867-M PREMIUM   Operating Instructions

DÜRKOPP
ADLER

1 About these instructions

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

Should you notice any discrepancies or if you have improvement
requests, then we would be glad to receive your feedback through
Customer Service (*p. 225*).

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

1.1 For whom are these instructions intended?

These instructions are intended for:

- Operators:
  This group is familiar with the machine and has access to
  the instructions. Specifically, chapter **Operation**   *p. 19*
  is important for the operators.

- Specialists:
  This group has the appropriate technical training for
  performing maintenance or repairing malfunctions.
  Specifically, the chapter **Setup**   *p. 197* is important for
  specialists.

Service Instructions are supplied separately.

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

1.2 Representation conventions – symbols and characters

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

Proper setting

Specifies proper setting.

Disturbances

Specifies the disturbances that can occur from an incorrect setting.

Cover

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

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

Steps to be performed for service, maintenance, and installation

Steps to be performed via the software control panel

The individual steps are numbered:

1. First step
2. Second step
... The steps must always be followed in the specified order.

• Lists are marked by bullet points.

↳ **Result of performing an operation**

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

Important

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

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

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

References

📖 Reference to another section in these instructions.

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

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

1.3 Other documents

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

1.4 Liability

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

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

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

Transport

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

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

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

2 Safety

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

2.1 Basic safety instructions

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

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

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

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

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

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

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

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

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

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

Requirements to be met by the personnel

Only qualified specialists may:

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

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

Operation

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

Safety equipment

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

2.2 Signal words and symbols used in warnings

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

Signal words

Signal words and the hazard they describe:

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

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

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

Symbol	Type of danger
	General
	Electric shock
	Puncture
	Crushing
	Environmental damage

Examples   Examples of the layout of warnings in the text:

<table>
<tr><td colspan="2" align="center">DANGER</td></tr>
<tr><td></td><td>Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.</td></tr>
</table>

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

<table>
<tr><td colspan="2" align="center">WARNING</td></tr>
<tr><td></td><td>Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.</td></tr>
</table>

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

<table>
<tr><td colspan="2" align="center">CAUTION</td></tr>
<tr><td></td><td>Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.</td></tr>
</table>

✍ 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.

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

CAUTION

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

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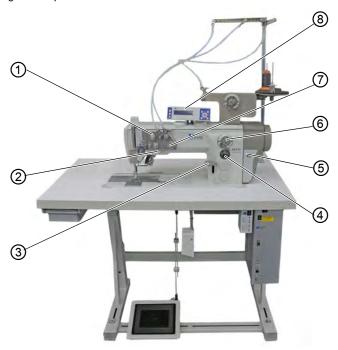
3 Machine description

3.1 Components of the machine

Fig. 1: Components of the machine

(1) - Programmable thread tension
(2) - Push buttons
(3) - Stitch adjustment lever
(4) - Oil level indicator
(5) - Button Service-Stopp
     (📖 Service Instructions)
(6) - Winder
(7) - Electronic handwheel
(8) - Control panel OP3000

3.2 Proper use

WARNING
Risk of injury from live, moving and cutting parts as well as from sharp parts! Improper use can result in electric shock, crushing, cutting and punctures. Follow all instructions provided.

NOTICE
Non-observance will lead to property damage! Improper use can result in material damage at the machine. Follow all instructions provided.

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

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

The needle thicknesses permissible for the machine are listed in the **Technical Data** (*p. 249*) chapter.

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

The machine is intended for industrial use.

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

Only authorized persons may work on the machine.

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

3.3 Declaration of Conformity

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

$$C\hspace{-2pt}\in$$

4 Operation

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

4.1 Preparing the machine for operation

WARNING

Risk of injury from moving, cutting and sharp parts!

Crushing, cutting and punctures are possible.

If possible, make preparations only when the machine is switched off.
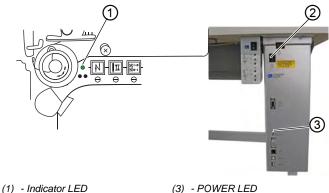
Complete the following steps in preparation of sewing before starting to work:

• Inserting/changing the needle
• Threading the needle thread
• Inserting and winding on the hook thread
• Setting the thread tensions

4.2 Switching on and off the machine

Fig. 2: Switching on and off the machine

(1) - *Indicator LED*   (3) - *POWER LED*
(2) - *Switch*

Switching on the machine

To switch on the machine:

1. Press the switch (2) to the **I** position.

Ⓛ The indicator LED (1) and the POWER LED (3) illuminate.

Switching off the machine
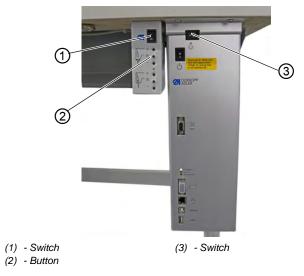
To switch off the machine:

1. Press the switch (2) to the **O** position.
2. The indicator LED (1) and the POWER LED (3) go out.

4.3 Switching on and off the sewing lamp

The sewing lamp switches on and off independent of the main switch.

Fig. 3: Switching on and off the sewing lamp

(1) - Switch   (3) - Switch
(2) - Button

Switching on the dimmable sewing lamp

To switch on the dimmable sewing lamp:

1. Press the switch (3) to the **I** position.
2. Press the switch (1) to the **I** position.
   ↳ The dimmable sewing lamp illuminates.

Press button (2) if the sewing lamp is not yet illuminated.

Switching off the dimmable sewing lamp

To switch off the dimmable sewing lamp:

1. Press switch (1) or (3) to the **O** position.
   ↳ The dimmable sewing lamp goes out.

4.4 Inserting/changing the needle

<table>
<tr><td colspan="2" style="background-color:yellow">CAUTION</td></tr>
<tr>
<td>⚠️</td>
<td>Risk of injury from sharp parts!
Punctures possible.

Switch off the machine before you insert or change the needle.</td>
</tr>
</table>

<table>
<tr><td style="background-color:blue">NOTICE</td></tr>
<tr>
<td>Property damage may occur!
There is a risk of machine damage, needle breakage or thread breakage if the distance between needle and hook tip is incorrect.

Check the distance to the hook tip after inserting a needle with a different thickness.</td>
</tr>
</table>
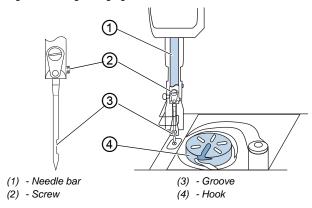
4.4.1 In 1-needle machines

Fig. 4: Inserting/changing the needle

(1) - Needle bar   (3) - Groove
(2) - Screw   (4) - Hook

To change the needle in a 1-needle machine:

1. Turn the handwheel until the needle bar (1) reaches the upper end position.

2. Loosen the screw (2).

3. Pull the needle out towards the bottom.

4. Insert the new needle into the hole in the needle bar (1) until it reaches the end stop.

Important

Align the needle in such a way that the groove (3) faces the hook (4).

5. Tighten the screw (2).

Order

Always adjust the clearance between the hook and the needle after changing to a different needle thickness (📖 *Service Instructions*).

Disturbance

An incorrect hook distance can cause the following disturbances:
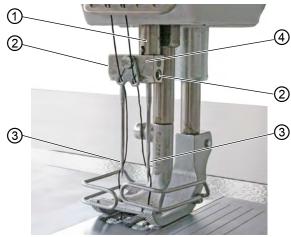
• Changing to a thinner needle:
   • Missing stitches
   • Thread damage
• Changing to a thicker needle:
   • Damage to the hook tip
   • Damage to the needle

4.4.2 In 2-needle machines

Fig. 5: Inserting/changing the needle (2)

(1) - Needle bar   (3) - Groove
(2) - Screw   (4) - Needle holder

To change the needle in a 2-needle machine:

1. Turn the handwheel until the needle bar (1) has reached the upper end position.

2. To change the right needle, loosen the right screw (2).

3. To change the left needle, loosen the left screw (2).

4. Pull the needles downwards out of the needle holder (4).

5. Insert each new needle into the corresponding hole of the needle holder (4) until it reaches the stop.

Important

Align the new needles in such a way that the grooves (3) face the hook (4). As viewed form the operator side, the groove (3) of the left needle must point to the left, while the groove (3) of the right needle must point to the right.

6. Tighten the screw (2).

Order

Always adjust the clearance between the hook and the needle after changing to a different needle thickness (*Service Instructions*).

Disturbance

An incorrect hook distance can cause the following disturbances:

- Changing to a thinner needle:
    - Missing stitches
    - Thread damage
- Changing to a thicker needle:
    - Damage to the hook tip
    - Damage to the needle

4.5 Threading the needle thread

WARNING
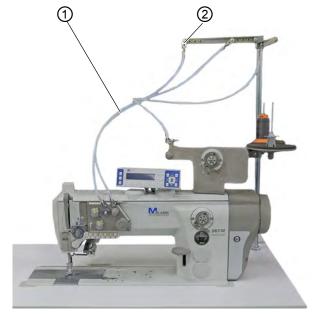
Risk of injury from needle tip and moving parts!
Puncture, cutting and crushing possible.

Turn off the machine before threading the thread.

4.5.1 In 1-needle machines

Fig. 6: Threading the needle thread (1-needle machine) (1)

(1) - Hose guide   *(2) - Thread guide*

To thread the needle thread:

1. Fit the thread reel on the reel stand.

   The unwinding bracket must stand directly above the thread reel.

2. Feed the thread from the rear to the front through the thread guide (2) on the unwinding bracket.

3. Use compressed air to blow the thread through the hose guide (1).

Information

To blow the thread through the hose guide (1) with the help of compressed air, position the compressed air gun together with the end of the thread at the upper end of the hose guide (1). Briefly squeeze the trigger once.

Fig. 7: Threading the needle thread (1-needle machine) (2)

(3) - Tightening lever   (7) - Tensioner 2
(4) - Spring tip   (8) - Tensioner 1
(5) - Thread tension spring (9) - Pre-tensioner
(6) - Thread guide   (10)- Hose guide

4. Feed the thread clockwise from the hose guide (10) around the pre-tensioner (9).

5. Feed the thread counterclockwise around tensioner 1 (8).

6. Feed the thread clockwise around tensioner 2 (7).

7. Feed the thread under the thread guide (6) to the thread tension spring (5).

8. Lift the tightening lever (3) with the thread.

9. Pull the thread under the spring tip (4).
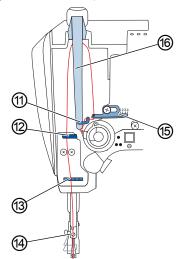
Fig. 8: Threading the needle thread (1-needle machine) (3)

(11) - Hook
(12) - Upper thread guide
(13) - Lower thread guide
(14) - Thread guide
(15) - Needle thread regulator
(16) - Thread lever

10. Guide the thread under the hook (11).

11. Insert the thread from bottom to top through the hole on the needle thread regulator (15).

12. Insert the thread from the right to the left through the thread lever (16).

13. Insert the thread through the upper thread guide (12).

14. Insert the thread through a hole in the lower thread guide (13).
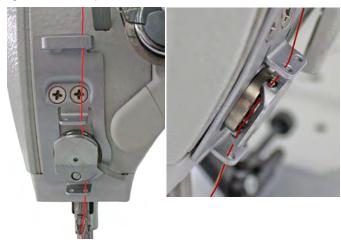
For machines with thread clamp (optional)

15. Insert the thread through the left hole of the guide above the thread clamp.

16. Insert the thread through the left hole of the guide below the thread clamp.

Fig. 9: Thread clamp

17. Insert the thread into the thread clamp from the left so that the thread is held in place inside the hook of the clamp.

The thread is supposed to run through the clamp almost without touching it and in such a way that it only makes contact with the guides above and below the thread clamp.

18. Feed the thread through the thread guide (14) on the needle bar.
19. Insert the thread through the needle eye in such a way that the loose thread end faces the hook.

i **For machines with thread cutter**
20. Pull the thread through the needle eye until the loose thread end has a length of approx. 4 cm with the thread lever (16) at the highest position.
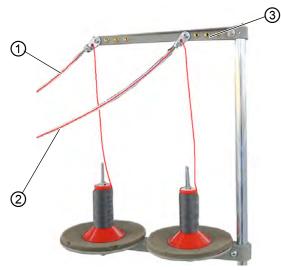
Important:

Check the thread length.
If the loose thread end is too long, the thread may be caught by the hook and cause a disturbance. If the loose thread end is too short, the machine cannot start sewing.

4.5.2 In 2-needle machines

Fig. 10: Threading the needle thread (2-needle machine) (1)

(1) - Left hose guide   (3) - Unwinding bracket
(2) - Right hose guide

To thread the right and the left needle thread:

Threading the needle thread through the hose guides:

1. Fit the thread reels on the reel stands.

   The unwinding bracket (3) must stand directly above the thread reels.

2. Feed the right thread from the rear to the front to the right hose guide (2).

3. Feed the left thread from the rear to the front to the left hose guide (1).

4. Use compressed air to blow both threads through the hose guides (1) and (2).
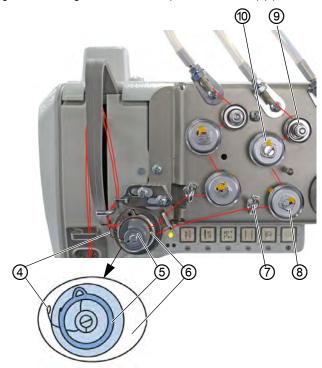
> | *i* | **Information**
> To blow the threads through hose guide (1) and (2) with the help
> of compressed air, position the compressed air gun together with
> the end of the threads at the upper end of hose guide (1) and (2).
> Briefly squeeze the trigger once.

Threading the right needle thread at the tensioning plate

Fig. 11: Threading the needle thread (2-needle machine) (2)
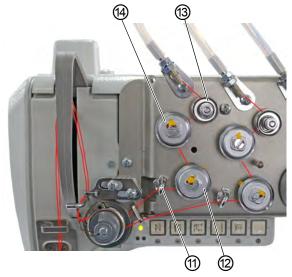
(4)	- Spring tip	(9)	- Pre-tensioner
(5)	- Thread tension spring		(right needle thread)
(6)	- Tightening lever	(10)	- Tensioner
(7)	- Thread guide (right needle thread)		(right needle thread)
(8)	- Tensioner (right needle thread)		

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5. Feed the thread clockwise from the right hose guide (2) around the pre-tensioner (9).

6. Feed the thread counterclockwise around the tensioner (10).

7. Feed the thread clockwise around the tensioner (8).

8. Feed the thread under the thread guide (7) clockwise to the thread tension spring (5).

9. Lift the tightening lever (6) with the thread.

10. Pull the thread under the spring tip (4).

Threading the left needle thread at the tensioning plate

Fig. 12: Threading the needle thread (2-needle machine) (3)

(11) - Thread guide   (13) - Pre-tensioner (left needle thread)
      (left needle thread)   (14) - Tensioner (left needle thread)
(12) - Tensioner (left needle thread)

11. Feed the thread clockwise from the left hose guide (1) around the pre-tensioner (13).

12. Feed the thread counterclockwise around the tensioner (12).

13. Feed the thread clockwise around the tensioner (14).

14. Feed the thread under the thread guide (11) clockwise to the thread tension spring (5).
15. Lift the tightening lever (6) with the thread.
16. Pull the thread under the spring tip (4).

Threading the needle thread at the needle thread regulator

Fig. 13: Threading the needle thread (2-needle machine) (4)

(15) - *Thread lever (now visible)*   (17) - *Hook*
(16) - *Needle thread regulator*

17. Guide the right thread under the hook (17).
18. Guide the left thread under the hook (17).
19. Thread the right thread from the bottom through the front hole on the needle thread regulator (16).
20. Thread the left thread from the bottom through the rear hole on the needle thread regulator (16).
21. Thread the right thread from the right through the lower hole on the thread lever (15).
22. Thread the left thread from the right through the upper hole on the thread lever (15).

Fig. 14: Threading the needle thread (2-needle machine) (5)

(18)- Thread guide   *(19)- Thread clamp*

23. Insert the right and the left thread through the upper thread guide (18).

For machines with thread clamp (optional):

24. Insert the right thread through the right hole of the guide above the thread clamp (19).

25. Insert the left thread through the left hole of the guide above the thread clamp (19).

26. Insert the right thread through the right hole of the thread clamp (19).

    The thread is supposed to run through the clamp almost without touching it and in such a way that it only makes contact with the guides above and below the thread clamp (19).

27. Insert the right thread through the right hole of the guide below the thread clamp (19).

28. Insert the left thread through the left hole of the guide below the thread clamp (19).

Fig. 15: Threading the needle thread (2-needle machine) (6)

(20) - Thread guide

29. Insert the right thread through the right hole of the thread guide (20) on the needle bar.

30. Insert the left thread through the left hole of the thread guide (20) on the needle bar.

31. Insert the right thread through the right needle eye in such a way that the loose thread end faces the right hook.

32. Insert the left thread through the left needle eye in such a way that the loose thread end faces the left hook.

For machines with thread cutter

33. Pull each thread through the needle eye until the loose thread end has a length of approx. 4 cm with the thread lever (15) at the highest position.

Important

Check the thread length.
If the loose thread end is too long, the thread may be caught by the hook and cause a disturbance. If the loose thread end is too short, the machine cannot start sewing.
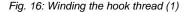
4.6 Winding the hook thread
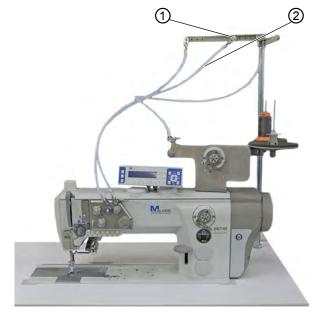
WARNING

Risk of injury from needle tip and moving parts!
Puncture, cutting and crushing possible.

Turn off the machine before threading the thread.

Fig. 16: Winding the hook thread (1)

(1) - Thread guide   *(2) - Hose guide*
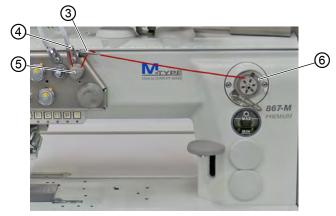
To wind the hook thread:

1. Fit the thread reel on the reel stand.

   The unwinding bracket must stand directly above the thread reel.

2. Feed the thread from the rear to the front through the thread guide (1) on the unwinding bracket.

3. Use a compressed air gun to feed the thread through the hose guide (2).
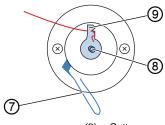
Fig. 17: Winding the hook thread (2)

| (3) - Thread guide | (5) - Pre-tensioner |
| (4) - Thread guide | (6) - Winder |

4. Feed the thread counterclockwise from the thread guide (4) around the pre-tensioner (5).

5. Insert the thread in a wavelike manner through the 2 holes of the thread guide (3): from bottom to top through the left hole and from top to bottom through the right hole.

6. Guide the thread to the bobbin (6).

Fig. 18: Winding the hook thread (3)

| (7) - Bobbin lever | (9) - Cutter |
| (8) - Bobbin shaft | |

7. Clamp the thread behind the cutter (9) and tear off the loose end behind it.

8. Fit the bobbin on the bobbin shaft (8).

9. Turn the bobbin clockwise until it clicks.

10. Pull the bobbin lever (7) up.

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i **Information**
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. For this purpose, use the winder mode in the softkey menu (📖 *p. 62*).

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11. Switch on the sewing machine.

12. Press the pedal forwards.

✎ The machine sews and winds the hook thread from the thread reel onto the bobbin. When the bobbin is filled, the winding process stops. The bobbin lever moves down. The cutter is automatically moved into its basic vertical position.

13. Pull off the full bobbin.

14. Tear off the thread behind the cutter (9).

15. Insert the full bobbin into the hook (📖 *p. 38*).

4.7 Changing the bobbin

WARNING
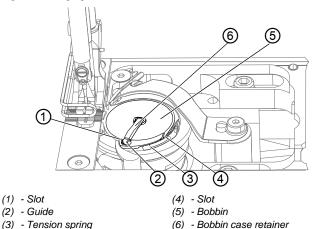
Risk of injury from needle tip and moving parts!
Puncture, cutting and crushing possible.

Turn off the machine before changing the bobbin.

The procedure used to change the bobbin is the same for 1-needle machines and 2-needle machines. The only difference is that the hook into which the bobbin is inserted is turned by 180 degrees for the left and the right side.

Fig. 19: Changing the bobbin

(1) - Slot	(4) - Slot
(2) - Guide	(5) - Bobbin
(3) - Tension spring	(6) - Bobbin case retainer

To change the bobbin:

1. Swivel up the bobbin case retainer (6).

2. Remove the empty bobbin.

3. Insert a full bobbin:

Important

Insert the bobbin so that it moves in the opposite direction of the hook when the thread is pulled out.
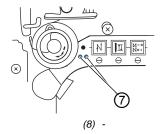
4. Feed the hook thread through the slot (4) in the bobbin case retainer.

5. Pull the hook thread under the tension spring (3).

6. Feed the hook thread through the slot (1) and pull it approx. 3 cm further.

7. Close the bobbin case retainer (6).

Machines with automatic remaining thread monitor

If the hook thread needs to be replaced, the LED indicator lamps (7) 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. 20: Remaining thread monitor message

(7) - LEDs   *(8) -*

! **Important**

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

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.

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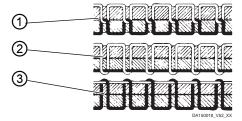
Together with the hook thread tension, the needle thread tension influences the final seam pattern. With thin sewing material, excessive thread tension can lead to undesired gathering and thread breakage.

✓ **Proper setting**

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

Fig. 21: Thread tension

DA150018_V52_XX

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

4.8.1 Setting the needle thread tension

The needle thread tension can only be set using the software of the OP3000; for detailed information, refer to the chapter Programming (*S. 53* and/or *S. 105*).

4.8.2 Setting the hook thread tension

WARNING
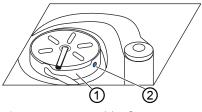
Risk of injury from needle tip and moving parts!

Puncture, cutting and crushing possible.

Switch off the machine before adjusting the hook thread tension.

Fig. 22: Setting the hook thread tension

(1) - Tension spring   *(2) - Screw*

The hook thread tension is generated by the tension spring (1) and adjusted via the screw (2).

To set the hook thread tension:

Increasing the hook thread tension

1. Turn screw (2) clockwise.

Reducing the hook thread tension

1. Turn screw (2) counterclockwise.

4.9 Setting the needle thread regulator

WARNING

Risk of injury from needle tip and moving parts!
Puncture, cutting and crushing possible.

Switch off the machine before setting the needle thread regulator.

The needle thread regulator determines the tension applied to guide the needle thread around the hook.
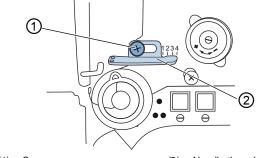
✓ **Proper setting**

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

4.9.1 In 1-needle machines

Fig. 23: Setting the needle thread regulator

(1) - Screw   *(2) - Needle thread regulator*

To set the needle thread regulator:
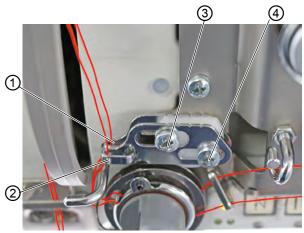
1. Loosen the screw (1).

   - **To increase the tension:**
     Slide the needle thread regulator (2) to the right

   - **To reduce the tension:**
     Slide the needle thread regulator (2) to the left

2. Tighten the screw (1).

4.9.2 In 2-needle machines

Fig. 24: Setting the needle thread regulator (2)

(1) - Needle thread regulator (left needle thread)	*(3) - Screw (left needle thread)*
(2) - Needle thread regulator (right needle thread)	*(4) - Screw (right needle thread)*

To set the needle thread regulator for the right and the left needle thread in a 2-needle machine:

1. To set the needle thread regulator (2) for the right needle thread: Loosen the screw (4).

   • **To increase the tension:**
   Slide the needle thread regulator (2) to the right.

   • **To reduce the tension:**
   Slide the needle thread regulator (2) to the left.

2. Tighten the screw (4).

3. To set the needle thread regulator (1) for the left needle thread: Loosen the screw (3).

   • **To increase the tension:**
   Slide the needle thread regulator (1) to the right.

   • **To reduce the tension:**
   Slide the needle thread regulator (1) to the left.

4. Tighten the screw (3).
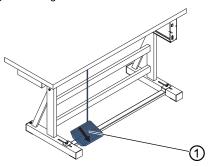
> ℹ️ **Information**
> When the largest thread quantity is required, the thread tension spring must be pulled approx. 0.5 mm up from its lower end position. This occurs when the needle thread loop passes the maximum hook diameter.

4.10 Lifting the sewing feet

Fig. 25: Lifting the sewing feet

(1) - Pedal

To lift the sewing feet:

1. Press the pedal (1) halfway back.
   ↳ The machine stops and lifts the sewing feet.
   The sewing feet 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 sewing feet are raised.

4.11 Sewing backwards with the stitch adjustment lever (optional)

The electronic stitch adjustment lever on the machine arm reduces the stitch length down to sewing backwards in the lower end position.

Fig. 26: Sewing backwards with the stitch adjustment lever
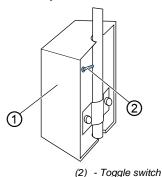
(1) - Stitch adjustment lever

1. Slowly push the stitch adjustment lever (1) down.

   ✤ The stitch length becomes smaller. In the lower end position, the machine sews backwards with the set stitch length.

4.12 Setting quick stroke adjustment

On machines with quick stroke adjustment
the elevated sewing foot stroke is switched via the knee button.
The toggle switch on the rear side of the knee button determines
whether the elevated sewing foot stroke is switched on perma-
nently or only while the knee button is pressed.

Fig. 27: Setting quick stroke adjustment

(1) - Knee button　　　　　　　　*(2) - Toggle switch*

To set the quick stroke adjustment:

For permanent conversion

1. Set the toggle switch (2) to the upper position.

    - **To switch on the elevated sewing foot stroke:**
      Push the knee button (1) to the right.

    - **To switch off the elevated sewing foot stroke:**
      Push the knee button (1) to the right again.

For temporary conversion

1. Set the toggle switch (2) to the lower position.

    - **To switch on the elevated sewing foot stroke:**
      Push the knee button (1) to the right and keep it pressed.

    ✎ The elevated sewing foot stroke is retained as long as the
      knee button is pushed to the right.

    - **To switch off the elevated sewing foot stroke:**
      Release the knee button (1).
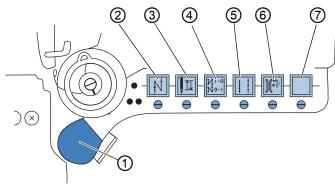
4.13 Quick functions on the push buttons

The machine has push buttons on the machine arm which can be used to activate specific functions while sewing.

4.13.1 Activating function buttons

Fig. 28: Activating function buttons

(1) - Favorite button	*(5) - Stitch length preselection*
(2) - Sewing backwards	*(6) - Auxiliary thread tension*
(3) - Needle position	*(7) - fully customizable button*
(4) - Start bartack/end bartack	

To activate/deactivate a function button:

Activating a function

1. Press the desired button.
  ↳ Function is activated. The button lights up.

Deactivating a function

1. Press the desired button again.
  ↳ Function is deactivated. The button turns off.

Information
The function buttons can be expanded by an additional button.
The button can be assigned 2 additional functions.

Functions of the buttons
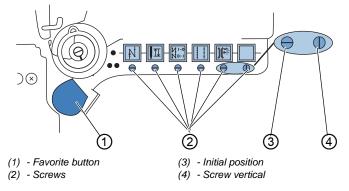
Button	Function
	Sewing backwards When this button is activated, the machine sews in reverse.
	Needle position When this button is activated, the needle moves to a specific position. This position is determined individually via the parameter settings. For more information, refer to the 🕮 Service Instructions. The machine comes configured so that selecting the button will bring the needle up to the top dead center.
	Start bartack/end bartack This button cancels the general setting for sewing start and end bartacks. If bartacks are on, pressing the button skips the next bartack. If bartacks are off, pressing the button sews the next bartack.
	Stitch length When this button is selected, the machine sews with the greater stitch length that was programmed for this stitch length on the control panel.
	Auxiliary thread tension When this button is selected, the machine sews with the programmed auxiliary thread tension.
	Fully customizable The button is fully customizable. The machine comes configured so that the machine will switch to the next seam section when the button is pressed.

4.13.2 Assigning a function to the favorite button

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

Fig. 29: Assigning a function to the favorite button

(1) - Favorite button   (3) - Initial position
(2) - Screws   (4) - Screw vertical
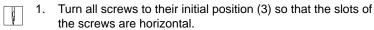
The button function is assigned by turning the screw (2) under the button until it is vertical. Only one function at a time can be assigned to the favorite button (1). Therefore, only one of the screws (2) may be in the vertical position (4).

All screws must be turned back to their horizontal initial position (3) before a new function is assigned.

To assign a function to the favorite button:

1. Turn all screws to their initial position (3) so that the slots of the screws are horizontal.
2. Turn the screw (2) under the desired button 90° so that the slot is vertical (4).

4.14 Sewing

WARNING
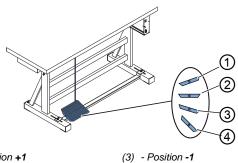
Risk of injury from the needle if sewing is started unintentionally!

Punctures possible.

Do not press the pedal when you fingers are in the area of the needle tip.

Fig. 30: Sewing

(1) - Position **+1**	(3) - Position **-1**
(2) - Position **0**	(4) - Position **-2**

The pedal starts and controls the sewing process.

Condition	Processes
Before starting sewing	
Initial situation	• Pedal in rest position (position **0**) ✎ Machine is at a standstill ✎ Needle is up. Sewing feet down.
Position the sewing material	• Press the pedal halfway back (position -1) ✎ The sewing feet are lifted. • Position the sewing material. • Release the pedal. ✎ Sewing feet are lowered onto the sewing material.

Condition	Processes
At seam beginning	
Start bartack and sew	• Press the pedal forwards (position +1) and keep it there. ✎ Machine sews a start bartack (if specified). ✎ Afterwards, the machine continues to sew - with increasing speed the further forward the pedal is pressed.
In the middle of the seam	
Stopping sewing	• Release the pedal (position 0). ✎ Machine stops. Depending on the setting, sewing feet and needle are up / down.
Continue the sewing process (after releasing the pedal)	• Press the pedal forwards (position +1) ✎ Machine continues to sew - with increasing speed the further forward the pedal is pressed.
Sew over thicker parts of the material	• Switch on the elevated sewing foot stroke with the knee button (📖 *p. 46*).
Change the stitch length	• 2nd stitch length must be activated using the button on the push buttons (📖 *p. 47*).
Increase the thread tension	• Activate auxiliary thread tension using the button on the push buttons (📖 *p. 47*).
Sew an intermediate bartack	• Sew backwards with stitch adjustment lever (📖 *p. 45*) or activate backwards sewing using the button on the push buttons (📖 *p. 47*).
At seam end	
Finish the seam and remove the sewing material	• Press the pedal fully back (position -2) and keep it there. ✎ End bartack is sewn, and thread is cut (if set). ✎ Machine stops. ✎ Needle is up. Sewing feet up. • Remove the sewing material.

5 Programming OP3000

5.1 Control panel OP3000

Fig. 31: Control panel

(1) - Softkey button   *(2) - Softkey menu button*

All settings in the software for the machine are performed using the OP3000 control panel.

Button	Function
Numeric buttons 0 to 9	• Input the parameter value (if the field for the parameters is activated) • Selection of a parameter that is shown on the control panel • Press the button below the desired symbol to select the function • Input a program name
ESC	• Cancel the function • Exit the menu (changes remain saved) to return to the starting level
OK	• Confirm the settings • Activate the input
P	Function is different for each menu.
S	Function is different for each menu.
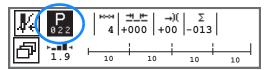
Button	Function
F	Function is different for each menu.
▶	• Selection to the right
◀	• Selection to the left • Back one menu level
▲	• Increase the value • Scroll through the list (upwards)
▼	• Decrease the value • Scroll through the list (downwards)
	Softkey button The button can be assigned various functions as required, 📖 *p. 62*.
	Softkey menu button Quick access function, 📖 *p. 62*.
+/−	No function assigned

Display on the control panel

The display shows the menu items that can be selected.
The activated menu point is shown inverted.

Fig. 32: The active entry is shown inverted (example)

Entering values

Values can be entered using the ▲/▼ buttons or the numeric buttons.

$\boxed{i}$ **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.

5.2 Switching on the machine

Fig. 33: Switching on the machine

(1) - Main switch
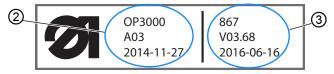
To switch on the machine:

1. Switch on the main switch (1).

♦ The display briefly shows the software versions:

Fig. 34: Display of the control/control panel software version

(2) - Software version of the OP3000   (3) - Control panel software

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

Fig. 35: Display of the program last used (Automatic mode)
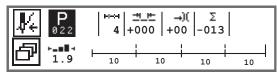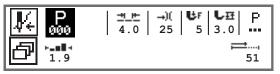
Fig. 36: Display in Manual mode

5.3   Software operating modes

The software of the 867-M PREMIUM has 3 available operating modes:

• **Manual mode (program 000) (** 📖 *p. 58*)

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 (program 001 - 999) (** 📖 *p. 88*)

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/Edit mode (** 📖 *p. 92*)

Programming mode allows the operator to create a new seam program in a quick and easy manner.
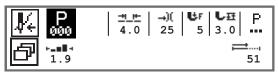
Edit mode can be used to adjust, delete and copy seam programs.

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

5.4 Using Manual mode

Fig. 37: Using Manual mode

The following table shows the individual symbols of parameters on the display and the functions of the buttons on the control panel. For some parameters, the exact setting is described in more detail later in the chapter.

The selected parameter is shown inverted on the control panel display. When a parameter is changed, its new value is loaded immediately.

Symbol	Meaning
	The button can be assigned various functions as required, 📖 *p. 62*. • Press **softkey** button
	Quick access function (softkey menu) Press the **softkey menu** button, 📖 *p. 62*.
P 000	Program number Value range: 000 - 999 Program 000 indicates that the control is in "Manual mode". • Use ◄/► to select the Program parameter • Use ▲/▼ to change the program number or enter the program number using the numeric buttons **0 – 9** and confirm with the **OK** button
	Stitch length Value range: 00.0 - 12.0 [mm] (depending on the sewing equipment and the subclass) • Use ◄/► to select the Stitch length parameter • Use ▲/▼ to change the stitch length

Symbol	Meaning
→)|(	Needle thread tension Value range: 01 - 99 • Use ◄/► to select the needle thread tension parameter • Use ▲/▼ to change the needle 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 parameter • Press the **OK** button to open the submenu • Use ▲/▼ to select the right or the left needle thread • Press the **OK** button to confirm • Use ▲/▼ to change the needle thread tension • Press the **OK** button to confirm
⬆F	Sewing foot pressure Value range: 01 - 20 • Use ◄/► to select the Sewing foot pressure parameter • Use ▲/▼ to change the sewing foot pressure
⬆⥮	Sewing foot stroke Value range: 00.0 – 09.0 [mm] (0.5 mm increments) • Use ◄/► to select the Stroke height parameter • Use ▲/▼ to change the stroke height

Symbol	Meaning
P ...	Other parameters • Use the **OK** button to go to the list • Use ▲/▼ to select the parameter • Use the **OK** button to go to the parameter settings More detailed description of parameters: • Speed (*Max Speed*) (📖 *p. 65*) • Thread cutter (*Thread Trim*) (📖 *p. 65*) • Thread clamp (*Thread Clamp*) (📖 *p. 66*) • Initial alignment stitch (*PointPos. °*) (📖 *p. 66*) • Start bartack (*Start Tack*) (📖 *p. 66*) • End bartack (*End Tack*) (📖 *p. 70*) • Sewing foot lift (*Foot*) (📖 *p. 72*) • Bobbin monitor (*Bobbin*) (📖 *p. 73*) • Information (*InfoScreen*) (📖 *p. 75*) • Puller (*Puller*) (📖 *p. 76*) • Edge guide (*EdgeGuide*) (📖 *p. 76*) • Correcting effects of high speed (*Speed Corr*) (📖 *p. 77*) • Material thickness detection (*Mat.Thickness*) (📖 *p. 81*) • Light barrier (*LightBarrier*) (📖 *p. 86*) • Outputs (*Output*) (📖 *p. 87*)
⊐·...	S.p.m. or seam length in [mm] The active option, either s.p.m. or mm, can be set at the Technician level. The s.p.m. option is set at the factory. After the thread has been cut off, the display is retained. Measurement/counting restarts when sewing starts again.
ESC	• Cancel the function • Exit the menu (changes remain saved) to return to the starting level
OK	• Confirm the settings • Activate the input
P	Create a program, 📖 *p. 92*.
S	No function assigned

Symbol	Meaning
F	No function assigned
+/-	No function assigned

If the parameter *FastMenuKeys* was activated at the Technician level, the display of the control panel will show the symbols listed in the table. The buttons on the control panel located underneath can then be used to select the corresponding functions. None of the parameters that may have been selected for the info screen are displayed. For an explanation on how to activate the fast menu keys, refer to the 📖 *Service Instructions*.

Symbol	Meaning
	Start bartack (off/single/double)
	End bartack (off/single/double)
	Thread cutter (active/inactive)
	Needle position (bottom/top)
	Sewing foot position (bottom/top)

5.4.1 Selecting the quick access function (softkey menu)
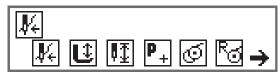
Here, you have quick access to functions during the sewing process. You can also assign a function to the **softkey** button.

To select a quick access function:

1. Press the **softkey menu** 🖻 button.

2. The following display appears:

Fig. 38: Selecting the quick access function (softkey menu)

3. To select a function: Press the numeric button under the desired function.

OR

4. To assign a function to the **softkey** button: Press the numeric button under the desired function and the **softkey** button at the same time.

   ♦ The function is assigned to the **softkey** button and can subsequently be called up using this softkey.

Information

There are various options available to assign to the **softkey** button depending on whether this is before the seam or in the seam.

---

5. To exit the menu, press the **ESC** button or the **softkey menu** button.

Possible button assignment for the softkey button (Manual mode)

Symbol	Meaning
	Threading mode The needle bar moves to the defined position. The pedal is temporarily locked.
	Raise/lower sewing foot BEFORE the seam: Position of the sewing foot after thread cutting. IN the seam: Position of the sewing foot when sewing stops.
	Needle position up / down If sewing is stopped within the seam, the needle is positioned up or down.
BEFORE the seam	Programming Activation of programming mode.
IN the seam	Thread cutter Function active or inactive.
BEFORE the seam	Bobbin mode
IN the seam	Perform half stitches Half stitches are performed when the button is pressed (needle position raised or lowered).
	Resetting the bobbin stitch counter The defined maximum s.p.m. of the bobbin used is reset to the starting value.
	Thread clamp Function active or inactive.

Symbol	Meaning
	2nd edge guide distance Moves the position for the 2nd edge guide distance.
	Edge guide reference run If the edge guide has lost its correct position due to an interruption, the reference run returns it to its starting position.

Possible button assignment for the softkey button (Automatic mode)

Symbol	Meaning
	Threading mode The needle bar moves to the defined position. The pedal is temporarily locked.
	Reset daily piece counter.
	Automatic stitch counting Function active or inactive.
BEFORE the seam	Programming Activation of programming mode.
BEFORE the seam	Bobbin mode
IN the seam	Perform half stitches Half stitches are performed when the button is pressed (needle position raised or lowered).
	Resetting the bobbin stitch counter The defined maximum s.p.m. of the bobbin used is reset to the starting value.

Symbol	Meaning
	Thread clamp Function active or inactive.
	2nd edge guide distance Moves the position for the 2nd edge guide distance.
	Edge guide reference run If the edge guide has lost its correct position due to an interruption, the reference run returns it to its starting position.

5.4.2 Setting the Speed (*Max Speed*) parameter

It is possible to reduce the maximum speed at this point. The value of the maximum speed can be set in the software at the Technician level.

Menu item	Setting option
(*Max Speed*) Speed	0050 – 3800 [rpm] depending on subclass

5.4.3 Setting the Thread cutter (*Thread Trim*) parameter

Set whether the thread cutter is activated or deactivated at the end of the seam.

Menu item	Setting option
(*Thread Trim*) Thread cutter	ON = on OFF = off

5.4.4 Setting the Thread clamp (*Thread Clamp*) parameter

If a thread clamp is present, this function can be activated or deactivated here. The thread clamp is closed for the 1st stitch of the seam to ensure that the needle thread lies on the underside of the sewing material.

Menu item	Setting option
(*Thread Clamp*) Thread clamp	On/Off

5.4.5 Setting the Initial alignment stitch (*PointPos.°*) parameter

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.

Menu item	Setting option
(*PointPos.°*) Initial alignment stitch function	000 – 359 [°]

5.4.6 Setting the Start bartack (*Start Tack*) parameter

There are various options for setting the start bartack. All subitems in the *Start Tack* menu are listed in the following table.

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

Menu items	Setting option 1	Setting option 2
On	On/Off	
Stitches (↑) Number of stitches backwards	Value range 01 – 50	
Stitches (↓) Number of stitches forward	Value range 01 – 50	

Menu items	Setting option 1	Setting option 2
`Repetitions`, Number of sections in a bartack 📖 *p. 68*	Value range 01 – 99	
`t Change`, Stop-Time for direction change 📖 *p. 68*	Value range 0000 – 1000 [ms]	
`St.Len. Def.`, Default stitch length 📖 *p. 68*	ON/OFF	
	`St.Len.` (↑)	Value range 01.0 – 12.0 [mm] (depending on subclass)
	`St.Len.` (↓)	Value range 01.0 – 12.0 [mm] (depending on subclass)
`Speed` Speed in bartack	Value range 0000 – 2000	
`Pedal Stop`, Single stitches per pedal 📖 *p. 68*	ON/OFF	
`Thr.Tens.Def`, Default needle thread tension 📖 *p. 69*	ON/OFF	Value range 01 - 99
`Catch Bartack`, Bartack before the bartack 📖 *p. 69*	On	ON/OFF
	`Stitches` (↑)	Value range 01 - 50
	`Stitches` (↓)	Value range 01 - 50
`First Repet.`, Number of stitches different for 1st section 📖 *p. 69*	On	ON/OFF
	`Stitches` (↑/↓)	Value range 01 - 50

Menu items	Setting option 1	Setting option 2
Last Repeti., Number of stitches different for last section 📖 *p. 69*	On	ON/OFF
	Stitches (↑/↓)	Value range 01 - 50
Invert Dir., Invert direction 📖 *p. 69*	ON/OFF	

Setting: Number of sections in a bartack (*Repetitions*)

A bartack always 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 in this submenu.

Setting: Stop-Time for direction change (*t Change*)

The waiting time at the turning points (for example 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).

Setting: Default stitch length (*St.Len.Def.*)

If this function is active, the same 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.

Setting: Single stitches per pedal (*Pedal Stop*)

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.

Setting: Default needle thread tension (`Thr.Tens.Def.`)

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.

Setting: Bartack before the bartack (`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.

Setting: Number of stitches different for 1st section (`First Repet.`)

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.

Setting: Number of stitches different for last section (`Last Repeti.`)

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.

This function is useful for the short stitch for the short thread cutter, for example. In this case, one less stitch is sewn in the last section.

Setting: Invert direction (`Invert Dir.`)

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.

5.4.7 Setting the End bartack (`End Tack`) parameter

There are various options for setting the end bartack. All subitems in the `End Tack` menu are listed in the following table.

Settings that are more complex and therefore require further explanation are described in more detail in the chapter on the start bartack (📖 *p. 66*) or below the table.

Menu items	Setting option 1	Setting option 2
`On`	On/Off	
`Stitches` (↑) Number of stitches backwards	Value range 01 – 50	
`Stitches` (↓) Number of stitches forward	Value range 01 – 50	
`Repetitions`, Number of sections in a bartack 📖 *p. 68*	Value range 01 – 99	
`t Change`, Stop-Time for direction change 📖 *p. 68*	Value range 0000 – 1000 [ms]	
`St.Len.Def.`, Default stitch length 📖 *p. 68*	ON/OFF	
	`St.Len.` (↑)	Value range 01.0 – 12.0 [mm] (depending on subclass)
	`St.Len.` (↓)	Value range 01.0 – 12.0 [mm] (depending on subclass)
`Speed` Speed in bartack	Value range 0000 – 2000	
`Pedal Stop`, Single stitches per pedal 📖 *p. 68*	ON/OFF	

Menu items	Setting option 1	Setting option 2
Thr.Tens.Def, Default needle thread tension 📖 *p. 69*	ON/OFF	Value range 01 - 99
Catch Bartack, Bartack after the bartack 📖 *p. 69*	On	ON/OFF
	Stitches (↑)	Value range 01 - 50
	Stitches (↓)	Value range 01 - 50
First Repet., Number of stitches different for 1st section 📖 *p. 69*	On	ON/OFF
	Stitches (↑/↓)	Value range 01 - 50
Last Repeti., Number of stitches different for last section 📖 *p. 69*	On	ON/OFF
	Stitches (↑/↓)	Value range 01 - 50
Invert Dir., Invert direction 📖 *p. 69*	ON/OFF	

5.4.8 Setting the Sewing foot lift (*Foot*) parameter

The sewing foot lift can have various settings. Possible settings and the corresponding value ranges are listed in the table.

Menu item	Setting option
FL AtStop, Sewing foot lift when sewing stops	ON = on OFF = off
FL AfterTrim, Sewing foot lift after thread cutting	ON = on OFF = off
FL ht.AtStop, High sewing foot lift when sewing stops	Value range 00 – 20 [mm] (depending on subclass)
FL ht.A.Trim, High sewing foot lift after thread cutting	Value range 00 – 20 [mm] (depending on subclass)

5.4.9   Setting the Bobbin monitor (*Bobbin*) parameter

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

Information
The bobbin monitor setting is global and NOT limited to an operating mode or a seam program.

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

Menu items	Setting option 1	Setting option 2
Off		
Monitor, 📖 *p. 74*	*t Clean*	Value range 0000 – 5000 [ms]
	Motor Stop	ON/OFF
	Foot down	ON/OFF
Softw., Software 📖 *p. 74*	*Counter type*	A/B/C/D
	Counter	Value range 00000 – 99999
	Motor Stop	ON/OFF
	Foot down	ON/OFF
	ResetNeces	ON/OFF

Setting: Monitor (`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. The possible settings are listed in the table.

`t Clean` Value range 0000 – 5000 [ms]	Duration for which the lens is blown clear with compressed air. The process takes place as the thread is cut.
`Foot_down`	Presser foot down
`Motor Stop` ON/OFF	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.

Setting: Software (`Softw.`)

In Software mode, the bobbin is monitored by the software based on the number of stitches sewn. The possible settings are listed in the table.
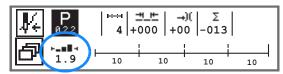
`Counter type` A/B/C/D	4 different counters can be applied. The following 3 subitems can be set for each of the counters.
`Counter` Value range 00000 – 99999	Bobbin supply capacity in stitches. This is a very variable value, which depends on the size of the bobbin and the thickness of the thread.
`Motor Stop` ON/OFF	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.
`Foot_down`	Presser foot down
`ResetNeces` ON/OFF	It is only possible to resume sewing after changing the bobbin and confirming the message on the control panel.

5.4.10 Setting the Information (*InfoScreen*) parameter

Information can be displayed on certain settings during sewing as desired or required.

Fig. 39: Setting the Information parameter

Possible settings for the Information parameter

Symbol	Menu item	Meaning
	Off	no display
⊢─⬡─⊣	*Bobbin Cnt*	Bobbin stitch counter
⊢─Ⴖ─⊣	*Speed*	Current speed
⊩POS⊪	*Position*	Handwheel position (Value range 000 – 359 [°])
⊢▄■⊣	*Mat.Thickness*	Material thickness detection
⊢∠⊣	*Pedal*	Pedal position (Value range 24 – -2)

5.4.11 Setting the Puller (`Puller`) parameter

The puller 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 puller can be adjusted separately. The input is in percent: a positive value increases the roller feed while a negative value reduces the feed.

Menu item	Setting option
Top Cor. Correction top roller	Value range -100 – 100 [%]
Bottom Cor. Correction bottom roller	Value range -100 – 100 [%]

5.4.12 Setting the Edge guide (`EdgeGuide`) parameter

The edge guide helps to precisely position the sewing material. The value set indicates the distance between the needle and edge guide/material edge.

The 2nd distance for the edge guide can only be accessed using the **softkey menu** button or the **softkey** button if these are assigned to the 2nd distance.

Menu item	Setting option
Distance Edge guide	Value range 01.0 – 45.0 [mm]
Gap (+) Edge guide 2nd distance	Value range 01.0 – 45.0 [mm]

5.4.13 Setting the Correction of effects of high speed (`Speed Corr.`) parameter

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.

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

Menu items	Setting option 1	Setting option 2
ON/OFF		
`Stitchlen.`, Stitch length 📖 *p. 79*	`Off`	
	`linear`	`Stitch length.`
		`Min. Speed`
		`Max. Speed`
	`2.OnOff`	`Min. Speed`
	`2.On`	`Min. Speed`
`Thr.Tens.`, Needle thread tension 📖 *p. 80*	`Off`	
	`linear`	`Thr.Tens.`
		`Min. Speed`
		`Max. Speed`
	`2.OnOff`	`Min. Speed`
	`2.On`	`Min. Speed`
`Foot Press.`, Sewing foot pressure 📖 *p. 80*	`Off`	
	`linear`	`Foot Press.`
		`Min. Speed`
		`Max. 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.OnOff	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.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: Stitch length (`Stitchlen.`)

The stitch length changes slightly depending on the speed. For this reason, the stitch length can be adjusted at different speeds by the software.

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

](←F

Setting: Needle thread tension (`Thr.Tens.`)

Depending on the speed, the needle thread tension can be adjusted at different speeds by the software.

linear	`Thr.Tens.` Value range 00 – 99	Maximum needle thread tension reached at the upper speed limit.
	`Min. Speed` Value range 0000 – 4000 [rpm] (depending on subclass)	Speed at which the increase in needle thread tension should start.
	`Max. Speed` Value range 0000 – 4000 [rpm] (depending on subclass)	Speed up to which the increase in needle thread tension should occur.
2.OnOff	`Min. Speed` Value range 0000 – 4000 [rpm] (depending on subclass)	Speed from which the 2nd needle thread tension should be used.
2.On	`Min. Speed` Value range 0000 – 4000 [rpm] (depending on subclass)	Speed from which the 2nd needle thread tension should be used.

↓F

Setting: Sewing foot pressure (`Foot Press.`)

Depending on the speed, the sewing foot pressure can be adjusted at different speeds by the software.

linear	`Foot Press.` Value range 00 – 20	Maximum sewing foot pressure reached at the upper speed limit.
	`Min. Speed` Value range 0000 – 4000 [rpm] (depending on subclass)	Speed at which the increase in sewing foot pressure should start.
	`Max. Speed` Value range 0000 – 4000 [rpm] (depending on subclass)	Speed up to which the increase in sewing foot pressure should occur.

5.4.14 Setting the Material thickness detection (*FabricThickness*) parameter

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

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

Menu items	Setting option 1	Setting option 2
ON/OFF		
Stroke, 📖 *p. 83*	*Off*	
	linear	*Stroke*
		ThickMin
		ThickMax
	2.OnOff	*ThickMin*
	2.On	*ThickMin*
Stitchlen., 📖 *p. 84*	*Off*	
	linear	*Stitch length*
		ThickMin
		ThickMax
	2.OnOff	*ThickMin*
	2.On	*ThickMin*
Thr.Tens., Needle thread tension 📖 *p. 85*	*Off*	
	linear	*Thr.Tens.*
		ThickMin
		ThickMax
	2.OnOff	*ThickMin*
	2.On	*ThickMin*

Menu items	Setting option 1	Setting option 2
Foot Press., Sewing foot pressure 📖 *p. 85*	*Off*	
	linear	*Foot Press.*
		ThickMin
		ThickMax
Max. Speed, Speed 📖 *p. 85*	*Off*	
	linear	*Max. Speed*
		ThickMin
		ThickMax

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 in the parameter depends on the limits set for the minimum and maximum material thickness.
2.OnOff	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.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: Sewing foot stroke (*Stroke*)

The sewing foot stroke can be adjusted to different material thicknesses by the software.

linear	*Stroke* Value range 00 – 09 [mm]	Maximum sewing foot pressure reached at the upper material thickness limit.
	ThickMin Value range 00.0 – 10.0 [mm]	Material thickness at which the increase in sewing foot pressure should start.
	ThickMax Value range 00.0 – 10.0 [mm]	Material thickness up to which the increase in sewing foot stroke should occur.
2.OnOff	*ThickMin* Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd sewing foot stroke should be used.
2.On	*ThickMax* Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd sewing foot stroke should be used.

Setting: Stitch length (`Stitchlen.`)

The stitch length changes slightly depending on the material thickness. For this reason, the stitch length can be adjusted at different material thicknesses by the software.

linear	stitch length. Value range -50 – 50 [%]	Maximum stitch length variation reached at the upper material thickness limit.
	ThickMin Value range 00.0 – 10.0 [mm]	Material thickness at which the increase/reduction of stitch length should start.
	ThickMax Value range 00.0 – 10.0 [mm]	Material thickness up to which the increase/ reduction of stitch length should occur.
2.OnOff	ThickMin Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.
2.On	ThickMin Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.

)(+F

Setting: Needle thread tension (*Thr.Tens.*)

Depending on the material thickness, the needle thread tension can be adjusted at different material thicknesses by the software.

linear	*Thr.Tens.* Value range 00 – 99	Maximum needle thread tension reached at the upper material thickness limit.
	ThickMin Value range 00.0 – 10.0 [mm]	Material thickness at which the increase in needle thread tension should start.
	ThickMax Value range 00.0 – 10.0 [mm]	Material thickness up to which the increase in needle thread tension should occur.
2.OnOff	*ThickMin* Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd needle thread tension should be used.
2.On	*ThickMin* Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd needle thread tension should be used.

↓F ᒫ

Setting: Sewing foot pressure (*Foot Press.*)

The sewing foot pressure can be adjusted at different material thicknesses by the software.

linear	*Foot Press.* Value range 00 – 20	Maximum sewing foot pressure reached at the upper material thickness limit.
	ThickMin Value range 00.0 – 10.0 [mm]	Material thickness at which the increase in sewing foot pressure should start.
	ThickMax Value range 00.0 – 10.0 [mm]	Material thickness up to which the increase in sewing foot pressure should occur.

5.4.15 Setting the Light barrier (*LightBarrier*) parameter

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.

Menu item	Setting option
Light barrier	ON = on OFF = off
Start, Signal detection at the beginning of the material	ON/OFF
End, Detection of end of material	ON/OFF
Distance, Distance after detection of end of material	Value range 0 – 255
Seams, Number of signal detections	Value range 1 – 255
Filter, Filter stitches up to signal detection	Value range 0 – 255

Setting: Signal detection at the beginning of the material (*Start*)

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.

Setting: Detection of end of material (*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.

Setting: Distance after detection of end of material (*Distance*)

Here, you can set the distance from the detection of the signal to the end of the material. This 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.

Setting: Number of signal detections (*Seams*)

Input of the number of signal detections after which the machine is supposed to continue with the specifically set parameters.

Setting: Filter stitches up to signal detection (*Filter*)

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.

5.4.16 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.

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

5.5 Using Automatic mode
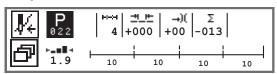
Automatic mode includes all program numbers from 001 to 999.

To access Automatic mode:

1. Use ◄/► to select the **Program** parameter.

2. Use ▲/▼ to select the program number **001** or another one (if available).

✣ The software switches to Automatic mode, the program name is shown briefly, and then the following display appears:

Fig. 40: Using Automatic mode

The following table explains the individual symbols on the display and the functions of the buttons on the control panel.

Symbol	Description
![softkey]	Depending on the assignment of buttons, there may be different functions here, 📖 *p. 62*. • Press **softkey** button
![softkey menu]	Quick access function (softkey menu) Press the **softkey menu** button, 📖 *p. 62*.
P	Program number Value range: 000 - 999 • Use ◄/► to select the **Program** parameter • Use ▲/▼ to change the program number or enter the program number using the numeric buttons **0 – 9** and confirm with the **OK** button If you select program 000, the control selects Manual mode, 📖 *p. 58*.
⊢⊶	Seam sections Number of seam sections contained in the current program.

Symbol	Description	
⇥┃ ┠	Stitch length correction factor Value range: -50 – 50 [%] Alters the stitch length in all seam sections with ▲/▼.	Allows for finer adjustment than by setting the parameters directly.
→)(	Needle thread tension correction factor Value range: -50 – 50 [%] Alters the needle thread tension in all seam sections with ▲/▼.	
Σ	Day piece counter Function active or inactive, 📖 *p. 99.*	
⊢▃■▋⊣	Information on the display Can be assigned differently as desired, 📖 *p. 75.*	

5.5.1   Sewing in Automatic mode
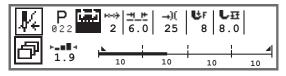
After selecting a program between 001 and 999, you will be in Automatic mode.

To sew in Automatic mode:

1.   Press the pedal forward and sew.

↳   The following display appears:

Fig. 41: Sewing in Automatic mode
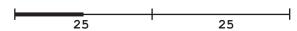
The parameter values for the current seam section are shown on the display.

The program bar shows the progress of the seam program. The number under the current seam section shows the number of stitches yet to be sewn / the outstanding length of the seam section.

The program bar shows half the current seam section in bold.

Fig. 42: Seam section in progress

25		**25**

Completed seam sections are shown fully in bold.

Fig. 43: Completed seam section

25		**25**

Additional information is shown next to the program bar, which can be identified at a glance thanks to the small symbols on the display:

Symbol	Meaning
◣	Start bartack
◢	End bartack
—	Manually switch between two seam sections (using ◄/ ► or button assignment for the push button on the machine arm or knee button); there is no stitch counting
"10"	Number of stitches or length in mm of the seam section. The active option, either s.p.m. or mm, can be set at the Technician level. The s.p.m. option is set at the factory.
┴	Stop at the end of the seam section with thread cutting
┼	Switch between two seam sections without stopping
┼	Switch between two seam sections, with a stop, but without thread cutting

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
◄/►	Seam section forwards/backwards or go to start of seam section.
Pedal halfway back	Lift sewing foot.
Pedal fully back	Cut off or cancel the program. The program remains stopped at the cutoff point.
⊡	Softkey menu, 📖 *p. 62*.

5.5.2 Canceling a program in automatic mode

To cancel a program in Automatic Mode:

1. Push 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.

5.6 Using Programming/Edit mode

5.6.1 Creating a new program

To create a new program:

1. Press the ⧉ button.

↳ The softkey menu appears.

2. Press the ᴾ₊ button.

↳ The control displays the next free program number.

Fig. 44: Creating a new program (1)

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

Or:

4. Choose a different program number using ▲/▼ or enter one with the numeric buttons **0 – 9** and then press the **OK** button (only free program positions are shown/accepted as numeric entries).

↳ The following information is shown, and the P in the program number field flashes:

Fig. 45: Creating a new program (2)

Programming mode offers two options for creating new seam programs:

- Creating a program using keyboard input, 📖 *p. 93.*
- Creating a program using teach-in, 📖 *p. 95.*
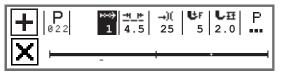
5.6.2   Creating a program using keyboard input

Creating a program using keyboard input is done completely without sewing. All parameters for the seam sections and the program are entered manually.

To create a program using keyboard input:

1. Create a new program, 📖 *p. 92.*

2. Use ► to switch to the seam section selection.

3. Use ➕ to activate the seam section.

↳ The following display is shown, with preset values which can be specified at technician level.

Fig. 46: Creating a program using keyboard input

4. Set the basic parameters that are explained in the table.

Symbol	Meaning
⊣ ⊢	Stitch length for the current seam section Value range: 00.0 - 12.0 [mm] (depending on the subclass) • Use ◄/► to select the Stitch length parameter • Use ▲/▼ to change the stitch length

Symbol	Meaning
→)l(	Needle thread tension value (%) of current seam section Value range: 00 - 99 • Use ◄/► to select the Needle thread tension parameter • Use ▲/▼ to change the needle 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 parameter • Press the **OK** button to open the submenu • Use ▲/▼ to select the right or the left needle thread • Press the **OK** button to confirm • Use ▲/▼ to change the needle thread tension • Press the **OK** button to confirm
↓F	Sewing foot pressure Value range: 01 - 20 • Use ◄/► to select the Sewing foot pressure parameter. • Use ▲/▼ to change the sewing foot pressure
↓Ⱦ	stroke Value range: 00.0 – 09.0 [mm] (0.5 mm increments) • Use ◄/► to select the Stroke height parameter • Use ▲/▼ to change the stroke height

5. Set other parameters for this seam section, 📖 *p. 97*.

6. To set up another seam section, use ▲ on the seam section display to switch to the next seam section.

7. Use ➕ to activate the seam section and set parameters again as described above.

8. Repeat steps 6 and 7 to define up to 30 seam sections if necessary.

9. Press the **ESC** button.

↳ The program is saved. The machine switches to Automatic mode and the newly created program is selected.
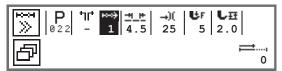
5.6.3 Creating a program using Teach-In

Creating a program using Teach-In is done by sewing the seam sections and manually entering the parameters for the seam sections and the program.

To create a program using Teach-In:

1. Create a new program, 📖 *p. 92*.

2. Press the **Teach-In** 🖳 button.

↳ The following display is shown, with preset values which can be specified at technician level.

Fig. 47: Creating a program using Teach-In

3. Set the basic parameters that are explained in the table.

Symbol	Meaning
⊣ ⊦	Stitch length for the current seam section Value range: 00.0 - 12.0 [mm] (depending on the subclass) • Use ◄/► to select the Stitch length parameter • Use ▲/▼ to change the stitch length

Symbol	Meaning
→)l(	Needle thread tension value (%) of current seam section Value range: 00 - 99 • Use ◄/► to select the Needle thread tension parameter • Use ▲/▼ to change the needle 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 parameter • Press the **OK** button to open the submenu • Use ▲/▼ to select the right or the left needle thread • Press the **OK** button to confirm • Use ▲/▼ to change the needle thread tension • Press the **OK** button to confirm
⌴⌄F	Sewing foot pressure Value range: 01 - 20 • Use ◄/► to select the Sewing foot pressure parameter • Use ▲/▼ to change the sewing foot pressure
⌴⌄Ⅱ	stroke Value range: 00.0 – 09.0 [mm] (0.5 mm increments) • Use ◄/► to select the Stroke height parameter • Use ▲/▼ to change the stroke height

4. Press the pedal and complete the seam section up to the desired position on the material.

5. To set other parameters for another seam section, use ▲ to add a new seam section.

6. Set the basic parameters.

7. Repeat steps 5 and 6 to define up to 30 steps if necessary.

8. Push the pedal fully back.

✎ The program switches to Edit mode.

9. If necessary, set additional parameters for all seam sections () and complete the selected program ().

10. Press the **ESC** button.

- ⮩ The program is saved. The machine switches to Automatic mode and the newly created program is selected.

5.6.4 Adjusting parameters for the current seam section

This menu allows the parameters for the current seam section to be changed. This setting ONLY affects the currently selected seam section, and NOT the entire program.

To adjust the parameters for the current seam section:

1. Use ◄/► to select the field ↦⇢ .
2. Press the **OK** button.
- ⮩ The submenu opens.
3. Use ▲/▼ to select the desired parameter.
4. Press the **OK** button to activate or deactivate the parameter or use ▲/▼ to edit the value and confirm the change by pressing the **OK** button.

Parameters for the current seam section:

Symbol	Description
n	*Stitch count* Length of the seam section 0 = Manually step through > 1 = Number of stitches or length in mm
max	*Max Speed* Maximum speed for the seam section.

Symbol	Description
	Seg.End Modes Set what happens at the end of a seam section when switching to the next section: • *Stop* Sewing stops – if OFF: no more settings possible, smooth switch between the seams sections if ON: • *Thread Trim* - Thread cutting • *Needle Up* - Needle position • *Foot Lifted* - Sewing foot lift • *FL height* - Sewing foot lift stroke height
	Start bartack Start bartack, setting identical to Manual mode, 📖 *p. 66*.
	End bartack End bartack, setting identical to Manual mode, 📖 *p. 70*.
	Needle Up Position of the needle when sewing stops on the seam section.
	Foot Lifted Position of the sewing foot when sewing stops on the seam section.
	FL height Lifting height of the sewing foot when sewing stops on the seam section.
	Backwards Backward stitches; when the parameter is activated, the section is sewn backwards.
	Puller Supports the transport of the sewing material, setting identical to Manual mode, 📖 *p. 76*.
	Center Guide Seam middle guide (only on 2-needle machines)

Symbol	Description
	EdgeGuide • *Distance* Edge guide (if available); value for the distance between the needle and the material edge, setting identical to Manual mode, 📖 *p. 76.*
	Light barrier Detects the beginning or the end of the material, setting identical to Manual mode, 📖 *p. 86.*
	Output To be assigned specifically for each customer, 📖 *p. 87.*

5. Exit the submenu using the **ESC** or ◄ button

✎ The changed values are stored immediately.

6. If necessary, create further seam sections or exit Programming mode using the **ESC** button.

✎ The program is saved. The machine switches to Automatic mode and the newly created program is selected.

### 5.6.5   Adjusting parameters for the selected program

This menu allows the parameters for the current program/seam program to be changed. This setting affects all seam sections created in the program.

To adjust the parameters for the selected program:

1. Use ◄/►to select the field P··· .

2. Press the **OK** button.

✎ The submenu opens.

3. Use ▲/▼ to select the desired parameter.

4. Press the **OK** button to activate or deactivate the parameter or use ▲/▼ to edit the value and confirm the change by pressing the **OK** button.

Parameters for selected program:

Symbol	Description
P 001-999	*Program name* A program name can be entered using the numeric buttons: • Use ◄/► to navigate forwards and backwards • Use the **F** button to delete a letter • Use the **OK** button to confirm the entry • Use the **ESC** button to discard the entry
	Add Values (+) •*St.Len. (+)* •*Foot Stroke (+)* •*Thr.Tens. (+)* •*Gap (+)* 2nd value of the parameters
P 001-999	*Next Prog.* A subsequent program can be defined.
	Loop Prog. The program is executed as a loop, which is useful, for instance, for ornamental stitch seams.
	Cycl. Program •*Loop Seg.* •*Start Seg.* •*Stop Seg.* •*Loop Seg.*
)(^TC	*Thread clamp* Function active or inactive, if available.
	Bobbin Setting identical to Manual mode, 📖 *p. 73.*
	InfoScreen Setting identical to Manual mode, 📖 *p. 75.*

Symbol	Description
⌊000⌋ Σ 14	*Piece counter* Daily piece counter, can be set to count either up or down. When the daily piece counter is activated, it must be reset once after entering a value using the function in the softkey menu to ensure it counts correctly.
	PointPos.° Setting identical to Manual mode, 📖 *p. 66.*
(n) cor.	*Speed Corr* Setting identical to Manual mode, 📖 *p. 77.*
	Mat.Thickness If present, setting identical to Manual mode, 📖 *p. 81.*

5. Exit the submenu using the **ESC** or ◄ button.

✎ The changed values are stored immediately.

6. If necessary, create further seam sections or exit Programming mode using the **ESC** button.

✎ The program is saved. The machine switches to Automatic mode and the newly created program is selected.

5.6.6 Editing programs

Parameters of already created programs can be adjusted subsequently.
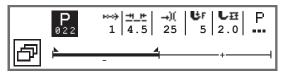
To edit a program:

1. Select the desired program.

2. Press the **P** button.

✎ The control switches to Edit mode.
The following information is shown, and the P in the program number field flashes:

Fig. 48: Editing programs

3. Select the seam section to be changed using ↦ with ▲/▼.

   ✎ The selected seam section is shown in bold in the program bar.

4. Adjust the basic parameters.

5. Adjust the parameters for the selected seam section, 📖 *p. 97*.

6. Adjust the parameters for the entire program, 📖 *p. 99*.

7. Use ⊞ to add a new seam section.

8. Use ☒ to delete the seam section marked in bold in the program bar.

9. Exit Edit mode using the **ESC** button.

   ✎ The program is saved. The machine switches to Automatic mode and the newly created program is selected.

5.6.7 Copying the program

Only the selected program is copied to a new program number.

To copy a program:

1. Select the desired program.

2. Press the **P** button.

   ✎ The P above the program number will flash.

3. Press the **softkey menu** 🗗 button.

   ✎ The softkey menu appears.

Fig. 49: Copying the program (1)

4. Press the numeric button under .

↳ The following display appears:

Fig. 50: Copying the program (2)

↳ The control displays the next free program number.
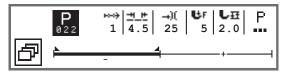
5. Press the **OK** button to load the program number.

OR

Select another program number using ▲/▼ or input a program number using the numeric buttons **0 – 9**.

6. Press the **OK** button to confirm the program number.

↳ The program number is loaded.
The control switches to Edit mode and the program number flashes:

Fig. 51: Copying the program (3)

7. If necessary, make changes to the newly copied program.

8. Press the **ESC** button.

↳ The program is saved. The machine switches to Automatic mode and the newly created program is selected.

5.6.8 Deleting the program

Only the selected program can be deleted.

To delete a program:

1. Select the desired program.

2. Press the **P** button.

↳ The P above the program number will flash.

3. Press the **softkey menu** ⧉ button.

↳ The softkey menu appears.

Fig. 52: Delete program

4. Press the numeric button under [Pₓ].

↳ The selected program is deleted. The program below/above is selected and can be edited.

5. To delete further programs, select the program using ▲/▼ and repeat from step 3.

6. Press the **ESC** button to go to Automatic mode.

↳ The machine switches to Automatic mode.

6 Programming the Commander Basic/Pro

6.1 Commander Basic/Pro control panel

Fig. 53: Commander Basic/Pro control panel

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

---

i **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 tapping the corresponding button with your finger. You switch between the different pages of the main screen by swiping with one finger.

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. 125*.

Fig. 54: Navigating the Commander Basic/Pro control panel

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

6.2.1 Symbols and tiles

Explanation of recurring symbols:

Icon	Meaning
	The letter shown in blue is active. A = Automatic mode M = Manual mode Tap the symbol to toggle between the two modes.
	Programming mode (access via the burger menu), see 📖 *p. 155*.
	Parameters you can set in manual mode.

Icon	Meaning
≡	Burger menu A window opens that lets you select Automatic mode, Manual mode, Programming mode or Settings.
?	Context-sensitive help Start by tapping the gray question mark before tapping the area for which you need help - this brings up a pop-up window containing a Help text. Tap anywhere to make the window disappear.
4.5	Bright tiles Parameters for which you can/must enter a numerical value. Values can be input by tapping.
	Dark tiles (stored) You can active or deactivate dark tiles encircled by a white line by tapping. You cannot set any values.
	Dark tiles (multifunction) You can active or deactivate dark tiles encircled by a white line and showing a blue triangle in the corner by tapping. A long tap opens a menu that lets you input values.
	Dark tiles (not stored) 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 tap the tile.
25 0	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 ⊖ or by typing on the integrated on-screen keyboard.
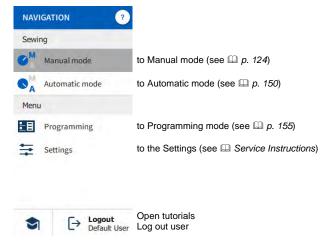
Values highlighted in red are invalid as they are not within the specified value range. If you enter invalid values, the software will automatically set the limit value of the value range.

6.2.3 Navigating the burger menu

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

Fig. 55: Navigating the burger menu

to Manual mode (see 📖 *p. 124*)

to Automatic mode (see 📖 *p. 150*)

to Programming mode (see 📖 *p. 155*)

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 a description of the two users that have been set up as the defaults: `Default User` and `Default Technician`. You can, of course, set up any number of users and roles that meet your individual requirements.

To access User Management:

1. Tap the symbol ≡ to bring up the navigation pane.
   ↳ This opens the navigation interface.
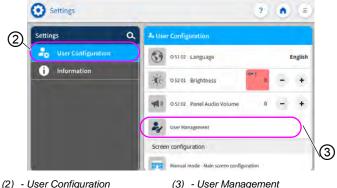
Fig. 56: User Management (1)

(1) - Settings

2. Tap `Settings` (1).
   ↳ This opens the Settings interface.

Fig. 57: User Management (2)

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

3. Tap the item *User Configuration* (2) on the left.

4. Tap the item *User Management* (3) on the right.

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

Fig. 58: User Management (3)

5. Define the desired settings (for sample explanations, see 📔 *p. 114* and 📔 *p. 115*).

6. Tap ◀ 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. Tap the symbol ≡ to bring up the navigation pane.

✎ This opens the navigation interface.

Fig. 59: User login

(1) - Logout

2. Tap `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. 120*).
   ✤ The user can log in immediately with this login information.

Login with username and password

To log in with username and password:

1. Enter *username* and *password*.
2. Tap ⬚.
   ✤ If the login information is correct, the user will be logged in.

6.3.1.2 Login with a 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. 120*).
2. Tap the item *Login with USB key*.
   ✤ 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, tap *Pair*.

✎ The window disappears, and the function *Login with USB key* is active.

Login 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 Login 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. 120*).

2. Tap 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.

Login 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.
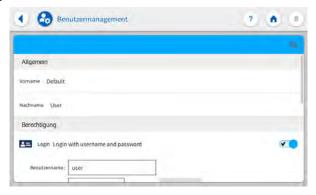
6.3.2 Authorizations as `Default User`

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.

If selecting User Management as a `Default User` (📖 *p. 109*), you will be shown the following interface:

Fig. 60: Authorizations as `Default User`

Settings of the user

Icon	Setting	Explanation
General		
	First name	Name of the user, NOT to be confused with the data used for logging in!
	Name	
Authorization		
👤≡	*Login with username and password*	On/Off
		Username Name for logging in
		Password Password for logging in
📶 NFC	*Login with NFC token*	Login by NFC chip allowed or not allowed

Icon	Setting	Explanation
🔱	*Login with USB key*	Login by USB key allowed or not allowed
⚷	*Automatic login during system start*	Automatic login when machine starts; no login required
Roles		
👤	*Developer*	Slider control active/inactive; for assigning the role
👤	*Technician*	Slider control active/inactive; for assigning the role
👤	*Vendor*	Slider control active/inactive; for assigning the role
👤	*User*	Slider control active/inactive; for assigning the role

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*) to log in. 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. 109*), you will be presented with the following interface:

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

On the left-hand side, you can select between the tabs (1) reserved for roles (⚲ *p. 116*) and users (⚲ *p. 120*). 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 left, you will find the settings (3) associated with the role/user you selected.

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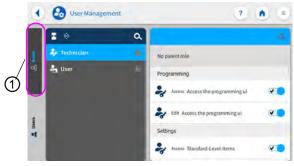
Role	User
A role defines which authorizations are permitted or forbidden. It is possible to assign more than one role to a single user. You need to be a user to log in; you cannot log in using a role.	You can log in as a user. A user can be assigned one or several roles - this is how they receive their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

6.3.3.1 Managing roles

If selecting User Management as a `Default Technician` (⚲ *p. 109*), you will be presented with the following interface:

Fig. 62: Managing roles

(1) - Tab for roles

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

Deleting a role

To delete a role:

1. Tap the desired role.

✎ The role is highlighted in blue.

2. Tap [X].

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

---

i **Information**

Roles with a [lock] 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. Tap [icon] (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	
Read	Access the programming ui
Edit	Access the programming ui
Settings	
Access	Standard-Level-Items
Access	Pro-Level-Items
Access	Technician level
Access	Vendor-Level-Items
Access	Developer level
Manual mode	
Edit	Status bar
Edit	Start screen
Edit	Sewing parameters
Access	Switch to automatic mode
Edit	Manual bartack
Edit	Sewing foot lifted
Edit	Needle stop position

Read/Edit/Access	Menu item
Edit	Bobbin Wind
Edit	Segment abort
Edit	Edge trimmer
Edit	2nd Edge Guide Position
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	Sewing foot stroke
Edit	Switch Foot Stroke Alternation
Edit	Bartack Toggle
Edit	Max. Speed
Edit	Bartack at seam begin
Edit	Bartack at seam end
Edit	Needle Half Stitch
Edit	Enabled Thread Trim
Edit	Needle thread clamp
Edit	Threading Mode
Edit	Light barrier
Automatic Mode	
Access	Program selection
Edit	Program
Edit	Stitch length correction factor
Edit	Needle thread tension correction factor

Read/Edit/Access	Menu item
User Management	
Edit	Current user
Edit	Roles up to technician
Edit	Roles up to vendor
Edit	Roles up to developer
Edit	Users up to technician
Edit	Users up to vendor
Edit	Users up to developer
Edit	Auto Login Editable

6.3.3.2 Managing users

If selecting User Management as a `Default Technician` (📖 *p. 109*), you will be presented with the following interface:

Fig. 63: Managing users (1)
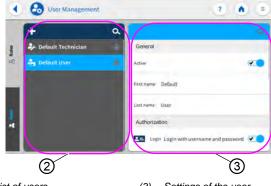
(1) - Tab for users

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

Fig. 64: 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. When tapping a user in this section, 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. Tap the desired user.

ϑ   The user is highlighted in blue.

2. Tap ❌.

ϑ   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. Tap ➕.
   - ↳ The list shows a new user.
2. Define the settings for the user (see table below).

Settings of the user

Icon	Setting	Explanation
General		
	First name	Name of the user, NOT to be confused with the data used for logging in!
	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 with USB key	Login by USB key allowed or not allowed
	Automatic login during system start	Automatic login when machine starts; no login required
Roles (📖 *p. 116*)		
	Developer	Slider control active/inactive; for assigning the role

Icon	Setting	Explanation
🛠️	`Technician`	Slider control active/inactive; for assigning the role
🛠️	`Vendor`	Slider control active/inactive; for assigning the role
👤	`User`	Slider control active/inactive; for assigning the role

i **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. 116*).

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. Tap the symbol ≡ to bring up the navigation pane.

    ♦   This opens the navigation interface.

Fig. 65: Using Manual mode

(1) - Manual mode

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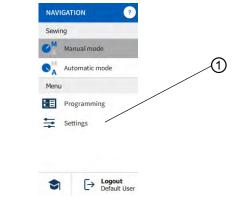
The main screen consists of three pages, which you can customize to your individual needs.

To adjust the tiles on the main screen:

1. Tap the symbol ⊜ to bring up the navigation pane.

↳   This opens the navigation interface.
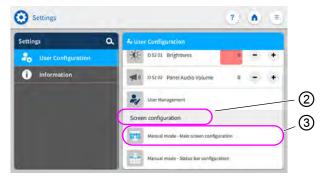
Fig. 66: Setting up the user interface (1)

(1) - Settings

2. Tap *Settings* (1).

↳   This opens the Settings interface.

Fig. 67: Setting up the user interface (2)

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

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

✤ The interface used for configuring the main screen opens.

Fig. 68: Setting up the user interface (3)

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

5. Tap ◀ to return to Settings or ⌂ to return to Manual mode.
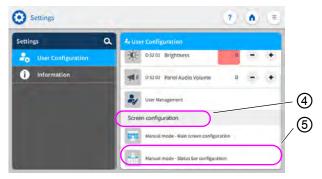
Adjusting the information displayed in the status bar

To adjust the appearance of the status bar:
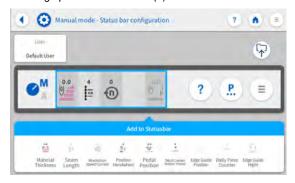
1. Go to *Settings* (see above).

Fig. 69: Setting up the user interface (4)

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

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

✎ The interface used for configuring the status bar opens.

Fig. 70: Setting up the user interface (5)
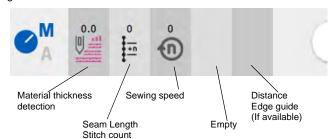
3. Tap and hold the desired symbol and drag it to move it into or out of the status bar.

4. Tap ◀ to return to Settings or ⌂ to return to Manual mode.

Default status bar settings

Fig. 71: Default status bar

Material thickness detection

Sewing speed

Distance Edge guide (If available)

Seam Length Stitch count

Empty

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.   Tap the symbol ![icon] to bring up the navigation pane.

   ⮡   This opens the parameter settings interface.

Fig. 72: Setting the parameters

(1) - Search		*(4) - Parameters Segment*
(2) - Parameters cross-segment		*(5) - Parameters Segment Begin*
(3) - Parameters Segment End		*(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	Setting
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 00.0 - 12.0 (depending on sewing equipment and subclass)
	Additional value sewing foot stroke (+) The 2nd value for the sewing foot stroke can be switched on using a button on the push button panel, the knee button or the tile on the control panel.	Value range 05.0 - 09.0 [mm]

Icon	Parameter	Setting
]|←F ⊕	*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 - 99
⊕ mm	*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 - 45.0
Main Parameter		
Σ/≡	*Bobbin monitor mode*	(see 📖 *p. 133*)
	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 [°]
mm	*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 - 45.0
Correction speed effect		
n +/− ✓	*Correction speed effect*	Value range On/Off (see 📖 *p. 135*)
	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.

Icon	Parameter	Setting
	`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. 139*)
	`Sewing foot stroke`	The sewing foot stroke can be adjusted to different material thicknesses by the software.
	`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.

Icon	Parameter	Setting
	Max. sewing speed	The maximum sewing speed can be adjusted to different material thicknesses by the software.
Output		
	Output 1-16	(see 🕮 *p. 143*)

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* A-D Σ 4 different counters can be applied. The following 3 subitems can be set for each of the counters.	Value range A/B/C/D
	Counter value Σ:0000 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 - 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 Σ ↺ 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.OnOff`	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.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 [rpm]
	(depending on subclass)
		Speed at which the increase/reduction of stitch length should start.

	`Max.`
	`sewing speed`
	Value range
	0000 – 4000 [rpm]
	(depending on subclass)
		Speed up to which the increase/reduction of stitch length should occur.

`2. Value On/`
`Off`
	`Min.`
	`sewing speed`
	Value range
	0000 – 4000 [rpm]
	(depending on subclass)
		Speed from which the 2nd stitch length should be used.

`2. Value On`	`Min.`
	`sewing speed`
	Value range
	0000 – 4000 [rpm]
	(depending on subclass)
		Speed from which the 2nd stitch length should be used.

Setting options `Needle thread tension`

Menu item	Setting 1	Setting 2
linear	*Needle thread tension* Value range 00 – 99	Maximum needle thread tension reached at the upper speed limit.
	Min. sewing speed Value range 0000 – 4000 [rpm] (depending on subclass)	Speed at which the increase in needle thread tension should start.
	Max. sewing speed Value range 0000 – 4000 [rpm] (depending on subclass)	Speed up to which the increase in needle thread tension should occur.
2. Value On/Off	*Min. sewing speed* Value range 0000 – 4000 [rpm] (depending on subclass)	Speed from which the 2nd needle thread tension should be used.
2. Value On	*Min. sewing speed* Value range 0000 – 4000 [rpm] (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 – 20	Maximum sewing foot pressure reached at the upper speed limit.
	Min. *sewing speed* Value range 0000 – 4000 [rpm] (depending on subclass)	Speed at which the increase in sewing foot pressure should start.
	Max. *sewing speed* Value range 0000 – 4000 [rpm] (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.OnOff	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.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 `Sewing foot stroke`

Menu item	Setting 1	Setting 2
linear	*Sewing foot stroke* Value range 00 – 09 [mm]	Maximum sewing foot stroke 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 foot stroke should start.
	Max. Material thickness Value range 00.0 – 10.0 [mm]	Material thickness up to which the increase in sewing foot stroke should occur.
2.OnOff	*Min. Material thickness* Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd sewing foot stroke should be used.
2.On	*Min. Material thickness* Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd sewing foot stroke should be used.

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 – 10.0 [mm]	Material thickness at which the increase/reduction of stitch length should start.
	Max. Material thickness Value range 00.0 – 10.0 [mm]	Material thickness up to which the increase/ reduction of stitch length should occur.
2.OnOff	*Min. Material thickness* Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.
2.On	*Min. Material thickness* Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.

Setting options `Needle thread tension`

Menu item	Setting 1	Setting 2
linear	*Needle thread tension* Value range 00 – 99	Maximum needle thread tension reached at the upper material thickness limit.
	Min. Material thickness Value range 00.0 – 10.0 [mm]	Material thickness at which the increase in needle thread tension should start.
	Max. Material thickness Value range 00.0 – 10.0 [mm]	Material thickness up to which the increase in needle thread tension should occur.
2.OnOff	*Min. Material thickness* Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd needle thread tension should be used.
2.On	*Min. Material thickness* Value range 00.0 – 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 – 20	Maximum sewing foot pressure 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 foot pressure should start.
	Max. Material thickness Value range 00.0 – 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 – 4000	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 – 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.

These parameters 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` 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	Setting
Parameter Seam Begin		
TC	*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
n	*Number of stitches backwards*	Value range 01 - 50
n	*Number of stitches forward*	Value range 01 - 50
n	*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 - 99
	Stop-Time for direction change The waiting time at the turning points (for example 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	Setting
	Stitch length default If this function is active, the same 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 01.0 - 12.0 [mm] (depending on subclass)
		Stitch length of backwards stitches Value range 01.0 - 12.0 [mm] (depending on subclass)
	Speed in bartack	Value range 0000 - 2000
	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 - 50
		Number of stitches forward Value range 01 - 50
		Number of bartack sections Value range 01 10

Icon	Parameter	Setting
	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 - 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 - 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	Setting
Seam Parameter		
	Stitch length	Value range 00.0 - 12.0 [mm] (depending on the sewing equipment and the subclass)
	Needle thread tension	Value range 01 - 99
	Sewing foot pressure	Value range 01 - 20
	Sewing foot stroke	Value range 1.0 – 9.0 [mm]
	Max. Speed It is possible to reduce the maximum sewing speed at this point. The value of the maximum sewing speed can be set in the software at the Technician level.	Value range 0050 – 3800 [rpm] (depending on subclass)
	Sewing foot lift at stop	Value range On/Off
	Height of sewing foot lift at Sewing stop	Value range 00 – 20 [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. 178*)

6.5.6 Setting the `Segment End` parameters

There are various options for setting the parameters at the segment end. 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	Setting
Parameter Seam End		
	`Sewing foot lift after trim`	Value range On/Off
	`Height of sewing foot lift after trim`	Value range 00 – 20 [mm] (depending on subclass)
	`Thread trimmer`	Value range On/Off
Adjustments for seamendbartackparameters		
	`Bartack at seam end`	Value range On/Off
	`Number of stitches backwards`	Value range 01 - 50
	`Number of stitches forward`	Value range 01 - 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 - 99

Icon	Parameter	Setting
	Stop-Time for direction change The waiting time at the turning points (for example 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 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 01.0 - 12.0 [mm] (depending on subclass)
		Stitch length of backwards stitches Value range 01.0 - 12.0 [mm] (depending on subclass)
	Speed in bartack	Value range 0000 - 2000
	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	Setting
	`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 - 50
		`Number of stitches forward` Value range 01 - 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 - 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 - 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. Tap the symbol $\equiv$ to bring up the navigation pane.

✥ This opens the navigation interface.

Fig. 73: Using Automatic mode (1)

(1) - Automatic Mode

2. Tap `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. 74: Using Automatic mode (2)

Explanations of icons/symbols in Automatic Mode:

Symbol/Icon	Meaning
P! 10 - SEAM 10 MANUEL	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
Naht 1:	Display of the entire program including its seams and segments.
0	Adjustment factors that can still be adjusted during the seam
25 / 0	Grayed-out tiles for information on the set parameters can be adjusted by programming (🕮 *p. 155*).
	Dark gray tiles can only be activated or deactivated. You define which tiles will be visible by programming (🕮 *p. 155*).

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. 75: 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
Push the pedal halfway back	Lift sewing foot.
Push the pedal fully back or cancel by tapping 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. Push 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 tapping 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.
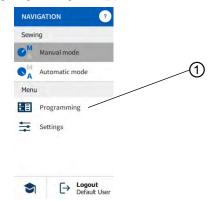
To access Programming mode:

1. Tap the symbol (≡) to bring up the navigation pane.

   ✎ This opens the navigation interface.

Fig. 76: Using Programming mode (1)

(1) - Programming mode

2. Tap `Programming`.

ꝏ The user interface for Programming mode opens.

Fig. 77: Using Programming mode (2)

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

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 create, delete and copy seams. 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. 125*.
▦	Place information in the status bar of the program, see 📖 *p. 125*.
▶	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. Tap on the desired seam.

   ↳ The seam is highlighted in blue.

Fig. 78: Editing the segments of a seam (1)

2. Tap on the symbol ⚙.

   ↳ The interface used for setting the parameters opens:

Fig. 79: Editing the segments of a seam (2)

(1) - Manage 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	Setting
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 00.0 - 12.0 (depending on sewing equipment and subclass)
	Additional value sewing foot stroke (+) The 2nd value for the sewing foot stroke can be switched on using a button on the push button panel, the knee button or the tile on the control panel.	Value range 05.0 - 09.0 [mm]
	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 - 99

Icon	Parameter	Setting
	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 – 45.0 [mm]
Program Cycle		
P→Px	*Next program* A subsequent program can be defined. Input via program number	
P	*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		
TC	*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
Σ/Ξ	*Bobbin monitor mode*	(see *p. 163*)

Icon	Parameter	Setting
Σ↓↑ 0000	*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 [°]
Correction speed effect		
+/- ✔	*Correction speed effect*	Value range On/Off (see 📖 *p. 165*)
	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. 169*)
	Sewing foot stroke	The sewing foot stroke can be adjusted to different material thicknesses by the software.

Icon	Parameter	Setting
	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. sewing 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* A-D Σ 4 different counters can be applied. The following 3 subitems can be set for each of the counters.	Value range A/B/C/D
	Counter value Σ:0000 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 - 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 Σ ↺ 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. *sewing speed* Value range 0000 – 4000 [rpm] (depending on subclass)	Speed at which the increase/reduction of stitch length should start.
	Max. *sewing speed* Value range 0000 – 4000 [rpm] (depending on subclass)	Speed up to which the increase/reduction of stitch length should occur.
2.Value *On/Off*	*Min.* *sewing speed* Value range 0000 – 4000 [rpm] (depending on subclass)	Speed from which the 2nd stitch length should be used.
2.Value	*Min.* *sewing speed* Value range 0000 – 4000 [rpm] (depending on subclass)	Speed from which the 2nd stitch length should be used.

Setting options `Needle thread tension`

Menu item	Setting 1	Setting 2
linear	*Needle thread tension* Value range 00 – 99	Maximum needle thread tension reached at the upper speed limit.
	Min. sewing speed Value range 0000 – 4000 [rpm] (depending on subclass)	Speed at which the increase in needle thread tension should start.
	Max. sewing speed Value range 0000 – 4000 [rpm] (depending on subclass)	Speed up to which the increase in needle thread tension should occur.
2.Value On/Off	*Min. sewing speed* Value range 0000 – 4000 [rpm] (depending on subclass)	Speed from which the 2nd needle thread tension should be used.
2. Value On	*Min. sewing speed* Value range 0000 – 4000 [rpm] (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 – 20	Maximum sewing foot pressure reached at the upper speed limit.
	Min. *sewing speed* Value range 0000 – 4000 [rpm] (depending on subclass)	Speed at which the increase in sewing foot pressure should start.
	Max. *sewing speed* Value range 0000 – 4000 [rpm] (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 `Sewing foot stroke`

Menu item	Setting 1	Setting 2
`linear`	`Sewing foot stroke` Value range 00 – 09 [mm]	Maximum sewing foot stroke 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 foot stroke should start.
	`Max. Material thickness` Value range 00.0 – 10.0 [mm]	Material thickness up to which the increase in sewing foot stroke should occur.
`2.Value On/Off`	`Min. Material thickness` Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd sewing foot stroke should be used.
`2. Value On`	`Min. Material thickness` Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd sewing foot stroke should be used.

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 – 10.0 [mm]	Material thickness at which the increase/reduction of stitch length should start.
	`Max. Material thickness` Value range 00.0 – 10.0 [mm]	Material thickness up to which the increase/ reduction of stitch length should occur.
`2.Value On/Off`	`Min. Material thickness` Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.
`2. Value On`	`Min. Material thickness` Value range 00.0 – 10.0 [mm]	Material thickness from which the 2nd stitch length should be used.

Setting options `Needle thread tension`

Menu item	Setting 1	Setting 2
`linear`	`Needle thread tension` Value range 00 – 99	Maximum needle thread tension reached at the upper material thickness limit.
	`Min. Material thickness` Value range 00.0 – 10.0 [mm]	Material thickness at which the increase in needle thread tension should start.
	`Max. Material thickness` Value range 00.0 – 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 – 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 – 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 – 20	Maximum sewing foot pressure 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 foot pressure should start.
	`Max. Material thickness` Value range 00.0 – 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 – 4000	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 – 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	Setting
Seam begin bartack parameters		
	Bartack at seam begin	Value range On/Off
	Number of stitches backwards	Value range 01 - 50
	Number of stitches forward	Value range 01 - 50

Icon	Parameter	Setting
	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 - 99
	Stop-Time for direction change The waiting time at the turning points (for example 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 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 01.0 - 12.0 [mm] (depending on subclass)
		Stitch length of backwards stitches Value range 01.0 - 12.0 [mm] (depending on subclass)
	Speed in bartack	Value range 0000 - 2000
	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	Setting
	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 - 50
		Number of stitches forward Value range 01 - 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 - 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 - 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	Setting
Seam Parameter		
	`Stitch length`	Value range 00.0 - 12.0 [mm] (depending on the sewing equipment and the subclass)
	`Needle thread tension`	Value range 01 - 99
	`Sewing foot pressure`	Value range 01 - 20
	`Sewing foot stroke`	Value range 1.0 – 9.0 [mm]

	`Seam length in segment`
	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 value of the maximum sewing speed can be set in the software at the Technician level.	Value range 0050 – 3800 [rpm] (depending on subclass)
	`Needle position` Needle position at sewing stop.	Value range On/Off
	`Sewing foot lift at stop`	Value range On/Off

Icon	Parameter	Setting
	Height of sewing foot lift at Sewing stop	Value range 00 – 20 [mm] (depending on subclass)
	Backwards When the parameter is activated, the section is sewn backwards.	Value range On/Off
	Seam Center Guide (only on 2-needle machines, optional additional equipment)	Value range On/Off
	Puller (optional additional equipment) The puller 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 puller 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]
	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. 178*)
Output		
	Output 01-16	(see 📖 *p. 179*)

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	Setting
	`Distance` Distance from the detection of the signal to the end of the material. This 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 - 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 - 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 - 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.

These parameters 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` 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 parameters at the segment end. 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	Setting
Parameter Seam End		
	`Sewing stop`	Value range On/Off Setting as to what will happen at the end of a segment/seam. (see 📖 *p. 182*)
Adjustments for seamendbartackparameters		
	`Bartack at seam end`	Value range On/Off
	`Number of stitches backwards`	Value range 01 - 50
	`Number of stitches forward`	Value range 01 - 50

Icon	Parameter	Setting
n	*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 - 99
	Stop-Time for direction change The waiting time at the turning points (for example 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]
mm mm	*Stitch length default* If this function is active, the same 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 01.0 – 12.0 [mm] (depending on subclass)
		Stitch length of backwards stitches Value range 01.0 – 12.0 [mm] (depending on subclass)
n	*Speed in bartack*	Value range 0000 - 2000
	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
](←F DEFAULT	*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	Setting
	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 - 50
		Number of stitches forward Value range 01 - 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 - 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 - 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
	`High sewing foot lift after thread cutting/at segment end`	Value range 00 – 20 [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 per-
formed 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. 109* 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. Tap the file containing the software update.

 ✵ Another window opens.

6. To start the software update, tap on the *Start Update* button.

7. Wait until advised that the USB key can be removed OR that the control panel was restarted.

$\boxed{i}$ **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

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

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

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

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

Maintenance interval

Work to be carried out	Operating hours			
	8	40	160	500
Cleaning				
Removing lint and thread remnants	●			
Lubricating				
Lubricating the machine head	●			
Lubricating the hook		●		

Work to be carried out	Operating hours			
	8	**40**	**160**	**500**
Servicing the pneumatic system				
Setting the operating pressure	●			
Draining the water condensation	●			
Cleaning the filter element		●		

7.1   Cleaning

WARNING

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

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

NOTICE

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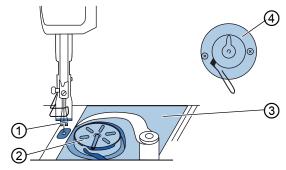
Clean the machine as described.

Property damage from solvent-based cleaners!

Solvent-based cleaners will damage paintwork.

Use only solvent-free substances for cleaning.

Fig. 80: Areas requiring special cleaning

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

Areas particularly susceptible to soiling:

• Cutter on the winder for the hook thread (4)

• Area under the throat plate (3)

• Hook (2)

• Area around the needle (1)

Cleaning steps:

1. Switch off the machine at the main switch.

2. Remove any lint and thread remnants using a compressed air gun or a brush.

7.2 Lubricating

CAUTION

Risk of injury from contact with oil!

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

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

NOTICE

Property damage from incorrect oil!

Incorrect oil types can result in damage to the machine.

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

CAUTION

Risk of environmental damage from oil!

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

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

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

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

• Viscosity at 40 °C:10 mm^2/s
• Flash point: 150 °C

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

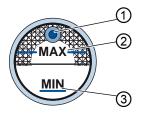| Container	Part no.
250 ml	9047 000011
1 l	9047 000012
2 l	9047 000013
5 l	9047 000014

7.2.1   Lubricating the machine head

Proper setting

The oil level is between the minimum level marking and the maximum level marking.

Fig. 81: Lubricating the machine head

(1) - Refill opening   *(3) - Minimum level marking*
(2) - Maximum level marking

To lubricate the machine head:

1. Check the oil level indicator at the inspection glass every day.
2. If the inspection glass lights up red, the machine is not sufficiently supplied with oil.
3. If the oil level is below the minimum level marking (3): Pour oil through the refill opening (1) but no higher than the maximum level marking (2).

7.2.2   Lubricating the hook

CAUTION

Risk of injury!

Crushing and puncture possible.

Only lubricate the hook when the machine is switched off. Carry out function tests with utmost caution when the sewing machine is switched on.

The approved oil quantity for hook lubrication is a factory specification.

✓ **Proper setting**

1. Hold a piece of blotting paper next to the hook.

2. Allow the machine to run without thread and sewing material for 10 seconds with the sewing feet lifted and at a high speed.

✇ The blotting paper will show a thin strip of oil when sewing is complete.

Fig. 82: Lubricating the hook

(1) - Screw

To lubricate the hook:

1. Turn the screw (1):

   • counterclockwise: more oil is released

   • clockwise: less oil is released

Important

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

7.3 Servicing the pneumatic system

7.3.1 Setting the operating pressure

NOTICE

Property damage from incorrect setting!

Incorrect operating pressure can result in damage to the machine.

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

Proper setting

Refer to the **Technical data** (*p. 249*) chapter for the permissible operating pressure. The operating pressure cannot deviate by more than ± 0.5 bar.

Check the operating pressure on a daily basis.

Fig. 83: Setting the operating pressure

DA150011_V52_XX

(1) - Pressure controller   *(2) - Pressure gage*

To set the operating pressure:

1. Pull the pressure controller (1) up.
2. Turn the pressure controller until the pressure gage (2)
   indicates the proper setting:

   • Increase pressure = turn clockwise
   • Reduce pressure = turn counterclockwise

3. Push the pressure controller (1) down.

7.3.2   Draining the water condensation

NOTICE

Property damage from excess water!

Excess water can cause damage to the machine.

Drain water as required.

Water condensation accumulates in the water separator (2) of the pressure controller.
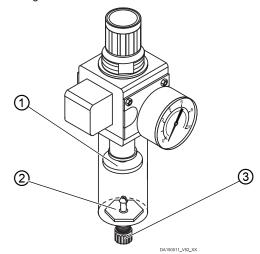
✓ **Proper setting**

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

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

Fig. 84: Draining the water condensation

DA150011_V52_XX

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

To drain water condensation:

1. Disconnect the machine from the compressed air supply.

2. Place the collection tray under the drain screw (3).

3. Loosen the drain screw (3) completely.

4. Allow water to drain into the collection tray.

5. Tighten the drain screw (3).

6. Connect the machine to the compressed air supply.
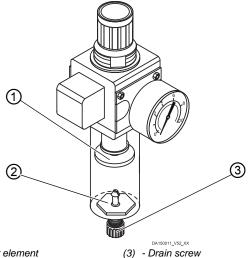
7.3.3 Cleaning the filter element

NOTICE

Damage to the paintwork from solvent-based cleaners!
Solvent-based cleaners damage the filter.

Use only solvent-free substances for washing out the filter tray.

Fig. 85: Cleaning the filter element

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

To clean the filter element:

1. Disconnect the machine from the compressed air supply.

2. Drain the water condensation (☷ *p. 193*).

3. Loosen the water separator (2).

4. Loosen the filter element (1).

5. Blow out the filter element (1) using a compressed air gun.

6. Wash out the filter tray using benzine.

7. Tighten the filter element (1).

8. Tighten the water separator (2).

9. Tighten the drain screw (3).

10. Connect the machine to the compressed air supply.

7.4   Parts list

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

www.duerkopp-adler.com

8 Setup

WARNING
Risk of injury from cutting parts! Cutting injuries may be sustained while unpacking and setting up the machine. Only qualified specialists may set up the machine. Wear safety gloves

WARNING
Risk of injury from moving parts! Crushing injuries may be sustained while unpacking and setting up the machine. Only qualified specialists may set up the machine. Wear safety shoes.

8.1 Checking the scope of delivery

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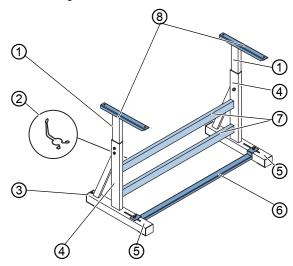
8.2 Removing the transport locks

Remove all transport locks before setting up the machine:

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

8.3 Assembling the stand

Fig. 86: Assembling the stand

(1) - Inner bar	*(5) - Foot strut*
(2) - Holder for oil can	*(6) - Cross strut*
(3) - Adjusting screw	*(7) - Cross bar*
(4) - Stand bar	*(8) - Head section - inner bar*
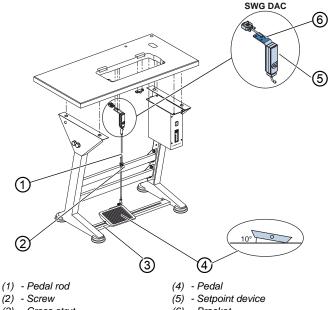
To assemble the stand:

1. Screw the cross bar(s)* (7) onto the stand bars (4).

2. Screw the oil can holder (2) to the rear to the upper cross bar (7).

3. Screw the cross strut (6) to the foot struts (5).

4. Insert the inner bars (1) in such a way that the longer end of the head section (8) is above the longer end of the foot struts (5).

5. Tighten the inner bars (1) down so that both head sections (8) are at the same height.

6. **Important:** Turn the adjusting screw (3) so that the stand has even contact with the ground.

* Stand components for long arm machines have 2 cross bars, and the other stand components have 1 cross bar.

8.4 Assembling the pedal and setpoint device

Fig. 87: Assembling the pedal and setpoint device

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

To assemble pedal and setpoint device:

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 for the alignment of the pedal.

2. Tighten the pedal (4) on the cross strut (3).

3. Screw the bracket (6) under the tabletop so that the pedal rod (1) runs to the pedal (4) at right-angles to the setpoint device (5).

4. Screw the setpoint device (5) onto the bracket (6).

5. Attach the pedal rod (1) with the ball sockets to the setpoint device (5) and 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).
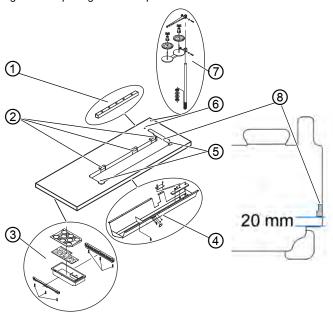
8.5 Tabletop

Ensure that the tabletop has sufficient load-bearing capacity and strength. If you want to make your own tabletop, use the dimensions given in the diagram **Appendix** (*p. 253*) as a template.

8.5.1 Completing the tabletop

The tabletop is optional. Drawings are provided in the appendix to allow you to independently assemble a tabletop (*p. 253*).

Fig. 88: Completing the tabletop

(1) - Cable duct	(5) - Recess
(2) - Slot	(6) - Hole
(3) - Drawer	(7) - Reel stand
(4) - Oil pan	(8) - Tilt sensor magnet

To complete the tabletop:

1. Screw the drawer (3) with the left-hand bracket to the underside of the tabletop.

2. Assemble the tilt sensor magnet (8) on the side of the tabletop cutout. Measurements from the front edge and below the edge of the table: 20 mm and 10 mm, respectively.

3. Screw the oil pan (4) in place under the slot for the machine.

4. Screw the cable duct (1) to the underside of the tabletop.
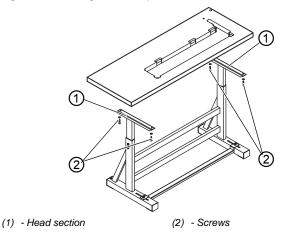
5. Insert the reel stand (7) into the hole.

6. Assemble the reel stand (7) with nut and washer.

7. Tighten the thread reel holder and the unwinding bracket on the reel stand (7) in such a way that they are exactly opposite each other.

8. Insert the plug (6) in the hole.

9. Insert the lower hinge parts into the slots (2).

10. Insert the rubber corners into the recesses (5).

8.5.2 Assembling the tabletop to the stand

Fig. 89: Assembling the tabletop to the stand

(1) - Head section   *(2) - Screws*

To assemble the tabletop to the stand:

1. Place the tabletop on the head sections (1) of the inner bars.

2. Use the screws (2) to fasten the tabletop at the screw holes of the head sections.

8.6 Setting the working height

WARNING

Risk of injury from moving parts!

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

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

CAUTION
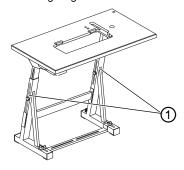
Risk of musculoskeletal damage from incorrect setting!

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

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

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

Fig. 90: Setting the working height

(1) - Screws

To set the working height:

1. Loosen the screws (1) on the stand bars.
2. Set the tabletop to the desired height.
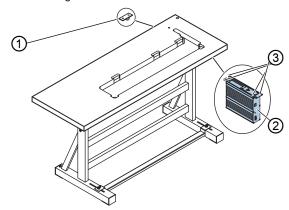
Important

Pull out or push in the tabletop evenly at both sides to prevent it from jamming.

3. Tighten the screws (1) on the stand bars.

8.7 Assembling the control

Fig. 91: Assembling the control

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

To assemble the control:

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

8.8 Inserting the machine head

WARNING

Risk of injury from moving parts!
The machine head is very heavy.
Crushing possible.

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

NOTICE
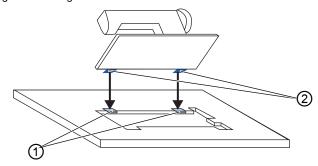
Property damage may occur!
Cable may sustain damage and impair the operation of the machine.

Always lay the cables so as not to create any chafing or pinching points.

Fig. 92: Inserting the machine head

(1) - Rubber inlays   (2) - Upper hinge parts

To insert the machine head:

1. Screw the upper hinge parts (2) onto the machine head.

2. Guide the cables through the tabletop with great care so as not to create any chafing or pinching points.

3. Insert the machine head from above at an angle of 45°.
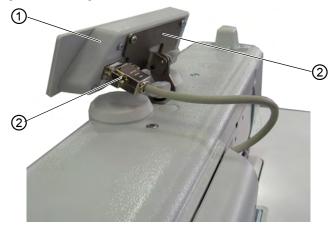
4. Insert the upper hinge parts (2) into the rubber inlays (1).

5. Tilt the machine head forward and insert it into the slot in the tabletop.

8.9   Assembling the control panel

8.9.1   Assembling the OP3000

Fig. 93: Assembling the OP3000

(1) - Control panel   (3) - Bracket
(2) - Plug

To assemble the control panel:

1. Tighten the control panel (1) on the bracket (3).

2. Insert the plug (2) of the connecting cable into the socket of the control panel (1).

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8.9.2   Assembling the Commander Basic/Pro

Fig. 94: Assembling the Commander Basic/Pro (1)
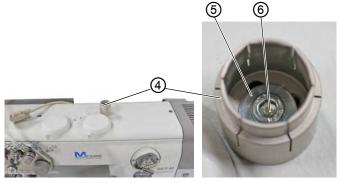
(1) - Control panel holder   (3) - Ball head
(2) - Countersunk screws

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. 95: Assembling the Commander Basic/Pro (2)

(4) - Ball socket   (6) - Screw
(5) - Washer
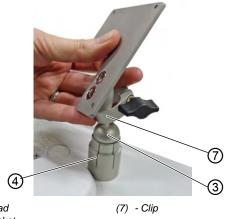
2. Place the arm cover (▥ *Service Instructions*).
   The arm cover is then only tightened by 3 screws.

3. Screw the ball socket (4) to the arm cover using washer (5) and screw (6).
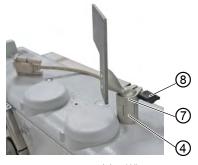
Fig. 96: Assembling the Commander Basic/Pro (3)

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

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. 97: Assembling the Commander Basic/Pro (4)

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

6. Slide the clip (7) onto the ball socket (4).

7. Tighten the wing screw (8).

Fig. 98: Assembling the Commander Basic/Pro (5)

(9) - Commander Basic/Pro control   (10) - Screws
*   panel*

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 the chipboard screw.
This requires that you pre-drill the hole in the tabletop to prevent damage to the tabletop surface.
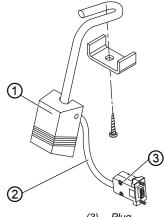
10. Switch on the machine.

↳ The control panel is detected by the control. The first initialization may take up to 15 minutes - do NOT switch off the machine!

11. The machine is ready for use when you can see the user interface of the Commander Basic/Pro.

8.10 Assembling the knee button

Fig. 99: Assembling the knee button

(1) - Knee button   *(3) - Plug*
(2) - Connecting cable
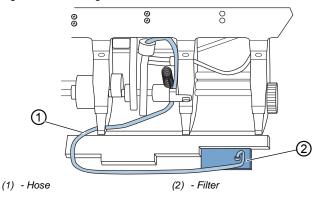
To assemble the knee button:

1. Screw the knee button (1) in front of the oil pan firmly in place under the tabletop.

2. Guide the connecting cable (2) to the back between the oil pan and the control.

3. Insert the plug (3) of the connecting cable into the socket of the control.

8.11 Assembling the oil extraction line

Fig. 100: Assembling the oil extraction line

(1) - Hose   *(2) - Filter*

To assemble the oil extraction line:

1. Tilt the machine head.

2. Tighten the filter (2) inside the oil pan with the plastic adapter to the right.

3. Insert the tube (1) of the oil extraction line into the plastic adapter.

8.12 Electrical connection

DANGER

Risk of death from live components!

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

Only qualified specialists may perform work on electrical equipment.

! **Important**

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

8.12.1 Connecting the sewing lamp transformer

DANGER

Risk of death from electric shock!

When the sewing machine is switched off at the main switch, the supply voltage for the sewing lamp remains active.

Disconnect the power plug before assembling the sewing lamp with sewing lamp transformer. Ensure the power plug cannot be unintentionally reinserted.

Fig. 101: Connecting the sewing lamp transformer (1)

(1) - Sewing lamp transformer
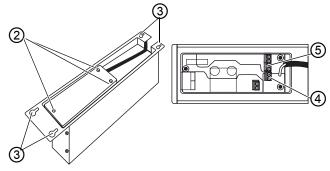
Assembling the sewing lamp transformer

To assemble the sewing lamp transformer:

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

Fig. 102: Connecting the sewing lamp transformer (2)

(2) - Adapter cover screws   *(4) - 24V/X5 connection*
(3) - Screw holder   *(5) - X3 connection*

Connecting the sewing lamp transformer

To connect the sewing lamp transformer:

1. Loosen the screw holder (3) for the control far enough to allow the control to be removed.

2. Remove the control.

3. Loosen the adapter cover screws (2).

4. Connect the supply line:
   - for additional sewing lamps to be assembled to the X3 port (5)
   - for integrated LED sewing lamps connected to the 24V/X5 port (4)

8.12.2 Establishing equipotential bonding

DANGER
Risk of death from live components!
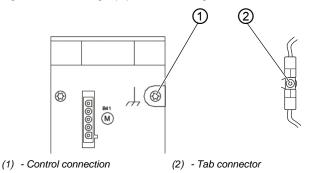
Risk of death from live components!

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

Disconnect the power plug before establishing equipotential bonding. Ensure the power plug cannot be unintentionally reinserted.

The grounding wire conducts away any static charging of the machine head.

Fig. 103: Establishing equipotential bonding

(1) - Control connection   *(2) - Tab connector*

To establish equipotential bonding:

1. Tilt the machine head.

2. Feed the equipotential bonding cable from the connection (1) on the rear side of the control through the slot in the tabletop and plug it onto the tab connector (2) on the base plate.

8.12.3 Connecting the control

DANGER

Risk of death from live components!

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

Disconnect the power plug before connecting the control. Ensure the power plug cannot be unintentionally reinserted.

To connect the control:

1. Connect the control as specified in the wiring diagram (*p. 253*).

8.13 Pneumatic connection (optional)

NOTICE

Property damage from oily compressed air!

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

Ensure that no oil particles enter the compressed air supply.

NOTICE

Property damage from incorrect setting!

Incorrect system pressure can result in damage to the machine.

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

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

i **Information**
The pneumatic connection package is available under part number 0797 003031. It consists of:
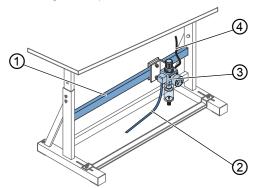
- System connection hose (length 5 m, diameter 9 mm)
- Hose connectors and hose clamps
- Coupling socket and coupling plug

8.13.1 Assembling the compressed air maintenance unit

Fig. 104: Assembling the compressed air maintenance unit

(1) - Cross bar   (3) - Compressed air maintenance unit
(2) - System connection hose   (4) - Machine hose

To assemble the compressed air maintenance unit:

1. Assemble the compressed air maintenance unit (3) to the upper cross bar (1) of the stand using the bracket, screws and clip.

2. Connect the machine hose (4) coming out of the machine head to the compressed air maintenance unit (3) at the top right.

3. Connect the system connection hose (2) to the pneumatic system.

8.13.2 Setting the operating pressure

NOTICE

Property damage from incorrect setting!

Incorrect operating pressure can result in damage to the machine.

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

☑ **Proper setting**
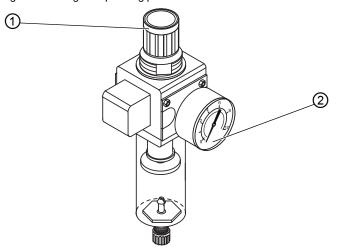
Refer to the **Technical data** (📖 *p. 249*) chapter for the permissible operating pressure. The operating pressure cannot deviate by more than ± 0.5 bar.

Fig. 105: Setting the operating pressure

(1) - Pressure controller   *(2) - Pressure gage*

🔧 To set the operating pressure:

1. Pull the pressure controller (1) up.

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2. Turn the pressure controller until the pressure gage (2) indicates the proper setting:

    • Increase pressure = turn clockwise

    • Reduce pressure = turn counterclockwise
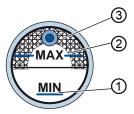
3. Push the pressure controller (1) down.

8.14 Checking the lubrication

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. 106: Checking the lubrication

(1) - Minimum level marking   *(3) - Inspection glass*
(2) - Maximum level marking

To check the lubrication:

1. Sew with the machine for approx. 1 minute.

2. Check at the inspection glass (3) whether the warning indicator is lit red or the oil level has dropped below the minimum marking (1).

3. If this is the case, top off oil (📖 *p. 189*).

8.15 Performing a test run

WARNING
Risk of injury from moving, cutting and sharp parts! Crushing, cutting and punctures are possible. If possible, only change settings when the machine is switched off.

When setup is complete, perform a test run to check the functionality of the machine. To this end, adjust the machine to the sewing material requirements.

To do so, read the corresponding chapters in the 📖 *Operating Instructions*. 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.

To perform a test run:

1. Insert needle (📖 *p. 22*).
2. Wind on the hook thread, (📖 *p. 36*).
3. Insert the bobbin (📖 *p. 38*).
4. Thread hook thread (📖 *p. 38*).
5. Thread needle thread (📖 *p. 26*).
6. Set the thread tensions to the sewing material being sewn (📖 *p. 40*).
7. Set the needle thread regulator to the sewing material being sewn (📖 *p. 42*).
8. Set the sewing foot pressure to the sewing material being sewn.
9. Set the sewing foot stroke to the sewing material being sewn.
10. Set stitch length.
11. Transfer the desired quick function from the push button to the favorite button (📖 *p. 47*).
12. Start the sewing test at low speed.
13. Gradually increase the speed until the working speed is reached.

9 Decommissioning

WARNING

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

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

CAUTION

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

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

You need to perform a number of activities if the machine is to be shut down for a longer period of time or completely decommissioned.

To decommission the machine:

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

10 Disposal

CAUTION
Risk of environmental damage from improper disposal! Improper disposal of the machine can result in serious environmental damage. ALWAYS comply with the national regulations regarding disposal.

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

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

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

11 Troubleshooting

11.1 Customer Service

Contact for repairs and issues with the machine:

Dürkopp Adler GmbH

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

11.2 Errors in sewing process

Error	Possible causes	Remedial action
Unthreading at seam beginning	Needle thread pretension is too firm	Check needle thread pretension (📖 *p. 41*).
Thread breaking	Needle thread and hook thread have not been threaded correctly	Check threading path (📖 *p. 26*).
	Needle is bent or sharp-edged	Replace the needle (📖 *p. 22*).
	Needle is not inserted correctly into the needle bar	Insert the needle correctly into the needle bar (📖 *p. 22*).
	The thread used is unsuitable	Use recommended thread (📖 *p. 249*).
	Thread tensions are too tight for the thread used	Check thread tensions (📖 *p. 40*).
	Thread-guiding parts, such as thread guides, are sharp-edged	Check threading path (📖 *p. 26*).
	Throat plate or hook have been damaged by the needle	Have parts reworked by qualified specialists

Error	Possible causes	Remedial action
Missing stitches	Needle thread and hook thread have not been threaded correctly	Check threading path (📖 *p. 26*, 📖 *p. 38*).
	Needle is blunt or bent	Replace the needle (📖 *p. 22*).
	Needle is not inserted correctly into the needle bar	Insert the needle correctly into the needle bar (📖 *p. 22*).
	The needle thickness used is unsuitable	Use recommended needle thickness (📖 *p. 249*).
	The reel stand is assembled incorrectly	Check the assembly of the reel stand
	Thread tensions are too tight	Check thread tensions (📖 *p. 40*).
	Throat plate or hook have been damaged by the needle	Have parts reworked by qualified specialists
	Distance from the hook to the needle is not set correctly	Set the correct distance (📖 *Service Instructions*)
Loose stitches	Thread tensions are not adjusted to the sewing material, the sewing material thickness or the thread used	Check thread tensions (📖 *p. 40*).
	Needle thread and hook thread have not been threaded correctly	Check threading path (📖 *p. 26*, 📖 *p. 38*).
Needle breakage	Needle thickness is unsuitable for the sewing material or the thread	Use recommended needle thickness (📖 *p. 249*).

11.3 Messages of the software

Code	Type	Possible cause	Remedial action
1000	Error	Sewing motor encoder plug X5B (Sub-D, 9-pin) not connected	• Connect encoder cable to the • control, use correct connection
1001	Error	Sewing motor error Sewing motor plug (AMP) not connected	• Check connection and plug in • Test sewing motor phases (R = 2.8Ω, high impedance to PE) • Replace the encoder • Replace sewing motor • Replace the control
1002	Error	Sewing motor insulation error	• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace sewing motor
1004	Error	Incorrect sewing motor direction of rotation	• Replace the encoder • Check motor plug assignment and change it if necessary • Check wiring in machine distributor and change it, if necessary • Test motor phases and check for correct value
1005	Error	Motor blocked	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace sewing motor
1006	Error	Maximum speed exceeded	• Replace the encoder • Perform reset • Check class (t 51 04)
1007	Error	Error in the reference run	• Replace the encoder • Eliminate stiff movement in the sewing machine
1008	Error	Sewing motor encoder error	• Replace the encoder
1010	Error	External synchronizer plug (Sub-D, 9-pin) not connected	• Connect cable of external synchronizer to control, make sure that interface (Sync) is correct • Only recommended for machines with transmission!

Code	Type	Possible cause	Remedial action
1011	Error	Encoder Z pulse missing	• Switch off the control, use handwheel to turn, and switch on the control again • If error is not corrected, check encoder
1012	Error	Synchronizer fault	• Replace synchronizer
1054	Error	Internal short circuit	• Replace the control
1055	Error	Sewing motor overload	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace sewing motor
1060	Error	Sewing motor overload / overvoltage /overcurrent	• Check selection of class • Replace the control • Replace motor • Replace the encoder
1061	Error	Sewing motor overload / overvoltage /overcurrent	• Check selection of class • Replace the control • Replace motor • Replace the encoder
1120	Error	Sewing motor Init fault	• Perform software update • Check selection of class
1121	Error	Sewing motor watchdog	• Perform software update • Check selection of class
1203	Error	Position not reached (during thread cutting, reversal, etc.)	• Check the controller settings and change them if necessary (e.g. thread cutter setting, belt tension, etc.) • Check position **thread lever at top dead center**
1302	Error	Failure with sewing motor current	• Check Service Stop • Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
1330	Error	No response from sewing motor	• Perform software update • Replace the control

Code	Type	Possible cause	Remedial action
2101	Error	Step motor card X30 reference run timeout	• Check reference sensor
2105	Error	Step motor card X30 blockage	• Eliminate stiff movement in the sewing machine
2121	Error	Step motor card X30 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2122	Error	Step motor card X30 flywheel position not found	• Check step motor 1 for stiff movement
2130	Error	Step motor card X30 not responding	• Perform software update • Replace the control
2131	Error	Step motor card X30 Init error	• Perform software update • Check selection of class
2152	Error	Step motor card X30 overcurrent	• Eliminate stiff movement in the sewing machine
2171	Error	Step motor card X30 Watchdog (Stitch length)	• Perform software update • Check selection of class
2172	Error	Step motor card X30 motor overload / overvoltage / overcurrent (Stitch length)	• Check selection of class • Replace the control • Replace the encoder • Replace the step motor
2173	Error	Step motor card X30 Sewing motor encoder not connected (Stitch length)	• Replace the control
2174	Error	Step motor card X30 Sewing motor encoder not init (Stitch length)	• Perform software update • Check selection of class
2175	Error	Step motor card X30 Init Position not found (Stitch length)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2176	Error	Step motor card X30 not Enabled (Stitch length)	• Replace the control

Code	Type	Possible cause	Remedial action
2177	Error	Step motor card X30 Overload (Stitch length)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2178	Error	Step motor card X30 Encoder failure (Stitch length)	• Replace the encoder
2179	Error	Step motor card X30 Current sensor failure (Stitch length)	• Replace the control
2180	Error	Step motor card X30 Incorrect step motor direction of rotation (Stitch length)	• Replace the encoder • Check if plugs have been mixed up • Check wiring in machine distributor and change it, if necessary
2181	Error	Step motor card X30 Reference drive failure (Stitch length)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2183	Error	Step motor card X30 overcurrent (Stitch length)	• Replace the control
2184	Error	Step motor card X30 parameter init (Stitch length)	• Perform software update • Check selection of class
2185	Error	Step motor card X30 insulation error (Stitch length)	• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace sewing motor
2187	Error	Step motor card X30 transport interval failure(Stitch length)	• Perform software update • Check selection of class
2188	Error	Step motor card X30 Reference drive failure (Stitch length)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2201	Error	Step motor card X40 reference run timeout	• Check reference sensor
2205	Error	Step motor card X40 step motor blockage	• Eliminate stiff movement in the sewing machine

Code	Type	Possible cause	Remedial action
2221	Error	Step motor card X40 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2222	Error	Step motor card X40 flywheel position not found	• Check step motor 1 for stiff movement
2230	Error	Step motor card X40 not responding	• Perform software update • Replace the control
2231	Error	Step motor card X40 Init error	• Perform software update • Check selection of class
2252	Error	Step motor card X40 overcurrent	• Eliminate stiff movement in the sewing machine
2271	Error	Step motor card X40 Watchdog (Sewing foot lift)	• Perform software update • Check selection of class
2272	Error	Step motor card X40 motor overload / overvoltage / overcurrent (Foot lifting)	• Check selection of class • Replace the control • Replace the encoder • Replace the step motor
2273	Error	Step motor card X40 Sewing motor encoder not connected (Foot lifting)	• Replace the control
2274	Error	Step motor card X40 Sewing motor encoder not init (Foot lifting)	• Perform software update • Check selection of class
2275	Error	Step motor card X40 Init Position not found (Foot lifting)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2276	Error	Step motor card X40 not Enabled (Foot lifting)	• Replace the control
2277	Error	Step motor card X40 I²t (Foot lifting)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2278	Error	Step motor card X40 Encoder failure (Foot lifting)	• Replace the encoder

Code	Type	Possible cause	Remedial action
2279	Error	Step motor card X40 Current sensor failure (Foot lifting)	• Replace the control
2280	Error	Step motor card X40 Incorrect step motor direction of rotation (Foot lifting)	• Replace the encoder • Check if plugs have been mixed up • Check wiring in machine distributor and change it, if necessary
2281	Error	Step motor card X40 Reference drive failure (Foot lifting)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2283	Error	Step motor card X40 overcurrent (Foot lifting)	• Replace the control
2284	Error	Step motor card X40 parameter init (Foot lifting)	• Perform software update • Check selection of class
2285	Error	Step motor card X40 insulation error (Foot lifting)	• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace sewing motor
2287	Error	Step motor card X40 transport interval failure (Foot lifting)	• Perform software update • Check selection of class
2288	Error	Step motor card X40 Reference drive failure (Foot lifting)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2301	Error	Step motor card X50 reference run timeout (Foot stroke)	• Check reference sensor
2305	Error	Step motor card X50 step motor blockage	• Eliminate stiff movement in the sewing machine
2321	Error	Step motor card X50 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2322	Error	Step motor card X50 flywheel position not found	• Check step motor 1 for stiff movement
2330	Error	Step motor card X50 not responding	• Perform software update • Replace the control

Code	Type	Possible cause	Remedial action
2331	Error	Step motor card X50 Init error	• Perform software update • Check selection of class
2352	Error	Step motor card X50 overcurrent	• Eliminate stiff movement in the sewing machine
2371	Error	Step motor card X50 Watchdog (Sewing foot lift)	• Perform software update • Check selection of class
2372	Error	Step motor card X50 motor overload / overvoltage / overcurrent (Foot stroke)	• Check selection of class • Replace the control • Replace the encoder • Replace the step motor
2373	Error	Step motor card X50 Sewing motor encoder not connected(Foot stroke)	• Replace the control
2374	Error	Step motor card X50 Sewing motor encoder not init (Foot stroke)	• Perform software update • Check selection of class
2375	Error	Step motor card X50 Init Position not found (Foot stroke)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2376	Error	Step motor card X50 not Enabled (Foot stroke)	• Replace the control
2377	Error	Step motor card X50 Overload (Foot stroke)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2378	Error	Step motor card X50 Encoder failure (Foot stroke)	• Replace the encoder
2379	Error	Step motor card X50 Current sensor failure (Foot stroke)	• Replace the control
2380	Error	Step motor card X50 Incorrect step motor direction of rotation (Foot stroke)	• Replace the encoder • Check if plugs have been mixed up • Check wiring in machine distributor and change it, if necessary

Code	Type	Possible cause	Remedial action
2381	Error	Step motor card X50 Reference drive failure(Foot stroke)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2383	Error	Step motor card X50 overcurrent (Foot stroke)	• Replace the control
2384	Error	Step motor card X50 parameter init (Foot stroke)	• Perform software update • Check selection of class
2385	Error	Step motor card X50 insulation error (Foot stroke)	• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace sewing motor
2387	Error	Step motor card X50 transport interval failure (Foot stroke)	• Perform software update • Check selection of class
2388	Error	Step motor card X50 Reference drive failure(Foot stroke)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2401	Error	Step motor card X60 reference run timeout (Edge guide)	• Check reference sensor
2405	Error	Step motor card X60 step motor blockage (Edge guide)	• Eliminate stiff movement in the sewing machine
2421	Error	Step motor card X60 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2422	Error	Step motor card X60 flywheel position not found	• Check step motor 1 for stiff movement
2430	Error	Step motor card X60 not responding	• Perform software update • Replace the control
2431	Error	Step motor card X60 Init error	• Perform software update • Check selection of class

Code	Type	Possible cause	Remedial action
2471	Error	Step motor card X60 Watchdog (Edge guide)	• Perform software update • Check selection of class
2472	Error	Step motor card X60 motor overload / overvoltage / overcurrent (Edge guide)	• Check selection of class • Replace the control • Replace the encoder • Replace the step motor
2473	Error	Step motor card X60 Sewing motor encoder not connected(Edge guide)	• Replace the control
2474	Error	Step motor card X60 Sewing motor encoder not init (Edge guide)	• Perform software update • Check selection of class
2475	Error	Step motor card X60 Init Position not found (Edge guide)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2476	Error	Step motor card X60 not Enabled (Edge guide)	• Replace the control
2477	Error	Step motor card X60 Overload (Edge guide)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2478	Error	Step motor card X60 Encoder failure (Edge guide)	• Replace the encoder
2479	Error	Step motor card X60 Current sensor failure (Edge guide)	• Replace the control
2480	Error	Step motor card X60 Incorrect step motor direction of rotation (Edge guide)	• Replace the encoder • Check if plugs have been mixed up • Check wiring in machine distributor and change it, if necessary
2481	Error	Step motor card X60 Reference drive failure (Edge guide)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor

Code	Type	Possible cause	Remedial action
2483	Error	Step motor card X60 overcurrent (Edge guide)	• Replace the control
2484	Error	Step motor card X60 parameter init (Edge guide)	• Perform software update • Check selection of class
2485	Error	Step motor card X60 insulation error (Edge guide)	• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace sewing motor
2487	Error	Step motor card X60 transport interval failure(Edge guide)	• Perform software update • Check selection of class
2488	Error	Step motor card X60 Reference drive failure (Edge guide)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2501	Error	Step motor card X70 reference run timeout (upper Puller)	• Check reference sensor
2505	Error	Step motor card X70 step motor blockage (upper Puller)	• Eliminate stiff movement in the sewing machine
2521	Error	Step motor card X70 encoder plug (Sub-D, 9-pin) not connected	• Connect encoder cable to the control, use correct connection
2522	Error	Step motor card X70 flywheel position not found	• Check step motor 1 for stiff movement
2530	Error	Step motor card X70 not responding	• Perform software update • Replace the control
2531	Error	Step motor card X70 Init error	• Perform software update • Check selection of class
2571	Error	Step motor card X70 Watchdog (upper Puller)	• Perform software update • Check selection of class

Code	Type	Possible cause	Remedial action
2572	Error	Step motor card X70 motor overload / overvoltage / overcurrent (upper Puller)	• Check selection of class • Replace the control • Replace the encoder • Replace the step motor
2573	Error	Step motor card X70 Sewing motor encoder not connected(upper Puller)	• Replace the control
2574	Error	Step motor card X70 Sewing motor encoder not init (upper Puller)	• Perform software update • Check selection of class
2575	Error	Step motor card X70 Init Position not found (upper Puller)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2576	Error	Step motor card X70 not Enabled (upper Puller)	• Replace the control
2577	Error	Step motor card X70 Overload (upper Puller)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2578	Error	Step motor card X70 Encoder failure (upper Puller)	• Replace the encoder
2579	Error	Step motor card X70 Current sensor failure (upper Puller)	• Replace the control
2580	Error	Step motor card X70 Incorrect step motor direction of rotation (upper Puller)	• Replace the encoder • Check if plugs have been mixed up • Check wiring in machine distributor and change it, if necessary
2581	Error	Step motor card X70 Reference drive failure(upper Puller)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor

Code	Type	Possible cause	Remedial action
2583	Error	Step motor card X70 overcurrent (upper Puller)	• Replace the control
2584	Error	Step motor card X70 parameter init (upper Puller)	• Perform software update • Check selection of class
2585	Error	Step motor card X70 insulation error (upper Puller)	• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace sewing motor
2587	Error	Step motor card X70 transport interval failure (upper Puller)	• Perform software update • Check selection of class
2588	Error	Step motor card X70 Reference drive failure(upper Puller)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2601	Error	Step motor X80 reference run timeout (bottom puller)	• Check reference sensor
2605	Error	Step motor card X80 step motor blockage (bottom puller)	• Eliminate stiff movement in the sewing machine
2621	Error	Step motor card X82 encoder plug (Sub-D, 9-pin) not connected (bottom puller)	• Connect encoder cable to the control, use correct connection
2622	Error	Step motor card X80 flywheel position not found (bottom puller)	• Check step motor 6 for stiff movement
2630	Error	Step motor card X80 not responding (bottom puller)	• Perform software update • Replace the control
2631	Error	Step motor card X80 Init failure (bottom puller)	• Perform software update • Check selection of class

Code	Type	Possible cause	Remedial action
2671	Error	Step motor card X80 Watchdog (bottom puller)	• Perform software update • Check selection of class
2672	Error	Step motor card X80 motor overload / overvoltage / overcurrent (bottom puller)	• Check selection of class • Replace the control • Replace the encoder • Replace the step motor
2673	Error	Step motor card X80 Sewing motor encoder not connected (bottom puller)	• Replace the control
2674	Error	Step motor card X80 Sewing motor encoder not init (bottom puller)	• Perform software update • Check selection of class
2675	Error	Step motor card X80 Init Position not found (bottom puller)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2676	Error	Step motor card X80 not Enabled (bottom puller)	• Replace the control
2677	Error	Step motor card X80 I²t (bottom puller)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2678	Error	Step motor card X80 Encoder failure (bottom puller)	• Replace the encoder
2679	Error	Step motor card X80 Current sensor failure (bottom puller)	• Replace the control
2680	Error	Step motor card X80 Incorrect step motor direction of rotation (bottom puller)	• Replace the encoder • Check if plugs have been mixed up • Check wiring in machine distributor and change it, if necessary

Code	Type	Possible cause	Remedial action
2681	Error	Step motor card X80 Reference drive failure (bottom puller)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2683	Error	Step motor card X80 overcurrent (bottom puller)	• Replace the control
2684	Error	Step motor card X80 parameter init (bottom puller)	• Perform software update • Check selection of class
2685	Error	Step motor card X80 insulation error (bottom puller)	• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace sewing motor
2687	Error	Step motor card X80 transport interval failure (bottom puller)	• Perform software update • Check selection of class
2688	Error	Step motor card X80 Reference drive failure (bottom puller)	• Eliminate stiff movement in the sewing machine • Replace the encoder • Replace motor
2901	Error	General Reference Timeout of the step motors	• Check the reference sensors
3010	Error	U100 V start-up error	• Disconnect the step motor plugs; if error persists, replace control
3011	Error	U100 V short circuit	• Disconnect the step motor plugs; if error persists: Replace the control
3012	Error	U100 V (I²T) overload	• One or more step motors defective
3020	Error	U24 V start-up error	• Disconnect magnet plug; if error persists: Replace the control
3021	Error	U24 V short circuit	• Disconnect magnet plug; if error persists: Replace the control

Code	Type	Possible cause	Remedial action
3022	Error	U24 V (I²T) overload	• One or more magnets defective
3030	Error	Motor phase failure	• Replace the control
3104	Warning	Pedal is not in position 0	• When switching the control on, take your foot off the pedal
3109	Warning	Operation lock	• Check tilt sensor on machine
3110	Information	Right thread tension magnet is not connected	• Check the connection of right thread tension magnet
3111	Information	Left thread tension magnet is not connected	• Check the connection of left thread tension magnet
3150	Information	Maintenance necessary	• for information on lubricating the machine, see the service instructions for the machine
3217	Information	RFW right	• Bobbin is empty • insert a new bobbin
3223	Information	Skip Stitch Detection	• -
3224	Information	Bobbin Rotation Monitor	• the bobbin is not rotating • Check the bobbin, advance the initial thread
3225	Information	SSD sensor is soiled	• Clean the sensor using compressed air or a soft cotton cloth
3354	Information	Failure in thread trimmer process	• Perform software update
3383	Information	Failure in the motor referencing process	• Check motor • Perform software update
4201	Warning	Failure SD-Card	• Insert SD card • Replace the control
4430	Warning	OP3000: Connection lost	• Check connection to OP3000 • Replace OP3000 • Replace the control
4440	Error	OP3000: DAC receive buffer exceeded	• Check connection to OP3000 • Replace OP3000 • Replace the control

Code	Type	Possible cause	Remedial action
4441	Warning	OP3000: DAC receiver timeout	• Check connection to OP3000 • Replace OP3000 • Replace the control
4442	Warning	OP3000: DAC unknown message	• Check connection to OP3000 • Replace OP3000 • Replace the control
4443	Warning	OP3000: DAC invalid checksum	• Check connection to OP3000 • Replace OP3000 • Replace the control
4445	Error	OP3000: DAC send buffer exceeded	• Check connection to OP3000 • Replace OP3000 • Replace the control
4446	Warning	OP3000: DAC no response	• Check connection to OP3000 • Replace OP3000 • Replace the control
4447	Warning	OP3000: DAC invalid response	• Check connection to OP3000 • Replace OP3000 • Replace the control
4450	Error	OP3000: DAC OP Receive buffer exceeded	• Check connection to OP3000 • Replace OP3000 • Replace the control
4451	Warning	OP3000: DAC OP receiver timeout	• Check connection to OP3000 • Replace OP3000 • Replace the control
4452	Warning	OP3000: DAC OP unknown message	• Check connection to OP3000 • Replace OP3000 • Replace the control
4456	Warning	OP3000: DAC no response	• Check connection to OP3000 • Replace OP3000 • Replace the control
4460	Warning	OP7000 connection lost	• Check connection to OP7000 • Replace OP7000 • Replace the control

Code	Type	Possible cause	Remedial action
4906	Information	Not in translation table	• Check machine ID connection socket • Reset or machine class change necessary
4907	Information	Not in translation table	• Machine class change necessary
4908	Information	Not in translation table	• Reset necessary
4911	Information	Not in translation table	• Reset necessary
4918	Warning	Invalid update file	• Contact DA Service
4919	Warning	Reset failed	• Contact DA Service
4920	Warning	Error in update log	• Contact DA Service
4921	Warning	The update was interrupted	• Contact DA Service
4922	Error	Unable to find user database	• Contact DA Service
4923	Error	Synchronization failed	• Contact DA Service
4930	Information	Control changed	• Data transfer from control panel to control
4931	Information	Checksum error of the control	• Data transfer from control panel to control
6353	Error	EEprom Timeout	• Switch off the control, wait until the LEDs are off, check connection for machine ID, and switch on control again
5001	Information	Incorrect class	• Change class • Perform reset
5002	Information	Incorrect class or machine ID connection error	• Change class • Perform reset
5003	Information	Data version is too old	• Perform reset
5004	Information	Checksum Error	• Perform reset

Code	Type	Possible cause	Remedial action
6360	Information	No valid data on external EEprom (internal data structures are not compatible with the external data storage device)	• Software update
6361	Information	No external EEprom connected	• Connect machine ID
6362	Information	No valid data on internal EEprom (internal data structures are not compatible with the external data storage device)	• Check machine ID connection • Switch off the control, wait until the LEDs have gone out, and then switch on the control again • Software update
6363	Information	No valid data on internal and external EEprom (software version is not compatible with the internal data storage device, emergency operating features only)	• Check machine ID connection • Switch off the control, wait until the LEDs have gone out, and then switch on the control again • Software update
6364	Information	No valid data on internal EEprom and no external EEprom connected (the internal data structures are not compatible with the external data storage device)	• Check machine ID connection • Switch off the control, wait until the LEDs have gone out, and then switch on the control again • Software update
6365	Information	Internal EEprom defective	• Replace the control
6366	Information	Internal EEprom defective and external data not valid (emergency operating features only)	• Replace the control
6367	Information	Internal EEprom defective and external data not valid (emergency operating features only)	• Replace the control
7270	Information	External CAN	• Check connection cables • Perform software update • Replace CAN slaves
9310	Error	Tape feeder not connected	• Check connection cables • Perform software update • Replace the control of the tape feeder

Code	Type	Possible cause	Remedial action
9320	Error	Tape feeder in lowered position	• No remedy specified in translation table
9330	Information	Material thickness sensor not connected	• Check connection cables • Perform software update • Replace material thickness sensor
9340	Error	Remaining thread monitor not connected	• Check connection cables • Perform software update • Replace remaining thread monitor
9910	Warning	Sewing stop	• Check tilt sensor on machine • Check 24V • Replace the control
9911	Warning	Power down	• The control is switched off
9912	Warning	Restart necessary	• Switch off the control
9913	Warning	Empty bobbin	• Please insert a full bobbin
9914	Warning	Reset	• Please remove USB key!
9915	Warning	Please Wait!	• Please wait and do not remove the USB key
9916	Warning	Erase internal Memory	• Erasure of the SD card. Continue with OK; Cancel with ESC
9917	Warning	Erase USB key	• Erasure of the USB key. Continue with OK; Cancel with ESC
9918	Warning	No USB key present	• Please insert a USB key
9919	Warning	Sewing stop	• Machine in stop mode for threading the thread
9920	Warning	Referencing	• Please wait for motor referencing
9921	Warning	Show Message from QONDAC	• Message
9922	Warning	Service Stop	• Check the Service Stop button • Check 24V • Replace the control
9923	Warning	Update required	• Press OK for Restart or ESC for cancel
9924	Warning	Generate security key	• Generate a security key on the USB key

Code	Type	Possible cause	Remedial action
9925	Warning	Security Key changed!	• Overwrite Key?
9926	Warning	Please Confirm Reset	• Really reset?
9927	Warning	Reset	• Reset successfully
9928	Warning	Referencing?	• Press pedal backwards (pedal position-2)
9929	Warning	Not enough thread available	• Please insert a full bobbin
9930	Warning	Empty bobbin	• Please insert a full bobbin
9931	Information	Bobbin Wind Mode	• Press pedal backwards to exit Bobbin Wind Mode
9932	Information	No program available	• Automatic mode is not available without a seam program. Please use programming mode to create a seam program.

12 Technical data

Noise emission

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

L_{pA} = 79 dB (A); K_{pA} = 0.58 dB (A) at

- Stitch length: 6.0 mm
- Sewing foot stroke, alternating: 7.0 mm
- Speed: 1500 rpm
- Sewing material: 2-layer Skai; 1.6 mm 900 gr/mm^2; DIN 53352

Data and characteristic values

Technical data	Unit	867-190922-M	867-190925-M	867-190929-M	867-190942-M	867-190945-M	867-190946-M	867-190949-M	867-290922-M	867-290942-M	867-290945-M
Machine type		Double lockstitch 301									
Hook type vertical, (L) large (26 mm)		●	●	●					●		
Hook type vertical, (XXL) extra large (32 mm)					●	●	●	●		●	●
Number of needles		1							2		
Needle system		134-35									
Needle strength	[Nm]	90 - 180									
Thread strength	[Nm]	120/3 - 10/3 (short thread cutter, KFA max. 15/3)									
Stitch length	[mm]	12/12									
Speed maximum	[min⁻¹]	3800			3400				3500	3200	
Speed set at the factory	[min⁻¹]	3400							3000		
Sewing foot stroke	[mm]	9									

Technical data	Unit	867-190922-M	867-190925-M	867-190929-M	867-190942-M	867-190945-M	867-190946-M	867-190949-M	867-290922-M	867-290942-M	867-290945-M
Lifting height	[mm]	20									
Mains voltage	[V]	230									
Mains frequency	[Hz]	50/60									
Operating pressure	[bar]	6 (only required in combination with optional equipment)									
Length	[mm]	740									
Width	[mm]	220									
Height	[mm]	460									
Weight	[kg]	59							60		

Characteristics

- sewing motor (DA direct drive) integrated into the machine head with max. speed of 3,800 rpm (depending on the hook size used)
- Control DAC comfort with OP3000 control panel
- Actuators without compressed air
- large (L) or extra-large (XXL) vertical hook
- electromagnetic thread cutter
- programmable setting of the stitch length via stepper motor (max. 12 mm)
- programmable adjustment of the alternating sewing feet via stepper motor (max. 9mm)
- Material thickness detection with programmable functions (sewing speed, sewing foot pressure, sewing foot stroke and thread tension)
- programmable sewing foot pressure via stepper motor (in combination with compression spring); depending on material thickness detection
- Sewing foot lift controlled by stepper motor (max. 20 mm, same actuator as the one used for the sewing foot pressure)

- programmable thread tension (electromagnetically) with speed compensation; also depending on material thickness detection
- electronic handwheel (ENP 10-1)
- integrated winder with winding assistant
- Safety snap-on coupling prevents any misadjustment or damage to the hook in the event of a thread jamming
- automatic wick lubrication with an inspection glass housed in the arm for lubricating the machine and the hook (including low oil level warning light)
- all subclasses with 6 push buttons, additional button element can be assigned push button functions
- Use of CTB bobbins in combination with cylindrical braking and lifting spring, hook covers with inspection glasses
- integrated LED sewing lamp including power supply and dimming function
- intuitive control software with graphical user interface
- up to 999 different seam programs supporting a maximum of 30 individual seam sections each. Sequential mode for a maximum of 9 interlinked seam programs

13 Appendix

Fig. 107: Tabletop drawing
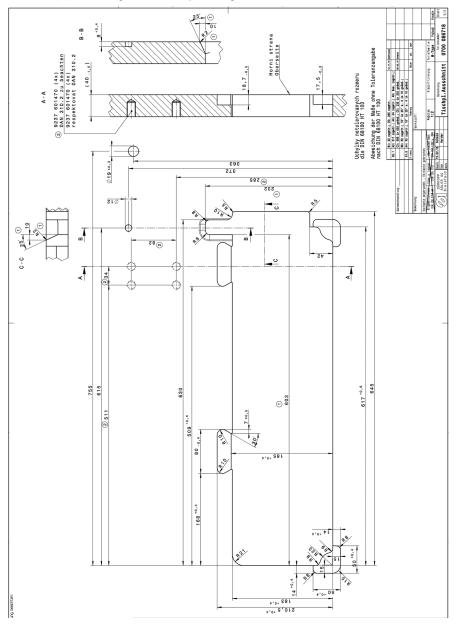
Fig. 108: Wiring diagram (1)
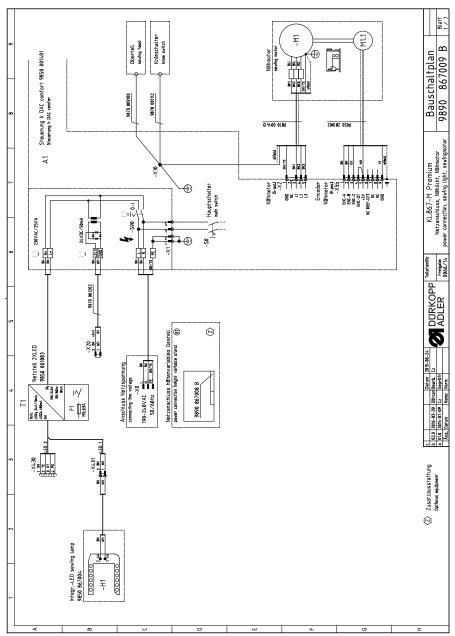
Fig. 109: Wiring diagram (2)
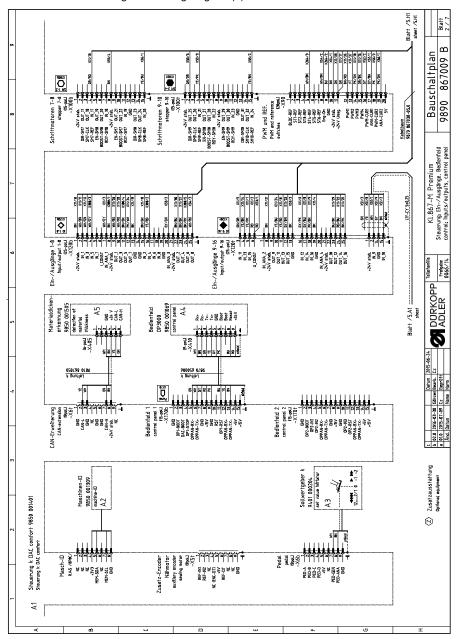
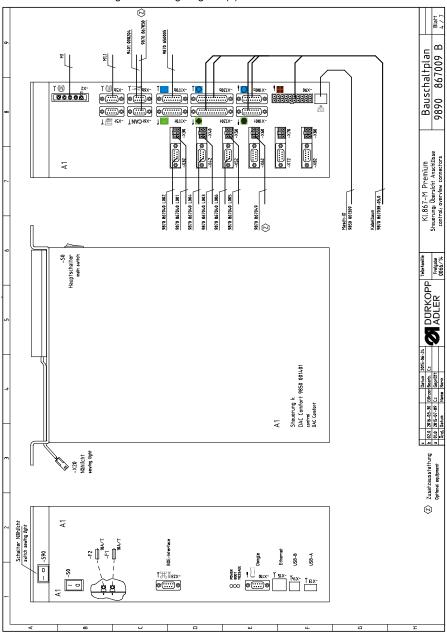*Fig. 110: Wiring diagram (3)*
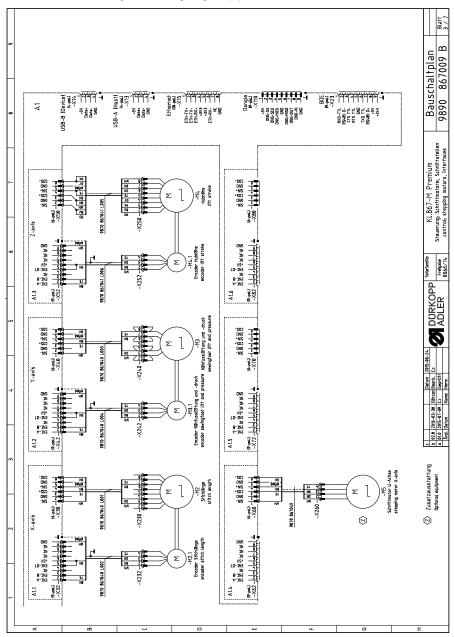
Fig. 111: Wiring diagram (4)
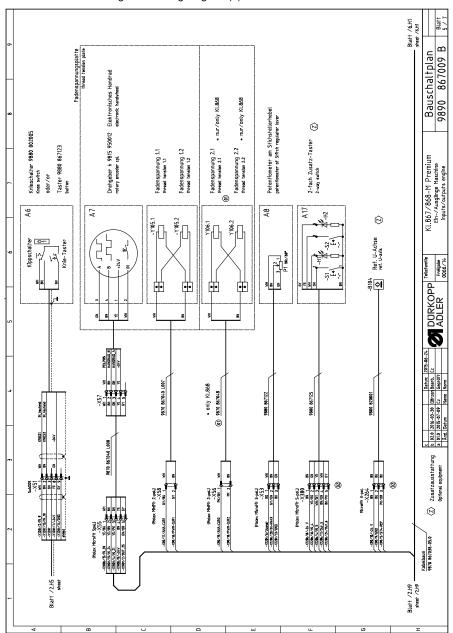
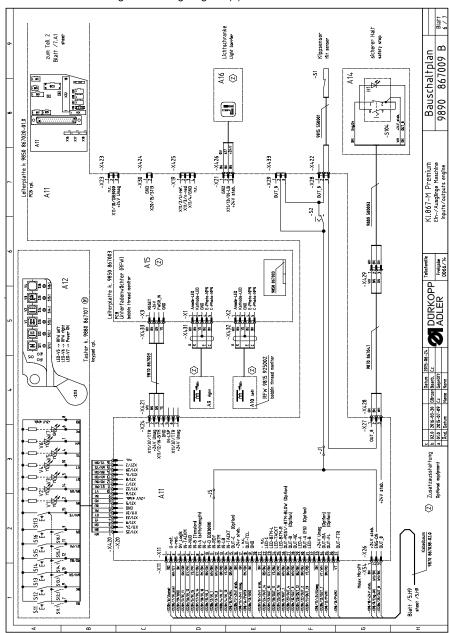Fig. 112: Wiring diagram (5)

Fig. 113: Wiring diagram (6)

Fig. 114: Wiring diagram (7)