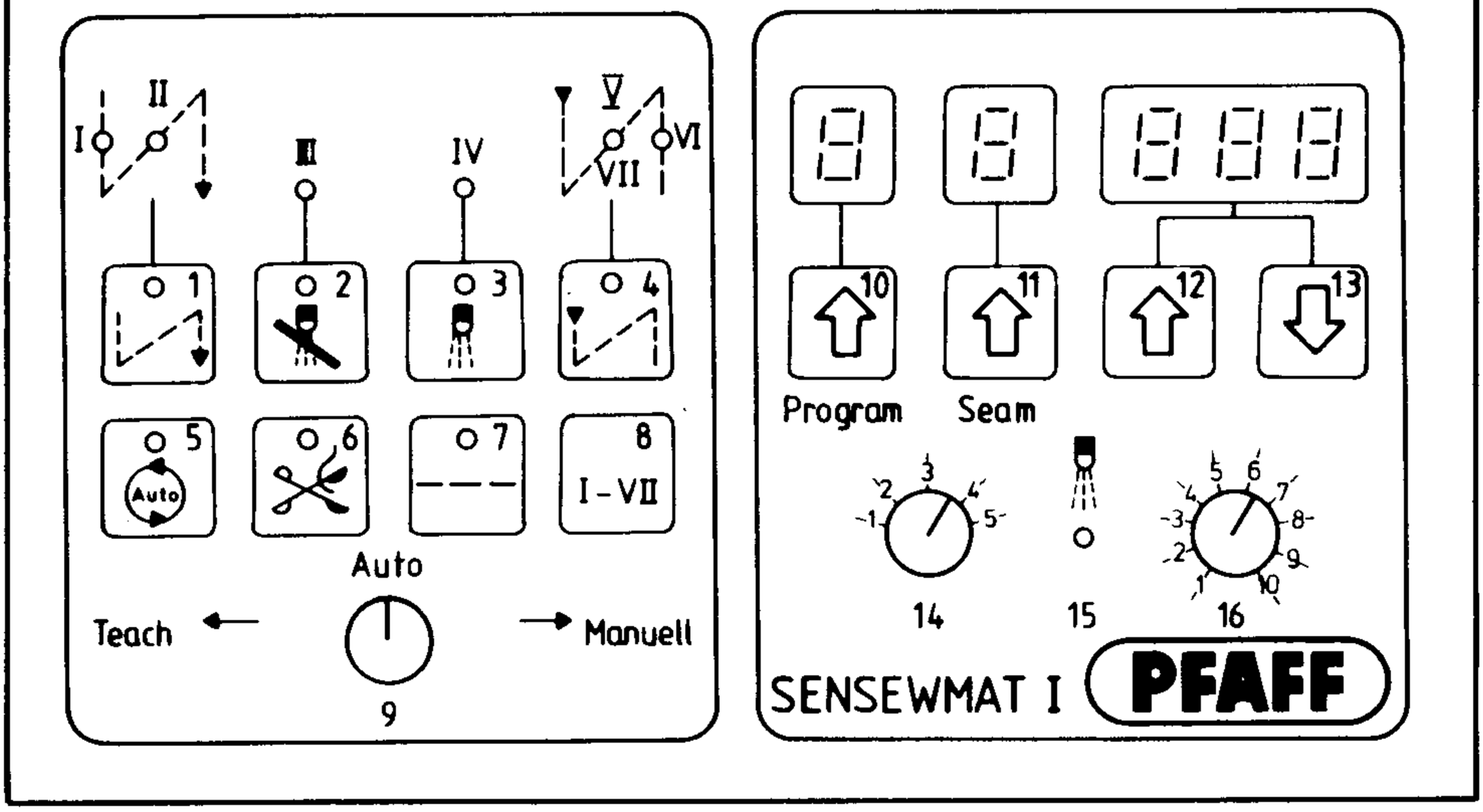
PFAFF®

SENSEWMAT I

Instruction and
Service manual



The number of pulses to be input can either be computed by the following formula or be found in the respective table.

Number of pulses $= \frac{\textbf{Needle-to-sensor distance – stitching margin}}{\textbf{Stitch length}}$ **x 38**

1 stitch = 38 pulses

The number of pulses thus computed are only basic values which may be deviated from.

1

Number of pulses at a sensor-to-needle distance of **10*** mm

Stitch margin "X"							
3	266	177	–				
2,5	285	190	–				
2	304	198	–				
1,5	323	215	162				
1	342	228	171				
	1,0	**1,5**	**2,0**	Stitch length			

*** Caution:** On this version the maximum speed must be reduced to 3500 s.p.m.

2

Number of pulses at a sensor-to-needle distance of **18** mm

Stitching margin "X"	1,0	1,5	2,0	2,5										
7	418	279	–	–										
6	456	304	–	–										
5	494	329	247	–										
4	532	355	266	–										
3	570	380	285	–										
2,5	589	393	295	–										
2	608	405	304	243										
1,5	627	418	314	251										
1	646	431	323	258										
	1,0	**1,5**	**2,0**	**2,5**	Stitch length									

3

Number of pulses at a sensor-to-needle distance of **28** mm

Stitching margin "X"	1,0	1,5	2,0	2,5	3,0	3,5								
7	798	532	399	319	266	–								
6	–	557	418	334	279	–								
5	–	583	437	350	291	250								
4	–	608	456	365	304	261								
3	–	633	475	380	319	271								
2,5	–	646	485	388	323	277								
2	–	658	494	395	329	282								
1,5	–	671	504	403	336	288								
1	–	684	513	410	342	293								
	1,0	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	Stitch length							

Contents

Instruction Book

SENSEWMAT I with motor control 5 G 53 AP 477

SENSEWMAT is a seam-length independent microprocessor control which makes it possible to program the last stitch of a seam segment to within a fraction of a stitch from the workpiece edge.

The control includes the following functions:

- 6 programs with 4 seam segments
- Workpiece edge sensing by sensor
- Stitch count
- Workpiece edge sensing by sensor and stitch count
- Triggering of single stitches by knee switch
- Start and finish backtack
- Optional constant sewing speed
- Thread trimming
- Manual sewing
- Thread wiping
- Edge guide control
- Presser foot lifting

1 Explanation of the functions

1.1 Program

The SENSEWMAT is designed for 6 programs with 4 seam segments each. The individual programs can be linked together so that a maximum of 24 seams can be sewn in succession.

1.2 Workpiece edge sensing by sensor

The sensor recognizes the workpiece edge and the last stitch is positioned at the required seam depth.
In top-stitching (e. g. of collars, sleeves, flaps, small parts, etc.), the method of sensing is referred to as: **workpiece edge sensing outside the part;** in sewing on parts (e. g. labels, appliqués, etc.) it is referred to as **workpiece edge sensing inside the part.**

1.3 Stitch count

Stitch counting is used when, e. g., the seam segment is shorter than the distance to the needle, or the material property does not allow use of workpiece edge sensing, or when a programmed sewing stop is to take place within the part. A maximum of 255 stitches can be input.

1.4 Workpiece edge sensing by sensor and stitch count

This combination is needed, e. g., with narrow curves when the sensor clears before ending the seam and the machine would stop prematurely. Workpiece edge sensing by sensor should be programmed at the required seam depth. The stitch count must be programmed in such a way that operation continues a little beyond the curve with stitch count. In the work sequence, first the input stitches are sewn and after that the sensor takes over workpiece edge sensing automatically.

1.5 Single stitch

During manual sewing or when sewing with stitch count, single stitches are frequently required (e. g. when sewing corners). The length of a single stitch can be programmed independently of the stitch length set. Programming is made in program **1**, seam **1**.

1.6 Start and finish backtack

A start and finish backtack can be triggered in every seam. Programming of the number of stitches can only take place in program 1, seam 1.

1.7 Constant sewing speed

At the motor, a constant sewing speed can be adjusted, e. g. for short seam segments. When the motor pedal is operated, the motor switches to this speed immediately. This speed is triggered at key 5.

1.8 Thread trimming

Thread trimming can be programmed in every seam. The thread is then cut automatically. During manual sewing, thread trimming can be triggered by pressing the pedal backwards.

1.9 Manual sewing

When switch 9 is turned to position "manual", the machine can be used as a normal high-speed seamer. A start and finish backtack can be optionally input.

1.10 Thread wiping

After thread trimming, the thread wiper places the starting thread under the sewing foot shoe so that it is not clamped under the sewing foot when sewing is started again. The thread wiper action can be disabled.

1.11 Edge guide control

An edge guide can be controlled by a cylinder in such a way that it moves away from the workpiece upon every sewing stop in which the presser foot is raised (except after thread trimming) and moves to the set position again when sewing is re-started. In this way the workpiece can be turned at corners without hindrance by the edge guide.

1.12 Presser foot lifting

Lifting of the presser foot takes place automatically after sensing of the workpiece edge by the sensor when the pedal is pressed forward. In addition, the presser foot can be lifted by pressing the pedal backward.

2 Explanation of the control panel of SENSEWMAT I

The control panel is divided into two fields. LED's which are marked I to VII are situated in the left field. These LED's are needed for programming.

I = LED for start backtack seam segment forward

II = LED for start backtack seam segment backwards

III = LED for stitch count

IV = LED for workpiece edge sensing by sensor

V = LED for finish backtack seam segment backwards

VI = LED for finish backtack seam segment forward

VII = LED's V and VI are called together with VII for single stitch

The middle part of the left field contains keys which are marked with digits (1–8). These are required for triggering functions.

Functions of the individual keys:

Triggering of the function "start backtack"

Triggering of the function "stitch count"

Triggering of the function "workpiece edge sensing by sensor"

Triggering of the function "finish backtack"

Triggering of a previously adjusted constant sewing speed

Calling forward “thread trimming”

Memory key
With this key, the functions triggered on keys 1–6 in the respective seam are stored.

Seam segment pre-selection key
With this key, the diodes I to VII are initiated for programming.

In the lower part of the left field a rotary switch marked with the number 9 is situated.

Functions of the switch:

In position “Teach” the program interlock is cancelled. The SENSEWMAT I can now be programmed. Sewing is not possible in this position.

In position “automatic” the program interlock is effective (program change at key 10 possible). The machine can execute only the stored functions.

In position “manual” the program interlock is effective again. The machine can be used for normal sewing. The start and finish backtacks can be input at keys 1 and 4. The sewing threads can be cut by back-pedalling. In addition, the presser foot can also be raised by back-pedalling.

In the middle part of the right field keys marked with numbers 10–13, are located.

Functions of the keys:

Triggering of programs 1–6

Triggering of seams 1–4 in the respective program

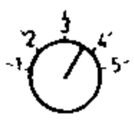
Input – more pulses or stitches

Input – fewer pulses or stitches

In the top part of the right field, LCD displays are situated on which the values input on keys 10–13 are displayed.

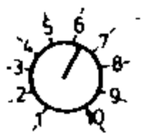
In the lower part of the right field two rotary switches as well as an LED are installed.

Functions of the switches and the LED:



Rough setting of the sensor sensitivity

Indicator diode of the sensor sensitivity



Fine adjustment of the sensor sensitivity

3 Programming of the SENSEWMAT

3.1 Start and finish backtack

The number of the stitches in the start and finish backtack can only be programmed in **program 1, seam 1.** Triggering of the backtacks is possible in every program and in every seam.

3.1.1 Start backtack

Switch on machine master switch.
Set switch **9** to position **"Teach"**.
Enter program **1** by pressing key **10**.
Enter seam **1** by pressing key **11**.
Press key **8** (diode **I** flashes).
Enter the required number of stitches for the forward leg of the start backtack on key **12** or **13**.
Press key **8** (diode **II** flashes).
Enter the required number of stitches for the reverse leg of the start backtack on key **12** or **13**.

3.1.2 Finish backtack

Turn on machine master switch.
Turn switch **9** to position **"Teach"**.
Enter program **1** by pressing key **10**.
Enter seam **1** by pressing key **11**.
Press key **8** until diode **V** flashes.
Enter the required number of stitches for the reverse leg of the finish backtack on key **12** or **13**.
Press key **8** (diode **VI** flashes).
Enter the required number of stitches for the forward leg of the finish backtack on key **12** or **13**.

3.2 Program

Triggering of the programs can take place at key **10** when stitch **9** is in position **"Teach"** or when switch **9** is in position **"automatic"** and the memory button **7** is pressed in every program at the first seam (diode must light up).

3.3 Programming of the seams

Make a sketch on the enclosed work sheet and number the individual seams in the sequence in which they are to be sewn. In the table, mark the functions to be carried out in the seams. Also enter the required stitch length and seam depth in the table.
Set the stitch length at the machine.
Turn on machine master switch.
Turn switch **9** to position **"Teach"**.
Enter program **1** at key **10**.
Enter seam **1** at key **11**.
Erase old program functions by pressing keys **1–7** (the diodes of keys **1–7** must no longer light up).
Enter new program functions, as checked off in the work sheet, by pressing keys **1–6.** The respective diodes must light up.
Press memory button **7**, (diode lights up).

If stitch count is needed in seam **1**, press key **8** until diode **III** flashes.
Enter the required number of stitches at key **12** or **13**.

If edge sensing by sensor is required in seam **1**, press key **8** until diode **IV** flashes.
Enter the number of pulses for the required seam depth (see table 1–3) at key **12** or **13**.

All 4 seams can be programmed in this sequence. If only 3 seams are required in a program, the functions in seam **4** must be cancelled at keys **1–7**.
Enter seam **1** at key **11** and set switch **9** at position **"automatic".**

3.4 Program linking

If more than 4 seams are needed in a program, two or more adjacent programs can be linked together.
Example:
If 7 seams are needed for an operation, programming is done as follows:
Switch on machine master switch and set switch **9** at position **"Teach"**.
Enter program **1** at key **10**.
Program the first 4 seams as described in item 3.3.
Press and hold switch **6** on the motor control panel to link the program.
Press key **11**. Number 2 appears in display **"program"** and number **1** in display **"seam"**.
Release switch **6** at the motor control panel.
Program seams **5, 6** and **7** (2–1, 2–2 and 2–3) as described in item 3.3.
Cancel the functions of seam **8** (2–4).
Press key **10** until number **1** appears in display.
Check:
When key **11** is pressed, the following number combinations must appear in displays **"program"** and **"seam"**: 1–1, 1–2, 1–3, 1–4, 2–1, 2–2, 2–3, 2–4, 1–1, etc.
Set switch **9** to position **"automatic"**.
All adjacent programs can be linked together in this way (e. g. 1 with 2, 2 with 3 etc.).

3.5 Program separation

Set switch **9** at position **"Teach"**.
Enter program **1** at key **11** and seam **4** at key **10**.
Press and hold switch **6** on the motor control panel.
Press key **11**. Number **2** appears in display **"program"** and number **1** in display **"seam"**.
Release switch **6**.
Programs **1** and **2** are now separated again.
Enter new program and set switch **9** at position **"automatic"**.

3.6 Program of a single stitch

Set switch **9** at position **"Teach"**.
Enter program **1**, seam **1**.
Press key **8** until the diodes **V** and **VI** both flash (function **VII**).
Enter the number of pulses at key **12** or **13** required for the fractional stitch length.
Set switch **9** at position **"automatic"**.
Triggering of the single stitch is effected by means of a knee switch.

3.7 Sensor sensitivity

3.7.1 Workpiece edge sensing within the material

Place the material, e. g. that on which a label is to be sewn, on the sensor (in the needle plate).
Turn switch **14** until diode **15** lights up.
Now move the material back and forth in all directions.
Diode **15** should shine with same intensity.
Place the label on the workpiece and move both parts over the sensor.
Diode **15** must now no longer shine.
Make fine adjustments of the sensor sensitivity at switch **16**.

3.7.2 Workpiece edge sensing outside the material

Turn switch **14** to position **1**.
Turn switch **16** until diode **15** shines.

3.8 Determination of the end of seam by the operator

In operations in which the seam length of the last seam varies (e. g. in top-stitching the middle of a one-piece collar), the operator can determine the end of seam by pressing the motor pedal backwards.
When the last seam is programmed, only thread trimming key **6** is pressed and memory button **7** (i. e. only the diodes of these keys must light up).

3.9 Correction of the number of stitches or the pulses for the seam depth

3.9.1 Number of stitches for stitch count

Set switch **9** at position **"Teach"**.
Call corresponding seam at key **11**.
Press key **8** until diode **III** flashes.
Correct number of stitches at key **12** or **13**.
Set switch **9** at position **"automatic"**.

3.9.2 Number of pulses for workpiece edge sensing via sensor

Set switch **9** at position **"Teach"**.
Enter corresponding seam at key **11**.
Press key **8** until diode **IV** flashes.
Correct number of pulses at key **12** or **13**.
Set switch **9** at position **"automatic"**.

3.10 Seam interruption

3.10.1 At stitch count

If a seam interruption should occur during sewing with stitch count, (e. g. bobbin change) proceed as follows:
Initiate cutting procedure by pressing the motor control pedal backwards.
Set switch **9** at position **"Manual"**.
Finish the remaining seams manually.
Set switch **9** at position **"Teach"** and afterwards to position **"automatic"** again.

3.10.2 Workpiece edge sensing by sensor

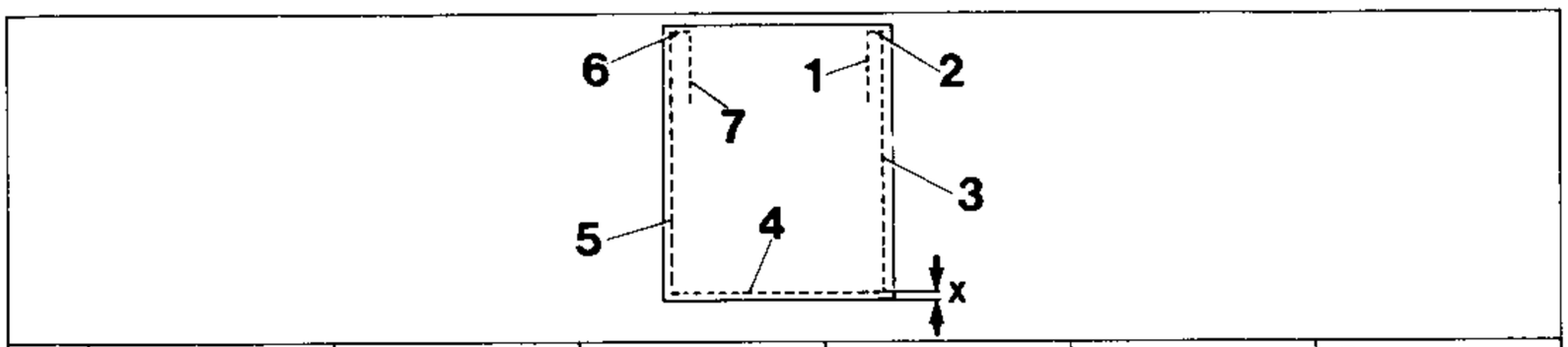
If a seam interruption should occur during sewing with workpiece edge sensing by sensor, (e. g. bobbin change) proceed as follows:
Initiate cutting procedure by pressing motor pedal backwards.
If the interruption is situated in the same seam, it is possible to continue sewing from the interrupted point.
If the seam interruption is situated one seam back, set switch **9** at position **"Manual"** and finish sewing the seam by hand.
Set switch **9** at position **"automatic"** again.

> **Note**
>
> In order to guarantee optimum precision, the speed of the machine should be as constant as possible approx. 30–35 mm before the end of the seam. Therefore, in this section the pedal should be pushed fully forward.

3.11 Generation of a program based on an example

Required operation:
Sewing on a shirt pocket. Stitch length **2.5 mm**, seam depth **1.5 mm**.

Working sequence:
Make a sketch on the enclosed work sheet and number the individual seams in the sequence in which they are sewn.



▲	1				2				3				4				5				6			
△	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1																								
2		X				X	X																	
3	X		X	X	X																			
4																								
5																								
6							X																	
7	X	X	X	X	X	X	X																	

N / 2.5	N – Stichlänge / Stitch length	N – Longueur du point / Largo de puntada
X / 2.5	X – Kantenabstand / Stitching margin	X – Relarge / Margen de costura

▲ – Programm-Nr. / Program No. ▲ – N° de programme / N° del programa

△ – Naht-Nr. / Seam No. △ – N° de couture / N° de la costura

Check off in the table the functions which should be executed in seams **1–7**.
Enter required stitch length **(2.5 mm)** and required seam depth **(1.5 mm)** in the table.
Switch on machine master switch.
Set the stitch length at the machine.
Set switch **9** at position **"Teach"**.

Triggering the functions

3.11.1 Seam 1

Input program **1** at key **11** and seam **1** at key **10**, (display 1–1).
Erase the old functions at keys **1–7** (diodes off).
Workpiece edge sensing call at key **3** (diode on).
Press memory button **7**, (diode on).

Seam 2

Input seam **2** at key **11**, (display 1–2).
Erase old functions at keys **1–7** (diodes off).
Initiate stitch count at key **2** (diode on).
Press memory button **7**, (diode on).

Seams 3 and 4

Program seams **3** and **4** the same as seam **1**.

Seam 5

Before seam **5** can be programmed, program **1** must first be linked with program **2**. Press and hold switch **6** on the motor control panel for program linking.
Press key **11**. Number **2** appears in display "program" and a **"1"** in display **"seam"**.
Release switch **6** again.
Program seam **5** the same as seam **1** (1st seam in the second program).

Seam 6 = 2nd seam in the second program (display 2–2).
Enter seam **2** at key **11**.
Erase old functions at keys **1–7** (diodes off).
Initiate stitch count at key **2** (diode on).

Seam 7 = 3rd seam in the second program (display 2–3).
Enter seam **3** at key **11**.
Erase the old functions at keys **1–7** (diodes off).
Initiate stitch count at key **2** and thread trimmer at key **6** (diodes on).
Press memory button **7**, (diode on).

Seam 8 = 4th seam in the second program (display 2–4).
Enter seam **4** at key **11**.
Erase the old functions at keys **1–7** (diodes off).

3.11.2 Programming of the functions: Stitch count and workpiece edge sensing b seams

Seam 1 at key 10
Enter program **1**, seam **1** at key **11**.
Press key **8** until diode **IV** flashes.
Enter the number of pulses for the required seam depth at key **12** or **13** (see table 1–3).

Seam 2 at key 10
Enter program **1**, seam **2** at key **11**.
Press key **8** until diode **III** flashes.
Enter the number of stitches required at key **12** or **13**.
Program seams **3, 4, 5, 6** and **7** the same as seams **1** and **2**.

3.11.3 Final worksteps

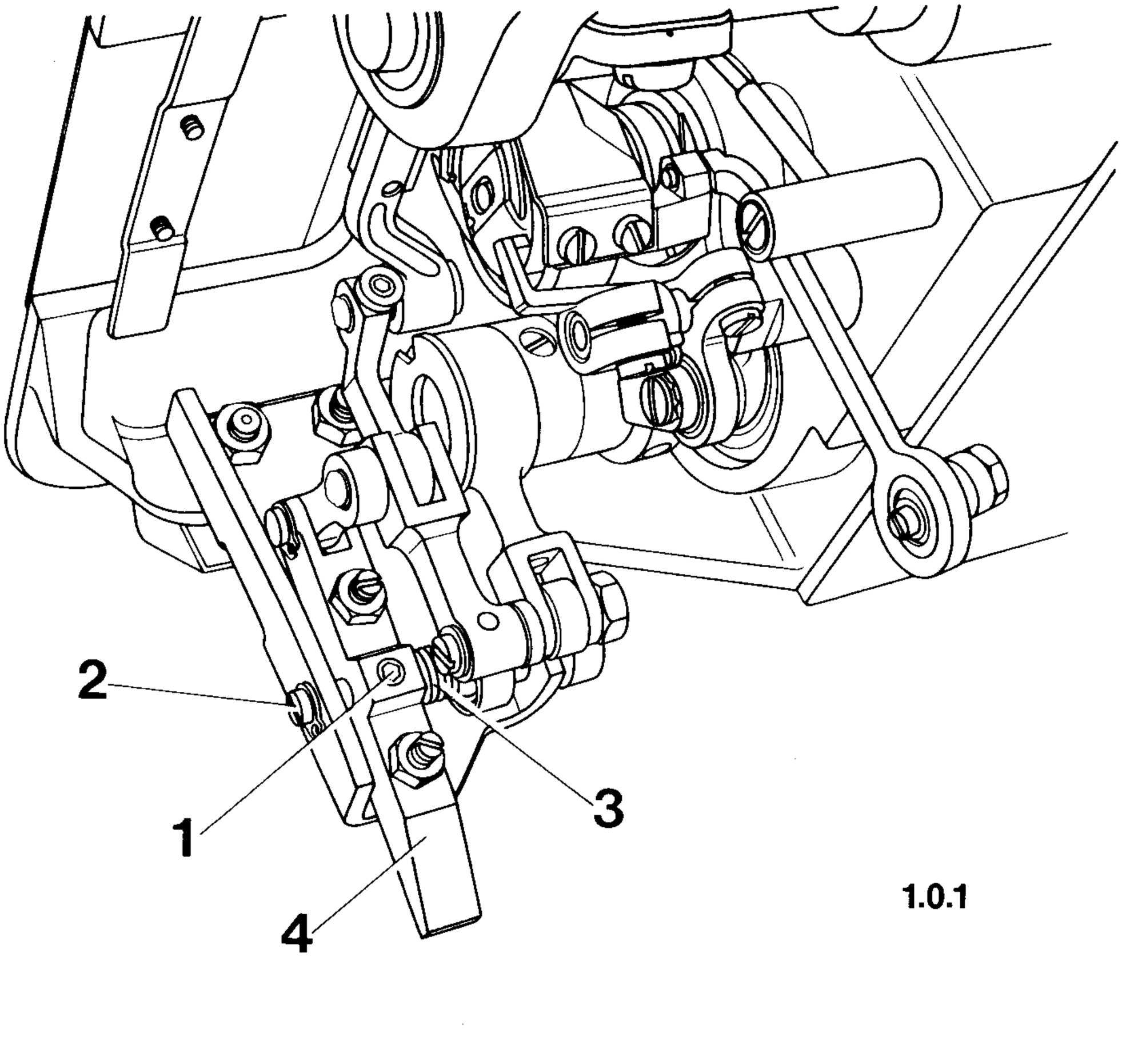
Set switch **9** at position **"automatic"**.
Adjust sensor sensitivity (see item 3.7).
Sew the **7** seams and check the positioning accuracy.
Correct number of pulses, if necessary.
Again sew the 7 seams.
If the number of pulses is correct, enter this in the work sheet. Now the program is established in writing and can be input again at any time.

Service Manual

1 Torsion spring of feed drop lever on Pfaff 483 and 487

Setting:

The tension of torsion spring **3** should be set so that feed drop lever **4** returns to its basic position after lowering.



1.0.1

1.1 Loosen screw **1** and turn pin **2** approx. 1/4 turn in clockwise direction.

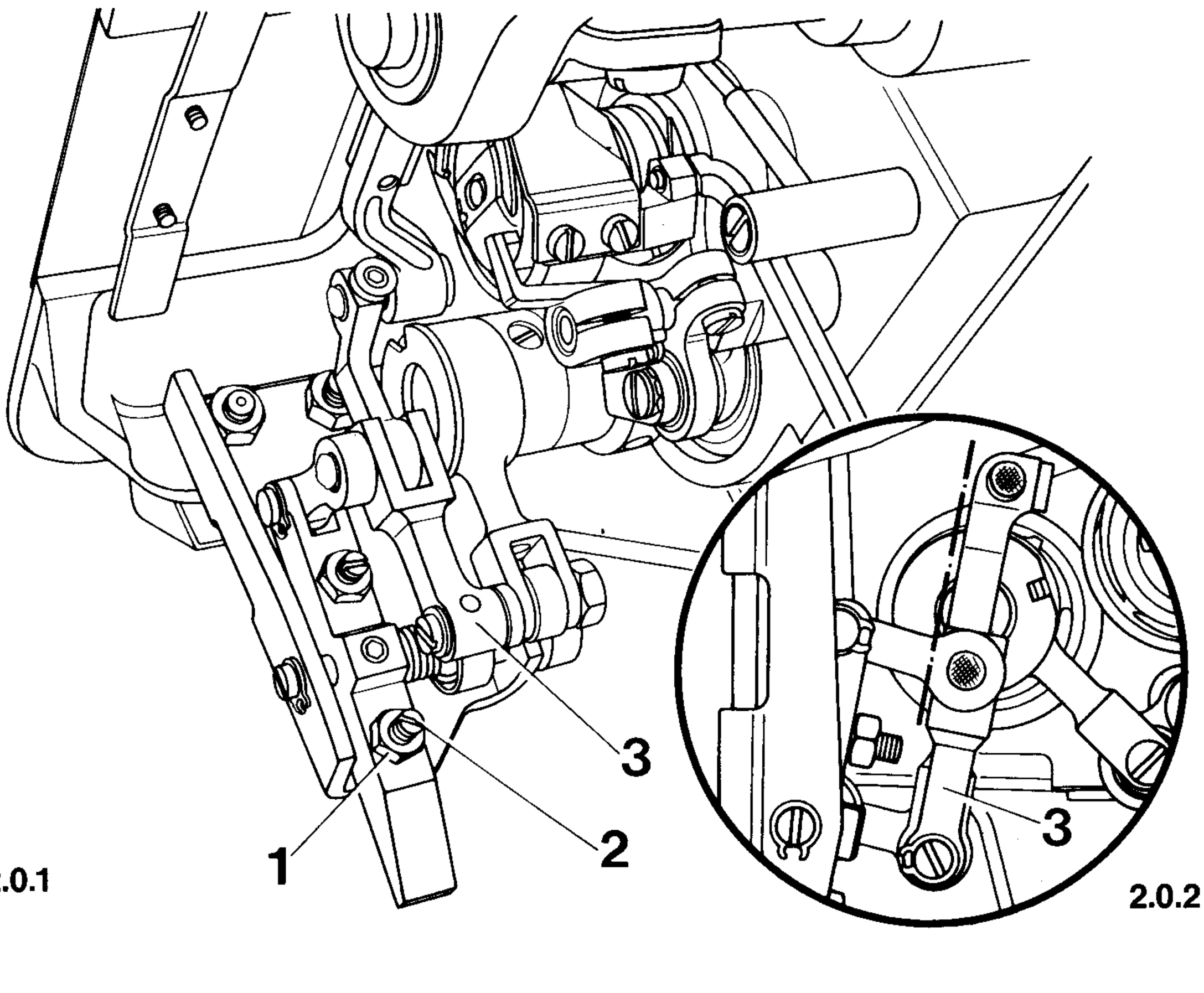
1.2 Tighten screw **1** in this position.

1.3 Check this adjustment (see Setting).

2 Feed drop joint lever on Pfaff 483 and 487

Setting:

With the machine set for its largest stitch length and with the bottom feed dog at its front reversal point the top and lower half of feed lowering joint lever **3** should form a line (see Fig. 2.0.2).



2.0.1

2.0.2

2.1 Set machine for largest stitch length.

2.2 Loosen nut **1**.

2.3 **Turn screw 2 in such a way that the top and lower half of feed lowering joint lever 3 form a line (see Fig. 2.0.2).**

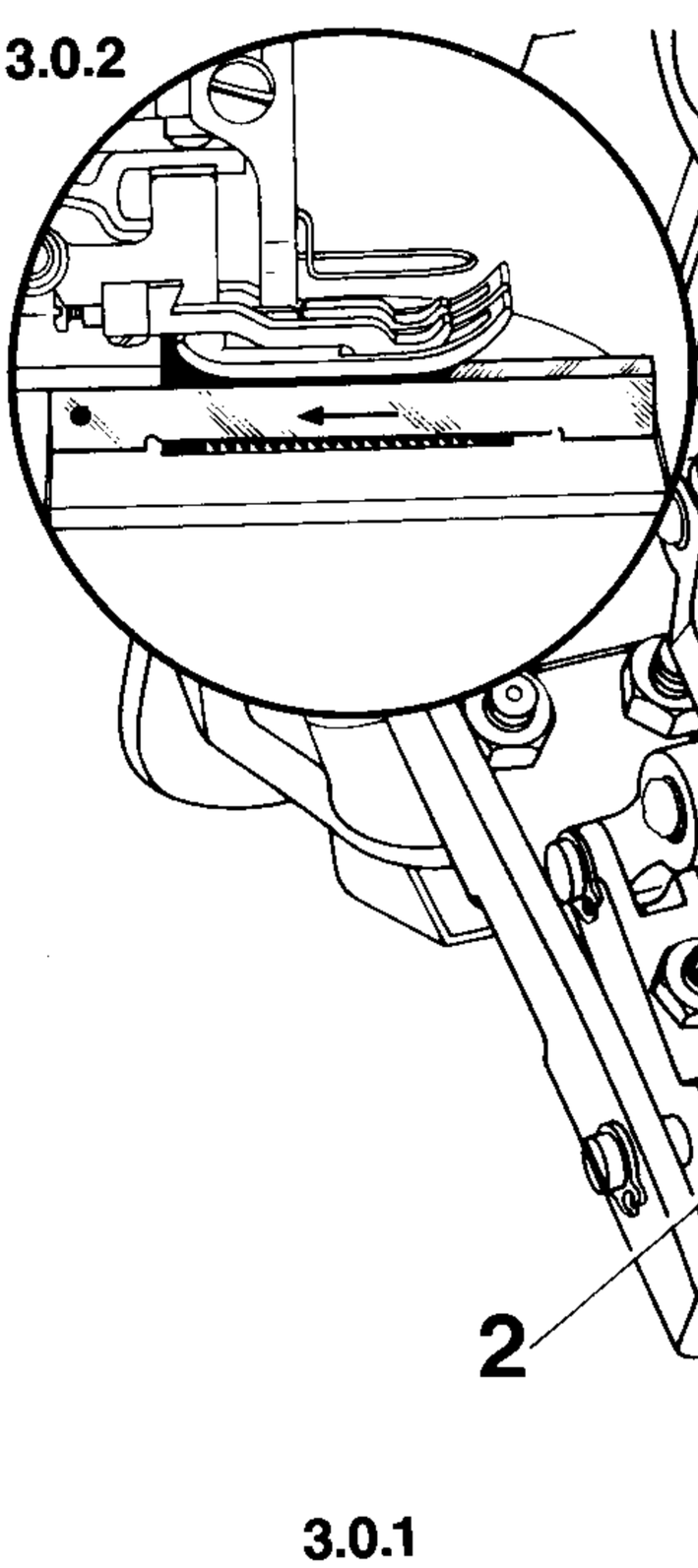
2.4 Tighten nut **1** in this position.

3 Bottom feed height on Pfaff 483 and 487

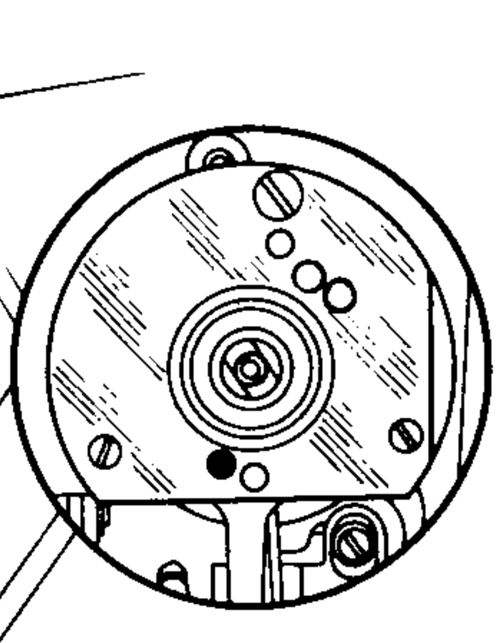
Setting:

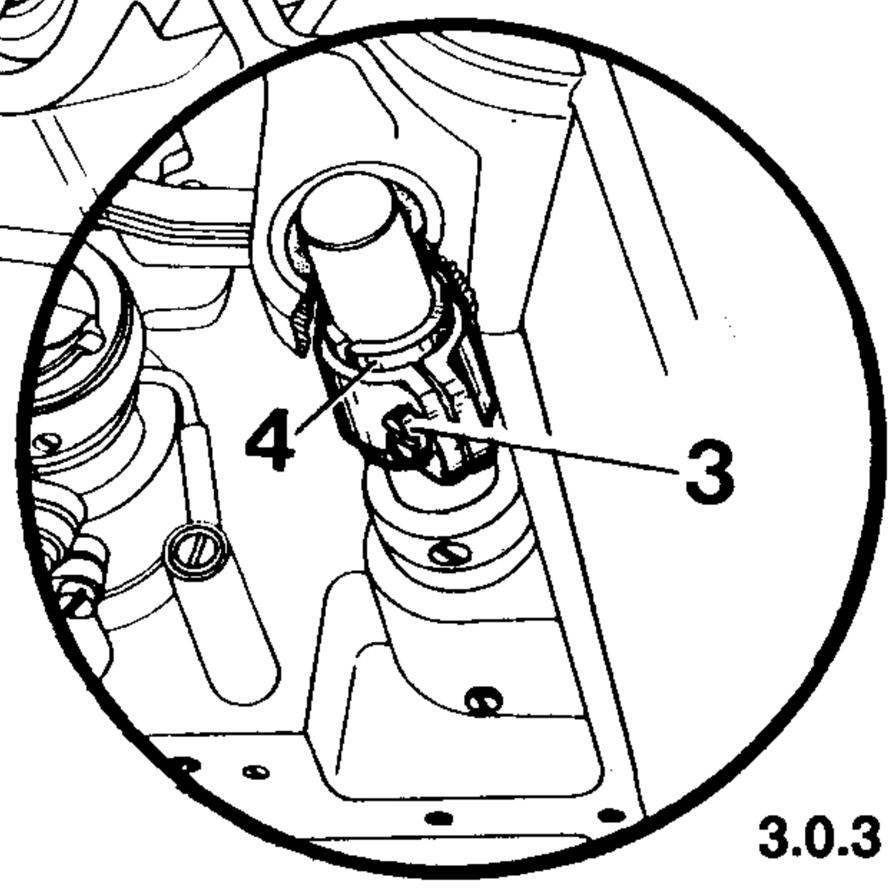
With the stitch length set at **"0"** and with the needle bar positioned **0.6 mm past t.d.c.** (= adjustment hole "1"), the bottom feed dog should be positioned in the centre of the feed slot and in its entire length be adjacent to the adjustment gauge (see Fig. 3.0.2).

3.0.2



3.0.1





3.0.3

3.1 Set the needle bar at **0.6 mm past t.d.c.** and block the machine by inserting the adjustment pin in hole **"1"**.

3.2 Set stitch length **"0"**.

3.3 Position the adjustment gauge under the presser foot in such a way that it is flush with the front edge of the needle plate (see Fig. 3.0.2).

3.4 Lower the presser foot on the gauge by means of the hand lever.

3.5 Position the bottom feed dog in the centre of the feed slot.

3.6 **Loosen nut 1 and turn eccentric 2 until the bottom feed dog is adjacent to the gauge.**

3.7 Loosen screw **3**.

3.8 **Turn eccentric clamp bush 4 in such a way that the bottom feed dog is adjacent to the gauge in its entire length.**

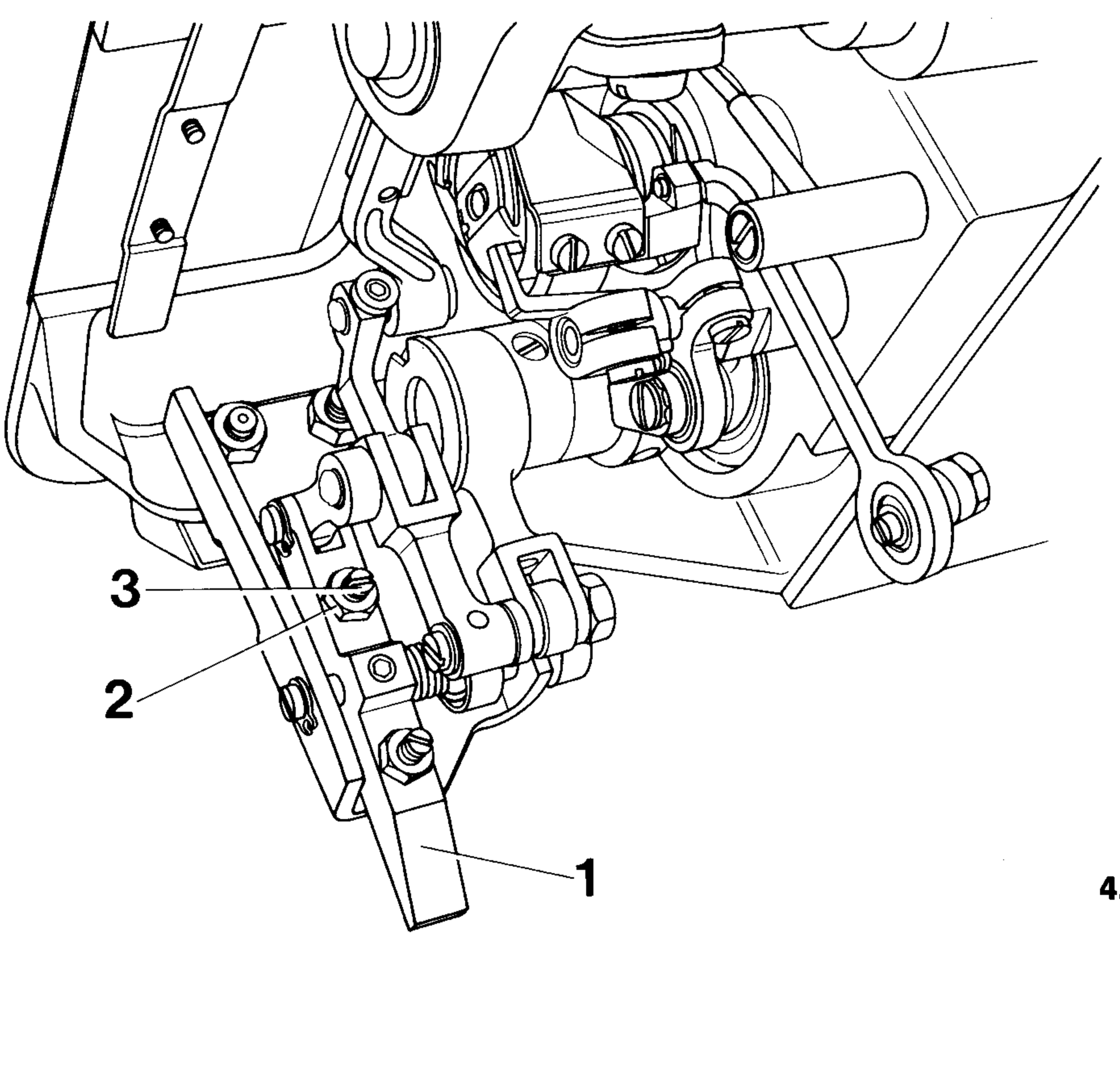
3.9 In this position tighten screw **3** and nut **1**.

3.10 Swing up the hand lever, remove the gauge from under the presser foot and pull the adjustment pin out of the bearing plate.

4 Lowering depth on Pfaff 483 and 487

Setting:

During the entire feeding phase the lowered feed dog should be beneath the upper edge of the needle plate.



4.0.1

4.1 Set bottom feed dog at top dead centre, actuate feed lowering lever **1** by hand and hold tight.

4.2 **Remove nut 2 and turn screw 3 in such a way that the teeth of the bottom feed dog are positioned approx. 0.5–1.0 mm beneath the needle plate.**

4.3 Tighten nut **2** in this position.

4.4 Check this adjustment (see Setting).

5 **Lowering cylinders on Pfaff 483 and 487** (below table top)

Setting:

With the cylinder plunger of the feed lowering cylinder retracted there should be a clearance of approx. **1.0–1.5 mm** between cylinder plunger and feed lowering lever.

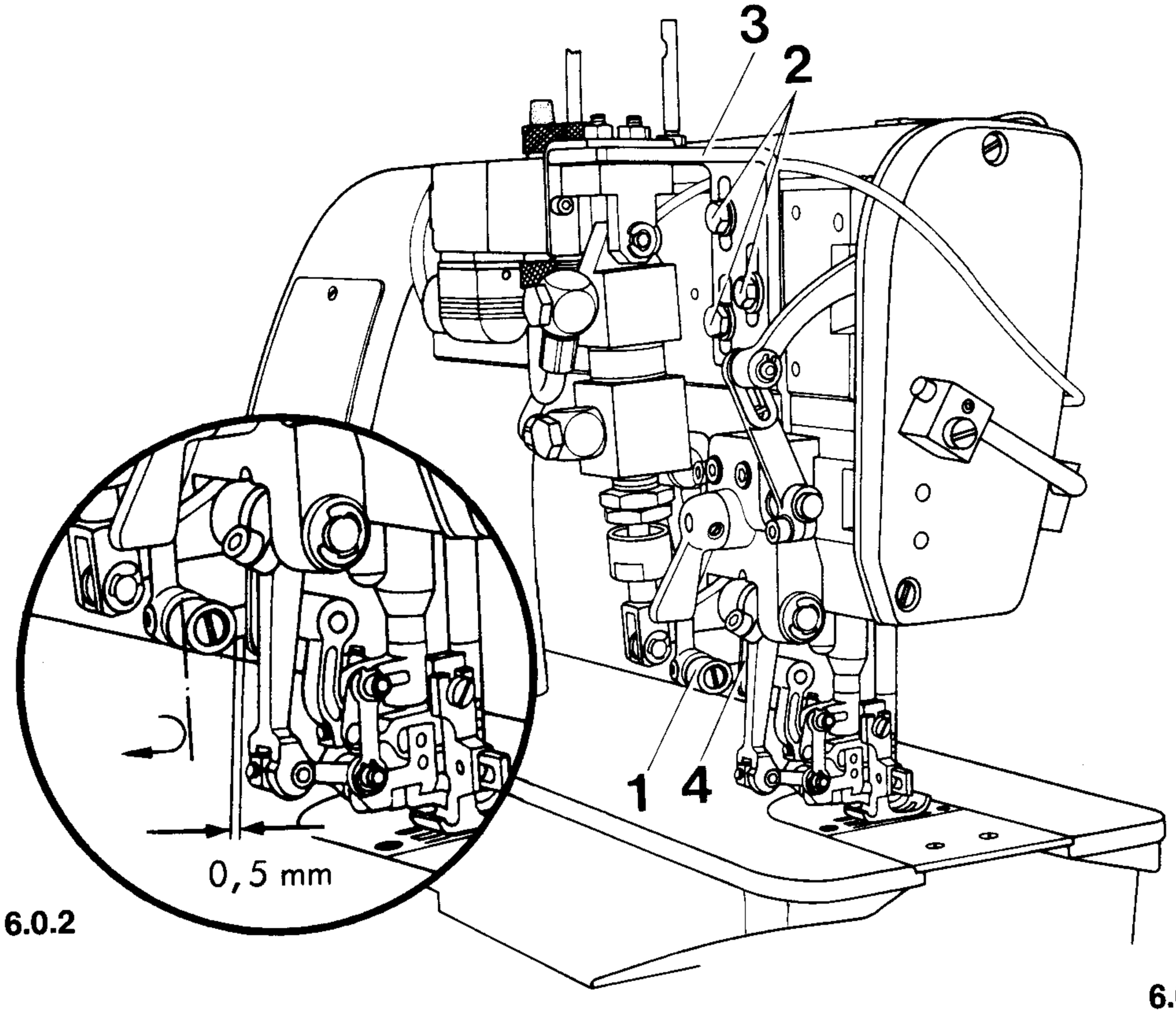
5.1 Loosen the screws of the cylinder bracket lightly and move the cylinder bracket according to Setting.

5.2 Tighten the screws of the cylinder bracket in this position.

6 Clearance between top feed dog lifting lever and actuating lever on Pfaff 487

Setting:

With actuating lever **1** at its front reversal point there should be a clearance of approx. **0.5 mm** between lifting lever **4** and actuating lever **1**.



6.0.2

6.0.1

6.1 Turn the balance wheel until actuating lever **1** is set at its front reversal point.

6.2 Loosen screws **2** lightly.

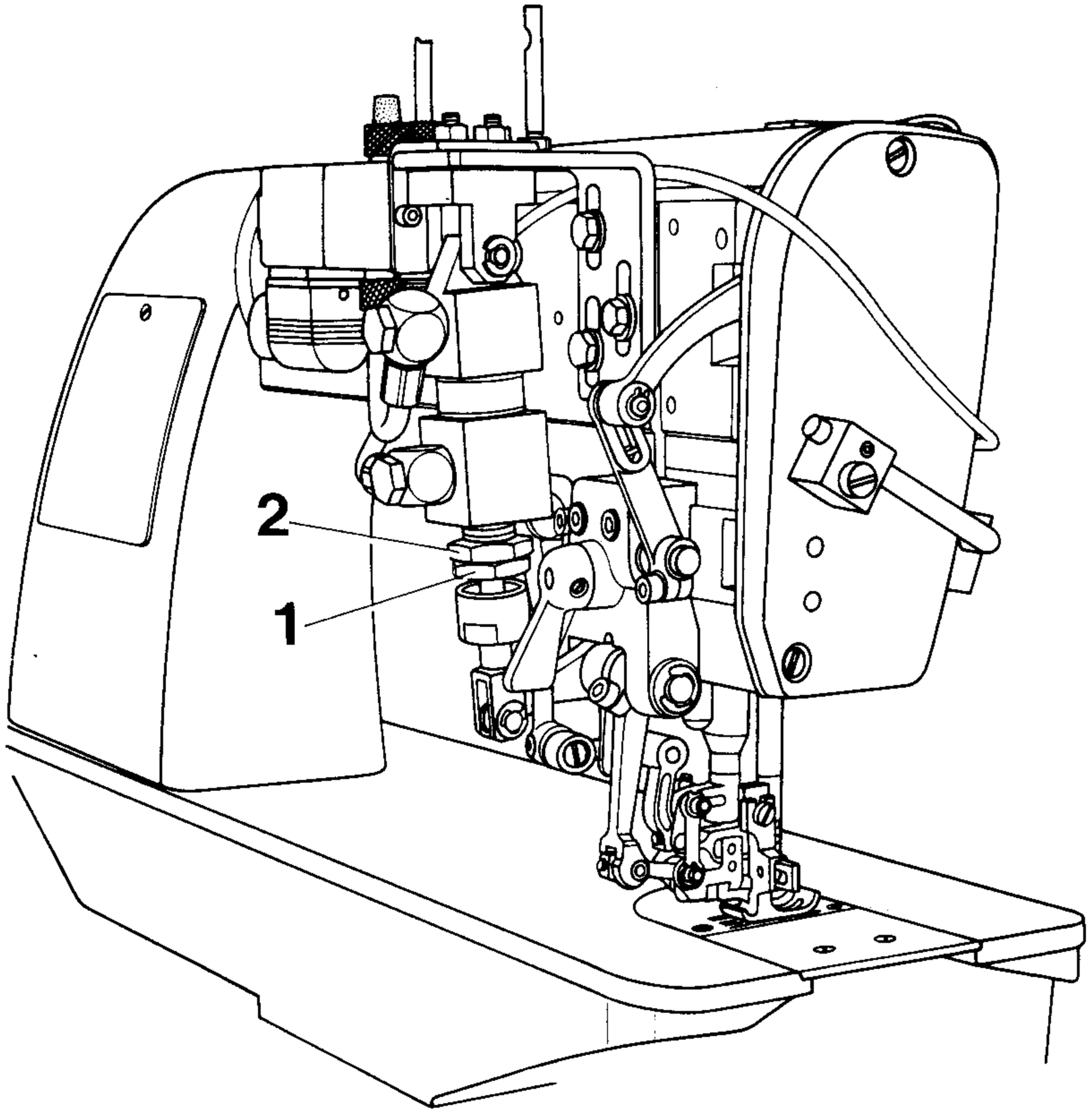
6.3 **Move cylinder bracket 3 in such a way that there is a clearance of approx. 0.5 mm between actuating lever 1 and lifting lever 4.**

6.4 Tighten screw **2** in this position.

7 Stroke limitation of top feed dog lifting cylinder on Pfaff 487

Setting:

With the top feed dog lifted, there should be a clearance of approx. **0.5–1.0 mm** between top feed dog and workpiece.



7.0.1

7.1 Remove air connection.

7.2 Remove nut **1**.

7.3 Place workpiece under presser foot.

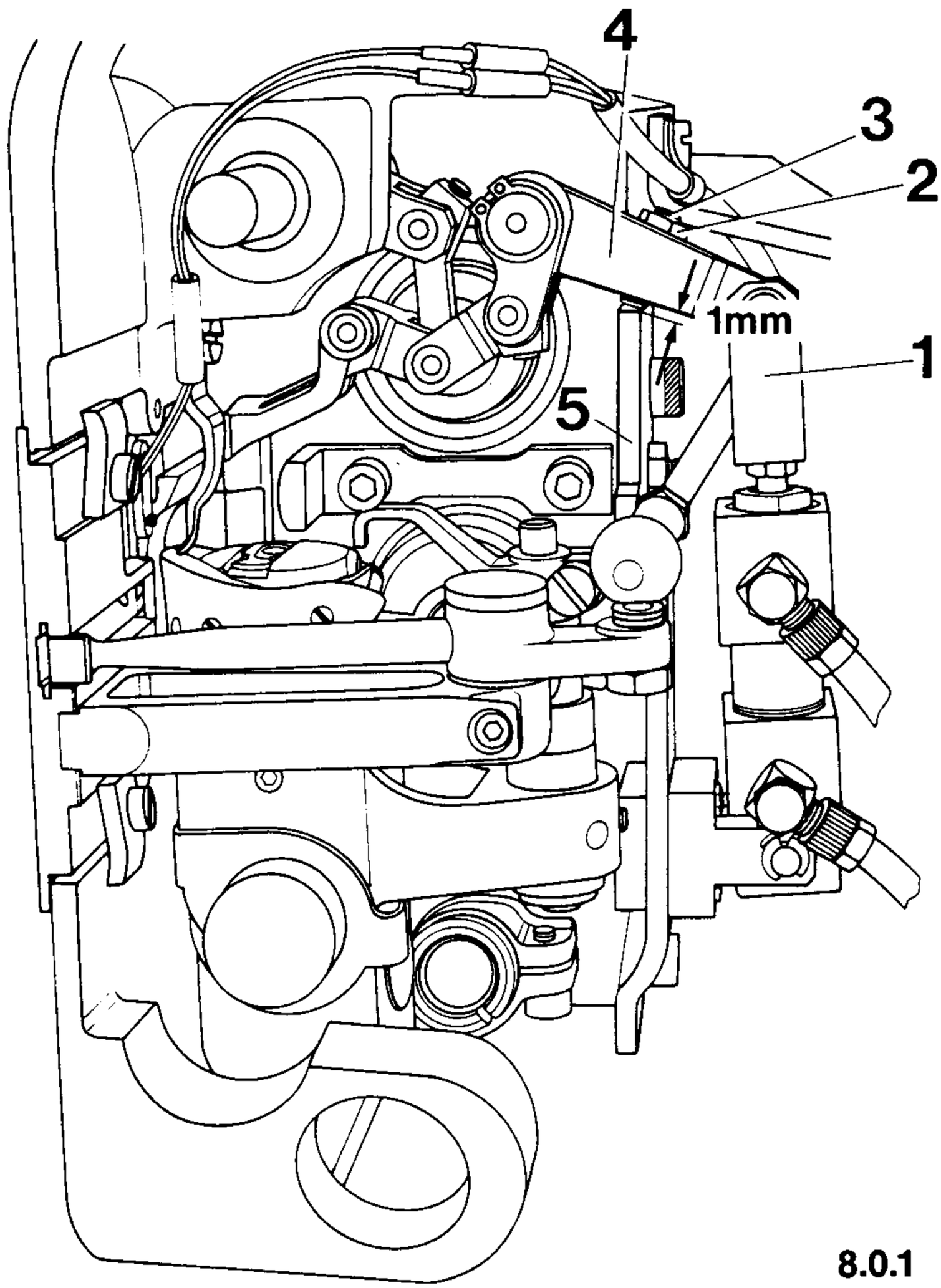
7.4 **Operate cylinder by hand and turn nut 2 until there is a clearance of approx. 0.5–1.0 mm between top feed dog and workpiece.**

7.5 Tighten lock nut **1** in this position.

8 Feed lowering lever on Pfaff 438

Setting:

With cylinder plunger **1** retracted there should be a clearance of approx. **1.0 mm** between feed lowering lever **4** and bracket **5**.



8.0.1

8.1 Remove air connection and retract cylinder plunger **1** by hand.

8.2 Remove nut **2**.

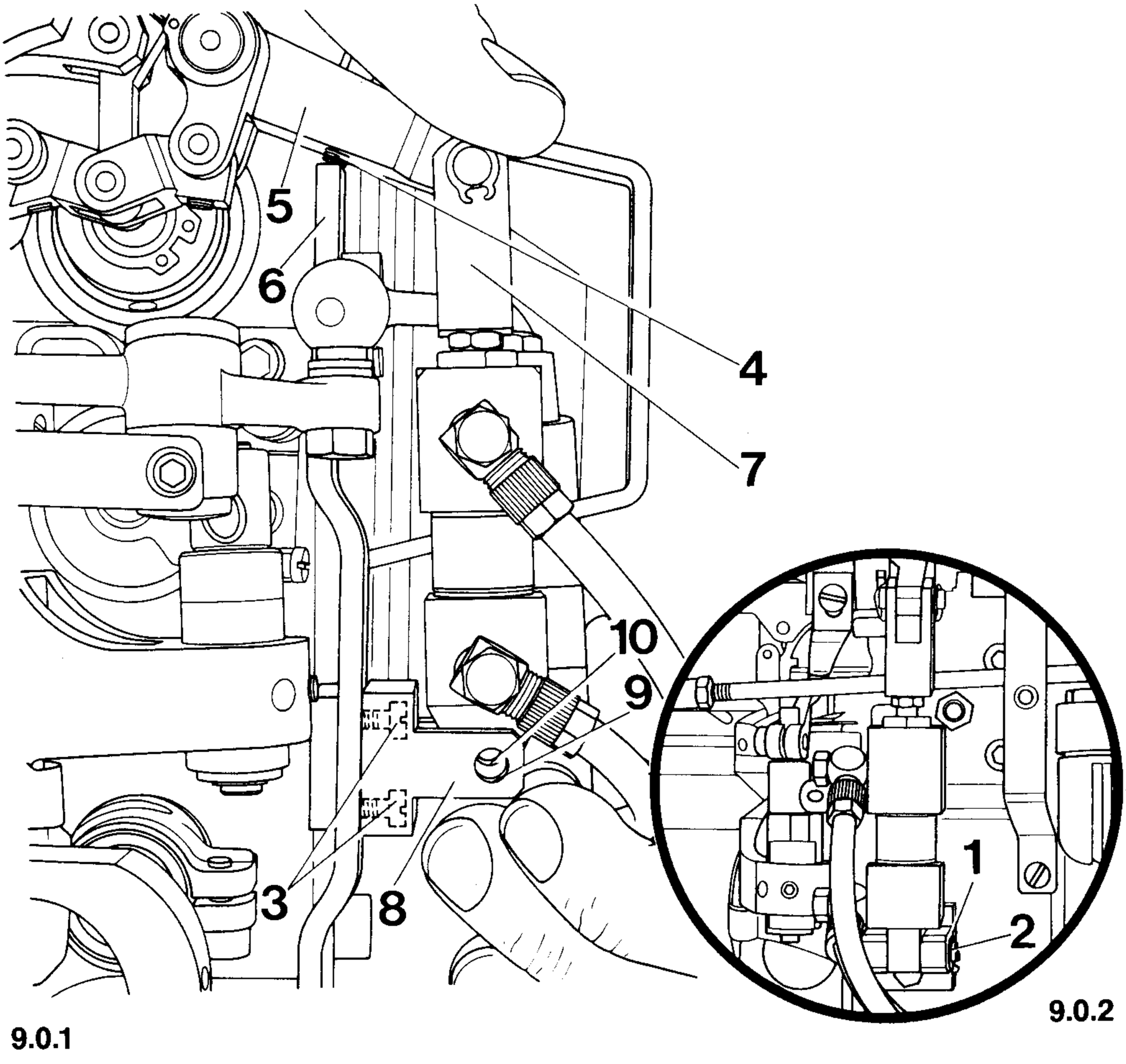
8.3 **Turn grubscrew 3 in such a way that there is a clearance of 1 mm between feed lowering lever 4 and bracket 5.**

8.4 Tighten nut **1** in this position.

9 Lowering cylinder on Pfaff 438

Setting:

With cylinder plunger **7** retracted and screw **4** of lowering lever **5** being adjacent to bracket **6**, hole **9** of bearing mounting **8** should be positioned approx. **1.5 mm** deeper than hole **10** of the cylinder.



9.0.1

9.0.2

9.1 Remove detent clip **1** and pin **2**.

9.2 Loosen screws **3** a little.

9.3 Move screw **4** of lowering lever **5** against bracket **6** and hold tight.

9.4 **Retract cylinder plunger 7 and move bearing mounting 8 in such a way that hole 9 is positioned approx. 1.5 mm deeper than hole 10 of the cylinder.**

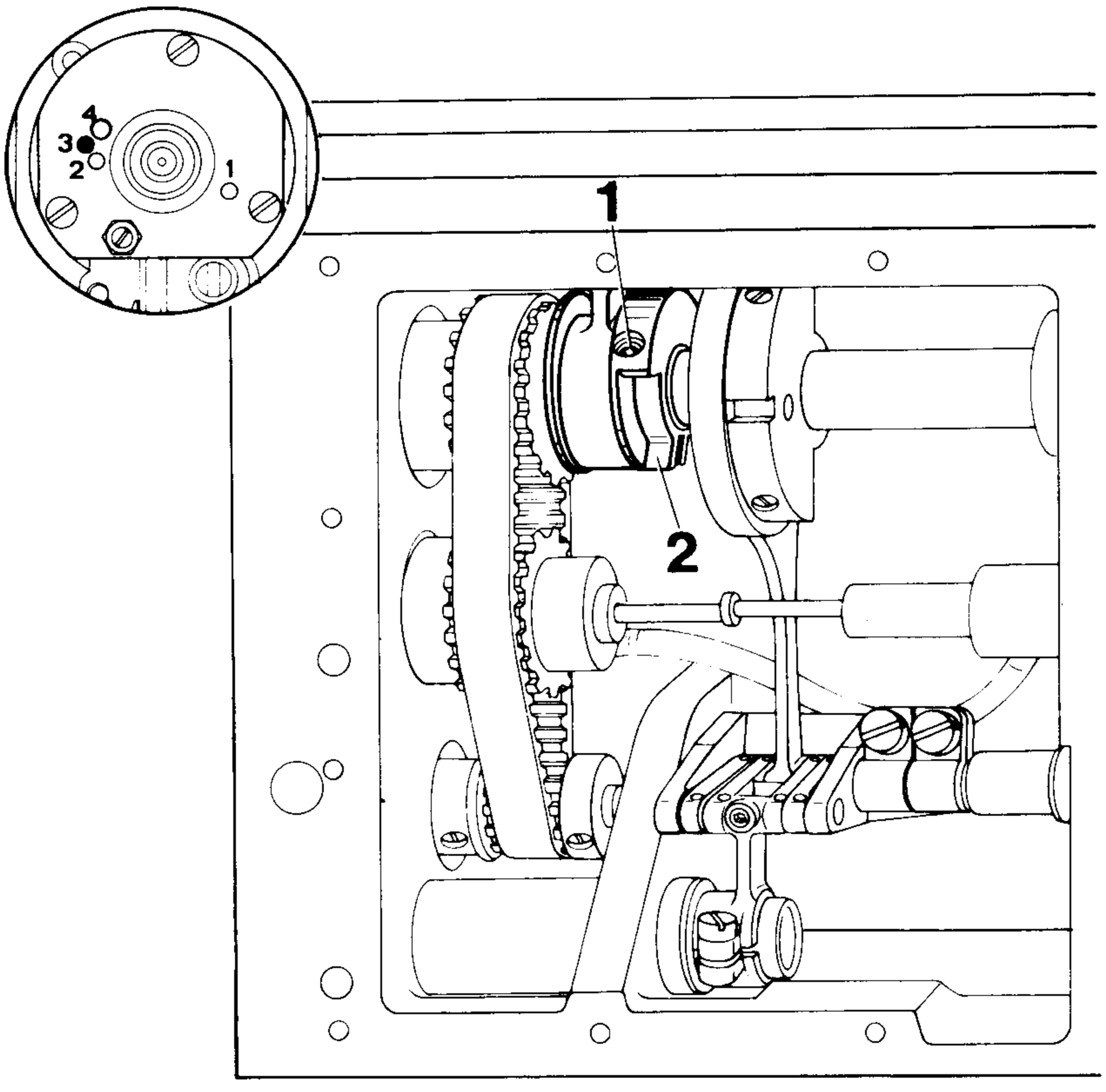
9.5 Tighten screws **3** in this position.

9.6 Remove bolt **2** and detent clip **1**.

10 Bottom feed dog lifting stroke on Pfaff 438

Setting:

With the machine set for stitch length setting "0" and in needle bar position **0.25 mm, past t.d.c.** (= adjustment hole **3**) the feed dog should be at its top reversal point.



10.0.1

10.1 Set stitch length "0".

10.2 Remove both screws **1** in feed lifting eccentric **2**.

10.3 Move needle bar to a position **0.25 mm** past t.d.c. and insert the adjustment pin in hole **3** of the bearing plate (to block the machine).

10.4 **Making sure that feed lifting eccentric 2 is not displaced on its axis, turn feed lifting eccentric 2 on its shaft until the feed dog is at its top reversal point.**

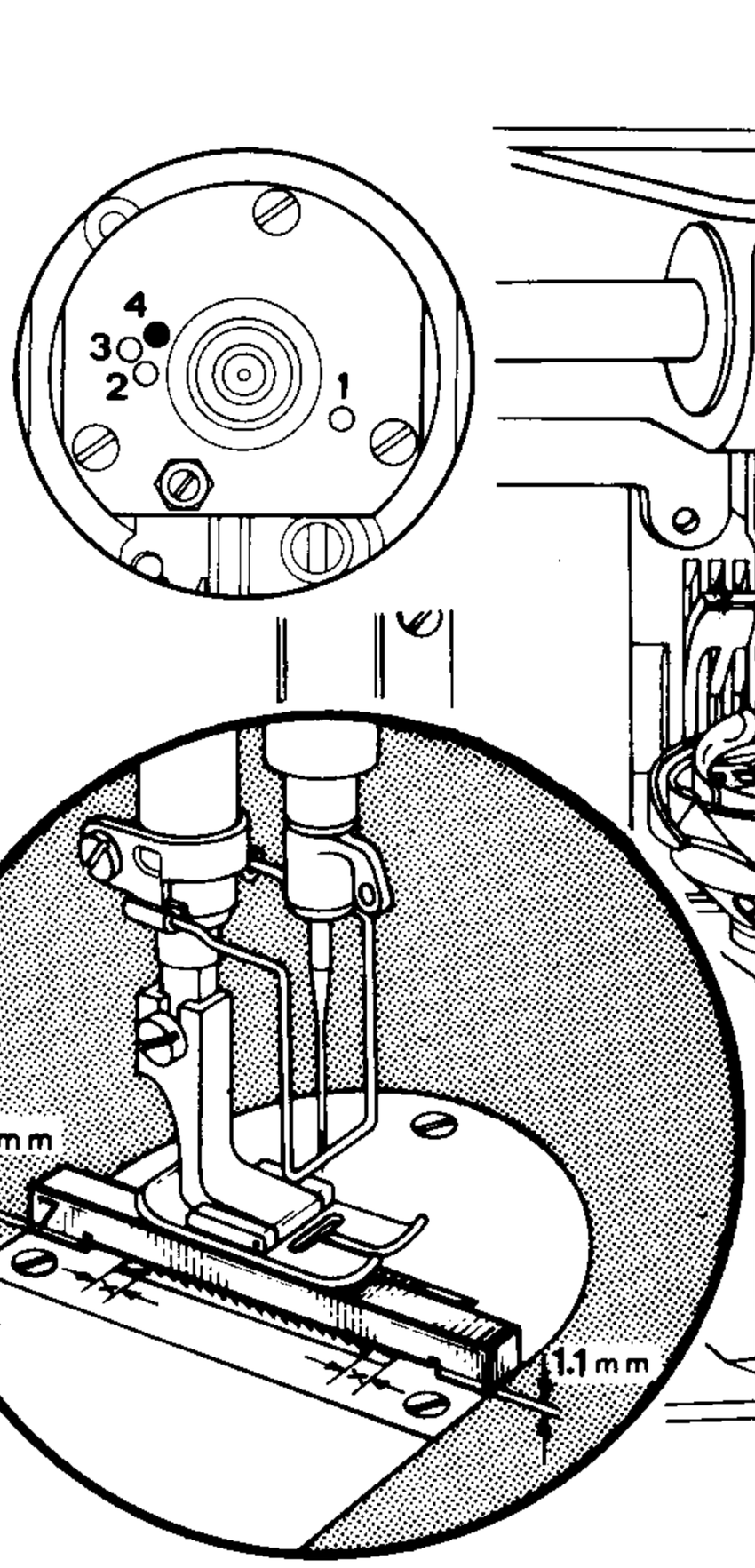
10.5 Tighten the accessible screw **1** in this position.

10.6 Take the adjustment pin from the bearing plate and tighten the second screw **1**, too.

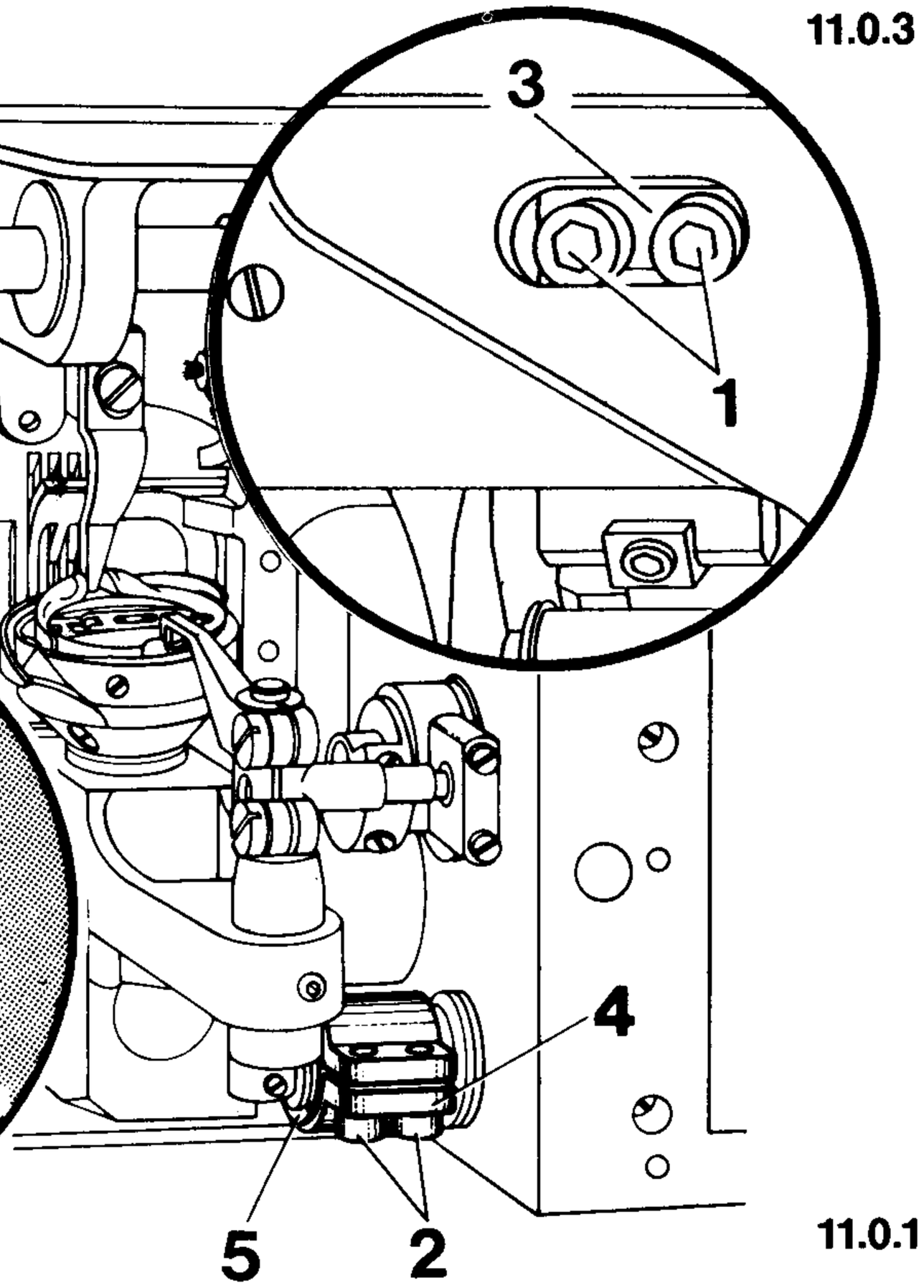
11 Bottom feed dog height on Pfaff 438

Setting:

With the machine set for stitch length "0" and in needle bar position **0.25 mm past t.d.c.** (= adjustment hole "3") the feed dog should be positioned in the middle of the feed slot and should be adjacent to the gauge in its entire length (see Fig. 11.0.2).



11.0.2



11.0.3

11.0.1

11.1 Move needle bar to a position **0.25 mm past t.d.c.** and insert the adjustment pin in hole **3** of the bearing plate (to block machine).

11.2 Remove clamp screws **1** and **2**.

11.3 Place the feed dog height-adjustment gauge under the presser foot in such a way that the cutout is turned downwards and the front edge is flush with the needle plate.

11.4 Lower the presser foot on the gauge by means of the hand lever.

11.5 Push up feed bar, position feed dog in the middle of feed slot and hold in this position.

11.6 Move the feed dog up against the adjustment gauge by turning feed dog lifting crank **3** and tighten one clamp screw **1** lightly.

11.7 **Turn eccentric clamp bush 5 situated under feed driving crank 4 in such a way that the feed dog is adjacent to the gauge in its entire length and again tighten one clamp screw 2 lightly.**

11.8 Making sure that the feed dog is adjacent to the adjustment gauge in its entire length, tighten clamp screws **1** and **2**.

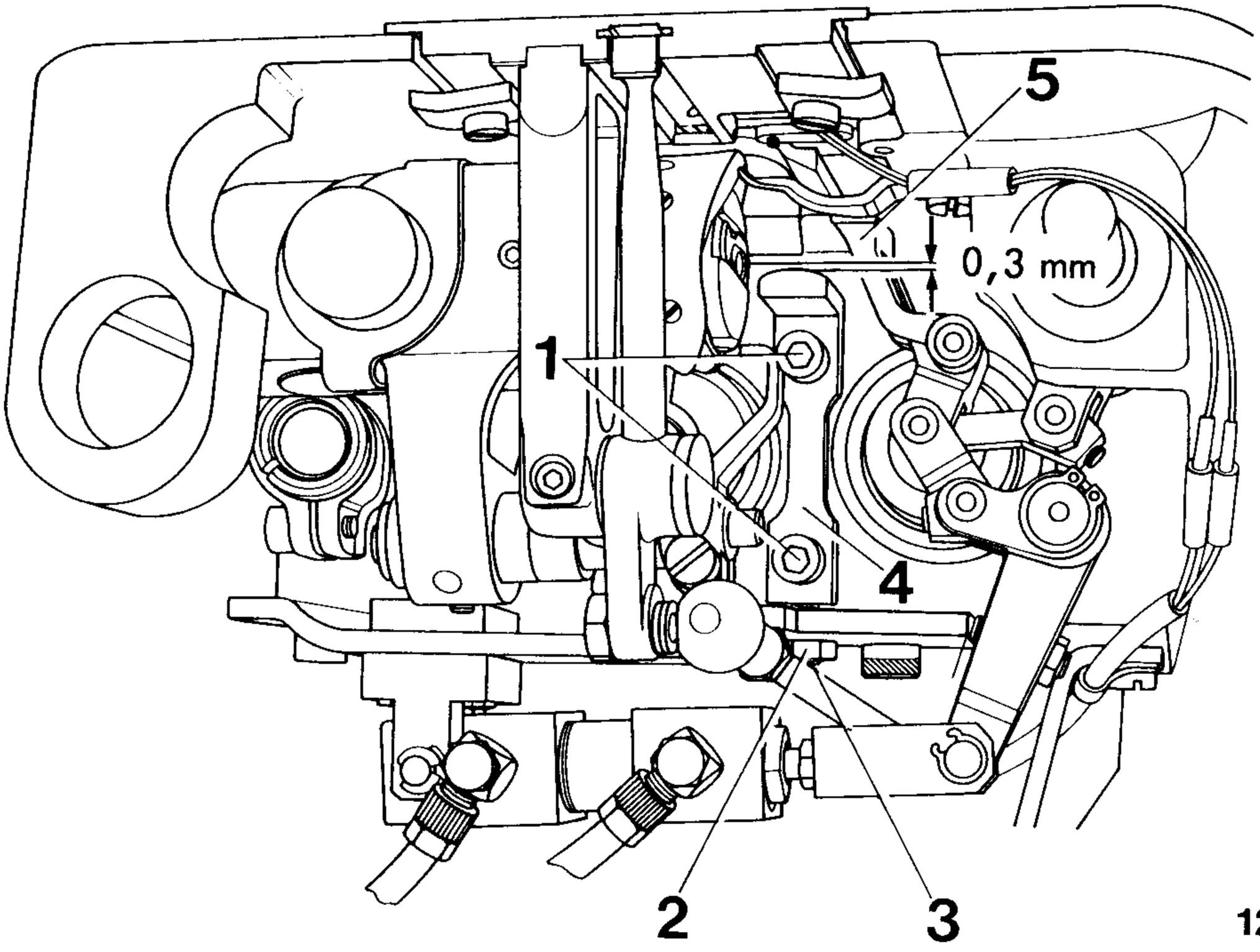
11.9 Swing up the hand lever, remove the adjustment gauge from under the presser foot and pull the adjustment pin out of the hole in the bearing plate.

11.10 Check this adjustment (see Setting).

12 Bottom feed stop on Pfaff 438

Setting:

With the machine set for stitch length **"0"** and with the bottom feed dog at bottom dead centre, there should be a clearance of approx. **0.3 mm** between feed bar **5** and stop **4**.



12.0.1

12.1 Set stitch length **"0"**.

12.2 Move bottom feed dog to bottom dead centre.

12.3 Loosen screws **1**.

12.4 Remove nut **2** and lightly unscrew grubscrew **3**.

12.5 **Move stop 4 in such a way that there is a clearance of approx. 0.3 mm between feed bar 5 and stop 4.**

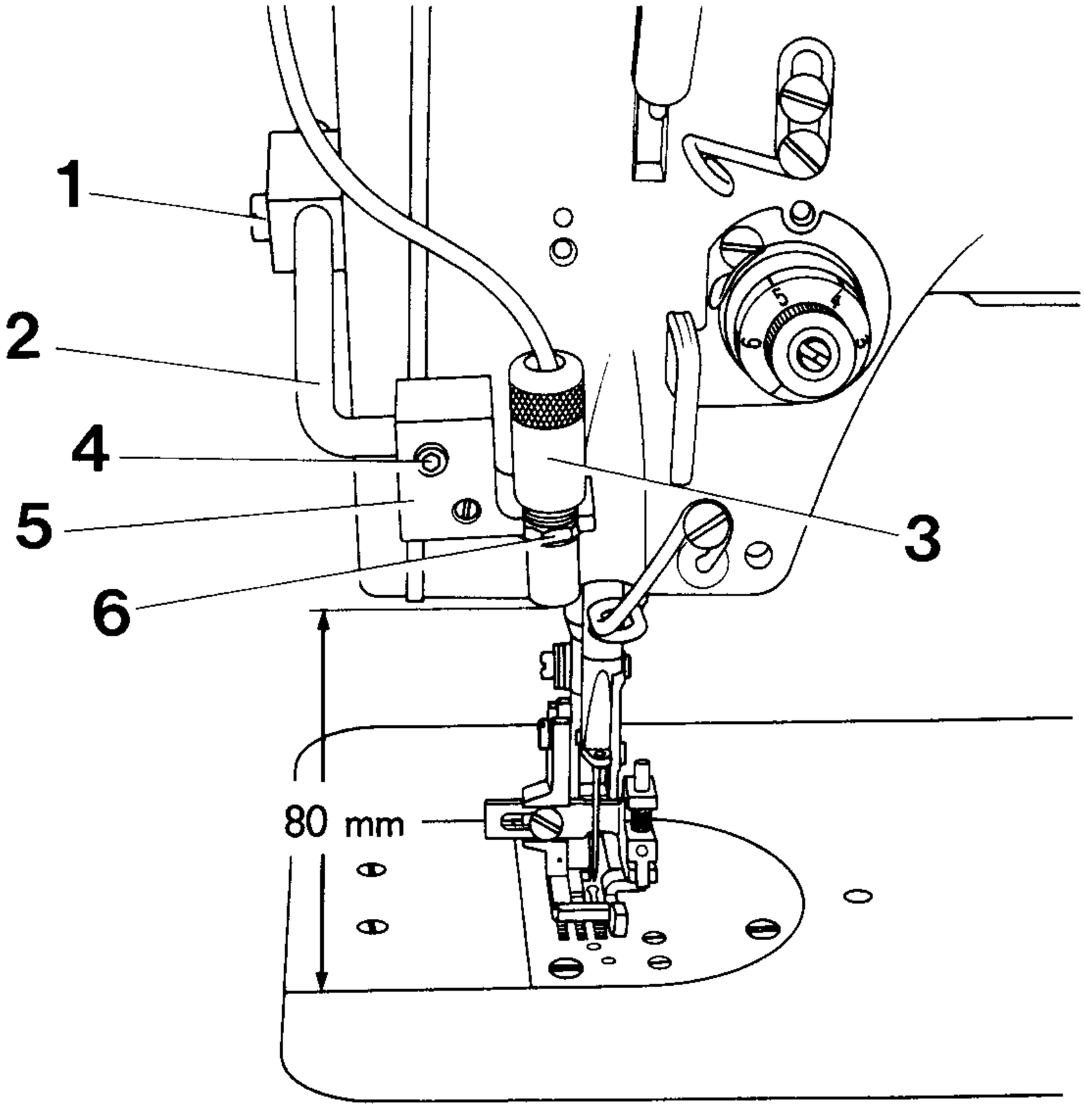
12.6 Tighten screws **1** in this position.

12.7 Move grubscrew **3** up against stop **4** and tighten nut **2**.

13 Light transmitter in relation to needle plate

Setting:

The clearance between light transmitter and needle plate should be approx. **80 mm**.
In addition, the light beam must be directed at the sensor in the needle plate, with the light beam forming a sharp contour on the needle plate.
On machines with 2 sensors, the light beam must fall on both sensors.



13.0.1

13.1 **Loosen screw 1 and turn bracket 2 until the clearance between light transmitter 3 and needle plate is approx. 80 mm.**

13.2 Tighten screw **1** in this position.

13.3 **Loosen screw 4 and turn bracket 5 in such a way that the light beam falls exactly on the sensor. On machines with 2 sensors, the light beam must fall on both sensors.**

13.4 Tighten screw **4** in this position.

13.5 **Remove nut 6 and turn the lower part of light transmitter 3 until the light beam forms a sharp contour on the needle plate.**

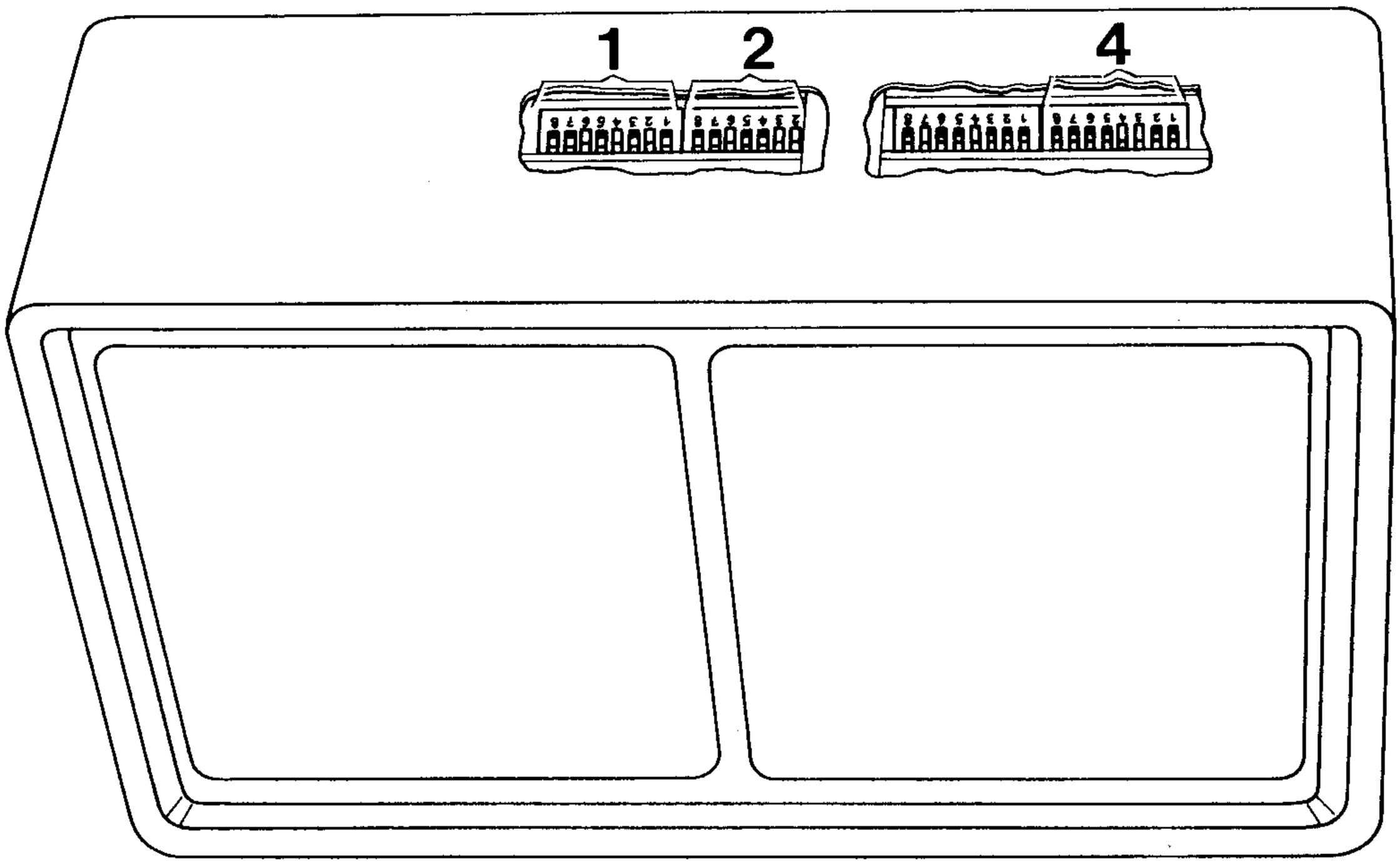
13.6 Tighten nut **6** in this position.

14 Switches of programming box

14.1 Switch block 1, 2 and 4

Setting:

Switch block 1: Switches 6, 4 and 2 are set at top at the figures.
Switch block 2: Switches 6, 3 and 2 are set at top at the figures.
Switch block 4: Switches 4 and 3 are set at top at the figures.



14.0.1

14.1.1 Switch off motor switch of machine.

14.1.2 Remove the four screws on the reverse side of the programming box and pull housing forward.

14.1.3 **Set switches as described under "Setting".**

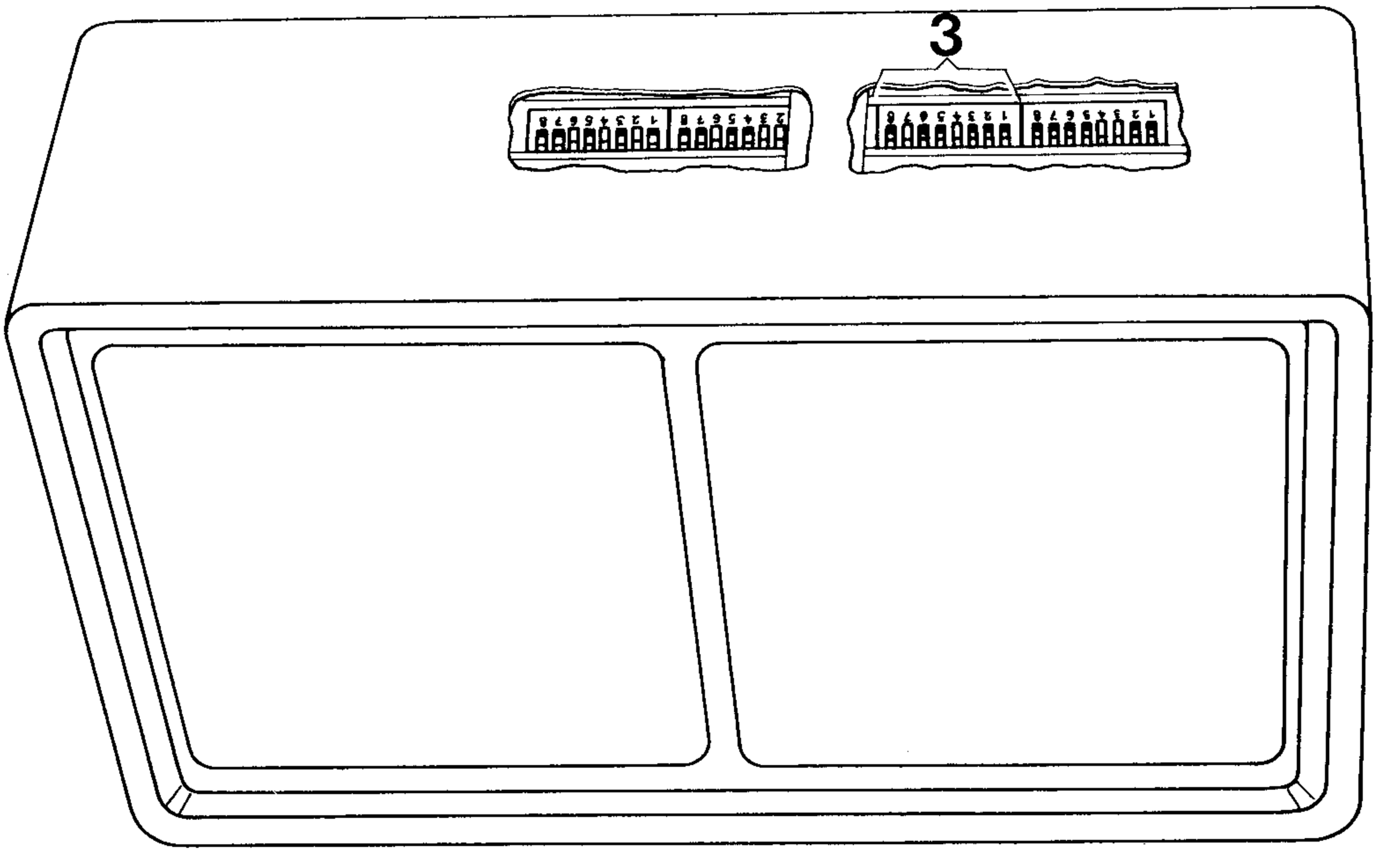
14.2 Switch block 3

Setting:

This switch block determines the number of brake stitches before the end of seam. In their basic position switches **7** and **4** of switch block **3** are set at top at the figures.

Note: With decreasing top speed it is possible to deviate from this basic setting because less brake stitches are required. For the respective switch positions, please refer to the table.

Speed	Brake stitches	Position of switch							
		8	7	6	5	4	3	2	1
4800	6 – 7		■			■			
4500	5 – 6			■	■		■		
4000	4 – 5			■	■			■	
3500	3 – 4			■		■			



14.0.2

14.2.1 **Making sure that the motor switch of the machine has been switched off, set the switches as described under "Setting".**

14.2.2 Push housing to the rear and turn in the four screws on the reverse side.

15 Setting the motor speeds on machines with 6 programs, each consisting of 4 seams (motor control 5 G 53)

15.1 **Cutting speed***

Turn switch **9** to position **"manual".** Make a few stitches. Press pedal backwards for thread trimming, at the same time pushing button **12**. The machine now runs continuously at cutting speed. Set a speed of **160–170 r/min.** at potentiometer **P1** of the motor control box. Push button **13**, the machine stops.

15.2 **Positioning speed**

Turn switch **9** to position **"manual".** Press pedal forward (first speed level). Set a speed of **190–200 r/min.** at potentiometer **P9** of the motor control box. Machine now runs at positioning speed. Release pedal.

15.3 **Braking speed**

Turn switch **9** to position **"teach".** Enter program **1**, seam **1**. Enter workpiece edge-sensing by pushing button **3**. Press memory button **7** (diode must light up). Turn switch **9** to position **"automatic"** and cover sensor with your hand. Press pedal forward, at the same time pushing button **12**. Unblock sensor. Machine now runs at braking speed. Set a speed of **850–900 r/min.** at potentiometer **P8** of the motor control box. Switch off the master switch of the machine, then switch it on again.

15.4 **Backtacking speed**

Program initial and finish backtacks as described in item 3.1.1 and 3.1.2 of the instruction manual. Turn switch **9** to position **"manual".** Enter initial and finish backtacks at buttons **1** and **4**. Press pedal forward and push button **12**. Machine now runs at initial backtacking speed. Set a speed of **1000–1200 r/min.** at potentiometer **P4** of the motor control box. Push button **13**. Machine stops. Push button **12** and press pedal backwards. Machine now runs at finish backtacking speed. Set a speed of **1000–1200 r/min.** at potentiometer **P5** of the motor control box. Push button **13**. Machine stops.

* After having set this speed all other speeds have to be reset too.

16 Setting the motor speeds on machines with 4 programs, each consisting of 7 seams (motor control 5 G 33).

16.1 **Cutting and positioning speed**

Push programming switch to the far right. Press the pedal lightly forward (first speed level). Set a speed of **170–180 r/min.** at potentiometer **P1** of the motor control panel. Release pedal.

16.2 **Bartacking and braking speed**

Program initial and finish backtacks as described in item 3.1.1 and 3.1.2 of the instruction manual. Push programming switch to the far right.

16.2.1 **Start backtacking speed**

Push and hold button **13**. Press pedal lightly forward. Set a speed of **1000–1200 r/min.** at potentiometer **P4**. Release button **13** (machine stops).

16.2.2 **Finish backtacking and braking speed**

Push and hold button **13**. Press pedal backwards. Set a speed of **900 r/min.** at potentiometer **P5**. Release button **13** (machine stops).

* After having set this speed all other speeds have to be reset too.

17 Setting the motor speeds on machines with 3 programs, each consisting of 9 seams (motor control 5 G 33).

17.1 Cutting and positioning speed

Push programming switch to the far right. Press the pedal lightly forward (first speed level). Set a speed of **170–180 r/min.** at potentiometer **P1** of the motor control box. Release pedal.

17.2 Braking speed

Push programming switch to the far left. Enter program **1**, seam **1**. Enter workpiece edge-sensing by pushing button **3**. Press memory button **7** (diode must light up). Push programming switch into the **middle.** Cover sensor with your hand. Press pedal forward and push and hold button **13**. Unblock sensor. Machine now runs at braking speed. Set a speed of **900 r/min.** at potentiometer **P8** on the motor control box. Release button **13**, switch off machine and switch it on again.

17.3 Bartacking speed

Program initial and finish backtacks, as described by examples 3.1.1 and 3.1.2 in the instruction manual. Push programming switch to the far right. Enter initial and finish backtacks at buttons **1** and **4**. Push and hold button **13**. Press pedal briefly forward. Machine now runs at start backtacking speed. Set a speed of **1000–1200 r/min.** at potentiometer **P4**. Release button **13**. Machine stops. Push and hold button **13**. Press pedal briefly backwards. Machine now runs at finish backtacking speed. Set a speed of **1000–1200 r/min.** at potentiometer **P5** of the motor control box. Release button **13** (machine stops).

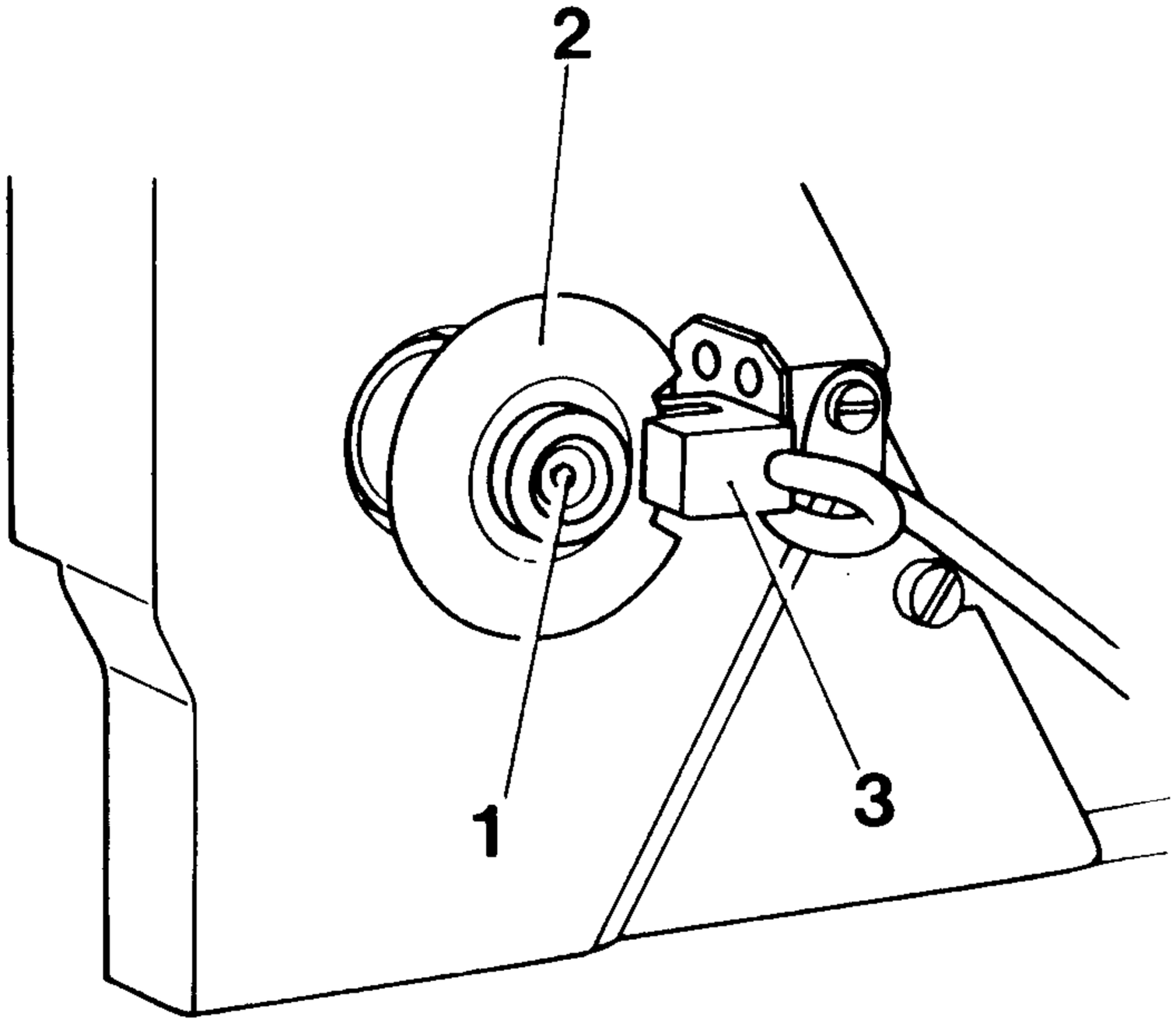
* After having set this speed all other speeds have to be reset too.

18 Synchronizer on Pfaff 438, 483 and 487

The synchronizer should be set in such a way that the first positioning action takes place **4 mm** past **bottom dead centre** of the needle bar.
The second positioning action (after thread trimming) should take place at **top dead centre** of the take-up lever.

19 Proximity switch on Pfaff 438

The proximity switch makes it possible to position the machine always at the right or left penetration.
For the setting pull plug of proximity switch out of the motor control box and make a few stitches until the needle is positioned at the correct side (either right or left).
Remove allen screw **1** and turn proximity switch **2** until its cutout is positioned in the middle of proximity switch **3**.
Tighten allen screw **1** in this position.
Insert plug of proximity switch in motor control box and carry out a check.
Reset, if necessary.



19.0.1

Important

When fitting the knuckle switch for intermediate backtacking to an existing machine, make sure that the leads are soldered onto terminals **"3"** and **"2"** in the **plug** of the knuckle switch. Different plug connection may lead to a short-circuit in the control circuit board of the motor.

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