

POWERLine

2231

ADJUSTMENT MANUAL

This Adjustment Manual is valid for machines
from the following serial numbers onwards:

2 765 806 →

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**PFAFF Industriesysteme
und Maschinen AG**

Hans-Geiger-Str. 12 - IG Nord
D-67661 Kaiserslautern

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1 Adjustment



Please observe all notes from Chapter 1 **Safety** of the instruction manual!
In particular care must be taken to see that all protective devices are refitted properly after adjustment, see Chapter 1.06 **Danger warnings** of the instruction manual!



If not otherwise stated, the machine must be disconnected from the electrical power supply. Danger of injury due to unintentional starting of the machine!

1.01 Notes on adjustment

All following adjustments 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.

1.02 Tools, gauges and other accessories for adjusting

- Screwdrivers with blade width from 2 to 10 mm
- Spanners (wrenches) with jaw width from 7 to 14 mm
- 1 set Allen keys from 1.5 to 6 mm
- 1 feed dog adjustment gauge, Part No. 61-111 689-04
- Metal rule (part No. 08-880 218-00)
- Sewing thread and test materials

1.03 Abbreviations

t.d.c. = top dead centre

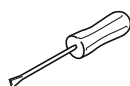
b.d.c. = bottom dead centre

1.04 Explanation of the symbols

In this adjustment manual, symbols emphasize operations to be carried out or important information. The symbols used have the following meaning:



Note, information



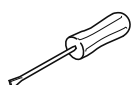
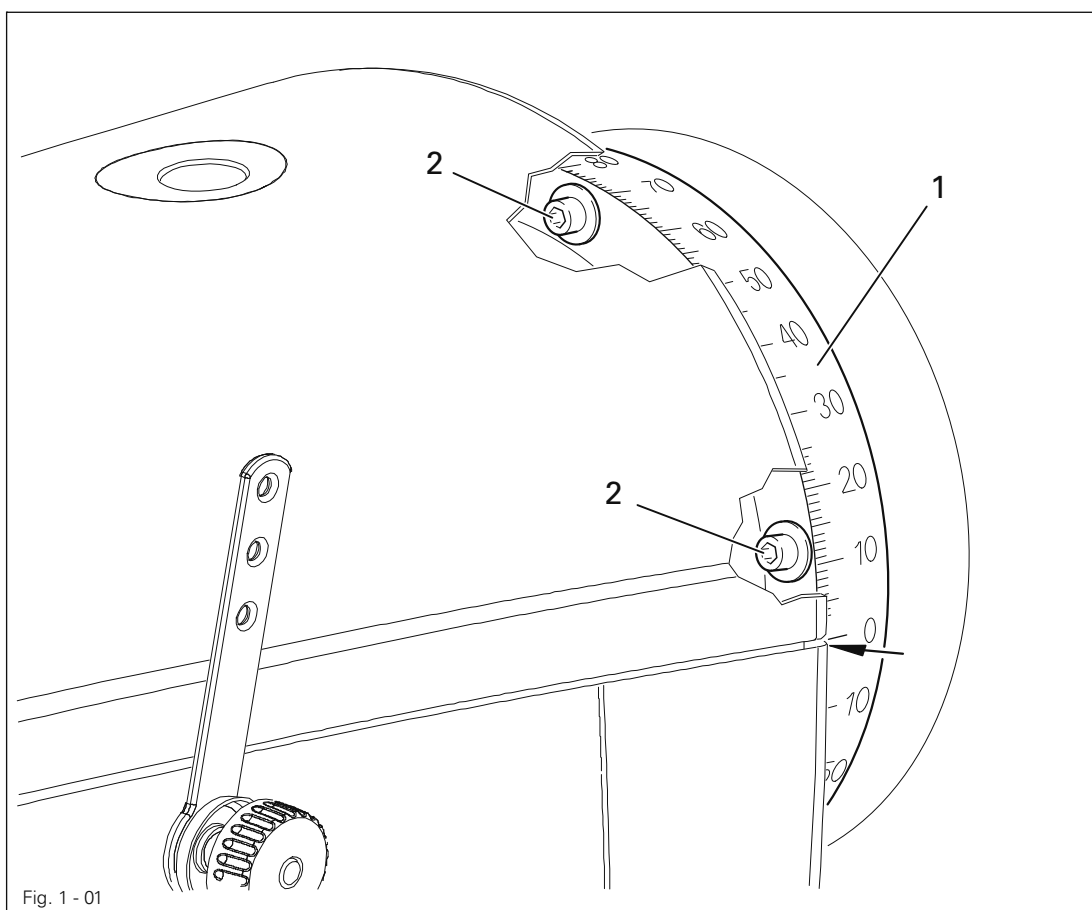
Service, repair, adjustment, maintenance
(work to be carried out by qualified staff only)

1.05 Adjusting the basic machine

1.05.01 Basic position of the balance wheel (adjustment aid)

Requirement

When the needle bar is positioned at t.d.c., the marking "0" on the scale should be level with the top edge of the belt guard (see arrow).

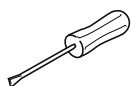
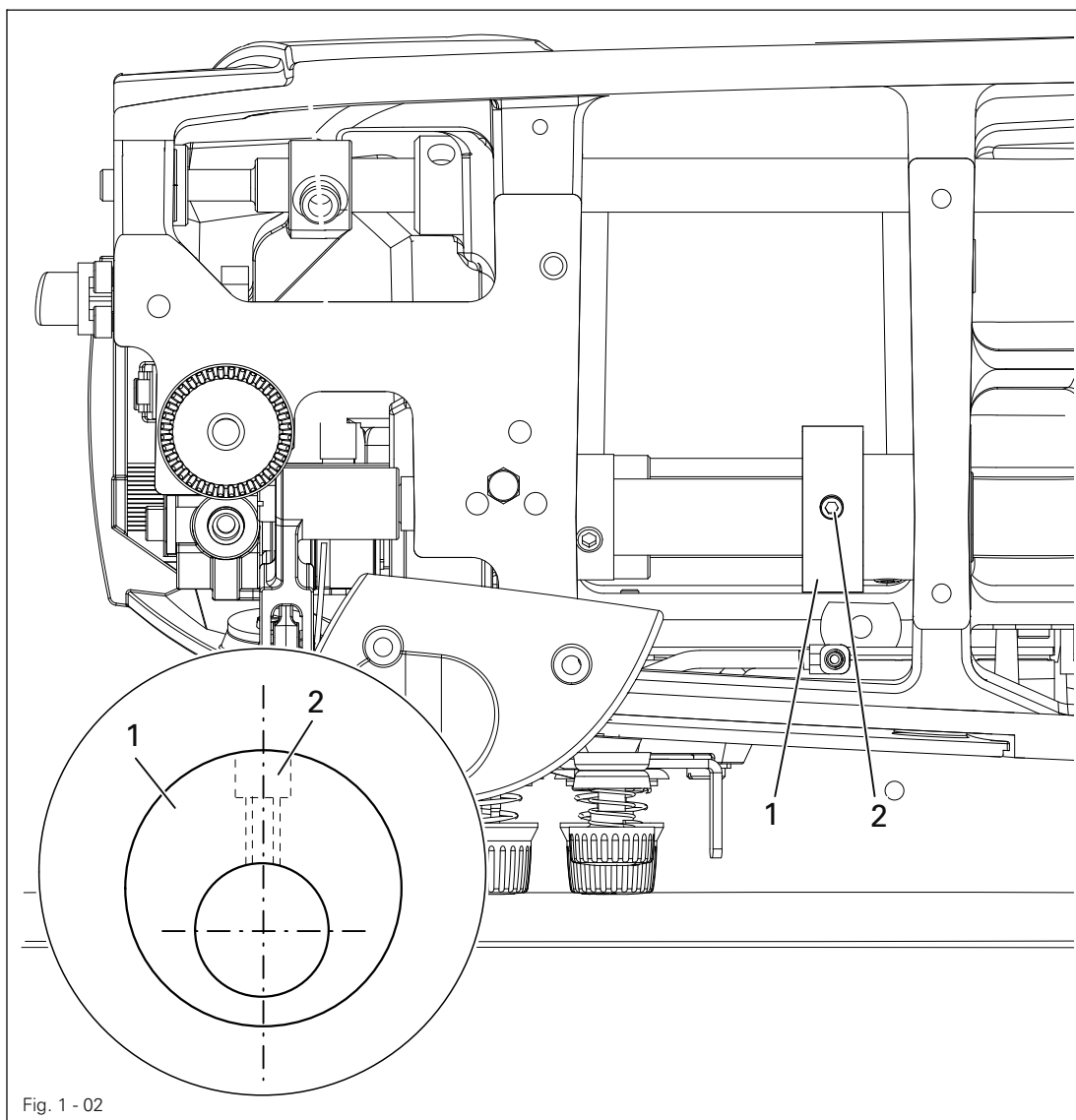


Adjust the scale dial 1 (four screws 2) in accordance with the **requirement**.

1.05.02 Balance weight

Requirement

When the needle bar is positioned at b.d.c. (balance wheel position 180°) the largest eccentricity of the balance weight **1** should be at the top.

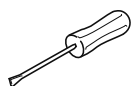
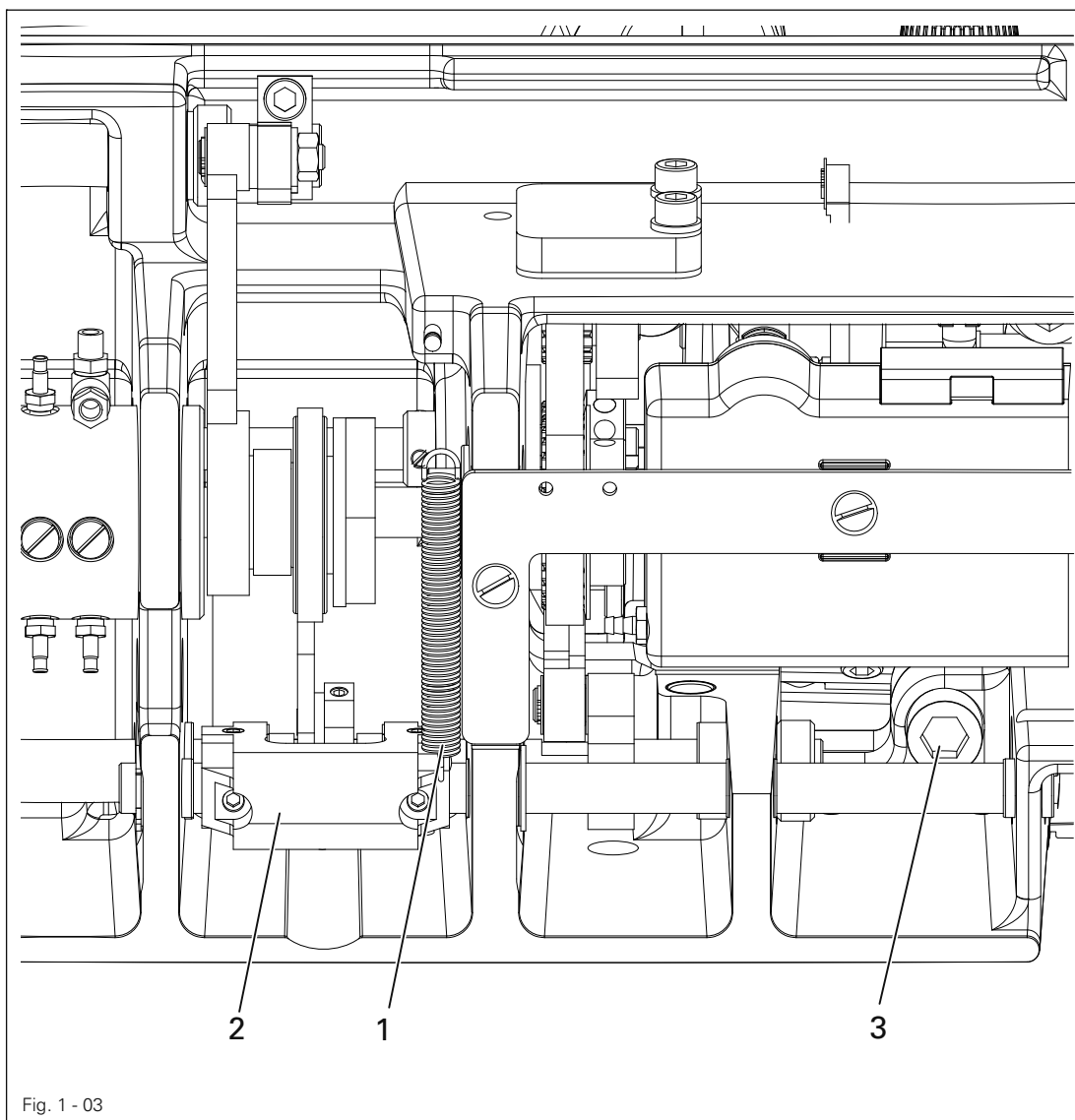


- Adjust balance weight **1** (screw **2**) in accordance with the **requirement**.

1.05.03 Zero position of the bottom and needle feed

Requirement

When the stitch length is set at "0", the bottom feed dogs and the needle bar should not make any feeding motion when the balance wheel is turned.

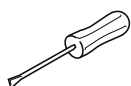
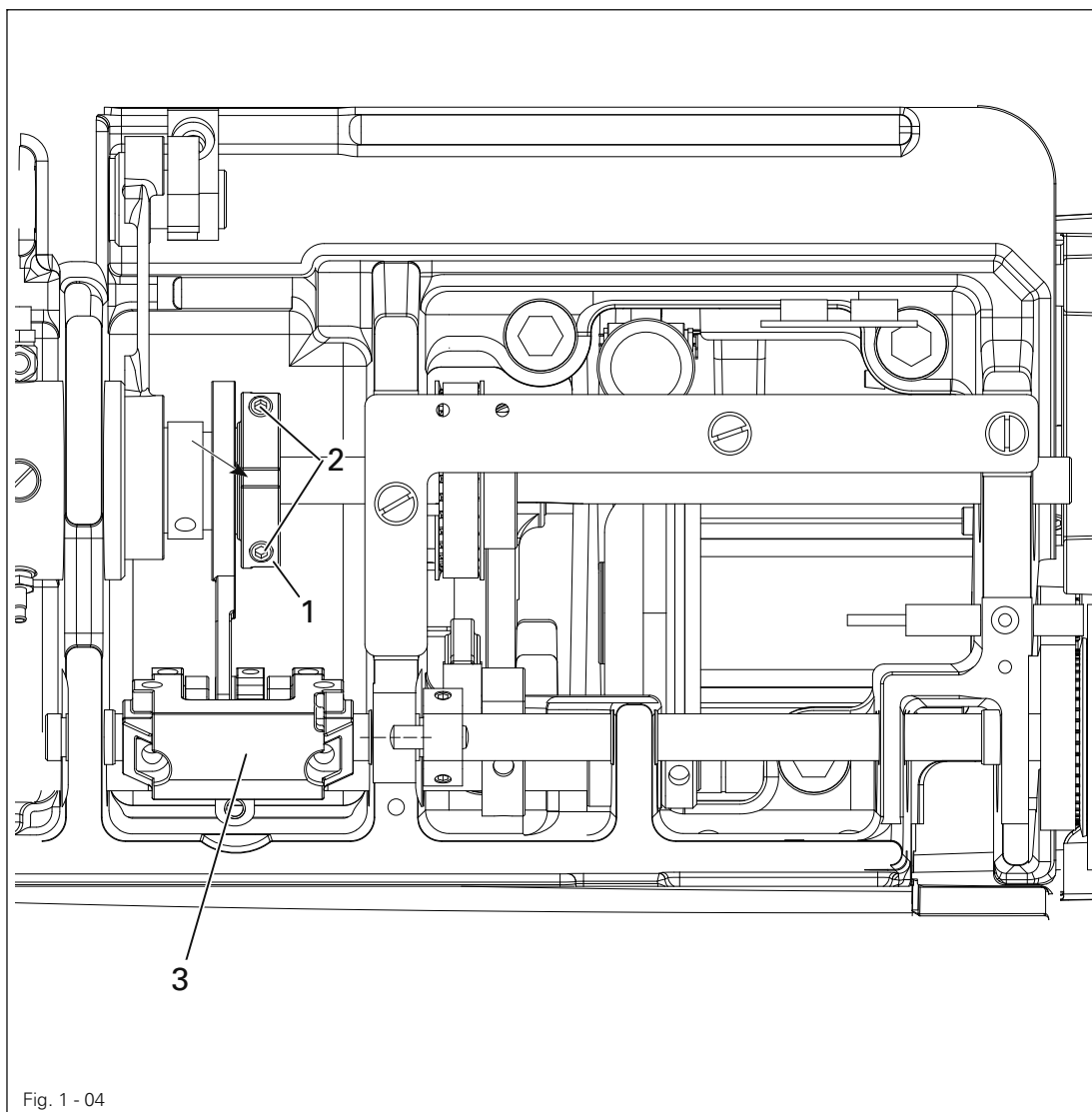


- Remove spring 1.
- Adjust crank 2 (screw 3) in accordance with the **requirement**.
- Replace the spring 1.

1.05.04 Feed dog motion of bottom feed dog and needle feed

Requirement

Bottom transporters, as well as the needle bar should not move, when stitch platen **3** is activated with handwheel at **190°** or higher.

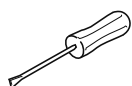
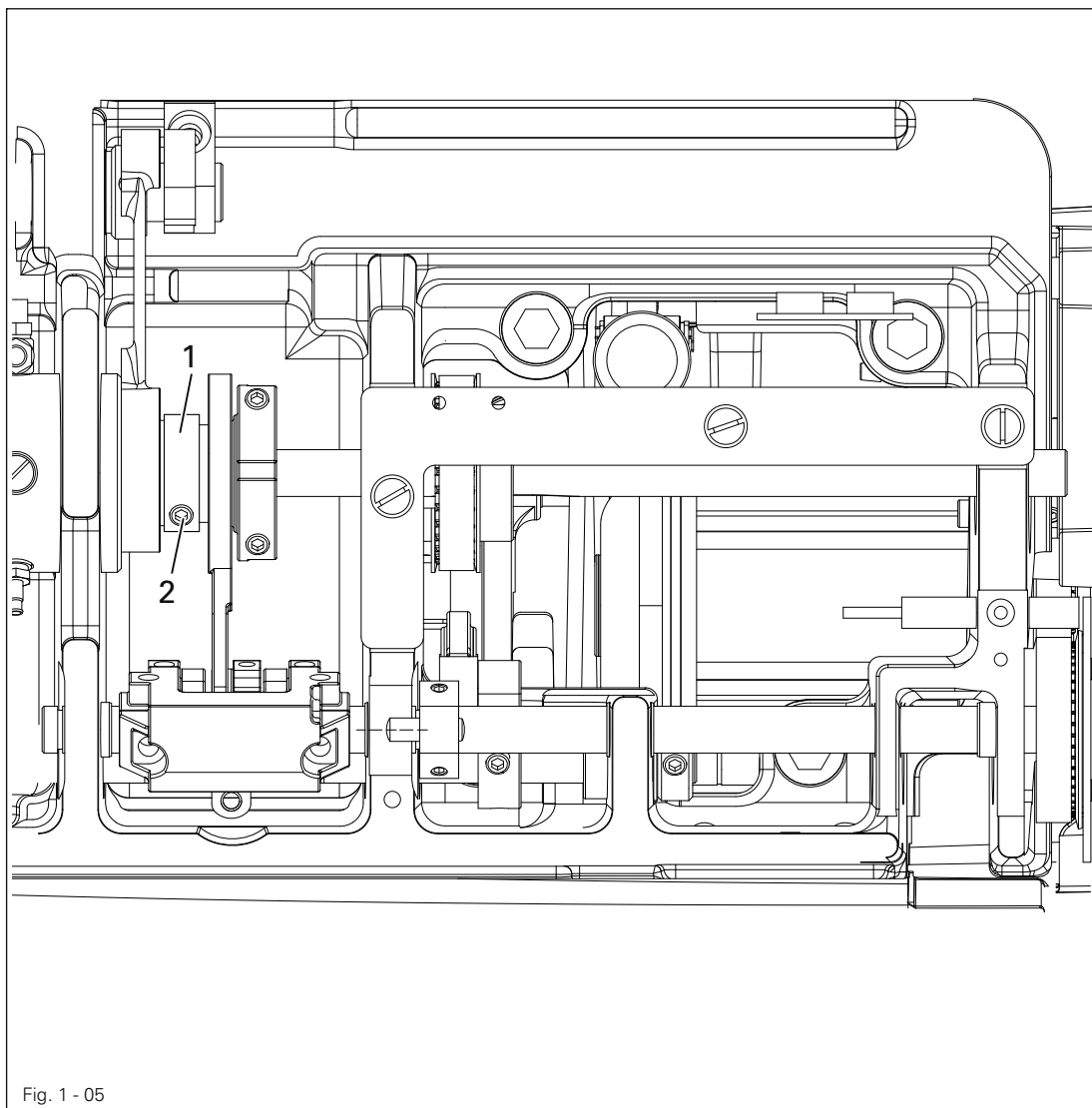


- Adjust eccentric **1** (screws **2**) in accordance with the **requirement**. Make sure that the cut-out (see arrow) is visible.

1.05.05 Feeding motion of the bottom feed dog

Requirement

When the balance wheel is positioned at **180°**, the feed dog should be at t.d.c.

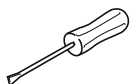
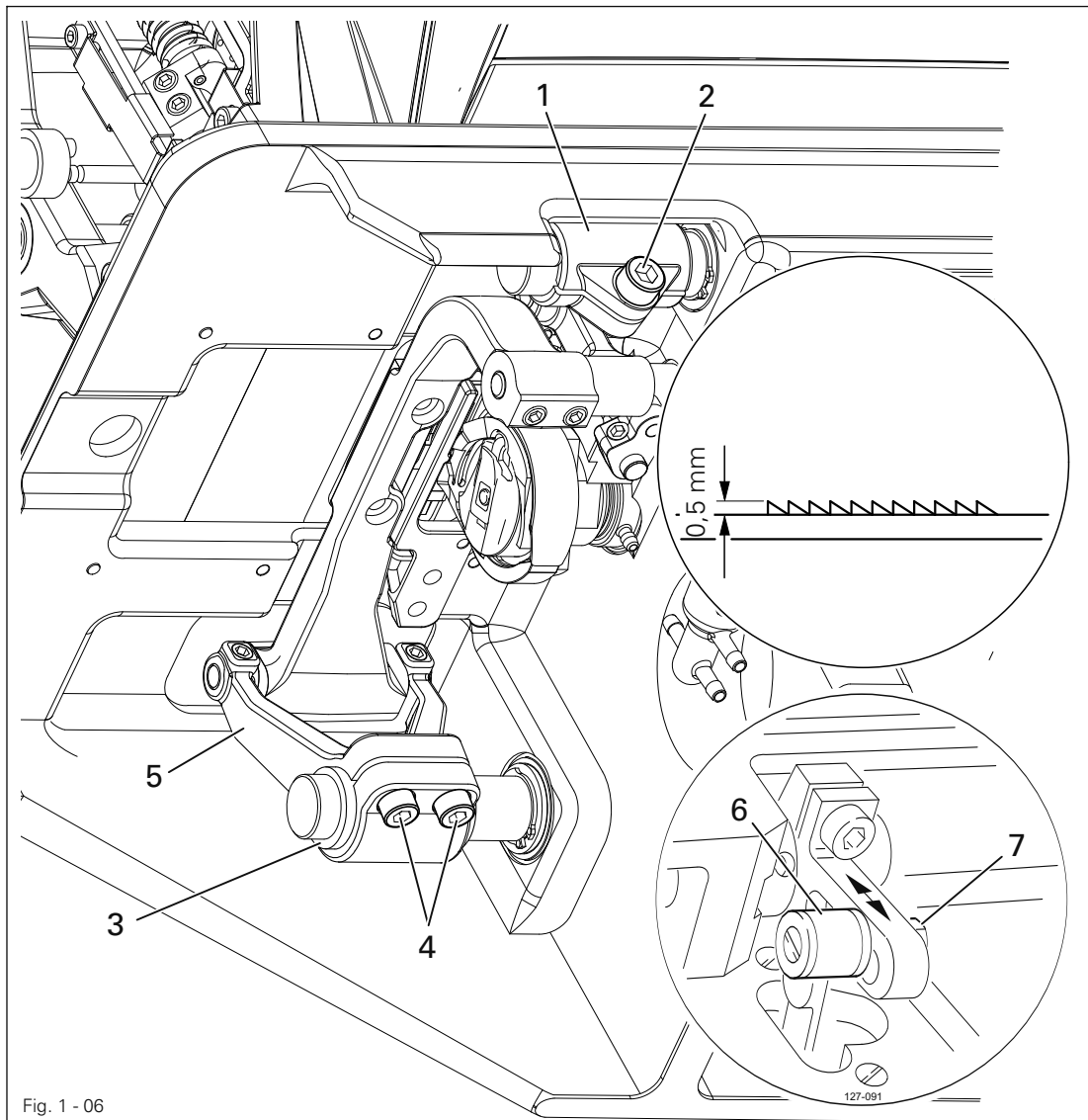


- Adjust eccentric **1** (screws **2**) in accordance with the **requirement**.

1.05.06 Height of the bottom feed dog

Requirement

1. When the needle bar is positioned at b.d.c. (balance wheel position 180°), the bottom feed dog should be positioned **0.5 mm** horizontally above the top edge of the needle plate, when crank **6** is in the centre of the slot.
2. The bottom feed dog should be positioned in the centre of the needle plate slot.



- Turn lifting crank **1** (screws **2**) in accordance with **requirement 1**.
- Adjust eccentric sleeve **3** and feed bar **5** (screws **4**) in accordance with **requirement 2**

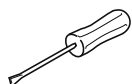
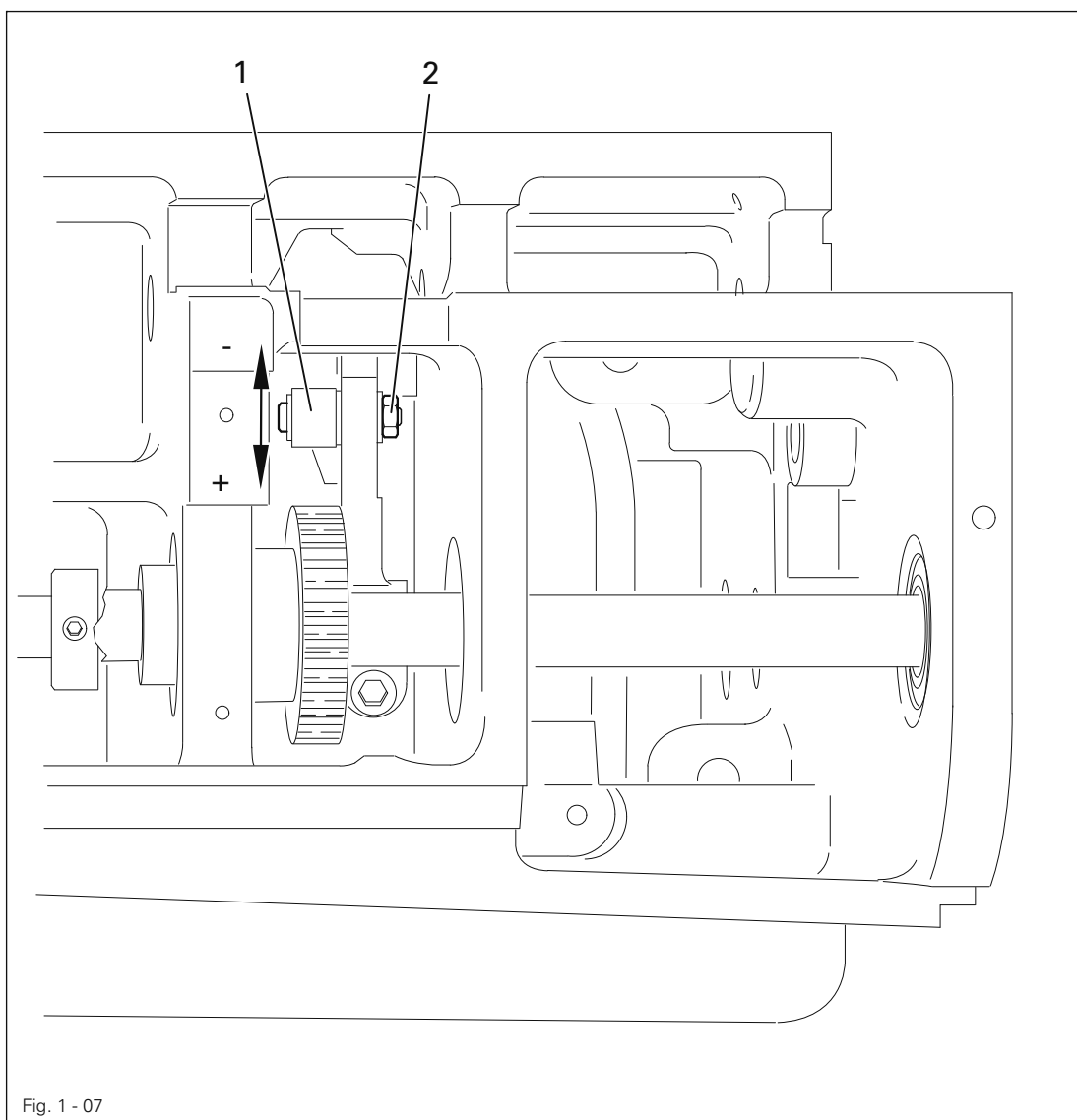


The height of the bottom feed dog can be increased or reduced by moving crank **6** (nut **7**) up or down.

1.05.07 Feeding stroke difference

Requirement

With the maximum stitch length set, when the balance wheel is turned the feeding strokes of the needle and the bottom feed dog should be the same.

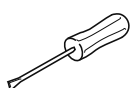
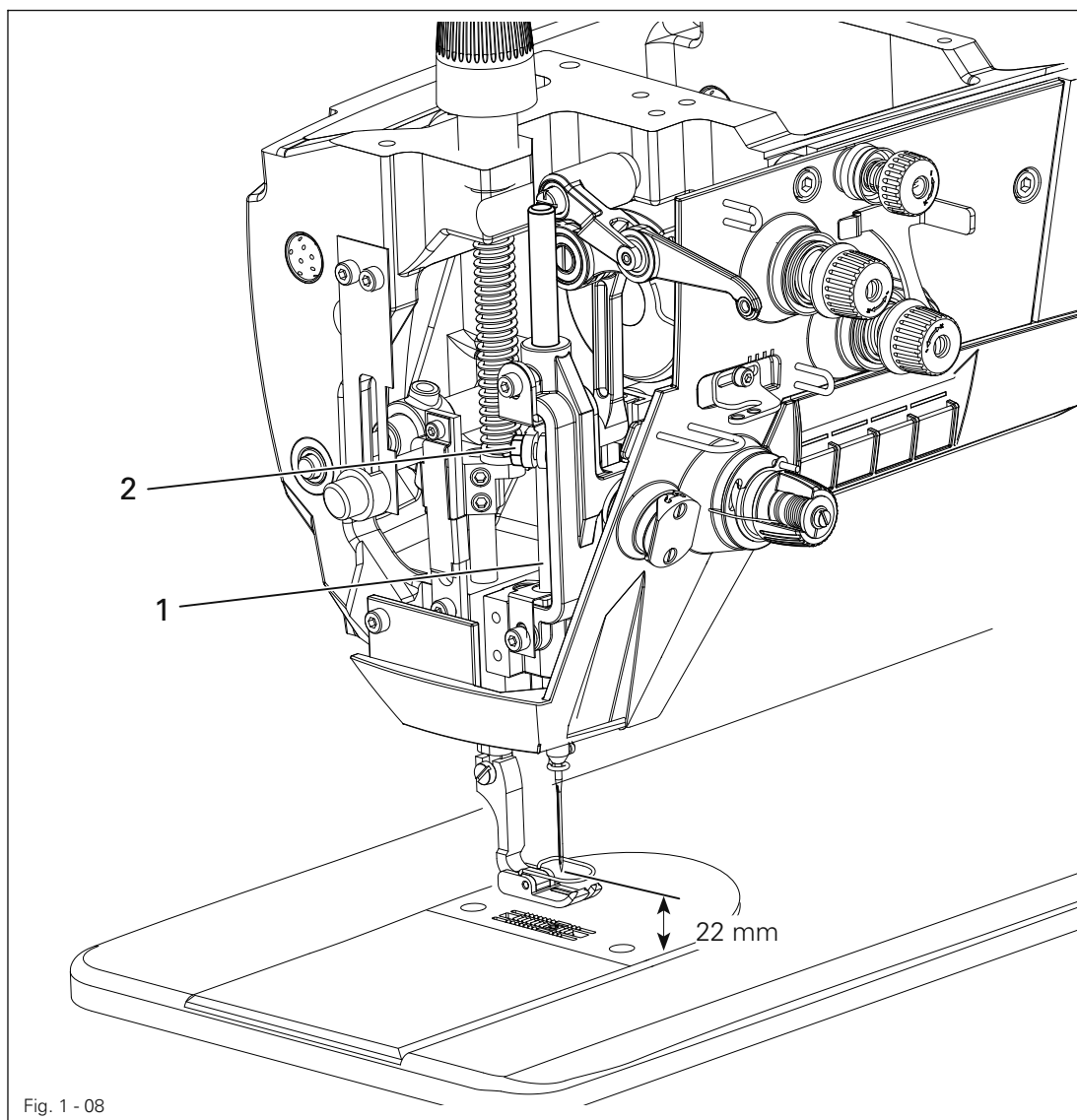


- With connecting rod 1 (nut 2) increase ("+") or reduce ("-") the needle feed stroke in accordance with the requirement.

1.05.08 Preliminary adjustment of the needle height

Requirement

When the needle bar is positioned at t.d.c. (balance wheel position 0°), the clearance between the needle point and the needle plate should be **22 mm**.



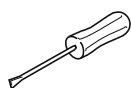
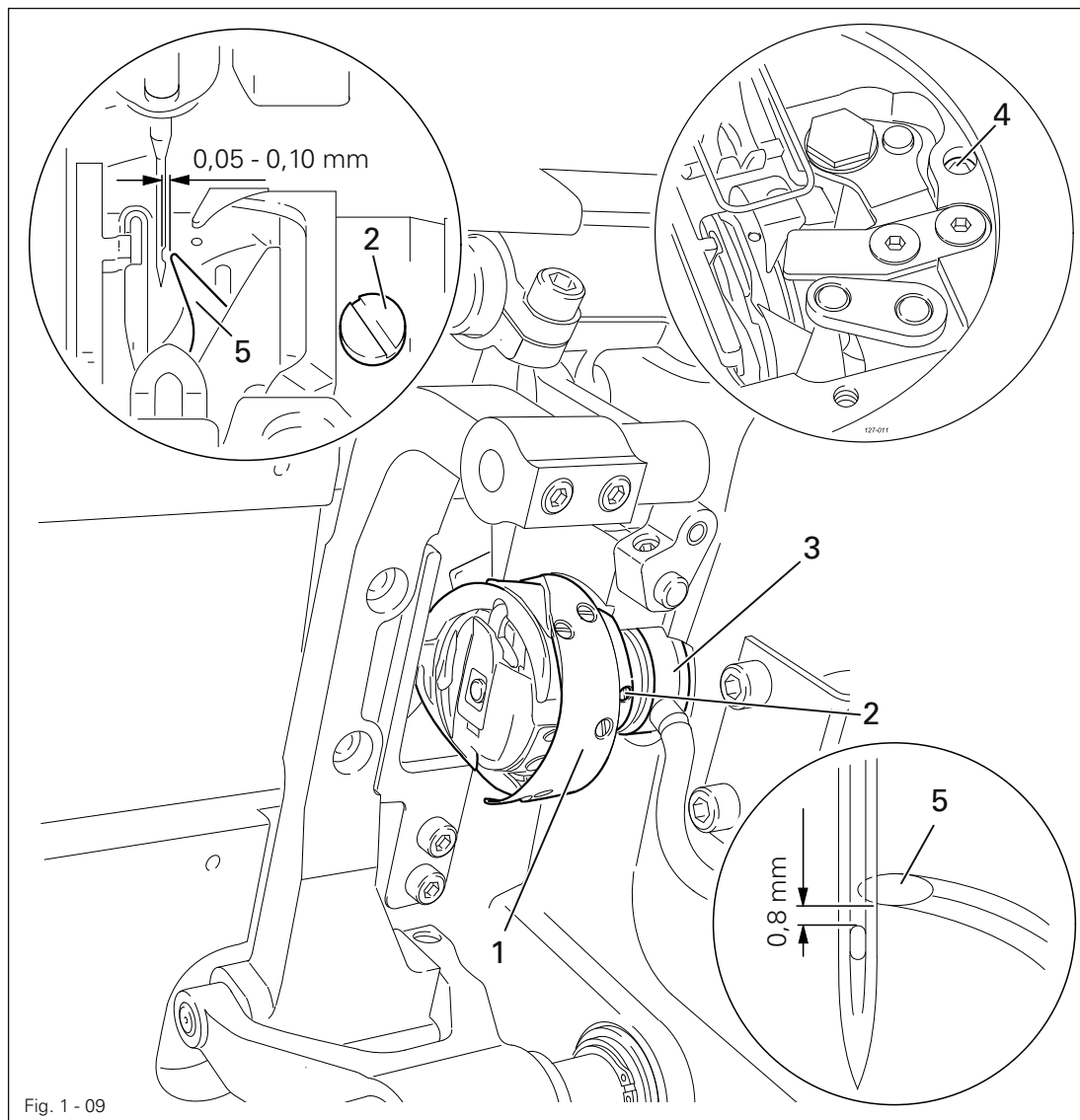
- Without turning it, re-position needle bar **1** (screw **2**) in accordance with the requirement.

1.05.09 Needle rise, hook clearance and needle height

Requirement

For stitch length setting "4.5" and needle bar position 2.0 mm to u.T. (= handwheel position 202°):

1. The hook point 5 should be positioned at needle centre with a needle cut clearance of 0.05 – 0.1 mm.
2. The top of the needle eye should be positioned 0.8 mm below hook point 5.

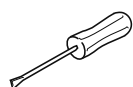
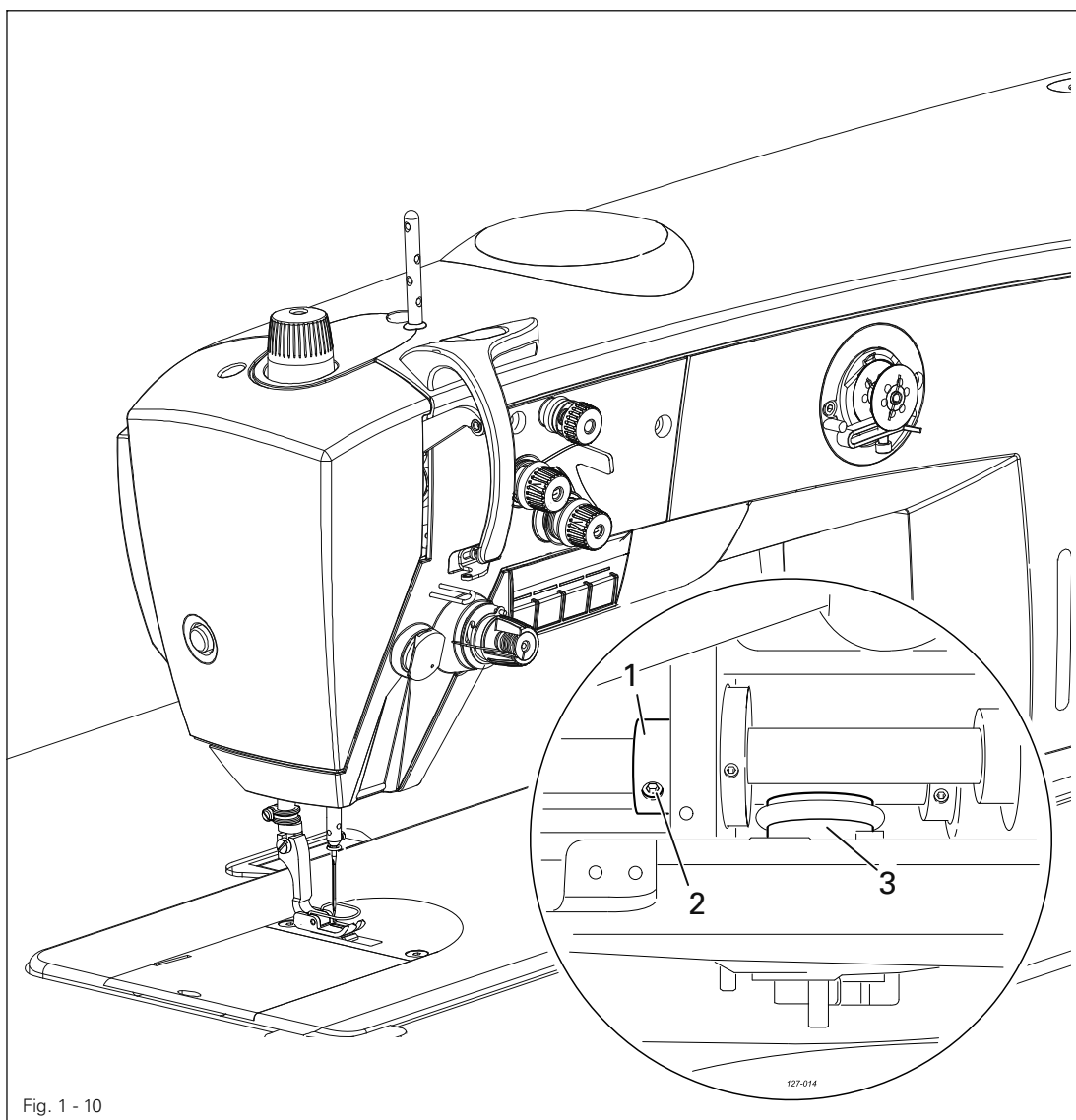


- Set stitch length "4.5" and bring the balance wheel into the needle rise position.
- Adjust hook 1 (screws 2) in accordance with **requirement 1**.
- Bring oil distributor ring 3 (screw 4) into contact with hook 1.
- Without turning it, re-position the needle bar in accordance with the **requirement 2**.

1.05.10 Bobbin winder

Requirement

1. When the bobbin winder is engaged, the winding spindle must be driven reliably.
When it is disengaged, friction wheel **3** should not be touching drive wheel **1**.
2. When it is switched off, the bobbin winder must click securely into its end position (knife raised).

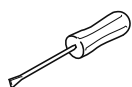
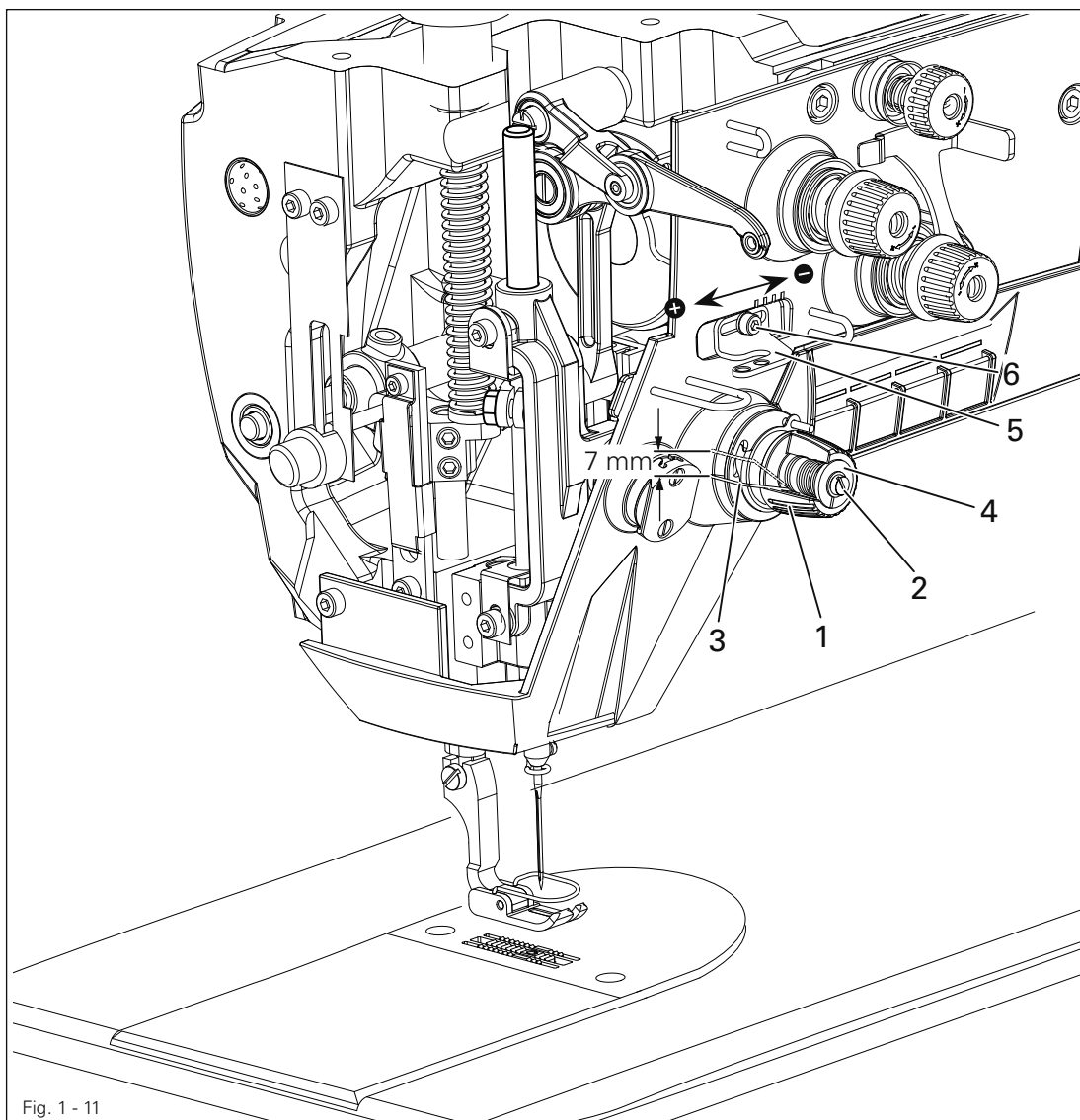


- Adjust drive wheel **1** (screw **2**) in accordance with the **requirement**.

1.05.11 Thread check spring and thread regulator

Requirement

1. The movement of thread regulator **3** must be completed when the needle point enters the material.
2. When the thread loop is at its largest while being passed around the hook, the check thread spring **3** should rise slightly from the rest **1**.



- Position rest **1** (screw **2**) in accordance with **requirement 1**.
- Turn sleeve **4** (screw **2**) to adjust the tension of thread check spring **3**.
- Position thread regulator **5** (screw **6**) in accordance with **requirement 2**.



For technical reasons it may be necessary to deviate from the indicated spring stroke or spring tension.

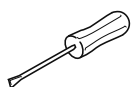
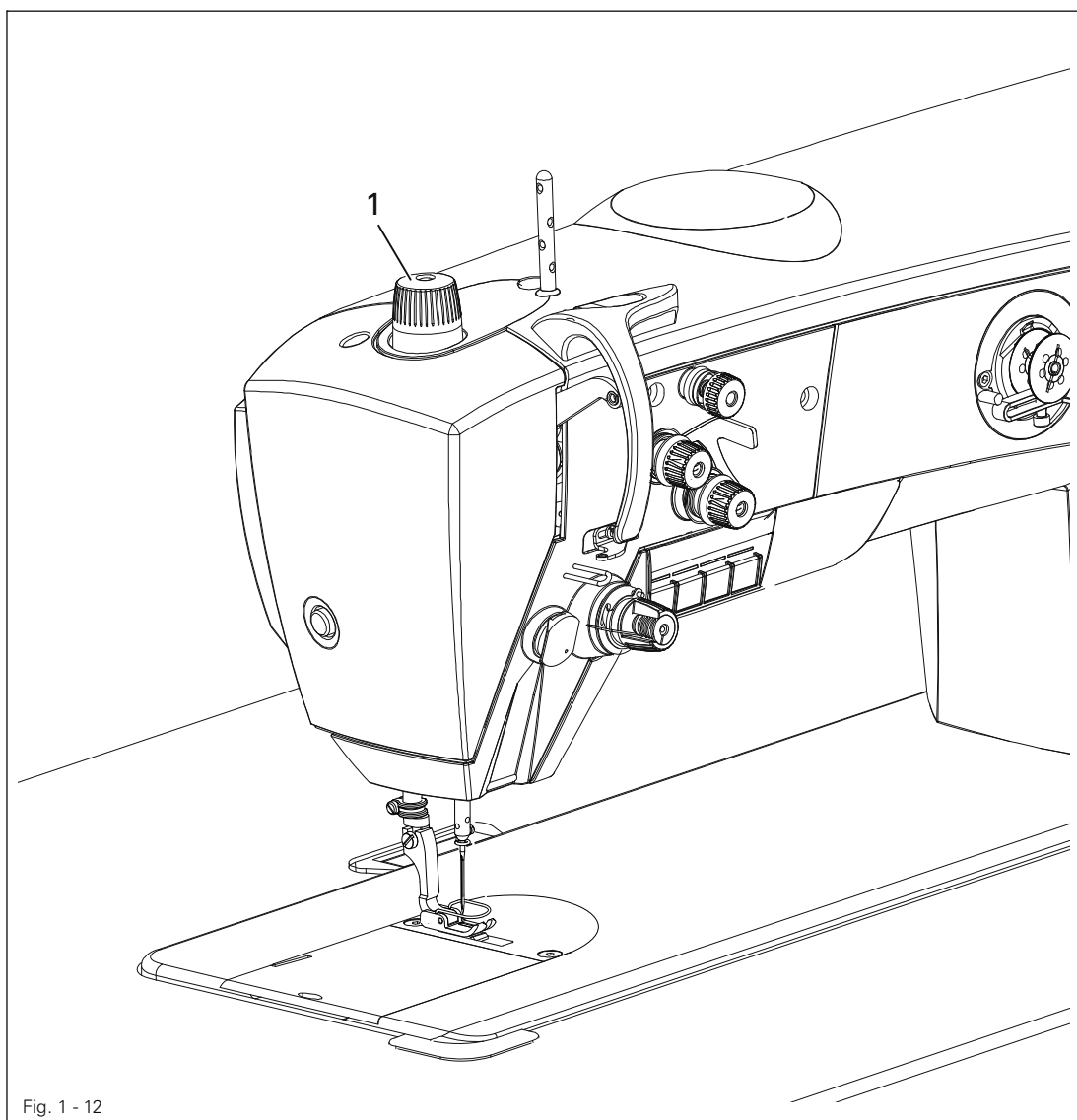
Move thread regulator **5** (screw **6**) towards ("**+**") (= more thread) or ("**-**") (= less thread).

Adjustment

1.05.12 Sewing foot pressure

Requirement

The material should be fed properly even at maximum speed and with the smallest stroke.

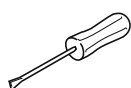
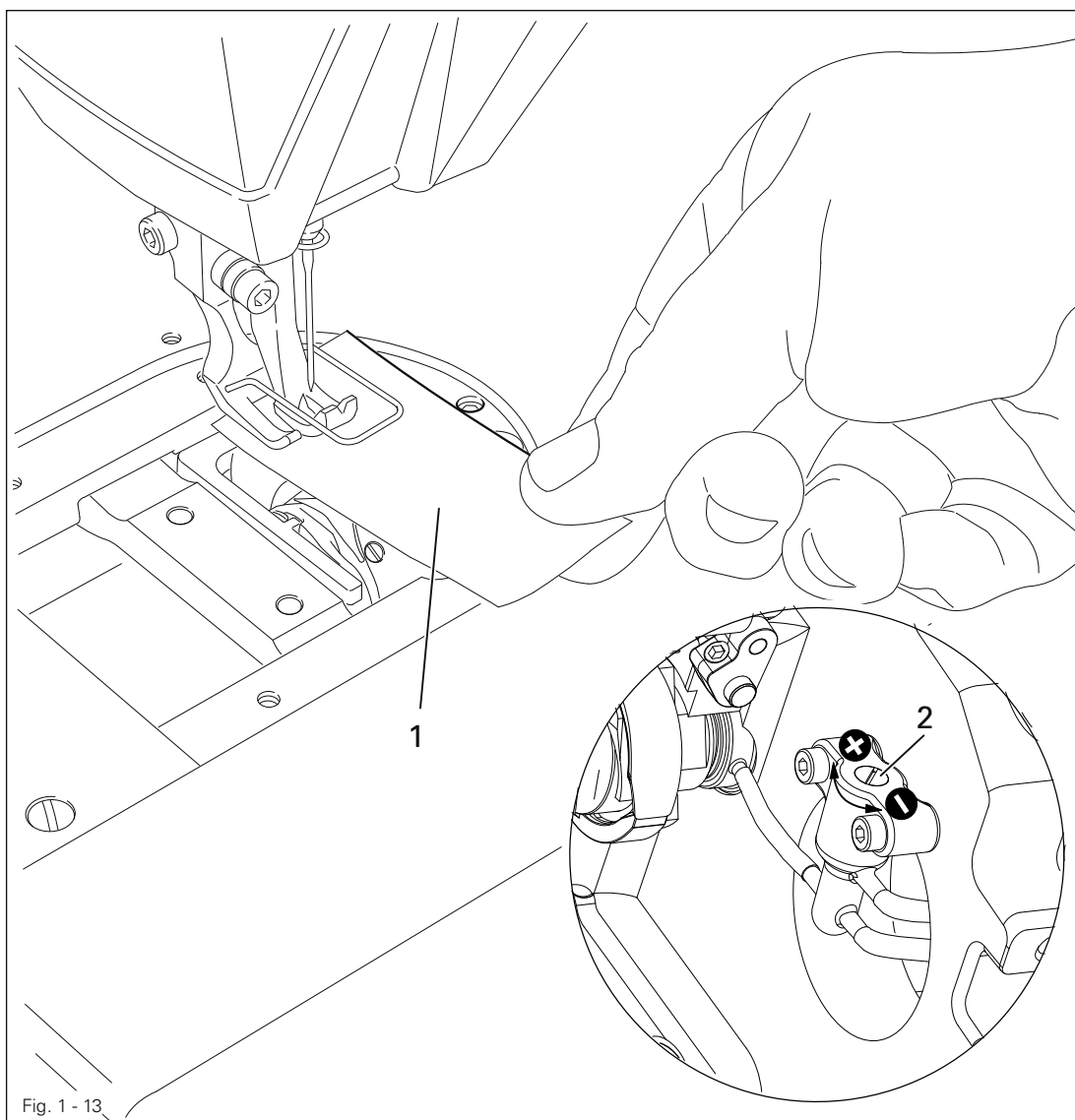


- Turn adjustment wheel **1** in accordance with the **requirement**.

1.05.13 Lubrication

Requirement

After a running time of **10** seconds a thin film of oil should be visible on paper strip **1** when this is held over the hook.



- Check that the machine is filled with oil and that the oil lines are free of air.
- Run the machine for **2 – 3 min.**



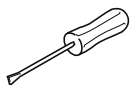
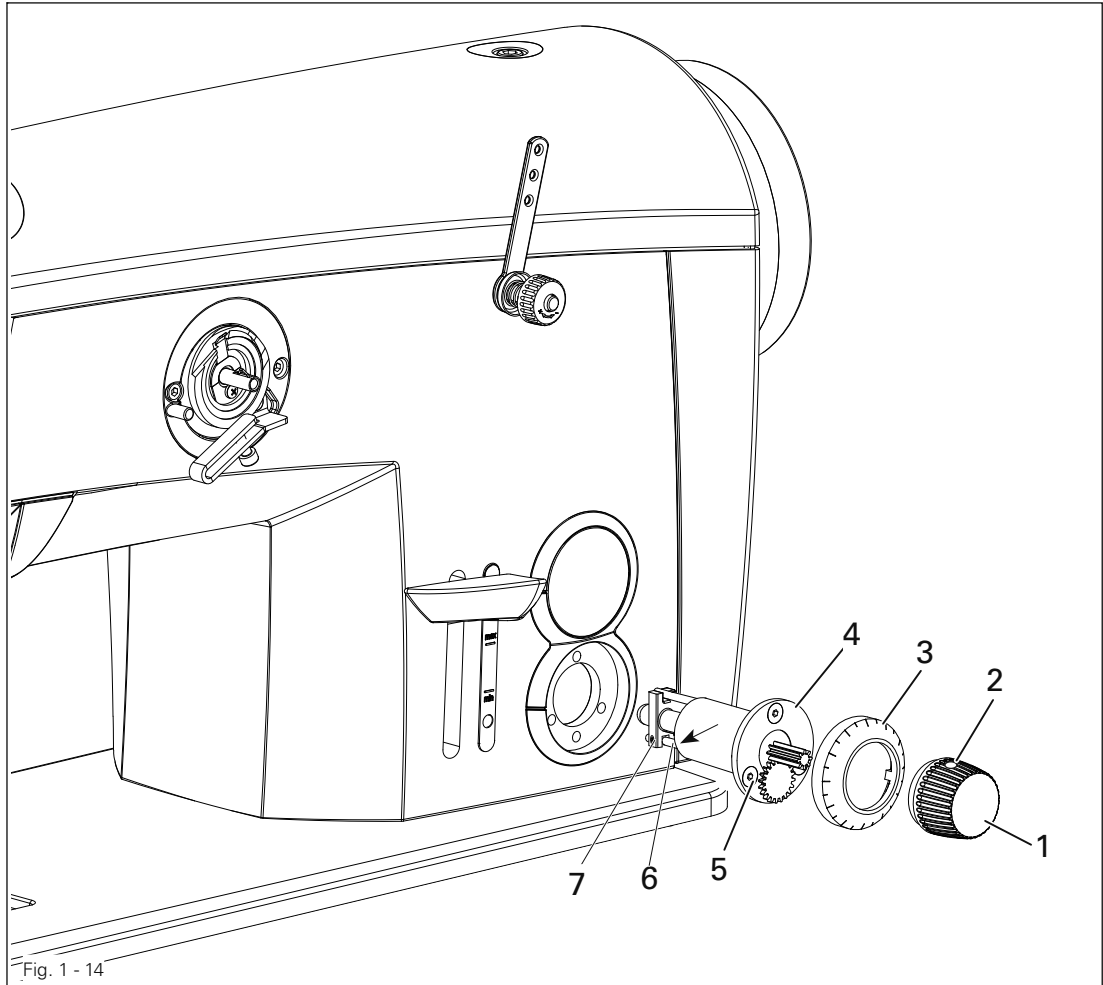
Do not put your hands into the needle area when the machine is running!
Danger of injury from moving parts!

- With the machine running, hold paper strip **1** against the hook and check the **requirement**.
- If necessary, regulate amount of oil with screw **2**.

1.05.14 Limiting the stitch length



When exchanging the parts kit with stitch lengths differing from the as-delivered state of the machine, limit the max. stitch length using stitch adjuster 4.



- Set the desired max. stitch length at control button 1 (on model **BN** and **CN** = 6.0 mm).
- Remove adjustment knob 1 (screws 2) and scale dial 3.
- Remove adjustment unit 4 (screws 5).
- Bring lineal 6 (screw 7) to the unit using stitch adjuster 4 (see arrow).
- Replace adjustment unit 4, scale dial 3 and adjustment knob 1.

1.05.15 Basic position of the machine drive (only on machines with PicoDrive)

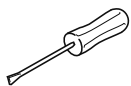
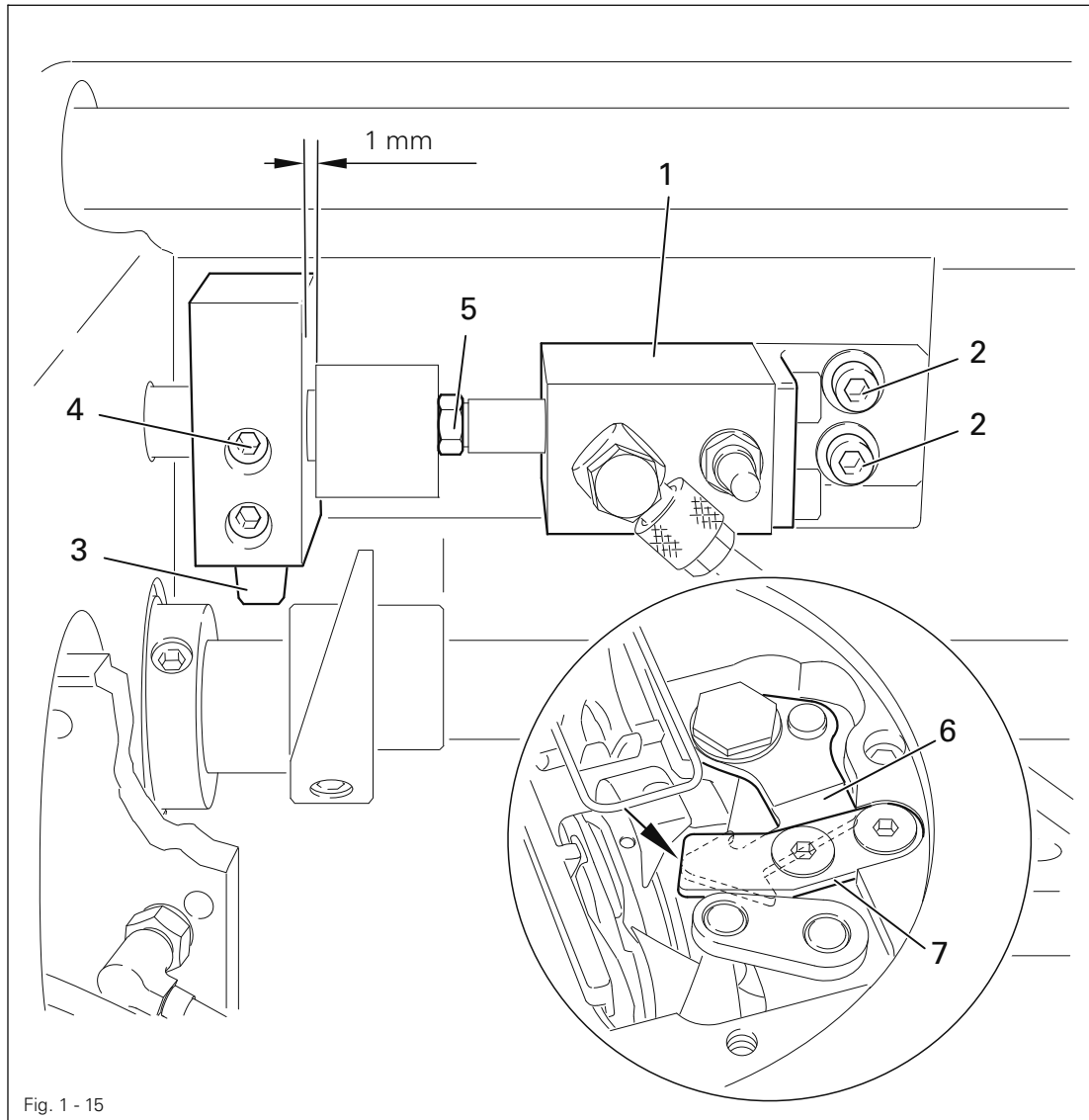
- Switch on the machine.
- When the machine is commissioned, "**Pulley**" appears on the display.
- Call up the parameter input by pressing the scroll key.
- Press the **TE key** to switch the function keys to input function (LED in the **TE key** is illuminated).
- Press the corresponding **+/- keys** to select parameter "**798**" and select the service level **C**, see chapter Selecting the User Level in the separate instruction manual for the control panel.
- Select parameter "**800**" by pressing the corresponding **+/- keys**.
- Check whether the value is set at "**1**" (balance wheel turns towards operator) and alter if necessary.
- Press the **scroll key** until "**Pulley**" appears on the display.
- If the pedal is operated, the control unit carries out a teach-in operation.
- The machine runs at low speed until the teach-in operation is completed.
- This operation cannot be interrupted.
- After the teach-in operation, the "**Pulley**" disappears from the screen - display returns to standard.
- Select parameter "**700**" by pressing the **+/- keys**.
- Sew one stitch by operating the pedal.
- Turn the balance wheel in the direction of rotation until the needle point, **descending from above**, is flush with the top edge of the needle plate.
- Conclude the adjustment of the sewing motor by pressing the **scroll key**.

1.06 Adjusting the thread trimmer -900/91

1.06.01 Basic position of the thread trimmer

Requirement

1. When the thread trimmer is in its resting position (cylinder extended), the point of thread catcher **6** should be flush with the cutting edge of knife **7** (see arrow).
2. The roller lever **3** should have a clearance of **1 mm** to the connecting piece.

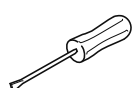
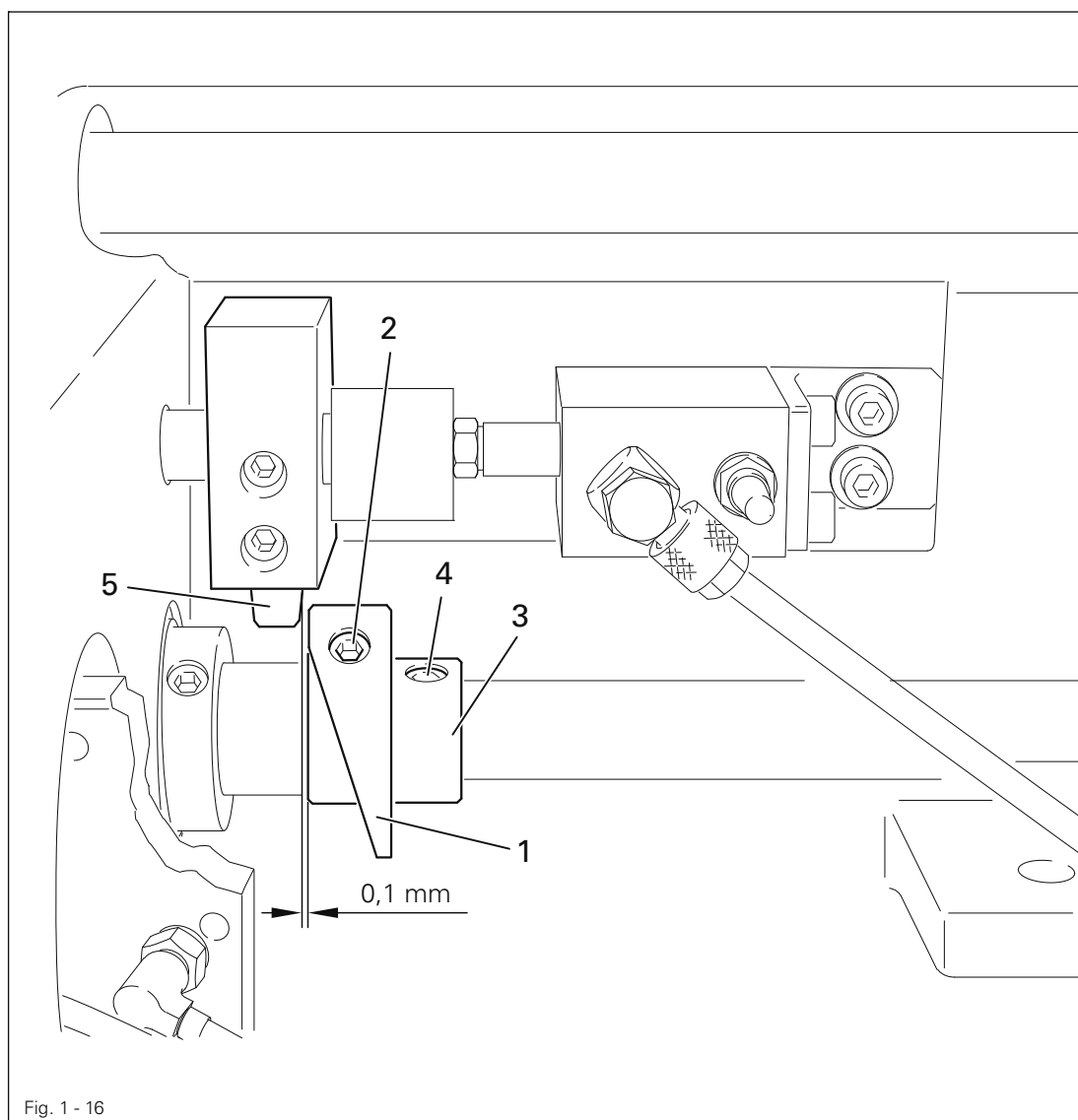


- Adjust thread trimmer **1** (screws **2**) in accordance with **requirement 1**.
- Adjust roller lever **3** (only screw **4**) in accordance with **requirement 2**.

1.06.02 Control cam to roller lever clearance (resting position)

Requirement

When the thread trimmer is in its resting position (balance wheel position 270°) there should be a clearance of **0.1 mm** between the roller lever **5** and the outside edge of control cam **1**.

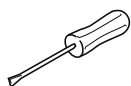
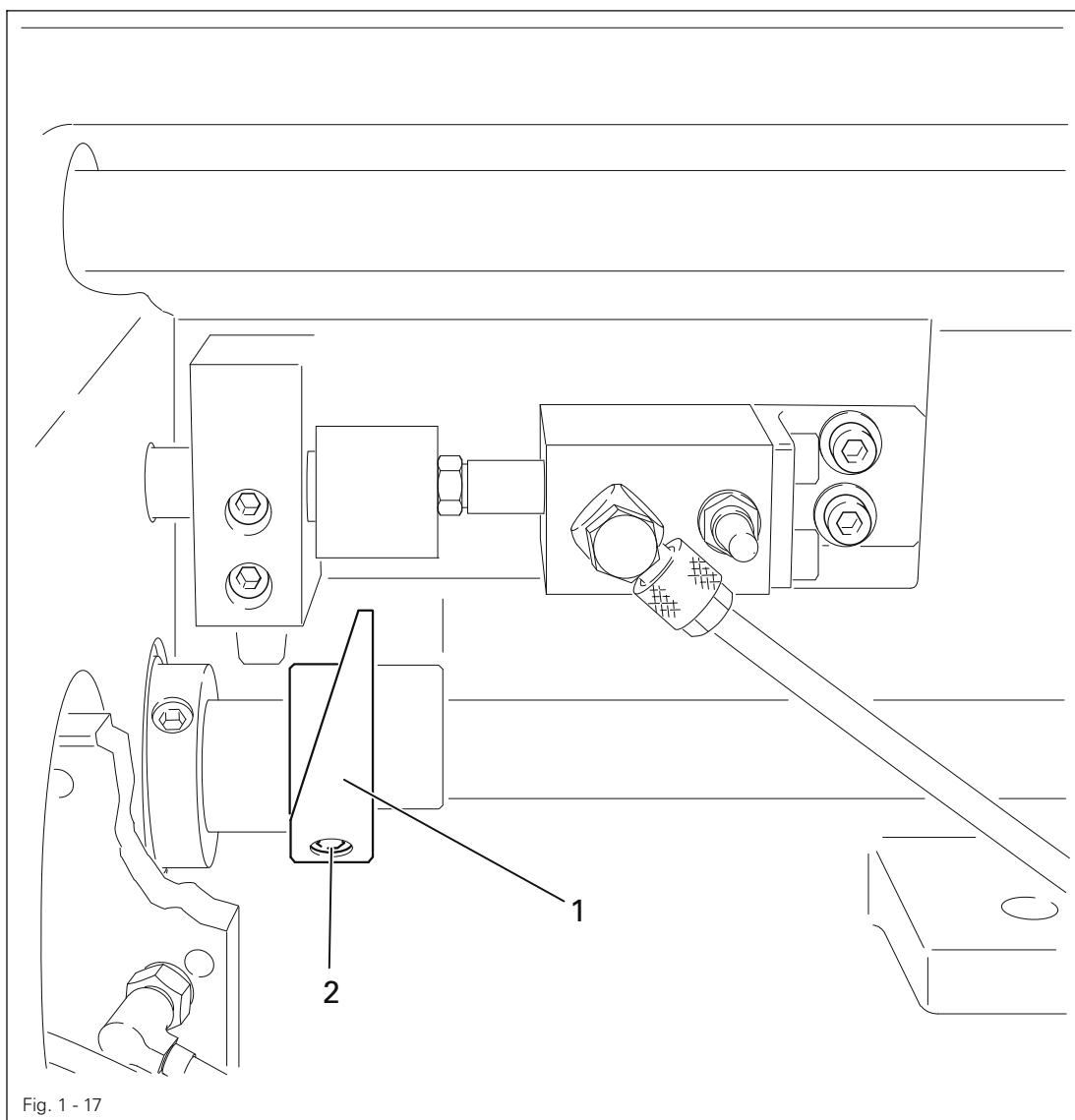


- Adjust control cam **1** (screw **2**) together with retaining collar **3** (screw **4**) in accordance with the **requirement**.

1.06.03 Adjusting the control cam

Requirement

When the take-up lever is at the top of its stroke (balance wheel position **70°**), the cutting operation should just have been completed.

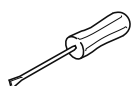
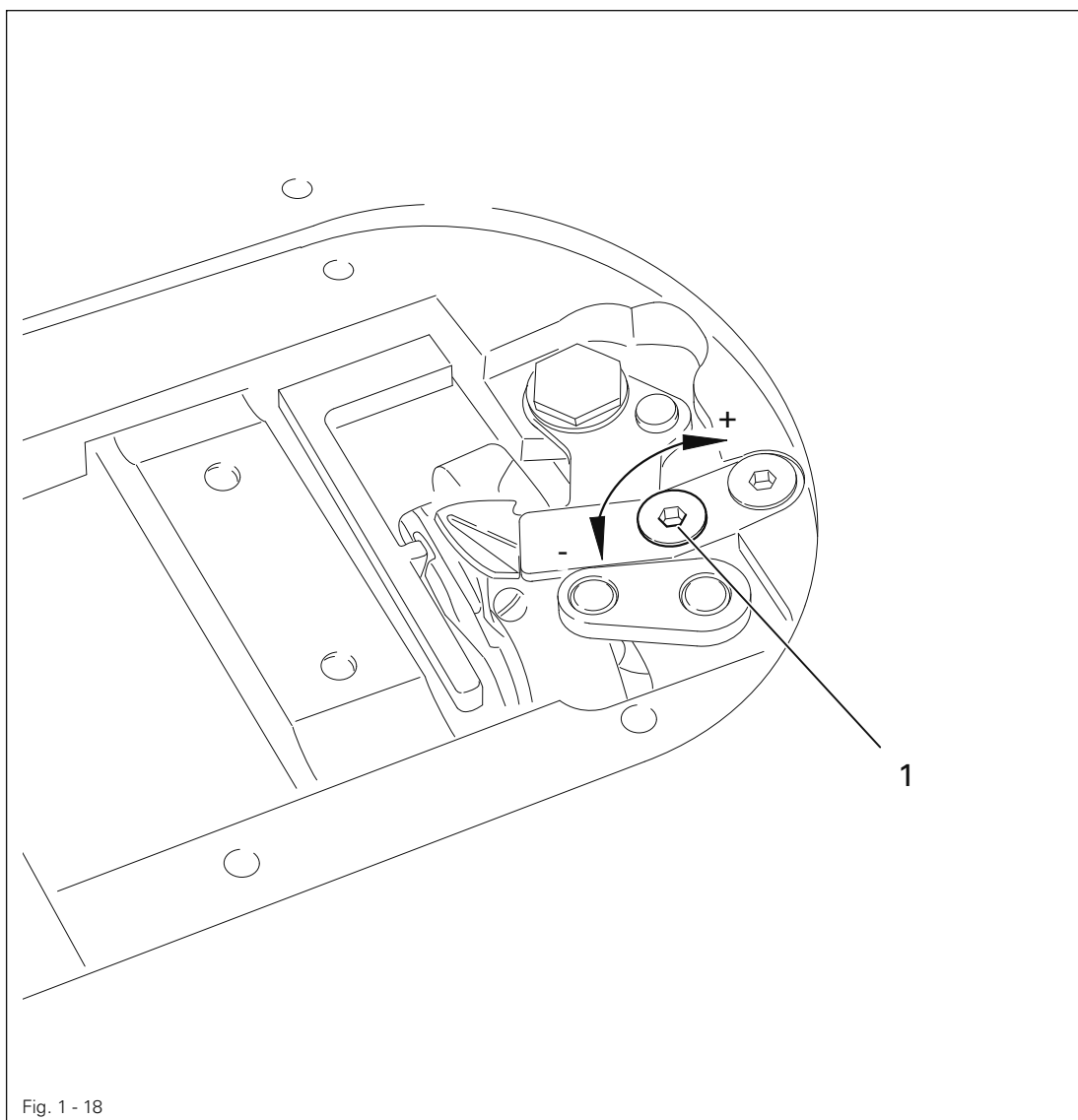


- Adjust control cam 1 (screw 2) in accordance with the **requirement**.

1.06.04 Knife pressure

Requirement

The thread should be cut reliably at all times.

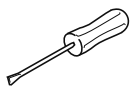
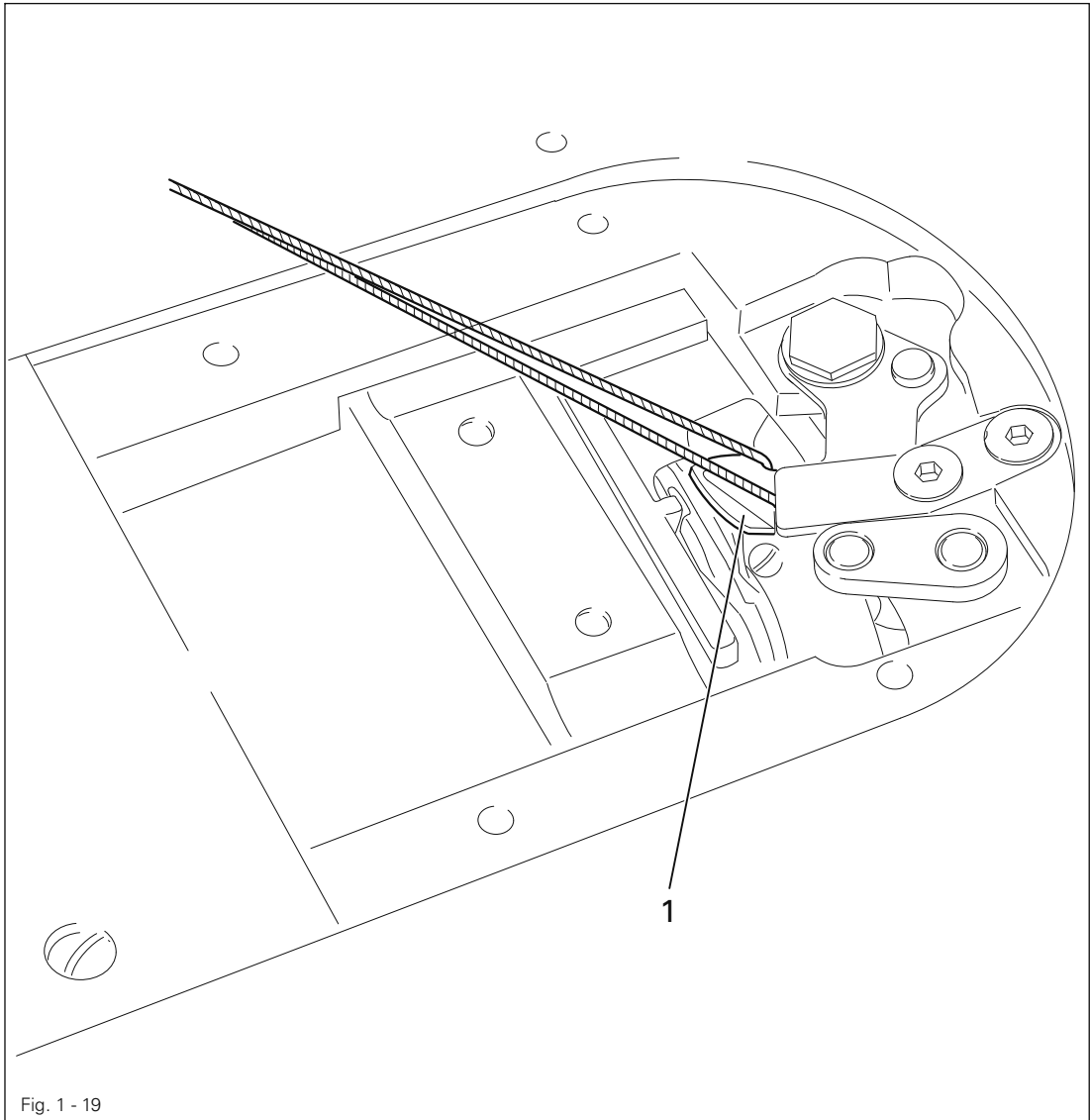


- Increase ("+") or reduce ("-") the knife pressure accordingly with screw 1.

1.06.05 Manual cutting test

Requirement

Both the needle and the bobbin thread should be cut neatly.



- Bring thread catcher **1** by hand to its front position.
- Take a double thread and place it into the catcher slot.
- Carry out a manual cutting test.
- If the thread is not cut in accordance with the **requirement**, adjust the knife pressure as described in Chapter **1.06.04 Knife pressure**.



Consult the instruction manual for the drive for a description of the parameter settings and a list of the parameters.

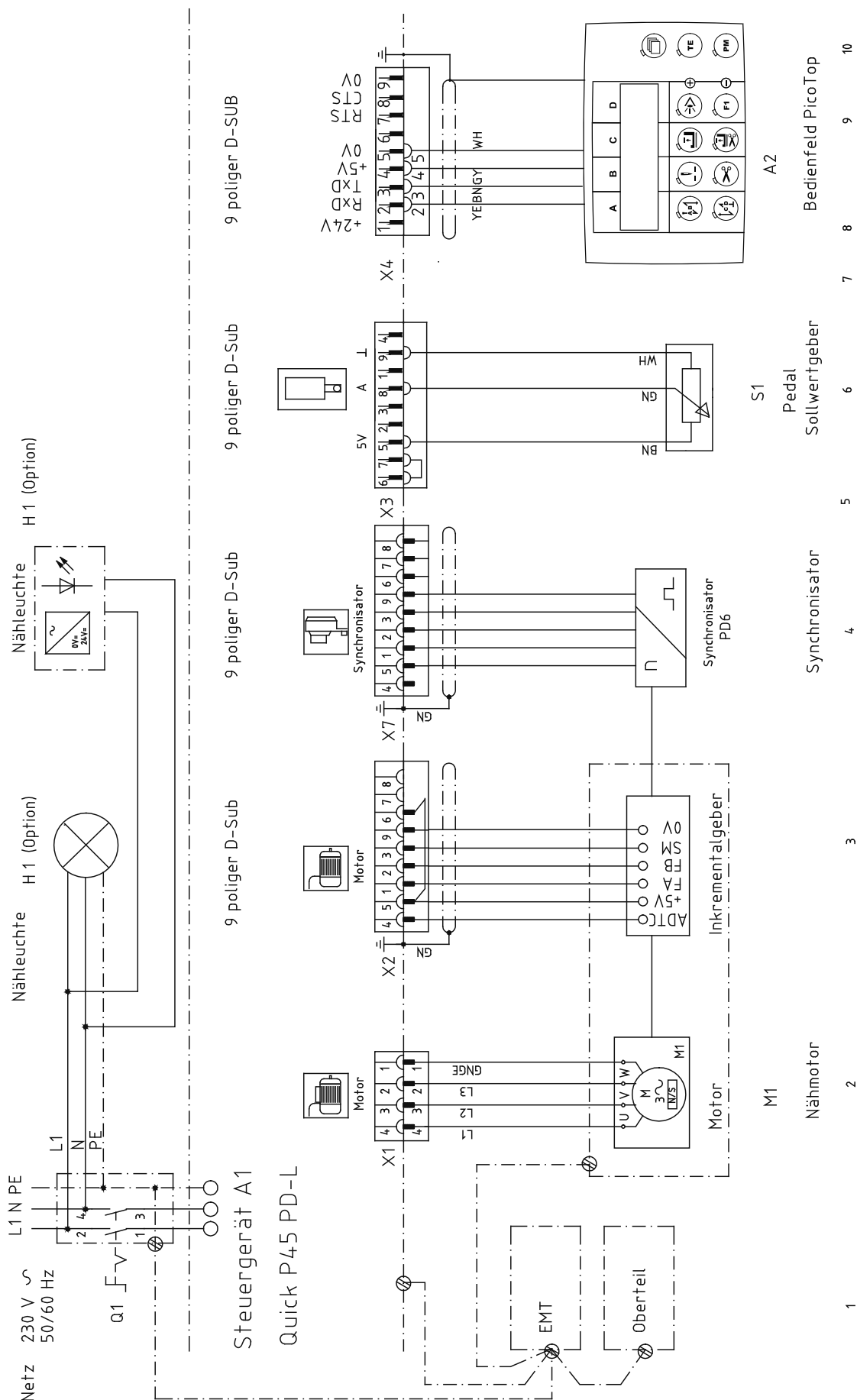
2.01 Block diagram PFAFF 2231 PLUS with control pack P45 PD-L

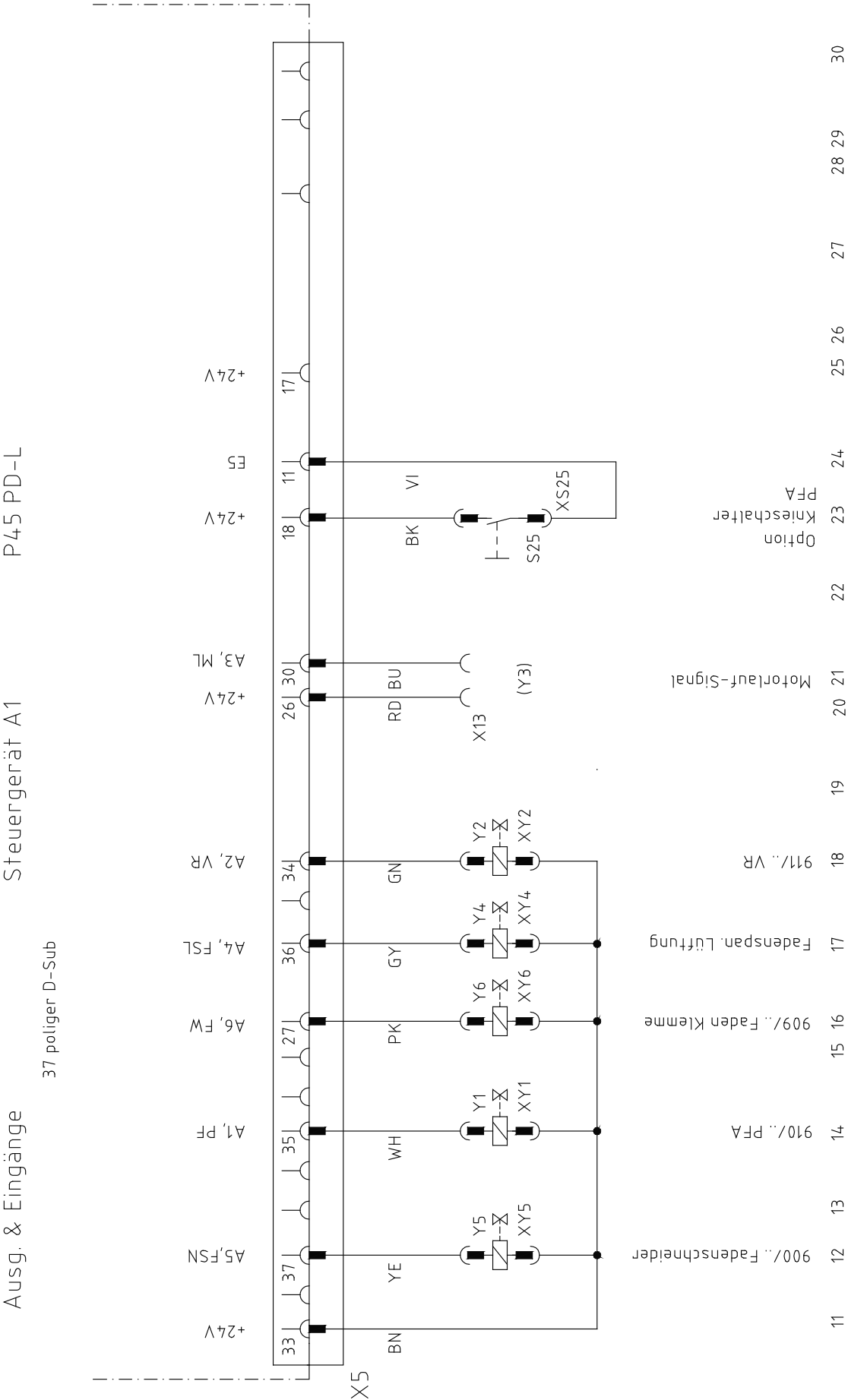


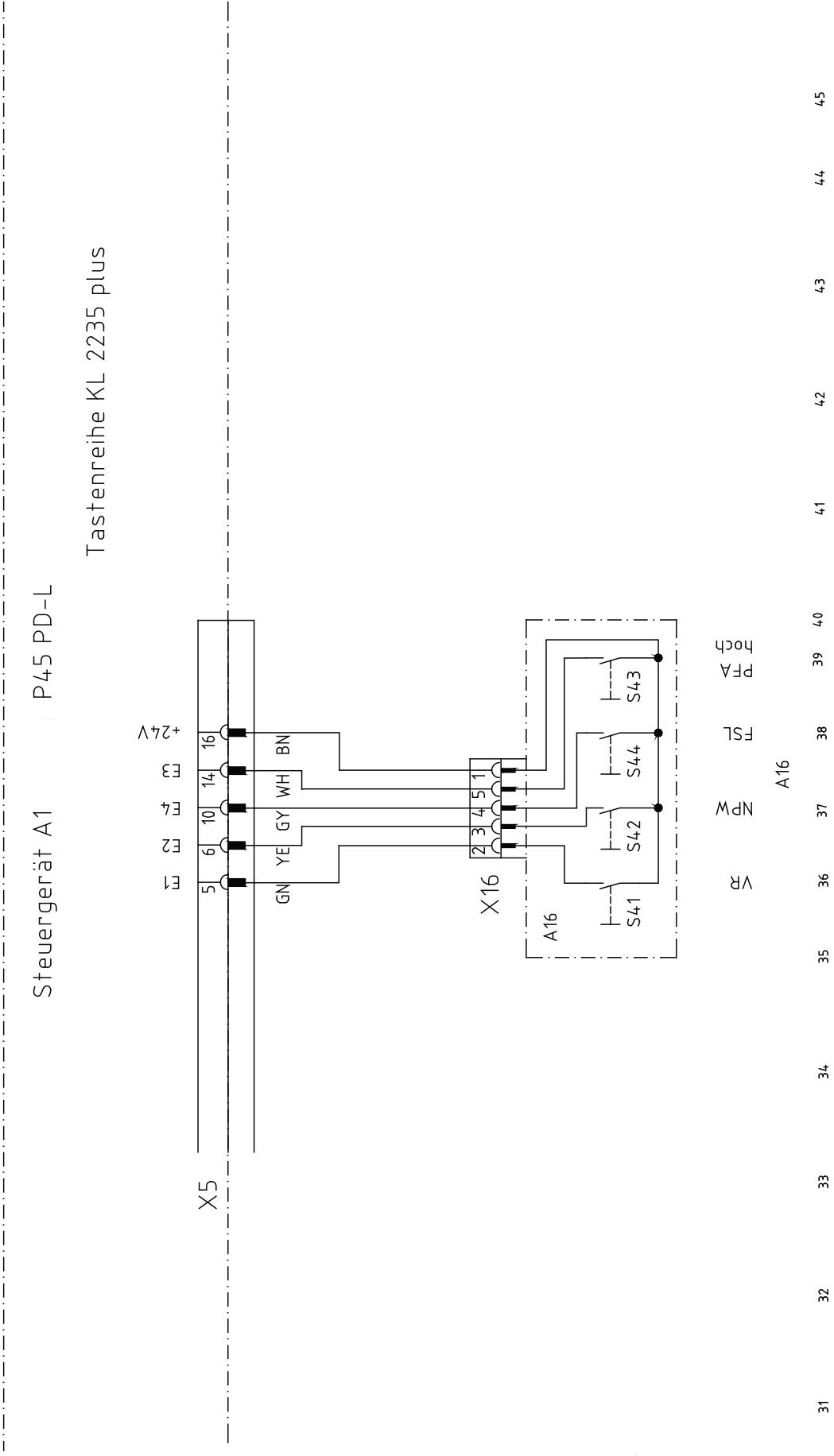
2.02 Circuit diagrams

Reference list for the Circuit diagrams 91-191 520-95

A1	Controller P45 PD-L
A2	Control panel (PicoTop)
A16	Keyboard
H1	Sewing lamp
M1	Sewing motor
Q1	Main switch
S1	Pedal speed control unit
S41	Reverse sewing or intermediate backtacks key
S42	Raise needle without thread trimming key
S43	Presser foot lift key
S44	Thread clamp key (increase needle thread tension)
S25	Knee switch for automatic presser foot lift
X1	Sewing motor
X2	Incremental transmitter
X7	Synchronizer PD 6
X3	Speed control unit
X4	PicoTop control panel or RS 232 interface (PC)
X5	Input/output plug
X8	Light barrier plug (optional)
XS25	Knee switch for automatic presser foot lift (S25)
XY1	Y1 automatic presser foot lift (-910/..)
XY2	Y2 backtacking device (-911/..)
XY3	Y3 thread trimmer (-900/..)
XY4	Y4 thread tension release (FSL)
XY6	Y5 Thread clamp (-909/..)
X15	Y15 Machine running signal (ML) optional
Y1	Automatic presser foot lift (-910/..)
Y2	Backtacking device (-911/..)
Y3	Thread trimmer (-900/..)
Y4	Thread tension release (FSL)
Y6	Thread clamp (-909/..)
Y15	Machine running signal (ML) optional









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PFAFF Industriesysteme und Maschinen AG

Hans-Geiger-Str. 12 - IG Nord
D-67661 Kaiserslautern

Phone: +49-6301 3205 - 0
Fax: +49-6301 3205 1386
E-mail: info@pfaff-industrial.com

Hotlines:

Technical service: +49-175/2243-101
Application consultancy: +49-175/2243-102
Spare-parts hotline: +49-175/2243-103

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