beisler
SEWING

743-221-01

Service instructions

1 About these Service Instructions

The service instructions for the 743-221-01 sewing unit were compiled with the utmost care. They contain information and notes in order to make long-term and reliable operation possible.

Please contact us if you find any discrepancies or have any suggestions.

1.1 Scope

These service instructions describe the setting and maintenance work on the 743-221-01 sewing unit for sewing single-pointed darts and pleats in a straight or curved line in a pair of pants, skirts and the like. It applies to all submodels. The intended use and set-up is described in the 🕮 operating manual.

1.2 Representation conventions – symbols and characters

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

Proper setting
Indicates proper setting.

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

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

Steps to be performed for servicing, 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
... The sequence of the steps must always be followed.

Lists are identified by bullet points.

-
- ...

Result of performing an operation
Change to the machine or in the display.

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

Information
Additional information, e. g. on alternative operating possibilities.

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

References
📖 Reference to another section in the manual.

Safety Important warnings for the machine operator are specially designated. Since safety is of particular importance, hazard symbols, levels of danger and their signal words are described separately in 📖 *3 Safety Information*, p. 7.

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

1.3 Other documents

This equipment includes components from other manufacturers. Each manufacturer has performed a hazard assessment for these purchased parts and confirmed their design compliance with applicable European and national regulations. The proper use of these components is described in each manufacturer's manual.

1.4 Liability

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

The manufacturer cannot be held liable for damages resulting from:

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

2 Technical Specifications

The 743-221-01 sewing unit is used for sewing single-pointed darts and pleats in a straight or curved line in a pair of pants, skirts and the like.

The sewing unit is equipped with a double-chainstitch sewing machine

Class 935-171-100 with needle thread monitor.

2.1 Characteristics

- Seam length control either by means of a light barrier or through programming.
- Seam securing at the start of the seam and at the end of the seam by means of stitch condensation or bar tack in the material being sewn and thread chain.
- Thread trimming system: Controlled chain trimmer.
- High sewing performance and short cycle times thanks to a microcontrol control system in conjunction with stepping motor technology for material feed.
- Fully overlapped working method.
- Compact, height-adjustable sewing unit with transport castors. Used for operation in standing or sitting position.
- Line-up and folding station plus the sewing station are grouped together as one unit. It is vertically pivotable so that maintenance and adjustment work can be carried out easily.
- Electronic thread monitoring system.
- Designed for processing spun and monofilament sewing threads.
- Built-in adjusting disc with positioning marks on the handwheel for quick and precise checking of the machine settings.
- A configuration set matching the seam configuration holds and guides the material being sewn. The configuration set can be replaced quickly. When ordering a sewing unit, you have to specify whether you require one or several configuration sets.
- The dart depth depends on the dart length, the configuration set, and the position of the folding table. Adjusting the folding table between 0 and 10° enables you to change the dart depth.

2.2 Declaration of conformity

The machine complies with the European regulations specified in the declaration of conformity or in the installation declaration.

2.3 Applicable documentation

The device contains built-in components of other manufacturers, e.g. drive motors. The corresponding manufacturers have performed a hazard assessment for these purchased parts and confirmed compliance of the design with the European and national specifications. The proper use of these components is described in each manufacturer's manual.

3 Safety Information

This section contains basic information for your safety. Read the instructions carefully before setting up, programming, or operating the machine.

Make sure to follow the information included in this section. Failure to do so can result in serious injury and damage to the machine.

3.1 Basic safety instructions

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

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

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

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

Transport

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

Setup

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

Operator's obligations

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

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

Requirements to be met by the personnel

The machine should only be set up by qualified technicians.

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

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

Only authorized persons may work on the machine. Every person who works on the machine must have read the operating manual first.

Operation Inspect the machine while in use for any externally visible damage. Stop working if you notice any changes to the machine. Report any changes to your supervisor. A damaged machine should no longer be used.

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

3.2 Signal words and symbols used in safety information

Safety information is outlined by colored bars.

Signal words indicate the degree of risk:

Signal word	Degree of risk
DANGER	Will result in serious injury or death.
WARNING	Can result in serious injury or death.
CAUTION	Can result in minor or moderate injury.
ATTENTION	Can result in property damage.

The following symbols indicate the type of risk to personnel:

Signal word	Type of risk
	General risk
	Risk of electric shock
	Risk of puncturing
	Risk of crushing

Examples of safety information layout in manual:

DANGER

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

This is what a hazard note looks like for a hazard that will result in serious injury or even death if the note is not observed.

WARNING

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

This is what a hazard note looks like for a hazard that could result in serious injury or death if the note is not observed.

CAUTION

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

This is what a hazard note looks like for a hazard that could result in moderate or minor injury if the note is not observed.

ATTENTION

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

This is what a hazard note looks like for a hazard that could result in property damage if the note is not observed.

ENVIRONMENTAL PROTECTION

Type and source of risk

Consequences of non-observance

Measures for avoiding the risk

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

4 Working basis

4.1 Sequence of the settings

Observe the sequence

Always adhere to the specified sequence for the individual setting steps.

Always observe all information on requirements and following settings marked at the side with  .

ATTENTION

Machine damage possible due to incorrect sequence.

Always adhere to the working sequence specified in this manual.

4.2 Cable routing

Tying the cable together

Ensure that all cables in the machine are laid such that moving parts are not impaired in their ability to function correctly.

1. Lay any cable that is too long neatly in proper cable snakes.
2. Tie the snakes together using a cable tie.

   If possible, bind the snakes to fixed parts.
   The cables must be fixed firmly in place.

3. Cut off any protruding part of the cable tie.

ATTENTION

Machine damage and malfunctions can be caused by laying the cables incorrectly.

Excess cabling may obstruct moving machine parts in their ability to function correctly. This will affect the sewing function and may cause damage.

Lay excess cabling as described above.

4.3 Screws used safety covers

Screws used in safety covers must not be completely unscrewed out of the screw hole. You can remove the cover as soon as the screws are undone sufficiently so as to allow you to take the cover off. The screws can either remain in the housing or in the cover. Such screws are identified in the text by the suffix *(safety cover)*.

4.4 Removing the covers

WARNING

Risk of injury

Crushing injuries from moving parts

Switch the sewing machine off before you remove the covers or refit them.

In many types of setting work, you will have to remove the machine covers first in order to access the components.

Described here is how to remove the individual covers and how to refit them. Just the covers that need to be removed is then specified in the text for that particular type of setting work.

4.4.1 Titling the machine upper part back

ATTENTION

Caution: Risk of injury!

Switch off the main switch!

Only pivot up the upper machine section when the sewing unit is switched off.

Figure 1: Tilting the machine upper part back

(1) - Supporting table
(2) - Configuration set
(3) - Handle

1. Pivot the supporting table (1), bundle clamp, and ejector to the side.
2. Move the configuration set (2) into the left end position.
3. Carefully pivot up the upper machine section using the handle (3) and lean it against the folding support.

   ↳ The upper machine section is held in this position through the location of the center of mass.
4. Lower the machine in the same way.

4.4.2 Removing and replacing the top cover

Abb. 2: Removing and replacing the top cover

(1) - Top cover screws
(2) - Top cover
(3) - Glass protection screws

Removing the top cover

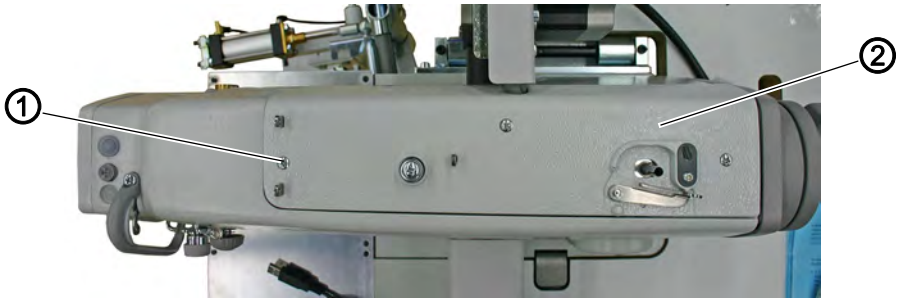
1. Loosen both glass protection screws (3).
2. Remove the glass protection.
3. Loosen all top cover screws (1).
4. Remove the top cover (2).

Replacing the top cover

1. Replace the top cover (2).
2. Tighten all top cover screws (1).
3. Position the glass protection.
4. Tighten both glass protection screws (3).

4.4.3 Removing and fitting the arm cover

Figure 3: Removing and fitting the arm cover



(1) - Screws (3x)
(2) - Arm cover

Removing the arm cover

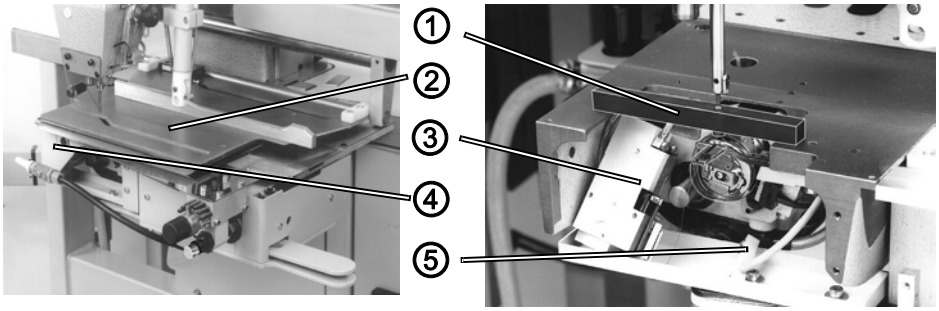
1. Undo all three screws (1) (*safety cover* 🕮 page 11) on the arm cover (2).
2. Remove the arm cover (2).

Fitting the arm cover

1. Fit the arm cover (2).
2. Screw down all three screws (1) (*safety cover* 🕮 page 11) on the arm cover (2).

4.4.4 Removing and inserting the Sliding plate

Figure 4: Removing the Sliding plate



(1) - Gage
(2) - Configuration set
(3) - Thread trimmer
(4) - Casing
(5) - Light barrier

Correction

1. Remove the configuration set (2).
2. Remove the casing (4).
3. Undo the light barrier (5) and thread trimmer (3) and put them down on the oil pan.

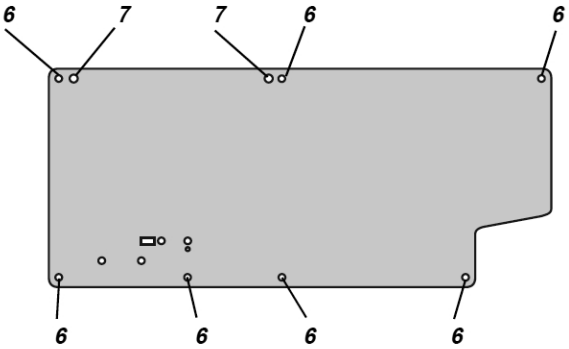
ATTENTION

Damage to property due to misaligned sliding plate

The centring discs (7) must not be twisted. These are used to align the sliding plate to the needle.

4. Undo the screws (6) on the sliding plate and remove the sliding plate.

Figure 5: Sliding plate

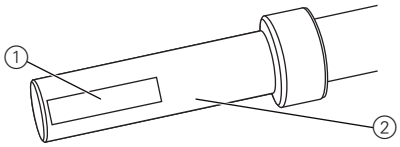


(6) - Gage *(7) - Configuration set*

4.5 Surfaces on shafts

Screwing onto the surface

Figure 6: Surfaces on shafts



(1) - Surface *(2) - Shaft*

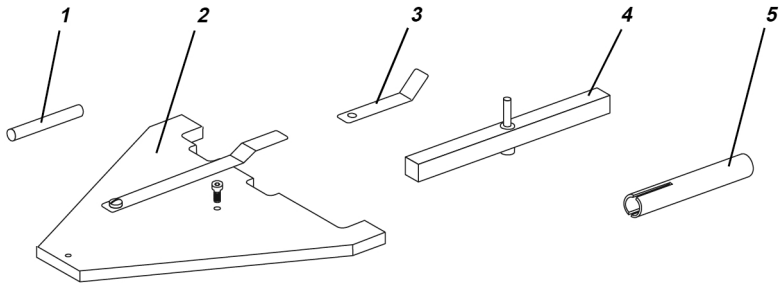
Some shafts have flat surfaces at those points where the components are screwed on. This strengthens the connection and setting work is made easier.

Always make sure that the whole screw is seated completely on the surface.

5 Setting the upper machine section

5.1 Gage set

Figure 7: Gage set



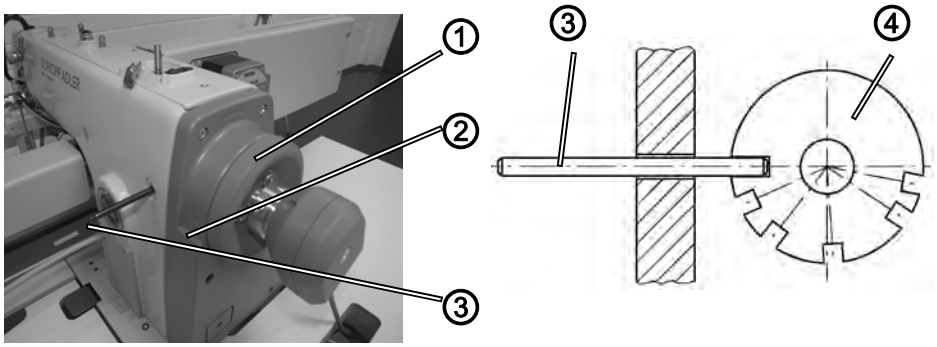
(1) - Locking peg
(2) - Gage
(3) - Feeler gage
(4) - Gage
(5) - Sleeve

The setting gages listed below allow you to precisely set and check the sewing unit.

Position	Setting gage	Order number	Use
1	Locking peg	9301 022608	For locking the sewing unit in place at position **A - F**.
2	Gage	0935 107077	For aligning the transport carriage, checking the reference point, guide roller, and center of the needle.
3	Feeler gage	0933 080200	For setting and checking the guide roller.
4	Gage	0935 107071	For aligning the needle bar height and hook drive housing.
5	Sleeve	0935 107090	For aligning the residual thread monitor.

5.2 Description and setting for the integrated adjusting disc

Figure 8: Adjusting disc



(1) - Handwheel
(2) - Marking
(3) - Locking peg
(4) - Adjusting disc

Use the locking peg (3) and the adjusting disc (4) integrated on the toothed belt wheel of the arm shaft to lock the sewing unit in place in all setting positions.

To do this, the adjusting disc is equipped with six slots which are identified on the handwheel (1) with the letters **A**, **B**, **C**, **D**, **E,** and **F.** In conjunction with the marking (2), the letters indicate the position of the slots in which the machine can be locked in place using the peg (3).

Slot **A** (loop stroke position) is deeper than the other slots. In the individual positions, the following can be set:

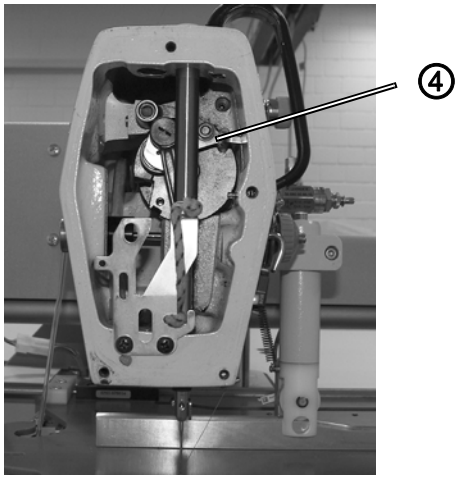
Slot	Setting
A	Adjusting disc to groove in the arm shaft crank, belt wheel, loop stroke, distance of hook tip to needle
B	No function
C	2. Needle position (thread lever upper position)
D	No function
E	Needle bar height
F	No function

5.3 Setting the arm shaft crank

Figure 9: Arm shaft crank

(1) - Winder lid
(2) - Hole
(3) - Hole

Figure 10: Arm shaft crank



(4) - Arm shaft groove

Rules and checking

The arm shaft groove (4) and slot **A** for the adjusting disc integrated on the toothed belt wheel must be aligned to line **X - Y.**

- Lock the arm shaft in place in the arm shaft groove (4) using a locking peg or a Ø 5 mm pin (through the hole (3)).
- The locking peg must be able to be inserted into the integrated adjusting disc through the hole (2) in pos. **A.**

ATTENTION

All settings made using the adjusting disc are only correct if they are set as described in the rules. If the arm shaft is adjusted, then all the following settings have to be checked and corrected where necessary.

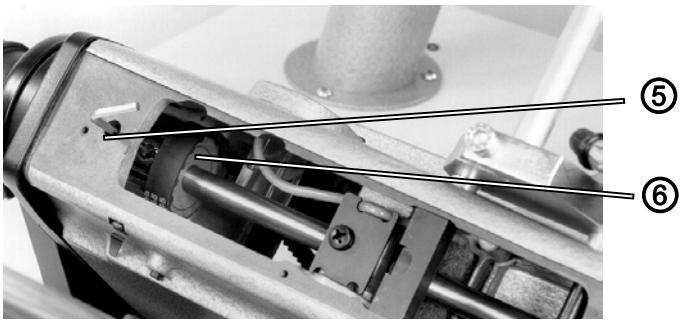
WARNING

Risk of injury due to crushing

Switch off the main switch!

Correct the position of the arm shaft only when the sewing unit is switched off.

Figure 11: Correction



(5) - Winder lid *(6) - Toothed belt wheel*

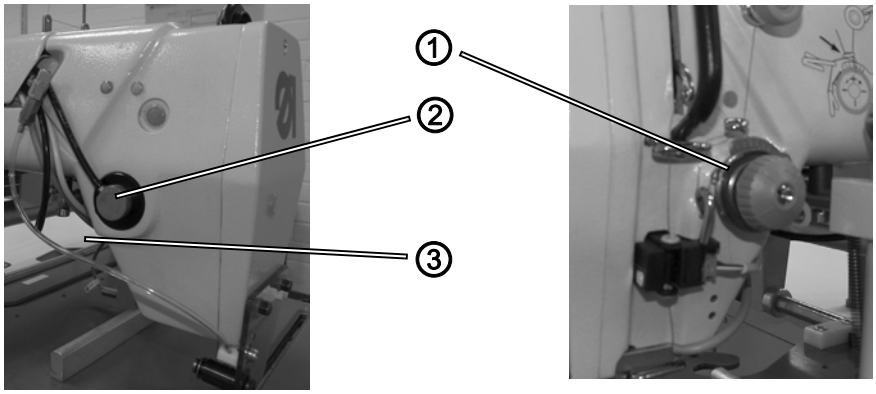
Correction

1. Remove the winder lid (1).
2. Undo the first screw for the toothed belt wheel (6).
3. From above, insert hex key (5) through the hole.
4. Use the locking peg to lock the toothed belt wheel in place at position **A**.
5. Undo the second screw for the toothed belt wheel (6).
6. Insert a 5 mm pin into the hole (3) and allow it to engage in the arm shaft groove (4) by turning the handwheel.
7. Tighten both screws on the toothed belt wheel (6) again.

The toothed belt wheel may not be moved axially.

5.4 Setting the needle thread tension release

Figure 12: Needle thread tension release



(1) - Tensioner discs
(2) - Cylinder
(3) - Screw

Rules and checking

The cylinder (2) must open the tensioner discs (1) approx. 1 mm. If closed, the tensioner discs (1) must tension the upper thread securely.

1. Call up the Technician level in the control system (📖 *7.2 Calling up the Technician level*, p. 65).
2. Select the `Service` menu item (📖 *7.2.3 Service menu item*, p. 70).
3. Select the `Multitest` submenu (📖 Multitest submenu, p. 71).
4. Select the `Test Output` subitem (📖 Test Output subitem, p. 71).
5. Actuate output 4 Fadenspannung (Thread tension).

   The needle thread tension opens.
6. Check the distance between the tensioner discs (1).

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only correct the needle thread tension release when the motor protection circuit breaker is switched off.

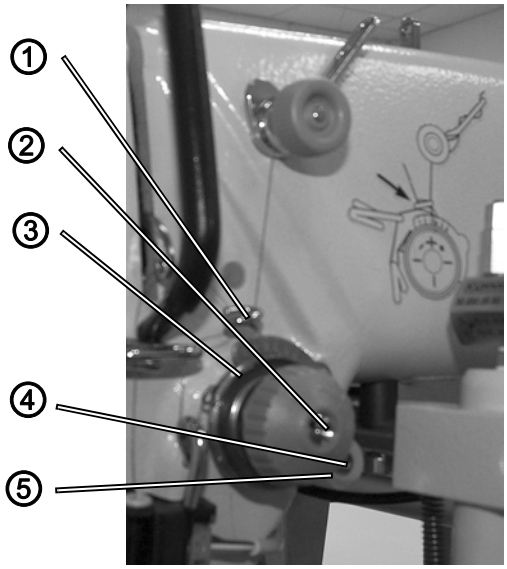
Correction

1. Loosen the screw (3) slightly.
2. Move the cylinder (2).
3. When upper thread tension is open, there should be a distance of 1 mm between the tensioner discs (1).

   This distance can be checked using a gage (📖 *5.1 Gage set*, p. 17).
4. Tighten the screw (3) again.

5.5 Setting the thread tensioning spring

Figure 13: Thread tensioning spring



(1) - Spring
(2) - Tensioning bolt
(3) - Socket
(4) - Screw
(5) - Screw

Rules and checking

The thread tensioning spring (1) is supposed to hold the upper thread clamped for at least until the tip of the needle has penetrated the material being sewn.

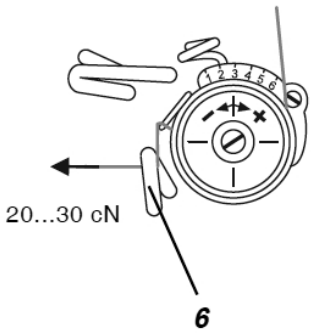
WARNING

Risk of injury due to crushing

Switch off the main switch!

Only correct the thread tensioning spring when the sewing unit is switched off.

Figure 14: Correction of spring travel and spring tension



(1) - Thread guide

Correction of spring travel

1. Loosen the screw (4).
2. Turn the socket (3).

   The spring (1) must pretension the upper thread at least up to the point where the needle tip enters the material being sewn.
3. Tighten the screw (4) again.

Correction of spring tension

1. Loosen the screw (5).
2. Set the tension value by turning the tensioning bolt (2).

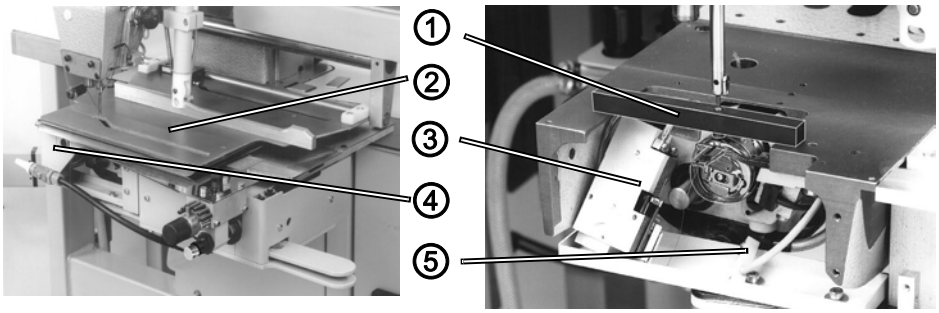
   Depending on the material being sewn and the yarn, the tension for the thread tensioning spring must be between 20 and 30 cN (1 cN = 1 g).

   The tension is measured on the thread guide (6).

   The thread is pulled parallel to the arm shaft.
3. Tighten the screw (5) again.

5.6 Setting the needle bar height

Figure 15: Setting the needle bar height



(1) - Gage
(2) - Configuration set
(3) - Thread trimmer
(4) - Casing
(5) - Light barrier

Rules and checking

The needle bar height is set and checked using the gage (1).

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only set the needle bar height when the sewing unit is switched off.

Correction

1. Remove the configuration set (2).
2. Remove the casing (4).
3. Undo the light barrier (5) and thread trimmer (3) and put them down on the oil pan.
4. Undo the screws (6) on the sliding plate and remove the sliding plate.

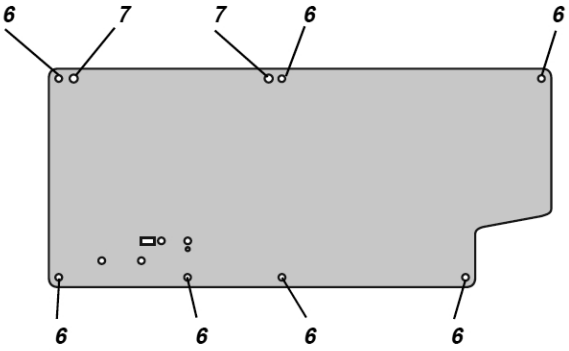
ATTENTION

Damage to property due to misaligned sliding plate

The centring discs (7) must not be twisted. These are used to align the sliding plate to the needle.

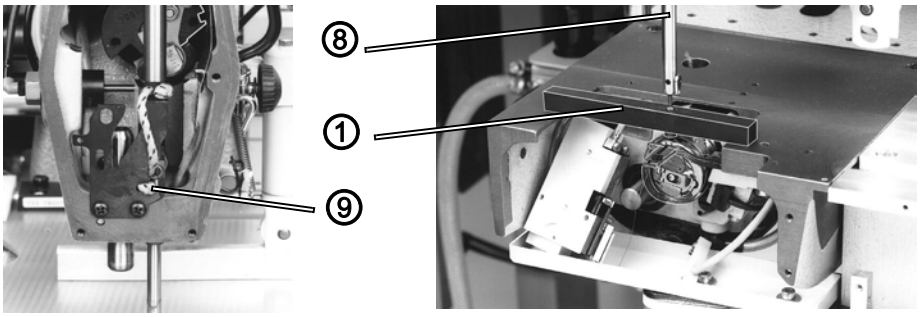
There are two spacers between the sliding plate and thread trimmer.

Figure 16: Sliding plate



(6) - Gage
(7) - Configuration set

Figure 17: Setting the needle bar height



(1) - Gage
(8) - Needle bar
(9) - Clamping screw

5. Fit the gage (1) onto the foundation plate.
6. Unscrew the protective cover and head cover.
7. Loosen the clamping screw (9).
8. Lock the sewing machine in place at position **E.**
9. Fit the needle bar (8) downwards onto the gage (1).

   ☑ The pin for the gage (1) must plunge into the needle bar (8) as far as it will go.
10. Tighten the needle bar fastening screw (10).

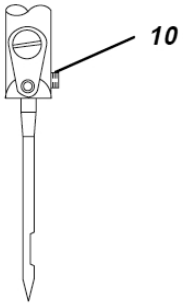
    ☑ The needle bar fastening screw (10) must be aligned parallel to the arm shaft and be pointing to the rear (to the handwheel).
11. Reattach all removed parts.

ATTENTION

Damage to property due to missing spacers.

When installing the thread trimmer, place the two spacers between the thread trimmer and sliding plate.

Figure 18: Needle bar with needle

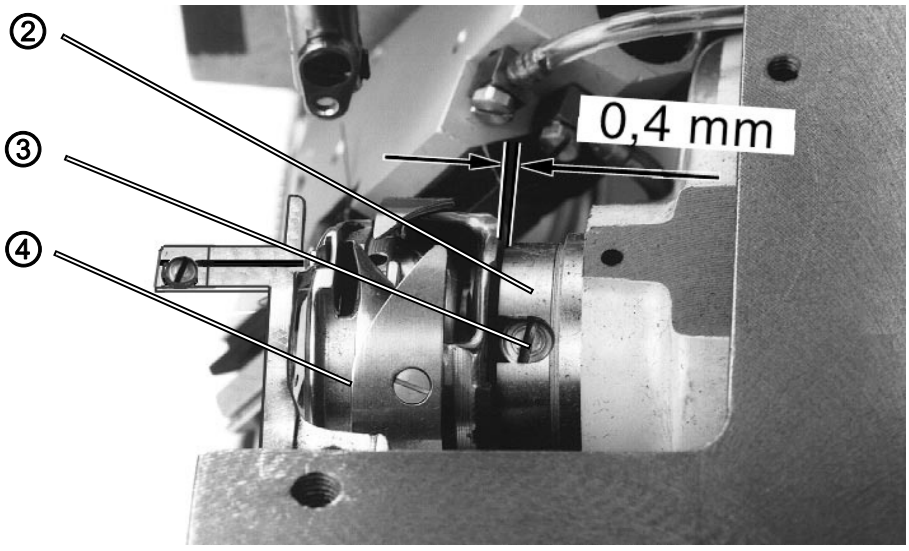


(10) - Needle bar fastening screw

5.7 Hook settings

5.7.1 Loop stroke and distance of hook tip to needle

Figure 19: Loop stroke and distance of hook tip to needle



(1) - Hook tip
(2) - Socket
(3) - Fastening screw
(4) - Hook

Rules and checking

The loop stroke is the path of the needle bar from the lower dead center to the point where the hook tip is at the center of the needle.

The loop stroke is 1.8 mm.

1. Lock the machine in place at position **A**.

   The hook tip (1) should be at the center of the needle.

   The distance between the hook tip (1) and the needle should be 0.1 mm.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only set the loop stroke and distance of the hook tip to the needle when the sewing unit is switched off.

Correction

1. Remove the configuration set and sliding plate (📖 *5.6 Setting the needle bar height*, p. 24).
2. Insert the new needle.
3. Loosen the first fastening screw (3) for the hook (4).
4. Lock the sewing machine in place at position **A.**
5. Loosen the second fastening screw (3) for the hook (4).
6. Set the hook tip (1) to the center of the needle.

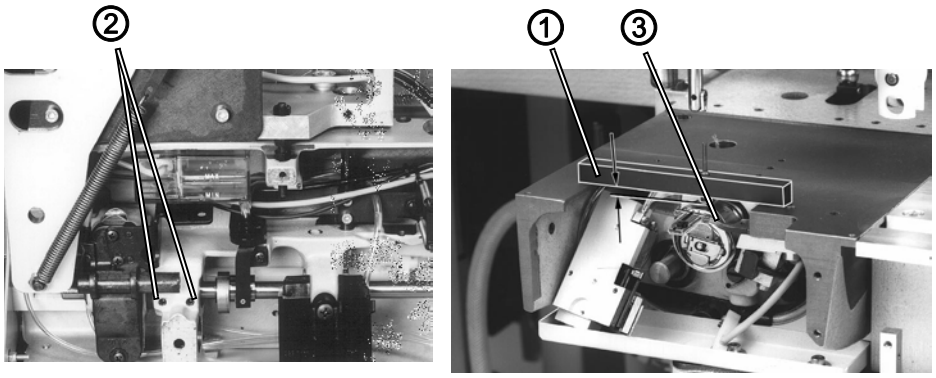
   The distance between the hook tip (1) and the groove for the needle must be 0.1 mm.

   In this position, there is a distance of approx. 0.4 mm between the hook (4) and the socket (2).

   If a distance of 0.4 mm is not reached, then the hook drive housing has to be adjusted accordingly (📖 *5.7.1 Loop stroke and distance of hook tip to needle*, p. 26).
7. Tighten the fastening screws (3) (two of them) for the hook (4) again.
8. Reattach all removed parts.

5.7.2 Setting the hook drive housing

Figure 20: Hook drive housing



(1) - Gage
(2) - Screws
(3) - Thread pulling plate

Rules and checking

The hook drive housing (4) is aligned at the factory. It may only be adjusted in exceptional cases.

When the hook drive housing (4) is correctly aligned, there has to be a distance of 0.4 mm between the hook and the socket (📖 *5.7.1 Loop stroke and distance of hook tip to needle*, p. 26).

The distance between the sliding plate supporting surface and the thread pulling plate (3) is 3.8 mm.

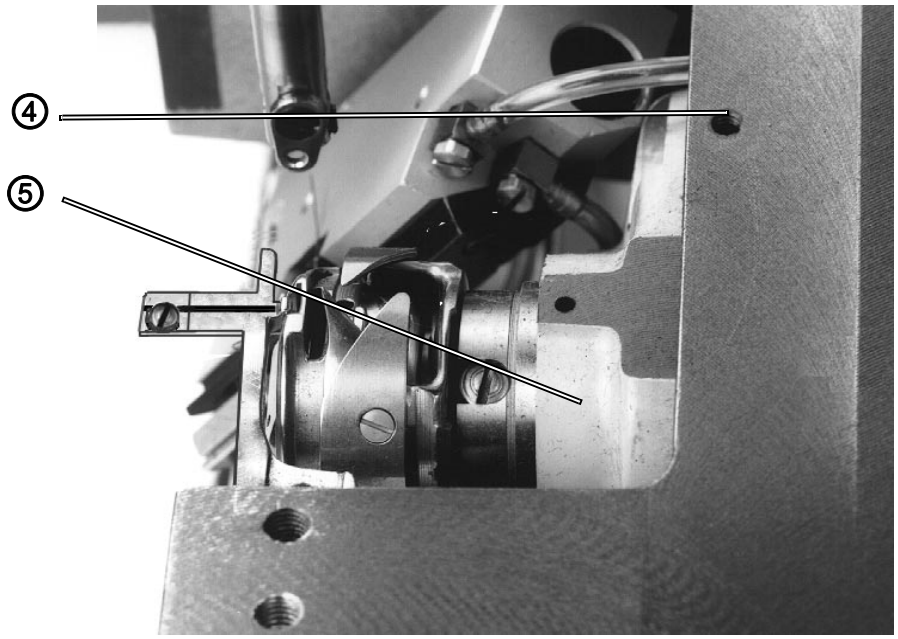
WARNING

Risk of injury due to crushing

Switch off the main switch!

Only correct the hook drive housing (4) when the sewing unit is switched off.

Figure 21: Hook drive housing



(4) - Lock screw *(5) - Hook drive housing*

Correction

1. Remove the configuration set and sliding plate (📖 *5.6 Setting the needle bar height*, p. 24).
2. Unscrew the lock screw (4).

   A stop screw is located underneath the lock screw.
3. Set the stop screw.

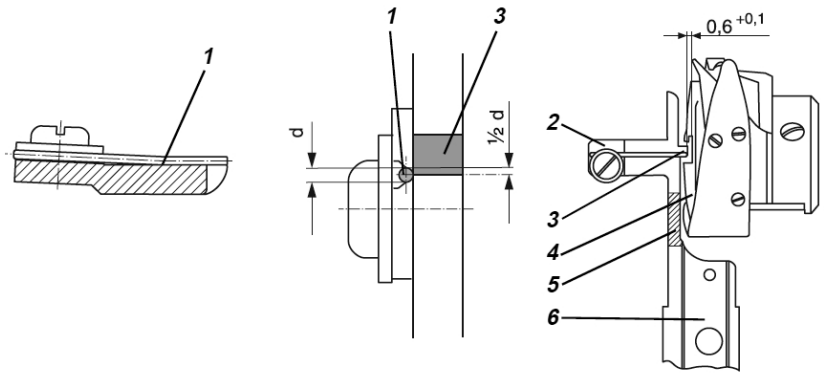
   The distance between the sliding plate supporting surface and the thread pulling plate (3) is 3.8 mm.

   This distance is checked using the gage (1).
4. Screw the lock screw (4) back in.
5. Undo the screws (2) for the hook drive housing.
6. Move the hook drive housing (5).

   There has to be a distance of 0.4 mm between the hook and the adjusting ring (📖 *5.7.1 Loop stroke and distance of hook tip to needle*, p. 26).
7. Tighten the screws (2) for the hook drive housing (5) again.
8. **Check** the distance of the hook tip to the needle and correct it, if necessary (📖 *5.7.1 Loop stroke and distance of hook tip to needle*, p. 26).

5.8 Setting the bobbin case support

Figure 22: Bobbin case support



(1) - Spring wire
(2) - Screw
(3) - Retaining collar
(4) - Bottom part of the bobbin case
(5) - Shaded area
(6) - Bobbin case support

Rules and checking

The bobbin case support (6) has been aligned accordingly at the factory.

When the support is replaced, the new support must be re-aligned if required.

The spring wire (1) should be resting gap-free and flush on the bobbin case support (6). Half the width of the spring wire (1) should be above the retaining collar (3).

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only correct the bobbin case support (6) when the sewing unit is switched off.

ATTENTION

Damage to property due to faulty alignment.

The alignment procedure may only be carried out in the shaded area (5).

There is a risk of breakage in the area around the retaining collar (3) due to the high-level of hardness. Put the thread trimmer and sliding plate in place.

Correction

1. Align the bobbin case support (6).

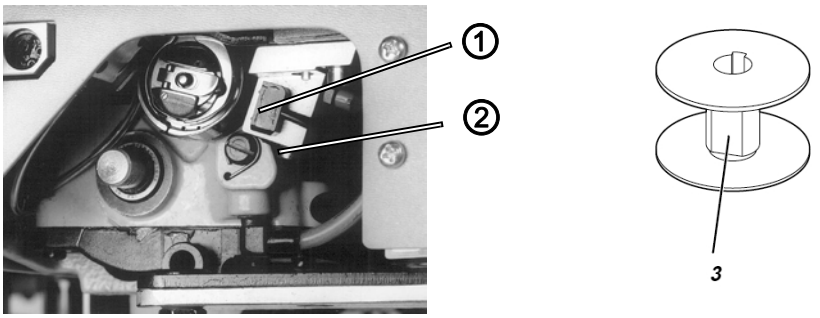
   The distance between the retaining collar (3) of the bobbin case support (6) and the bottom part of the bobbin case (4) should be 0.6 +0.1 mm.
2. Loosen the screw (2).
3. Move the wire such that it lies flush against the retaining collar or is 0.1 mm away.
4. Tighten the screw (2).

Note

Holding wire If worn, the holding wire (1) can be turned and the second wire end can be used.

5.9 Setting the light barrier for the residual thread monitor

Figure 23: Light barrier for the residual thread monitor



(1) - Light barrier
(2) - Clamping screw
(3) - Reflecting surface

Rules and checking

When the light barrier is correctly aligned, a reflection occurs when an empty bobbin is turned.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only align the reflection light barrier when the motor protection circuit breaker is switched off.

Note

Residual thread monitor

The residual thread monitor is only effective if the value for the hook thread counter has been set to **0000.**

Checking the alignment

1. Place the empty bobbin onto the sleeve (gage (5) section 2.1) and insert it into the bobbin housing.
2. Move the hook by turning the handwheel until the infrared radiation from light barrier 1 can hit the bobbin hub (bottom of hook tip) without obstruction through the light window in the bobbin housing.
3. Call up the Technician level in the control system (📖 *7.2 Calling up the Technician level*, p. 65).
4. Select the `Service` menu item (📖 *7.2.3 Service menu item*, p. 70).
5. Select the `Multitest` submenu (📖 Multitest submenu, p. 71).
6. Select the `Test Input` subitem (📖 Test Input subitem, p. 72).
7. Select input 3 Restfadenwächter (Residual thread monitor).
8. Turn the empty bobbin with the sleeve (gage 5).

   If the infrared radiation from light barrier (1) hits the reflecting surface (3) of the bobbin hub, this must be indicated in the display:

   Display with reflection: `Value 1`

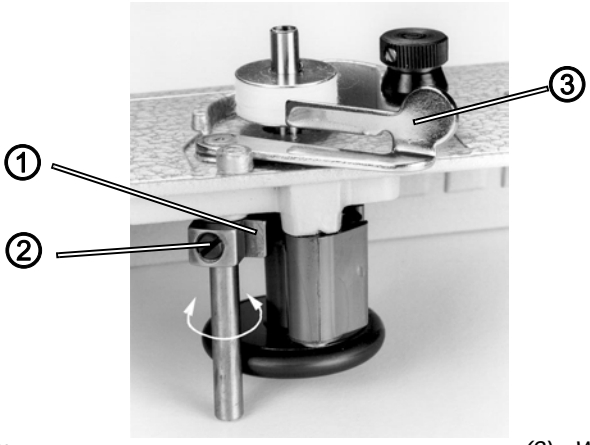
   Display without reflection: `Value 0`

Correcting the alignment

1. Clean the lenses for the light barrier (1) and the reflecting surface (3) of the bobbin hub using a soft cloth.
2. Loosen the clamping screw (2).
3. Push the light barrier (1) into the light barrier holder as far as it will go.
4. Tighten the clamping screw (2) gently.
5. Align the light barrier.
6. Turn the light barrier (1) until `Value 1` is shown in the display.
7. Tighten the clamping screw (2) again.
8. Check the alignment after clamping and, if required, correct it again.

5.10 Setting the winder

Figure 24: Winder



(1) - Switch cam
(2) - Screw
(3) - Winder flap

Rules and checking

The winder should automatically cut-off if the bobbin is filled to approx. 0.5 mm under the edge of the winder.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only correct the winder when the sewing unit is switched off.

Correction

Small changes to the filling quantity

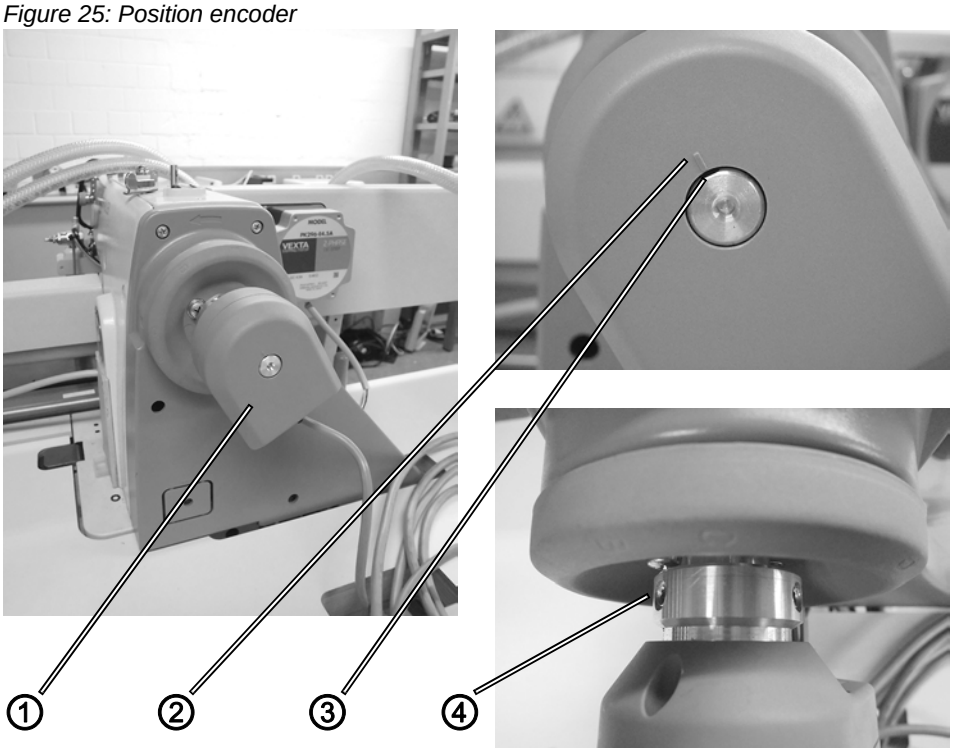
1. Bend the winder flap (3).

Large changes to the filling quantity

1. Remove the winder lid.
2. Loosen the screw (2).
3. Turn the switch cam (1).
   In the direction of the arrow **A (to the left)**: smaller filling quantity
   In the direction of the arrow **B (to the right)**: larger filling quantity
4. Tighten the screw (2) again.
5. Reattach the winder lid.

5.11 Setting the position encoder

Figure 25: Position encoder



(1) - Position encoder
(2) - Marking
(3) - Surface of the visible part of the shaft
(4) - Setscrews

Proper setting

If the handwheel is locked in place at position C, the marking (2) in the plastic part of the position encoder (1) has to be located on the surface of the visible part of the shaft (3).

Check

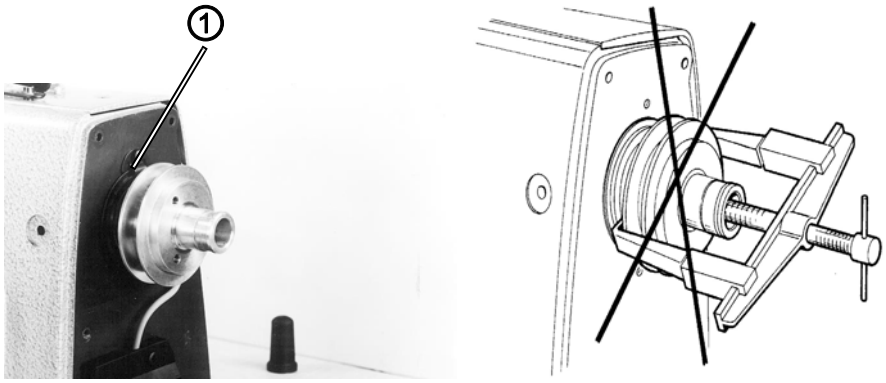
1. Lock the handwheel in place at position C.
2. Check the position of the marking (2) and the surface of the visible part of the shaft (3) to one another.

Correction

1. Allow the machine to continue to be locked in place at position C.
2. If the marking (2) and the surface of the visible part of the shaft (3) are not above each other, then loosen the setscrews (4).
3. Turn the shaft until the correct position is reached.
4. Tighten the setscrews (4) again.

5.12 Replacing the right-hand arm shaft bearing

Figure 26: Right-hand arm shaft bearing



(1) - Retaining springs
(2) - Screw
(3) - V-belt pulley
(4) - Axle bearing
(5) - Retaining ring
(6) - Screw

Rules and checking

The right-hand arm shaft bearing has to be replaced if the arm shaft is running with difficulty.

WARNING

Risk of injury due to rotating shaft.

Switch off the main switch!

Only replace the arm shaft bearing when the sewing unit is switched off.

ATTENTION

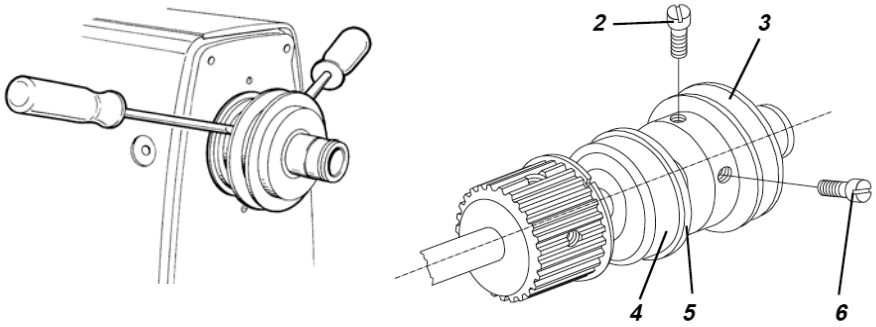
Damage to property due to axial pressure in the direction of the head cover.

Do not use an extractor!

Axial pressure must not be exerted on the arm shaft if you are removing or installing the right-hand arm shaft bearing.

Axial pressure in the direction of the head cover leads to the thread lever being damaged.

Figure 27: Do not use an extractor

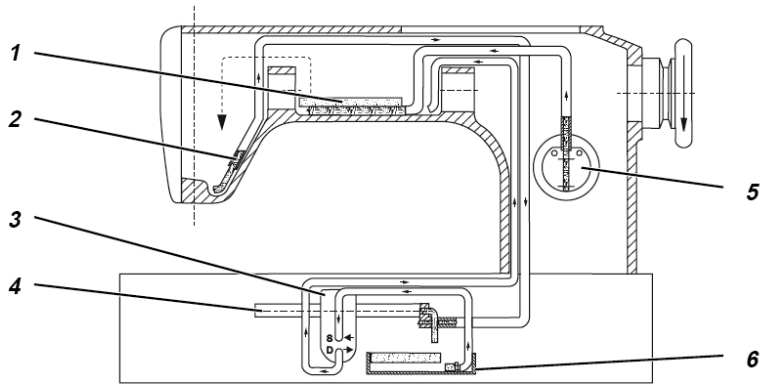


Replacing the arm shaft bearing

1. Remove the position encoder, handwheel, arm cover and head cover.
2. Undo the belt guard and remove it together with the V-belt.
3. Remove the retaining springs (1) (two of them).
4. Undo screws (2) and (6).
5. Use two screwdrivers or similar to carefully pry off the v-belt pulley (3).
6. Pull off the axle bearing (4) using an extractor and remove the retaining ring (5).
7. Mount the retaining ring (5) onto a new axle bearing (4) (order no.: 0211 000361) and press it completely onto the v-belt pulley (3) properly.
8. Drive in the v-belt pulley (3) into its seating by using gentle taps with a plastic hammer.
9. Refit the removed parts in reverse order.

5.13 Oil lubrication

Figure 28: Oil lubrication



(1) - Oil pan
(2) - Oil-wick
(3) - Pump
(4) - Distributor pipe
(5) - Oil reservoir
(6) - Oil collection tray

The oil flows from the oil reservoir (5) to the oil pan (1). From there, the lubrication points located in the arm and head area will be supplied with oil.

The oil emitted from the crank mechanism flows via the oil-wick (2) to the central distributor pipe (4) for the lubrication points located underneath the foundation plate. The excess oil drips into the oil collection tray (6) and is led back into the oil pan (1) by means of the pump (3).

This allows you to attain effective lubrication with reduced oil consumption.

WARNING

Risk of injury due to rotating shaft.

Switch off the main switch!

Only perform assembly work on the oil circuit when the sewing unit is switched off.

Note

Hose ends

When performing assembly work, always make sure that the hose ends are connected up properly to the pump.

S = Sucking

D = Pushing

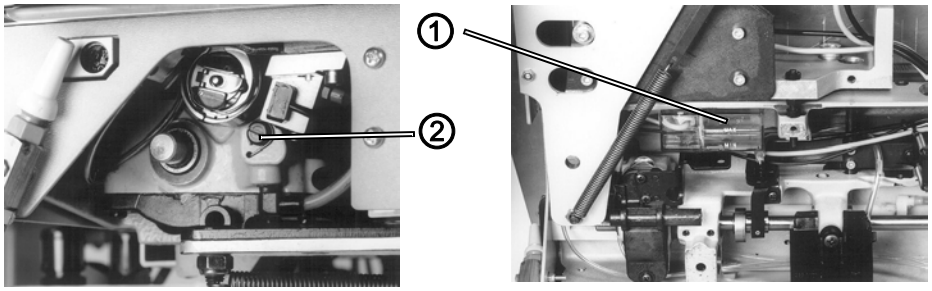
Rules and checking

The oil level has to be checked weekly.

1. Check the oil level in oil reservoir (5).
   The oil level must be between the **MIN** and **MAX** markings.
2. If necessary, top up the oil to the **MAX** marking.

5.14 Hook lubrication

Figure 29: Hook lubrication



(1) - Oil reservoir

(2) - Oil regulating screw

WARNING

Risk of injury due to skin contact with oil.

Check the hook lubrication only taking the utmost care when the sewing unit is switched on.

Oil can cause rashes.

Avoid prolonged skin contact.

Wash yourself thoroughly after any contact is made with oil.

Switch off the main switch.

Only correct the hook lubrication when the sewing unit is switched off.

ATTENTION

Environmental damage from used oil.

The handling and disposal of mineral oils is subject to legal regulations.

Deliver used oil to an authorized collecting station.

Protect the environment!

Make sure that no oil is spilt.

Rules and checking

The required oil quantity for hook lubrication can be regulated and is determined by the sewing threads being processed and by the material being sewn.

When sewing between 8 and 10 seams, a piece of paper held underneath the hook - preferably blotting paper - should be slightly sprayed with oil.

Correction

1. Set the oil regulating screw (2):

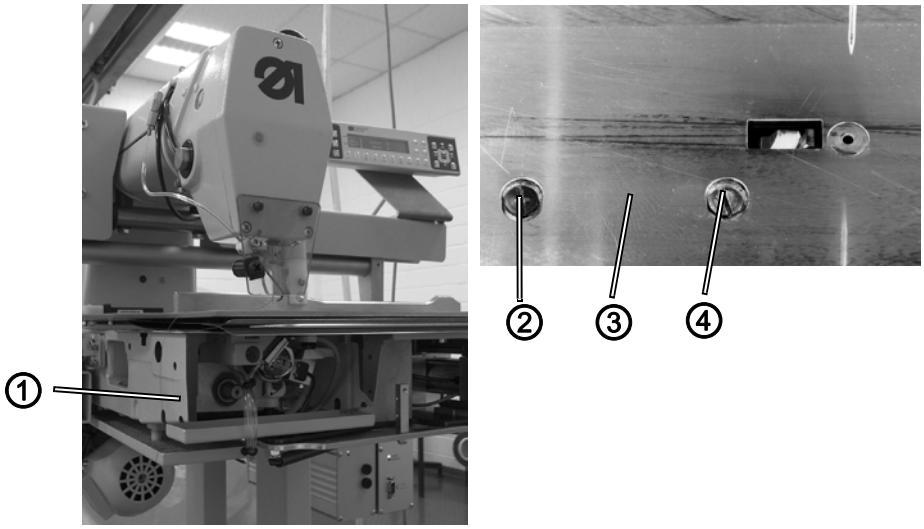
   Anticlockwise = more oil

   Clockwise = less oil

6 Setting the sewing unit

6.1 Setting the thread trimmer

Figure 30: Thread trimmer



(1) - Casing
(2) - Screws
(3) - Sliding plate
(4) - Screws

Rules and checking

The movable cutter must be able to move freely in the slot of the configuration set during thread cutting.

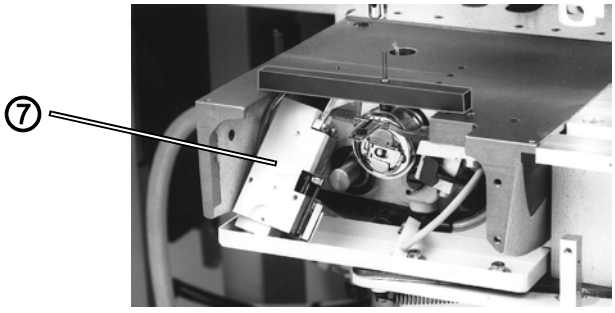
WARNING

Risk of injury due to crushing

Switch off the main switch!

Only remove the thread trimmer when the sewing unit is switched off.

Figure 31: Thread trimmer



(7) - Thread trimmer

Removing the thread trimmer

1. Remove the configuration set and casing (1).
2. Remove screws (2) and (4).

ATTENTION: There are two spacers between the sliding plate (3) and thread trimmer (7).

3. Label the three hoses on the thread trimmer (7) and then unscrew them.
4. Remove the thread trimmer (7).

Installing the thread trimmer

1. Connect up the hoses according to the labeling.
2. Fasten the thread trimmer (7) beneath the sliding plate (3).

   In doing so, prevent the hoses from colliding with moving parts.
3. Fasten screws (2) and (4).

   The movable cutter must be able to move freely in the slot of the configuration set during thread cutting.

ATTENTION: When performing the installation work, place the spacers between the sliding plate and thread trimmer.

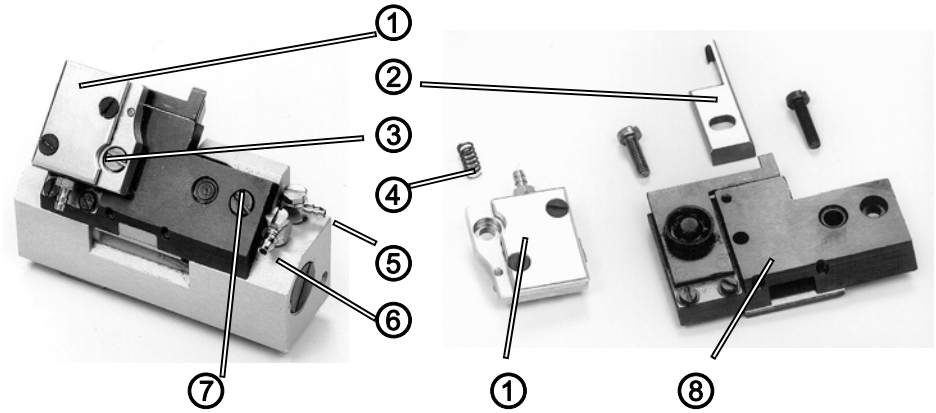
4. Reattach the casing (1) and configuration set.

Function test for the thread trimmer

1. Call up the Technician level in the control system (🕮 *7.2 Calling up the Technician level*, p. 65).
2. Select the `Service` menu item (🕮 *7.2.3 Service menu item*, p. 70).
3. Select the `Multitest` submenu (🕮 Multitest submenu, p. 71).
4. Select the `Test Output` subitem (🕮 Test Output subitem, p. 71).
5. Actuate output 1 Schere (Trimmer).

6.1.1 Installing and removing the cutter

Figure 32: Installing and removing the cutter



(1) - Cover plate
(2) - Counter-blade
(3) - Screws
(4) - Compression spring
(5) - Y3
(6) - Y1
(7) - Screws
(8) - Cutter guide plate

The cutters have to replaced and set when the thread trimmer is removed. The sewing threads should be reliably cut using as little pressure as possible.

Rules and checking

The distance from the cutter edge of the fixed cutter (12) to the surface of the trimmer body is 1.5 mm.

The cutting edge of the counter-blade (2) lies just below the cutting edge of the fixed cutter. This is the case if the distance from the cutter edge to the surface of the trimmer body is 2 mm.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only remove the thread trimmer when the sewing unit is switched off.

Only install or remove the cutter when the thread trimmer is removed.

Removing the cutter

1. Remove the thread trimmer (see 📖 Removing the thread trimmer, p. 42).
2. Remove screws (3) and (7).
3. Remove the cover plate (1) and cutter guide plate (8).

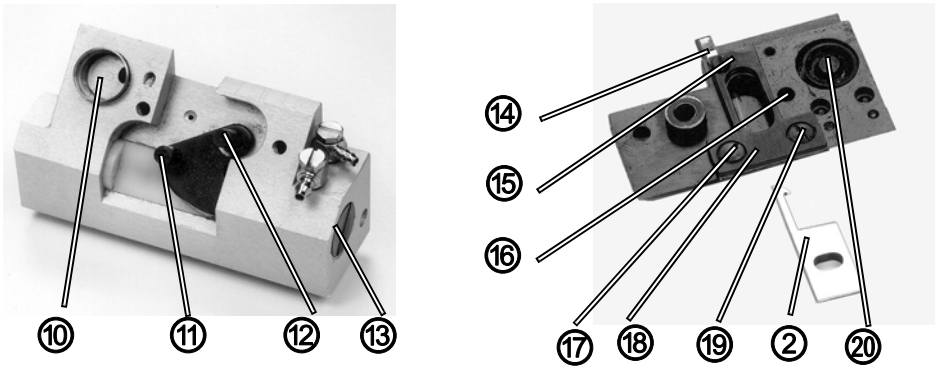
   ATTENTION: Do not lose compression spring (4).
4. Remove the counter-blade (2) (movable cutter) **downwards** and out of the cutter guide plate (8).

This is necessary so that the cutter does not get damaged.

5. Undo screws (17) and (19).
6. Remove the pressing plate (18).
7. Remove the cutter (14) (fixed cutter).

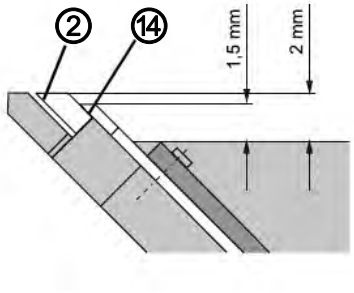
   The position identifiers `Y1` and `Y3` (compressed air connections) designate the relevant magnet valves.

Figure 33: Installing and removing the cutter



(2) - Counter-blade
(10) - Cylinder
(11) - Pin
(12) - Pin
(13) - Screw
(14) - Cutter
(15) - Pressure screw
(16) - Hole
(17) - Screw
(18) - Pressing plate
(19) - Screw
(20) - Seal

Figure 34: Installing and removing the cutter



(2) - Counter-blade
(14) - Cutter

Installing the cutter

1. Screw the cutter (14) onto the pressing plate (18).

   The distance from the cutter edge to the surface of the trimmer body is 1.5 mm.
2. Tighten screws (17) and (19).
3. Loosen the pressure screw (15).
4. Insert the counter-blade (2) **from below** into the cutter guide plate (8).

Check ease of movement of the cutter.

5. Tighten the pressure screw (15) and set it for the cutting pressure.

   The sewing threads should be reliably cut off using as little pressure as possible.

6. Carry out a cutting test.

   The pressure screw (15) is slotted at the bottom. For a tight fit, this can be slightly widened.

7. Fit the cutter guide plate (8).

   The seal (20) has to engage in the cylinder (10).

   The pin (12) has to engage in the hole (16).

   The pin (11) has to engage in the elongated hole for the counter-blade (2).

8. Fit the cover plate (1) with the compression spring (4) onto the cutter guide plate (8).
9. Tighten screws (3) and (5) firmly.

Setting the height of the counter-blade (2)

The height of the counter-blade (2) (movable cutter) is set using the screw (13).

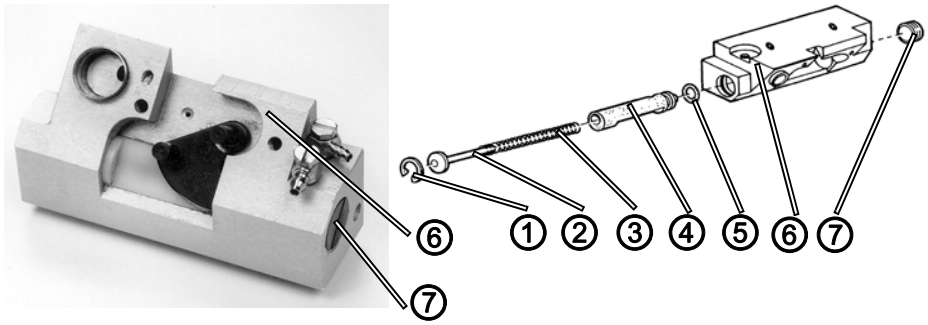
If the screw (13) has been unscrewed, then it has to be re-inserted with PTFE and screwed in up to the old position.

Set the counter-blade (2) such that its cutting edge is just below the cutting edge of the cutter (14) (fixed cutter).

This is the case if the distance from the cutter edge to the surface of the trimmer body is 2 mm.

6.1.2 Replacing the piston

Figure 35: Replacing the piston



(1) - Retaining ring
(2) - Disc
(3) - Compression spring
(4) - Piston
(5) - O-ring
(6) - Trimmer body
(7) - Screw

The moving cutter is lifted pneumatically.

The piston (4) actuating the cutter is located in the trimmer body (6).

Rules and checking

When replacing the piston, set it such that the cutting edge of the counter-blade is just below the cutting edge of the fixed cutter.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only replace the thread trimmer when the sewing unit is switched off.

Only replace the piston when the thread trimmer is removed.

ATTENTION

The running surface for the hole is anodized.

The anodized layer must not be damaged when replacing the piston.

Correction

1. Remove the thread trimmer (see 🕮 Removing the thread trimmer, p. 42).
2. Remove the retaining ring (1).

   ATTENTION: Disc (2) is under spring pressure!
3. Remove the disc (2), compression spring (3), and piston (4) together with O-ring (5).

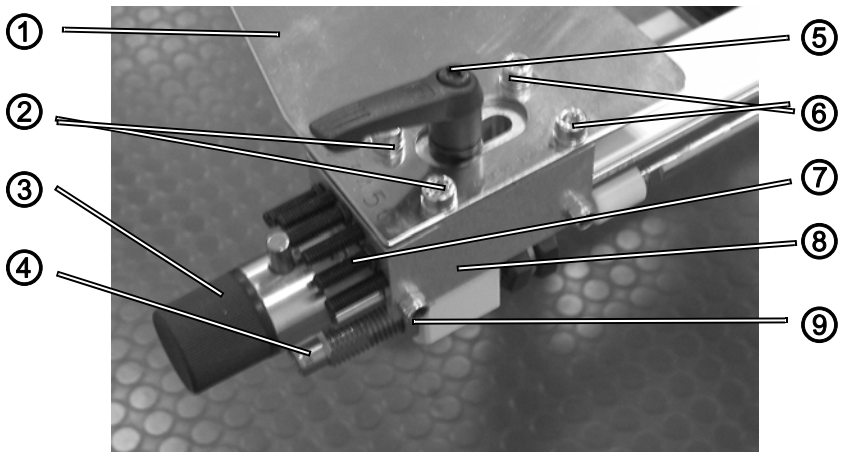
Lubricate the running surface for the hole using ESSO fluid grease S420.

4. Install the piston in the reverse order.

   If the screw (7) has been unscrewed, re-insert it using PTFE (see 🕮 *6.1.1 Installing and removing the cutter*, p. 43).
5. Install the thread trimmer.
6. Carry out a cutting test with the sewing threads (test program).

6.2 Setting the folding table

Figure 36: Folding table



(1) - Folding plate
(2) - Screw
(3) - Knob
(4) - Depth adjustment
(5) - Clamping lever
(6) - Screw
(7) - Setscrews
(8) - Piston
(9) - Counternut

Rules and checking

Depending on the thickness of the material being sewn, the folding plate (1) should be 1 to 1.5 mm above the sliding plate (in parallel). The height is determined by the material strength.

In the 0° position, the front edge of the folding plate (1) runs parallel to the front edge of the sliding plate.

The insertion depth is determined by the material being sewn. The first insertion of the needle should be as close as possible to the fold edge in the material being sewn.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only set the folding table when the sewing unit is switched off.

Correction

Setting the height

1. Unscrew screws (2) and (6).
2. Set the height of the folding plate (1) by adding or removing intermediate layers (from the accessory pack) between the piston (8) and folding plate (1).
3. Tighten screws (2) and (6).

Setting the position

1. Move the swivel arm into the 0° position.
2. Undo screws (2) and (6) as well as the clamping lever (5).
3. Align the folding plate (1) parallel to the sliding plate.

   The front edge of the folding plate should be over the center of the needle hole and 0° edge for the scale.

   The depth adjustment (4) may have to be changed.
4. Tighten the screws (2) and (6) as well as the clamping lever (5) again.

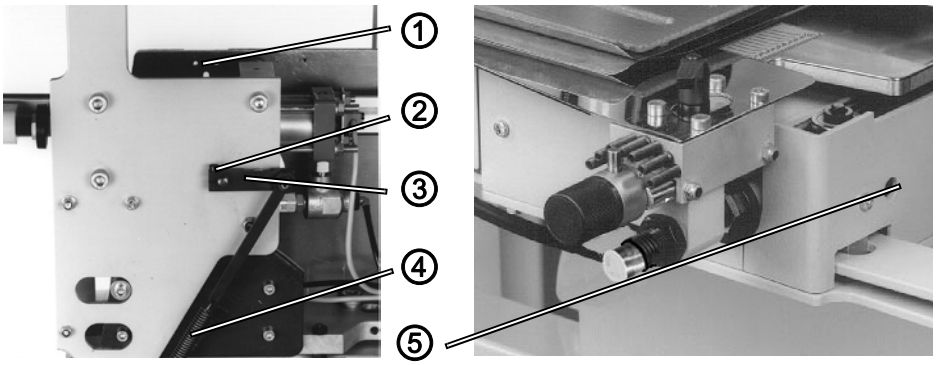
Setting the insertion depth

1. Release the counternut (9).
2. Set the depth adjustment (4).

   With moderately heavy material, the first insertion of the needle should be as close as possible to the fold edge.
3. Tighten the counternut (9) again.

6.2.1 Setting the folding table retraction

Figure 37: Folding table retraction



(1) - Edge of the base plate
(2) - Screw
(3) - Lever
(4) - Tension spring
(5) - Hole

The folding table is extended by means of a pneumatic cylinder and retracted by means of a tension spring.

Rules and checking

The tension spring (4) should be tensioned such that the lever (3) is parallel to the edge of the base plate when the folding table is retracted.

The extending movement of the folding table should take place quickly, but not abruptly.

WARNING

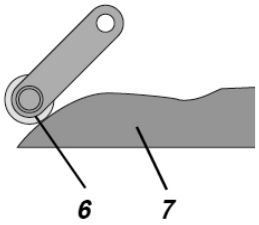
Risk of injury due to crushing

Switch off the main switch!

Only set the folding table retraction when the sewing unit is switched off.

Perform adjustment work and function testing with extreme caution when the sewing unit is running.

Figure 38: Folding table retraction



(6) - Pressure roller
(7) - Control cam

Correction

Setting the folding table retraction

1. Insert the folding table.
2. Take off the right-hand casing and remove the tension spring (4).
3. Loosen the screw (2).
4. Press the pressure roller (6) against the control cam (7) and align the lever (3) parallel to the edge (1) at the same time, and tighten the screw (2).

   The axial play of the shaft must not exceed 0.5 mm.
5. Reattach the tension spring (4).

Setting the extending speed

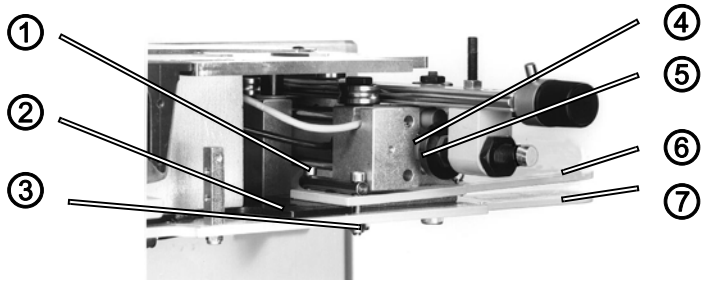
1. Set the extending speed of the folding table using the throttle valve.

   Movement should take place quickly, but not abruptly.

   The throttle valve can be reached through the hole (5).

6.2.2 Setting the angular adjustment, S7 switching moment

Figure 39: Angular adjustment, S7 switching moment



(1) - Screws
(2) - Pressure plate
(3) - Counternuts
(4) - Switching disc
(5) - Counternut
(6) - Handle
(7) - Base plate

The angle is adjusted manually. The handle is pressed and the angle adjusted according to the scale.

Rules and checking

The set angle must be held securely by the brake.

If the table is at the front, then `input 7 Tisch eingefahren (Table retracted)` has to switch.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only set the angular adjustment when the sewing unit is switched off.

Perform adjustment work and function testing with extreme caution when the sewing unit is running.

Correction

Setting angular adjustment

1. Tighten the screws (1) (two of them).

   The handle (6) must press evenly on the pressure plate (2).

   The distance of the handle (6) to the base plate (7) is approx. 5 mm at the outer edge.
2. Tighten the counternuts (3).

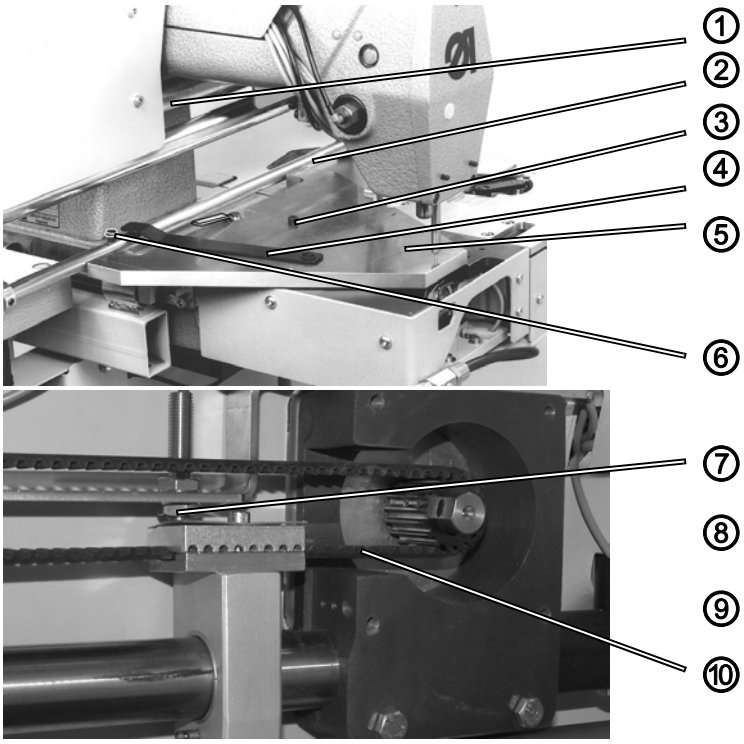
Setting the switching moment for `input 7 Tisch eingefahren (Table retracted)`

1. Call up the Technician level in the control system (📖 *7.2 Calling up the Technician level*, p. 65).

2. Select the `Service` menu item (📖 *7.2.3 Service menu item*, p. 70).
3. Select the `Multitest` submenu (📖 Multitest submenu, p. 71).
4. Select the `Test Input` subitem (📖 Test Input subitem, p. 72).
5. Select input 3 Restfadenwächter (Residual thread monitor).
6. Release the counternut (5).
7. Turn the nut until `input 7 Tisch eingefahren (Table retracted)` switches reliably.
8. Tighten the counternut (5).

6.3 Setting the transport carriage

Figure 40: Transport carriage



(1) - Screws
(2) - Shaft
(3) - Screw
(4) - Stopper plate
(5) - Gage
(6) - Pin
(7) - Screws
(8) - Stop screw
(9) - Counternut
(10) - Switch plate

The transport carriage picks up the configuration set and moves it according to the seam configuration.

Rules and checking

The transport carriage has to be at an angle of 90° to the arm shaft.

The reference point must be set using the gage.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only set the transport carriage when the sewing unit is switched off.

Perform adjustment work and function testing with extreme caution when the sewing unit is running.

Figure 41: Transport carriage

(11) - Surface

Correction

1. Remove the configuration set and sliding plate (📖 *5.5 Setting the thread tensioning spring*, p. 22).
2. Fit the gage (5) (order no. 0935 107077) onto the foundation plate of the sewing unit, and fasten it using the screw (3).
3. Undo the screws (1) (two of them).
4. Align the transport carriage using the gage.

   The shaft (2) must be resting against the gage.
5. Tighten the screws (1) (two of them).
6. Align the stopper plate (4) approx. 5° (anticlockwise) to the surface (11) of the gage (5).
7. Switch on the machine.
8. Press the `OK` button on the controller.

   The transport carriage moves to the reference position.

   The position of the stopper plate (4) is changed using the pin (6).

   The stopper plate (4) should be flush with the edge (11) of the gage

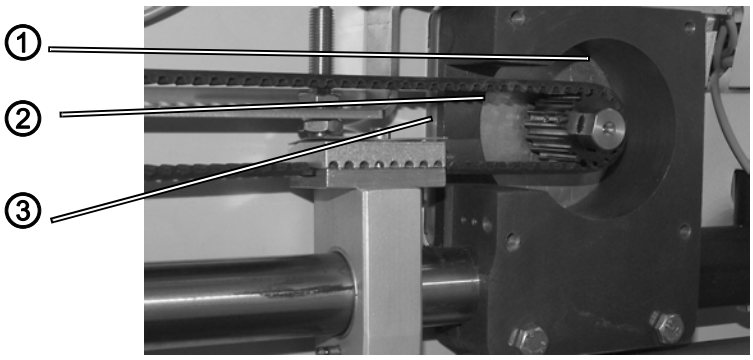
in this position. If not, then undo the screws (7) and adjust the switch plate (10).

9. Check the position once again.
10. Set the stop screw (8) and secure it using the counternut (9).

    The distance between the carrier and the screw head is approx. 1 mm.

6.3.1 Setting the run-off protection

Figure 42: Run-off protection



(1) - Screws
(2) - Bracket
(3) - Switch plate

Rules and checking

The left run-off protection for the transport carriage is effectuated by means of `input 5 Transportschlitten links (Left transport carriage)`.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only set the run-off protection when the sewing unit is switched off.

Perform adjustment work and function testing with extreme caution when the sewing unit is running.

Correction

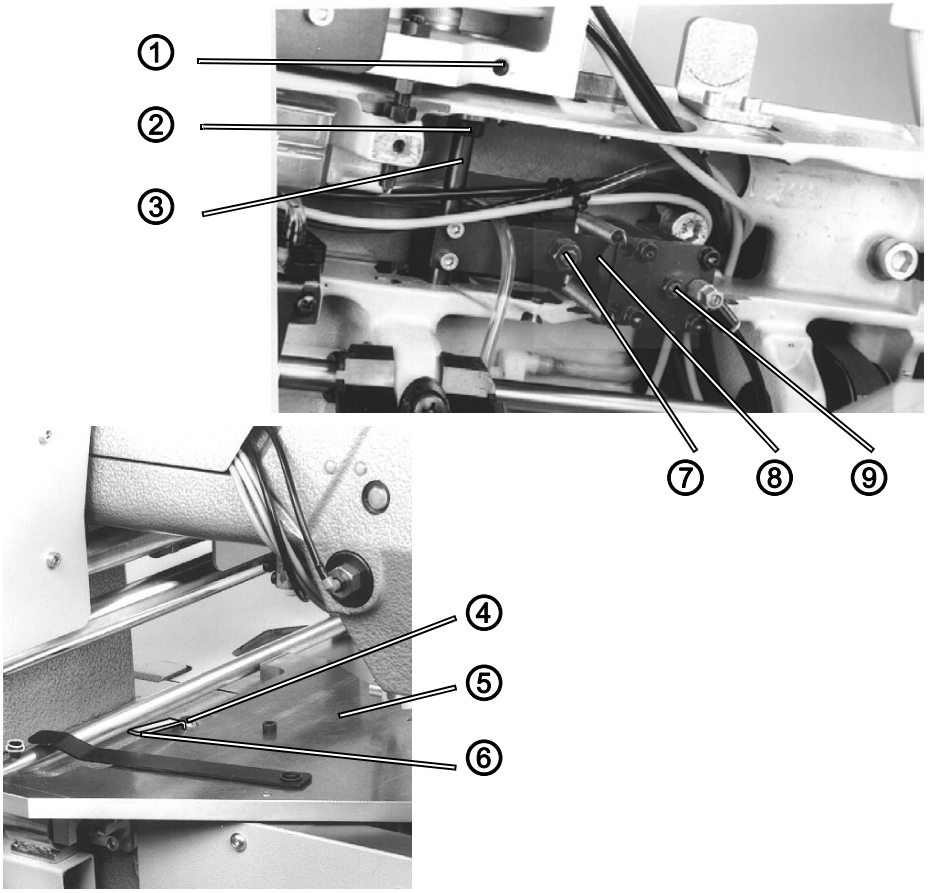
1. Set the height of *input 5 Transportschlitten links (Left transport carriage)* such that the switch plate (3) can pass through without a gap. If not, then bend the bracket (2) accordingly.
2. Push the transport carriage by hand into the left end position.
3. Call up the Technician level in the control system (📖 *7.2 Calling up the Technician level*, p. 65).
4. Select the *Service* menu item (📖 *7.2.3 Service menu item*, p. 70).
5. Select the *Multitest* submenu (📖 Multitest submenu, p. 71).
6. Select the *Test Input* subitem (📖 Test Input subitem, p. 72).
7. Push the switch plate (3) to *input 5 Transportschlitten links (Left transport carriage)* until this switches reliably.
8. Turn the sheet metal tongues into the nearest tooth spaces.
9. Undo the screws (1) (two of them).
10. Move the bracket (2).

    This is the fine adjustment for the switching moment.
11. Tighten the screws (1) again (two of them).
12. Check the switching function.

6.4 Setting the configuration set

6.4.1 Setting the guide roller for the configuration set

Figure 43: Guide roller for configuration set



(1) - Adjusting ring
(2) - Shaft
(3) - Adjusting ring
(4) - Guide roller
(5) - Gage
(6) - Gage
(7) - Screw
(8) - Pneumatic cylinder
(9) - Screw

Rules and checking

The position of the guide roller (4) is set using gages (5) and (6).

The pneumatic cylinder (8) is only required in the event of very curved seams.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only set the guide roller when the sewing unit is switched off.

Figure 44: Transport carriage

(11) - Surface

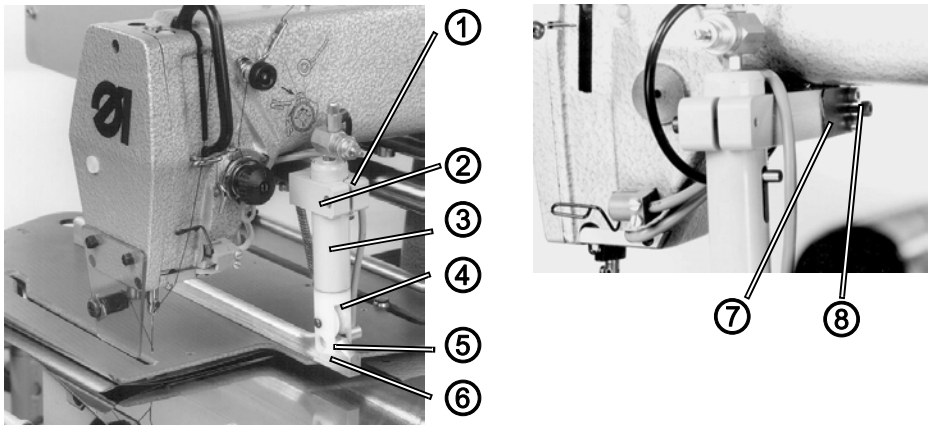
Correction

1. Remove the configuration set and sliding plate (📖 *5.5 Setting the thread tensioning spring*, p. 22).
2. Fit the gage (5) (order no. 0935 107077) onto the foundation plate of the sewing unit, and fasten it using the screw (3).
3. Fold the upper section over to the left.
4. Undo adjusting rings (1) and (3).
5. Press the guide roller (4) to 1 mm away from the first surface of the gage (5) by moving the shaft (2).
6. Check this distance using a gage (6) (order no. 0933 080200).
7. Fasten the adjusting rings (1) and (3) again.
8. Undo the counternut and unscrew the screw (7) several turns.

   The screw (9) presses against the piston rod.
9. Press the guide roller (4) to 1 mm away from the second surface of the gage (5) by adjusting the screw (9).
10. Check this distance using the gage (6).
11. Tighten the counternut on the screw (9).
12. Screw in the screw (7) as far as it will go and secure it.
13. Use the gage (6) to check whether the guide roller is 1 mm away from both surfaces of the gage (5). If not, repeat the adjustment.

6.4.2 Setting the pressing cylinder for the configuration set

Figure 45: Pressing cylinder for configuration set



(1) - Clamping block
(2) - Screw
(3) - Pressing cylinder
(4) - Inner surfaces of the roller fork
(5) - Guide roller
(6) - Control cam
(7) - Spring plate
(8) - Clamping screw

Rules and checking

The pressing cylinder (3) closes the configuration set.

The clamping block (1) is located on a shaft. The pressing cylinder (3) is able to move back and forth. The return movement ensues through the spring plate (7).

When the configuration set is inserted, the roller fork is opposite the control cam (6).

WARNING

Risk of injury due to crushing

Switch off the main switch!

Only set the pressing cylinder when the sewing unit is switched off.

Correction

Setting the height

1. Turn handwheel until the needle is at the top dead center.
2. Move the configuration set.

   The guide roller (5) of the pressing cylinder (3) must press against the cam for the control cam (6).
3. Undo the screw (2) and move the pressing cylinder (3) in the clamping block (1).

   The distance between the tip of the needle and the upper side of the configuration set is 2.5 mm. The inner surfaces (4) of the roller fork must be parallel to the control cam (6).
4. Tighten the screw (2) again.

Setting the spring plate (5)

1. Loosen the clamping screw (8).
2. Move the spring plate (7) on the shaft.

   The spring plate should be resting at a height of 5 mm on the clamping block.

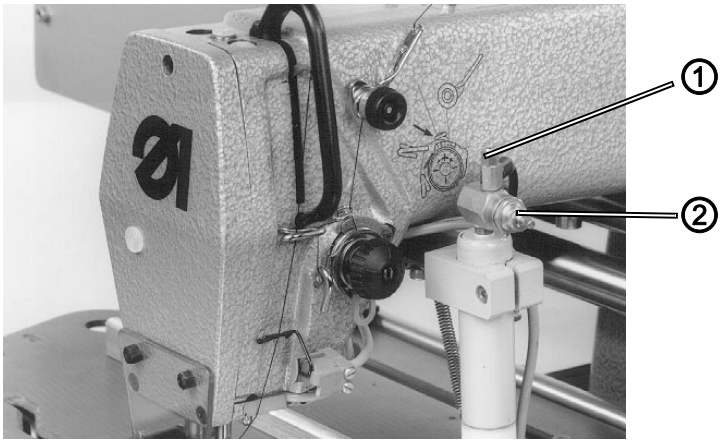
   The guide roller (5) is in the middle, above the control cam.
3. Tighten the clamping screw (8) again.

ATTENTION

The sliding surface for the spring plate (7) must be kept constantly greased.

6.4.3 Setting the closing motion for the configuration set

Figure 46: Closing motion for configuration set



(1) - Choke *(2) - Setscrew*

Rules and checking

The closing motion for the configuration set is determined by the choke (1) and the closing force is determined by the pressure controller.

The closing motion for the pressing cylinder should take place quickly, but not abruptly.

Perfect material transfer should be achieved with as little pressure as possible.

WARNING

Risk of injury due to crushing

Perform adjustment work and function testing with extreme caution when the sewing unit is running.

Correction

Setting the closing speed

1. Set the choke (1).

   Increasing the speed = Unscrew the setscrew (2)

   Decreasing the speed = Screw in the setscrew (2)

Setting the closing force

1. Call up the Technician level in the control system (🕮 *7.2 Calling up the Technician level*, p. 65).
2. Select the `Service` menu item (🕮 *7.2.3 Service menu item*, p. 70).
3. Select the `Multitest` submenu (🕮 Multitest submenu, p. 71).
4. Select the `Test Output` subitem (🕮 Test Output subitem, p. 71).
5. Actuate `output 5 Formsatz schließen (Close configuration set).`

   The cylinder is actuated.
6. Check whether the material is held securely.
7. Set the pressure controller.

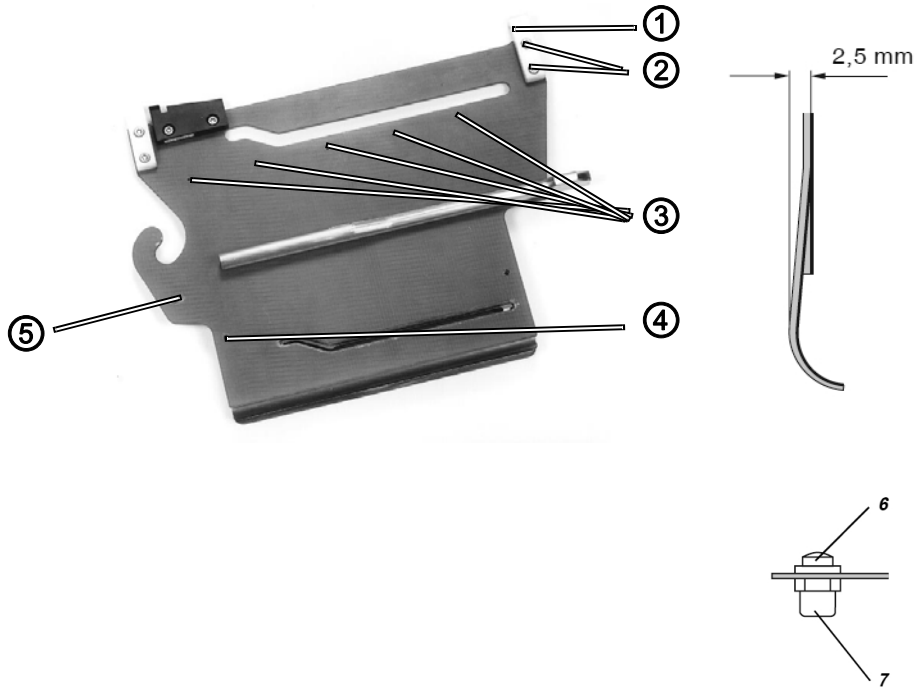
   Increasing the pressure = Screw in the setscrew (2)

   Decreasing the pressure = Unscrew the setscrew (2)

   Perfect material transfer should be achieved with as little pressure as possible.

6.4.4 Setting the configuration set

Figure 47: Setting the configuration set



(1) - Retaining brackets
(2) - Fastening screws
(3) - Screws
(4) - Holes
(5) - Elongated hole
(6) - Retaining bracket
(7) - Stopper

The sewing unit can be equipped with various configuration sets for different seam configurations (see operating manual).

Rules and checking

The configuration set should sit free of play on the carrier shaft.

The material clamps have to be attached such that the adjustment pins (📖 *5.1 Gage set*, p. 17) can be inserted through the holes (4).

The folding lip pressure (pre-tensioning of the material clamps) is determined by the bow height.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Remove the configuration set from the sewing unit and then set it.

Correction

Setting the retaining brackets

1. Undo the fastening screws (2) on the retaining brackets (1).

   The configuration set should sit free of play on the carrier shaft.
2. If not, move the retaining brackets (1) and (6).
3. Tighten the fastening screws (2) again.

Setting the position of the material clamps

1. Press the configuration set together (same dimension as in the sewing unit).

   The adjustment pins must be able to be inserted through the holes (4).
2. If not, then undo the screws (3) and set the plates accordingly.

Setting the folding lip pressure

1. Bend the bow of the material clamps accordingly.

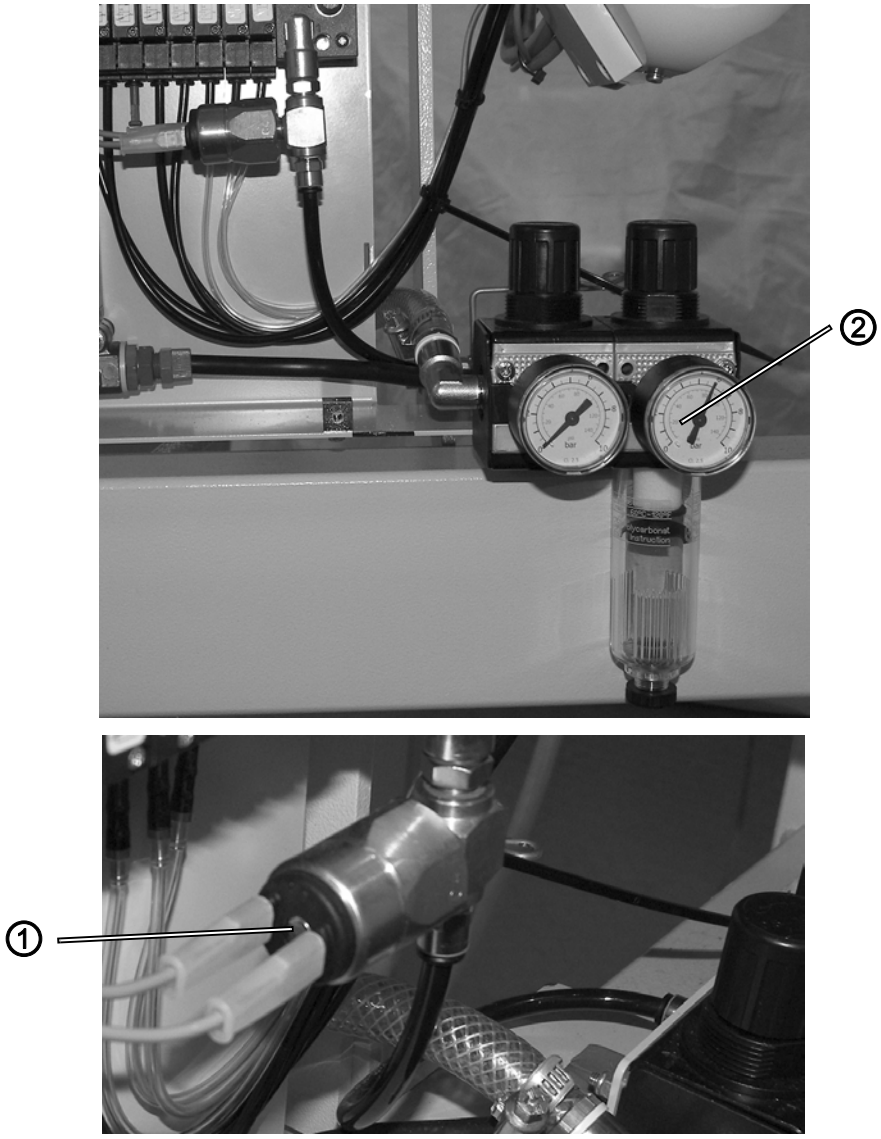
   Standard setting is 2.5 mm.

   The distance must be equal over the entire length of the material clamp.

   The distance must also be equal for both plates.

6.5 Adjusting the pressure monitor

Figure 48: Adjusting the pressure monitor



(1) - Pressure reducer
(2) - Pressure monitor

Rules and checking

The pressure monitor should trigger an appropriate warning message on the display when the pressure drops to below 4 bar.

Adjusting

1. Regulate the right-hand pressure reducer down to 4 bar.
2. Adjust the pressure monitor for as long as it takes until the warning message is no longer shown on the display.
3. Regulate the right-hand pressure reducer up to 4 bar again.

7 Service settings via the software

This chapter describes service settings such as

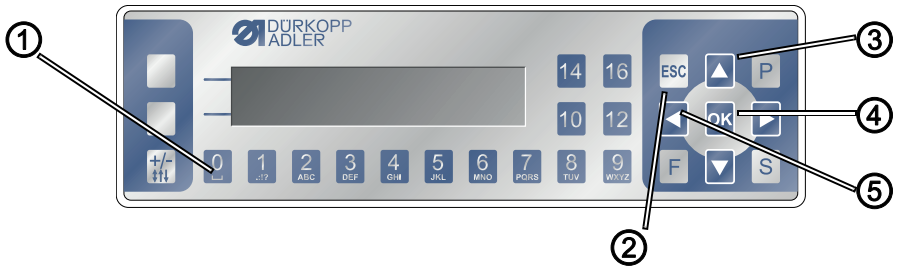
- The basic configuration of the machine
- Test functions for individual elements in the machine
- Calibration functions
- Presettings for programs and functions

Changes to stitch length, thread tension, etc. and the calling up and compiling of sewing programs is described in the operating manual (📖 *Operating manual Section 5 Operating the sewing unit*).

7.1 Basic use of the software

The software is controlled via the control panel.

Figure 49: Display and control panel for the software



(1) - Numeric keys
(2) - ESC key
(3) - Arrow keys ▲/▼
(4) - OK key
(5) - Arrow keys ◀/▶

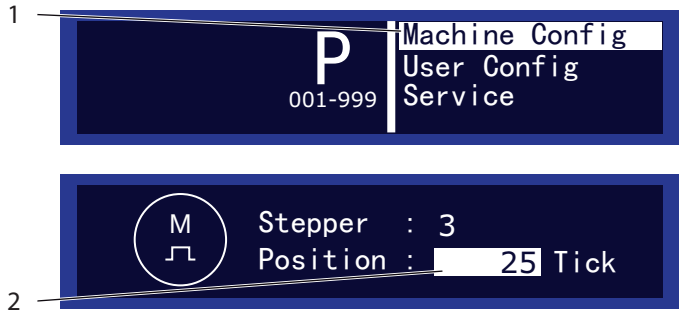
Display and selection

The display shows menu items or value fields that you can select.

Active entry highlighted

The relevant activated entry is highlighted.

Figure 50: Activated menu entries and value fields



(1) - Activated entry in a menu list
(2) - Activated entry in a value field

Movement with the arrow keys

You can use the arrow keys to move from entry to entry:

- ▲/▼ in a list of menu items
- ◀/▶ for adjacent value fields

Back to menu level

Back using ◀

Use ◀ to access the previous menu level.

Canceling in menu lists

Use *ESC* for canceling in menus

If you press *ESC* in a menu list, this will bring you to the user level.

Changing values

Input of value using numeric keys or ▲/▼

In activated fields, you can enter a value by using the numeric keys or change it incrementally using ▲/▼.

Input of incorrect values

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

Confirm with *OK*

Use *OK* to apply the activated entry:

In a menu list, the selected menu item will be opened.

Canceling value editing

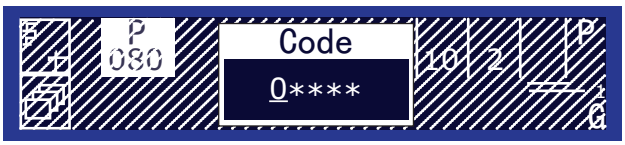
Use *ESC* to cancel numeric entry

If you press *ESC* when editing value fields, you can cancel the entry without having to apply your changes.

7.2 Calling up the Technician level

All settings in the service area are carried out in the Technician level.

Figure 51: Input mask for the technician code



Calling up the Technician level

1. Keep the *P* key and *S* key pressed down simultaneously.

↳ The display shows the input mask for the code.

2. Enter technician code 25483 using the numeric keys.

↳ Each time a number is entered, the input cursor will automatically jump to the next position. The numbers are not shown for reasons of security. A 0 appears at the relevant entry point; asterisks are in the other positions. Use ◀/▶ to move from one entry point to another.

Directly after the code is entered, the display shows the three menu items in the Technician level:

- **Machine config.**

  Start and end bar tack, thread cutter, speeds, holding positions, sewing foot lifter

- **User config.**

  Signal tone between program sections, function of the left pedal, program termination using the pedal, switch between the right and the left sleeve

- **Service**

  Test functions for magnets and drives, conveying calibration, sewing feet and thread tension, reset functions

Establishing access after an error message

After some error messages, it may happen that menus or programs can no longer be called up. After being switched off or on, the machine also displays the error message during start up and will not continue to the programs.

In this case, there is an option to go directly to the Technician level during machine start up in order to carry out a fault diagnosis using *Multitest* or to reset the machine to the delivery state using *Reset all*.

Operating steps

1. Switch off the machine at the main power switch.
2. Keep the *F* key pressed down and switch on the machine at the main switch.

↳ The machine starts up, and the display shows the input mask for the code.

3. Enter technician code 25483 (📖 *7.2 Calling up the Technician level*, p. 65).

↳ The submenus *Multitest*, *Reset*, and *Last errors* are now available.

- *Multitest*: Tests for fault diagnosis (📖 Multitest submenu, p. 71).
- *Reset*: Reset machine to delivery state (📖 Reset submenu, p. 75)
- *Last errors*: The last 10 error messages will be displayed.

7.2.1 *Machine Config* menu item

This menu allows you to determine the basic settings for the machine which apply to all programs.

This menu item has the following submenus:

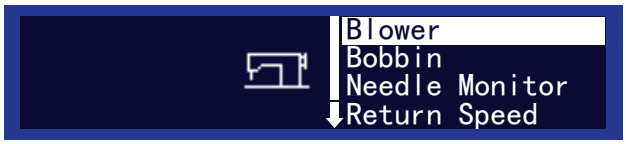
Submenus in *Machine Config*

- **Blower** - For setting the blow-off time
- **Bobbin** - For setting the residual thread monitor (sensor or stitch counter)
- **Needle Monitor** - For switching the thread breakage sensor on/off
- **Return Speed** - For setting the return speed of the configuration set
- **Thr.ChainClamp** - For setting the thread clamp

Blower submenu

In this submenu, you can determine the blow-off time for the material being sewn.

Figure 52: Parameters in the Blower submenu



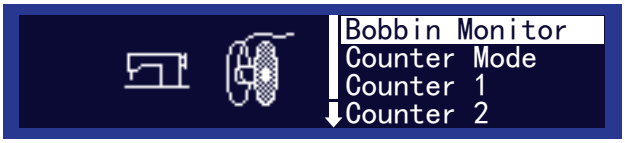
Blower **Parameters in the *Blower* submenu**

Icon	Entry	Meaning	Possible value range	Spec. value
-	-	Duration of blow-off time	10 - 2000	200

Bobbin submenu

In this submenu, you can make settings for the residual thread monitor.

Figure 53: Parameters in the Bobbin submenu



Bobbin Parameters in the *Bobbin* submenu

Icon	Entry	Meaning	Possible value range	Spec. value
	Bobbin Monitor	Switching the residual thread monitor on/off	0 = Switched off 1 = Switched on	0
	Counter Mode	Selection of stitch counter	0 = No counter 1 = Counter 1 2 = Counter 2 3 = Counter 3	0
	Counter 1	Counter 1	100 - 9999	5000
	Counter 2	Counter 2	100 - 9999	5000
	Counter 3	Counter 3	100 - 9999	5000

Needle Monitor submenu

In this submenu, you can switch the thread breakage sensor on or off.

Figure 54: Parameters in the Needle Monitor submenu

Needle Monitor **Parameters in the *Needle Monitor* submenu *Return Speed***

Icon	Entry	Meaning	Possible value range	Spec. value
	-	Switching the thread breakage sensor on/off	0 = Switched off 1 = Switched on	1

submenu

In this submenu, you can switch the thread breakage sensor on or off.

Figure 55: Parameters in the Return Speed submenu

Return Speed **Parameters in the *Return Speed* submenu**

Icon	Entry	Meaning	Possible value range	Spec. value
-	-	Setting the return speed of the configuration set	500 - 11000	11000

Thr.ChainClamp submenu

In this submenu, you can make the settings for the thread clamp.

Figure 56: Parameters in the `Thr.ChainClamp` submenu

Thr.ChainClamp

Parameters in the *Thr.ChainClamp* submenu

Icon	Entry	Meaning	Possible value range	Spec. value
	Stitches Release	Number of stitches until release	1 - 5	3
	Release Time	Release time	100 - 200 ms	150

7.2.2 *User Config* menu item

This menu allows you to determine the basic settings for the controller display.

This menu item has the following submenus:

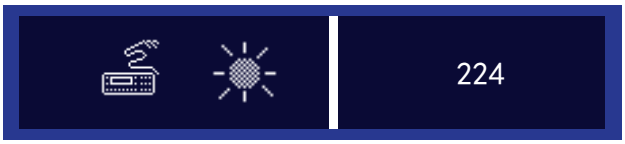
Submenus in *User Config*

- **Brightness** - For setting the brightness
- **Contrast** - For setting the contrast

Brightness submenu

In this submenu, you can set the brightness of the display.

Figure 57: Parameters in the `Brightness` submenu



Brightness **Parameters in the *Brightness* submenu**

Icon	Entry	Meaning	Possible value range	Spec. value
	Brightness	Setting the brightness	1 - 255	224

Contrast submenu

In this submenu, you can set the contrast for the display.

Figure 58: Parameters in the Contrast submenu

Contrast **Parameters in the *Contrast* submenu**

Icon	Entry	Meaning	Possible value range	Spec. value
	Contrast	Setting the contrast	1 - 255	32

7.2.3 *Service* menu item

This menu allows you to carry out function tests, reset the machine to the delivery state, or see the last error messages.

Figure 59: Submenus in the Service menu item

This menu item has the following submenus:

Submenus in *Service*

- **Multitest** - For setting the brightness
- **Reset** - For setting the contrast
- **Last errors** - For setting the contrast

Menu structure for *Service*

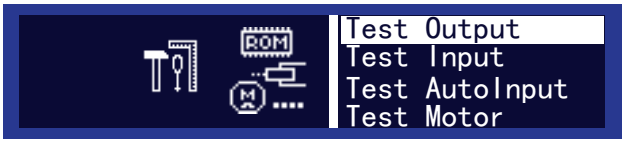
The submenus have further subitems:

Menu item	Submenu	Subitem
Service	**Multitest**	Test Output
		Test Input
		Test Auto Input
		Test Motor
		Test Reference
	Reset	Reset YES
		Reset NO
	Last errors	-

Multitest submenu

In this submenu, you can test the inputs and outputs.

Figure 60: Parameters in the `Multitest` submenu



Test Output subitem

In this subitem, you can test the outputs of the machine.

Figure 61: Display in the Test Output subitem

Test steps

1. Use ▲/▼ in the *Output* field to choose the element that you wish to test.
2. Press the *OK* button.

   The output will be tested.
3. Observe whether the elements function correctly.

↳ If the element is functional, the display switches between *1* and *0* in *Value*.

Test *Output*

Output	Element
1	Schere (Trimmer)
2	Fadenkette klemmen (Clamp thread chain)
3	Fadenkette lösen (Release thread chain)
4	Fadenspannung (Thread tension)
5	Formsatz schließen (Close configuration set)
6	Reserve (Spare)
7	Tisch frei (Table free)
8	Tisch zurück (Table back)

Test Input subitem

In this subitem, you can test the inputs of the machine.

Figure 62: Display in the Test Input subitem

Test steps

1. Use ▲/▼ in the *Input* field to choose the element that you wish to test.
2. Actuate the element as described in the *Test method* column (see table further down below).
3. Observe the display.

↳ If the element is functional, the display switches between *1* and *0* in *Value*.

Test *Input*

Input	Element	Test method
1	Nadelfadenwächter (Needle thread monitor)	Pull the thread through and then move it.
2	Druckwächter (Pressure monitor)	Reduce the air pressure on the maintenance unit.
3	Restfadenwächter (Residual thread monitor)	Insert the almost empty bobbin into the hook and then pull off the thread manually.
5	Transportschlitten links (Left transport carriage)	Move the transport carriage to the left and right.
6	Nähen ein (Sewing on)	Test the sensor by retracting and extending the table.
7	Tisch eingefahren (Table retracted)	Test the sensor by retracting and extending the table.

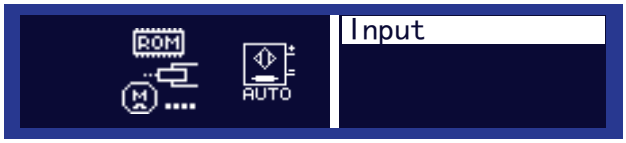
Input	Element	Test method
8	Formsatzkontrolle (Configuration set check)	Press the configuration set downwards onto the table plate.
9	Lichtschranke Nahtende (Light barrier for end of seam)	Remove the configuration set and cover the light barrier.

Elements 6, 7, and 8 can also be tested by holding a metal object in front of the respective sensor.

Test Auto Input subitem

In this subitem, you can carry out the same tests as under *Test Input* without having to select the element beforehand via the display.

Figure 63: Display in the Test Auto Input subitem



Test steps

1. Actuate the element as described in the *Test method* column (📖 page 72).

↳ In *Input*, the display shows the number of the element last changed.

If the element is functional, the display switches between *1* and *0* in *Value*.

Test Motor Sewing subitem

In this subitem, you can test the sewing motor.

Figure 64: Display in the Test Motor Sewing subitem

Test steps

1. *Press the OK* button.

↳ The machine performs a reference run.

2. In *Speed*, use ▲/▼ to enter a speed in steps of 50.
3. Press *OK*.

↳ The motor runs at the entered speed.

To exit:

1. Press *ESC*.

Test Motor Stepper subitem

In this subitem, you can test the stepper motor for the configuration set.

Figure 65: Display in the Test Motor Stepper subitem

Test steps

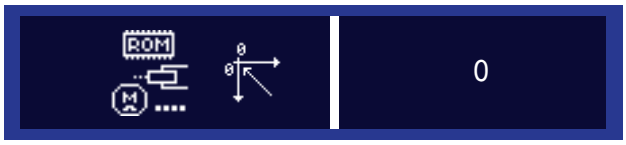
1. Use ▲/▼ in the *Stepper* field to choose the motor that you wish to test.
2. Press *OK*.
3. Use ▲/▼ to test the respective motor.

↳ If the motor is functioning correctly, the behavior described in the table will be shown.

Test Reference subitem

In this subitem, you can carry out a reference run for the configuration set.

Figure 66: Display in the Test Reference subitem



Test steps

1. *Press the OK* button.

↳ The reference run will be carried out.

Reset submenu

Reset submenu

This submenu allows you to reset programs and parameters to the delivery state. To do this, re-entering the technician password is requested (for reasons of security).

Figure 67: Reset submenu

1. Use ▲/▼ to select the *Reset* submenu.

↳ The display shows the input mask for the password.

2. Enter technician code 25483 using the numeric keys (📖 Section 7.2 Calling up the Technician level, page 65).

↳ You are now in the *Reset* submenu and can select the required subitem using ▲/▼.

Reset YES

Reset YES subitem

In this subitem, you can reset all programs and parameters to the delivery state. Only the calibration values for the thread tension and sewing feet are retained. If you require this:

1. Use ▲/▼ to select *Reset YES*.
2. Press the *OK* button.

↳ All programs and parameters (except for the calibration values for the thread tension and sewing feet) will be reset to their delivery state.

Reset NO

Reset NO subitem

1. Use ▲/▼ to select *Reset NO*.
2. Press the *OK* button.

↳ The Service menu will be displayed again.

7.3 Installing software per dongle

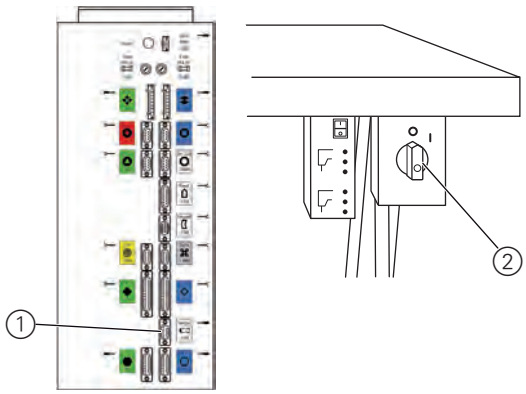
When a new software version is available, this can be downloaded from www.duerkopp-adler.com and loaded into the controller via a dongle. All settings on the machine are retained.

Dongle transfer only for software

No copying of programs

You can only transfer the software using a dongle. Sewing programs cannot be copied from one machine to another - neither via dongle nor using a USB stick - but rather have to be created anew on each machine (📖 *Operating manual*).

Figure 68: Installing software per dongle



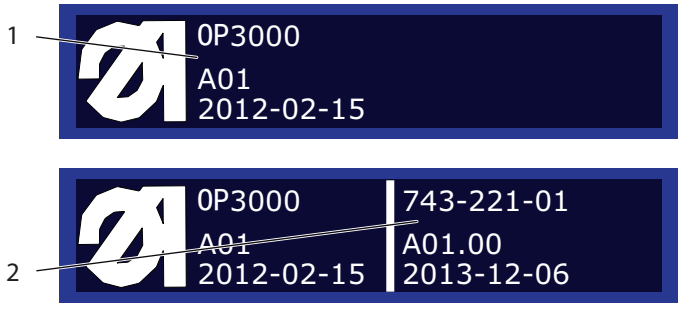
(1) - Socket for dongle *(2) - Main switch*

Transfer steps

1. Switch off the machine at the main switch (2).
2. Insert the dongle into the socket (1) on the rear side of the controller.
3. Switch on the machine at the main switch (2).

↳ The machine starts up and automatically starts the software transfer. During the transmission, the display only shows the firmware version of the control panel on the left. As soon as the transmission is finished, the display will also show the software version of the machine on the right. The machine performs a reference run.

Figure 69: Display of the firmware and software version



(1) - Firmware version

(2) - Software version

4. Remove the dongle.

↳ The software transfer is complete.
The machine is ready for sewing.

Response if the display of the software version is missing

The machine sometimes does not show the software version on the right-hand side of the display despite successful transmission.

Should a software version still not be shown after two minutes:

1. Switch off the machine at the main switch.
2. Remove the dongle.
3. Switch on the machine at the main switch.

↳ The display will show the new software version to the right.
The machine performs a reference run.

↳ The machine is ready for sewing.

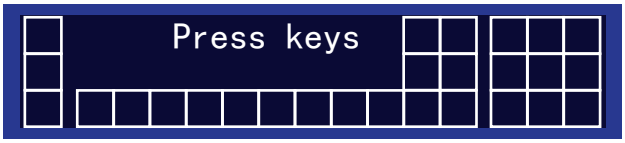
7.4 Checking the functionality of the keys on the control panel

Steps for checking

1. Switch off the machine at the main switch.
2. Keep the *ESC* key pressed down and switch on the machine at the main switch.

↳ The display shows the following mask:

Figure 70: Mask for checking the keys on the control panel



3. Press all keys on the control panel in any order except for *ESC*.

↳ If a key is functional, then the corresponding box on the display will be filled in (highlighted clearly).
If the key is not functional, then the box stays empty.

4. Press *ESC* as the last key.

- **If all keys are functional:**

↳ The display shows the following status message.

Figure 71: Status message when the keys are completely functional

5. Press *OK*.

- **If one or several keys are not functional:**

↳ The display shows the status message *Keys ... NOT OK!*

↳ The control panel has to be replaced.

8 Maintenance

WARNING

Risk of injury due to crushing

Switch off the main switch!

Maintenance work on the sewing unit may only be carried out when the unit is switched off.

8.1 Pivoting up the upper machine section

ATTENTION

Caution: Risk of injury!

Switch off the main switch!

Only pivot up the upper machine section when the sewing unit is switched off.

The upper machine section can be pivoted up for maintenance work.

Figure 72: Pivoting up the upper section

(1) - Supporting table
(2) - Configuration set
(3) - Handle

1. Pivot the supporting table (1), bundle clamp, and ejector to the side.
2. Move the configuration set (2) into the left end position.
3. Carefully pivot up the upper machine section using the handle (3) and lean it against the folding support.

↳ The upper machine section is held in this position through the location of the center of mass.

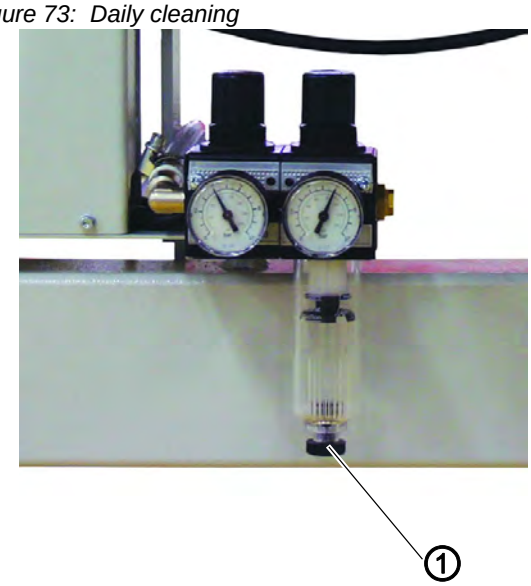
4. Lower the machine in the same way.

8.2 Cleaning

A clean machine provides protection from faults.

Daily cleaning

Figure 73: Daily cleaning



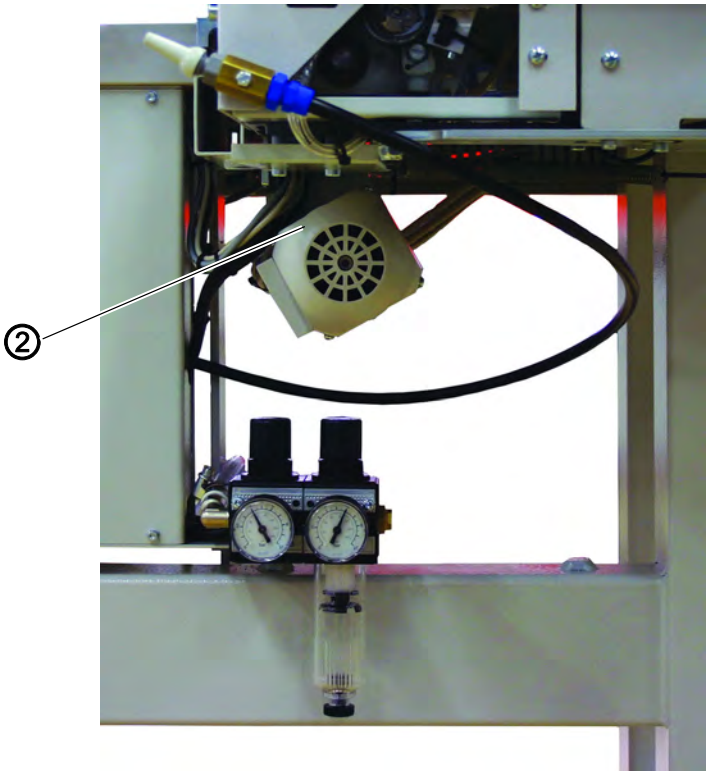
(1) - Drain screw

1. Remove all accumulations of fluff.
2. Clean the light barrier using a soft cloth.
3. Check the water level in the pressure controller.

   The water level must not rise up to the filter element.
4. After screwing in the drain screw (1), discharge the water under pressure.

Depending on the amount of dust

Figure 74: Cleaning as required



(2) - Motor fan sieve

5. Clean the motor fan sieve (2).

8.3 Oil lubrication

ATTENTION

Caution: Risk of injury!

Oil can cause rashes.

Avoid prolonged skin contact.

Wash yourself thoroughly after any contact is made with oil.

ATTENTION

Environmental risk:

The handling and disposal of mineral oils is subject to legal regulations.
Deliver used oil to an authorized collecting station.
Protect the environment!
Make sure that no oil is spilt.

For lubricating the sewing unit, use only lubricating oil **DA-10** or oil of equivalent quality with the following specifications:

Viscosity at 40°C: 10 mm²/s

Flash point: 150° C

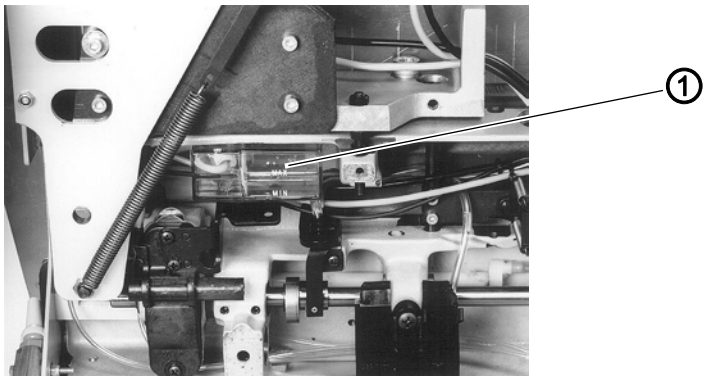
Lubricating oil **DA-10** can be obtained at **DÜRKOPP-ADLER AG** sales outlets under the following part number:

250 ml container:	9047 000011
1 liter container:	9047 000012
2 liter container:	9047 000013
5 liter container:	9047 000014

Lubricating the hook

1. Pivot up the upper machine section as described.
2. Fill the oil reservoir (1) with oil up to the **max** marking.
   The required oil quantity is set at the factory.
   Only reduce or increase the oil quantity in special cases.

Figure 75: Oil reservoir 1 - hook lubrication

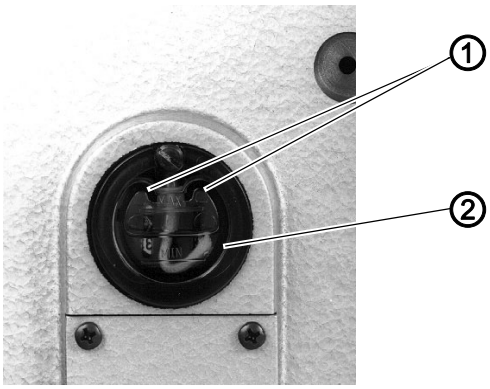


(1) - Oil reservoir 1

Lubricating the upper machine section

1. The oil level in oil reservoir (2) must not drop below the **min** marking.
2. If necessary, top up the oil to the **max** marking through the holes (1) in the sight glass.

Figure 76: Oil reservoir 2 - upper machine section



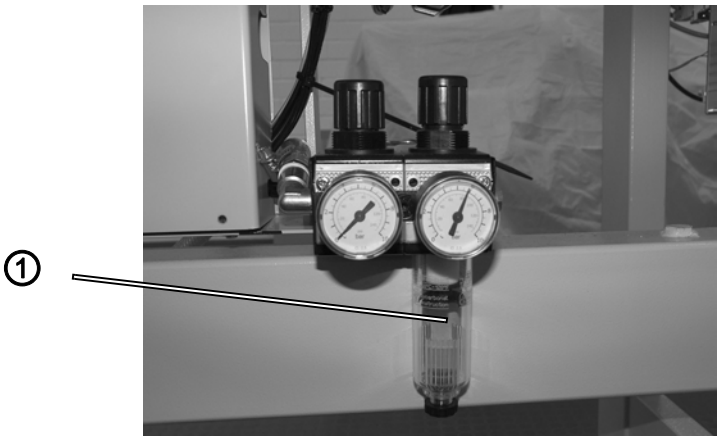
(1) - Holes
(2) - Oil reservoir 2

Maintenance work

Work to be carried out	Operating hours			
	8	40	160	500
Upper section				
Remove accumulations of fluff, sewing dust, and thread remains in the area around the hook and throat plate	X			
Clean the light barrier	X			
Check the oil level at the reservoir		X		
Check the oil level at the reservoir for hook lubrication		X		
Check the hook lubrication			X	
Clean the lenses for the residual thread monitor	X			
Check the toothed belt				X
Sewing unit				
Clean the motor fan sieve	X			
Clean the filter for the stepper motor drive	X			
Check the status and tension of the V-belt (transfer carriage)				X
Lubricate the leaf spring on the pressing cylinder		X		
Pneumatic system				
Check the water level in the pressure controller	X			
Clean the filter element in the maintenance unit			X	
Check the tightness of the system			X	

8.4 Cleaning the maintenance unit

Figure 77: Maintenance unit



(1) - Filter element

The maintenance unit protects the sewing unit from dirt particles and water to prevent blockages and rust formation in the pneumatic system.

Rules and checking

The water level in the pressure controller must not rise up to the filter.

Clean the filter element (1) every 160 hours.

WARNING

Risk of injury due to crushing

Switch off the main switch!

Disconnect the sewing unit from the compressed air supply.

Only clean the filter under pressure-free conditions.

1. Discharge water out of the water separator under pressure.
2. Wash out the filter tray and filter element (1) using benzine.
3. Blow clean the filter element (1) using the compressed air pistol.

ATTENTION

The filter tray will be destroyed through contact with solvents.

Do not use solvents for washing out the filter tray and filter element.

9 Summary of all settings

Note

Order The overall setting of the sewing unit needs to be carried out in the specified order.

Settings

No.:	Issue	Chapter	Correct setting	Correction
Arm shaft crank				
1	Position of the adjusting disc	2.3	Groove and slot **A** in alignment.	Turn the toothed belt wheel.
Upper thread tension				
2	Upper thread tension release	2.4	Distance of tensioner discs 1 mm if the tensioner discs are tightened.	Move the cylinder.
3	Thread tensioning spring	2.5	Spring travel: Keep the upper thread tensioned until the tip of the needle has penetrated the material being sewn.	Turn the socket.
			Spring tension: approx. 20 to 30 cN	Adjust the tensioning bolt.
Needle bar height				
4	Needle bar height	2.7	Set with gage.	Move the needle bar.
Hook settings				
5	Hook drive housing	2.7.2	Distance between hook and socket is 0.4 mm.	Adjust the housing at the side.
			Distance between sliding plate supporting surface and thread pulling plate is 3.8 mm.	Adjust the stop screw in the foundation plate.
6	Loop stroke	2.7.1	In pos. **A** , hook tip is at needle center, and distance from hook tip to groove is 0.1 mm.	Adjust the hook.
7	Bobbin case support	2.8	Distance between retaining collar and housing: 0.6 $^{+0.1}$ mm	Bend the retaining collar.
Residual thread monitor				
8	Light barrier	2.9	Reflection when empty bobbin is turned.	Align the light barrier.

No.:	Issue	Chapter	Correct setting	Correction
Winder				
9	Fill level of bobbin	2.10	To 0.5 mm under the edge of the winder.	Turn the switch cam.
Position encoder				
10	Positioning	2.11	Position at position **C** after the sewing procedure.	Turn the position encoder ring.
Thread trimmer				
11	Position of thread trimmer	3.1	The movable cutter must be able to move freely in the slot of the configuration set during thread cutting.	Align the thread trimmer.
12	Fixed cutter	3.1.1	Should protrude 1.5 mm out of the trimmer body.	Move the cutter.
13	Counter-blade	3.1.1	Should protrude 2 mm out of the trimmer body.	Move the cutter.
14	Cutting pressure	3.1.1	Cutting should be reliable with little pressure.	Adjust the pressure screw.
Folding table				
15	Height	3.2	1 to 1.5 mm parallel above the sliding plate. Height is determined by the material strength.	Add intermediate layers.
16	Position	3.2	Parallel to sliding plate. Front edge above center of needle hole and 0° marking on scale.	Align the folding plate.
17	Insertion depth	3.2	1st insertion as close as possible to the fold edge.	Adjust depth setting.
18	Folding table retraction	3.2.1	Tensioning in tension spring such that the lever is parallel to the base plate.	Align the lever.
19	Extending the folding table	3.2.1	Movement quick, but not abrupt.	Adjust the choke.
20	Angular adjustment	3.2.2	Distance of handle on the outer edge approx. 5 mm.	Adjust the distance.
21	Switching moment **b3**	3.2	When the table is at the front, the initiator must switch reliably.	Turn the switching disc.
Transport carriage				
22	Angle	3.3	90° to arm shaft.	Set using gage.
23	Position	3.3	Check reference point using gage.	Adjust the switch plate.
24	Run-off protection	3.3.1	Transport carriage at left end position.	Adjust the switch plate.

No.:	Issue	Chapter	Correct setting	Correction
Configuration set				
25	Guide roller	3.4.1	Align position using gages: Distance to needle.	Adjust position of piston in the pneumatic cylinder.
			Position in direction of movement of transport carriage.	Move the shaft.
26	Position of pressing cylinder	3.4.2	Needle at top dead center and guide roller on cam for the control cam: Distance between needle tip and upper side of configuration set is 2.5 mm.	Move the cylinder.
			Inner surfaces of roller fork parallel to the control cam.	Turn the cylinder.
27	Spring plate on pressing cylinder	3.4.2	Should be resting at a height of 5 mm on the clamping block.	Move the spring plate.
28	Closing motion	3.4.3	Quick, but not abrupt.	Adjust the choke.
29	Closing force	3.4.3	Reliably holds the material with as little pressure as possible.	Set the pressure controller.
30	Retaining brackets	3.4.4	Configuration set should sit free of play on the carrier shaft.	Move the retaining brackets.
31	Material clamps	3.4.4	Adjustment pins must be able to be inserted through the checking holes.	Adjust the plates.
32	Folding lip pressure	3.4.4	Bow of material clamps 2.5 mm.	Bend the material clamps.

10 Appendix

10.1 Error messages, warnings, and infos

The DAC classic controller has three message groups. These three groups are described in the following table.

Software Version V00.16 for 743-121 and 743-221.

Group	Abb.	Description
Fault	Err	**Fault** Switch off the controller and remedy the problem.
Warning	Wrn	**Remove the status causing the warning** The controller will run normally again.
Information	Inf	**Information** Press the *OK* button. Continued operation should be possible. It could be that only emergency operating features are possible.

Group	Code	Fault/Warning/Info Description	Remedial action
Error	1000	Sewing motor encoder (Sub-D, 9 pin) not connected.	• Connect the encoder cable with the controller. Make sure the correct position is observed (E).
Error	1001	Sewing motor fault. Sewing motor plug (AMP) not connected.	• Check the connection and connect up the plug, if necessary. • Check sewing motor phases (R= 2.8 Ohm, high impedance to PE). • Exchange the sewing motor. • Exchange the controller.
Error	1002	Sewing motor insulation fault.	• Check the motor phase and PE for low impedance. • Exchange the sewing motor.
Error	1004	Sewing motor turns incorrectly.	• Exchange the encoder. • Check whether the motor plug is correctly inserted. • Check the wiring in the machine on the distributor and change it, if necessary. • Test the motor phases and check the values.
Error	1005	Sewing motor blocked.	• Remove the cause of the lack of freedom of motion of the sewing machine.

Group	Code	Fault/Warning/Info Description	Remedial action
Error	1006	Maximum speed exceeded.	• Exchange the encoder. • Reset the controller. • Check the machine submodel (t 51 04).
Error	1007	Fault in the reference run.	• Exchange the encoder. • Remove the cause of the lack of freedom of motion of the sewing machine.
Error	1008	Sewing motor encoder fault.	• Exchange the encoder.
Error	1010	The plug for the external synchronizer is not connected up.	• Insert the plug for the external synchronizer into the controller. Make sure the correct position is observed (Sync). • Only required in machines with transmission.
Error	1011	Encoder Z impulses missing.	• Switch off the controller. Use handwheel to turn and switch on the controller again. • Check the encoder.
Error	1012	External synchronizer has faults.	• Check the external synchronizer.
Error	1052	Sewing motor current too high, internal current too high, > 25 A.	• Check the machine submodel. • Exchange the controller.
Error	1053	Sewing motor voltage too high, internal voltage too high.	• Check the machine submodel. • Exchange the controller.
Error	1054	Internal short circuit.	• Exchange the controller.
Error	1055	Sewing motor overloaded.	• Remove the cause of the lack of freedom of motion of the sewing machine.
Information	1203	Position not reached (for cutting off thread, etc.).	• Check the control panel settings and change them if required, make mechanical alterations to the machine, e. g. thread cutter, setting for belt tension, etc. • Check "Fadenhebel Oben" (Thread lever up) position (Position 2).
Error	2020	DAC extension not connected up.	• Check the connection for DAC extension and power supply.
Error	2101	Stepper motor reference "time out".	• Check connection to stepper motor. • Check connection to reference switch.
Error	2120	Stepper motor not connected up.	• Check the connection to stepper motor and DAC extension.

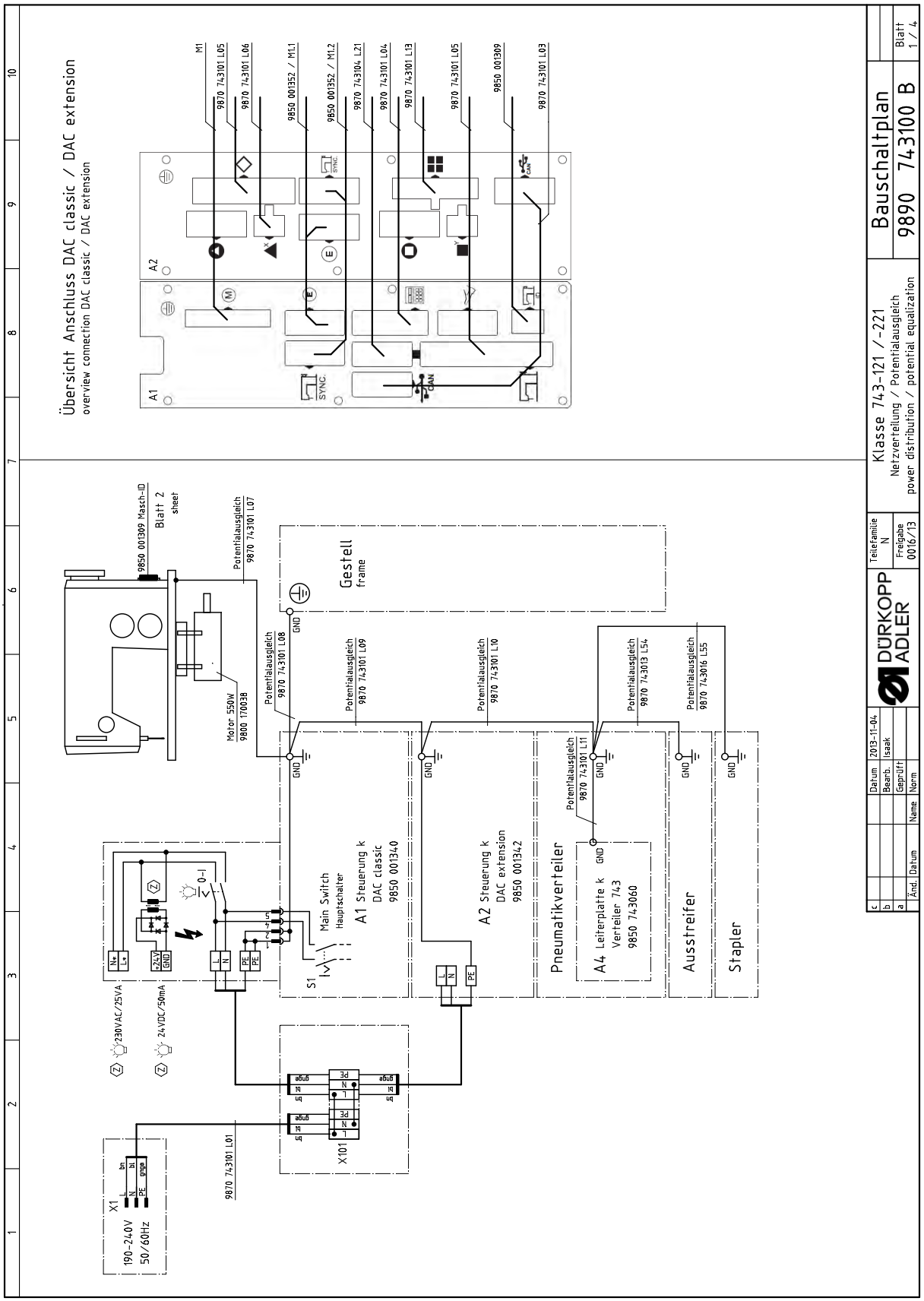
Group	Code	Fault/Warning/Info Description	Remedial action
Information	2159	Stepper motor: Carriage reaches left end position.	• Seam length too long. Check seam program.
Error	3100	AC RDY time out, intermediate circuit voltage has not reached the defined threshold in the given time.	• Check the mains voltage. • If the mains voltage is OK, exchange the controller.
Error	3101	Overvoltage, mains voltage > 290 V for brief period.	• Check the mains voltage, if the voltage is constantly too high - stabilize or use generator.
Error	3102	Undervoltage fault (2nd limit value) (mains voltage < 150 V AC)	• Check the mains voltage. • Stabilize the mains voltage. • Use generator.
Information	3103	Undervoltage warning (1st limit value) (mains voltage < 180 V AC)	• Check the mains voltage. • Stabilize the mains voltage. • Use generator.
Warning	3104	Pedal position is not at position 0.	• When switching the controller on, take your foot off the pedal.
Error	3105	Short circuit U 24 V.	• Remove 37-pin plug; if fault 3105 persists, then exchange the controller. • Check the inputs/outputs for 24 V short circuit.
Error	3106	U 24 V (I^2T). overload	• One or several magnets faulty.
Error	3107	Pedal not connected up.	• Connect up analog pedal.
Information	3108	Speed reduction	
Warning	3109	Upkeep ofsafety.	• Check the tilting sensor on the upper section.
Information	3150	Maintenance required (Info).	• For information on lubricating the machine, see the machine's service instructions.
Warning	3151	Maintenance required (only continue if parameter t 51 14 has been reset, see operating manual for the machine).	• It is vital that service is carried out, see service instructions for the machine.
Information	3210	Upper thread breakage.	• Check upper thread.
Information	3215	Lower thread counter (info value 0 reached).	• Change the bobbin, press the counter Reset button.
Information	3216	Left lower thread monitor.	• Change the left bobbin.
Information	3217	Right lower thread monitor.	• Change the right bobbin.
Information	3218	Left and right lower thread monitor.	• Change the left and right bobbin.

Group	Code	Fault/Warning/Info Description	Remedial action
Warning	3302	Air pressure too low.	• Check air pressure.
Warning	3303	Table in wrong position.	• Retract the table prior to sewing.
Warning	3304	No configuration set detected.	• Insert configuration set or check the template pressure.
Warning	3330	Sliding plate open.	• Close the sliding plate.
Information	3340	Sensor configuration set bounces (jumps).	• Check the configuration set pressure when closed (see *6.4.3 Setting the closing motion for the configuration set*, p. 58).
Error	6353	Internal EEprom communication error.	• Switch off the controller, wait until the LEDs are off and then switch on again.
Error	6354	External EEprom communication error.	• Switch off the controller, wait until the LEDs are off, and check the connection for the machine ID. Switch the controller back on.
Information	6360	No valid data on the external EEprom.	• Update the software. The internal data structures are not compatible with the external data memory.
Information	6361	No external EEprom connected up.	• Connect up machine ID.
Information	6362	No valid data on the internal EEprom.	• Check the connection for the machine ID. • Switch off the controller, wait until the LEDs are off and then switch on again. • Update the software. The internal data structures are not compatible with the external data memory.
Information	6363	No valid data on the internal and external EEprom (only emergency operating features).	• Check the connection for the machine ID. • Switch off the controller, wait until the LEDs are off and then switch on again. • Update the software. The software version is not compatible with the internal memory.

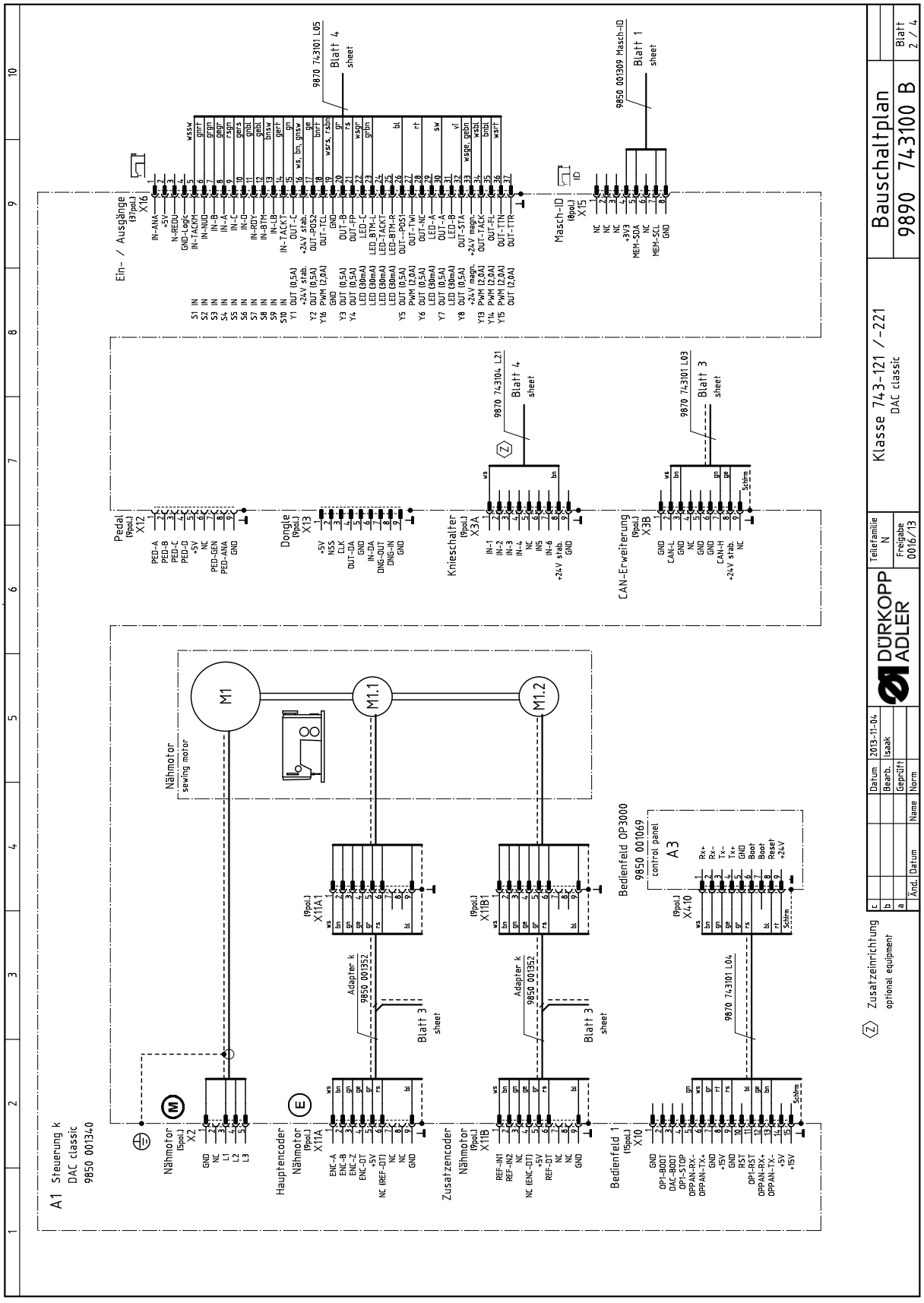
Group	Code	Fault/Warning/Info Description	Remedial action
Information	6364	No valid data on the internal and external EEprom (only emergency operating features).	• Check the connection for the machine ID. • Switch off the controller, wait until the LEDs are off and then switch on again. • Update the software. The software version is not compatible with the internal memory. • Update the software. The internal data structures are not compatible with the external data memory.
Information	6365	Internal EEprom faulty.	• Exchange the controller.
Information	6366	Internal EEprom faulty and external data damaged (only emergency operating features).	• Exchange the controller.
Information	6367	Internal EEprom faulty and external one not connected up (only emergency operating features).	• Exchange the controller.
Information	7202	DAC extension communication error.	• Check the connection to the DAC extension.
Information	7203	DAC extension checksum error.	• Check the connection to the DAC extension.
Information	7801	Wrong software version. Only DAC classic.	• Update the software. • Exchange the controller.
Information	7802	Update failed. Only DAC classic.	• Update the software. • Exchange the controller.
Information	7803	Classic IO communication error.	
Error	8401	Monitoring.	• Update the software. • Exchange the controller.
Error	8402	Hardware fault.	• See 8401.
Error	8403	Memory fault.	• See 8401.
Error	8404	Internal BUS error.	• See 8401.
Error	8405	Usage error.	• See 8401.
Error	8406	Flash checksum error.	• See 8401.
Information	8407	General software error.	• See 8401.
Error	8501	Software protection.	• In order to update the software, you always have to use the DA tool.
Error	9001	Emergency stop.	• Restart.

10.2 Wiring diagram

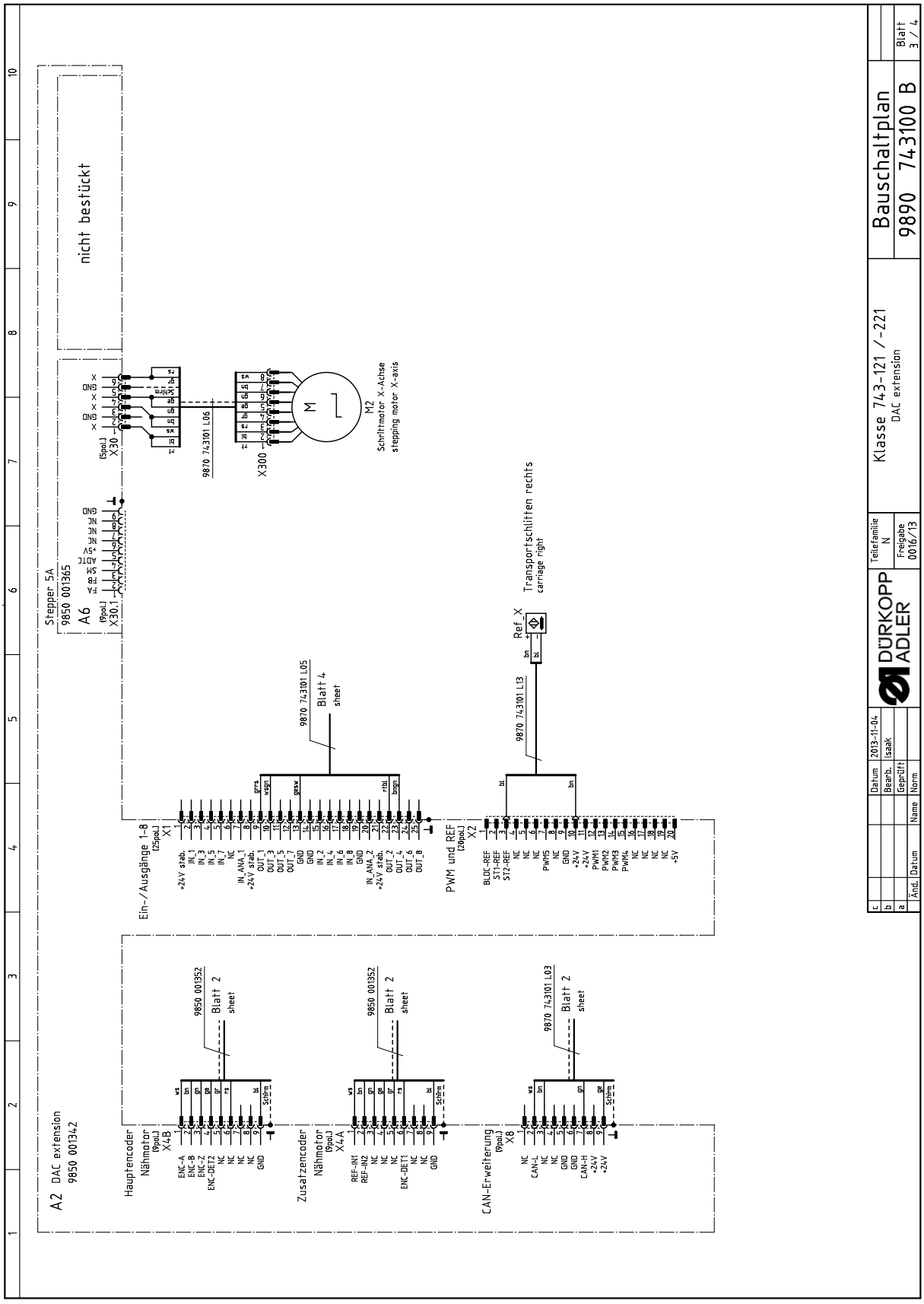
Wiring diagram - sheet 1



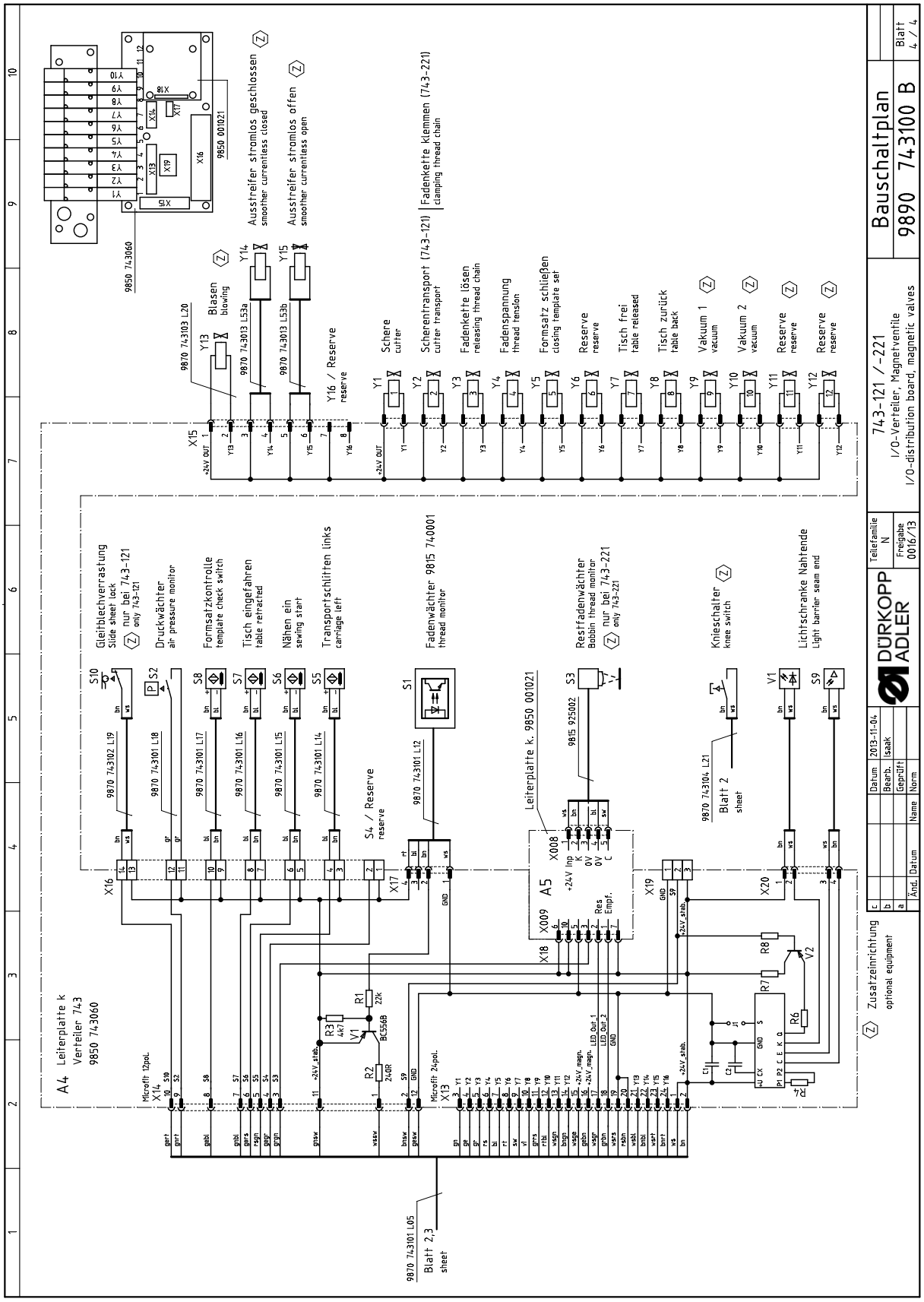
Wiring diagram - sheet 2



Wiring diagram - sheet 3



Wiring diagram - sheet 4



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