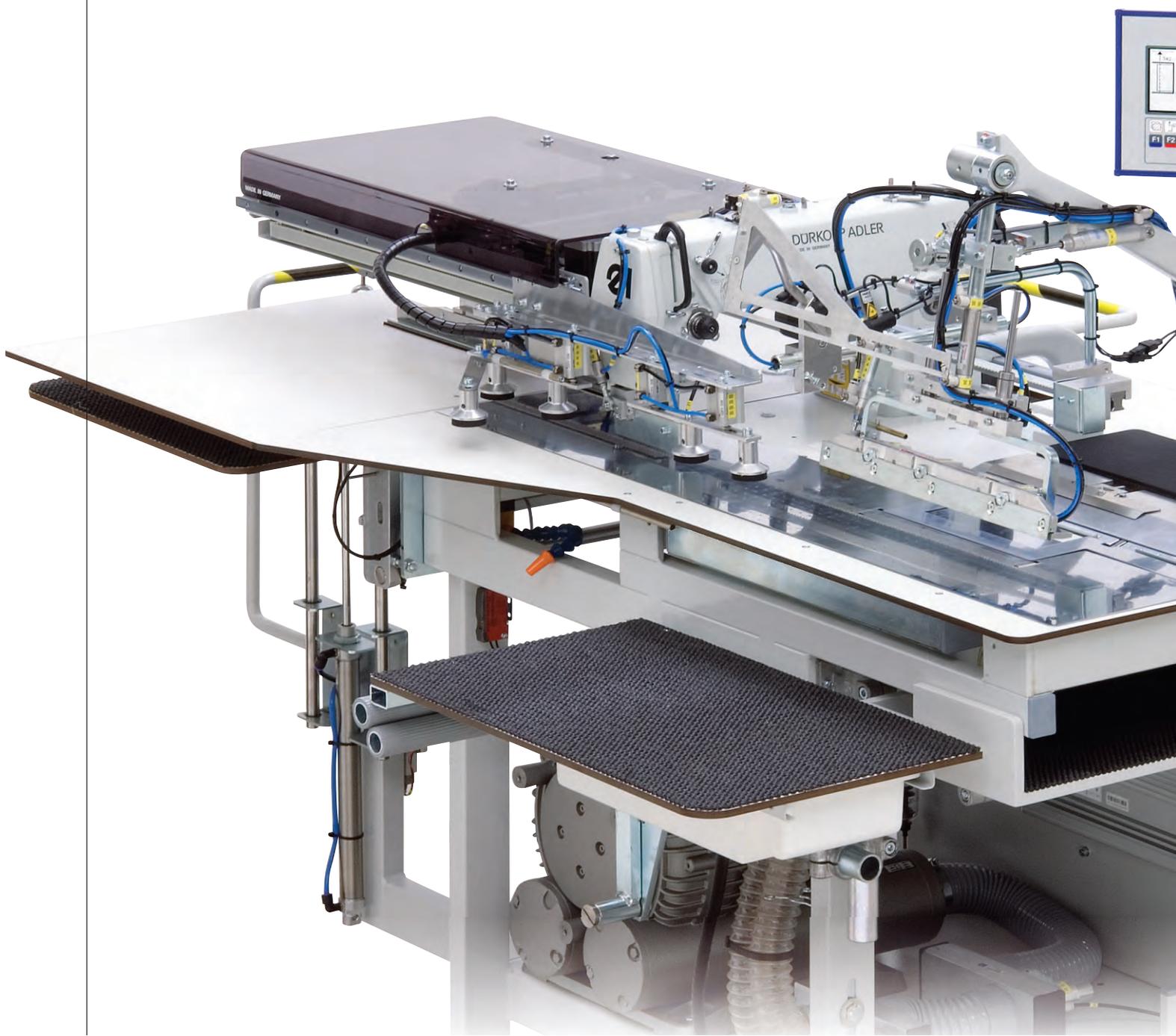


2112-5

Service Instructions



IMPORTANT
READ CAREFULLY BEFORE USE
KEEP FOR FUTURE REFERENCE

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1 About these instructions

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

Should you notice any discrepancies or if you have improvement requests, then we would be glad to receive your feedback through **Customer Service** ( p. 87).

Consider these instructions as part of the product and keep it easily accessible.

1.1 For whom are these instructions intended?

These instructions are intended for:

- Specialists:
This group has the appropriate technical training for performing maintenance or repairing malfunctions.

With regard to minimum qualification and other requirements to be met by personnel, please also follow the chapter **Safety** ( p. 7).

1.2 Representation conventions – symbols and characters

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



Proper setting

Specifies proper setting.



Disturbances

Specifies the disturbances that can occur from an incorrect adjustment.



Cover

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



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



Steps to be performed for service, maintenance, and installation



Steps to be performed via the software control panel

The individual steps are numbered:

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

- Lists are marked by bullet points.



Result of performing an operation

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



Important

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



Information

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



Order

Specifies the work to be performed before or after an adjustment.

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. 7).

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 transport damages
- 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. 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.

These instructions must 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 stacker 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 be used for:

- Setting up the machine/putting the machine into operation
- Performing maintenance work and repairs
- Performing 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 disassembled or deactivated. If it is essential to disassemble 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

Symbol	Type of danger
	Puncture
	Crushing
	Environmental damage

Examples Examples of the layout of warnings in the text:

DANGER



Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

WARNING



Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

CAUTION



Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

CAUTION



Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

NOTICE

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

3 Clamp rail

WARNING



Risk of injury from moving parts!

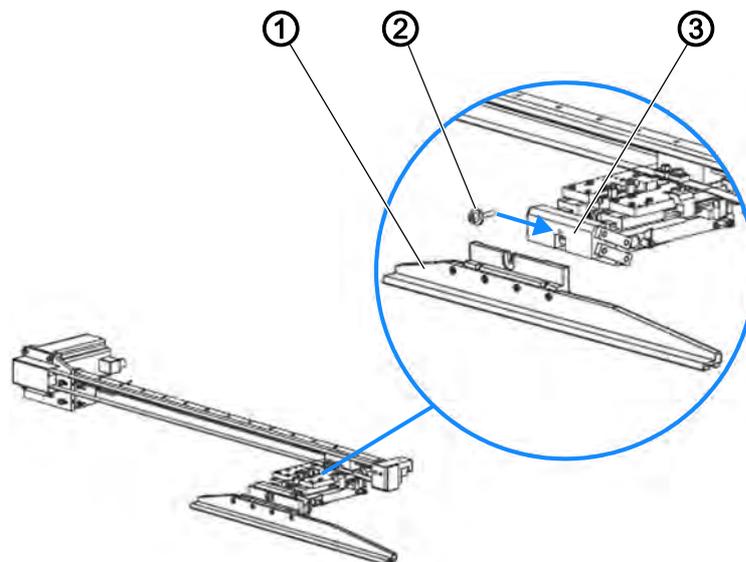
Crushing possible.

Switch off the machine before adjusting the settings of the clamp rail.

3.1 Assembling and disassembling the clamp rail

The clamp rail must be replaced if the protective lining at the bottom side of the rail is worn.

Fig. 1: Assembling and disassembling the clamp rail



(1) - Clamp rail
(2) - Screw

(3) - Main clamp

Disassembling the clamp rail



To disassemble the clamp rail:

1. Lift the main clamp (3).
2. Loosen the screw (2).
3. Pull the clamp rail (1) down and out.

Assembling the clamp rail

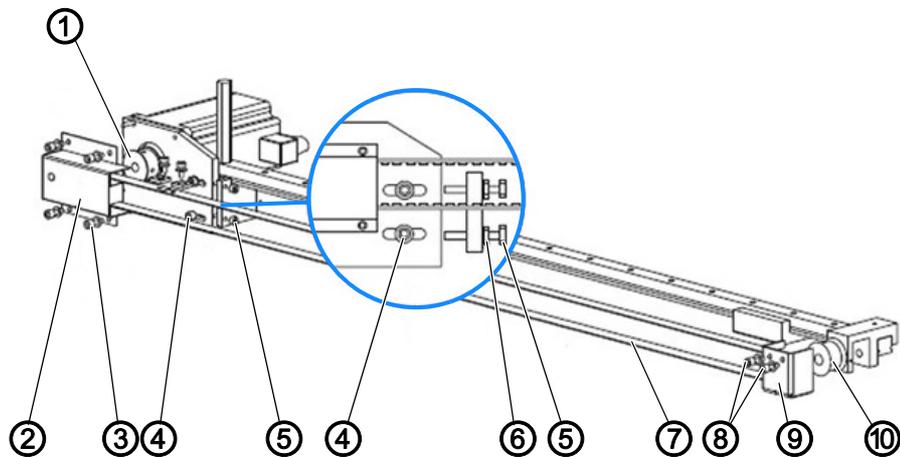


To assemble the clamp rail:

1. Insert the clamp rail (1) into the fixture and push it up until it reaches the stop.
Make sure the clamp rail (1) is positioned evenly in the fixture.
2. Tighten the screw (2).

3.2 Changing the toothed belt

Fig. 2: Changing the toothed belt (1)



- (1) - Drive roller
- (2) - Cover
- (3) - Screws
- (4) - Screws
- (5) - Screws

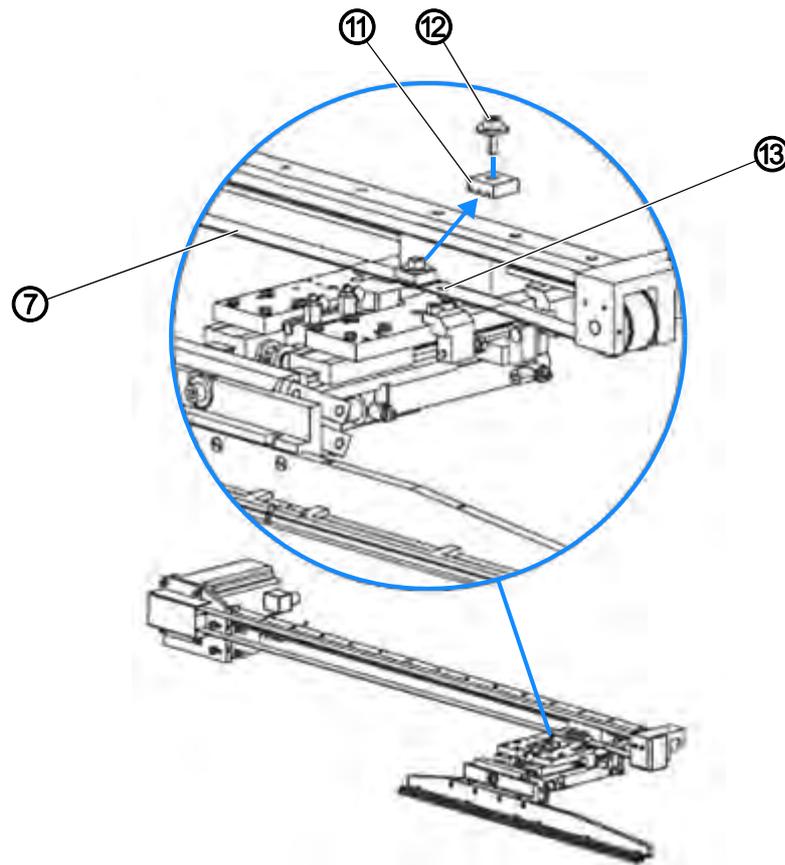
- (6) - Nuts
- (7) - Toothed belt
- (8) - Screws
- (9) - Cover
- (10) - Slide roller



To change the toothed belt:

1. Switch off the machine.
2. Slide the clamp to the left until it reaches the stop position.
3. Loosen the screws (3).
4. Disassemble the cover (2).
5. Loosen the screws (8).
6. Disassemble the cover (9).
7. To release the tension of the toothed belt (7), loosen the screws (4).
8. Loosen the nuts (6).
9. Tighten the screws (5).

Fig. 3: Changing the toothed belt (2)



(7) - Toothed belt
 (11) - Belt clamps

(12) - Screws
 (13) - Holes



10. Loosen the screws (12).
11. Remove the toothed belt (7).
12. Fit the new belt onto the drive roller (1) and the slide roller (10).
The ends of the toothed belt are fitted with holes.
13. Position the ends of the toothed belt (7) with the belt clamps (11) exactly over the holes on the bearing bracket and tighten them using screws.
14. To tension the toothed belt (7), tighten the screws (5) until the toothed belt can be depressed approx. 10 mm with distinct counter pressure at the middle of the transport rail.
15. Tighten the nuts (6).
16. Tighten the screws (4).
17. Assemble covers (2) and (9).

4 Assembling and disassembling the cutter block

WARNING



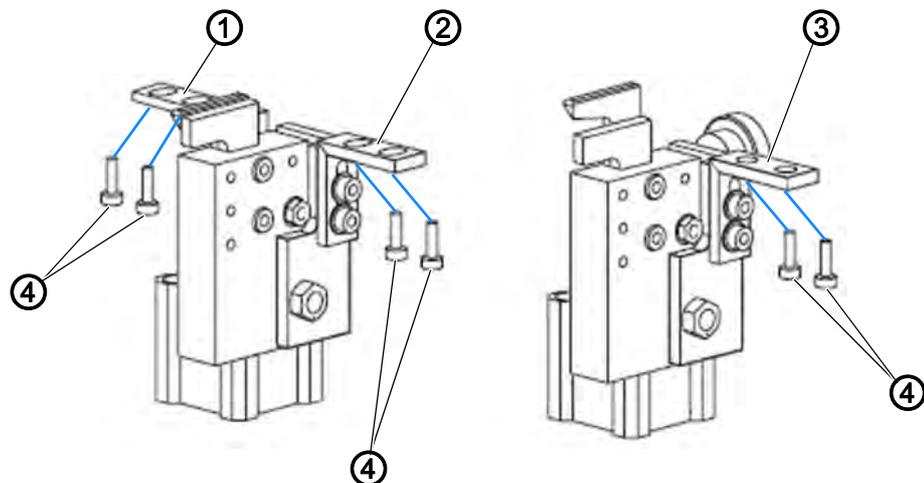
Risk of injury from sharp parts!

Cutting injuries may be sustained.

Switch off the machine before adjusting the cutter settings.

NEVER reach into the cutters with your hands.

Fig. 4: Assembling and disassembling the cutter block



(1) - Bracket
(2) - Bracket

(3) - Bracket
(4) - Screws

The cutters are integral to a block together with the pressure cylinder. The cutter block for the left fly piece is attached to the pick-up plate bracket with 2 mounting brackets (1) and (2).

The cutter blocks for the left and right trouser components are each attached with a mounting bracket (3) to the bottom of the working plate.



To disassemble and assemble the cutter blocks:

1. Disconnect the compressed air supply.
2. Loosen the screws (4).
3. Tighten the new cutter block.
4. Restore the compressed air supply.



Order

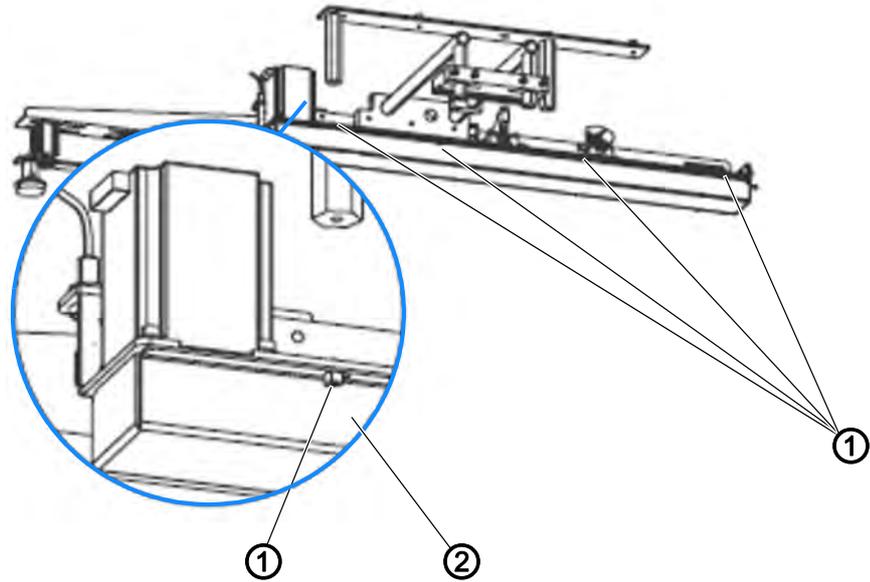
Proceed by carrying out the following adjustment:

- Adjust the cutter position (📖 p. 31)

5 Assistance transport

5.1 Changing the toothed belt for the assistance transport

Fig. 5: Changing the toothed belt for the assistance transport (1)



(1) - Screws

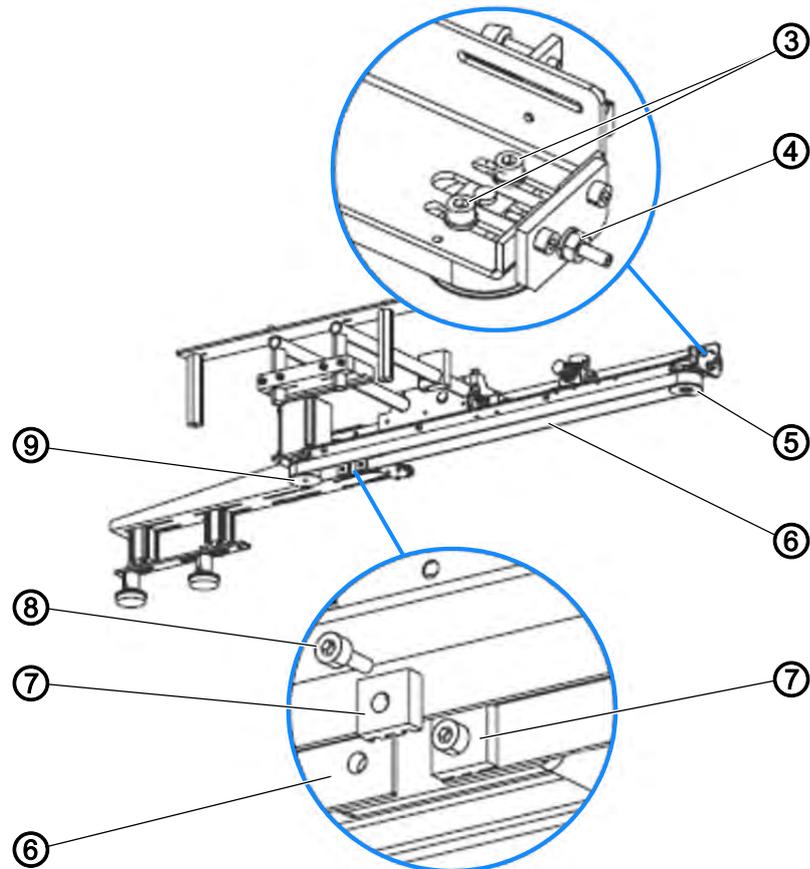
(2) - Cover



To change the toothed belt for the assistance transport:

1. Loosen the screws (1).
2. Disassemble the cover (2).

Fig. 6: Changing the toothed belt for the assistance transport (2)



- (3) - Screws
- (4) - Screw
- (5) - Slide roller
- (6) - Toothed belt

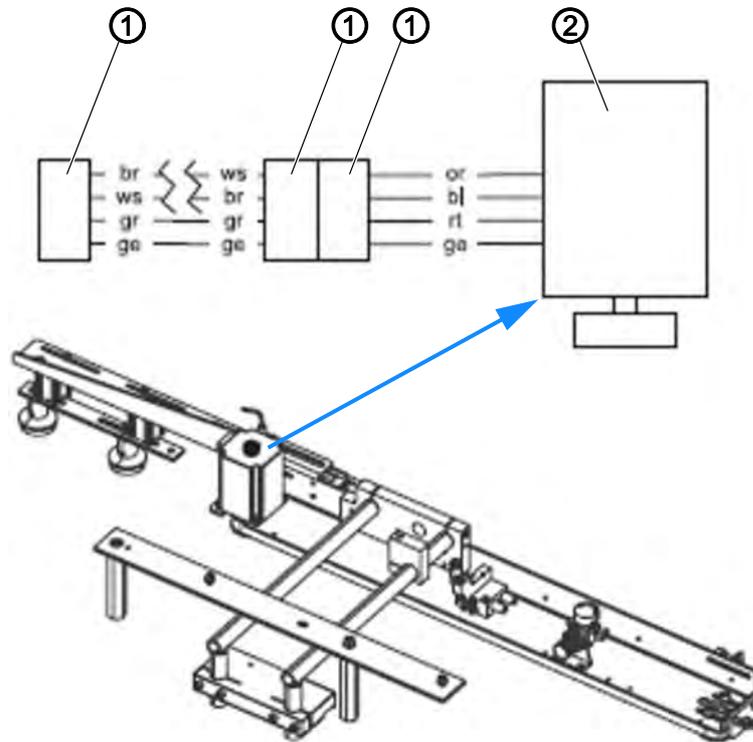
- (7) - Toothed belt clamps
- (8) - Screws
- (9) - Drive roller



3. To release the tension of the toothed belt (6), loosen screws (3) and (4).
4. Unscrew the screws (8) from the toothed belt clamps (7).
5. Remove the toothed belt (6).
6. Fit the new belt onto the drive roller (9) and the slide roller (5).
7. Position the ends of the toothed belt (6) together with the belt clamps (7) exactly over the holes on the holder and tighten them using screws.
8. Tension the toothed belt (6).
To tension the toothed belt, tighten the screw (4) until the toothed belt (6) can be depressed approx. 10 mm with distinct counter pressure at the middle of the transport rail.
9. Tighten the screws (3).
10. Assemble the cover (2).
11. Tighten the screws (1).

5.2 Pin assignment for the stepper motor of the assistance transport

Fig. 7: Pin assignment for the stepper motor of the assistance transport

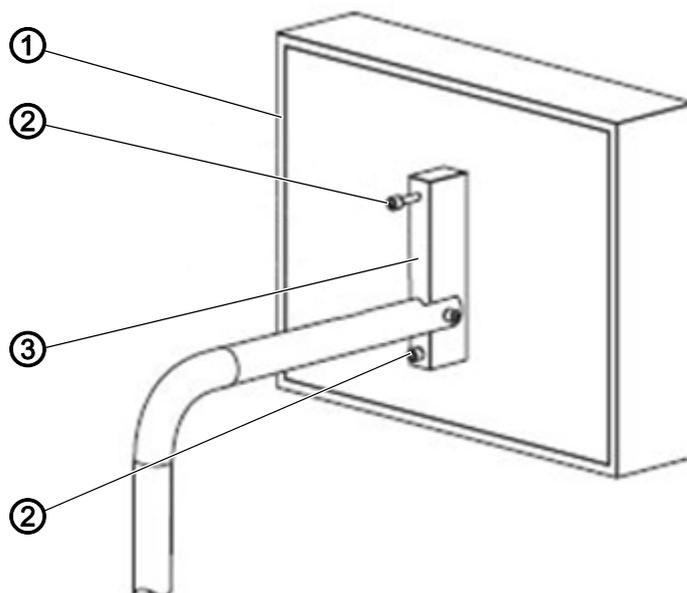


(1) - Plug connections

(2) - Stepper motor assistance transport

6 Disassembling and assembling the control panel

Fig. 8: Disassembling and assembling the control panel



(1) - Control panel
(2) - Screws

(3) - Holder



To disassemble and assemble the control panel:

1. Switch off the machine.
2. Loosen the screws (2).
3. Remove the control panel (1) from the holder (3).
4. Place the control panel onto the holder (3).
5. Tighten the screws (2).

7 Setting up the machine

WARNING



Risk of injury from pointed and sharp parts!

Cutting and puncture possible.

Switch off the machine before you set up the machine.

Do NOT reach into the area of the cutters or the needle.

WARNING



Risk of injury from moving parts!

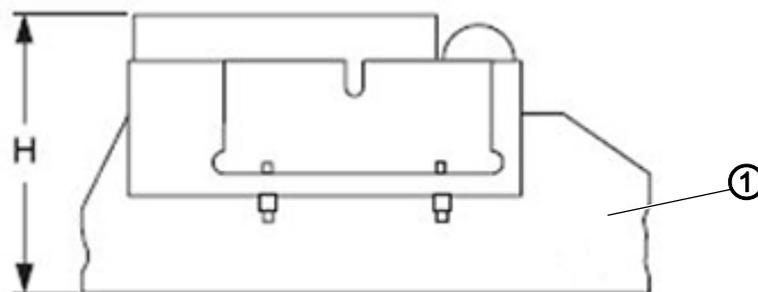
Crushing possible.

Switch off the machine before you set up the machine.

7.1 Adjusting the clamp rail

7.1.1 Adjusting the downforce pressure of the clamp rail

Fig. 9: Adjusting the downforce pressure of the clamp rail (1)



(1) - Clamp rail

The pressure of the clamp rail (1) exerted on the working plate changes with decreasing height **H**.

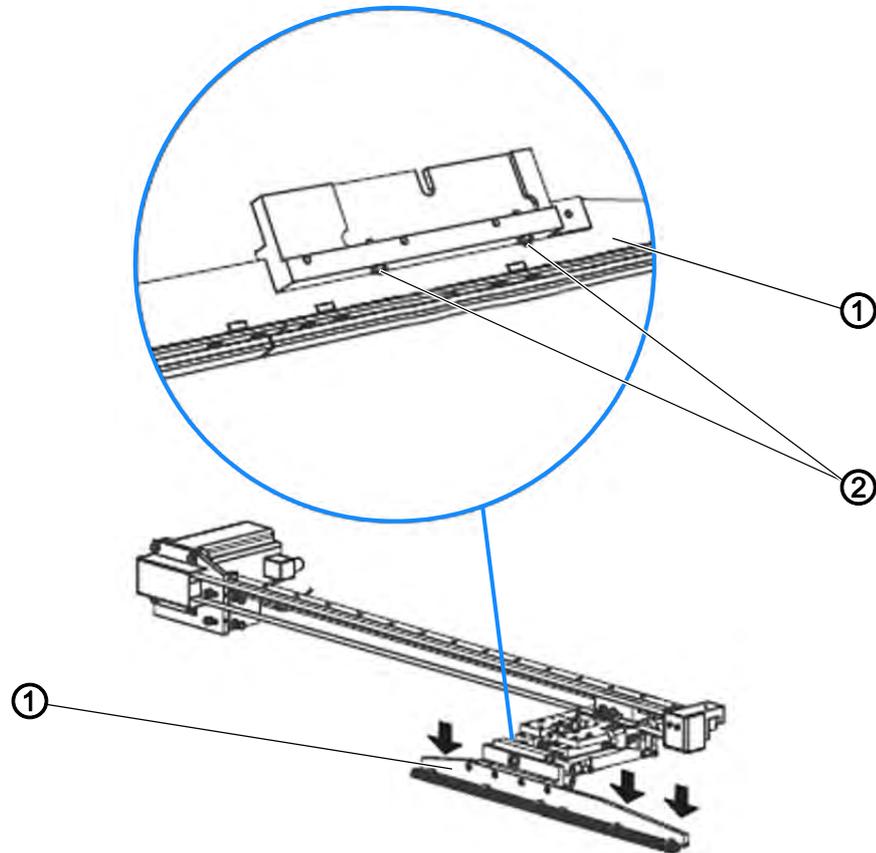


To adjust the downforce pressure of the clamp rail:

1. Check to see if the main clamp exerts pressure on the sewing piece evenly along the entire length of the rail.
To do so, position a piece of fabric at the loading position and lower the main clamp.

2. Check the downforce pressure.
To do so, try to pull the piece of fabric out of the clamp at several locations along the clamp rail.

Fig. 10: Adjusting the downforce pressure of the clamp rail (2)



(1) - Clamp rail

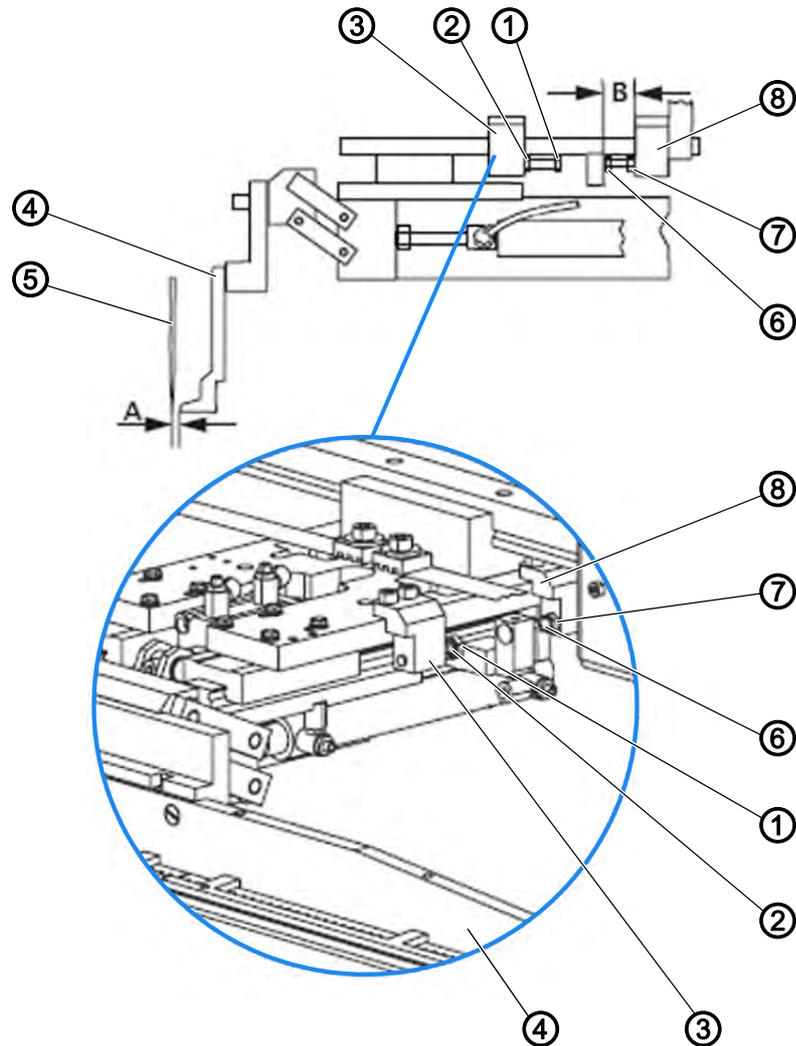
(2) - Screws



3. If the downforce pressure is uneven, too strong or insufficient, disassemble the clamp rail (1).
4. Turn the screws (2) at the inner side of the clamp rail (1) in or out.
 - **To increase the downforce pressure:** Turn the screws (2) in
 - **To reduce the downforce pressure:** Turn the screws (2) out
5. Assemble the clamp rail.
6. Check the downforce pressure and readjust it if necessary.

7.1.2 Adjusting the disengagement position of the clamp slide

Fig. 11: Adjusting the disengagement position of the clamp slide



- (1) - Screw
- (2) - Counternut
- (3) - Front stop point
- (4) - Clamp rail

- (5) - Needle
- (6) - Screw
- (7) - Counternut
- (8) - Rear stop point

The disengagement position for the front and rear stop point of the clamp slide is set at the bearing bracket.

The front stop point (3) determines how far the clamp slide will approach the needle.

The rear stop point (8) determines how far the clamp slide will return to its initial position.

Adjusting the front stop point



To adjust the front stop point:

1. Lower the main clamp.
2. Disconnect the compressed air supply.
3. Use your hand to push the main clamp below the sewing head.
4. Lower the needle by hand.
5. Loosen the counternut (2).
6. Turn the screw (1) into position.
- ↳ The distance **A** between clamp rail (4) and needle (5) is 1 - 1.5 mm.
7. Tighten the counternut (2).

Adjusting the rear stop point

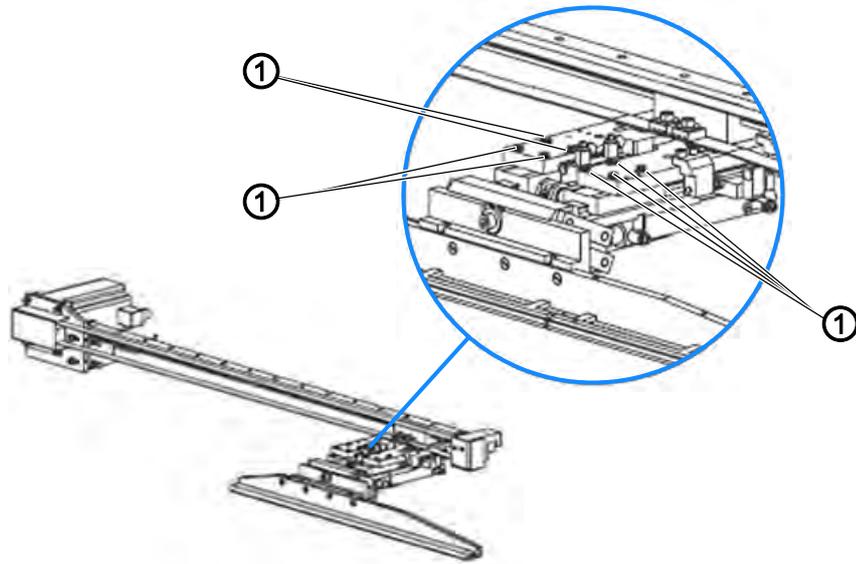


To adjust the rear stop point:

1. Loosen the counternut (7).
2. Turn the screw (6) into position.
- ↳ The clear length B of the screw (6) is exactly 10 mm.
3. Tighten the counternut (7).

7.1.3 Adjusting the parallel orientation of the clamp rail

Fig. 12: Adjusting the parallel orientation of the clamp rail



(1) - Screws

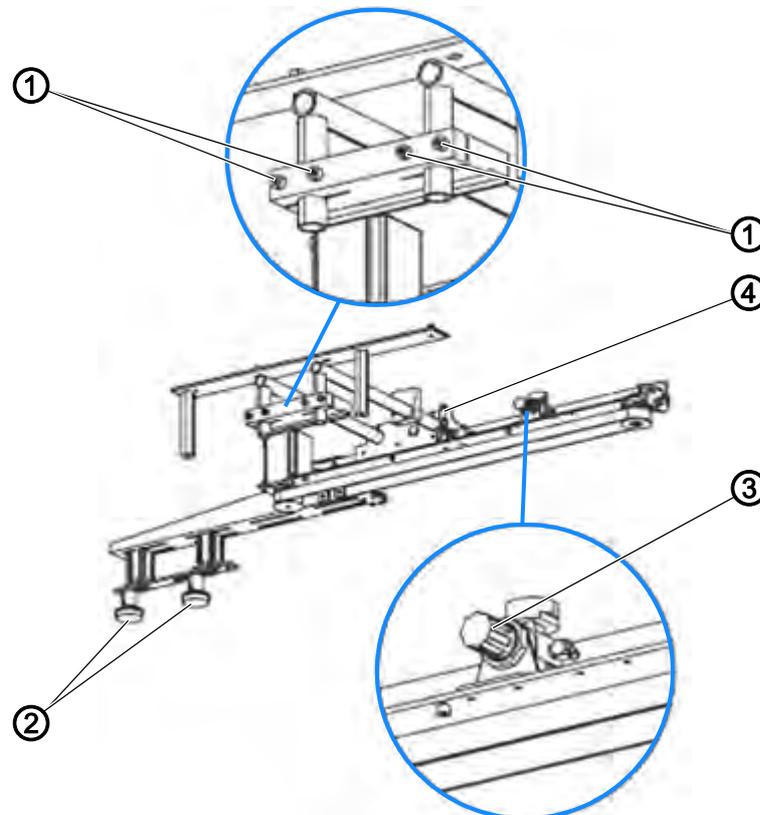


To adjust the parallel orientation of the clamp rail:

1. Check to see if the needle is positioned exactly parallel to the clamp rail along the entire length of the clamp rail.
To do so, push the main clamp below the sewing head and check the distance between clamp rail and needle at several locations.
2. If the distance is not identical at all locations, loosen the screws (1).
3. Swivel the clamp rail to the parallel position.
4. Tighten the screws (1).
5. Check parallel orientation and readjust it necessary.

7.2 Adjusting the downforce pressure of the assistance transport

Fig. 13: Adjusting the downforce pressure of the assistance transport



(1) - Screws
(2) - Stamp

(3) - Pressure reducer
(4) - Assistance transport

Checking the downforce pressure



To check the downforce pressure of the assistance transport:

1. Position sewing material at the loading position.
2. Lower the stamp (2).
3. Try to pull the sewing material out of the stamp at several locations along the transport section.

↘ The downforce pressure needs to be the same at all locations.

Adjusting the downforce pressure



To adjust the downforce pressure:

1. Set the pressure reducer (3) to 1 bar (0.1 mpa).
2. Check parallel alignment of the stamps (2) to the sliding plate.

If the alignment of the stamps must be adjusted:

3. Loosen the screws (1).
4. Adjust the height position of the assistance transport (4).
5. Tighten the screws (1).

6. Lower the stamp (2).
7. Check the downforce pressure and readjust it if necessary.

7.3 Adjusting the guide laser

WARNING



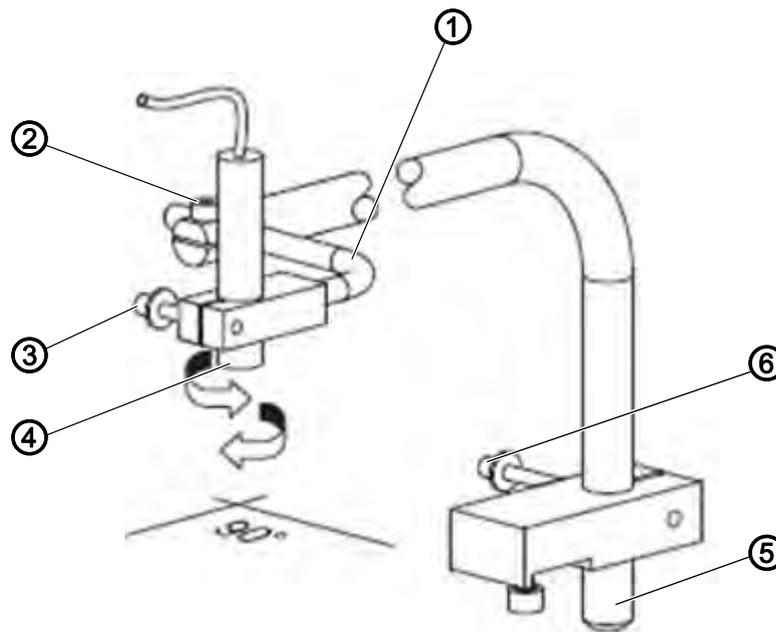
Risk of injury from laser beams!

Retina damage possible.

NEVER look directly into the laser beam.
NEVER allow optical equipment such as burning glasses or lenses to interfere with the laser beam path.

The guide laser marks the line-up position of simple labels on the pocket facing.

Fig. 14: Adjusting the guide laser



- (1) - Angular bracket
- (2) - Screw
- (3) - Screw

- (4) - Laser
- (5) - Laser
- (6) - Screw

Adjusting the height



To adjust the height of the guide laser:

1. Loosen the screw (6) on the rear of the worktable.
2. Position the holder of the laser (6) at the desired height.
3. Tighten the screw (6).

Adjusting the horizontal alignment



To adjust the guide laser horizontally:

1. Loosen the screw (3).
2. Rotate the laser (4) to the desired position.
3. Tighten the screw (3).

Adjusting the vertical alignment



Information

You can use the vertical alignment of the guide laser to determine the seam width when sewing the zipper fly. If the alignment of the laser to the left is changed, the seam will narrow, while the seam will become wider if the alignment of the laser to the right is changed.



To adjust the guide laser vertically:

1. Loosen the screw (2).
2. Swivel the angular bracket (1) of the laser to the desired position.
3. Tighten the screw (2).

7.4 Adjusting the folder

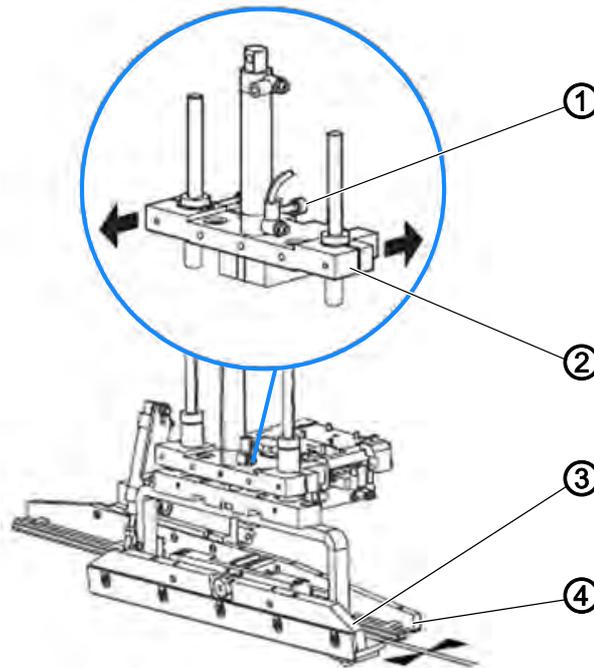
7.4.1 Aligning the folder parallel to the clamp rail



Proper setting

The lowered folder must be absolutely parallel to and in slight contact with the clamp rail along its entire length.

Fig. 15: Aligning the folder parallel to the clamp rail



(1) - Screw
(2) - Bracket

(3) - Folder clamp
(4) - Clamp rail



To align the folder parallel to the clamp rail:

1. Move the main clamp into position.
To do so, use the input/output control functions
 - Move the main clamp to the front stop point
 - Lower the main clamp
2. Move the folder into position.
To do so, use the input/output control functions
 - Rotate the folder
 - Close the folder clamp
 - Lower the folder
3. Check the alignment of the folder clamp (3) to the clamp rail (4).
4. Loosen the screw (1) if the folder clamp (3) and the clamp rail (4) are not parallel to one another.
5. Rotate the bracket (2) of the folder clamp parallel to the clamp rail (4).
6. Tighten the screw (1).

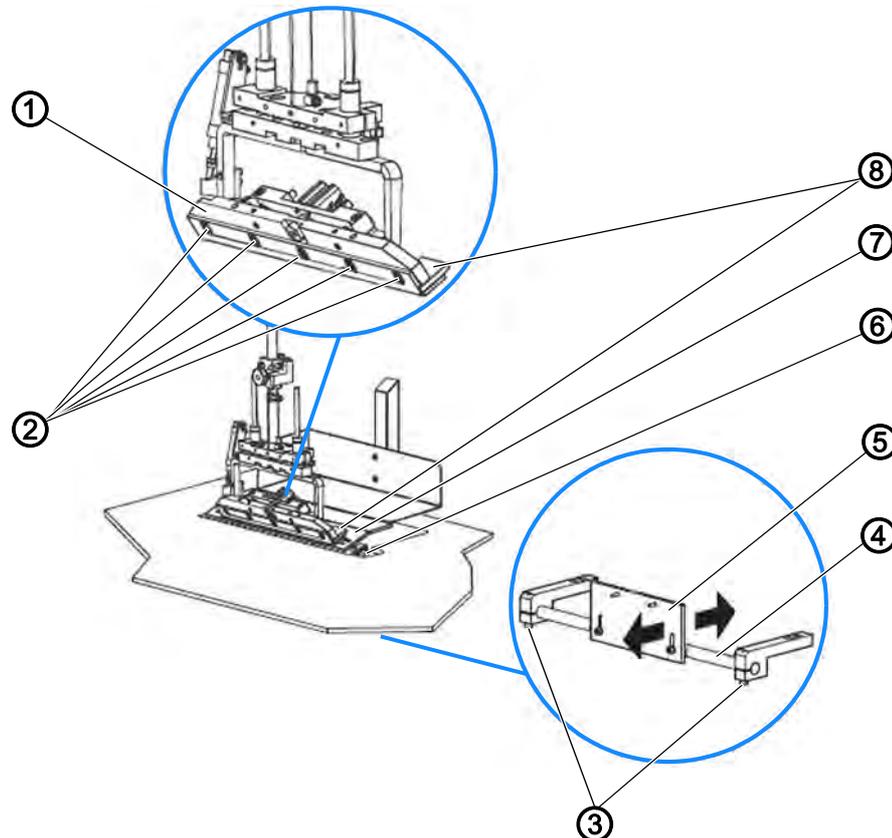
7.4.2 Aligning the folder with the pick-up plate



Proper setting

To ensure that the folder can pick up the pocket facing evenly, the folder must lie evenly on the pick-up plate along its entire length when it is lowered.

Fig. 16: Aligning the folder with the pick-up plate



- | | |
|---------------|-----------------------|
| (1) - Folder | (5) - Holder |
| (2) - Screws | (6) - Adjusting wheel |
| (3) - Screws | (7) - Pick-up plate |
| (4) - Bracket | (8) - Folder rail |



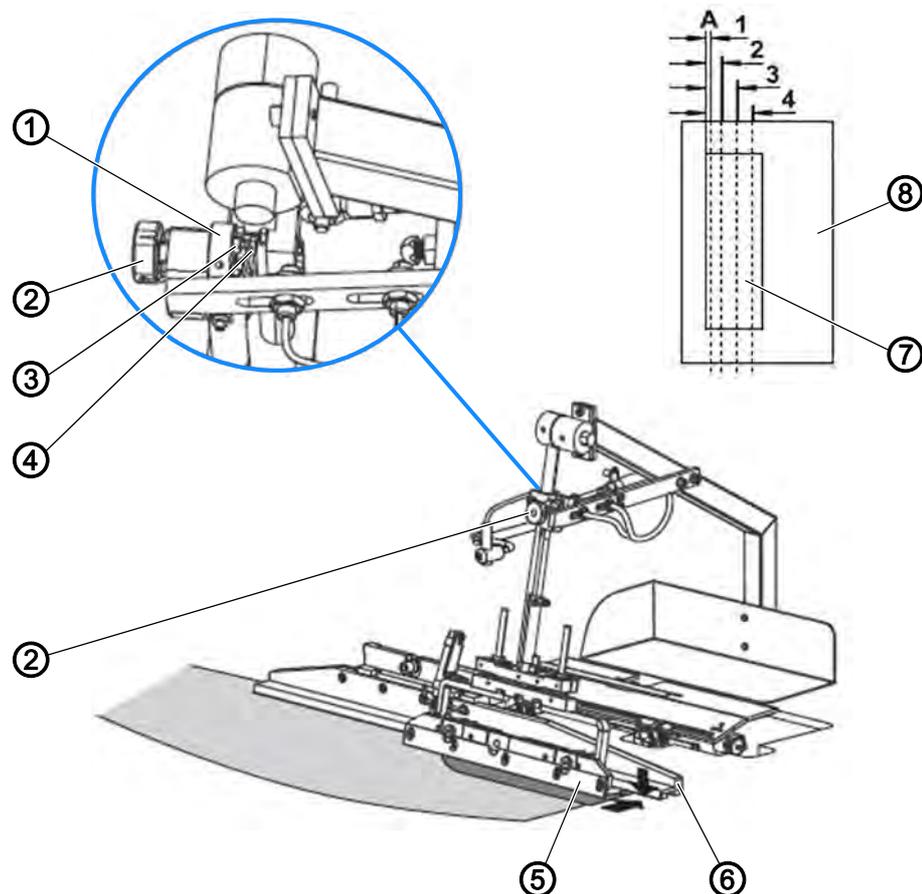
To align the folder with the pick-up plate:

1. To fix the pick-up plate (7) in place, turn the adjusting wheel (6) all the way into the minus range.
2. Move the folder (1) onto the pick-up plate (7).
To do so, use the input/output control functions
 - Move the folder to the right
 - Lower the folder
3. Loosen the screws (3) on the bottom side of the worktable.
4. Rotate the bracket (4) at the holder (5).
- ↳ The inclination of the pick-up plate (7) is such that the folder (1) lies evenly on the pick-up plate (7).
5. Tighten the screws (3).

6. To readjust the folder rail (8), loosen the screws (2).
7. Depress the folder rail (8) evenly onto the pick-up plate (7).
8. Tighten the screws (2).

7.4.3 Adjusting the lower position of the folder

Fig. 17: Adjusting the lower position of the folder



- (1) - Revolver
- (2) - Adjusting wheel
- (3) - Counternut
- (4) - Screw

- (5) - Folder
- (6) - Clamp rail
- (7) - Zipper fly
- (8) - Trousler component

The quick stitch width adjustment allows for the presetting of 4 seam widths.

Use the adjusting wheel (2) to adjust the stitch width between the trouser component (8) and the zipper fly (7) or prefabricated pocket bag to the required range.



Proper setting

The folder lowers onto the work surface to the left of the clamp slide without any friction contact.

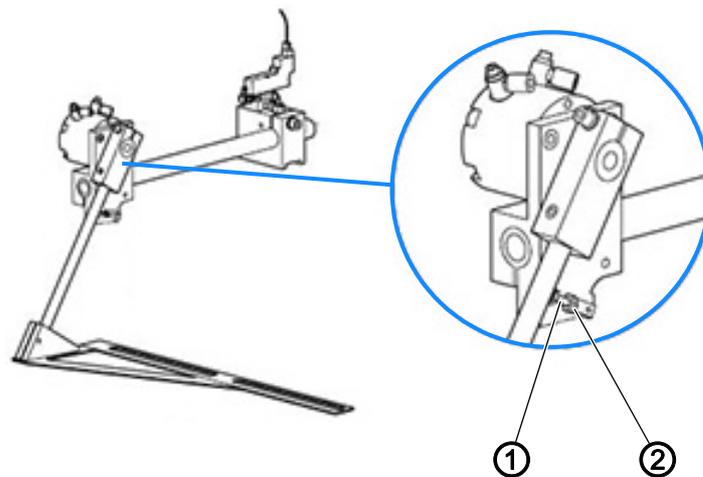


To adjust the lower position of the folder:

1. Loosen the counternut (3).
2. Turn the screw (4) at the revolver (1) into position.
3. Check the distance of the folder (5) to the clamp rail (6).
- ↙ The folder lowers onto the work surface to the left of the clamp slide without any friction contact.
4. Tighten the counternut (3).

7.5 Aligning the stop for the right fly piece

Fig. 18: Aligning the stop for the right fly piece



(1) - Screw

(2) - Counternut

The position of the stop determines the line-up position of the right fly piece on the right trouser component.

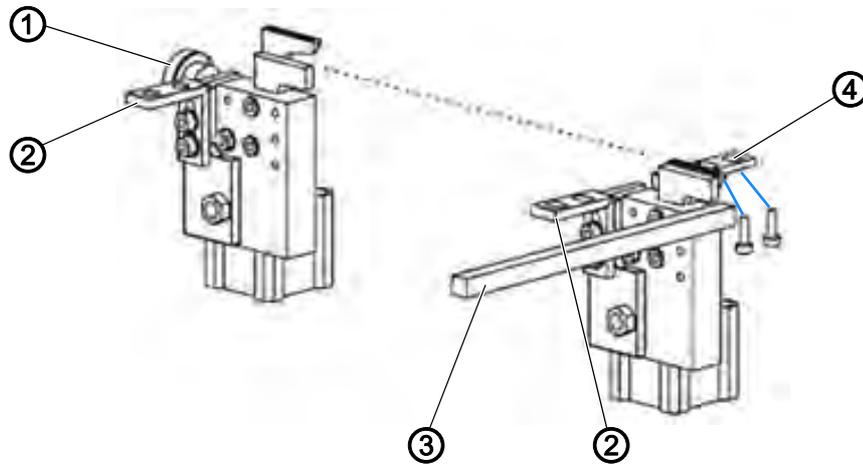


To adjust the stop for the right fly piece:

1. Loosen the counternut (2).
2. Turn the screw (1).
3. Tighten the counternut (2).

7.6 Adjusting the cutters

Fig. 19: Adjusting the cutters



(1) - Adjusting wheel
(2) - Angle arm

(3) - Stop rail
(4) - Mounting bracket

The cutting depth of the gusset in the left fly piece is adjusted by various settings on the 4 cutters.



Proper setting

The 2 cutters for the gusset in the left fly piece and in the left trouser component must be aligned to each other in a way that ensures that both cutting positions are exactly flush.

Adjusting the cutting depth of the cutters



To adjust the cutting depth of the cutters:

1. Turn the adjusting wheel (1).

Adjusting the cutting depth of the gusset in the left fly piece

The cutting depth of the gusset in the left fly piece depends on the cutter block's mounting position.



To adjust the cutting depth of the gusset:

1. Reposition the cutter block in the slotted holes of the mounting bracket (4).
2. Position the cutter at an exact distance to the stop rail (3).

Adjusting the vertical position of the cutters

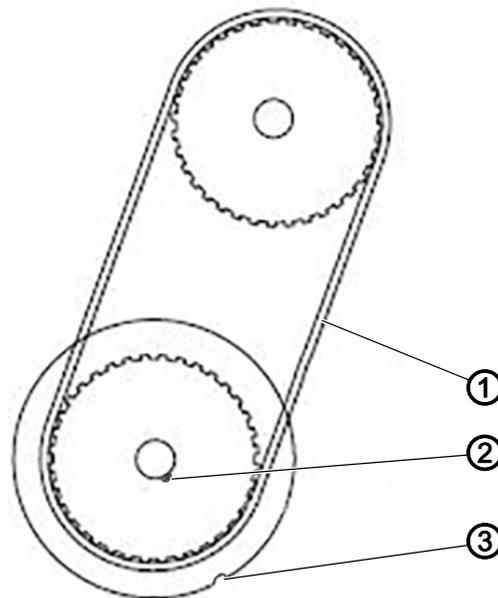


To adjust the vertical position of the cutters:

1. Reposition the cutter block in the slotted holes of the angle arm (2). Make sure that the lowered cutters are positioned flush with the upper edge of the working plate / the pick-up plate.

7.7 Adjusting the thread trimmer

Fig. 20: Adjusting the thread trimmer



(1) - Drive belt
(2) - Feather key

(3) - Marking



To adjust the thread trimmer:

1. Turn the handwheel until the needle is at the top dead center (position **C**).
2. Lock the machine in place at position **C**.
To do so, insert the locking peg into the hole to the left of the handwheel.
3. Install the drive belt (1) so that the feather key (2) is flush with the marking (3) on the motor housing.
4. Remove the lock.



5. Call up the *Global Parameters* menu:

- Press the **F1** key
- Press the **F2** *GP* key

6. Enter the following values:

- 35: Thread lever in position up 200 INC
- 36: Switch-on pos. for thread cutting 110 INC

7. To store the value and exit the setting level, press the **P** key.

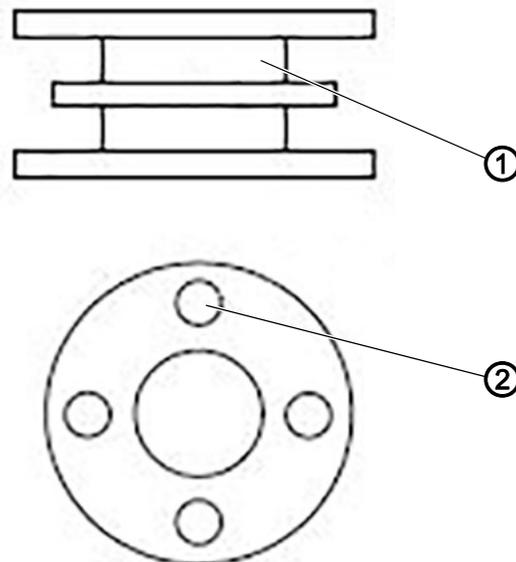
8. Start the *Thread trimmer* function:
 - Press the **P** key
 - Press the **F2** *Diagnostics* key
 - Press the **F2** *Sewing motor* key
 - Press the **F2** *Thread trimmer* key
9. To start and stop the machine cycle, press the **0** key.
10. Check position **C** to see if the feather key (2) is flush with the marking (3) on the motor housing and readjust if necessary.

7.8 Remaining thread monitor

The remaining thread monitor is checked using a photocell. If the messages on the display do not match the filling state of the bobbin, the photocell sensitivity must be checked.

Checking the remaining thread monitor

Fig. 21: Checking the remaining thread monitor



(1) - Chamber

(2) - Inspection glass



To check the remaining thread monitor:

1. Fill the bobbin to half its capacity until the inspection glasses (2) of the upper chamber (1) are covered.
2. Insert the bobbin.
3. Sew until the bobbin shows *BOBBIN: 003 M.*
4. Keep sewing until the display shows *BOBBIN EMPTY.*

5. Remove the bobbin.
6. Unwind the remaining thread from the bobbin and measure the length of the thread.
- ↳ The remaining thread length should be 0.5 m.
7. If more or less than 0.5 m of thread are remaining, the photocell must be adjusted:

If the thread on the bobbin is sewn off over the rest length of 0.5 m without the message *BOBBIN EMPTY* being displayed **OR** if the message *BOBBIN EMPTY* is displayed even though the bobbin contains more than 0.5 m of thread, the photocell sensitivity must be adjusted.

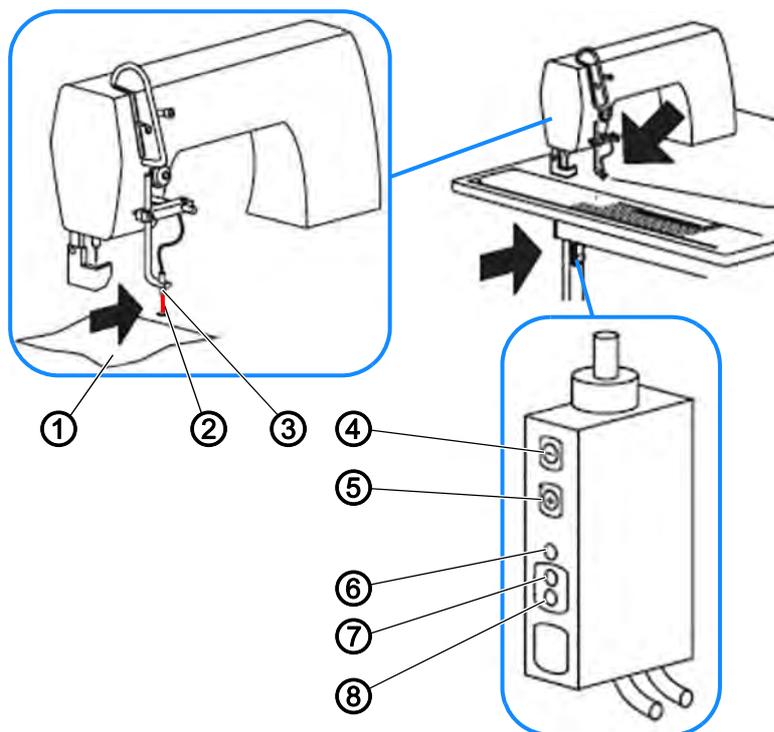


To adjust the sensitivity of the photocell:

1. Rotate the potentiometer at the photocell.
 - **To increase the sensitivity:** Turn the potentiometer clockwise
 - **To reduce the sensitivity:** Turn the potentiometer counterclockwise

7.9 Adjusting the photocell light sensitivity at the sewing head

Fig. 22: Adjusting the photocell light sensitivity at the sewing head



- (1) - Sewing material
 (2) - Light beam
 (3) - Photocell
 (4) - Key

- (5) - Key
 (6) - Red LED
 (7) - Green LED
 (8) - Yellow LED

The photocell (3) at the sewing head controls the beginning and the end of the sewing process. The sensitivity of the photocell (3) must be set in accordance with the sewing material used.



To adjust the photocell light sensitivity at the sewing head:

1. Make sure that the light beam (2) of the photocell (3) is not interrupted.
2. To unlock the keypad, press and hold keys (4) and (5) for approx. 5 seconds.
 - ↳ The green LED (7) lights up briefly.
The keypad remains unlocked for 4 minutes, indicated by the red LED (6) flashing for that period.
The light conductor control will be locked automatically after 4 minutes.
3. Use keys (4) and (5) to adjust the light sensitivity of the photocell (3).
 - To increase light sensitivity: Press the + key (5)
 - To reduce light sensitivity: Press the - key (4)
4. Slide the sewing material (1) to be used into the light beam (2).
 - ↳ The yellow LED (8) goes out when the light beam (2) is interrupted.
5. If the yellow LED (8) does not go out, reduce the light sensitivity.



Information

The red LED (6) must not illuminate in any switching state.

If the red LED (6) illuminates, the light amplifier is in a critical switching state. In this case, increase the light sensitivity of the photocell (3) until the red LED (6) goes out before setting the light sensitivity of the photocell (3) in accordance with the sewing material used.

7.10 Adjusting the switches on the stepper motor PCB

NOTICE

Property damage may occur!

Collision of moving machine parts.

Move the machine to its initial position before switching the machine on.

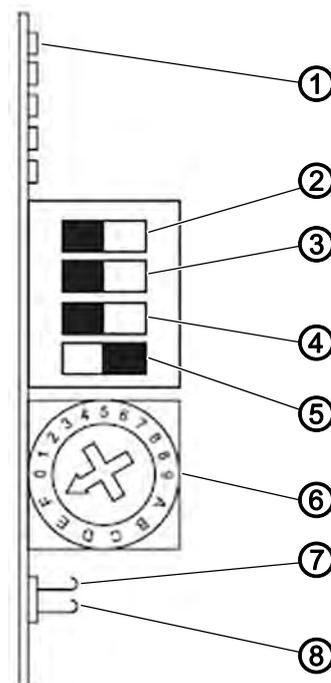
NOTICE

Property damage may occur!

Damage to electrical components possible if the settings of the PCB switches are changed while the machine is switched on.

Switch off the machine before adjusting the PCB switches.

Fig. 23: Adjusting the switches on the stepper motor PCB



- | | |
|------------------|---------------------|
| (1) - LED | (5) - DIP switch |
| (2) - DIP switch | (6) - Rotary switch |
| (3) - DIP switch | (7) - Hook switch |
| (4) - DIP switch | (8) - Hook switch |



To adjust the switches on the stepper motor PCB:

1. Set the step width:
 - DIP switches (2) and (3)
 - Micro step: Hook switches (7) and (8)

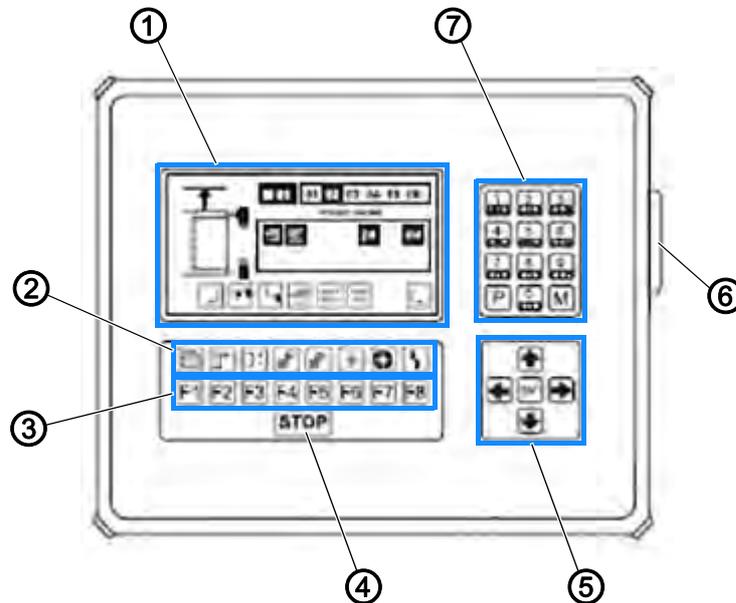
2. Set current lowering using DIP switch (4).
 3. Set DIP switch (5) to **ON**.
 4. Set the motor phase current: Turn the rotary switch (6) to the **F** position.
 5. Switch on supply voltage.
- ↳ When the PCB is adjusted correctly, the LED (1) is illuminated.
The standby relay is energized.

Micro step		DIP switch (2)	DIP switch (3)
Hook switch (7) open Signal = 0	Hook switch (8) closed Signal = 0		
Hook switch (7) closed Signal = 1	Hook switch (8) open Signal = 1		
200	2000	ON	OFF
400	4000	ON	ON
500	5000	OFF	ON
1000	100000	OFF	OFF
Signal 0 = de-energized, Signal 1 = energized			
Rotary switch position	Phase current	DIP switch (4)	Current lowering
F	5.50 A	OFF	on
		ON	off

8 Programming

8.1 Display and key functions

Fig. 24: Display and key functions



- | | |
|------------------------|-----------------------------|
| (1) - Display | (5) - Arrow keys |
| (2) - Icon bar | (6) - Slot for memory stick |
| (3) - Function keys | (7) - Numeric keypad |
| (4) - Program stop key | |

Display (1)

During machine operation, the display shows the values of the selected seam program. If menus are activated, the menu symbols or the corresponding parameters of the function are displayed.

Symbol bar (2)

The symbol bar indicates the menus that can be requested using function keys (3) directly from the start level.

For all other menus, the corresponding symbols are shown on the control panel display.

Function keys (3)

The function keys are used to request the menus on the selected level for setting or changing machine functions.

The function keys **F1** and **F8** have an identical function in all menus:

- **F1** : move to the previous level or to the start level
- **F8** : to move to the next level

Program stop key (4)

If the key is pressed during the machine cycle, all machine movements and the sewing process are stopped.

Arrow keys (5)

Pressing the **↑** and **↓** arrow keys will move the cursor one line up or down in the selected menu.

Pressing the **←** and **→** arrow keys will either mark the desired parameter or - if the parameter list comprises several pages - browse forward or backward.

Slot for memory stick (6)

The memory stick is the storage medium for backup copies of all program control data. Programs can be copied to and stored on the memory stick and uploaded to the control again if required.

Numeric keypad (7)

All variable number values are entered using the numeric keypad. The desired sewing programs are requested using the **M** key. The **P** key is used to request submenus, confirm input and exit the programming mode.

8.2 Layout of the program control

NOTICE

Property damage may occur!

Damage to machine components if the machine is not ready for operation.

Do not enter data unless the machine is ready for operation.

The program control is controlled using the menus listed below:

- System menu
- Service menu
- Global Parameters menu
- Special Parameters menu

System menu

The system menu is used to perform all settings for the program control operating system and for managing the seam programs ( p. 44):

- Copying factory settings to the program control
- Saving programmed seam programs to the memory stick
- Copying and renaming seam programs
- Copying seam programs from the memory stick to the program control

Service menu

The service menu is used to directly call up service functions. These functions support machine setup or other work steps required during machine operation ( p. 52), e. g.:

- Resetting the day counter
- Winding the bobbin thread

Global Parameters menu

The Global Parameters menu is used to set parameters that control the basic functions of the machine ( p. 60).

Changing global parameters will result in changes to all stored seam programs.

Special Parameters menu

Special parameters are settings that refer only to the properties of a particular seam in a seam program ( p. 62).

Special parameters can be functions that are enabled or disabled as required or parameter values that are set in lists.

The changes made will only affect the currently selected seam.

Seam program

A seam program controls the entire machine cycle during sewing:

- transport of the sewing material to the sewing head
- stitching down a seam
- ejection of the sewing material

A seam program is determined by 2 different kinds of values:

- Global parameters
- Special parameters

Seam number

Each seam program can be executed with up to 6 seams of different stitch widths.

The seams are assigned to the seam program by seam numbers (01, 02, 03, 04, 05, 06).

Combination of seam program with seam

A seam program can be combined with one seam, with several seams or with all 6 seams.

If a seam program with several seam numbers is called up, the seams are processed one at a time in the order of the seam numbers from left to right. The order of the seam number is freely selectable.

Memory

Seam programs are stored in the memory **M**.

The program control memory can hold up to 50 seam programs (**M01 - M50**) with up to 6 seams (**01 - 06**) each.

For backup purposes, all seam programs stored in the memory can be copied to the memory stick.

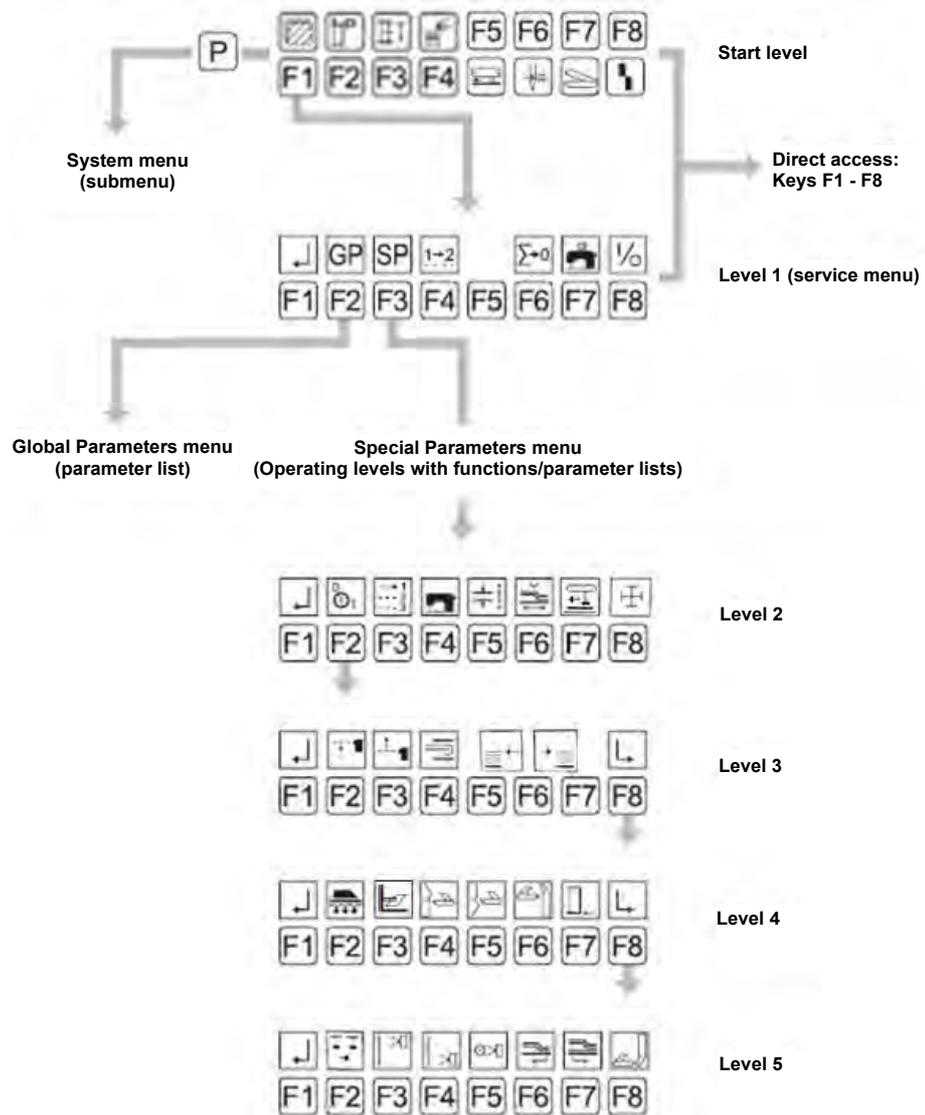
Creating seam programs

While it is possible to create entirely new seam programs, it is easier to copy and modify an existing seam program.

To change an existing seam program, copy the seam program to an unused program location. Modify the seam program afterwards.

8.3 Overview of the program levels

Fig. 25: Overview of the program levels



8.4 System menu

The system menu is divided into several submenus. The submenus are, in turn, divided into open and access-protected submenus.

Open submenus

Open submenus are freely accessible from the start level:

- Enter the service code (📖 p. 45)
- Check the clamp motor steps
- View the total piece counter (📖 p. 45)

Access-protected submenus

Access-protected submenus can only be opened after the service code has been entered:

- Eprom sewing parameters (📖 p. 46)
- Copy seam numbers (📖 p. 47)
- Erase seam (📖 p. 48)
- Enter seam name (📖 p. 48)
- Copy seam program to memory stick (📖 p. 49)
- Download seam program from memory stick (📖 p. 49)
- Copy variables (global parameters/special parameters) to memory stick (📖 p. 50)
- Download variables (global parameters/special parameters) from memory stick (📖 p. 50)
- Run the clamp motor in continuous operation (📖 p. 51)
- Check thread trimmer (📖 p. 51)

8.4.1 Calling up and exiting the system menu



To call up the system menu from the start level:

1. Press the **P** key.
- ↳ The system menu is called up.



To confirm your input and exit the system menu:

1. Press the **P** key.
- ↳ The input is confirmed.
You exit the system menu.

All input for the system menus must be started from submenu level 1.



To switch to submenu level 1:

1. Press the key.

The submenus of the system menu can be requested using either the arrow keys or the function keys.



Important

Always perform a **reset** in the system menu after altering the settings or making changes in order to return the machine to its initial position.



To perform a reset:

1. Press the **STOP** key 2x.

8.4.2 Entering the service code

Entering the service code allows you to access the access-protected submenus of the system menu.



To enter the service code:

1. Press the key.
2. Press the key.
↳ The submenu *Service Code* is called up.
3. Enter the service code 50190 on the numeric keypad.
4. Press the key.

8.4.3 Submenu *Piece Counter*

This submenu lets you view the total number of finished pieces. The total piece counter cannot be reset.



To view the total piece counter:

1. Press the key.
2. Press the key.
↳ The submenu *Additional Programs* is called up.
3. Press the key.
↳ The submenu *Piece Counter* is called up.
The total number of finished pieces is displayed.

8.4.4 Submenu *Eprom sewing parameters*

This function allows you to copy the factory-programmed, fixed seams from the Eprom back to the seam program.



To copy the factory-programmed seams into the seam program:

1. Press the **P** key.
2. Press the **F1** **Init parameters** key.
3. Press the **F4** **Eprom sewing parameters** key.
4. Enter seam number 01 using the numeric keypad.

Specifying the order of the seams

The settings refer to the selected seam program. The order for sewing the seams can be set at will.

When the order has been set, existing seam numbers are overwritten or new seam numbers are created.



To specify the order of the seams:

1. Press the **F1** key.
 2. Press the **F4** key.
- ↳ The display shows the marking of the seam program and the seam number:

Fig. 26: Specifying the order of the seams (1)

20 01 02 03 04



3. Use the cursor to mark the seam number you wish to change:

Fig. 27: Specifying the order of the seams (2)

20 01 02 03 04



4. Press the **ENT** key.
- ↳ The *Overwrite* function opens.
5. Enter a new seam number using the numeric keypad:

Fig. 28: Specifying the order of the seams (3)

20 01 04 03 04

-  6. To confirm your input and exit the menu, press the **P** key.
 ↳ The display shows the new order of the seams:

Fig. 29: Specifying the order of the seams (4)



8.4.5 Submenu *Copy seam numbers*

You can use this submenu to copy properties of a seam program to other seam programs.

The existing seams of the seam program to which you transfer the properties will be overwritten completely.

 To copy a seam program:

1. Press the **M** key.
 2. Enter the two-digit number of the seam program you wish to overwrite.
 3. Press the **P** key.
 4. Press the **F1** **Init parameters** key.
 5. Press the **F2** **Copy seam number** key.
 6. Enter the two-digit number of the seam program you wish to copy.
- ↳ The display shows *OK PLEASE WAIT*.
 The copying process is completed.

8.4.6 Submenu *Erase seam*



Important

When erased, the seam number will be removed from all seam programs into which it had been inserted.



To erase an existing seam:

1. Press the **M** key.
2. Select the desired seam program using the **←** and **→** keys.
 - ↳ The number of the seam program selected will be highlighted in black.
3. Press the **P** key.
4. Press the **F1** **Init parameters** key.
5. Press the **F5** **Erase seam** key.
6. Enter the seam number on the numeric keypad.
7. Press the **ENT** key.
 - ↳ The seam has been erased.

8.4.7 Submenu *Enter seam name*

You can give each seam a name of its own.



To name a seam:

1. Press the **P** key.
2. Press the **F1** **Init parameters** key.
3. Press the **F5** **Enter seam name** key.
4. Use the numeric keypad to enter the desired name.
The seam name can contain letters or numbers.

To enter letters: press and hold the required color-coded function key while pressing the corresponding color-coded number key for the letter on the numeric keypad.

To enter blank spaces/number combinations: Press the **←** or **→** arrow keys.

To delete a letter: Press the **9** key 4x.
5. To confirm your input and exit the menu, press the **P** key.

8.4.8 Copying a seam program to the memory stick



To copy a seam program to the memory stick:

1. Plug the memory stick into the USB port.
2. Press the **P** key.
3. Press the **F1** **Init parameters** key.
4. Press the **F6** **Machine <-> Stick** key.
5. Press the **F1** **Active seam -> Memory stick** key.
6. Enter the desired seam number on the numeric keypad.

8.4.9 Downloading a seam program from the memory stick

To restore or change seams, you can download seam programs from the memory stick.

For this purpose, an unused location is selected or an existing seam program is overwritten.



To download a seam program from the memory stick:

1. Plug the memory stick into the USB port.
2. Press the **P** key.
3. Press the **F1** **Init parameters** key.
4. Press the **F6** **Machine <-> Stick** key.
5. Press the **F2** **Stick -> Active seam** key.
6. Enter the desired seam number on the numeric keypad.

8.4.10 Copying variables to the memory stick



To copy variables (global parameters/special parameters) to the memory stick:

1. Plug the memory stick into the USB port.
2. Press the **P** key.
3. Press the **F1** **Init parameters** key.
4. Press the **F6** **Machine <-> Stick** key.
5. Press the **F3** **Machine memory <-> Stick** key.
6. Confirm the safety prompt.
7. Press the **ENT** key.

8.4.11 Downloading variables from the memory stick



Important

If this function is used to download all variables from the memory stick to the program control, ALL current seam programs will be overwritten.



To copy variables (global parameters/special parameters) to the memory stick:

1. Plug the memory stick into the USB port.
2. Press the **P** key.
3. Press the **F1** **Init parameters** key.
4. Press the **F6** **Machine <-> Stick** key.
5. Press the **F4** **Stick -> Machine memory** key.
6. Confirm the safety prompt.
7. Press the **ENT** key.

8.4.12 Running the clamp motor in continuous operation

For testing purposes, the clamp motor can be run in continuous operation to check for constant machine movement.



To **start** the clamp motor in continuous operation:

1. Press the **P** key.
2. Press the **F2** **Diagnostics** key.
3. Press the **F3** **Clamp transport** key.
4. Press the **F2** **Clamp motor permanent test** key.
5. Confirm the safety prompt.
6. Press the **ENT** key.
7. The clamp motor runs in continuous operation.



To **exit** continuous operation:

1. Press the **STOP** key.

8.4.13 Checking the thread trimmer

By entering the three-digit value, you can specify when the thread cutter will be activated.

The input must be checked for a machine cycle and corrected if required.



To check the thread trimmer:

1. Press the **P** key.
2. Press the **F2** **Diagnostics** key.
3. Press the **F2** **Sewing motor** key.
4. Press the **F2** **Thread trimmer** key.
5. To start or stop the machine cycle, press the **0** key.

8.5 Service menu

The service functions of the service menu are called up via direct access from the start level or from level 1.

Service functions support the working process during production at the machine.

8.5.1 Overview of the functions on the start level

Fig. 30: Overview of the functions on the start level



Function key	Description	Reference
F1	Call up service menu level 1	p. 52
F2	Insertion distance length, photocell correction at seam beginning	p. 53
F3	Photocell correction for seam end, seam length and fixed seam end point	p. 53
F4	Remove the sewing material at the stacker	p. 54
F5	Drive assistance transport to service position	p. 54
F6	Actuate thread clamp manually	p. 55
F7	Check cutters manually	p. 55
F8	Initialize loading process	p. 56

8.5.2 Calling up level 1



To call up level 1 of the service menu:

1. Press the key.

8.5.3 Submenu *Insertion distance length, photocell correction at seam beginning*

The settings made in this menu refer to each selected seam and are in close relation to the settings made for the seam end (📖 p. 53).



To set the length of the insertion distance and the photocell correction for the seam beginning:

1. Press the **F2** key.
↪ The cursor marks the value that can be changed.
2. To change the value, press the **←** or **→** arrow key.

OR

3. To input a new value, enter the desired number combination on the numeric keypad.
4. To confirm your input and exit the menu, press the **P** key.

8.5.4 Submenu *Photocell correction for seam end, seam length and fixed seam end point*

The settings made in this menu refer to each selected seam and are in close relation to the settings made for the seam beginning (📖 p. 53).



To set the photocell correction for the seam end, seam length and fixed seam end point:

1. Press the **F3** key.
↪ The cursor marks the value that can be changed.
2. To change the value, press the **←** or **→** arrow key.

OR

3. To input a new value, enter the desired number combination on the numeric keypad.
4. To confirm your input and exit the menu, press the **P** key.



Important

The settings must be checked using a sewing piece and corrected if required.

Seam	Description
Seam 1	Seam beginning and seam end are determined by the scan points of the photocell. The setting refers to the seam length to be fixed. The higher the input value, the longer the seam.
Seam 2	The seam beginning is determined by the scan point of the photocell. The seam end is determined by a fixed seam length. The setting refers to the seam length to be fixed. The higher the input value, the longer the seam.
Seam 3	The seam beginning is determined by a fixed insertion distance. The seam end is determined by the scan point of the photocell. The setting refers to the correction of the photocell made for the seam end. The higher the input value, the later the cancellation of the sewing process.
Seam 4	The seam beginning is determined by a fixed insertion distance. The seam end is determined by a fixed seam length. The setting refers to the seam length to be fixed. The higher the input value, the longer the seam.
Seam 5	Seam beginning and seam end are determined by the scan points of the photocell. The setting refers to a correction of the photocell made for the seam end. The higher the input value, the later the cancellation of the sewing process.

8.5.5 Removing the sewing material at the stacker

The lifting table of the stacker can be lowered to remove the sewing material.



To lower the lifting table and to raise it again:

1. Press the **F4** key.

8.5.6 Driving the assistance transport to the service position

To create sufficient space for work steps on the sewing head, the assistance transport can be driven to the outer service position.



To drive the assistance transport to the outer service position and return it to its initial position:

1. Press the **F5** key.

8.5.7 Actuating the thread clamp manually

After the needle thread has been passed through the needle, the thread clamp is actuated manually to protect the needle thread from being pulled out of the needle when the machine cycle starts.



To actuate the thread clamp manually:

1. Press the **F6** key.

8.5.8 Checking the cutters manually

The sharpness and function of the cutters can be checked individually.



To call up the *Cutter test* menu:

1. Press the **F7** key.
- ↳ The display shows the submenu:

Fig. 31: Checking the cutters manually



To check the cutter for the **left trouser component**:

1. Press the **F4** key.
- ↳ The cutter performs a cutting movement.



To check the cutter for the **right trouser component**:

1. Press the **F5** key.
- ↳ The cutter performs a cutting movement.



To check the cutter for the **left fly piece/right side pocket**:

1. Press the **F6** key.
- ↳ The cutter performs a cutting movement.



To check the cutters for the **right fly piece/left side pocket**:

1. Press the **F7** key.
- ↳ The cutter performs a cutting movement.



To wind the bobbin thread:

1. Press the **F8** key.
2. Confirm the status message.

If the message *BOBBIN EMPTY* appears:



1. Insert a full bobbin.
2. Press the **ENT** key.

If the display shows the message *BOBBIN: 004 M* when a full bobbin is inserted:



1. Press the **F7** key.
2. Press the **F8** key.



Information

If the bobbin is empty and the display does not show a status message, the photocell sensitivity must be adjusted (p. 33).

8.5.9 Initializing the loading process

This function depends on the mode of the machine cycle. It refers only to machine movements that can be performed before the automatic cycle.



To initialize the loading process:

1. Press the **F8** key.
- The machine movements will be reset to the initial position.

8.5.10 Winding the bobbin thread manually



Important

To prevent needle thread and hook thread from becoming entangled, the needle thread must be removed up to the thread lever.



To wind the bobbin thread manually:

1. Press the **F1** key.
2. Press the **F7** key.
3. Press any key to finish.

8.5.11 Selecting machine control inputs / outputs

This menu is used for troubleshooting and for a manual testing of machine cycle settings.

The outputs (OUT) can be selected and tested separately.
The corresponding inputs (INP) are displayed for an active output.
Additionally, the selected output can be switched intermittently.

Activated inputs/outputs are marked with highlighted numbers:

Fig. 32: Selecting machine control inputs / outputs

01	02	03	04	05	06	07	08	09	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60



Important

If an output is activated, the machine performs the corresponding function.
Before activating the outputs, remove all unnecessary objects within the operating range of the machine.



To activate an output:

1. Press the  key.
2. Press the  key.
3. Press key  or .
4. Press key  or .
5. Press the  key.
 - ↳ The function number is highlighted in black.
The output is active.



To deactivate the output:

1. Press the  key.



To switch the output to intermittent operation:

1. Mark the function number.
2. Hold down the  key for approx. 3 seconds.
 - ↳ The function number is highlighted in black and flashes.
The output is active intermittently.



To deactivate intermittent operation:

1. Press the  key.
- ↪ The function number is highlighted in black.
The output is active.



To deactivate the output:

1. Press the  key.

List of outputs

Valve	Output number		Cylinder number	Signal output	Valve type
Y01	01	Open/close clamp	01	X07 Pin02	5/2 way
Y02	02	Move clamp in / out sideways	02	X07 Pin03	5/2 way
Y03	03	Swing folder left / right	03	X11 Pin20	5/2 way
Y04	04	Rotate folder	04	X11 Pin21	5/2 way
Y05	05	Open / close folder clamp	05	X11 Pin22	5/2 way
Y06	06	Open / close sliding table	06	X11 Pin26	5/2 way
Y07	07	Lifting table up	07	X11 Pin27	5/3 way
Y08	08	Stacker stamp up / down	08	X11 Pin23	5/2 way
Y09	09	Open / close pocket bag clamp	09	X07 Pin10	5/2 way
Y10	10	Thread clamp forward / backward	10	X07 Pin06	5/2 way
Y11	10	Blow thread in (synchronous with Y10)		X07 Pin06	3/2 way
Y12	12	Right front trouser component cutter	12	X07 Pin11	5/2 way
Y13	13	Zipper fly cutter	13	X07 Pin16	5/2 way
Y14	14	Left front trouser component cutter	14	X07 Pin12	5/2 way
Y15	15	Vacuum off/on	15	X07 Pin01	3/2 way
Y16	16	Open/close zipper fly clamp	16	X07 Pin14	5/2 way
Y17	17	Open / close label feed clamp	17	X07 Pin08	5/2 way
Y18	18	Label feed up / down	18	X07 Pin09	5/2 way
Y22	22	Assistance transport stamp	22	X11 Pin31	5/2 way

Valve	Output number		Cylinder number	Signal output	Valve type
Y25	25	Swivel right fly piece stop in/out	25	X07 Pin15	5/2 way
Y27	27	Cutter side pocket	27	X11 Pin17	5/2 way
Y31	31	Thread trimmer	31	X07 Pin05	3/2 way
Y33	08	Blowing at stacker transport (synchronous with Y08)		X11 Pin23	3/2 way
Y34	34	Folder up	34	X11 Pin18	3/2 way
Y35	35	Folder down	34	X11 Pin 19	3/2 way
Y36	36	Thread tension lift	36	X07 Pin04	3/2 way
Y37	37	Stacker transport rear	37	X11 Pin24	3/2 way
Y38	38	Stacker transport front	38	X11 Pin25	3/2 way
Y45	01	Blowing at clamp (synchronous with Y01)		X07 Pin02	3/2 way
Y46	46	Zipper fly blowing	46	X07 Pin13	3/2 way
Y47	47	Parts blowing	47	X07 Pin07	3/2 way
Y48	48	Lifting table down	48	X11 Pin28	5/3 way

List of inputs

Switch	Input number		Switch type	Version	Signal input
S01	01	Start switch	Foot button	Make	X09 Pin01
S02	02	Foot button zipper fly clamp	Foot button	Make	X09 Pin02
S04	04	Clamp reference point	Initiator NPN	Break	X09 Pin04
S07	07	Folder at right stop	Initiator NPN	Make	X09 Pin07
S08	08	Folder at left stop	Initiator NPN	Make	X09 Pin08
S09	09	Assistance transport basing point	Initiator NPN	Make	X09 Pin09
S10	10	Stacker transport stop position	Initiator NPN	Make	X09 Pin10
S17	17	Label feed on / off	Foot button	Make	X13 Pin17
S21	21	Photocell seam beginning / seam end	Photocell NPN		X13 Pin21

Switch	Input number		Switch type	Version	Signal input
S22	22	Photocell stacking height	Photocell NPN		X13 Pin22
S23	23	Needle thread monitor	Touch probe		Plug X2
S25	25	Remaining thread monitor	Photocell NPN		X13 Pin25

Terminal assignment for S23 (needle thread monitor, plug X2)

- yellow: 1
- green: 2
- white:3
- brown: 4

8.6 Global parameters

The following global parameters can be programmed:

No.	Parameter	Value	Unit
01	Till clamp sideways fwd <i>Scan and part pickup after clamp movement forward</i>	0.3	s
02	Till clamp down <i>Lower clamp after clamp movement forward for part pickup</i>	0.1	s
03	Till vacuum off <i>Switch vacuum off after clamp down</i>	0.2	s
04	Thrd length, bobbin full	003	m
05	Till clamp inserting <i>Clamp insertion delay</i>	0.2	s
06	Sewing end -> Cl. sideways <i>Clamp movement sideways to the rear after sewing is completed</i>	0.1	s
07	Time after clamp open <i>Clamp movement right to programmed position after clamp up</i>	0.1	s
10	Till folding cl. closed <i>After folder right and down, time until folding clamp closes</i>	0.5	s
11	Till folder lift up <i>After folding clamp closes, time until folder up</i>	0.2	s
12	Till folder swings left <i>After folder up, time until folder swings left and rotates</i>	0.2	s

No.	Parameter	Value	Unit
13	Impulse folder down <i>Pulse duration folder down, time until folder is switched airless during pick-up</i>	0.05	s
14	Cl. open till folder up <i>After folding clamp opens, time until folder up</i>	0.2	s
17	Till tension open <i>After seam end, time until tension lift on</i>	0.0	s
18	Duration of tens. open <i>Duty cycle of tension opening</i>	0.4	s
19	Till thread clamp forward <i>After clamp up, time until thread clamp forward</i>	0.2	s
20	Dur. thread clamp forward <i>Duration of blowing and thread clamp forward</i>	0.5	s
21	Till stacker transport <i>After sewing motor stops and transport stamp down, time until stacker transport moves backward to ES8</i>	0.0	s
22	Dur. sliding table open <i>Duration for sliding table open</i>	0.0	s
23	Lift. Table mod 00/01-99 <i>Lower lifting table</i> <ul style="list-style-type: none"> • <i>Input 00: Lower lifting table via photocell</i> • <i>Input 01-99: Lifting table is lowered after corresponding number of pieces</i> 	0.0	
24	Dur. lifting table sinks	0.0	s
25	Till fabric clamp forward <i>After pedal is released, time until pocket bag clamp closes</i>	0.0	s
26	Till scissors closed <i>Time until cutter pinches the trouser component</i>	0.0	s
27	Duration scissor cuts <i>Cutting duration of the cutter</i>	0.0	s
28	Till fabric clamp opens <i>Time during which the fabric clamp is closed</i>	0.0	s
29	Till swing retainer down <i>Lower swing retainer after seem has been sewn</i>	0.0	s
30	Till retainer swings <i>Swing retainer after retainer has been lowered</i>	0.0	s
31	Dur. of pulling retainer <i>Time during which the retainer pulls</i>	0.0	s
33	Clamp moves to stacker <i>Time until moving begins</i>	0.0	s
34	Stacker stamp open <i>Distance over which the stamps will feed the sewing material</i>	0.0	cm

No.	Parameter	Value	Unit
35	Thread lever in top position	200	INC
36	Switch-on position for thread cutting	100	INC
37	Cutting speed	180	rpm
38	Duration of trimming <i>Duty cycle for thread cutting</i>	0.35	s
39	Turn Back <i>Thread lever reversing angle</i>	00	INC
40	Process in steps	00	

8.7 Special parameters

Special parameters are values that refer to only one specific seam program. Changes of these values affect only the current seam program.

Special parameters can be functions that may be enabled or disabled or parameter values that are set in lists.

For a list of the factory-set special parameters, refer to the **Appendix** (📖 p. 95).

Special parameters that can be programmed in lists

No.	Parameter
01	Clamp position right <i>Clamp position right during piece transfer</i>
02	Folder swing release <i>Swing folder.</i> <i>Input of distance in mm after which folder swings right after beginning of insertion.</i> <i>Default: 120 mm</i>
03	Insertion speed <i>Clamp insertion speed</i>
04	Clamp speed <i>Clamp transport speed</i>
05	Waiting position <i>Waiting position of clamp behind seam end</i>
06	Sewing speed 1 <i>Sewing speed at seam beginning</i>
07	Sewing speed 2 <i>Sewing speed in main seam</i>
08	Sewing speed 3 <i>Sewing speed at seam end</i>

No.	Parameter
09	Distance sewing speed 1 <i>Distance for slow sewing (sewing speed 1)</i>
10	Distance sewing speed 3 <i>Distance for slow sewing at seam end (sewing speed 3)</i>
12	Thread monitor on after <i>Needle thread monitor on (distance in mm after sewing has started)</i>
13	Needle thread monitor filter <i>Filter for needle thread monitor (response delay)</i>
14	Remaining thread monitor filter <i>Filter for hook thread monitor (response delay)</i>
16	Start bartack length

8.7.1 Calling up the *Special Parameters* menu



To call up the *Special Parameters* menu:

1. Press the **F1** key on the start level.
2. Press the **F3** key.

↳ The *Special Parameters* menu is called up.



To exit the menu:

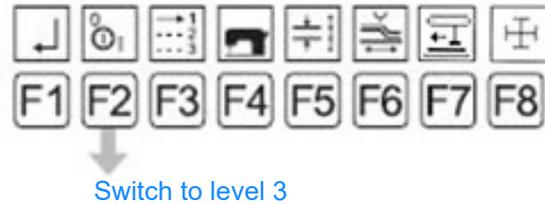
1. Press the **P** key.

8.7.2 Functions on level 2

Functions can be enabled or disabled for a selected seam program. This process covers the levels 3, 4 and 5.

Enabled functions are shown as icons on the display, disabled functions are hidden on the display.

Fig. 33: Functions on level 2



Function key	Menu
F1	Back to start level
F2	Call up level 3
F3	Select <i>Start modes</i> list
F4	Call up <i>Machine head parameters</i>
F5	Call up <i>Stitch lengths and bar tacks</i> list
F6	Call up <i>Clamp transport</i> list
F7	Call up <i>Assistance transport</i> list
F8	Switch marking lamps on and off



To call up the special parameters level 2:

1. Press the **F1** key on the start level.
↪ The Service menu opens.
2. Press the **F3** key in the Service menu.
↪ The special parameters level 2 opens.

Selecting the Start modes list

You can set two modes in this menu: **Start mode** and **Blowing mode**.



To call up the mode:

1. Press the **F3** key.



To change the **Parameter**:

1. Press the **ENT** key.
2. Use the numeric keypad to enter the desired value.

OR

3. Select the desired value using the keys **←** and **→**.
4. To confirm your input, press the **P** key.

Values that can be set in Start mode and Blowing mode

Start mode The selected start mode determines how the machine cycle is started and executed ( <i>Operating Instructions</i>)	Blowing mode The blowing mode is used to smooth the sewing material for transport by the stacker after it has been sewn
Mode 01	00: off
Mode 02	01: on, only parts blowing
Mode 03	02: fly blowing
Mode 04	03: on, parts blowing and fly blowing
Mode 05	
Mode 06	
Mode 07	

Setting the machine head parameters

This list is used to set all parameters for the functions of the sewing head.

The minimum and maximum input values are limited by the program control. Values that are not within the limits will not be accepted, but reduced to the corresponding minimum or maximum value.



To set the machine head parameters:

1. Press the **F4** key.

↳ The parameter list is shown on the display.



Information

The possible settings for the sewing speed refer to the following sewing ranges:

- Sewing speed 1: Seam beginning
- Sewing speed 2: Seam center
- Sewing speed 3: Seam end

Setting stitch lengths and bar tacks

All settings for the configuration of the seam can be changed using this list.

The minimum and maximum input values are limited by the program control. Values that are not within the limits will not be accepted, but reduced to the corresponding minimum or maximum value.



To set the stitch lengths and bar tacks:

1. Press the **F5** key.

↳ The parameter list is shown on the display.

Adjusting the clamp transport

This list is used to adjust all settings for the clamp movement.



To adjust the clamp transport:

1. Press the **F6** key.

↳ The parameter list is shown on the display.

Parameter	Description
01	Clamp insertion as seen from the right end of the rail
02	Stop position 600 mm is a safety value. Only values higher than 600 mm can be input.
03	Setting range: 35% - 80%
04	Setting range: 35% - 99%
05	Range of the curve where no sewing is performed. If the value 0 is input here, the sewing process starts immediately.

Adjusting the assistance transport

This list is used to adjust all settings for the assistance transport.



To adjust the assistance transport:

1. Press the **F7** key.

↳ The parameter list is shown on the display.

Parameter	Description
37	Distance over which the feed of the sewing material by the assistance transport will be synchronous with the main clamp 00 cm = switched off
38	Synchronization from assistance transport to main clamp Setting range: 75% - 125%

8.7.3 Functions on level 3

Fig. 34: Functions on level 3



Function key	Menu
F1	Back to level 2
F2	Switch photocell for seam beginning on or off
F3	Switch photocell for seam end on or off
F4	Switch folder on or off
F5/F6	Switch sliding table on or off
F8	Call up level 4



To call up the special parameters level 3:

1. Press the **F1** key on the start level.
 ↪ The Service menu opens.
2. Press the **F3** key in the Service menu.
 ↪ The special parameters level 2 opens.
3. Press the **F2** key on special parameters level 2.
 ↪ The special parameters level 3 opens.

Switching the photocell for the seam beginning on or off

If the photocell that scans the initial position of the seam is switched off, the machine control requires a fixed insertion distance for the machine cycle.

Switching off the photocell results in a switch-over to a fixed insertion length. This function is directly related to the *Photocell correction* functions of the Service menu (📖 p. 53).



To switch the photocell for the seam beginning on or off:

1. Press the **F2** key.
- ↪ The alternating request of this function switches between the modes *photocell for seam beginning* and *fixed insertion distance*.

Switching the photocell for the seam end on or off

If the photocell that scans the end position of the seam is switched off, the machine control requires a fixed point for the seam end for the machine cycle.

Switching off the photocell results in a switch-over to a fixed seam end point. This function is directly related to the *Photocell correction* functions of the Service menu (📖 p. 53).



To switch the photocell for the seam end on or off:

1. Press the **F3** key.
- ↪ The alternating request of this function switches between the modes *photocell for seam end* and *fixed seam end point/fixed seam length*.

Switching the folder on or off

The folder places the pocket facing onto the pocket bag or the left fly piece onto the left trouser component.

If this function is disabled, the pocket facing and the fly piece must be manually placed onto the pocket bag and the left trouser component, respectively.



To switch the folder on or off:

1. Press the **F4** key.

Switching the sliding table on or off

If this function is disabled, the pocket facing will not be stacked at the seam end.



To switch the sliding table on or off:

1. Press the **F5** key.

8.7.4 Functions on level 4

Fig. 35: Functions on level 4



Switch to level 5

Function key	Menu
F1	Back to level 3
F2	Switch vacuum on or off
F3	Switch automatic label feed system on or off
F4	Switch cutter <i>left trouser component</i> on or off
F5	Switch cutter <i>right trouser component</i> on or off
F6	Switch cutter <i>left fly piece</i> on or off
F7	Sew to fixed seam end position
F8	Call up level 5



To call up the special parameters level 4:

1. Press the **F1** key on the start level.
↪ The Service menu opens.
2. Press the **F3** key in the Service menu.
↪ The special parameters level 2 opens.
3. Press the **F2** key on special parameters level 2.
↪ The special parameters level 3 opens.
4. Press the **F8** key on special parameters level 3.
↪ The special parameters level 4 opens.

Switching the vacuum on or off

The vacuum is used as a fixing aid for the left or right trouser component before the clamp transport transfer.

The vacuum can be disabled during the checking of machine movements.



Important

During normal production operation, the vacuum should always be enabled as failures in the machine cycle may otherwise occur.



To switch the vacuum on or off:

1. Press the **F2** key.

Switching the automatic label feed system on or off

Folded labels can only be sewn with the automatic label feed system.

Plain labels can be placed onto the pocket facing manually when the automatic label feed system is switched off.



To switch the automatic label feed system on or off:

1. Press the **F3** key.

Switching the cutters on or off

Sewing programs have been programmed at the factory with an individual cutter cut.

For specific seams, this function can be enabled or disabled separately.



To switch the cutter *left trouser component* on or off:

1. Press the **F4** key.



To switch the cutter *right trouser component* on or off:

1. Press the **F5** key.



To switch the cutter left fly piece on or off:

1. Press the **F6** key.

Sewing to a fixed seam end position

If this function is enabled, a fixed position can be programmed for stitching down the fly pieces.



To activate the function *Sew to fixed seam end position*:

1. Press the **F7** key.

8.7.5 Functions on level 5

Fig. 36: Functions on level 5



Function key	Menu
F1	Back to level 4
F2	Transport stamp
F3	Switch needle thread monitor on or off
F4	<i>not active</i>
F5	Switch remaining thread monitor on or off
F6	Clamp position after seam end
F7	Clamp waiting position
F8	Cutter <i>left side pocket</i>



To call up the special parameters level 5:

1. Press the **F1** key on the start level.
↳ The Service menu opens.
2. Press the **F3** key in the Service menu.
↳ The special parameters level 2 opens.
3. Press the **F2** key on special parameters level 2.
↳ The special parameters level 3 opens.
4. Press the **F8** key on special parameters level 3.
↳ The special parameters level 4 opens.
5. Press the **F8** key on special parameters level 4.
↳ The special parameters level 5 opens.

Switching the needle thread monitor on or off

For testing purposes, the needle thread monitor can be switched off.



Important

During normal production, the needle thread monitor should always be switched on as the sewing program will otherwise not be stopped if the thread breaks.



To switch the needle thread monitor on or off:

1. Press the **F3** key.

Switching the remaining thread monitor on or off

For testing purposes, the remaining thread monitor can be switched off.



Important

During normal production, the remaining thread monitor should always be switched on as the sewing program will otherwise not be stopped if the thread breaks.



To switch the remaining thread monitor on or off:

1. Press the **F5** key.

Switching the clamp position after the seam end on or off

If this function is enabled, the clamp moves to the clamp transport end point behind the seam end before releasing the sewing piece.



To switch the function *Clamp position after seam end* on or off:

1. Press the **F6** key.

Moving the clamp to the waiting position

If this function is enabled, the clamp moves to the waiting position after the seam end.



To activate the function *Move clamp to waiting position*:

1. Press the **F7** key.

Cutter left side pocket

To activate the cutter left side pocket:



1. Press the **F8** key.

9 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.

Maintenance intervals

Work to be carried out	Operating hours			
	8	40	160	500
Cleaning				
Cleaning the machine head	●			
Lubricating				
Lubricating the clamp rail	●			
Servicing the pneumatic system				
Adjusting the operating pressure	●			
Draining the water-oil mixture	●			
Cleaning the filter element		●		

9.1 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!

Sewing dust and thread residues can impair the operation of the machine.

Clean the machine as described.

NOTICE

Property damage from solvent-based cleaners!

Solvent-based cleaners will damage paintwork.

Use only solvent-free substances for cleaning.



To clean the machine:

1. Switch off the machine.
2. Remove fabric residues.
3. Using a compressed air gun, blow off dust and thread residues at the sewing head, at the working plate, at the main clamp and at the linear rail.
4. Wipe machine parts dry using a dry, clean cloth.

9.2 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.

Lubricating the clamp rail



To lubricate the clamp rail:

1. Switch off the machine.
2. Wipe off the clamp rail using a clean, oil-saturated cloth.

9.3 Servicing the pneumatic system

9.3.1 Adjusting the operating pressure

NOTICE

Property damage from incorrect adjustment!

Incorrect operating pressure can result in damage to the machine.

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

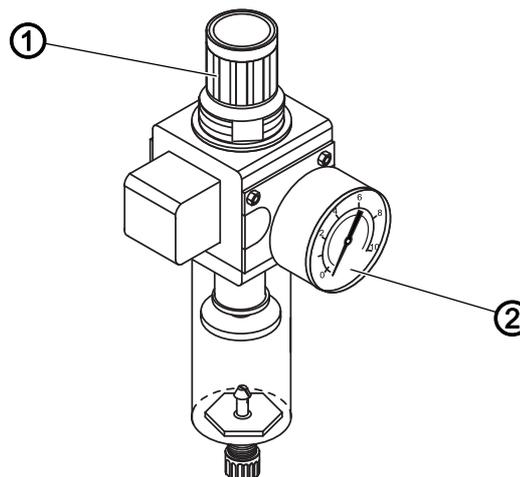


Proper setting

Refer to the **Technical Data** (📖 p. 93) 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. 37: Adjusting the operating pressure



(1) - Pressure regulator

(2) - Pressure gage



To adjust the operating pressure:

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

9.3.2 Draining the water-oil mixture

NOTICE

Property damage from excess liquid!

Too much liquid can result in damage to the machine.

Drain liquid as required.

The collection tray (2) of the pressure regulator will show accumulation of a water-oil mixture.

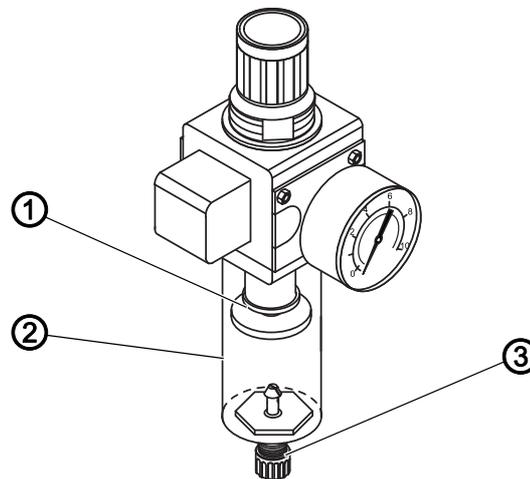


Proper setting

The water-oil mixture must not rise up to the level of the filter element (1).

Check the level of the water-oil mixture in the collection tray (2).

Fig. 38: Draining the water-oil mixture



(1) - Filter element
(2) - Collection tray

(3) - Drain screw



To drain the water-oil mixture:

1. Disconnect the machine from the compressed air supply.
2. Place the vessel under the drain screw (3).
3. Loosen the drain screw (3) completely.
4. Allow the water-oil mixture to drain into the vessel.
5. Tighten the drain screw (3).
6. Connect the machine to the compressed air supply.

9.3.3 Cleaning the filter element

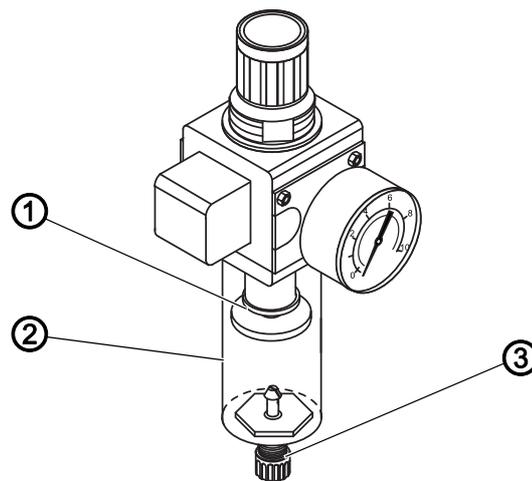
NOTICE

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. 39: Cleaning the filter element



(1) - Filter element
(2) - Collection tray

(3) - Drain screw



To clean the filter element:

1. Disconnect the machine from the compressed air supply.
2. Drain the water-oil mixture (📖 p. 79).
3. Unscrew the collection tray (2).
4. Unscrew the filter element (1).
5. Blow out the filter element (1) using the compressed air gun.
6. Wash out the filter tray using benzine.
7. Tighten the filter element (1).
8. Tighten the collection tray (2).
9. Tighten the drain screw (3).
10. Connect the machine to the compressed air supply.

9.4 Parts list

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

www.duerkopp-adler.com



10 Decommissioning

WARNING



Risk of injury from a lack of care!

Serious injuries may occur.

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

CAUTION



Risk of injury from contact with oil!

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

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



To decommission the machine:

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

11 Disposal

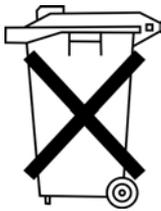
CAUTION



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.

12 Troubleshooting

12.1 Customer Service

Contact for repairs and issues with the machine:

Dürkopp Adler AG

Potsdamer Str. 190
33719 Bielefeld, Germany

Tel. +49 (0) 180 5 383 756

Fax +49 (0) 521 925 2594

Email: service@duerkopp-adler.com

Internet: www.duerkopp-adler.com



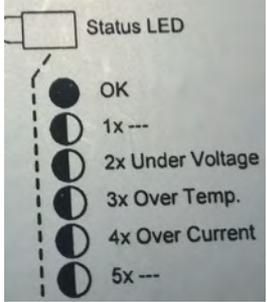
12.2 Messages of the software

Please contact customer service if an error occurs that is not described here. Do not attempt to correct the error yourself.

Code	Meaning	Remedial action
Error 01 Seam program empty	Current seam program empty; possibly, distances and routes have not been input or the entire program was erased	Insert program values manually, copy from other program or retrieve from ROM (parameter INIT)
Error 02 Seam not enabled	Current seam program not activated; number appears black on white	Press <ENT> key to activate program
Error 05 I/O communication error	Error transmitted between control unit and I/O module	Check connecting cable; if not OK, replace control unit and/or I/O module
Error 06 Step pulses not valid	Clamp slide not positioned correctly	Check sensor connection to clamp motor; check connecting cable between adapter board 9020020 and I/O module 9020013; replace adapter board 9020020

Code	Meaning	Remedial action
Error 07 No step pulses from clamp motor	No step pulses from clamp motor. If the clamp motor moved slightly, the step pulses could not be processed properly. If the motor did not move, problem may be caused by control unit or clamp motor power unit	Check connection to clamp motor; replace clamp motor; replace adapter board 9020020; check condition of LEDs at power board (Berger); if required, check Berger motor; check connection to clamp motor (plug); check connection between 9020020 and power unit (plug); replace adapter board 9020020
Error 08 Main clamp at stop	Limit switch ES04 switched during clamp movement even though clamp should have been distant still	Check distance counter using test program (steps); if counter is faulty, replace clamp motor or adapter board 9020020; if counter is OK, check switch 04
Error 09 Clamp can not leave the switch	Clamp slide moves to limit switch during initialization but does not return (direction not reversed)	Using test program <i>Clamp motor actuation</i> , enter slow speed and reverse direction using arrow keys; if motor does not reverse direction, check: connection between 9020020 and power unit (plug); Berger power unit; if motor reverses direction, check limit switch ES04
Error 13 Clamp position error	Excessive difference between nominal position (stepper motor default) and actual position (pulse from setpoint device) of clamp slide; clamp slide probably blocked	remove blocked component; check clamp slide for easy movement: Check motor pinion (may be loose on shaft); tension transport belt
Error 14 Insertion/sewing length error	Seam length exceeds maximum possible seam distance; excessive insertion distance	Program seam distance / insertion distance correctly
Error 16 Folder not left	ES08 (folder at left stop) does not switch or switches too late	Check ES08 (input); check mechanical components for easy movement

Code	Meaning	Remedial action
Error 29 No pulses from sewing motor	No pulses from sewing motor after sewing process starts (sewing motor does not run)	Check sewing motor and synchronization; check connection between I/O module 9020013 and sewing motor; read both upper LEDs at 9020013; left LED illuminates briefly when needle up; right LED shows synchronization pulses (512 pulses/rotation); if no LED illuminates when handwheel is actuated, check sewing motor power supply and replace sewing motor, if required. If LEDs are OK and motor does not run before error message, check connection between 9020020 and sewing motor, replace 9020020 or sewing motor, if required; if motor makes some stitches before error message, check connection between control unit and I/O module; replace components as required
Error 30 Sewing motor too fast	During thread cutting, sewing motor did not reach cutting speed within error period	Replace sewing motor or synchronizer
Error 32 Thread cutting position does not come	During thread cutting, sewing motor did not reach the cutting position	Input slower cutting speed and earlier cutting position; replace sewing motor or synchronizer
Error 33 Sewing motor does not stop	After thread cutting, sewing motor does not stop within error period	Input slower cutting speed and earlier cutting position; replace sewing motor or synchronizer
Error 35 Thread breaking	Thread monitor detects thread breaking	
Error 37 Bobbin thread only rest	The photocell at the bobbin capsule is illuminated; bobbin empty	If bobbin is not empty, the photocell is set too sensitive and needs to be adjusted
Error 41 No part	Photocell FZ21 remains illuminated during insertion	Adjust photocell sensitivity; input test 21
Error 42 Photocell not lighted	Photocell FZ21 does not detect seam end	Seam distance too long; adjust photocell sensitivity; input test 21

Code	Meaning	Remedial action
Error 43 Photocell lighted too early	Photocell FZ21 detects intermittent reflection during insertion	Adjust photocell sensitivity; input test 21
Errors 45 - 48 I/O DAC, ULN, 485, RES	Internal hardware error during data transmission to adapter board 9020020	Replace 9020020
Error 56	Error in 3-phase stepper motor-Power amplifier D900	 <p>Status LED</p> <ul style="list-style-type: none"> ● OK ◐ 1x --- ◑ 2x Under Voltage ◒ 3x Over Temp. ◓ 4x Over Current ◔ 5x ---

12.3 Errors in sewing process

Error	Possible causes	Remedial action
Unthreading at seam beginning	Needle thread tension is too firm	Check needle thread tension
Thread breaking	Needle thread and hook thread have not been threaded correctly	Check threading path
	Needle is bent or sharp-edged	Replace needle
	Needle is not inserted correctly into the needle bar	Insert the needle correctly into the needle bar
	The thread used is unsuitable	Use recommended thread
	Thread tensions are too tight for the thread used	Check thread tensions
	Thread-guiding parts, such as thread tube, thread guide or thread take-up disk, are sharp-edged	Check threading path
	Throat plate, hook or spread have been damaged by the needle	Have parts reworked by qualified specialists
Skip stitches	Needle thread and hook thread have not been threaded correctly	Check threading path
	Needle is blunt or bent	Replace needle
	Needle is not inserted correctly into the needle bar	Insert the needle correctly into the needle bar
	The needle thickness used is unsuitable	Use recommended needle thickness
	The reel stand is assembled incorrectly	Check the assembly of the reel stand
	Thread tensions are too tight	Check thread tensions
	Throat plate, hook or spread have been damaged by the needle	Have parts reworked by qualified specialists

Error	Possible causes	Remedial action
Loose stitches	Thread tensions are not adjusted to the sewing material, the sewing material thickness or the thread used	Check thread tensions
	Needle thread and hook thread have not been threaded correctly	Check threading path
Needle breakage	Needle thickness is unsuitable for the sewing material or the thread	Use recommended needle thickness

13 Technical data

13.1 Data and characteristic values

Technical data	Unit	2112-5
Type of stitches		201
Hook type		Horizontal hook, small
Number of needles		1
Needle system		134 SERV 7 or 797
Needle strength	[Nm]	80 - 120
Thread strength	[Nm]	Max. 30/3
Stitch length	[mm]	1 - 6.5
Speed maximum	[min ⁻¹]	5000
Speed on delivery	[min ⁻¹]	4200
Max. folding length	[mm]	320
Max. sewing length	[mm]	350
Mains voltage	[V]	190 - 230
Mains frequency	[Hz]	50/60
Operating pressure	[bar]	6
Length	[mm]	1750
Width	[mm]	1450
Height	[mm]	1700
Weight	[kg]	265

13.2 Requirements for fault-free operation

Compressed air quality must conform to ISO 8573-1: 2010 [7:4:4].

14 Appendix

Factory settings special parameters

No.	Parameter	Value	Unit
Seam 01 - left fly piece			
01	Clamp position right	030	mm
02	Folder swing release	370	mm
03	Insertion speed	60	%
04	Clamp speed	99	%
05	Waiting position	43	cm
06	Sewing speed 1	1200	rpm
07	Sewing speed 2	4200	rpm
08	Sewing speed 3	1200	rpm
09	Distance sewing speed 1	10	mm
10	Distance sewing speed 3	15	mm
12	Thread monitor on after	05	mm
13	Needle thread monitor filter	20	mm
14	Bobbin monitor filter	00	
16	Start bartack length	08	mm
17	End bartack length	00	mm
18	Stitch length seam beginning	1.5	mm
19	Distance of stitch length	08	mm
24	Stitch length main seam	3.0	mm
25	Stitch length seam end	1.5	mm
26	Distance of stitch length	08	mm
27	Stitch length trimming stitch	1.5	mm
28	Choice of trimming stitch	00	
30	Start mode/insert	05	
31	Clamp/curve code	00	
32	Blowing mode	03	
33	Push retainer mode	00	
34	Swing retainer mode	00	
37	Assist. transport/distance	45	cm
38	Assist. transport/synchron.	120	%

No.	Parameter	Value	Unit
Seam 02 - right fly piece			
01	Clamp position right	030	mm
02	Folder swing release	370	mm
03	Insertion speed	60	%
04	Clamp speed	99	%
05	Waiting position	43	cm
06	Sewing speed 1	1200	rpm
07	Sewing speed 2	4200	rpm
08	Sewing speed 3	1200	rpm
09	Distance sewing speed 1	10	mm
10	Distance sewing speed 3	15	mm
12	Thread monitor on after	05	mm
13	Needle thread monitor filter	20	mm
14	Bobbin monitor filter	00	
16	Start bartack length	00	mm
17	End bartack length	08	mm
18	Stitch length seam beginning	1.5	mm
19	Distance of stitch length	08	mm
24	Stitch length main seam	3.0	mm
25	Stitch length seam end	1.5	mm
26	Distance of stitch length	08	mm
27	Stitch length trimming stitch	1.5	mm
28	Choice of trimming stitch	00	
30	Start mode/insert	07	
31	Clamp/curve code	00	
32	Blowing mode	01	
33	Push retainer mode	00	
34	Swing retainer mode	00	
37	Assist. transport/distance	00	cm
38	Assist. transport/synchron.	120	%
Seam 11 - right side pocket			
01	Clamp position right	030	mm
02	Folder swing release	370	mm
03	Insertion speed	60	%

No.	Parameter	Value	Unit
04	Clamp speed	99	%
05	Waiting position	43	cm
06	Sewing speed 1	1200	rpm
07	Sewing speed 2	4200	rpm
08	Sewing speed 3	1200	rpm
09	Distance sewing speed 1	10	mm
10	Distance sewing speed 3	10	mm
12	Thread monitor on after	05	mm
13	Needle thread monitor filter	20	mm
14	Bobbin monitor filter	00	
16	Start bartack length	10	mm
17	End bartack length	00	mm
18	Stitch length seam beginning	1.5	mm
19	Distance of stitch length	08	mm
24	Stitch length main seam	3.0	mm
25	Stitch length seam end	1.5	mm
26	Distance of stitch length	08	mm
27	Stitch length trimming stitch	1.5	mm
28	Choice of trimming stitch	00	
30	Start mode/insert	05	
31	Clamp/curve code	00	
32	Blowing mode	03	
33	Push retainer mode	00	
34	Swing retainer mode	00	
37	Assist. transport/distance	45	cm
38	Assist. transport/synchron.	120	%
Seam 12 - left side pocket			
01	Clamp position right	030	mm
02	Folder swing release	370	mm
03	Insertion speed	60	%
04	Clamp speed	99	%
05	Waiting position	43	cm
06	Sewing speed 1	1200	rpm
07	Sewing speed 2	4200	rpm

No.	Parameter	Value	Unit
08	Sewing speed 3	1200	rpm
09	Distance sewing speed 1	10	mm
10	Distance sewing speed 3	10	mm
12	Thread monitor on after	05	mm
13	Needle thread monitor filter	20	mm
14	Bobbin monitor filter	00	
16	Start bartack length	00	mm
17	End bartack length	10	mm
18	Stitch length seam beginning	1.5	mm
19	Distance of stitch length	08	mm
24	Stitch length main seam	3.0	mm
25	Stitch length seam end	1.5	mm
26	Distance of stitch length	08	mm
27	Stitch length trimming stitch	1.5	mm
28	Choice of trimming stitch	00	
30	Start mode/insert	05	
31	Clamp/curve code	00	
32	Blowing mode	01	
33	Push retainer mode	00	
34	Swing retainer mode	00	
37	Assist. transport/distance	00	cm
38	Assist. transport/synchron.	120	%
Seam 19 - right fly piece, ladies' trousers			
01	Clamp position right	030	mm
02	Folder swing release	370	mm
03	Insertion speed	60	%
04	Clamp speed	99	%
05	Waiting position	43	cm
06	Sewing speed 1	1200	rpm
07	Sewing speed 2	4200	rpm
08	Sewing speed 3	1200	rpm
09	Distance sewing speed 1	10	mm
10	Distance sewing speed 3	10	mm
12	Thread monitor on after	05	mm

No.	Parameter	Value	Unit
13	Needle thread monitor filter	20	mm
14	Bobbin monitor filter	00	
16	Start bartack length	00	mm
17	End bartack length	10	mm
18	Stitch length seam beginning	1.5	mm
19	Distance of stitch length	08	mm
24	Stitch length main seam	3.0	mm
25	Stitch length seam end	1.5	mm
26	Distance of stitch length	08	mm
27	Stitch length trimming stitch	1.5	mm
28	Choice of trimming stitch	00	
30	Start mode/insert	05	
31	Clamp/curve code	00	
32	Blowing mode	01	
33	Push retainer mode	00	
34	Swing retainer mode	00	
37	Assist. transport/distance	00	cm
38	Assist. transport/synchron.	120	%
Seam 20 - left fly piece, ladies' trousers			
01	Clamp position right	030	mm
02	Folder swing release	370	mm
03	Insertion speed	60	%
04	Clamp speed	99	%
05	Waiting position	43	cm
06	Sewing speed 1	1200	rpm
07	Sewing speed 2	4200	rpm
08	Sewing speed 3	1200	rpm
09	Distance sewing speed 1	10	mm
10	Distance sewing speed 3	10	mm
12	Thread monitor on after	05	mm
13	Needle thread monitor filter	20	mm
14	Bobbin monitor filter	00	
16	Start bartack length	10	mm
17	End bartack length	00	mm

No.	Parameter	Value	Unit
18	Stitch length seam beginning	1.5	mm
19	Distance of stitch length	08	mm
24	Stitch length main seam	3.0	mm
25	Stitch length seam end	1.5	mm
26	Distance of stitch length	08	mm
27	Stitch length trimming stitch	1.5	mm
28	Choice of trimming stitch	00	
30	Start mode/insert	06	
31	Clamp/curve code	00	
32	Blowing mode	01	
33	Push retainer mode	00	
34	Swing retainer mode	00	
37	Assist. transport/distance	45	cm
38	Assist. transport/synchron.	120	%

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