

# PFAFF

## 2481-906/11

*plus line*

Instruction manual

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

# 2216531 →



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

Reprinting, copying or translation of PFAFF instruction manuals, whether in whole or in part, is not permitted without our prior permission and not without written indication of the source.

## **PFAFF Industrie Maschinen AG**

Postfach 3020  
D-67653 Kaiserslautern

Königstr. 154  
D-67655 Kaiserslautern

Redaktion / Illustration  
**Verlag Technische Dokumentation**  
D-77901

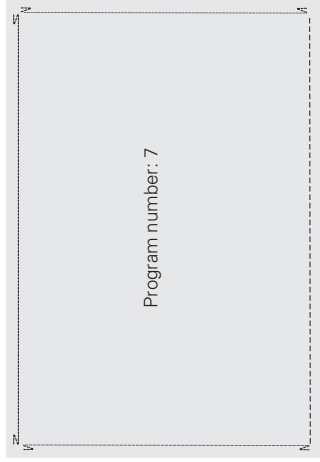




A. Example of recording of a seam program

Below a seam program input is described using the example of a pocket pouch with basted pocket opening.

Seam section 2



Seam section 1

Seam section 3

Seam section 4  
(basted seam)

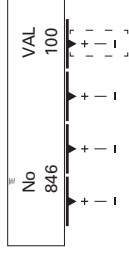
Overview of the input steps (example)

| Step | ➤ | # | ✳   | A/B | C/D | ⏪ | ⏩ | ⏹ | ⏸ | ⏹ | ⏹    | ⏹ |
|------|---|---|-----|-----|-----|---|---|---|---|---|------|---|
| 1    | 7 | 0 | 2.5 | -   | -   | - | - | - | - | - | -    | - |
| 2    | 7 | 1 | 2.5 | ●   | ●   | - | - | - | - | - | ●/25 | - |
| 3    | 7 | 2 | 2.5 | ●   | ●   | - | - | - | - | - | ●/57 | - |
| 4    | 7 | 3 | 2.5 | ●   | ●   | - | - | - | - | - | ●/25 | - |
| 5    | 7 | 4 | 6.0 | -   | -   | - | - | - | - | - | ●/23 | - |
| 6    | 7 | 5 | 0.0 | -   | -   | - | - | - | - | - | -    | - |
| 7    | - | - | -   | -   | -   | - | - | - | - | - | -    | - |
| 8    | - | - | -   | -   | -   | - | - | - | - | - | -    | - |
| 9    | - | - | -   | -   | -   | - | - | - | - | - | -    | - |
| 10   | - | - | -   | -   | -   | - | - | - | - | - | -    | - |

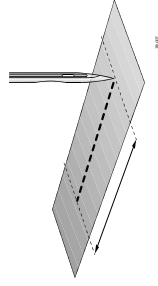
1.3 continued



- Set the value for parameter **846** at **100**, see **Section 1.1**.



- Thread the machine.
- Place the workpiece under the presser foot.
- Sew a seam with at least 20 stitches.
- Measure the length of the seam over 20 stitches and calculate the **actual stitch length**.  
e.g. 35 mm/20 = 1.75 mm
- If the difference, measured over 20 stitches, is larger than +/- 0.5 mm, the value for parameter **846** must be corrected.

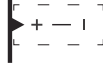


Correcting the setting

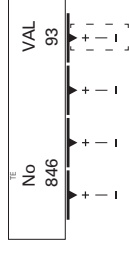
- Take the value for parameter **846** from **table 1.3** in **Section 4** or calculate it with the aid of the opposite formula.

Example:  $\frac{2,00 \text{ mm}}{2,15 \text{ mm}} \times 100 = 93.02$   
=> Value: **91**

Set stitch length \_\_\_\_\_ x 100  
Actual stitch length



- Select the calculated value for parameter **846**, see **Section 1.1**



1.4

Adjusting the reverse stitch length

Calculating the deviation

- Press and hold key **1** on the machine head and calculate the deviation as in **Section 1.3**.

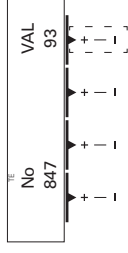
Correcting the setting

- Calculate the value for parameter **847** as described in **Section 1.3**.



Set stitch length \_\_\_\_\_ x 100  
Actual stitch length

- Select the calculated value for parameter **847**, see **Section 1.1**.



2.

Tables

Table 1.3 / Values for the adjustment of the feed regulator (static)

| Length over<br>20 stitches | Stitch length 3.0 mm                |                            | Stitch length 2.5 mm                |                            | Stitch length 2.0 mm                |                            | Stitch length 1.5 mm                |                            |
|----------------------------|-------------------------------------|----------------------------|-------------------------------------|----------------------------|-------------------------------------|----------------------------|-------------------------------------|----------------------------|
|                            | Value for<br>parameter<br>846 / 847 | Length over<br>20 stitches | Value for<br>parameter<br>846 / 847 | Length over<br>20 stitches | Value for<br>parameter<br>846 / 847 | Length over<br>20 stitches | Value for<br>parameter<br>846 / 847 | Length over<br>20 stitches |
| 58.5                       | 102                                 | 48.5                       | 103                                 | 38.5                       | 104                                 | 28.5                       | 105                                 | 28.5                       |
| 59.0                       | 102                                 | 49.0                       | 102                                 | 39.0                       | 103                                 | 29.0                       | 103                                 | 29.0                       |
| 59.5                       | 101                                 | 49.5                       | 101                                 | 39.5                       | 101                                 | 29.5                       | 102                                 | 29.5                       |
| 60.0                       | 100                                 | 50.0                       | 100                                 | 40.0                       | 100                                 | 30.0                       | 100                                 | 30.0                       |
| 60.5                       | 99                                  | 50.5                       | 99                                  | 40.5                       | 99                                  | 30.5                       | 98                                  | 30.5                       |
| 61.0                       | 98                                  | 51.0                       | 98                                  | 41.0                       | 97                                  | 31.0                       | 97                                  | 31.0                       |
| 61.5                       | 98                                  | 51.5                       | 97                                  | 41.5                       | 96                                  | 31.5                       | 95                                  | 31.5                       |
| 62.0                       | 97                                  | 52.0                       | 96                                  | 42.0                       | 95                                  | 32.0                       | 94                                  | 32.0                       |
| 62.5                       | 96                                  | 52.5                       | 95                                  | 42.5                       | 94                                  | 32.5                       | 92                                  | 32.5                       |
| 63.0                       | 95                                  | 53.0                       | 94                                  | 43.0                       | 93                                  |                            |                                     |                            |
| 63.5                       | 94                                  | 53.5                       | 93                                  | 43.5                       | 92                                  |                            |                                     |                            |
| 64.0                       | 94                                  | 54.0                       | 93                                  |                            |                                     |                            |                                     |                            |
| 64.5                       | 93                                  | 54.5                       | 92                                  |                            |                                     |                            |                                     |                            |
| 65.0                       | 92                                  |                            |                                     |                            |                                     |                            |                                     |                            |



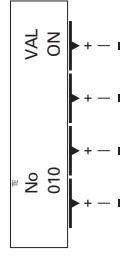
All values for stitch lengths not listed can be calculated with the aid of the following formula:

$$\frac{\text{Set stitch length}}{\text{Actual stitch length}} \times 100$$

3.

Setting the thread tension

- Switch on the machine.
- Press the TE/Speed key twice.



Thread tension of the securing seams

- By pressing the corresponding +/- keys, select parameter „862“.

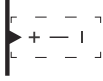


- By pressing the corresponding +/- key, select the value for parameter „862“ (setting range: 0 – 63).

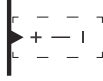


Thread tension of the basting seams

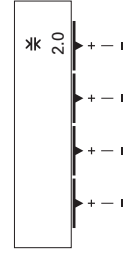
- By pressing the corresponding +/- keys, select parameter „863“.



- By pressing the corresponding +/- key, select the value for parameter „863“ (setting range: 0 – 63).



- Conclude the parameter input by pressing the TE/Speed key. The altered values are stored and the controller switches to the sewing mode.



|          |   | Chapter – Page |
|----------|---|----------------|
|          | 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          |
| 1.05     | Operating and specialist personnel .....                  | 1 - 3          |
| 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 2481-906/11 .....                                   | 3 - 1          |
| 3.02     | Models and subclasses .....                               | 3 - 1          |
| <b>4</b> | <b>Disposal of machine</b> .....                          | <b>4 - 1</b>   |
| <b>5</b> | <b>Transport, packaging and storage</b> .....             | <b>5 - 1</b>   |
| 5.01     | Transportation to customer's premises .....               | 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 elements</b> .....                             | <b>7 - 1</b>   |
| 7.01     | On/off switch .....                                       | 7 - 1          |
| 7.02     | Keys on machine head .....                                | 7 - 1          |
| 7.03     | Pedal .....   | 7 - 2          |
| 7.04     | Lever for lifting the presser foot .....                  | 7 - 2          |
| 7.05     | Knee switch .....   | 7 - 3          |
| 7.06     | Control panel .....                                       | 7 - 4          |
| 7.06.01  | Screen displays .....                                     | 7 - 4          |
| 7.06.02  | Function keys .....                                       | 7 - 4          |
| <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  | Mounting the spool holder .....                           | 8 - 2          |
| 8.01.03  | Connecting the plug-in connections and earth cables ..... | 8 - 3          |
| 8.02     | Commissioning .....                                       | 8 - 4          |
| 8.03     | Switching the machine on/off .....                        | 8 - 4          |
| 8.04     | Start inhibitor .....                                     | 8 - 5          |
| 8.04.01  | Mounting the start inhibitor .....                        | 8 - 5          |

---

# Contents

---

|           | Contents .....  | Chapter – Page |
|-----------|---|----------------|
| 8.04.02   | Checking the function of the start inhibitor .....                        | 8 - 5          |
| 8.05      | Table top cutout .....  | 8 - 6          |
| <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      | Inserting the bobbin in the bobbin case .....                             | 9 - 3          |
| 9.05      | Threading the bobbin case / Adjusting the bobbin thread tension .....     | 9 - 4          |
| 9.06      | Threading the needle thread .....   | 9 - 5          |
| 9.07      | Entering the stitch length .....  | 9 - 6          |
| 9.08      | Entering the maximum stitch length .....                                  | 9 - 6          |
| 9.09      | Entering the maximum speed .....  | 9 - 7          |
| 9.10      | Setting the remaining stitches for the bobbin thread control .....        | 9 - 7          |
| 9.11      | Entering the start and end backtacks .....                                | 9 - 8          |
| <b>10</b> | <b>Sewing .....</b>   | <b>10 - 1</b>  |
| 10.01     | Manual sewing .....   | 10 - 1         |
| 10.02     | Programmed sewing .....   | 10 - 2         |
| 10.03     | Error messages .....  | 10 - 3         |
| <b>11</b> | <b>Input .....</b>  | <b>11 - 1</b>  |
| 11.01     | Seam program input .....  | 11 - 1         |
| 11.02     | Example of a seam program input .....                                     | 11 - 1         |
| <b>12</b> | <b>Care and Maintenance .....</b>   | <b>12 - 1</b>  |
| 12.01     | Cleaning the machine .....  | 12 - 1         |
| 12.02     | Topping up the oil tank .....   | 12 - 2         |
| <b>13</b> | <b>Adjustment .....</b>   | <b>13 - 1</b>  |
| 13.01     | Notes on adjustment .....   | 13 - 1         |
| 13.02     | Tools, gauges and other accessories .....                                 | 13 - 1         |
| 13.03     | Abbreviations .....   | 13 - 1         |
| 13.04     | Control and adjustment aids .....   | 13 - 2         |
| 13.05     | Adjusting the basic machine .....   | 13 - 3         |
| 13.05.01  | Basic position of the machine drive unit .....                            | 13 - 3         |
| 13.05.02  | Preadjusting the needle height .....                                      | 13 - 4         |
| 13.05.03  | Neutral position of the bottom feed dog .....                             | 13 - 5         |
| 13.05.04  | Zero position of the needle feed .....                                    | 13 - 6         |
| 13.05.05  | Feeding motion of the bottom feed dog .....                               | 13 - 7         |
| 13.05.06  | Feeding motion of the needle feed .....                                   | 13 - 8         |
| 13.05.07  | Lifting stroke of the bottom feed dog .....                               | 13 - 9         |
| 13.05.08  | Height of the bottom feed dog / Position in the needle plate cutout ..... | 13 - 10        |
| 13.05.09  | Needle in needle hole centre .....  | 13 - 11        |
| 13.05.10  | Hook shaft bearing and toothed belt tension .....                         | 13 - 12        |



|           | Contents .....  | Chapter – Page |
|-----------|---|----------------|
| 13.05.11  | Hook lubrication .....  | 13 - 13        |
| 13.05.12  | Needle rise, hook-to-needle clearance, needle height and bobbin case position finger .. | 13 - 14        |
| 13.05.13  | Thread check spring and slack thread regulator .....                                    | 13 - 16        |
| 13.05.14  | Presser foot clearance .....  | 13 - 17        |
| 13.05.15  | Setting the zero point of the feed regulator .....                                      | 13 - 18        |
| 13.05.16  | Stitch length adjustment forwards and in reverse .....                                  | 13 - 19        |
| 13.05.17  | Bobbin winder .....   | 13 - 20        |
| 13.05.18  | Mechanical limiting of the stitch length .....  | 13 - 21        |
| 13.05.19  | Presser foot pressure .....   | 13 - 22        |
| 13.06     | Adjusting the thread trimming device -900/24 .....                                      | 13 - 23        |
| 13.06.01  | Adjusting the solenoid / preliminary adjustment of the control cam .....                | 13 - 23        |
| 13.06.02  | Lateral alignment of the thread catcher .....   | 13 - 24        |
| 13.06.03  | Knife position .....  | 13 - 25        |
| 13.06.04  | Front point of reversal of the thread catcher .....                                     | 13 - 26        |
| 13.06.05  | Manual trimming check .....   | 13 - 27        |
| 13.06.06  | Thread tension release .....  | 13 - 28        |
| 13.06.07  | Readjusting the control cam .....   | 13 - 29        |
| 13.07     | Function control of the bobbin thread monitor .....                                     | 13 - 30        |
| 13.08     | Parameter settings .....  | 13 - 31        |
| 13.08.01  | Example of a parameter input .....  | 13 - 31        |
| 13.08.02  | Selecting the user level .....  | 13 - 32        |
| 13.08.03  | List of parameters .....  | 13 - 33        |
| 13.09     | Explanation of the error messages .....   | 13 - 40        |
| 13.10     | Service functions .....   | 13 - 41        |
| 13.11     | Internet update of the machine software .....   | 13 - 46        |
| <b>14</b> | <b>Wearing parts .....</b>  | <b>14 - 1</b>  |
| <b>15</b> | <b>Circuit diagrams .....</b>   | <b>15 - 1</b>  |

## 1 Safety

### 1.01 Directives

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

In addition to this Instruction Manual, also observe all generally accepted, statutory and other regulations and legal requirements and all valid environmental protection regulations!

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

### 1.02 General notes on safety

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



Electric voltage!  
Danger to operating or technical staff!



#### Caution

Do not operate without finger guard and safety devices.  
Before threading, changing bobbin and needle, cleaning etc. **switch off main switch.**

### 1.04 Important points for the user

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

Further information can be obtained from your PFAFF 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 for taking care of problems arising in the sewing area.

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

- always observe the Notes on Safety in the Instruction Manual!
- never use any working methods which could adversely affect the safety of the machine!
- not wear loose-fitting clothing or jewelry 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!
- wait until the luminous diode on the control box is no longer blinking or on before beginning adjustment or repair work.
- never work on parts which are still connected to the power supply! Exceptions are explained in the regulations EN 50110.
- replace the protective coverings and close the electrical control box after all repairs or maintenance work!

1.06

Danger



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



Never reach into the sewing area while sewing! Danger of injury by the needle!



Never leave objects on the table while adjusting the machine settings! Objects can become trapped or be slung away! Danger of injury!

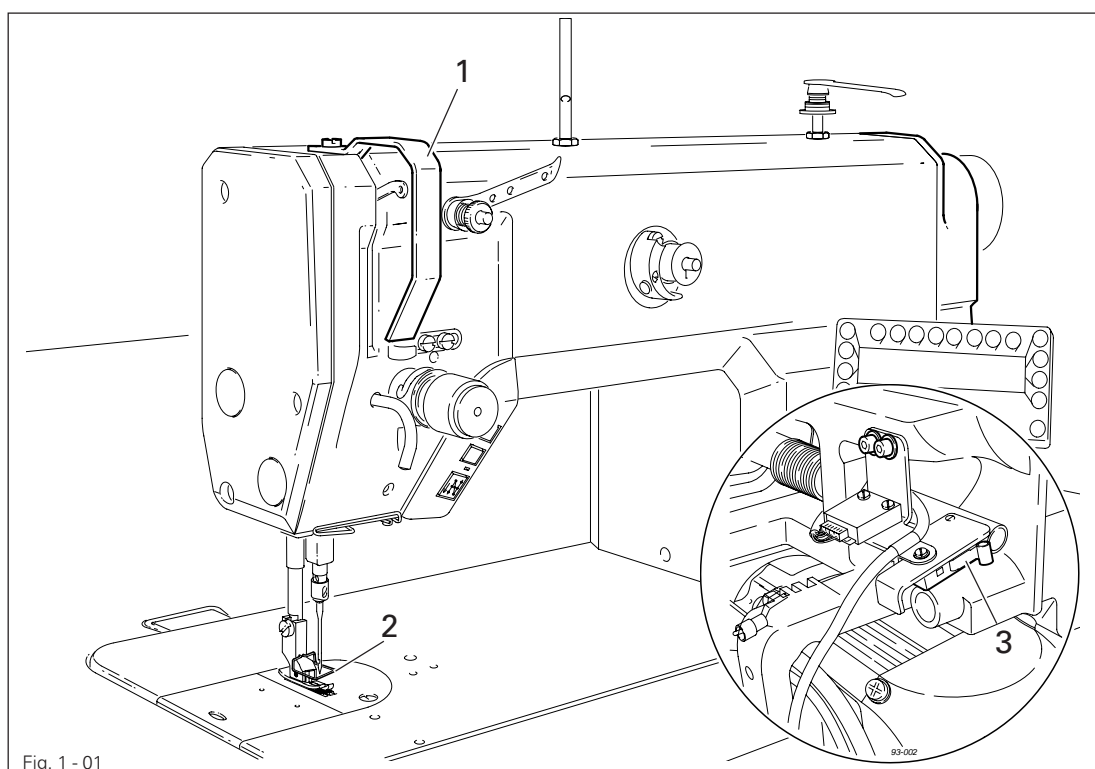


Fig. 1 - 01



Do not operate the machine without its take-up lever guard **1!**  
Danger of injury due to the motion of the take-up lever!



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



Do not start the machine without start inhibitor **3!**  
Danger of injury if the machine is started accidentally!

2

### Proper use

The PFAFF 2481-906/11 is an ultra high-speed, single needle sewing machine with compound feed.

The machine is used in industry for sewing lockstitch seams.



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 2481-906/11**

|   |                        |
|---|------------------------|
| Stitch type: .....  | 301 (lockstitch)       |
| Needle system: .....  | 134                    |
| Needle size in 1/100 mm: .....  |                        |
| Model A: .....  | 60 - 70                |
| Model B: .....  | 80 - 100               |
| Effective balance wheel diameter: .....   | 65 mm                  |
| Presser foot clearance: .....   | 9 - 13 mm              |
| Clearance width: .....  | 260 mm                 |
| Clearance height: .....   | 125 mm                 |
| Bed plate dimensions: .....   | 476 x 177 mm           |
| Sewing head dimensions:   |                        |
| Length: .....   | ca. 550 mm             |
| Width: .....  | ca. 180 mm             |
| Height (above table): .....   | ca. 300 mm             |
| Max. stitch length: .....   | 6.0 mm                 |
| Max. speed: .....   | 4500 spm ♦             |
| Connection data:  |                        |
| Operating voltage: .....  | 230 V ± 10 %, 50/60 Hz |
| Max. power consumption: .....   | 400 VA                 |
| Fuse protection: .....  | 1 x 16 A, inert        |
| Noise data:   |                        |
| Noise emission level at workplace with a sewing speed of 3200 spm: .....                | $L_{pA} < 81$ dB(A) ■  |
| (Noise measurement in accordance with DIN 45 635-48-A-1, ISO 11204, ISO 3744, ISO 4871) |                        |
| Net weight of sewing head: .....  | ca. 30 kg              |
| Gross weight of sewing head: .....  | ca. 38 kg              |

▲ Subject to alterations

♦ Depending on the stitch length, the max. speed is reduced automatically within the max. preset value.

■  $K_{pA} = 2.5$  dB

**3.02 Models and subclasses**

Model B: ..... for sewing medium-weight materials

**Additional equipment:**

Sub-class -909/04 ..... Thread wiper

### 4 Disposal of machine

- The proper disposal of the machine 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 Transportation to customer's premises**

The machines are delivered completely packed.

#### **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. Make sure that the machines are always transported upright.

#### **5.03 Disposal of the packaging**

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

#### **5.04 Storage**

The machine can be stored for up to 6 months if not in use. During this time it should be protected from dust and moisture.

For longer storage the individual parts of the machine, especially the moving parts, must be protected from corrosion, e.g. by a film of oil.

---

## Explanation of the symbols

---

### 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:



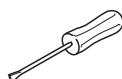
Note, information



Cleaning, care



Lubrication, greasing



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

7 Control elements

7.01 On/off switch

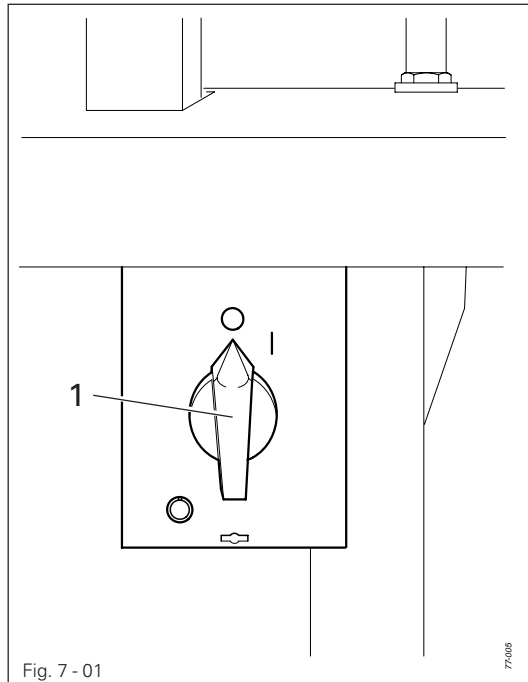


Fig. 7 - 01



Before switching on the machine, raise the take-up lever as far as possible.

- The machine can be switched on or off by turning the on/off switch 1.

7.02 Keys on machine head

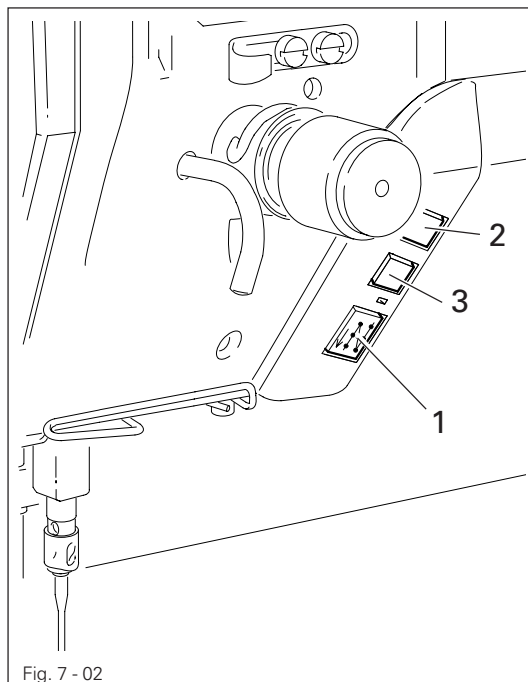


Fig. 7 - 02

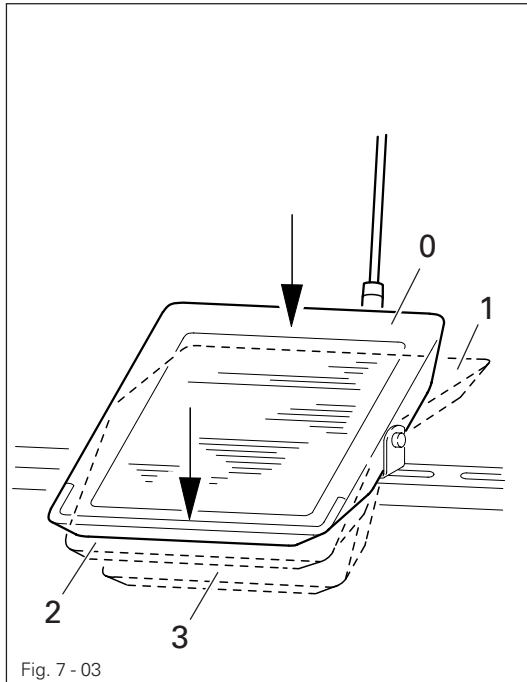
- By operating the respective keys, the following functions are carried out:

Key 1: Reverse sewing

Key 2: Raise the needle, without thread trimming

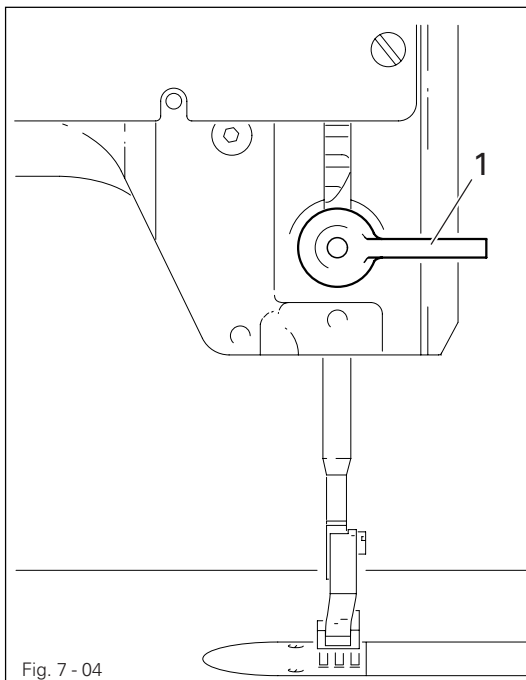
Key 3: Bartack suppression

## 7.03 Pedal



- 0 = Neutral position
- 1 = Sewing
- 2 = Raise presser foot
- 3 = Cut thread / reset bobbin thread monitor or bobbin rest thread count function

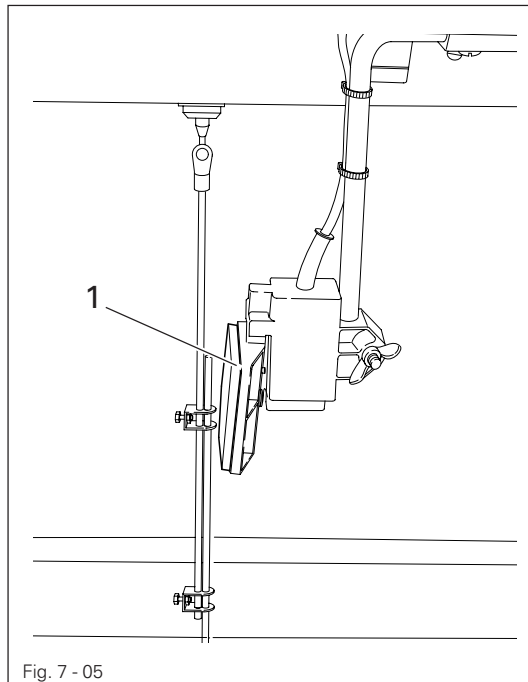
## 7.04 Lever for lifting the presser foot



- The presser foot is raised by turning lever 1.

7.05

Knee switch



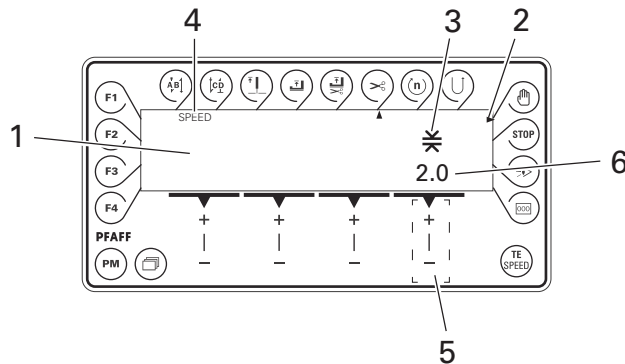
- After knee switch 1 has been pressed, the maximum stitch length is used for the next seam section.



The value for the maximum stitch length is set with parameter "849", see **Chapter 9.08 Entering the maximum stitch length.**

## 7.06 Control panel

The control panel is used to create and alter seam programs, enter parameter values and read error messages and service settings.



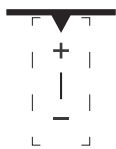
The control panel consists of display 1 and the function keys described below. Display 1 consists of a two-row, alpha-numerical display with 16 symbols per row. The special symbols 3 and texts 4 show the respective status of the function keys and the operating modes of the machine.

During the power-on phase the control panel automatically switches on all LCD segments and the horn. Afterwards the lettering PFAFF appears on the display, until the higher-ranking control unit sends commands to the control panel.

### 7.06.01 Screen displays

- Activated functions are displayed with a triangular marking 2 below or next to the respective function key.
- In the sewing mode all relevant sewing data is displayed and these can be changed directly, depending on the status of the machine, see also **Chapter 10 Sewing**.
- During the parameter input the selected parameter number with the corresponding value is displayed, see **Chapter 13.08 Parameter settings**.
- During the seam program input the inputs are carried out in relevant input menus, see **Chapter 11.01 Seam program input**.

### 7.06.02 Function keys



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

If a corresponding value has to be set for the activated function, this is carried out with the corresponding +/- key. For example, by pressing and holding the +/- key 5, the numerical value 6 shown above the key is changed slowly to begin with. If the +/- key 5 is held down longer, the numerical value 6 is changed more quickly.



### Start backtacks

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



### End backtacks

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



### Needle position

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



### Foot position after stop

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



### Foot position after trimming

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



### Thread trimmer

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



### Speed

- If this key is pressed the corresponding function is switched on or off. When the function is switched on, the current seam section is sewn at the speed entered irrespective of the pedal position (Parameter "222", see **Chapter 13.11 Parameter settings**).



### Reverse sewing

- If this key is pressed the corresponding function is switched on or off. When the function is switched during programmed sewing, the corresponding seam section is sewn in reverse.



### Manual seam end

- If this key is pressed the corresponding function is switched on or off. When the function is switched on, the move to the next seam section is not carried out by stitch counting or sensor, but manually with the use of the pedal (position "-2").



### Programmed stop

- If this key is pressed the corresponding function is switched on or off. When the function is switched on, the machine stops automatically at the end of a seam section.



### Sensor

- No function



### Stitch counting

- If this key is pressed the corresponding function is switched on or off. When the function is switched on, the machine moves to the next seam section after sewing the number of stitches entered.



### TE/Speed

- If this key is pressed once while the machine is in the sewing mode, the input menu for the maximum speed is selected. If no input is made within 5 seconds, the sewing mode is selected again.
- If this key is pressed twice (within 5 seconds) while the machine is in the sewing mode, the machine switches to parameter input.
- If this key is pressed once while the machine is in the parameter input mode, the altered values are stored and the sewing mode is selected.



### Scrolling

- If this key is pressed the machine scrolls among the displays (parameters), if more than 4 parameters are directly accessible in the sewing mode.



### PM

- If this key is pressed the programmed sewing function is switched on or off. When the function is switched on, the letters "PM" appear on the display of the control panel. The parameters related to the program are shown in the alpha-numerical part of the display.



### F1

- F1

If this key is pressed the service menu is selected, see **Chapter 13.10 Service functions**.



### F2

- No function



### F3

- No function



### F4

- If this key is pressed, the next bartack is not sewn.



## 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, be sure that the frame and the table top which you intend to use can hold the weight of the machine and the motor. It must be ensured that the supporting structure is sufficiently sturdy, even during sewing operations.

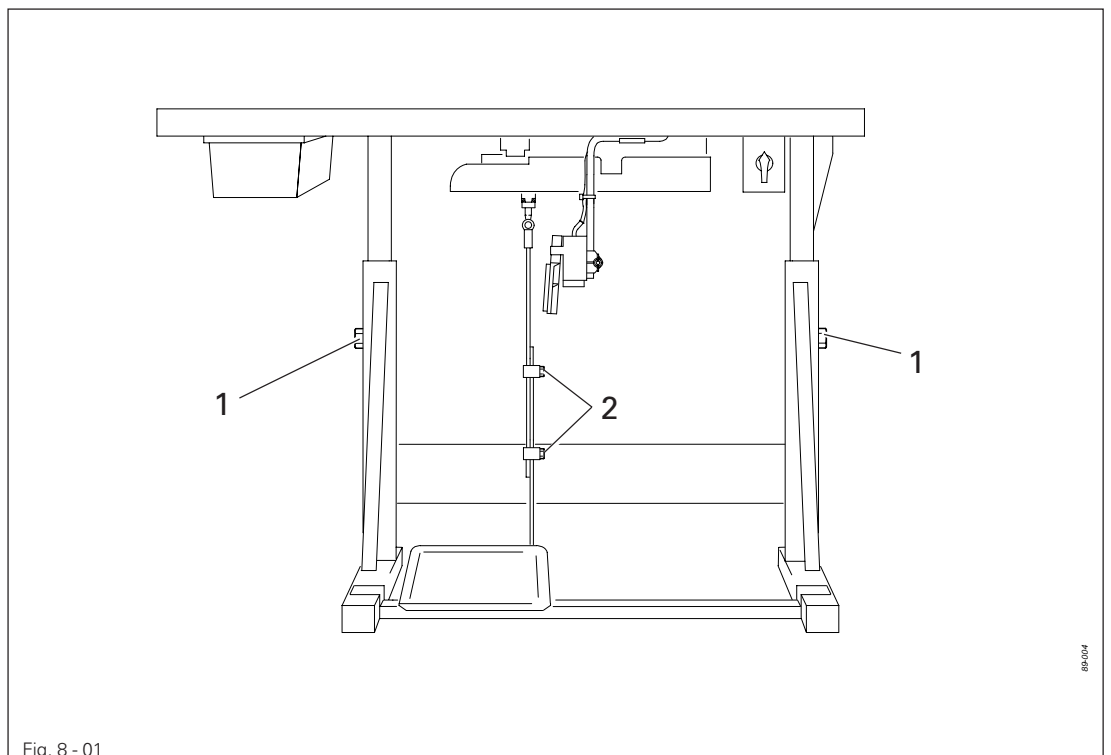
### 8.01 Mounting

The necessary electricity supply must be available at the machine's location. Also, a stable and horizontal surface as well as adequate lighting are required at the location.



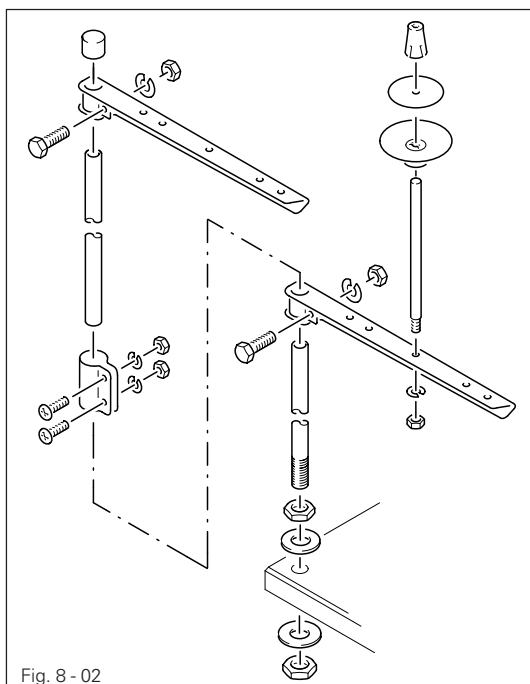
Depending on the type of table, the method of packaging used may require that the table top be lowered for transport. The following is a description of how to adjust the height of the table top.

#### 8.01.01 Adjusting the table-top height



- Loosen screws **1** and **2** and set the desired table-top height
- Tighten screws **1** well.
- Adjust the pedal to the desired position and tighten screw **2**.

## 8.01.02 Mounting the spool holder



- Mount the spool holder as shown in Fig. 8-02.
- Insert the spool holder into the hole in the table top and fasten it with the nuts enclosed.

## 8.01.03 Connecting the plug-in connections and earth cables

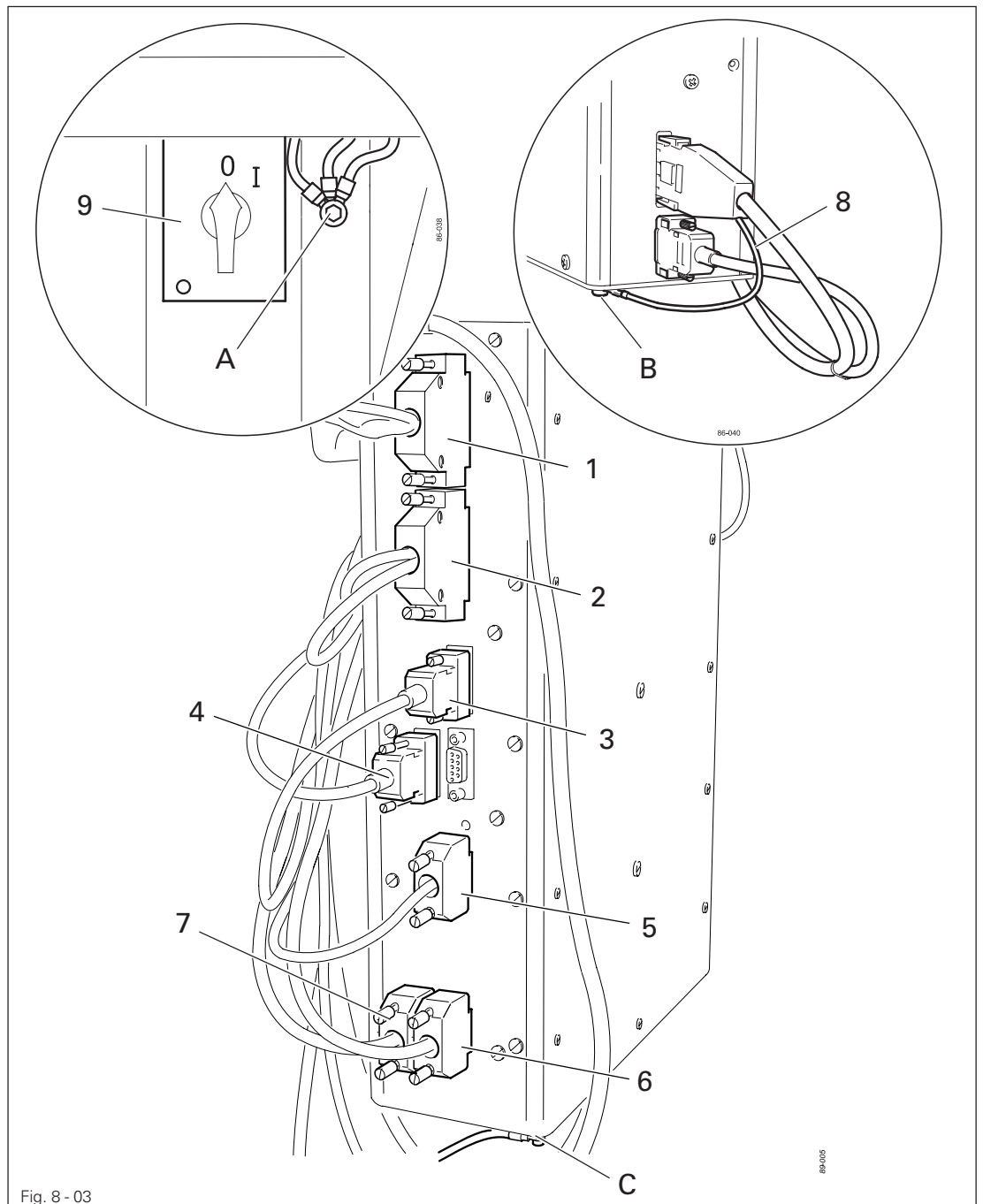
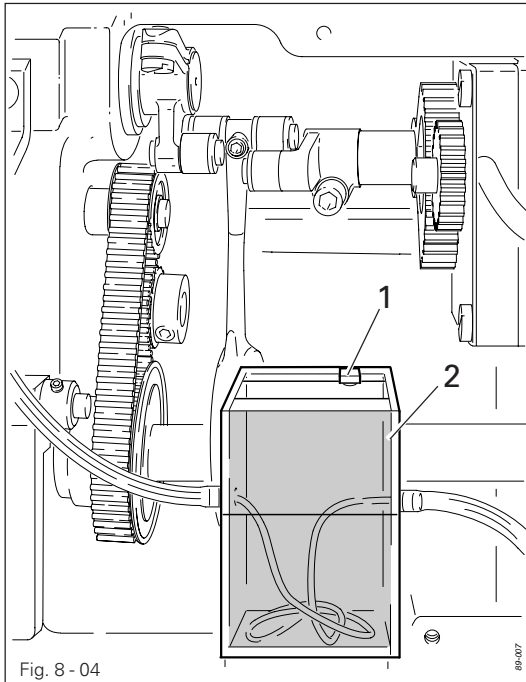


Fig. 8 - 03

- Connect plugs 1-7 as labelled to the control box.
- Screw the earth cable from the sewing head to earth point A.
- Screw the earth cable 8 from the motor to earth point B.
- Connect earth point C and earth point A with an earth cable.
- Fasten the earth cable of the main switch 9 to earth point A.

## 8.02

### Commissioning



- Before commissioning the machine remove plug 1 from the oil tank 2.



Danger of damage to the machine!

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

- Examine the machine, in particular the electric cables for any damage.
- Clean the machine thoroughly, see also **Chapter 12 Care and Maintenance**.
- Have qualified personnel check whether the machine can be operated with the available voltage and whether it is connected properly. If there are any irregularities do not operate the machine under any circumstances.

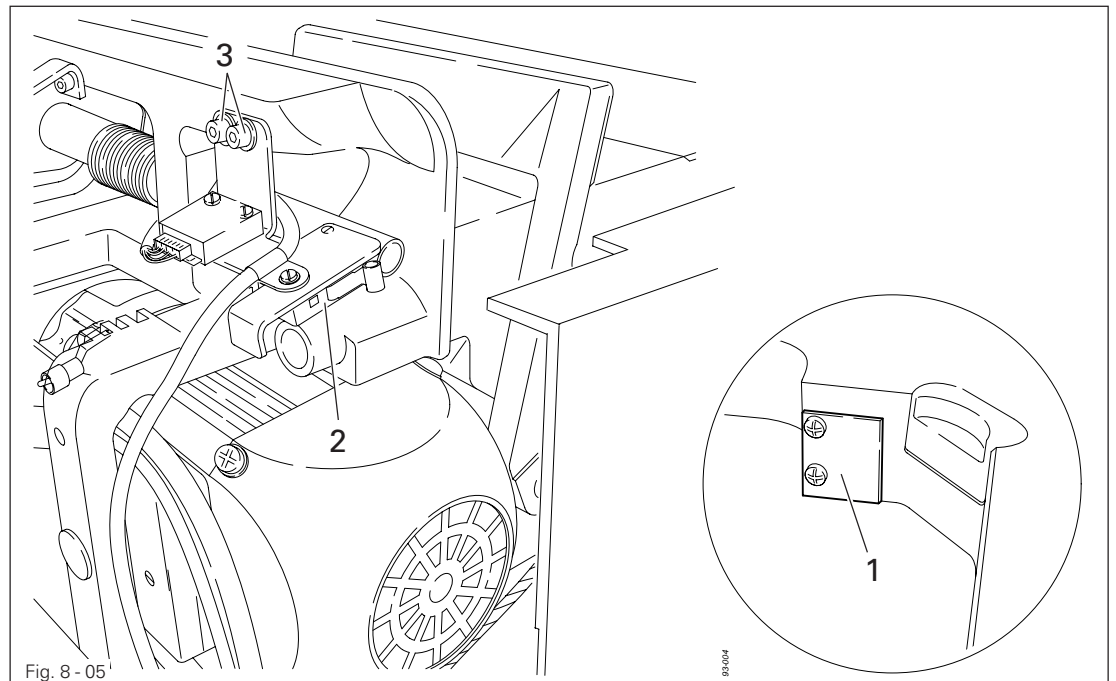
## 8.03

### Switching the machine on/off

- Switch the machine on or off (see **Chapter 7.01 On/off switch**).

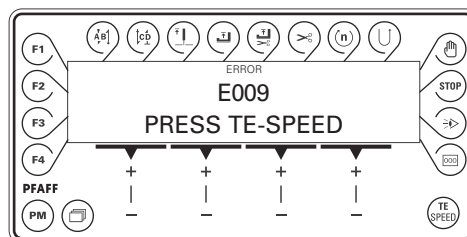
## 8.04 Start inhibitor

### 8.04.01 Mounting the start inhibitor



- For machines delivered without a table, the plate 1 from the accessories should be mounted, so that it is on a level with the bottom edge of the table top and with the left edge of the table top cutout.
- Set the machine into the table top.
- After loosening screws 3, move switch 2 until it is touching plate 1.
- In this position tighten screws 3.

### 8.04.02 Checking the function of the start inhibitor

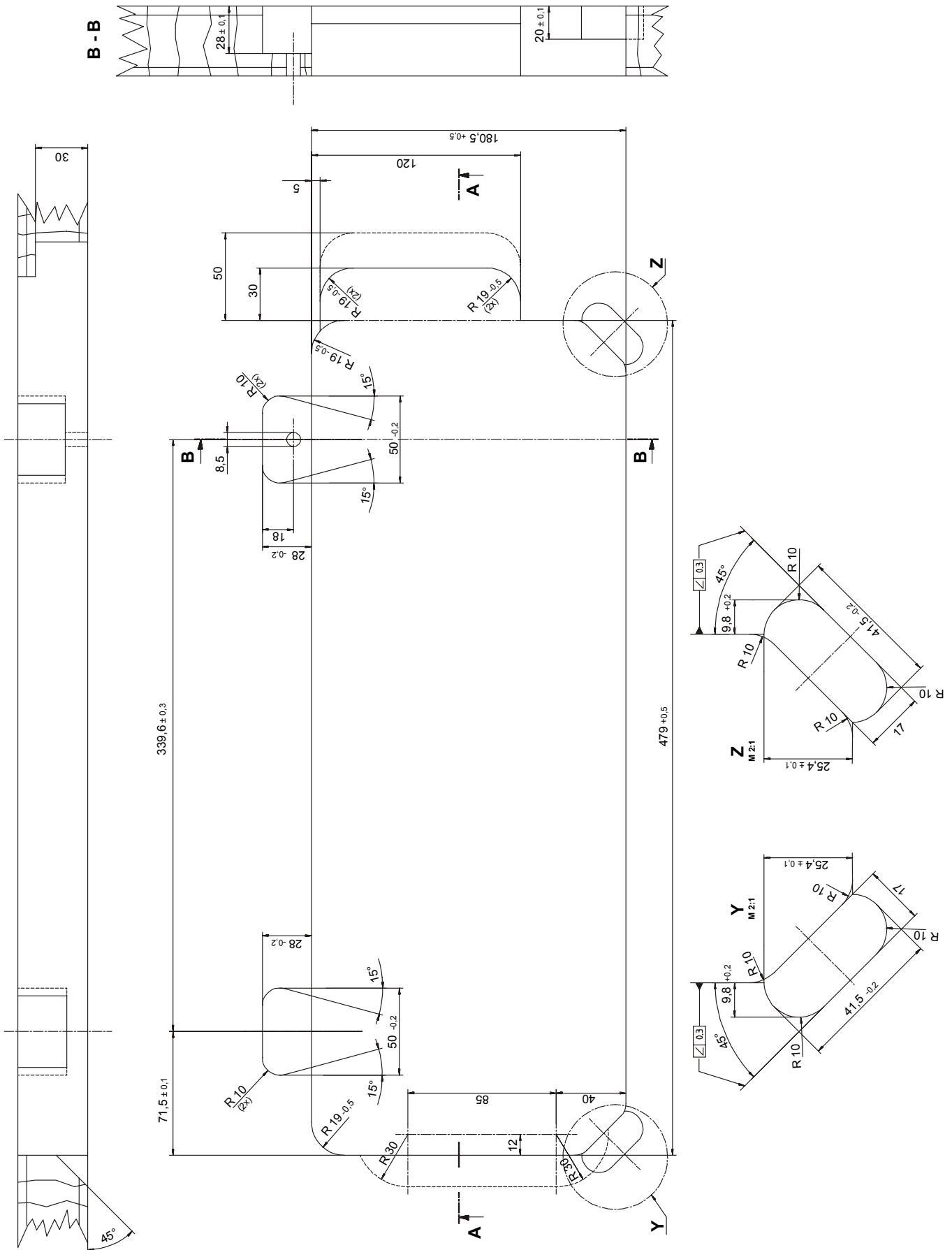


- Switch the machine on at the main switch and tilt it over. The error message "E009" must appear on the control panel.
- If the message does not appear, check the setting of the start inhibitor as described in **Chapter 8.01.04 Mounting the start inhibitor**.
- Set the sewing head upright and acknowledge the error message. The machine is ready for operation again.



# Mounting and commissioning the machine

## 8.05 Table top cutout



9

Preparation



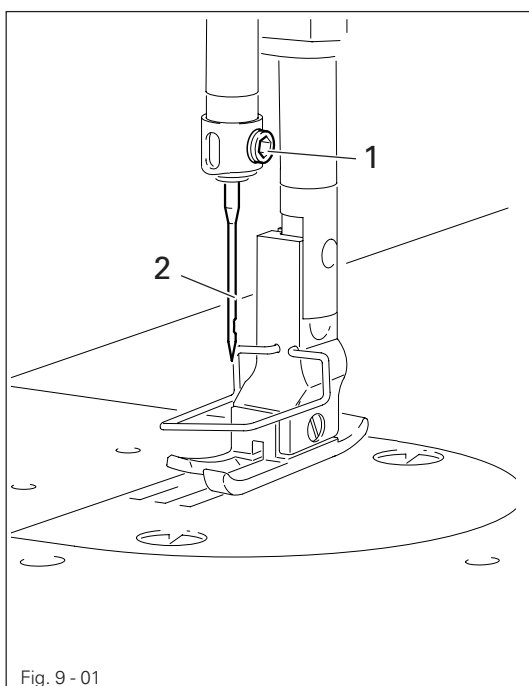
All regulations and instructions in this Instruction Manual are to be observed!  
Special attention is to be paid to the safety regulations!



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



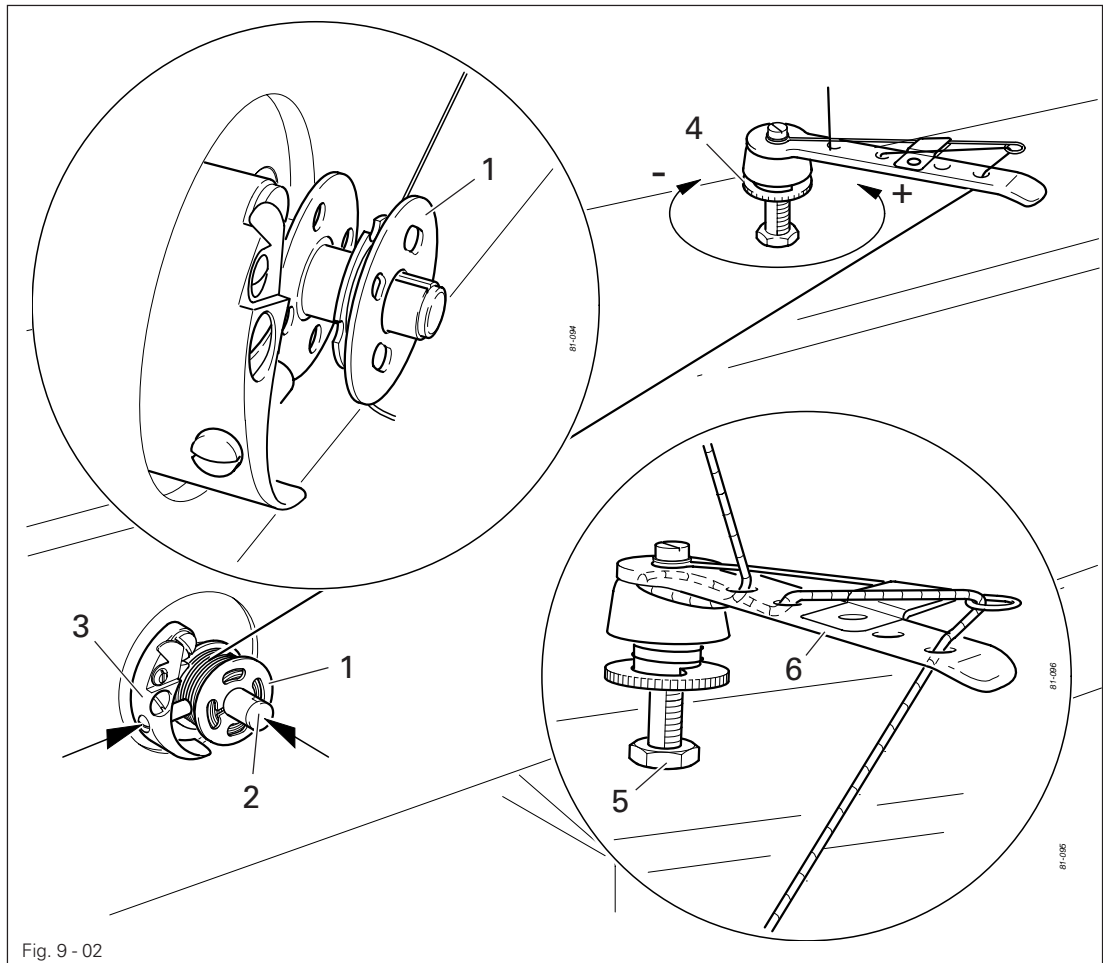
Switch off the machine!  
Danger of injury due to unintentional starting of the machine!

Use only system 134 needles.

- Raise needle bar.
- Loosen screw 1 and insert needle 2 until you feel it stop.
- Tighten screw 1.



The selection of the correct needle depends on the model of the machine and the material and threads being sewn (see chapter 3 Specifications).



- Fit empty bobbin 1 onto bobbin winder spindle 2 with the rest thread chamber on the outside.
- Thread the thread as shown in the above illustration and wind it round the bobbin 1 a few times in an anti-clockwise direction.
- Switch on the bobbin winder by pressing bobbin winder spindle 2 and lever 3 simultaneously.



The bobbin fills up during sewing.



If the machine is only run for bobbin winding (without sewing), a hook base must be fitted in the hook.

Otherwise a jammed thread may damage the hook!

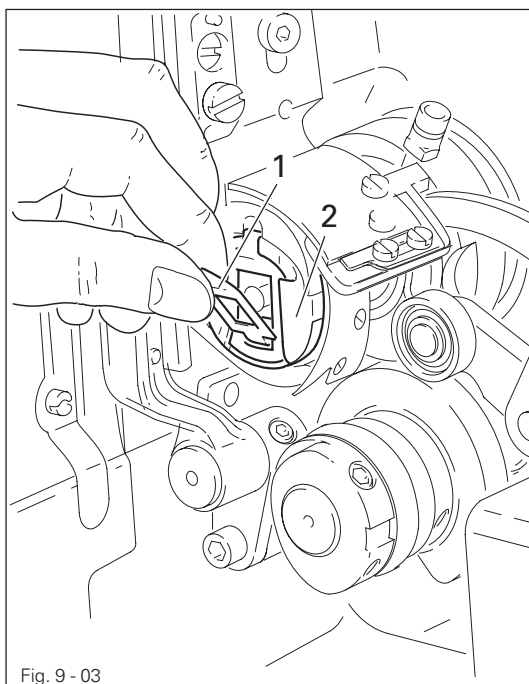
- The tension of the thread on bobbin 1 can be adjusted with knurled screw 4.
- The bobbin winder stops automatically when bobbin 1 is full.

If the thread is wound unevenly:

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



9.03 Removing/Inserting the bobbin case



Switch off the machine!  
 Danger of injury due to  
 unintentional starting of the  
 machine!

**Removing the bobbin case:**

- Tilt back the machine.
- Raise latch 1 and remove bobbin case 2.

**Inserting the bobbin case:**

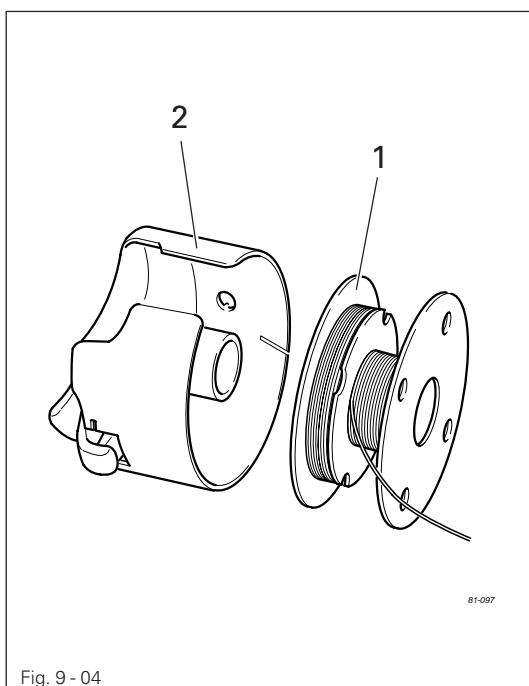
- Press bobbin case 2 until you feel it snap into the bobbin case base.

Return the machine to its  
 upright position using **both**  
 hands!



Danger of injury by crushing  
 between the machine and the  
 table top!

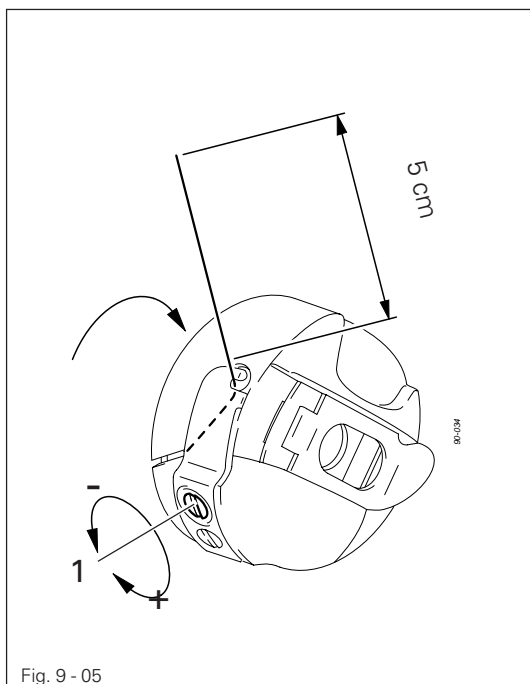
9.04 Inserting the bobbin in the bobbin case



- Insert bobbin 1 into the bobbin case 2 as shown in the opposite illustration.

9.05

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

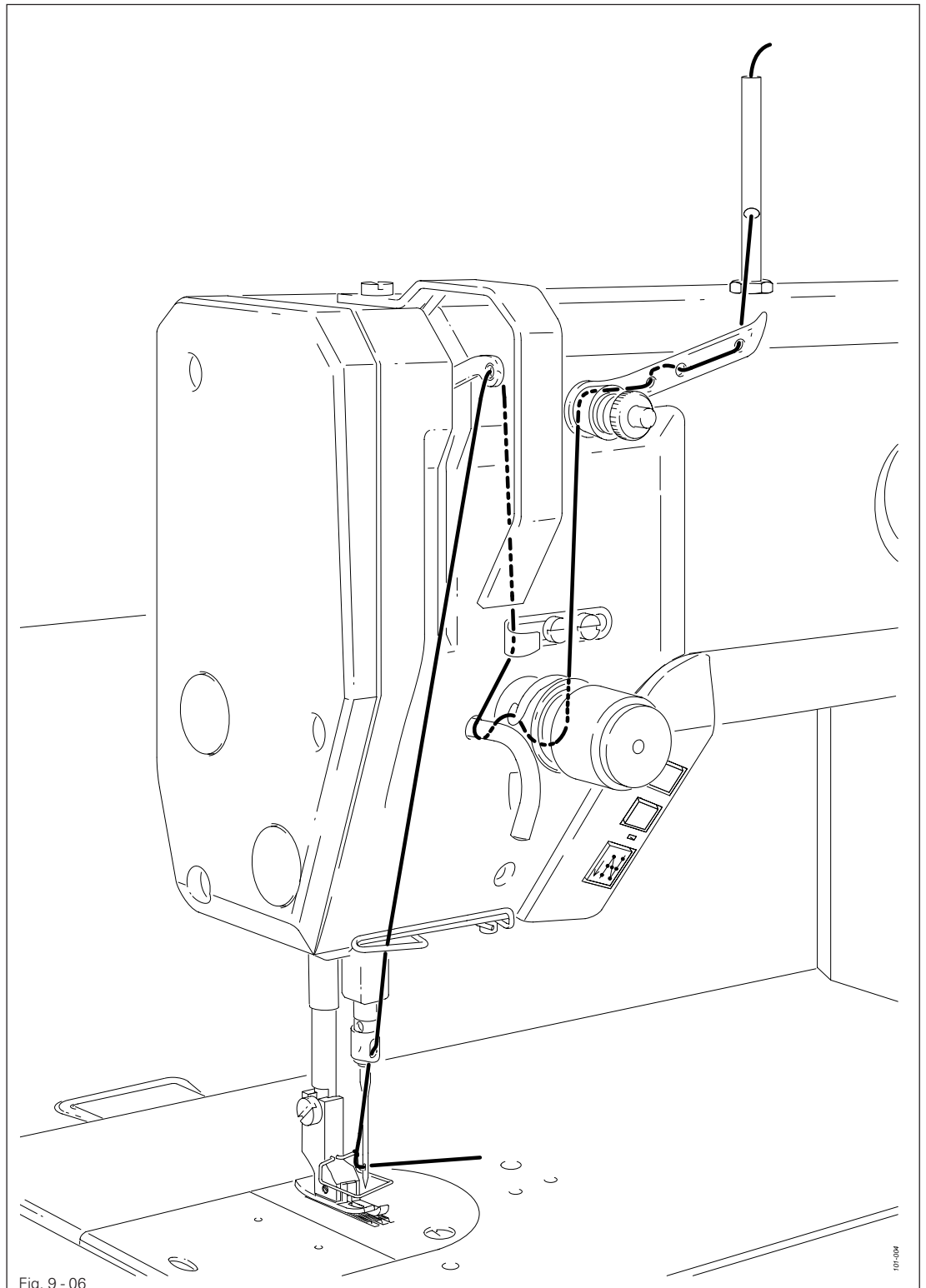


- Pass the thread through the slot under the spring as shown in the opposite illustration.
- Adjust the thread tension by turning screw 1.



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

9.06 Threading the needle thread

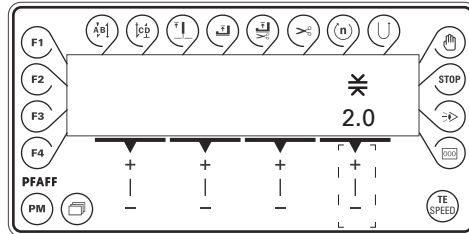


Switch off the machine!  
Danger of injury due to unintentional starting of the machine!

- Thread the machine as shown in Fig. 9-06.

## 9.07 Entering the stitch length

- Switch on the machine.  
After the machine has been switched on, the current stitch length is displayed.

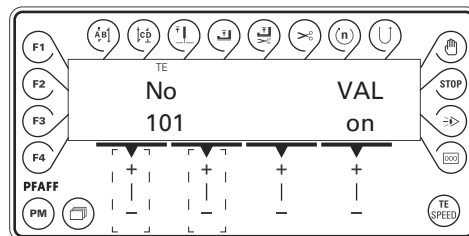


- ✂ ● Adjust the stitch length by pressing the corresponding +/- key.

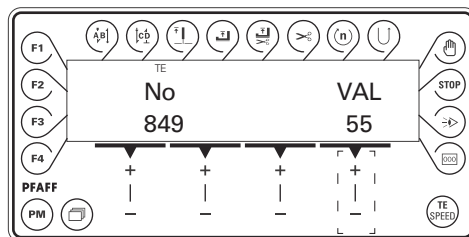
## 9.08 Entering the maximum stitch length


- Switch on the machine.
- Press the **TE/Speed** key twice to enter the parameter input function.  
The status text "TE" appears on the display and the pedal functions are blocked to prevent the machine starting accidentally.

2 x 



- No ● Select the parameter "849" by pressing the corresponding +/- key.



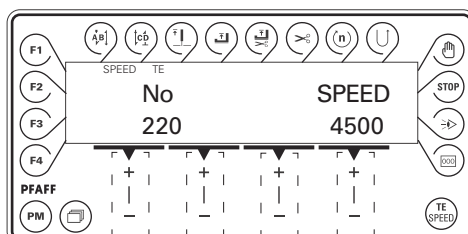
- VAL ● By pressing the corresponding +/- key select the desired value for the maximum stitch length.
-  ● By pressing the **TE/Speed** key the value is taken over and the machine changes to the sewing mode.



The maximum stitch length can be called up with the knee switch, see **Chapter 7.05 Knee switch**.

## 9.09 Entering the maximum speed

- Switch on the machine.
- Press the **TE/Speed** key to call up the input menu for the maximum speed. The status texts "Speed" and "TE" appear on the display.



- SPEED** ● Set the maximum speed by pressing the corresponding +/- key.

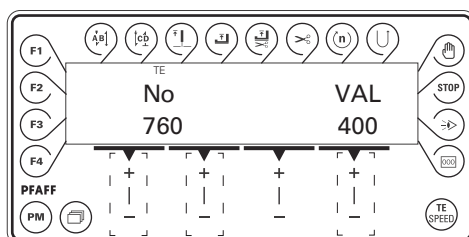
## 9.10 Setting the remaining stitches for the bobbin thread control

When the bobbin thread monitor signals that the bobbin thread has been used up, there is still a little thread on the bobbin.

- Switch on the machine.
- Press the **TE/Speed** key twice to enter the parameter input function.



- Select mechanic level "B", see **Chapter 13.08.02 Selecting the user level**.



- No** ● Select the parameter "760" by pressing the corresponding +/- key.

- VAL** ● By pressing the corresponding +/- key set the number of remaining stitches which can still be sewn after the detection of the bobbin thread monitor (depends on the thread size).



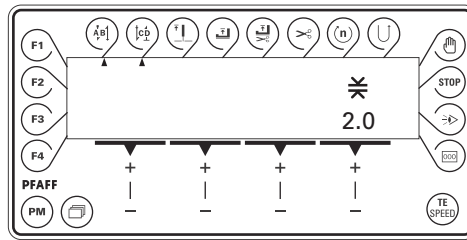
- By pressing the **TE/Speed** key the value is taken over and the machine changes to the sewing mode.



The bobbin thread rest counter can only be used when parameter "660" is set at "1", see **Chapter 13.08 Parameter settings**.

## 9.11 Entering the start and end backtacks

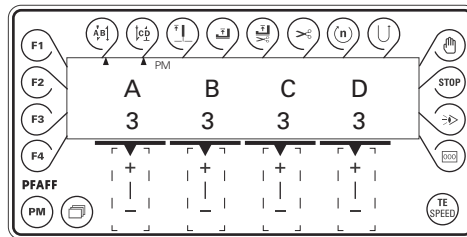
- Switch on the machine.



- Switch on the corresponding function by pressing the **start backtick** and/or **end backtick** keys. (Arrow appears under the corresponding function key.)



- Change to the input menu for start and end backtacks by pressing the **scroll** key.



- A ● By pressing the corresponding +/- key select the desired value for the number of forward stitches (A) of the start backtick.
- B ● By pressing the corresponding +/- key select the desired value for the number of reverse stitches (B) of the start backtick.
- C ● By pressing the corresponding +/- key select the desired value for the number of reverse stitches (C) of the end backtick.
- D ● By pressing the corresponding +/- key select the desired value for the number of forward stitches (D) of the end backtick.



- Call up the stitch length input menu again by pressing the **scroll** key.

## 10 Sewing

In the sewing mode all relevant settings for the sewing operation are displayed. Functions can be switched on or off by pressing a key. Values for the most important parameters can be changed directly.

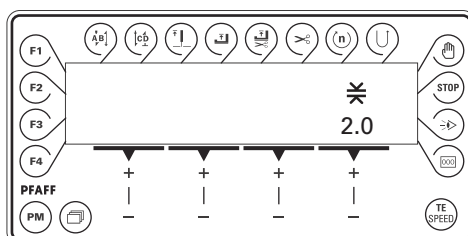
In this mode a difference is made between **manual sewing** and **programmed sewing**. To change from manual to programmed sewing, press the PM key. In programmed sewing the text "PM" appears on the display. The program numbers 1 – 15 can each be used for one seam program with up to 15 seam sections.

PM

## 10.01 Manual sewing

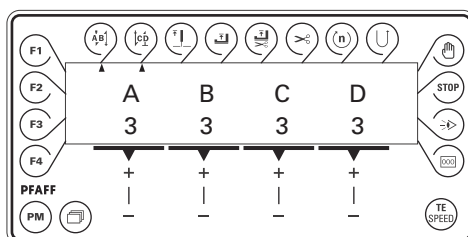
After the machine has been switched on (**Chapter 7.01 Main switch**) and the manual sewing mode has been selected with the PM key, the display appears for entering the stitch length, also see **Chapter 9.07 Entering the stitch length**.

PM



If the backtack function is switched on, the display appears for entering the backtack values, also see **Chapter 9.08 Entering the start and end backtacks**.

It is possible to switch from one display to the other by pressing the scroll key.



Further functions in manual sewing, also see **Chapter 7.06.02 Function keys**:

- |  |                               |  |   |
|--|-------------------------------|--|---|
|  | Start backtacks on/off        |  | Presser foot raised at end of seam on/off |
|  | End backtacks on/off          |  | Thread trimming on/off                    |
|  | Needle position raised on/off |  | Reverse sewing on/off                     |
|  | Presser foot raised on/off    |  |   |

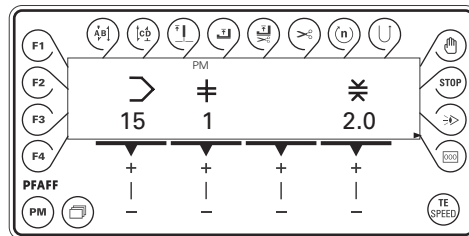
Sewing is carried out with the pedal functions, see **Chapter 7.03 Pedal**.

## 10.02 Programmed sewing

In programmed sewing various seam programs can be called up by selecting the corresponding program number. A number of seam sections with corresponding functions can be allocated to each seam program. The number of possible seam programs and seam sections is set with the parameters "492" or "493", see **Chapter 13.08 Parameter settings**. In addition to just sewing, that is to say working through seam programs, in programmed sewing seam programs can be entered and altered, also see **Chapter 11.01 Entering seam programs**.



After the machine has been switched on (**Chapter 7.01 Main switch**) and the programmed sewing mode has been selected with the **PM** key, the display appears for selecting the program number, seam section and stitch length.



If other functions, such as sensor or stitch count have been activated, it is possible to switch to other displays for entering corresponding values by pressing the **scroll** key.



The number of backtack stitches is set in manual sewing, see **Chapter 9.11 Entering the start and end backtacks**. The values entered apply to all seam programs.

Functions in programmed sewing, also see **Chapter 7.06.02 Function keys**:



Start backtacks on/off



Fixed speed on/off



End backtacks on/off



Reverse sewing direction on/off



Needle position raised on/off



Manual seam end on/off



Presser foot raised on/off



Programmed stop on/off



Presser foot raised after thread trimming on/off



Stitch count on/off



Thread trimming on/off

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



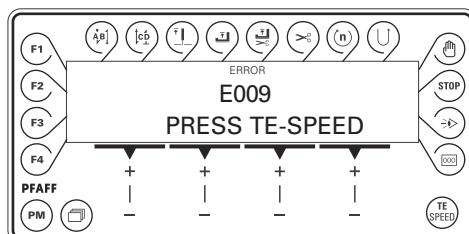
If several seam sections belong to one seam program, the separate seam sections are sewn automatically one after the other.



### 10.03 Error messages

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

For an explanation of the error codes see **Chapter 13.09 Explanation of the error messages**.



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

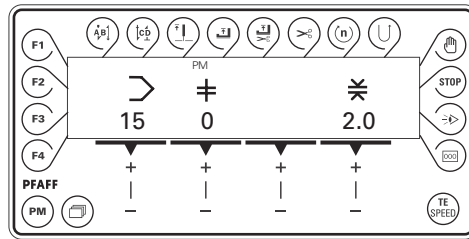


## 11 Input

In this chapter the input of seam programs is described.

### 11.01 Seam program input

- Switch on the machine.
- Press the PM key to call up programmed sewing. The text "PM" must appear on the display.

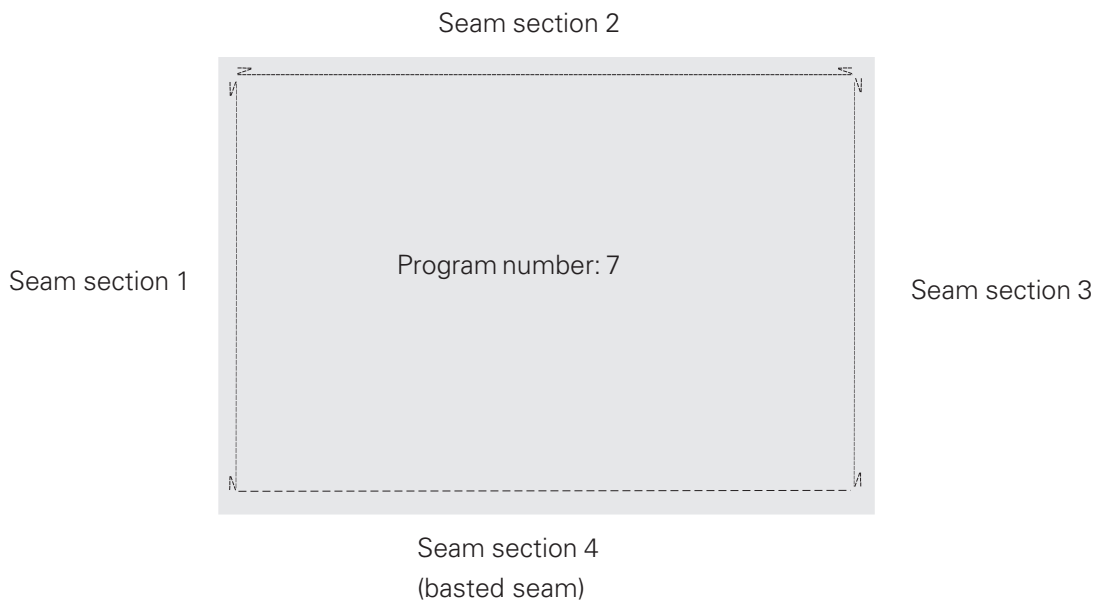


After selecting programmed sewing, seam programs can be entered. The input is carried out by switching functions on or off or by entering values for the seam section of a seam program. All functions available in programmed sewing can be used for the seam program input, see **Chapter 10.02 Programmed sewing**.

The seam program input is described in the following example.

### 11.02 Example of a seam program input

A seam program consists of the program number and at least one seam section with allocated functions. Below is an example of a seam program input for a pocket pouch with basted pocket opening.



Overview of the input steps (example)

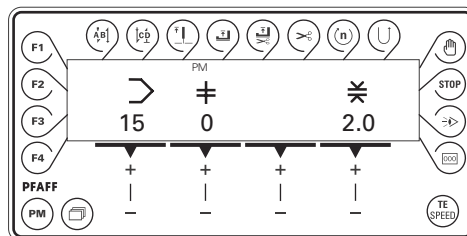
| Schritt | ➤ | ≠ | ≠   | A/B | C/D |   |   |   |   |   |   |   | STOP | 000  |   |
|---------|---|---|-----|-----|-----|---|---|---|---|---|---|---|------|------|---|
| 1       | 7 | 0 | 2.5 | -   | -   | - | - | - | - | - | - | - | -    | -    | - |
| 2       | 7 | 1 | 2.5 | ●   | ●   | - | - | ● | ● | - | - | - | -    | ●/25 | - |
| 3       | 7 | 2 | 2.5 | ●   | ●   | - | - | ● | ● | - | - | - | -    | ●/57 | - |
| 4       | 7 | 3 | 2.5 | ●   | ●   | - | - | ● | ● | - | - | - | -    | ●/25 | - |
| 5       | 7 | 4 | 6.0 | -   | -   | - | - | ● | ● | - | - | - | -    | ●/23 | - |
| 6       | 7 | 5 | 0.0 | -   | -   | - | - | - | - | - | - | - | -    | -    | - |
| 7       | - | - | -   | -   | -   | - | - | - | - | - | - | - | -    | -    | - |
| 8       | - | - | -   | -   | -   | - | - | - | - | - | - | - | -    | -    | - |
| 9       | - | - | -   | -   | -   | - | - | - | - | - | - | - | -    | -    | - |
| 10      | - | - | -   |     |     |   |   |   |   |   |   |   |      |      |   |

Entering programmed sewing

- Switch on the machine.

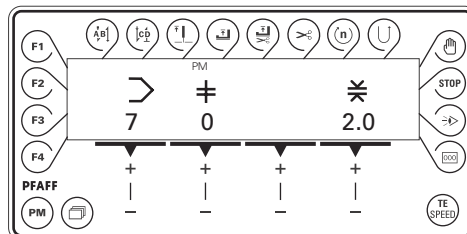


- Press the PM key.  
The text "PM" must appear on the display.



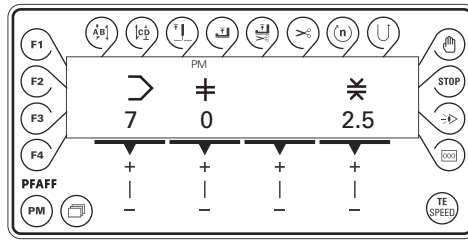
Selecting the program number

- ● Select program number "7" with the corresponding +/- key.



## Selecting the stitch length

- ✂ ● Set the value for the stitch length at "2.5" with the corresponding +/- key.



- 📄 ● Press the **scroll** key to select further seam parameters.

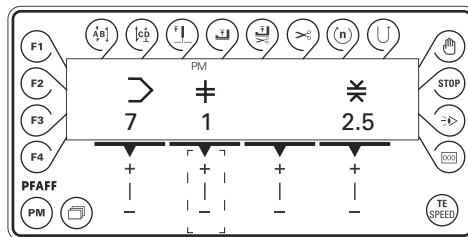


The values entered in the seam section "0" apply for all following seam sections, if these are not altered within the individual seam sections.

- 📄 ● Press the **scroll** key to select the first seam section.

## Selecting seam section 1

- ✂ ● Select seam section "1" with the corresponding +/- key.



## Selecting the functions for seam section 1

- The backtacking function at the beginning of the seam (start backtacks) should be switched on.
- The thread should be trimmed the end of the seam section.
- The presser foot should be raised after thread trimming.
- The end of the seam section should be recognised by stitch counting (25 stitches).
- The backtacking function at the end of the seam (end backtacks) should be switched on.

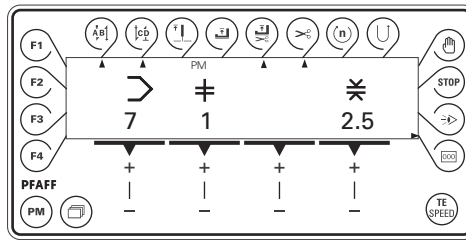
- ⏮ ● Press the **start backtrack** key to switch on the backtacking function at the beginning of the seam. To enter the number of stitches for start and end backtacks see **Chapter 9.11 Entering start and end backtacks**.

- ✂ ● Press the **thread trimming** key to trim the thread automatically at the end of the seam.

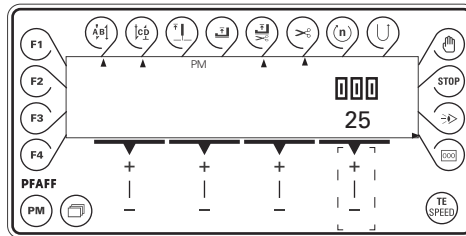
- 📏 ● By pressing it, switch on the **foot position after trimming** key to raise the presser foot after thread trimming.

- 000 ● Press the **stitch counting** key to enable recognition of the end of the seam section by the number of stitches.

- Press the **end backtrack** key to switch on the backtacking function at the end of the seam. To enter the number of stitches for start and end backtacks see **Chapter 9.11 Entering start and end backtacks**.

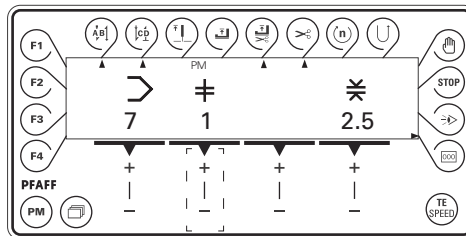


- Press the **scroll** key to enter the number of stitches.



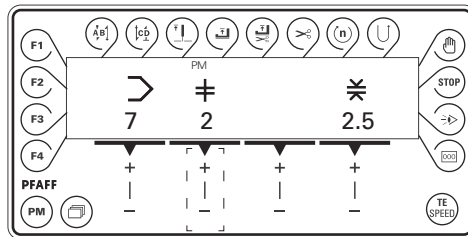
- With the corresponding **+/-** key enter the value "25" for the number of stitches.

- Press the **scroll** key to be able to select the next seam section.



## Selecting seam section 2

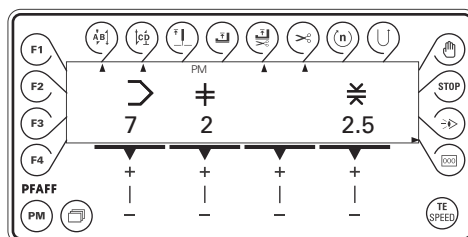
- Select seam section "2" with the corresponding +/- key.



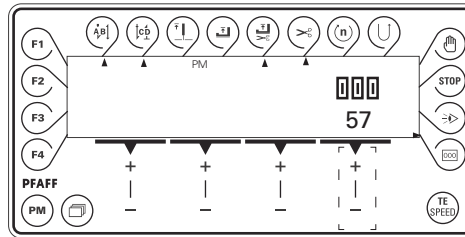
## Selecting the functions for seam section 2

- The backtacking function at the beginning of the seam (start backtacks) should be switched on.
- The thread should be trimmed the end of the seam section.
- The presser foot should be raised after thread trimming.
- The end of the seam section should be recognised by stitch counting (57 stitches).
- The backtacking function at the end of the seam (end backtacks) should be switched on.

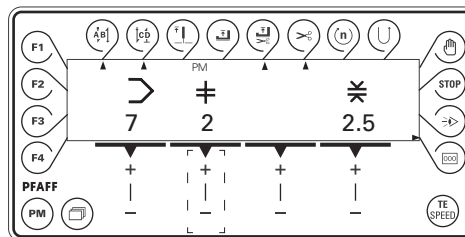
- Press the **start backtack** key to switch on the backtacking function at the beginning of the seam. To enter the number of stitches for start and end backtacks see **Chapter 9.11 Entering start and end backtacks**.
- Press the **thread trimming** key to trim the thread automatically at the end of the seam.
- By pressing it, switch on the **foot position after trimming** key to raise the presser foot after thread trimming.
- Press the **stitch counting** key to enable recognition of the end of the seam section by the number of stitches.
- Press the **end backtack** key to switch on the backtacking function at the end of the seam. To enter the number of stitches for start and end backtacks see **Chapter 9.11 Entering start and end backtacks**.



- Press the **scroll** key to enter the number of stitches.

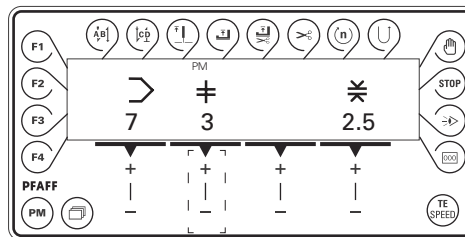


- With the corresponding +/- key enter the value "57" for the number of stitches.
- Press the **scroll** key to be able to select the next seam section.



### Selecting seam section 3

- Select seam section "3" with the corresponding +/- key.



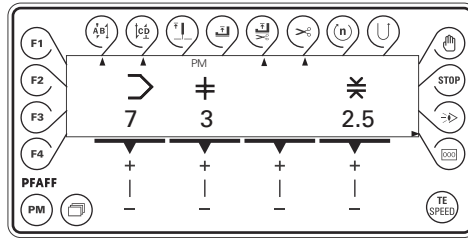
### Selecting the functions for seam section 3

- The backtacking function at the beginning of the seam (start backtacks) should be switched on.
- The thread should be trimmed the end of the seam section.
- The presser foot should be raised after thread trimming.
- The end of the seam section should be recognised by stitch counting (25 stitches).
- The backtacking function at the end of the seam (end backtacks) should be switched on.

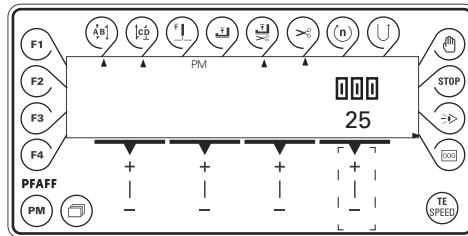
- Press the **start backtack** key to switch on the backtacking function at the beginning of the seam. To enter the number of stitches for start and end backtacks see **Chapter 9.11 Entering start and end backtacks**.
- Press the **thread trimming** key to trim the thread automatically at the end of the seam.
- By pressing it, switch on the **foot position after trimming** key to raise the presser foot after thread trimming.
- Press the **stitch counting** key to enable recognition of the end of the seam section by the number of stitches.



- Press the **end backtick** key to switch on the backtacking function at the end of the seam. To enter the number of stitches for start and end backticks see **Chapter 9.11 Entering start and end backticks**.



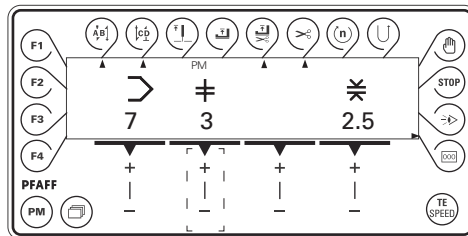
- Press the **scroll** key to enter the number of stitches.



- With the corresponding **+/-** key enter the value "25" for the number of stitches.



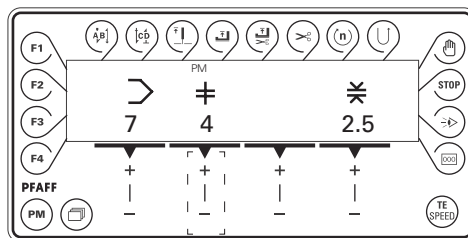
- Press the **scroll** key to be able to select the next seam section.



## Selecting seam section 4



- Select seam section "4" with the corresponding **+/-** key.





**Selecting the functions for seam section 4**

- The thread should be trimmed the end of the seam section.
- The presser foot should be raised after thread trimming.
- The stitch length should be **6.0 mm**.
- The end of the seam section should be recognised by stitch counting (23 stitches).



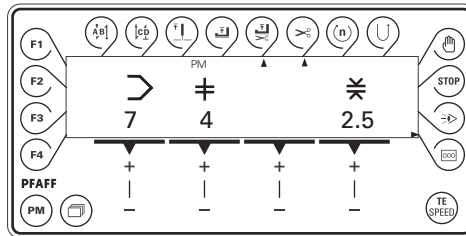
- Press the **thread trimming** key to trim the thread automatically at the end of the seam.



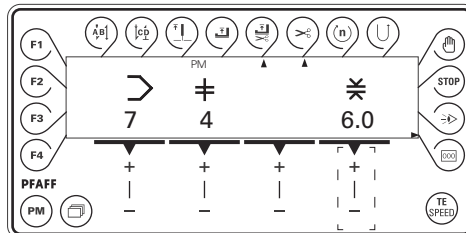
- By pressing it, switch on the **foot position after trimming** key to raise the presser foot after thread trimming.



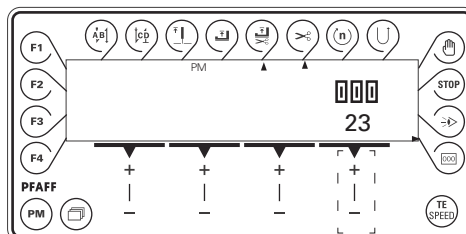
- Press the **stitch counting** key to enable recognition of the end of the seam section by the number of stitches.



- With the corresponding +/- key set the value for the stitch length at "**6.0**".



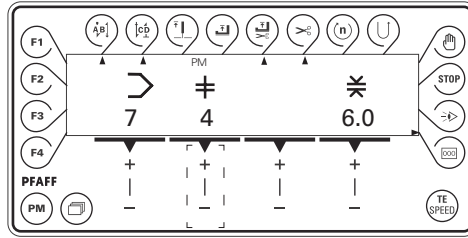
- Press the **scroll** key to enter the number of stitches.



- With the corresponding +/- key enter the value "**23**" for the number of stitches.

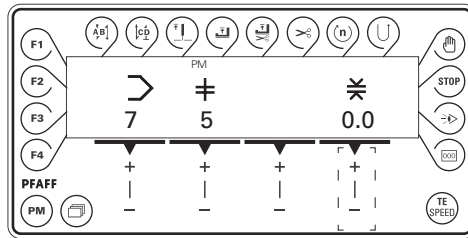


- Press the **scroll** key to be able to select the next seam section.



## Closing the seam program

- Select seam section "5" with the corresponding +/- key.



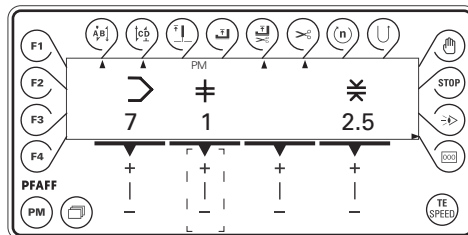
- With the corresponding +/- key set the value for the stitch length at "0.0".



By setting the stitch length in seam section 5 at zero, seam section 4 is recognised as the last seam section of the seam program and the seam program input is concluded.

## Sewing a test seam

- With the corresponding +/- key select the seam section "0" or "1".



- Using the pedal functions, sew a test seam.

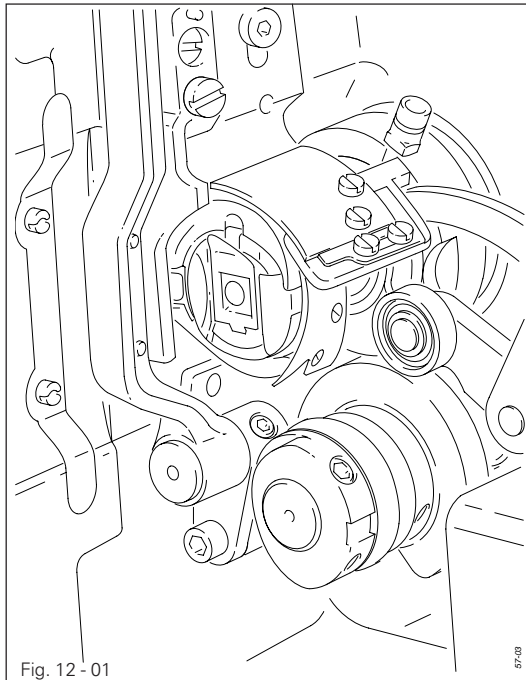
12 Care and Maintenance

|                              |   |
|------------------------------|---|
| Cleaning .....               | daily, several times if in continuous operation |
| Checking the oil level ..... | every 3 months ▲                                |



▲ 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 the machine



Switch off the machine!  
Danger of injury due to unintentional starting of the machine!

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



Return the machine to its upright position using **both** hands!  
Danger of injury by crushing between the edge of the machine and the table top!

## 12.02 Topping up the oil tank

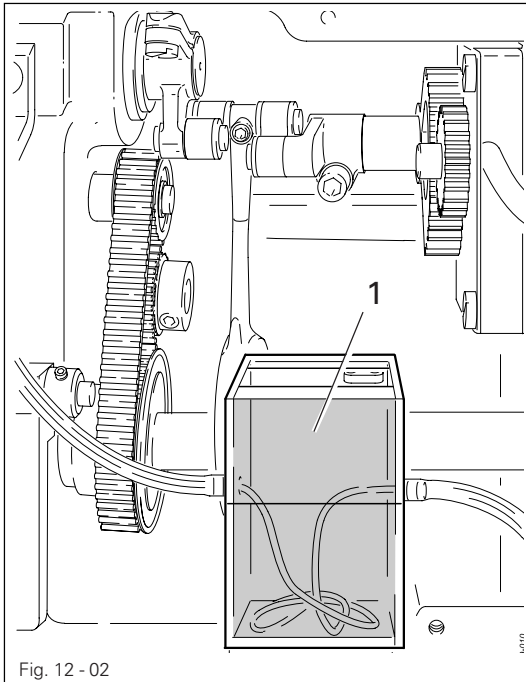


Fig. 12 - 02



The oil reservoir must always have oil in it.

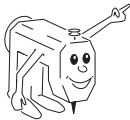
- Whenever it is necessary to refill the reservoir, tilt back the machine and let it rest on the sewing head support.
- Fill oil through hole 1 into the reservoir 2 up to the level of the front edge (see arrow).



Return the machine to its upright position using **both** hands!  
Danger of injury by crushing between the machine and the table top!



Only use oil with a mean viscosity of  $10.0 \text{ mm}^2/\text{s}$  at  $40^\circ\text{C}$  and a density of  $0.847 \text{ g/cm}^3$  at  $15^\circ\text{C}$ .



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

## 13 Adjustment



No C-clamp should be fastened to the needle bar of the PFAFF 2481-906/11.  
This could cause damage to the special coating of the needle bar.

### 13.01 Notes on adjustment

All following adjustments are based on a fully assembled machine and may only be carried out by expert staff trained for this purpose.

Machine covers, which have to be removed and replaced to carry out checks and adjustments, are not mentioned in the text.

The order of the following chapters corresponds to the most logical work sequence for machines which have to be completely adjusted. If only specific individual work steps are carried out, both the preceding and following chapters must be observed.

Screws, nuts indicated in brackets ( ) are fastenings for machine parts, which must be loosened before adjustment and tightened again afterwards.



Unless stated otherwise, during all adjustment work the machine must be disconnected from the electric and pneumatic power supply!  
Danger of injury if the machine is started accidentally!

### 13.02 Tools, gauges and other accessories

- 1 set of screwdrivers with blade widths from 2 to 10 mm
- 1 set of wrenches with jaw widths from 7 to 14 mm
- 1 set of Allen keys from 1.5 to 6 mm
- 1 metal ruler, part no. 08-880 218-00
- 1 feed dog adjustment gauge, part no. 61-111 639-71
- 1 locking pin (5 mm diameter), part no. 13-033 346-05
- 1 adjustment gauge, part no. 61-111 639-70
- 1 adjustment gauge for tightening the belt of the hook drive, part no. 61-111 639-76
- Threads and test material

### 13.03 Abbreviations

TDC = top dead center

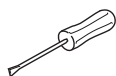
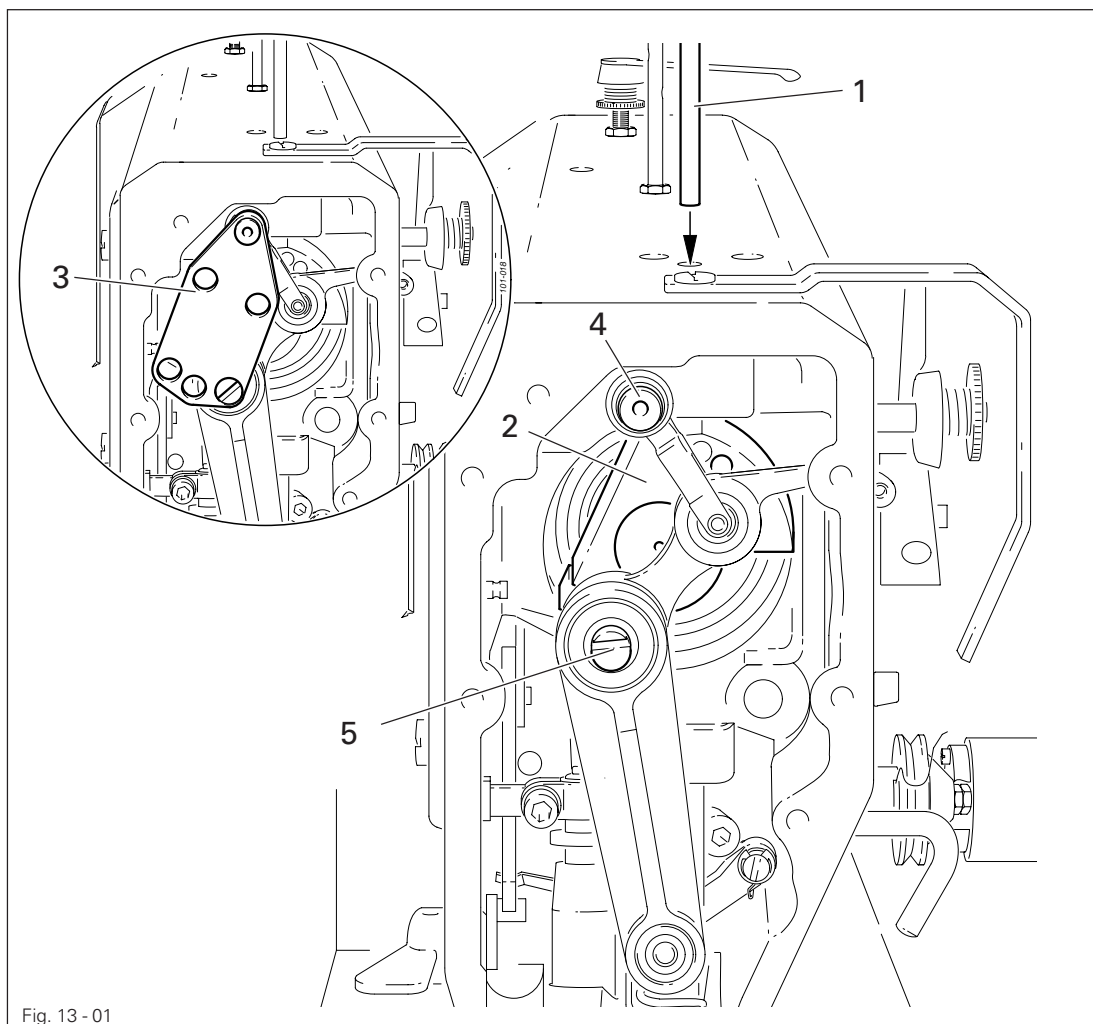
BDC = bottom dead center

## 13.04

### Control and adjustment aids



The positions required during adjustment can be fixed with the help of adjustment pin 1 (part no. 13-033 346-05) and, if necessary, adjustment gauge 3 (part no. 61-111 639-73).



#### Needle bar position 1.8 mm past b.d.c.

- Turn the balance wheel until the needle bar is approximately in the required position.
- Insert adjustment pin 1 in the hole.
- Move the balance wheel fractionally to and fro until adjustment pin 1 engages in crank 2.

#### Needle bar position 0.6 mm past b.d.c.

- Bring the needle bar approximately into the required position.
- Fit adjustment gauge 3 to pins 4 and 5, paying attention to the right side (for 30 mm or 36 mm needle bar stroke).

## 13.05 Adjusting the basic machine

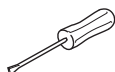
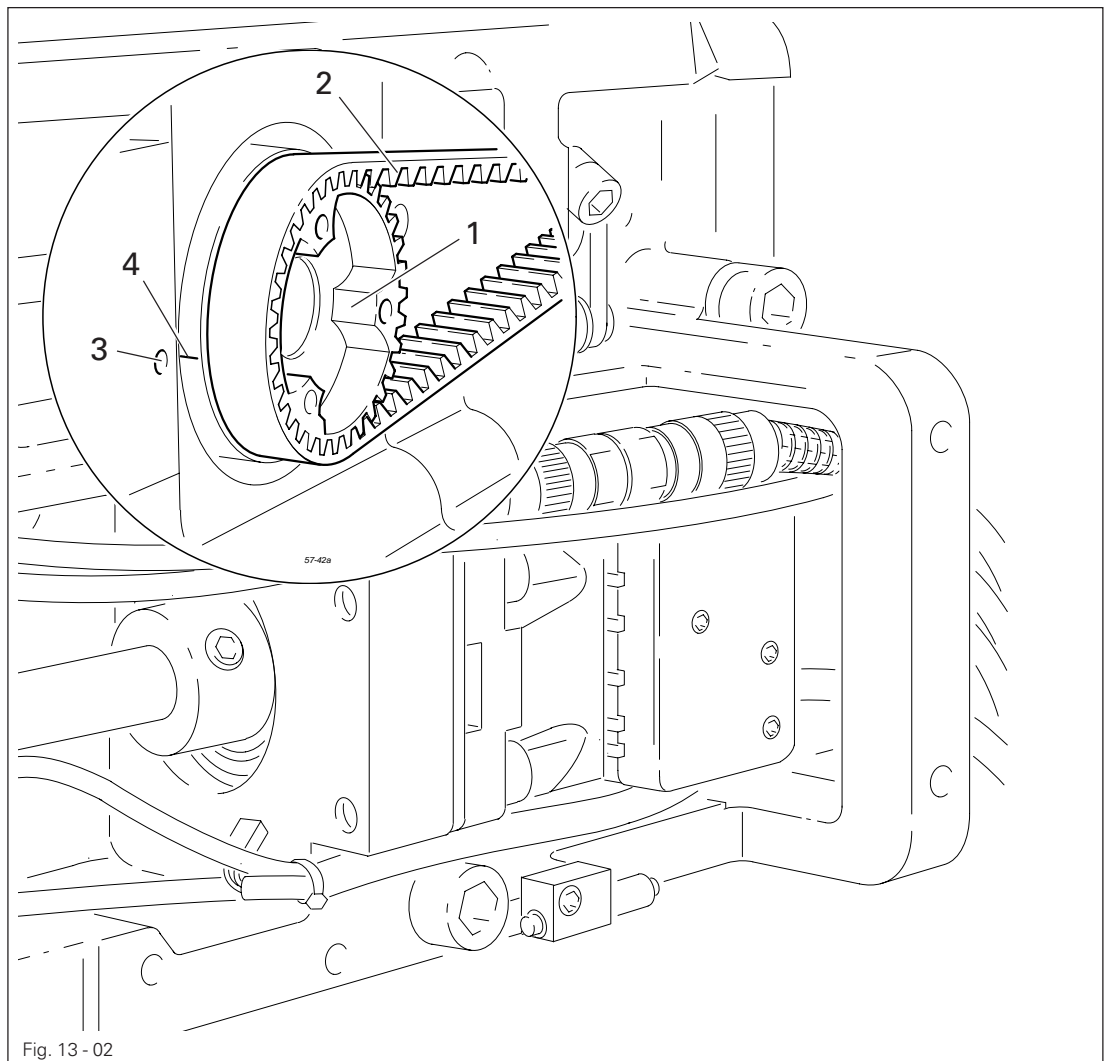
### 13.05.01 Basic position of the machine drive unit



This adjustment is only necessary, if toothed belt **2** was removed.

#### Requirement

When the needle bar is positioned 0.6 mm past b.d.c., the markings **3** and **4** should be in alignment.



- Bring needle bar to 0.6 mm past b.d.c.
- Adjust the toothed belt wheel 1 according to the **requirement** and slide on toothed belt 2.



When installing the motor pay attention to the correct position of shaft flange, shock absorber and motor flange!



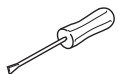
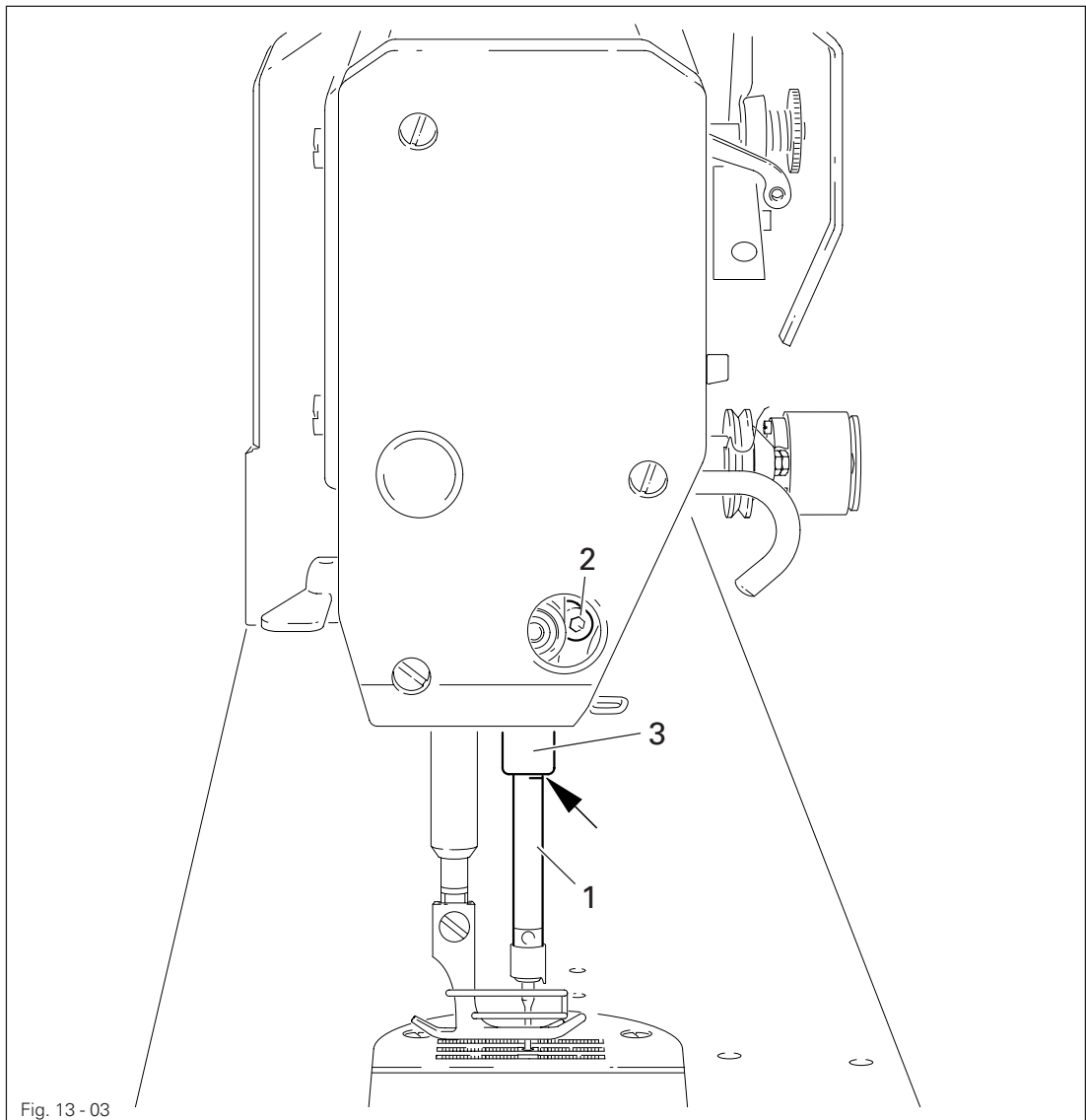
The second screw on the toothed belt wheel **1** is a conical screw.

## Adjustment

### 13.05.02 Preadjusting the needle height

#### Requirement

When the needle bar is positioned 1.8 mm above BDC, the mark on the needle bar **1** must be flush with the bottom edge of the needle bar frame **3**.



- Set needle bar at 1.8 mm past b.d.c. and block machine with blocking pin, see **Chapter 13.04 Checking and adjusting aids**.
- Move needle bar **1** (screw **2**), without turning it, according to the requirement.



## 13.05.03 Neutral position of the bottom feed dog

**Requirement**

With the stitch length set at "0"

1. The marking on the toothed segment **1** should be positioned in the centre of the toothed wheel shaft **3**.
2. Cranks **4** and **6** should be in alignment and there should be no feeding motion of the bottom feed dog when the balance wheel is turned.

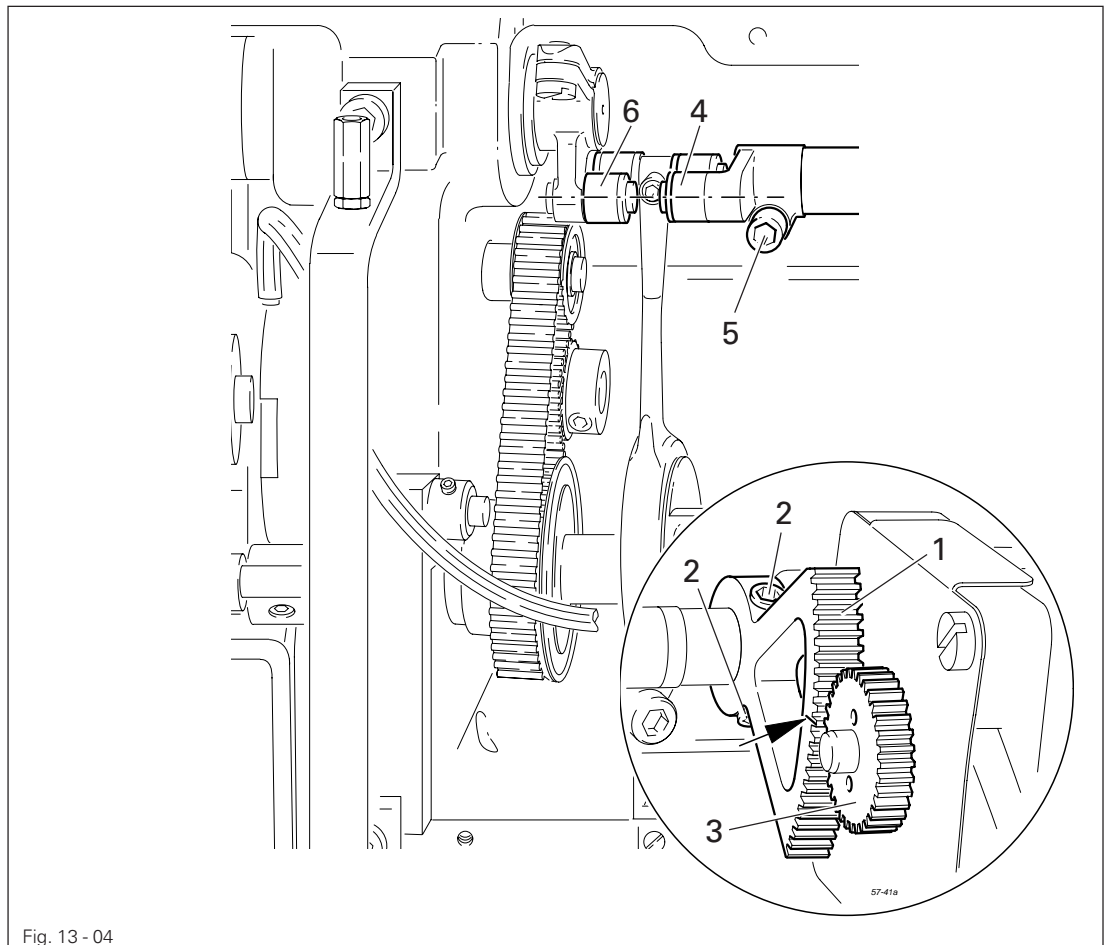
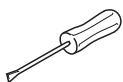


Fig. 13 - 04



- Switch on the machine.
- On the control panel set the stitch length at "0" and turn the balance wheel until the stitch length control motor reacts.
- Make sure that parameter **834** is set at "0", see **Chapter 13.08 Parameter settings**.
- Adjust tooth segment **1** (screws **2**) according to **requirement 1**, without turning toothed wheel **3**.
- Adjust crank **4** (screws **5**) according to **requirement 2**.
- Switch off the machine.

## 13.05.04 Zero position of the needle feed

### Requirement

When the stitch length is set at "0", there should be no feeding motion of the needle bar when the balance wheel is turned.

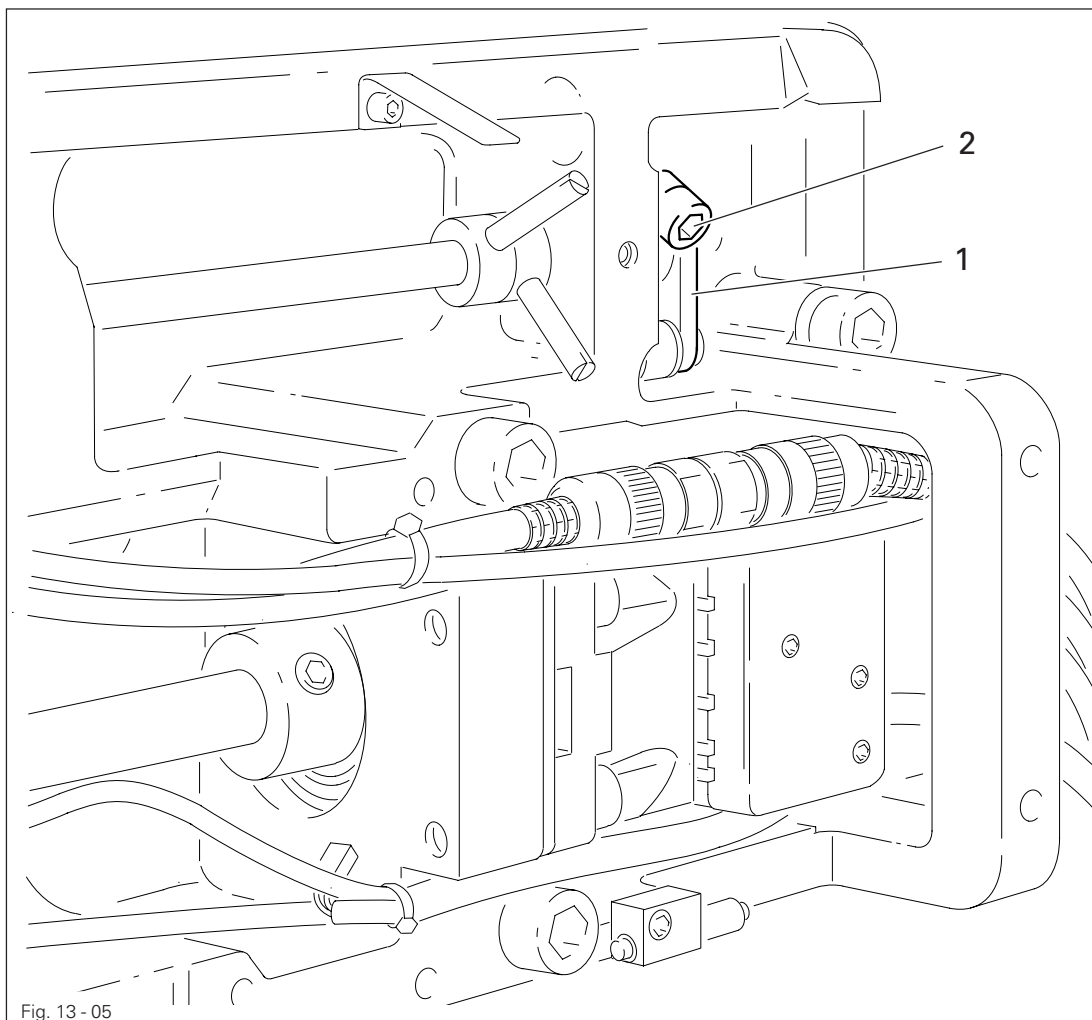
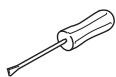


Fig. 13 - 05



- Switch on the machine.
- On the control panel set the stitch length at "0" and turn the balance wheel until the stitch length control motor reacts.
- Make sure that parameter **834** is set at "0", see **Chapter 13.08 Parameter settings**.
- Adjust crank **1** (screw **2**) according to the **requirement**.
- Switch off the machine.

## 13.05.05 Feeding motion of the bottom feed dog

### Requirement

With the needle bar positioned **0.6 mm past b.d.c.** the bottom feed dog should not move, when shaft **3** is turned backwards and forwards.

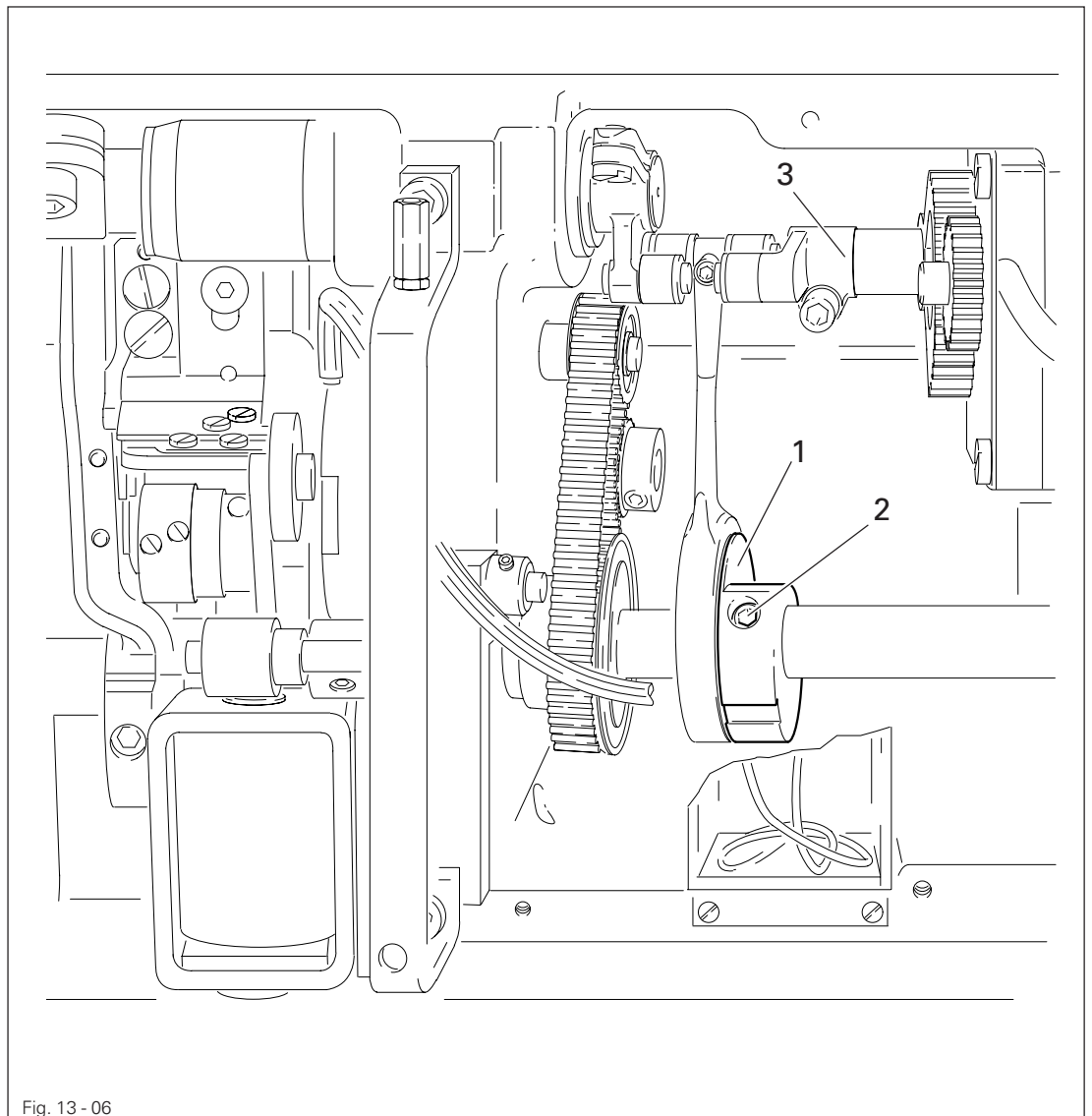
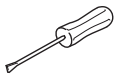


Fig. 13 - 06



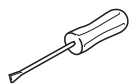
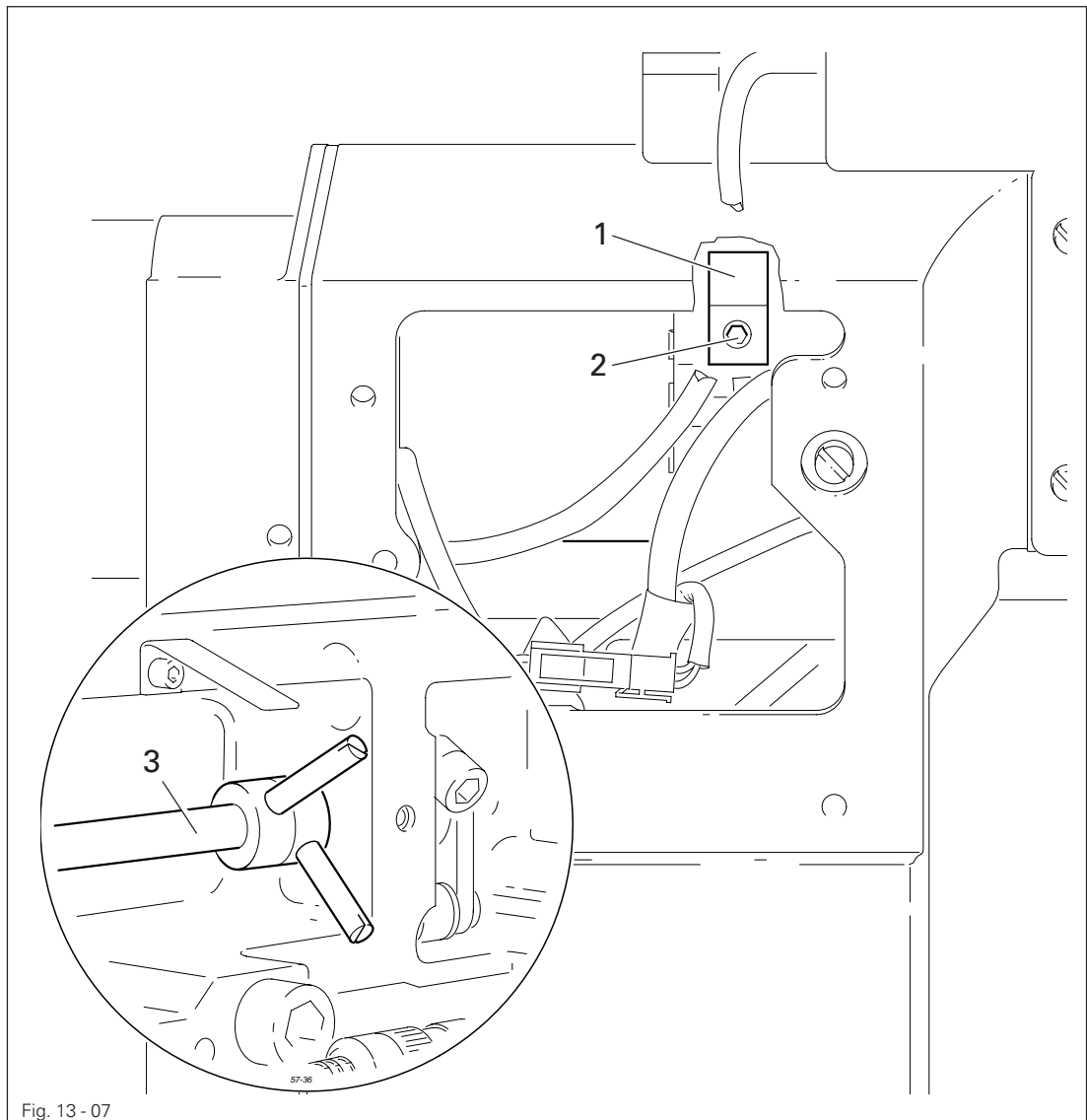
- Position the needle bar at 0.6 mm past b.d.c.
- Adjust eccentric **1** (screws **2**) according to the **requirement**, without moving it sideways.

## Adjustment

### 13.05.06 Feeding motion of the needle feed

#### Requirement

With the needle bar positioned **0.6 mm past b.d.c.** the needle should not move, when shaft **3** is turned backwards and forwards.



- Position the needle bar at 0.6 mm past b.d.c.
- Adjust eccentric **1** (screws **2**) according to the **requirement**.

## 13.05.07 Lifting stroke of the bottom feed dog

**Requirement**

When the needle bar is positioned **0.6 mm past b.d.c.** and the stitch length is set at "0"

1. The bottom feed dog should be at the top of its stroke and
2. The control cam **3** should be resting on the feed lifting eccentric **1**.

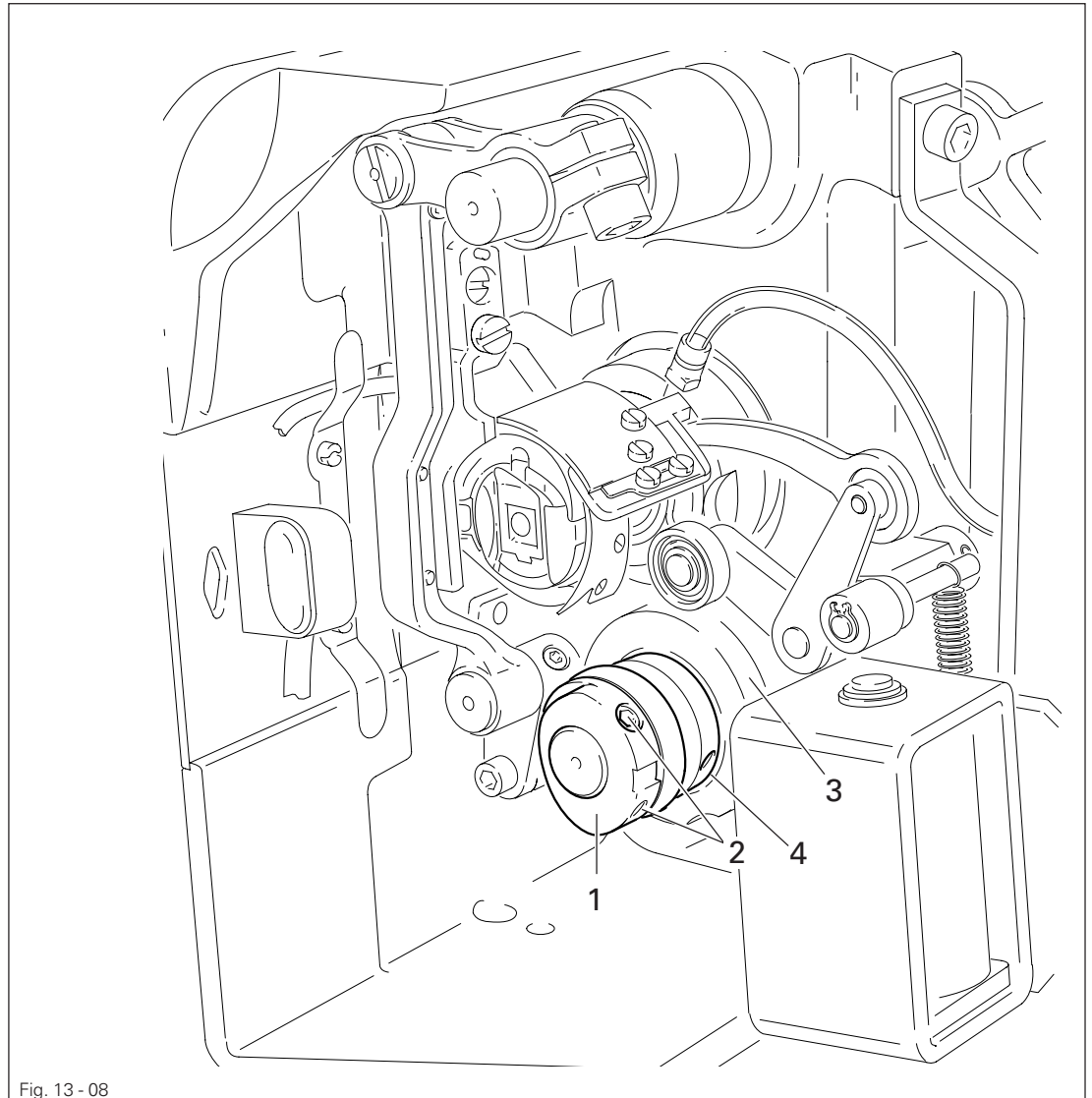
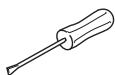


Fig. 13 - 08



Before starting the adjustment, disconnect the pedal rods!  
 Danger of injury in the machine suddenly starts up!

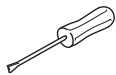
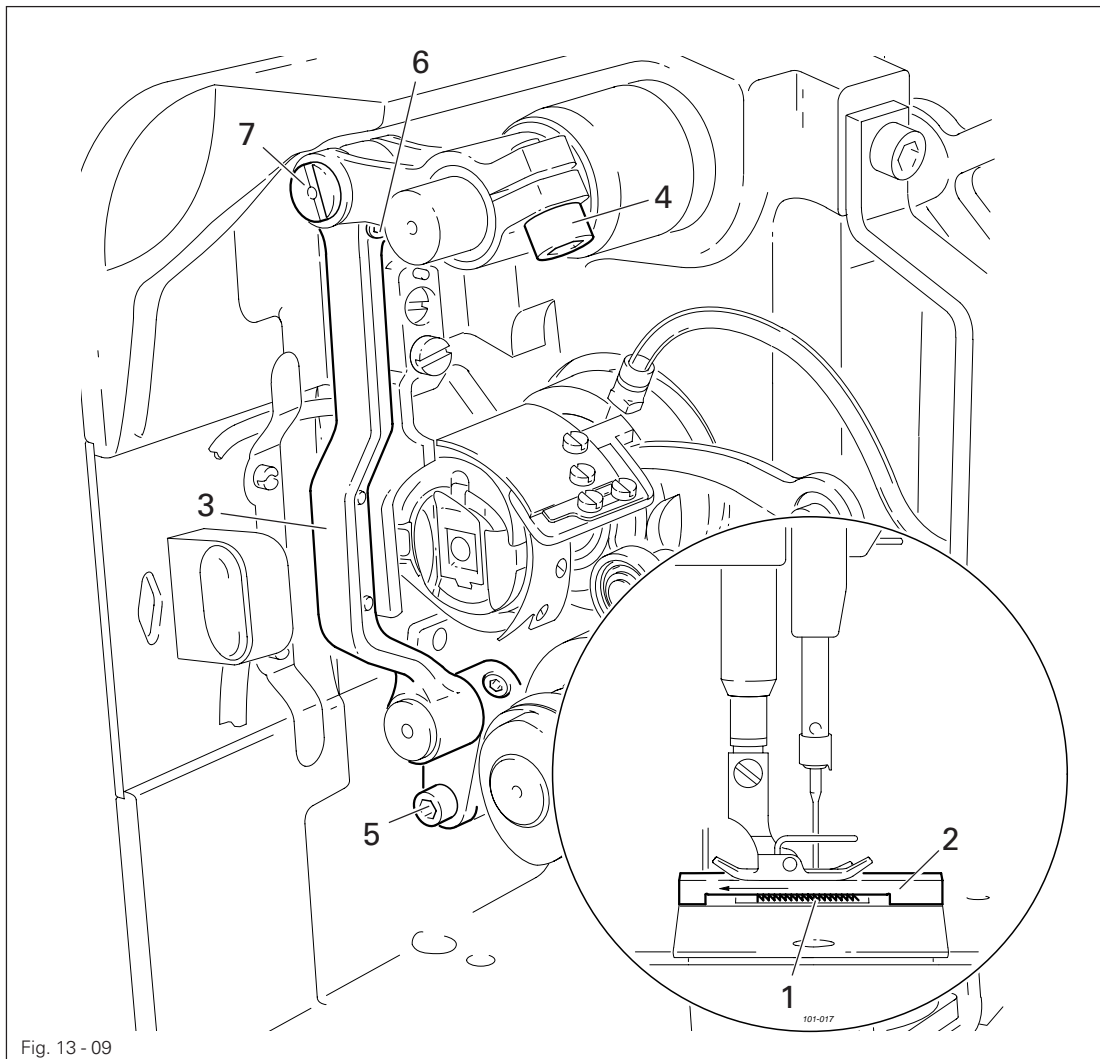
- Switch on the machine.
- Set the stitch length at "0" and bring the needle bar to 0.6 mm past b.d.c.
- Turn the balance wheel until the stitch length control motor reacts.
- Adjust eccentric **1** (screws **2**) according to **requirement 1**.
- Adjust control cam **3** (screws **4**) according to **requirement 2** and switch off the machine.

## 13.05.08 Height of the bottom feed dog / Position in the needle plate cutout

### Requirement

At the top of its stroke, when the stitch length is set at "0", the bottom feed dog 1

1. Should be positioned in the centre of the needle plate cutout as seen from the side and in feeding direction and
2. Rest on the feed dog adjustment gauge 2 over its whole length.



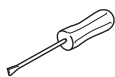
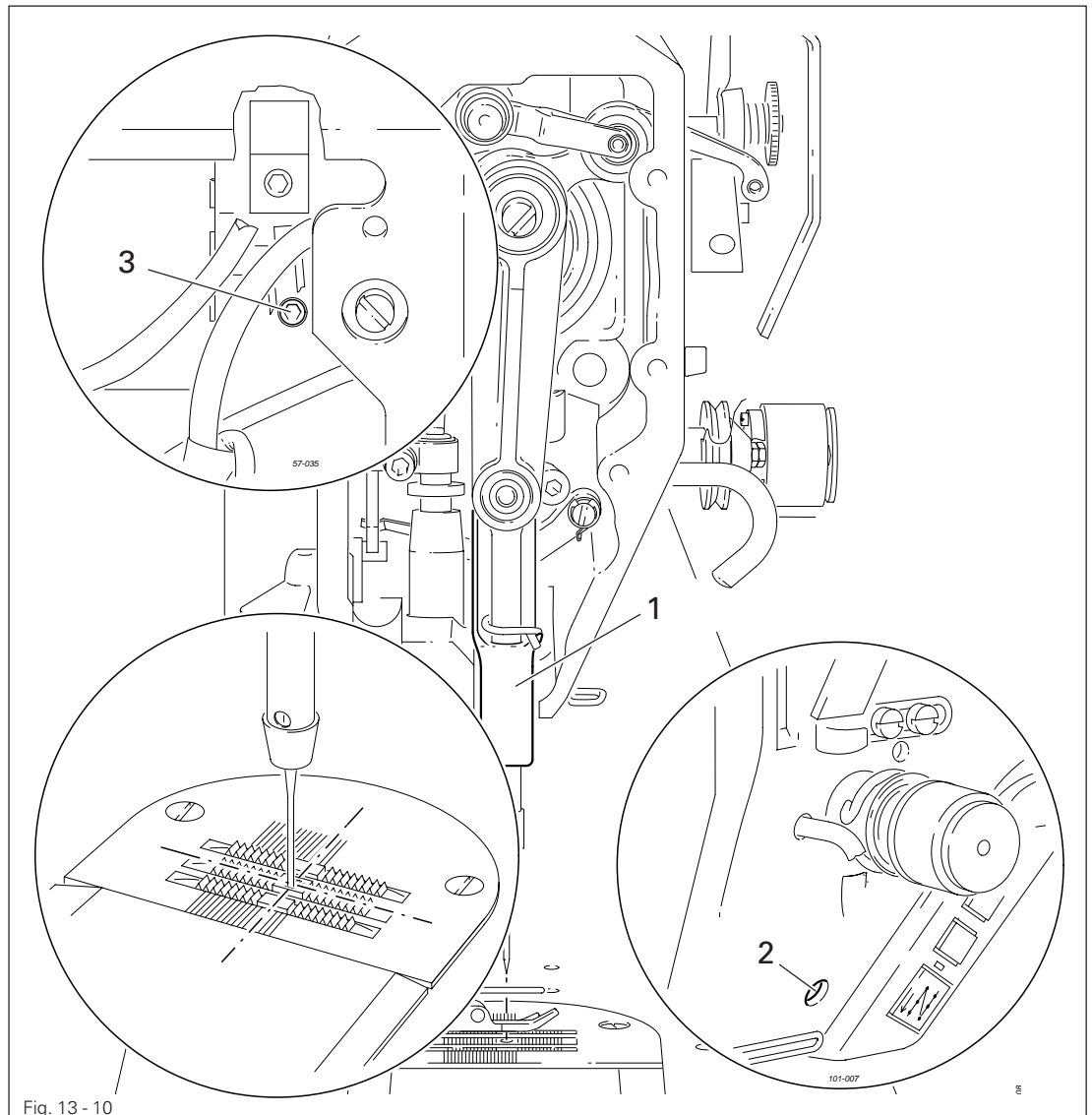
Before starting the adjustment, disconnect the pedal rods!  
Danger of injury in the machine suddenly starts up!

- Switch on the machine and set the stitch length at "0".
- Turn the balance wheel until the stitch length control motor reacts.
- Bring the bottom feed dog 1 to the top of its stroke.
- Raise the presser foot, position the feed dog adjustment gauge 2 over the needle plate cutout with its front edge flush with the edge of the needle plate, as shown in Fig. 13-09, and lower the presser foot.
- Adjust bracket 3 (screw 4) according to requirement 1.
- Adjust bracket 3 or eccentric 7 (screws 5 and 6) according to requirement 2.
- Switch off the machine.

## 13.05.09 Needle in needle hole centre

### Requirement

The needle should enter the needle hole exactly in the centre.



Before starting the adjustment, disconnect the pedal rods!  
 Danger of injury in the machine suddenly starts up!

- Switch on the machine.
- On the control panel set the stitch length at "0" and turn the balance wheel until the stitch length control motor reacts.
- By turning the balance wheel position the needle in the needle hole.
- Adjust needle bar frame 1 (screws 2 and 3) according to the **requirement**.
- Switch off the machine.

## 13.05.10 Hook shaft bearing and toothed belt tension

### Requirement

1. The front edge of the hook shaft **5** should be at a distance of **14.5 mm** from the centre of the needle, whereby the groove in the hook shaft bearing **1** (see arrow) should be parallel to the bed-plate and point in the opposite direction to the sewing direction.
2. The toothed belt should be tightened so that when the gauge is placed on it, the marking in the gauge window should match the marking on the bushing.

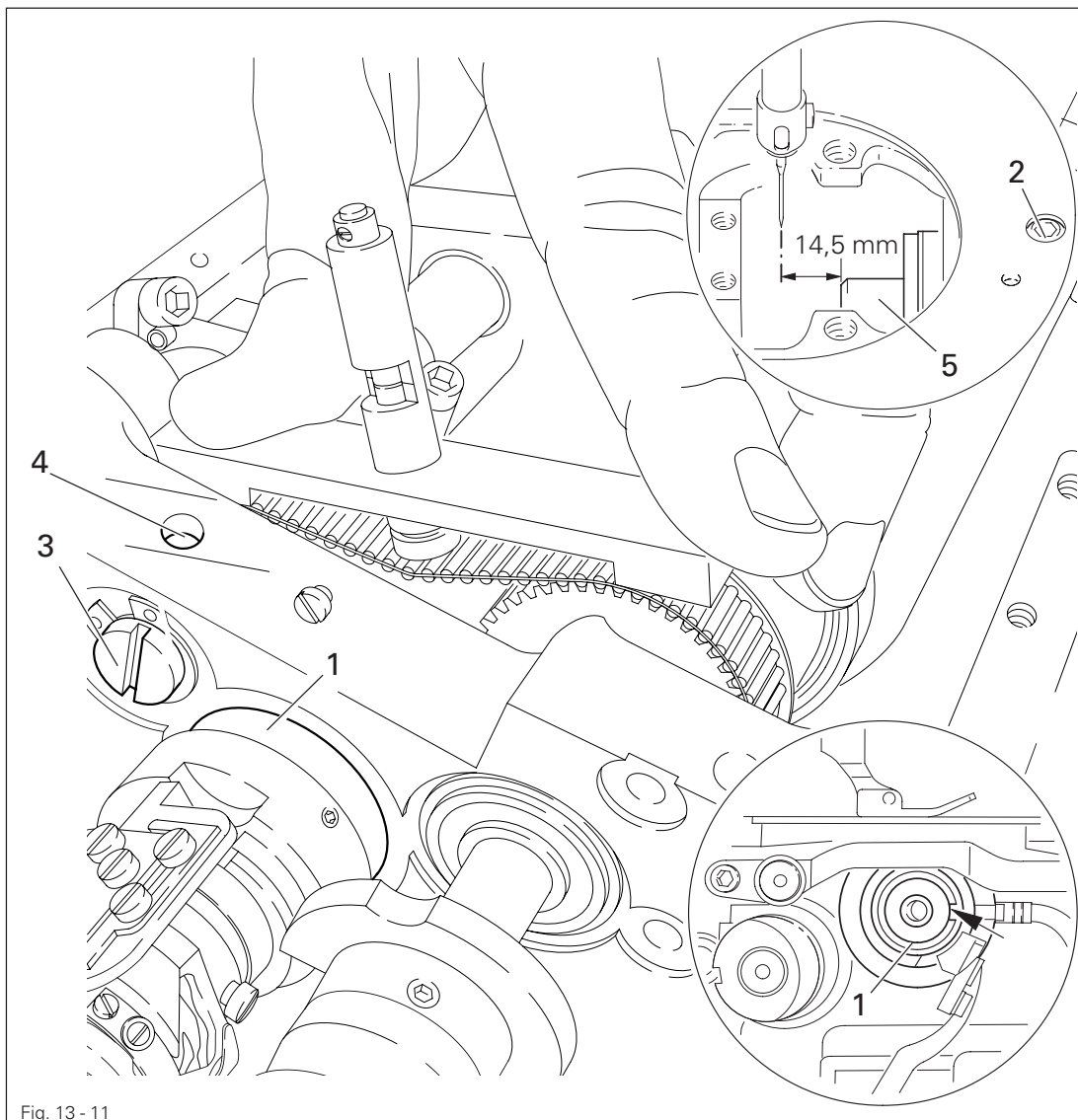
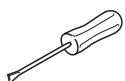


Fig. 13 - 11



- Align the hook bearing shaft **1** (screw **2**) in accordance with **requirement 1**.
- Press the gauge (part no. 61-111 639-76) onto the toothed belt, so that it is centred to it and touching the bearing on the rock shaft. The gauge window must point towards the hook.
- Turn eccentric **3** (screw **4**) clockwise in accordance with **requirement 2**, taking care that the axial position of eccentric **3** is not changed.



## 13.05.11 Hook lubrication

**Requirement**

1. The centrifugal disk **1** must be positioned **1.5 mm** in front of the oil ring **3**.
2. When the machine is running at full speed, **after approx. 10 seconds** a mark should be made by a fine stripe of oil on the strip of paper placed over the needle plate cutout.

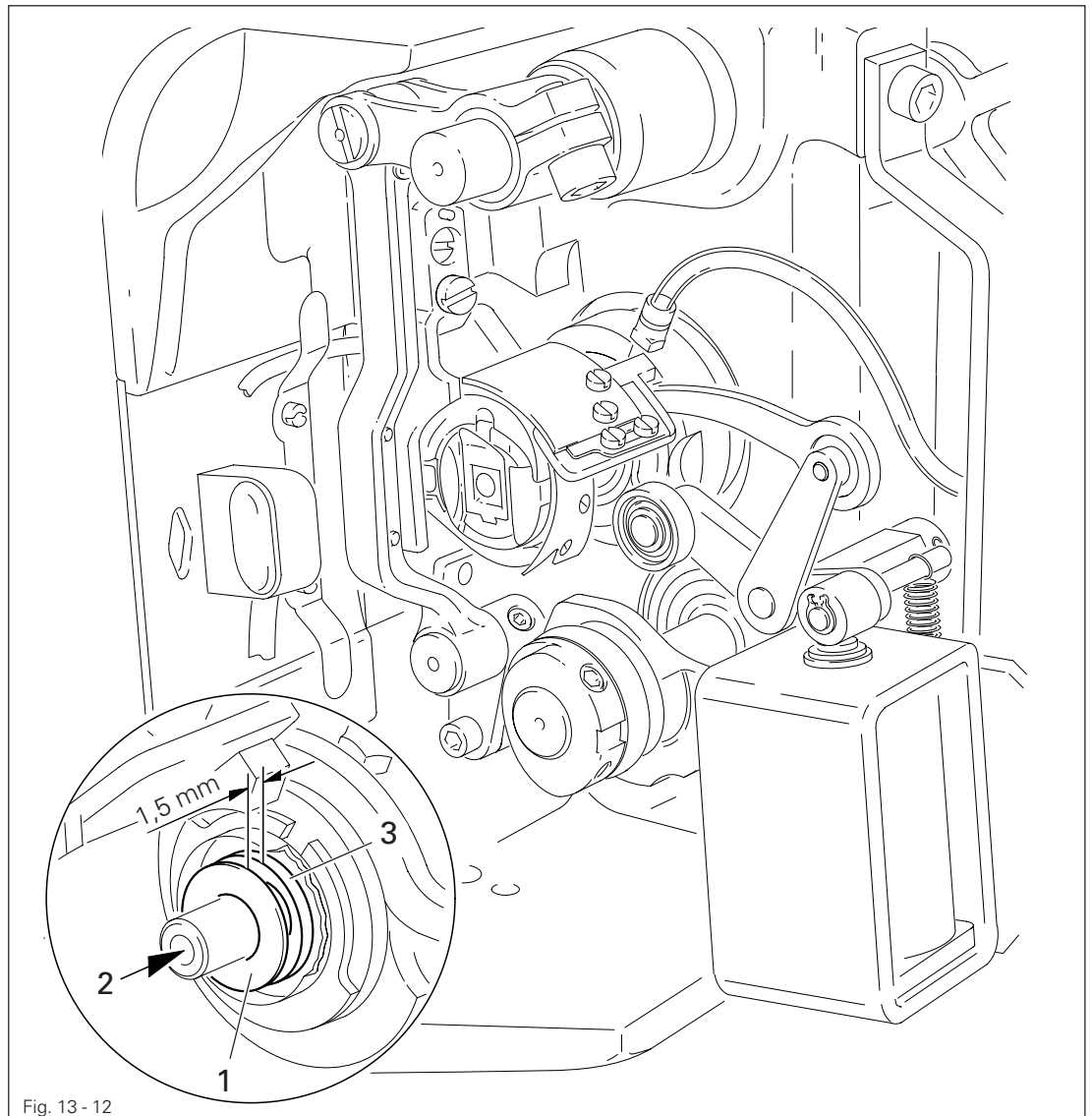
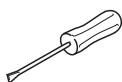


Fig. 13 - 12



The adjustment is only necessary if the wick has been replaced.  
When replacing the wick, make sure that the new wick is impregnated with oil.



- Move the centrifugal disk **1** (screw **2**) according to **requirement 1**.
- Check **requirement 2**. If necessary, move centrifugal disk **1**.

## Requirement

With the needle at 1.8 mm after BDC,

1. the hook point **6** must point to the middle of the needle and be at a distance of **0.05 mm - 0.1 mm** to the clearance cut of the needle, and
2. the top edge of the needle eye must be **0.8 mm** below the hook point.
3. Between the projection of the bobbin case position finger **4** and the bottom of the retaining groove there should be a distance of **0.5 mm**.

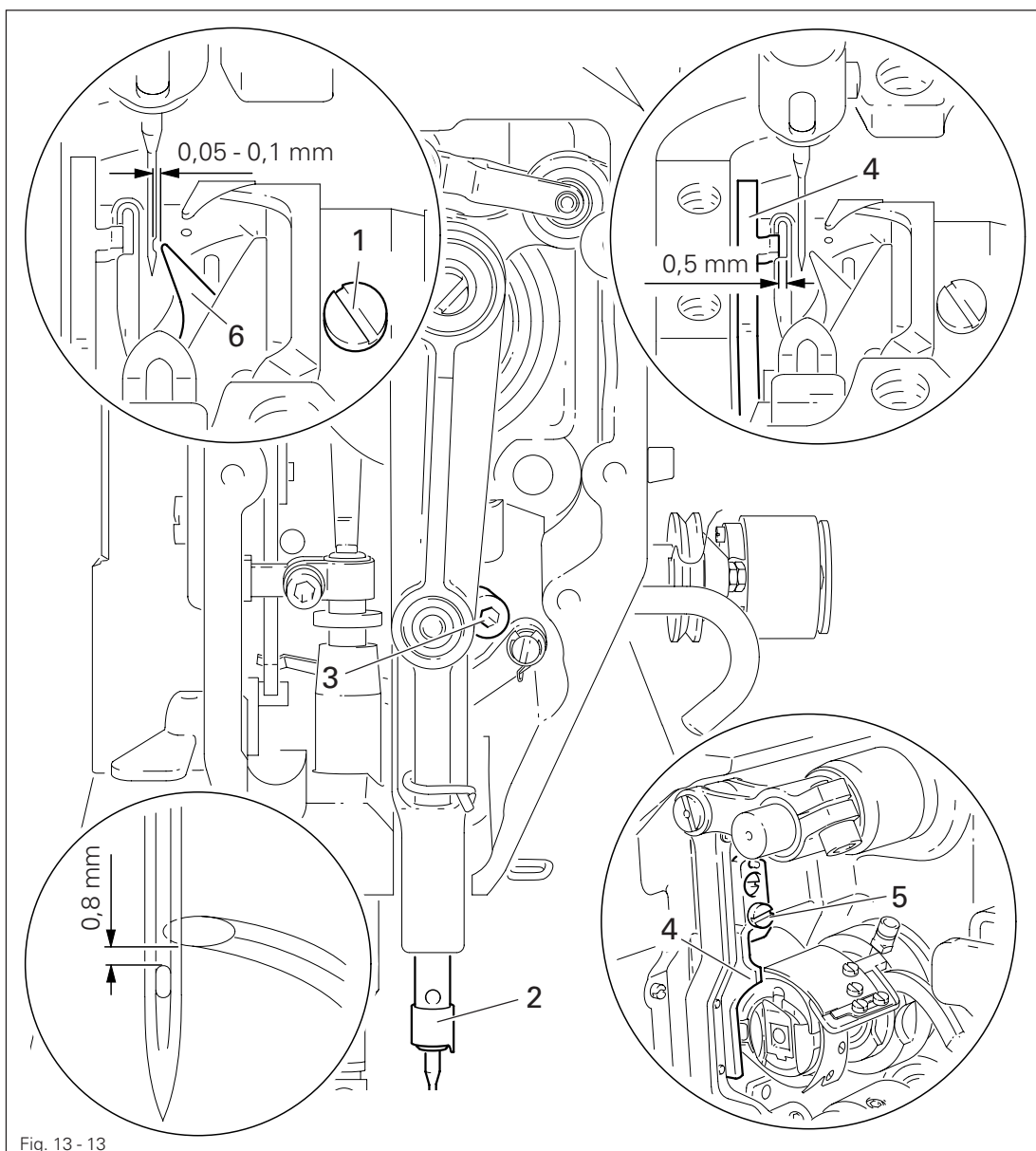
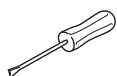


Fig. 13 - 13



- Switch on the machine.
- On the control panel set the stitch length at "0" and turn the balance wheel until the stitch length control motor reacts.
- Switch off the machine.
- Using the adjustment pin, position the needle bar at 1.8 mm after BDC.
- Adjust the hook according to **requirement 1**.

- Tighten screw 1.
- Move needle bar 2 (screw 3) without turning it according to requirement 2.
- Align bobbin case position finger 4 (screw 5) according to requirement 3.

## 13.05.13 Thread check spring and slack thread regulator

### Requirement

1. The motion of the thread check spring must be completed when the 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 have moved by approx. **1 mm**.

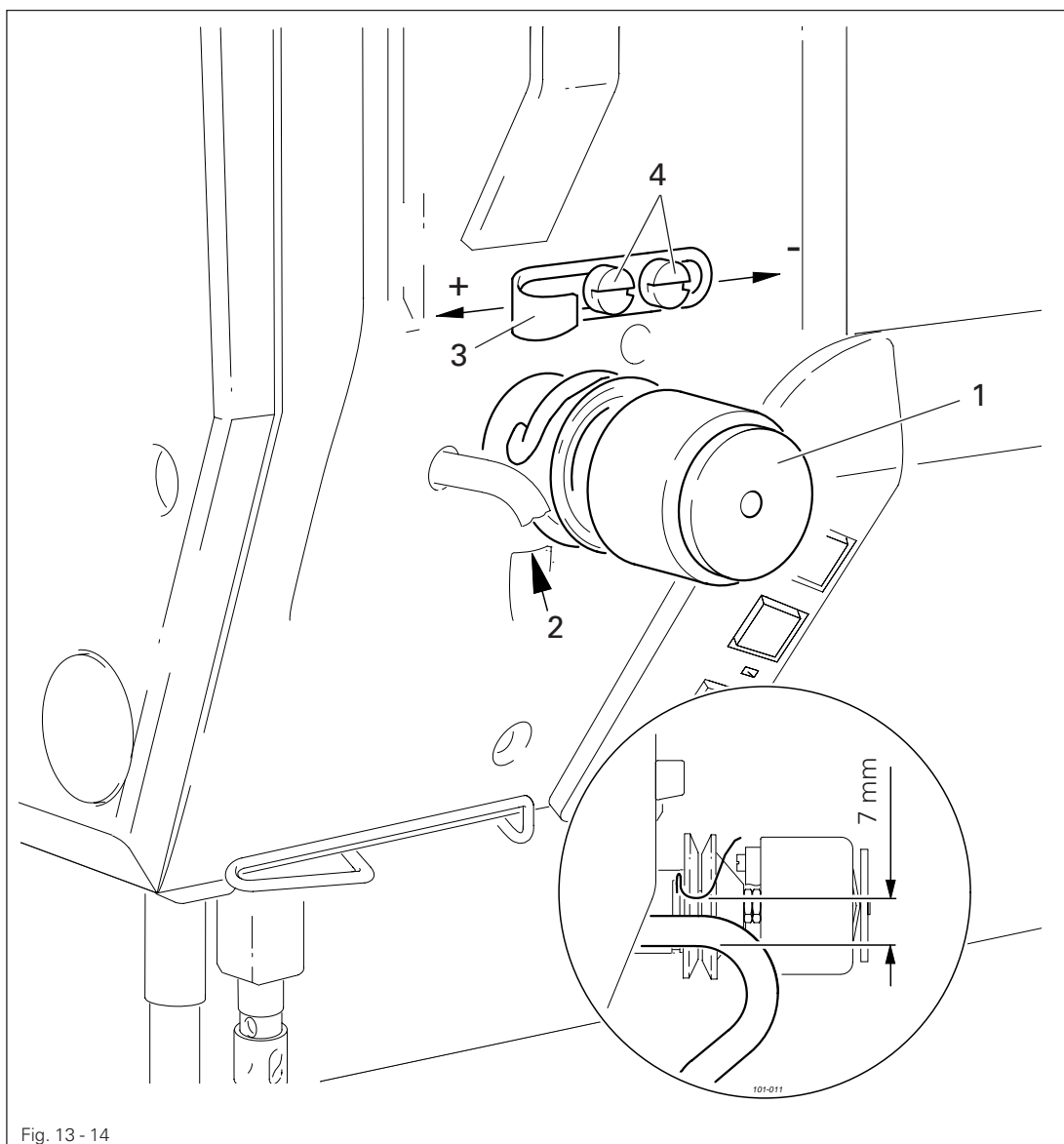
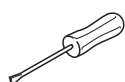


Fig. 13 - 14



- Turn thread tension **1** (screw **2**) according to **requirement 1**.
- Turn thread tension **3** (screw **4**) according to **requirement 2**.



Due to technical sewing reasons it may be necessary to deviate from the spring stroke indicated above.

Move the slack thread regulator **3** (screw **4**) toward the "**+**" (= more thread) or toward the "**-**" (= less thread)

## 13.05.14 Presser foot clearance

### Requirement

1. When the automatic presser foot lift is operated, the clearance between the presser foot and the needle plate should be **7 mm**.
2. When the hand lever is raised, the clearance between the presser foot and the needle plate should be **5 mm**.

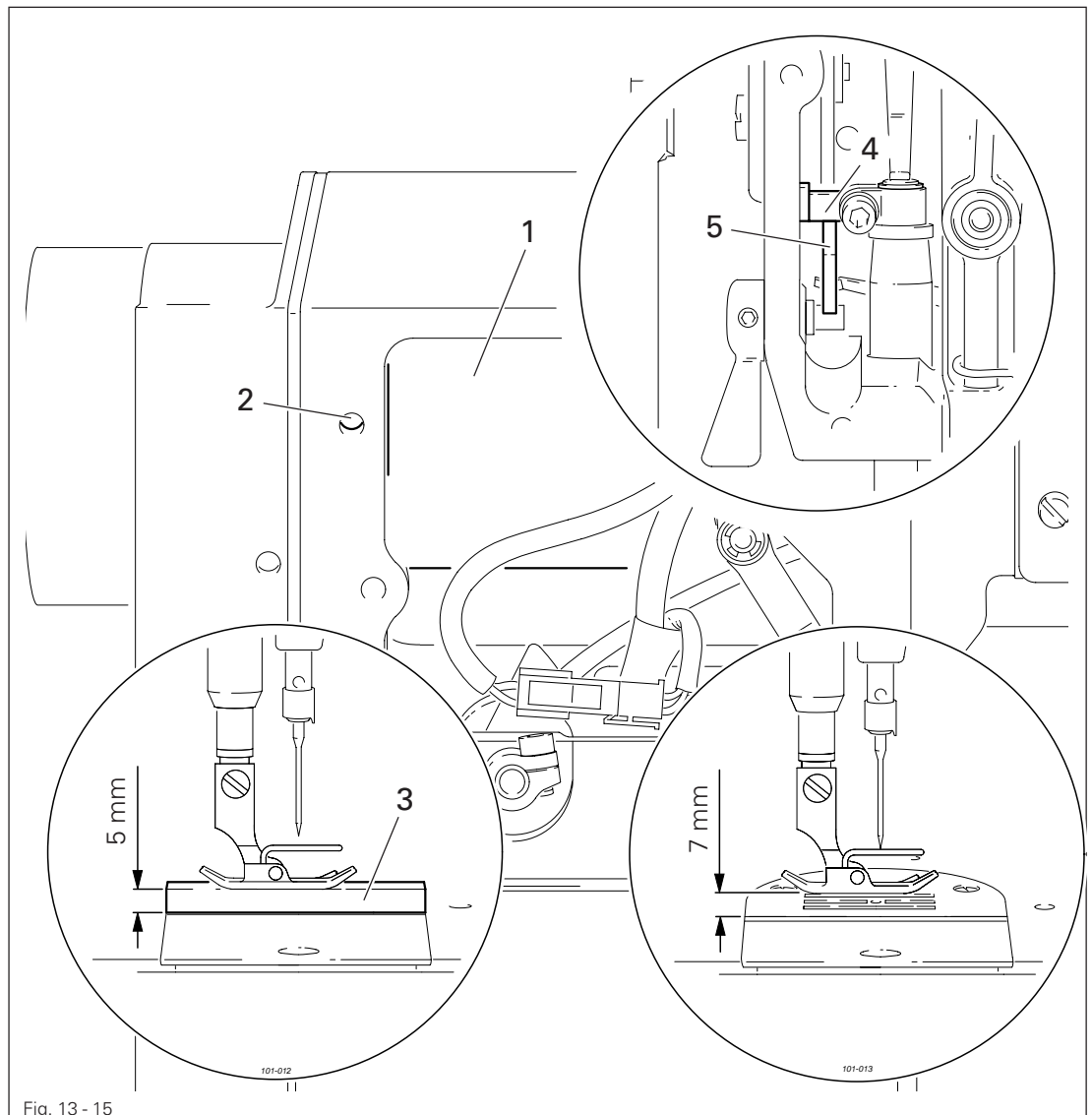
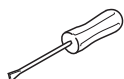


Fig. 13 - 15



- Adjust solenoid 1 (screw 2) in accordance with **requirement 1**.
- Raise the hand lever and place adjustment gauge 3 (part no. 61-111 639-70) under the presser foot in accordance with **requirement 2**.
- Move presser bar lifting lever 4 against lifting piece 5.

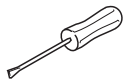


Make sure that the needle is in the centre of the presser foot.

## 13.05.15 Setting the zero point of the feed regulator

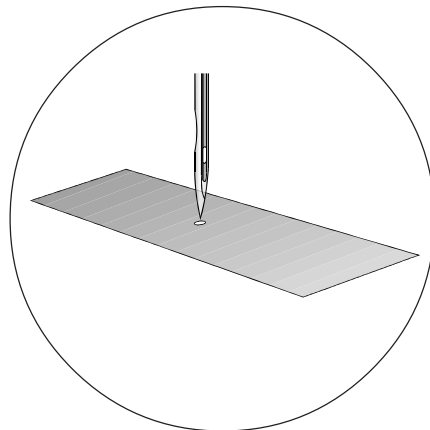
### Requirement

When the stitch length is set at "0", at maximum speed (4500 spm) the needle should always penetrate in the same place.

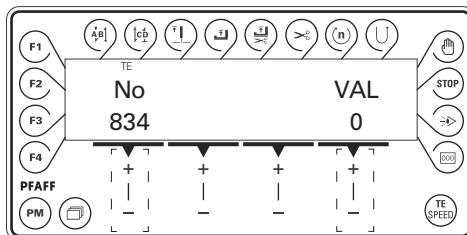


- Unthread the machine.
- Switch on the machine.
- Place the workpiece under the presser foot.
- Let the machine sew at maximum speed and check the **requirement**.

(The workpiece should not move).



- Change the value for parameter **834** within the permissible values in accordance with the **requirement**.



The permissible values for parameter **834** are "1", "0" or "-1".

If the zero point of the feed regulator cannot be set by selecting one of the permissible values, the mechanical setting must be checked or corrected, see **Chapter 13.05.03 Zero position of the bottom feed dog**.



The zero position of the feed regulator is always recognisable in a range of 3 values. When making the adjustment, select the middle value.

- Switch off the machine.

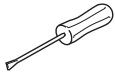


Find more information on how to select and alter parameters and about descriptions (functions) of the individual parameters in **Chapter 13.08 Parameter settings**.

## 13.05.16 Stitch length adjustment forwards and in reverse

### Requirement

At a maximum speed of 400 spm, the stitch length selected on the control panel should not differ from the actual stitch length when sewing forwards or in reverse.



- Thread the machine.
- Switch on the machine.
- Select the stitch length being used on the control panel.
- With parameter **607** limit the maximum speed to 400 spm.
- Set parameter **846** at **100**.
- Place the workpiece under the presser foot.
- Sew a seam with at least 20 stitches.
- Measure the length of the seam over 20 stitches and calculate the actual stitch length.
- If the difference, measured over 20 stitches, is larger than +/- 0.5 mm, the value for parameter 846 must be corrected.
- Take the value for parameter **846** from the table or calculate it with the aid of the formula:

$$\frac{\text{Set stitch length}}{\text{Actual stitch length}} \times 100$$

| Stitch length 3,0 mm    |                               | Stitch length 2,5 mm    |                               | Stitch length 2,0 mm    |                               | Stitch length 1,5 mm    |                               |
|-------------------------|-------------------------------|-------------------------|-------------------------------|-------------------------|-------------------------------|-------------------------|-------------------------------|
| Length over 20 stitches | Value for parameter 846 / 847 | Length over 20 stitches | Value for parameter 846 / 847 | Length over 20 stitches | Value for parameter 846 / 847 | Length over 20 stitches | Value for parameter 846 / 847 |
| 58.5                    | 102                           | 48.5                    | 103                           | 38.5                    | 104                           | 28.5                    | 105                           |
| 59.0                    | 102                           | 49.0                    | 102                           | 39.0                    | 103                           | 29.0                    | 103                           |
| 59.5                    | 101                           | 49.5                    | 101                           | 39.5                    | 101                           | 29.5                    | 102                           |
| <b>60.0</b>             | <b>100</b>                    | <b>50.0</b>             | <b>100</b>                    | <b>40.0</b>             | <b>100</b>                    | <b>30.0</b>             | <b>100</b>                    |
| 60.5                    | 99                            | 50.5                    | 99                            | 40.5                    | 99                            | 30.5                    | 98                            |
| 61.0                    | 98                            | 51.0                    | 98                            | 41.0                    | 97                            | 31.0                    | 97                            |
| 61.5                    | 98                            | 51.5                    | 97                            | 41.5                    | 96                            | 31.5                    | 95                            |
| 62.0                    | 97                            | 52.0                    | 96                            | 42.0                    | 95                            | 32.0                    | 94                            |
| 62.5                    | 96                            | 52.5                    | 95                            | 42.5                    | 94                            | 32.5                    | 92                            |
| 63.0                    | 95                            | 53.0                    | 94                            | 43.0                    | 93                            |                         |                               |
| 63.5                    | 94                            | 53.5                    | 93                            | 43.5                    | 92                            |                         |                               |
| 64.0                    | 94                            | 54.0                    | 93                            |                         |                               |                         |                               |
| 64.5                    | 93                            | 54.5                    | 92                            |                         |                               |                         |                               |
| 65.0                    | 92                            |                         |                               |                         |                               |                         |                               |

- Select the calculated value for parameter **846** and switch off the machine.

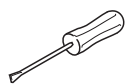
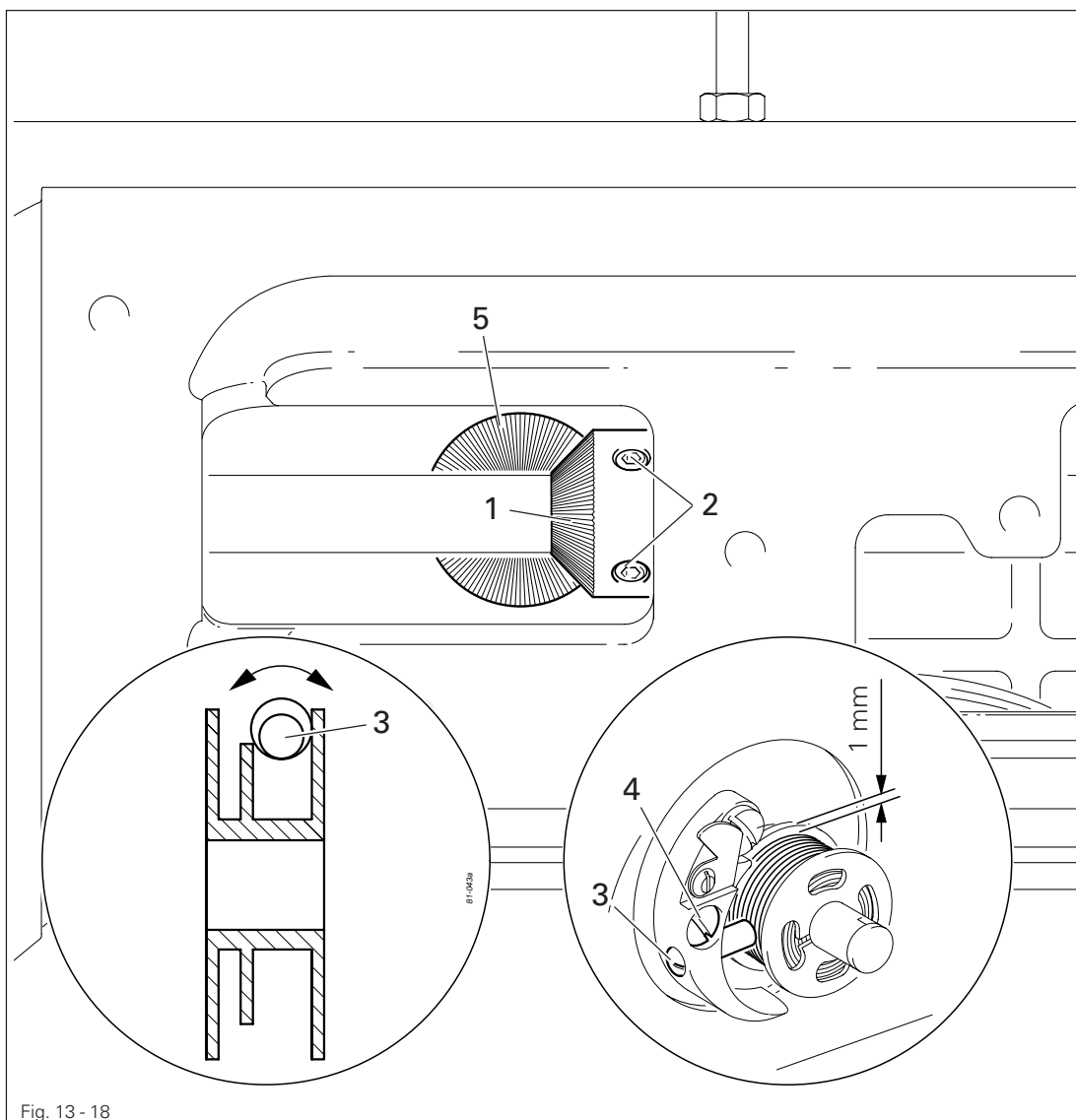


The adjustment of the reverse stitch length is carried out as described in the above work steps under parameter "847", with the reverse feed key pressed, see **Chapter 7.02 Keys on the machine head**. More information about selecting and changing parameters and explanations (functions) of the individual parameters is contained in **Chapter 13.08 Parameter settings**.

## 13.05.17 Bobbin winder

### Requirement

1. With the bobbin winder on, the drive wheel 1 must engage reliably.
2. With the bobbin winder off, the friction wheel 5 must not be driven by the drive wheel 1.
3. The eccentric pin 3 should be positioned in the centre of the large bobbin chamber.



- Move drive wheel 1 (screws 2) in accordance with **requirement 1 and 2**.
- Place a bobbin on the bobbin winder, thread the bobbin and switch on the bobbin winder.
- Adjust pin 3 (screw 4) in accordance with **requirement 2** and turn it in accordance with **requirement 3**.



## 13.05.18 Mechanical limiting of the stitch length

**Requirement**

1. With the maximum stitch length set, the feed dog should not touch the needle plate cut-out when sewing forwards and in reverse.
2. The screws of the stops **1** (forwards sewing) and **3** (reverse sewing) should each have a clearance of **0.3 mm** to the corresponding metal edge.

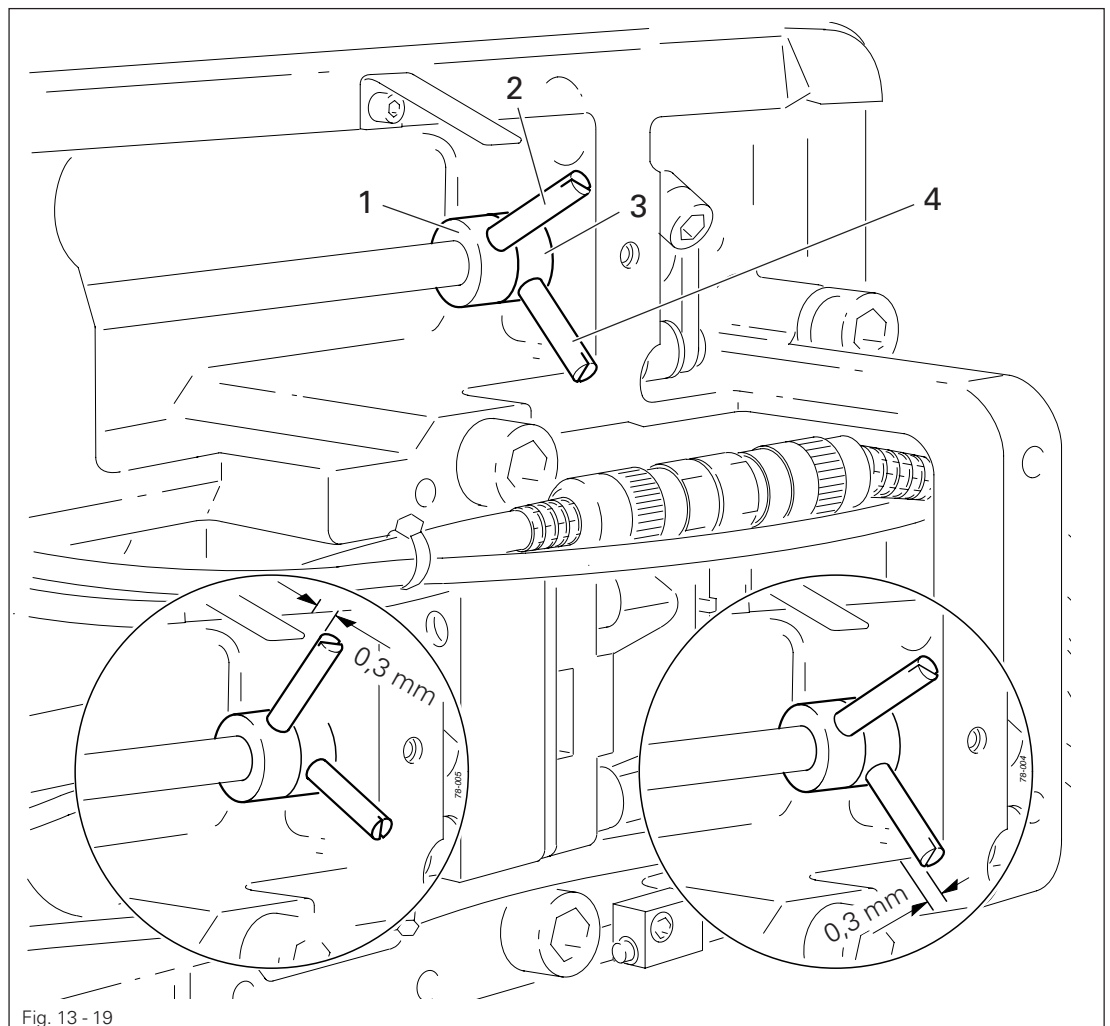
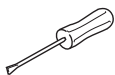


Fig. 13 - 19



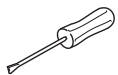
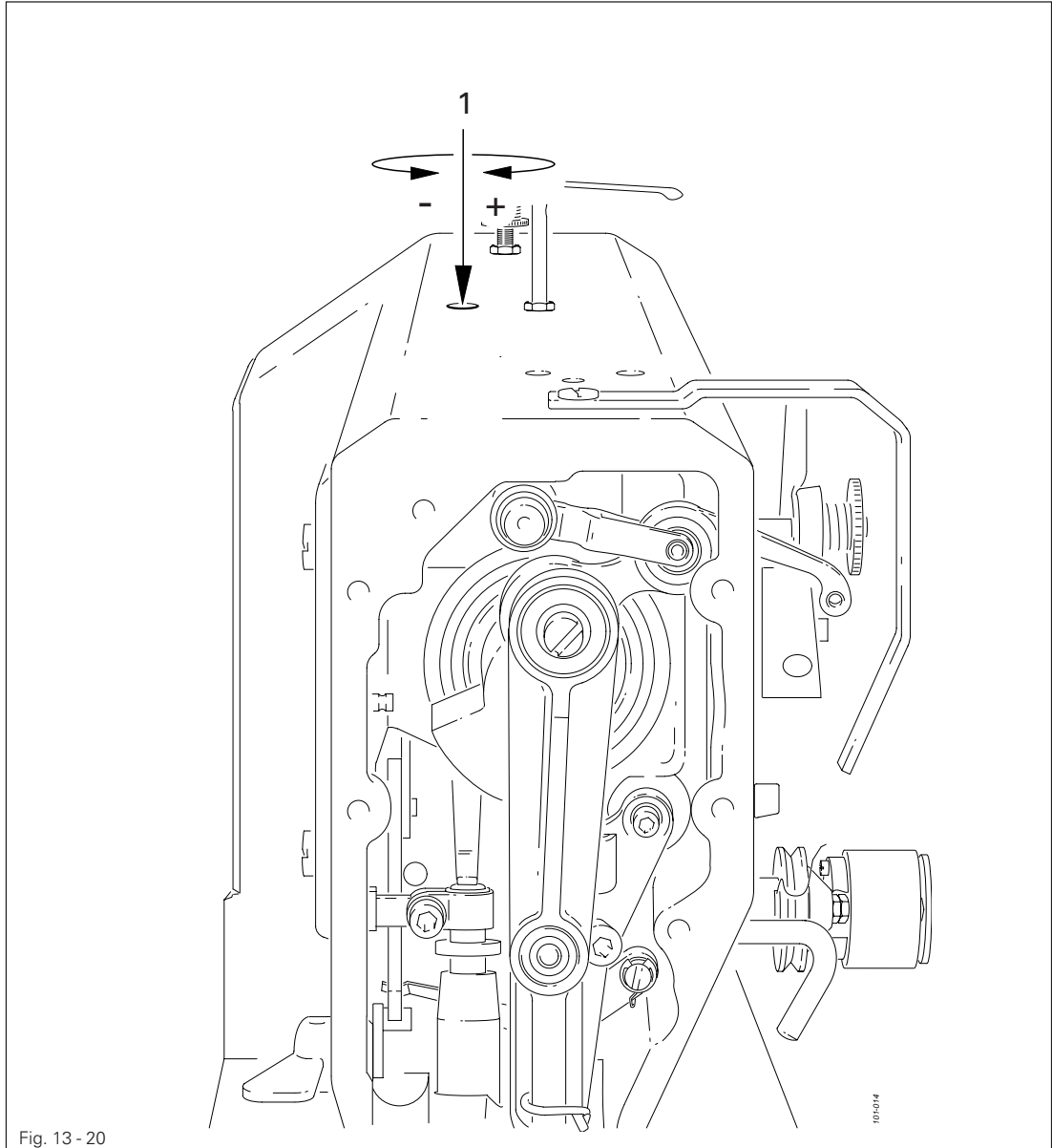
- Switch on the machine and set parameter **849** in accordance with **requirement 1**, see **Chapter 13.11 Parameter settings**.
- Select the maximum stitch length on the control panel.
- Adjust stop **1** (screw **2**) in accordance with **requirement 2**.
- Holding down the reverse sewing key, sew 2 stitches, see **Chapter 7.02 Keys on the machine head**.
- Adjust stop **3** (screw **4**) in accordance with **requirement 2**.
- Switch off the machine.

# Adjustment

## 13.05.19 Presser foot pressure

### Requirement

The material must be fed reliably. In the process, pressure marks on the material must not be made.



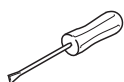
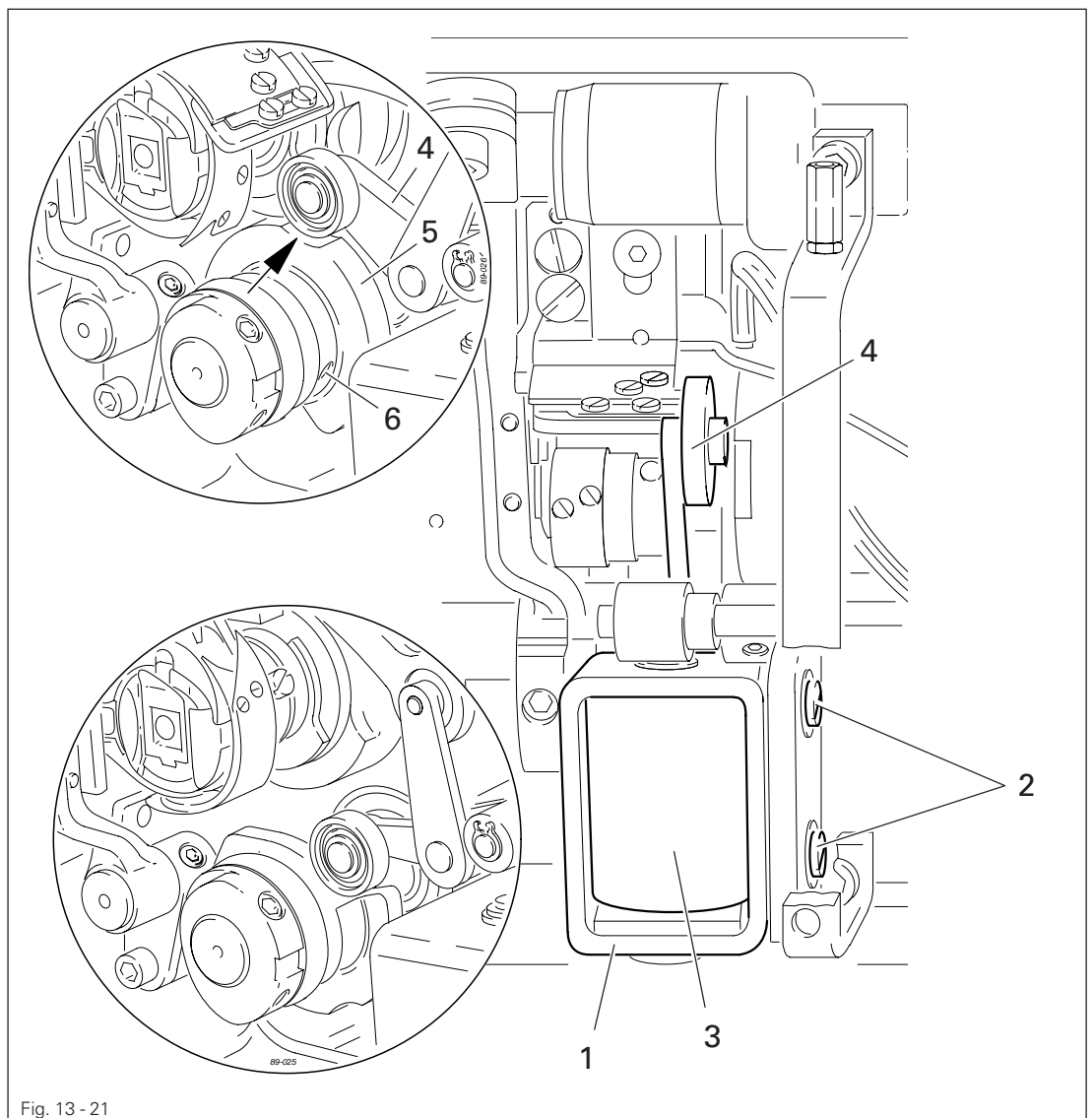
- Turn screw 1 in accordance with the **requirement**.

## 13.06 Adjusting the thread trimming device -900/24

### 13.06.01 Adjusting the solenoid / preliminary adjustment of the control cam

#### Requirement

1. When solenoid **3** is completely extended, roller lever **4** should be at the lowest point of the control cam.
2. When the needle bar is positioned at 1.8 mm after b.d.c. (needle rise position), roller lever **4** should engage in the appropriate recess of the control cam.

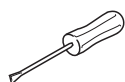
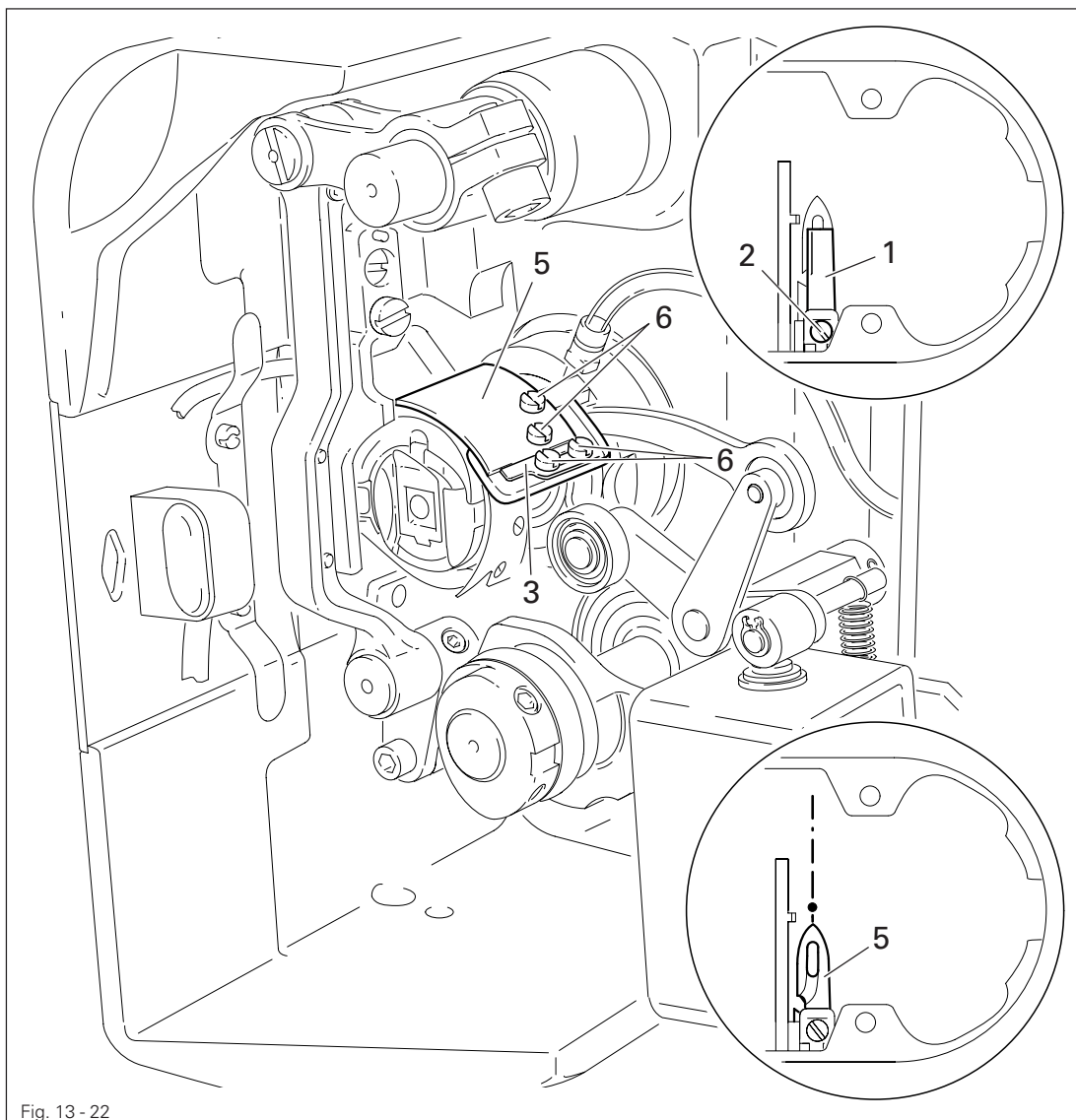


- Adjust solenoid holder **1** (screws **2**) in accordance with requirement **1**.
- Adjust control cam **5** (screws **6**) in accordance with requirement **2**.

## 13.06.02 Lateral alignment of the thread catcher

### Requirement

1. The tip of the thread catcher 5 must point exactly to the center of the needle.
2. The thread catcher 5 must be horizontal. It must not graze anything when it is operating.



- Remove knife 1 (screw 2).
- Move needle bar to its BDC.
- Loosen stop 3 (screws 4).
- Position thread catcher 5 (screw 6) manually in front of the needle.
- Align thread catcher 5 (screws 7) according to the requirements.



For further adjustments, leave knife 1 removed and stop 3 loosened.

## 13.06.03 Knife position

**Requirement**

1. There must be a distance of **4 mm** between the cutting edge of the knife and the needle.
2. The right edge of the knife **1** must not extend beyond the right edge of the thread catcher (see arrow).

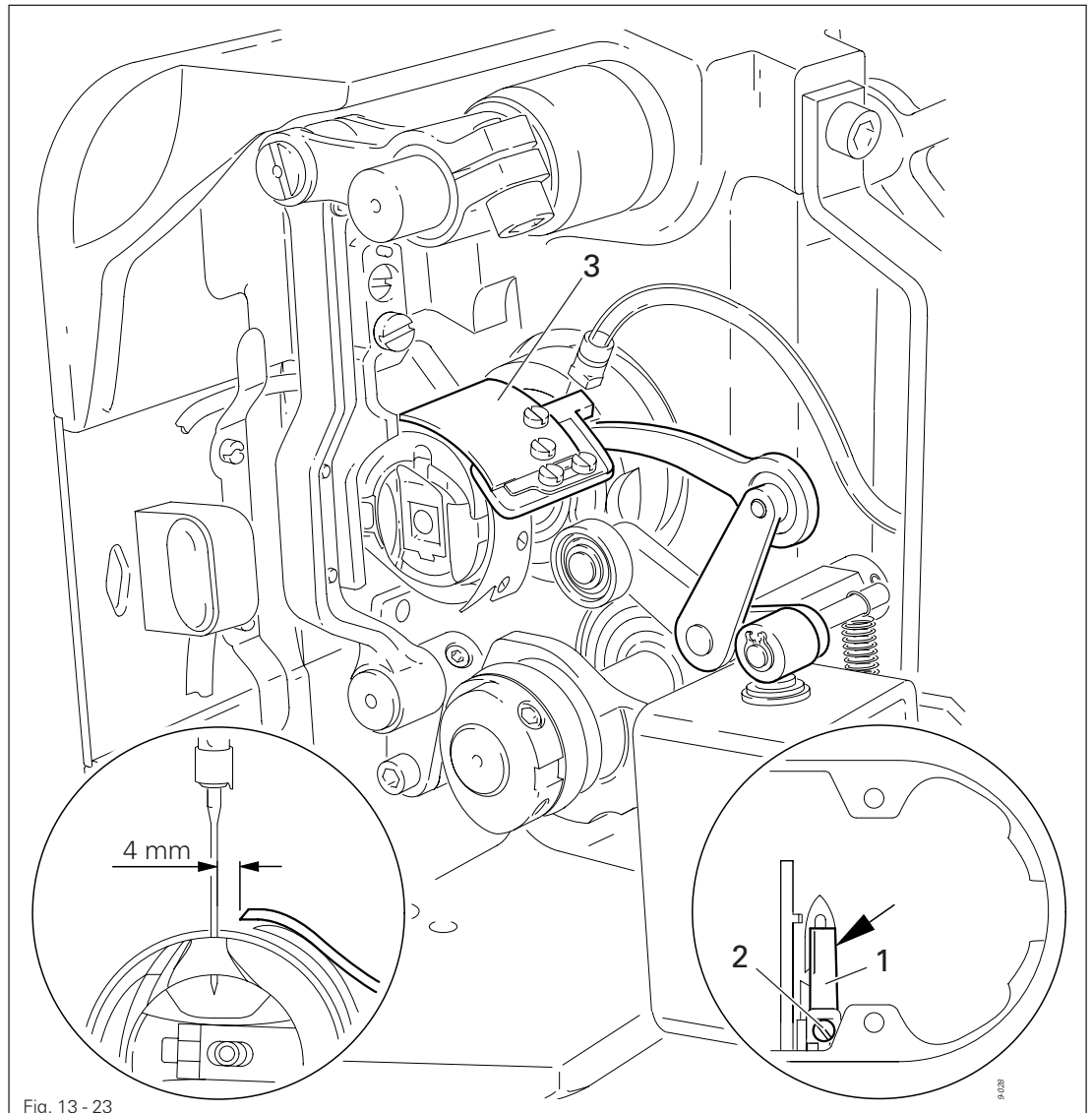
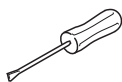


Fig. 13 - 23



- Bring the needle bar to BDC.
- Slide knife **1** under the locking tab and align according to **requirement 1**.
- Tighten screw **2** lightly.
- Adjust thread catcher carrier **3** by hand until the wedge point in the thread catcher is positioned just in front of the cutting edge of the knife.
- Align knife **1** according to **requirement 2** and tighten screw **2**.

## 13.06.04 Front point of reversal of the thread catcher

### Requirement

At the front point of reversal of thread catcher 4, the tip of the thread catcher cutout should be 1 mm in front of the bobbin case position finger 5.

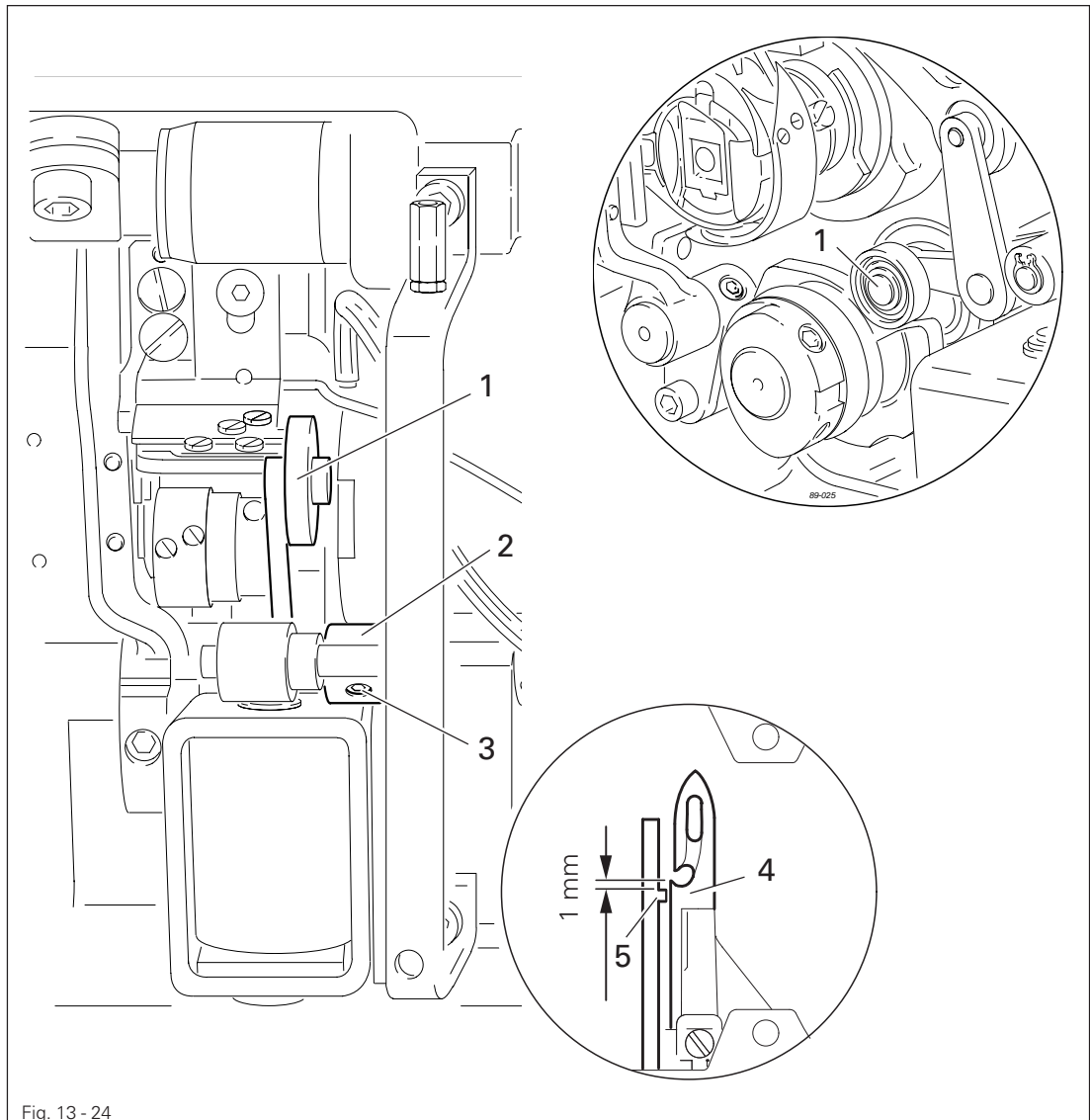
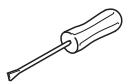


Fig. 13 - 24



- Position roller lever 1 at the lowest point of the control cam.
- Adjust bush 2 (screws 3) according to the requirement.

## 13.06.05 Manual trimming check

**Requirement**

Two threads must be cut perfectly both left and right in the cutout of thread catcher 1.

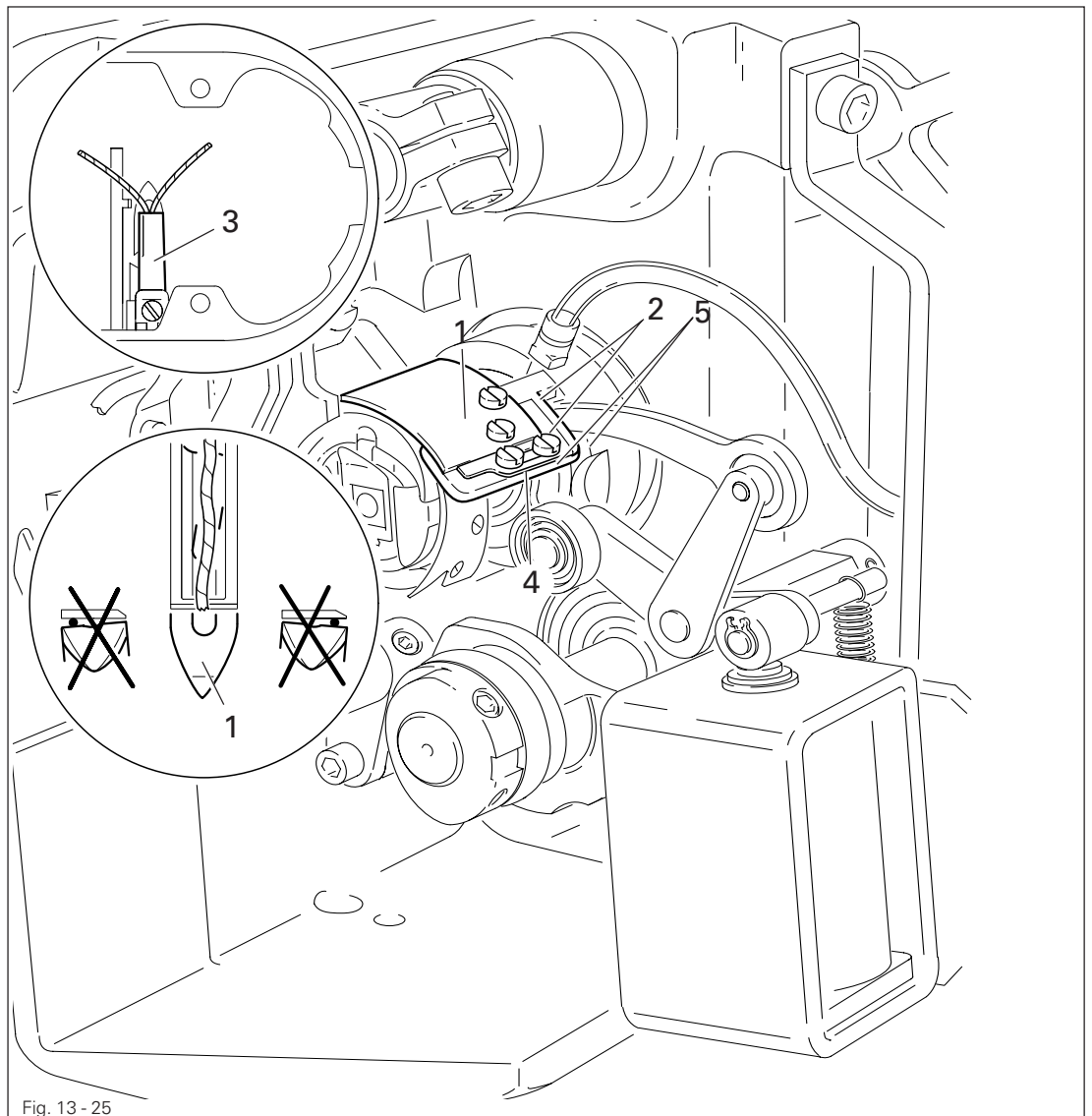
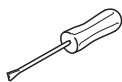


Fig. 13 - 25



- Move thread catcher 1 by hand to its front point of reversal.
- Double the thread and insert into catcher cutout.
- Carry out trimming operation manually.
- If the threads are not cut according to the **requirement**, align thread catcher 1 (screws 2) with knife 3 accordingly.
- Move stop 4 against thread catcher 1 and tighten screws 5.
- Check chapter 13.06.02 **Lateral alignment of the thread catcher**, and readjust if necessary.

## 13.06.06 Thread tension release

### Requirement

1. When the thread tension is released, there should be a distance of **2.4 mm** between armature **5** and case **3**.
2. When the thread tension is applied, there should be a distance of **1.9 mm** between armature **5** and case **3**.

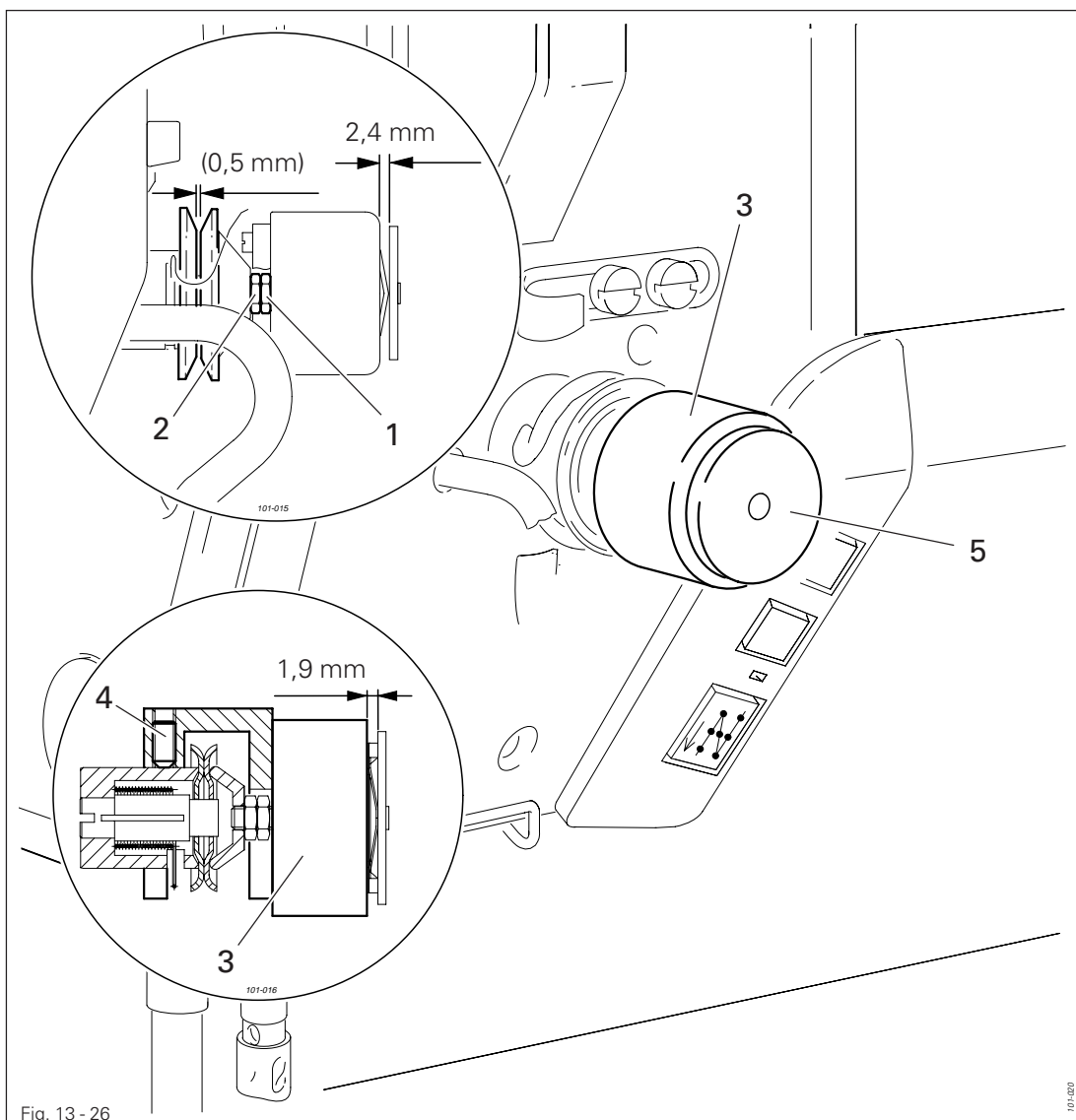
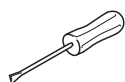


Fig. 13 - 26



- Turn nut **1** (nut **2**) in accordance with **requirement 1**.
- Adjust case **3** (screw **4**) in accordance with **requirement 2**.



The pressure of the tensions disks is set with parameters "862" (securing stitches) and "863" (basting seam), see **Chapter 13.08 Parameter settings**.



## 13.06.07 Readjusting the control cam

### Requirement

When the take-up lever is in its t.d.c., control cam 1 should have moved thread catcher 3.

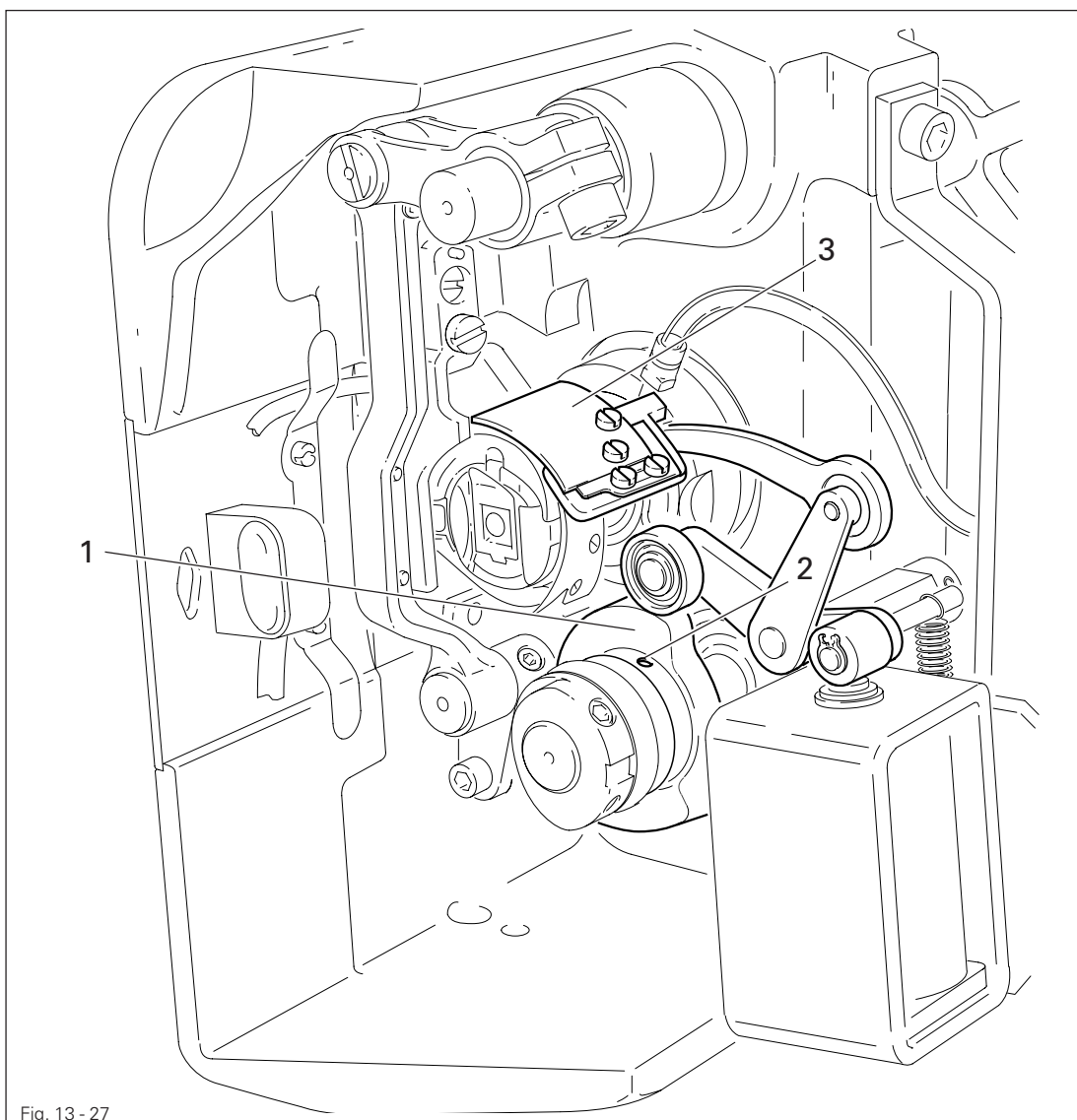
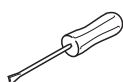


Fig. 13 - 27

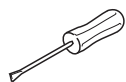
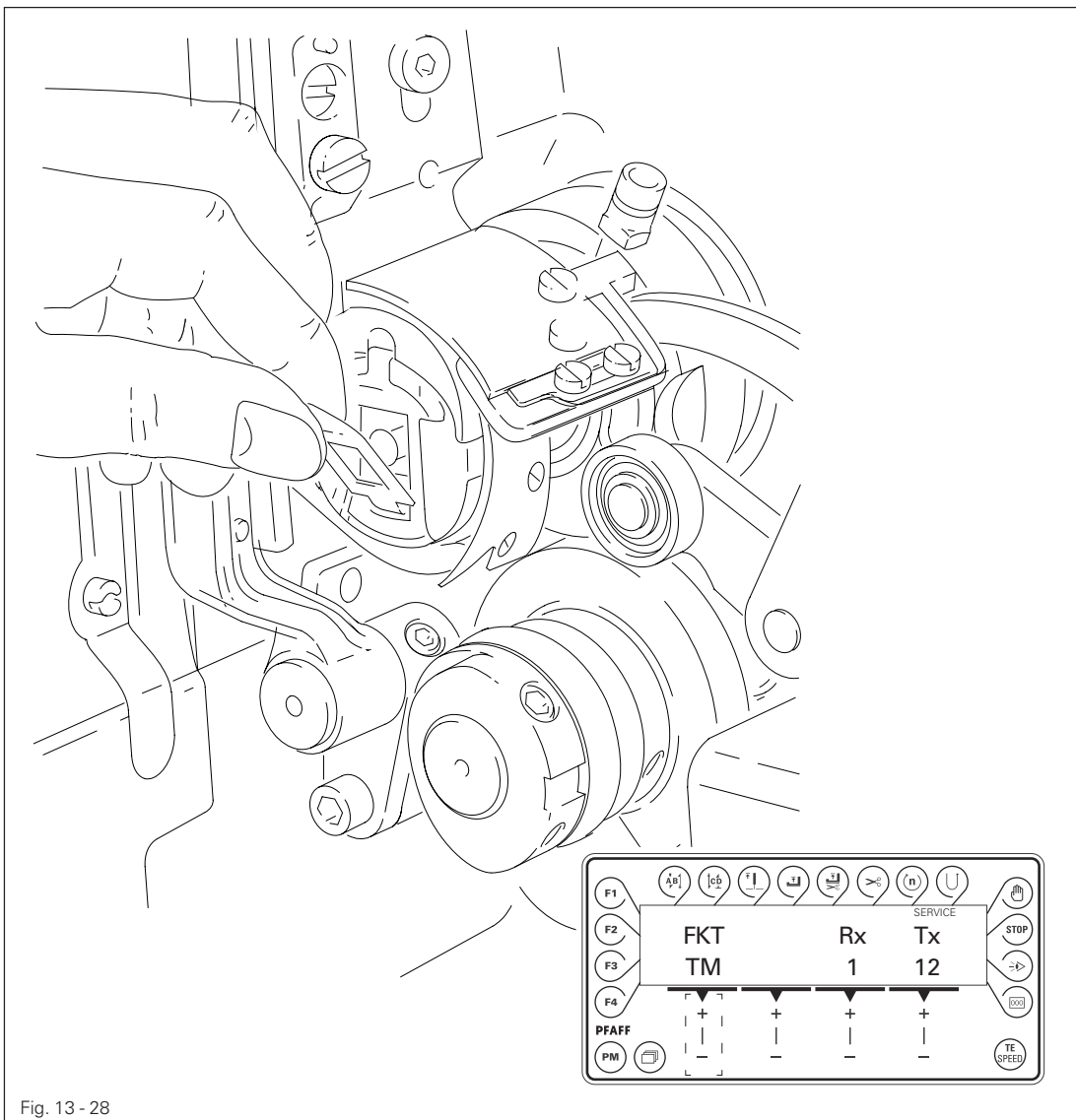


- Adjust control cam 1 (screws 2) according to the requirement.

## 13.07 Function control of the bobbin thread monitor

### Requirement

When the thread is pulled, the value under "Rx" must change from "1" to "0" (perfect transmission of the incoming signal of the bobbin thread monitor).




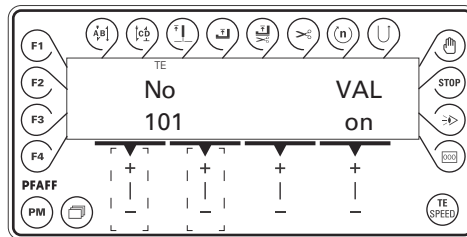
- Place the bobbin in the bobbin case and the bobbin case in the hook.
- Switch on the machine.
- Select the "TM" function from the service menu, see **Chapter 13.10 Service functions**.
- Pull the thread by hand and check the **requirement**.
- If necessary, increase or reduce the transmitting power with the corresponding +/- key.

**Tx** ● Switch off the machine.

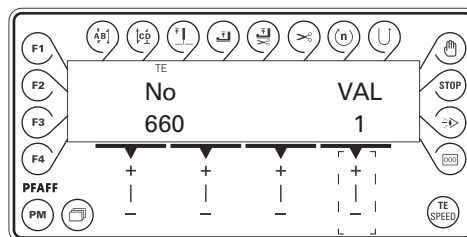
## 13.08 Parameter settings

## 13.08.01 Example of a parameter input

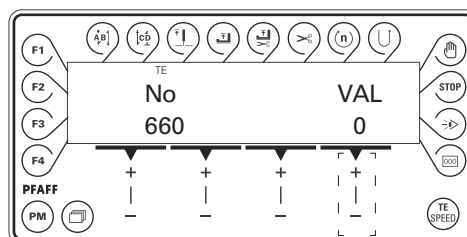
- Switch on the machine.
- 2 x  ● Press the **TE/Speed** key twice to enter the parameter input function. The status text "TE" appears on the display and the pedal functions are blocked, to avoid the machine starting accidentally.




- No** ● Select the desired parameter, e.g. "660" bobbin thread control, by pressing the corresponding **plus/minus** key.




- VAL** ● With the corresponding **plus/minus** key, set the desired value for the parameter, e.g. "0" to switch off the bobbin thread control function.

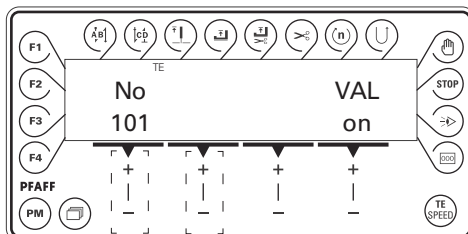


-  ● By pressing the **TE/Speed** key the value is taken over and the machine switches to the sewing mode.

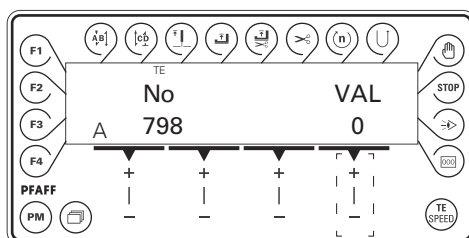
# Adjustment

## 13.08.02 Selecting the user level

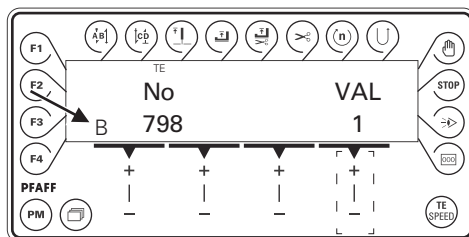
- Switch on the machine.
- 2 x  ● Press the **TE/Speed** key twice to call up the parameter input function.




- No** ● Call up parameter "798" by pressing the corresponding +/- key.



- VAL** ● By pressing the corresponding +/- key select the desired user level.
  - "0" = Operator level **A**
  - "1" = Mechanic level **B**
  - "11" = Service level **C**The respective level is displayed on the screen (see arrow).



-  ● Press the **TE/Speed** key to take over the value and change to the sewing mode.



When the main switch is switched off, the machine changes automatically to user level **A**.

## 13.08.03 List of parameters

| Group | Parameter | Description  | User level | Setting range | Set value |
|-------|-----------|--|------------|---------------|-----------|
| 0     | 10        | Bobbin thread monitor-current level                          | C          | 8 - 16        | 12        |
|       | 11        | Bobbin thread monitor-stitch counter (starting value)        | C          | 0 - 255       | 32        |
|       | 14        | Number of seam segments for gliding average of stitch length | C          | 0 - 10        | 2         |
|       | 15        | Use gliding average of stitch length for corner stitch       | C          | OFF - ON      | OFF       |
|       | 16        | Transmitting power of light sensors<br>0=low / 5=high        | C          | 0 - 5         | 0         |
|       | 17        | Light sensors lower hysteresis value for threshold [%]       | C          | 10 - 90       | 30        |
|       | 18        | Light sensors upper hysteresis value for threshold [%]       | C          | 10 - 90       | 35        |
|       | 20        | Light sensors<br>Min. value for 2 plies                      | C          | 0 - 255       | 0         |
|       | 21        | Light sensors<br>Max. value for 2 plies                      | C          | 0 - 255       | 0         |
|       | 22        | Light sensors<br>Threshold from 2->1 ply                     | C          | 0 - 255       | 66        |
|       | 23        | Light sensors current threshold                              | C          | 0 - 255       | 70        |
|       | 24        | Light sensors<br>Threshold from 1->2 ply                     | C          | 0 - 255       | 74        |
|       | 25        | Light sensors<br>Min. value for 1 ply                        | C          | 0 - 255       | 200       |
|       | 26        | Light sensors<br>Max. value for 1 ply                        | C          | 0 - 255       | 255       |
|       | 30        | Light sensors<br>Min. value for 2 plies                      | C          | 0 - 255       | 0         |
|       | 31        | Light sensors<br>Max. value for 2 plies                      | C          | 0 - 255       | 0         |
|       | 32        | Light sensors<br>Threshold from 2->1 ply                     | C          | 0 - 255       | 66        |

## Adjustment

| Group | Parameter                        | Description   | User level | Setting range | Set value |
|-------|----------------------------------|---|------------|---------------|-----------|
| 0     | 33                               | Light sensors<br>current light barrier threshold [%]  | C          | 0 - 255       | 70        |
|       | 34                               | Light sensors<br>Threshold from 1->2 ply  | C          | 0 - 255       | 74        |
|       | 35                               | Light sensors<br>Min. value for 1 ply   | C          | 0 - 255       | 200       |
|       | 36                               | Light sensors<br>Max. value for 1 ply   | C          | 0 - 255       | 255       |
| 1     | 100                              | Control panel contrast [%]  | A          | 90 - 110      | 100       |
|       | 101                              | Control panel key response signal<br>0=tone off/1=tone off/key inverted<br>2=tone on/3=tone on/key inverted       | A          | 0 - 3         | 2         |
|       | 102                              | Start backtacks forwards  | C          | 0 - 9         | 3         |
|       | 103                              | Start backtacks in reverse  | C          | 0 - 9         | 3         |
|       | 105                              | Start backtacks speed   | B          | 100 - 1500    | 900       |
|       | 106                              | Start backtacks speed<br>ON = pedal-controlled<br>OFF = set with param. "105"                                     | C          | OFF - ON      | OFF       |
|       | 107                              | Pedal-controlled speed start backtacks<br>ON = limited with parameter "105"<br>OFF = limited with parameter "607" | C          | OFF - ON      | OFF       |
|       | 108                              | End backtacks in reverse  | C          | 0 - 9         | 3         |
|       | 109                              | End backtacks forwards  | C          | 0 - 9         | 3         |
|       | 110                              | End backtacks speed   | B          | 100 - 1500    | 1000      |
|       | 111                              | No. of stitches from bright light barrier<br>to seam end in manual sewing   | A          | 1 - 255       | 6         |
|       | 113                              | Start with light barrier<br>ON = only when light barrier is dark<br>OFF = also when light barrier is bright       | B          | OFF - ON      | ON        |
|       | 114                              | After light barrier or stitch counting<br>ON = stop<br>OFF = autom. end backtacks and seam<br>end                 | C          | OFF - ON      | OFF       |
| 116   | Soft start stitches (soft start) | A   | 0 - 10     | 1             |           |

| Group | Parameter | Description   | User level | Setting range | Set value |
|-------|-----------|---|------------|---------------|-----------|
| 1     | 117       | Speed for soft start stitches   | B          | 30 - 550      | 400       |
|       | 148       | Start backtacks<br>ON = double / OFF = single                                       | A          | OFF - ON      | ON        |
|       | 149       | End backtacks<br>ON = double / OFF = single   | A          | OFF - ON      | ON        |
|       | 199       | Speed for light barrier compensating stitches [min <sup>-1</sup> ]                  | B          | 300 - 1500    | 1200      |
| 2     | 220       | Speed level 12 (Poti-reserve) [min <sup>-1</sup> ]                                  | A          | 300 - 4500    | 4000      |
|       | 221       | Speed limitation for seam programs [min <sup>-1</sup> ]                             | B          | 300 - 4500    | 4000      |
|       | 222       | Speed constant for seam programs [min <sup>-1</sup> ]                               | B          | 300 - 4500    | 1500      |
|       | 298       | Number of reduced stitches  | A          | 0 - 3         | 1         |
|       | 299       | Edge guide position in manual sewing [1/10 mm]                                      | A          | 10 - 185      | 185       |
| 4     | 419       | Bartacks:<br>ON = inverted<br>OFF = suppressed                                      | C          | OFF - ON      | ON        |
|       | 492       | Number of seam programs   | B          | 1 - 99        | 15        |
|       | 493       | Number of seam segments per seam program  | B          | 1 - 15        | 15        |
| 5     | 554       | Presser foot after seam segment with pedal forwards:<br>ON = raised / OFF = lowered | C          | OFF - ON      | ON        |
|       | 584       | Backtack stitches<br>ON = fourfold / OFF = normal                                   | C          | OFF - ON      | OFF       |
| 6     | 601       | Cutting:<br>ON = ein / OFF = aus  | B          | OFF - ON      | ON        |
|       | 602       | ON = Cutting with pedal -1<br>OFF = Cutting with pedal -2                           | C          | OFF - ON      | OFF       |
|       | 603       | ON = Pedal stops after cutting<br>OFF = immediate start after end of seam           | C          | OFF - ON      | ON        |
|       | 604       | Cutting:<br>ON = forwards after semi end backtack<br>OFF = in reverse too           | C          | OFF - ON      | ON        |

| Group | Parameter | Description  | User level | Setting range | Set value |
|-------|-----------|--|------------|---------------|-----------|
| 6     | 605       | Speed display<br>ON = ein / OFF = aus  | B          | OFF - ON      | OFF       |
|       | 606       | Speed level 1 (min.) [min <sup>-1</sup> ]  | B          | 30 - 550      | 180       |
|       | 607       | Speed level 12 (max.) [min <sup>-1</sup> ]   | B          | 300 - 4500    | 4000      |
|       | 609       | Cutting speed [min <sup>-1</sup> ]   | B          | 60 - 500      | 180       |
|       | 615       | Light barrier detection<br>ON = from bright to dark<br>OFF = from dark to bright                     | C          | OFF - ON      | OFF       |
|       | 616       | Function of external key (S2):<br>ON = Needle position change<br>OFF = Needle raised without cutting | C          | OFF - ON      | OFF       |
|       | 624       | Start inhibitor: ON = ein / OFF = aus  | C          | OFF - ON      | ON        |
|       | 642       | Presser foot – time from switch-on to tension reduction (tacting)                                    | C          | 10 - 50       | 50        |
|       | 643       | Feed conversion – time from switch-on to tension reduction (tacting)                                 | C          | 10 - 200      | 100       |
|       | 651       | Automatic lowering of presser foot<br>ON = ein / OFF = aus   | C          | OFF - ON      | ON        |
|       | 660       | Bobbin thread monitoring<br>0 = off<br>1 = on<br>2 = bobbin thread reverse counter on                | A          | 0 - 2         | 1         |
|       | 665       | Start inhibitor<br>ON = when contact closed<br>OFF = when contact open                               | C          | OFF - ON      | OFF       |
|       | 668       | Thread wiper : ON = ein / OFF = aus  | B          | OFF - ON      | OFF       |
| 7     | 700       | Logical zero mark [increments]   | B          | 0 - 127       | 0         |
|       | 702       | Needle position (needle lowered)   | B          | 0 - 30        | 15        |
|       | 703       | Needle position (take-up lever raised)   | B          | 100 - 127     | 113       |
|       | 705       | Needle position (end of cutting signal)  | B          | 80 - 127      | 98        |
|       | 706       | Needle position (start of cutting signal)  | B          | 40 - 80       | 68        |



| Group | Parameter | Description  | User level | Setting range | Set value |
|-------|-----------|--|------------|---------------|-----------|
| 7     | 707       | Needle position<br>(start thread tension release)                                  | B          | 40 - 80       | 70        |
|       | 710       | Needle position<br>(needle raised without cutting)                                 | B          | 80 - 127      | 106       |
|       | 715       | Operating time thread wiper [ms]   | B          | 0 - 2550      | 120       |
|       | 718       | Moment of standstill brake<br>(rest brake)   | B          | 0 - 100       | 0         |
|       | 719       | Presser foot-holding current   | B          | 0 - 50        | 40        |
|       | 720       | Cutting-holding current  | B          | 0 - 50        | 10        |
|       | 721       | Feed converter-holding current   | C          | 0 - 50        | 40        |
|       | 722       | Acceleration ramp:<br>1 = flat / 50 = steep  | C          | 1 - 50        | 50        |
|       | 723       | Brake ramp:<br>1 = flat / 50 = steep   | C          | 4 - 50        | 50        |
|       | 729       | Start delay after<br>lowering presser foot [ms]                                    | B          | 0 - 2550      | 120       |
|       | 730       | Lift delay<br>for presser foot after seam end [ms]                                 | B          | 0 - 2550      | 0         |
|       | 731       | Stitch count delay for end backtack  | C          | 0 - 2550      | 70        |
|       | 732       | Delay time for cutting<br>after single end backtack [ms]                           | C          | 0 - 2550      | 30        |
|       | 733       | Delay time from<br>switch on feed conversion<br>to speed start [ms]                | C          | 0 - 200       | 30        |
|       | 739       | Delay time for speed<br>after start backtack or<br>stitch condensation [ms]        | C          | 0 - 2550      | 200       |
|       | 740       | Stitch count delay for end backtack [ms]   | C          | 0 - 2550      | 60        |
|       | 760       | Stitch count to bobbin thread monitor<br>(machine stop in needle lowered position) | A          | 0 - 50000     | 1000      |
|       | 761       | Extension<br>thread tension release/<br>pull thread [ms]                           | B          | 0 - 2550      | 0         |

## Adjustment

| Group | Parameter                       | Description   | User level | Setting range | Set value |
|-------|---------------------------------|---|------------|---------------|-----------|
| 7     | 791                             | Stitch count delay for start backtack [ms]                                      | C          | 0 - 2550      | 30        |
|       | 797                             | Hardware test: ON = ein / OFF = aus   | B          | OFF - ON      | OFF       |
|       | 798                             | User level:<br>0 = User level A<br>1 = Mechanic level B<br>11 = Service level C | A          | 0 - 255       | 0         |
|       | 799                             | Machine class:<br>1 = 2481<br>(2 to 4 = other machine classes)                  | C          | 1 - 4         | 1         |
| 8     | 800                             | Rotating direction of motor   | C          | OFF - ON      | ON        |
|       | 801                             | Reversing angle   | C          | 5 - 106       | 16        |
|       | 805                             | Rotating direction of stepping motor 2  | C          | OFF - ON      | OFF       |
|       | 808                             | Rotating direction of stepping motor 1  | C          | OFF - ON      | ON        |
|       | 831                             | Start delay for stepping motor 2 [increments]                                   | B          | 0 - 10        | 5         |
|       | 832                             | Needle position (feed start)  | B          | 0 - 127       | 15        |
|       | 833                             | Needle position (feed end)  | B          | 0 - 127       | 67        |
|       | 834                             | Feed regulator-balance<br>[1 semi-step = 5/100mm]                               | B          | -5 - 5        | 0         |
|       | 835                             | Reduced single stitch [%]   | A          | 0 - 100       | 100       |
|       | 843                             | Distance sensor 1 to sensor 2<br>[1/10mm]                                       | B          | 75 - 85       | 80        |
|       | 844                             | Distance sensor 1 to needle [2/10mm]  | B          | 80 - 300      | 200       |
|       | 845                             | Speed-controlled stitch length adjustment<br>[% pro 1000 min <sup>-1</sup> ]    | B          | 0 - 3         | 1         |
|       | 846                             | Feed regulator characteristic line adjustment for forward stitch length [%]     | A          | 80 - 110      | 96        |
|       | 847                             | Feed regulator characteristic line adjustment for reverse stitch length [%]     | A          | 80 - 110      | 90        |
| 849   | Maximum stitch length [1/10 mm] | A   | 0 - 60     | 55            |           |

| Group | Parameter | Description   | User level | Setting range | Set value |
|-------|-----------|---|------------|---------------|-----------|
| 8     | 862       | Current for stepping motor axis 1   | A          | 0 - 63        | 45        |
|       | 863       | Current for current reduction of stepping motor axis 1  | A          | 0 - 63        | 37        |
|       | 864       | Current reduction time stepping motor axis 1 [ms]   | B          | 0 - 1000      | 250       |
|       | 880       | Starting current main drive   | C          | 1 - 10        | 6         |
|       | 881       | Filter parameter for position controller  | C          | 0 - 12        | 5         |
|       | 884       | Proportional amplification of the speed control (general)                                       | C          | 1 - 50        | 10        |
|       | 885       | Integral amplification of the speed control   | C          | 0 - 50        | 35        |
|       | 886       | Proportional amplification of the position controller   | C          | 1 - 50        | 30        |
|       | 887       | Differential amplification of the position controller   | C          | 1 - 50        | 30        |
|       | 889       | Time for position control (0 = permanently)   | C          | 0 - 2550      | 200       |
|       | 890       | Proportional amplification of higher ranking speed controller for standstill brake (rest brake) | C          | 1 - 50        | 25        |
|       | 891       | Proportional amplification of subordinate speed controller for standstill brake (rest brake)    | C          | 1 - 50        | 20        |
| 9     | 901       | Cutting release-speed   | C          | 30 - 500      | 300       |
|       | 956       | Current for stepping motor axis 2   | B          | 30 - 63       | 48        |
|       | 957       | Current for current reduction of stepping motor axis 2  | B          | 15 - 31       | 24        |
|       | 958       | Current reduction time stepping motor axis 1  | B          | 0 - 500       | 150       |

## 13.09 Explanation of the error messages

| Message | Description                        |
|---------|------------------------------------|
| E001    | Pedal not in neutral position      |
| E003    | SM 1 (for reference)               |
| E004    | SM 2 (for reference)               |
| E009    | Start inhibitor at standstill      |
| E010    | Incorrect machine class            |
| E040    | Transmitted light sensors          |
| E045    | Bobbin thread monitoring           |
| E062    | Short circuit 24V                  |
| E063    | Overload switch power supply       |
| E064    | Network monitoring                 |
| E065    | Extint low in operation            |
| E066    | Short circuit                      |
| E067    | Power off                          |
| E068    | Extint low in operation            |
| E069    | No increments                      |
| E070    | Motor blocking                     |
| E071    | No incremental connector           |
| E072    | No set value connector             |
| E073    | Motor running interrupted          |
| E075    | Controller locked                  |
| E092    | Start inhibitor when motor running |
| E151    | System                             |
| E155    | Sewing motor                       |
| E156    | Time out communication             |
| E157    | Stepping motor ramps               |
| E158    | Stepping motor frequency           |
| E170    | Incorrect main drive transmission  |
| E171    | Logical zero mark invalid          |
| E172    | Communication error main drive     |
| E175    | Main drive start                   |
| E200    | Brake path too short               |
| E201    | Main drive position                |
| E222    | Time-out monitoring                |

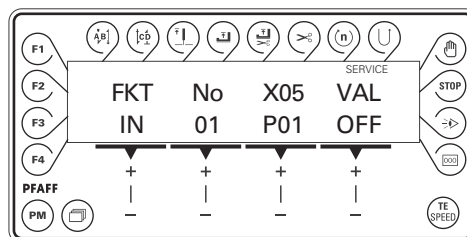
## 13.10 Service functions

- TE SPEED** The service functions help with finding errors and commissioning. After selecting the input mode with the **TE/Speed** key, with the corresponding authorisation (access level B or C), the menu for selecting service functions can be called up by pressing the **F1** key. After the service functions have been called up, the status text "Service" appears on the display.

- Switch on the machine.

- TE SPEED** ● Press the **TE/Speed** key to call up the input mode.

- F1** ● Press the **F1** key within 5 seconds to call up the service functions.



The individual service functions are shown under "FKT" and can be selected with the corresponding +/- key.

### Overview of the service functions

| FKT | Explanation   |
|-----|---|
| IN  | Read out inputs<br>With the corresponding +/- key the number of the input "No" can be selected.   |
| OUT | Set/reset outputs<br>With the corresponding +/- key the number of the output "No" can be selected and set accordingly "VAL" (ON/OFF).   |
| PED | Read out set value transmitter pedal  |
| POS | Read out main drive position  |
| SM1 | Move stepping motor SM1 (edge guide)<br>By selecting the type „POS“ and entering the desired value with the corresponding +/- keys, the edge guide positions in the position entered. By selecting the type "REF" and confirming the selection with the corre |

## Adjustment

| FKT | Explanation   |
|-----|---|
| SM2 | <p>Move stepping motor SM2 (feed regulator)</p> <p>By selecting the type "POS2 and entering the desired value with the corresponding +/- keys, the feed regulator positions in the position entered. By selecting the type "REF" and confirming the selection with the corresponding +/- keys, the feed regulator is moved to the reference position.</p>   |
| DM  | <p>Adjust main drive</p> <p>By selecting the type "POS" and entering the desired value with the corresponding +/- keys, the main drive positions in the position entered.</p> <p>By selecting the type "SPD" and entering the desired value with the corresponding +/- keys, the value for the speed is changed accordingly.</p> <p>By selecting the type "SC" and entering the desired value with the corresponding +/- keys, the value for the stitch count is changed accordingly.</p> |
| RES | <p>Carry out reset</p> <p>By selecting the type "PAR" and confirming the selection with the corresponding +/- keys, the values for all parameters are reset (master reset).</p> <p>By selecting the type "PRG" and confirming the selection with the corresponding +/- keys, all seam programs are deleted.</p>   |
| TM  | <p>Adjust bobbin thread monitor</p> <p>With the corresponding +/- key the transmitting power of the bobbin thread monitor "Tx" can be changed.</p>  |
| PS  | <p>Adjust transmitted light sensors</p> <p>With the corresponding +/- key the transmitting power of the transmitted light sensors "Tx" can be changed (Lo/Hi).</p>  |
| VER | <p>Display software version</p>   |

## Plug assignment

## CAN

| Pin-No. | Comment | Function | Plug marking | Signal marking |
|---------|---------|----------|--------------|----------------|
| X11A.2  | CAN     | CAN-     | CAN_HIGH     | CAN_TxD        |
| X11A.3  | CAN     |          |              | Gnd            |
| X11A.7  | CAN     | CAN+     | CAN_LOW      | CAN_RxD        |

## Set value transmitters

| Pin-No. | Comment | Function  | Plug marking | Signal marking |
|---------|---------|-----------|--------------|----------------|
| X11B.4  | pedal   |           |              | +5V            |
| X11B.5  | pedal   |           |              | +5V            |
| X11B.6  | pedal   |           |              | Gnd            |
| X11B.7  | pedal 2 | set value |              | SW2 (analog)   |
| X11B.8  | pedal 1 | set value |              | SW1 (analog)   |
| X11B.9  | pedal   |           |              | Gnd            |

## Sensors

| Pin-No. | Comment | Function           | Plug marking | Signal marking |
|---------|---------|--------------------|--------------|----------------|
| X15.1   | Sensors | current source UFW |              | P7.3           |
| X15.2   | Sensors | DLS outside (LS2)  |              | P5.3 (analog)  |
| X15.3   | Sensors | DLS inside (LS1)   |              | P5.6 (analog)  |
| X15.4   | Sensors | ZZ-Sensor 2438     | E9           | E9/Port_E9     |
| X15.5   | Sensors | current source DLS | A10/PortA10  | O10            |
| X15.6   | Sensors |                    | +5V          | +5V            |
| X15.7   | Sensors | UFW-Out            |              | UFW_MESS       |
| X15.8   | Sensors |                    | +24V         | +24V           |
| X15.9   | Sensors |                    | 0V           | 0V             |

## RS232

| Pin-No. | Comment   | Function | Plug marking | Signal marking |
|---------|-----------|----------|--------------|----------------|
| X1A.1   | BDF-S2/T1 |          | +24V         | +24V           |
| X1A.2   | BDF-S2/T1 |          | RxD          | RxD            |
| X1A.3   | BDF-S2/T1 |          | TxD          | TxD            |
| X1A.4   | BDF-S2/T1 |          | +5V          | +5V            |
| X1A.5   | BDF-S2/T1 |          | Gnd          | Gnd            |
| X1A.6   | BDF-S2/T1 |          | -            |                |
| X1A.7   | BDF-S2/T1 |          | RTS          | RTS            |
| X1A.8   | BDF-S2/T1 |          | CTS          | CTS            |
| X1A.9   | BDF-S2/T1 |          | Gnd          | Gnd            |

# Adjustment

## OTE

| Pin-No. | Comment | Function          | Plug marking | Signal marking |
|---------|---------|-------------------|--------------|----------------|
| X1B.1   | OTE     |                   |              | Gnd            |
| X1B.2   | OTE     | SSI-Out (TxD)     |              | SSOut          |
| X1B.3   | OTE     | SSI-Clock         |              | SSClk          |
| X1B.4   | OTE     |                   |              | +24V           |
| X1B.5   | OTE     |                   |              | +5V            |
| X1B.6   | OTE     | SSI-strobe (Mode) |              | SSStr          |
| X1B.7   | OTE     | SSI-In (RxD)      |              | SSIn           |
| X1B.8   | OTE     | (light barrier 1) |              | (LS1)          |
| X1B.9   | OTE     |                   |              |                |

## Incremental transmitter

| Pin-No. | Comment      | Function             | Plug marking | Signal marking |
|---------|--------------|----------------------|--------------|----------------|
| X3.1    | incr.transm. | track A 256inc./rev. |              | FA_MINI        |
| X3.2    | incr.transm. | track B 256inc./rev. |              | FB_MINI        |
| X3.3    | incr.transm. | SyMa 360°/256        |              |                |
| X3.4    | incr.transm. | Autodetect           |              | ADTC           |
| X3.5    | incr.transm. |                      |              | +5V            |
| X3.6    | incr.transm. |                      |              | +5V            |
| X3.7    | incr.transm. |                      |              | Gnd            |
| X3.8    | incr.transm. | Ext. SyMa 180°       |              | EXTSM_MINI     |
| X3.9    | incr.transm. |                      |              | Gnd            |

## Stepping motor 1 (edge guide)

| Pin-No. | Comment | Function          | Plug marking | Signal marking |
|---------|---------|-------------------|--------------|----------------|
| X4B.1   | SM1/FSL | phase A.2         | A11          |                |
| X4B.2   | SM1/FSL | phase A.1         | A12          |                |
| X4B.3   | SM1     | phase B.2         | A21          |                |
| X4B.4   | SM1     | phase B.1         | A22          |                |
| X4B.5   | SM1     |                   |              |                |
| X4B.6   | SM1     |                   |              |                |
| X4B.7   | SM1     | +5V (with 120R ?) |              |                |
| X4B.8   | SM1     | reference SM1     | SM_REF1      | SM_REF1        |
| X4B.9   | SM1     | Gnd               |              |                |

## Stepping motor 2 (stitch length)

| Pin-No. | Comment | Function          | Plug marking | Signal marking |
|---------|---------|-------------------|--------------|----------------|
| X4A.1   | SM2     | Phase A.2         | B11          |                |
| X4A.2   | SM2     | Phase A.1         | B12          |                |
| X4A.3   | SM2     | Phase B.2         | B21          |                |
| X4A.4   | SM2     | Phase B.1         | B22          |                |
| X4A.5   | SM2     |                   |              |                |
| X4A.6   | SM2     |                   |              |                |
| X4A.7   | SM2     | +5V (with 120R ?) |              |                |
| X4A.8   | SM2     | reference SM2     | SM_REF2      | SM_REF2        |
| X4A.9   | SM2     | Gnd               |              |                |



## Outputs

| Pin-No. | Comment   | Function           | Plug marking | Signal marking |
|---------|-----------|--------------------|--------------|----------------|
| X13.01  | PWM       | FSL-solenoid(Y8)   | A1           | O1.1           |
| X13.02  |           | FSL-solenoid(Y8+)  | A1           | O1.2           |
| X13.03  | PWM       | PFH-solenoid(Y4)   | A2           | O2.1           |
| X13.04  |           | PFH-solenoid(Y4+)  | A2           | O2.2           |
| X13.05  |           | WI-solenoid(Y3)    | A3           | O3             |
| X13.06  | PWM       | SN-solenoid(Y2)    | A4           | O4             |
| X13.07  |           |                    | A5           | O5             |
| X13.08  |           | RAFI-LED(H1)       | A6           | O6             |
| X13.09  |           |                    | A7           | O7             |
| X13.10  |           |                    | A8           | O8             |
| X13.11  |           |                    | A9           | O9             |
| X13.12  | (from DX) | current source DLS | A10/PortA10  | O10            |
| X13.13  |           |                    | A11          | O11            |
| X13.14  |           |                    | +24V         | +24V           |
| X13.15  |           |                    | +24V         | +24V           |
| X13.16  |           |                    | A14          | O14            |
| X13.17  |           |                    | A15          | O15            |
| X13.18  |           |                    | A16          | O16            |
| X13.19  |           | SN-solenoid(Y2+)   | +24V         | +24V           |
| X13.20  |           | WI-solenoid(Y3+)   | +24V         | +24V           |
| X13.21  |           |                    | +24V         | +24V           |
| X13.22  |           | RAFI-LED(H1+)      | +24V         | +24V           |
| X13.23  |           |                    | +24V         | +24V           |
| X13.24  |           |                    | A13          | O13            |
| X13.25  |           |                    | A12          | O12            |

## Inputs

| Pin-No. | Comment   | Function             | Plug marking | Signal marking |
|---------|-----------|----------------------|--------------|----------------|
| X5.01   |           | TUM-key(S1)          | E1           | E7             |
| X5.02   |           | NPW-key(S2)          | E2           | E8             |
| X5.03   |           | EST-key(S2)          | E3           | E2             |
| X5.04   |           | ANLSP-switch(S14)    | E4           | E4             |
| X5.05   |           | EST-knee switch(S13) | E5           | E5             |
| X5.06   |           | knee switch2         | E15          | E15            |
| X5.07   |           |                      | E16          | E16            |
| X5.08   |           |                      | E14          | E14            |
| X5.09   | (from DX) | ZZ-Sensor 2438       | E9           | E9/Port_E9     |
| X5.10   |           |                      | E10          | E10            |
| X5.11   |           |                      | E11          | E11            |
| X5.12   |           |                      | E12          | E12            |
| X5.13   |           |                      | E13          | E13            |
| X5.14   |           |                      | E6           | E6             |
| X5.15   |           |                      | E7           | E1             |
| X5.16   |           |                      | E8           | E3             |
| X5.17   |           | S1-S2-S3(Gnd)        | 0V           | 0V             |
| X5.18   |           |                      | 0V           | 0V             |
| X5.19   |           | ANLSP-switch(Gnd)    | 0V           | 0V             |
| X5.20   |           | EST-knee switch(Gnd) | 0V           | 0V             |
| X5.21   |           |                      | 0V           | 0V             |
| X5.22   |           |                      | 0V           | 0V             |
| X5.23   |           |                      | +24V         | +24V           |
| X5.24   |           |                      | A16          | output_A16     |
| X5.25   |           |                      | +24V         | +24V           |

## 13.11 Internet update of the machine software

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



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

To update the machine software carry out the following steps:



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

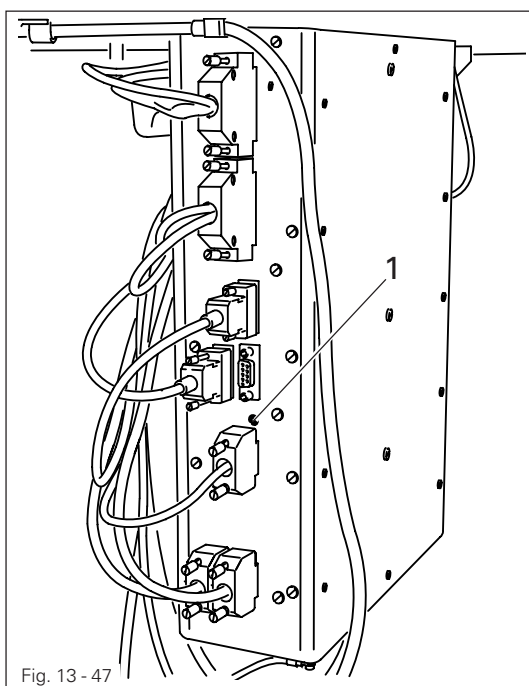


Fig. 13 - 47

- Switch off the machine.
- Connect the PC (serial interface or appropriate USB-adapter) and the machine control unit (RS232). To do so disconnect the plug of the control panel.
- Switch on the PC and start the PFP boot program.
- Select the machine type.
- Press the "programming" button.
- Hold down boot key 1 and switch on the machine.
- Press the "OK" button.

- The software update is carried out, the update progress is shown on the bar display of the PFP boot program.
- During the up-dating procedure the machine must not be switched off.
- When the update has been completed, switch off the machine and end the PFP boot program.
- End the connection between the PC and the machine control unit and reconnect the control panel to the machine control unit.
- Switch on the machine.

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



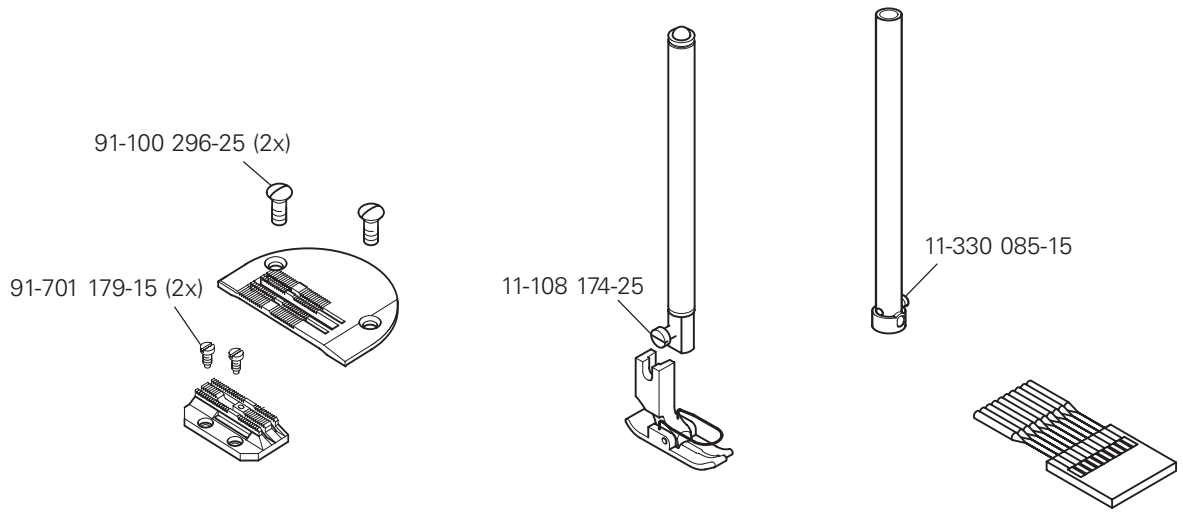
More information and assistance is at your disposal in the file "PFPHILFE.TXT", which can be called up from the PFP boot program by pressing the "help" button.

14 Wearing parts

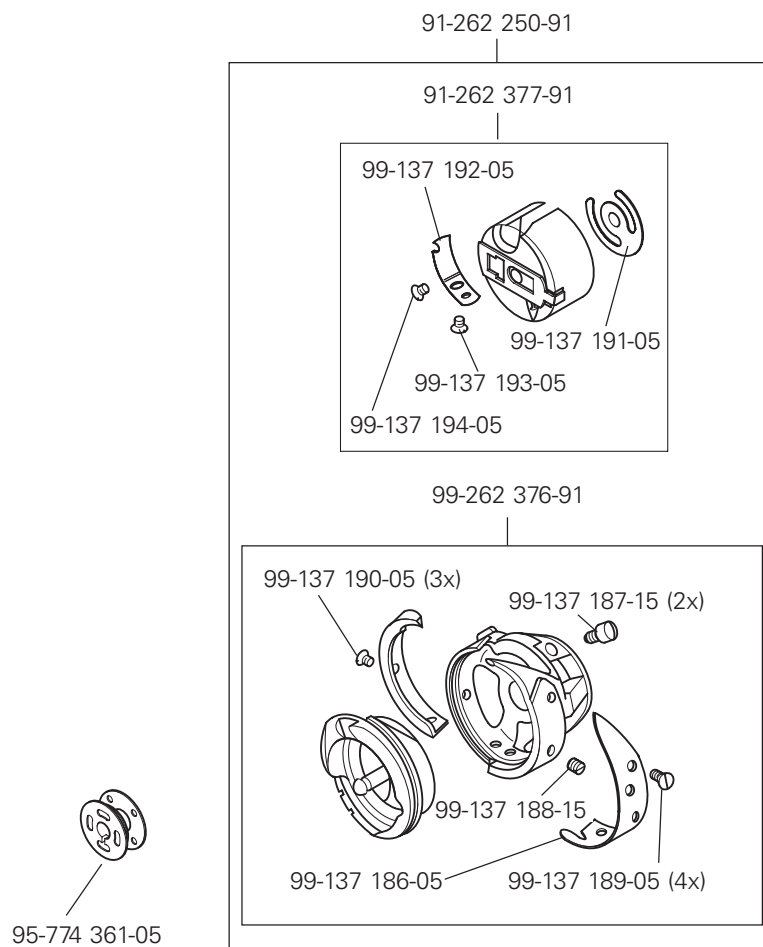


This list indicates the most important wearing parts.

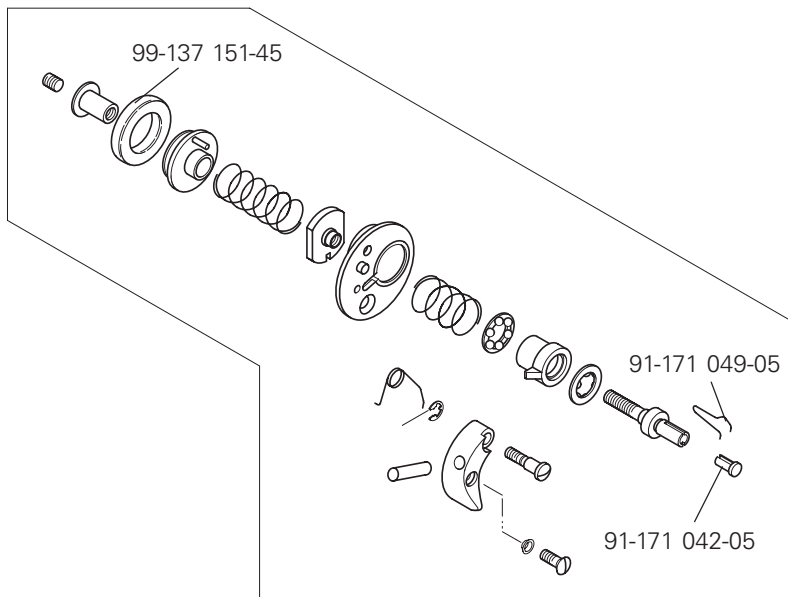
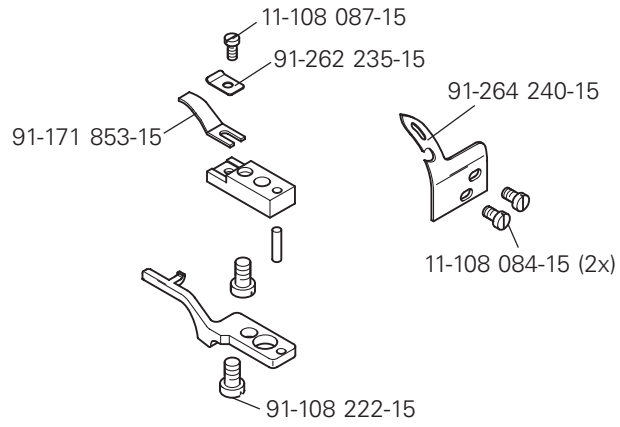
You can request a detailed parts list for the complete machine under parts number 296-12-18 760.



System 134

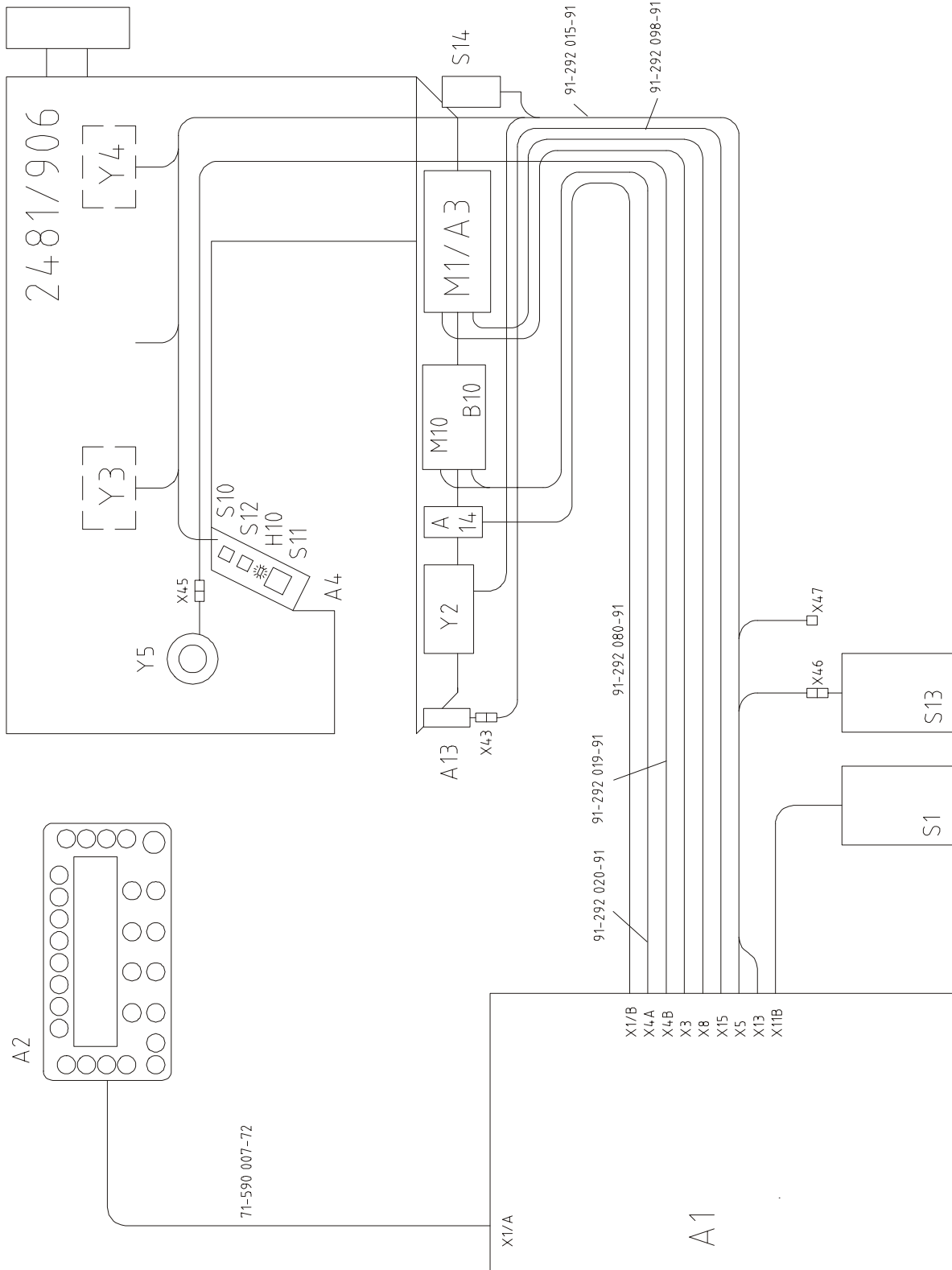


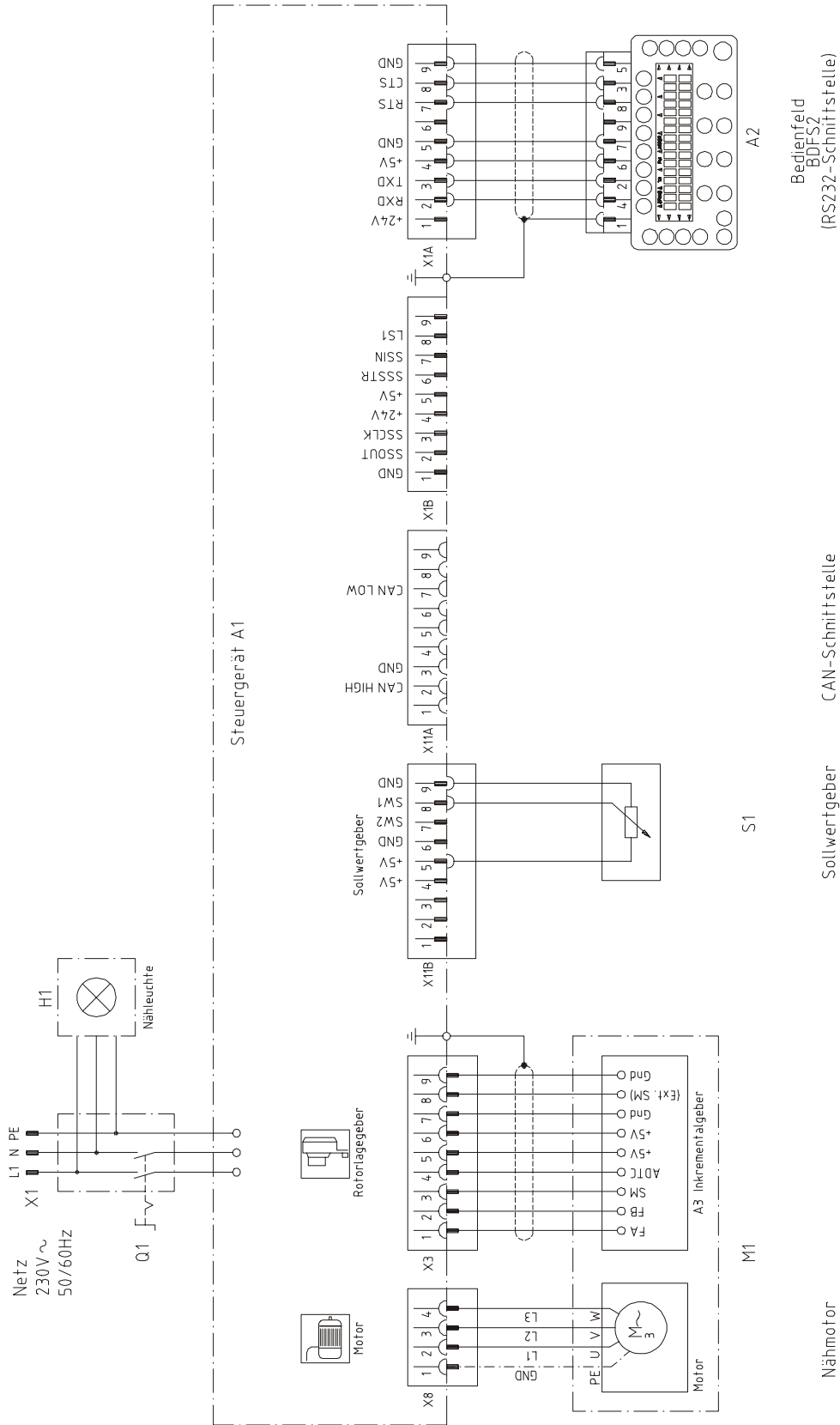
# Wearing parts



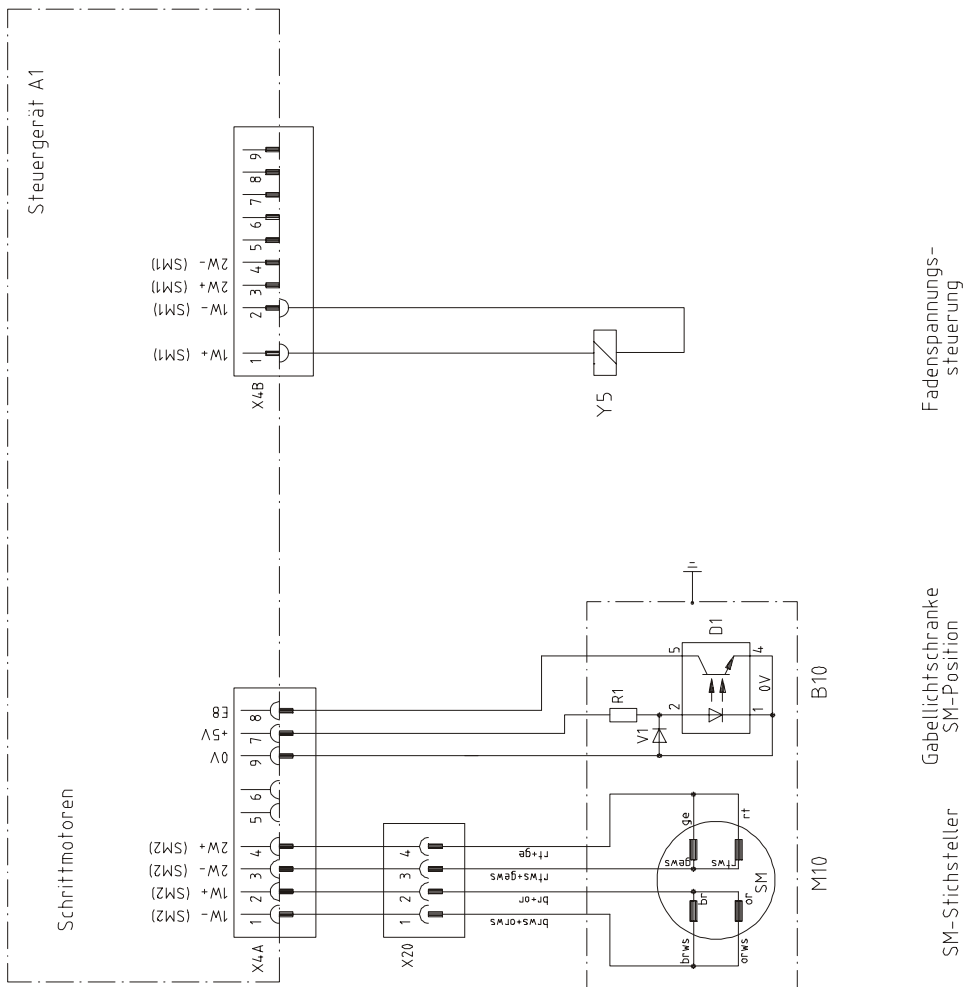
**15      Circuit diagrams****Reference list for circuit diagrams**

|     |   |
|-----|---|
| A1  | Controller Quick P322MS                         |
| A2  | Control panel BDF S2                            |
| A3  | Incremental transmitter (included in M1)        |
| A4  | Keyboard  |
| A13 | Bobbin thread monitor                           |
| A14 | Sewing head identification                      |
|     |   |
| S1  | Set value transmitter                           |
| S10 | Single stitch (included in A4)                  |
| S11 | Backtacking by hand (backtack) (included in A4) |
| S12 | Needle position (included in A4)                |
| S13 | Knee switch (feed reverse)                      |
| S14 | Start inhibitor                                 |
| S15 | 2 <sup>nd</sup> knee switch                     |
|     |   |
| H1  | Sewing lamp                                     |
| H10 | Bobbin thread alarm (included in A4)            |
|     |   |
| Q1  | Main switch                                     |
|     |   |
| M1  | Sewing motor                                    |
| M10 | Stepping motor (feed regulator)                 |
|     |   |
| B10 | Hybrid light barrier (included in M10)          |
|     |   |
| Y2  | 900 (thread trimmer)                            |
| Y3  | W1 (thread wiper)                               |
| Y4  | Automatic presser foot lift                     |
| Y5  | Thread tension control                          |
|     |   |
| X43 | Bobbin thread monitor                           |





- 1 Nähmotor
- 2 A3 Inkrementalgeber
- 3 Sollwertgeber
- 4 CAN-Schnittstelle
- 5 Bedienfeld BDFS2 (RS232-Schnittstelle)
- 6



10

9

8

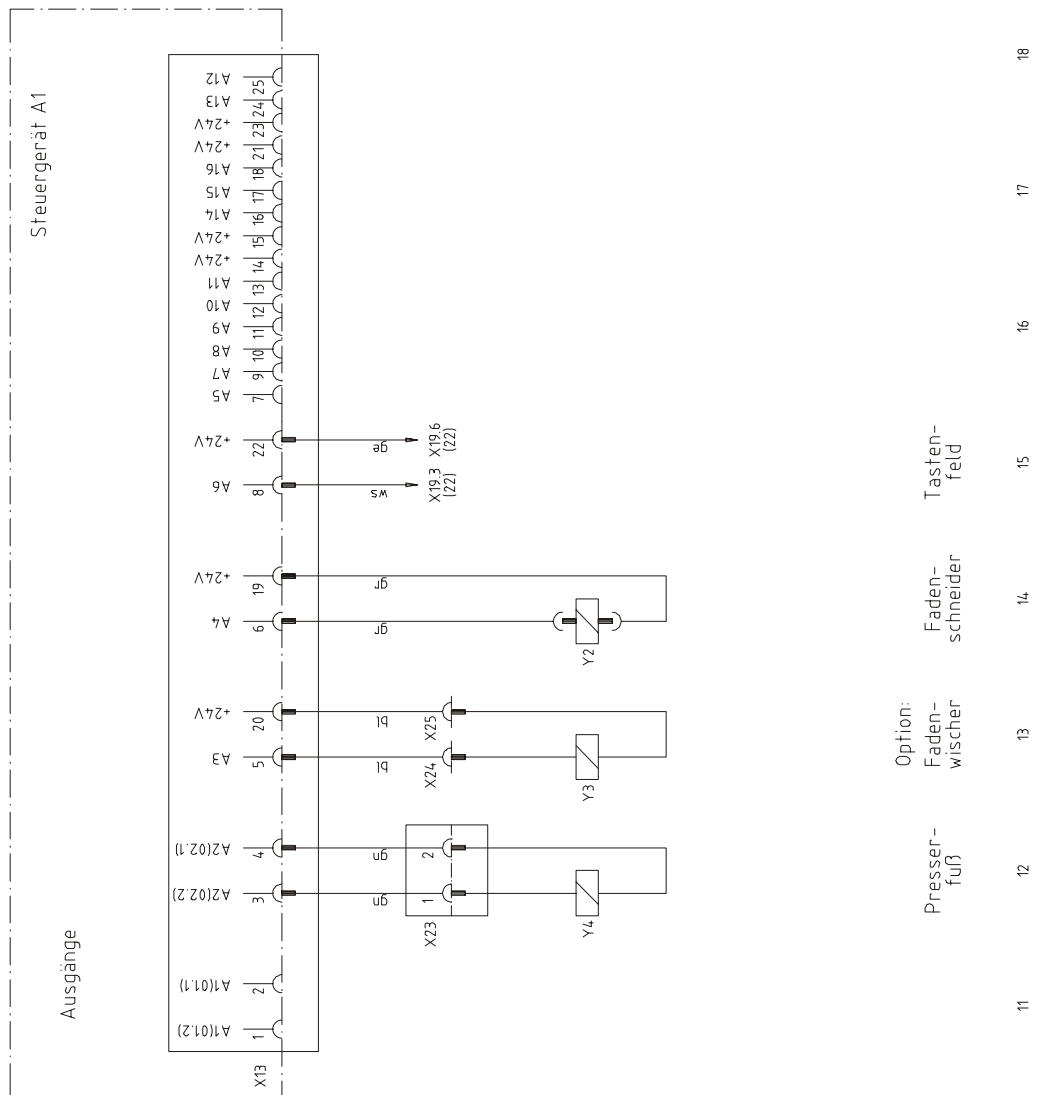
7

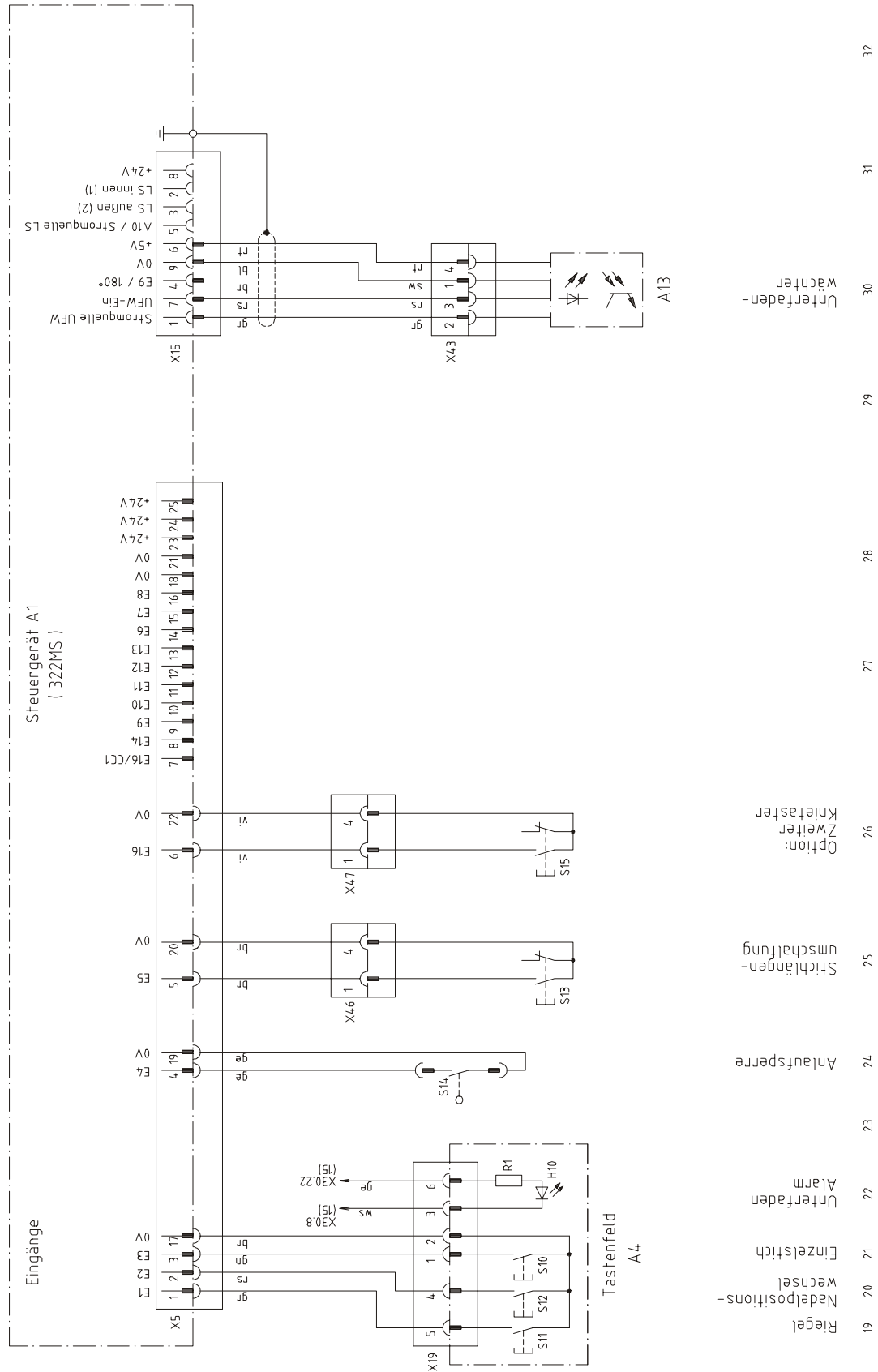
Fadenspannungs-  
steuerung

Gabellichtschränke  
SM-Position

SM-Stichsteller









# PFAFF

## PFAFF Industrie Maschinen AG

Postfach 3020  
D-67653 Kaiserslautern

Königstr. 154  
D-67655 Kaiserslautern

Telefon: (0631) 200-0  
Telefax: (0631) 17202  
E-Mail: [info@pfaff-industrial.com](mailto:info@pfaff-industrial.com)

Gedruckt in der BRD  
Printed in Germany  
Imprimé en R.F.A.  
Impreso en la R.F.A.