

# PFAFF

1491E1

1493E1

Instruction Manual



This Instruction Manual is valid for all models and subclasses listed in the chapter "**Specifications**".

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	Contents .....	Chapter - Page
<b>1</b>	<b>Safety .....</b>	<b>1 - 1</b>
1.01	Directives .....	1 - 1
1.02	General notes on safety .....	1 - 1
1.03	Safety symbols .....	1 - 2
1.04	Important points for the user .....	1 - 2
<b>1.05</b>	<b>Operating and specialist personnel .....</b>	<b>1 - 3</b>
1.05.01	Operating personnel .....	1 - 3
1.05.02	Specialist personnel .....	1 - 3
1.06	Danger .....	1 - 4
<b>2</b>	<b>Proper use .....</b>	<b>2 - 1</b>
<b>3</b>	<b>Specifications .....</b>	<b>3 - 1</b>
3.01	PFAFF 1491E1, 1493E1 .....	3 - 1
3.02	Needle and thread .....	3 - 2
3.03	Possible models and subclasses .....	3 - 2
<b>4</b>	<b>Disposal of the machine .....</b>	<b>4 - 1</b>
<b>5</b>	<b>Transport, packaging and storage .....</b>	<b>5 - 1</b>
5.01	Transport to the customer .....	5 - 1
5.02	Transport within the customer's premises .....	5 - 1
5.03	Disposal of the packaging .....	5 - 1
5.04	Storage .....	5 - 1
<b>6</b>	<b>Explanation of the symbols .....</b>	<b>6 - 1</b>
<b>7</b>	<b>Control .....</b>	<b>7 - 1</b>
7.01	On/off switch .....	7 - 1
7.02	Keys on the machine head .....	7 - 1
7.03	Pedal .....	7 - 2
7.04	Knee switch / knee lever .....	7 - 2
7.05	Lever for lifting the roller presser .....	7 - 3
7.06	Edge trimmer -725/04 .....	7 - 3
7.07	Edge trimmer -726/05 .....	7 - 4
7.08	Control panel .....	7 - 5
7.08.01	Display .....	7 - 5
7.08.02	Operation-mode keys .....	7 - 6
7.08.03	Function keys .....	7 - 6
7.08.04	Number keys .....	7 - 6
<b>8</b>	<b>Mounting and commissioning the machine .....</b>	<b>8 - 1</b>
8.01	Mounting .....	8 - 1
8.01.01	Adjusting the table-top height .....	8 - 1
8.01.02	Fitting the tilt lock .....	8 - 2
8.01.03	Adjusting the V-belt tension .....	8 - 2
8.01.04	Mounting the upper V-belt guard .....	8 - 3

	Contents .....	Chapter - Page
8.01.05	Mounting the lower V-belt guard .....	8 - 3
8.01.06	Mounting the synchronizer .....	8 - 4
8.01.07	Mounting the spool holder .....	8 - 4
8.02	Commissioning the machine .....	8 - 5
8.03	Turning the machine on/off .....	8 - 5
<b>9</b>	<b>Preparation .....</b>	<b>9 - 1</b>
9.01	Inserting the needle .....	9 - 1
9.02	Winding the bobbin thread, adjusting the thread tension .....	9 - 2
9.03	Removing / Inserting the bobbin case .....	9 - 3
9.04	Threading the bobbin case / Adjusting the bobbin thread tension .....	9 - 3
9.05	Threading the needle thread / Adjusting the needle thread tension .....	9 - 4
9.06	Adjusting the stitch length .....	9 - 5
9.07	Selecting a language .....	9 - 6
<b>10</b>	<b>Sewing .....</b>	<b>10 - 1</b>
10.01	Manual sewing .....	10 - 1
10.02	Sewing with the fixed programs .....	10 - 2
10.03	Programmed sewing .....	10 - 3
10.04	Decorative seams .....	10 - 5
10.05	Program interruption .....	10 - 5
10.06	Error messages .....	10 - 6
<b>11</b>	<b>Programming .....</b>	<b>11 - 1</b>
11.01	Symbols in the status bar .....	11 - 1
11.02	Symbols in the text and graphic fields .....	11 - 2
11.03	Symbols in the pictogram bar .....	11 - 3
11.04	Summary of the functions in SEWING mode .....	11 - 4
11.05	Summary of the functions in INPUT mode .....	11 - 5
11.06	Summary of the functions in Teach In .....	11 - 6
11.07	Summary of the functions in program administration .....	11 - 7
11.08	Summary of the functions in the input menu .....	11 - 7
11.09	Summary of the service function .....	11 - 8
11.10	Selection of functions from menu levels .....	11 - 8
11.11	Creating seam programs .....	11 - 10
11.11.01	Altering fixed programs .....	11 - 10
11.11.02	Programming .....	11 - 11
11.11.03	Teach In .....	11 - 13
11.12	Bartack menu .....	11 - 15
11.13	Placed-stitch menu .....	11 - 16
11.14	Seam section end .....	11 - 17
11.15	Programming examples .....	11 - 18
11.15.01	Example of seam programming .....	11 - 18
11.15.02	Example for programming a decorative seam .....	11 - 28
11.15.03	Example of Teach In programming .....	11 - 31

Contents .....		Chapter - Page
<b>12</b>	<b>Care and maintenance .....</b>	<b>12 - 1</b>
12.01	Cleaning .....	12 - 1
12.02	Lubricating the hook .....	12 - 2
12.03	Filling the oil reservoir .....	12 - 2
12.04	Lubricating the bevel gears .....	12 - 3
12.05	Filling the oil reservoir of the thread lubricator .....	12 - 3
12.06	Cleaning the air filter on the control box .....	12 - 4
12.07	Oiling the edge trimmer -726/05.....	12 - 4
<b>13</b>	<b>Adjustment .....</b>	<b>13 - 1</b>
13.01	Notes on adjusting.....	13 - 1
13.02	Tools, gauges and other accessories for adjusting .....	13 - 1
13.03	Abbreviations.....	13 - 1
<b>13.04</b>	<b>Adjusting the basic machine .....</b>	<b>13 - 2</b>
13.04.01	Adjusting the synchronizer .....	13 - 2
13.04.02	Setting the machine configuration .....	13 - 4
13.04.03	Positioning the needle in the direction of sewing (1491 E1) .....	13 - 5
13.04.04	Positioning the needle in the direction of sewing (1493E1) .....	13 - 6
13.04.05	Positioning the needle across the direction of sewing .....	13 - 7
13.04.06	Limiting the needle bar frame (1491E1) .....	13 - 8
13.04.07	Preadjusting the needle height .....	13 - 9
13.04.08	Hook-to-needle clearance, needle rise, needle height and needle guard .....	13 - 10
13.04.09	Bobbin case opener height .....	13 - 11
13.04.10	Bobbin case opener stroke .....	13 - 13
13.04.11	Feed wheel height .....	13 - 14
13.04.12	Clearance between roller presser and feed wheel .....	13 - 15
13.04.13	Roller presser .....	13 - 16
13.04.14	Automatic presser-foot lifter .....	13 - 17
13.04.15	Knee lever .....	13 - 18
13.04.16	Tension release .....	13 - 19
13.04.17	Thread check spring .....	13 - 20
13.04.18	Bobbin winder .....	13 - 21
13.04.19	Roller presser pressure .....	13 - 22
<b>13.05</b>	<b>Adjusting the edge trimmer -725/04 .....</b>	<b>13 - 23</b>
13.05.01	Replacing the knife .....	13 - 23
13.05.02	Knife height .....	13 - 24
13.05.03	Knife stroke .....	13 - 25
13.05.04	Knife motion .....	13 - 26
13.05.05	Knife position .....	13 - 27

	Contents .....	Chapter - Page
<b>13.06</b>	<b>Adjusting the edge trimmer -726/05 .....</b>	<b>13 - 28</b>
13.06.01	Replacing the knife .....	13 - 28
13.06.02	Knife position with regard to needle plate.....	13 - 29
13.06.03	Knife position across the direction of sewing.....	13 - 30
13.06.04	Knife height .....	13 - 31
13.06.05	Knife motion .....	13 - 32
13.06.06	Knife stroke .....	13 - 33
<b>13.07</b>	<b>Adjusting the thread trimmer -900/53 .....</b>	<b>13 - 34</b>
13.07.01	Removing the scissors .....	13 - 34
13.07.02	Control cam to bobbin opener and tripping lever .....	13 - 35
13.07.03	Radial position of the tripping lever.....	13 - 36
13.07.04	Engaging solenoid .....	13 - 37
13.07.05	Scissor drive lever .....	13 - 38
13.07.06	Adjusting the control cam with the adjustment gauge in relation to the bobbin opener and the scissor .....	13 - 39
13.07.07	Radial position of the control cam in relation to the bobbin opener .....	13 - 40
13.07.08	Scissor tripping-lever in relation to the control cam of the scissor.....	13 - 41
13.07.09	Control cam in relation to scissor .....	13 - 42
13.07.10	Scissor return lever .....	13 - 43
13.07.11	Scissor return control .....	13 - 44
13.07.12	Installing the scissor .....	13 - 45
13.07.13	Eccentric sleeve .....	13 - 46
13.07.14	Scissor drive bar.....	13 - 47
13.07.15	Scissor function test .....	13 - 48
13.08	Tension release (only on machines with thread tension control -906/10).....	13 - 50
<b>13.09</b>	<b>Parameter adjustments.....</b>	<b>13 - 51</b>
13.09.01	Adjusting positions .....	13 - 51
13.09.02	Adjusting the counter .....	13 - 52
13.09.03	Adjusting speeds .....	13 - 52

## 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, observe also all generally accepted, statutory and other regulations and legal requirements and all valid environmental protection regulations! The regionally valid regulations of the social insurance society for occupational accidents or other supervisory organisations 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, roller presser, needle plate, or 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 at your PFAFF agent.



## 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 jewellery such as chains or rings!
- also ensure that only authorized persons have access to the potentially dangerous area around the machine!
- always immediately report to the person responsible any changes in the machine which may limit its safety!

### 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 obliged 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 contained only 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 or in the needle plate area while adjusting the machine settings! Objects can become trapped or be slung away! Danger of injury!

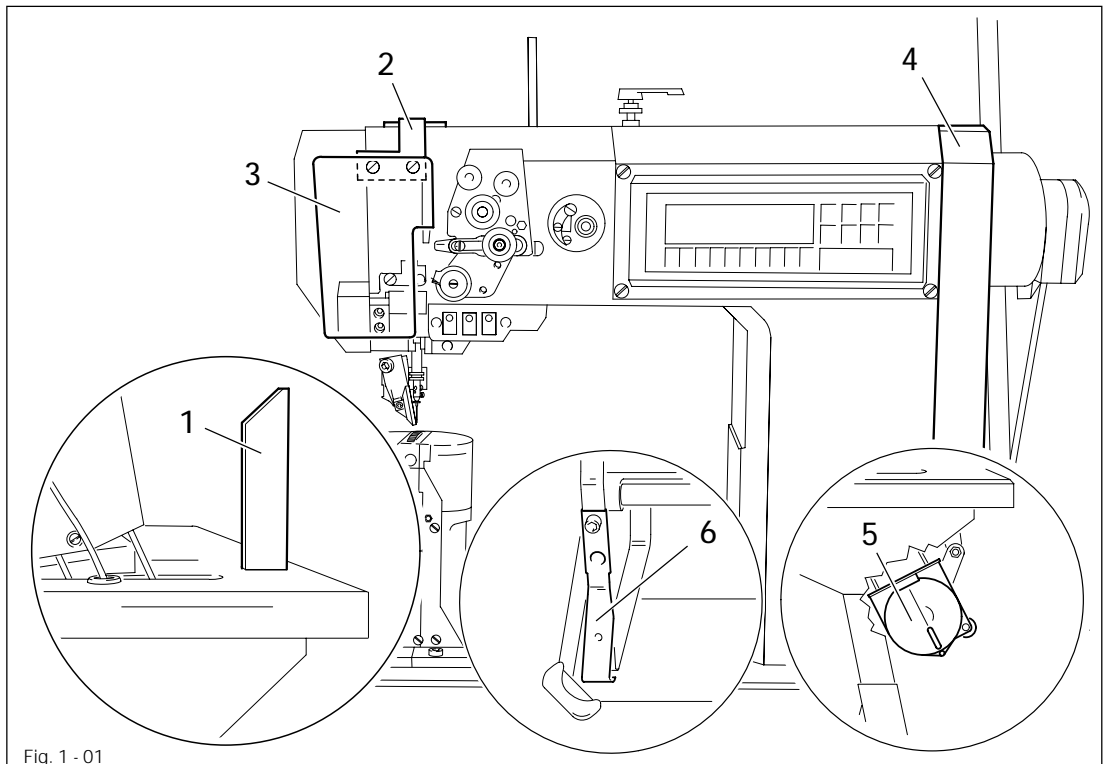


Fig. 1 - 01



Do not operate the machine without support 1!  
Danger due to top-heavy sewing head!  
Machine can tip over backwards when tilted!



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



Only operate the machine with the eye guard 3 lowered!  
The eye guard 3 protects the eyes from oil particles from the thread lubrication.



Do not operate the machine without belt guards 4 and 5!  
Danger of injury by the moving V-belt!



Do not operate the machine without tilt lock 6!  
Danger of crushing between sewing head and table top!

2

Proper use

The PFAFF 1491E1 is a high speed, single needle, postbed sewing machine (post to the right of the needle) with forwards and reverse feeding feed-wheel and roller presser as well as a feed-synchronized needle.

The PFAFF 1493E1 is a high speed, single needle, postbed sewing machine (post to the right of the needle) with forwards and reverse feeding feed-wheel and roller presser.

These machines are used for sewing lockstitch seams in the leather and upholstery industries.



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 includes the observance of all operational, adjustment, maintenance and repair measures required by the manufacturer!

## 3 Specifications

### 3.01 PFAFF 1491E1, 1493E1 ▲

Stitch type: ..... 301 (lockstitch)

Handwheel eff. dia.: ..... 65 mm

Clearance under the roller presser: ..... 7 mm

Clearance width: ..... 245 mm

Clearance height: ..... 115 mm

Post height: ..... 180 mm

Dimensions of sewing head:

Length: ..... approx. 615 mm

Width: ..... approx. 240 mm

Height (above table): ..... approx. 500 mm

Bedplate: ..... 518 x 177 mm

Max. speed: ..... 4000 spm ♦

Cutting clearance (on -725/.. and -726/..): ..... 0.9 - 2.5 mm

Cutting speed (on -725/.. and -726/..): ..... 2800 cuts/min

Electrical data:

Operating voltage: ..... 230 V ± 10%, 50/60 Hz

Max. output: ..... 1.2 kVA

Fuse protection: ..... 1 x 16 A, delayed action

Working noise level:

Emission at workplace at n = 2500 spm: ..... 80 dB(A)

(Noise measurement in accordance with DIN 45 635-48-A-1)

Net weight of machine head: ..... approx. 61 kg

Gross weight of machine head: ..... approx. 71 kg

▲ Subject to alteration

♦ Varies according to material, work process and stitch length

3.02 Needle and thread

Model	Thread ▲ thickness (Nm) max. synthetic	Needle thickness in 1/100 mm	Needle system
A	60 - 60	70	134
B	40 - 40	100	134
B/C	20 - 30	120	134

▲ or comparable thicknesses of other thread types

3.03 Possible models and subclasses

Model A ..... For processing fine materials  
 Model B ..... For processing medium materials  
 Model B/C ..... For processing medium to medium/heavy materials

Additional equipment:

Subclass -725/04 ..... Edge trimmer  
 Subclass -726/05 ..... Edge trimmer  
 Subclass -900/53 ..... Thread trimmer  
 Subclass -906/10 ..... Thread tension control  
 Subclass -910/17 ..... Automatic presser-foot lifter

### 4 Disposal of machines

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



Special care is to be taken that parts soiled with lubricants are separately disposed of in accordance with the locally valid pollution control regulations!

### 5 Transport packaging and storage

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

Within Germany, complete machines (with table and motor) are delivered without packaging.

Machines without a table (sewing head with motor only) and 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 fibre.

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 the following section of this Instruction Manual, certain tasks or important pieces of information are accentuated by symbols.

The symbols used have the following meanings:



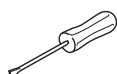
Note, information



Cleaning, care



Lubrication, greasing



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



7 Controls

7.01 On/off switch

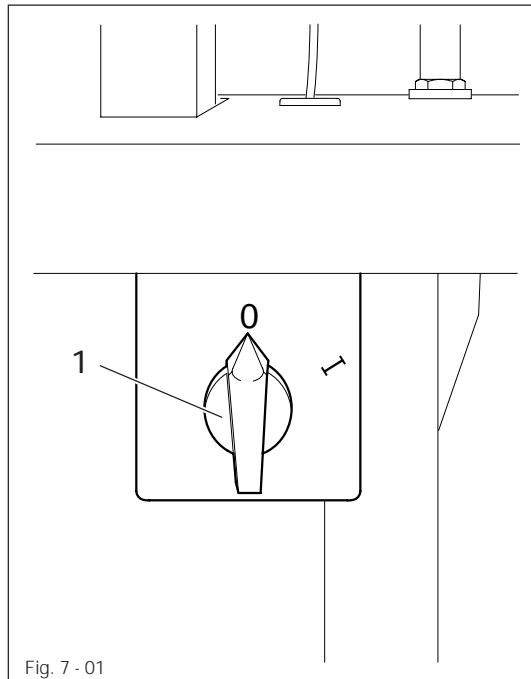


Fig. 7 - 01

- Turn the machine on/off by turning On/Off switch 1.

7.02 Keys on the machine head

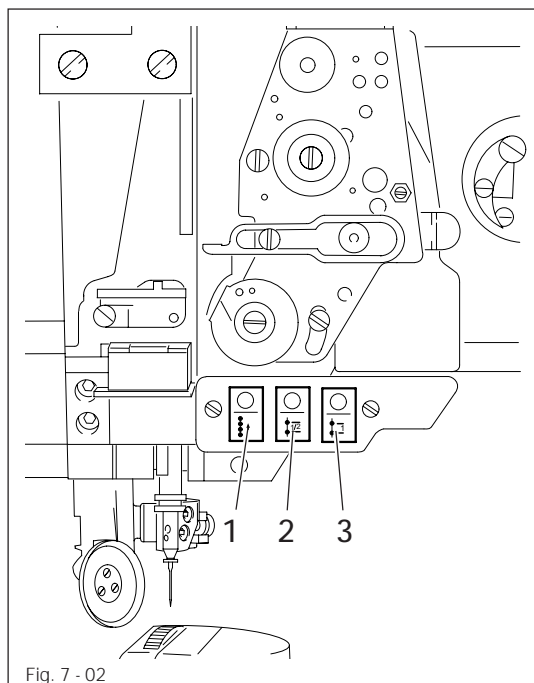


Fig. 7 - 02

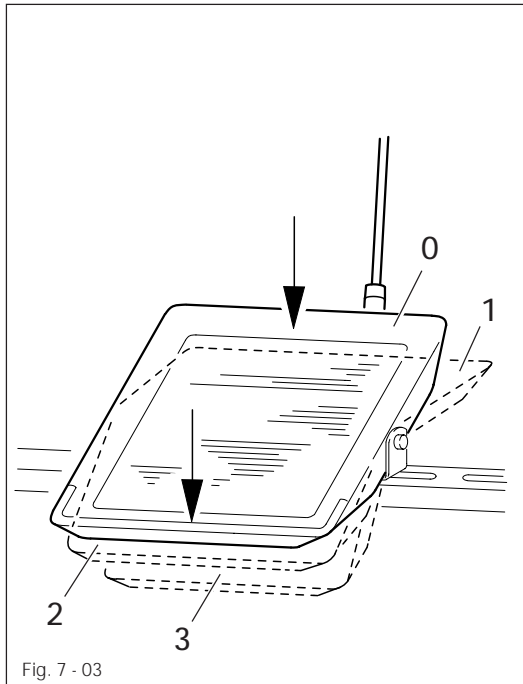
- Different functions are triggered by pressing the different keys.

Key 1: reverse sewing

Key 2: sews one stitch with half stitch length.

Key 3: sews one stitch with full stitchlength.

## 7.03 Pedal

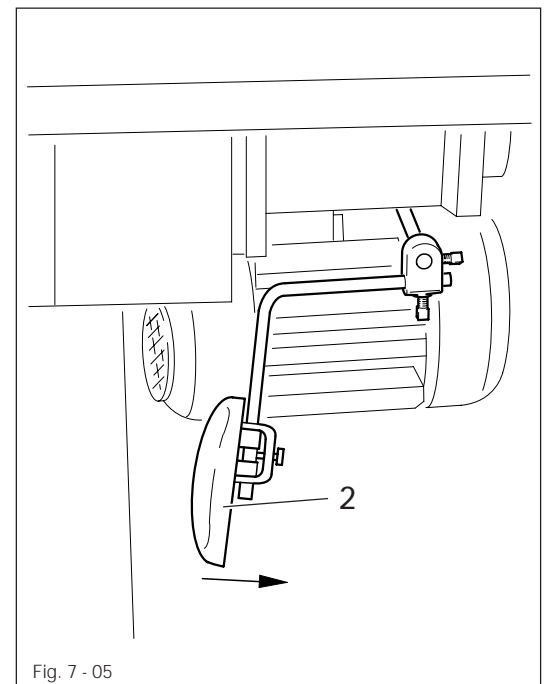
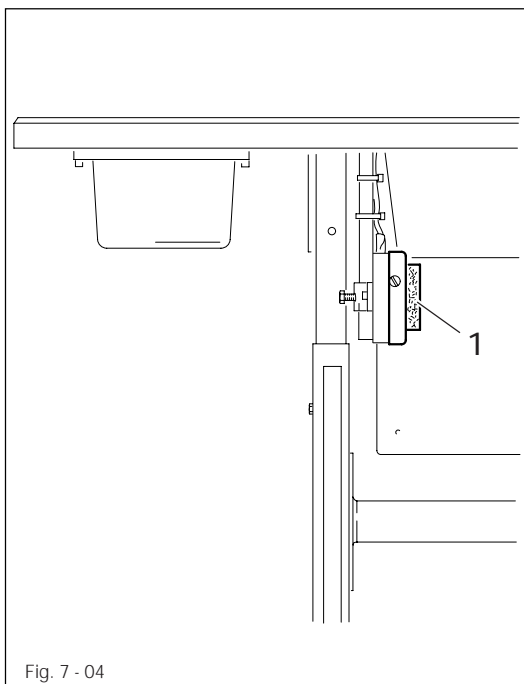


- 0 = Machine stop
- 1 = Sew
- 2 = Raise roller presser
- 3 = Trim thread and raise roller presser



Other pedal functions can also be programmed (see **chapter 10 Sewing**)

## 7.04 Knee switch / knee lever



- By activating the knee switch 1 the end of the seam section can be signaled during programmed sewing.
- The roller presser is raised by pressing the knee lever 2 in the direction of the arrow .



The function of the knee switch 1 must be switched on using the control panel (see **chapter 11 Programming**).

7.05 Lever for lifting the roller presser

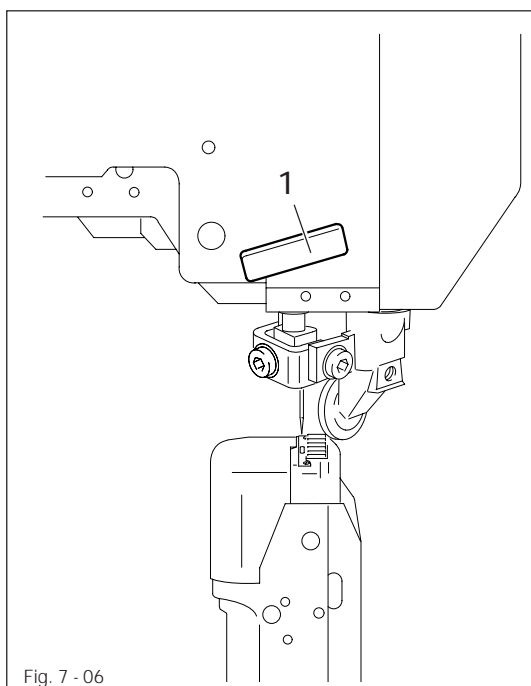


Fig. 7 - 06

- The roller presser is raised by turning lever 1.

7.06 Edge trimmer -725/04

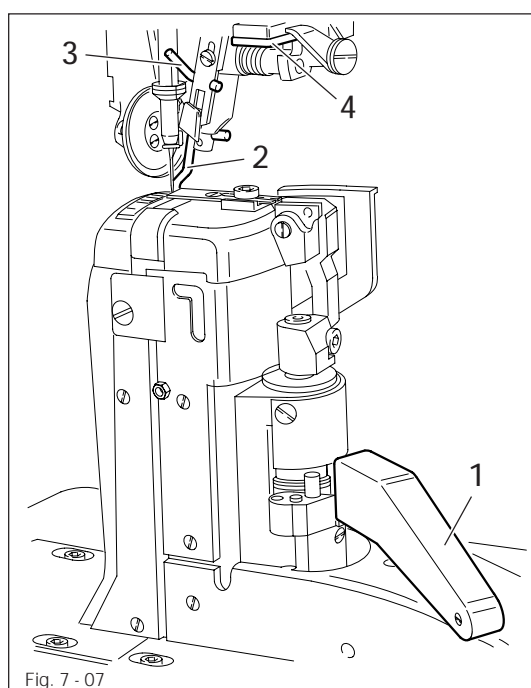


Fig. 7 - 07

Switching on the edge trimmer

- The knife is brought into start position and the edge trimmer is switched on by pushing lever 1 to the rear until it engages.

Switching off the edge trimmer

- The edge trimmer is switched off and the knife is swung to the rear by pressing lever 1.

Switching on the edge guide

- The edge guide is brought to starting position by swinging in the edge guide 2 and pressing lever 3.

Switching off the edge guide

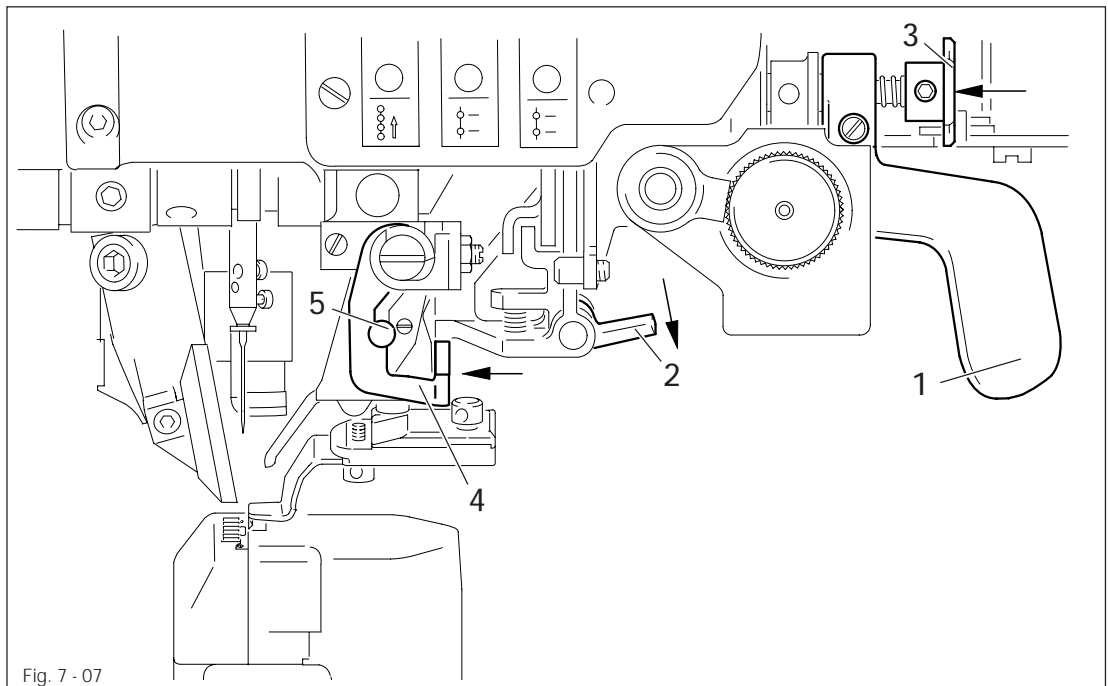
- The edge guide is put out of operation by raising it until it engages.
- The edge guide swings to the rear when lever 4 is raised.



Do not reach into the area of the working knife. Danger of injury!

7.07

## Edge trimmer -726/05



- The knife is brought to starting position by turning lever 1.
- The knife is put out of operation by pressing lever 2 down or pressing key 3.
- The edge guide returns to starting position when lever 4 is pressed.
- The edge guide is put out of operation by raising lever 5.



Do not reach into the area of the working knife. Danger of injury!

7.08 Control panel

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

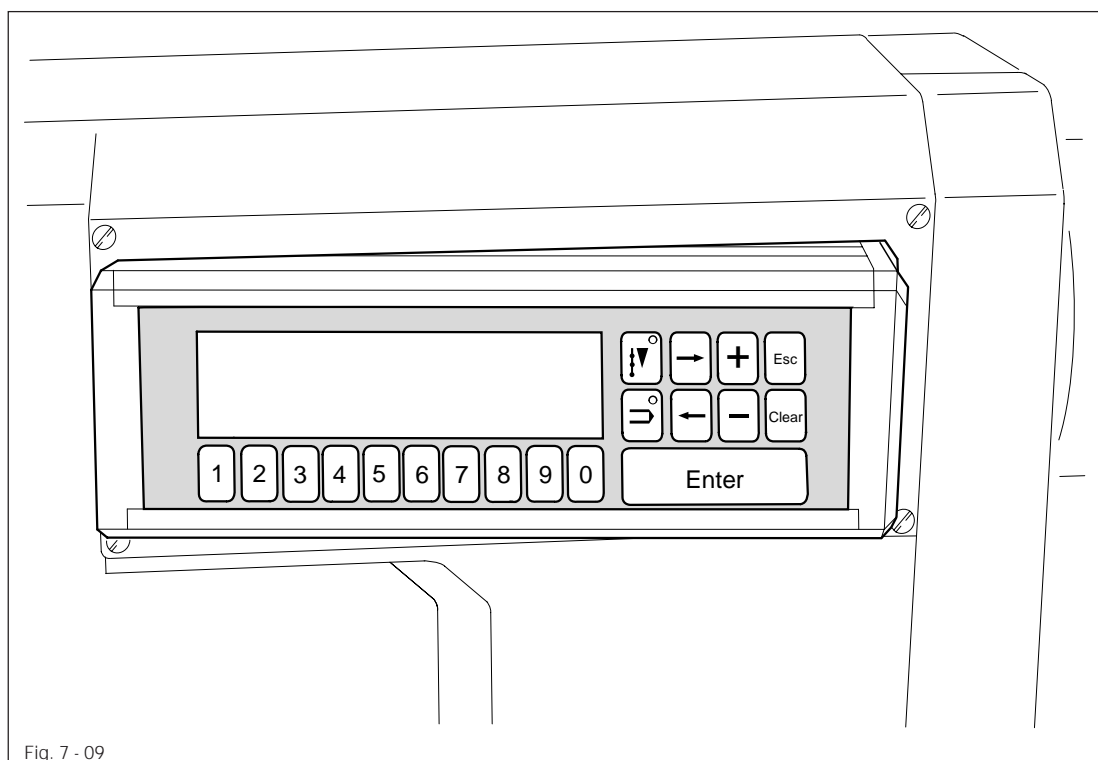


Fig. 7 - 09

7.08.01 Display

In the basic screen the messages in the display are divided into three sections:

**Status bar**

The status bar is in the upper section of the display. Here, up to 5 pictograms with the corresponding values can be displayed (e.g. program number, number of seam section, stitch length etc.).

**Text field**

The text field is in the middle section of the screen, in which messages are displayed in 2 lines. Stylized seam sections can also be shown here with information about start and end bartacks, sewing direction and seam section end.

**Pictogram bar**

The pictogram bar can be found at the bottom of the display. Here, symbols are displayed whose corresponding function can be called up via the **number keys**. Active functions are shown by a symbol displayed on a dark background.



Normal symbol (function not active)



Symbol on dark background (function active)

## 7.08.02 Operation-mode keys

There are two operation modes. The selected mode can be seen by the light emitting diode in the respective key.



**SEWING** mode



**INPUT** mode

## 7.08.03 Function keys



**Arrow keys** (right/left)

- change menu bars
- for positioning the cursor when entering several values in one line



**Plus/Minus keys**

- for raising and lowering input values



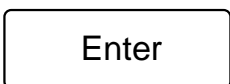
**Esc key**

- for interrupting functions without taking on the value inputted
- for returning to superordinate menu functions
- for quitting the error-message screen



**Clear key**

- for returning the input value to 0
- for quitting the error-message screen



**Enter key**

- for confirming an input value
- for error acknowledgement after an error message

## 7.08.04 Number keys

Below the display there is a row of number keys (1-0).

Depending on the current operating mode, these keys have the following functions:

- carrying out the function shown by the symbol displayed above the number key
- inputting a numerical value
- selecting functions or the next level of the menu



**Double click** = pressing a key twice in rapid succession

## 8 Mounting and commissioning the machine



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



If the machine is delivered without a table, it must be ensured that the frame and the table top which you intend to use can hold the weight of the machine and the motor, even while sewing.

### 8.01 Mounting

The necessary electricity supply must be available at the machine's location. There must be a stable and horizontal surface and adequate lighting at the machine's location.



Due to reasons of packaging, the table top is lowered for transport. The following is a description of how to adjust the height of the table top.

#### 8.01.01 Adjusting the table-top height

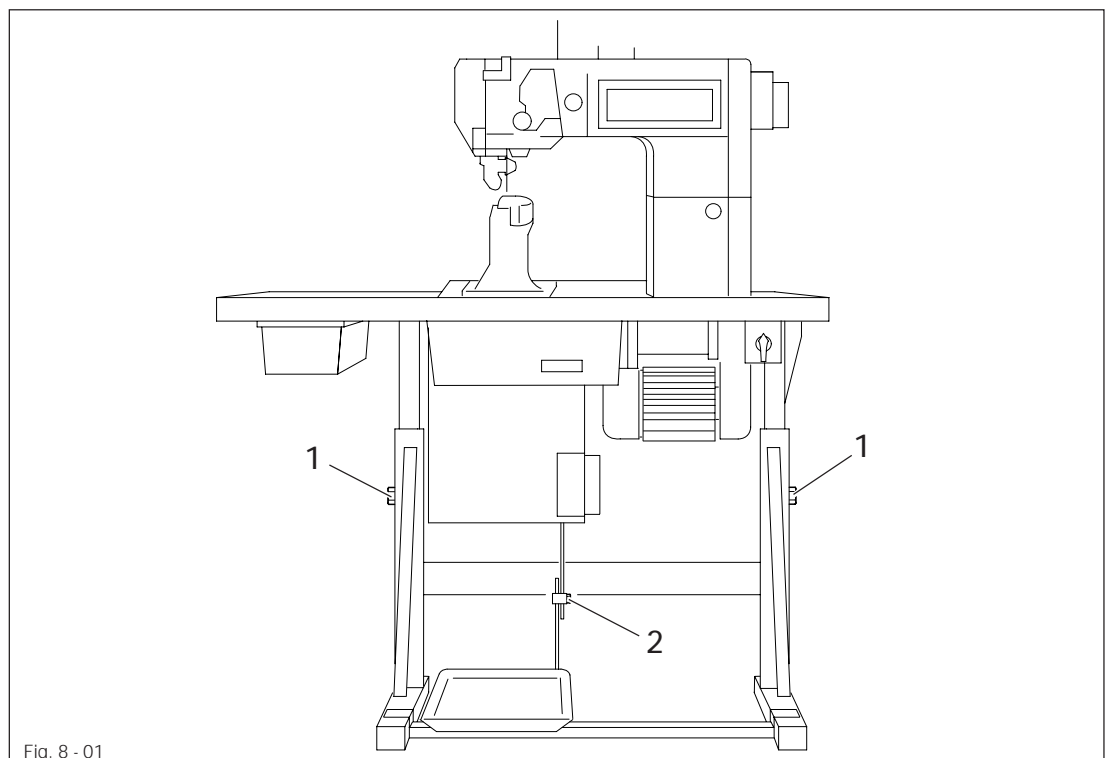
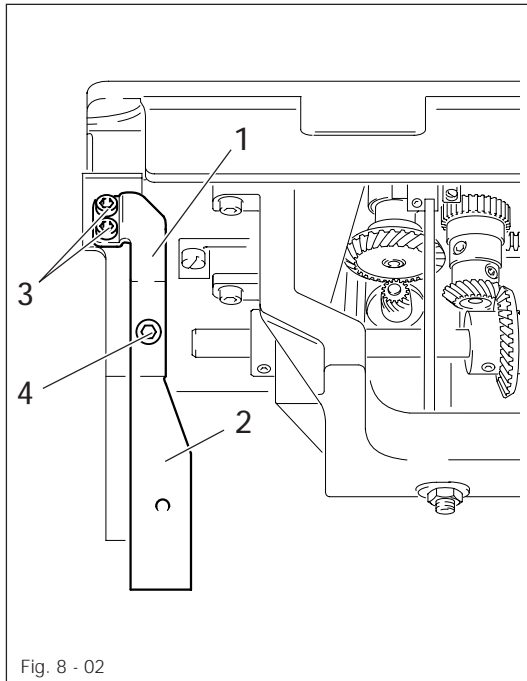


Fig. 8 - 01

- Loosen screws 1 and 2 and set the desired table-top height
- Tighten screws 1 well.
- Adjust the position of the pedal so that you can operate it comfortably and tighten screw 2.

# Mounting and commissioning the machine

## 8.01.02 Fitting the tilt lock

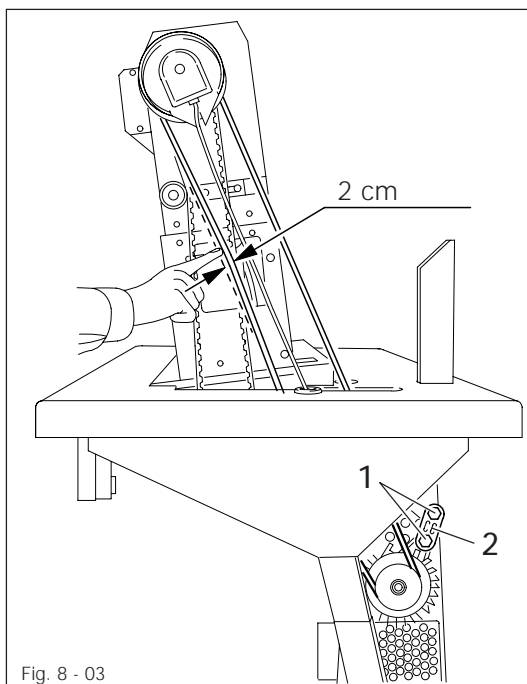


- Screw on tilt lock parts 1 and 2, provided in the accessories, using screws 3 and 4.



Do not operate the machine without tilt lock 1!  
Danger of crushing between sewing head and table top!

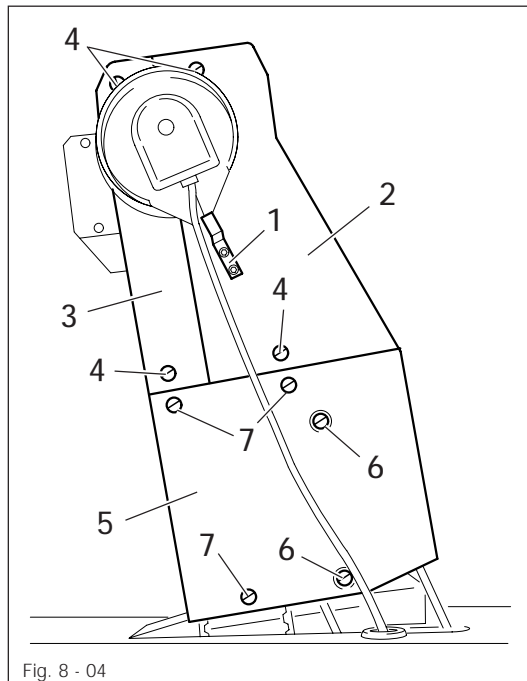
## 8.01.03 Adjusting the V-belt tension



- Loosen nuts 1.
- Tighten the V-belt with belt take-up hanger 2.
- Tighten nuts 1.

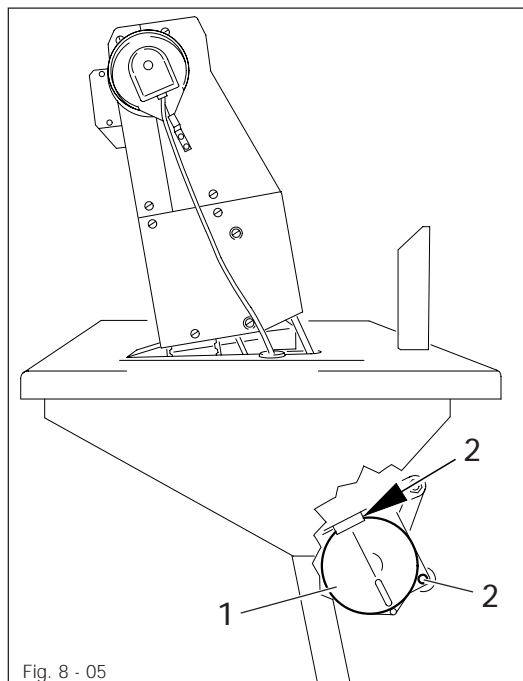


## 8.01.04 Mounting the upper V-belt guard



- Screw position stop 1 onto the right half of V-belt guard 2.
- Attach both halves 2 and 3 of the belt-guard with screws 4.
- Slide the lower section 5 of the V-belt guard with its slots over the heads of retaining screws 6. Screw it on with screws 7. Finally, tighten screws 6 through the holes.

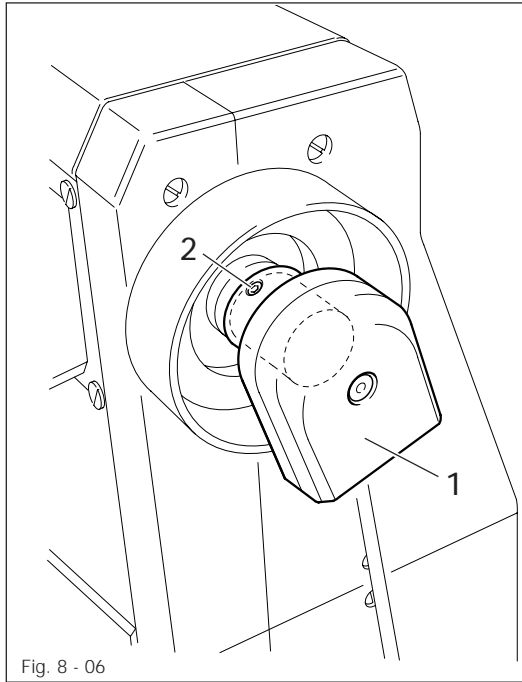
## 8.01.05 Mounting the lower V-belt guard



- Align belt-guard 1 in such a way that both the motor pulley and the V-belt run freely.
- Tighten screws 2.

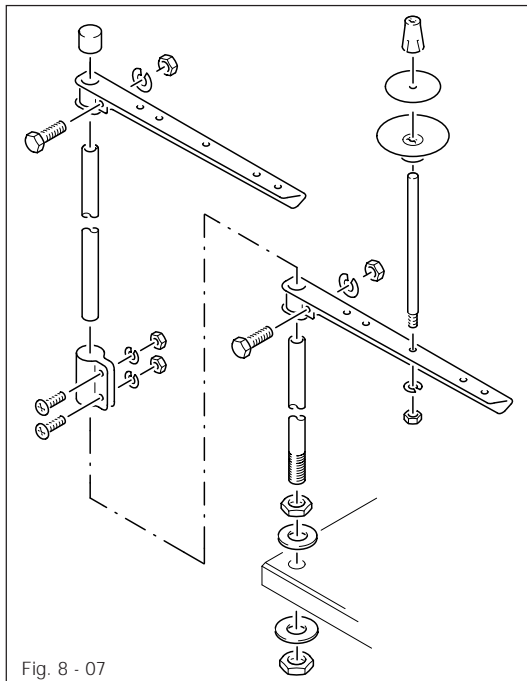
# Mounting and commissioning the machine

## 8.01.06 Mounting the synchronizer



- Slide synchronizer 1 onto the shaft.
- Tighten screws 2 slightly.
- Plug the synchronizer plug into the electrical socket of the control box.
- Adjust the synchronizer ( see **chapter 13.04.01 Adjusting the synchronizer** ).

## 8.01.07 Mounting the spool holder



- Mount the spool holder as shown in **Fig. 8 - 07**.
- Insert the spool holder into the hole in the table top and affix it with the nuts enclosed.

### 8.02 Commissioning the machine

- Before commissioning the machine, check the electrical leads for any damage.
- Clean the machine thoroughly and oil it / fill with oil ( see **chapter 12 Care and maintenance** ).
- Have specialists ensure that the machine's motor can be operated with the available electricity supply and that it is connected correctly to the terminal box. If not, the machine must not be operated.

### 8.03 Turning the machine on/off

- Turn the machine on ( see **chapter 7.01 On/Off switch** ).

## 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. Before all preparation work, the machine is to be separated from the electricity supply by removing the plug from the mains or switching off the On/Off switch!

### 9.01

## Inserting the needle

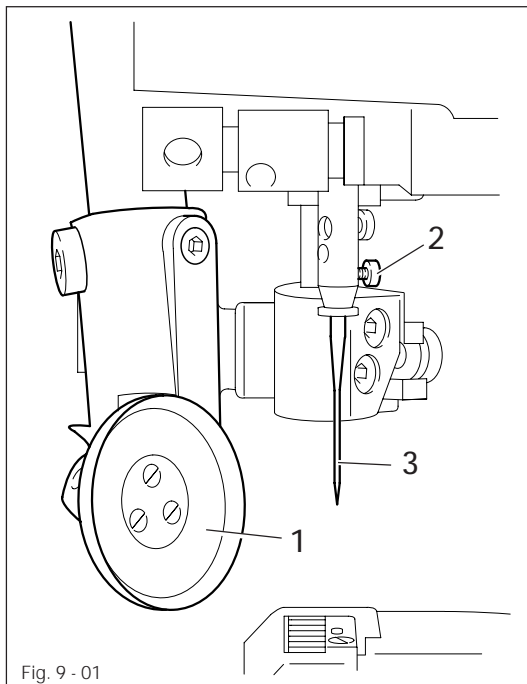


Fig. 9 - 01



Turn the machine off!

Use only system 134 needles.

- Raise roller presser 1.
- Swing the eye guard upwards.
- Pull roller presser 1 downwards slightly and swing it out to the left.
- Loosen screw 2 and insert needle 3 until you feel it stop. The long groove must be facing the left.
- Tighten screw 2 and swing the roller presser back.



The selection of the correct needle depends on the model of the machine and the material and threads being sewn (see chapter 3.02 Needle and thread).

## 9.02 Winding the bobbin thread, adjusting the thread tension

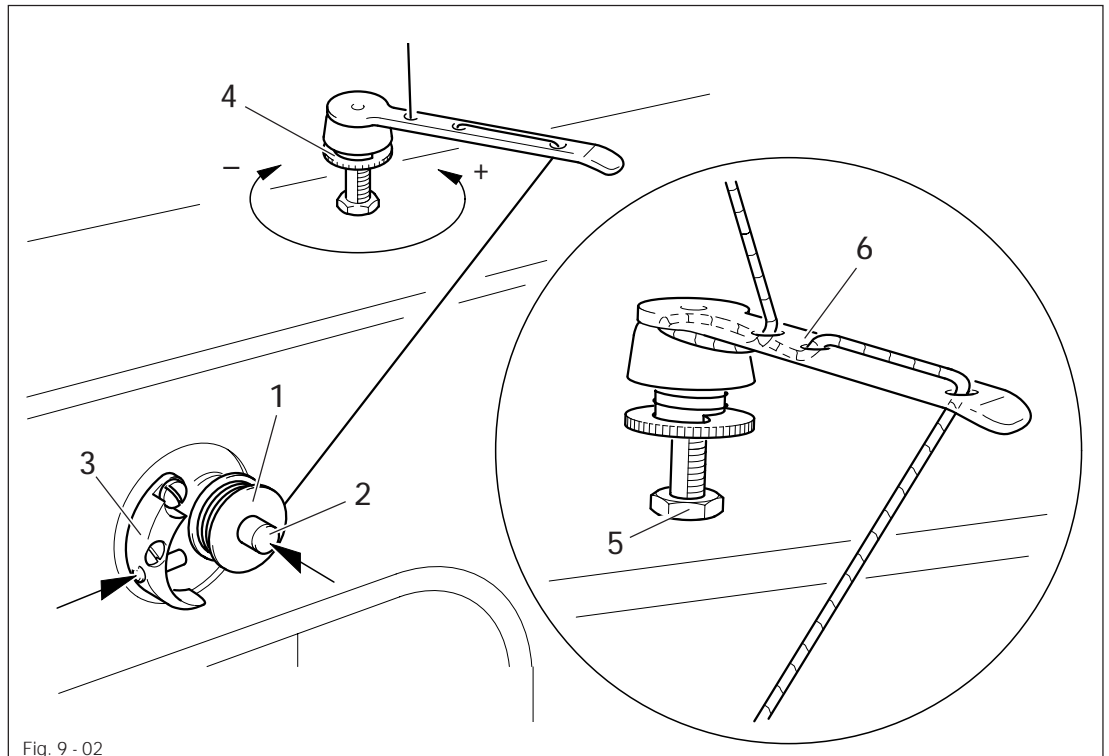


Fig. 9 - 02

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



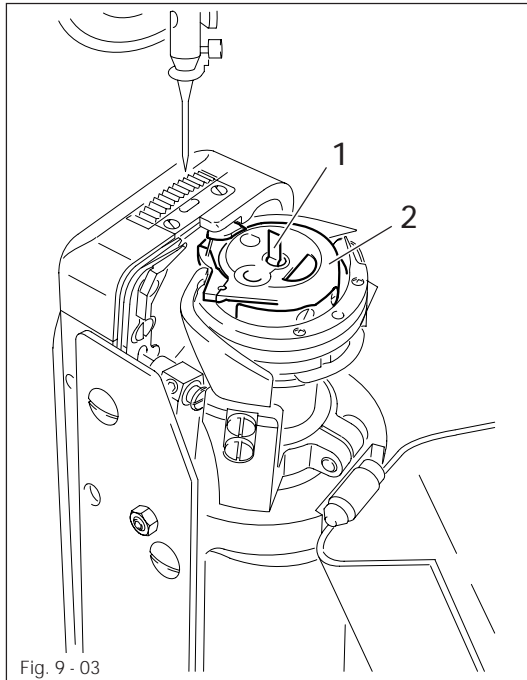
The bobbin fills up while you are sewing.

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

If the thread is wound unevenly:

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

## 9.03 Removing/Inserting the bobbin case



Turn the machine off!

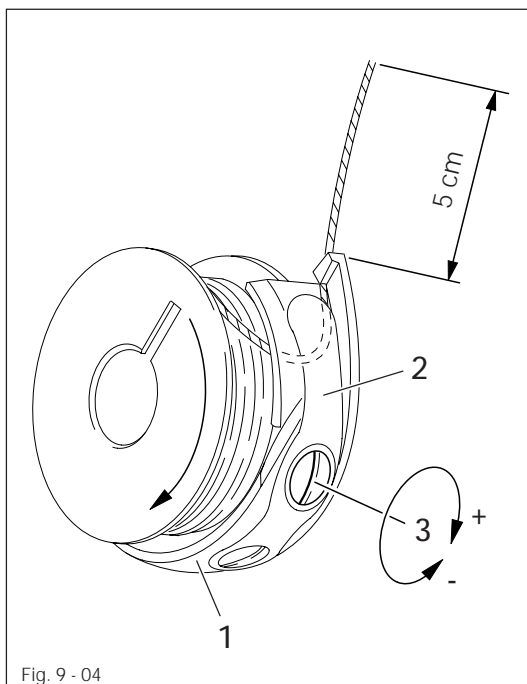
Removing the bobbin case:

- Open the post cap.
- Raise latch 1 and remove bobbin case 2.

Inserting the bobbin case:

- Insert bobbin case 2.
- Close the latch and close the post cap.

## 9.04 Threading the bobbin case / Adjusting the bobbin thread tension



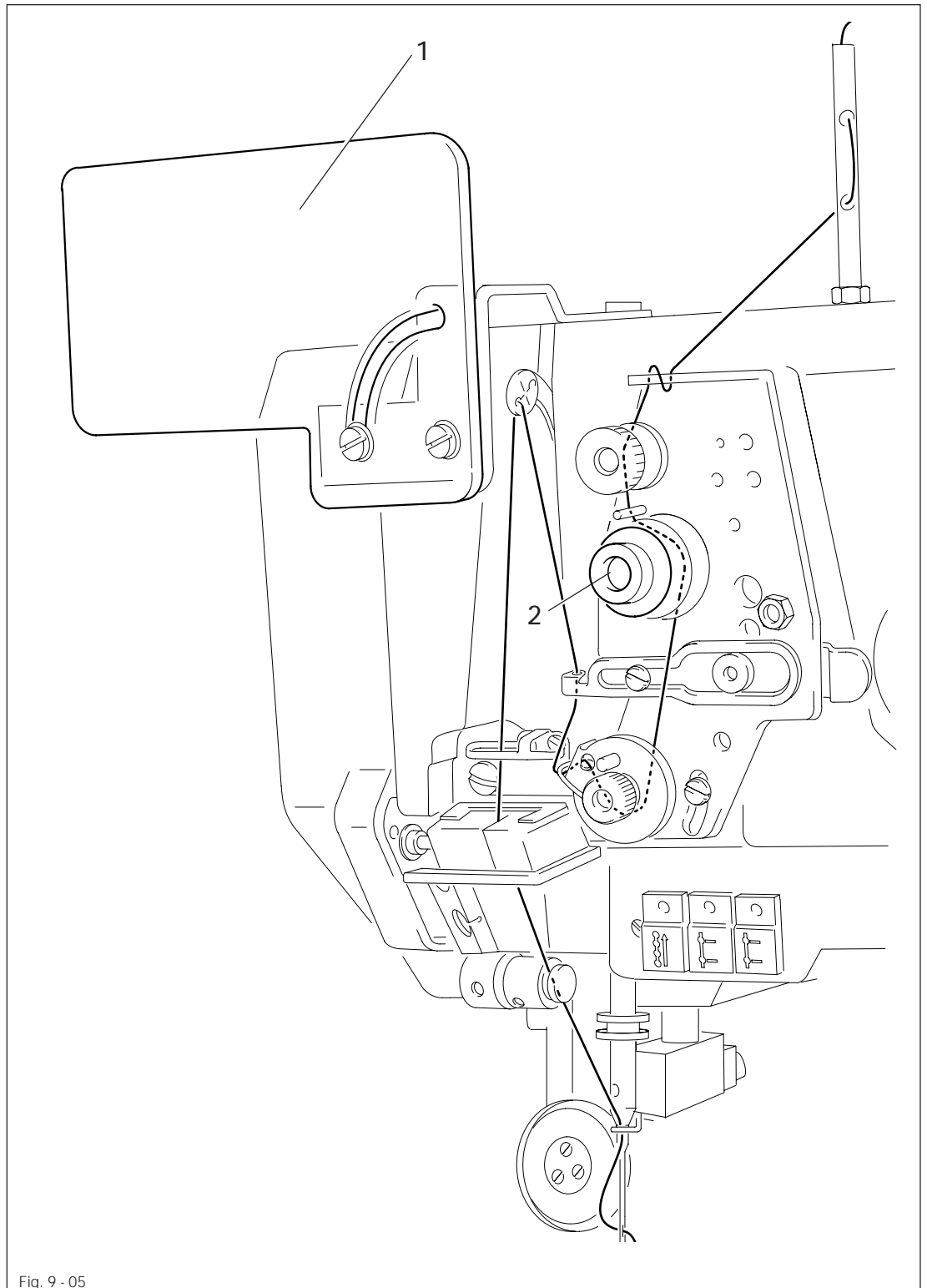
- Insert the bobbin into the bobbin case 1.
- Pass the thread through the slot under spring 2.
- Pass the thread through the notch.
- Adjust the thread tension by turning screw 3.



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

9.05

## Threading the needle thread / Adjusting the needle thread tension



Turn the machine off!

- Swing eye guard 1 upwards.
- Thread the machine as shown in Fig. 9 - 05.
- Adjust the needle thread tension by turning knurled screw 2.

## 9.06 Adjusting the stitch length

- Turn the machine on!

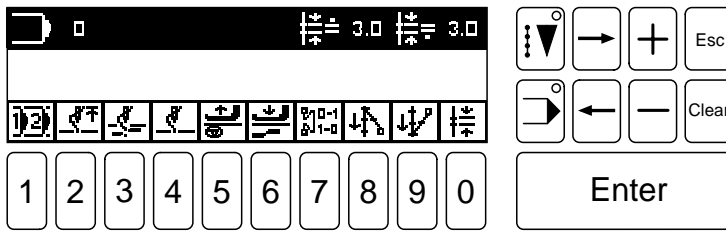


Fig. 9 - 06

If the display shown in Fig. 9-06 does not appear:



- Select the function **select program**.



- Enter program number 0.



- Confirm with the **Enter** key.



- Select the function **stitch length** with number key 0.

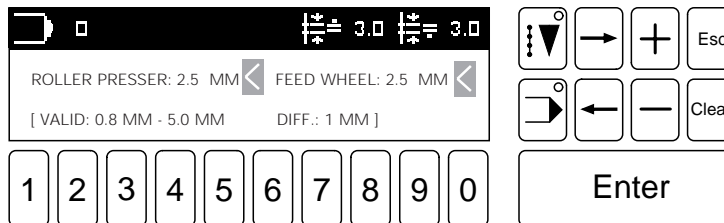


Fig. 9 - 07

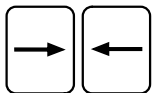
- Using the number keys, input the desired stitch lengths.



The value inputted will also be assumed on by the feed wheel and the roller presser.

If the values for the feed wheel and the roller presser vary, the feed wheel and the roller presser must be selected individually.

When inputting varying feed lengths:



- Select the feed wheel or roller presser separately using the **arrow keys** (observe cursor).



- Input the required value and confirm with the **Enter** key.



## 9.07 Selecting a language

- Turn the machine on.
- Select INPUT mode.

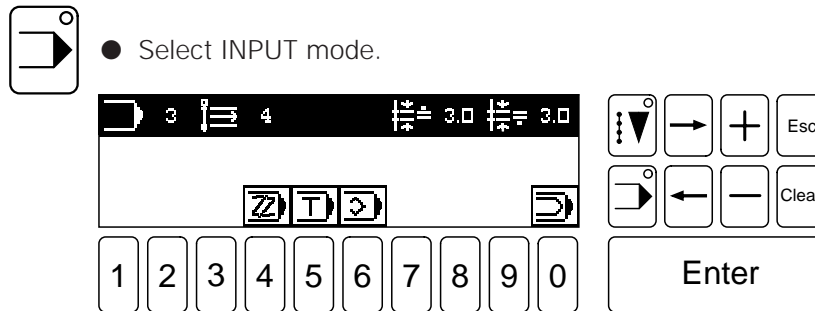


Fig. 9 - 08

- Select the function input menu with number key 0.
- Select the function SWITCH FUNCTIONS with number key 1.
- Select the function LANGUAGES with number key 3.
- Select the desired language with the number keys:
 

1	=	(D)
2	=	(GB)
3	=	(F)
4	=	(I)
5	=	(E)
6	=	(P)
- The language is taken on immediately once the corresponding number has been entered.

## 10 Sewing

### 10.01 Manual sewing

- Turn the machine on.

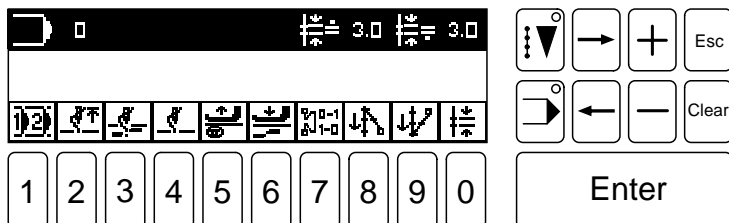


Fig. 10 - 01

If the display shown in Fig. 10-01 does not appear:



- Select the function **select program**.



- Enter program number 0.

Enter

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

- After these inputs you can begin sewing.

Explanation of the symbols in the display:



#### Program selection

This function opens a direct menu for selecting the desired seam program.



#### Needle up

By activating this function, the machine runs until the needle is at its top position when stopping (without thread trimming).



#### Thread trimming

When this function is active, the thread is cut when the pedal is pressed backwards.



#### Needle position

When this function is active, the machine positions the needle at its top position when stopping. When this function is deactivated, the needle stops at its lowest position.



#### Roller presser up after stop

When this function is active, the roller presser is raised when the machine is stopped.



#### Roller presser down after trimming

When this function is active, the roller presser is lowered after the trimming process.



#### Bartack suppression

- When pressed once the next bartack is suppressed.
- When pressed twice the next two bartacks are suppressed.



#### Start bartack

- When pressed once the **single** start-bartack is switched on.
- When pressed again a **double** start-bartack is switched on.
- Activating a third time switches the start bartack back off again.



**End bartack**

- When pressed once the **single** end-bartack is switched on.
- When pressed again a **double** end-bartack is switched on.
- Activating a third time switches the end bartack back off again.



**Stitch length**

This function opens a direct menu for inputting the desired values for the stitch lengths.

## 10.02 Sewing with the fixed programs

Fixed programs are stored at program numbers 1 and 2.

The fixed programs are used for the fast and comfortable sewing of seams with varying stitch lengths and/or levels of fullness.

The programs have 2 or 3 seam sections which you can switch between with the knee switch. They are designed as rotary programs and are completed by activating the pedal (see chapter 10.04 Decorative seams).

- Turn the machine on.

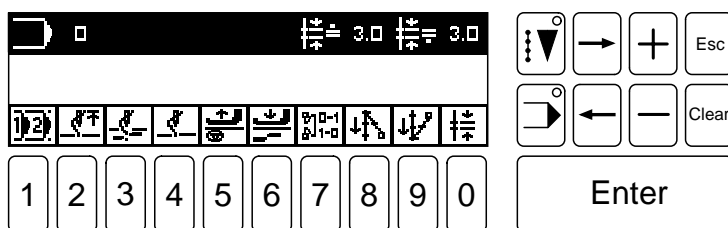


Fig. 10 - 02



- Switch on the bartack functions **start/end bartack** if desired.



- Select the function **select program**.

1

or

2

- Input program number 1 or 2.

Enter

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

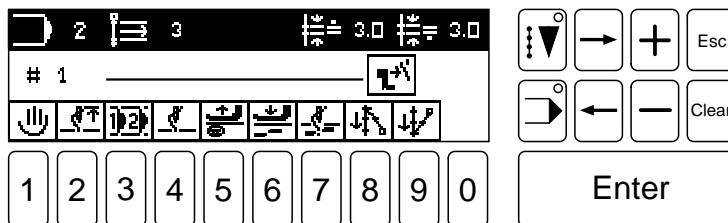


Fig. 10 - 03



In the text line you will see a stylized seam behind the number of the current seam section. Up-dating of the text line on a change of section is enabled or disabled in the input menu under SERVICE / SEWING MOTOR / SEAM WITH MOTOR RUNNING ( see chapter 11.09 summary of the service functions ).

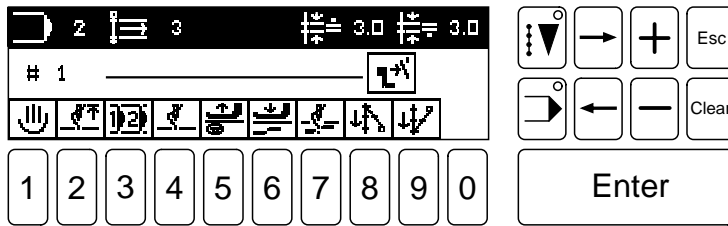


Fig. 10 - 03

Explanation of the functions in the display:



#### Program interruption

This function interrupts the sewing of the seam program.

See **chapter 10.05 Program interruption**.



#### Needle up

By activating this function, the machine runs until the needle is at its top position when stopping (without thread trimming).



#### Program selection

This function opens a direct menu for selecting the desired seam program.



#### Needle position

When this function is active, the machine positions the needle at its top position when stopping. When this function is deactivated, the needle stops at its lowest position.



#### Roller presser up after stop

When this function is active, the roller presser is raised when the machine is stopped.



#### Roller presser down after trimming

When this function is active, the roller presser is lowered after the trimming process.



#### Thread trimming

When this function is active, the thread is cut when the pedal is pressed backwards.



#### Start bartack

- When pressed once the **single** start-bartack is switched on.
- When pressed again a **double** start-bartack is switched on.
- Activating a third time switches the start bartack back off again.



#### End bartack

- When pressed once the **single** end-bartack is switched on.
- When pressed again a **double** end-bartack is switched on.
- Activating a third time switches the end bartack back off again.



For information on altering fixed programs see **chapter 11.11.01 Altering fixed programs**.

## 10.03 Programmed sewing

Pre-programmed seams can be selected with the program numbers 3 - 99.

- Turn the machine on.

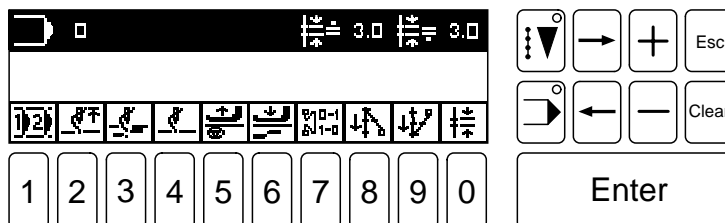
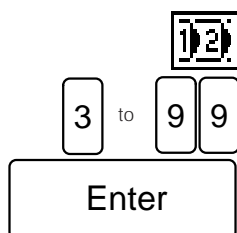


Fig. 10 - 04



- Select the function **select** program.
- Enter the desired program number from **3** to **99**.
- Confirm this entry with the **Enter** key.

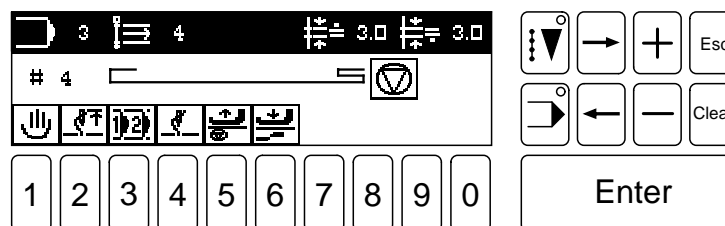


Fig. 10 - 05



In the text line you will see a stylized seam behind the number of the current seam section. Up-dating of the text line on a change of section is enabled or disabled in the input menu under **SERVICE / SEWING MOTOR / SEAM WITH MOTOR RUNNING** ( see chapter **11.09 Summary of the service functions** ).

Explanation of the symbols:



### Program interruption

This function interrupts the sewing of the seam program (see chapter 10.05 Program interruption).



### Needle up

By activating this function, the machine runs until the needle is at its top position when stopping (without thread trimming).



### Program selection

This function opens a direct menu for selecting the desired seam program.



### Needle position

When this function is active, the machine positions the needle at its top position when stopping. When this function is deactivated, the needle stops at its lowest position.



### Roller presser up after stop

When this function is active, the roller presser is raised when the machine is stopped.



## Roller presser down after trimming

When this function is active, the roller presser is lowered after the trimming process.

## 10.04 Decorative seams

Decorative seams are designed as rotary programs. The program does not stop at the end of the program and the thread is not trimmed. The program is repeated until the pedal is brought backwards to the 2nd position ( pedal position **3** in **chapter 7.03 Pedal** ).



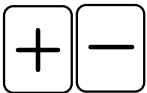
There is an example for programming decorative seams in **chapter 11.14.02 Example for programming a decorative seam**.

## 10.05 Program interruption



If the sewing of a program has to be interrupted ( e.g. in the case of a thread breakage ), the function **program interruption** must be activated.

- When pressed once, the machine switches to **manual SEWING**.
- If you continue sewing manually the stitch length values will be taken from the seam program ( symbol in display appears on a dark background ).
- By using the **plus/minus keys** you can select the seam section in which the seam program is to be continued.
- When pressed a second time, you enter the selected seam section. **Programmed SEWING** is continued.



## 10.06 Error messages

In the case of an error message, the text and pictogram bars in the display are written over. An error message is triggered by false settings, false elements or seam programs or by overload.

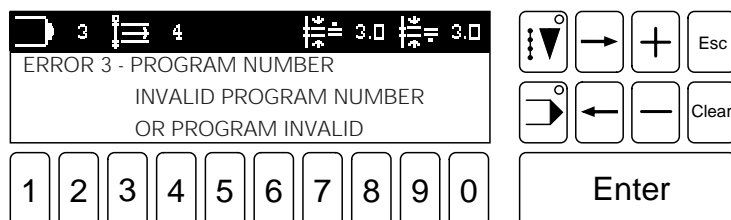
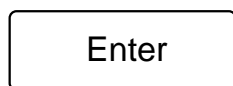


Fig. 10 - 06

- The error must be corrected before the machine can be operated.

To correct errors:

- By pressing the **Enter** key you skip back to the incorrect entry.
- Make the correct entry.



Information on correcting errors can be found in the corresponding service handbook. Errors may only be corrected by authorized specialists.

## 11 Programming

### 11.01 Symbols in the status bar

Information on the current seam section are displayed in the upper area of the display. Symbols with the corresponding values will also be displayed.

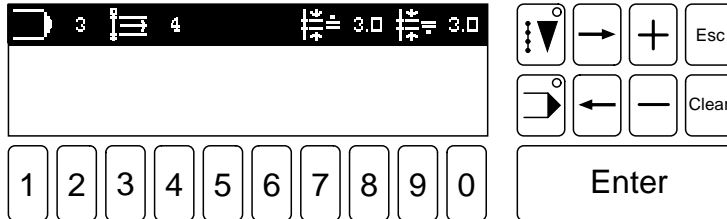


Fig. 11 - 01



#### Program number

The number of the selected seam program appears behind this symbol.



#### Number of seam sections

The total number of seam sections contained in the current seam program is displayed behind this symbol.



#### Top feed stitch length

The stitch length for the roller presser in the current seam section is displayed behind this symbol.



#### Bottom feed stitch length

The stitch length for the feed wheel in the current seam section is displayed behind this symbol.



## 11.02 Symbols in the text and graphic fields

Corresponding to the input status, a stylized seam section with the functions of the seam section end is shown in the middle of the display.

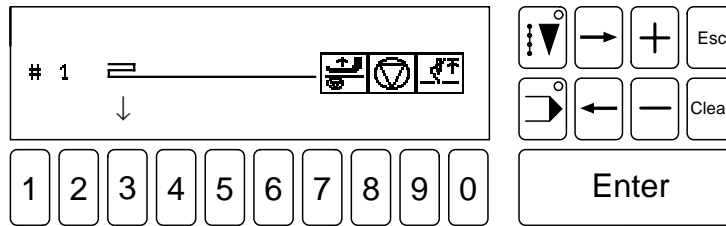



Fig. 11 - 02

### # Current seam section

The number of the current seam section is shown behind the symbol (e.g. 1).

 Single start-bartack

 Double start-bartack

 Seam

 Single end-bartack

 Double end-bartack

 Placed stitch



The symbols in the text bar show the functions which are carried out at the end of the seam section ( see **chapter 11.14 Seam section end** ). If the symbols are in front of the stylized seam, this seam section is sewn in reverse.

## 11.03 Symbols in the pictogram bar

In this control concept, the functions are selected exclusively using the **number keys**. The selectable functions are displayed as symbols in the pictogram bar of the display. You select the function by pressing the **number key** which is underneath it.

Initial state INPUT mode:

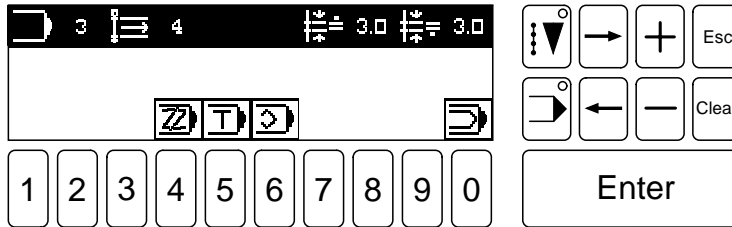


Fig. 11 - 03

Explanation of the symbols in the display:



### Programming

This function opens a direct menu for programming seams. The program is inputted using the control panel.



### Teach In

This function opens a direct menu for programming seams. Here, the system "learns" the desired seam.



### Program administration

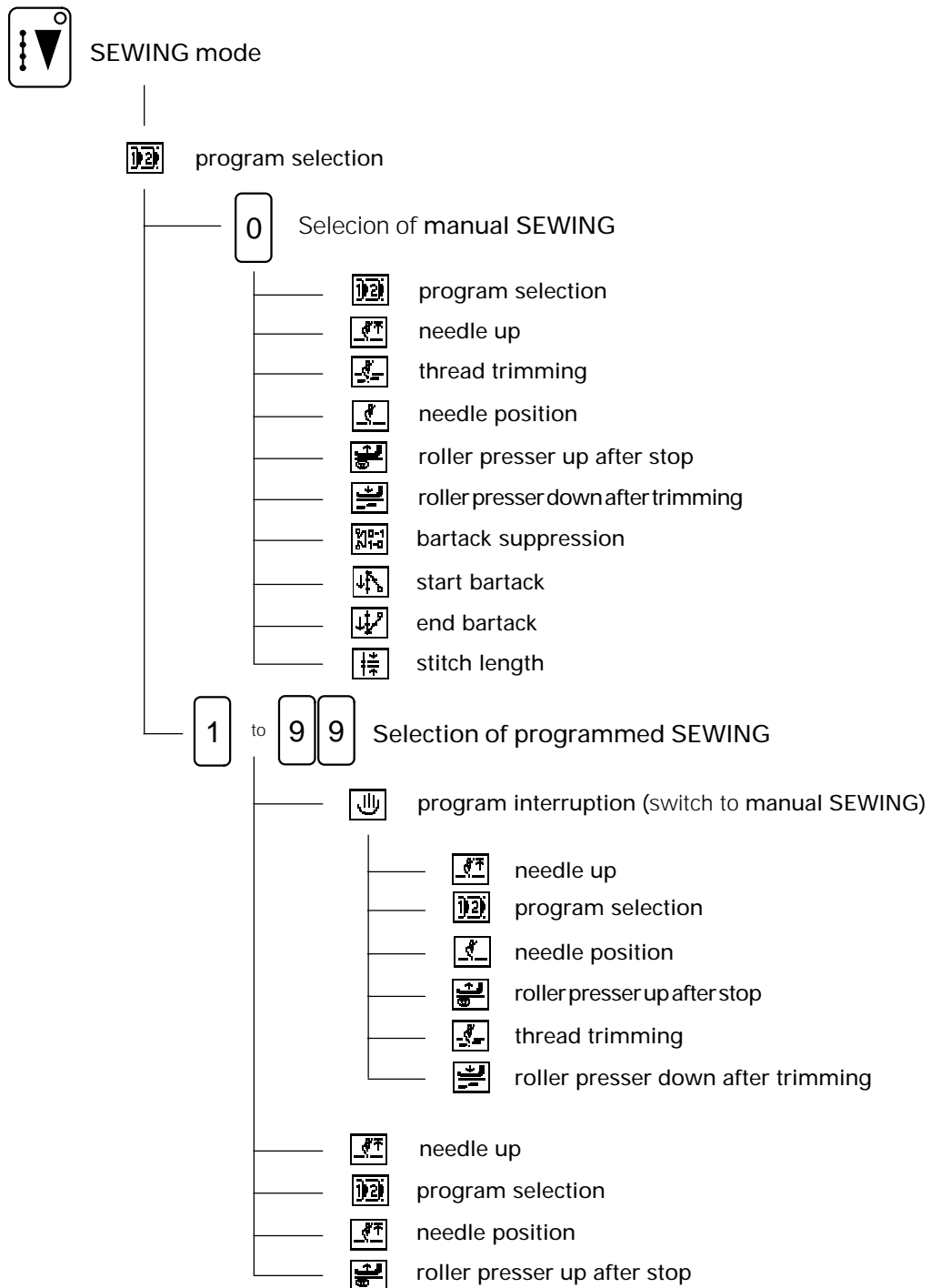
This function opens a menu with further functions which serve the administration of program data.



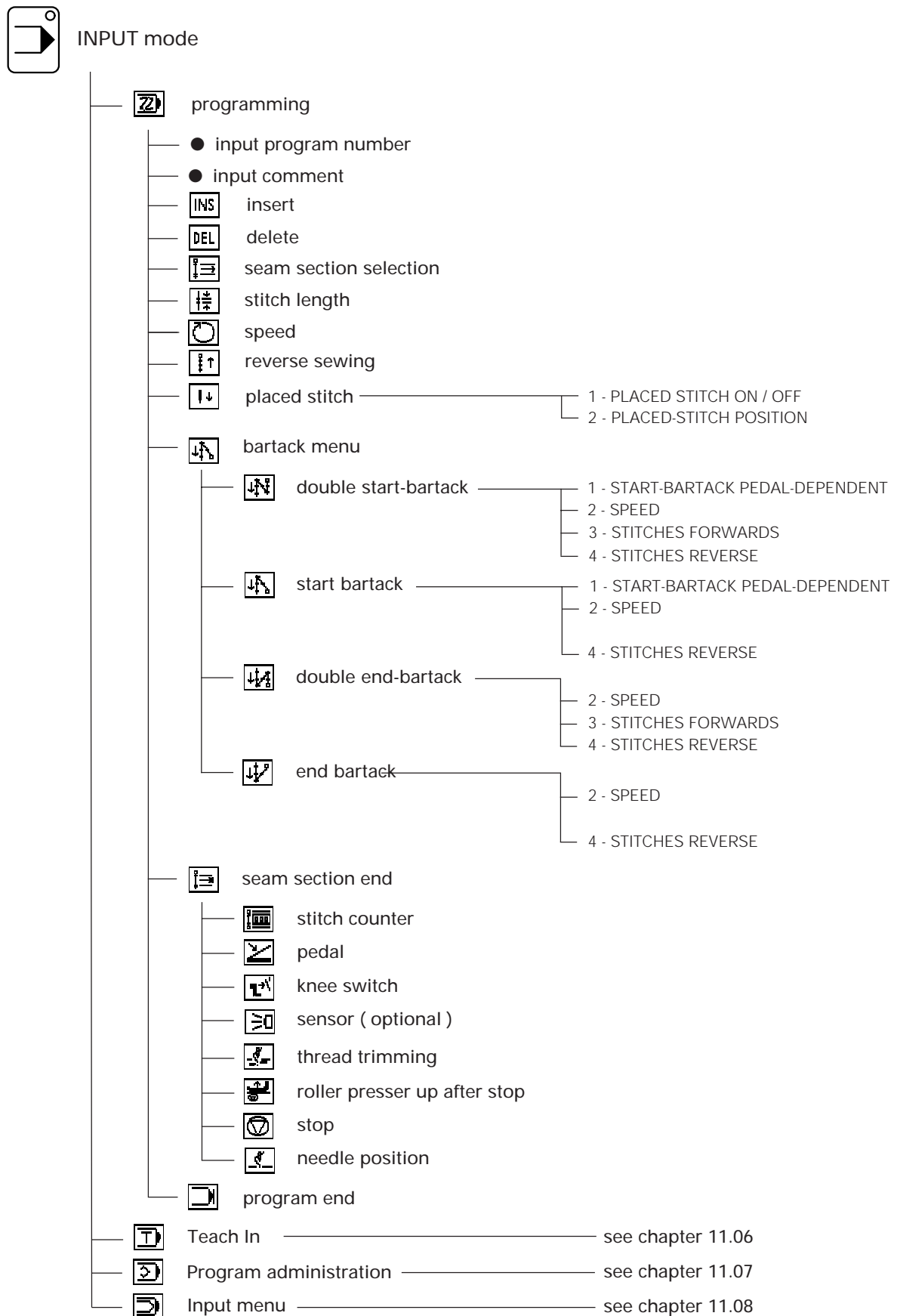
### Input menu

This function opens a menu with special functions, selection of language, switch functions, parameter settings and service functions.

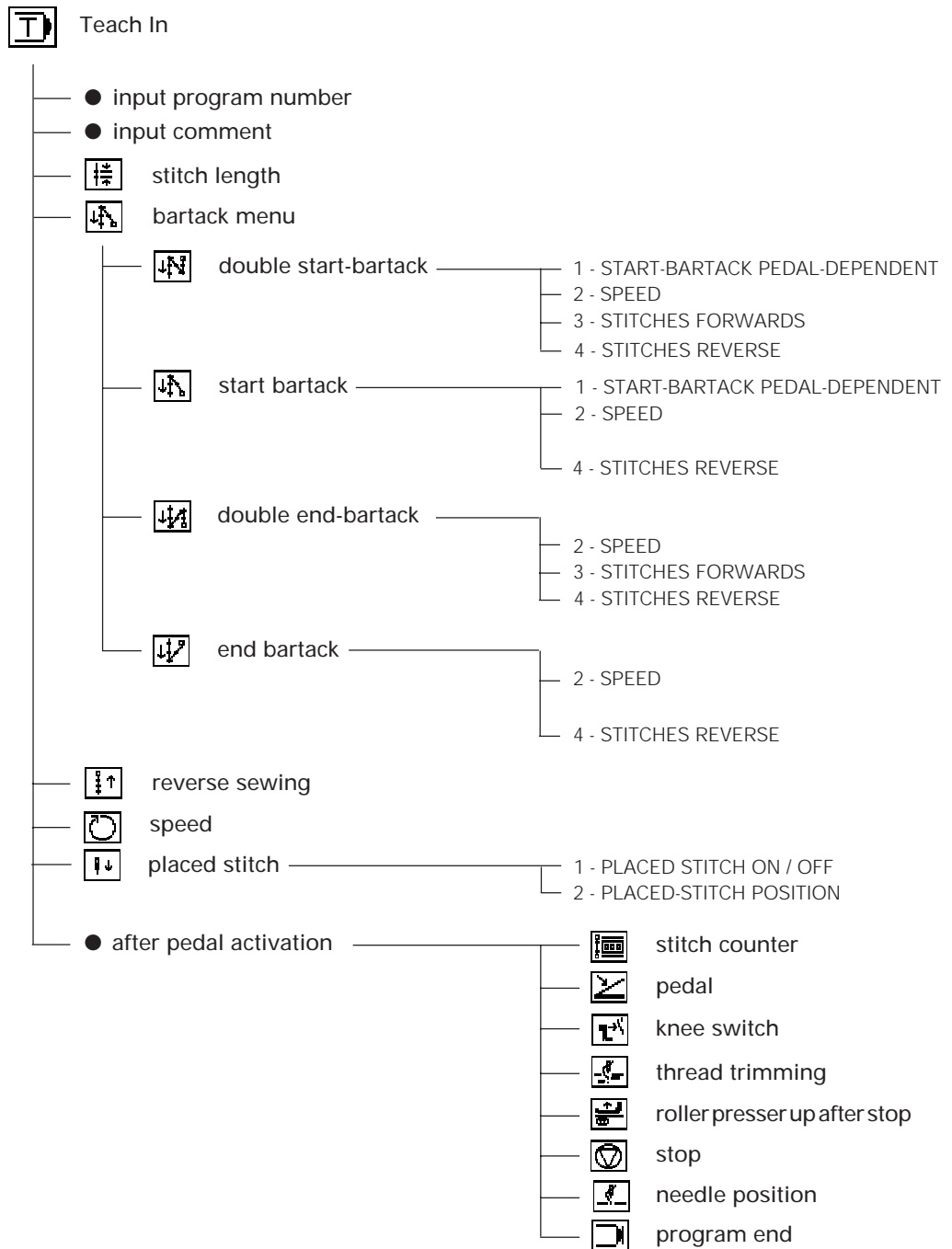
11.04 Summary of the functions in SEWING mode



## 11.05 Summary of the functions in INPUT mode



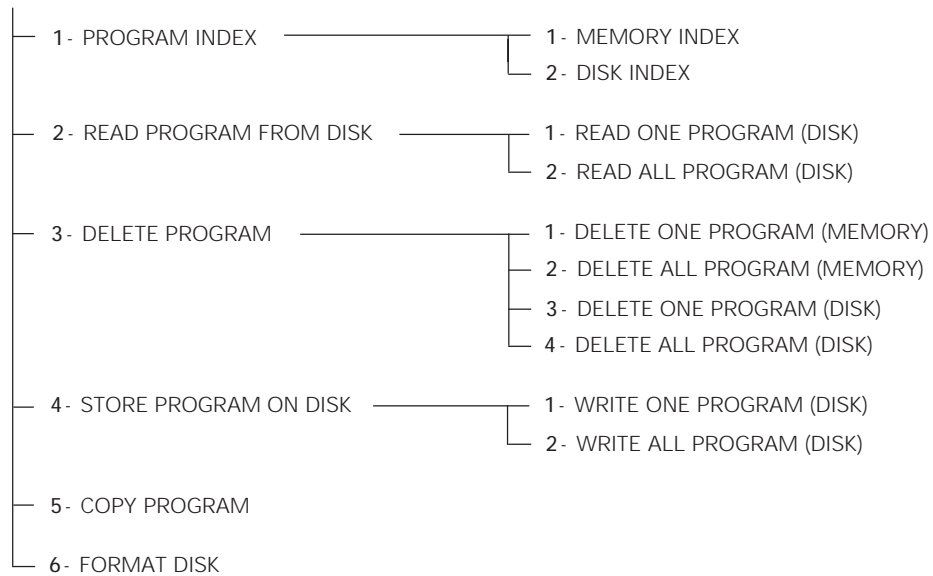
11.06 Summary of the functions in Teach In



## 11.07 Summary of the functions in program administration



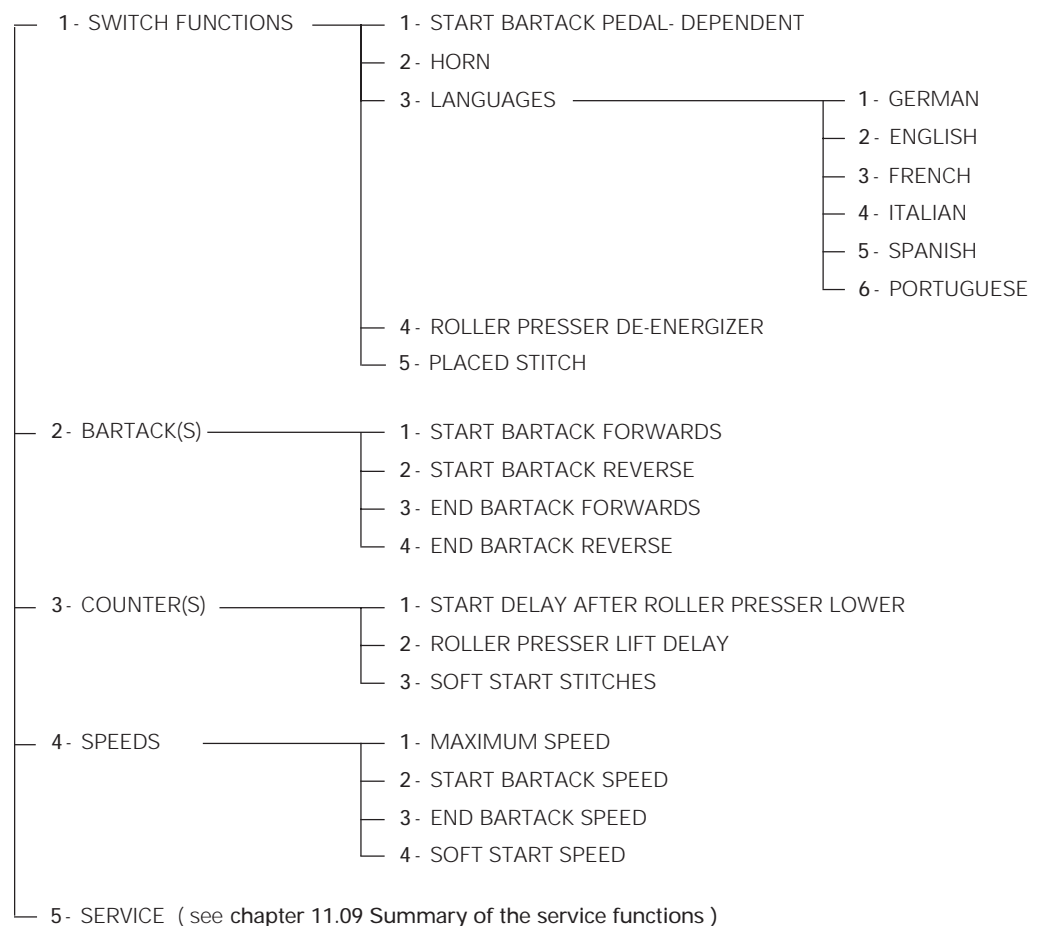
### Program administration



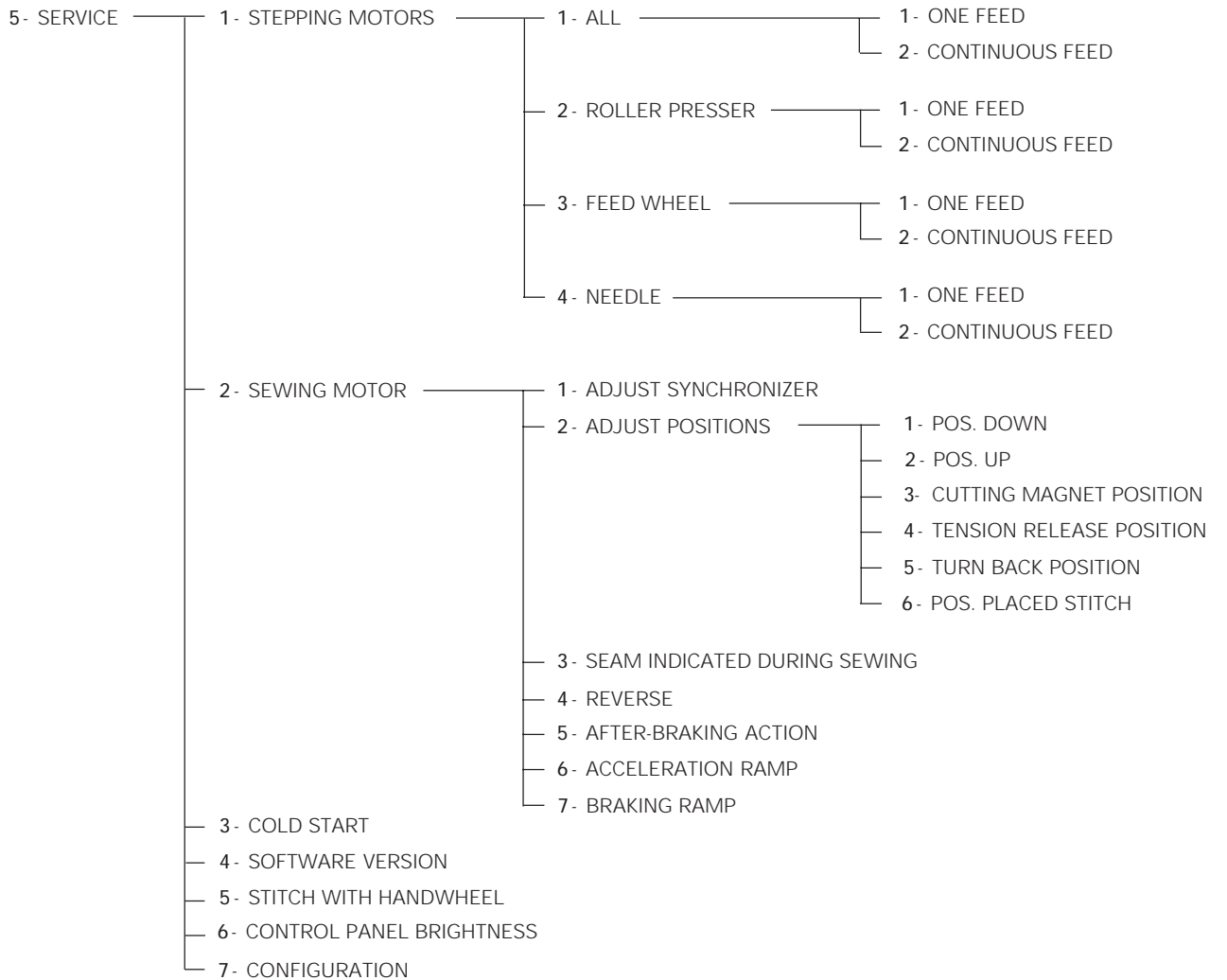
## 11.08 Summary of the functions in the input menu



### Input menu



### 11.09 Summary of the service functions



### 11.10 Selection of functions from menu levels



- Select **INPUT** mode

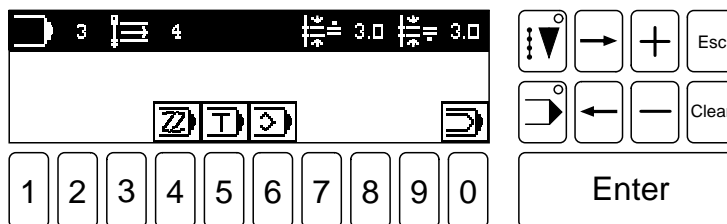


Fig. 11 - 04



- Select the **input menu** function (the first menu level appears in the display).

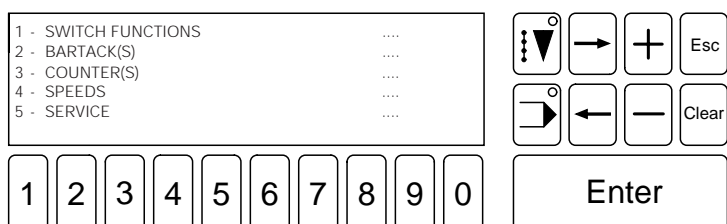


Fig. 11 - 05

- 5** ● Select the function SERVICE with number key 5. The following display appears:

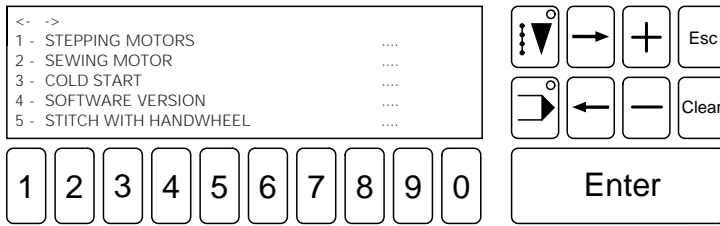


Fig. 11 - 06

- 2** ● Select the function SEWING MOTOR with number key 2. The following display appears:

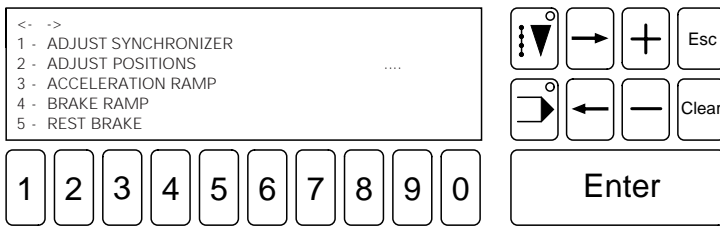


Fig. 11 - 07

- 1** ● Select the function ADJUST SYNCHRONIZER with number key 1. The display for adjusting the synchronizer appears:

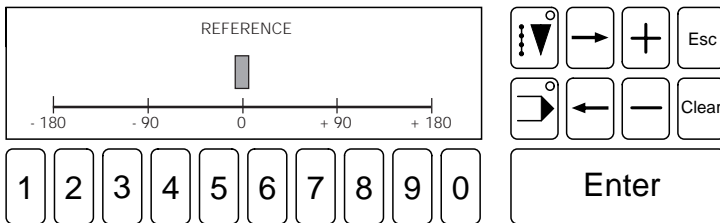


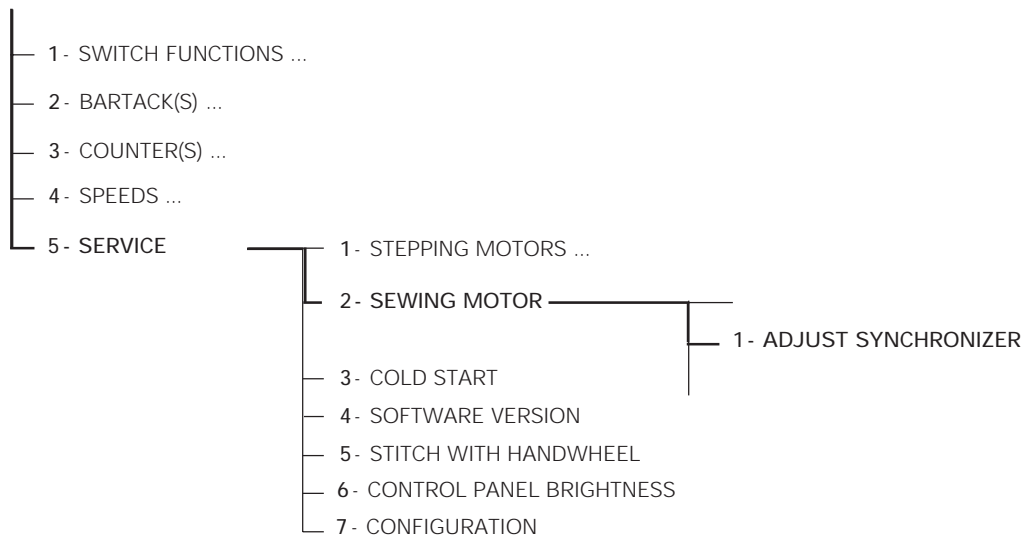
Fig. 11 - 08



INPUT mode



Function input menu





## 11.11 Creating seam programs

### 11.11.01 Altering fixed programs



- Select INPUT mode. The initial INPUT display appears:

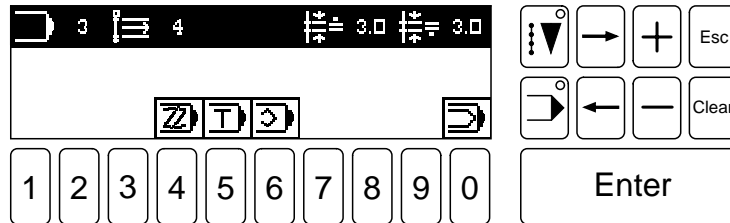


Fig. 11 - 09



- Select function Programming. The menu for inputting the program number appears:

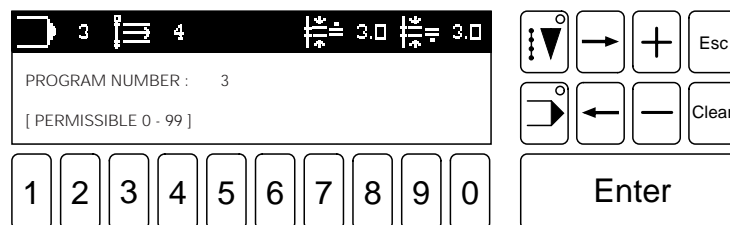
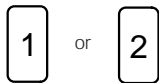


Fig. 11 - 10



- Enter program number 1 or 2.

Enter

- Confirm the entry with the Enter key.

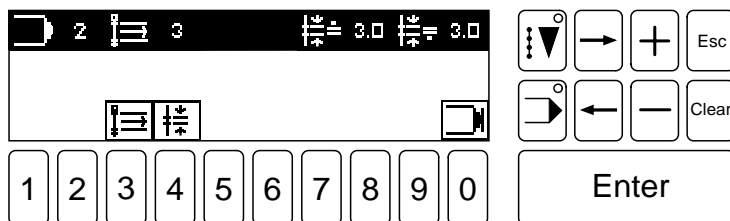


Fig. 11 - 11

Explanation of symbols in the display:



**Seam section selection**

This function opens a direct menu for selecting a desired seam section within the sewing program



**Stitch length**

This function opens a direct menu for inputting the desired values for the stitch lengths.



**Program end**

Is only a display function with fixed programs.

- The fixed programs can be altered via the functions **stitch length** and **seam section selection**.

## 11.11.02 Programming



- Select INPUT mode. The initial INPUT display appears:

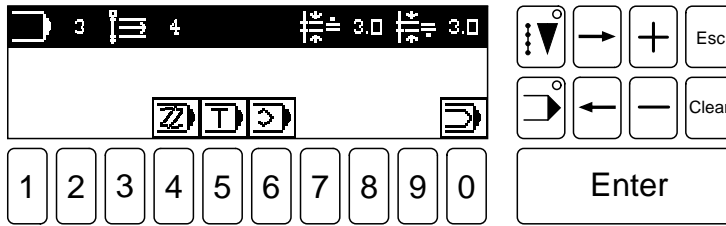


Fig. 11 - 12



- Select function Programming. The menu for inputting the program number appears:

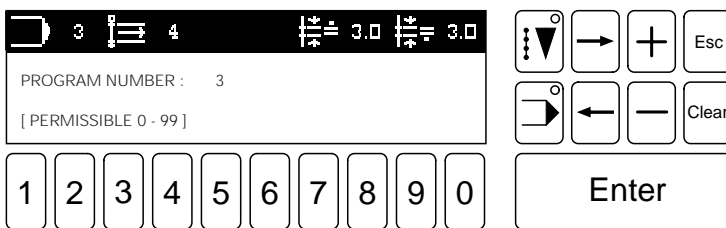


Fig. 11 - 13



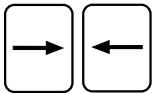
- Enter a program number from 3 to 99.



- Confirm the entry with the Enter key  
The menu for inputting a comment appears:



Fig. 11 - 14



- A comment of up to 14 characters can be entered.
- The characters in the display can be scrolled through with the arrow keys.
- Select a character by pressing the corresponding number key.
- Confirm the input with the Enter key.



The basic menu for programming appears:

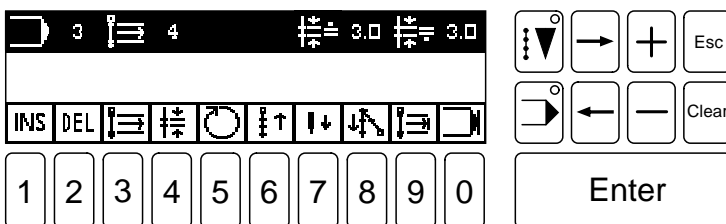


Fig. 11 - 15

- Individual seam programs can now be created using the functions.
- Incorrect combinations will not be accepted by the system.

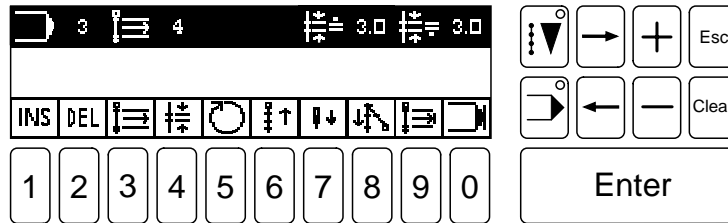












Fig. 11 - 15

Explanation of the symbols in the display:

- 
**Insert**  
 This function inserts a seam section into the current seam program. The current seam section is pushed back one position.
- 
**Delete**  
 This function deletes the current seam section.
- 
**Seam section selection**  
 This function opens a direct menu for selecting the desired values for the stitch lengths.
- 
**Stitch length**  
 This function opens a direct menu for inputting the desired values for the stitch lengths.
- 
**Speed**  
 This function opens a direct menu for inputting the value of the speed dependent on the seam section.
- 
**Reverse sewing**  
 When this function is activated the seam is sewn backwards in the current seam section.
- 
**Bartack menu**  
 This function opens a direct menu for inputting bartack functions ( see **chapter 11.12 Bartack menu** ).
- 
**Placed stitch**  
 This function opens a direct menu for enabling/disabling the placed-stitch function and inputting a value for the placed-stitch position ( see **chapter 11.13 placed-stitch menu** ).
- 
**Seam section end**  
 This function opens a direct menu for determining the functions at the seam section end ( see **chapter 11.14 Seam section end** ).
- 
**Program end**  
 This function finishes the seam program. The program data entered is checked.



The programming process is explained step by step using an example in **chapter 11.15.01 Example of seam programming**.



Bartacks which are not logical are automatically deleted when the program is checked.

## 11.11.03 Teach In

In this function the machine can "learn" a seam program while sewing.



- Select INPUT mode. The basic INPUT screen appears:

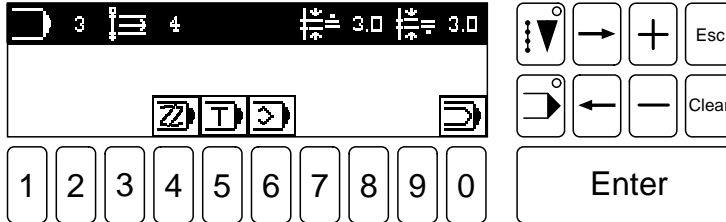


Fig. 11 - 16



- Select the Teach In function. The menu for inputting the program number appears.

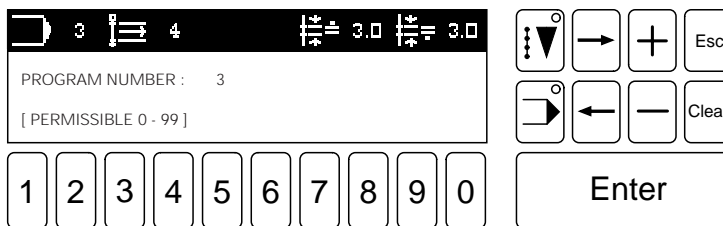


Fig. 11 - 17



- Enter a program number from 3-99.



- Confirm the entry with the Enter key.  
The menu for inputting a comment appears:

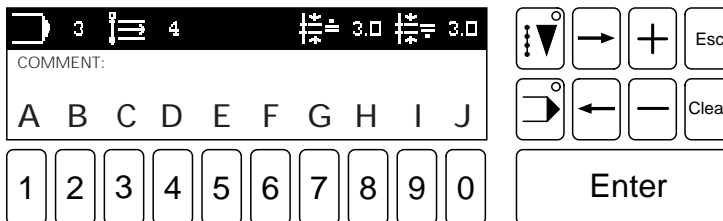
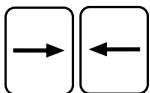


Fig. 11 - 18



- A comment of up to 14 characters can be entered.
- The characters in the display can be scrolled through with the arrow keys.
- Select a character by pressing the corresponding number key.



- Confirm the input with the Enter key.

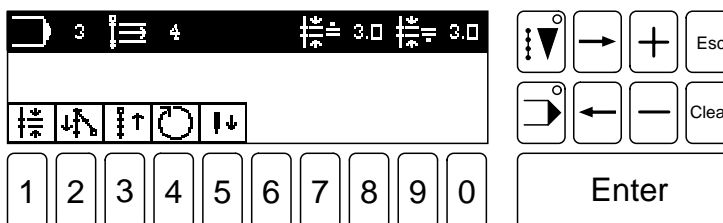


Fig. 11 - 19

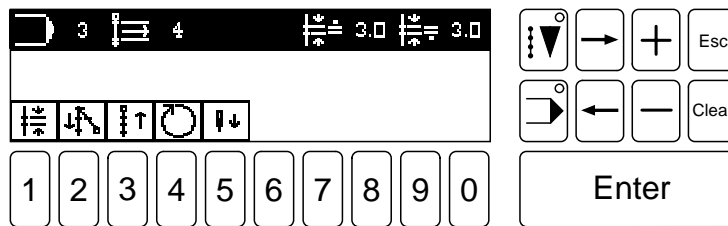







Fig. 11 - 19

Explanation of the symbols in the display:

- 
**Stitch length**  
 This function opens a direct menu for inputting the desired values for the stitch length.
- 
**Bartack menu**  
 This function opens a direct menu for inputting bartack functions.
- 
**Reverse sewing**  
 When this function is activated the seam is sewn backwards in the current seam section.
- 
**Speed**  
 This function opens a direct menu for inputting the value of the speed dependent on the seam section.
- 
**Placed stitch**  
 This function opens a direct menu for enabling/disabling the placed-stitch function and inputting a value for the placed-stitch position.

- Press the pedal. The machine switches automatically to **manual SEWING**.
- Sew the seam manually.
- The end of the seam section can be determined after the first standstill of the machine.

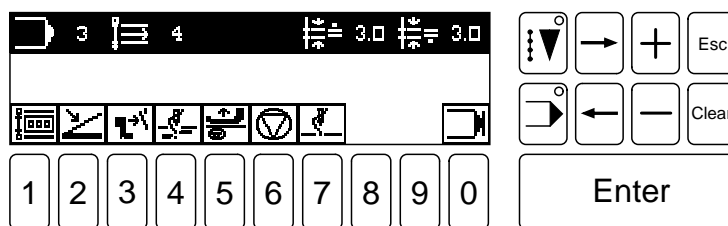


Fig. 11 - 20

- The corresponding functions at the end of the seam section can be entered using the control panel ( see **chapter 11.14 Seam section end** ) or they can be selected directly using the knee switch or pedal.



The symbol also appears on a dark background in the display when the function is activated using the knee switch or pedal. If a function is activated accidentally, it can be deactivated again using the corresponding number key.

Enter

- After pressing the **Enter key**, the seam section end is accepted and you switch over to the next seam section.



- Programming is finished with the **program end** function.

## 11.12 Bartack menu

In INPUT mode, values for start and end bartacks can be entered in this function after the programming function has been activated.

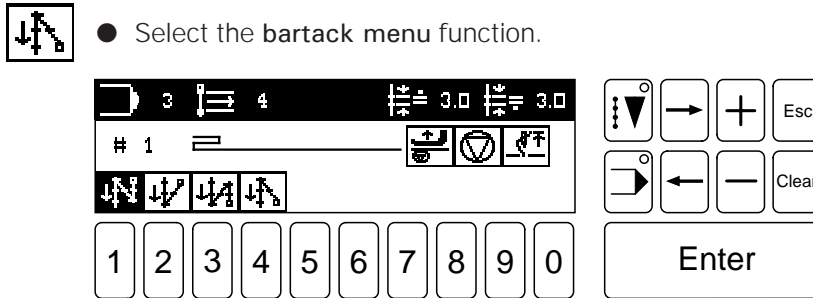


Fig. 11 - 21



### Double start-bartack

- Pressing this key once turns the function on or off.
- A double click of this key opens the menu for inputting the bartack parameters.



### Single start-bartack

- Pressing this key once turns the function on or off.
- A double click of this key opens the menu for inputting the bartack parameters.



### Double end-bartack

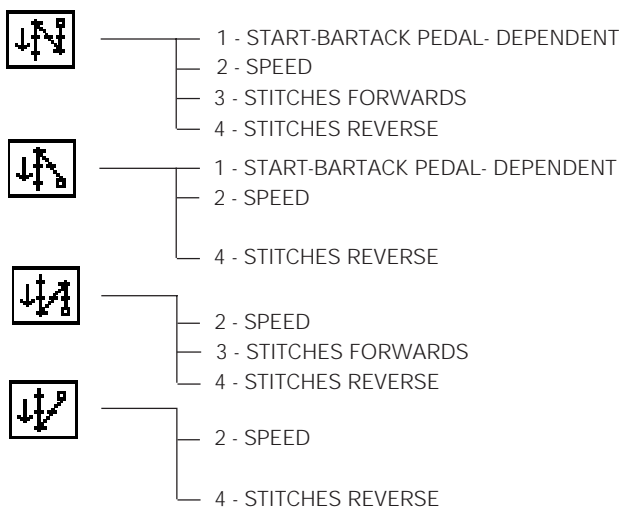
- Pressing this key once turns the function on or off.
- A double click of this key opens the menu for inputting the bartack parameters.



### Single end-bartack

- Pressing this key once turns the function on or off.
- A double click of this key opens the menu for inputting the bartack parameters.

Summary of the input menus:



Start bartacks are only sewn in the seam program if the trimming has already been carried out. End bartacks are only sewn if the thread trimming function has been activated.

All other bartack functions entered are optimized after the end of the program.

11.13 Placed-stitch menu

In the INPUT mode the placed stitch can be set after the function programming has been enabled.

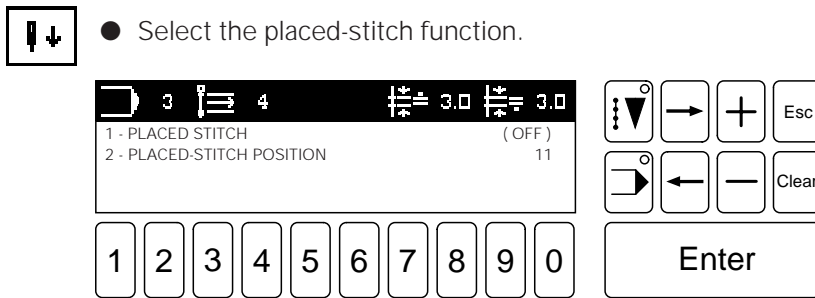


Fig. 11 - 22

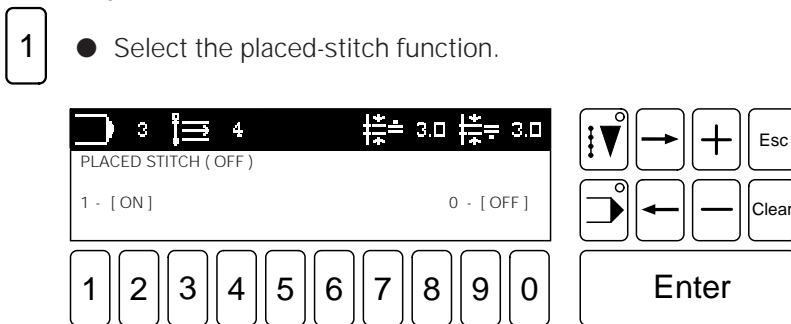


Fig. 11 - 23

- Enable ( number key 1 ) or disable ( number key 0 ) placed-stitch function.



- Confirm input with Enter key.

- Select placed-stitch function to set the position of the placed stitch.



Before the placed stitch can be set, a stitch must first be sewn. Placed stitches can only be sewn in a sewing program when the needle has been positioned at the top or the thread has been trimmed in the seam section before. All other input placed stitches are cancelled after programming is concluded.

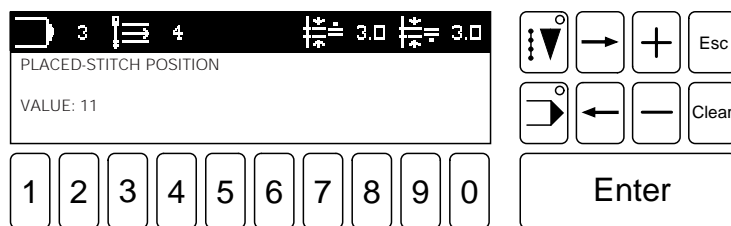


Fig. 11 - 24



- Set the required position by turning the balance wheel.
- Confirm input with Enter key.

## 11.14 Seam section end

If certain functions are to be carried out automatically at the end of a seam section, these functions can be entered into a menu.

In **Teach In** mode, the menu for inputting appears automatically after the first machine standstill.



In programming mode, the menu must be selected using the **seam section end** function.

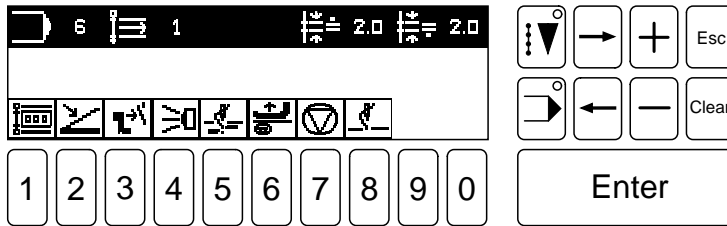


Fig. 11 - 25

- The functions can be switched on and off by pressing the corresponding **number key**.
- The pedal and knee switch functions can be switched on either by pressing the keys or by activating the pedal or knee switch directly.
- When pressing the **Enter key** the current seam section is brought to an end and the machine springs to a new seam section.

Enter

Explanation of the symbols in the display:



### Stitch counter

- This function is activated by pressing the key once. I.e. the seam section end is determined by the number of stitches.
- Pressing the key once again opens the menu for inputting the number of stitches.
- Pressing the key a third time switches the function off again.



### Pedal

When this function is active, the seam section end is signaled by pressing the pedal.



### Knee switch

When this function is active, the seam section end is signaled by pressing the knee switch.



### Thread trimming

When this function is active, the thread is cut automatically at the seam section end.



### Roller presser up after stop

When this function is active, the roller presser is raised automatically at the seam section end.



### Stop

When this function is active, the machine is stopped at the seam section end. The **stop** function only makes sense in combination with the **thread trimming** function when a seam correction is to be carried out at the seam section end. The seam correction is then carried out with the keys on the sewing head.



### Sensor ( optional )

When this function is enabled the end of seam is signalled by the sensor.





**Needle position**

When this function is active, the needle travels to its top position at the seam section end.  
When this function is not active, the needle positions itself at its lowest point.



**Program end**

This function serves to end the seam program. The program data entered is checked.

11.15 Programming examples



The following display representations are only accurate if no program has been inputted previously.

11.15.01 Example of seam programming

The seam to be programmed is:

- to contain 5 seam sections
- and to be saved with the comment "seam 1"
- at program number 7.



- Select INPUT mode.

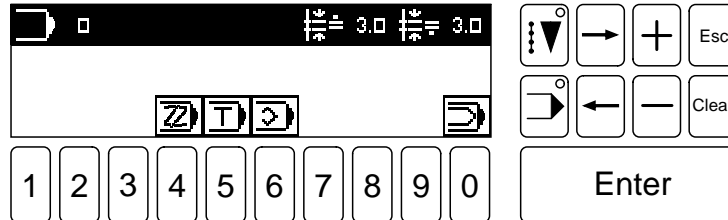


Fig. 11 - 26



- Select the programming function ( number key 4 ).

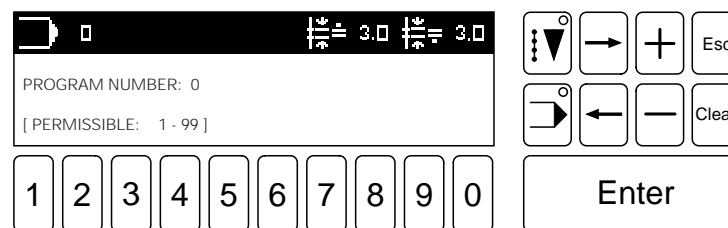
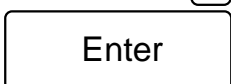


Fig. 11 - 27



- Input program number 7.
- Confirm this entry with the Enter key.  
( Display for inputting comment Fig. 11-28 appears. )



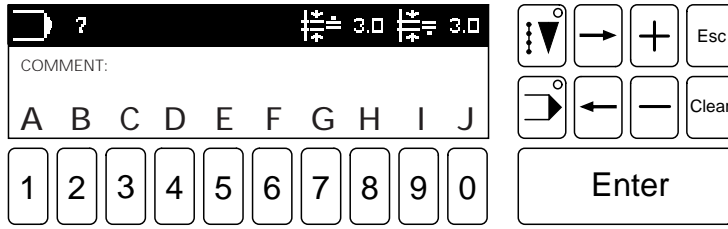


Fig. 11 - 28



- Press the arrow key pointing to the right.

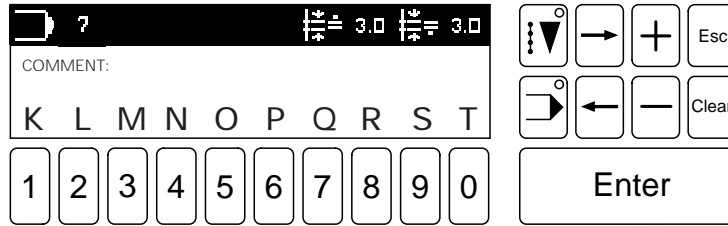


Fig. 11 - 29



- Select letter N.



- Press the arrow key pointing to the left ( Display Fig. 11-28 appears again ).



- Select letter A.
- Complete the comment in this way.
- Confirm the entry with the Enter key.

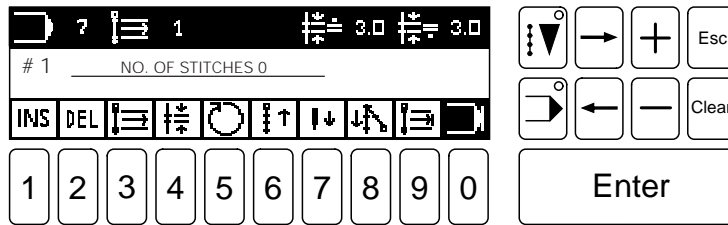


Fig. 11 - 30

- Program the first seam section:

This seam section is to contain

- a double start-bartack ( 2 stitches forwards and reverse ),
- stitch counting ( 5 stitches )
- and a stitch length ( for roller presser and feed wheel ) of 3.5 mm.



- Open the bartack menu (number key 8).

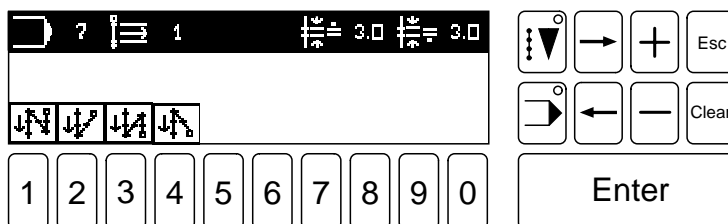


Fig. 11 - 31



- Double click (press twice in rapid succession) on the function double start-bartack to open the start bartack menu for double bartacks ( number key 1 ).

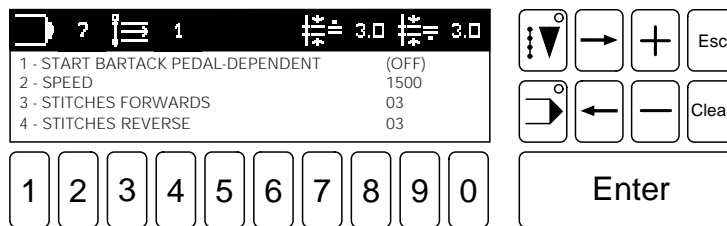


Fig. 11 - 32

3

- Select the function STITCHES FORWARDS.

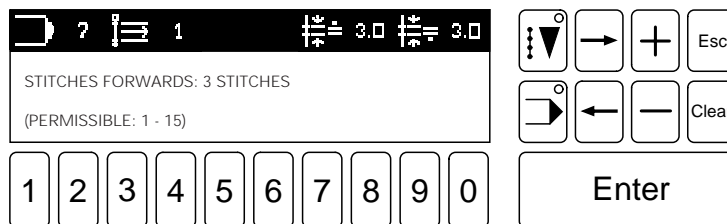


Fig. 11 - 33

2

- Enter the number of stitches.



Fig. 11 - 34

Enter

- Confirm this input with the Enter key.

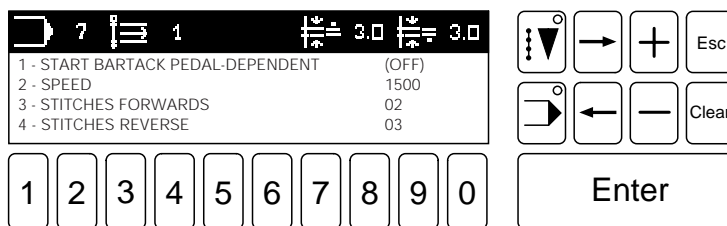


Fig. 11 - 32

4

- Select the function STITCHES REVERSE.

2

- Enter the number of stitches.

Enter

- Confirm this input with the Enter key ( Display Fig. 11-32 appears ).

Enter

- Close the input in the bartack menu with the Enter key ( Display Fig. 11-31 appears ).

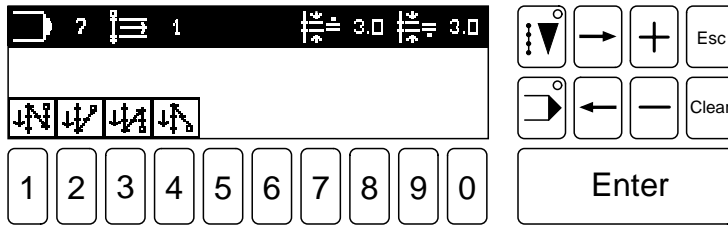


Fig. 11 - 31

- The double start-bartack function still has to be activated ( number key 1 ). After the number key has been pressed, the symbol is displayed on a dark background.
- Close the bartack menu function with the Enter key.

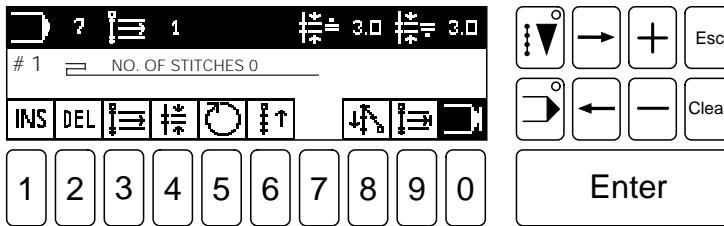
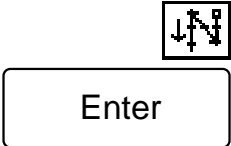


Fig. 11 - 30

- Select the stitch length function ( number key 4 ).

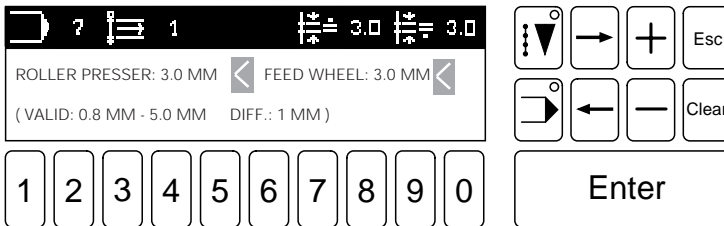
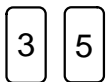


Fig. 11 - 35

- This is entered for both stitch lengths. If varying values are to be entered, the roller presser and the feed wheel must be selected individually using the arrow keys. Observe the cursor.



- Enter the desired stitch lengths.

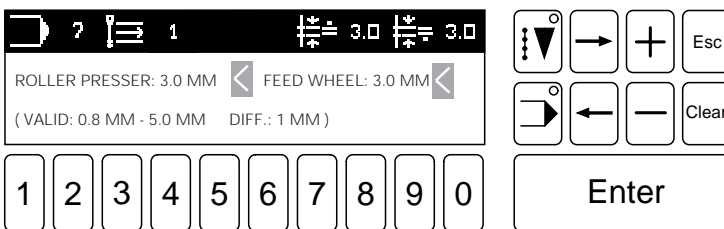


Fig. 11 - 36

- Confirm stitch length input with the Enter key.

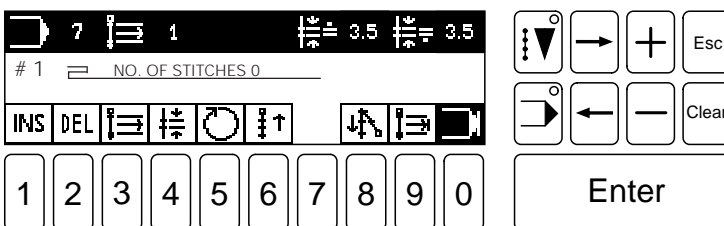


Fig. 11 - 37



- Select the function seam section end ( number key 9 ).

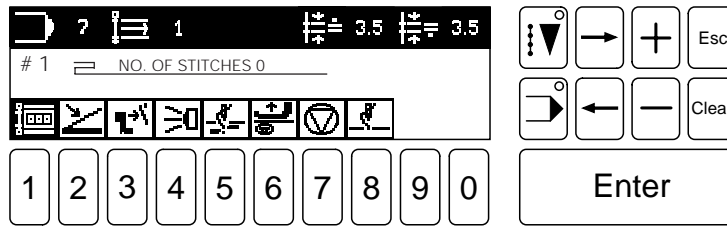


Fig. 11 - 38



- The stitch counter function is already on ( dark background ). By activating the function ( number key 1 ) the menu for inputting the number of stitches is opened.

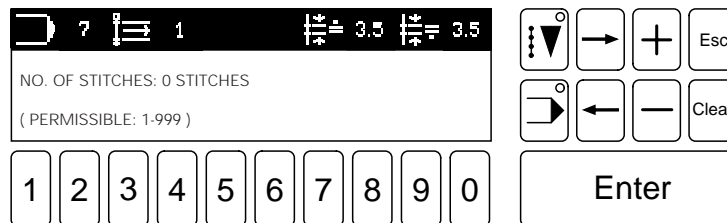


Fig. 11 - 39

5

- Enter the desired number of stitches.

Enter

- Confirm this entry with the Enter key.

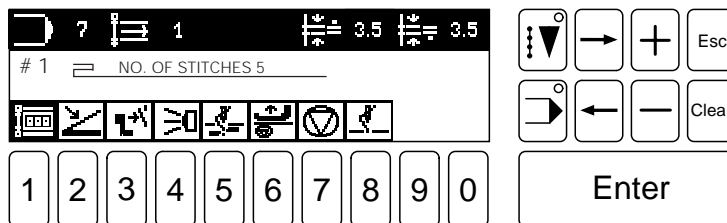


Fig. 11 - 40

Enter

- Close the seam section end menu with the Enter key.

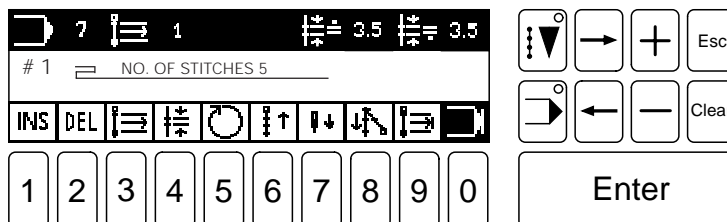


Fig. 11 - 37



- Switch off the program end function ( number key 0 ) in order to be able to program the second seam section.
- Press the Enter key to confirm the first seam section.

Enter

- Program the second seam section:

In this seam section the

- stitch length should be 5.0 mm

- and a stitch count should be carried out ( 1 stitch ).

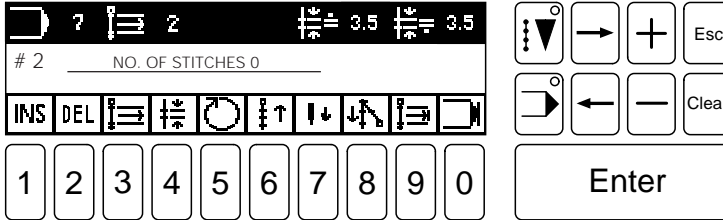


Fig. 11 - 41



- Select the stitch length function.

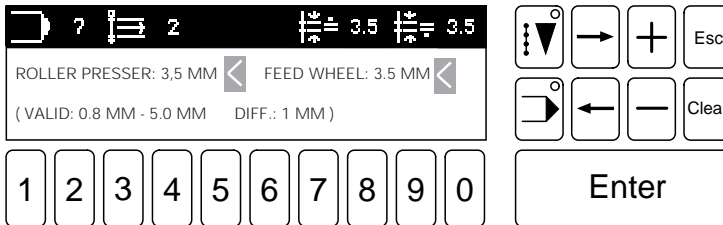


Fig. 11 - 42



- Input the value for the stitch lengths.



- Confirm the entry with the Enter key.

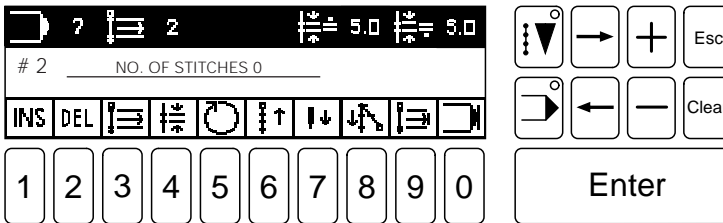


Fig. 11 - 43



- Select the seam section end function ( number key 9 ).

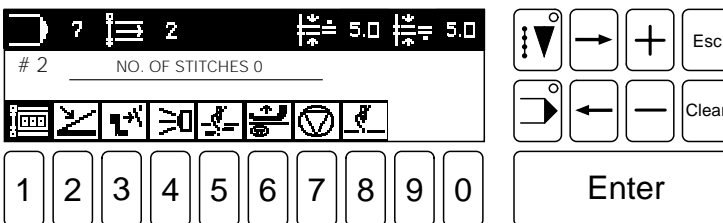


Fig. 11 - 44



- Select the menu for inputting the number of stitches ( number key 1 ).  
Display Fig. 11-45 appears.

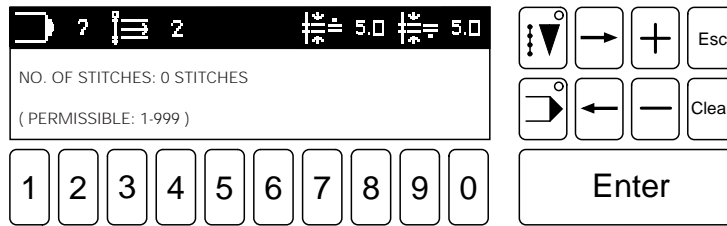


Fig. 11 - 45

- 1 ● Enter the desired number of stitches.



- Confirm this number of stitches with the Enter key.

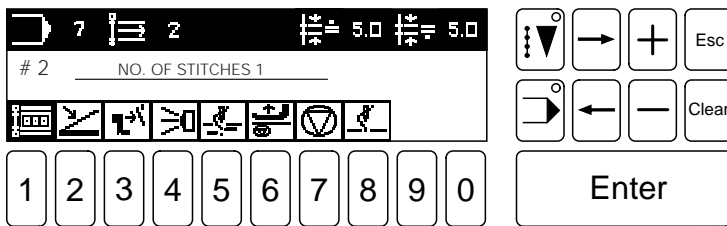
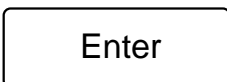
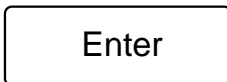


Fig. 11 - 46



- Press the Enter key to confirm the seam section end.



- Press the Enter key to confirm the second seam section end. The machine jumps to the third seam section.

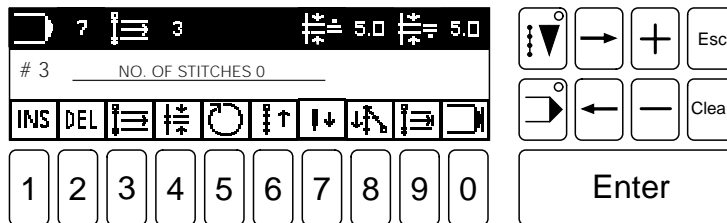


Fig. 11 - 47

- Program the third seam section so that:

- the stitch length is 5.0 mm,
- a stitch count is carried out (1 stitch)
- and the seam is sewn in reverse.

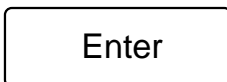


- Select the seam section end function ( number key 9 ).

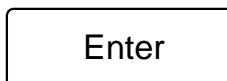


- Select the stitch counter function ( number key 1 ).

- 1 ● Enter the desired number of stitches.



- Confirm the number of stitches with the Enter key.



- Confirm the seam section end with the Enter key. Display Fig. 11-48 appears.

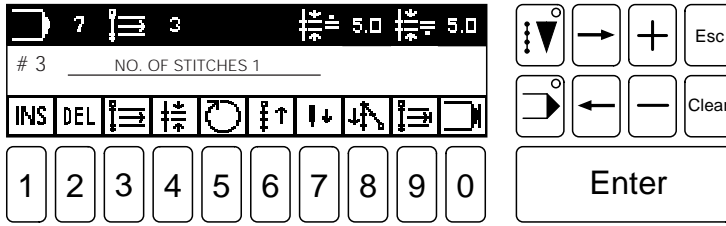


Fig. 11 - 48



- Switch on the reverse sewing function ( number key 6 ).

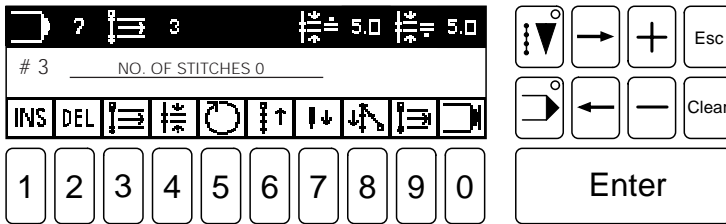


Fig. 11 - 49



- Confirm the third seam section with the Enter key.  
The machine jumps to the inputting of the fourth seam section.

- Program the fourth seam section:

In this seam section

- the stitch length should be 5.0 mm and
- a stitch count should be carried out ( 1 stitch ).



- Select the seam section end function ( number key 9 ).



- Select the stitch counter function ( number key 1 ).



- Enter the desired number of stitches.



- Confirm the number of stitches with the Enter key.



- Confirm the seam section end with the Enter key.

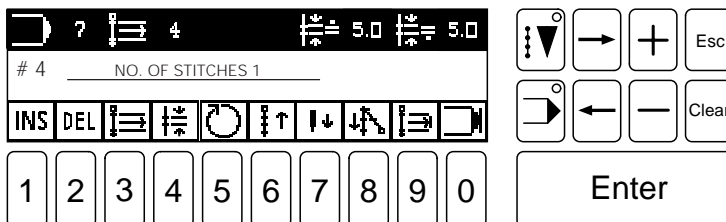


Fig. 11 - 50



- Confirm the fourth seam section with the Enter key.  
The machine jumps to the inputting of the fifth seam section.



- Program the fifth ( last ) seam section:

The seam section should have

- a double end-bartack ( 1 stitch forwards and reverse ),
- stitch counting ( 5 stitches ),
- a stitch length ( for roller presser and feed wheel ) of 2.5 mm
- and trim the thread at the end of the seam section.

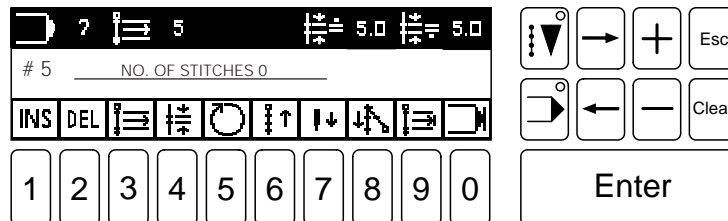


Fig. 11 - 51



- Select the **bartack** menu function ( number key 8 ).



- Double click on the **double end-bartack** function ( number key 3 ).

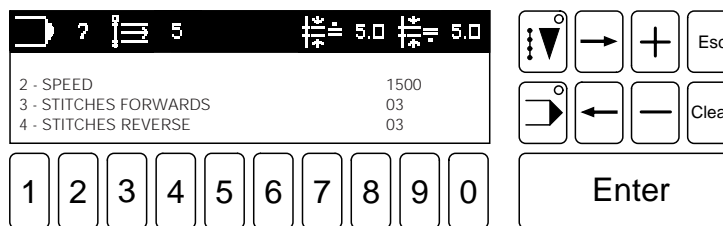


Fig. 11 - 52

3

- Select the **STITCHES FORWARDS** function.

1

- Enter the number of stitches.

Enter

- Confirm the input by pressing the **Enter** key.

4

- Select the **STITCHES REVERSE** function.

1

- Enter the number of stitches.

Enter

- Confirm this number by pressing the **Enter** key.

Enter

- Finish the inputting of the bartack values by pressing the **Enter** key.



- Switch on the **double end-bartack** function ( number key 3 ).

Enter

- Confirm the bartack functions by pressing the **Enter** key.

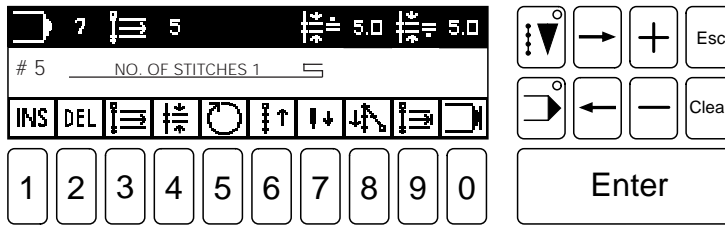
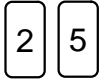


Fig. 11 - 53



- Select the stitch length function ( number key 4 ).



- Enter the value for the stitch length.



- Confirm this entry by pressing the Enter key.



- Select the seam section end function ( number key 9 ).



- If the stitch counter function is not active, switch it on ( number key 1 ).



- Activate the stitch counter function once again to open the menu for inputting.



- Enter the number of stitches.



- Confirm this entry by pressing the Enter key.



- Switch on the thread trimmer function ( number key 5 ).

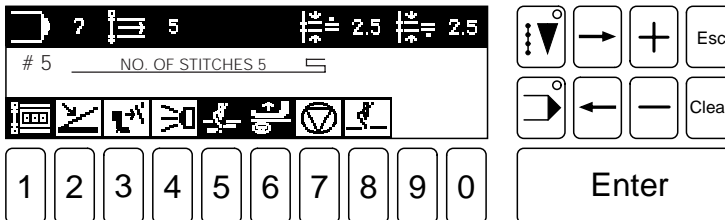


Fig. 11 - 54



- Confirm the seam section by pressing the Enter key.



- Select the program end function.

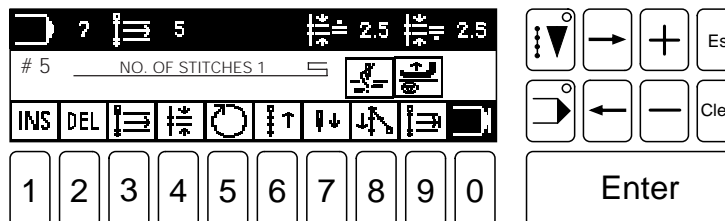


Fig. 11 - 55








- Save the seam program by pressing the Enter key.

11.15.02 Example for programming a decorative seam

The decorative seam to be sewn should have:

- four seam sections
- and be saved with the comment "Deco 1"
- at program number 6

-  ● Select INPUT mode.
-  ● Select the programming function.
-  ● Enter the program number.
-  ● Confirm this entry with the Enter key.
- Enter comment ( see chapter 11.15.01 Example for programming a seam ).
-  ● Confirm with the Enter key.

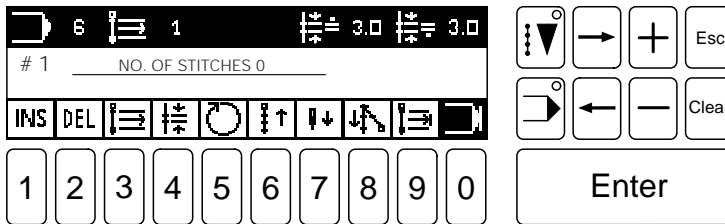





Fig. 11 - 56

- Program the first seam section.

This seam section should have

- stitch counting ( 1 stitch )
- and a stitch length of 2 mm.

-  ● Select the stitch length function ( number key 4).
-  ● Enter the stitch length ( see chapter 11.15.01 Example of seam programming ).
-  ● Confirm with the Enter key.

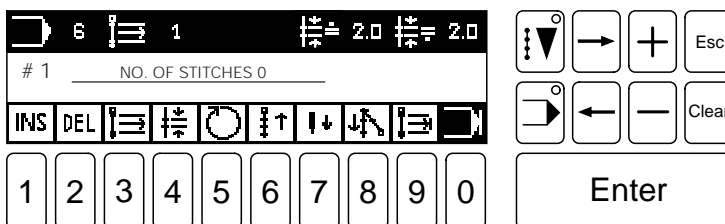



Fig. 11 - 57

-  ● Select the seam section end function.

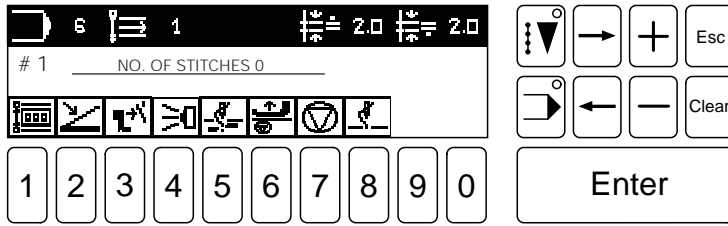


Fig. 11 - 58



- If this function is not active, switch on the stitch counter ( number key 1 ).



- Select the stitch counter function again to open the input menu.

1

- Enter the number of stitches.

Enter

- Confirm the entry with the Enter key.

Enter

- Confirm the seam section end by pressing the Enter key.

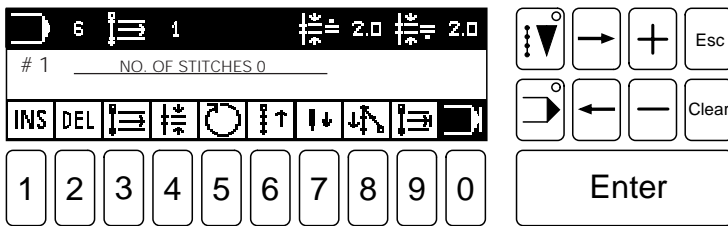


Fig. 11 - 59



- Switch off the program end function ( number key 0 ).

Enter

- Confirm the first seam section by pressing the Enter key.

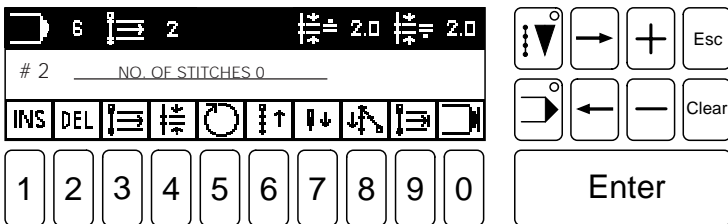


Fig. 11 - 60

- Program the second seam section:

This seam section should have  
 - stitch counting (1 stitch)  
 - and a stitch length of 3.5 mm.



- Select the stitch length function ( number key 4 ).

3 5

- Enter the stitch length.

Enter

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



- Select the seam section end function ( **number key 9** ).



- If not active, switch the **stitch counter** on ( **number key 1** ).



- Select the **stitch counter** function again to open the input menu.

1

- Enter the number of stitches.

Enter

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

Enter

- Confirm the seam section end by pressing the **Enter** key.

Enter

- Confirm the second seam section by pressing the **Enter** key.

- Program the third seam section:

This seam section should have  
 - stitch counting (1 stitch)  
 - and a stitch length of 5 mm.



- Select the seam section end function ( **number key 9** ).



- Select the **stitch counter** function to open the input menu.

1

- Enter the number of stitches.

Enter

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

Enter

- Confirm the seam section end by pressing the **Enter** key.



- Select the **stitch length** function ( **number key 4** ).

5

- Enter the stitch length.

Enter

- Confirm with the **Enter** key.

Enter

- Confirm the third seam section by pressing the **Enter** key.

- Program the fourth (last) seam section:

This seam section should have

- stitch counting ( 1 stitch )
- and a stitch length of 3.5 mm.



- Select the **seam section end** function ( **number key 9** ).



- Select the **stitch counter** function to open the input menu.

- Enter the number of stitches.

Enter

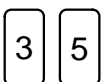
- Confirm the entry with the **Enter** key.

Enter

- Confirm the seam section end by pressing the **Enter** key.



- Select the **stitch length** function ( **number key 4** ).



- Enter the stitch length.

Enter

- Confirm with the **Enter** key.



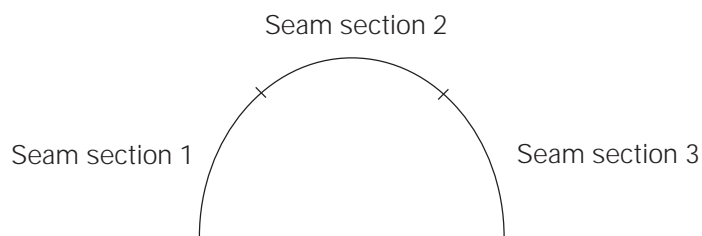
- Select the **program end** function ( **number key 0** ).

Enter

- Confirm the decorative seam by pressing the **Enter** key.






## 11.15.03 Example of Teach In programming

The following seam is to be created:



The seam to be programmed is

- to contain 3 seam sections
- and to be saved with the comment "Learn"
- at the program number 8.

- 
  - Select INPUT mode.
- 
  - Select the Teach In function ( number key 5 ).
- 
  - Enter the program number.
- 
  - Confirm with the Enter key.
  - Enter comment.
- 
  - Confirm with the Enter key.

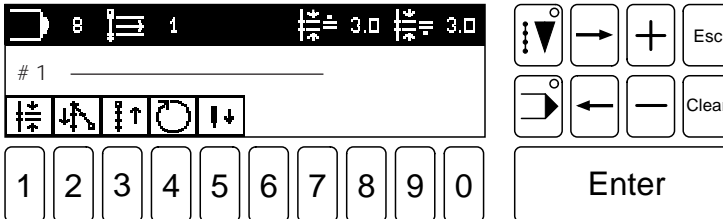





Fig. 11 - 61

- Input the first seam section:
- This seam section should have
- the knee switch function (seam section end)
  - and a stitch length of 2.8 mm.

- 
  - Select the stitch length function ( number key 1 ).
- 
  - Enter the stitch length.
- 
  - Confirm with the Enter key.

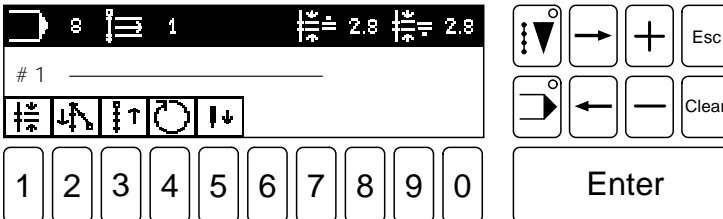


Fig. 11 - 62

- Sew the first seam section manually. The number of stitches is counted and displayed in the status bar. After stopping, the machine skips automatically to inputting the seam section end ( Fig. 11-63 in display ).

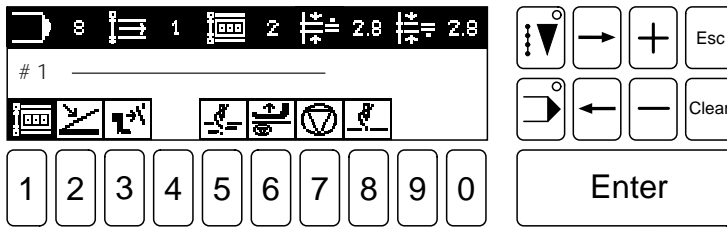


Fig. 11 - 63



- Switch on the knee switch function ( number key 3 ).

or:

- Activate the knee switch.
- Confirm the seam section end by pressing the Enter key.

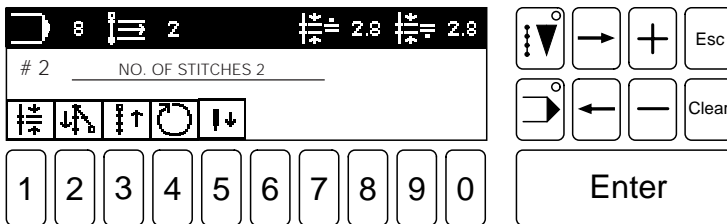


Fig. 11 - 64

- Input the second seam section:

This seam section should have

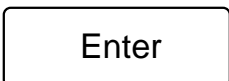
- the knee switch function ( seam section end )
- and a stitch length of 2.4 mm.



- Select the **stitch length** function ( number key 1 ).



- Enter the stitch length.



- Confirm with the Enter key.

- Sew the second seam section manually.

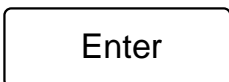
The number of stitches is counted and displayed in the status line. After stopping, the machine skips automatically to inputting the seam section end.



- Switch on the knee switch function ( number key 3 ).

or:

- Activate the knee switch.



- Confirm the seam section end by pressing the Enter key.

- Input the third seam section:

This seam section should have

- the pedal function ( seam section end )
- and the thread trimmer ( seam section end )
- and a stitch length of 2.8 mm.





- Select the **stitch length** function ( **number key 1** ).



- Enter the stitch length.

Enter

- Confirm with the **Enter** key.

- Sew the second seam section manually.



- Switch on the **pedal** function ( **number key 2** ).

or:

- Bring the pedal backwards into the 2nd position.

The **roller presser up after stop** function is activated automatically.



- Switch on the **thread trimmer** function ( **number key 4** ).



- Select the **program end** function ( **number key 0** ).



The thread trimming and / or the end bartack are not carried out until program end function is activated ( at the end of the program ), or the Enter key ( in every other sector ).

## 12 Care and maintenance

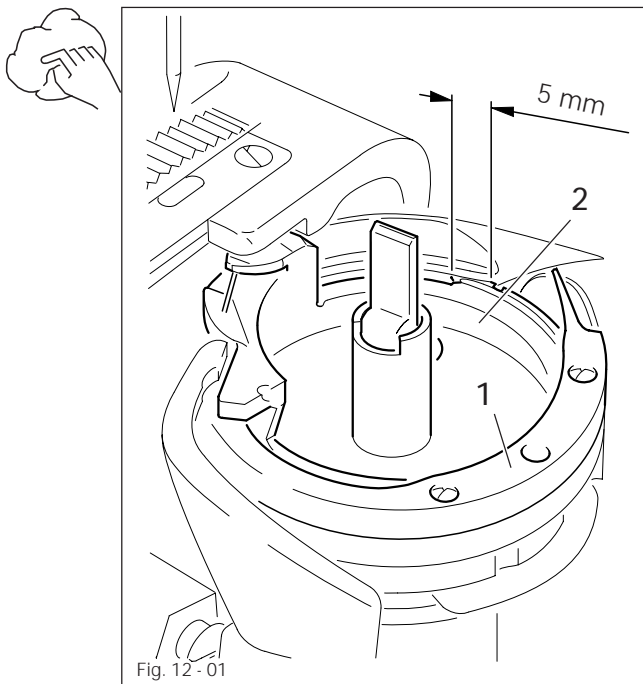
Clean .....	daily, more often if in continuous operation
Oil level (lubricating the front parts) .....	daily before use
Oil level (Thread lubrication) .....	daily before use
Lubricate the hook .....	daily before use
Lubricate the bevel gears .....	annually
Clean the air filter .....	once a week
Lubricate the trimming mechanism ( only -726/05 ) .....	twice a week



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

### 12.01 Cleaning

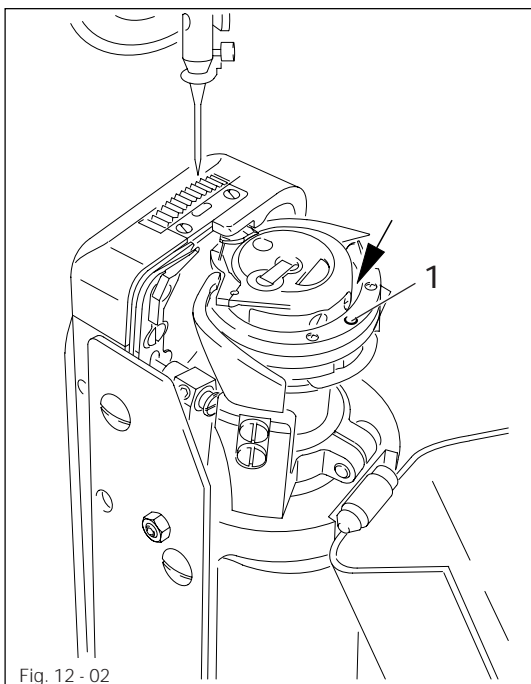
Clean the hook and hook compartment daily, more often if in continuous operation.



Turn the machine off!

- Bring the needle bar to its highest position.
- Open the post cap and remove the bobbin case cap and the bobbin.
- Unscrew hook gib 1.
- Turn the handwheel until the point of bobbin case 2 penetrates into groove approx. 5 mm.
- Remove bobbin case 2.
- Clean the hook race with paraffin.
- When inserting the bobbin case 2, ensure that the horn of the bobbin case 2 meshes in the groove of the needle plate.
- Screw hook gib 1 back on.
- Insert the bobbin case with the bobbin and close the post cap.

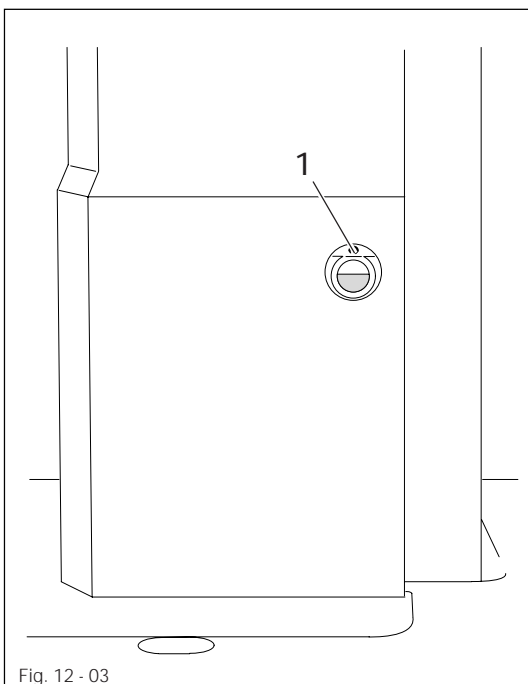
12.02 Lubricating the hook



Turn the machine off!

- Apply 1-2 drops of oil into hole 1 of the hook gib every day.
- Before commissioning and after longer standstill periods, also apply a few drops of oil into the hook race. ( see arrow in Fig. 12-02 )

12.03 Filling the oil reservoir



Check the oil level before every use.

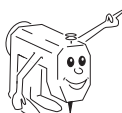
- Fill oil through hole 1 into the reservoir as required.



There must always be oil in the oil reservoir.

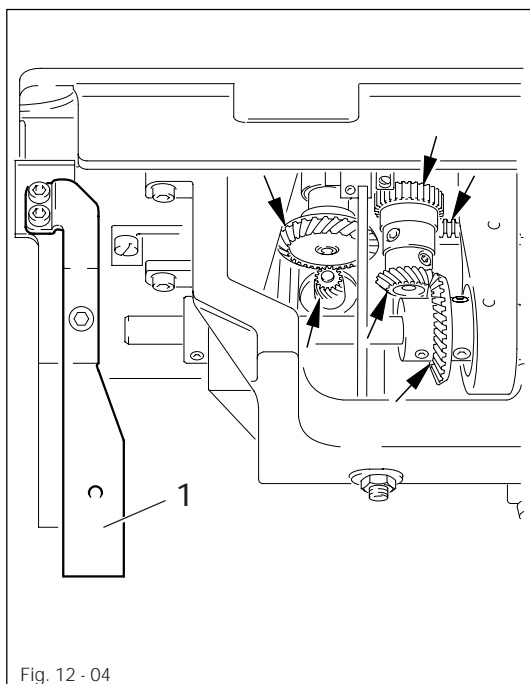


Use only oil with a mean viscosity of 22.0 mm<sup>2</sup>/s at 40°C and a density of 0.865 g/cm<sup>3</sup> at 15°C.



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

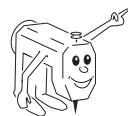
### 12.04 Lubricating the bevel gears



Turn the machine off!

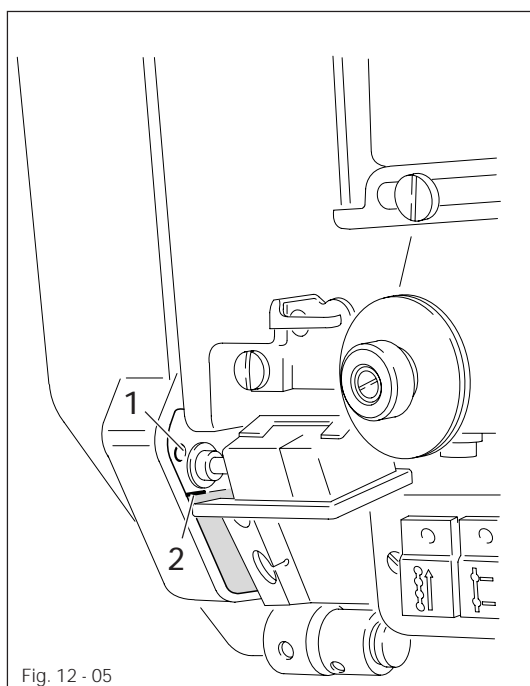
- The bevel gears for driving the hook and the rack are to be greased once a year.
- Lay the machine head backwards onto its support.
- Brush a little grease onto all of the tooth flanks and the rack ( see arrows ).
- To stand the machine head up again, press safety plate 1 to the rear and stand the machine head up using both hands.

Use both hands to return the machine to an upright position.  
Danger of crushing between machine head and table top.



We recommend PFAFF hard soap grease with a drop point of approx. 150°C.  
Part no. 280-1-120 243.

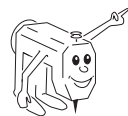
### 12.05 Filling the oil reservoir of the thread lubricator



Check the oil level before every use.

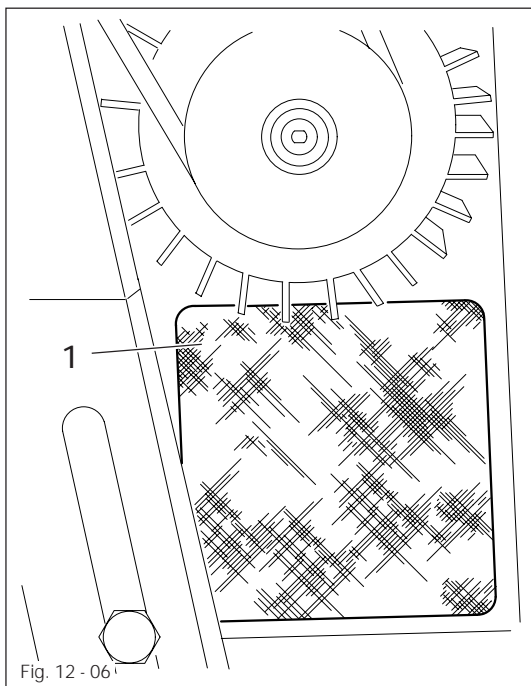
There must always be oil in the oil reservoir.

- Fill oil through hole 1 up to marking 2 as required.



We recommend  
PFAFF thread lubrication oil  
Best.-Nr. 280-1-120 217.

12.06 Cleaning the air filter on the control box



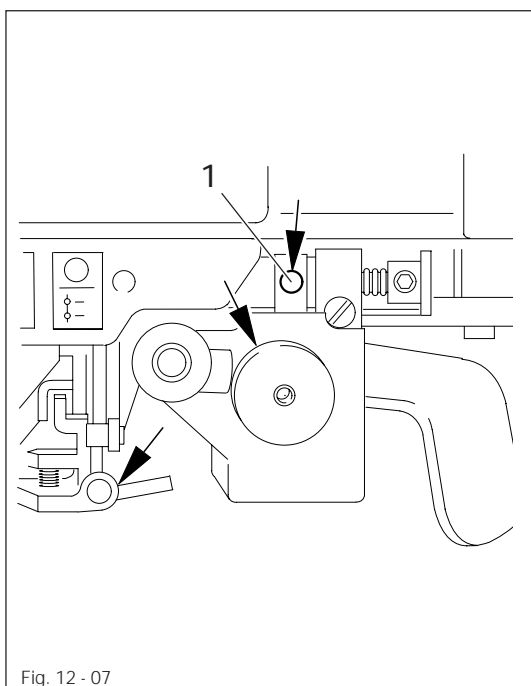
Turn the machine off!

- The filter must be cleaned at least once a week, or more depending on the cleanliness of the air.
- Dust which collects on the filter grate 1 is to be removed with a brush.



Never blow the dust off the filter grate into the machine housing!

12.07 Oiling the edge trimmer -726/05

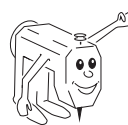


- All moving parts and bearings marked with arrows in Fig. 12-07 are to be supplied with oil twice a week.



Use only oil with a mean viscosity of 22.0 mm<sup>2</sup>/s at 40°C and a density of 0.865 g/cm<sup>3</sup> at 15°C.

We recommend  
PFAFF sewing machine oil  
Best.-Nr. 280-1-120 144.



### 13 Adjustment

#### 13.01 Notes on adjusting

All adjustments in these adjustment instructions are based on a completely installed machine and must only be carried out by appropriately trained specialists. Covers on the machine which have to be removed and replaced for checks and adjustment work are not mentioned here. The screws and nuts in brackets () are attachments of machine parts which are to be loosened before making the adjustment and tightened again when the adjustment is complete.

#### 13.02 Tools, gauges and other accessories for adjusting

- 1 set of screwdrivers with blade widths from 2 to 10 mm
- 1 set of wrenches with jaw widths from 7 to 13 mm
- 1 set of Allan keys from 1.5 to 6 mm
- 1 adjustable clamp, ( Part No. 08-880 137-00 )
- 1 metal rule, (Part No. 08-880 218-00)
- 1 adjustment pin ( needle position in sewing direction, Part no. 61-111 641-46 )
- 1 adjustment gauge, ( Part No. 08-880 136-01 )
- 1 adjustment gauge, ( Part No. 61-111 643-33 )
- 1 adjustment pin for needle bar rinse ( Part No. 61-111 641-39 )
- Needles, system 134
- Sewing thread and test material

#### 13.03 Abbreviations

TDC = top dead center

BDC = bottom dead center

## 13.04 Adjusting the basic machine

## 13.04.01 Adjusting the synchronizer

**Requirement**

When the point of the needle descending in sewing direction is at the top edge of the needle plate the reference point must be at "0".

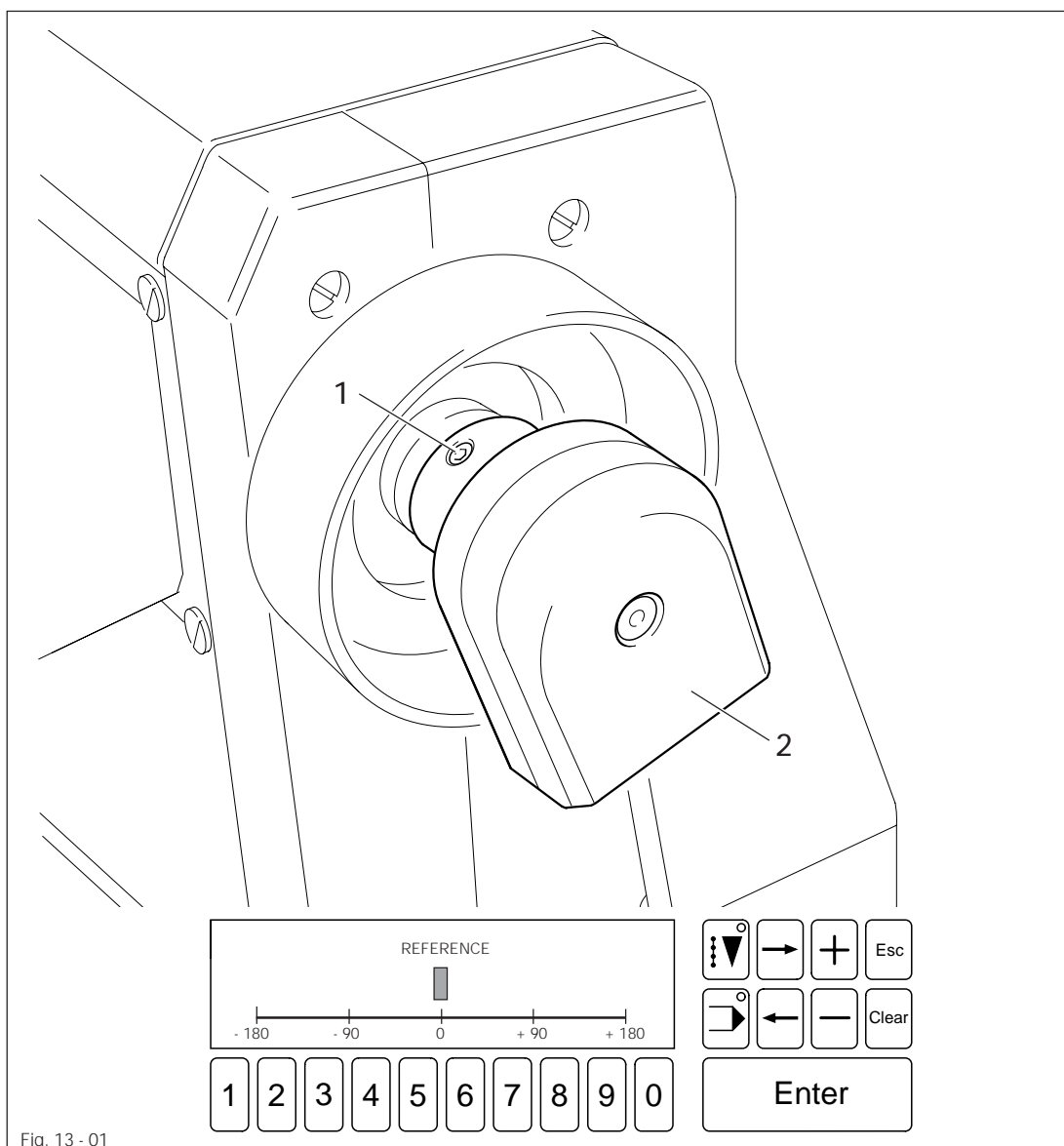
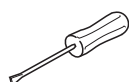


Fig. 13 - 01



- Switch the machine on and sew a few stitches.
- Loosen screws 1.



- Select INPUT mode.



- Select the **input menu** function ( number key 0 ).



- Select the SERVICE function.

---

## Adjustment

---

2

- Select the SEWING MOTOR function.

1

- Select the ADJUST SYNCHRONIZER function.
- Turn the balance wheel in sewing direction until the point of the descending needle is at the top edge of the needle plate.
- With the needle in this position, turn synchronizer 2 until the cursor in the display is at "0".
- Tighten screws 1.



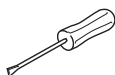
For other positioning options see the ADJUSTING POSITIONS function in chapter 11.09 Summary of the service functions.



## 13.04.02 Setting the machine configuration

**Requirement**

The configuration must correspond with the existing machine and its fitted work aids ( see table ).



- Switch on the machine.



- Select INPUT mode on the control panel by pressing the key accordingly.



- Select **input menu** ( number key 0 ).



- Select SERVICE.



- Select CONFIGURATION

- Press **number keys** to set the configuration according to requirement.

Number	Machine configuration
0	1471E1, 1474E1, 1491E1 and 1493E1
1	1471E1, 1474E1, 1491E1 and 1493E1 with sensor
2	421E1
3	reserved
4	421E1 with sensor
5	reserved
6	1421E1
7	1421E1 with bobbin thread supply monitor -926/04
8	1421E1 with sensor
9	1421E1 with sensor and bobbin thread supply monitor -926/04
10	1421E1 with sensor, bobbin thread supply monitor -926/04 and doku seam system

## 13.04.03 Positioning the needle in the direction of sewing ( 1491 E1 )

### Requirement

With the stitch length set at "5", the needle must be the same distance from the inner edges of the needle hole in both its front and rear points of reversal.

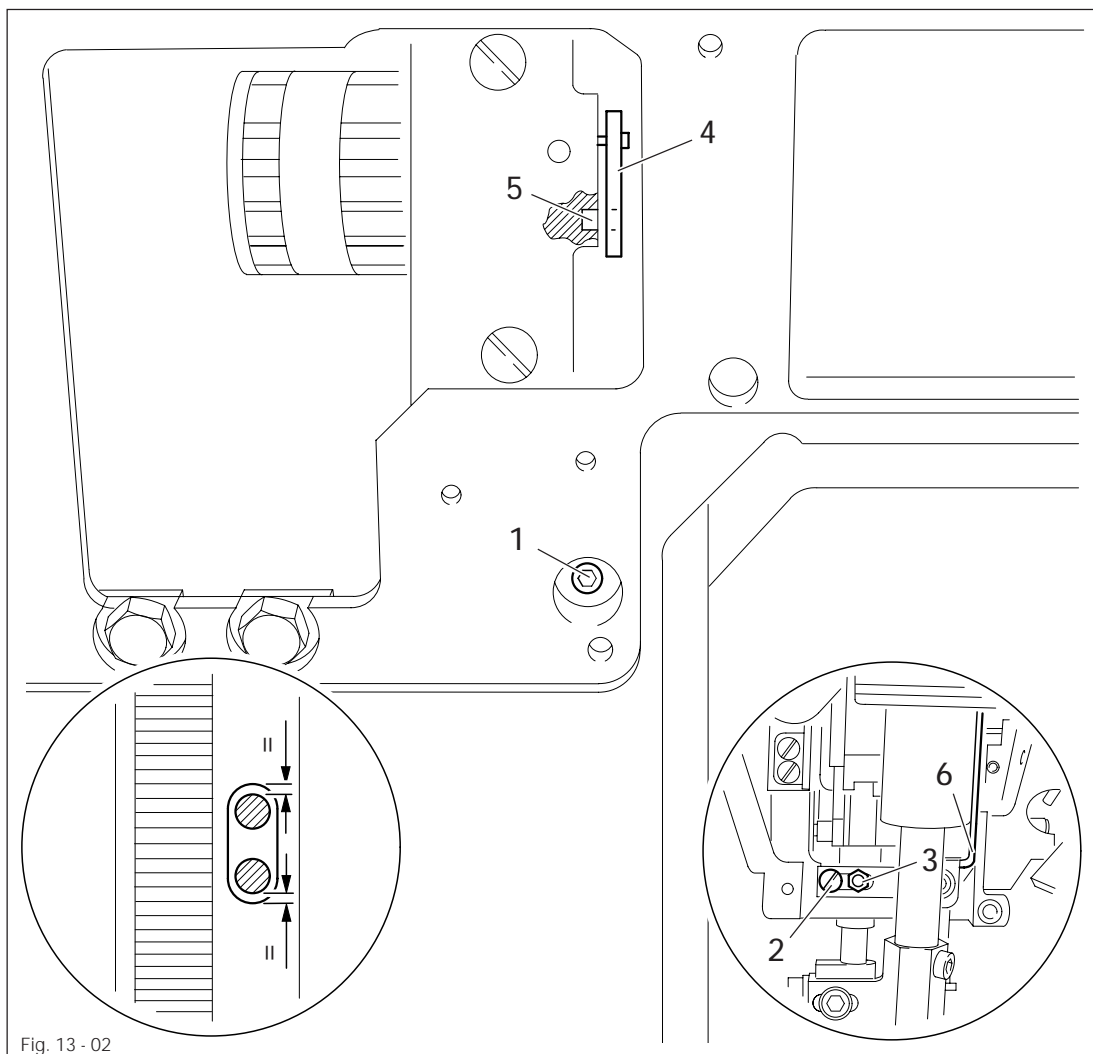
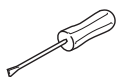


Fig. 13 - 02



- Turn the machine on and set the stitch length at "5".
- Turn the machine off and back on again ( synchronisation of the needle bar to the stitch length ).
- Turn the handwheel in its direction of rotation until the needle is in the needle hole.
- Check the **requirement** by turning the single start bartack on and back off again.
- For the adjustment, loosen screw 1 through the hole in the back of the housing.
- Loosen screw 2 and nut 3.
- Pass the bent part of the adjustment pin through the longitudinal opening on the back of the housing and then through the hole in lever 4 and into hole 5.
- Move the needle bar frame 6 ( screw 1 ) in accordance with the **requirement**.



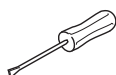
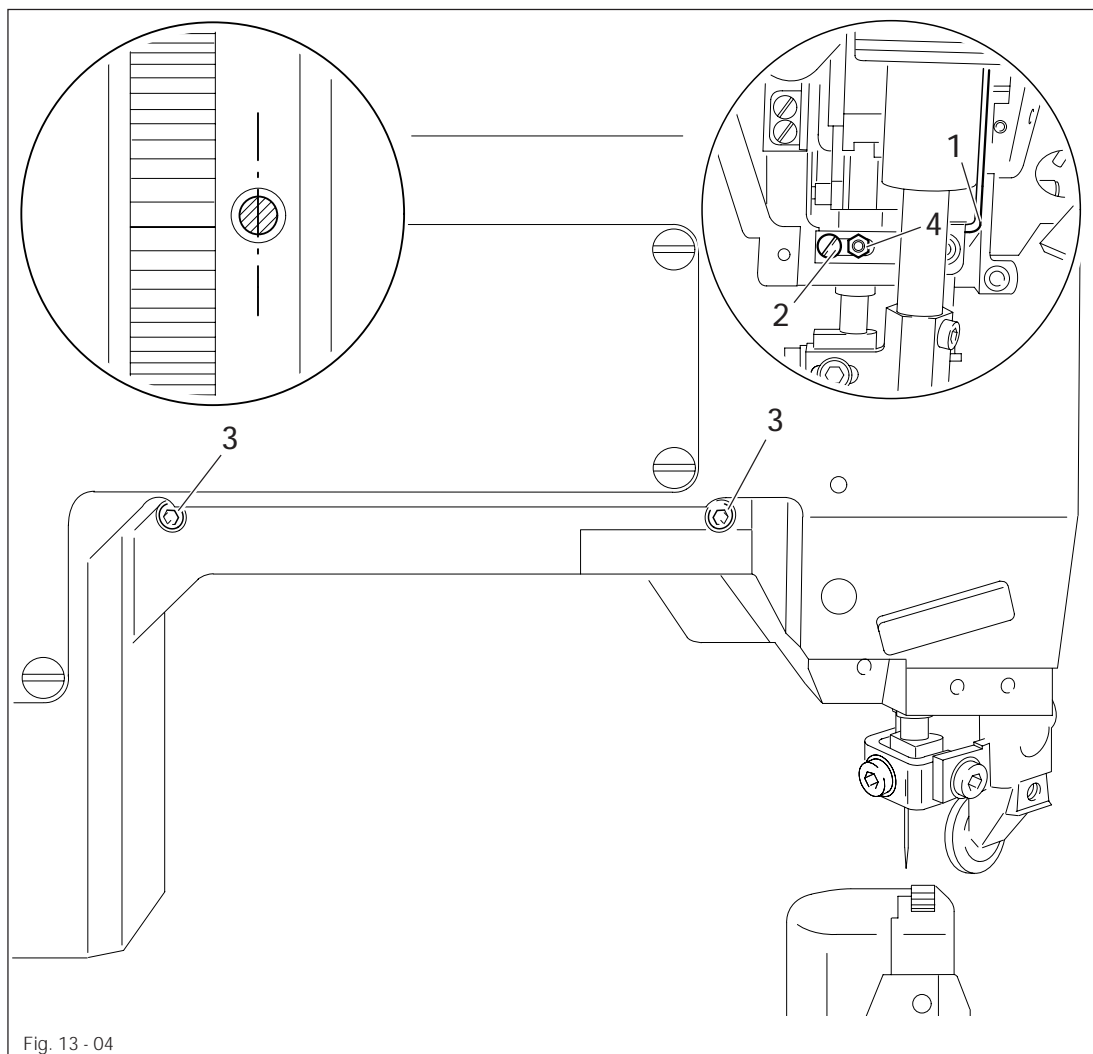
Screw 2 and nut 3 remain loosened for the following adjustment.

- Carry out a check in accordance with the **requirement**.

## 13.04.04 Positioning the needle in the direction of sewing ( 1493E1 )

### Requirement

The needle must penetrate the middle of the needle hole as viewed in the direction of sewing.



- Move the needle bar frame 1 ( screws 2 and 4 and nut 3 ) in accordance with the requirement.



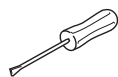
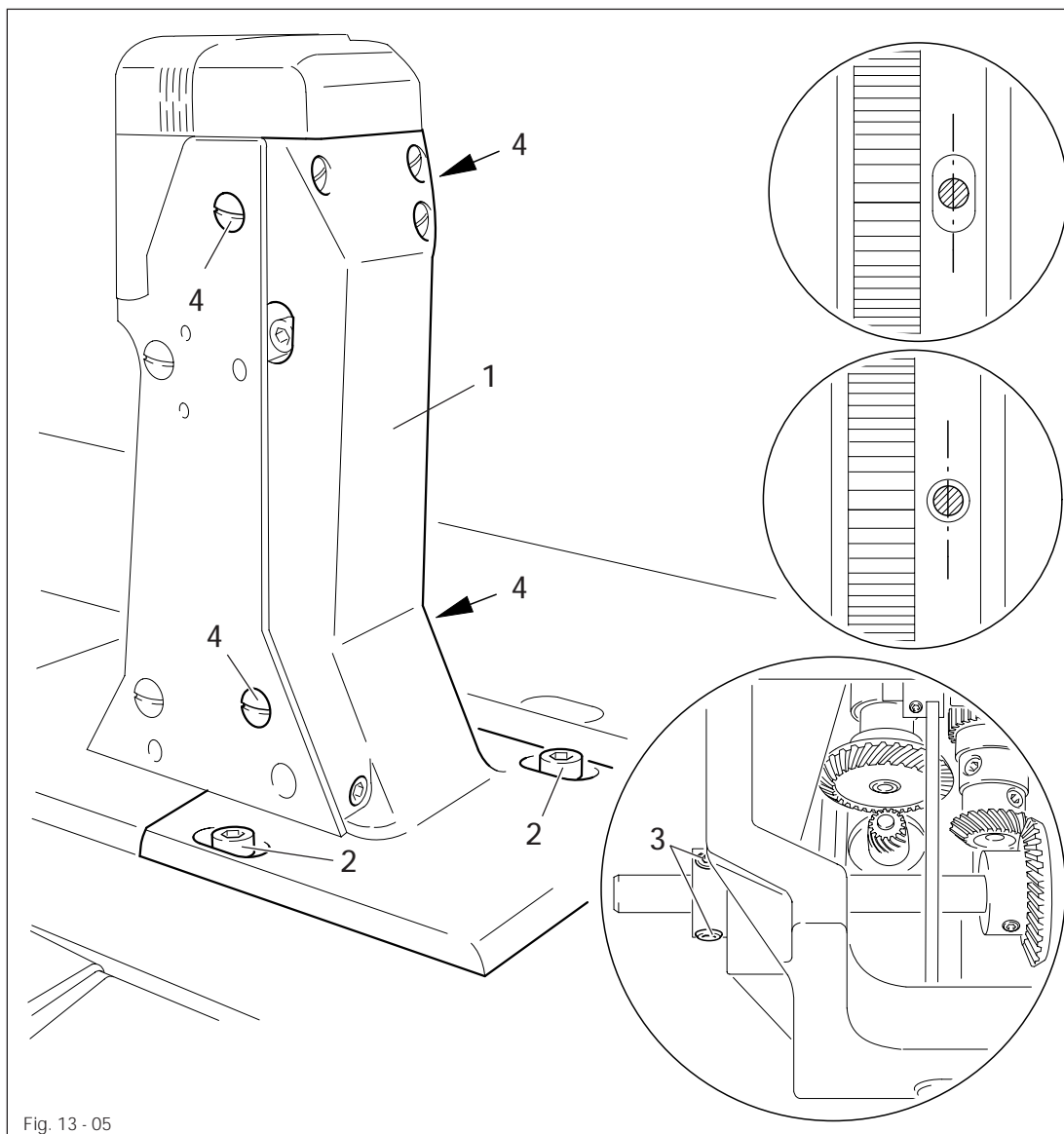
Screws 4 are accessible through the holes on the back of the housing.

## Adjustment

### 13.04.05 Positioning the needle across the direction of sewing

#### Requirement

The needle must penetrate the middle of the needle hole as viewed across the direction of sewing.



- Move the feed wheel post 1 (screws 2, 3 and 4) in accordance with the requirement.



Screws 4 remain loosened for the following adjustments.

## 13.04.06 Limiting the needle bar frame ( 1491E1 )

**Requirement**

With the stitch length set at "5", screw 4 must be the same distance from the inner edge of the mounting hole when the needle is at both the front and rear points of reversal.

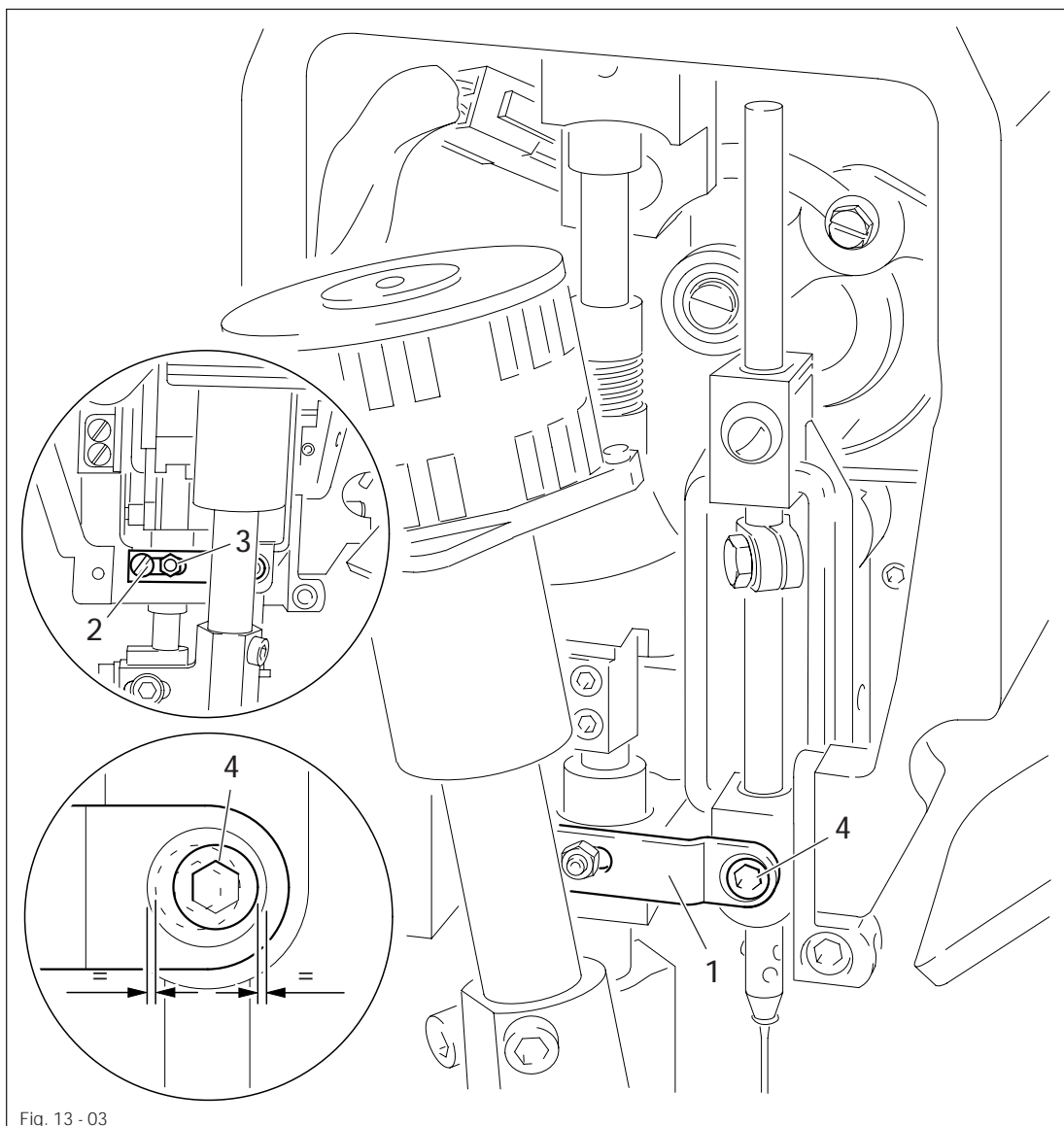
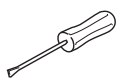


Fig. 13 - 03



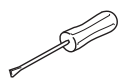
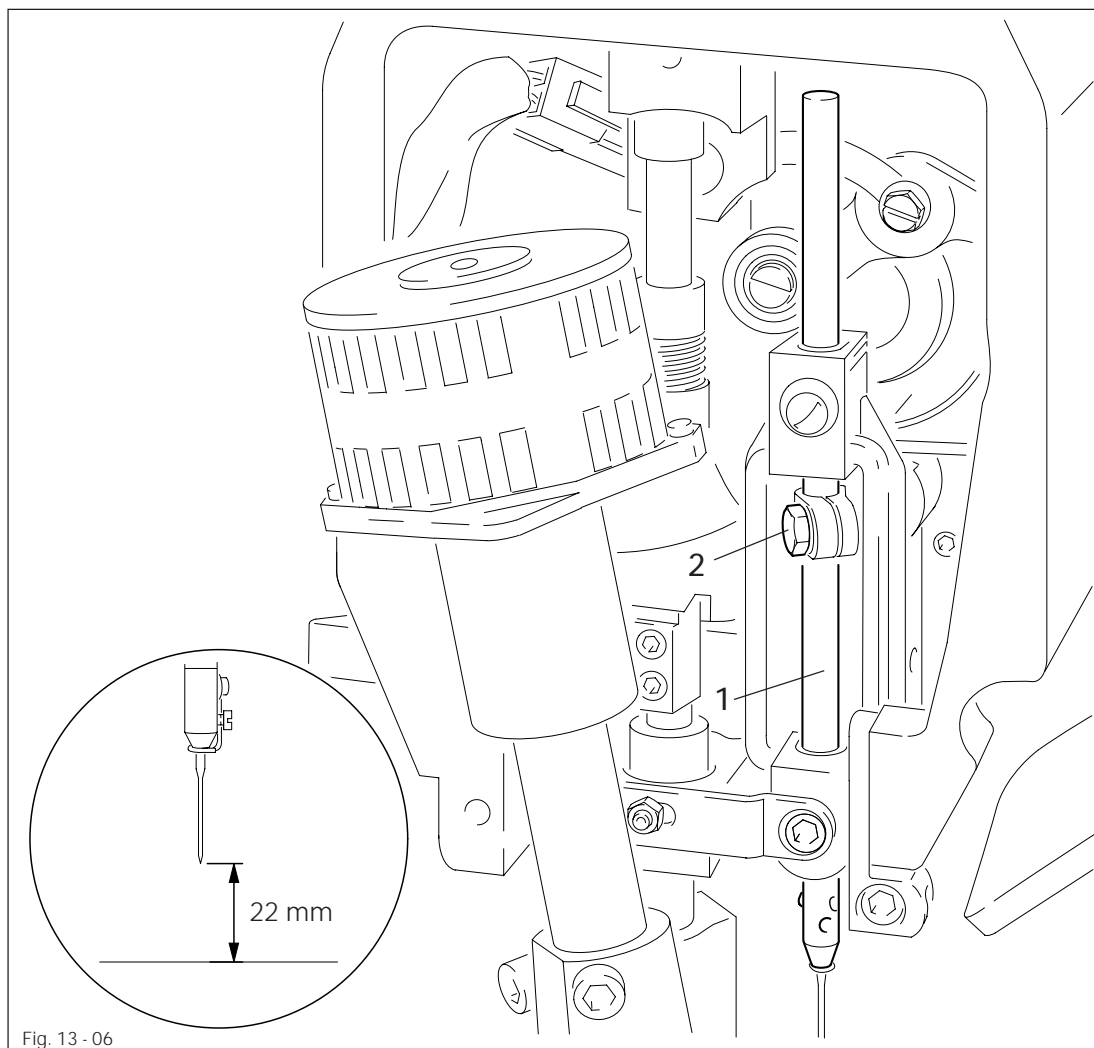
- Turn the machine on and set the stitch length at "5".
- Check the **requirement** by turning the single start bartack on and back off again.
- For the adjustment, move latch 1 (screw 2 and nut 3) in accordance with the requirement.

## Adjustment

### 13.04.07 Preadjusting the needle height

#### Requirement

With the needle bar at TDC there must be approx. **22 mm** between the point of the needle and the needle plate.



- Move the needle bar 1 ( screw 2 ) in accordance with the requirement without turning it.

## 13.04.08 Hook-to-needle clearance, needle rise, needle height and needle guard

**Requirements**

With the needle at 1.8 after BDC and with the stitch length at "0.8" (only PFAFF 1491E1)

1. the hook point must point to the middle of the needle and be 0.05 to 0.1 mm from the needle,
2. the top edge of the needle eye must be 0.8 to 1.0 mm beneath the hook point and
3. the needle guard 9 must lightly touch the needle.

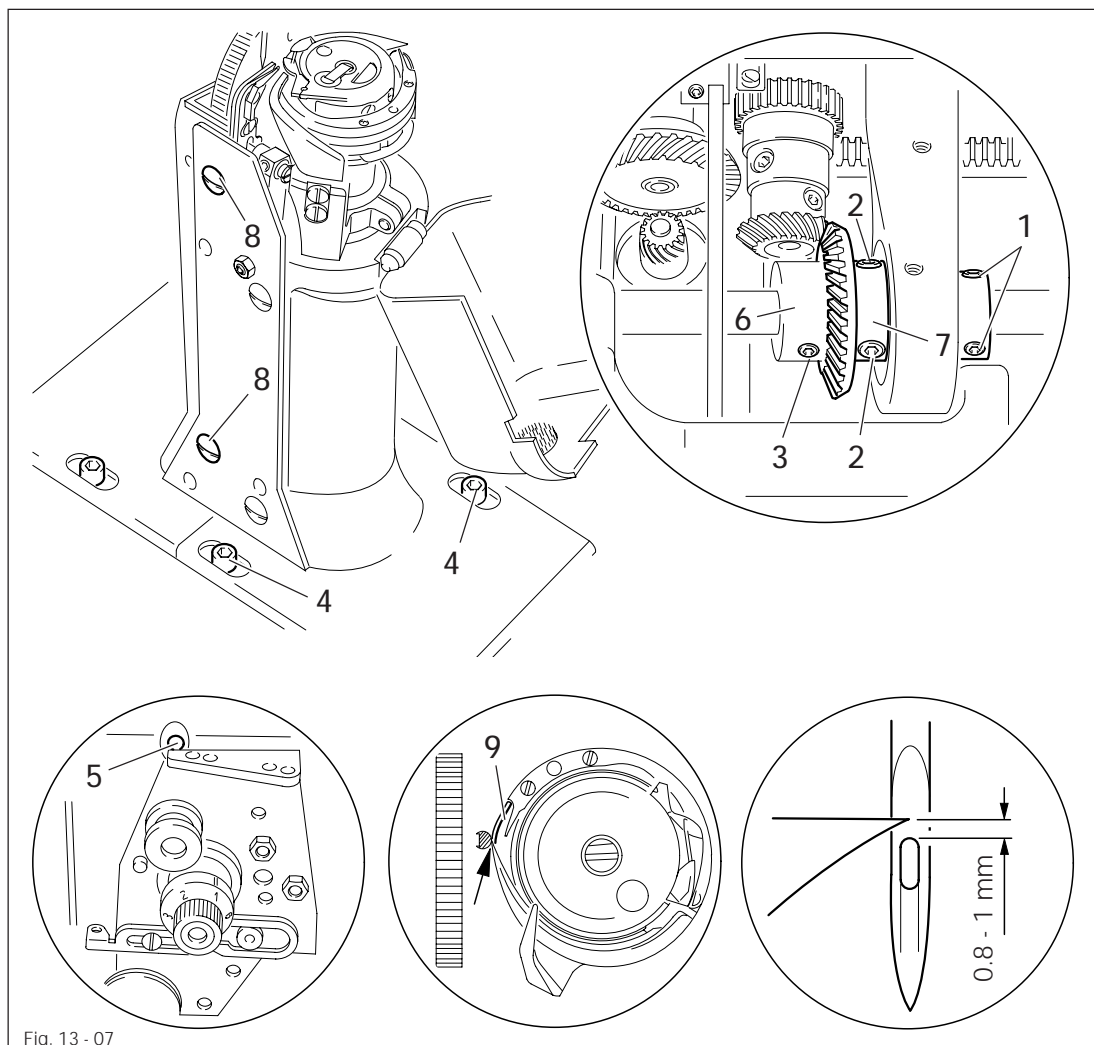
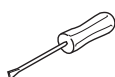


Fig. 13 - 07

Only on the PFAFF 1491E1:



- Turn the machine on.
- Set the stitch length to "0.8" and sew four to five stitches ( without trimming ).
- Turn the machine off.
- Loosen screws 1, 2, 3 and 4.
- Position the needle bar 1.8 after BDC.
- Place the adjustment pin into hole 5 and place under pressure.
- Position the hook point at the middle of the needle, taking care to ensure that the needle is not pressed by the needle guard 9.
- Set the needle height in accordance with requirement 2.

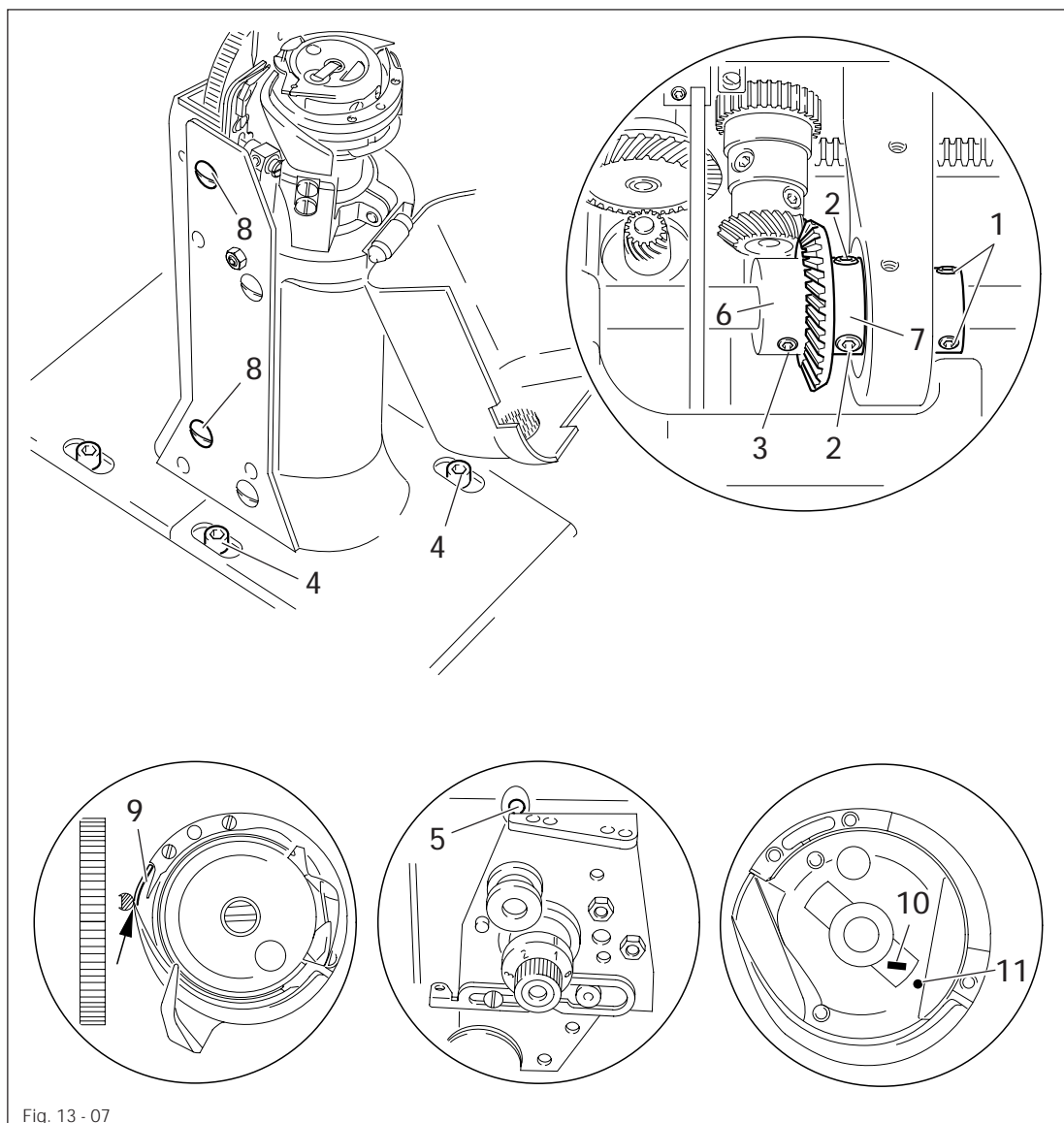


Fig. 13 - 07

- Move the hook post in accordance with **requirement 1** and tighten screws **4**.
- Pull the adjustment pin out of hole **5**.
- Observing the bevel gear play, tighten screws **2**.
- Bring retaining collar **6** to rest against bevel gear **7** and tighten screws **1** and **3**.
- Tighten screws **8** on both sides of the post.
- Align needle guard **9** in accordance with **requirement 3**.



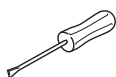
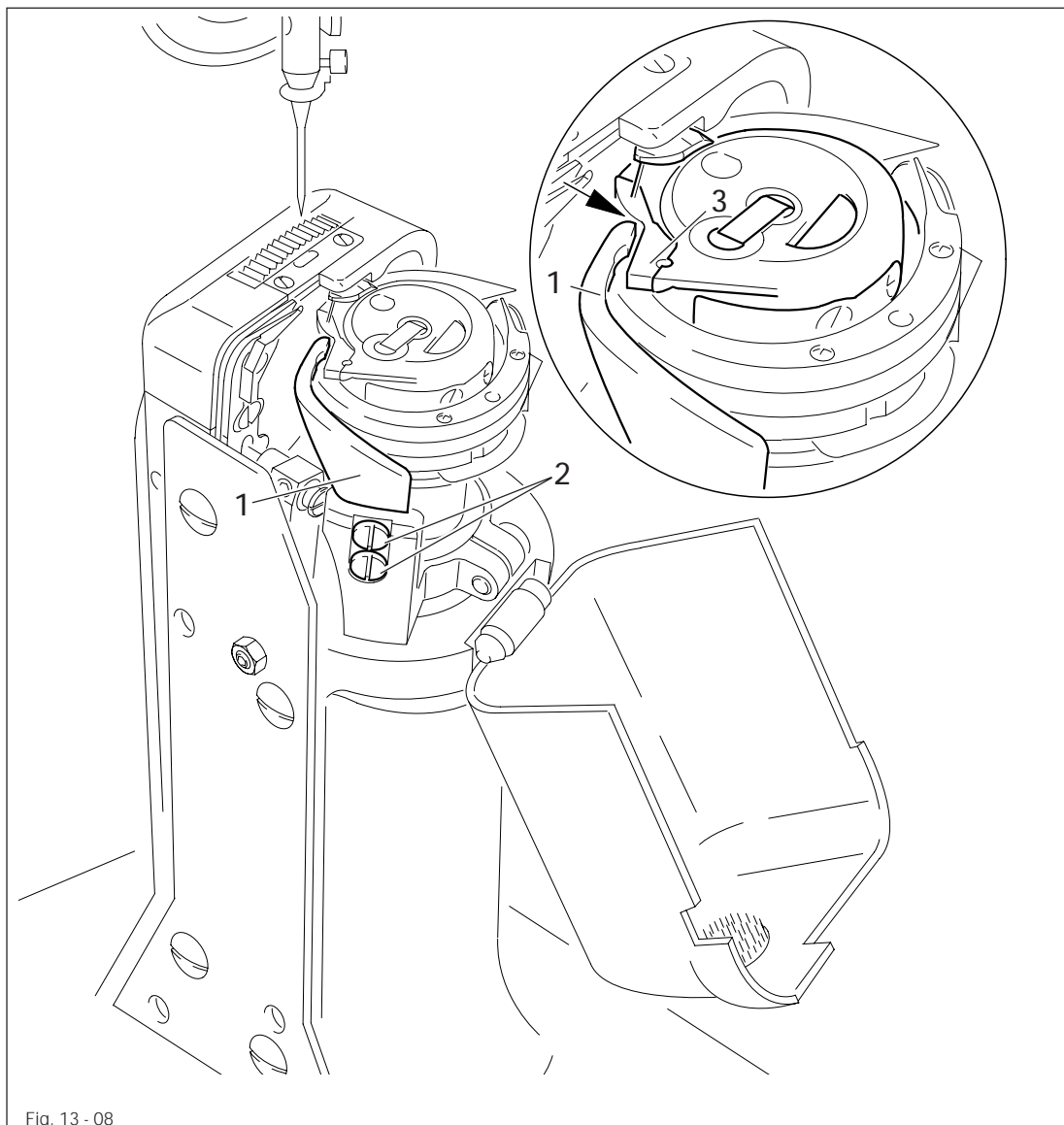
When changing the hook, ensure that markings **10** and **11** are both on the same side.



## 13.04.09 Bobbin case opener height

### Requirement

The top edges of the bobbin case opener 1 and the bobbin case base 3 must be at the same height.

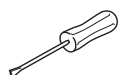
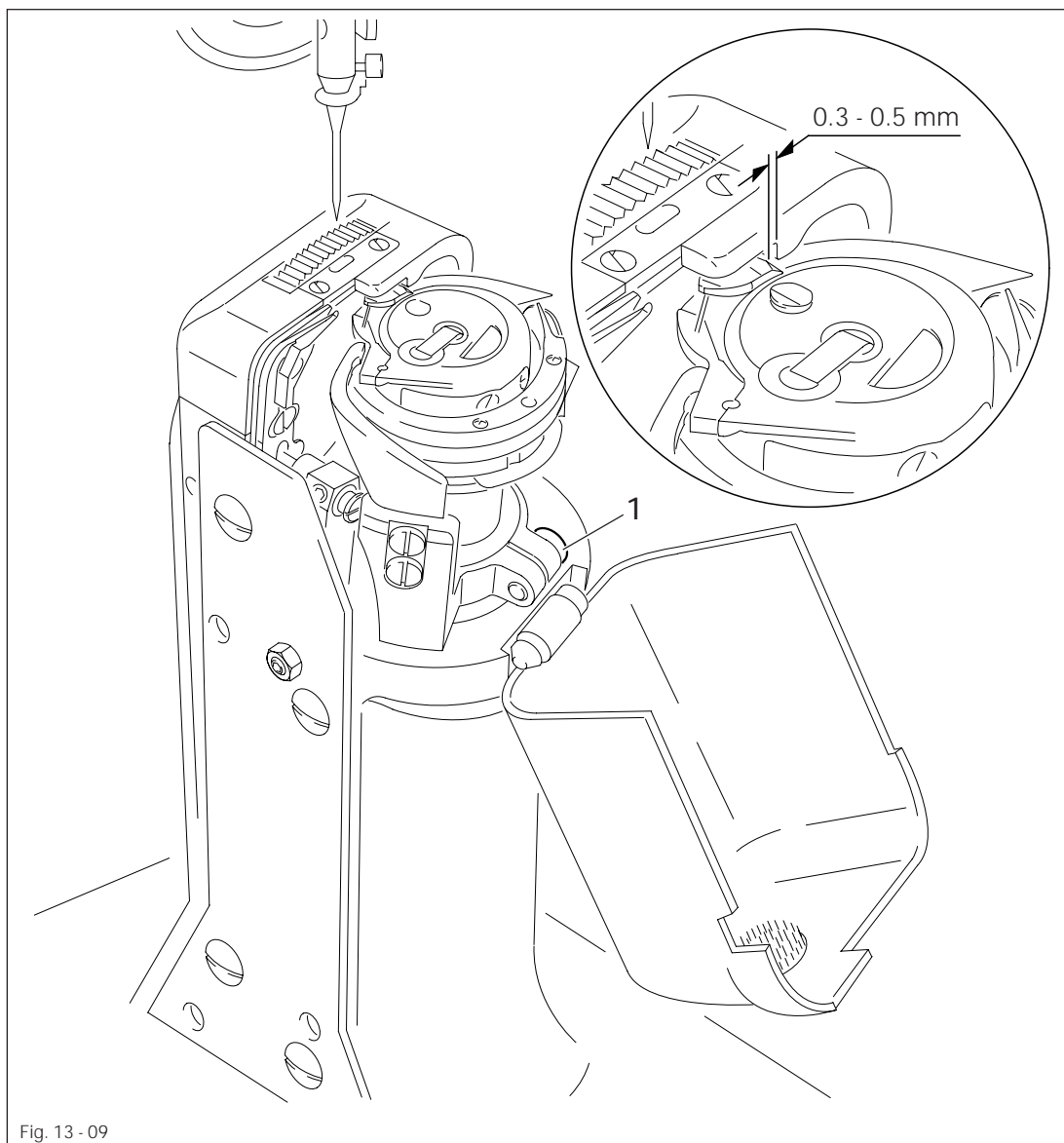


- Move the bobbin case base 1 ( screws 2 ) in accordance with the requirement.

## 13.04.10 Bobbin case opener stroke

### Requirement

When the bobbin case opener presses the bobbin case to the furthest extent, the projection of the bobbin case must protrude **0.3 - 0.5 mm** from the rear edge of the needle plate recess.



- Turn the handwheel until the bobbin case opener presses against the bobbin case to the furthest extent.
- Move the bobbin case base ( screw 1, accessible from the rear of the post ) in accordance with the **requirement**.



This setting can vary according to the thickness of the thread.

## 13.04.11 Feed wheel height

**Requirement**

The feed wheel must protrude above the needle plate by the height of the teeth ( approx. 0.8 mm ).

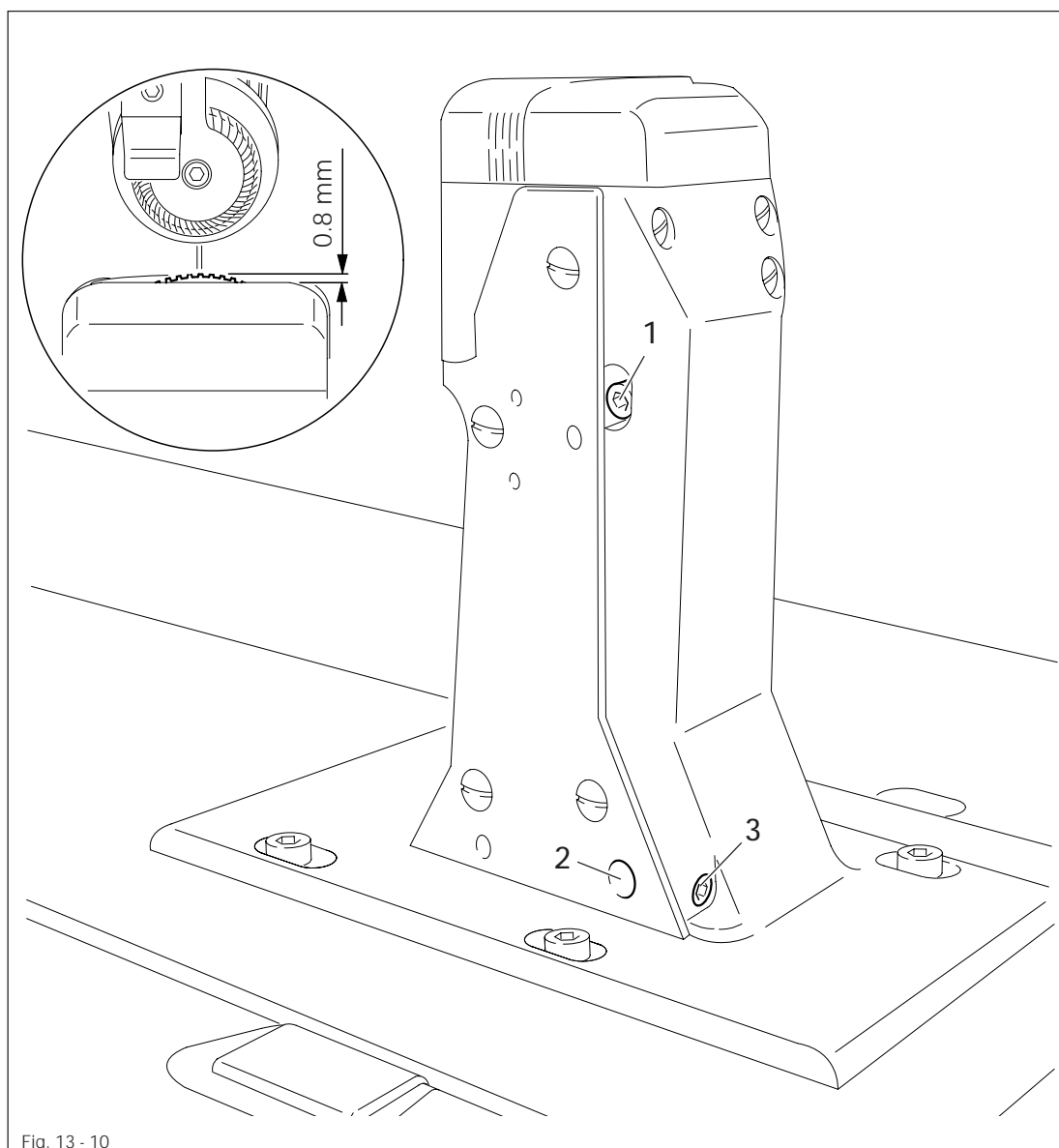
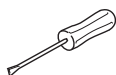


Fig. 13 - 10



- Swing out the roller presser.
- Loosen screw 1.
- Turn the eccentric ( screw 3 ) which is accessible through hole 2 in accordance with the requirement.
- Tighten screw 1.

### 13.04.12 Clearance between roller presser and feed wheel

#### Requirement

With lever 1 raised the clearance between the roller presser and the feed wheel must be 7 mm.

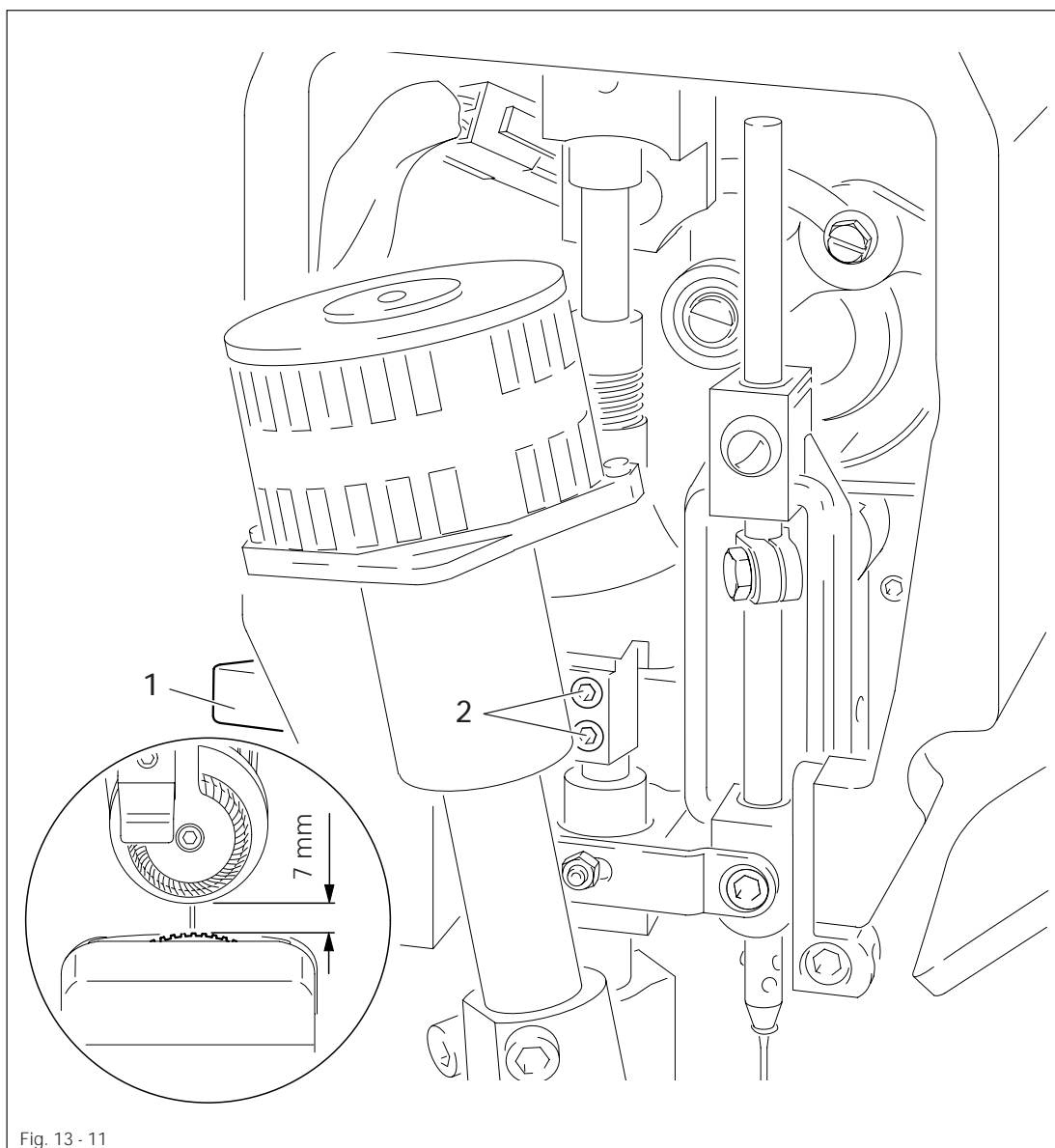
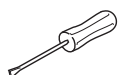


Fig. 13 - 11



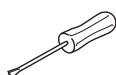
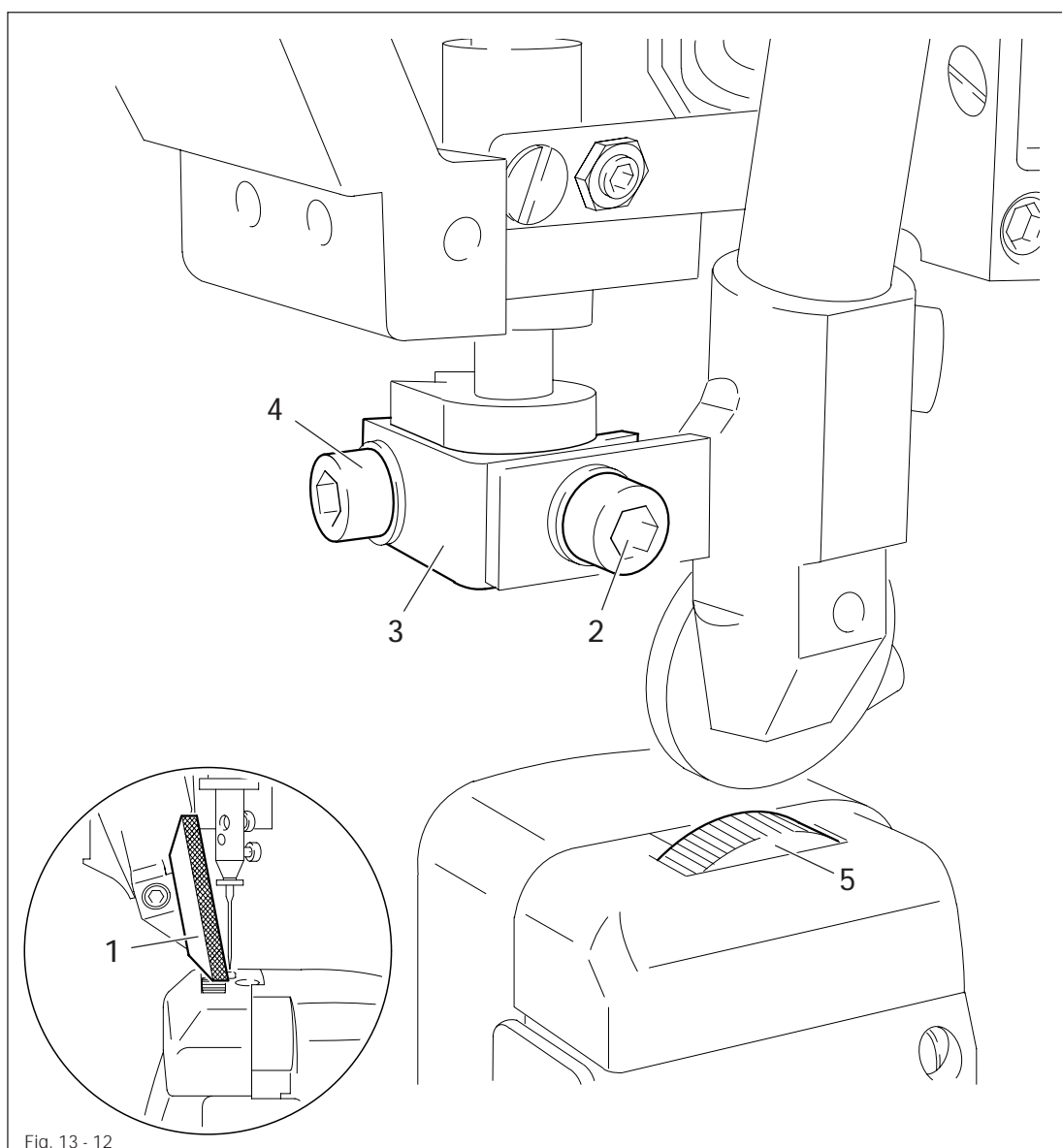
- Raise lever 1.
- Move the presser foot bar ( screws 2 ) in accordance with the **requirement**. Take care to ensure that the roller presser is parallel to the feed wheel.

## 13.04.13 Roller presser

## Requirements

When the roller presser 1 is resting on the feed wheel 5 it must

1. be parallel to the feed wheel 5 when viewed in the direction of sewing,
2. be in the middle of the needle when viewed in the direction of sewing and
3. be as close as possible to the needle when viewed across the direction of sewing.



- Raise the roller presser 1.
- Always observe **requirement 1** when carrying out the following adjustments.
- Move the roller presser 1 ( screw 2 ) in accordance with **requirement 2**.
- Allow the roller presser 1 to come to rest on the feed wheel 5.
- Move the roller presser bracket 3 ( screw 4 ) in accordance with **requirement 3**.



When sewing very tight curves the roller presser 1 should be moved toward the operator a little.

## 13.04.14 Automatic presser-foot lifter

### Requirement

When solenoid 1 is activated, lever 3 for the roller presser must drop automatically.

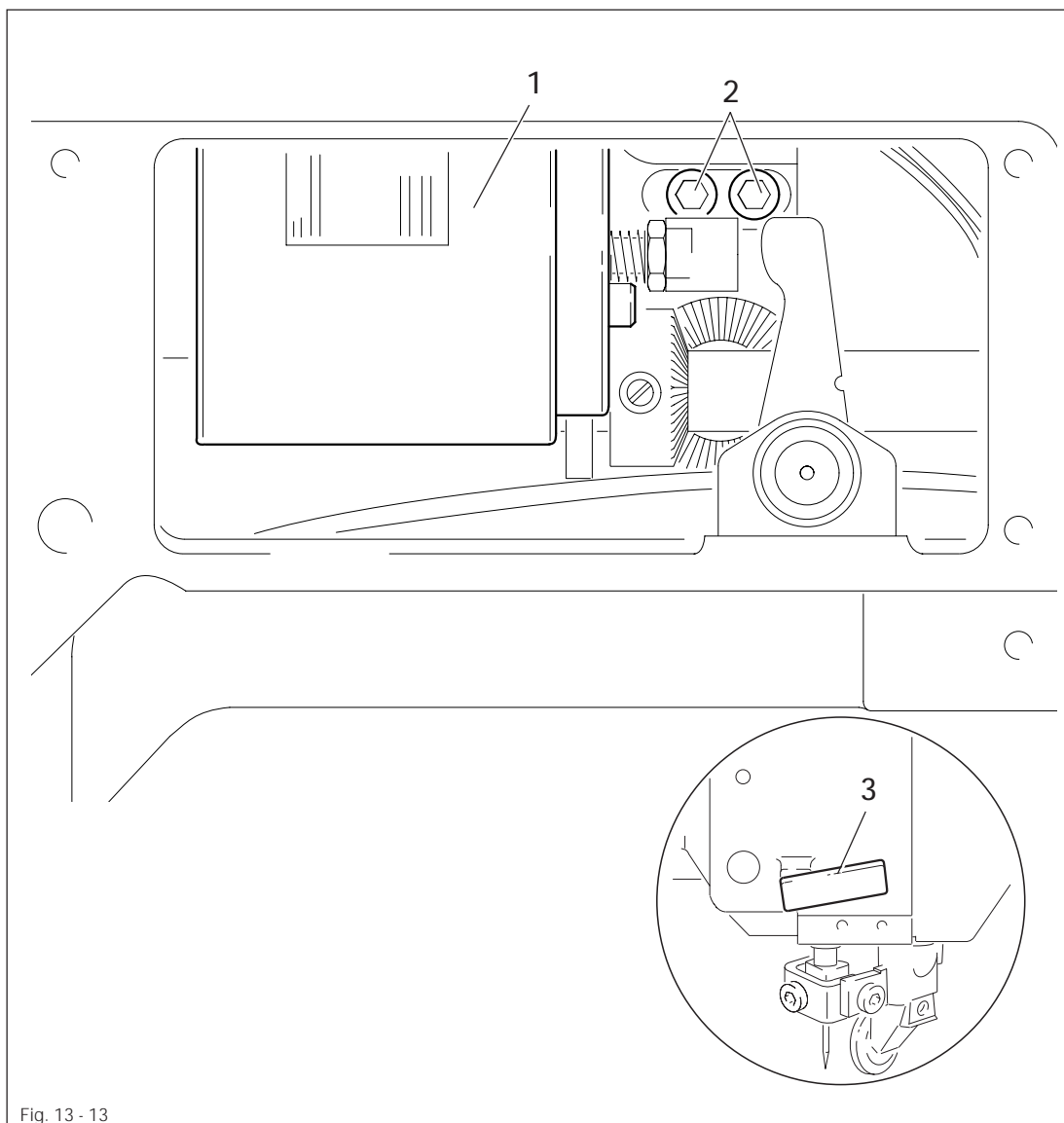
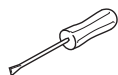


Fig. 13 - 13



- Move solenoid 1 ( screws 2 ) in accordance with the **requirement**.
- Turn the machine on and check the **requirement**.
- Turn the machine off.

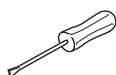
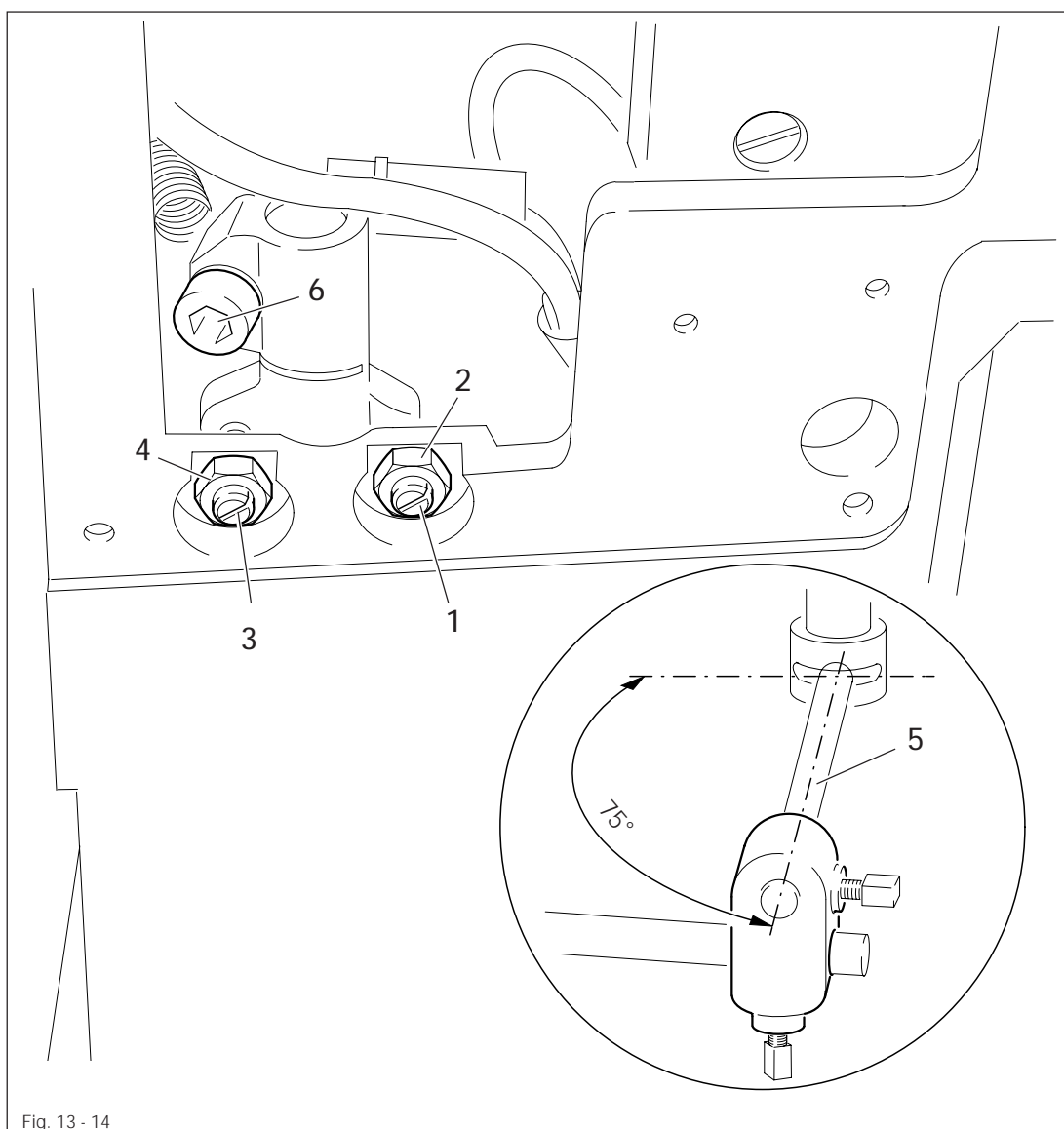


Depending on the thickness of the material, the clearance between the roller presser and the feed wheel can be increased to a maximum of 10 mm by moving the solenoid to the right.

## 13.04.15 Knee lever

**Requirements**

1. The knee lever must have a little play before the roller presser is raised.
2. The lever for the roller presser must drop automatically when the knee lever is pressed as far as it will go.
3. Bar 5 of the knee lever must be at an angle of approx.  $75^\circ$  to the bedplate.



- Turn screw 1 ( nut 2 ) in accordance with requirement 1.
- Turn screw 3 ( nut 4 ) in accordance with requirement 2.
- Adjust bar 5 ( screw 6 ) in accordance with requirement 3.

## 13.04.16 Tension release

### Requirement

With lever 1 raised or the automatic presser foot lifter activated, both tension discs 6 must be at least 0.5 mm apart.

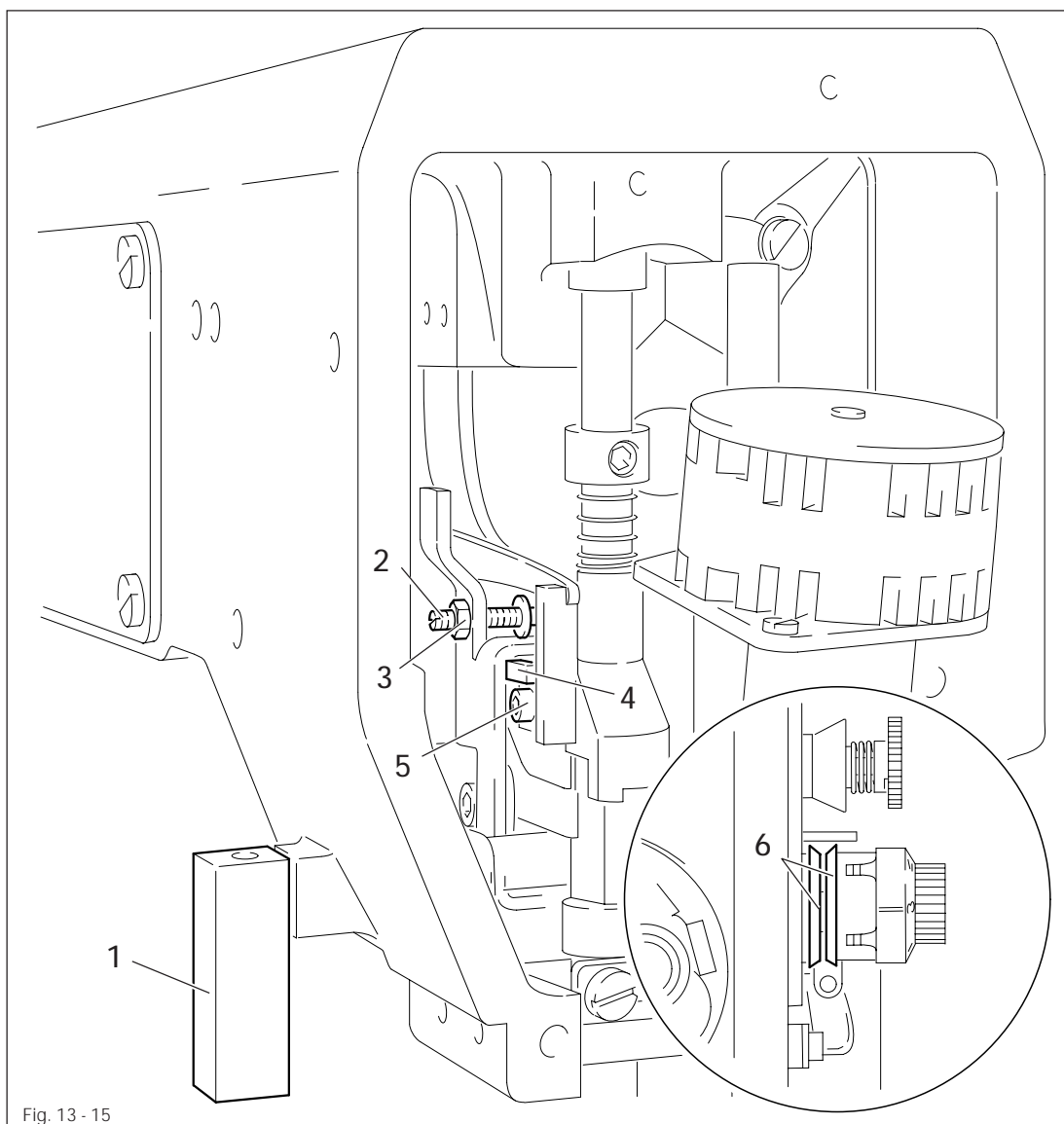
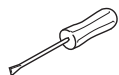


Fig. 13 - 15



- Raise the roller presser using lever 1.
- Adjust screw 2 ( nut 3 ) in accordance with the **requirement**.
- Raise the roller presser using the automatic presser foot lifter or the knee lever.
- Move the drive dog 4 ( screw 5 ) in accordance with the **requirement**.



On machines with thread tension control ( -906/10 ) the timing of the tension release can be adjusted using the service functions ( see **chapter 11.09 Summary of the service functions** ).



## 13.04.17 Thread check spring

**Requirements**

1. The motion of the thread check spring 7 must be finished when needle point enters the material ( spring stroke approx. 7 mm ).
2. When the thread loop is at its largest when going around the hook, the thread check spring must raise slightly from the workpiece rack 1.

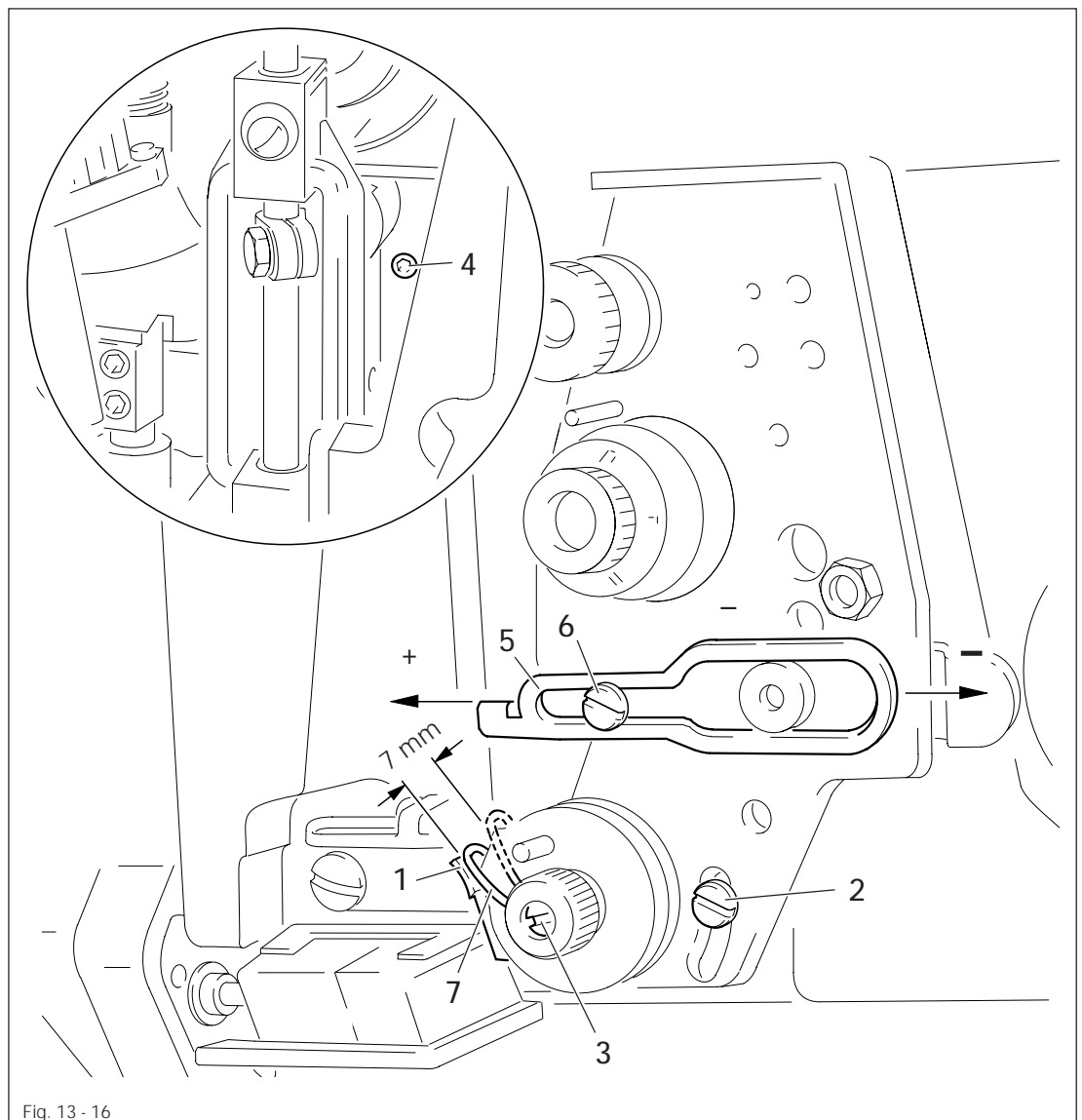
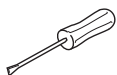


Fig. 13 - 16



- Move workpiece rack 1 ( screw 2 ) in accordance with **requirement 1**.
- Turn screw 3 ( screw 4 ) to adjust the strength of the spring.
- Move the slack thread regulator 5 ( screw 6 ) in accordance with **requirement 2**.

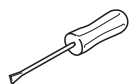
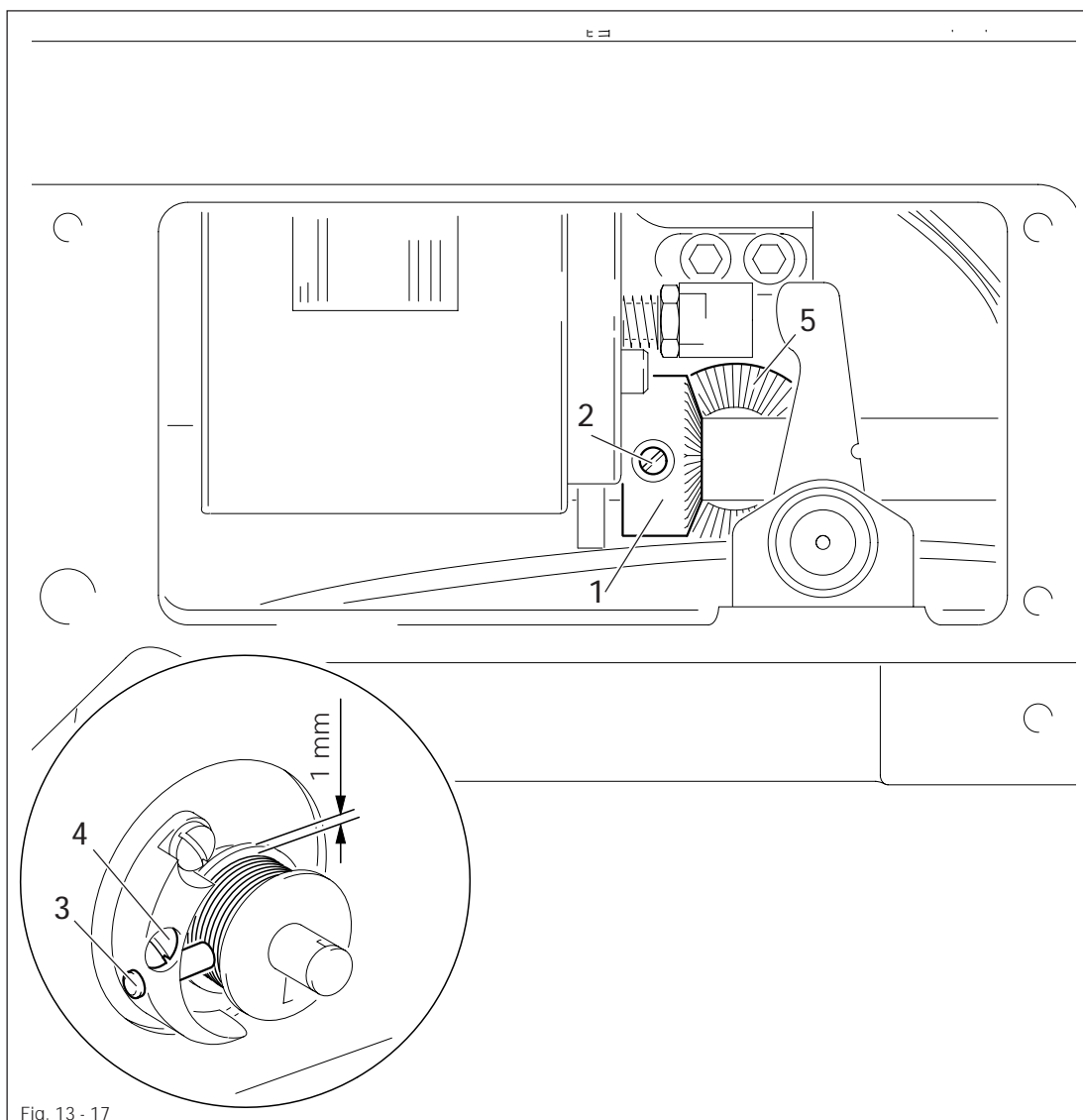


Due to technical sewing reasons it may be necessary to deviate from the spring stroke / spring strength mentioned here. Move the slack thread regulator 5 ( screw 6 ) toward the "+" ( = more thread ) or toward the "-" ( = less thread ).

## 13.04.18 Bobbin winder

### Requirements

1. With the bobbin winder on, the bobbin winder spindle must engage reliably. With the bobbin winder off, the friction wheel 5 must not engage the drive wheel 1.
2. The bobbin winder must turn off automatically when the thread level is approx. **1 mm** from the edge of the bobbin.

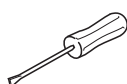
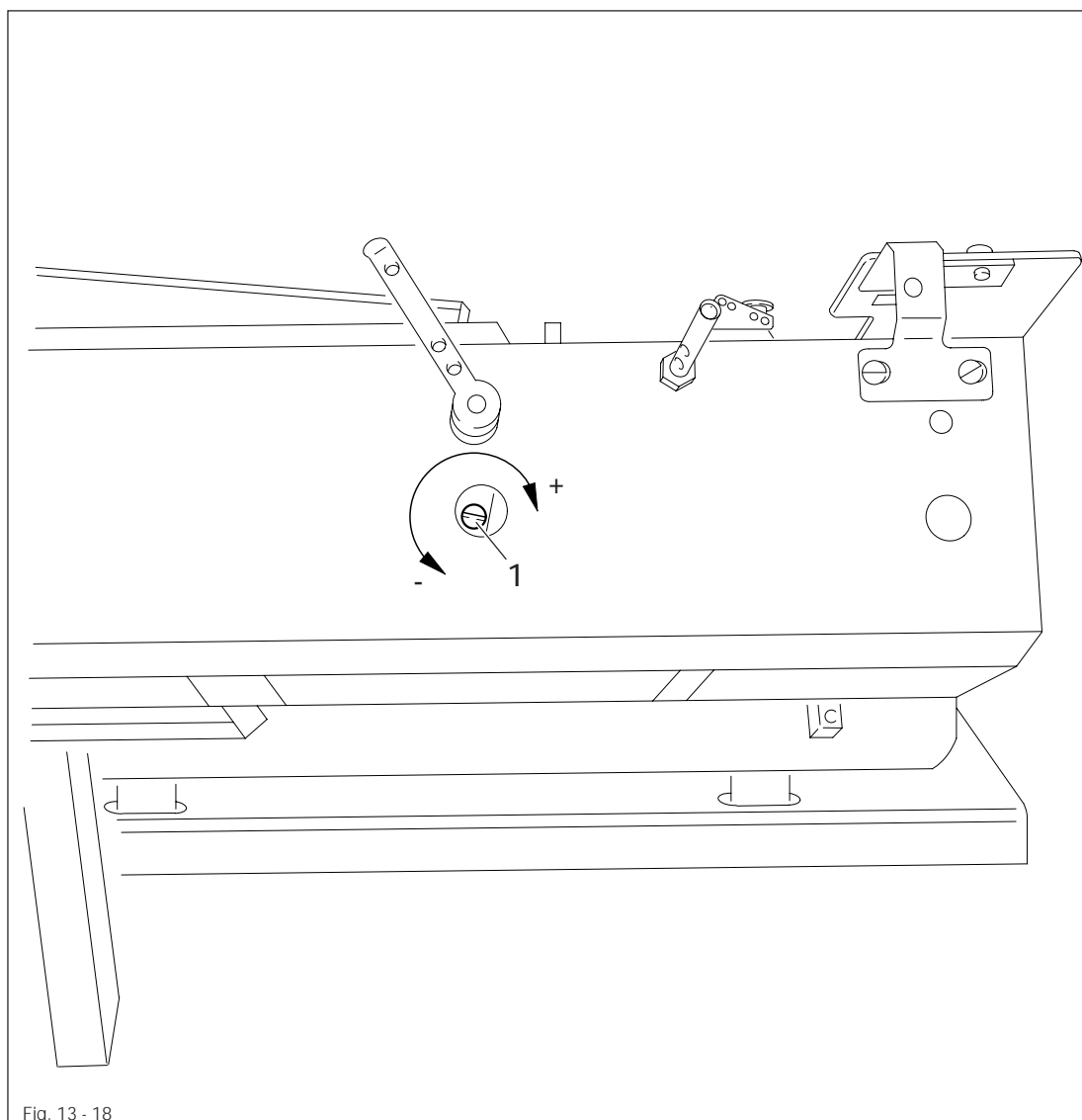


- Move drive wheel 1 ( screws 2 ) in accordance with requirement 1.
- Move pin 3 ( screw 4 ) in accordance with requirement 2.

## 13.04.19 Roller presser pressure

### Requirement

The material must be fed reliably. There must not be any pressure marks on the material.



- Adjust the roller presser pressure with screw 1 in accordance with the requirement.



Screw 1 is underneath a cover.



When the roller presser pressure is low, the lowering speed of the roller presser can be increased by turning on the function ROLLER PRESSER DE-ENERGIZER. See chapter 11.08 Summary of the functions in the input menu.

## Adjustment

### 13.05 Adjusting the edge trimmer -725/04

#### 13.05.01 Replacing the knife

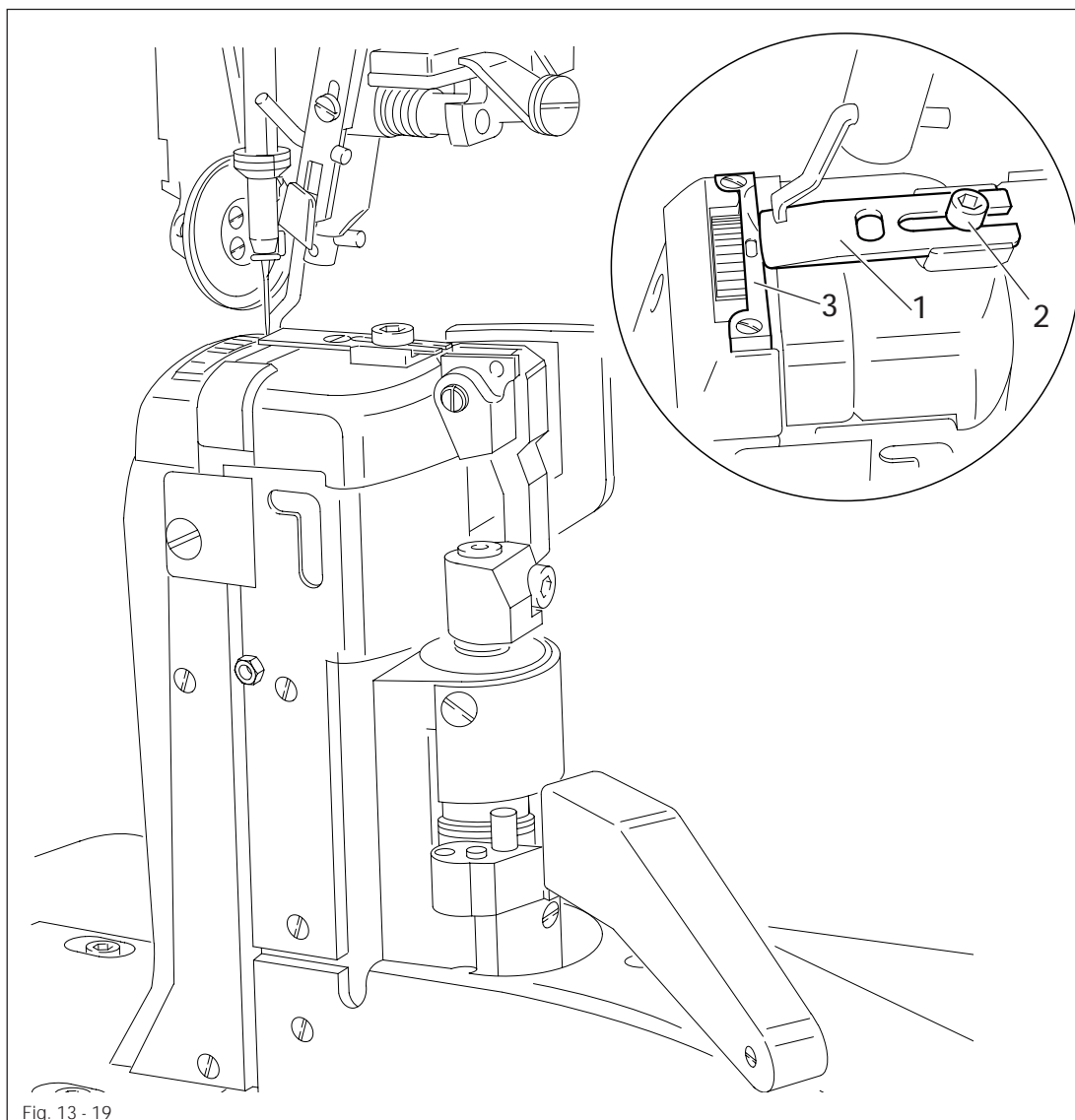
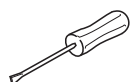


Fig. 13 - 19



- Turn the machine off.
- Loosen screw 2 and remove knife 1.
- Insert a new knife 1 and slide it flush against the needle plate insert 3.
- Tighten screw 2.



Check chapter 13.05.05 Knife position.

## 13.05.02 Knife height

**Requirement**

With the edge trimmer swung in, the middle of the knife bracket must be at the same height as the upper edge of the needle plate.

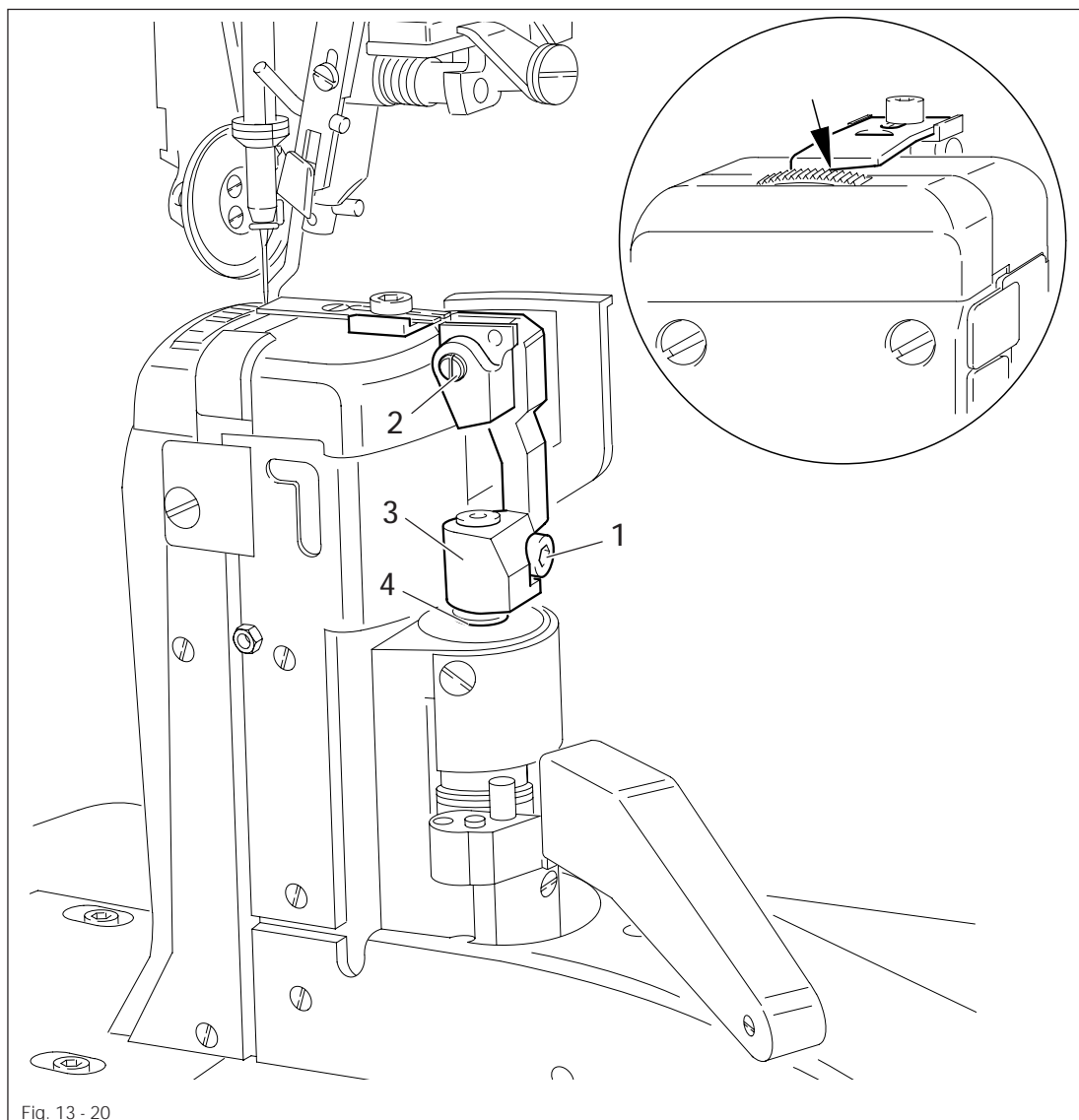
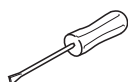


Fig. 13 - 20



- Turn the machine off and swing in the edge trimmer.
- Loosen screw 1.
- Position the knife in the middle of its setting range by turning eccentric 2.
- Move knife carrier 3 in accordance with the **requirement** and tighten screw 1.
- Bring the circlip 4 to rest against the knife carrier 3.



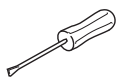
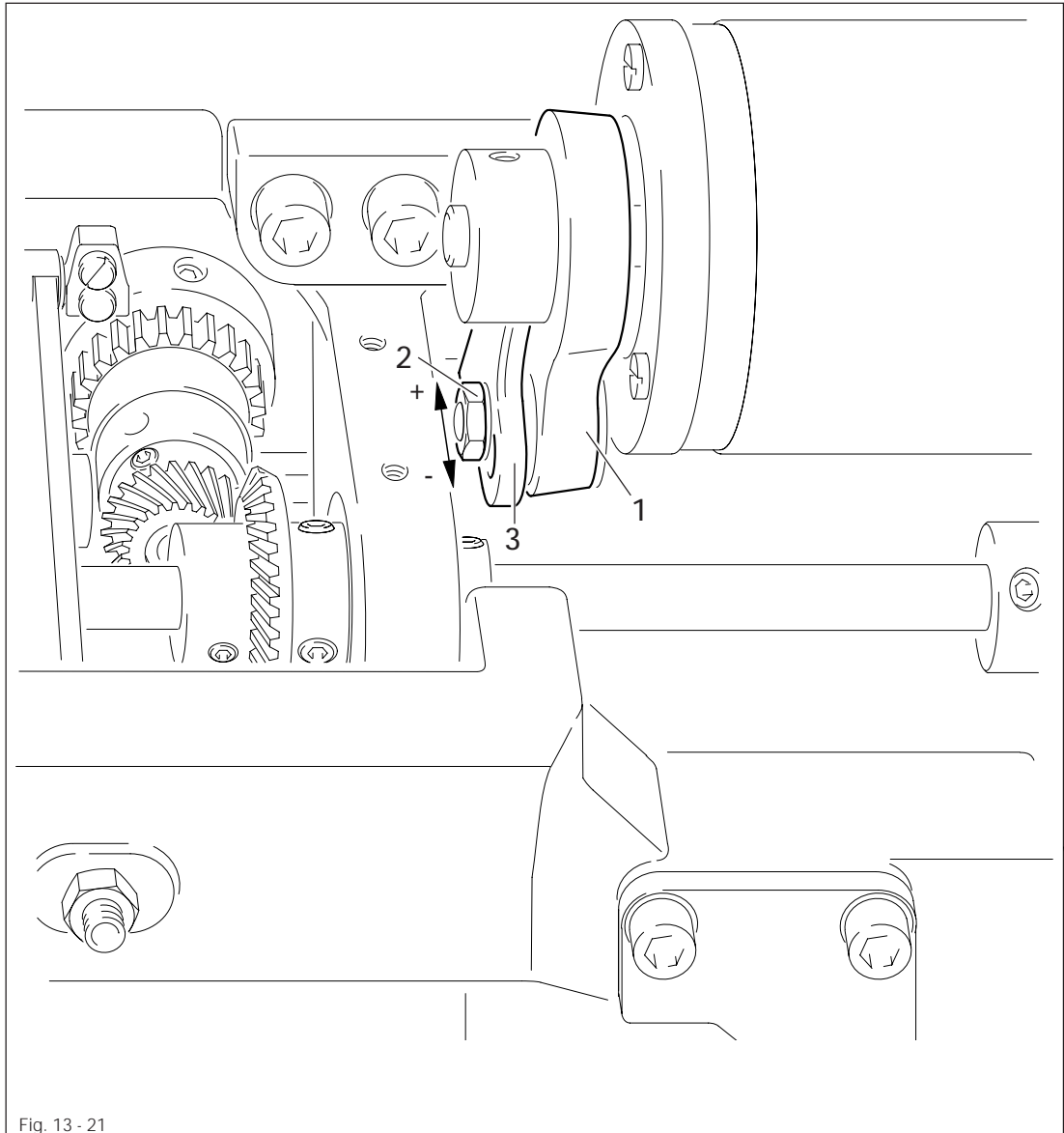
The setting can deviate from the basic setting on eccentric 2 as the material thickness varies.

# Adjustment

## 13.05.03 Knife stroke

### Requirement

The knife stroke can be set within a range of 2.0 to 3.5 mm for the ideal adaptation to all materials used.

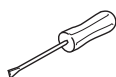
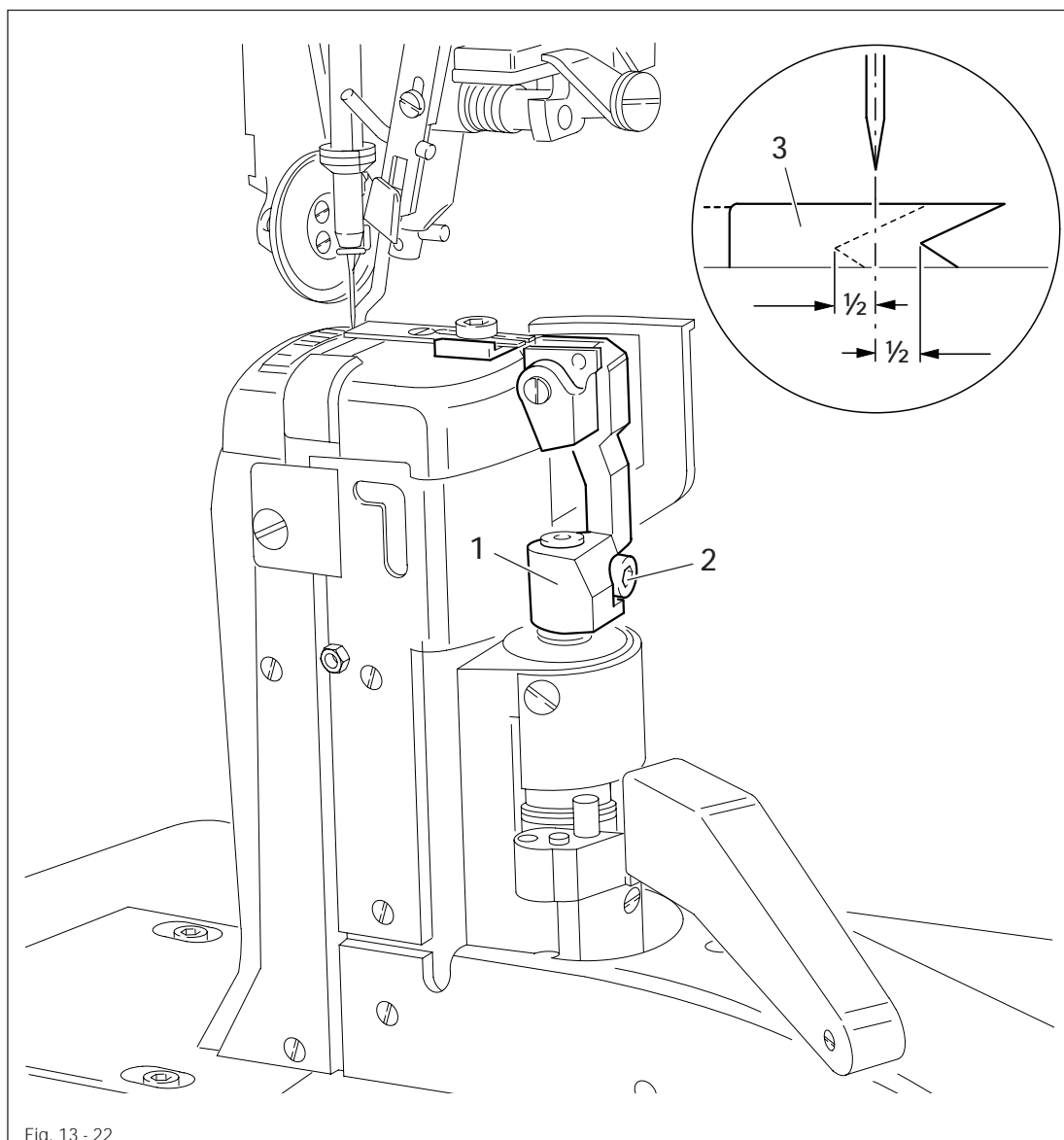


- Move crank 1 ( nut 2 ) in slot 3 in accordance with the requirement.

## 13.05.04 Knife motion

**Requirement**

With the edge trimmer swung in and the needle in the needle hole, half of the motion of the knife 3 must take place in front of, and half behind the needle when the motor shaft is turned by hand.



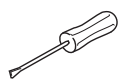
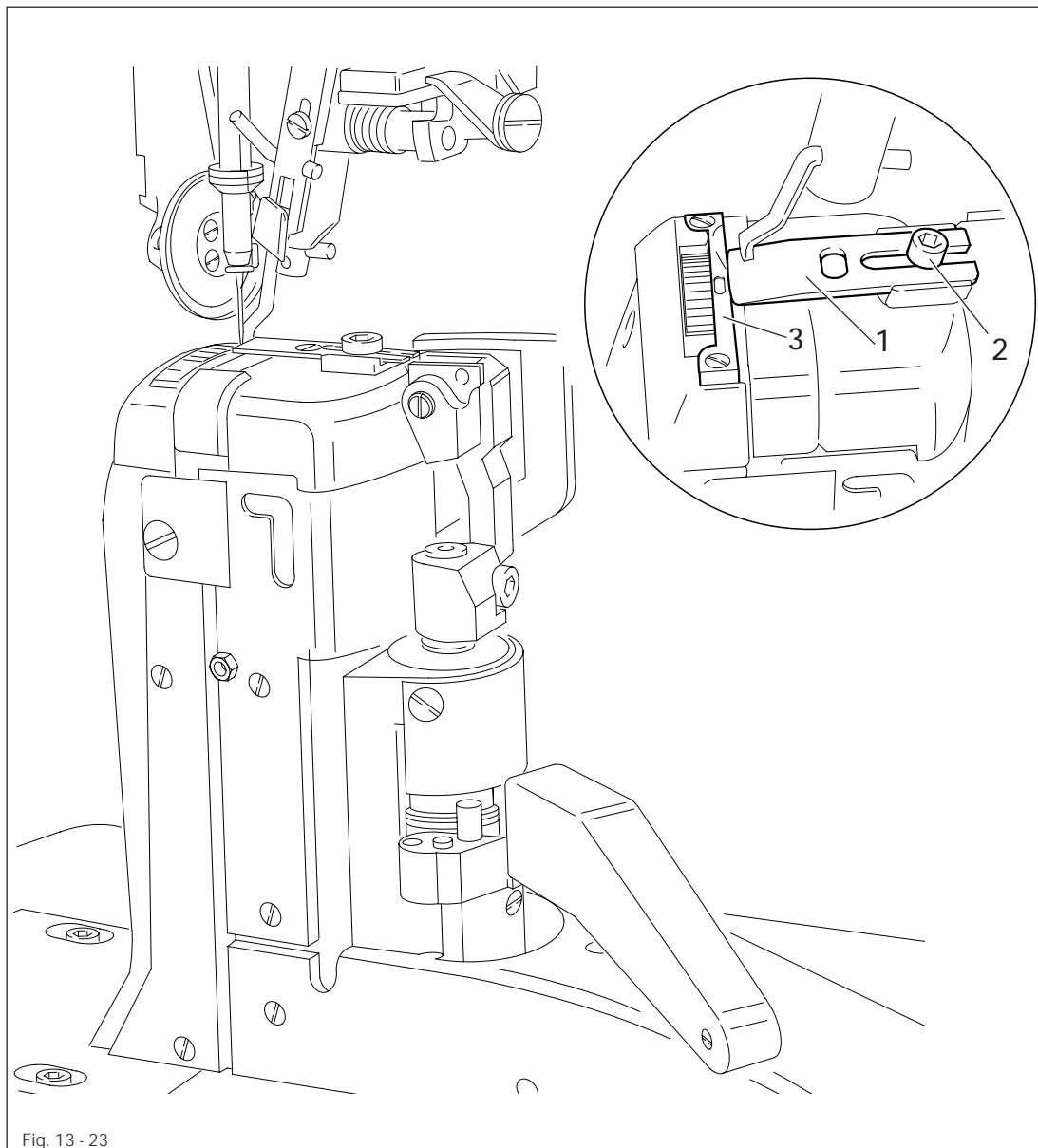
- Turn the machine off and swing in the edge trimmer.
- Turn the knife carrier 1 ( screw 2 ) in accordance with the requirement.

## Adjustment

### 13.05.05 Knife position

#### Requirement

With the edge trimmer swung in, the knife 1 must lightly touch the needle plate insert. Make sure there is no whistling sound during the cutting process.

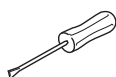
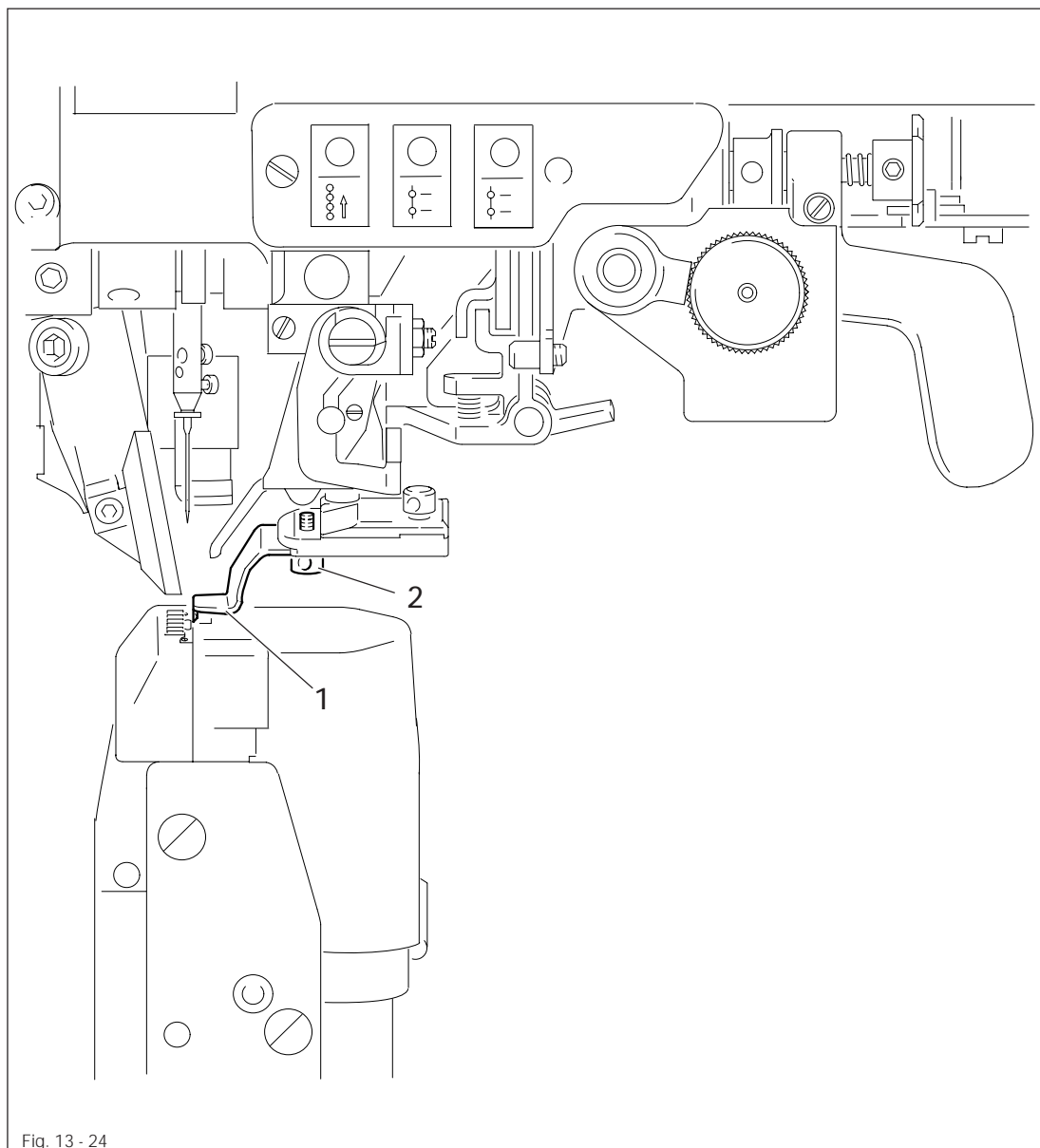


- Turn the machine off and swing in the edge trimmer.
- Move the knife 1 ( screw 2 ) in accordance with the requirement.



## 13.06 Adjusting the edge trimmer -726/05

### 13.06.01 Replacing the knife



- Turn the machine off.
- Loosen screw 2 and remove knife 1.
- Insert a new knife 1 and slide it flush to the needle plate insert.
- Tighten screw 2.



Check chapter 13.06.02 Knife position with regard to needle plate and chapter 13.06.03 Knife position across the direction of sewing.

## 13.06.02 Knife position with regard to needle plate

### Requirement

With the edge trimmer swung in, the knife 2 must be parallel to the needle plate insert.

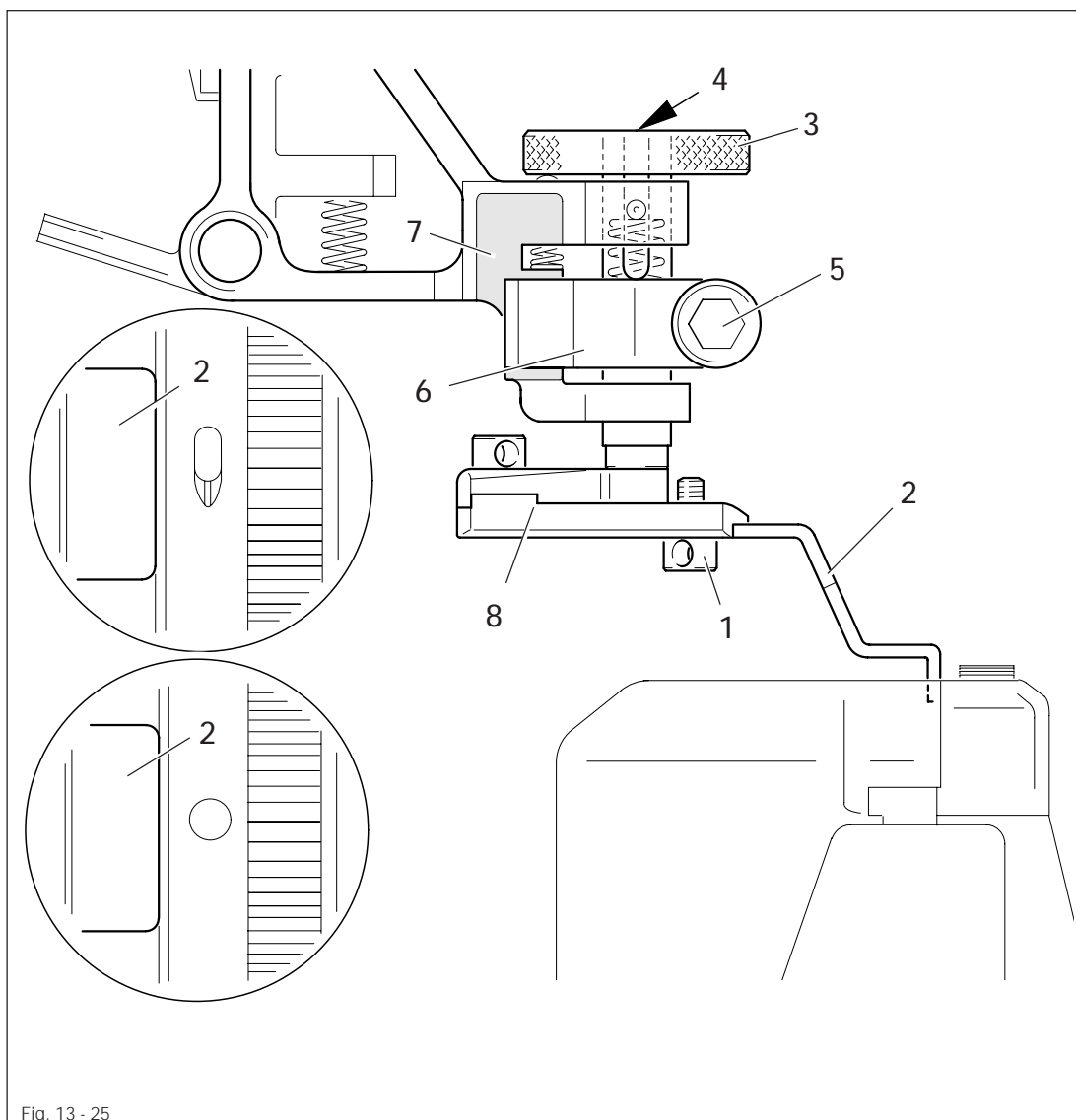
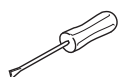


Fig. 13 - 25



- Turn the machine off and swing in the edge trimmer.
- Loosen screw 1 and push the knife 2 back a little.
- Turn milled screw 3 in such a way that its top edge is flush with the top edge of the cylindrical guide 4.
- Loosen screw 5, position guide 6 in the middle of guide 7 and tighten screw 5 lightly.
- Turn the knife carrier 8 in accordance with the **requirement** and tighten screw 5.



Screw 1 remains loosened for the following adjustments.

## 13.06.03 Knife position across the direction of sewing

**Requirement**

With the edge trimmer swung in, the knife 2 must be vertical and lightly touch the needle plate insert.

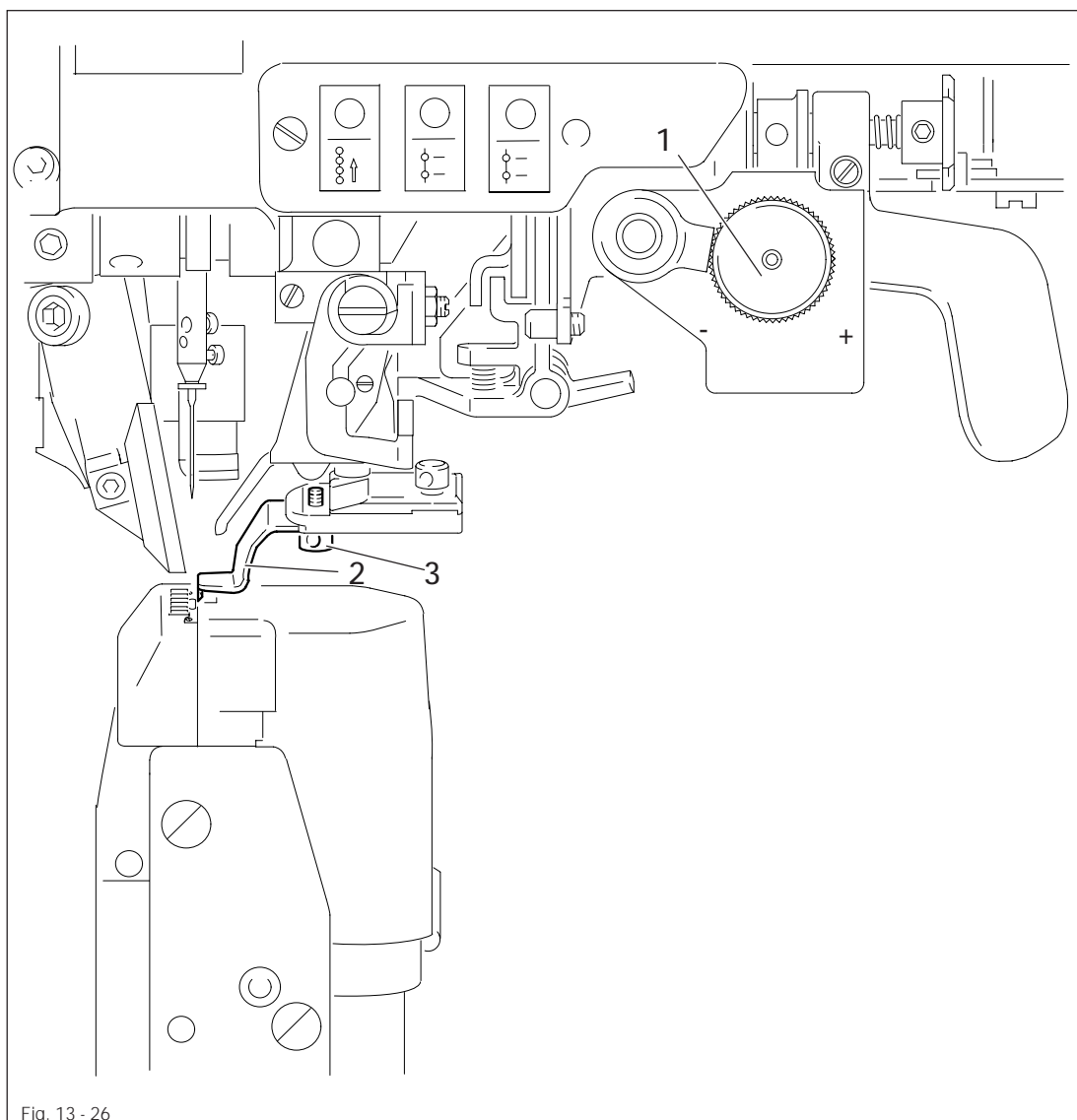
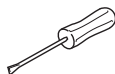


Fig. 13 - 26



- Turn the machine off and swing in the edge trimmer.
- Position the knife 1 vertically by turning the milled screw.
- Bring the knife 2 lightly to rest against the needle plate insert and tighten screw 3.



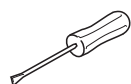
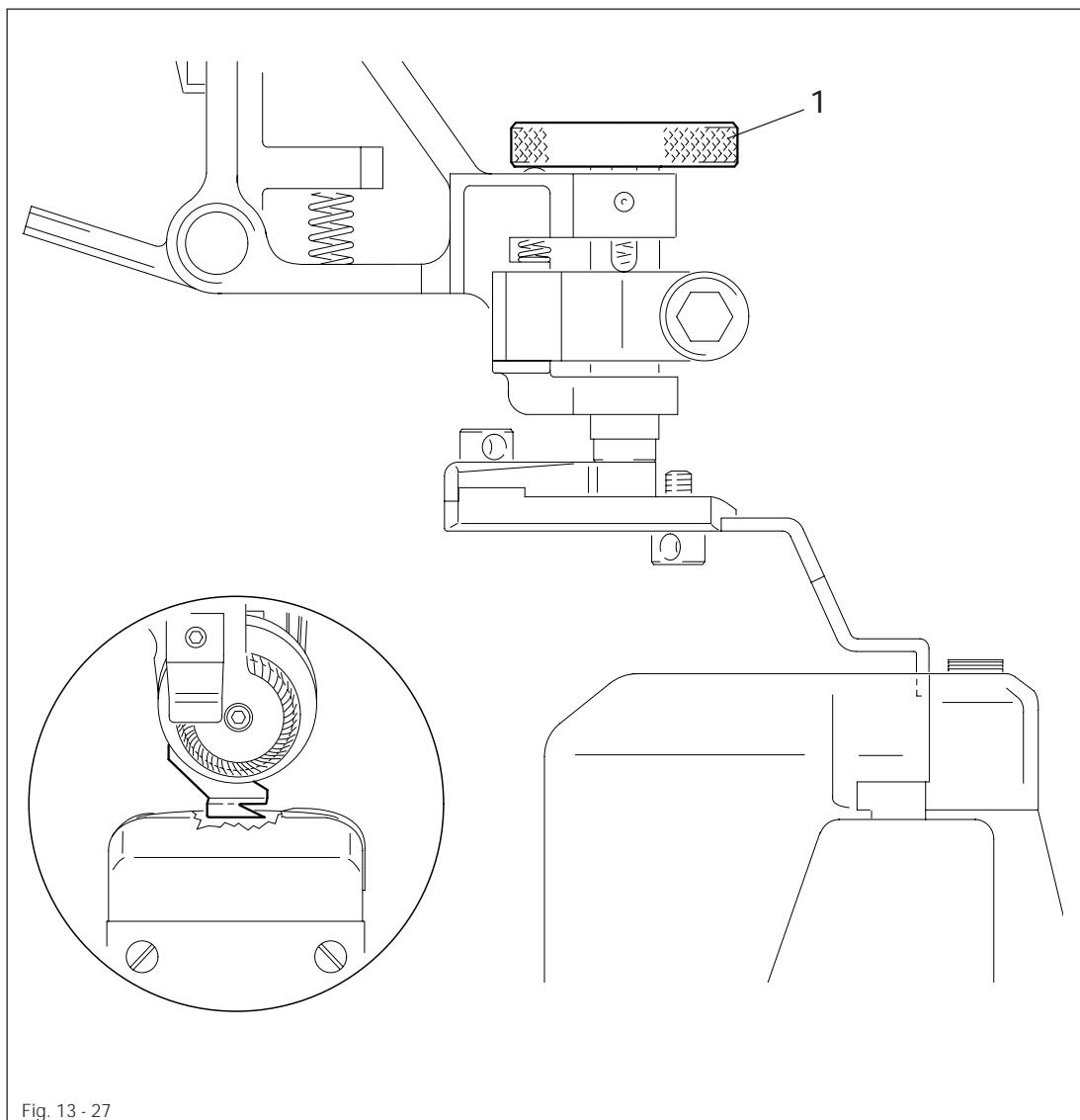
The cutting pressure can be adjusted to suit the material used by turning milled screw 1.

## Adjustment

### 13.06.04 Knife height

#### Requirement

With the edge trimmer swung in, the middle of the knife bracket must be at the same height as the top edge of the needle plate.



- Turn the machine off and swing in the edge trimmer.
- Turn milled screw 1 in accordance with the **requirement**.



The setting can deviate from the basic adjustment to suit the material thickness.

## 13.06.05 Knife motion

**Requirement**

With the edge trimmer swung in and the needle in the needle hole, half of the motion of the knife 3 must be in front of, and half behind the needle when the motor shaft is turned by hand.

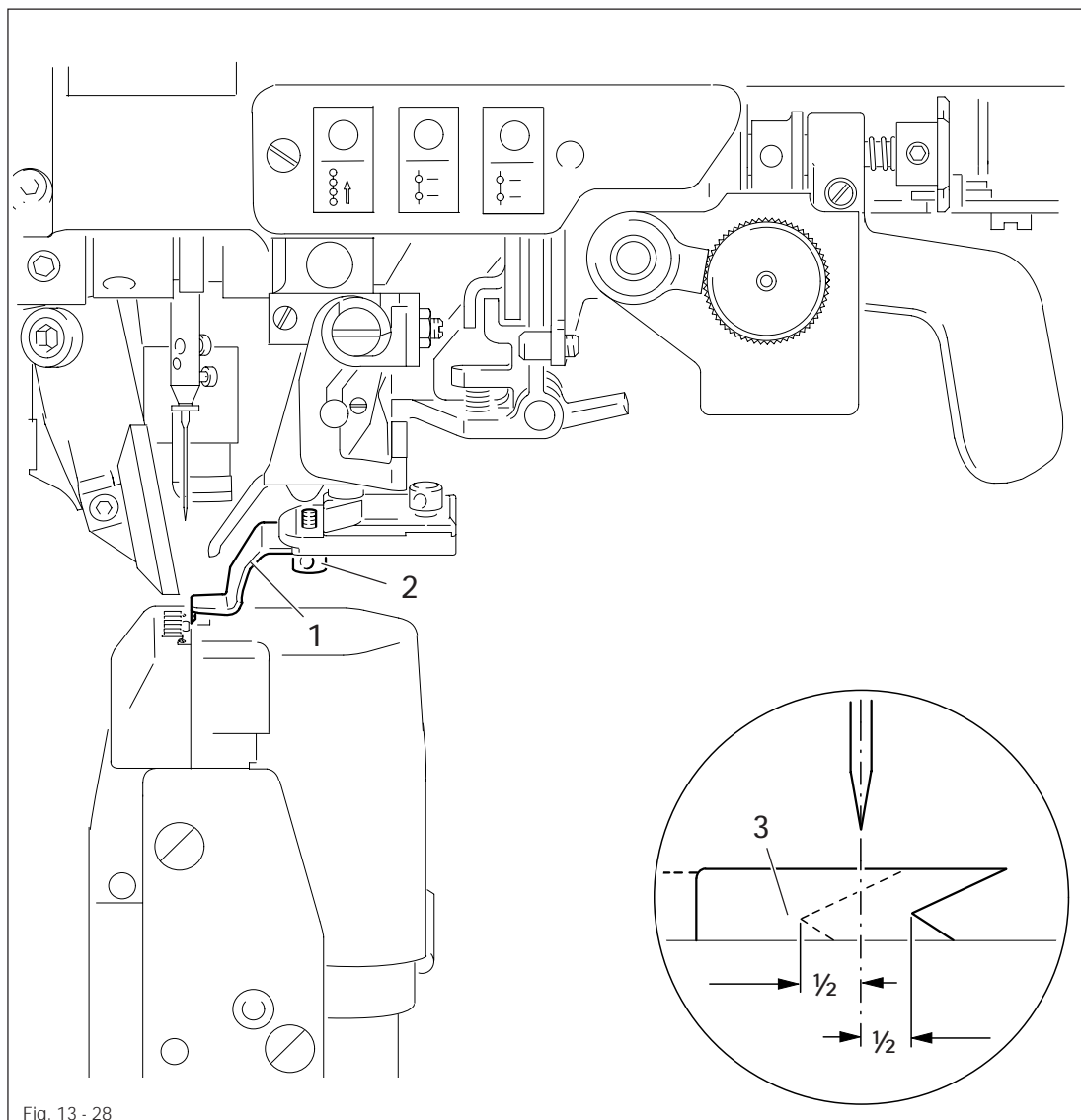
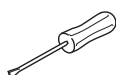


Fig. 13 - 28



- Turn the machine off and swing in the edge trimmer.
- Move knife holder 1 ( screw 2 ) in accordance with the requirement.

## Adjustment

### 13.06.06 Knife stroke

#### Requirement

The knife stroke can be set within a range of 1.0 to 3.5 mm for the ideal adaptation to all materials used.

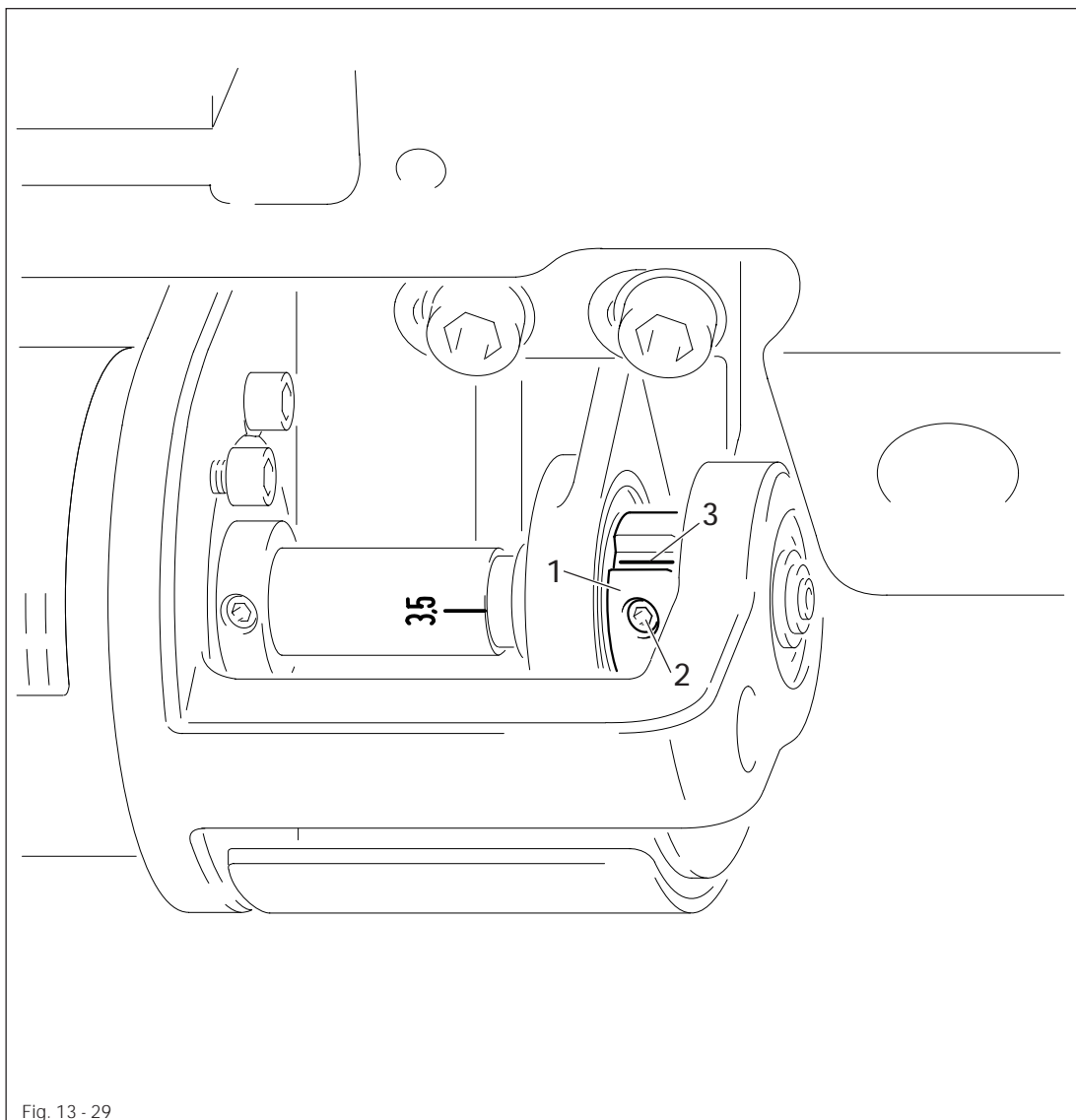
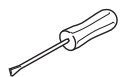


Fig. 13 - 29



- Turn eccentric 1 ( screws 2 ) on the rear machine head so that the marking of the desired cutting stroke is opposite marking 3.

## 13.07 Adjusting the thread trimmer -900/53

## 13.07.01 Removing the scissors

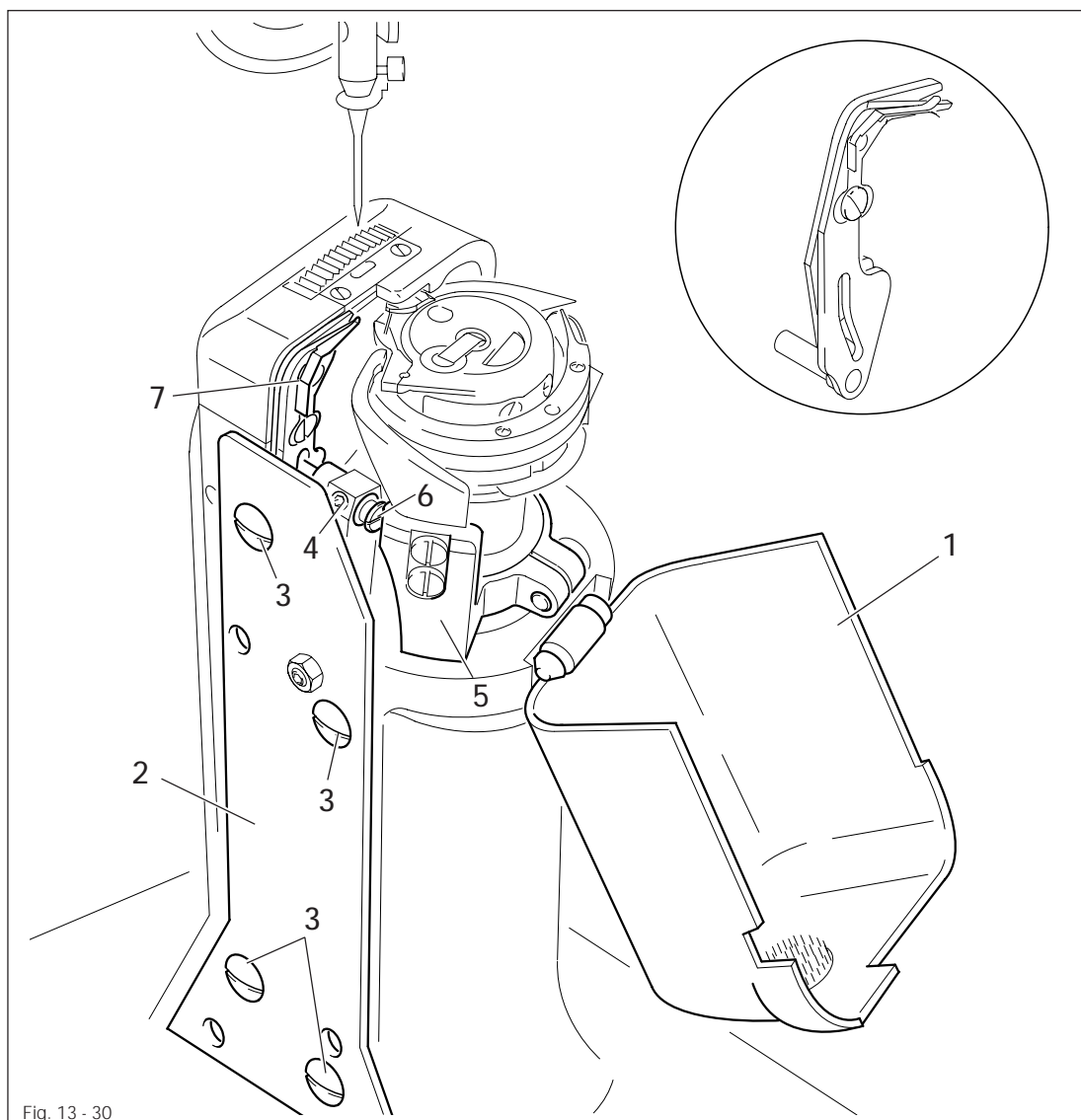
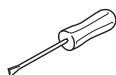


Fig. 13 - 30



- Open post cover 1 and unscrew post cover plate 2 ( screws 3 ).
- Loosen screw 4.
- Swing out bobbin case base 5 by hand and hold it in this position.
- Remove bolt 6.
- Open the scissor drive bar and remove scissor 7.
- Allow bobbin case base 5 to swing in and close the scissor drive bar.



Post cover plate 2 remains dismounted for further adjustments.

## 13.07.02 Control cam to bobbin opener and tripping lever

### Requirements

1. Control cam 2 must be touching bearing collar 3.
2. The roller of tripping lever 6 must fall slightly into the path of control cam 2.

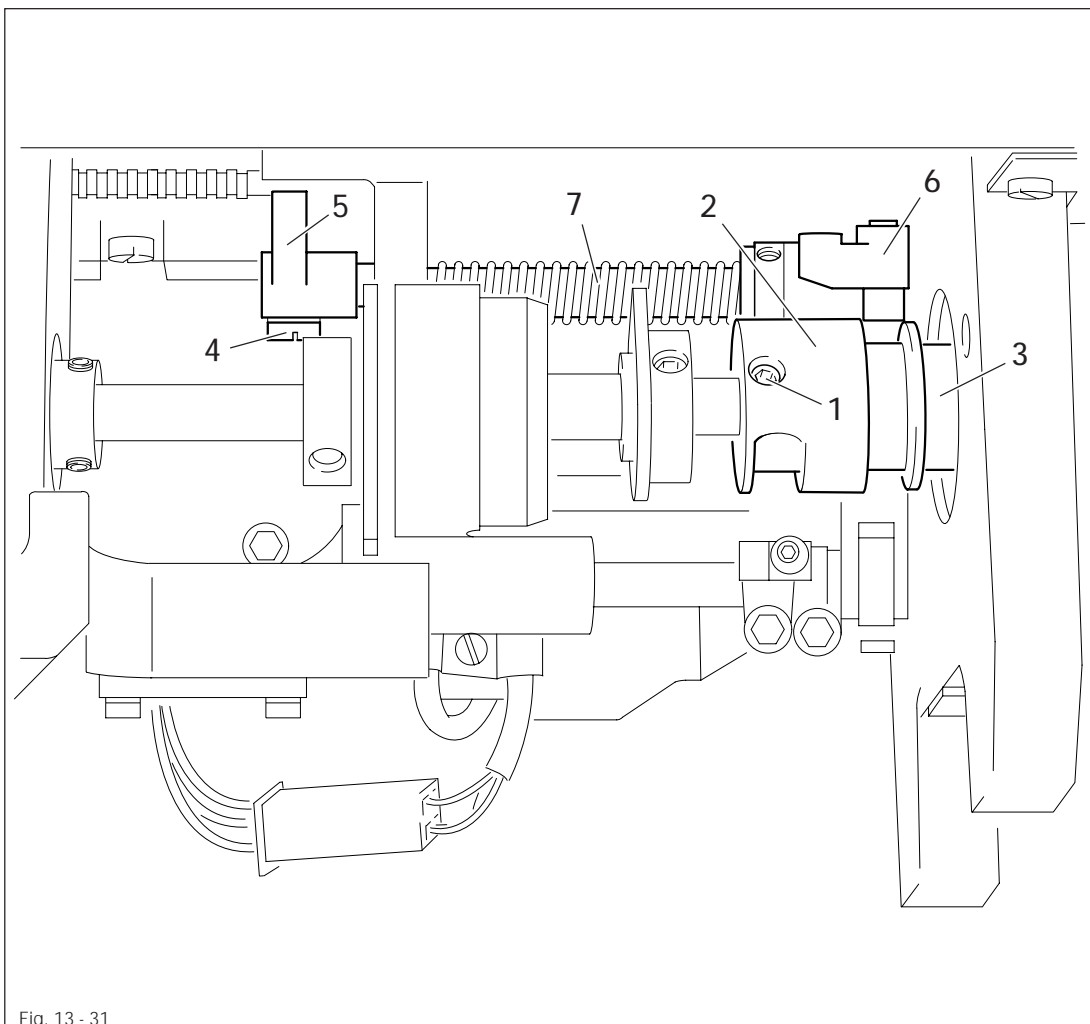
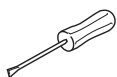


Fig. 13 - 31



- Loosen screws 1 and bring control cam 2 to rest against bearing collar 3.
- In this position tighten one of the screws 1 slightly so that control cam 2 can still be turned.
- Loosen screw 4.
- Bring the needle bar to BDC and position the straight section of the cam track under the roller of tripping lever 6.
- Activate the engaging lever by hand.
- Move tripping lever 6 together with schaft 7 in accordance with requirement 2.
- Taking care to ensure that connecting link 5 engages completely in the groove of the rack, bring connecting link 5 to rest on the right and tighten screw 4.



Only tighten screws 1 slightly for the following adjustment.



## 13.07.03 Radial position of the tripping lever

**Requirement**

With the tripping lever 3 in resting position, there must be a clearance of 0.3 mm between its roller and the circumference of the control cam 4.

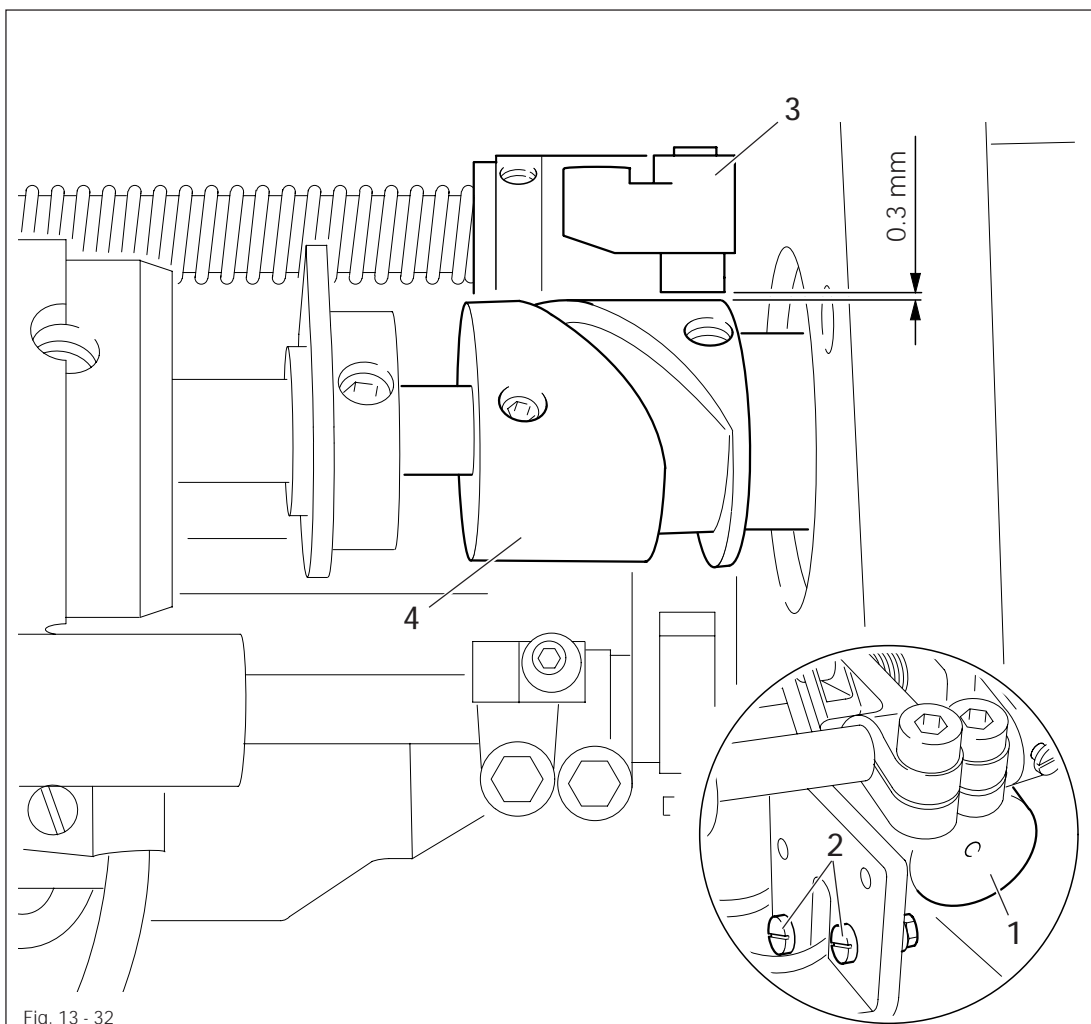
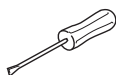


Fig. 13 - 32



- Bring the needle bar to BDC.
- Move solenoid carrier 1 ( nuts of screws 2 ) in accordance with the requirement.

## 13.07.04 Engaging solenoid

### Requirement

With the trimming device switched on, the field core must still be **1 mm** before its lower stop.

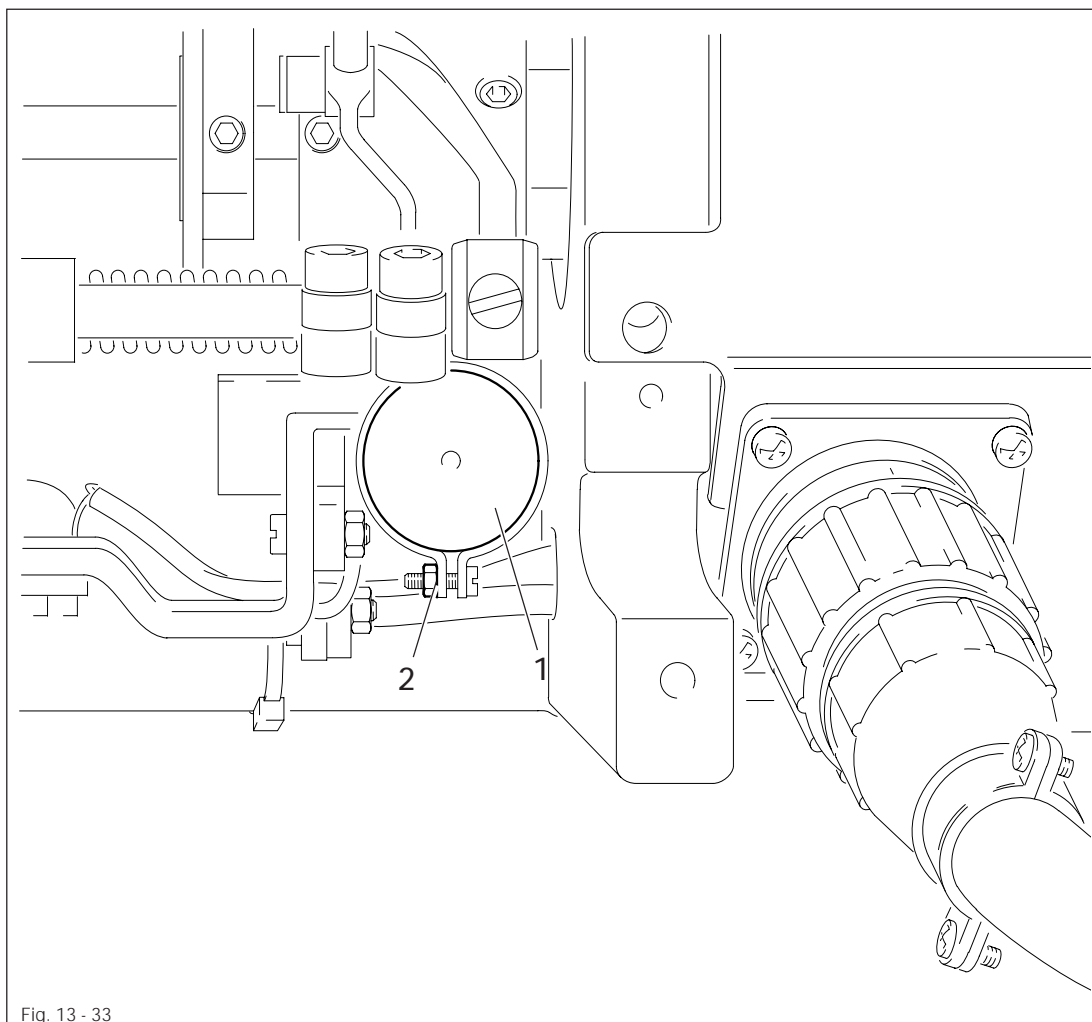
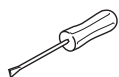


Fig. 13 - 33

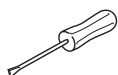
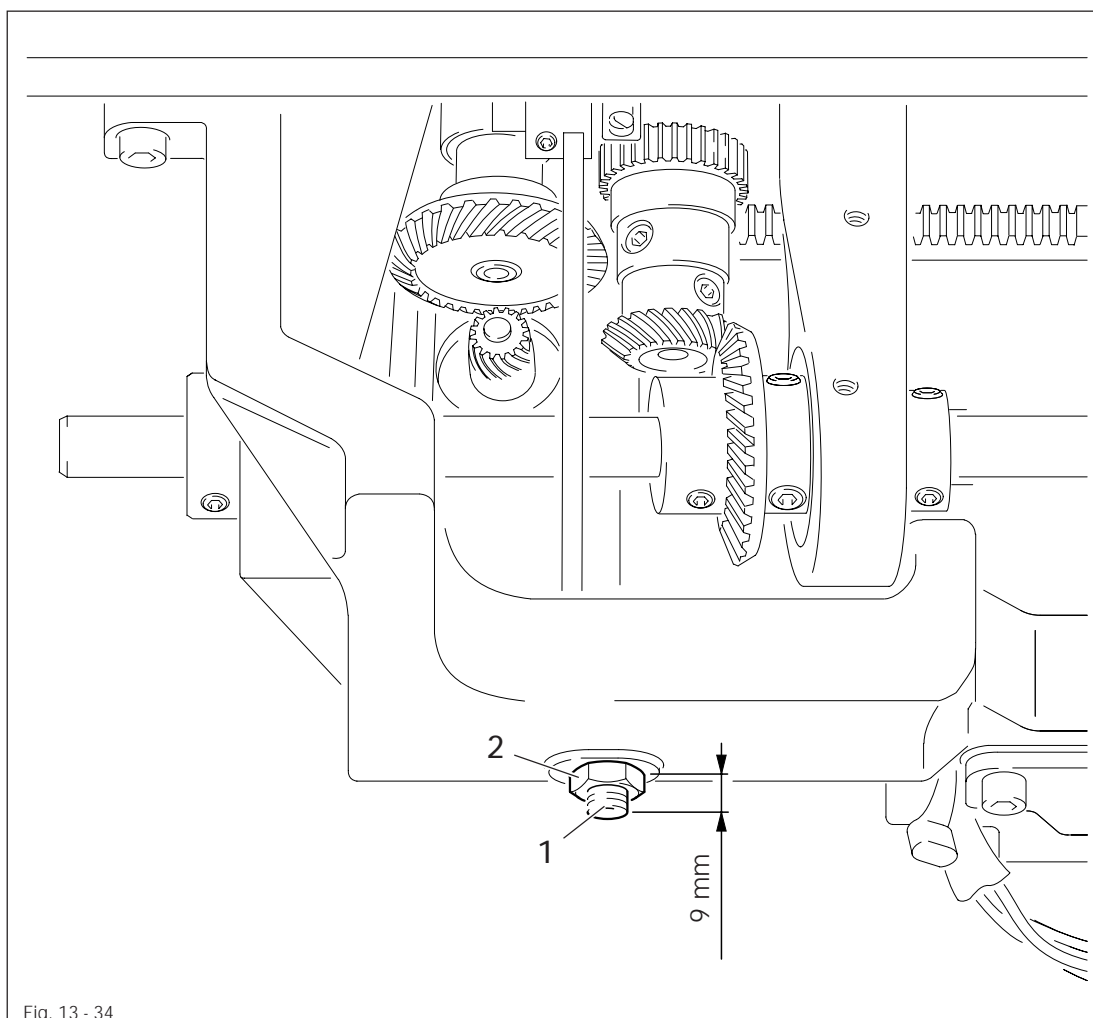


- Bring the needle bar to BDC and activate the tripping lever by hand.
- Push solenoid housing 1 ( screw 2 ) up as far as possible and then move it in accordance with the **requirement**.
- Lift the tripping lever out of the control cam by hand.

## 13.07.05 Scissor drive lever

### Requirement

The top edge of screw 1 must protrude approx. 9 mm from the recess on the housing.



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

### 13.07.06 Adjusting the control cam with the adjustment gauge in relation to the bobbin opener and the scissor

#### Requirements

With the needle bar at BDC, both control cams must be positioned in such a way that

1. adjustment gauge 5 can be slid into the grooves of both control cams,
2. both cams are on the rests of adjustment gauge 5 and
3. the bent section of adjustment gauge 5 is touching roller 3.

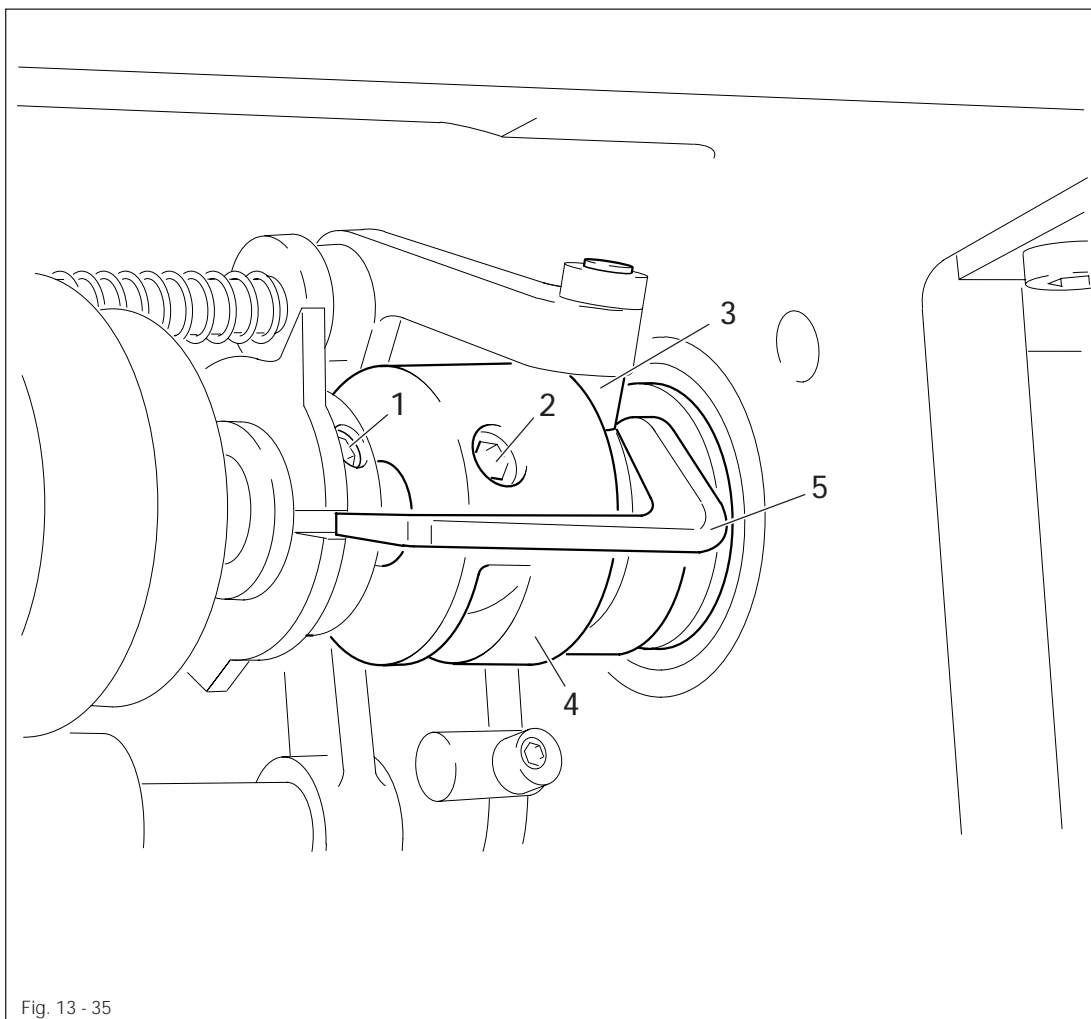
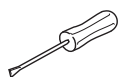


Fig. 13 - 35



- Loosen screws 1 and 2.
- Bring the needle bar to BDC and activate the tripping lever by hand ( roller 3 engaged ).
- Adjust the control cams in accordance with the **requirement** and insert adjustment gauge 5.
- Turn control curve 4 in accordance with the **requirement**.
- Taking care to ensure that control cam 4 is touching the bearing collar, tighten the accessible screws 1 and 2.
- Remove adjustment gauge 5 and tighten the remaining screws 1 and 2.



For adjustment without the gauge see chapter 13.07.07 Radial position of the control cam in relation to the bobbin opener and chapter 13.07.09 Control cam in relation to scissor.

## 13.07.07 Radial position of the control cam in relation to the bobbin opener

### Requirement

The retracting motion of the bobbin opener must begin when the needle bar is 4 mm after BDC.

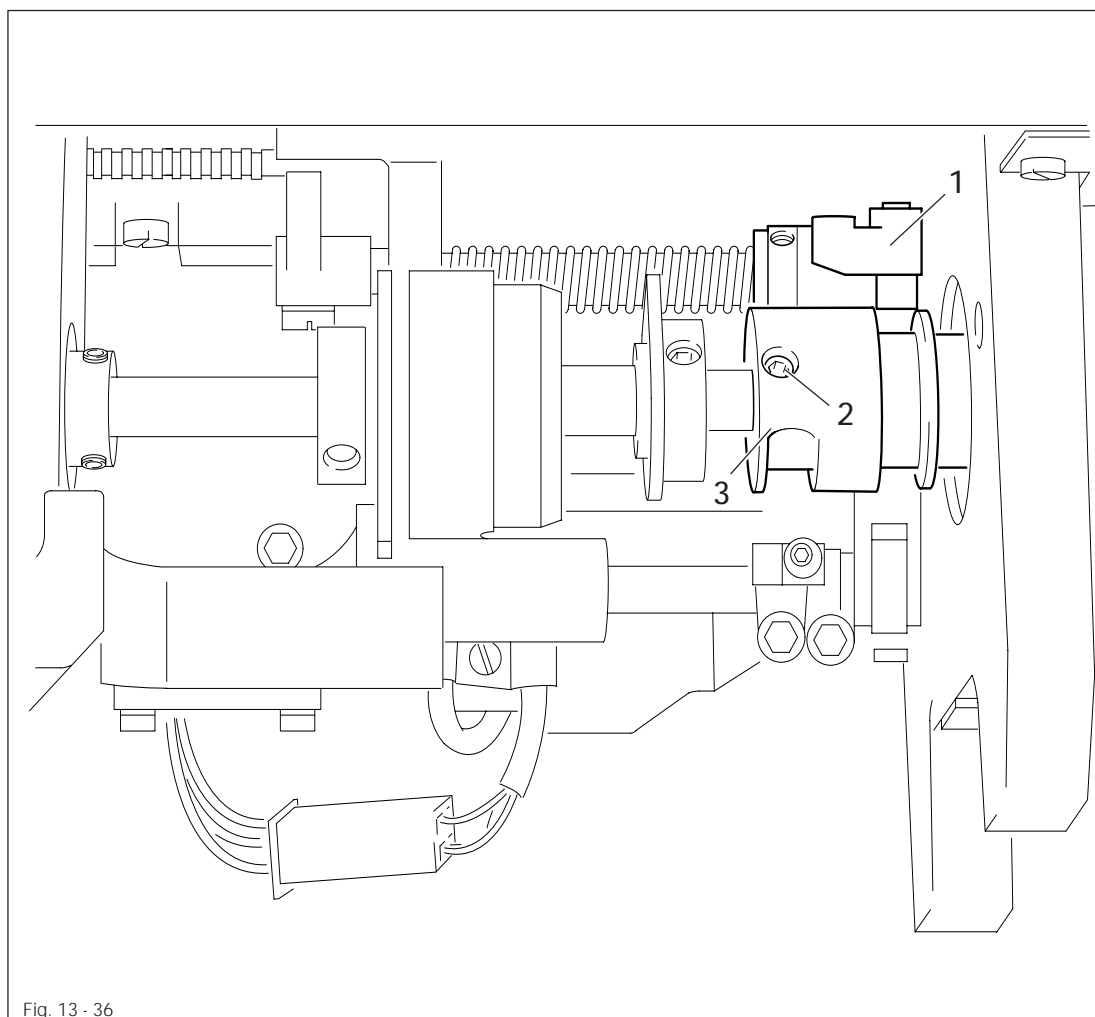
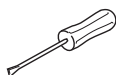


Fig. 13 - 36



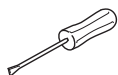
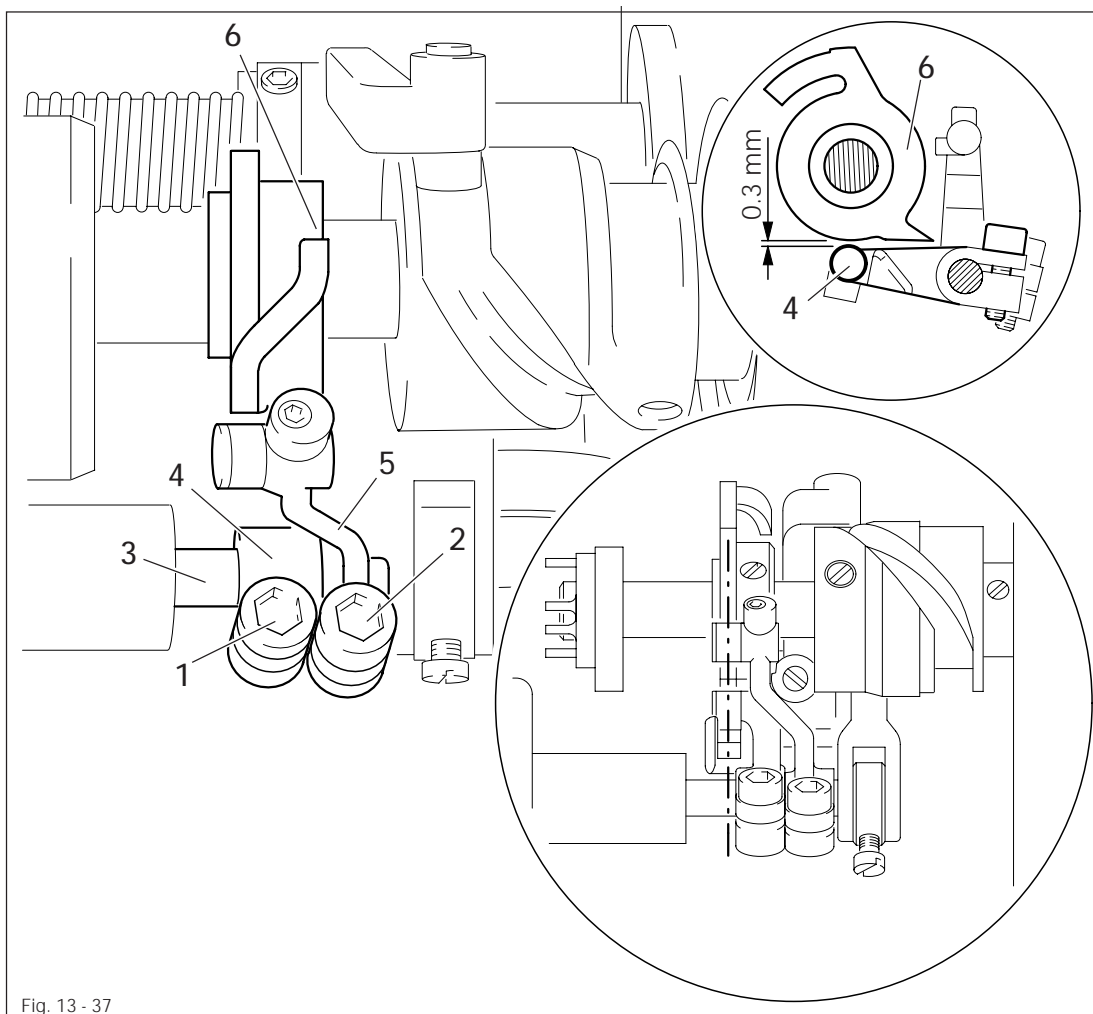
- Activate the tripping lever by hand. The roller of the tripping lever 1 must engage easily and unobstructedly in the cam track.
- Bring the needle bar to 4 mm after BDC ( use adjustment gauge and C-clamp ).
- Loosen screws 2.
- Turn control cam 3 in the direction of rotation until you feel resistance ( start of the retracting motion ).
- In this position tighten the accessible screw 2.
- Remove tripping lever 1 out of the control cam 3 by hand.
- Remove the C-clamp and tighten the remaining screws 2.

## 13.07.08 Scissor tripping-lever in relation to the control cam of the scissor

### Requirements

At the left point of reversal of the rock shaft 3

1. the roller of tripping lever 4 and the roller of back-racking lever 5 must be in the middle of control cam 6 and
2. there must be a distance of 0.3 mm between the roller of tripping lever 4 and the external circumference of control cam 6.



- Bring the needle bar to BDC and activate the tripping lever by hand.
- Loosen screws 1 and 2.
- Turn the handwheel in the direction of rotation until rock shaft 3 is at its left point of reversal.
- Move tripping lever 4 and back-racking lever 5 in accordance with requirement 1.
- Turn tripping lever 4 in accordance with requirement 2.
- In this position and observing requirement 1, tighten screw 1.



Screw 2 remains loosened for the following adjustment.

## 13.07.09 Control cam in relation to scissor

**Requirements**

1. The cutting motion must begin when the needle bar is 0.6 mm after TDC.
2. There must be a clearance of **9 mm** between control cams 2 and 4.

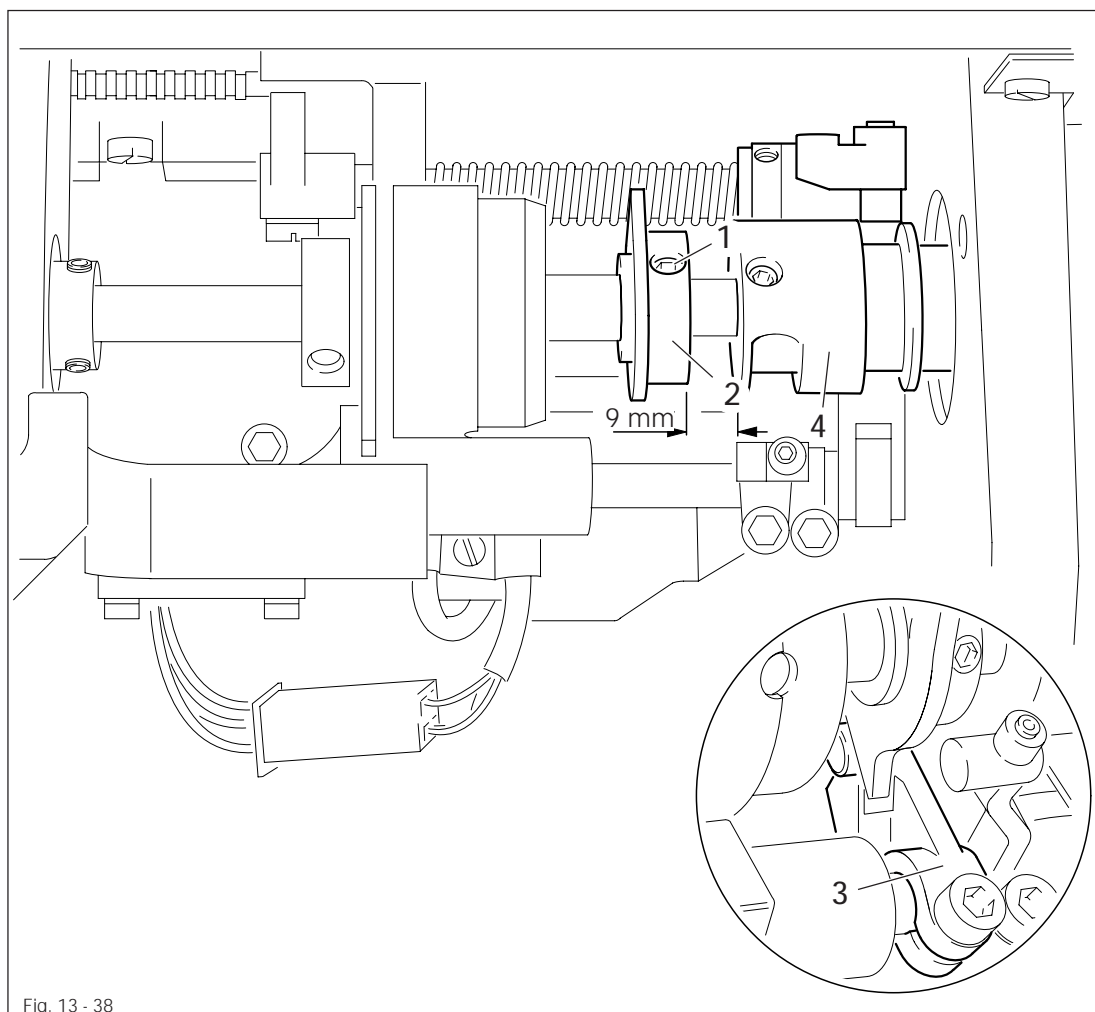
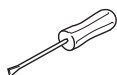


Fig. 13 - 38



- Loosen screws 1.
- Bring the needle bar to BDC and activate the engaging lever by hand.
- Bring the needle bar to 0.6 mm after TDC ( use adjustment gauge and C-clamp ).
- Turn control cam 2 until the trip is touching the roller of the tripping lever 3.
- Taking care that control cam 2 is **9 mm** from retractor cam 4, tighten one of the screws 1.
- Remove the C-clamp, make the second screw 1 accessible and tighten it.

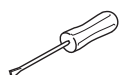
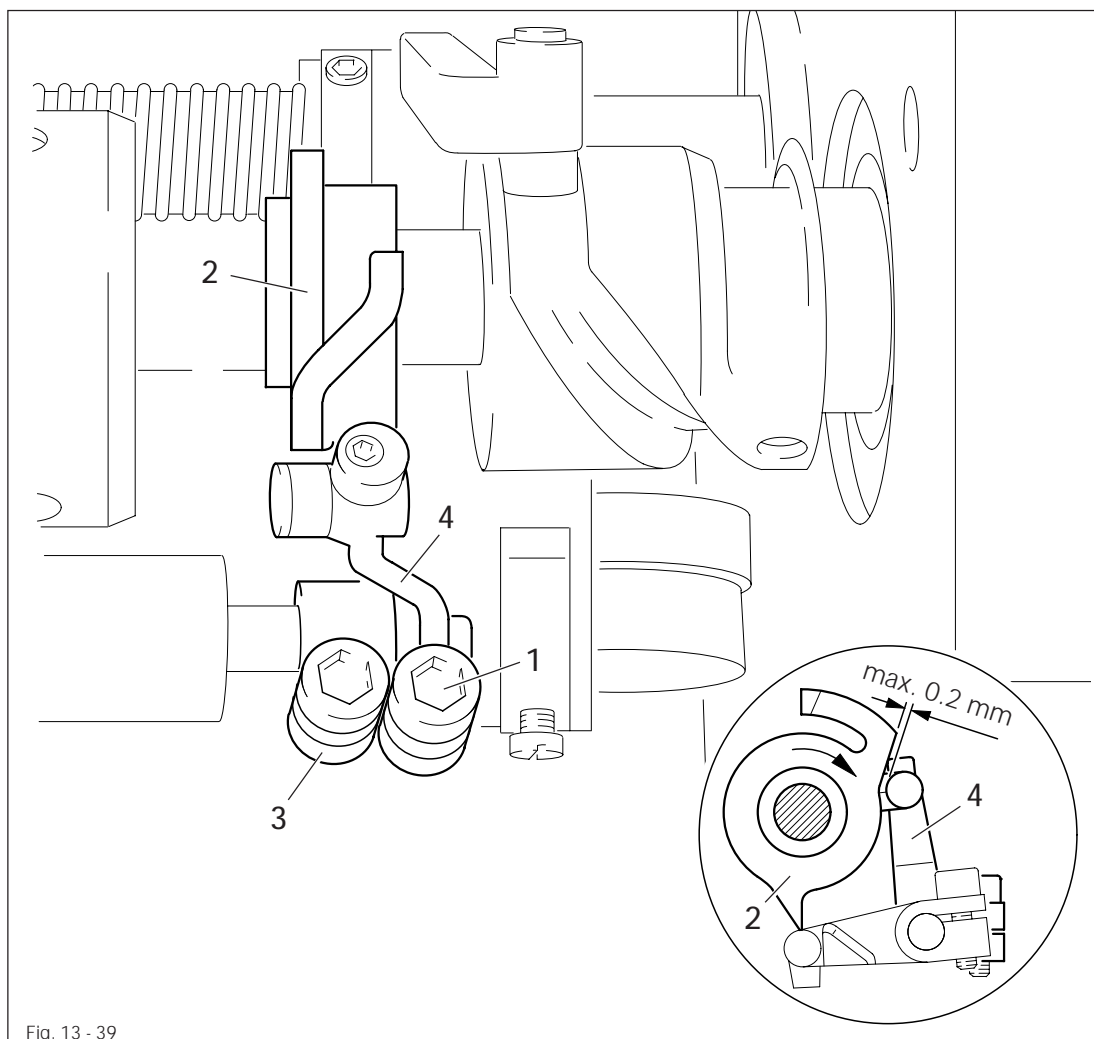


When using elastic sewing threads it can be necessary to set the relationship between the control cam and the bobbin opener and the scissors a little „later“ . A thread tension control ( subclass 906/10) is available for automatic tension-release with highly elastic sewing threads.

## 13.07.10 Scissor return lever

### Requirement

When the roller of tripping lever 3 is exactly at the point of the trip of control cam 2 the maximum distance between the roller of return lever 4 and control cam 2 must be 0.2 mm.



- Loosen screw 1.
- Bring the needle bar to BDC and activate the engaging lever by hand.
- Position the point of the trip of control cam 2 exactly at the middle of the roller of tripping lever 3 by turning the handwheel in the direction of sewing.
- Maintaining this position, bring the return lever 4 to rest against the side of tripping lever 3 and turn it radially in accordance with the **requirement**.
- Tighten screw 1.



## 13.07.11 Scissor return control

**Requirements**

1. When the point of the trip of control cam 1 is exactly at the roller of tripping lever 2 and trip 3 is touching the beginning of the angular edge of guide plate 5 ( see arrow ) there must be a clearance of approx. **0.6 mm** between trip 3 and guide plate 5.
2. When the rock shaft has sprung back to its starting position the maximum clearance between trip 3 and guide plate 5 must be **0.3 mm**.

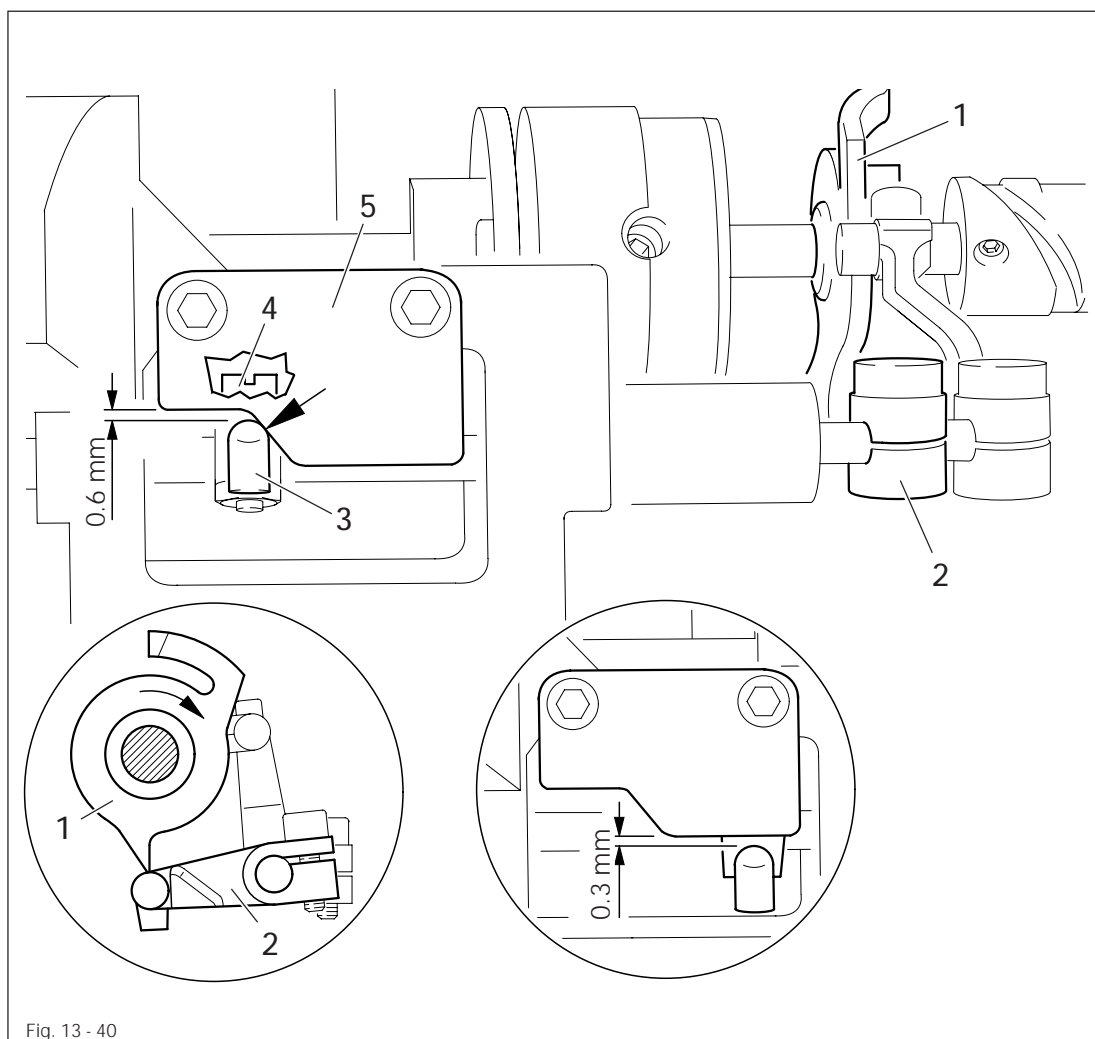
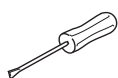


Fig. 13 - 40



- Position the point of the trip of control cam 1 exactly at the roller of tripping lever 2 by turning the handwheel.
- Move trip 3 ( screw 4 ) in accordance with **requirement 1**.
- Bring rock shaft back to its starting position.
- Check **requirement 2**. If necessary, position guide plate 5 appropriately.

## 13.07.12 Installing the scissor

### Requirements

1. The pin of bolt 4 must protrude into the cam tracks of the scissor halves.
2. The scissor must work with as little lateral play as possible.

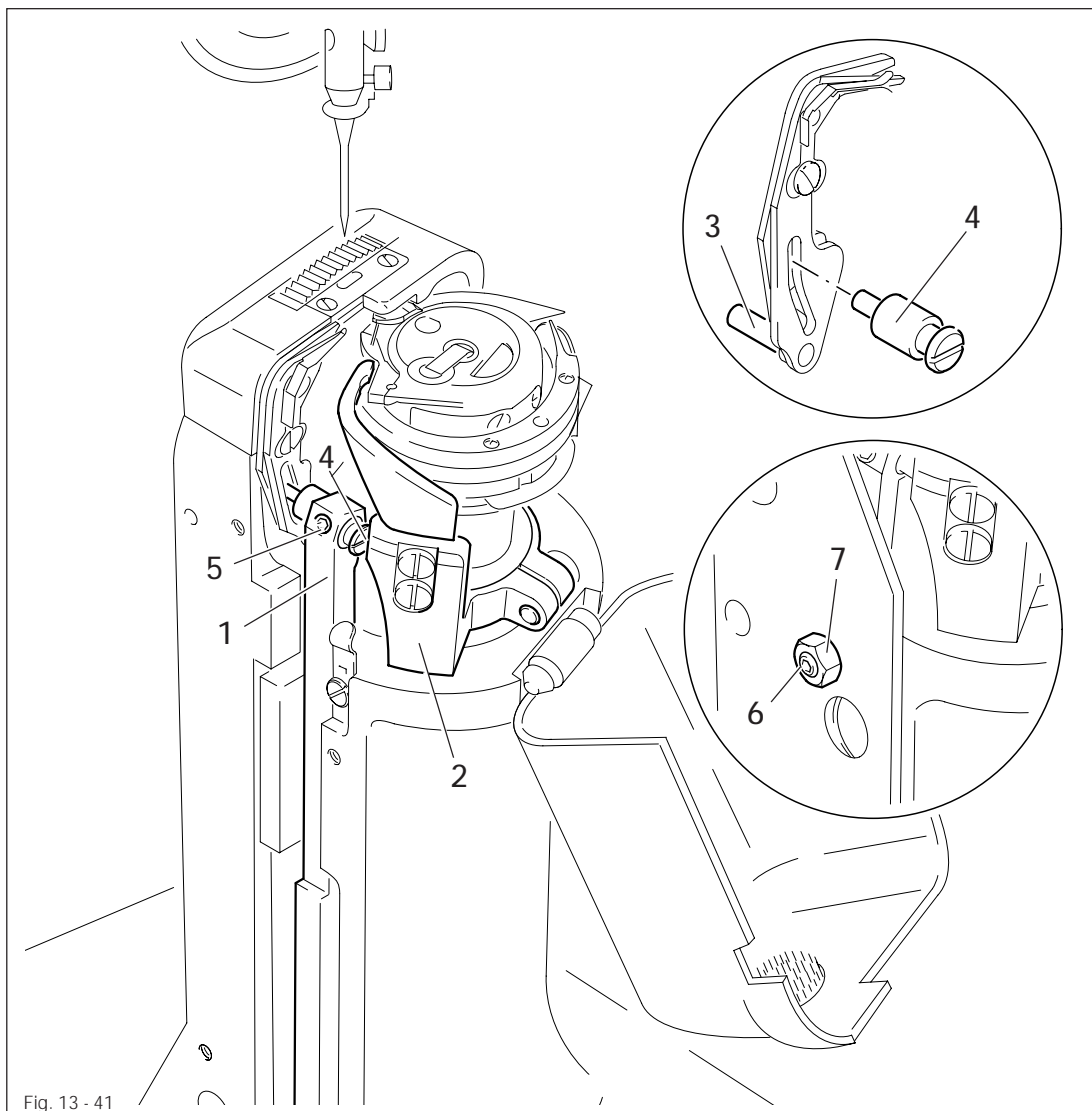
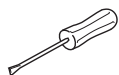


Fig. 13 - 41

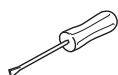
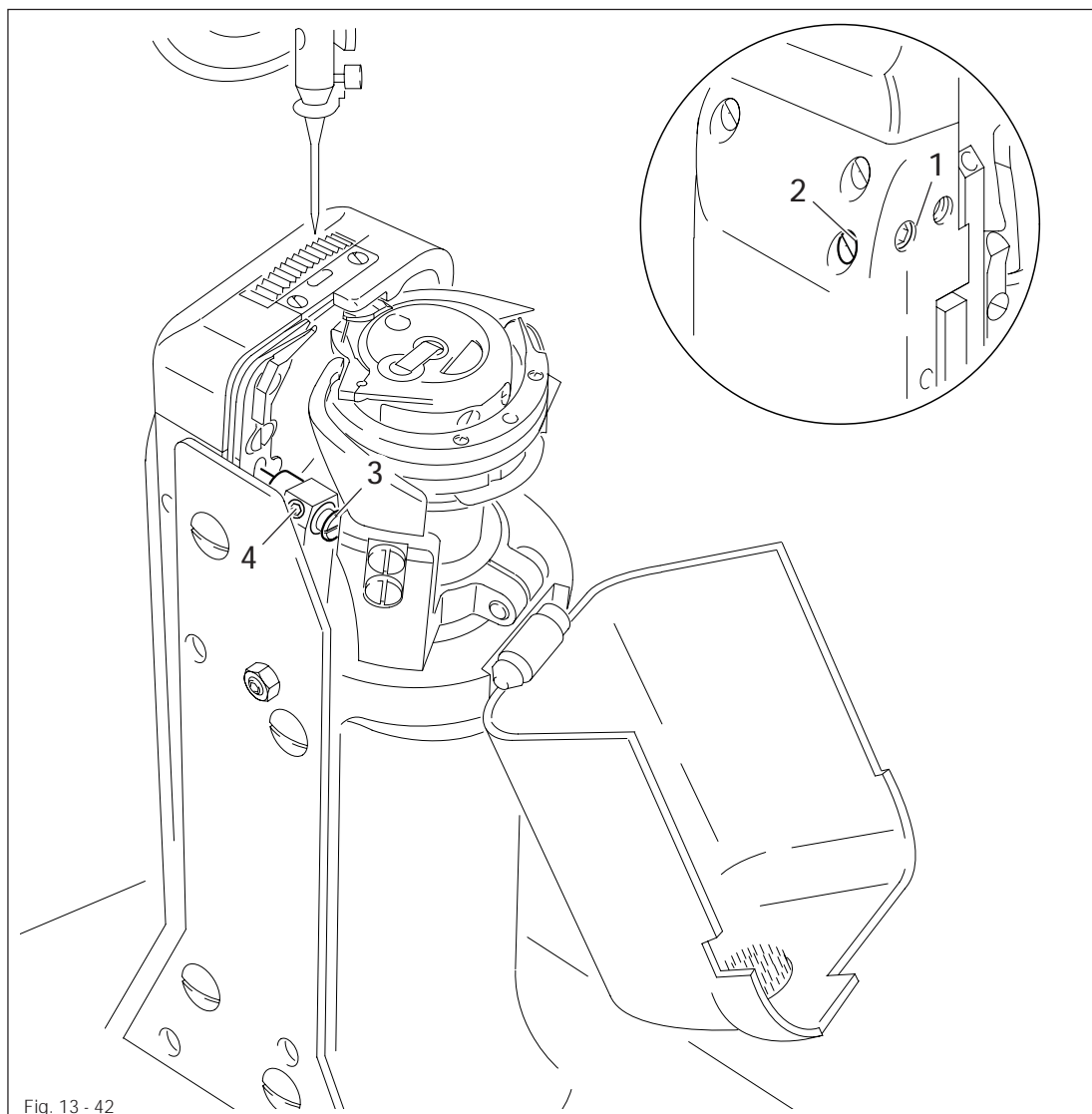


- Swing out drive bar 1.
- Swing out bobbin opener 2 by hand and hold it.
- Insert the scissor with its bearing pin 3 into the bearing bushing of the feed wheel post.
- Swing in drive bar 1 and insert pin 4 in accordance with **requirement 1**.
- Position the eccentricity of pin 4 so that it faces upwards.
- Tighten screw 5 and screw on the post cover plate.
- Check drive bar 1 for play and friction free running. If necessary, adjust with screw 6 (nut 7).

## 13.07.13 Eccentric sleeve

**Requirements**

1. In its starting position the scissor must be flush with the contour of the needle plate.
2. The scissor must lightly touch the needle plate and the eccentric sleeve 2.



- Loosen screw 1 enough so that eccentric sleeve 2 can still be turned.
- Turn eccentric sleeve 2 until the scissor is flush with the needle plate.
- Maintaining this position move eccentric sleeve 2 laterally in accordance with the requirement.
- Tighten screw 1.
- Press pin 3 ( screw 4 ) lightly against the scissor.

## 13.07.14 Scissor drive bar

### Requirements

1. In its starting position the scissor must be flush with the needle plate contour.
2. At the TDC of the drive bar 2 there must be a safety clearance of at least 0.3 mm between pin 5 and the top end of the cam guide.

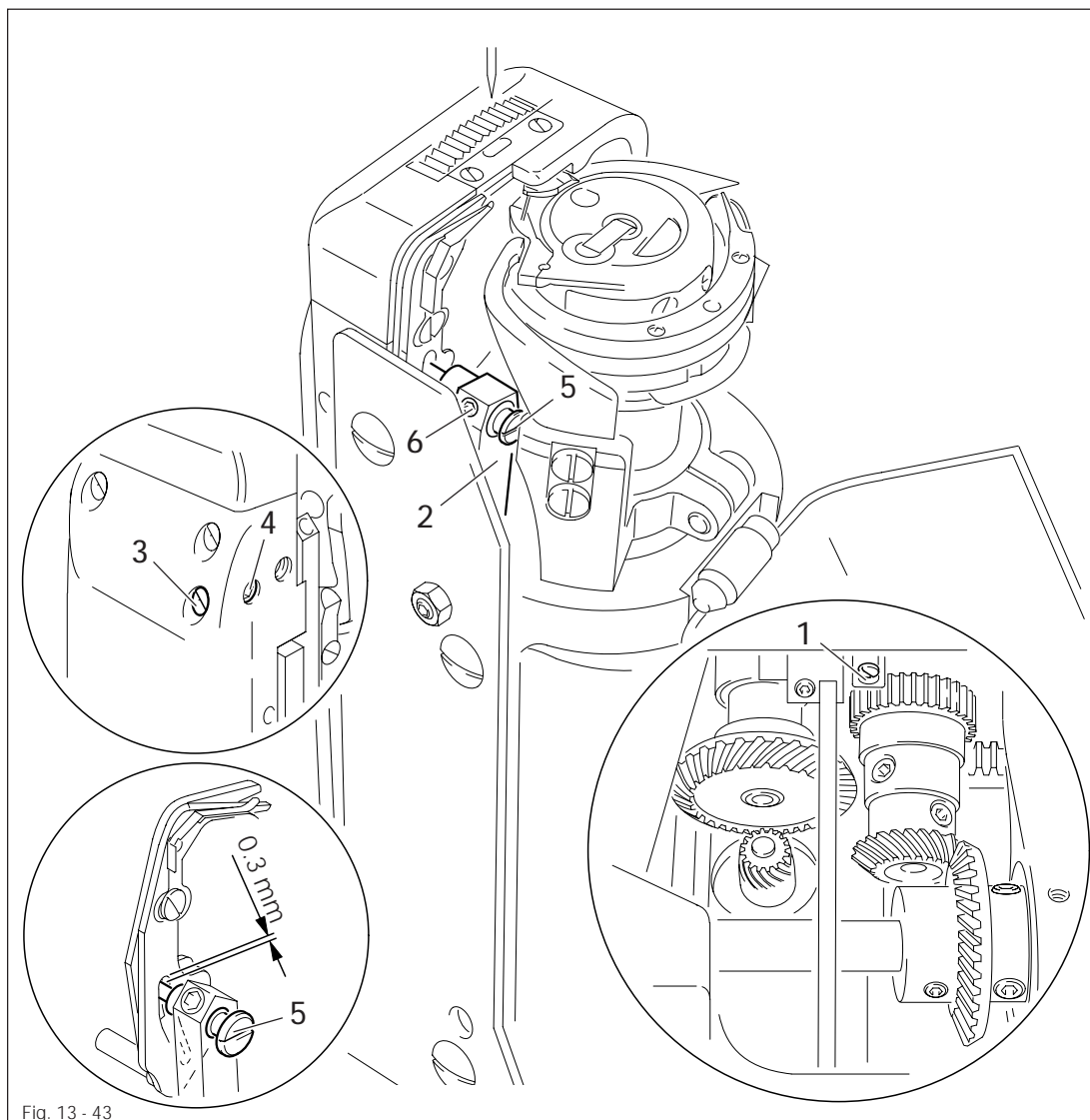
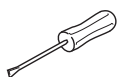


Fig. 13 - 43

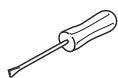
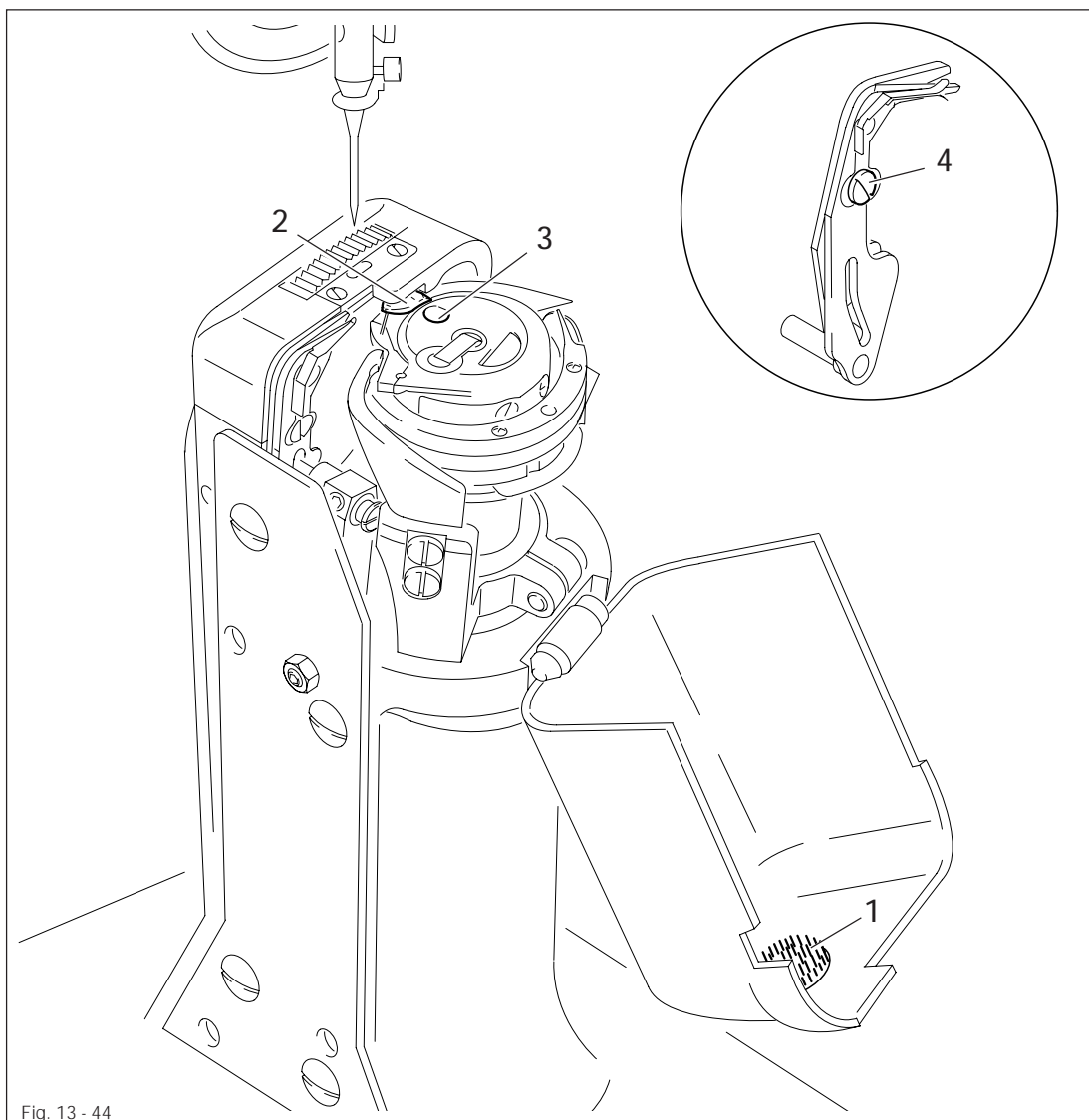


- Bring the needle bar to BDC and activate the engaging lever by hand.
- Bring drive bar 2 to its top point of reversal by turning the handwheel.
- Carry out the alteration on the drive bar 2 ( screw 1 ), the eccentric sleeve 3 ( screw 4 ) and/or the eccentric pin 5 ( screw 6 ) in accordance with the **requirement**.
- Check the **requirement** from chapter 13.07.13 Eccentric sleeve.
- Bring the trimming device to its starting position using the handwheel.

## 13.07.15 Scissor function test

**Requirements**

1. The threads must be cut neatly.
2. After being trimmed, the bobbin thread must be held securely by the thread trapper.



- Turn the machine on.
- Sew a few stitches and turn the on/off switch off.
- Activate the engaging lever by hand and close the post cover while ensuring that pressure disk 1 is stuck into the post cap.
- Bring the needle bar to TDC by turning the handwheel and open the post cover.
- In this position the needle and bobbin threads must be held by the catching lug of bobbin case 2 and the needle thread must be held by the catching lug of bobbin 3.
- If the needle thread is not held, stick in a new pressure disk 1 (part no. 91-119 492-91).
- Turn the handwheel and observe the cutting process.

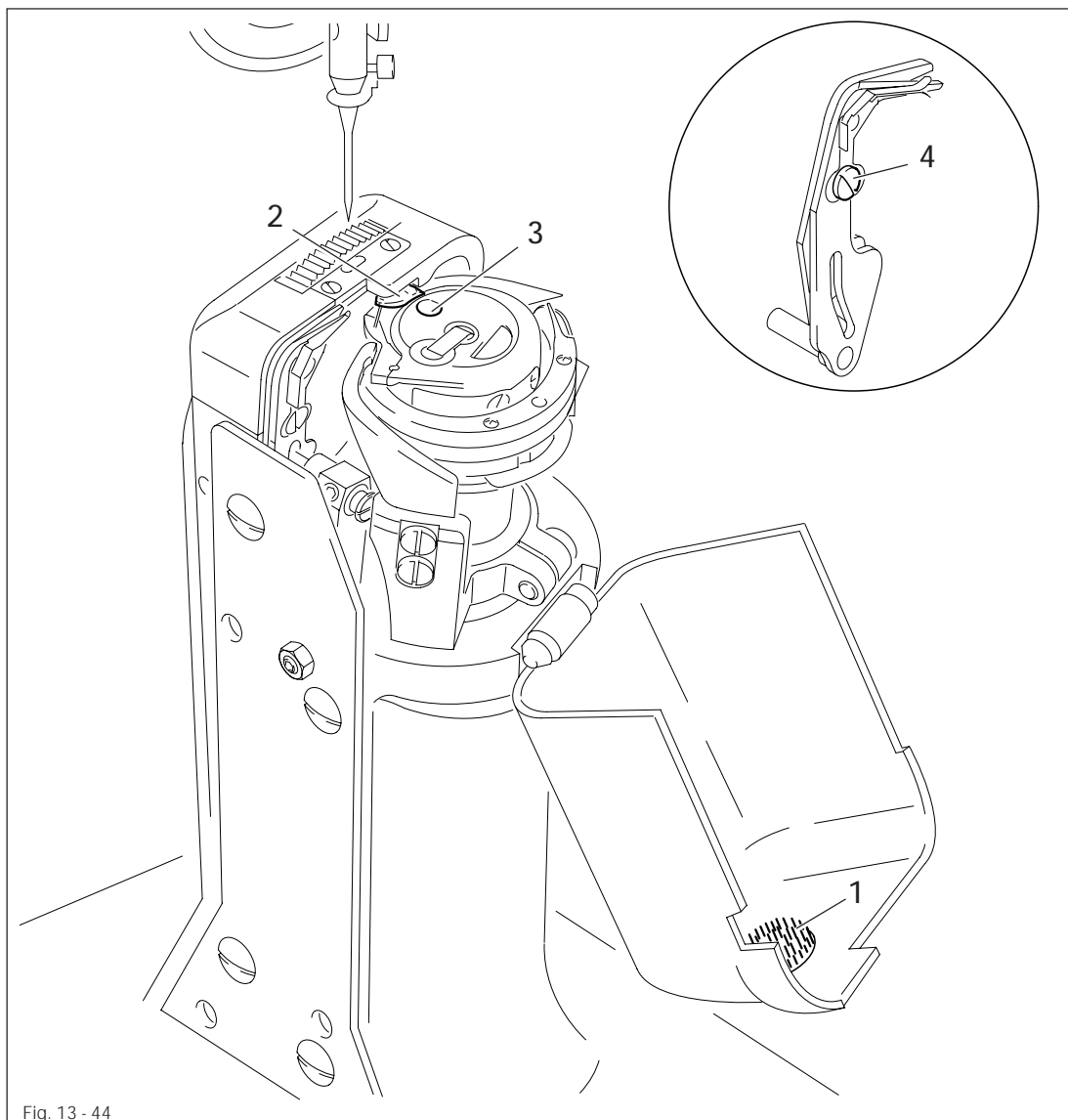


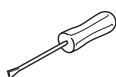
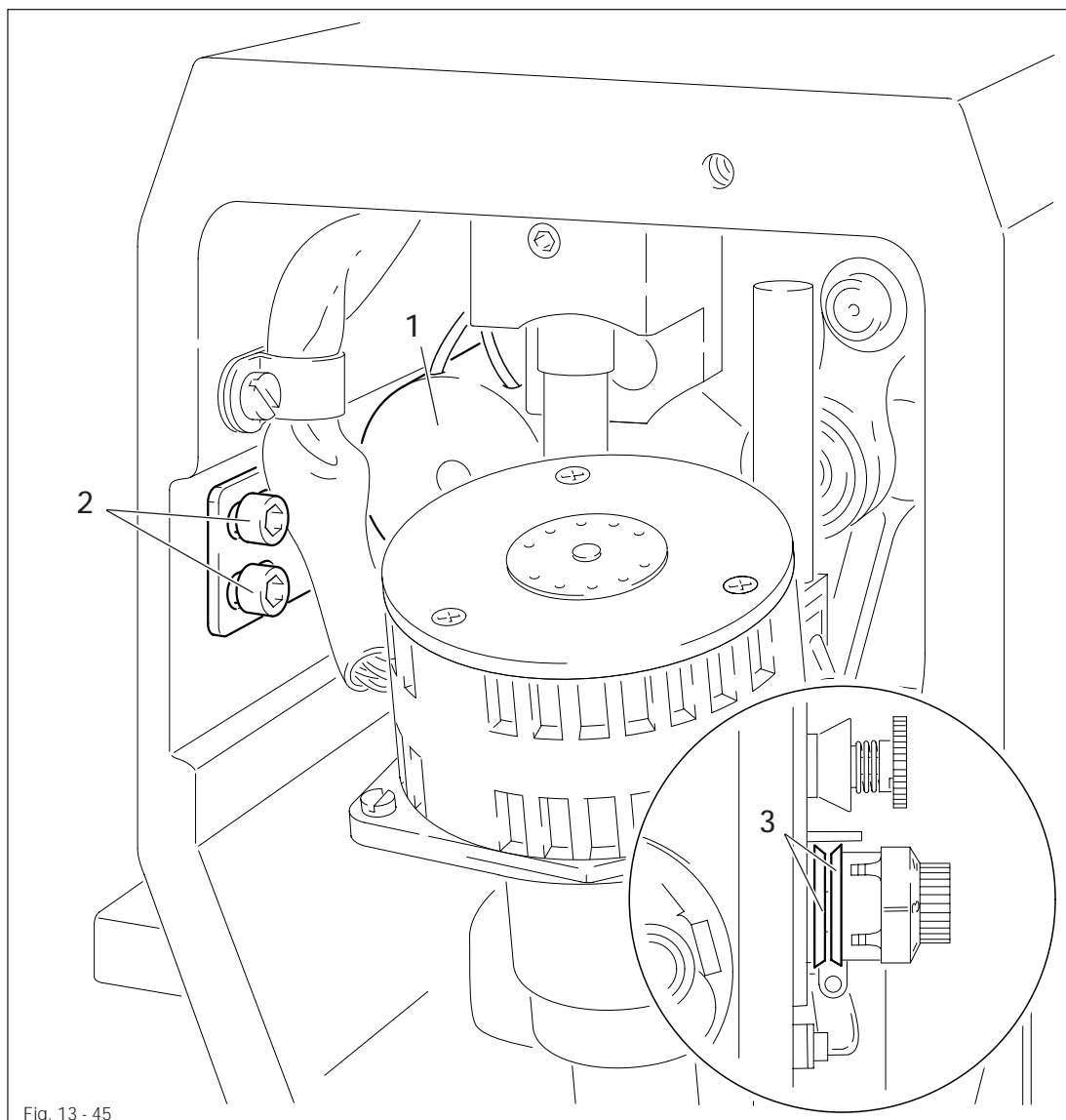
Fig. 13 - 44

- When the scissor is advancing, the thread trapper must first trap and hold the threads on the scissor ( if necessary adjust the thread trapper as required after loosening retaining screw 4 ).
- As the process continues, both the bobbin thread and the part of the thread loop closest to the scissor which is held by the catching lug must be cut reliably.
- If the threads are not cut or not cut cleanly check **chapter 13.07.14 Scissor drive bar** again.
- Carry out a check in accordance with the requirements.

## 13.08 Tension release (only on machines with thread tension control -906/10)

**Requirement**

With solenoid 1 activated the tension disks 3 must be at least 0.5 mm apart.



- Activate solenoid 1.
- Move solenoid 1 ( screws 2 ) in accordance with the requirement.



The timing of the tension release can be adjusted via the service functions ( see chapter 11.09 Summary of the service functions and chapter 13.09 Parameter adjustments ).

## 13.09 Parameter adjustments

### 13.09.01 Adjusting positions

- Turn the machine on



- Select INPUT mode.



- Select the input menu function (number key 0).



- Select the SERVICE function.



- Select the SEWING MOTOR function.



- Select the ADJUST POSITIONS function.

(The current parameter settings are shown in the display.)

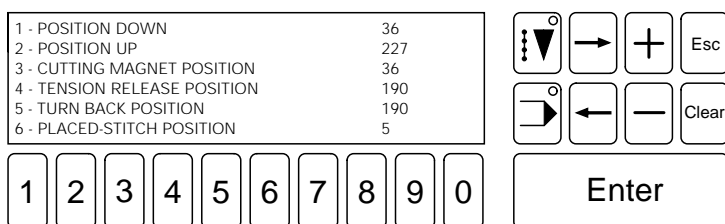


Fig. 13 - 46



The positions shown in Fig. 13 - 46 comply with the standard settings.

If these parameter settings are altered, an optimum sewing result cannot be guaranteed.

Adjusting the parameters:



to



- Select the parameter to be altered with the corresponding number key.

- Change the position by turning the handwheel.

Enter

- Confirm the alteration with the Enter key.



## 13.09.02 Adjusting the counter

- Turn the machine on.



- Select INPUT mode.



- Select the input menu function (number key 0).

3

- Select the COUNTER function.

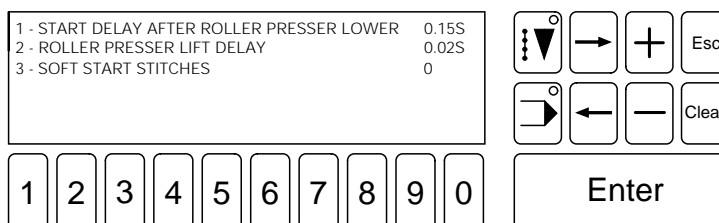


Fig. 13 - 47

Adjusting the parameters:

1 to 3

- Select the parameter to be altered with the corresponding number key.

- Enter the new value via the number keys (observe permissible values).

Enter

- Confirm the alteration with the Enter key.

## 13.09.03 Adjusting speeds

- Turn the machine on.



- Select INPUT mode.



- Select the input menu function (number key 0).

4

- Select the SPEED function.

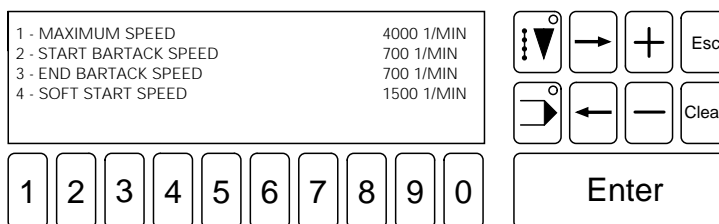


Fig. 13 - 48

- The speeds are adjustable as described in 13.09.02 Adjusting the counter.

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