



175-179

## Service Instructions

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## 1 General information

### 1.1 Scope of application of the instructions

These instructions describe setting and maintenance work on the special sewing machines 175, 176 and 179. They apply to all subclasses.

The  *Operating Instructions* describe the intended use and the set-up.

### 1.2 Declaration of conformity

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

### 1.3 Applicable documentation

The device contains built-in components from other manufacturers, e.g. drive motors. 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 Damage during transport

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. This secures any claims towards the transport company.

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

### 1.5 Limitation of liability

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

The manufacturer accepts no liability for any damage due to:

- Failure to observe these instructions
- Improper use

- Unauthorized modifications to the machine
- The deployment of untrained personnel
- Damage during transport
- Using unapproved spare parts

## 2 Safety instructions

This section contains basic instructions for your safety.

Read the instructions carefully before setting up, programming, servicing or operating the machine.

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



### 2.1 General safety instructions

Only authorized persons may use the machine. Every person who works with the machine must have read the operating instructions first.

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

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

Observe the generally applicable safety and accident prevention regulations and the legal regulations concerning industrial safety and the protection of the environment.

When using vendor parts, you must also observe the safety instructions and the operating instructions of the respective manufacturers.

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

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

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

Inspect the machine while in use for any externally visible damage.

Interrupt your work immediately if you notice any changes to the machine. Report any changes to your supervisor. A damaged machine must not be used any further.

Machines or machine parts that have reached the end of their service life must not continue to be used. They have to be disposed of properly and in accordance with the applicable statutory provisions.

The machine may only be set up by qualified specialists. Every person who sets up the machine must have read the set-up instructions first.

Only qualified specialists may perform maintenance work and repairs. Every person who performs maintenance or setting work on the machine must have read the service instructions first.

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

Only qualified electrical specialists may perform work on electrical equipment.

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.

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

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

## 2.2 Layout of safety instructions

Safety instructions in the text are surrounded by colored bars.

Signal words specify the severity of a danger:

- **Danger:**  
Resulting in death or serious injury.
- **Warning:**  
Death or serious injury possible.
- **Caution:**  
Moderate to minor injuries possible.
- **Attention:**  
Material damage possible.

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

-  General danger
-  Danger due to electric shock
-  Danger due to sharp objects
-  Danger due to crushing

**Examples of the layout of the safety instructions in the text:**

<b>Danger</b>	
	<p><b>Type and source of the danger</b></p> <p><b>Consequences in the event of noncompliance</b></p> <p>Measures for avoiding the danger</p> <p><i>This is what a hazard note looks like for a hazard that will result in serious injury or even death if not complied with.</i></p>

### Warning



**Type and source of the danger**

**Consequences in the event of noncompliance**

Measures for avoiding the danger

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

### Attention

**Type and source of the danger**

**Consequences in the event of noncompliance**

Measures for avoiding the danger

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

### 3 Environmental hazard notes

#### 3.1 General environmental hazard notes

Please dispose of machines or machine parts that have reached the end of their service life properly and in compliance with the legal environmental protection regulations.

Use consumables sparingly and dispose of them properly and in compliance with the legal environmental protection regulations.

#### 3.2 Layout of environmental hazard notes

The text of the environmental hazard notes is surrounded by green bars.

The following symbols indicate the type of environmental protection measure:



Note on proper disposal

Example of the layout of environmental hazard notes in the text:

#### Environmental protection



**Type and source of the danger**

**Consequences in the event of noncompliance**

Measures for avoiding the danger

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

## 4 Work fundamentals

### 4.1 Symbols in the text

The following symbols in the margin and in the text indicate the type of information contained in the text.



#### Correct setting

Indicates the correct setting.



#### Faults

Indicates faults that can occur due to an incorrect setting.



#### Cover

Indicates which covers must be removed in order to access the components to be set.



#### Steps to be performed for servicing, maintenance and installation



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

The individual steps are numbered:

1. First setting step
2. Second setting step
3. Third setting step, etc.

The sequence of setting steps must always be followed.

#### Result of performing an operation



If, as a result of a setting step, a change occurs in the machine or a new notice appears on the display which is important feedback for you, this change is marked with an arrow: ↪



#### Important

Indicates that special attention must be paid to this point when performing a step.



#### Information

Provides additional information.



#### Sequence

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

#### Reference



A reference is provided to another place in the text.

## 4.2 Sequence of settings

### Comply with the sequence

Always comply with the sequence of individual setting steps as specified.

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

### Attention

#### Machine damage possible due to using the incorrect sequence.

It is essential that you comply with the sequence of work steps specified in these instructions.

## 4.3 Cable guidance

### Joining cables

Take care that all cables are laid in the machine such that the functioning of moving parts is not disrupted.



1. Lay cables that are too long in tidy loops.
2. Bind together the cable loops with cable ties.



- Tie loops wherever possible to fixed parts.  
The cables must be secured firmly.
3. Cut off the extending ends of cable ties.

### Attention

#### Machine damage and function disruptions are possible due to incorrectly laid cables.

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

Therefore excess cable should be laid as described above.

## 4.4 Screws in safety covers

Screws in safety covers need not be unscrewed completely from the screw hole. As soon as the screws are loosened such that the cover can be detached, you can remove the cover. The screws remain either in the housing or in the cover. In the text, such screws are marked with the addition (*safety cover*).

## 4.5 Removing covers

### Warning



#### Risk of injury

Risk of crushing from moving parts

Switch the sewing machine off, before removing or re-fitting covers.

For many setting operations, you must first remove the machine covers in order to access the components.

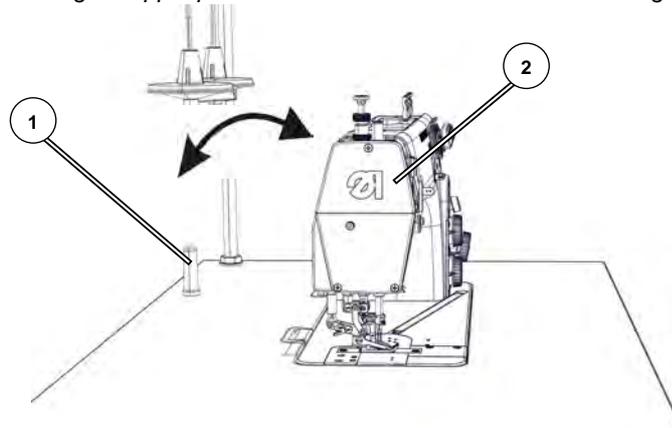
The following is a description of how to remove the individual covers and fit them again. The text for the relevant setting operations then only mentions which of the covers must be removed.

### 4.5.1 Access to the underside of the machine



In order to access the components on the underside of the machine, you must tilt the upper part of the machine backwards.

Fig. 1: Tilting the upper part of the machine backwards and returning it to its upright position



(1) - Support

(2) - Machine upper section

#### Tilting the upper part of the machine backwards



1. Tilt the upper part of the machine (2) back to the support (1).

#### Straightening up the upper part of the machine

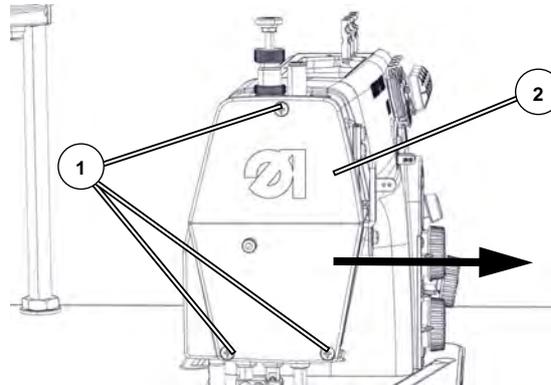


2. Carefully tilt the upper part of the machine (2) forward to its upright position.

### 4.5.2 Removing and fitting the head cover



Fig. 2: Removing and fitting the head cover



(1) - Head cover screws      (2) - Head cover

#### Removing the head cover



1. Unscrew the three head cover screws (1).
2. Remove the head cover (2)

#### Fitting the head cover

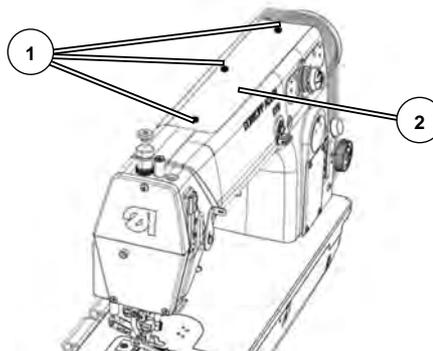


1. Fit the head cover (2).
2. Tighten the three head cover screws (1).

### 4.5.3 Removing and fitting the arm cover



Fig. 3: Removing and fitting the arm cover



(1) - Screws      (2) - Arm cover

#### Removing the arm cover



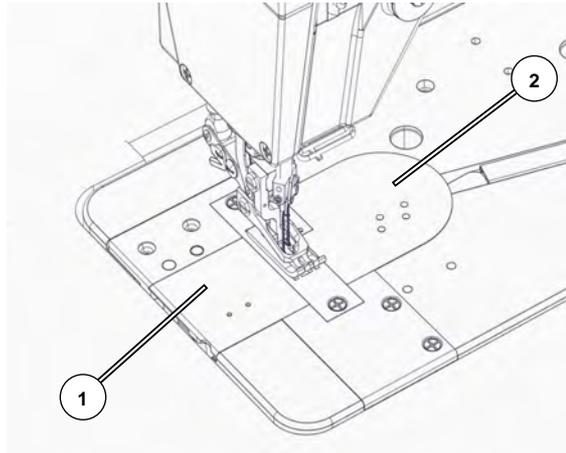
1. Unscrew all three screws (1) on the arm cover.
2. Remove the arm cover (2).

**Fitting the arm cover**

1. Fit the arm cover (2).
2. Tighten all three screws (1) on the arm cover.

**4.5.4 Removing and fitting the covers on the base plate (175, 176)**

Fig. 4: Removing and fitting the covers on the base plate



(1) - Cover, left

(2) - Cover, right

**Removing the cover**

1. Raise the cover, left (1) with a small screwdriver and remove.
2. Raise the cover, right (2) with a small screwdriver and remove.

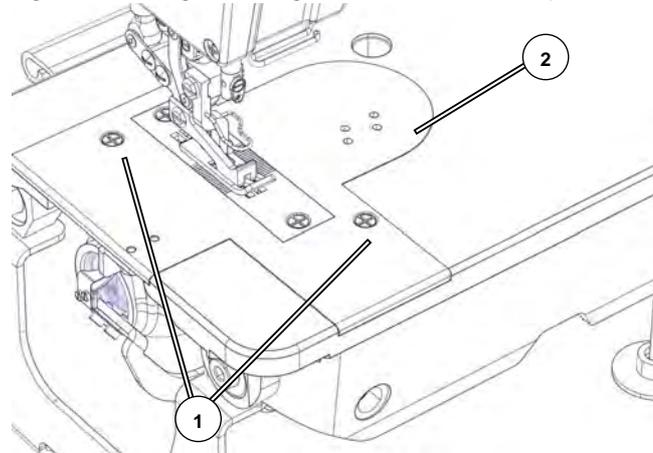
**Fitting the covers**

1. Insert the cover (1).
2. Insert the cover (2).

### 4.5.5 Removing and fitting the cover on the base plate (179)



Fig. 5: Removing and fitting the cover on the base plate



- (1) - Screws
- (2) - Cover



#### Removing the cover

1. Unscrew both screws (1).
2. Lift and lock the sewing foot.
3. Lift the cover (2) and remove to the front.

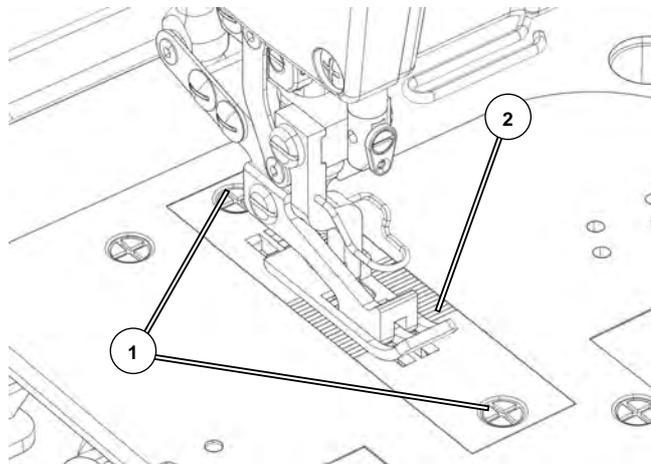


#### Fitting the cover

1. Lift and lock the sewing foot.
2. Fit the cover (2) from the front.
3. Tighten both screws (1).

#### 4.5.6 Removing and inserting the throat plate

Fig. 6: Removing and inserting the throat plate



- (1) - Screws  
(2) - Throat plate



##### Removing the throat plate

1. Lift and lock the sewing foot.
2. Unscrew both screws (1).
3. Remove the throat plate (2) upwards.

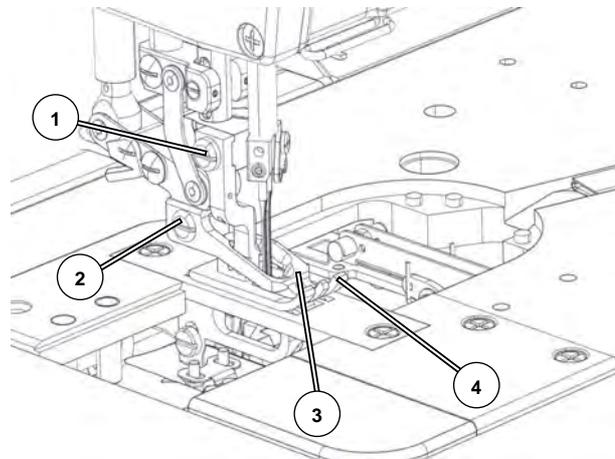


##### Inserting the throat plate

1. Lift and lock the sewing foot.
2. Insert the throat plate (2) from above.
3. Tighten both screws (1).

### 4.5.7 Removing and inserting the feed pincers and sewing foot

Fig. 7: Removing and inserting the feed pincers and sewing foot



(1) - Screw  
(2) - Screw

(3) - Feed pincers  
(4) - Sewing foot



#### Removing the feed pincers

1. Lift and lock the sewing foot.
2. Unscrew the screw (2).
3. Remove the feed pincers (3).



#### Removing the sewing foot

1. Unscrew the screw (1).
2. Remove the sewing foot (4).



#### Inserting the sewing foot

1. Lift and lock the sewing foot.
2. Fit the sewing foot (4).
3. Secure the sewing foot with screw (1).

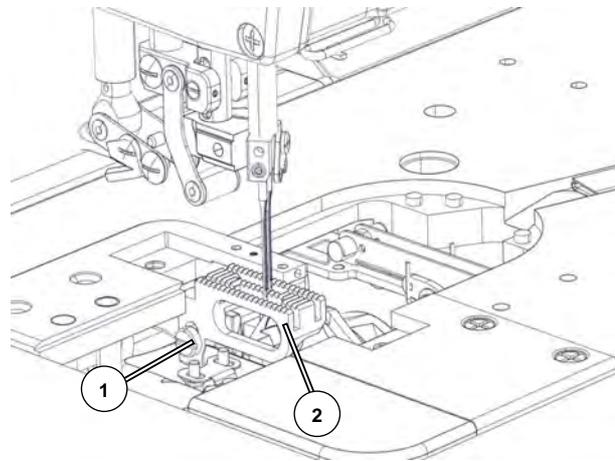


#### Inserting the feed pincers

1. Insert the feed pincers (3).
2. Secure the feed pincers with screw (2).

### 4.5.8 Removing and installing the feeds

Fig. 8: Removing and installing the feeds



(1) - Screw  
(2) - Feed



#### Removing the feed (175, 179)

1. Unscrew the screw (1).
2. Remove the feed (2).



#### Removing the feeds (176)

1. Remove the screws from the feeds.
2. Remove the main feed.
3. Remove the differential feed.



#### Installing the feed (175, 179)

1. Install the feed (2).
2. Secure the feed with screw (1).



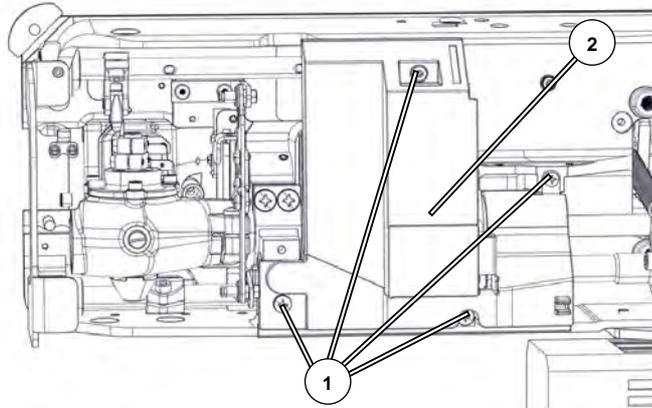
#### Installing the feeds (176)

1. Install the main feed (1).
2. Secure the feed with screw (1).
3. Install the differential feed.
4. Secure the differential feed with screw.

### 4.5.9 Removing and fitting the oil pan (175, 176)



Fig. 9: Removing and fitting the oil pan



- (1) - Screws
- (2) - Oil pan



#### Removing the oil pan

1. Unscrew the four screws (1).
2. Remove the oil pan (2) downwards.



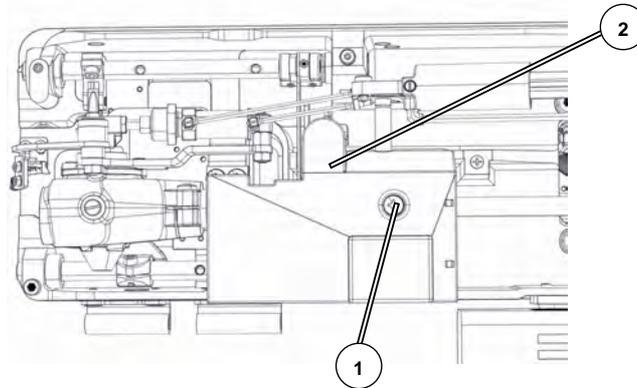
#### Fitting the oil pan

1. Fit the oil pan (2).
2. Secure the oil pan by tightening the four screws (1).

#### 4.5.10 Removing and fitting the oil pan (179)



Fig. 10: Removing and fitting the oil pan



- (1) - Screw  
(2) - Oil pan



##### Removing the oil pan

1. Unscrew the screw (1).
2. Remove the oil pan (2) downwards.



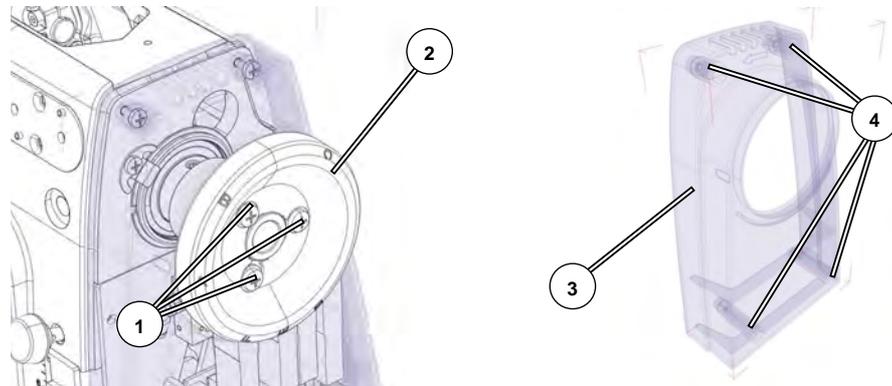
##### Fitting the oil pan

1. Fit the oil pan (2).
2. Secure the oil pan by tightening the screw (1).

### 4.5.11 Removing and fitting the upper belt guard



Fig. 11: Removing and fitting the upper belt guard



(1) - Screws  
(2) - Handwheel

(3) - Belt guard  
(4) - Screws



#### Removing the handwheel

1. Unscrew the three screws (1) on the handwheel.
2. Remove the handwheel (2).



#### Removing the belt guard

1. Unscrew the four screws (4) on the belt guard.
2. Remove the belt guard (3).



#### Fitting the belt guard

1. Fit the belt guard (3).
2. Secure the belt guard by tightening the four screws (4).



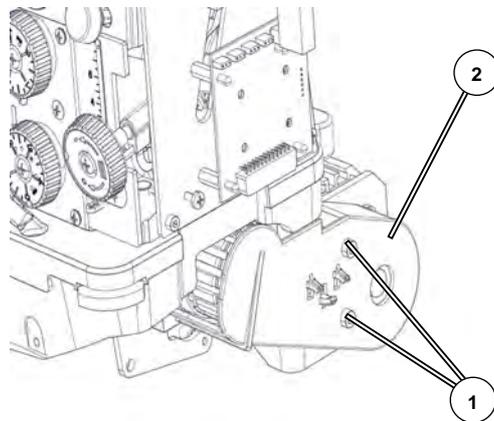
#### Fitting the handwheel

1. Fit the handwheel (2).
2. Secure the handwheel by tightening the three screws (1).

#### 4.5.12 Removing and fitting the lower belt guard



Fig. 12: Removing and fitting the lower belt guard



- (1) - Screws  
(2) - Belt guard



##### Removing the belt guard

1. Unscrew both screws (1).
2. Remove the belt guard (2) to the right.



##### Fitting the belt guard

1. Fit the belt guard (2).
2. Secure the belt guard with both screws (1).

## 4.6 Removing disruptive components

### Warning



#### Risk of injury

Risk of crushing from moving parts

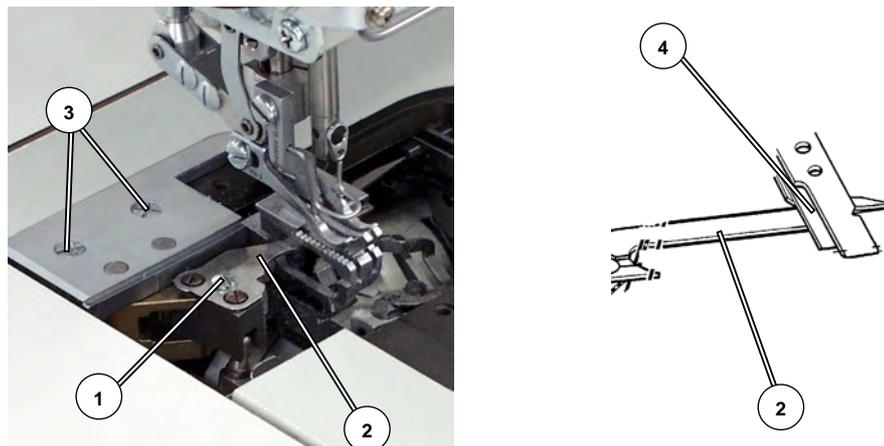
Switch the sewing machine off, before removing or re-installing individual components.

For some setting operations, you must first remove the thread cutting device, needle protection, looper and looper mounting, in order to access the components to be set.

The following is a description of how to remove and re-install the thread cutting device, needle protection, looper and looper mounting.

### 4.6.1 Removing and installing the thread cutting device (175, 176)

Fig. 13: Removing the thread cutting device.



(1) - Screw

(2) - Movable blade

(3) - Screws

(4) - Counter blade

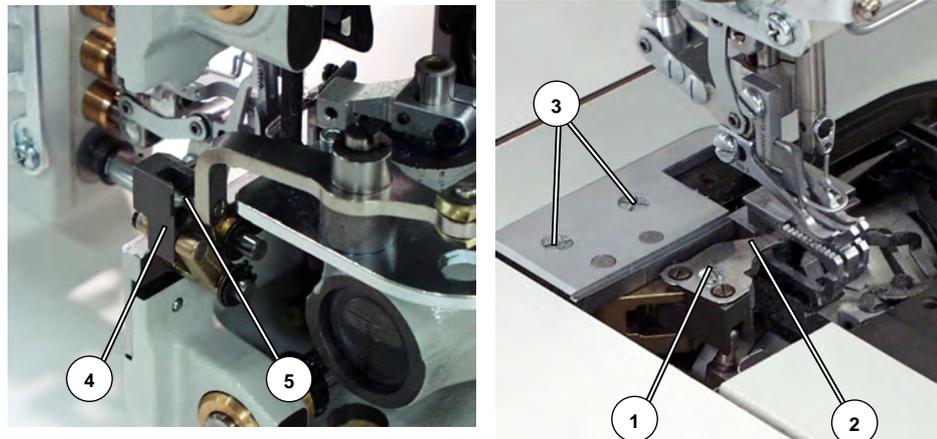
#### Removing the blade



1. Unscrew the screw (1).
2. Pull the movable blade (2) to the left out of the counter blade (4).
3. Unscrew the screws (3) and remove the thread cutter upwards.

## Installing the blade

Fig. 14: Installing the thread cutting device.



(1) - Screw

(2) - Movable blade

(3) - Screws

(4) - Blade mounting

(5) - Ball lever



1. Position the thread cutter such that the blade holder (4) fits over the ball lever (5).
2. Insert both screws (3) and tighten.
3. Push the movable blade (2) to the right between the counter blades.
4. Secure the blade to the thread cutter with the screw (1).

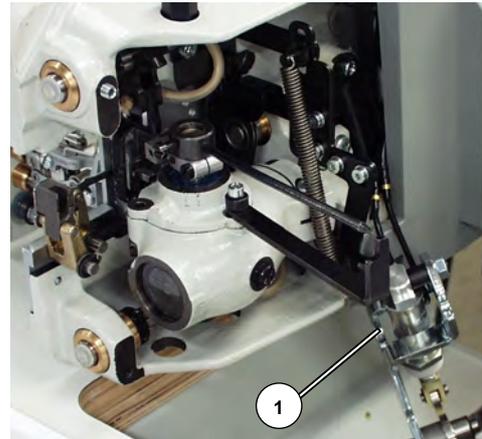
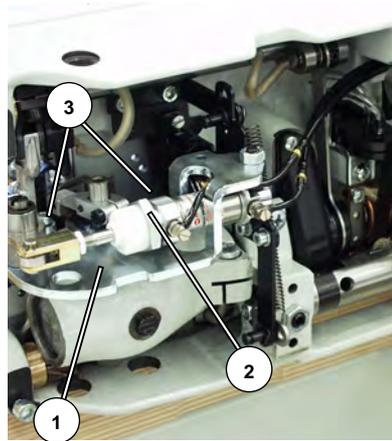


### Sequence

After removing the thread cutter, you must make the following settings:

- Thread cutter setting ( Section 22.1, pg. 90)

Fig. 15: Removing and installing the support plate.



(1) - Support plate  
(2) - Cylinder

(3) - Screws

### Removing the support plate



1. Remove both screws (3).
2. Carefully remove the support plate (1) with mechanics and cylinder (2).

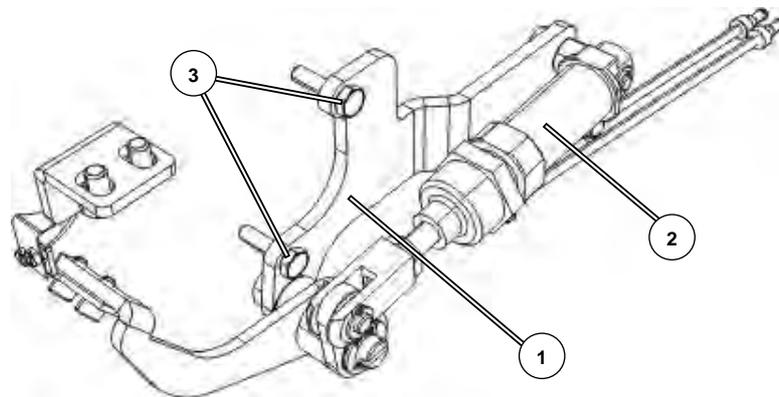
### Installing the support plate



1. Carefully fit the support plate (1) with mechanics and cylinder (2).
2. Secure the support plate with both screws (3).

#### 4.6.2 Removing and installing the thread cutting device (179)

Fig. 16: Removing the thread cutting device.



(1) - Support plate  
(2) - Cylinder

(3) - Screws

##### Removing the support plate



1. Unscrew the screws (3).
2. Carefully remove the support plate (1) with mechanics and cylinder (2).

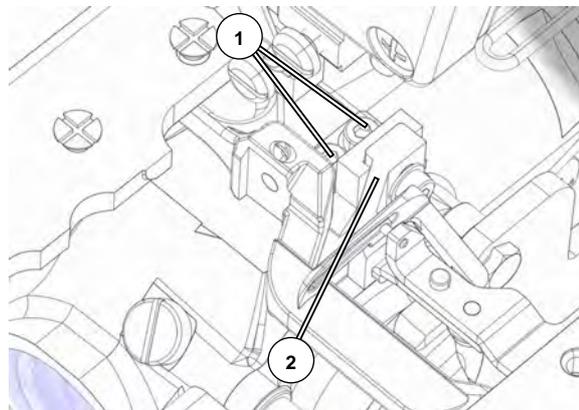
##### Installing the support plate



1. Carefully fit the support plate (1) with mechanics and cylinder (2).
2. Secure the support plate with the screws (3).

### 4.6.3 Removing and installing the needle protection

Fig. 17: Removing and installing the needle protection.



- (1) - Screws  
(2) - Needle protection

#### Removing the needle protection



1. Unscrew the two screws (1).
2. Carefully remove the needle protection (2).

#### Installing the needle protection



1. Carefully fit the needle protection (2).
2. Secure the needle protection by tightening the two screws (2).

#### Sequence

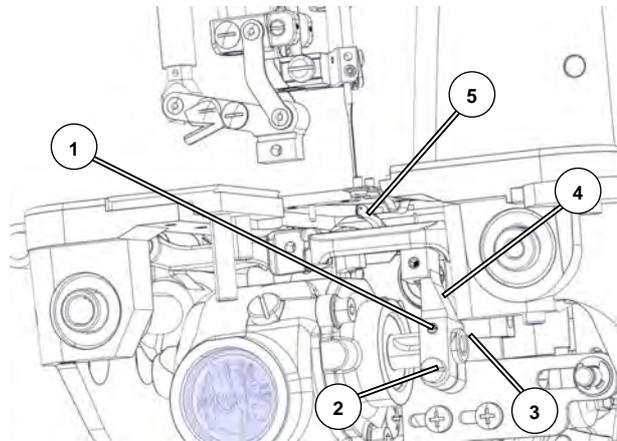


After removing the needle protection, you must make the following setting:

- Setting the needle protection (📖 Section 14, pg. 61)

#### 4.6.4 Removing and installing the looper and looper mounting

Fig. 18: Removing and installing the looper and looper mounting.



(1) - Adjusting screw  
 (2) - Screw  
 (3) - Adjusting screw

(4) - Looper mounting  
 (5) - Looper

##### Removing the looper mounting and looper



1. Loosen the two adjusting screws (1) and (3) slightly.
2. Loosen the screw (2).
3. Remove the looper mounting (4) with looper (5) from the shaft.

##### Installing the looper mounting and looper



1. Push the looper mounting (4) with looper (5) onto the shaft.
2. Tighten the two adjusting screws (1) and (3) slightly.
3. Tighten the screw (2) on the looper mounting completely.



##### Sequence

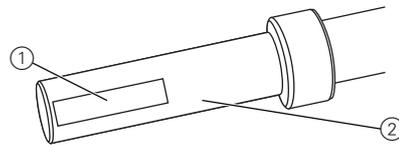
After removing the looper and the looper mounting, you must perform the following setting:

- Looping stroke and looper gauge ( Section 13.1, pg. 57)
- Needle protection ( Section 14, pg. 61)

## 4.7 Flat surfaces on shafts

### Screwing onto flat surfaces

Fig. 19: Flat surfaces on shafts



(1) - Flat surface (2) - Shaft

Some shafts have flat surfaces at places where components are to be attached. These make the connection more stable and setting easier.

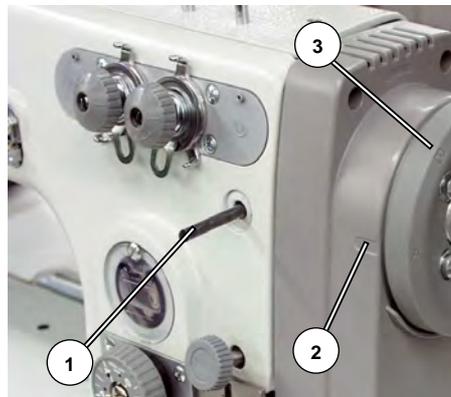


Always ensure that the screws are completely flush with the flat surface.

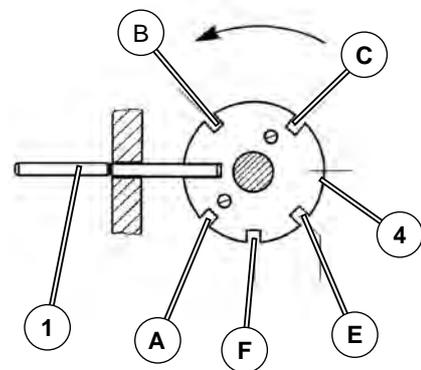
## 4.8 Locking the sewing machine

For some settings, the machine must be locked. To this end, the locking pin (1) from the accessory pack is inserted into a groove on the arm shaft crank, in order to block the arm shaft.

Fig. 20: Locking pin and tracing grooves on the arm shaft crank



(1) - Locking pin  
(2) - Marking



(3) - Handwheel  
(4) - Arm shaft crank with tracing grooves

There are numbers on the handwheel (3) for orientation. If you turn the handwheel such that one of the numbers is next to the marking (2), this means that the corresponding groove on the arm shaft crank (4) is under the opening for the locking pin (1).

There are 6 locking positions for the following settings:

• **Position A**

- Adjusting disk on the upper toothed belt wheel with its deepest slot A to the groove in the arm shaft crank

• **Position B**

- Symmetry of the looper motion, i.e., when turning against the direction of rotation of the machine, the needle point must, as in slot C also, be in line with the center of the needle

• **Position C**

- Setting the lower toothed belt wheel
- Symmetry of the looper motion
- Looping stroke
- Needle bar height

• **Position D**

- Feed at standstill
- Stroke setting of the top feed foot

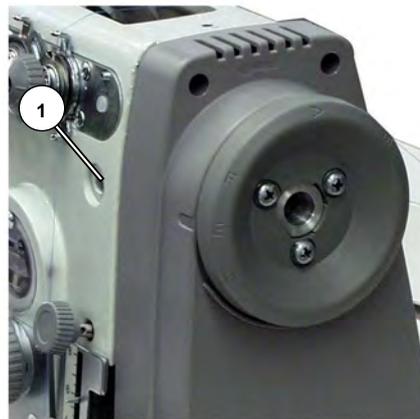
• **Position E**

- Thread pick-up disk

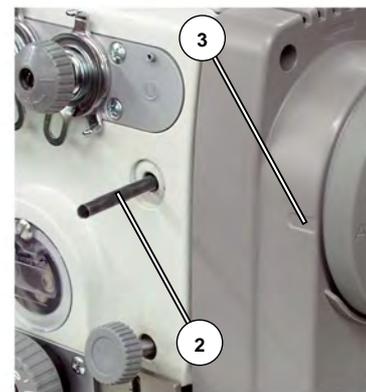
• **Position F**

- 1st screw of the top feed stroke cam in the direction of rotation aligned with grooves of the pull rod.
- Stroke setting of the top feed foot

Fig. 21: Locking the sewing machine



(1) - Locking opening  
(2) - Locking pin



(3) - Marking

**Locking the machine**

1. Turn the handwheel until the number for the desired locking position is next to the marking (3).
2. Insert the locking pin (2) through the locking opening (1) into the groove on the arm shaft crank.



The numbers on the handwheel serve for general orientation. In order to hit the groove precisely, you may have to turn the handwheel slightly.

**Canceling the lock**

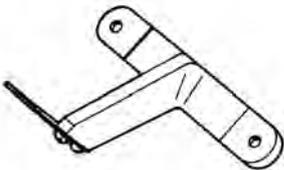
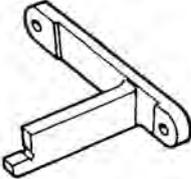
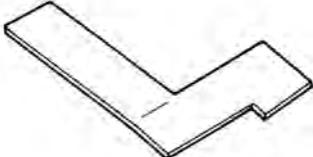
1. Pull out the locking pin (2).

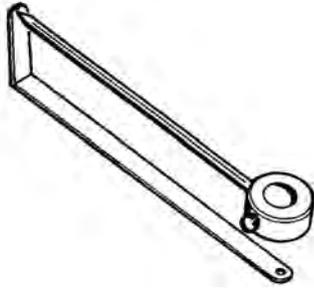
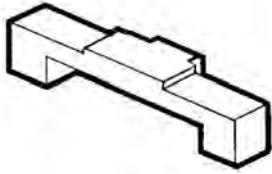
## 5 Gauge and key set

The gauges listed below enable precise setting and testing of the classes 175, 176 and 179.

The locking pin listed is included in the accessory pack with every machine supplied. It can be used to lock handwheel positions A - F that are required for the machine settings.

Fig. 22: Gauge and key set

Gauge	Order number	Setting
	0933 000735	Setting the rocker bolt in the looper drive housing
	0933 000739 K	Setting the looper drive housing
	9301 022608 included in the accessory pack	Locking pin For locking the handwheel in one of the setting positions A - F
	0171 000981	To measure the needle evasive movement (ellipsis width) of the looper drive. If you have your own dial gauge, only the clamping sleeve 171 984 and measuring pin 933 748 are required.
	0171 290010	Slant of the looper of 89° 30'

Gauge	Order number	Setting
	0933 080192	Even looper movement for symmetry
	0933 000740	Height of the thread take-up disk
	0271 000767	Height of the feed

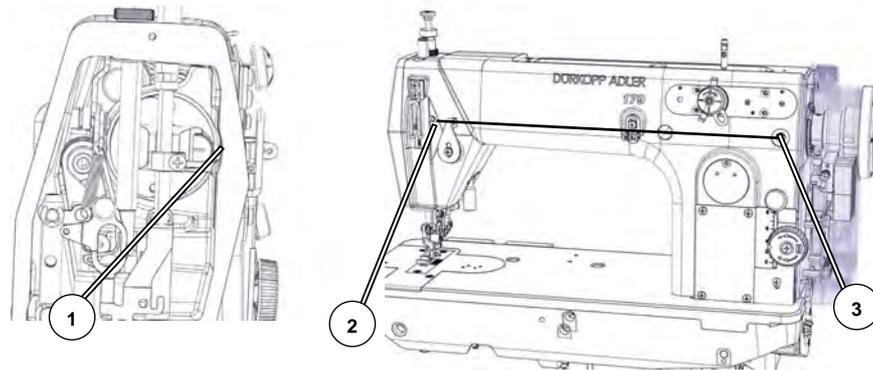
## 6 Setting the adjusting disk to the arm shaft crank



The deepest slot **A** of the adjusting disk should be in line with the groove (1) in the arm shaft crank.

(Only when the adjusting disk is in this position are the settings to be made in the other slots also correct.)

Fig. 23: Adjusting disk to the arm shaft



(1) - Groove in the arm shaft crank  
(2) - Locking pin

(3) - Locking pin



### Check correct setting

First check the factory setting using two locking pins (2) and (3) (alternatively twist drill 5 mm).



### Faults due to incorrect setting

- All function sequences are disrupted.

**Warning**



**Risk of injury**

**Risk of crushing from moving parts**

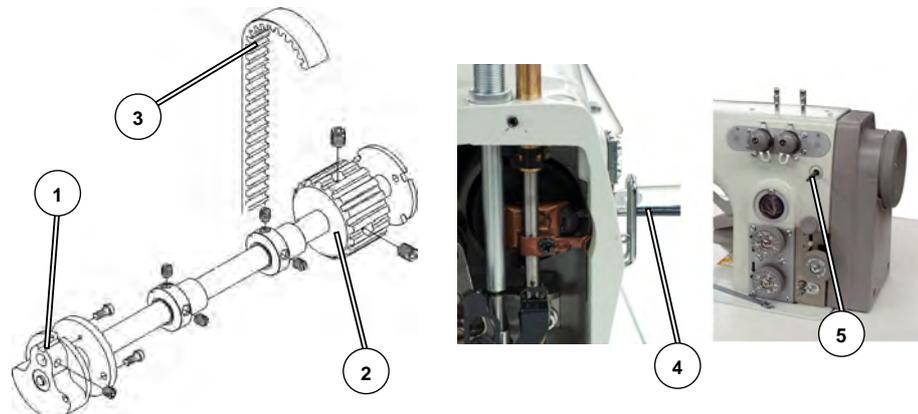
Switch off the sewing machine before setting the adjusting disk.



**Cover**

- Remove the head cover (📖 Section 4.5.2, pg. 12)
- Remove the top arm cover (📖 Section 4.5.3, pg. 12)

Fig. 24: Setting the adjusting disk to the arm shaft crank



(1) - Groove in the arm shaft crank  
(2) - Top toothed belt wheel

(3) - Toothed belt  
(4) - Locking peg  
(5) - Locking peg



**Setting steps**

1. Remove the toothed belt (3).
2. Loosen the screws on the upper toothed belt wheel (2).
3. Insert the locking pin (4) in the groove (1) of the arm shaft crank.
4. Turn the handwheel, until the locking pin (5) can be inserted into the deepest slot (A) of the adjusting disk.
5. Tighten the screws on the upper toothed belt wheel (2).
6. Fit the toothed belt.

## 7 Setting the lower toothed belt wheel

### Warning



**Risk of injury**

**Risk of crushing from moving parts**

Switch the sewing machine off, before setting the lower toothed belt wheel.



### Check correct setting

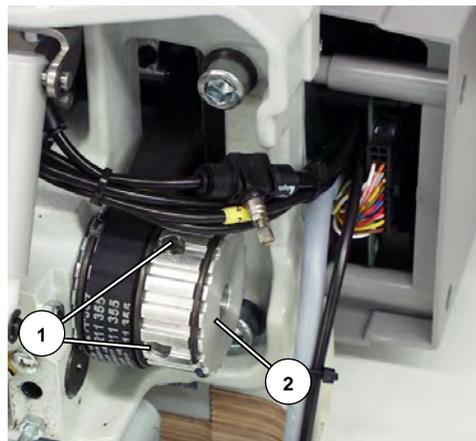
When positioning the toothed belt on the lower toothed belt wheel (2) it is important to ensure that both screws (1) are in slot **C** in the position shown, i.e., easily accessible with a hex key.



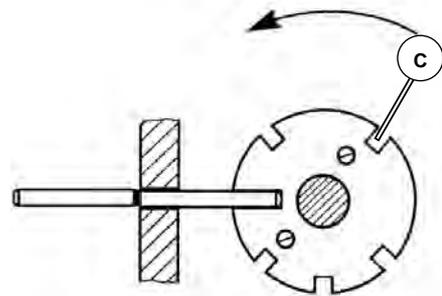
### Faults due to incorrect setting

- Setting the machine is made more difficult.

Fig. 25: Setting the lower toothed belt wheel



(1) - Screws  
(2) - Lower toothed belt wheel



(3) - Arm shaft crank with tracing grooves



### Setting steps

1. Turn lower toothed belt (2) into the position shown.
2. Lock machine in *position C* (📖 Section 4.8, pg. 28).
3. Place toothed belt on upper toothed belt wheel.

**Sequence**

After completely repositioning the toothed belt between the upper and lower shafts, you must make the following settings:

- Symmetry of the looper motion ( Section 11, pg. 52)
- Looping stroke and looper gauge to the needle ( Section 13.1, pg. 57)
- Needle bar height ( Section 13.2, pg. 59)
- Feed at standstill ( Section 16.1, pg. 65)
- Thrust setting of the top feed foot ( Section 18.1, pg. 75)
- Stroke setting of the top feed foot ( Section 18.3, pg. 80)

## 8 Rocker bolt for the looper drive and left lower shaft bearing

### Warning

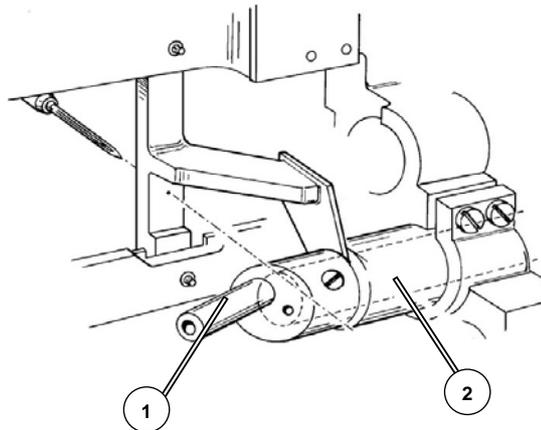


**Risk of injury**

**Risk of crushing from moving parts**

Switch off the sewing machine before setting the rocker bolt and the lower shaft bearing.

Fig. 26: Setting the rocker bolt and left lower shaft bearing



(1) - Rocker bolt

(2) - Left lower shaft bearing



### Cover

- Remove the covers on the base plate (📖 Section 4.5.4, pg. 13)



### Sequence

- Remove the needle
- Remove the throat plate (📖 Section 4.5.6, pg. 15)
- Remove the oil pan (📖 Section 4.5.9, pg. 18)
- Remove the thread cutting device, class 175 and 176 (📖 Section 4.6.1, pg. 22)
- Thread cutting device, class 179 (📖 Section 4.6.2, pg. 25)
- Drain the oil in the looper drive housing (📖 Section 8.1, pg. 38)
- Remove the needle protection (📖 Section 4.6.3, pg. 26)
- Remove the looper mounting (📖 Section 4.6.4, pg. 27)
- Remove the looper drive housing (📖 Section 8.2, pg. 39)
- Set the lower bearing and rocker bolt (📖 Section 8, pg. 37)

## 8.1 Draining and filling the oil in the looper drive housing

### Environmental protection



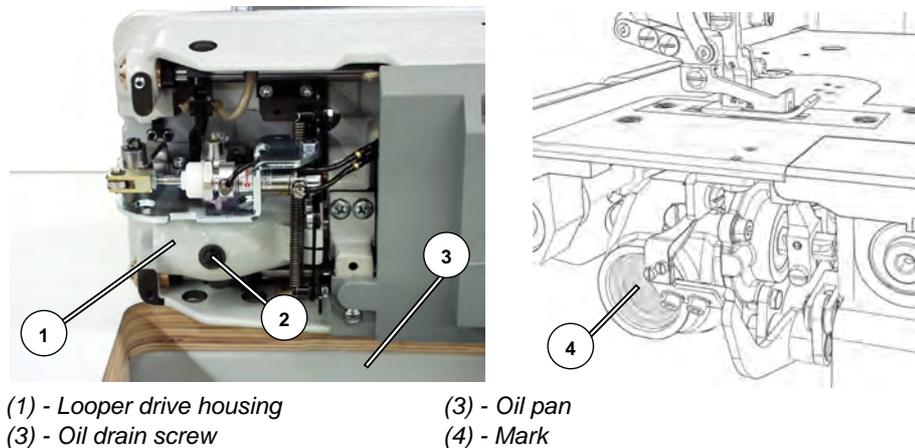
#### Risk of environmental damage from lubricant

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

Collect waste lubricant carefully and dispose of it and greasy machine parts in accordance with the applicable statutory regulations.

Please observe all safety and environmental protection instructions issued by the lubricant manufacturer.

Fig. 27: Draining and filling the oil in the looper drive housing



(1) - Looper drive housing  
(3) - Oil drain screw

(3) - Oil pan  
(4) - Mark



#### Draining the oil

1. Tilt the machine backwards (📖 Section 4.5.1, pg. 11).
2. Unscrew the oil drain screw (2).
3. Place an appropriate collection tray in the oil pan (3).
4. Carefully tilt the machine backward and allow the oil to drain out completely.



#### Topping up the oil

1. Tilt the machine backwards (📖 Section 4.5.1, pg. 11).
2. Top up the looper drive housing (1) with the oil, **DA 10** up to the upper mark (4) on the sight glass.
3. Screw in the oil drain screw (2).

## 8.2 Removing and fitting the looper drive housing

### Warning

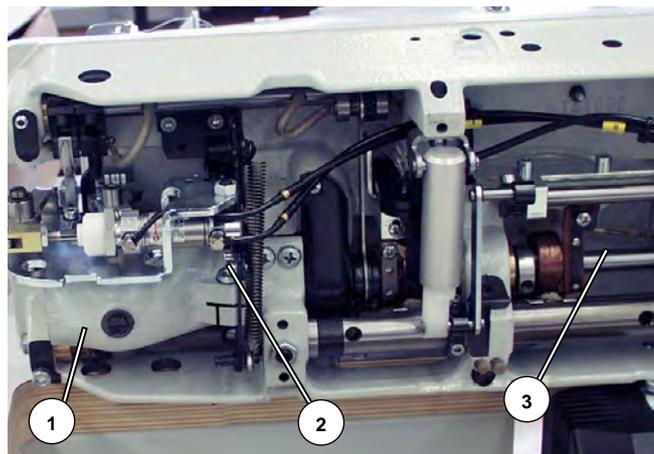


**Risk of injury**

**Risk of crushing from moving parts**

Switch off the sewing machine before removing or fitting the looper drive housing.

Fig. 28: Removing and fitting the looper drive housing



(1) - Looper drive housing  
(2) - Clamping screw

(3) - Lower shaft



### Removing the looper drive housing

1. Tilt the machine backwards (📖 Section 4.5.1, pg. 11).
2. Loosen the clamping screw (2).
3. Pull the looper drive housing (1) carefully off to the left.  
While doing so, slowly turn the lower shaft (3).



### Fitting the looper drive housing

1. Push the looper drive housing (1) carefully on to the right.  
While doing so, slowly turn the lower shaft (3) until the rocker bolt is engaged in its mounting.
2. Tighten the clamping screw (2).

**Sequence**

After installing a completely new looper drive housing, you must make the following settings:

- Set the looper drive housing (📖 Section 9, pg. 44)
- Set the needle evasive movement (📖 Section 10, pg. 47)
- Set the symmetry of the looper motion (📖 Section 11, pg. 52)
- Set the looper in the looper mounting (📖 Section 12, pg. 54)
- Set the looper and needle bar height (📖 Section 13, pg. 56)

### 8.3 Setting the left lower shaft bearing

#### Warning

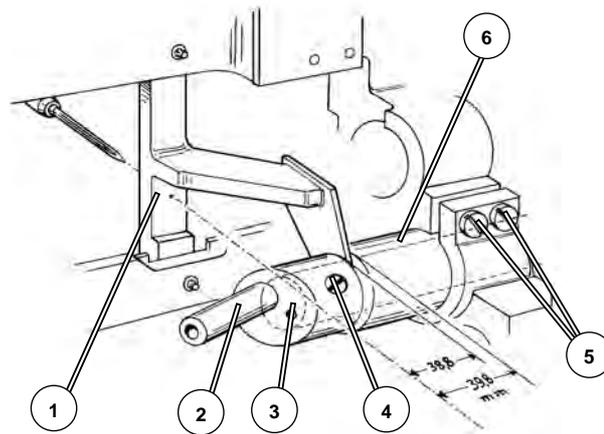


#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before adjusting the lower shaft bearing.

Fig. 29: Setting the left lower shaft bearing



(1) - Gauge

(2) - Rocker bolt

(3) - Face of the lower shaft

(4) - Screw

(5) - Clamping screws

(6) - Lower shaft bearing



#### Check correct setting

The distance from the center of the needle to the start of the left lower shaft bearing (6) is to be 39.8 mm and from the center of the needle to the end of the rocker bolt is to be 38.8 mm.



#### Setting steps

1. Screw the gauge (1), order no. 0933 000735, onto the needle plate support.
2. Loosen the two clamping screws (5).
3. Move the lower shaft bearing (6) to the gauge (1).
4. Tighten the two clamping screws (5).



#### Faults due to incorrect setting

- Damage to the looper
- Damage to the needle
- Damage to the thread cutter
- Missed stitches
- Thread breakage

## 8.4 Setting the rocker bolt

### Warning

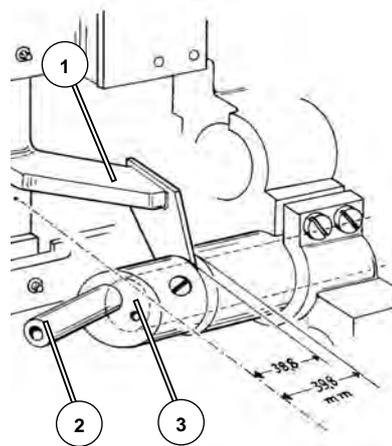


**Risk of injury**

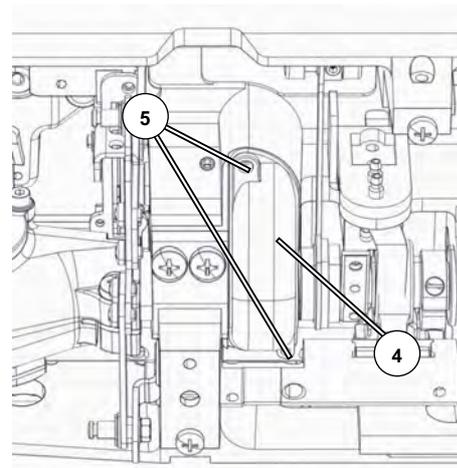
**Risk of crushing from moving parts**

Switch off the sewing machine before adjusting the rocker bolt.

Fig. 30: Setting the rocker bolt



- (1) - Gauge
- (2) - Rocker bolt
- (3) - Face of the lower shaft



- (4) - Grease cap
- (5) - Screw



### Check correct setting

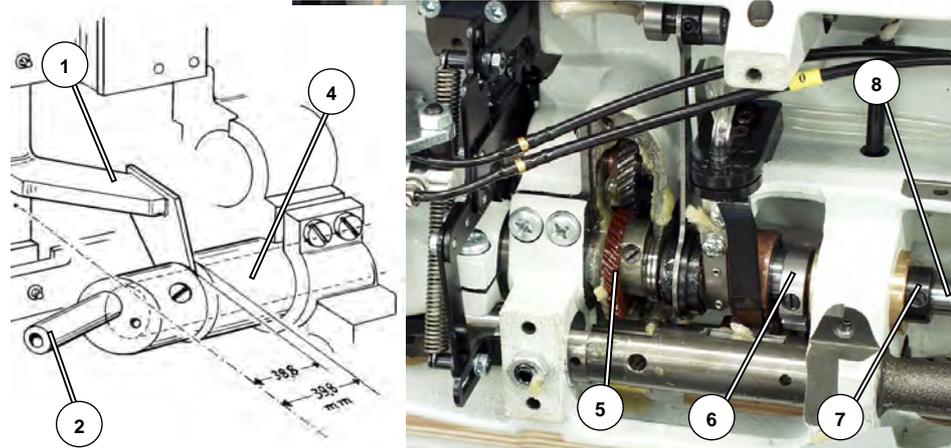
The rocker bolt (2) must be pushed up against the face (3) of the lower shaft.



### Setting steps

1. Remove the grease cap (4).  
The second fastening screw (5) is accessible from the upper side of the base plate.
2. Screw the gauge (1), order no. 0933 000735, onto the needle plate support.

Fig. 31: Setting the rocker bolt



- (1) - Gauge  
 (2) - Rocker bolt  
 (3) - Screw  
 (4) - Lower shaft bearing

- (5) - Toothed wheel  
 (6) - Cam  
 (7) - Set collar  
 (8) - Lower shaft

3. Loosen the set collar (7), cam (6), toothed wheel (5) and the right set collar bearing.
4. Slide the lower shaft (8) such that there is a distance of 1 mm between the lower shaft bearing (4) and rocker bolt (2) or the rocker bolt is against the gauge (1).
5. Fasten the set collar (7) and cam (17), secure the right set collar bearing and align the toothed wheel (18). Tighten screws.
6. Check the movement of the toothed belt on the lower toothed belt wheel. If required, align the lower toothed belt wheel.
7. Re-install the looper drive housing ( Section 8.2, pg. 39) and fill with **DA 10** oil ( Section 8.1, pg. 38).



### Faults due to incorrect setting

- Damage to the looper
- Damage to the needle
- Damage to the thread cutter
- Missed stitches
- Thread breakage



### Sequence

After setting the rocker bolts and left lower shaft, you must make the following settings:

- Re-fit all parts
- Symmetry of the looper motion ( Section 11, pg. 52)
- Looping stroke and looper gauge to the needle ( Section 13.1, pg. 57)
- Looper and needle bar height ( Section 13, pg. 56)

## 9 Setting the looper drive housing

### Warning

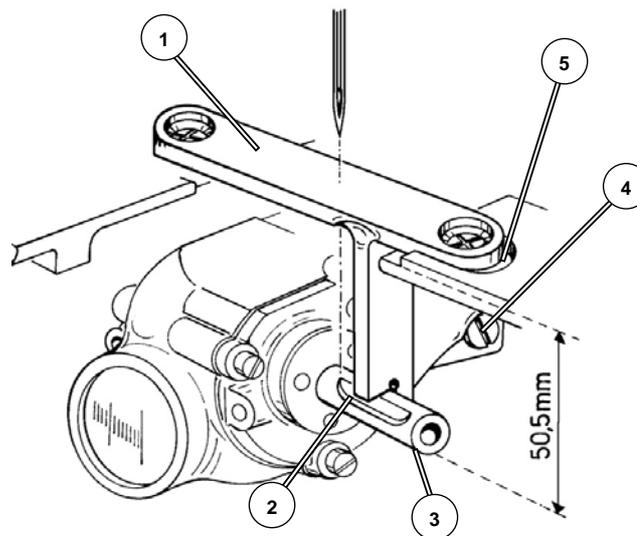


#### Risk of injury

**Crushing and needle-prick injuries caused by moving and pointed parts.**

Switch off the sewing machine before adjusting the looper drive housing.

Fig. 32: Setting the looper drive housing



(1) - Gauge

(2) - Looper shaft

(3) - Looper shaft lower edge

(4) - Clamping screw

(5) - Needle plate support



### Check correct setting

The needle point should point to the center of the looper shaft (2) and the looper shaft lower edge should be parallel to the underside of the needle plate.

This corresponds to a distance of 50.5 mm between the lower edge of the looper shaft (3) and the needle plate support (5).



### Faults due to incorrect setting

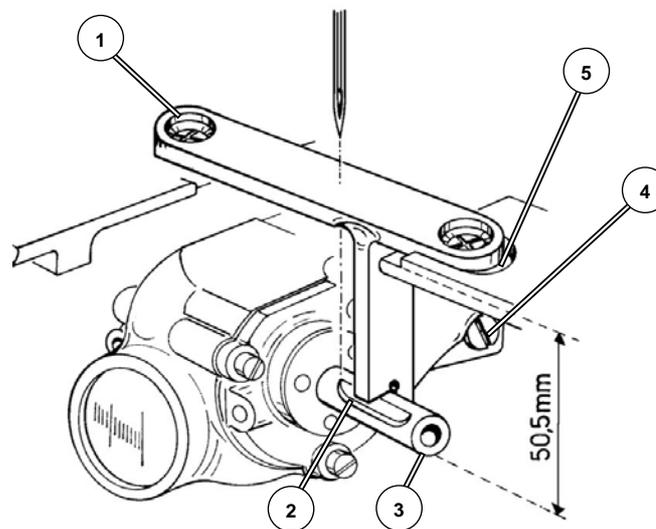
- Damage to the looper
- Damage to the needle
- Damage to the thread cutter
- Missed stitches
- Thread breakage



### Sequence

- Remove the needle
- Remove the throat plate (📖 Section 4.5.6, pg. 15)
- Remove the oil pan (📖 Section 4.5.9, pg. 18)
- Remove the thread cutting device, class 175 and 176 (📖 Section 4.6.1, pg. 22)
- Remove the thread cutting device, class 175 and 176 (📖 Section 4.6.2, pg. 25)
- Drain the oil in the looper drive housing (📖 Section 8.1, pg. 38)
- Remove the needle protection (📖 Section 4.6.3, pg. 26)
- Remove the looper mounting (📖 Section 4.6.4, pg. 27)

Fig. 33: Setting the looper drive housing



- (1) - Gauge  
 (2) - Looper shaft  
 (3) - Looper shaft lower edge

- (4) - Clamping screw  
 (5) - Needle plate support



### Setting steps

1. Screw the gauge (1), order no. 0933 000735, onto the needle plate support.
2. Loosen the clamping screw (4).
3. Align the looper drive housing such that the looper shaft (2) lies in the cutout of the gauge (1).
4. Tighten the clamping screw (4).

**Sequence**

After setting the looper drive housing, you must make the following settings:

- Symmetry of the looper motion ( Section 11, pg. 52)
- Looping stroke and looper gauge to the needle ( Section 13.1, pg. 57)
- Looper and needle bar height ( Section 13, pg. 56)
- Feed at standstill ( Section 16, pg. 65)

## 10 Setting the needle evasive movement (ellipsis width)

### Warning

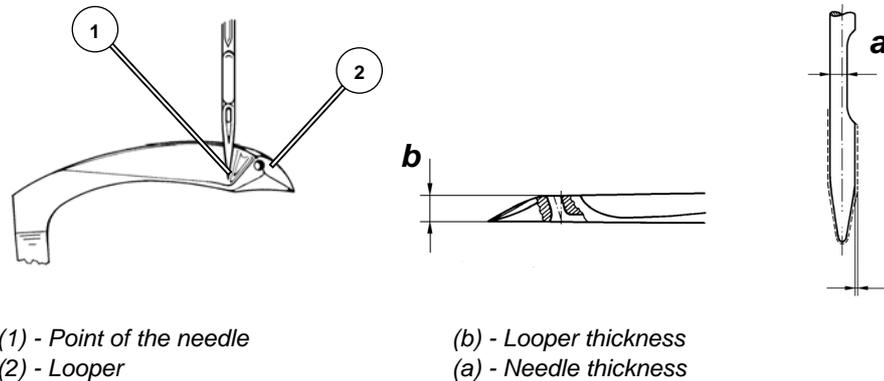


**Risk of injury**

**Risk of crushing from moving parts**

Switch the sewing machine off, before setting the needle evasive movement.

Fig. 34: Setting the needle evasive movement



(1) - Point of the needle  
(2) - Looper

(b) - Looper thickness  
(a) - Needle thickness



### Check correct setting

The needle evasive movement is correctly set if during the looper movement from right to left, the distance to the needle is 0.1 mm and during the looper movement from left to right the point (1) of the descending needle is at the back of the looper (2) at the moment when the looper and needle take up the position shown in the above sketch.

The precise dimension of the evasive movement depends on the needle system and the needle thickness.

It must therefore be calculated using the following formula:

$$E = a + b + 0.1 + X$$

### Example using a 934 SIN/Nm 110 needle

Needle thickness at "a" = 0.7 mm

Looper thickness at "b" = 1.4 mm

Distance from looper tip to the needle = 0.1 mm

For larger needle thickness 110 Nm "X" = 0.1 mm

Ellipsis width "E" = 2.3 mm

\*X = larger dimension a for larger needle thicknesses.

X for Nm 100 = 0 mm

X for Nm 110 and 120 = 0.1 mm

X for Nm 130 = 0.2 mm

To set, move the lower shaft axially.

To the right = ellipsis width is smaller

To the left = ellipsis width is larger

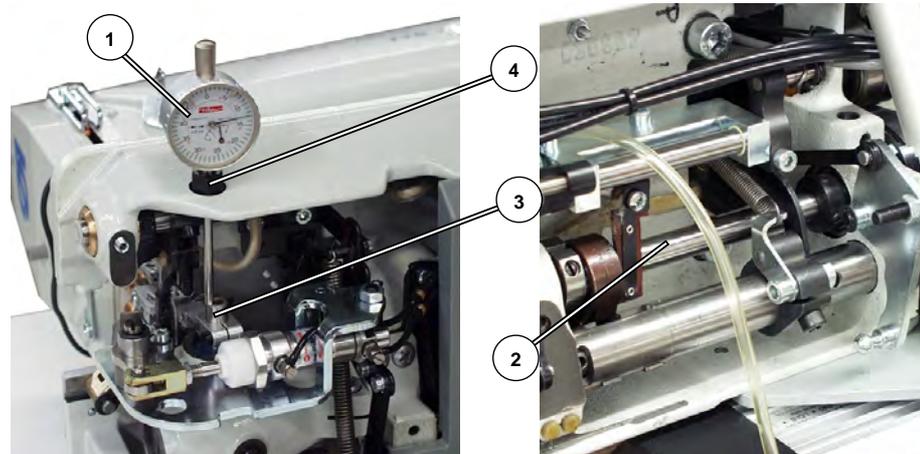


**Information**

See next page for setting instructions.

## 10.1 Setting the needle evasive movement

Fig. 35: Setting the needle evasive movement



(1) - Gauge

(2) - Lower shaft

(3) - Looper shaft

(4) - Clamping sleeve



### Setting steps

1. Screw on the clamping sleeve (4) and deploy the dial gauge (1), order no. 171 981.
2. Turn the handwheel to position the looper shaft (3) at its lowest point.
3. Set the measured value 0 on the dial gauge (1).
4. Turn the handwheel to position the looper shaft (3) at its highest point.
5. Read the difference off the dial gauge.



### Important

If the dimension does not match the calculated dimension for the ellipsis width, the lower shaft (2) must be loosened and adjusted (📖 Section 10.3, pg. 51).

When adjusting in the axial direction, the ellipsis width changes in the ratio of 1:2, i.e., when the lower shaft is moved, e.g. by 0.2 mm, the ellipsis width changes by 0.1 mm.

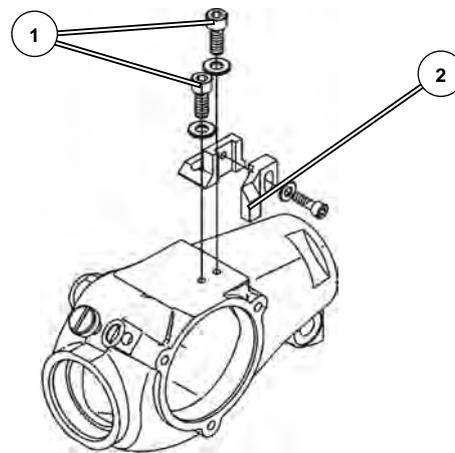


### Faults due to incorrect setting

- Damage to the looper
- Damage to the needle
- Missed stitches
- Thread breakage

## 10.2 Resetting the needle protection

Fig. 36: Resetting the needle protection



- (1) - Screws
- (2) - Needle protection

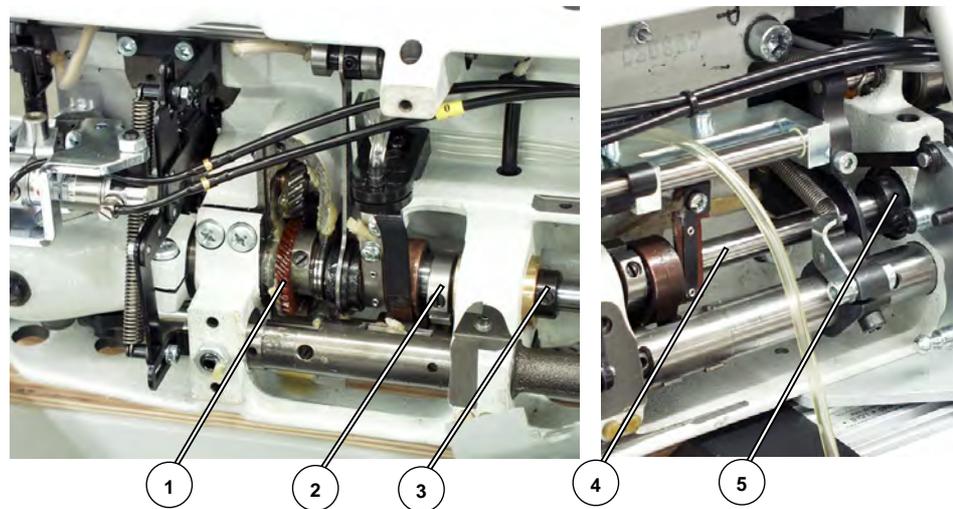


### Setting steps

1. Loosen the screws (1) and reset the needle protection (2).

### 10.3 Setting the lower shaft

Fig. 37: Setting the lower shaft



(1) - Toothed wheel  
(2) - Cam  
(3) - Set collar

(4) - Lower shaft  
(5) - Right set collar bearing



#### Setting steps

1. Remove the throat plate and feed (📖 Section 4.5.6, pg. 15).
2. Loosen the toothed wheel (1), cam (2), set collar (5) and the right set collar bearing (5).
3. Push the lower shaft (4) in the appropriate direction until the calculated dimension is achieved.
4. Set the cam (2), set collar (5) and the right set collar bearing (5) such that a tight fit with the lower shaft (4) is ensured.
5. Align the toothed wheel (1) to the upper toothed wheel and screw tight.



#### Sequence

After setting the rocker bolts and left lower shaft, you must make the following settings:

- Symmetry of the looper motion (📖 Section 11, pg. 52)
- Looping stroke and looper gauge to the needle (📖 Section 13.1, pg. 57)

## 11 Setting the symmetry of the looper motion

### Warning

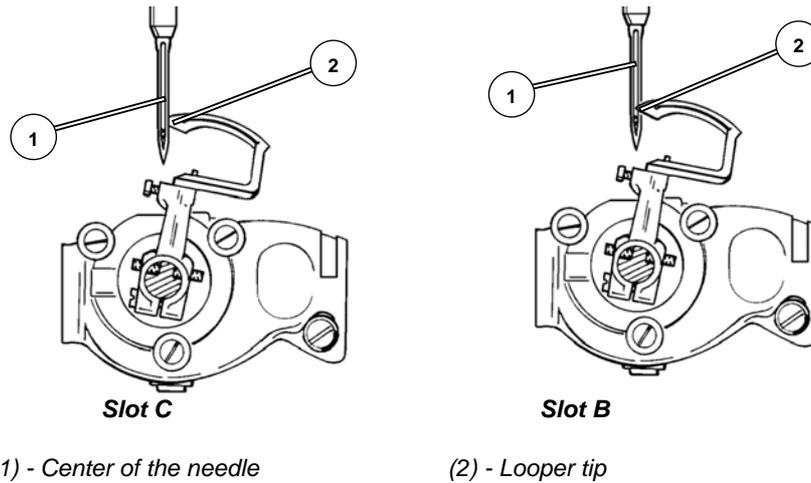


**Risk of injury**

**Risk of crushing from moving parts**

Switch the sewing machine off, before setting the symmetry of the looper motion.

Fig. 38: Setting the symmetry of the looper motion



### Check correct setting

Setting the symmetry means that the looper tip is in line with the center of the needle for machines locked both in slot **C** and slot **B**.

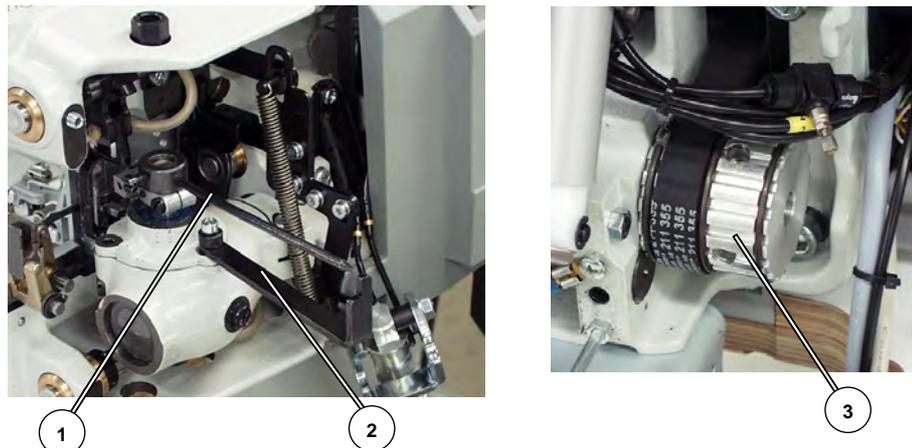
The looper tip is to be behind the needle in slot **C** and in front of it in slot **B**.



### Faults

- Damage to the looper
- Damage to the needle
- Missed stitches
- Thread breakage

Fig. 39: Setting the symmetry of the looper motion



(1) - Indicator  
(2) - Gauge

(3) - Lower toothed belt wheel



### Sequence

Before making adjustments, the following parts must be removed:

- Thread cutting device, class 175 and 176 (📖 Section 4.6.1, pg. 22)
- Thread cutting device, class 175 and 176 (📖 Section 4.6.2, pg. 25)



### Setting steps

1. To ensure precise adjustments, secure the gauge (2), order number 933 80192, to the looper drive housing and the indicator (1) to the looper shaft.
2. Loosen the screws on the lower toothed belt wheel (3).
3. Turn the lower shaft such that the indicator (1) is above the marking on the gauge (2) both in slot **C** and **B**.
4. When you turn the lower shaft, the indicator must swing out to the left.
5. Tighten the screws on the toothed belt wheel (3).



### Information

If you do not have a gauge available, perform the adjustment as shown in the drawings.

## 12 Setting the looper in the looper mounting

### Warning



#### Risk of injury

**Crushing and needle-prick injuries caused by moving and pointed parts.**

Switch the sewing machine off, before setting the looper.



### Check correct setting

The front of the looper should be positioned at an angle of 89° 30' to the edge of the machine plate.

If there are two loopers, the rear one must be aligned and tightened first, followed by the front one.

Setting is performed using the gauge, order no. 0171 290010.



### Faults due to incorrect setting

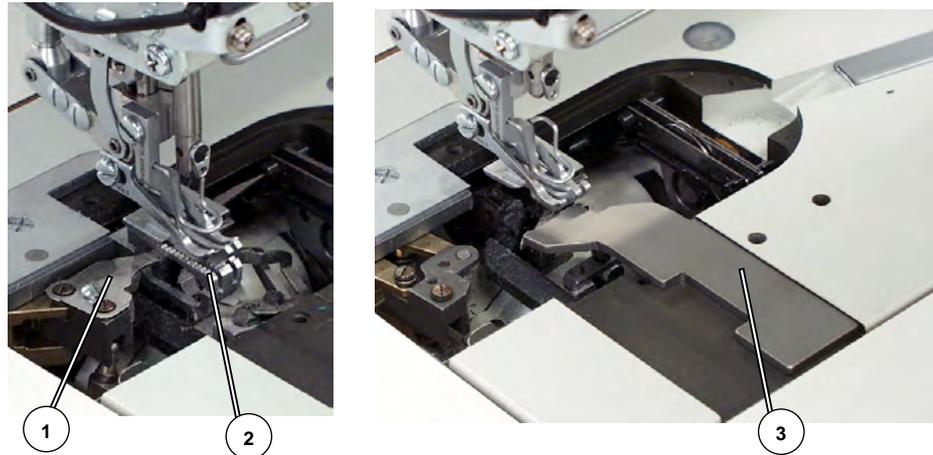
- Damage to the looper
- Damage to the needle
- Missed stitches
- Thread breakage



### Cover

- Remove covers on the base plate ( Section 4.5.4, pg. 13) and ( Section 4.5.5, pg. 14)
- Remove the throat plate ( Section 4.5.6, pg. 15)
- Remove the feed ( Section 4.5.8, pg. 17).
- Remove the thread cutter ( Section 4.6.1, pg. 22) and ( Section 4.6.2, pg. 25).

Fig. 40: Setting the looper in the looper mounting



(1) - Thread cutter  
(2) - Feed

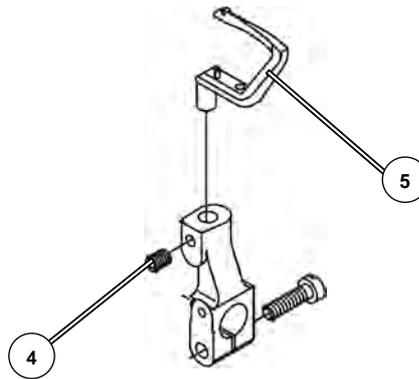
(3) - Gauge



### Setting steps

1. Loosen the screw (4).

Fig. 41: Looper and looper mounting



(4) - Screw

(5) - Looper

2. Place the gauge (3), order no. 0171 290010, on the right side of the base plate cutout.
3. Move the looper (5) to the gauge and tighten the screw (4).



### 13.1 Setting the looping stroke position and looper gauge

#### Warning



#### Risk of injury

**Crushing and needle-prick injuries caused by moving and pointed parts.**

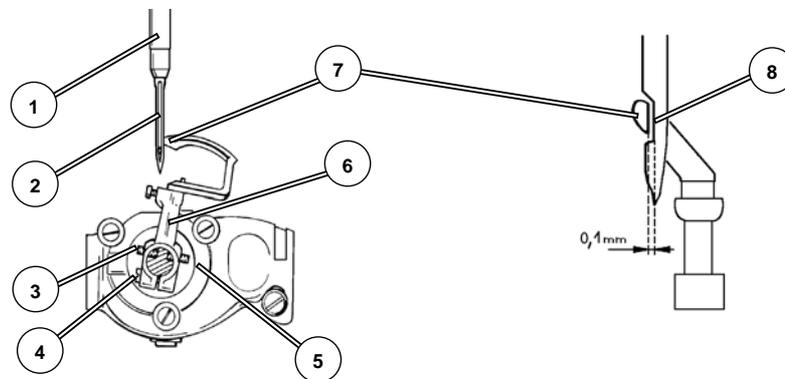
Switch off the sewing machine before setting the looping stroke position and the looper gauge.



#### Cover

- Removing the covers on the base plate (📖 Section 4.5.5, pg. 14)
- Removing the throat plate (📖 Section 4.5.6, pg. 15)

Fig. 43: Setting the looping stroke position and looper gauge



- (1) - Needle bar  
(2) - Needle  
(3) - Adjusting screw  
(4) - Screw

- (5) - Adjusting screw  
(6) - Looper mounting  
(7) - Looper tip  
(8) - Groove of the needle



#### Setting steps

1. Turn the needle bar (1) into the looping stroke position.
2. Lock the machine in slot C.
3. Loosen the screw (4).
4. Set the **looping stroke position**:  
Place the looper tip (6) behind the needle (2) on the center line.  
To do this, turn the adjusting screws (3) and (5) accordingly.
5. Set the **looper gauge**:  
Set a distance of 0.1 mm by moving the looper mounting (6) axially between the looper tip and the needle groove (8).
6. Tighten (4) screw.

**Sequence**

After setting the looping stroke position and looper gauge, you must make the following settings:

- Needle bar height ( Section 13.2, pg. 59)
  - Checking the symmetry of the looper motion (Pos. B and C) ( Section 11, pg. 52).
7. After definitively aligning the looping stroke position, looper gauge and needle bar: *cancel the lock* ( Section 4.8, pg. 28).

## 13.2 Setting the needle bar height

### Warning



#### Risk of injury

**Crushing and needle-prick injuries caused by moving and pointed parts.**

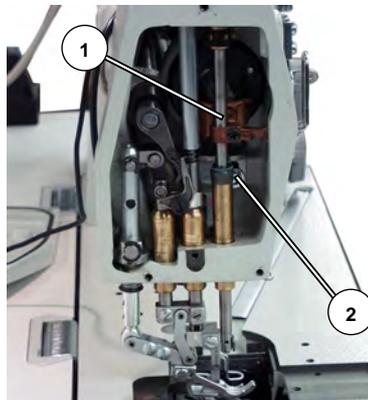
Switch off the sewing machine before checking and setting the needle bar height.



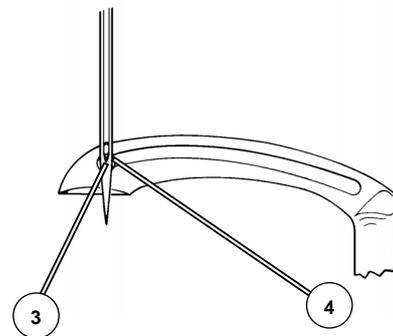
### Cover

- Head cover (📖 Section 4.5.2, pg. 12)

Fig. 44: Needle bar height



(1) - Needle bar  
(2) - Needle bar fastening screw



(3) - Lower edge of the needle eye  
(4) - Looper eye



### Check correct setting

When the looper eye (4) is in line with the middle of the needle, the lower edge of the needle eye (3) and the upper edge of the looper eye should be at the same level.



### Faults due to incorrect setting

- Missed stitches
- Thread breakage



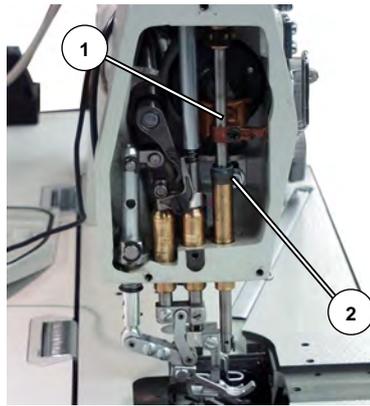
### Sequence

Prerequisite:

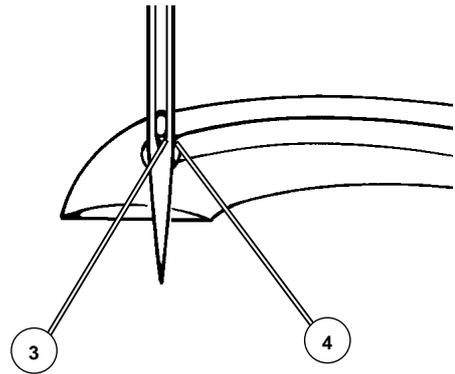
A straight and undamaged needle must be used.

(📖 *Operating Instructions Sec. Replacing Needles*)

Fig. 45: Setting the needle bar height



(1) - Needle bar  
(2) - Needle bar fastening screw



(3) - Lower edge of the needle eye  
(4) - Lower edge of the looper eye



**Setting steps**

1. Loosen the needle bar fastening screw (2).
2. Set the needle bar height such that the lower edge of the needle eye (3) and upper edge of the looper eye (4) are at the same level.



**Important:** Do not turn the needle bar to the side while doing this.

3. Tighten the needle bar fastening screw (2).



**Sequence**

After setting the needle bar height, you must make the following settings:

- Looping stroke position and looper gauge (📖 Section 13.1, pg. 57)
4. After definitively aligning the looping stroke position, looper gauge and needle bar: *cancel the lock* (📖 Section 4.8, pg. 28).

## 14 Setting the needle protection

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before setting the needle protection.



### Check correct setting

If the looper tip (1) moves to the left and reaches the needle, the needle point should lie on the looper protection.

If one were to press against the needle at this time, it should not be possible to press it into the path of the looper tip.

In the lowest needle position, half of the needle eye (2) must remain clear.



### Faults due to incorrect setting

- Damage to the looper
- Damage to the needle
- Missed stitches
- Thread breakage



### Sequence

Prerequisite:

A straight and undamaged needle must be used

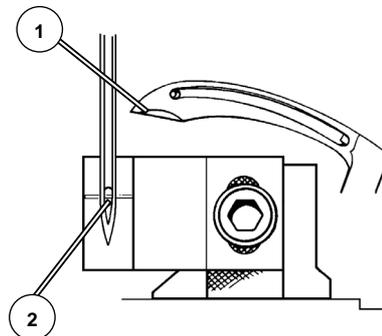
(📖 *Operating Instructions Sec. 8.7 Replacing needles*)



### Cover

- Remove the covers on the base plate (📖 Section 4.5.5, pg. 14)
- Remove the throat plate (📖 Section 4.5.6, pg. 15)

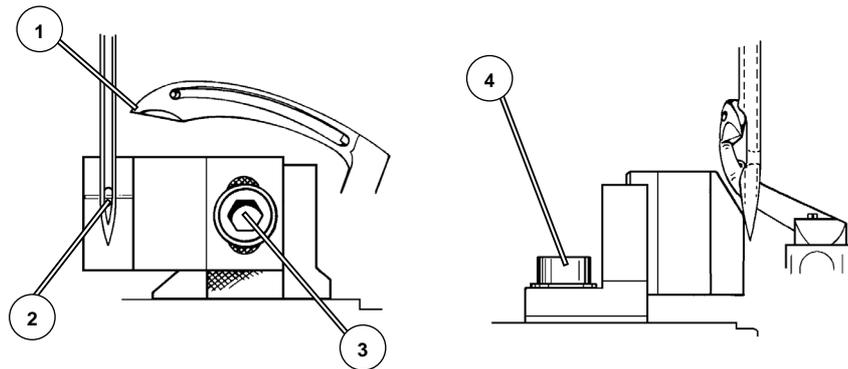
Fig. 46: Setting the needle protection



(1) - Looper tip

(2) - Needle eye

Fig. 47: Setting the needle protection



(1) - Looper tip  
(2) - Needle eye

(3) - Screw  
(4) - Screw



### Setting steps

1. Loosen the screw (3).
2. Adjust the height of the needle protection accordingly.
3. Tighten screw (3).
4. Loosen screws (4).
5. Move the needle protection to the needle point.
6. Tighten screws (4).



**Important:** The needle must not be pushed aside any more than is required.

## 15 Setting the spreader (179)

### Warning

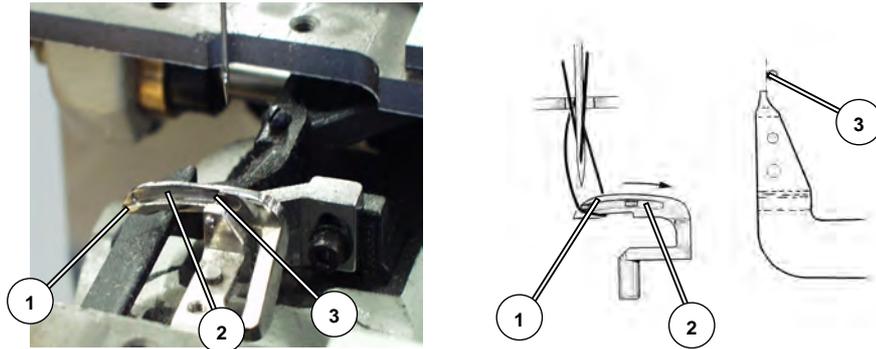


#### Risk of injury

#### Risk of crushing from moving parts

Switch the sewing machine off, before setting the spreader.

Fig. 48: Setting the spreader



(1) - Looper tip  
(2) - Looper groove

(3) - Spreader tip



### Check correct setting

When the looper tip (1) moves to the right, the spreader tip (3) holds the front of the thread loop and opens it for the entry of the needle. The spreader tip (3) should hold the thread loop until the needle point has passed the lower edge of the looper.

The right side of the spreader tip (3) is to be flush with the left side of the needle (see drawing).

In the sewing direction, the spreader (3) must be set such that the looper with its groove (2) can move as closely as possible in front of the spreader tip, but still with sufficient freedom.

The spreader tip should be centered in the looper groove (2).



### Faults due to incorrect setting

- Missed stitches
- Thread breakage



### Sequence

Prerequisite:

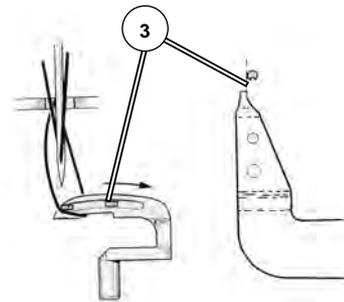
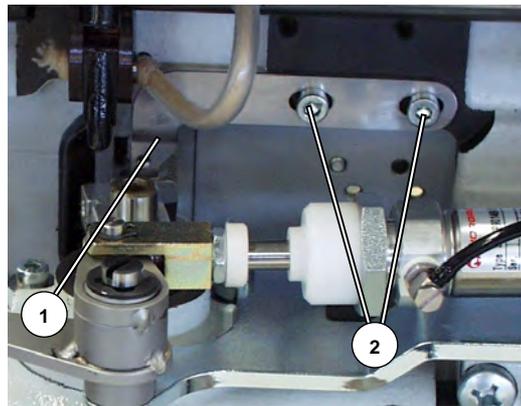
A straight and undamaged needle must be used  
( *Operating Instructions Sec. 8.7 Replacing needles*)



**Cover**

- Remove the covers on the base plate (📖 Section 4.5.5, pg. 14)
- Remove the throat plate (📖 Section 4.5.6, pg. 15)
- Remove the feed pincers and sewing foot (📖 Section 4.5.7, pg. 16).
- Remove the feed (📖 Section 4.5.8, pg. 17).

Fig. 49: Setting the spreader



(1) - Spreader  
(2) - Screws

(3) - Spreader tip



**Setting steps**

1. Loosen the screws (2) slightly.
2. Set the spreader (1) accordingly.

## 16 Bottom feed (175, 179)

### 16.1 Feed motion for the feed

#### Warning



**Risk of injury**

**Risk of crushing from moving parts**

Switch off the sewing machine before checking and setting the feed motion.



#### Check correct setting

For a good stitch pull, the feed should perform another small “thrust motion” after passing the top dead center of the needle bar.



#### Faults due to incorrect setting

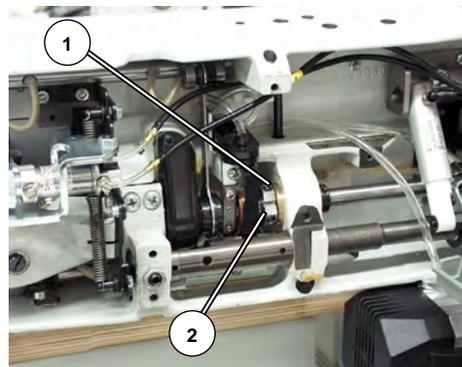
- Poor thread pull
- Missed stitches



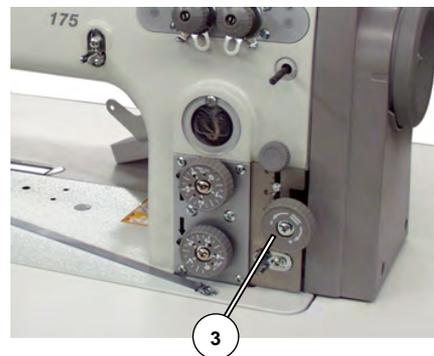
#### Cover

- Removing the oil pan ( Section 4.5.9, pg. 18)

Fig. 50: Feed motion of the feed



(1) - Screw  
(2) - Thrust cam



(3) - Adjusting wheel



#### Setting steps

1. Loosen the screws (1) of the thrust cam (2).
2. Lock the handwheel in slot D.
3. Turn the thrust cam (2) such that when the adjusting wheel (3) moves the feed does not.
4. Tighten the screws of the thrust cam (2).  
Ensure here that the lower shaft is set tight.



**Important:** For the maximum feed length, the feed must not strike the throat plate cutouts. ( Section 17.3, pg. 72)

## 16.2 Stroke motion for the feed

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before checking and setting the stroke motion.



### Check correct setting

When the needle point reaches the hole of the throat plate, the descending tooth points of the feed should be level with the throat plate surface. This setting corresponds to slot D of the adjusting disk.



### Faults due to incorrect setting

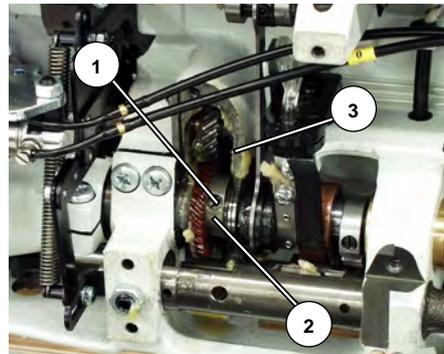
- Damage to the looper
- Damage to the needle
- Missed stitches
- Thread breakage



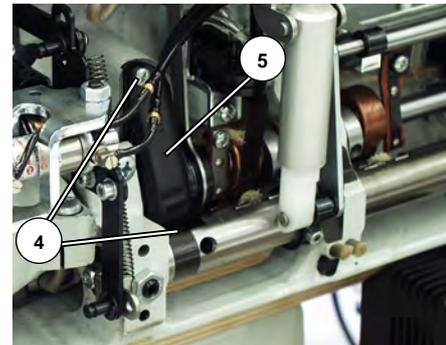
### Cover

- Remove the oil pan (📖 Section 4.5.9, pg. 18)

Fig. 51: Stroke motion of the feed



- (1) - Screw  
(2) - Stroke cam  
(3) - Housing edge



- (4) - Screws  
(5) - Grease cap



### Setting steps

1. Unscrew the screws (4) and remove the grease cap (5).
2. Loosen the screws of the stroke cam (2).
3. Lock the machine in slot D.

4. Turn the stroke cam (2) such that the center of the first screw (1) in the direction of rotation of the machine is level with the housing edge (3).
5. Align the toothed wheel to the upper toothed wheel and tighten the screws of the stroke cam (2).
6. Position the grease cap (5) and secure with screws (4).



**Important:** In its highest position, the feed should be 0.9 mm above the throat plate surface.

## 16.3 Setting the stitch lengths (175)

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before checking and setting the stitch lengths.



### Check correct setting

#### Normal stitch lengths

If, for example, a stitch length of 3 mm is set on the adjusting wheel, 11 stitches on thin cardboard should correspond to a feed of 30 mm.



### Faults due to incorrect setting

- Stitch length does not suit



### Cover

Remove the oil pan (📖 Section 4.5.9, pg. 18).

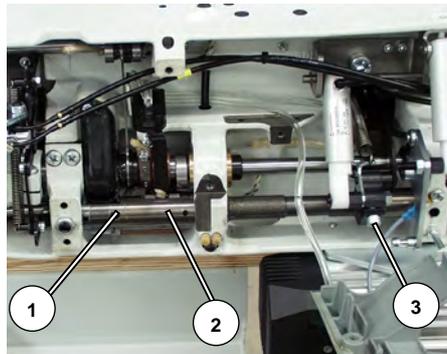


### Sequence

Prerequisite:

A straight and undamaged needle must be used  
(📖 *Operating Instructions Sec. 8.7 Replacing needles*)

Fig. 52: Adjusting the stitch length



(1) - Hole  
(2) - Guide

(3) - Clamping screw



### Setting steps

1. Loosen the clamping screw (3).
2. Insert a peg in the borehole (2) and turn the guide (2) accordingly.

## 16.4 Angle of incline of the feed (175, 179)

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before checking and setting the feed inclination.



### Check correct setting

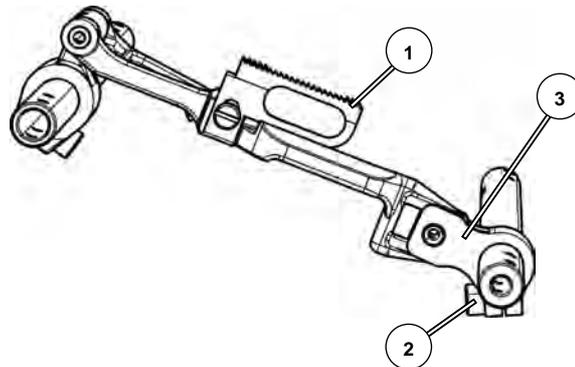
The incline angle or the parallelism of the feed (1) to the throat plate is set using the cam (3).



### Faults due to incorrect setting

- Damage to the material to be sewn

Fig. 53: Adjusting the angle of incline of the feed



(1) - Feed  
(2) - Screw

(3) - Lever



### Setting steps

1. Loosen the screw (2).
2. Turn the lever (3) such that the feed (1) is parallel to the throat plate.  
Ensure that the feed mounting is not pushed in the longitudinal direction.
3. Tighten screw (2).

## 17 Differential bottom feed (176)

### 17.1 Feed motion of the feeds

#### Warning



**Risk of injury**

**Risk of crushing from moving parts**

Switch off the sewing machine before setting the feed.



#### Check correct setting

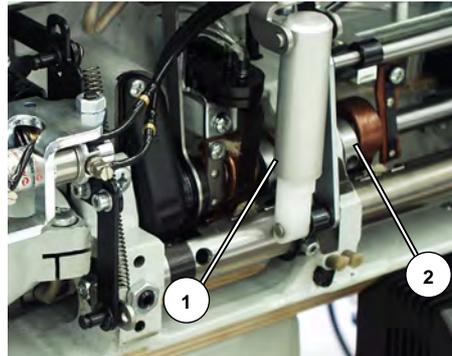
The feed motion of the feed is determined by the position of the cams (1) and (2) on the lower shaft.



#### Cover

- Remove the oil pan (📖 Section 4.5.9, pg. 18).

Fig. 54: Feed motion of the feeds



(1) - Thrust cam  
(2) - Thrust cam



(3) - Adjusting wheel



#### Setting steps

1. Lock upper part in position D.
2. Loosen the screws on the thrust cam (1).
3. Turn the thrust cam (1) so that the feed does not move when the adjusting wheel (3) is moving up and down.



**Important:** Do not turn the thrust cam too far. If it is turned more than 180° the feed movement will take place at the wrong time.

4. Tighten the screws on the thrust cam (1).



#### Sequence

After setting the feed motion of the feed, you must make the following settings:

- Check the stitch length (📖 Section 16.3, pg. 68).

## 17.2 Angle of incline of the feeds

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before setting the height of the feeds.



### Check correct setting

The main feed (3) (right feed mounting) should be in the highest position depending on the sewing equipment, and parallel above the surface of the throat plate.

The differential feed (2) (left feed mounting) should be in the highest position depending on the sewing equipment, and parallel above the surface of the throat plate.

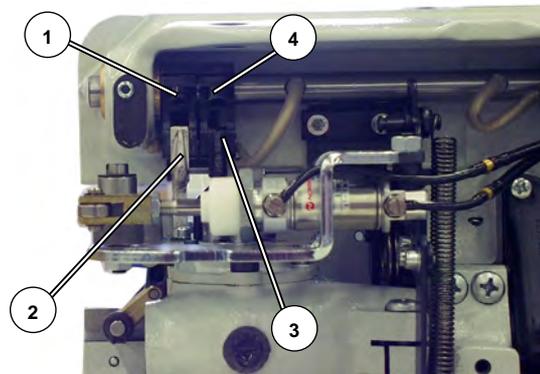


### Faults due to incorrect setting

- Damage to the looper
- Damage to the needle
- Missed stitches
- Thread breakage

New drawing

Fig. 55: Height of the feeds



(1) - Screw  
(2) - Differential feed

(3) - Main feed  
(4) - Screw



### Setting steps

1. Loosen the screws (1) and (4).
2. Set the height of the feed mounting with the gauge (order no. 935 054563).
3. Tighten screws (1) and (4).

### 17.3 Feeds in the longitudinal direction (176)

#### Warning



**Risk of injury**

**Risk of crushing from moving parts**

Switch off the sewing machine before setting the feed.



#### Check correct setting

With the maximum fullness set, the feeds must not come into contact with one another or with the throat plate.



#### Faults due to incorrect setting

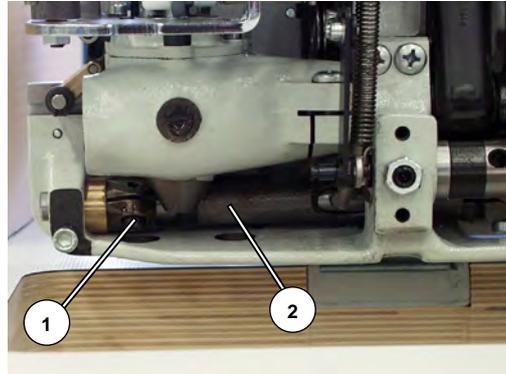
- Damage to the throat plate
- Damage to the feeds
- Noise



#### Cover

- Removing the throat plate (📖 Section 4.5.6, pg. 15)

Fig. 56: Feeds in the longitudinal direction



(1) - Screw, differential feed

(2) - Screw, main feed



#### Setting steps

1. Loosen the screws (1) and (2).
2. Set feeds in the longitudinal direction.
3. Tighten screws (1) and (2).



#### Information

Screw (1) can only be accessed from outside via the borehole in the base plate.

## 17.4 Main feed, stitch length (176)

### Warning

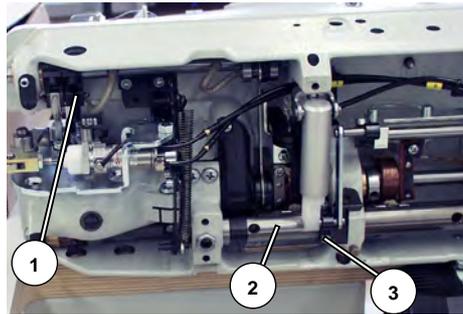


#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before adjusting the main feed.

Fig. 57: Main feed, stitch length



(1) - Main feed

(2) - Guide shaft

(3) - Screw



### Check correct setting

The bottom feed works with 2 feeds that are arranged one after the other and can be set independently of one another.

The feed length of the main feed (right feed mounting (1)) is determined by the position of the left guide shaft (2).

The differential feed can execute a different feed length than the main feed. The amount of ruffing depends on the setting.

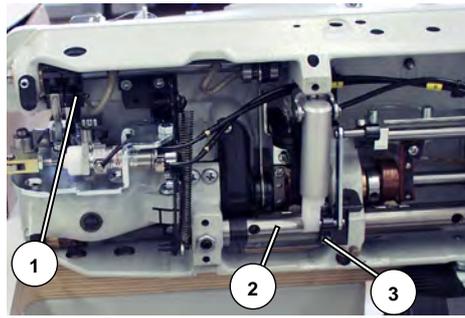
If, for example, a stitch length of 4 mm is set on the stitch adjuster, 11 stitches on thin cardboard should correspond to a feed of 40 mm.



### Faults due to incorrect setting

- Stitch length does not suit

Fig. 58: Main feed, stitch length



(1) - Main feed  
(2) - Guide shaft

(3) - Screw

**Setting steps**

1. Loosen the screw (3).
2. Turn the guide shaft (2) accordingly.
3. Tighten screw (3).

**Sequence**

Perform the sewing process and check the stitch length.

## 18 Differentiable foot top feed (175, 179)

### 18.1 Time of the feed motion of the top feed foot

#### Warning

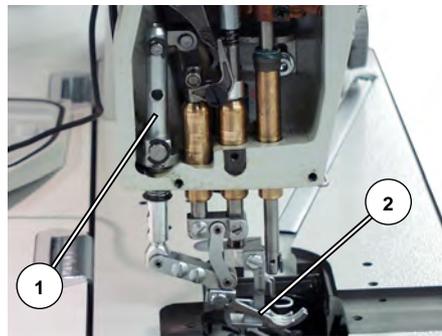


#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before adjusting the feed motion.

Fig. 59: Feed motion of the top feed foot



(1) - Advance lever

(2) - Top feed foot



#### Check correct setting

If the sewing machine is in position D, the advance lever (1) should be vertical.

If the sewing machine is in position D and a stitch length of 4 mm is set, the top feed foot (2) should not move when the top feed guide is swung out.



#### Faults due to incorrect setting

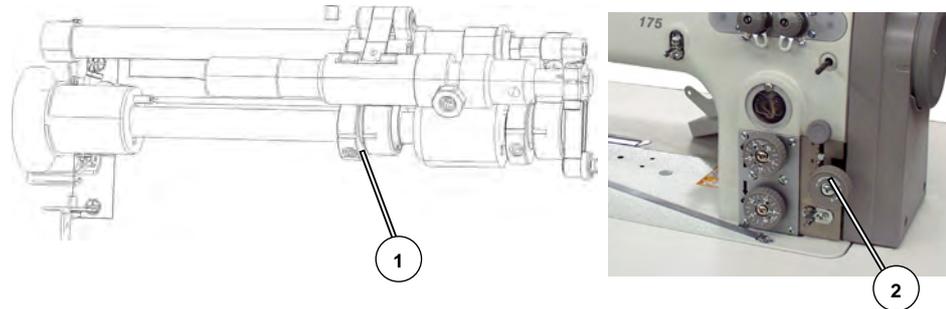
- Synchronization of the top feed to the bottom feed is poor
- Ruffing behavior is poor



#### Cover

- Remove the head cover ( Section 4.5.2, pg. 12)
- Remove the arm cover ( Section 4.5.3, pg. 12)

Fig. 60: Feed motion of the top feed foot



(1) - Thrust cam

(2) - Adjusting wheel



### Setting steps

#### Setting the thrust cam

1. Set the stitch length to 4 mm.
2. Loosen the first screw of the thrust cam (1).
3. Lock sewing machine in position **D**.
4. Loosen the second screw of the thrust cam (1).
5. Turn the thrust cam (1) slightly and thereby raise and lower the adjusting wheel (2).
6. Twist the thrust cam (1) until no further movement is evident in the top feed.

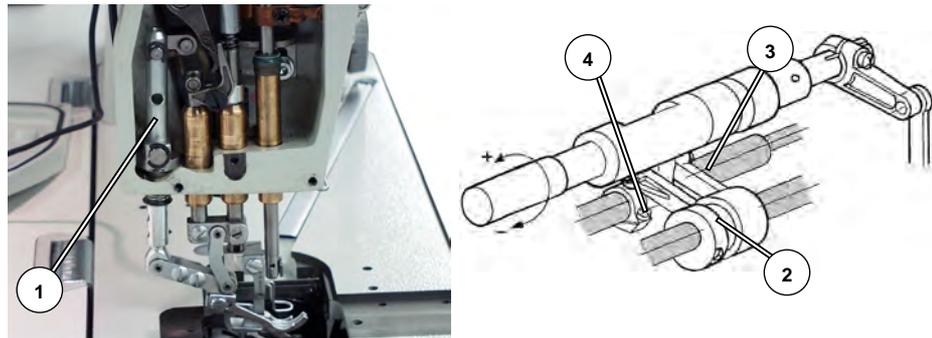


#### Important

Before tightening the thrust cam screws, pull the thrust cam (1) approx. 5 mm away from the bearing, so that the cam and bearing do not rub against one another.

7. Retighten the two screws of the thrust cam (1).

Fig. 61: Advance lever



(1) - Advance lever  
(2) - Thrust cam

(3) - Clamping hub  
(4) - Screw

### Setting the advance lever

1. Set the stitch length to 4 mm.
2. Lock sewing machine in position **D**.
3. Loosen the screws (4) (two items) of the clamping hub (2).
4. Move the advance lever (1) to the vertical position.
5. Retighten the screws (4) (two items) of the clamping hub (2).

## 18.2 Synchronization of top feed foot and feed (175, 179)

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before setting the synchronization.



#### Check correct setting

1. Set the stitch length to 4 mm for the feed **and** the top transport foot.
2. Use the handwheel to turn the sewing machine through a cycle and check the synchronization.

During the working phase of the top feed foot, the top transport foot and the feed must be in synch.



#### Faults due to incorrect setting

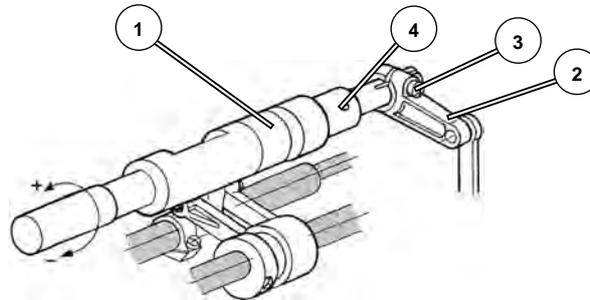
- Synchronization and ruffing behavior not optimal



#### Cover

- Remove the arm cover (📖 Section 4.5.3, pg. 12)

Fig. 62: Synchronization of top feed foot and feed



(1) - Guide  
(2) - Clamping lever

(3) - Screw  
(4) - Hole



#### Setting steps

1. Set the stitch length to 4 mm for the feed and the top transport foot.
2. Loosen the screw (3) of the clamping lever (2).
3. Turn the guide (1) (insert locking peg in borehole (4)).



### **Important**

By turning in the direction + the top feed becomes larger.  
By turning in the direction - the top feed becomes smaller.

4. When there is synchronicity between the top and bottom feed, retighten screw (3) of the clamping lever (2).



### **Sequence**

Use the handwheel to turn the sewing machine through a cycle and check the synchronization.

## 18.3 Stroke setting of the top feed foot (175, 179)

### 18.3.1 Time of the stroke motion of the top feed foot

#### Warning

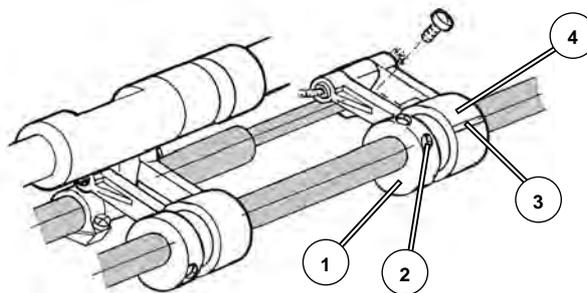


#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before setting the stroke cam.

Fig. 63: Setting the stroke cam



- (1) - Screw  
(2) - Stroke cam



#### Check correct setting

In position **F** the first screw (2) of the stroke cam (1) is aligned with the groove (3) of the push rod.



#### Faults due to incorrect setting

- Increased wear of mechanical parts
- Feed behavior not optimal, poss. loud machine noises



#### Cover

Remove the arm cover (📖 Section 4.5.3, pg. 12)



#### Setting steps

1. Lock sewing machine in position **F**.
2. Loosen both screws of the stroke cam (1).
3. Turn stroke cam (1) until the first screw in the direction of rotation is aligned with the groove (3) of the push rod.
4. Retighten both screws of the stroke cam (1).

### 18.3.2 Stroke height of the top feed foot (175, 179)

#### Warning



**Risk of injury**

**Risk of crushing from moving parts**

Switch off the sewing machine before setting the stroke.



#### Check correct setting

The top feed foot (2) should have a maximum stroke of 2 mm.

In position B “**Thread lever at lowest point**”, the distance between the foot fastening block (1) and the bearing block (3) of the rocker lever (4) should be 72 mm.



#### Faults due to incorrect setting

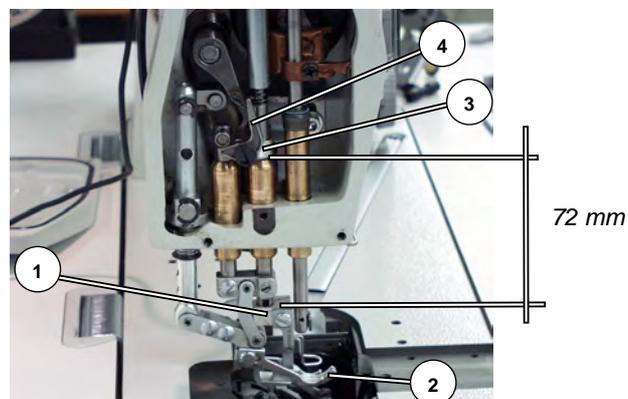
- Poor feed behavior



#### Cover

- Remove the arm cover (📖 Section 4.5.3, pg. 12)
- Remove the head cover (📖 Section 4.5.2, pg. 12)

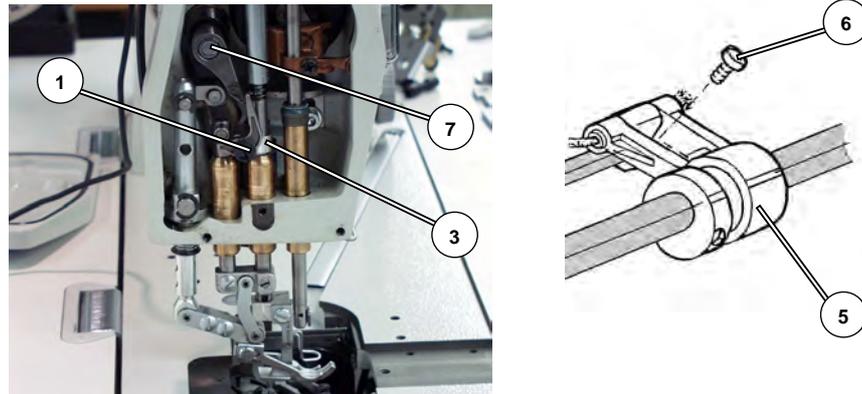
Fig. 64: Stroke of the top feed



(1) - Foot fastening block  
(2) - Top feed foot

(3) - Bearing block  
(4) - Rocker lever

Fig. 65: Stroke height of the top feed



- (1) - Screw
- (3) - Bearing block
- (5) - Clamping hub

- (6) - Screw
- (7) - Lifting shaft



**Setting steps**

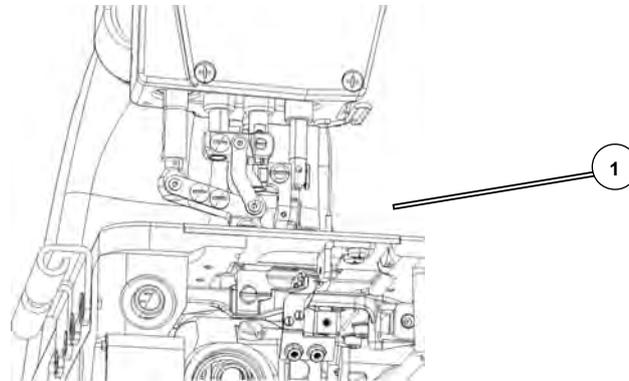
1. Lock sewing machine in position “Thread lever at lowest point”.
2. Loosen the screw (1).
3. Move the bearing block (3).



**Important:**

The cloth presser bar must end flush on the underside of the foot fastening block.

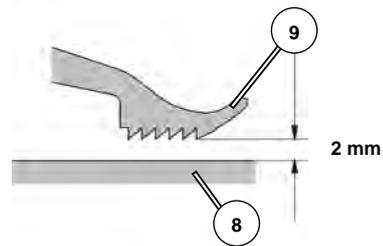
Fig. 66: Stroke height of the top feed foot



- (1) - Screw

4. Tighten screw (1).
5. Loosen the screw (6) of the clamping hub (5).
6. Turn the lifting shaft (7).  
The top feed foot (9) should have a maximum stroke of 2 mm to the throat plate (8).  
Turn the lifting shaft until the top feed has achieved the required stroke.

Fig. 67: Top feed foot and throat plate



(8) - Throat plate

(9) - Top feed foot



**Important:**

Set only as much lift as is required. Too great a lift comes at the expense of the pincer movement, i.e. the higher the stroke, the shorter the movement of the top feed on the feed.

7. Tighten screw (6).

### 18.3.3 Position of the top feed foot (175, 179)

#### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before setting the position of the top feed foot.



#### Check correct setting

The top feed foot is set in the factory such that parallel support on the feed is guaranteed for light to medium-weight sewing material.

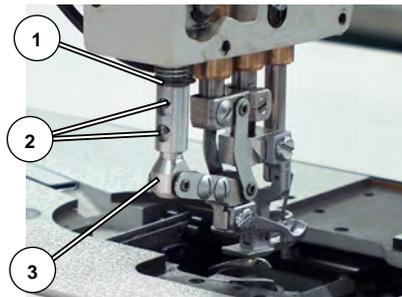
The support surface (inclination) can be adjusted to suit the sewing material.



#### Faults due to incorrect setting

- Material damage

Fig. 68: Position of the top feed foot



(1) - Feed shaft  
(2) - Threaded pins

(3) - Pin



#### Setting steps

1. Loosen threaded pins (2).
2. Push the pin (3) into or out of the feed shaft (1) as required.  
This adjusts the angle of incline of the top feed foot.
3. Re-tighten the threaded pins (2).



#### Sequence

After adjusting the angle of incline of the top feed, the lift height must be checked and corrected if necessary.

## 19 Retention spring on the looper (175, 176)

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before setting the retention spring.



### Check correct setting

When the looper moves from **right to left** the needle thread loop (4) must slide to above the holding point (1) between the retention spring (2) and the looper (3).

When the looper moves from **left to right** the needle thread loop should be held at the holding point (1) until the descending needle has entered the thread triangle on the left in front of the needle thread loop (4).

As the needle moves to its upper position and the looper moves to the left, the needle point should pass the retention spring (2) at a distance of approx. 0.5 mm.



### Faults due to incorrect setting

- Missed stitches
- Thread breakage

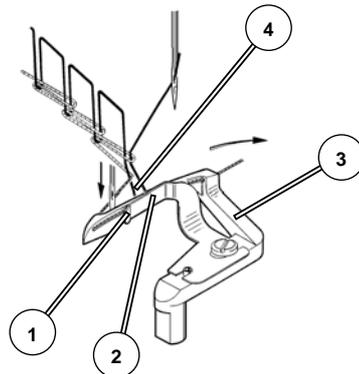


### Cover

Remove the covers on the base plate ( Section 4.5.4, pg. 13)

Remove the throat plate ( Section 4.5.6, pg. 15)

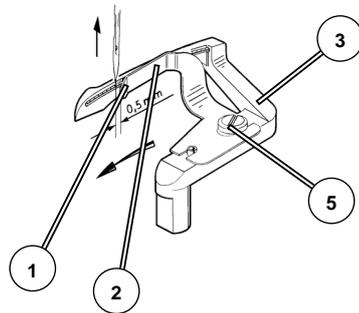
Fig. 69: Retention spring on the looper



(1) - Holding point  
(2) - Retention spring

(3) - Looper  
(4) - Needle thread loop

Fig. 70: Retention spring on the looper



(1) - Holding point  
(2) - Retention spring

(3) - Looper  
(5) - Screw



### Setting steps

1. Bend the retention spring (2) so that it rests flat against the looper (3). Make sure also that the pressure is greatest in front at the holding point (1).
2. Loosen the screw (5).
3. Set the distance to 0.5 mm by sliding the retention spring (2).



### Important:

The force of the pressure of the spring against the looper must be checked when the machine is completed and threaded.

4. Tilt the upper part of the machine backwards and turn by hand.
5. Check the described stitch formation during the right-to-left and left-to-right looper motion.  
If required, if the needle thread loop is not pushed beyond the holding point (1) reduce the pressure of the retention spring by bending it, or increase the pressure if the needle thread loop is not held at the holding point (1) until the needle enters the thread triangle on the left in front of the needle thread loop.



### Sequence

Perform the sewing process and check the stitch formation.

## 20 Stitch length-controlled thread take-up

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before adjusting the thread take-up.



### Check correct setting

The stitch length-controlled thread take-up (1) enables an automatic adjustment of the looper thread quantity to the relevant stitch length.

When adjusting the stitch length, the thread take-up is actuated accordingly via the lower guide shaft.

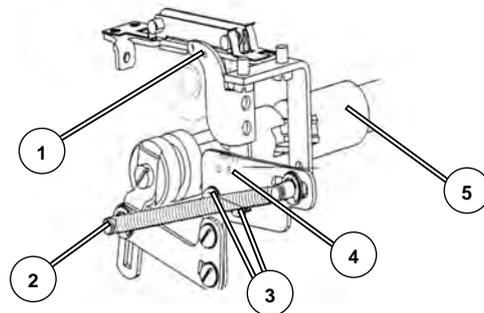
The setting values are easily reproduced using a scale (2).



### Faults due to incorrect setting

- Missed stitches
- Thread breakage

Fig. 71: Stitch length-controlled thread take-up



(1) - Looper thread take-up  
(2) - Bolt  
(3) - Screw

(4) - Scale  
(5) - Guide shaft



### Setting steps

#### Basic setting

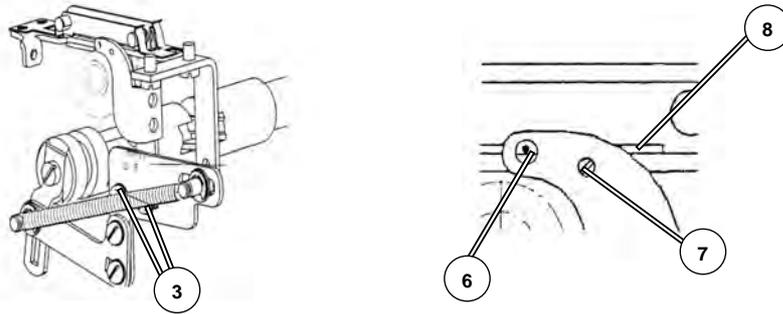
For sewing machines with a maximum stitch length of 4 mm:

1. Push bolt (2) toward the guide shaft until it stops.

#### Setting the thread take-up

1. Loosen screws (3).
2. Set the thread guide in accordance with the scale.  
0 = small thread quantity  
5 = larger thread quantity

Fig. 72: *Stitch length-controlled thread take-up*



(3) - Screw  
(6) - Thread guide hole

(7) - Screw  
(8) - Carrier plate

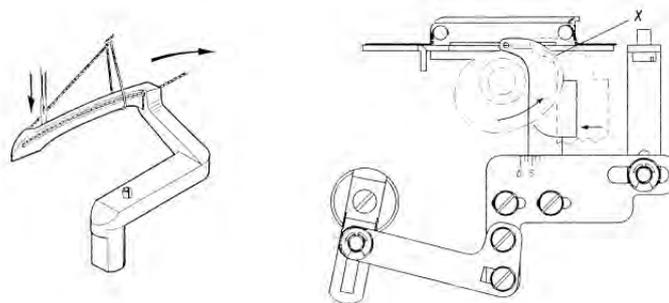


**Important:**

When setting a larger thread quantity, it is important to ensure that the looper thread does not come off the thread take-up disk before time.

3. Align the center of the thread guide hole (6) to the edge of the carrier plate (8).
4. Tighten screws (3).  
At the side, the thread guide is set so that it does not have any play. If this is not the case, the screw (7) must be adjusted.

Fig. 73: *Stitch length-controlled thread take-up*



**Important:**

For an extreme setting, e.g. shortest possible stitch length and largest possible thread quantity (flexible seam) it must be ensured that it is possible for the needle to enter into the thread triangle again securely. Overly large thread quantities can cause missed stitches.

If for the above settings the stitch length must be increased significantly, then the thread guide must be reset in direction 0.

Otherwise the looper thread could come off in area X of the thread take-up disk.

The looper thread would not, during the backward motion of the looper, be pulled back through the take-up disk as required.

## 21 Setting the thread take-up disk

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before setting the thread take-up disk.



### Check correct setting

The thread take-up disk (1) should be 5 mm above the carrier plate (2) for a machine locked in slot **E** (top dead center of needle bar).



### Faults due to incorrect setting

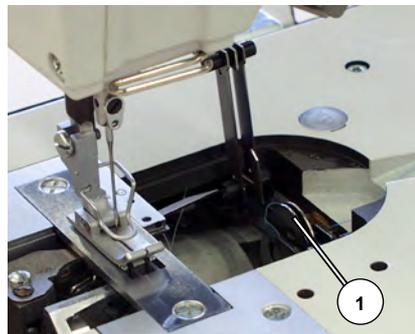
- Missed stitches
- Thread breakage



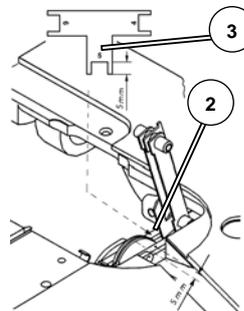
### Cover

Remove the covers on the base plate (📖 Section 4.5.4, pg. 13)

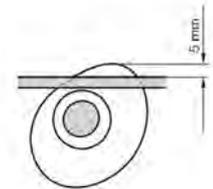
Fig. 74: Setting the thread take-up disk



(1) - Thread take-up disk  
(2) - Carrier plate



(3) - Gauge



### Setting steps

1. Loosen the screws of the thread take-up disk (1).
2. Insert the locking pin in slot **E**.
3. Turn the thread take-up disk (1) accordingly.  
The measurement can be performed using **gauge 3**.
4. Set the disk tightly and tighten the screws.

## 22 Setting the thread cutting device

### 22.1 Setting the thread cutting device (175, 176)

#### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before adjusting the thread cutting device.



#### Check correct setting

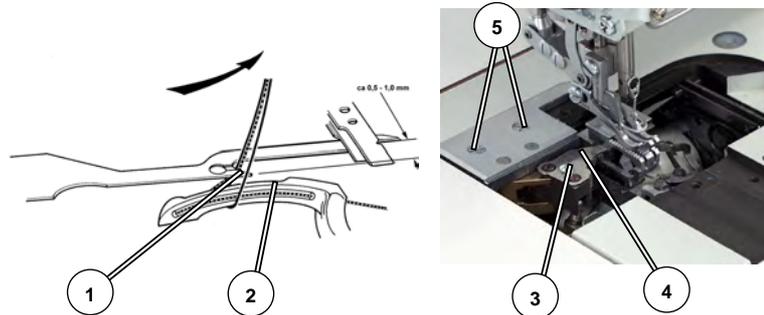
The looper thread that is behind the looper and the rear thread of the needle thread loop must be grasped by the point of the movable blade during the cutting process.



#### Faults due to incorrect setting

- Thread that is not cut or not cut cleanly

Fig. 75: Removing the blade



- (1) - Point of the movable blade  
(2) - Looper  
(3) - Screw

- (4) - Movable blade  
(5) - Screw

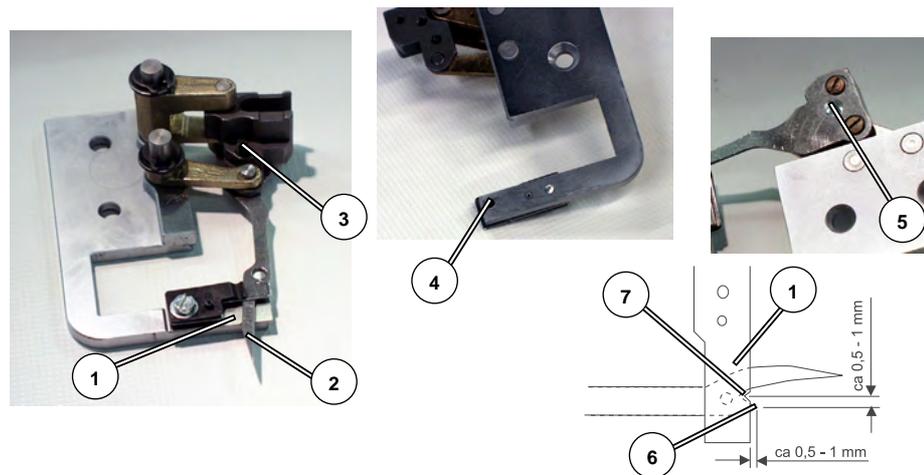


#### Setting steps

#### 1) Removing the blade

1. Unscrew screw (3) and remove movable blade (4).
2. Unscrew the screws (5).
3. Remove the entire thread cutter.

Fig. 76: Manual cutting test



- (1) - Blade
- (2) - Movable blade
- (3) - Pressure screw
- (4) - Pressure screw

- (5) - Screw
- (6) - Point of the movable blade
- (7) - Notch

## 2) Manual cutting test

1. First loosely secure the movable blade (2) with the screw (5).
2. Align the point (6) of the movable blade with the notch (7) of the stationary blade (1).  
The point should be approx. 0.5 - 1.0 mm away from the notch.
3. Tighten screw (5).
4. Perform cutting test with thread.



### Important

If the cut is not clean, the blade must be checked for sharpness or replaced with a new sharp blade.

5. Set the movable blade (2) in cutting position by lightly turning in the pressure screw (3).



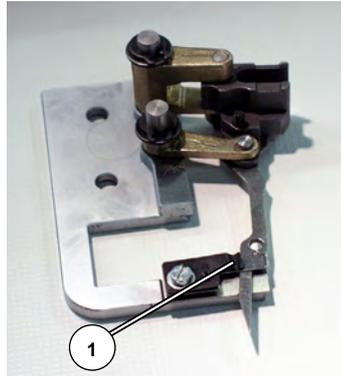
### Important

A smooth blade movement must be guaranteed.

6. If required, align the stationary blade (1) to the movable blade (2) using the pressure screw (4).

### 3) Thread clamping plate

Fig. 77: Thread clamping plate



(1) - Thread clamping plate

The thread clamping plate (1) should hold the cut thread ends gently to ensure a smooth start to sewing.

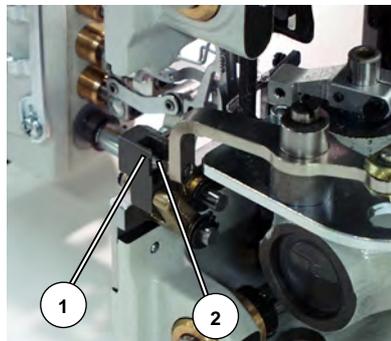


#### Important

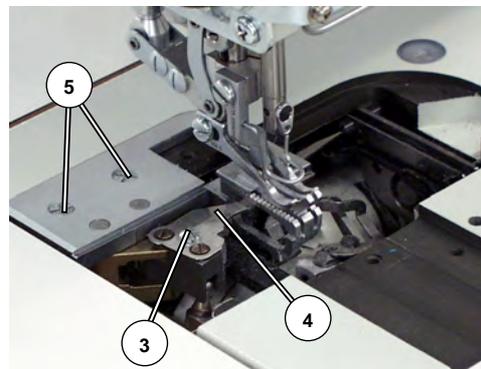
If the clamping plate is too tight this can cause ruffing at the start of sewing.

### 4) Installing the thread cutter

Fig. 78: Installing the thread cutter



(1) - Blade mounting  
(2) - Ball lever  
(3) - Screw

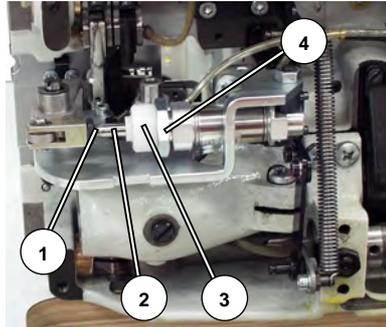


(4) - Blade  
(5) - Screw

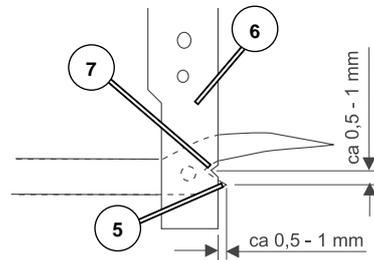
1. Unscrew screw (3) and first remove the movable blade again.
2. Position the thread cutter such that the blade holder (1) fits over the ball lever (2).
3. Tighten screws (5).
4. Insert blade (4) and secure with screw (3).

### 5) End positions of the thread cutter

Fig. 79: End position of the thread cutter



- (1) - Counternut
- (2) - Piston rod
- (3) - End stop
- (4) - Nut



- (5) - Point of the movable blade
- (6) - Stationary blade
- (7) - Notch

1. Disconnect the machine from the compressed air supply.
2. Slide the piston rod (2) into the left end position.
3. Loosen the counternut (1) and turn the piston rod (2) as far as required until the position depicted in the sketch on the right is achieved.



#### Important

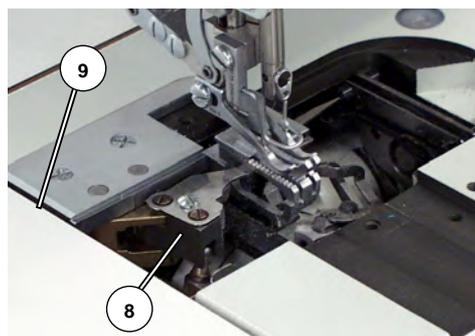
The point (5) of the movable blade (6) should be approx. 0.5 - 1 mm below the notch (7) of the stationary blade (6).



#### Important

The point (5) of the movable blade (6) should be approx. 0.5 - 1 mm behind the edge of the stationary blade.

Fig. 80: End position of the thread cutter



- (8) - Edge of the blade mounting
- (9) - Edge of the table plate

4. If one moves the piston rod (2) into its right end position, the edge (8) of the blade mounting and edge (9) of the table plate should be flush with one another.
5. Loosen the nut (4) and set the end position of the cylinder accordingly using the end stop (3).

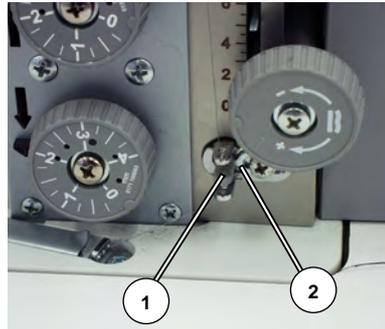


#### Sequence

Perform cutting test while sewing for both the smallest and largest stitch length.

## 6) Thread puller for looper and needle thread

Fig. 81: Thread puller for looper and needle thread



(1) - Thread puller



(2) - End stop



### Important:

While cutting the thread, the thread tensions are opened and the thread puller (1) is activated for the looper and the needle thread.

The pulled, tension-free thread serves to ensure proper stitch formation the next time sewing commences.

No more thread than is required should be pulled as this determines the length of the thread end remaining at the start of the seam.

The thread puller (1) is stepped.

By adjusting the end stop (2) more or less thread can be pulled.

## 22.2 Thread cutting device (179)

### Warning



#### Risk of injury

#### Risk of crushing from moving parts

Switch off the sewing machine before adjusting the thread cutting device.



### Check correct setting

If the thread puller lever (1) in the top dead center of the needle bar is moved all the way to the right, the thread puller (2) should move so far through the thread loop around the looper that it securely grasps this and brings it back with it on the return path.

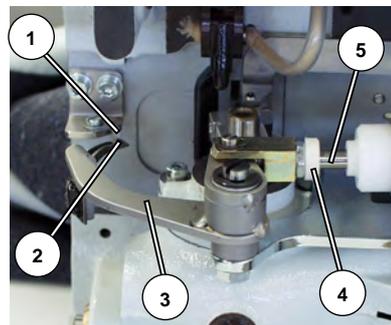
On the return, the thread puller (2) should move so far to the left that the thread loop it has grasped is pulled against the counter blade (5) and safely cut.



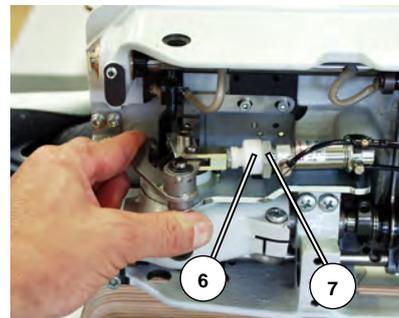
### Faults due to incorrect setting

- Thread is not cut

Fig. 82: Thread puller lever



- (1) - Counter blade  
(2) - Thread puller  
(3) - Thread puller lever  
(4) - Counternut



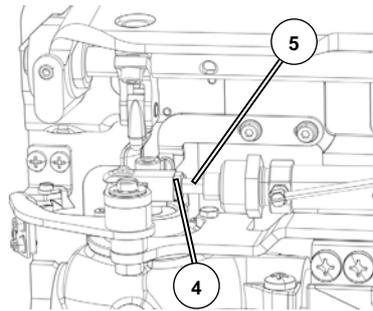
- (5) - Piston rod  
(6) - End stop  
(7) - Counternut



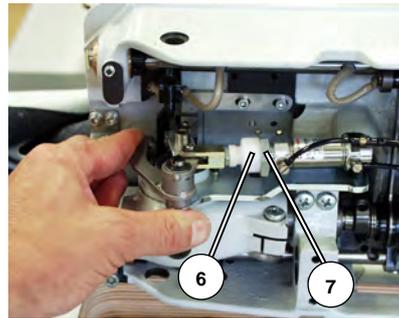
### Setting steps

1. Insert sewing material and sew a short seam.
2. Switch off the machine.
3. Remove compressed air.
4. Turn the needle bar into the top dead center.
5. Press the thread puller lever (3) manually all the way to the right.
6. Check whether the thread puller (2) is moving through the thread loop around the looper.
7. Slowly push the thread puller lever (3) to the left.
8. Check whether the thread loop is pulled against the counter blade (1).

Fig. 83: Thread puller lever end position



(4) - Counternut  
(5) - Piston rod



(6) - End stop  
(7) - Counternut

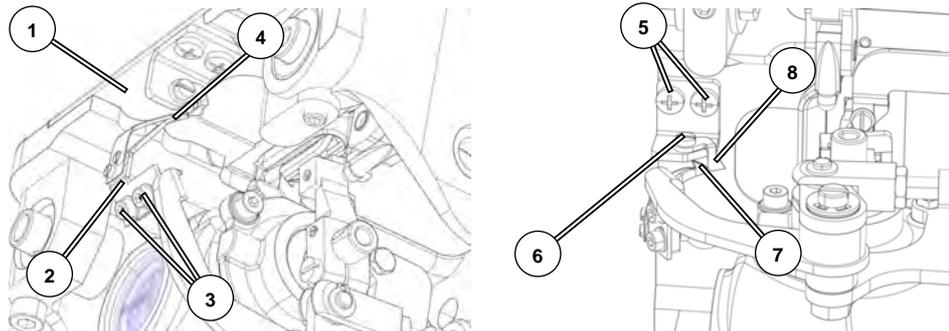
### Correction of the right end position of the thread puller lever

1. Release the counternut (7).
2. Turn the end stop (6) accordingly.
3. Tighten the counternut (7).

### Correction of the left end position of the thread puller lever

1. Release the counternut (4).
2. Turn the piston rod (5) accordingly.
3. Tighten the counternut (4).

Fig. 84: Side position of the thread puller lever



(1) - Cover plate  
 (2) - Holding bracket  
 (3) - Screws  
 (4) - Thread puller plate

(5) - Screws  
 (6) - Screw  
 (7) - Thread puller plate  
 (8) - Counter blade

### Correction of the side position of the thread puller plate

1. Loosen the screws (3) slightly.
2. Align the side of the thread puller plate (4) such that the thread loop is securely grasped.
3. Tighten screws (3).

### Counter blade



**Important:** The holding bracket (2) for the counter blade should be flush with the outside edge of the cover plate (1).

The counter blade (8) must project sufficiently far into the thread puller plate here.

1. Loosen screws (5).
2. Align the holding bracket (2) to the edge of the cover plate (1) and to the thread puller plate (4).
3. Tighten screws (5).

### Cutting pressure of the counter blade

1. The cutting pressure is set by turning the counter blade (8) with respect to the thread puller plate (7).
2. Loosen the screw (6).
3. Carefully turn the counter blade (8) until the thread is cut cleanly.
4. Tighten screw (6).

## 23 Maintenance work

### 23.1 Lubrication

#### Warning



#### Risk of injury

#### Skin rashes from lubricant

Oil can cause a rash if it comes into contact with the skin. Avoid any prolonged skin contact with the oil. Wash the affected area thoroughly after contact.

#### Environmental protection



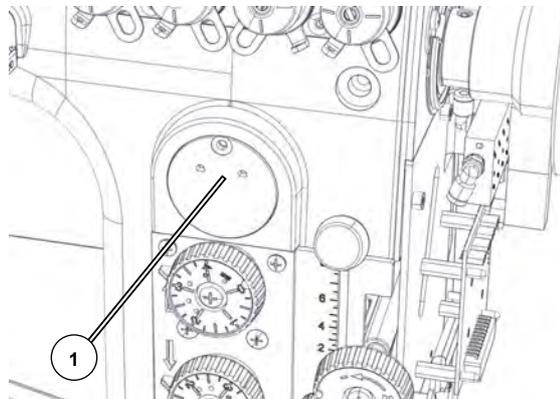
#### Risk of environmental damage from grease

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

Collect waste lubricant carefully and dispose of it and greasy machine parts in accordance with the applicable statutory regulations.

Please observe all safety and environmental protection instructions issued by the lubricant manufacturer.

Fig. 85: Oil reservoir



(1) - Oil reservoir

#### Lubrication of the upper part of the machine

- The upper part of the machine is equipped with a central oil wick lubrication. All bearing points are supplied from the oil reservoir (2).
- The oil level must never drop below the “**MIN**” mark.
- Top up through the holes in the sight glass until the oil level reaches the “**MAX**” mark.

Use only **DA 10** lubricant or an equivalent oil conforming to the following specifications to lubricate the special sewing machine:

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

**DA 10** can be obtained from **DÜRKOPP ADLER AG** sales offices under the following part numbers:

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



### 23.2 Cleaning work

Sewing dust and thread remains must be removed every 8 operating hours using a compressed-air pistol or a brush.

Areas that need to be cleaned particularly thoroughly:

- Looper
- Throat plate
- Motor fan sieve

These cleaning operations are described in the operating instructions ( *Operating Instructions Sec. 10 Maintenance*).

#### Attention

##### **Possible damage to the paintwork from solvent-based cleaners**

Solvent-based cleaners damage the paintwork of the machine.

Use only solvent-free substances to clean the machine.







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