

PFAFF

939 U

3704^{-2/02}_{-2/03}

Instruction Manual

This instruction manual applies to machines from the following serial numbers onwards:

2660862 →



This instruction manual applies to all versions and subclasses listed under "**Specifications**".

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1 Safety

1.01 Regulations

This machine is constructed in accordance with the European regulations indicated in the conformity and manufacturer's declarations.

In addition to this instruction manual, please also observe all generally accepted, statutory and other legal requirements, including those of the user's country, and the applicable pollution control regulations!

The valid regulations of the regional social insurance society for occupational accidents or other supervisory authorities are to be strictly adhered to!

1.02 General notes on safety

- The machine must only be operated by adequately trained operators and only when the instruction manual has been fully read and understood!
- All notices on safety and the instruction manual of the motor manufacturer are to be read before the machine is put into operation!
- All notes on the machine concerning danger and safety must be observed!
- The machine must be used for the purpose for which it is intended and must not be operated without its safety devices; all regulations relevant to safety must be adhered to.
- When part sets are changed (e.g. needle, presser foot, needle plate, feed dog or bob-bin), during threading, when the workplace is left unattended and during maintenance work, the machine must be isolated from the power supply by turning off the on/off switch or removing the plug from the mains!
- Daily maintenance work must only be carried out by appropriately trained persons!
- Repairs and special maintenance work must only be carried out by qualified technical staff or persons with appropriate training!
- During maintenance or repairs on the pneumatic system the machine must be isolated from the compressed air supply! The only exception to this is when adjustments or function checks are carried out by appropriately trained technical staff!
- Work on the electrical equipment must only be carried out by technical staff who are qualified to do so!
- Work on parts or equipment connected to the power supply is not permitted! The only exceptions to this are specified in regulations EN 50110.
- Conversion or modification of the machine must only be carried out under observation of all relevant safety regulations!
- Only spare parts which have been approved by us are to be used for repairs! We draw special attention to the fact that spare parts and accessories not supplied by us have not been subjected to testing nor approval by us. Fitting and/or use of any such parts may cause negative changes to the design characteristics of the machine. We shall not accept any liability for damage caused by the use of non-original parts.

1.03

Safety symbols



Danger!
Special points to observe.



Danger of injury to operating or technical staff!



Electric voltage!
Danger to operating or technical staff!



Caution

Do not operate without finger guard and safety devices.

Before threading, changing bobbin and needle, cleaning etc. **switch off main switch.**

1.04

Important notes for the user

- This instruction manual belongs to the equipment of the machine and must be available to the operating staff at all times.
This instruction manual must be read before the machine is operated for the first time.
- Both operating and technical staff must be instructed on the safety devices of the machine and on safe working methods.
- It is the duty of the user to operate the machine in perfect running order only.
- The user must ensure that none of the safety devices are removed nor put out of working order.
- The user must ensure that only authorized persons operate and work on the machine.

For further information please refer to your PFAFF agency.

1.05 Notes for operating and technical staff

1.05.01 Operating staff

Operating staff are the persons responsible for setting up, operating and cleaning the machine and for eliminating any malfunctioning in the sewing area.

The operating staff is obliged to observe the following points:

- The notes on safety in this instruction manual must always be observed!
- Any working methods, which adversely affect the safety of the machine, must be avoided.!
- Loose-fitting clothing should be avoided. No jewellery, such as chains and rings, should be worn!
- Ensure that only authorised persons enter the danger area of the machine!
- Any changes occurring on the machine, which may affect its safety, must be reported to the user immediately.

1.05.02 Technical staff

Technical staff are persons who have been trained in electrical engineering/electronics and mechanical engineering. They are responsible for lubricating, servicing, repairing and adjusting the machine.

The technical staff is obliged to observe the following points:

- The notes on safety in this instruction manual must always be observed!
- Before carrying out any adjustment or repair work the main switch must be switched off and measures taken to prevent it from being switched on again!
- Never work on parts or equipment still connected to the power supply! Exceptions are only permissible in accordance with the regulations EN 50110.
- All safety covers must be replaced after the completion of maintenance or repair work!

1.06

Danger



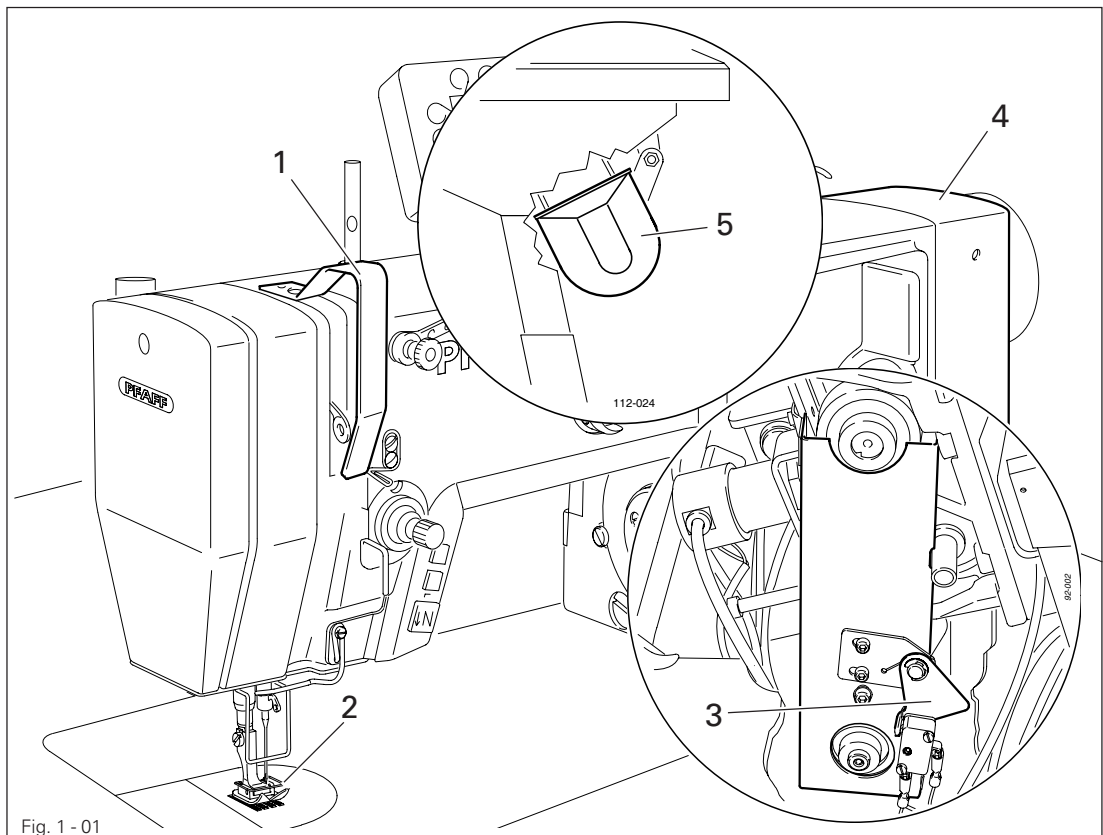
A working area of **1 meter** is to be kept free both in front of and behind the machine while it is in operation so that it is always easily accessible.



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 the take-up lever guard **1!**
Danger of injury through the movement of the take-up lever.



Do not operate the machine without finger guard **2!**
Danger of injury from the needle!



Do not operate machines with Quick-flange motor without start inhibitor **3!**
Danger of injury if the machine is started accidentally!



Do not operate machines with Quick-underfloor motor without belt guard **4 and 5.**
Danger of injury from the drive belts!

2

Proper use

The **PFAFF 939 U** is a high-speed zigzag sewing machine with differential bottom feed and mechanical shift from zigzag to 3-stitch zigzag.

The machines are used for producing zigzag lockstitch seams in the clothing and linen industry.

The **PFAFF 3704-2/02** is an engineered workplace with high-speed zigzag sewing machine.

The machine is used to sew collars in the outerwear clothing industry.

Planned operation: Sew undercollar to top collar, with imitation hand stitch and fullness application

The **PFAFF 3704-2/03** is an engineered workplace with high-speed zigzag sewing machine.

The machine is used to sew collars in the outerwear clothing industry.

Planned operation: Sew undercollar to top collar, with zigzag seam and fullness application



Any use of these machines which is not approved by the manufacturer shall be considered as improper use! The manufacturer shall not be liable for any damage arising out of improper use! Proper use shall also be considered to include compliance with the operation, adjustment, service and repair measures specified by the manufacturer!

3 Specifications ▲

Stitch type:	304 (zigzag lockstitch)
Needle system	
PFAFF 939 U / PFAFF 3704-2/03:	438
PFAFF 3704-2/02:	134 EL
Needle size in 1/100 mm:	
Model B:	80 - 100
Presser foot clearance:	7 mm
Clearance width:	260 mm
Clearance height:	130 mm
Bedplate dimensions:	476 x 177 mm
Sewing head dimensions:	
Length:	ca. 550 mm
Width:	ca. 180 mm
Height (above table):	ca. 300 mm
Max. stitch length:	N24*
Max. speed	
PFAFF 939 U:	4500 spm ♦
PFAFF 3704-2/..:	5500 spm ♦
Max. stitch with	6,0 mm
Connection data (for Quick motors)	
Operating voltage:	230 V ± 10%, 50/60 Hz
Max. power	1,2 kVA
Fuse protection:	1 x 16 A, inert
Noise data:	
Noise emission level at workplace with a sewing speed of 3600 spm:	$L_{pA} < 80$ dB(A) ■
(Noise measurement in accordance with DIN 45 635-48-A-1, ISO 11204, ISO 3744, ISO 4871)	
Working air pressure:	6 bar
Air consumption	ca. 1 N1/cycle
Net weight of sewing head:	ca. 48 kg
Gross weight of sewing head:	ca. 56 kg

▲ Subject to alterations

♦ The maximum speed depends on the material, operation and stitch length.

■ $K_{pA} = 2,5$ dB

* = 2.5 mm feed stroke of the rear and 4.5 mm of the front feed dog

4 Disposal of Machine

- Proper disposal of the machine is the responsibility of the customer.
- The materials used for the machine are steel, aluminium, brass and various plastic materials.
The electrical equipment comprises plastic materials and copper.
- The machine is to be disposed of according to the locally valid pollution control regulations; if necessary, a specialist is to be commissioned.



Care must be taken that parts soiled with lubricants are disposed of separately according to the locally valid pollution control regulations!

5 **Transportation, packing and storage**

5.01 **Transportation to customer's premises**

The machines are delivered completely packed.

5.02 **Transportation inside the customer's premises**

The manufacturer cannot be made liable for transportation inside the customer's premises nor to other operating locations. It must be ensured that the machines are only transported in an upright position.

5.03 **Disposal of packing materials**

The packing materials of this machine comprise paper, cardboard and VCE fibre. Proper disposal of the packing material is the responsibility of the customer.

5.04 **Storage**

If the machine is not in use, it can be stored as it is for a period of up to six months, but it should be protected against dust and moisture.

If the machine is stored for longer periods, the individual parts, especially the surfaces of moving parts, must be protected against corrosion, e.g. by a film of oil.

6 Explanation of symbols

In this instruction manual, work to be carried out or important information is accentuated by symbols. These symbols have the following meanings:



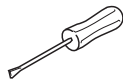
Note, information



Cleaning, care



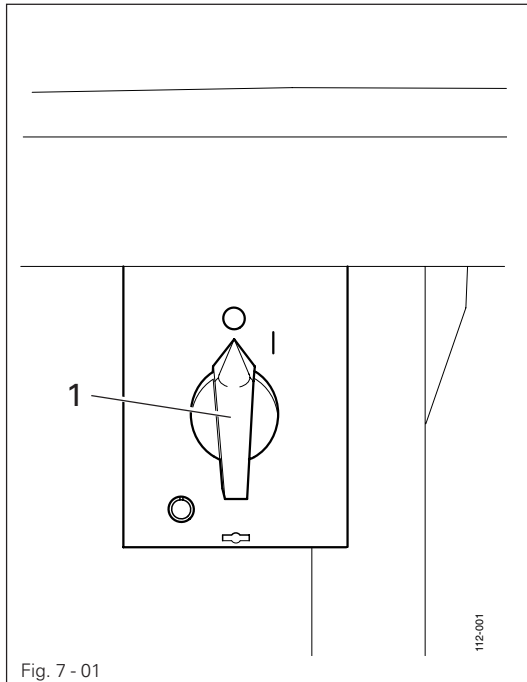
Lubrication



Maintenance, repairs, adjustment, service work
(only to be carried out by technical staff)

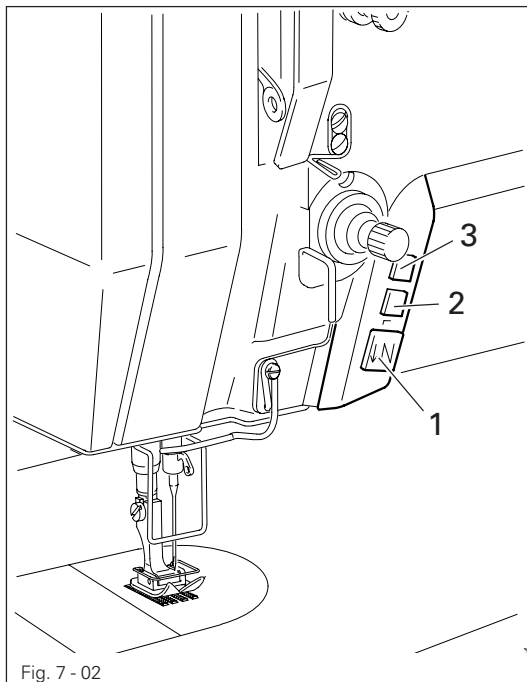
7 Controls

7.01 Main switch



- The machine is switched on or off by turning the main switch 1.

7.02 Keys on the machine head (only on machines with Quick-flange motor)



- As long as key 1 is pressed during sewing, the machine sews in reverse.
- Bring the machine into a switching position (for switching from zig-zag to multi-stitch or from multi-stitch to zig-zag) by operating key 2.
- Key 3 can be assigned with the appropriate parameter settings, see **Motor Instruction Manual**.

7.03 Pedal on the PFAFF 939 U

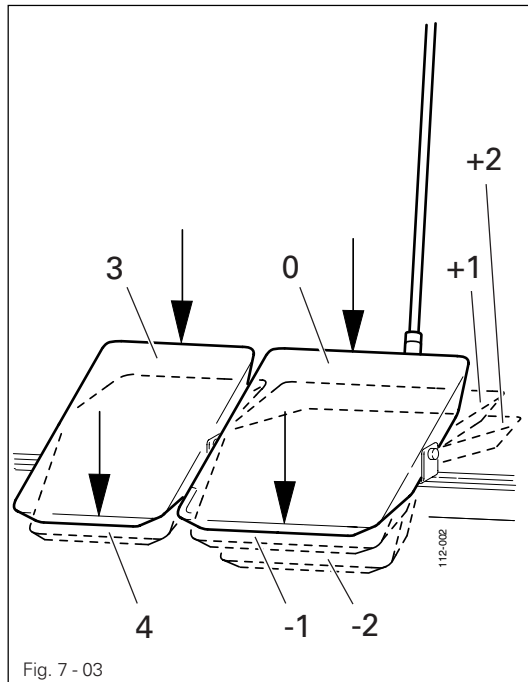


Fig. 7 - 03

- 0 = Resting position
- +1 = Lower presser foot
- +2 = Sew
- 1 = Lift presser-foot (on machines with automatic presser-foot lifter)
- 2 = Trim thread (on machines with a thread trimmer)
- 3 + (+2) = Requesting the second feed stroke value.
- 4 + (+2) = Reverse sewing



Further function-combinations can be found in the instruction manual of the motor manufacturer.

7.04 Pedal on the PFAFF 3704-2/..

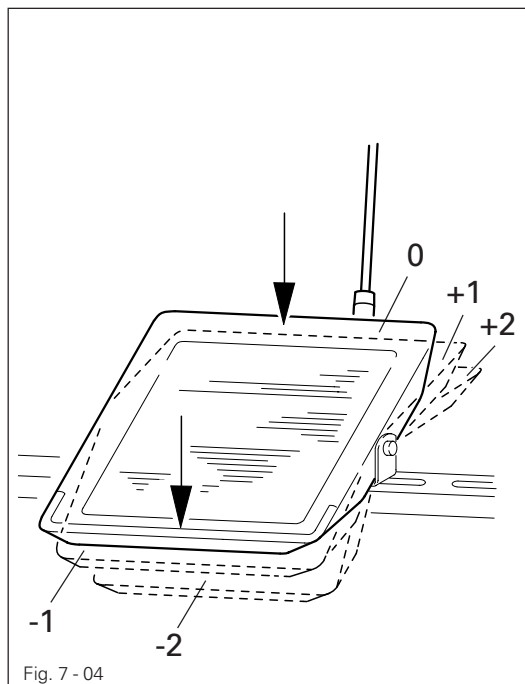


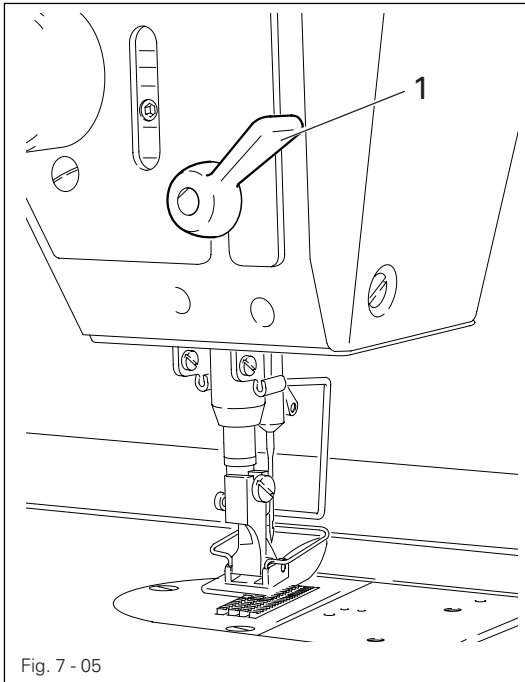
Fig. 7 - 04



The position of the presser foot and the needle depend on the selected functions, see **Chapter 7.15 Control panel.**

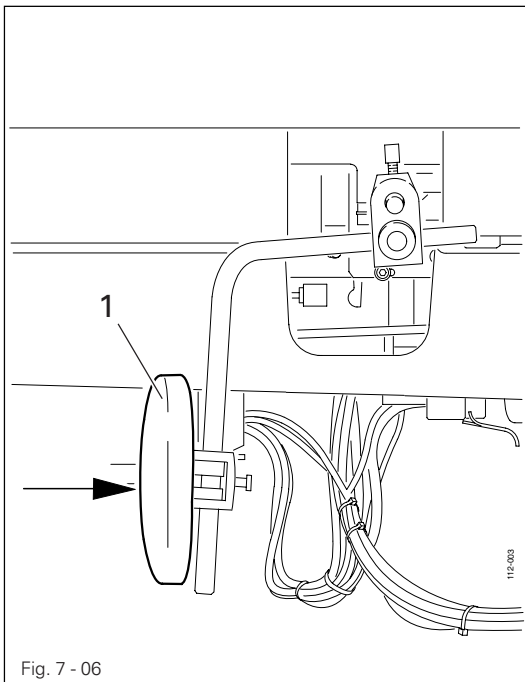
- 0 = Machine stop
- +1 = Lower presser foot or sewing start
- +2 = Sew
- 1 = Raise presser foot
- 2 = End bartack and trim thread

7.05 Lever for raising presser foot



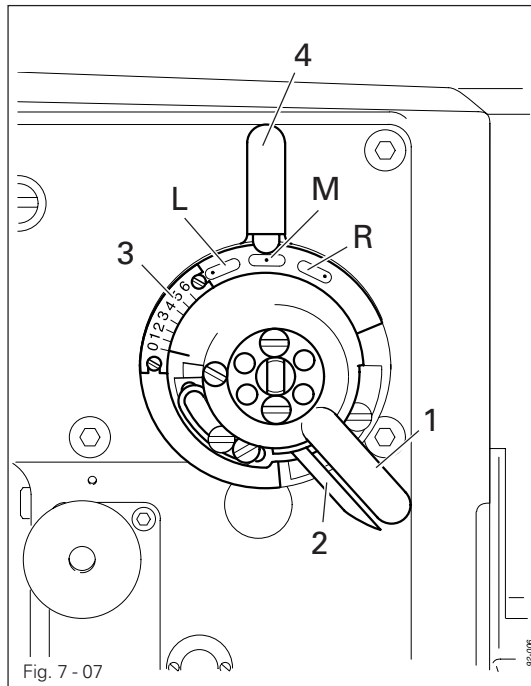
- The presser foot is raised by turning lever 1.

7.06 Knee lever (only on the PFAFF 939 U)



- On machines without an automatic presser foot lift, the knee lever 1 is used to raise the presser foot.

7.07 Adjustment lever for zigzag stitch and needle position



- The zigzag stitch adjustment lever 1 is used for adjusting the width of the zigzag stitch.
- To change the position of the adjustment lever, the locking lever 2 must be pressed against the adjustment lever 1.

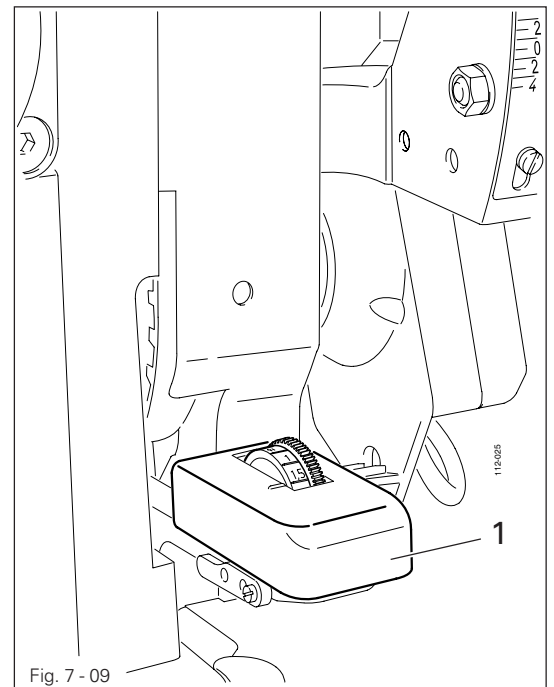
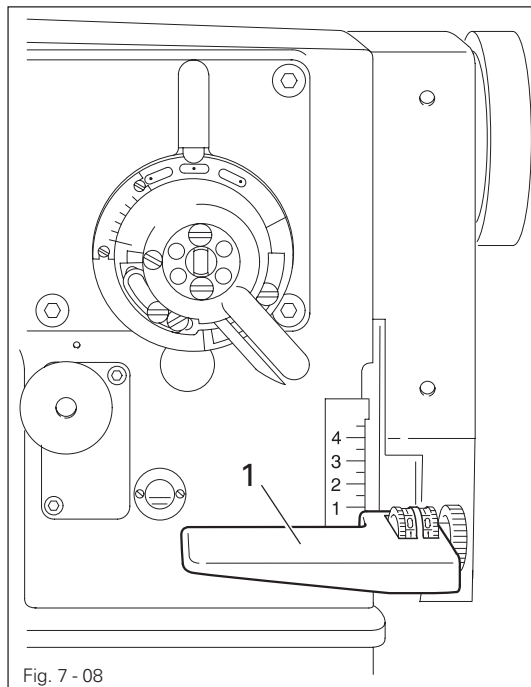


The current zigzag-stitch width can be seen on scale 3.

- By turning the needle-position adjustment lever 4 the required needle position can be set.

L = needle-position left
 M = needle-position center
 R = needle-position right

7.08 Reverse-feed key



- The machine sews in reverse as long as the reverse-feed key 1 is pressed.

7.09 Stitch length adjustment wheel

PFAFF 939 U

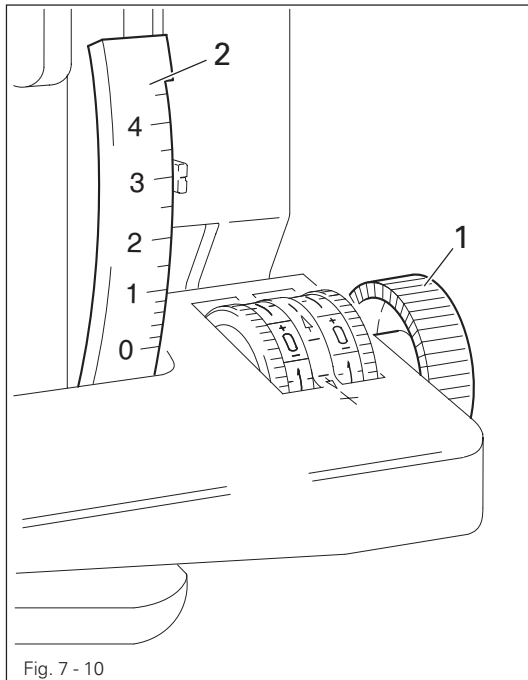


Fig. 7 - 10

PFAFF 3704-2/..

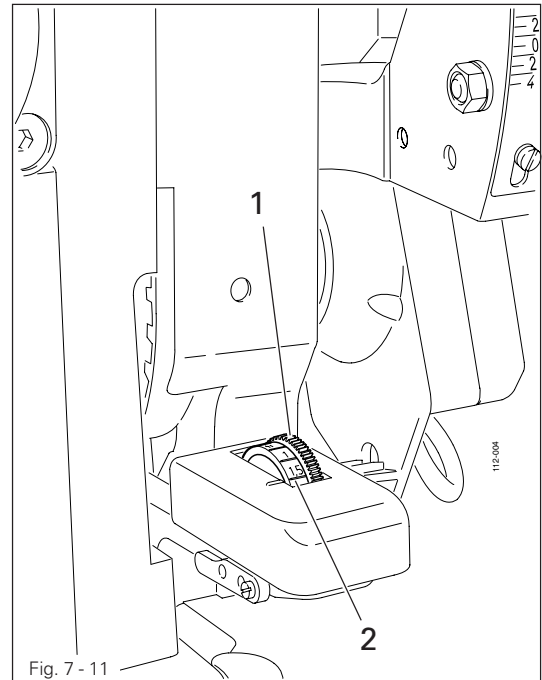


Fig. 7 - 11

- Set the stitch length by turning the stitch length adjustment wheel 1.



The stitch length setting can be read on scale 2.

7.10 Adjustment wheels for the top feed (only on the PFAFF 939 U)

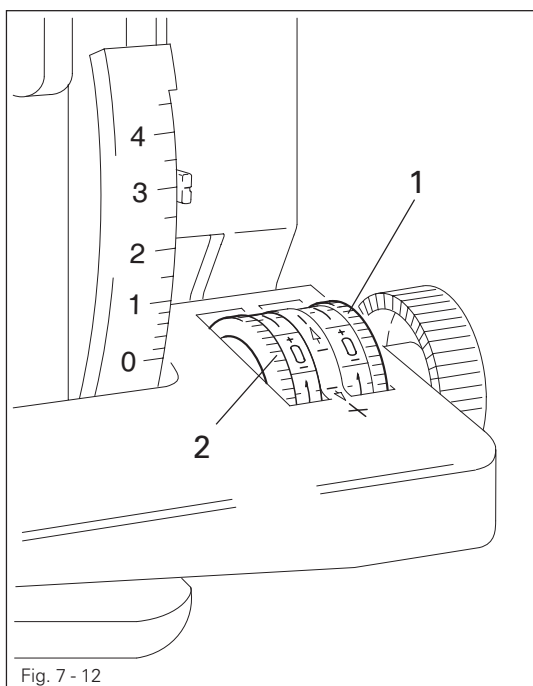


Fig. 7 - 12

- Adjustment wheel 1 (1st setting)
This adjustment wheel is for adjusting the setting with which the machine is to do most of its work.

Green area = Apply fullness

Red area = Stretch

Zero = Normal sewing

(The main and differential feed dogs work with the same feed stroke).

- Adjustment wheel 2 (2nd setting)
Adjustment wheel 2 is used for setting a value, which deviates from the first setting. This value can be selected with the second pedal (see **Chapter 7.03 Pedal**).

7.11 Adjustment lever for the differential feed (only on the PFAFF 3704-2/..)

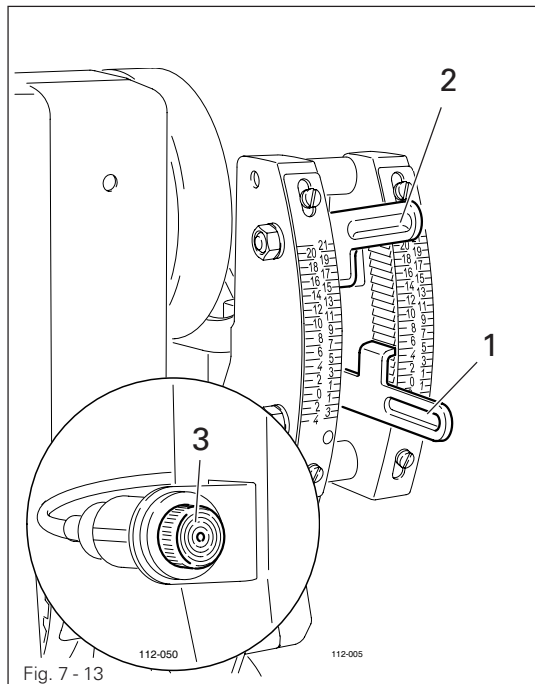


Fig. 7 - 13

- Lever 1 (standard value)
Lever 1 is set at the value, with which the machine usually operates.
- Lever 2 (fullness)
Lever 2 can be set at a value, which deviates from the first setting. This value can be called up with the knee switch, see Chapter 7.14 Knee switch...



If the machine is set at the standard setting, display unit 3 on the machine head is green.

7.12 Adjustment wheel for multi-stitch and zigzag stitch (only on the PFAFF 939 U)

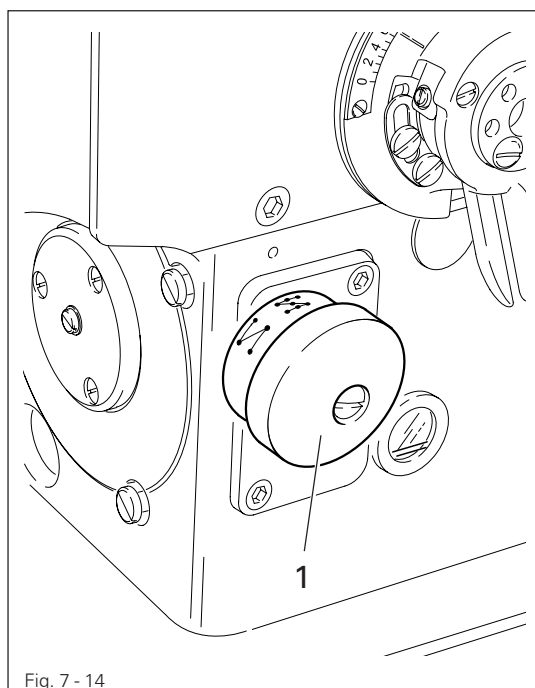


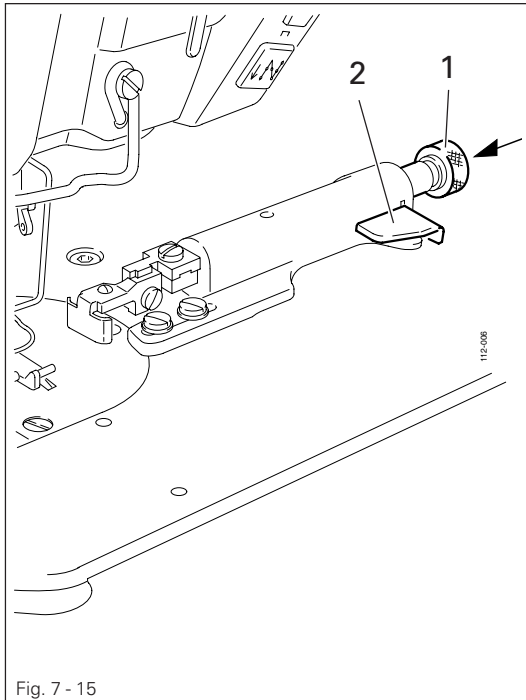
Fig. 7 - 14



Before sewing begins, make sure that adjustment wheel 1 is locked in position! Only switch over when the machine is at a standstill! Danger of machine damage!

- It is possible to switch between multi stitch and zigzag stitch with adjustment wheel 1, see Chapter 9.08 Adjusting the multi- or zigzag stitch.

7.13 Mechanical edge guide (only on the PFAFF 3704-2/02)



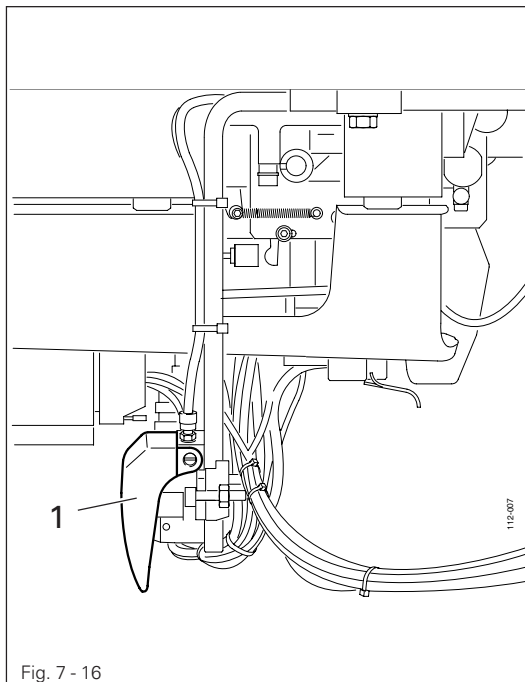
Switching on the edge guide:

- Press knob 1 in the direction of the arrow until it locks into place.

Switching off the edge guide:

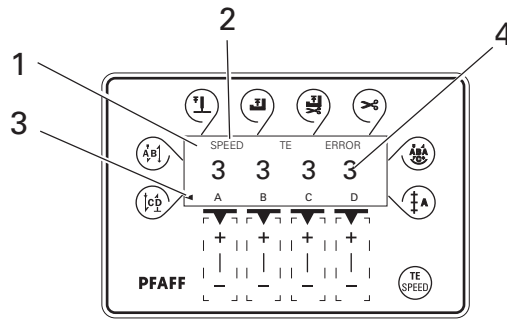
- Press down key 2.

7.14 Knee switch (only on the PFAFF 3704-2/..)



- By pressing knee switch 1 it is possible to switch between the two settings of the differential feed.

7.15 Control panel (only on machines with Quick-Eco-Drive motor).



The control panel consists of display 1 and the function keys described below. The display 1 consists of a single-line alpha-numerical, 7 segment LCD display with 8 symbols. The texts 2, located above and next to the LCD display, show the respective status of the function keys and the operating status of the machine. The control panels switches on all LCD-segments and the horn automatically for a short time during the power-on phase, after which the lettering PFAFF appears on the display, until the higher-ranking control unit sends commands to the control panel.

The function keys are located around the display 1. They are foil-packed without permanent marking and without contact signal. Fixed functions are allocated to the keys, see **Chapter 7.15.02 Function keys**.

7.15.01 Screen displays

- Activated functions are displayed with a triangular marking 3 below or next to the respective function key.
- In the sewing mode all relevant sewing data is displayed and can be changed directly, depending on the status of the machine, see also **Chapter 10 Sewing**.
- During the parameter input the selected parameter number with the corresponding value is displayed, see **Chapter 12.07.02 Example of a parameter input**.

7.15.02 Function keys

The function keys described below are used basically to switch machine functions on and off.

Each time a key is pressed, this must be confirmed by at least one beep tone. Irrespective of the machine mode a double beep signal is given if invalid keys are pressed or maximum values reached.



If a corresponding value has to be set for the activated function, this is carried out with the corresponding +/- key. By pressing and holding the corresponding +/- key, the relevant numerical value 4 is changed slowly to begin with. If the corresponding +/- key is held down longer, the values change more quickly.



Start backtacks

- If this key is pressed, the backtacks at the beginning of the seam (start backtacks) are switched on or off. The number of forward stitches (A) or reverse stitches (B) for the start backtacks can be changed by pressing the +/- key underneath. To convert from double backtack to single backtack set the number of stitches for the corresponding seam section at zero.



End backtacks

- If this key is pressed, the backtacks at the end of the seam (end backtacks) are switched on or off. The number of reverse stitches (C) or forward stitches (D) can be changed by pressing the +/- key underneath. To convert from double backtack to single backtack set the number of stitches for the corresponding seam section at zero.



Needle position

- If this key is pressed the "needle raised after sewing stop" function is switched on or off. When the function is switched on, the needle positions at t.d.c. after sewing stops.



Foot position after stop

- If this key is pressed the "foot raised after sewing stop" function is switched on or off. When the function is switched on, the presser foot is raised after sewing stops.



Foot position after trimming

- If this key is pressed the "foot raised after thread trimming" function is switched on or off. When the function is switched on, the presser foot is raised after thread trimming.



Thread trimmer

- If this key is pressed the thread trimming function is switched on or off.



Darning program

- If this key is pressed the darning program function is switched on or off. The counted seam function is switched off automatically.



Counted seam

- If this key is pressed the counted seam function is switched on or off. The darning program function is switched off automatically.



TE/Speed

- If this key is pressed once the speed limit for the sewing mode is activated.
- If this key is pressed twice (within 5 seconds) the machine changes from sewing to input mode.

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

8.01 Installation

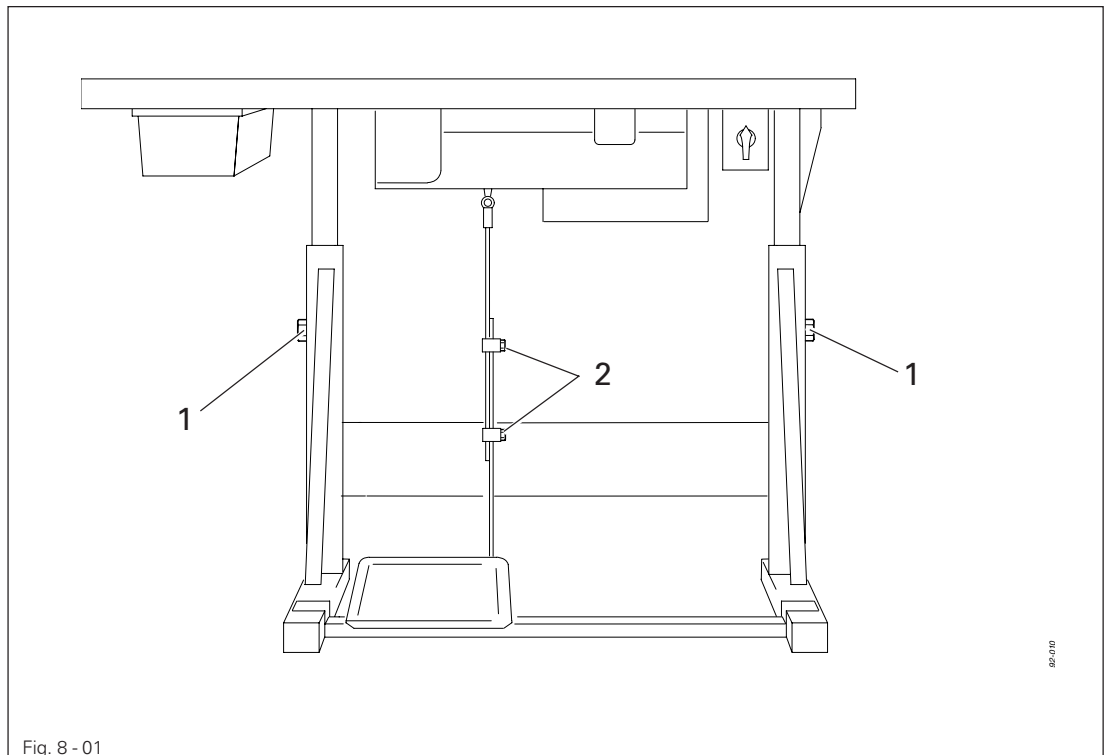
The site where the machine is installed must be provided with suitable connections for electric current.

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.

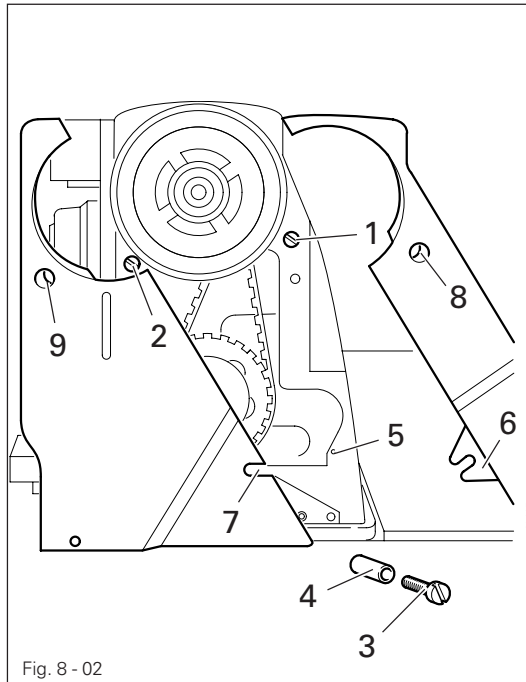
8.01.01 Adjusting the table height



- 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.

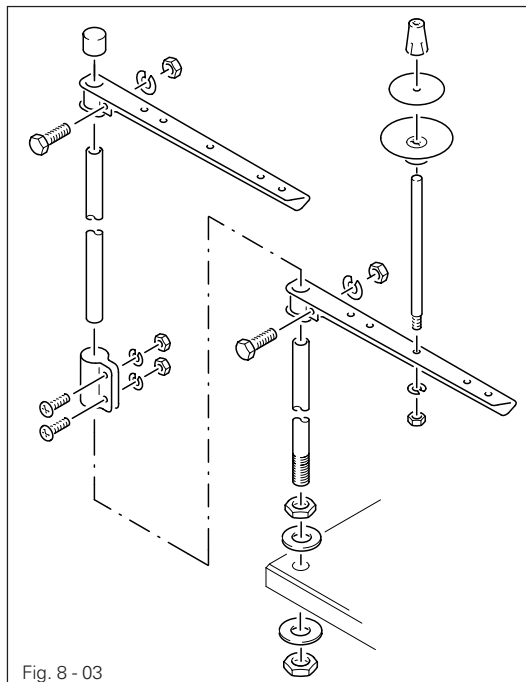
Installation and commissioning

8.01.02 Fitting the top belt guard (only on the PFAFF 939 U)



- Slide the left and right halves of the V-belt guard into place with the slots behind the heads of screws 1 and 2.
- Screw screw 3 with distance bush 4 into threaded hole 5.
- Align the V-belt guard, taking care that clip 6 is behind slot 7 and in front of distance bush 4.
- Tighten screws 1 and 2 (through holes 8 and 9) and screw 3.
- When using an external motor, the motor cover must also be fitted as described by the motor manufacturer.

8.01.03 Fitting the reel stand



- Fit the reel stand as shown in Fig. 8-03.
- Afterwards insert the stand in the hole in the table top and secure it with the nuts provided.

8.02 Fitting the Quick-flange motor (only on the PFAFF 939 U)

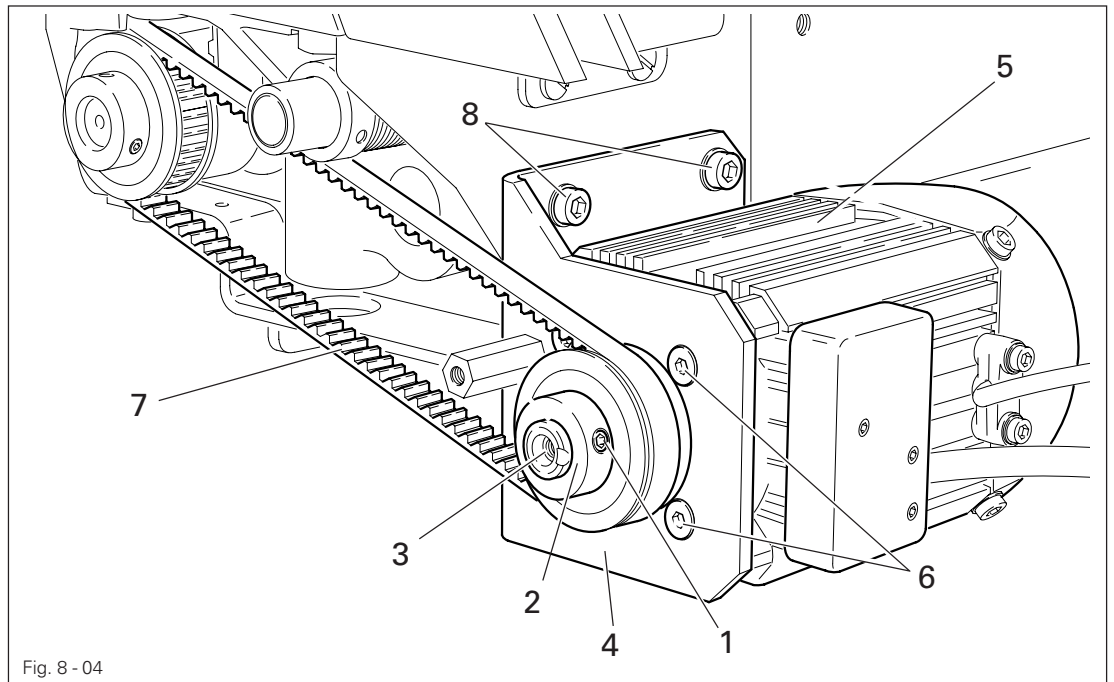


Fig. 8 - 04

- Loosen screws 1 and remove toothed belt wheel 2 from the motor shaft 3.
- Attach bearing plate 4 to the motor 5 with screws 6 as shown in Fig. 8-04.
- Slide toothed belt wheel 2 onto the motor shaft 3 and fasten with screws 1.
- Slightly tilt bearing plate 4 with motor 5 to the side and place the toothed belt 7 on the toothed belt wheels.
- Align bearing plate 4 of motor 5 on the machine case and attach it with screws 8.

8.03 Fit the belt guard of the Quick flange-motor.

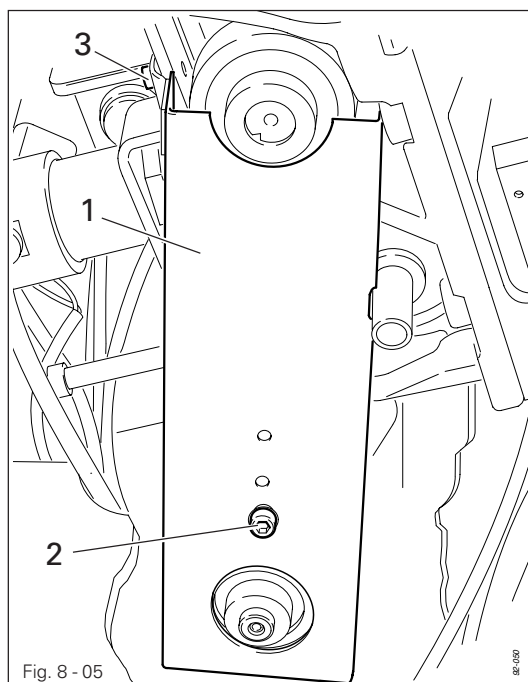
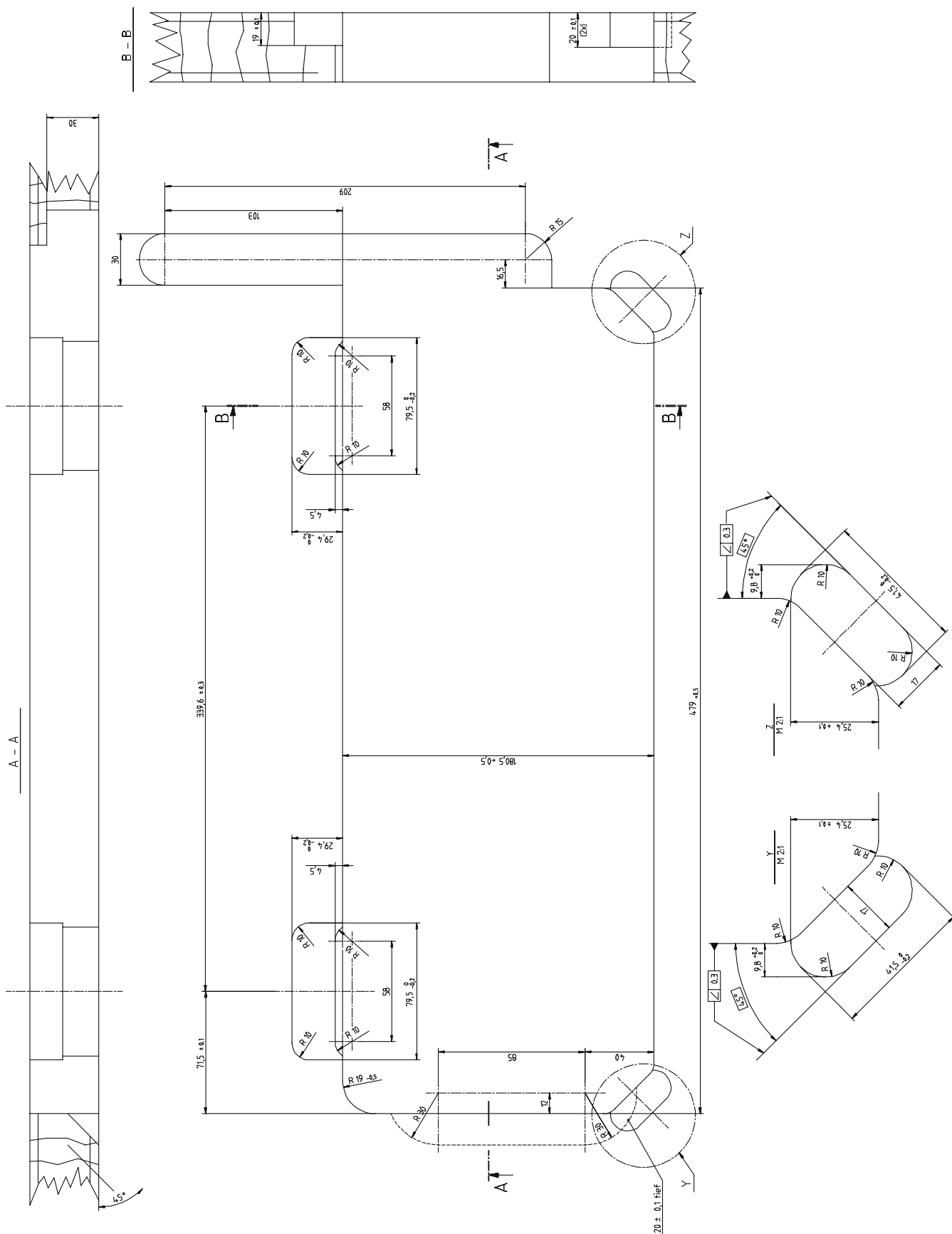


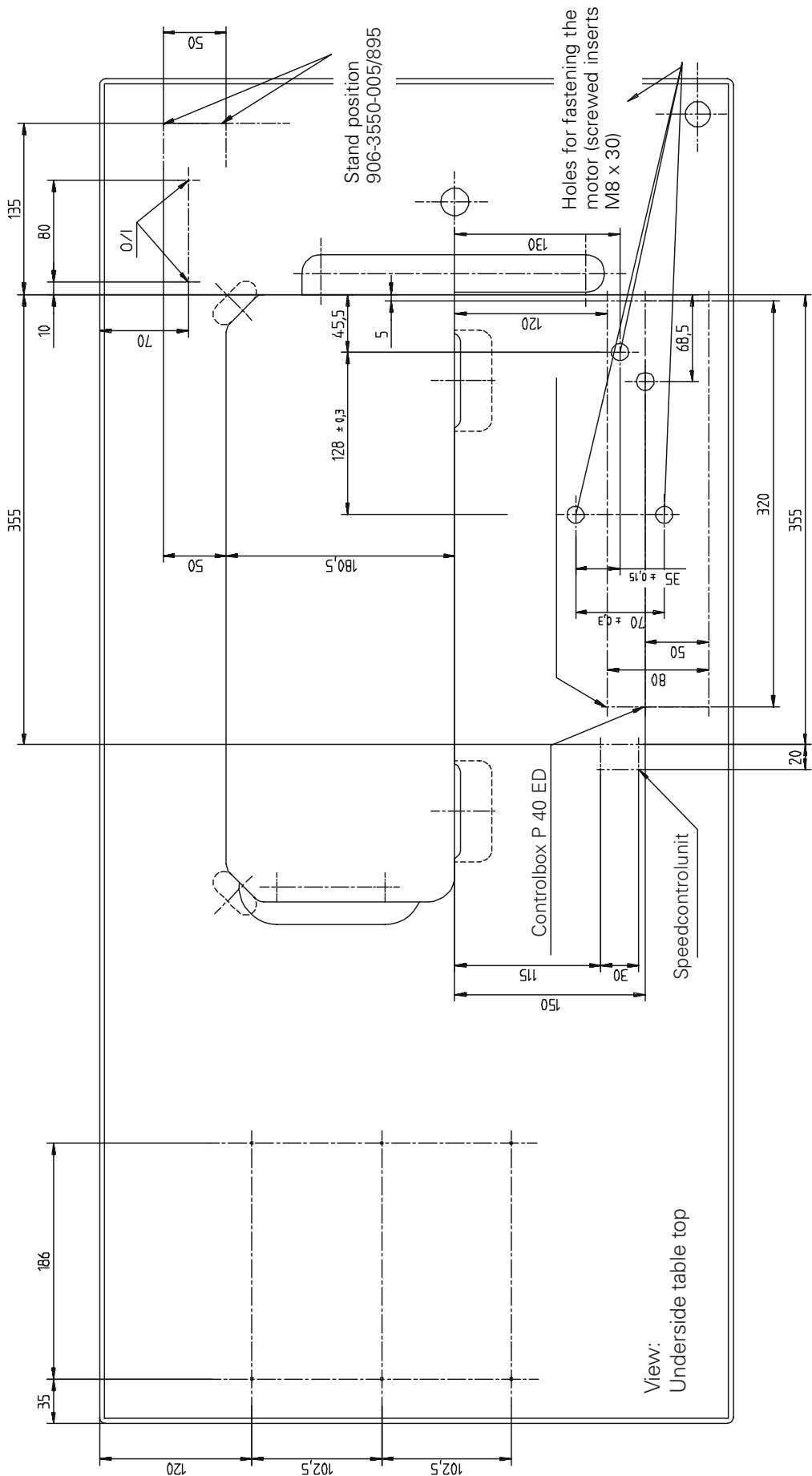
Fig. 8 - 05

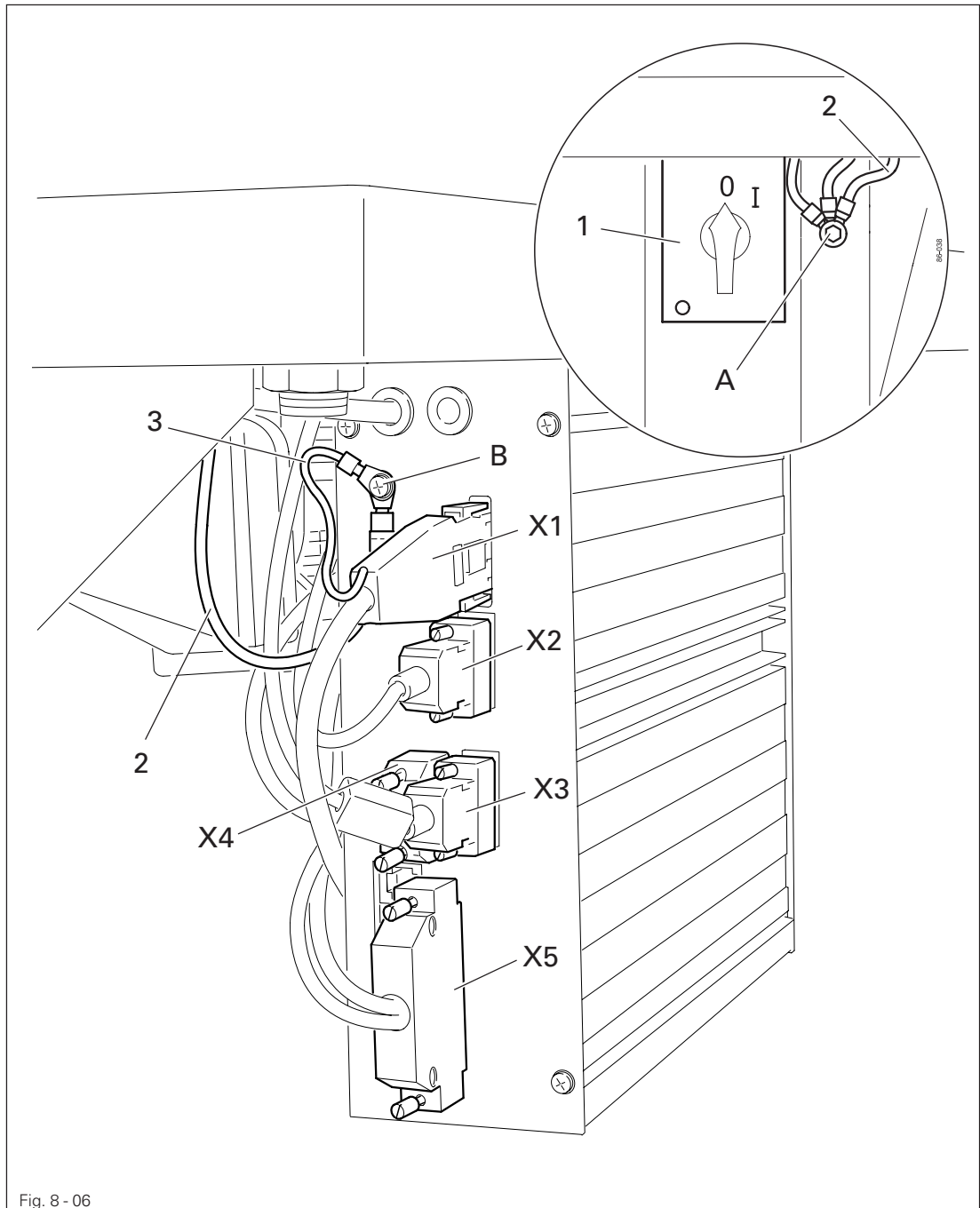
- Attach belt guard 1 with screws 2 and 3.

8.04 Table top cutout for the PFAFF 939 U



8.05 Table top assembly for the PFAFF 939 U





- Connect all plugs as labelled to the control box.
- Screw the earth cable from the sewing head and the main switch 1 to earth point A.
- Connect earth point A to earth point B with earth cable 2.
- Screw the earth cable 3 from the motor to earth point B.

8.07 Commissioning

- Examine the machine, in particular the electric cables and pneumatic connection tubes for any damage.
- Clean the machine thoroughly and then oil it.
- Have qualified personnel check whether the machine can be operated with the available voltage and whether it is connected properly in the terminal box. If there are any irregularities do not operate the machine under any circumstances.
- When the machine is running, the balance wheel must turn towards the operator, see **Chapter 8.09 Basic setting of the machine drive unit.**
- Connect the machine to the compressed air system. The pressure gauge should show a pressure of 6 bar. If necessary, adjust the value, see **Chapter 11.05 Checking/adjusting the air pressure.**

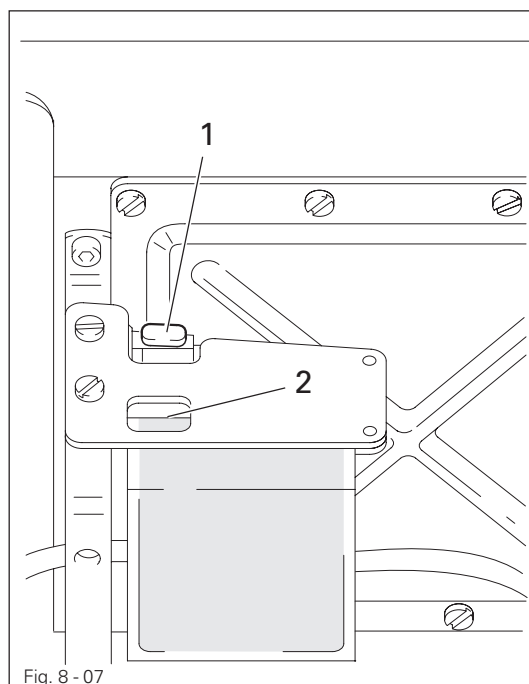


Fig. 8 - 07

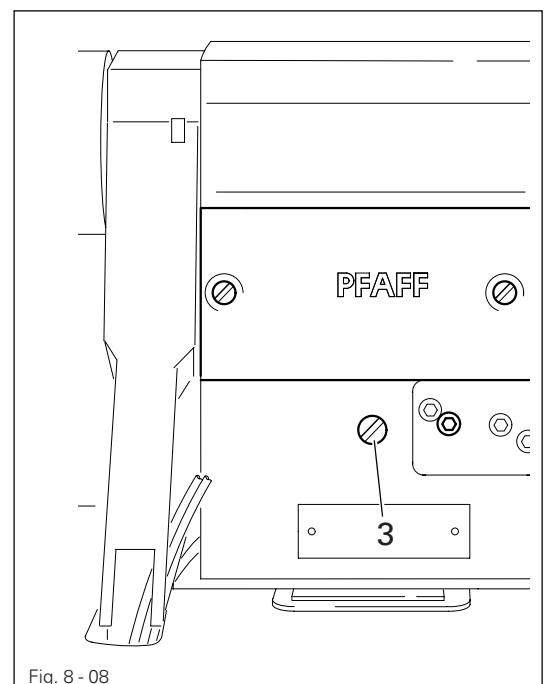


Fig. 8 - 08

- Before commissioning the machine remove plug 1 from its hole and fill in oil up to marking 2, see **Chapter 11.02 Oiling the hook.**



Plug 1 serves as a safety device for transportation and should not be used during sewing operations.

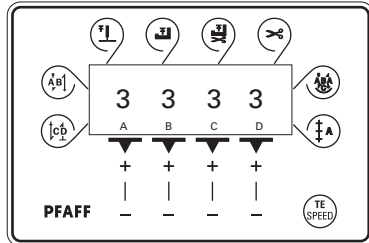
- Before commissioning the machine remove screw 3 and fill in oil up to the marking (inspection glass on the front side of the machine), see **Chapter 11.03 Oiling the zigzag drive.**


8.08 Switching the machine on/off

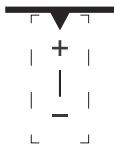
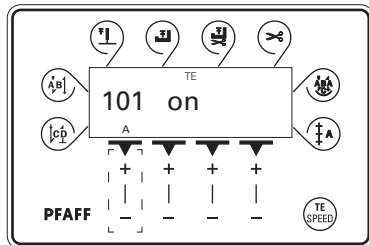
- Switch the machine on, see **Chapter 7.01 Main switch.**
- Carry out a test run.

8.09 Basic setting of the machine drive unit (only on machines with Quick-Eco-Drive-Motor)

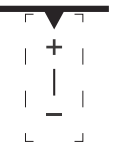
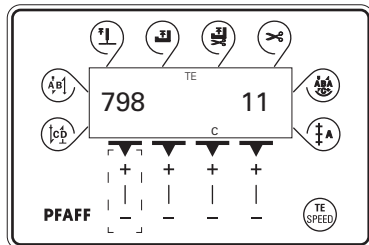
- Switch on the machine.



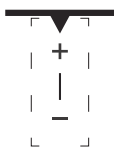
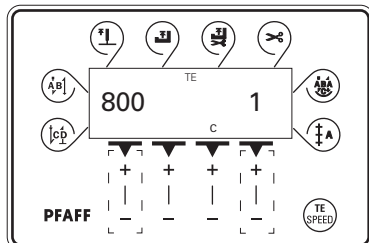
- 2 x  ● Press TE/Speed key twice to call up the input mode.



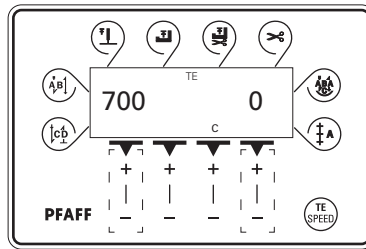
- By pressing the corresponding +/- key call up parameter "798" and select value "11" (service level "C"), see Chapter 12.07.01 Selecting the user level.



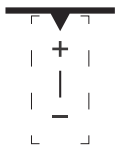
- By pressing the corresponding +/- key, call up parameter "800" (rotation direction of the motor).
- By pressing the corresponding +/- key enter the value "1".



- By pressing the corresponding +/- key select parameter "700".

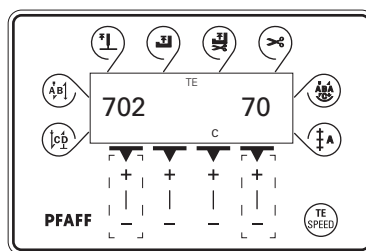


- Sew one stitch by operating the pedal.
- Turn the balance wheel in the sewing direction until the needle tip is level with the top edge of the needle plate when penetrating on the left hand side.
- Set the value at "0" with the corresponding +/- key.

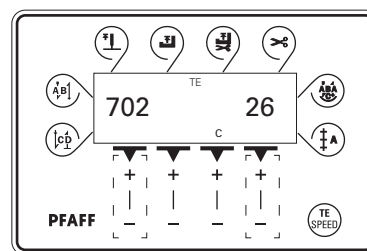


- By pressing the corresponding +/- key call up parameter "702".

PFAFF 939 U;
PFAFF 3704-2/03



PFAFF 3704-2/02

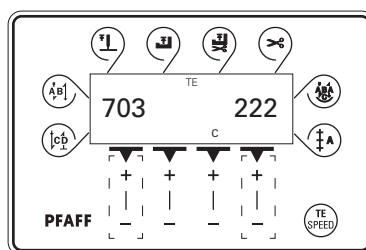


- By pressing the corresponding +/- key enter value "70" for the PFAFF 939 U and PFAFF 3704-2/03, or value "26" for the PFAFF 3704-2/02.

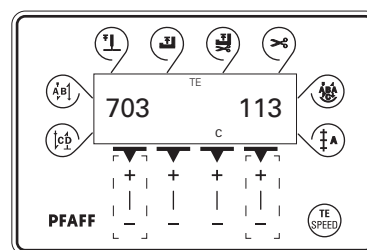


- By pressing the corresponding +/- key call up parameter "703".

PFAFF 939 U;
PFAFF 3704-2/03



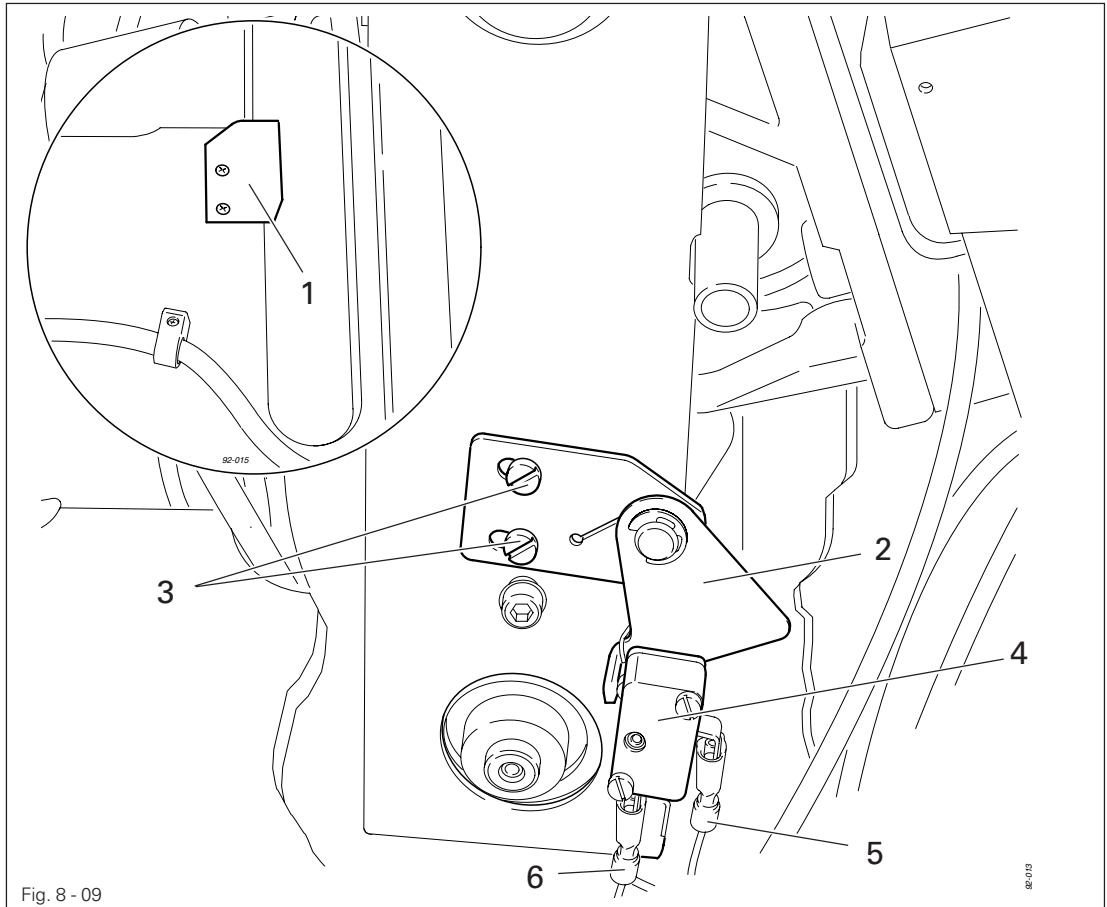
PFAFF 3704-2/02



- By pressing the corresponding +/- key enter value "222" for the PFAFF 939 U and PFAFF 3704-2/03, or value "113" for the PFAFF 3704-2/02.

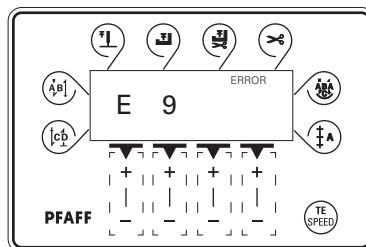


- Conclude the adjustment of the sewing motor by pressing the TE/Speed key.



- For machines delivered without a table, the plate 1 from the accessories should be mounted under the table top, so that the switch lug 2 is resting on plate 1 when the sewing head is in an upright position.
- Loosen screws 3 and adjust switch 4 so that the switch lug 2 is free when the sewing head is tilted back and pressed when the sewing head is upright.
- Connect plugs 5 and 6 to the switch 4.

Function check of the start inhibitor



- Switch the machine on at the main switch and tilt it back. The error message "E9" must appear on the control panel.
- If the message does not appear, check the setting of switch 4.
- Set the sewing head upright and acknowledge the error message by pressing the **TE/Speed** key. The machine is ready for operation again.



9

Setting up



All instructions and regulations in this instruction manual must be observed. Special attention must be given to all safety regulations!



All setting-up work must only be done by personnel with the necessary training. For all setting-up work the machine must be isolated from its power supply by turning off the on/off switch or removing the machine plug from the electric power socket!

9.01

Inserting the needle

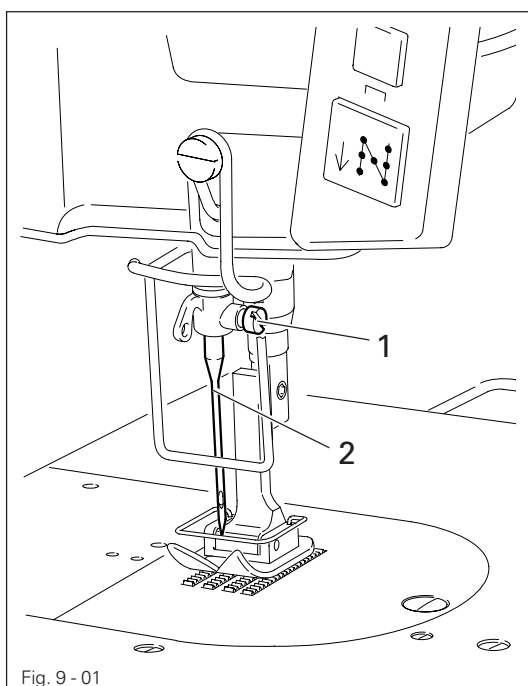


Fig. 9 - 01



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



Only use needles from the system intended for the machine, see **Chapter 3 Specifications**.

- Bring the needle bar into its highest position.
- Loosen screw 1.
- Insert the needle 2 as far as possible.
- The long needle groove must be facing forwards.
- Tighten screw 1.

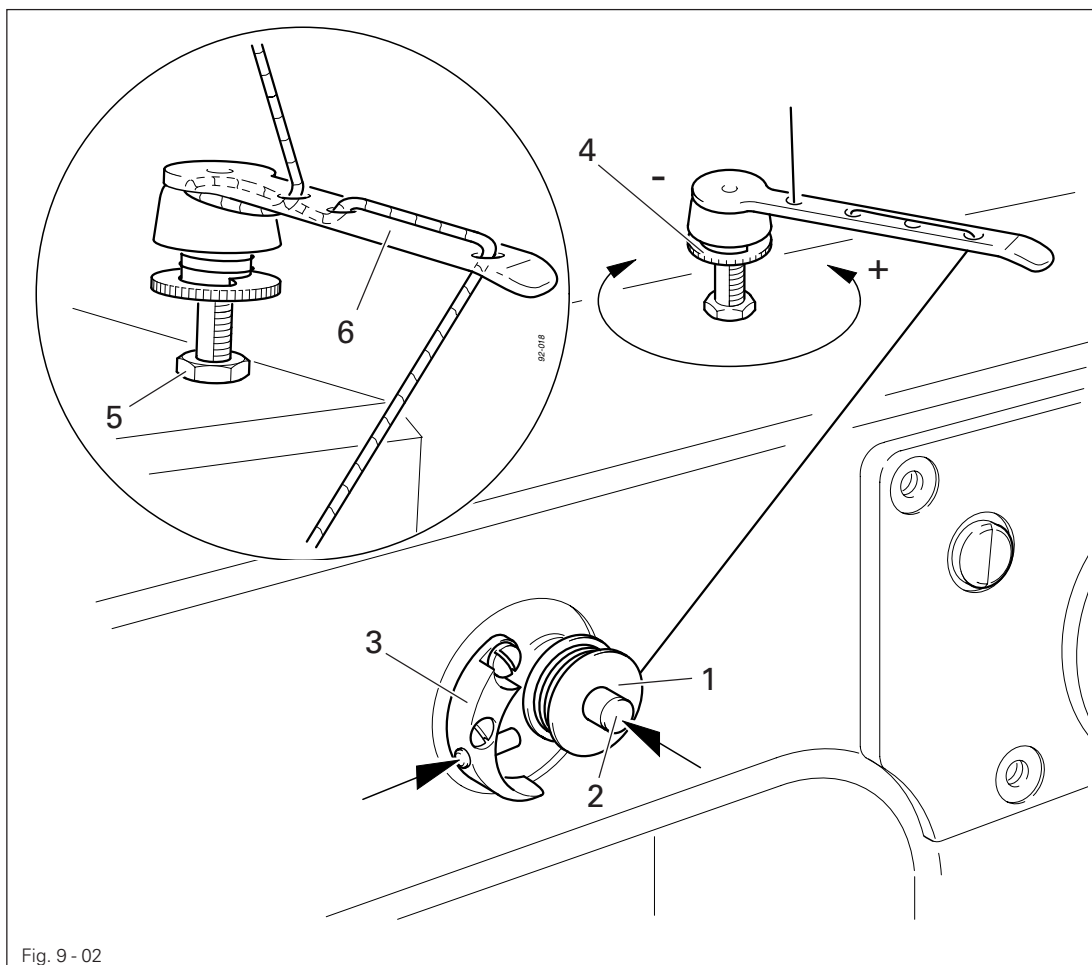


Fig. 9 - 02

- Place an empty bobbin 1 onto bobbin winder spindle 2.
- Thread the bobbin as shown in Fig. 9 - 02 and wind it clockwise around bobbin 1 a few times.
- Switch on the bobbin winder while at the same time pressing bobbin winder spindle 2 and lever 3.



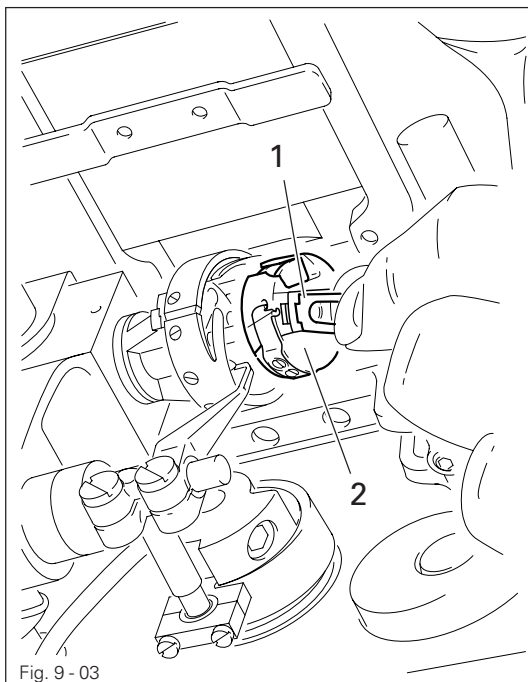
The bobbin is filled up during sewing.

- The thread tension on bobbin 1 can be adjusted using 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.

9.03 Removing/inserting the bobbin case



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

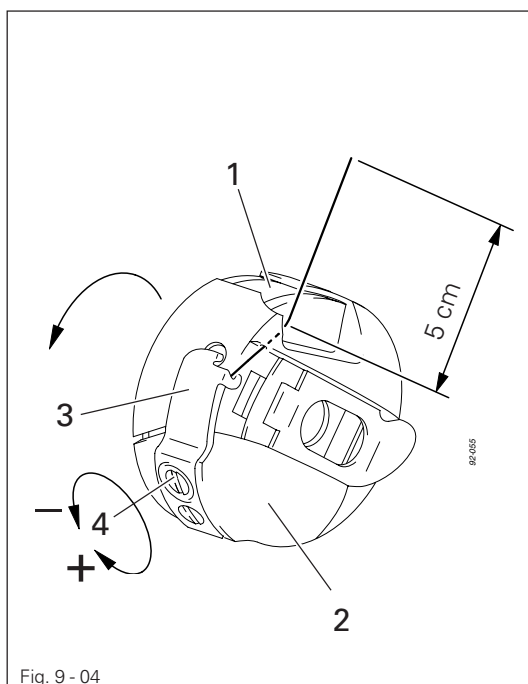
Removing the bobbin case.

- Lift clip 1 and remove bobbin case 2.

Inserting the bobbin case:

- Insert bobbin case 1 until you feel it click into place.

9.04 Threading the bobbin case, adjusting the thread tension



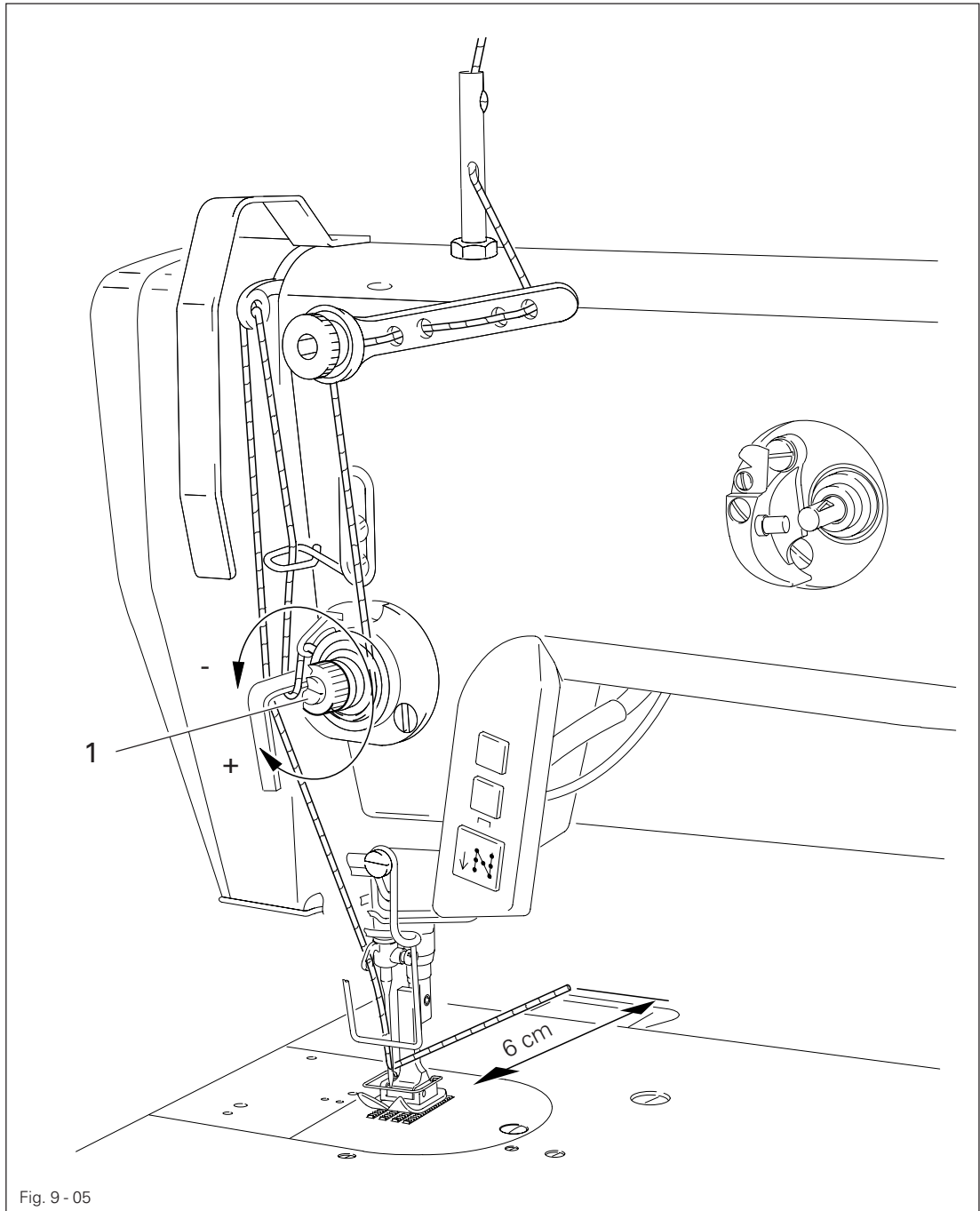
- Insert bobbin 1 into bobbin case 2.
- Pass the thread through the gap under spring 3 and through the hole in bobbin case 2.
- Adjust the thread tension by turning screw 4.



When the thread is pulled the bobbin 1 must rotate in the direction of the arrow.

9.05

Threading the needle thread / Adjusting the needle thread tension on the PFAFF 939 U and PFAFF 3704-2/03



Switch off the machine!

Danger of injury if the machine is started accidentally!

- Thread the needle thread as show in the above illustration.
- Adjust the needle thread tension by turning milled screw 1.

9.06 Threading the needle thread / Adjusting the needle thread tension
on the PFAFF 3704-2/02

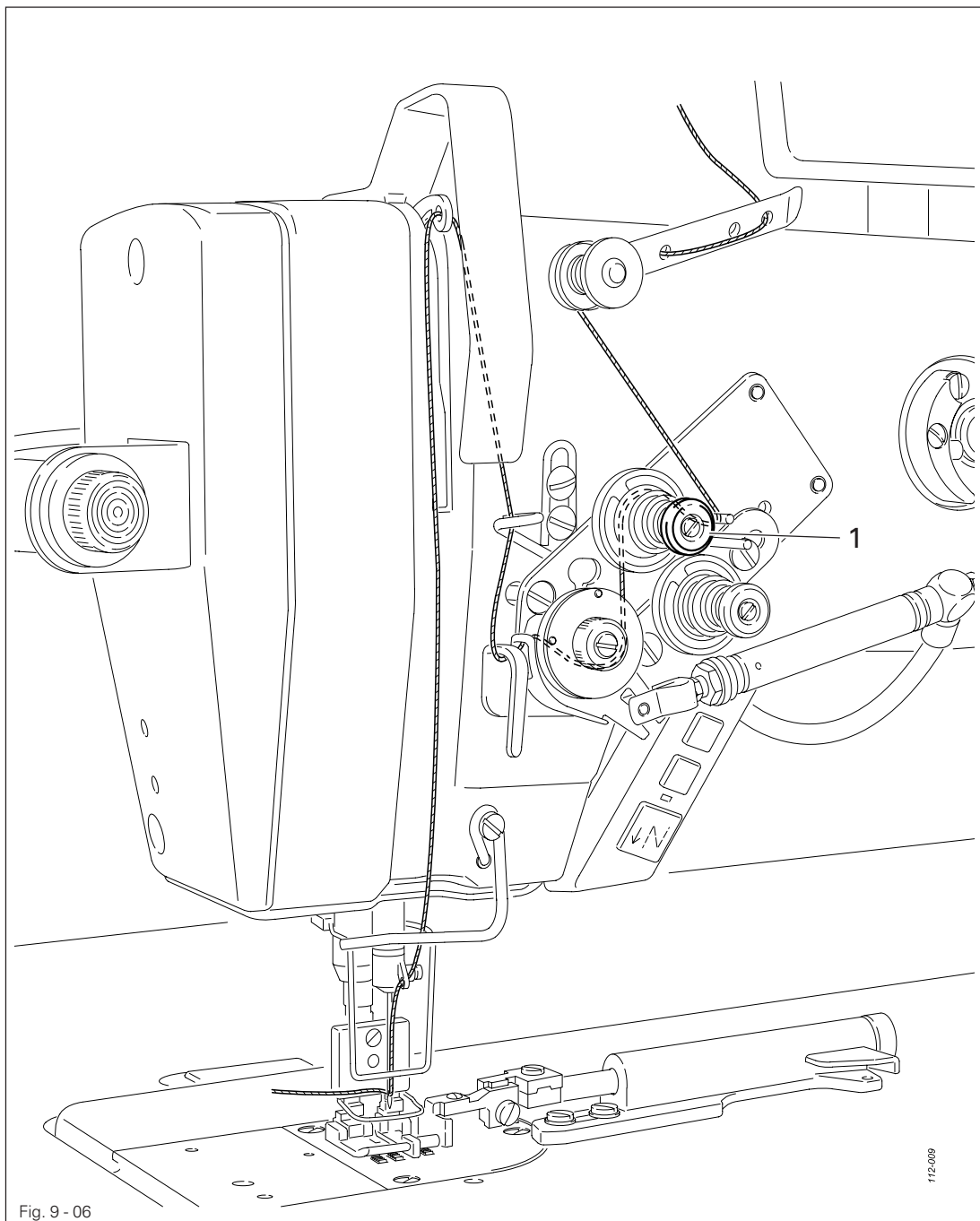


Fig. 9 - 06

112-009



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

- Thread the needle thread as show in the above illustration.
- Adjust the needle thread tension by turning milled screw 1.

9.07

Setting the zigzag stitch and the stitch position

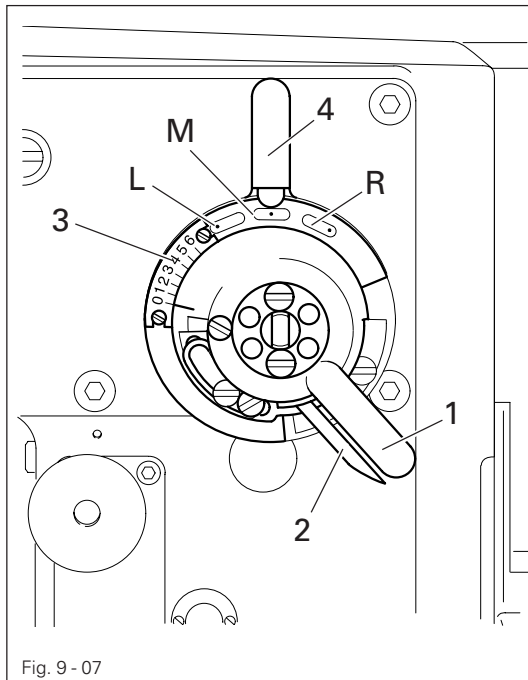


Fig. 9 - 07

- Set the zigzag stitch width by turning the zigzag lever 1.
- To vary the adjustment press catch 2 against zigzag lever 1.
- The setting can be read from scale 3.
- Set the stitch position by turning stitch position lever 4.

L = stitch position on left
 M = stitch position in the middle
 R = stitch position on the right

9.08

Adjusting the stitch length

PFAFF 939 U

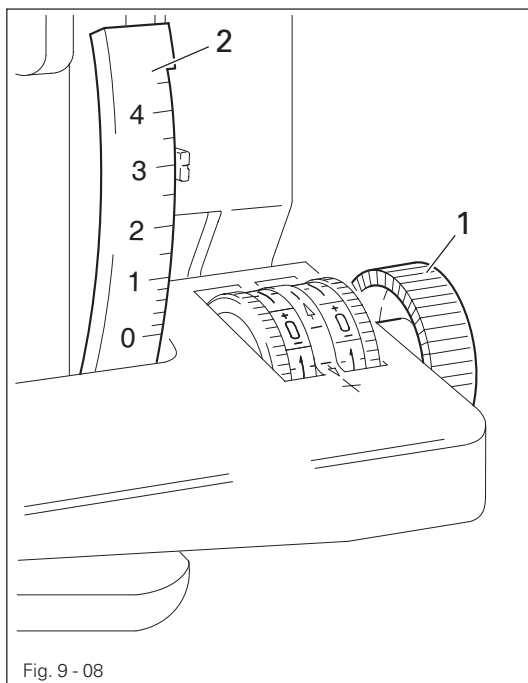


Fig. 9 - 08

PFAFF 3704-2/..

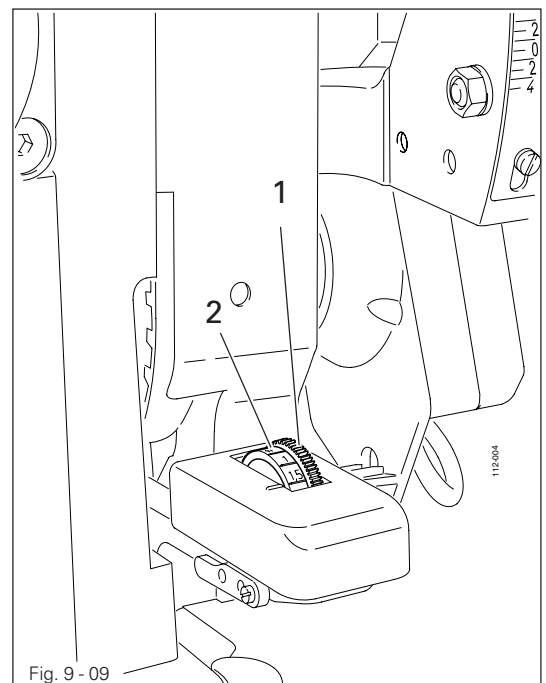


Fig. 9 - 09

- Adjust the stitch length by turning the feed regulator wheel 1.
 The setting can be read on scale 2.

9.09 Adjusting the differential feed on the PFAFF 939 U

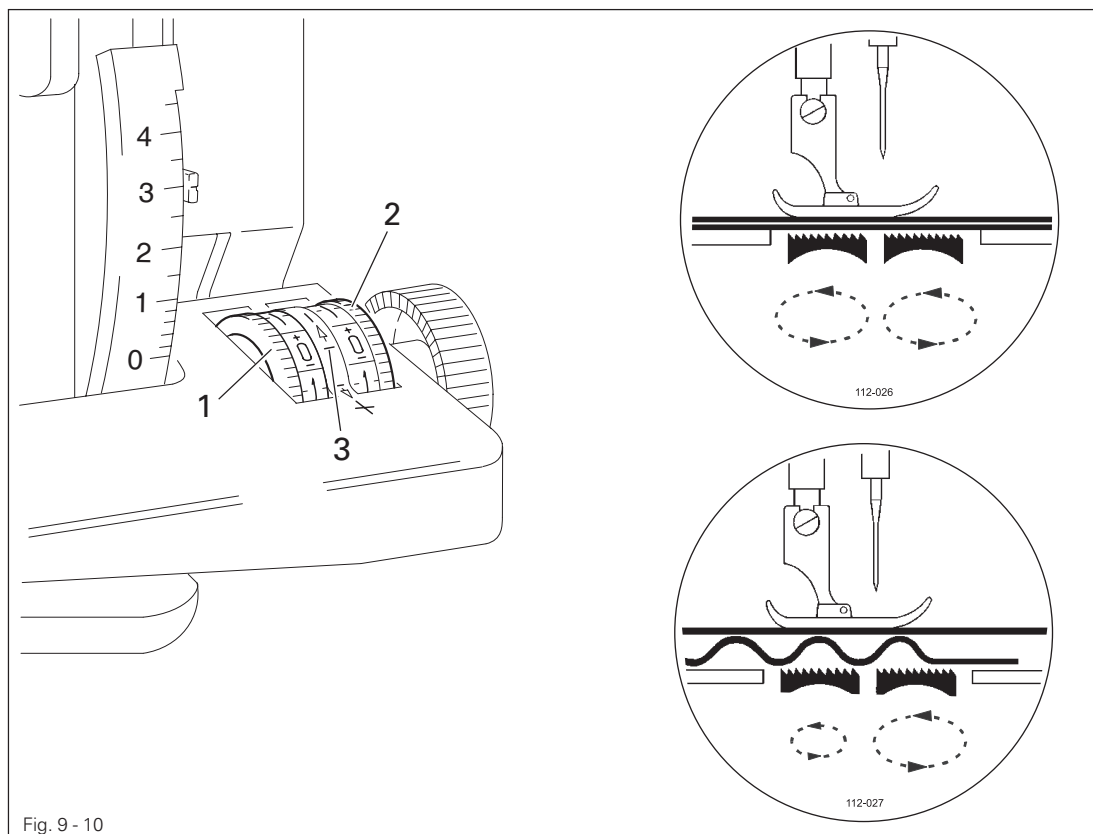


Fig. 9 - 10

9.09.01 Sewing without fullness

- Turn adjustment wheel 1 as far as possible in the "+" direction.
- Turn adjustment wheel 2 until "0" is at marking 3.
- Turn adjustment wheel 1 back until "0" is at marking 3.
- Adjust the stitch length (see chapter 9.08 Adjusting the stitch length).



When sewing without fullness the feed stroke of the main and the differential feed dogs is the same.

9.09.02 Ständig Mehrweite einarbeiten

- Turn adjustment wheel 1 as far as possible in the "+" direction.
- Turn adjustment wheel 2 until the desired level of fullness (green numbers) is at marking 3.
- Turn adjustment wheel 1 back until the same green number is at marking 3.
- Adjust the stitch length (see chapter 9.08 Adjusting the stitch length).



The sum of the selected fullness level and the stitch length must not exceed 4.5 because more than this lessens the stitch length.

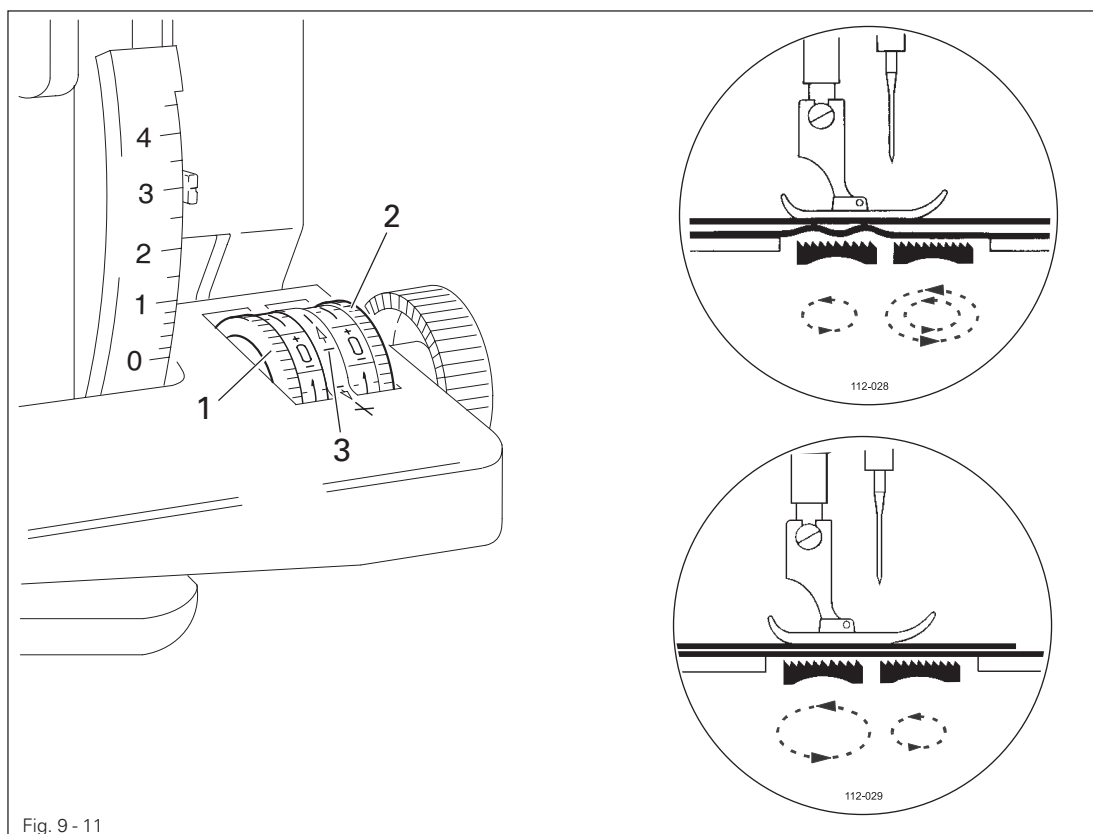


Fig. 9 - 11

9.09.03 Applying fullness intermittently

- Turn adjustment wheel 1 as far as possible in the "+" direction.
- Turn adjustment wheel 2 until "0" is at marking 3.
- Turn adjustment wheel 1 back until the desired level of fullness (green numbers) is at marking 3.
- Adjust the stitch length (see **chapter 9.08 Adjusting the stitch length**).



The sum of the selected fullness level and the stitch length must not exceed 4.5 because more than this lessens the stitch length.

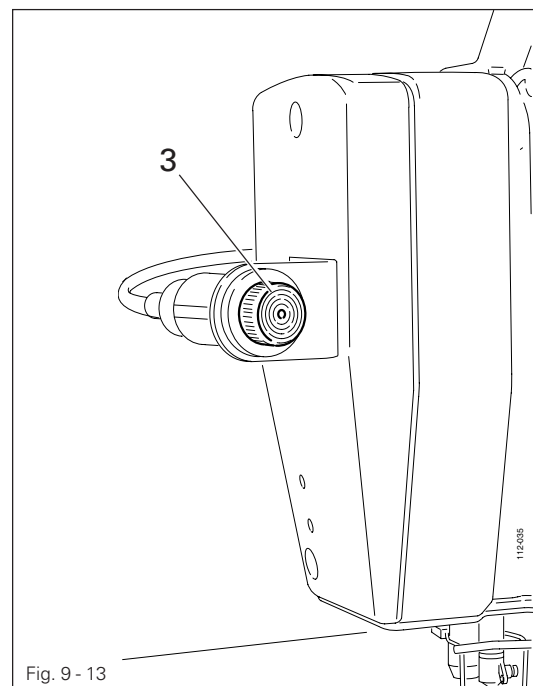
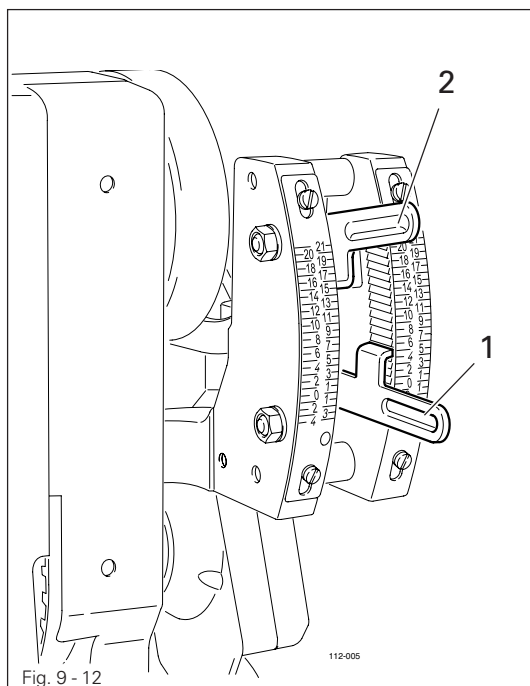


When the left pedal is in its neutral position, the machine works with the same feed stroke for the main and differential feed dogs. When the left pedal is operated, the fullness set on adjustment wheel 1 is worked into the bottom material ply (see **Chapter 7.03 Pedal on the PFAFF 939 U**).

9.09.04 Constantly stretch the top material ply.

- Turn adjustment wheel 1 as far as possible in the "+" direction.
- Turn adjustment wheel 2 until the desired level of stretch (red numbers) is at marking 3.
- Turn adjustment wheel 1 back until the same red number is at marking 3.
- Adjust the stitch length (see **chapter 9.08 Adjusting the stitch length**).

9.10 Adjusting the differential feed on the PFAFF 3704-2/..



Standard value:

- Set the value with which the machine will usually operate on lever 1.

Fullness:

- Set the required deviating value (e.g. for fullness) on lever 2.



By pressing the knee switch, it is possible to switch between the standard value and fullness, see **Chapter 7.14 Knee switch**.

Setting displayed on display unit 3:

Display white = fullness

Display green = standard value

9.11 Adjusting the multi-stitch or the zigzag stitch

(on the PFAFF 939 U with Quick-flange motor)

9.11.01 Changing from zigzag stitch to multi-stitch

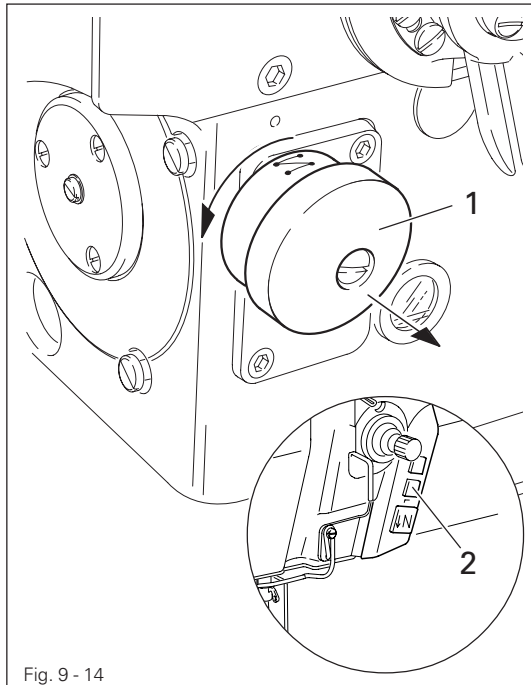


Fig. 9 - 14



Before sewing begins, make sure that adjustment wheel 1 is locked in position! Only switch over when the machine is at a standstill! Danger of machine damage!

- Bring the machine into a switching position by operating key 2.
- Pull adjustment wheel 1 and turn it in the direction of the arrow until it clicks into position.

9.11.02 Changing from multi-stitch to zigzag stitch

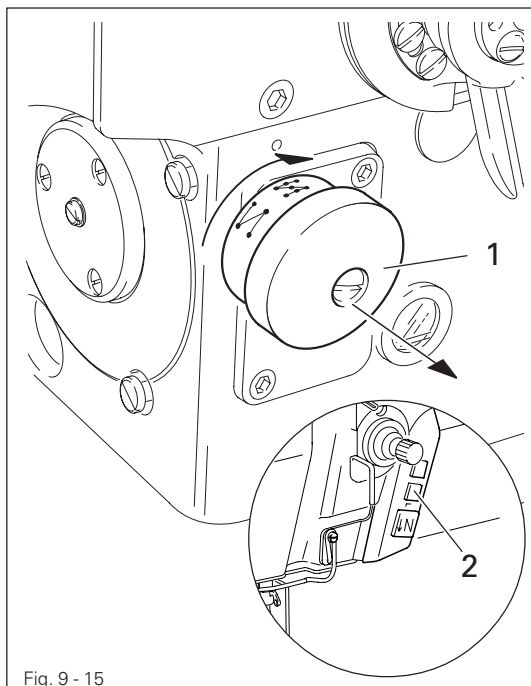


Fig. 9 - 15

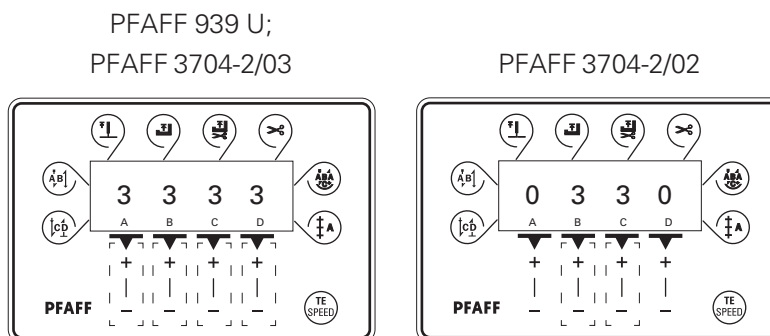


Before sewing begins, make sure that adjustment wheel 1 is locked in position! Only switch over when the machine is at a standstill! Danger of machine damage!

- Bring the machine into a switching position by operating key 2.
- Pull adjustment wheel 1 and turn it in the direction of the arrow until it clicks into position.

9.12 Entering start and end backtacks or condensed stitches

- Switch on the machine.



- If necessary switch off the "darning seam" or "counted seam" function, see **Chapter 10.01 Darning program** or **Chapter 10.02 Counted seam**.
- By pressing the corresponding +/- key ("A") select the desired value for the number of forward stitches (A) of the start backtack. (only on the PFAFF 939 U and the PFAFF 3704-2/03).
- By pressing the corresponding +/- key ("B") select the desired value for the number of reverse stitches (B) of the start backtack.
- By pressing the corresponding +/- key ("C") select the desired value for the number of reverse stitches (C) of the end backtack.
- By pressing the corresponding +/- key ("D") select the desired value for the number of forward stitches (D) of the end backtack (only on the PFAFF 939 U and the PFAFF 3704-2/03).



- By pressing the keys **start backtack** and/or **end backtack**, activate the corresponding function (arrow appears next to the corresponding function key).

Sewing (only on machines with Quick-Eco-Drive-Motoren)

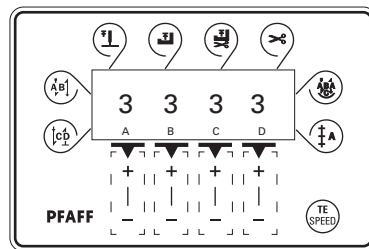
In the sewing mode all relevant settings for the sewing operation are displayed. Functions can be switched on or off by pressing a key. Values for start and end backtacks or stitch placement can be changed directly.



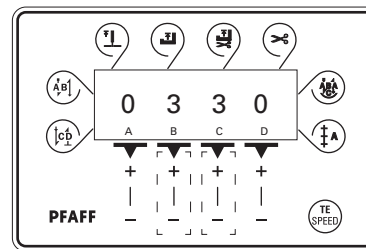
When the machine is switched on, the sewing mode is always activated.

- Switch on the machine.

PFAFF 939 U;
PFAFF 3704-2/03



PFAFF 3704-2/02



- If necessary switch off the function "darning seam" or "counted seam", see **Chapter 10.01 Darning program** or **Chapter 10.02 Counted seam**.

Functions in manual sewing, also see **Chapter 7.16.02 Function keys**:



Start backtacks on/off



Presser foot raised at end of seam on/off



End backtacks on/off



Thread trimming on/off



Needle position raised on/off



Darning program on/off



Presser foot raised on/off



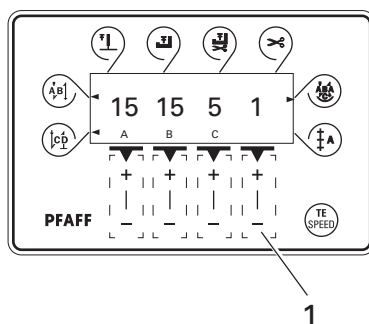
Counted seam on/off

Sewing is carried out with the pedal functions, see **Chapter 7.03** or **7.04 Pedal**.



The "Darning program" and "Counted seam" functions are explained in more detail in **Chapter 10.01 Darning program** or **Chapter 10.02 Counted seam**.

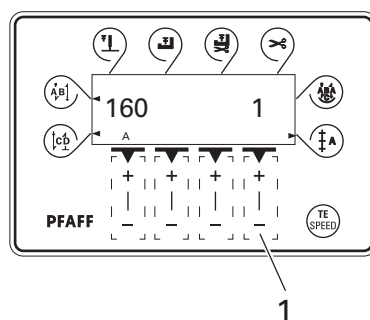
10.01 Darning program



The corresponding function can be switched on or off directly with the **Darning program** key. The "counted seam" function is switched off automatically. Several darning programs with different seam sections A and/or B can be selected. The number of required darning programs can be selected by operating the **+/- key 1**. The number of stitches for the individual seam sections A and/or B can be selected by operating the **corresponding +/- key**. By operating the **corresponding +/- key** it is possible to select a repeating factor "C" for the selected darning program.

If the backtack functions are also activated, only the status backtack on or backtack off is displayed. The individual backtack parameters can be altered after the "darning program" function has been switched off, see **Chapter 9.12** Entering start and end backtacks or condensed stitches

10.02 Counted seam



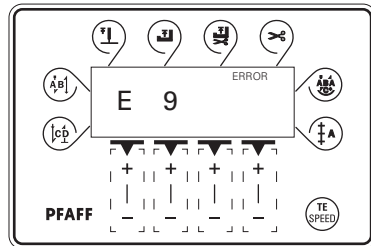
The corresponding function can be switched on or off directly with the **Counted seam** key. The "darning program" function is switched off automatically. Several counted seam sections can be selected. The number of required seam sections can be selected by operating the **+/- key 1**. The required number of stitches "A" of the selected seam section can be selected by operating the **corresponding +/- key**.

If the backtack functions are also activated, only the status backtack on or backtack off is displayed. The individual backtack parameters can be altered after the "counted seam" function has been switched off, see **Chapter 9.12** Entering start and end backtacks or condensed stitches

10.03 Error messages

If a fault occurs, the text "ERROR" appears on the display, together with an error code and short instructions. An error message is caused by incorrect settings, faulty elements or seam programs as well as by overload conditions.

For an explanation of the error codes see **Chapter 12.08 Explanation of the error messages**.

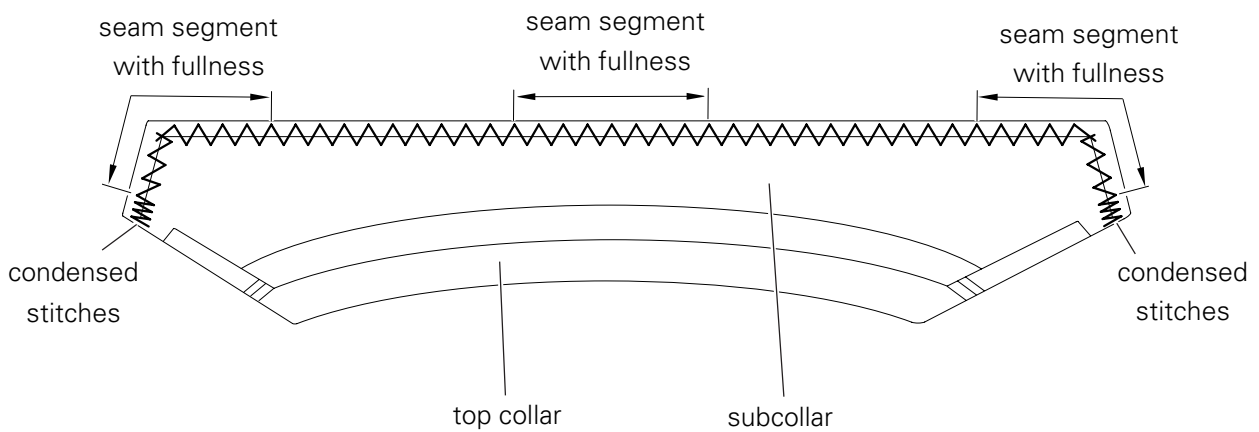


- Correct the error.



- Acknowledge error correction by pressing the TE/Speed key.

10.04 Example of a seam on the PFAFF 3704-2/02



11 Care and maintenance

Cleaning	daily, several times by continuous operation
Checking the oil level (hook oil tank)	once a year [▲]
Checking the oil tank(zigzag eccentric lubrication)	daily, before operation
Checking/adjusting the air pressure	daily, before each operation
Cleaning the air filter/lubricator	Cleaning the air filter/lubricator



▲ This maintenance interval is for an average machine running time in a single shift operation. If the machine running times are longer, shorter maintenance intervals are recommended.

11.01 Cleaning



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

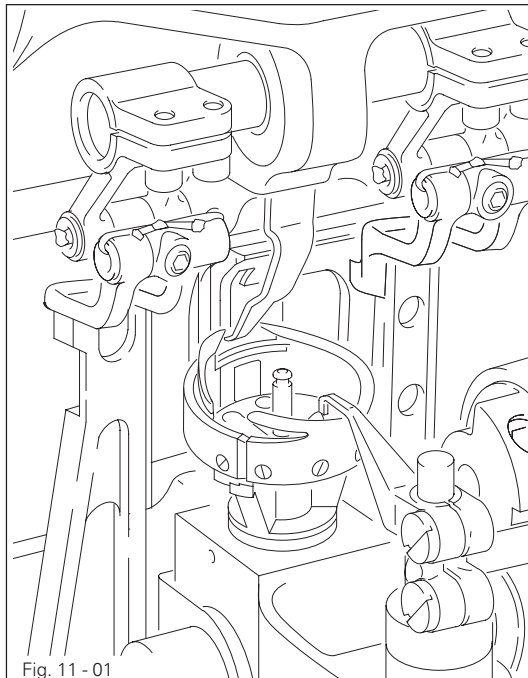


Fig. 11 - 01

- Tilt back the machine head.
- Clean the hook and the hook compartment daily, more often if in continuous operation.



Use both hands to set the machine upright!
Danger of crushing between sewing head and table top!

11.02 Lubricating the hook

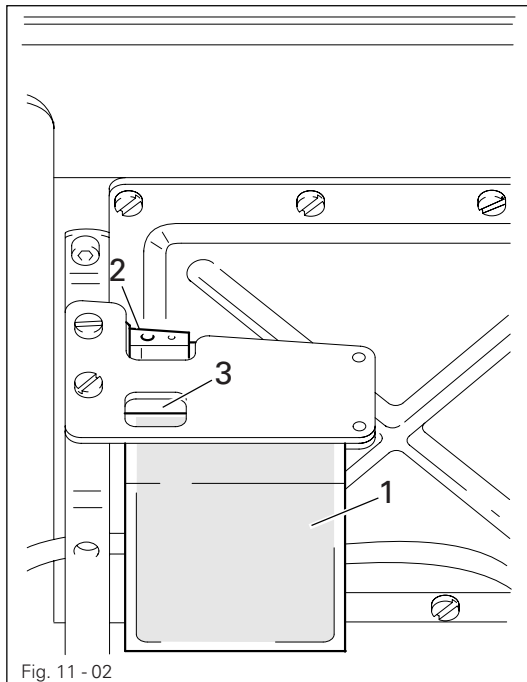


Fig. 11 - 02

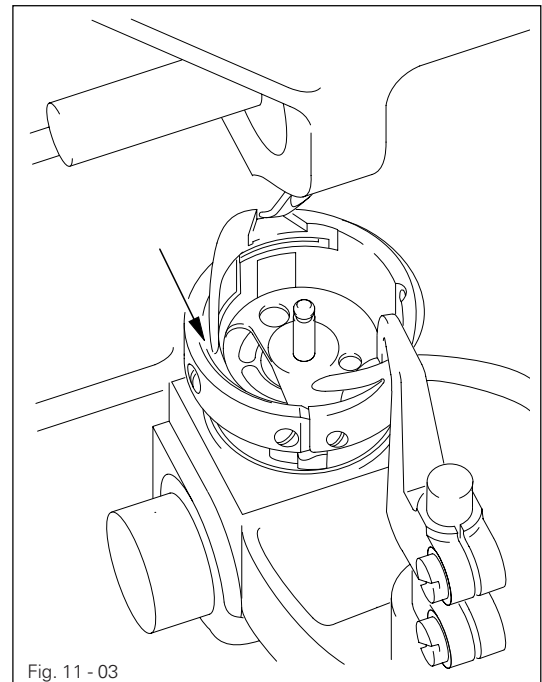


Fig. 11 - 03



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

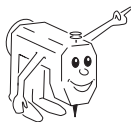


Only use oil with a mean viscosity of 10.0 mm²/s at 40°C and a density of 0.847 g/cm³ at 15°C.

- Lay the machine head on its back.
- Fill the oil reservoir 1 up to the upper marking 3 through hole 2.
- Before operating the machine for the first time or after longer stationary periods, add a few additional drops of oil into the hook race (see arrow in Fig. 11-03).



Return the machine to its upright position with both hands. Danger of crushing between machine head and table top!



We recommend PFAFF sewing machine oil.
Part no. 280-1-120 105.

11.03 Oiling the zigzag drive

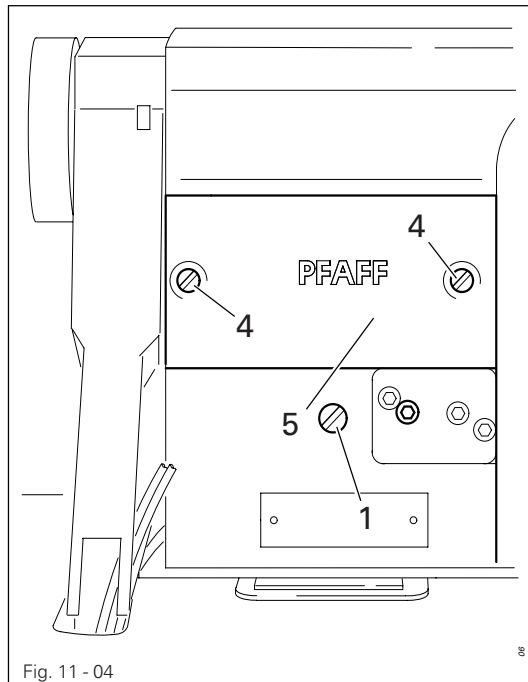


Fig. 11 - 04

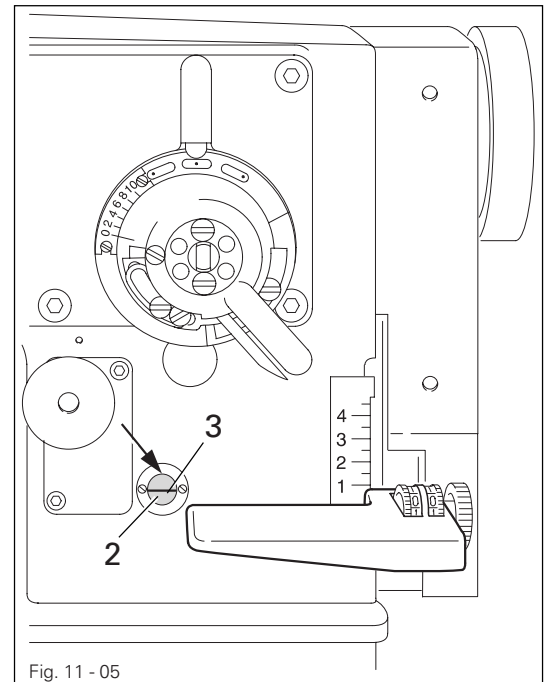


Fig. 11 - 05



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



Only use oil with a mean viscosity of 68.00 m²/s at 40° C and a density of 0.881 g/cm³ at 15° C.

- Check the oil level before each operation.
- When necessary, remove screw 1 and pour in oil until sight glass 2 is full.
- Tighten screw 1.

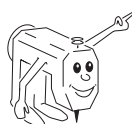


Never allow the oil level to sink below the minimum mark 3!
Danger of damage to the machine!



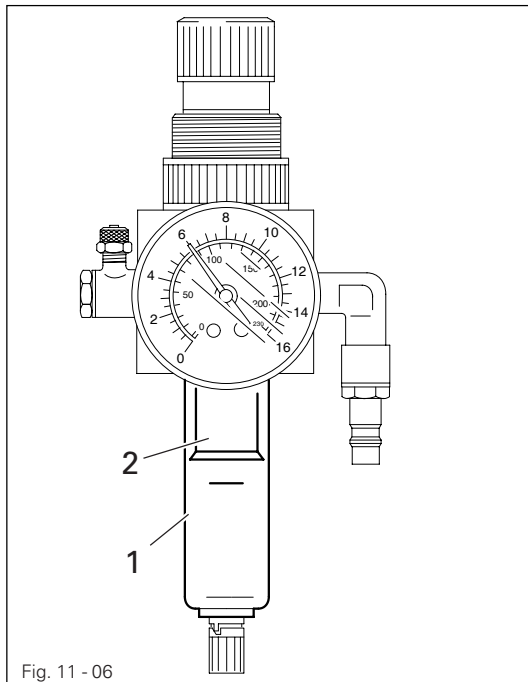
To fill in larger quantities of oil, e.g. when filling for the first time before commissioning, it is better to remove cover 5.

- Loosen screws 4 and remove cover 5.
- Take care that no dirt gets into the case.
- Pour in oil until sight glass 2 is full.
- Clean the surface of cover 5, the case and the seal.
- Replace cover 5 and tighten screws 4.



We recommend PFAFF sewing machine oil, part no. 280-1-120 146.

11.04 Cleaning the air filter of the air-filter / lubricator



Switch the machine off!
Disconnect the air hose at the
air-filter / lubricator.

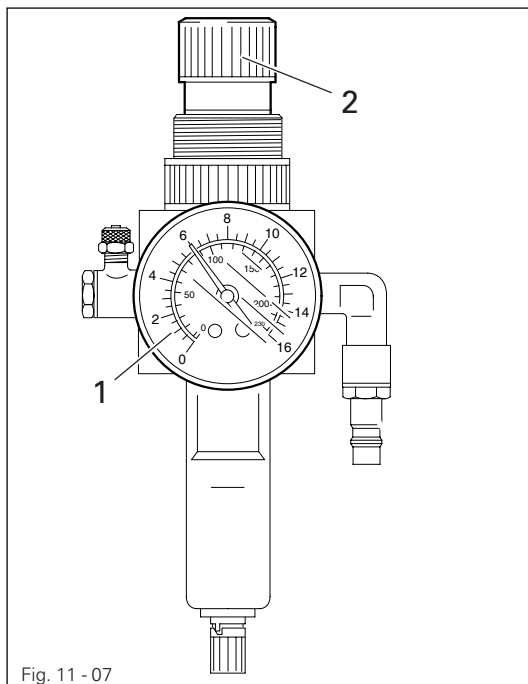
To drain water bowl 1:

- Water bowl 1 drains itself automatically when the compressed-air hose is disconnected from the air-filter / lubricator.

Cleaning filter 2:

- Unscrew water bowl 1.
- Take out filter 2.
- Clean filter 2 with compressed air or isopropyl alcohol (part No. 95-665 735-91).
- Screw in filter 2 and screw on water bowl 1.

11.05 Checking/adjusting the air pressure



- Before operating the machine, always check the air pressure on gauge 1.
- Gauge 1 must show a pressure of 6 bar.
- If necessary adjust to this reading.
- To do so, pull knob 2 upwards and turn it so that the gauge shows a pressure of 6 bar.

12 Adjustment

12.01 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.



The machine must be switched off for all adjustment work!
Danger of injury if the machine is started accidentally!

12.02 Tools, gauges and other accessories for adjusting

- 1 set of screwdrivers with blade widths from 2 to 10 mm
- 1 set of wrenches with jaw widths from 7 to 14 mm
- Open-ended spanner (jaw width 27 mm)
- 1 set of Allan keys from 1.5 to 6 mm
- 1 metal rule, (Part No. 08-880 218-00)
- Locking pin (5 mm diameter), part no. 13-030 341-05
- Feed dog adjustment gauge, part no. 91-119 995-05
- Hook bearing adjustment gauge, part no. 91-119 996-05
- Needles, threads and test material

12.03 Abbreviations

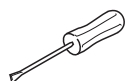
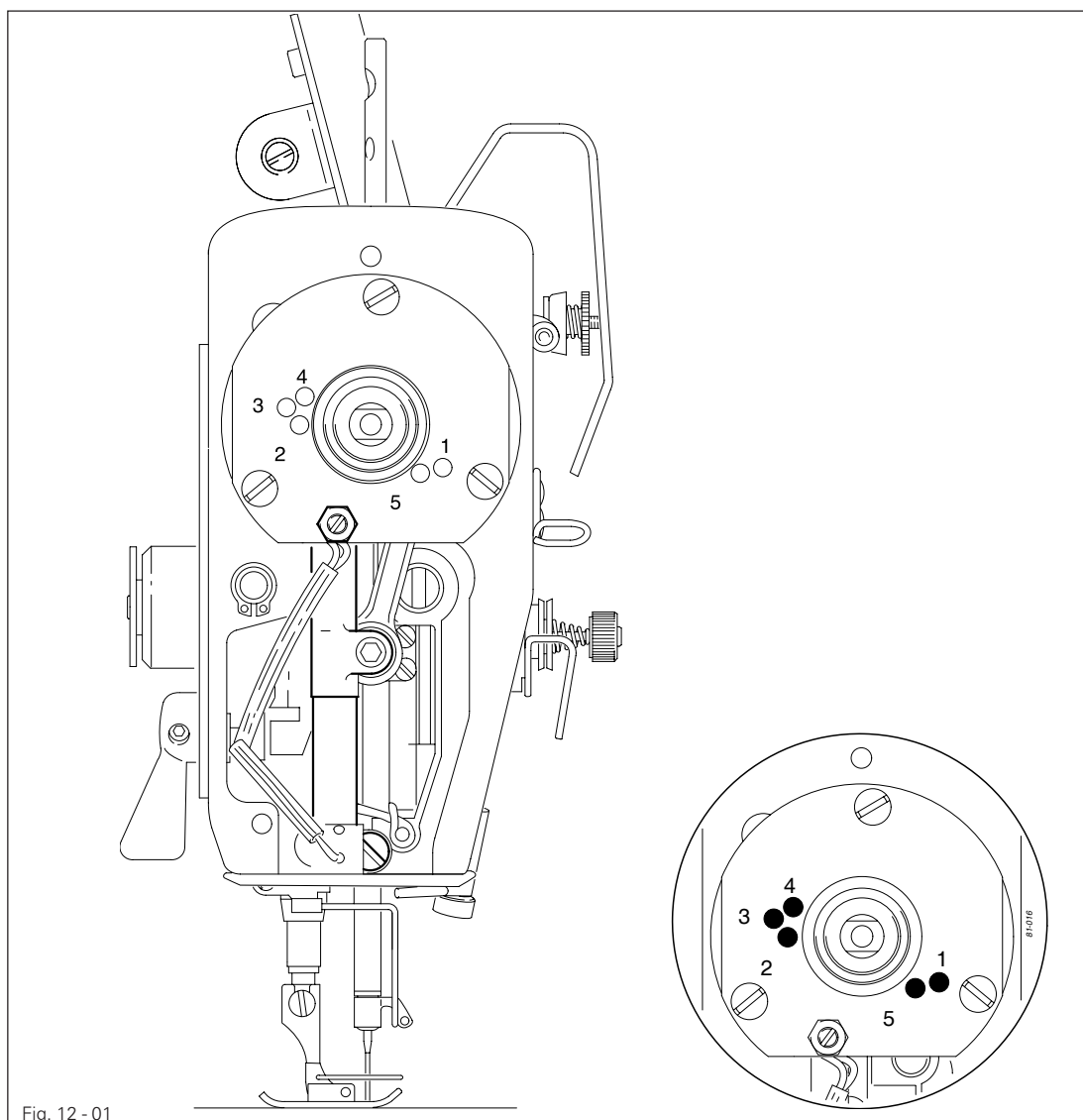
TDC = top dead center

BDC = bottom dead center

12.04 Check and adjustment aid



By blocking with holes 1 - 5 the required needle bar positions can be fixed exactly.



- Turn the balance wheel until the needle bar has approximately reached the required position.
- Place the 5 mm blocking pin in the appropriate hole and put pressure on it.
- Turn the balance wheel forwards and backwards a little until the blocking pin moves into the slot in the crank behind the bearing plate, thus blocking the machine.

Hole 1	=	2.0 mm after the bottom dead center of the needle bar (2.0 past tdc)
Hole 2	=	Top dead center of the needle bar (tdc)
Hole 3	=	0.25 mm after the top dead center of the needle bar (0.25 past bdc)
Hole 4	=	1.0 mm after the top dead center of the needle bar (1.0 mm past tdc)
Hole 5	=	4 mm after the bottom dead center of the needle bar (4.0 past bdc)

12.05 Adjusting the basic machine

12.05.01 Balancing weight

Requirement

With the needle bar at bdc the largest eccentricity of the balancing weight 1 must be pointing upwards.

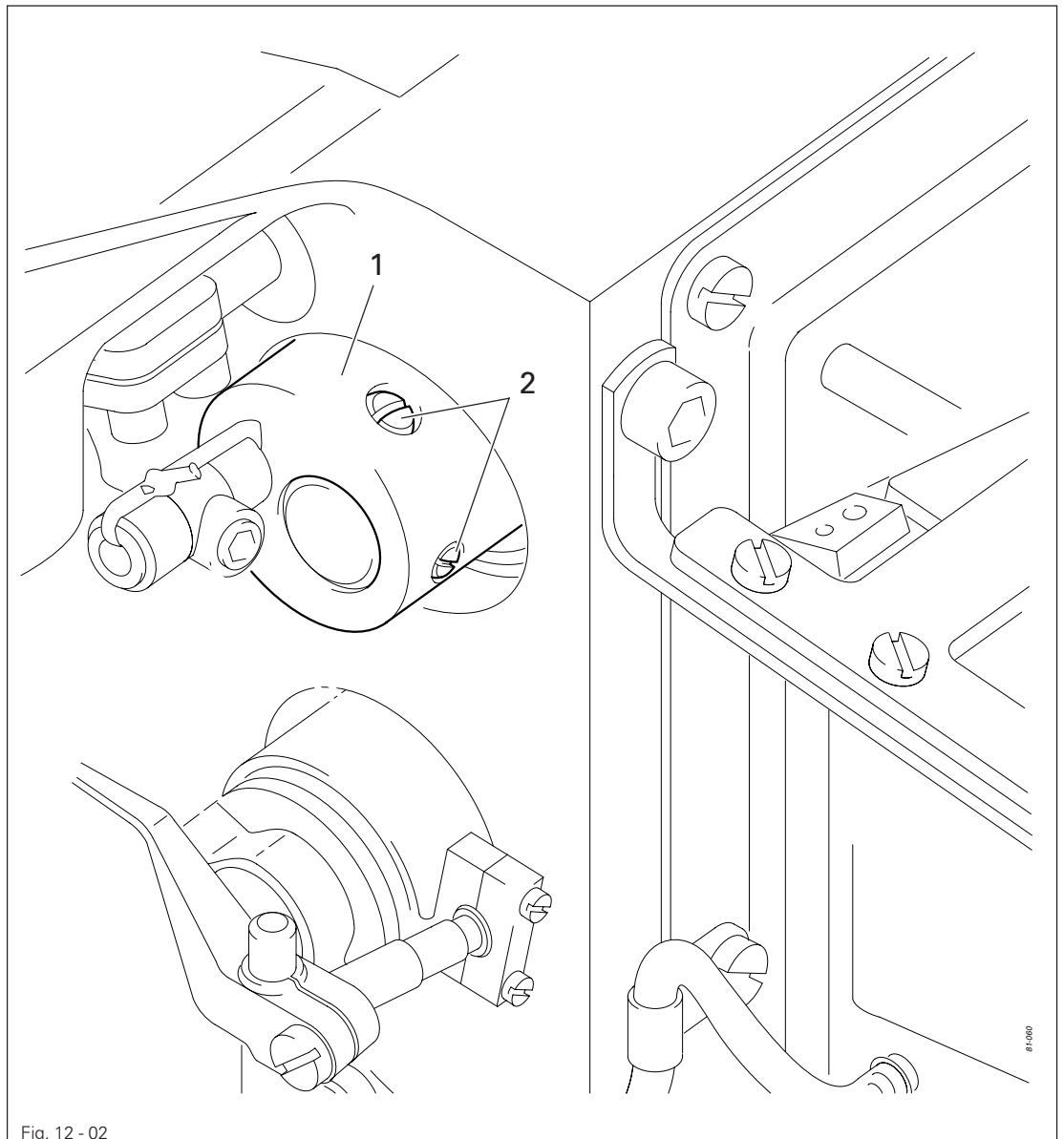
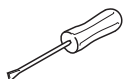


Fig. 12 - 02



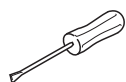
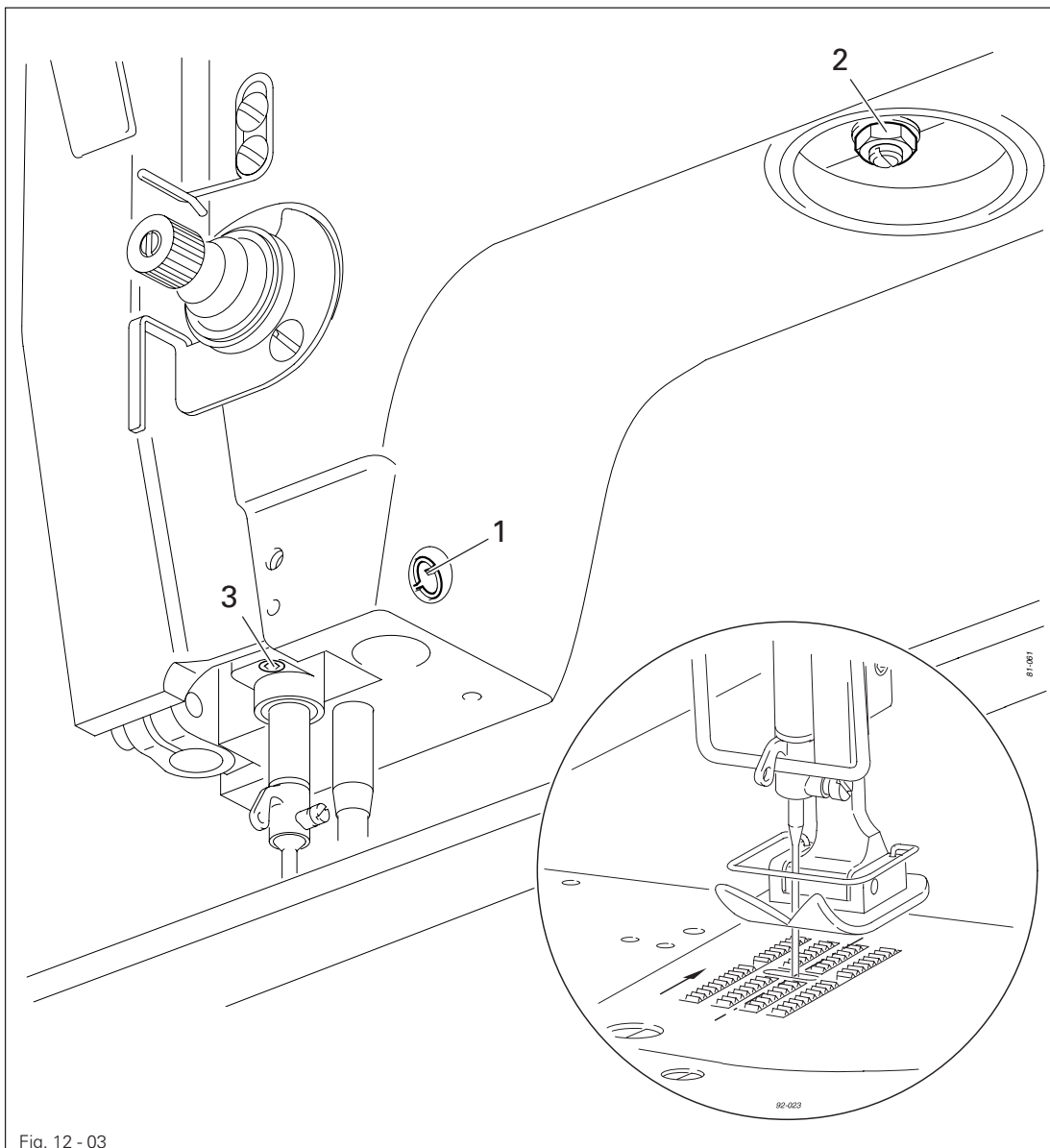
- Bring the needle bar to b.d.c.
- Adjust the balance weight 1 (screw 2) in accordance with the requirement.

Adjustment

12.05.02 Centering the needle in the needle hole (in sewing direction)

Requirement

With the zigzag setting at "0" and the needle position set at "middle" the needle must enter the center of the needle hole as viewed in the direction of sewing.



- Bring the needle bar to b.d.c.
- Adjust the eccentric pin 1 (nut 2 and screw 3) in accordance with the **requirement**.

12.05.03 Parallel guiding of the needle bar

Requirement

Guide bar 5 must be parallel to the needle bar.

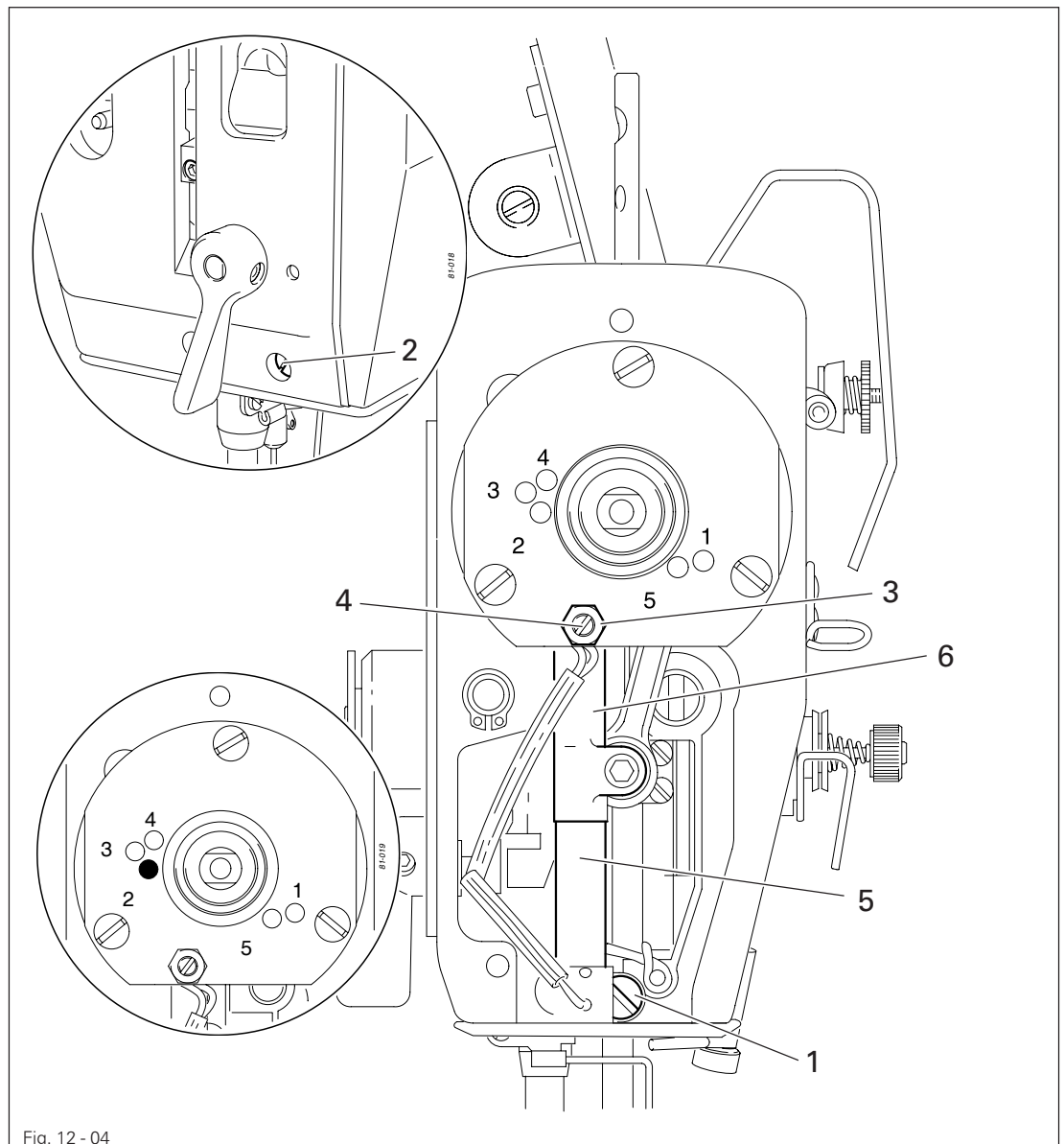
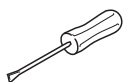


Fig. 12 - 04



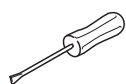
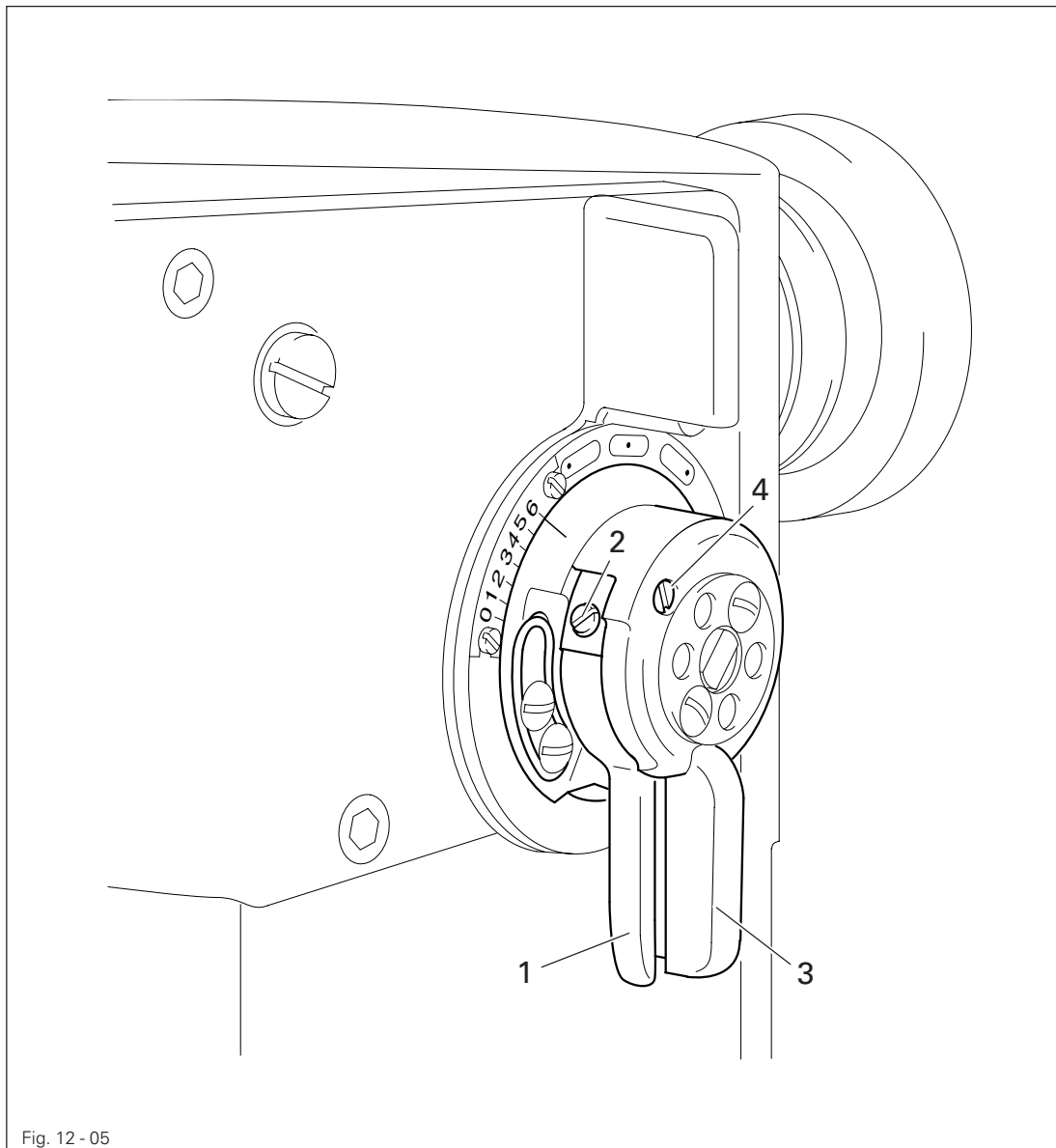
- Bring the needle bar to tdc (hole 2).
- Loosen screws 1,2 and nut 3.
- The largest eccentricity of pin 4 must be facing downwards.
- Bring the groove on guide bar 5 into a position in which it rests against eccentric pin 4, turn eccentric pin 4 in accordance with the **requirement** and tighten nut 3.
- Push guide bar 5 downwards and then upwards as far as possible. Bushing 6 must not move laterally during this movement (readjust eccentric pin 4 if necessary).
- Move guide bar 5 until it rests against eccentric pin 4 and tighten screws 1 and 2.

Adjustment

12.05.04 Locking lever

Requirement

The zigzag stitch adjustment lever 3 must be able to be locked in any position.



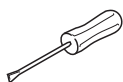
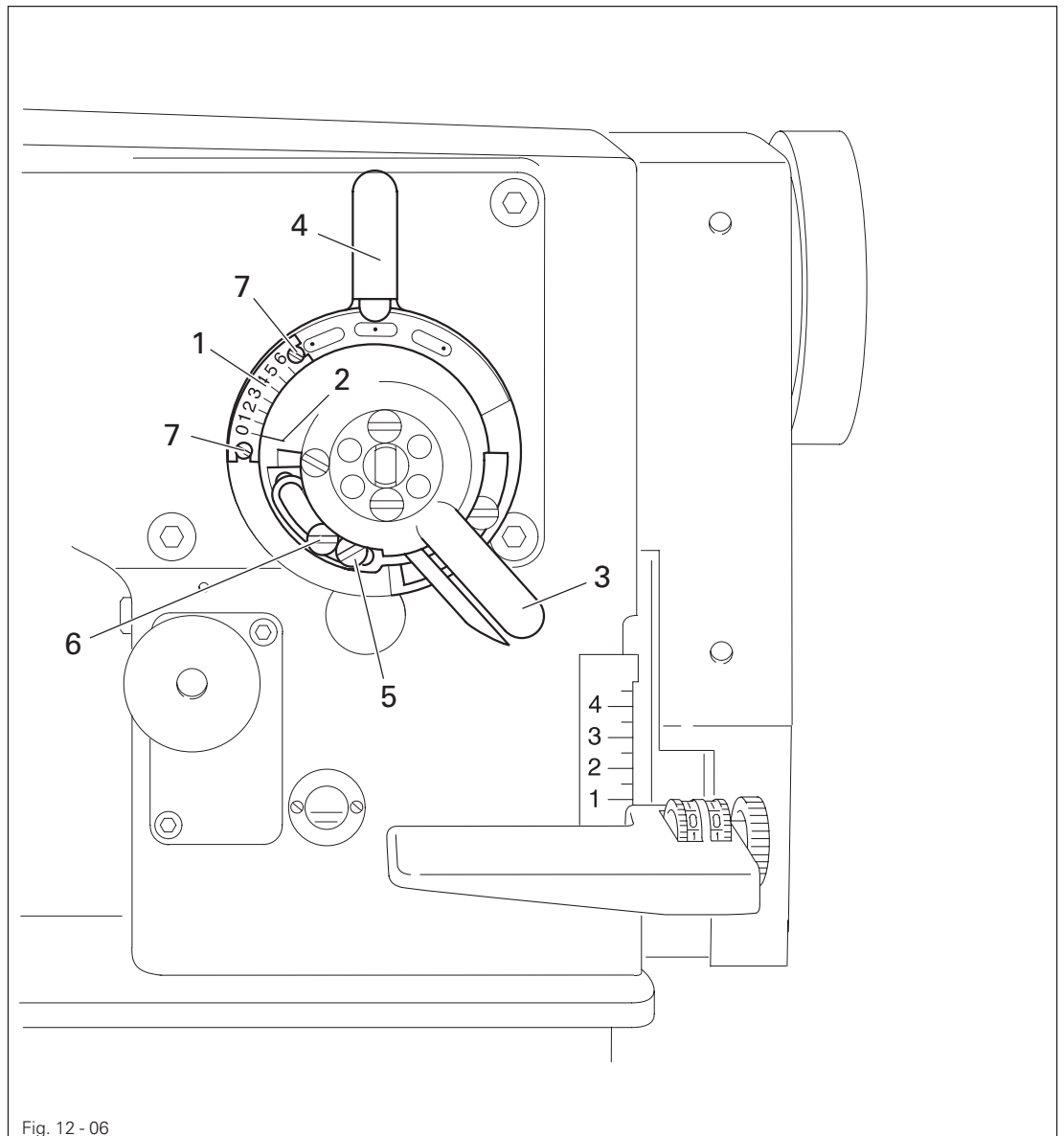
- Loosen screw 2.
- Press locking lever 1 against the zigzag stitch adjustment lever 3.
- Turn pivot pin 4 as far as possible to the left.
- Release locking lever 1.
- Locking lever 1 must be parallel to the zigzag stitch adjustment lever 3.
- Tighten screw 2.

12.05.05 Zero stitch and zigzag stitch scale

Requirement

With the zigzag stitch set at "0":

1. the needle bar must not move laterally when the balancewheel is turned and
2. the marking "0" on scale 1 must be at marking 2.



- Set the needle position adjustment lever 4 to "middle" and loosen screws 5 and 6.
- Run the machine slowly and turn the zigzag stitch adjustment lever 3 to the right until the needle bar no longer moves laterally.
- Turn the machine off. Move screw 5 to the right until it touches and then tighten it.
- Loosen screws 7 and move scale 1 in accordance with requirement 2.
- Tighten screws 7.



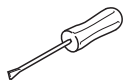
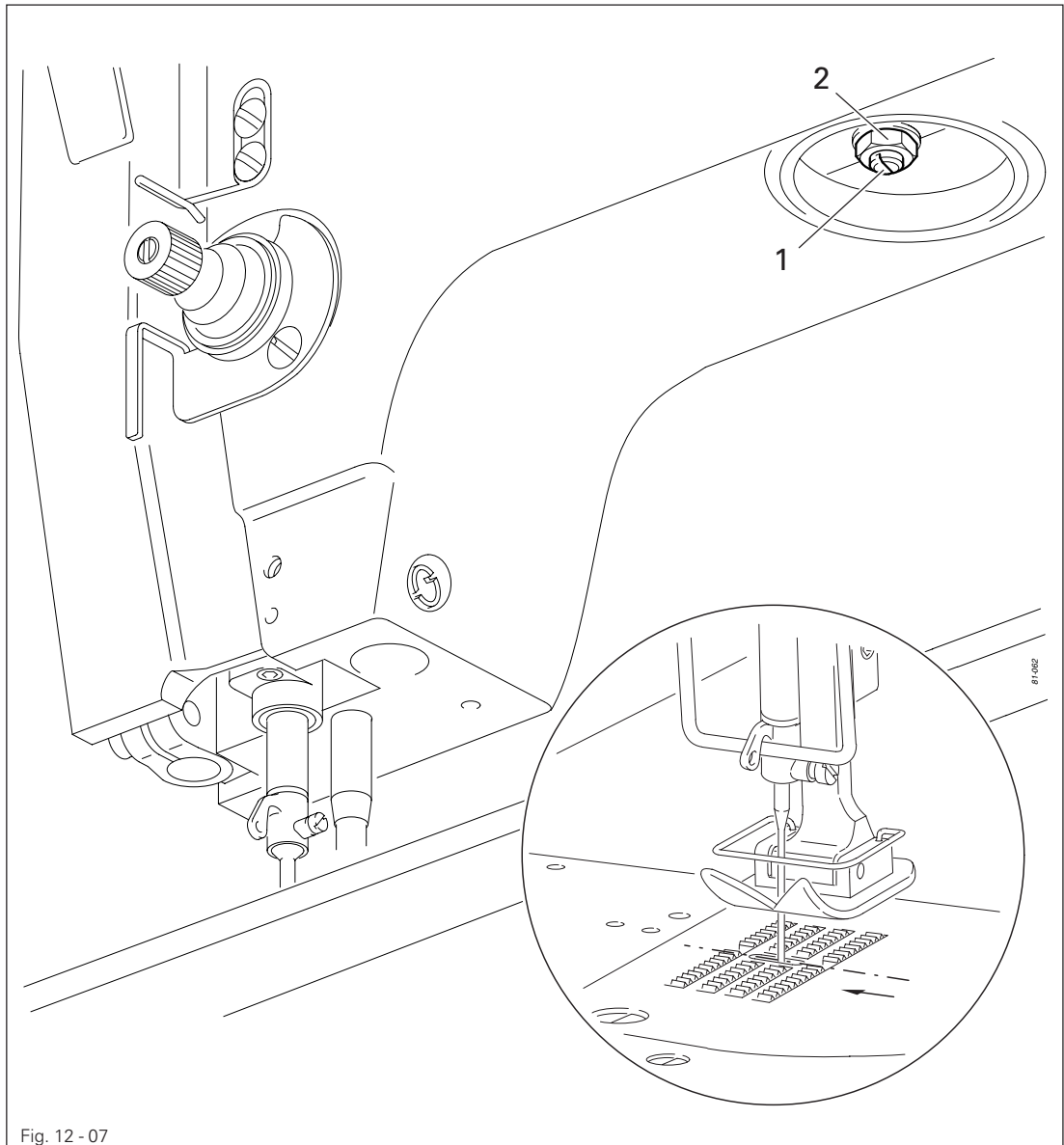
Screw 6 remains loose for the following adjustment.

Adjustment

12.05.06 Centering the needle in the needle hole (crosswise to sewing direction)

Requirement

With the zigzag stitch set at "0" and the needle position setting at "middle" the needle must enter the center of the needle hole as seen across the direction of sewing.

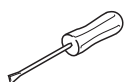
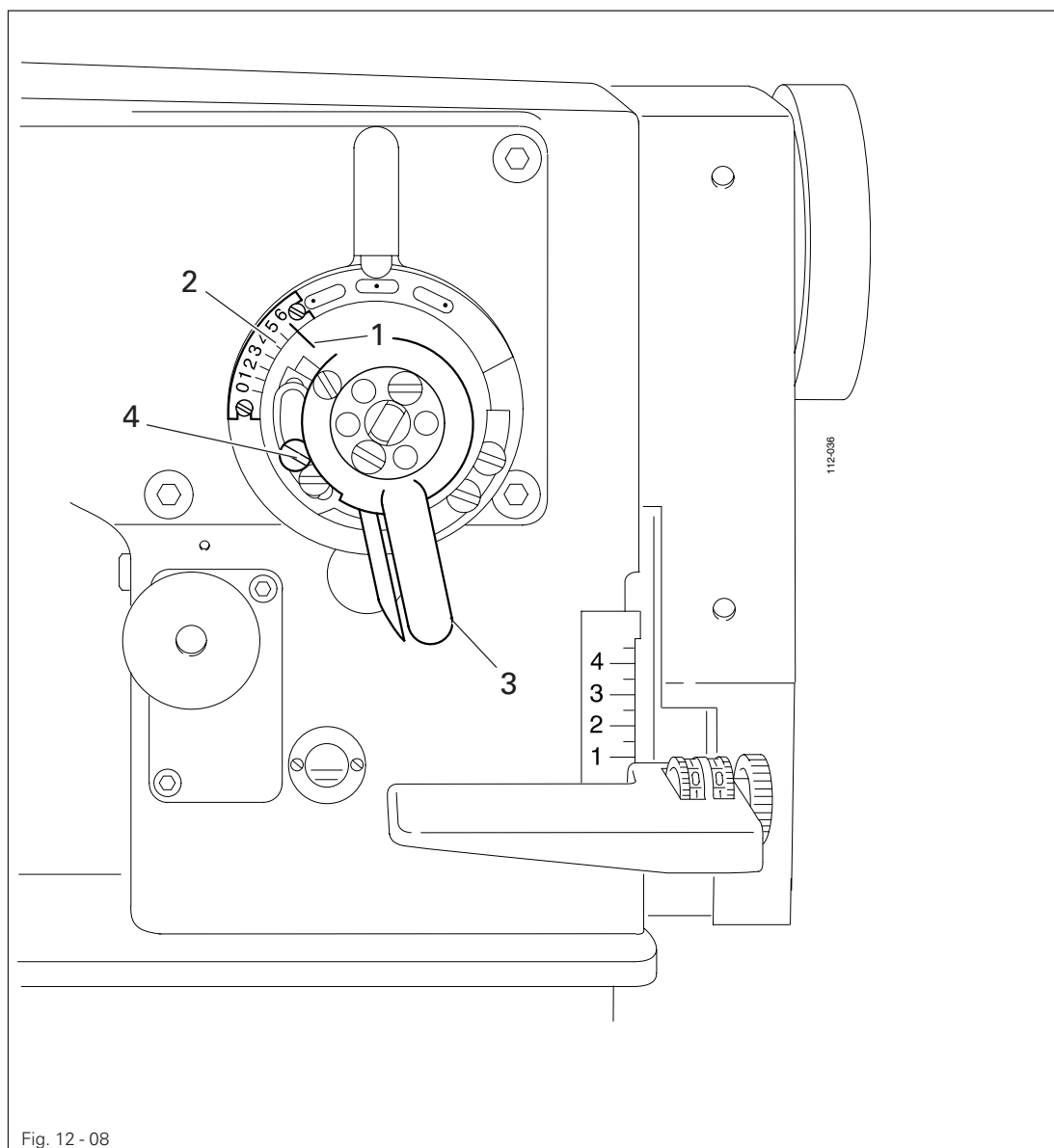


- Adjust the eccentric pin 1 (nut 2) in accordance with the requirement.

12.05.07 Zigzag stitch width

Requirement

At the largest zigzag stitch setting, marking 1 must be at the largest zigzag value on scale 2.



- Turn the zigzag stitch adjustment lever **3** in accordance with the **requirement**.
- Move screw **4** upwards until it touches and then tighten it.

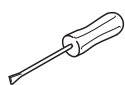
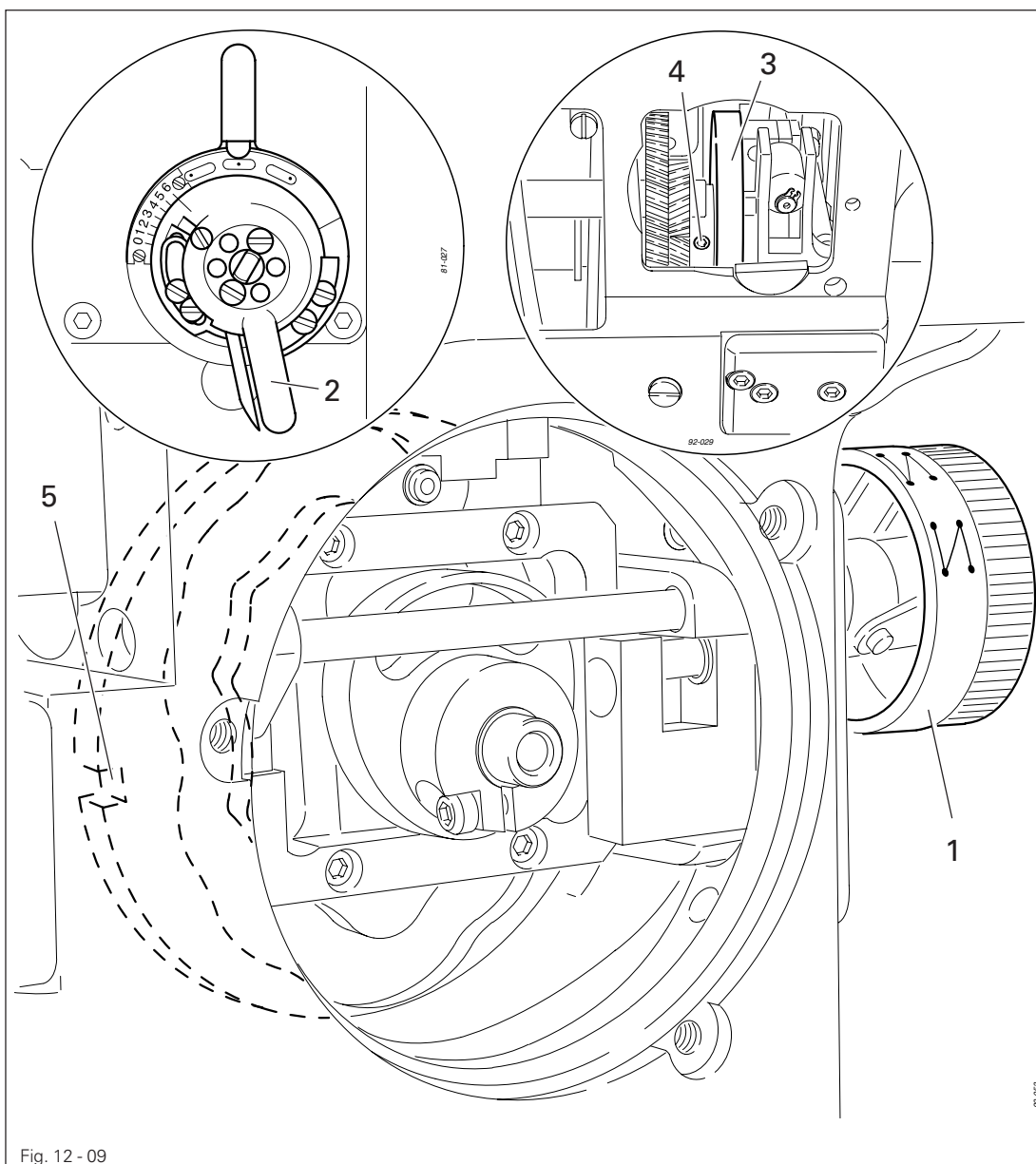


If the machine is equipped with a needle plate with a smaller hole than is marked on the scale, the zigzag limit must be set according to the needle hole width on the needle plate.

12.05.08 Multi-stitch movement (only on the PFAFF 939 U)

Requirement

1. When the needle, at its b.d.c., penetrates on the right-hand side, the recess 5 on the control cam 3 should be positioned horizontally towards the rear.
2. The lateral movement of the needle bar should have been completed when the needle penetrates the workpiece (carry out a check with the largest zigzag setting).



- Set the adjustment wheel 1 at multi-stitch.
- Set the zigzag stitch width lever 2 at "largest zigzag width".
- Adjust control cam 3 (screws 4) in accordance with the **requirement**.

12.05.09 Zigzag stitch movement (only on the PFAFF 3704-2/..)

Requirement

When the needle bar, on the right of its throw, is positioned at t.d.c. (adjustment hole "2"), the needle bar should not move laterally when the zigzag stitch adjustment lever is moved to and fro.

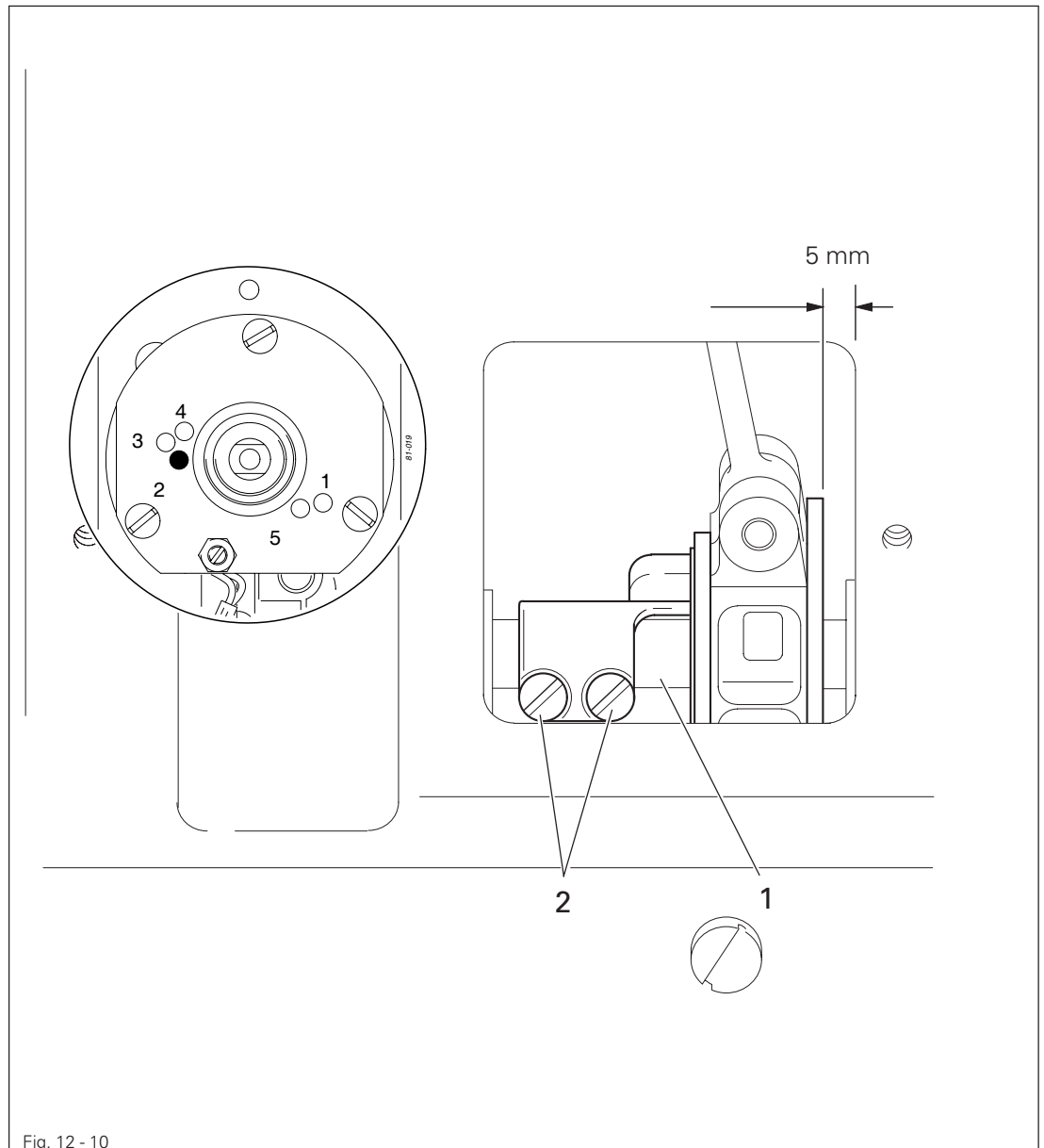
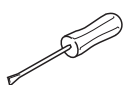


Fig. 12 - 10



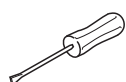
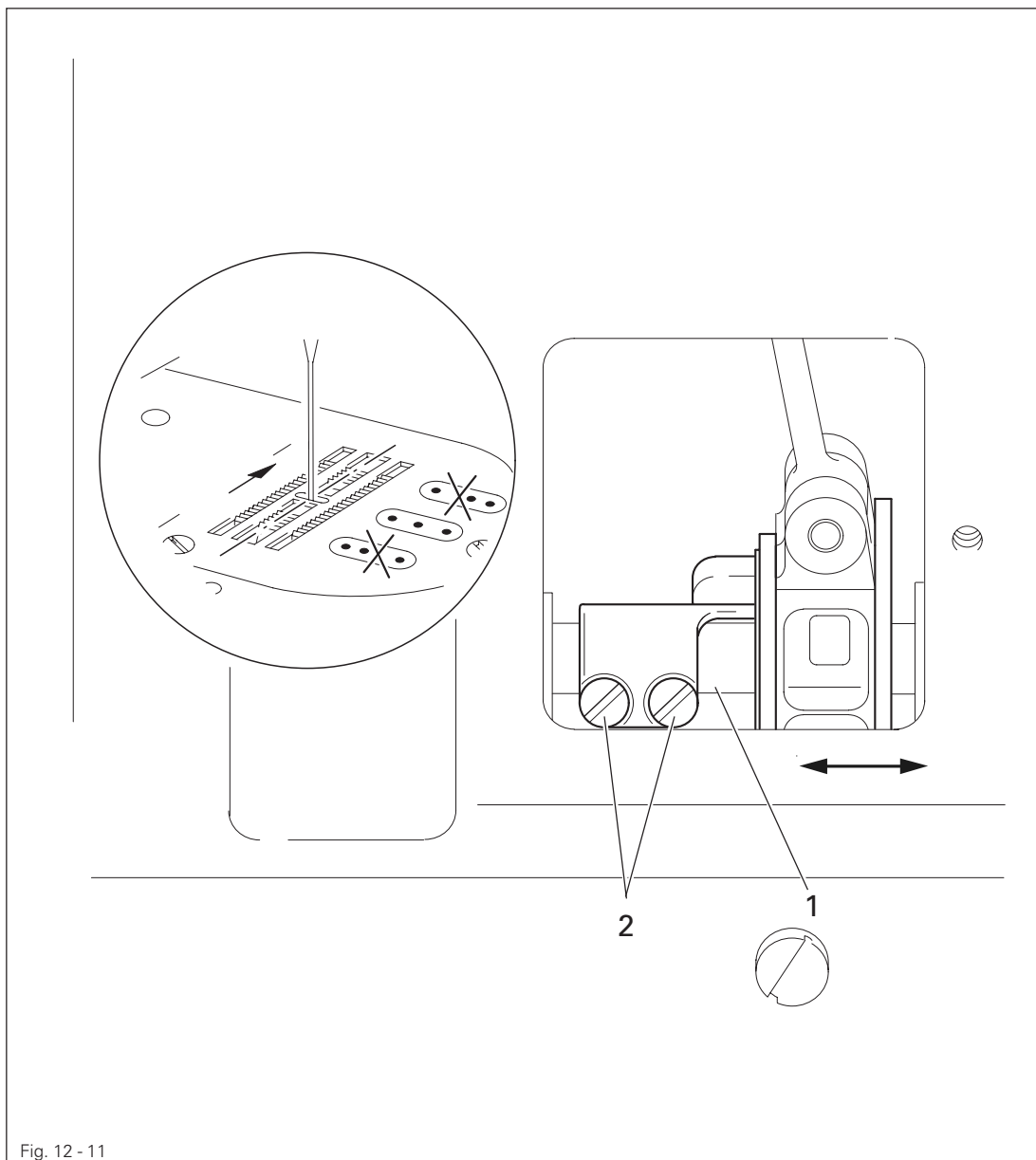
- Bring the needle bar, on the right of its throw, to t.d.c. and place the adjustment pin in hole "2" of the bearing plate (locking the machine).
- Turn the zigzag eccentric 1 (screws 2) in accordance with the requirement. Make sure that the zigzag eccentric 1 is about **5 mm** away from the right inner side of the casting wall.
- Remove the adjustment pin from the bearing plate.

Adjustment

12.05.10 Needle penetration symmetry (only on the PFAFF 3704-2/..)

Requirement

When the zigzag stitch is set at "0", the needle should penetrate in the centre of the needle hole. With the maximum zigzag stitch set, the needle should penetrate on the left and right at the same distance from the centre hole.

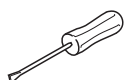
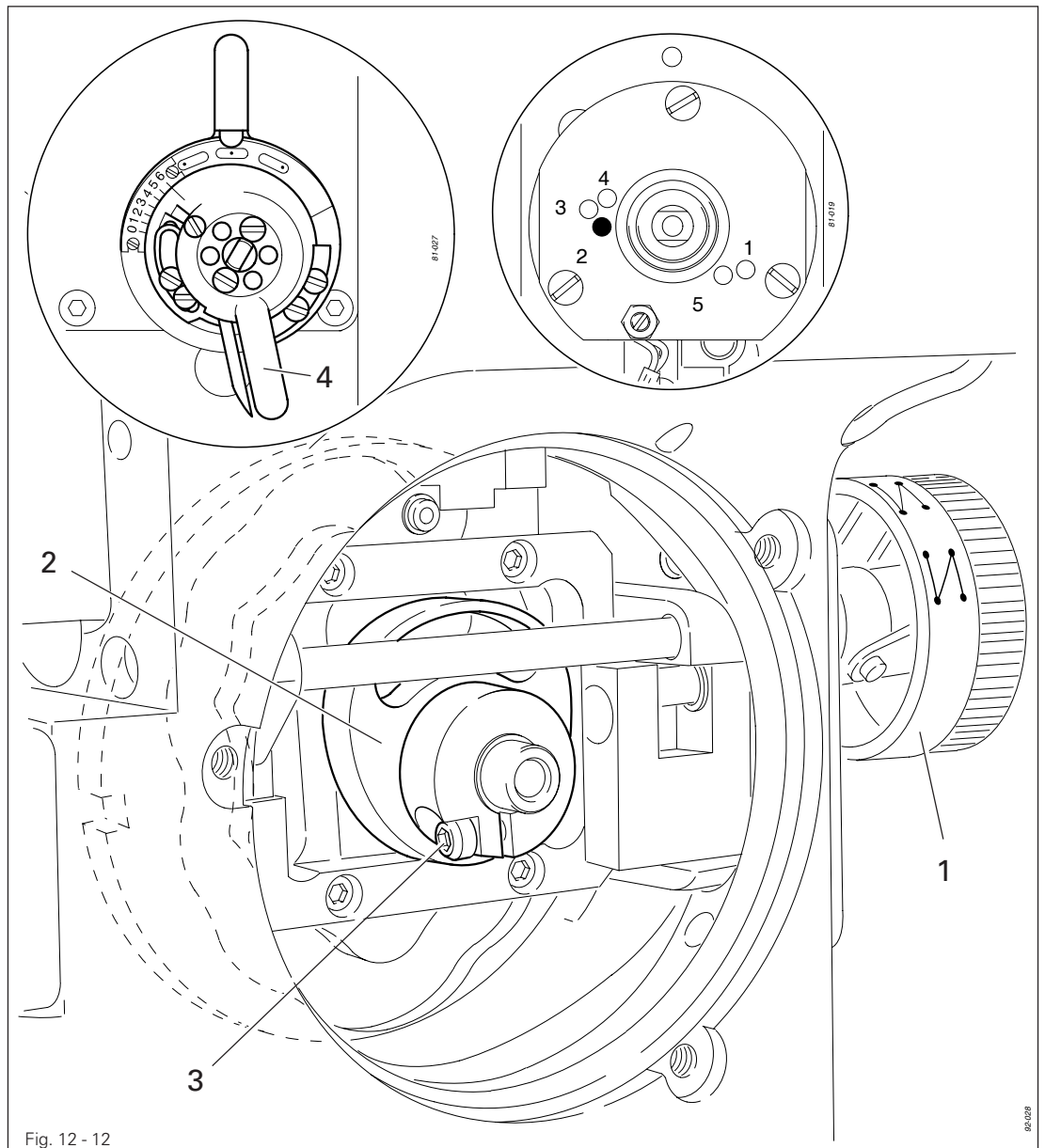


- Let the needle penetrate in the required zigzag settings using paper.
- Without twisting it adjust zigzag eccentric 1 (screws 2) in accordance with the requirement.

12.05.11 Zigzag movement (only on the PFAFF 939 U)

Requirement

When the needle bar, moving from its right b.d.c., reaches its t.d.c. (hole 2), it should not carry out any lateral motion when the zigzag stitch width lever 4 is moved to and fro.



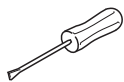
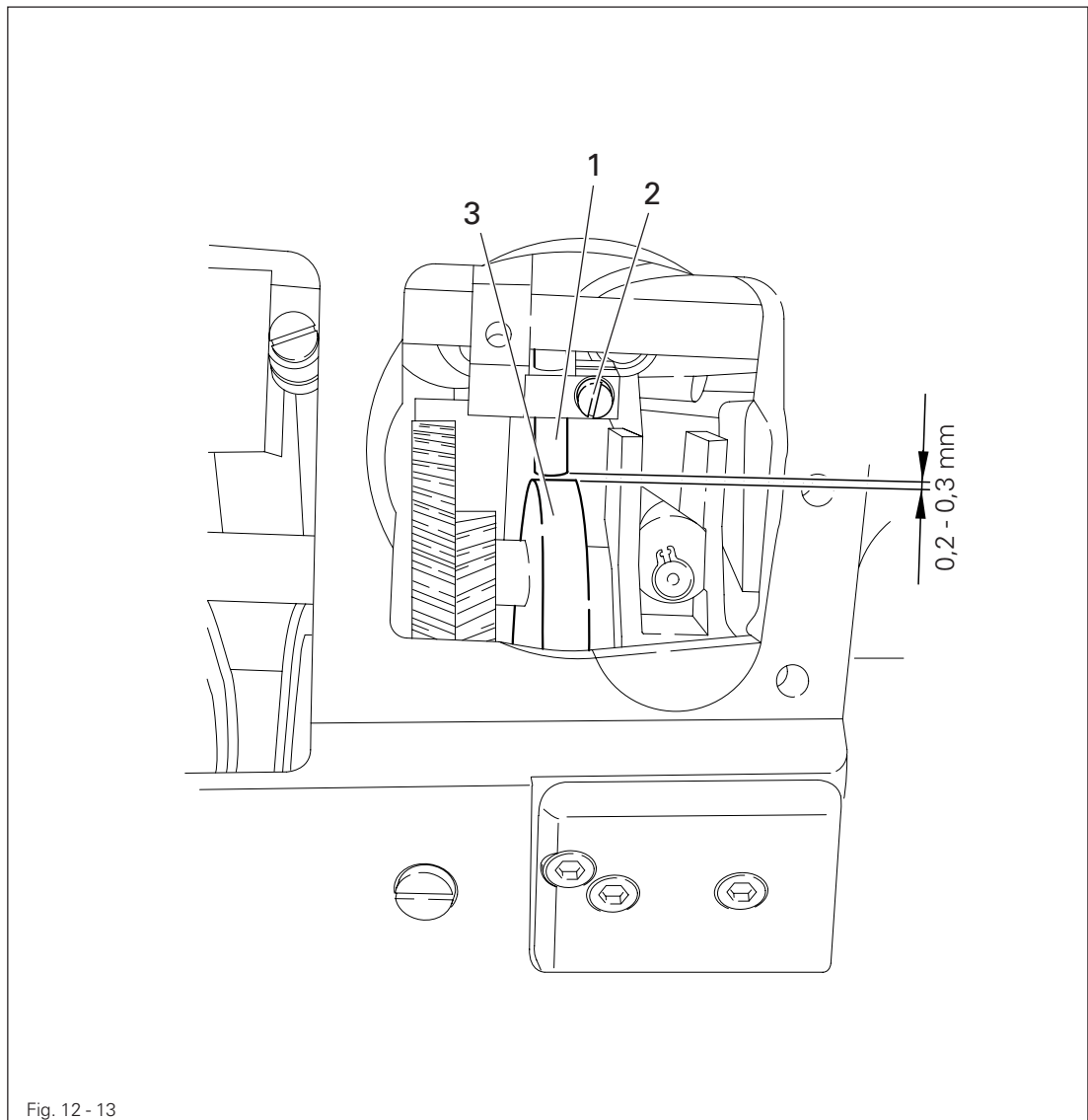
- Set the adjustment wheel 1 at zigzag.
- Adjust the zigzag eccentric 2 (screw 3) in accordance with the requirement.

Adjustment

12.05.12 Target positioning sensor (only on the PFAFF 939 U)

Requirement

There should be a clearance of **0.2 – 0.3 mm** between sensor **1** and control cam **3**.



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

12.05.13 Needle position adjustment lever

Requirement

The left and right throws of the needle must be the same size at the largest zigzag stitch setting and at the left or right needle position.

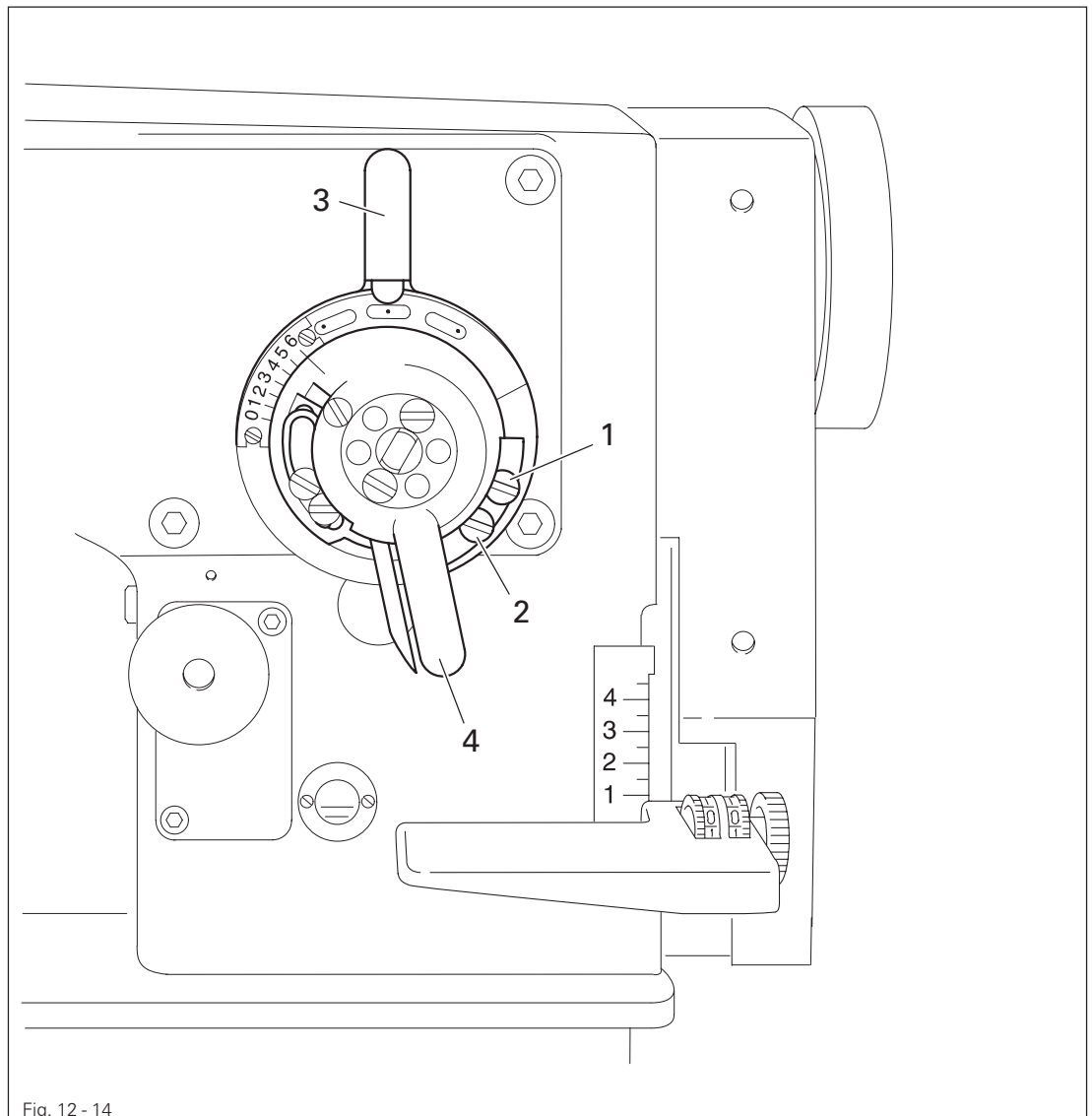
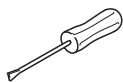


Fig. 12 - 14



- Loosen screws 1 and 2.
- Set the needle position adjustment lever 3 to "middle" and the zigzag stitch adjustment lever 4 at the largest zigzag stitch.
- Place a piece of paper underneath the presser foot and perforate it to the left and right with the needle.
- Set the zigzag stitch adjustment lever 4 at "0" and move the needle position adjustment lever 3 to the right/left until the needle is exactly over the perforations made in the last step.
- For the left needle-position bring screw 1 to a position where it touches and tighten it and for the right needle-position do the same with screw 2.

Adjustment

12.05.14 Adjustment wheels for differential feed (only on the PFAFF 939 U)

Requirement

With guide pin 3 in the middle of the connecting link and the ends of the toothed racks 4 flush with each other, the zero markings on the adjustment wheels 5 must be at marking 6.

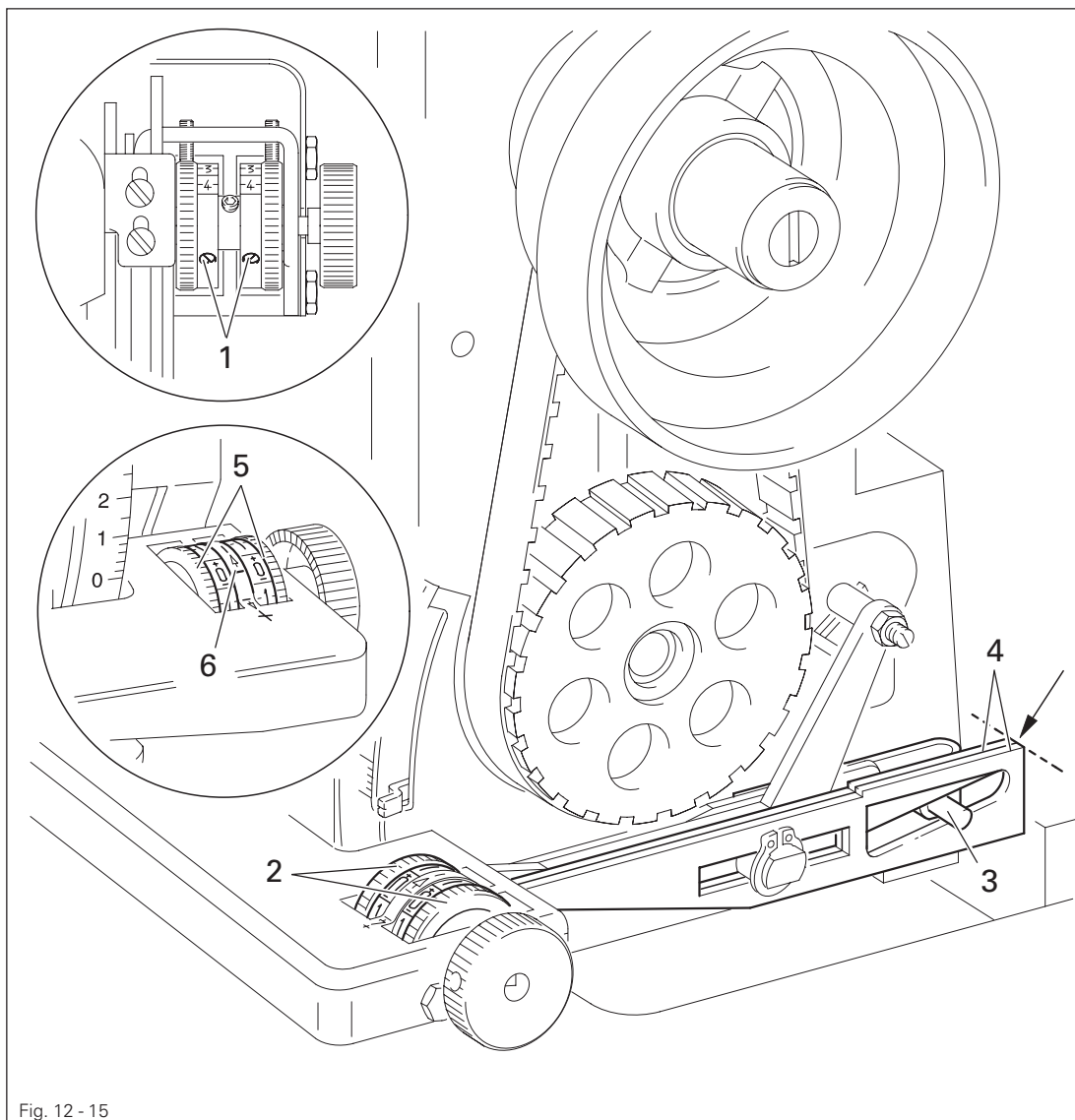
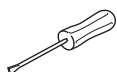


Fig. 12 - 15



- Loosen screws 1.
- Turn both adjustment wheels 2 until guide pin 3 is in the middle of the connecting link. The ends of the two toothed racks 4 must be flush with each other.
- Turn both scale rings in accordance with the **requirement** and tighten screws 1.

12.05.15 Zeroing the differentiatio (only on the PFAFF 939 U)

Requirement

With the largest stitch length set, the reverse feed control key **12** should be set at its highest position. In addition the stop lug **11** of clamp crank **8** should be touching the top regulating shaft.

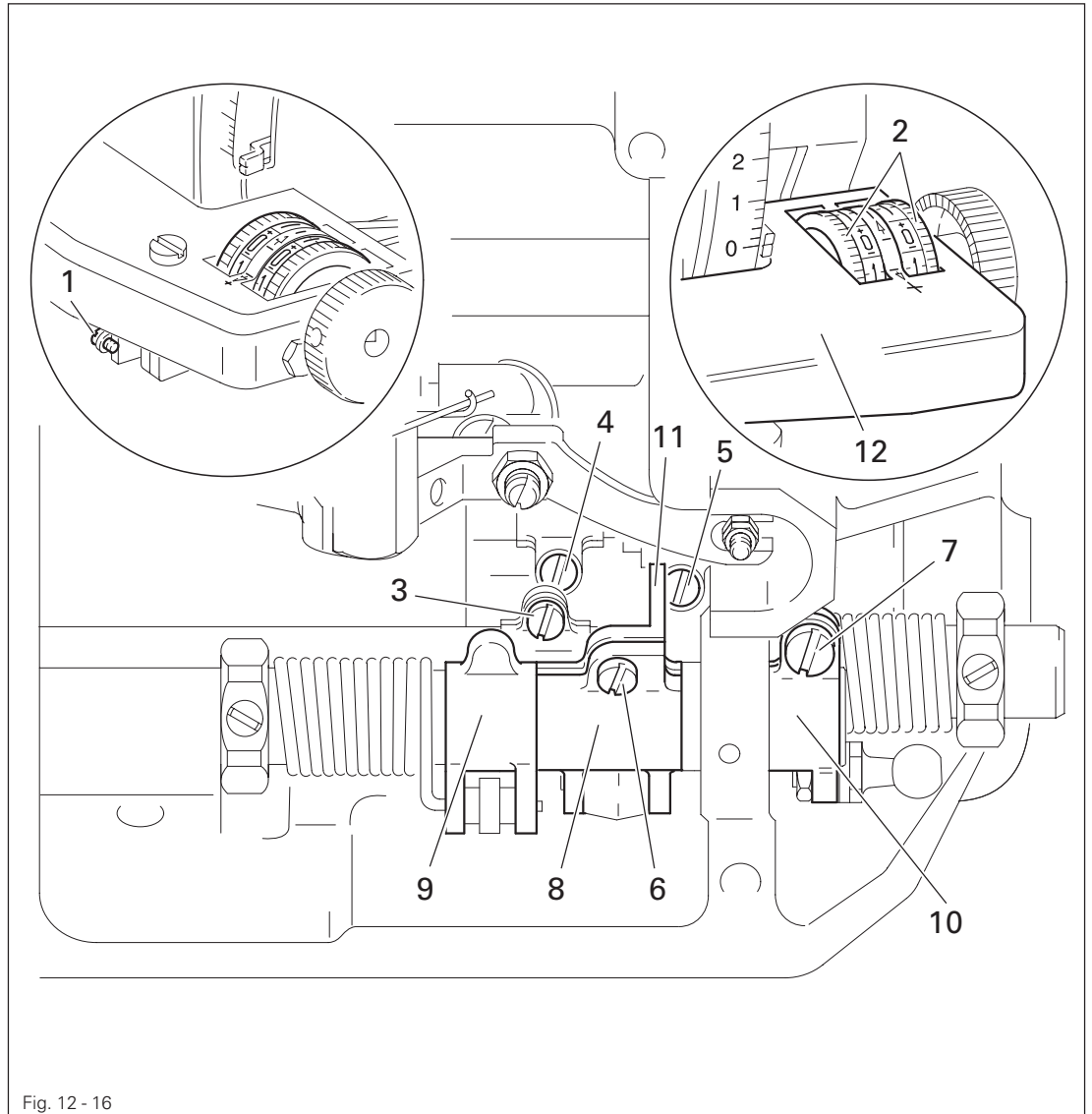
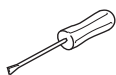


Fig. 12 - 16



- Unscrew screw **1** and the needle plate on machines with stitch length N24.
- Set both adjustment wheels **2** at "0".
- Loosen screws **3**, **4**, **5**, **6** and **7**.
- Set the maximum stitch length and adjust clamp crank **8** in accordance with the requirement. Tighten screws **5** and **6**.
- Turn clamp crank **9** until it is parallel with clamp crank **8**, and tighten screws **3** and **4**.
- Turn clamp crank **10** so that it is parallel with the bedplate and tighten screws **7**.
- On machines with stitch length N24, tighten screw **1** and fit the needle plate.

Adjustment

12.05.16 Differential feed synchronisation (only on the PFAFF 3704-2/..)

Requirement

When the stitch length is set at "1.5" and both levers 1 are in the "0" position, the two feed dogs 5 should move the same distance when the balance wheel is turned.

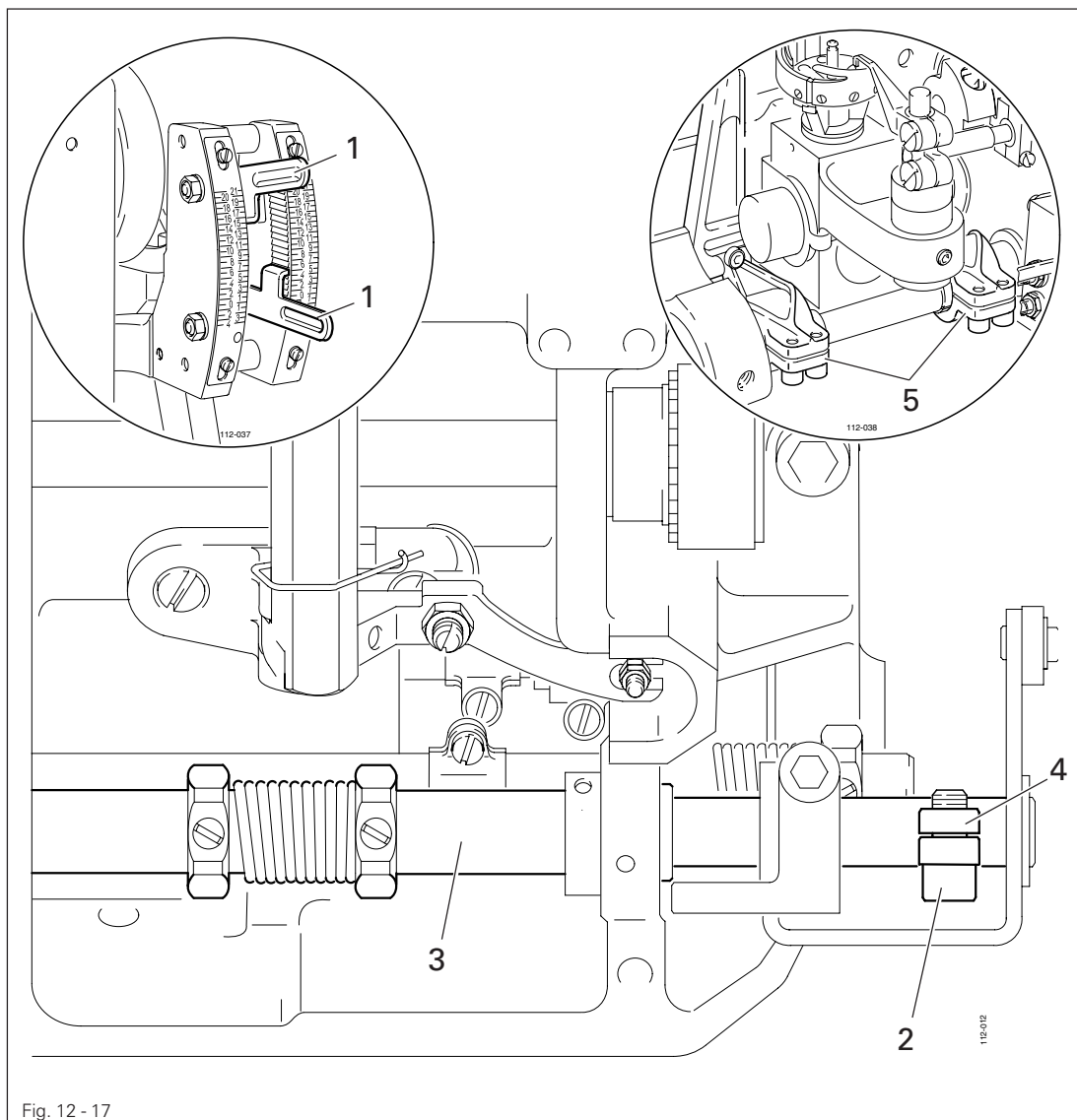
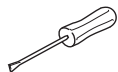


Fig. 12 - 17

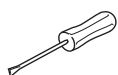
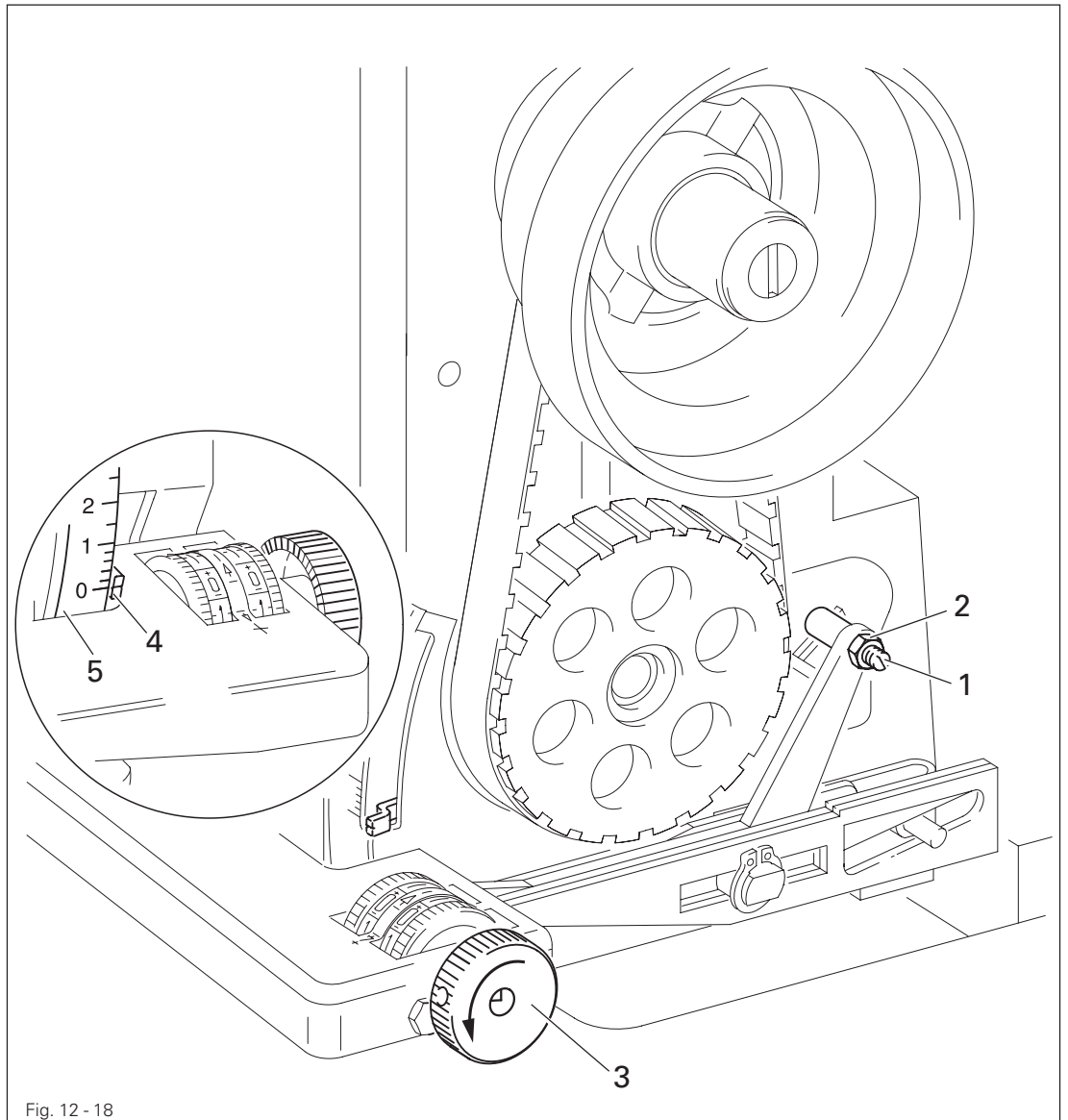


- Set the stitch length at "1.5".
- Set both levers 1 at "0".
- Loosen screw 2.
- While constantly turning the balance wheel, adjust shaft 3 in accordance with the requirement.
- Bring clamp crank 4 to its top position and tighten screw 2.

12.05.17 Position of the stitch length adjustment wheel on the PFAFF 939 U.

Requirement

When adjustment wheel 3 is turned as far forward as possible, the pointer 4 should be positioned exactly opposite the mark "0" on scale 5.



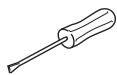
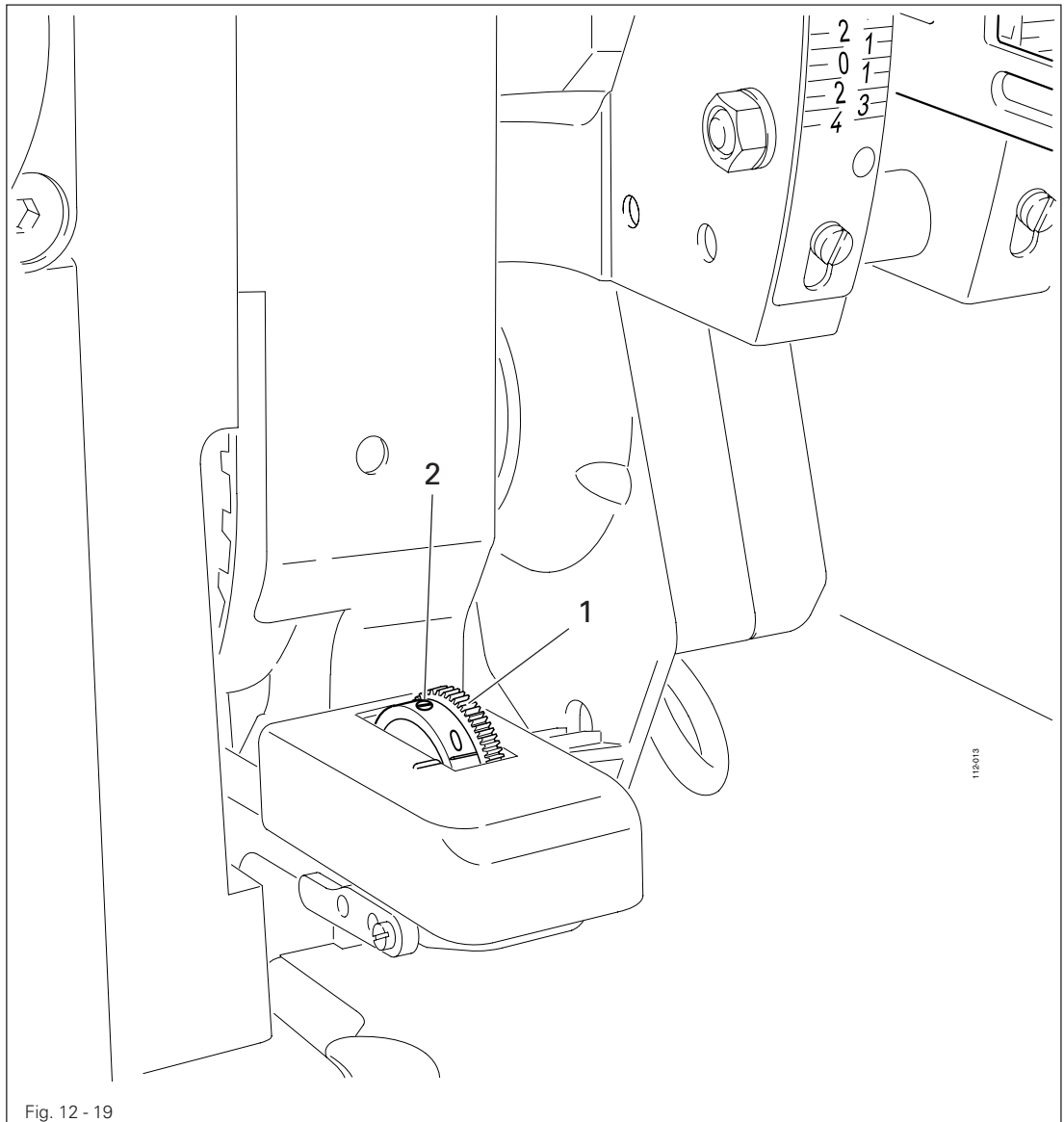
- Adjust eccentric 1 (nut 2) in accordance with the requirement.

Adjustment

12.05.18 Position of the stitch length adjustment wheel on the PFAFF 3704-2/..

Requirement

When adjustment wheel 1 is turned as far forward as possible, the marking for "0" on adjustment wheel 1 and the marking on the reverse feed control should match.



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

12.05.19 Zeroing the main feed (rear feed dog) on the PFAFF 939 U

Requirement

With the stitch length set at "0", when the balance wheel is turned, there should be no feeding motion of the main feed dog.

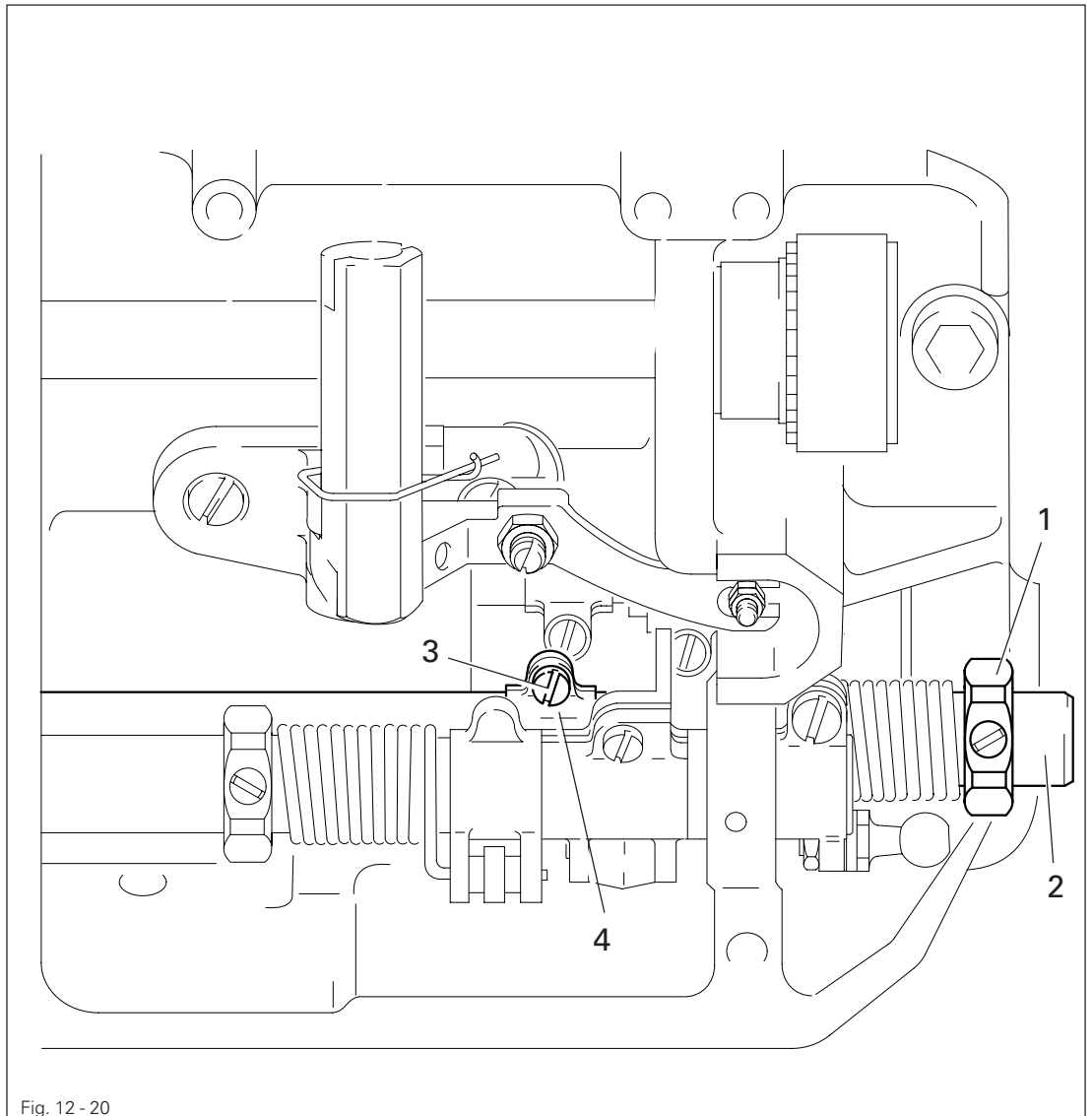
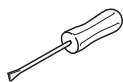


Fig. 12 - 20



- Set the stitch length at "0".
- Fit the open-ended spanner (width 27) to the torsion-spring collar 1 and use it to hold regulating shaft 2.
- Loosen screw 3.
- While constantly turning the balance wheel, adjust the spanner on the torsion-spring collar 1 in accordance with the **requirement**.
- In this position, move adjustment crank 4 against the cast iron frame and tighten screw 3.
- Carry out a control in accordance with the **requirement**.

12.05.20 Zeroing the main feed (rear feed dog) on the PFAFF 3704-2/..

Requirement

With the stitch length set at "0", when the balance wheel is turned, there should be no feeding motion of the main feed dog.

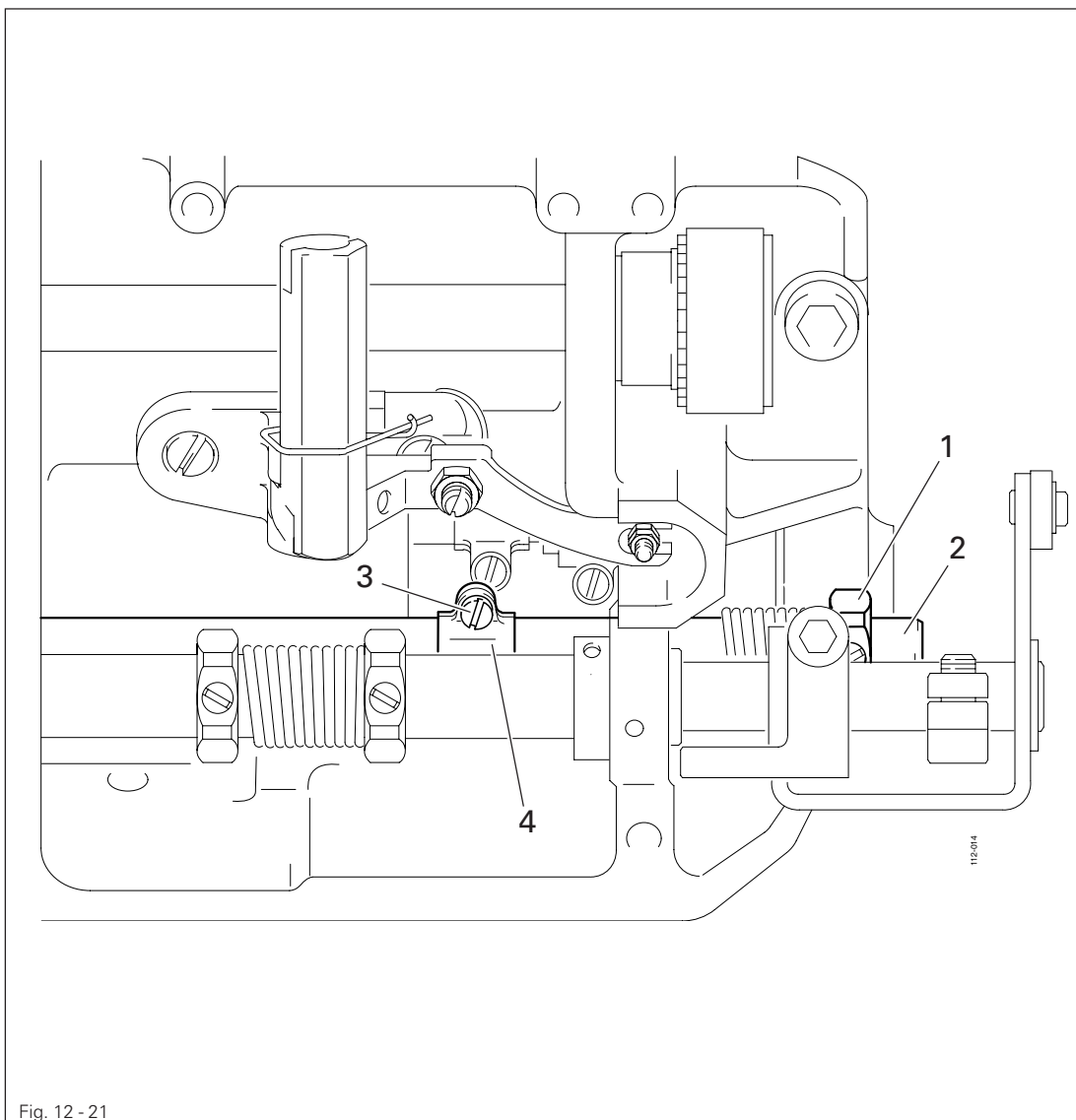
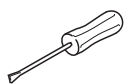


Fig. 12 - 21



- Set the stitch length at "0".
- Fit the open-ended spanner (width 27) to the torsion-spring collar **1** and use it to hold regulating shaft **2**.
- Loosen screw **3**.
- While constantly turning the balance wheel, adjust the spanner on the torsion-spring collar **1** in accordance with the **requirement**.
- In this position, move adjustment crank **4** against the cast iron frame and tighten screw **3**.
- Carry out a control in accordance with the **requirement**.

12.05.21 Zeroing the differential feed (front feed dog) on the PFAFF 939 U

Requirement

With the stitch length set at "0" and the adjustment wheels set at "0", when the balance wheel is turned, there should be no feeding motion of the differential feed dog.

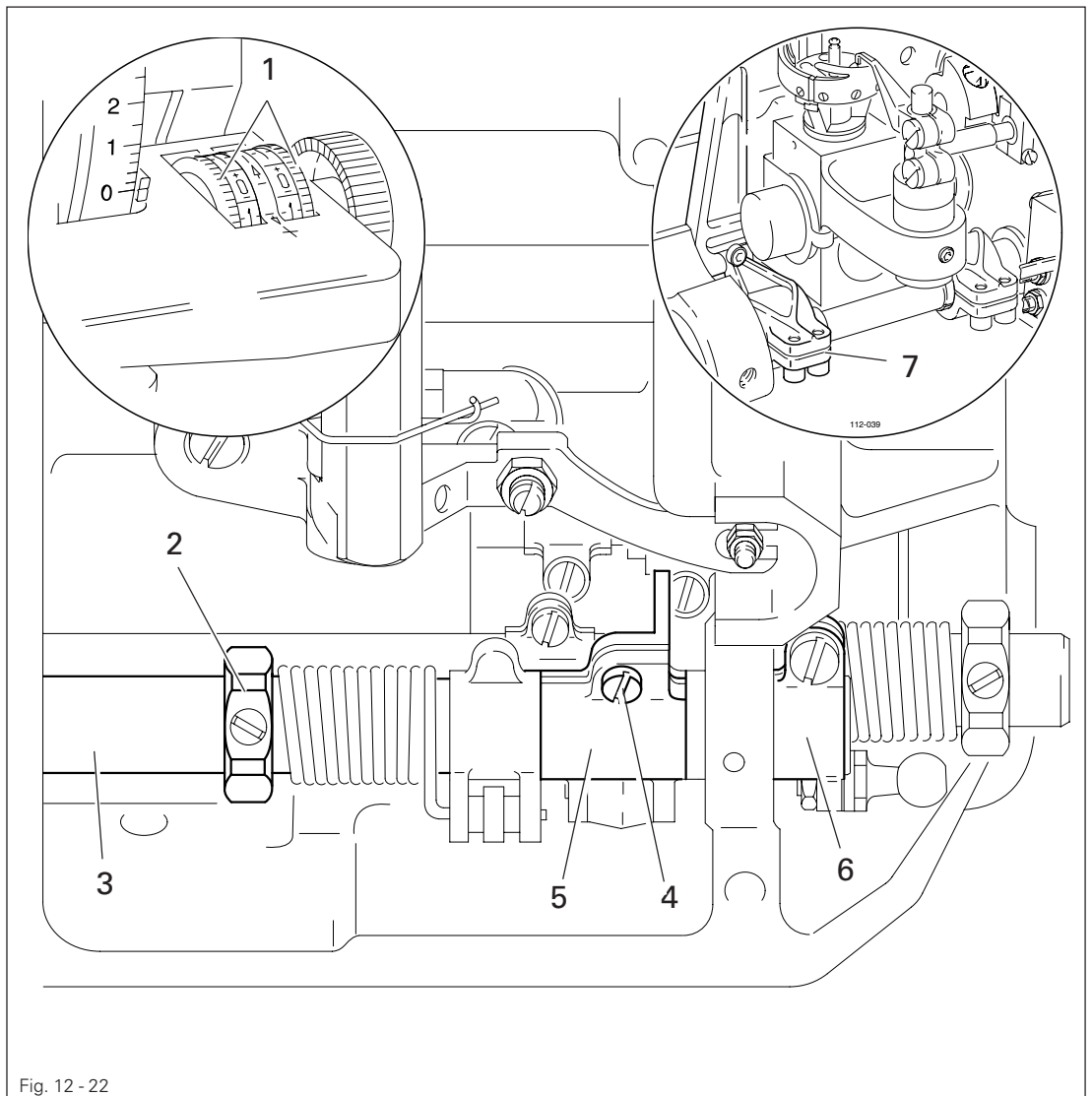
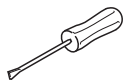


Fig. 12 - 22

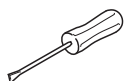
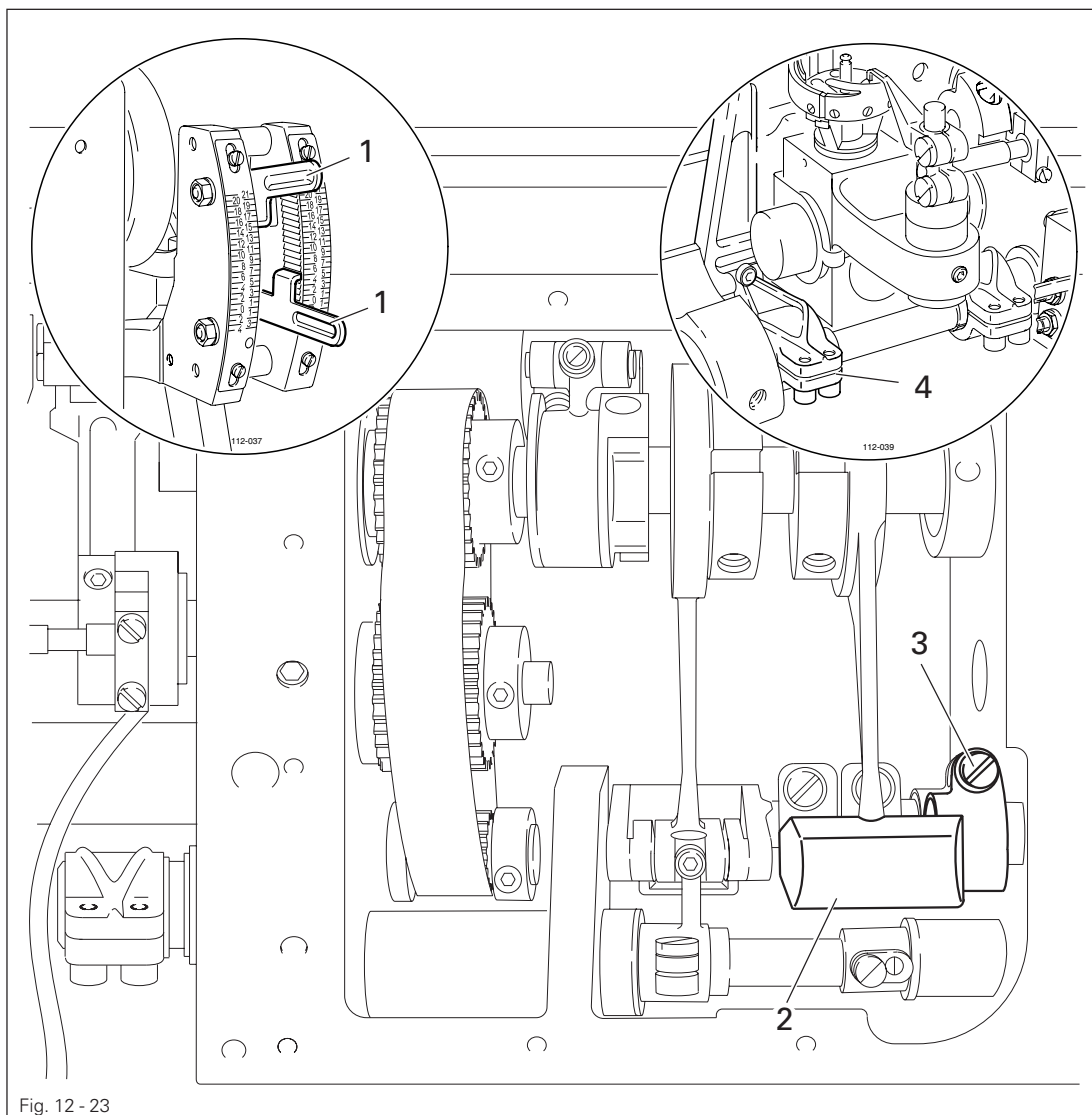


- Set the stitch length at "0".
- Set both adjustment wheels 1 at "0".
- Fit the open-ended spanner (width 27) to the torsion-spring collar 2 and use it to hold regulating shaft 3.
- Loosen screw 4.
- While constantly turning the balance wheel, adjust the spanner on the torsion-spring collar 2 in accordance with the **requirement**.
- In this position, move adjustment crank 5 and crank 6 against the cast iron frame and tighten screw 4.
- Carry out a control in accordance with the **requirement**.

12.05.22 Zeroing the differential feed (front feed dog) on the PFAFF 3704-2/..

Requirement

When the stitch length is set at "0" and both levers 1 set at the "0" position, the differential feed dog 4 should not make any feeding movement when the balance wheel is turned.

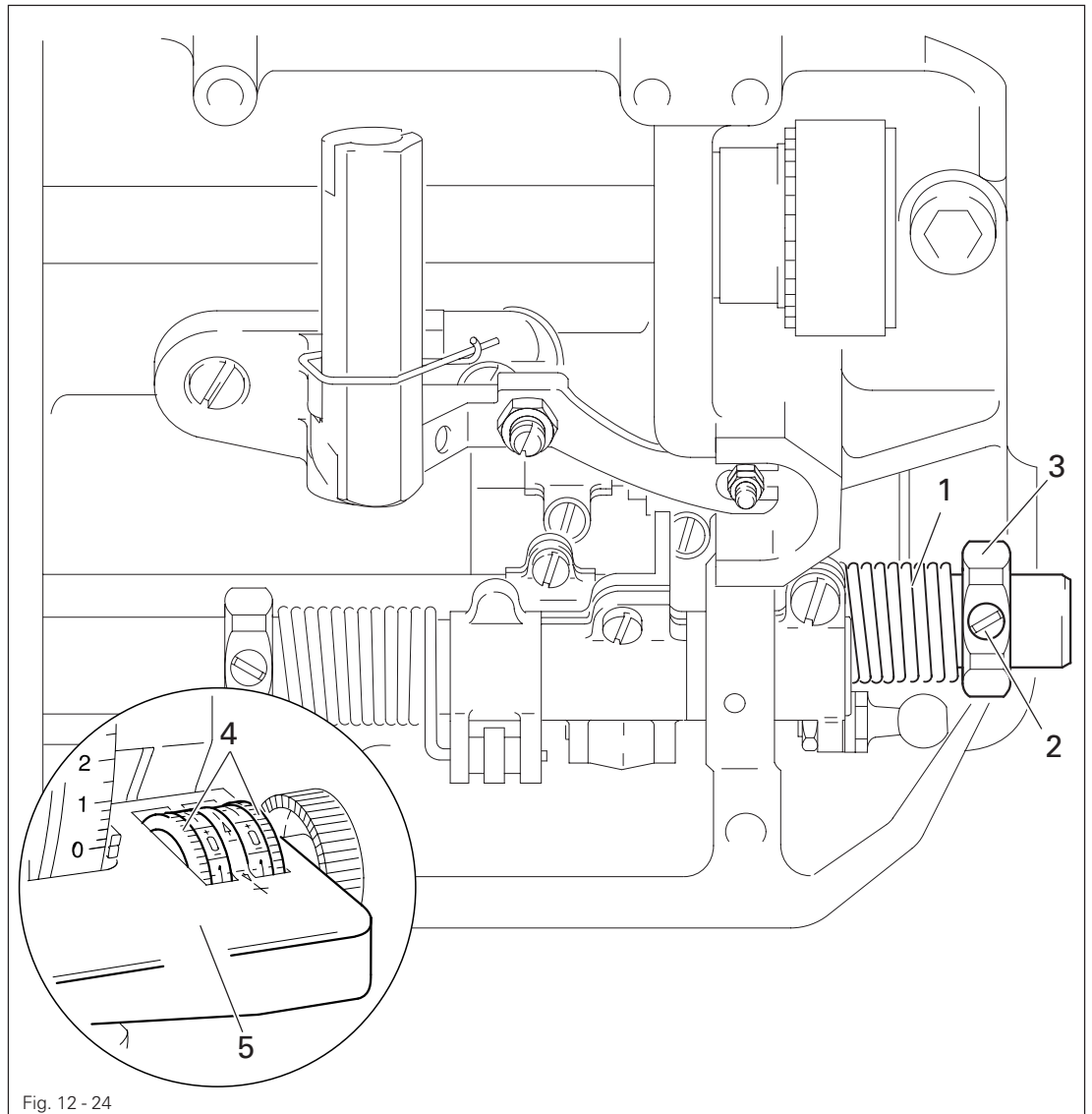


- Set the stitch length at "0".
- Set both levers 1 at "0".
- While constantly turning the balance wheel, adjust crank 2 (screw 3) in accordance with the **requirement**.
- Carry out a control check in accordance with the **requirement**.

12.05.23 Torsion spring of the reverse feed lever on the PFAFF 939 U

Requirement

With the presser foot raised, the longest stitch length set and the adjustment wheels 4 at "0", the reverse feed lever 5 must return automatically to its uppermost point after being activated.



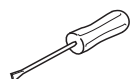
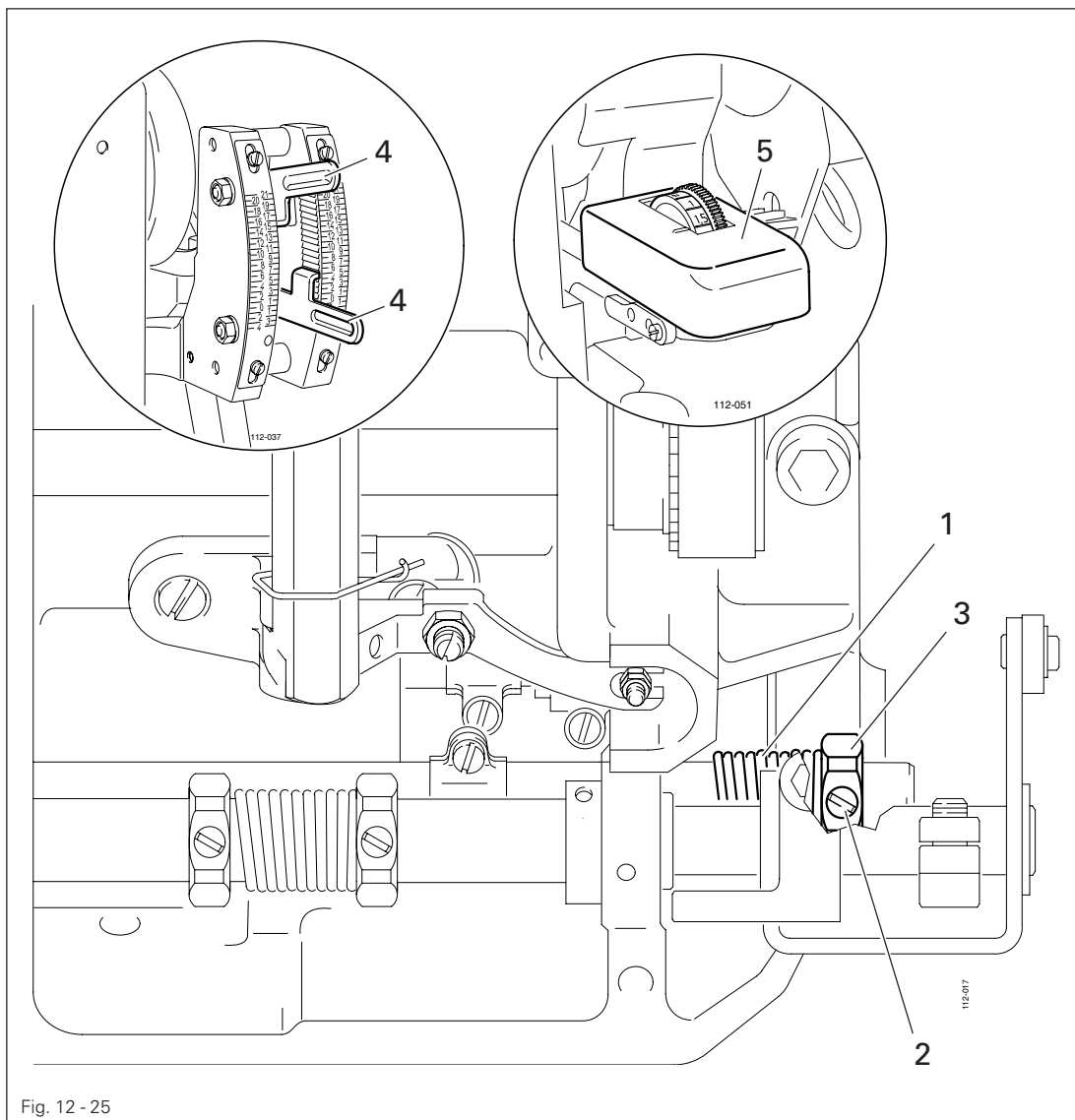
- Turn torsion spring 1 (screw 2) in accordance with the **requirement** using nut 3.

Adjustment

12.05.24 Torsion spring of the reverse feed lever on the PFAFF 3704-2/..

Requirement

With the presser foot raised, the longest stitch length set and the adjustment lever 4 at "0", the reverse feed lever 5 must return automatically to its uppermost point after being activated.

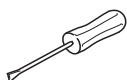
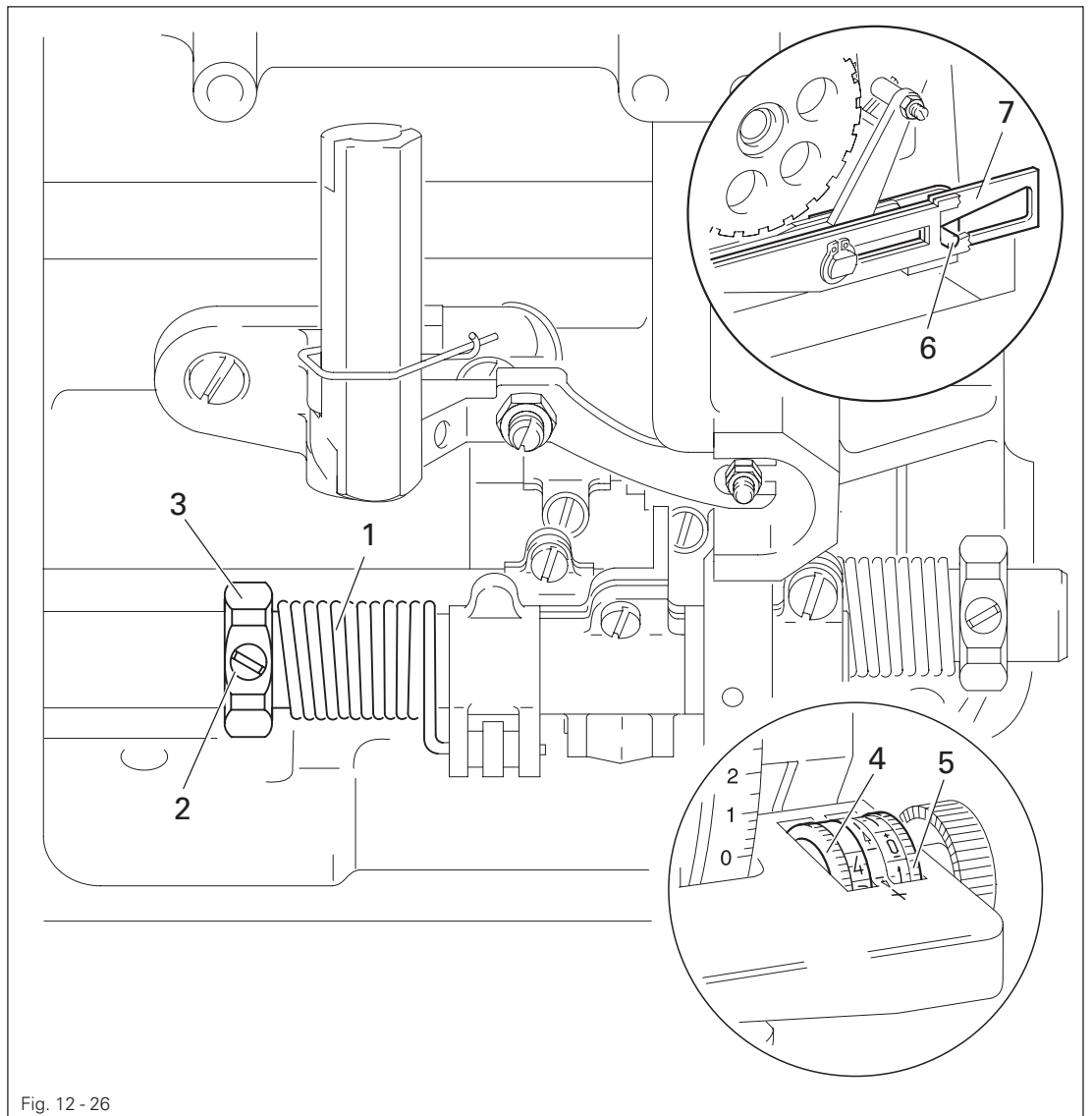


- Turn torsion spring 1 (screw 2) in accordance with the **requirement** using nut 3.

12.05.25 Torsion spring of the differentiation regulating shaft on the PFAFF 939 U

Requirement

With the presser foot raised, the stitch length set at "0", adjustment wheel 4 at + 4.5 and adjustment wheel 5 at "0", guide pin 6 must be touching in connecting link 7.



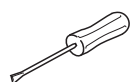
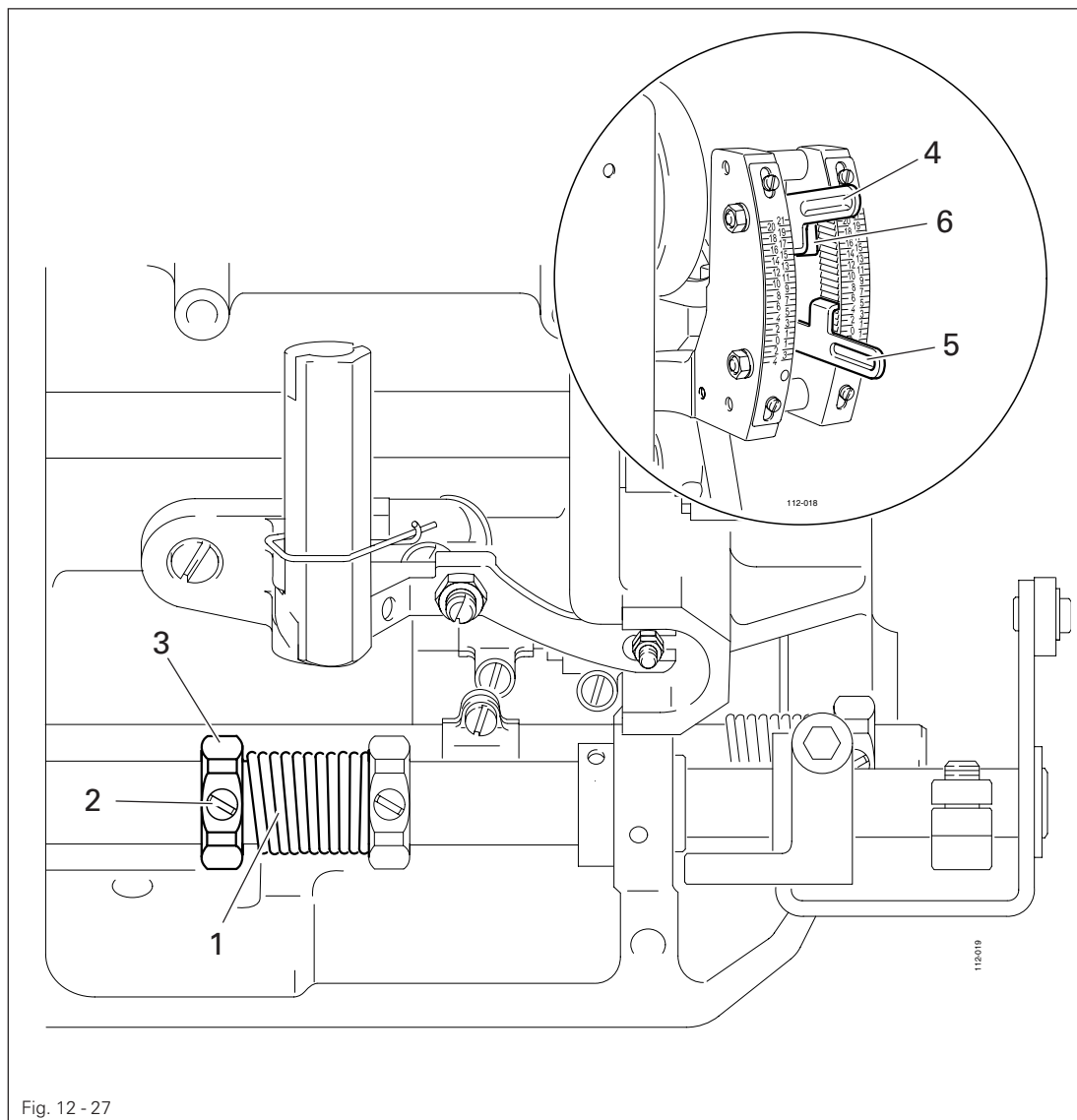
- Turn torsion spring 1 (screw 2) in accordance with the **requirement** using nut 3.

Adjustment

12.05.26 Torsion spring of the differentiation regulating shaft on the PFAFF 3704-2/..

Requirement

When the presser foot is raised, the maximum stitch length set, lever 4 raised to its top position and lever 5 set at "0", the pointer 6 should be touching lever 4.

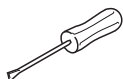
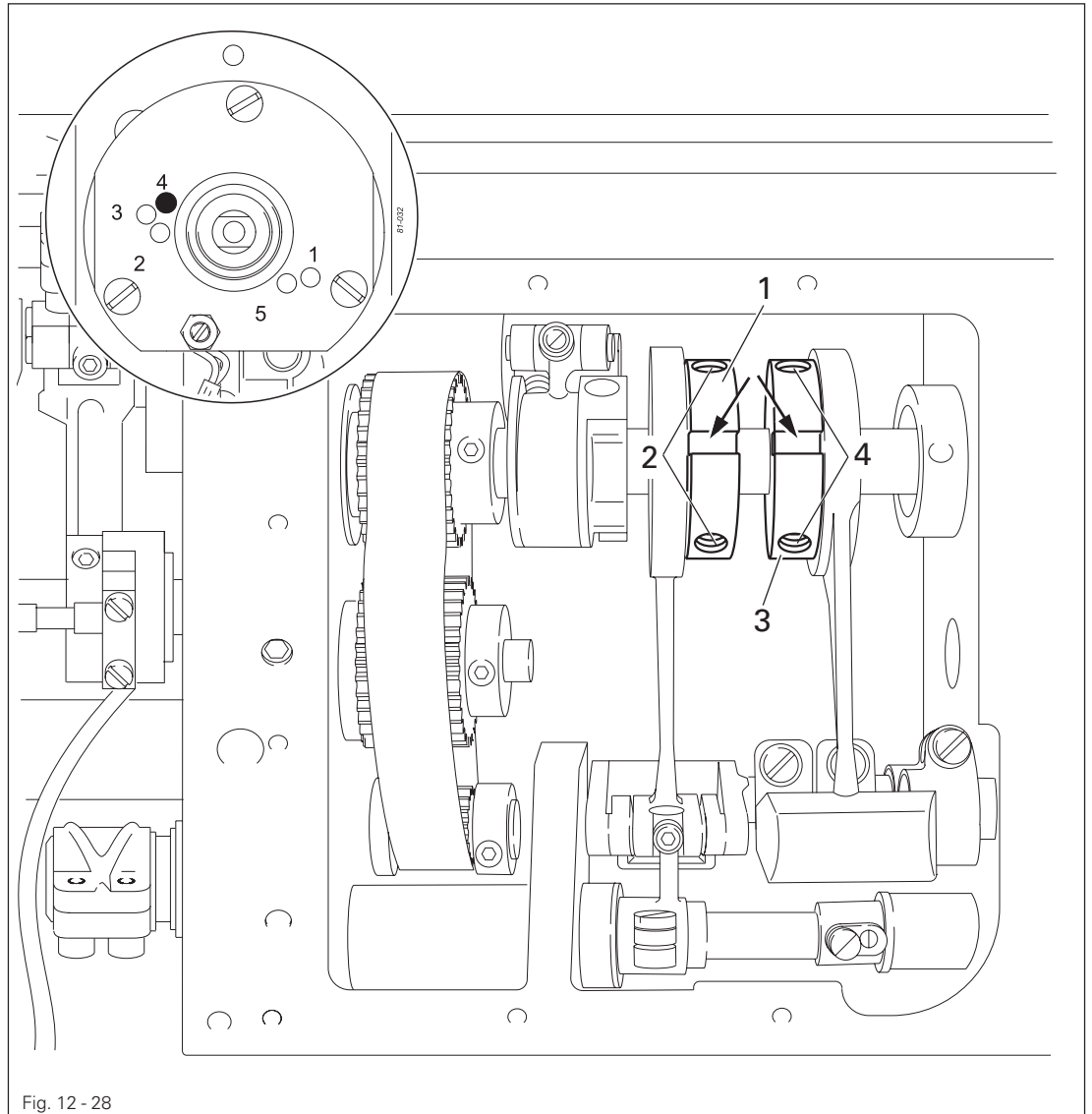


- Turn torsion spring 1 (screw 2) in accordance with the **requirement** using nut 3.

12.05.27 Feeding motion of the main and differential feeds

Requirement

With the maximum stitch length set and the needle bar positioned 1.0 after t.d.c. (hole 4), when the reverse stitch key is operated, there should be no feeding motion of the main and differential feed dogs.



- While constantly operating the reverse stitch key, adjust the main feeding eccentric 1 (screws 2) in accordance with the **requirement** (the cutout on feeding eccentric 1 must be visible).
- While constantly operating the reverse stitch key, adjust the differential feeding eccentric 3 (screws 4) in accordance with the **requirement** (the cutout on feeding eccentric 3 must be visible).



Eccentric 1 and 2 should not be axially displaced.

12.05.28 Lifting stroke of the main and differential feed dogs

Requirement

With the stitch length set at "0" and the needle bar positioned at 0.25 after t.d.c. (hole 3), the feed dogs should be at the top of their stroke.

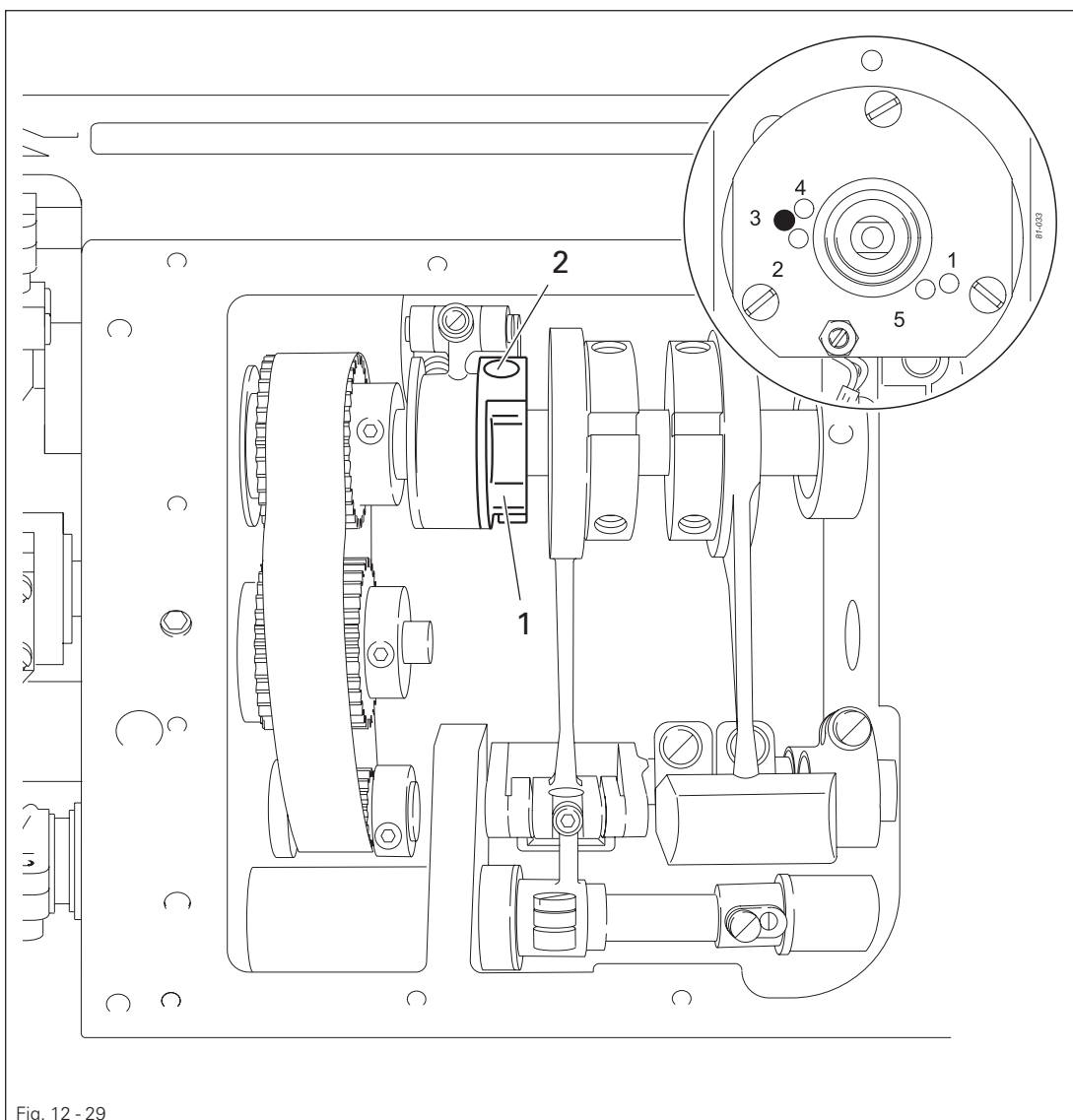
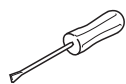


Fig. 12 - 29



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



Feed lifting eccentric 1 should not be axially displaced.

12.05.29 Height of the main and differential feed dogs

Requirement

With the stitch length set at "0" and the needle bar positioned at 0.25 after t.d.c. (hole 3):

1. The feed dogs should be in the centre of the needle plate cutout and be touching the feed dog height adjustment gauge over their whole length.
2. There should be a distance of **approx. 4 mm** between the feed dogs.

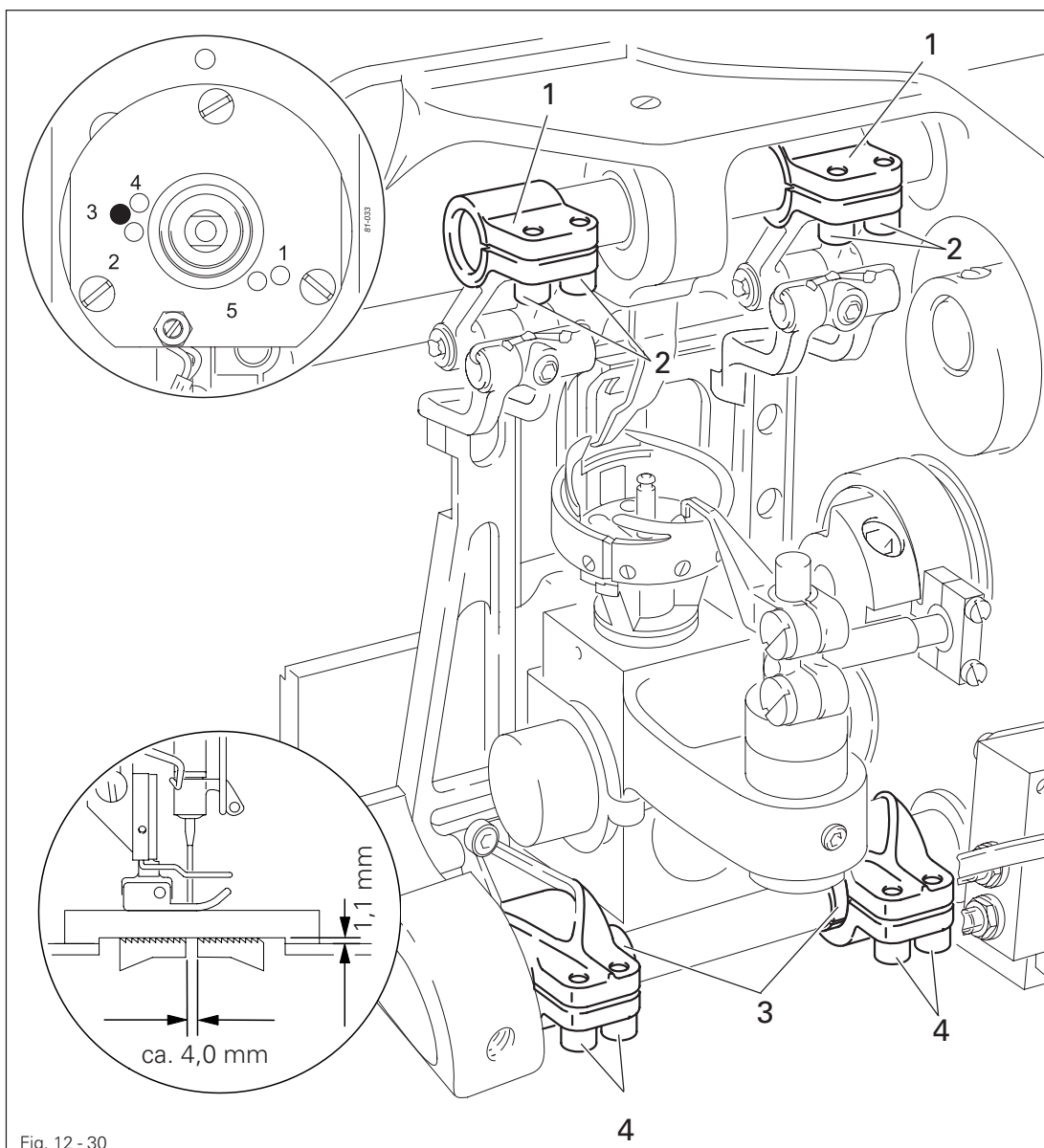
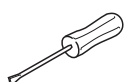


Fig. 12 - 30



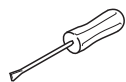
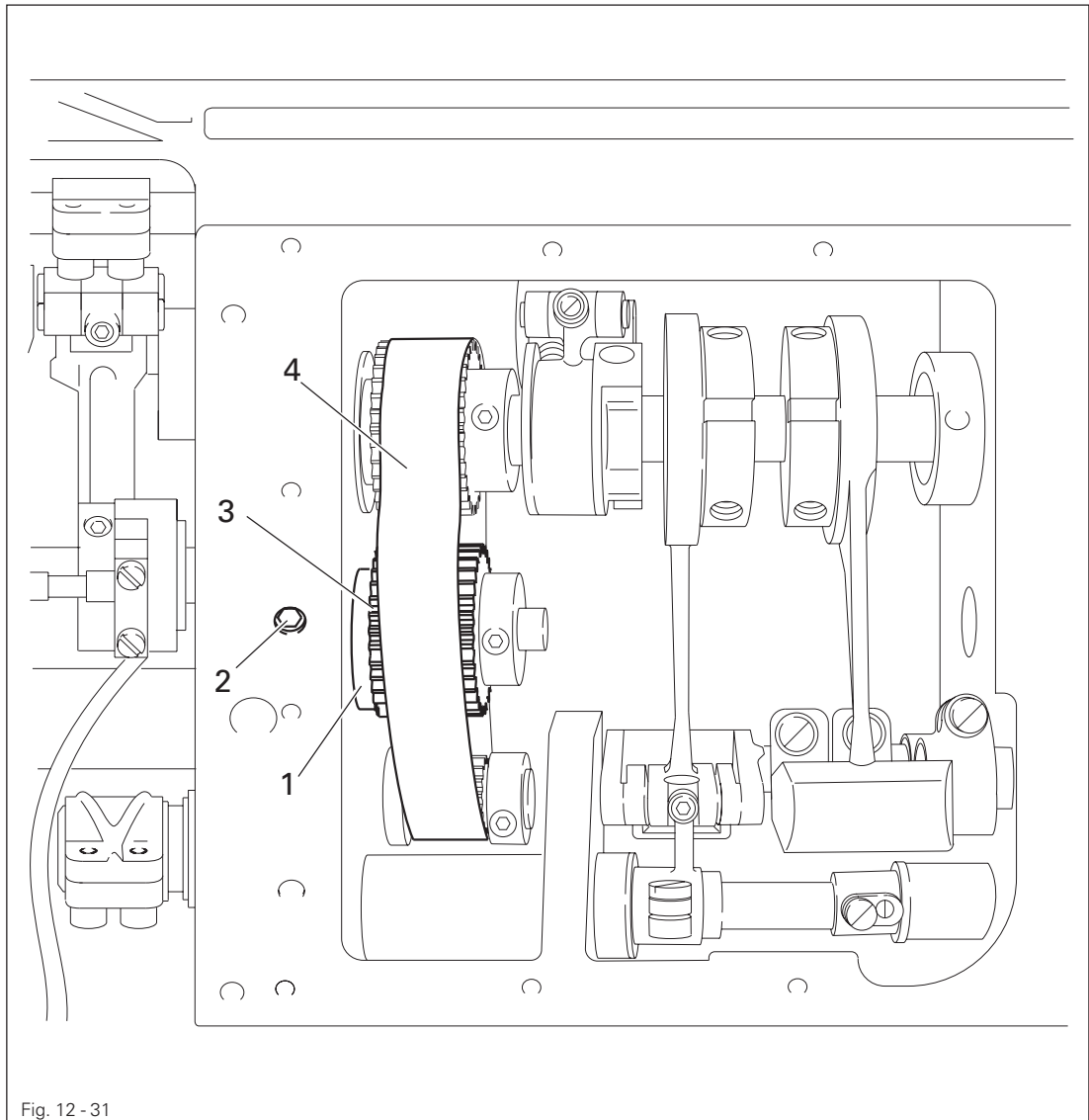
- Place the feed dog adjustment gauge under the sewing foot with the cutout facing down.
- Lower the sewing foot until it touches the gauge.
- Press up both feed bars and adjust the feed dogs in accordance with **requirement 2**.
- Adjust lifting cranks 1 (screws 2) and eccentric clamp bushings 3 (screws 4) in accordance with **requirement 1**.

Adjustment

12.05.30 Drive belt in the gearbox housing

Requirement

Drive belt 4 must be tightened so that the machine runs freely and the belt sprockets do not have any noticeable play.



- Adjust eccentric bearing bush 1 (screw 2) in accordance with the **requirement** and so that drive belt 4 is in the centre of bobbin opener drive wheel 3.

12.05.31 Hook bearing bracket

Requirement

The hook shaft must be touching the hook bearing bracket adjustment gauge 1 at the top and the side.

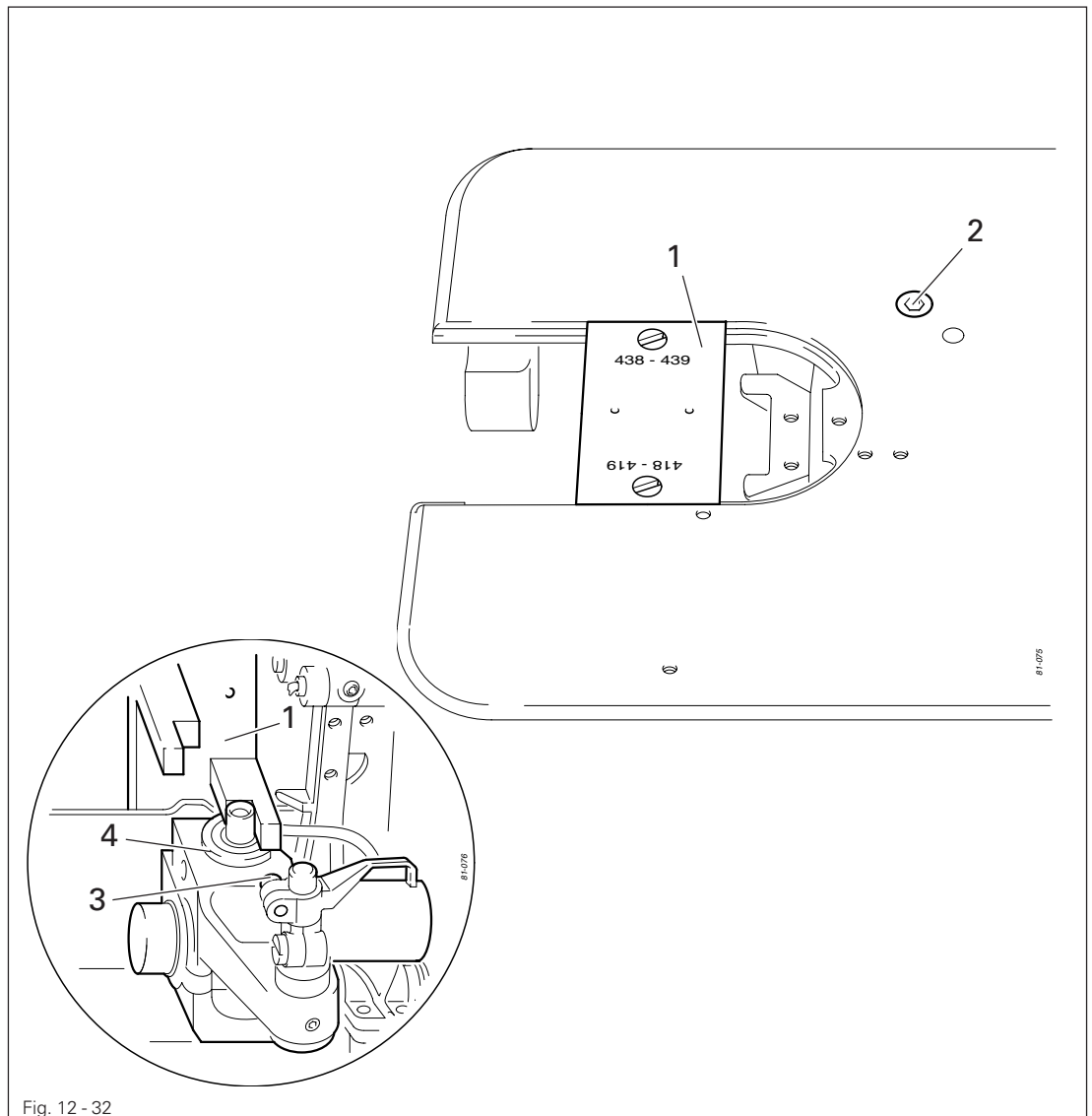
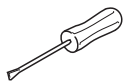


Fig. 12 - 32



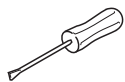
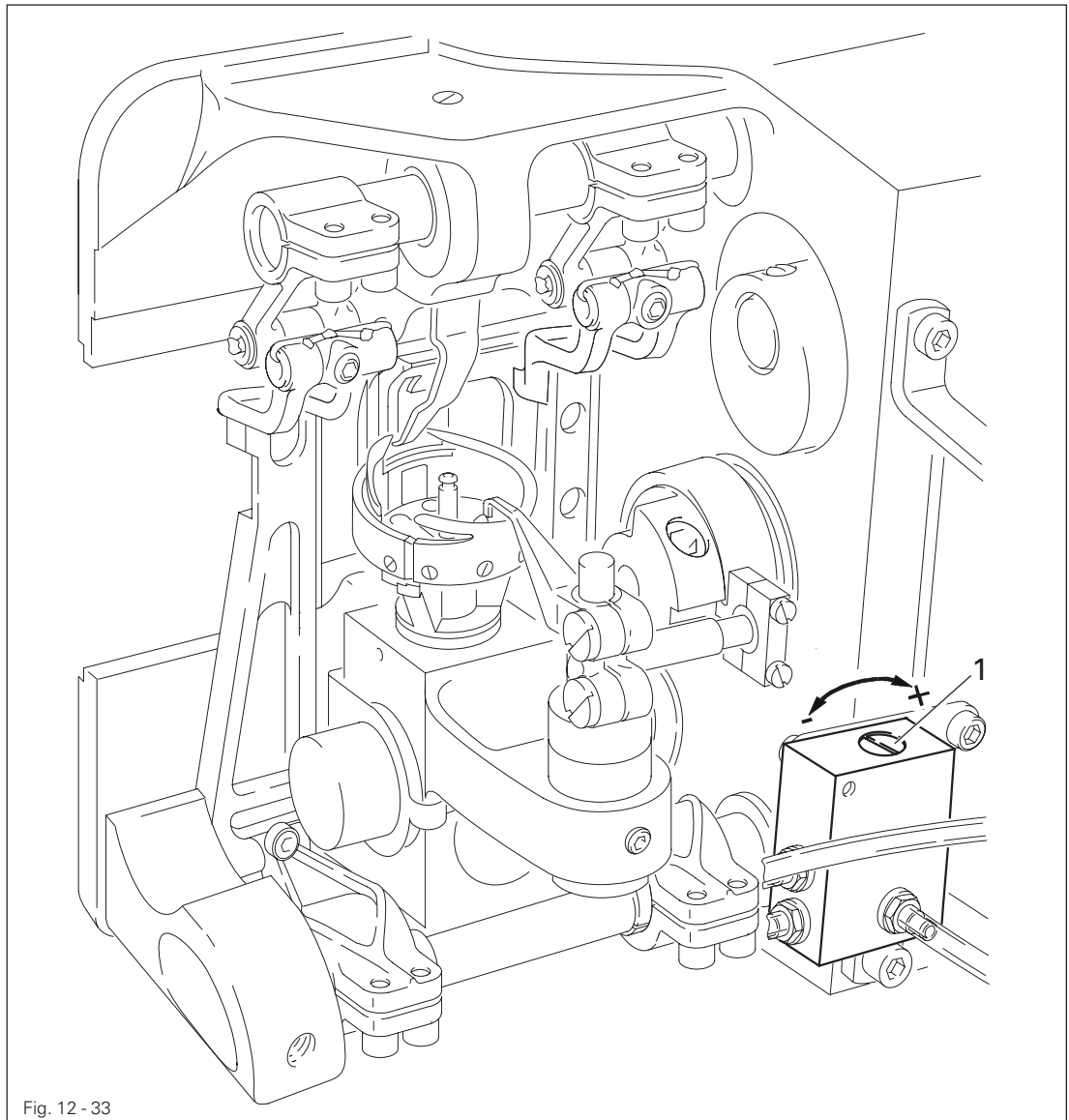
- Loosen screw 3.
- Swing the bobbin case opener to the right and remove the hook.
- Loosen screw 2 and loosen the draw key underneath it by lightly tapping the head of the screw.
- Screw on the hook bearing bracket adjustment gauge.
- It must be possible to read the numbers "438-439" from the front.
- Move or turn hook bearing bracket 4 in accordance with the **requirement**.
- Tighten screw 2.
- Adjust the bobbin case opener in accordance with **subsection 12.05.36 Bobbin case opener position**.

Adjustment

12.05.32 Hook lubrication

Requirement

When the machine is running at full speed, after about 10 seconds a fine oil streak should be visible on a strip of paper held over the needle plate cutout.



- Adjust screw 1 in accordance with the requirement.

12.05.33 Pre-adjusting the needle height

Requirement

With the needle bar at tdc (hole 2) the distance between the point of the needle and the needle plate must be **19 mm**.

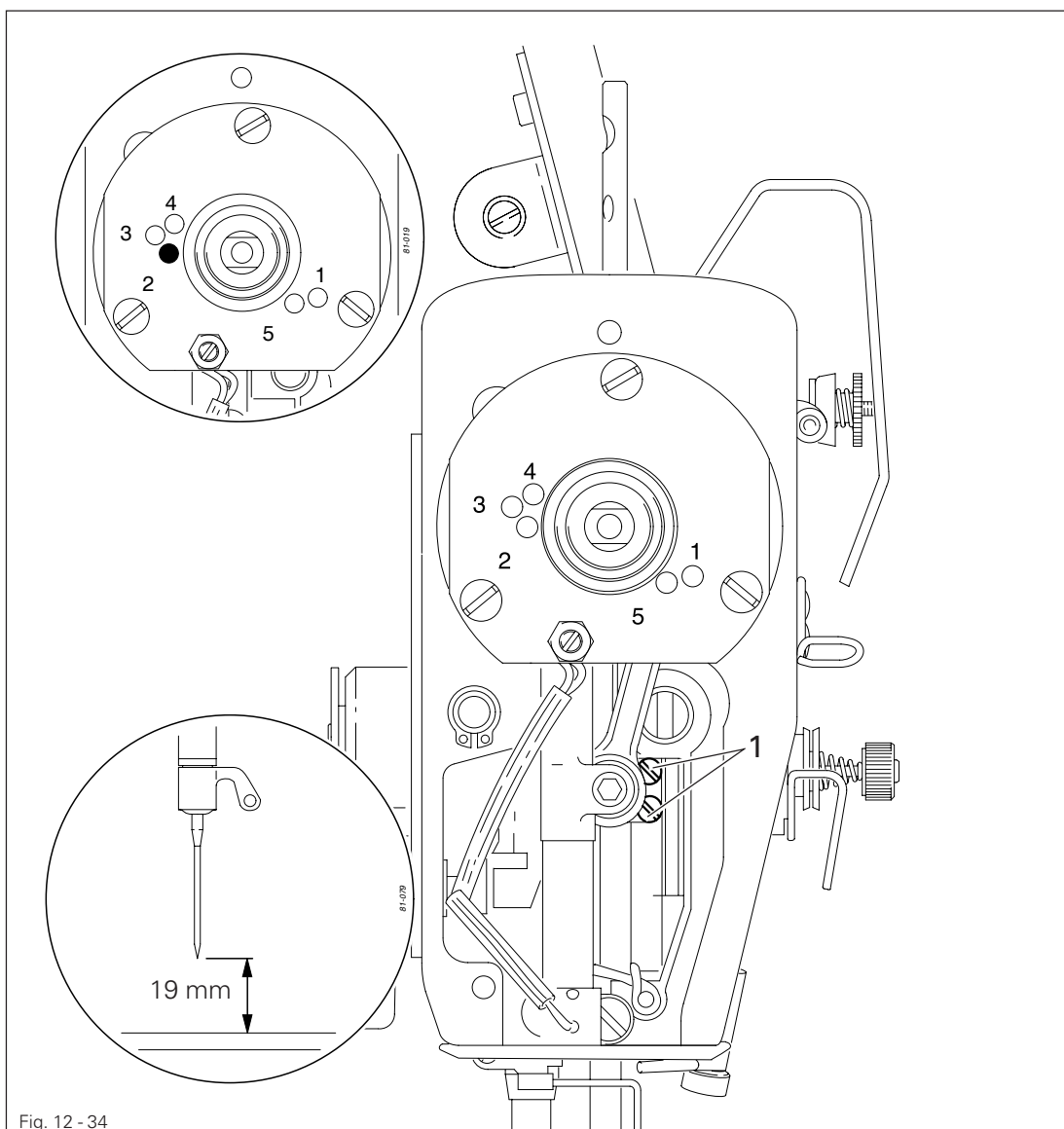
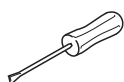


Fig. 12 - 34



- Without turning it, adjust the needle bar (screws 1) in accordance with the **requirement**.

12.05.34 Needle rise, hook-to-needle clearance and bobbin case positioning-finger

Requirement

1. With the needle position set at "middle", the zigzag stitch setting at "0" and the needle bar position 2.0 past bdc (hole 1) the hook point must be in the middle of the needle and the distance between the needle and the hook point must be **0.05 - 0.1 mm**.
2. The bobbin case positioning-finger must be fitted so that there is a clearance of **0.5 mm** between the bottom section of the bobbin case and the front edge of the bobbin case positioning-finger (see arrow).

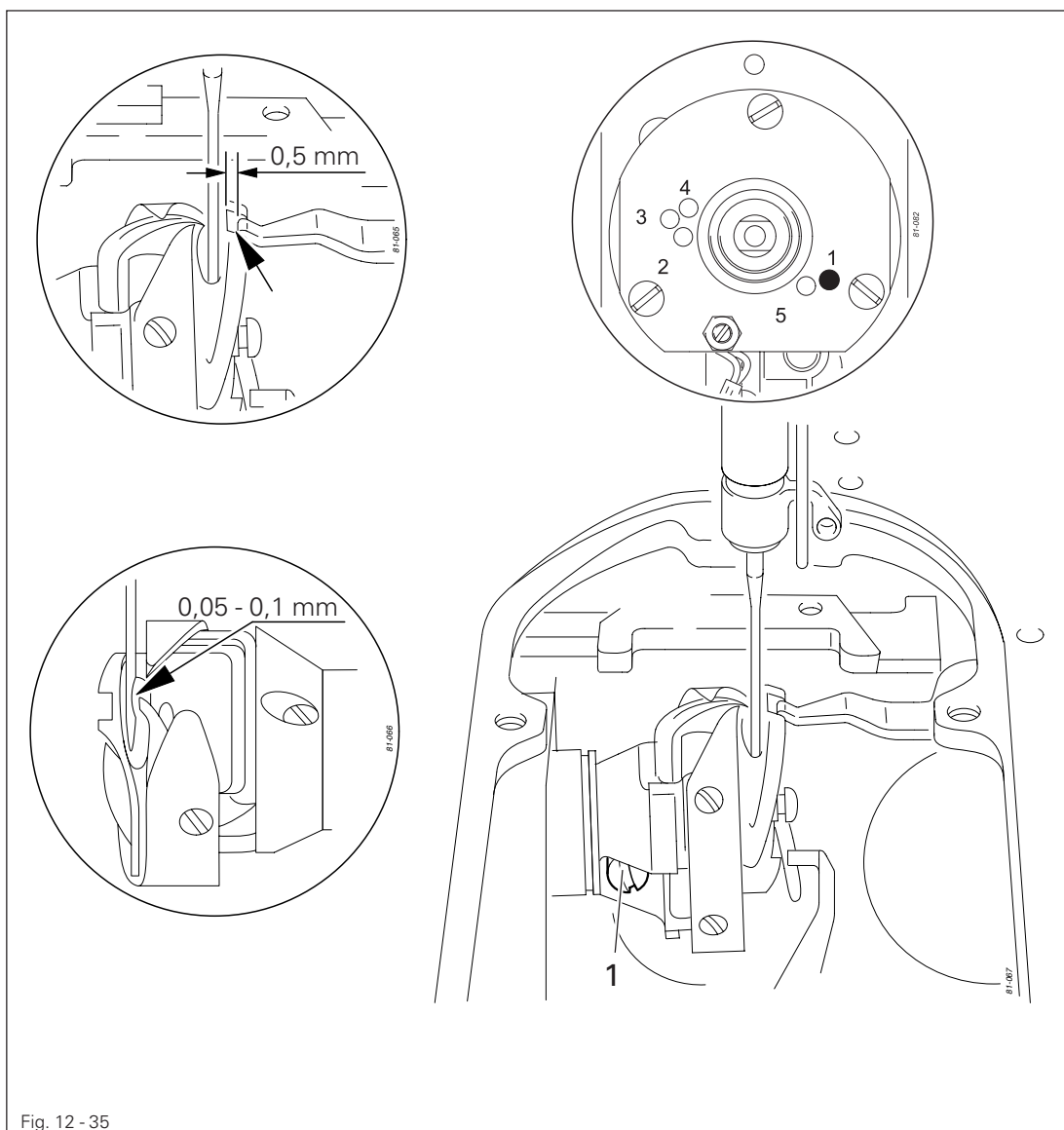
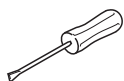


Fig. 12 - 35



- Adjust the hook (screw 1) in accordance with **requirement 1**.
- Fit the bobbin case position stop in accordance with **requirement 2**.

12.05.35 Final adjustment of the needle height

Requirement

With the zigzag stitch set at "0", the needle position set at "left" and the hook point in the middle of the needle, the top edge of the needle eye must be **0.5 mm** underneath the hook point.

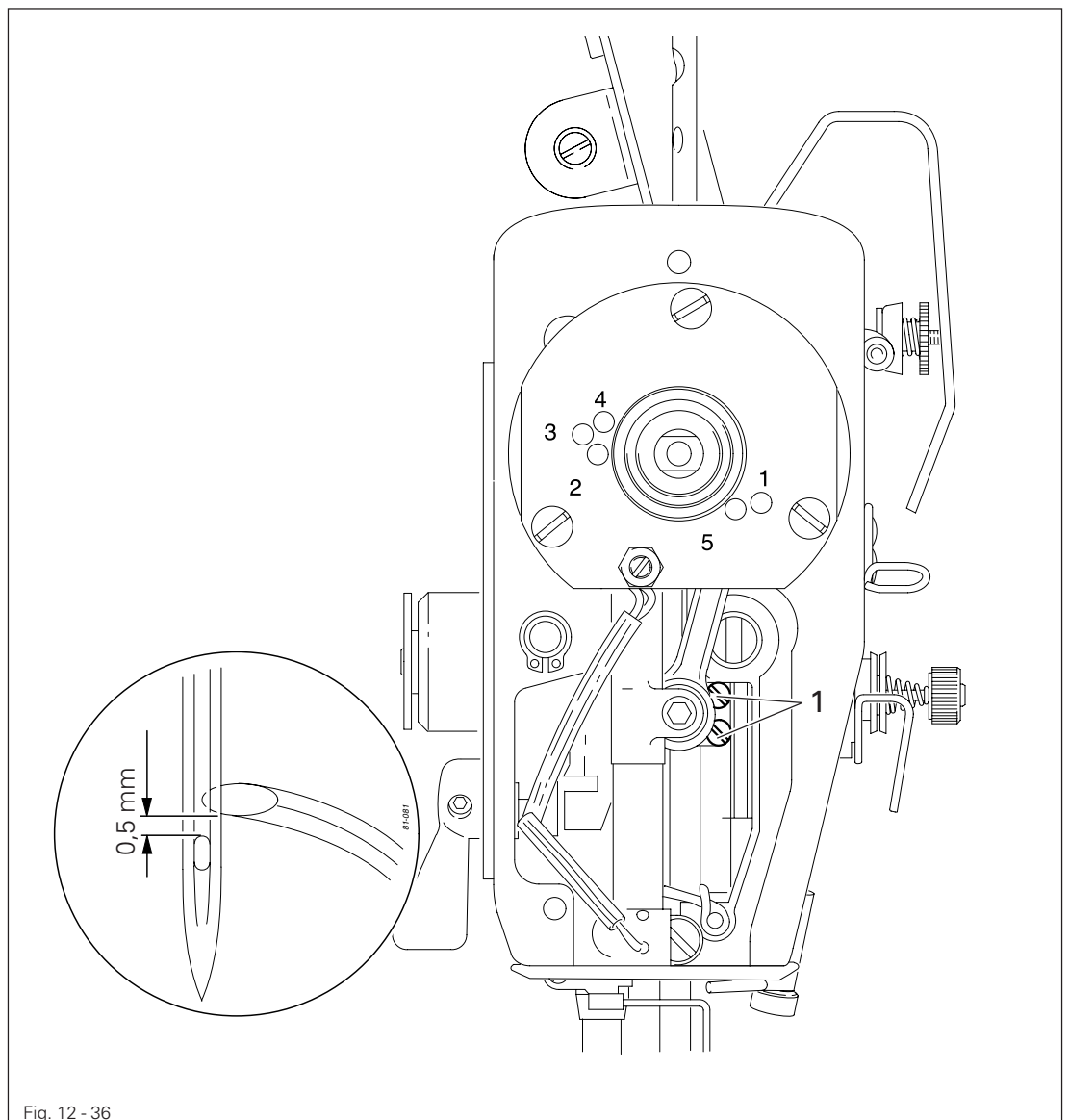
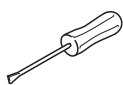


Fig. 12 - 36



- Without turning it, adjust the needle bar (screws 1) in accordance with the requirement.

12.05.36 Bobbin case opener position

Requirement

1. There must be a clearance of **0.5 mm** between the top edge of the bobbin case opener and the inner edge of the bottom section of the bobbin case.
2. Between the bobbin case opener finger and the bottom section of the bobbin case opener there must be a clearance of **0.8 mm**.
3. At the left point of reversal of the bobbin case opener the bobbin case positioning-finger must be approx. **0.3 mm** from the right side of the groove in the bottom section of the bobbin case.

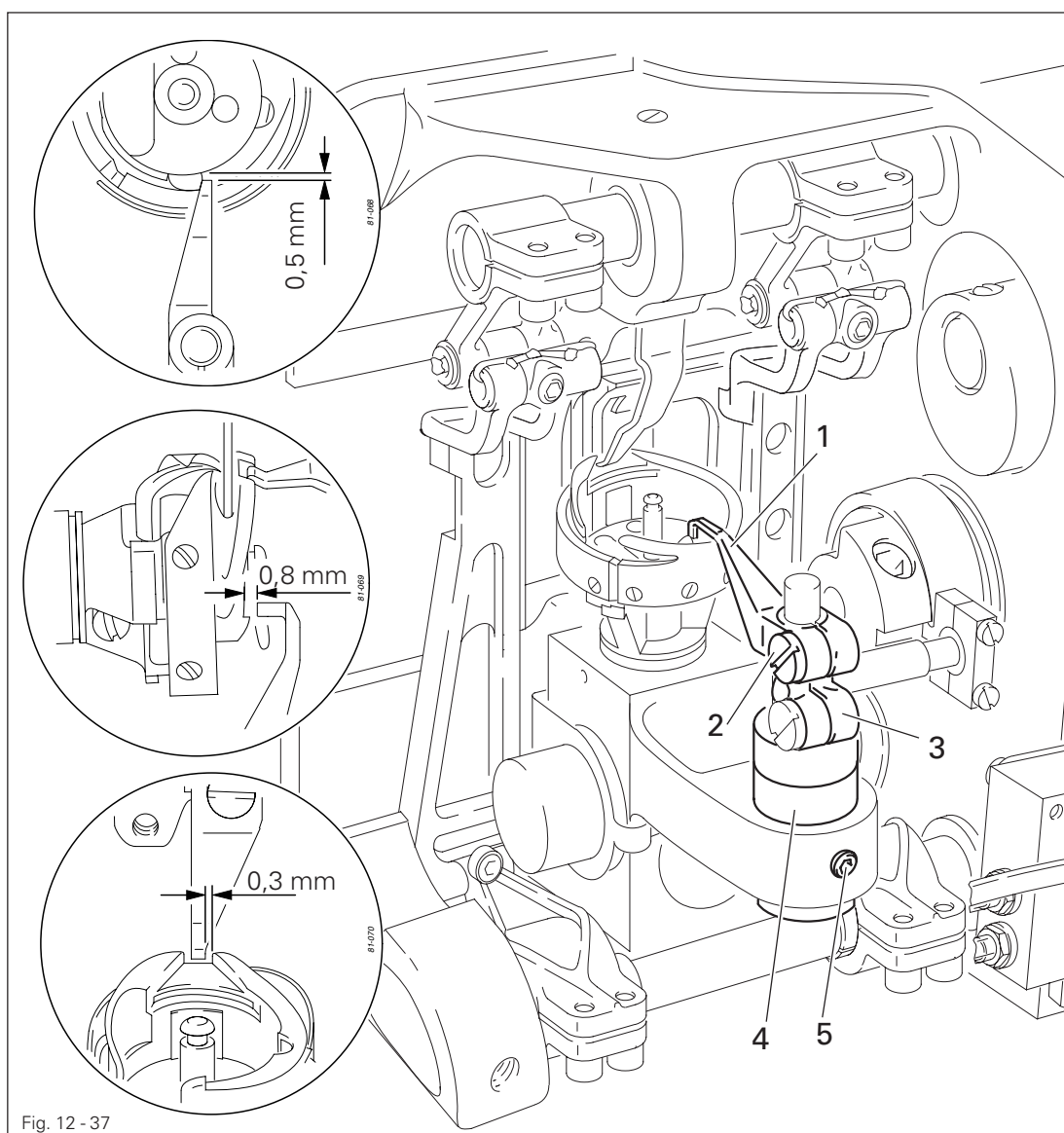
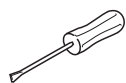


Fig. 12 - 37

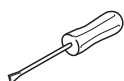
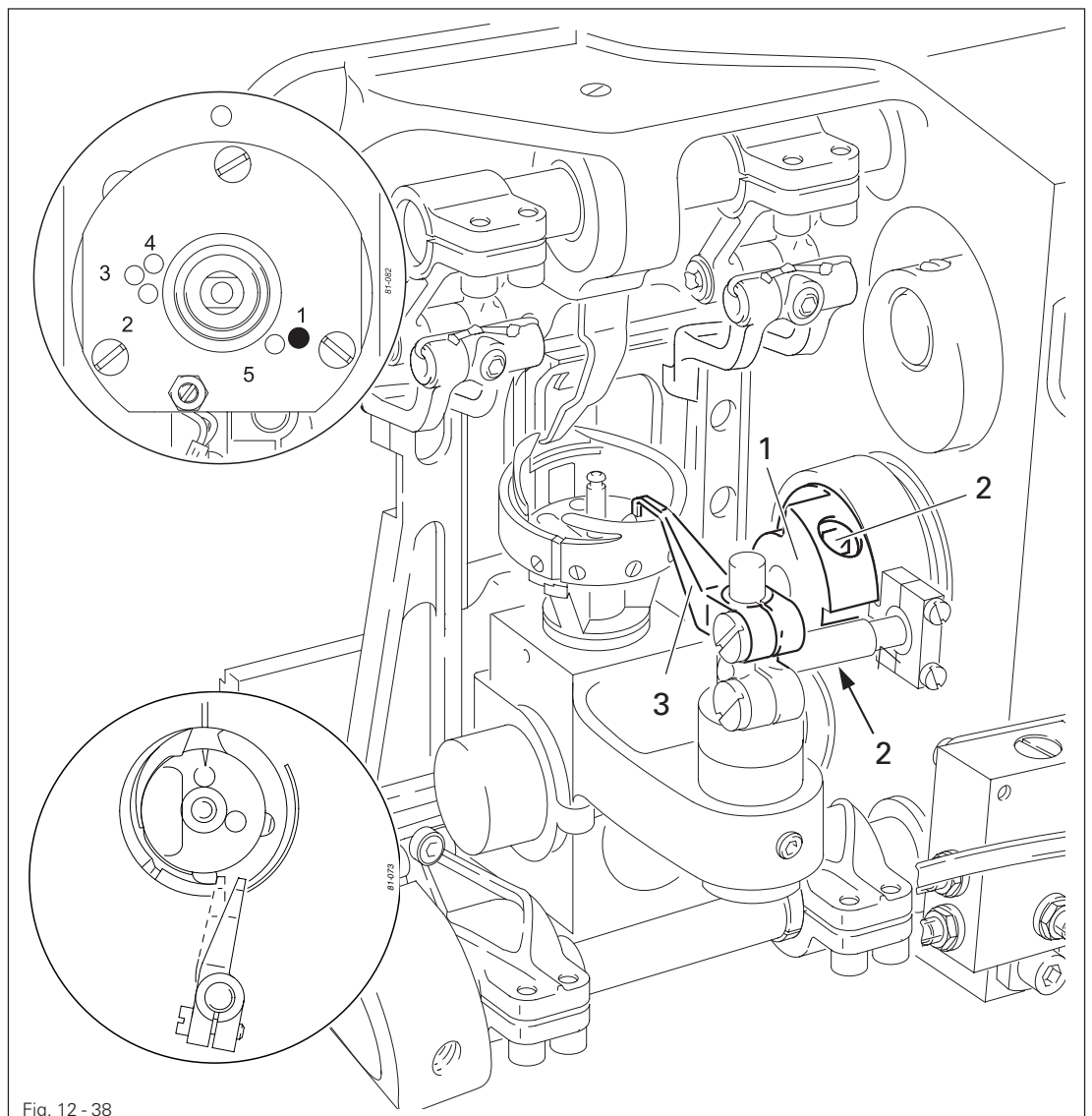


- Loosen screw 2.
- Place bobbin opener 1 on the right side of the bobbin case base, press it against clamp crank 3 located underneath this and slightly tighten screw 2.
- Adjust eccentric bearing bush 4 (screw 5) in accordance with requirements 1 and 2.
- Adjust bobbin opener 1 in accordance with requirement 3 and tighten screw 2, taking care to see that bobbin opener 1 is touching clamp crank 3

12.05.37 Bobbin case opener motion

Requirement

With the needle bar 2.0 past bdc (hole 1) the bobbin case opener 3 must be at its right point of reversal.



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

12.05.38 Presser foot to needle plate clearance / Presser foot pressure

Requirement

1. When the hand lever is raised, the needle should penetrate exactly in the "needle hole centre" of the presser foot and the presser foot to needle plate clearance should be 5 mm.
2. Even at top sewing speed the material should be fed without problems. There should be no pressure marks on the material.

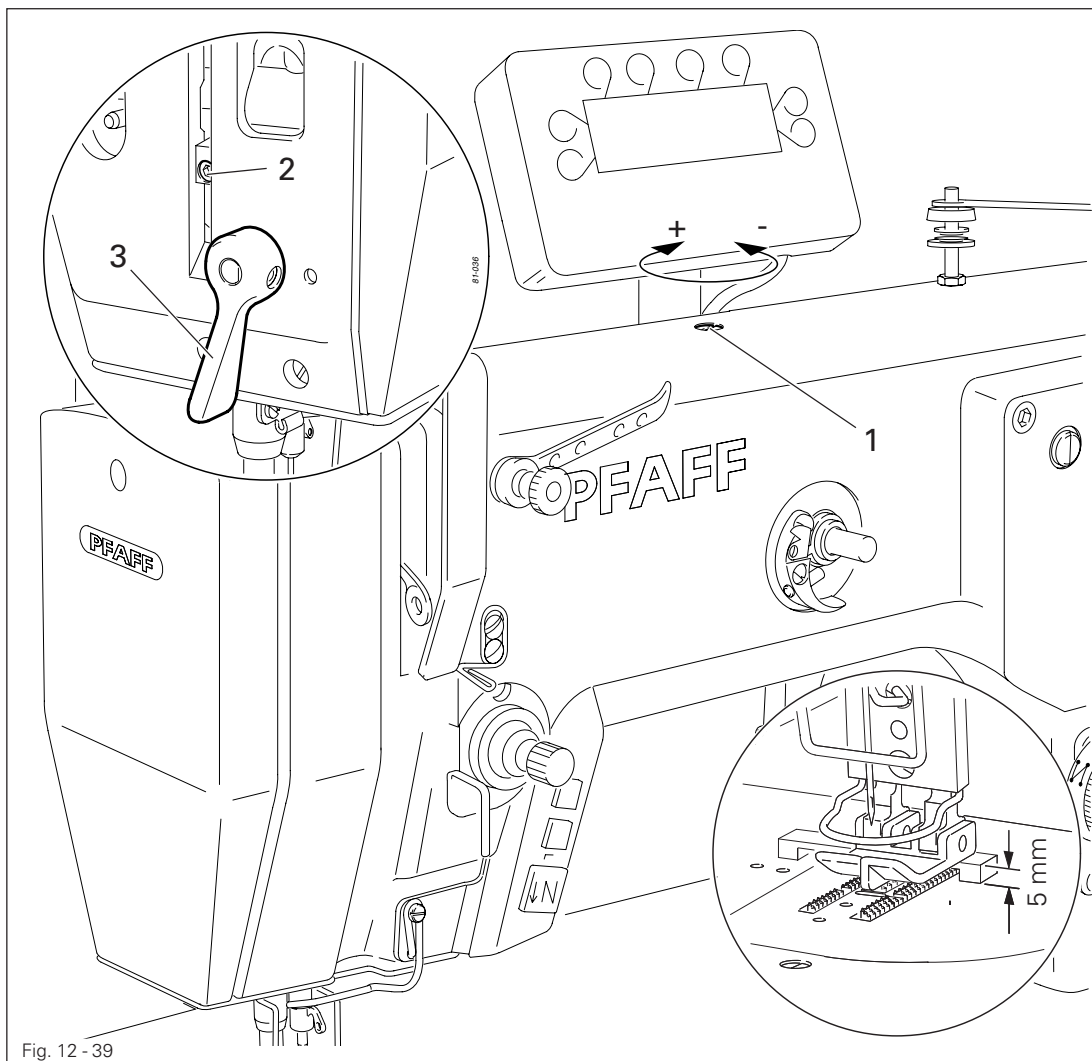
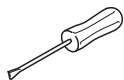


Fig. 12 - 39



- Set the zigzag stitch adjustment lever at "0" and the stitch position adjustment lever at "centre".
- Let the presser foot drop onto the needle plate and reduce the pressure on the presser bar by turning screws 1.
- Place the feed dog adjustment gauge under the presser foot with the recess at the bottom.
- Loosen screw 2 and raise hand lever 3.
- Allow the needle to penetrate the needle hole and align the presser foot in accordance with the **requirement 1**.
- Press the presser bar lifting piece down and tighten screw 2.
- Turn screw 1 in accordance with the **requirement 2**.

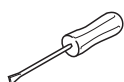
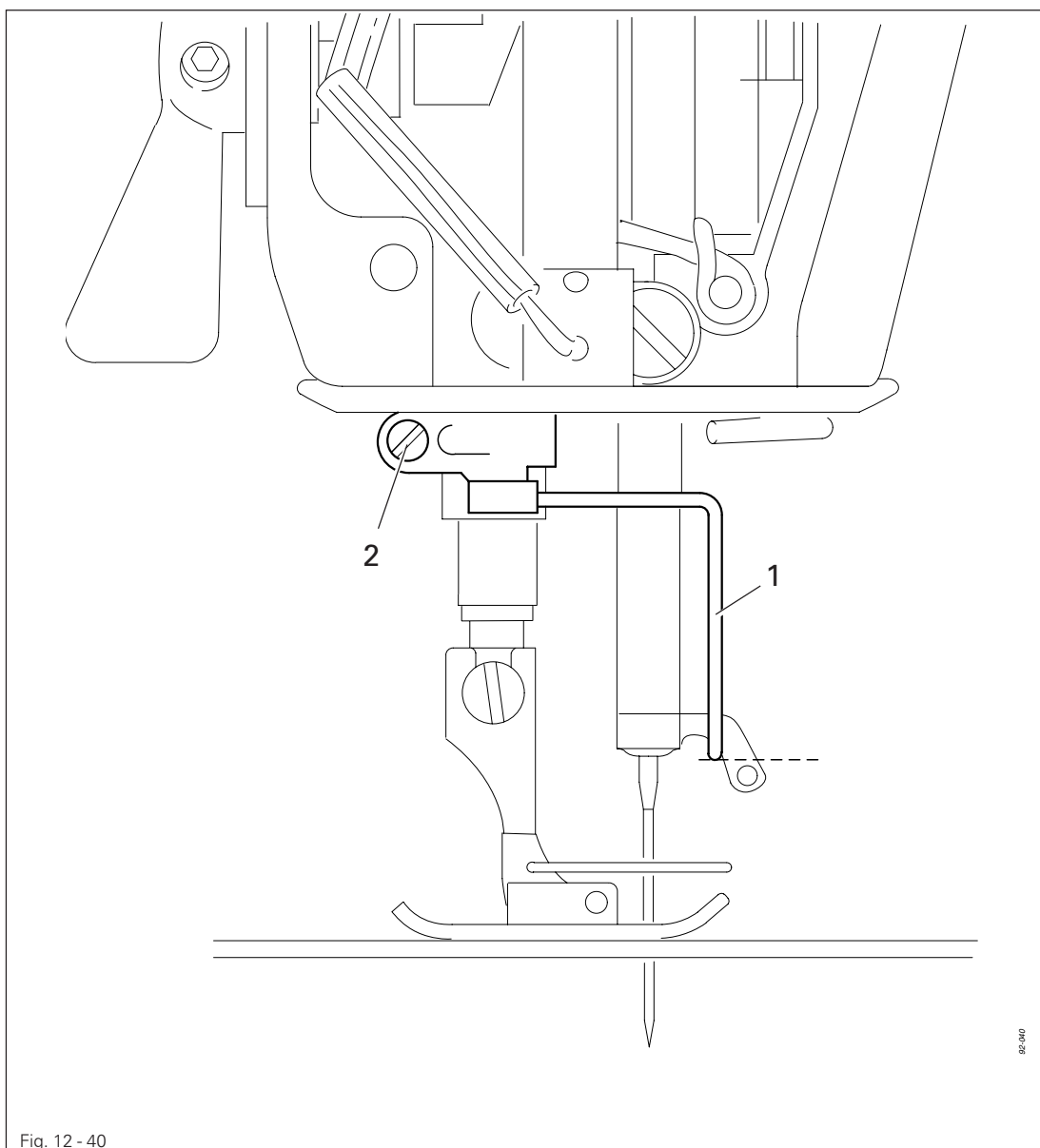


The presser foot pressure (screw 1) can be increased (+) or reduced (-) as required.

12.05.39 Thread diverter pin

Requirement

With the needle bar at bdc the top edge of the thread guide hole must be at the same height as the bottom edge of the thread diverter.



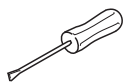
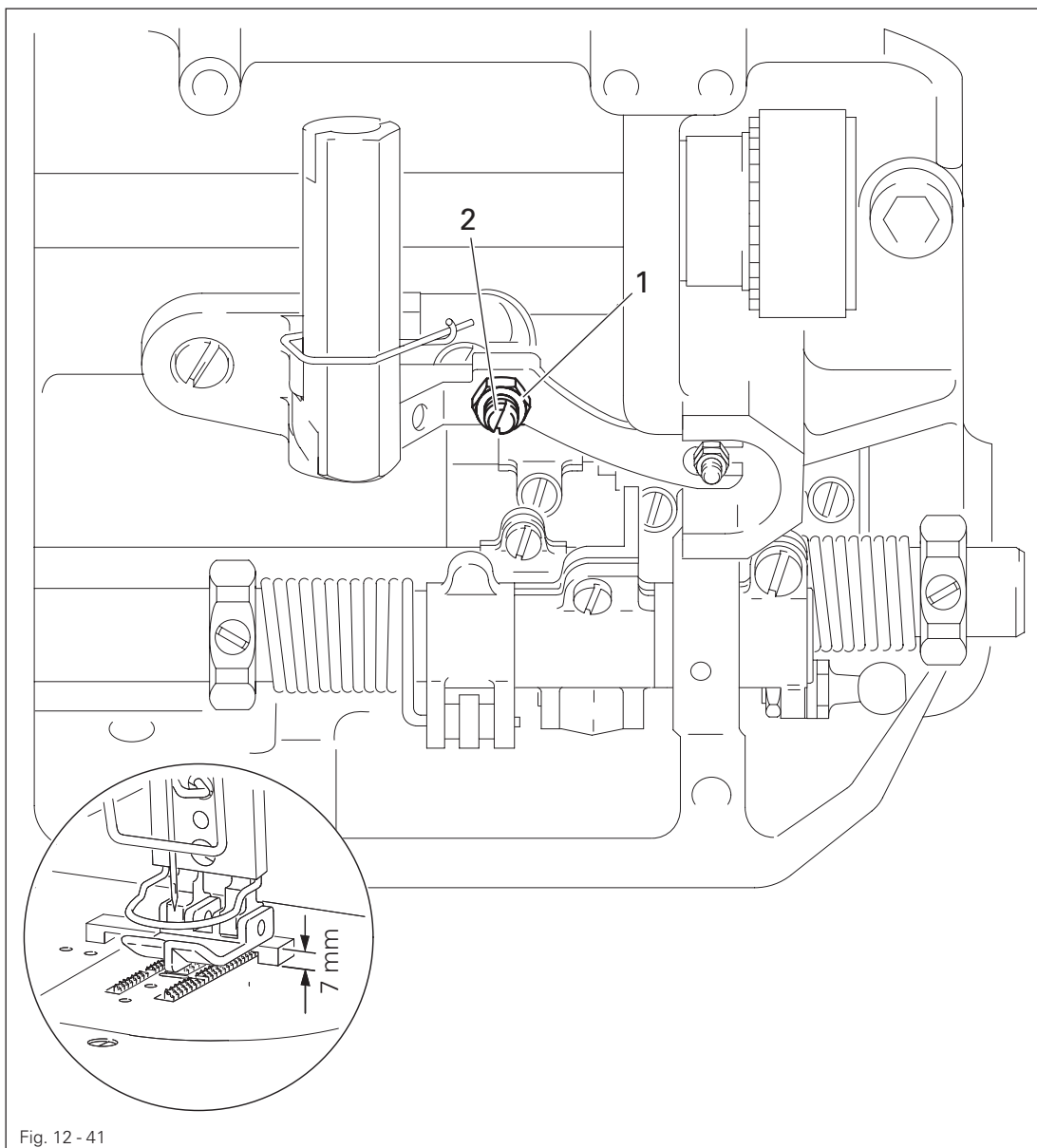
- Adjust thread guide bar 1 (screw 2) according to the **requirement**, taking care that it is parallel to the bed-plate.

Adjustment

12.05.40 Limiting the knee lever stroke

Requirement

When the knee lever is pressed the hand lever must drop automatically and the presser foot must be just over **7 mm** above the needle plate.

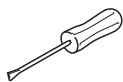
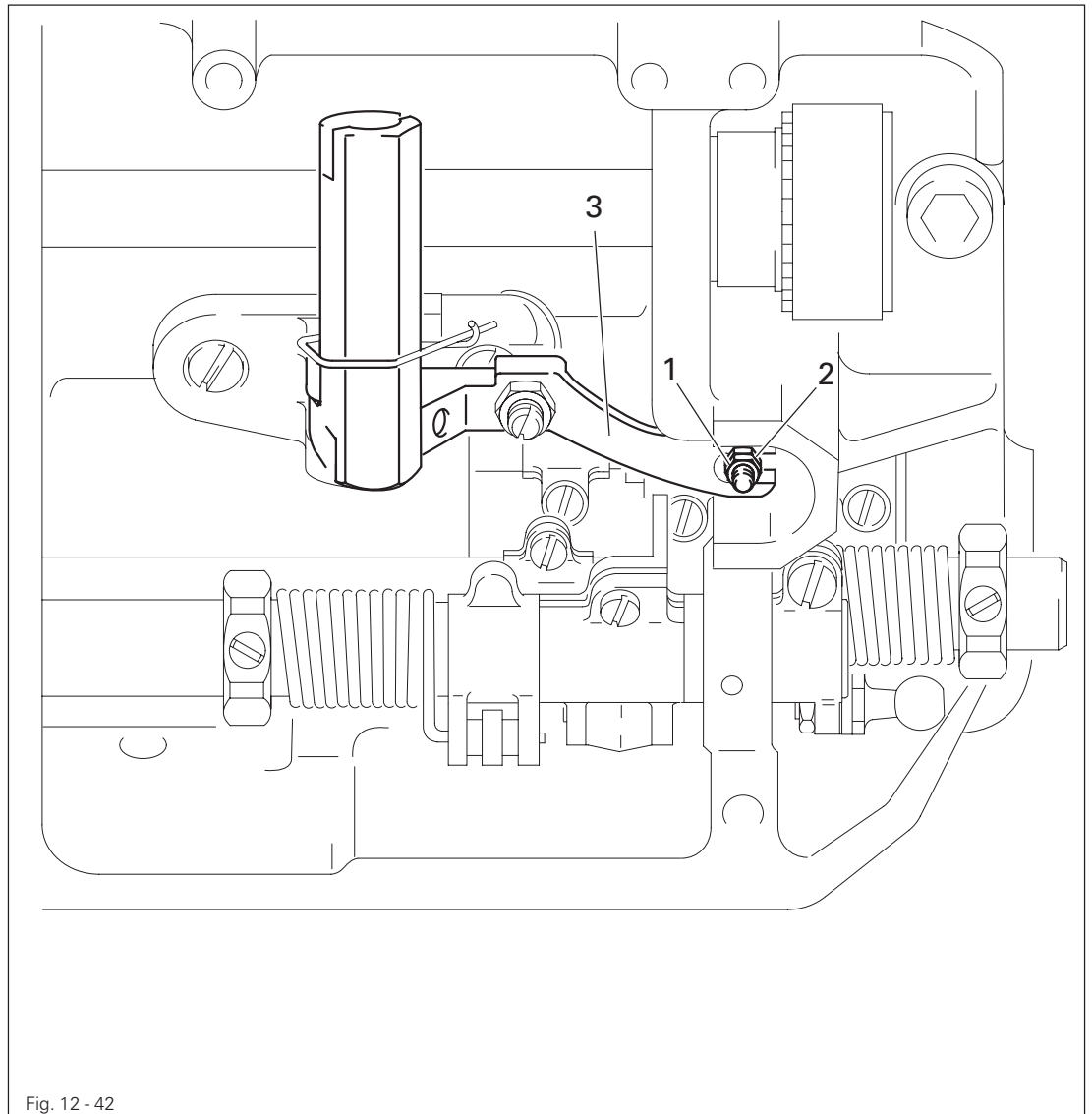


- Place the feed dog gauge under the presser foot with its recess facing downwards.
- Lower the presser foot onto the gauge.
- Loosen nut 1 and turn screw 2 out a few turns.
- Move the knee lever to the right until a noticeable resistance is felt, making sure that the presser foot is not lifted off the gauge, and hold it at this position.
- Turn screw 2 in as far as it will go, then back out by one turn, and lock it in place with nut 1.

12.05.41 Knee lever play

Requirement

When lightly pressing the knee lever there should be a noticeable play between nut 1 and fork 3.



- Adjust nut 1 (nut 2) in accordance with the **requirement** and lock it with nut 2.

12.05.42 Bobbin winder

Requirement

1. With the bobbin winder engaged the bobbin winder spindle must be turned reliably, but friction wheel **3** must not touch drive wheel **1** when the bobbin winder is switched off.
2. The bobbin winder must disengage automatically when the thread is approx. **1 mm** from the edge of the bobbin.

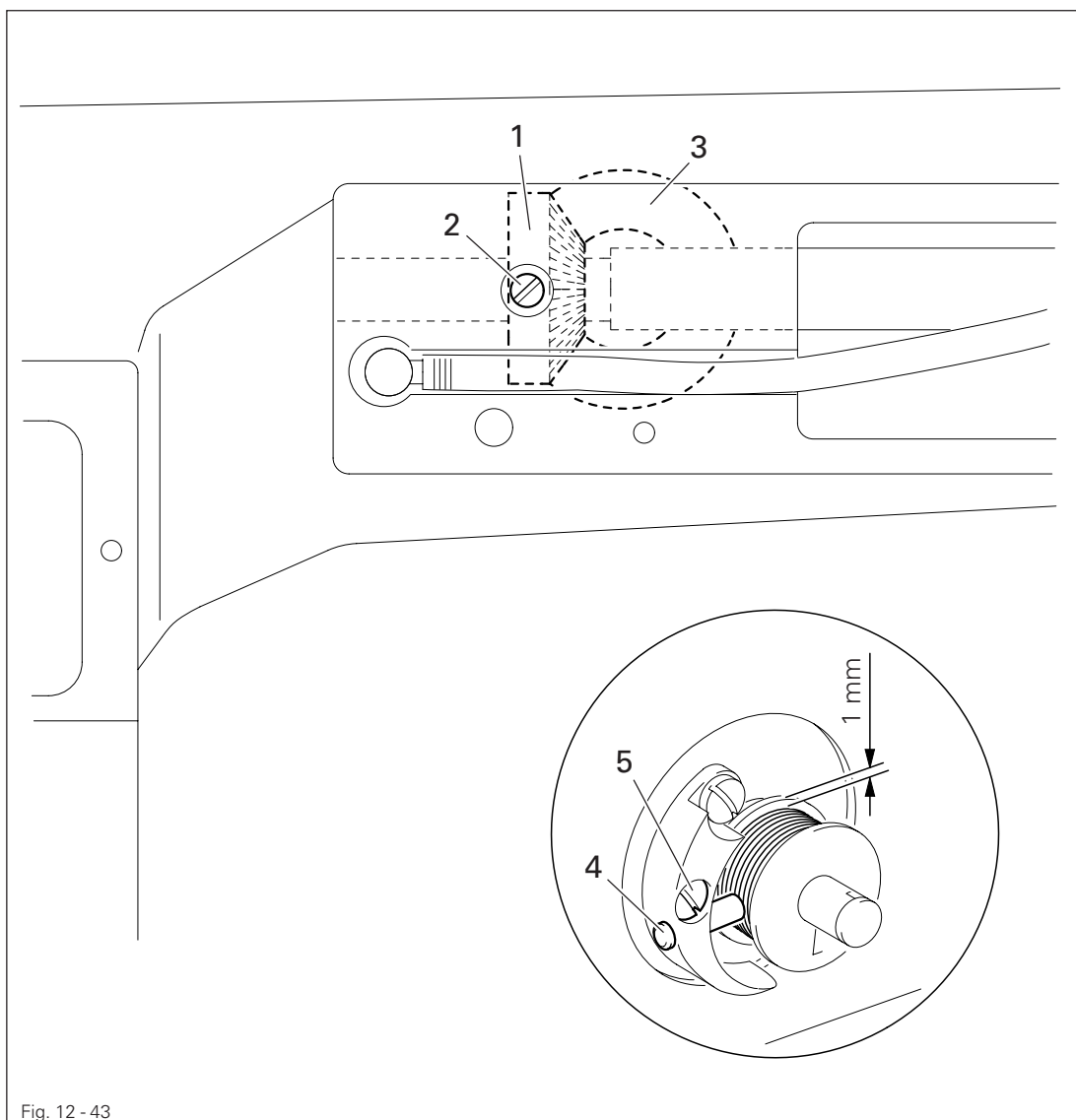
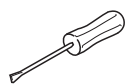


Fig. 12 - 43

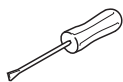
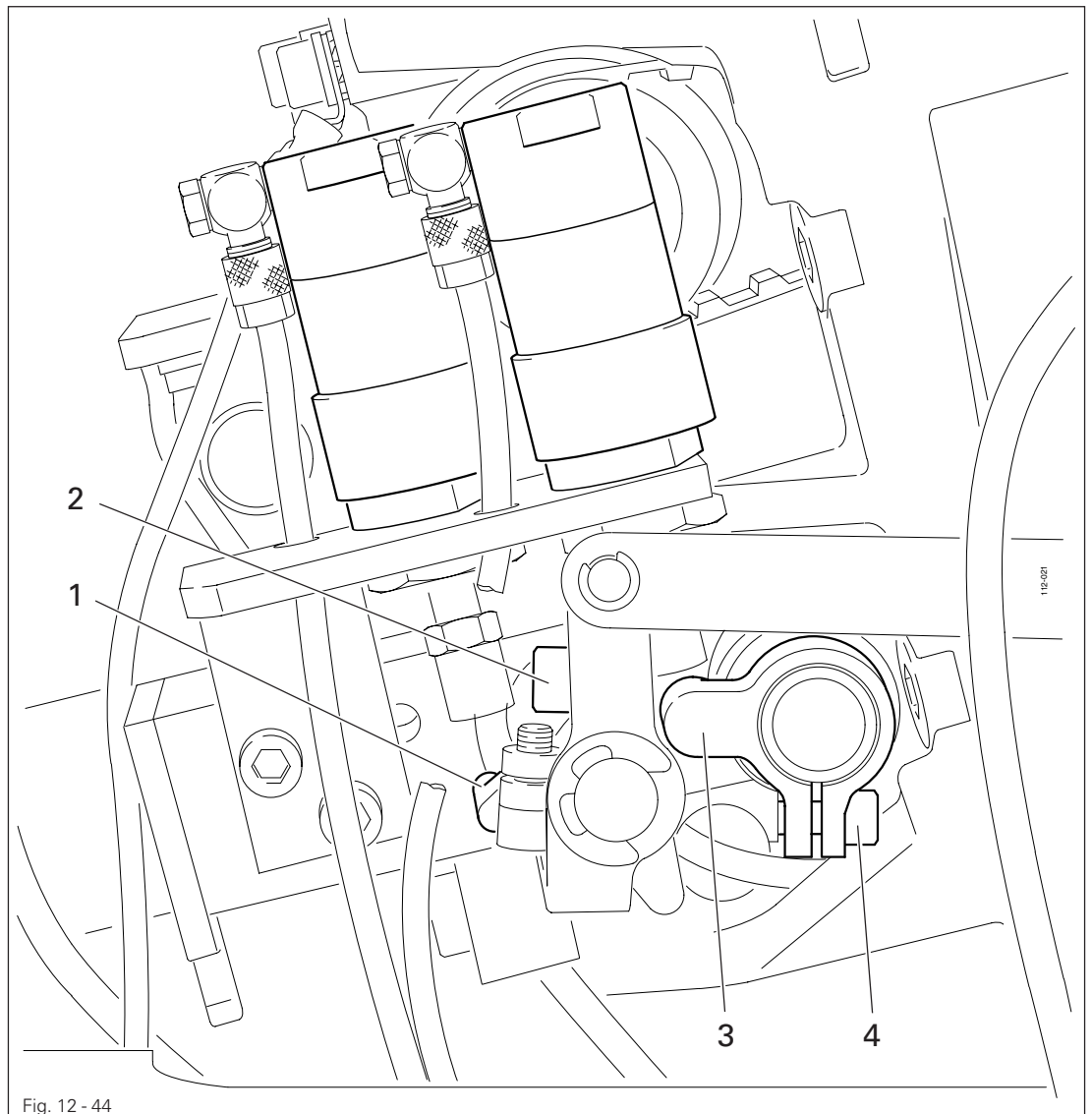


- Position drive wheel **1** in accordance with **requirement 1** and tighten screw **2**.
- Place a bobbin onto the bobbin winder, thread the bobbin and engage the bobbin winder
- Move regulating pin **4** in accordance with **requirement 2** and tighten screw **5**.

12.05.43 Stitch condensation (only on the PFAFF 3704-2/02)

Requirement

When the stitch condensation function is switched on, the feed stroke of the main and differential feed dog should be **0.2 – 0.3 mm**.

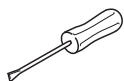
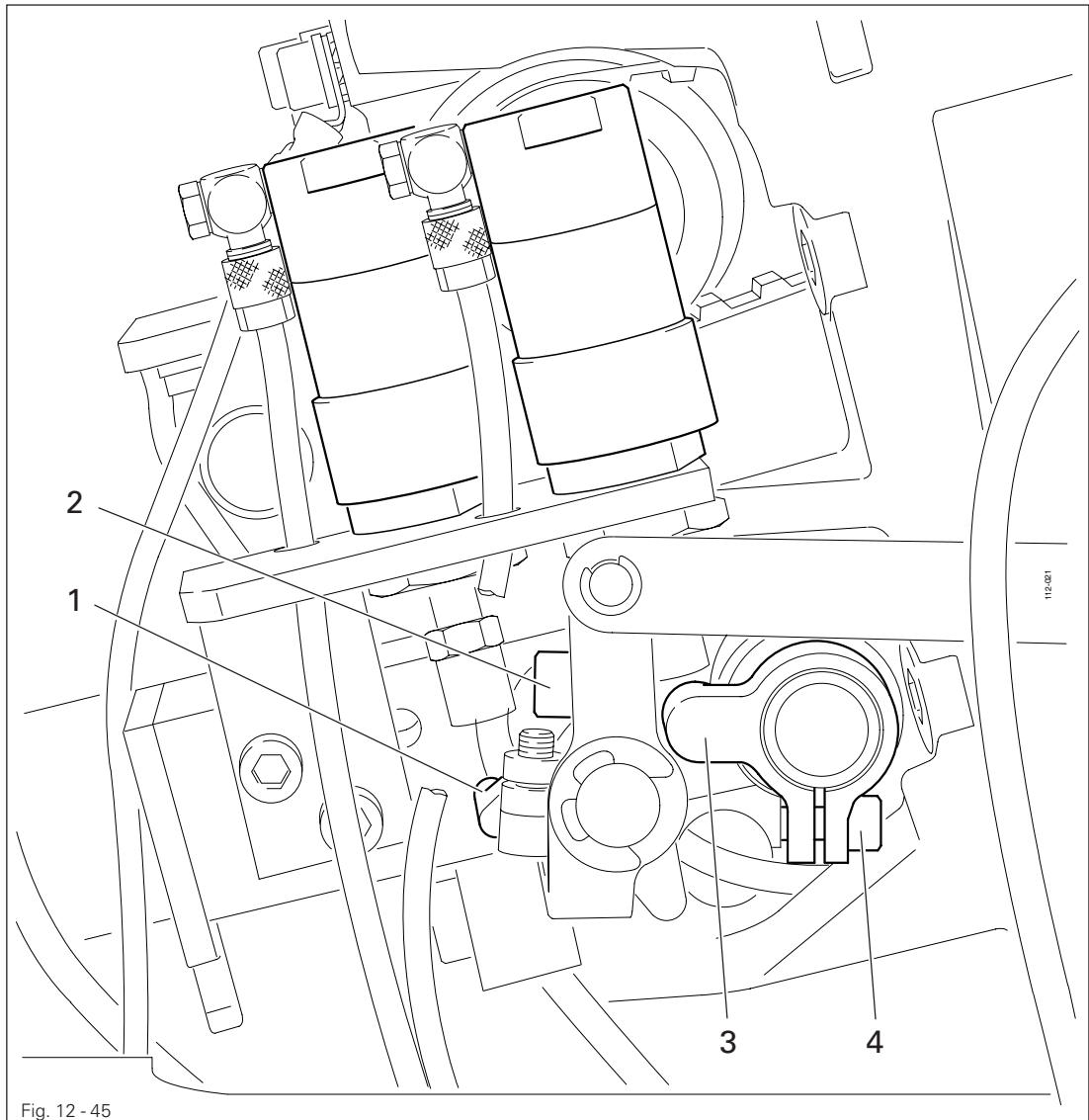


- Adjust crank 1 (screw 2) and crank 3 (screw 4) in accordance with the requirement.

12.05.44 Switching to reverse feed (only on the PFAFF 3704-2/03)

Requirement

When the reverse feed function is switched on, the actual length of the reverse stitches should correspond to the set stitch length.



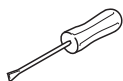
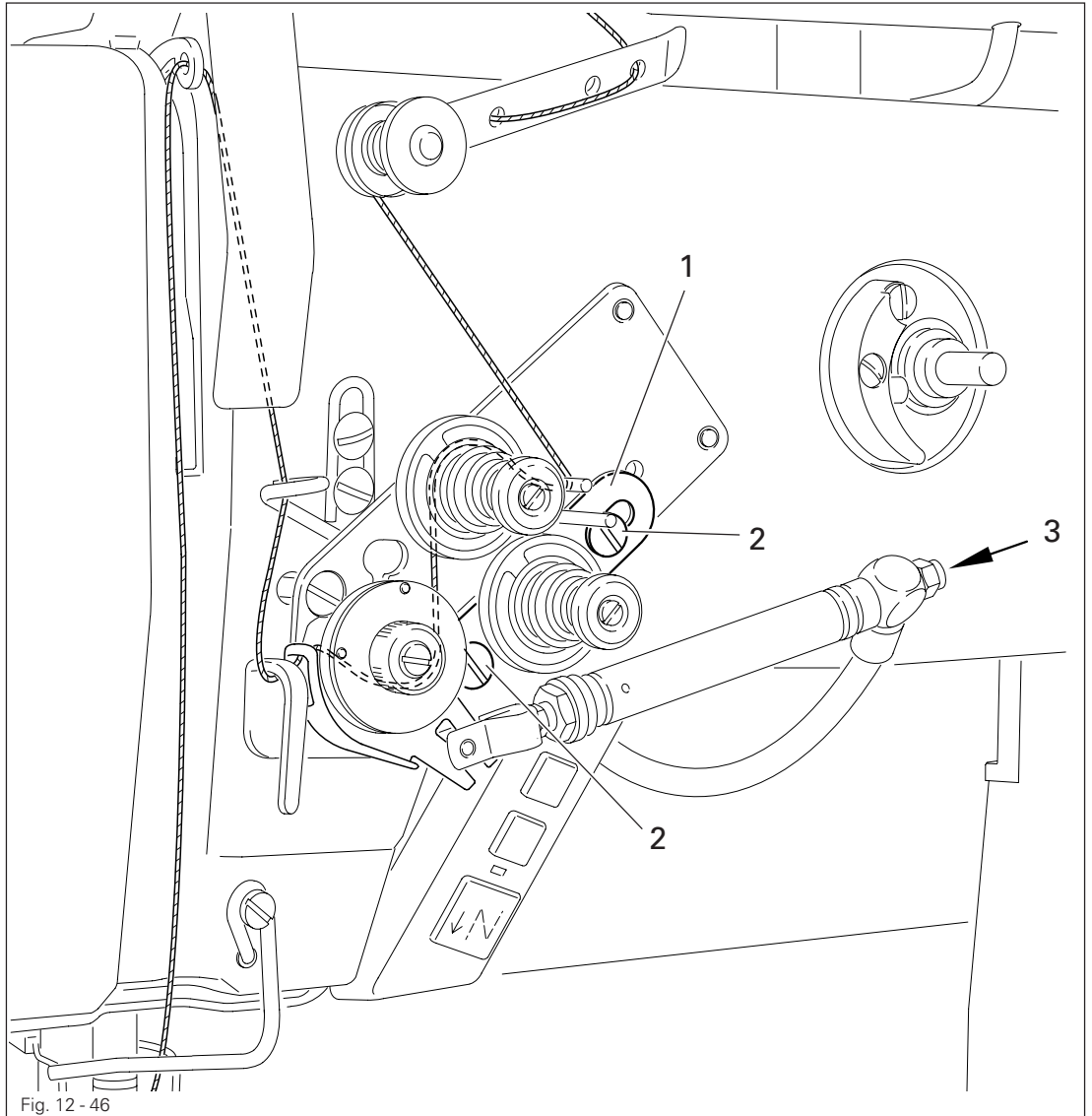
- Adjust crank 1 (screw 2) and crank 3 (screw 4) in accordance with the requirement.

12.05.45 Thread puller (only on the PFAFF 3704-2/02)

Requirement

The thread puller should

1. draw so much thread that a secure seam start is guaranteed at all times and
2. remain in its end front position until the thread trimming operation is finished.



- Adjust cylinder bracket 1 (screws 2) in accordance with requirement 1.
- Adjust throttle 3 in accordance with requirement 2.

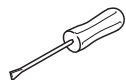
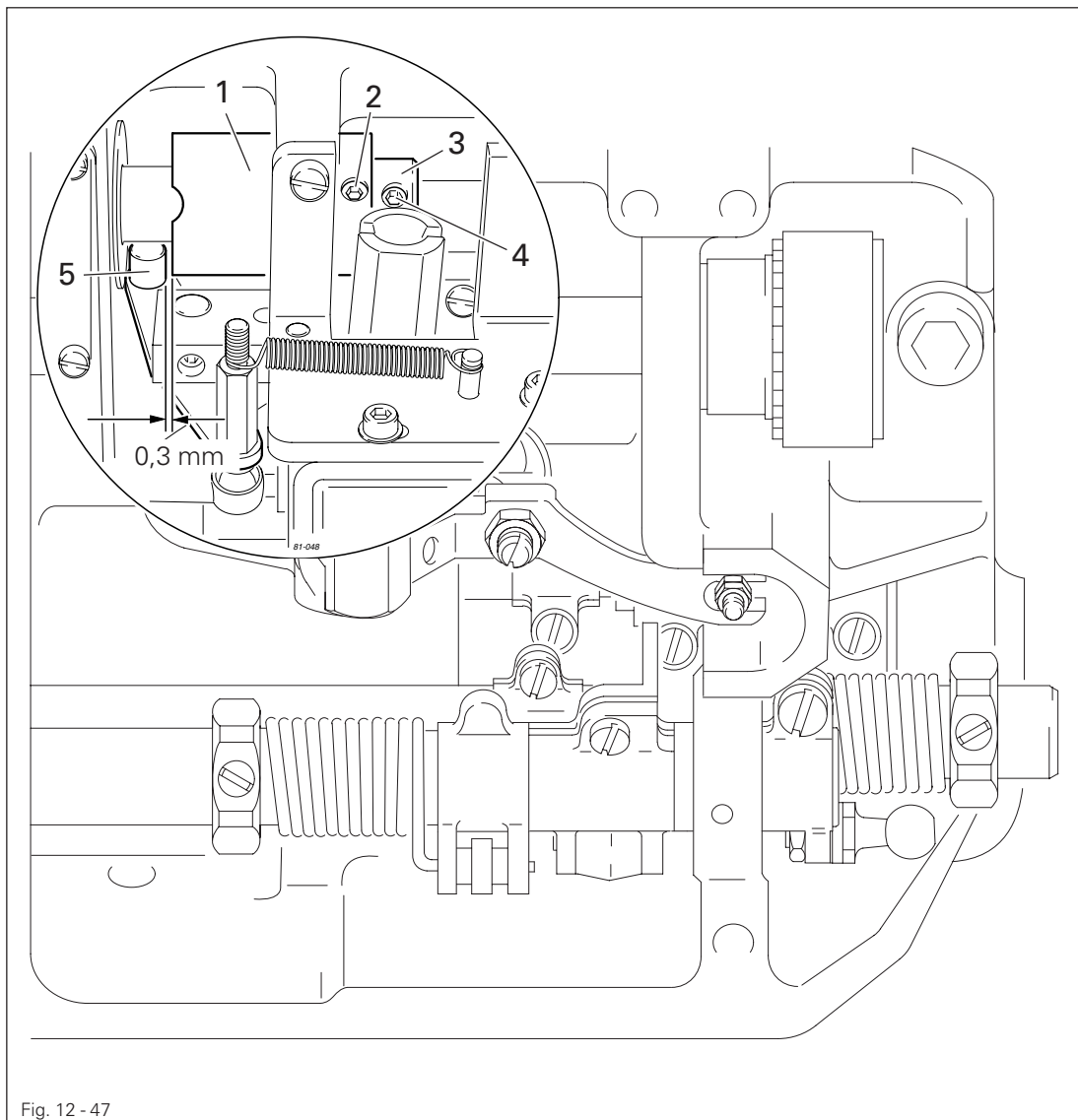
Adjustment

12.06 Adjusting the thread trimmer -900/24

12.06.01 Axial position of the control cam

Requirement

1. Roller 5 should be at a distance of **0.3 mm** from the control cam 1.
2. Adjustment ring 3 should be touching the control cam 1.

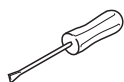
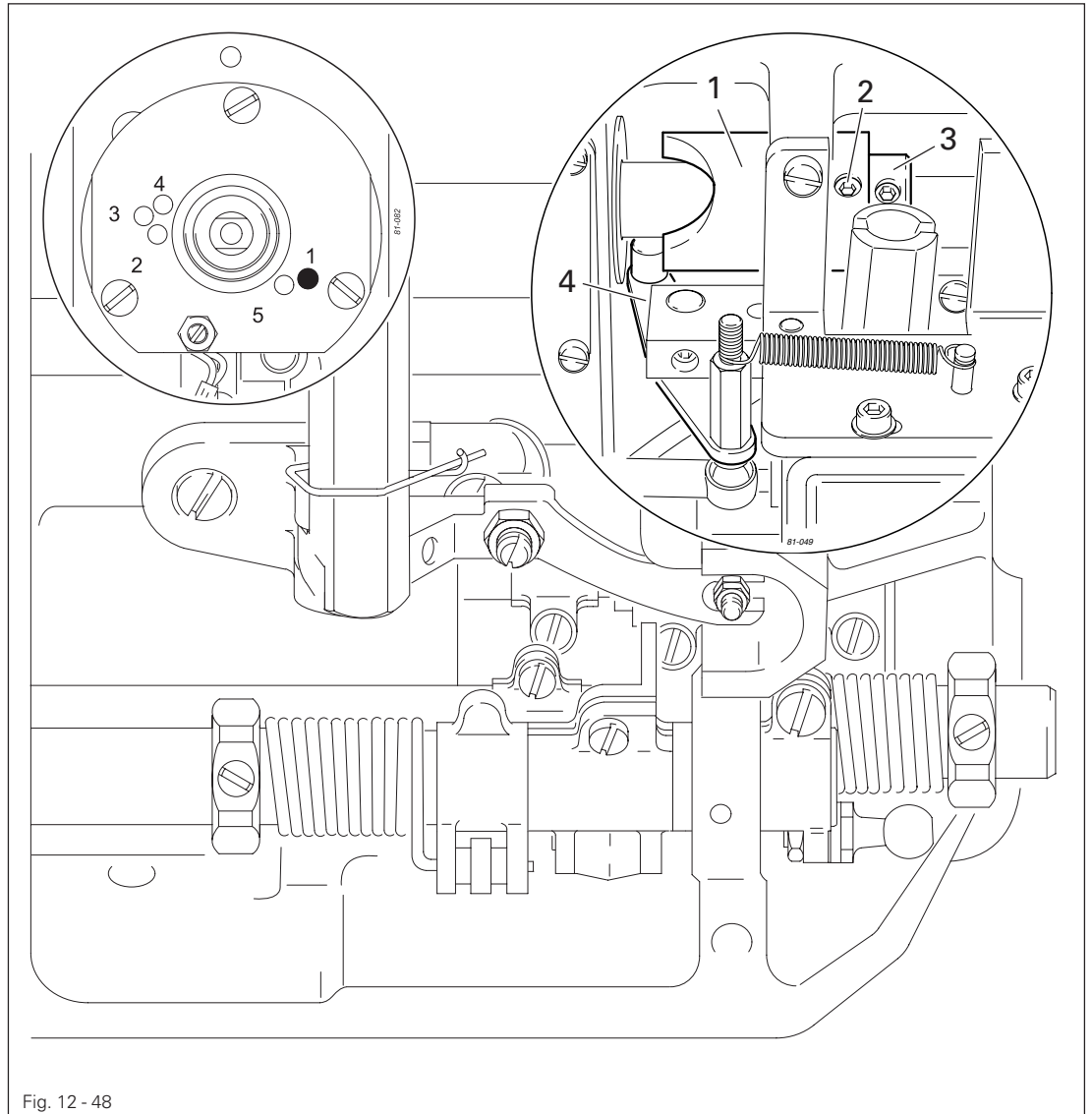


- Shift control cam 1 (screw 2) and adjustment ring 3 (screw 4) in accordance with the requirements.

12.06.02 Preliminary adjustment of the control cam

Requirement

1. In the needle rise position (hole 1) the roller lever 4 should lock into the corresponding groove of the control cam.
2. The control cam 1 should be touching adjustment ring 3.

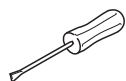
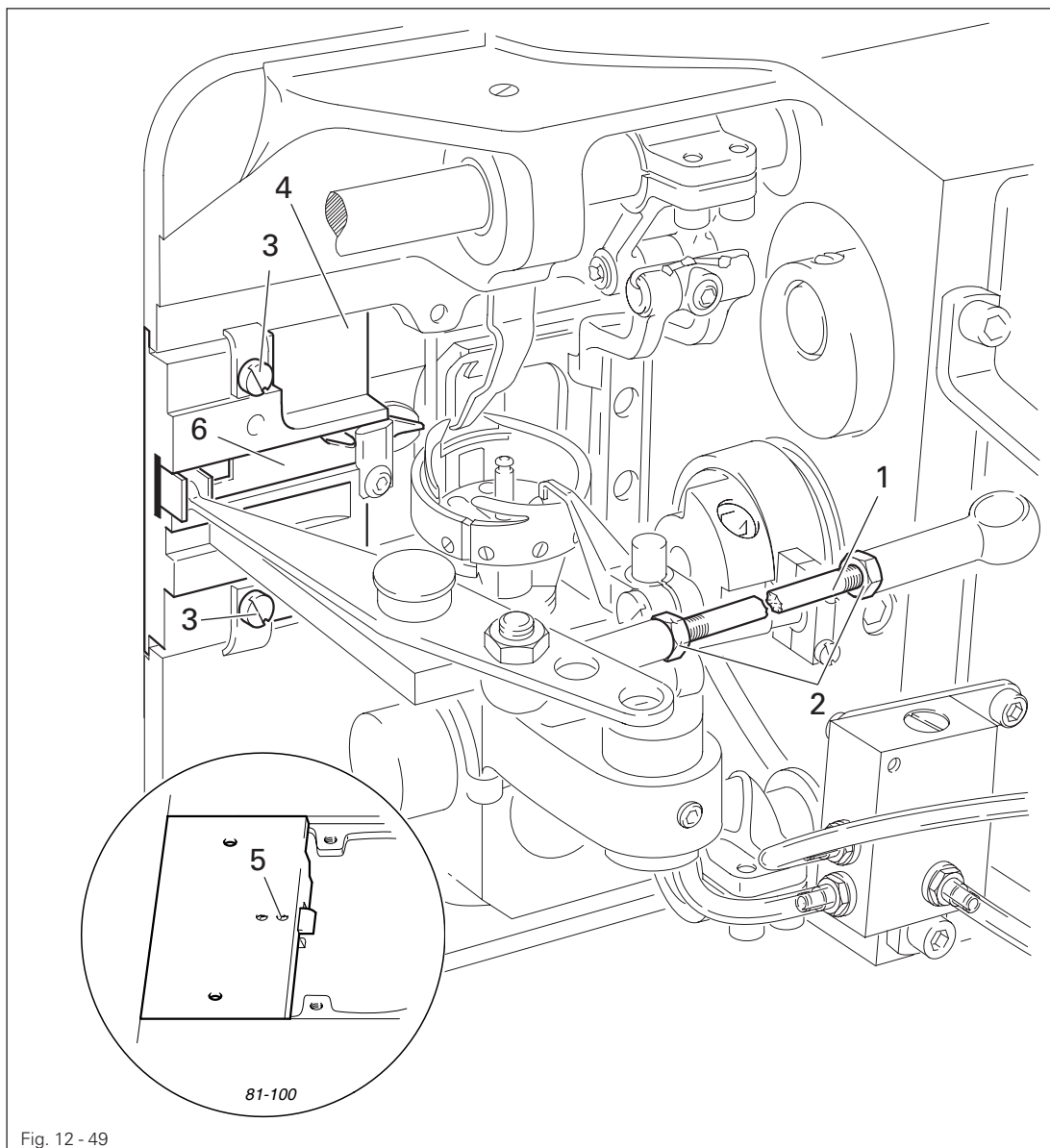


- Turn control cam 1 (screws 2) in accordance with **requirement 1** and shift it in accordance with **requirement 2**.

12.06.03 Position of the thread catcher and cutting test

Requirement

When the thread trimmer is in its neutral position, the edge of thread catcher **6** should be flush with the edge of the mounting plate **4**.



- Turn linkage rod **1** (nuts **2**, left and right thread) in accordance with the **requirement**.
- During the cutting test, remove linkage rod **1**, loosen screws **3** and remove mounting plate **4**.
- Carry out the cutting test with double thread.
- By turning screw **5** adjust the cutting pressure.
- Fit mounting plate **4** so that its edge is flush with the edge of the bed-plate.
- Tighten screws **3** and replace linkage rod **1**.

12.06.04 Readjustment of the control cam

Requirement

1. When the end of the hook guard **3** is level with of the right edge of the bobbin case position finger **4**, the thread catcher **5** should begin moving forwards.
2. The control cam **1** should be touching adjustment ring **6**.

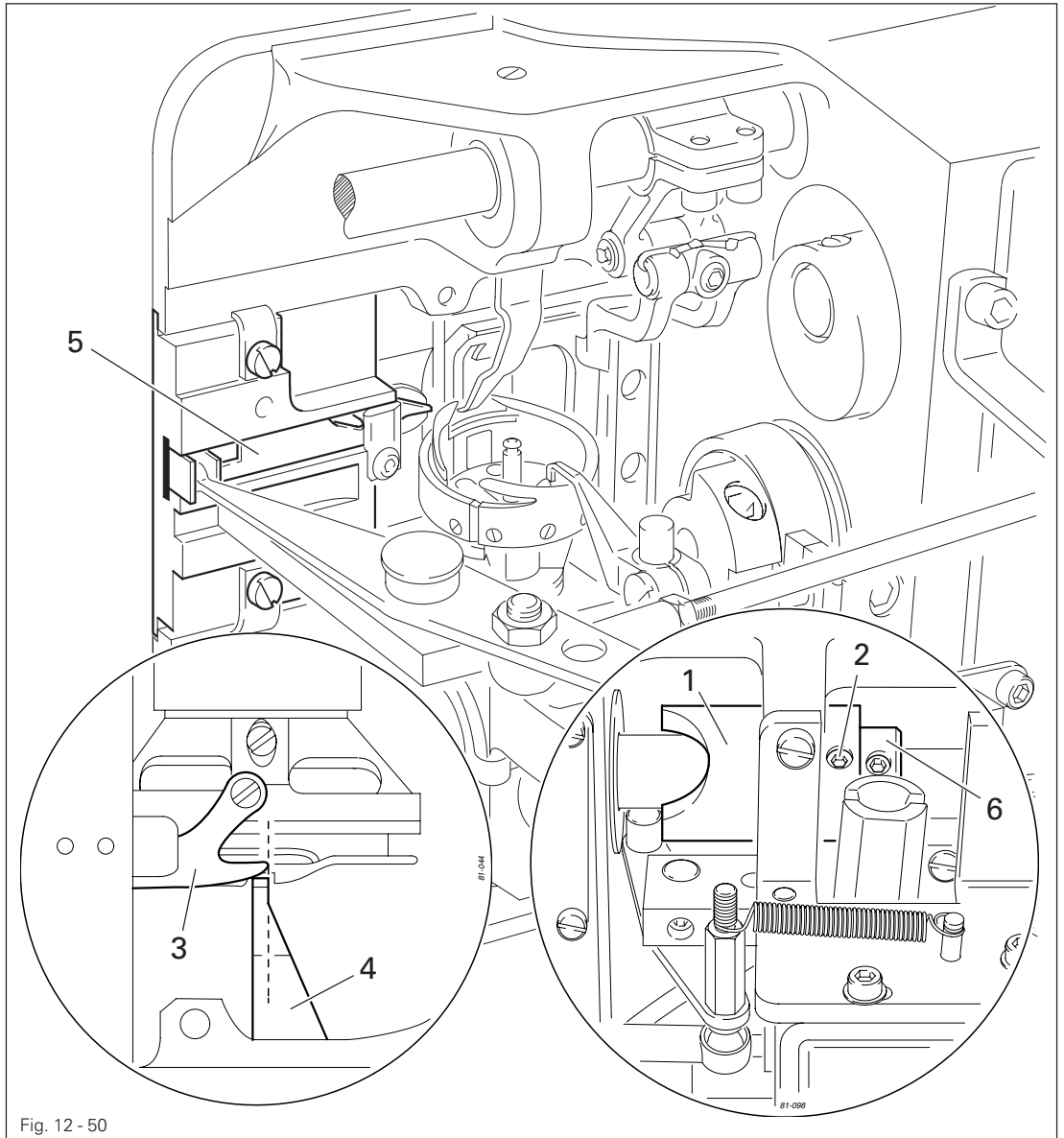
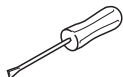


Fig. 12 - 50



- Bring the needle bar to b.d.c.
- Turn control cam **1** (screws **2**) in accordance with **requirement 1** and shift it in accordance with **requirement 2**.

12.06.05 Needle thread tension release

Requirement

1. When solenoids **3** are activated, the tensions disks **4** should be at least **0.5 mm** apart.
2. When the thread trimmer is in its neutral position and the sewing foot is positioned on the needle plate, the tension should be fully effective.

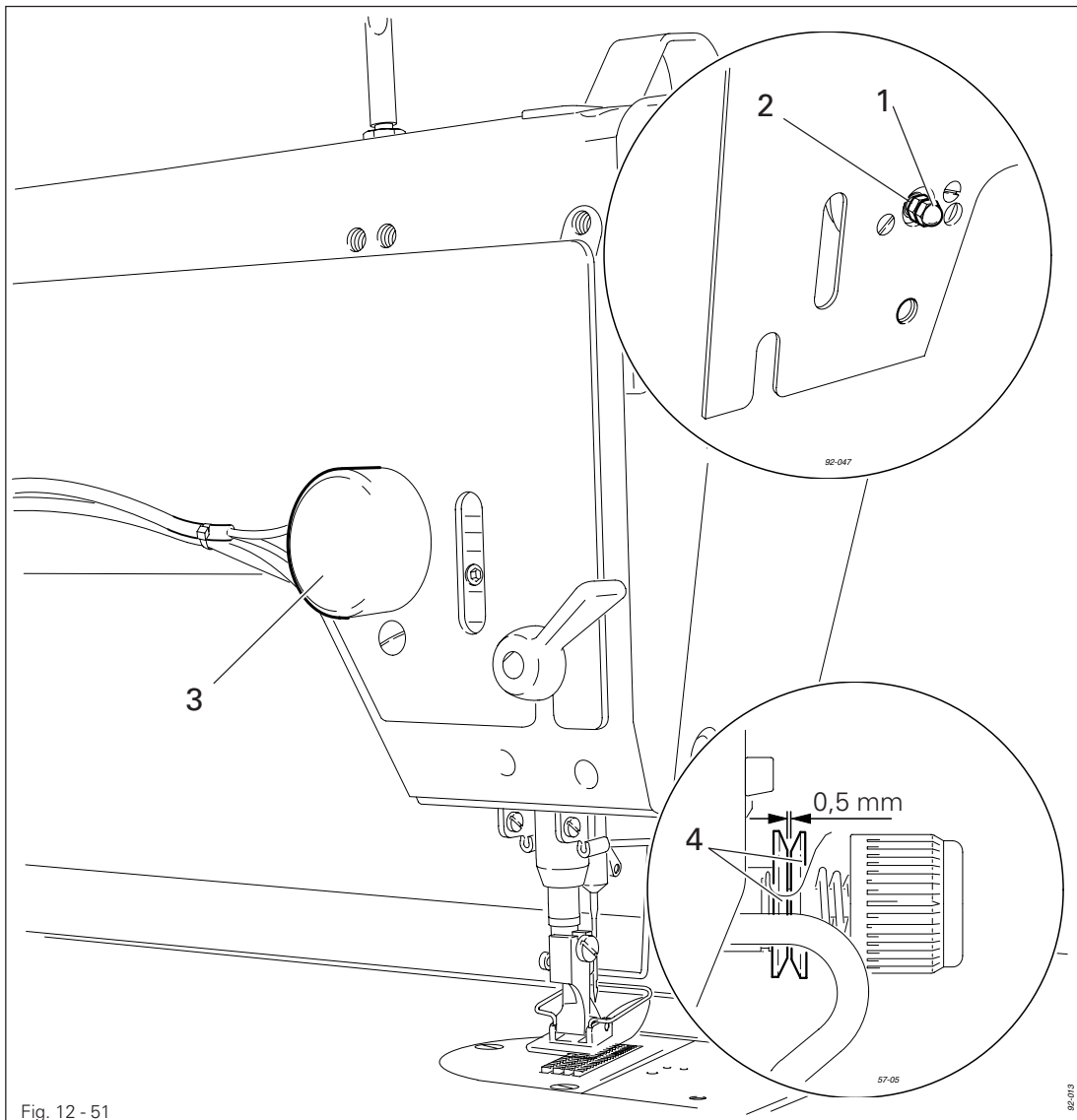
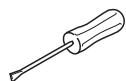


Fig. 12 - 51



- Unscrew the thread wiper.
- Turn nut **1** (nut **2**) in accordance with the **requirements**.
- Screw thread wiper back into place.

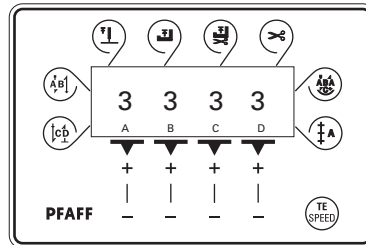


On the PFAFF 3704-2/02 both tension units are released.

12.07 Parameter settings

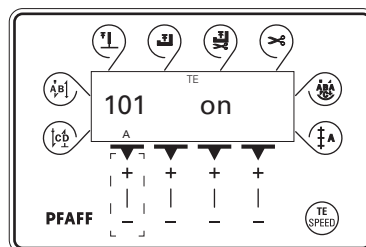
12.07.01 Selecting the user level

- Switch on the machine.

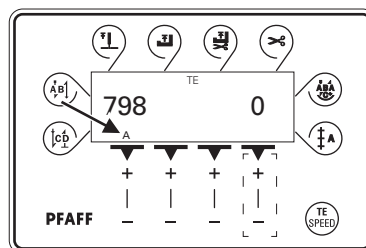


2 x 

- Press the TE/Speed key twice to call up the input mode.



- By pressing the corresponding +/- key select the parameter group "798".



- By pressing the corresponding +/- key select the desired user level:

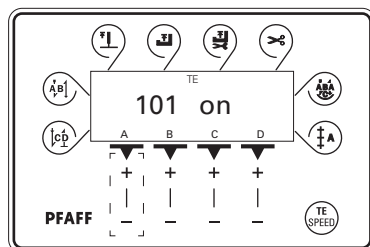
- "0" = operator level A
- "1" = technician level B
- "11" = service level C

The selected user level is displayed on the screen. (see arrow)

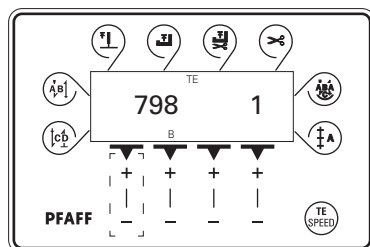
Adjustment

12.07.02 Example of a parameter input

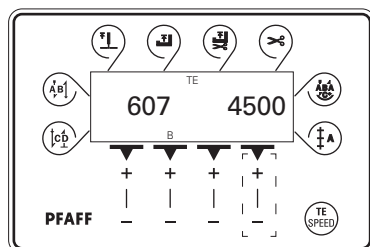
- Switch on the machine.
- Press the **TE/Speed** key twice to select the input mode.



- By pressing the corresponding **plus/minus key** select parameter "798" and the user level "B", see Chapter 12.07.01 Selecting the user level.



- Select parameter "607" by pressing the corresponding **+/- key**.



- Select the required value for the maximum speed by pressing the corresponding **+/- key**.
- By pressing the **TE/Speed** key the selected value is taken over and the machine switches to the sewing mode.



12.07.03 Liste der Parameter

Group	Parameter	Description	User level	Setting range	Setting value for PFAFF 939 U / PFAFF 3704-2/03	Setting value for PFAFF 3704-2/02
1	101	Control panel key tone (OFF / ON)	A, B, C	ON - OFF	ON	ON
	105	Backtack speed at beginning of seam	B, C	300 - 2000	1200	600
	110	Backtack speed at end of seam	B, C	300 - 2000	1200	600
6	605	Speed display (OFF / ON)	B, C	ON - OFF	OFF	OFF
	606	Min. speed (level 1)	B, C	300 - 6000	180	100
	607	Max. speed (level 12)	B, C	300 - 6000	4500	2000
	609	Cutting speed	B, C	60 - 500	180	100
	660	Bobbin thread control 0 = off 1 = thread monitor 2 = reverse counter	A, B, C	0 - 2	0	0
7	700	Needle position 0 Needle at penetration point, left (needle reference position)	B, C	0 - 255	0	0
	702	Needle position 1 (needle lowered)	B, C	0 - 255	70	26
	703	Needle position 2 (take-up lever raised)	B, C	0 - 255	222	113
	705	Needle position 5 (end of cutting signal 1)	B, C	0 - 255	196	
	706	Needle position 6 (start of cutting signal 2)	B, C	0 - 255	136	60
	707	Needle position 9 (start thread tension release)	B, C	0 - 255	150	60
	746	Switchover position from multi-stitch to zig-zag stitch	B, C	0 - 255	90	90
	748	Key allocation for switchover position	B, C	1 - 7	7	5
	797	Hardware test (OFF / ON)	B, C	ON - OFF	OFF	OFF
	798	User level 0 = User level "A" 1 = Mechanic level "B" 11 = Service level "C"	A, B, C	0, 1, 11	0	0

Group	Parameter	Description	User level	Setting range	Setting value for PFAFF 939 U / PFAFF 3704-2/03	Setting value for PFAFF 3704-2/02
7	799	Machine class 1 = 939U / 3704-2/..	C	1 - 4	1	1
8	800	Rotating direction of the motor 1 = 939U / 3704-2/..	C	0 - 1	1	1



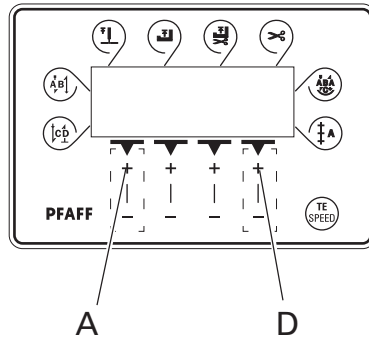
Further parameters are listed in the **Motor Instruction Manual**.

12.08 Explanation of the error signals

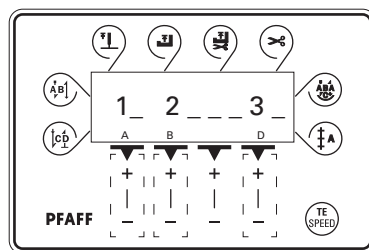
Signal	Description
E001	Pedal not in neutral position
E009	Start inhibitor during standstill
E010	Incorrect machine class
E062	Short circuit 24V
E063	Overload mains supply circuit
E064	Network monitoring
E065	Extint low in operation
E066	Short circuit
E067	Network off
E068	Extint low in operation
E069	No increments
E070	Motor blocking
E071	No incremental connector
E074	External transmitter for synchronisation marker missing
E088	RAM defective
E092	Start inhibitor when motor running
E173	Start error

12.09 Reset / Cold start

After selecting the reset menu, by pressing the corresponding key it is possible to delete seam parameters, delete seam programs and to carry out a cold start.



- Press and hold "+" on keys **A** and **D** and switch on the machine, see Chapter 7.01 Main switch.



A Resetting the seam parameters

- Press "+" on key **A**.
All parameters are deleted, the display "—rE—" appears for a short time on the screen.



B Resetting the seam programs

- Press "+" on key **B**.
All seam programs are deleted, the display "—rE—nA" appears for a short time on the screen.



D Cold start

- Press "+" on key **D**.
With the exception of the value for the machine class, the values of the machine control unit are set back to their basic values, the display "—COLd—" appears for a short time on the screen.



After the cold start all programmed values are set back to their status at the time of delivery. For this reason after a cold start it is necessary to re-enter first the parameter "800" and then the parameters "700" to "799".

12.10 Internet update of the machine software

The machine software can be updated with PFAFF flash programming. For this purpose the PFP boot program and the appropriate control software for the machine type must be installed on a PC. To transfer the data to the machine, the PC and the machine control unit must be connected with an appropriate null modem cable (part no. 91-291 998-91).



The PFP boot program and the control software of the machine type can be downloaded from the PFAFF-homepage using the following path:
www.pfaff-industrial.com/de/service/download/steuerungssoftware.html

To update the machine software carry out the following steps:



While the machine software is being updated, no setting up, maintenance or adjustment work may be carried out on the machine!

- Switch off the machine.
- Connect the PC (serial interface or appropriate USB-adapter) and the machine control unit (RS232).
- Switch on the PC and start the PFP boot program.
- Select the machine type.
- Press the "programming" button.
- An extra program (quick loader) is started.
- Switch on the machine within 60 seconds.
- The software update is carried out, the update progress is shown on the bar display.
- NWhen the update has been completed, the message "**software update successfully completed**" appears.



If this message does not appear, the entire procedure must be repeated!
The machine is not safe for operation until the programming has been completed successfully and without faults.

- Switch off the machine and end the quick loader and PFP boot program.
- End the connection between the PC and the machine control unit.
- Switch on the machine.

A plausibility control is carried out and, if necessary, a cold start.



More information and assistance is at your disposal in the file "PFPHILFE.TXT", which can be called up from the PFP boot program by pressing the "help" button.

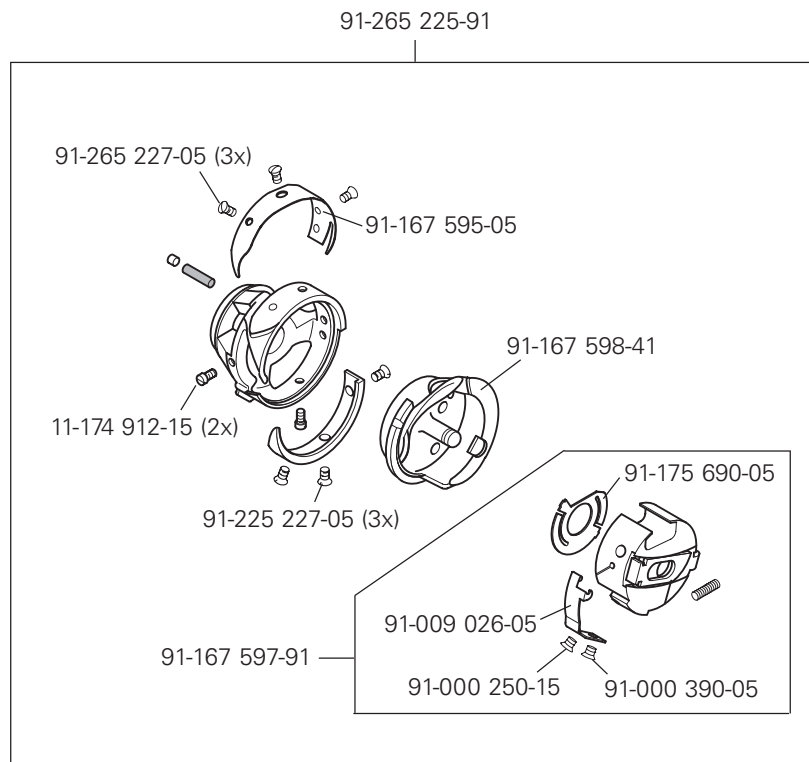
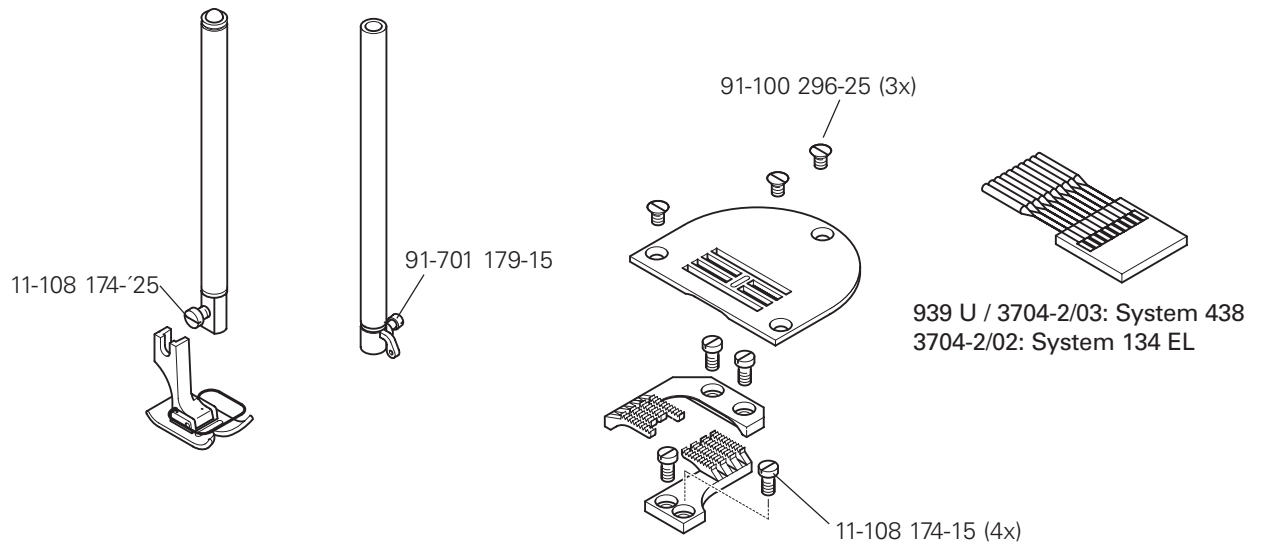
13

Wearing parts

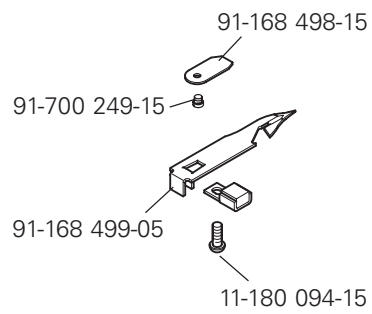
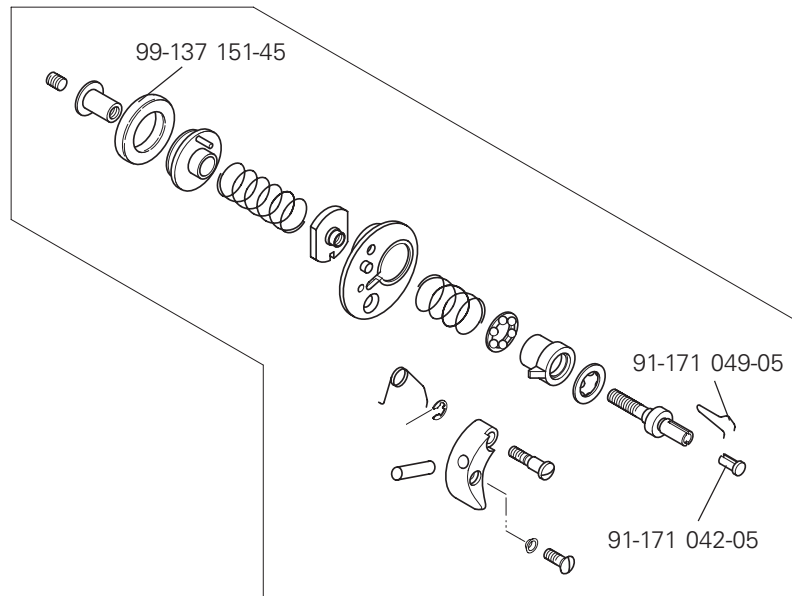


This is a list of the most important wearing parts.

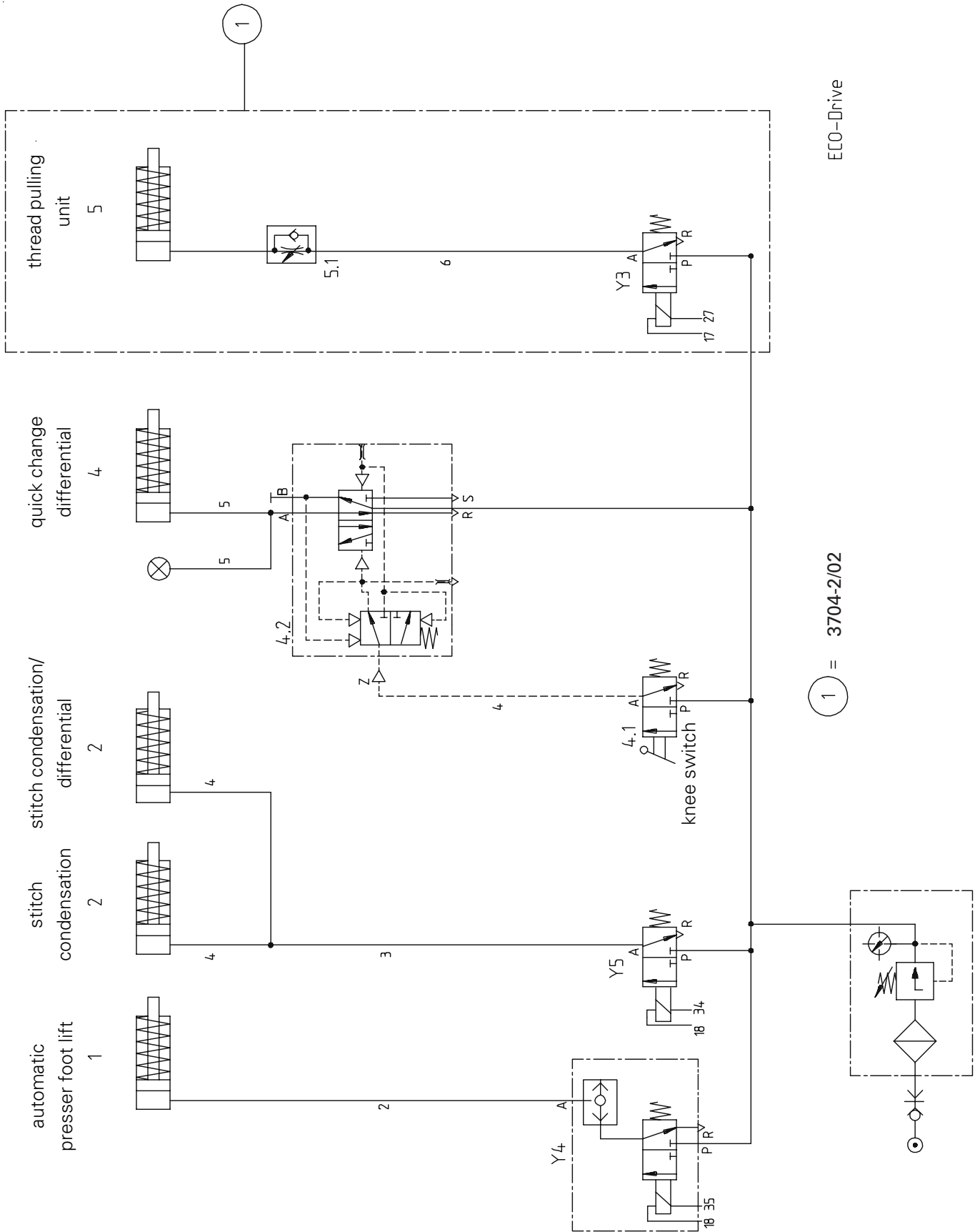
You can order a detailed spare parts list for the complete machine under part no. 296-12-18 603.



Wearing parts



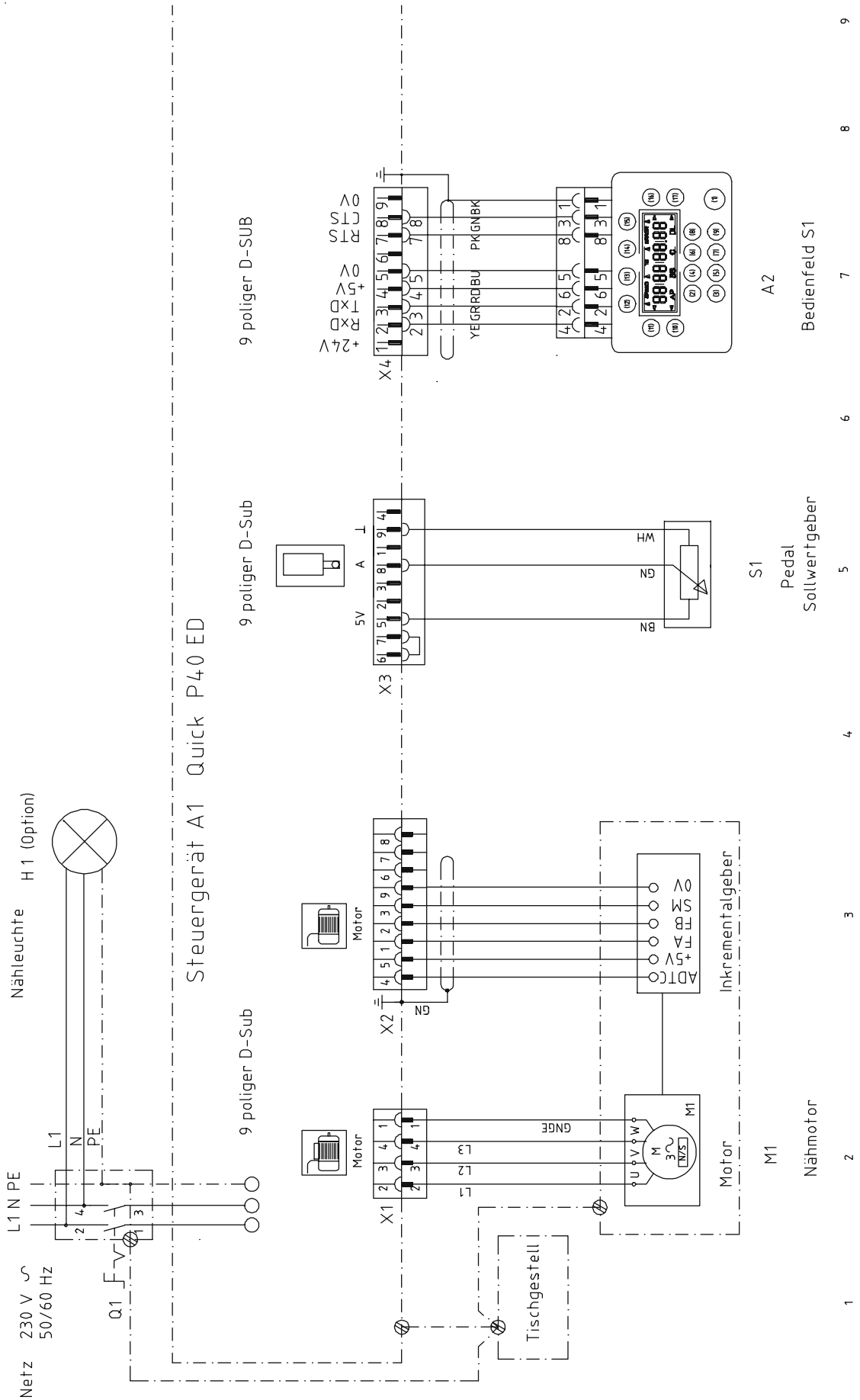
PFAFF 3704



Reference list for circuit diagrams

A1	Controller Quick P40 ED
A2	Control panel S1
A14	Sewing head identification (OTE)
B1	Initiator zig-zag stitch control
H1	Sewing lamp
H10	LED Stitch counter
M1	Sewing motor
Q1	Main switch
S1	Pedal set value transmitter
S6	Start inhibitor key
S41	Manual backtacking
S42	Needle position change key
S43	Single stitch key
S46	Bridge start inhibitor (only on the PFAFF 3704)
X0	RS232 interface (PC)
X1	Motor
X2	Incremental transmitter
X3	Set value transmitter
X4	Control panel S1
X5	Inputs/outputs
X6	Bobbin thread monitor (optional)
X7	Light barrier (optional)
X22	900/.. thread trimmer
X24	910/..automatic presser foot lift
X25	911/.. backtacking device
X28	Thread tension release
X40	Keyboard
X46	Start inhibitor
X50	Sewing head identification (OTE)
Y2	-900/.. Fadenschneider
Y3	-909/.. Thread wiper
Y4	-910/..automatic presser foot lift
Y5	-911/..backtacking device
Y8	Thread tension release

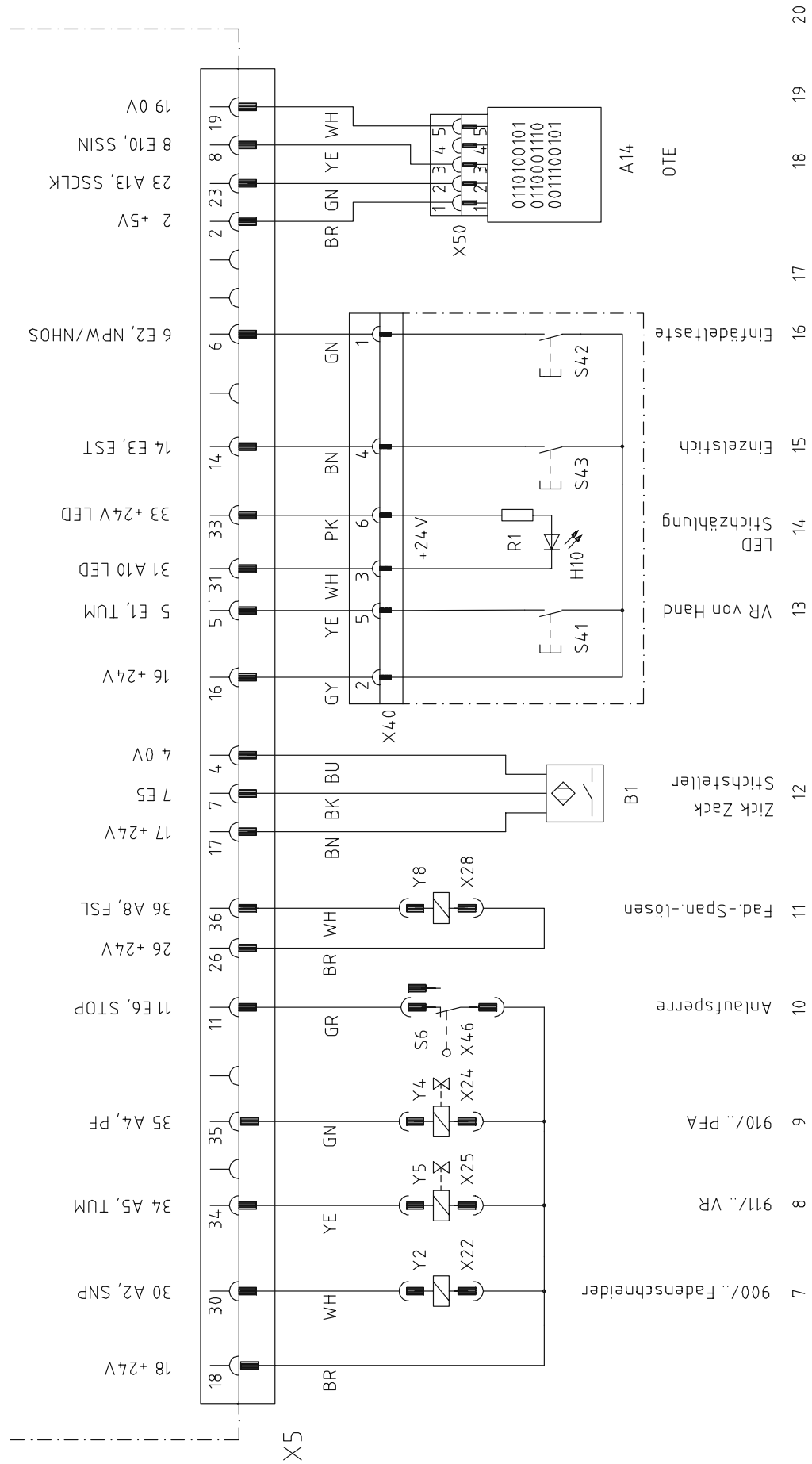
PFAFF 939 U



PFAFF 939 U

Steuergerät A1
Quick P40 ED

Ausgänge und Eingänge
37 poliger D-Sub



PFAFF 939 U

Steuergerät A1 Quick P40 ED

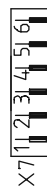
6 poliger Western

+5V
0V
UFW IN
LS
+24V
UFW OUT



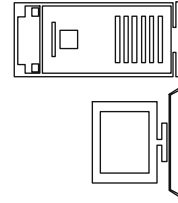
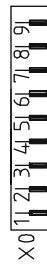
6 poliger Western

+5V
0V
UFW IN
LS
+24V
UFW OUT



9 poliger D-SUB

0V
TXD



(Option)
Unterfadenwächter

20

21

(Option)
Lichtschranke

22

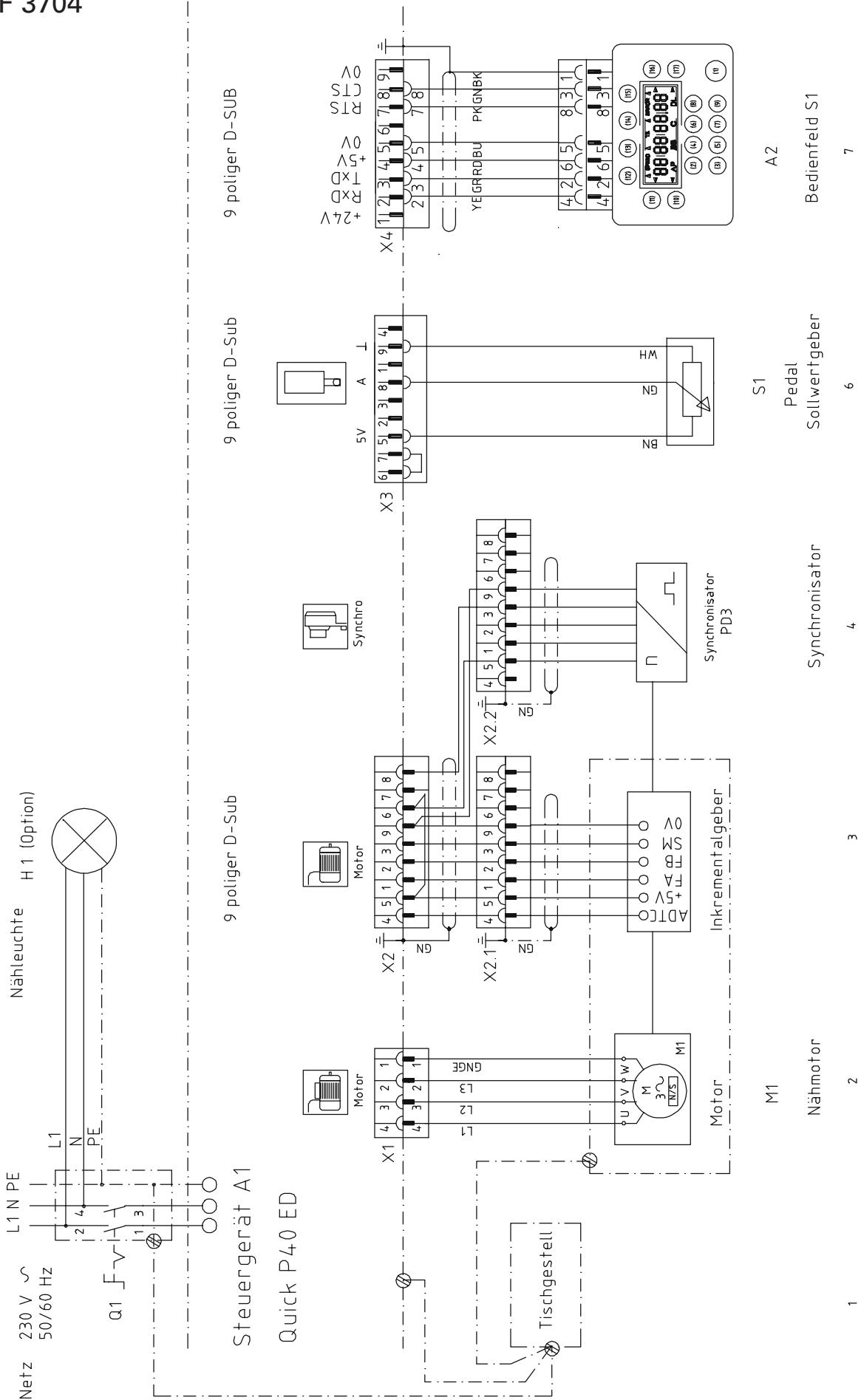
23

RS232-Schnittstelle

24

25

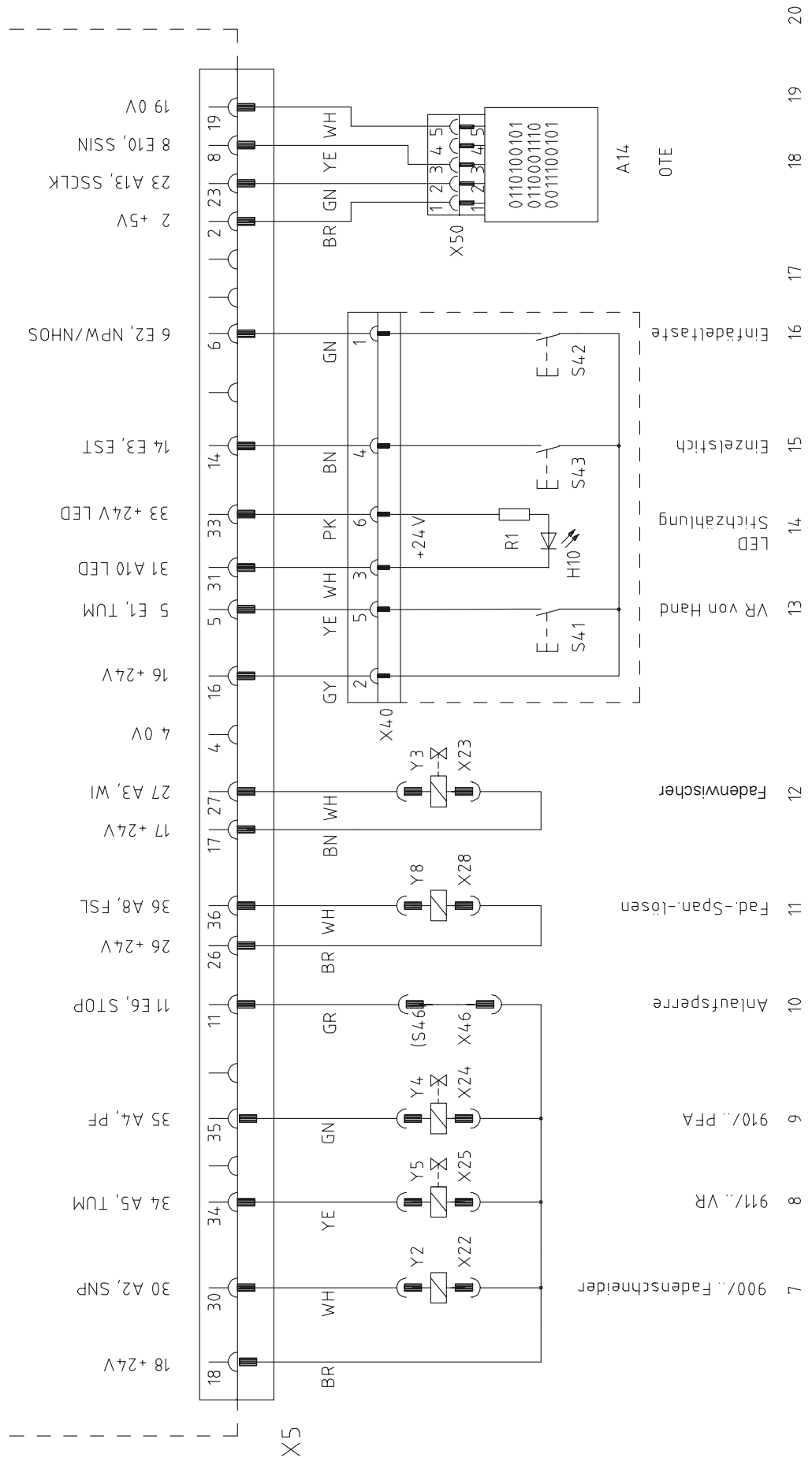
PFAFF 3704



PFAFF 3704

Steuergerät A1
Quick P40 ED

Ausgänge und Eingänge
37 poliger D-Sub

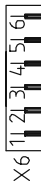


PFAFF 3704

Steuergerät A1 Quick P40 ED

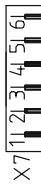
6 poliger Western

+5V
0V
UFW IN
LS
+24V
UFW OUT



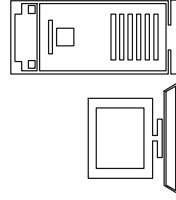
6 poliger Western

+5V
0V
UFW IN
LS
+24V
UFW OUT



9 poliger D-SUB

RxD
0V



(Option)
Unterfadenwächter

20

21

(Option)
Lichtschranke

22

23

RS232-Schnittstelle

24

25

PFAFF

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