

# GLOBAL

## **ZZ 1560 XLH series**

### **Service Instructions**

Always switch off the electricity when working on  
the machine.

**IMPORTANT**  
**READ CAREFULLY BEFORE USE**  
**KEEP FOR FUTURE REFERENCE**

**523i = Global ZZ 1565**  
**524i = Global ZZ 1566**  
**525i = Global ZZ 1567**  
**527i = Global ZZ 1568**

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## 1 About these instructions

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


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

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

### 1.1 For whom are these instructions intended?

These instructions are intended for:

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

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

### 1.2 Representation conventions – symbols and characters

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



#### **Proper setting**

Specifies proper setting.



#### **Disturbances**

Specifies the disturbances that can occur from an incorrect adjustment.



#### **Cover**

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



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



#### **Steps to be performed for service, maintenance, and installation**



#### **Steps to be performed via the software control panel**

**The individual steps are numbered:**

1. First step
  2. Second step
  - ... The steps must always be followed in the specified order.
- Lists are marked by bullet points.

**Result of performing an operation**

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

**Important**

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

---

**Information**

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

---


**Order**

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

**References**

Reference to another section in these instructions.

**Safety**

Important warnings for the user of the machine are specifically marked. Since safety is of particular importance, hazard symbols, levels of danger and their signal words are described separately in the chapter **Safety** ( p. 7).

**Location  
information**

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

### **1.3 Other documents**

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

### **1.4 Liability**

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

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

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

#### **Transport**

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

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

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





## 2 Safety

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



### 2.1 Basic safety instructions

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

These instructions must be available at the machine's location at all times.

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

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

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

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

|  |   |
|--|---|
| <b>Transport</b>                               | Use a lifting carriage or stacker to transport the machine. Raise the machine max. 20 mm and secure it to prevent it from slipping off.   |
| <b>Setup</b>                                   | The connecting cable must have a power plug approved in the relevant country. The power plug may only be assembled to the power cable by qualified specialists.   |
| <b>Obligations of the operator</b>             | <p>Follow the country-specific safety and accident prevention regulations and the legal regulations concerning industrial safety and the protection of the environment.</p> <p>All the warnings and safety signs on the machine must always be in legible condition. Do not remove!</p> <p>Missing or damaged warnings and safety signs must be replaced immediately.</p> |
| <b>Requirements to be met by the personnel</b> | <p>Only qualified specialists may:</p> <ul style="list-style-type: none"><li>• Setting up the machine</li><li>• Performing maintenance work and repairs</li><li>• Performing work on electrical equipment</li></ul> <p>Only authorized persons may work on the machine and must first have understood these instructions.</p>   |

- Operation** Check the machine during operating for any externally visible damage. Stop working if you notice any changes to the machine. Report any changes to your supervisor. Do not use a damaged machine any further.
- Safety equipment** Safety equipment should not be disassembled or deactivated. If it is essential to disassemble or deactivate safety equipment for a repair operation, it must be assembled and put back into operation immediately afterward.
- 



## 2.2 Signal words and symbols used in warnings




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

**Signal words** Signal words and the hazard they describe:

| Signal word    | Meaning   |
|----------------|---|
| <b>DANGER</b>  | (with hazard symbol)<br>If ignored, fatal or serious injury will result |
| <b>WARNING</b> | (with hazard symbol)<br>If ignored, fatal or serious injury can result  |
| <b>CAUTION</b> | (with hazard symbol)<br>If ignored, moderate or minor injury can result |
| <b>CAUTION</b> | (with hazard symbol)<br>If ignored, environmental damage can result     |
| <b>NOTICE</b>  | (without hazard symbol)<br>If ignored, property damage can result       |

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

| Symbol  | Type of danger |
|---|----------------|
|  | General        |
|  | Electric shock |

| Symbol  | Type of danger       |
|---|----------------------|
|  | Puncture             |
|  | Crushing             |
|  | Environmental damage |

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

### **DANGER**



#### **Type and source of danger!**

Consequences of non-compliance.

Measures for avoiding the danger.

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

### **WARNING**



#### **Type and source of danger!**

Consequences of non-compliance.

Measures for avoiding the danger.

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

### **CAUTION**



#### **Type and source of danger!**

Consequences of non-compliance.

Measures for avoiding the danger.

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

**CAUTION****Type and source of danger!**

Consequences of non-compliance.

Measures for avoiding the danger.

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

**NOTICE****Type and source of danger!**

Consequences of non-compliance.

Measures for avoiding the danger.

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

### 3 Working basis


#### 3.1 Order of the adjustments



##### Order

The setting positions for the machine are interdependent.

Always comply with the order of individual adjustment steps as specified.

It is absolutely essential that you follow all notices regarding prerequisites and subsequent settings that are marked with  in the margin.

#### NOTICE

##### Property damage may occur!

Risk of machine damage from incorrect order.

It is essential to follow the working order specified in these instructions.

#### 3.2 Laying the cable guide

Ensure that all cables are laid in the machine such that the function of moving parts is not hampered.



To lay the cable guide:

1. Lay any excess cable neatly in proper cable snakes.
2. Bind together the cable loops with cable ties.



##### Important

Tie loops wherever possible to fixed parts.  
The cables must be secured firmly.

3. Cut off any overlapping cable ties.

#### NOTICE

##### Property damage may occur!

Excess cable can impair the functioning of moving machine parts.  
This impairs the sewing function and can result in damage.

Lay excess cable as described above.

### 3.3 Removing the covers

#### WARNING



#### Risk of injury from moving parts!

Crushing possible.

Move the machine into the service position or switch the machine off before removing the covers.

#### WARNING



#### Risk of injury from sharp parts!

Punctures possible.

Switch the machine off before removing the covers.

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

This chapter describes how to remove and then refit the individual covers. The text for each type of work setting then specifies only the cover that needs to be removed at that particular time.

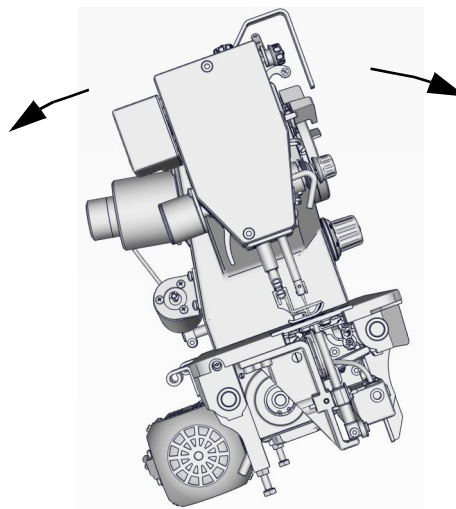
#### 3.3.1 Access to the underside of the machine



##### Cover

In order to access the components on the underside of the machine, you must first swivel up the machine head.

*Pic. 1: Access to the underside of the machine*



**Tilting the machine head**

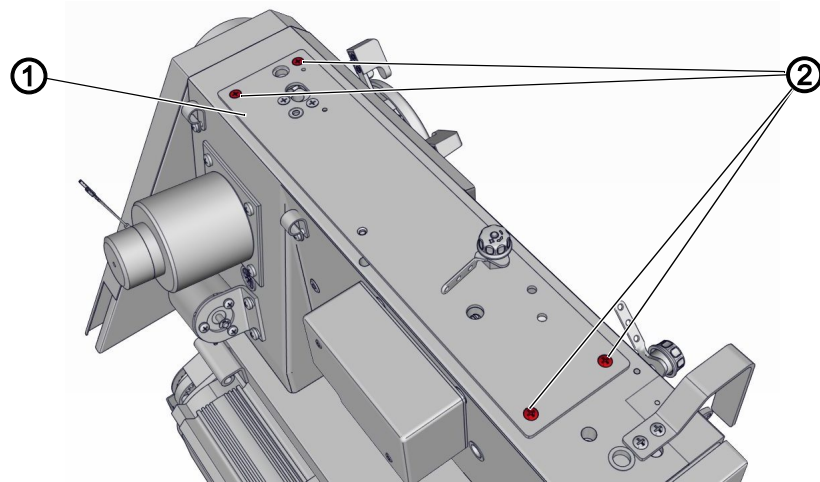
1. Tilt the machine head as far as it will go.

**Erecting the machine head**

1. Erect the machine head.

**3.3.2 Removing and placing the arm cover**

*Pic. 2: Removing and placing the arm cover*



(1) - Arm cover

(2) - Screws

**Removing the arm cover**

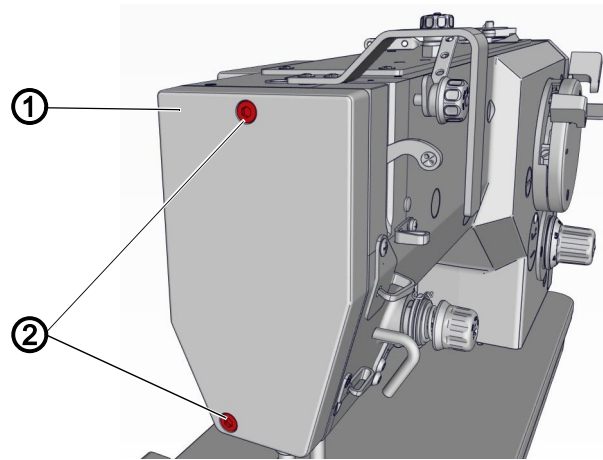
1. Loosen the screws (2).
2. Remove the arm cover (1).

**Placing the arm cover**

1. Place the arm cover (1).
2. Tighten the screws (2).

### 3.3.3 Removing and placing the head cover

*Pic. 3: Removing and placing the head cover*



(1) - Head cover

(2) - Screws

#### **Removing the head cover**



1. Loosen the screws (2).
2. Remove the head cover (1).

#### **Placing the head cover**

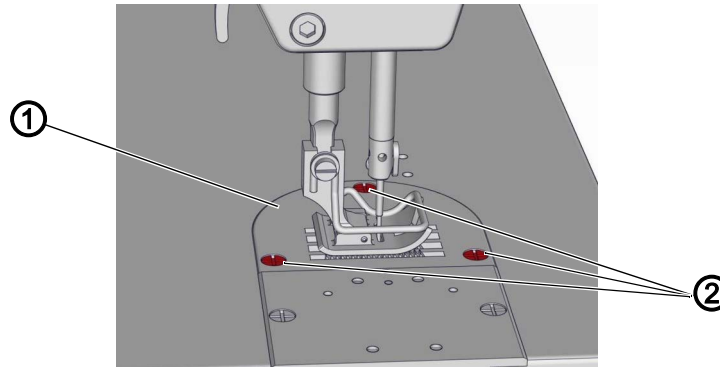


1. Place the head cover (1).
2. Tighten the screws (2).



### 3.3.4 Disassembling and assembling the throat plate

Pic. 4: Disassembling and assembling the throat plate



(1) - Throat plate

(2) - Screws

#### Disassembling the throat plate



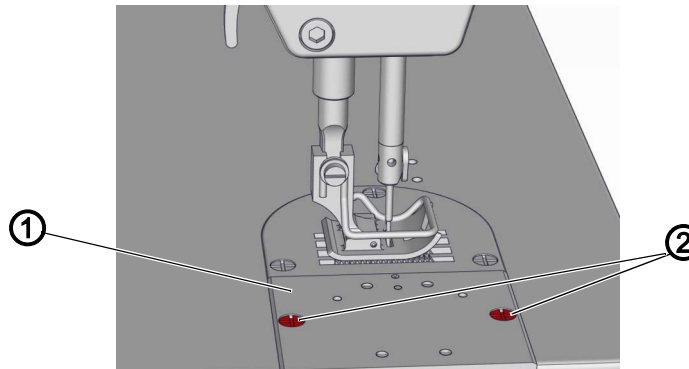
1. Loosen the screws (2).
2. Remove the throat plate (1).

#### Assembling the throat plate

1. Insert the throat plate (1).
2. Tighten screws (2).

### 3.3.5 Disassembling and assembling the slide plate

Pic. 5: Disassembling and assembling the slide plate



(1) - Slide plate

(2) - Screws

#### Disassembling the slide plate



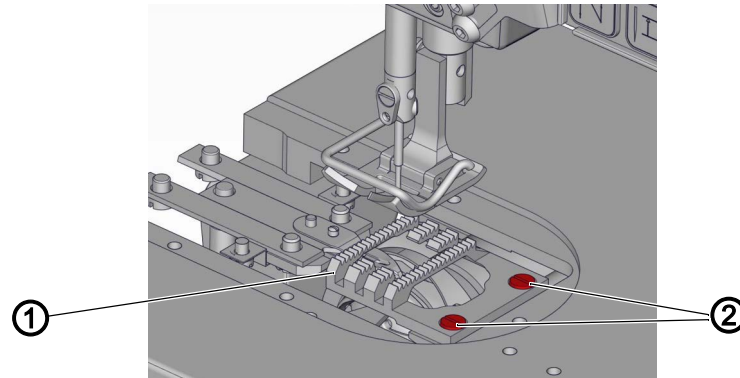
1. Loosen screws (2).
2. Remove the slide plate (1).

#### Assembling the slide plate

1. Insert the slide plate (1).
2. Tighten screws (2).

### 3.3.6 Disassembling and assembling the feed dog

Pic. 6: Disassembling and assembling the feed dog



(1) - Feed dog

(2) - Screws

#### Disassembling the feed dog



1. Loosen the screws (2).
2. Remove the feed dog (1).

#### Assembling the feed dog

1. Insert the feed dog (1).
2. Tighten the screws (2).

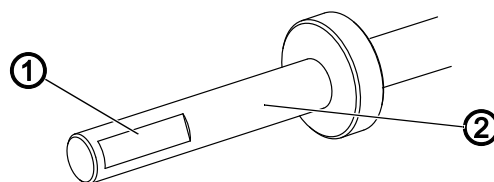


#### Important

Check the feed dog settings (📖 p. 34).

### 3.4 Flats on shafts

Pic. 7: Flats on shafts



(1) - Flat

(2) - Shaft

Some shafts have flat surfaces at the points where the components are screwed on. This stabilizes the connection and makes setting easier. The first screw in the direction of rotation is always screwed on to a flat surface.

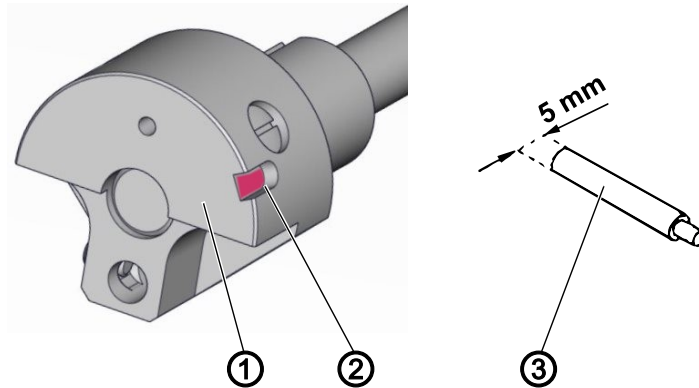


#### Important

Always ensure that the screws are completely flush with the surface.

### 3.5 Locking the machine in place

Pic. 8: Locking the machine in place (1)

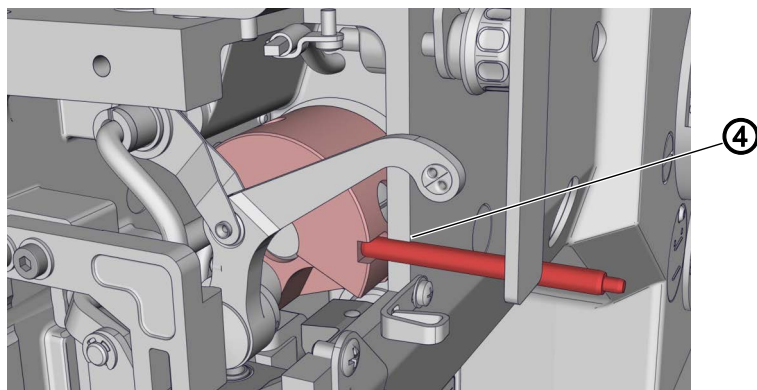


- (1) - Arm shaft crank  
(2) - Arresting groove

- (3) - Locking pin

For some settings, the machine must be locked in place. To do this, the locking pin (3) from accessory pack is inserted into a slot (2) on the arm shaft crank (1), blocking arm shaft.

Pic. 9: Locking the machine in place (2)



- (4) - Locking opening

#### Locking the machine in place



1. Remove the plug from the locking opening (4).
2. Turn the handwheel until the arresting groove (2) is in front of the locking opening (4).
3. Insert the locking pin (3) with end  $\varnothing$  5 mm into arresting groove (2).

#### Removing the lock



1. Pull the locking pin (3) out from arresting groove (2).
2. Insert the plug into the locking opening (4).



## 4 Zigzag stitch mechanism of machines 523, 524, 527

### WARNING



#### Risk of injury from moving parts!

Crushing possible.

Switch off the machine before checking and setting.



#### Order

The machine setting must be carried out in the sequence as described herein.

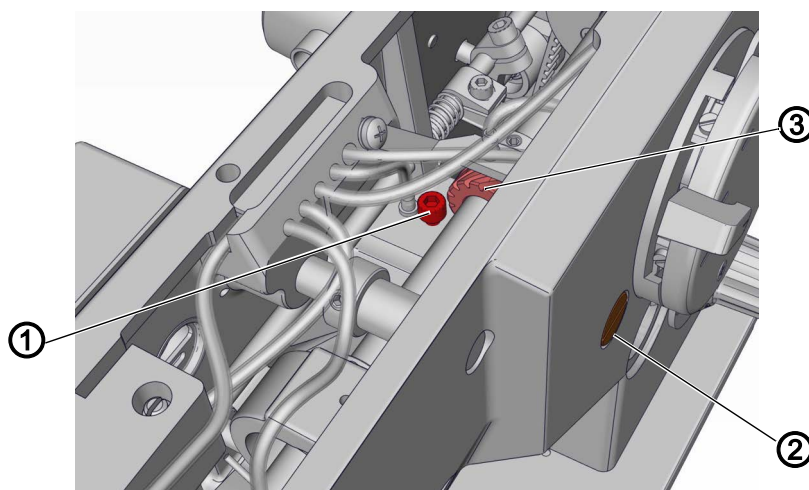
### 4.1 Tooth clearance setting of zigzag stitch gear



#### Proper setting

The tooth clearance of zigzag stitch should be as small as possible. No overlap instead of clearance, however, may arise in any mutual position of the gears.

*Pic. 10: Tooth clearance setting of zigzag stitch gear*





(1) - Screw

(2) - Eccentric bolt

(3) - Gear



1. Dismantle the machine arm cover ( p. 13).
2. Loosen screw (1).
3. Turn the eccentric bolt (2) until the gear fitted on it strikes the gear (3). With regard of the gear runout, caused by manufacturing inaccuracy, turn the handwheel by 1/4 revolution, and set the clearance again. Repeat this 8 times (2 revolutions of the main shaft), until the eccentric bolt (2) position with the smallest tooth clearance is found.
4. Locate the eccentric bolt (2) in this position and fix it with a screw (1).
5. Mount the machine arm cover ( p. 13).

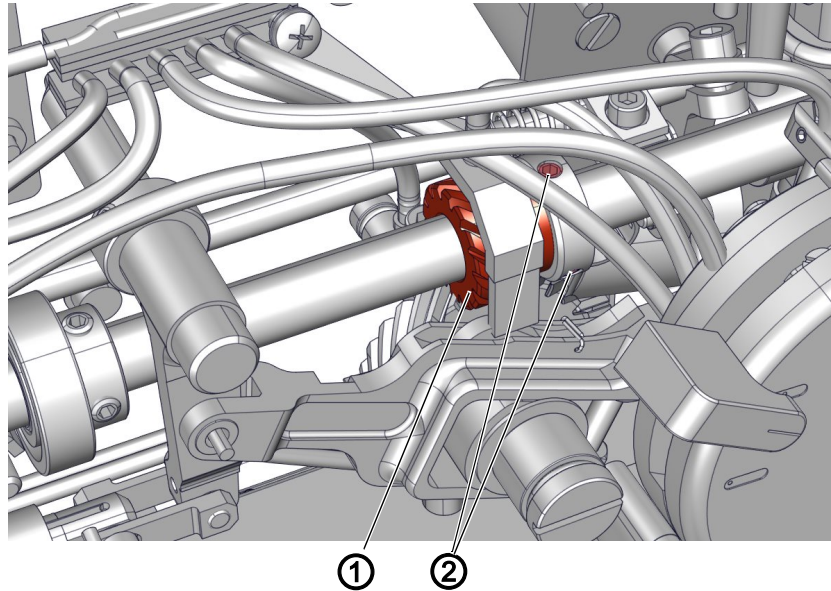
## 4.2 Timing of zigzag stitch to needle motion



### Proper setting

When sewing the maximal zigzag stitch, the needle should shift in the lateral direction at the time when it is over the sewn material.

Obr. 11: Timing zigzag stitch



(1) - Gear

(2) - Screws



1. Dismantle the arm cover (📖 p. 13).
2. Loosen two screws (2) of the gear (1).
3. Turn the hand wheel to the position where the proper setting is complied with.
4. Tighten the screws (2).
5. Check whether the needle is without any motion at the time when it is stabbed in the sewn material and adjust the setting, if needed.
6. Mount the machine arm cover (📖 p. 13).

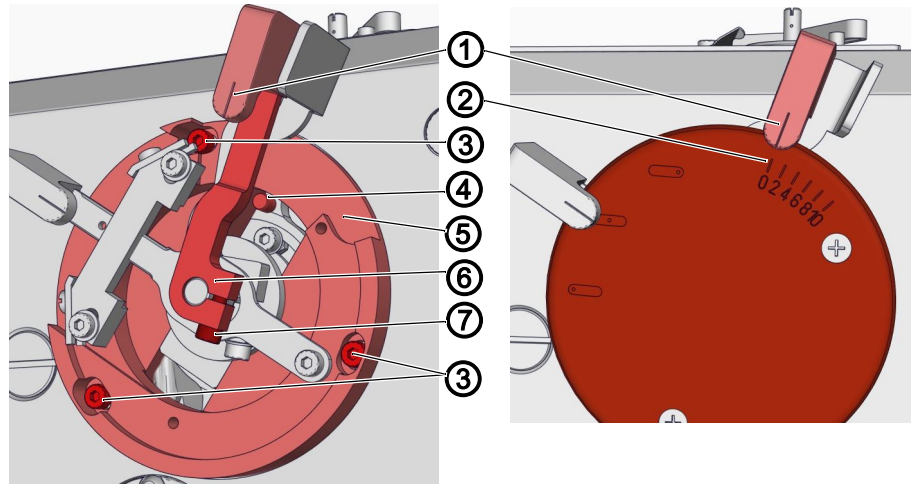
### 4.3 Straight stitch alignment



#### Proper setting

The centrally positioned straight stitch must be fully aligned, i. e. the needle must not have any lateral motion.

Pic. 12: Straight stitch alignment



- (1) - Mark
- (2) - Scale
- (3) - Screws
- (4) - Stop pin

- (5) - Casing
- (6) - Lever
- (7) - Screw



1. Set the zero stitch length on the knob.
2. Dismantle the cover.
3. Loosen the screw (7).
4. Place the stop pin (4) to the stop onto the casing (5).
5. Place a piece of paper onto the throat plate and turn the hand wheel there and back until the needle point makes 2 holes in the paper.
6. Loosen 3 screws (3) and try to set the casing (5) angle position until the needle, when being turned, stabs there and back in the same hole in the paper.
7. Tighten the screws (3).
8. Fix the lever (6) with the screw (7), so that the mark (1) is located opposite the zero on the zigzag stitch scale (2).
9. Mount the cover.

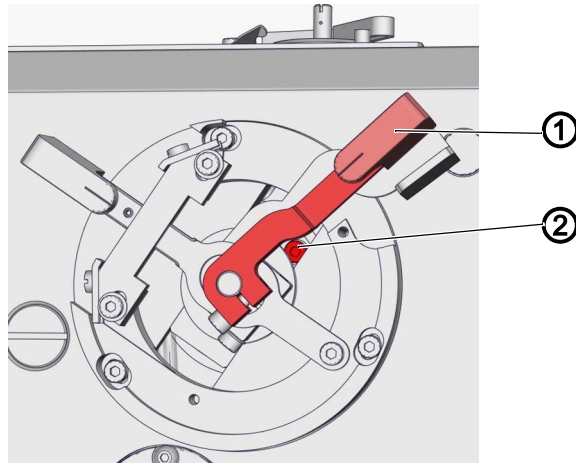
#### 4.4 Zigzag stitch width



##### Proper setting

The zigzag stitch width setting must be limited to the value prescribed for the applied sewing equipment with the setting tolerance -5% of the prescribed value.

*Pic. 13: Zigzag stitch width*



(1) - Lever

(2) - Screw



1. Set the zero stitch length on the knob.
2. Place a piece of paper onto the throat plate.
3. Dismantle the cover.
4. Loosen the screw (2).
5. Try to set the lever (1) in the position corresponding with the required zigzag stitch width.
6. Turn the hand wheel there and back until the needle makes 2 holes in the paper. Measure their distance.
7. Change the lever position (1) until the distance of the holes complies with the proper setting.
8. Shift the screw (2) to the stop and tighten it.
9. Mount the cover.



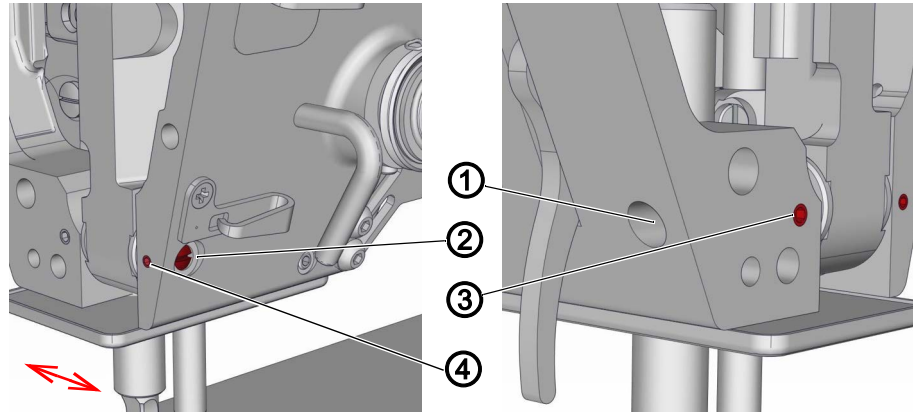
#### 4.5 Needle stab position setting in feeding direction



##### Proper setting

If the needle is in the bottom dead center, it should be positioned in the throat plate needle hole center in feeding direction and its lost motion in the feeding direction should be as small as possible.

*Pic. 14: Needle stab position setting in feeding direction*



(1) - Regulating screw  
(2) - Regulating screw

(3) - Arresting screw  
(4) - Arresting screw



1. Place the needle in the bottom dead center.
2. Loosen the arresting screws (3), (4), and the regulating screw (2).
3. Adjust the regulating screw (1) so that the proper setting is complied with and arrest it with the screw (3).
4. Adjust the regulating screw (2) so that the lost motion (play) of the needle bar holder in the arrow direction is the smallest achievable one; rubbing must not occur.
5. Tighten the screw (4).

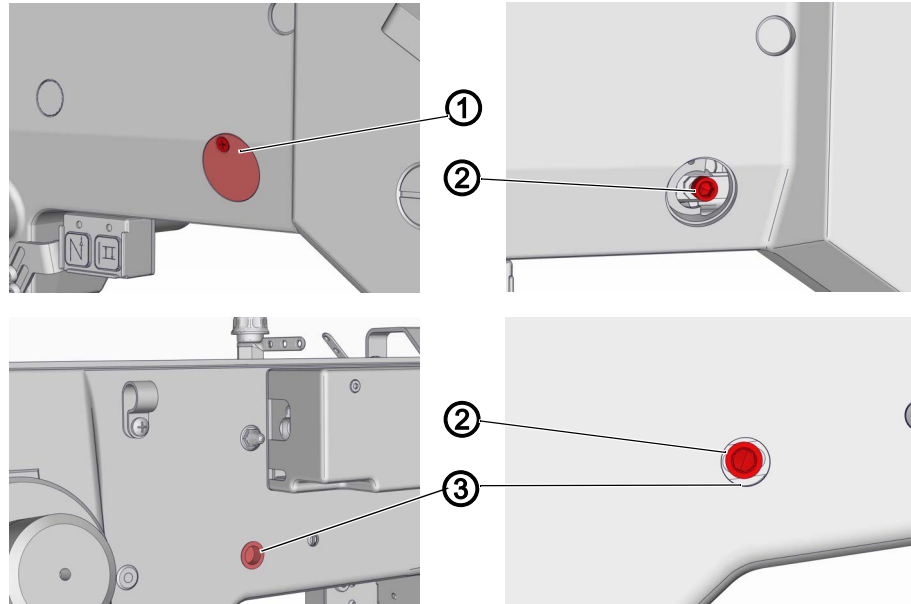
## 4.6 Lateral setting of needle stab position



### Proper setting

Both dead centers of the needle lateral motion at the zigzag stitch sewing should be at the same distance from the throat plate needle hole edges.

*Pic. 15: Lateral setting of needle stab position*



(1) - Cover  
(2) - Screws

(3) - Hole



1. Dismantle the cover (1) and the hole stop (3) from the rear side.
2. Loosen both screws (2).
3. Set the maximum zigzag stitch width and adjust the positions of the needle lateral motion dead centers as per proper setting.
4. Tighten both screws (2) properly.
5. Replace the cover (1) and hole stop (3).

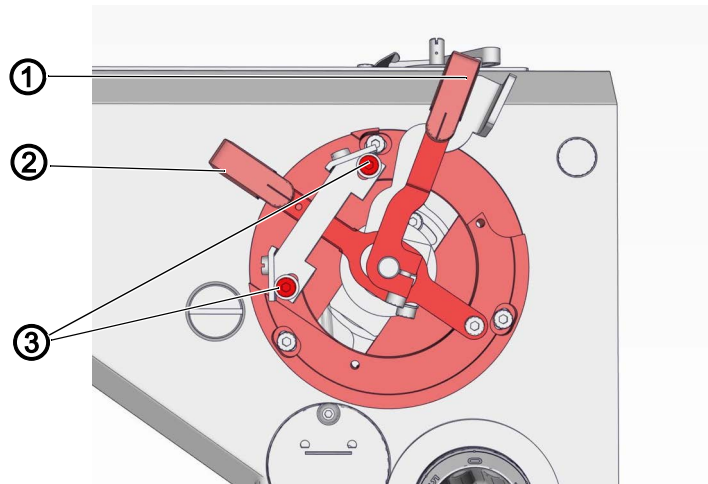
#### 4.7 Lateral setting of central straight stitch position



##### Proper setting

If the central straight stitch is set, the needle position should be approximately in the center of the presser foot or in the middle of the throat plate needle hole center.

*Pic. 16: Lateral setting of central straight stitch position*



(1) - Lever  
(2) - Lever

(3) - Screws



1. Set the zero width of the zigzag stitch with the lever (1).
2. Loosen the screws (3).
3. Shift the lever (2) until the needle shifts in the lateral direction to the throat plate needle hole center.
4. Tighten the screws (3).

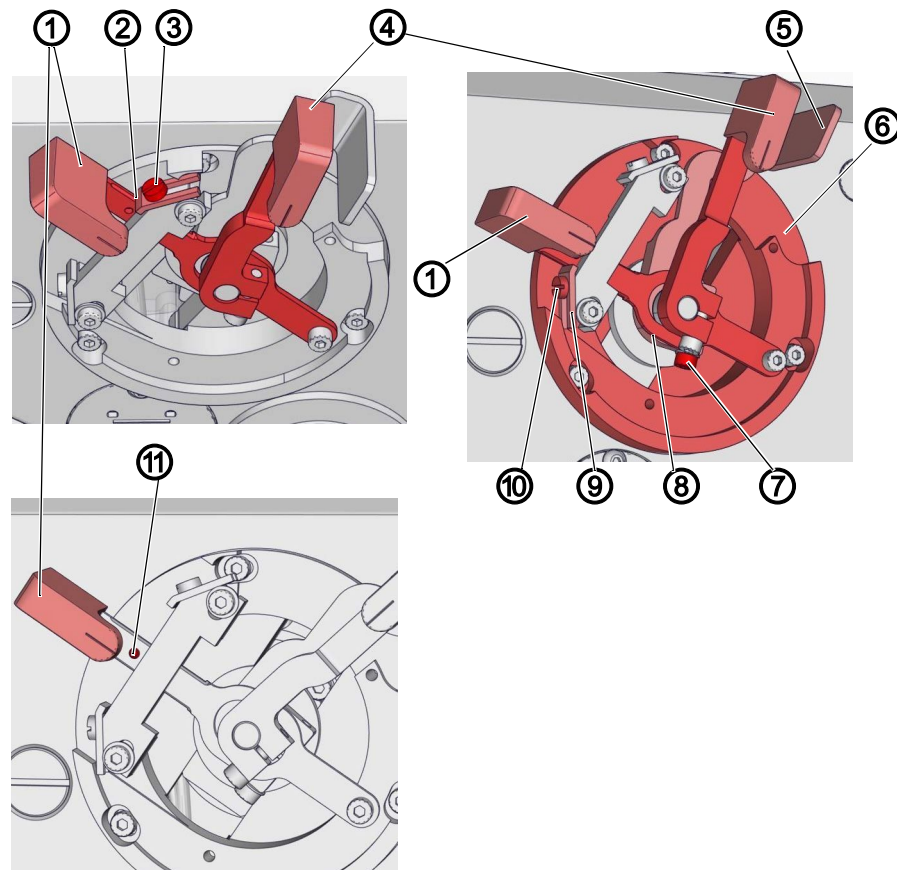
#### 4.8 Lateral setting of straight stitches on throat plate needle hole edges, arresting of zigzag stitch setting mechanism



##### Proper setting

If the sewing equipment allows using the maximum zigzag stitch width, which is characteristic of the particular machine type, the position of the border straight stitches should be adjusted so that it aligns with the zigzag stitch border. If the throat plate needle hole is narrower than the maximum zigzag stitch width of the particular sewing machine type, the lever for the position setting of the border stitch must be fixed in the central position.

Pic. 17: Lateral setting of straight stitches



- (1) - Lever
- (2) - Stop
- (3) - Screw
- (4) - Lever
- (5) - Arresting lever
- (6) - Casing

- (7) - Screw
- (8) - Arresting nut (invisible)
- (9) - Stop
- (10) - Screw
- (11) - Regulating screw



1. Loosen the screw (3) and turn the lever (1) to the position, in which the needle will perform no lateral motion when turning the lever (4).
2. Locate the stop (2) to the lever (1) and fix it with the screw (3).
3. Loosen the screw (10) and turn the lever (1) to the position, in which the needle performs no side motion when moving the lever (4).
4. Locate stop (9) to the lever (1) and fix it with the screw (10).
5. Adjust the arresting lever (5) in this position.

6. Tighten the arresting nut (8 - invisible).
  7. Loosen the screw (7).
  8. Turn the arresting lever (5) to 1 mm space from the casing (6).
  9. Tighten the screw (7).
- 



---

#### **Information**

If the sewing equipment does not allow using the maximum zigzag stitch width, screw the regulating screw (11) into the lever (1) and fix it in the central position.

---

## 5 Form stitch mechanism of machine 525

### WARNING



**Risk of injury from moving parts!**

Crushing possible.

Switch off the machine before checking and setting.



### Order

The machine setting must be carried out in the sequence as described herein.

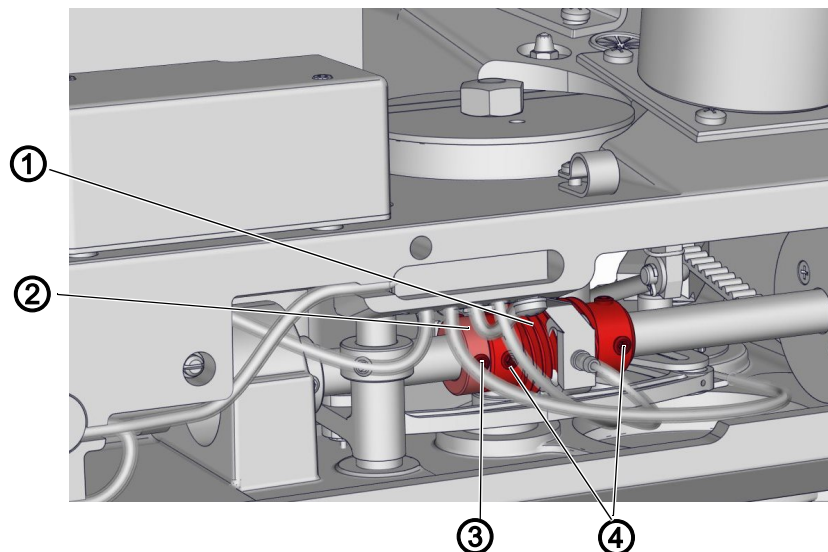
### 5.1 Tooth clearance setting of form stitch gear



#### Proper setting

The tooth clearance of the form stitch gear should be as small as possible. No overlap instead of clearance, however, may arise in any mutual position of the gears.


Pic. 18: Tooth clearance setting of form stitch gear




- (1) - Conical worm  
(2) - Regulating ring

- (3) - Screws  
(4) - Screws



1. Dismantle the arm cover ( p. 13).
2. Loosen 2 screws (3) of the regulating ring (2).
3. Loosen 4 screws (4) on the conical worm (1).

4. Set the tooth clearance as small as possible on the entire circumference of the conical worm (1).
  - Shift the conical worm (1) to the thread lever mechanism:
    - ↳ Reduce the tooth clearance
  - Conical worm (1) shifting to the hand wheel:
    - ↳ Increase the tooth clearance
5. Tighten 4 screws (4) on the conical worm (1).
6. Move the regulating ring (2) on touch with the conical worm (1).
7. Tighten 2 screws (3).
8. Check the tooth clearance.
9. Mount the machine arm cover ( p. 13).

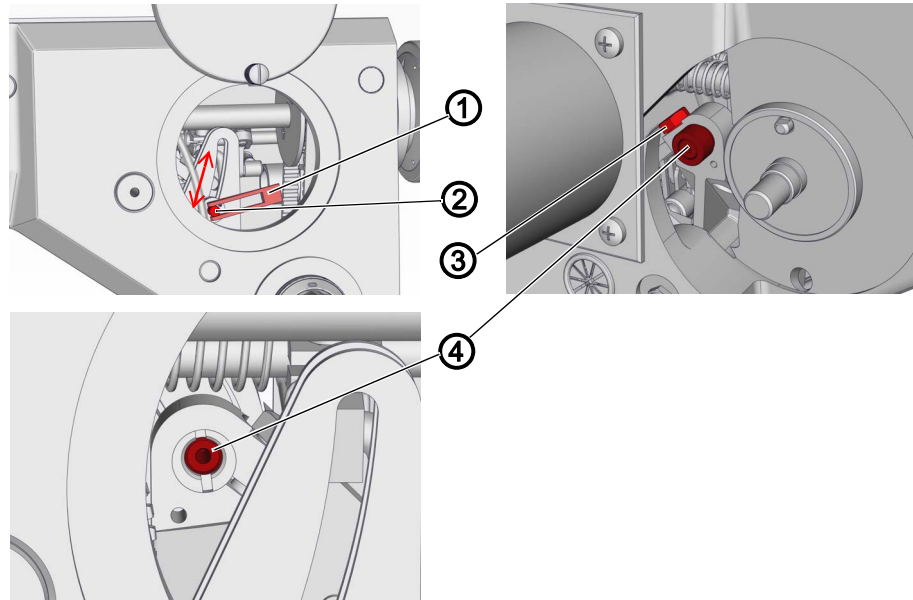
## 5.2 Roller bolt position of form stitch steering cam



### Proper setting

When changing the form stitch width, the stitch central axis should remain in its place. It should not shift laterally.

Pic. 19: Roller bolt position of form stitch steering cam



(1) - Lever

(2) - Bolt

(3) - Screw

(4) - Eccentric bolt



1. Mount the wheel steering cam of the straight stitch (from the machine rear side).
2. Dismantle the cover of the form stitch width setting mechanism.
3. Release the bolt (2) position by tilting the lever (1) in yourself direction.
4. Move the bolt (2) in the arrow direction and watch whether the needle is moving laterally. If yes, dismantle the steering cam, loosen the screw (3) and try to turn the eccentric bolt (4) to a different position and test whether the needle is changing its position. Repeat this until the eccentric bolt (4) position is found where the needle position does not change.
5. Tighten the screw (3).
6. Mount the cover of the form stitch width setting mechanism.





### 5.3 Setting of needle stab position



#### Proper setting

If the wheel steering cam of the straight stitch is mounted, the needle should be located in both directions in the center of the throat plate needle hole.

1. Adjust the needle position in feeding direction ( p. 23).
2. Adjust the needle lateral position so that the needle is located in the needle hole center ( p. 24).

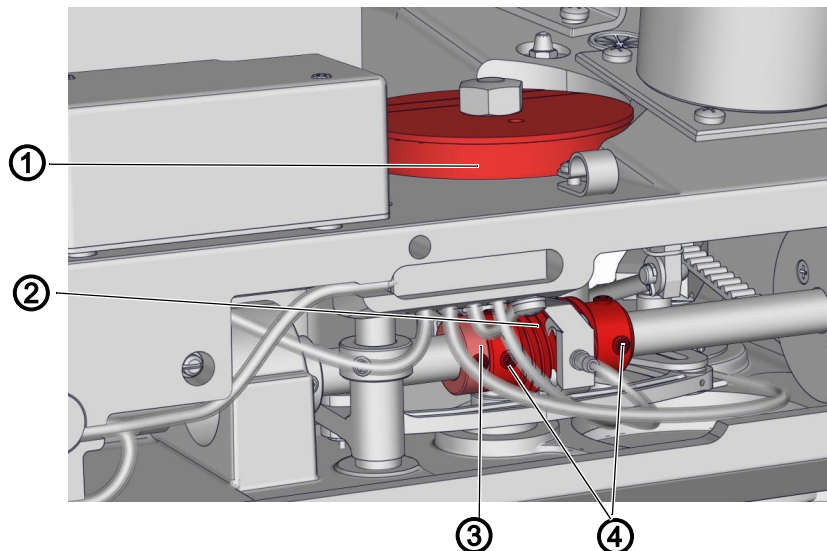
### 5.4 Timing of form stitch steering cam to needle motion



#### Proper setting



When sewing the form stitch, the needle should shift in the lateral direction at the time when it is over the sewn material.

*Pic. 20: Timing of form stitch steering cam to needle motion*



- |                    |                       |
|--------------------|-----------------------|
| (1) - Cam          | (3) - Regulating ring |
| (2) - Conical worm | (4) - Screws          |



1. Dismantle the arm cover ( p. 13).
2. Mount any form stitch cam (1).
3. Loosen 4 screws (4).
4. Turn the conical worm (2) to the position where the proper setting is complied with.
5. Shift the conical worm (2) on touch with the regulating ring (3).
6. Tighten 4 screws (4).
7. Check whether the needle is without any motion at the time when it is stabbed in the sewn material and adjust the setting, if needed.
8. Mount the arm cover ( p. 13).

## 6 Feeding and presser foot

### WARNING



**Risk of injury from moving parts!**

Crushing possible.

Switch off the machine before checking and setting.

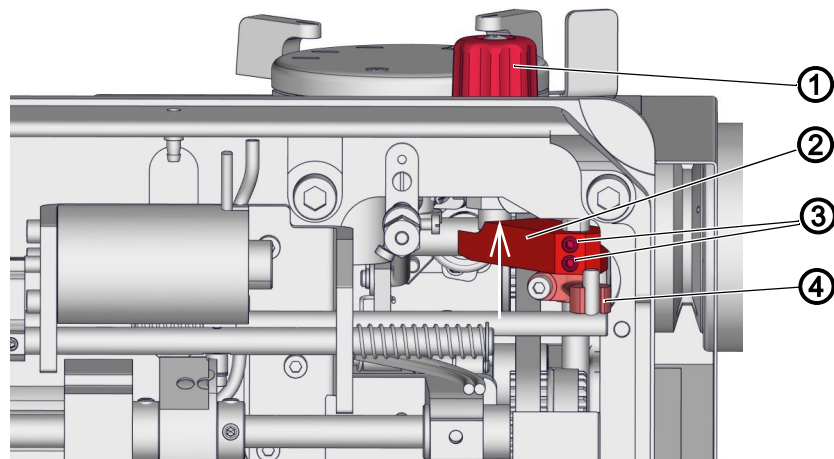
### 6.1 Stitch length setting mechanism



#### Proper setting

If the zero stitch length is set, the hand lever should perform no lost motion.

*Pic. 21: Stitch length setting mechanism*



(1) - Knob  
(2) - Lever

(3) - Screw  
(4) - Backtacking lever



1. Loosen the screws (3).
2. Set the knob (1) on the zero stitch length.
3. Shift the lever (2) in the arrow direction until its fork is in bilateral contact with the screw spherical end on the knob (1) axis.
4. Tighten the screws (3).
5. Check whether the backtacking lever (4) performs any lost motion in this position.

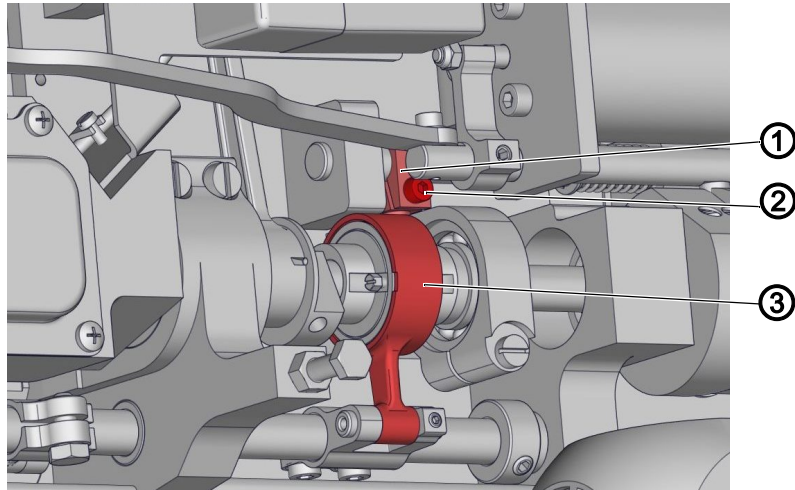
## 6.2 Zero stitch length



### Proper setting

If the zero stitch length is set, the connecting rod (3) should perform no motion.


Pic. 22: Zero stitch length



(1) - Sleeve  
(2) - Screw

(3) - Connecting rod



1. Set the stitch length knob on the zero cipher.
2. Tilt the machine ( p. 12).
3. Loosen the screw (2).
4. Shift the sleeve (1) until the position is found where the connecting rod (3) stops moving.
5. Tighten the screw (2).

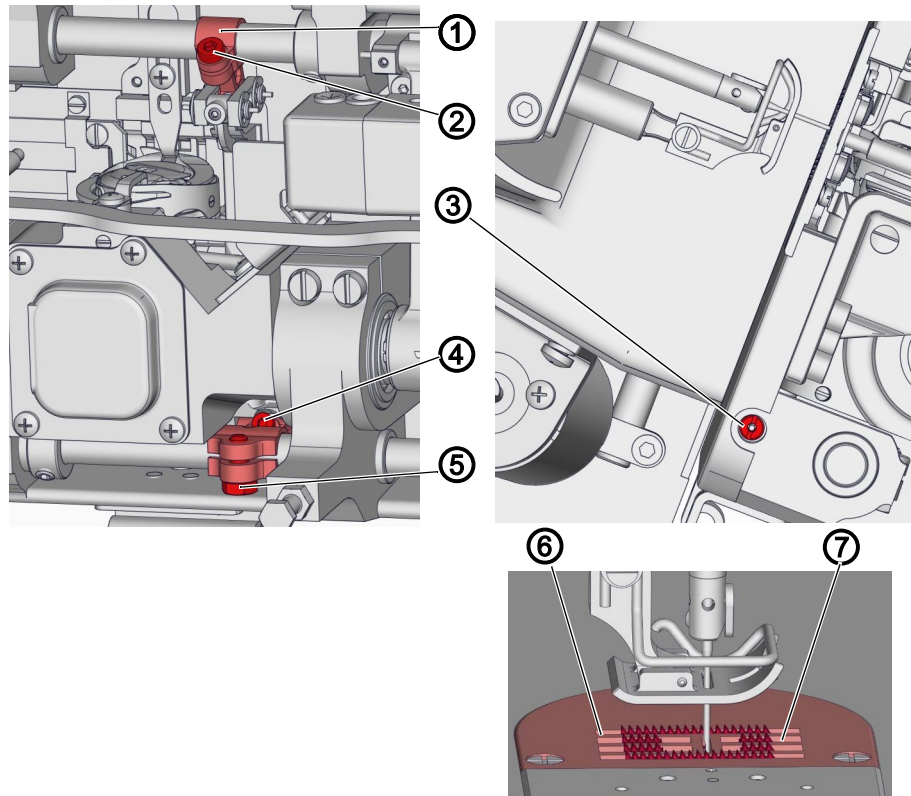
### 6.3 Feed dog position in throat plate recess and its height



#### Proper setting

The feed dog should not touch the throat plate laterally. At the zero stitch length the teeth should be located in the throat plate recess center. If the feed dog is positioned in the top dead center, it should be located 1 mm over the throat plate and its top surface should be parallel with the throat plate.

Pic. 23: Feed dog position in throat plate recess and its height



- (1) - Lever
- (2) - Screw
- (3) - Eccentric bolt
- (4) - Screws

- (5) - Screw
- (6) - Space
- (7) - Space



1. Set the stitch length knob on the zero cipher.
2. Loosen the screws (5) and (2). Shift the whole mechanism laterally so that the feed dog does not touch the throat plate.
3. Shift the feed dog so that the spaces (6) and (7) are the same and tighten the screw (5).
4. Loosen the screws (4), turn the eccentric bolt (3) and the lever (1) until the feed dog protrudes from the throat plate by 1 mm in front and at the back.
5. Tighten the screws (4) and (2).
6. Set the maximum stitch length and check whether the spaces (6) and (7) are the same in the dead centers of the feed dog motion.

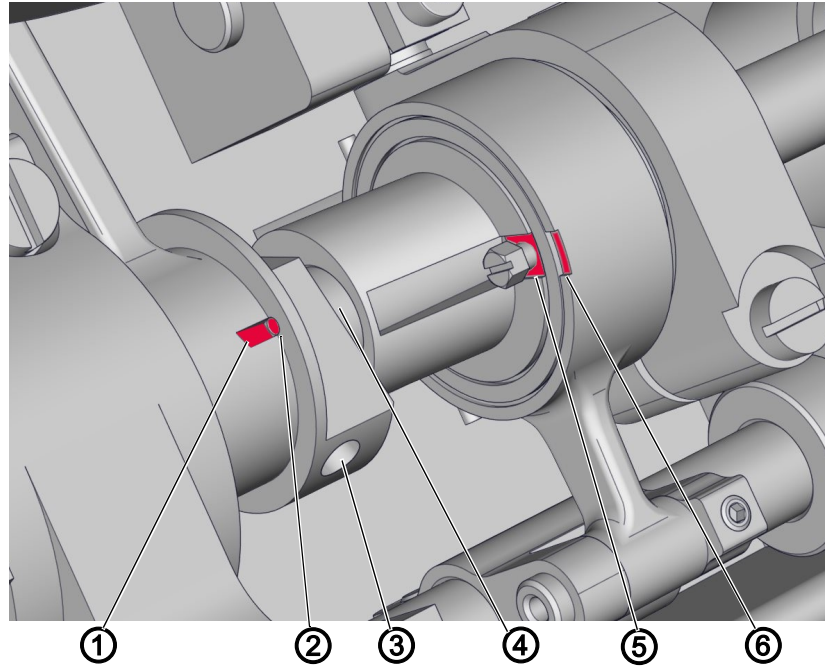
## 6.4 Timing of feed dog motion eccentric



### Proper setting

- If the needle is lifted by 1 mm from the bottom dead center, the feed dog should not move when the backtacking lever is pressed down.
- If the needle eye is in the same height as the sewn material of the maximum thickness 1 mm, the feeding of the material should start (the feed dog teeth approximately at the throat plate level).


Pic. 24: Timing of feed dog motion eccentric (1)



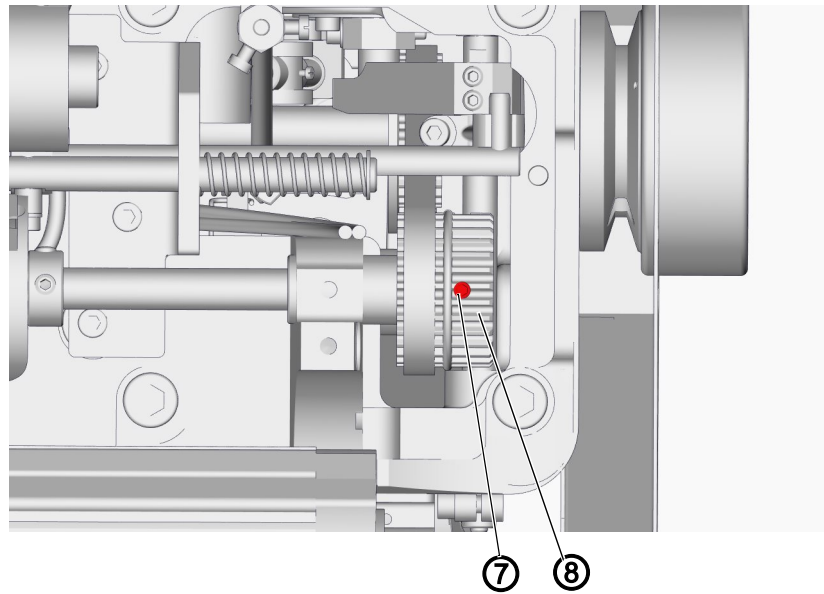
- (1) - Connecting rod  
(2) - Eccentric bolt  
(3) - Screws

- (4) - Shaft  
(5) - Ring  
(6) - Connecting rod



1. Locking the machine in place ( p. 17).
2. Set the maximum stitch length on the knob.
3. Loosen 2 screws (3).
4. Turn the eccentric bolt (2).
- ↳ Mark on the connecting rod (1) coincides with the hole on the eccentric bolt (2).
5. Tighten gradually the 2 screws (3).
6. Loosen 2 screws (7).
7. Turn the shaft (4) manually.
- ↳ Mark on the ring (5) coincides with the mark on the connecting rod (6).

Pic. 25: Timing of feed dog motion eccentric (2)remo



(7) - Screws

(8) - Pulley



8. Tighten 2 screws (7) of the pulley (8).

9. Removing the lock (📖 p. 17).

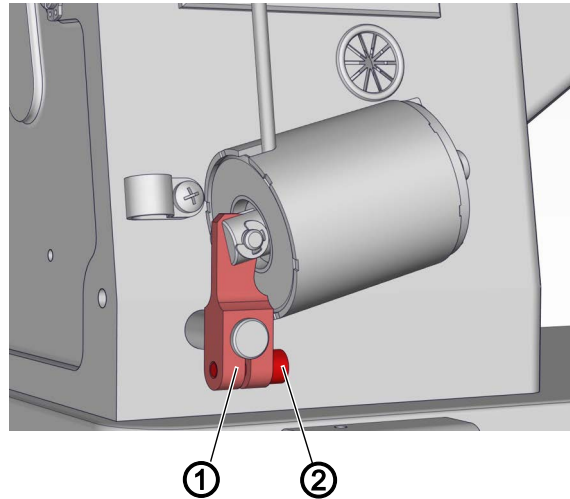
## 6.5 Backtacking with solenoid



### Proper setting

At the maximum stitch length, at the backtacking mechanism dislocation with the solenoid, its movable core should not strike the fixed one.

*Pic. 26: Backtacking with solenoid*



(1) - Lever

(2) - Screw



1. Set the maximum stitch length on the knob.
2. Press the backtacking lever down to the stop and hold it in this position.
3. Loosen the screw (2), press the lever (1) down to the stop, and put it back by approximately 1 mm.
4. Tighten the screw (2).
5. Test whether its movable core does not strike the fixed one when the solenoid is switched on.

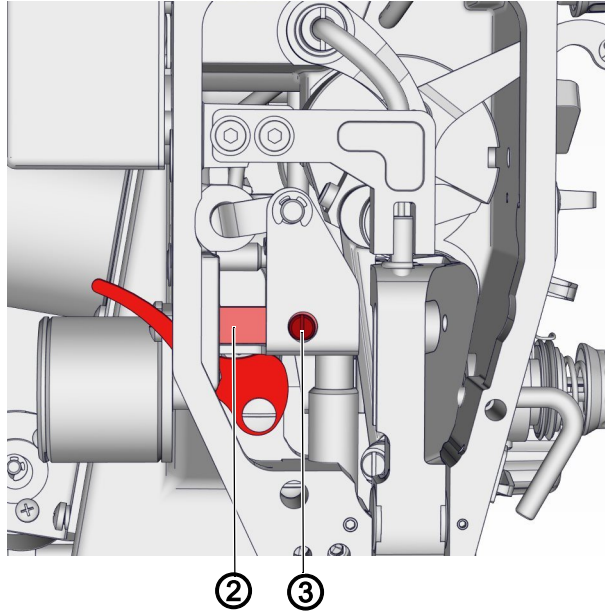
## 6.6 Manual foot lifting



### Proper setting

The foot stroke with the hand lever should be 5,5 mm.

Pic. 27: Manual foot lifting



(1) - Hand lever  
(2) - Driver

(3) - Screw



1. Place the bottom feed dog under the level of the throat plate top surface.
2. Place an object of thickness 5,5 mm under the foot.
3. Loosen the screw (3).
4. Lift the hand lever (1), press the driver (2) down to the lever (1).
5. Tighten the screw (3).



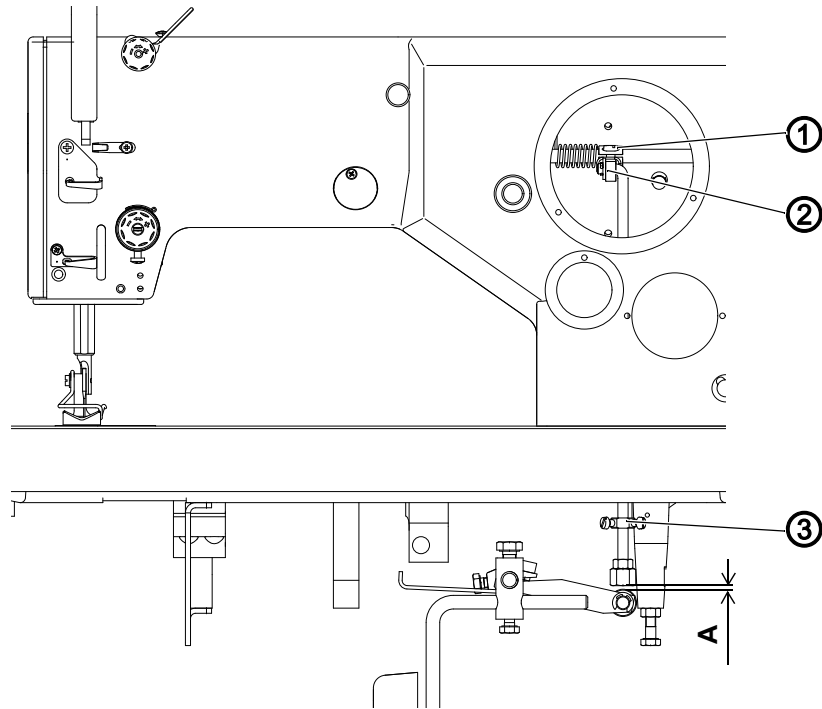
## 6.7 Foot lifting with knee lever



### Proper setting

The foot stroke with the knee lever should be 12,5 mm, the space (A) = approximately 2 mm if the knee lever is in the initial position.

*Pic. 28: Foot lifting with knee lever*



(1) - Screw  
(2) - Lever

(3) - Ring



1. Lower the presser foot on the throat plate.
2. Loosen the screw (1).
3. Turn the lever (2) so that there is the prescribed space (A).
4. Tighten the screw (1).
5. Try to adjust the ring (3) position and test how big the foot stroke with the knee lever is. Repeat this until the prescribed foot lifting is achieved.

## 6.8 Foot lifting with solenoid

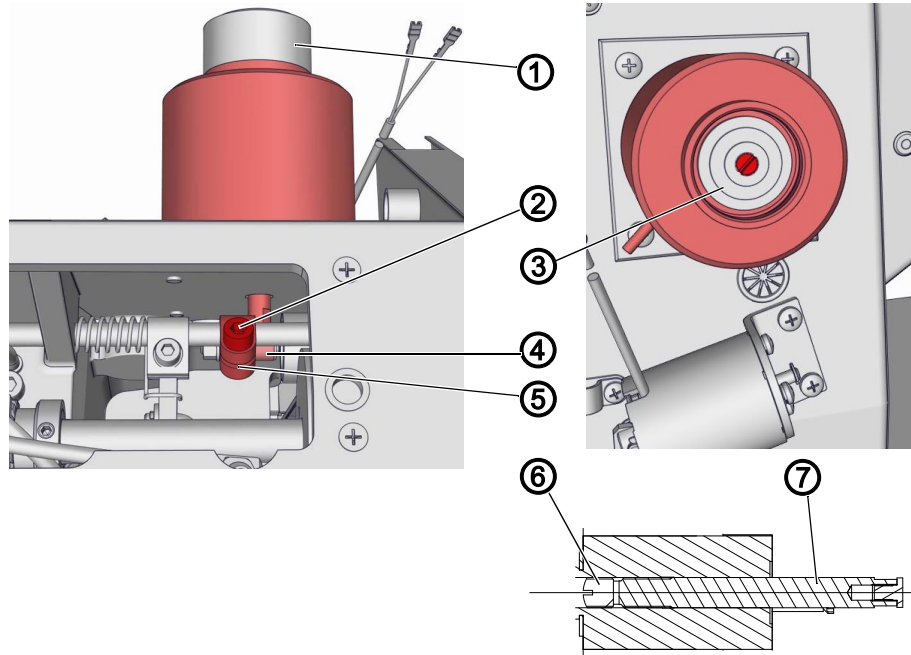


### Proper setting

The foot stroke with the solenoid is 12 mm.

If the foot is lifted, the solenoid movable core should be at the stop onto the fixed core.

Pic. 29: Foot lifting with solenoid



- (1) - Solenoid cover
- (2) - Screw
- (3) - Solenoid core
- (4) - Roller

- (5) - Lever
- (6) - Screw
- (7) - Screw



1. Place the foot onto the throat plate.
2. Unscrew the solenoid cover (1).
3. Loosen the screw (2).
4. Turn the lever (5) with the roller (4) almost on touch with the arm side.
5. Tighten the screw (2).
6. Remove the solenoid core (3).
7. Loosen the screw (6) and try to turn the screw (7) to any position.
8. Insert the core (5) back in the solenoid, press it down and find out how big the solenoid stroke is. Repeat the procedure until the prescribed value is achieved.
9. Lock the screw (7) position with the screw (6).
10. Mount the solenoid cover (1).

## 7 Needle bar and hook

### WARNING



**Risk of injury from moving parts!**

Crushing possible.

Switch off the machine before checking and setting.

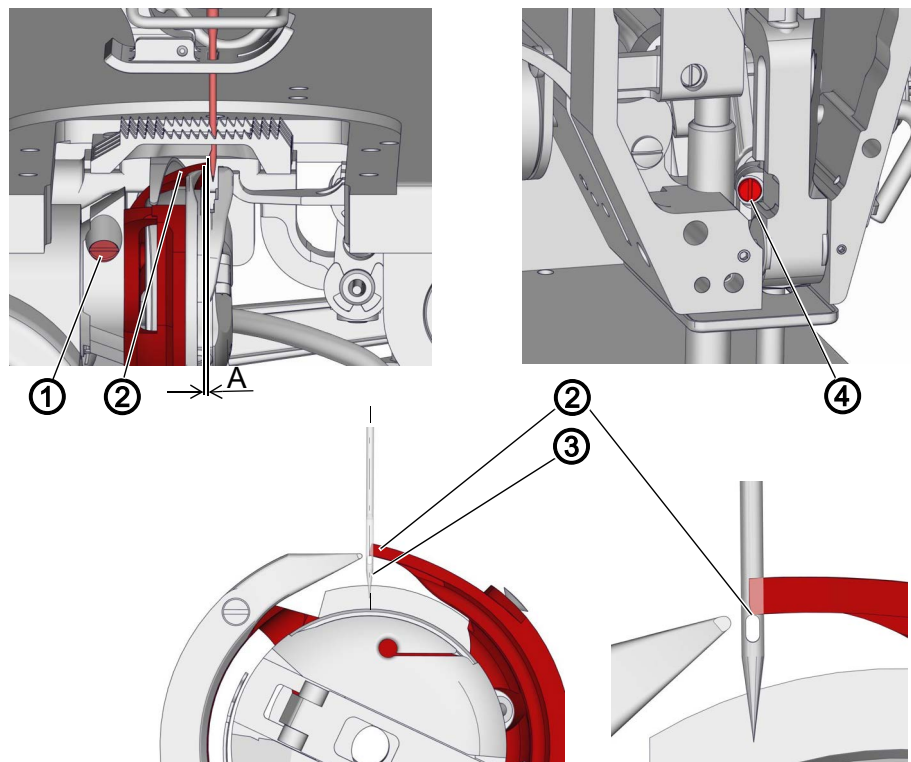
### 7.1 Needle bar height, needle and hook point clearance



#### Proper setting

When sewing on the left, if the hook point is positioned on the needle axis, the hook point bottom edge should be located on the needle eye top edge. The hook should be positioned so that the distance between the needle scarf bottom and the hook point is (A) = 0,2 mm.

*Pic. 30: Needle bar height, needle and hook point*





(1) - Screws


(2) - Hook point

(3) - Needle axis

(4) - Screw



1. Set the lever of zigzag stitch width to zero (523i, 524i, 527i); mount the wheel steering cam of straight stitch (525i).
2. Dismount the throat plate (  p. 15).
3. Locking the machine in place (  p. 17).
4. Loosen two screws (1), shift the hook to the distance (A) and the hook point (2) onto the needle axis (3).
5. Tighten two screws (1).

6. Removing the lock the machine in place ( p. 17).
7. Set the maximal zigzag stitch width (523i, 524i, 527i);  
dismount the wheel steering cam of straight stitch and mount any form  
stitch cam, which has the stitch width 10 mm (525i).  
Turn the hand wheel and set the needle to maximal left position.
8. Loosen the needle bar driver screw (4) and shift the needle bar vertically  
so that the hook point bottom edge (2) is at the level of the needle  
eye top edge.
9. Check the proper setting.
10. Tighten the screw (4).

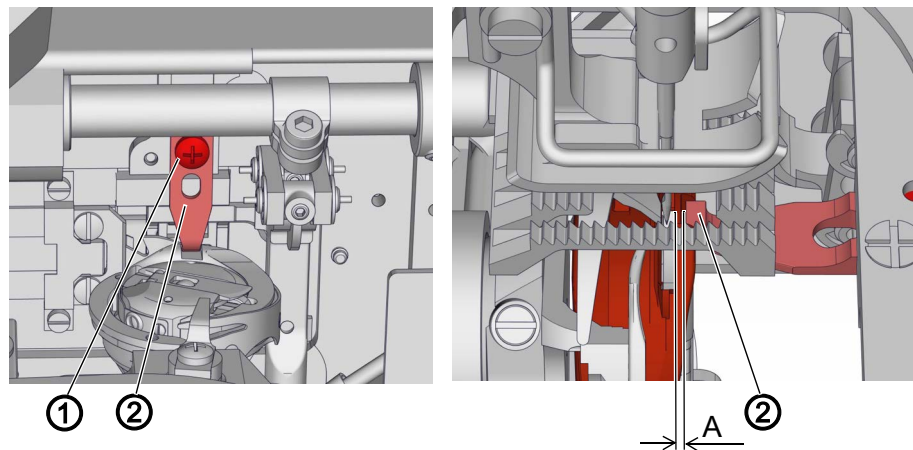
## 7.2 Bobbin case driver



### Proper setting

The distance between the bobbin case driver and the bobbin case groove  
bottom should be (A) = 0,7 mm.



*Pic. 31: Bobbin case driver*



(1) - Screw

(2) - Driver



1. Dismount the throat plate ( p. 15).
2. Tilt the machine ( p. 12).
3. Loosen the screw (1).
4. Shift the driver (2) to the distance (A) = 0,7 mm.
5. Tighten the screw (1).

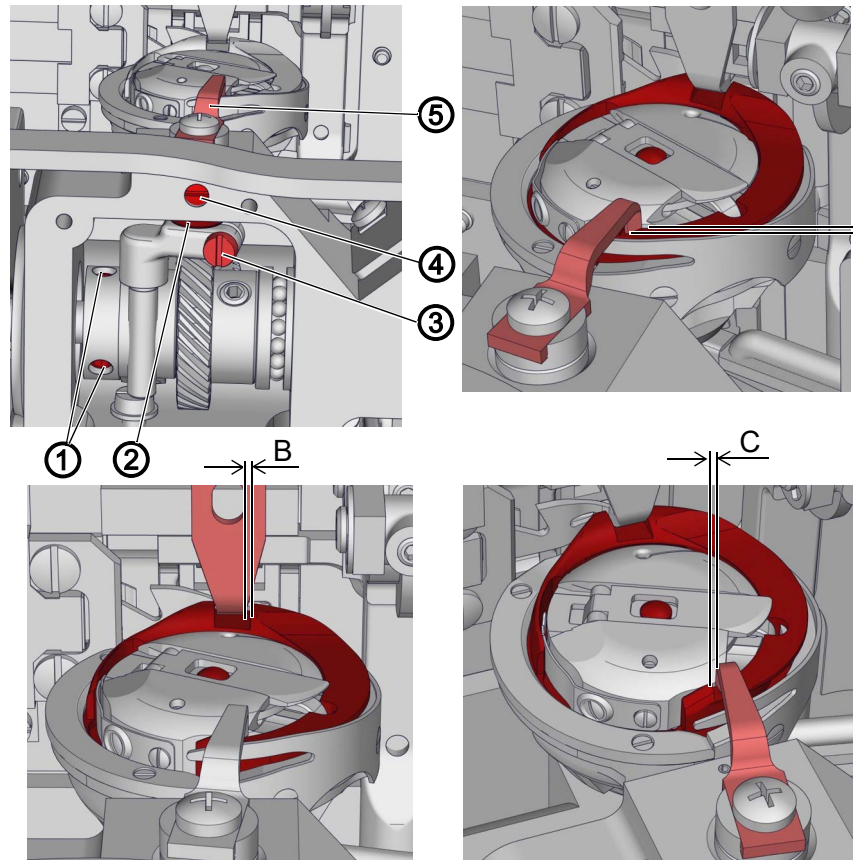
### 7.3 Hook lifting



#### Proper setting

In the direction of the hook axis there should be the space (A) = 0,8 mm between the bobbin case lifter and the hook. The maximum hook lifting should be (B) = 0,4 to 0,8 mm according to the thread thickness. The timing of the lifting eccentric should enable a smooth passage of the thread between the bobbin case and the bobbin case lifter (C) = 1 mm.



Pic. 32: Hook lifting




- (1) - Screw
- (2) - Case
- (3) - Screw

- (4) - Screw
- (5) - Bobbin case lifter



1. Dismount the throat plate ( p. 15).
2. Tilt the machine ( p. 12).
3. Loosen the screw (4) and shift the case (2) to obtain the space (A) = 0,8 mm and tighten the screw (4).
4. Turn the hand wheel until the bobbin case lifter (5) is in the maximum lifting position (left position). Loosen the screw (3) and turn the bobbin case lifter so that the space (B) = 0,4 to 0,8 mm is achieved according to the thread thickness.

5. Tighten the screw (3).
6. Loosen two screws (1), try to set the timing of the feeding eccentric and tighten the screws (1). Sew and watch the size of the space (C) at the moment when the thread is passing through the space. Correct the timing so that (C) = 1 mm.
7. Mount the throat plate ( p. 15).

## 8 Thread mechanism

### WARNING



#### Risk of injury from moving parts!

Crushing possible.

Switch off the machine before checking and setting.

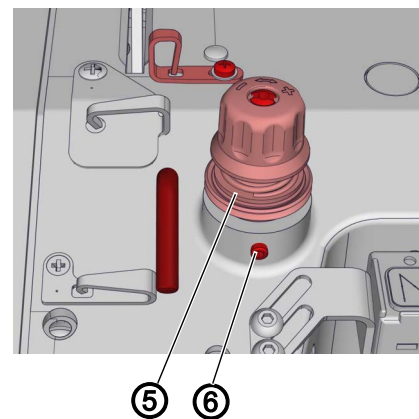
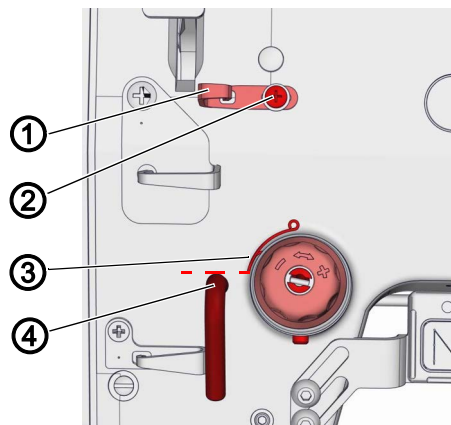
### 8.1 Thread limiter and check spring



#### Proper setting

The thread limiter (1) should be positioned horizontally. The screw (2) should be located in the center of its groove. The spring (3) stop should be located in such position so that the spring end (3) is in the same height as the thread guide top edge (4). In the initial position the spring (3) should be pre-tensioned by 80° - 90° according to the thread thickness.

Pic. 33: Thread limiter and check spring



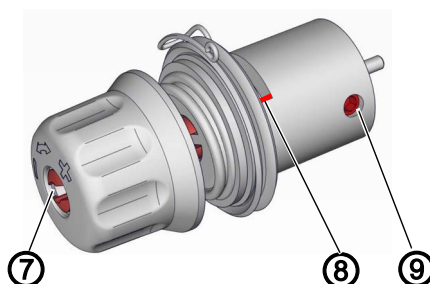
- (1) - Limiter
- (2) - Screw
- (3) - Check spring
- (4) - Guide

- (5) - Tensioner
- (6) - Screw



1. Set the thread limiter position (1) as shown in the picture and in compliance with the proper setting.
2. Loosen the screw (6) and dismantle the tensioner (5).

Pic. 34: Seřízení napínače niti



(7) - Bolt  
(8) - Stop

(9) - Screw



3. Loosen the screw (9).
4. Turn the bolt (7) by the screwdriver clockwise until the spring hits the stop (8), then continue turn approximately 80° - 90° (according to the thread), to achieve the prescribed pre-tension.
5. Tighten the screw (9).
6. Mount the tensioner (5).
7. Turn the whole tensioner (5) so that the spring end (3) is in the same height as the guide top edge (4).
8. Tighten the screw (6).
9. Sew several stitch and check the spring proper setting.



## 8.2 Bobbin winder

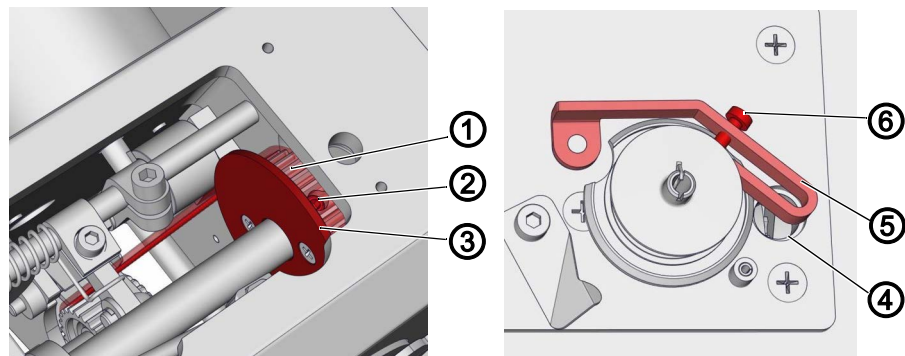


### Proper setting

If the bobbin winder is switched off, the space between the driving and driven wheels of the bobbin winder should be as small as possible, but they must not touch each other.

When winding the thread, the bobbin winder should automatically switch off when the thread is wound up to 0,5 mm under the bobbin outer diameter.



Pic. 35: Bobbin winder



- (1) - Indented belt
- (2) - Regulating screw
- (3) - Pulley

- (4) - Hole
- (5) - Switch lever
- (6) - Screw



1. Dismantle the arm cover ( p. 13).
2. Shift the indented belt (1) with a screwdriver so that two regulating screws (2) are accessible and loosen them.
3. Mount the arm cover ( p. 13).
4. Switch off the bobbin winder with the lever (5).
5. Insert a hexagonal key through the hole (4) into the regulating screw (2) and shift the indented belt pulley (3) to the left up to the stop. Afterwards shift it by 0,5 mm to the right and tighten the screw. Then tighten also the other belt pulley fixing screw.
6. Adjust the switch lever (5) with the screw (6) and test whether the adjustment complies with the proper setting.

## 9 Thread trimming

### WARNING



**Risk of injury from moving parts!**

Crushing possible.

Switch off the machine before checking and setting.

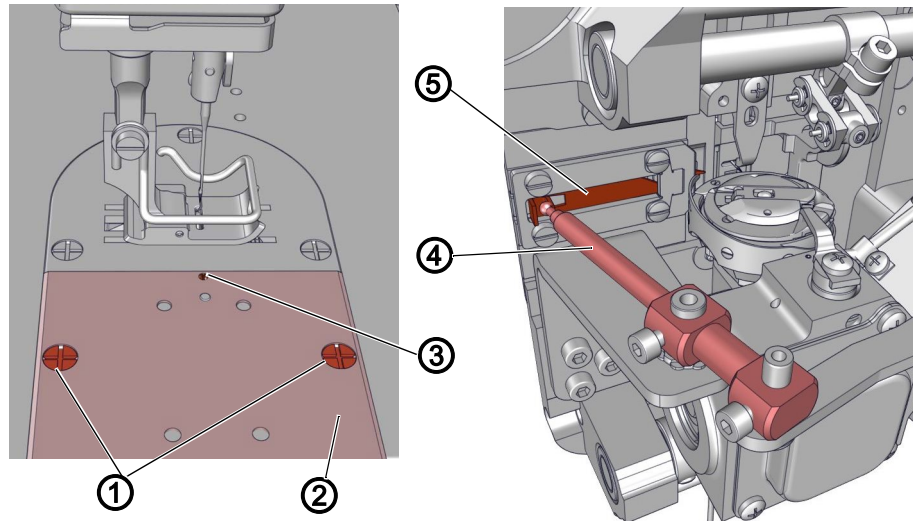
### 9.1 Trimming pressure between knives



#### Proper setting

The counter knife pressure should be as small as possible, however, there is a safe and clean thread trimming. The knives should be on touch within the last part of the trimming knife path only.

*Pic. 36: Trimming pressure between knives*



- (1) - Screws
- (2) - Plate
- (3) - Screw

- (4) - Lever
- (5) - Thread-pulling knife



1. Loosen the screws (1) of the trimming carrier plate (2).
2. Remove the plate (2).
3. Shift out the thread-pulling knife (5) from basic position and insert the trimming thread to the hook of knife.
4. Set with the screw (3) the counter knife pressure according to proper setting and check perfect thread trimming.
5. Mount the plate (2) back again so that the lever (4) is in the recess of thread-pulling knife (5).

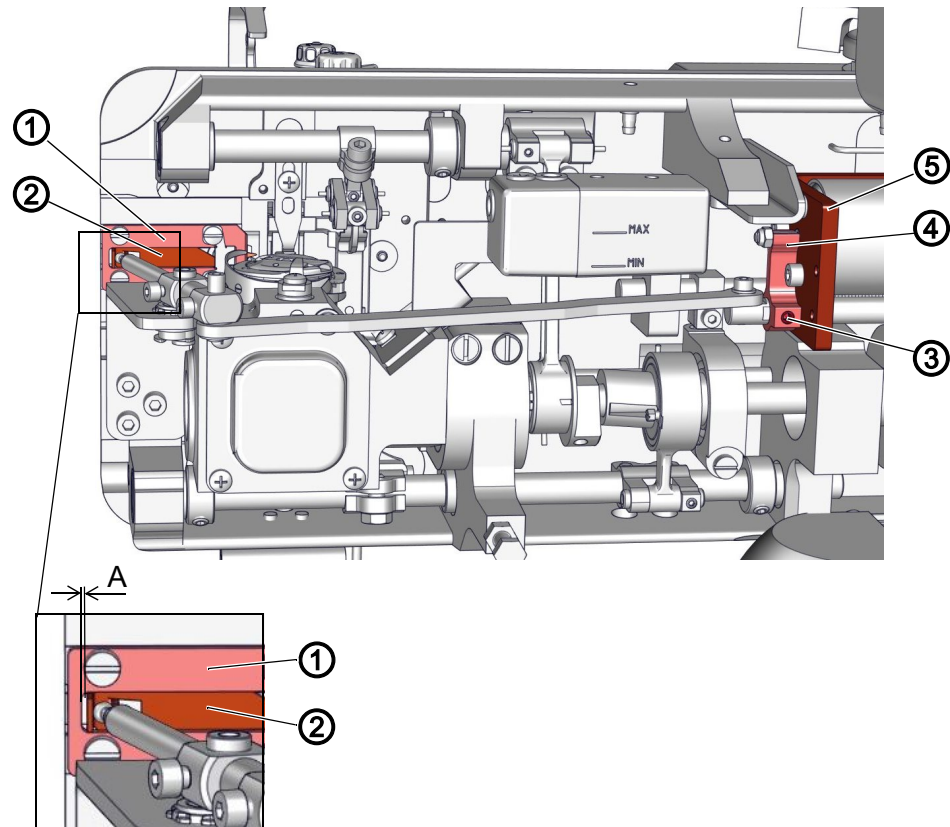
## 9.2 Driver



### Proper setting

If the driver (4) touches the casing (5), the thread-pulling knife (2) should have the distance (A) = 0.5 to 1 mm on its left edge opposite the fishplate (1).


Pic. 37: Driver



- (1) - Fishplate
- (2) - Thread-pulling knife
- (3) - Screw

- (4) - Driver
- (5) - Casing



1. Tilt the machine ( p. 12).
2. Loosen the screw (3).
3. Shift the trimming knife (2) as per proper setting.
4. Place the driver (4) on touch with casing (5).
5. Tighten the screw (3).

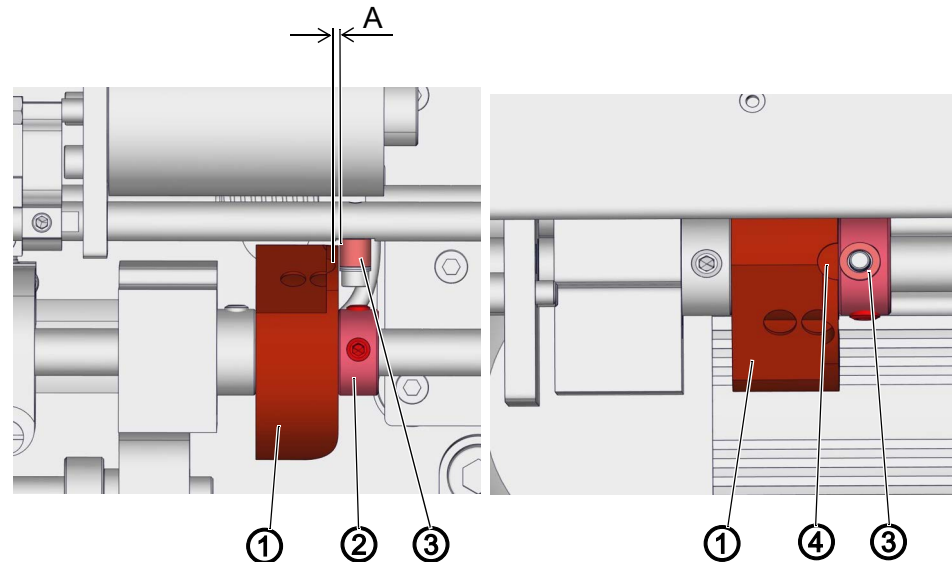
### 9.3 Trimming cam



#### Proper setting

If the trimmer is not active, then the shortest distance between the cam (1) and roller (3) should be (A) = 0,2 mm.

Pic. 38: Trimming cam



(1) - Cam  
(2) - Ring

(3) - Roller  
(4) - Slot



1. Tilt the machine (📖 p. 12).
2. Locking the machine in place (📖 p. 17).
3. Loosen the 2 ring screws (2).
4. Loosen the 2 cam screws (1).
5. Shift the cam (1) to the roller (3) to the distance (A) = 0,2 mm from the straight face of the cam (1).
6. Tighten the 2 ring screws (2).
7. Turn the cam (1) by slot (4) to the roller (3).
8. Tighten the 2 cam screws (1).
9. Removing the lock (📖 p. 17).

## 10 Puller

### WARNING



#### Risk of injury!

Switch off the machine before the Puller setting.



#### Proper setting

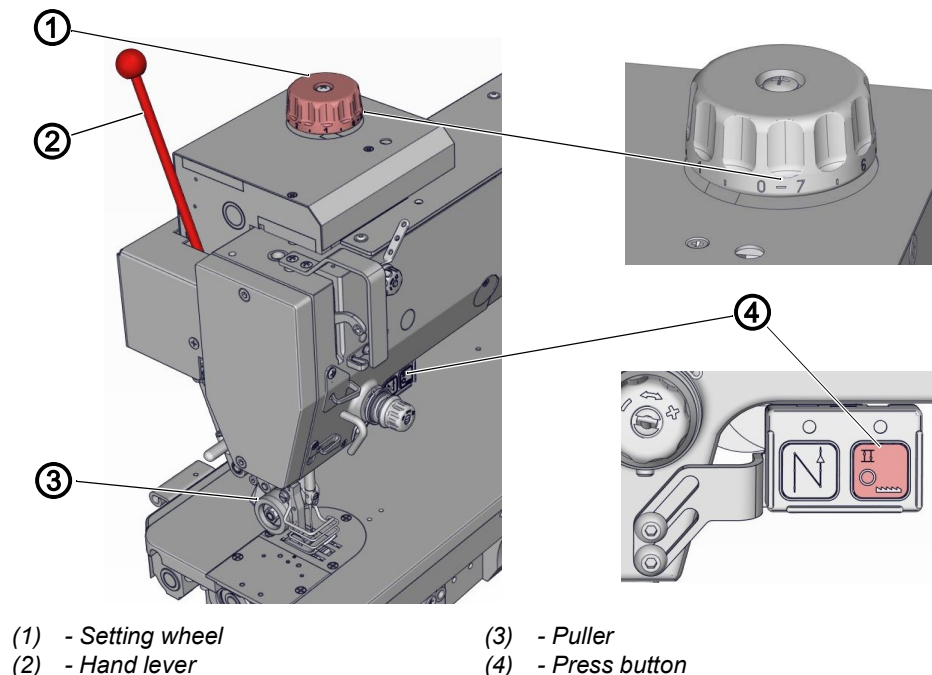
The puller (3) will automatically lift at the presser foot lifting and backtacking. The function must be entered on the control panel, see Operating Instructions, chapter 4.14.2.

The maximum length of the upper puller intermittent feeding is 7 mm. The feeding length is to be set by the setting wheel (1) independent of the bottom feeding.

The hand lever (2) lifts/lowers the puller.

The press button (4) activates the mode to lift the puller automatically (the function will be set on the control panel).

Pic. 39: Puller



## 10.1 Synchronous operation of bottom feed and puller

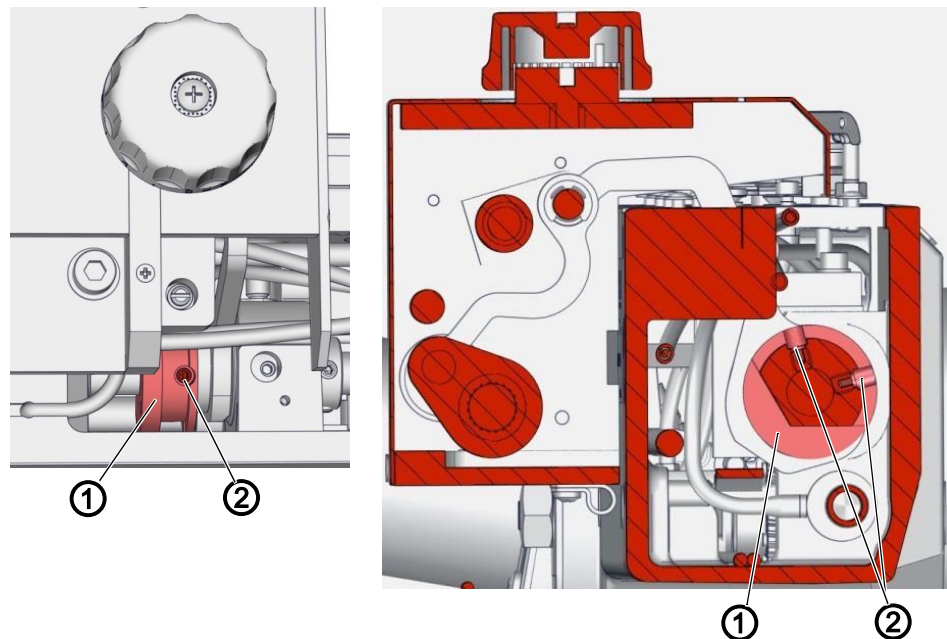


### Proper setting

The bottom feed and the upper puller should operate synchronously. The upper puller motion must be unconditionally finished before the feed dog moves.

- ✎ The sewn material remains under tension between the presser foot and the puller, thus minimizing the seam ripples at the stitch tightening.

Pic. 40: Synchronous operation



(1) - Eccentric

(2) - Screws



1. Remove the arm cover (📖 p. 13).
2. Loosen 2 fastening screws (2) on the eccentric (1).
- ✎ The eccentric (1) should turn on the shaft with little force.
3. Turn the hand wheel in the turning direction so that the needle is in front of the upper dead point.
- ✎ The feed dog will come up over the throat plate.
4. Put a sheet of paper under the presser foot and turn in the turning direction until the machine starts feeding it.
5. At that moment put the eccentric (1) back and set it according to the picture.
- ✎ The synchronization moment then comes up – the feeding wheel will feed synchronously with the feed dog.
6. Tighten two screws (2) of the eccentric (1).
7. Fit the arm cover again (📖 p. 13).

## 10.2 Distance from puller to needle




### Proper setting

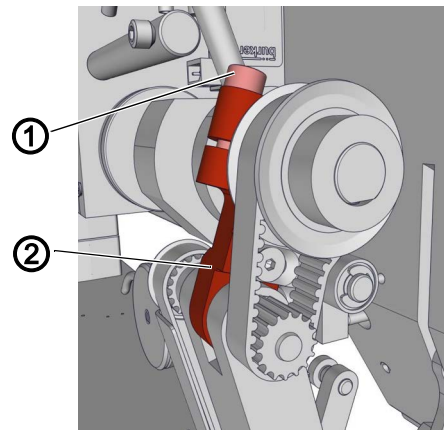
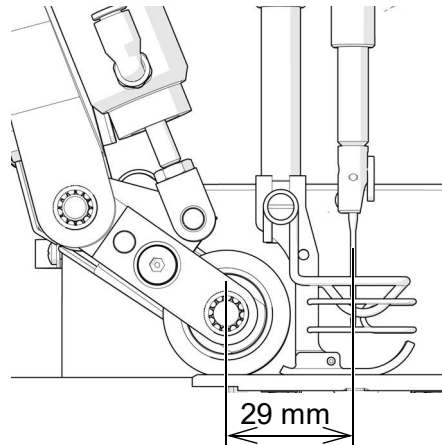
The distance between the feeding wheel center and the needle axis is 29 mm.



### Important

If the distance is set anew, then the upper as well as bottom end position also must be set anew! ( p. 54)


Pic. 41: Distance from puller to needle



(1) - Screw

(2) - Frame



1. Loosen the screw (1).
2. Turn the frame (2) on the axis.
-  The distance between the feeding wheel center and the needle axis must be 29 mm.
3. Tighten the screw (1).



### 10.3 Puller lifting



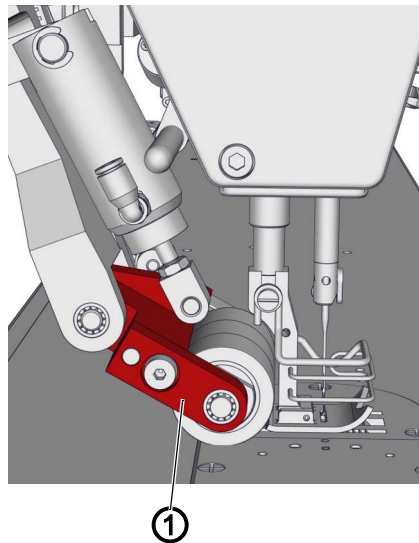
#### Proper setting

The lifted upper puller at the end position must not strike the presser foot.

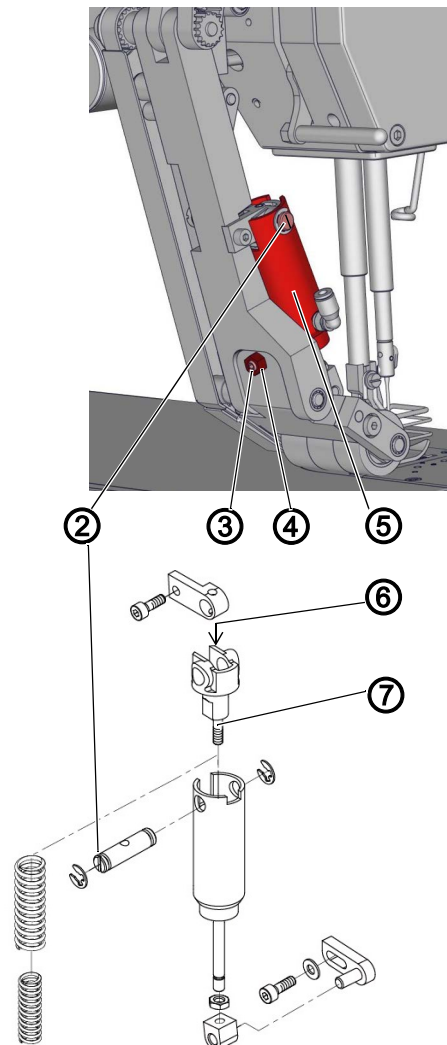
At the bottom end position after the puller placing on the throat plate the frame (1) must deflect by approximately another 0.5 mm before the hand lever stop reaches its end position.

If a toothed feeding wheel is used, there must be a gap at the bottom end position between the wheel and the throat plate not to damage the throat plate.

Pic. 42: Puller lifting



- (1) - Frame
- (2) - Pin
- (3) - Setting screw
- (4) - Safety nut



- (5) - Pneumatic cylinder
- (6) - Clearance for setting screw (7)
- (7) - Setting screw



**Correction of upper end position**

1. Turn the pin (2).
  - ↳ The pin groove (2) must be parallel with the cylinder (5) axis.
2. Set a limit to the cylinder stroke (3).
  - ↳ Set the adjusting screw by means of a hexagonal key 2.5 mm according to the correct setting.

**Correction of bottom end position**

1. Loosen the safety nut (4).
2. Turn the adjusting screw (3):
  - Lifting: turn clockwise
  - Lowering: turn anti-clockwise
3. Tighten the safety nut (4).

## 10.4 Toothed belt tensioning



### Proper setting

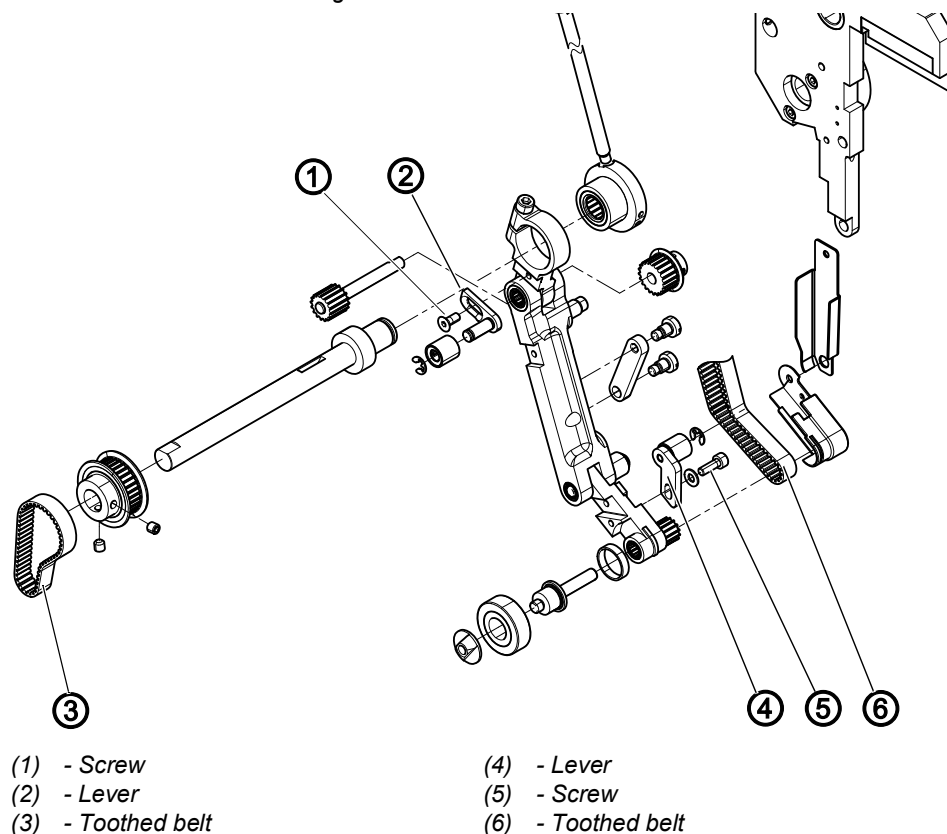
Toothed belts should be tensioned to guarantee a precise transfer of step lengths.



### Important

A too high tension of the belt can result in an exceeding wear and a faulty function.

Pic. 43: Toothed belt tensioning



### Upper toothed belt correction



1. Loosen the screw (1).
2. Shift the lever (2).
- ↩ Tighten the toothed belt (3) according to the correct setting.
3. Tighten the screw (1).

### Bottom toothed belt correction

1. Loosen the screw (5).
2. Shift the lever (4).
- ↩ Tighten the toothed belt (6) according to the correct setting.
3. Tighten the screw (5).

## 10.5 Puller pressure




### Proper setting

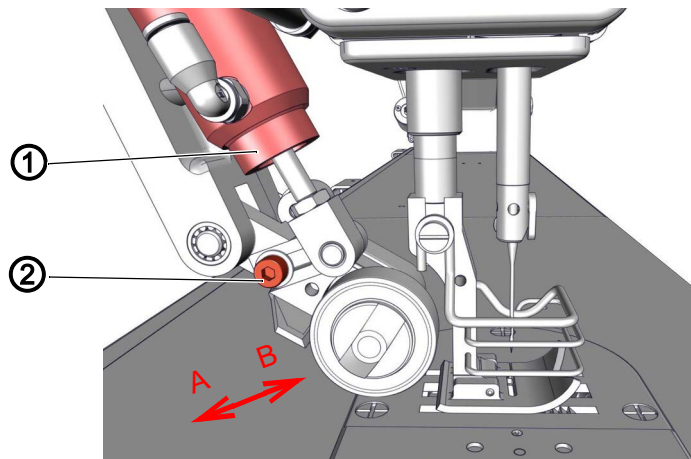
The puller pressure must be adjusted to the sewn material.



### Important

If the pressure was re-set, then the upper end position must be set anew!  
( p. 54)

Pic. 44: Puller pressure



(1) - Pneumatic cylinder

(2) - Screw



1. Loosen the screw (2).
2. Shift the pneumatic cylinder (1):
  - In the arrow direction (A) – the pressure is reduced
  - In the arrow direction (B) – the pressure is increased
3. Tighten the screw (2).

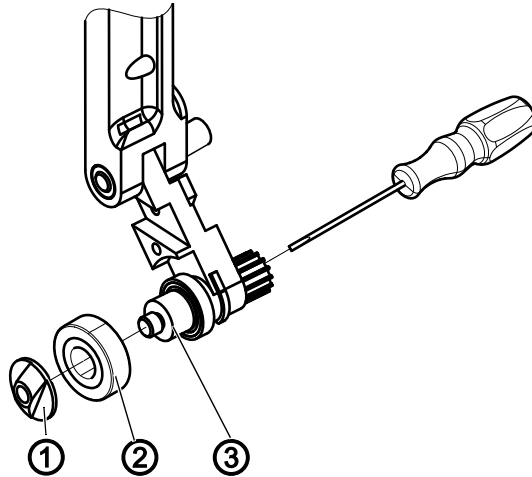
## 10.6 Feeding wheel replacement



### Important

If the rubber-coated feeding wheel is replaced with a toothed one or vice versa, then the bottom end position must be set anew! (📖 p. 54)

Pic. 45: Feeding wheel replacement 1



(1) - Nut

(2) - Feeding wheel

(3) - Shaft

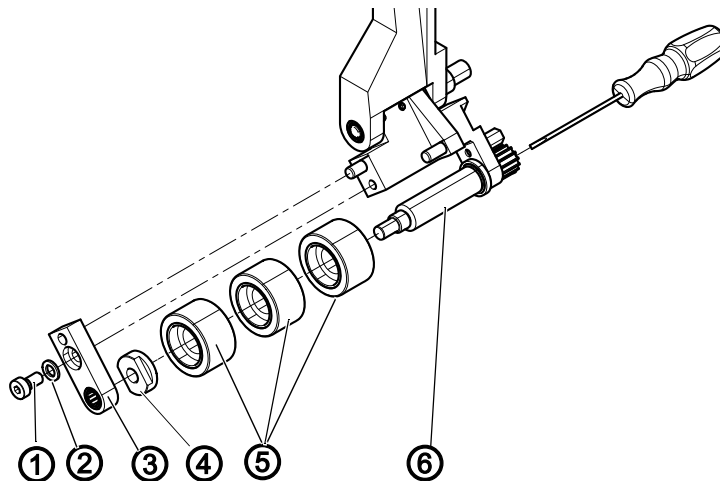


1. Dismantle the nut (1).

### Beware of the left-handed threading!

2. Fix the shaft (3) at the other end with a screwdriver.
3. Replace the feeding wheel (2).
4. Mount and tighten the nut (1).

Pic. 46: Feeding wheel replacement 2



(1) - Screw

(2) - Washer

(3) - Lever

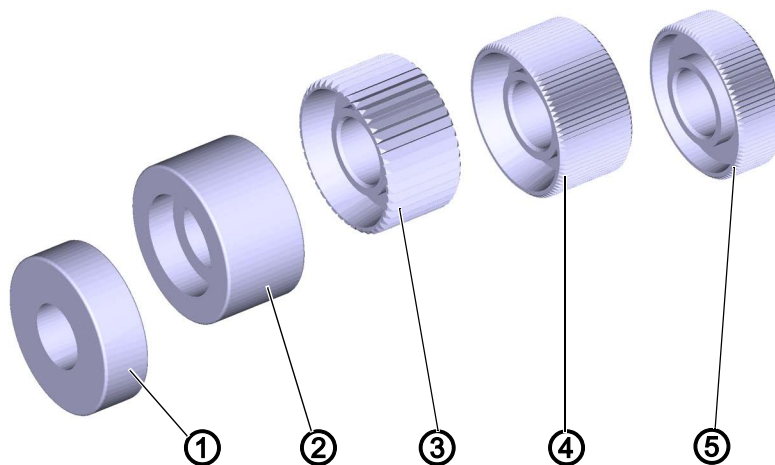
(4) - Nut

(5) - Feeding wheels

(6) - Shaft

1. Unscrew the screw (1) with the washer (2).
2. Remove the lever (3)
3. Dismantle the nut (4).
- Beware of the left-handed threading!**
4. Fix the shaft (6) at the other end with a screwdriver.
5. Replace the feeding wheels (5).
6. Mount and tighten the nut (4).
7. Fit the lever (3).
8. Screw in the screw (1) with the washer (2).

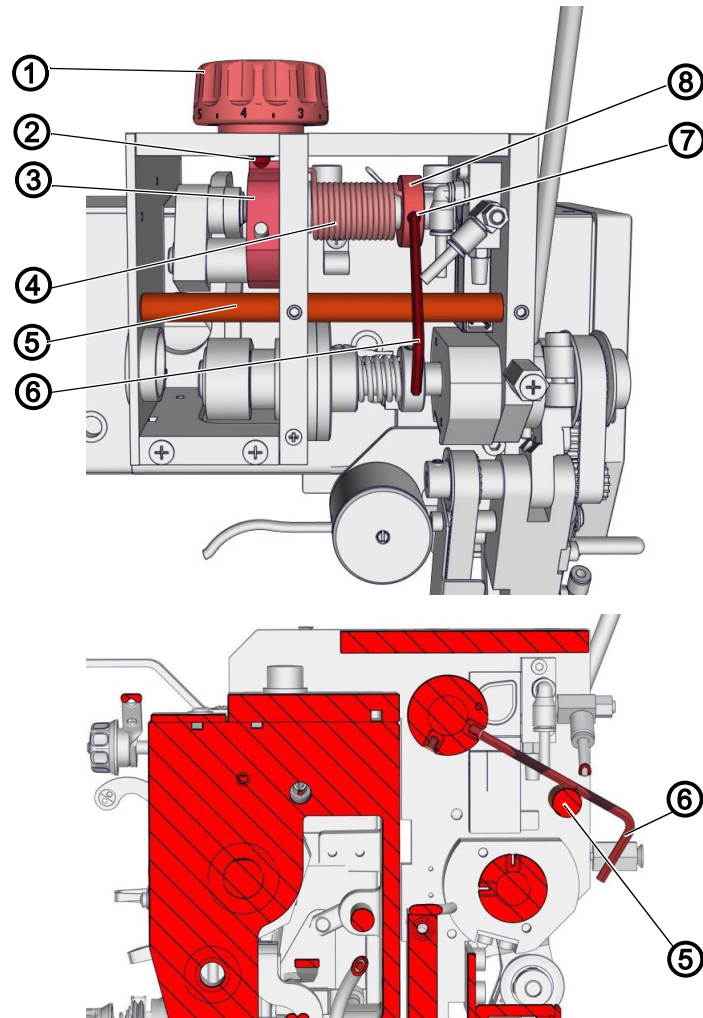
Pic. 47: Feeding wheels



| Pos. | Order number  | Description                                  |
|------|---------------|--|
| 1    | 0933 005725   | Rubber-coated feeding wheel - width 9 mm     |
| 2    | 0933 005737 A | Rubber-coated feeding wheel - width 15 mm    |
| 3    | 0933 005738 A | Toothed feeding wheel/44 teeth - width 15 mm |
| 4    | 0933 005737   | Toothed feeding wheel/88 teeth - width 15 mm |
| 5    | 0933 005736   | Toothed feeding wheel/88 teeth - width 9 mm  |

## 10.7 Setting of cam torsion spring pressure on step length setting wheel screw

Pic. 48: Setting of cam torsion spring



- |                           |                          |
|---------------------------|--------------------------|
| (1) - Setting wheel       | (5) - Rod                |
| (2) - Setting wheel screw | (6) - Hexagonal key 3 mm |
| (3) - Cam                 | (7) - Setting screws     |
| (4) - Torsion spring      | (8) - Setting ring       |



1. Loosen two setting screws (7) of the setting ring (8).
2. Set the maximum value of 7 mm on the setting wheel (1).
3. Insert the hexagonal key 3 mm (6) into the other hole (in the turning direction) of the setting ring (8).
4. Turn the setting ring (8) in the direction of the spring winding and lean it against the rod (7).
5. Tighten two setting screws (7).

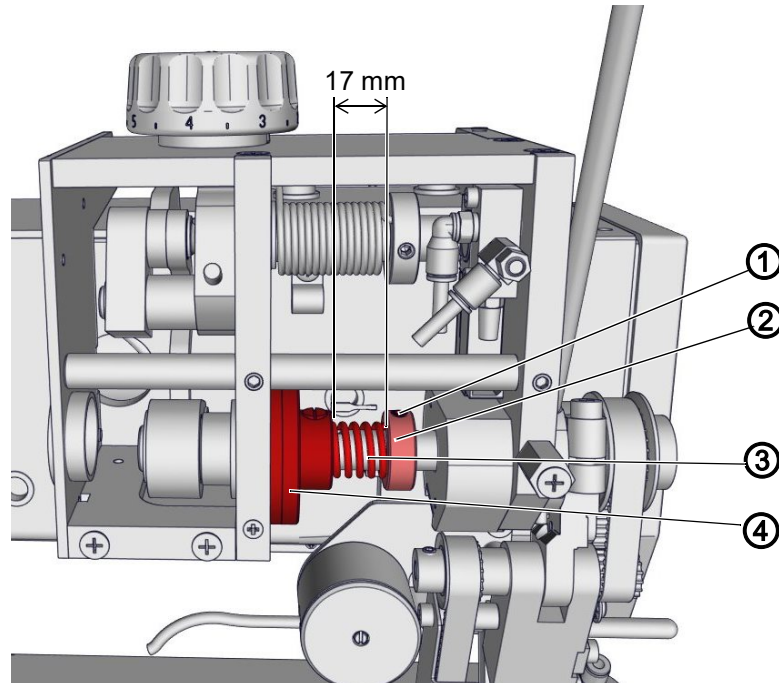
## 10.8 Disk brake pressure setting



### Proper setting

The spring is to be pressed to the value of 17 mm.

Pic. 49: Disk brake pressure setting



(1) - Fastening screws  
(2) - Setting ring

(3) - Spring  
(4) - Brake disc



1. Loosen two fastening screws (1) of the setting ring (2).
2. The setting ring should be able to freely move on the shaft.
3. Press the spring (3) with the setting ring (2) to the brake disc (4) to the value of 7 mm.
4. Tighten two fastening screws (1).

## 11 Electronic control and sewing machine drive

### **DANGER**



#### **Risk of injury from electricity!**

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

Work on the electrical system must **ONLY** be carried out by qualified electricians or appropriately trained and authorized personnel.

**ALWAYS** pull the power plug before working on the electrical equipment.

All operating instructions and parameter sheets are available at the manufacturers' websites (see [www.efka.net](http://www.efka.net),

[www.duerkopp-adler.com](http://www.duerkopp-adler.com), [www.hohsing.com](http://www.hohsing.com), etc.).

Selected instructions concerning the control and drive setting needed for the operators are included in the Operating instructions.

Selected instructions needed for the technician to set the drive are included in the Operating instructions.

#### **Important notes concerning electrostatic discharges (ESD)**

Electrostatic discharges can cause damage to PCBs and other components. You can obtain a certain protection by wearing anti-static gloves or wrist-wraps that you can connect for grounding on the mass of any unpainted metal piece of the machine head or on the switch cabinet.

Handle the PCBs with utmost caution. They are very sensitive towards electrostatic discharges. Hold the PCBs only at their edges.

Put the PCBs after unwrapping or after dismounting with their components upside onto a grounded statically discharged surface.

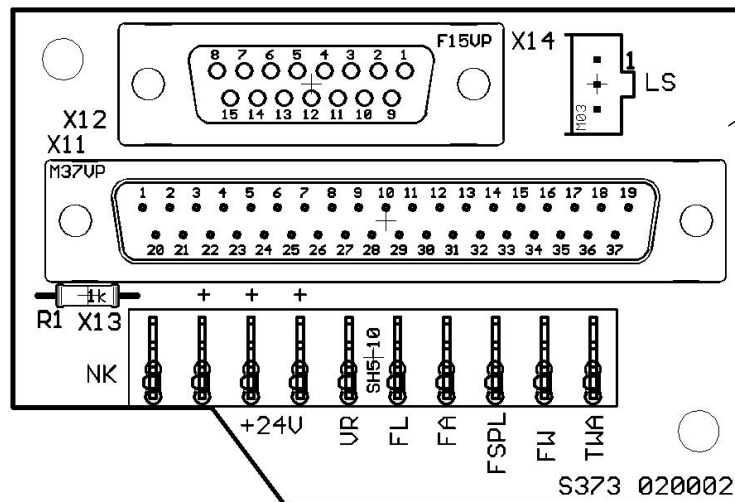
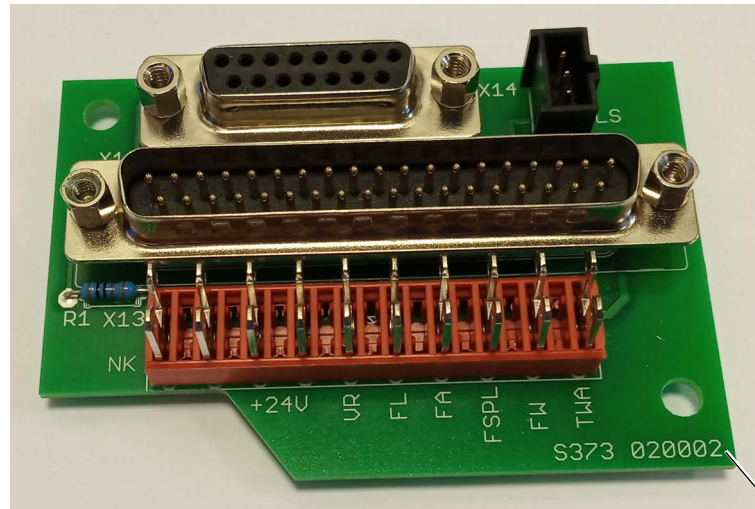
We recommend to use a conductive foam underlay but not as the protective cover of the PCB.

Pay attention not to pull the PCBs over any surface.



## Description of PCB plugs (S373 020002)

Pic. 50: PCB



(1) - PCB S373 020002

### Description of connectors:

R1 autoselect resistor

X11 machine interface

X12 button panel

X13 NK - needle cooling +24V - power supply

VR - backtacking FL - foot lifting

FA - thread trimming FSPL - tread tension

FW - thread wiper TWA - Puller

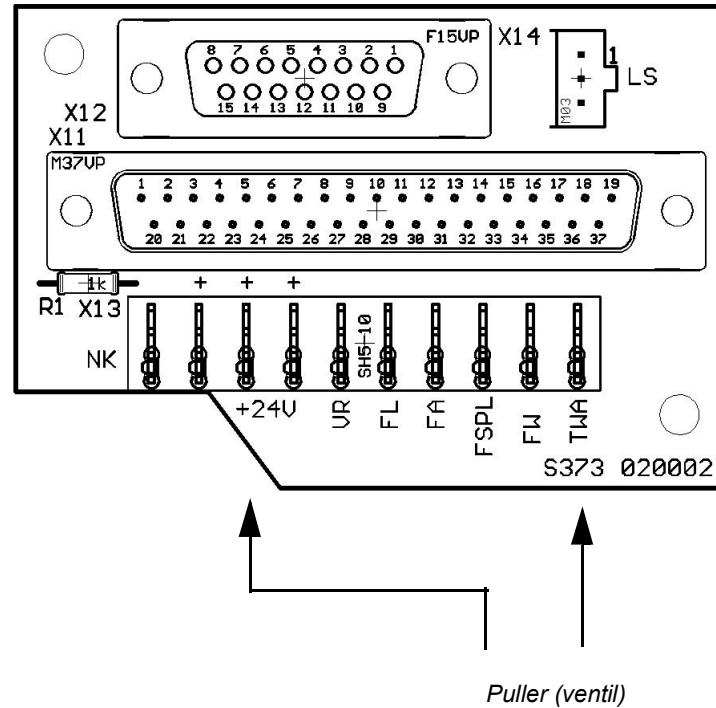
X14 light barrier

Solenoids and ventils of the socket X13 are always connected against +24V.

### Example of puller connection:

Power supply for the ventil of pullerlifting is connected to the pins +24V and TWA on the socket X13.

Pic. 51: Puller connection



## 12 Maintenance

### WARNING



#### Risk of injury from sharp parts!

Punctures and cutting possible.

Prior to any maintenance work, switch off the machine.

### WARNING



#### Risk of injury from moving parts!

Crushing possible.

Prior to any maintenance work, switch off the machine.

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

### Maintenance intervals

| Work to be carried out  | Operating hours |    |     |     |
|---|-----------------|----|-----|-----|
|   | 8               | 40 | 160 | 500 |
| Check the bobbins for wear and damage and replace them if necessary |                 |    | ●   |     |
| <b>Cleaning</b>   |                 |    |     |     |
| Removing lint and threads remnants                                  | ●               |    |     |     |
| <b>Lubricating</b>  |                 |    |     |     |
| Lubricating the head machine  | ●               |    |     |     |
| Lubricating the hook  |                 | ●  |     |     |

## 12.1 Cleaning

### WARNING



#### **Risk of injury from flying particles!**

Flying particles can enter the eyes, causing injury.

Wear safety goggles.

Hold the compressed air gun so that the particles do not fly close to people.

Make sure no particles fly into the oil pan.

### NOTICE

#### **Property damage from soiling!**

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

Clean the machine as described.

### NOTICE

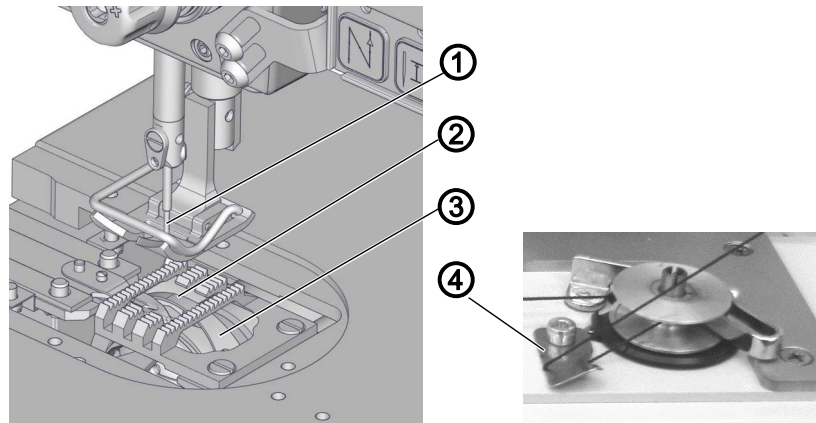
#### **Property damage from solvent-based cleaners!**

Solvent-based cleaners will damage paintwork.

Use only solvent-free substances for cleaning.

Sewing dust and thread residues should be removed after every 8 operating hours using a compressed air gun or a brush. If very fluffy sewing material is being sewn the machine must be cleaned more frequently.

Pic. 52: Cleaning



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

**Areas particularly susceptible to soiling:**

- Area around the needle (1)
- Area under the throat plate (2)
- Hook (3)
- Knife on the winder for the hook thread (4)



1. Remove any dust and thread residues using a compressed air gun or a brush.

## 12.2 Lubricating

### CAUTION



#### **Risk of injury from contact with oil!**

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

Avoid skin contact with oil.

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

### NOTICE

#### **Property damage from incorrect oil!**

Incorrect oil types can result in damage to the machine.

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

### CAUTION



#### **Risk of environmental damage from oil!**

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

Carefully collect up used oil.

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

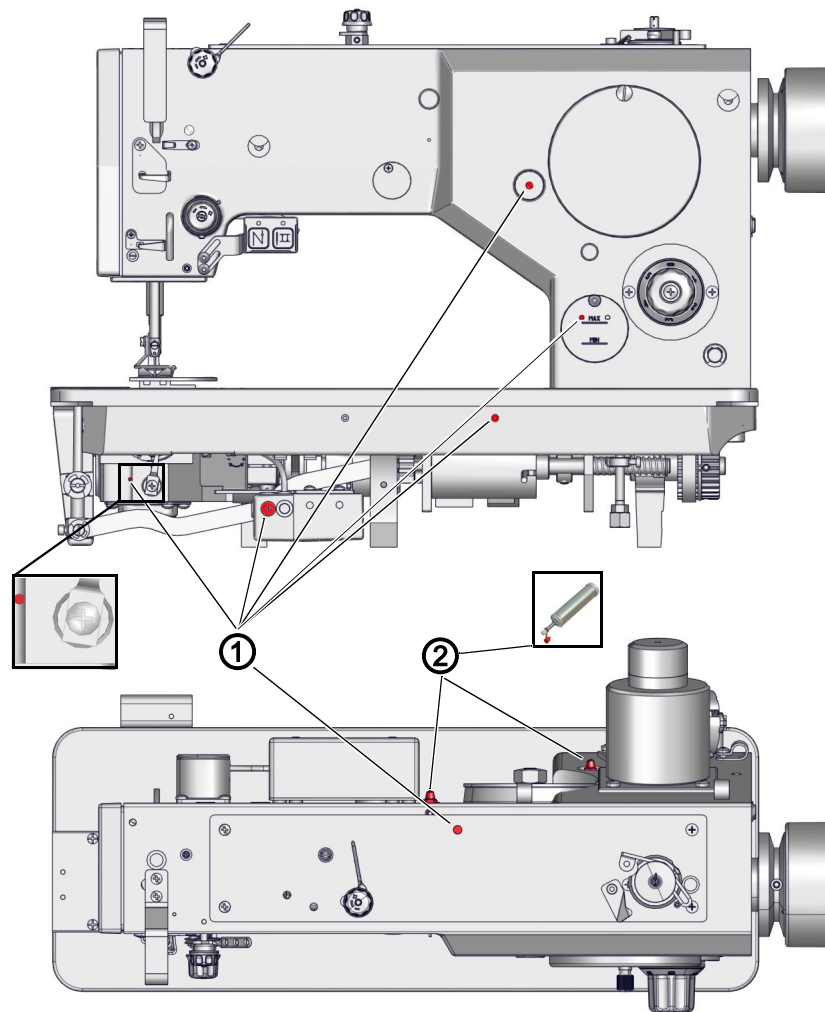
The machine is equipped with a central oil-wick lubrication system. The bearings are supplied from the oil reservoir.



### **Important**

1. The places that must be lubricated are marked on the machine in red around the lubrication holes. Always make sure that the lubrication holes are clean before lubricating. If they are not, they must first be cleaned. Drip oil into the lubrication holes or onto the surface of the parts as required so that the parts are properly lubricated but the oil does not leak out unnecessarily. The needle bar and those parts of the machine that are subjected to more friction or stress should be lubricated several times a day as needed. After the machine has been put into operation, it should be cleaned daily, especially those parts that come into contact with the material being sewn. The hook and hooking device must be cleaned several times a day.
2. Once a week, the machine should be thoroughly cleaned of all dirt and oil deposits. The entire machine should be carefully inspected to ensure that no parts are damaged and that all mechanisms are working properly. Any defects found must be rectified immediately.

Pic. 53: Lubricating



(1) - Filling and lubrication holes for oil      (2) - Filling and lubrication holes for vaseline

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

- Viscosity at 40 °C: 10 mm<sup>2</sup>/s
- Flash point: 150 °C

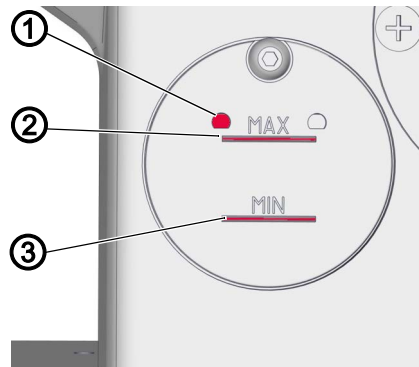
You can order the lubricating oil from our sales offices using the following part numbers:

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

Use the product **Klüber lubrication ISOFLEX NBU 15** when refilling the vaseline.

### 12.2.1 Lubricating the machine head

Pic. 54: Lubricating the machine head



(1) - Oil filler opening  
(2) - MAX marking

(3) - MIN marking



#### Proper setting

The oil level must not raise above the MAX marking (2) or drop below the MIN marking (3).

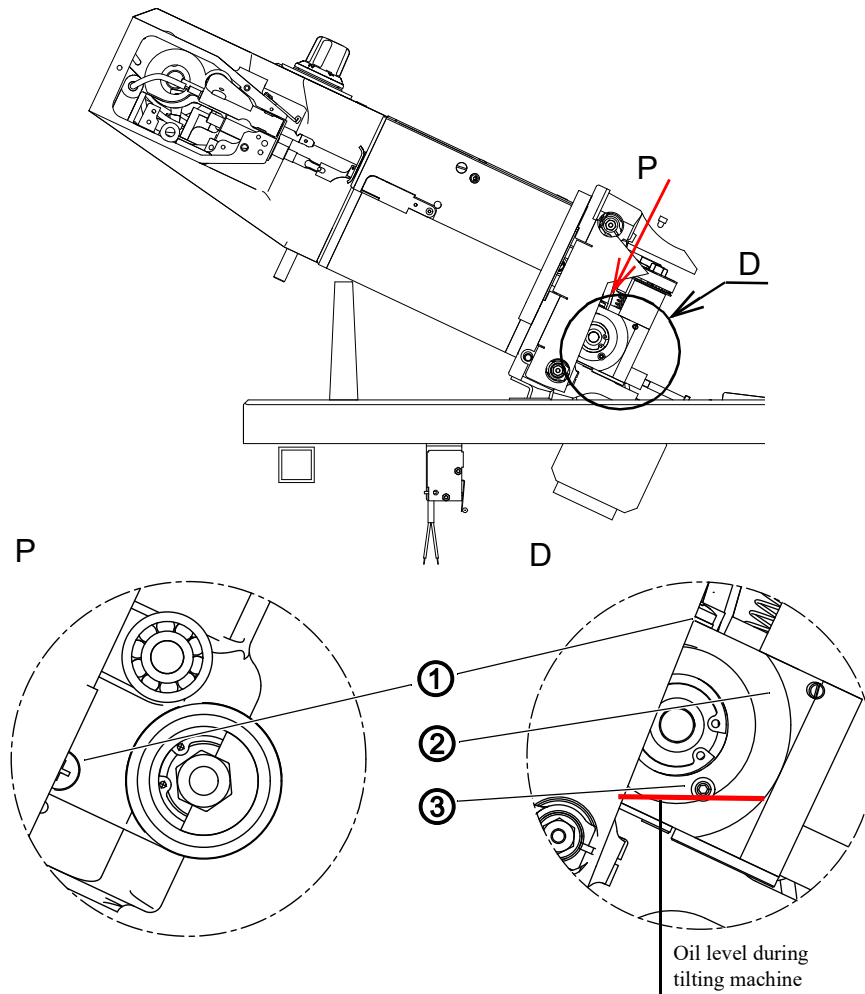


1. Fill oil through the oil filler opening (1) up to the MAX marking (2).



### 12.2.2 Lubricating the machine 52Xi\_188\_294 mm

Pic. 55: Lubricating the machine 52Xi\_188\_294 mm



- (1) - Filling hole  
(2) - Hook Support

- (3) - Inspection hole



#### Proper setting

The oil level must not fall below the inspection hole (3).



1. Tilt the machine onto the support pin.
2. Unscrew the screw from the filling hole (1).
3. Unscrew the screw from the inspection hole (3).
4. Pour the oil through the filling hole (1).
- ↳ The level is correct as soon as the oil starts to flow out through the inspection hole (3).
5. Tighten the screw in the inspection hole (3).
6. Tighten the screw in the filling hole (1).
7. Erect the machine head.

### 12.2.3 Hook lubrication

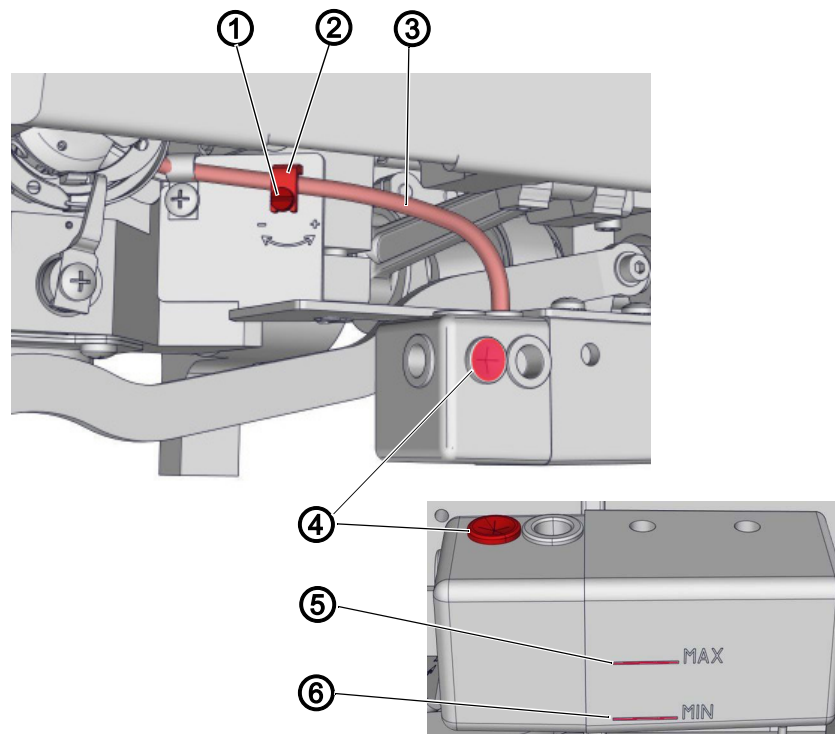
The optimal oil quantity for hook lubrication is specified by the factory. Hold a piece of blotting paper next to the hook and step on the pedal.



#### Proper setting

1. The regulating screw (1) must be tightened so that the clamp (2) lightly grips the hose with lubricating wick (3).
2. After sewing a path of approx. 1 m long, the blotting paper is evenly sprayed with a thin layer of oil.
3. The oil level must not raise above the MAX marking (5) or drop below the MIN marking (6).

Pic. 56: Hook lubrication



- |                                  |                          |
|----------------------------------|--------------------------|
| (1) - Regulating screw           | (4) - Oil filler opening |
| (2) - Clamp                      | (5) - MAX marking        |
| (3) - Tube with lubricating wick | (6) - MIN marking        |



1. Tilt the machine (📖 p. 12).
2. Turn the regulating screw (1):
  - Releasing more oil: turn counterclockwise (+)
  - Releasing less oil: turn clockwise (-)
  - Fill oil through the oil filler opening (4) up to the MAX marking (5).



#### Important

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

### 12.3 Parts list

A parts list can be ordered from Dürkopp Adler.  
For more information visit our website:

[www.minerva-boskovice.cz](http://www.minerva-boskovice.cz)

[www.duerkopp-adler.com](http://www.duerkopp-adler.com)





## 13 Decommissioning

### WARNING



#### **Risk of injury from a lack of care!**

Serious injuries may occur.

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

### CAUTION



#### **Risk of injury from contact with oil!**

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

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



To decommission the machine:

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



## 14 Disposal

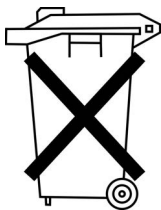
### CAUTION



#### **Risk of environmental damage from improper disposal!**

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

ALWAYS comply with the national regulations regarding disposal.



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

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

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





## 15 Errors in the sewing process

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

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

## 16 Technical parameters

| Technical parameters                           | Unit  | 523i 411001<br>523i 447001 | 524i 811001<br>524i 847001<br>524i 911001<br>524i 947001 | 525i 811001<br>525i 811201<br>525i 811202<br>525i 847001<br>525i 847201<br>525i 847202<br>525i 911001<br>525i 947001<br>525i 947201<br>525i 947202 | 527i 811001<br>527i 847001<br>527i 911001<br>527i 947001 |
|--|-------|----------------------------|--|--|--|
| Zig zag stitch max. width                      | [mm]  | 6                          | 10   |  |  |
| Maximum sewing speed for stitch width 6 mm **  | [RPM] | 5000                       | 4400   | according to cams used   | 3400   |
| Maximum sewing speed for stitch width 8 mm **  | [RPM] | -                          | 4000   | according to cams used   | 2500   |
| Maximum sewing speed for stitch width 10 mm ** | [RPM] | -                          | 3500   | according to cams used   | 2000   |
| Standard sewing speed *                        | [RPM] | 3500                       | 3500   | 3500   | 2000   |

\* The machine is set up to the standard sewing speed in the factory.

\*\* Mentioned speed's value of sewing must not be exceed with a respect to the machine's lifetime. Can not be guaranteed her achievement under any conditions, Usually is necessary to do reduction her speed's value according to use thread, needle and sewn material.

|  |  |
|--|--|
| Stitch type  | double thread zig-zag lockstich  |
| Stitch length  | maximum 5 mm   |
| Foot lifting with hand lever   | 5.5 mm   |
| Foot lifting with knee lever or solenoid   | 12 mm  |
| Needle system  | 134; 134-35; 134-35 LR   |
| Manually controlled subclass   | DC motor - positioning motor without further functions                         |
| Solenoid controlled subclass   | DC motor (AC servo) - positioning motor with reverse run after thread trimming |
| Sewing head weight   | 42 kg<br>61 kg (525i-75); 68 kg (525i-75-66)                                   |
| Sewing machine cpl. weight (including stand)   | 78 kg<br>133 kg (525i-75); 140 kg (525i-75-66)                                 |
| Thread length after trimming   | maximum 20 mm  |
| Machine head clear workspace   | 267 x 117 mm<br>750 x 117 mm (525i-75)<br>750 x 183 mm (525i-75-66)            |
| Machine bed plate dimensions   | 178 x 476 mm<br>186 x 960 mm (525i-75; 525i-75-66)                             |
| Rated standby power  | 12 W   |
| Rated power when sewing (3000 rpm.)  | 250 W  |
| Short-term power   | 1500 VA  |
| Machine floor plan dimensions (including stand)  | 1060 x 550 mm<br>1700 x 730 mm (525i-75)<br>1600 x 600 mm (525i-75-66)         |
| Machine height (including thread stand)  | 1490 mm  |
| Acoustic pressure equivalent level of a separate machine at workplace at 20% machine utilization under standard sewing conditions in a shift | 83 dB/A  |





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