DÜRKOPP ADLER

52Xi
52Xi-75

Service Instructions

IMPORTANT
READ CAREFULLY BEFORE USE
KEEP FOR FUTURE REFERENCE

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1 About these instructions

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

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

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

1.1 For whom are these instructions intended?

These instructions are intended for:

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

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

1.2 Representation conventions – symbols and characters

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

Proper setting

Specifies proper setting.

Disturbances

Specifies the disturbances that can occur from an incorrect adjustment.

Cover

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

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

Steps to be performed for service, maintenance, and installation

Steps to be performed via the software control panel

The individual steps are numbered:

1. First step
2. Second step
3. …

The steps must always be followed in the specified order.

- Lists are marked by bullet points.

Result of performing an operation

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

Important

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

Information

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

Order

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

References

Reference to another section in these instructions.

Safety

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

Location information

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

1.3 Other documents

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

1.4 Liability

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

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

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

Transport

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

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

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

2 Safety

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

2.1 Basic safety instructions

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

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

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

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

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

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

Transport

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

Setup

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

Obligations of the operator

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

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

Requirements to be met by the personnel

Only qualified specialists may:

- Setting up the machine
- Performing maintenance work and repairs
- Performing work on electrical equipment

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

Operation

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

Safety equipment

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

2.2 Signal words and symbols used in warnings

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

Signal words

Signal words and the hazard they describe:

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

Symbols

The following symbols indicate the type of danger to personnel:

Symbol	Type of danger
	General
	Electric shock

Symbol	Type of danger
	Puncture
	Crushing
	Environmental damage

Examples Examples of the layout of warnings in the text:

DANGER

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

WARNING

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

CAUTION

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

CAUTION

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

NOTICE

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

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

3 Working basis

3.1 Order of the adjustments

Order

The setting positions for the machine are interdependent.

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

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

NOTICE

Property damage may occur!

Risk of machine damage from incorrect order.

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

3.2 Laying the cable guide

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

To lay the cable guide:

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

Important

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

3. Cut off any overlapping cable ties.

NOTICE

Property damage may occur!

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

Lay excess cable as described above.

3.3 Removing the covers

WARNING

Risk of injury from moving parts!

Crushing possible.

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

WARNING

Risk of injury from sharp parts!

Punctures possible.

Switch the machine off before removing the covers.

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

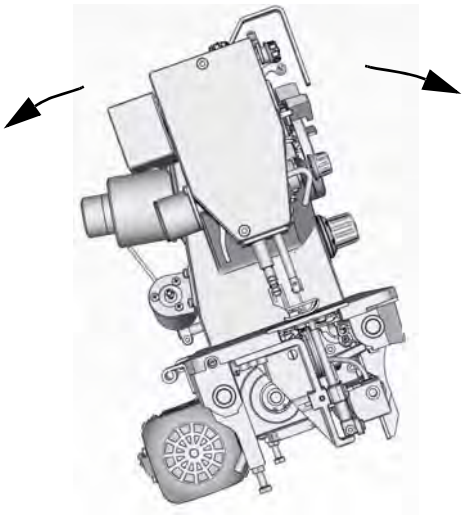
This chapter describes how to remove and then refit the individual covers. The text for each type of work setting then specifies only the cover that needs to be removed at that particular time.

3.3.1 Access to the underside of the machine

Cover

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

Pic. 1: Access to the underside of the machine



Tilting the machine head

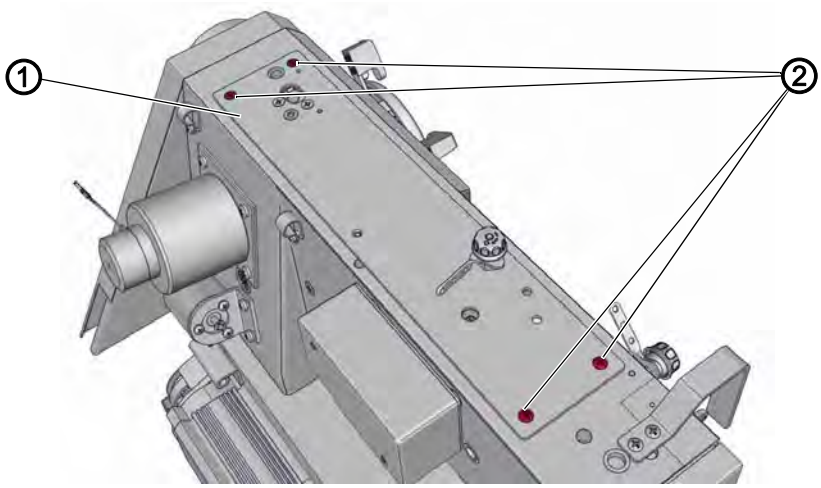
1. Tilt the machine head as far as it will go.

Erecting the machine head

1. Erect the machine head.

3.3.2 Removing and placing the arm cover

Pic. 2: Removing and placing the arm cover



(1) - Arm cover

(2) - Screws

Removing the arm cover

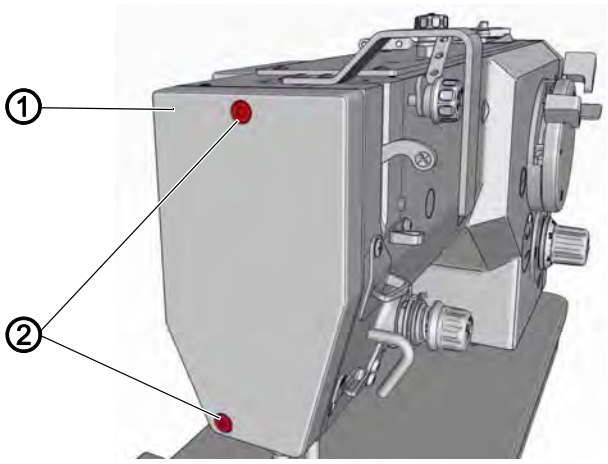
1. Loosen the screws (2).
2. Remove the arm cover (1).

Placing the arm cover

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

3.3.3 Removing and placing the head cover

Pic. 3: Removing and placing the head cover



(1) - Head cover *(2) - Screws*

Removing the head cover

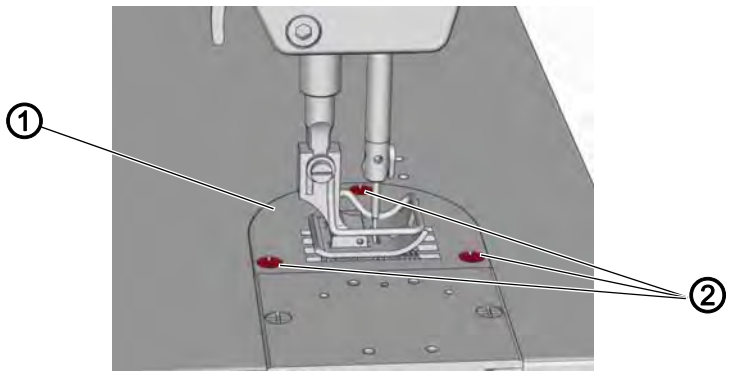
1. Loosen the screws (2).
2. Remove the head cover (1).

Placing the head cover

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

3.3.4 Disassembling and assembling the throat plate

Pic. 4: Disassembling and assembling the throat plate



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

Disassembling the throat plate

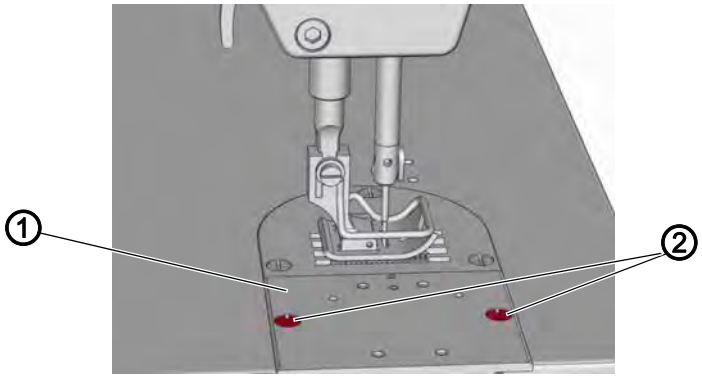
1. Loosen the screws (2).
2. Remove the throat plate (1).

Assembling the throat plate

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

3.3.5 Disassembling and assembling the slide plate

Pic. 5: Disassembling and assembling the slide plate



(1) - Slide plate *(2) - Screws*

Disassembling the slide plate

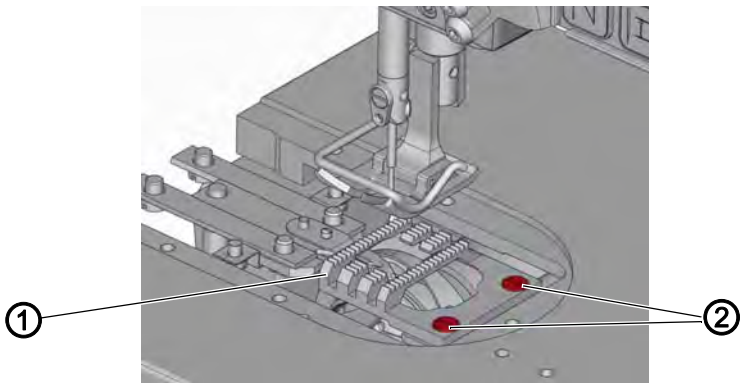
1. Loosen screws (2).
2. Remove the slide plate (1).

Montáž zásuvné desky

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

3.3.6 Disassembling and assembling the feed dog

Pic. 6: Disassembling and assembling the feed dog



(1) - Feed dog *(2) - Screws*

Disassembling the feed dog

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

Assembling the feed dog

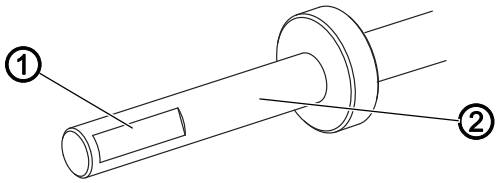
1. Insert the feed dog (1).
2. Tighten the screws (2).

Important

Check the feed dog settings (📖 *p. 33*).

3.4 Flats on shafts

Pic. 7: Flats on shafts



(1) - Flat *(2) - Shaft*

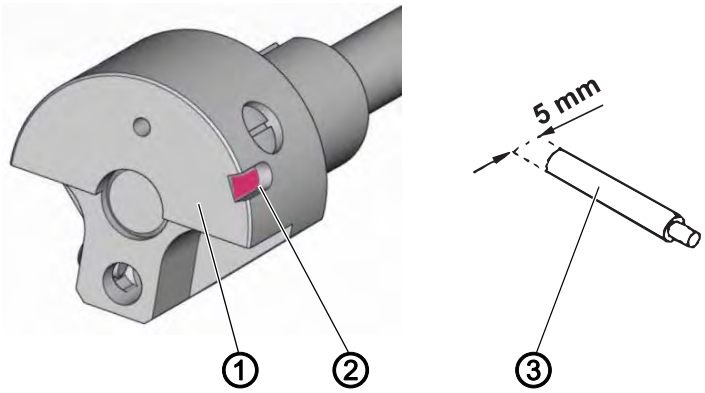
Some shafts have flat surfaces at the points where the components are screwed on. This stabilizes the connection and makes setting easier. The first screw in the direction of rotation is always screwed on to a flat surface.

Important

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

3.5 Locking the machine in place

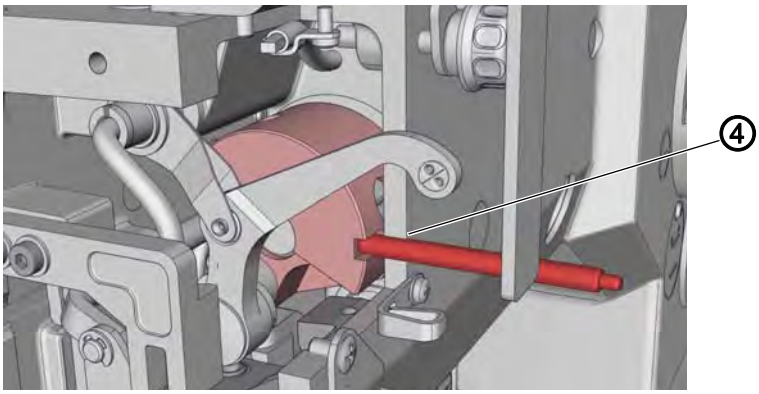
Pic. 8: Locking the machine in place (1)



(1) - Arm shaft crank
(2) - Arresting groove
(3) - Locking pin

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

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



(4) - Locking opening

Locking the machine in place

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

Removing the lock

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

4 Zigzag stitch mechanism of machines 523, 524, 527

WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before checking and setting.

Order

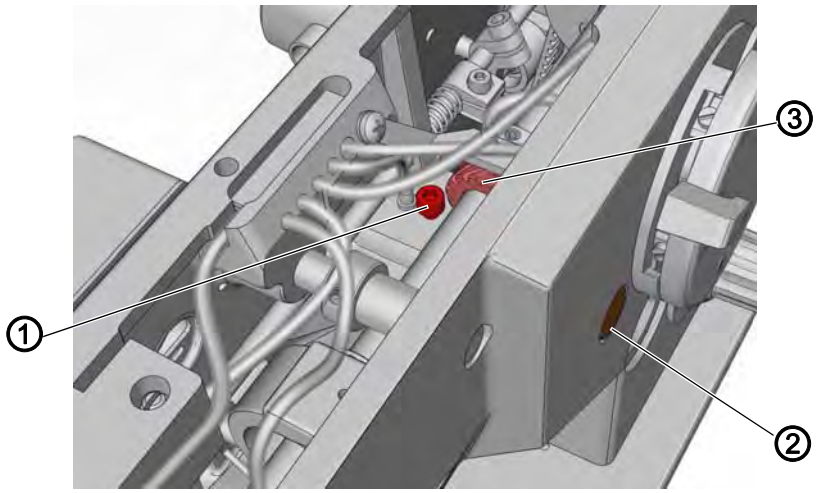
The machine setting must be carried out in the sequence as described herein.

4.1 Tooth clearance setting of zigzag stitch gear

Proper setting

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

Pic. 10: Tooth clearance setting of zigzag stitch gear



(1) - Screw
(2) - Eccentric bolt
(3) - Gear

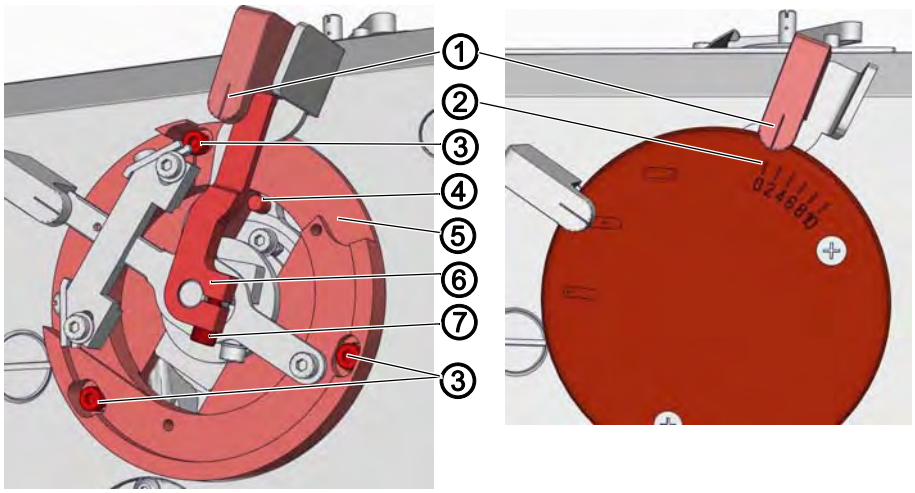
1. Dismantle the machine arm cover (📖 *p. 13*).
2. Loosen screw (1).
3. Turn the eccentric bolt (2) until the gear fitted on it strikes the gear (3). With regard of the gear runout, caused by manufacturing inaccuracy, turn the handwheel by 1/4 revolution, and set the clearance again. Repeat this 8 times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

4.2 Straight stitch alignment

Proper setting

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

Pic. 11: Straight stitch alignment



(1) - Mark
(2) - Scale
(3) - Screws
(4) - Stop pin
(5) - Casing
(6) - Lever
(7) - Screw

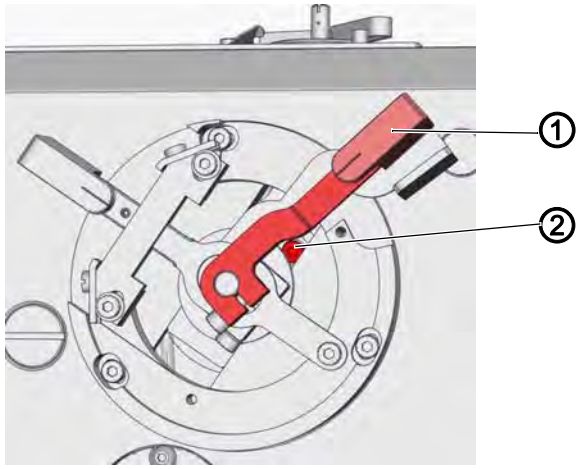
1. Set the zero stitch length on the knob.
2. Dismantle the cover.
3. Loosen the screw (7).
4. Place the stop pin (4) to the stop onto the casing (5).
5. Place a piece of paper onto the throat plate and turn the hand wheel there and back until the needle point makes 2 holes in the paper.
6. Loosen 3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

4.3 Zigzag stitch width

Proper setting

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

Pic. 12: Zigzag stitch width



(1) - Lever *(2) - Screw*

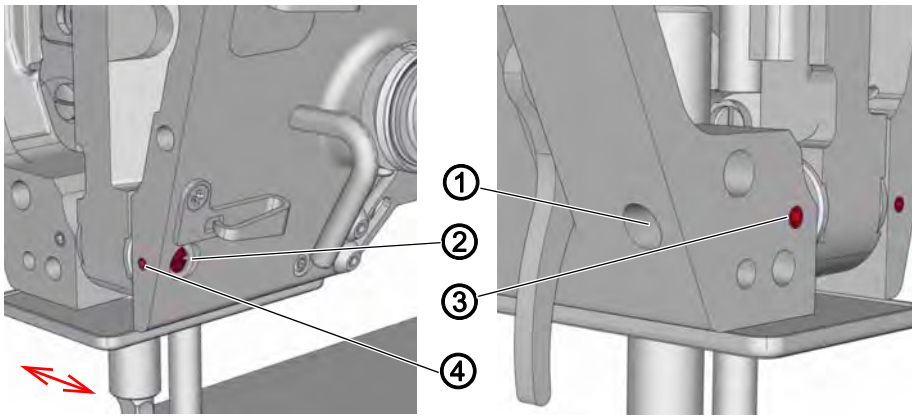
1. Set the zero stitch length on the knob.
2. Place a piece of paper onto the throat plate.
3. Dismantle the cover.
4. Loosen the screw (2).
5. Try to set the lever (1) in the position corresponding with the required zigzag stitch width.
6. Turn the hand wheel there and back until the needle makes 2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

4.4 Needle stab position setting in feeding direction

Proper setting

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

Pic. 13: Needle stab position setting in feeding direction



(1) - Regulating screw
(2) - Regulating screw
(3) - Arresting screw
(4) - Arresting screw

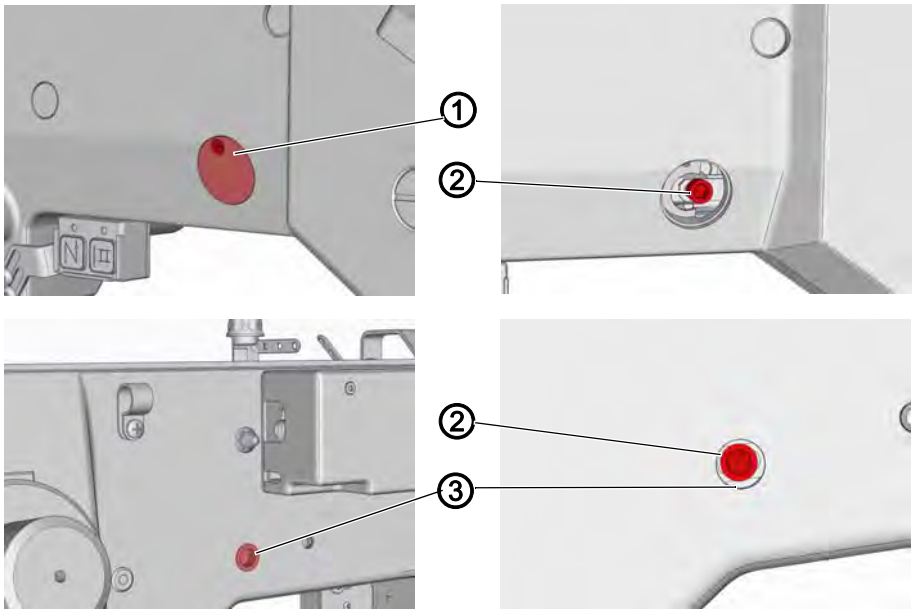
1. Place the needle in the bottom dead center.
2. Loosen the arresting screws (3), (4), and the regulating screw (2).
3. Adjust the regulating screw (1) so that the proper setting is complied with and arrest it with the screw (3).
4. Adjust the regulating screw (2) so that the lost motion (play) of the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

4.5 Lateral setting of needle stab position

Proper setting

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

Pic. 14: Lateral setting of needle stab position



(1) - Cover
(2) - Screws
(3) - Hole

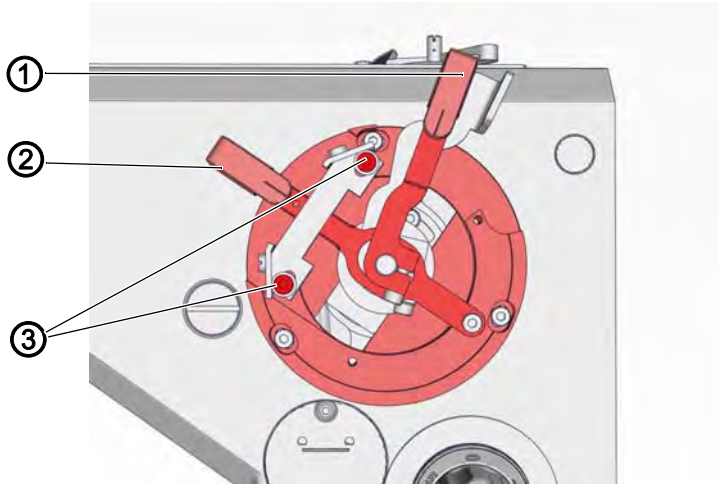
6. Dismantle the cover (1) and the hole stop (3) from the rear side.
7. Loosen both screws (2).
8. Set the maximum zigzag stitch width and adjust the positions of the needle lateral motion dead centers as per proper setting.
9. Tighten both screws (2) properly.
10. Replace the cover (1) and hole stop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

4.6 Lateral setting of central straight stitch position

Proper setting

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

Pic. 15: Lateral setting of central straight stitch position



(1) - Lever
(2) - Lever
(3) - Screws

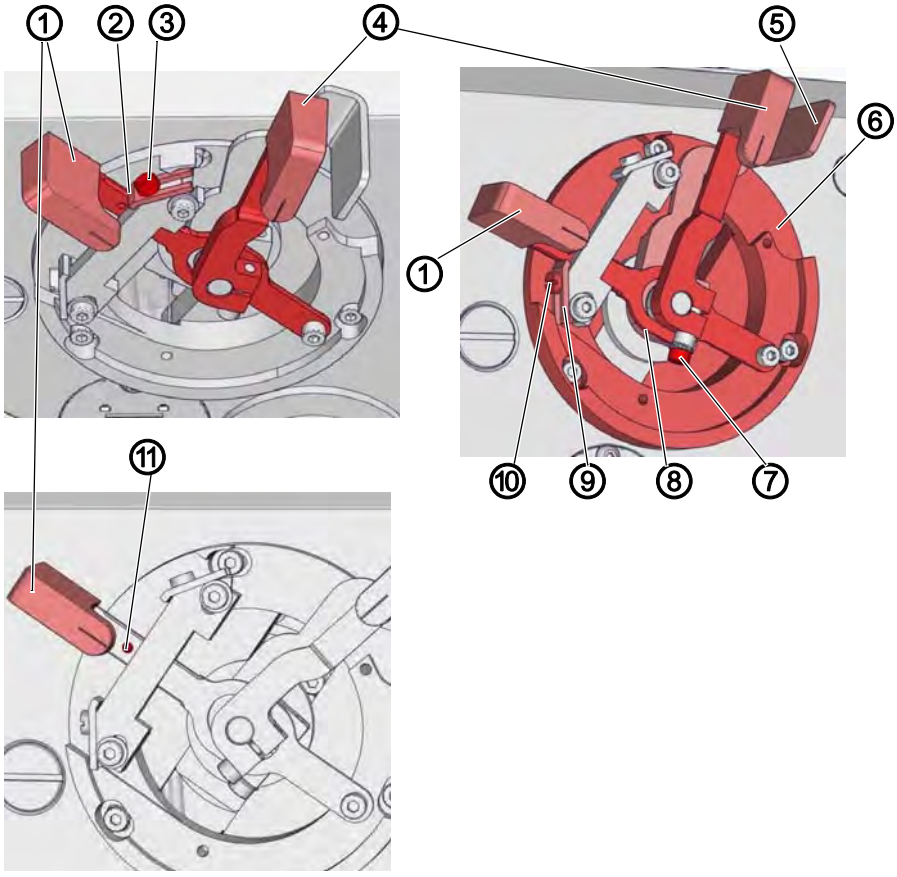
1. Set the zero width of the zigzag stitch with the lever (1).
2. Loosen the screws (3).
3. Shift the lever (2) until the needle shifts in the lateral direction to the throat plate needle hole center.
4. Tighten the screws (3).

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

Proper setting

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

Pic. 16: Lateral setting of straight stitches



(1) - Lever
(2) - Stop
(3) - Screw
(4) - Lever
(5) - Arresting lever
(6) - Casing
(7) - Screw
(8) - Arresting nut (invisible)
(9) - Stop
(10) - Screw
(11) - Regulating screw

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

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

Information

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

5 Form stitch mechanism of machine 525

WARNING

Risk of injury from moving parts!

Crushing possible.

Switch off the machine before checking and setting.

Order

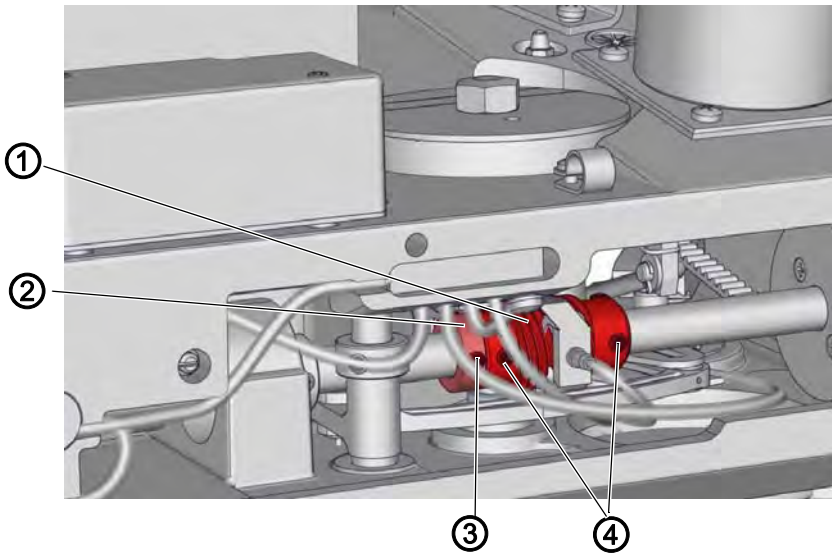
The machine setting must be carried out in the sequence as described herein.

5.1 Tooth clearance setting of form stitch gear

Proper setting

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

Pic. 17: Tooth clearance setting of form stitch gear



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

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

4. Set the tooth clearance as small as possible on the entire circumference of the conical worm (1).
   - Shift the conical worm (1) to the thread lever mechanism:

     ↳Reduce the tooth clearance
   - Conical worm (1) shifting to the hand wheel:

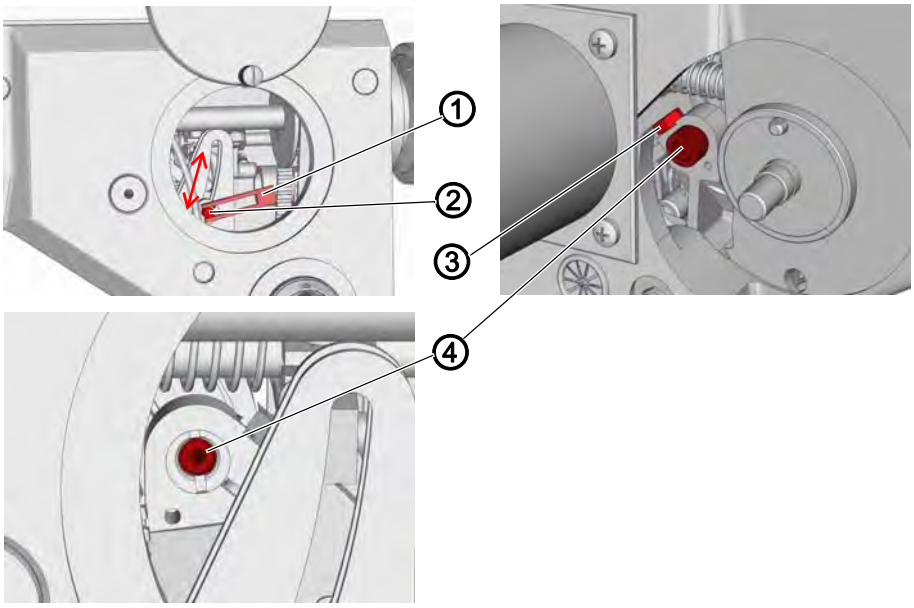
     ↳Increase the tooth clearance
5. Tighten 4 screws (4) on the conical worm (1).
6. Move the regulating ring (2) on touch with the conical worm (1).
7. Tighten 2 screws (3).
8. Check the toot clearance.

5.2 Roller bolt position of form stitch steering cam

Proper setting

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

Pic. 18: Roller bolt position of form stitch steering cam



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

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

5.3 Setting of needle stab position

Proper setting

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

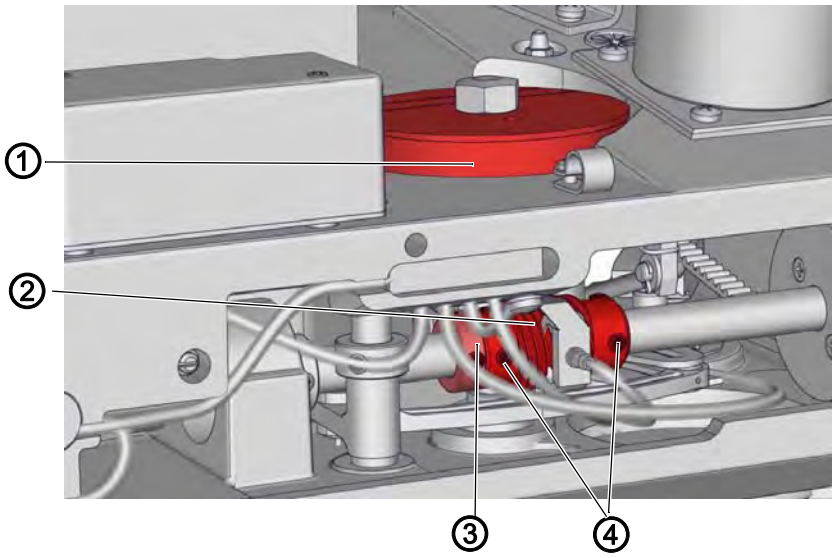
1. Adjust the needle position in feeding direction (📖 *p. 22*).
2. Adjust the needle lateral position so that the needle is located in the needle hole center (📖 *p. 23*).

5.4 Timing of form stitch steering cam to needle motion

Proper setting

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

Pic. 19: Timing of form stitch steering cam to needle motion



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

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

6 Feeding and presser foot

WARNING

Risk of injury from moving parts!

Crushing possible.

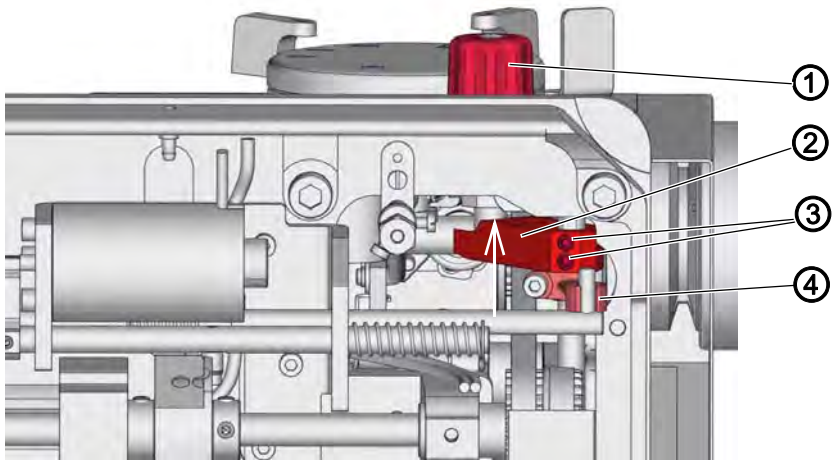
Switch off the machine before checking and setting.

6.1 Stitch length setting mechanism

Proper setting

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

Pic. 20: Stitch length setting mechanism



(1) - Knob
(2) - Lever
(3) - Screw
(4) - Backtacking lever

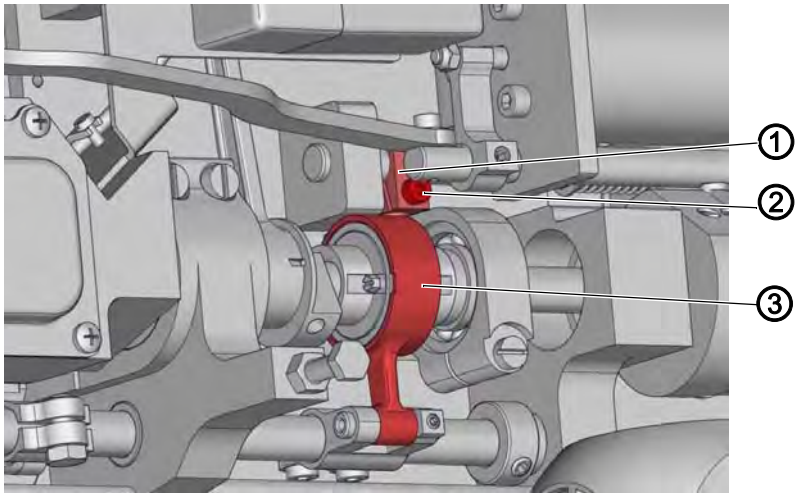
1. Loosen the screws (3).
2. Set the knob (1) on the zero stitch length.
3. Shift the lever (2) in the arrow direction until its fork is in bilateral contact with the screw spherical end on the knob (1) axis.
4. Tighten the screws (3).
5. Check whether the backtacking lever (4) performs any lost motion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

6.2 Zero stitch length

Proper setting

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

Pic. 21: Zero stitch length



(1) - Sleeve
(2) - Screw
(3) - Connecting rod

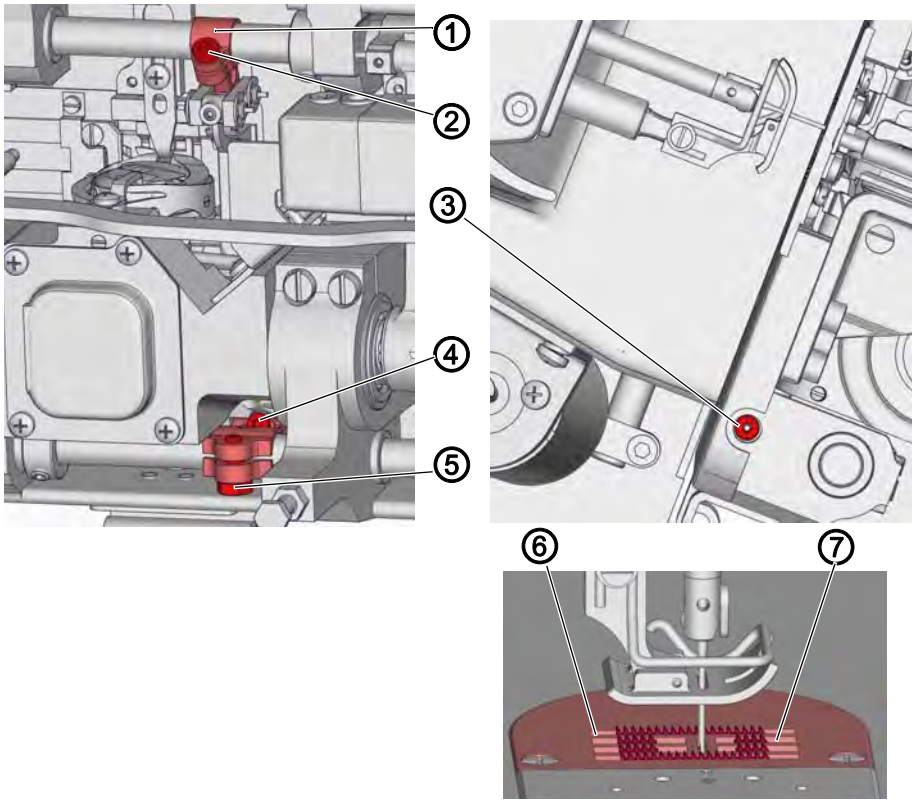
1. Set the stitch length knob on the zero cipher.
2. Tilt the machine (*p. 12*).
3. Loosen the screw (2).
4. Shift the sleeve (1) until the position is found where the connecting rod (3) stops moving.
5. Tighten the screw (2).

6.3 Feed dog position in throat plate recess and its height

Proper setting

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

Pic. 22: Feed dog position in throat plate recess and its height



(1) - Lever
(2) - Screw
(3) - Eccentric bolt
(4) - Screws
(5) - Screw
(6) - Space
(7) - Space

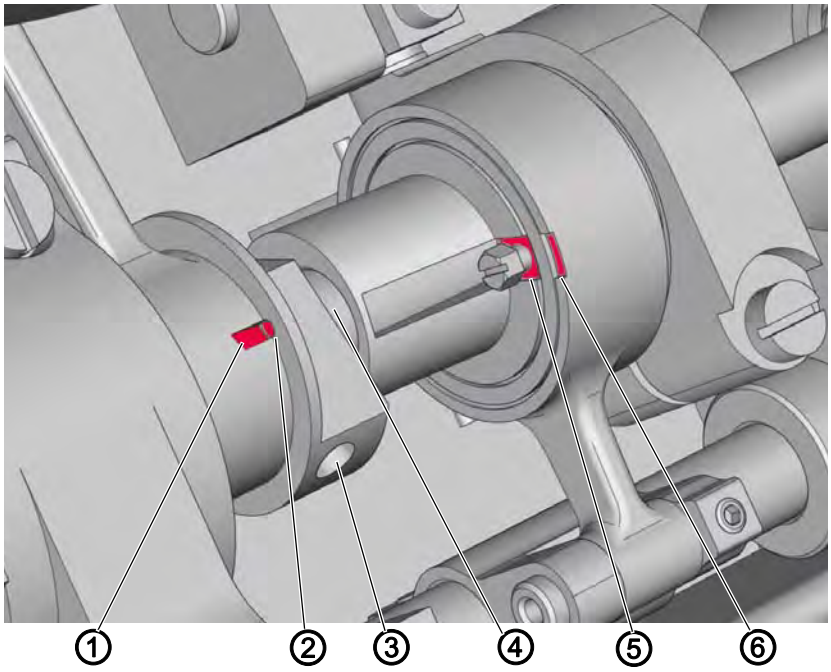
1. Set the stitch length knob on the zero cipher.
2. Loosen the screws (5) and (2). Shift the whole mechanism laterally so that the feed dog does not touch the throat plate.
3. Shift the feed dog so that the spaces (6) and (7) are the same and tighten the screw (5).
4. Loosen the screws (4), turn the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

6.4 Timing of feed dog motion eccentric

Proper setting

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

Pic. 23: Timing of feed dog motion eccentric (1)



(1) - Connecting rod
(2) - Eccentric bolt
(3) - Screws
(4) - Shaft
(5) - Ring
(6) - Connecting rod

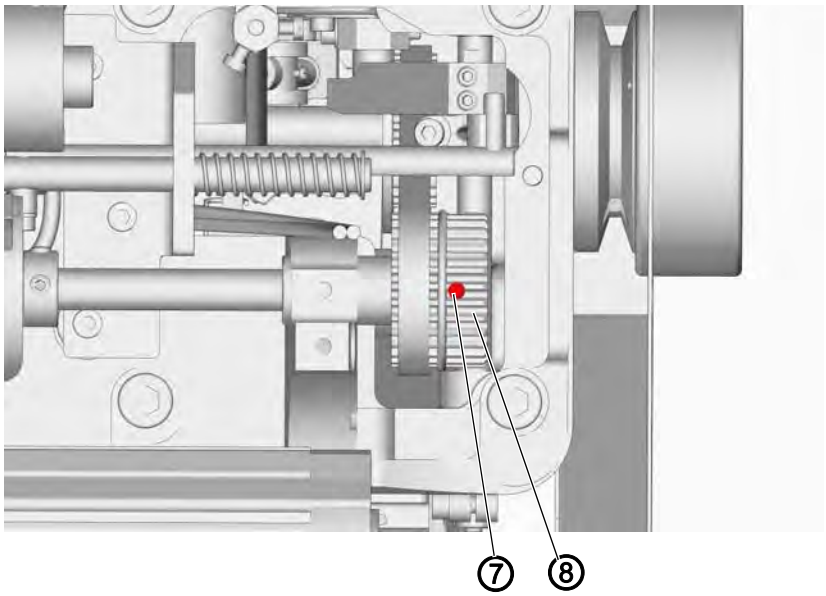
1. Locking the machine in place (📖 *p. 17*).
2. Set the maximum stitch length on the knob.
3. Loosen 2 screws (3).
4. Turn the eccentric bolt (2).

↳ Mark on the connecting rod (1) coincides with the hole on the eccentric bolt (2).

5. Tighten gradually the 2 screws (3).
6. Loosen 2 screws (7).
7. Turn the shaft (4) manually.

↳ Mark on the ring (5) coincides with the mark on the connecting rod (6).

Pic. 24: Timing of feed dog motion eccentric (2)



(7) - Screws *(8) - Pulley*

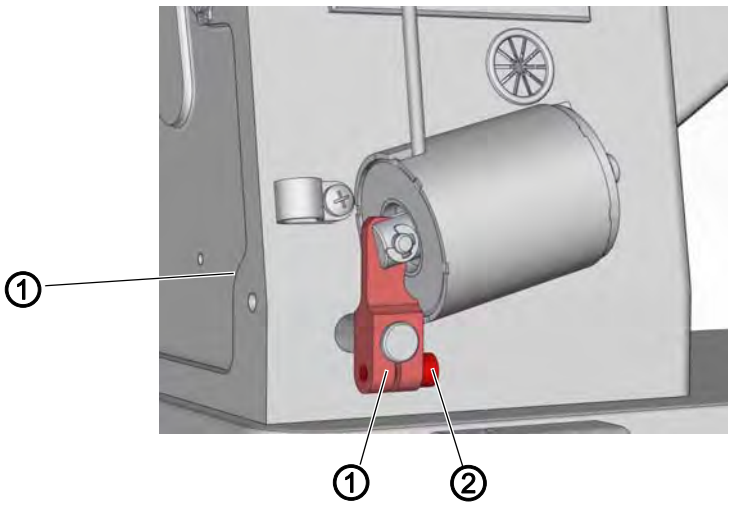
8. Tighten 2 screws (7) of the pulley (8).

6.5 Backtacking with solenoid

Proper setting

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

Pic. 25: Backtacking with solenoid



(1) - Lever *(2) - Screw*

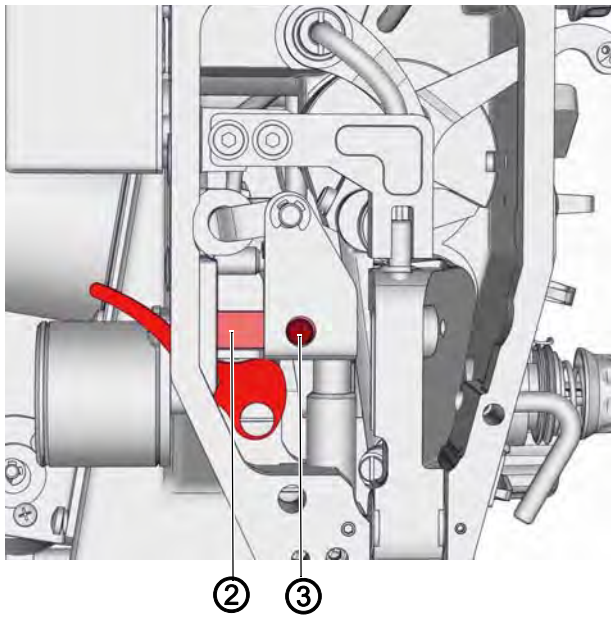
1. Set the maximum stitch length on the knob.
2. Press the backtacking lever down to the stop and hold it in this position.
3. Loosen the screw (2), press the lever (1) down to the stop, and put it back by approximately 1 mm.
4. Tighten the screw (2).
5. Test whether its movable core does not strike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

6.6 Manual foot lifting

Proper setting

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

Pic. 26: Manual foot lifting



(1) - Hand lever
(2) - Driver
(3) - Screw

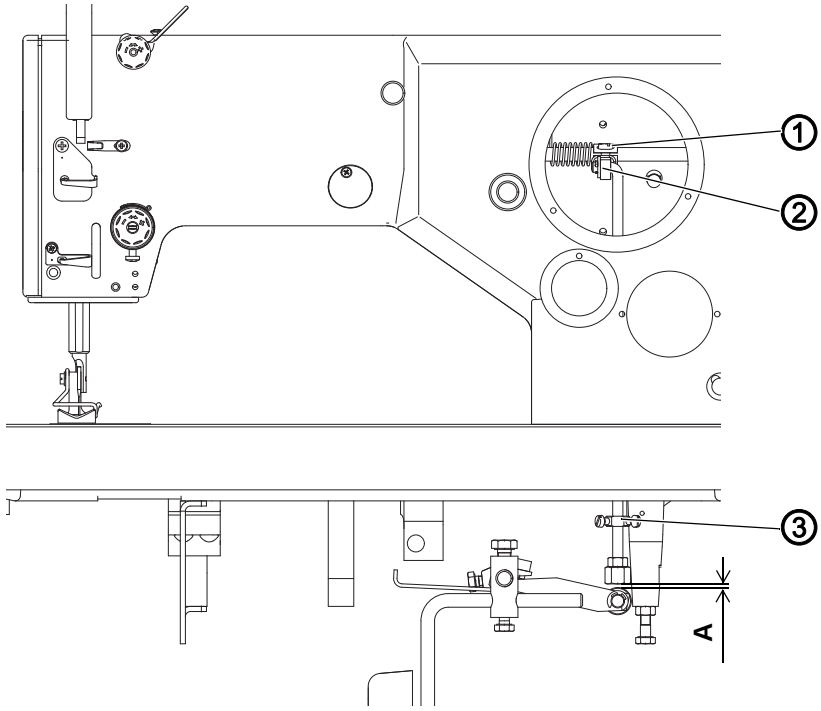
1. Place to bottom feed dog under the level of the throat plate top surface.
2. Place am object of thickness 5,5 mm under the foot.
3. Loosen the screw (3).
4. Lift the hand lever (1), press the driver (2) down to the lever (1).
5. Tighten the screw (3).

6.7 Foot lifting with knee lever

Proper setting

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

Pic. 27: Foot lifting with knee lever



(1) - Screw
(2) - Lever
(3) - Ring

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

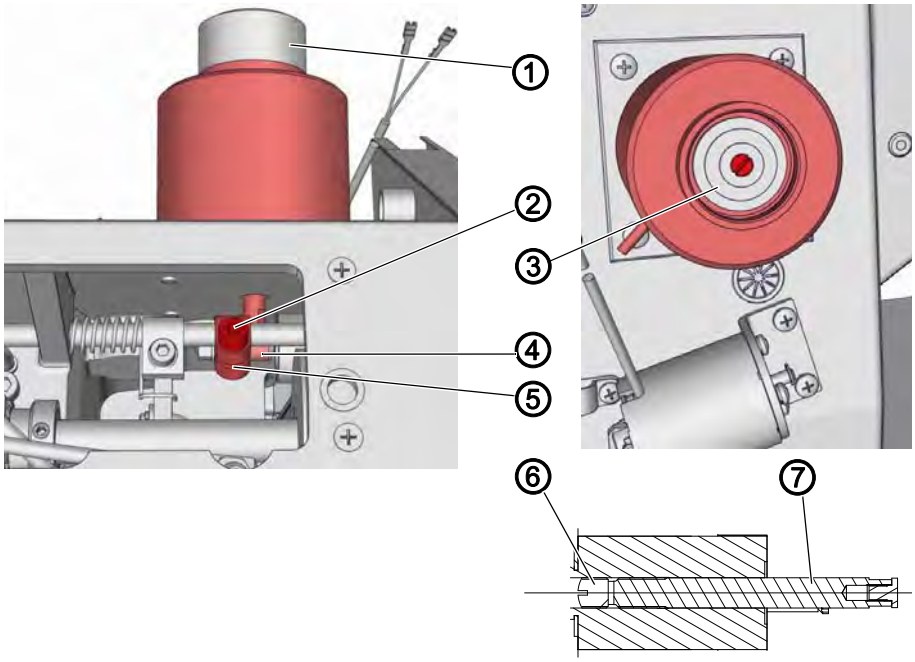
6.8 Foot lifting with solenoid

Proper setting

The foot stroke with the solenoid is 12 mm.

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

Pic. 28: Foot lifting with solenoid



(1) - Solenoid cover
(2) - Screw
(3) - Solenoid core
(4) - Roller
(5) - Lever
(6) - Screw
(7) - Screw

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

7 Needle bar and hook

WARNING

Risk of injury from moving parts!

Crushing possible.

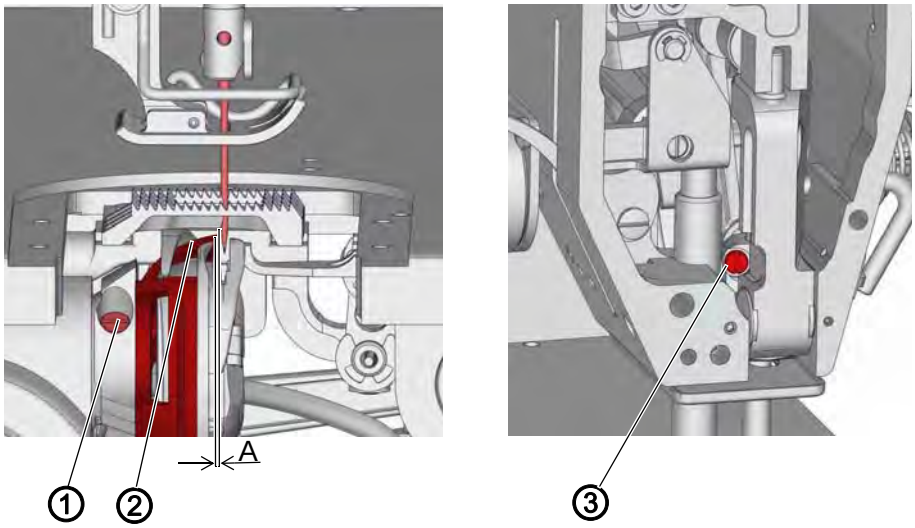
Switch off the machine before checking and setting.

7.1 Needle bar height, needle and hook point clearance

Proper setting

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

Pic. 29: Needle bar height, needle and hook point clearance



(1) - Screw
(2) - Hook point
(3) - Screw

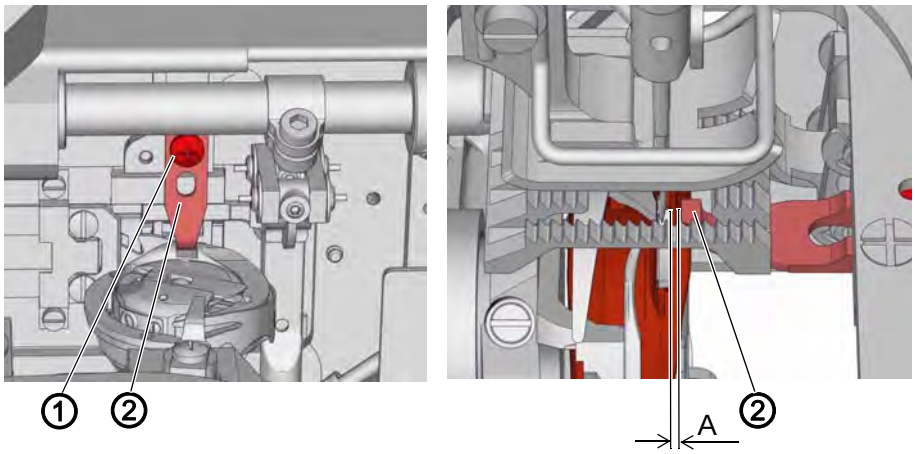
1. Dismount the throat plate (📖 *p. 15*).
2. Set the needle stab to the left and the hook point onto the needle axis.
3. Loosen the needle bar driver screw (3) and shift the needle bar vertically so that the gook point bottom edge (2) is at the level of the needle eye top edge.
4. Tighten the screw (3).
5. Loosen two screws (1) and shift the hook to the distance (A).
6. Tighten two screws (1).

7.2 Bobbin case driver

Proper setting

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

Pic. 30: Bobbin case driver



(1) - Screw

(2) - Driver

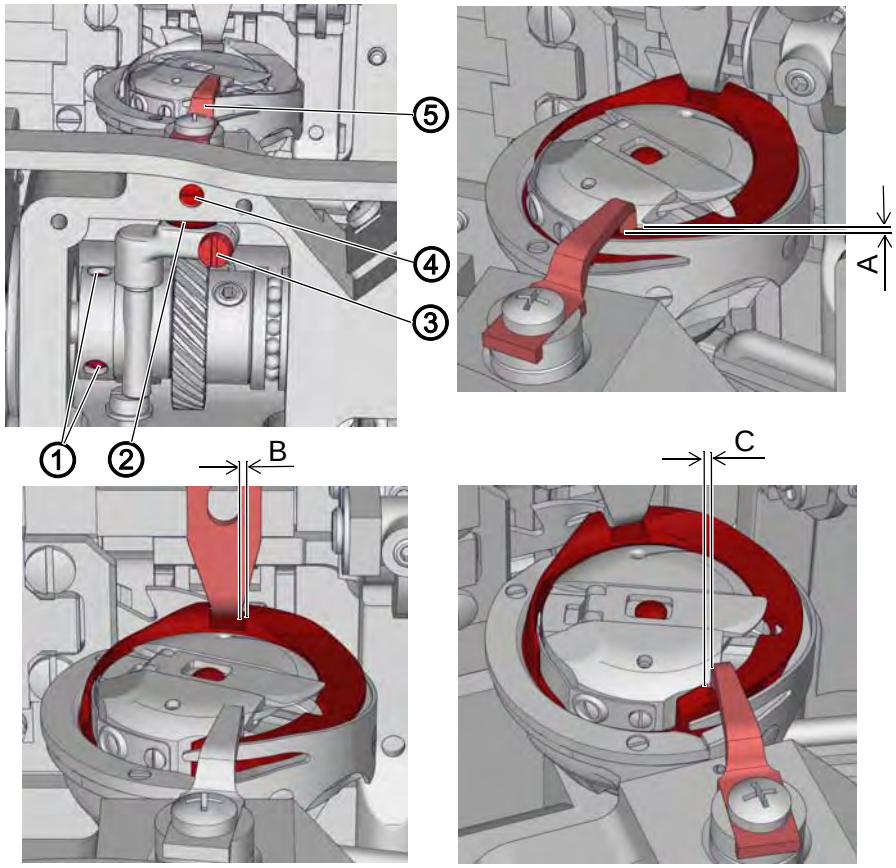
1. Dismount the throat plate (📖 *p. 15*).
2. Tilt the machine (📖 *p. 12*).
3. Loosen the screw (1).
4. Shift the driver (2) to the distance (A) = 0,7 mm.
5. Tighten the screw (1).

7.3 Hook lifting

Proper setting

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

Pic. 31: Hook lifting



(1) - Screw
(2) - Case
(3) - Screw
(4) - Screw
(5) - Bobbin case lifter

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

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

8 Thread mechanism

WARNING

Risk of injury from moving parts!

Crushing possible.

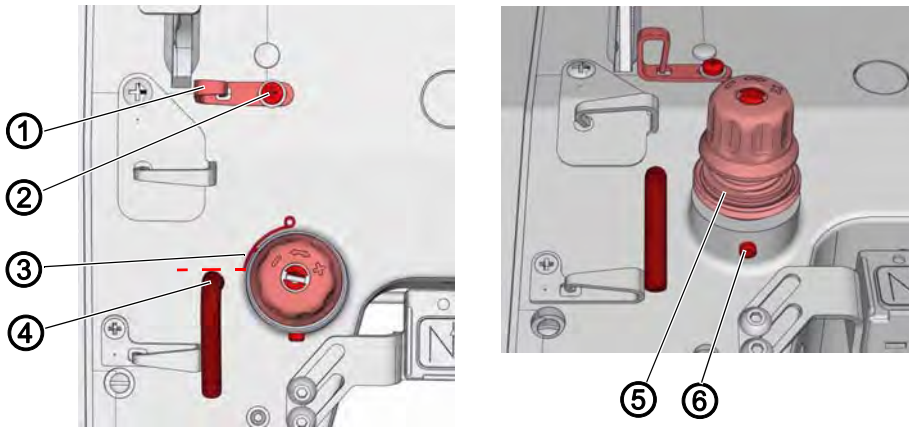
Switch off the machine before checking and setting.

8.1 Thread limiter and check spring

Proper setting

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

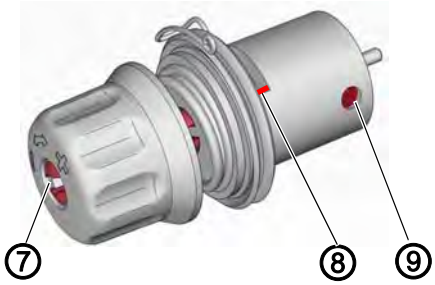
Pic. 32: Thread limiter and check spring



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

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

Pic. 33: Seřízení napínače niti



(7) - Bolt
(8) - Stop
(9) - Screw

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

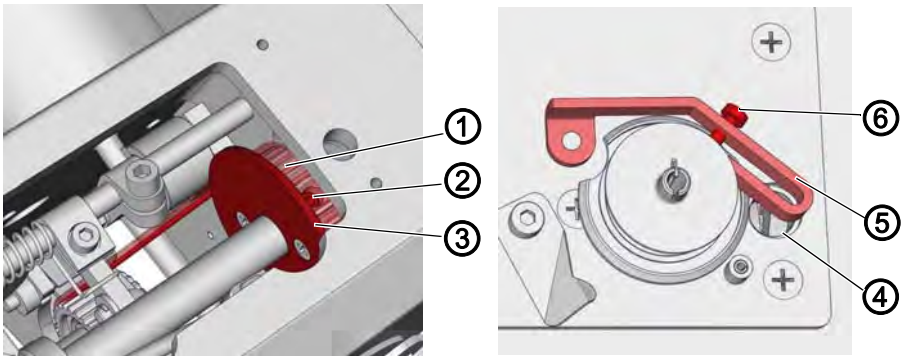
8.2 Bobbin winder

Proper setting

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

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

Pic. 34: Bobbin winder



(1) - Indented belt
(2) - Regulating screw
(3) - Pulley
(4) - Hole
(5) - Switch lever
(6) - Screw

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

9 Thread trimming

WARNING

Risk of injury from moving parts!

Crushing possible.

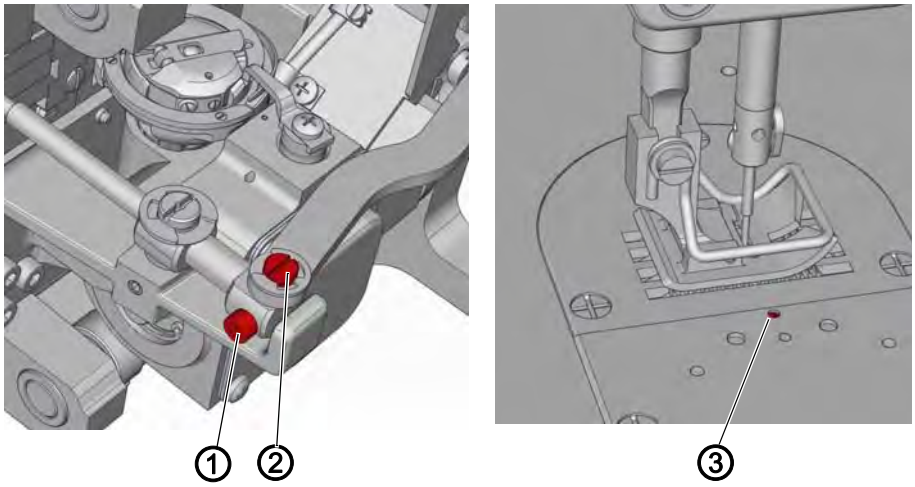
Switch off the machine before checking and setting.

9.1 Trimming pressure between knives

Proper setting

The trimming pressure should be as large as possible, however, the knives should be on touch within the last part of the trimming knife path only.

Pic. 35: Trimming pressure between knives



(1) - Screw
(2) - Bolt
(3) - Screw

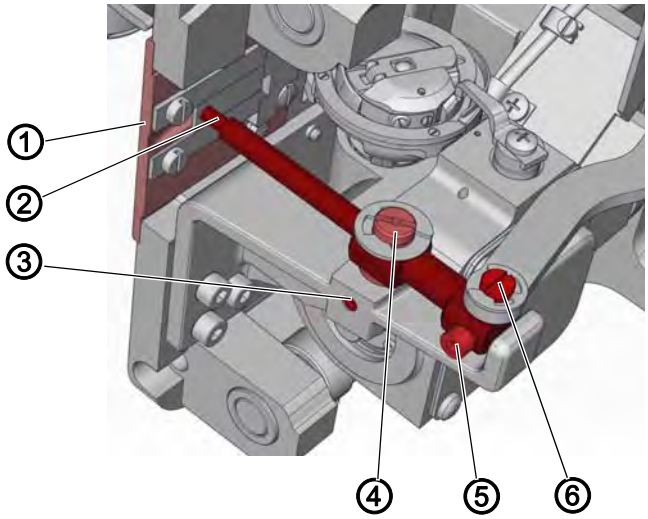
1. Tilt the machine (📖 *p. 12*).
2. Loosen the screw (1) and remove the bolt (2).
3. Set a high pressure between the trimming knives with the screw (3) so that the resistance against the knife motion is high within the whole motion path.
4. Gradually reduce the knife pressure with the screw (3) until compliance with the proper setting is achieved.
5. Mount the bolt (2) back again.

9.2 Trimming lever

Proper setting

The trimming lever (2) should be located as high as possible, but it should not rub the plate (1). The eccentric bolt (6) groove should be in horizontal position.

Pic. 36: Trimming lever



(1) - Plate
(2) - Trimming lever
(3) - Screw
(4) - Eccentric bolt
(5) - Screw
(6) - Eccentric bolt

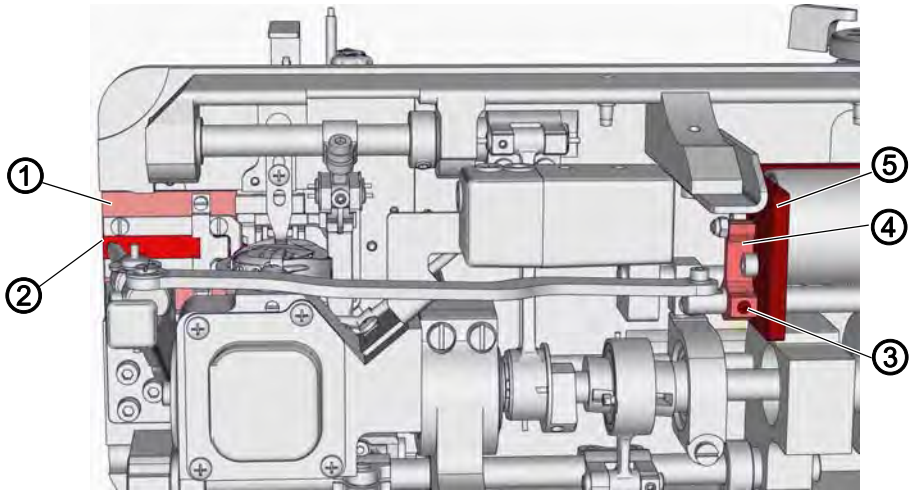
1. Tilt the machine (📖 *p. 12*).
2. Loosen the screw (3).
3. Turn the eccentric bolt (4) so that the lever (2) does not rub the plate (1), however, it should be positioned as high as possible.
4. Tighten the screw (3).
5. Loosen the screw (5).
6. Turn the eccentric bolt (6) so that its groove is almost horizontally positioned.
7. Tighten the screw (5).

9.3 Driver

Proper setting

If the driver (4) touches the casing (5), the knife (2) should be on the plate edge (1).

Pic. 37: Driver



(1) - Plate
(2) - Trimming knife
(3) - Screw
(4) - Driver
(5) - Casing

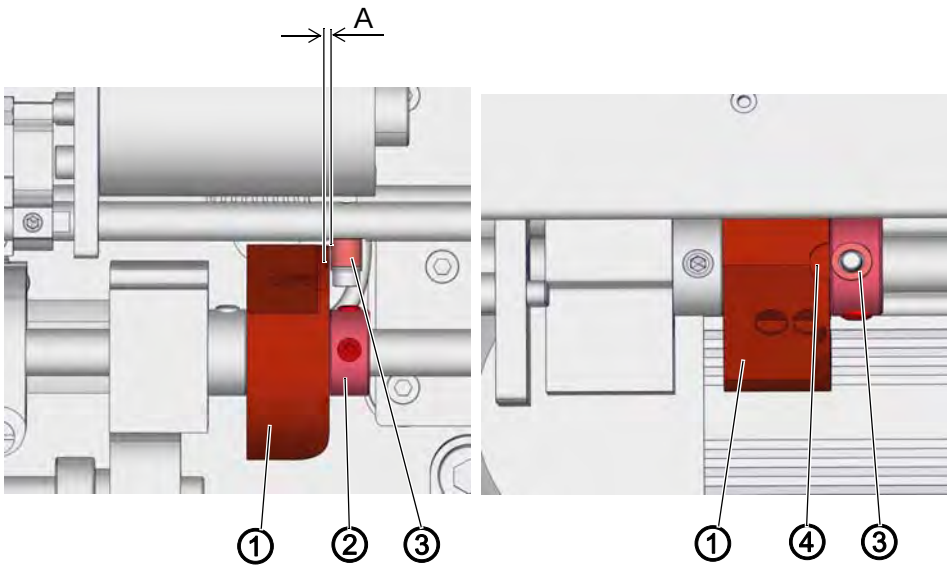
1. Tilt the machine (📖 *p. 12*).
2. Loosen the screw (3).
3. Shift the trimming knife (2) as per proper setting.
4. place the driver (4) on touch with casing (5).
5. Tighten the screw (3).

9.4 Trimming cam

Proper setting

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

Pic. 38: Trimming cam



(1) - Cam
(2) - Ring
(3) - Roller
(4) - lot

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

10 Puller

WARNING

Risk of injury!

Switch off the machine before the Puller setting.

Proper setting

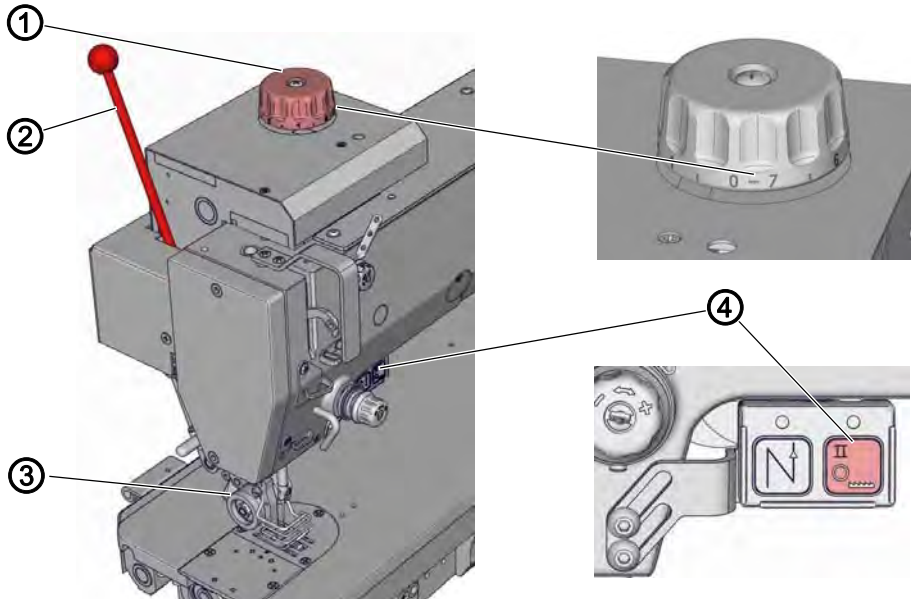
The puller (3) swill automatically lift at the presser foot lifting and backtacking. The function must be entered on the control panel, see Operating Instructions, chapter 4.14.2.

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

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

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

Pic. 39: Puller



(1) - Setting wheel
(2) - Hand lever
(3) - Puller
(4) - Press button

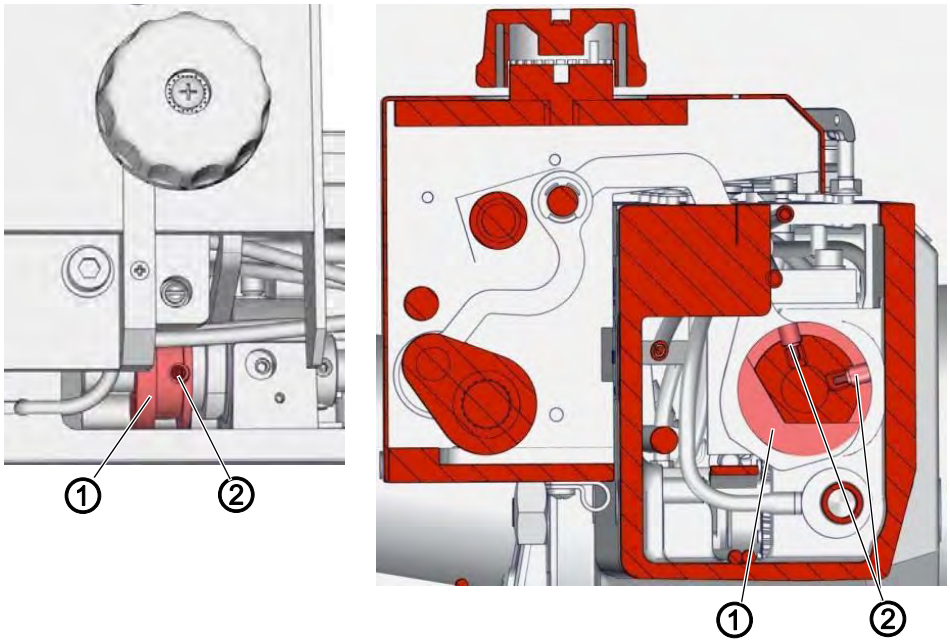
10.1 Synchronous operation of bottom feed and puller

Proper setting

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

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

Pic. 40: Synchronous operation



(1) - Eccentric *(2) - Screws*

1. Remove the arm cover (📖 *p. 13*).
2. Loosen 2 fastening screws (2) on the eccentric (1).

↳ The eccentric (1) should turn on the shaft with little force.

3. Turn the hand wheel in the turning direction so that the needle is in front of the upper dead point.

↳ The feed dog will come up over the throat plate.

4. Put a sheet of paper under the presser foot and turn in the turning direction until the machine starts feeding it.
5. At that moment put the eccentric (1) back and set it according to the picture.

↳ The synchronization moment then comes up – the feeding wheel will feed synchronously with the feed dog.

6. Tighten two screws (2) of the eccentric (1).
7. Fit the arm cover again (📖 *p. 13*).

10.2 Distance from puller to needle

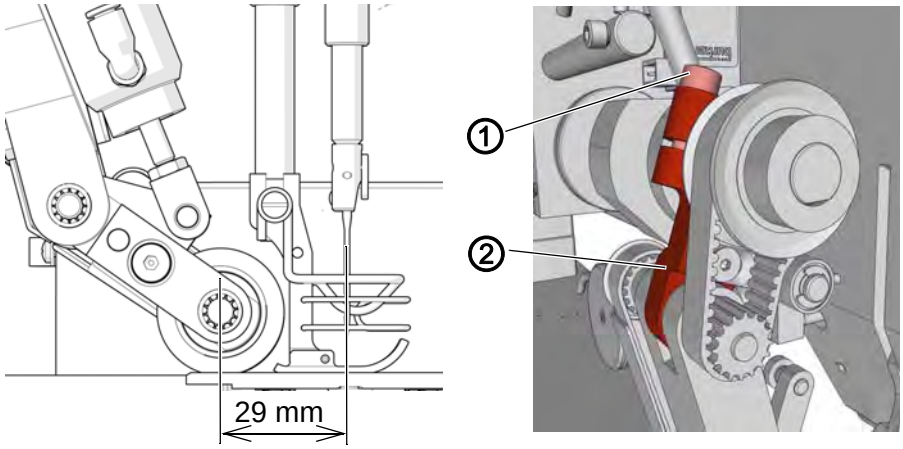
Proper setting

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

Important

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

Pic. 41: Distance from puller to needle



(1) - Screw

(2) - Frame

1. Loosen the screw (1).
2. Turn the frame (2) on the axis.

   ↳ The distance between the feeding wheel center and the needle axis must be 29 mm.
3. Tighten the screw (1).

10.3 Puller lifting

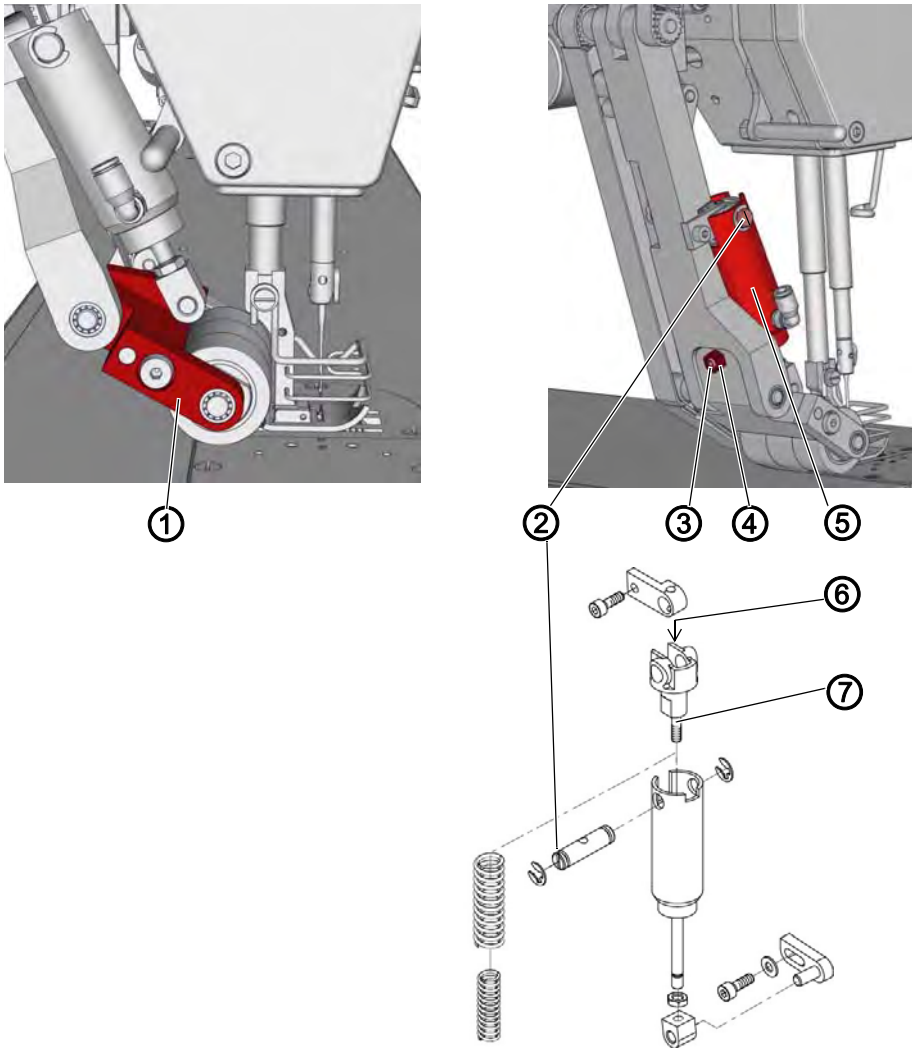
Proper setting

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

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

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

Pic. 42: Puller lifting



(1) - Frame
(2) - Pin
(3) - Setting screw
(4) - Safety nut
(5) - Pneumatic cylinder
(6) - Clearance for setting screw (7)
(7) - Setting screw

Correction of upper end position

1. Turn the pin (2).

↳ The pin groove (2) must be parallel with the cylinder (5) axis.

2. Set a limit to the cylinder stroke (3).

↳ Set the adjusting screw by means of a hexagonal key 2.5 mm according to the correct setting.

Correction of bottom end position

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

10.4 Toothed belt tensioning

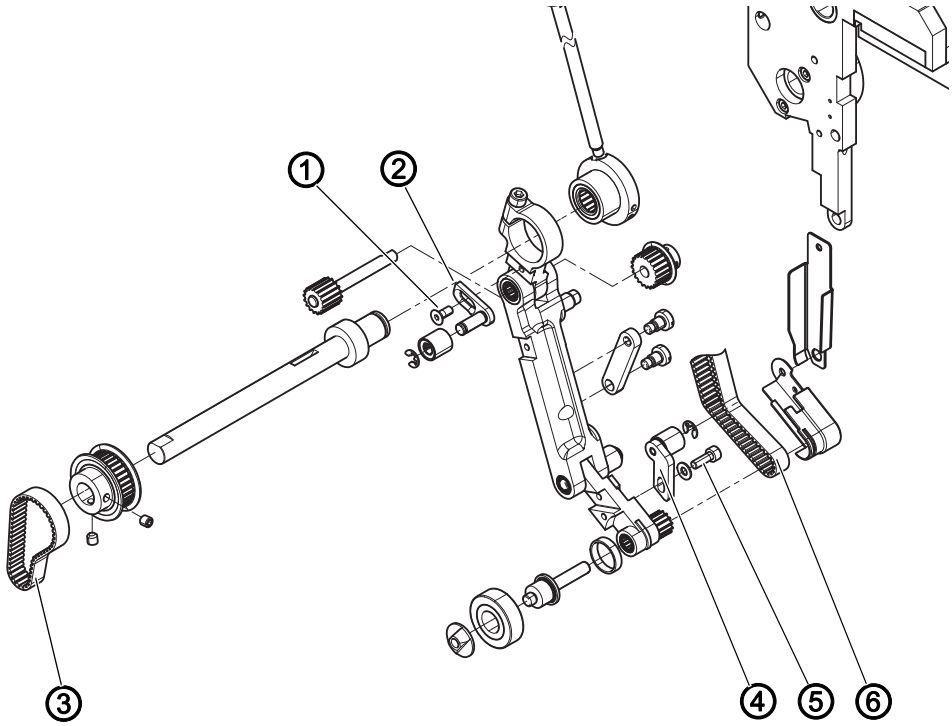
Proper setting

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

Important

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

Pic. 43: Toothed belt tensioning



(1) - Screw
(2) - Lever
(3) - Toothed belt
(4) - Lever
(5) - Screw
(6) - Toothed belt

Upper toothed belt correction

1. Loosen the screw (1).
2. Shift the lever (2).

↳ Tighten the toothed belt (3) according to the correct setting.

Bottom toothed belt correction

1. Loosen the screw (5).
2. Shift the lever (4).

↳ Tighten the toothed belt (6) according to the correct setting.

10.5 Puller pressure

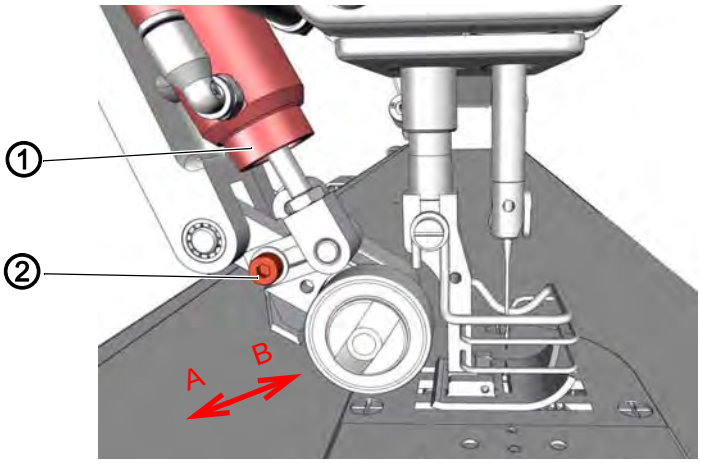
Proper setting

The puller pressure must be adjusted to the sewn material.

Important

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

Pic. 44: Puller pressure



(1) - Pneumatic cylinder *(2) - Screw*

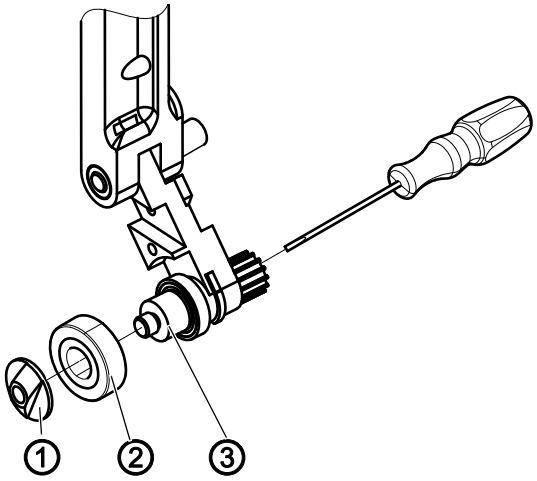
1. Loosen the screw (2).
2. Shift the pneumatic cylinder (1):
   - In the arrow direction (A) – the pressure is reduced
   - In the arrow direction (B) – the pressure is increased
3. Tighten the screw (2).

10.6 Feeding wheel replacement

Important

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

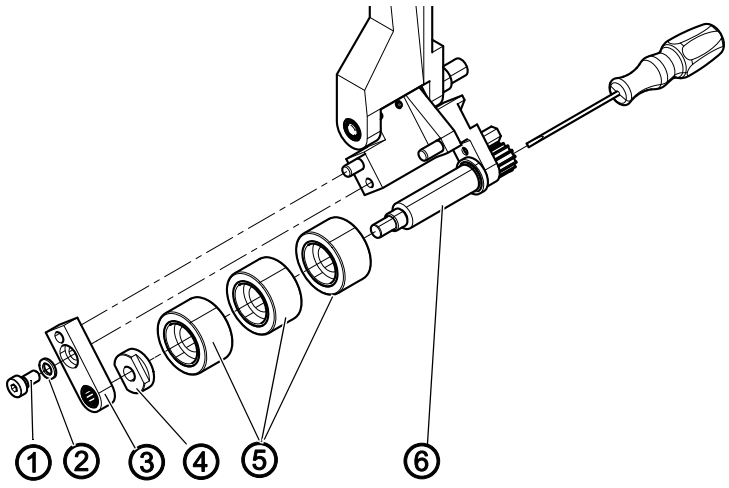
Pic. 45: Feeding wheel replacement 1



(1) - Nut
(2) - Feeding wheel
(3) - Shaft

1. Dismantle the nut (1).
   Beware of the left-handed threading!
2. Fix the shaft (3) at the other end with a screwdriver.
3. Replace the feeding wheel (2).
4. Mount and tighten the nut (1).

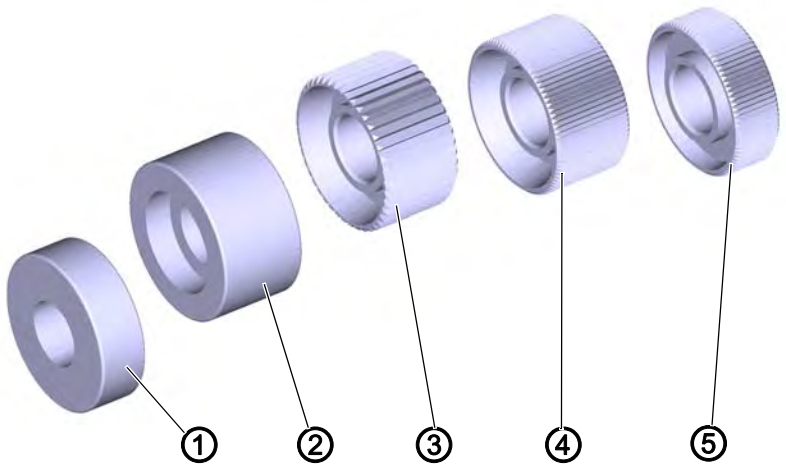
Pic. 46: Feeding wheel replacement 2



(1) - Screw
(2) - Washer
(3) - Lever
(4) - Nut
(5) - Feeding wheels
(6) - Shaft

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

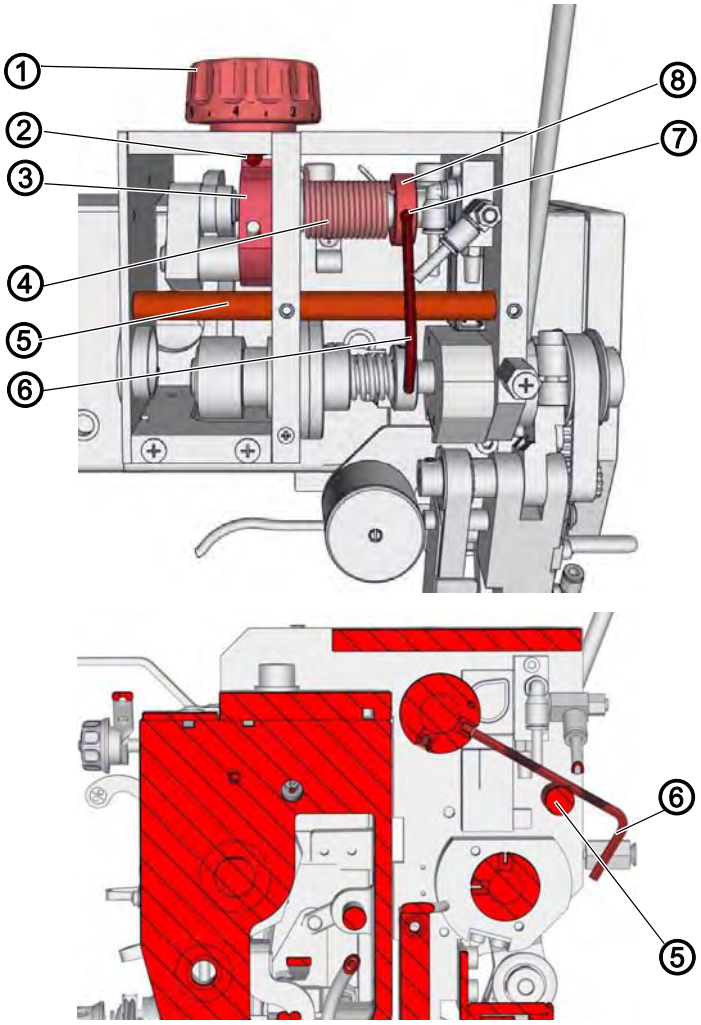
Pic. 47: Feeding wheels



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

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

Pic. 48: Setting of cam torsion spring



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

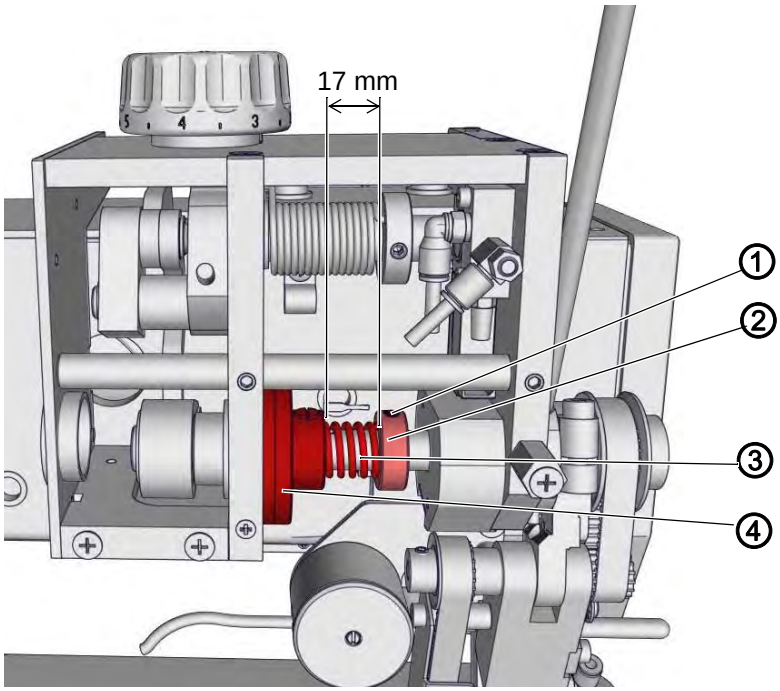
1. Loosen two setting screws (7) of the setting ring (8).
2. Set the maximum value of 7 mm on the setting wheel (1).
3. Insert the hexagonal key 3 mm (6) into the other hole (in the turning direction) of the setting ring (8).
4. Turn the setting ring (8) in the direction of the spring winding and lean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

10.8 Disk brake pressure setting

Proper setting

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

Pic. 49: Disk brake pressure setting



(1) - Fastening screws
(2) - Setting ring
(3) - Spring
(4) - Brake disc

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

11 Electronic control and sewing machine drive

DANGER

Risk of injury from electricity!

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

Work on the electrical system must ONLY be carried out by qualified electricians or appropriately trained and authorized personnel.
ALWAYS pull the power plug before working on the electrical equipment.

All operating instructions and parameter sheets are available at the manufacturers´ websites (see www.efka.net,

www.duerkopp-adler.com, www.hohsing.com, etc.).

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

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

Important notes concerning electrostatic discharges (ESD)

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

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

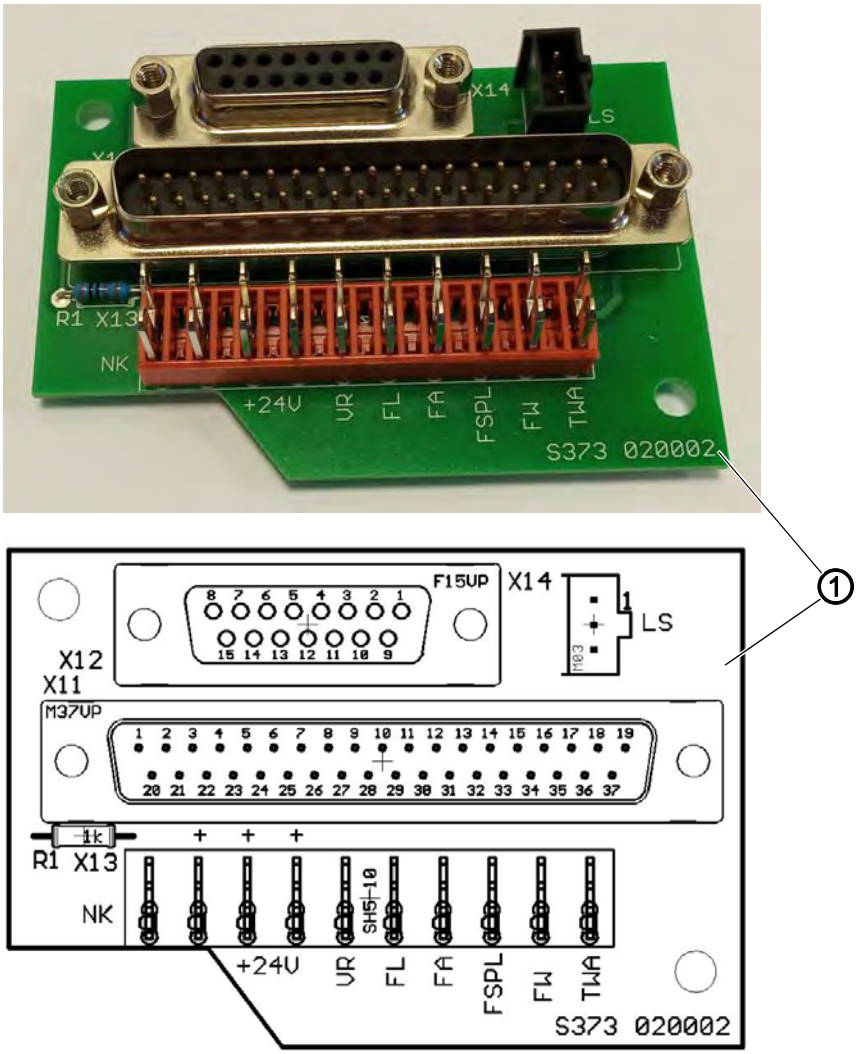
Put the PCBs after unwrapping or after dismounting with their components upside onto a grounded statically discharged surface.

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

Pay attention not to pull the PCBs over any surface.

Description of PCB plugs (S373 020002)

Pic. 50: PCB



(1) - PCB S373 020002

Description of connectors:

R1autoselect resistor

X11machine interface

X12button panel

X13NK - needle cooling+24V - power supply

VR - backtackingFL - foot lifting

FA - thread trimmingFSPL - tread tension

FW - thread wiperTWA - Puller

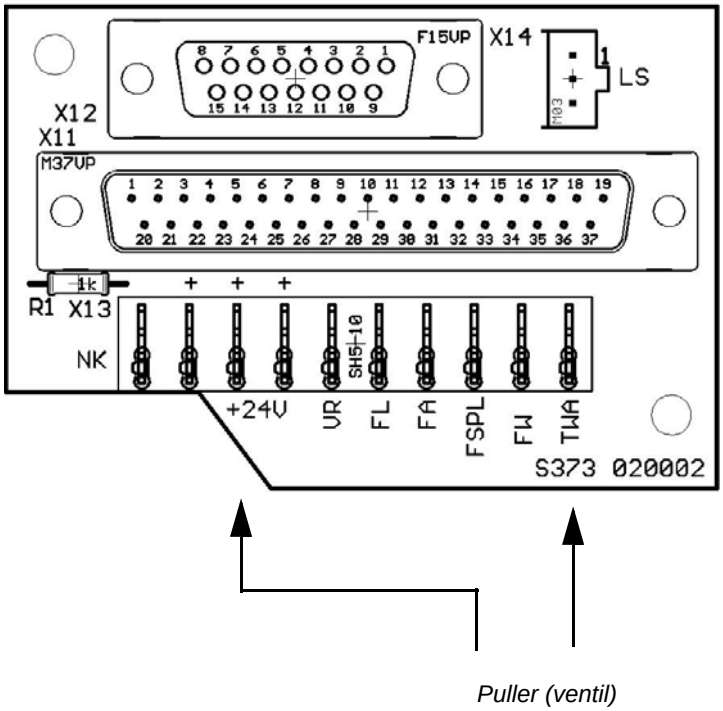
X14light barrier

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

Example of puller connection:

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

Pic. 51: Puller connection



Puller (ventil)

12 Maintenance

WARNING

Risk of injury from sharp parts!

Punctures and cutting possible.

Prior to any maintenance work, switch off the machine.

WARNING

Risk of injury from moving parts!

Crushing possible.

Prior to any maintenance work, switch off the machine.

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

Maintenance intervals

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

12.1 Cleaning

WARNING

Risk of injury from flying particles!

Flying particles can enter the eyes, causing injury.

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

NOTICE

Property damage from soiling!

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

Clean the machine as described.

NOTICE

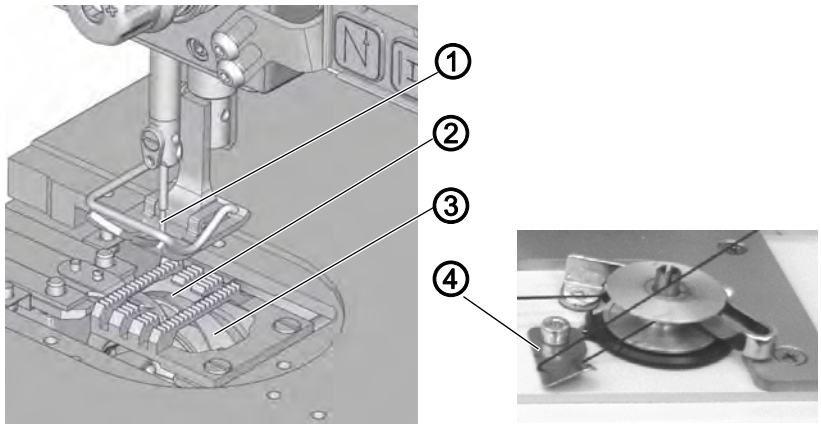
Property damage from solvent-based cleaners!

Solvent-based cleaners will damage paintwork.

Use only solvent-free substances for cleaning.

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

Pic. 52: Cleaning



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

Areas particularly susceptible to soiling:

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

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

12.2 Lubricating

CAUTION

Risk of injury from contact with oil!

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

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

NOTICE

Property damage from incorrect oil!

Incorrect oil types can result in damage to the machine.

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

CAUTION

Risk of environmental damage from oil!

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

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

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

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

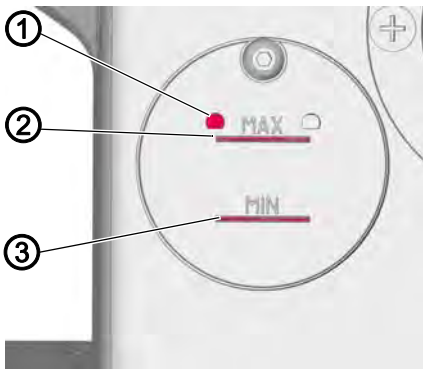
- Viscosity at 40 °C: 10 mm²/s
- Flash point: 150 °C

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

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

12.2.1 Lubricating the machine head

Pic. 53: Lubricating the machine head



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

Proper setting

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

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

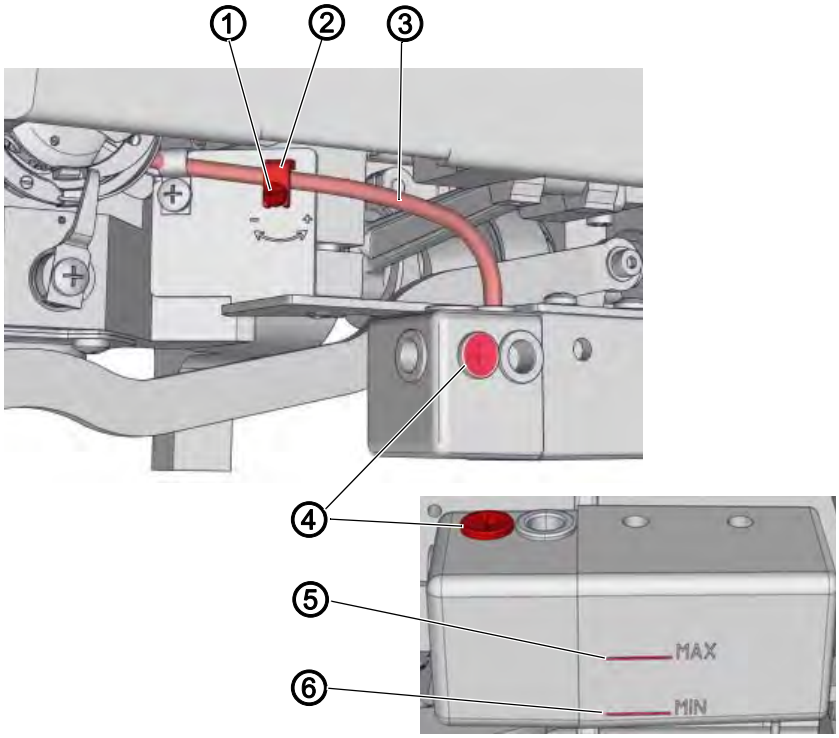
12.2.2 Hook lubrication

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

Proper setting

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

Pic. 54: Hook lubrication



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

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

Important

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

12.3 Parts list

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

www.minerva-boskovice.cz

www.duerkopp-adler.com

13 Decommissioning

WARNING

Risk of injury from a lack of care!

Serious injuries may occur.

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

CAUTION

Risk of injury from contact with oil!

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

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

To decommission the machine:

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

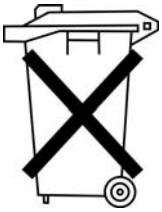
14 Disposal

CAUTION

Risk of environmental damage from improper disposal!

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

ALWAYS comply with the national regulations regarding disposal.



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

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

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

15 Errors in the sewing process

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

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

16 Technical parameters

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

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

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

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

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Subject to design changes - Part of the machines shown with additional equipment - Printed in Czech Republic