DÜRKOPP ADLER

581

Operating Instructions

IMPORTANT

READ CAREFULLY BEFORE USE

KEEP FOR FUTURE REFERENCE

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. 159*).

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

1.1 For whom are these instructions intended?

These instructions are intended for:

- Operators:
  This group is familiar with the machine and has access to the instructions. Specifically, chapter **Operation** (📖 *p. 19*) is important for the operators.
- Specialists:
  This group has the appropriate technical training for performing maintenance or repairing malfunctions. Specifically, the chapter **Setup** (📖 *p. 135*) is important for specialists.

Service Instructions are supplied separately.

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

1.2 Representation conventions – symbols and characters

Various information in these instructions is represented or 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 setting.

Cover

Specifies which covers must be removed 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. 1. First step
2. 2. Second step
3. ... The steps must always be followed in the specified order.
4. • Lists are marked by bullet points.

Result of performing an operation

Change on 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 a setting.

References

🕮 Reference to another section in these instructions.

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

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

1.3 Other documents

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

1.4 Liability

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

The manufacturer cannot be held liable for damages resulting from:

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

1.4.1 Transport

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

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

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

2 Safety

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

2.1 Basic safety instructions

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

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

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

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

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

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

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

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

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

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

Requirements to be met by the personnel

Only qualified specialists may:

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

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

Operation

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

Safety equipment

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

2.2 Signal words and symbols used in warnings

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

Signal words

Signal words and the hazard they describe:

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

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

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

Symbol	Type of danger
	General
	Electric shock
	Puncture
	Crushing
	Environmental damage

Examples Examples of the layout of warnings in the text:

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.

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.

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.

3 Machine description

3.1 Machine

Fig. 1: Machine Description (1)

(1) - Button for threading mode
(2) - Buttons
(3) - Control panel

The machine is fitted with a programmable control and a control panel.

These can define up to 50 different buttonholes.

The buttonholes can be programmed in up to 25 sequences (📖 *p. 47*).

A sequence can include a maximum of 9 different buttonholes; each individual buttonhole within the sequence can be repeated up to maximum 9 times consecutively.

During sewing, it is possible to switch automatically or manually between the programmed buttonholes (📖 *p. 58*).

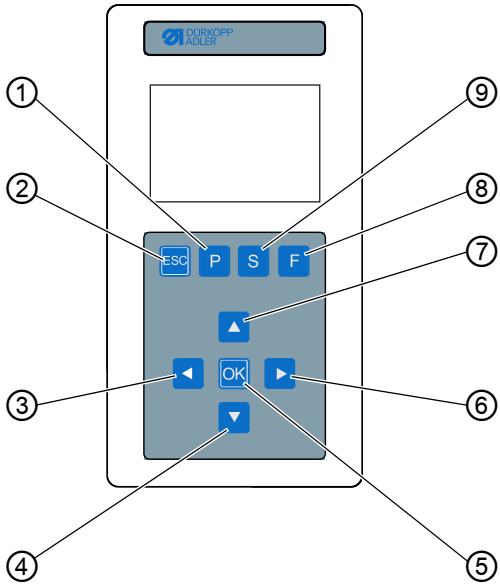
3.2 Control panel

The **OP5000** control panel is located on the side of the machine and is connected to the control. Using the control panel, you can set the functions for the relevant buttonhole.

The control panel comprises:

- Display
- Buttons

Fig. 2: Machine Description (2)



(1) - P Button
(2) - ESC button
(3) - Arrow button
(4) - Arrow button
(5) - OK button
(6) - Arrow button
(7) - Arrow button
(8) - F button
(9) - S button

Buttons and functions of the control panel

No.	Button	Function
①	P	• Calls up the setting mode for individual buttonholes
②	ESC	• Returns to the user level • Rejects changes
③	◀	• Moves one level down • Changes to previous buttonhole shape
④	▼	• Moves to the menu item one field lower • Reduces values
⑤	OK	• Calls up values • Saves changed values

No.	Button	Function
⑥		• Changes to the next buttonhole shape
⑦		• Moves to the menu item one field higher • Increases values
⑧		• Calls up service mode
⑨		• Calls up the setting mode for buttonhole sequences

4 Operation

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

4.1 Preparing the machine for operation

WARNING

Risk of injury from moving, cutting and sharp parts!

Crushing, cutting and punctures are possible.

If possible, make preparations only when the machine is switched off.

Complete the following steps in preparation of sewing before starting to work:

- Inserting/changing the needle
- Threading the needle thread
- Inserting and winding on the looper thread
- Adjusting the thread tension

4.2 Switching on and off the machine

Fig. 3: Switching on and off the machine

(1) - Main switch

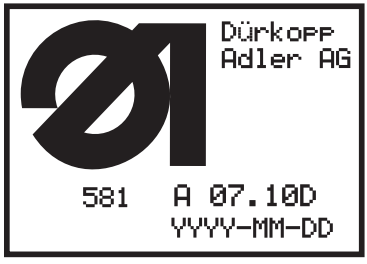
Switching on the power supply

To switch on the power supply:

1. Turn the main switch (1) into position **I**.

↳ The welcome screen appears on the display, whereby YYYY-MM-DD stands for the current date:

Fig. 4: Switching on the power supply



↳ The machine moves to the loading position and is ready to sew, when the main menu (📖 *p. 47*) appears.

Switching off the power supply

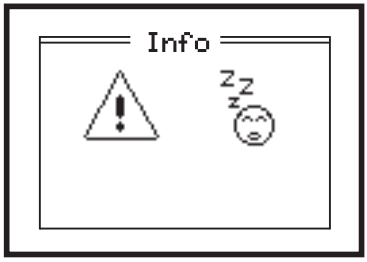
Information
The main switch is simultaneously the EMERGENCY STOP switch. When the main switch is switched off, the machine is disconnected from the power supply.

To switch off the power supply:

1. Turn the main switch (1) into position **0**.

↳ All drives and the control are disconnected from the mains grid. The following appears on the display:

Fig. 5: Switching off the power supply



4.3 Activating and deactivating threading mode

Threading mode can be used to thread the needle thread, looper thread and gimp thread.

Fig. 6: Activating and deactivating threading mode

(1) - Button for threading mode

Activating threading mode

To activate the threading mode:

1. Press button (1) on the head cover. The button must engage.

↳ The machine is in threading mode.
The button illuminates.
The fabric support plate moves into the best position for threading.
The fabric clamps remain in the position they were in when threading mode was switched on.
The sewing drive is separated from the power supply.
The slitting blade is switched off.

↳ You can now:

- insert the needle
- thread the looper thread
- thread the needle thread
- thread the gimp thread

Deactivating threading mode

To deactivate the threading mode:

1. Press the button (1) again. The button must disengage.

↳ After a short pause, the machine is ready to sew again. The sewing process is continued from the point where threading mode was activated.

4.4 Inserting/changing the needle

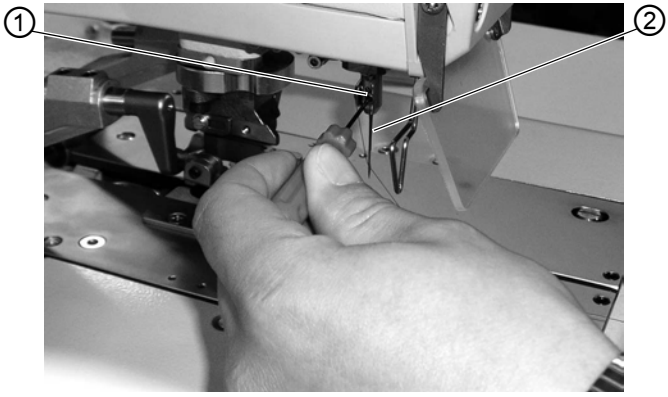
WARNING

Risk of injury from sharp parts!

Punctures possible.

Only change the needle when the machine is switched off.

Fig. 7: Inserting/changing the needle (1)



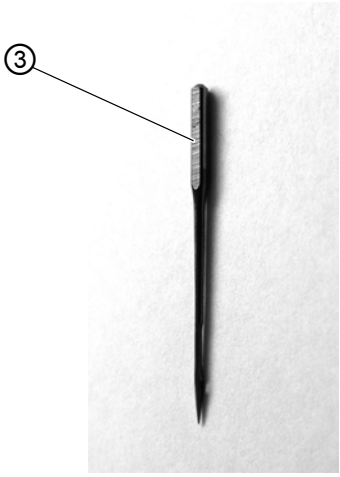
(1) - Screw *(2) - Needle*

To insert or change the needle:

1. Loosen the screw (1).
2. Pull the needle (2) from the needle bar.

3. Push in the new needle into the bore of the needle thread through to the end stop.

Fig. 8: Inserting/changing the needle (2)



(3) - Needle piston

4. Align the needle (2) such that the groove is facing forwards and the flat part (only in needle system 579) on the needle piston (3) is facing to the left in the direction of the screw (1).
5. Tighten the screw (1).

4.5 Threading the needle thread

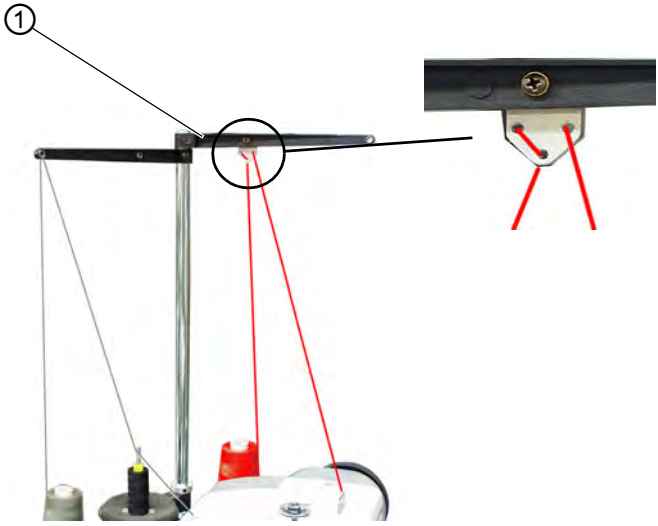
WARNING

Risk of injury from sharp parts!
Punctures possible.
Thread the needle thread when the machine is switched off or in threading mode.

To thread the needle thread:

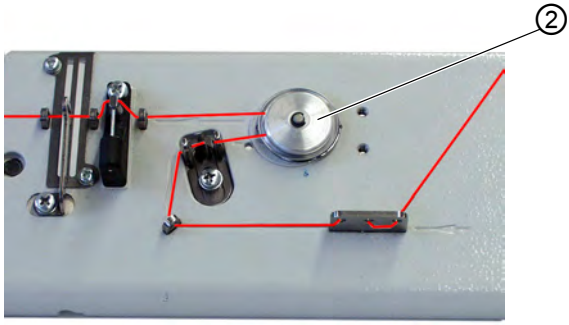
1. Thread the needle thread as shown in the figures.

Fig. 9: Threading the needle thread (1)



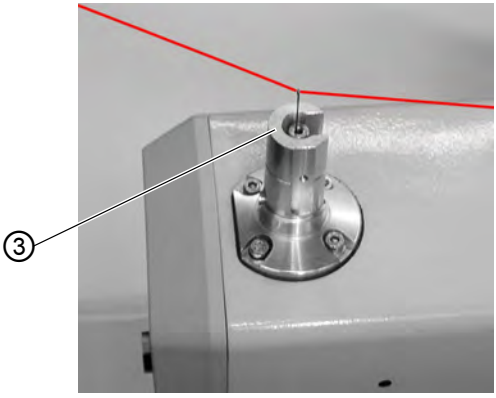
(1) - Thread guide

Fig. 10: Threading the needle thread (2)



(2) - Needle thread tensioner element

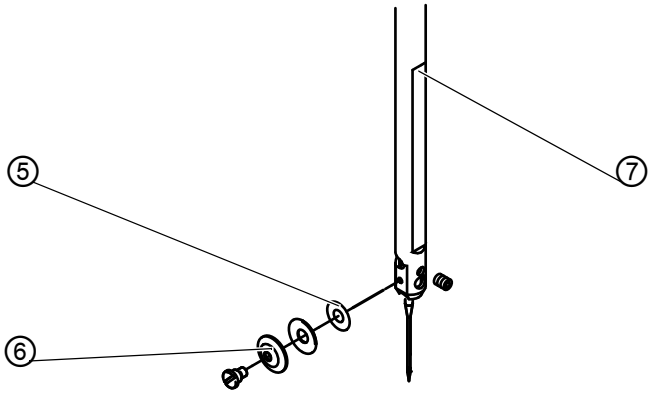
Fig. 11: Threading the needle thread (3)



(3) - Thread guide *(4) - Looper*

2. To thread the needle thread, push the threading wire (in the accessory pack) through the hollow needle bar (7) from the bottom upwards.
3. Hang the needle thread at the top behind the hook (4).
4. Pull the needle thread down with the threading wire.
5. Guide the needle thread to the left behind the tension disk (5) and thread it into the needle from the back to the front.

Fig. 12: Threading the needle thread (4)



(5) - Tension disk
(6) - Spring
(7) - Needle bar

4.6 Threading the looper thread

WARNING

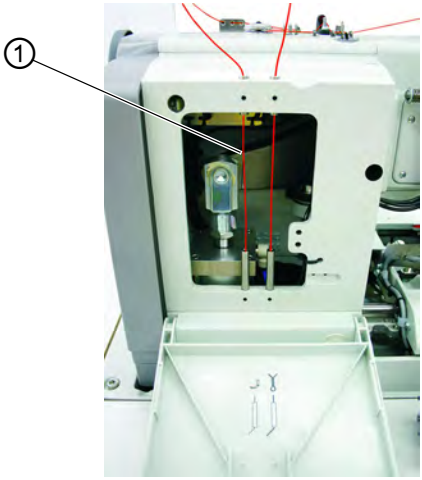
Risk of injury from sharp parts!
Punctures possible.
Thread the looper thread when the machine is switched off or in threading mode.

The machine must be in the end position, i.e. the looper turret should face forward with the loopers.

Step

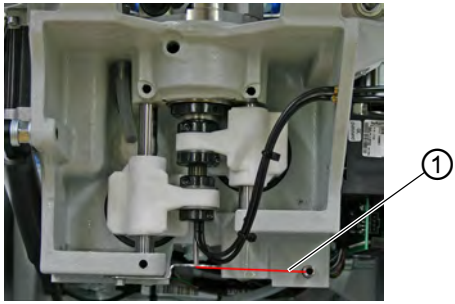
1. Remove the clamping plates (📖 *p. 37*).
2. Swivel the machine up (📖 *p. 39*).
3. Thread the looper thread (1) using the long threading wire (accessory pack) as shown in the figures.

Fig. 13: Threading the looper thread (1)



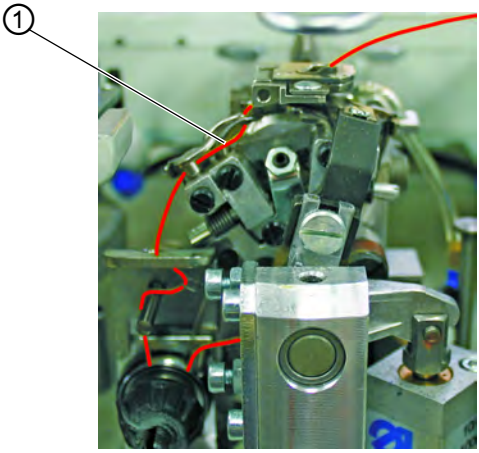
(1) - Looper thread

Fig. 14: Threading the looper thread (2)



(1) - Looper thread

Fig. 15: Threading the looper thread (3)



(1) - Looper thread

4. Leave an end of looper thread approx. 25 mm long hanging out from the hole in the throat plate.
5. Fit the clamping plates.

4.7 Threading the gimp thread

WARNING

Risk of injury from sharp parts!

Punctures possible.

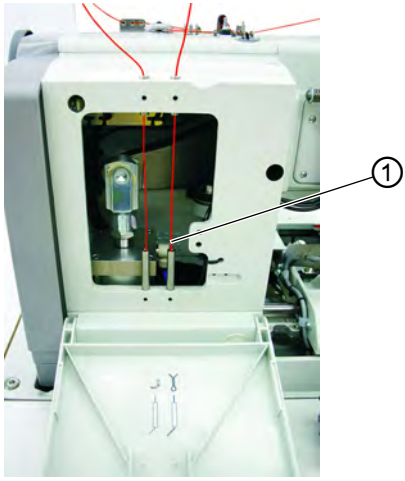
Thread the gimp thread when the machine is switched off or in threading mode.

To thread the gimp thread:

1. Thread the gimp thread (1) as shown in the figures.

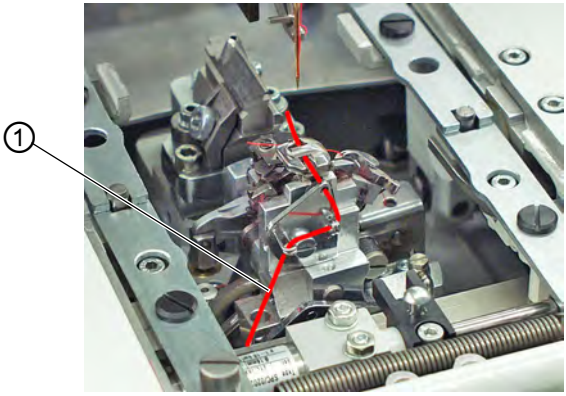
Threading the gimp thread: Subclass 112, 312 and 151

Fig. 16: Threading the gimp thread: Subclass 112, 312 and 151 (1)



(1) - Gimp thread

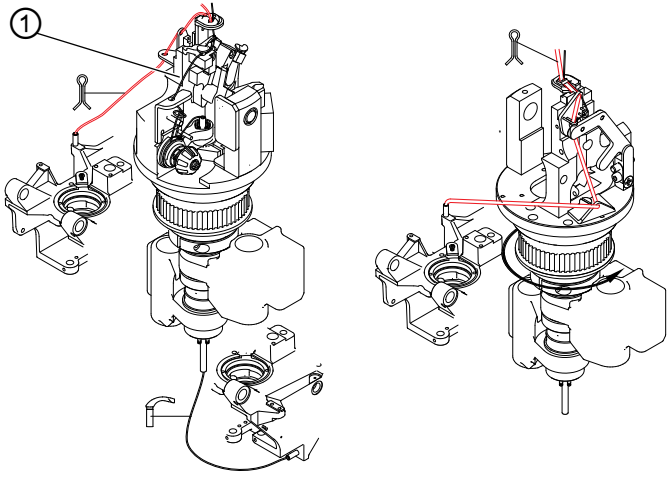
Fig. 17: Threading the gimp thread: Subclass 112, 312 and 151 (2)



(1) - Gimp thread

2. Leave an end of gimp thread approx. 25 mm long hanging out from the gimp hole in the throat plate.

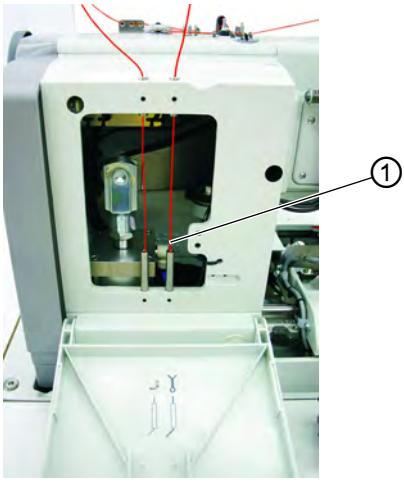
Fig. 18: Threading the gimp thread: Subclass 112, 312 and 151 (3)



(1) - Gimp thread

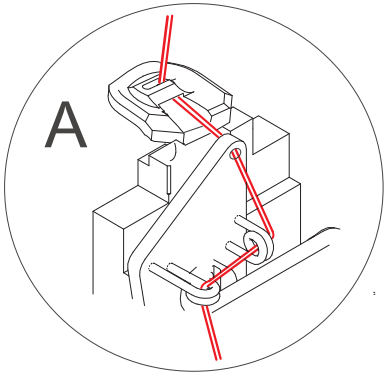
Threading the gimp thread: Subclass 141 and 341

Fig. 19: Threading the gimp thread: Subclass 141 and 341 (1)



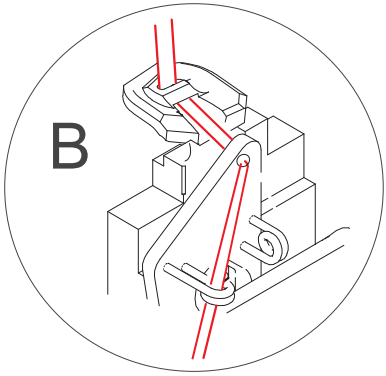
(1) - Gimp thread

Fig. 20: Threading the gimp thread: Subclass 141 and 341 (2)



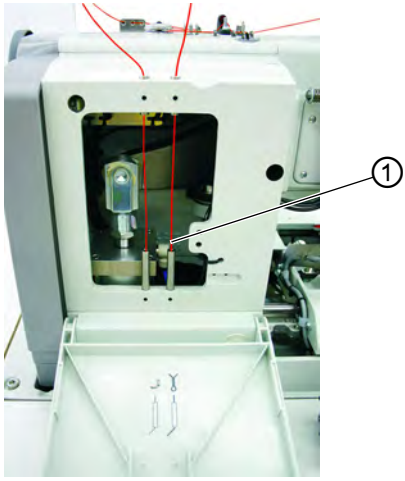
3. Sew the buttonhole and check whether the gimp is pulled back far enough.
   If necessary, rethread the gimp thread as shown in **B**.

Fig. 21: Threading the gimp thread: Subclass 141 and 341 (3)



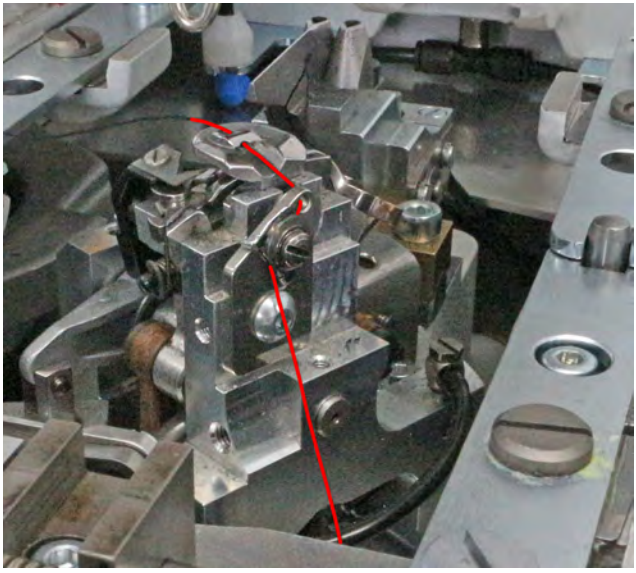
Threading the gimp thread: Subclass 121 and 321

Fig. 22: Threading the gimp thread: Subclass 121 and 321 (1)



(1) - Gimp thread

Fig. 23: Threading the gimp thread: Subclass 121 and 321 (2)



4.8 Thread tension

The thread tensions depend on the type and quality of the thread as well as on the sewing material. The buttonhole looks best when sewn with the lowest possible thread tension.

Overly tight thread tensions can result in undesired ruffing and thread breakages with thin materials.

4.8.1 Setting the needle thread tension

The needle thread tension must generally be tighter than the tension of the looper thread. The thread tension is electronically regulated. It comprises the main tension for the sewing process and a remaining residual tension (cutting tension) for tightening the needle thread during the cutting operation below the throat plate.

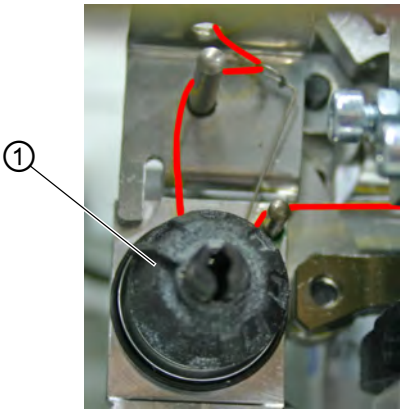
Regulate the residual tension (cutting tension) to suit the elasticity of the needle thread used, so that the thread end hanging from the needle is sufficiently long to ensure a safe sewing start.

To set the needle thread tension:

1. Set the main tension for the sewing process using the control panel (📖 *p. 55*).
2. Set the residual tension (cutting tension) using the control panel.

4.8.2 Setting the looper thread tension

Fig. 24: Setting the looper thread tension



(1) - Looper thread tensioner element

To set the looper thread tension:

1. Swivel up the machine head.
2. Set the looper thread tension with the looper thread tensioner element (1):
   - Increase the looper thread tension: turn clockwise
   - Reduce the looper thread tension: turn counterclockwise
3. Swivel down the machine head.

The length of the starting thread can be adjusted by changing the thread tension at the start.

4.9 Using threads and gimp threads

Threads

The appearance of the buttonhole is influenced considerably by:

- the thread used
- the use of different strengths for needle and looper threads

Gimp threads

The purpose of gimp is to stabilize the buttonhole and at the same time make it flexible.

It should have the following characteristics:

- not too thick, but supple and firm
- even thickness

4.10 Removing and fitting clamping plates

WARNING

Risk of injury from sharp parts!

Punctures possible.

Remove and fit the clamping plates when the machine is switched off or in threading mode.

Removing clamping plates

Fig. 25: Removing clamping plates

(1) - Clamping plate, left *(2) - Clamping plate, right*

To remove the clamping plates:

1. Slightly raise the right clamping plate (2) at the back and pull it backwards.
2. Remove the clamping plate (2) sideways to the right.
3. Slightly raise the left clamping plate (1) at the back and pull it backwards.
4. Remove the clamping plate (1) sideways to the left.

Fitting clamping plates

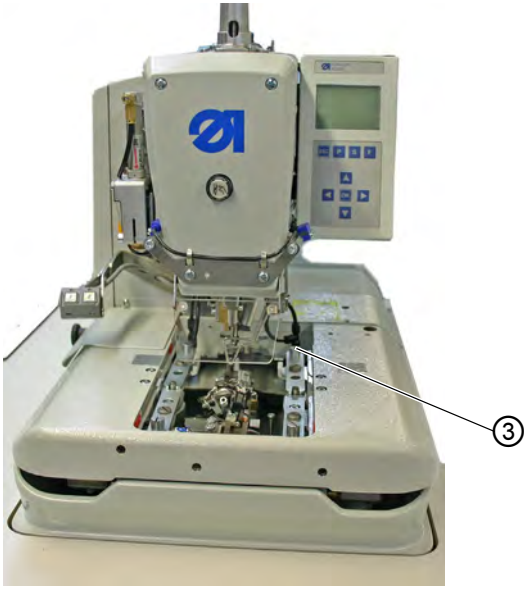
NOTICE

Property damage may occur!

Incorrectly positioned clamping plates can result in property damage.

Position clamping plates as described.

Fig. 26: Fitting clamping plates



(3) - Pin

To fit the clamping plates:

1. Push the clamping plate forward into the mounting.
2. Allow the clamping plate to engage at the back into the pin (3).

4.11 Swiveling the machine up and down

WARNING

Risk of injury from sharp parts!

Punctures possible.

Only swivel up the machine when the machine is switched off or in threading mode.

Swiveling up

You must swivel the machine up for a variety of activities (e.g. to thread the looper thread or the gimp thread).

Fig. 27: Swiveling the machine up

(1) - Locking bolt

To swivel the machine upwards:

1. Pull out the locking bolt (1).
2. Raise the machine at the front.
3. Release the locking bolt (1) again and allow it to engage in a hole. To do this, you may have to swivel the machine up and down a little.
4. Do not let go of the machine until the locking bolt (1) has engaged.

Once you have completed the activities you have planned, swivel the machine back down again.

Swiveling the sewing machine down

To swivel the machine down:

1. Hold the machine firmly.
2. Pull out the locking bolt (1).
3. Swivel the machine down slowly.

WARNING

Risk of injury from moving parts!

Crushing possible.

Hold the machine firmly when swiveling it down.

NOTICE

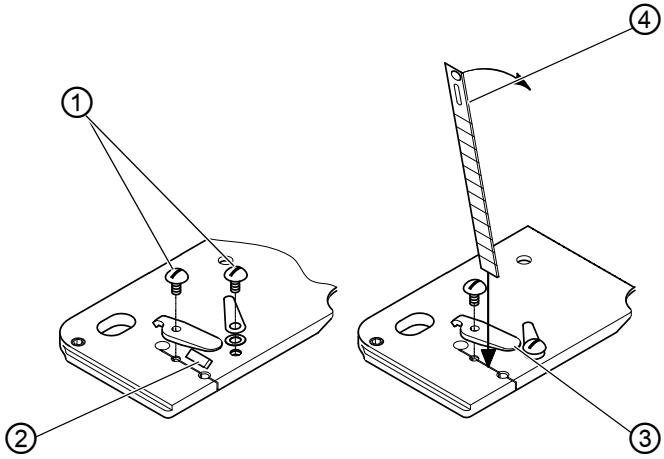
Property damage may occur!

Operating the machine when it is swiveled up can result in property damage.

Always swivel the machine down before starting to sew.

4.12 Changing the blade

Fig. 28: Changing the blade



(1) - Screws
(2) - Old blade
(3) - Bobbin case retainer
(4) - New blade

To change the blade:

1. Loosen the screws (1) and remove the bobbin case retainer (3).
2. Remove the old blade (2).
3. Insert the new blade (4) to the base of the groove and bend in the direction of the arrow.
4. Re-tighten the screws (1).
5. Tighten the bobbin case retainer using the screw (1).

Important

The blade may not project outside the bobbin case retainer!

4.13 Sewing

The sewing process can be controlled either with the buttons on the machine or via the pedal.

4.13.1 Sewing using the buttons

The clamps can be controlled and the sewing process started with the buttons on the machine. The function differs depending on the setting in the Service menu (🕮 *Service Instructions*).

Fig. 29: Buttons

(1) - Button 1 *(2) - Button 2*

1st setting (default):

- Button 1: Clamps are opened / closed.
- Button 2: The sewing process starts if the clamps are closed.

2nd setting:

- Button 1: Clamps are opened / closed.
- Button 2: If the clamps are not lowered, they are lowered now. The sewing process starts.

The buttons facilitate quick switch-off during sewing.

To activate quick switch-off:

1. Press button 1 or 2.

↳ The sewing process stops.

You now have the following options:

- Cancel sewing
- Continue sewing

Cancel sewing

To interrupt the sewing process:

1. Press button 1.

Continue sewing

To continue the sewing process:

1. Press button 2.

4.13.2 Sewing with the pedal

The pedal is a 2-step pedal without backpedal function:

- When the first step is pressed, the clamps are closed.
  To re-open the clamps, release the first step.
- When the second step is pressed, the sewing process starts.
  When the sewing process is running, you can release the pedal.

The pedal supports quick switch-off during sewing. You cannot continue the sewing process with the pedal.

Activating quick switch-off

To activate quick switch-off:

1. Press the pedal.

↳ The sewing process stops.

You now have the following options:

- Cancel sewing
- Continue sewing

Cancel sewing

To interrupt the sewing process:

1. Press the pedal.

↳ The sewing procedure is canceled.

Continue sewing

To continue the sewing process:

1. Press the OK button on the control panel

Information
You can also use the buttons the machine for quick switch-off (📖 *p. 42*).

Removing the completed sewing material for subclass 151

Fig. 30: Removing the completed sewing material for subclass 151

(1) - Blade *(2) - Thread clamp*

To remove the finished sewing material:

1. Guide the looper thread and the gimp thread under the thread clamp (2).
2. Pull both threads from right to left along the blade (1).

↳ The threads are cut.

5 Programming

5.1 Software description

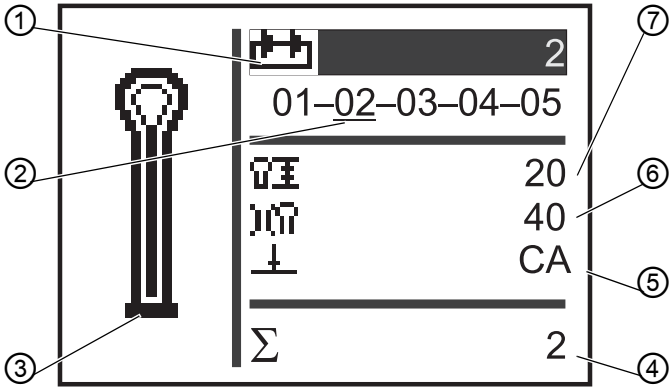
There are 2 modes at user level:

- Sequential mode
- Single buttonhole mode

The main menu comprises the following fields depending on the mode:

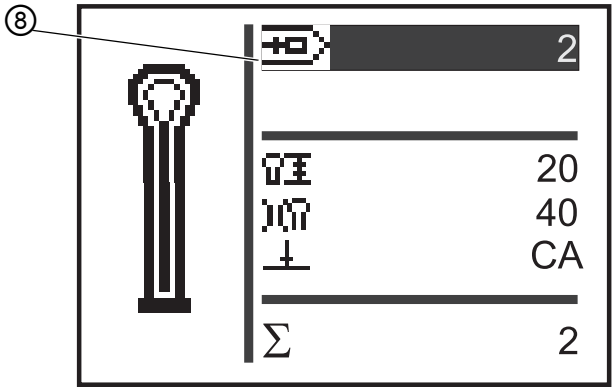
- Sequential number (1) or buttonhole number (8)
- Buttonhole sequence (2) or empty row
- Thread tension (7)
- Cutting length or eyelet diameter (6)
- Cutting mode (5)
- Counter (4)

Fig. 31: Sequential mode



(1) - Sequential number
(2) - Buttonhole sequence
(3) - Buttonhole shape
(4) - Piece counter
(5) - Cutting mode
(6) - Cutting length
(7) - Thread tension

Fig. 32: Single buttonhole mode



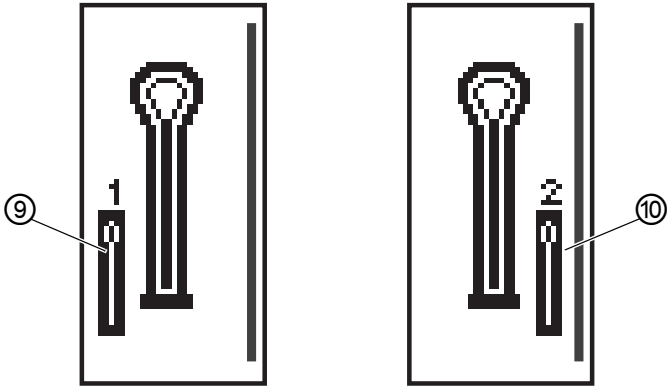
(8) - Buttonhole number

It is possible to see which field is active by the white lettering on a dark background.

For subclasses 312, 321 and 341, there is also monoflex mode, as 2 blade positions are possible.

Active monoflex mode is indicated by display of a bar next to the buttonhole shape:

Fig. 33: Monoflex mode



(9) - Blade position 1

(10) - Blade position 2

5.1.1 Structure

The machine menu is divided into levels. In the main menu, the most important information for sewing operation is displayed (user level).

There are further levels in addition to the user level:

- Setting mode, to program buttonholes (P level)
- Setting mode, to program buttonhole sequences (S level)
- Service mode, to perform service work (F level); this is password-protected

A menu item in these levels can also contain further sub-menu items.

5.1.2 Operating modes

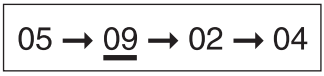
Depending on the setting, when the machine is in sequential mode it will be in one of the following operating modes:

- Automatic operation
- Manual operation
- Light barrier mode (if available)

Automatic operation

In the sequence shown on the display, arrows are displayed between the buttonhole shapes. It is possible to see the currently selected buttonhole from the bar below the number.

Fig. 34: Display for automatic operation

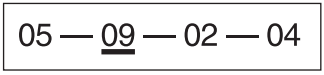


After sewing a buttonhole, the control changes automatically to the next buttonhole shape. After sewing the last buttonhole, the control changes back to the first buttonhole shape within the sequence.

Manual operation

In the sequence shown on the display, lines are displayed between the buttonhole shapes. It is possible to see the currently selected buttonhole from the bar below the number.

Fig. 35: Display for manual operation



The control does **not** change automatically between the buttonhole shapes. Changes are made manually using the buttons or .

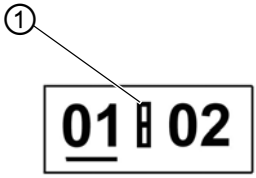
Light barrier mode

If the light barrier kit is installed, it is possible to work in light barrier mode.

Either the lapel or the front edge is detected by 2 light barriers, and the corresponding program is automatically selected.

Precisely 2 programs must be entered in the sequence.
Light barrier mode can be recognized by the symbol (1).

Fig. 36: Light barrier mode



(1) - Symbol

5.2 User level

On the user level, the most important information for sewing operation is displayed.

5.2.1 Basic operation

You can change the values at user level by pressing the corresponding button on the control panel (📖 *p. 16*).
Depending on where the cursor is positioned, the values change either in 1-step or 10-step increments.

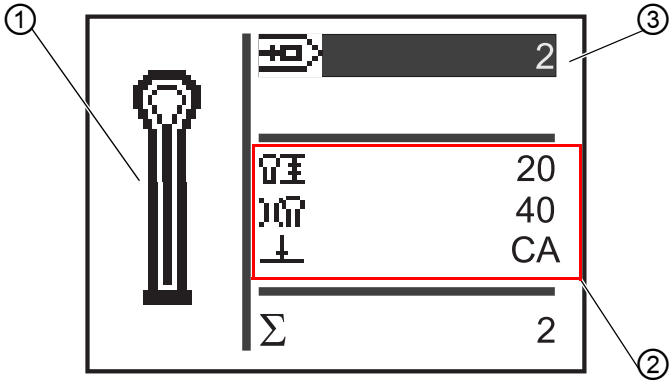
Depending on the setting in the sequence menu, either sequential mode or single buttonhole mode is available (📖 *p. 58*).

You can tell which mode is activated by the fact that it is highlighted in the topmost field of the display after switching on (📖 *p. 49*).

5.2.2 Single buttonhole mode

On the user level, you can select a buttonhole from 50 pre-programed buttonholes.

Fig. 37: Single buttonhole mode



(1) - Buttonhole shape
(2) - Values
(3) - Buttonhole number

To select a pre-programmed buttonhole:

1. Using the ▲ button, navigate to the field **Buttonhole number** (3).

2. Press the OK button.

↳ The cursor flashes.

3. Select the desired buttonhole number using the buttons ▲ or ▼.
   As a selection aid, the current buttonhole shape (1) and the most important corresponding values (2) are displayed.

4. Confirm the selection with the OK button.

5.2.3 Sequential mode

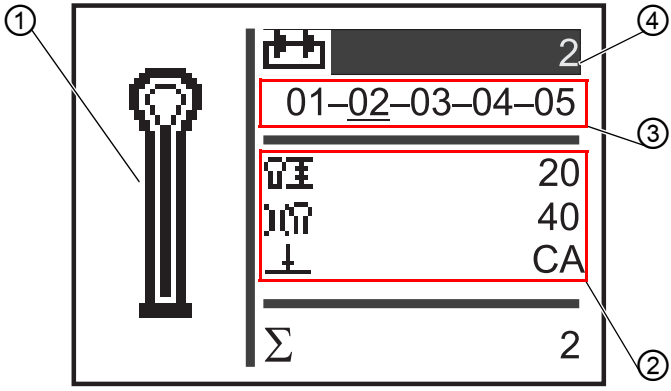
Depending on the setting, the machine will be in either automatic, manual or light barrier mode (📖 *p. 49*). In sequential mode you can switch between programmed buttonholes in the sequence at any time, unless you are working in light barrier mode.

There are 2 steps for selecting a buttonhole in sequential mode:

Order

1. Select a sequential number.
2. Select a buttonhole.

Fig. 38: Sequential mode



(1) - Buttonhole shape
(2) - Values
(3) - Sequence
(4) - Sequential number

Selecting a sequential number

To select the sequential number:

1. Using the button, navigate to the field **Sequential number** (4).
2. Press the OK button.
   ↳ The cursor flashes within the desired row.
3. Select the desired number using the buttons or .
4. Confirm the selection with the OK button.

Selecting a buttonhole

To select a buttonhole:

1. Select the buttonhole within the sequence shown using the buttons or .
   ↳ The desired buttonhole is marked with a bar.
   As a selection aid, the current buttonhole shape is displayed in the **Buttonhole shape** (1) field and the corresponding values are displayed in the **Values** (2) area.

Selecting the operating mode

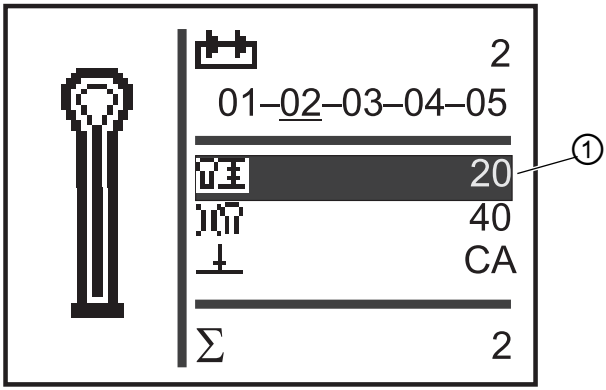
To select the operating mode:

1. Use the buttons or to navigate to the field **Sequence** (3).
2. Press the OK button.
3. Use the button to change the operating mode.
   ↳ The arrows between the buttonhole shapes appear or disappear as appropriate.
4. Confirm the selection with the OK button.

5.2.4 Setting the cutting length

On the display, the field (1) indicates the cutting length. You can set the cutting length.

Fig. 39: Setting the cutting length in sequential mode



(1) - Cutting length

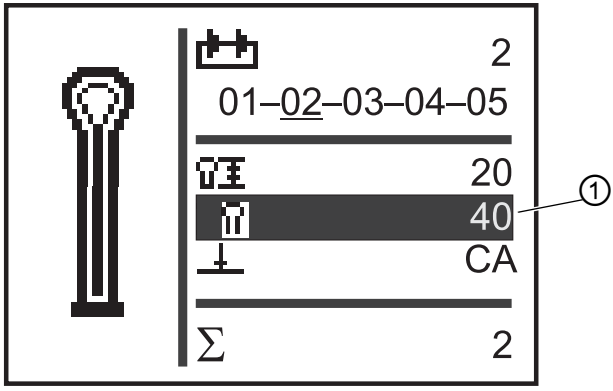
To set the cutting length:

1. Use the button ▼ to navigate to the field **Cutting length** (1).
2. Press the OK button.
   ↳ The cursor flashes.
3. Use the buttons ▲ or ▲ to set the desired value.
4. Confirm with the OK button.

5.2.5 Setting the thread tension

On the display, the field (1) indicates the thread tension during sewing. You can set the thread tension.

Fig. 40: Setting the thread tension in sequential mode



(1) - Thread tension field

To set the thread tension:

1. Use the button ▼ to navigate to the field **Thread tension** (1).
2. Press the OK button.
   The cursor flashes.
3. Use the buttons ▲ or ▼ to set the desired value.
4. Confirm with the OK button.

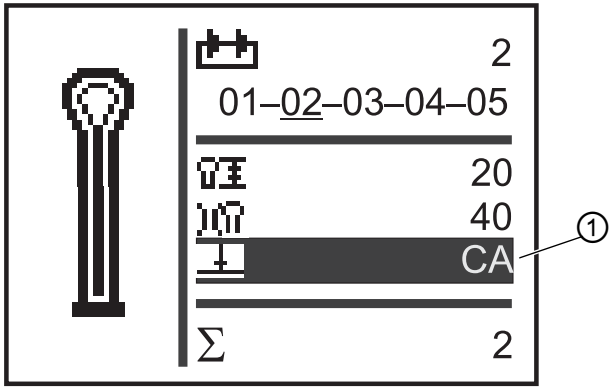
5.2.6 Setting the cutting mode

On the display, the field (1) indicates the cutting mode. The cutting mode determines when and whether a buttonhole is to be cut during the sewing process.
For cutting mode, you can switch between the following parameters:

Parameters for cutting mode

Parameter	Function
0	= No cutting
CA	= Cut after the seam end (Cut After)
CB	= Cut before the seam beginning (Cut Before)

Fig. 41: Setting cutting mode in sequential mode



(1) - Cutting mode

To set the cutting mode:

1. Use the ▼ button to navigate to the field **Cutting mode** (1).
2. Press the OK button.

↳ The cursor flashes.

3. Use the buttons ▲ or ▼ to set the desired value.

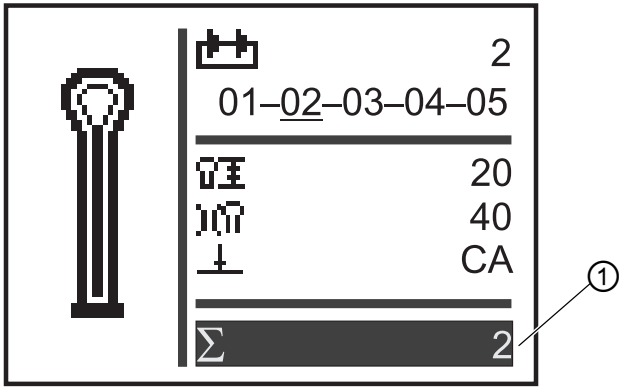
4. Confirm with the OK button.

5.2.7 Resetting the piece counter

The machine is equipped with a piece counter that counts the number of sewn buttonholes. After the Σ symbol (1) the current value (e.g. 2) is displayed. The piece counter value is retained after the machine is switched off.

The piece counter counts up to a maximum of 9999 buttonholes. When this value is exceeded, the count starts again at 0.

Fig. 42: Resetting the piece counter



(1) - Piece counter field

To reset the piece counter:

1. Use the ▼ button to navigate to the field **Piece counter** (1).

2. Press the OK button.

↳ The menu bar changes.

3. Hold the OK button for approx. 2 seconds.

↳ The piece counter is set to *0* and the display changes back to the main menu (📖 *p. 51*).

5.3 Buttonhole programming

The buttonholes are programmed on the P level.
The respective characteristics of the buttonhole, e.g. buttonhole length and eye shape, can be set for all bartack forms.

Important

Once you press the OK button, you can no longer sew!

Important

If you change the bartack form of a buttonhole program, all values of this buttonhole are reset to the preset value.

Information
Not all buttonhole shapes and variants can be sewn with every subclass or item of sewing equipment.

To program a buttonhole:

1. Press the OK button.

↳ The setting mode for the individual buttonholes is started.

2. Using the button ▲, navigate to the field **Buttonhole number** (📖 *p. 51*).
3. Press the OK button.
4. Select the desired buttonhole number using the buttons ▲ or ▼.
5. Press the OK button.
6. Using the buttons ▲ or ▼ select the bartack form 0.9.
7. Press the OK button.
8. Select the desired bartack using the buttons ▲ or ▼.

Bartack forms

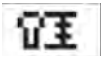
No bartack	Taper bar	Cross tack	Round tack	Eyelet
				

9. Confirm the selection with the OK button.

Using the button ◀ you can move one level higher and set further values (see the following list of menu items and sub-menu items).

Or, you can quit the setting mode using the ESC button.

List of menu items and sub-menu items

Value	Description
	**Length settings**
	**Cutting length:** The cutting length can be adjusted, depending on the sewing direction, from 6 mm to max. 50 mm.
	**Eyelet diameter (only for eyelet machines)**
	**Stitch length in the buttonhole seam:** Distance from stitch to stitch within the seam (from 0.5 mm to 2 mm).
	**Number of stitches in the eyelet (only for eyelet machines):** Number of evenly distributed stitches in the entire eyelet.
	**Overlap in the eyelet (only for eyelet machines):** Overlap of seam beginning and seam end.
	**Thread cutting length:** The length of the needle thread and of the looper thread end can be changed on the 581-112 or 581-312 on the buttonhole underside. Condensing stitches increase the seam safety at seam beginning and seam end.
	**Stitch length of the condensing stitches at seam beginning:** Distance from stitch to stitch within the condensing at seam beginning.
	**Stitch length of the condensing stitches at seam end:** Distance from stitch to stitch within the condensing at seam end.
	**Number of condensing stitches at seam beginning:** Number of stitches within the condensing at seam beginning.
	**Number of condensing stitches at seam end:** Number of stitches within the condensing at seam end.
	**Needle thread tension**

Value	Description
	**Sewing tension:** Electronically regulated sewing tension within the sewing cycle.
	**Cutting tension:** Reduced needle thread tension for the needle thread cutter.
	**Sewing start tension:** The length of the initial thread inserted can be regulated by changing the thread tension at the start of sewing.
	**Eye settings**
	**Eye shape:** 7 different eye shapes can be programmed.
	**Number of stitches in the eye:** Min. 4 to max. 25 stitches can be set in the rounding of the buttonhole eye.
	**Eye angle:** The buttonhole eye can be inclined slightly to the left or right.
	**Zigzag stitch adjustment:** The mechanically set zigzag stitch width can be reduced by up to 1.0 mm or increased by up to 0.5 mm.
	**Cutting settings**
	**Cutting mode:** Depending on the sewing direction, the buttonhole can be cut either after (CA), before (CB) or not at all (0).
	**Cutting area:** Distance between the two inner punctures of the forward and return seam.
	**Multiflex mode cutting range:** 1 = Total cut, 2 = Middle cut, 3 = Eye cut or edge cut/bar cut
	**Cutting length for total cut:** The cutting length can be shorted by max. 2 mm.

Value	Description
	**Cutting position for middle cut:** The position can be specified as a percentage and increases from the eye position (0 %) to the rearmost position (100 %).
	**Cutting correction in the x-direction:** The blade position within the buttonhole can be pushed to the left or right.
	**Cutting correction in the y-direction:** The blade position within the buttonhole can be pushed forward or back.
	**Cutting pressure correction:** Automatic adjustment (4 stages) of the cutting force for the buttonhole blade depending on the buttonhole length. - up to 14 mm buttonhole length (eyelets) 2 stages - from 15 mm to 30 mm buttonhole length 3 stages - from 31 mm buttonhole length 4 stages In this menu item, you can increase or reduce the preset cutting force, depending on the buttonhole length.
	**Flexible cutting**: Monoflex mode 581-312 or 581-321 or 581-341
	**Taper bar settings**
	**Taper bar length:** The taper bar length can be adjusted, depending on the sewing direction and buttonhole length, from 2 mm to max. 36 mm.
	**Zigzag stitch width in the taper bar:** The zigzag stitch width applicable for the entire buttonhole can be reduced in the taper bar.
	**Overlap in the taper bar:** Overlap of the forward and return seams in the taper bar.
	**Height of the bartack incline:** The length of the taper in the bartack is adjustable.
	**Cross tack settings**

Value	Description
	**Cross tack length:** Total length of the cross tack. The setting range is automatically adjusted depending on the selected cutting space and the zigzag stitch width.
	**Stitch length in the cross tack:** Distance from stitch to stitch within the cross tack (from 0.5 mm to 2 mm).
	**Zigzag stitch width in the cross tack:** The zigzag stitch width can be reduced or increased in the cross tack.
	**x-position of the cross tack:** The entire cross tack can be moved slightly to the left or right.
	**Seam length in the cross tack:** Overlap of the forward and return seams with the cross tack.
	**Round tack settings**
	**Number of stitches in the round tack:** Min. 6 to max. 12 stitches can be set in the round tack or 4 to 10 stitches in the lower semi-circle.
	**Zigzag stitch width in the round tack:** The zigzag stitch width applicable for the entire buttonhole can be reduced in the round tack.
	**Seam start position**: The seam beginning can be either in the round tack or within the forward seam.
	**Overlap in the seam:** Overlap of seam beginning and seam end in the seam.
	**Seam starting position within the seam:** Position of the seam beginning within the forward seam can be changed from the start of the seam (100 %) to the eye (0 %).
	**Overlap in the round tack:** Overlap of seam beginning and seam end in the round tack.

Value	Description
Gimp	**Gimp monitoring (only for additional equipment 581-141 and 581-341):** Monitoring on/off, as to whether the gimp thread is inserted.
	**Following buttonhole:** Number of the buttonhole that is sewn directly after this buttonhole without opening the clamps. This makes it possible to carry out double passes.
	**Speed:** Revolutions per minute.

5.4 Sequence programming

The sequences are programmed on the S level.

Important

Once you press the S button, you can no longer sew!

To program a sequence:

1. Press the S button.

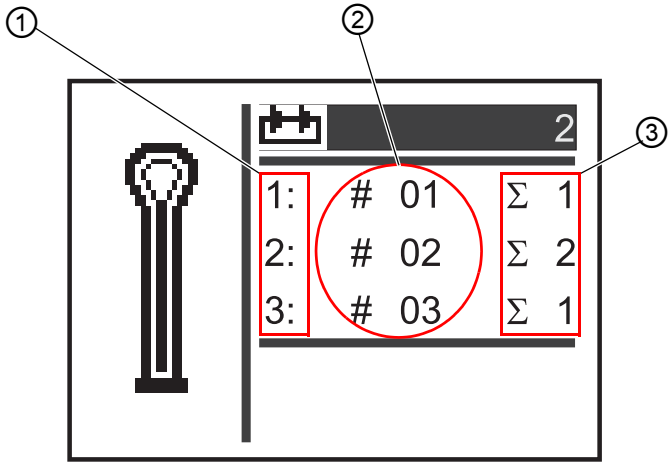
↳ The setting mode for the individual sequences is started.

2. Use the ▲ button to navigate to the **Sequential number** field (🕮 *p. 52*).

3. Press the OK button.

↳ The following appears on the display:

Fig. 43: Programming sequences (1)

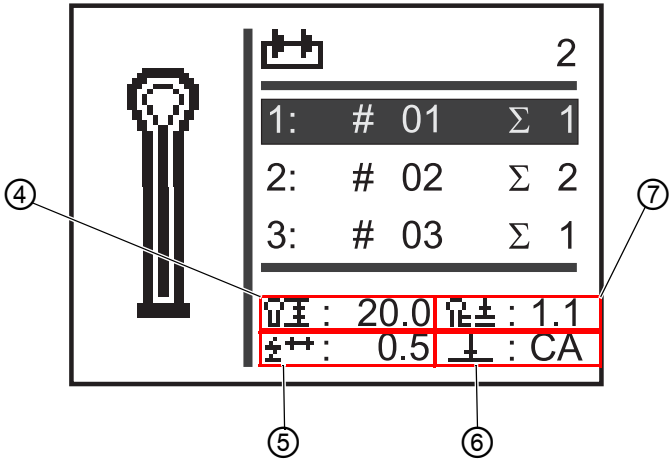


(1) - Position within the sequence
(2) - Buttonhole number
(3) - Number of buttonholes

4. Select the desired sequential number using the buttons ▲ or ▼.
5. Press the OK button.

↳ The following appears on the display:

Fig. 44: Programming sequences



(4) - Cutting length
(5) - Zigzag stitch adjustment
(6) - Cutting mode
(7) - Stitch length

6. Use the buttons ▲ or ▼ to select the position desired for the buttonhole within the sequence (1st column of the display).

↳ The cursor shows the current position.

7. Press the OK button.

8. Use the buttons ▲ or ▼ to select the desired buttonhole number (2nd column of the display).

↳ The buttonhole shape is displayed.

9. Press the OK button.

10. Use the buttons ▲ or ▼ to set the desired number of buttonholes (3rd column of the display).

11. Confirm with the OK button.

You can add further buttonhole programs. Start again with step 1.

5.4.1 Deleting a buttonhole at the end of a sequence

To delete a buttonhole at the end of a sequence:

1. Use the buttons ▲ or ▼ to select the last but one line of the programmed buttonhole sequence.
2. Press the OK button.
3. Use the buttons ▲ or ▼ to select the buttonhole program *0*.
4. Confirm with the OK button.

↳ The selected buttonhole is deleted.

When you want to quit setting mode, press the ESC button. This will take you back to the user level.

5.4.2 Adding a buttonhole at the end of a sequence

To add a buttonhole at the end of a sequence:

1. Use the ▼ button to select the last line of the programmed buttonhole sequence.
2. Press the OK button.
3. Select the desired buttonhole program using the buttons ▲ or ▼.
4. Press the OK button.

When you want to quit setting mode, press the ESC button. This will take you back to the user level.

5.4.3 Inserting a buttonhole within a sequence

It is not possible to insert buttonholes individually into the sequence. Note the current sequence programming and change the sequence accordingly (📖 *p. 58*).

You can also switch off sequential mode.

5.4.4 Switching off sequential mode

If you want to use single buttonhole mode instead of sequential mode, switch off sequential mode.

To switch off sequential mode:

1. Press the S button.
2. Use the button ▲ to navigate to the field **Sequential number** (📖 *p. 52*).
3. Press the OK button.
4. Use the ▼ button to select the sequential number `0`.
5. Press the OK button.

↳ The sequential mode is switched off.

6. Press the ESC button.

↳ The setting mode is ended. This will take you back to the user level.

5.5 Service mode

In service mode, there are machine functions that can be used for servicing work. Service mode is password-protected in order to prevent unintentional incorrect machine settings.

To set the machine, you must make the following settings on the control panel:

- Subclass (📖 *p. 81*)
- Buttonhole without bartack
- Zigzag stitch = 0.0
- Cutting area = 0.0

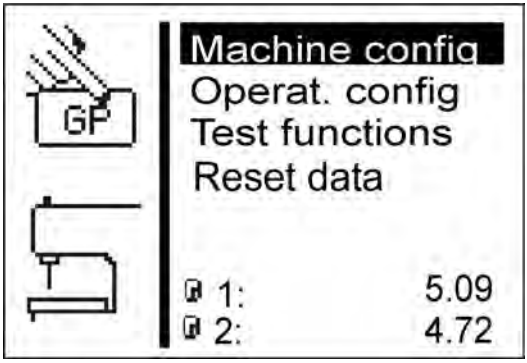
5.6 Activating the technician level

In service mode, you have access to machine functions that can be used for servicing work. Service mode is protected with a code, in order to prevent unintentional incorrect machine settings during use. All settings in service mode are performed at technician level.

To enable the technician level:

1. Press the F button on the control panel.
   ↳ The input mask for the code appears on the display.
2. Using the arrow buttons enter the code 2548.
3. Press the OK button.
   ↳ The service menu appears on the display:

Fig. 45: Activating the technician level



You can select the individual menus using the arrow buttons.

The selected menu is activated by pressing the OK button.

To exit service mode:

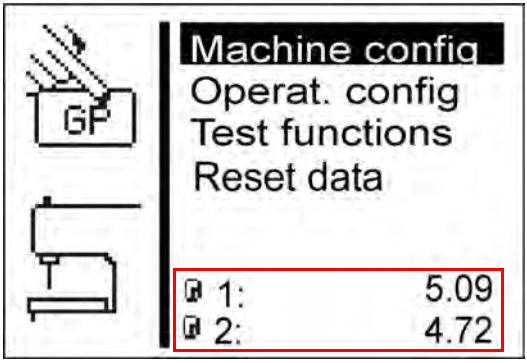
1. Press the ESC button.

↳ The control switches back to the main menu.

5.7 Buttonhole cycle

On the technician level, you can check the cycle time of a buttonhole or the net sewing time required to finish a buttonhole.

Fig. 46: Buttonhole cycle



To view the buttonhole cycle:

1. Activate the technician level (📖 *p. 69*).

↳ The bottom portion of the screen shows 2 time entries.

- 1: Cycle time (measured from the time sewing starts to the time the upper material clamps open)
- 2: Sewing time (measured from the time sewing starts to the time sewing ends)

↳ Changes to the parameters have an effect on cycle time and sewing time.

5.8 Menu structure

The following table provides an overview of the menu structure in the service menu.

Magenta: Menu items for technician-level settings and information.

Structure of the OP5000 service menu

Menu item	Numerical	Function	Subitems	Subitems	Reference
Machine config	1	Used to stipulate the basic settings of the machine which shall apply in all programs			🕮 *p. 75*
	1.1		Load. pos.		🕮 *p. 75*
	1.2		ZZ range		🕮 *p. 77*
	1.3		Thread mon.		🕮 *p. 79*
	1.4		Cut. time		🕮 *p. 80*
	1.5		E-group		🕮 *p. 81*
	1.5.1			Subclass	
	1.5.2			Equipment	
	1.6		Threading pos.		🕮 *p. 84*
	1.6.1			Standard	
	1.6.2			Parallel	
	1.7		Operation mode		🕮 *p. 85*
	1.7.1			Standard	
	1.7.2			Sample	
	1.7.3			Tandem	
	1.7.4			Indexer	

Menu item	Numerical	Function	Subitems	Subitems	Reference
	1.8		Tension data		🕮 *p. 86*
	1.9		Multiflex		🕮 *p. 88*
	1.9.1			Mode	
	1.9.2			X-Corr. L	
	1.9.3			X-Corr. R	
	1.9.4			Y-Corr.	
	1.9.5			Blocklength	
	1.9.6			Knife L	
	1.9.7			Knife R	
	1.10		ZZ offset		🕮 *p. 90*
	1.11		Cut control		🕮 *p. 91*
	1.12		Spec.funct.		🕮 *p. 91*
User config.	2	Used to change language, and technical settings			🕮 *p. 92*
	2.1		Language		🕮 *p. 92*
	2.1.1			Deutsch	
	2.1.2			English	
	2.1.3			Numbers	
	2.2		Start Mode		🕮 *p. 94*
	2.3		Sew.lamp		🕮 *p. 96*
	2.4		Key tones		🕮 *p. 97*

Menu item	Numerical	Function	Subitems	Subitems	Reference
Test functions	3	Used to quickly check the input and output elements, change sewing processes and trace back events			🕮 *p. 98*
	3.1		Multitest		🕮 *p. 98*
	3.1.1			Output test	
	3.1.2			Input test	
	3.1.3			Auto input tst	
	3.1.4			Sew. motor tst	
	3.1.5			Step.motor tst	
	3.1.6			Flash test	
	3.1.7			RAM test	
	3.2		Sewing proc.		🕮 *p. 106*
	3.2.1			Step by step	
	3.2.2			Start ref.	
	3.2.3			St.cont.operat	
	3.2.4			Looper adjust.	
	3.3		Import/Export		🕮 *p. 113*
	3.3.1			Import	
	3.3.2			Export	
	3.4		Events		🕮 *p. 113*
	3.4.1			All events	
	3.4.2			Latest events	
Data transfer	4	Load/save files			
	4.1		Import		🕮 *p. 116*
	4.2		Export		🕮 *p. 117*
Reset data	5	Reset data			🕮 *p. 119*

5.9 Menu item *Machine config*

The menu item *Machine config* allows you to determine the basic settings for the machine which apply to all programs. In this menu item, the following subitems are available for selection:

- Load. pos. (📖 *p. 75*)
- ZZ range (📖 *p. 77*)
- Thread mon. (📖 *p. 79*)
- Cut. time (📖 *p. 80*)
- E-group (📖 *p. 81*)
- Threading mode (📖 *p. 84*)
- Operation mode (📖 *p. 85*)
- Tension data (📖 *p. 86*)
- Multiflex (📖 *p. 88*)

5.9.1 Load. pos.

In the subitem *Load. pos.* you can set the desired loading position.

Parameters in the *Load. pos.* subitem

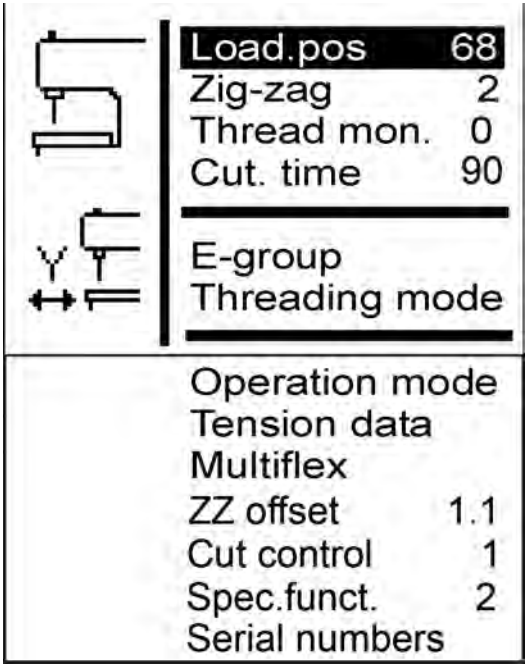
Icon	Entry	Meaning	Possible Value range	Preset value
	Load. pos.	Loading position: Distance from the cutting point	0-68	68

To set the loading position:

1. Select (📖 *p. 69*) *Machine config* in service mode.
2. Press the OK button.

↳ The following appears on the display:

Fig. 47: Load. pos.



3. Press the OK button.

↳ *68* appears on the display.
The preset value is identical to the seam start position.

4. Enter the desired value using the arrow buttons.

5.9.2 Zigzag stitch width

In the subitem *ZZ range* you can check the zigzag stitch width.

On eyelet machines, you can set the zigzag stitch width.

NOTICE

Property damage may occur!

There is a risk of breaking when there are different zigzag stitch widths set within the sewing equipment.

Set both the electronic and mechanical zigzag stitch widths to **narrow** or both to **wide**.
Check the mechanical zigzag stitch width.

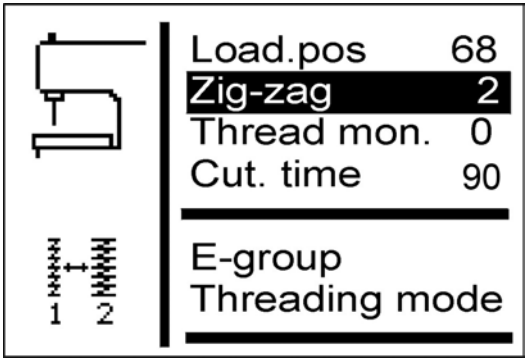
Parameters in the *ZZ range* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	ZZ range	Zigzag stitch width: • 1 = Narrow • 2 = Wide	1-2	

To check the zigzag stitch width:

1. Select (📖 *p. 69*) *Machine config* in service mode.
2. Press the OK button.
3. Press the ▼ button as often as required until *ZZ range* is highlighted on the display.

Fig. 48: ZZ range



Under `ZZ range` the set value (here: `2`) is displayed.

You can only adjust the zigzag stitch width using the corresponding sewing equipment (📖 *p. 81*).

5.9.3 Thread mon.

In the subitem *Thread mon.* the thread monitor for the needle thread is set.

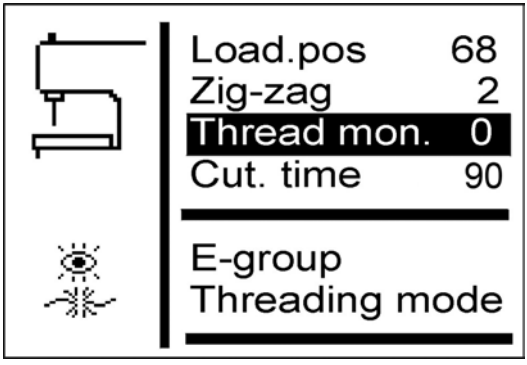
Parameters in the *Thread mon.* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Thread mon.	Number of stitches after which the sewing process is canceled due to a thread breakage	0-14	7

To set the remaining thread monitor:

1. Select (📖 *p. 69*) *Machine config* in service mode.
2. Press the OK button
3. Press the ▼ button as often as required until *Thread mon.* is highlighted on the display.

Fig. 49: Thread mon.



4. Press the ▼ button.

↳ 7 appears on the display.

5. Enter the desired value using the arrow buttons.

5.9.4 Cut. time

In the subitem *Cut. time* you can set the switch-on time of the cutting block individually. As a result, the sewing material to be worked on is cut cleanly and such that it is not unnecessarily long.

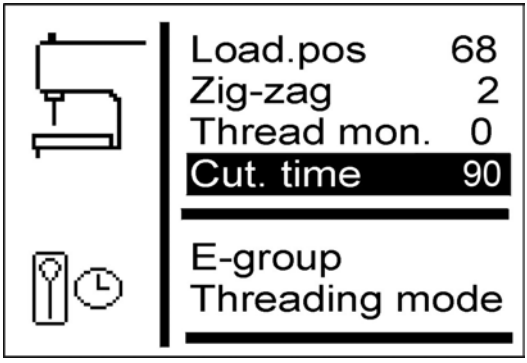
Parameters in the *Cut. time* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Cut. time	Switch-on time of the cutting block in ms	70-300	90

To set the switch-on time of the cutting block:

1. Select (📖 *p. 69*) *Machine config* in service mode.
2. Press the OK button.
3. Press the ▼ button as often as required until *Cut. time* is highlighted on the display.

Fig. 50: Cut. time



4. Press the OK button.
5. Enter the desired value using the arrow buttons.

5.9.5 E-group

You can insert different sewing equipment. In the subitem `E-group` you enter the selected sewing equipment.

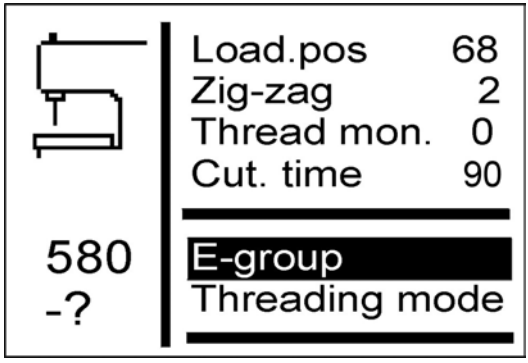
Parameters in the `E-group` subitem

Icon	Entry	Meaning	Possible value range	Preset value
	E-group	see following table		

To set the sewing equipment:

1. Select (📖 *p. 69*) `Machine config` in service mode.
2. Press the OK button.
3. Press the ▼ button as often as required until `E-group` is highlighted on the display.

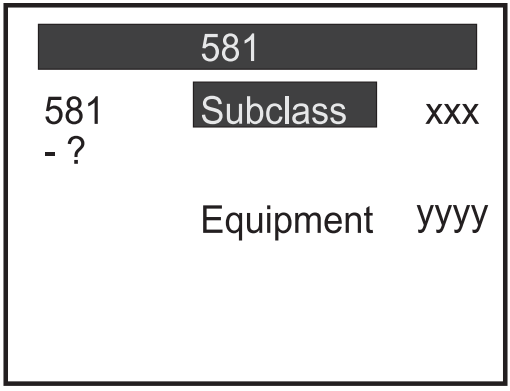
Fig. 51: E-group (1)



4. Press the OK button.

↳ The following appears on the display:

Fig. 52: E-group (2)



5. Press the ▼ button to select *Equipment*.
6. Press the OK button.
7. Enter the selected sewing equipment.

Subclass	Sewing equipment, narrow	Sewing equipment, wide
112	E1101 E1151 E1190	E1121 E1171 E1195
121	E1201 E1202 E1204	E1221 E1222 E1224
141	E1401 E1403	E1421 E1423
151	E1501 E1502 E1504 E1551 E1553 E1590	E1521 E1522 E1524 E1571 E1573 E1595
312	E3101	E3121
321	E3201	E3221
341	E3401	E3421

Information
For subclasses 141 and 314 it is also possible to set acquired length packages in the *E-group* subitem.

5.9.6 Threading position

The subitem *Threading position* is used to set how the machine is set up.

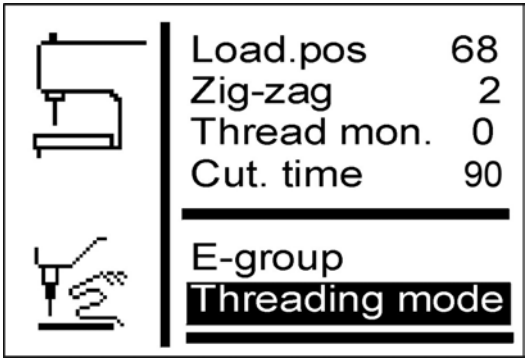
Parameters in the *Threading position* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Threading pos.	• Standard = Normal insertion • Longitudinal = Lateral insertion		

To set the threading position:

1. Select (📖 *p. 69*) *Machine config* in service mode.
2. Press the OK button.
3. Press the ▼ button as often as required until *Threading position* is highlighted on the display.

Fig. 53: Threading position



4. Press the OK button.

↳ *Standard* appears on the display.

5. Press the ▼ button.

↳ *Parallel b/h* appears on the display.

5.9.7 Operation mode

The subitem *Operation mode* is used to set the operating mode.

Parameters in the *Operation mode* subitem

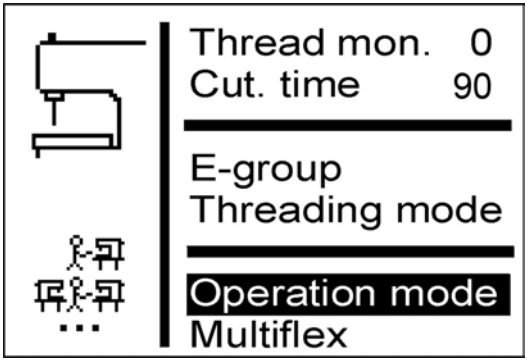
Icon	Entry	Meaning	Possible value range	Preset value
	Operation mode	• **Standard** = Normal sewing • **Sample** = Machine stops before the buttonhole is cut • **Tandem** = Connection to a 2nd machine • **Indexer** = Machine is installed on an indexer		

You can check buttonholes in sample mode.

To set the operating mode:

1. Select (📖 *p. 69*) *Machine config* in service mode.
2. Press the OK button.
3. Press the ▼ button as often as required until *Operation mode* is highlighted on the display.

Fig. 54: Operation mode



4. Press the OK button.

↳ *Standard* appears on the display.

5. Press the ▼ button as often as required until the desired value appears.

5.9.8 Tension data

In the subitem *Tension data* you can set the characteristic values for the magnets of the needle thread tension.

Important

Only change the characteristic values when you install a new magnet! The corresponding values will be enclosed with the magnet in a new order.

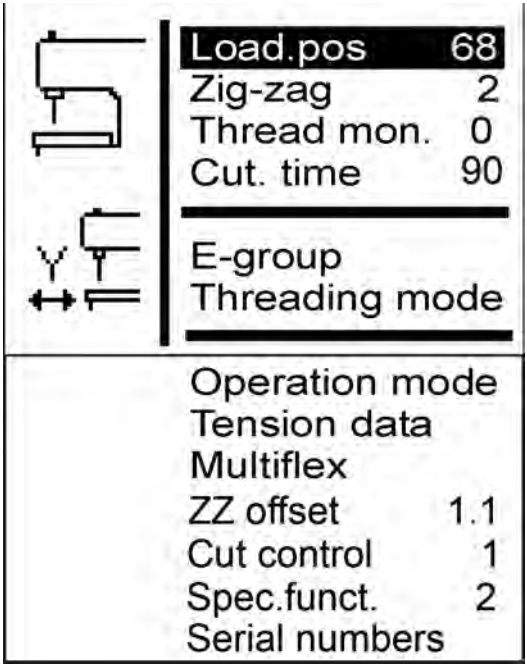
To set the tension data:

1. Select (📖 *p. 69*) *Machine config* in service mode.

2. Press the OK button.

↳ The following appears on the display:

Fig. 55: Tension data



3. Press the ▼ button as often as required until *Tension data* is highlighted on the display.
4. Press the OK button.

↳ Value 1 is highlighted on the display.

5. If you want to change the highlighted characteristic value, press the OK button.
   If you want to change a different characteristic value, press the ▼ button as often as required until that value is highlighted.

5.9.9 Multiflex (581-321 and 581-341 only)

The subitem *Multiflex* is used to set the integrated cutting system.

Parameters in the *Multiflex* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Multiflex	• Mono • Multi		

Mono mode

- X-correction left buttonhole
- X-correction right buttonhole
- Y-correction for both buttonholes

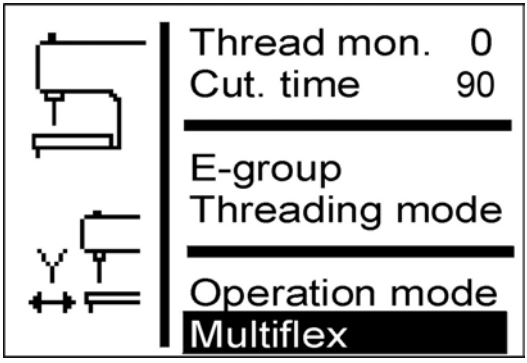
Multi mode

- X-correction left buttonhole
- X-correction right buttonhole
- Y-correction for both buttonholes
- Block length
- Blade number for left blade
- Blade number for right blade

To set the cutting system:

1. Select (📖 *p. 69*) *Machine config* in service mode.
2. Press the OK button.
3. Press the ▼ button as often as required until *Multiflex* is highlighted on the display.

Fig. 56: Multiflex



4. Press the OK button.

↳ *Mono* appears on the display.

5. Press the ▼ button.

↳ *Multi* appears on the display.

6. Press the OK button.

Blades and their shape

Part number	Blade number	Shape
0580 332000	31	With eye 2.8 x 4.3 x 36 mm
0580 332010	21	With eye 2.1 x 3.2 x 36 mm
0580 332020	02	Middle cut without eye 8mm
0580 332030	33	Only eye 2.8 x 4.3 mm
0580 332040	23	Only eye 2.1 x 3.2 mm
0580 332050	01	Without eye 36 mm
0580 332060	32	Middle cut with eye 2.8 x 4.3 x 8 mm
0580 332070	22	Middle cut with eye 2.1 x 3.2 x 8 mm
0580 332100	82	Eyelet ∅ 1.0 mm
0580 332110	83	Eyelet ∅ 1.5 mm
0580 332120	84	Eyelet ∅ 2.0 mm
0580 332130	86	Eyelet ∅ 3.0 mm
0580 332140	88	Eyelet ∅ 4.0 mm

5.9.10 ZZ offset

The subitem *ZZ offset* is used to set the compensation for the zigzag stitch offset.

Parameters in the *ZZ offset* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	ZZ offset	Zigzag stitch offset	0.8-1.6	1.3

5.9.11 Cut control

The subitem *Cut control* is used to set the cutting monitoring.

Parameters in the *Cut control* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Cut control	• 0 = Off • 1 = On	0-1	1

5.9.12 Spec.funct.

You can set the following special functions:

- Only open clamps in the loading position (1)
- Subsequent sewing pattern (2)
- Extended min or max limits (4)
- Open clamps together (8)
- Extra-long buttonholes (16)

Up to 31 combinations are possible here.

5.10 Menu item *User config.*

In the *User config.* menu item, you can specify further machine settings relating to the user.

In this menu item, the following subitems are available for selection:

- *Language* (📖 p. 92)
- *Buttons* (📖 p. 94)
- *Sew.lamp* (📖 p. 96)
- *Key tones* (📖 p. 97)

5.10.1 Language

In the *Language* menu item, select the desired language (German or English or numerical).

Parameters in the *Language* subitem

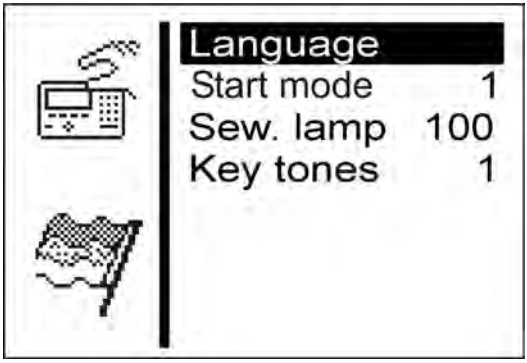
Icon	Entry	Meaning	Possible value range	Preset value
	Language	Setting the language for the user interface	• Deutsch • English • Numerical	

To select the language:

1. Select (📖 p. 69) *User config.* in service mode.
2. Press the OK button.

↳ The following appears on the display:

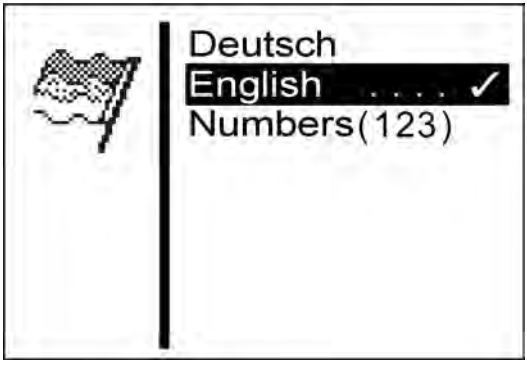
Fig. 57: Language (1)



3. Press the OK button.

↳ The following appears on the display:

Fig. 58: Language (2)



4. Press the ▼ button as often as required until the desired language is highlighted.

5. Press the OK button.

5.10.2 Buttons

In the subitem `Buttons` you can convert the way in which the machine buttons function. There are 2 settings here.

Parameters in the `Buttons` subitem

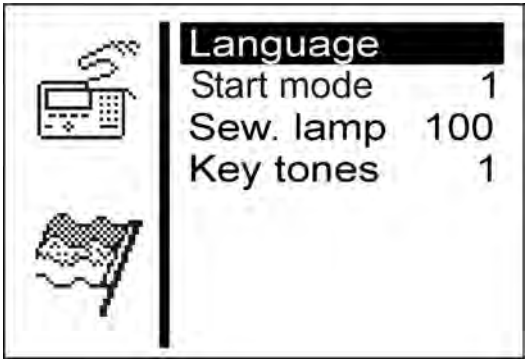
Icon	Entry	Meaning	Possible value range	Preset value
	Buttons	• **1** = *Button 1*: Clamping plates are opened / closed. *Button 2*: The sewing process only starts when the clamping plates are closed • **2** = *Button 1*: Clamping plates are opened / closed. *Button 2*: The sewing process starts. The clamping plates are automatically closed	1-2	2

To convert the way in which the buttons function:

6. Select (📖 *p. 69*) `User config.` in service mode.
7. Press the  button.

↳ The following appears on the display:

Fig. 59: Buttons



8. Press the ▼ button so that `Buttons` is highlighted on the display.
9. Press the OK button.

↳ *2* appears on the display.

10. Press the ▼ button.

↳ *1* appears on the display.

11. Press the OK button.

5.10.3 Sew.lamp

In the subitem *Sew.lamp* you can set the brightness of the sewing lamp, if this additional equipment is installed.

Parameters in the *Sew.lamp* subitem

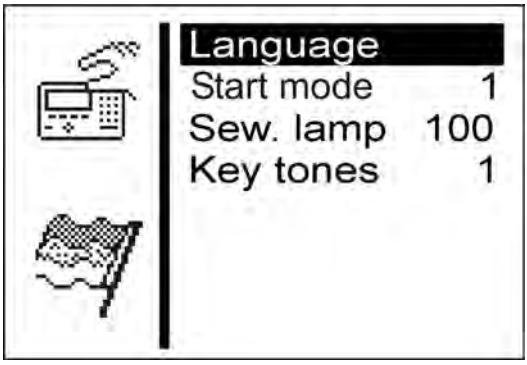
Icon	Entry	Meaning	Possible value range	Preset value
	Sew.lamp	• 0 = Off • 100 = Maximum brightness	0-100	100

To set the brightness of the sewing lamp:

1. Select (📖 *p. 69*) *User config.* in service mode.
2. Press the OK button.

↳ The following appears on the display:

Fig. 60: Sew.lamp



3. Press the ▼ button as often as required until *Sew.lamp* is highlighted on the display.
4. Press the OK button.

↳ *100* appears on the display.

5. Press the ▼ button as often as required until the desired brightness is achieved.
6. Press the OK button.

5.10.4 Key tones

In the subitem *Key tones* you can set the button tones.

Parameters in the *Key tones* subitem

Icon	Entry	Meaning	Possible value range	Preset value
	Key click	• 0 = Off • 1-50 = Peep duration in ms for every button press	0-50	0

To switch the button tones on:

1. Select (📖 *p. 69*) *User config.* in service mode.
2. Press the OK button.

↳ *Language* appears on the display.

3. Press the ▼ button as often as required until *Key tones* is highlighted on the display.
4. Press the OK button.

↳ *0* appears on the display.

5. Set the desired peep duration using the arrow buttons.

5.11 Menu item *Test functions*

WARNING

Risk of injury from sharp and moving parts!
Crushing, cutting or punctures possible.

Exercise the utmost caution when performing tests when the machine is running.

In the menu item *Test functions* you can perform function tests on the input and output elements, check the sewing process and retrace events.

In this menu item, the following subitems are available for selection:

- Multitest (📖 *p. 98*)
- Sewing proc. (📖 *p. 106*)
- Events (📖 *p. 113*)

The subitems have further subitems.

5.11.1 Multitest

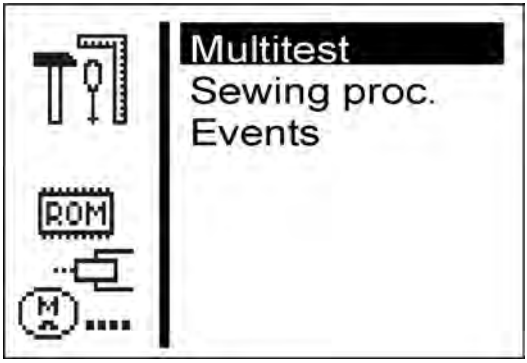
In the subitem *Multitest* you can use the software to test whether specific elements are functioning. Additional measuring equipment is not required.

To select the *Multitest* subitem:

1. Select (📖 *p. 69*) *Test functions* in service mode.
2. Press the OK button.

↳ The following appears on the display:

Fig. 61: Multitest



3. Press the OK button.

↳ The following options are available:

- *Output test*
- *Input test*
- *Auto input tst*
- *Sew. motor tst*
- *Step.motor tst*
- *Flash test*
- *RAM test*

Output test

NOTICE

Property damage may occur!

Testing an output element can lead to collisions with other machine elements. There is a risk of breaking

Before switching on each output element, make sure that this cannot collide with other components.

In the subitem `Output test` you can test the individual output elements.

To perform an output test:

1. Select `Output test`.
2. Press the OK button.
3. Using the arrow buttons, select the desired output element (see *following table*).

↳ The current status is displayed:

- 0 = Output not activated
- 1 = Output activated

4. Press the OK button.

↳ The output is switched over.

Functions of the operating elements

Output	Function
Y01	Needle thread cutter; for 581-112 and 581-312 additional looper thread cutter
Y02	Looper thread tension
Y03	Fabric clamp
Y04	Spreader
Y05	Needle thread advancing device
Y06	Slitter
Y07	Slitter
Y08	Looper thread advancing device; only on the 581-121 and 581-321
Y09	Needle thread catcher to the sewing material
Y10	Open the needle thread catcher
Y11	Needle thread catcher to the needle

Output	Function
Y12	Looper thread cutter; only on the 581-121, 581-141 and 581-321, 521-341
Y13	Multiflex blade
Y14	Multiflex cutting block
Y15	Slitter

You can quit the output test using the ESC button.

Input test

In the subitem *Input test* you can test the individual input elements.

To perform an input test:

1. Select *Input test*.
2. Press the OK button.
3. Using the arrow buttons, select the desired input element (see *following table*).

↳ The current status is displayed:

- 0 = Input not activated
- 1 = Input activated

Functions of the input elements

Input	Function
S03	Cutting punch position
S04	Light barrier mode
S05	Light barrier mode
S09	Button 1
S10	Button 2

Input	Function
S11	Pedal 1
S12	Pedal 2
S13	Pedal 3
RefN	Sewing motor
RefX	X-axis
RefY	Y-axis
RefZ	Z-axis

You can quit the input test using the ESC button.

Auto input tst

In the subitem *Auto input tst* you can test the function of all input elements.

To perform the automatic input test:

1. Select *Auto input tst*.
2. Press the OK button.
   - When the status of an input is changed, this input is automatically displayed.
3. You can quit the automatic input test using the ESC button.

Sew. motor tst

NOTICE

Property damage may occur!

Testing the sewing motor can lead to collisions with other machine elements. There is a risk of breaking.

It is essential that the clamping plates are removed before performing the sewing motor test.

In the subitem *Sew. motor tst* you can test the sewing motor.

During the test, the speed can be increased in intervals of 100.

To carry out the sewing motor test:

1. Select *Sew. motor tst*.
2. Press the OK button.
3. Use the ▲ button to increase the speed.
4. Use the ▼ button to reduce the speed.
5. Quit the motor test using the ESC button.

Step.motor tst

NOTICE

Property damage may occur!

Testing the stepper motor can lead to collisions with other machine elements. There is a risk of breaking.

It is essential that the clamping plates are removed before performing the stepper motor test.

In the subitem *Step.motor tst* you can test the stepper motors.

The stepper motors are tested using the associated reference switches.

To perform the stepper motor test:

1. Select *Step.motor tst*.
2. Press the OK button.
3. With the buttons ◀ or ▶ select the corresponding stepper motor X … Z.
4. Using the ▲ or ▼ buttons, the stepper motor moves forward or back 20 steps.

X = X-direction (transverse movement of the fabric support plate)

Y = Y-direction (longitudinal movement of the fabric support plate)

Z = Z-direction (rotation of the sewing mechanism)

5. Quit the stepper motor test using the ESC button.

Flash test

In the subitem *Flash test* you can test the flash memory by displaying a checksum.

To carry out a flash test:

1. Select *Flash test*.
2. Press the OK button.

↳ *Busy* appears on the display.
When the flash test ends, the calculated checksum is displayed on the left and *OK* or *Error* on the right.

3. Quit the flash test using the ESC button.

RAM test

In the subitem *RAM test* you can test the working memory.

To carry out a RAM test:

1. Select *RAM test*.
2. Press the OK button.

↳ *Busy* appears on the display.
When the RAM test is ended, one of two events is displayed:

- OK = Working memory is working properly
- Error = Error in the working memory

3. Quit the RAM test using the ESC button.

5.11.2 Sewing proc.

WARNING

Risk of injury from sharp and moving parts!

Crushing, cutting or punctures possible.

Do not perform any maintenance or setting works during testing.

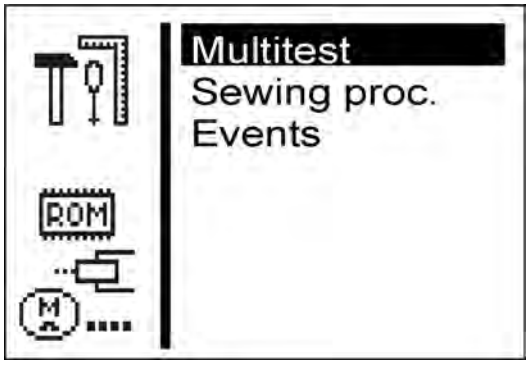
In the subitem *Sewing proc.* you can test the sewing process.

To select the *Sewing proc.* subitem:

1. Select (📖 *p. 69*) *Test functions* in service mode.
2. Press the OK button.

↳ The following appears on the display:

Fig. 62: Sewing proc.



3. Press the ▼ button so that *Sewing proc.* is highlighted on the display.

4. Press the OK button.

↳ The following options are available:

- *Step by step*
- *Start ref.*
- *St.cont.operat*
- *Looper adjust.*

Step by step

In the subitem *Step by step* sewing is stopped at various points during the sewing process. The stop points make it easier to check and set the machine.

To start the test program:

1. Press the OK button.

↳ The set value has the following meaning:

- 0 = Normal sewing process, the test program is switched off.
- 1 = After switching the valves for the needle thread catcher, the sewing process is stopped.
- 2 = After switching the valves for the relevant thread cutting system, the sewing process is stopped.
- 3 = After switching each valve, the sewing process is stopped.

You can quit the test program by pressing OK and then ◀.

Start ref.

In the subitem *Start ref.* you can start a reference run.

With the aid of the reference run, you can perform basic machine settings.

To start a reference run:

1. Select *Start ref*.
2. Press the OK button.

St.cont.operat

In the subitem *St.cont.operat* you can start a continuous run.

Before the start of sewing, a security prompt is first displayed, which must be confirmed with *Yes*.

To start a continuous run:

1. Select *St.cont.operat*.
2. Press the OK button.

Looper adjust.

In the subitem Looper adjust. you can check the sewing tool settings. To this end the sewing motor moves to the pinning points for calibration (📖 *Service Instructions)* and then to the various settings to check the looping stroke, needle stroke, needle protection and spreader positions.

To check the sewing tools:

1. Select Looper adjust.
2. Press the OK button.

↳ The machine performs a reference run. The following appears on the display:

Fig. 63: Looper adjust. (1)

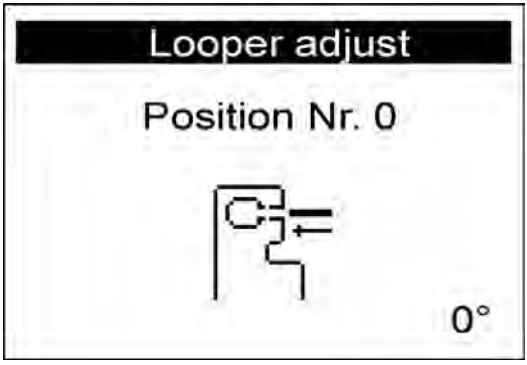


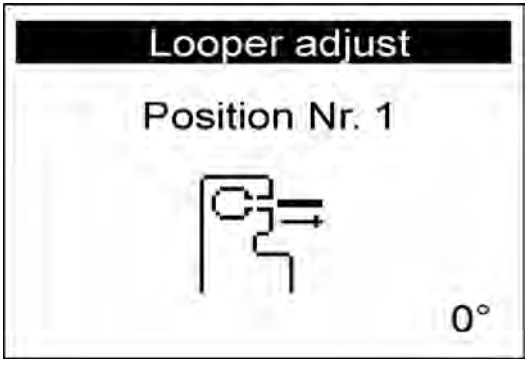
Fig. 64: Looper adjust. (2)

(1) - Arresting pin

3. Insert the arresting pin (1) and check whether the pin is engaged in the slot of the arm shaft.
   In this position, the needle bar must be at top dead center.

4. Press the OK button.
   ↳ The following appears on the display:

Fig. 65: Looper adjust. (3)

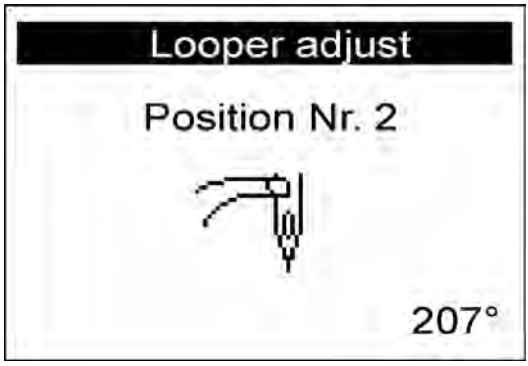


5. Remove the arresting pin (1) again.

6. Press the OK button.

↳ The sewing motor moves into the test position 2 (looping stroke left).
The following appears on the display:

Fig. 66: Looper adjust. (4)



7. Check whether the tip of the left looper is at the center of the needle.

If you have to change the looper setting, proceed as follows:

1. Press the OK button.

↳ The machine moves back into the position 0.

2. Swivel the machine up.

↳ The screws for the looper setting are now accessible.

3. Change the looper setting.
4. Swivel the machine down.

5. Press the OK button.

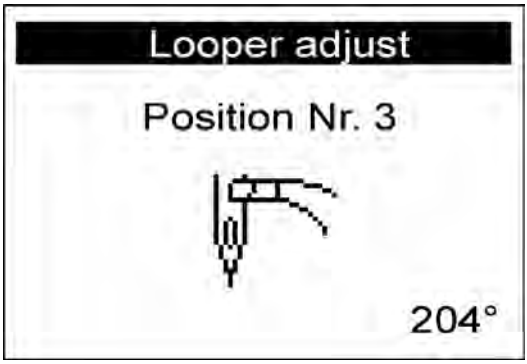
↳ The sewing motor moves back into the test position 2 again.

6. Check the looper setting.

7. Press the OK button.

↳ The sewing motor moves into the test position 3 (looping stroke right).
The following appears on the display:

Fig. 67: Looper adjust. (5)



You can check the looper setting and, if required, set as described previously.

When you press the OK button, the next test position of the sewing tool appears on the display (see *following table*).

Important

When setting the needle bar height, you need to choose the position such that the entire needle eye can be seen below the left looper tip!

Positions and settings

Position	Setting
4	Needle bar height
5	Needle guard, left
6	Needle guard, right
7	Spreader, left open
8	Spreader, left closed
9	Spreader, right open
10	Spreader, right closed

5.11.3 Events

In the subitem *Events* you can retrace events.

To select the *Events* subitem:

1. Select (📖 *p. 69*) *Test functions* in service mode.
2. Press the OK button.
3. Select *Events*.
4. Press the OK button.

↳ The following options are available:

- *All events*
- *Latest events*

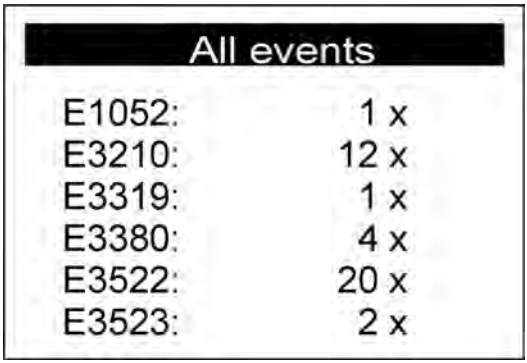
All events

In the subitem *All events* all events that have occurred are displayed.

An explanation of the error messages is provided on 📖 *p. 159*.

Example:

Fig. 68: All events



To call up all events:

1. Select `All events`.
2. Press the OK button.

↳ All events are displayed.

You can also display other events by pressing the F button.

You can quit the subitem using the ESC button.

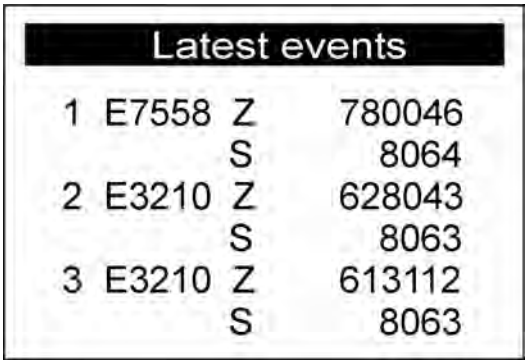
Latest events

In the subitem `Latest events` the events that occurred most recently are displayed.

An explanation of the error messages is provided on 📖 *p. 159*.

Example:

Fig. 69: Latest events



To call up the latest events:

1. Select `Latest events`.
2. Press the OK button.

   The latest events are displayed.

You can quit the subitem using the ESC button.

5.12 Menu item *Data transfer*

The menu item *Data transfer* allows you to save or load buttonhole programs to or from a USB key.

In this menu item, the following subitems are available for selection:

- *Import* (📖 *p. 116*)
- *Export* (📖 *p. 117*)

5.12.1 Import

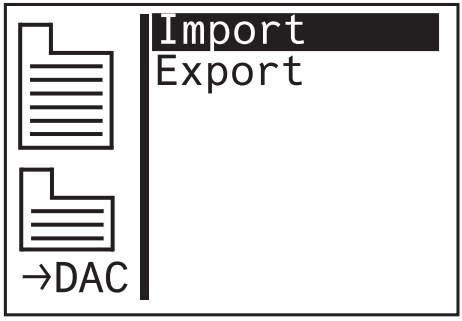
The menu item *Import* allows you to load buttonhole programs from a USB key onto the machine.

To select the *Import* subitem:

1. Select (📖 *p. 69*) *Data transfer* in service mode.
2. Press the OK button.

↳ The following appears on the display:

Fig. 70: Import (1)

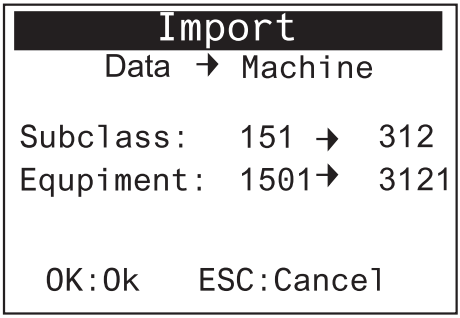


3. Press the OK button.

↳ The data is imported.

If the buttonhole programs originate from a machine with a different subclass or from a different item of sewing equipment, the following information appears on the display:

Fig. 71: Import (2)



4. Press the OK button to import the data.

↳ The data is imported, and the display returns to *Import/ Export*.

5. Press the ESC button to cancel the data import.

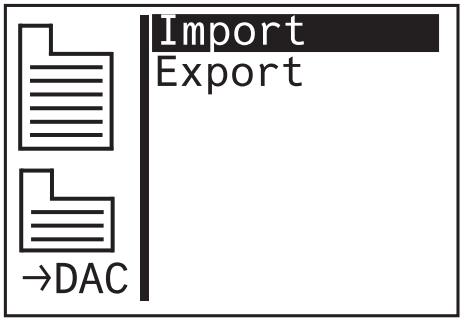
5.12.2 Export

The menu item *Export* allows you to save buttonhole programs from the machine to a USB key.

To select the *Export* subitem:

1. Select (📖 *p. 69*) *Data transfer* in service mode.
2. Press the OK button.
3. The following appears on the display:

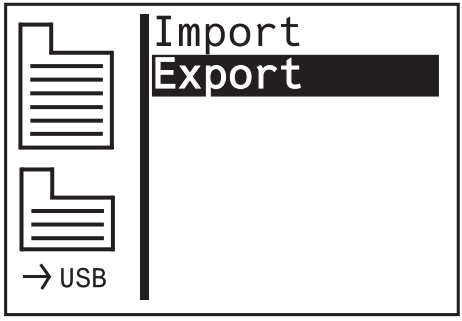
Fig. 72: Export (1)



4. Press the button and select *Export*.

↳ The following appears on the display:

Fig. 73: Export (1)



5. Press the OK button to save the data to the USB key.

↳ The data is exported, and the display returns to *Import/ Export*.

5.13 Menu item `Reset data`

NOTICE

Data loss due to reset!

All settings are lost during a reset.

Before resetting, make sure that you have saved all the important data.

In the menu item `Reset data` you can reset programs and parameters to the delivery state if the machine is no longer working correctly. For security reasons, you are asked to input the code once again.
Only the calibration values and the set subclass are retained.

6 Maintenance

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

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

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.

Maintenance interval

Work to be carried out	Operating hours			
	8	40	160	500
Machine				
Remove accumulations of fluff	●			
Remove any lint in the area below the throat plate	●			
Check the oil level	●			
Check and clean the toothed belt			●	
Lubricate the cutting punch			●	

Work to be carried out	Operating hours			
	8	40	160	500
Lubricate the clamping arm at the felt			●	
Lubricate the felt at the cam plate			●	
Pneumatic system				
Check the water level in the pressure controller	●			
Clean the filter element in the compressed air maintenance unit	●			
Check the tightness of the system			●	

6.1 Cleaning

WARNING

Risk of injury from flying particles!

Flying particles can enter the eyes, causing injury.

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

NOTICE

Property damage from soiling!

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

Clean the machine as described.

NOTICE

Property damage from solvent-based cleaners!

Solvent-based cleaners will damage paintwork.

Use only solvent-free substances for cleaning.

The machine must be cleaned of dust and thread remnants on a daily basis. A clean machine provides protection from disturbances.

To clean the machine:

1. Clean the area of the looper, thread cutter, throat plate and the sewing head of sewing dust, thread remnants and cutting waste.
   If a vacuum is available, it is recommended to vacuum the sewing waste.
2. If required, empty the cutting waste from the suction container.

6.2 Lubricating

CAUTION

Risk of injuries 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.

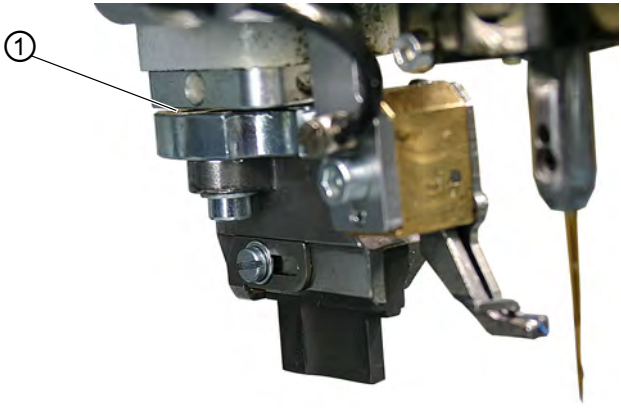
For topping off the oil reservoir, use only lubricating oil **DA 10** or oil of equivalent quality with the following specifications:

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

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

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

Fig. 74: Lubricating (1)



(1) - Cutting punch

Lubricate the machine as follows:

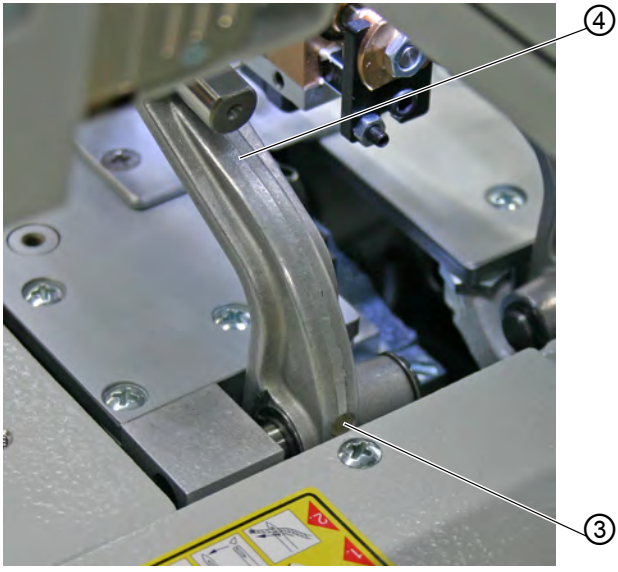
1. Lubricate the cutting punch (1).

Fig. 75: Lubricating (2)

(2) - Cam disk

2. Lubricate the felt at the cam plate (2).

Fig. 76: Lubricating (3)



(3) - Felt *(4) - Clamping arm*

3. Lubricate the felts (3) of the clamping arms (4).

6.3 Servicing the pneumatic system

6.3.1 Setting the operating pressure

Information
The operating pressure is 6.5 bar.

The operating pressure is preset and cannot be adjusted.

6.3.2 Draining the water condensation

NOTICE

Property damage from excess water!
Excess water can cause damage to the machine.

Drain water as required.

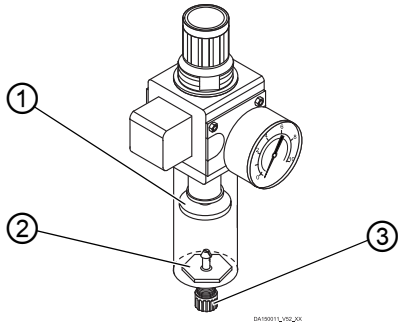
Water condensation accumulates in the water separator (2) of the pressure controller.

Proper setting

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

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

Fig. 77: Draining the water condensation



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

To drain water condensation:

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

6.3.3 Cleaning the filter element

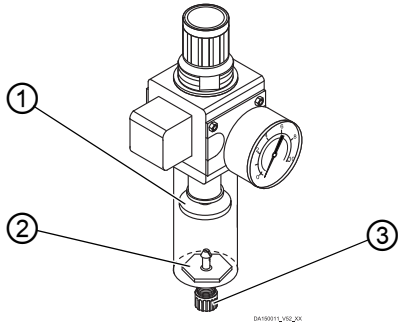
NOTICE

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. 78: Cleaning the filter element



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

To clean the filter element:

1. Disconnect the machine from the compressed air supply.
2. Drain the water condensation (📖 *p. 127*).
3. Loosen the water separator (2).
4. Loosen the filter element (1).
5. Blow out the filter element (1) using a compressed air gun.
6. Wash out the filter tray using benzine.
7. Tighten the filter element (1).
8. Tighten the water separator (2).
9. Tighten the drain screw (3).
10. Connect the machine to the compressed air supply.

6.4 Changing the cutting blocks and blade

Depending on the area of application, you must change the cutting blocks and blade after six months at the earliest. You can change the cutting length by changing the cutting blocks. The method for changing the cutting blocks and/or the blade differs depending on the subclasses.

WARNING

Risk of injury from sharp parts!

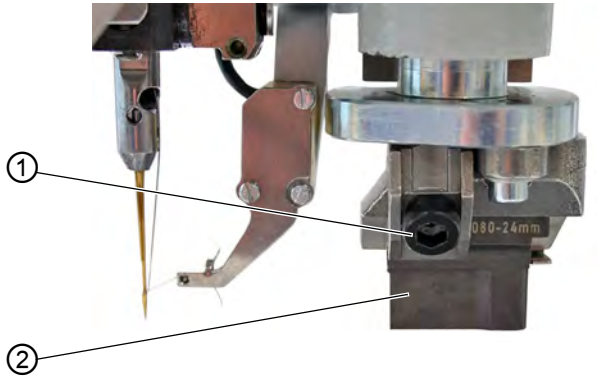
Cutting injuries may be sustained.

Only change the cutting block or blade when the machine is switched off.

6.4.1 Subclass without multiflex

Changing the cutting block

Fig. 79: Changing the cutting block



(1) - Screw *(2) - Cutting block*

To replace the cutting block:

1. Loosen the screw (1) (Allen key in the accessory pack).
2. Pull the cutting block (2) forward and remove.

3. Insert the new cutting block and push to the end stop.
4. Re-tighten the screw (1).

Changing the blade

Fig. 80: Changing the blade

(3) - Blade *(4) - Screw*

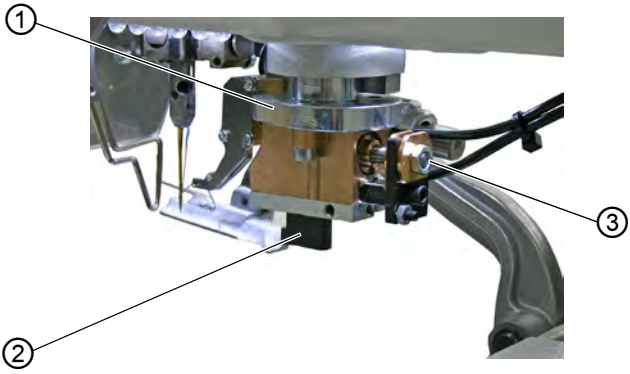
To change the blade:

1. Loosen the screw (4).
2. Pull the blade (3) forward and remove.
3. Insert the new blade and push to the end stop.
4. Re-tighten the screw (4).

6.4.2 Subclass with Multiflex

Changing the cutting block

Fig. 81: Changing the cutting block (multiflex)



(1) - Cutting block holder
(2) - Cutting block
(3) - Screw

To replace the cutting block:

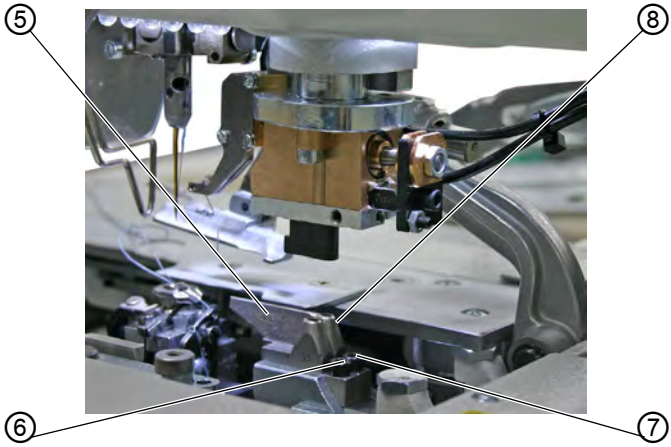
1. Remove compressed air supply hose (📖 *p. 146*).
2. Press the cutting block holder (1) down carefully with a screwdriver.
3. Loosen the screw (3).
4. Pull the cutting block (2) out to the left.
5. Push the new cutting block (2) into the guide and tighten the screw (3).
6. Reconnect the compressed air hose.

When the compressed air is connected (📖 *p. 146*), the cutting block holder automatically moves back up.

Information
If you want to use a cutting block with a different length, you must make the appropriate setting on the control panel (📖 *Service Instructions).*

Changing the blade

Fig. 82: Changing the blade (multiflex)



(4) - Blade
(5) - Screw
(6) - Screw
(7) - Blade

To change the blade:

1. Loosen screw (5) or (6) (Allen key in the accessory pack).
2. Remove blade (4) or (7).
3. Insert the new blade and tighten with screw (5) or (6).

Important
If you cannot remove the blade, slightly loosen the screw of the second blade.

Information
If you want to use a blade with a different shape, you must make the appropriate settings on the control panel (📖 *Service Instructions).*

6.5 Parts list

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

www.duerkopp-adler.com

7 Setup

WARNING

Risk of injury from cutting parts!

Cutting injuries may be sustained.

The machine may only be set up by trained specialists.
Wear safety gloves and safety shoes.

7.1 Checking the scope of delivery

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

7.2 Removing the transport locks

All transport locks must be removed prior to setup.

To remove the transport locks:

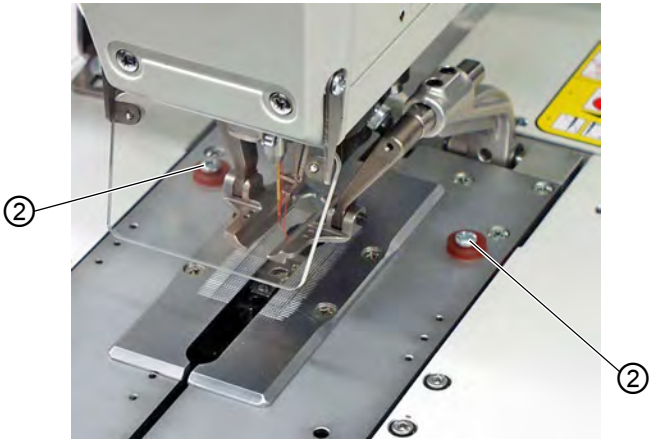
1. Remove the lashing straps and wooden blocks from the
   - Machine head
   - Machine table
   - Stand

Fig. 83: Removing the transport lock of the machine head

(1) - Screw

2. Remove the screw (1) on the oil pan below the tabletop.
   The screw prevents the machine head from swiveling up during transport.

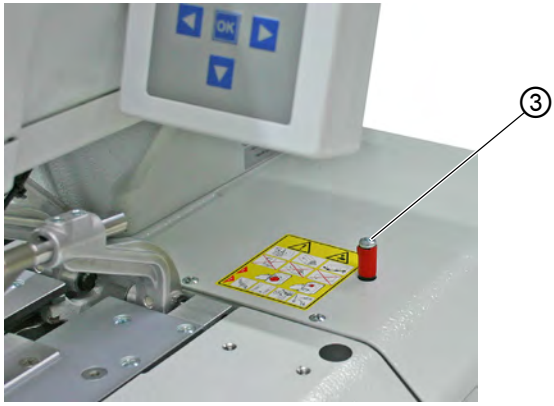
Fig. 84: Removing the transport lock of the clamping plates



(2) - Screws

3. Remove screws (2).
   The screws prevent the clamping plates from falling out.

Fig. 85: Removing the transport lock of the machine table



(3) - Screw

4. Remove the screw (3).

7.3 Assembling the stand

It you ordered the stand matching the machine, use the ring bolt to insert the machine (📖 *p. 138*).

If you would like to use a different stand, you must perform the following work independently:

- Assemble the main switch (📖Additional Instructions *Connecting the control box at the main switch*)
- Assemble the tabletop (📖 *p. 137*)
- Assemble the compressed air maintenance unit (📖 *p. 147*)

7.4 Assembling the tabletop

If you want to make your own tabletop, use the drawing (📖 *p. 185*) as a template for the dimensions. The tabletop should be approx. 40 mm thick.

7.5 Using the ring bolt

Fig. 86: Using the ring bolt

(1) - Ring bolt *(2) - Machine*

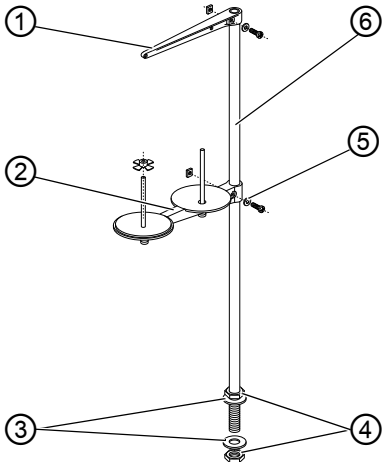
The ring bolt makes it easier for you to lift the machine into the stand. You can use it e.g. to lift the machine with a suspension crane or you can also thread a stable rod through the ring bolt and then have 2 people lift the machine. The ring bolt is in the accessory pack.

To use the ring bolt:

1. Screw the ring bolt (1) onto the machine.
2. Lift the machine (2) into the stand.
3. When the machine is assembled, unscrew the ring bolt (1) again.

7.6 Assembling the reel stand

Fig. 87: Assembling the reel stand



(1) - Thread guide
(2) - Thread reel holder
(3) - Washers
(4) - Nuts
(5) - Washer
(6) - Reel stand

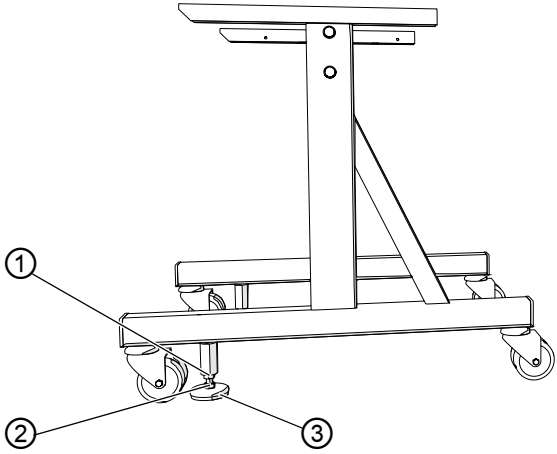
To assemble the reel stand:

1. Insert the reel stand (6) into the hole of the tabletop and secure with nuts (4) and washers (3).
2. Assemble the thread reel holder (2).
3. Assemble the thread guide (1).
4. Align the thread reel holder (2) and thread guide (1) so that thread reel holder and thread guide are parallel to one another.

Information
You must set the centering piece to suit the type of thread reel. Incorrect settings can result in sewing disruptions.

7.7 Securing the stand

Fig. 88: Securing the stand



(1) - Counternut
(2) - Nut
(3) - Support plate

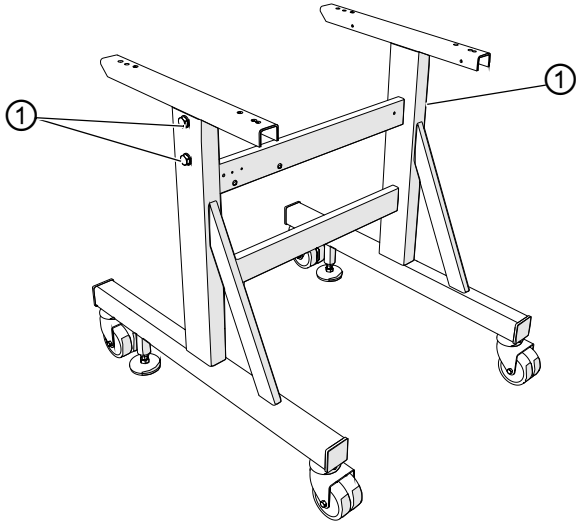
To ensure that the stand cannot move unintentionally, you have the option of securing it.

To secure the stand:

1. Screw both support plates (3) on the nut (2) as far down as required to ensure that the machine is firm and secure.
2. Screw the counternut (1) upward.
3. Tighten the counternut (1) slightly.

7.8 Setting the working height

Fig. 89: Setting the working height



(1) - Screws

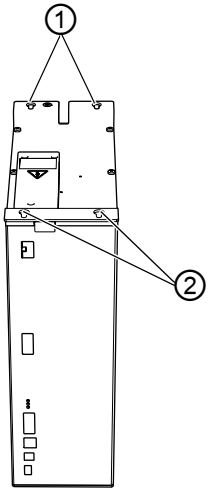
The working height can be continuously adjusted between 73 cm and 90 cm (measured to the upper edge of the tabletop).

To set the working height:

1. Loosen the screws (1) on both sides of the stand.
2. Adjust the tabletop of the machine so that it is level at the desired working height.
   To avoid jamming, slide the tabletop in or out evenly at both sides.
3. Tighten the screws (1).

7.9 Assembling the control

Fig. 90: Assembling the control

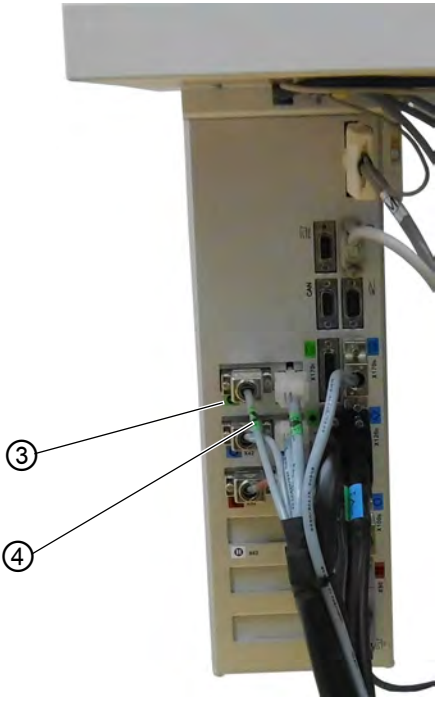


(1) - Screw position *(2) - Screw position*

To assemble the control:

1. Use screws to mount the control to the underside of the table-top at positions (1) and (2). The side housing the type plate will be pointing to the left.

Fig. 91: Connecting the control



(3) - Connection *(4) - Cable*

2. Connect all plugs with the relevant connections. The plugs are clearly labeled by means of identification on the cable (4), and the connections (3) on the housing are labeled correspondingly.
   The cable and the connection have the same designation or the same symbol.
3. Connect all plugs with the connections.

7.10 Electrical connection

DANGER

Risk of death from live components!

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

Only qualified specialists may perform work on electrical equipment.

You establish the electrical connection as follows:

1. Connect the machine in accordance with the wiring diagram (📖 *p. 185*).

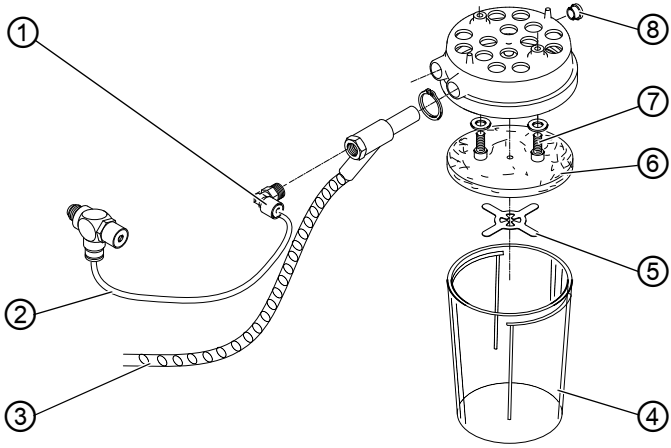
7.11 Establishing equipotential bonding

To establish equipotential bonding:

1. Establish equipotential bonding in accordance with the wiring diagram (📖 *p. 185*).

7.12 Assembling the suction container

Fig. 92: Assembling the suction container



(1) - Angle piece
(2) - Hose
(3) - Hose
(4) - Container
(5) - Spring plate
(6) - Foam
(7) - Screws
(8) - Blanking plug

The cutting waste that occurs during sewing ends up in the suction container.

To assemble the suction container:

1. Disassemble components 4, 5, 6 and 7 of the suction container in accordance with the figure.
2. Insert the blanking plug (8).
3. Screw the suction container into the pre-drilled holes below the oil pan using the screws (7).
4. Tighten the foam (6) with the spring plate (5) again.
5. Tighten the container (4).
6. Connect the hose (3) to the suction container via the injector. Cutting waste is extracted via the hose (3) into the container (4).
7. Screw the angle piece (1) onto the injector.
8. Connect the suction container with the pressure supply via the hose (2).

7.13 Pneumatic connection

The pneumatic system of the machine and the additional equipment must be supplied with moisture-free, non-lubricated compressed air. A pneumatic connection package for stands with maintenance unit and pneumatic auxiliary equipment is available for this purpose:

- Connection hose, 5 m long, Ø = 9 mm
- Hose connectors and hose clamps
- Coupling socket and coupling cover R ¼

NOTICE

Property damage from oily compressed air!

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

Ensure that no oil particles enter the compressed air supply.

NOTICE

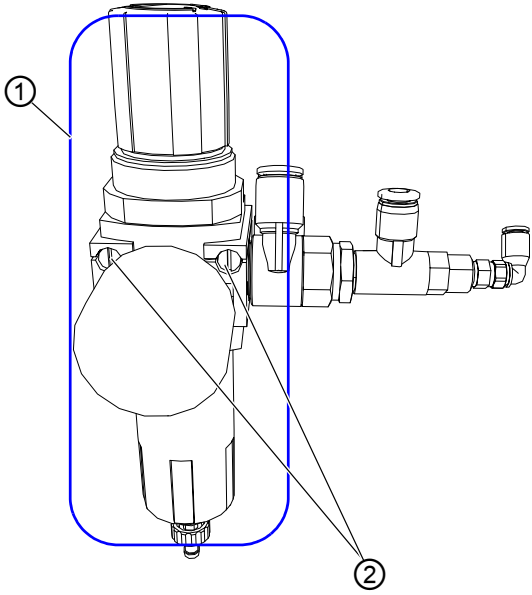
Property damage from incorrect setting!

Incorrect system pressure can result in damage to the machine.

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

7.13.1 Assembling the compressed air maintenance unit

Fig. 93: Assembling the compressed air maintenance unit (1)

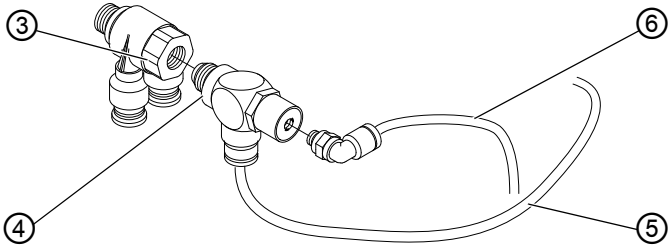


(1) - Compressed air maintenance unit *(2) - Screws*

To assemble the compressed air maintenance unit:

1. Assemble the compressed air maintenance unit (1) to the tabletop using screws (2).

Fig. 94: Assembling the compressed air maintenance unit (2)



(3) - Distributor
(4) - Valve
(5) - Hose
(6) - Connection hose

2. Connect the valve (4) to the hose (5) for the suction container.
3. Connect the connection hose (6) for the compressed air to the valve (4).

7.13.2 Setting the operating pressure

Information
The operating pressure is 6.5 bar.

The operating pressure is preset and cannot be adjusted.

7.14 Checking the lubrication

The wicks, felt, looper and needle bar must all be lubricated with a little oil when setting up the machine, or after longer standstill periods.

All moving parts in the machine are lubricated via an oil-wick system from 2 oil reservoirs.

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 the legal regulations.

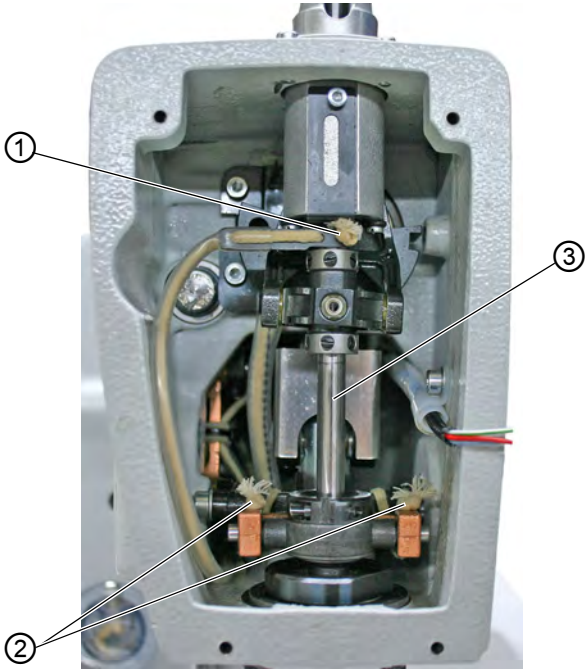
Use only **DA 10** lubricant or an equivalent oil conforming to the following specifications for lubrication:

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

Lubricate the machine as follows:

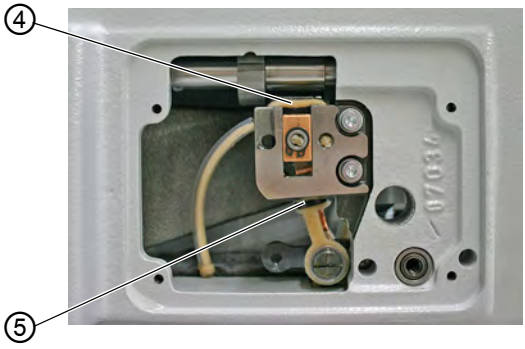
1. Unscrew the head and side covers.

Fig. 95: Lubricating (1)



(1) - Wick
(2) - Wick
(3) - Needle bar

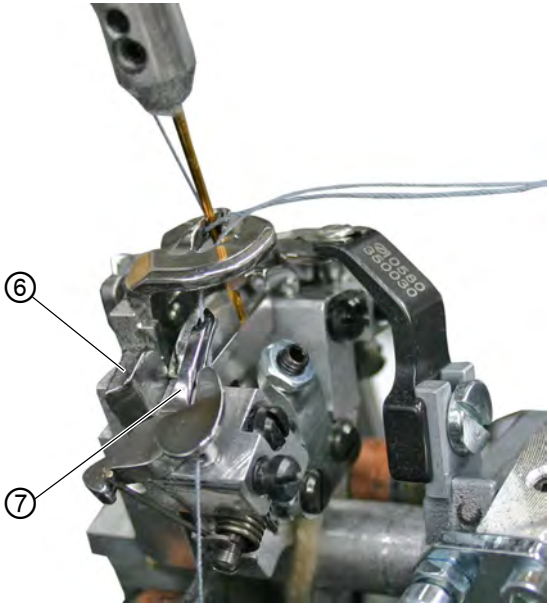
Fig. 96: Lubricating (2)



(4) - Wick
(5) - Felt

2. Soak the wicks (1) and (2) as well as felt (5) with a little oil.
3. Add 1-2 drops of oil to the pendulum sleeve and needle bar (3).
4. Screw the head and side covers on.
5. Remove the clamping plates.
6. Soak the wick (4) with a little oil.

Fig. 97: Lubricating (3)



(6) - Spreader plate *(7) - Spreader*

7. Add 1-2 drops of oil to the spreader plate (6) and to the spreader (7).

Topping off the oil

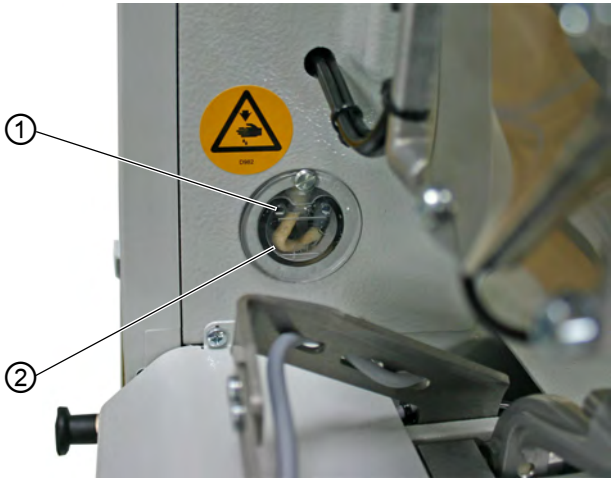
For topping off the oil reservoir, use only lubricating oil **DA 10** or oil of equivalent quality with the following specifications:

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

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

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

Fig. 98: Topping off the oil (1)



(1) - Fill opening *(2) - Oil reservoir*

To top off with oil:

1. Top off the oil reservoir (2) through the fill openings (1) up to the MAX mark

Fig. 99: Topping off the oil (2)

(3) - Fill opening *(4) - Oil reservoir*

2. Top off the oil reservoir (4) through the fill opening (3) up to the MAX mark.

7.15 Adjusting the material edge stops

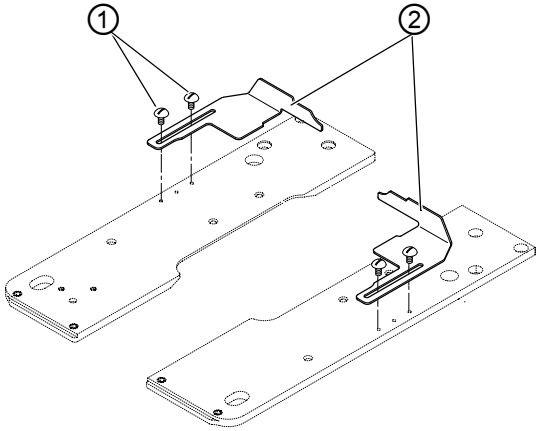
WARNING

Risk of injury from sharp parts!

Punctures possible.

Only set the material edge stops when the machine is switched off.

Fig. 100: Adjusting the material edge stops



(1) - Screws *(2) - Material edge stops*

To enable you to work precisely with the sewing material, you can adjust the position of the material edge stops.

To set the material edge stops:

1. Insert the sewing material until it comes into contact with the material edge stops (2) on the right and left sides.
2. Loosen the screws (1) on the right and left sides.
3. Set the sewing position by moving the material edge stops (2) back and forth.
4. Re-tighten the screws (1).

7.16 Carrying out a test run

Once the setup work is complete, put the machine into operation and perform a test run. Follow the order given below:

Order

1. Switch on the machine.
2. Carry out a test run.
3. Switch off the machine.

To perform a test run:

1. Insert the sewing material.
2. Select a buttonhole shape (📖 *p. 51*) and first set a low speed.
3. Sew the buttonhole (📖 *p. 42*).
4. Continuously increase the speed.
5. Check whether the buttonhole meets the desired requirements.

If the requirements are not met, change the thread tension (📖 *p. 34*).

Information
If the welcome screen does not appear on the control panel after switching on even after waiting for a long time, this means that there is no software on the control.

In this case, the software must first be installed (📖 *Service Instructions*).

8 Decommissioning

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

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

Skin damage from contact with oil!

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

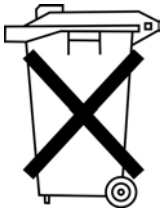
Avoid contact with oil residues.

To decommission the machine:

Step

1. Switch off the main switch located centrally under the sewing material support surface.
2. Unplug the power plug.
3. Disconnect the pneumatic connection.
4. Remove residual oil from the oil pan under the sewing material support surface 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 soiling and damage.

9 Disposal



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

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

CAUTION

Risk of environmental damage from improper disposal!

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

ALWAYS comply with the legal regulations regarding disposal.

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

10 Troubleshooting

10.1 Customer Service

Contact for repairs and issues with the machine:

Dürkopp Adler AG

Potsdamer Str. 190
33719 Bielefeld, Germany

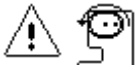
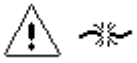
Phone: +49 (0) 180 5 383 756
Fax: +49 (0) 521 925 2594

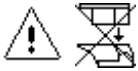
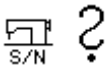
Email: service@duerkopp-adler.com
Internet: www.duerkopp-adler.com

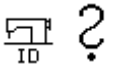
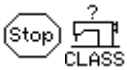
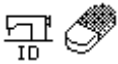
10.2 Messages of the software

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

10.2.1 Information messages

Symbol	Description	Remedial action
	At the start of sewing, the needle is not in the upper initial position or is on the wrong side	• Turn the handwheel until the message disappears
	The machine is in the threading position and is then ready for sewing.	• After threading, press the button on the head cover to return to sewing mode
	The thread breaks during sewing	• Press the button on the head cover to move to the threading position

Symbol	Description	Remedial action
	At the start of sewing the needle is in the threading position	• Press the button on the head cover • Switch the machine off and on again
	No compressed air available, or the pressure is too low	• Switch off the machine • Ensure the supply of sufficient compressed air • Switch on the machine
	A prohibited cutting combination was selected (ONLY for Multiflex)	• In the control, check and adjust the data for the blade and cutting block set • If necessary, insert and set an appropriate blade and cutting block
	The sewing process stops (ONLY for 141, 341 with integrated and activated gimp monitoring)	• The sewing process can be continued with the **OK** button or button 2, or stopped with the **ESC** button or button 1
	The serial number of the machine has not been entered	• Press the **OK** button • Contact DA service

Symbol	Description	Remedial action
 :6361	Machine ID not found	• Check the plug
	• Wrong class • The software does not match the class	• after 5 seconds, a screen appears with the display of the class • Continue with **YES**: **Caution!** the update will overwrite all existing data Continue with **NO**: Abort • Order and load the correct software
	Machine ID has not been initialized	• Press the **OK** button

10.2.2 Error messages

If an error occurs, the 

symbol appears on the display, followed by a 4-digit number combination.

Error	Meaning	Possible cause	Remedial action
1000	Sewing motor fault	• Encoder plug (Sub-D, 9-pin) not connected or defective • Encoder defective	• Check the connection of the encoder cable and replace, if necessary
1001	Sewing motor fault	• Sewing motor plug not connected or defective	• Check the connection of the sewing motor cable • Test sewing motor phases (R = 2.8 Ω, high impedance to PE) • Replace the encoder • Replace the sewing motor • Replace the control
1002	Sewing motor insulation error		• Check motor phase and PE for low-impedance connection • Replace the encoder • Replace the sewing motor
1004	Sewing motor fault	• Incorrect direction of rotation	• Replace the encoder • Check plug assignment and change, if necessary • Check wiring in machine distributor and change it, if necessary • Test motor phases and check for correct value
1005	Sewing motor current feed fault	• Sewing motor blocked • Encoder cable not connected or defective • Encoder defective	• Remove the blockage • Check the encoder cable and replace, if necessary • Replace the sewing motor

Error	Meaning	Possible cause	Remedial action
1006	Sewing motor fault	• Max. speed exceeded • Sewing motor cable defective • Sewing motor defective	• Switch the machine off and on again • Replace the encoder • Perform reset • Replace the sewing motor • Contact customer service
1007	Error in the reference run		• Replace the encoder • Eliminate stiff movement in the machine
1008	Sewing motor encoder error		• Replace the encoder
1010	Sewing motor synchronization error	• External synchronizer plug (Sub-D, 9-pin) not connected	• Connect plug of external synchronizer to control, use correct connection (Sync) • Replace the reference switch or synchronizer • Only required for machines with transmission!
1011	Sewing motor synchronization error (Z pulse)		• Switch off the control, use handwheel to turn and switch on the control again • If error is not corrected, check encoder
1012	Sewing motor synchronization error		• Replace the synchronizer
1051	Sewing motor timeout	• Cable to sewing motor reference switch defective • Reference switch defective	• Replace the cable • Replace reference switch (9815 935006)
1052	Sewing motor overcurrent	• Sewing motor cable defective • Sewing motor defective • Control defective	• Replace the sewing motor cable • Replace the sewing motor • Replace the control

Error	Meaning	Possible cause	Remedial action
1053	Line voltage too high	• Line voltage too high	• Check the line voltage
1054	Internal short circuit		• Replace the control
1055	Sewing motor overload	• Sewing motor is sluggish or is blocked • Sewing motor defective • Control defective	• Eliminate sluggishness/ blockage • Replace the sewing motor • Replace the control
1056	Sewing motor overtemperature	• Sewing motor not moving freely • Sewing motor defective • Control defective	• Eliminate sluggishness • Replace the sewing motor • Replace the control
1058	Sewing motor speed is greater than the setpoint	• Reference switch defective • Sewing motor defective	• Replace reference switch (9815 935006) • Replace the sewing motor
1060	PowerParts		• Replace the control
1062	Sewing motor IDMA auto-increment	• Disturbance	• Switch the machine off and on again
1120	Software error	• Parameter not initialized	• Perform software update
1203	Sewing motor: Position not reached		• Switch the machine off and on again • Perform software update • Contact Customer Service
1302	Sewing motor current feed fault	• Sewing motor blocked • Encoder cable not connected or defective • Encoder defective	• Remove the blockage • Check the encoder cable and replace, if necessary • Replace the sewing motor
1330	Sewing motor not responding		• Switch the machine off and on again • Perform software update • Contact Customer Service

Error	Meaning	Possible cause	Remedial action
1342 – 1344	Sewing motor fault	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
1410	Sewing motor: Thread cutter speed is not achieved	• Encoder defective • Sewing motor defective	• Switch the machine off and on again • Replace the encoder • Replace the sewing motor • Contact customer service
1411	Sewing motor: Thread cutter position is not achieved	• Thread cutter position is not achieved	• Switch the machine off and on again • Perform software update • Contact Customer Service
1412	Sewing motor: Stop position after turning backward is not achieved	• Stop position after turning backward is not achieved	• Switch the machine off and on again • Perform software update • Contact Customer Service
1420	Sewing motor current feed fault	• Sewing motor blocked • Encoder cable not connected or defective • Encoder defective	• Remove the blockage • Check the encoder cable and replace, if necessary • Replace the sewing motor
1421	Sewing motor timeout	• Cable to sewing motor reference switch defective • Reference switch defective	• Replace the cable • Replace reference switch (9815 935006)
1430	Sewing motor: Positioning speed is not achieved	• Sewing motor cable defective • Sewing motor defective • Control defective	• Switch the machine off and on again • Replace the encoder • Replace the sewing motor • Contact Customer Service

Error	Meaning	Possible cause	Remedial action
1431	Sewing motor: Stop position	• Internal sewing motor fault	• Reduce the positioning speed • Perform software update
1450	Internal sewing motor fault	• Internal sewing motor fault	• Switch the machine off and on again • Perform software update • Replace the control • Contact Customer Service
1498 – 1499	Internal sewing motor fault	• Internal sewing motor fault	• Switch the machine off and on again • Perform software update • Replace the control • Contact Customer Service
21	Stepper motor X-axis		
22	Y-axis stepper motor		
23	Z-axis stepper motor		
.. .. 02	Stepper motor current feed fault	• Stepper motor not moving freely or blocked • Encoder cable not connected or defective • Stepper motor cable is not connected or is faulty • Encoder defective • Stepper motor defective	• Eliminate sluggishness/ blockage • Check the encoder cable and replace, if necessary • Replace the encoder • If the stepper motor is not supplied with current: • Check the stepper motor cable and replace, if necessary • Replace the stepper motor
.. .. 03	Stepper motor step losses	• Stiff mechanical movement or blockage	• Eliminate mechanical sluggishness or blockage
.. .. 21		• Encoder plug (Sub-D, 9-pin) not connected or defective • Encoder defective	• Check the connection of the encoder cable and replace, if necessary

Error	Meaning	Possible cause	Remedial action
.. .. 22	Magnet wheel search timeout		• Check connection cables • Check stepper motor for stiff movement
.. .. 30	Stepper motor not responding		• Perform software update • Replace the control
.. .. 41	Stepper motor not responding	• Stepper motor card defective	• Perform software update • Replace stepper motor card
.. .. 52	Stepper motor overcurrent	• Stepper motor defective • Control defective	• Replace the stepper motor • Replace the control
.. .. 53	Stepper motor overvoltage	• Line voltage too high	• Check the line voltage
.. .. 55	Stepper motor overload	• Stepper motor not moving freely or blocked • Stepper motor defective • Control defective	• Eliminate sluggishness/ blockage • Replace the stepper motor • Replace the control
.. .. 56	Stepper motor overtemperature	• Stepper motor not moving freely • Stepper motor defective • Control defective	• Eliminate sluggishness • Replace the stepper motor • Replace the control
.. .. 62	Stepper motor IDMA auto-increment	• Disturbance	• Switch the machine off and on again
3100 – 3103	Machine: Voltage fault	• Temporary line voltage interruption	• Check line voltage and stabilize, if required
3221 – 3222	Machine: Thread tension regulation	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service

Error	Meaning	Possible cause	Remedial action
3300 – 3507	Fault in the machine control	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
3508		• Needle position faulty	• Retighten the drive belt
3509 – 3724	Fault in the machine control	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
4201	No USB key inserted		• Insert USB key
4208	Checksum error	File faulty	
4209	Error while saving the file	The file to be saved is faulty	
4210	Error while loading the file	No data on the USB key	• Insert a USB key containing data
4460 – 4468	Control panel OP5000	• Disturbance	• Switch the machine off and on again • Perform software update • Replace the control panel
6000 – 6299	Driver error	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
6361	Machine ID not found		• Check the plug
6365	Internal memory faulty	• Control defective	• Replace the control

Error	Meaning	Possible cause	Remedial action
6400 – 6999	Driver error	• Internal error	• Switch the machine off and on again • Perform software update • Contact Customer Service
7551 – 7559	Communication with the control panel interface	• Internal error • Cable disturbance • Cable to the control panel interface is faulty	• Switch the machine off and on again • Eliminate source of disturbance • Perform software update • Replace the cable • Contact customer service
7651 – 7659	Communication with the control panel interface	• Internal error • Cable disturbance • Cable to the control panel interface is faulty	• Switch the machine off and on again • Eliminate source of disturbance • Perform software update • Replace the cable • Contact Customer Service
8151 – 8161	IDMA error	• Internal error • Disturbance • Control defective	• Switch the machine off and on again • Perform software update • Replace the control • Contact Customer Service

Error	Meaning	Possible cause	Remedial action
8251 – 8258	Fault during ADSP booting or booting	• Internal error • Disturbance	• Switch the machine off and on again • Perform software update • Contact Customer Service
9000 – 9004	Seam appearance fault	• Internal error	• Switch the machine off and on again • Perform software update • Reset the data (📖 *Service Instructions)* • Contact Customer Service
9009	Cutting punch is not in position	• Cutting position sensor	• Check the plug and cable and replace, if required • Replace the distributor board

10.3 Errors in sewing process

Meaning	Possible causes	Remedial action
Thread breakage	• The needle and looper threads are not threaded correctly	• Check threading path
	• Needle is bent or sharp-edged • Needle is not inserted correctly into the needle bar	• Replace the needle • Insert the needle into the needle bar
	• The thread used is unsuitable	• Use the recommended thread (📖 *Service Instructions)*
	• Thread tensions are too tight for the thread used	• Check thread tensions
	• Thread-guiding parts such as thread tubes, thread guide or thread take-up disk are sharp-edged	• Check the thread path
	• Throat plate, looper or spreader have been damaged by the needle	• Have parts reworked by qualified specialists

Meaning	Possible causes	Remedial action
Missing stitches	• The needle and looper threads are not threaded correctly	• Check threading path
	• Needle is blunt or bent • Needle is not inserted correctly into the needle bar	• Replace the needle • Insert the needle into the needle bar
	• The needle thickness used is unsuitable	• Use recommended needle thickness (*p. 175*)
	• Reel stand is incorrectly fitted	• Check reel stand
	• Thread tensions are too tight	• Check thread tensions
	• Sewing material is not held correctly	• Check the clamping pressure (*Service Instructions)*
	• Sewing material is not spread or is insufficiently spread	• Check the spread (*Service Instructions)*
	• The loop stroke was not corrected when changing the zigzag stitch width	• Set the looping stroke (*Service Instructions)*
	• Incorrect parts used for the desired sewing equipment	• Check the parts based on the equipment sheet
	• The looper or spreader is misaligned	• Check individual settings
	• Throat plate, looper or spreader have been damaged by the needle	• Have parts reworked by qualified specialists

Meaning	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
	• The needle and looper threads are not threaded correctly	• Check threading path
Needle breakage	• Needle thickness is unsuitable for the sewing material or the thread	• Use recommended needle
Seam beginning not secure	• Residual tension is too tight for the needle thread	• Adjust residual tension
Buttonhole is not clean	• Cutting pressure is insufficient	• Increase the cutting pressure (📖 *Service Instructions)*
	• Switch-on time of the cutting block is too short	• Increase switch-on time (📖 *Service Instructions)*
	• Cutting edge of blade is blunt or chipped	• Replace and set blade (📖 *Service Instructions)*
	• A cutting block that does not correspond to the blade is used	• Replace cutting block and set (📖 *Service Instructions)*

Meaning	Possible causes	Remedial action
Sewing mechanism rotation is faulty	• Toothed belt is not sufficiently tensioned	• Re-tighten the toothed belt, or replace if required
	• Toothed belt and toothed disks are dirty	• Clean the toothed belt and disks, if required replace the toothed belt
	• Sewing mechanism collides with other parts	• At a low speed, check the movement of the sewing mechanism and watch out for possible collisions
	• Set collars on the looper turret or needle bar drives are too tight	• Check the set collars, set a small amount of play if required: Looper stroke (📖 *Service Instructions)*, needle bar height (📖 *Service Instructions)* and spreader plate (📖 *Service Instructions)*
	• Stiffness of individual parts	• Check all parts related to the sewing mechanism rotation
Fabric support plate transport is faulty	• Fabric support plate collides with other parts	• At a low speed, check the movement of the fabric support plate and watch out for possible collisions

11 Technical data

Data and characteristic values

Technical data	Unit	Class
Machine type		581
Stitch type		Double chain stitch/ single chain stitch
Number of needles		1
Needle system		579
Needle strength	[Nm]	up to 125
Thread strength	[Nm]	30/3 - 120/3
Stitch length	[mm]	0.5 - 2
Speed maximum	[min^{-1}]	2500
Speed on delivery	[min^{-1}]	2000
Mains voltage	[V]	1x190 - 240
Mains frequency	[Hz]	50/60
Operating pressure	[bar]	6
Length	[mm]	1060
Width	[mm]	750
Height	[mm]	1050

Characteristics

Basic type

Double chain stitch-buttonholer or chain stitch-eyelet maker with CNC step motor technology for material feeding and for rotating the sewing mechanism.

Application

- Sewing buttonholes with or without an eye, with taper bar, round tack, cross tack or without a bartack
- Sewing of eyelets

Sewing material

Material comprised of textile or synthetic fibers

Equipment

- Thread cutter
- electronically regulated thread tension
- different thread cutting systems depending on subclass

Looper

- 2 chain stitch loopers, with the left thread leading (buttonholer)
- 2 chain stitch blind loopers (eyelet maker)

Technical features

The machine is fitted with the **Compact Servo** positioning drive, which is integrated in the machine arm.

A stepper motor drives the movements for each of the axes X, Y and Z. These drives are controlled via the electronic control **DAC comfort** in combination with different pneumatic machine functions.

This drive and control system provides the following advantages:

- variable sewing speed, depending on the stitch distance, which can be adjusted by the user between 1200 and 2500 stitches/min, for different qualities of sewing thread and material
- optimized cycle time
- 50 individual programmable buttonholes
- 25 sequences each programmable with up to 9 buttonhole programs
- high level of running smoothness, as there is no mechanical switching on and off; noise levels are reduced through optimized needle bar and looper drive
- extremely variable range of application through CNC control with 3 stepper motors (no control cams)
- Integrated Multitest testing and monitoring system. In addition to monitoring the sewing process, this can be used to quickly test the input and output elements and the motor functions without additional measuring equipment

- Step by step feature within the buttonhole cycle to check the function sequences
- the **OP5000** control panel (graphics-capable LCD display with membrane keyboard) is mounted to the right on the sewing head and is easily accessible to the user
- Adjustable functions:
  - Cutting before or after sewing
  - No slitting
  - Choice of buttonhole shape:
  - With or without an eye
  - Without bartack
  - With taper bar
  - With round tack
  - With cross tack
  - Taper bar length
  - Eye shape
  - Eye size
  - Buttonhole shape
- Button operation for the following functions:
  - Closing clamp and opening clamp (clamps open automatically after the end of the seam)
  - Switching on the sewing process
  - Quick stop with needle in upper position
- Piece counter with display on the control panel for the number of sewn buttonholes (daily and overall production)
- Pneumatic buttonhole slitting
- Suction for the cutting waste
- Central oil-wick system from 2 oil reservoirs
- Mechanical conversion from narrow to wide ZZ range
- Electronic changing of the zigzag stitch width (+/-0.5 mm) in the buttonhole seam and the eye
- Electronic setting of the intermediate material width
- Modern, ergonomically cost effective design within the current DA design line
- Large-surface fabric support plate with large recess depth for the distance between the buttonhole and the sewing material edge

- Machine head swiveling supported by a gas pressure spring
- Needle thread monitor interrupts the sewing cycle when the needle thread breaks; the material clamps remain down and hold the sewing material. The sewing material can be removed by button operation
- Owing to the vertical action of the cutting block system, no adaptation of the cutting blocks by filing is required in the event of different cutting block heights
- It can be selected on the control panel that after the sewing material is released, the fabric support plate moves to the starting position of the next buttonhole; this makes it easier to see when positioning the workpiece
- Switch in the head cover for moving towards the ideal threading position for looper thread and needle thread (gimp thread)
- Automatic adjustment (4-stage) of the cutting force for the buttonhole blade depending on the programmed buttonhole length
- Electronically regulated needle thread tension (to be assigned to programmed buttonholes)
- Fine adjustment and display for
  - Seam start and seam end
  - Position and length of the cross tack
  - Timing of the thread cutter movement
- Pneumatically actuated thread cutting systems work precisely due to short drive paths
- Electronic changing of the zigzag stitch width in the cross tack
- Due to the particular design of the machine arm, it is possible to position the sewing material in the longitudinal direction when using a different fabric holding device (additional equipment)

12 Glossary

Term	Explanation
Start bartack	Secures the start of a seam.
Display	Displays information.
Control panel	You can: • call up modes • read values • read information and error messages Is located on the side of the machine.
User level	Controls authorization as to which processes can be performed on the control. There are 4 levels: • Operator • Buttonhole programming (P) • Sequence programming (S) • Technician (F)
CA	Abbreviation shown by the display: See *Cutting mode*.
CB	Abbreviation shown by the display: See *Cutting mode*.
Cursor	Marks the current position in the software on the *display*.
Speed	Refers to the revolutions per minute performed by the sewing motor.
Speed limitation	See *Reduced speed*.
Pressure controller	Ensures the correct operating pressure.
Threading mode	Mode that can be activated at the push of a button. Serves as a threading aid.
End bartack	Secures the end of a seam.
Thread cutter	Cuts the thread at the end of a sewing process. It is located under the sewing material support.

Term	Explanation
Thread tension	Determines the appearance of the sewing material. Depends on the thread and sewing material used. There is: • Needle thread tension • Looper thread tension
Function button	Refers to the **F** button. Activates service mode (technician level).
Looper thread	Identifies the thread coming from the bobbin under the sewing material support.
Light barrier	Helps to optically detect the seam end using a sensor.
Machine function	Identifies an equipment feature of a machine.
Pressure gage	Measures and displays the operating pressure.
Needle thread	Refers to the thread that is coming from the thread reel and is guided by the needle.
Needle thread monitor	Interrupts the sewing process if the needle thread breaks.
Thread	General term for looper thread and needle thread.
Sewing speed	Mathematical product of the stitch length and number of stitches.
Sewing material	Identifies the material to be sewn.
Parameter	Numerical value that activates or sets a machine function.
Reduced speed	Machine runs at a lower speed than set by default in the factory.
Remaining thread monitor	Reports that the looper thread bobbin is empty.
Cutting mode	Determines when and whether a buttonhole is to be cut during the sewing process: • CB (before the sewing process) • CA (after the sewing process) • 0 (Cutting mode off) Changes the *cutting diameter*.

Term	Explanation
Cutting diameter	Defines the diameter of the buttonhole to be cut.
Cutting length	Defines the length of the buttonhole, which depends on the diameter of the button.
Eyelet diameter	See *Cutting diameter*.
Number of stitches	Indicates the number of stitches per minute.
Piece counter	Counts the number of sewing cycles run (quantity) after the respective thread is cut.
Maintenance unit	Comprises a water separator and pressure controller.
Water separator	Filters the condensed water and the dirt from the compressed air. Enriches the air with a certain quantity of oil.

13 Appendix

Fig. 101: Tabletop

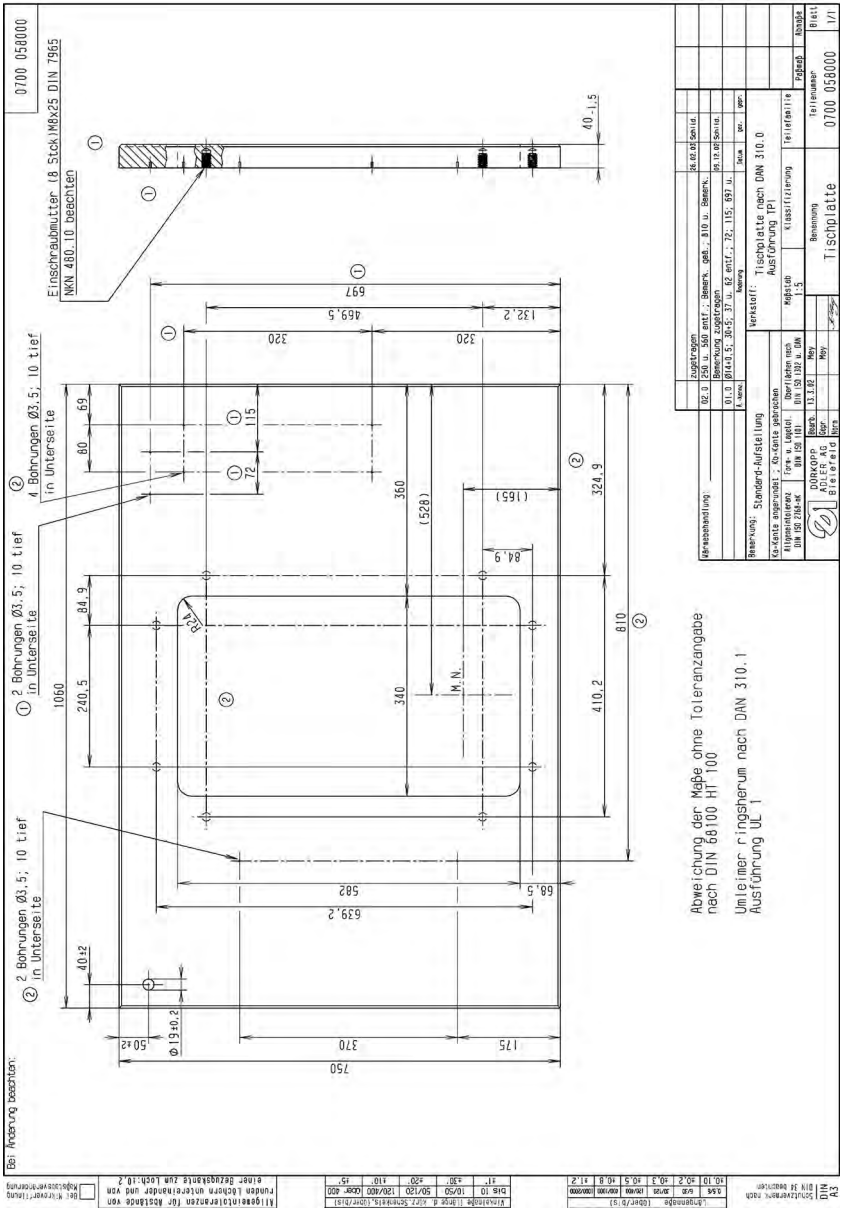


Fig. 102: Wiring diagram (1)

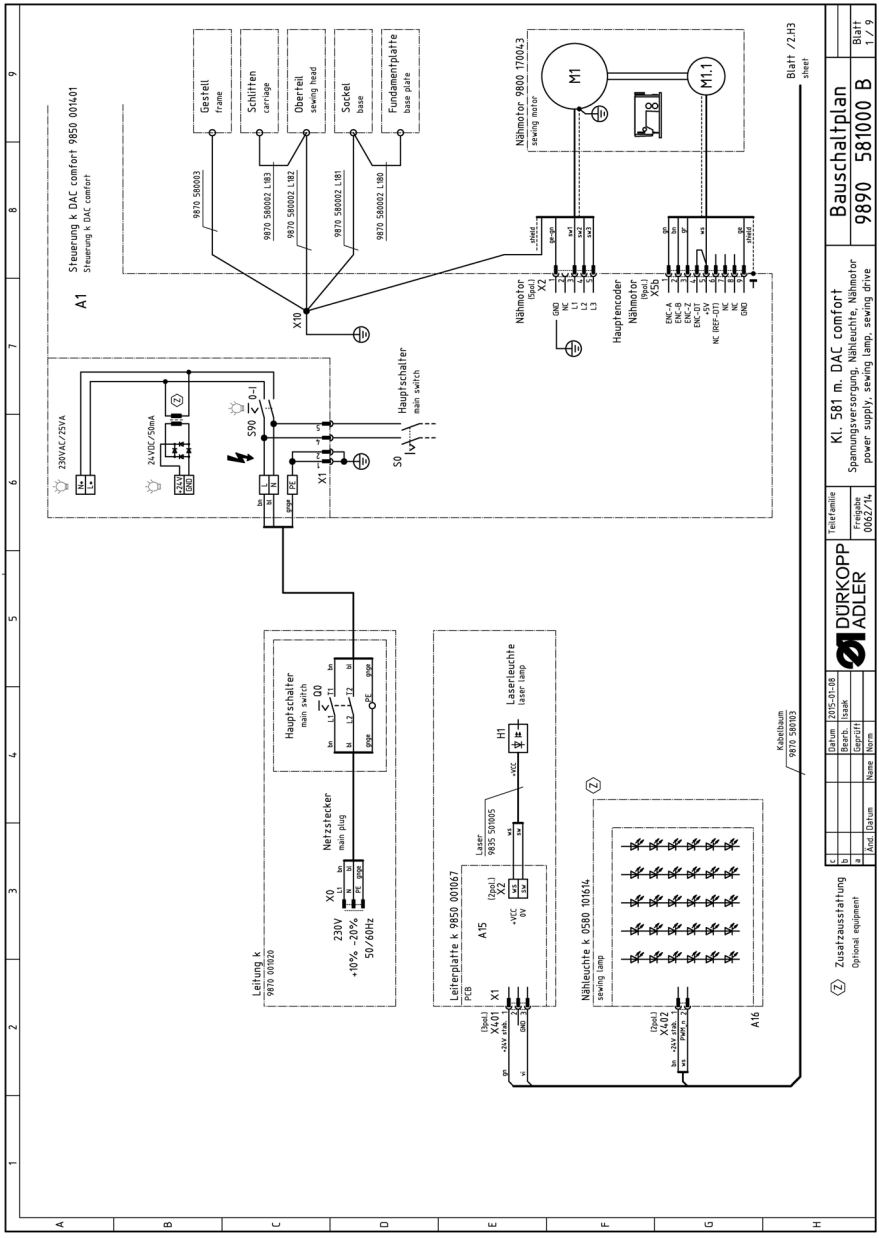


Fig. 103: Wiring diagram (2)

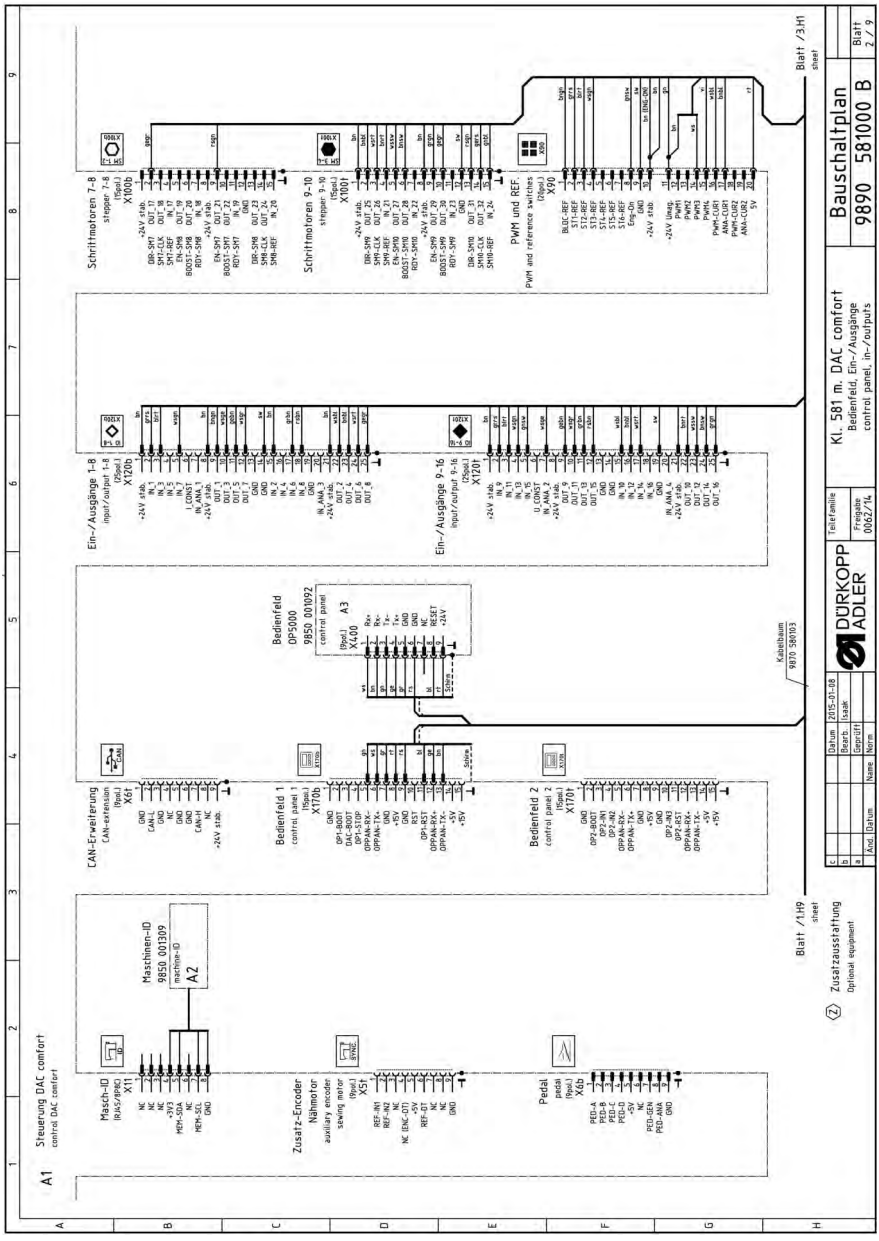


Fig. 104: Wiring diagram (3)

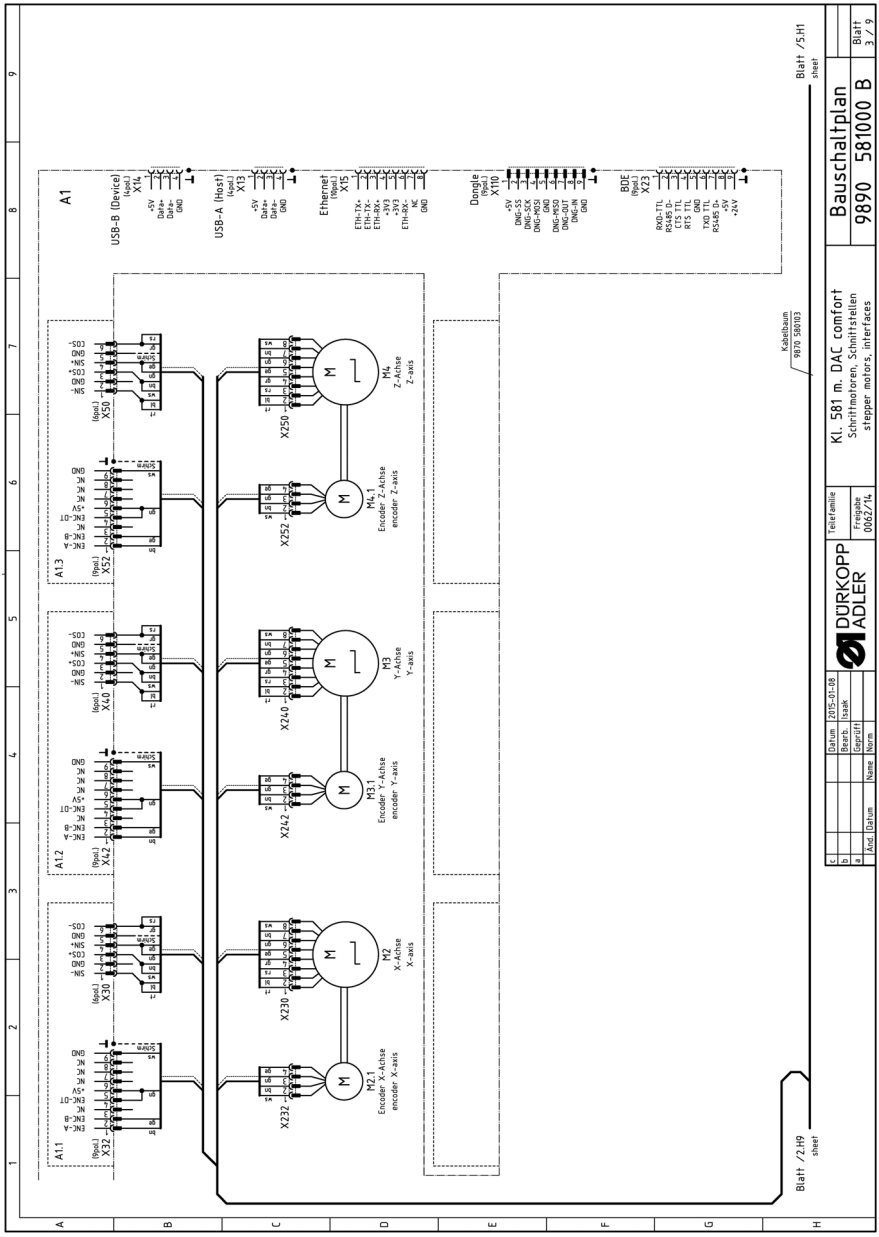


Fig. 105: Wiring diagram (4)

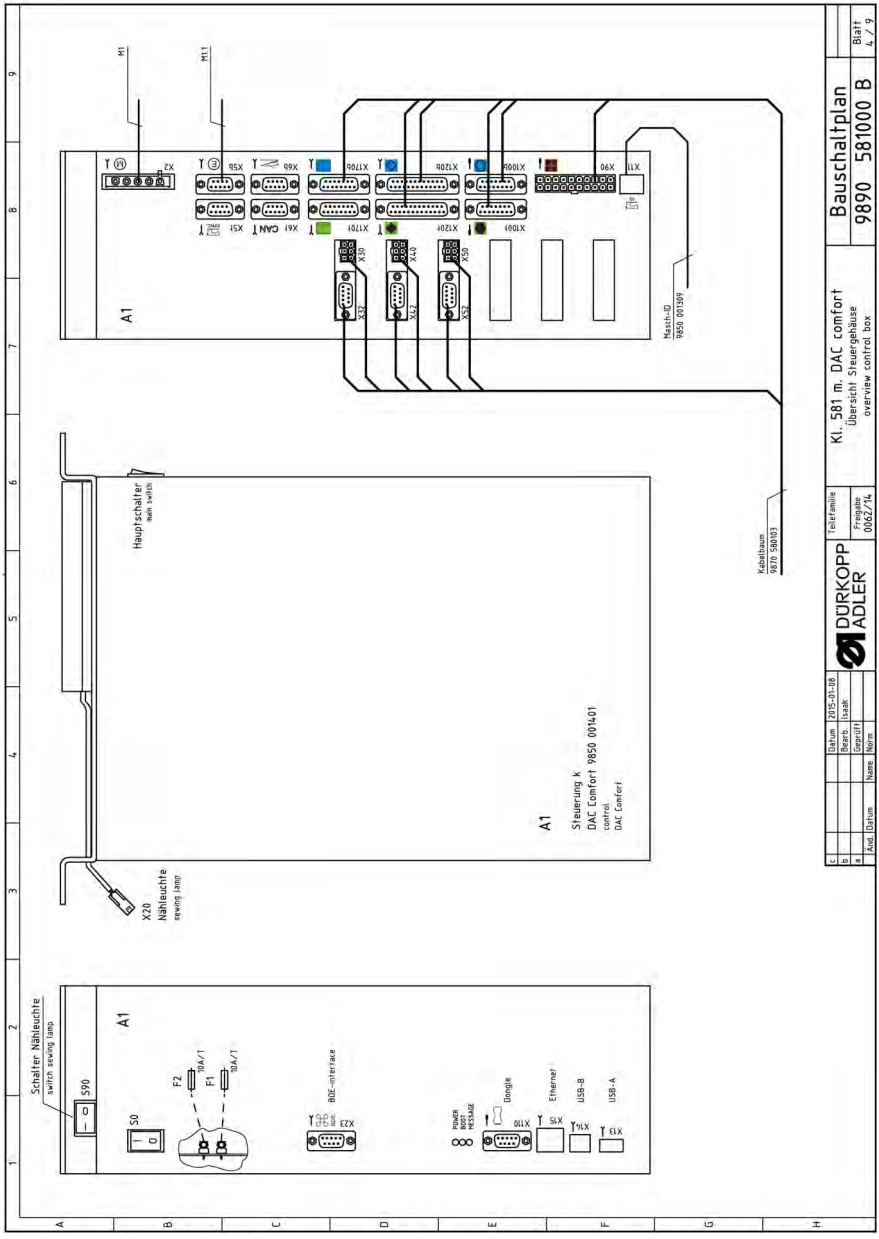


Fig. 106: Wiring diagram (5)

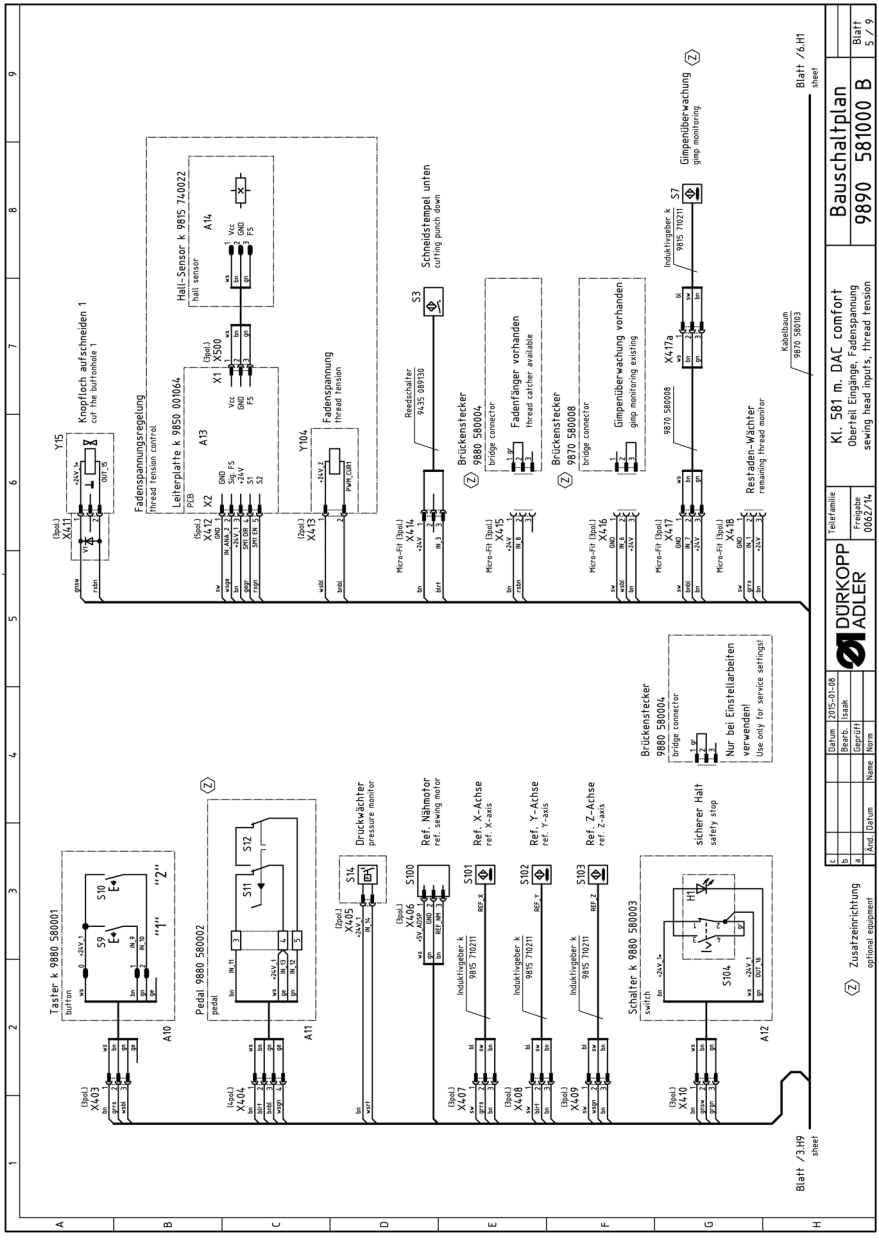


Fig. 107: Wiring diagram (6)

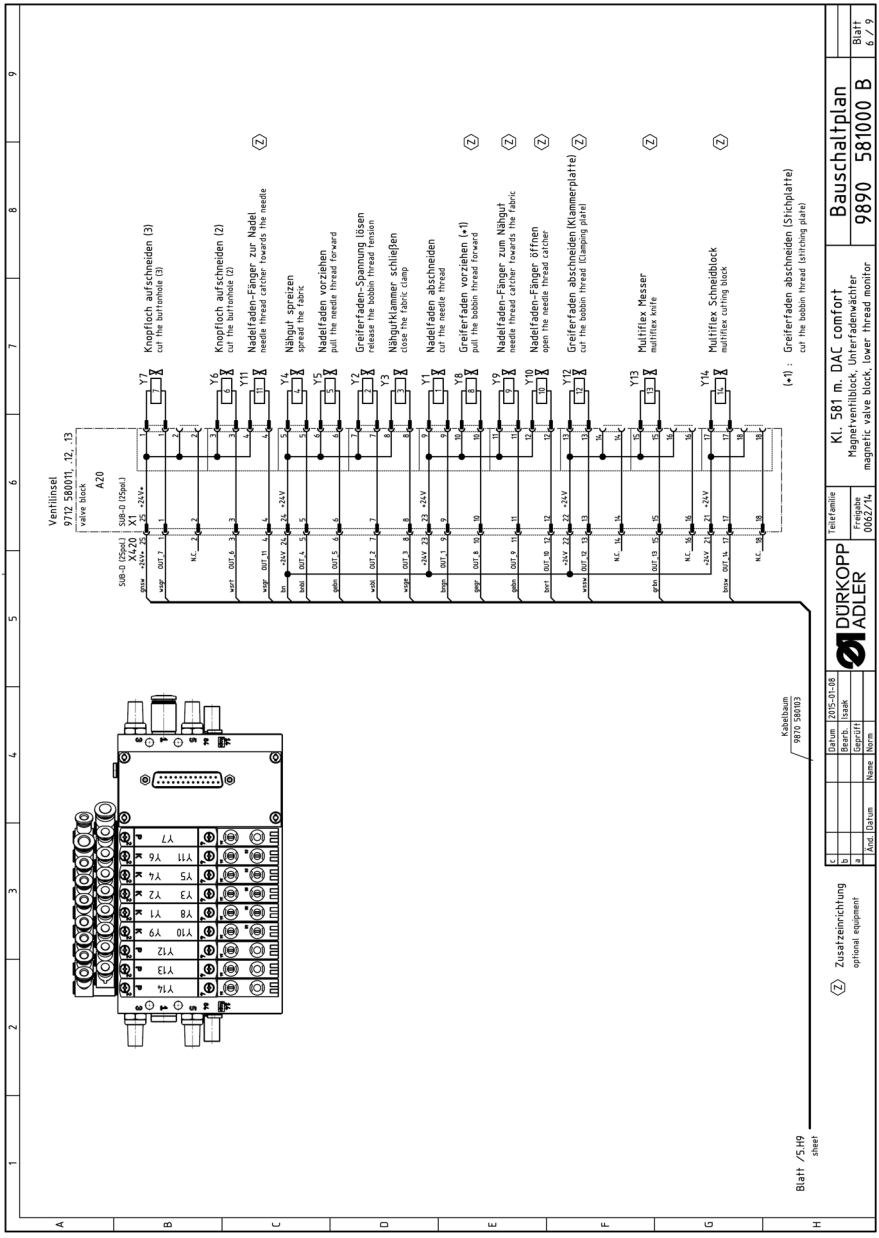


Fig. 108: Wiring diagram (7)

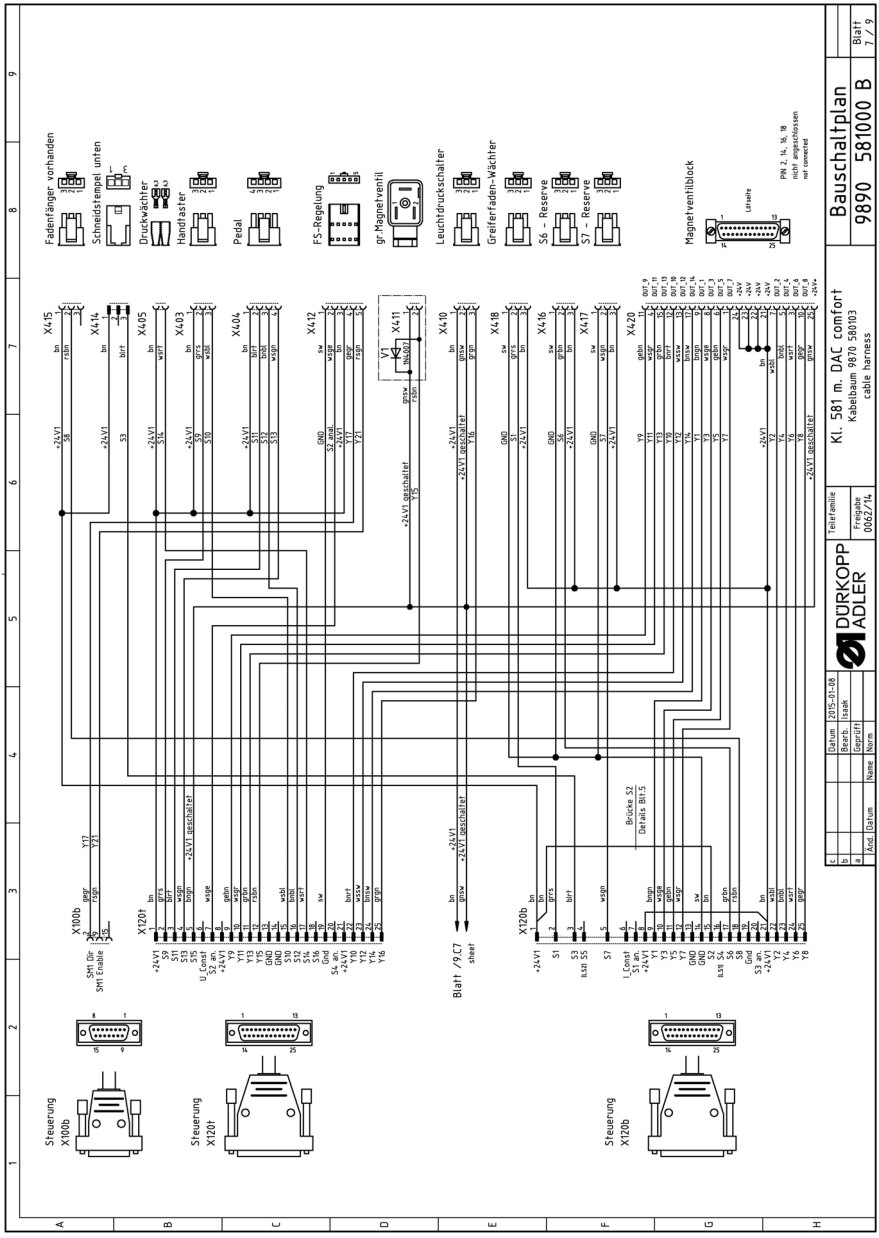


Fig. 109: Wiring diagram (8)

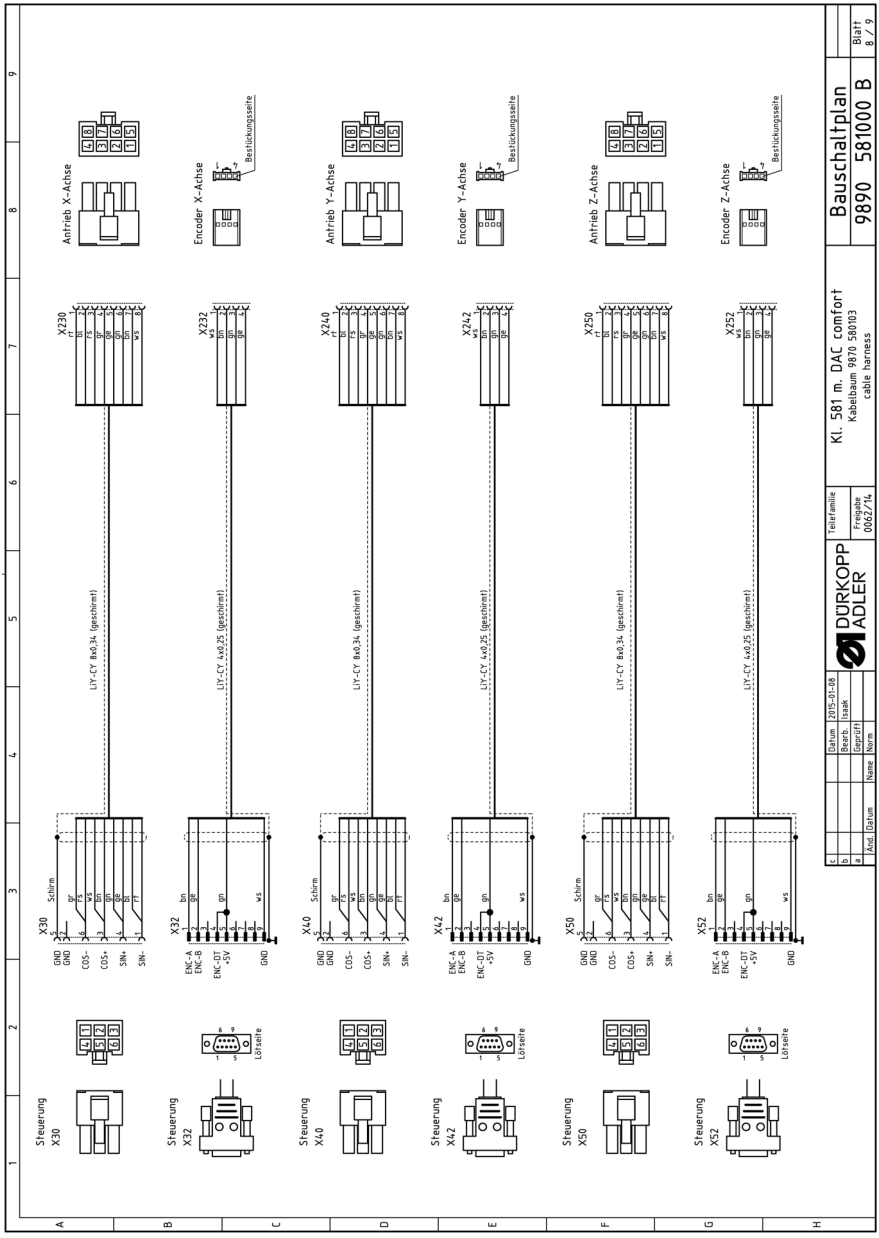
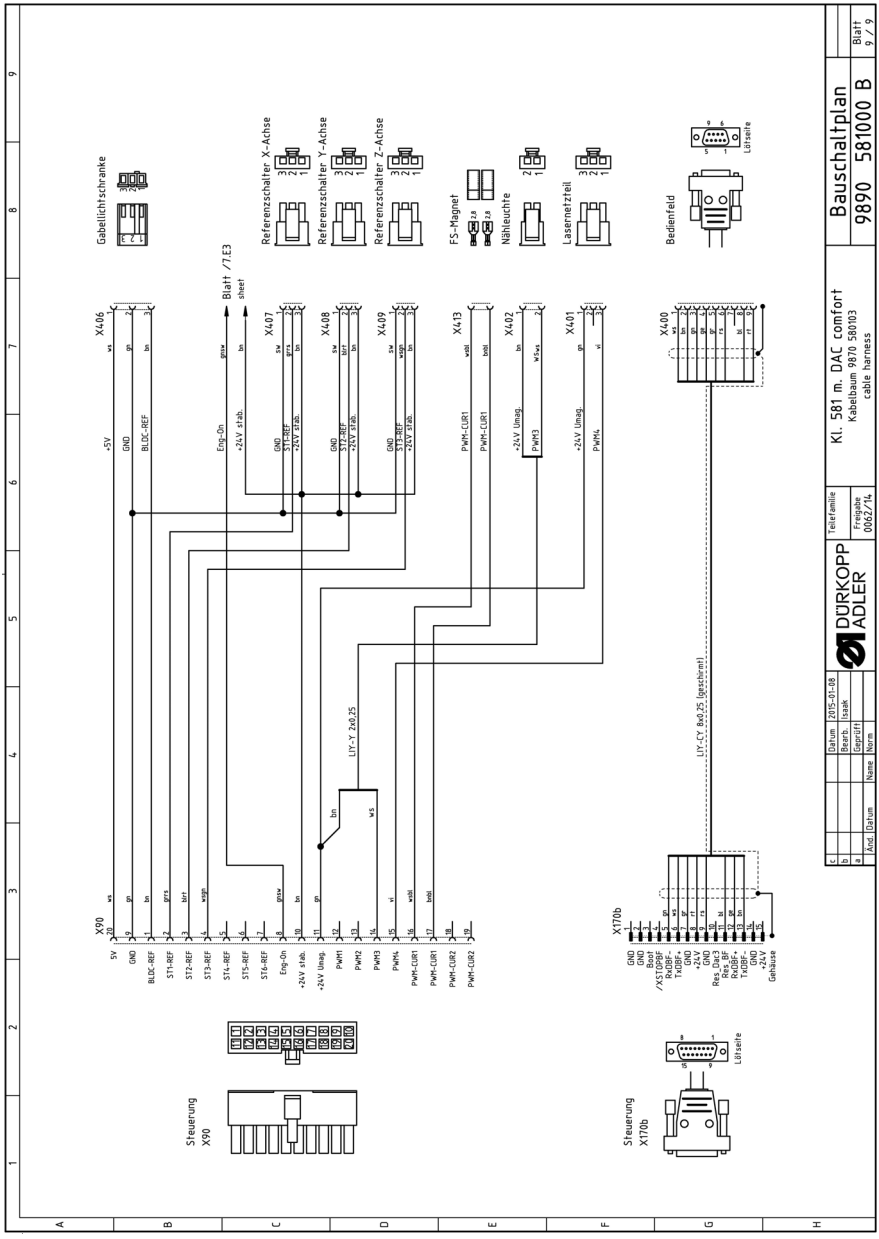


Fig. 110: Wiring diagram (9)



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