



LP 8971-I-NP- AUT

INSTRUCTION MANUAL

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1 Safety

1.01 Safety symbols



Danger!

Points to be observed



**Danger of injury for operating
and specialist personnel !**



Caution

Do not operate without finger guard and safety devices.
Before threading, changing bobbin and needle, cleaning etc switch off main switch.

1.02 Important points for the user

- This Instruction Manual is a component of the machine and must be available to the operating personnel at all times.
- The Instruction Manual must be read before operating the machine for the first time.
- The operating and specialist personnel must to be instructed in the safeguards of the machine and safe work methods.
- It is the duty of the user to operate the machine in perfect running order.
- It is the obligation of the user to ensure that none of the safety mechanisms are removed or deactivated.
- It is the obligation of the user to ensure that only authorized persons operate and work on the machine.

Safety

1.03 Danger



A working area of 1 meter is to be kept free both in front of and behind the machine in operation so that the machine is always easily accessible.



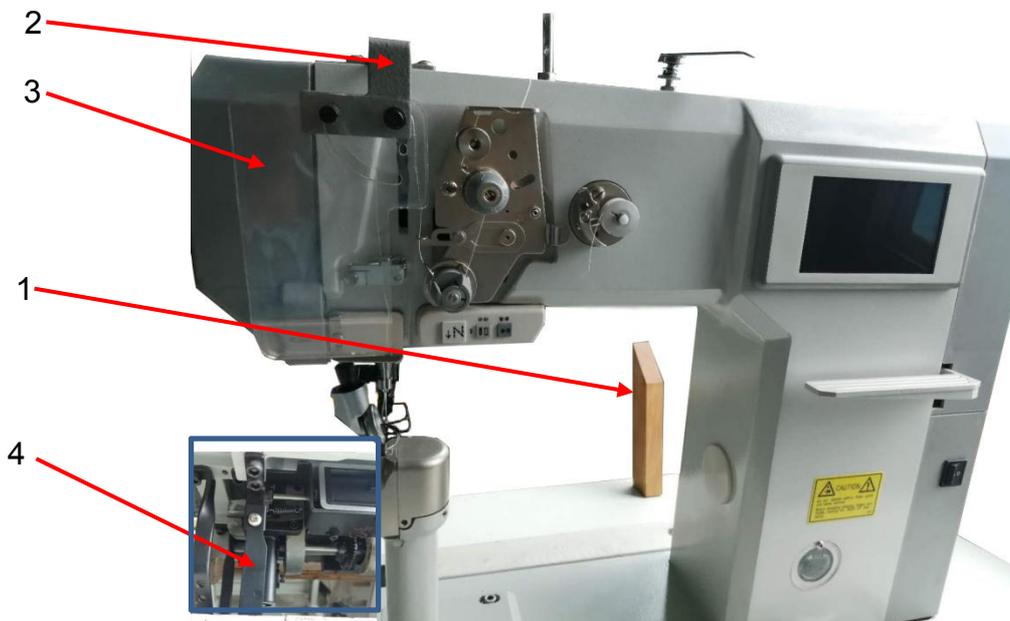
Never reach into the sewing area while sewing! Danger of injury by the needle!



Never leave objects on the table while adjusting the machine settings! Objects can become trapped or be slung away! Danger of injury!



Do not operate the machine without support 1! Danger due to top-heavy sewing head! Machine can tip over backwards when tilted!





Switch the machine off before tilting it backwards!
Danger of injury if the machine is started accidentally!



Do not operate the machine without its take-up-lever guard **2** !
Danger of injury due to the motion of the take-up lever!



On machines with thread lubricator, only operate the machine with the eye guard **3** lowered! The eye guard **3** protects the eyes from oil particles from the thread lubrication!



Do not operate the machine without tilt lock **4**!
Danger of crushing between sewing head and table top!

Specifications

2 Specifications

Stitch type (lockstitch)

Stitch length	0-5 mm
Clearance under roller presser	5 mm
Clearance width	245 mm
Clearance height	115 mm
Post height	180 mm

Sewing head dimensions

Length	approx. 615 mm
Width	approx. 240 mm
Height (above table)	approx. 500 mm
Bedplate dimensions	518 x 177 mm

Max.speed 2500 spm.

Connection data

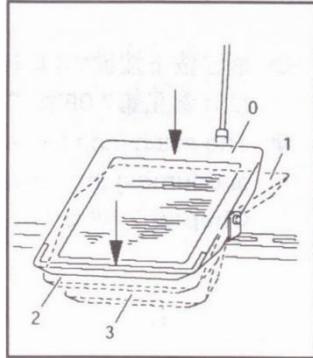
Operating voltage	230V ± 10%, 50/60 Hz
Max.power consumption	1.2 KVA

Net weight of sewing head	approx. 65 kg
Gross weight of sewing head	approx. 77 kg

▲ Subject to alteration

3 Controls

3.01 Pedal



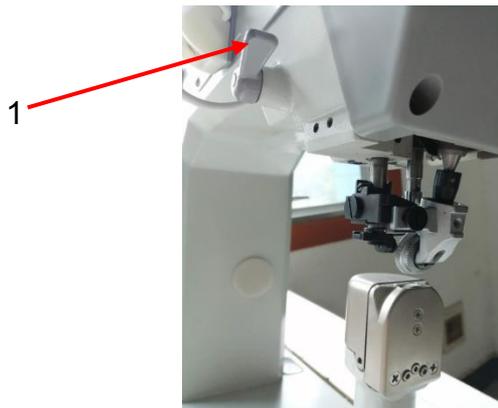
0=Neutral position

1=Sewing

2=Raiser roller presser

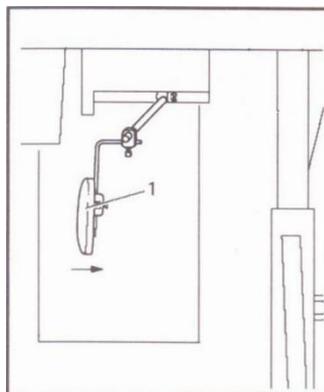
3=Trim sewing threads

3.02 Lever for lifting roller presser



- The roller presser can be raised by turning lever 1.

3.03 Knee lever



- The roller presser can be raised by pressing the knee lever 1 in the direction of the arrow.

Controls

3.04 Key for setting stitch length



- The stitch length is set by pressing key **1** and turning the balance wheel .

3.05 Swing out roller presser



- When the roller presser is raised, it can be swung out by pulling it lightly downwards (see arrow).

Installation and commissioning

4 Installation and commissioning



The machine must only be installed and commissioned by qualified personnel!

All relevant safety regulations must be strictly adhered to!



If the machine is delivered without a table, be sure to use a stand and table top that can hold the weight of the machine .

It is very important to ensure that the stand of the machine is firm and steady, also during sewing.

4.01 Installation

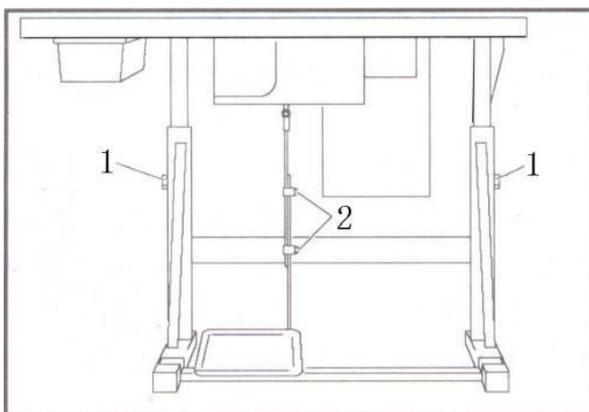
The site where the machine is installed must be provided with suitable connections for electric current.

It must be ensured that the standing surface of the machine site is firm and horizontal, and that sufficient lighting is provided for.



For packing and transportation reasons the table top is in the lowered position. The table height is adjusted as described below.

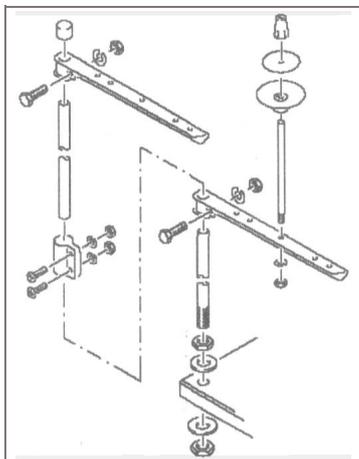
Adjusting the table height



- Loosen screws **1** and **2** and set the table height as required.
- Firmly tighten screw **1**.
- Set the required pedal position and tighten screw **2**.

Installation and commissioning

4.02 Fitting the reel stand



- Fit the reel stand as shown in Fig.
- Afterwards insert the stand in the hole of the table top and secure it with the nuts provided.

4.02.01 Fitting the tilt lock



Switch the machine off! Danger of injury if the machine is started accidentally!



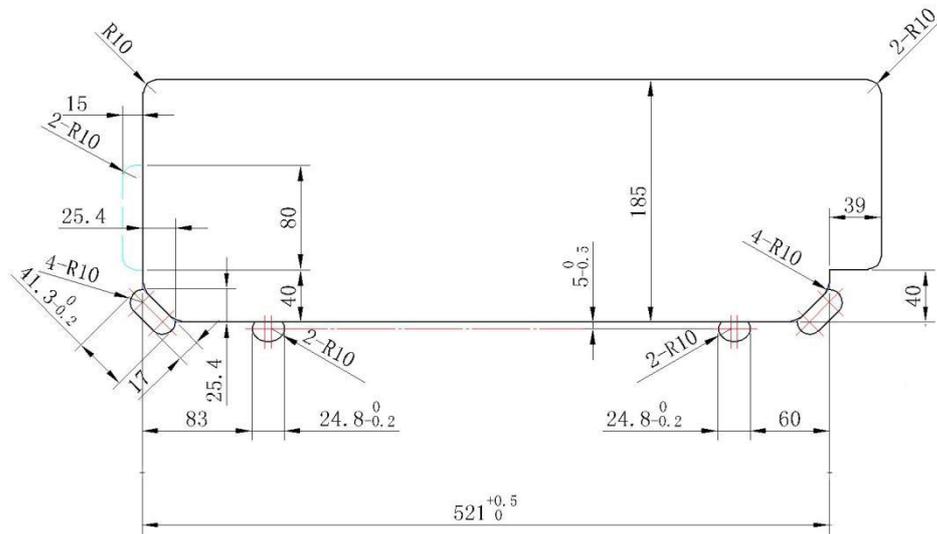
- Fix the tilt lock **1** by screw **2**.
(Supplied with accessories)



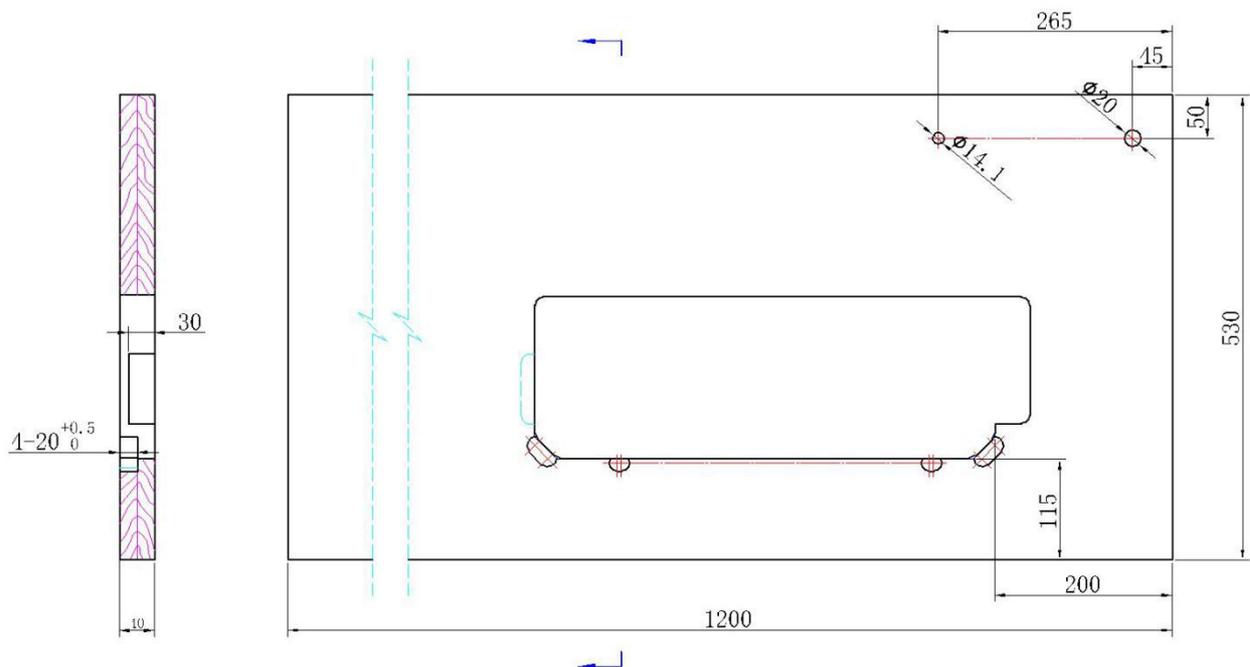
Do not operate the machine without tilt lock **1** ! Danger of crushing between sewing head and table top!

Installation and commissioning

4.05 Tilted work base



4.06 Mounting the table top



5 Preparation



All instructions and regulations in this Instruction Manual must be observed .
Special attention must be paid to all safety regulations!

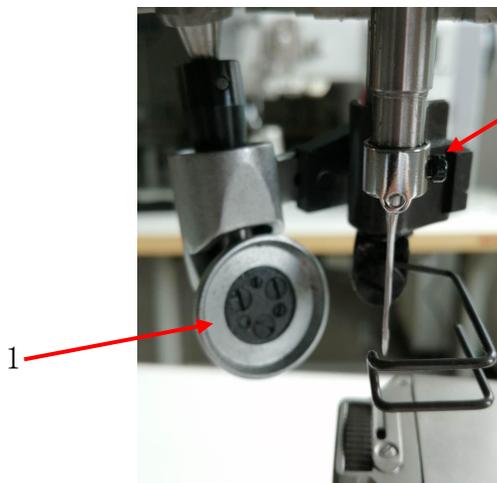


All setting-up work must only be carried out by personnel with the appropriate training. For all setting-up work the machine must be disconnected from its power supply by turning off the on/off switch, or removing the plug from the electric power socket.

5.01 Inserting needle on model



Switch the machine off! Danger of injury if the machine is started accidentally!



Only use needles of system **134**

- Raise the roller presser **1** and swing it out .
- Loosen screw **2** and insert the needles .as far as possible. The long groove must face to the left .
- Tighten screw **2** and swing roller presser **1** back to position.



The Choice of needle depends on the model of the machine and the thread and material used.

Preparation

5.02 Winding the bobbin thread; adjusting the primary thread tension



- Place an empty bobbin **1** into bobbin winder spindle **2**
- Thread the bobbin as shown in Fig. And wind it clockwise around bobbin **1** a few times
- Switch on the bobbin winder while pressing bobbin winder spindle **2** and lever **3**.

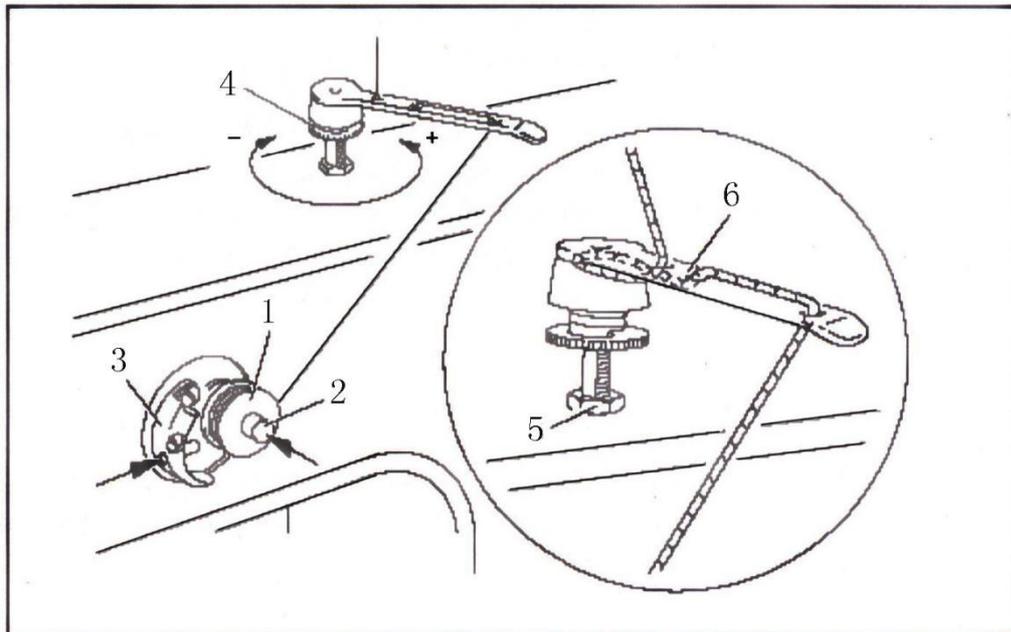


The bobbin is filled up during sewing.

- The thread tension of bobbin **1** can be adjusted by knurled screw **4**.
- The bobbin winder stops automatically when bobbin **1** is full.

If the thread is wound unevenly:

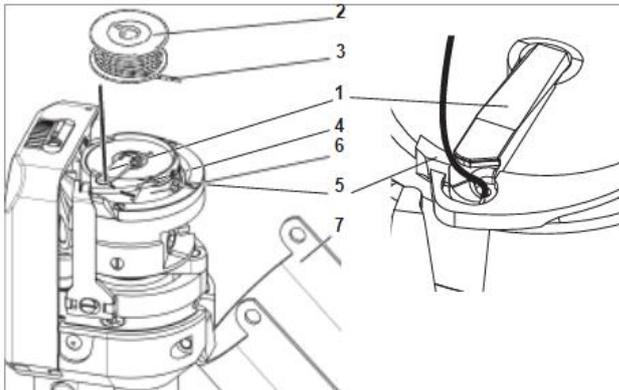
- Loosen nut **5**.
- Turn thread guide **6** accordingly.
- Tighten nut **5**.



Preparation

5.03 Inserting the bobbin and threading the hook thread

Switch the machine off ! Danger of injury if the machine is started accidentally !



- Tilt the shutter **1** up.
- Insert the bobbin **2** with the thread end **3** oriented according to the picture.
- Thread the thread through the slit **4** and space **5**, hook upon the shutter **1** and fasten it under the spring **6**.
- Draw the thread in the sewing direction to the throat plate corner (about **40 mm**).
- Close the cover of hook **7**.
- Cut the protruding thread.

5.04 Adjusting the hook thread tension



Caution! Risk of injury!

Turn off the main switch.

The hook thread tension may only be adjusted with the machine switched off.



- Adjust the hook thread tension via the screw **1**. Increase the tension by tightening the screw.
- Measure the thread tension with a dynamometer. Thread the thread according to the picture and pull in the arrow direction **2**.

Hook thread tension mean value

Sewing category	Used needle size	Thread tension in grams
light	70-80	50
medium	90-110	65

Preparation

5.05 Threading the needle thread and regulating its tension

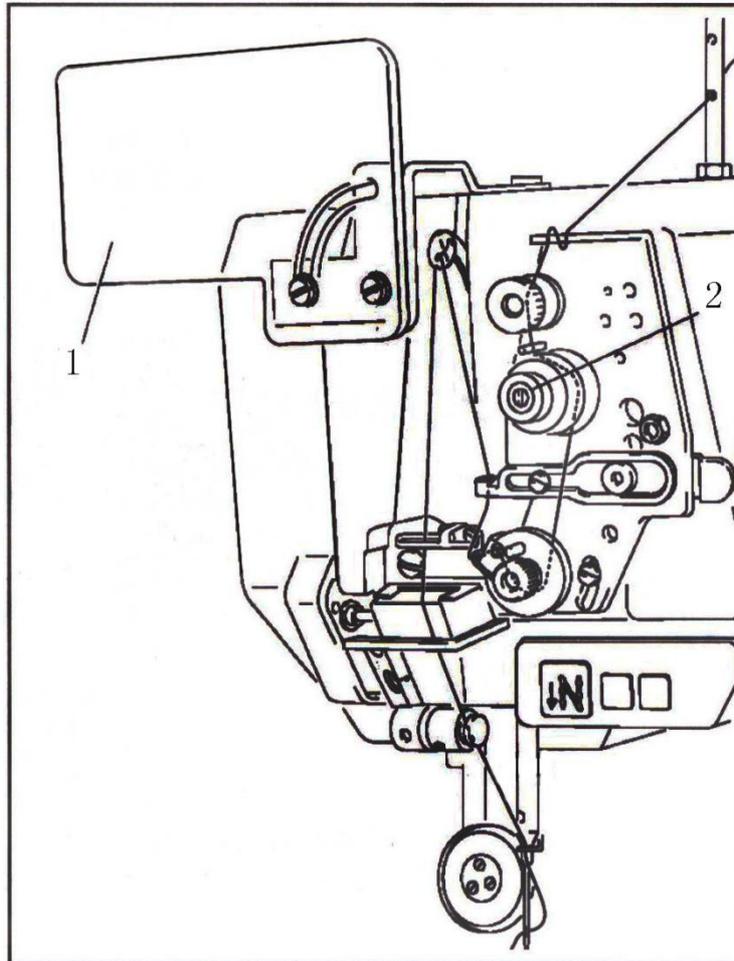


Switch the machine off !

Danger of injury if the machine is started accidentally!



- Tilt up the eye guard **1**.
- Thread the needle thread as shown in Fig.
- Adjust the needle thread tension by turning milled screw **2**.



5.06 Setting the stitch length



- Press key **1** and at the same time turn the balance wheel until the stitch setter clicks into position.
- Hold down key **1** and turn the balance wheel to and fro until the stitch length required is shown on the scale **2** opposite the bottom edge **3** of the belt guard recess.



Care and Maintenance

6 Care and Maintenance

Clean.....	daily,more frequently if in continuous operation
Oil level (thread lubrication/hook lubrication).....	daily,before use
Oil the hook.....	daily,before use
Lubricate the bevel gears.....	once a year



These maintenance intervals are calculated for the average running time of a single shift operation. If the machine is operated more than this, shorter intervals are recommended.

6.01 Cleaning and checking

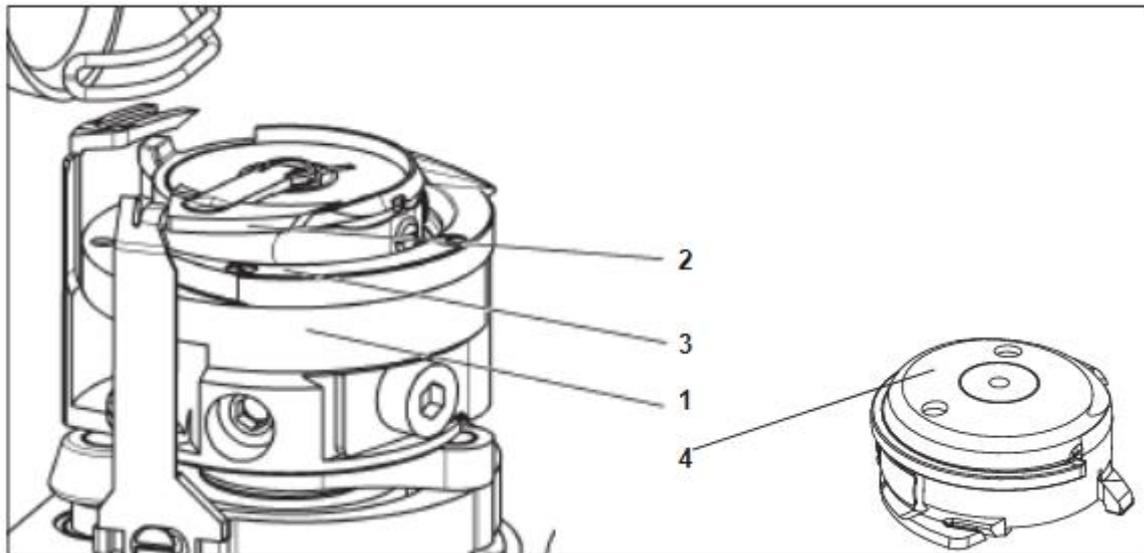


Switch the machine off!
Danger of injury if the machine is started accidentally!



The lacquered surfaces don't clear with organic solvent.
For the cleaning are suitable detergents based on alcoholic.

Care and Maintenance



Maintenance work to be carried out	Explanation	Operating hours
Remove lint, pieces of thread (e.g. with an air blow gun)	<p>Places in special need of cleaning: Area under the throat plate and feeding roller, top roller and its surrounding.</p> <ul style="list-style-type: none"> ● Area around the hook 1 ● Bobbin housing 2 ● Thread trimmer ● Area around the needle 	8
Remove lint, pieces of thread (e.g. with an air blow gun)	<p>Remove the throat plate. Remove the hook plunger ring 3. Remove the bobbin housing 2 from the hook. Clean the inner area of the hook. Clean the bobbin housing-particularly look for glue remainder on the surface 4.</p>	20
Check the hook	<p>Check the clearance on the track between bobbin housing 2 and the hook 1.</p>	500

Care and Maintenance

6.02 Oil bowl for hook lubrication



Check the oil level before each use. There must always be oil in reservoir **1**.



If required refill oil through hole **2**.

Use only oil with a mean viscosity of $22.0\text{mm}^2/\text{s}$ at 40°C and a density of $0.865\text{g}/\text{cm}^3$ at 15°C .



Care and Maintenance

6. 03 Lubricating the bevel gears



Switch the machine off!

Danger of injury if the machine is started accidentally!

- All bevel gears must be supplied with new grease once a year.



- Tilt the sewing head back onto the support.

Fig. shows the bevel gears .

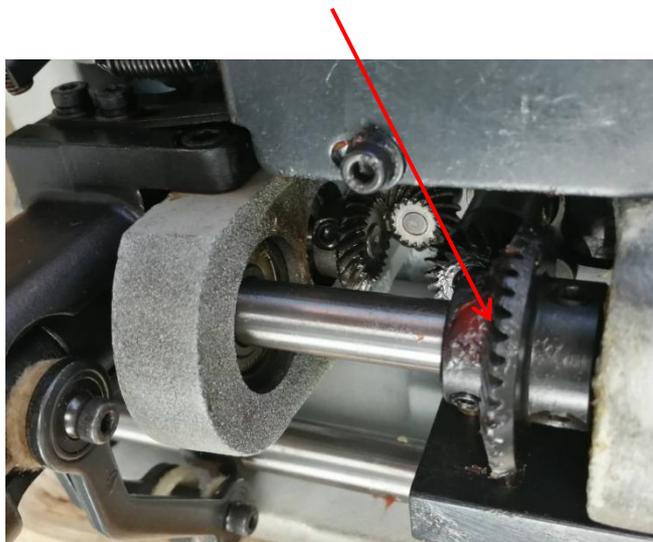
- Apply grease to all the tooth flanks and the rack (see arrows).
- To set the sewing head upright, press tilt lock 1 backwards and set the sewing head upright using both hands.



Use both hands to set the sewing head upright!

Danger of crushing between the sewing head and the table top!

We recommend sodium grease with a dripping point of approx. 150°C.



Adjustment

7 Adjustment



Unless stated otherwise, during all adjustment work the machine must be disconnected from electric supply!

Danger of injury if the machine is started accidentally!

7.01 Notes on adjustment

- All following adjustment are based on a fully assembled machine and may only be carried out by expert staff trained for this purpose.
- Machine covers, which have to be removed and replaced to carry out checks and adjustments, are not mentioned in the text.
- The order of the following chapters corresponds to the most logical work sequence for machines which have to be completely adjusted. If only specific individual work steps are carried out, both the preceding and following chapters must be observed.
- Screws, nuts indicated in brackets () are fastenings for machine parts, which must be loosened before adjustment and tightened again afterwards.

Tools, gauges and other accessories

- 1 set of screwdrivers with blade widths from **2** to **10 mm**
- 1 set of open ended wrenches with opening sizes from **7** to **13 mm**
- 1 set of alien keys from **1.5** to **6mm**
- 1 clamp
- 1 metal ruler
- 1 gauge
- Sewing thread and test material

7.03 Adjusting the basic machine

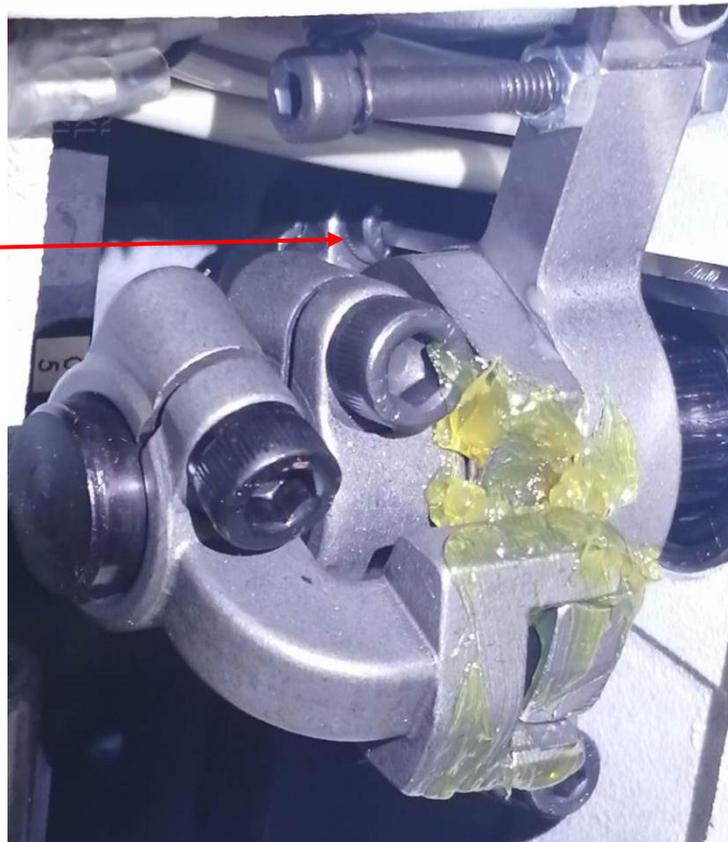
7.03.01 Needle position in sewing direction .

Requirement

With the stitch length set at its minimum, the needle should be positioned in the centre of the needle hole, as seen in the direction of sewing.



- Set the minimum stitch length.
- Adjust needle bar (screw 1) according to the **Requirement**.



Adjustment

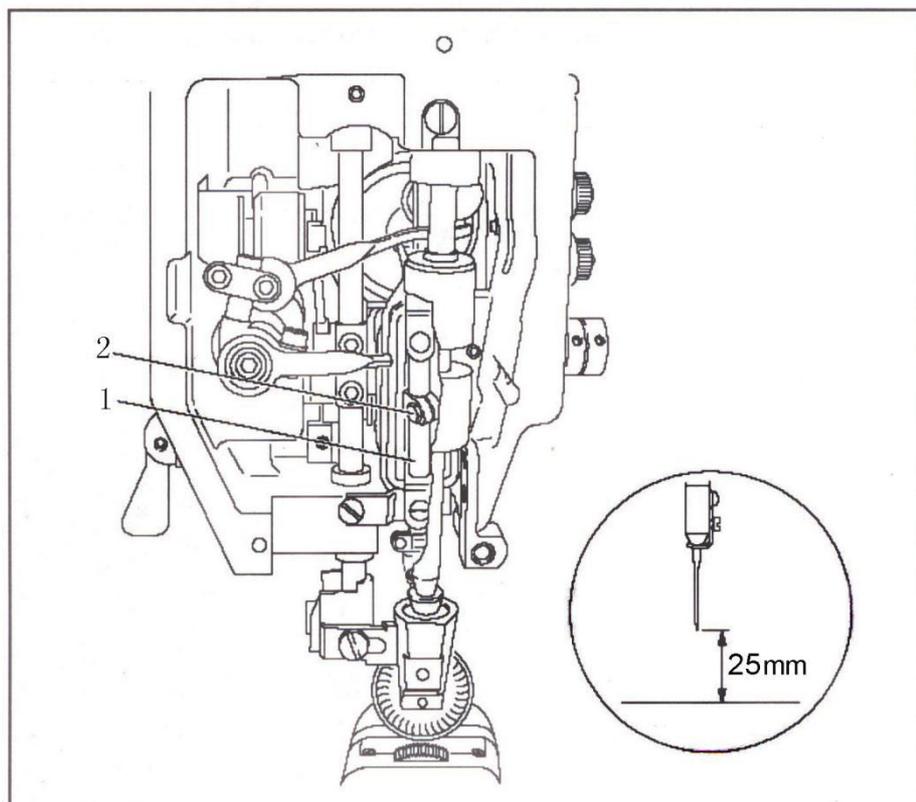
7.03.02 Preliminary adjustment of the needle height

Requirement

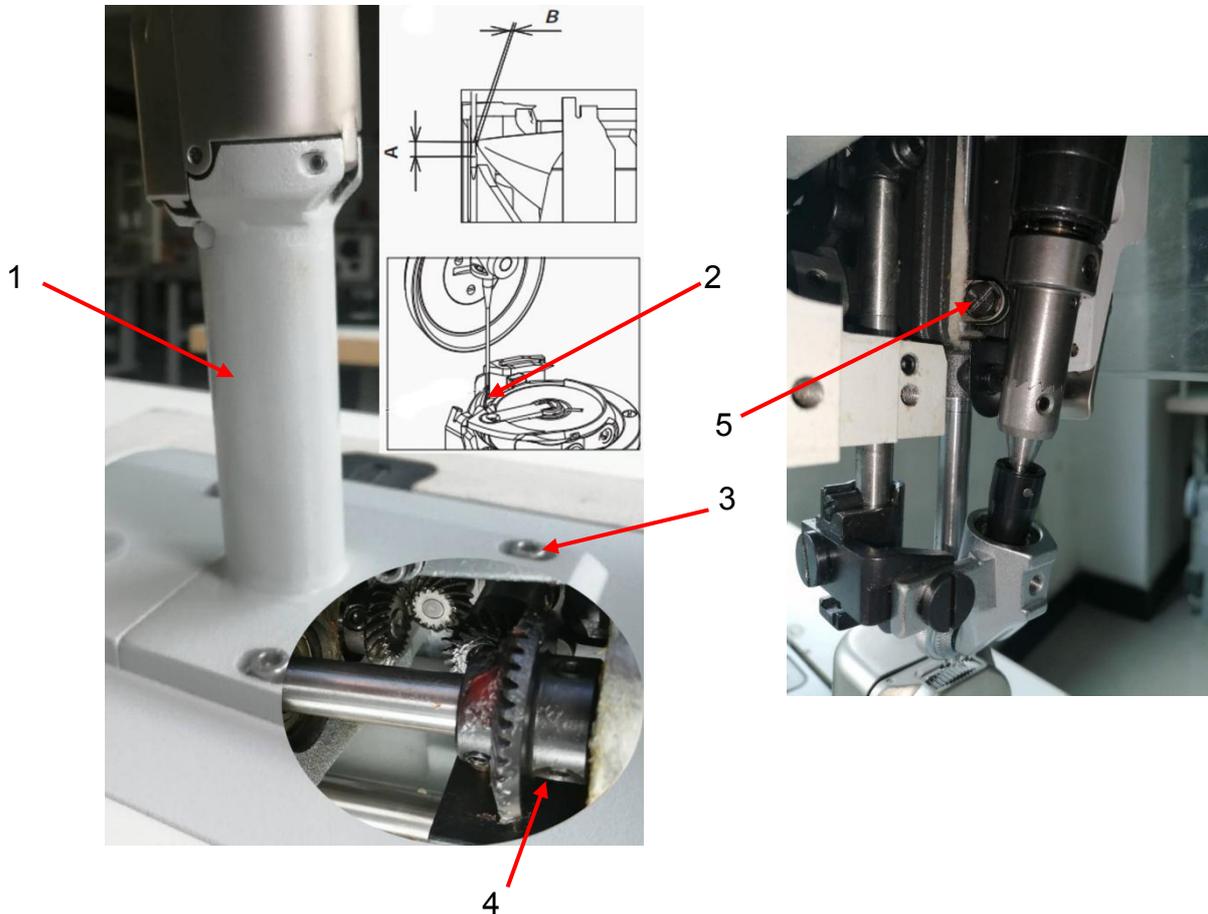
When the needle bar is at top dead centre, there must be a clearance of approx. **25mm** between the needle point and the needle plate.



- Adjust needle bar **1** (screw **2**). Without turning it, according to the **Requirement**.



7.03.03 Needle bar height, play of needle to hook tip.



Requirement

With the needle bar positioned **2.3mm** after bottom dead centre ,
Length **A = 1.5 mm**, distance **B = 0.02 to 0.1 mm**:

1. Loosen four screws **4** and turn the hook tip **2** to the needle axis.
2. Loosen the two screws **3** and displace the hook column **1** from off the needle to the distance measure **B**. Tighten screws **3**.
3. Loosen screw **5**, position the needle bar and needle to the distance measure **A** and tighten screw **5**.
4. Check whether the hook tip **2** is positioned in the range of the needle axis, tighten screw **4**.

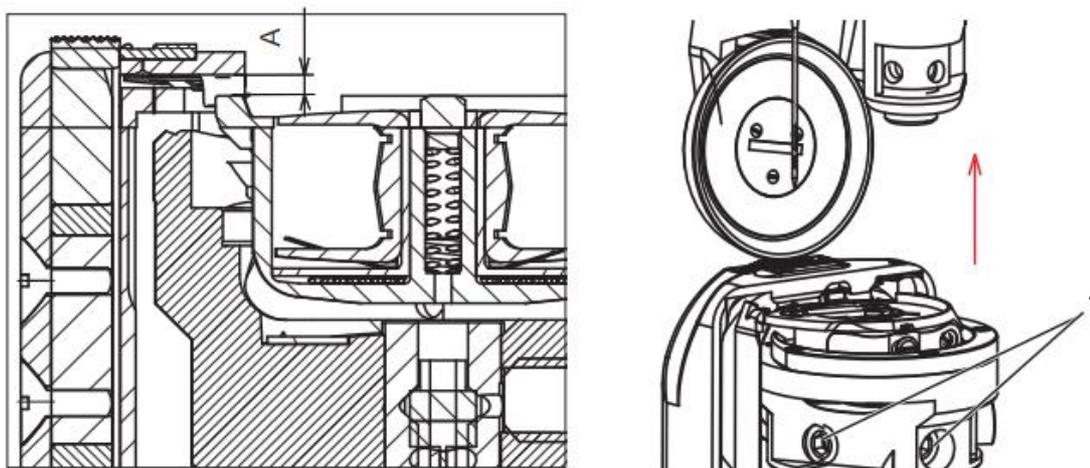
Adjustment

7.03.04 Setting of the needle bar and of the hook.

Hook height

Rule:

The distance **A** should be 1.0 up to 1.1 mm.



- Loosen screws **1** and set the height **A** according to the rule.
- Tighten the screws **1**.



Caution: Danger of injury !

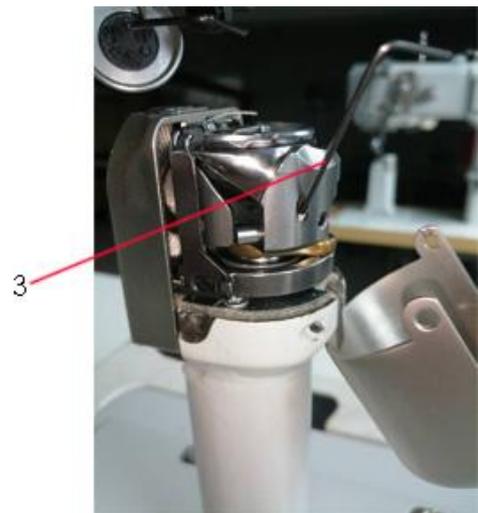
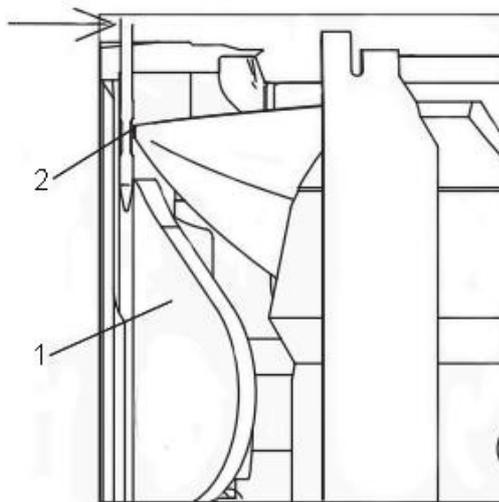
Turn the main switch off.

Proceed with the hook setting only with the sewing machine switched off.

7.03.05 Hook tip guard

Requirement

The guard plate of the hook **1** should prevent a contact between the needle and the hook tip **2**.



- Set the maximum stitch length according to the sewing equipment.
- Dismount the throat plate.
- Position the hook tip **2** on the needle and adjust the setting screw of the guard plate **1** by using an Allen key of **1.25 mm 3**, so that the needle does not touch the hook tip **2**.
- Checking: Exert a light pressure on the needle (see arrow) and turn the hook at the same time.
- The setting is not incorrect if the guard plate **1** slightly deflects the needle.



Caution: Danger of injury !

Turn the main switch off.

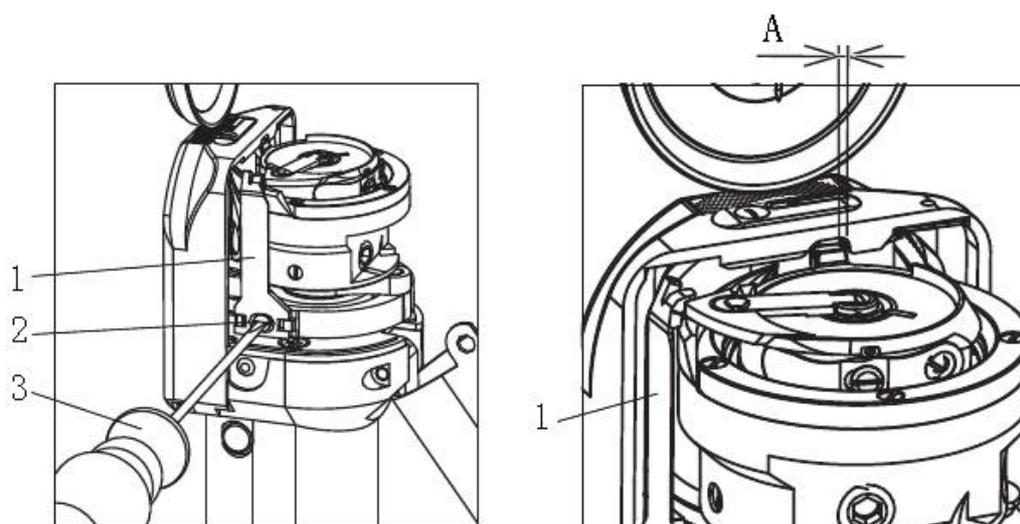
Proceed with the setting of the hook guard only with the sewing machine switched off.

Adjustment

7.03.06 Bobbin housing release

Requirement

The distance measure **A** with max. release should be **0.5 mm**.

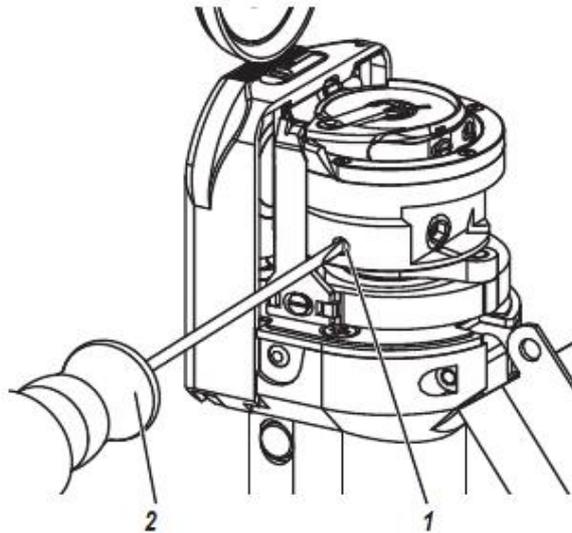


- Loosen screw **2** by the screwdriver **3**, set the bobbin housing release **1** so that the distance measure **A** according to rule is accomplished.
- Tighten screw **2**.

7.03.07 Hook lubrication

Requirement

The screw **2** is to be unscrewed by **1.5** revolution from the position where the lubrication is fully closed.



- Screw the choking screw **1** by means of a screwdriver **2** and loosen it back by **1.5** revolution according to the rule.
- Check whether the oil lubrication is sufficient. Place a sheet of paper near the hook, run the machine to full speed and observe whether a trace of sprinkling oil appears on the paper.
- If you want to choke the lubrication, screw the screw (1) deeper, and vice versa.



Caution: Danger of injury !

Turn the main switch off.

Proceed with the setting of the hook lubrication only with the Sewing machine switched off.

Adjustment

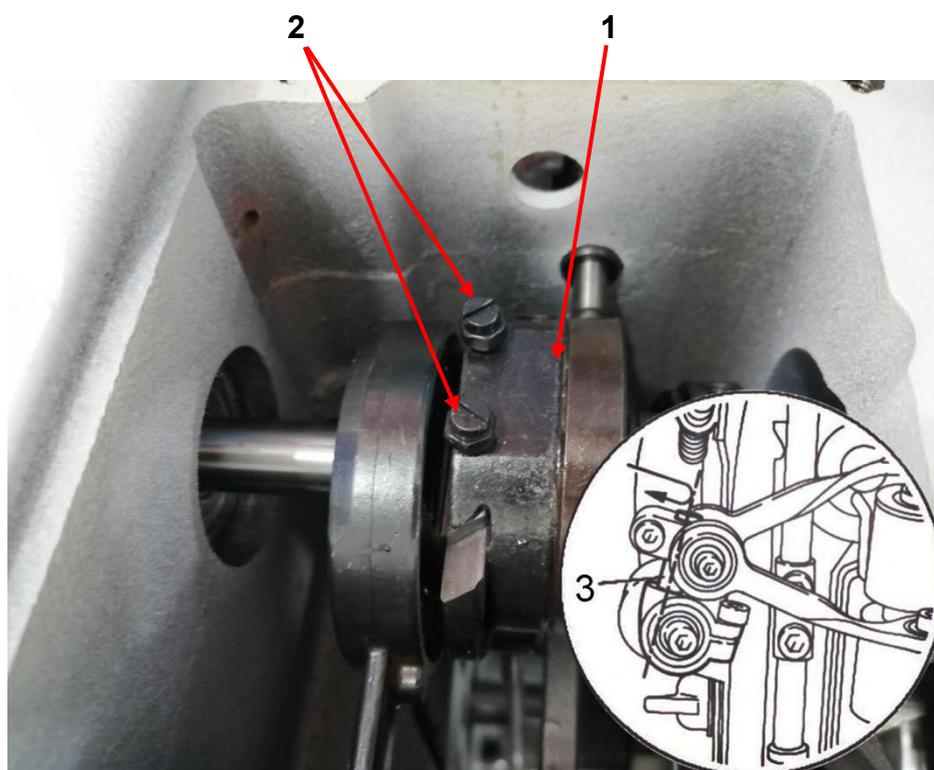
7.03.08 Stitch length control eccentric

Requirement

When the needle (with maximum stitch length set), coming from top dead centre, is **3 mm** above the needle plate, the crank **3** must have reached its front point of reversal.



- Set the maximum stitch length.
- Turn stitch length control device **1** (screws **2**) according to **Requirement**.



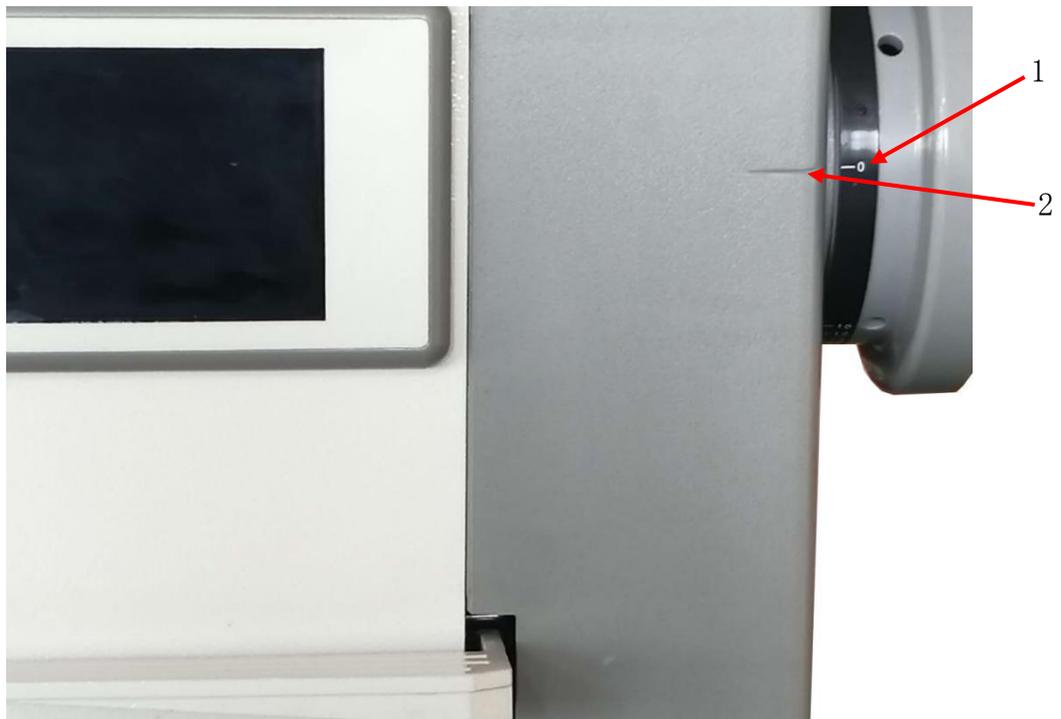
7.03.09 Stitch length scale disk

Requirement

When the stitch length control device is locked in position, and the minimum stitch length is set, the marking line of the highest number on the scale disk **1** must be opposite the lower edge **2** of the belt guard recess.



- Set the minimum stitch length.
- Turn the scale disk **1** according to the **Requirement**.



Adjustment

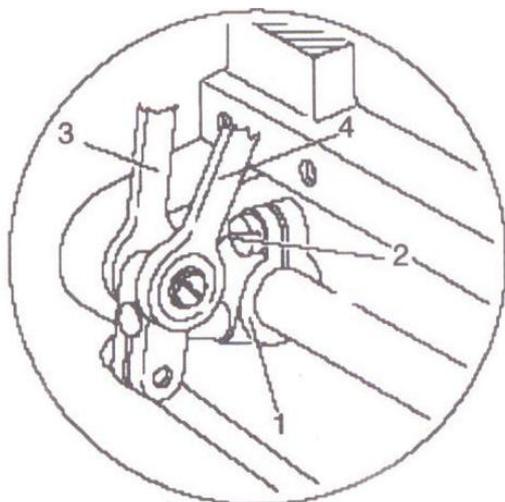
7.03.10 Shaft crank to feed wheel drive

Requirement

When the maximum length is set, the linkage rod **3** and **4** must be able to move freely when the balance wheel is turned.



- Set the maximum stitch length.
- Twist or shift the shaft crank **1** (screw **2**) according to the **Requirement**.



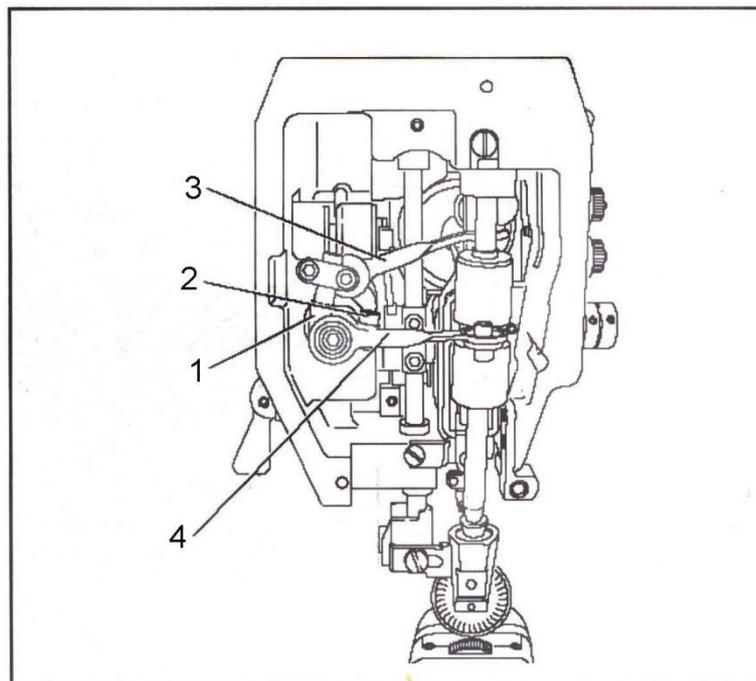
7.03.11 Shaft crank to roller presser drive

Requirement

When the maximum stitch length is set, the linkage rods **3** and **4** must be able to move freely at their left and right point of reversal when the balance wheel is turned.



- Set the maximum stitch length.
- Twist or shift the shaft crank **1** (screw **2**) according to the **Requirement**.



Adjustment

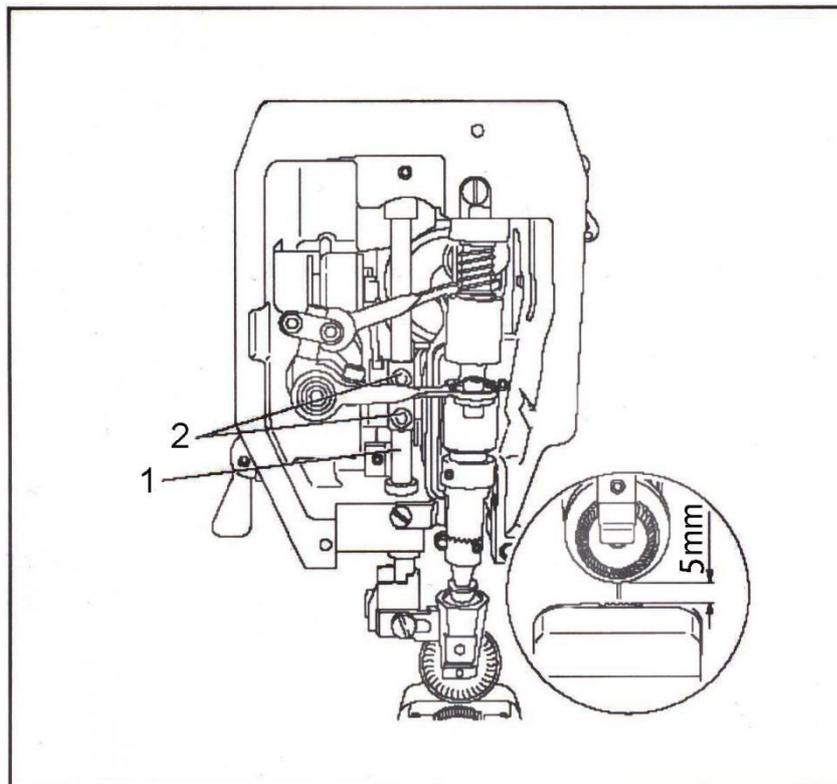
7.03.12 Clearance between roller presser and feed wheel

Requirement

When the presser bar lifter is raised, the clearance between the roller presser and the feed wheel must be **5 mm**.



- Raise the presser bar lifter.
- Adjust the presser bar **1** (screws **2**) according to the **Requirement**.
Make sure that the roller presser is parallel to the feed wheel.



7.03.13 Roller presser

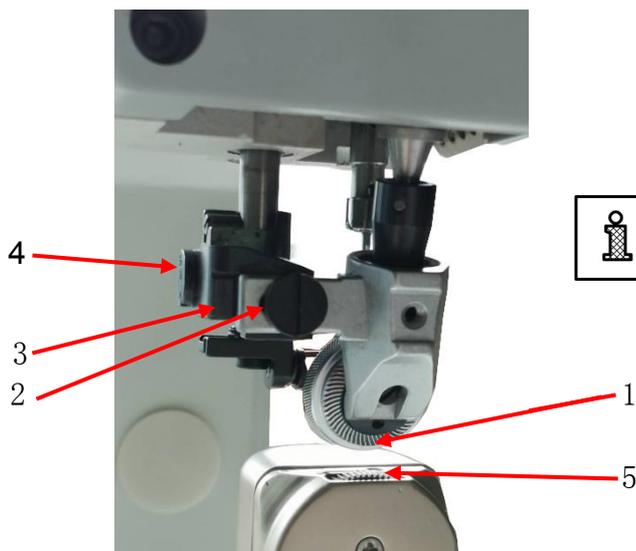
Requirement

When the roller presser **1** is touching the feed wheel **5** it must:

- 1.be parallel to feed wheel **5**, as seen in the direction of sewing.
- 2.be in the centre of the needle , as seen in the direction of sewing.
- 3.be as near as possible to the needle ,as seen crosswise to the direction of sewing.



- Raise the roller presser.
- Always observe **Requirement 1** for subsequent adjustments.
- Adjust roller presser **1** (screw **2**) according to **Requirement 2**.
- Lower roller presser **1** to rest on feed wheel **5**.
- Adjust roller presser bracket **3** (screw **4**) according to **Requirement 3**.



When sewing very tight curves, the roller presser **1** must be moved a little towards the operator.

Adjustment

7.03.14 Stitch length on stitch length scale

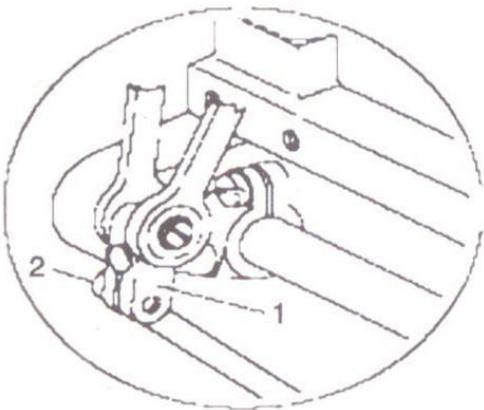
Requirement

When the stitch length is set at " 3 " , and after the needle has entered a strip of leather **11 times**, the total length from the first to last needle penetration must be **30 mm**.



- Set stitch length " 3 " .
- By turning the balance wheel, let the needle enter **11 times** and measure the total length.
- Adjust clamp **1** (screw **2**) according to the **Requirement** .

Clamp **1** must not be positioned diagonally to the rock shaft!



7.03.15 Synchronization of roller presser and feed wheel

Requirement

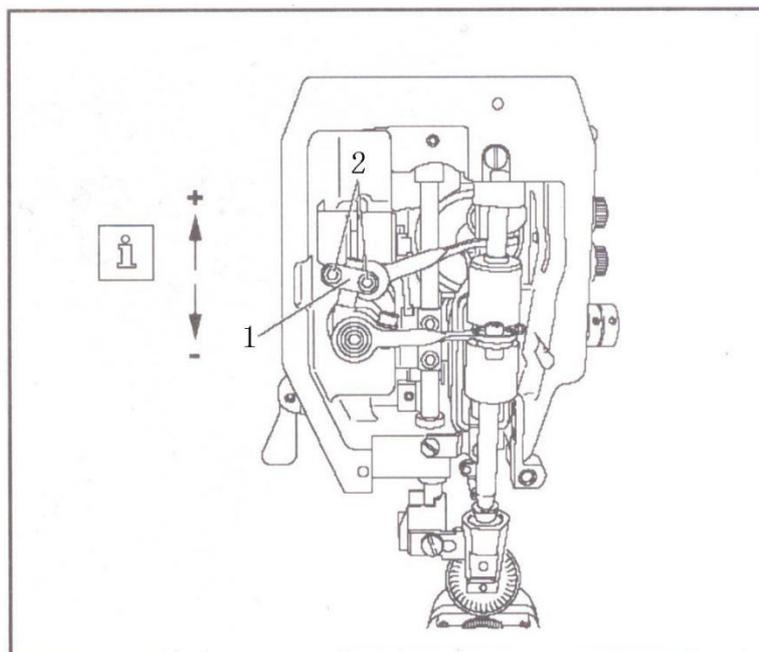
After **30** needle penetrations in a strip of leather the total length from the first to the last penetration should be the same, both in the lower and the upper leather layer.



- Set stitch length " 3 " .
- By turning the balance wheel, let the needle enter **30** times.
- Compare the total sewn length of the lower and upper leather layer.
- Adjust clamp **1** (screw **2**) according to the **Requirement** .



Clamp **1** must not be positioned diagonally to the rock shaft!



Adjustment

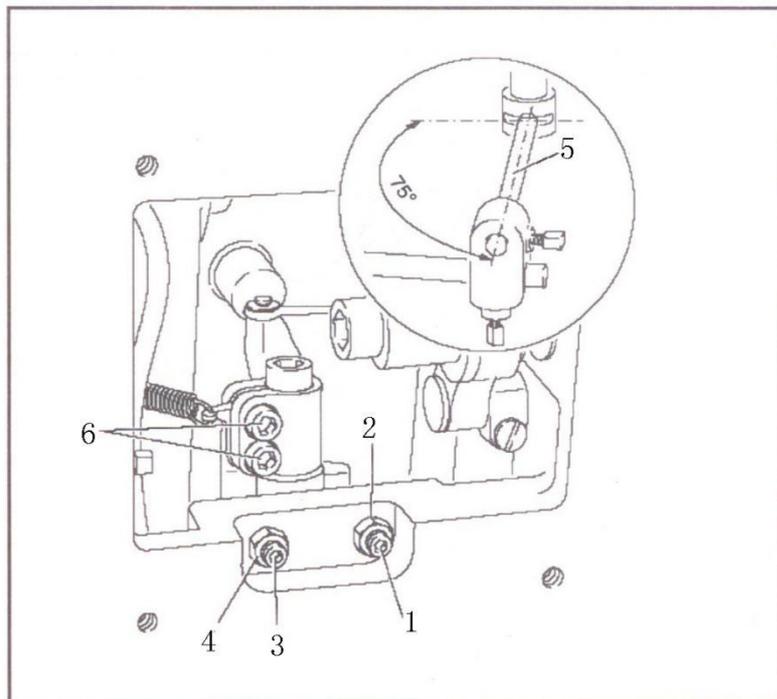
7.03.16 Knee lever

Requirement

1. before the roller presser rises, the knee lever must still have a slight play.
2. when the knee lever is raised as far as possible, the lever for the roller presser must drop automatically.
3. knee lever bar **5** must be at an angle of approx. 75° to the bedplate.



- Adjust screw **1** (nut **2**) according to **Requirement 3**.
- Adjust screw **3** (nut **4**) according to **Requirement 2**.
- Set bar **5** (screws **6**) according to **Requirement 3**.



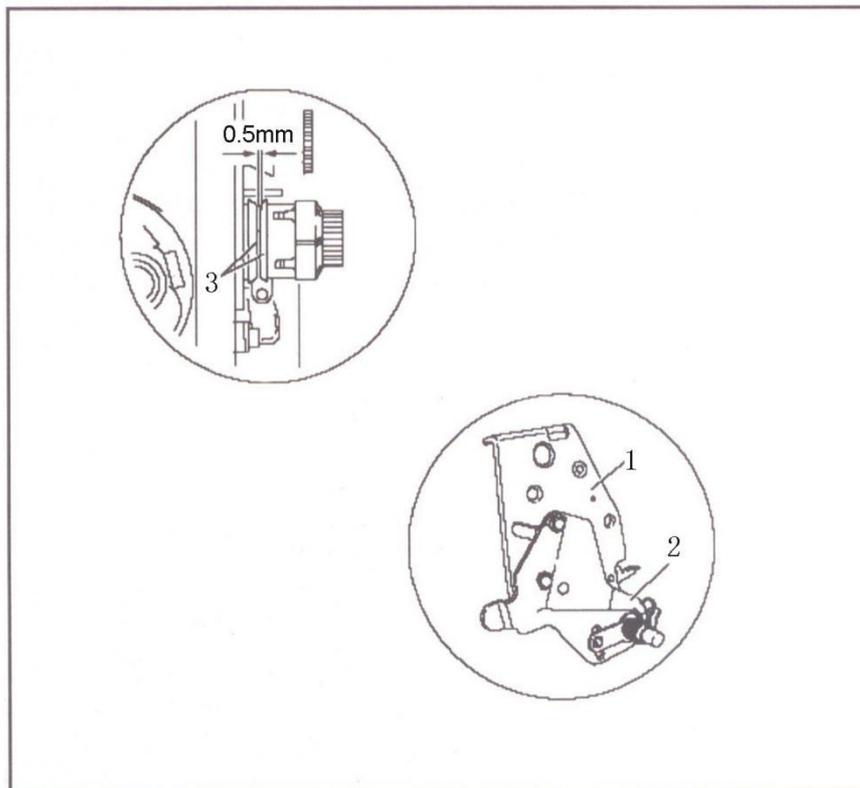
7.03.17 Needle thread tension release

Requirement

1. when the presser bar lifter is raised, the tension discs **3** should be pressed at least **0.5 mm** apart.
2. When the roller presser is lowered, the tension must be fully effective.



- Align tension mounting plate **1** and pressure plate **2** according to **Requirement**.



Adjustment

7.03.18 Thread check spring

Requirement

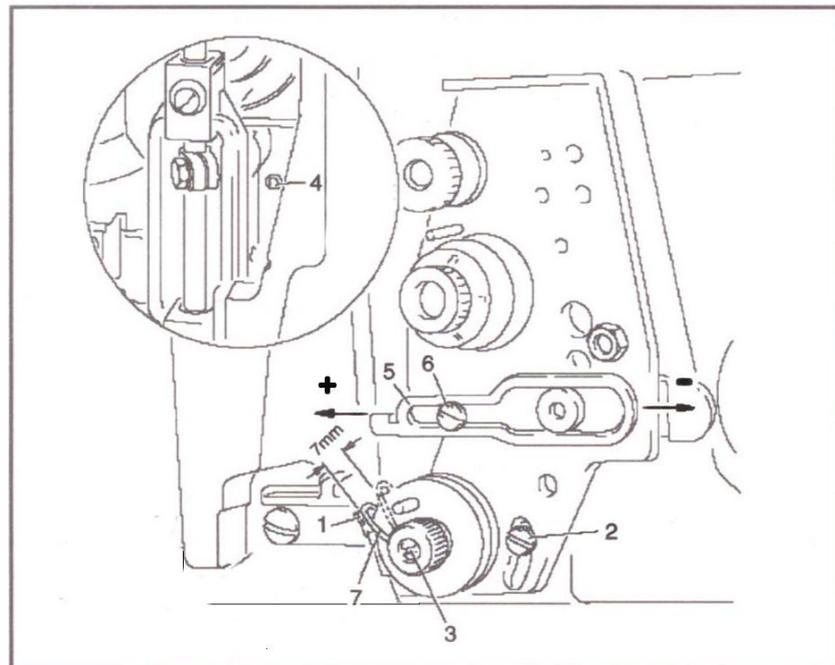
1. the movement of thread check spring **7** should be completed when the needle point penetrates the fabric (spring stroke approx. **7 mm**).
2. when the largest thread loop is formed while the thread is passed around the hook, the thread check spring **7** should rise slightly from its support.



- Adjust support **1** (screw **2**) according to **Requirement 1**.
- Adjust the spring tension by turning screw **3** (screw **4**).
- Adjust the thread regulator **5** (screw **6**) according to **Requirement 2**.



For technical reasons it may be necessary to deviate from the specified spring stroke or spring tension. Move the thread regulator **5** (screw **6**) towards "+" (= more thread) or "-" (= less thread).



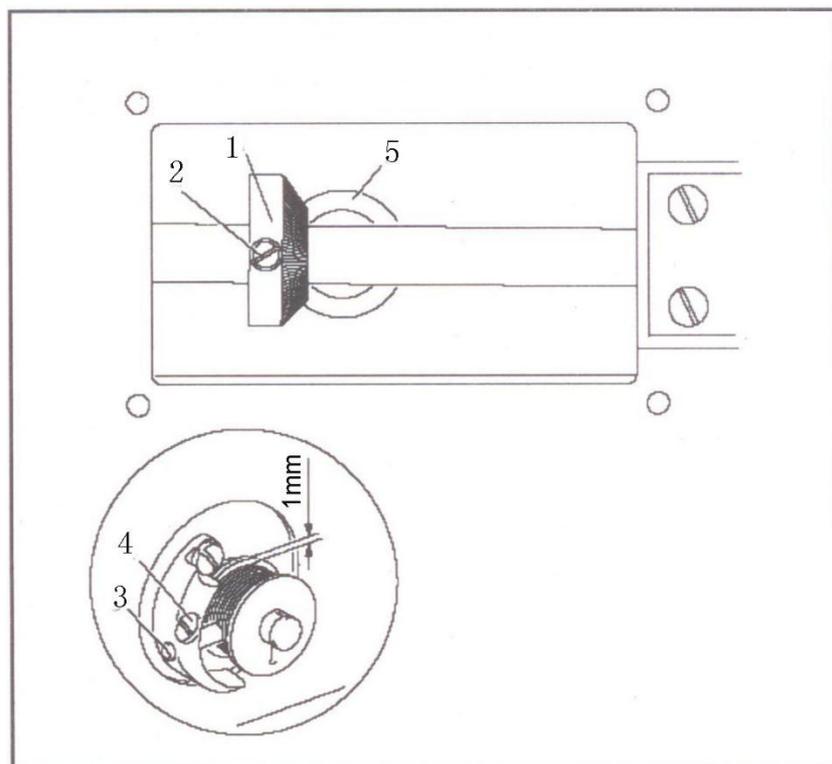
7.03.19 Bobbin winder

Requirement

1. when the bobbin winder is engaged, the winding spindle must be driven reliably. When the bobbin winder is disengaged, the friction wheel **5** must not be moved by drive wheel **1**.
2. the bobbin winder must switch itself off, when the filled thread is about **1mm** from the edge of the bobbin.



- Position drive wheel **1** (screws **2**) according to **Requirement 1**.
- Position bolt **3** (screw **4**) according to **Requirement 2**.



Adjustment

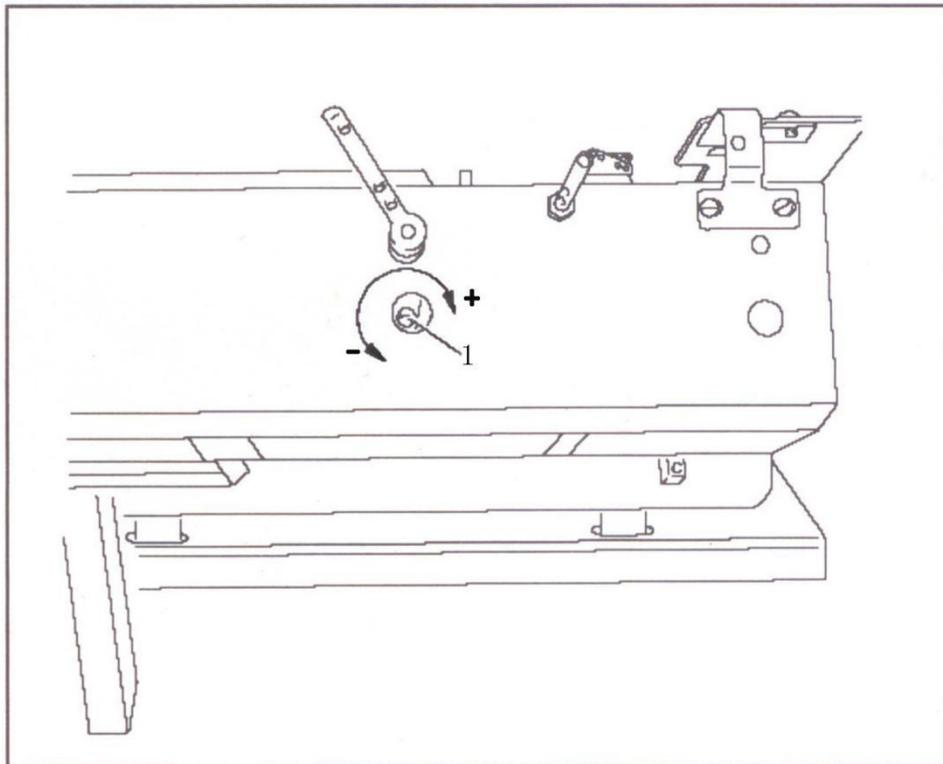
7.03.20 Pressure of roller presser

Requirement

The material must be fed smoothly. No pressure marks should be visible on the material.



- Adjust roller pressure with screw **1** according to the **Requirement**.



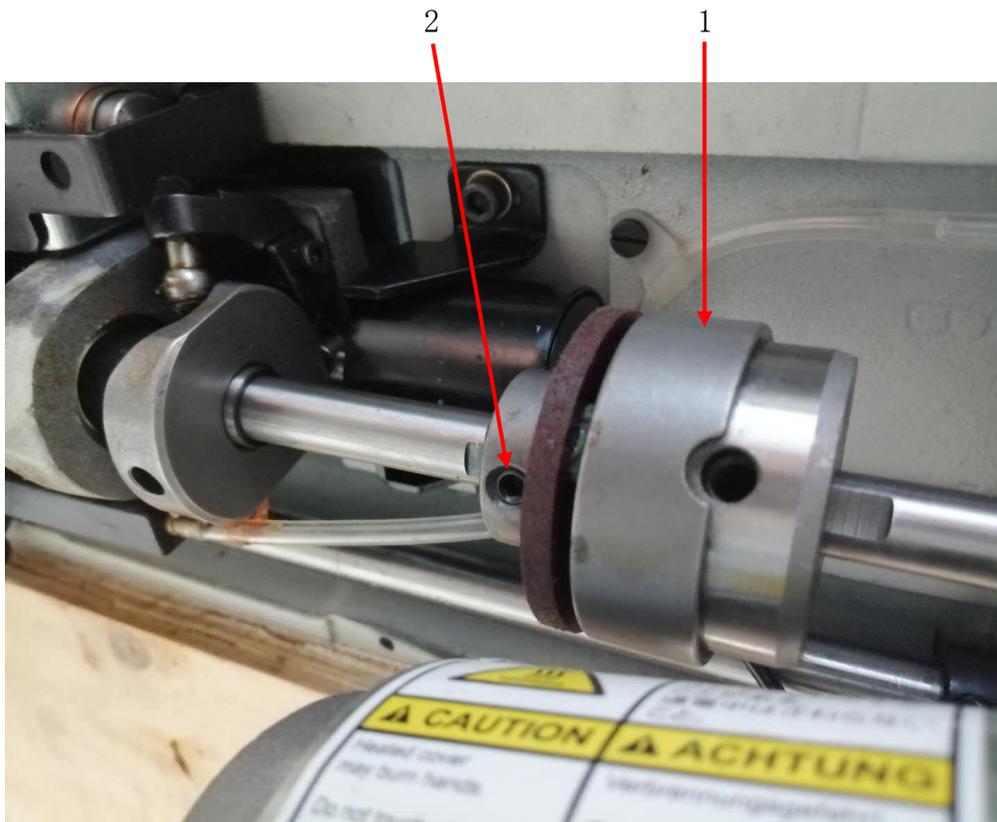
7.03.21 Re-engage safety coupling



The coupling **1** is set by the manufacturer. When the thread jams, the coupling **1** disengages in order to avoid damage to the hooks. A description of how to engage the coupling follows.



- Remove jammed thread.
- Hold coupling **1** with screw **2** and turn the balance wheel, until you feel coupling **1** snap back into place again.



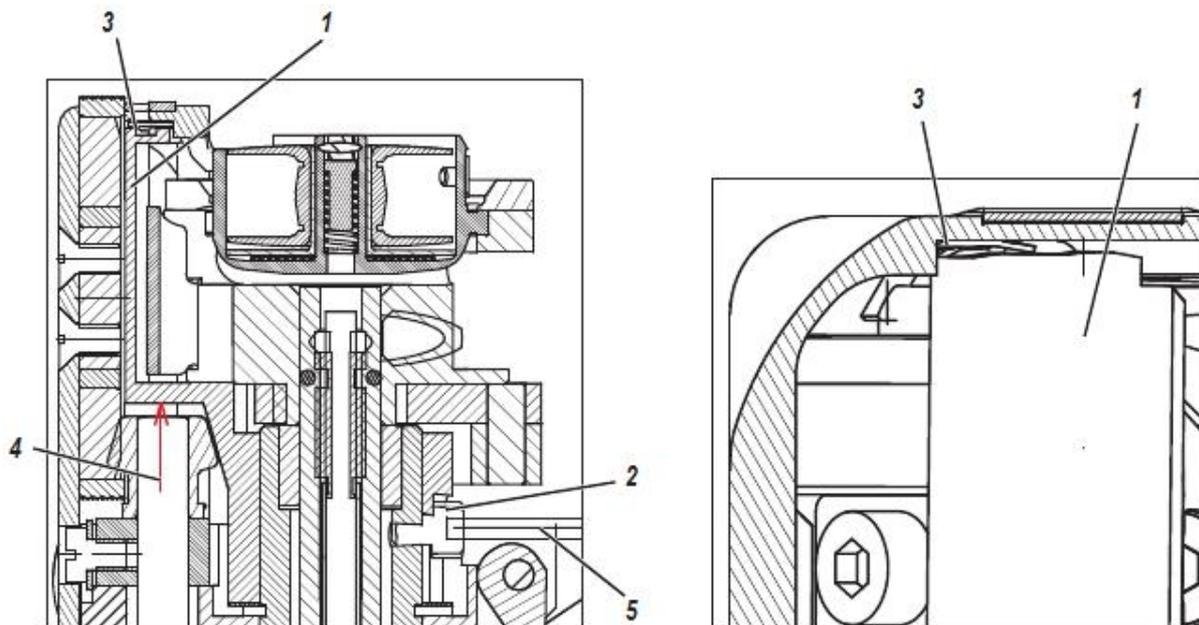
Adjustment

7.04 Thread cutter

7.04.01 Thread-pulling knife height

Requirement

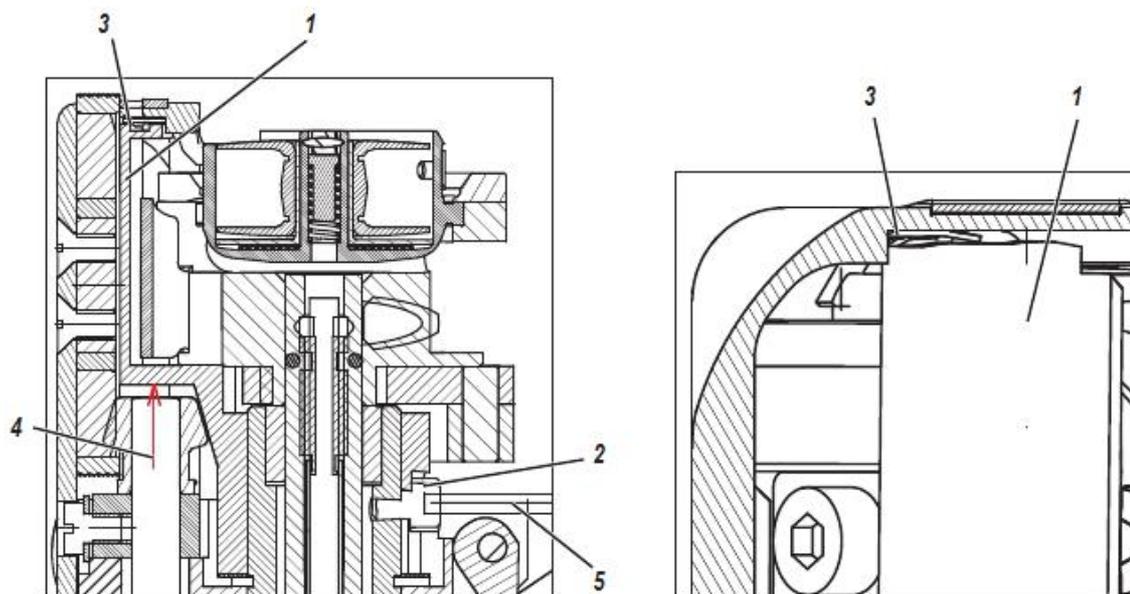
At the turning to its adjusting position the thread-pulling knife **1** should touch the counter knife **3** without pressure.



- Slightly turn the thread-pulling knife **1** so that its locking screw **2** is accessible for the hexagonal key **2.5 mm 5**.
- Loosen the screw **2** and lift the thread-pulling knife **1** in the arrow **4** direction to touch the counter knife **3**. The thread-pulling knife must not develop any pressure on the counter knife **3**. The cutting pressure between the knives **1** and **3** will develop during the thread-pulling knife **1** slight turning to the cutting position due to the elevated position of its cutting edge surface.
- Fix the thread-pulling **5** with the screw **2**.

7.04 Thread cutter

7.04.01 Thread-pulling knife height



Caution: Danger of injury !

Turn the main switch off.

Proceed with the thread cutter setting only with the sewing machine switched off.



Attention !

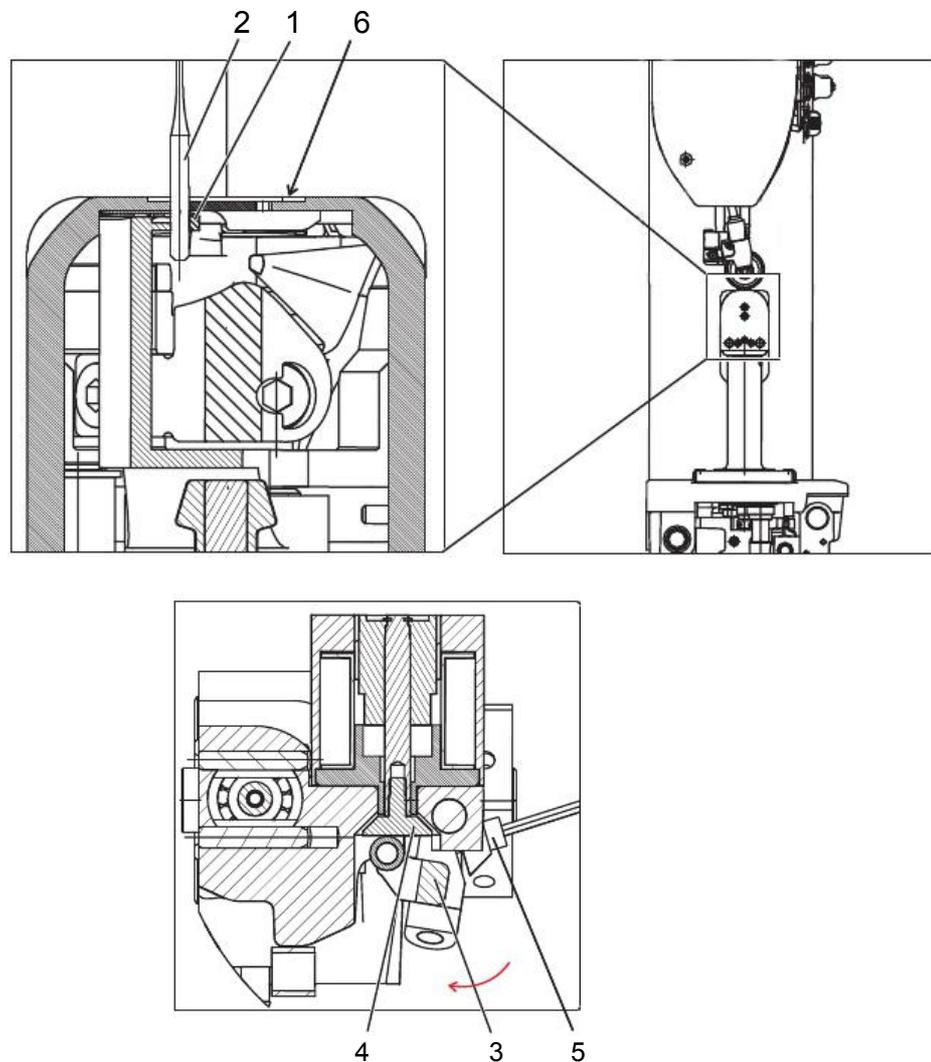
When the pressure of the counter knife is set too high this results in a higher knife wear.

Adjustment

7.04.02 Starting position of the thread-pulling knife

Requirement

If the thread pulling knife 1 is locked in the starting position with a needle shank 2, the electric motor shock absorber 4 and the lever 3 should be positioned at the stop.



7.04.02 Starting position of the thread-pulling knife

- Dismantle the throat plate insert in the recess **6**.
- Loosen the screw **5** with the hexagonal key **3 mm**.
- With your hand slightly turn the thread pulling knife **1** to the starting position and lock it with the needle shank **2**.
- Turn the lever **3** in the arrow direction to the stop and then fix it with the screw **5**.
- Remove the needle **2** and mount the throat plate insert back again.



Caution: Danger of injury !

Turn the main switch off.

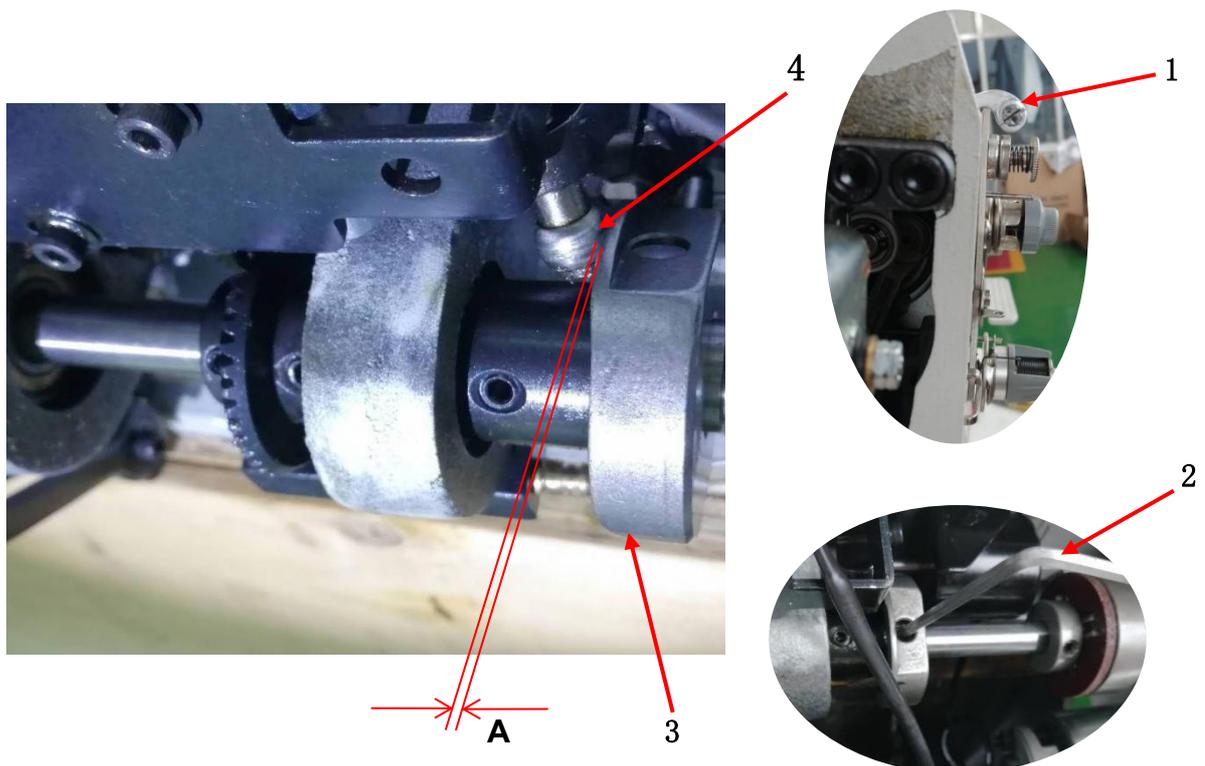
Proceed with the thread cutter setting only with the sewing machine switched off.

Adjustment

7.04.03 Angle position (timing) of control cam and clearance between cam and roller

Requirement

1. The thread take up lever **1** is at the top dead position.
2. Between the control cam **3** and the roller **4** there should be the distance **A = 0,1 mm**.



7.04.03 Angle position (timing) of control cam and clearance between cam and roller

- Loosen both locking screws of the cam **3** with the hexagonal key **3 mm 5**.
- The thread take up lever **1** is at the top dead position to the picture .
- Insert the feeler gauge **0.1 mm** between the cam **3** and the roller **4**.
- Slide the cam **3** to the left fully to the stop until the clearances inside the mechanism are set.
- Fix the cam **3** with two locking screw with the key **2**.



Caution: Danger of injury !

Turn the main switch off.

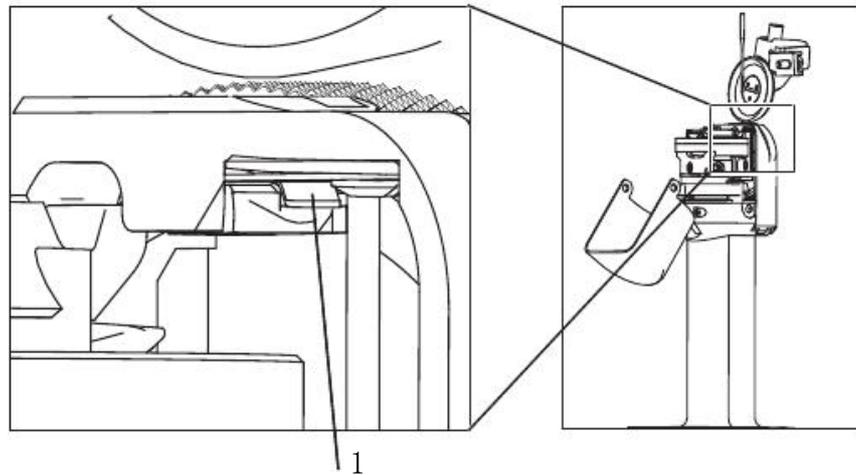
Proceed with the setting of the control cam only with the sewing machine switched off.

Adjustment

7.04.04 Bobbin thread clamp

Requirement

The clamping force of the spring **1** should be high enough so as the tension needed to pull out the bottom thread is approximately the same as the tension needed to pull this thread from the hook bobbin.



- Sew and cut the threads.
- Pull the bottom thread. If its tension is too low (the thread under the spring can easily slip out), tilt the hook cover up and slightly bend the spring **1** downwards with a screwdriver.
- Repeat the seam sewing, do the thread cutting, perform a test of the tension needed to pull the thread out, and slightly bend the spring, until the thread is reliably retained with the spring.



Caution: Danger of injury !

Turn the main switch off.
Only adjust the clamping spring when the machine is turned off.



Attention !

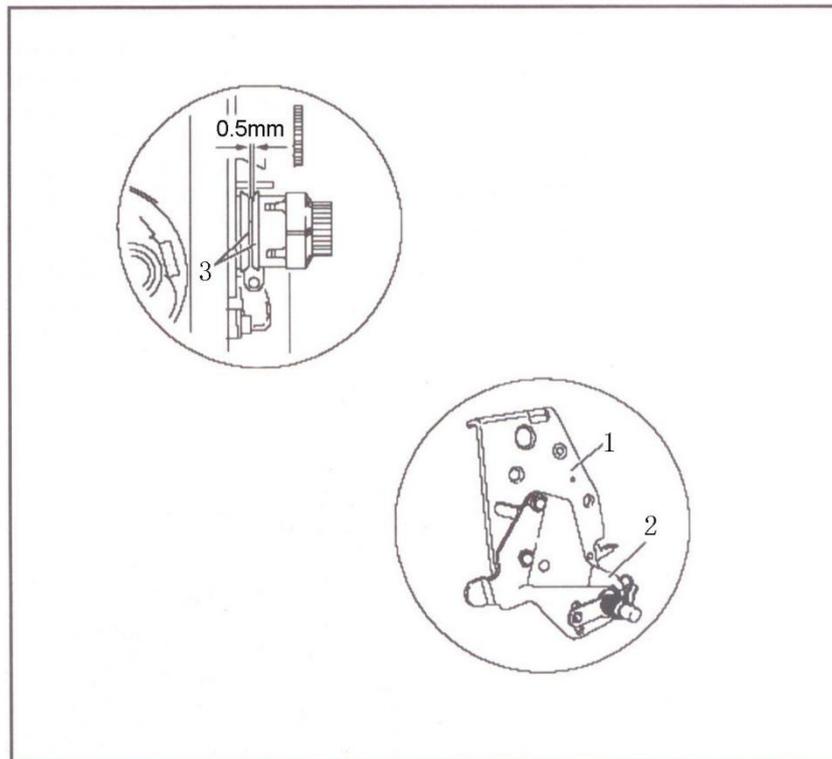
Sewing problems can result when the clamping spring is improperly adjusted.

Adjustment

7.04. 05 Releasing the tension

Requirement

When the magnet is activated, tension discs 3 must be at least **0.5 mm** apart.



- Activate the magnet.
- Detach the tension bearing plate **1** and adjust pressure plate **2**.

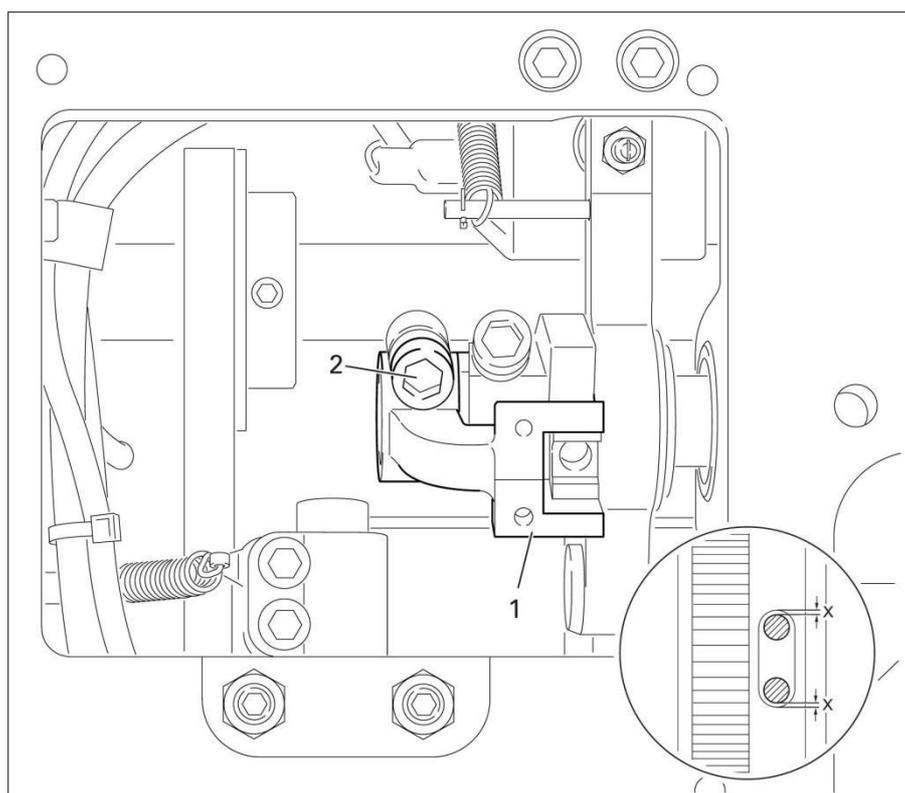
Adjustment

7.05 Adjusting backtracking mechanism

7.05.01 Needle in needle hole

Requirement

When the maximum stitch length is set, the needle must be the same distance from the inside edge of the needle hole, both for forward and reverse stitch.

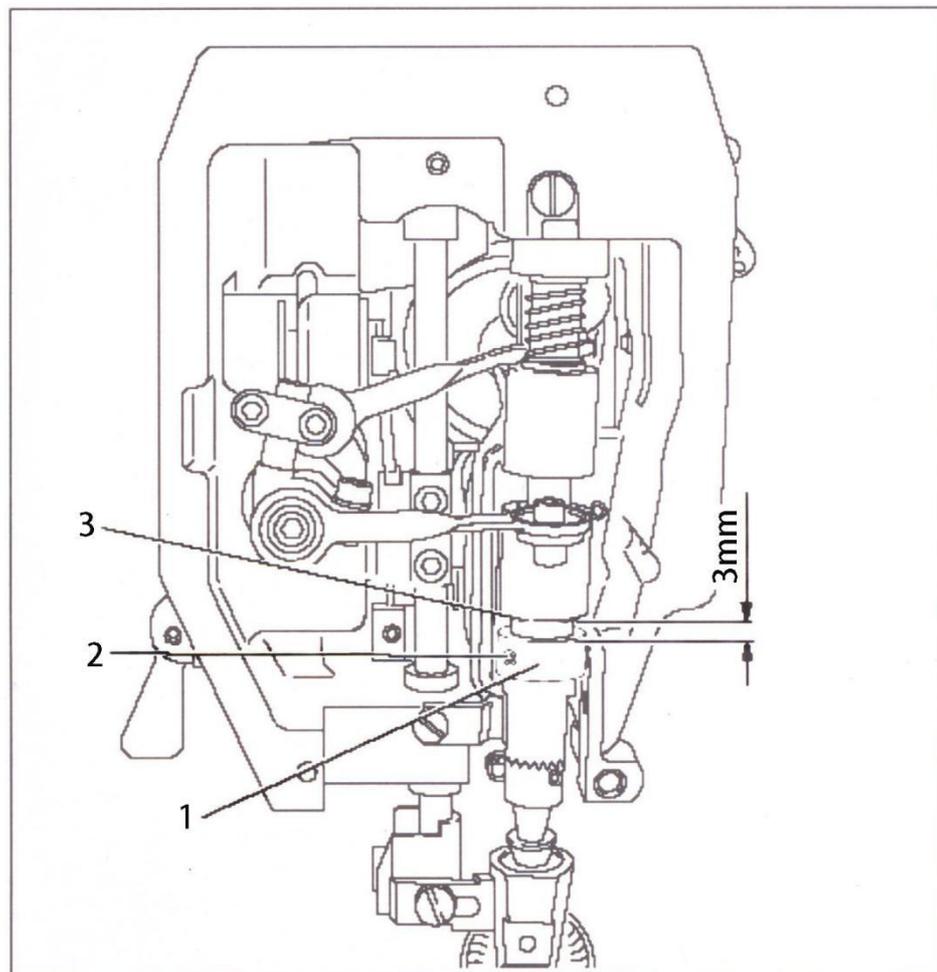


- Turn crank 1 (screw 2) according to the **Requirement**,

7.05.02 Coupling for roller presser drive

Requirement

There must be a distance of **3 mm** between coupling half **1** and locking disc **3** of the drive mechanism.



- Adjust coupling half **1** (screw **2**) according to the **Requirement**.

