

# PFAFF

## 3574 -2/02

Instruction Manual

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## 1 Safety

### 1.01 Directives

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

In addition to this Instruction Manual, also observe all generally accepted, statutory and other regulations and legal requirements - also those of the country in which the machine will be operated - and all valid environmental protection regulations!

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

### 1.02 General notes on safety

- This machine may only be operated by adequately trained operators and only after having completely read and understood the Instruction Manual!
- All Notes on Safety and Instruction Manuals of the motor manufacturer are to be read before operating the machine!
- The danger and safety instructions on the machine itself are to be followed!
- This machine may only be used for the purpose for which it is intended and may not be operated without its safety devices. All safety regulations relevant to its operation are to be adhered to.
- When exchanging sewing tools (e.g. needle, presser foot and bobbin), when threading the machine, when leaving the machine unattended and during maintenance work, the machine is to be separated from the power supply by switching off the On/Off switch or by removing the plug from the mains!
- Everyday maintenance work is only to be carried out by appropriately trained personnel!
- Repairs and special maintenance work may only be carried out by qualified service staff or appropriately trained personnel!
- Work on electrical equipment may only be carried out by appropriately trained personnel!
- Work is not permitted on parts and equipment which are connected to the power supply! Exceptions to this are only to be found in the regulations EN 50110.
- Modifications and alterations to the machine may only be carried out under observance of all the relevant safety regulations!

- Only spare parts which have been approved by us are to be used for repairs!  
We expressly point out that any replacement parts or accessories which are not supplied by us have not been tested and approved by us.  
The installation and/or use of any such products can lead to negative changes in the structural characteristics of the machine.  
We shall not be liable for any damage which may be caused by non-original parts.

## 1.03 Safety symbols



Danger!  
Points to be observed.



Danger of injury for operating and specialist personnel!

## 1.04 Important points for the user

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

Further information can be obtained from your PFAFF dealer.

## 1.05 Operating and specialist personnel

### 1.05.01 Operating personnel

Operating personnel are persons responsible for the equipping, operating and cleaning of the machine as well as taking care of faults arising in the sewing area.

The operating personnel is obliged to observe the following points and must:

- always observe the Notes on Safety in the Instruction Manual!
- never use any working methods which could limit the level of safety in using the machine!
- not wear loose-fitting clothing or jewelery such as chains or rings!
- also ensure that only authorized persons have access to the potentially dangerous area around the machine!
- also ensure that only authorized persons have access to the potentially dangerous area around the machine!

### 1.05.02 Specialist personnel

Specialist personnel are persons with a specialist education in the fields of electrics, electronics and mechanics. They are responsible for the lubrication, maintenance, repair and adjustment of the machine.

The specialist personnel is obligated to observe the following points and must:

- always observe the Notes on Safety in the Instruction Manual!
- switch off the On/Off switch before carrying out adjustments or repairs, and ensure that it cannot be switched on again unintentionally!
- never work on parts which are still connected to the power supply! Exceptions are explained in the regulations EN 50110.
- replace the protective coverings and close the electrical control box after all repairs or maintenance 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!

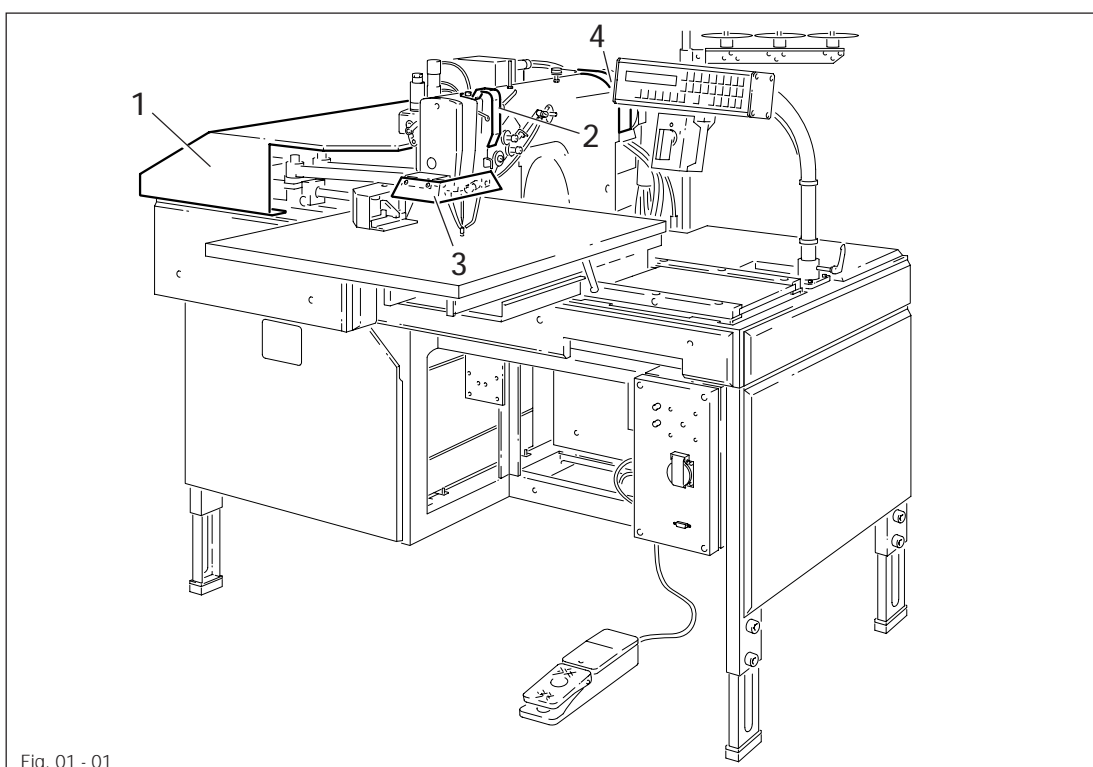


Fig. 01 - 01



Only operate the machine when the cover 1 is closed!  
Danger of injury due to the action of the jig control!



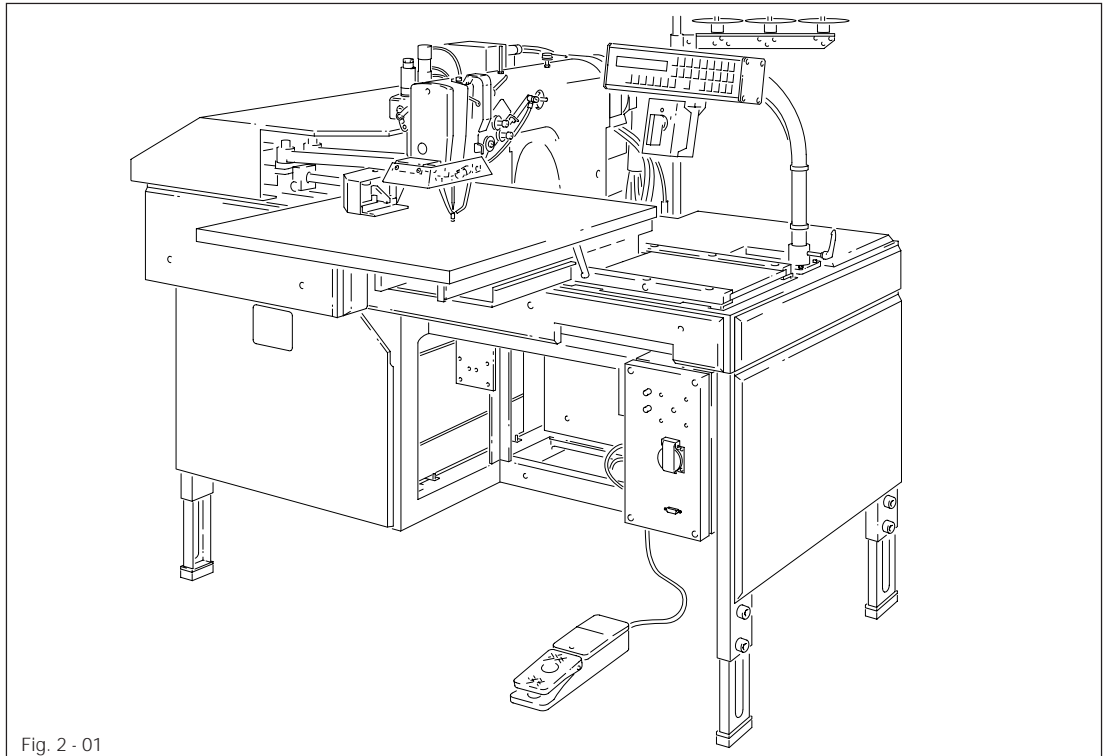
Do not operate the machine without the take-up-lever guard 2!  
Danger of injury due to the motion of the take-up lever!



Do not operate the machine without the eye guard 3!  
The eye guard 3 protects the operator from flying particles of material.



Do not operate the machine without the belt guard 4!  
Danger of injury due to the rotating V-belt!



The PFAFF 3574-2/02 is used for the industrial manufacture of freely programmable lockstitch seams within a seam type area of 180 x 220 mm, e.g. for decorative patterns, emblems, ornaments, decorative and assembly seams, bartack seams as well as assembly and closing seams on three-dimensional workpieces.



Any and all uses of this machine which have not been approved of by the manufacturer are considered to be inappropriate! The manufacturer cannot be held liable for any damage caused by the inappropriate use of the machine! The appropriate use of the machine means that all operational, adjustment, maintenance and repair measures required by the manufacturer are to be observed!

3 Specifications ▲

Sewing head: .....	483 with -900/51
Sewing speed: .....	max. 2600 spm <sup>-1</sup>
Stitch length: .....	max. 6 mm
Stitch type: .....	301 (lockstitch)
Needle system: .....	134-35
Needle size: .....	80 - 120 Nm
Clearance under presser foot: .....	10 mm
Sewable material thickness: .....	max. 5 mm
Sewing area size: .....	180 x 220 mm
Seam depth: .....	min. 0.8 mm
Dimensions of the machine:	
Length: .....	~1300 mm
Width: .....	~800 mm
Height (without reel stand): .....	~1280 mm
Sewing motor: .....	brushless DC servomotor
Motor speed: .....	max. 4500 rpm <sup>-1</sup>
Connection voltage: .....	220 V 50/60 Hz
Power requirement: .....	850 VA
Fuse protection: .....	1 x 16 A, delayed action
Working air pressure: .....	min. 6 bar
Air consumption: .....	approx. 15 l / cycle ♦
Working noise level:	
Emission at workplace at n = 2000 spm <sup>-1</sup> : .....	L <sub>PA</sub> < 83 dB(A)
(noise measurement according to DIN 45 635-48-2-KL 2)	
Net weight: .....	approx. 297 kg
Gross weight: .....	approx. 322 kg

▲ Subject to alternation

♦ Varies according to program length

### 4 Disposal of the machine

- The proper disposal of the machine is the responsibility of the customer.
- The materials used are steel, aluminium, brass and various plastics.  
The electrical equipment consists of plastics and copper.
- The machine must be disposed of in accordance with applicable local environmental protection regulations. If necessary, a specialist is to be commissioned.



Special care is to be taken that parts soiled by lubricants are separately disposed of in accordance with the applicable local environmental protection regulations!

### 5 Transport, packaging and storage

#### 5.01 Transport to the customer's premises

Within Germany, the machine is delivered without packaging.  
Machines for export are packaged.

#### 5.02 Transport within the customer's premises

The manufacturer bears no liability for transport within the customer's premises or to the individual locations of use.  
Always ensure that the machine is only transported upright.

#### 5.03 Disposal of the packaging

The packaging of these machines consists of paper, cardboard and VCE fiber.  
The proper disposal of the packaging is the responsibility of the customer.

#### 5.04 Storage

The machine can be stored for up to 6 months if not in use. During this time it should be protected from dust and moisture.  
For longer storage the individual parts of the machine, especially the moving parts, should be protected against corrosion, e.g. by a film of oil.

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## *Explanation of the symbols*

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### 6 Explanation of the symbols

In this Instruction Manual, tasks to be carried out and important information are drawn to your attention by symbols. The symbols have the following meanings:



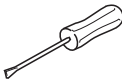
Note, information



Cleaning, care



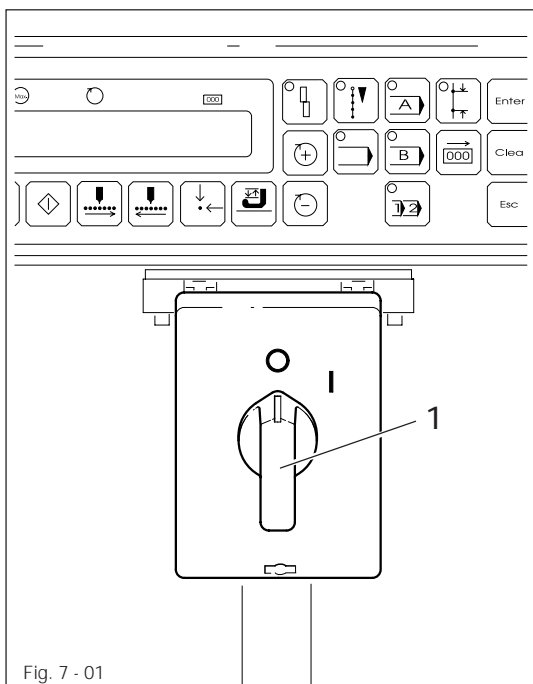
Lubrication



Servicing, repairing, adjustment, maintenance  
(only to be carried out by specialist personnel)

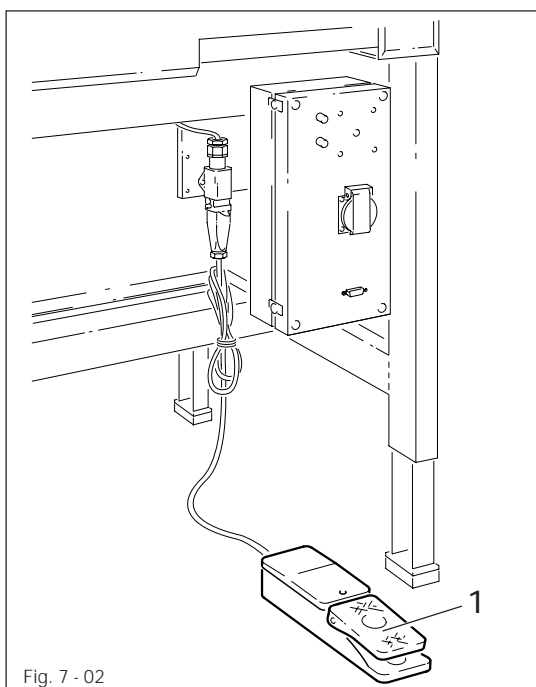
7 Controls

7.01 On/off switch



- By turning main switch 1, the machine is switched on or off.

7.02 Foot switch



- When the foot switch 1 is actuated, the following functions are called:

Level 1: retain sewing jig

Level 2: start sewing program

## 7.03 Control panel

The control panel consists of the display and two key panels.

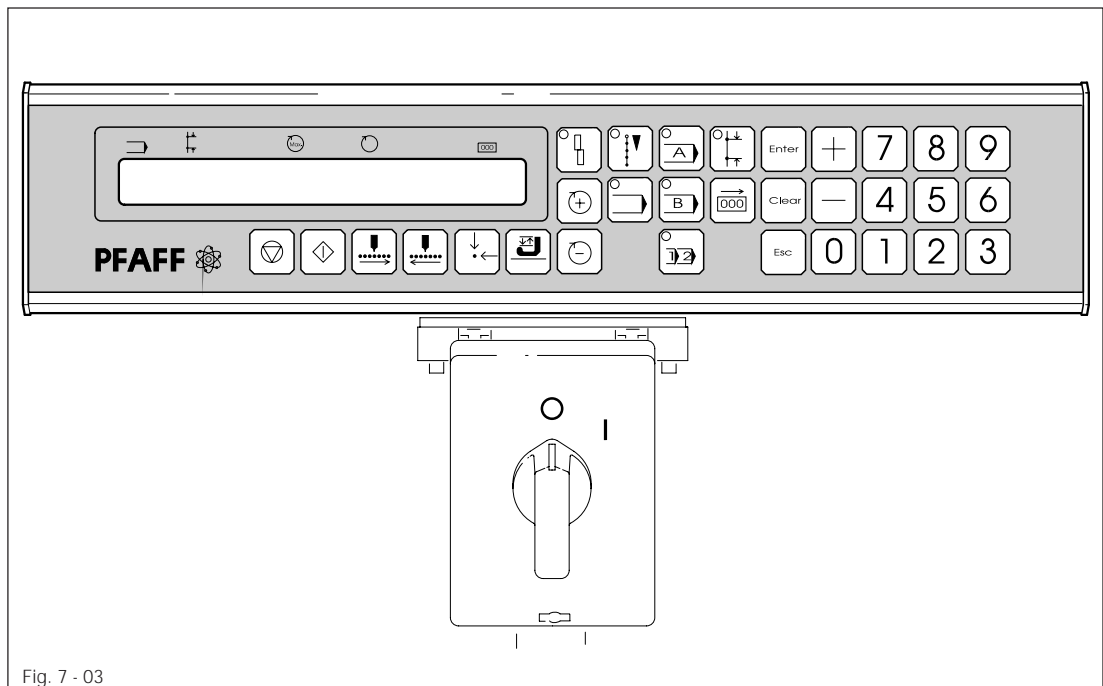




Fig. 7 - 03


### 7.03.01 Display


The display is divided into 2 lines:

- In the top line, the current values appear beneath the corresponding symbols.

 Program number (from 0 - 99)

 Stitch length (in mm)

 Nominal speed (in  $\text{min}^{-1}$ )

 Actual speed (in  $\text{min}^{-1}$ )

 Quantity

- In the bottom line of the display, various texts are shown (e.g. input requests, error messages, etc.). The text number of the text displayed follows the symbol "#". The text number serves to uniquely assign the text in the various foreign languages.



7.03.02 Control panel operation modes

You can select the operation modes by pressing the following keys. The selected mode can be seen by the light emitting diode in the respective key.



SEWING mode



INPUT mode



Within both of the operation modes, only certain keys are assigned functions (see chapter 7.03.03 Functions in the SEWING mode and chapter 7.03.04 Functions in the INPUT mode).

7.03.03 Functions in the SEWING mode

The following functions can be selected by pressing the corresponding red key.



**Program stop**  
Interrupt sewing program.



**Program start**  
Start sewing program or continue program following interruption.



**Seam type forwards**  
Carry out seam type forwards step by step.  
Combined with the **program start key**, the seam type sequence is carried out automatically.



**Seam type backwards**  
Carry out seam type backwards step by step.  
Combined with the **program start key**, the seam type sequence is carried out automatically.



**Home position**  
Brings the feed carriage of the sewing jig to start position.



**Presser foot up/down**  
The presser foot is raised/lowered and simultaneously, the feeding clamp of the sewing jig is opened or closed.



**Reset key**  
For acknowledging an error correction. (The key's diode is lit when there is an error message.)



**Increase allowed speed**  
The specified speed is increased.



**Decrease allowed speed**  
The specified speed is decreased.

## 7.03.04 Functions in the INPUT mode

The following functions can be selected by pressing the corresponding **green** key.



### Program station A

When the function is activated (diode lit), a previously stored program is called.



### Program station B

When the function is activated (diode lit), a previously stored program is called.



### Program selection

When the function is activated (diode lit), a previously stored program can be selected via the **number keys** or the **plus/minus keys**.



### Stitch length change

When the function is activated (diode lit), the value for the stitch length can be changed via the **number keys** or the **plus/minus keys**. The value entered must be confirmed with the **Enter key**.



### Reset unit counter

The unit counter is reset to "0".



### Enter key

For confirming input values and dialogs (entry into functions).



### Clear key

For resetting input values.



### Esc key

For interrupting functions without assuming input values which may have been changed (return to previous menu level).



### Plus key

This key is used for

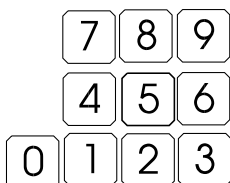
- increasing the input values in increments
- answering dialog questions with "yes" and
- for paging up in the menu mode.



### Minus key

This key is used for

- for decreasing the input values in increments
- answering dialog questions with "no" and
- for paging down in the menu mode.



### Number keys

This key is used for

- entering number values and
- direct selection of menu functions.

## 8 Mounting and commissioning the machine

After unpacking the machine, check it for any transport damage. In case of damage, inform the shipping company and the responsible PFAFF dealer.

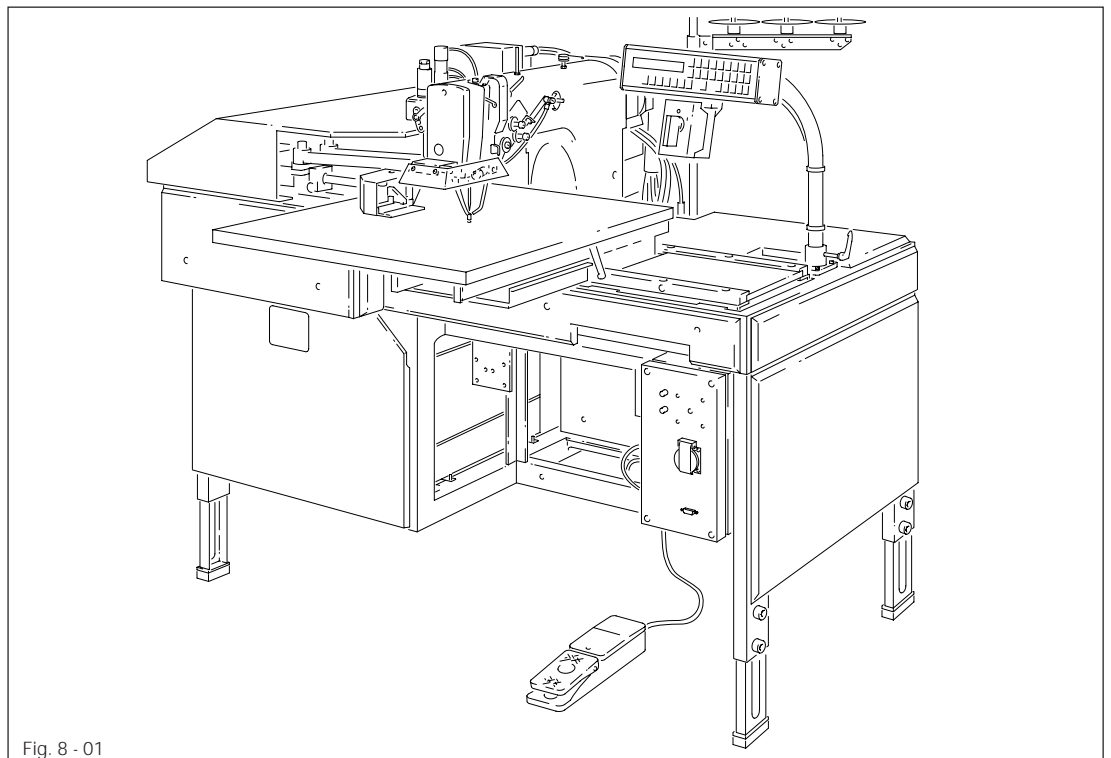


The machine must only be mounted and commissioned by qualified personnel!  
All relevant safety regulations are to be observed!

### 8.01 Mounting

The location where the machine is set up must have a flat, sturdy surface. Suitable connections for supplying electricity and compressed air must also be provided (refer to chapter 3 Specifications).

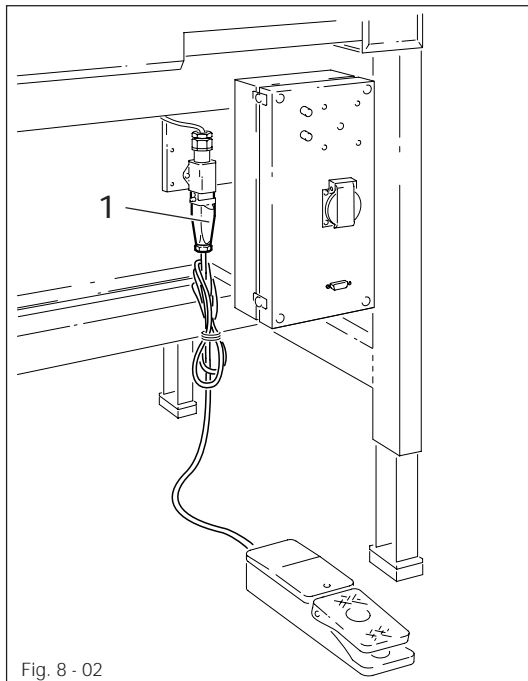
#### 8.01.01 Aligning the machine



- Lift the machine with a forklift from the shipping pallet.
- Screw the enclosed rubber springs onto the legs.
- Set down the machine on the ground and make sure it is standing horizontally by adjusting the legs.

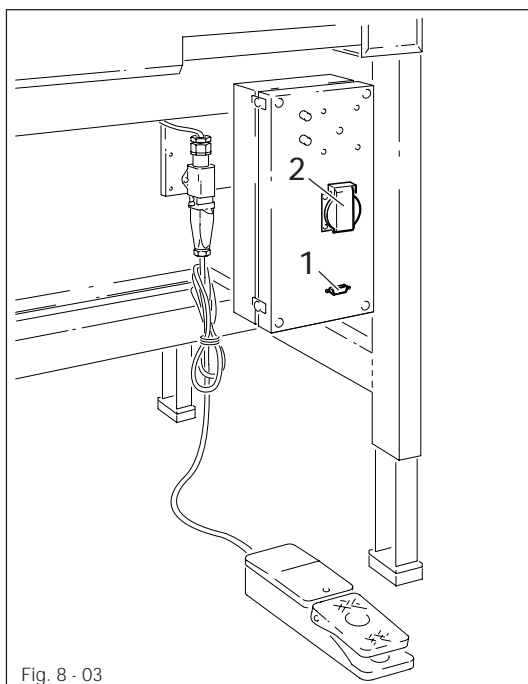
## Mounting and commissioning the machine

### 8.01.02 Connecting the foot switch



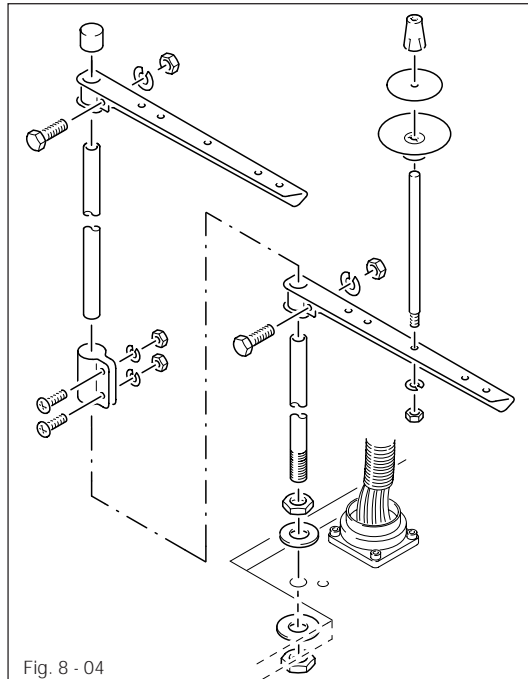
- Connect plug 1 in the socket and secure with the circlip.

### 8.01.03 Connecting disk drive and/or programming panel



- For disk drive and/or programming panel, connect the transmission cable plug to socket 1.
- The power plug of the disk drive can be plugged into connection 2.

## 8.01.04 Mounting the reel stand



- Mount the reel stand according to Fig. 8-04.
- Then insert the reel stand in the frame and secure with the enclosed nuts.

## 8.02 Commissioning the machine



When the machine is commissioned, the zero point of the jig control must be checked and adjusted, if required. (See chapter 8.04 Checking/setting zero point).

- Check the machine, in particular the electrical cables and pneumatic connecting hoses for any damage.
- Clean the machine thoroughly and then oil machine and/or fill with oil (see chapter 12 Care and maintenance).
- Have specialists ensure that the machine can be operated with the available electricity supply and that it is connected correctly to the power supply (see chapter 3 Specifications). If not, the machine **must not** be operated.
- Connect the machine to the compressed air system and adjust the compression (see chapter 12.04 Checking and adjusting air compression).

## 8.03 Turning the machine on/off

- Turn the machine on/off (see chapter 7.01 On/off switch).
- Check air compression and adjust if required (see chapter 12.04 Checking and adjusting air compression).

# Mounting and commissioning the machine

## 8.04 Checking/setting zero point



It is necessary to check/set the zero point when the machine is commissioned and following a cold start.

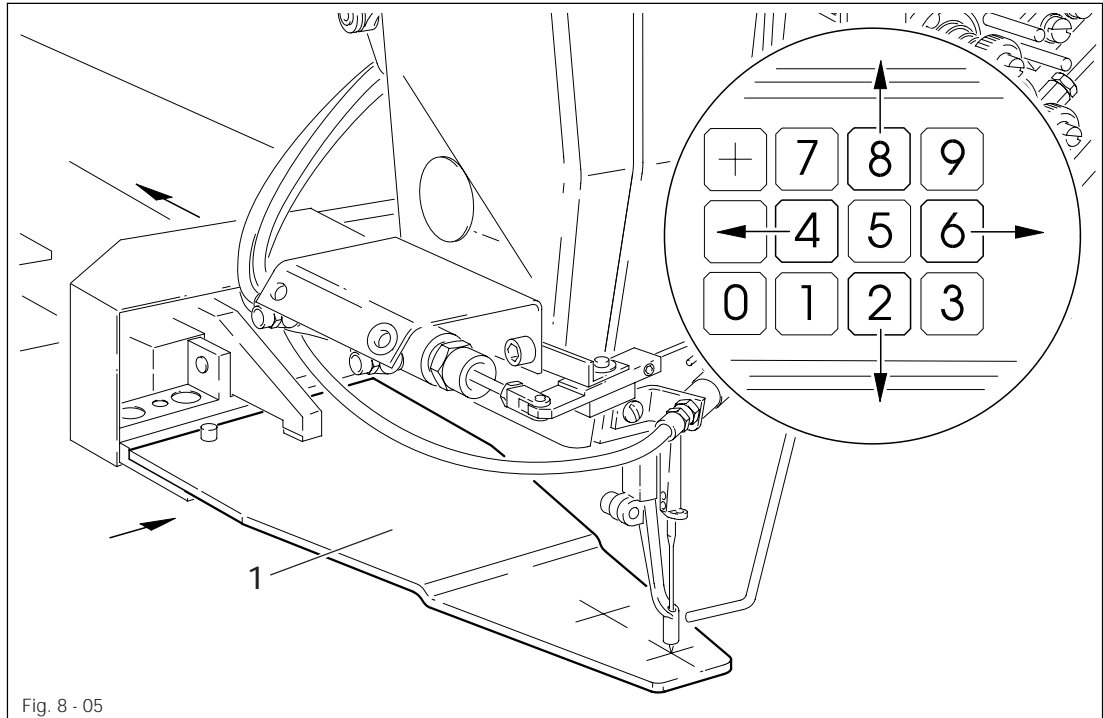


Fig. 8 - 05



● Call **INPUT** mode.



● Select the **SERVICE** function via the **number key 7**.



● Select the **SET ZERO POINT** function via the **number key 7**.

● Move feed carriage manually to zero point (in direction of arrow until it stops).

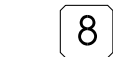


● Press the **home position** key. (Feed carriage moves to home position.)

● Insert zero point jig 1.



● Confirm insertion of the zero point jig 1 with the **plus key**.  
(Feed carriage moves to current zero point.)



● To set the zero point, move feed carriage via the **number keys 2, 4, 6 and 8** so that the needle is positioned exactly over the corresponding hole of the zero point jig 1.



● Store the zero point setting with the **Enter key**.



The zero point setting is not lost following a cold start. However, the **SET ZERO POINT** function must be executed in order to be able to work with the machine. The previous setting can either be corrected or confirmed via the **Enter key**.

9

Preparation



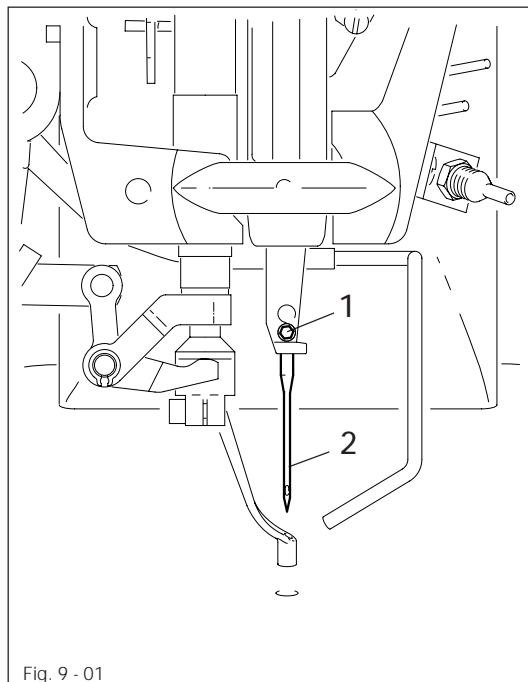
All regulations and instructions in this Instruction Manual are to be observed!  
Special attention is to be paid to the safety regulations!



All preparation work is only to be carried out by appropriately trained personnel.

9.01

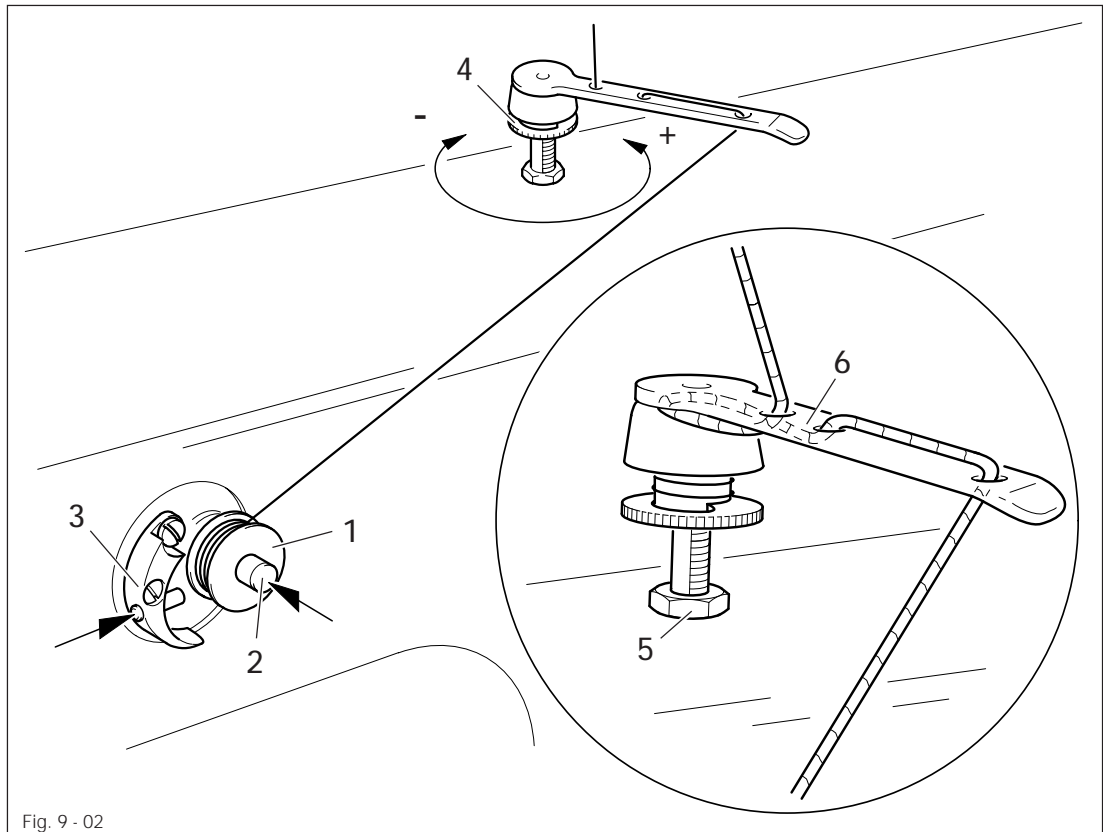
Inserting the needle



Turn off the machine!  
Danger of injury if machine is  
switched on suddenly!

Only use system 134-35 needles.

- Raise the needle bar via the handwheel.
- Loosen screw 1, insert needle 2 and move upward until it stops.
- Align needle 2 so that the clearance cut faces the hook and tighten screw 1.



- Place an empty bobbin 1 onto bobbin winder spindle 2.
- Thread the bobbin in accordance with Fig. 9-02 and wind it counter-clockwise around bobbin 1 a few times.
- Switch on the bobbin winder pressing bobbin winder spindle 2 and lever 3.



The bobbin fills up while you are sewing.

- The thread tension on bobbin 1 can be adjusted with knurled screw 4.
- The bobbin winder stops automatically when bobbin 1 is full.

If the bobbin 1 is not filled evenly:

- Loosen nut 5.
- Turn thread guide 6 correspondingly.
- Tighten nut 5.



9.03 Inserting/removing the bobbin case

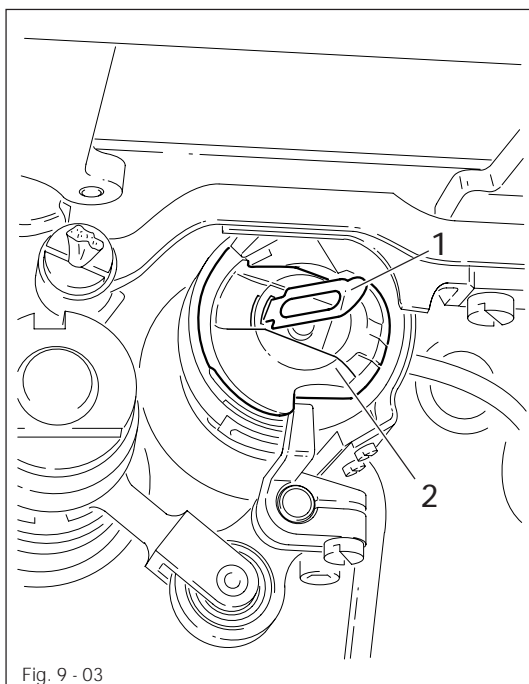


Fig. 9 - 03



Turn off the machine!  
 Danger of injury if the machine is switched on suddenly!

Removing the bobbin case:

- Open latch 1 and remove bobbin case 2.

Inserting the bobbin case:

- Press the bobbin case 2 until you feel it engage in the bobbin.

9.04 Threading the bobbin case / Adjusting the bobbin thread tension

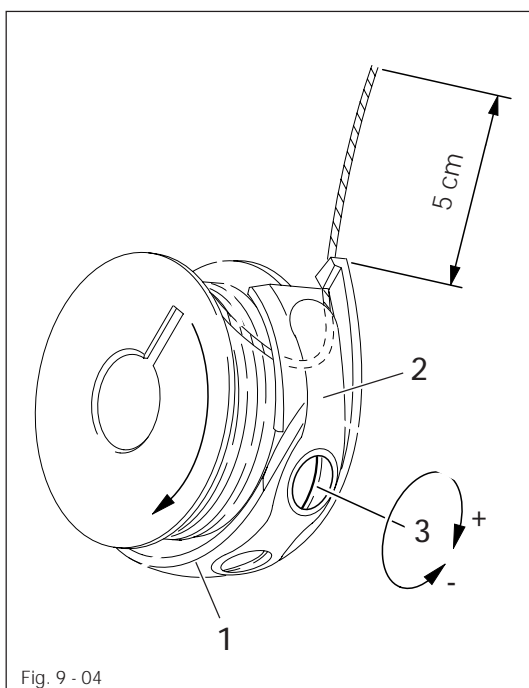
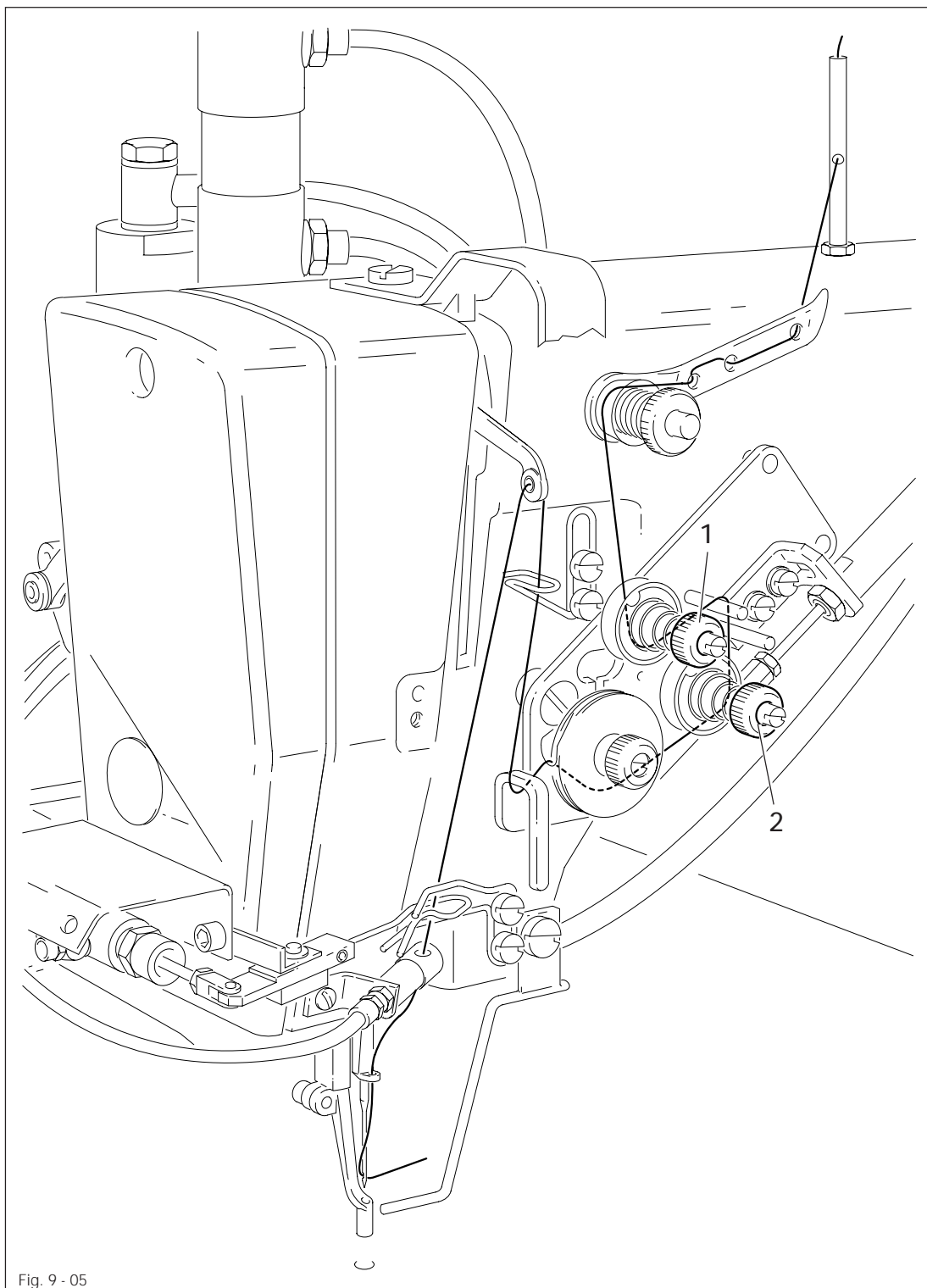


Fig. 9 - 04

- Insert the bobbin into the bobbin case 1.
- Pass the thread through the slot under spring 2.
- Pass the thread through the notch.
- Adjust the thread tension by turning screw 3.



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



Turn the machine off!

Danger of injury if machine is switched on suddenly!

- Thread the machine as shown in Fig. 9-05.
- Adjust the needle thread tension by turning knurled screws 1 and 2.

9.06 Selecting the program number

Sewing programs already entered are called as described below.

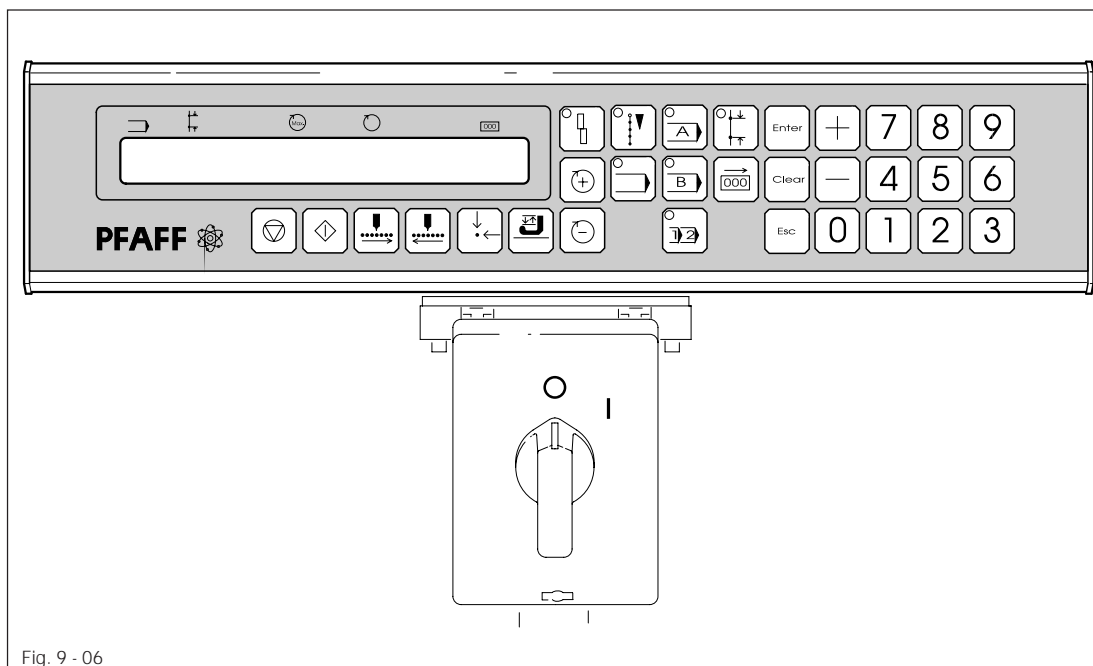


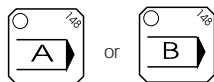
Fig. 9 - 06



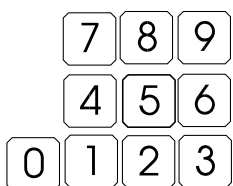
- Select **INPUT** mode.



- Press **program selection** key.



- Select program station in which the desired program is to be stored. (The diode in the key of the selected program station lights up.)



- Enter the number of the desired program via the **number keys**. (The program num can also be selected via the **plus/minus** keys).



If the program selected is not stored in the machine memory, a warning is output after the selection is completed.

Display: "PROGRAM NOT IN MEMORY # 100"  
The diode of the reset key is lit.



- In this case, press **reset key** and repeat input with other program numbers which have been already assigned sewing programs.

## 9.07 Inserting sewing jig

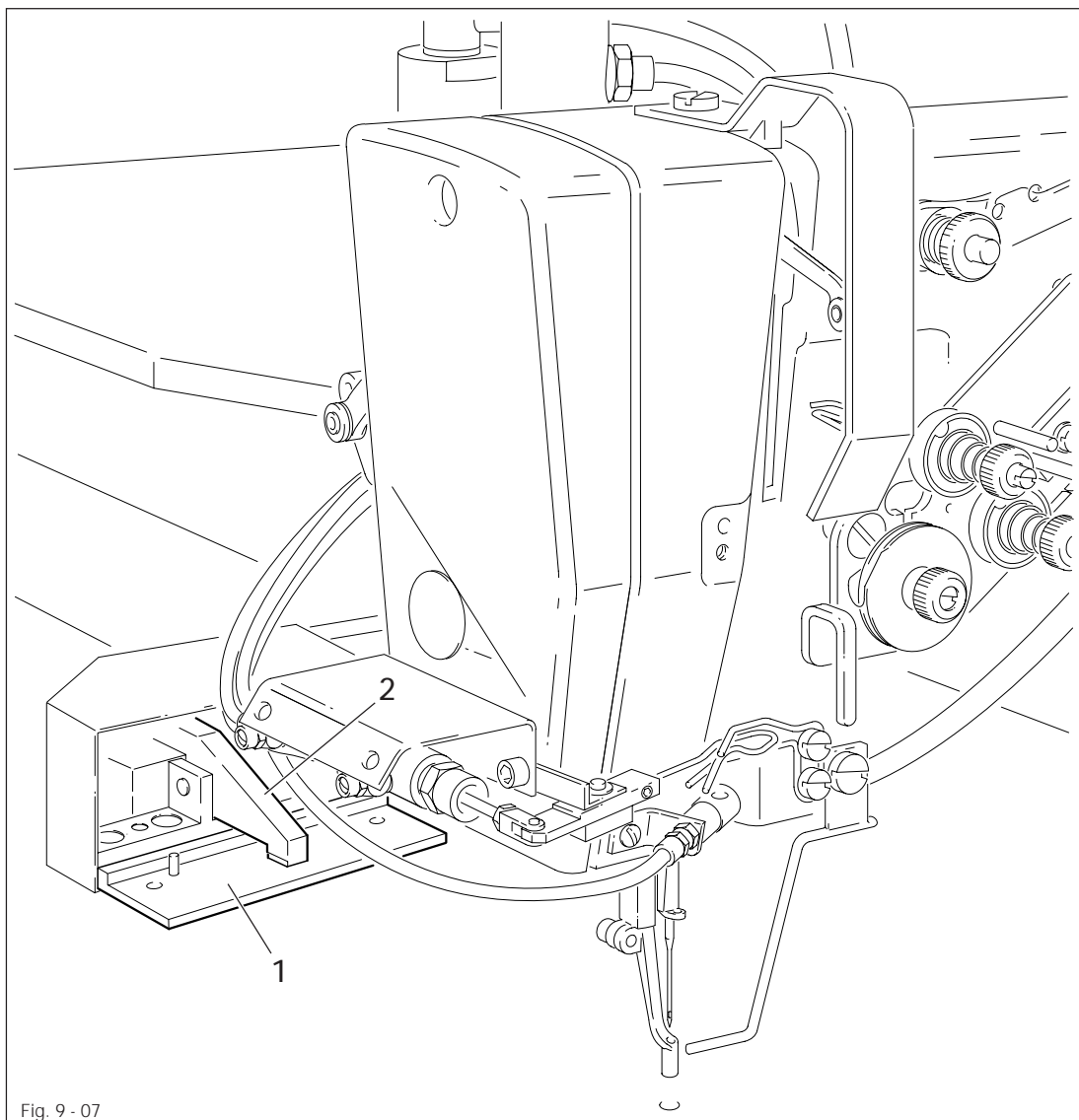


Fig. 9 - 07



The sewing jig must correspond to the pre-selected sewing program!  
Otherwise, the wrong combination of sewing jig and sewing program can cause serious damage to the machine and the sewing jig.

- Insert workpiece in the sewing jig.
- Insert the sewing jig in bracket 1.
- Bring foot switch to the 1st switch level. The sewing jig is positioned via clamp 2.

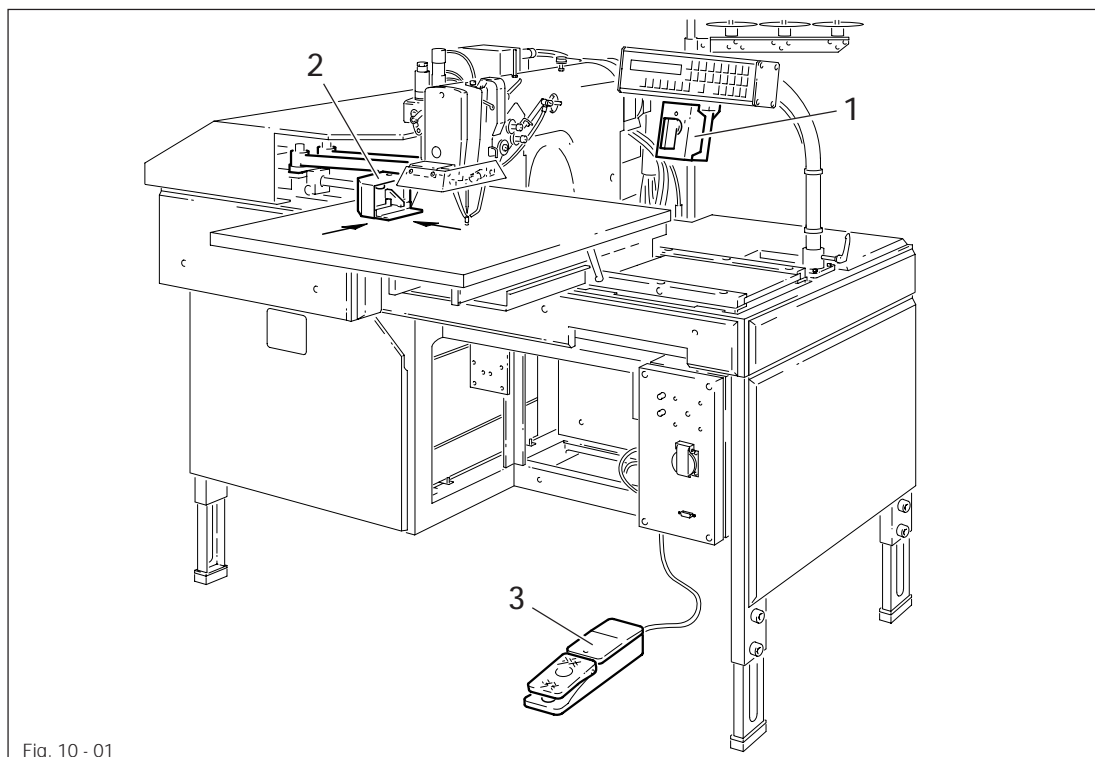


Fig. 10 - 01

- Switch on machine at main switch 1.
- Move feed carriage 2 manually to zero point (in direction of arrow until it stops).



- Press the **home position** key on the control panel.  
(Feed carriage moves to home position.)



- Confirm zero point via the **Enter** key or reset (see chapter 8.04 Checking/setting zero point).



- Select program number (see chapter 9.06 Selecting the program number).
- Call **SEWING** mode (diode on the key must be lit).



- Press **program start** key.  
(Feed carriage moves to loading position and the positioning clamp of the sewing jig opens.)

- Insert sewing jig (see chapter 9.07 Inserting sewing jig).
- Bring foot switch 3 to switch level 1 (sewing jig is positioned).



We recommend that a test run is carried out when the machine is commissioned and after a new seam program has been entered.

- To start sewing, bring foot switch 3 to switch level 2.

## 11 Programming

### 11.01 Summary of the functions in INPUT mode



In the **INPUT** mode, a distinction is made between direct functions and menu functions.

#### 11.01.01 Direct functions

Direct functions are used often and can be selected directly via the corresponding keys.



Program station A



Program station B



Program selection



Stitch length change



Reset unit counter

#### 11.01.02 Menu functions

Functions which are used less frequently are stored in a menu. The menu functions are divided into three menu levels and can be called as described below (also see **chapter 11.01.03 Summary of the menu functions**).



- After the **INPUT** mode has been selected, the home position is reached.

Display: "CHOOSE FUNCTION OR SCROLL # 200"



- Using the **plus/minus keys**, the functions in the first menu level can be scrolled through.

e.g. Display: "1- PROGRAM MANAGEMENT # 201"



- Enter the function selected in this manner or the second menu level by pressing **Enter**.



By entering the corresponding **number keys**, the desired function can also be selected directly.

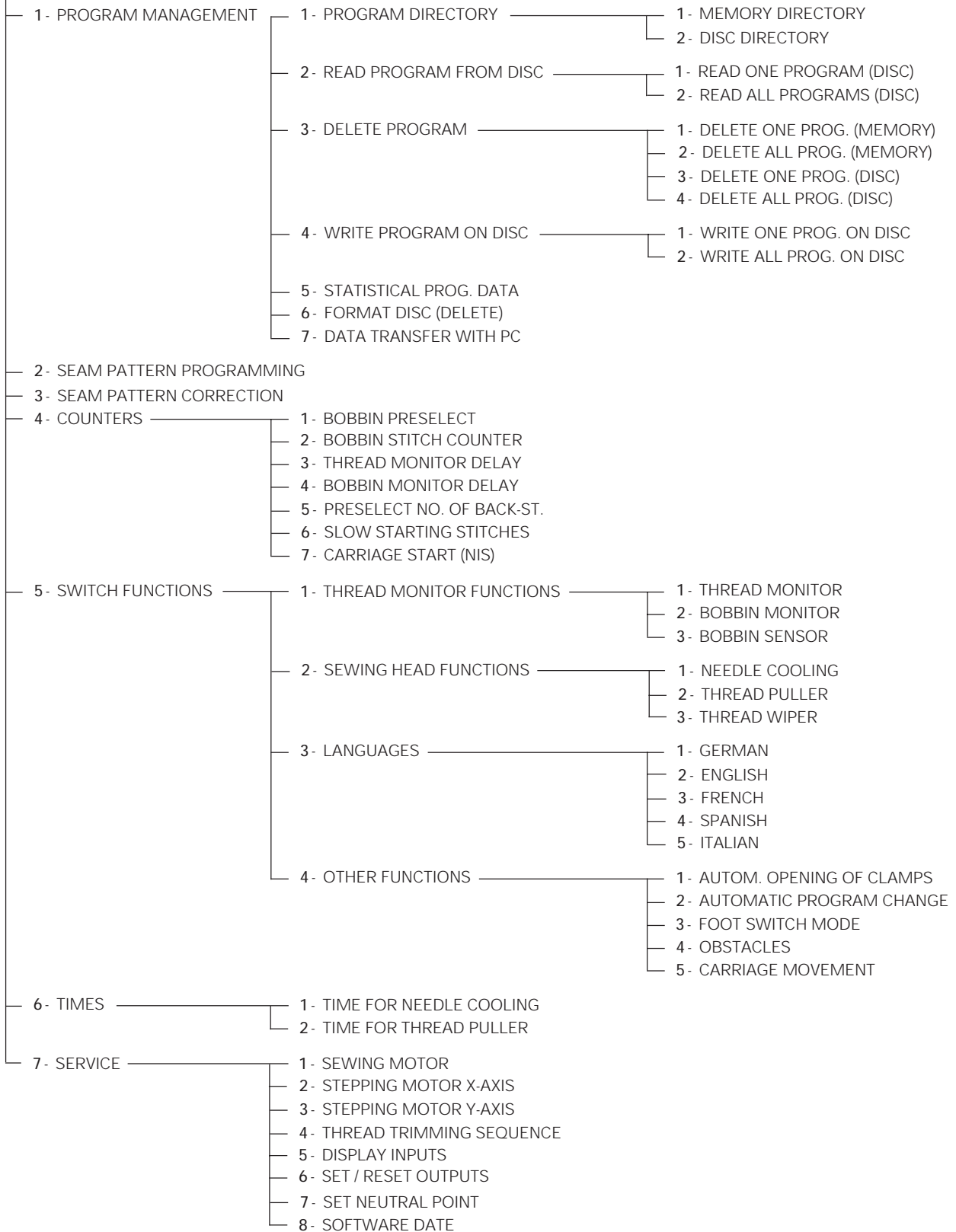


- Use the **Esc key** to interrupt selected functions. This returns you to the superordinate menu level.

## 11.01.03 Summary of the menu functions



Home position INPUT



1st menu level

2nd menu level

3rd menu level

## 11.02 Examples for selecting functions

### 11.02.01 Selecting a direct function

To change the stitch length, for example, proceed as follows:



- Select **INPUT** mode.

Display: "CHOOSE FUNCTION OR SCROLL # 200"



- Press **stitch length change** key.

e.g. Display: "PROGRAM:1 STITCHL.3.20 # 211"

3

4

- Via the **number keys**, enter the number of the program to be changed (e.g. 34).

e.g. Display: "PROGRAM:34 STITCHL.2.50 # 211"



- Confirm with **Enter**.



- Via the **plus/minus keys**, increase or decrease the stitch length value or enter the desired value directly via the **number keys**.

e.g. Display: "PROGRAM:34 ST.LENGTH 2.80 # 212"



- Confirm with **Enter**.

Display: "STITCH GENERATION # 213"

- The new stitch length value is assumed.

Display: "CHOOSE FUNCTION OR SCROLL # 200"

### 11.02.02 Selecting a menu function

The **THREAD PULLER** function is to be activated. In this example, only the input via the **number keys** is described. The individual functions can also be selected via the **plus/minus keys** and called with **Enter**.



- Call **INPUT** mode.

Display: "CHOOSE FUNCTION OR SCROLL # 200"

5

- Press **number key 5** (entry into the 1st menu level).

Display: "SWITCH FUNCTIONS # 380"

2

- Press **number key 2** (entry into the 2nd menu level).

Display: "SEWING HEAD FUNCTIONS # 382"

2

- Press **number key 2** (entry into the 3rd menu level).

Display: "THREAD PULLER OFF (ON : 1) # 406"

1

- Press **number key 1**.

Display: "THREAD PULLER ON (OFF : 0) # 407"



- Confirm inputs with the **Enter key**.

Display: "CHOOSE FUNCTION OR SCROLL # 200"



## 11.03 Explanation of the menu functions

The functions are divided into main functions (1st menu level) and subfunctions (2nd and 3rd menu levels).

### 1- PROGRAM MANAGEMENT

All of the subfunctions are listed under this main function which have to do with the organization of sewing programs.

#### 1- PROGRAM DIRECTORY

Other subfunctions can be called under this subfunction.

##### 1- MEMORY DIRECTORY

##### 2- DISC DIRECTORY

Depending on which subfunction has been selected, all of the programs of the memory or the disc are listed.

If one line in the display is not sufficient for displaying all of the programs, the **Enter key** serves as a scrolling function.



#### 2- READ PROGRAM FROM DISC

Other subfunctions can be called under this subfunction.

##### 1- READ ONE PROGRAM (DISC)

##### 2- READ ALL PROGRAMS (DISC)

Depending on the subfunction selected, either all of the programs or a particular program can be read from a disc into the machine memory.

#### 3- DELETE PROGRAM

Other subfunctions can be called under this subfunction.

##### 1 - DELETE ONE PROG. (MEMORY)

##### 2 - DELETE ALL PROG. (MEMORY)

##### 3 - DELETE ONE PROG. (DISC)

##### 4 - DELETE ALL PROG. (DISC)

Depending on the subfunction selected, either all of the programs or a particular program in the machine memory or on a disc can be deleted.

#### 4 - WRITE PROGRAM ON DISK

Other subfunctions can be called under this subfunction.

##### 1- WRITE ONE PROG. ON DISC

##### 2- WRITE ALL PROG. ON DISC

Depending on the subfunction selected, either all of the programs or a particular program from the machine memory can be written on disc.

#### 5- STATISTICAL PROG. DATA

With this main function, the following program data are displayed:

- Stich count and program length in bytes.
- Stitch length and obstacles
- Clamp type

## 6- FORMAT DISC (DELETE)

Discs can be reformatted (720 KB).



If the disc is reformatted, all of the data on the disc are deleted.

## 7- DATA TRANSFER WITH PC

Via this function, the control is made ready to transmit in order to communicate directly with a PC via the SYS 3000 software.

## 2- SEAM PATTERN PROGRAMMING

Sewing programs can be programmed directly on the machine (see **chapter 11.04.06 Seam pattern programming**).

## 3- SEAM PATTERN CORRECT

Sewing programs can be corrected directly on the machine. (See **chapter 11.04.07 Correcting sewing program**).

## 4- COUNTERS

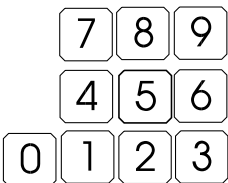


or



With this main function, the user can program counters in the subfunctions according to his requirements.

Values are always changed via the **plus/minus keys** or the **number keys**.



### 1- BOBBIN PRESELECT

The number of stitches can be selected according to which the machine automatically stops for a bobbin change.

### 2- BOBBIN STITCH COUNTER

The current value of the specified stitch count until the bobbin is changed is displayed. The value can be reset using the **Clear key**.



### 3- THREAD MONITOR DELAY

The number of stitches can be set for which a thread disturbance is to be ignored. A small number of stitches means that the needle thread monitor is more sensitive.

### 4- BOBBIN MONITOR DELAY

The number of stitches can be set for which a thread disturbance is to be ignored. A small number of stitches means that the bobbin monitor is more sensitive.

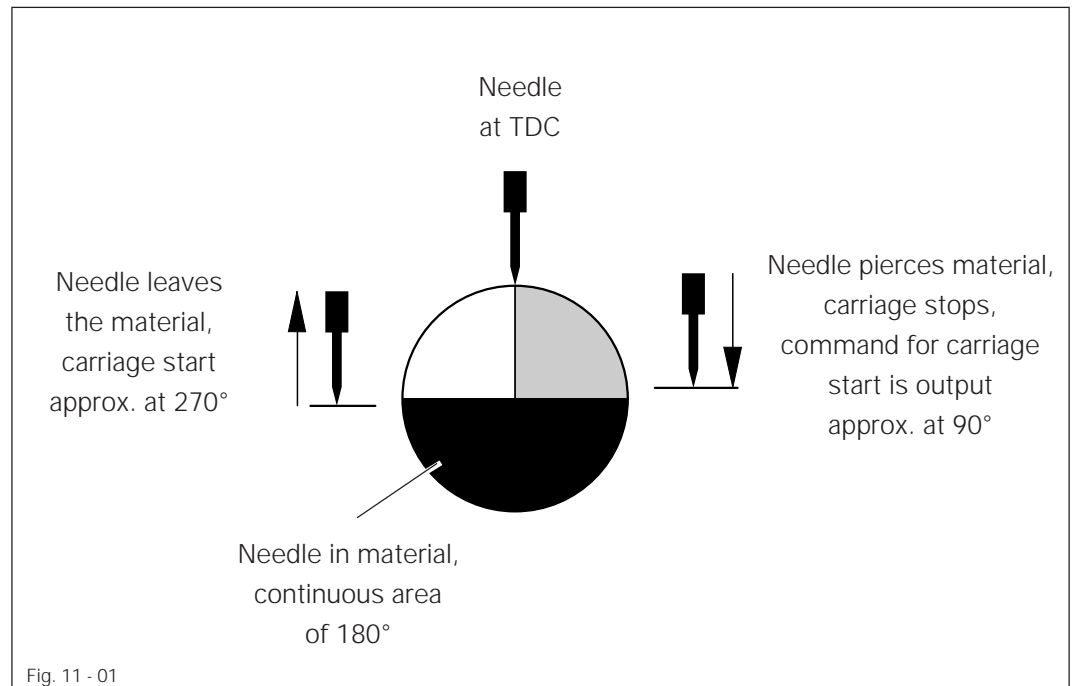
### 5- PRESELECT NO. OF BACK-ST.

The number of stitches can be set by which, when there is a thread disturbance, the needle automatically goes back.

### 6- SLOW STARTING STITCHES

The number of stitches can be set which are to be carried out when sewing is begun with reduced speed.

7- CARRIAGE START (NIS = needle in material)



The command for the carriage start is output when the needle pierces the material. However, the carriage actually starts when the needle leaves the material (constant 180° later). The point in time for the output of the carriage start command can be changed in the range of 0 - 360°.



Under certain conditions, the stitch formation can be influenced by the setting. To avoid thread disturbances, the value should be between 60° and 120°.

5- SWITCH FUNCTIONS

Under this main function, the user can program machine functions according to his requirements in the subfunctions.

1- THREAD MONITOR FUNCTIONS

Thread monitor functions are listed here which can be turned on or off via the number keys 1 or 0.



- 1- THREAD MONITOR
- 2- BOBBIN MONITOR
- 3- BOBBIN SENSOR (option)

2- SEWING HEAD FUNCTIONS

Sewing head functions are listed here which can be turned on or off via the number keys 1 or 0.



- 1- NEEDLE COOLING
- 2- THREAD PULLER  
Increases the thread amount when starting to sew.
- 3- THREAD WIPER

## 3- LANGUAGES

Several languages are listed here from which the desired user language can be selected.

- 1- GERMAN
- 2- ENGLISH
- 3- FRENCH
- 4- SPANISH
- 5- ITALIAN

## 4- OTHER FUNCTIONS



Under this subfunction are other subfunctions which can be turned on or off with the number keys 1 or 0.

### 1- AUTOM. OPENING OF CLAMPS

After program completion, the sewing jig is automatically released.

### 2- AUTOMATIC PROGRAM CHANGE

After program completion, the program station is automatically changed.

### 3- FOOT SWITCH MODE

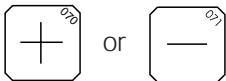
### 4- OBSTACLES

This function must be entered when the program is created if parts of the sewing jig are higher than the presser foot of the machine.

### 5- CARRIAGE MOVEMENT

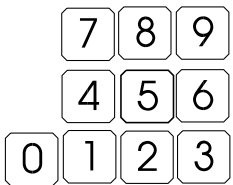
When this function is on, the carriage moves continuously during sewing.

When this function is off, the carriage moves intermittently, e.g. when the needle is in the material the carriage feed stops.



## 6- TIMES

Under this main function, times are listed which can be set via the plus/minus keys or the number keys.



### 1- TIME FOR NEEDLE COOLING

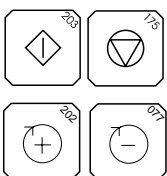
The airblast time for cooling the needle can be set as required.

### 2- TIME FOR THREAD PULLER

The time is to be set so that the thread puller cylinder can carry out the complete stroke.

## 7- SERVICE


The service functions are only intended for the mechanics. A detailed description is found in the service manual for the machine control.





### 1- SEWING MOTOR


The sewing motor can be switched on/off via the program start/stop key in order to control the speed. The speed can be varied via the keys increase/decrease speed setting.



2- STEPPING MOTOR X-AXIS

 The clearance under the needle must not be blocked!


 or  Via the **plus/minus keys**, the motor can be moved forward or backward.


3- STEPPING MOTOR Y-AXIS

 The clearance under the needle must not be blocked!

 or  Via the **plus/minus keys**, the motor can be moved forward or backward.

4- THREAD TRIMMING SEQUENCE

 The clearance under the needle must not be blocked!

 By pressing the **Enter key**, a thread trimming sequence is carried out.

5 - DISPLAY INPUTS

6 - SET / RESET OUTPUTS

7 - SET NEUTRAL POINT

(See **chapter 8.04 Checking/setting zero point**).

8 - SOFTWARE DATE



11.04.02 Direct functions

Via these keys, the selected function is carried out directly.



**Seam pattern forwards**

Carry out seam pattern forwards step by step.



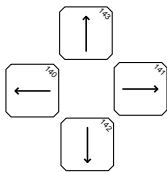
**Seam pattern backwards**

Carry out seam pattern backwards step by step.



**Presser foot up/down**

The presser foot is raised/lowered and at the same time, the feeding clamp of the sewing jig is opened or closed.



**Arrow keys**

These keys are used to move the feed carriage.



**Delete**

The current value is deleted.

11.04.03 Dialog keys



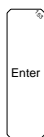
**Reset key**

For confirming an error correction (diode in the key is lit when there is an error message.)



**Program end**

End programming or correction.



**Enter key**

For confirming input values and dialogs (entry into functions).



**Esc key**

For interrupting preselected functions without assuming input values which may have been changed (return to previous menu level).



**Plus key**

This key is used for

- increasing the input values in increments
- answering dialog questions with "yes" and
- for paging up in the menu mode.



**Minus key**

This key is used for

- decreasing the input values in increments
- answering dialog questions with "no" and
- paging down in the menu mode.

## 11.04.04 Functions for block and pattern manipulation



### Block

(not available yet)

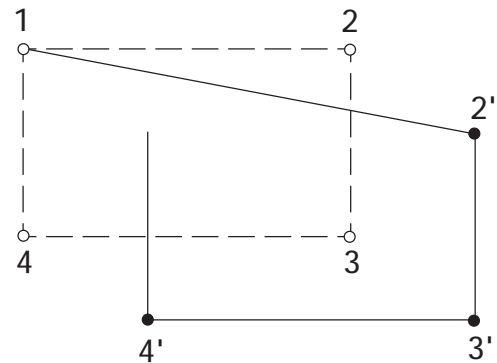
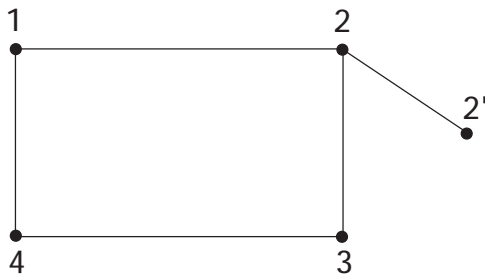


### Move pattern

An entire seam pattern can be moved with this function.

Example:

Supporting point 2 is moved to 2'. Beginning at supporting point 2', all of the coordinates are then changed proportionately.



### Manipulate pattern

(not available yet)



### Coordinates reference point

The current coordinate values are set to "0".

## 11.04.05 Functions in INSERT mode



### Straight line

When the function is active, a straight line can be entered. The stitch length must be defined.



### Stitch/feed motion

When the function is active, a single stitch can be entered independent of the stitch length.



### Curve

When the function is active, a curve can be entered.



### Graphics menu

When the function is active, a menu with other functions is available.

#### Standard stitch length

Input of a stitch length which can be changed via the stitch length change (control panel) function.

#### Stitch length

Input of a stitch length which cannot be changed via the control panel.



## Stitch width

Superimposes a zigzag stitch on a basic line.

## Circle

Input of a circular seam.

## Circular arc

Input of a seam with the shape of a circular arc.

## Curve end

Transformation of a curve supporting point to a curve end point.



Quick motion



Start sewing



Trim thread



Loading position program end



Machine function menu

When the function is active, a menu with further functions is available.

## Speed

Input of the speed from 200 min<sup>-1</sup> to max. permissible speed.

## Additional tension

Switches on second thread tension for certain seam sections.

## Foot level

Presser foot is switched to second height.

## 1st clamp

Open/ close clamp.

## 2nd clamp

Open/ close clamp.

## Output

Freely programmable outputs can be set/ reset.

## Programmed stop

Input of a machine stop at a particular seam pattern position without thread trimming and opening of clamps. A new start is initiated via the **program start** key or the foot switch.

## Sewing off

Input of sewing interruption in the program sequence without thread trimming.

## Waiting for input

This function causes the machine to wait until an input (switch, proximity switch) has reached a certain level before the program is executed.

## Waiting period

Input of a waiting period at a particular position of the seam section. After the waiting period is over, the program is automatically continued.

## Delay parameters

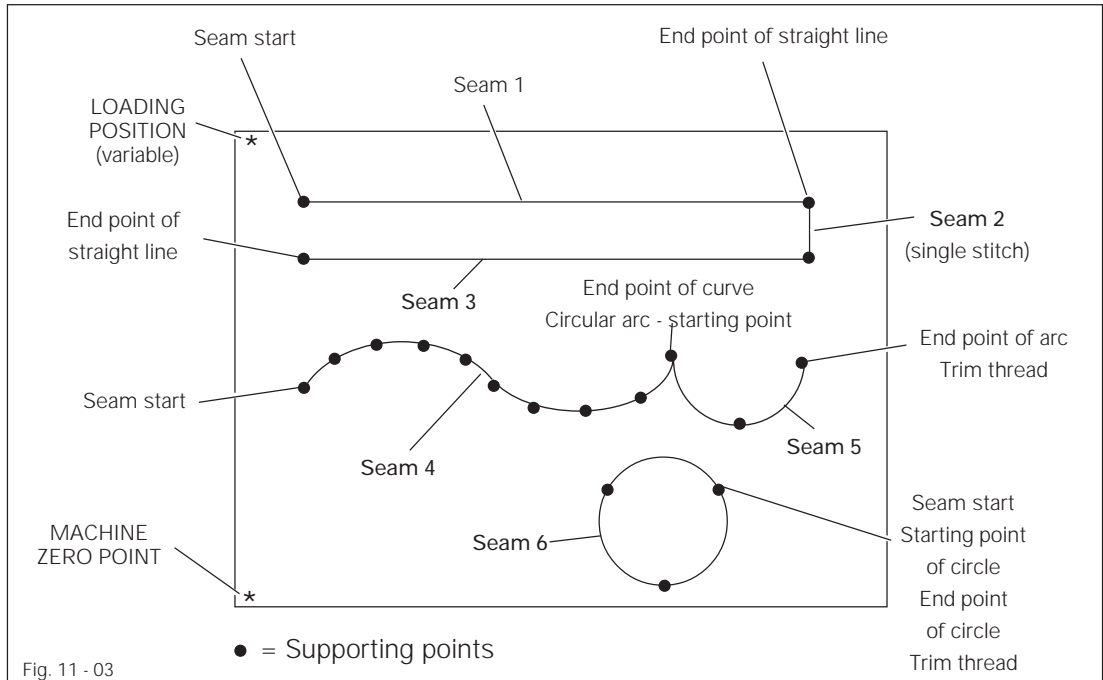
To activate programmed functions at a particular position in the seam section, these can be delayed.

## 11.04.06 Seam pattern programming



The following description deals with entering a sewing program via the programming panel and is illustrated by an example.

Ideally, a pattern or drawing with the required coordinates is to serve as the draft for the program.



- Connect programming panel to unit (see chapter 8.01.03 Connecting disk drive and/or programming panel).
- Turn on main switch (see chapter 7.01 On/off switch).
- Move feed carriage manually to zero point (right rear end position).

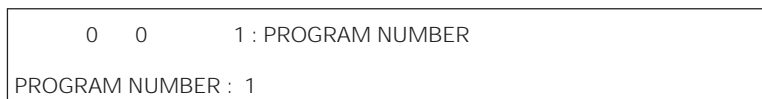


- Press **home position key** on control panel.



- Select the SEAM PATTERN PROGRAMMING function with **number key 2**.

Display in programming panel:



or



- Select desired program number.



- Confirm program number selection.  
(If the selected program number has already been assigned, an error message appears. Confirm error message and choose another program number.)



or



- Select desired type of clamp.

3 : OBSTACLES  
OBSTACLES : YES "+", NO "-"



- The selection depends on the clamp type.

3 : OBSTACLES  
CLAMP WITHOUT OBSTACLE

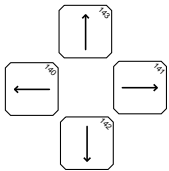


Following input of the above functions switch to **INSERT** mode. The diode in the key is lit.



Activate **straight line** function.

3 : OBSTACLES  
INSERT STRAIGHT LINE



- Move to loading position.  
(For clamps without obstacles with one straight line, otherwise the obstacles must be circumvented with **several** straight lines).

000 000 5 : STITCH LENGTH  
ENTER END POINT OF STRAIGHT LINE



- The coordinates for the loading position are shown in the display.
- Press **Enter** key.

6 : STRAIGHT LINE  
END POINT OF STRAIGHT LINE



- Turn off **straight line** function (diode off).

6 : STRAIGHT LINE



Activate **machine function menu** function (diode lit).

6 : STRAIGHT LINE  
SPEED : 00 RPM



or



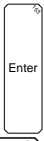
- Press **plus or minus** key until the CLAMP function appears in the display.

6 : STRAIGHT LINE  
CLAMP 1



- Press **Enter** key.

6 : STRAIGHT LINE  
1. OPEN 1ST CLAMP WITH ENTER

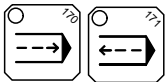


- Open clamp.



- Activate loading position program end.

8 : LP-PROGRAM END



With the functions **seam pattern forwards** or **seam pattern backwards**, the functions carried out can be checked in **basic mode**.

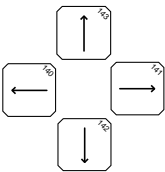


- Activate **INSERT** mode.



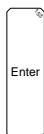
- Activate **QUICK MOTION** mode.

8 : LP-PROGRAM END  
INSERT QUICK MOTION



- Move to seam start of **seam 1** (see Fig. 11-03).

000 000 8 : LP-PROGRAM END  
ENTER END POINT QUICK MOTION



The coordinates of the seam start are shown in the display.

- Press **Enter** key.

9 : QUICK MOTION



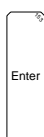
- Activate **start sewing** function

10 : START SEWING



- Activate **graphics menu** function.

10 : START SEWING  
STANDARD STITCH LENGTH



- Press **Enter** key.

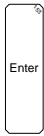
10 : START SEWING  
SELECT STANDARD STITCH LENGTH 3.00 MM



or



- Select desired standard stitch length (e.g. 2 mm).



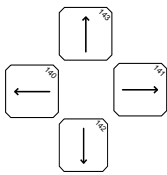
- Press Enter key.

11 : STANDARD STITCH LENGTH  
STANDARD STITCH LENGTH 2.00 MM



- Activate straight line function.

11 : STANDARD STITCH LENGTH  
INSERT STRAIGHT LINE



- Carry out seam 1 to the end point of the straight line (see Fig. 11-03).

ENTER STRAIGHT LINE END POINT



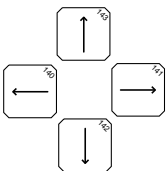
- Press Enter key.

12 : STRAIGHT LINE  
STRAIGHT LINE END POINT



- Activate stitch / feed motion.

12 : STRAIGHT LINE  
INSERT SINGULAR FEED MOTION



- Move to end point of seam 2 (see Fig. 11-03).

12 : STRAIGHT LINE  
ENTER STITCH/FEED MOTION END POINT



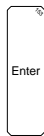
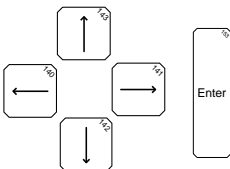
- Press Enter key.

13 : STITCH/FEED MOTION  
STITCH/FEED MOTION END POINT



- Activate straight line function.

13 : STITCH/FEED MOTION  
INSERT STRAIGHT LINE



- Carry out seam 3 to end point of straight line and then press Enter key (see Fig. 11-03).

14 : STRAIGHT LINE  
STRAIGHT LINE END POINT



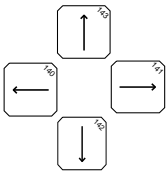
- Select **thread trimming** function.

15 : TRIMMING



- Activate **quick motion** function.

15 : TRIMMING  
INSERT QUICK MOTION



- Move to seam start of **seam 4** (see Fig. 11-03).

15 : TRIMMING  
ENTER END POINT QUICK MOTION



- Press **Enter** key.

16 : QUICK MOTION



- Activate **start sewing** function.

17 : START SEWING



- Activate **curve** function.

17 : START SEWING  
INSERT CURVE



- Move to supporting points of **seam 4** one after another and confirm each with the **Enter** key.

18 : CURVE POINT  
CURVE POINT

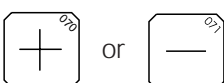


- After the last supporting point has been confirmed, switch off **curve** function (diode off).

28 : CURVE END POINT



- Activate **graphics menu** function.



- Press **plus/minus** keys until the **CIRCULAR ARC** function appears in the display.

28 : CURVE END POINT

CIRCULAR ARC

● Press **Enter** key.

28 : CURVE END POINT

ENTER ARC SUPPORTING POINT

At the circular arc starting point, an additional supporting point as well as the circular arc end point must be marked.

● Move to supporting point (see Fig. 11-03).

● Press **Enter** key.

29 : CURVE END POINT

ENTER ARC END POINT

● Move to arc end point (see Fig. 11-03).

● Press **Enter** key.

30 : ARC END POINT

● Select **thread trimming** function.

31 : TRIMMING

● Activate **quick motion** function.

31 : TRIMMING

INSERT QUICK MOTION

● Move to seam start of **seam 6** (see Fig. 11-03).

31 : TRIMMING

INSERT END POINT QUICK MOTION

● Press **Enter** key.

32 : QUICK MOTION



- Activate **start sewing** function

33 : START SEWING



- Activate **graphics menu** function.



or



- Press **plus/minus** keys until the CIRCLE function appears in the display.

CIRCLE

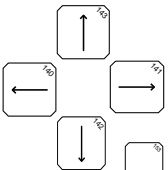


- Press **Enter** key.

ENTER CIRCLE SUPPORTING POINT 1



To create the circle, two additional supporting points must be marked.

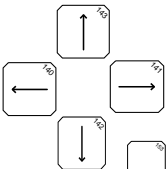


- Move to first supporting point (see Fig. 11-03).



- Press **Enter** key.

ENTER CIRCLE SUPPORTING POINT 2



- Move to second supporting point (see Fig. 11-03).



- Press **Enter** key.

36 : CIRCLE END POINT  
MOVE TO LAST POINT WITH ENTER



- Press **Enter** key.

36 : CIRCLE END POINT



- Select **thread trimming** function.

37 : TRIMMING





- Press **program end key**.

32 : QUICK MOTION  
CREATE STITCH DATA WITH " + "



- Press **plus key**.

STITCH GENERATION IN PROGRESS

PROGRAMMING DISPLAY SWITCHED OFF

The completed sewing program is now in the machine memory with its assigned program number.

#### 11.04.07 Correcting sewing program

- Connect programming panel to unit (see **chapter 8.01.03 Connecting disk drive and/or programming panel**).
- Turn on main switch (see **chapter 7.01 On/off switch**).
- Move feed carriage manually to zero point (right rear end position).



- Press **home position key** on control panel.



- Select the SEWING PROGRAM CORRECT function with **number key 3**.



An existing sewing program can be carried out either from the zero point or from the loading point.

Display in programming panel:

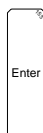
PROGRAM TO CORRECT:



or



- Select desired program number (or use **number keys** of control panel).



- Confirm program number selection.

PROGRAM NUMBER AFTER CORRECTION:



or



- Enter new program number for the program to be changed.



If a new program number is not entered, the original program is deleted following the correction.

DELETE ORIGINAL PROGRAM WITH " + "



- Press **minus key** if you want to keep the original program.

If the clamps are still open, the following display appears:

CLOSE CLAMPS

- Close the clamps with the foot switch.



- Carry out sewing program step by step and proceed as described in **chapter 11.04.06 Seam pattern programming**.



- Press **program end key**.

32 : QUICK MOTION

CREATE STITCH DATA WITH " + "

- Press **plus key**.

STITCH GENERATION IN PROGRESS

PROGRAMMING DISPLAY SWITCHED OFF

The completed sewing program is now in the machine memory with its assigned program number.

12 Care and maintenance

Clean the entire machine .....	weekly
Clean the hook compartment .....	daily, more often for continuous operation
Check oil level .....	annually
Clean blower air filter .....	once a week
Check air pressure .....	daily before use
Clean air filter of filter / lubricator .....	as required



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

12.01 Cleaning the machine

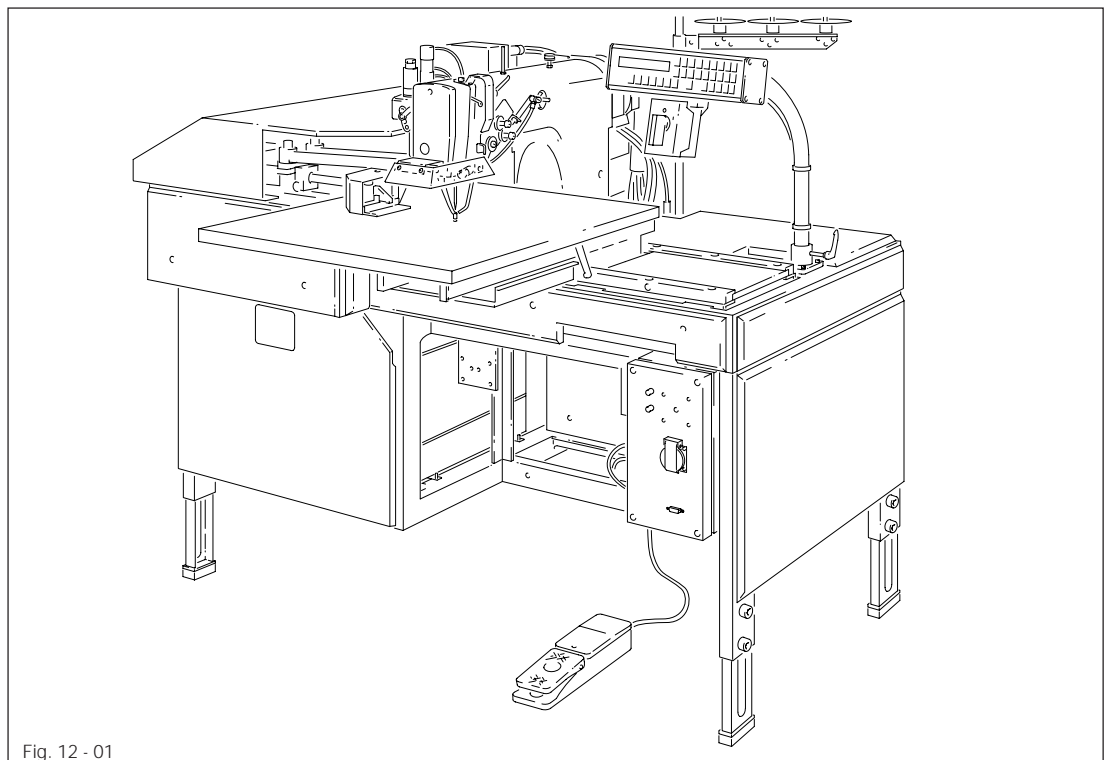


Fig. 12 - 01



Switch off the machine!  
Risk of injury if the machine starts unexpectedly!



- Clean the hook compartment and the needle area of the machine daily.
- Clean the entire machine at least once a week.

### 12.02 Filling the oil reservoir

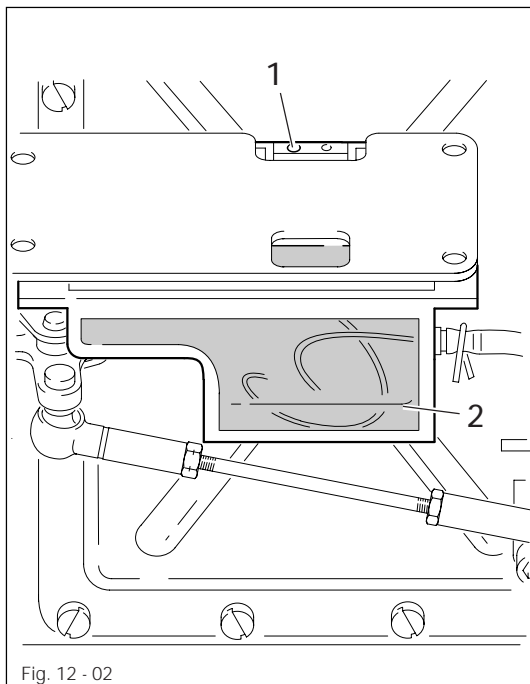


Fig. 12 - 02

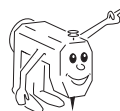


There must always be oil in oil reservoir 2.

- If necessary, pull out the sewing head and tilt back (see Chapter 13.04 Pulling out/inserting the sewing head).
- Fill with oil through hole 1 in oil reservoir 2.



Use only oil with a viscosity of 10.0 mm<sup>2</sup>/s at 40°C and a density of 0.865 g/cm<sup>3</sup> at 15°C.



We recommended PFAFF sewing machine oil  
Part no. 280-1-120 144.

### 12.03 Cleaning the blower air filter

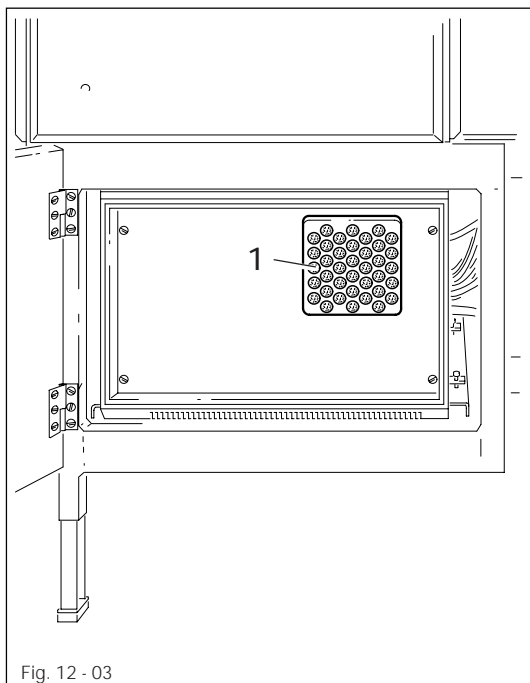
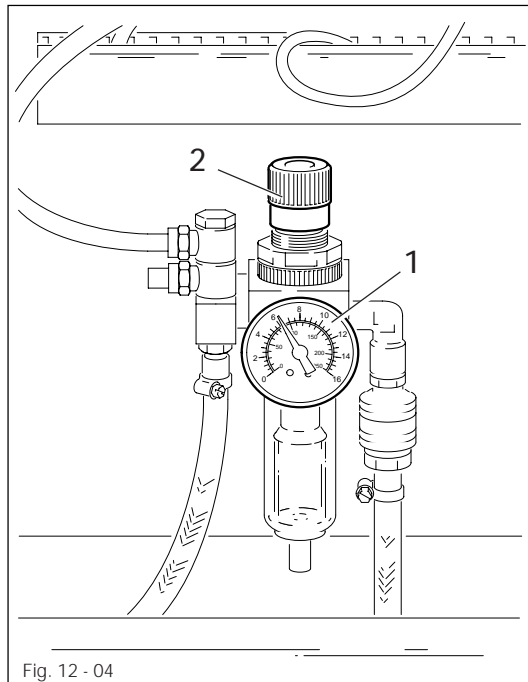


Fig. 12 - 03

- Open the cover on the left below the power table.
- Remove cover 1.
- Take out the filter element and blow clean with compressed air.
- Reinsert the cleaned filter element, replace cover 1 and close the cover.

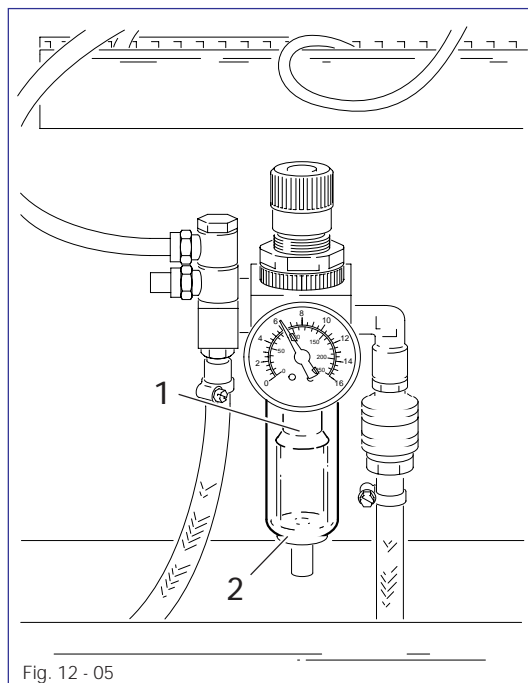
12.04 Checking/adjusting air compression



Pressure gauge 1 should display a pressure of 6 bar!

- Check air compression on pressure gauge 1 before each use.
- Adjust air compression if necessary by turning knob 2.

12.05 Cleaning the air filter of the air filter / lubricator



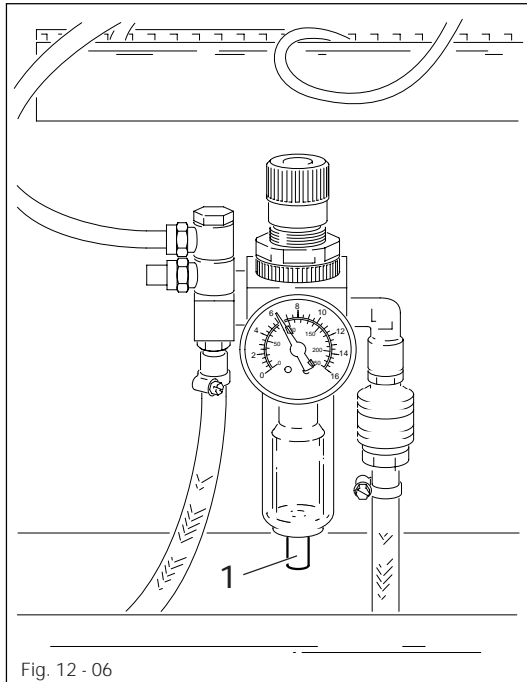
If an air compression of 6 bar is no longer achieved, filter element 1 must be cleaned.



Switch off the machine!  
Shut off the compressed air!

- Unscrew reservoir 2.
- Take out filter element 1.
- Clean filter element 1 and reservoir 2 with benzine.
- Blow clean filter element 1 from the inside with compressed air.
- Pay attention to the seals when replacing reservoir 2.

### 12.06 Emptying the water trap



Make sure knurled bush 1 is unscrewed as far as possible (left thread).



If the water level is rising, the automatic drain will open and the water drain off.

- Place a suitable collection vessel underneath the drain.

## 13 Adjustment

### 13.01 Notes on adjustment

All the adjustments described in this manual refer to a completely installed machine and may be carried out only by appropriately trained personnel.

The machine covers which must be unscrewed and replaced for checks and adjustment work are not mentioned in the text.

The screws and nuts in parentheses ( ) secure those machine parts which must be loosened before adjustment and retightened after adjustment.

### 13.02 Tools, gauges and other accessories

- 1 set of screwdrivers from 2 to 10 mm blade width
- 1 set of wrenches with jaw widths from 7 to 14 mm
- 1 set of Allan keys from 1.5 to 6 mm
- 1 metal ruler, part no. 08-880 218-00
- 1 adjustment pin (5 mm in diameter), part no. 13-033 341-05
- Thread and test material

### 13.03 Abbreviations

TDC = top dead center

BDC = bottom dead center

## 13.04 Pulling out/inserting the sewing head



The sewing head must be pulled out of the unit for maintenance and adjustment work.

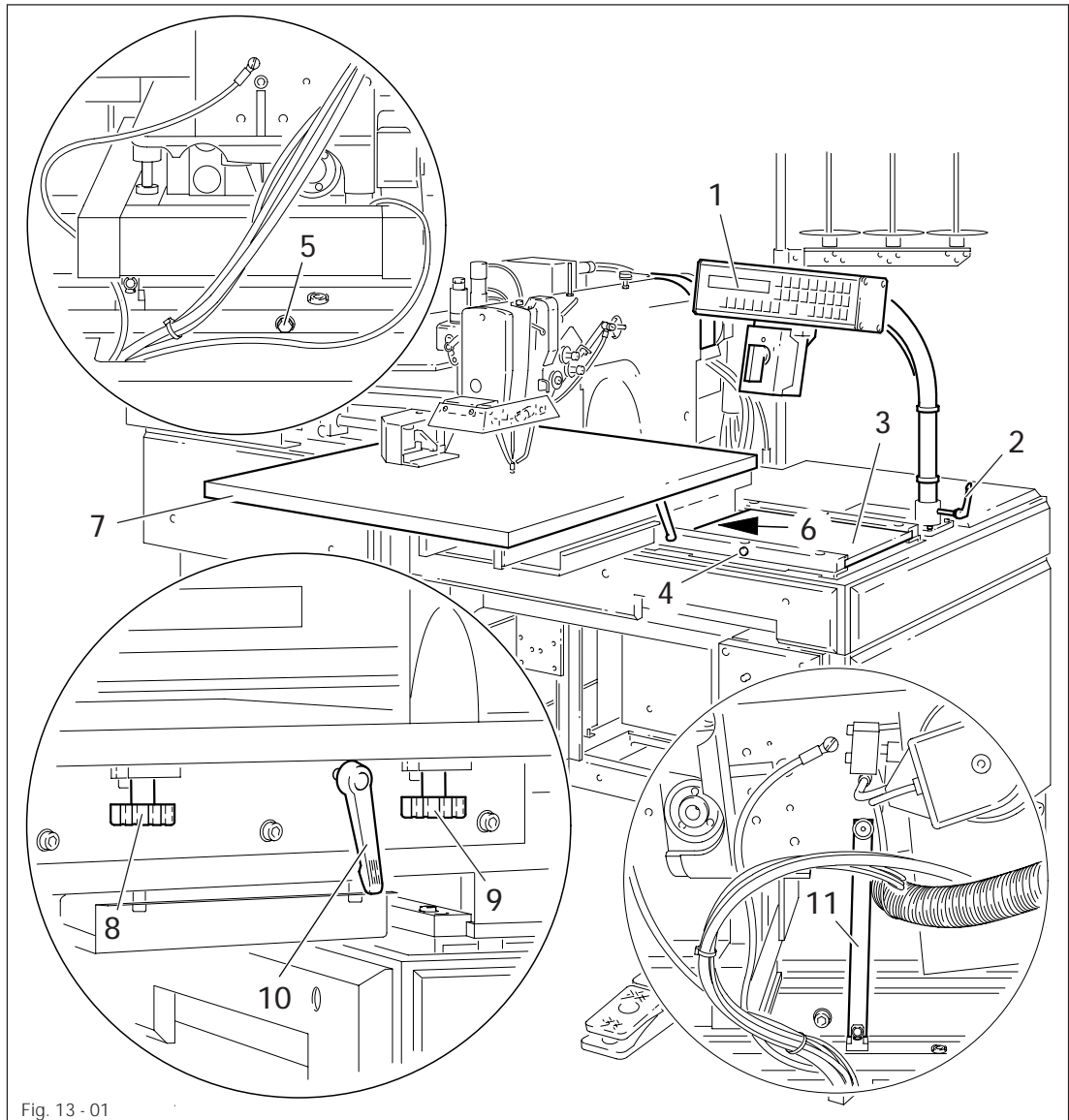
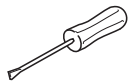


Fig. 13 - 01



- To **tilt back** the sewing head, push away control panel 1 (clamp lever 2).
- Remove plate 3 (screw 4).
- Loosen clamp screw 5 behind the sewing head.
- Release clamp levers 6 below the sewing head on both sides.
- Pull the sewing head with power table 7 towards the control panel as far as it will go.
- Unscrew star handles 8 and 9 on both sides of power table 7 and remove power table 7.
- Release clamp lever 10 and erect support 11.
- Tilt back the sewing head making sure that the pin on the rear side engages in support 11.
- To **insert** the sewing head, perform all the above steps in the reverse order.



## 13.05 Checking and adjustment aids



The necessary needle bar positions can be fixed exactly by blocking holes 1 and 3-6.

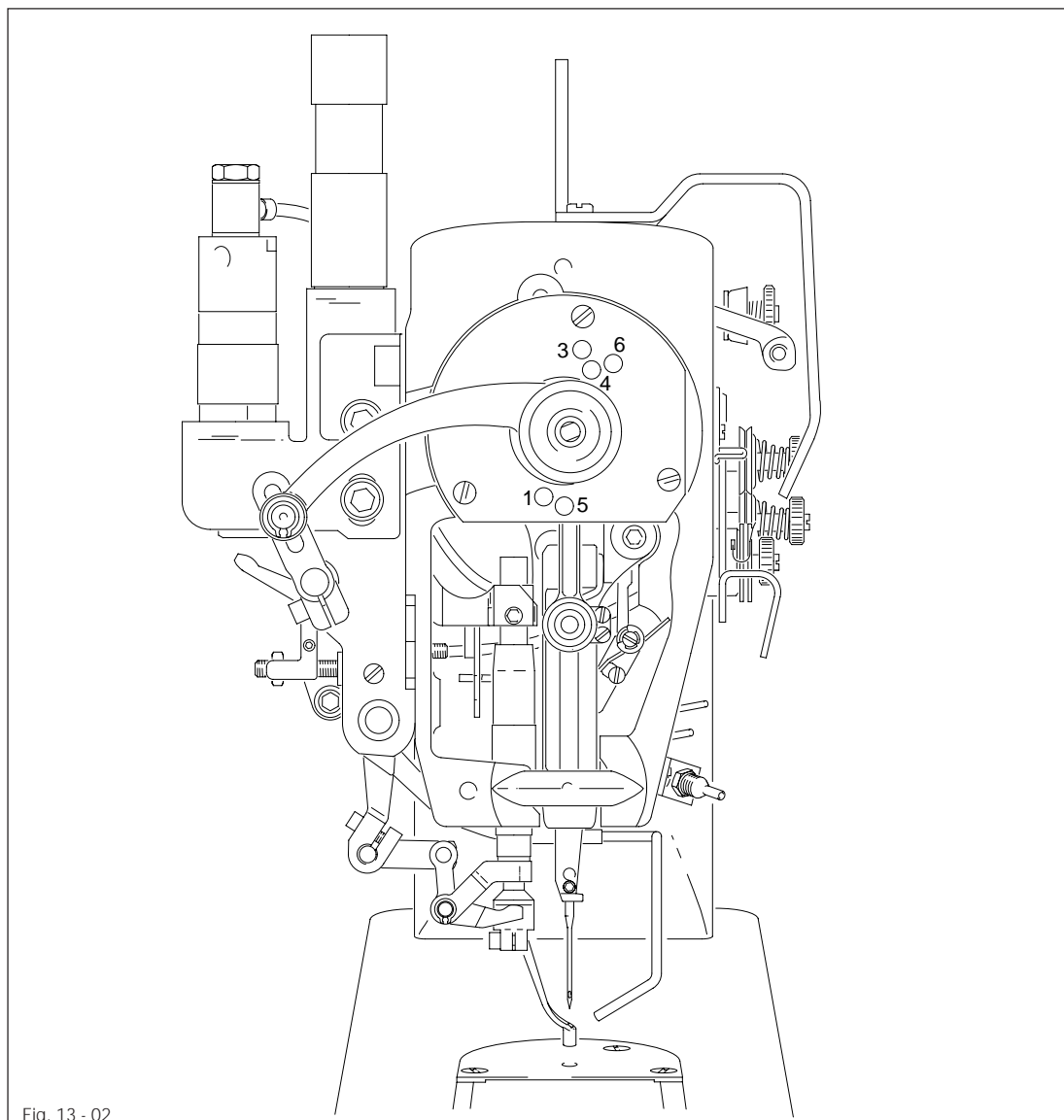
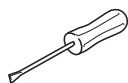


Fig. 13 - 02



- Turn the handwheel until the needle bar is approximately in the position required.
- Insert the adjustment pin into the relevant hole provided and apply pressure.
- Turn the handwheel slightly forwards and backwards until the adjustment pin engages in the crank slot behind the bearing plate and thus blocks the machine.

Hole 1 = 0.6 mm past the top dead center of the needle bar (0.6 past TDC)

Hole 3 = 0.6 mm past the bottom dead center of the needle bar (0.6 past BDC)

Hole 4 = 1.8 mm past the bottom dead center of the needle bar (1.8 past BDC)

Hole 5 = top dead center of the needle bar (TDC)

Hole 6 = 4 mm past the bottom dead center of the needle bar (4 past BDC)

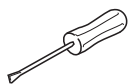
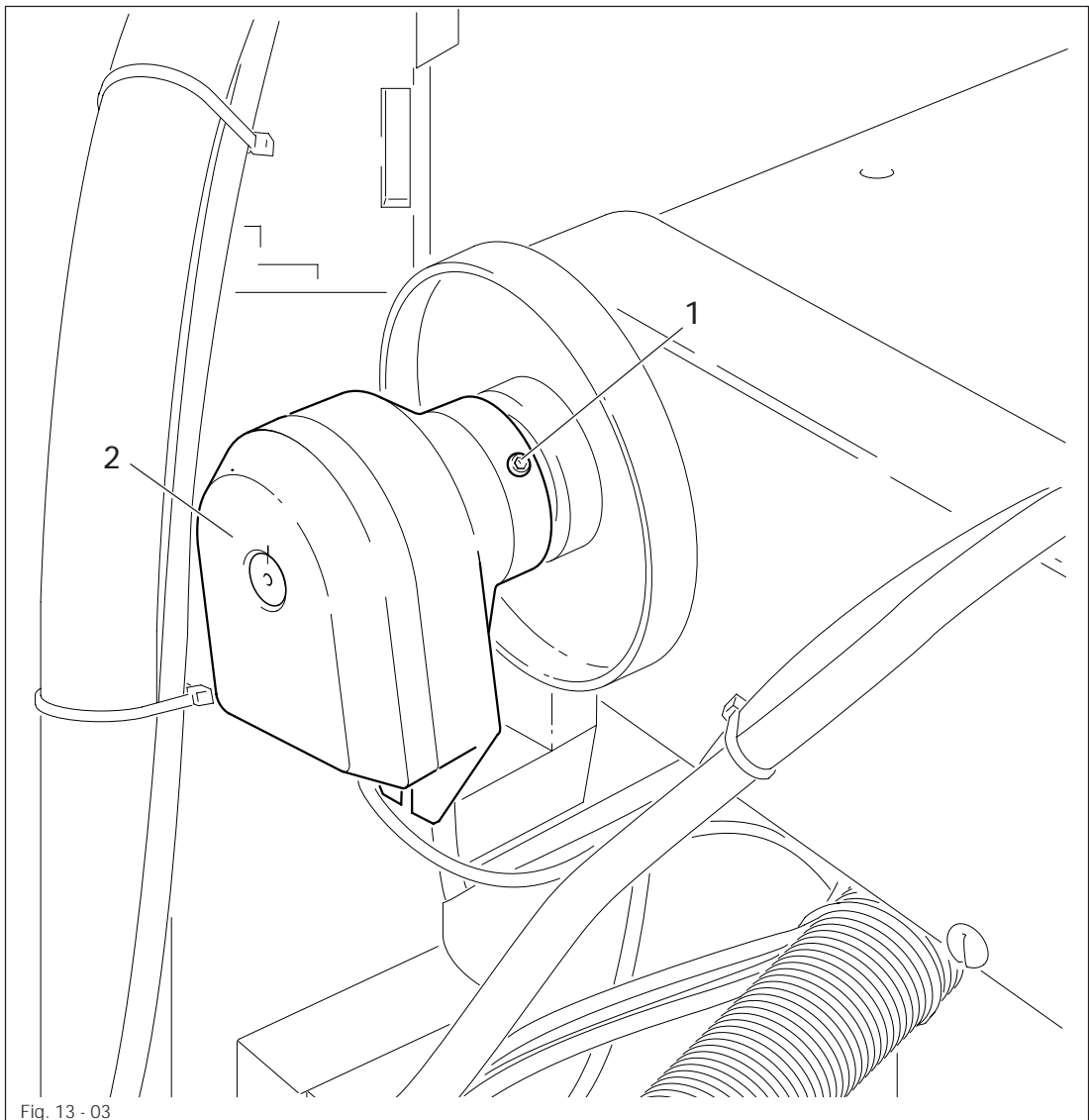
# Adjustment

## 13.06 Adjustment of the sewing head

### 13.06.01 Adjusting the synchronizer

#### Requirement

Upon completion of the sewing operation, the sewing machine should be positioned in the TDC of the needle bar.



- Switch on the machine.
- Slide the feed carriage to zero point by hand (see Chapter 8.04 Checking /setting zero point).

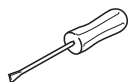
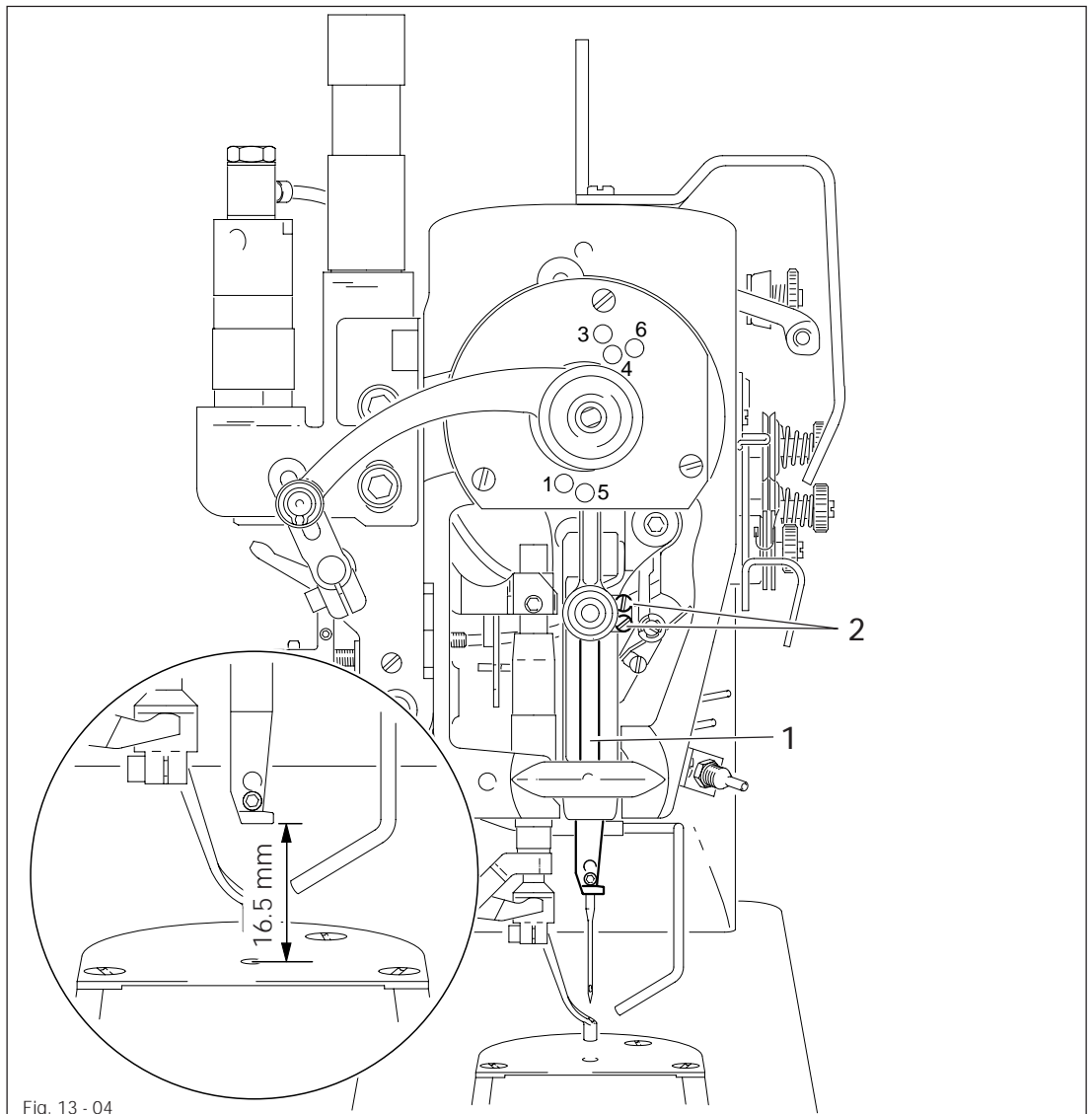


- Press the **home position** key on the control panel.
- Loosen screw 1.
- Hold synchronizer 2 firmly while turning the handwheel to position the needle bar at TDC.
- Tighten screw 1.
- Perform a check according to the **requirement**.

## 13.06.02 Preadjusting needle height

**Requirement**

In the BDC of the needle bar, the distance between the bottom edge of needle bar 1 and the needle plate should be approx. 16.5 mm.



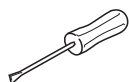
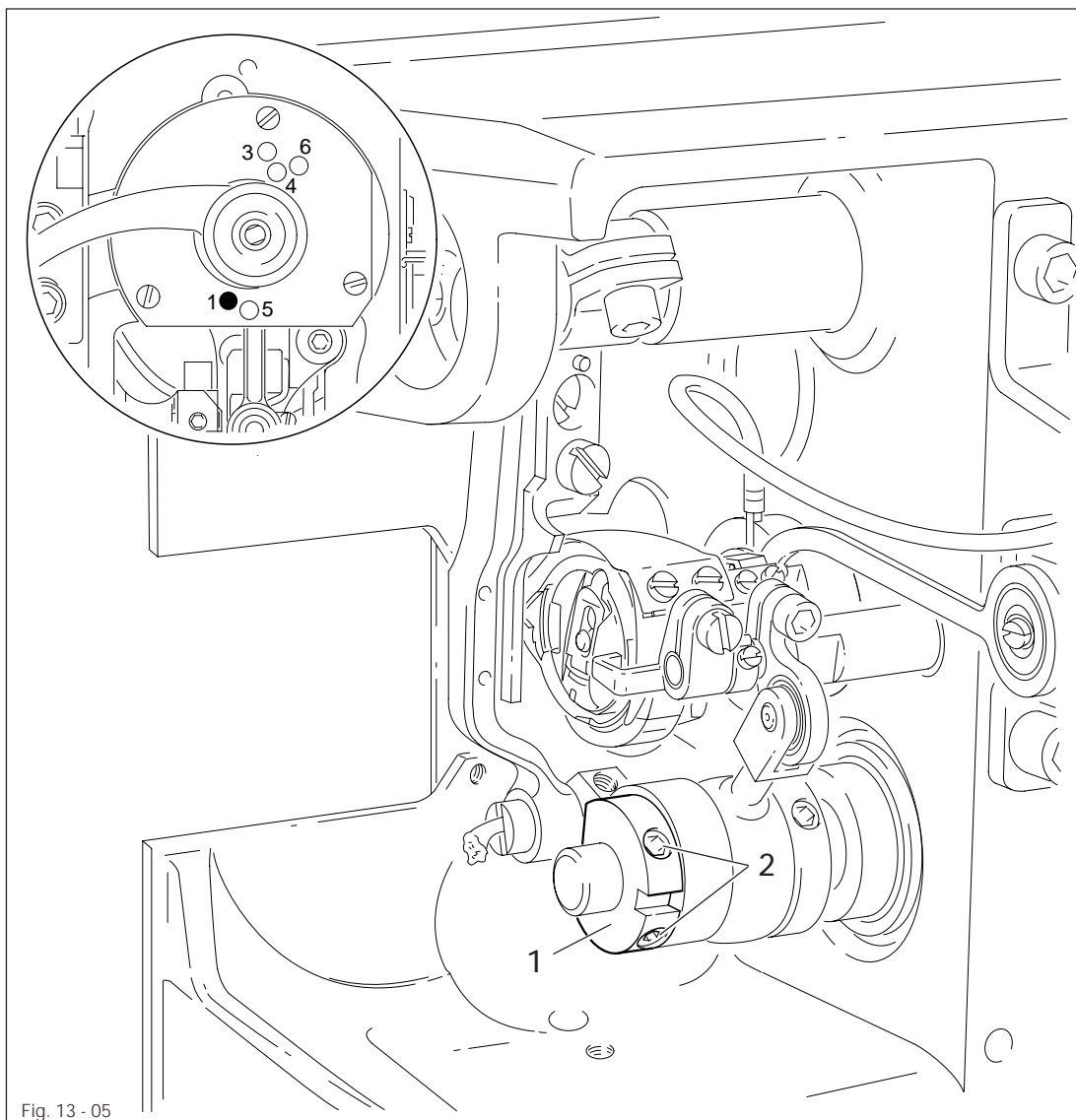
- Position needle bar 1 in the BDC.
- Move needle bar 1 (screw 2), without turning it, according to the requirement.

## 13.06.03 Counter presser lifting stroke

### Requirement

With the needle bar at 0.6 past BDC (hole 3),

1. the counter presser should be in its top point of reversal and
2. the cutout of eccentric 1 should be positioned more or less vertically below the center of the axle.

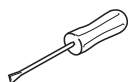
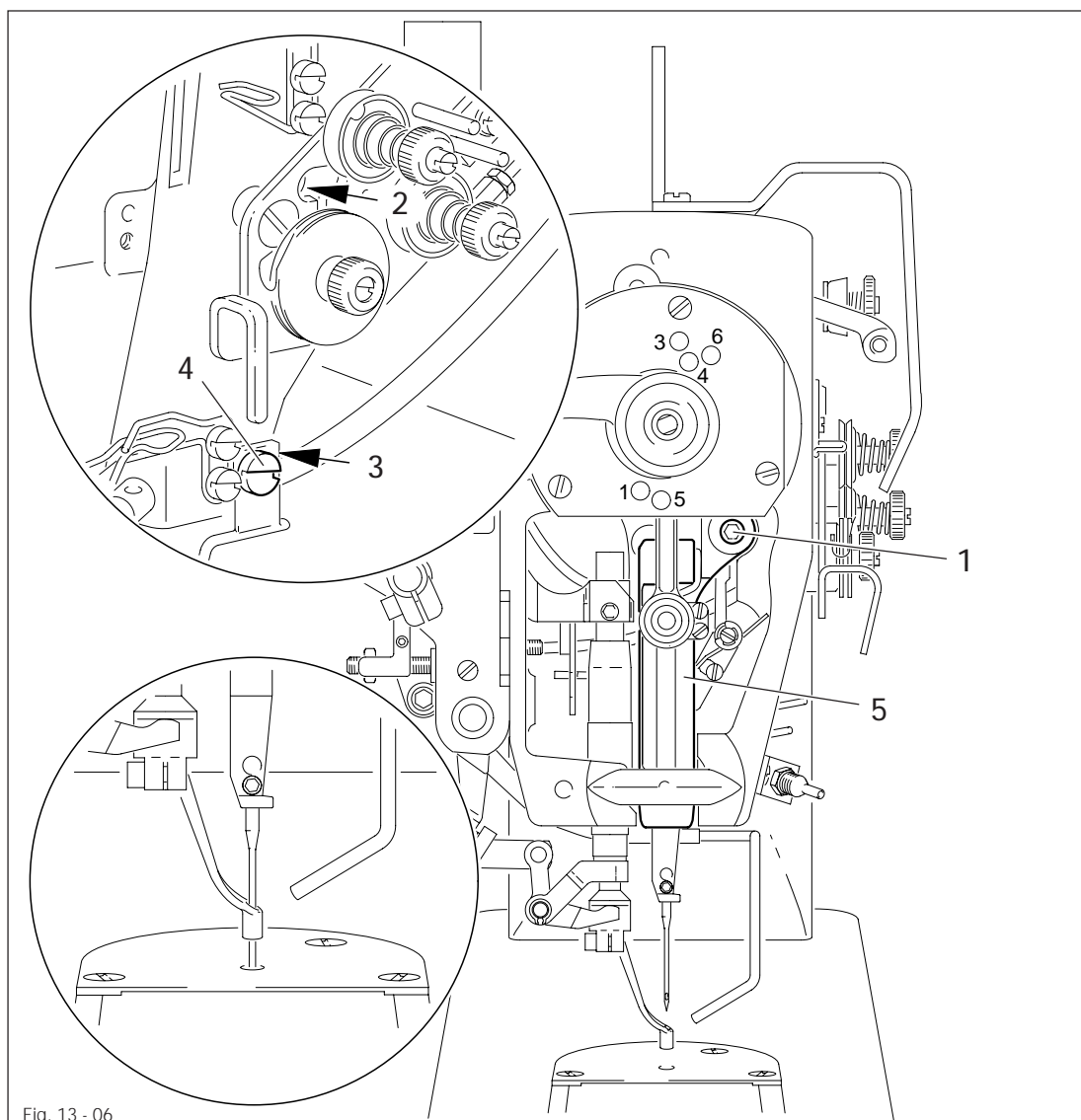


- Position the needle bar at 0.6 past BDC.
- Turn eccentric 1 (screw 2) according to the requirement.

## 13.06.04 Needle in the needle hole center

**Requirement**

The needle should penetrate right into the center of the needle hole.



- Position the needle immediately above the needle hole.
- Loosen screws 1, 2 and 3 (behind screw 4).
- Move needle bar frame 5 according to the requirement.
- Slightly tighten screw 2. Retighten screw 3.
- Using screw 1, pull the inner guide pin up to the eye of needle bar frame 5 and screw it tight.
- Rotate the handwheel a few times to prevent needle bar frame 5 tensioning.
- Retighten screw 2.

## 13.06.05 Hook shaft bearing and hook-to-needle clearance

### Requirement

1. The groove in bearing 3 (see arrow) should be visible from below and there should be slight but palpable play between gear wheels 5 and 9.
2. When the hook is resting lightly on the centrifugal disk and the hook point is positioned at the center of the needle, there should be a clearance of **less than 0.1 mm** between the hook point and the clearance cut of the needle.
3. Gear wheel 5 should align with gear wheel 9.

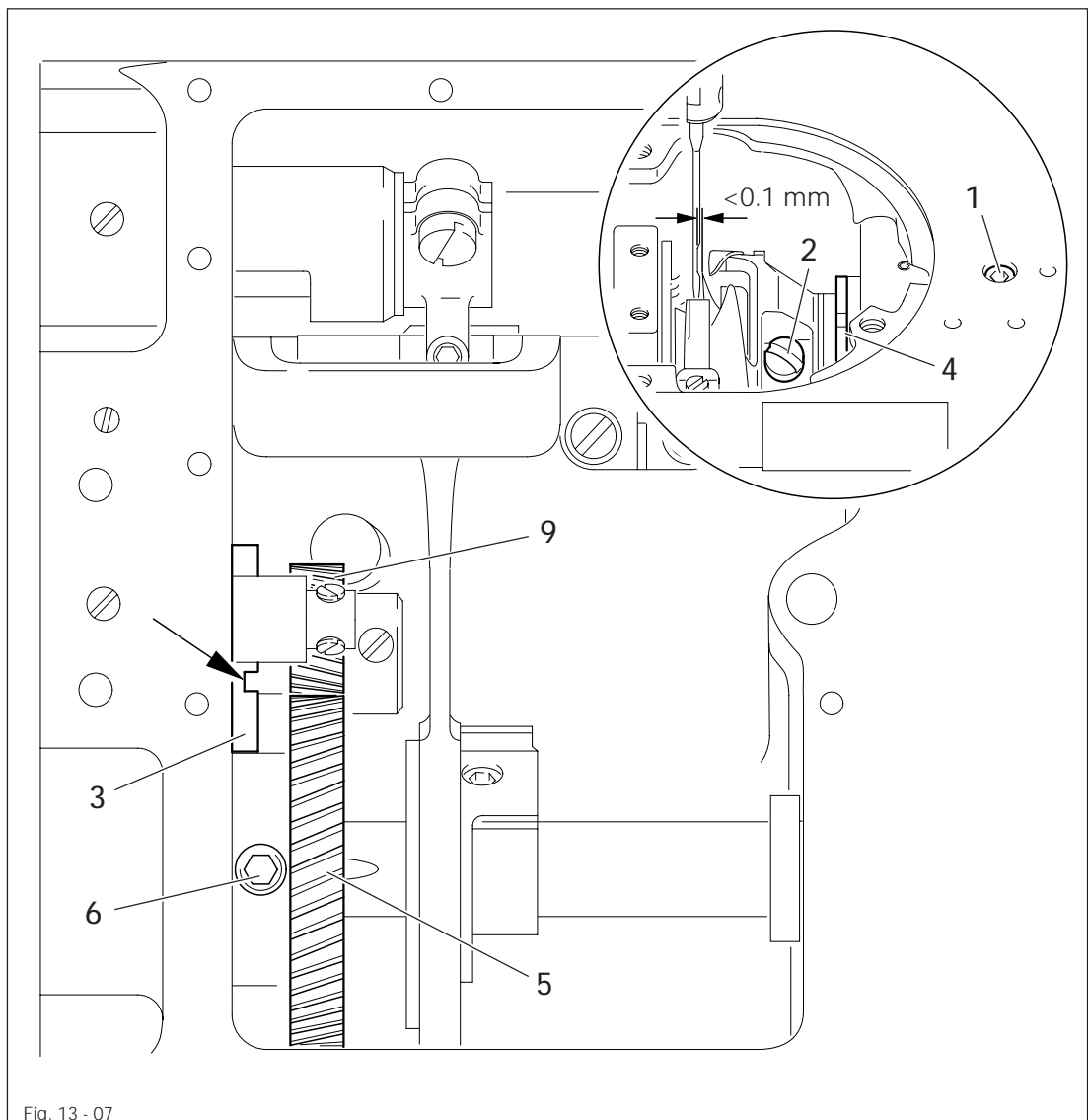
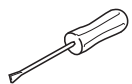


Fig. 13 - 07



- Loosen screws 1 and 2.
- Turn bearing 3 according to the **requirement 1**.
- Move the hook gently against centrifugal disk 4 until it stops.
- Move bearing 3 without turning it according to **requirement 2**.
- Tighten screws 1 and 2.
- Move gear wheel 5 (screw 6) according to **requirement 3**.

## 13.06.06 Needle rise, needle height and bobbin case position stop

## Requirement

1. With the needle bar at 1.8 past BDC (hole 4), the hook point should be positioned on the right side of the needle.
2. In the needle rise position, the top edge of the needle eye should be positioned **0.8 mm** below the hook point and
3. there should be a distance of at least **0.5 mm** between the projection of bobbin case position stop 4 and the base of the retaining groove.

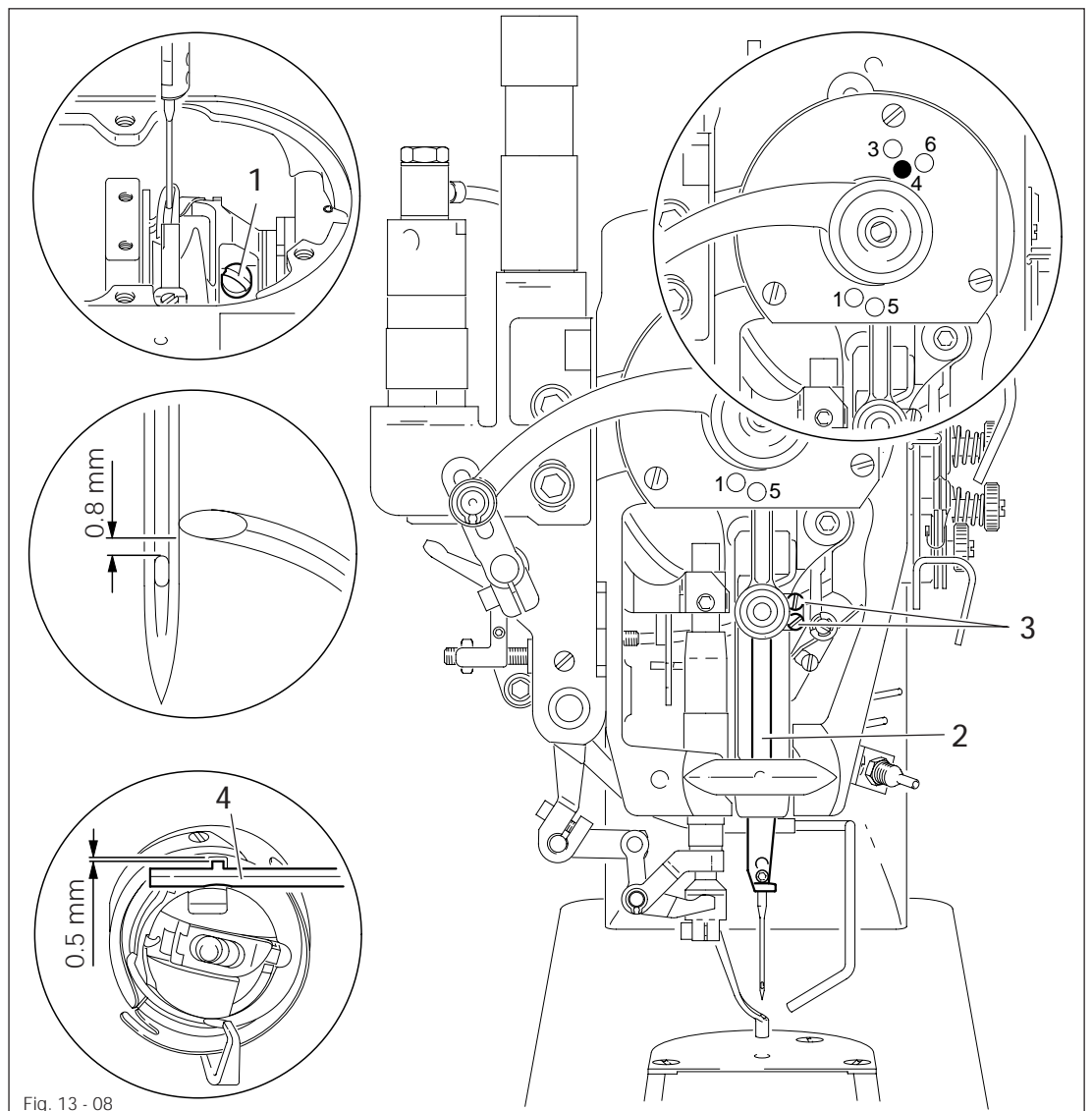
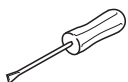


Fig. 13 - 08

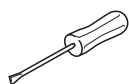
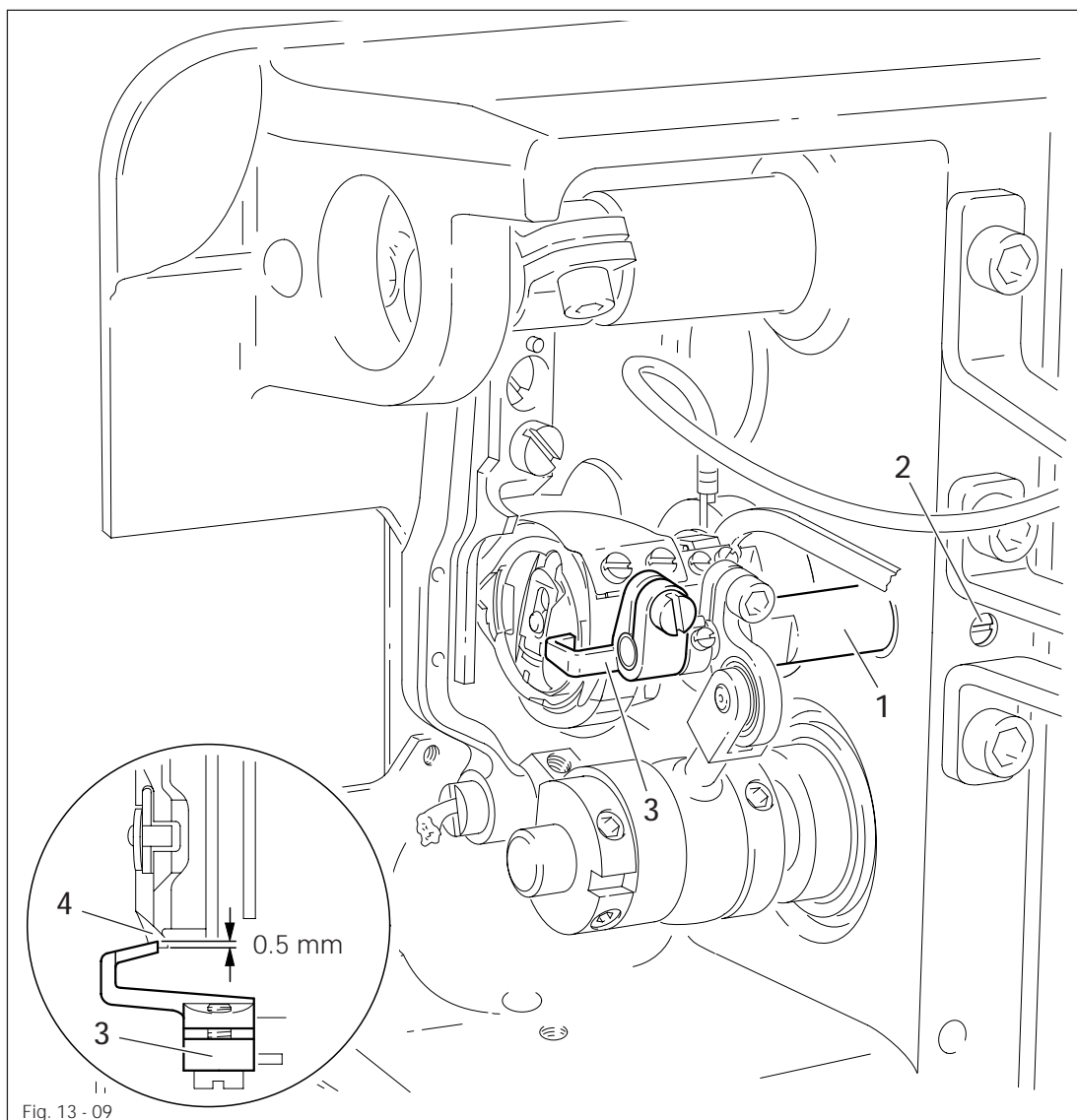


- Position the needle bar at 1.8 past BDC.
- Turn the hook (screw 1) without moving it according to **requirement 1**.
- From needle bar position 1.8 past BDC, position the hook point in the center of the needle (needle rise position) by turning the handwheel in the direction of rotation.
- Move needle bar 2 (screws 3) without turning it according to **requirement 2**.
- Mount bobbin case position stop 4 according to **requirement 3**.

## 13.06.07 Bobbin opener height

### Requirement

At the left point of reversal of bobbin opener 3, the top edge of its finger should be positioned 0.5 mm above the bottom edge of trip 4.



- Turn bobbin opener bearing 1 (screw 2) according to the requirement.

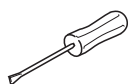
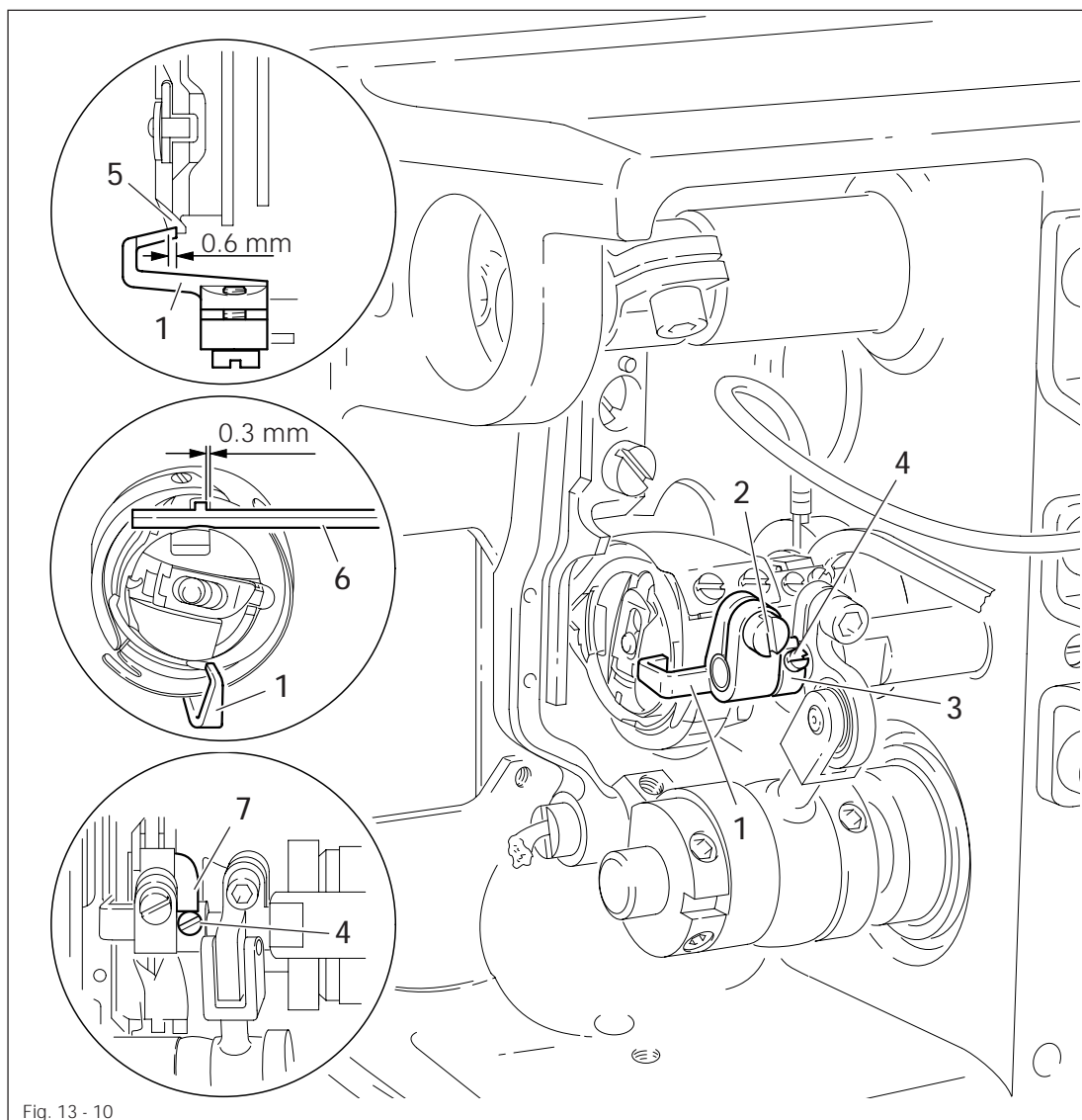


## 13.06.08 Bobbin opener position

**Requirement**

In the left point of reversal of bobbin opener 1,

1. the front edge of the bobbin opener finger should be positioned approx. 0.6 mm behind the front edge of trip 5 and
2. the bobbin case base should be pushed back approx. 0.3 mm from the position finger of bobbin case position stop 6 and rest against screw 4 on stop pin 7.



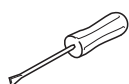
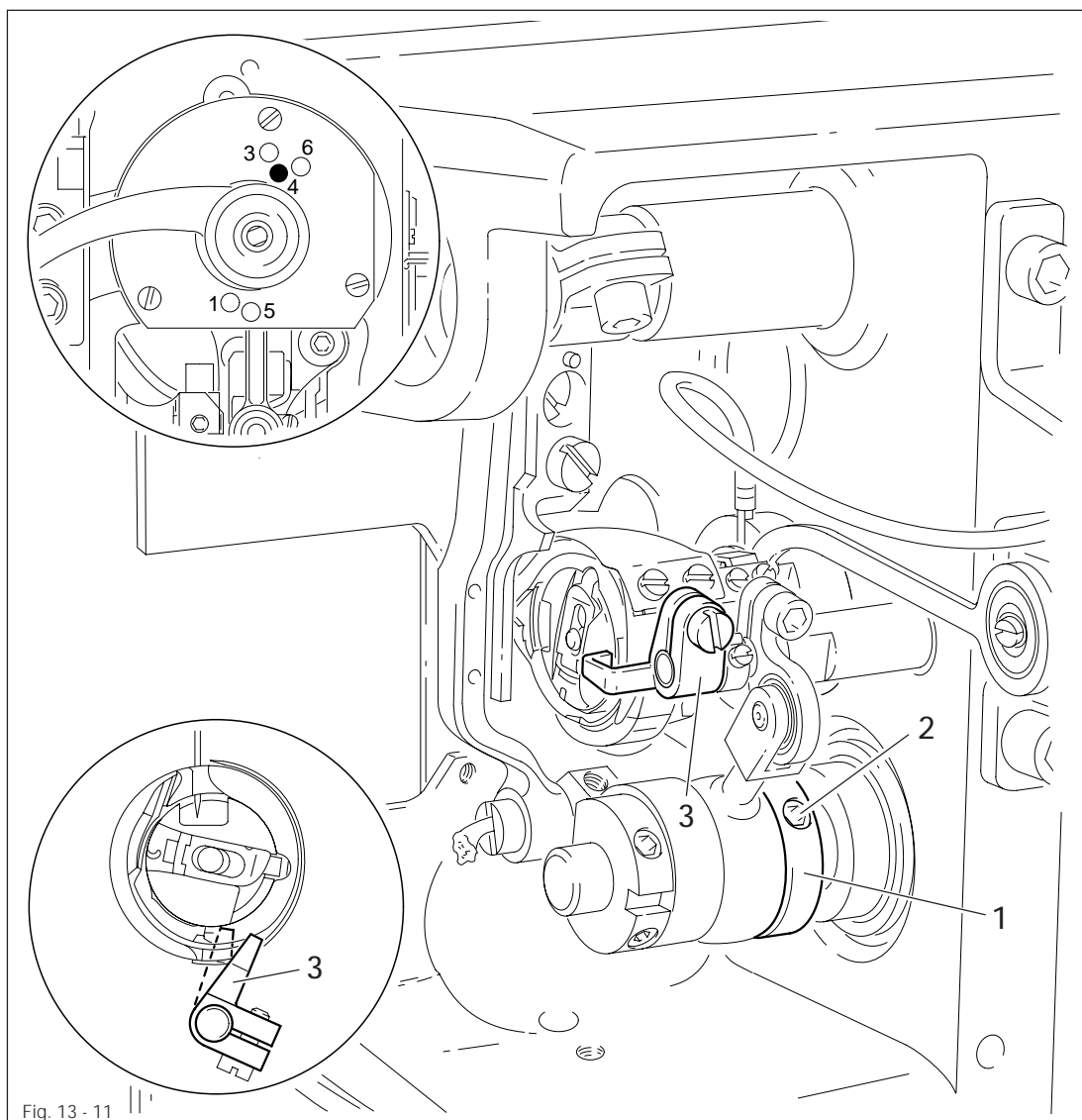
- Move bobbin opener 1 (slightly loosen screw 2) according to requirement 1.
- Adjust retaining collar 3 (screw 4) according to requirement 2.

## Adjustment

### 13.06.09 Bobbin opener movement

#### Requirement

With the needle bar at 1.8 past BDC (hole 4), bobbin opener 3 should be positioned in its right point of reversal.



- Adjust eccentric 1 (screw 2) according to the requirement.

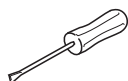
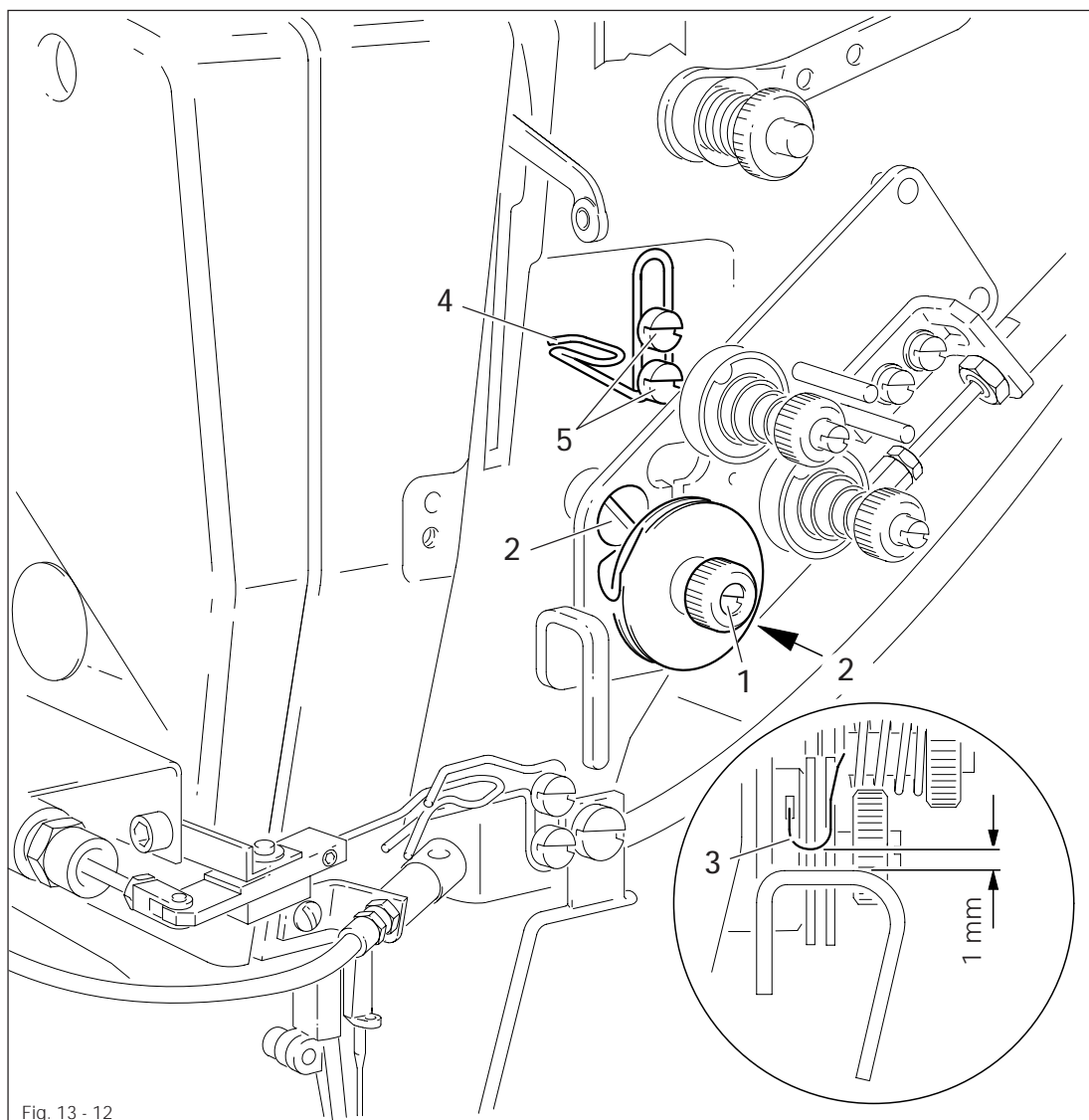


To provide a better indication of the movement of the bobbin opener, a screwdriver can be inserted in the jam slot of bobbin opener 3.

## 13.06.10 Thread check spring and slack thread regulator

**Requirement**

1. The stroke of thread check spring 3 should be completed when the needle point penetrates the material (spring stroke approx. 7 mm).
2. Slack thread regulator 4 should be so secure in its elongated hole that thread check spring 3 moves approx. 1 mm when the thread loop is at its largest when going round the hook.



- Turn thread tension 1 (screws 2) according to requirement 1.
- Move slack thread regulator 4 (screws 5) according to requirement 2.



The stroke of thread check spring 3 and position of slack thread regulator 4 will vary depending on the material and thread and must be corrected according to the sewing result.

## Adjustment

### 13.06.11 Thread puller

#### Requirement

Upon completion of a sewing operation, thread puller 3 should pull enough thread to ensure a secure beginning of seam and without breaking the thread.

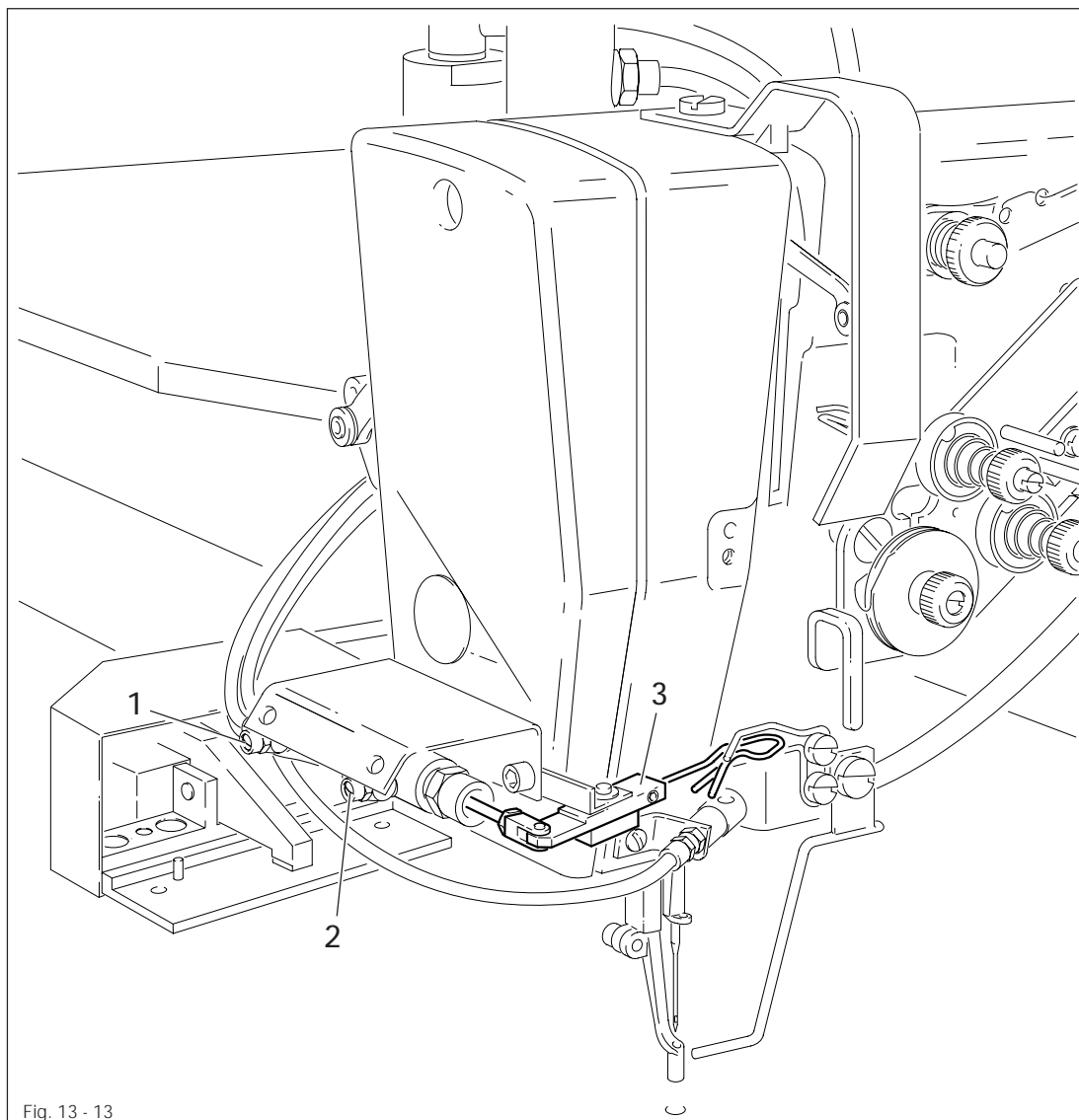
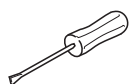


Fig. 13 - 13



- Adjust restrictors 1 and 2 according to the requirement.

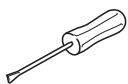
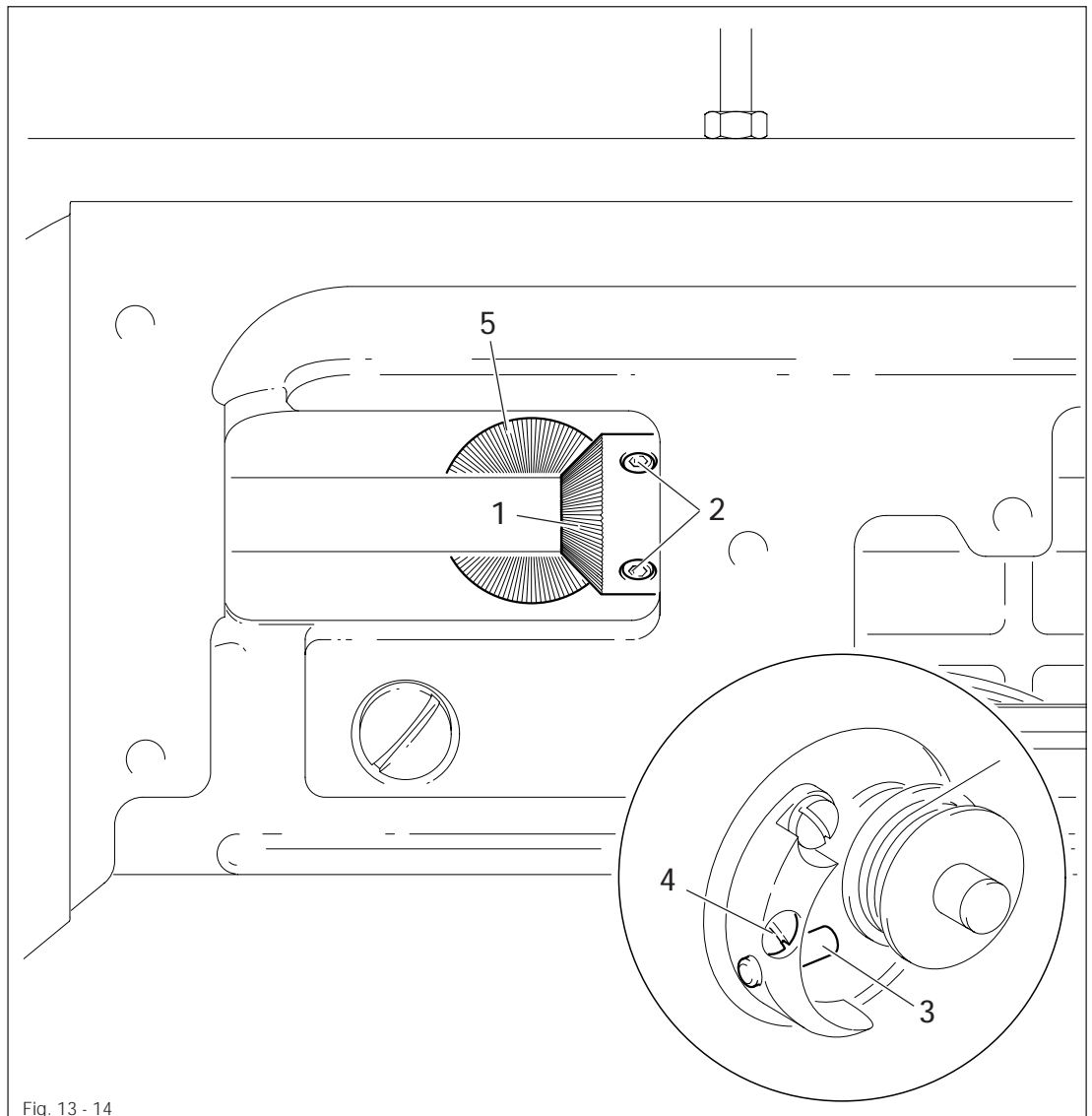


The time for the thread puller can be adjusted via the control panel using the function "TIME FOR THREAD PULLER" (see Chapter 11.03 Explanation of the menu functions).

## 13.06.12 Bobbin winder

**Requirement**

1. When the winder is switched on, the bobbin winder spindle should move securely with the winder.
2. When the winder is switched off, friction wheel 5 must not engage drive wheel 1.
3. The bobbin winder should switch off automatically when the bobbin has been filled to approx. 1 mm from the edge.



- Move drive wheel 1 (screws 2) according to requirements 1 and 2.
- Move pin 3 (screw 4) according to requirement 3.

## 13.06.13 Presser foot lifting movement

### Requirement

With the needle bar at TDC (hole 5), the presser foot should be in its top point of reversal.

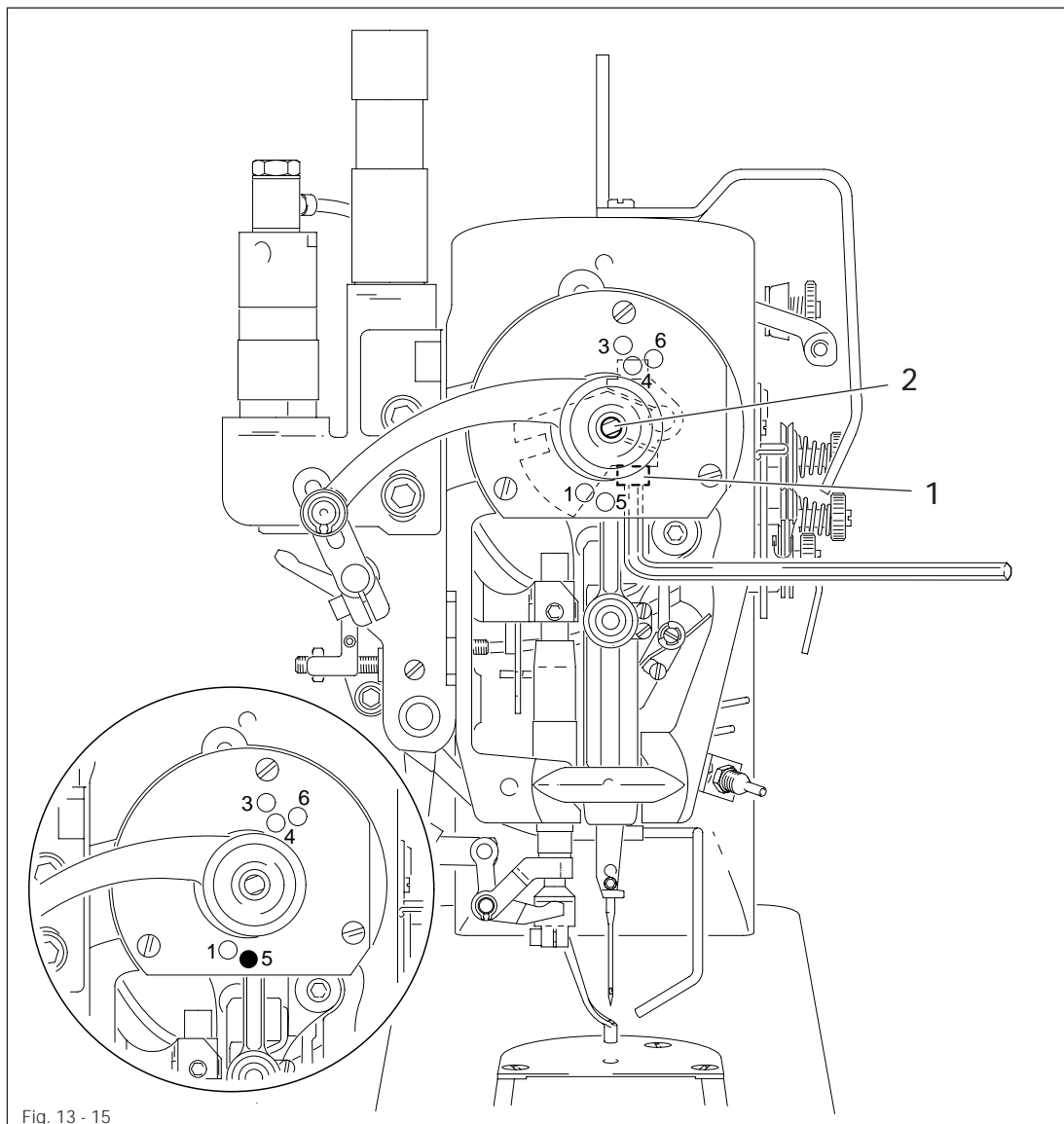
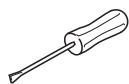


Fig. 13 - 15

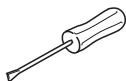
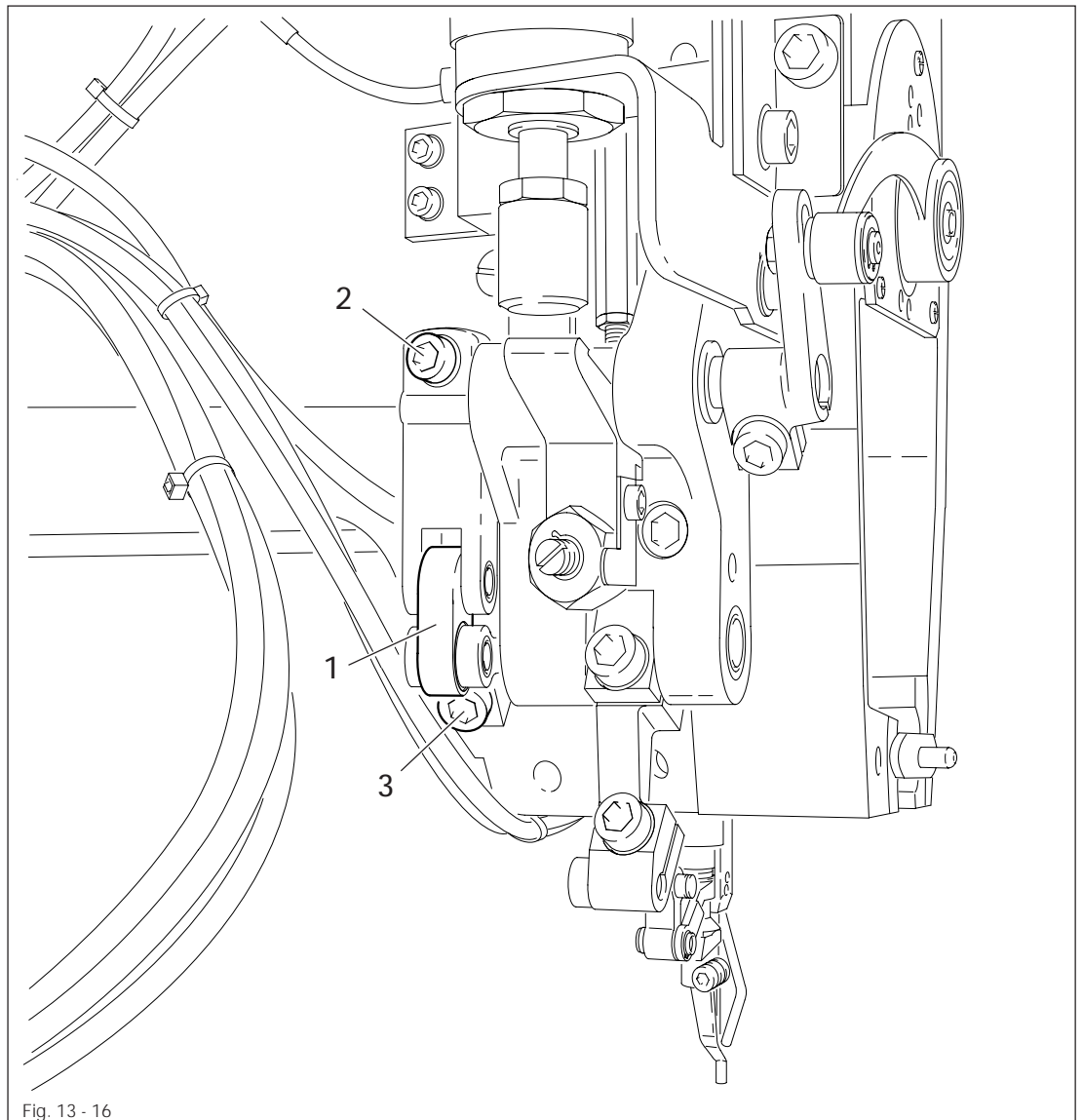


- Position the take-up lever in its top position and loosen screw 1.
- Position the needle bar at TDC and turn eccentric 2 according to the requirement.
- Position the take-up lever in its top position and tighten screw 1.
- Check setting and repeat if necessary.

## 13.06.14 Presser foot depression time

### Requirement

The presser foot should be depressed for as long as the needle is in the workpiece.



- Position the needle bar at BDC.
- Position articulated joint 1 (screws 2 and 3) so that it is centered and horizontal.

## 13.06.15 Adjusting the presser bar

### Requirement

When presser bar 1 is raised, there should be a distance of 1 mm between bush 3 and lever 4.

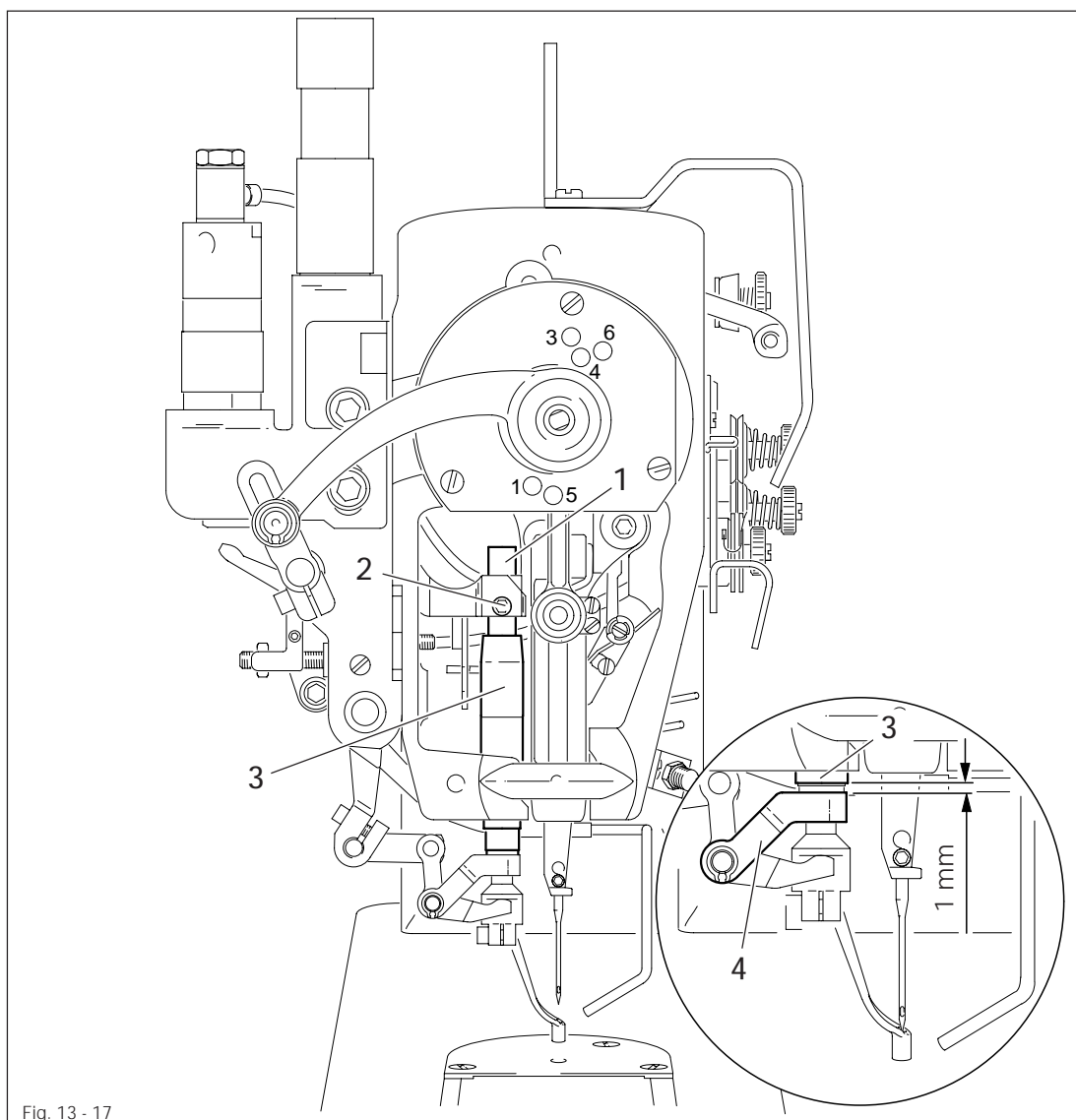
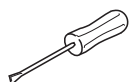


Fig. 13 - 17



- Switch on the machine.



Make sure the foot switch is not actuated!  
Risk of injury if the machine starts unexpectedly!

- Move presser bar 1 (screw 2) according to the requirement.

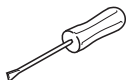
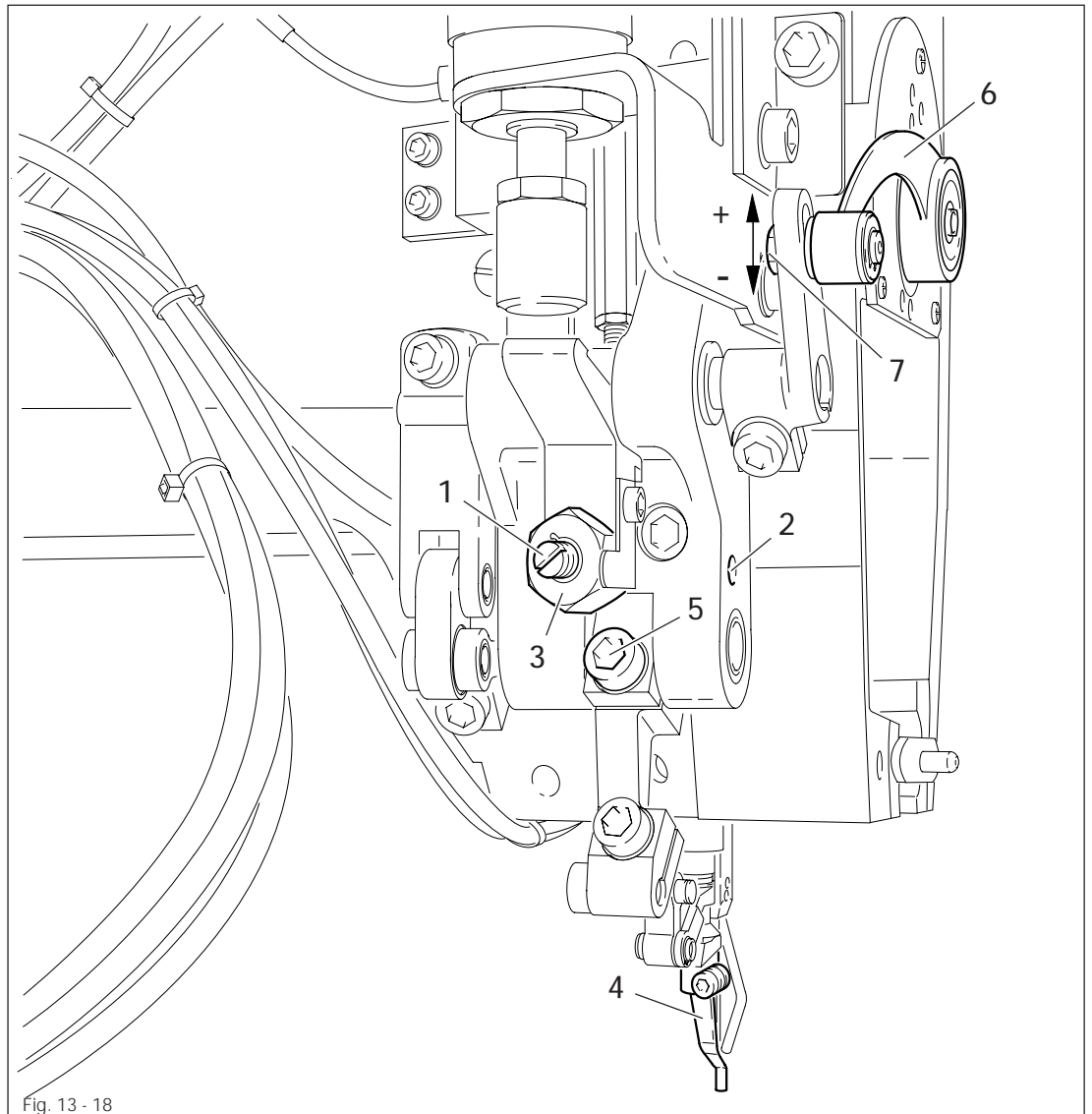


## 13.06.16 Bottom point of reversal of the presser foot and lift

### Requirement

With screw 1 screwed in as far as possible and nut 3 unscrewed as far as the circlip,

1. presser foot 4 should rest on the needle plate (counter presser) in its bottom point of reversal.
2. The lift of presser foot 4 should be adjusted to the fabric.



- Screw in adjusting screw 1 (screw 2) as far as possible.
- Unscrew nut 3 as far as the circlip.
- Using the handwheel, position presser foot 4 in its bottom point of reversal.
- Adjust presser foot 4 (screw 5) according to requirement 1.



The lift of presser foot 4 can be adjusted to the fabric by moving connecting rod 6 (nut 7) towards either "+" (= more lift) or "-" (= less lift).

## 13.06.17 Adjusting the presser foot to fabric thickness

### Requirement

In its bottom point of reversal, the distance between the presser foot and the needle plate should be appropriate to the fabric thickness.

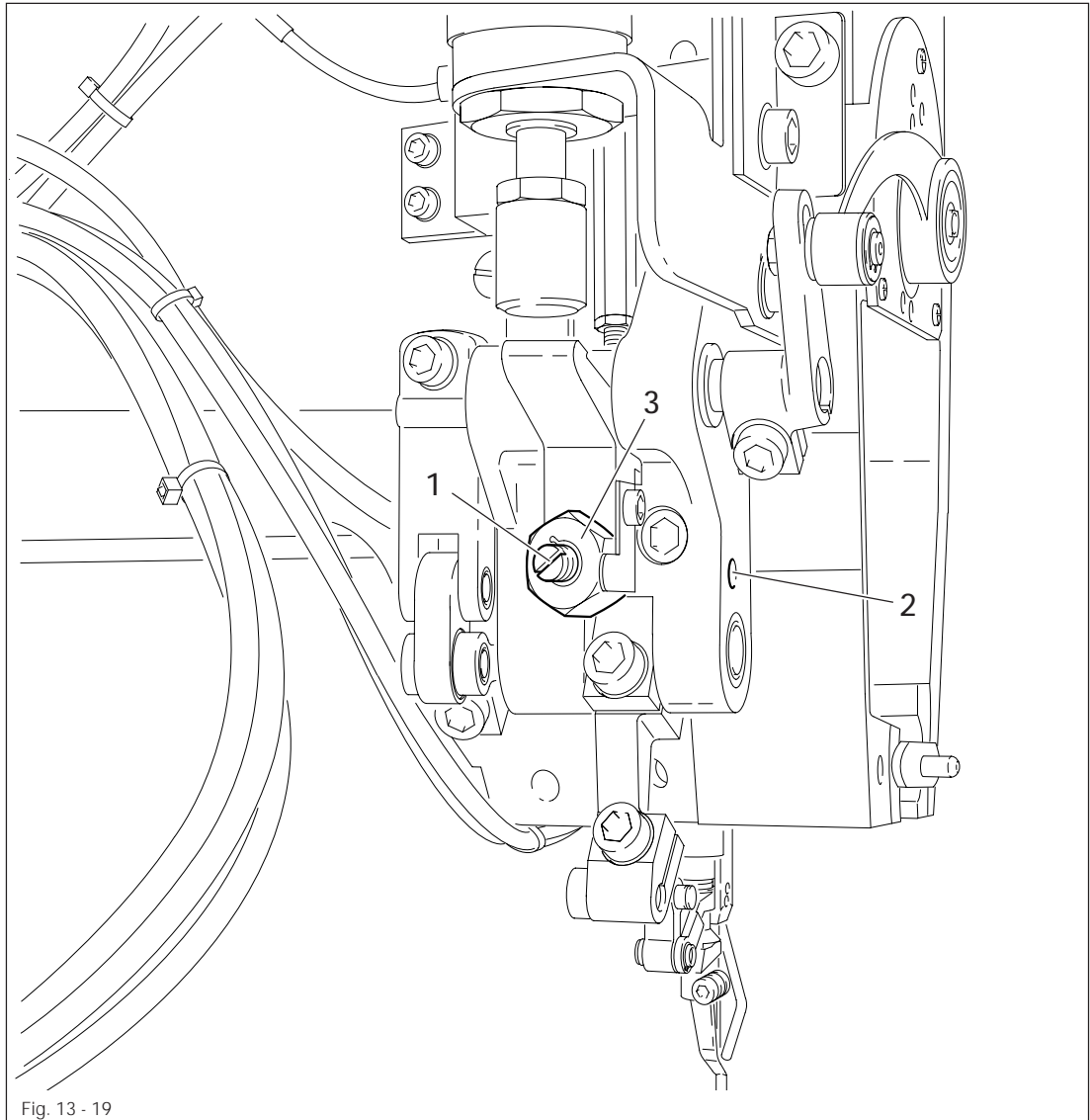
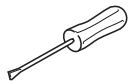


Fig. 13 - 19



Adjustment to uniform fabric thickness:

- Turn nut **1** according to the **requirement**.

Adjustment to two different fabric thicknesses:

- Adjust adjusting screw **1** (screw **2**) to the larger fabric thickness according to the **requirement**.
- Adjust nut **3** to the smaller fabric thickness according to the **requirement**.

## 13.07 Thread trimmer adjustment

## 13.07.01 Dismantling/assembling the control unit

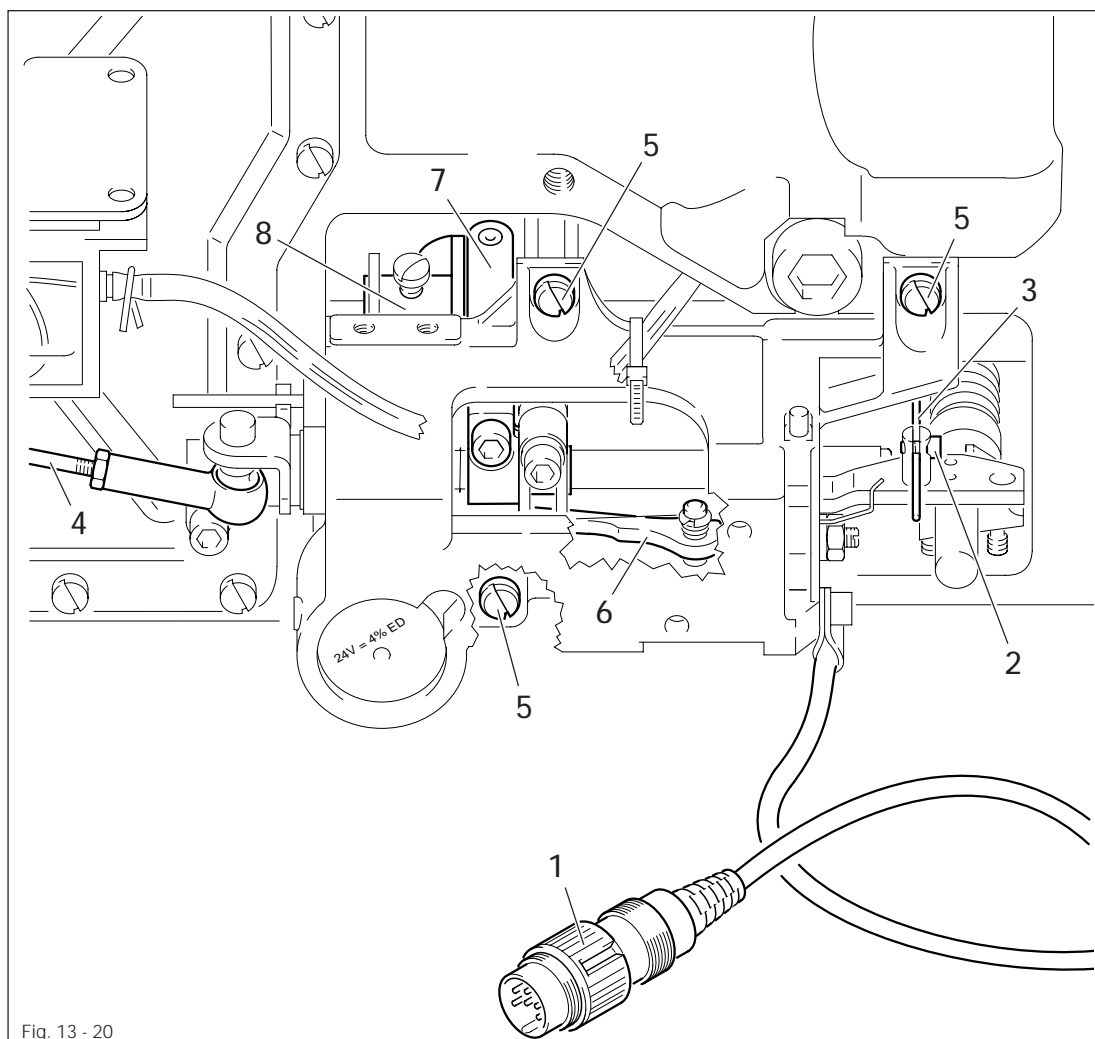
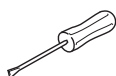


Fig. 13 - 20



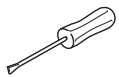
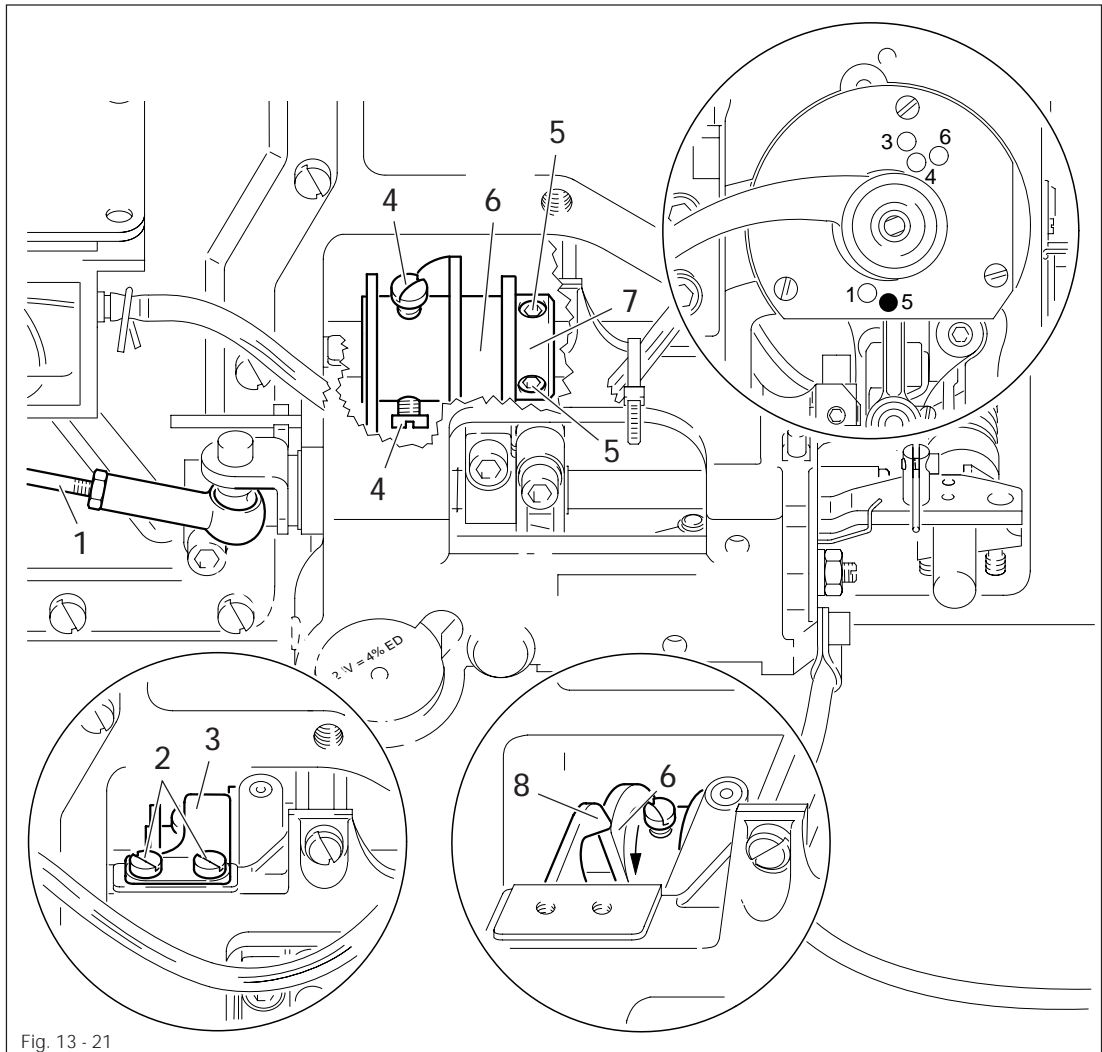
- To **dismantle** the control unit, pull plug 1 out of the socket of the motor guide plate or the control box.
- Loosen screw 2 and remove pull rod 3.
- Remove connecting rod 4.
- Unscrew screw 5 and remove the entire control unit.
- To **assemble** the control unit, position the needle bar at BDC.
- Mount the control unit and slightly tighten screw 5.
- Actuate engaging lever 6 by hand so that roller lever 7 engages in control cam 8.
- Align the control unit in such a way that the roller of roller lever 7 is centered at the cam recess of control cam 8.
- Tighten screw 5.
- Reassemble connecting rod 4 and pull rod 3 and tighten screw 2.
- Plug in plug 1.
- Perform a manual function test.
- If engaging lever 6 is not released, realign the control unit.

## 13.07.02 Preadjusting the control cam

### Requirement

With the needle bar at TDC (hole 5)

1. the beginning of the highest boss of the trip of control cam 6 must be positioned below the tip of latch 8, and
2. the right side of the trip must be flush with the right side of latch 8.



- Remove the ball heads of connecting rod 1 from the ball pins on the trimmer unit and control unit and remove connecting rod 1.
- Unscrew screw 2 and remove catch spring 3 together with the cover disk.
- Loosen screws 4 and 5.
- Turn control cam 6 according to **requirement 1** and move it according to **requirement 2**.
- Tighten screw 4.
- Push retaining collar 7 onto control cam 6.
- Tighten screw 5.



Connecting rod 1 and catch spring 3 remain dismantled for further adjustment work.

## 13.07.03 Roller lever

**Requirement**

With the needle bar at 1.8 past TDC (hole 4),

1. when roller lever 4 is tapped, the roller must engage easily in the control cam 7,
2. the roller of roller lever 4 must be centered at the cam recess of control cam 7.

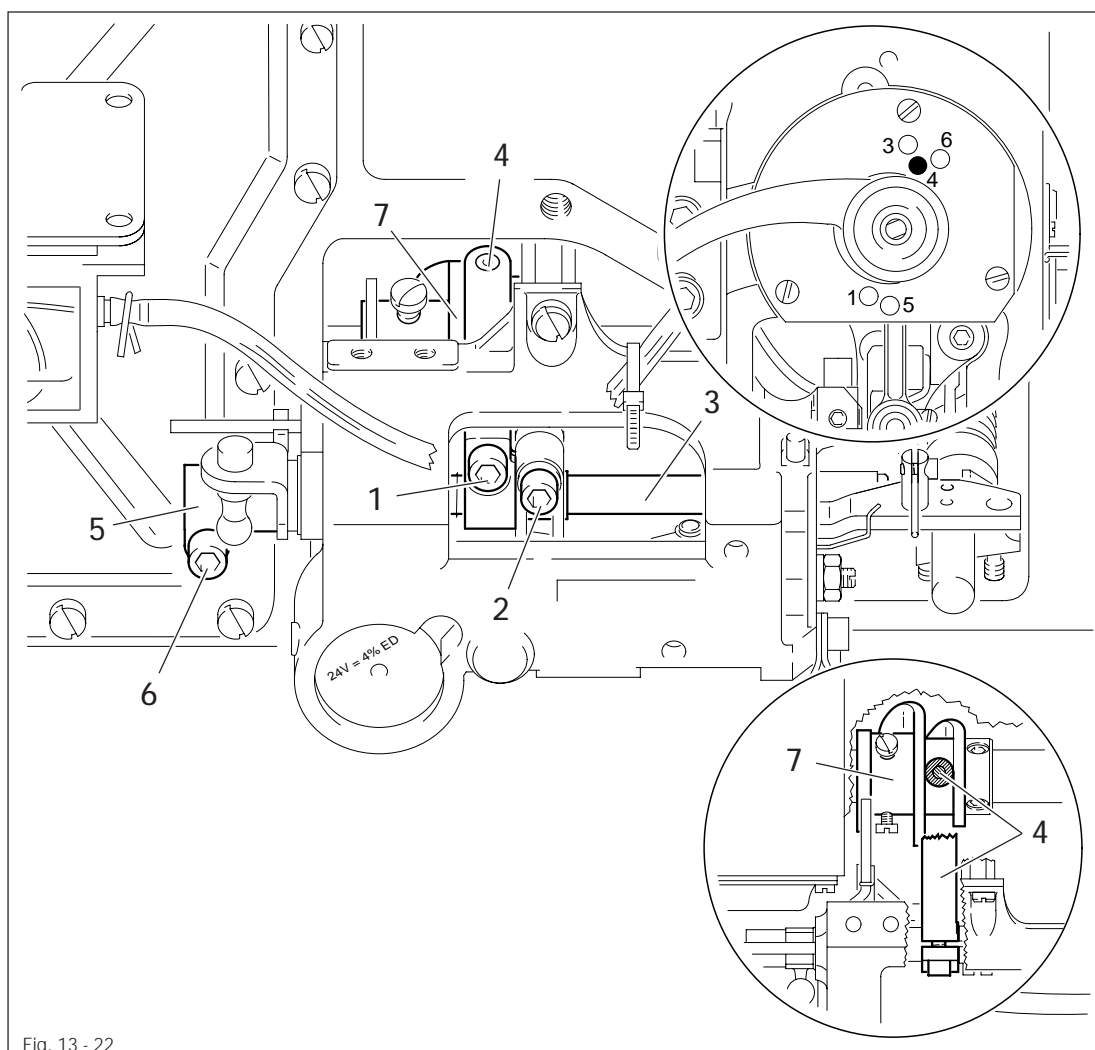
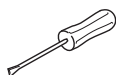


Fig. 13 - 22



- Loosen screws 1 and 2.
- Apply a load to rock shaft 3 to the right.
- Adjust roller lever 4 according to requirements 1 and 2.
- Tighten screw 1.
- Position the surface of retaining collar 5 (screw 6) parallel to the bedplate.



Screw 2 remains loosened for the following adjustments.

## Requirement

When the thread trimmer is in the resting position, there should be a distance of **0.3 mm** between latch 2 and the highest boss of control cam 1.

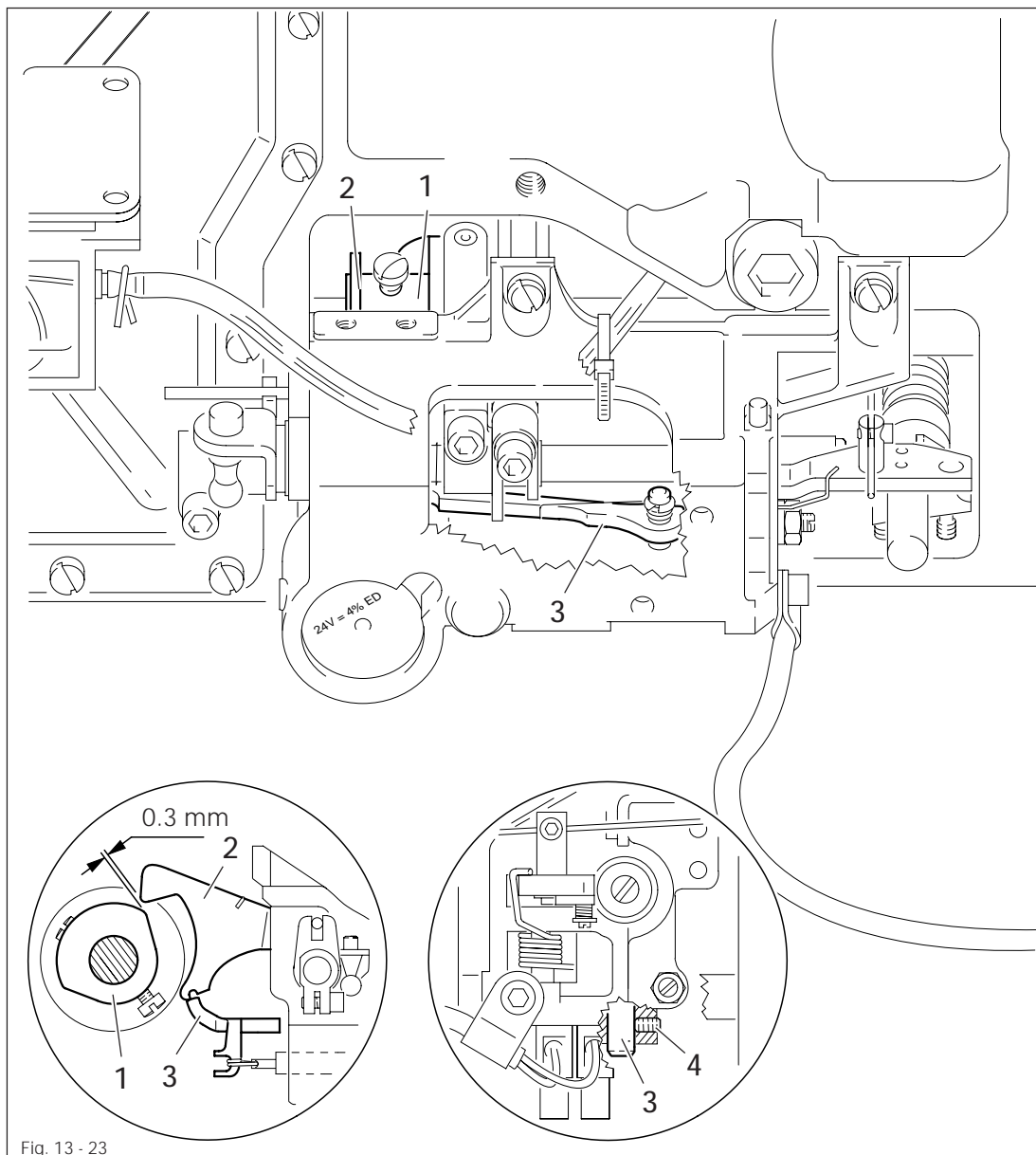
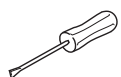


Fig. 13 - 23



- By turning the handwheel, position the bearing surface of control cam 1 with its largest eccentricity below latch 2.
- Move engaging lever 3 (screw 4) according to the requirement.

## 13.07.05 Engaging solenoid

**Requirement**

With the needle bar at 1.8 past BDC (hole 4), there should be a distance of 0.2 to 0.3 mm between engaging lever 1 and latch 2 when the engaging solenoid is actuated.

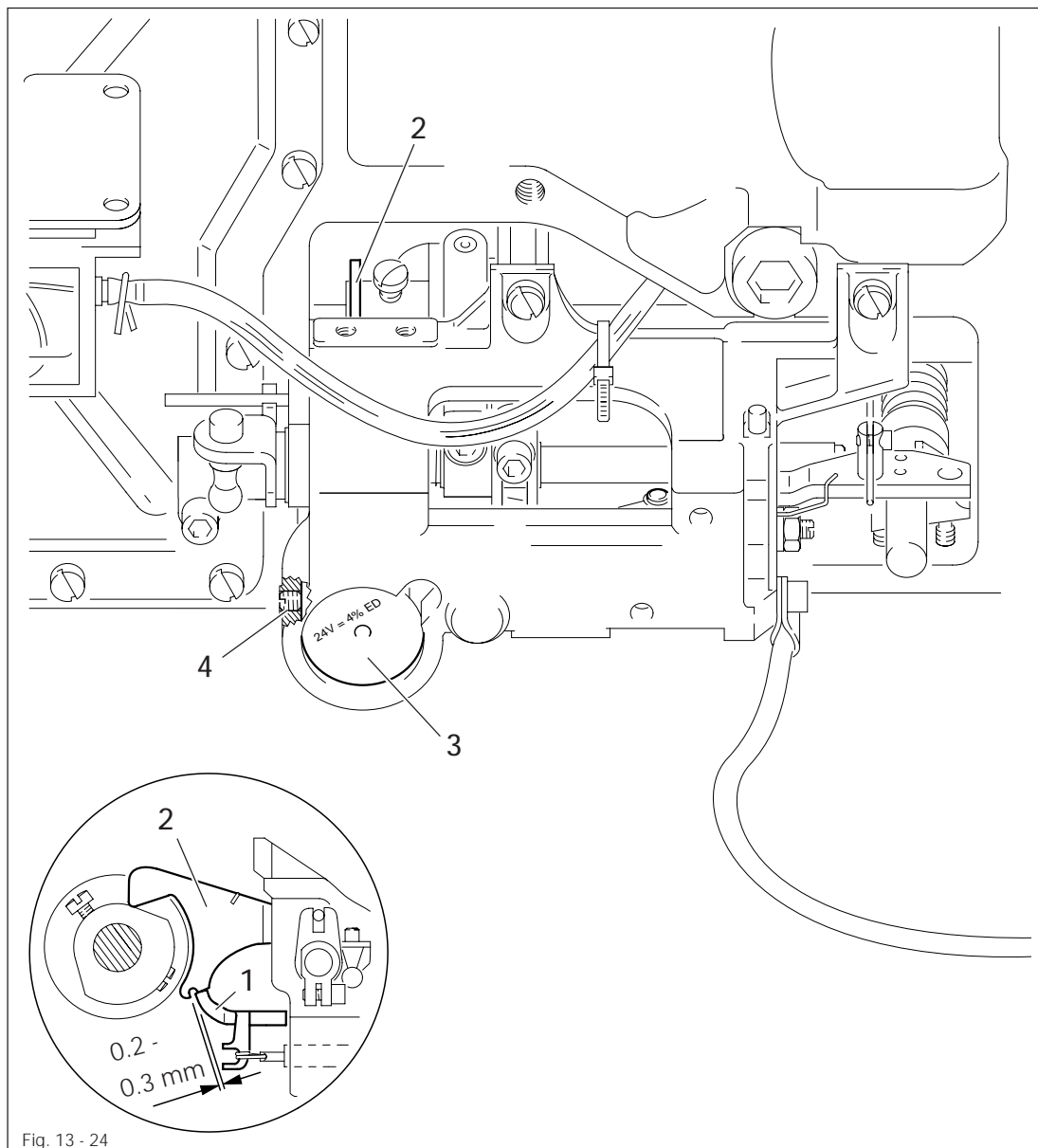
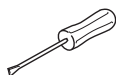


Fig. 13 - 24

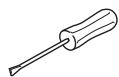
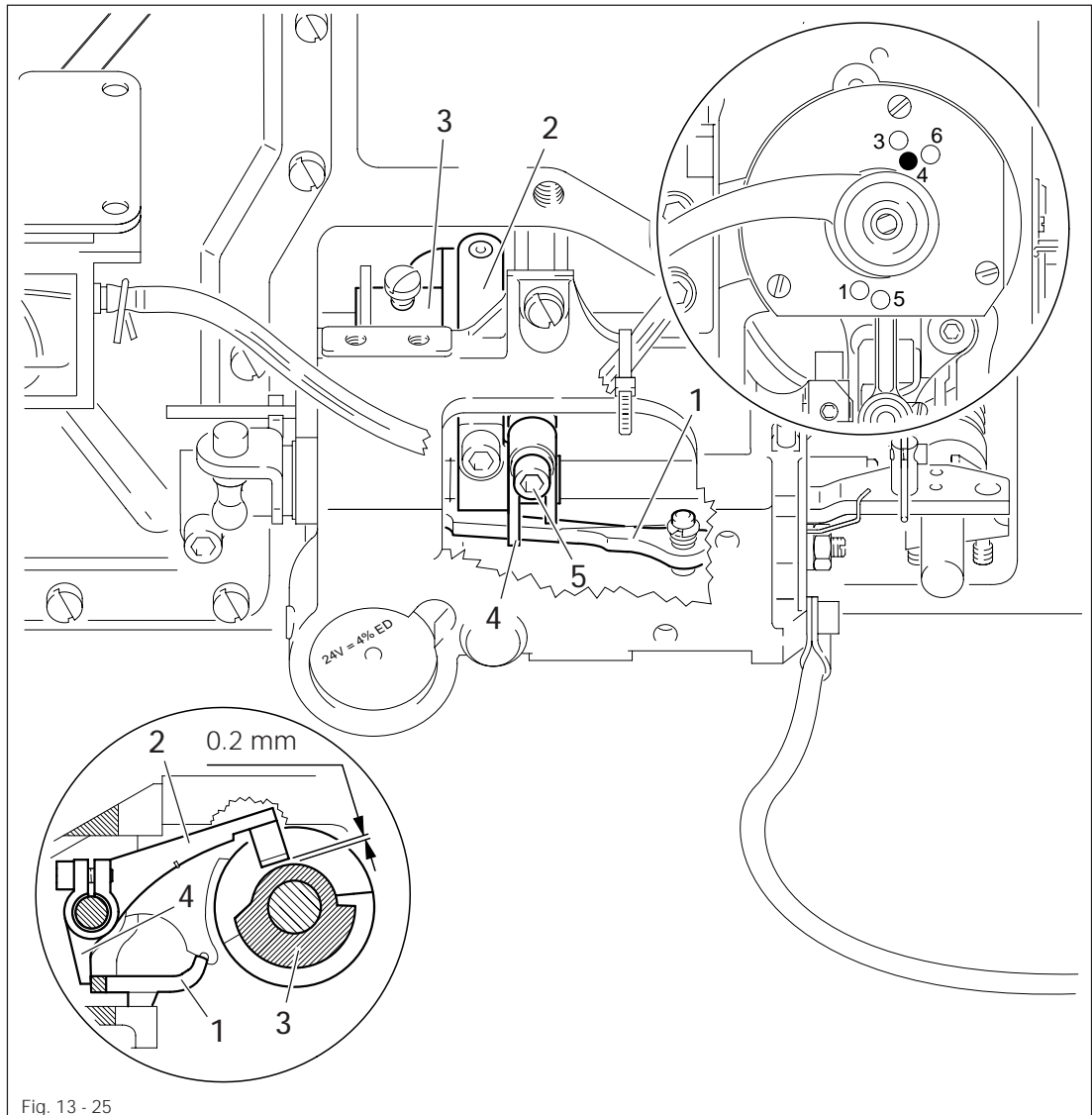


- Position the needle bar at 1.8 past BDC.
- Actuate engaging lever 1 by hand until latch 2 engages.
- Press the magnetoinductor into solenoid housing 2 as far as it will go and move solenoid housing 3 (screw 4) according to the **requirement**.

## 13.07.06 Actuating lever

### Requirement

With the needle bar at 1.8 past BDC (hole 4) and engaging lever 1 actuated, there should be a distance of approx. 0.2 mm between the roller of roller lever 2 and the base of control cam 3.



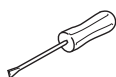
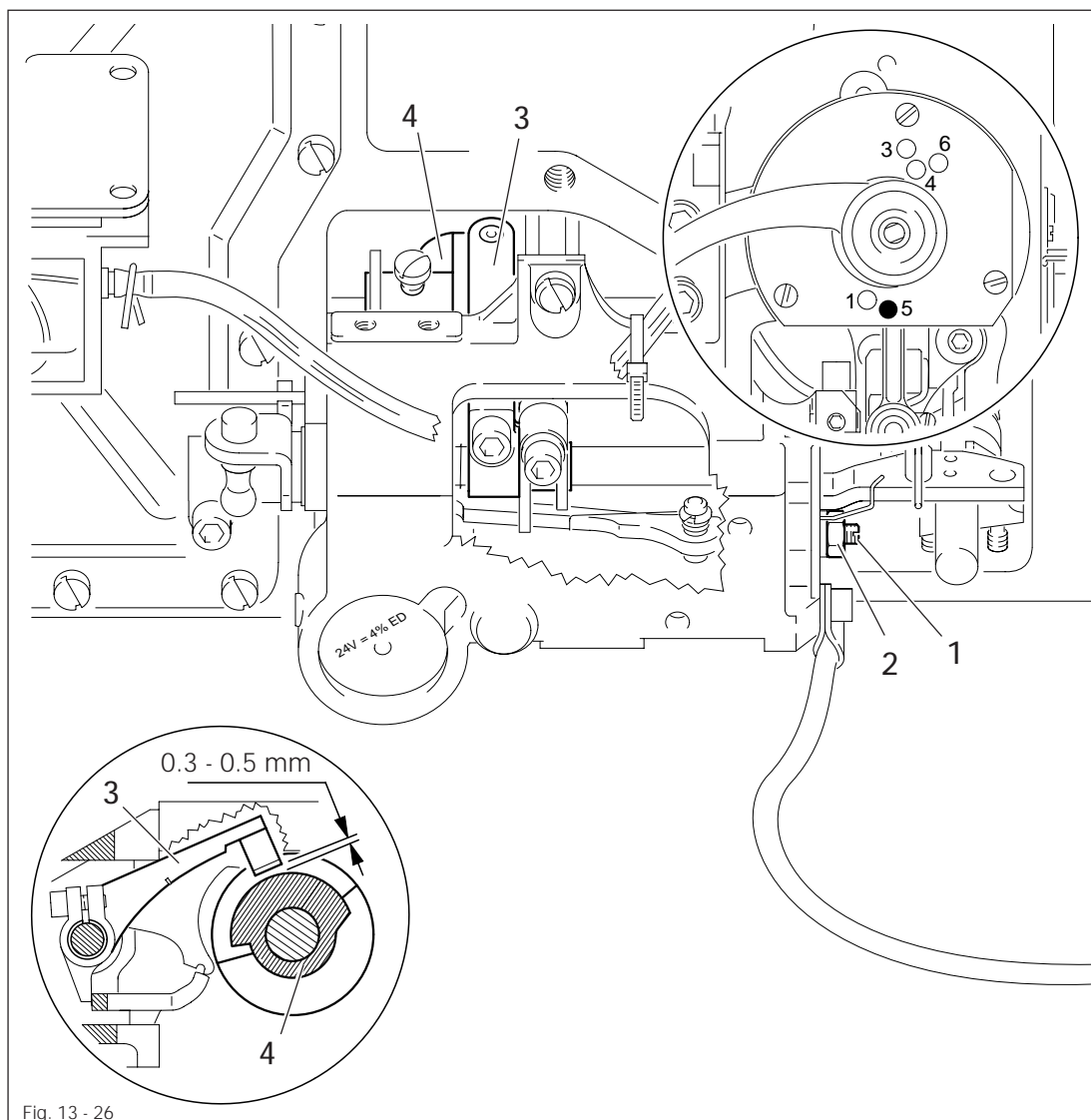
- Position the needle bar at 1.8 past BDC.
- Actuate engaging lever 1 by hand.
- Push in roller lever 2 as far as the base of control cam 3.
- Slightly tighten screw 5.
- Position actuating lever 4 on engaging lever 1.
- By tapping on roller lever 2 and repeated measurements, adjust the distance to control cam 3 to approx. 0.2 mm, with lever 4 resting on the side of roller lever 2.
- Tighten screw 5.



## 13.07.07 Engaging lever

**Requirement**

With the needle bar at TDC (hole 5) and the thread trimmer in the resting position, there should be a distance of 0.3 to 0.5 mm between the roller of roller lever 3 and the outer diameter of control curve 4.



- Turn screw 1 (nut 2) according to the requirement.
- Perform a check according to the requirement.

## 13.07.08 Lateral alignment of the thread catcher

### Requirement

1. The tip of thread catcher **6** should point exactly to the center of the needle.
2. Thread catcher **6** should not brush against anything when moving.

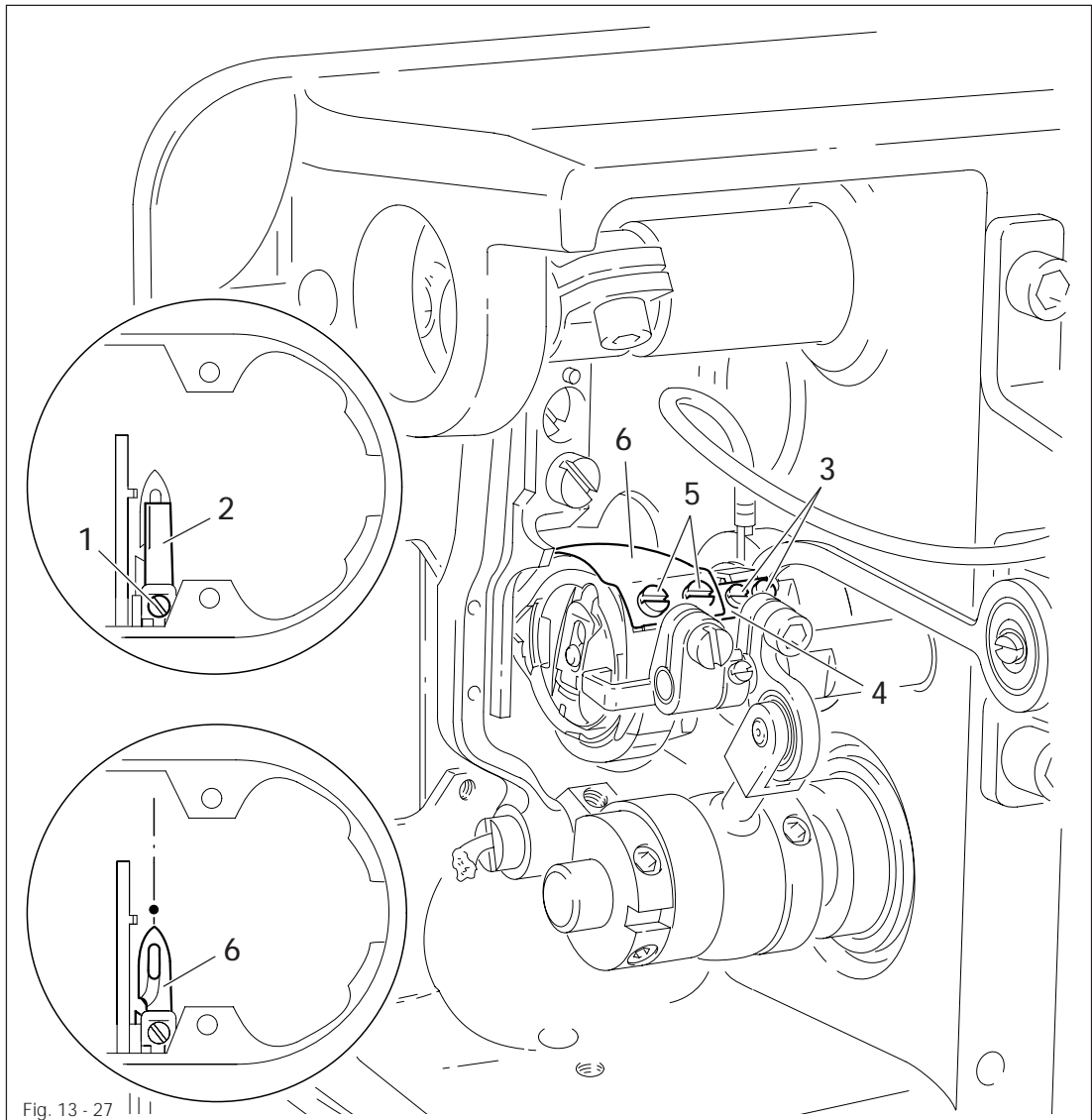
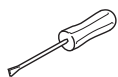


Fig. 13 - 27 |||



- Unscrew the needle plate and feed dog.
- Loosen screw **1** and remove knife **2**.
- Position the needle bar at BDC.
- Loosen screws **3** and set aside catcher stop **4**.
- Loosen screws **5**.
- By moving the thread catcher base, position the tip of thread catcher **6** in front of the needle.
- Laterally align thread catcher **6** according to **requirement 1**.
- Tighten screws **5**, making sure the back of the thread catcher is horizontal.



The needle plate, feed dog and knife **2** remain dismantled and screws **3** loosened for the following adjustments.

## 13.07.09 Front point of reversal of the thread catcher

**Requirement**

In the front point of reversal of thread catcher 3, the rear edge of the thread catcher cut-out should be positioned 1 mm in front of bobbin case position stop 4.

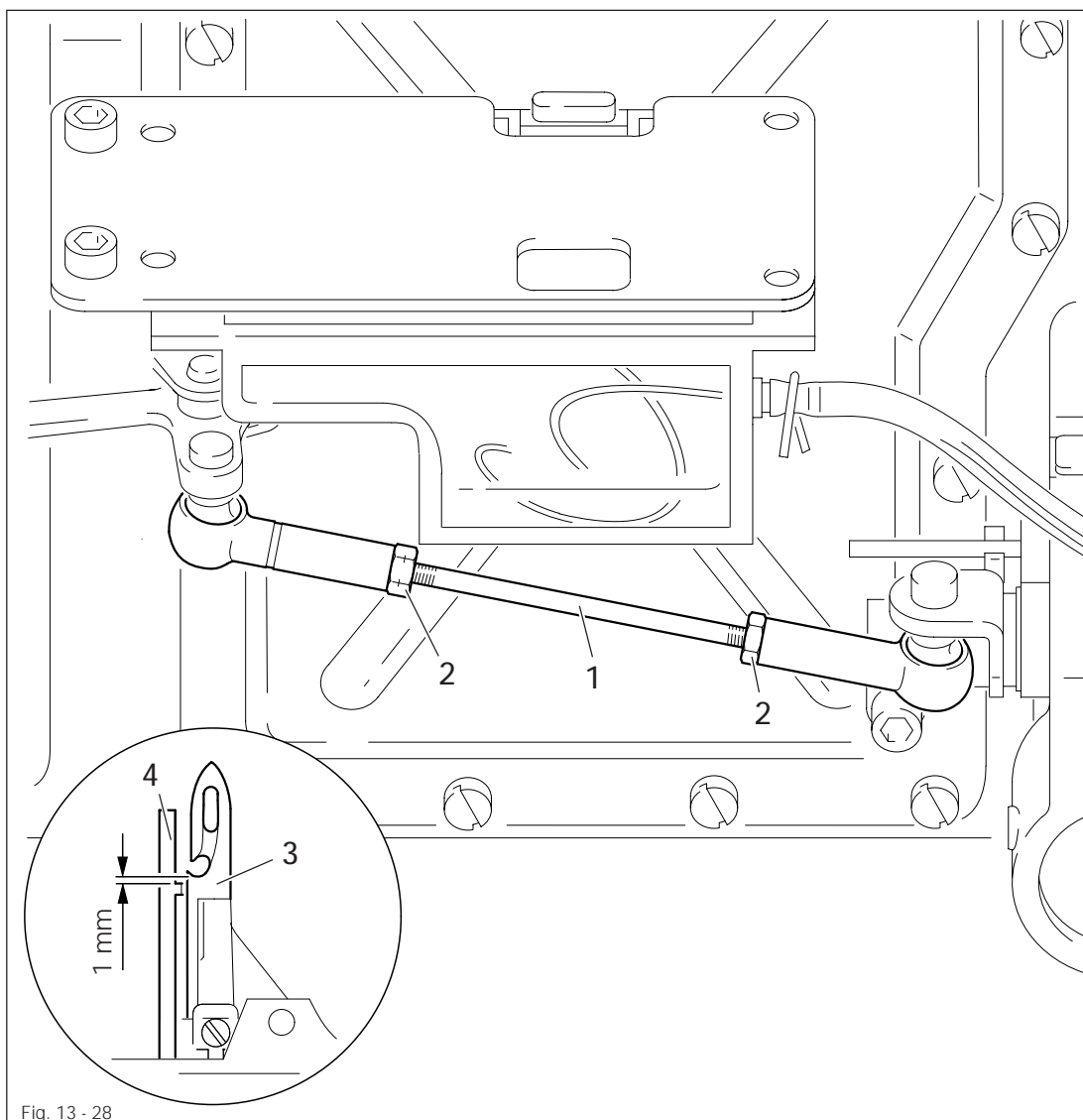
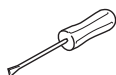


Fig. 13 - 28



- Press the heads of connecting rod 1 onto the ball pins on the trimmer unit and on the control unit.
- Loosen nuts 2 (right and left threads).
- Position the needle bar at BDC.
- Actuate the engaging lever by hand.
- By turning the handwheel, position thread catcher 3 in its front point of reversal.
- Turn connecting rod 1 according to the **requirement**.
- Lock connecting rod 1 in place with nuts 2.

## 13.07.10 Readjusting the control cam

### Requirement

When the end of thread guard 1 is 2 mm behind the center of the projection of bobbin case position stop 2, there should be a distance likewise of 2 mm between the tip of thread catcher 6 and the center of the projection.

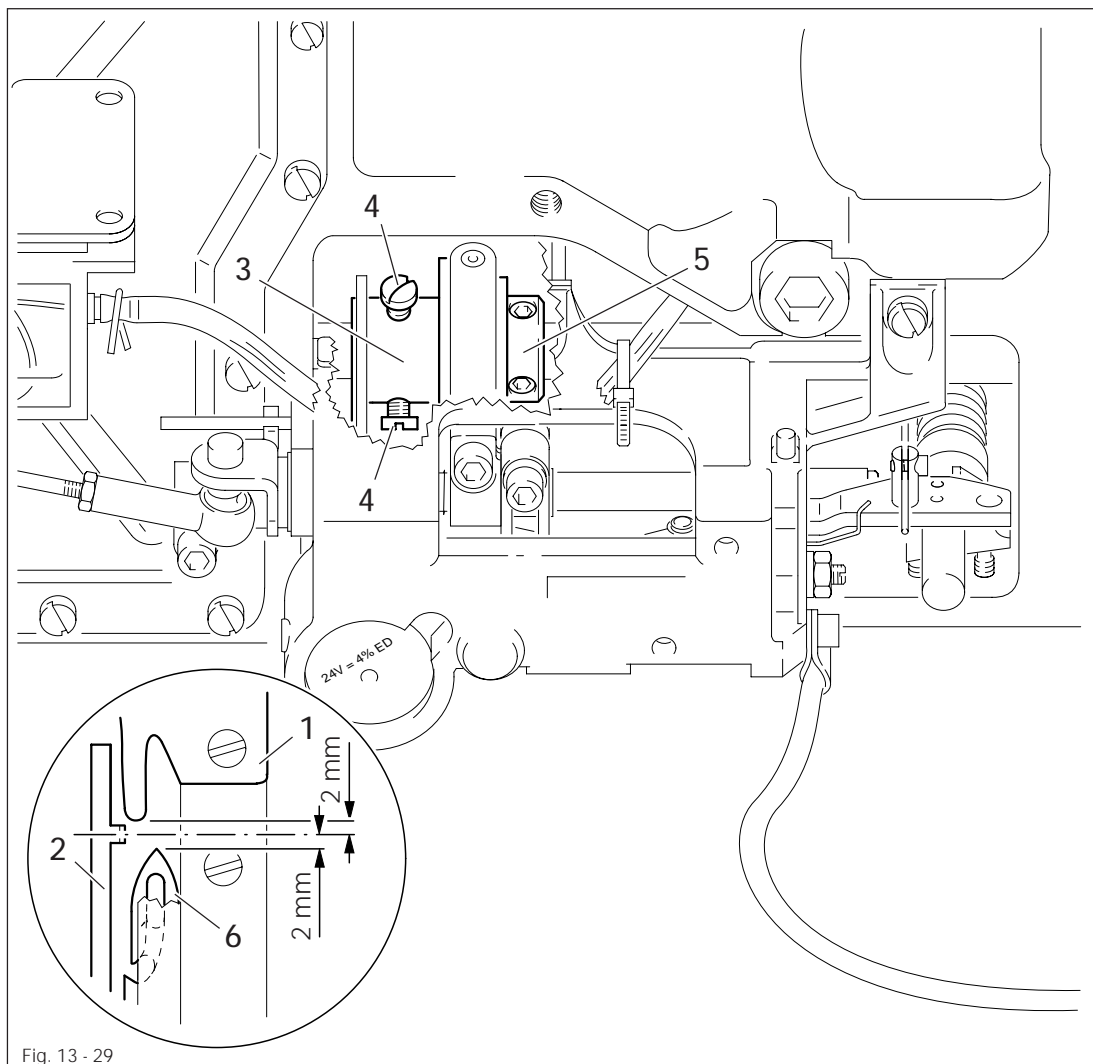
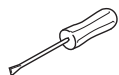


Fig. 13 - 29



- Position the needle bar at BDC.
- Actuate the engaging lever by hand.
- Turn the handwheel until there is a distance of 2 mm between the end of thread guard 1 and the center of the projection of bobbin case position stop 2.
- Turn control cam 3 (screws 4) according to the **requirement** and move against retaining collar 5 until it stops.

## 13.07.11 Catch spring

**Requirement**

When the thread trimmer is in the resting position, there should be a distance of 0.5 mm between catch spring 1 and roller lever 3.

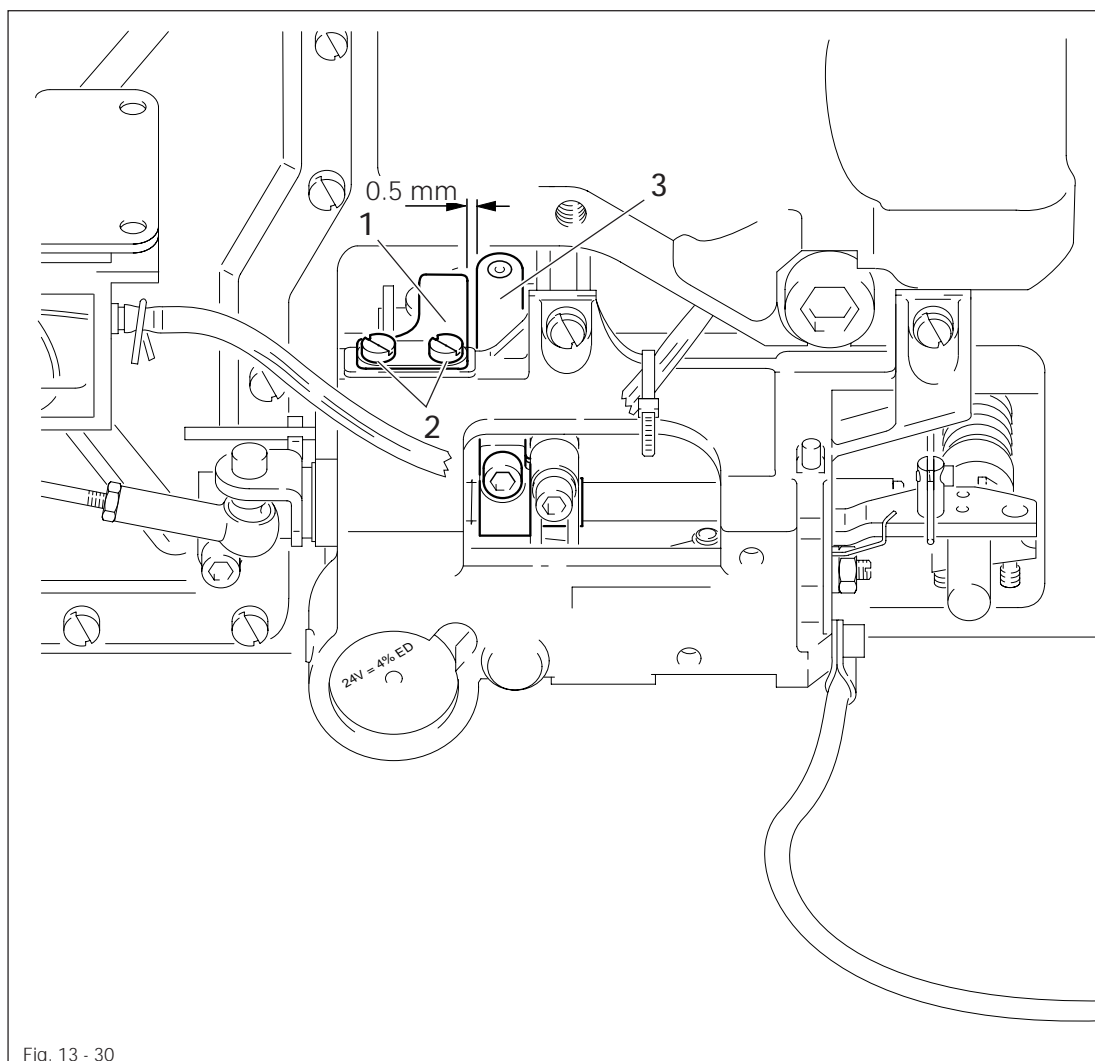
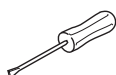


Fig. 13 - 30



- Mount catch spring 1 together with the cover disk.
- Slightly tighten screws 2.
- Push up catch spring 1 as far as it will go and align according to the requirement.
- Tighten screws 2.

## 13.07.12 Distance of knife to needle

### Requirement

There should be a distance of **4 mm** between the front edge of knife **1** and the needle.

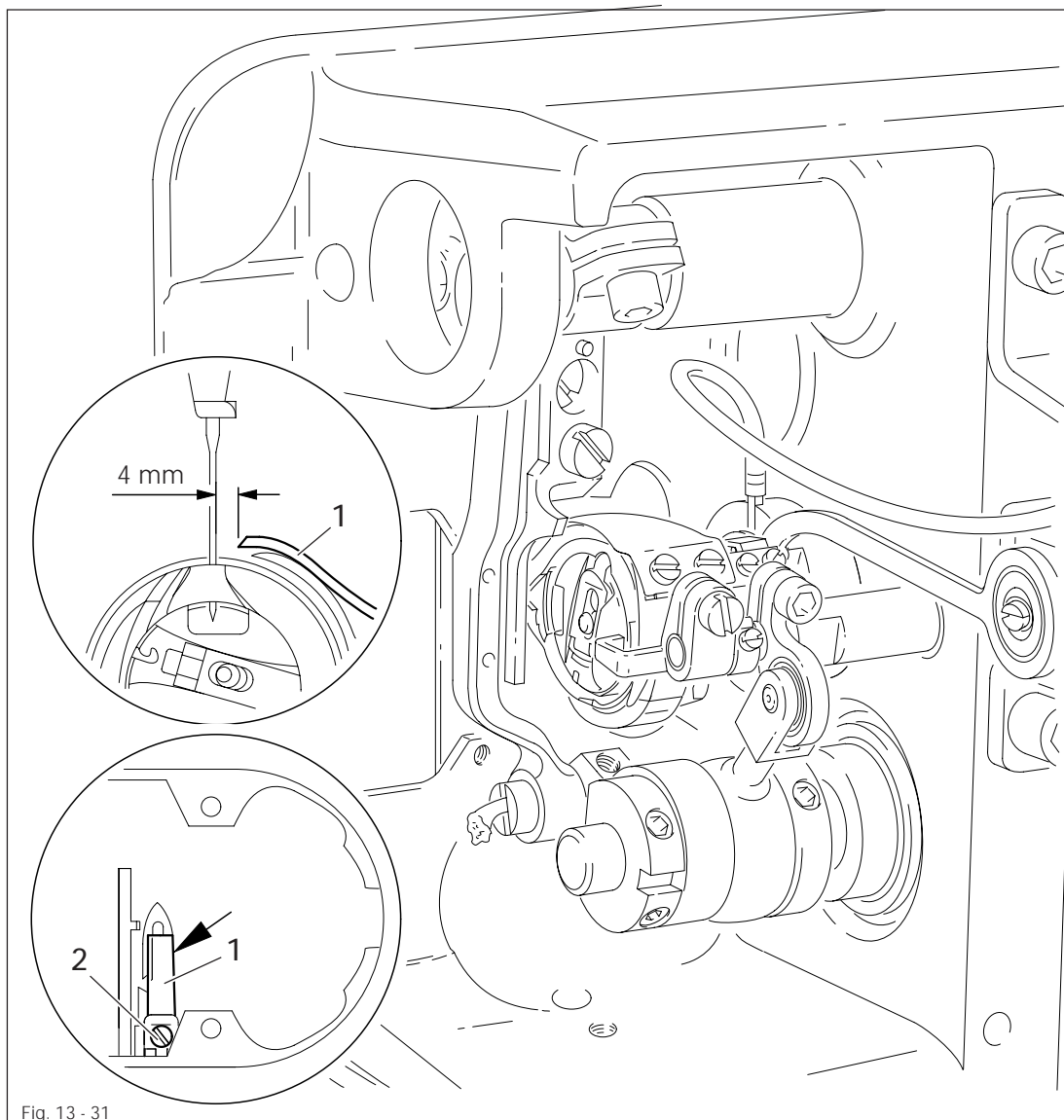


Fig. 13 - 31



- Position the needle bar at BDC.
- Slide knife **1** under the locking tab and align according to the **requirement**.
- Slightly tighten screw **2**.
- Actuate the engaging lever by hand.
- Turn the handwheel until the wedge point in the thread catcher is just in front of the cutting edge of the knife.
- Align knife **1** in such a way that the right edge of the knife does not protrude over the right, inset edge of the thread catcher (see arrow).
- Tighten screw **2**.

## 13.07.13 Manual cutting function test

**Requirement**

Both threads must be cut perfectly both right and left in the thread catcher cutout.

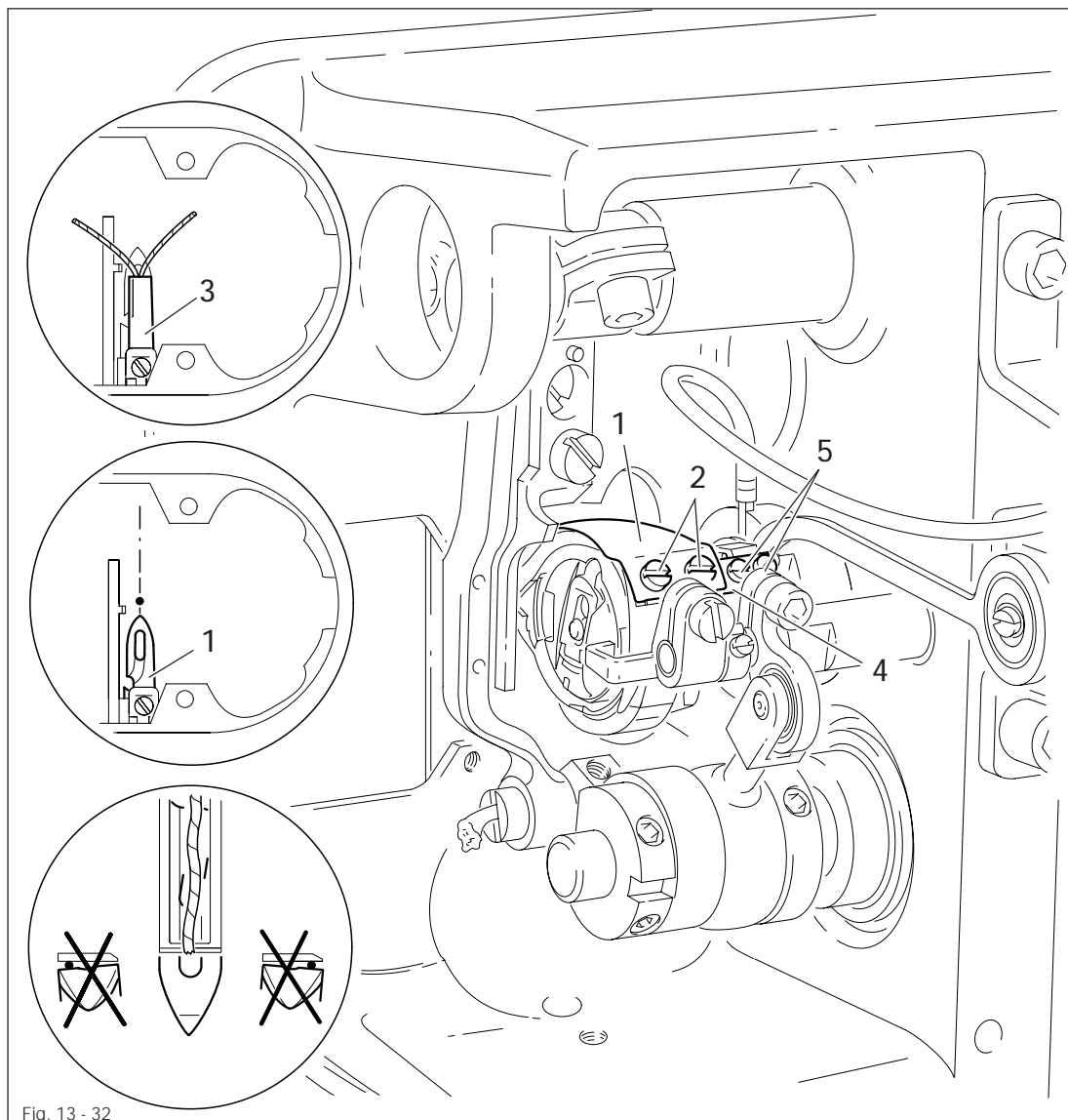
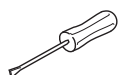


Fig. 13 - 32



- Position the needle bar at BDC and actuate the engaging lever by hand.
  - Turn the handwheel until thread catcher 1 is in its front point of reversal.
  - Take two threads double and hang them in the cutout of thread catcher 1.
  - Continue turning the handwheel and allow the cutting operation to finish.
  - If the two threads are not cut according to the **requirement**, loosen screws 2 and align thread catcher 1 in relation to knife 3 accordingly.
  - Tighten screws 2, making sure that the tip of the thread catcher is pointing to the center of the needle.
- Position catcher stop 4 on thread catcher 1 and tighten screws 5.

## 13.07.14 Needle thread tension release

### Requirement

1. When the thread trimmer is in the resting position, trip 5 should be engaged and have a distance of **0.5 mm** to release olive 1.
2. When trip 5 is positioned at the highest point of release olive 1, the tension disks of thread tension should be at least **0.5 mm** apart.

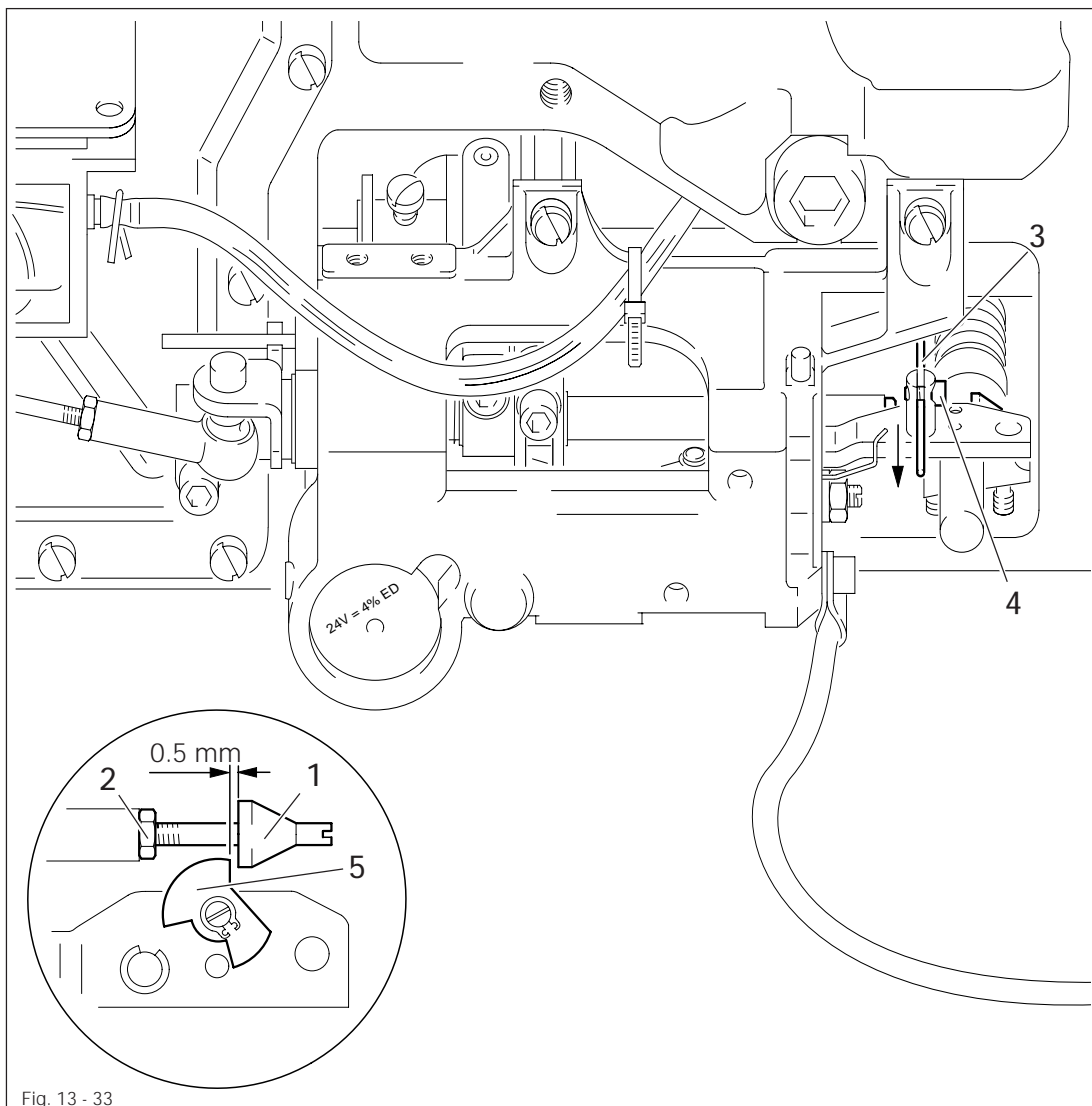
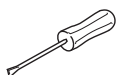


Fig. 13 - 33



- Turn release olive 1 (nut 2) according to **requirement 1**.
- Allow the presser foot to rest on the needle plate.
- Pull out the thread between the tension disks.
- Pull down pull rod 3 (screw 4) as far as it will go.
- Position the needle bar at BDC and actuate the engaging lever by hand.
- Turn the handwheel until trip 5 is positioned at the highest point of release olive 1.
- The tension disks must now be at least **0.5 mm** apart.
- By turning the handwheel, position the rock shaft in the starting position.
- Trip 5 must now be engaged and needle thread tension fully effective.
- Lightly grease release olive 1.





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