine)	O	O	O
9081 300001	Tool kit M-type	O	O	O

Order number	Additional equipment	878-160722-M	878-160725-M	878-260722-M
0888 200464	Parts set for binding, tape width 2.0 mm	O		
0888 200474	Parts set for binding, tape width 2.5 mm	O		
0888 200614	Attachment for French binding	O		
0888 200884	Tape roll holder, lower	O		
0888 100294	Tape roll holder, top	O		
N800 080030	Edge guide, tiltable	O	O	O
N800 080004	Roller and straight stop, swiveling	O	O	O
0878 590024	Separator, tiltable	O	O	O
N800 080001	Edge guide, tiltable	O	O	O

For **additional instructions** and further **documentation**, visit the download section on the Dürkopp Adler website: http://www.duerkopp-adler.com/de/main/Support/downloads.

4 Operation

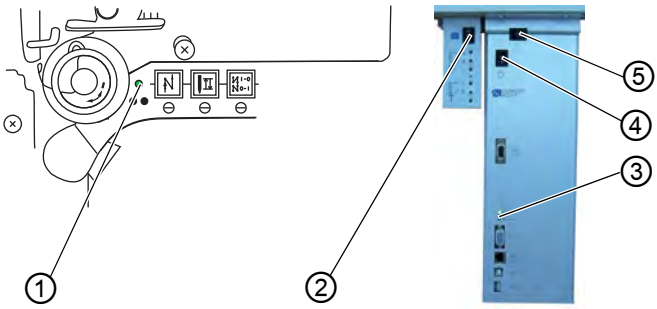
4.1 Switching power supply on and off

The lower main switch (4) on the controller regulates the power supply.

Important

When you turn on the machine must not be under the top roller sewn material!

Fig. 2: Switching power supply on and off



(1) - Indicator lamp on the keypad
(2) - Switch for dimmable sewing lamp
(3) - Indicator lamp on the controller
(4) - Main power switch
(5) - Switch for the sewing lamp

Switching power on

1. Press the main switch (4) down to position I.

↳ Indicator lamps (1) and (3) light up.

Switching power off

1. Press the main switch (4) up to position 0.

↳ Indicator lamps (1) and (3) turn off.

Switching on the dimmable sewing lamp

1. Press switch (5) to the left to position 1.
2. Press switch (2) up to position 1.

↳ Dimmable sewing lamp illuminates.

Switching off the dimmable sewing lamp

1. Press switch (2) down to position 0.
2. Press switch (5) to the left to position 0.

4.2 Inserting and replacing the 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.

Sequence

After switching to a different needle size, adjust the distance between the hook and the needle, as well as the position of the throat plate towards its post (🕮 *Service instructions*).

NOTICE

Damage to the machine, needle breakage, or thread damage is possible due to incorrect distance between the needle and hook tip.

A false orientation of the needle may damage the hook tip.
Check the distance to the hook tip and the position of the throat plate towards its post after inserting a new needle with a different size. Reset distance if necessary.

Faults caused by an incorrect hook clearance

After inserting a thinner needle:

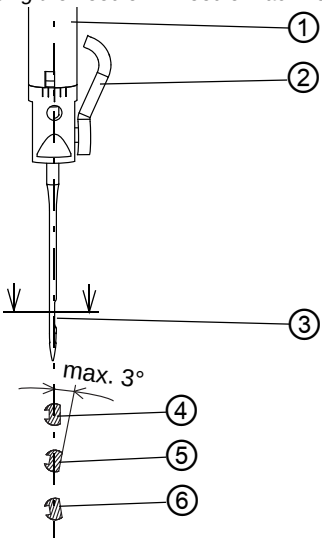
- Missing stitches
- Thread damage

After inserting a thicker needle:

- Damage to the hook tip
- Damage to the needle

Changing the needle

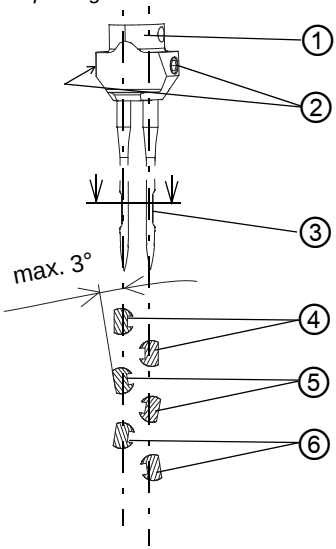
Fig. 3: Inserting and replacing the needle - 1-needle machine



(1) - Needle bar
(2) - Lever
(3) - Groove
(4), (5), (6) - Orientation of needle

1. Turn the handwheel until the needle bar (1) reaches the upper end position.
2. Draw the lever (2) in your direction to loosen the screw fixing the needle.
3. Pull the needle out towards the bottom.
4. Insert the new needle.
5. **Important:** Align the needle so that the groove (3) is facing the hook according to section (4) or (5). The needle may not be oriented as shown at section (6).
6. Turn the lever (2) back to tighten the screw.

Fig. 4: Inserting and replacing the needle - 2-needles machine



(1) - Needle bar
(2) - Screws
(3) - Groove
(4), (5), (6) - Orientation of needle

1. Turn the handwheel until the needle bar (1) reaches the upper end position.
2. Loosen the screws (2).
3. Pull the needle out towards the bottom.
4. Insert the new needle.
5. **Important:** Align the needles so that the groove (3) is facing the hook according to section (4) or (5). The needles may not be oriented as shown at section (6).
6. Tighten the screws (2).

4.3 Threading the needle thread

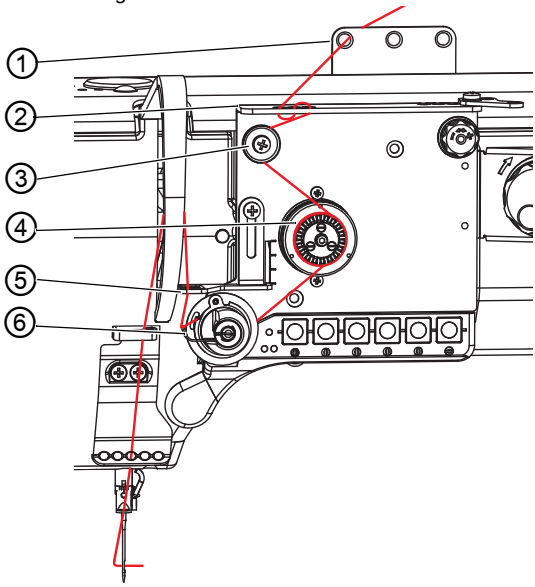
WARNING

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

4.3.1 Tension plate rotary

Information
Tension plate rotary uses the control on the display and all the setting as an tension plate electronic.

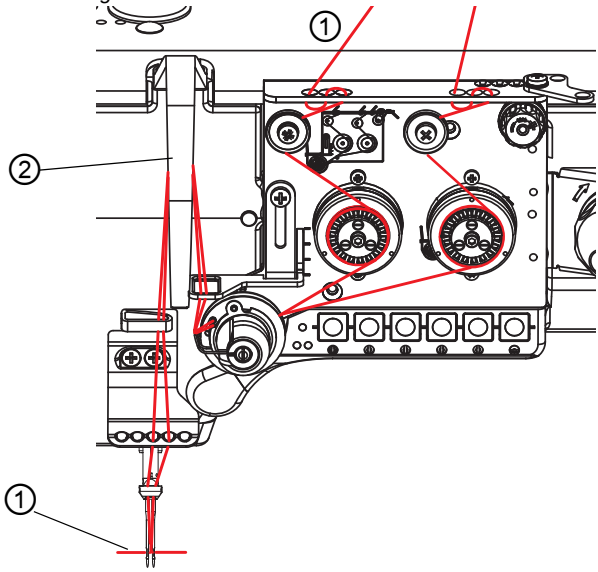
Fig. 5: Threading the needle thread - 1-needle machine



(1) - Thread guide
(2) - Thread guide
(3) - Auxiliary tensioner
(4) - Primary rotary tensioner
(5) - Thread regulator
(6) - Tightening spring

1. Insert the thread from thread stand through (1) and (2).
2. Guide the thread from the thread guide (2) counterclockwise around auxiliary tensioner (3).
3. Wind the thread once clockwise around primary tensioner (4).
4. Guide the thread to tightening spring (6).
5. Lift the tightening spring (6) with the thread and pull the thread under the spring arm.
6. Insert the thread from the bottom up through the thread regulator hole (5) and then to the thread lever, the guide, the needle holder and the needle eye.

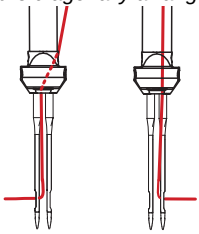
Fig. 6: Threading the needle thread - 2-needles machine



(1) - Left thread *(2) - Thread lever*

1. Thread the machine according to the picture. The thread (1) designed for the left needle is to be threaded in the left tensioners and in the upper hole in the thread lever (2).
2. Threading the side by side arranged needles is in the picture above.

Fig. 7: Threading the diagonally arranged needles



4.3.2 Tension plate electronic

Informace
Tension plate electronic is optional equipment.

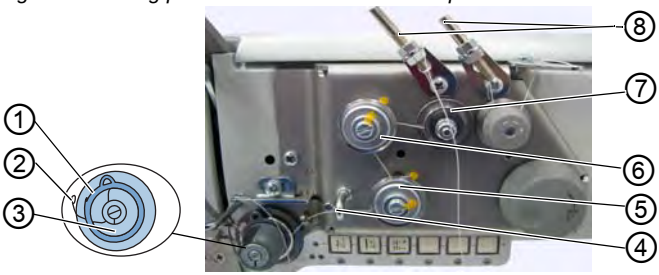
In all machines the thread from the thread reel is fed through the thread guide and to the machine via the unwinding bracket.

Fig. 8: hread guide on the unwinding bracket and machine arm

(1) - Thread guide
(2) - Reel stand
(3) - Guide on unwinding bracket

1. Fit the thread reel on the reel stand (2).
2. Insert the thread from the rear to the front through the thread guide on the unwinding bracket (3).
3. Use e.g. a compressed air gun to feed the thread through the thread guide (1).

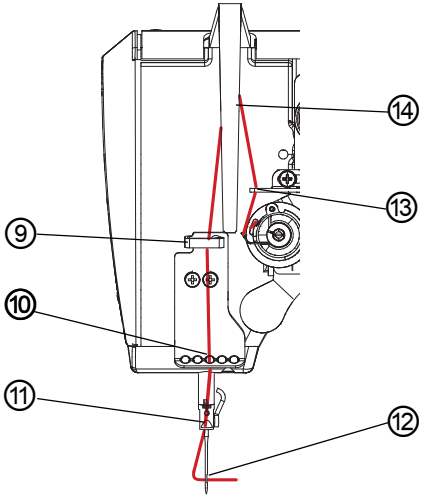
Fig. 9: Threading procedure for needle thread - part 1



(1) - Tightening lever
(2) - Spring tip
(3) - Thread tensioning spring
(4) - Diverter pin
(5) - Tensioner 2
(6) - Tensioner 1
(7) - Preliminary tensioner
(8) - Thread guide

4. Feed the thread clockwise from the thread guide (8) around the preliminary tensioner (7).
5. Feed the thread counterclockwise around tensioner 1 (6).
6. Feed the thread clockwise around tensioner 2 (5).
7. Guide the thread under the diverter pin (4) to the thread tensioning spring.
8. Lift the tightening lever (1) with the thread.
9. Pull the thread under the spring tip (2).

Fig. 10: Threading procedure for needle thread - part 2



(9) - Upper thread guide
(10) - Lower thread guide
(11) - Thread guide on the needle bar
(12) - Needle eye
(13) - Thread regulator
(14) - Thread lever

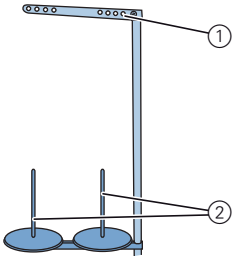
10. Insert the thread from bottom to top through the hole on the thread regulator (13).
11. Insert the thread from the right to the left through the thread lever (14).
12. Insert the thread through the upper thread guide (9).
13. Insert the thread through a hole in the lower thread guide (10).
14. Insert the thread through the thread guide on the needle bar (11).
15. Insert the thread through the needle eye (12) in such a way that the loose thread end faces the hook.

4.4 Inserting and winding on the hook thread

WARNING

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

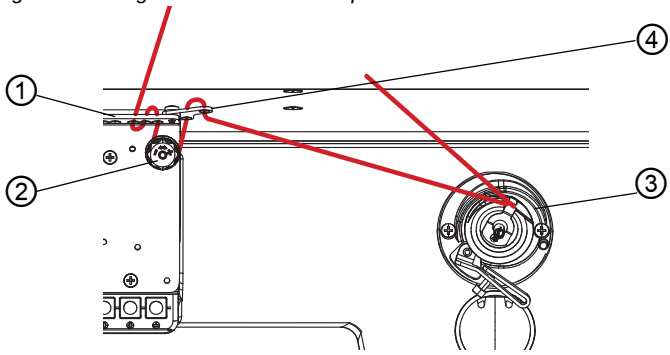
Fig. 11: Thread guide on the unwinding bracket and machine arm



(1) - Guide on unwinding bracket *(2) - Reel stand*

1. Fit the thread reel on the reel stand (2).
2. Insert the thread from the rear to the front through the thread guide on the unwinding bracket (1).

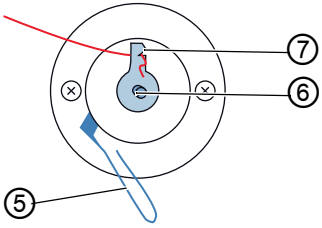
Fig. 12: Winding on the hook thread - part 1



(1) - Thread guide
(2) - Pre-tensioner
(3) - Winder
(4) - Hook thread guide

3. Insert the thread in a wavelike manner through the 3 holes of the thread guide (1): from top to bottom through the left hole, from bottom to top through the hole in the middle and finally from top to bottom through the right hole.
4. Guide the thread counterclockwise around the pre-tensioner (2).
5. Insert the thread in a wavelike manner through the 2 holes of the hook thread guide (4): from bottom to top through the left hole and from top to bottom through the right hole.
6. Guide the thread to the winder (3).

Fig. 13: Winding on the hook thread - part 2



(5) - Bobbin lever
(6) - Bobbin shaft
(7) - Cutter

7. Clamp the thread behind the cutter (7) and tear off the loose end behind it.
8. Fit the bobbin on the bobbin shaft (6).
9. Turn the bobbin clockwise until it clicks.
10. Pull the bobbin lever (5) up.

The hook thread is normally wound on when sewing is in progress. However, you can also wind on the hook thread without sewing, e.g. if you require a full bobbin in order to start sewing.

ATTENTION

Damage to the sewing feet or needle plate possible if the thread is wound on without material.
Lock the top roller in place in the highest position.

Winding procedure

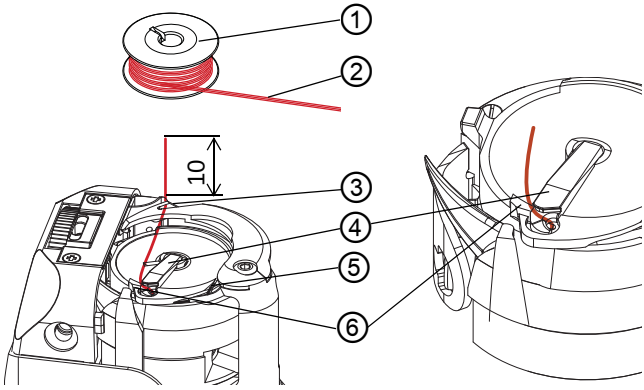
1. Switch on the sewing machine.
2. Press the foot pedal forwards.
   ↳The machine sews and winds the hook thread from the thread reel onto the bobbin.
   When the bobbin is full, the machine automatically stops winding. The bobbin lever moves down.
   The cutter is automatically moved into its basic vertical position.
3. Pull off the full bobbin.
4. Tear off the thread behind the cutter.
5. Insert the full bobbin in the hook
   (🕮 *Replacing the hook thread bobbin*, p. 32).
6. Repeat the winding-on procedure with an empty bobbin, as described above.

4.5 Replacing the hook thread bobbin

WARNING

Risk of injury from needle and moving parts!
Switch off the sewing machine before replacing the hook thread bobbin.

Fig. 14: Replacing the hook thread bobbin



(1) - Bobbin
(2) - Thread end
(3) - Tensioning spring
(4) - Bobbin housing flap
(5) - Slot
(6) - Slot

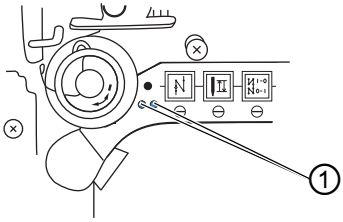
1. Push up the bobbin housing flap (4).
2. Remove the empty bobbin.
3. Insert a full bobbin (1):

   Important: Insert the bobbin (1) with the thread end (2) oriented according to the picture.
4. Thread the thread through the slot (5) and slot (6).
5. Close up the bobbin housing flap (4) and fasten the thread under the tensioning spring (3).
6. Trim the thread end according to the picture.

Automatic remaining thread monitor

For machines with automatic remaining thread monitor:
If the hook thread needs to be replaced, the LED indicator lamps (2) light up on the machine arm. The left light is for the left-hand hook, and the right light is for the right-hand hook.

Fig. 15: Remaining thread monitor



(1) - LEDs on the machine arm

Each of the bobbins has a thread supply groove that is embedded in the bobbin core.

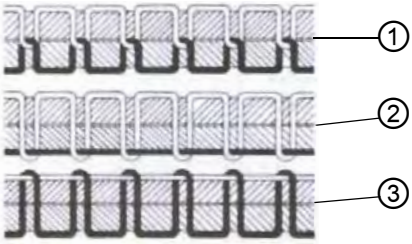
Important: Insert the bobbin in the hook in such a way that the thread supply groove faces down. Otherwise, the remaining thread monitor will not work.

4.6 Thread tension

There 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 the needle and hook threads
(2) - Hook thread tension greater than needle thread tension
(3) - Needle thread tension greater than hook thread tension

4.6.1 Setting needle thread tension

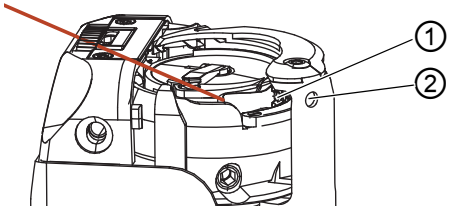
The needle thread tension can only be set using the software of the OP3000; for detailed information, refer to the chapter (🕮 *5 Settings via the software*, str. 45).

4.6.2 Setting hook thread tension

WARNING

Risk of injury from needle and moving parts!
Switch off the sewing machine before adjusting the hook thread tension.

Fig. 16: Setting hook thread tension



(1) - Adjusting screw *(2) - Hole*

The hook thread tension is adjusted using the adjusting screw (1). Insert a screwdriver through the hole (2).

To increase the tension:

1. Turn the adjusting screw (1) clockwise.

To reduce the tension:

1. Turn the adjusting screw (1) counterclockwise.

4.7 Setting the thread regulator

WARNING

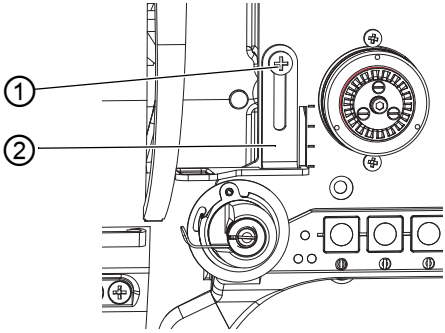
Risk of injury from needle and moving parts!
Switch off the sewing machine before setting the thread regulator.

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

Proper setting:

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

Fig. 17: Setting the thread regulator

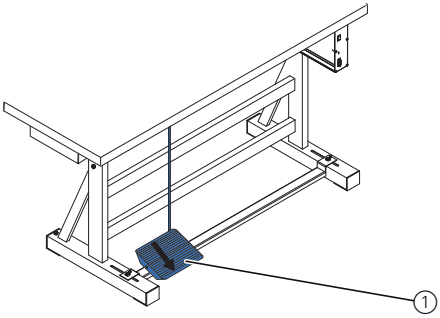


(1) - Regulator screw *(2) - Thread regulator*

1. Loosen the regulator screw (1).
   - **To increase the tension:**
     Slide the thread regulator (2) up.
   - **To reduce the tension:**
     Slide the thread regulator (2) down.
2. Tighten the regulator screw (1).

4.8 Lifting and folding the top roller

Fig. 18: Electronic top roller lifter with pedal



(1) - Pedal

1. Press the pedal (1) halfway back.

   ↳The machine stops and lifts top roller.
   The top roller remain up as long as the pedal is pressed halfway back.

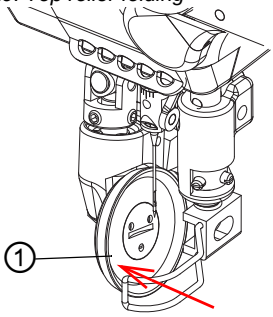
or

1. Press the pedal (1) fully back.

   ↳The thread cutter is activated and the top roller is lifted.

Top roller folding

Fig. 19: Top roller folding



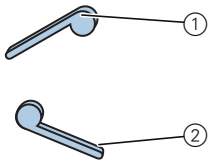
(1) - Top roller

1. Fold the top roller (1) in the direction of the arrow.

4.9 Holding the top roller in the upper position

There is a lever at the back of the machine for holding the top roller in the upper position.

Fig. 20: Holding the top roller in the upper position with the lever



(1) - Top roller in upper position
(2) - Upper position canceled

To hold the top roller in the upper position:

1. Push the lever down.

To cancel the lock:

1. Push the lever up.

You can also use the pedal to cancel the upper position:

1. Press the pedal halfway back as when lifting the top roller.

   ↳The lever swivels back up and the lock is removed.

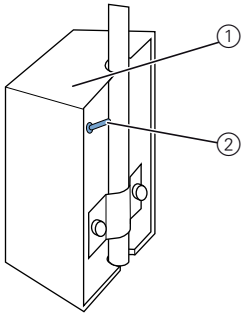
CAUTION

Risk of crushing when lowering the top roller!
Do not hold your hands under the top roller when the upper position is released via the pedal or lever.

4.10 Electronic knee lever

The electronic knee lever can be used to control the different functions of the machine for example switch between two different stitch lengths or two values of the upper thread tension. You can also lift the top roller while sewing. The switch on the back of the knee lever specifies whether the feature is enabled permanently, or only for the knee lever is pressed.

Fig. 21: Elements of the knee lever



(1) - Knee switch
(2) - Switch

For permanent switch:

1. Set the switch (2) to the upper position.
   - **To switch the relevant function:**
     Push the knee switch (1) to the right.
   - **To switch off the relevant function:**
     Push the knee switch (1) to the right again.

For temporary switch:

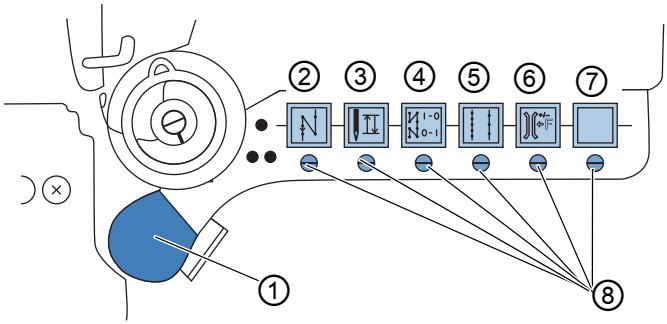
1. Set the switch (2) to the lower position.
   - **To switch:**
     Push the knee switch (1) to the right and keep it pressed.
     ↳A new state is retained as long as the knee switch is pushed to the right.
   - **To switch off:**
     Release the knee switch (1).

4.11 Quick functions on the keypad

The machine has a keypad on the machine arm for activating specific functions while sewing.

4.11.1 Activating function keys

Fig. 22: Keypad for quick functions



(1) - Favorite button functions
Keys for:
(2) - Reverse sewing
(3) - Needle position
(4) - Start and end bar tack (inversion)
(5) - Stitch length preselection (great/small)
(6) - Auxiliary thread tensioner
(7) - Switch to the next seam section (customizable)
(8) - Screws for configuring the favorite button (1)

Activating a key function

1. Press the key.

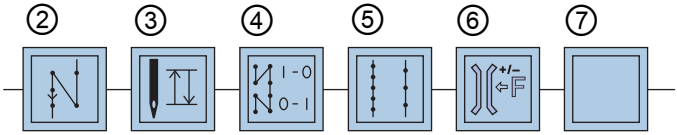
   ↳Function is activated. The key illuminates.

Deactivating a key function

1. Press the key again.

Function is deactivated. The key turns off.

Fig. 23: Functions keys



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. For more information, refer to the 🕮 *Service instructions*. The machine comes configured so that selecting the key (3) will bring the needle up.

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.

Stitch length key (5):

When this key (5) is selected, the machine sews with the greater stitch length that was programmed for this stitch length on the control panel.

Auxiliary thread tensioning key (6):

This key (6) activates the programmed auxiliary thread tensioner.

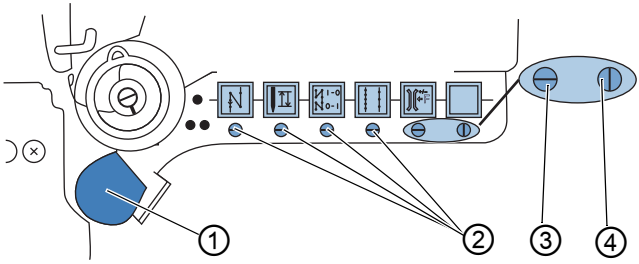
Switch to the next seam section (7):

The key (7) switches to the next seam section. The key is fully customizable. It is possible to implement other functions as necessary.

4.11.2 Assigning key functions to the favorite button

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

Fig. 24: Assigning a key function to the favorite button



(1) - Favorite button
(2) - Screws for the assignment of the favorite button (1)
(3) - Screw in basic position: slot horizontal
(4) - Screw activates the favorite button (1): slot vertical

The key function is assigned by turning the screw under the key until it is vertical. Only one function at a time can be assigned to the favorite button (1). Therefore, only one of the screws (4) may be in the vertical position.
All screws must be turned back to their original horizontal position before a new function is assigned.

To assign a key function:

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

4.12 Operating the controller

The machine is operated with a DAC Comfort controller (📖 *Settings via the software*, p. 45).

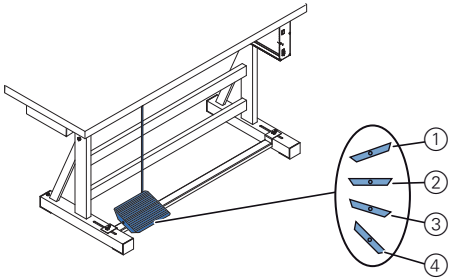
4.13 Sewing

WARNING

Risk of injury from the needle tip when sewing is started unintentionally!
Take care not to accidentally press the foot pedal when your fingers are in the needle tip area.

The pedal starts and controls the sewing process.

Fig. 25: Sewing with the peda



(1) - Pedal position +1: sewing active
(2) - Pedal position 0: rest position
(3) - Pedal position -1: moves the sewing feet up
(4) - Pedal position -2: sewing the end bar tack and cutting off the thread

Initial position:

- Pedal position 0:
  ↳Machine stationary, needles up, top roller down.

To position the material to be sewn:

1. Press the pedal halfway back in pedal position -1:
   ↳The sewing feet are lifted.
2. Push the material to be sewn into the initial position.

Sewing:

1. Press the pedal forwards in pedal position +1:
   ↳The machine sews.
   The sewing speed increases the further forward the pedal is pressed.

To interrupt sewing:

1. Release the pedal in pedal position 0:

   ↳The machine stops, needles and top roller are down.

To continue sewing:

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

   ↳The machine continues to sew.

To sew over thickened seams:

1. Switch on the elevated top roller stroke with the knee lever (🕮 *Electronic knee lever*, p. 39).

To change the stitch length:

1. Switch on the 2nd stitch length using the key for the quick function (🕮 *Quick functions on the keypad*, p. 40).

To increase the thread tension:

1. Switch on the auxiliary thread tensioner using the key for the quick function (🕮 *Quick functions on the keypad*, p. 40).

To sew intermediate bar tacks:

1. Press the reverse sewing button on the keypad (🕮 *Quick functions on the keypad*, p. 40).

To finish a seam:

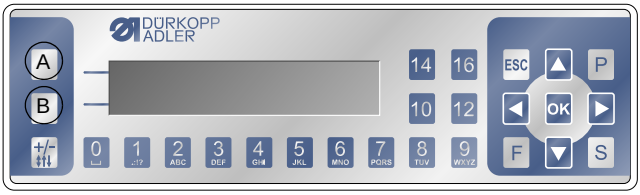
1. Press the pedal back completely in pedal position -2:

   ↳The machine sews the end bar tack, and the thread cutter cuts the thread.
   The machine stops, needles and sewing feet are up.
2. Remove the sewing material.

5 Settings via the software

5.1 OP3000 control panel

Fig. 26: Control panel



All settings in the controller for the 878-M PREMIUM are performed using the OP3000 control panel.

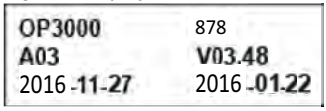
Key	Function
0 to 9	Inputting the parameter value (if the field for the parameters is activated) Selection of a parameter that is shown on the display • Press the key under the desired symbol. ↳ The function is selected.
ESC	Cancel the function Exit the menu (changes remain saved)
OK	Confirm the settings Activate the input
P	Function is different for each menu
S	Function is different for each menu
F	Function is different for each menu
▶	Selection to the right
◀	Selection to the left Back one menu level
▲	Increase the value Scroll through the list (upwards)
▼	Decrease the value Scroll through the list (downwards)
A	Upper softkey Assignment is different for each menu

Key	Function
B	Down softkey
+/-	Altering sense of difference feed

Information
For more information on setting control DAC Comfort can be found in the relevant parameter sheets.

5.2 Switching the sewing machine on

Fig. 27: Display of the firmware and software version



1. Switch the main switch on.

↳ The display shows the software version:

- On the left of the screen the control panel firmware
- On the right of the screen the controller software version

↳ The machine performs a reference run:
The display shows the program last used, or manual mode.

Fig. 28: Display of the program last used

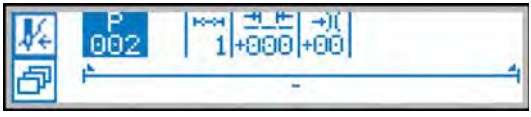


Fig. 29: Display in Manual mode

5.3 Controller operating modes

The controller of the 878-M PREMIUM has 3 available operating modes:

- **Manual mode (program 000)**

  Manual mode is the simplest operating mode.
  There are no sewing programs and no inputs for individual sewing sections.

  Changes to the top roller pressure, stroke height, stitch length, thread tension and also the activation of other functions are always implemented immediately.

  All the major sewing parameters can be changed manually during the sewing process.

- **Automatic mode (program 001 - 999)**

  Automatic mode allows for the execution of setups (seam program comprised of only one seam section) or complex seam programs.

  Seam programs are divided into individual sections. Each section is assigned its own individual stitch length, thread tension, etc.

- **Programming/edit mode**

  Programming mode allows the operator to create a new seam program in a quick and easy manner (**P** flashes above the program number).

  Edit mode can be used to change, delete and copy seam programs.

5.4 Manual mode

Fig. 30: Parameters in manual mode

The following table shows the individual symbols (parameters) on the display and the functions of the keys on the control panel.

When a parameter is selected, its color on the display changes. When a parameter is changed, its new value is loaded immediately.

Symbol	Meaning
	(depending on the assignment) Programming • Press the upper softkey
	**Quick access function** (softkey menu) • Press the lower softkey, 🕮 *5.4.1 Quick access function (softkey menu)*, str. 50.
P	**Program number** Value range: 000 to 999 Program 000 indicates that the controller is in **Manual mode**. • Use ◀ / ▶ to select the **Program** parameter. • Use ▲ / ▼ to change the program number. Or: • Input the program number directly using the keys **0** to **9** and confirm with **OK** as required. This takes you into **Automatic mode**.
	**Stitch length** Value range: 0.0 to 7.0 mm (depending on the sewing equipment) • Use ◀ / ▶ to select the **Stitch length** parameter. • Use ▲ / ▼ to change the stitch length

Symbol	Meaning
	**Thread tension** Value range: 1 to 99 • Use ◀ / ▶ to select the **Thread tension** parameter. • Use ▲ / ▼ to change the thread tension **Information** If the values for the needle thread tension of the right and the left needle thread are not identical and changed jointly, the difference remains the same. **2-needle machines** • Use ◀/▶ to select the Needle thread tension par. • Press the **OK** button to open the submenu • Use ▲/▼ to select the right of the left needle thread • Press the **OK** button to confirm • Use ▲/▼ to change the needle thread tension • Press the **OK** button to confirm
	**Top roller pressure** Value range: 1 to 14 • Use ◀ / ▶ to select the **Top roller pressure** par. • Use ▲ / ▼ to change the top roller pressure
 	**Difference feed between top roller and wheel feeder** Value range: 0 to 16 (increments 1) • Use ◀ / ▶ to select the **Difference feed** parameter. • Use **+/-** to select difference sense • Use ▲ / ▼ or the numeric keys to change the difference value
	**Other parameters** 🕮 *5.4.2 Menu for other settings*, str. 51
	**S.p.m. or seam length in mm** After the thread has been cut off, the display is retained. Measurement/counting restarts when sewing starts again.
P	**Creating a program** 🕮 *5.6.1 Creating programs*, str. 56
+/-	Altering sense of difference feed (wavy line up - top roller feeds faster; wavy line down - top roller feeds slower)
ESC, F and S	No function assigned
OK	No function assigned

5.4.1 Quick access function (softkey menu)

Here you have quick access to functions during the sewing process. You can also assign a function to the upper softkey

1. Press the lower softkey .

↳ The following information is shown on the display:

Fig. 31: Softkey menu

2. **Calling up a function:**
   - Press the numeric key under the desired function.

or

Assigning a function to the upper softkey:

- Press the numeric key under the desired function and the upper softkey at the same time.

↳ The function is assigned to the upper softkey and can subsequently be called up using this softkey.

3. Press ESC to exit the menu.

Symbol	Meaning
	**Needle position up / down** If sewing is stopped within the seam, the needle is positioned up or down.
	**Threading mode** The needle bar moves to the defined position. The pedal is temporarily locked.
	**Programming** Added a new sewing programm.
	**Bobbin mode** Press the pedal forwards for winding. Press the pedal backwards - bobbin mode is ended.

Symbol	Meaning
	**Resetting the bobbin stitch counter** After pressing the stitch counter is reset to zero.
	**Foot lifting** After pressing the top roller lift.
	**Thread clamp** Is not mounted.
	**Manual backtack** After pressing switch the feed to backtack.
	**Backtack suppression/recall**
	**Manual thread trimming** After pressing during sewn work the thread is cut.

5.4.2 Menu for other settings

1. Use ◂ / ▸ to select **Other parameters** P ▪▪▪ .
2. Press the **OK** key.
3. Use ▲ / ▼ to select the desired parameter.
4. Press the **OK** key to select the parameter.
5. Change values using the ▲ / ▼ keys.
6. Press the **OK** key to confirm your selection.
7. Press ◂ or **ESC** to exit the menu

Symbol	Meaning
	**Max Speed** Value range: 50 to 2500 (depending on stitch length)
	**Thread Trim** Value range: on/off
	**Thread Clamp** - is not mounted Value range: on/off
	**Point Position** Value range: 0 až 360° Set value defines the needle bar position after pressing electronic handwheel.
	**Start Tack** Dialog box for defining the start bar tack
	**End Tack** Dialog box for defining the end bar tack
	**Foot** Top roller position when sewing stops and after the thread is cut
	**Bobbin** (thread monitor) - only on request Value range: on/software/monitor
	Info Screen Display more information on the display
	**Speed Corr.** Setting the correction of various sewing parameters depending on the speed of the machine.
	**Fabric Thickness** Setting the correction of various sewing parameters depending on the material thickness.

5.4.3 Sewing

Altering parameters whilst within the seam

1. Move the pedal to the **0** position.
2. Change the desired parameter on the control panel.
3. Press the pedal forwards and sew.

↳ The seam will be sewn using the altered parameter value.

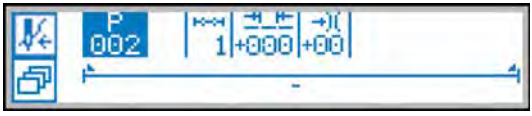
5.5 Automatic mode

Program numbers 001 to 999.

1. Use ◂ / ▸ to select the **Program** parameter.
2. Use ▴ / ▾ to select the program number **1** or another one (if available).

↳ The controller switches to automatic mode and the following information appears on the display:

Fig. 32: Displey in Automatic mode



The following table shows the individual symbols on the display and the functions of the keys on the control panel.

5.5.1 Before starting sewing

Symbol	Meaning
	**Programming** (depending on assignment) • Press the upper softkey
	**Quick access function** (softkey menu) • Press the lower softkey 🕮 *5.4.1 Quick access function (softkey menu)*, str. 50.
	**Program number** Value range: 000 to 999 • Use ◀ / ▶ to select the **Program** parameter. • Use ▲ / ▼ to change the program number. Or: • Input the program number using the **0 - 9** keys and confirm with **OK** as required. If you select program 000, the controller selects Manual mode
	**Seam sections** Number of sections contained in the current program.
	**Stitch length correction factor** Value range: -50 to +50 % Alters the stitch length in all seam sections.
	**Thread tension correction factor** Value range: -50 to +50 % Alters the thread tension in all seam sections.

1. Sew, press the pedal or press the **OK** key.

↳ The program switches to the 1st section.

5.5.2 Sewing

1. Press the pedal forwards and sew.

↳ The following information is shown on the display:

Fig. 33: Display when sewing in Automatic mode

The parameter values for the current section are shown on the display.

The program bar shows the progress of the seam.

The number under the current section shows the number of stitches yet to be completed / the outstanding length of the section.

The program bar shows half the current section in bold.

Fig. 34: Current section

Completed sections are shown fully in bold.

Fig. 35: Completed section

The following table lists the functions that can be performed in the course of the seam.

Key/Pedal	Function
◀ / ▶	**Stop forward/back or to the start of the section**
▲ / ▼	**Correction of the thread tension** The value is saved.
Pedal halfway back	**Raise the top roller**
Pedal fully back	**Cut off the thread** The program remains stopped at the cutoff point.
Lower softkey	**Softkey menu** 🕮 *5.4 Manual mode*, str. 48

5.5.3 Canceling the program

1. Cut off (press the pedal fully back).

↳ The program is interrupted.

5.6 Programming/edit mode

5.6.1 Creating programs

If [P+] is assigned to the upper softkey:

1. Press the upper softkey [P+].

↳ The following display appears:

Fig. 36: Programming

2. Continue with handling step 3.

If [P+] is not assigned to the upper softkey:

1. Press the [⧉] key.

↳ The softkey menu appears.

2. Press the [P+] key.

↳ The controller displays the next free program number.

3. Press **OK** to load the program number.

   Or:

4. Select another program number using ▲/▼ or input a program number using the keypad keys **0 - 9** and then press **OK**.

↳ The following information is shown on the display, the **P** in the program number field flashes:

Fig. 37: Programming display

5. Press the upper softkey.

The following table shows the individual symbols on the display and the functions of the keys on the control panel.

Symbol	Meaning
>>	**Auto Forward** Value range: on/off
	Add section
	Delete section
P	**Number of current program to be created**
	No function assigned
	Current section • Use ◀/▶ to select the **Section** parameter. • Use ▲/▼ to switch to the next/previous section. • Press the **OK** key to edit other parameters for the section, 🕮 *5.6.4 Editing programs*, str. 60.
	Stitch length for the current section Value range: 0.0 to 7.0 mm • Use ◀/▶ to select the **Stitch length** parameter. • Use ▲/▼ to change the stitch length.

Symbol	Meaning
	**Thread tension value (%) for the current section** Value range: 0 to 99 • Use ◀ / ▶ to select the **Thread tension** parameter. • Use ▲/▼ to change the thread tension.
	**Top roller pressure** Value range: 1 to 14 • Use ◀ / ▶ to select the **Top roller pressure** parameter. • Use ▲/▼ to change the top roller pressure
 	**Difference feed between top roller and wheel feeder** Value range: 0 to 16 (increments 1) • Use ◀ / ▶ to select the **Difference feed** parameter. • Use **+/-** to select difference sense Use ▲/▼ or numeric keys to change the difference value
	**Number of stitches /** **length of the current section in mm**

Programming mode offers two options for creating new seam programs:

- Creating a program by keyboard input
- Creating a program by teach-in

5.6.2 Creating a program by keyboard input

1. Use ▸ to switch to section selection 1.
2. Use ⊞ to activate the section.
3. Set all parameters for this section.
4. To set up another section, use ▲ on the section display to switch to the next section.
5. Use ⊞ to activate the section and set all parameters.
6. Repeat steps 4 and 5 to define up to 30 sections if necessary.
7. Press the **ESC** key.

↳ The program is saved.

↳ The machine switches to Automatic mode.
The program that was just created is selected.

5.6.3 Creating a program by teach-in

1. Press the **Teach-In** key.
2. Set the parameters for the section (stitch length, thread tension, top roller pressure and top roller stroke).
3. Press the pedal and complete the seam section up to the desired position on the material.
4. To set other parameters for another seam section, use ▲ to add a new seam section.
5. Set the parameters.
6. Repeat steps 4 and 5 to define up to 30 sections if necessary.
7. Press the pedal back.

↳ The program switches to Edit mode.

8. If necessary, add other parameters for all seam sections (bartack, sewing speed, thread cutter, top roller lifter, etc.).
9. Press the **ESC** key.

↳ The program is saved.

↳ The machine switches to Automatic mode.
The program that was just created is selected.

5.6.4 Editing programs

1. In Automatic mode, press the **P** key.

↳ The controller switches to Edit mode.
The program previously selected can now be edited.
The following information is shown on the display, and the **P** in the program number field flashes:

Fig. 38: Display in Edit mode

1. Use ◂ / ▸ and ▴ / ▾ to select the program to be edited and the section.

↳ The selected section is shown bold in the program bar.

2. Use ◂ / ▸ to select the parameter to be changed for the respective section, and use ▴ / ▾ to change it.
3. Use ⊞ to add a new section.
4. Use ⊠ to delete a section.

5.6.5 Changing further parameters for the current section

1. Use ◀ / ▶ to select the field  .
2. Press the **OK** key.

   ↳ The submenu opens.
3. Use ▲/▼ to select the desired parameter.
4. Press the **OK** key to activate or deactivate the parameter or use ▲/▼ to edit the value and confirm the change by pressing **OK**.

Symbol	Meaning
	**Stich Count**
	**Auto Forward**
	**Top roller Pressure**
	**Max Speed**
	**Seq. End Modes**
	**Start Tack** Dialog box for defining the start bar tack
	**End Tack** Dialog box for defining the end bar tack
	**Needle up**

Symbol	Meaning
	**Foot lifted**
	**Top roller lift height**
	**Backwards**

5. Exit the submenu using **ESC** or ◂
↳ The changed values are stored immediately.
6. Exit Edit mode using **ESC**.

5.6.6 Changing further parameters for the selected program

This menu allows further parameters for the current seam program to be changed.

1. Use ◀ / ▶ to select the field P ▪▪▪ .
2. Press the **OK** key.

↳ The submenu opens.

3. Use ▲/▼ to select the desired parameter.
4. Press the **OK** key to activate or deactivate the parameter or use ▲/▼ to edit the value and confirm the change by pressing **OK**.

Symbol	Meaning
	**Program Name (program name)**
	**Next Progr.**
	**Thread Tension (thread tension)** Sets up an auxiliary thread tensioner that can be activated during the sewing process with press of a button.
	**Stitch Length (stitch length)** Defines a second stitch length that can be activated during the sewing process with press of a button.
	**Bobbin (setting thread monitor)**
	**Daily Piece Counter (day piece counter)** - by number thread trim
	**Point Pos.** After pressing moves to a specified position in degrees.

Symbol	Meaning
	Info Screen Display more information on the display
	**Speed Corr.** Setting the correction of various sewing parameters depending on the speed of the machine.
	**Fabric Thickness** Setting the correction of various sewing parameters depending on the material thickness.

5. Exit the submenu using **ESC** or ◂ .

↳ The changed values are stored immediately.

6. Exit Edit mode using **ESC**.

5.6.7 Copying the program

The selected program is copied into a new program number.

1. Press the  key.

↳ The softkey menu appears.

Fig. 39: Softkey menu

2. Press the  key.

↳ The following display appears:

Fig. 40: Copying the program

↳ The controller displays the next free program number.

3. Press **OK** to load the program number.

   Or:

   Select another program number using ▲/▼ or input a program number using the keypad keys **0 - 9** and then press **OK**.

↳ The program number is loaded.
The following display appears, with the program number flashing:

Fig. 41: Display after specifying the program number

4. Load the desired changes into the new program.
5. Press the **ESC** key.

↳ The controller exits Programming mode and reverts to Automatic mode.

5.6.8 Deleting a program

The selected program is deleted.

1. Press the key.

↳ The softkey menu appears.

Fig. 42: Softkey menu

2. Press the key.
3. Press the **ESC** key.

↳ The controller exits Programming mode and reverts to Automatic mode.

5.7 Simplified display menu

Obr. 43: Control panel

Icons in the top line are the same as in the standard menu, icons in the bottom line have special functions and will be operated with the keys as follows:

Key	Function
2	Start Tack Switch between off/single/double backtacking. Backtacking multi icon appears just in case of special sett-up in backtacking menu. Number of stitches transfers from backtacking menu also.
3	End Tack Switch between off/single/double backtacking. Backtacking multi icon appears just in case of special sett-up in backtacking menu. Number of stitches transfers from backtacking menu also.
4	Thread Trim Range of values: on/off
5	Needle Position Switch between needle position up/down.
6	Foot Lifting (foot lifting in stitch/after trimming) After pedal release the foot lifts automatically, after depressing the pedal is automatically lowered.

Information
How to choose between the standard and simplified display menu is available in the Service Instructions.

6 Programming Commander Basic/Pro

6.1 Commander Basic/Pro control panel

Fig. 44: Commander Basic/Pro control panel

All settings in the software are performed using the Commander Basic/Pro control panel.

Information
If a value is entered that is not within the specified value range, the software will automatically adopt the limit value which is closest to your entry from the value range.

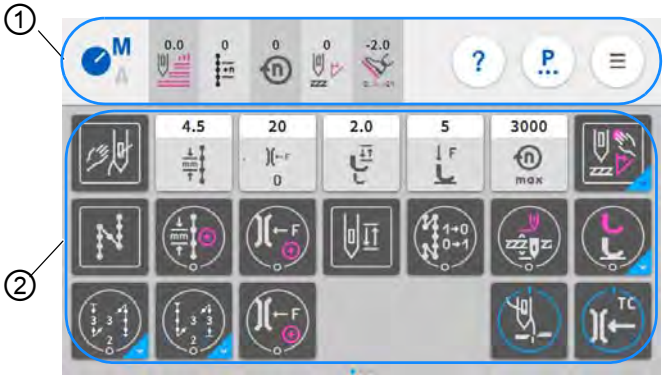
6.2 Navigating the Commander Basic/Pro control panel

You navigate the control panel by tapping the screen with your fingers. There is no need for an input device.

You can open menus by pressing the corresponding button with your finger. Swipe to switch between the different pages of the main screen.

You can modify the information displayed in the status bar (1). You can also adjust the tiles shown on the three pages of the main screen (2). You customize the information using the control panel settings, 📖 *p. 88*.

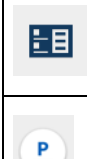
Fig. 45: Navigating the Commander Basic/Pro control panel



(1) - Status bar *(2) - Main screen*

6.2.1 Symbols and buttons

Explanation of recurring symbols:

Icon	Meaning
	The letter shown in blue is active. A = Automatic mode M = Manual mode Press the symbol to toggle between the two modes.
	Programming mode (access via the burger menu), see 📖 *p. 116*.
	Parameters you can set in manual mode.
	Burger menu A window opens that lets you select Automatic mode, Manual mode, Programming mode or Settings.
	Context-sensitive help Start by pressing the gray question mark before pressing the area for which you need help - this brings up a pop-up window containing a Help text. Press anywhere to make the window disappear.
	Bright tiles Parameters for which you can/must enter a numerical value. Values can be input by pressing.
	Dark tiles (latching) You can active or deactivate dark tiles encircled by a white line by pressing. You cannot set any values.

Icon	Meaning
	Dark tiles (multifunction) You can active or deactivate dark tiles encircled by a white line and showing a blue triangle in the corner by pressing. A long press opens a menu that lets you input values.
	Dark tiles (hold to run) You cannot enter any values for dark tiles surrounded by a square white line. The function assigned to the tile is only active for as long as you press the tile.
	Grayed-out tiles Grayed-out tiles merely provide information. You can neither enter values nor active or deactivate these tiles.

6.2.2 Entering values

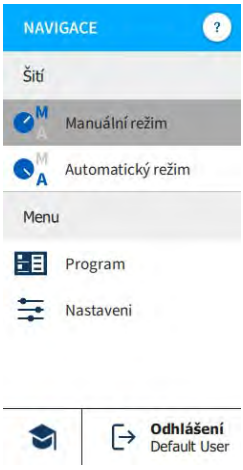
You can input values using the buttons +, − or by typing on the integrated on-screen keyboard.

Values highlighted in red are invalid as they are not within the specified value range. If you enter invalid values, the software will automatically set the limit value of the value range.

6.2.3 Navigating the burger menu

You can open the burger menu with a press of the symbol .

Fig. 46: Navigating the burger menu



to Manual mode (see 🕮 *p. 87*)

to Automatic mode (see 🕮 *p. 111*)

to Programming mode (see 🕮 *p. 116*)

to the Settings (see 🕮 *Service Instructions*)

Open tutorials
Log out user

6.2.4 Navigation during the start of the control panel

You can access the languages and settings without having to wait for the control panel to finish starting up.

You can select these options as soon as their icons are displayed on the control panel. After entering your user login, you will be taken to the language options or the settings - depending on which option you selected.

Symbol	Explanation
	Language selection
	Settings

6.3 User Management

The User Management section allows you to create users and roles with different authorizations.

The factory setting is such that the *Default User* will automatically be logged in when the machine starts and the control panel boots up. You can change this setting at the Technician level as needed.

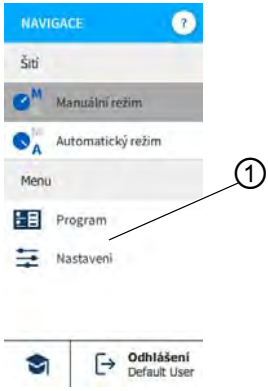
The following is an explanation of the two users set up by default, *Default User* and *Default Technician*. You can set up any number of users and roles that meet your individual requirements.

To access User Management:

1. Press on the symbol to open the burger menu.

↳ The menu opens.

Fig. 47: User Management (1)

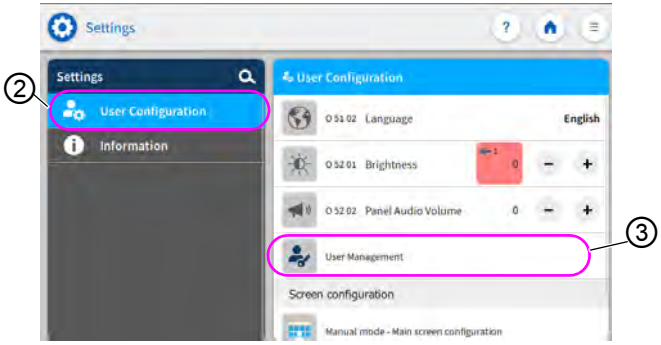


(1) - Settings

2. Press *Settings* (1).

↳ This opens the Settings interface.

Fig. 48: User Management (2)

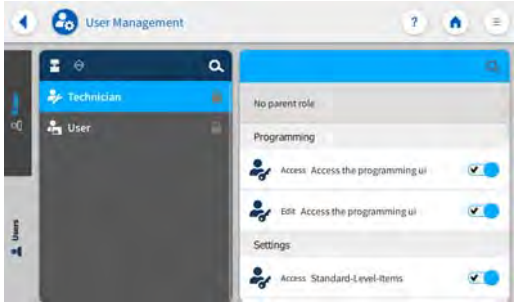


(2) - User Configuration *(3) - User Management*

3. Press the item `User Configuration` (2) on the left.
4. Press the item `User Management` (3) on the right.

↳ The user management interface opens - which may look different depending on the user.

Fig. 49: User Management (3)



5. Define the desired settings (for sample explanations, see 📖 *p. 77* and 📖 *p. 77*).
6. Press ◀ to return to Settings or ⌂ to return to Manual mode.

6.3.1 User login

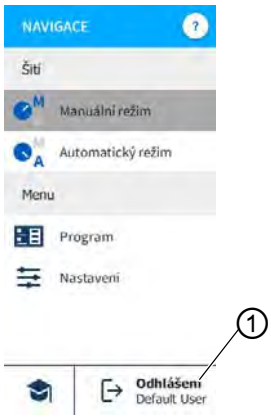
The factory setting of the software is such that the `Default User` will be logged in automatically when the machine is switched on. This neither requires the input of a password nor a USB key or an NFC chip. The following explains how you can switch users.

To access User Management:

1. Press on the symbol to open the burger menu.

↳ The menu opens.

Fig. 50: User login



(1) - Logout

2. Press `Logout` (1).

↳ This opens the Login interface.

There are three ways to log in. The three options - including the necessary settings in the software - are described below.

6.3.1.1 Logging in with username and password

Assigning a username and password

To assign a username and password:

1. Create a new user in `User Management` and assign this user a username and password (📖 *p. 83*).

↳ The user can log in immediately with this login information.

Logging in with username and password

To log in with username and password:

1. Enter `username` and `password`.
2. Press  .

↳ If the login information is correct, the user will be logged in.

6.3.1.2 Logging in with USB key

Assigning a USB key to a user

To assign a USB key to a user:

1. Select a user in `User Management` or create a new user (📖 *p. 83*).
2. Press the item `Login using USB`.

↳ A new window opens.

3. Plug the USB key into one of the ports on the control panel.
4. Select the USB key you wish to assign to the user for login purposes.

5. To assign the USB key, press *Pair*.

↳ The window disappears, and the function *Login using USB* is active.

Logging in with USB key

To log in with a USB key:

1. Plug the assigned USB key into the control panel.

↳ If the USB key has been assigned correctly, the user will be logged in.

6.3.1.3 Logging in with NFC chip

Assigning an NFC chip to a user

To assign an NFC chip to a user:

1. Select a user in *User Management* or create a new user (📖 *p. 83*).
2. Press the item *Login with NFC chip*.

↳ A new window opens.

3. To assign the NFC chip, hold the chip up to the control panel on the left-hand side.

↳ The window disappears, and the function *Login with NFC chip* is active.

Logging in with NFC chip

To log in with an NFC chip:

1. Hold the assigned NFC chip up to the control panel on the left-hand side.

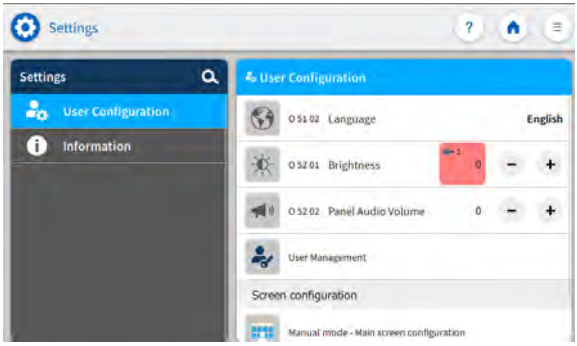
↳ If the NFC chip has been assigned correctly, the user will be logged in.

6.3.2 Authorizations as *Default User*

The factory setting for the `Default User` is such that the default user will be logged in automatically when the machine is switched on. This neither requires the input of a password nor a USB key or an NFC chip.

User management cannot be selected as a `Default User` (📖 *p. 72*):

Fig. 51: Authorizations as `Default User`

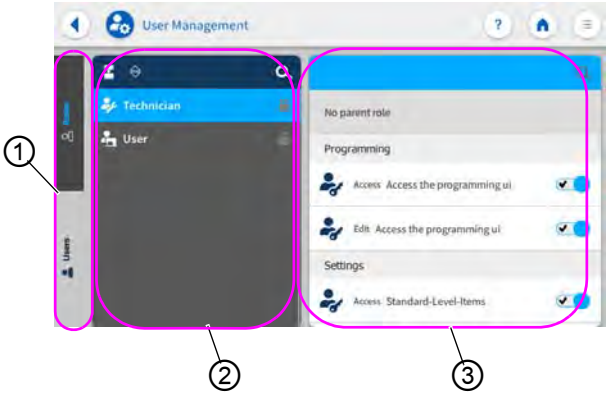


6.3.3 Authorizations as *Default Technician*

The factory setting for the Default Technician requires that the technician enter their username and password (`technician`, `25483`). The Default Technician has more far-reaching authorizations than the Default User. They are explained in more detail below.

If selecting User Management as a `Default Technician` (📖 *p. 72*), you will be presented with the following interface:

Fig. 52: Authorizations as `Default Technician`



(1) - Tab for roles and users
(2) - List of roles/users
(3) - Settings roles/users

On the left-hand side, you can select between the tabs (1) reserved for roles (📖 *p. 79*) and users (📖 *p. 83*). Detailed explanations are provided further below. To the right of the tabs you will find the list (2) of created roles / users - varying with the tab (1) you selected. On the far right, you will find the settings (3) associated with the role/user you selected.

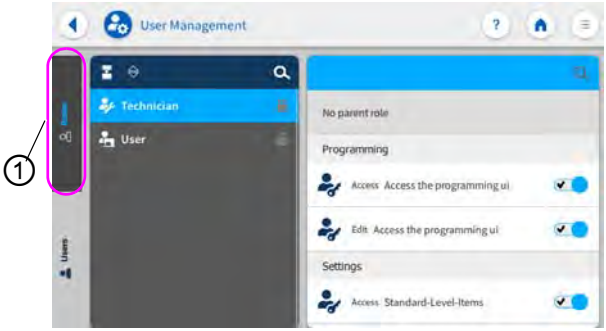
Explanation of role and user

Roles	User
A role defines which authorizations are permitted or forbidden. It is possible to assign more than one role to a single user. You need to be a user to log in; you cannot log in using a role.	You can log in as a user. A user can be assigned one or several roles - this is how they receive their authorizations.

6.3.3.1 Managing roles

If selecting User Management as a `Default Technician` (📖 *p. 72*), you will be presented with the following interface:

Fig. 53: Managing roles



(1) - Tab for roles

Press the tab (1) reserved for the `Roles` on the left-hand side.

Deleting a role

To delete a role:

1. Press the desired role.

↳ The role is highlighted in blue.

2. Press ✖.

↳ The role disappears from the list; it has been deleted.

Information

Roles with a 🔒 symbol behind their names have been created at the factory. They cannot be deleted.

Creating/deriving a new role

To create a new role:

1. Press (only a role with fewer or equal authorizations than your own).

   The list shows a new role.

2. Define the settings for the role (see table below).

Information
When logged in as a *Default Technician*, you can only select role derivations up to the role of *Technician*. You can adjust this setting in the authorizations of the roles (table below).

Settings of the roles

Read/Edit/Access	Menu item
Parent role	
Select from which role the new role is supposed to be derived. The selection shows all previously created roles.	
Programming	
Access	Access the programming ui
Edit	Settings on the programming screen
Settings	
Access	Standard level
Access	Technician level
Manual mode	
Edit	Bartack sewing
Edit	Status bar
Edit	Main screen
Access	Role Main Screen

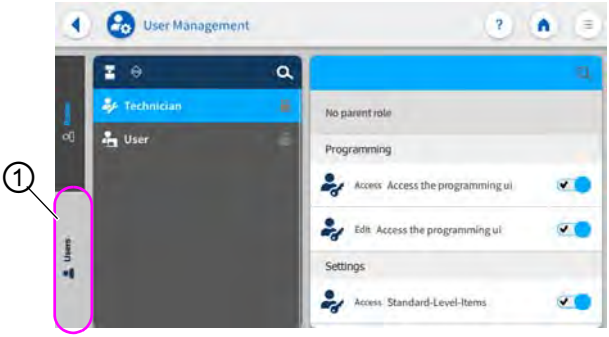
Read/Edit/Access	Menu item
Access	Role Status Bar
Access	Switch to automatic mode
Access	Sewing parameters
Edit	Manual bartack
Edit	Sewing foot lifted
Edit	Position of the needle while adjusting the sewing settings
Edit	Bobbin Wind mode
Edit	Segment abort
Edit	Edge trimmer
Edit	2nd Edge Guide Position
Edit	2nd Edge Guide Height
Edit	Edge Guide reference position
Edit	Stitch length
Edit	Switch Stitch Length
Edit	Needle thread tension
Edit	Switch Thread Tension
Edit	Sewing foot pressure
Edit	Bartack Toggle
Edit	Max. Speed
Edit	Needle Half Stitch
Edit	Enabled Thread Trim
Edit	Needle thread clamp
Edit	Threading Mode
Edit	Light barrier

Read/Edit/Access	Menu item
Edit	Reset Bobbin Counter
Edit	Center guide
Automatic mode	
Access	Program selection
Edit	Program name
Edit	Stitch length correction factor
Edit	Needle thread tension correction factor
Sewing	
Edit	Enable multi functional tiles
Edit	Flat Sew
User Management	
Edit	Current user
Edit	Roles up to technician
Edit	Roles up to vendor
Edit	Users up to technician
Edit	Users up to vendor
Edit	Auto Login Editable

6.3.3.2 Managing users

If selecting User Management as a `Default Technician` (📖 *p. 72*), you will be presented with the following interface:

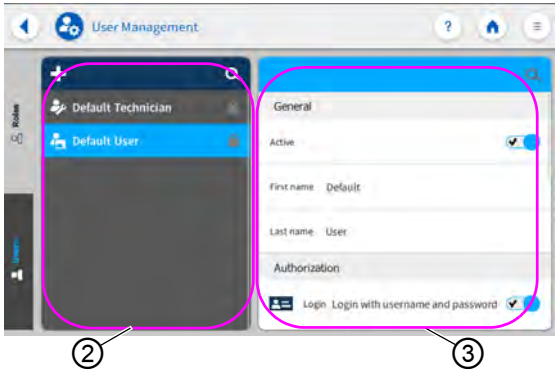
Fig. 54: Managing users (1)



(1) - Tab for users

Press the tab (1) reserved for the `User` on the left-hand side. This interface appears:

Fig. 55: Managing users (2)



(2) - List of users

(3) - Settings of the user

The left-hand side holds a list of all users (2) that have been created. You will see on the right-hand side which settings (3) have been defined for the selected user.

Deleting a user

To delete a user:

1. Press the desired user.

↳ The user is highlighted in blue.

2. Press .

↳ The user disappears from the list; it has been deleted.

Information

Users with a symbol behind their names have been created at the factory. They cannot be deleted.

Creating a new user

To create a new user:

1. Press .

↳ The list shows a new user.

2. Define the settings for the user (see table below).

User settings

Icon	Settings	Explanation
General		
	First name	Name of the user, NOT to be confused with the data used for logging in!
	Last name	
Authorization		
	*Login with username and password*	On/Off
		Username Name for logging in
		Password Password for logging in
	*Login with NFC token*	Login by NFC chip allowed or not allowed
	Login using USB	Login by USB key allowed or not allowed
	*Automatic login during system start*	Automatic login when machine starts; no login required

Icon	Settings	Explanation
Roles (📖 *p. 79*)		
	*Technician*	Slider control active/inactive; for assigning the role
	*User*	Slider control active/inactive; for assigning the role

Information
When logged in as a *Default Technician*, you can only assign roles up to the role of *Technician*. You can adjust this setting in the authorizations of the roles (📖 *p. 79*).

6.4 Software operating modes

The software of the control panel offers various operating modes:

- **Manual mode**

  Manual mode is the simplest operating mode. There are no programs/seam programs and no inputs for individual seam sections.

  Changes to the sewing foot pressure, stroke height, stitch length, needle thread tension and, also, the activation of other functions are always implemented immediately.

  All the major sewing parameters can be changed manually during the sewing process.

- **Automatic mode**

  Automatic mode allows for the execution of setups (seam program comprised of only one seam section) or complex seam programs (comprising 2 or more seam sections).

  Seam programs are divided into individual seam sections. Each section is assigned its own individual stitch length, needle thread tension, etc.

- **Programming**

  Programming mode makes it possible to create, adjust or delete a seam program in a quick and easy manner.

The individual modes and their uses are explained in detail later on.

6.5 Using Manual mode

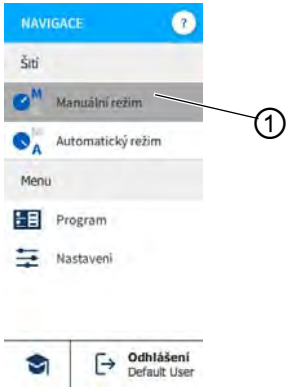
In manual mode, no programs have been saved, allowing you to use all parameters in a variable manner.

To access the Manual mode:

1. Press the symbol ≡ to bring up the navigation pane.

↳ This opens the navigation interface.

Fig. 56: Using Manual mode



(1) - Manual mode

2. Press `Manual mode` (1).

↳ The interface of Manual mode opens.

6.5.1 Setting up the user interface

You can customize the arrangement of the tiles and the appearance of the status bar in Manual mode.

Arranging the tiles on the main screen

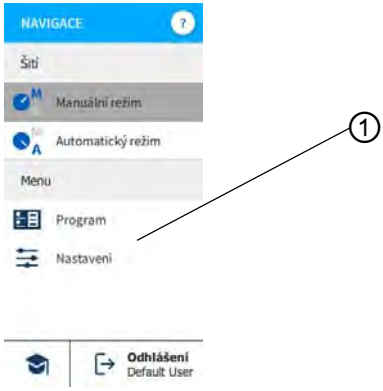
The main screen consists of three pages, which you can customize to your individual needs.

To adjust the tiles on the main screen:

1. Press the symbol ≡ to bring up the navigation pane.

↳ This opens the navigation interface.

Fig. 57: Setting up the user interface (1)

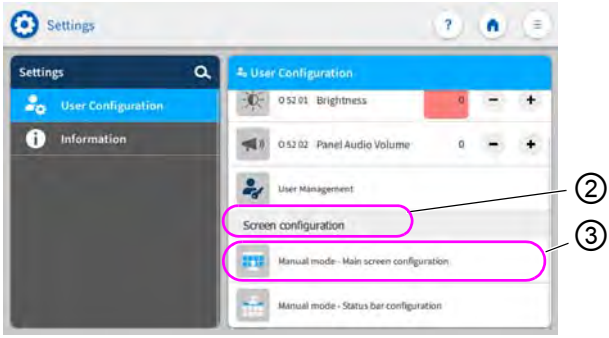


(1) - Settings

2. Press `Settings` (1).

↳ This opens the Settings interface.

Fig. 58: Setting up the user interface (2)

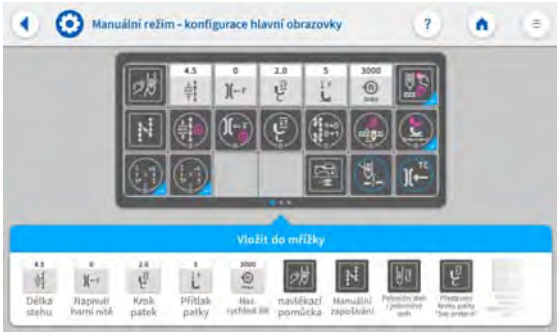


(2) - Screen configuration *(3) - Main screen configuration*

3. Go to `Screen configuration` (2) and press on `Manual mode - Main screen configuration` (3).

The interface used for configuring the main screen opens.

Fig. 59: Setting up the user interface (3)



4. Press and hold the desired tile and drag it to move it into or out of the grid.

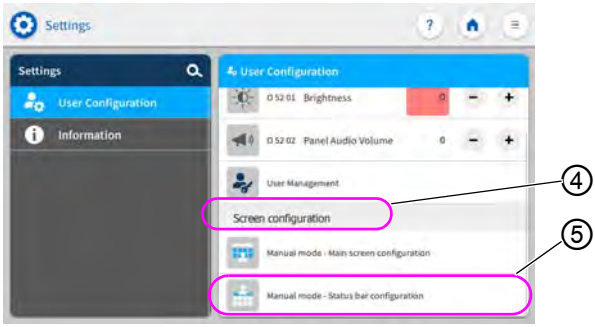
5. Press ◀ to return to Settings or ⌂ to return to Manual mode.

Adjusting the information displayed in the status bar

To adjust the appearance of the status bar:

1. Go to *Settings* (see above).

Fig. 60: Setting up the user interface (4)



(4) - Screen configuration *(5) - Status bar configuration*

2. Go to *Screen configuration* (4) and press on *Manual mode - Status bar configuration* (5).

↳ The interface used for configuring the status bar opens.

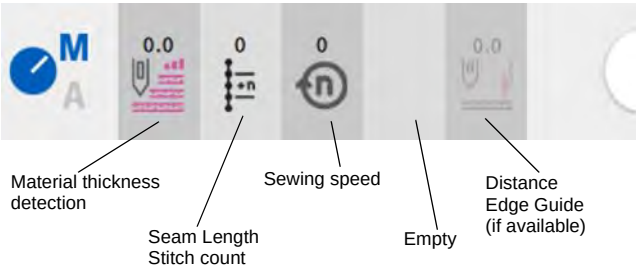
Fig. 61: Setting up the user interface (5)

3. Press and hold the desired symbol and drag it to move it into or out of the status bar.

4. Press to return to Settings or to return to Manual mode.

Default status bar settings

Fig. 62: Default status bar



6.5.2 Setting the parameters

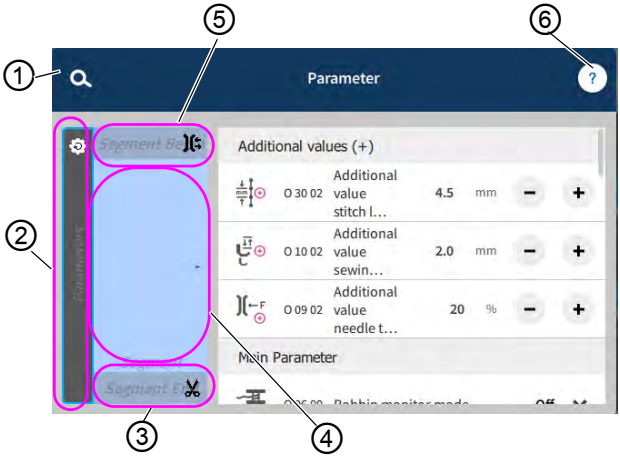
In Manual mode, you can set a variety of parameters. The functions and how they affect the parameters are described further below.

To access the parameter settings:

1. Press the symbol to bring up the parameter pane.

↳ This opens the parameter settings interface.

Fig. 63: Setting the parameters



(1) - Search
(2) - Parameters cross-segment
(3) - Parameters Segment End
(4) - Parameters Segment
(5) - Parameters Segment Begin
(6) - Context-sensitive help

6.5.3 Setting cross-segment *parameters*

There are various options for setting the cross-segment parameters. The following table lists all possible options.

Settings that are more complex and therefore require further explanation are described in more detail after the table.

Icon	Parameter	Settings
Additional values (+)		
	*Additional value stitch length (+)* The 2nd value for the stitch length can be switched on using a button on the push button panel or the tile on the control panel.	Value range 0.1 to 7.0 [mm] (depending on sewing equipment and subclass)
	*Additional value needle thread tension (+)* The 2nd value for the needle thread tension can be switched on using a button on the push button panel or the tile on the control panel.	Value range 01 to 99 [%]
	*Additional value of upper fullness (+)* The 2nd value for the upper fullness can be switched on using a button on the push button panel, with the knee button or with the button on the control panel.	Value range -6 to 16
	*Additional value of lower fullness (+)* The 2nd value for the lower fullness can be switched on using a button on the push button panel, with the knee button or with the button on the control panel.	Value range -6 to 16
	*Gap (2nd value)* The 2nd value for the gap between the motor-driven edge guide and the needle (factoring in the defined safety distance to the sewing feet).	Value range 8.0 to 45.0 [mm]
Main Parameter		
	`Bobbin monitor mode`	(see 🕮 *p. 95*)

Icon	Parameter	Settings
	`Point position` The distance of the needle from the material can be adjusted to allow precise positioning of the sewing material when starting sewing. The value entered here corresponds to the degree number on the handwheel.	Value range 000–359 [°]
	*Flat Sew* Transport correction at zero difference for Flat Sew.	Value range -20 to 20
	*Gap* Value for the gap between the motor-driven edge guide and the needle (factoring in the defined safety distance to the sewing feet).	Value range 8.0 to 45.0 [mm]
Correction speed effect		
	`Correction speed effect`	Value range On/Off (see 🕮 *p. 97*)
	*Stitch length*	The stitch length changes slightly depending on the speed. For this reason, the stitch length can be adjusted at different speeds by the software.
	*Needle thread tension*	Depending on the speed, the needle thread tension can be adjusted at different speeds by the software.
	*Sewing foot pressure*	Depending on the speed, the sewing foot pressure can be adjusted at different speeds by the software.
Material thickness detection		
	`Material thickness detection`	Value range On/Off (see 🕮 *p. 100*)
	*Stitch length*	The stitch length changes slightly depending on the material thickness. For this reason, the stitch length can be adjusted to different material thicknesses by the software.

Icon	Parameter	Settings
	*Needle thread tension*	Depending on the material thickness, the needle thread tension can be adjusted to different material thicknesses by the software.
	*Sewing foot pressure*	The sewing foot pressure can be adjusted to different material thicknesses by the software.
	`Max. Speed`	The maximum sewing speed can be adjusted to different material thicknesses by the software.
Output		
	`Output 1-16`	(see 🕮 *p. 104*)

6.5.3.1 Setting the *Bobbin monitor mode* parameters

The amount of remaining thread on the bobbin can be monitored optically or by software using this setting.

Menu item	Setting option 1	Setting option 2
Off		
Monitor Monitor mode can only be used if the additional equipment of the remaining thread monitor is present on the machine. Monitor mode allows for optical monitoring of the bobbin.	*Sewing stop*  Sewing stops and a notice is shown on the display when the bobbin is detected to be nearly empty. If the parameter is not activated, only the LEDs on the machine arm give a warning if the bobbin is empty.	Value range On/Off
	Sewing foot lower position 	Value range On/Off
	t Clean  Duration for which the lens is blown clear with compressed air. The process takes place as the thread is cut.	Value range 0000–5000 [ms]

Menu item	Setting option 1	Setting option 2
Software / Stitch Counter In Software mode, the bobbin is monitored by the software based on the number of stitches sewn.	*Counter Type*  4 different counters can be applied. The following 3 sub-items can be set for each of the counters.	Value range A/B/C/D
	Counter value  Bobbin supply capacity in stitches. This is a very variable value, which depends on the size of the bobbin and the thickness of the thread.	Value range 00000 to 99999
	Sewing stop  Sewing stops and a notice is shown on the display when the bobbin is detected to be nearly empty. If the parameter is not activated, only the LEDs on the machine arm give a warning if the bobbin is empty.	Value range On/Off
	Sewing foot lower position 	Value range On/Off
	Reset necessary  It is only possible to resume sewing after changing the bobbin and confirming the message on the control panel.	Value range On/Off

6.5.3.2 Setting the *Correction speed effect* parameters

Some parameters are affected by high speeds because of the resulting physical effects. To counteract these effects and to achieve consistent results, even at high speeds, adjustment factors can be set depending on the speed.

Overview of settings modes

The correction of the effects of high speeds can be identified in various modes and responded to depending on the setting. This general explanation can be applied to the following specific parameters.

Setting mode	Description
linear	In the linear setting, the size of the parameter increases or decreases steadily as the speed increases. The increase/decrease of the parameter depends on the limits set for the minimum and maximum speed.
2. Value On/Off	If a certain speed is exceeded, the 2nd value of the parameter is activated. If the speed then falls below this level again, it switches to the base value for the parameter.
2. Value On	If a certain speed is exceeded, the 2nd value of the parameter is activated. If the speed then falls below this level again, it does NOT switch to the base value for the parameter. Only after finishing the seam by cutting the thread is the base value for the parameter set again.

Setting options *Stitch length*

Menu item	Setting 1	Setting 2
linear	*Stitch length* Value range -50 – 50 [%]	Maximum stitch length variation reached at the upper speed limit.
	Min. Sewing speed Value range 0000-4000 [1/min] (depending on subclass)	Speed at which the increase/reduction of the stitch length should start.
	Max. Sewing speed Value range 0000-4000 [1/min] (depending on subclass)	Speed up to which the increase/reduction of the stitch length should occur.
2. Value On/Off	*Min. Sewing speed* Value range 0000-4000 [1/min] (depending on subclass)	Speed from which the 2nd stitch length should be used.
2. Value On	*Min. Sewing speed* Value range 0000-4000 [1/min] (depending on subclass)	Speed from which the 2nd stitch length should be used.

Options for setting the *Needle thread tension* parameter

Menu item	Setting 1	Setting 2
linear	*Needle thread tension* Value range 00 to 99 [%]	Maximum needle thread tension reached at the upper speed limit.
	Min. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed at which the increase in needle thread tension should start.
	Max. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed up to which the increase in needle thread tension should occur.
2. Value On/Off	*Min. Speed* Value range 0000-4000 [1/min] (depending on subclass)	Speed from which the 2nd needle thread tension should be used.
2. Value On	*Min. Speed* Value range 0000-4000 [1/min] (depending on subclass)	Speed from which the 2nd needle thread tension should be used.

Setting options *Sewing foot pressure*

Menu item	Setting 1	Setting 2
linear	*Sewing foot pressure* Value range 00 to 20	Maximum sewing foot pressure reached at the upper speed limit.
	Min. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed at which the increase in sewing foot pressure should start.
	Max. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed up to which the increase in sewing foot pressure should occur.

6.5.3.3 Setting the *Material thickness detection* parameters

To achieve consistently good sewing results for different material thicknesses, some parameters can be adjusted specifically to the material thickness.

Overview of settings modes

The material thickness can be identified in various modes and responded to depending on the setting. This general explanation can be applied to the following specific parameters.

Setting mode	Description
linear	In the linear setting, the size of the parameter increases or decreases steadily as the material thickness increases. The increase/decrease of the parameter depends on the limits set for the minimum and the maximum material thickness.
2. Value On/Off	If a certain material thickness is exceeded, the 2nd value of the parameter is activated. If the material thickness then falls below this level again, it switches to the base value for the parameter.
2. Value On	If a certain material thickness is exceeded, the 2nd value of the parameter is activated. If the material thickness then falls below this level again, it does NOT switch to the base value for the parameter. Only after finishing the seam by cutting the thread is the base value for the parameter set again.

Setting options *Stitch length*

Menu item	Setting 1	Setting 2
linear	*Stitch length* Value range -50 – 50 [%]	Maximum stitch length variation reached at the upper material thickness limit.
	Min. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness at which the increase/ reduction of the stitch length should start.
	Max. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness up to which the increase/ reduction of the stitch length should occur.
2. Value On/ Off	*Min. Material thickness* Value range 00.0 to 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.
2. Value On	*Min. Material thickness* Value range 00.0 to 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.

Options for setting the *Needle thread tension* parameter

Menu item	Setting 1	Setting 2
linear	*Needle thread tension* Value range 00 to 99 [%]	Maximum needle thread tension reached at the upper material thickness limit.
	Min. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness at which the increase in needle thread tension should start.
	Max. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness up to which the increase in needle thread tension should occur.
2. Value On/ Off	*Min. Material thickness* Value range 00.0 to 10.0 [mm]	Material thickness from which the 2nd needle thread tension should be used.
2. Value On	*Min. Material thickness* Value range 00.0 to 10.0 [mm]	Material thickness from which the 2nd needle thread tension should be used.

Setting options *Sewing foot pressure*

Menu item	Setting 1	Setting 2
linear	*Sewing foot pressure* Value range 00 to 20	Maximum sewing foot pressure reached at the upper material thickness limit.
	Min. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness at which the increase in sewing foot pressure should start.
	Max. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness up to which the increase in sewing foot pressure should occur.

Setting options *Max. sewing speed*

Menu item	Setting 1	Setting 2
linear	*Max. Speed* Value range 0000 to 4000 [1/min]	Maximum speed reached at the upper material thickness limit.
	Min. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness at which the increase in sewing speed should start.
	Max. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness up to which the increase in sewing speed should occur.

6.5.3.4 Setting the *Outputs (Output)* parameter

This parameter provides virtual outputs that can be assigned customer-specific functions. They can be used when customer-specific applications require a signal from the control of the machine.

This parameter cannot be used unless the virtual outputs have been assigned to a physical output at the Technician level. This requires that the parameter *Additional I/O Configuration* can be configured at the Technician level; for more details, refer to the explanation in the 🕮 *Service Instructions*.

6.5.4 Setting the *Segment Begin* parameters

There are various options for setting the Segment Begin parameters. The following table lists all possible options.

Settings that are more complex and therefore require further explanation are described in more detail after the table.

Icon	Parameter	Settings
Parameter Seam Begin		
	*Needle thread clamp* The needle thread clamp is closed at the 1st stitch of the seam to ensure that the needle thread lies on the underside of the sewing material.	Value range On/Off
Seam begin bartack parameters		
	*Bartack at seam begin*	Value range On/Off
	*Number of stitches backwards*	Value range 01 to 50
	*Number of stitches forward*	Value range 01 to 50

Icon	Parameter	Settings
	*Number of bartack sections* A bartack consists of several sections. If the sewing direction is changed, a new section is started. The number of sections in a bartack can be set here.	Value range 01 to 99
	*Stop-Time for direction change* The waiting time at the turning points (e.g. for a change of sewing direction) is set at this point. A short waiting time in milliseconds should ensure consistent seam quality (ornamental-stitch bartack).	Value range 0000–1000 [ms]
	*Stitch length default* If this function is active, the same needle stitch length is used for the bartack as the one set in Manual mode. If this function is deactivated, a custom input can be entered.	On/Off
		Stitch length of stitches forward Value range 0.1 to 7.0 [mm] (depending on subclass)
		Stitch length of backwards stitches Value range 0.1 to 7.0 [mm] (depending on subclass)
	*Speed in bartack*	Value range 50 to 2000 [1/min]
	*Single stitches per pedal* If this function is activated, each stitch in the bartack can be sewn individually by pressing the pedal. This function can only be used meaningfully if the speed is set very low for the bartack.	Value range On/Off
	*Needle thread tension default* If this function is active, the same needle thread tension is used for the bartack as the one set in Manual mode. If this function is deactivated, a custom input can be entered.	Value range On/Off

Icon	Parameter	Settings
	*Catch bartack* To ensure a safe sewing start and complete sewing of the start bartack, an additional bartack can precede the start bartack. Only the number of forward and backward stitches can be selected. The stitch length cannot be set individually – it corresponds to the stitch length of the normal start bartack.	On/Off
		Number of stitches backwards Value range 01 to 50
		Number of stitches forward Value range 01 to 50
		Number of bartack sections Value range 01 10
	*First bartack section* The 1st section of the bartack can be programmed with a different number of stitches. All subsequent sections have the preset number of stitches from the settings for the start bartack.	On/Off
		Number of stitches Value range 01 to 50
	*Last bartack section* The last section of the bartack can be programmed with a different number of stitches. All previous sections have the preset number of stitches from the settings for the end bartack.	On/Off
		Number of stitches Value range 01 to 50
	*Invert bartack direction* Normally, a bartack starts either with the sewing direction (forwards – even number of sections) or against the sewing direction (backwards – odd number of sections), depending on the number of sections. Setting this parameter inverts the sewing direction of the bartack.	Value range On/Off

6.5.5 Setting the *Segment* parameters

There are various options for setting the parameters in the segment. The following table lists all possible options.

Settings that are more complex and therefore require further explanation are described in more detail after the table.

Icon	Parameter	Settings
Seam Parameter		
	*Stitch length*	Value range 0.1 to 7.0 [mm] (depending on the sewing equipment and the subclass)
	*Needle thread tension*	Value range 01 to 99 [%]
	*Upper difference*	Value range -6 to 16
	*Lower difference*	Value range -6 to 16
	*Sewing foot pressure*	Value range 01 to 14
	*Max. Speed* It is possible to reduce the maximum sewing speed at this point. The maximum sewing speed can be set in the software at the Technician level.	Value range 0050-2500 [1/min] (depending on subclass)

Icon	Parameter	Settings
	*Sewing foot lift at stop*	Value range On/Off
	*Height of sewing foot lift at stop*	Value range 00 to 13 [mm] (depending on subclass)
	*Light barrier* (optional additional equipment) The light barrier detects the beginning and the end of the material. After a signal was detected, sewing can continue automatically with the specifically set parameters.	Value range On/Off (see 🕮 *p. 138*)

6.5.6 Setting the *Segment End* parameters

There are various options for setting the Segment End parameters. The following table lists all possible options.

Settings that are more complex and therefore require further explanation are described in more detail after the table.

Icon	Parameter	Settings
Parameter Seam End		
	*Sewing foot lift after trim*	Value range On/Off
	*Height of sewing foot lift after trim*	Value range 00 to 13 [mm] (depending on subclass)
	*Thread trimmer*	Value range On/Off

Icon	Parameter	Settings
Adjustments for seam end bartack parameters		
	*Bartack at seam end*	Value range On/Off
	*Number of stitches backwards*	Value range 01 to 50
	*Number of stitches forward*	Value range 01 to 50
	*Number of bartack sections* A bartack consists of several sections. If the sewing direction is changed, a new section is started. The number of sections in a bartack can be set here.	Value range 01 to 99
	*Stop-Time for direction change* The waiting time at the turning points (e.g. for a change of sewing direction) is set at this point. A short waiting time in milliseconds should ensure consistent seam quality (ornamental-stitch bartack).	Value range 0000–1000 [ms]
	*Stitch length default* If this function is active, the same needle stitch length is used for the bartack as the one set in Manual mode. If this function is deactivated, a custom input can be entered.	On/Off
		Stitch length of stitches forward Value range 0.1 to 7.0 [mm] (depending on subclass)
		Stitch length of backwards stitches Value range 0.1 to 7.0 [mm] (depending on subclass)
	*Speed in bartack*	Value range 50 to 2000 [1/min]

Icon	Parameter	Settings
	*Single stitches per pedal* If this function is activated, each stitch in the bartack can be sewn individually by pressing the pedal. This function can only be used meaningfully if the speed is set very low for the bartack.	Value range On/Off
	*Needle thread tension default* If this function is active, the same needle thread tension is used for the bartack as the one set in Manual mode. If this function is deactivated, a custom input can be entered.	Value range On/Off
	*Catch bartack* To ensure a safe sewing start and complete sewing of the start bartack, an additional bartack can precede the start bartack. Only the number of forward and backward stitches can be selected. The stitch length cannot be set individually – it corresponds to the stitch length of the normal start bartack.	On/Off
		Number of stitches backwards Value range 01 to 50
		Number of stitches forward Value range 01 to 50
		Number of bartack sections Value range 01 to 10
	*First bartack section* The first section of the bartack can be programmed with a different number of stitches. All subsequent sections have the preset number of stitches from the settings for the start bartack.	On/Off
		Number of stitches Value range 01 to 50

Icon	Parameter	Settings
	Last bartack section The last section of the bartack can be programmed with a different number of stitches. All previous sections have the preset number of stitches from the settings for the end bartack.	On/Off *Number of stitches* Value range 01 to 50
	Invert bartack direction Normally, a bartack starts either with the sewing direction (forwards – even number of sections) or against the sewing direction (backwards – odd number of sections), depending on the number of sections. Setting this parameter inverts the sewing direction of the bartack.	Value range On/Off

6.6 Using Automatic mode

Automatic mode is comprised of all stored programs.

To access the Automatic mode:

1. Press the symbol ≡ to bring up the navigation pane.

   This opens the navigation interface.

Fig. 64: Using Automatic mode (1)

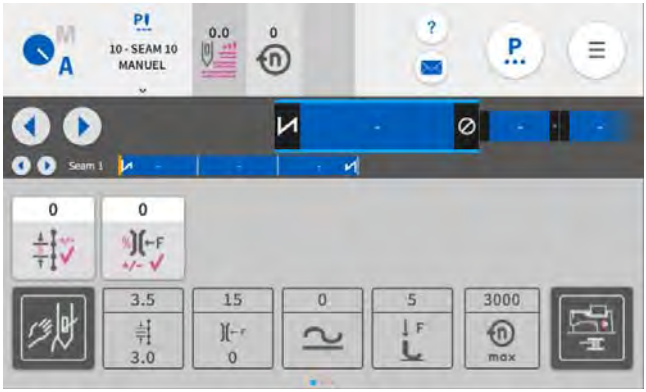
(1) - Automatic mode

2. Press `Automatic mode` (1).

↳ The interface of Automatic mode opens.
The program stored last is loaded.

The display shows tiles and information below the upper bar that vary with the selected program:

Fig. 65: Using Automatic mode (2)



Explanations of icons/symbols in Automatic mode:

Symbol/Icon	Meaning
	Selected program
	Move to the next or previous step in seams/ segments – also during the seam
X	Abort a seam program
	Seam/segment including information on the settings for seam beginning, seam and seam end
	Display of the entire program including its seams and segments.
	Adjustment factors that can still be adjusted during the seam.
	Grayed-out tiles for information on the set parameters can be adjusted by programming (📖 *p. 116*).
	Dark gray tiles can only be activated or deactivated. You define which tiles will be visible by programming (📖 *p. 116*).

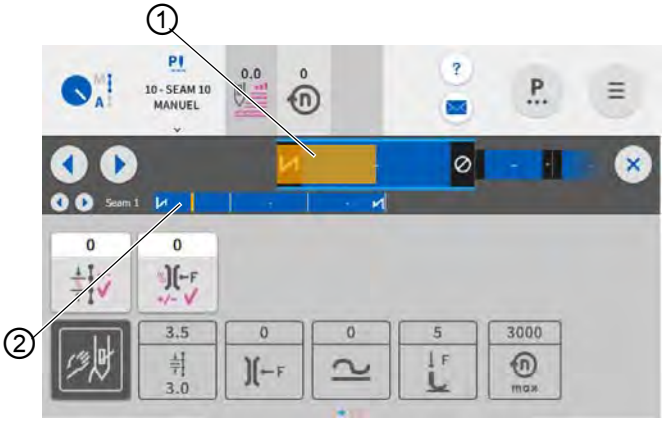
6.6.1 Sewing in Automatic mode

To sew in Automatic mode:

1. Select the program.
2. Press the pedal forward and sew.

↳ You can see the following on the control panel:

Fig. 66: Sewing in Automatic mode



(1) - Progress in the segment *(2) - Progress in the program*

Possible actions in the course of the seam

The following table lists the functions that can be performed in the course of the seam.

Button/Pedal	Function
	Go to the next or previous step in the seams/ segments
Press the pedal halfway back.	Lift sewing foot.
Press the pedal fully back or cancel by pressing the **X**.	Cut off or cancel the program. The program remains stopped at the cutoff point.

6.6.2 Canceling a program in Automatic mode

To cancel a program in Automatic mode:

1. Press the pedal fully back.

↳ The program is canceled and the thread cut. The machine takes note of where the program was canceled, and then continues from the same point when sewing resumes.

2. To cancel the program completely, press the pedal all the way backwards again.

↳ The program is canceled, and the machine starts from the first seam section in the program when sewing resumes.

Important

Canceling by pedal is only possible if the parameter segment switch by pedal is NOT active in the program defaults at the Technician level.
If the parameter is still active, you can cancel the program only by pressing the cross on the control panel.

6.7 Using Programming mode

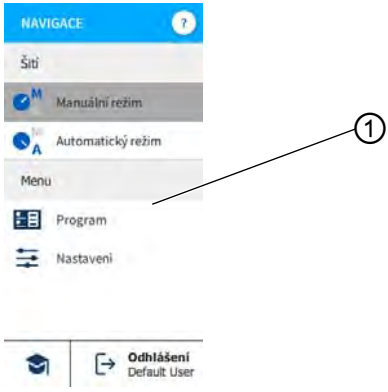
Programming mode allows you to create new programs and copy and adjust existing programs.

To access Programming mode:

1. Press the symbol to bring up the navigation pane.

↳ This opens the navigation interface.

Fig. 67: Using Programming mode (1)

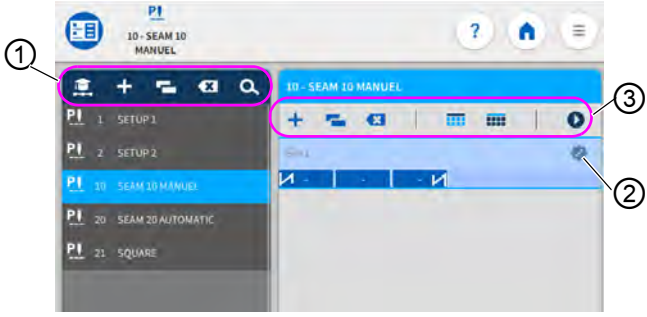


(1) - Programming mode

2. Press `Programming`.

↳ The user interface for Programming mode opens.

Fig. 68: Using Programming mode (2)



(1) - Managing programs
(2) - Edit the seams/segments
(3) - Manage the seams/segment

6.7.1 Managing programs

You can create, delete and copy programs. Managing the items is quick and easy thanks to the buttons listed below.

	Create a new program
	Delete a selected program
	Copy and insert a program
	Search for a program name

6.7.2 Managing seams

You can also add tiles to the main screen or the status bar. You can also add tiles to the main screen or the status bar. Managing the items is quick and easy thanks to the buttons listed below.

Settings in the selected program (edit seam)	
	Add seam
	Delete seam
	Copy and insert a seam
	Place tiles on the main screen of the program (grid), see 🕮 *p. 88*.
	Place information in the status bar of the program, see 🕮 *p. 88*.
	Exit Programming/Edit and return to the beginning of the program (in Automatic mode)

6.7.3 Editing the segments of a seam

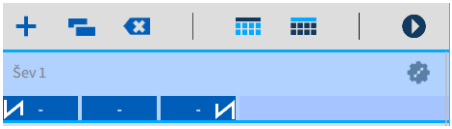
This section allows you to set the parameters for the current seam.

To edit the segments of a seam:

1. Press on the desired seam.

↳ The seam is highlighted in blue.

Fig. 69: Editing the segments of a seam (1)



2. Press on the symbol .

↳ The interface used for setting the parameters opens.

Fig. 70: Editing the segments of a seam (2)

(1) - Managing segments
(2) - Parameters cross-segment
(3) - Parameters Segment
(4) - Parameters Segment End/ Seam end
(5) - Parameters Segment Begin/ Seam Begin
(6) - List of adjustable parameters

6.7.4 Managing segments

You can create, delete and copy segments. Managing the items is quick and easy thanks to the buttons listed below.

Edit segments	
	Add segment
	Delete segment
	Copy and insert a segment

6.7.5 Setting program parameters

There are various options for setting the cross-program parameters. The following table lists all possible options.

Settings that are more complex and therefore require further explanation are described in more detail after the table.

Icon	Parameter	Settings
Additional values (+)		
	*Additional value stitch length (+)* The 2nd value for the stitch length can be switched on using a button on the push button panel or the tile on the control panel.	Value range 0.1 to 7.0 [mm] (depending on sewing equipment and subclass)
	*Additional value needle thread tension (+)* The 2nd value for the needle thread tension can be switched on using a button on the push button panel or the tile on the control panel.	Value range 01 to 99 [%]
	*Additional value of lower difference (+)* The 2nd value for the difference can be switched on using a button on the push button panel, with the knee button or with the button on the control panel.	Value range -6 to 16

Icon	Parameter	Settings
	*Gap (2nd value)* The 2nd value for the gap can be switched on using a button on the push button panel or the tile on the control panel.	Value range 01.0 to 45.0 [mm]
Program Cycle		
P→Px	*Next program* A subsequent program can be defined. Input via program number.	
	*Program Cycle* The program is executed as a loop, which is useful, for instance, for ornamental stitch seams. You select the start segment and the end segment from a program and define how often you wish the selected segments to be sewn.	On/Off
		`Start Segment` Value range 00 – 30 (0 = the cycle starts with the first segment)
		`End Segment` Value range 00 – 30 (0 = the cycle ends with the last segment)
		`Repetitions` Value range 00 – 99 (0 = the cycle continues until the next segment is activated manually)
Main Parameter		
	*Needle thread clamp* The needle thread clamp is closed at the 1st stitch of the seam to ensure that the needle thread lies on the underside of the sewing material.	Value range On/Off
	`Bobbin monitor mode`	(see 🕮 *p. 123*)

Icon	Parameter	Settings
	*Counter Mode* Daily piece counter, can be set to count either up or down.	`Off/Up/Down`
		`Reset` When the daily piece counter is activated, it must be reset once after entering a value to ensure it counts correctly.
	`Point position` The distance of the needle from the material can be adjusted to allow precise positioning of the sewing material when starting sewing. The value entered corresponds to the degree number on the handwheel.	000–359 [°]
	*Flat Sew* Transport correction at zero difference for Flat Sew.	Value range -20 to 20
Correction speed effect		
	`Correction speed effect`	Value range On/Off (see 🕮 *p. 125*)
	*Stitch length*	The stitch length changes slightly depending on the speed. For this reason, the stitch length can be adjusted at different speeds by the software.
	*Needle thread tension*	Depending on the speed, the needle thread tension can be adjusted at different speeds by the software.
	*Sewing foot pressure*	Depending on the speed, the sewing foot pressure can be adjusted at different speeds by the software.
Material thickness detection		
	`Material thickness detection`	Value range On/Off (see 🕮 *p. 128*)

Icon	Parameter	Settings
	*Stitch length*	The stitch length changes slightly depending on the material thickness. For this reason, the stitch length can be adjusted to different material thicknesses by the software.
	*Needle thread tension*	Depending on the material thickness, the needle thread tension can be adjusted to different material thicknesses by the software.
	*Sewing foot pressure*	The sewing foot pressure can be adjusted to different material thicknesses by the software.
	`Max. Speed`	The maximum sewing speed can be adjusted to different material thicknesses by the software.

6.7.5.1 Setting the *Bobbin monitor mode* parameters

The amount of remaining thread on the bobbin can be monitored optically or by software using this setting.

Menu item	Setting 1	Setting 2
Off		
Monitor Monitor mode can only be used if the additional equipment of the remaining thread monitor is present on the machine. Monitor mode allows for optical monitoring of the bobbin.	*Sewing stop*  Sewing stops and a notice is shown on the display when the bobbin is detected to be nearly empty. If the parameter is not activated, only the LEDs on the machine arm give a warning if the bobbin is empty.	Value range On/Off
	Sewing foot lower position 	Value range On/Off
	t Clean  Duration for which the lens is blown clear with compressed air. The process takes place as the thread is cut.	Value range 0000–5000 [ms]

Menu item	Setting 1	Setting 2
Software / Stitch Counter In Software mode, the bobbin is monitored by the software based on the number of stitches sewn.	*Counter Type*   4 different counters can be applied. The following 3 sub-items can be set for each of the counters.	Value range A/B/C/D
	Counter value   Bobbin supply capacity in stitches. This is a very variable value, which depends on the size of the bobbin and the thickness of the thread.	Value range 00000 to 99999
	Sewing stop   Sewing stops and a notice is shown on the display when the bobbin is detected to be nearly empty. If the parameter is not activated, only the LEDs on the machine arm give a warning if the bobbin is empty.	Value range On/Off
	Sewing foot lower position 	Value range On/Off
	Reset necessary  It is only possible to resume sewing after changing the bobbin and confirming the message on the control panel.	Value range On/Off

6.7.5.2 Setting the *Correction speed effect* parameters

Some parameters are affected by high speeds because of the resulting physical effects. To counteract these effects and to achieve consistent results, even at high speeds, adjustment factors can be set depending on the speed.

Overview of settings modes

The correction of the effects of high speeds can be identified in various modes and responded to depending on the setting. This general explanation can be applied to the following specific parameters.

Setting mode	Description
linear	In the linear setting, the size of the parameter increases or decreases steadily as the speed increases. The increase/decrease of the parameter depends on the limits set for the minimum and maximum speed.
2. Value On/Off	If a certain speed is exceeded, the 2nd value of the parameter is activated. If the speed then falls below this level again, it switches to the base value for the parameter.
2. Value On	If a certain speed is exceeded, the 2nd value of the parameter is activated. If the speed then falls below this level again, it does NOT switch to the base value for the parameter. Only after finishing the seam by cutting the thread is the base value for the parameter set again.

Setting options *Stitch length*

Menu item	Setting 1	Setting 2
linear	*Stitch length* Value range -50 – 50 [%]	Maximum stitch length variation reached at the upper speed limit.
	Min. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed at which the increase/reduction of the stitch length should start.
	Max. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed up to which the increase/reduction of the stitch length should occur.
2. Value On/ Off	*Min. Speed* Value range 0000-4000 [1/min] (depending on subclass)	Speed from which the 2nd stitch length should be used.
2. Value On	*Min. Speed* Value range 0000-4000 [1/min] (depending on subclass)	Speed from which the 2nd stitch length should be used.

Options for setting the *Needle thread tension* parameter

Menu item	Setting 1	Setting 2
linear	*Needle thread tension* Value range 00 to 99 [%]	Maximum needle thread tension reached at the upper speed limit.
	Min. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed at which the increase in needle thread tension should start.
	Max. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed up to which the increase in needle thread tension should occur.
2. Value On/ Off	*Min. Speed* Value range 0000-4000 [1/min] (depending on subclass)	Speed from which the 2nd needle thread tension should be used.
2. Value On	*Min. Speed* Value range 0000-4000 [1/min] (depending on subclass)	Speed from which the 2nd needle thread tension should be used.

Setting options *Sewing foot pressure*

Menu item	Setting 1	Setting 2
linear	*Sewing foot pressure* Value range 00 to 20	Maximum sewing foot pressure reached at the upper speed limit.
	Min. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed at which the increase in sewing foot pressure should start.
	Max. Speed Value range 0000-4000 [1/min] (depending on subclass)	Speed up to which the increase in sewing foot pressure should occur.

6.7.5.3 Setting the *Material thickness detection* parameters

To achieve consistently good sewing results for different material thicknesses, some parameters can be adjusted specifically to the material thickness.

Overview of settings modes

The material thickness can be identified in various modes and responded to depending on the setting. This general explanation can be applied to the following specific parameters.

Setting mode	Description
linear	In the linear setting, the size of the parameter increases or decreases steadily as the material thickness increases. The increase/decrease of the parameter depends on the limits set for the minimum and the maximum material thickness.
2. Value On/Off	If a certain material thickness is exceeded, the 2nd value of the parameter is activated. If the material thickness then falls below this level again, it switches to the base value for the parameter.
2. Value On	If a certain material thickness is exceeded, the 2nd value of the parameter is activated. If the material thickness then falls below this level again, it does NOT switch to the base value for the parameter. Only after finishing the seam by cutting the thread is the base value for the parameter set again.

Setting options *Stitch length*

Menu item	Setting 1	Setting 2
linear	*Stitch length* Value range -50 – 50 [%]	Maximum stitch length variation reached at the upper material thickness limit.
	Min. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness at which the increase/reduction of the stitch length should start.
	Max. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness up to which the increase/ reduction of the stitch length should occur.
2. Value On/ Off	*Min. Material thickness* Value range 00.0 to 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.
2. Value On	*Min. Material thickness* Value range 00.0 to 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.

Options for setting the *Needle thread tension* parameter

Menu item	Setting 1	Setting 2
linear	*Needle thread tension* Value range 00 to 99 [%]	Maximum needle thread tension reached at the upper material thickness limit.
	Min. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness at which the increase in needle thread tension should start.
	Max. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness up to which the increase in needle thread tension should occur.
2. Value On/ Off	*Min. Material thickness* Value range 00.0 to 10.0 [mm]	Material thickness from which the 2nd needle thread tension should be used.
2. Value On	*Min. Material thickness* Value range 00.0 to 10.0 [mm]	Material thickness from which the 2nd needle thread tension should be used.

Setting options *Sewing foot pressure*

Menu item	Setting 1	Setting 2
linear	*Sewing foot pressure* Value range 00 to 20	Maximum sewing foot pressure reached at the upper material thickness limit.
	Min. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness at which the increase in sewing foot pressure should start.
	Max. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness up to which the increase in sewing foot pressure should occur.

Setting options *Max. sewing speed*

Menu item	Setting 1	Setting 2
linear	*Max. Sewing speed* Value range 0000 to 4000 [1/min]	Maximum speed reached at the upper material thickness limit.
	Min. Material thickness Value range 00.0 – 10.0 [mm]	Material thickness at which the increase in sewing speed should start.
	Max. Material thickness Value range 00.0 to 10.0 [mm]	Material thickness up to which the increase in sewing speed should occur.

6.7.6 Setting the *Seam Begin/Segment Begin* parameters

There are various options for setting the Seam Begin/Segment Begin parameters. The following table lists all possible options.

Settings that are more complex and therefore require further explanation are described in more detail after the table.

Icon	Parameter	Settings
Seam begin bartack parameters		
	*Bartack at seam begin*	Value range On/Off
	*Number of stitches backwards*	Value range 01 to 50
	*Number of stitches forward*	Value range 01 to 50
	*Number of bartack sections* A bartack consists of several sections. If the sewing direction is changed, a new section is started. The number of sections in a bartack can be set here.	Value range 01 to 99
	*Stop-Time for direction change* The waiting time at the turning points (e.g. for a change of sewing direction) is set at this point. A short waiting time in milliseconds should ensure consistent seam quality (ornamental-stitch bartack).	Value range 0000–1000 [ms]

Icon	Parameter	Settings
	*Stitch length default* If this function is active, the same needle stitch length is used for the bartack as the one set in Manual mode. If this function is deactivated, a custom input can be entered.	On/Off
		Stitch length of stitches forward Value range 0.1 to 7.0 [mm] (depending on subclass)
		Stitch length of backwards stitches Value range 0.1 to 7.0 [mm] (depending on subclass)
	*Speed in bartack*	Value range 50 to 2000 [1/min]
	*Single stitches per pedal* If this function is activated, each stitch in the bartack can be sewn individually by pressing the pedal. This function can only be used meaningfully if the speed is set very low for the bartack.	Value range On/Off
	*Needle thread tension default* If this function is active, the same needle thread tension is used for the bartack as the one set in Manual mode. If this function is deactivated, a custom input can be entered.	Value range On/Off
	*Catch bartack* To ensure a safe sewing start and complete sewing of the start bartack, an additional bartack can precede the start bartack. Only the number of forward and backward stitches can be selected. The stitch length cannot be set individually – it corresponds to the stitch length of the normal start bartack.	On/Off
		Number of stitches backwards Value range 01 to 50
		Number of stitches forward Value range 01 to 50
		Number of bartack sections Value range 01 to 10

Icon	Parameter	Settings
	*First bartack section* The 1st section of the bartack can be programmed with a different number of stitches. All subsequent sections have the preset number of stitches from the settings for the start bartack.	On/Off *Number of stitches* Value range 01 to 50
	*Last bartack section* The last section of the bartack can be programmed with a different number of stitches. All previous sections have the preset number of stitches from the settings for the end bartack.	On/Off *Number of stitches* Value range 01 to 50
	*Invert bartack direction* Normally, a bartack starts either with the sewing direction (forwards – even number of sections) or against the sewing direction (backwards – odd number of sections), depending on the number of sections. Setting this parameter inverts the sewing direction of the bartack.	Value range On/Off

6.7.7 Setting the *Segment* parameters

There are various options for setting the parameters in the segment. The following table lists all possible options.

Settings that are more complex and therefore require further explanation are described in more detail after the table.

Icon	Parameter	Settings
Seam Parameter		
	*Stitch length*	Value range 0.1 to 7.0 [mm] (depending on the sewing equipment and the subclass)
	*Needle thread tension*	Value range 01 to 99 [%]
	*Sewing foot pressure*	Value range 01 to 14
	*Differentiation*	Value range -6 to 16
	*Type of differentiation*	Range Upper/lower
 	*Seam segment length* or *Number of stitches in segment*	You can set the active option at the Technician level *Machine configuration > Mode segment size*. The s.p.m. option is set at the factory. The display remains after the thread has been cut, while counting/ measuring will begin when sewing starts again.
	*Max. Speed* It is possible to reduce the maximum sewing speed at this point. The maximum sewing speed can be set in the software at the Technician level.	Value range 0050-2500 [1/min] (depending on subclass)

Icon	Parameter	Settings
	*Positioning of the needle* Position of the needle when sewing stops.	Value range On/Off
	*Sewing foot lift at stop*	Value range On/Off
	*Height of sewing foot lift at stop*	Value range 00 to 13 [mm] (depending on subclass)
	*Backwards* When the parameter is activated, the section is sewn backwards.	Value range On/Off
	*Center guide* (only on 2-needle machines, optional additional equipment)	Value range On/Off
	*Puller* (optional additional equipment) The feed dog supports the transport of the sewing material. The feed of the two rollers is calculated automatically based on the stitch length of the machine. An adjustment may be necessary depending on the application. The rollers of the feed dog can be adjusted separately. The input is in percent: a positive value increases the roller feed while a negative value reduces the feed.	On/Off *Correction top roller* Value range -100 - 100 [%] *Correction bottom roller* Value range -100 - 100 [%]
	*Gap* (optional additional equipment) The edge guide helps to precisely position the sewing material. The value set indicates the distance between the needle and edge guide/material edge.	Value range 01.0 - 45.0 [mm]

Icon	Parameter	Settings
	*Light barrier* (optional additional equipment) The light barrier detects the beginning and the end of the material. After a signal was detected, sewing can continue automatically with the specifically set parameters.	Value range On/Off (see 🕮 *p. 138*)
Output		
	*Output 01-16*	(see 🕮 *p. 139*)

6.7.7.1 Setting the *Light barrier* parameters

The light barrier detects the beginning and the end of the material. After a signal was detected, sewing can continue automatically with the specifically set parameters.

Icon	Menu item	Settings
	*Distance* Distance from the detection of the signal to the end of the material. The distance signifies the path from the needle to the light barrier. The path is specified in millimeters and used by the machine to independently calculate the number of stitches.	Value range 0 to 255
	*Signal detection at seam begin* The signal scan of the light barrier is performed at the beginning of the seam. If the function is activated, the light barrier must detect a signal to allow the machine to sew. If the function is inactive, sewing can take place without signal detection.	Value range On/Off
	*Signal detection at seam end* The signal scan of the light barrier is performed at the end of the seam. If the function is active, the machine will continue to sew with the specifically set parameters following the signal detection. If the function is inactive, nothing will happen.	Value range On/Off
	*Seams* Input of the number of signal detections after which the machine is supposed to continue with the specifically set parameters.	Value range 1 to 255
	*Filter stitches* Loosely woven fabric with stitches may cause the light barrier to wrongly detect a signal. To prevent this from happening, you enter the number of filter stitches. This number represents the minimum number of stitches with signal detection following the 1st detection of the signal.	Value range 0 to 255

6.7.7.2 Setting the Outputs (*Output*) parameter

This parameter provides virtual outputs that can be assigned customer-specific functions. They can be used when customer-specific applications require a signal from the control of the machine.

This parameter cannot be used unless the virtual outputs have been assigned to a physical output at the Technician level. This requires that the parameter *Additional I/O Configuration* can be configured at the Technician level; for more details, refer to the explanation in the 🕮 *Service Instructions*.

6.7.8 Setting the *Segment End/Seam End* parameters

There are various options for setting the Segment End parameters. The following table lists all possible options.

Settings that are more complex and therefore require further explanation are described in more detail after the table.

Icon	Parameter	Settings
Parameter Seam End		
	*Sewing stop*	Value range On/Off Setting as to what will happen at the end of a segment/seam. (see 🕮 *p. 142*)
Adjustments for seam end bartack parameters		
	*Bartack at seam end*	Value range On/Off
	*Number of stitches backwards*	Value range 01 to 50
	*Number of stitches forward*	Value range 01 to 50
	*Number of bartack sections* A bartack consists of several sections. If the sewing direction is changed, a new section is started. The number of sections in a bartack can be set here.	Value range 01 to 99

Icon	Parameter	Settings
	*Stop-Time for direction change* The waiting time at the turning points (e.g. for a change of sewing direction) is set at this point. A short waiting time in milliseconds should ensure consistent seam quality (ornamental-stitch bartack).	Value range 0000–1000 [ms]
	*Stitch length default* If this function is active, the same needle stitch length is used for the bartack as the one set in Manual mode. If this function is deactivated, a custom input can be entered.	On/Off
		Stitch length of stitches forward Value range 0.1 to 7.0 [mm] (depending on subclass)
		Stitch length of backwards stitches Value range 0.1 to 7.0 [mm] (depending on subclass)
	*Speed in bartack*	Value range 0000 to 2000 [1/min]
	*Single stitches per pedal* If this function is activated, each stitch in the bartack can be sewn individually by pressing the pedal. This function can only be used meaningfully if the speed is set very low for the bartack.	Value range On/Off
	*Needle thread tension default* If this function is active, the same needle thread tension is used for the bartack as the one set in Manual mode. If this function is deactivated, a custom input can be entered.	Value range On/Off

Icon	Parameter	Settings
	*Catch bartack* To ensure a safe sewing start and complete sewing of the start bartack, an additional bartack can precede the start bartack. Only the number of forward and backward stitches can be selected. The stitch length cannot be set individually – it corresponds to the stitch length of the normal start bartack.	On/Off
		Number of stitches backwards Value range 01 to 50
		Number of stitches forward Value range 01 to 50
		Number of bartack sections Value range 01 to 10
	*First bartack section* The 1st section of the bartack can be programmed with a different number of stitches. All subsequent sections have the preset number of stitches from the settings for the start bartack.	On/Off
		Number of stitches Value range 01 to 50
	*Last bartack section* The last section of the bartack can be programmed with a different number of stitches. All previous sections have the preset number of stitches from the settings for the end bartack.	On/Off
		Number of stitches Value range 01 to 50
	*Invert bartack direction* Normally, a bartack starts either with the sewing direction (forwards – even number of sections) or against the sewing direction (backwards – odd number of sections), depending on the number of sections. Setting this parameter inverts the sewing direction of the bartack.	Value range On/Off

6.7.8.1 Setting the *Sewing stop* parameters

You can set additional parameters for the *Sewing stop*. Possible settings and the corresponding value ranges are listed in the table.

Icon	Menu item	Setting option
	*Needle up position*	Value range On/Off
	*Thread trimmer* (can only be set in the last segment)	Value range On/Off
	*Sewing foot lift at segment end*	Value range On/Off
	*Height of sewing foot lift after trim/at segment end*	Value range 00 to 13 [mm] (depending on subclass)

6.8 Importing/exporting programs

Programs cannot be imported or exported by the Default User.

This process requires that the user be logged in as a technician, 🕮 *Service Instructions*.

6.9 Performing a software update

A software update - for control panel or control - is always performed on the control panel. The software of the control is updated automatically whenever a software update is performed for the control panel. The files necessary for updating the control are already included in the file updates of the control panel.

To perform a software update:

1. Log in as a user with the access rights necessary to perform a software update (see 📖 *p. 72* on how to define this setting).
2. Download the software version from the Internet (www.duerkopp-adler.com) and save it to a USB key.
3. Plug the USB key into the port on the control panel.
4. Open the burger menu and select the menu *Settings – Software Update*.

↳ A window listing the files stored on the USB key opens.

5. Select the file containing the software update.

↳ Another window opens.

6. To start the software update, press on the *Start Update* button.
7. Wait until advised that the USB key can be removed OR that the control panel was restarted.

Information

If detecting - while the control panel is being restarted - that the software of the control requires an update as well, the system will start this update automatically.

It may take up to 15 minutes for the system to complete the update and restart the control panel successfully.

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8. Once the control panel has been restarted, the machine can be used again.
9. If you have not already done so, you can now remove the USB key.

7 Maintenance

This chapter describes simple maintenance work that needs to be carried out on a regular basis. The maintenance work can be carried out by the operating personnel. Advanced maintenance work may only be carried out by qualified specialists. Advanced maintenance work is described in the 🕮 *Service instructions*.

7.1 Cleaning work

Cleaning the machine

Lint and thread remnants should be removed after every 8 hours of operation using a compressed air gun or a brush. When sewing very fluffy material, the machine should be cleaned more frequently.

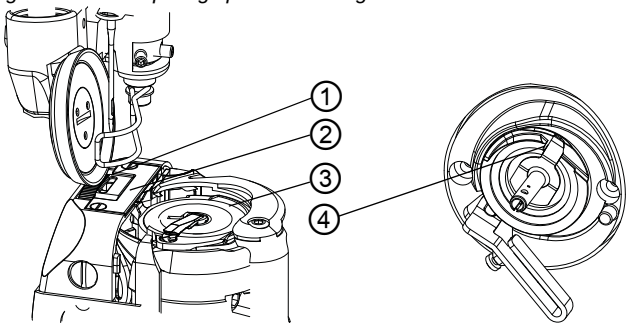
WARNING

Risk of injury from flying particles!
Switch off the machine at the main switch before cleaning the machine.
Flying particles can enter the eyes, causing injury.
Hold the compressed air gun so that the particles do not fly close to people.
Make sure no particles fly into the oil sump.

NOTICE

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 instructions.

Fig. 71: Areas requiring special cleaning



(1) - Area around the needle
(2) - Area under the throat plate
(3) - Hook
(4) - Cutter on the bobbin winder

Areas particularly susceptible to soiling:

- Cutter on the bobbin winder for the hook thread (4)
- Area under the throat plate (3)
- Hook (2)
- Area around the needle (1)

Cleaning steps:

1. Shut off power by turning off main switch.
2. Remove any lint and thread remnants using a compressed air gun or a brush.

NOTICE

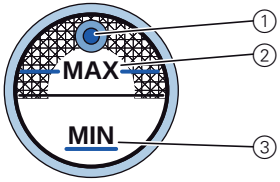
Damage to paintwork may occur when using solvent-based cleaners.
Solvent-based cleaners will damage paintwork on the machine.
Use only solvent-free substances for cleaning the machine.

7.2 Checking the 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 has come into contact with your skin, wash the affected areas thoroughly.

Fig. 72: Oil level indicator



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

Checking the oil level

1. Check the oil level indicator every day:

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

NOTICE

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 markings.

Refilling oil

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

1. Switch off the sewing machine at the main switch.
2. Add oil up to but not past the maximum level marking (2).
3. Press the main switch again to turn the sewing machine back on.

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

NOTICE

Machine damage possible due to incorrect oil.
An incorrect oil type can cause damage to the machine.
Only use oil specified in the operating instructions.

CAUTION

Risk of pollution 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 the applicable statutory regulations.

7.3 Customer service

Contact for repairs if machine is damaged:

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

8 Setup

WARNING

Risk of injury!
The machine may only be set up by trained specialists.
Wear safety gloves and safety shoes when unpacking and setting up.

8.1 Checking the scope of delivery

Important: The scope of delivery depends on your specific order.

1. Check that all parts are present before setup.

Standard equipment:

- Machine head
- Oil sump
- Reel stand with unwinding bracket
- Control unit
- Control panel
- Sewing lamp

Optional additional equipment:

- Table top
- Drawer
- Frame
- Pedal
- Knee switch

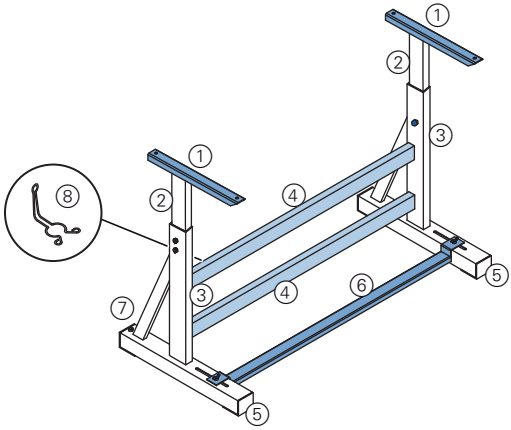
8.2 Removing the transport locks

All transport securing devices must be removed prior to setup.

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

8.3 Assembling frame components

Fig. 73: Assembling frame components



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

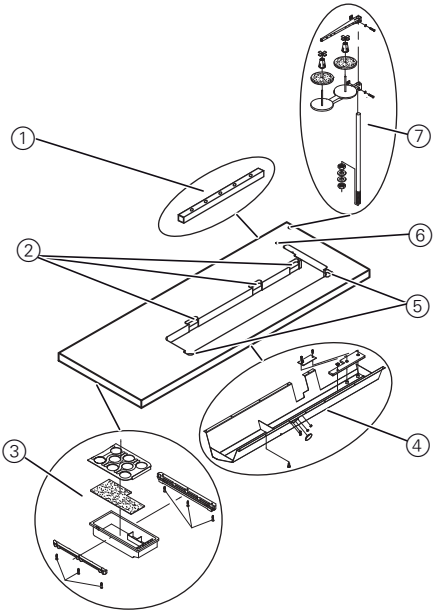
1. Screw the cross bar (4) onto the frame bars (3).
2. Screw the oil can holder (8) at the rear to the upper cross bar (4).
3. Screw the cross strut (6) to the foot struts (5).
4. Insert the inner bars (2) in such a way that the longer end of the head section (1) is above the longer end of the foot struts (5).
5. Screw the inner bars (2) down so that both head sections (1) are at the same height.

Important: Turn the adjusting screw (7) so that the frame has even contact with the ground.

8.4 Completing the table top

The table top is optional.
For drawings that allow you to independently assemble a table top, refer to the 🕮 *Appendix*, p. 173.

Fig. 74: Completing the table top



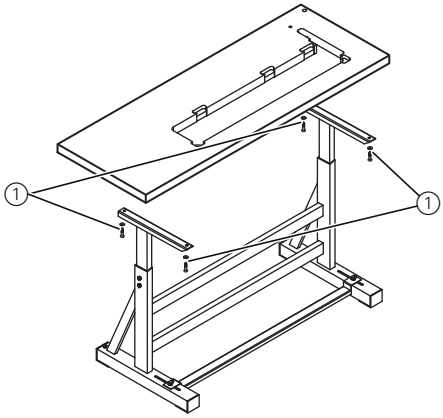
(1) - Cable duct
(2) - Recesses for lower hinge parts
(3) - Drawer
(4) - Oil sump
(5) - Corner protrusions
(6) - Hole
(7) - Reel stand

1. Screw the drawer (3) with the left-hand bracket to the underside of the table top.
2. Screw the oil sump (4) in place under the recess for the machine.
3. Screw the cable duct (1) to the underside of the table top.
4. Insert the reel stand (7) into the hole.
5. Fasten the reel stand (7) with nut and washer.
6. Screw the thread reel holder and the unwinding bracket onto the reel stand (7) in such a way that they are exactly on top of each other.

7. Insert the blind plug to the hole (6).
8. Fit the lower hinge parts into the recesses (2).
9. Fit the rubber corners in the corner protrusions (5).

8.5 Fastening the table top to the frame

Fig. 75: Fastening the table top to the frame



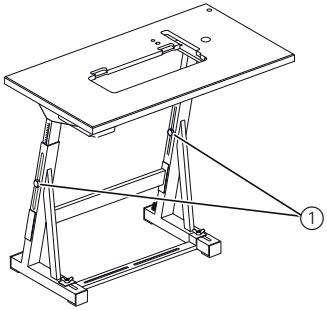
(1) - Screw holes and screws

1. Place the table top on the head sections of the inner bars.
2. Screw the table top firmly with the screws (1) according to the marks on the table top 🕮 *Table top drawing*, p. 173.

8.6 Setting the working height

The working height is continuously adjustable between 750 and 900 mm (clearance between the floor and upper edge of the table top).

Fig. 76: Setting the working height



(1) - Screws

CAUTION

Risk of crushing!
The table top can sink under its own weight when the screws on the frame bars are released. This applies even more when the machine head is already fitted.
Ensure that your hands are not jammed when releasing the screws.

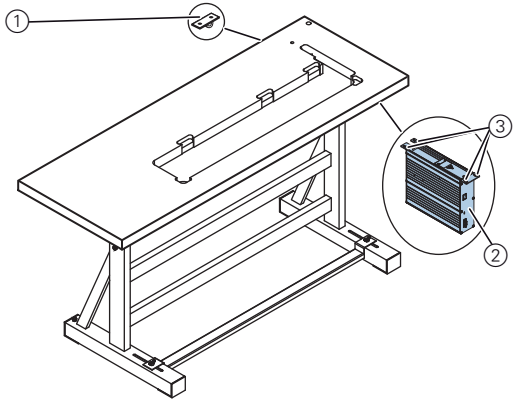
1. Release the screws (1) on the frame bars.
2. Set the table top to the desired height.

   Important: Pull out or push in the table top evenly at both sides to prevent it from jamming.
3. Tighten the screws (1) on the frame bars.

8.7 Controller

8.7.1 Fitting the control unit

Fig. 77: Fitting the control unit

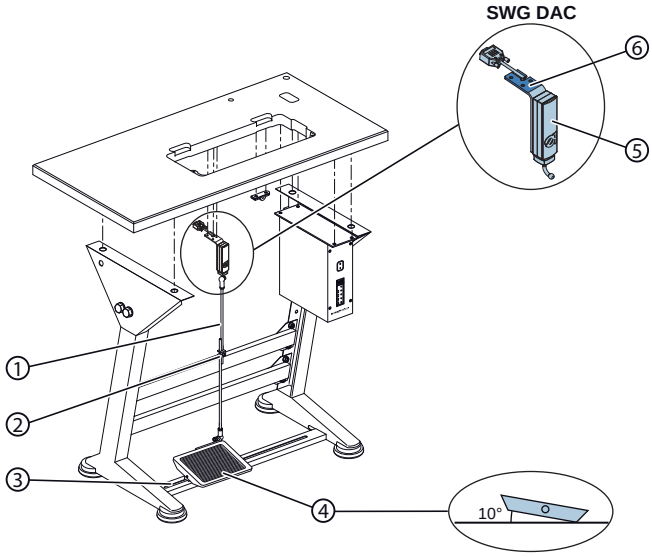


(1) - Strain relief
(2) - Control unit
(3) - Screw holder

1. Screw the control unit (2) onto the 4 screw holders (3) under the table top.
2. Clamp the power cable of the control unit (2) into the strain relief mechanism (1).
3. Screw the strain relief mechanism (1) under the table top.

8.7.2 Fitting the pedal and setpoint device

Fig. 78: Fitting the pedal and setpoint device



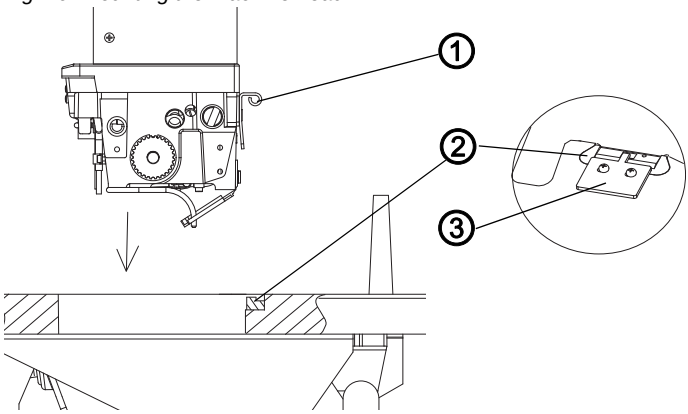
(1) - Pedal rod
(2) - Screw
(3) - Cross strut
(4) - Pedal
(5) - Setpoint device
(6) - Bracket

1. Fit the pedal (4) on the cross strut (3) and align it in such a way that the middle of the pedal is under the needle. The cross strut has elongated holes to allow alignment of the pedal.
2. Screw the pedal (4) firmly onto the cross strut (3).
3. Screw the bracket (6) under the table top so that the pedal rod (1) runs to the pedal (4) at right-angles to the setpoint device (5).
4. Screw the setpoint device (6) onto the bracket (5).
5. Hang the pedal rod (1) with the ball socket on the setpoint device (5) and attach to the pedal (4).
6. Pull the pedal rod (1) to the correct length:

   Proper setting: 10° inclination with pedal (4) released
7. Tighten the screw (2).

8.8 Mounting the machine head

Fig. 79: Mounting the machine head



(1) - Upper hinge parts
(2) - Rubber inlays
(3) - Locking plate

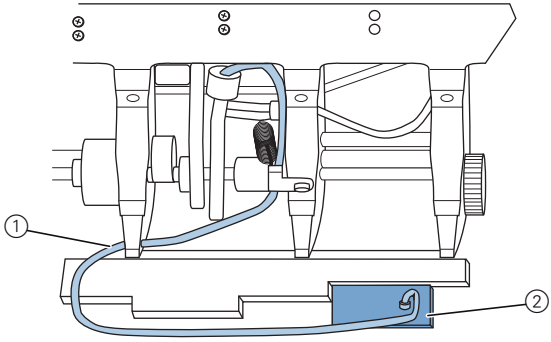
CAUTION

Risk of crushing!
The machine head is very heavy.
Take care not to jam your hands when fitting the machine head.
This especially applies when fitting the upper hinge parts into the rubber inlays.

1. Screw the upper hinge parts (1) onto the machine head.
2. Insert the machine head vertically in the recess in the table top.
3. Insert the upper hinge parts (1) into the rubber inlays (2).
4. Above the right hinge place the locking plate (3) and screw it with two screws to the table.

8.9 Fitting the oil extraction line

Fig. 80: Fitting the ooil extraction line

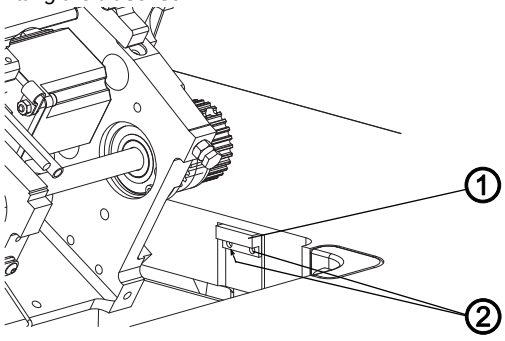


(1) - Tube of the oil extraction line *(2) - Filter*

1. Tilt the machine head.
2. Screw the filter (2) into the oil sump with the plastic adapter to the right.
3. Insert the tube of the oil extraction line (1) into the plastic adapter.

8.10 Fitting the tilt sensor

Fig. 81: Fitting the tilt sensor

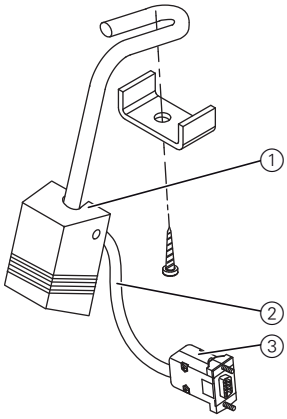


(1) - Tilt sensor *(2) - Screws*

1. Tilt the machine head.
2. Place the tilt sensor (1) into the groove in the table top.
3. Screw the tilt sensor (1) with two screws (2).

8.11 Installing the knee switch

Fig. 82: Installing the knee switch



(1) - Knee switch
(2) - Connecting cable
(3) - Plug

1. Screw the knee switch (1) in front of the oil sump firmly in place under the table top.
2. Guide the connecting cable (2) to the back between the oil sump and the control unit.
3. Insert the plug (3) of the connecting cable in the socket of the control unit.

8.12 Fitting the control panel

8.12.1 Assembling the OP3000

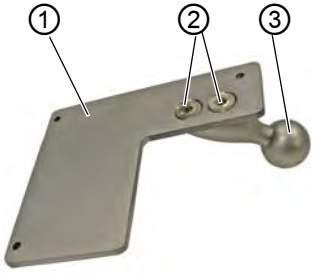
Fig. 83: Fitting the control panel

(1) - Control panel
(2) - Connecting cable plug
(3) - Control panel bracket

1. Screw the control panel (1) firmly onto the control panel bracket (3).
2. Insert the plug (2) of the connecting cable in the socket of the control panel (1).

8.12.2 Assembling the Commander Basic/Pro

Fig. 84: Assembling the Commander Basic/Pro (1)

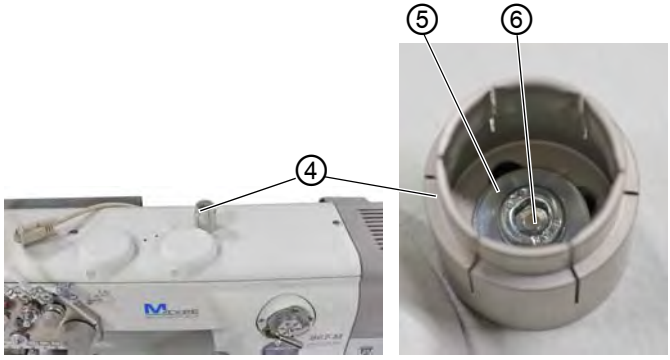


(1) - Control panel bracket
(2) - Countersunk screws
(3) - Ball head

To assemble the Commander Basic/Pro control panel:

1. Screw the ball head (3) to the control panel holder (1) using 2 countersunk screws (2).

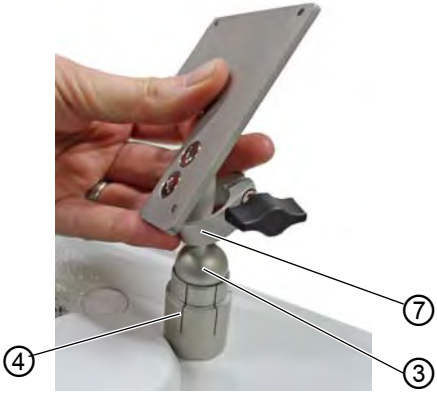
Fig. 85: Assembling the Commander Basic/Pro (2)



(4) - Ball socket
(5) - Washer
(6) - Screw

2. Place the arm cover (📖 *Service Instructions*).
   The arm cover is tightened by only 3 screws.
3. Screw the ball socket (4) to the arm cover using washer (5) and screw (6).

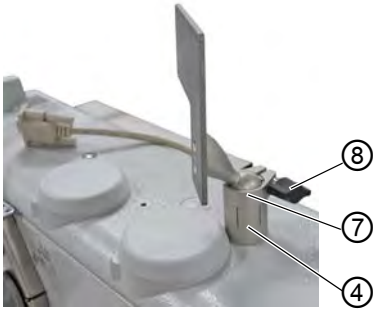
Fig. 86: Assembling the Commander Basic/Pro (3)



(3) - Ball head
(4) - Ball socket
(7) - Clip

4. Slip the clip (7) over the ball head (3).
5. Press the ball head (3) into the ball socket (4), allowing it to slightly gyrate.

Fig. 87: Assembling the Commander Basic/Pro (4)



(4) - Ball socket
(7) - Clip
(8) - Wing screw

6. Slide the clip (7) onto the ball socket (4).
7. Tighten the wing screw (8).

Fig. 88: Assembling the Commander Basic/Pro (5)

(9) - Control panel Commander Basic/Pro
(10) - Screws

8. Tighten the Commander Basic/Pro control panel (9) to the control panel holder using the screws (10).
9. Insert and tighten the cable at the Commander Basic/Pro control panel (9).

Information
Another option is to assemble the ball socket (4) on the tabletop using a chipboard screw.
This requires that you pre-drill the hole in the tabletop to prevent damage to the tabletop surface.

10. Switch on the machine.

Ä The control panel is recognized by the control. The first initialization can take up to 15 minutes - do NOT switch off the machine!

11. The machine is ready for operation when the Commander Basic/Pro user interface is visible.

8.13 Electrical connection

DANGER

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

8.13.1 Checking the mains voltage

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

1. Check the mains voltage before connecting the machine.

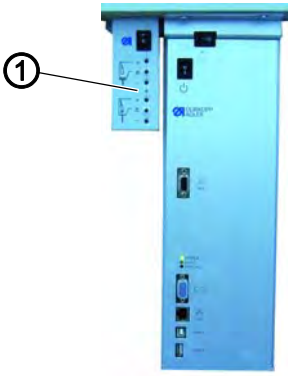
8.13.2 Fitting and connecting the sewing lamp and sewing lamp transformer

DANGER

Risk of death from electric shock!
When you disconnect the sewing machine from the power supply at the main switch, the supply voltage for the sewing lamp remains active.
Pull out the power plug before fitting and connecting the sewing lamp and sewing lamp transformer.
Make sure the power plug cannot be accidentally plugged back in.

Fitting the sewing lamp transformer

Fig. 89: Fitting the sewing lamp transformer

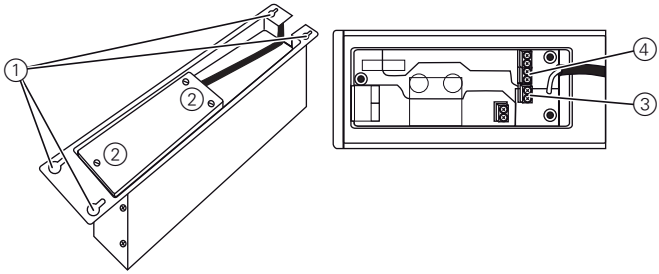


(1) - Sewing lamp transformer

1. Screw the sewing lamp transformer (1) in place at the pre-drilled holes under the table top.
2. Fasten the connecting cable under the table top using cable ties.
3. Establish the plug connection to the supply line for the sewing lamp.

Connecting the sewing lamp transformer

Fig. 90: Connecting the sewing lamp transformer



(1) - Screw holder
(2) - Adapter cover screws
(3) - 24V/X5 port
(4) - X3 port

1. Loosen the screw holder(4) for the controller far enough to allow the controller to be removed..
2. Remove the controller.
3. Loosen the adapter cover screws (3).
4. Connect the supply line:
   - for additional sewing lamps to be fitted to the X3 port (1)
   - for integrated LED sewing lamps connected to the 24V/X5 port (2)

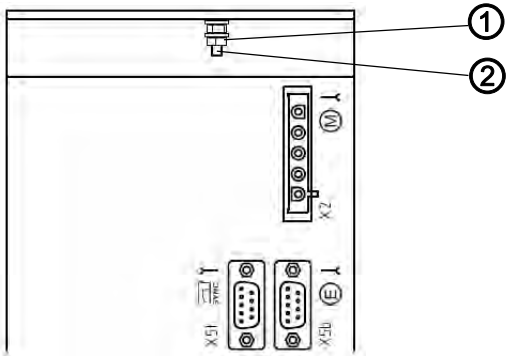
8.13.3 Establishing equipotential bonding

DANGER

Risk of death from electric shock!
Disconnect the power plug before establishing equipotential bonding.
Make sure the power plug cannot be accidentally plugged back in.

The protective earth conductor conducts away any static charging of the machine head.

Fig. 91: Establishing equipotential bonding



(1) - Nut *(2) - Protective earth connection*

1. Unscrew the nut (1).
2. Place the loop of grey motor cable on the protective earth connection (2).
3. Screw and tighten the nut (1).

Information
If is mounted the knee switch with the protective earth cable on the machine, it must be connect to control unit in the same way.

8.13.4 Connecting the control unit

NEBEZPEČÍ

Risk of death from electric shock!
Disconnect the power plug before connecting the control unit.
Make sure the power plug cannot be 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.
- Connect the control unit to the power supply using the power cable.

1. Connect the control unit as specified in the interconnection diagram, 🕮 *Interconnection diagram*, p. 176

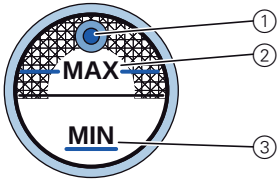
8.14 Lubrication

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

All wicks and felt bits of the machine head are soaked in oil at the factory. This oil is conveyed to the reservoir during use. This is why you should avoid filling too much oil during initial filling.

Fig. 92: 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 marking (2).

NOTICE

M**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 marking.

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

NOTICE

Machine damage possible due to incorrect oil.
An incorrect oil type can cause damage to the machine.
Only use oil specified in the operating instructions.

CAUTION

Risk of pollution 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 the applicable statutory regulations.

8.15 Sewing test

Conduct a sewing test before starting up the machine. Adjust the machine to the sewing material requirements.

To do this, read the corresponding sections in the 🕮 *Instructions for use*. Read the corresponding chapters in the 🕮 *Service instructions* in order to make adjustments to the machine if the sewing results do not conform to the requirements.

WARNING

Risk of injury from needle and moving parts!
Switch off the sewing machine before replacing the needle, inserting the thread, inserting the hook thread bobbin, and adjusting the hook thread tension and the thread regulator.

Performing a sewing test

1. Insert needle.
2. Wind on the hook thread.
3. Insert the hook thread bobbin.
4. Thread hook thread.
5. Thread needle thread.
6. Set thread tension to material being sewn.
7. Adjust the thread regulator to the material to be sewn.
8. Set top roller pressure to material being sewn.
9. Set top roller 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.

9 Disposal

Do not dispose of the machine in the general household waste.

The machine must be disposed of in a suitable and proper manner and in accordance with all applicable national regulations.

CAUTION

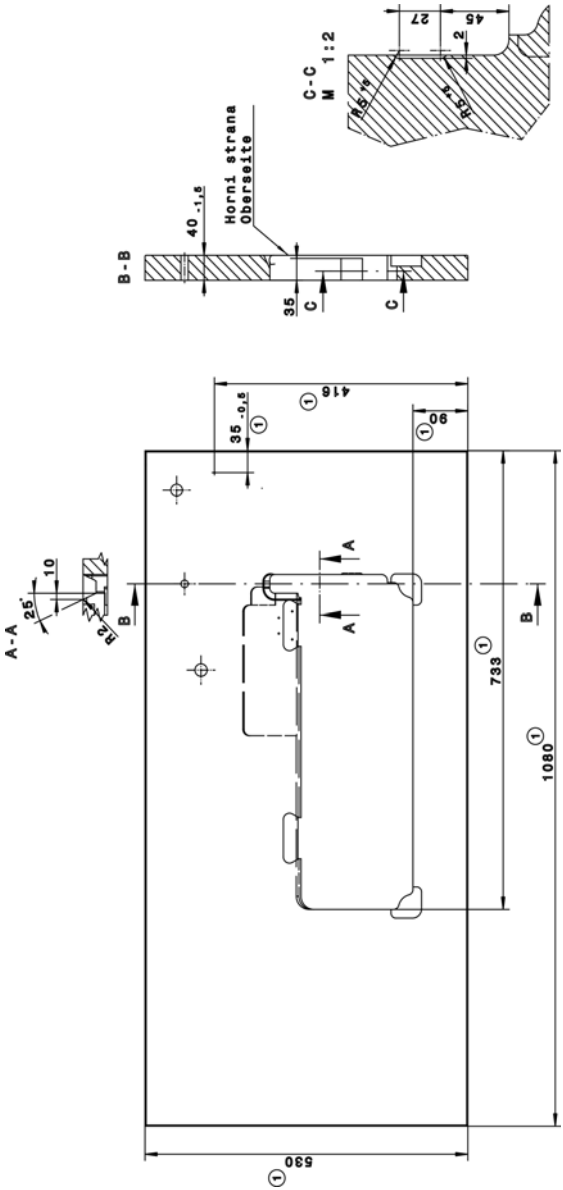
Risk of pollution from improper disposal!
Improper disposal of the machine can result in serious pollution.
ALWAYS comply with the legal regulations regarding disposal.

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 when disposing of these materials.

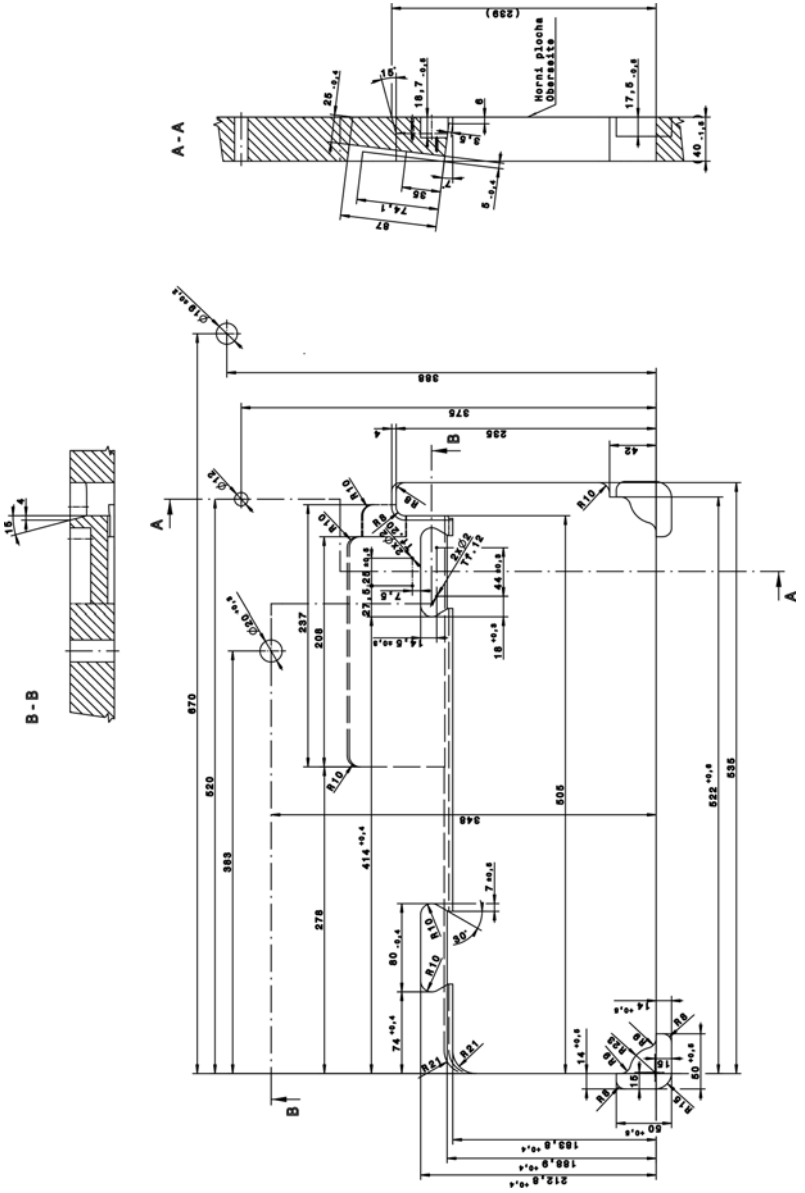
10 Appendix

10.1 Table top drawing

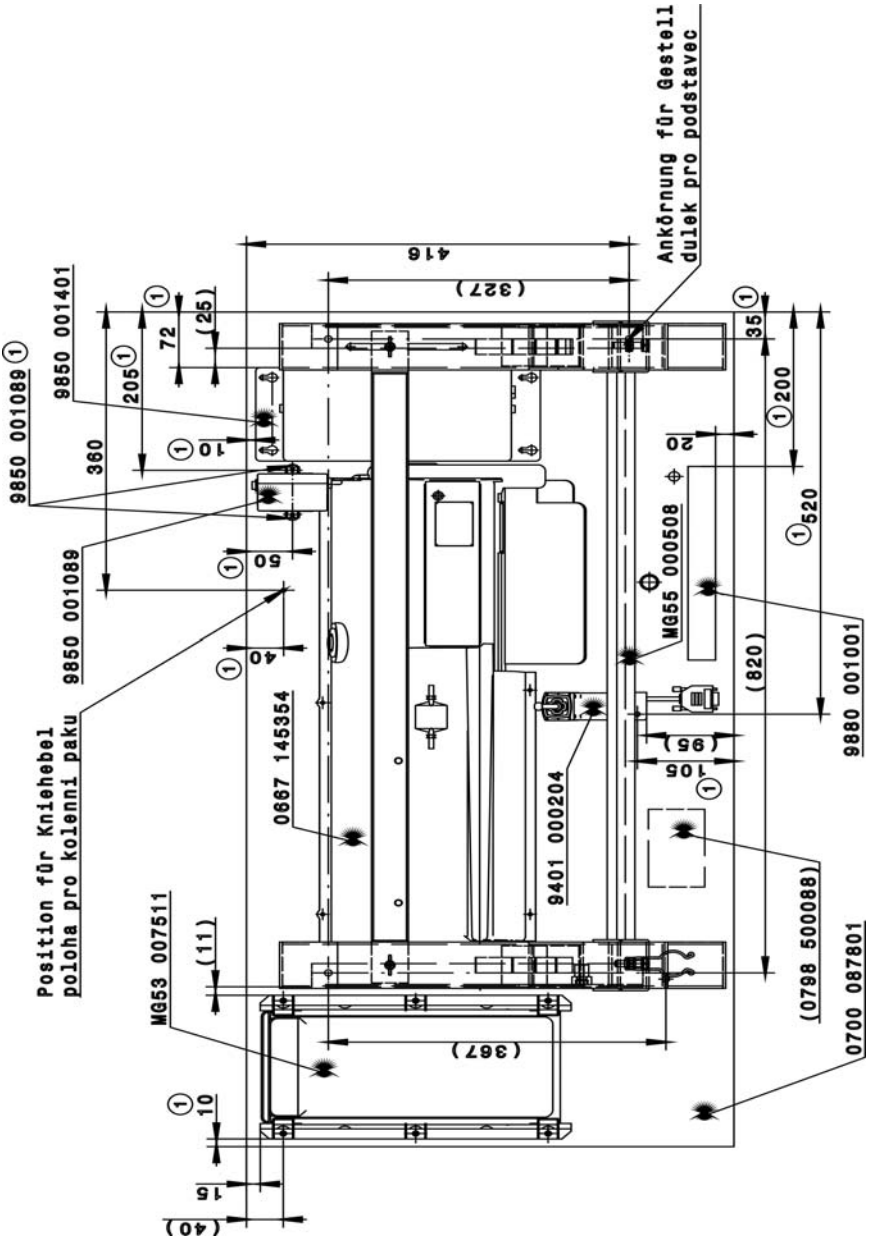
Dimensions for manufacturing a table top, part 1



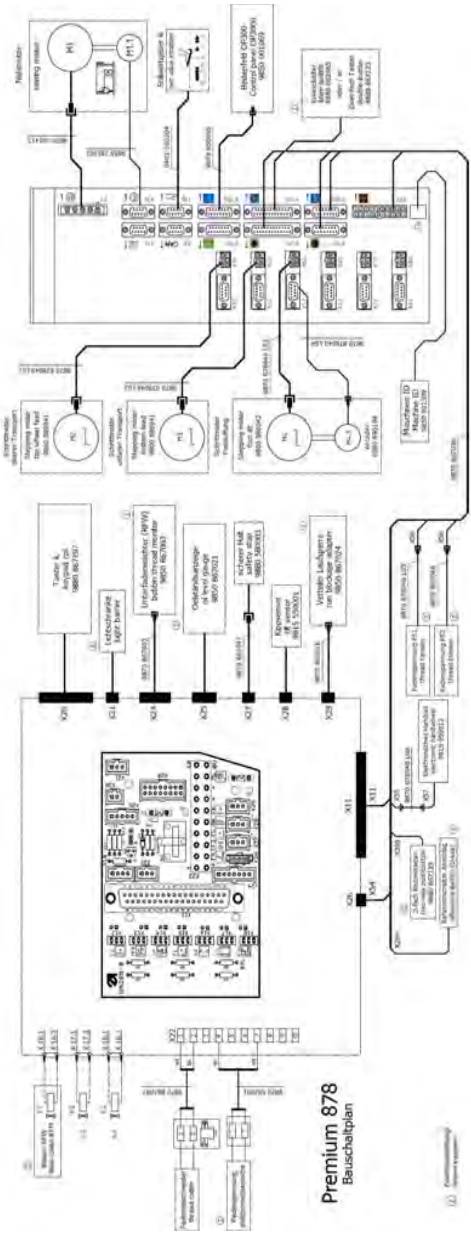
Dimensions for manufacturing, part 2



10.2 Component layout on underside of table top



10.3 Interconnection diagram



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