

***POWER*Line**

2235

ADJUSTMENT MANUAL

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

7 205 458 →

The reprinting, copying or translation of PFAFF Service Manuals, whether in whole or in part, is only permitted with our previous authorization and with written reference to the source.

**PFAFF Industriesysteme
und Maschinen AG**

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

	Contents	Page
1	Adjustment	4
1.01	Notes on adjustment	4
1.02	Tools, gauges and other accessories for adjusting	4
1.03	Abbreviations	4
1.04	Explanation of the symbols.....	4
1.05	Adjusting the basic machine	5
1.05.01	Basic position of the balance wheel (adjustment aid).....	5
1.05.02	Balance weight	6
1.05.03	Zero position of the unison feed	7
1.05.04	Feeding motion of the unison feed	8
1.05.05	Lifting motion of the bottom feed dog	9
1.05.06	Height of the bottom feed dog	11
1.05.07	Feeding stroke difference	12
1.05.08	Preliminary adjustment of the needle height.....	13
1.05.09	Needle rise, hook clearance and needle height	14
1.05.10	Top feed stroke	15
1.05.11	Top-feed lifting motion	16
1.05.12	Adjusting the potentiometer for speed reduction.....	17
1.05.13	Basic position of the machine drive (only on machines with PicoDrive)	17
1.05.14	Bobbin winder.....	18
1.05.15	Thread check spring and thread regulator.....	19
1.05.16	Sewing foot pressure.....	20
1.05.17	Lubrication	21
1.05.18	Limiting the stitch length	22
1.06	Adjusting the thread trimmer -900/91.....	23
1.06.01	Basic position of the thread trimmer	23
1.06.02	Control cam to roller lever clearance (resting position).....	24
1.06.03	Adjusting the control cam	25
1.06.04	Knife pressure.....	26
1.06.05	Manual cutting test	27
2	Circuit diagrams	28
2.01	Block diagram PFAFF 2235 PLUS with control pack P45 PD-L	28
2.02	Circuit diagrams	29
2.03	Block diagram PFAFF 2235 PREMIUM with control pack P74 ED-L	33
2.04	Circuit diagrams PFAFF 2235 PREMIUM.....	34

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 gauge for the top feed stroke 5.0 mm (Part No. 61-111 633-60)
- 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

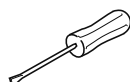
t.d.c. = top dead centre

b.d.c. = bottom dead centre

1.04 Explanation of the symbols



Note, information



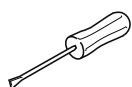
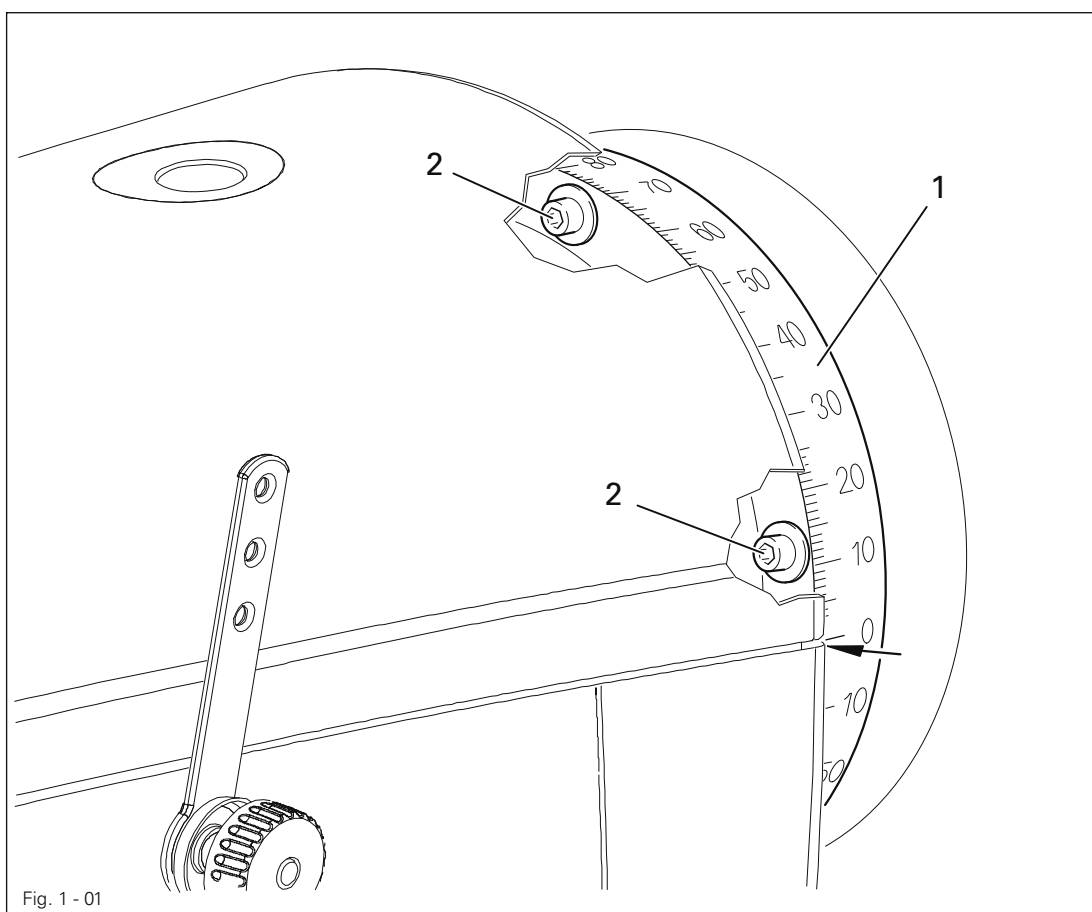
Service, repair, adjustment, maintenance
(work to be carried out by qualified staff only)

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).

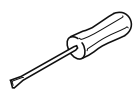
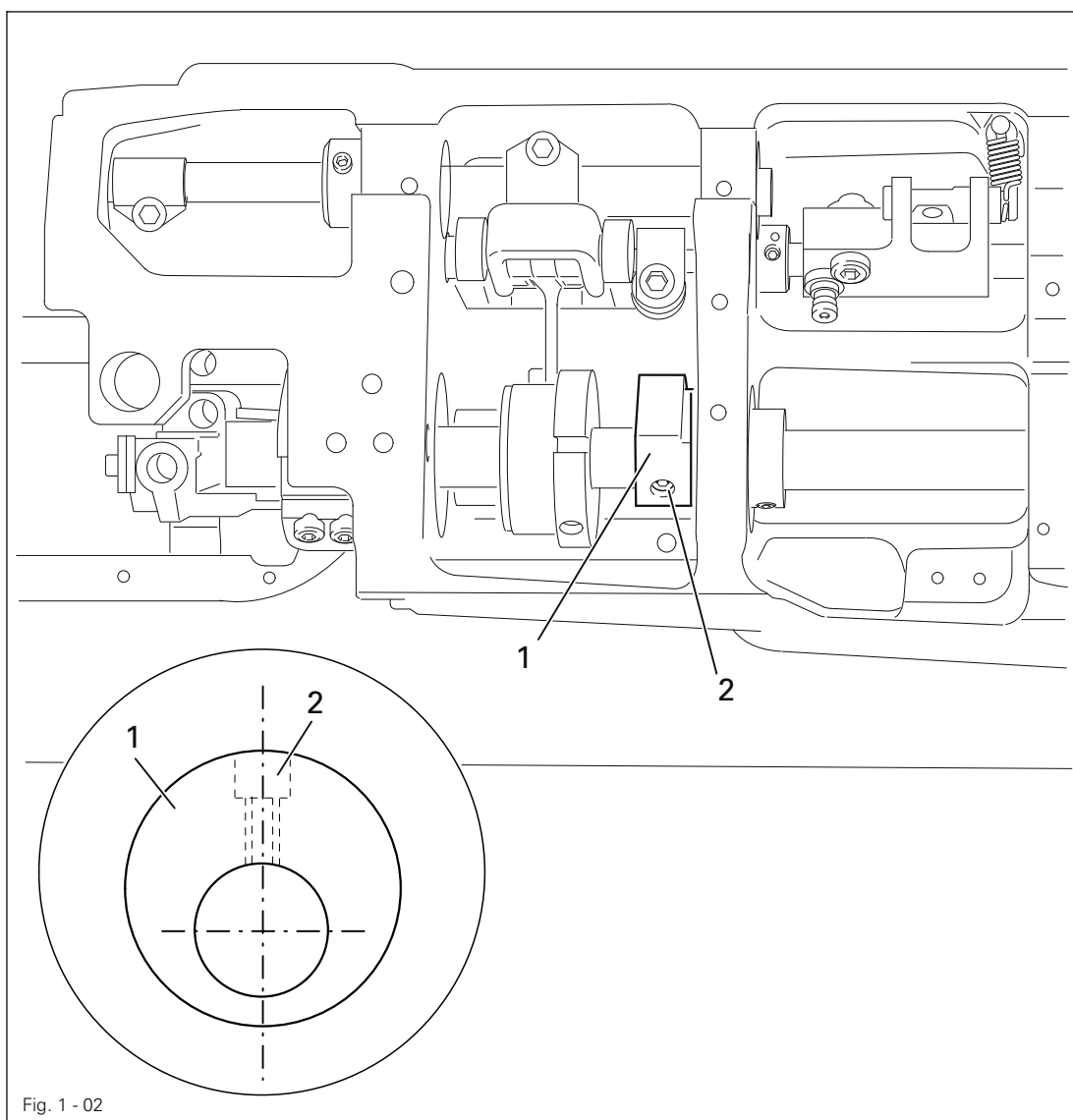


Adjust the scale dial 1 (four screws 2) in accordance with the **requirement**.

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.

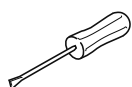
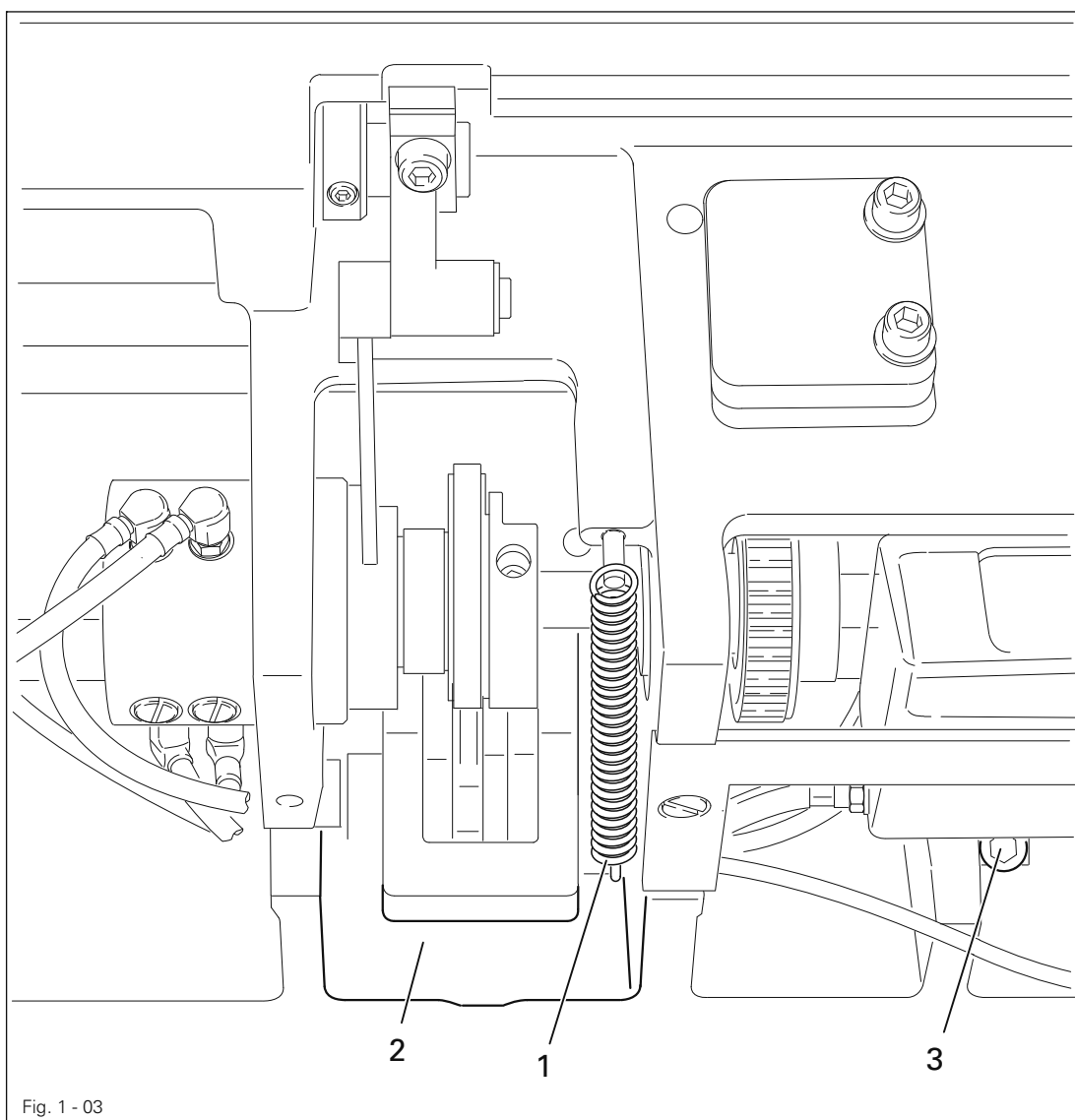


- Adjust balance weight **1** (screw **2**) in accordance with the **requirement**.

1.05.03 Zero position of the unison feed

Requirement

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

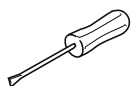
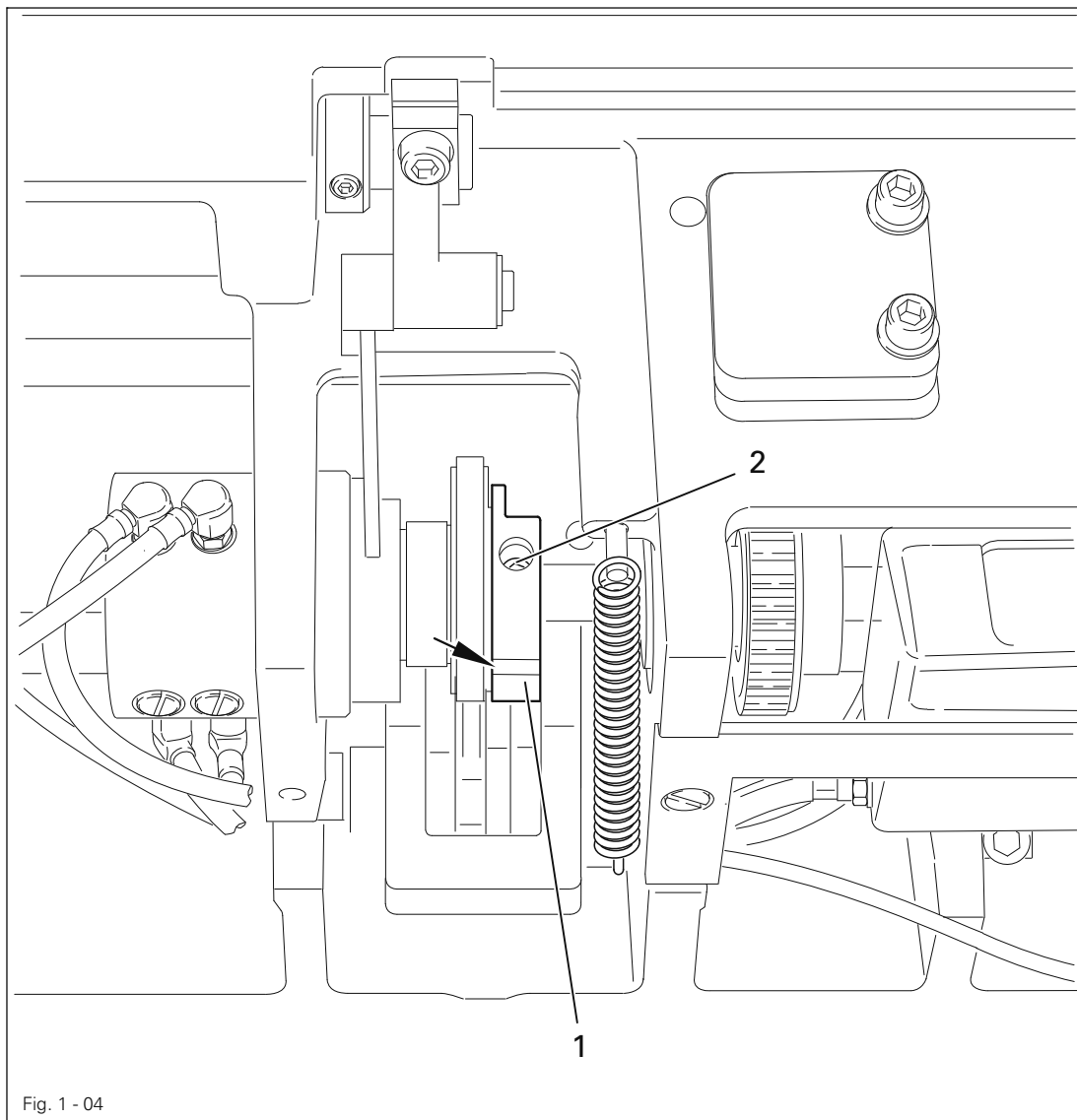


- Remove spring 1.
- Adjust crank 2 (screw 3) in accordance with the **requirement**.
- Replace the spring 1.

1.05.04 Feeding motion of the unison feed

Requirement

When the needle bar is positioned at b.d.c. (balance wheel position **180°**), and the maximum stitch length is set, the top and bottom feed dogs and the needle bar should not make any feeding motion when the reverse-feed lever is pressed.

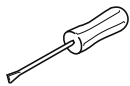
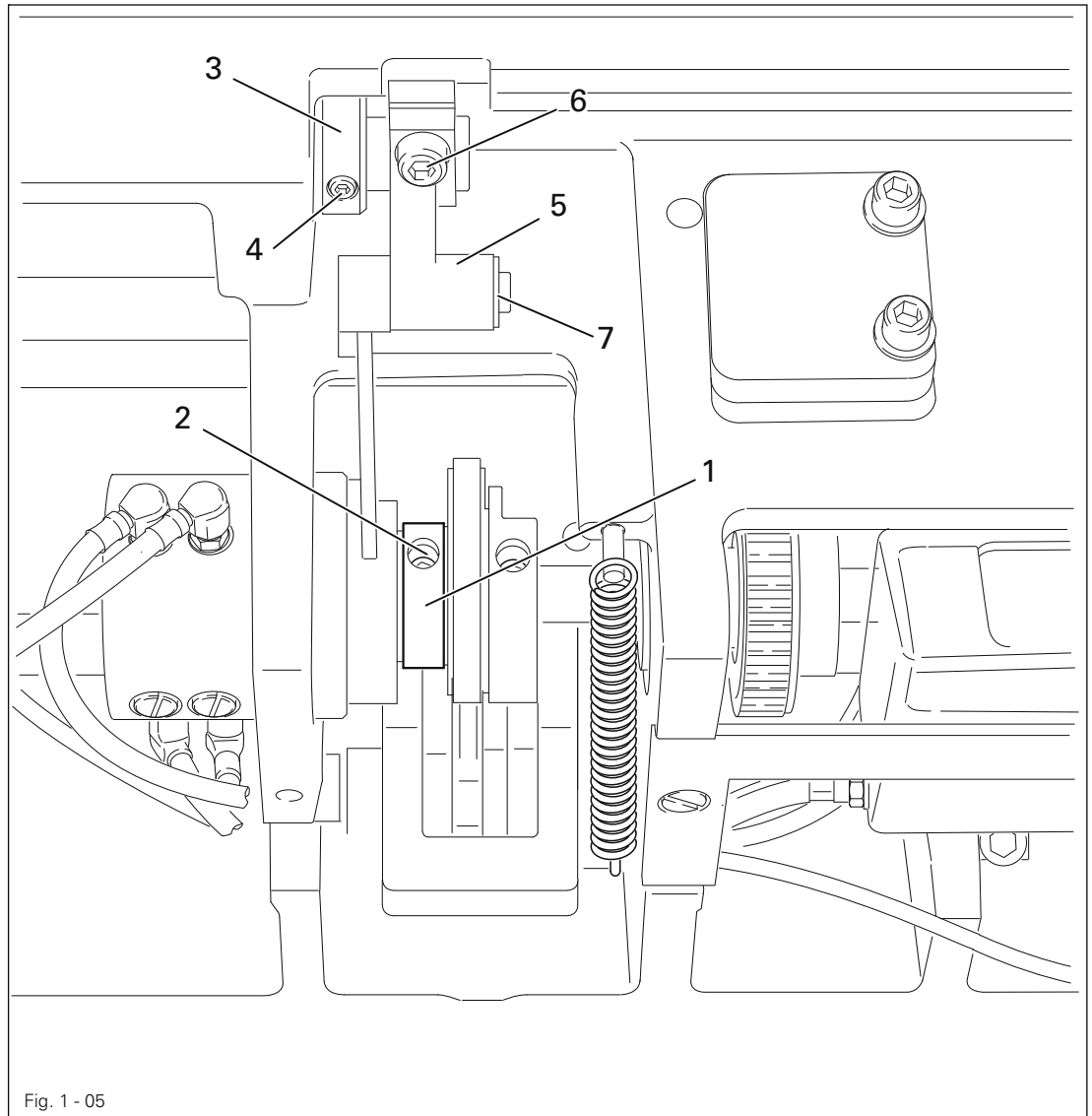


- Adjust eccentric **1** (screws **2**) in accordance with the **requirement**. Make sure that the cut-out (see arrow) is visible.

1.05.05 Lifting 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**.



Use the kit with the Order No. **91-501 398-90** to deactivate the transporter lifting movement.

- Install assembly and adjust
- Remove collar **3** (screws **4**) and crank **5** (screw **6**, snap-ring **7**).
- Mount the preassembled parts of the kit as shown in figures 1 - 05a.
- Adjust bottom transporter height and stroke movement where required.

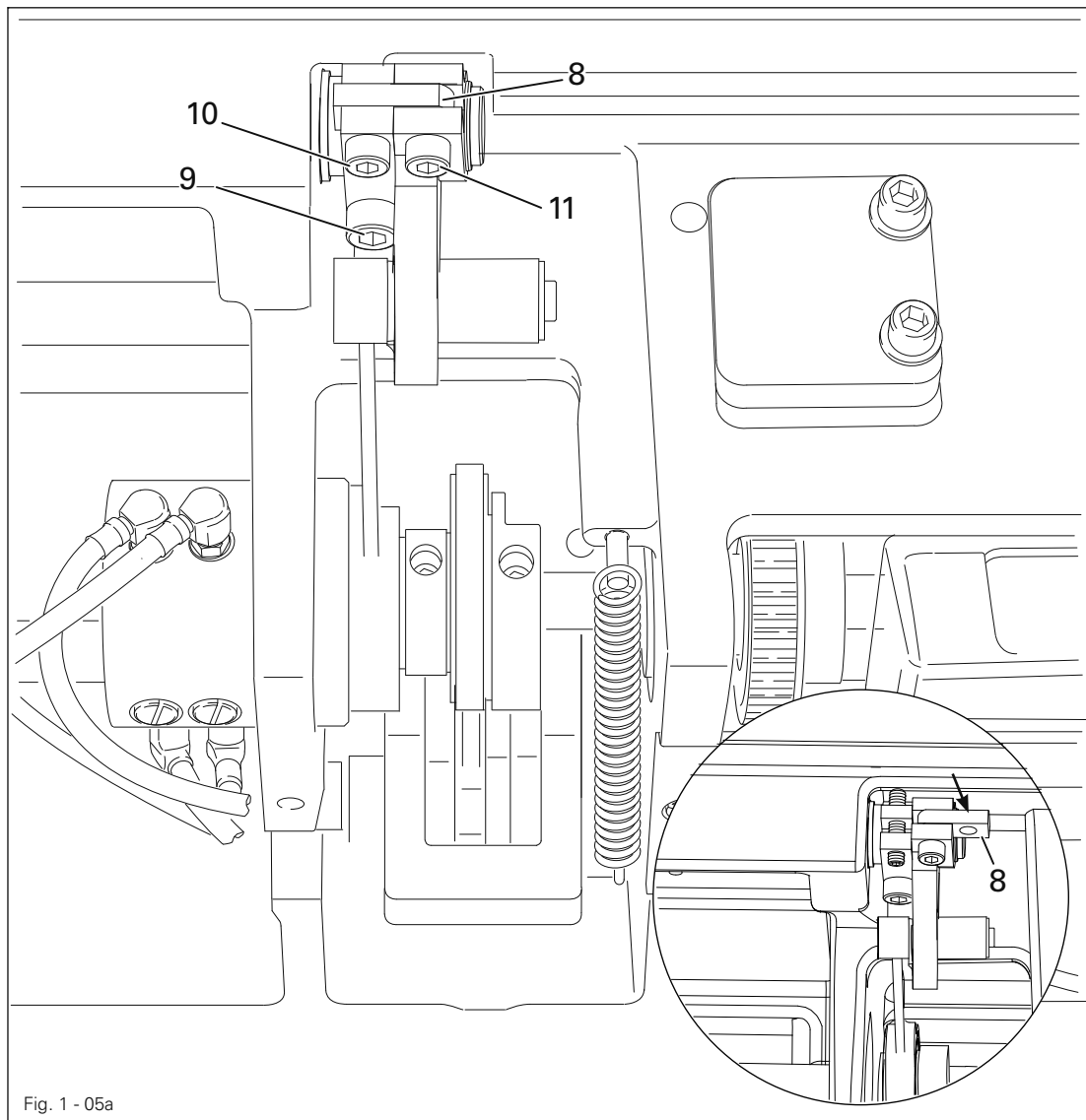
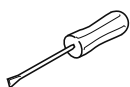


Fig. 1 - 05a



Activate lifting movement

- Lifting movement is activated if connection part 8 is swiveled in as shown in figures 1 - 05a, and screws 9 (M6 x 16) and 10 (M5 x 16) have been attached.

Deactivate lifting movement

- Remove screws 9 and 10 and swivel connection part 8 (screw 11) towards the right.
- Replace screw 9 with a screw M6 x 25.
- Replace screw 10 with a threaded pin M5 x 25 and tighten to stop.



Adjust transporter height with deactivated stroke movement so that the upper edge of the transporter is at the height of the upper edge of the needle plate. Adjust the transporter height once again with the stroke movement activated, as described in chapter 1.05.06.

1.05.06 Height of the bottom feed dog

Requirement

1. When the stitch length is set at "0" and 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.
2. In the direction of sewing, the bottom feed dog should be positioned in the centre of the needle plate slot.

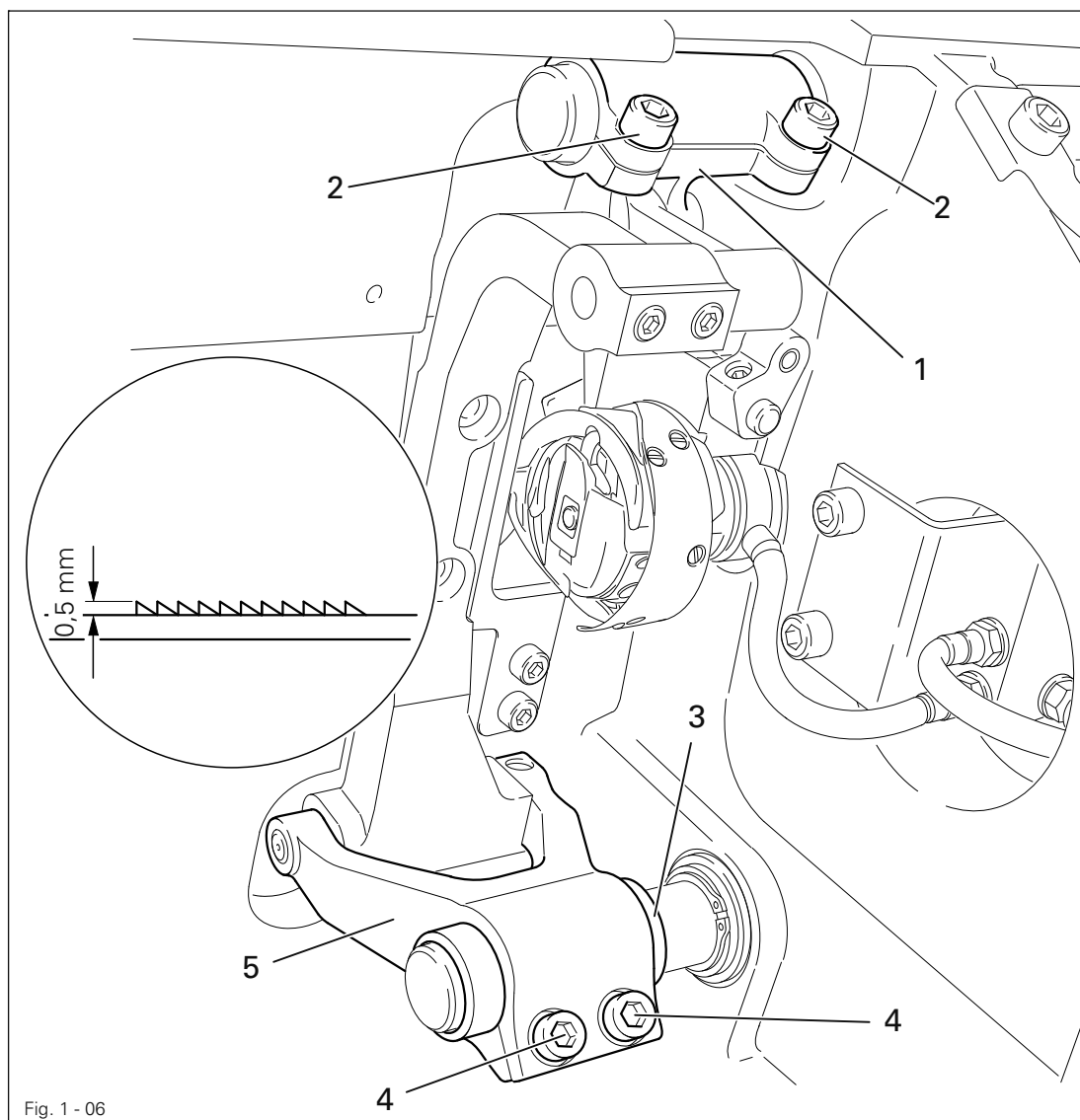
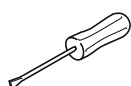


Fig. 1 - 06



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

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.

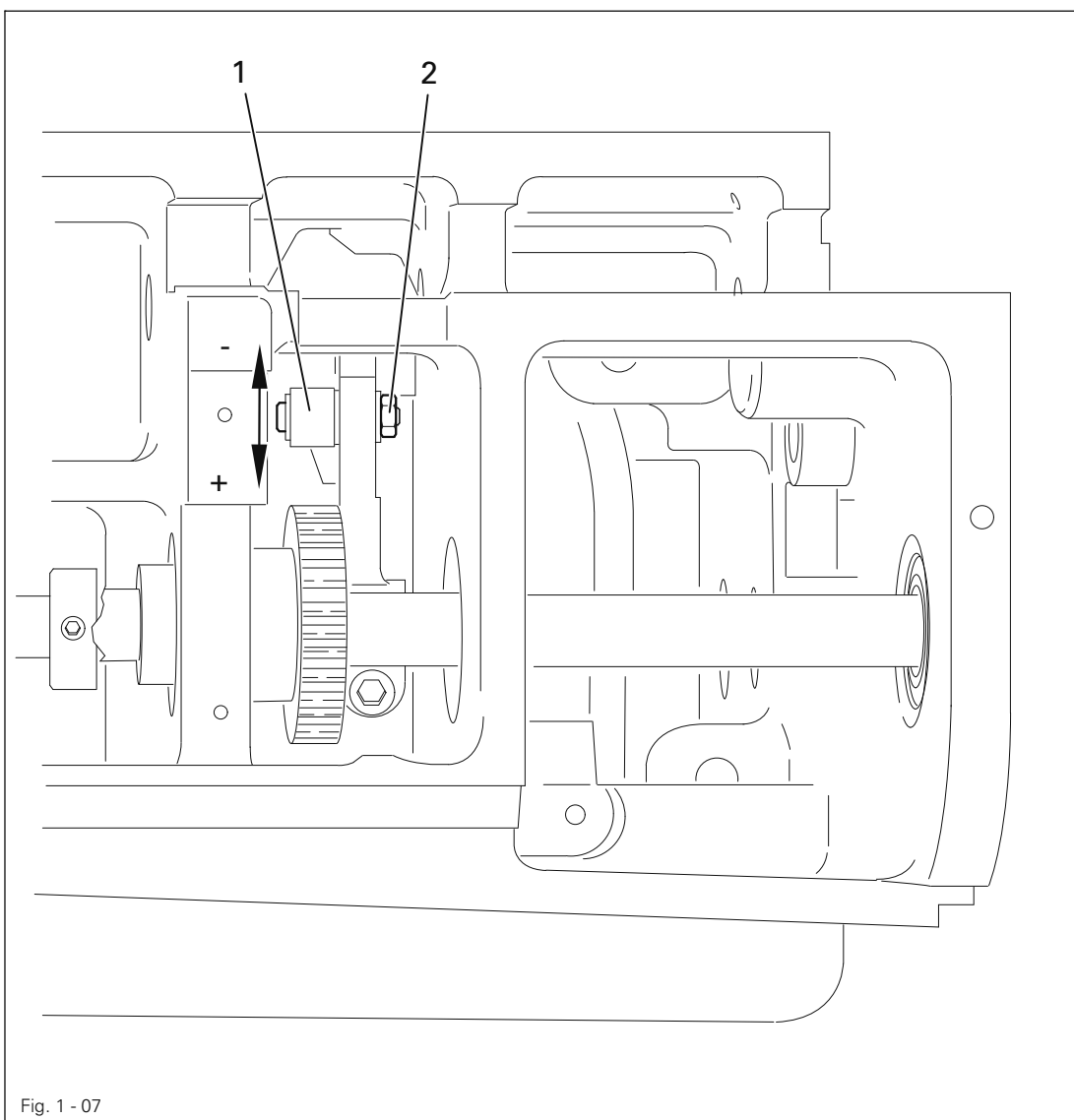
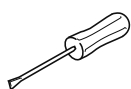


Fig. 1 - 07

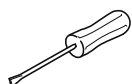
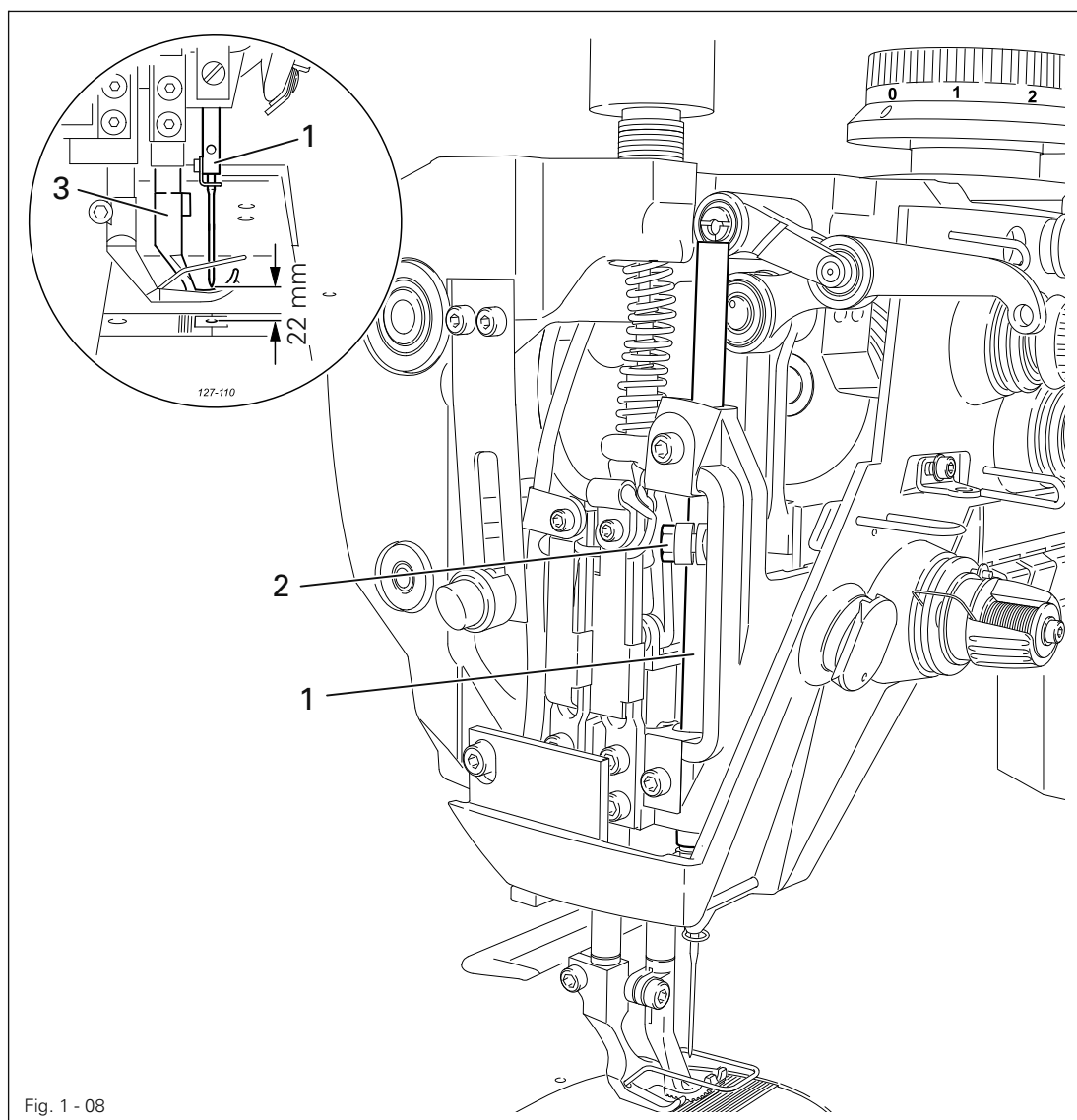


- With connecting rod 1 (nut 2) increase ("+") or reduce (-) the needle feed stroke in accordance with the **requirement**.

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.



Make sure that needle bar 1 and foot 3 do not collide.

1.05.09 Needle rise, hook clearance and needle height

Requirement

With the stitch length set at "4.5" and in the needle rise position (see table)

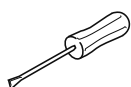
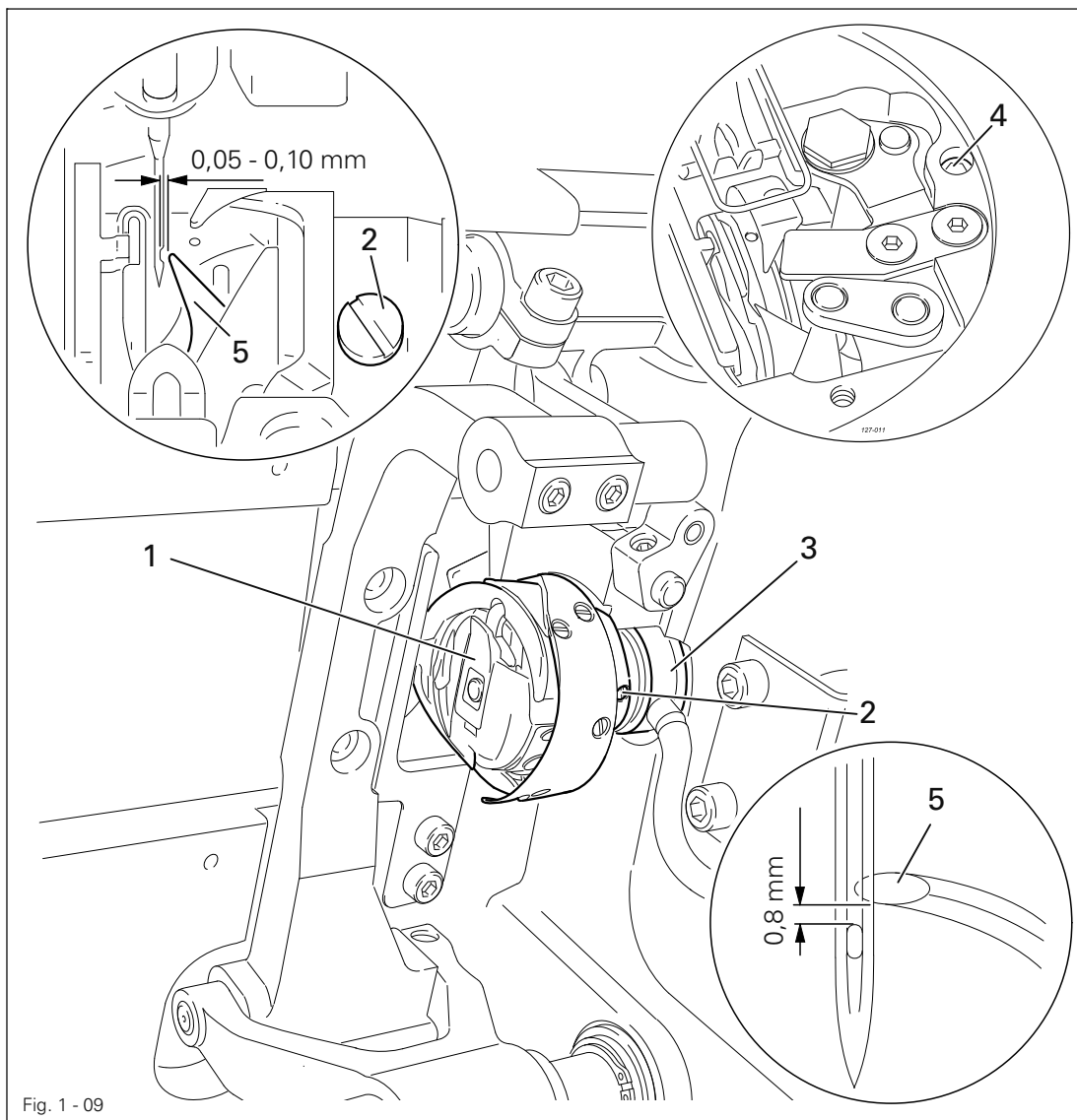
1. The hook point **5** should be positioned at "needle centre" with a hook-to-needle clearance of **0.05 – 0.10 mm**.
2. The top of the needle eye should be positioned **0.8 mm** below hook point **5**.



Needle rise position

Model C: Balance wheel position **202° / 2.0 mm**

Model C/D: Balance wheel position **204° / 2.4 mm**



- 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 Top feed stroke

Requirement

With adjustment wheel 1 set at "5", the top feed dog 7 and presser foot 4 should each rise by 5.0 mm.

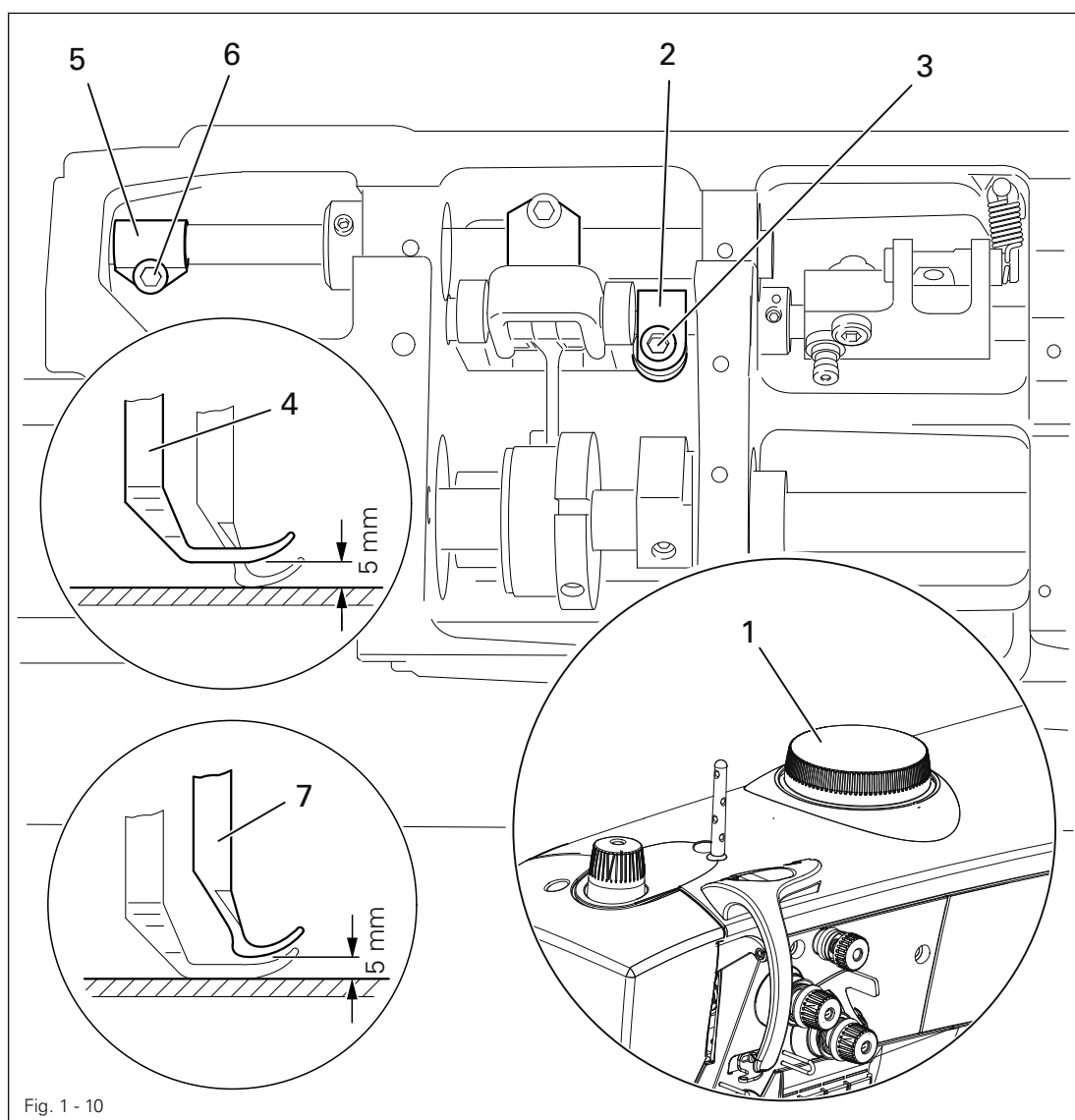
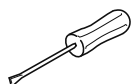


Fig. 1 - 10

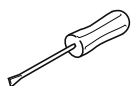
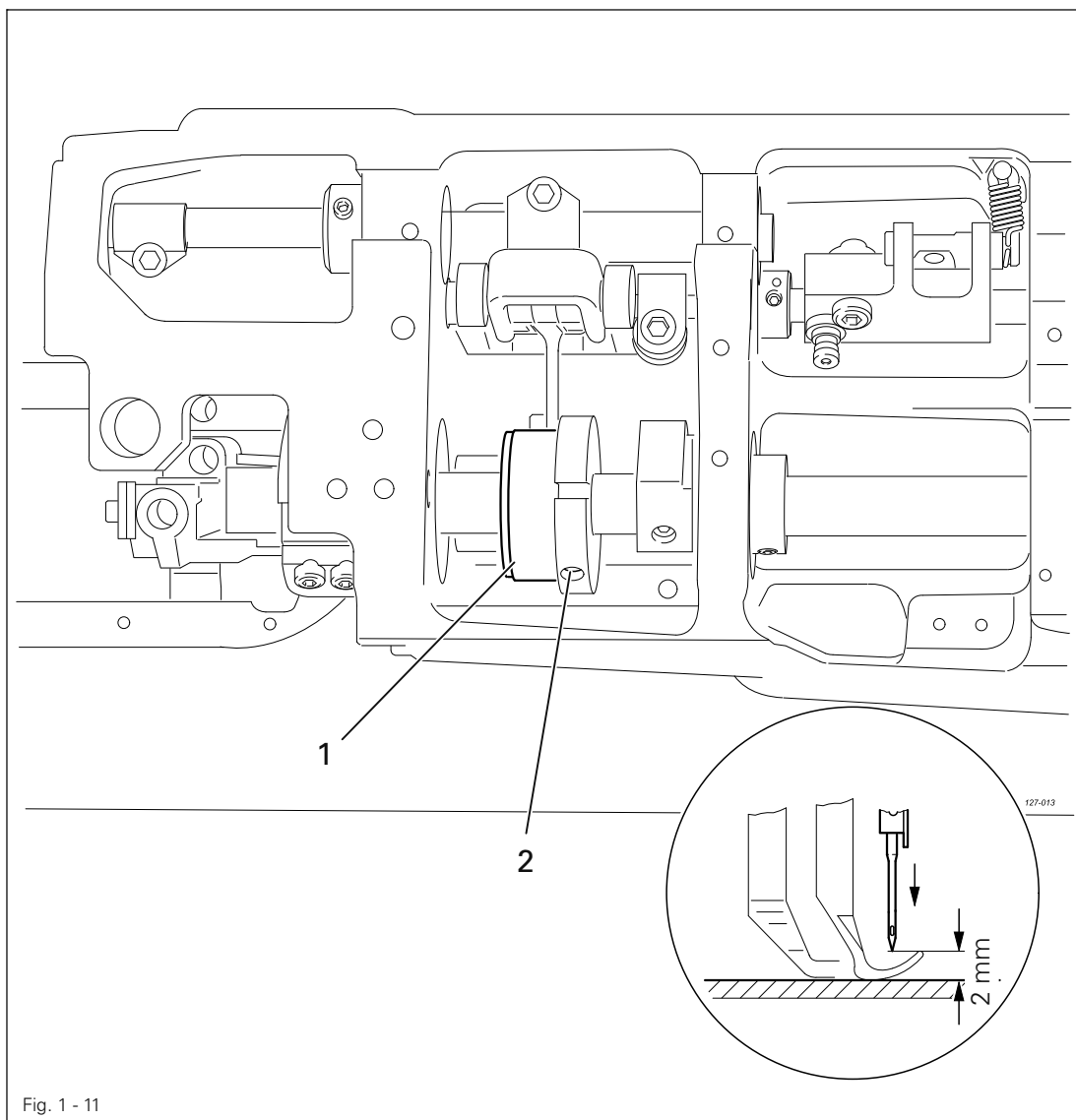


- Remove the bottom feed dog and set adjustment wheel 1 at "5".
- Loosen the screws of the needle plate, place the metal gauge over the opening of the needle plate slot so that both sewing feet can be lowered onto the metal gauge.
- For the preliminary adjustment, adjust crank 2 (screw 3) so that there is a clearance of 5 mm between presser foot 4 and the needle plate.
- Adjust crank 5 (screw 6) so that top feed dog 7 and presser foot 4 have the same stroke.
- Check the adjustment in accordance with the **requirement**, and correct if necessary.

1.05.11 Top-feed lifting motion

Requirement

The top feed dog should just have reached the needle plate when the presser foot lift is set at **5 mm** and the needle descending from above is **2 mm** above the needle plate.



- Turn eccentric 1 (screw 2) in accordance with the **requirement**.

1.05.12 Adjusting the potentiometer for speed reduction

- Switch on the machine
- Set the smallest stroke "0".
- Using the stroke adjustment function, call up the smallest stroke (LED off), see the Control Panel Instruction Manual.
- Call up parameter "501" and press key "C+" to save the bottom value.
- Set the inner adjustment wheel at maximum stroke "9".
- Using the stroke adjustment function, call up the largest stroke (LED on), see the Control Panel Instruction Manual.
- Call up parameter "502" and press key "C+" to save the top value.



The speed is adjusted in accordance with Chapter 3.03 Maximum Speed in the Instruction Manual.

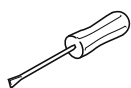
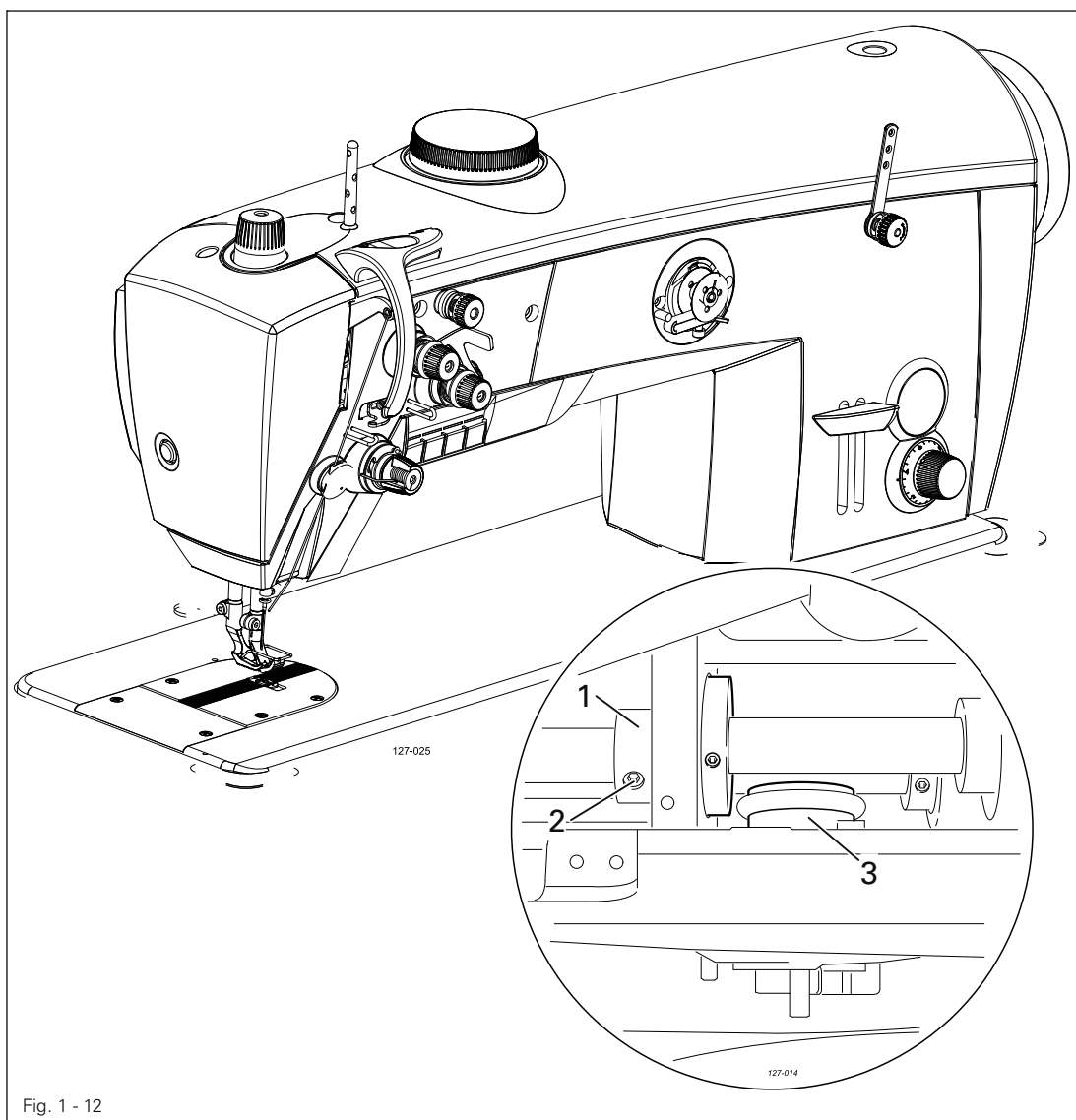
1.05.13 Basic position of the machine drive (only on machines with PicoDrive)

- 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**.

1.05.14 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).

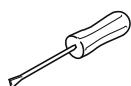
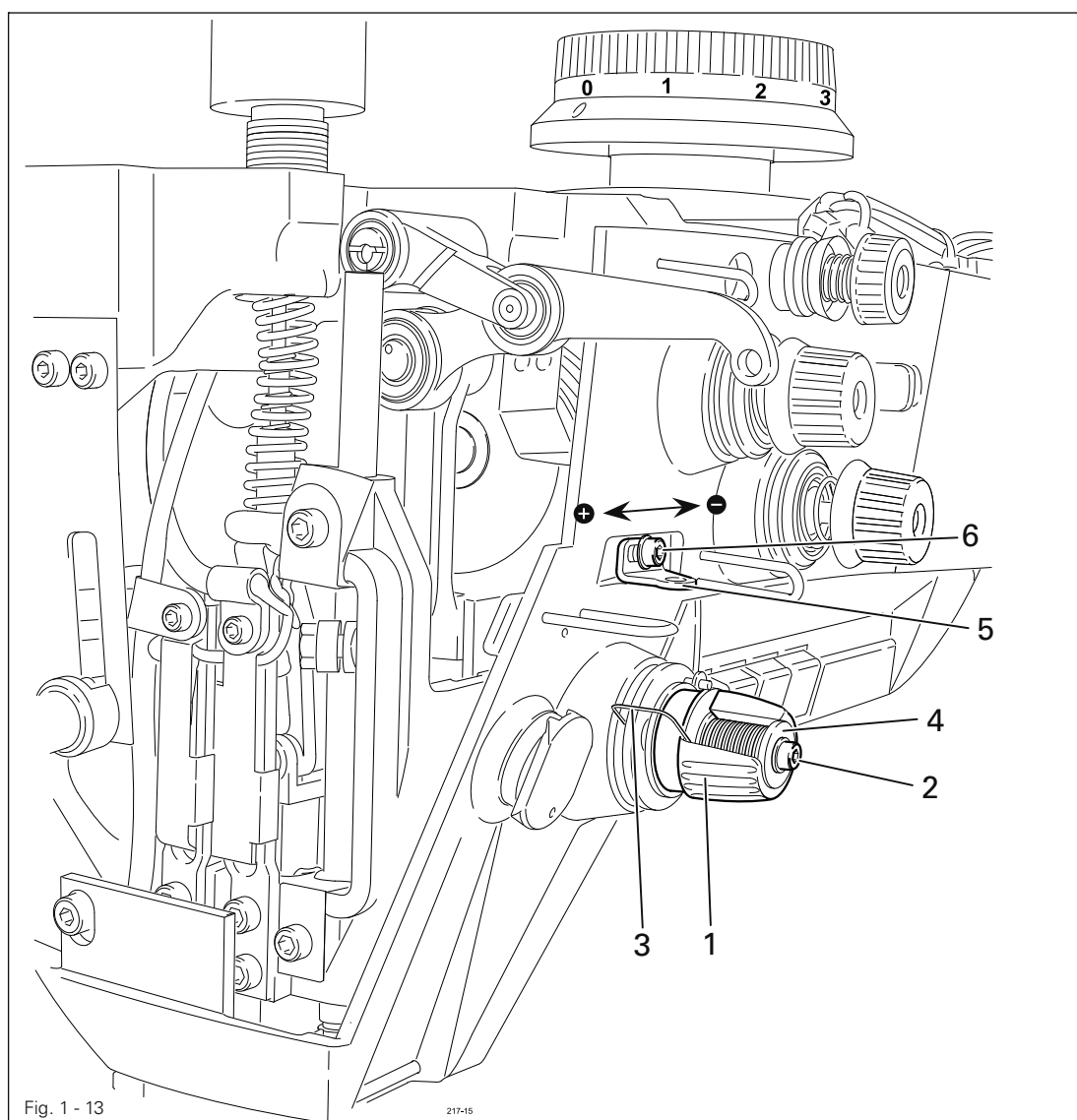


- Adjust drive wheel **1** (screw **2**) in accordance with the **requirement**.

1.05.15 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.

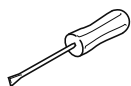
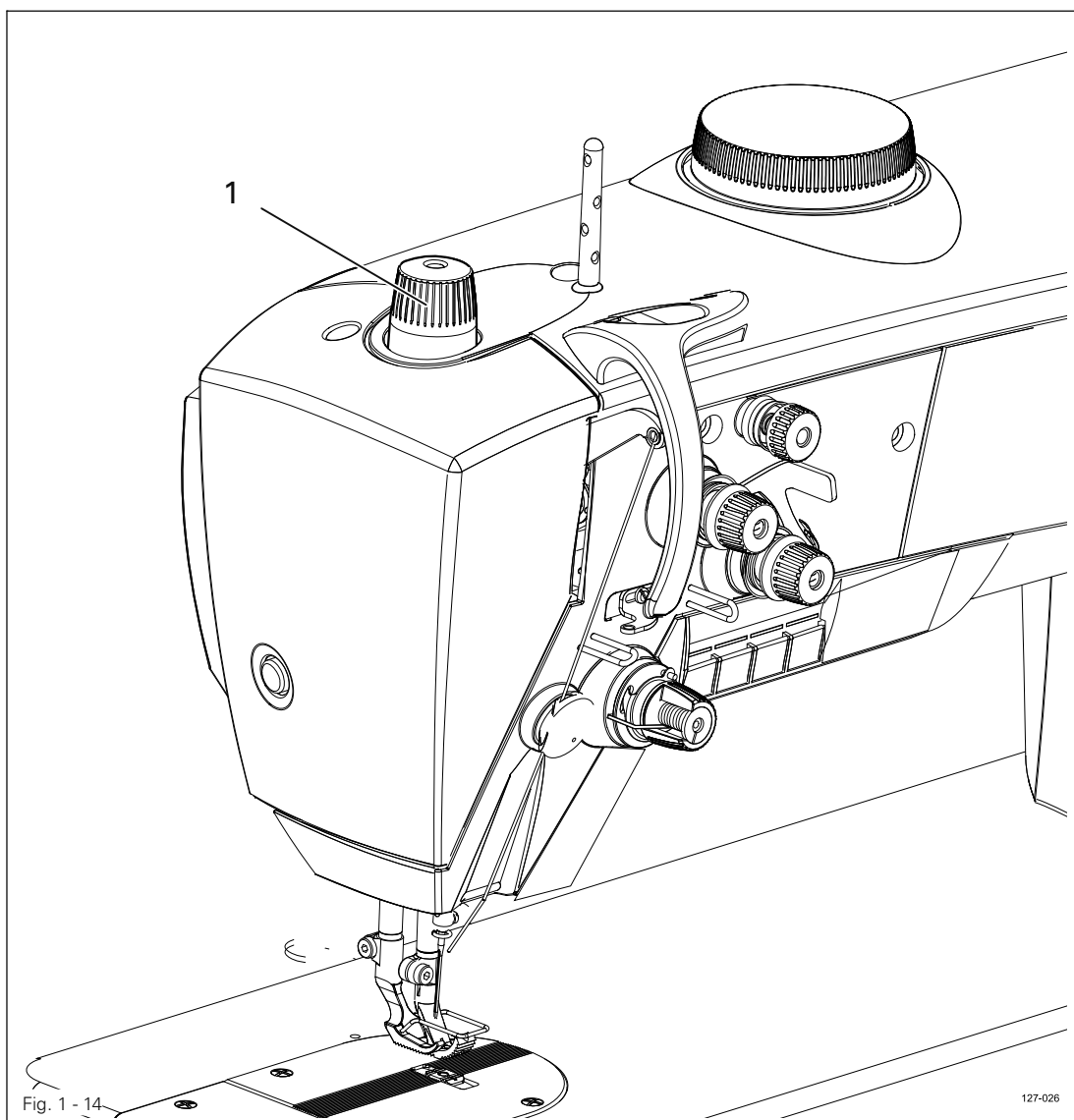
Move thread regulator **5** (screw **6**) towards ("**+**") (= more thread) or ("**-**") (= less thread).

Adjustment

1.05.16 Sewing foot pressure

Requirement

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

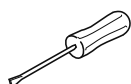
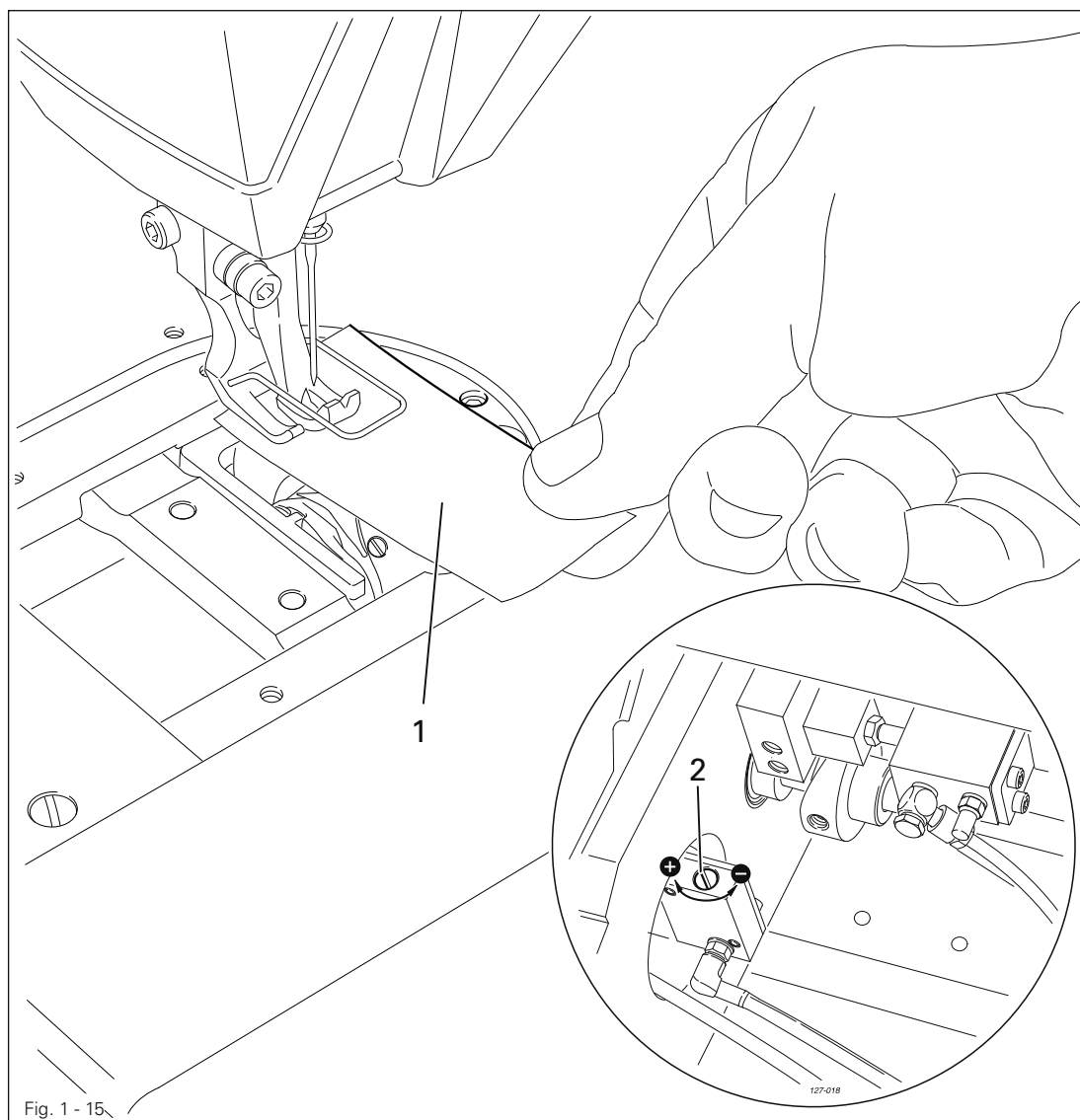


- Turn adjustment wheel 1 in accordance with the **requirement**.

1.05.17 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.**



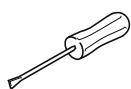
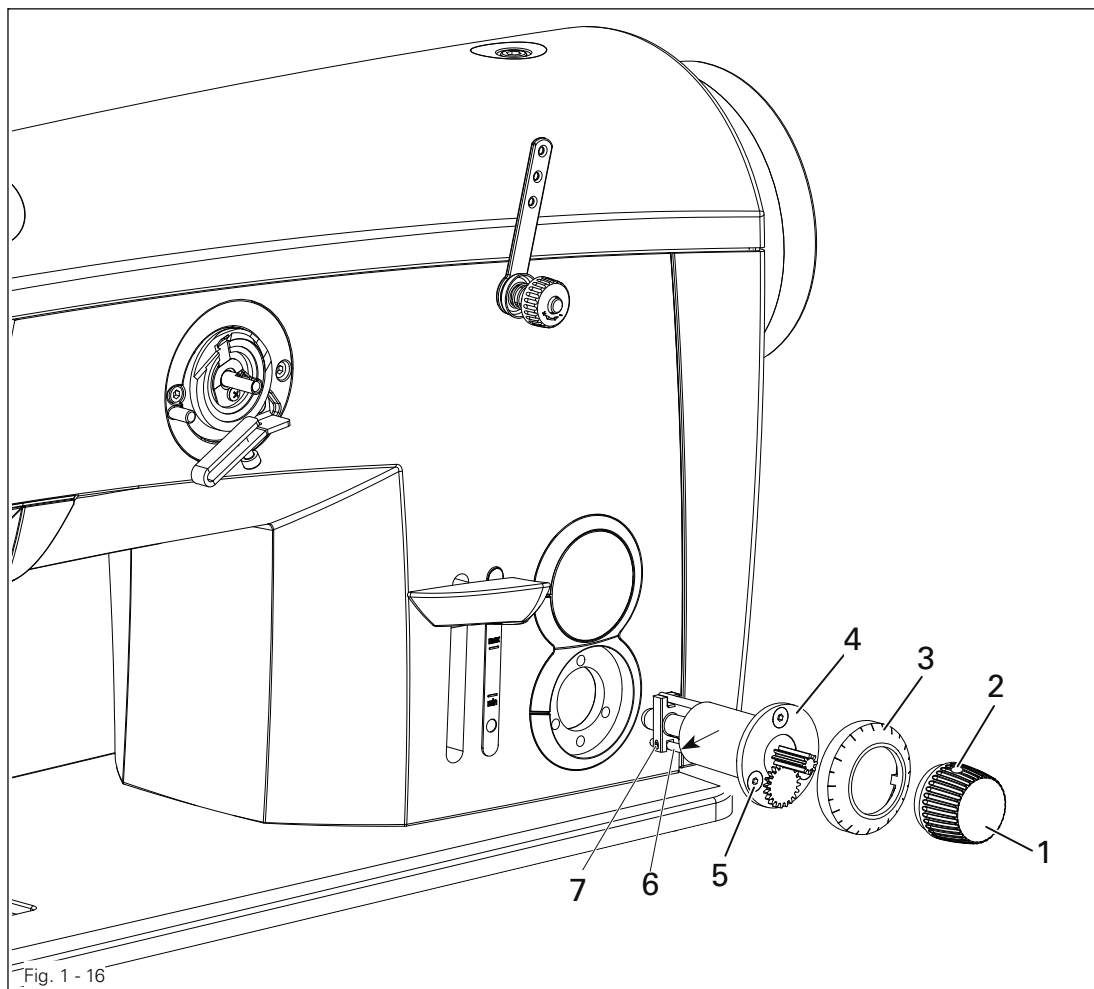
Do not put your hands into the needle area when the machine is running!
Danger of injury from moving parts!

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

1.05.18 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.



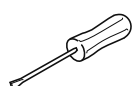
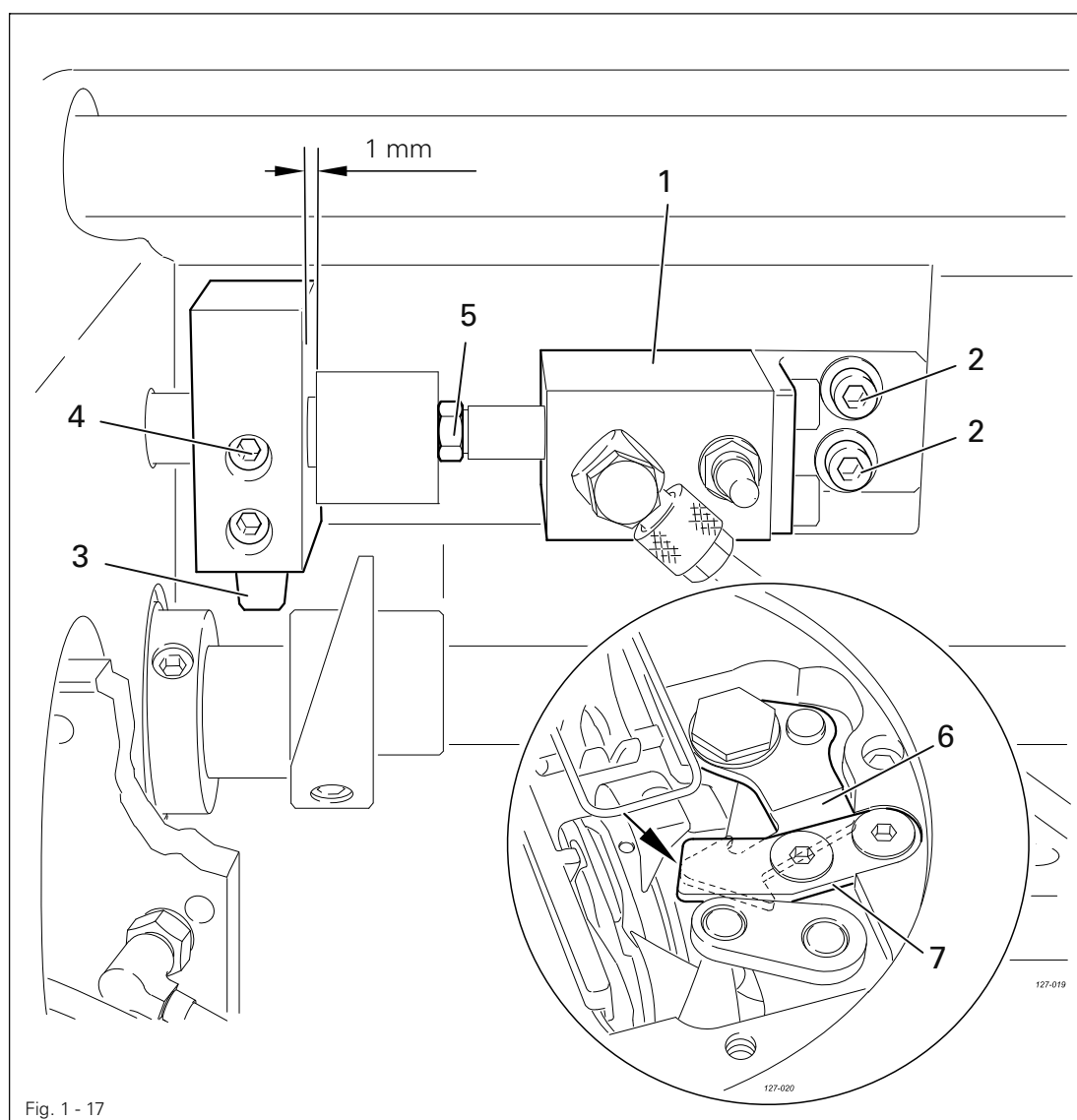
- Set the desired max. stitch length at control button 1
(on model CN = 6.0 mm, on model CN9 + C/DN9 = 9 mm)
- Remove adjustment knob 1 (screws 2) and scale dial 3.
- Remove adjustment unit 4 (screws 5).
- Bring lineal 6 (screw 7) to the unit using stitch adjuster 4 (see arrow).
- Replace adjustment unit 4, scale dial 3 and adjustment knob 1.

1.06 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.

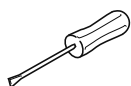
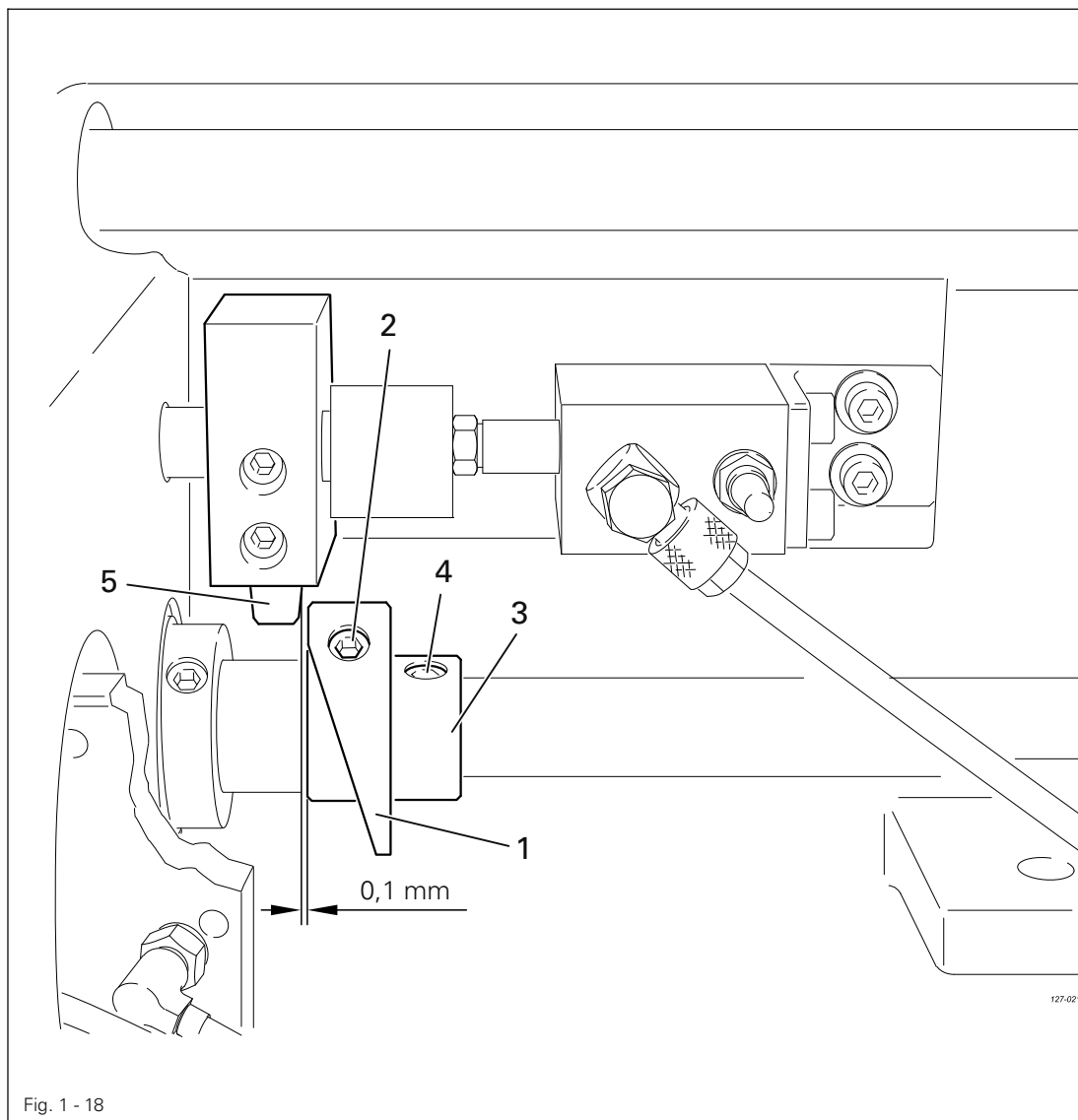


- Adjust thread trimmer 1 (screws 2) in accordance with **requirement 1**.
- Adjust roller lever 3 (only screw 4) in accordance with **requirement 2**.

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**.

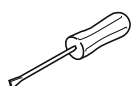
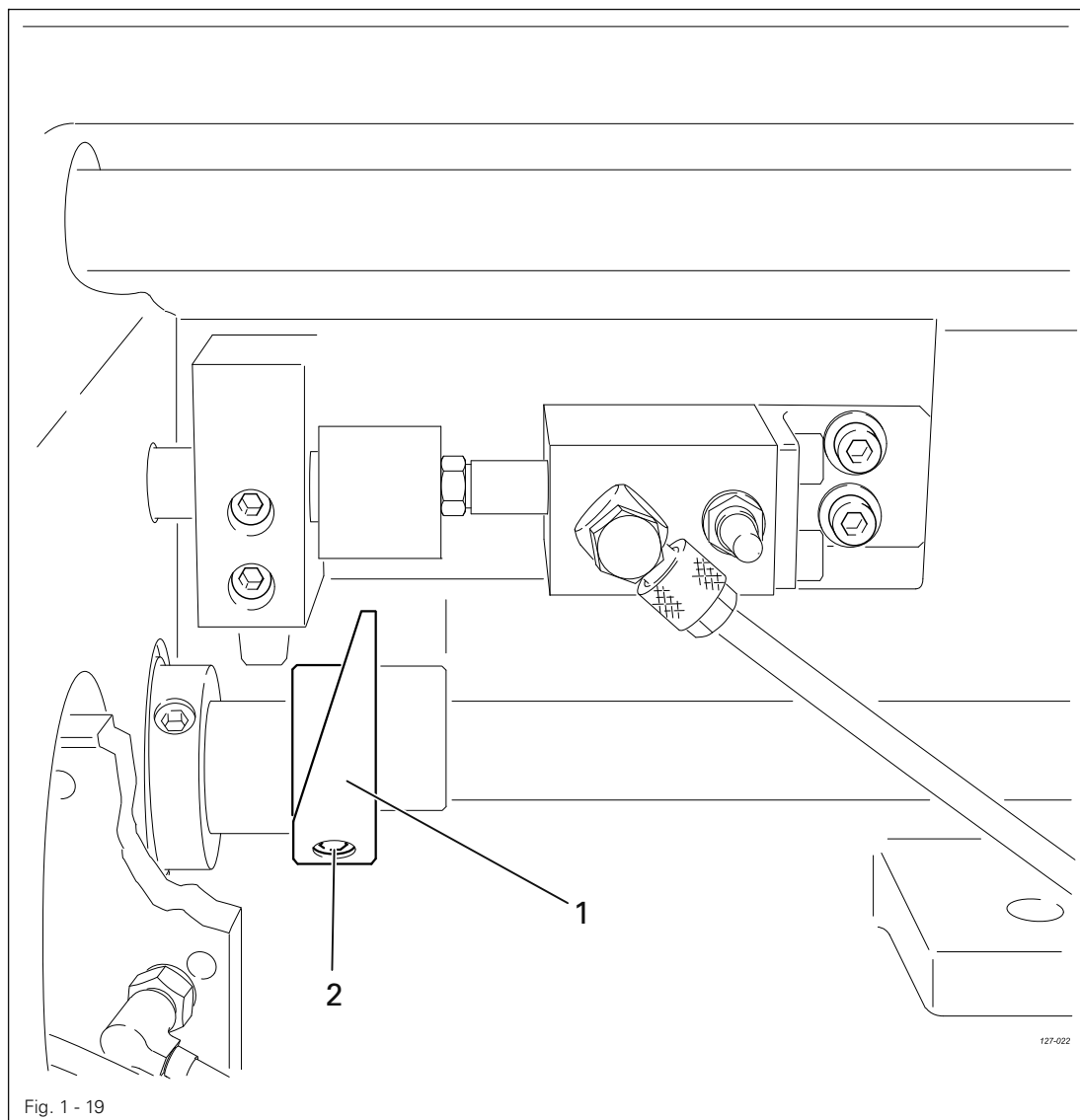


- Adjust control cam **1** (screw **2**) together with retaining collar **3** (screw **4**) in accordance with the **requirement**.

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.



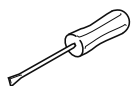
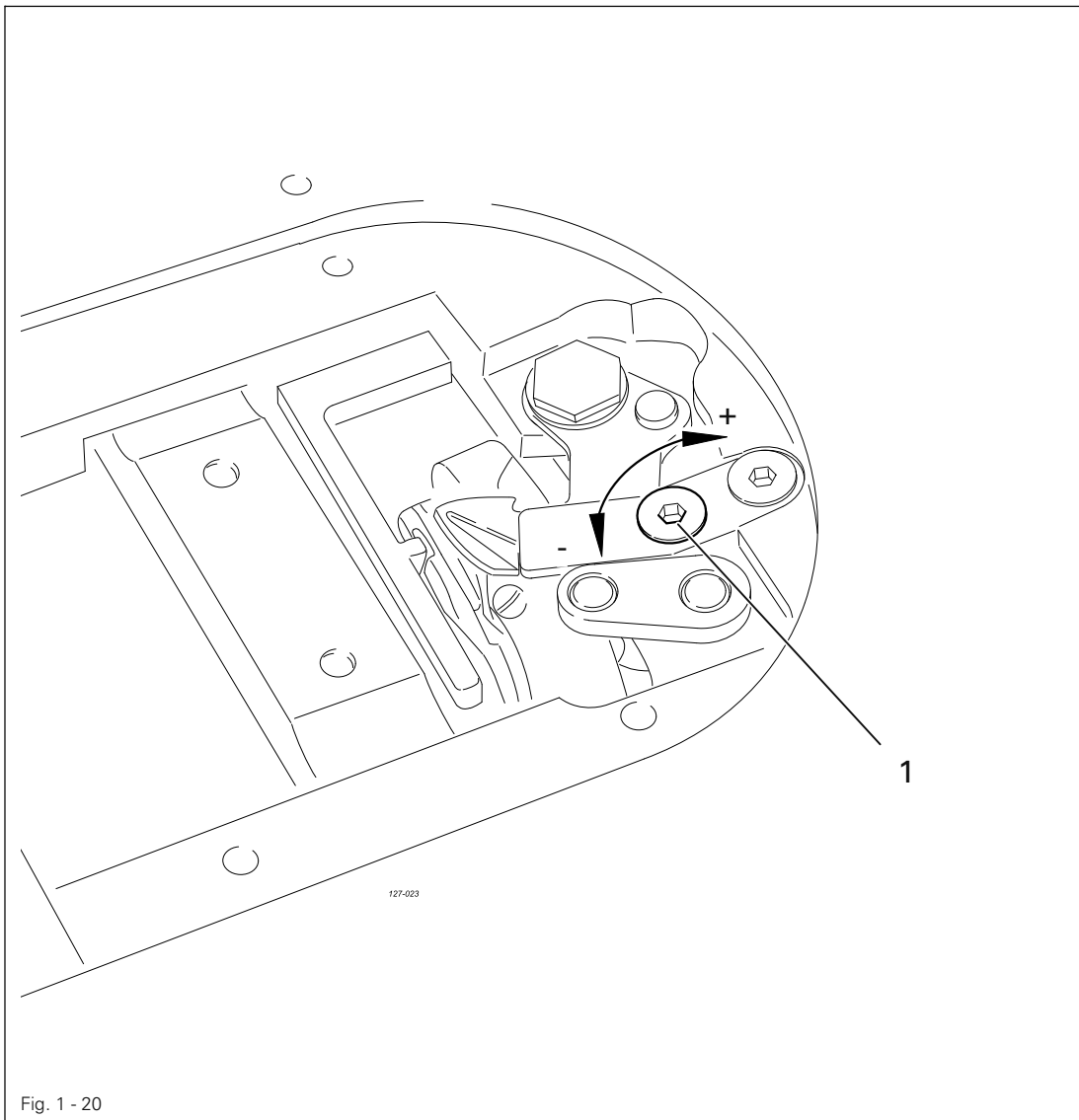
- Adjust control cam 1 (screw 2) in accordance with the **requirement**.

Adjustment

1.06.04 Knife pressure

Requirement

The thread should be cut reliably at all times.

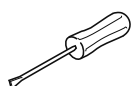
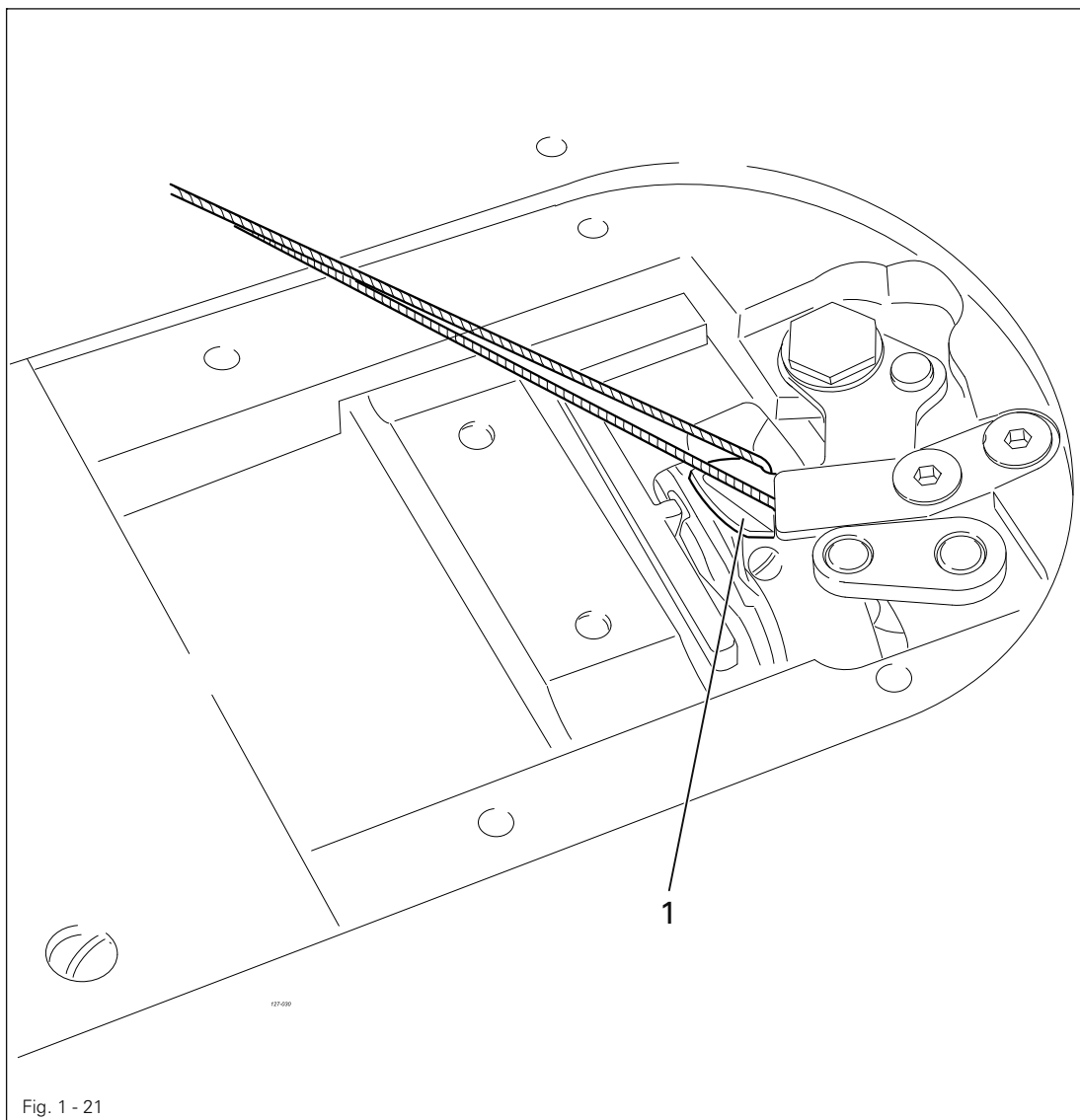


- Increase ("+") or reduce ("-") the knife pressure accordingly with screw 1.

1.06.05 Manual cutting test

Requirement

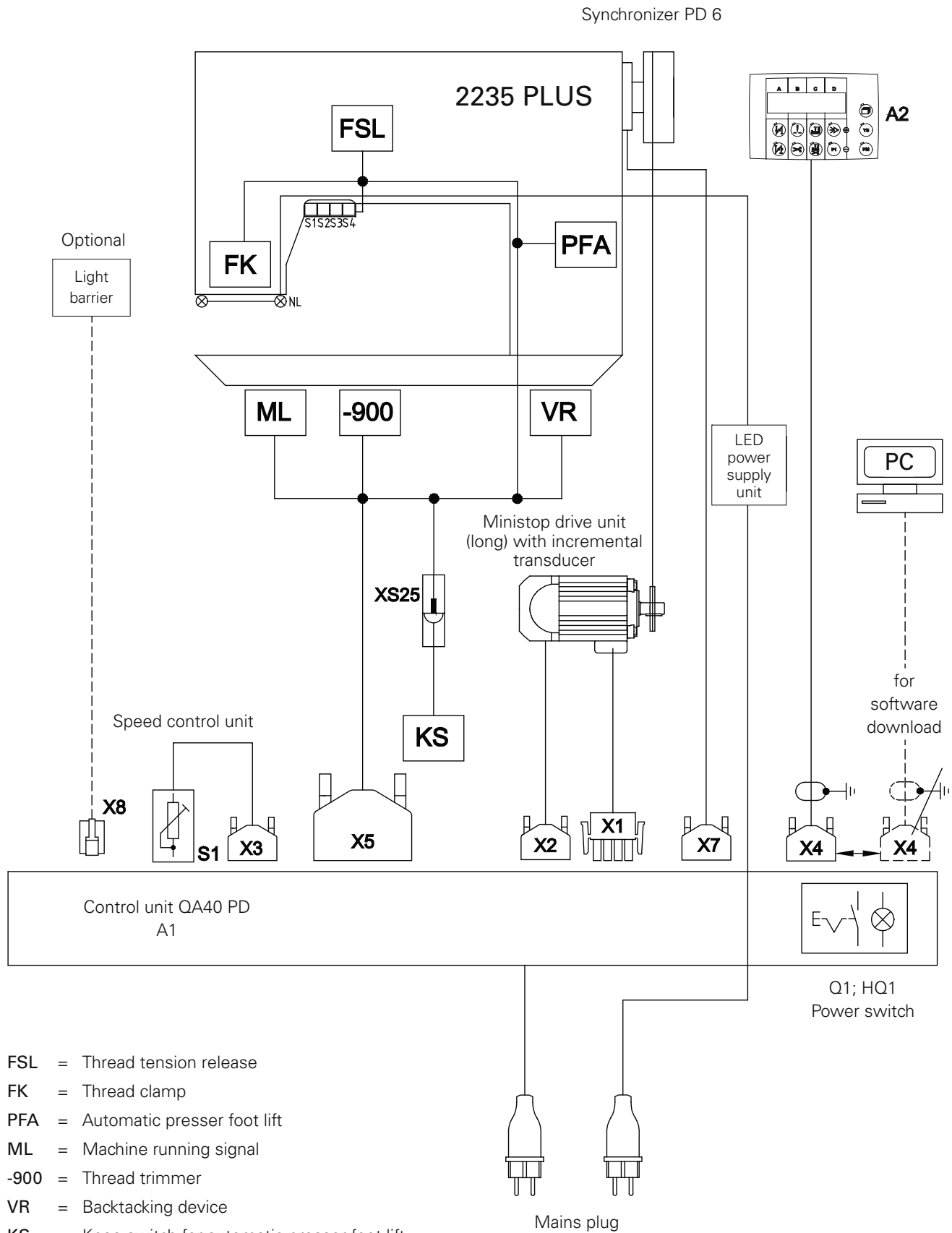
Both the needle and the bobbin thread should be cut neatly.



- 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.

2 Circuit diagrams

2.01 Block diagram PFAFF 2235 PLUS with control pack P45 PD-L

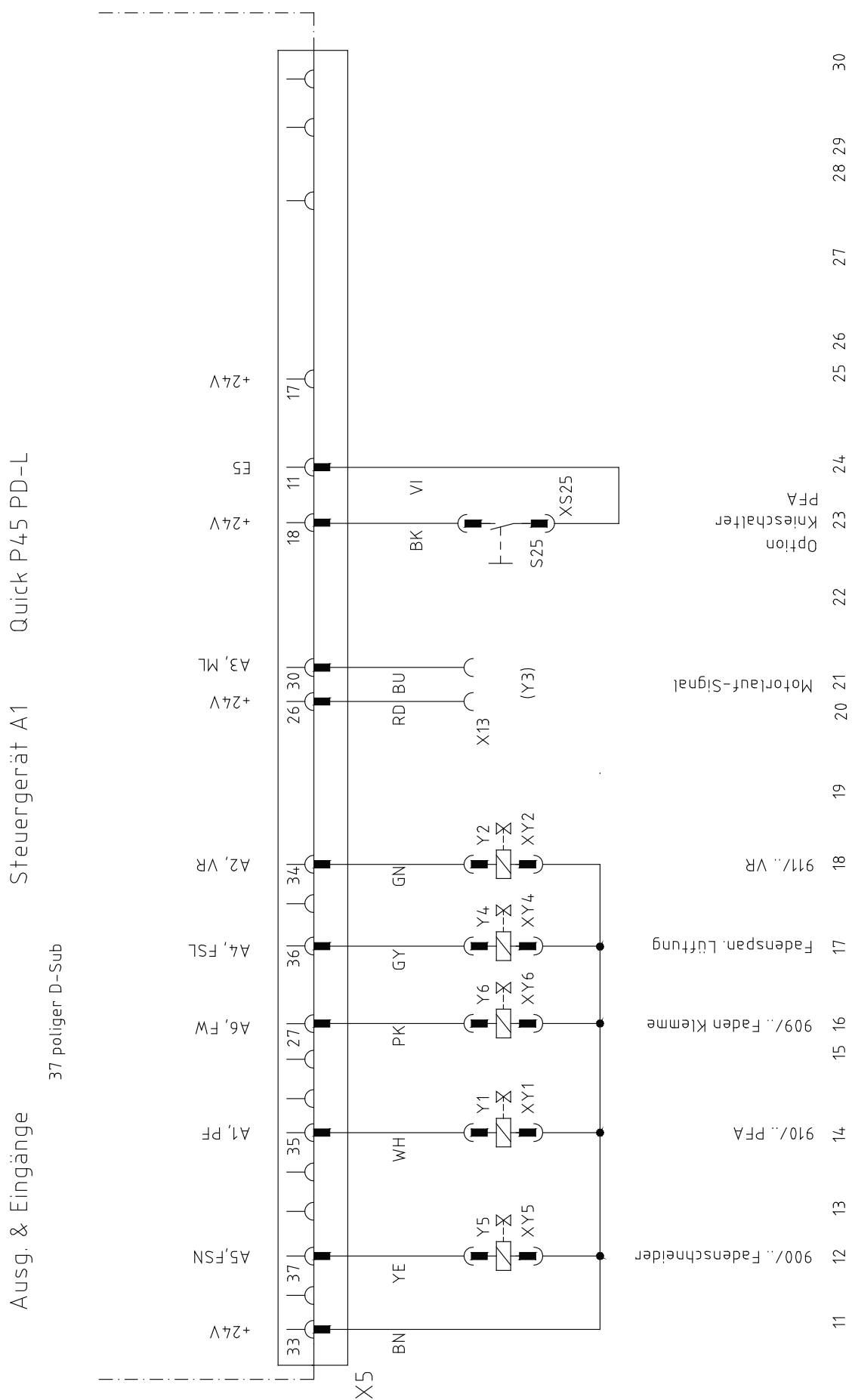


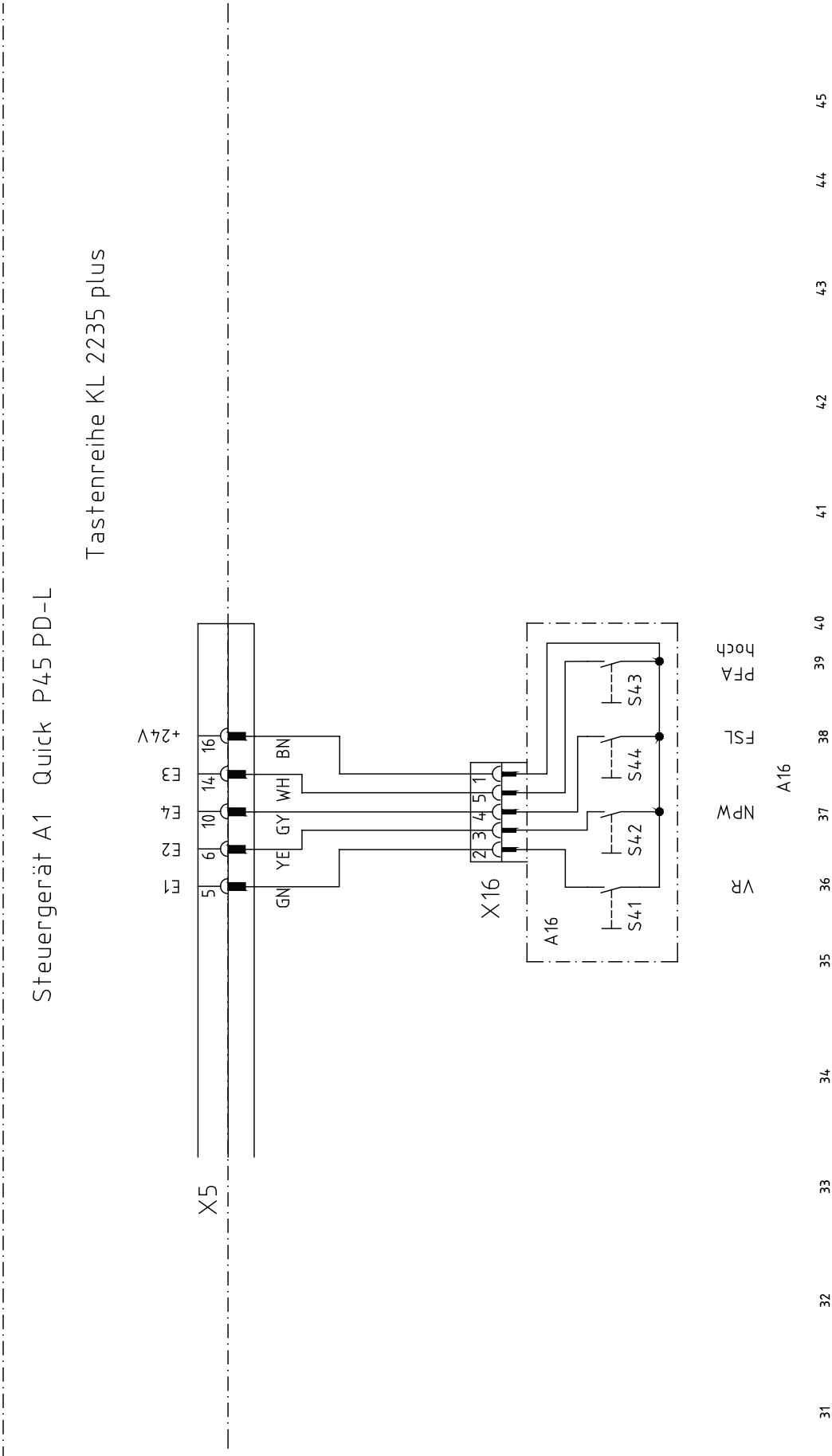
2.02 Circuit diagrams

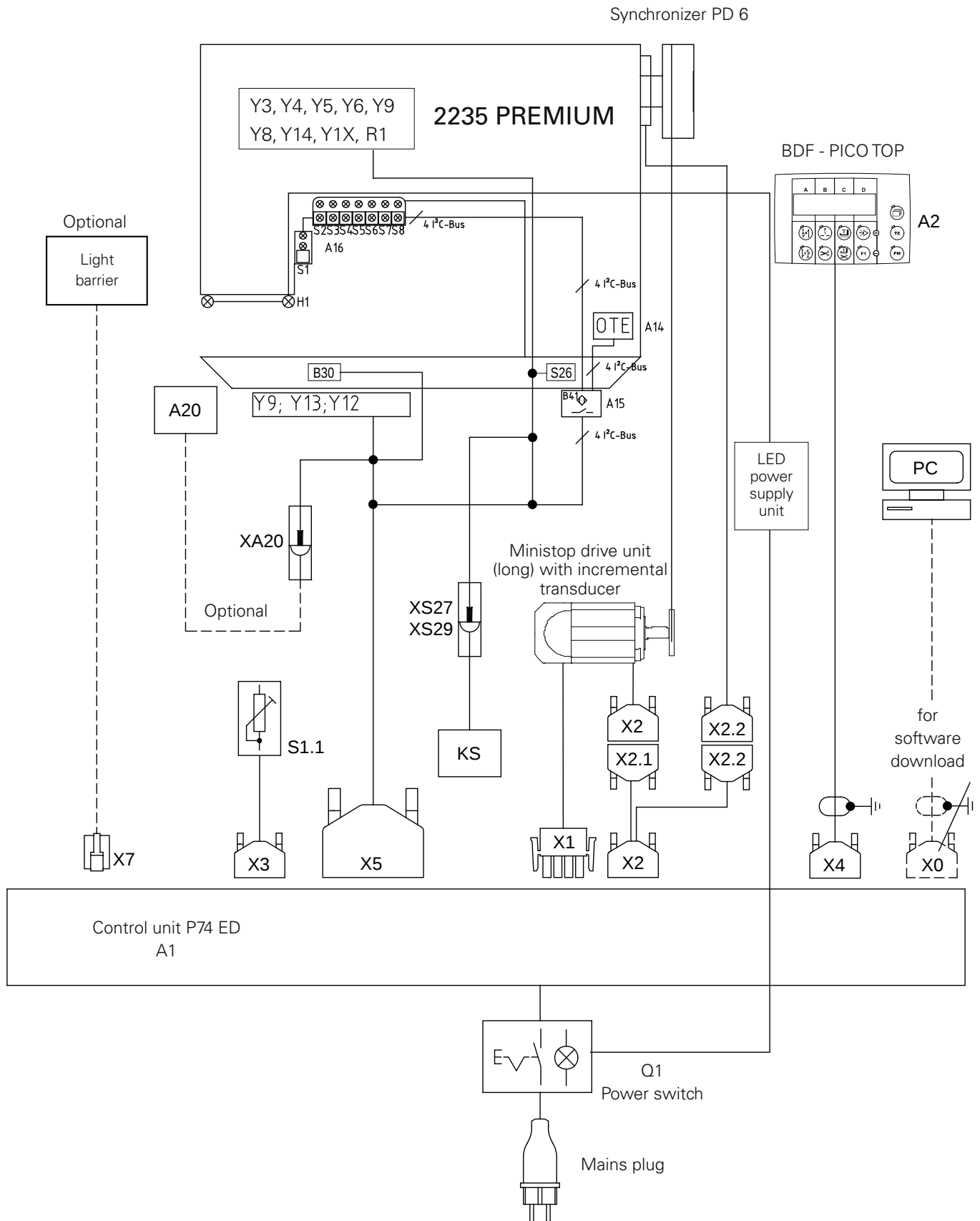
Reference list for the Circuit diagrams 91-191 520-95

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





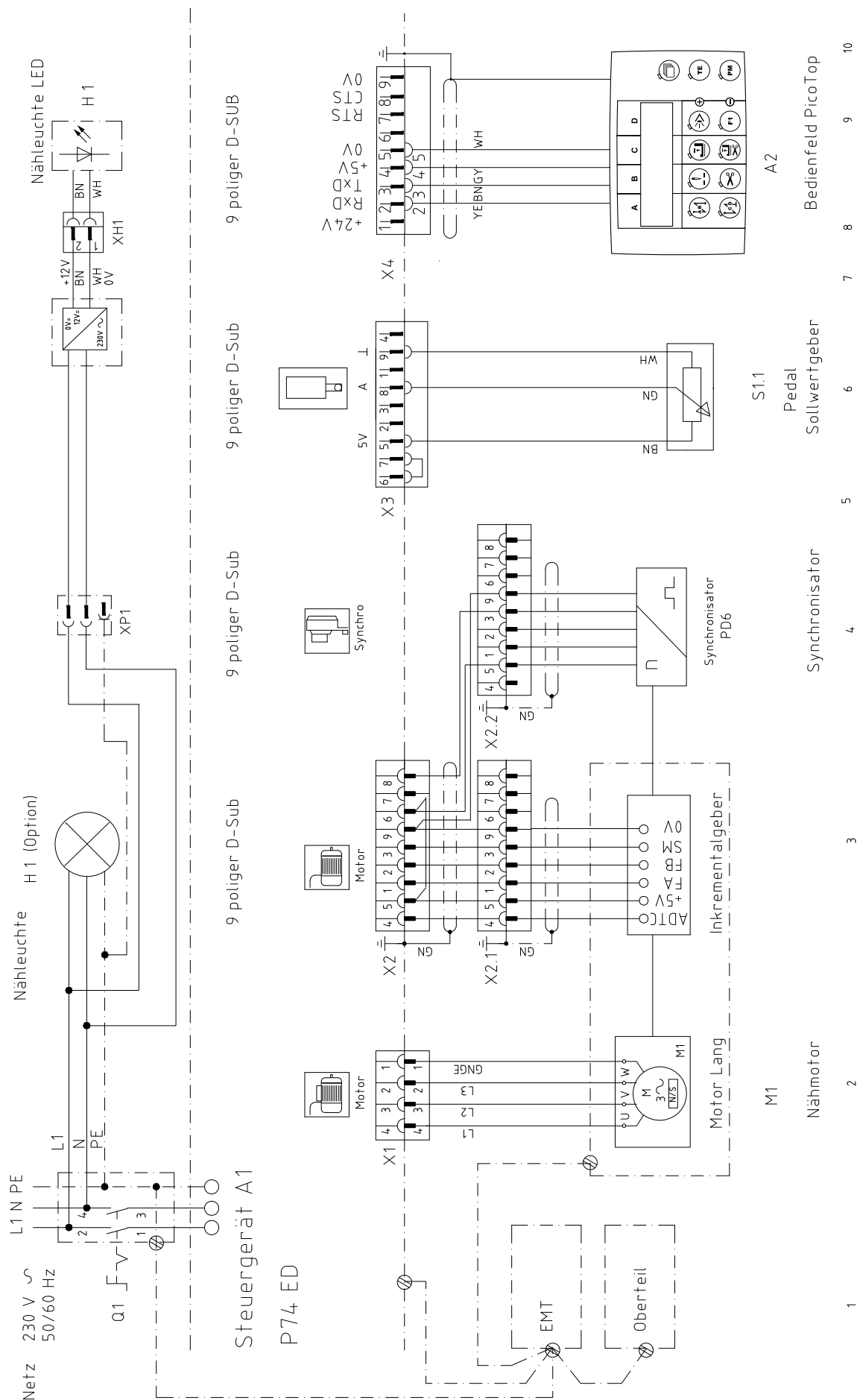


2.03 Block diagram PFAFF 2235 PREMIUM with control pack P74 ED-L

2.04 Circuit diagrams PFAFF 2235 PREMIUM

Reference list for the Circuit diagrams 91-191 519-95

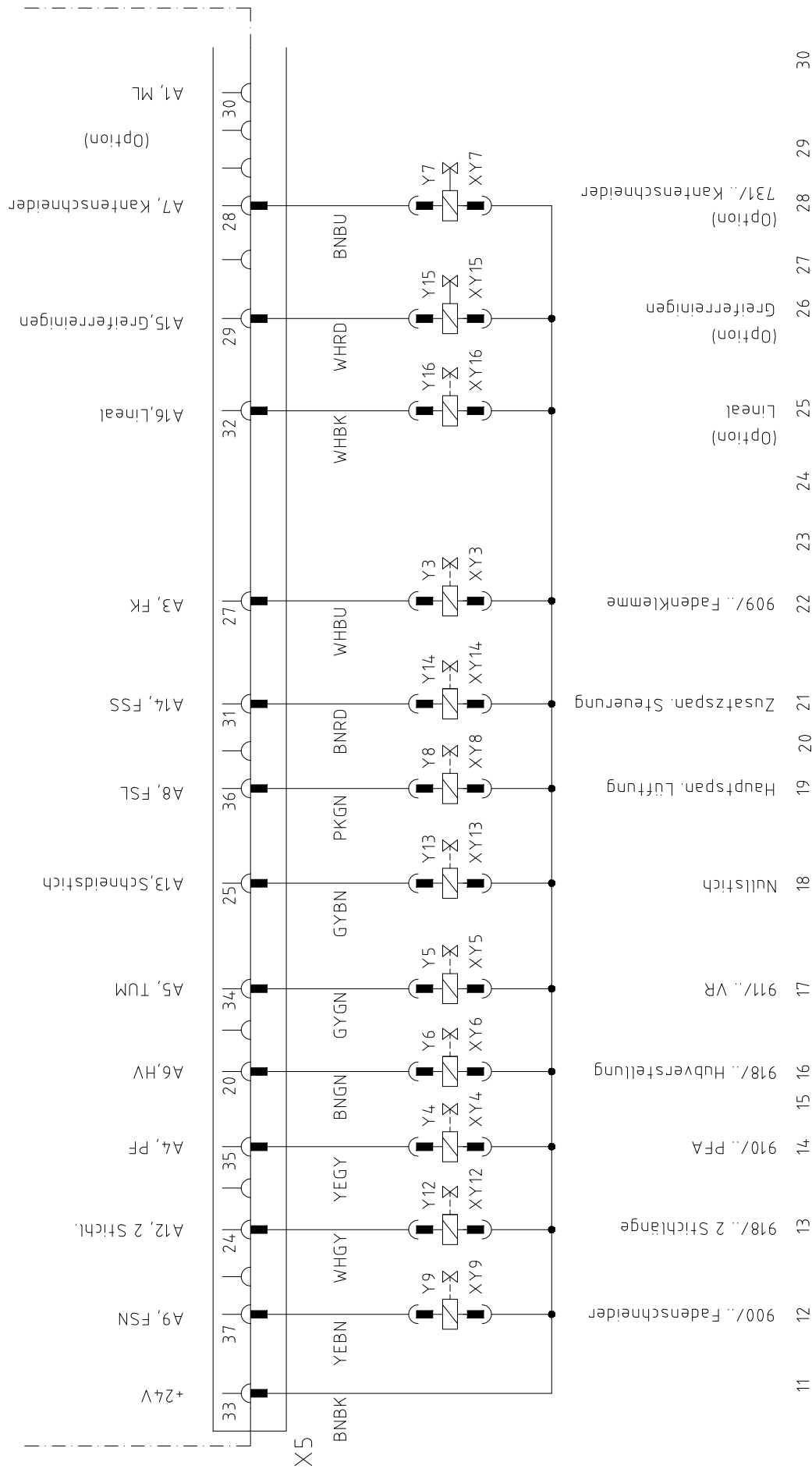
A1	Steuergerät P74 ED-L	X3	Speed control unit
A1	Controller P74 ED-L	X4	PicoTop control panel
A2	Control panel (PicoTop)	X5	Input/output plug
A14	Sewing head recognition (OTE)	X7	Light barrier plug & bobbin thread monitor (optional)
A15	Oil sensor (2C-Bus)	XA14	A14 Sewing head recognition (OTE)
A16	Keyboard (2C-Bus)	XA15.1	A15 Oil sensor (2C-Bus)
A20/1	Bobbin thread monitor 1 (optional)	XA15.2	A15 Oil sensor (2C-Bus) >
A20/2	Bobbin thread monitor 2 (optional)		A16 Keyboard (2C-Bus)
B30	Slider monitoring (optional)	XA20	A20 Bobbin thread monitor (optional)
B41	Oil sensor (2C-Bus)	XR1	R1 Potentiometer for reduced speed during stroke adjustment
H1	Sewing lamp	XS26	Start inhibitor
R1	Potentiometer for reduced speed during stroke adjustment	XS27	Stroke control
M1	Sewing motor	XS28	Speed limitation from 9mm stitch length on
Q1	Main switch	XS29	Centre guide
S1.1	Pedal speed control unit	XY3	Y3 Thread clamp (-909/..)
S1	Key 1 depending on parameter other function	XY4	Y4 Presser foot lift (-910/..)
S2	Key 2 depending on parameter other function	XY5	Y5 Backtacking device (-911/..)
S3	Key 3 depending on parameter other function	XY6	Y6 Stroke adjustment (-918/26)
S4	Key 4 depending on parameter other function	XY8	Y8 Thread tension release
S5	Key 5 depending on parameter other function	XY9	Y9 Thread trimmer (-900/..)
S6	Key 6 depending on parameter other function	XY12	Y12 2nd stitch length quick adjustment (-918/29)
S7	Key 7 depending on parameter other function	XY13	Y13 Trim stitch
S8	Key 8 Emergency off	XY14	Y14 Thread tension control
S26	Start inhibitor	XY15	Y15 Hook cleaning A20 Bobbin thread monitor (-926/..)
S27	Stroke adjustment	Y3	Thread clamp (-909/..)
S28	Speed limitation from 9mm stitch length on	Y4	Presser foot lift (-910/..)
S29	Centre guide	Y5	Backtacking device (-911/..)
X0	RS232 interface (PC)	Y6	Stroke adjustment (-918/26)
X1	Sewing motor	Y8	Thread tension release
X2	Incremental transmitter	Y9	-900/.. Thread trimmer
X2.1	Incremental transmitter	Y12	2nd stitch length (-918/29)
X2.2	Synchronizer PD 6	Y13	Trim stitch
		Y14	Thread tension control
		Y15	Hook cleaning A20 Bobbin thread monitor (-926/..) optional
		Y16	Centre guide unit (only on the 2546)



Ausgänge

Steuergerät A1 P74 ED

37 poliger D-Sub



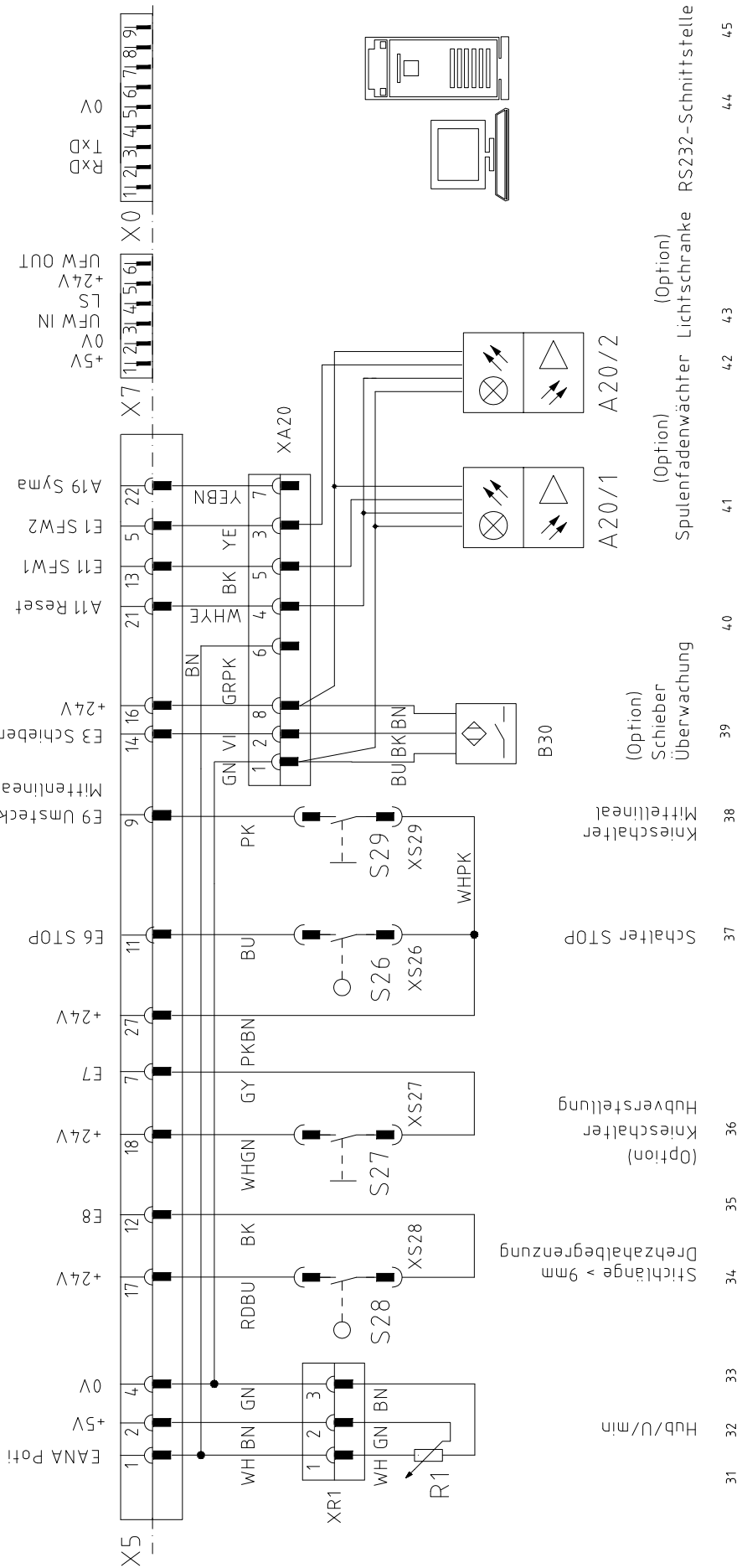
Steuergerät A1 P74 ED

Eingänge

37 poliger D-Sub

6 poliger Western

9 poliger D-SUB





[illegible]



Europäische Union
Wachstum durch Innovation – EFRE



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

Printed in Germany