DÜRKOPP ADLER

745-35 Speedpocket

Service Instructions

1 About this manual - General information

The service manual for the sewing unit 745-35 S was compiled with the utmost care. It contains information and notes in order to make long-term and reliable operation possible.

Should you notice any discrepancies or if you have improvement requests, then we would be glad to receive your feedback, 🕮 *6.10 Customer service.*

1.1 Scope of application of the manual

This manual describes the setting and the maintenance of the sewing unit 745-35 Speedpocket.
The set-up and the intended use of the unit are described in the
🕮 *Operating manual.*

1.2 Representational conventions – Symbols and characters

Different information is depicted or highlighted in this operating manual by the following characters for easier and quicker understanding:

Correct setting:

Demonstrates the correct setting.

Dysfunctions

Indicates the dysfunctions that can occur with an incorrect setting.

Cover

Indicates which cover has to be removed in order to attain the element to be set.

- **Itemization**

  Itemizations are identified by bullet points. In this case, the correct order does not matter.

Steps to be performed for service, maintenance and installation

Steps to be performed on the control panel for the software

The individual **steps to be performed are numbered:**

1.
2.
3.
...

1. First step for setting
2. Second step for setting
3. Third step for setting, and so on.

It is very important to perform the different steps for setting in the correct order.

Result of an action

If a step for setting results in a change on the machine or a new information that is important for you appears on the display, this adjustment will be marked with an arrow.

Indicates the steps for setting to be performed on the control panel for the software. The individual steps are numbered. It is very important to perform the different steps of setting in the correct order.

Important

Points out to what you should pay particular attention when performing a step.

For your information

Gives additional information.

Order

Indicates the operations to be performed before or after a setting.

References

Will be followed by a reference to another passage in the manual.

Safety

Important warnings for the user of the machine are specifically marked. Because safety constitutes an area of major importance, hazard symbols, levels of risk, and their signal words are described separately in *2 Safety instructions*, p. 9.

Location information

Information on where something is positioned using the terms “right” or “left” must always be regarded from the operator's point of view if the figure gives no other obvious indication for determining the location.

1.3 Other documents

The device contains built-in components from other manufacturers. The respective manufacturers have carried out hazard assessments for these purchased parts and confirmed compliance of the design with the applicable European and national regulations. The intended use of the built-in components is described in the corresponding manuals of the manufacturers.

1.4 Liability

All information and notes in this operating manual have been compiled in accordance with the latest technology and the applicable standards and regulations.

The manufacturer cannot be held liable for any damage due to:

- Damage during transport
- Failure to observe the operating manual
- Improper use
- Unauthorized modifications to the machine
- The deployment of untrained personnel
- Using spare parts not approved

1.4.1 Transportation

Dürkopp Adler cannot be held liable for any damage during transport. Check the delivered product immediately after receiving it. Report any damage to the last transport manager. This also applies if the packaging is not damaged.

Keep the machines, devices and packaging material in the condition they were at the time when the damage was identified. That secures any claims towards the transport company.

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

1.4.2 Intended use

The Dürkopp Adler 745-35 is for sewing light to moderately heavy material. Light to moderately heavy material requires a needle strength of 80-110 Nm.

The machine is only intended for processing dry material. The material must not contain any hard objects.

The sewing machine is intended for industrial use.

The machine may only be set up and operated in dry conditions on well-maintained premises. If the machine is operated on premises that are not

dry and well-maintained, then further measures may be required which must be compatible with EN 60204-31:1999.

Only authorized/trained persons may work on the machine.

The manufacturer will not be held liable for damage resulting from improper use.

WARNING

Danger due to high voltage, crushing and sharp objects.

Improper use can result in injuries.

Please follow all instructions in the manual.

ATTENTION

Improper use could result in material damage.

Please follow all the instructions of the manual.

2 Safety instructions

These service instructions describe the adjustment of the sewing unit 745-35 S in a logical order.

ATTENTION

Possible material damage!

Certain setting positions are interdependent. Therefore, it is important to carry out the individual setting steps in the described order.

ATTENTION

Possible material damage!

Before putting the sewing unit back into use after disassembly, the required settings mentioned in these service instructions have to be carried out first.

2.1 Basic safety instructions

The machine may only be used as described in these service 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
- Threading

Before carrying out any adjustment at parts involved in the stitch formation:
Insert a new, flawless needle.

Exception:
Adjustments that are carried out through test or adjustment programs.

Adjustments and functional tests while the sewing unit is working are to be effectuated in compliance with all safety measures and with utmost care.

Adjustments in the area around the needle:
Remove dangerous elements before the adjustment in order to avoid injuries, unless the elements are indispensable for the adjustment.

Incorrect or defective spare parts could impair the safety and damage the machine. Therefore only use original spare parts from the manufacturer.

Transportation

When the machine is being transported, use a lifting carriage or a forklift. Raise the machine max. 20 mm and secure it against slipping off.

Set-up

The connecting cable must have a power plug approved in the specific country. 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 have to be replaced immediately.

Requirements to be met by the personnel

The machine may only be set up by qualified specialists.

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

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. Interrupt your work if you notice any changes to the machine. Report any changes to your supervisor. A damaged machine may not be used any more.

Safety devices

Safety devices must not be removed or put out of service. If this cannot be avoided for a repair operation, the safety device must be refitted and put back into service immediately afterwards.

2.2 Signal words and symbols used in warnings

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

Signal words Signal words and the endangerment that they describe:

Signal word	Endangerment
DANGER	Resulting in death or serious injury.
WARNING	Death or serious injury possible.
CAUTION	Moderate to minor injuries possible.
ATTENTION	Material damage possible.

Symbols In the case of dangers to personnel, the following symbols indicate the type of hazard:

Symbol	Type of danger
	General danger
	Danger due to electric shock
	Danger due to sharp objects
	Danger due to crushing

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

DANGER

Type and source of the danger

Consequences in the event of noncompliance

Measures for avoiding the danger

This is what a warning looks like for a hazard that will result in serious injury or even death if not com-

WARNING

Type and source of the danger

Consequences in the event of noncompliance

Measures for avoiding the danger

This is what a warning looks like for a hazard that could result in serious injury or even death if not complied with.

CAUTION

Type and source of the danger

Consequences in the event of noncompliance

Measures for avoiding the danger

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

CAUTION

Type and source of the danger

Measures for avoiding the danger

This is what a warning looks like for a hazard that could result in environmental damage if not complied with.

ATTENTION

Type and source of the danger

Measures for avoiding the danger

This is what a warning looks like for a hazard that could result in material damage if not complied with.

3 Machine head

3.1 Gauges

The gauges mentioned below allow for an exact setting and checking of the sewing unit.

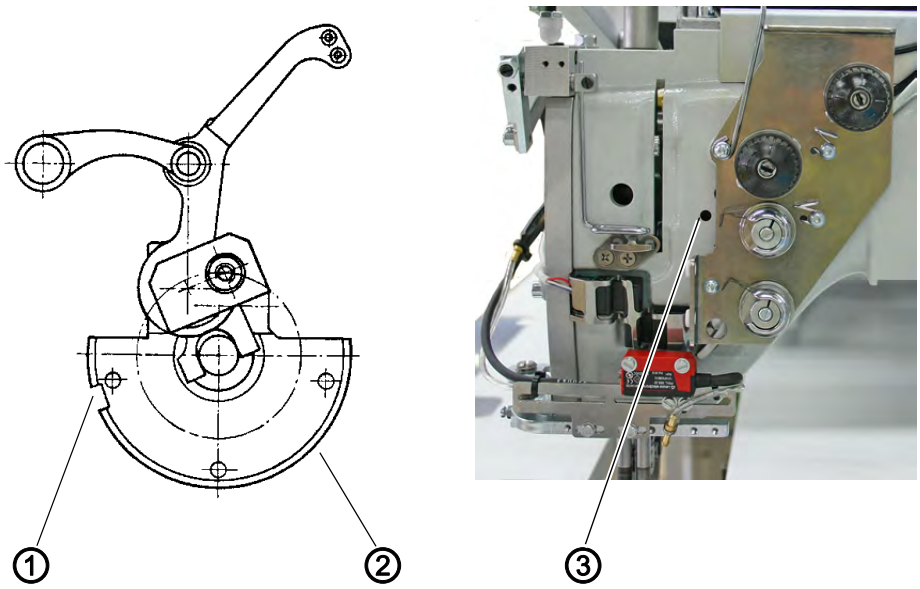
The locking pin is part of the standard delivery and to be found in the accessories. It is used to lock the machine head in looping stroke position.

Gauges

Setting gauge	Part no.	Use
Locking pin	0211 000700	Looping stroke position
Gauge	0244 001001	Looper shaft height
Measuring bridge	0212 004942	Needle holder height
Measuring pin	0216 001070	Needle holder height
Setting pin	0244 001014	Lateral hook distance
Gauge	0246 002591	Crank pin to arm shaft

3.2 Groove in the arm shaft crank

Fig. 1: Groove in the arm shaft crank



(1) - Groove
(2) - Arm shaft crank
(3) - Drill-hole

The arm shaft crank (2) has a groove (1) (5 mm).

The machine head can be locked by putting the locking pin in the drill-hole (3). In this state the machine head is in looping stroke position.

3.3 Tilting the machine head up

For maintenance work the machine head can be tilted up. For this purpose the transport carriage has to be in its rear end position.

WARNING

CAUTION Risk of Injury!

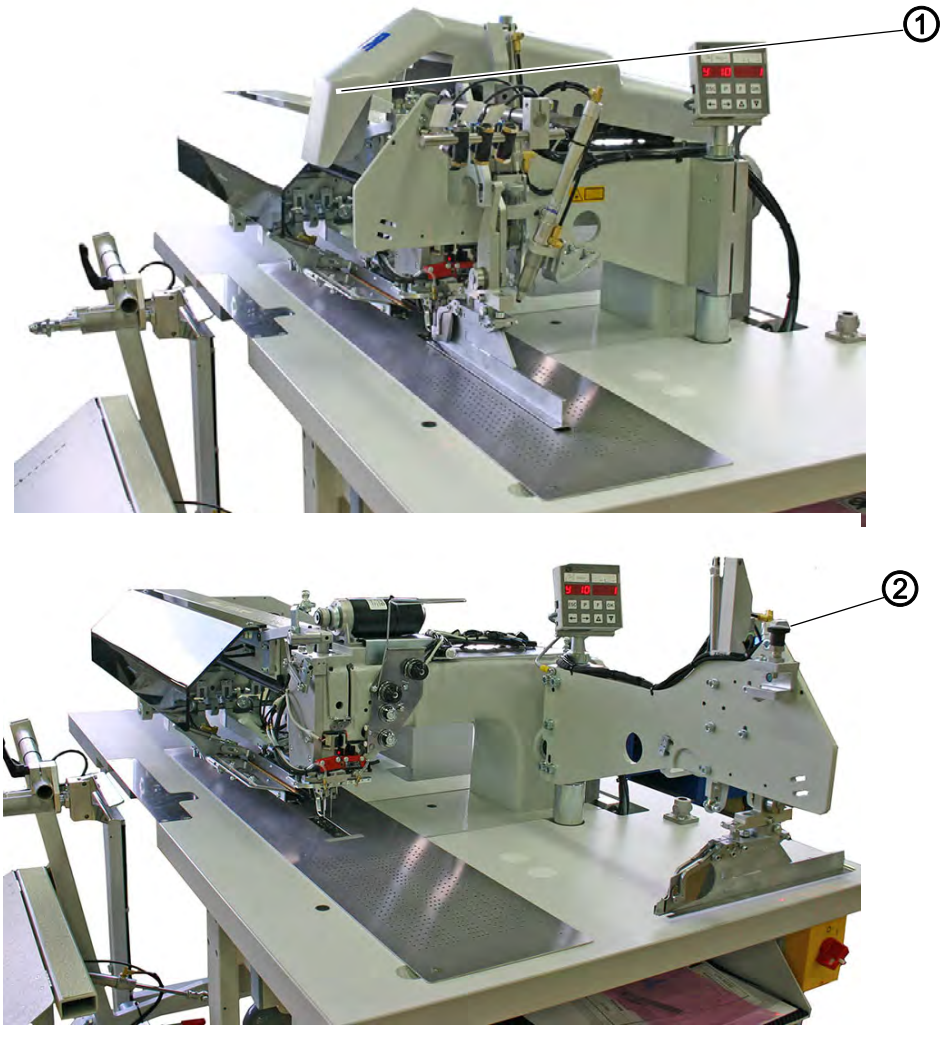
Tilt up the machine head only with the main switch switched off.

WARNING

Crushing hazard due to moving parts!

Do not reach into the cutout of the table top when the machine head is tilted up.

Fig. 2: Tilting up/ swinging back the machine head I

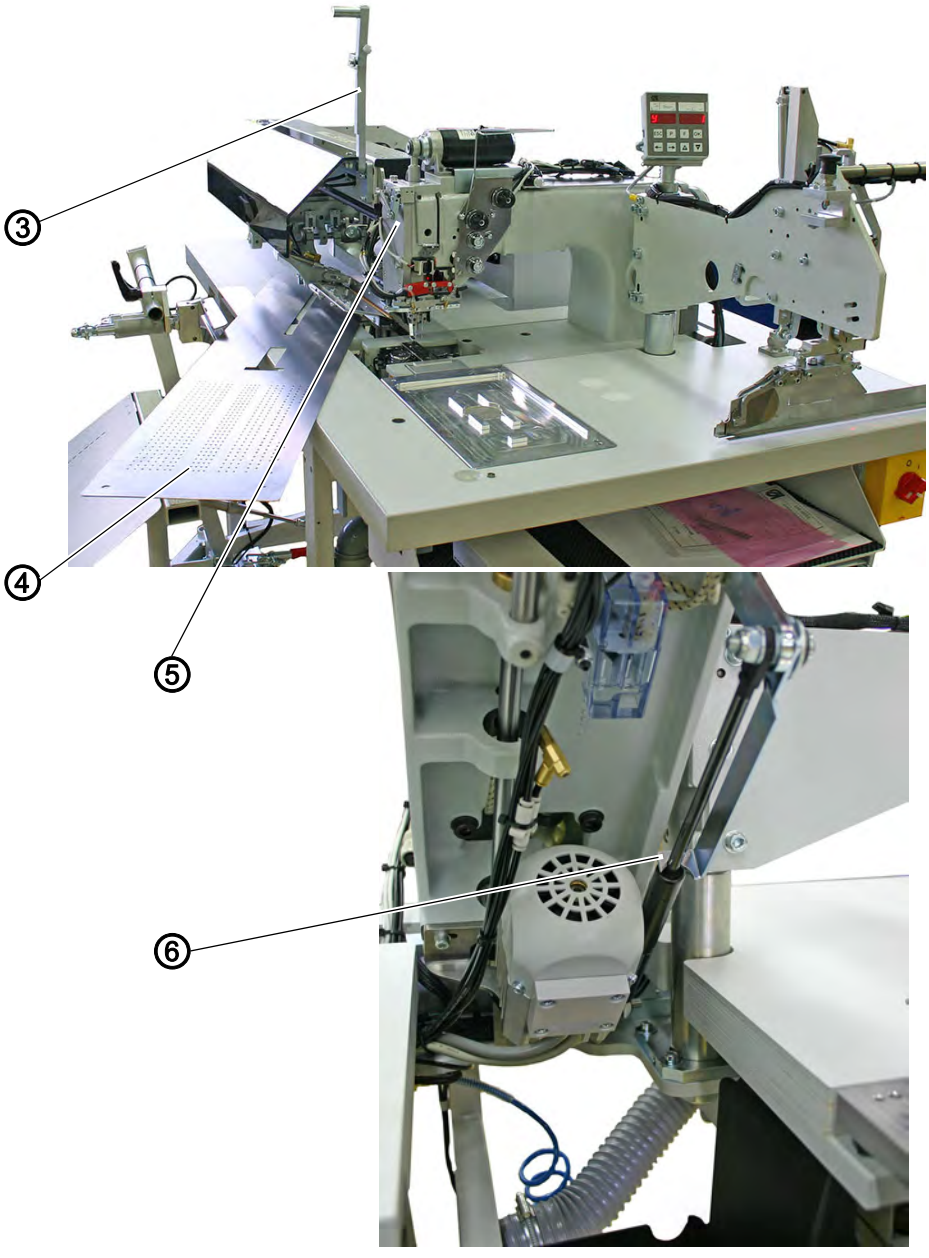


- Covering hood *(2) - Knob of the folding station*

Tilting the machine head up

1. Remove the covering hood (1). For this purpose lift the covering hood at the front and rear in order to release the catch. Carefully lift the covering hood upwards.
2. Pull the knob of the folding station (2) to the top and swing out the folding station by 90°.

Fig. 3: Tilting up/ swinging back the machine head II



(3) - Locking lever
(4) - Fabric sliding sheet
(5) - Face cover
(6) - Latch

3. Swivel the locking lever (3) up.
4. Lift the left fabric sliding sheet (4) at the front and swing it to the left.
5. Lift the machine head in the area of head cover (5) and tilt it up carefully. The latch (6) snaps in additionally. The space under the machine table is accessible for cleaning now.

Swinging the machine head back

1. Hold the machine head tight in the area of head cover (5).
2. Release the latch (6).
3. Swing back the machine head carefully.
4. Put the fabric sliding sheet (4) back into place.
5. Swivel the locking lever (3) down.
6. Carefully swing back the folding station and let the knob of the folding station snap in.

ATTENTION

Possible material damage!

When swinging back the unpressurized machine: Bring the folder manually in its upper position! Otherwise the needles could collide with the folder and break.

7. Put on the covering hood (1) and let it snap in again.

3.4 Installing/removing the machine head

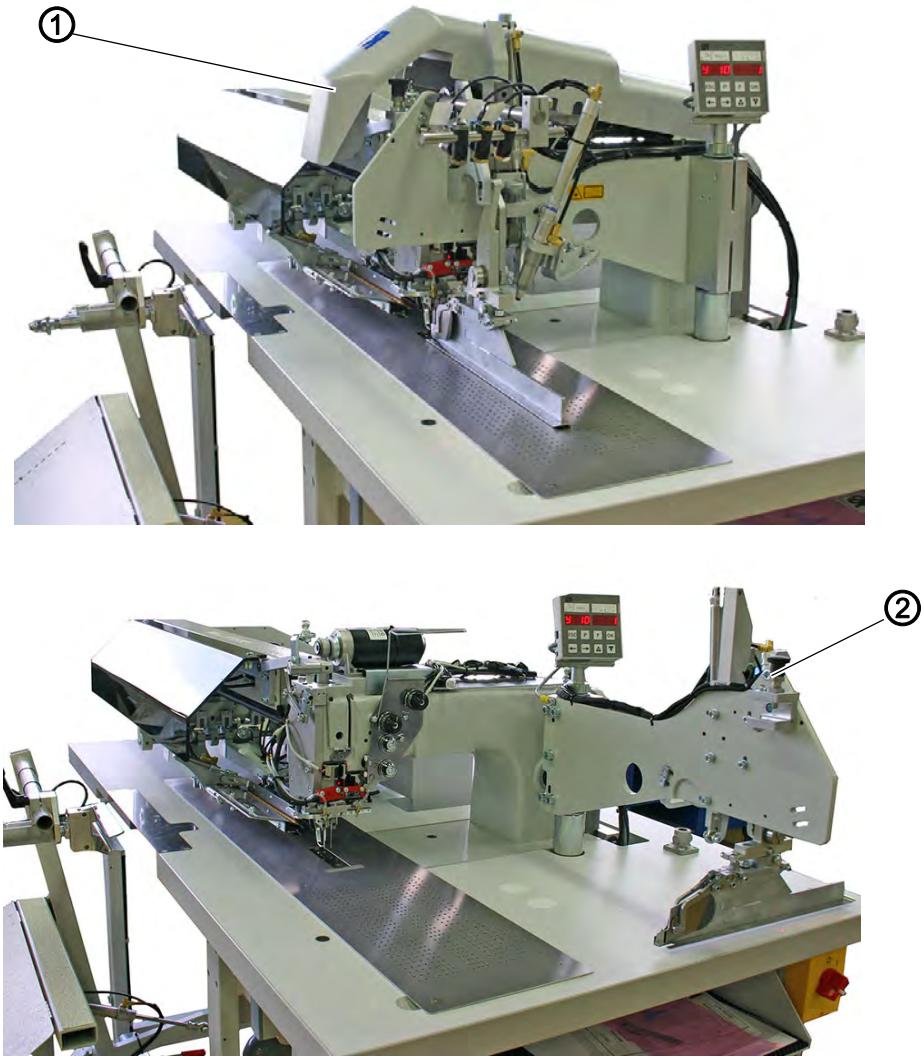
For repair works or in order to facilitate the change to another needle distance, the machine head can be removed. For this purpose the transport carriage must be in its rear end position.

WARNING

CAUTION Risk of Injury!

Install and remove the machine head only with the main switch switched off.

Fig. 4: Installing / removing the machine head I



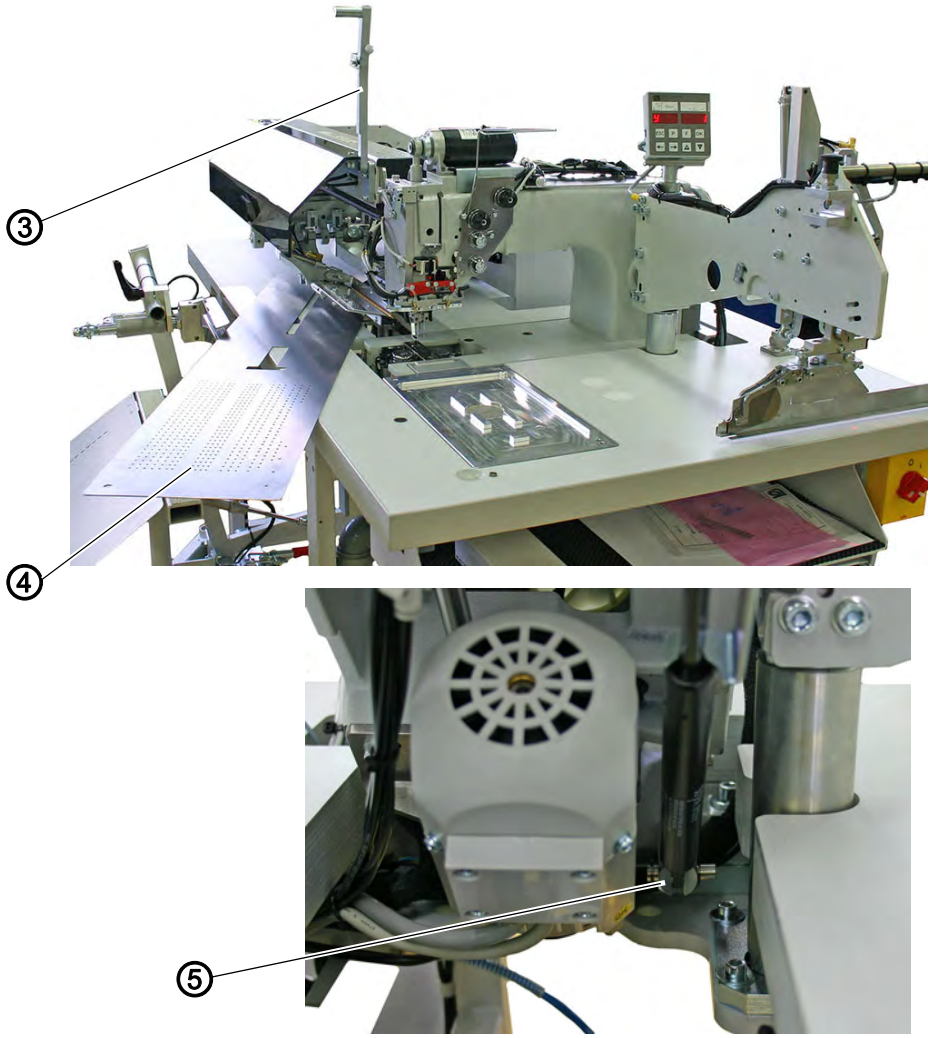
(1) - Covering hood

(2) - Knob of the folding station

Removing the machine head

1. Remove the covering hood (1). For this purpose lift the covering hood at the front and rear in order to release the catch. Carefully lift the covering hood (1) upwards.
2. Pull the knob of the folding station (2) to the top and swing out the folding station by 90°.

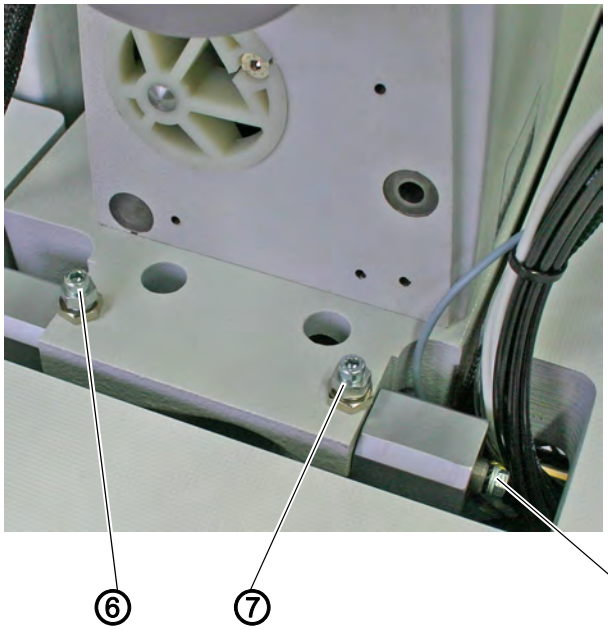
Fig. 5: Installing / removing the machine head II



(3) - Locking lever
(4) - Fabric sliding sheet
(5) - Connection between gas and shock-absorber

3. Swivel the locking lever (3) up.
4. Lift the left fabric sliding sheet (4) at the front and swing it to the left.
5. Disconnect the electrical and pneumatic connection to the machine head.
6. Disconnect the connection between the gas and the shock-absorber (5).

Fig. 6: Installing / removing the machine head III



(6) - Screw
(7) - Screw
(8) - Equipotential bonding

7. Remove screws (6) and (7).
8. Carefully lift off the machine head by using an adequate auxiliary tool.

Installing the machine head

1. Carefully insert the machine head by using an adequate auxiliary tool back into the cutout on the table top.
2. Fix the machine head with screws (6) and (7) and adjust the height if necessary, 📖 *10 Aligning the machine head*, p. 111.
3. Restore the gas shock absorber connection.
4. Restore the electrical and pneumatic connection of the machine head.
5. Put the fabric sliding sheet (4) back into place.
6. Swivel the locking lever (3) down.
7. Swing back the folding station and engage the knob of the folding station (2).
8. Put on the covering hood (1) and let it snap in again.

3.5 Crank pin on the arm shaft

The distance between the eccentric crank pin (1) and the arm shaft (4) determines the dimension of the needle bar stroke and thus the upper dead center of the needle bar (construction-conditioned).

WARNING

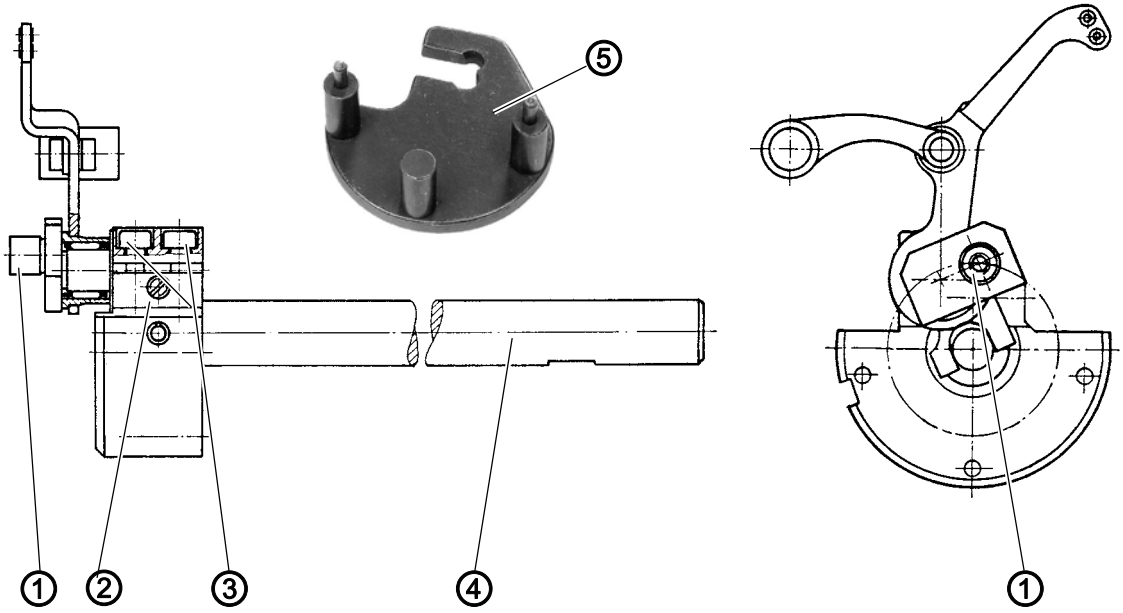
CAUTION Risk of Injury!

Set the crank pin only with the main switch switched off.

Important

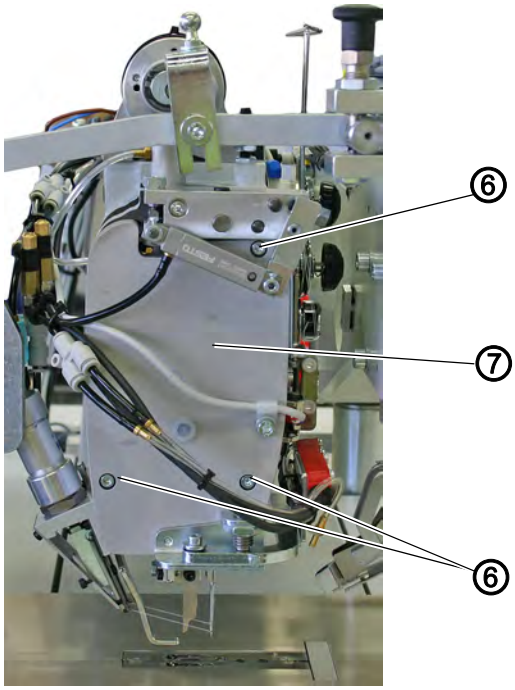
The adjustment of the crank pin (1) is done with the gauge 0246 002591 (5). It is not necessary to remove crank and armshaft (4) for the adjustment.

Fig. 7: Positioning of the crank pin



(1) - Crank pin
(2) - Screw
(3) - Allen screws
(4) - Arm shaft
(5) - Gauge

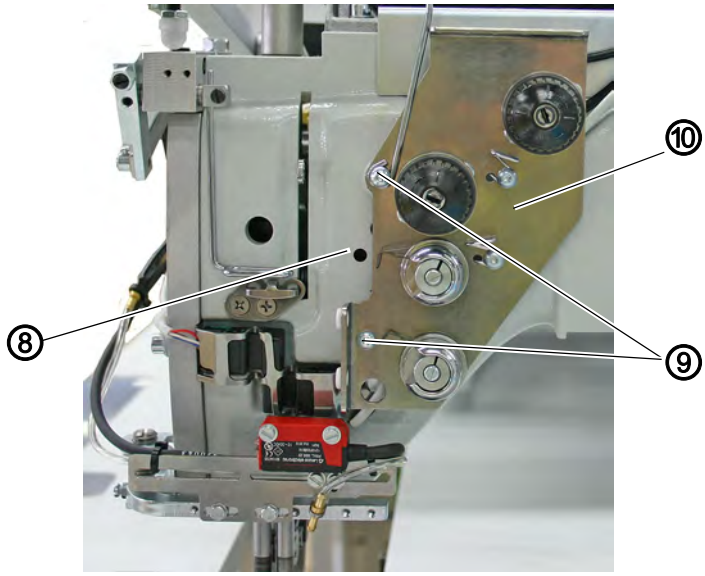
Fig. 8: Removing the face cover



(6) - Fastening screws
(7) - Face cover

1. Remove the face cover after loosening the fastening screws (6).

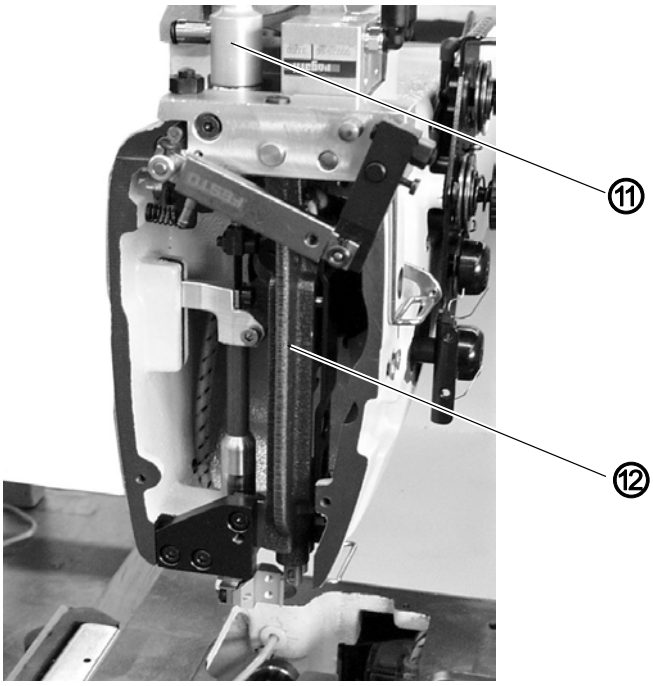
Fig. 9: Loosening the thread tensioning plate



(8) - Drill-hole
(9) - Fastening screws
(10) - Thread tensioning plate

2. Swing the thread tensioning plate (10) to the side after loosening the fastening screws (9).

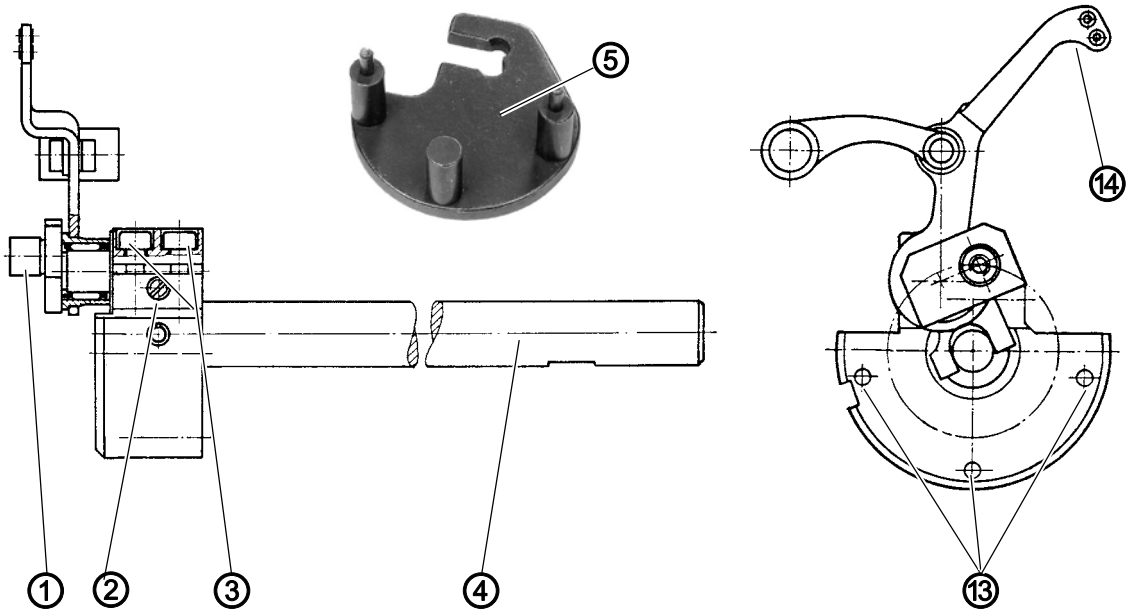
Fig. 10: Removing the shift cylinder and the needle bar linkage



(11) - Shift cylinder *(12) - Needle bar linkage*

3. Remove the needle bar linkage (12) (📖 *3.6.6 Mounting the needle bar linkage*, p. 36).
4. Remove the shift cylinder (11) for the center knife drive (📖 *3.8.2 Removing / installing the shift cylinder*, p. 59).

Fig. 11: Positioning of the crank pin



(1) - Crank pin
(2) - Screw
(3) - Allen screws
(4) - Arm shaft
(5) - Gauge
(13) - Insertion bores
(14) - Thread lever

5. After unscrewing the fastening screws, detach the needle bar connecting rod (**ATTENTION** left-handed thread) from the crank pin (1) and pull it off along with the needle cage.
6. Turn the handwheel until the hexagon screws (3) are facing down. In this position, the screws are accessible.
7. Loosen the hexagon screws (3).
8. Loosen the support bolt (2). The screw can be accessed through the hole (8) (figure above).
9. Put the pivots of gauge (5) in the insertion bores (13).
10. Turn the crank pin (1) in such a way that it reaches in the cutout of the gauge (5).
11. Press the crank pin (1) on. The thread lever (14) must have a minimum axial backlash for the lubrication.
12. Tighten the support bolt (2).
13. Tighten the hexagon screws (3).
14. Remove gauge (5).
15. Turn the handwheel and check arm shaft (4) for ease of movement.
16. Put the needle tie rod with the needle cage on the crank pin (1) and tighten the fastening screws (**ATTENTION** left-handed thread).
17. Install and adjust the needle bar linkage (📖 *3.6.6 Mounting the needle bar linkage*, p. 36).
18. Install the switching cylinder used for the center knife drive (📖 *3.8.2 Removing / installing the shift cylinder*, p. 59).

3.6 Needle bar linkage

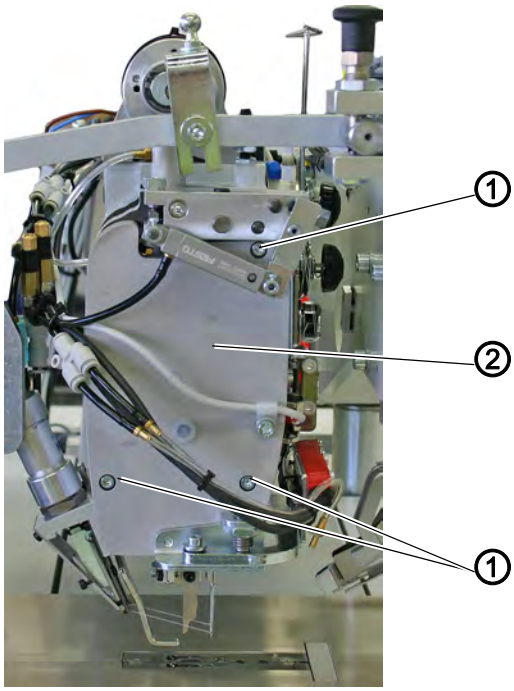
3.6.1 Removing the needle bar linkage

WARNING

Crushing hazard due to moving parts!

Remove the needle bar linkage only with the sewing unit switched off.

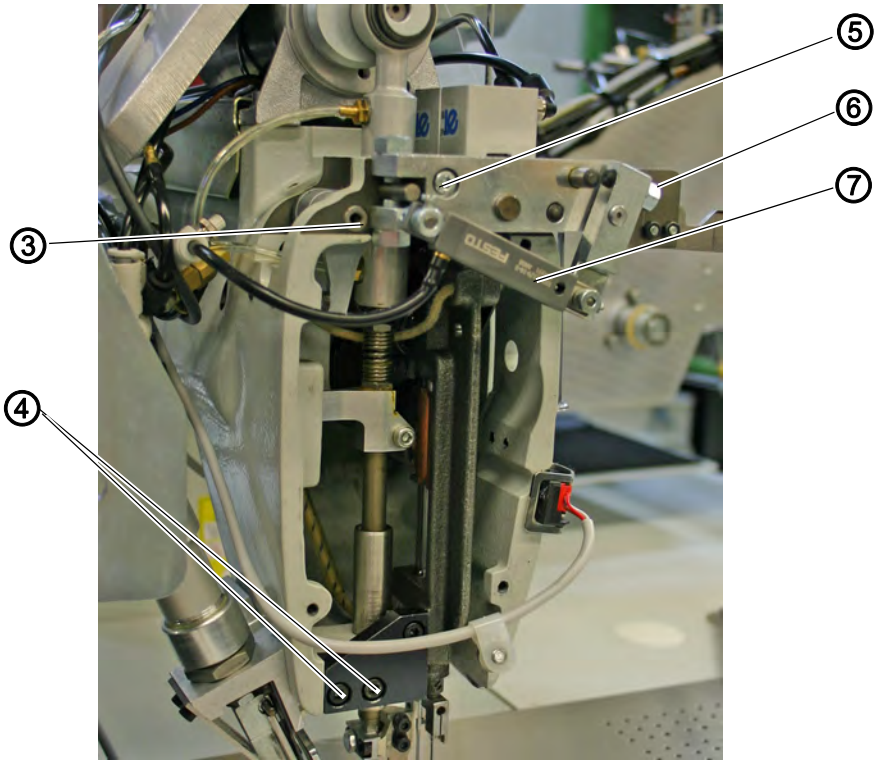
Fig. 12: Removing the face cover



(1) - Fastening screws *(2) - Face cover*

1. Remove the fastening screws (1).
2. Remove the face cover (2).

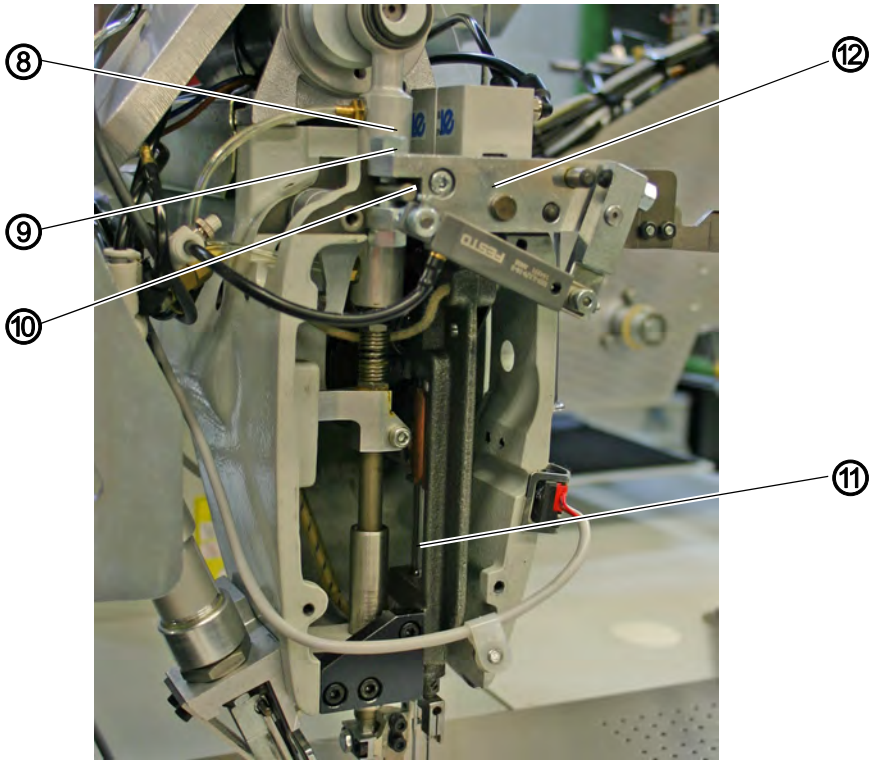
Fig. 13: Removing the needle bar linkage I



(3) - Screw
(4) - Screws
(5) - Screw
(6) - Screw
(7) - Thread puller

3. Loosen screws (3) and (6) and pull off the thread puller (7).
4. Remove the screws (4).
5. Remove the screw (5).

Fig. 14: Removing the needle bar linkage II



(8) - Adjusting screw
(9) - Lock nut
(10) - Stop pin
(11) - Needle bar linkage
(12) - Retaining plate

6. Loosen the lock nut (9).
7. Slightly loosen the set screw (8).
   ATTENTION!
   Do not loosen both set screw (8). The linkage frame is set to the correct height with the two setting screws (8) by the manufacturer.

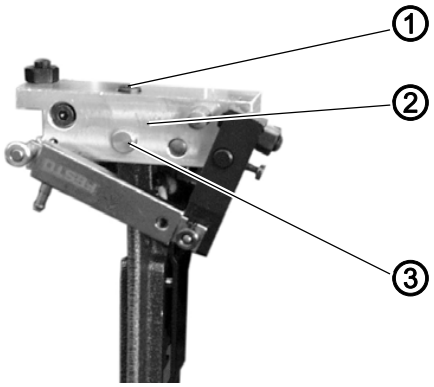
ATTENTION!

Pay attention not to damage the oil wick when removing the needle bar. Mark the position of the oil wick for subsequent reassembly.

8. Carefully draw the retaining plate (12) with the needle bar linkage (11) off the stop pin (10). Slightly turning back and forth while drawing-off makes it easier.

3.6.2 Removing a needle bar from the linkage

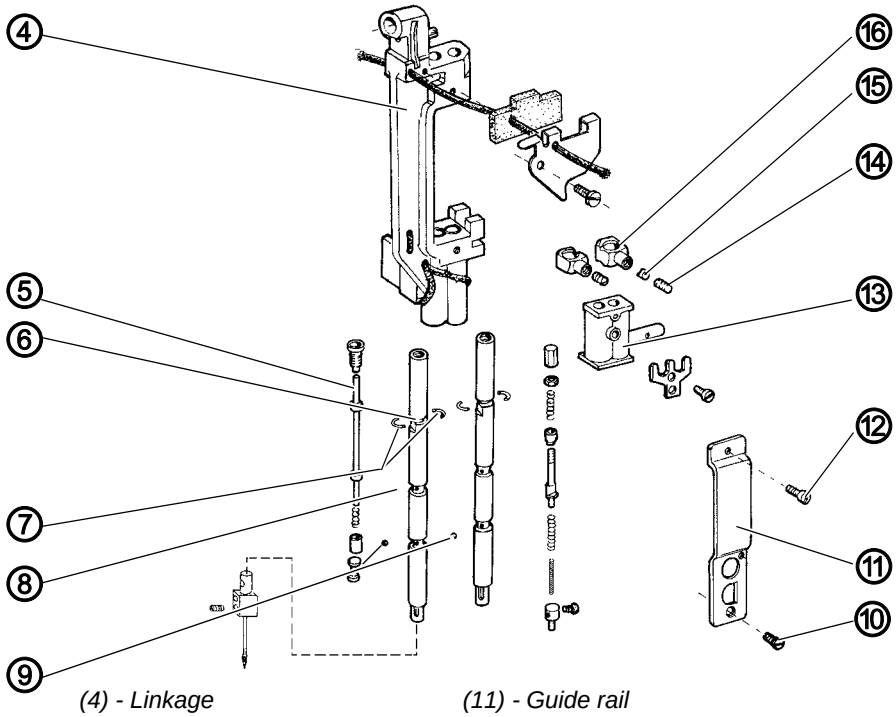
Fig. 15: Removing the needle bar



(1) - Clamp screw
(2) - Retaining plate
(3) - Bearing stud

1. Loosen the clamp screw (1).
2. Pull out the bearing stud (3).
3. Pull the retaining plate (2) off the needle bar linkage.

Fig. 16: Needle bar linkage



(4) - Linkage
(5) - Uncoupling rod
(6) - Circular groove
(7) - Half rings
(8) - Upper coupling balls
(9) - Lower coupling balls
(10) - Screw
(11) - Guide rail
(12) - Screw
(13) - Cross head
(14) - Lock screw
(15) - Fastening screw
(16) - Clamp collar

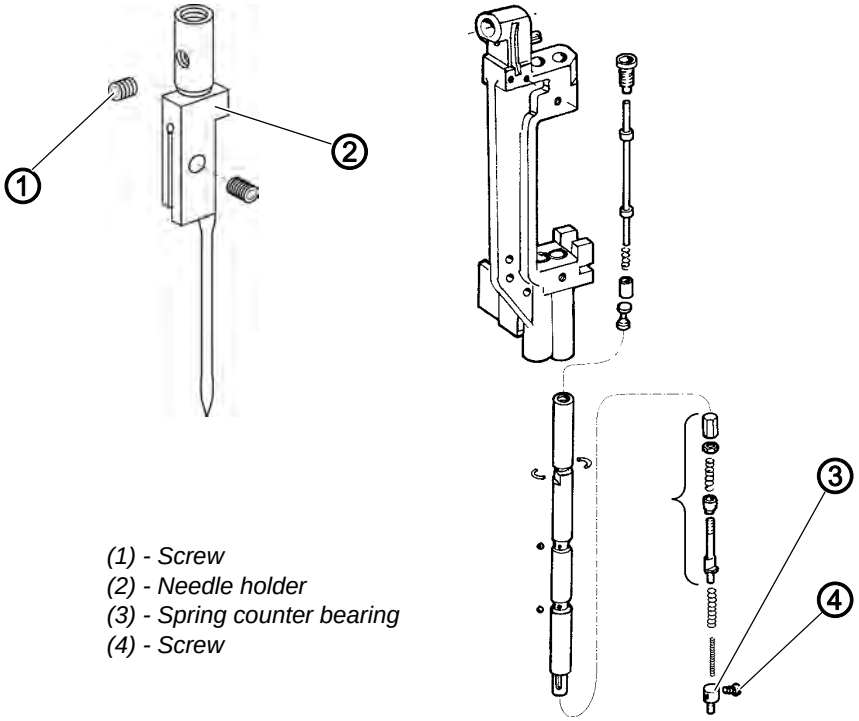
4. Unscrew screws (12) and (10).
5. Remove the guide rail (11).
6. Actuate the two uncoupling rods (5) and push the cross head (13) halfway down the needle bar stroke.
7. Unscrew the lock screw (14) of the clamp collar (16) and the fastening screw (15) underneath.
8. Remove the two half rings (7). They are located in the circular groove (6) and become visible when the clamp collar (16) has been pushed down.
9. Push the switching block in a way that the two uncoupling rods (5) are not actuated.
10. Slowly push the cross head (13) to the top of the needle bar until the three upper coupling balls (8) jump out.

    ATTENTION! Make sure not to loose the balls, they are under spring tension.
11. Pull the needle bar downwards out of the linkage (4).

    ATTENTION! When doing this, the three lower coupling balls (9) might drop from their holes at the needle bar.

3.6.3 Disassembling a needle bar

Fig. 17: Disassembling the needle bar



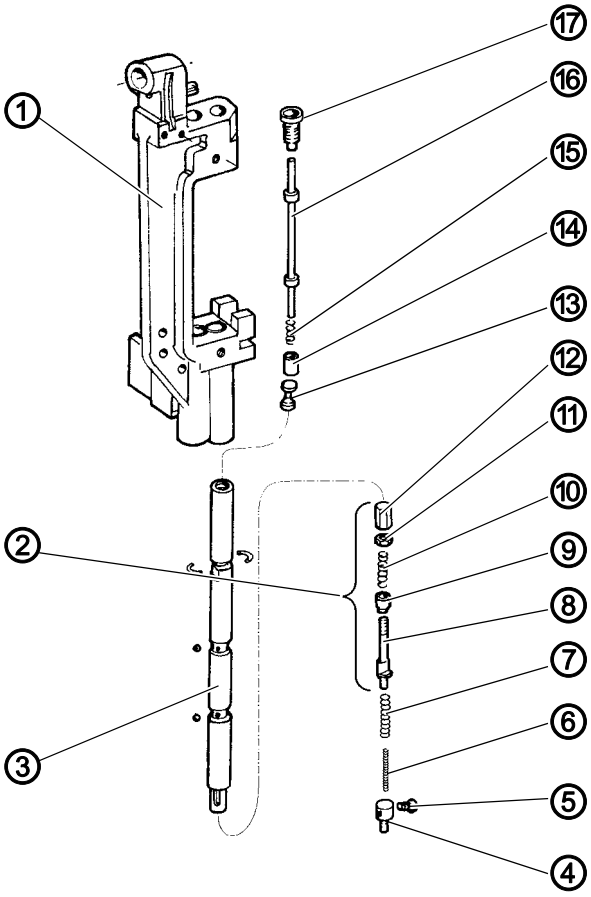
(1) - Screw
(2) - Needle holder
(3) - Spring counter bearing
(4) - Screw

1. Remove the linkage and the needle bar as described in *3.6.1 Removing the needle bar linkage*, p. 26.
2. Unscrew the screw (1) and the needle holder (2).
3. Unscrew the screw (4) and loosen the spring counter bearing (3).

   ATTENTION! The spring counter bearing is under spring tension. Before loosening the screw (4), insert a pin of Ø 4 mm from below into the needle bar to retain the spring counter bearing.
4. Remove the parts inside the needle bar one by one from below.

3.6.4 Assembling a needle bar

Fig. 18: Assembling the needle bar



(1) - Linkage
(2) - Coupling rod
(3) - Needle bar
(4) - Spring counter bearing
(5) - Screw
(6) - Spring
(7) - Spring
(8) - Spring bar
(9) - Taper socket
(10) - Spring
(11) - Nut
(12) - Cap nut
(13) - Taper pin
(14) - Bushing
(15) - Spring
(16) - Uncoupling rod
(17) - Plug screw

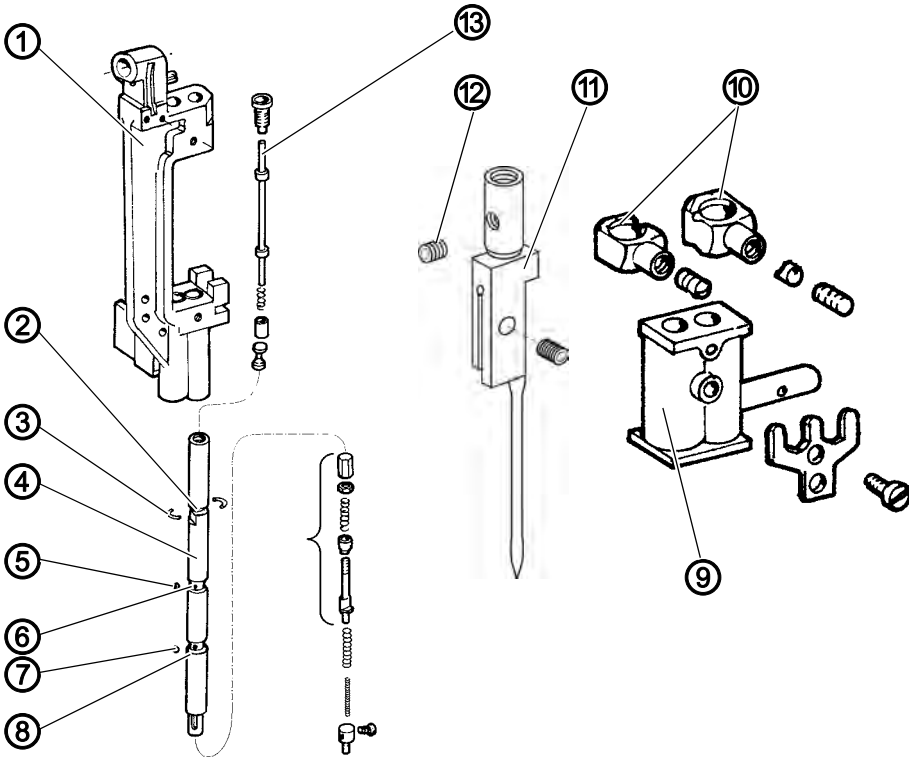
1. Firmly screw the plug screw (17) into the needle bar.
2. Pre-assemble the lower coupling rod (2) according to the adjacent figure.
3. Tighten the nut (11) and lock it with the cap nut (12) just as to achieve a distance of 30.5 mm between the lower edge of the taper socket (9) and the upper edge of the cap nut (12).

   Note
   It is imperative to observe this dimension in order to achieve the needed retaining force of the coupling for the needle penetration.
4. Put the spring (15) and the bushing (14) onto the slimmer shaft end of the uncoupling rod (16).
5. Insert the thicker shaft end from below into the needle bar (3) until it emerges out of the plug screw (17).

6. Consecutively insert the taper pin (with cylinder pointing to the top), the pre-assembled coupling rod (2), the spring (7) with spring (6) and counter bearing (4) into the needle bar.
7. Firmly fasten the counter bearing (4) by means of screw (5).
8. Check by repeatedly pressing down the uncoupling rod (16) whether the assembly inside the needle bar moves freely and resiliently.

3.6.5 Mounting the needle bars into the needle bar linkage

Fig. 19: Mounting the needle bar I



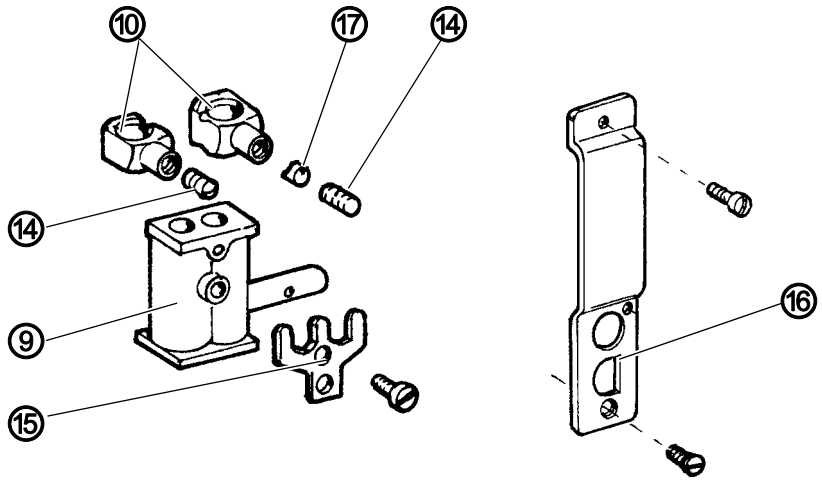
(1) - Linkage
(2) - Circular groove
(3) - Half rings
(4) - Needle bar
(5) - Upper coupling balls
(6) - Upper holes
(7) - Coupling balls (3x)
(8) - Lower holes
(9) - Cross head
(10) - Clamp collar
(11) - Needle holder
(12) - Screw
(13) - Uncoupling rod

1. Insert the needle bar (4) from below into the linkage (1).
2. Insert the cross head (9) and the clamp collar (10). The thin part of the clamp collar has to point to the other needle bar and the bell hollow to the top.
3. At first push the needle bar only so far up that the three lower holes (8) for the balls are still below the linkage.

4. Insert three coupling balls (7) into the lower holes (8). Use some grease to prevent the balls from falling out.
5. Push the needle bar further up so that the lower coupling balls disappear and the upper holes (6) become visible.
6. Insert three coupling balls (5) into the upper holes (6).
7. Firmly hold the needle bar and push the uncoupling rod (13) into the needle bar.
8. At the same time pull the cross head (9) downwards until halfway above the upper coupling balls (5).

   ATTENTION!
   Needle bar and cross head must not be shifted anymore, otherwise the coupling balls that are under spring tension might jump out.
9. Push the clamp collar (10) halfway down the needle bar until the circular groove (2) is exposed.
10. Put the two half rings (3) into the circular groove. Push the clamp collar upwards as far as it will go, so that the half rings are positioned in the bell hollow.
11. Push the cross head (9) as far as it will go up against the clamp collar (10). By this the needle bar gets coupled with the cross head (9).
12. Screw in the needle holder (11) and fasten it with screw (12).
13. Turn the needle bar so that the front surfaces of the two needle holder (11) form an even plane.

Fig. 20: Mounting the needle bar II



(9) - Cross head
(10) - Clamp collar
(14) - Lock screw
(15) - Fork plate
(16) - Guide rail
(17) - Fastening screw

14. Fix the clamp collar (10) on the needle bar (4). Make sure that the two clamp collars (10) are positioned with their round necks in the fork plate (15) that is fixed on the cross head (9) and that the lock screw (14) is also firmly tightened after tightening the fastening screw (17).
15. Screw on the guide rail (16). It prevents the twisting of a deactivated needle bar.

ATTENTION!
When the needle bar linkage is removed and the needle bar is deactivated, do not push the cross head (9) down to far. The upper coupling ball (5) might accidentally jump out (comp. fig. above)

Remark: After the linkage has been mounted, the correct needle height in relation to the hook has to be set according to 📖 *3.6.7 Height of the needle bar linkage*, p. 38.

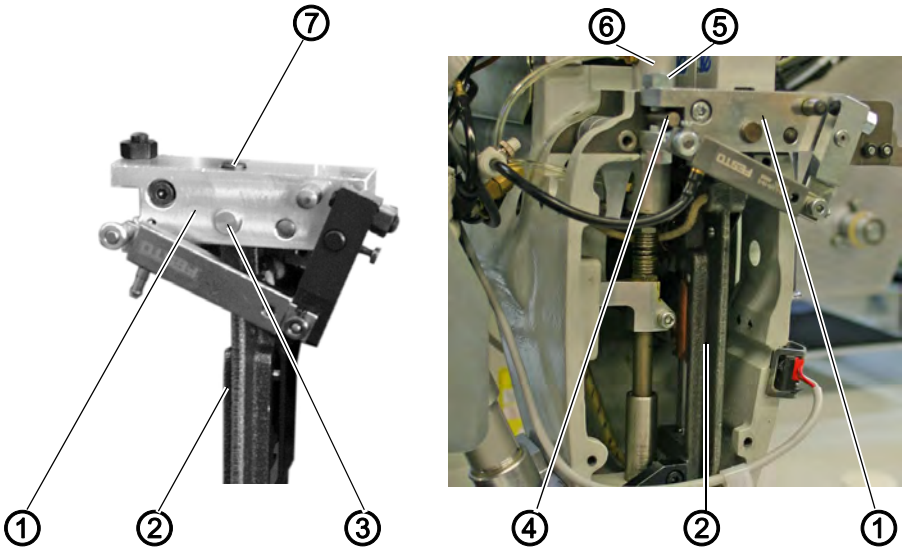
3.6.6 Mounting the needle bar linkage

WARNING

Crushing hazard due to moving parts!

Remove the needle bar linkage only with the sewing unit switched off.

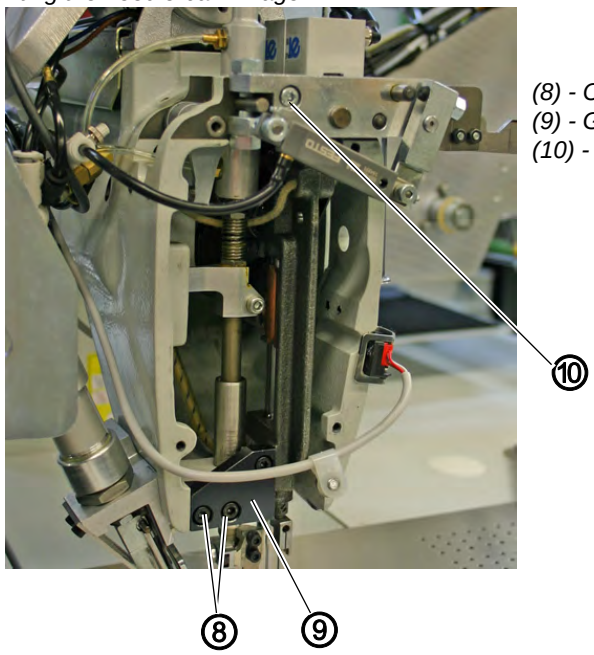
Fig. 21: Mounting the needle bar linkage I



(1) - Retaining plate
(2) - Needle bar linkage
(3) - Bearing stud
(4) - Stop pin
(5) - Lock nut
(6) - Adjusting screw
(7) - Clamp screw

1. Push the retaining plate (1) on the needle bar linkage (2).
2. Push the bearing stud (3) into retaining plate and needle bar linkage.
3. Tighten clamp screw (7). The needle bar linkage has to be abut on the retaining plate (1), and yet run smoothly.
4. Carefully push the retaining plate (1) together with the needle bar linkage into the stop pin (4).
5. Insert the fastening screw (10) (see figure below) and slightly tighten it.
6. Place the adjusting screw (6) (height of the needle bar linkage) onto the stop pin (4) and secure it with a lock nut (5).

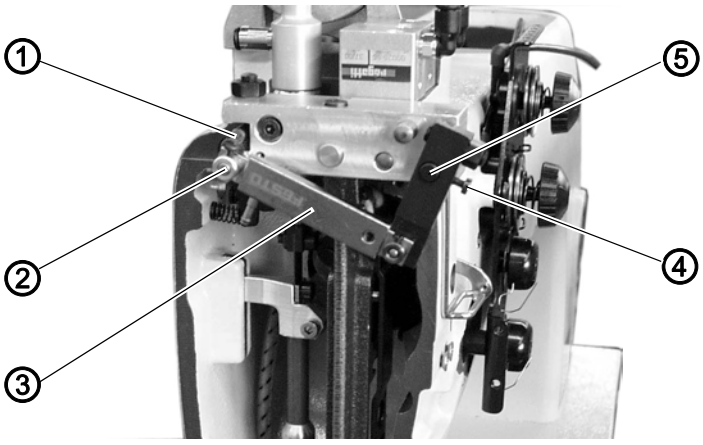
Fig. 22: Mounting the needle bar linkage II



(8) - Clamp screws
(9) - Guiding plate
(10) - Screws

7. Fix the guiding plate (9) with two clamp screws (8).
8. Insert a needle and align the needle bar linkage in relation to the throat plate.
9. Tighten screws (10).
10. Check the height of the needle bar linkage (📖 p. 38) as well as the lateral alignment to the needle hole (📖 p. 40).

Fig. 23: Mounting the needle bar linkage III



(1) - Screw
(2) - Pin
(3) - Thread puller
(4) - Screw
(5) - Pin

11. Push the thread puller (3) onto the pins (5) and (2) and fix it with screws (4) and (1).
12. Adjust the thread puller (📖 p. 70).

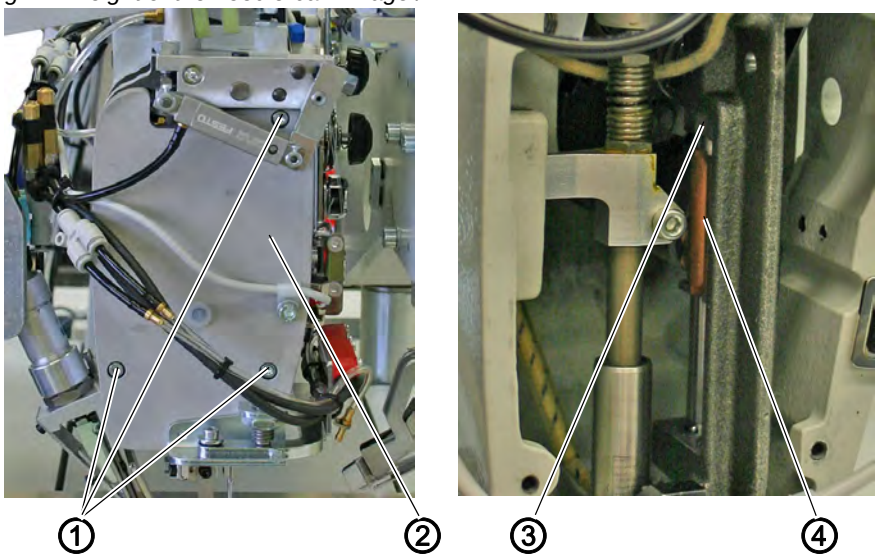
3.6.7 Height of the needle bar linkage

WARNING

Crushing hazard due to moving parts!

Check and adjust the height of the needle bar linkage only with the sewing unit switched off.

Fig. 24: Height of the needle bar linkage /



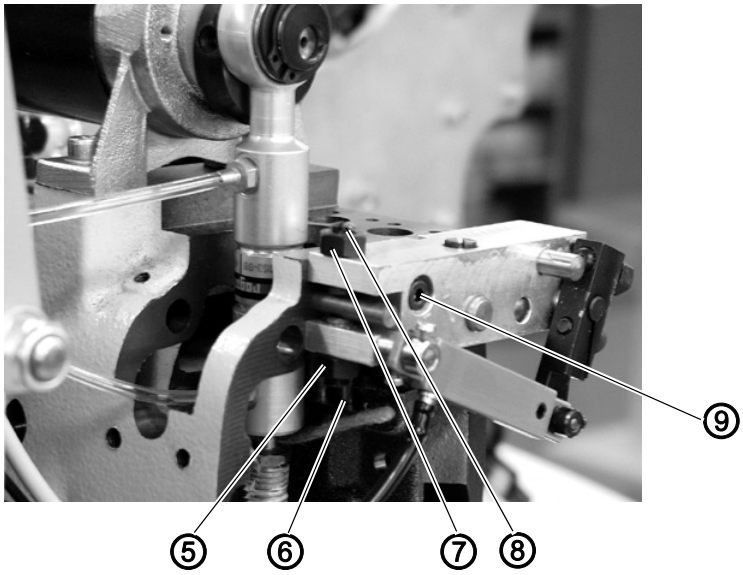
(1) - Screws
(2) - Face cover
(3) - Needle bar linkage
(4) - Cross head

Standard checking

When the two needle bars are activated in the upper dead center, there has to be a distance of 0.2 mm between the cross head (4) and the needle bar linkage (3).

1. Remove the screws (1) and remove the face cover (2).
2. Check the distance of 0.2 mm between the cross head (4) and the needle bar linkage (3).

Fig. 25: Height of the needle bar linkage II



(5) - Lock nut
(6) - Screw
(7) - Lock nut
(8) - Screw
(9) - Screw

Correction

1. Remove the screws (1) and remove the face cover (2).
2. Slightly loosen the screw (9) on the retaining plate.
3. Loosen the lock nuts (7) and (5).
4. Adjust the height of the linkage with the screws (6) and (8) until a distance of 0.2 mm exists between the linkage (3) and the cross head (4).
5. Tighten the lock nuts (7) and (5).
6. Tighten the screw (9) on the retaining plate.
7. Mount the face cover (2).

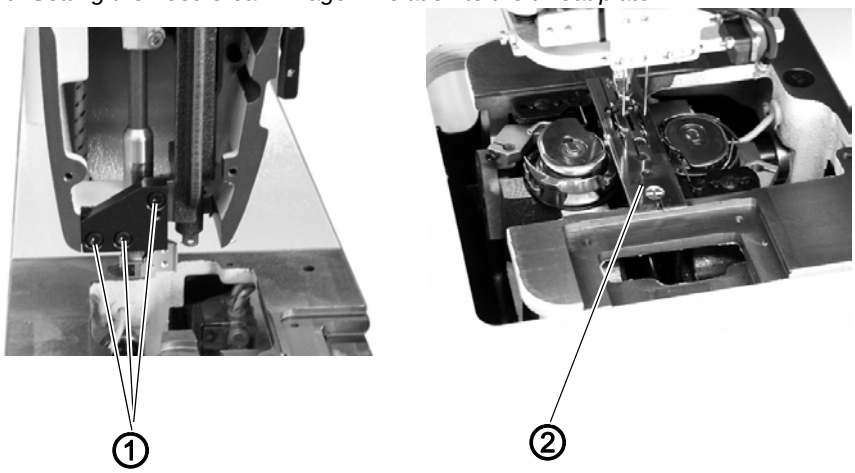
3.6.8 Needle bar linkage in relation to the throat plate

WARNING

Crushing hazard due to moving parts!

Check and adjust the orientation of the needle bar linkage only with the sewing unit switched off.

Fig. 26: Setting the needle bar linkage in relation to the throat plate



(1) - Screws

(2) - Throat plate

Standard checking

The needles should penetrate in the center of the holes of the throat plate (2).

1. Insert new needles.
2. Slowly turn down the needle bars with the hand wheel.
3. Check the needles' position in the needle hole.

Correction

1. Loosen the screws (1).
2. Shift the needle bar linkage laterally so as to position the needles in the center of the needle hole.
3. Tighten the screws (1).

3.6.9 Changing the needle holder

WARNING

Crushing hazard due to moving parts!

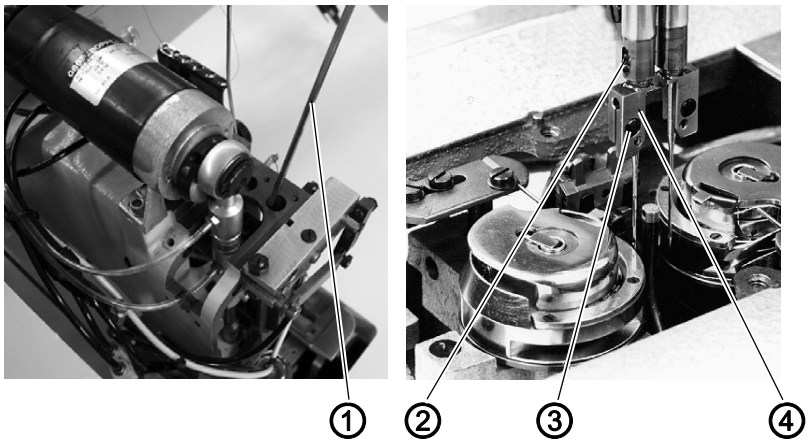
Replace and check the needle holder only with the sewing unit switched off.

WARNING

Crushing hazard due to moving parts!

It is only possible to exchange the needle holder when the respective needle bar is its lowest position. The other needle bar has to be switched off.

Fig. 27: Changing the needle holder I



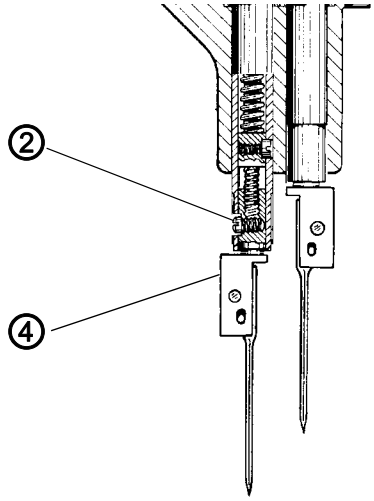
(1) - Allen key
(2) - Screw
(3) - Screw
(4) - Needle holder

1. Loosen screw (3).
2. Remove the needle from the needle holder (4).
3. Press down the coupling rod of the needle bar with an Allen key (1) and hold it.
4. Switch off the needle bar by turning the hand wheel.
5. Continue to turn the hand wheel.

↳ The actuated needle bar is switched off.

6. Continue to turn the hand wheel until the needle bar is in its lowest position.

Fig. 28: Changing the needle holder II



(2) - Screw
(4) - Needle holder

7. Loosen screw (2).
8. Remove the needle holder (4) out of the needle bar by turning it.
9. Screw in a new needle holder.
10. Adjust the height of the needle holder (📖 p. 48).
11. Tighten the screw (3).
12. Check the penetration of the needle in the needle hole.
13. Check the lateral distance between the needle and the hook (📖 p. 50).
14. The exchange of the second needle holder is done accordingly.

3.7 Hook

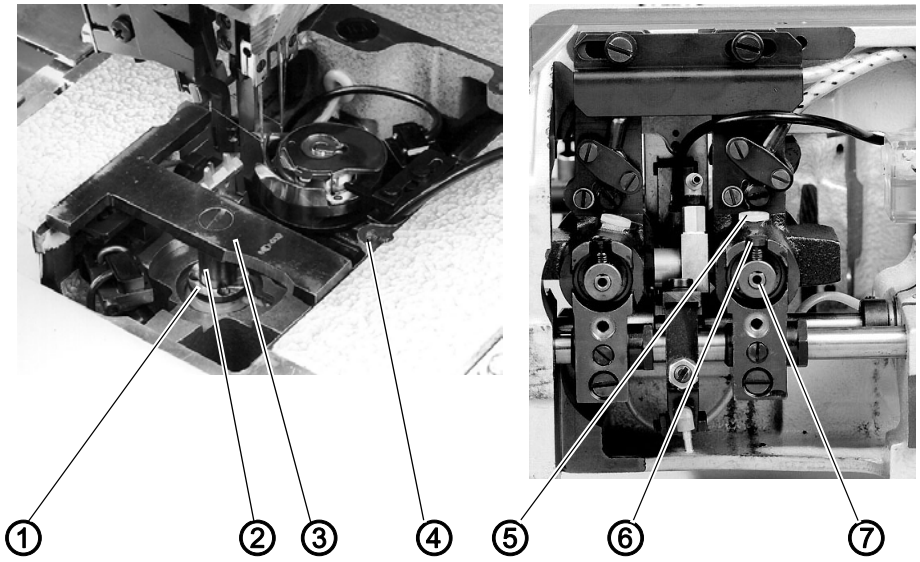
3.7.1 Hook shaft height

WARNING

CAUTION Risk of Injury!

Replace and check the hook shaft height only with the sewing unit switched off.

Fig. 29: Setting the hook shaft height



(1) - Neck of the hook shaft
(2) - Measuring bushing
(3) - Gauge
(4) - throat plate support
(5) - Plastic stopper
(6) - Screw
(7) - Bushing

Standard checking

The distance between the throat plate support (4) and the neck (1) of the hook shaft has to be 17.7 mm.

The exact height of the hook shaft is adjusted by using the gauge (3) (Order No. 0244 001001).

1. Remove the throat plate.
2. Remove both hooks (📖 p. 54).
3. Put the gauge (3) on the throat plate support (4). The measuring bushing (2) of the gauge has to cover the journal of the hook shaft.
4. Check whether the hook shaft neck (1) has contact with the measuring bushing (2).

Correction

1. Swing up the machine head (📖 p. 16).
2. Remove the plastic stopper (5).
3. Loosen the screws positioned beneath the plastic stopper (5).
4. Loosen the screws (6).
5. Push the hook shaft with its neck (1) until it is underneath the measuring bushing (2) of the gauge. In order to do so, place a screwdriver underneath the neck (1). If the hook shaft stands out too high, push the hook shaft down by carefully tapping on its neck (1).
6. Tighten the screws positioned beneath the plastic stopper (5) in this position.
7. Push the bushing (7) against the hook shaft until it stops.
8. Tighten the screws (6) on the surfaces of the bushing (7).
9. Mount the hook and the throat plate again (📖 p. 54).

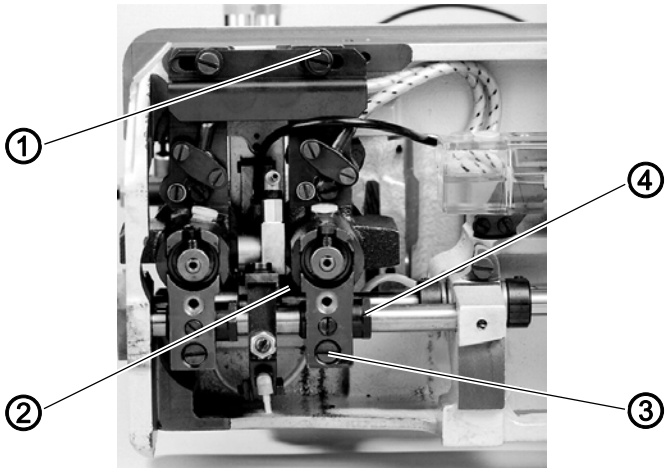
3.7.2 Gear wheel clearance of the hook drive

WARNING

CAUTION Risk of Injury!

Check and adjust the gear wheel clearance only with the sewing unit switched off.

Fig. 30: Gear-wheel clearance of the hook drive



(1) - Screw
(2) - Worm wheel
(3) - Screw
(4) - Socket

Standard checking

The clearance between worm shaft and worm wheel should be as minimal as possible. But a smooth running must be sure.

After aligning the hook drive in axial direction (changing the needle distance) the gear wheel clearance needs to be readjusted.

1. Slightly turn the hook and check the gear wheel clearance.

Correction

1. Loosen screw (3).
2. Loosen screw (1) just a little bit.
3. Loosen the clamp screw of the worm wheel (2) just a little bit.
4. Shift the worm wheel (2) axially. The distance between the worm wheel (2) and the inner surface of the hook housing has to be 0.3 mm. The distance has to be between the worm wheel and the right side for the right hook housing (the left side for the left hook housing).
5. Measure the distance with a slip gauge.
6. Set the gear wheel clearance by twisting the eccentric socket (4). The clearance between worm shaft and worm wheel should be minimal and yet tangible.
   Increasing the clearance: Turn the socket (4) upwards.
   Decreasing the clearance: Turn the socket (4) downwards.
7. Check and if necessary adjust the looping stroke (📖 p. 46) and the distance between hook tip and needle (📖 p. 50).
8. Tighten screws (1) and (3).

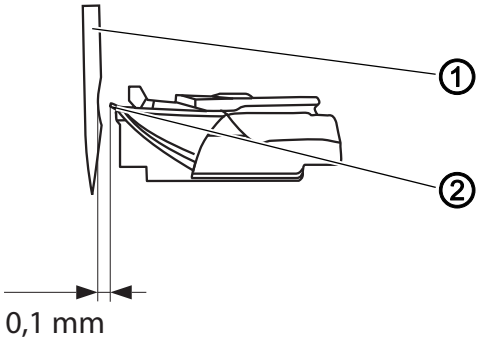
3.7.3 Looping stroke

WARNING

CAUTION Risk of Injury!

Check and adjust the looping stroke only with the sewing unit switched off.

Fig. 31: Setting the looping stroke I



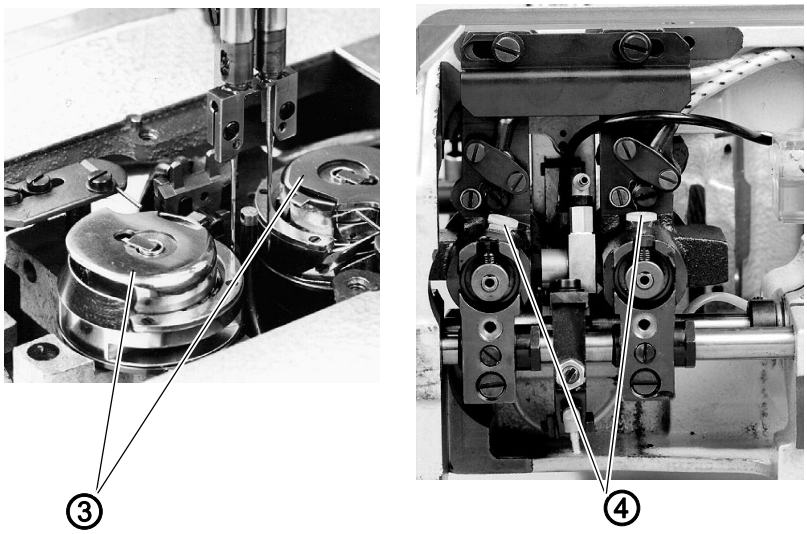
(1) - Needle *(2) - Hook tip*

Standard checking

The looping stroke is the course of the needle bars from the bottom dead center to the point when the hook tips (2) come to be at the middle of needle (1). The looping stroke is 2 mm. It is adjusted with the locking pin (Order No. 0211 000700).

1. Remove the throat plate.
2. Remove the bobbin case tops (3) with the bobbins.
3. Turn the hand wheel until the machine head is in looping stroke position and lock it with the locking pin.
4. Check the position of the hook tips in relation to the needles.

Fig. 32: Setting the looping stroke II



(3) - Bobbin case tops

(4) - Plastic stoppers

Correction

1. Remove throat plate, bobbin case tops and bobbins.
2. Swing up the machine head.
3. Remove the plastic stoppers (4).
4. Loosen the screws positioned beneath the plastic stoppers (4).
5. Lock the machine in looping stroke position.
6. Turn the hook manually until the hook tips come to be in the middle of the needle.
7. Tighten the first screw positioned beneath the plastic stoppers (4).
8. Remove the locking pin.
9. Continue to turn the hand wheel and tighten the second screw.
10. Push the plastic stoppers (4) back into the drill-holes.

3.7.4 Height of the needle holder

WARNING

Crushing hazard due to moving parts!

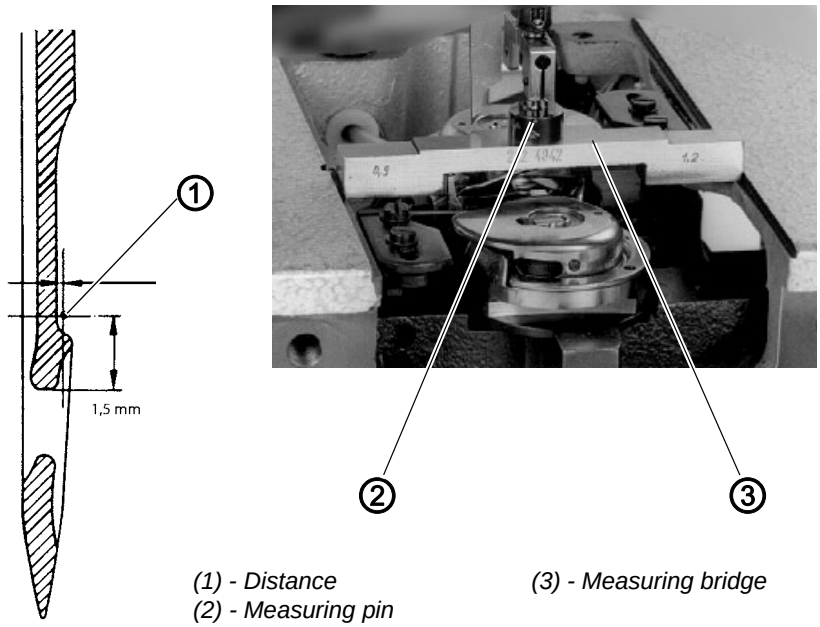
Check and adjust the height of the needle holders only with the sewing unit switched off.

WARNING

Risk of being stabbed by moving parts!

Never reach into the area of the center knives when working on the needle holders.

Fig. 33: Setting the needle holder height I



(1) - Distance
(2) - Measuring pin
(3) - Measuring bridge

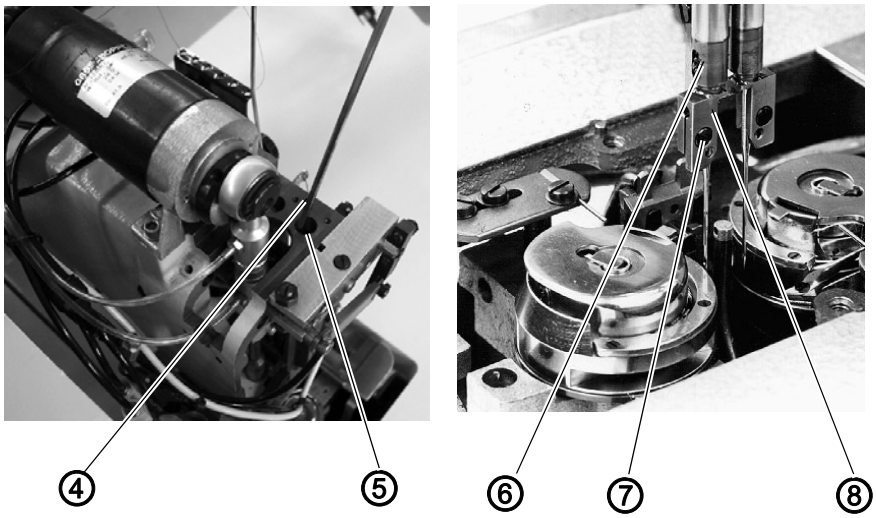
Standard checking

The distance from the upper edge of the needle eye to the hook tip (1) has to be 1.5 mm.

The setting is effectuated with the measuring bridge (3) (Order No. 0212 004942) and the measuring pin (2) (Order No. 0216 001070).

1. Remove the throat plate.
2. Turn the needle bar into looping stroke position.
3. Put the locking pin into the drill-hole on the machine arm. The locking pin has to snap into the groove of the arm shaft crank.
4. Check the position of the needles in relation to the hook tips.

Fig. 34: Setting the needle holder height II



(4) - Allen key
(5) - Drill-hole
(6) - Screw
(7) - Screw
(8) - Needle holder

Correction

1. Remove the throat plate.
2. Remove the needles from the needle holders (8).

   Note
   In order to turn the needle holders, one of the needle bar has to switched off.
3. Turn the needle bars with the hand wheel until they stand shortly before the upper dead center.
4. Use an Allen key to press down the coupling rod through the drill-hole (5) and hold it.
5. Continue to turn the hand wheel. The pressed down coupling rod switches the needle bar off.
6. Release the coupling rod.
7. Push the measuring pin (2) as far as it will go into the needle holder.
8. Tighten the screw (7).
9. Put the measuring bridge (3) onto the throat plate support.
10. Turn the needle bar into looping stroke position and lock it with the locking pin. The measuring bridge should be pushed under the measuring pin (2) with as little clearance as possible.
11. Remove the screw (6).
12. Set the needle holder's (8) height accordingly. In order to do so, turn the needle holder (a complete rotation of 360° is possible).
13. Align the needle holder. The front surfaces of the needle holder have to point to the front and be on the same level.
14. Screw in the screw (6) into the needle holder and tighten it.

15.Remove the locking pin and the measuring pin (2).

16.Switch on the needle bar again. In order to do so, turn the needle bar with the hand wheel past the upper dead center without the coupling rod being actuated.

17.Adjust the second needle holder likewise.

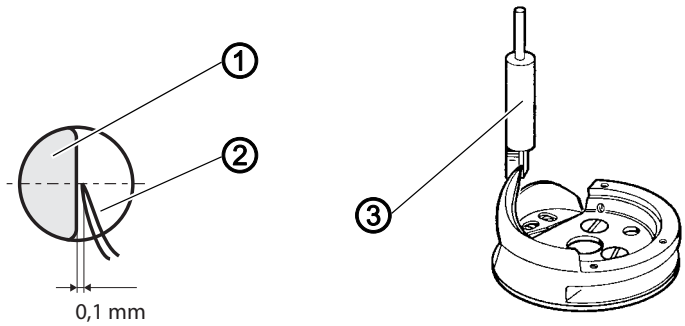
3.7.5 Distance between hook tips and needles

WARNING

Risk of being stabbed by moving parts!

Check and adjust the distance between hook tips and needle only with the sewing unit switched off.

Fig. 35: Distance between hook tips and needles I



(1) - Needles
(2) - Hook tips

(3) - Setting pin

Standard checking

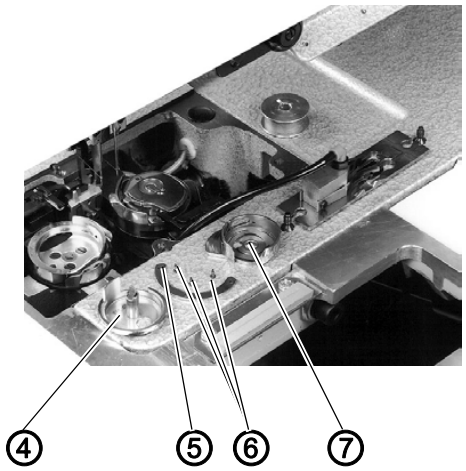
The distance between the hook tips (2) and the needles (1) should be 0.1 mm in looping stroke position. This set distance allows to work with needles sized from Nm 90 to Nm 110.

The distance between hook tips and needles does not need to be corrected when interchanging needles of this size range. After changing needles, only the needle guard needs readjustment (📖 p. 53).

The distance between the hook tips and the needles is adjusted with the setting pin (3) (Order No. 0244 001014).

1. Remove the throat plate.
2. Turn the needle bar into looping stroke position.
3. Put the locking pin into the drill-hole on the machine arm. The looking pin has to snap into the groove of the arm shaft crank.
4. Check the distance between hook tips and needles

Fig. 36: Distance between hook tips and needles II



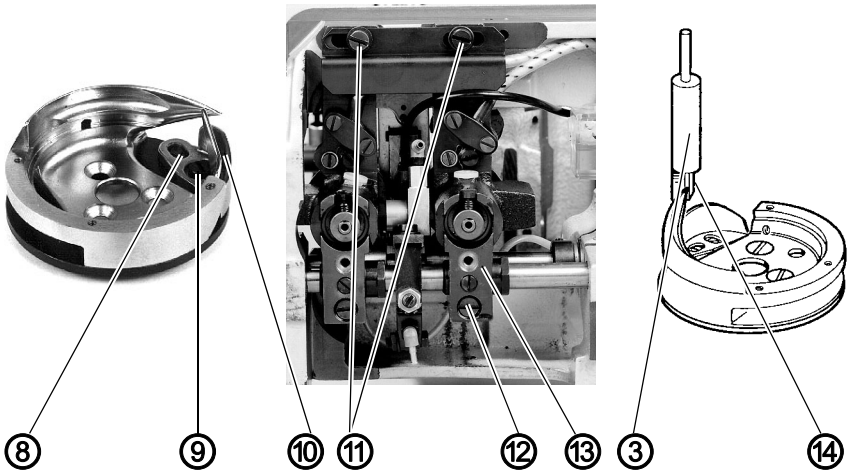
(4) - Bobbin case bottom
(5) - Hook cover
(6) - Fastening screws
(7) - Bobbin case top

Correction

1. Remove the throat plate.
2. Remove the bobbin case top (7) with the bobbin.
3. Unscrew the fastening screws (6) of the hook cover (5).
4. Remove the hook cover (5).
5. Remove the bobbin case bottom (4) from the hook by slightly turning the hand wheel back and forth.

   ATTENTION!
   Do not use force to remove the bobbin case bottom (4).

Fig. 37: Distance between hook tips and needles III



(3) - Setting pin
(8) - Eccentric bolt
(9) - Screw
(10) - Needle guard
(11) - Screw
(12) - Screw
(13) - Hook turret
(14) - Measuring surface

6. Loosen screw (9).
7. The needle guard (10) is reset by turning the eccentric bolt (8).
8. Remove the needle from the needle holder.
9. Insert the setting pin (3) as far as it will go into the needle holder.
10. Swing up the machine head.
11. Loosen the screws (11) and (12).
12. Laterally shift the hook turret (13). The hook tip should slightly touch the measuring surface (14) of the setting pin (3) without displacing it.
13. Tighten screws (11).
14. Tighten screws (10).
15. Mount the bobbin case bottom and hook cover again.
16. Screw on the throat plate.

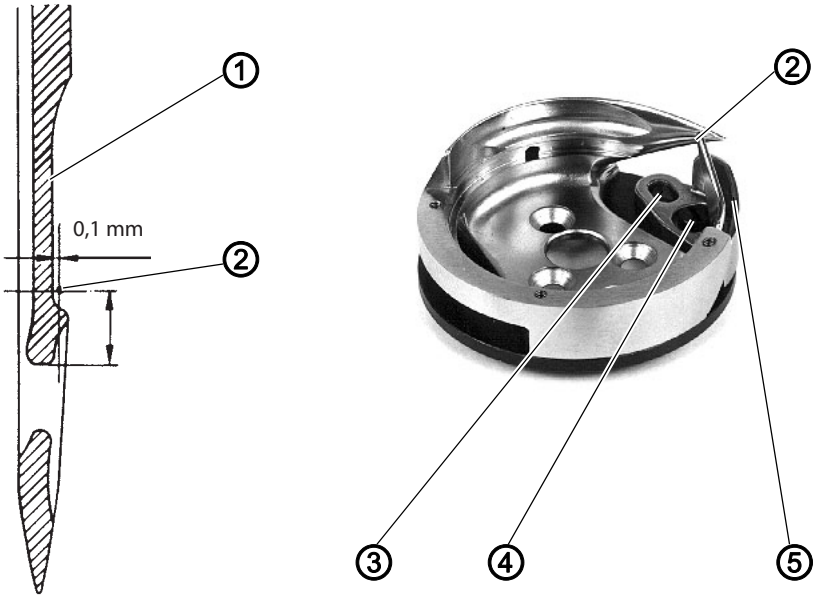
3.7.6 Needle guard

WARNING

Risk of being stabbed by moving parts!

Check and adjust the needle guard only with the sewing unit switched off.

Fig. 38: Needle guard



(1) - Needle
(2) - Hook tip
(3) - Eccentric bolt
(4) - Screw
(5) - Needle guard

Standard checking

The needle guard (5) prevents the needle (1) from deflecting into the path of the hook tip (2).

The needle tip has to abut on the needle guard (5) before the hook tip (2) reaches the needle. It must not be possible to push the needle into the hook tip's (2) path.

There has to be a distance of 0.1 mm between the needle scarf and the hook tip (2) when the hook tip stands in the middle of the needle.

1. Turn the needle into the area of the hook tip and check the needle guard's function.

Correction

1. Screw off the throat plate.
2. Remove the hook cover and the bobbin case bottom (📖 p. 50).
3. Loosen screw (4).
4. Adjust the needle guard (5) by twisting the eccentric bolt (3).
5. Firmly tighten screw (4).
6. Mount the bobbin case bottom and the hook cover.
7. Screw on the throat plate.

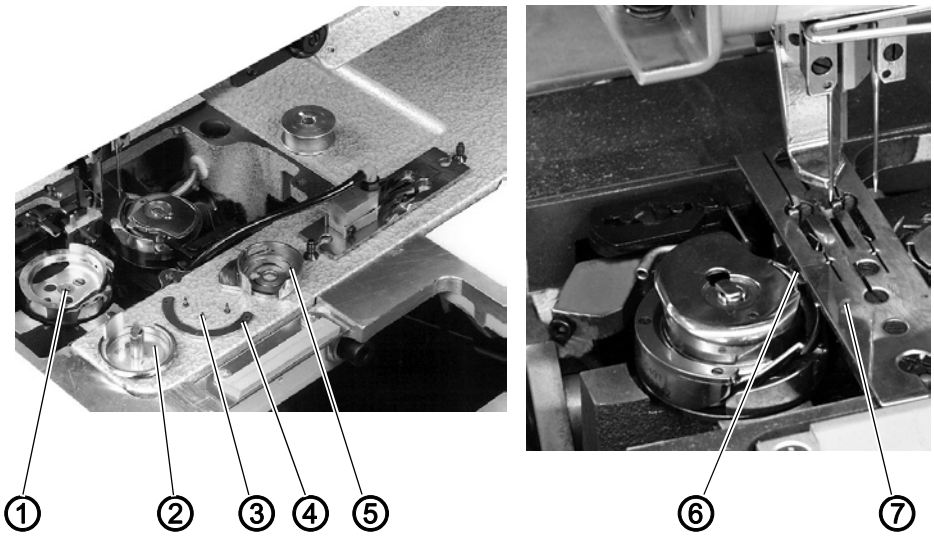
3.7.7 Replacing the hook

WARNING

Risk of being stabbed by moving parts!

Replace the hook only with the sewing unit switched off.

Fig. 39: Replacing the hook



(1) - Fastening screw of the hook
(2) - Bobbin case bottom
(3) - Fastening screws
(4) - Hook cover
(5) - Bobbin case top
(6) - Retaining lug
(7) - Throat plate

1. Remove the throat plate (7) after loosening the fastening screws.
2. Remove the bobbin case top (5) with the bobbin.
3. Unscrew the fastening screws (3) of the hook cover (4).
4. Remove the hook cover (4).

5. Remove the bobbin case bottom (2) from the hook.
6. In order to do so slightly turn the hand wheel back and forth.

   ATTENTION!
   Do not use force to remove the bobbin case bottom.
7. Unscrew the fastening screws (1) of the hook.
8. Lift the hook off the hook shaft and remove it.
9. Put a new hook onto the hook shaft. the position of the hook on the shaft is determined by the arrangement of the drill-holes in the hook bottom. This way the correct position of the hook tip at the middle of the needle after looping stroke is ensured.
10. Insert the bobbin case bottom (2) into the hook.

    ATTENTION!
    The retaining lug (6) of the bobbin case bottom has to be positioned in the cutout of the throat plate.
11. Mount the hook cover (4) and fix it with the screws (3).
12. Screw on the throat plate (7).

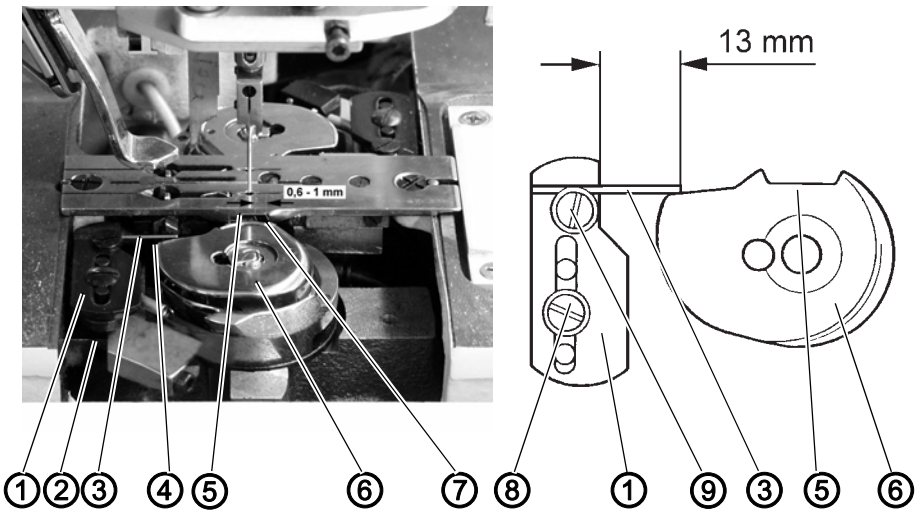
3.7.8 Bobbin case retaining wire

WARNING

Risk of injury due to moving parts!

Check and adjust the bobbin case retaining wire only with the sewing unit switched off.

Fig. 40: Bobbin case retaining wire



(1) - Plate
(2) - Screw
(3) - Bobbin case retaining wire
(4) - Edge 1
(5) - Edge 2
(6) - Bobbin case top
(7) - Retaining lug
(8) - Screw
(9) - Clamp screw

Function

The bobbin case retaining wire (3) keeps the bobbin case top and bottom in a certain position against the rotation of the hook.

The needle thread loop that has been conducted around the hook, is pulled through in between the resilient retaining wire (3) and the edge (4) of the bobbin case top. The retaining wire (3) ensures the unhindered passage of the thread over the lug of the bobbin case bottom and through the cutout of the throat plate.

Standard checking

There has to be a gap of 0.6 mm to 1.0 mm for the thread's passage between the edge (7) of the retaining lug and the edge of the throat plate cutout. In this position the edge (5) of the bobbin case top is approximately parallel to the throat plate.

The retaining wire (3) protrudes 13 mm out of the plate (1) and abuts exactly in front of the edge (4) of the bobbin case top (6).

1. Turn the bobbin case top (6) against the retaining wire (3) and check the distance between the retaining lug (7) and the throat plate cutout.
2. Measure the length of the retaining wire (3).

Correction

1. Loosen the clamp screw (9).
2. Adjust the retaining wire (3). The retaining wire (3) has to protrude 13 mm out of the plate (1).
3. Tighten the clamp screw (9).
4. Loosen screw (2).
5. Adjust the height of the plate (1). The retaining wire (3) has to abut in front of the edge (5) of the bobbin case top (6).

ATTENTION

Risk of material damage!

The back of the hook must not bump under the retaining wire (3) during the hook's rotation. Set the height of the plate (1) accordingly.

6. Tighten screw (2).
7. Loosen screw (8).
8. Shift the plate (1). The distance between the retaining lug (7) and the edge of the throat plate cutout has to be 0.6 mm to 1.0 mm.
9. Tighten the screw (8).

3.8 Center knife

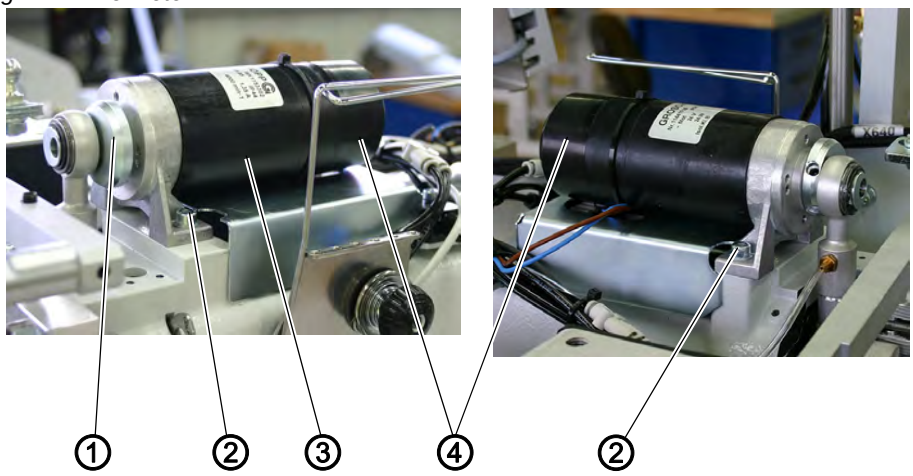
3.8.1 Removing / installing the drive motor

WARNING

Risk of injury

Remove and install the drive motor only with the main switch switched off.

Fig. 41: Drive motor

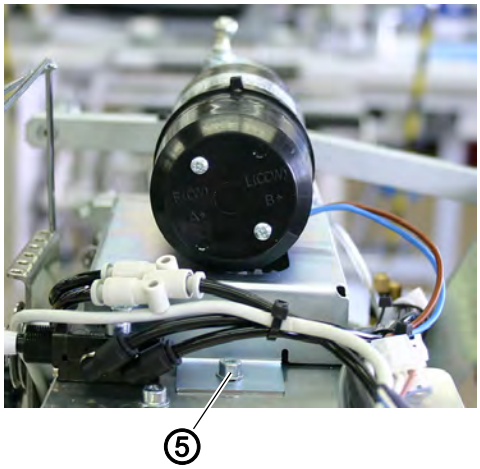


(1) - Eccentric
(2) - Fastening screws for the motor
(3) - Drive motor
(4) - Cap

Removing the drive motor

1. Undo the electrical connections of the motor by removing the plug between cable harness and motor cable.

Fig. 42: Removing the drive motor



(5) - Screw

2. Loosen the screw (5) of the cover.

3. Carefully pull of the cap.
4. Loosen the screw on the eccentric (1).
5. Unscrew the fastening screws of the motor (2).
6. Pull the drive motor (3) backwards out of the eccentric (1).

Installing the drive motor

1. Push the drive motor (3) with its shaft to the front into the eccentric (1).
2. Align the motor so that it is parallel to the upper shaft and centrical to the center knife guide.
3. Fix the motor with the fastening screws (2).
4. Tighten the screws on the eccentric (1).
5. Carefully put back the cap.
6. Tighten the screw (5) of the cap.
7. Re-establish the electrical connections on the motor by connecting the plug between cable harness and motor cable.

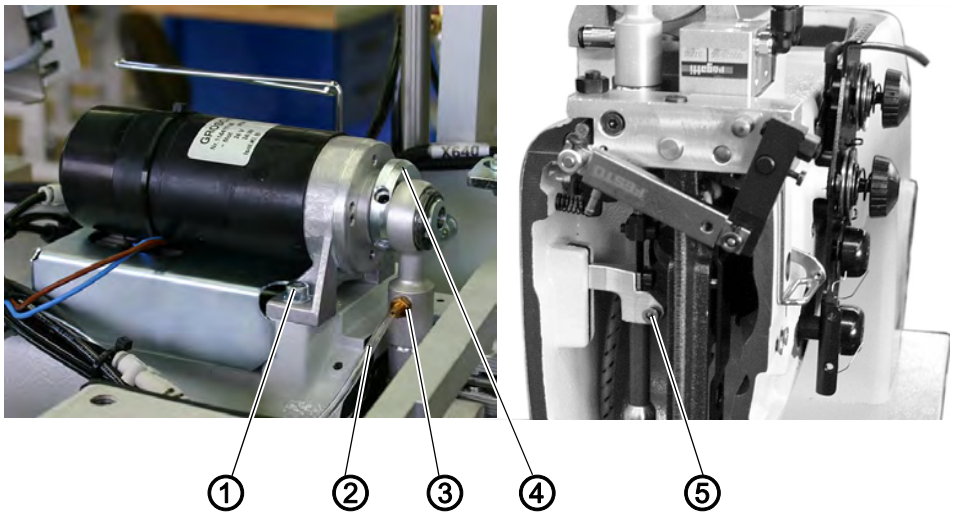
3.8.2 Removing / installing the shift cylinder

WARNING

Risk of injury due to moving parts!

Install and remove the shift cylinder only with the main switch switched off.

Fig. 43: Removing / installing the shift cylinder



(1) - Fastening screws
(2) - Pneumatic hose
(3) - Pneumatic connection
(4) - Eccentric
(5) - Clamp screw

Removing the shift cylinder

1. Pull off the pneumatic hose (2).
2. Unscrew the connection (3) out of the cylinder, if necessary.
3. Remove the drive motor (📖 *3.8.1 Removing / installing the drive motor*, p. 58).
4. Loosen the clamp screw (5) between shift cylinder and driving rod.
5. Pull out the shift cylinder to the top.

Removing the shift cylinder

1. Insert the shift cylinder from the top.
2. Tighten the clamp screw (5) between shift cylinder and driving rod.
3. Push the motor to the front and the motor shaft into the eccentric (4).
4. Fix the motor with the fastening screws (1).
5. Tighten the screws on the eccentric (4).
6. Screw the pneumatic connection (3) into the cylinder, if necessary.
7. Push the pneumatic hose (2) back on.
8. Mount the drive motor (📖 *3.8.1 Removing / installing the drive motor*, p. 58).

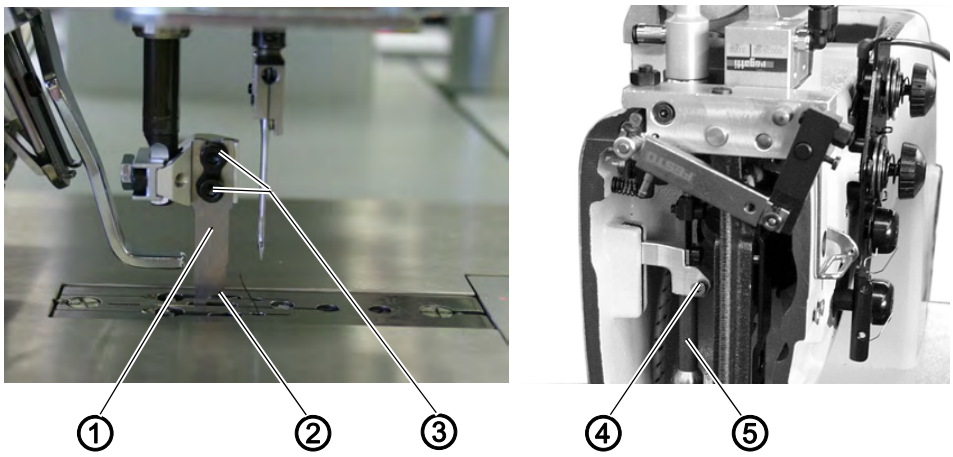
3.8.3 Setting the knives

WARNING

Crushing hazard due to moving parts!

Switch off the main switch and disconnect the sewing unit from the compressed air supply.
Set the center knife only with the sewing unit switched off.

Fig. 44: Setting the knife I



(1) - Center knife
(2) - Front edge of the center knife
(3) - Screws
(4) - Screw
(5) - Driving rod of the knife

Standard checking

At the bottom dead center, the front edge (2) of the center knife (1) has to protrude approx. 1 mm above the cutting edge of the stationary knife in the throat plate.

The center knife (1) has to abut on the stationary knife in the throat plate with **slight** pressure.

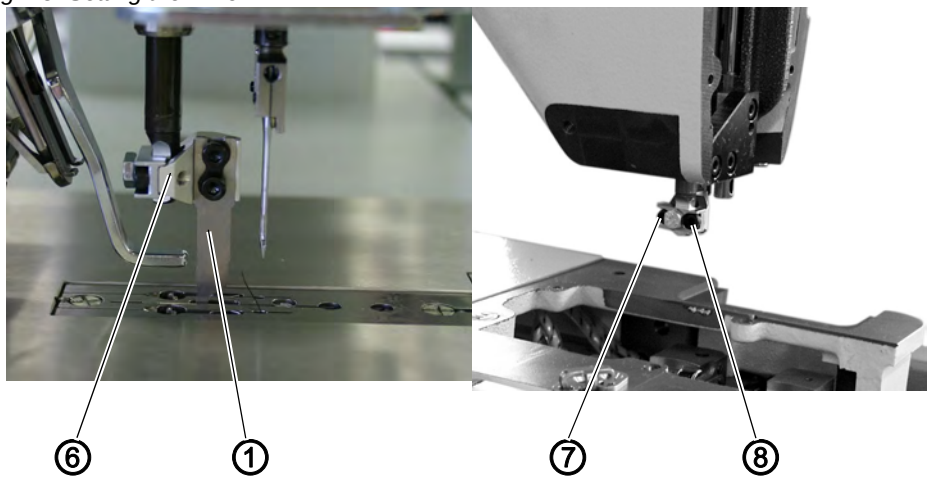
1. Move the center knife (1) with the eccentric on the drive motor into the bottom dead center.
2. Check that the edge (2) of the knife stands no more than 1 mm above the stationary knife.

Correction

Parallel alignment of the knife holder

1. Move the center knife with the eccentric on the drive motor into the bottom dead center.
2. Loosen screw (4).
3. Turn the knife drive rod (5) in a way that the center knife stands in a parallel position or slightly in cutting position to the knife in the throat plate.
4. Tighten the screw (4).

Fig. 45: Setting the knife II



(1) - Center knife
(6) - Knife carrier
(7) - Screw
(8) - Screw

Setting the knife height

1. Move the center knife with the eccentric on the drive motor to the bottom dead center.
2. Loosen the screws (3).
3. Set the height of the center knife (1).
4. Tighten screws (3).
5. Loosen the screws (7) and (8).
6. Position the knife carrier (6) with the center knife (1) to the left against the stationary knife in the throat plate. The center knife has to abut parallel and with **slight** pressure.
7. Tighten screws (7) and (8).
8. Carry out a cutting test.
9. If correction is needed, put the knife in cutting position by slightly turning the knife driving rod (5) to the left.

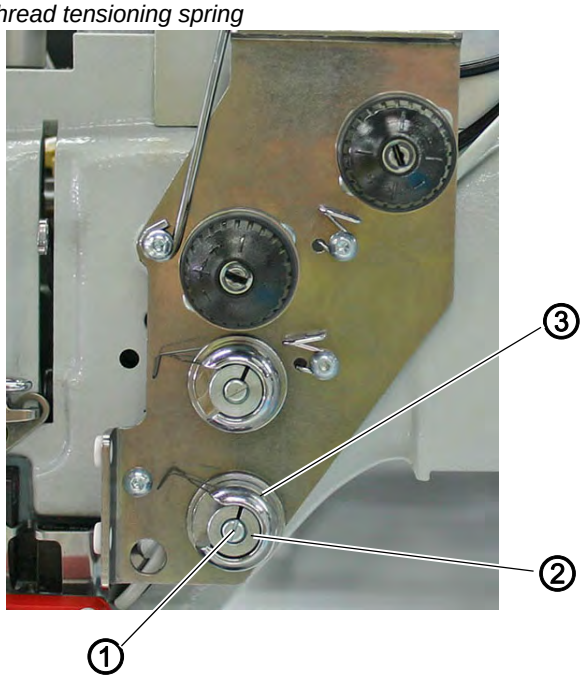
3.9 Thread tensioning spring

WARNING

Risk of injury due to moving parts!

Set the thread tensioning spring only with the sewing unit switched off.

Fig. 46: Thread tensioning spring



(1) - Screw
(2) - Bushing
(3) - Regulator

Standard checking

1. The thread tensioner springs have to keep the needle threads tensioned until the needle points penetrate the sewing material.
2. If the tension of the needle threads is already released when penetrating the sewing material, the needles risk to pierce the threads in their downward movement.
3. Slowly turn the hand wheel forward and observe the thread tensioner springs when the needles penetrate the sewing material.

Correcting the spring travel

1. Loosen screw (1).
2. Set the regulator (3) by turning it.
3. Tighten the screw (1).

Correcting the spring tension

1. Loosen screw (1).
2. Turn the bushing (2).
   Turn in clock-wise direction: The spring tension increases
   Turn in counter-clockwise direction: The spring tension decreases
3. Tighten the screw (1).

3.10 Trimming and clamping device for needle threads

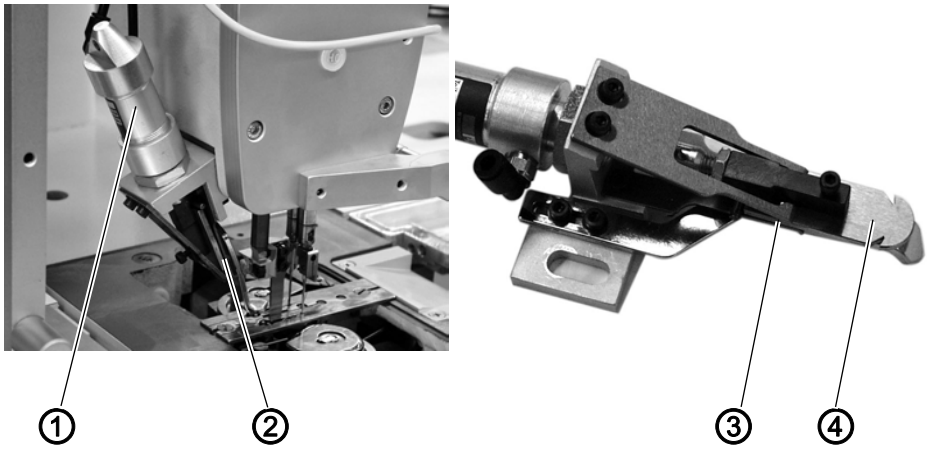
3.10.1 Function

WARNING

Risk of being cut by moving parts!

Check trimmer and thread catcher only with the sewing unit switched off.

Fig. 47: Function of trimming and clamping device



(1) - Cylinder
(2) - Clamping sheet
(3) - Trimmer
(4) - Thread catcher

Function

After seam end and during the transport to the corner knives, the cylinder (1) is activated. The thread catcher (4) is lowered and takes up the needle threads.

After a preset period the thread catcher bounces up. The needle threads are clamped at the clamping sheet (2) and trimmed at the trimmer (3).

After the first stitches of the next seam, the clamped needle threads are released.

By means of the resilient clamping sheet (2) the thread catcher (4) rests plane against the trimmer (3). Thus the trimmer is automatically in cutting position.

Checking the function

1. Actuate the pneumatic switch on the machine head.

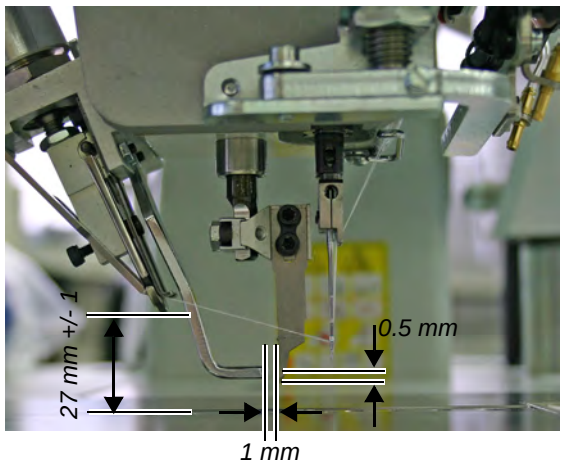
3.10.2 Exchanging trimmer and thread catcher

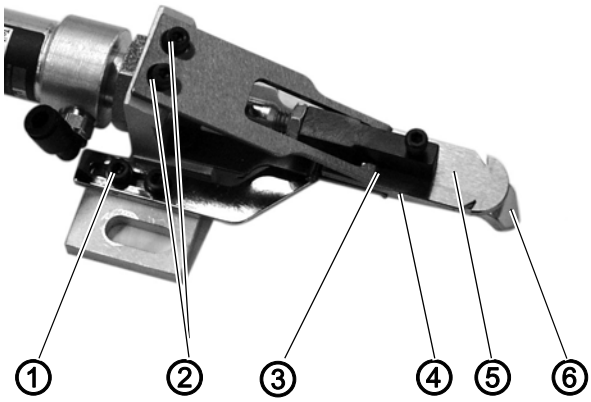
WARNING

Risk of being cut by moving parts!

Check trimmer and thread catcher only with the sewing unit switched off.

Fig. 48: Exchanging trimmer and thread catcher I





(1) - Screw
(2) - Screws
(3) - Trimmer
(4) - Screw (rear side)
(5) - Needle thread catcher
(6) - knife guard

Standard

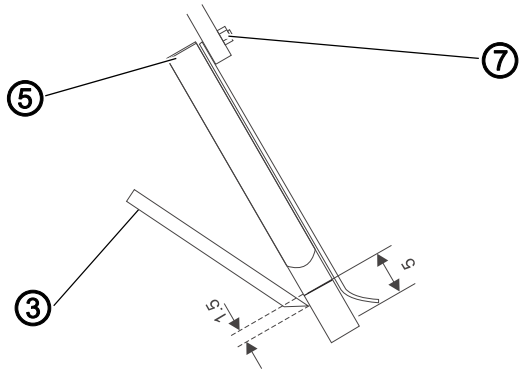
After a certain time of operation the trimmer (3) becomes blunt. The blunt trimmer has to be removed for resharpening.

When changing to another needle distance, the thread catcher (5) also has to be exchanged.

Exchanging trimmer and thread catcher

1. Unscrew and remove the complete thread catcher from the machine head.
2. Remove the screws (2).
3. Remove the trimmer (3).
4. Unscrew screw (1) and remove the knife guard (6).
5. Unscrew screw (4) (on the rear side).
6. Remove the thread catcher (5).
7. Insert a new thread catcher and fix it with screw (4).
8. Apply a new trimmer (3) and fix it with screws (2). At the same time set the distances of 5 mm and 1.5 mm.
9. Carry out a trimming and clamping test. If needed, adjust the clamping pressure with screw (7).

Fig. 49: Exchanging trimmer and thread catcher II



(3) - Trimmer
(5) - Needle thread catcher
(7) - Screw

Mounting the complete thread catcher

1. Mount the complete thread catcher in a way that the thread catcher (5) is centric between the needles.
2. Set the height of the thread catcher so that the distance between sliding plate and lower edge of the thread catcher (5) is 27+/- 1 mm.
3. Put on the knife guard (6). The knife guard (6) has to be set in a way that the distances of 1 mm and 0.5 mm are respected when the center knife is in the upper dead center.
4. Fix the knife guard (6) with screw (1).

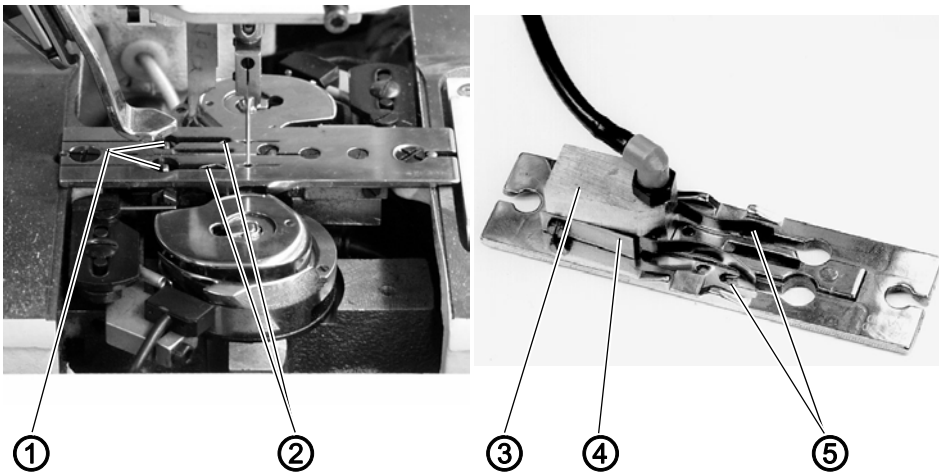
3.11 Trimming and clamping device for hook threads

WARNING

Risk of being cut by moving parts!

Check the trimming and clamping device for hook threads only with the sewing unit switched off.

Fig. 50: Trimming and clamping device for hook threads I



(1) - Hook thread scissors
(2) - Hook thread clamp
(3) - Cylinder
(4) - Boundary sheet
(5) - Thread clamping sheet

Function

After seam end the hook threads are pulled during the process of thread-pulling through the thread grooves of the throat plate into the open hook thread scissors (1) and the hook thread clamp (2).

The hook thread clamp (2) is located underneath the throat plate. It is pneumatically opened.

The hook threads are pulled between the throat plate wall and the opened thread clamping sheets (5).

The thread clamping sheets close.

The hook thread scissors (1) cut the hook threads.

At each working cycle the hook thread scissors (1) are cleaned by an air jet. This prevents a jamming of fluff and thread wastes.

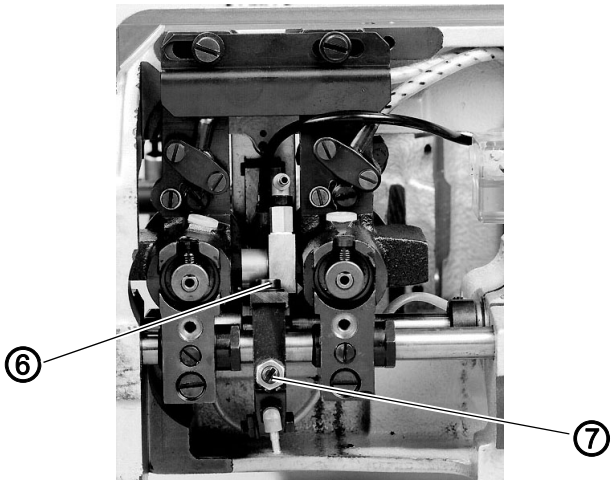
Standard

The upper edge of the hook thread scissors (1) has to be on the same level with the upper edge of the throat plate. If the hook thread scissors are set too high, the sewing material may get damaged.

If the hook thread scissors are set too low, the hook threads will not be cut.

The boundary sheets (4) fixed on the cylinder (3) determine the opening width of the thread clamping sheets. When the thread clamping sheets (5) are opened pneumatically, the two hook tips have to pass by with a safe distance.

Fig. 51: Trimming and clamping device for hook threads II



(6) - Screw
(7) - Screw

Correction

1. Loosen screw (7).
2. Align the opening of the hook thread scissors (1) centrically to the thread grooves of the throat plate.
3. Tighten the screw (7).
4. Loosen the screw (6).
5. Set the hook thread scissors' height. The upper side of the hook thread scissors have to form an even plane with the upper side of the throat plate.
6. Tighten the screw (6).
7. Align the thread clamping sheets (5). The thread clamping sheets have to rest plane and with a slight spring tension against the walls of the throat plate.
8. Check the safety distance between the hook tips and the pneumatically opened thread clamps. In order to do so, proceed as follows:
9. Call up the adjustment and test program “Selecting the output elements”, 📖 *13.3.1 Testing the output elements*, p. 144.
10. Releasing the thread clamps: Select output Y4 and press the key **OK**.
11. Slowly turn the hand wheel and check the distance of the hook tips to

the thread clamps.

12. If necessary, align the boundary sheets (4) accordingly.
13. Closing the thread clamps: Press the key **OK** once again.
14. Adjust the air jet for the cleaning of the hook thread scissors. The compressed air is supplied via the connection Y3. The throttle valve is situated on the blower pipe.

ATTENTION!

The stitch formation must not be disturbed by the air jet. Light sewing materials (f. e. lining) must not be blown off the throat plate.

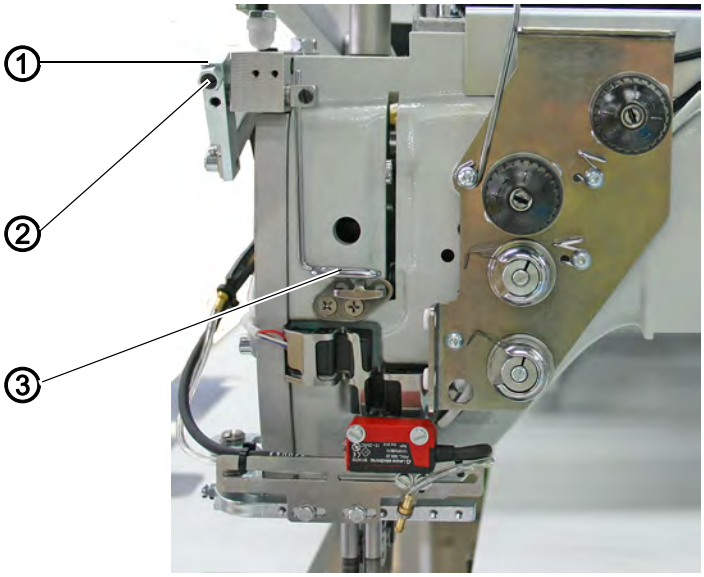
3.12 Thread puller for needle threads

WARNING

Risk of injury due to moving parts!

Set the thread puller only with the sewing unit switched off.

Fig. 52: Thread puller for needle threads



(1) - Lock nut
(2) - Stop screw
(3) - Thread puller

Standard checking

The thread puller (3) pulls a certain quantity of thread out of the opened thread tension. The thread quantity that is pulled out has to meet the following conditions:

At sewing start the downward movement of the needles must not pull the needle threads out of the needle thread clamp.

At the same time, at sewing start a tight stitch formation has to be guaranteed and the thread puller must not touch the folding station.

Correction

1. Loosen the lock nut (1).
2. Set the thread puller's (3) moving range by turning the stop screw (2).
3. Tighten the lock nut (1).

3.13 Synchronizer

WARNING

Risk of injury due to moving parts!

Set the synchronizer only with the sewing unit switched off.

Fig. 53: Synchronizer

(1) - Cam segment *(2) - Threaded pin*

Standard checking

After positioning the thread lever should be about 5 mm in front of the upper dead center. The shouldered edge of the cam segment should be centric between the forks of the light barrier.

Correction

1. Turn the sewing unit approx. 5 mm in front of the position “thread lever in upper dead center”.
2. Loosen the threaded pin (2).
3. Turn the cam segment (1) in a way that the shouldered edge of the cam segment sits centrically between the forks of the light barrier.
4. Tighten the threaded pin (2).
5. Check the positioning after the trimming.

3.14 Oil lubrication

WARNING

Risk of injuries due to oil!

Oil can cause skin rashes. Avoid longer skin contact. After contact wash yourself thoroughly.

CAUTION

Environmental hazards

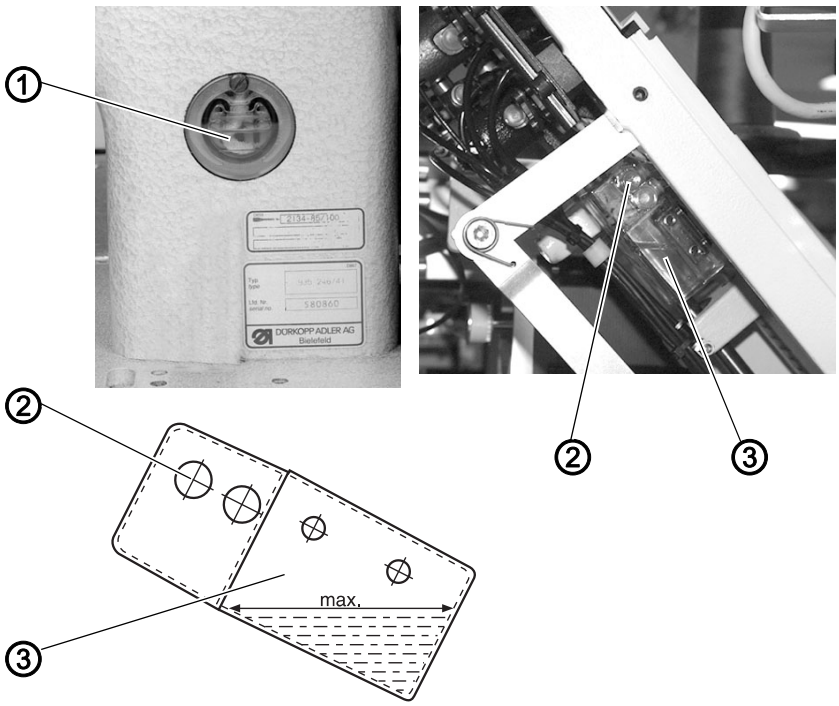
The handling and disposal of mineral oils is subject to legal regulations. Deliver used oil to an authorized collecting station. Protect your environment. Be careful not to spill any oil.

To lubricate the sewing unit use only DA-10 lubricating oil or an equivalent oil with the following specifications:

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

DA-10 can be ordered from the DÜRKOPP ADLER AG sales point.

Fig. 54: Oil lubrication

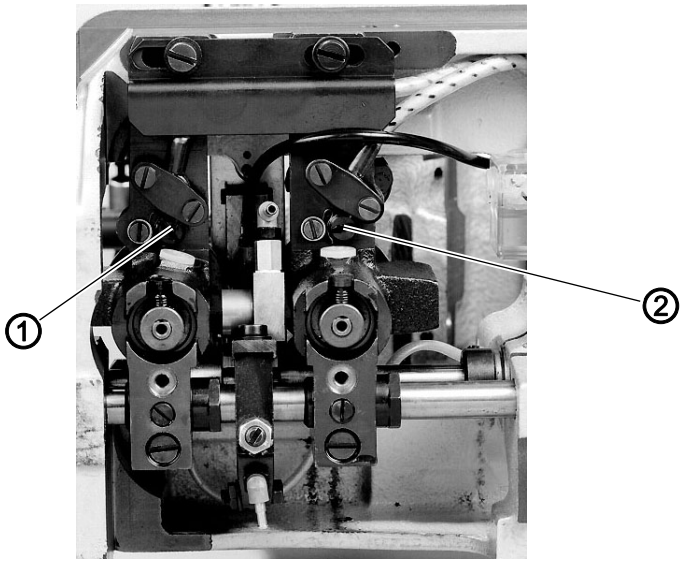


(1) - Oil reservoir
(2) - Nipple
(3) - Oil reservoir

1. Check the oil level in the oil reservoir (1) for the lubrication of the machine head.
2. The oil level in the oil reservoir (1) must not drop below the marking **MIN**.
3. If necessary, fill oil through the drill-hole in the inspection glass up to the marking **MAX**.
4. Check the oil level in the oil reservoir (3) for the lubrication of the hook.
5. Tilt up the machine head (📖 *3.3 Tilting the machine head up*, p. 16).
6. The oil level in the oil reservoir (3) must not drop below the marking **MIN**.
7. If necessary, fill up the oil reservoir (3) through the nipple (2) up to the marking **MAX** (see sketch).

3.14.1 Hook lubrication

Fig. 55: Lubricating the hook



(1) - Screw
(2) - Screw

Standard

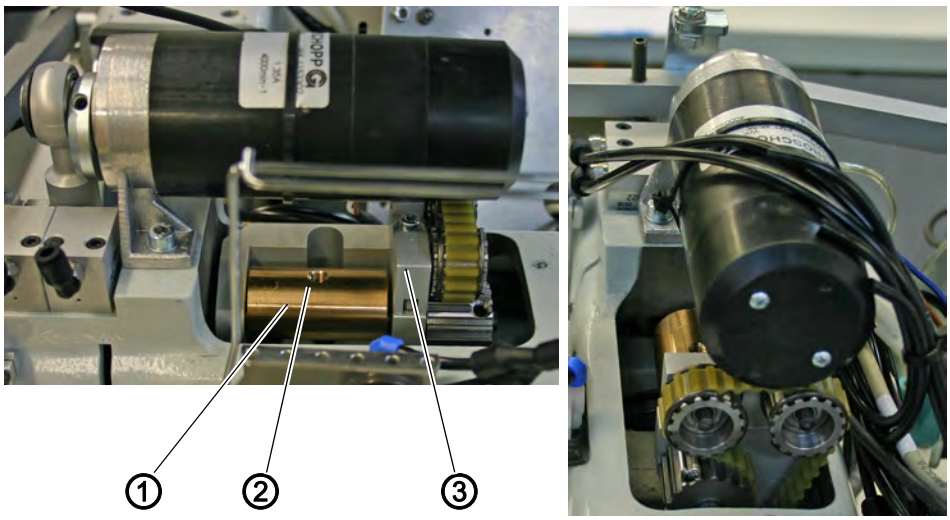
The needed amount of oil has been set in the factory at the screws (1) and (2). The amount should only be increased or decreased in special cases.

1. Adjust screws (1) and (2).
   Turn the screw in: less oil
   Turn the screw out: more oil

3.15 Equalizing gear

The equalizing gear decreases the vibrations of the machine head and, as a result, those of the entire unit during the sewing process.

Fig. 56: Equalizing gear



(1) - Balancing weight
(2) - Threaded pin
(3) - Bearing bracket

Checking

The threaded pin (2) of the balancing weight (1) has to point vertically to the top when the machine head is in the position “needles at bottom dead center”.

Correction

1. Loosen the threaded pin (2) of the balancing weight (1).
2. Bring the machine head into the position “needles at bottom dead center”.
3. Tighten the threaded pin (2) of the balancing weight (1) again. Make sure that the threaded pin (2) points vertically to the top and the balancing weight (1) sits centrically on the bearing bracket (3).

4 Transport carriage

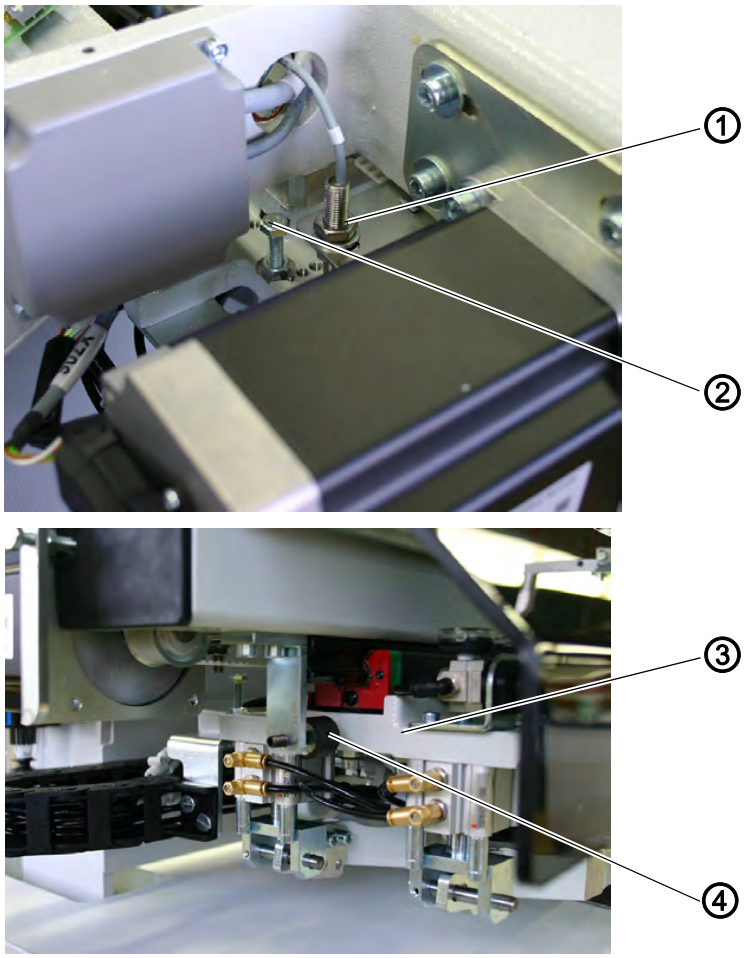
4.1 Rear end position

WARNING

Crushing hazard due to moving parts!

Check and adjust switch and stop for the rear end position of the transport carriage only with the sewing unit switched off.

Fig. 57: Rear end position of the transport carriage



(1) - Reference switch
(2) - Switching screw
(3) - Transport carriage
(4) - Stop

Standard checking

The reference switch (1) determines the end position at the rear end and due to a predefined path also the front end position of the transport carriage.

There has to be a distance of 0.5 mm to 1.0 mm between the switching

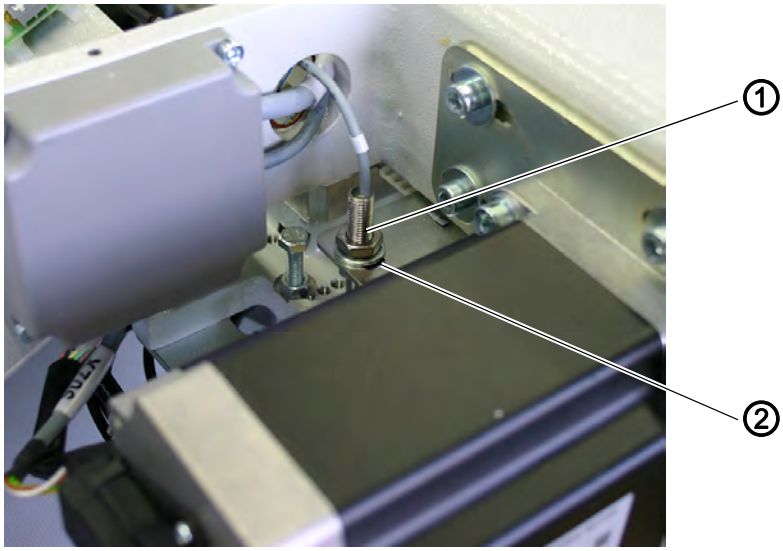
screw (2) and the reference switch (1).

When the transport carriage returned far enough for the switching screw (2) to stand centrically underneath the reference switch (1), there has to be a distance of 2 mm between the transport carriage (3) and the stop (4).

The fine adjustment is carried out with the feeding clamp adjustment, 📖 *5 Feeding clamps*, p. 87. At that stage the stop also needs to be adjusted.

4.1.1 Position of the reference switch in the slotted hole

Fig. 58: Reference switch in the slotted hole



(1) - Reference switch *(2) - Slotted hole*

Standard checking

1. Check the position of the reference switch (1) in the slotted hole (2), 📖 *5.5 Rear end position of the feeding clamp*, p. 94.

Correction

1. Loosen the upper lock nut on the reference switch (1)
2. Adjust the reference switch in the slotted hole (2), 📖 *5.5 Rear end position of the feeding clamp*, p. 94.
3. Tighten the upper lock nut again.

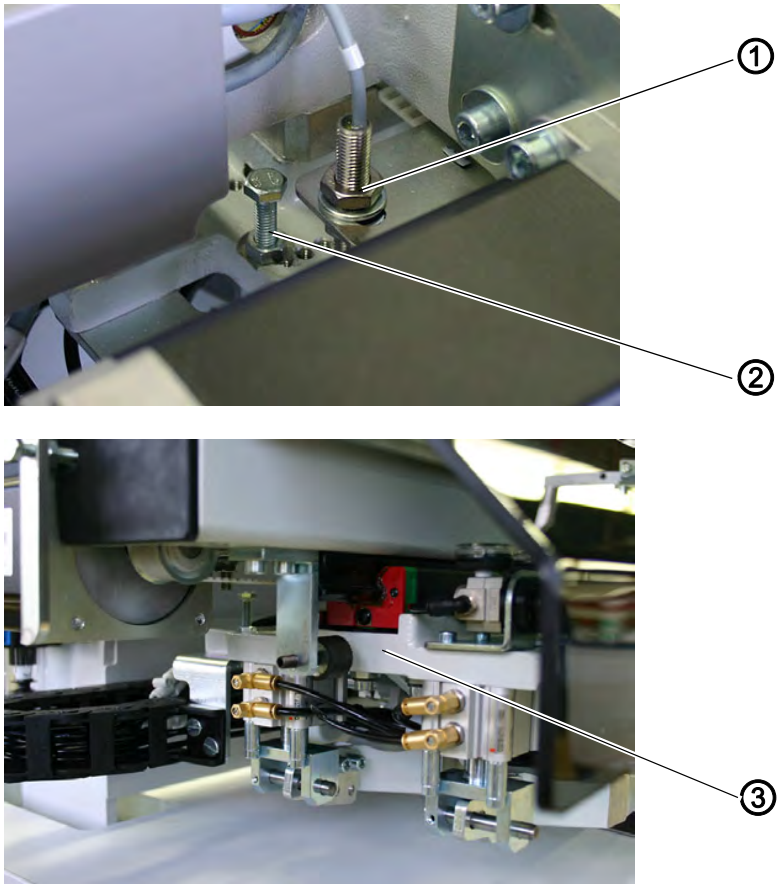
ATTENTION

Risk of material damage

Always check the distance to the switching screw after working on the reference switch. Otherwise you risk a collision and thus material damages and failure of the machine.

4.1.2 Distance between switching screw and reference switch

Fig. 59: Distance between switching screw and reference switch



(1) - Reference switch
(2) - Switching screw
(3) - Transport carriage

Standard checking

1. Push the transport carriage (3) completely to the rear.
2. Check the distance of 1 mm between reference switch (1) and switching screw (2).

Correction

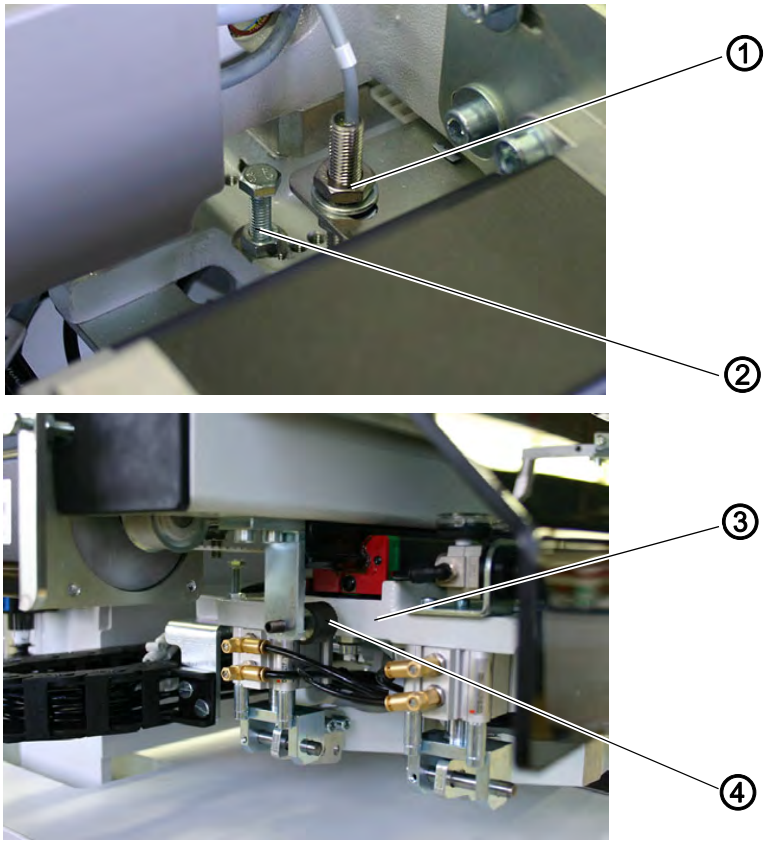
1. Loosen the lock nut on the switching screw.
2. Set the height of the screw (2). Set the distance between the switching

screw (2) and the reference switch (1) to max. 1 mm.

3. Tighten the lock nut.
4. Push the transport carriage (3) completely to the rear.
5. Check the distance of 1 mm between reference switch (1) and screw (2).

4.1.3 Stop for the transport carriage

Fig. 60: Stop for the transport carriage



(1) - Reference switch
(2) - Switching screw
(3) - Transport carriage
(4) - Stop

Standard checking

1. Push the transport carriage (3) far enough to the rear for the switching screw (2) to stand centrically underneath the reference switch (1).
2. Check whether the stop (4) has a difference of 2 mm to the transport carriage when it is in this position.

Correction

1. Push the transport carriage far enough to the rear for the switching screw (2) to stand centrically underneath the reference switch (1).
2. Loosen the lock nut on the stop (4).
3. Set the stop (4) 2 mm close to the transport carriage.
4. Tighten the lock nut on the stop (4).

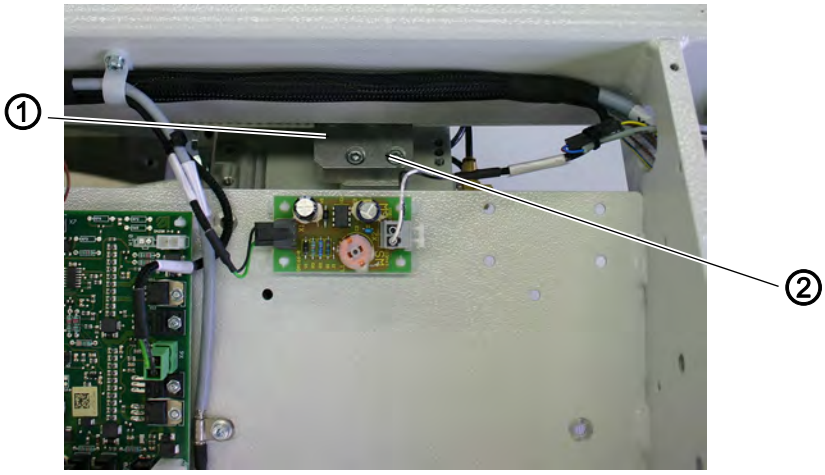
4.2 Changing the toothed belt

WARNING

Risk of injury due to moving parts!

Change the toothed belt only with the sewing unit switched off.

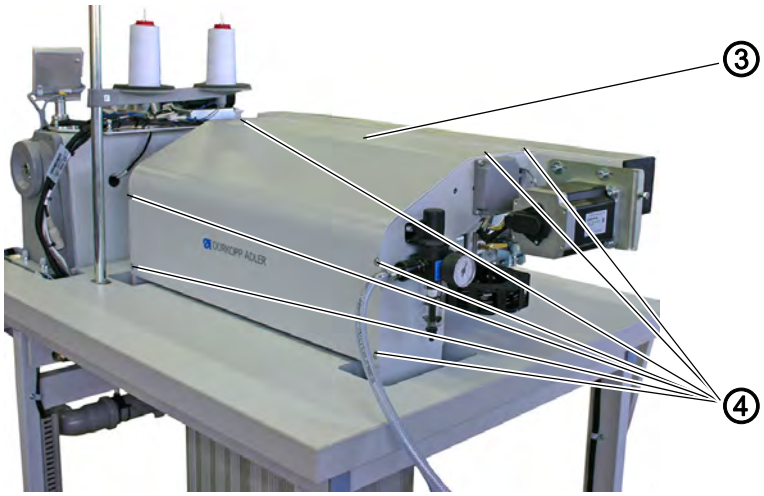
Fig. 61: Changing the toothed belt I



(1) - Belt clamp *(2) - Screw of the belt clamp*

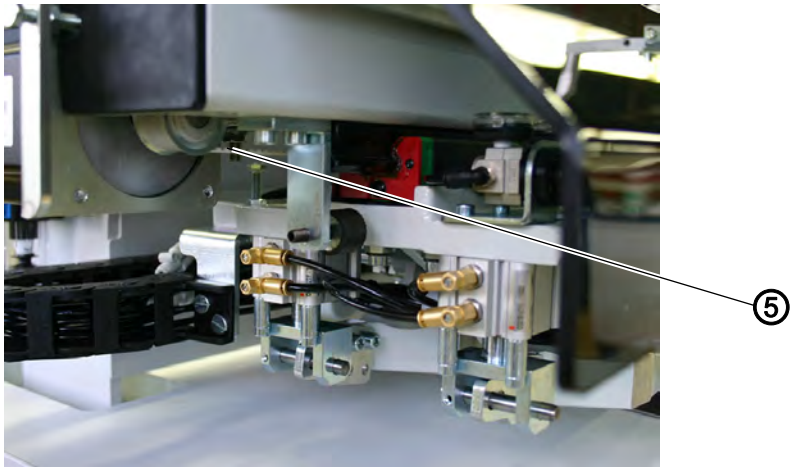
To facilitate its replacement the toothed belt is divided. It is kept together by the belt clamp (1).

Fig. 62: Changing the toothed belt II



(3) - Covering hood *(4) - Screws*

Fig. 63: Changing the toothed belt II

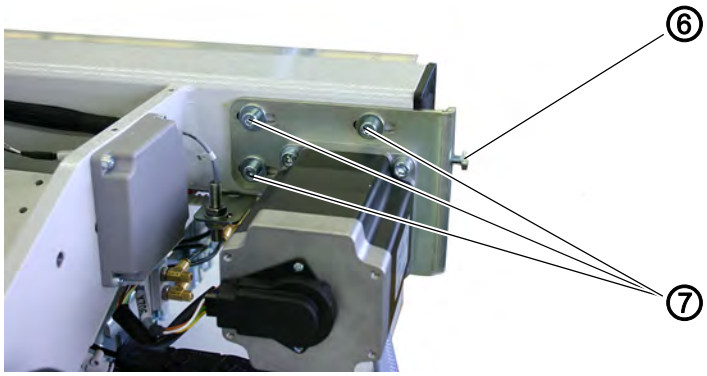


(5) - Toothed belt

Removing the old toothed belt

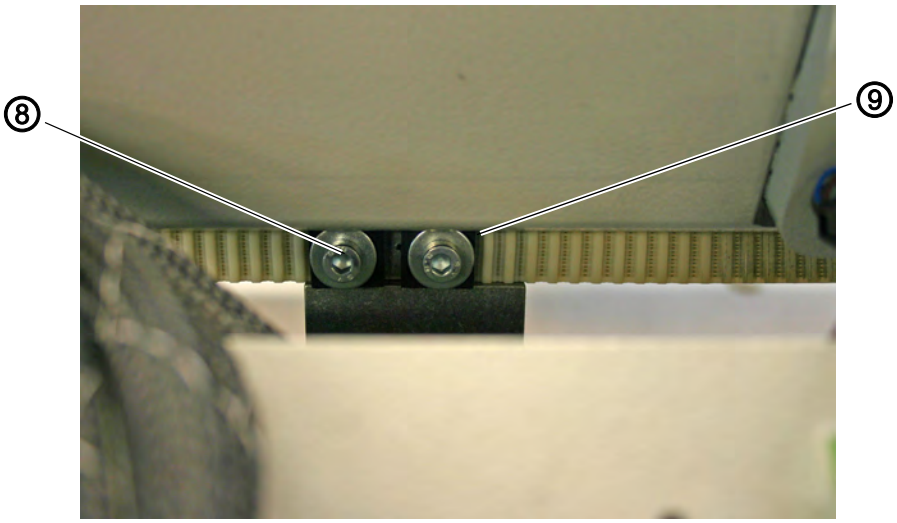
1. Remove the screws (4) and remove the covering hood (3).
2. Remove the screws on the belt clamp (2) and push the carriage to the side.
3. Slightly loosen the screws (7) (3 screws) and loosen the tension screw (6) to decrease the belt tension.
4. Turn the belt clamp by 90° and remove the screws on the belt clamping pieces (8).
5. Remove the toothed belt from the machine.

Fig. 64: Changing the toothed belt IV



(6) - Tension spring *(7) - Screws*

Fig. 65: Changing the toothed belt V



(8) - Screws on the belt clamping pieces (9) - Belt clamping pieces

Putting on a new toothed belt

(available by the meters, minimum length 1.45 m)

1. Pull the new toothed belt through the spar, make sure it runs over the two belt wheels.
2. Fix the loose ends of the toothed belt with the belt clamping pieces (9) on the belt clamp (1).
3. Place the belt clamp (1) above the carriage and fix it with the screws of the belt clamp.
4. Adjust the belt tension, 🕮 *4.3 Adjusting the belt tension*, p. 84.

4.3 Adjusting the belt tension

WARNING

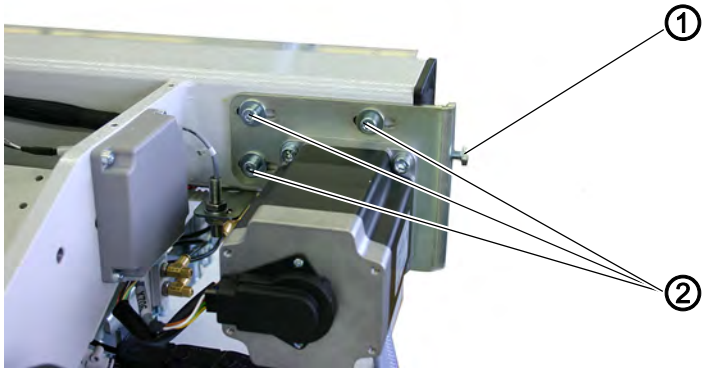
Risk of injury due to moving parts!

Turn off the main switch. Set the belt tension only with the sewing unit switched off.

It is useful to set the belt tension with a customary frequency meter (60Hz).

If you use a smartphone, you can download the Tension2Go App. This free application measures the pretension frequency and the pretension of industrial belts.
Of course, this app does not substitute a pretension measuring instrument, but it can quickly give a rough orientation.

Fig. 66: Adjusting the belt tension



(1) - Tension spring *(2) - Fastening screws*

1. Push the transport carriage (3) completely to the front.
2. Slightly loosen the fastening screws (2) (3x) of the motor support.
3. Set the belt tension with the tension screw (1) to 60Hz and lock it.
4. Tighten the fastening screws (2) (3x) of the motor support again.

Consequences of an excessive toothed belt tension

- Reduced durability
- Noisy running

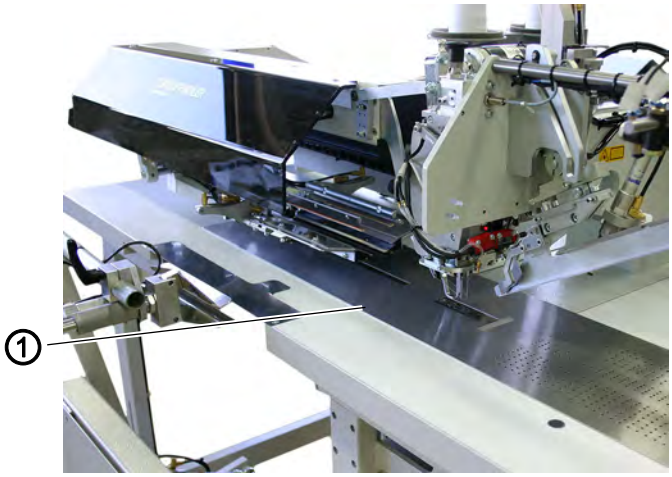
Consequences of an insufficient toothed belt tension

- No faultless meshing between belt teeth and disc toothing
- Skipping of teeth under load.
- Irregular stitch lengths
- Possible loss of steps

5 Feeding clamps

5.1 Measuring line for aligning feeding clamps and folder

Fig. 67: Aligning feeding clamps and folder



(1) - Edge of the sliding plate (measuring line)

For a free feed of the sewing material and in order to execute correct pocket openings, the folding and trimming tools as well as the marking lamps have to be aligned towards the center of the pocket opening. The center of the pocket opening is defined as the middle in between the two needle holders.

The setting and checking of the folding and trimming tools is done by means of the edge of the sliding plate (measuring line) (1).

The edge of the sliding plate (1) runs parallel to the feed direction with a distance of 100 mm.

5.2 Aligning the feeding clamp towards the measuring line

WARNING

Risk of injury due to moving parts!

Check the parallelism of the feeding clamps only with the sewing unit switched off.

Fig. 68: Aligning the feeding clamps I

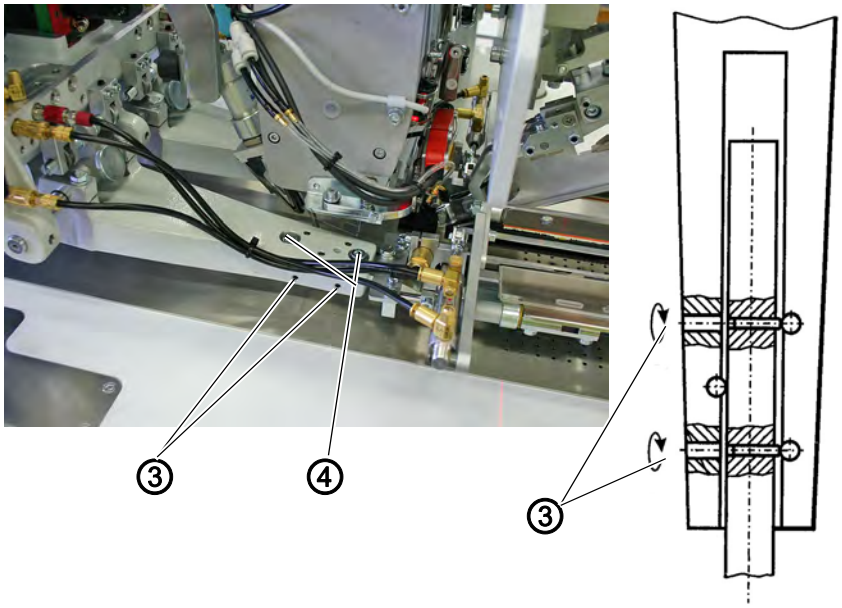
(1) - Feeding clamps *(2) - Edge of the sliding plate*

Standard checking

The feeding clamps (1) have to be parallel to the pick-up folder and to the sliding plate edge (2).

1. Push the feeding clamps (1) into the pick-up folder area.
2. Check the parallelism of the inner edge of the feeding clamps to the edge of the sliding plate (2).

Fig. 69: Aligning the feeding clamps II



(3) - Allen screws *(4) - Fastening screws*

Correction

1. Loosen screw (4) slightly.
2. Align the feeding clamp (1) with the Allen screws (3) (SW 2) in parallel. In order to do so, proceed as follows:
3. Turn the Allen screws (3) in clockwise or counter-clockwise direction until parallelism is attained.
4. Tighten the screws (4).

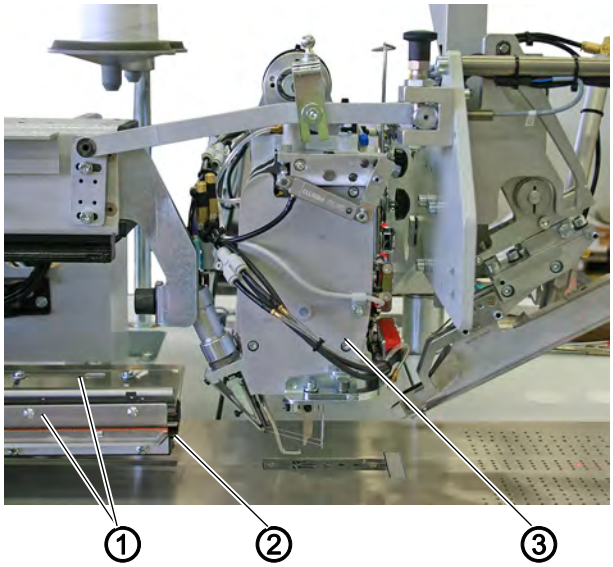
5.3 Height of the feeding clamp stroke

WARNING

Crushing hazard due to moving parts!

Check and adjust the height of the feeding clamp stroke only with the sewing unit switched off.

Fig. 70: Feeding clamp stroke I



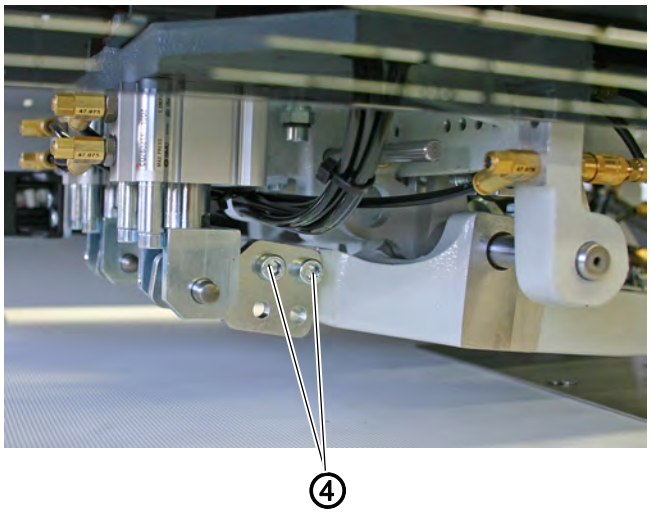
(1) - Flap clamps
(2) - Feeding clamps
(3) - Machine arm

Standard checking

When the flap clamps (1) are closed the lifted feeding clamps (2) have to pass by the machine arm (3) without striking against it.

1. The distance between the front edges of the lifted feeding clamps and the fabric sliding sheet should be approx. 20 mm to the left and to the right.
2. Push the transport carriage underneath the machine arm (3).
3. Check the stroke height of the two feeding clamps.

Fig. 71: Feeding clamp stroke II



(4) - Screws

Correction

The height of the stroke can be set by loosening the screws (4).

1. Check the height of the feeding clamp stroke in relation to the fabric sliding sheet.
2. Tighten the screws (4).

5.4 Distance between feeding clamps and folder sole

WARNING

Crushing hazard due to moving parts!

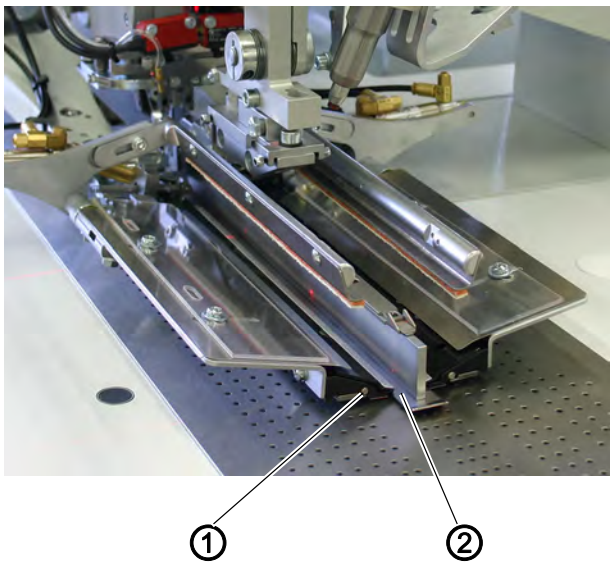
Check and set the feeding clamps only with utmost care when the sewing unit is switched on.

ATTENTION

Risk of material damage!

The clamp position has to be adjusted according to the folder used.

Fig. 72: Distance between feeding clamps and folder sole I



(1) - Feeding clamps *(2) - Folder sole*

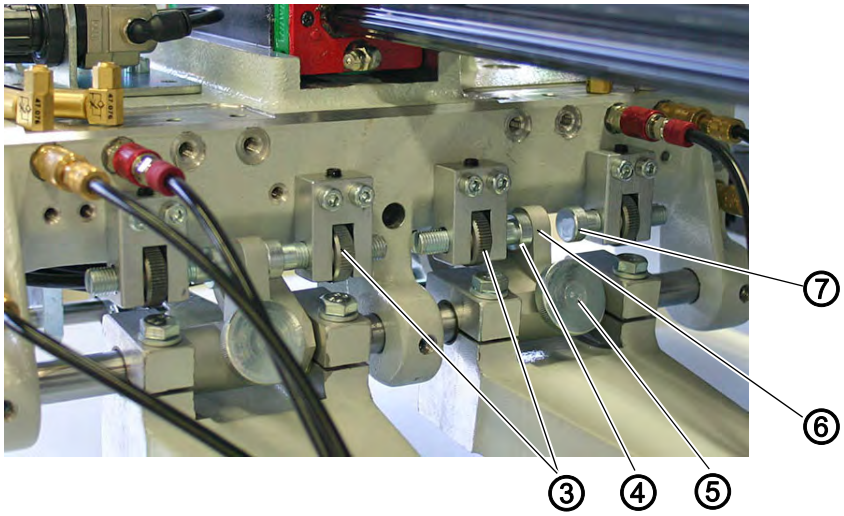
Standard checking

Between the outer edges of the folder sole (2) and the inner edges of the feeding clamps (1) has to be a certain distance. With medium-weight clothing fabric the distance should be approx. 1.0 mm to 1.5 mm.

This distance is required to ensure equal piping strips on both sides and an unhindered passage of the material.

1. Start the sewing process and check the distance between the outer edges of the folding sole (2) and the inner edges of the feeding clamps (1).

Fig. 73: Distance between feeding clamps and folder sole II



(3) - Knurled nut
(4) - Stop screw
(5) - Screw
(6) - Lever
(7) - Stop screw

Correction

For simple piping the stop screw (4) serves as stop for the lever (6), with double piping it is the stop screw (7).

1. Loosen screw (5).
2. Depending on the piping, push the lever (6) in front of stop screw (4) or (7).
3. Tighten the screw (5).

Fine adjustment:

The stop screws can be accurately adjusted with the knurled nut (3).

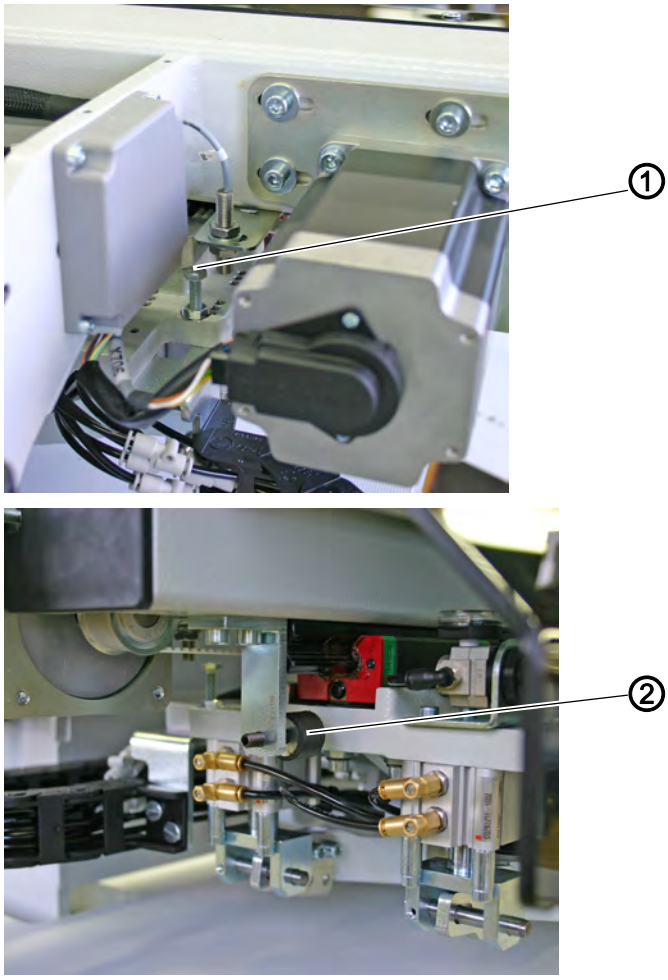
5.5 Rear end position of the feeding clamp

WARNING

Crushing hazard due to moving parts!

Set the feeding clamp only with utmost care.

Fig. 74: Rear end position of the feeding clamp



(1) - Reference switch *(2) - Rear stop*

Standard checking

1. Move towards the reference switch (1).
2. The feeding clamps moves to the rear end position (operator's view).
3. Dimensional control for the feeding clamp front edge:
   Distance A (front positioning point) + seam length + 15 mm.
   Thus the feeding clamp front edge has to measure
   111+180+15 = 306 mm from the needle center.

4. Measure the difference between the actual position and the determined nominal position.
5. Turn off the main switch.
6. Adjust the reference switch (1) by the difference, 📖 p. 78.
7. Adjust the rear stop (2), 📖 p. 80.
8. Turn the main switch on.
9. Execute another reference run and check the dimension of the feeding clamp's front edge.

6 Corner knives

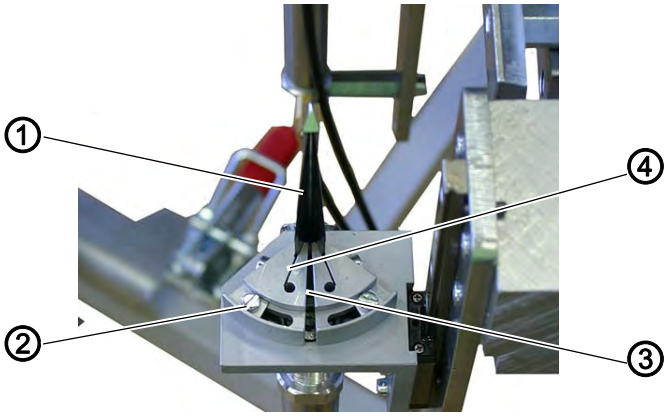
6.1 Presetting

WARNING

Risk of being cut by moving parts!

Do not reach into the area of the corner knives. The spurting corner knives can cause serious incisions. Setting operations on the running machine are to be effectuated with utmost care.

Fig. 75: Presetting corner knives



(1) - Corner knives
(2) - Screw
(3) - Front face
(4) - Corner knife carrier

1. In order to correctly set the corner knives' (1) position, the four corner knives are first of all put into a basic setting.
2. Loosen screw (2).
3. Turn the corner knife carriers (4) so that the front faces (3) face each other.
4. Tighten screw (2).
5. Set the other knife carriers as described.

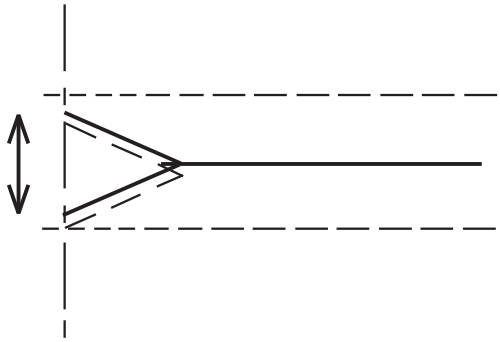
6.2 Setting the corner knife station according to the seams

WARNING

Risk of being cut by moving parts!

Set the corner knife station only with the sewing unit switched off.

Fig. 76: Setting the corner knives according to the seams I

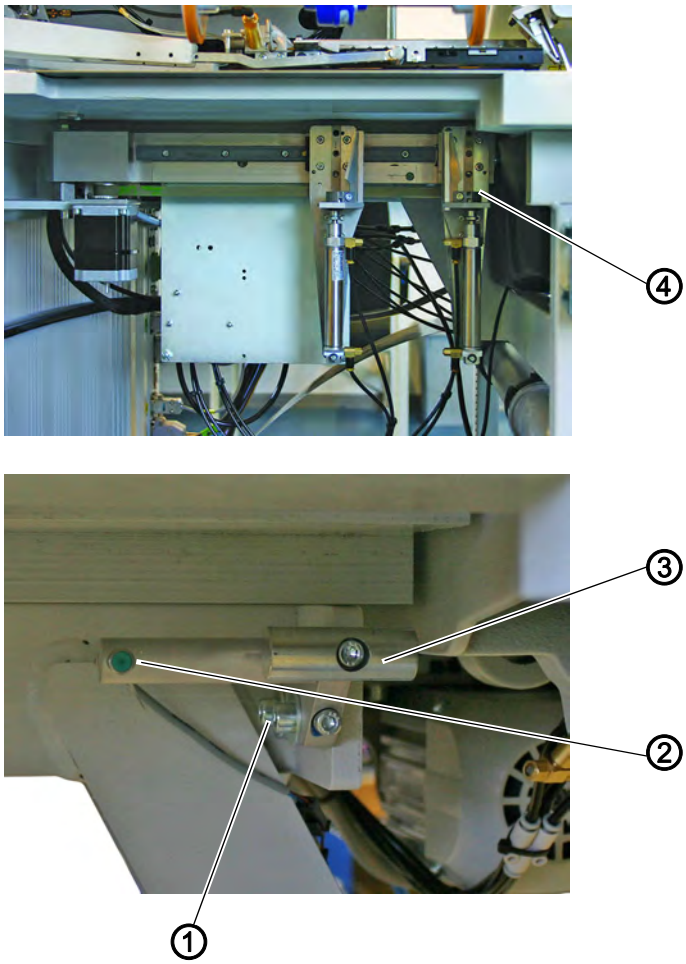


Standard checking

The corner incisions have to be symmetrical to the seams.

1. Iron a piece of Vilene onto the workpiece. This will help to make the corner incision visible.
2. Execute a test seam.
3. Check the sewing and incision pattern.

Fig. 77: Setting the corner knives according to the seams II



(1) - Screws
(2) - Switch
(3) - Holder
(4) - Corner knife station

Correcting the corner incision at seam end

1. Completely swing out the corner knife station (4).
2. Slightly loosen the screws (1).
3. Shift the carrier (3) accordingly.
4. Tighten the screws (1).
5. Swing the corner knife station back in.
6. Adjust the distance to the switch (2).

Fig. 78: Setting the corner knives according to the seams III

(5) - Screw *(6) - Eccentric*

Correcting the corner incision at seam beginning

1. Slightly loosen the screw (5).
2. Adjust the corner knife station with the eccentric (6).

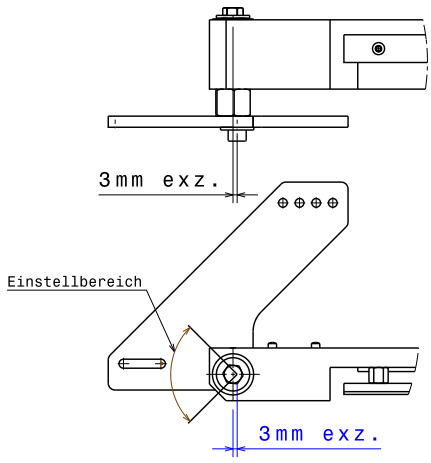
ATTENTION

Risk of material damage!

Mind the position of the eccentric.

Setting range

Fig. 79: Setting range



3. Tighten the screw (5).
4. Execute a test seam.
5. Check the sewing and incision pattern.

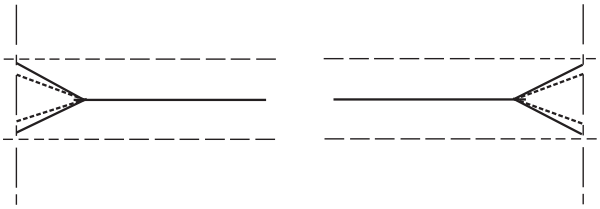
6.3 Setting the slant of the corner incisions

WARNING

Risk of being cut by moving parts!

Set the corner knives only with the sewing unit switched off.

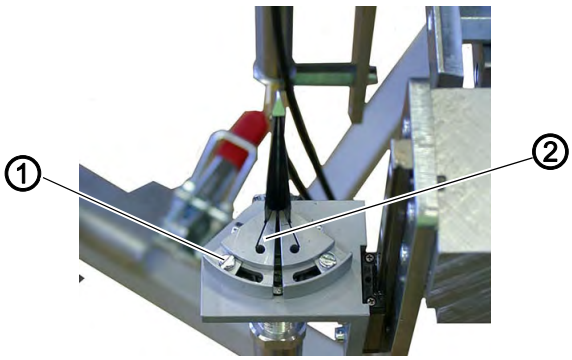
Fig. 80: Slant of the corner incisions I



Standard checking

The incisions of the corner knives should be as close as possible to the seam but must not cut through it.

Fig. 81: Slant of the corner incisions II



(1) - Screw *(2) - Corner knife carrier*

1. Execute a test seam. It is recommended to first iron a piece of Vilene onto the workpiece. This helps to make the corner incisions visible.
2. Check the sewing and incision pattern.
3. Loosen screw (1).
4. Adjust the knife carrier (2) accordingly.
5. Tighten the screw (1).
6. Adjust the other three knife carriers according to the seam pattern.

6.4 Replacing the corner knives

WARNING

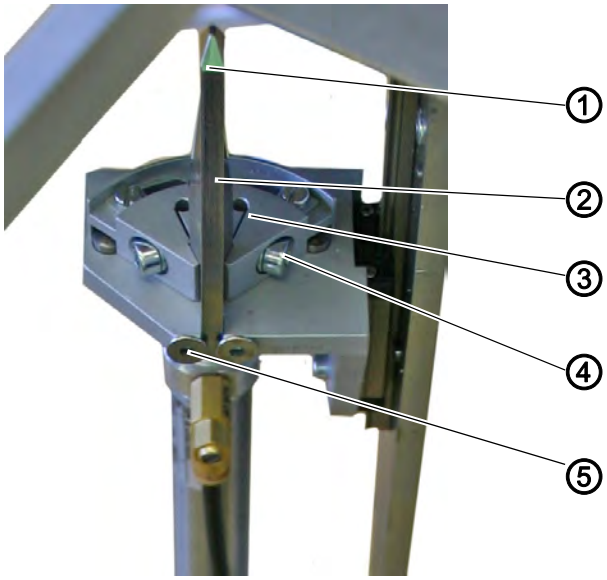
Risk of being cut by moving parts!

Replace the corner knife station only with the sewing unit switched off. Do not reach into the sharp blades of the corner knives.

Replace blunt knives against a set of knives contained in the accessories.

Additional corner knives can be ordered with the number indicated on the parts list.

Fig. 82: Replacing the corner knives



(1) - Piercer
(2) - Corner knives
(3) - Knife carrier
(4) - Screw
(5) - Screws of the piercer

1. Swing out the corner knife station
2. Remove the piercer (1).
3. Loosen the screw (4).
4. Remove the old corner knife.
5. Insert a new corner knife (2) into the knife carrier (3).
6. Tighten the screw (4).
7. Put the piercer (1) back into place - the tip of the knife has to be underneath the piercer (1).
8. Swinging the corner knife station in.

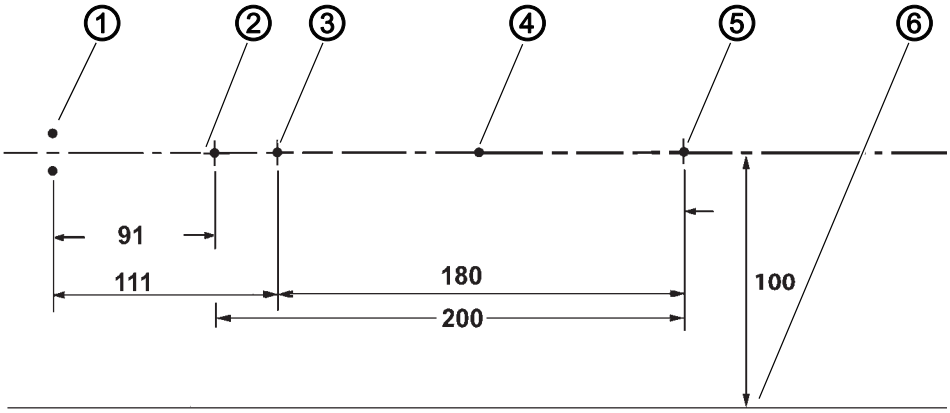
7 Laser markings

3 laser modules for the marking of the positioning points are part of the 745-35 S standard equipment.

The positions for fixing the laser modules are described in 🕮 *7.1 Aligning the laser modules*, p. 104.

An adjustment template is available under Order No. 0745 290050.

Abb. 83: Laser markings



Laser markings

Number	marking
1	Needles
2	Cutting line
3	Marking front positioning point
4	Center of pocket opening
5	Marking rear positioning point
6	sliding plate edge (measuring line)

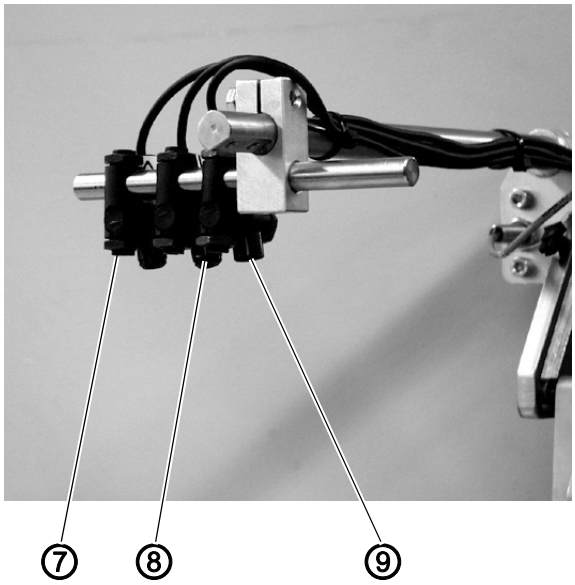
7.1 Aligning the laser modules

WARNING

Risk of injury

Do not look directly at the light source.

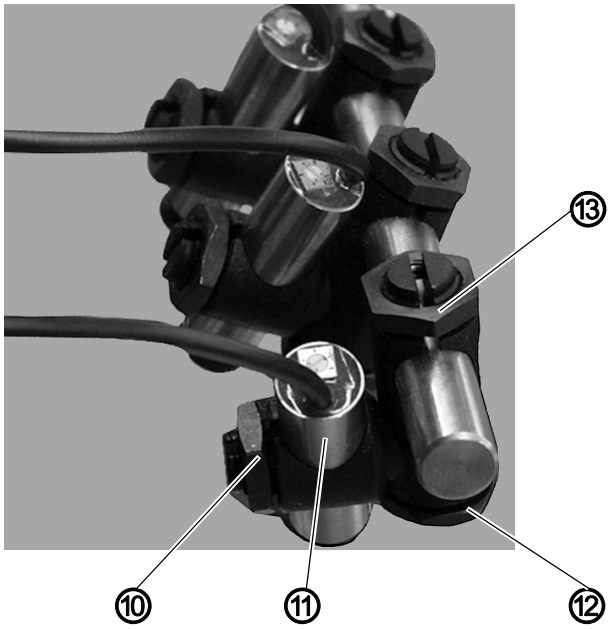
Abb. 84: Aligning the laser module I



(7) - Laser module seam end
(8) - Laser module center of pocket opening
(9) - Laser module seam beginning

1. Laser module (9) marks the seam beginning, laser module (8) the center of the pocket opening and laser module (7) the seam end.
2. The markings (3) and (4) have to be aligned according to the cutting line (2) (center of pocket opening).
3. The distance between the center of the pocket opening and the sliding plate edge (measuring line) has to be 100 mm.

Abb. 85: Aligning the laser module II



(10) - Lock nut
(11) - Laser
(12) - Lock nut
(13) - Lock nut

4. Slightly loosen the lock nuts (12) and (13).
5. Adjust the distance and angle of the laser module towards the cutting line (2) by shifting and turning.
6. Tighten the lock nuts (12) and (13).
7. Slightly loosen the lock nut (10).
8. Align the laser line by turning the laser module (11).
9. Tighten the lock nut (10) again.

After adjusting the laser modules, imperatively heed the following points:

- Check the marking and its alignment towards the pocket center.
- Respect the maximum sewing area.

8 Light barriers

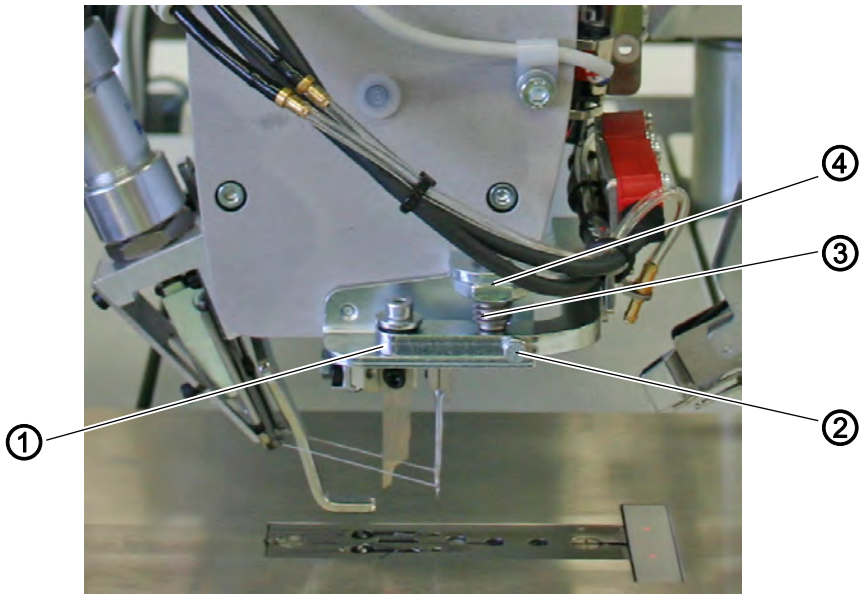
8.1 Rotary arm

WARNING

Risk of injury due to moving parts!

Set the rotary arm of the reflecting light barriers only with the sewing unit switched off.

Abb. 86: Rotary arm of the light barriers



(1) - Rotary am
(2) - Screw with lock nut
(3) - Locking screw
(4) - Lock nut

Standard checking

The rotary arm (1) should stand in parallel position to the machine arm. When swinging in front of the arm it has to snap in safely.

1. Swing out the rotary arm (1) with the light barriers.
2. Swing the rotary arm (1) back in and check the pressure of the locking screw (3).
3. Check the position of the rotary arm (1) in relation to the machine arm.

Correction

1. Loosen the lock nut (4).
2. Turn the locking screw (3).

In clockwise direction =	Snapping pressure increases
In counter-clockwise direction =	Snapping pressure decreases

3. Tighten the lock nut (4).
4. Loosen the lock nut (2).
5. Align the rotary arm in parallel position to the machine arm with screw (2).
6. Tighten the lock nut (2).

8.2 Setting the light-barrier for the flap

How to set the light barrier for the flaps, you can read in 📖 *Setting the light-barrier for the flap*, p. 148.

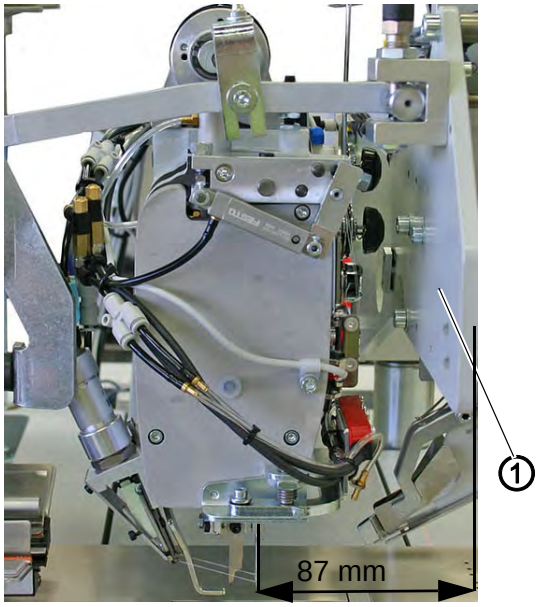
9 Folding station plate

WARNING

Risk of injury

Set the folding station plate of the loading station only with the sewing unit switched off.

Abb. 87: Folding station plate



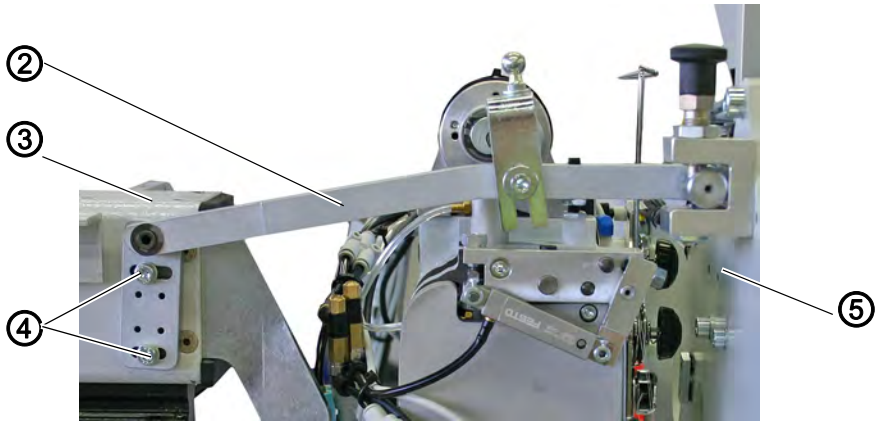
(1) - Folding station plate

Standard checking

The distance between the center of the needle and the exterior of the folding station plate has to be 87 mm.

1. Prolong the folding station plate (1) by means of a rail or an angle piece to match the sliding plate surface.
2. Check the distance to the needle.

Abb. 88: Correction folding station plate



(2) - Lock lever
(3) - Carrier
(4) - Screws
(5) - Folding station

Correction

The position of the lock lever (2) has been set and bolted with two locking pins (Ø 2 mm) in the factory. If a correction is necessary, the locking pins have to be knocked out.

1. Knock out the locking pins (2x) by using appropriate auxiliary means.
2. Slightly loosen the screws (4) (2x) on the plate of the lock lever (2).
3. Set the distance between the prolonged surface of the folding station (5) and the needles of the machine head to 87 mm.
4. Tighten the screws (4) (2x) on the plate of the lock lever (2) again.
5. Bolt the plate of the lock lever (2) with the carrier (3) again. In order to do so, use new locking pins and the two idle holes of the four drill-holes on the plate of the lock lever (2).

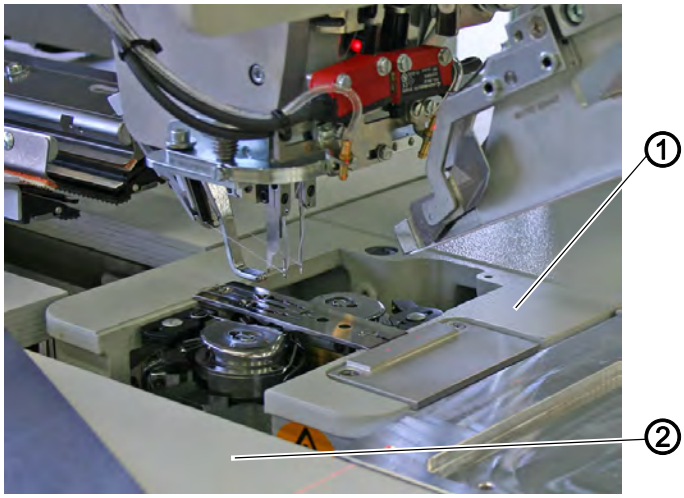
10 Aligning the machine head

WARNING

Risk of injury due to moving parts!

Set the machine head only with the sewing unit switched off.

Abb. 89: Aligning the machine head I



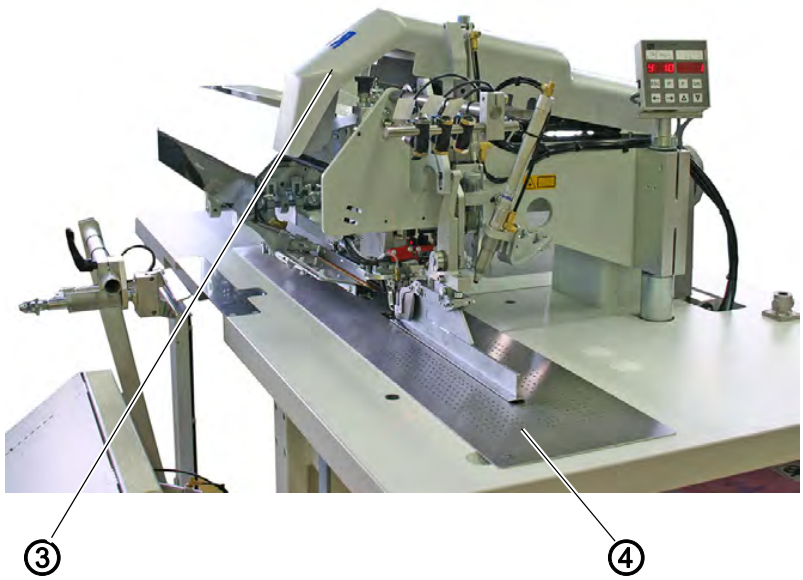
(1) - Base plate *(2) - Table plate*

Standard checking

The offset surface (approx. 1.5 mm lower) of the machine head's base plate (1) has to be over its whole length on the same level as the table plate (2).

1. Push the feeding clamps to the back.
2. Lift the sliding sheet (4) at the front and swing it to the left.
3. Check the height of the base plate.

Abb. 90: Aligning the machine head II

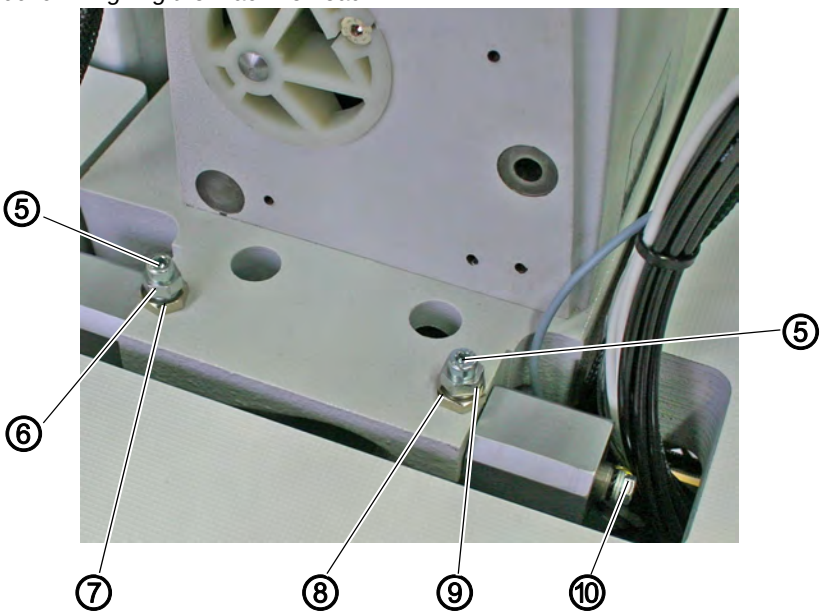


(3) - Cover

(4) - Sliding plate

Correction

Abb. 91: Aligning the machine head III



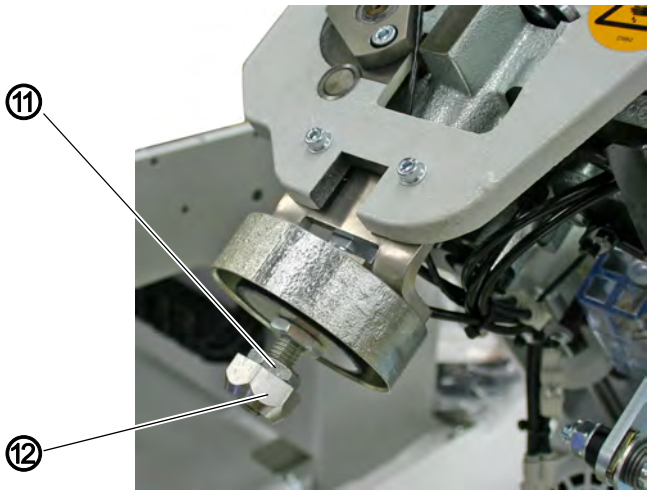
(5) - Screw
(6) - Bushing
(7) - Lock nut
(8) - Lock nut
(9) - Bushing
(10) - Equipotential bonding

Rear of the machine head

1. Remove the cover (3).
2. Loosen the lock nuts (7) and (8).

3. Turn the bushings (6) and (9) equally with an Allen key while retaining the screws (5).
4. Tighten the lock nuts (7) and (8).

Abb. 92: Aligning the machine head III



(11) - Lock nut *(12) - Centering nut*

Front of the machine head

1. Swing up the machine head (📖 *3.3 Tilting the machine head up*, p. 16).
2. Loosen the lock nut (11).
3. Turn the centering nut in or out, if needed.
4. Tighten the lock nut (11) again.
5. Swing the machine head back.

11 Folder

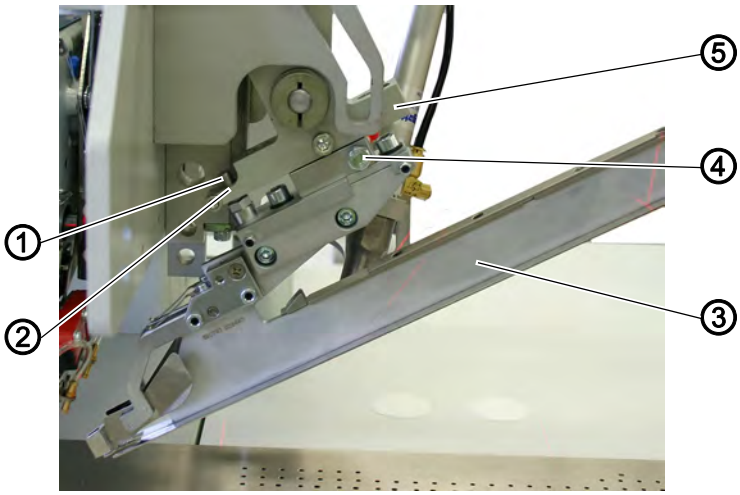
11.1 Correct fixing

WARNING

Risk of injury due to moving parts!

Remove and install the folder only with the main switch switched off.

Fig. 93: Fixing the folder



(1) - Pin
(2) - Operating lever
(3) - Folder
(4) - Screw
(5) - Clamping collar

Standard checking

The folder (3) has to be pushed upwards until it abuts on the clamping collar (5).

The pin (1) has to sit in the drill-hole of the operating lever (2).

Correction

1. Loosen screw (4).
2. Push the folder (3) upwards as far as it will go.
3. Tighten the screw (4).

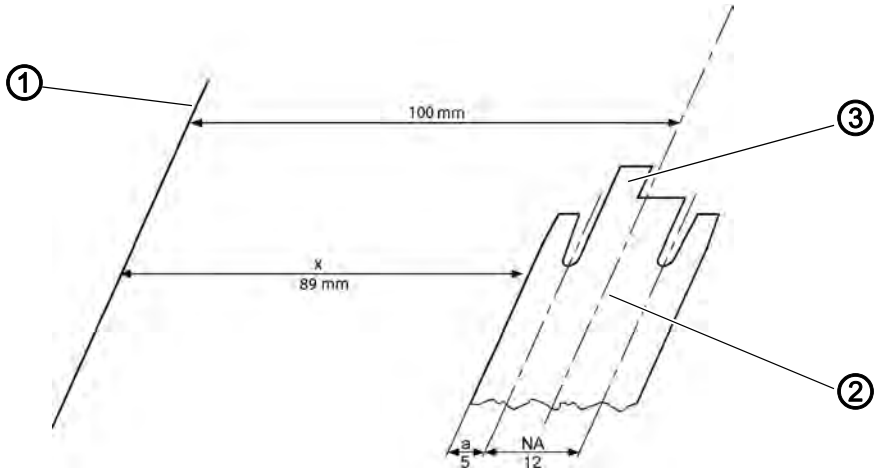
11.2 Aligning the folder towards the center of the pocket opening

WARNING

Risk of injury due to moving parts!

Align the folder towards the center of the pocket opening only with the main switch switched off.

Fig. 94: Aligning the folder I



(1) - Edge of the sliding plate (measuring line)
(2) - Center of the pocket opening
(3) - Folder sole

Standard checking

When it is correctly fixed, the folder can be aligned from the edge of the sliding plate (1) towards the center of the pocket opening.

Dimension x is to be determined according to the width of the folder sole (3). By using this dimension the folder can be aligned to the center of the pocket opening (2) and parallel to the sliding plate edge (1).

Deduct the piping width a and half of the needle distance NA from the dimension 100 mm.

Example as shown in the sketch:

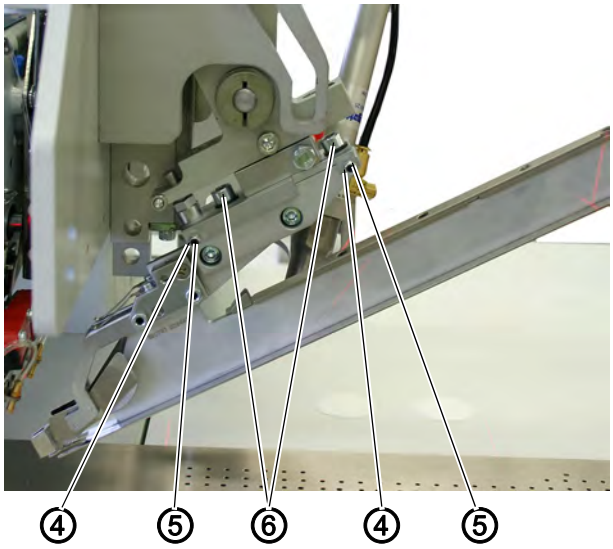
100 mm - a - 1/2 x NA = x
100 mm - 5 mm - 1/2 x 12 mm = 89 mm

Check the distance of the folder sole (3) to the sliding plate edge (1).

Dimension A

NA	a
10	4
12	5
14	6
16	6.5
20	8.5

Fig. 95: Aligning the folder II



(4) - Nut
(5) - Threaded pin
(6) - Screws

Correction parallelism

1. Depressurize the machine and push down the folder manually.
2. Slightly loosen the screws (6).
3. Loosen the nuts (4) and turn the threaded pins (5) until the dimension x is adjusted over the complete length of the sole.
4. Tighten the nuts (4).
5. Tighten screws (6).

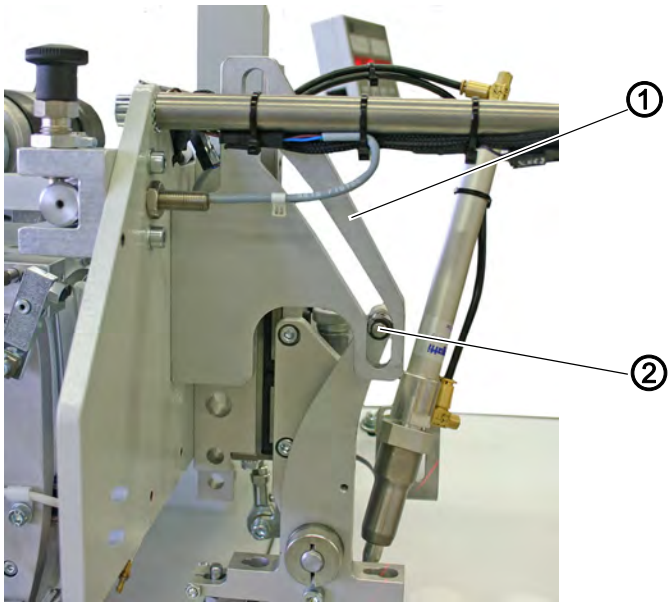
11.3 Lifting motion of the folder

WARNING

Risk of injury due to moving parts!

Set the lifting motion of the folder only with the sewing unit switched off.

Fig. 96: Lifting motion of folder I



(1) - Cam plate *(2) - Guide roller*

Standard checking

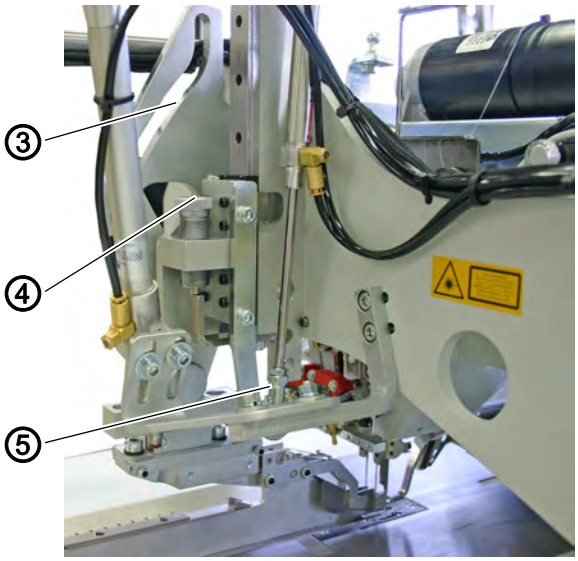
With the folder lowered

The cam plate (1) is set in a way that the folder upon lifting is first lifted vertically for approx. 6 mm before it is swung out of the sewing area.

With the folder lifted

When the folder is lifted there still has to be some clearance between the guide roller (2) and the highest point of the guide groove (3).

Fig. 97: Lifting motion of folder II



(3) - Guide groove
(4) - Screw
(5) - Joint head

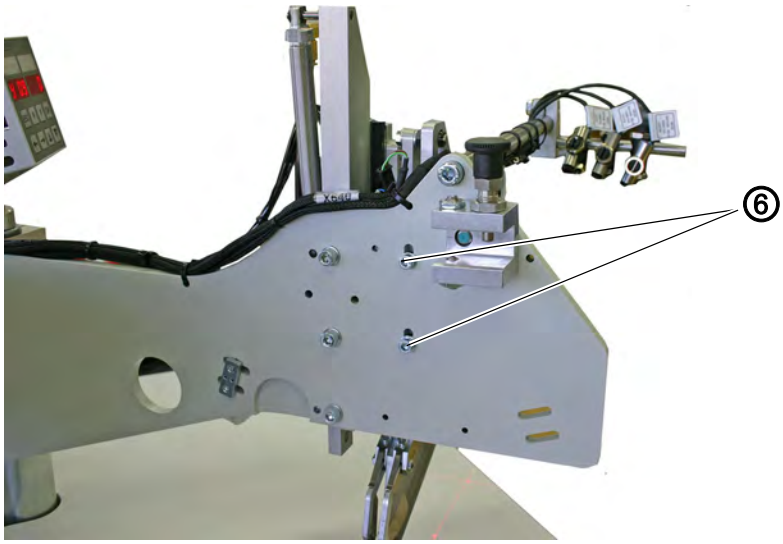
Correction

WARNING

Risk of injury due to moving parts!

Set the guide groove of the folder only with the sewing unit switched off.

Fig. 98: Lifting motion of folder III

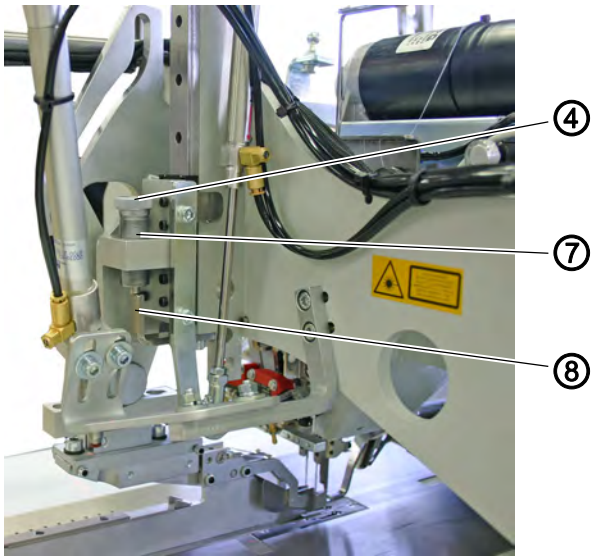


(6) - Screws

1. Loosen the screws (6).
2. Shift the cam plate (1) in the slotted holes.
3. Tighten screws (6).
4. If needed, turn the joint head (5) on the piston rod of the cylinder.

↳ In case the folder collides when swinging out with the rotary arm of the reflecting light barriers (📖 *8.1 Rotary arm*, p. 107), the cam plate (1) needs to be readjusted.

Fig. 99: Lifting motion of folder IV



(4) - Screw
(7) - Stop screw
(8) - Stop

Stop screw with spring

Standard checking

The stop screw (7) has to be set in a way that there is a distance of 1-2 mm (depending on the fabric) between the sole of the lowered folder and the sliding plate.

The integrated spring pushes back the folder so that the piping strip is seized at sewing (the cylinder is without pressure during this sequence).

1. Turn the stop screw (7) so that it bears against the stop (8) when the folder is lowered (Make sure it snaps in).
2. Adjust the spring pressure with screw (4) in stop screw (7) so that the folder is pushed back.

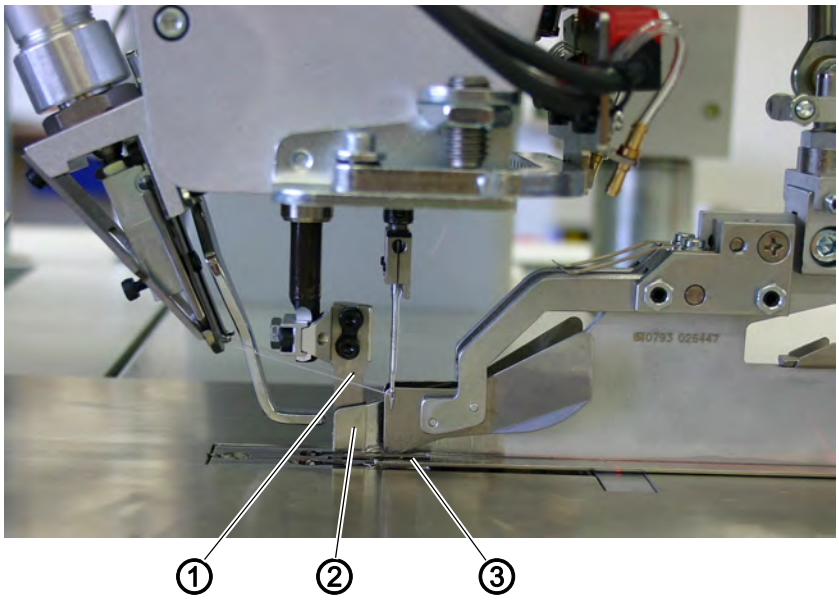
11.4 Position of the folders towards the needles

WARNING

Risk of injury due to moving parts!

Align the folder towards the needles and the center knife only with the sewing unit switched off.

Fig. 100: Position folder towards needles I



(1) - Center knife
(2) - Center knife guard
(3) - Folder sole

Standard checking

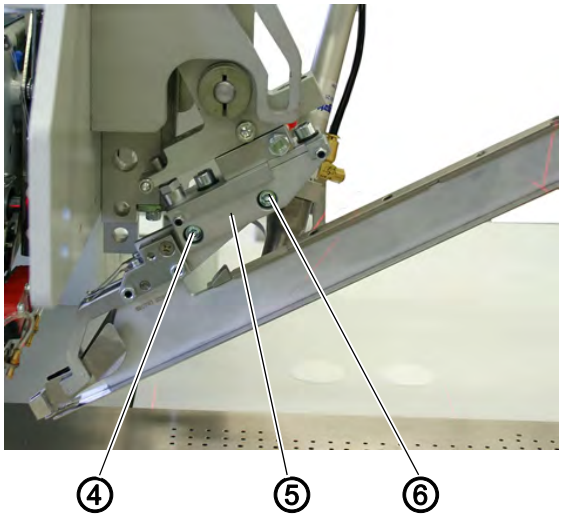
With the folder fixed correctly the following conditions have to be fulfilled:

When the folder is lowered the needles have to plunge into the needle holes of the folder sole (3) without any hindrance (without being deflected).

When the center knife (1) enters the center knife guard (2), the rear knife edge has to be flush with the knife guard (2).

1. Push the folder manually all the way down.
2. Check the position of the folder sole (3) towards the needles and the center knife (1).

Fig. 101: Position folder towards needles II



(4) - Screw
(5) - Folder
(6) - Screw

Correction

1. Loosen the screws (4) and (6).
2. Shift the folder (5) in sewing direction.
3. Tighten screws (4) and (6).

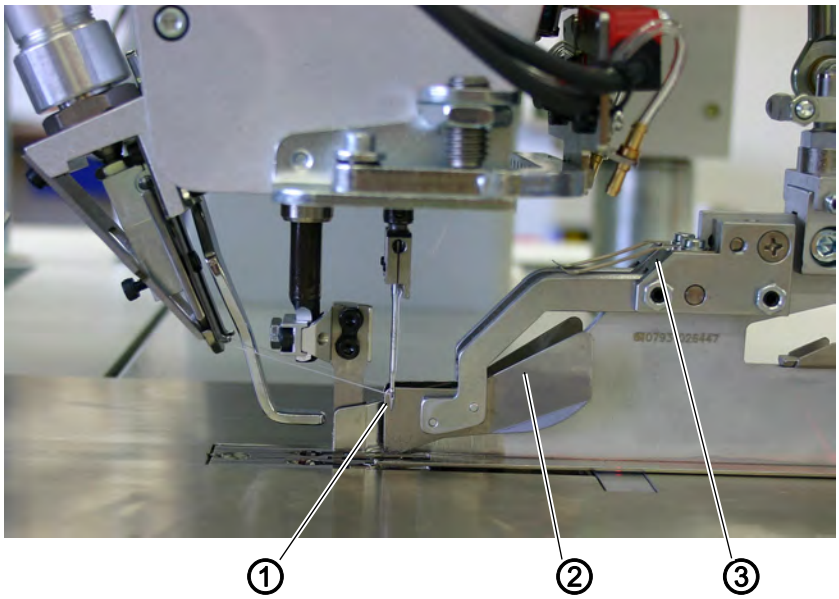
11.5 Guide plates on the folder

WARNING

Risk of injury due to moving parts!

Set the guiding plates only with the sewing unit switched off.

Fig. 102: Guiding plates on the folder I



(1) - Edges
(2) - Guide plates
(3) - Leaf springs

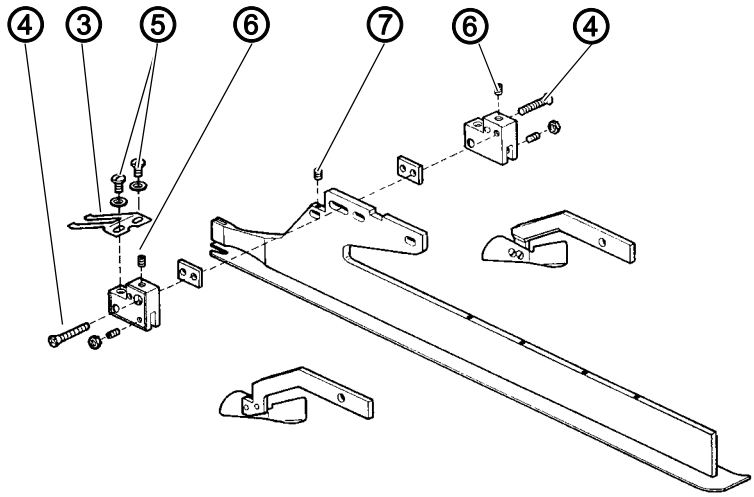
Standard checking

When the folder is lowered the edges (1) of the guide plates (2) should protrude approx. 1 mm behind the needles.

The spring leafs (3) hold down the guide plates (2) with low pressure. Adjust the pressure so that the resilient guide plates (2) can easily be lifted by the fed piping strip or by the flap.

1. Lower the folder.
2. Check the guide plates' (2) position towards the needles.
3. Check the spring pressure of the guide plates (2).

Fig. 103: Guiding plates on the folder II



(3) - Leaf springs
(4) - Screws
(5) - Screws
(6) - Threaded pins
(7) - Threaded pin

Correction

1. Align the guide plates (2).
2. Loosen the screws (4).
3. Loosen the threaded pin (7).
4. Adjust the guide plates (2) in longitudinal direction.
5. Adjust the threaded pins (6).
   The lower edge of the guide plates should be approx. 1 to 2 mm above the fabric sliding plates.
6. Tighten screws (4).
7. Tighten the threaded pin (7).

Setting the spring pressure

1. Loosen the screws (5).
2. Adjust the pressure by aligning the spring leafs (3).
3. Tighten screws (5).

12 Stacker

The following basic settings of the stacker have already been carried out at the factory before delivery. They only need to be corrected in exceptional cases.

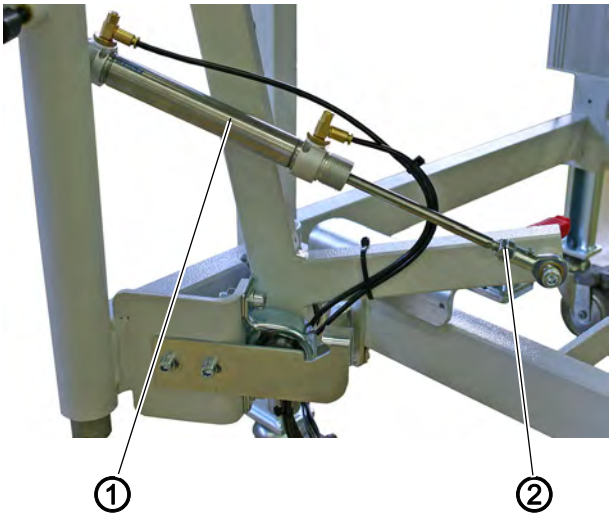
WARNING

Crushing hazard due to moving parts!

Switch off the main switch and disconnect the stapler from the compressed air supply before carrying out any adjustment.

12.1 Position of the gripper towards the table top

Abb. 104: Position of the gripper towards the table top



(1) - Cylinder *(2) - Lock nut*

Standard checking

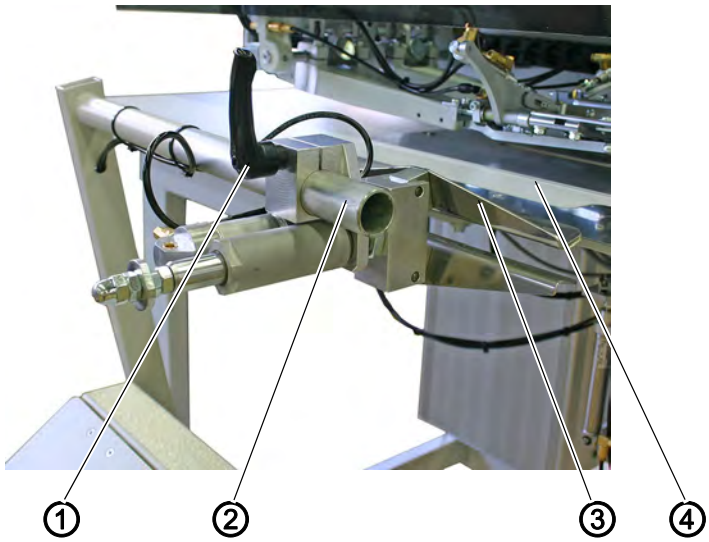
The opened gripper should be positioned towards the table top in a way that the sewing material can be transported without any hindrance.

Correction

1. Loosen the lock nut (2).
2. Turn the piston rod of the cylinder (1) in or out.
3. Tighten the lock nut (2).

12.2 Height of the gripper

Abb. 105: Height of the gripper



(1) - Clamping lever
(2) - Axis
(3) - Gripper
(4) - Plate

Standard checking

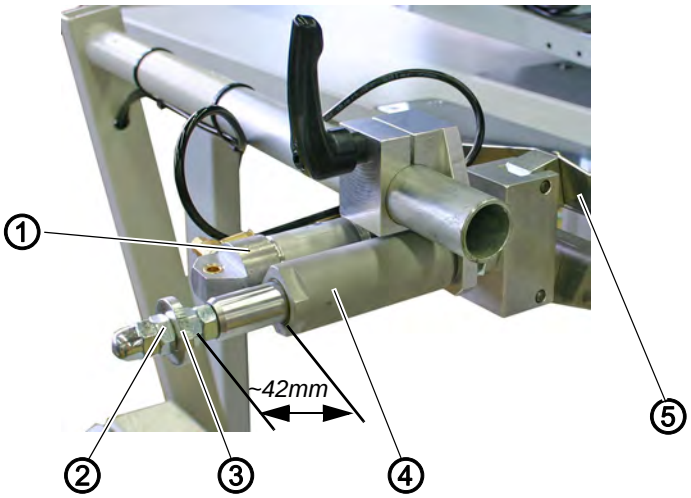
The closed gripper (3) should be on the same level as the plate (4) on the table top.

Correction

1. Loosen the clamping lever (1).
2. Push the gripper (3) manually to the front until the grippers are closing.
3. Tighten the clamping lever (1).
4. By loosening the clamping lever (1) the gripper can be shifted on the axis (2) in both directions.

12.3 Adjusting the position and the closing of the gripper

Abb. 106: Position/closing of gripper



(1) - Cylinder
(2) - Nut
(3) - Disc
(4) - Bushing
(5) - Grippers

Standard checking

When the cylinder (1) extends the disc (3) reaches the bushing (4) after ~ 42 mm.

This is the top front position of the grippers (5) (from this position on the grippers close when the cylinder (1) continues to extend and clamp the sewing material).

Correction

The front position and the closing of the grippers (5) is determined by the position of the disc (3).

1. Loosen nut (2).
2. Adjust the disc (3).
   Decreasing the distance between disc and bushing
   = Increasing the clamping pressure
   Increasing the distance between disc and bushing
   = Decreasing the clamping pressure
3. Tighten the nut (2).

Note:

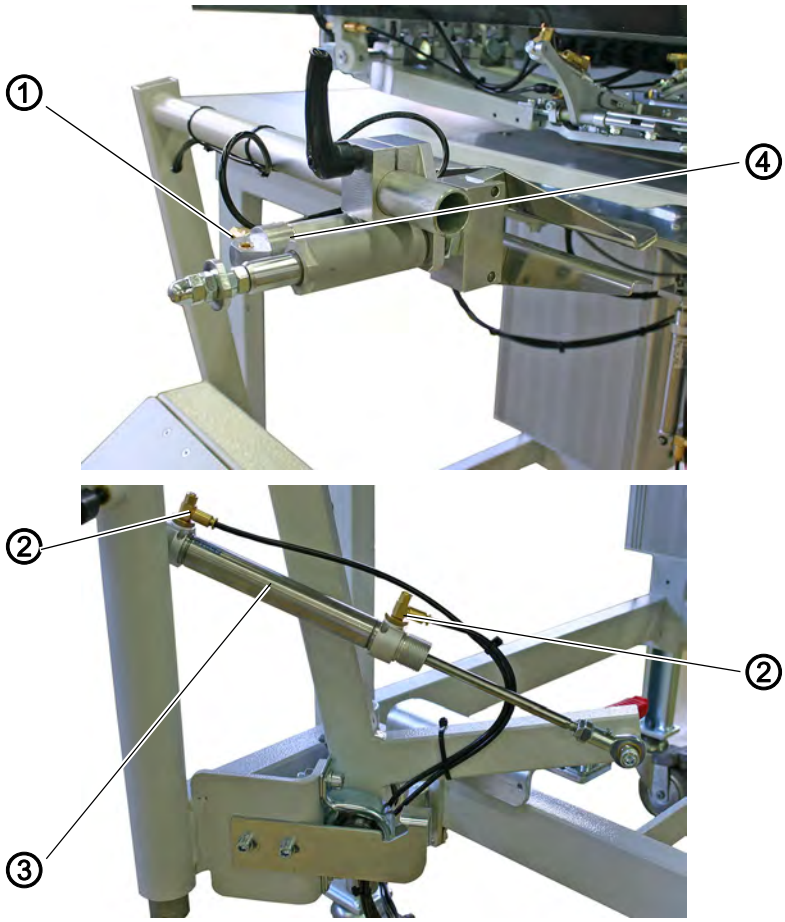
When creating a pocket program the “position of the feeding clamp after sewing” can be determined and the position of the stacker gripper be adjusted.

12.4 Speed of the cylinder

The speed can be adjusted with the throttle valves (1) and (2) on the cylinders (3) and (4).

Set the throttle valves on cylinder (3) so that the lever reaches the end position rapidly, but does not pop out.

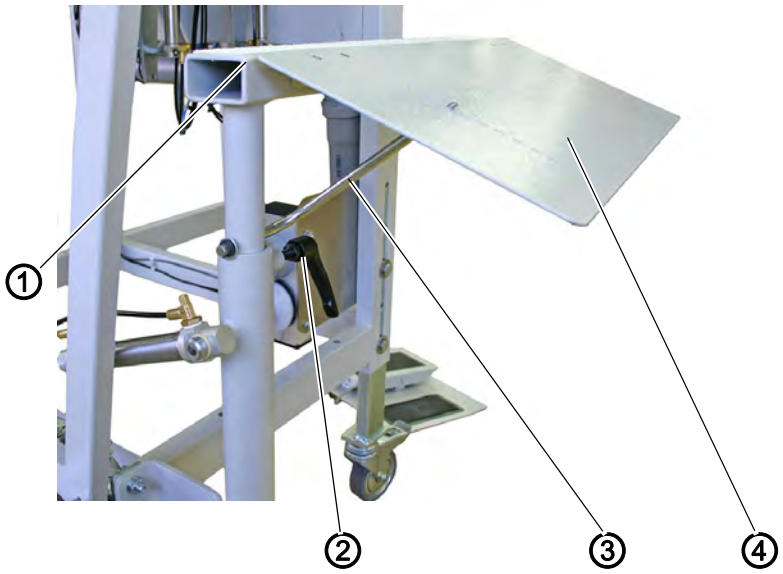
Abb. 107: Speed of the cylinder



(1) - Throttle valve cylinder 1
(2) - Throttle valves cylinder 2
(3) - Cylinder
(4) - Cylinder

12.5 Position of the stacking table

Abb. 108: Position of the stacking table



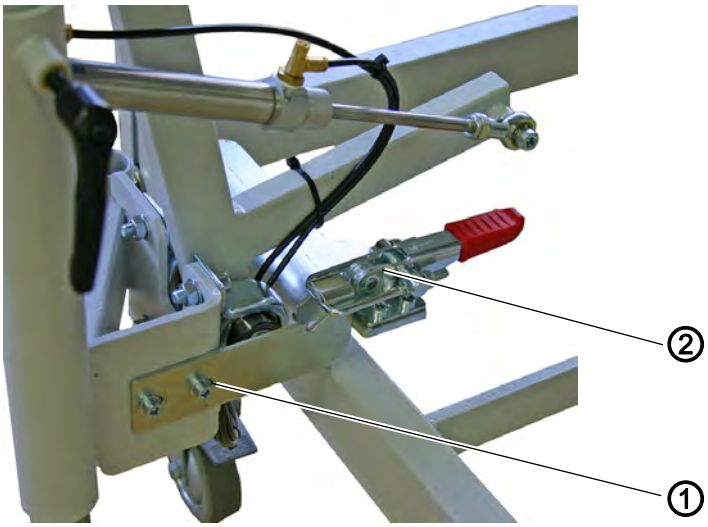
(1) - Holder
(2) - Clamping lever
(3) - Locking lever
(4) - Stacking table

The height of the holder (1) with the stacking table (4) can be set in a way that workpieces with different lengths and bundles of different sizes can be stacked.

1. Loosen the clamping lever (2) and adjust the position.
2. Tighten the clamping lever (2).
3. The stacking surface can be adjusted (short and long workpieces) by swinging the stacking table (4).
4. If the correct position has been determined, the locking lever (3) is pushed into an appropriate drill-hole on the stacking table (4)

12.6 Swinging the stacker aside

Abb. 109: Swinging the stacker



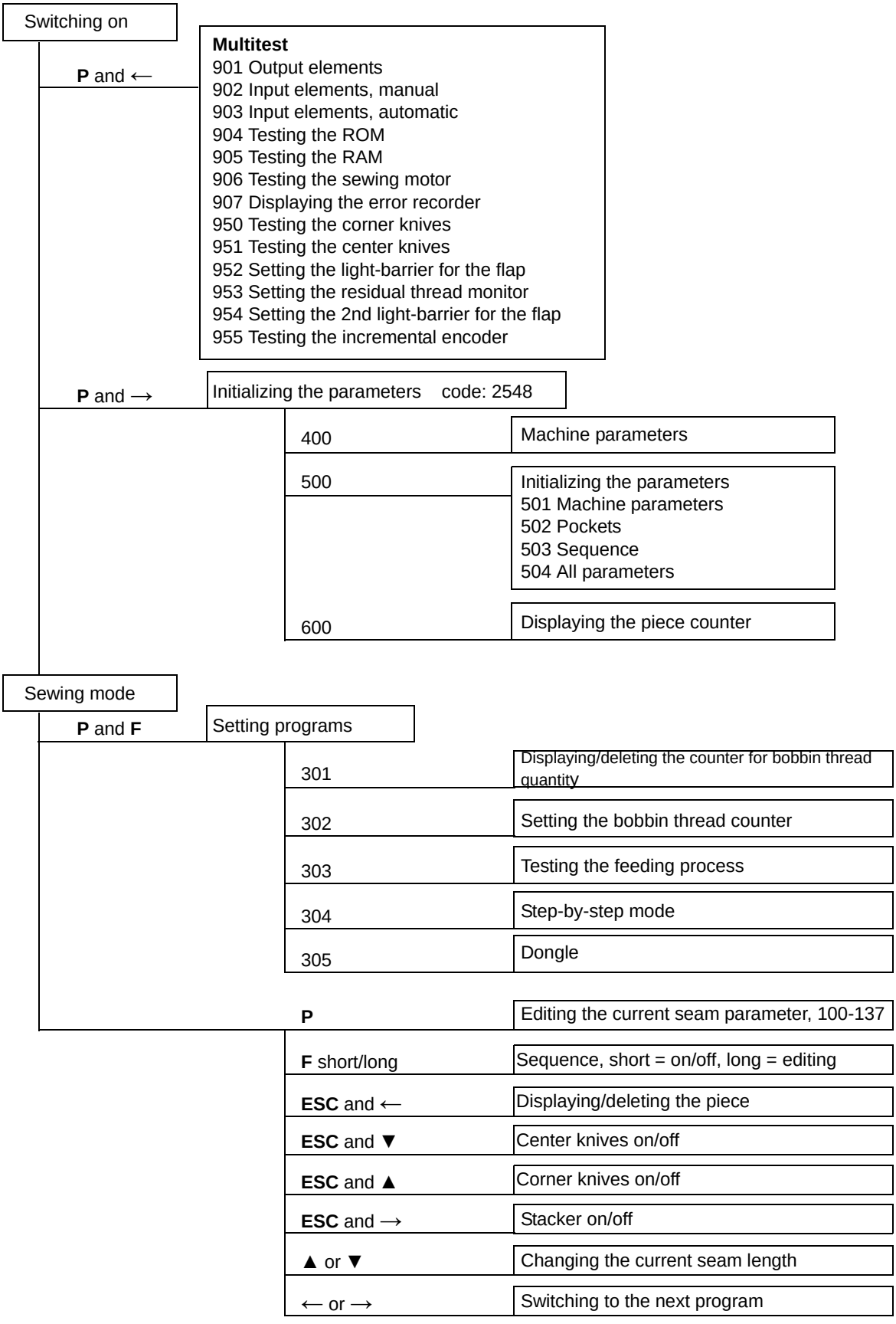
(1) - Locking plate *(2) - Quick release*

For the adjustment of the corner knives it is possible to swing the stacker aside.

1. Loosen the quick release (2).
2. Swing the stacker aside.
3. Swing the stacker back into its original position after the adjustment operations.
4. Tighten the quick release (2).
5. With the locking plate (1) the stacker can be set in parallel position to the machine.

13 Service settings via the software

Fig. 110: Structure of menu



13.1 Operation

After switching on the machine is operated via the control panel.

Fig. 111: Operating panel

If you do not press one of the key combinations (**P** and →) or (**P** and ←) within 2 seconds after switching the machine on, the program will switch to the sewing mode.

For this the machine has to first execute a reference run that is started with the pedal.
Until then the following message will be flashing on the display:

Fig. 112: Message after switching on

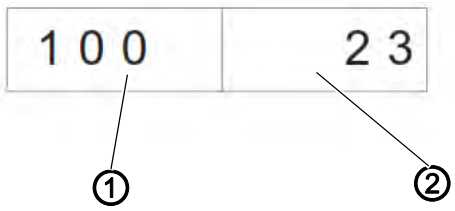
13.1.1 Editing a pocket program

When the machine is in its basic position and in the sewing mode and the key **P** is actuated, you get into the level for editing the current pocket program.

In case the feeding process has been started already, this is not possible. In order to do so, the feeding process had to be canceled, thus bringing the machine back in its basic position.

Selecting a seam parameter

Fig. 113: Selecting a seam parameter



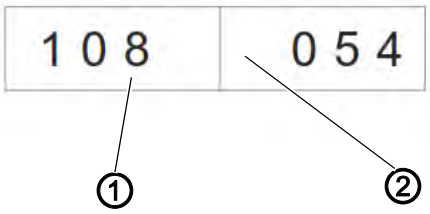
(1) - Parameter number *(2) - Parameter value*

How to select a seam parameter:

1. Press the key **P**.
   ↳ The parameter number (1) flashes.
2. Select the parameter using the arrow keys ▲ and ▼.
3. Press the key OK.
   ↳ The selected parameter is indicated with its current value (2). One digit of the value flashes.

Editing of seam parameters

Fig. 114: Editing a seam parameter



(1) - Parameter number *(2) - Parameter value*

How to edit a seam parameter:

1. Select a seam parameter, 🕮 *2.1.1*.
   ↳ One digit of the parameter value (2) flashes.
2. Change the parameter value (2) using the arrow keys ▲ and ▼.
3. Press the key OK.
   ↳ The new parameter value (2) will be saved.

4. Alternatively press the key **ESC**.

↳ The new setting will not be saved and a reset to the former value occurs.

5. Go to the next digit to be edited by using the arrow keys ← and →.
6. Repeat the steps 2 to 4.

Initializing pocket programs

Upon initializing a pocket program with standard values will be loaded.

Fig. 115: Initializing a pocket program

How to initialize a pocket program:

1. Briefly press the key **F**.

↳ The display changes to the submenu shown above.

2. Press the key **OK** in order to carry out the initialization.
3. Press the key **ESC** in order to stop the initialization.

With a long actuation of the key F all 9 seam programs are initialized. Afterwards the display switches to the mode for the selection of a seam parameter in the current seam program.

Fig. 116: Display after a long actuation of the key F

13.1.2 Editing a sequence

The machine has to be in the sewing mode. With a short actuation of the key **F** the sequence is switched on or off. Up to a maximum of 7 seam programs can be included in one sequence.

Fig. 117: Editing a sequence

How to edit a sequence:

1. Set the machine to the sewing mode.
2. Keep the key **F** for more than 2 seconds pressed.

↳ The display switches to the currently set sequence. The current sequence will be deleted and the first digit after the □ flashes.

3. Change the program number using the arrow keys ▲ and ▼.
4. Select the next position using the arrow keys ← or →.

↳ By pressing the key ← the position to the right of the flashing digit will be deleted.

5. Press the key **OK**.

↳ The editing of the sequence is ended and the display switches back to the sewing mode.

13.1.3 Piece counter

In order to display the piece counter the machine has to be in the sewing mode.

The number of pieces is indicated in the right field of the piece counter display.

Fig. 118: Resetting the piece counter

How to get to the piece counter:

1. Press the keys **ESC** and ← simultaneously.

↳ The daily piece counter will be displayed.

2. Keep the key **OK** pressed for a while in order to set the daily piece counter back to 0.
3. Press the key **ESC** to get back to the sewing mode.

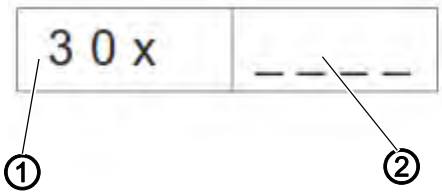
13.2 Setting programs of the machine

The setting programs of the machine can selected and activated as requested.

List of the setting programs	
301	Displaying/deleting the counter for the bobbin thread quantity
302	Setting the counter for the bobbin thread quantity
303	Testing the feeding process
304	Step-by-step mode

How to get to the setting programs:

Fig. 119: Display of the setting programs



(1) - Setting program *(2) - Value*

1. Set the machine to the sewing mode.
2. Press the keys **P** and **F** simultaneously.

↳ The display switches to the setting program mode.

3. Select the setting programs using the arrow keys ▲ and ▼.
4. Press the key **OK** to activate the setting program.
5. Press the key **ESC** to exit the menu.

13.2.1 Displaying/deleting the counter for bobbin thread quantity

The value displayed for the bobbin thread quantity has to be multiplied by 10.

Fig. 120: Display of the setting programs

How to display/delete the counter for the bobbin thread quantity:

1. Select the setting program **Displaying/deleting the counter for the bobbin thread quantity**.
2. Press the key **OK** a long time to reset the value.

↳ The value will be reset to a programmed maximum value.

13.2.2 Setting the counter for the bobbin thread quantity

The value displayed for the bobbin thread quantity has to be multiplied by 10.

Fig. 121: Display of the setting programs

How to set the counter for the bobbin thread quantity:

1. Select the setting program **Setting the counter for the bobbin thread quantity**.

↳ The value of the bobbin thread quantity flashes.

2. Set the value using the arrow keys,▲ and ▼.
   When setting the value to 0 the counting of the bobbin thread quantity is switched off.
3. Press the key **OK**.

↳ The value will be saved.
Now another setting program can be selected.

13.2.3 Testing the feeding process

Fig. 122: Display of the setting programs

How to test the feeding process:

1. Select the setting program **Feeding process**.
2. Press the key **OK** for a while.

↳ The machine switches back to the sewing process.
After the reference run the feeding process will be carried out according to the sewing program.

3. Actuate the pedal in inching operation.

↳ The transport carriage runs in its rear end position. The feeding clamps lift and the flap clamps open.

4. The process can be started anew.
5. Exit the program/process by switching the machine off.

13.2.4 Step-by-step mode

Fig. 123: Display of the setting programs

How to operate the **step-by-step mode**:

1. Activate the setting program **Step-by-step mode**.
2. Press the key **OK** for a while.

↳ The machine switches back to the sewing process.
At the stops at seam beginning and seam end the following message is displayed:

Fig. 124: Step-by-step mode

3. Actuate the pedal.

↳ The sewing process is continued up to the next stop.
At the same time the regular screen is displayed.

4. Repeat step 3 until the end of the sewing process.
5. Exit the program by switching the machine off.

13.2.5 Dongle menu

Note:

In order to save the parameters you need an empty dongle. This can be ordered from Dürkopp Adler AG, the Part-No. is: 9835 901005.

How to navigate throughout the Dongle menu:

1. Press the key **OK** to go back one level lower.
2. Press the arrow key to get one level higher.
3. Press the arrow keys ▲ and ▼ for further selections in the menu levels.

↳ At the same time the right half of the display flashes.

If no dongle is connected to the plug connection X 110 the message **Info 4301** will be displayed.

During the data transmission the right and the left half of the respective menu item flashes.

Displaying the dongle content

Fig. 125: Displaying the dongle content

1. Press the key **OK**.

↳ The following messages can possibly be displayed after this action:

Data dongle **f. e. for the 745-35S**

(To save parameters)

Fig. 126: Data dongle

Boot dongle **f. e. for the 745-35S**

Fig. 127: Boot dongle

Empty dongle (not formatted)

Fig. 128: Empty dongle

An empty dongle has to be formatted prior to using it, 📖 3.5.6.

1. Press the key **OK**.

↳ The display switches to the menu item **Displaying the dongle content**.

Loading of machine parameters

Fig. 129: Loading the machine parameters

The display switches to the security check:

Fig. 130: Security check

1. Press the key **OK**.

↳ The machine parameters will be uploaded from the dongle onto the control unit.

2. Press the key **ESC**.

↳ The display switches to the menu item **Loading the machine parameters**.

If there are no machine parameters memorized on the dongle, the message **Info 4325** will appear. This message has to be confirmed with the key **OK** in order to continue working.

Loading pocket programs and a sequence

Fig. 131: Loading pocket programs/sequence

The display switches to the security check:

Fig. 132: Security check

1. Press the key **OK**.

↳ The pocket programs and the sequence will be uploaded from the dongle onto the control unit.

2. Press the key **ESC**.

↳ The display switches to the menu item **Loading pocket programs/ sequence**.

If there are no pocket programs memorized on the dongle, the message **Info 4326** will appear. This message has to be confirmed with the key **OK** in order to continue working.

Saving the machine parameters

Fig. 133: Saving the machine parameters

The display switches to the security check:

Fig. 134: Security check

1. Press the key **OK**.

↳ The machine parameters of the sewing unit will be saved on the dongle.

2. Press the key **ESC**.

↳ The display switches to the menu item **Saving the machine parameters**.

Saving pocket programs/ sequences

Fig. 135: Saving the pocket program/sequence

The display switches to the security check:

Fig. 136: Security check

1. Press the key **OK**.

↳ The pocket programs and the sequence will be saved on the dongle.

2. Press the key **ESC**.

↳ The display switches to the menu item **Saving pocket programs/ sequence**.

Formatting the dongle

ATTENTION!

Material damage

By formatting all data saved on the dongle will be irrevocably deleted!

The formatting of the dongle is necessary if in the menu item **Displaying the dongle content** the following message is NOT displayed:

Fig. 137: Data dongle

How to format the dongle:

Fig. 138: Formatting the dongle

The display switches to the security check:

Fig. 139: Security check

1. Press the key **OK**.

↳ The dongle is being formatted.
During the formatting process the display flashes:

Fig. 140: Display formatting the dongle

↳ When the formatting process is finished the menu item **Formatting the dongle** will be displayed again.

2. Press the key **ESC**.

↳ The process is stopped and the display switches back to the menu item **Formatting the dongle**.

13.3 Multitest

The Multitest programs can be accessed by switching the machine on and simultaneously pressing **P** and ←.

How to select a Multitest program:

1. Switch on the machine and simultaneously press the keys **P** and ←.
2. Select the desired program using the arrow keys ▲ and ▼.
3. Press the key **OK** to confirm the program selection.

List of programs:	
901	Testing the output elements
902	Testing the input elements manually
903	Testing the input elements automatically
904	Testing the ROM
905	Testing the RAM
906	Testing the sewing motor
907	Displaying the error recorder
950	Testing the corner knives
951	Testing the center knives
952	Setting the light-barrier for the flap
953	Setting the residual thread monitor
954	Setting the 2nd light-barrier for the flap
955	Testing the incremental encoder

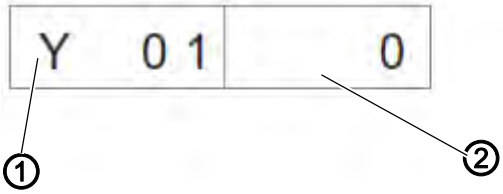
13.3.1 Testing the output elements

*Fig. 141: Program **Testing the output elements***

1. Press the key **OK**.

↳ The display switches to this screen:

Fig. 142: Testing the output elements



(1) - Output number *(2) - Status*

↳ To the left flashes the output number (1).
To the right its current status (2) is displayed.
0 = switched off
1 = switched on

2. Select the output number using the arrow keys ▲ and ▼.
3. Press the key **OK** to switch the output on or off.

When switching to the next output the status of the former one is maintained.

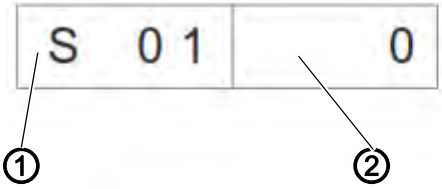
13.3.2 Testing the input elements manually

*Fig. 143: Program **Testing the input elements***

1. Press the key **OK**.

↳ The display switches to this screen:

Fig. 144: Testing the input elements



(1) - Input number *(2) - Status*

↳ To the left flashes the input number (1).

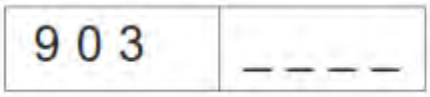
To the right its current status (2) is displayed.
0 = switched off
1 = switched on

2. Select the input number using the arrow keys ▲ and ▼.
3. Press the key **OK** to switch the input on or off.

When switching to the next input the status of the former one is maintained.

13.3.3 Testing the input elements automatically

*Fig. 145: Program **Testing the input elements automatically***



1. Press the key **OK**.

↳ The display switches to this screen:

Fig. 146: Testing the input elements

↳ To the right the status of the input element that has been changed last is displayed.

13.3.4 Testing the ROM

*Fig. 147: Program **Testing the ROM***

1. Press the key **OK**.

↳ The display switches to this screen:

Fig. 148: Testing the ROM

↳ Screen after the test:

Fig. 149: Testing the ROM

↳ Checksum: 1 = OK; 0 = Error

13.3.5 Testing the RAM

*Fig. 150: Program **Testing the RAM***

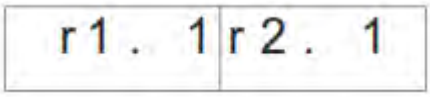
1. Press the key **OK**.

↳ The display switches to this screen:

Fig. 151: Testing the RAM

↳ Screen after the test:
1 = OK; 0 = Error

Fig. 152: Testing the RAM



13.3.6 Testing the sewing motor

*Fig. 153: Program **Testing the sewing motor***

1. Press the key **OK**.

↳ The display switches to this screen:

Fig. 154: Testing the sewing motor

2. Press the keys **+** and **-** to set the speed in steps of 100 rpm.

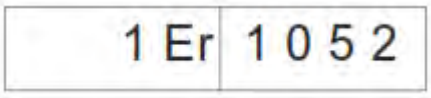
13.3.7 Displaying the error recorder

*Fig. 155: Program **Displaying the error recorder***

1. Press the key **OK**.

↳ The display switches to this screen:

Fig. 156: Displaying the error recorder



2. Press the keys **+** and **-** to view the last 10 errors.

13.3.8 Testing the corner knives

↳ The display switches to this screen:

Fig. 157: Testing the corner knives

↳ In the right field the current seam length of L1 will be indicated flashing.

1. Press the key **P** to change the corner knives up and down.

13.3.9 Checking the center knife activation

↳ The display switches to this screen:

Fig. 158: Checking the center knife activation

1. Press the key **F** to switch the center knives on or off.

13.3.10Setting the light-barrier for the flap

*Fig. 159: Program **Setting the light barrier for the flap***

1. Swing out the folding station before activating the program.
2. Put some fabric underneath the feeding clamp.
3. Press the key **OK**.

↳ The status of the light barrier for the flap scanning will be indicated flashing in the right field.
At reflection = LS 1
No reflection = LS 0

Fig. 160: Setting the light-barrier for the flap

↳ The following outputs will be switched on:
Lower the feeding clamps to the left and to the right,
close the folding sheets,
close the flap clamps,
move the feeding clamp into the loading area.

4. Align the light barrier to the center of the reflecting foil.
At the same time check the area of the seam beginning to the seam end on the clamp.
5. Determine the distance from the switching point of the light barrier to the needles. In order to do so put a paper model having the size of a flap under the flap clamp.
6. Push the feeding clamp from the feeding area towards the machine head until the light barrier does not have a reflection any longer.
7. Measure the distance from the front edge of the paper model to the needles.

↳ This value has to be seized in the machine parameters.

8. Switch the machine off and at the next switching on simultaneously keep the keys **P** and → pressed to activate the program level for the machine parameters (400) (Code 2548).
9. Enter the distance in 1/10 mm in the menu point 406.

The LEDs on the light barrier have the following functions:

- Orange LED on = reflection present
- Orange LED off = no reflection
- Green LED on = switching signal steady

If the green LED does not shine, the light barrier has to be either cleaned, adjusted, exchanged or the reflecting foil to be replaced.

13.3.11Optional equipment - Setting the residual thread monitor

In order to be able to set the residual thread monitor the following preparations have to be taken:

- Remove the upper part of the bobbin case with the bobbin.
- Insert an empty bobbin into the upper part of the bobbin case.
- Select program **953 Setting the residual thread monitor**.

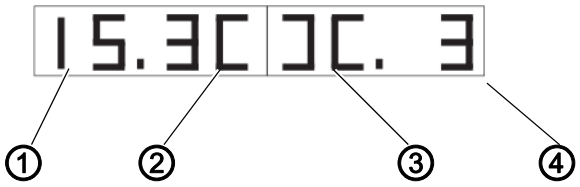
How to align the light barriers of the residual thread monitor:

*Fig. 161: Program **Setting the residual thread monitor***

1. Press the key **OK**.

↳ The display switches to this screen:

Fig. 162: Setting the residual thread monitor



(1) - Current reflection value 15
(2) - Bar if > 8
(3) - No bar, value < 8
(4) - Current reflection value 3

2. Turn the empty bobbin in a way that a reflection occurs at the bobbin hub.

↳ The intensity of the reflection is indicated by a number between 1 and 15.
If the value is above the threshold value (8), a bar appears on the display and an acoustic signal is heard.

3. Press the key **ESC** to exit the program.

Note:

In case the transmission power is too important and the residual thread monitor is already triggered when the hook is just being illuminated, the transmission power can be reduced. The same is true if the transmission power is too low.

How to set the transmission power of the residual thread monitor:

Fig. 163: Setting the residual thread monitor

(1) - Value left residual thread monitor *(2) - Value right residual thread monitor*

1. Keep the key **F** pressed for a while to change the values of the transmission power of the residual thread monitors.
   15 = high transmission power
   1 = low transmission power
2. Change the value as desired:
   ← = Decreasing the value for the left residual thread monitor
   → = Increasing the value for the left residual thread monitor
   ▲ = Increasing the value for the right residual thread monitor
   ▼ = Decreasing the value for the right residual thread monitor
3. Press the key **OK** to confirm the setting.
4. Press the key **ESC** to go one level back.

13.3.12Optional equipment setting the 2nd light-barrier for the flap

*Fig. 164: Program **Setting the light barrier for the flap***

1. Swing out the folding station before activating the program.
2. Put some fabric underneath the feeding clamp.
3. Press the key **OK**.

↳ The status of the light barrier for the flap scanning will be indicated flashing in the right field.
At reflection = LS 1
No reflection = LS 0

Fig. 165: Setting the light-barrier for the flap

↳ The following outputs will be switched on:
Lower the feeding clamps to the left and to the right,
Close the folding sheets,
Close the flap clamps,
Move the feeding clamp into the loading area.

4. Align the light barrier to the center of the reflecting foil. At the same time check the area of the seam beginning to the seam end on the clamp.
5. Determine the distance from the switching point of the light barrier to the needles. In order to do so put a paper model having the size of a flap under the flap clamp.
6. Push the feeding clamp from the feeding area towards the machine head until the light barrier does not have a reflection any longer.
7. Measure the distance from the front edge of the paper model to the needles.

↳ This value has to be seized in the machine parameters.

8. Switch the machine off and at the next switching on simultaneously keep the keys **P** and → pressed to activate the program level for the machine parameters (400) (Code 2548). The menu point 409 has to be activated.
9. Enter the distance in 1/10 mm in the menu point 410.

13.3.13Testing the incremental encoder

*Fig. 166: Program **Testing the incremental encoder***

1. Swing out the folding station before activating the program.
2. Press the key **OK**.

↳ In the right half the current value of the incremental encoder is displayed.

Fig. 167: Display incremental encoder

↳ By moving the feeding clamps the value of the incremental encoder is altered.

3. Press the key **P** to start the reference run of the feeding clamp.
4. After the reference run the feeding clamp's movement to the front position (450.0) can be started by pressing the key →.

↳ After the movement the current position is indicated on the left display.

5. After the reference run the feeding clamp's movement to the rear position (150.0) can be started by pressing the key .
6. The speed of the feeding clamp is altered by actuating the key **F** (steps: 10%, 50%, 80%, 100%).
7. The feeding clamps are lifted or lowered by actuating the keys **+** and **-**.
8. With the key **OK** the motor is switched off.

↳ The feeding clamp can be moved manually again.

13.4 Table Seam parameters

How to get to the seam parameters:

1. Navigate to the main level.
2. Press the key **P**.

↳ This is how you get to the programming level.

3. Briefly press the key **F**.

↳ The current seam program is initialized.

4. Keep the key **F** pressed for a while.

↳ All seam programs are initialized.

Number Menu item	Description	Minimum value	Maximum value	Standard value
100	Seam length in mm	20	180	180
101	Stacker on / off			on
102	Center knives on / off			on
103	Center knife correction seam beginning 1/10 mm	-9.9	9.9	0
104	Center knife correction seam end 1/10 mm	-9.9	9.9	0
105	Corner knives on / off			on
106	Corner knife correction seam beginning 1/10 mm	-20	20	0
107	Corner knife correction seam end 1/10 mm	-20	20	0
108	Stitch length 1/10 mm	2.0	3.0	2.5
109	Speed	2000	3000	2750
110	Sewing motor soft start on / off			on
111	Sewing motor number of soft start stitches	1	20	2
112	Sewing motor soft start speed	500	900	900
113	Clamp mode 0 = lower left and right feeding clamp simultaneously 1 = lower left feeding clamp first 2 = lower right feeding clamp first			0
114	Positioning point 0 = front 1 = center 2 = rear			0
115	Positioning point offset mm	1	170	90
116	Type of seam tightening seam beginning 0 = bartack 1 = stitch condensation			1
117	Number of condensed stitches / bartacks Stitch length 1/10 mm	1	10	4

Number Menu item	Description	Minimum value	Maximum value	Standard value
118	Stitch length condensed stitches / bartacks Seam beginning 1/10 mm	0.5	3.0	1.0
119	Number of bartack stitches seam beginning	1	5	3
120	Type of seam tightening seam end 0 = bartack 1 = stitch condensation			1
121	Number of condensed stitches seam end	1	10	4
122	Stitch length condensed stitches / bartacks Seam end 1/10 mm	0.5	3.0	1.0
123	Number of bartack stitches seam end	1	5	3
124	Material feed type 0 = material moves to inserting position 1 = material moves to stacking position 2 = no move, in stacking position			2
125	Type of waiting position 0 = feeding clamp moves to waiting position 1 = feeding clamp stays in stacking position			1
126	Feed stroke to the stacking position	1	100	40
127	Loading speed %	10	100	80
128	Return speed %	10	100	80
129	Downholder on / off			on
130	Sewing mode 0 = fix seam length 1 = light barrier for flap scanning			0
131	Light barrier correction seam beginning 1/10 mm	-20	20	0
132	Light barrier correction seam end 1/10 mm	-20	20	0
133	Feed stroke to the waiting position	1	515	100
134	Max. flap length	30	180	180
135	Flap clamp on / off			on
136	Pedal mode 0 = regular 1 = pedal has to be brought to basic position before the next step 2 = pedal actuation for a move to sewing position (flap clamp)			0
137	2nd Light barrier activated 0 = 1st Light barrier activated 1 = 2nd Light barrier activated			0

13.5 Machine parameters

How to get to the machine parameters:

1. Switch the machine on and simultaneously keep the keys **P** and → pressed.

↳ The machine will ask for an access code.

2. Enter the code: 2548

Number Menu item	Description	Min. value	Max. value	Standard value
400	Submenu Machine configuration			
401	Stacker available			1 = available
402	Downholder available			1 = available
403	Thread monitor on / off			1 = on
404	Needle distance (10,12)			10
405	Max. seam length 180 / 200	180	200	180
406	Distance light barrier - needles 1/10 mm	0	375	55
407	Distance of corner knives seam end to needles	1	375	130
408	Residual thread monitor available			1 = available
409	2nd light barrier available			1 = available
410	Distance 2nd light barrier - needles 1/10 mm	1	375	55
500	Initializing the parameters			
501	Initializing the machine parameters			
502	Initializing the pocket parameters			
503	Initializing the sequence			
504	Initializing all parameters			
600	Displaying the piece counter			

Initializing the programs

1. Select the initialization programs (501 to 504) with the arrow keys ▲ and ▼.
2. Press the key **OK**.

↳ In the right half of the display flashes **Inl**.

3. Press the key **K** for a while to initialize the programs 501 to 504.

Machine parameters

Fig. 168: Initializing the machine parameters

↳ After the initializing of the machine parameters with the standard values, the parameter 401-407 have to be adjusted to the machine's equipment.

Pocket parameters

Fig. 169: Initializing the pocket parameters

↳ After initializing the pocket parameters the standard values are loaded.

Sequence

Fig. 170: Initializing the sequence

↳ After the initializing the sequence containing the standard values is loaded.

All parameters

Fig. 171: Initializing all parameters

↳ Initializing all parameters, that is loading the machine parameters, pocket parameters and the sequence with the standard values.

13.6 Error messages/operating status indications

Error/Info	Meaning	Remedial action
Control unit		
1051	Sewing motor Timeout • Cable to the sewing motor's reference switch faulty • Reference switch faulty	• Replace the cable • Replace the reference switch
1052	Excess current sewing motor • Sewing motor cable faulty • Sewing motor faulty • Control unit faulty	• Replace the sewing motor cable • Replace the sewing motor • Replace the control unit
1053	Mains voltage too high	Check the mains voltage
1055	Sewing motor overload • Sewing motor is blocked/rough-running • Sewing motor faulty • Control unit faulty	• Eliminate the blocking/rough-running • Replace the sewing motor • Replace the control unit
1056	Sewing motor overheat • Sewing motor rough-running • Sewing motor faulty • Control unit faulty	• Eliminate the rough-running • Replace the sewing motor • Replace the control unit
1058	Sewing motor speed • Sewing motor faulty	• Replace the sewing motor
1062	Sewing motor IDMA autoincrement • Dysfunction	• Switch the machine off and on again
1302	Sewing motor dysfunction • Control unit receives no impulses from impulse transmitter in motor	• Check the cable from impulse transmitter in motor to control unit
1342-1344	Sewing motor dysfunction Internal error	• Switch the machine off and on again • Software update • Inform the DA-Service
2101	Stepping motor X-axis timeout referencing • Cable to the reference switch faulty • Reference switch faulty	• Replace the cable • Replace the reference switch
2103	Stepping motor feed • Clamp (X-axis) has step loss	• Check whether feeding clamp is rough-running
2152	Stepping motor X-axis excess current	• Replace stepping motor X-axis • Replace the control unit
2153	Stepping motor X-axis excess voltage • Mains voltage too high	• Check the mains voltage
2156	Stepping motor X-axis overheat • Stepping motor X-axis rough-running • Stepping motor X-axis faulty • Control unit faulty	• Eliminate the rough-running • Replace stepping motor X-axis • Replace the control unit

Error/Info	Meaning	Remedial action
2162	Stepping motor X-axis IDMA autoincrement dysfunction	Switch the machine off and on again
3100	Machine control voltage Temporary voltage drop	Check the mains voltage
3101	Machine power voltage Temporary voltage drop	Check the mains voltage
3102	Machine sewing motor voltage Temporary voltage drop	Check the mains voltage
3103	Machine stepping motor voltage Temporary voltage drop	Check the mains voltage
3107	Machine temperature • Ventilation openings obstructed • Ventilation grid soiled	• Check the ventilation openings • Clean the ventilation grid
3210	Broken thread	Thread in the thread again
3215	Counter for the bobbin thread quantity zero (Bobbin empty)	Insert a full bobbin
3220	Empty bobbin	Insert a full bobbin
3500-3507 3520-3530 3540 3545 3721 3722	Error control command interpreter/motor synchronization Internal error	• Switch the machine off and on again • Software update • Inform the DA-Service
Dongle		
4301	No dongle plugged in on the control	Plug in the correct dongle on the control unit
4304	Wrong dongle type, for the memorizing of data a data dongle has to be available	Dongle needs to be formatted
4320	Security check before dongle formatting	Key **OK** → formatting Key **ESC** → cancel
4321	Security check before memorizing the machine parameters on the dongle	Key **OK** → memorize Key **ESC** → cancel
4322	Security check before memorizing the pocket parameters on the dongle	Key **OK** → memorize Key **ESC** → cancel Info 4323
4323	Security check before uploading machine parameters from the dongle to the control unit	Key **OK** → memorize Key **ESC** → cancel
4324	Security check before uploading pocket parameters from the dongle to the control unit	Key **OK** → memorize Key **ESC** → cancel
4325	No machine parameters can be loaded from the dongle to the control unit since no machine parameters have been memorized.	Use a dongle with machine parameters
4326	No pocket parameters can be loaded from the dongle to the control unit since no pocket parameters have been memorized.	Use a dongle with pocket parameters

Error/Info	Meaning	Remedial action
6551- 6554 6651- 6653 6751- 6761	Error machine head position/ AD-converter / processor error Internal error	• Switch the machine off and on again • Software update • Inform the DA-Service
6952	Error stepping motor drive Internal error	• Switch the machine off and on again • Software update • Inform the DA-Service
7451 7453 7454	Communication test interface Internal error	• Switch the machine off and on again
7452 7455	Communication test interface • Transmission fault • Cable communication test interface faulty • Internal error	• Eliminate the disturbance source • Replace the cable • Switch the machine off and on again
7551- 7555 7558 7559	Communication control panel interface Internal error	• Switch the machine off and on again • Software update • Inform the DA-Service
7556 7557	Communication control panel interface • Transmission fault • Cable control panel interface faulty	• Eliminate the disturbance source • Replace the cable
8151 8156- 8159	Error IDMA • Dysfunction • Control unit faulty	• Switch the machine off and on again • Replace the control unit
8152- 8154	Error IDMA Internal error	• Switch the machine off and on again • Software update • Inform the DA-Service
8251 8255	Error booting ADSP/booting Internal error	• Switch the machine off and on again • Software update • Inform the DA-Service
8252 8257 8258/ 8253 8256 8254	Error booting ADSP/ booting XILINX/ booting Dysfunction	Switch the machine off and on again
8351 8801- 8805 8806 8890 8891	Error testpins/ signal-/ event processing/ memory wrapper / list of functions Internal error	• Switch the machine off and on again • Software update • Inform the DA-Service
System		
Info 9001	Corner knife station is swung out	Swing the corner knife station in
Err 9001	Corner knife station is swung out during the sewing process. Step back on the pedal, afterwards the transport carriage drives to the rear; start the process.	Check/ adjust the fixation of the corner knife station
Info 9002	Folding station is swung out	Swing in the folding station

Error/Info	Meaning	Remedial action
Err 9002	Folding station is swung out during the sewing process. Step back on the pedal, afterwards the transport carriage drives to the rear; start the process.	Check/ adjust the fixation of the folding station
9003	Wrong needle position before sewing start	Manually turn the hand wheel to the thread lever's lifted position
9601	Pedal was stepped back during the sewing process	To cancel actuate the pedal once more. Afterwards the feeding clamp drives to its rear position
9604	Light barrier (S4) for the fabric removal not activated	Set the light barrier (S4) for the fabric removal
9700	Folder not lifted	Correct the setting of the folder (mechanical collision, check switch S8)
9701	Folder not lowered	Correct the setting of the folder (mechanical collision, check switch S8)
9710	End switch feeding clamp activated	Check the fabric feed and the end switch
9720	Error at flap scanning with light barrier	Check the reflecting foil; Check the alignment of the light barriers
9721	Flap was positioned in front of the front positioning point	Position the flap correctly
9722	Flap overlaps the maximum sewing area (behind the rear positioning point)	Check the flap size, position the flap correctly
9723	Fluff at the flap beginning	Feed flaps with smooth edges, check the reflecting foil
9726	Flap to big or the reflecting foil is soiled or faulty	Check the flap size and the reflecting foil
9730	Corner knife at seam beginning cannot be reached	Change the current seam length or the positioning point of the current seam or change L1 (adjust the corner knife distance)
9800	Hardware error DC motor control	Check the DC motor, DC controller and cable, check the power supply
9900	Faulty machine parameters (Checksum error)	Initialize the machine parameters once again (test program); set the machine parameters
9901	Faulty pocket sequence (Checksum error)	Initialize the pocket sequences once again Adjust the pocket sequences
9902	Faulty pocket program (Checksum error)	Initialize the faulty pocket programs (Test program); Adjust the pocket programs
reF	Request to carry out the reference run after switching on the machine	Step back on the pedal
Current seam length flashes	Corner knife at seam beginning cannot be reached	Change the current seam length or the positioning point of the current seam or change L1 (adjust the corner knife distance)

13.7 Input elements

S1	Needle thread monitor left needle
S2	Needle thread monitor right needle
S3	Folder lowered
S4	Folding device swiveled in
S5	Knife bracket swiveled in
S6	Light barrier workpiece removed/ hood monitoring
S7	Pedal forwards
S8	Pedal backwards
S24	2nd light barrier for the flap scanning
S21	Light barrier for the flap scanning
S100	Reference switch sewing motor
S101	Reference switch feeding clamp

13.8 Output elements

Y1	Open the needle thread scissors
Y2	Lower the center knife
Y3	Blow out fluff
Y4	Open the hook thread clamp
Y5	Close the hook thread scissors
Y6	Close the thread tension
Y7	Lower left feeding clamp
Y8	Lower right feeding clamp
Y9	Lift off the folders
Y10	Lower the folders
Y11	Close the folding sheets
Y12	Open the flap clamp
Y13	Downholder on
Y14	Stacker nipper forward
Y15	Swing out the stacker shackle
Y27	Knife bracket seam beginning
Y28	Knife bracket seam end

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