

3307-1/11

INSTRUCTION MANUAL

This instruction manual applies to machines from the following serial numbers **2 752 431** and software version **0366/001** onwards:



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

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1 Safety

1.01 Regulations

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

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

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

1.02 General notes on safety

- 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, 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!

Special points to observe.



Danger of injury to operating or technical staff!



Caution

Do not operate without finger guard and safety devices.

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

1.04

Important notes for the user

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

For further information please refer to your PFAFF agency..

1.05 Notes for operating and technical staff

1.05.01 Operating staff

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

The operating staff is obliged to observe the following points:

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

1.05.02 Technical staff

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

The technical staff is obliged to observe the following points:

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

1.06

Danger warnings



A working area of 1 m must be kept free both in front of and behind the machine, so that easy access is possible at all times.



Never put your hands in the sewing area during sewing!
Danger of injury by the needle!

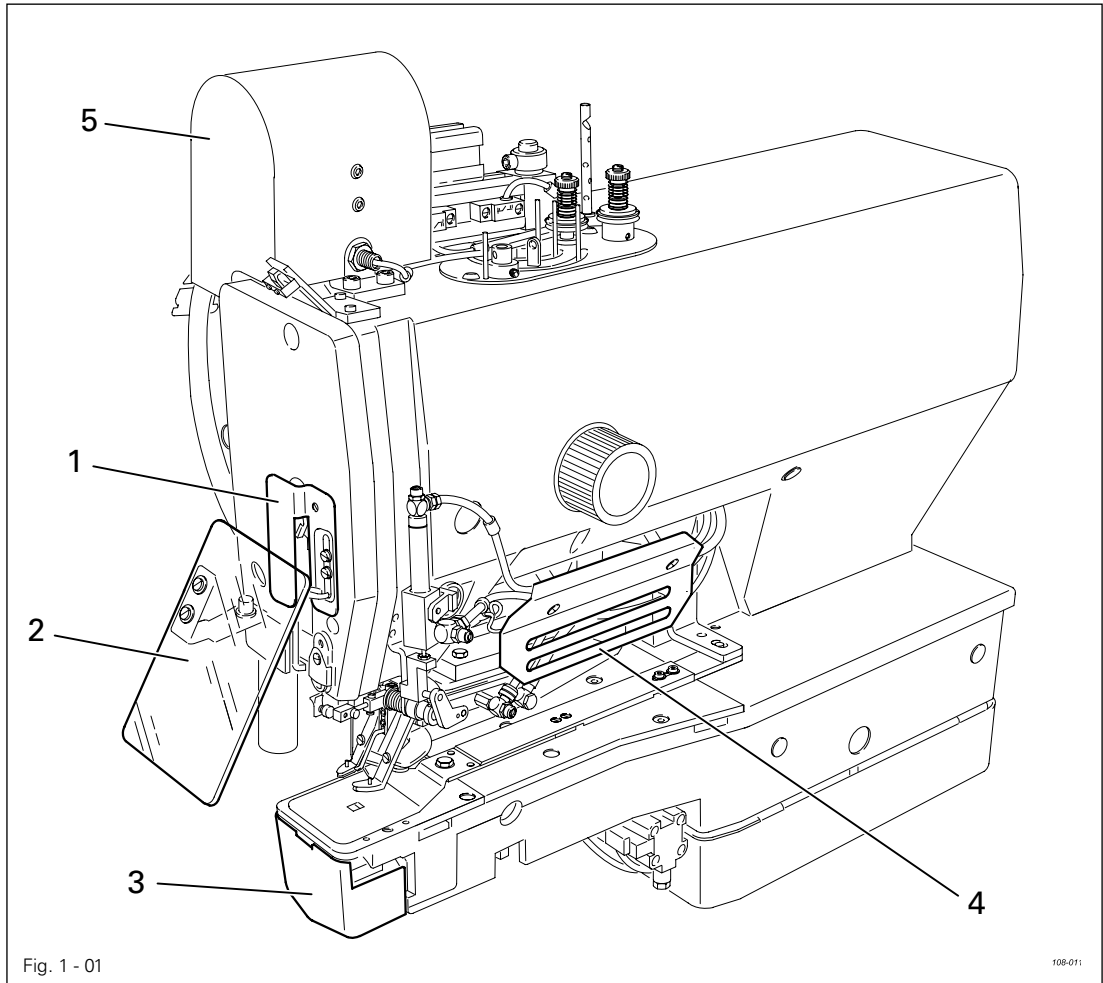


Fig. 1 - 01

108-011



Do not run the machine without take-up lever guard 1!
Danger of injury by moving take-up lever!



Do not operate the machine without eye shield 2!
Danger of injury from flying needle or button fragments!



Only operate the machine with cover 3 closed!
Danger of injury from rotating hook!



Do not operate the machine without protective covers 4 and 5!
Danger of injury from clamp drive!

2

Proper use

The PFAFF **3307-1/11** is an automatic button sewer with automatic button feed and is used to sew buttons on articles of clothing.



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

Specifications

3 Specifications[▲]

3.01 General information

Max. sewing speed: 2000 spm
Stitch type: 107
Needle bar stroke: 46 mm
Max. thickness of workpiece: 4 mm
Max. work clamp clearance: 17 mm
Fabric clearance (crosswise to sewing arm): 235 mm
Fabric clearance (lengthwise to sewing arm): 30 mm
Max. size of sewing area: 8 x 12 mm[♦]
Number of stitches: freely programmable
Feed type: intermittent

Power supply: 230 V +10%, 50 / 60 Hz
Power consumption: max. 0.6 kVA
Input power rating: 0.7 kVA
Fuse protection: 1 x 16 A, inert

Working air pressure: 6 bar
Air consumption: ~1,5 l / work cycle

Noise data:

Noise emission level at workplace with a sewing speed of 1800 spm

Sewing cycle - 1/3 sewing time: $L_{pA} = 70,0 \text{ dB(A)}$ [■]

(Noise measurement in accordance with DIN 45 635-48-A-1, ISO 11204, ISO 3744, ISO 4871)

Sewing head dimensions:

Length: approx. 514 mm

Width: approx. 200 mm

Height: approx. 550 mm

Weight of sewing head: approx. 65 kg

Dimensions of base:

Length: approx. 1060 mm

Width: approx. 600 mm

Height: approx. 820 mm

Weight of base incl. control box: approx. 55 kg

Needle system: 134 - 35

Needle size for fine materials: 70 - 100

Needle size for medium-weight materials: 80 - 120

[▲] Subject to alterations

[♦] Depending on cut-out size of bed plate

[■] $K_{pA} = 2,5 \text{ dB}$

3.02 Seam pattern sizes



When changing part sets parameter "204" must be adapted to the cut-out size of the bed plate, see Chapter 8.04 Setting the seam pattern size. If this instruction is not observed there is a risk of severe damage to the machine!

Value for parameter "204"	Cut-out size of the bed plate	Size of seam pattern
1	7 mm x 7 mm	5 mm x 5 mm
2	8 mm x 8 mm	6 mm x 6 mm
3	9 mm x 9 mm	7 mm x 7 mm
4	10 mm x 10 mm	8 mm x 8 mm
5	11 mm x 11 mm	8 mm x 9 mm
6	10 mm x 14 mm	8 mm x 12 mm

4

Disposal of Machine

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



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

5 Transportation, packing and storage

5.01 Transportation to customer's premises

The machines are delivered completely packed.

5.02 Transportation inside the customer's premises

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

5.03 Disposal of packing materials

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

5.04 Storage

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

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

Explanation of symbols

6 Explanation of symbols

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



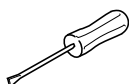
Note, information



Cleaning, care



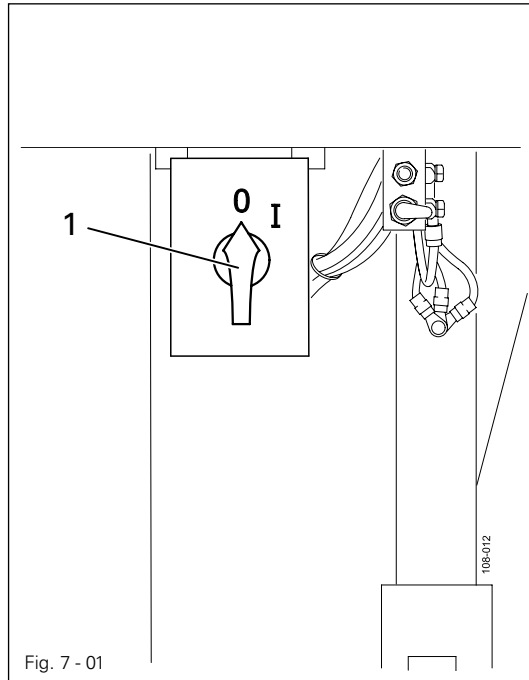
Lubrication



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

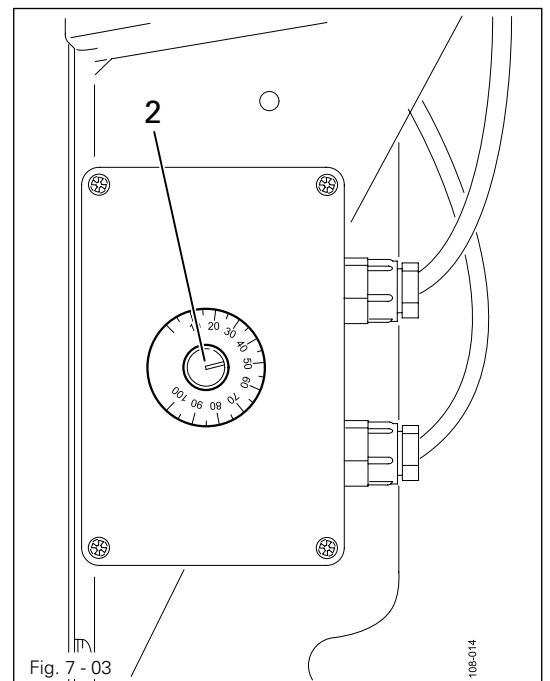
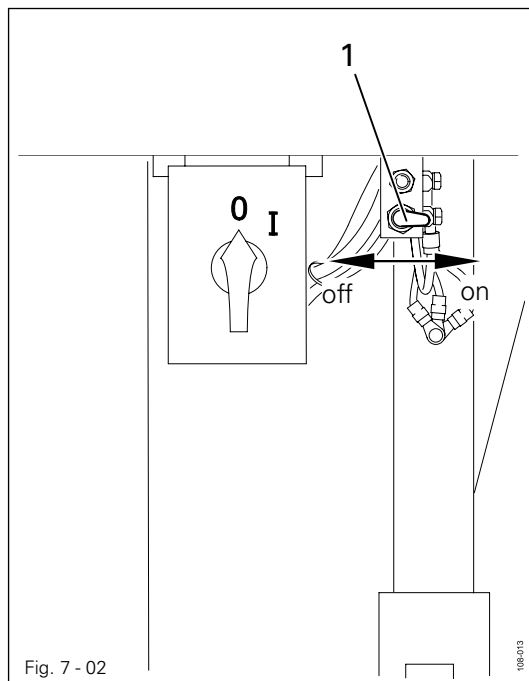
7 Controls

7.01 Main switch



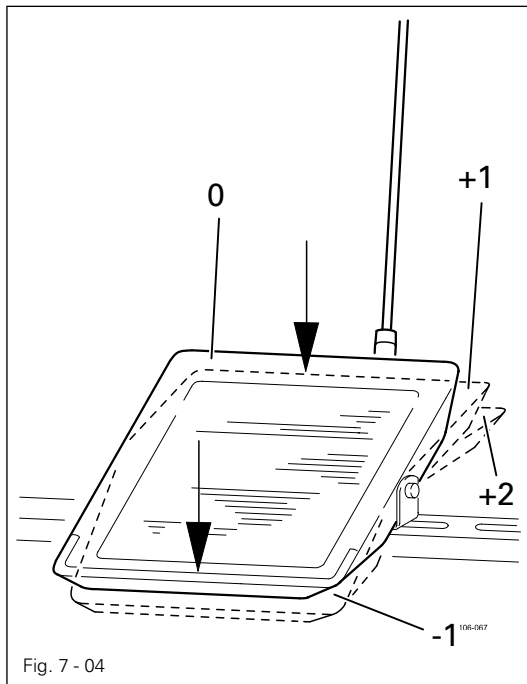
- The machine is switched on or off by turning the main switch 1.

7.02 Switch and regulator for the button sorting unit



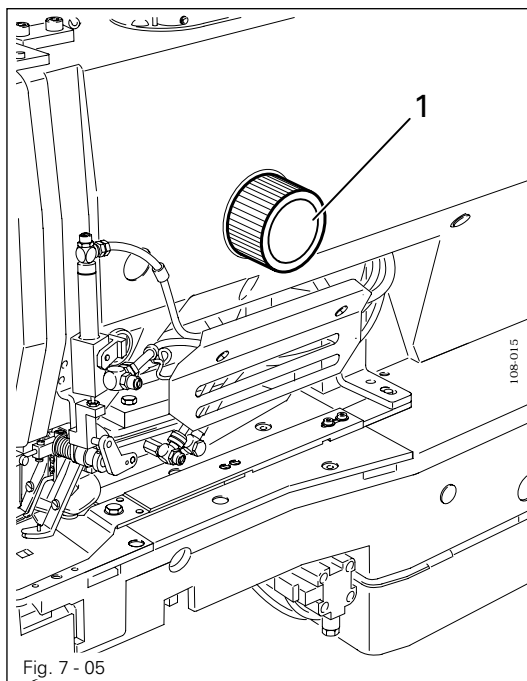
- By turning switch 1, the air supply for the button sorting unit is switched on or off.
- By pressing or turning regulator 2, the button sorting unit is switched on and the button feed speed set.

7.03 Pedal



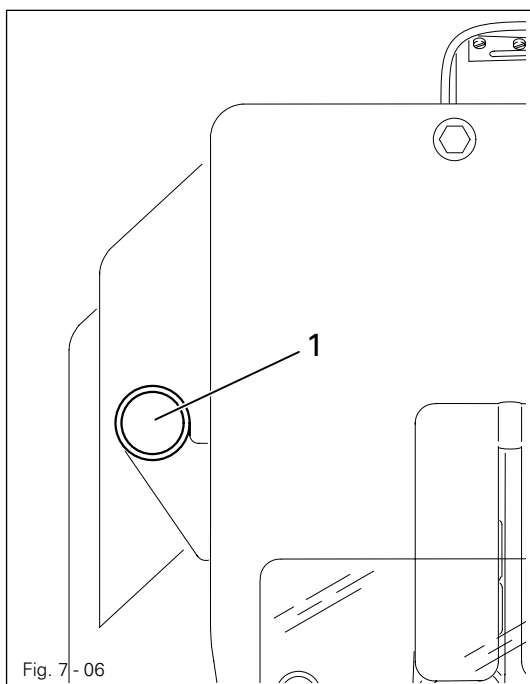
- 0 = Neutral position
- +1 = Lower button clamp
- +2 = Sewing
- 1 = Feed button manually, e.g. after a breakdown (At the end of the sewing process, the next button is fed automatically.)

7.04 Balance wheel



- By pressing and holding down balance wheel 1, it is possible to adjust the needle bar manually.

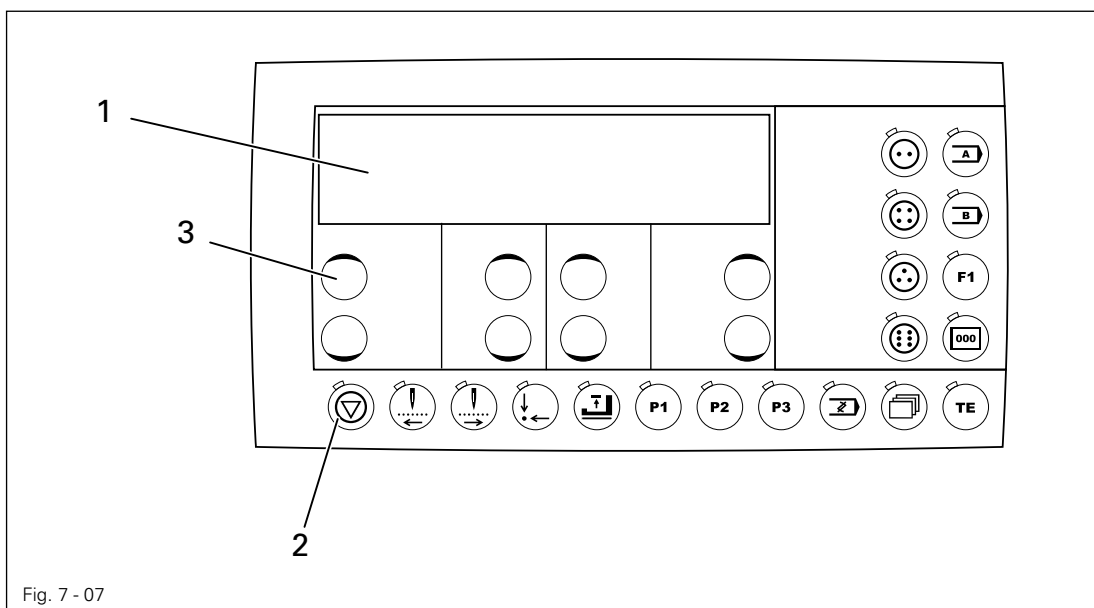
7.05 Missed stitch detection key



- Key 1 lights up, when an error is detected in the sewing process.
- Acknowledge the error signal by pressing key 1.

7.06 Control panel

The control panel is used to call up machine functions for setting up the machine and for sewing operation, for entering parameter values and for reading error messages and service settings.



The control panel consists of the display 1 and the function keys described below. The display 1 consists of a two-line alphanumerical LCD display with 16 symbols per line. The function keys 2 are located below and to the right of the display. The status of the function keys 2 and the operating status of the machine are shown by LEDs in the respective keys.

Every time the function keys **2** are operated, a key tone sounds as confirmation of the input. If the input required is invalid, e.g. because the max. permissible value for the parameter input has been reached, a double tone is audible. An SD-card reader for data transfer is integrated.

7.06.01 Screen displays

- In the sewing mode all relevant sewing data is displayed and can be changed directly, depending on the status of the machine, see also Chapter **10 Sewing**.
- During the parameter input the selected parameter number with the corresponding value is displayed, see Chapter **13.48 Parameter settings**.

7.06.02 Symbole im Display



	Speed		Stem length
	Piece counter		SD-memory-card
	Program number		Machine memory
	"Enter" function"		

7.06.03 Function keys

The functions keys described below are used essentially to switch machine functions on and off. When the function is switched on, the **diode in the key is illuminated**.

If a corresponding value has to be fixed for the activated function, this can be carried out with the corresponding **+/- keys 3**.

By pressing and holding the corresponding **+/- key**, firstly the numerical value displayed above it is altered slowly. If the **+/- key** is pressed longer, the numerical value changes more

-  quickly. The respective **+/- keys** shown opposite are described below.
- 



Stop

- When operated during a sewing cycle, the machine is stopped.
- When entering the code number this key corresponds to the figure 1.



Tacting forwards

- This key is used to tact forwards through the entire sewing cycle step by step.
- When entering the code number this key corresponds to the figure 2.



Danger of needle breakage!
Before tacting move the needle to its t.d.c. using the balance wheel.



Tacting in reverse

- This key is used to tact in reverse through the entire sewing cycle step by step.
- When entering the code number this key corresponds to the figure 3.



Danger of needle breakage!

Before tacting move the needle to its t.d.c. using the balance wheel.



Basic position

- In the sewing mode the machine moves to the basic position.
- When entering the code number this key corresponds to the figure 4.



Button clamp raised/lowered

- In the sewing mode the button clamp (or work clamp or button holder) is raised/lowered.
- When entering the code number this key corresponds to the figure 5.



Direct fetch key P1

- The direct fetch key can be allocated to a button seam pattern or a sequence. The currently selected seam pattern or the currently selected sequence is allocated to the key by pressing this for approx. 2 sec.
- When entering the code number this key corresponds to the figure 6.



Direct fetch key P2

- The direct fetch key can be allocated to a button seam pattern or a sequence. The currently selected seam pattern or the currently selected sequence is allocated to the key by pressing this for approx. 2 sec.
- When entering the code number this key corresponds to the figure 7.



Direct fetch key P3

- The direct fetch key can be allocated to a button seam pattern or a sequence. The currently selected seam pattern or the currently selected sequence is allocated to the key by pressing this for approx. 2 sec.
- When entering the code number this key corresponds to the figure 8.



Programming

- This key is used to enter the seam pattern programming mode for different button types.
- When entering the code number this key corresponds to the figure 9.

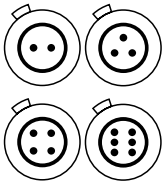


Piece counter

- Press this key to reset the piece counter (LED has no function).



Further functions can be selected with the keys described below, which are each equipped with an LED. When the LED lights up, the corresponding function is activated / switched on.



Button type

- With these keys the type of button required (two-, four-, three- or six-hole button) can be selected.
- When entering the code number this key corresponds to the figure 0.



A key

- Press this key to start the emptying function of the button feed unit (LED is on).
- Press the key again to move the button feed unit to its basic position (LED is off).



B key

- This key is reserved for special functions.



F1 key

- Press this key to activate a manual button loading cycle.



TE

- This key can be used to switch between sewing operation (LED off) and input mode (LED on). It is also used to acknowledge error messages.

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 Installation

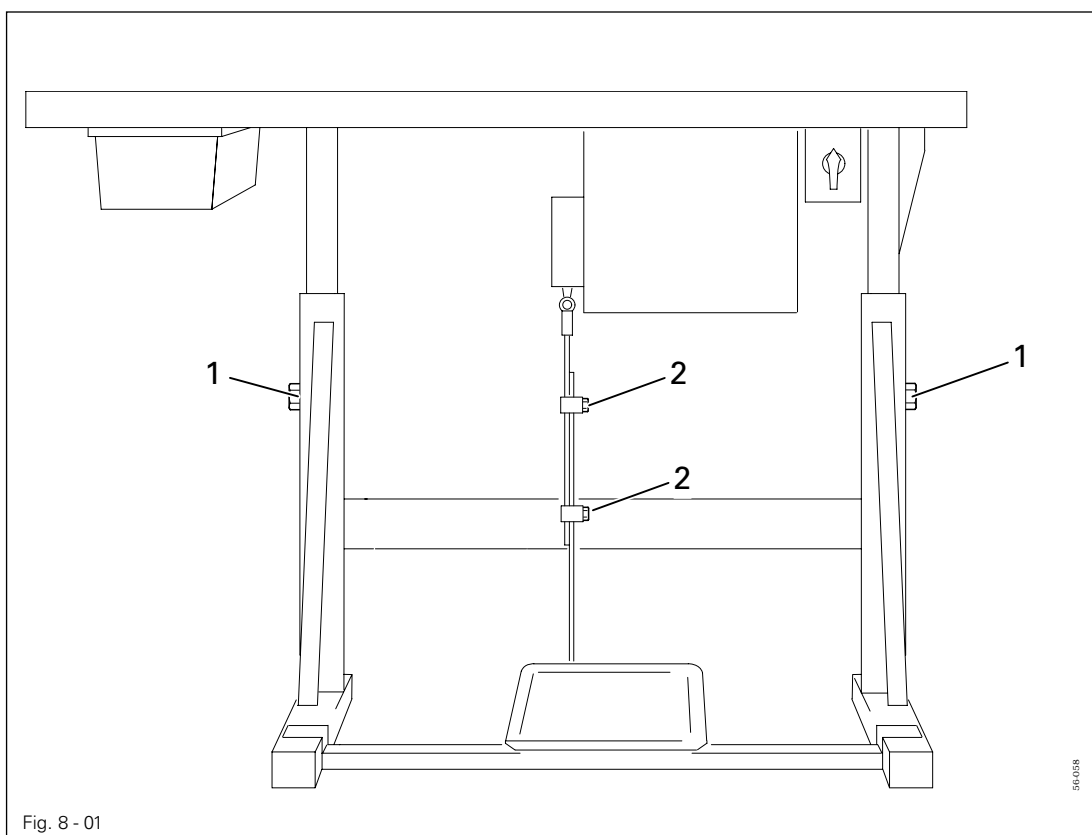
The site where the machine is installed must be provided with suitable connections for the electric current, see Chapter 3 **Specifications**.

It must also be ensured that the standing surface of the machine site is firm and horizontal, and that sufficient lighting is provided.

8.01.01 Adjusting the table height



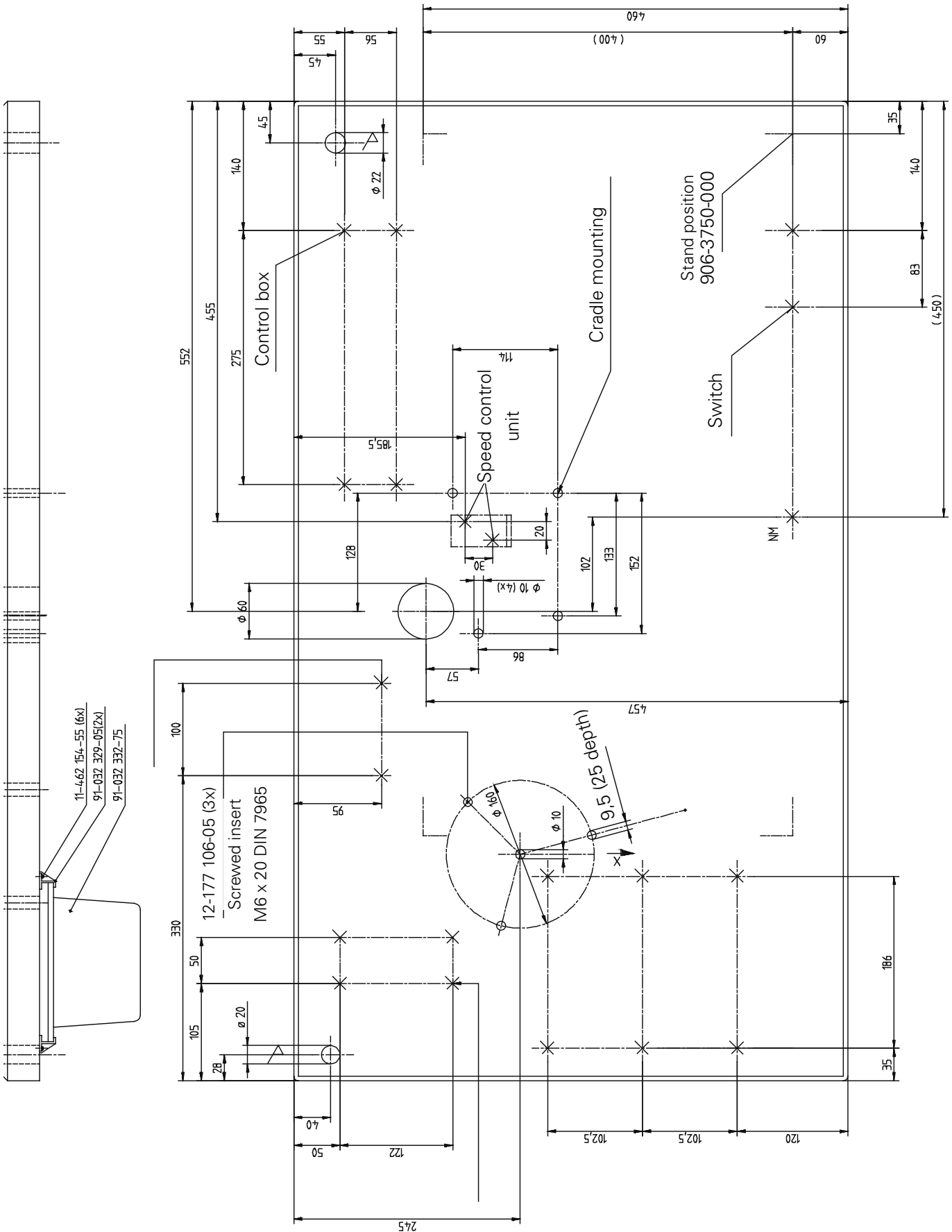
For packing reasons the table top is in the lowered position. The table height is adjusted as described below..



- Loosen screws 1 and 2 and set the table height as required.
- Firmly tighten screw 1.
- Set the required pedal position and tighten screws 2.

Mounting and commissioning the machine

8.01.02 Drilling template for the table-top



8.01.03 Connecting the plug-in connections and earth cable

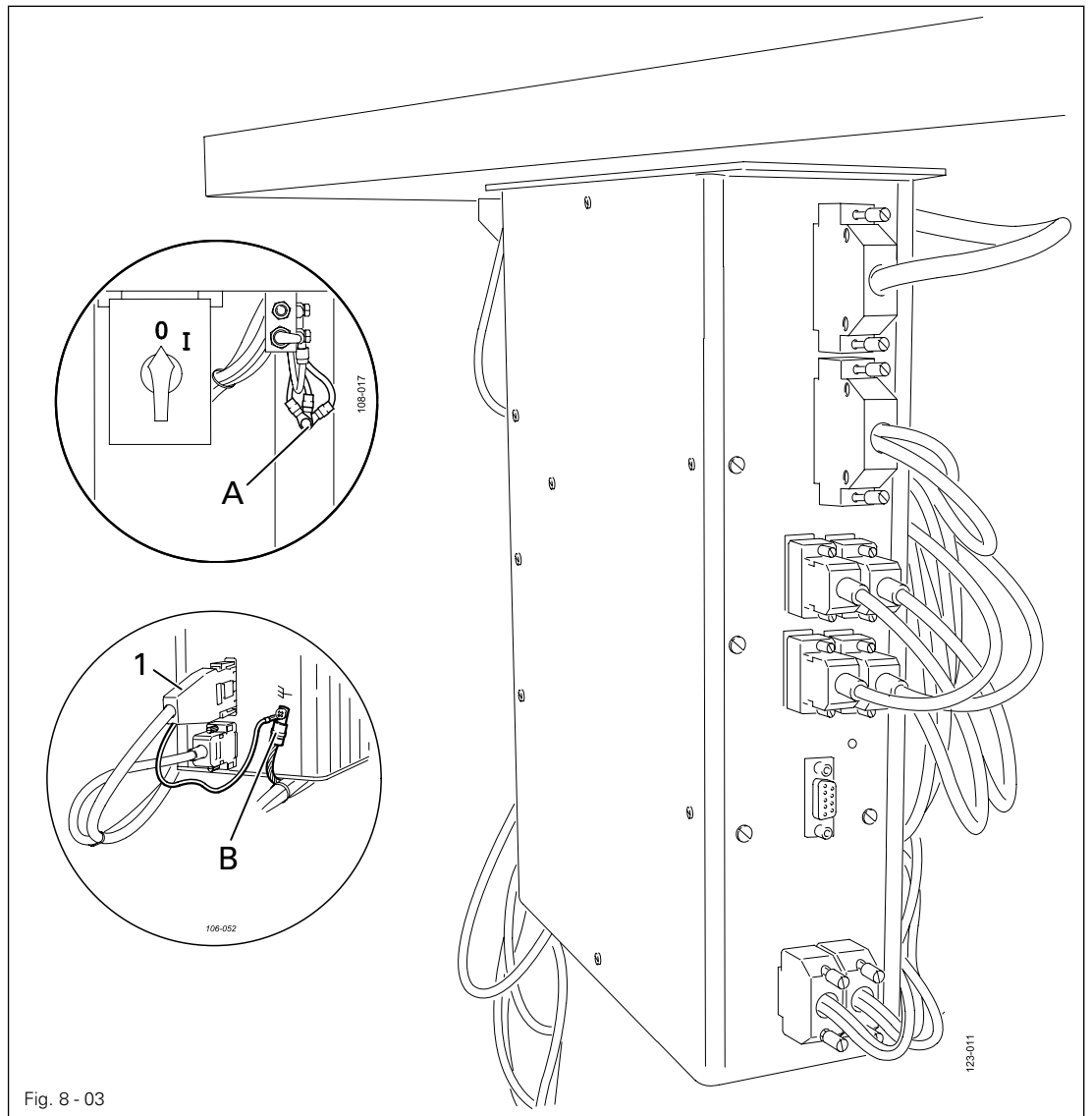
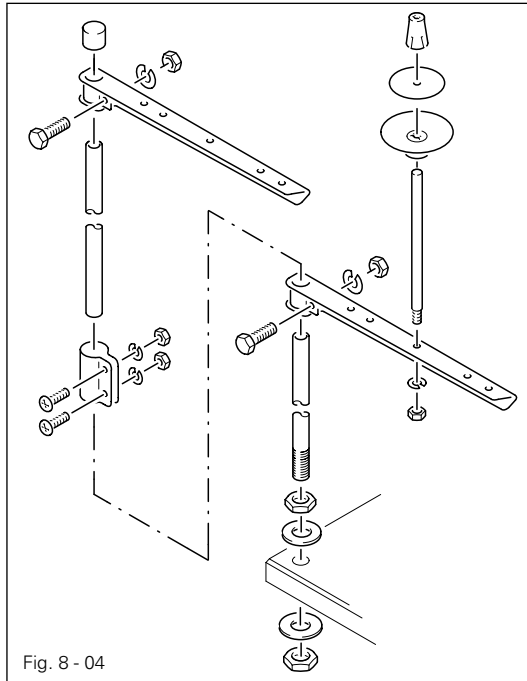


Fig. 8 - 03

- Connect all plugs as labelled in the control box.
- Screw the earth cable from the machine and from the main switch to earth point A.
- Connect earth points A and B with an earth cable.
- Screw the earth cable of plug 1 to earth point B.

Mounting and commissioning the machine

8.01.04 Fitting the reel stand



- Fit the reel stand as shown in Fig. 8 - 04.
- Afterwards insert the stand in the hole in the table top and secure it with nuts provided.

8.02 Commissioning

- Clean the machine thoroughly and then check the oil level (see Chapter 12 Care and Maintenance).
- Check the machine, in particular the electric leads and pneumatic connection tubes, for any damage.
- Have mechanics ensure that the machine's motor can be operated with the available electricity supply.
- Connect the machine to the compressed air system. The manometer should show a pressure of 6 bar.
- If necessary, set this value (see Chapter 12.05 Checking / adjusting the air pressure).
- Before the machine is commissioned, the seam pattern sizes set in the machine control unit must be checked, see Chapter 8.04 Setting the seam pattern size.

8.03 Switching the machine on / off

- Switch on the air supply for the button sorting unit, see Chapter 7.02 Switch and regulator for the button sorting unit.
- Switch on the main switch, see Chapter 7.01 Main switch.
- Switch on the button sorting unit and set the button feed speed, see Chapter 7.02 Switch and regulator for the button sorting unit.



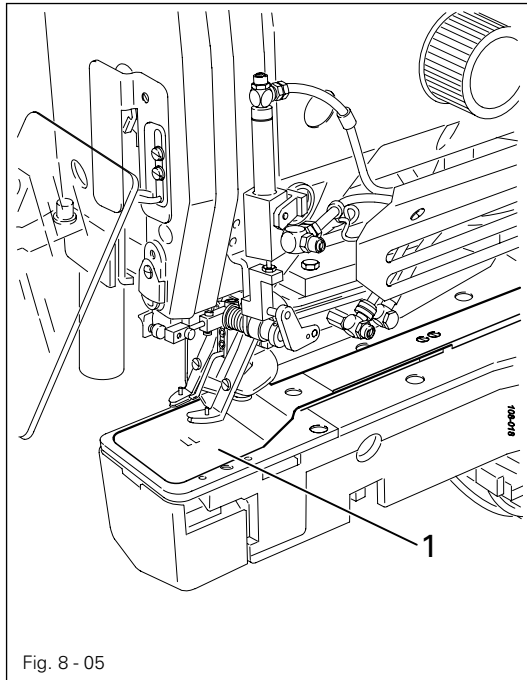
To switch off the machine, the above sequence must be carried out in the reverse order.

8.04 Setting the seam pattern size



After the machine has been switched on for the first time, first of all the seam pattern sizes set in the machine control unit must be checked and corrected if necessary. The seam pattern size depends on the cut-out size of the bed plate and is set with parameter "204". If these instructions are not observed there is a risk of severe **damage to the machine!**

8.04.01 Establishing the value for parameter "204"



- Measure the size of the cut-out in bed plate 1.
- With the use of the table below determine the value for parameter "204".
- Set „parameter "204", which is the seam pattern size, in accordance with Chapter 8.04.02 Changing parameter "204".

Value for parameter "204"	Bed plate cut-out size	Seam pattern size
1	7 mm x 7 mm	5 mm x 5 mm
2	8 mm x 8 mm	6 mm x 6 mm
3	9 mm x 9 mm	7 mm x 7 mm
4	10 mm x 10 mm	8 mm x 8 mm
5	11 mm x 11 mm	8 mm x 9 mm
6	10 mm x 14 mm	8 mm x 12 mm

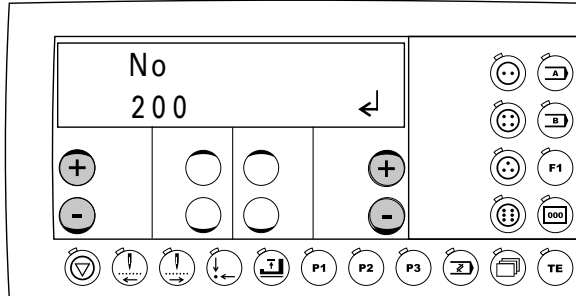
Mounting and commissioning the machine

8.04.02 Altering parameter "204"

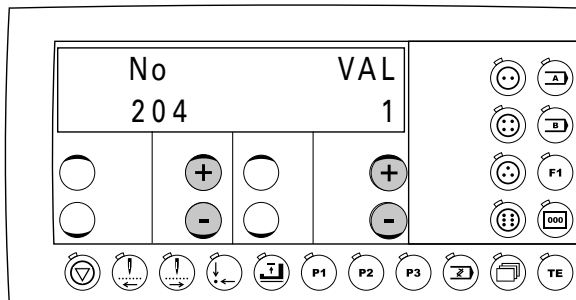
- Switch on the machine.



- Press the "TE" key to select the input mode (LED in the key is on).



- Select the function group "200" by pressing the left +/- keys.
- Confirm the selection by pressing the right plus key.
- If necessary enter the access code, see Chapter 13.48.02 Entering/altering the access code.



- Select parameter "204" by pressing the left +/- keys.
- Select the value calculated for the seam pattern size by pressing the right +/- keys, see Chapter 8.04.01 Calculating the value for parameter "204".
- By selecting the sewing mode, the altered value is taken over and the machine changes to the sewing mode (LED in the key goes off).



9

Setting up



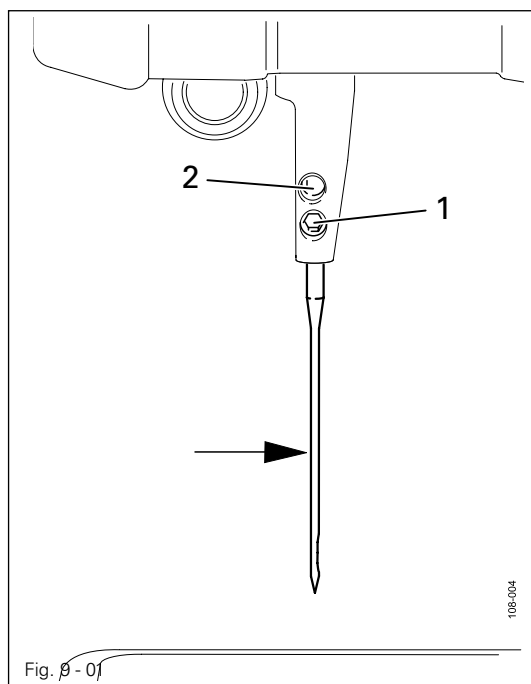
All instructions and regulations in this instruction manual must be observed. Special attention must be given to all safety regulations!



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

9.01

Inserting the needle



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

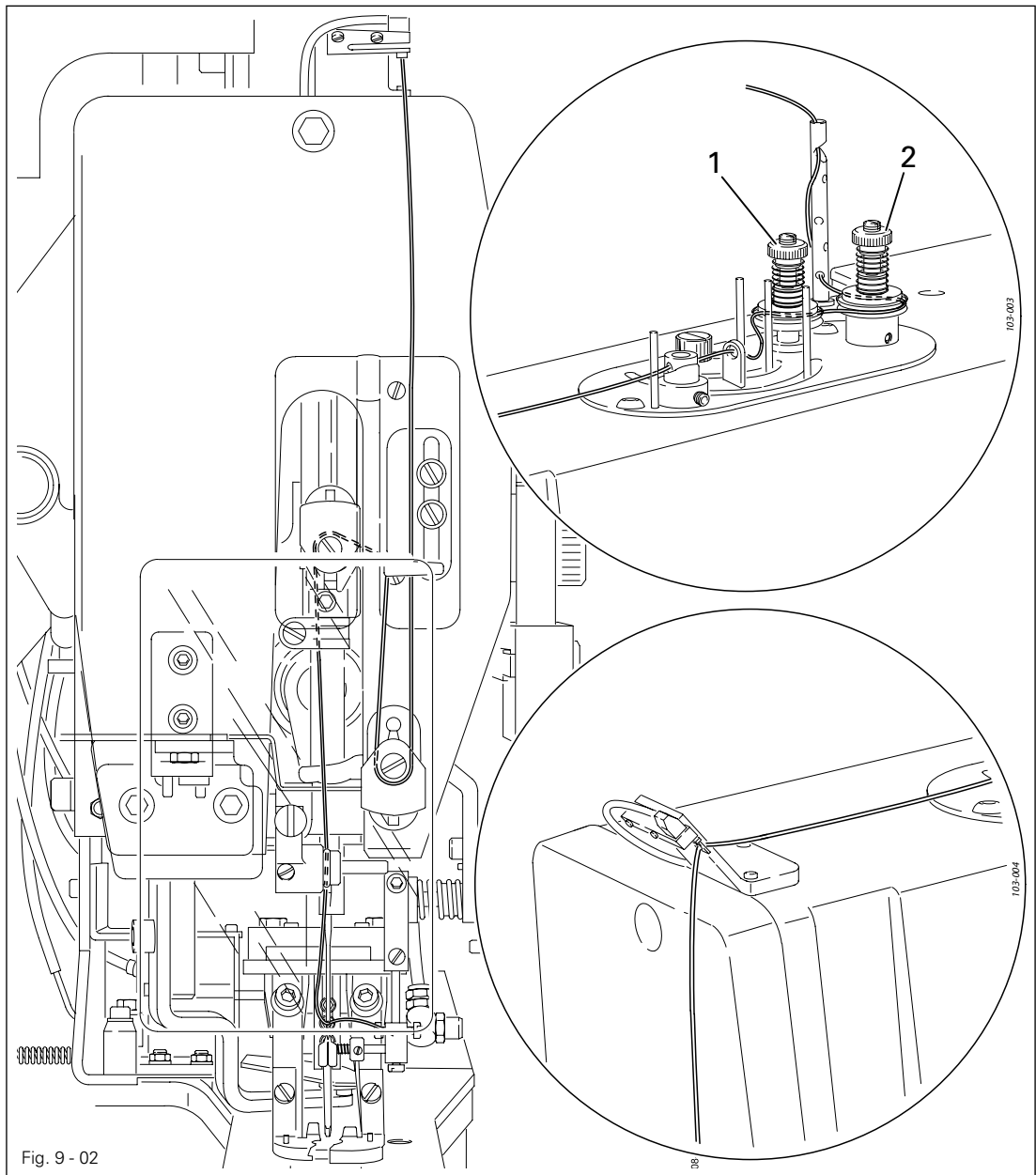


Only use needles from the system intended for the machine, see Chapter 3 Specifications.

- Loosen screw 1.
- Insert the needle as far as possible. The long needle groove (see arrow) must be facing forwards.
- Tighten screw 1.



Through hole 2 it is possible to check whether the needle has been inserting as far as possible. Broken needles can be removed by inserted suitable tools in hole 2.



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

- Thread needle thread as shown in Fig. 9-02.
- By turning milled screws 1 and 2 adjust the tension of the needle thread to avoid material puckering or thread breakage.



For thin, soft materials a lower thread tension is required, for thicker fabrics a higher thread tension.

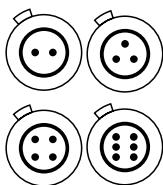


Thread the needle from the front!

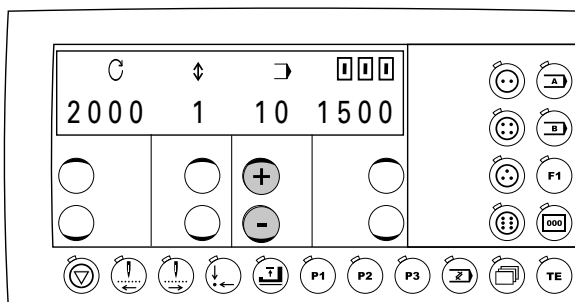
9.03 Selecting the button type and program number



To select a button type and program number, a program for the corresponding button must already have been entered with the seam pattern input, see **Chapter 11.01 Seam pattern input**.

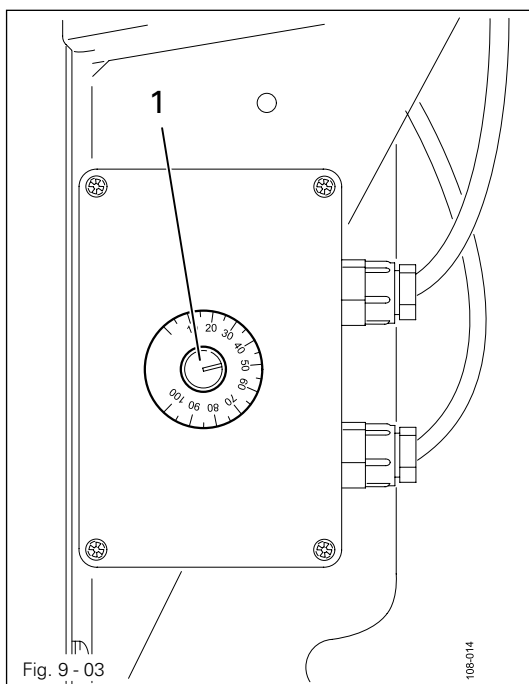


- Switch on the machine.
The sewing mode is activated automatically.
- Select the required button type with the corresponding key.



- Select the required program number (1-99) with the corresponding plus/minus key.

9.04 Setting the button feed speed of the button sorting unit

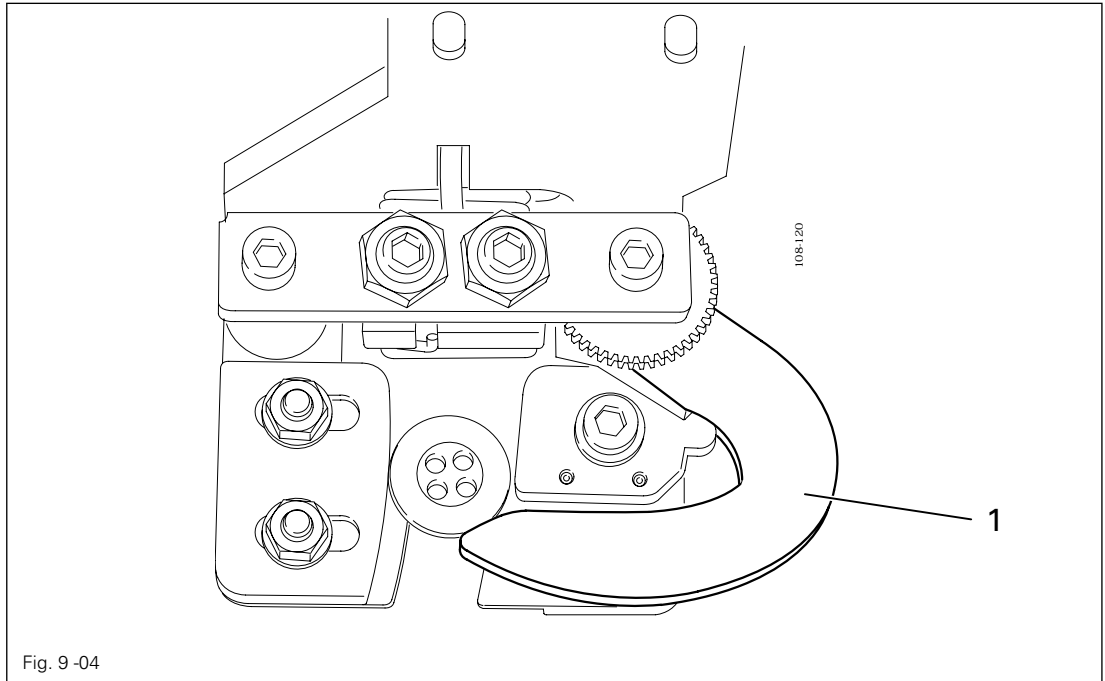


- Adjust regulator 1 in accordance with the required feed speed.



There must always be an adequate number of buttons in the button feed unit.

9.05 Emptying the button feed spiral



- Switch on the machine.
- Start the emptying function of the button feed spiral.
Disengage lever 1 by hand.
- The button feed spiral empties automatically.
- End the emptying function of the button feed spiral.

9.06 Inserting and removing the SD-memory card

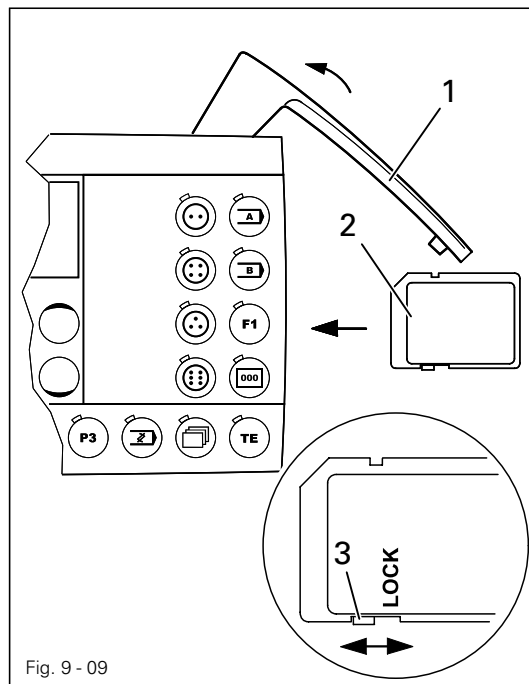


Fig. 9 - 09

Inserting the SD-memory card

- Open cover 1.
- Insert SD-memory card 2 into the card slot with the label at the front.
- Close cover 1 again.

Removing the SD-memory card

- Open cover 1.
- Press the edge of the SD-memory card 2 lightly – the SD-card is ejected.
- Close cover 1 again.



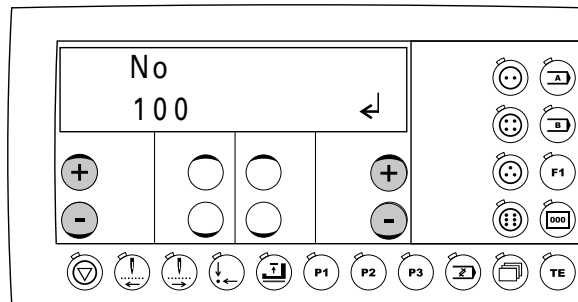
By moving slide 3 it is possible to activate (position "LOCK") or deactivate the write protection function of the SD-memory card. To store, process or delete data on the SD-memory card, the write protection function must be deactivated.

9.07 Activating the sequence mode

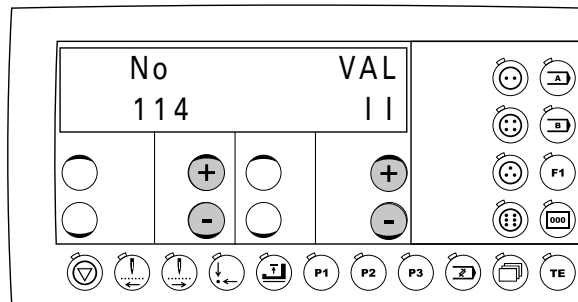


To activate the sequence mode, the sequence must have been entered beforehand, see Chapter 11.02 Entering a sequence.

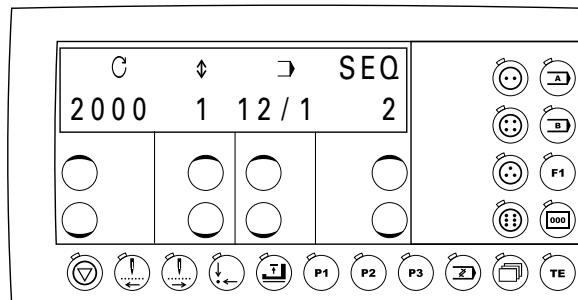
- Switch on the machine
- Select the input mode (LED in the key is on).











- Call up the function group "100" by pressing the left +/- keys.
- Confirm the selection by pressing "+" on the right +/- keys.



- Select parameter "114" (sequence mode) by pressing the left +/- keys.
- By pressing the right +/- keys select value "II" to switch on the sequence mode.
- Conclude the parameter input (LED in the key goes off) by switching to the sewing mode.



Screen displays:

-  **2000:** **Maximum speed**
 The value can be changed directly with the corresponding +/- keys.
-  **1:** **Stem length**
 The value can be changed directly with the corresponding +/- keys.
(1 = no stem; 2 = short stem; 3 = long stem)
-  **12/1:** **Number of seam patterns / current seam pattern**
 The current seam pattern can be selected directly with the corresponding +/- key.
-  **2:** **Current sequence**
 The current sequence can be selected directly with the corresponding +/- key.



When working through the sequences, the machine switches automatically to the next seam pattern in the sequence after finishing the current seam pattern. After the last seam pattern the machine switches back to the first seam pattern of the sequence.

10 Sewing

10.01 Sewing sequence

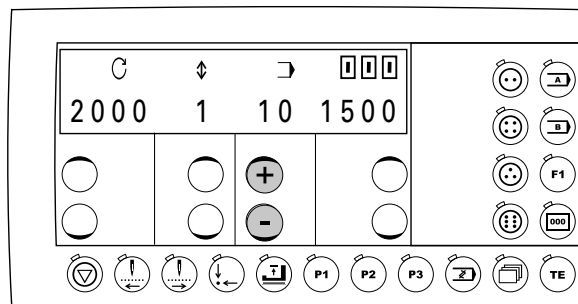


The machine must be installed, connected and set up in accordance with Chapter 8 **Installation and Commissioning**.



The screen display on the control panel and consequently the operation of the machine is dependent among other things on the subclass and the sequence mode being activated, see Chapter 9.07 **Activating the sequence mode**.

- Switch on the machine.



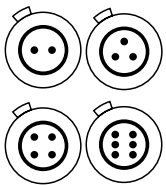
Screen displays:



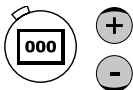
2000: Maximum speed
The value can be changed directly with the corresponding +/- keys.



1: Stem length
The value can be changed directly with the corresponding +/- keys.
(1 = no stem; 2 = short stem; 3 = long stem)



10: Program number
The seam pattern can be selected directly with the corresponding +/- key. In conjunction with the four keys for the button type (two-hole button, four-hole button, three-hole button, six-hole button), 99 stored seam patterns can be selected for each button type. On the stem wrapper, the stem length is selected with the program number. Seam patterns with odd program numbers have a short stem, seam patterns with even program numbers have a long stem.



1500: Piece counter
The value can be changed directly with the corresponding +/- keys.
To set the counter at "0", press the "piece counter" key.



The function of the other keys and symbols is explained in Chapter 7.06 **Control panel**.

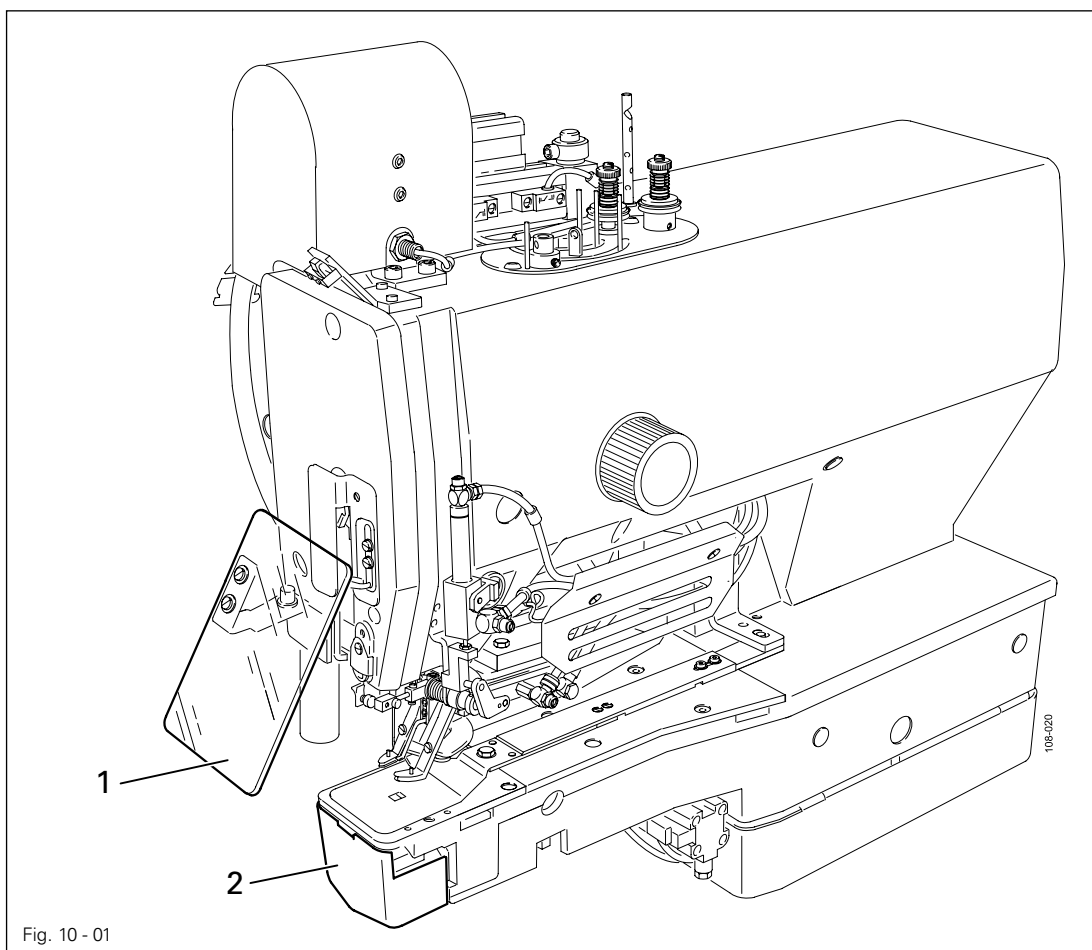


Fig. 10 - 01



Do not operate the machine without eye shield 1!
Danger of injury from flying needle or button fragments!



Only operate the machine with cover 2 closed!
Danger of injury from rotating hook!

- Insert the needle, see Chapter 9.01 **Inserting the needle.**
- Thread the needle, see Chapter 9.02 **Threading the needle thread.**
- Switch on the machine, see Chapter 8.03 **Switching the machine on/off.**
- Select the button type and corresponding program number, see Chapter 9.03 **Selecting the button type and program number.**
- Place an adequate supply of buttons in the button feed unit.
- Place the material under the button.
- Lower the button clamp with the pedal and start the sewing operation, see Chapter 7.02 **Pedal.**

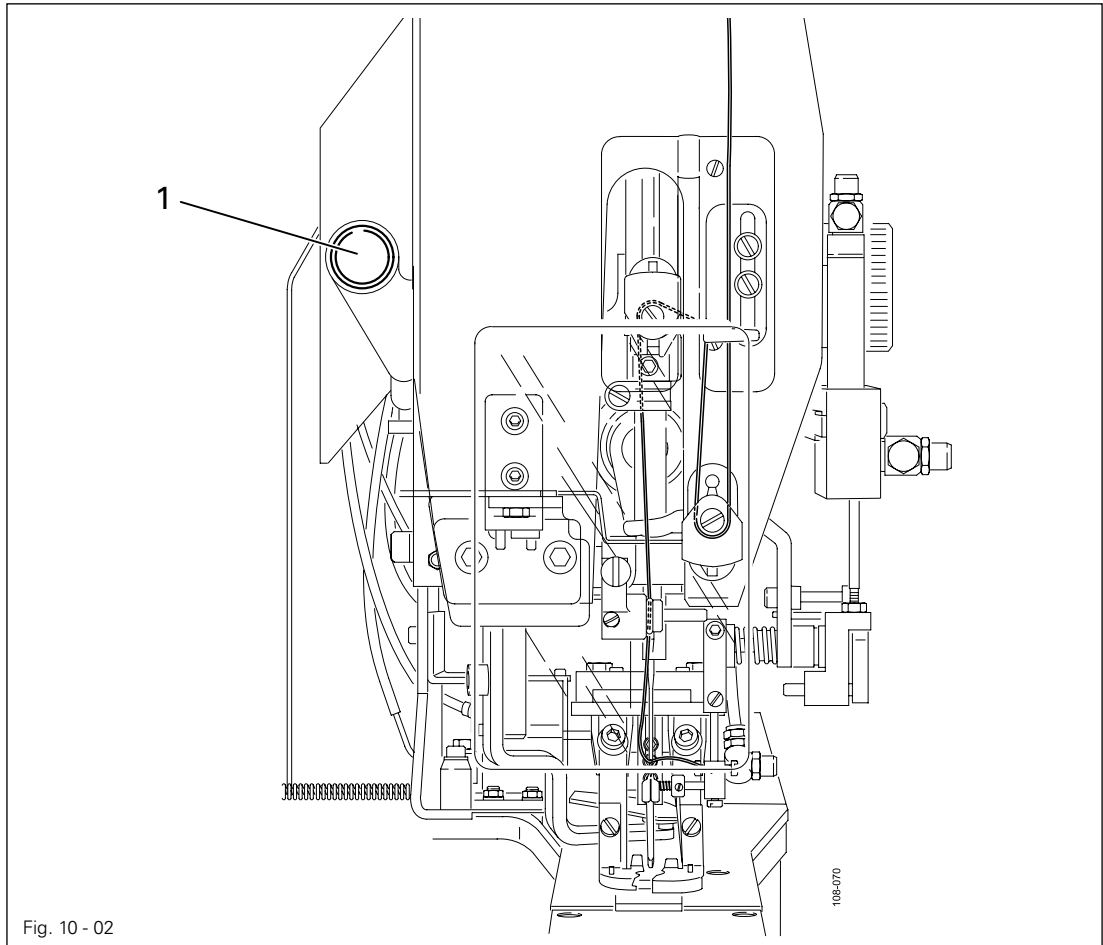


Fig. 10 - 02

The machine has a missed stitch sensor and a button loading control unit, with the aid of which the sewing process can be monitored. If a fault occurs, key 1 lights up. The machine start is blocked. Following steps must be carried out:

- Remove the workpiece.
- Press key 1 (lamp goes off).
- Cut off the button.
- Feed a button (using the "F1" key or pedal position "-1")
- Reinsert the workpiece and restart the sewing process.

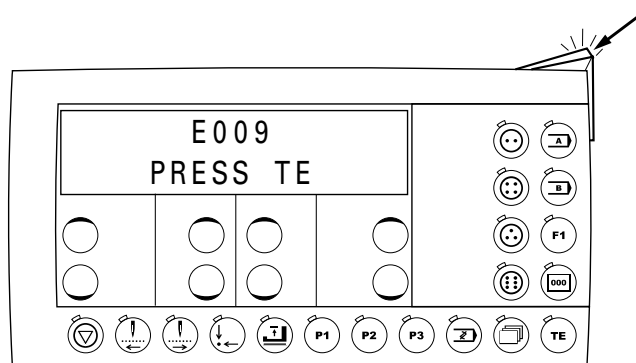


The error signal may be caused by e.g. no button being fed (error 28) or by a button inserted at the wrong angle (error 4). If key 1 lights up again and again, have specialists check the machine adjustment.

10.02 Error messages

If a malfunction occurs, an error code appears on the display together with short instructions. In addition the diode in the memory card slot lights up red. An error message may be caused by incorrect settings, defective elements or seam programs, as well as by overload conditions.

For a description of the error codes see Chapter 13.49 Description of the error messages.



- Eliminate the error.
- Acknowledge the elimination of the error by pressing the "TE" key.
The diode in the memory card slot lights up yellow.

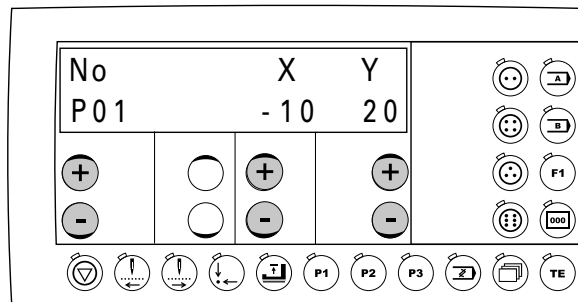
11 Input

11.01 Seam pattern input

For each button type (two-hole, four-hole or three-hole button) **99** programs (seam patterns) can be entered and stored. The seam pattern input is carried out by calling up or entering certain seam parameters. The seam pattern input is described below for each button type.

11.01.01 Seam pattern input for two-hole and self-shank buttons

- Switch on the machine.
- Select the program number and button type, see Chapter 9.03 **Selecting the button type and program number**.
- Call up the programming mode



- Select the desired parameter (**P01, P02** etc.) with the left +/- keys.
- With the two corresponding +/- keys move to or select the desired positions (X and Y) or values.

Parameter input two-hole button

	P01	First needle entry position
	P02	Second needle entry position
	P07	Total number of stitches (1-99).
	P10	End knotting function: I = off, II = on

- Operate the left +/- keys to take over the values entered and to call up the next or previous parameter.
- Press the "programming" key to take over the values entered and to call up the sewing mode.

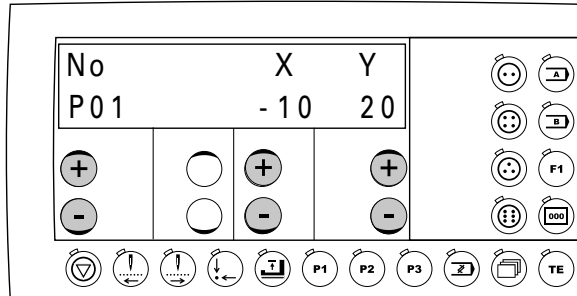


To achieve the best results, cutting should take place at the left needle entry position. This is achieved through the number of stitches and the location of the needle entry positions.

11.01.02 Seam pattern input for three-hole buttons



- Switch on the machine.
- Select the program number and button type, see Chapter 9.03 **Selecting the button type and program number.**
- Call up the programming mode



- Select the desired parameter (P01, P02 etc.) with the left +/- keys.
- With the two corresponding +/- keys move to or select the desired positions (X and Y) or values.

Parameter input three-hole button

	P01	First needle entry position
	P02	Second needle entry position
	P03	Third needle entry position
	P07	Total number of stitches (2-99)
	P09	Seam pattern: 1 = seam cycle, 2 = point, 3 = basting
	P10	End knotting function: I = off, II = on



- Operate the left +/- keys to take over the values entered and to call up the next or previous parameter.
- Press the "programming" key to take over the values entered and to call up the sewing mode.



To achieve the best results, cutting should take place at the left needle entry position. This is achieved through the number of stitches and the location of the needle entry positions.

Seam pattern for the three-hole button

	Seam cycle (P09 = 1)
	Point (P09 = 2)
	Basting (P09 = 3)

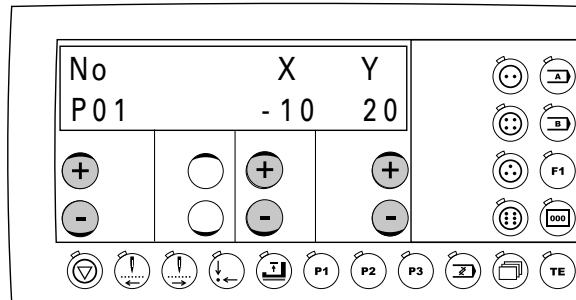
11.01.03 Seam pattern input for four-hole buttons



- Switch on the machine.



- Select the program number and button type, see Chapter 9.03 **Selecting the button type and program number.**
- Call up the programming mode



- Select the desired parameter (**P01, P02** etc.) with the left +/- keys.
- With the two corresponding +/- keys move to or select the desired positions (**X** and **Y**) or values.

Parameter input four-hole button

	P01	First needle entry position
	P02	Second needle entry position
	P03	Third needle entry position
	P04	Fourth needle entry position
	P07	Total number of stitches (2-99)
	P08	Intermediate trimming: I = off, II = on
	P09	Stitch formation: 1 = normal, 2 = seam cycle, 3 = arrow, 4 = Z
	P10	End knotting function: I = off, II = on

- Operate the left +/- keys to take over the values entered and to call up the next or previous parameter.



- Press the "programming" key to take over the values entered and to call up the sewing mode.

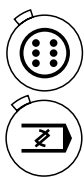


To achieve the best results, cutting should take place at the left needle entry position. This is achieved through the number of stitches and the location of the needle entry positions.

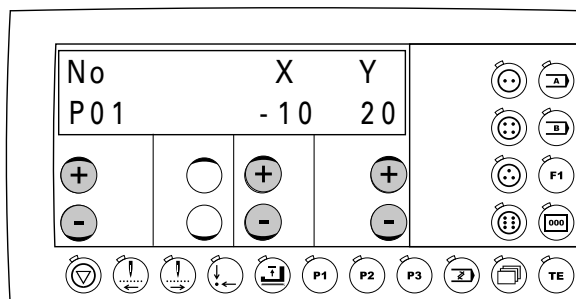
Seam pattern examples for the four-hole button

	<p>Seam patterns with intermediate cutting (P06 = II), without seam cycle (P09 = 1).</p>
	<p>Seam patterns without intermediate cutting (P06 = I), and without seam cycle (P09 = 1).</p>
	<p>Seam patterns with seam cycle (P09 = 2), the intermediate cutting function is switched off automatically.</p>
	<p>Seam pattern "arrow" (P09 = 3) the intermediate cutting function is switched off automatically.</p>
	<p>Stitch formation "Z" (P09 = 4) the intermediate trimming function is switched off automatically.</p>

11.01.04 Seam pattern input for six-hole buttons

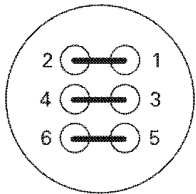


- Switch on the machine.
- Select the program number and button type, see Chapter 9.03 **Selecting the button type and program number.**
- Call up the programming mode



- Select the desired parameter (P01, P02 etc.) with the left +/- keys.
- With the two corresponding +/- keys move to or select the desired positions (X and Y) or values.

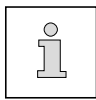
Parameter input six-hole button

	P01	First needle entry position
	P02	Second needle entry position
	P03	Third needle entry position
	P04	Fourth needle entry position
	P05	Fifth penetration position
	P06	Sixth penetration position
	P07	Total number of stitches (2-99)
	P08	Intermediate trimming: I = off, II = on
	P09	Seam pattern: 1 - 17 (see seam example)
	P10	End knotting function: I = off, II = on

- Operate the left +/- keys to take over the values entered and to call up the next or previous parameter.

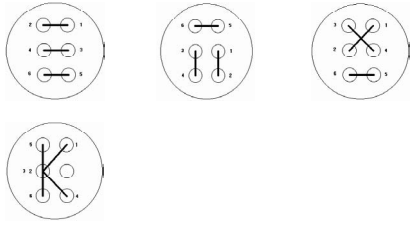
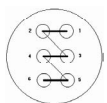
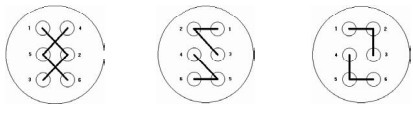

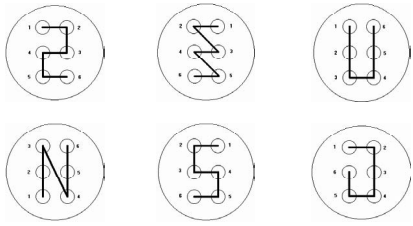



- Press the "programming" key to take over the values entered and to call up the sewing mode.

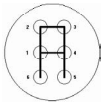
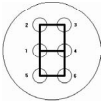
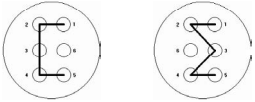
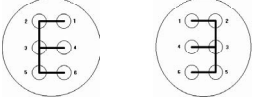


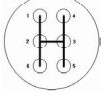
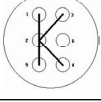
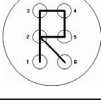
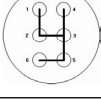
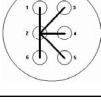
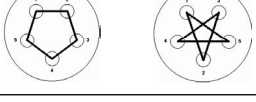


To achieve the best results, cutting should take place at the left needle entry position. This is achieved through the number of stitches and the location of the needle entry positions.

Seam pattern examples for the six-hole buttons

	<p>Stitch formation 1 (P09 = 1) Stitch sequence 1 - 2; 3 - 4; 5 - 6 Seam patterns with intermediate cutting (P08 = II)</p>
	<p>Stitch formation 1 (P09 = 1) Stitch sequence 1 - 2; 3 - 4; 5 - 6 Seam patterns without intermediate cutting (P08=I)</p>
	<p>Stitch formation 2 (P09 = 2) Stitch sequence 1 - 2 - 3; 4 - 5 - 6 Seam patterns with intermediate cutting (P08 = II)</p>
	<p>Stitch formation 3 (P09 = 3) Stitch sequence 1 - 2 - 3 - 1; 4 - 5 - 6 - 4 Seam patterns with intermediate cutting (P08 = II)</p>
	<p>Stitch formation 4 (P09 = 4) Stitch sequence 1 - 2 - 3 - 4 - 5 - 6 - 5 - 4 - 3 - 2 - 1</p>
	<p>Stitch formation 5 (P09 = 5) Stitch sequence 1 - 2 - 3 - 4 - 5 - 6 - 1</p>

Seam pattern examples for the six-hole buttons

	Stitch formation 6 (P09 = 6) Stitch sequence 1 - 2 - 3 - 4 - 5 - 4 - 1 - 6 - 1 - 4 - 3 - 2 - 1
	Stitch formation 7 (P09 = 7) Stitch sequence 1 - 2 - 3 - 4 - 1 - 5 - 6 - 4 - 1 - 2 - 3 - 4 - 6 - 5 - 1
	Stitch formation 8 (P09 = 8) Stitch sequence 1 - 2 - 3 - 4 - 5 - 4 - 3 - 2 - 1
	Stitch formation 9 (P09 = 9) Stitch sequence 1 - 2 - 3 - 4 - 3 - 5 - 6 - 5 - 3 - 2 - 1
	Stitch formation 10 (P09 = 10) Stitch sequence 1 - 2 - 3 - 4 - 3 - 5 - 3 - 2 - 1
	Stitch formation 11 (P09 = 11) Stitch sequence 1 - 2 - 3 - 4 - 5 - 6 - 3 - 6 - 5 - 4 - 3 - 2 - 1
	Stitch formation 12 (P09 = 12) Stitch sequence 1 - 2 - 3 - 4 - 3 - 5 - 3 - 2 - 6 - 2 - 1
	Stitch formation 13 (P09 = 13) Stitch sequence 1 - 2 - 3 - 2 - 4 - 2 - 5 - 2 - 1
	Stitch formation 14 (P09 = 14) Stitch sequence 1 - 2 - 3 - 4 - 5 - 2 - 6 - 2 - 5 - 4 - 3 - 2 - 1
	Stitch formation 15 (P09 = 15) Stitch sequence 1 - 2 - 3 - 4 - 3 - 5 - 6 - 5 - 3 - 2 - 1
	Stitch formation 16 (P09 = 16) Stitch sequence 1 - 2 - 3 - 2 - 4 - 2 - 5 - 2 - 6 - 2 - 1
	Stitch formation 17 (P09 = 17) Stitch sequence 1 - 2 - 3 - 4 - 5 - 1

Pfaff does not guarantee that all selectable stitch formations can be sewn reliably in all the possible needle penetration point combinations.

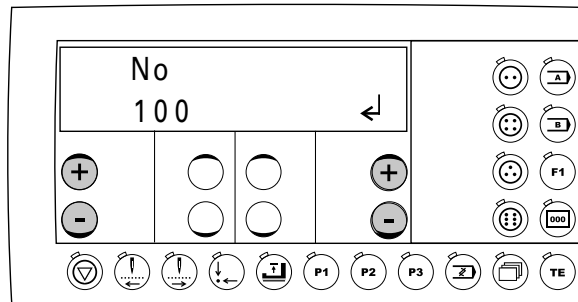


To achieve the best possible sewing result, the first penetration point should be at the back and the first tack should be sewn in the X-direction. If necessary use the soft start function (parameter **501**) for a better sewing start and add extra stitches (parameter **503**) at the seam start, or change the direction of the formation! A reduction of the maximum speed can also improve the sewing result.

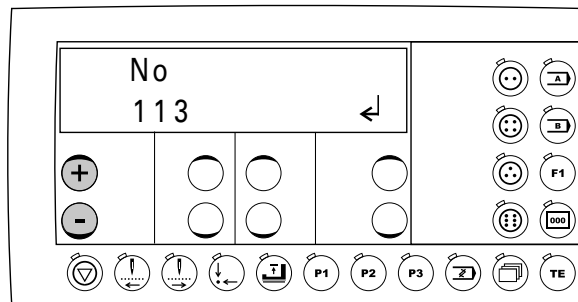
11.02 Sequence input

In one sequence up to **99** seam patterns can be stored in any order. When working with the sequence (sequence mode) the seam patterns are processed one after the other in the order specified. After the last seam pattern in the sequence, the first seam pattern is repeated again. Below is a description of a sequence input with two seam patterns.

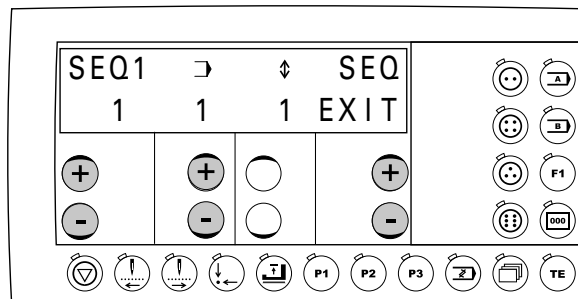
- Switch on the machine.
- Call up the input mode (LED in the key lights up).



- Select the function group "100" by pressing the left +/- keys.
- Confirm the selection by pressing "+" on the right +/- keys.



- Select parameter "113" by pressing the left +/- keys.
- Confirm the selection by pressing "+" on the right +/- keys.



- Select the required seam pattern by pressing the middle +/- keys.
- Select the next position by pressing "+" on the left +/- keys.
- Select the next seam pattern by pressing the middle +/- keys.
- After entering the seam patterns, conclude the sequence input by pressing the right +/- keys ("EXIT").

11.03 Program Management

In the program management the program numbers of the programs filed in the machine memory or on the inserted SD-memory card are displayed. The programs (seam patterns) can be deleted or copied. Commercially available SD-memory cards with a storage capacity of max. 2 GByte can be inserted in the control panel. The machine data is stored in the file "MD" in the sub-directory \P3307. The button-hole programs are filed as follows:



The 2-hole button programs are in directory \P3307\P2 in the files 01 – 99.



The 3-hole button programs are in directory \P3307\P3 in the files 01 – 99.



The 4-hole button programs are in directory \P3307\P4 in the files 01 – 99.



The 6-hole button programs are in directory \P3307\P6 in the files 01 – 99.



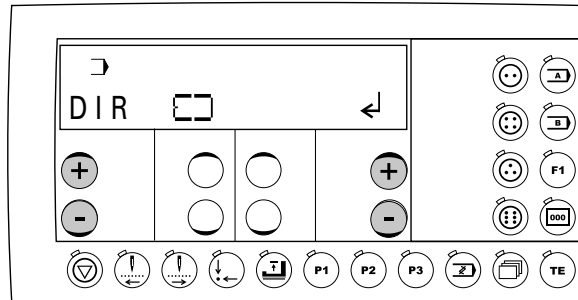
The stem-wrapping programs are in directory \P3307\PU in the files 01 – 99.

The desired button type is selected by pressing the corresponding key. A description of how to insert or remove the SD-memory card is given in Chapter 9.06 **Inserting/removing the SD-memory card**.

Should the SD-memory cards need to be formatted on the PC, they must be formatted in the format "FAT16". Alternatively the SD-memory cards can also be formatted on the corresponding machine with the formatting function, see Chapter 11.03.08 **Formatting the SD-memory card**.

11.03.01 Calling up the program management

- Switch on the machine.
- Call up the input mode. (The LED in the key is on.)
- Call up the program management.
- Select the desired button type.



After the program management has been called up, the first menu item appears (display of programs in the machine memory).

Confirm the selection of the menu item with the "Enter" function by pressing the right **plus** key.

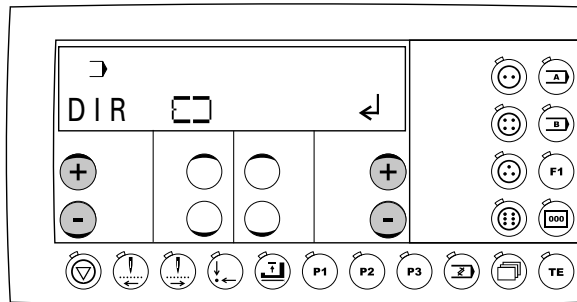
Scroll through the other menu items by pressing the left **+/-** keys, see following chapter.

The following menu items are available in the program management:

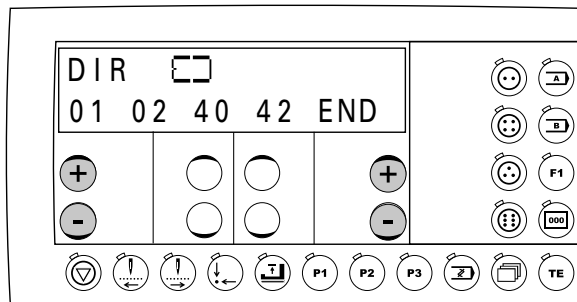
- Displaying programs in the machine memory
- Displaying programs on the connected SD-memory card
- Copying individual programs to the SD-memory card
- Copying individual programs to the machine memory
- Deleting programs in the machine memory
- Deleting programs on the SD-memory card
- Formatting the SD-memory card

11.03.02 Displaying programs in the machine memory

- Call up the program management and select the desired button type, see Chapter 11.03.01 Calling up the program management.



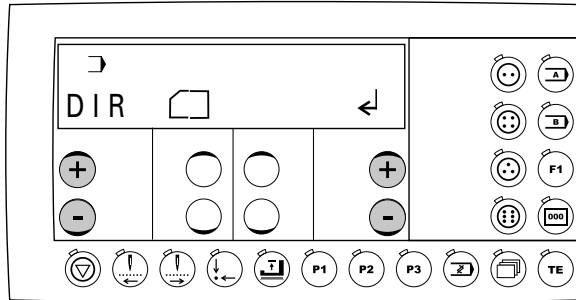
- Press the left +/- keys until the corresponding menu item appears.
- Confirm the selection of the menu item by pressing the right plus key.



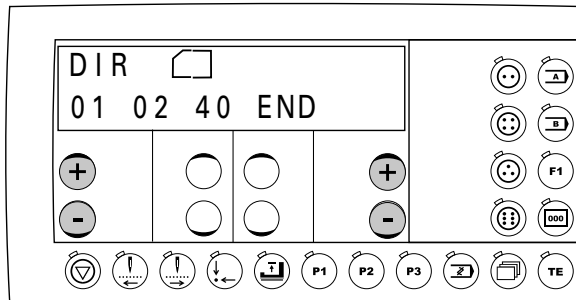
- Press "+" on the right +/- keys to scroll through the display of the machine memory (programs 1 – 99). Only assigned program spaces will be displayed.
- Press the left +/- keys to select the other menu items of the program management.

11.03.03 Displaying programs on the SD-memory card

- Call up the program management and select the desired button type, see Chapter 11.03.01 Calling up the program management.



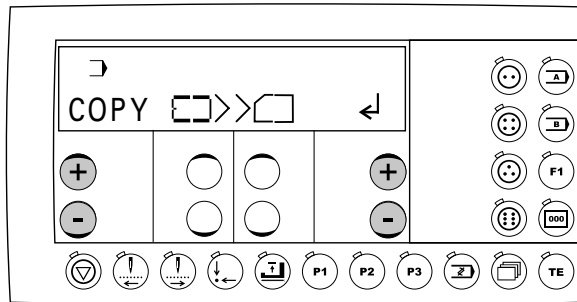
- Press the left +/- keys until the corresponding menu item appears.
- Confirm the selection of the menu item by pressing the right plus key.



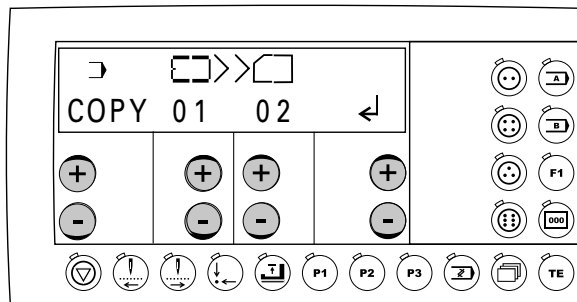
- By pressing "+" on the right +/- keys it is possible to scroll through the display of the SD-memory card (1 – 99 programs). Only assigned program spaces will be displayed.
- Press the left +/- keys to select the other menu items of the program management.

11.03.04 Copying programs to the SD-memory card

- Call up the program management and select the desired button type, see Chapter 11.03.01 Calling up the program management.



- Press the left +/- keys until the corresponding menu item appears.
- Confirm the selection of the menu item by pressing the right plus key.



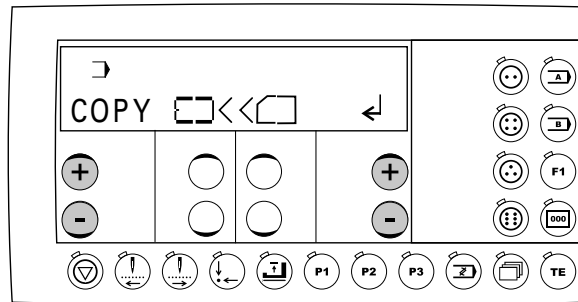
- Press the +/- keys under the machine memory symbol to select the seam patterns which are to be copied from the machine memory onto the SD-memory card (programs 1 – 99).
- Select the program numbers to be stored on the SD-memory card by pressing the +/- keys under the memory card symbol.
- Confirm the copying process by pressing the right plus key.
- Press the left +/- keys to select the other menu items of the program management.



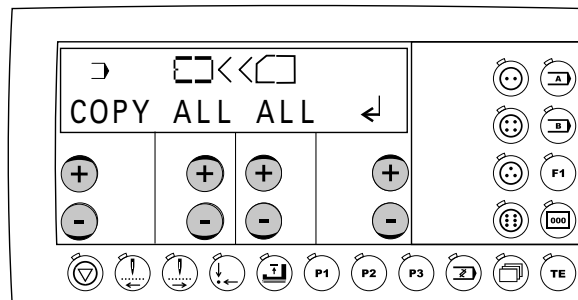
If the entire contents of the machine "ALL" are selected, all the seam patterns for the selected button type will be copied to the SD-memory card. If a seam pattern already exists on the SD-memory card, a confirmation enquiry is displayed. If the right plus key is pressed, the seam pattern will be overwritten. If the right minus key or the "basic position" key are pressed, the process is stopped.

11.03.05 Copying programs to the machine memory

- Call up the program management and select the desired button type, see Chapter 11.03.01 Calling up the program management.



- Press the left +/- keys until the corresponding menu item appears.
- Confirm the selection of the menu item by pressing the right plus key.



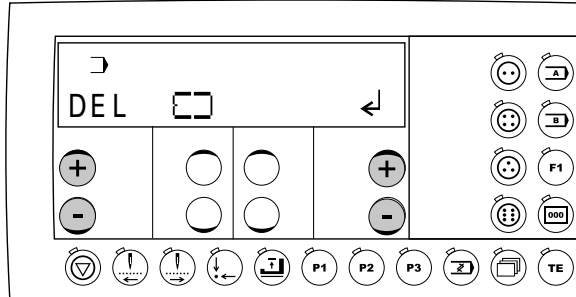
- Press the +/- keys under the memory card symbol to select the seam patterns which are to be copied from the SD-memory card to the machine memory (programs 1 – 99).
- Select the program numbers to be stored in the machine memory by pressing the +/- keys under the machine memory symbol.
- Confirm the copying process by pressing the right plus key.
- Press the left +/- keys to select the other menu items of the program management.



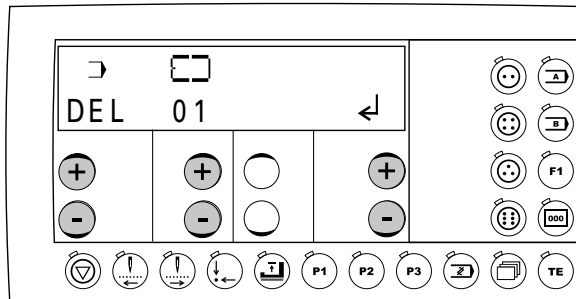
If the entire contents of the memory card "ALL" are selected, all the seam patterns for the selected button type will be copied to the machine memory. If a seam pattern already exists in the machine memory, a confirmation enquiry is displayed. If the right plus key is pressed, the seam pattern will be overwritten. If the right minus key or the "basic position" key are pressed, the process is stopped.

11.03.06 Deleting programs in the machine memory

- Call up the program management and select the desired button type, see Chapter 11.03.01 Calling up the program management.



- Press the left +/- keys until the corresponding menu item appears.
- Confirm the selection of the menu item by pressing the right plus key.



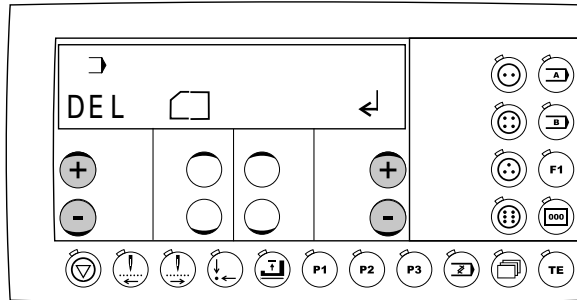
- Press the +/- keys under the machine memory symbol to select the seam patterns which are to be deleted from the machine memory (programs 1 – 99).
- Confirm the deleting process by pressing the plus key.
- Press the left +/- keys to select the other menu items of the program management.



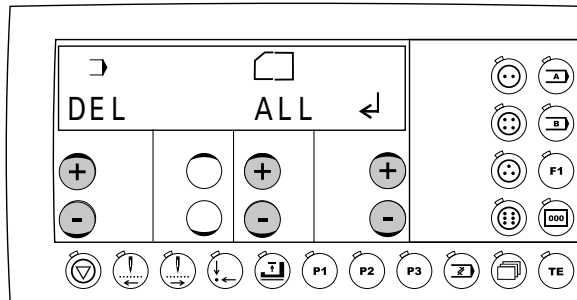
If the entire contents of the machine "ALL" are selected, all the seam patterns for the selected button type will be deleted from the machine memory. The machine data "MD" cannot be deleted. Before the deleting action a confirmation enquiry is displayed. If the right plus key is pressed, the seam pattern will be overwritten. If the right minus key or the "basic position" key are pressed, the process is stopped.

11.03.07 Deleting programs on the SD-memory card

- Call up the program management and select the desired button type, see Chapter 11.03.01 Calling up the program management.



- Press the left +/- keys until the corresponding menu item appears.
- Confirm the selection of the menu item by pressing the right plus key.



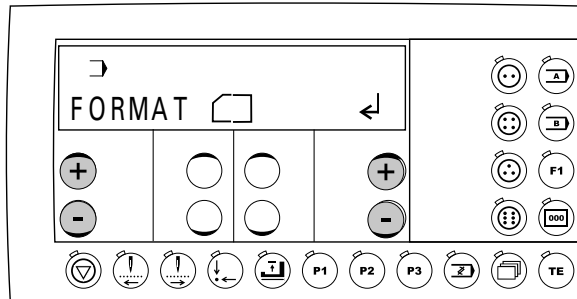
- Press the +/- keys under the memory card symbol to select the seam patterns which are to be deleted from the SD-memory card (programs 1 – 99).
- Confirm the deleting process by pressing the right plus key.
- Press the left +/- keys to select the other menu items of the program management.



If the entire contents of the memory card "ALL" are selected, all the seam patterns for the selected button type will be deleted from the memory card. Before the deleting action a confirmation enquiry is displayed. If the right plus key is pressed, the seam pattern will be overwritten. If the right minus key or the "basic position" key are pressed, the process is stopped.

11.03.08 Formatting the SD-memory card

- Call up the program management and select the desired button type, see Chapter 11.03.01 Calling up the program management.



- Press the left +/- keys until the corresponding menu item appears.
- Confirm the selection of the menu item by pressing the right plus key.



Before formatting begins, a confirmation enquiry is made. Press the right plus key to confirm the formatting process. Press the right minus key or the "basic position" key to stop the formatting process.



If the card cannot be read, it will be completely formatted. If it can be read and the directory \P3307 exists for the 3307, the machine data and the sub-directories for all button types in this directory will be deleted.

If the directory \P3307 does not exist for the 3307, only the directory will be created. This ensures that programs from other machines and other files are not lost.

- Press the left +/- keys to select the other menu items of the program management.

12 Care and maintenance

12.01 Maintenance intervals

RCleaning the hook compartment	daily
Cleaning the entire machine	once a week
Cleaning the air filter/lubricator (air filter)	as required
Top up oil (gears and needle drive).....	once a month
Lubricate gear shaft	once a month
Checking the air pressure	daily, before operation



During all cleaning work the machine must be disconnected from the power supply by switching off the main switch or pulling out the plug! Danger of injury if the machine is started accidentally!

12.02 Cleaning the machine

The cleaning cycle required for the machine depends on following factors:

- Single or several shift operation
- Amount of dust resulting from the workpiece

It is therefore only possible to stipulate the best possible cleaning instructions for each individual case.



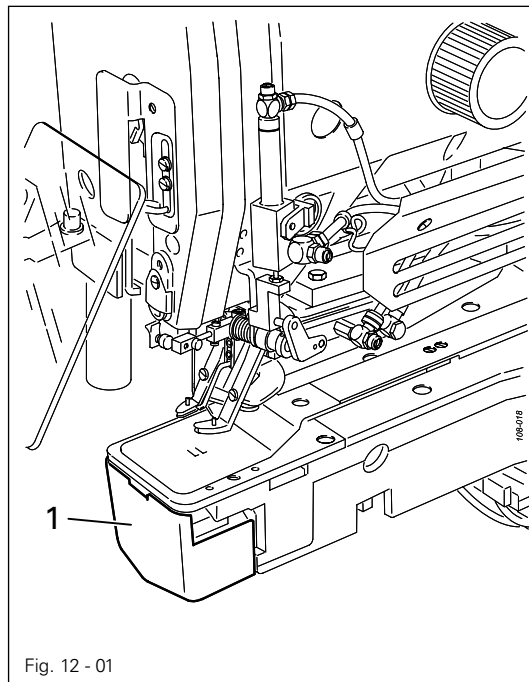
For all cleaning work the machine must be disconnected from the mains by switching off the on/off switch or by removing the mains plug! Danger of injury if the machine suddenly starts up .



To avoid breakdowns, the following cleaning work is recommended for single shift operation:

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

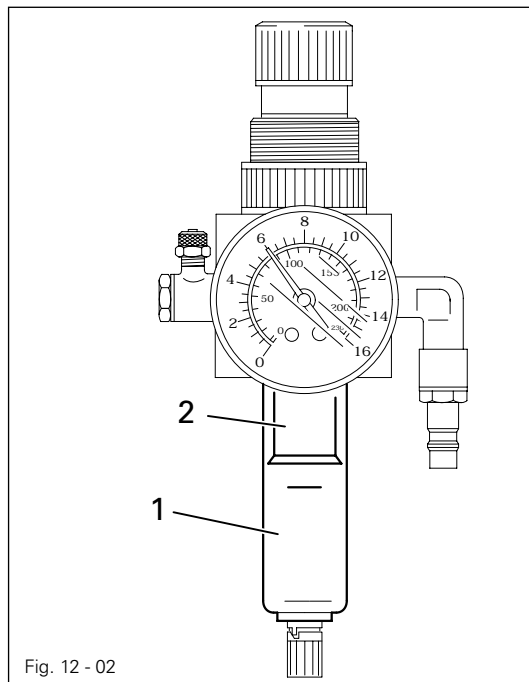
12.03 Cleaning the hook compartment



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

- Open the hook compartment cover 1.
- Clean the hook and the hook compartment daily, more often if in continuous operation.

12.04 Cleaning the air filter/lubricator



Switch off the machine!
Remove the compressed air tube from the air filter.

Empty the water tank 1:

- The water tank 1 empties automatically after the removal of the compressed air tube of the air filter.

Clean filter 2:

- Unscrew water tank 1.
- Remove filter 2.
- Clean filter 2 with compressed air or with isopropyl alcohol (part no. 95-665 735-91).
- Replace filter 2 and screw water tank 1 back into place.

12.05 Checking/adjusting the air pressure

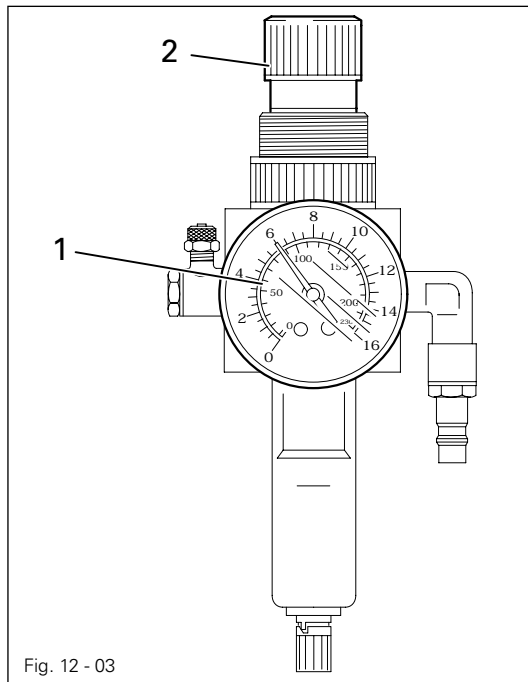


Fig. 12 - 03

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

12.06 Top up the oil for needle drive

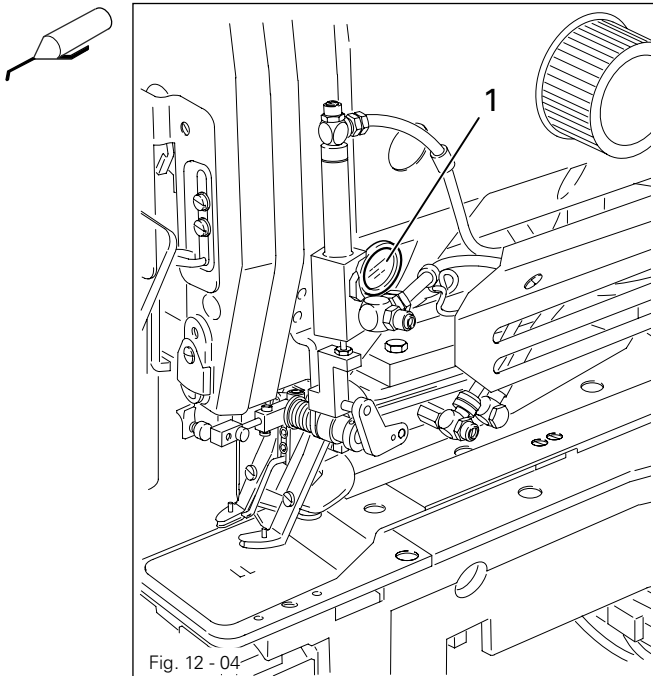


Fig. 12 - 04

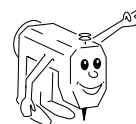


Top up oil once a month.

- Pour in oil through the hole in inspection glass 1 up to the bottom edge of the hole.

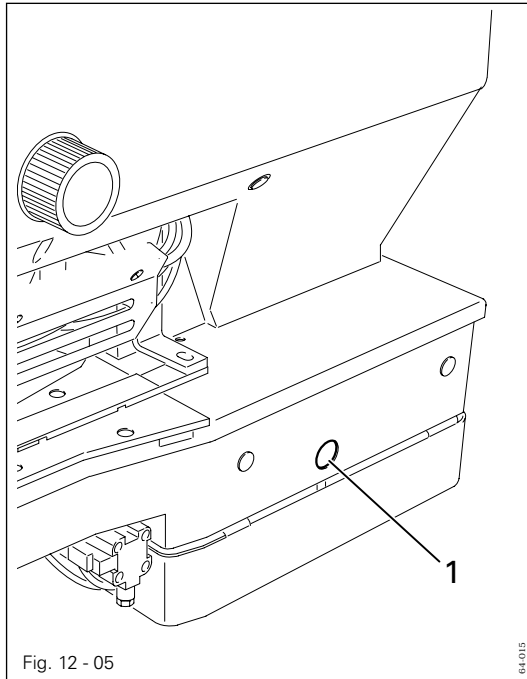


Only use oil with a mean viscosity of $31.0 \text{ mm}^2/\text{s}$ at 40° C and a density of 0.870 g/cm^3 at 15° C .



We recommend
PFAFF sewing machine oil,
part no. 280-1-120 145

12.07 Topping up oil for the gears

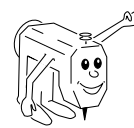


Top up oil once a month.

- Pour in oil through the hole in inspection glass 1.

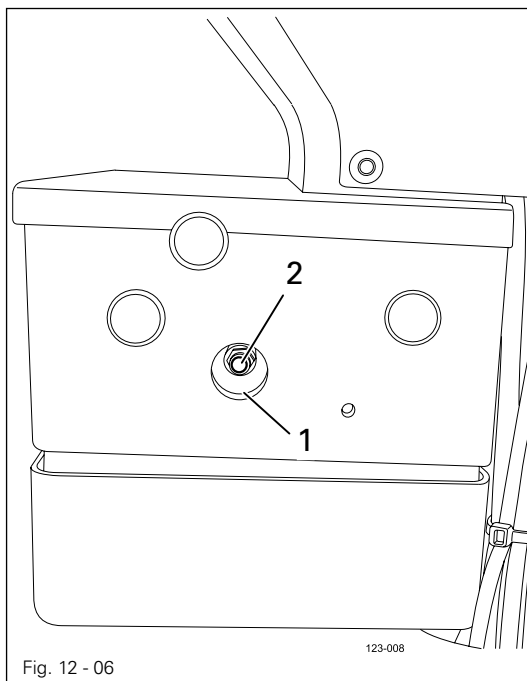


Only use oil with a mean viscosity of $31.0 \text{ mm}^2/\text{s}$ at 40° C and a density of 0.870 g/cm^3 at 15° C .



We recommend
PFAFF sewing machine oil,
part no. 280-1-120 145

12.08 Lubricating the gear shaft



Lubricate the gear shaft once a month.

- Remove the cover from hole 1.
- Use the lubricating nipple 2 of a grease gun to lubricate the gear shaft.



Only use Gleitmo 585 M
heavy duty grease, part no.
280-1-120 069.

13 Adjustment



Unless stated otherwise, the machine must be disconnected from the electric and pneumatic power supply!

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.

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 offset screwdriver, part no. 91-029 339-91
- 1 metal ruler, part no. 08-880 218-00
- C-clamp, part no. 61-111 600-35
- 1 needle rise gauge 2.4 mm, part no. 61-111 600-01
- 1 adjustment gauge "hook centre", part no. 61-111 637-03
- 1 adjustment gauge „needle centre“ 91-253 505-04 (send button with order), will be included in the delivery in accordance with the button selected.
- 1 locking pin "t.d.c. needle", part no. 61-111 635-92
- 1 locking pin "needle drive", part no. 13-030 272-05
- Needles, threads and test material

13.03 Abbreviations

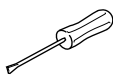
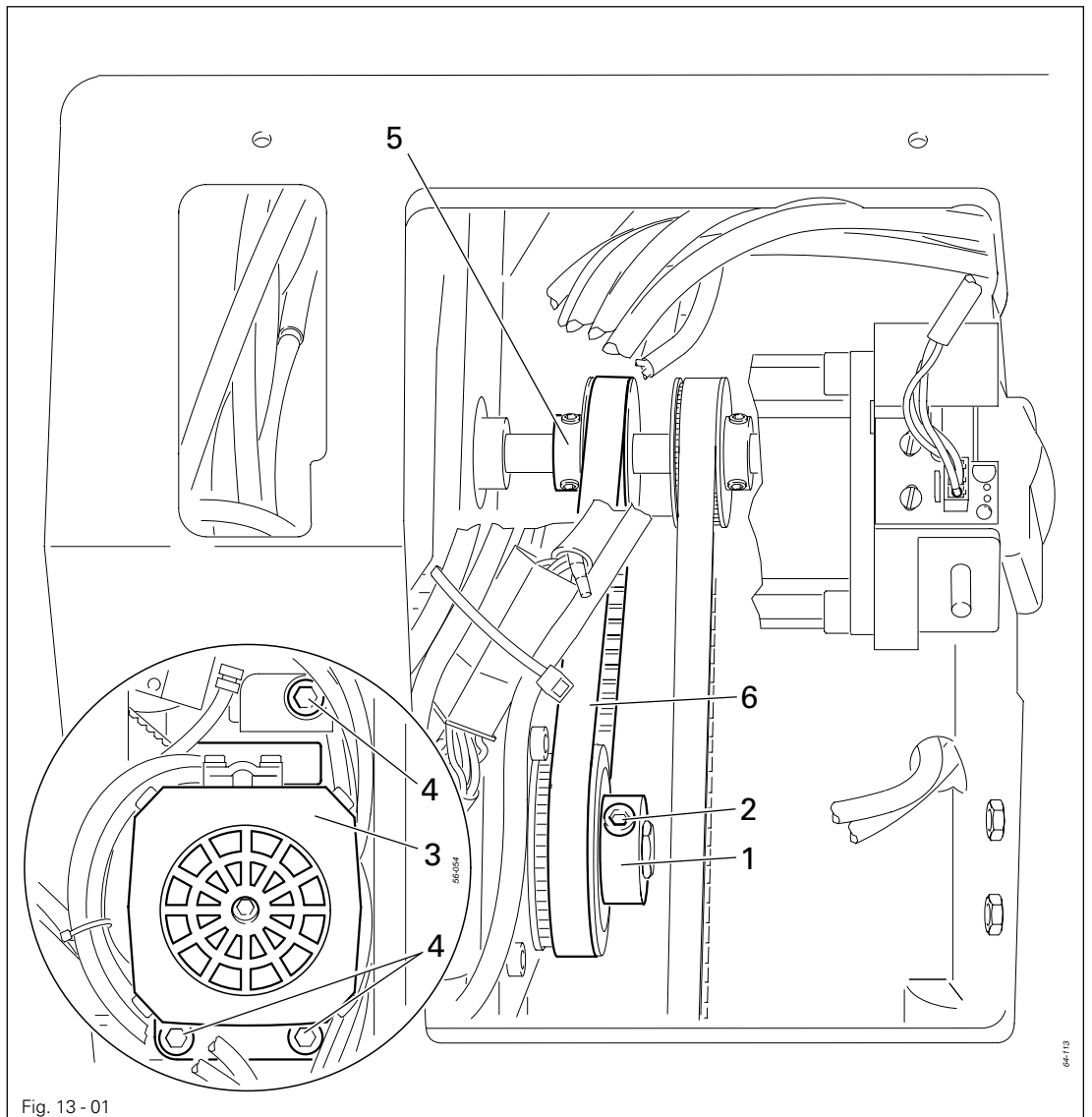
t.d.c. = top dead centre

b.d.c. = bottom dead centre

13.04 Toothed belts of the main drive

Requirement

1. Toothed belt wheels **1** and **5** should be in alignment.
2. Hardly any play should be noticeable between toothed belt wheels **1** and **5** and the toothed belt **6**.



- Adjust toothed belt wheel **1** (screws **2**) in accordance with **requirement 1**.
- Move motor **3** (screws **4**) in accordance with **requirement 2**.



If there are operational noises, the adjustments must be repeated.

13.05 Top needle bar position (reference position)

Requirement

Needle bar 4 should be positioned at its t.d.c. with access to one of the screws 1.

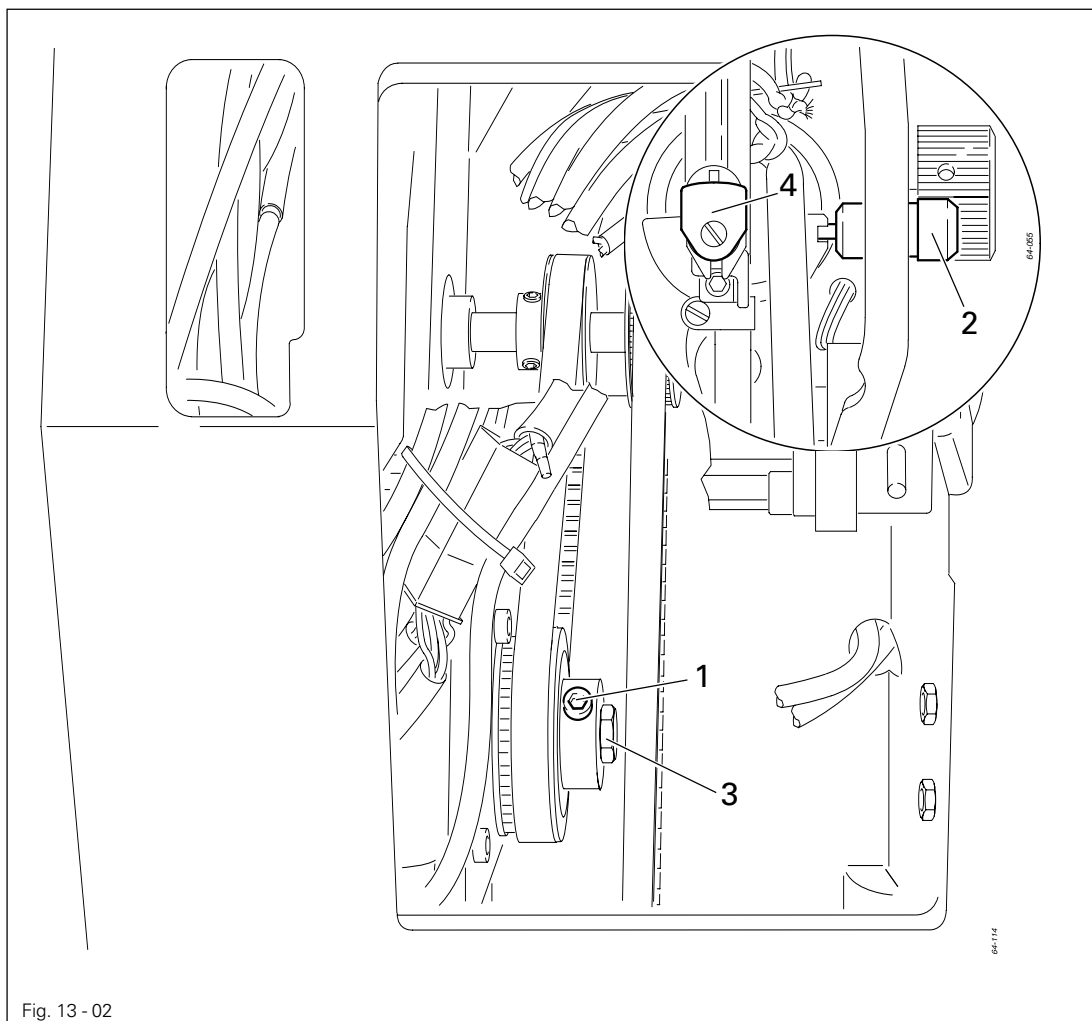
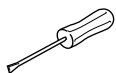


Fig. 13 - 02



- Remove the needle.
- Loosen screws 1.
- Using the balance wheel, position the needle bar at its t.d.c. and lock it with locking pin 2 (part no. 61-111 635-92).
- Switch on the machine, select parameter 612.
- With screw 3 turn the motor shaft so that the value for parameter 612 is at "0".
- Confirm the value.
- Confirm the value with "Enter function".
- Tighten screws 1 (to begin with only one screw is accessible).
- Switch off the machine and remove locking pin 2.

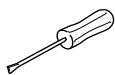
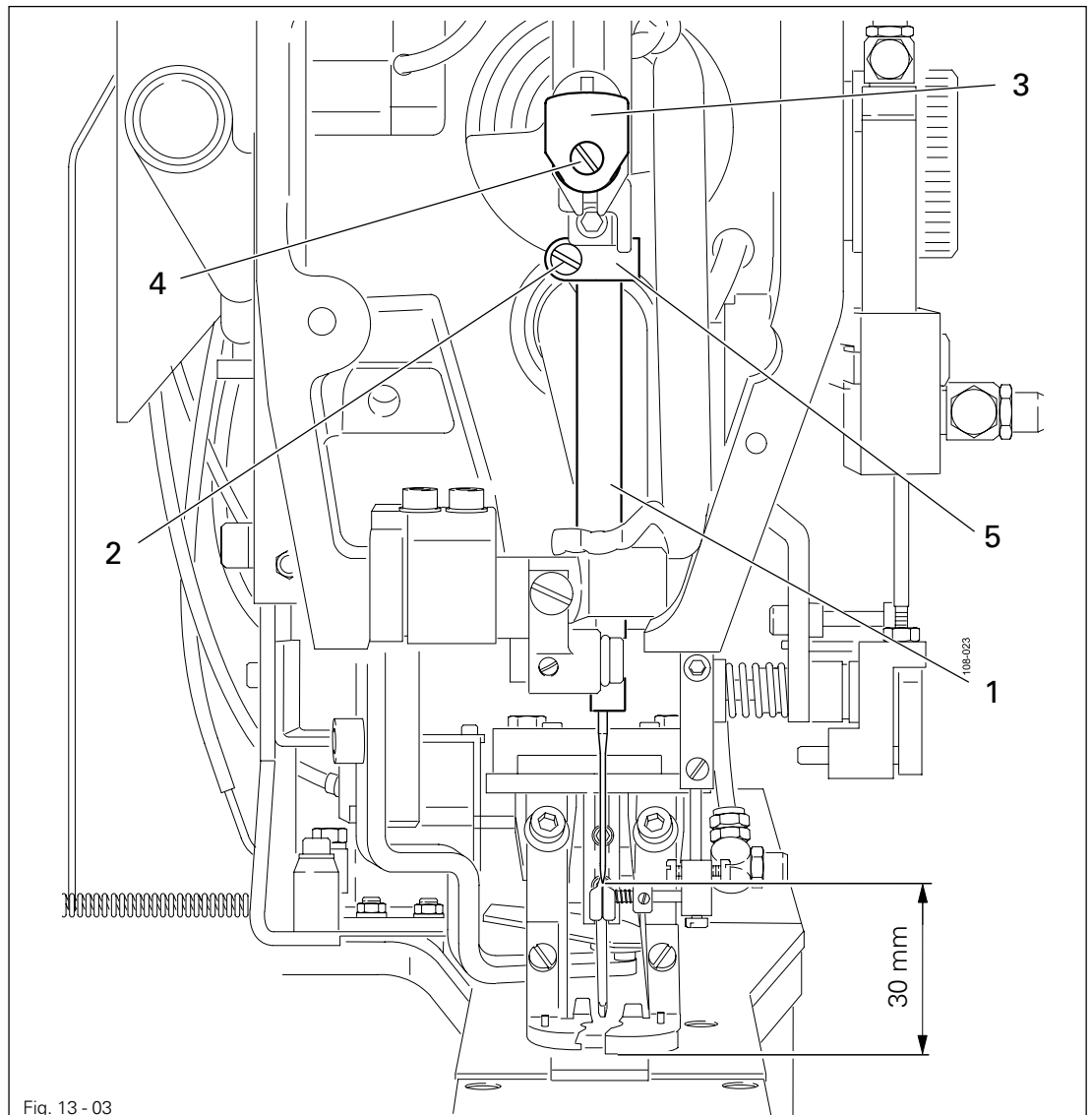


This setting can change again by ± 3 increments after checking.

13.06 Pre-adjusting the needle height

Requirement

1. When the needle bar is at its t.d.c., there should be a distance of **30 mm** between the needle point and the needle plate.
2. The thread puller **3** should be touching clamp **5** and be positioned in the centre of the face plate cutout.

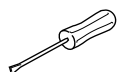
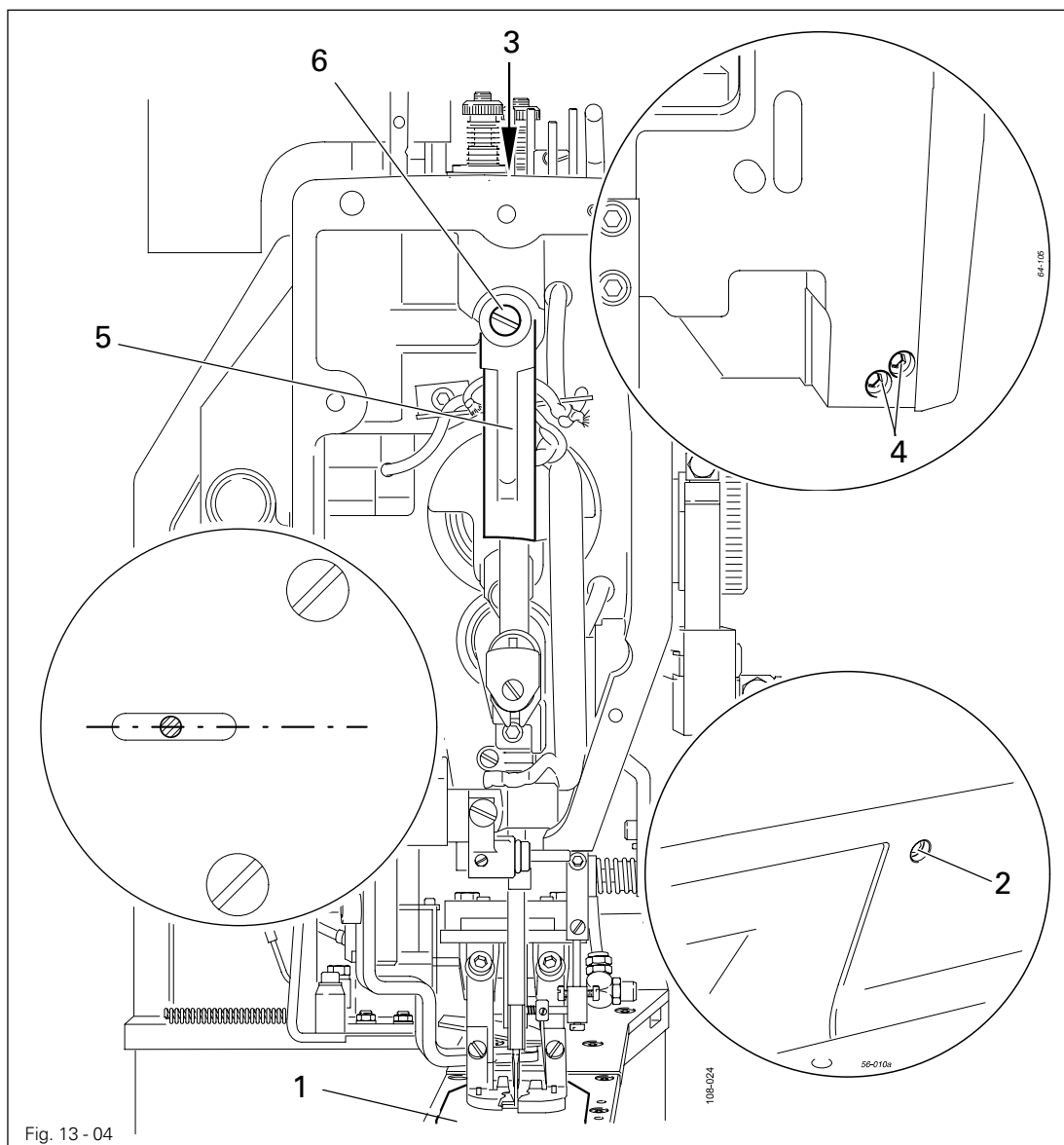


- Adjust needle bar **1** (screw **2**) and thread puller **3** (screw **4**) in accordance with the requirements.

13.07 Position of the needle to the needle hole

Requirement

When the needle bar is at its b.d.c., in the lengthwise direction of the arm the needle should be positioned in the centre of the needle hole.



- Switch on the machine and set parameter "610" at value "4".
- Unscrew cloth plate 1.
- Loosen screws 2, 3 and 4.
- With the balance wheel set the needle bar at its b.d.c.
- Align pendulum 5 in accordance with the **requirement**.
- Tighten screws 4.
- By moving the needle bar, make sure that pin 6 is not jammed and tighten screw 3.
- Switch off the machine.

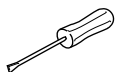
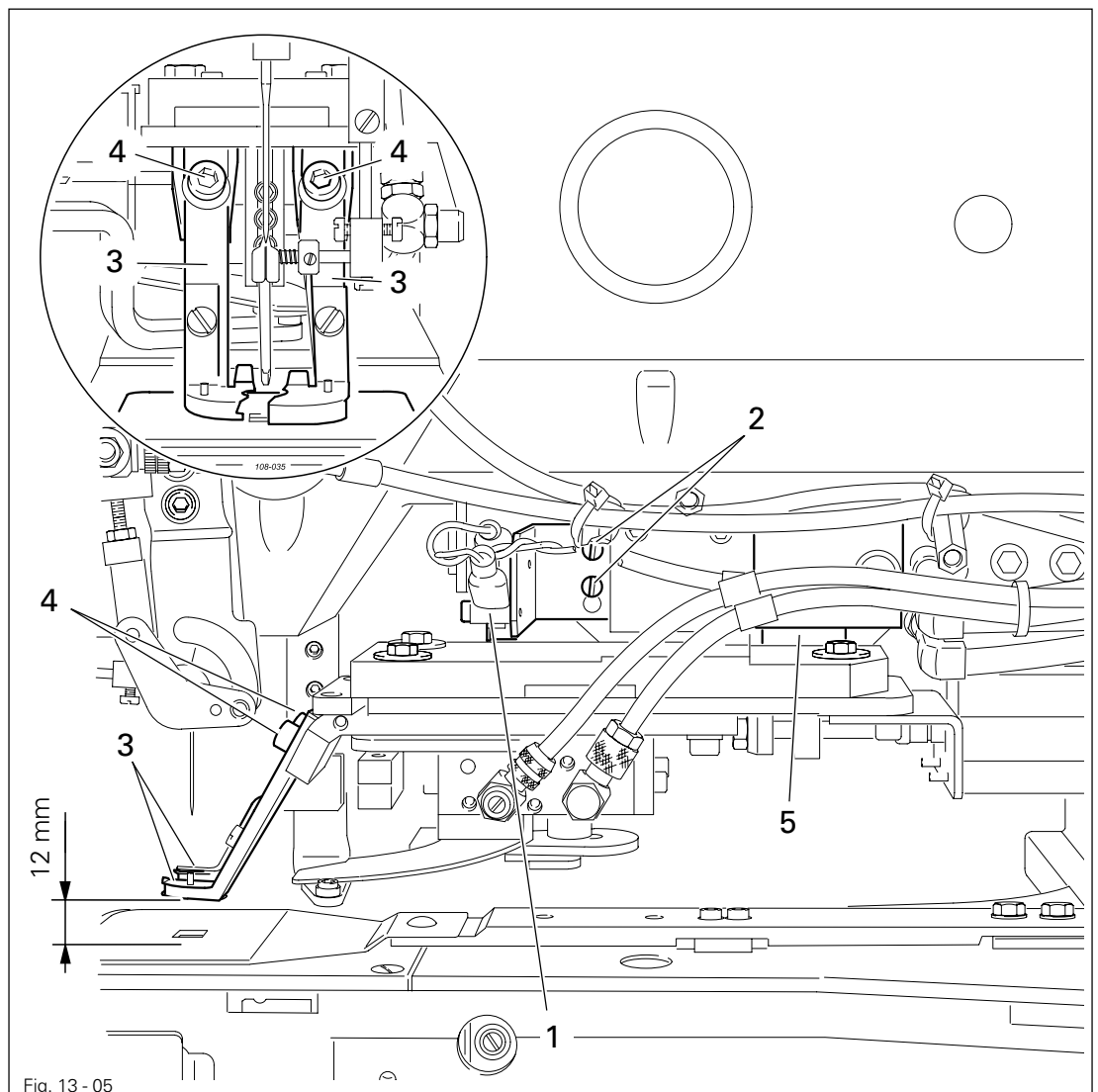


Screw 2 remains loosened for further adjustments.

13.08 Basic setting of the button clamp

Requirement

1. When the button clamp is raised, switch 1 should be operated reliably and the distance of the clamp jaws 3 to the needle plate should be 12 mm.
2. When the button clamp is lowered, the clamp jaws 3 should be resting parallel on the needle plate.



- Adjust switch 1 (screws 2) and clamp jaws 3 (screws 4) in accordance with **requirement 1**.
- Connect the machine to the pneumatic system.
- Switch on the machine and lower the button clamp.
- Align clamp jaws 3 (screws 4) in accordance with **requirement 2**.
- Switch off the machine and disconnect it from the pneumatic system.

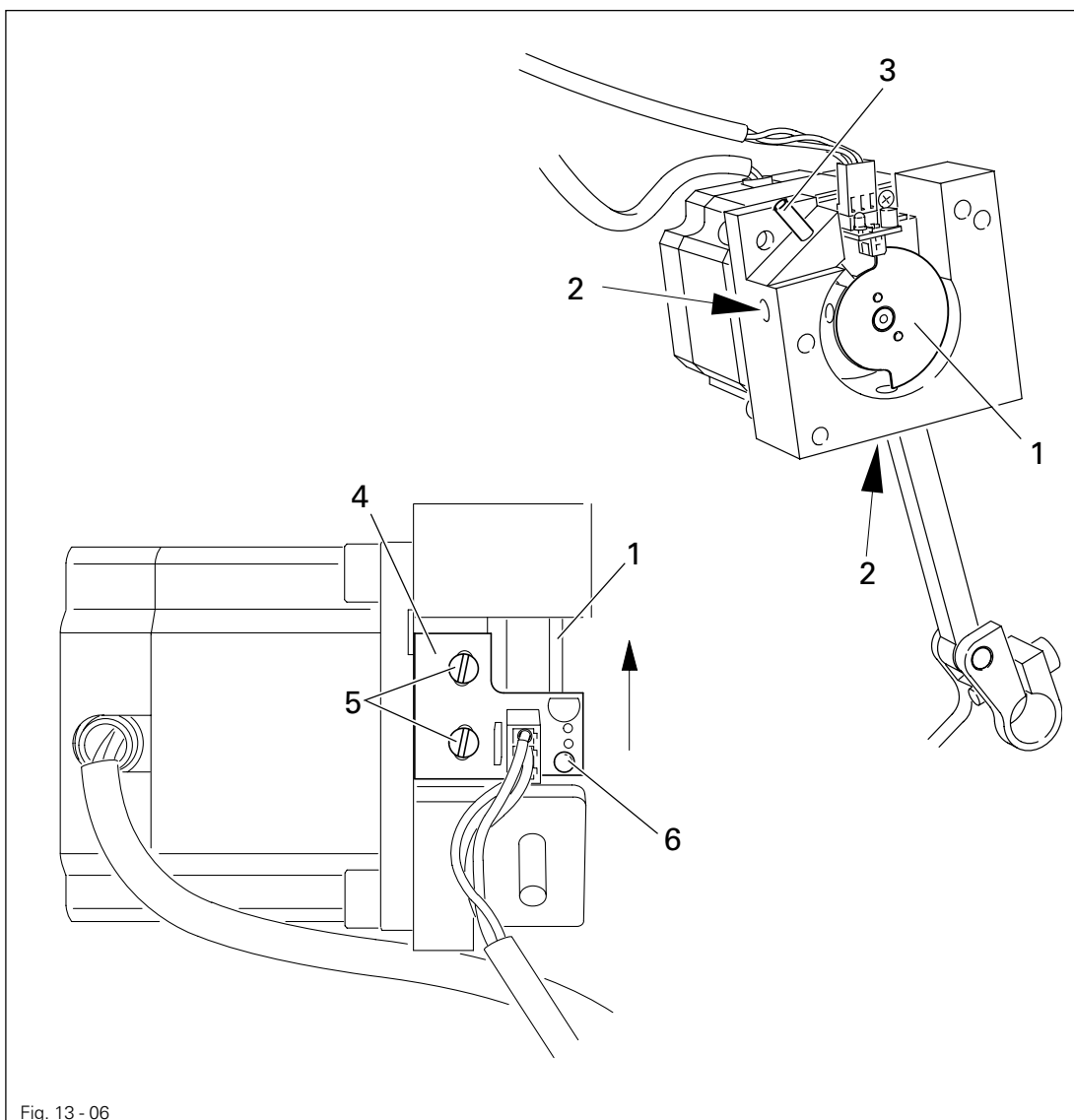


Ring 5 is used to limit the clamp stroke and must not be removed!

13.09 Sensor board of the needle drive (in dismantled condition)

Requirement

1. When parameter "610" is set at "4", the recess in eccentric 1 should match the locking hole in the mounting bracket.
2. The switch lug of eccentric 1 should be axially centred to the hybrid light barrier of the sensor board.



To change the sensor board, it is imperative to observe the following work steps!



Electric voltage!
Danger of an electric shock if handled incorrectly!

- Completely remove the needle drive unit (plugs remain connected).
- Loosen screws 2.

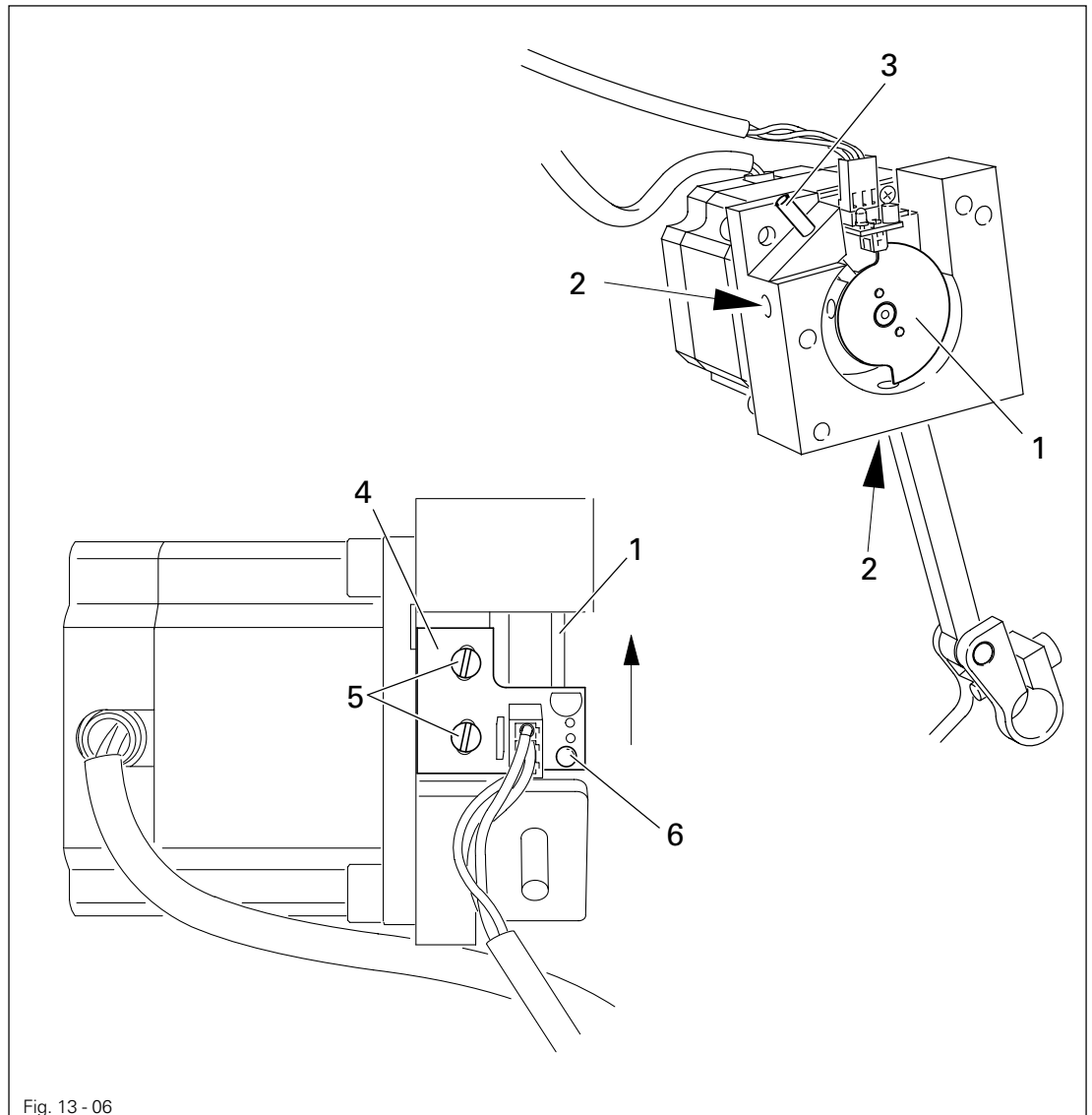
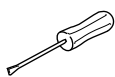


Fig. 13 - 06



- Lock eccentric 1 by placing the locking pin 3 (part no. 13-030 272-05) in the locking hole of the mounting bracket.
- Switch on the machine and wait until the stepping motor has stopped running (ignore error message on the control panel).
- Set parameter "610" at "4" (see **Chapter 13.48.01 Selecting and changing parameters**).
- Making sure that it is touching the rear wall, move board 4 (screw 5) in the direction of the arrow, until LED 6 lights up and move it back until LED 6 has just extinguished.
- Move eccentric 1 in accordance with **requirement 2** and tighten screws 2.
- Switch off the machine.
- Remove locking pin 3.
- Switch on the machine and check the needle drive unit in accordance with **requirement 1**.
- Switch off the machine.
- Install needle drive unit and adjust it in accordance with **Chapter 13.10 Basic setting of the needle drive**.

13.10 Basic setting of the needle drive

Requirement

With the needle bar at its b.d.c. and with eccentric 2 locked, in the crosswise direction of the arm the needle should be in the centre of the needle hole.

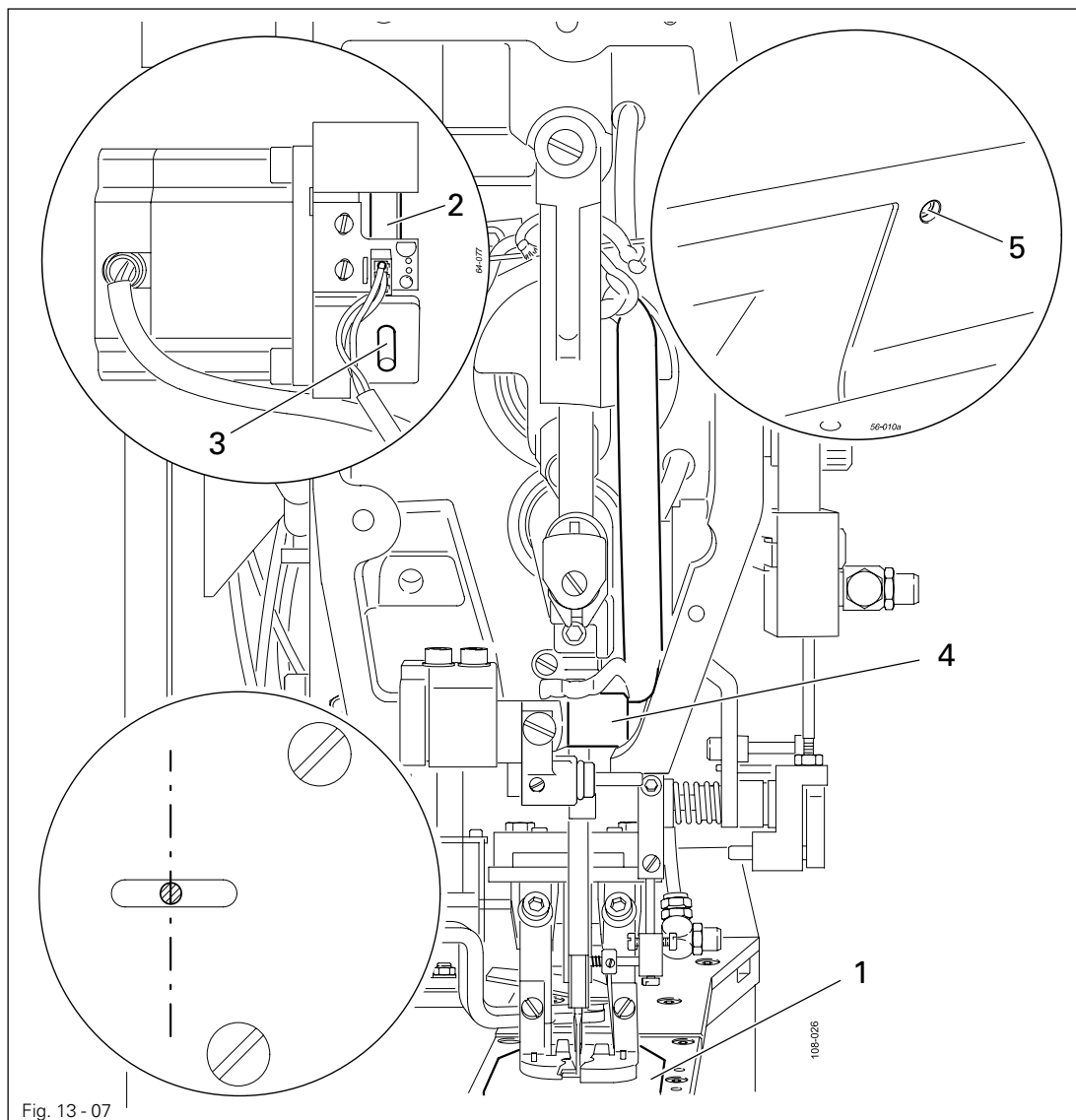
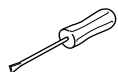


Fig. 13 - 07



- Switch on the machine and set parameter "610" at "4".
- Unscrew cloth plate 1.
- Using the balance wheel, set the needle bar at its b.d.c. and lock eccentric 2 (locking pin 3, part no. 13-030 272-05).
- Adjust the needle bar frame 4 (screw 5) in accordance with the **requirement**.
- Remove locking pin 3.

13.11 Position of the hook shaft to the needle

Requirement

When parameter "610" is set at "1", the hook shaft should be centred to the needle.

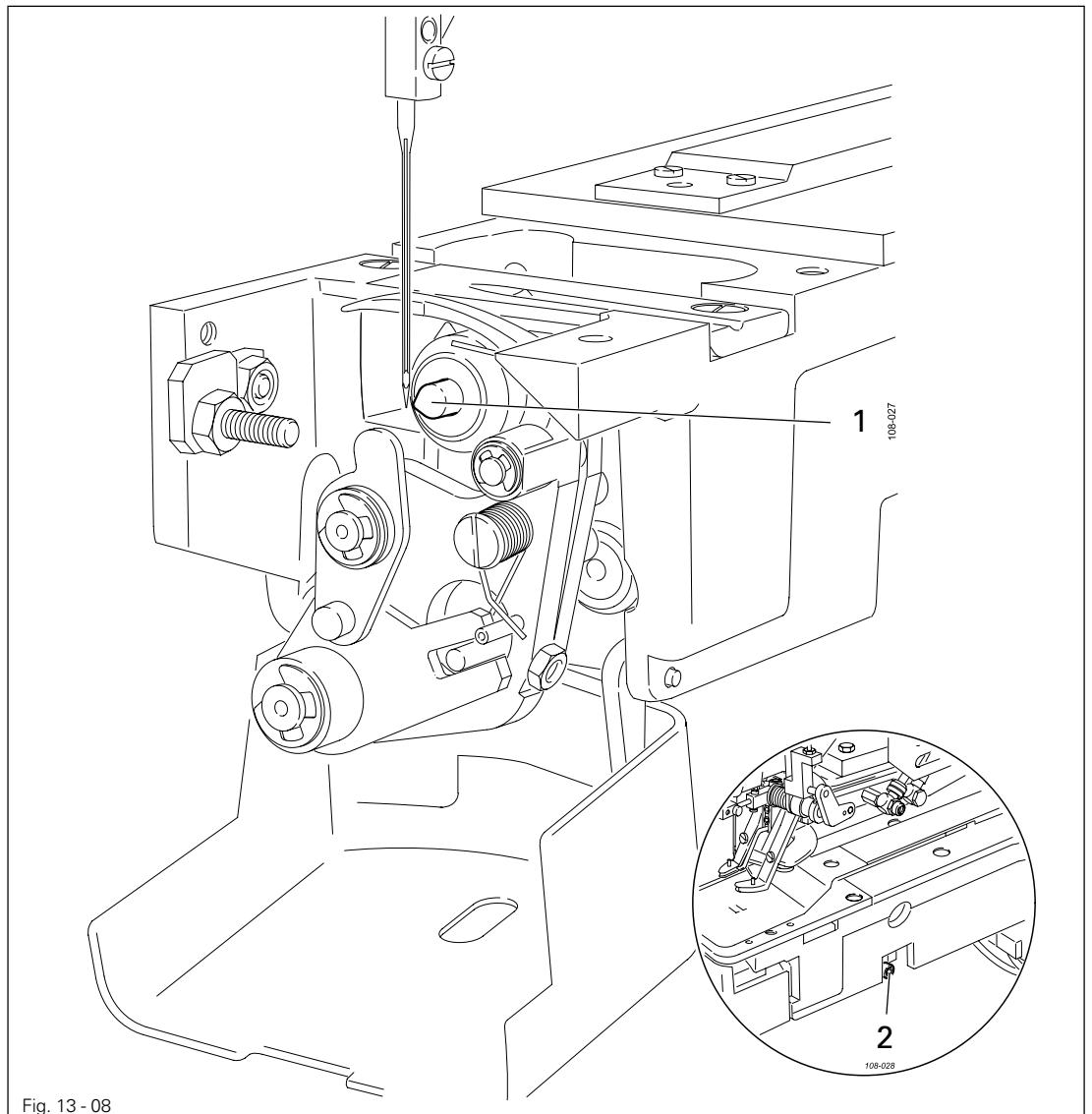
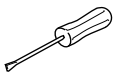


Fig. 13 - 08



- Remove needle plate and cloth plate.
- Remove hook and fit hook gauge 1 (part no. 61-111 637-03).
- Loosen screw 2.
- Switch on the machine and set the parameter "610" at "1".
- Using the balance wheel, set the needle bar at its b.d.c. and set the hook gauge 1 at the centre of the needle.
- Tighten screw 2.
- Switch off the machine and remove hook gauge 1.



The needle plate and cloth plate as well as the hook remain dismantled for further adjustments.

13.12 Adjusting the drag link mechanism

Requirement

When the needle bar is at t.d.c.

1. The milled slot in shaft **3** should be in alignment with the milled slot of the cast iron bracket **7**.
2. The milled slot of crank **4** should be in alignment with the front edge of driving crank **6**.

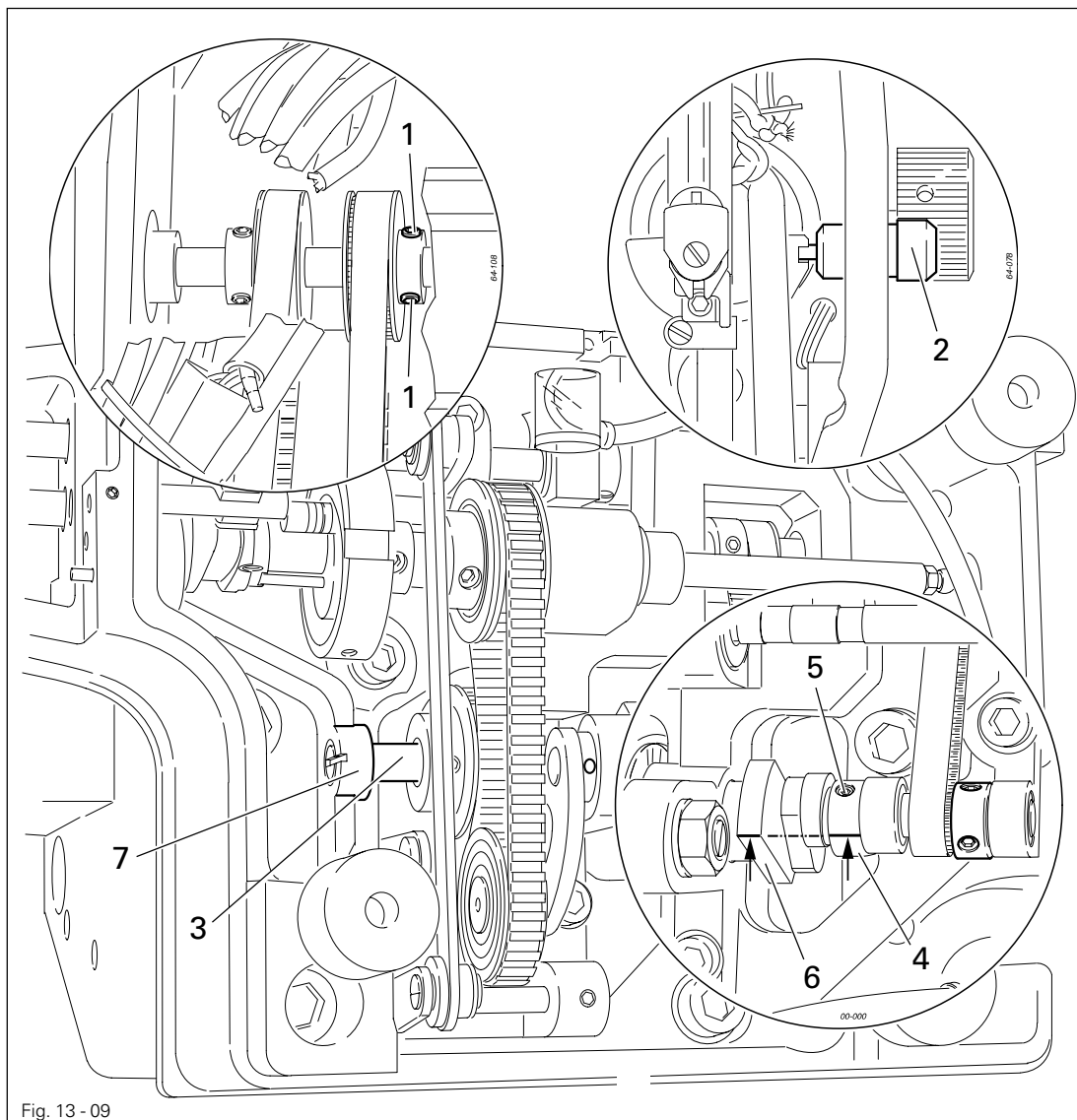
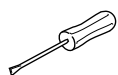


Fig. 13 - 09



- Loosen screw **1** on the arm shaft.
- Using the balance wheel, set the needle bar at t.d.c. and lock it with locking pin **2**.
- Adjust shaft **3** in accordance with **requirement 1** with the aid of the needle rise gauge (2.4 mm).
- Tighten screws **1**.
- Turn crank **4** (screws **5**) in accordance with **requirement 2**.
- Remove locking pin **1**.



If the position described in **requirement 2** is not reached, driving crank **6** must be installed accordingly.

13.13 Needle rise and hook clearance

Requirement

When the needle bar is positioned 2.4 after b.d.c. and parameter "610" is set at "1", the point of hook 1 should be positioned at "needle centre" and be at a distance of 0.1 mm from the needle.

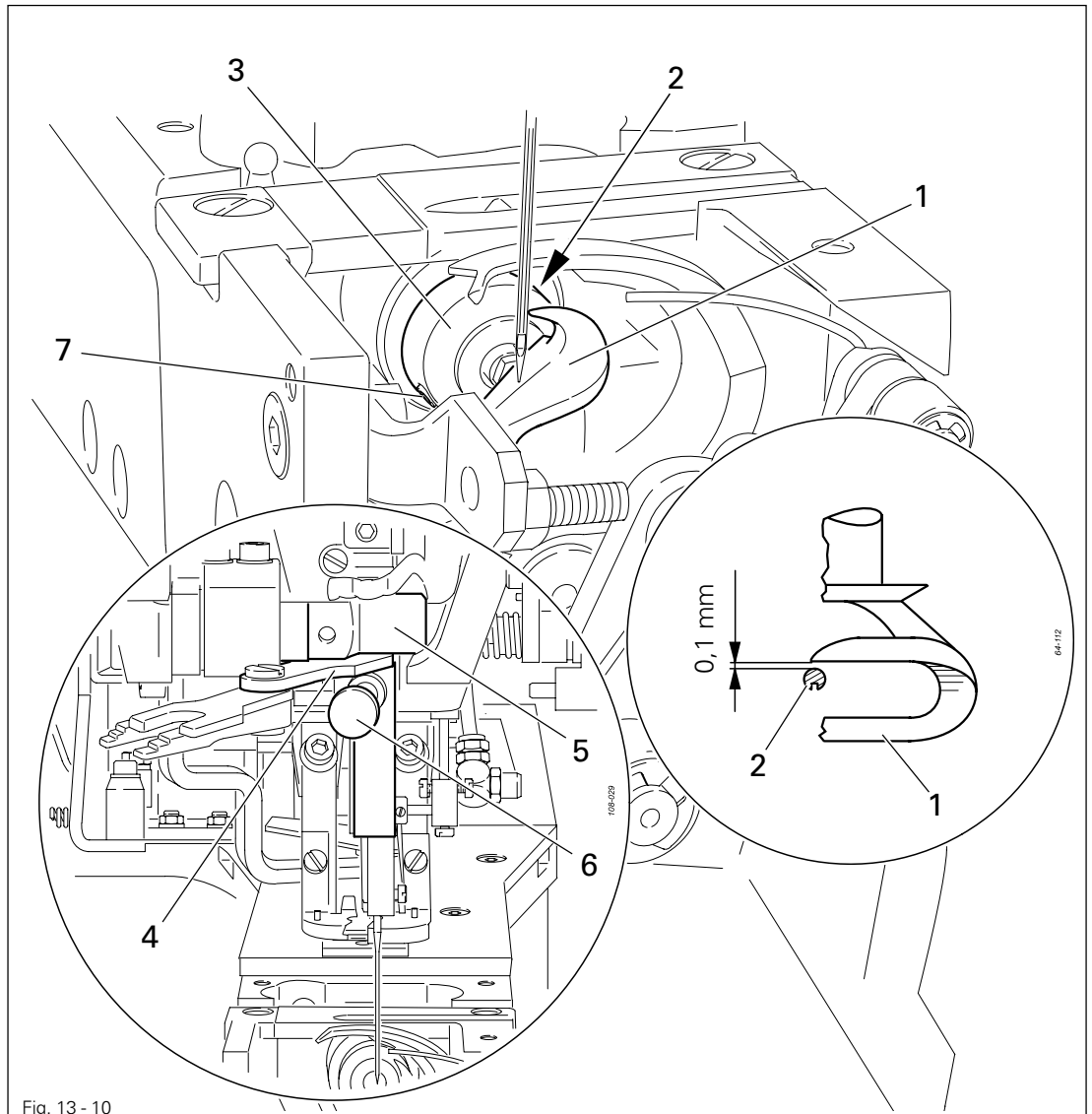
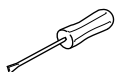


Fig. 13 - 10



- Dismount thread brake.
- Insert hook 1 so that screw 2 of collar 3 is on the surface of the hook shaft.
- Slightly tighten screw 2.
- Switch on the machine and set parameter "610" at "1".
- Turn the balance wheel in the direction of sewing until the needle bar is in its bottom stroke.
- Fit needle rise gauge 4 (2.4 mm) to needle bar frame 5 and fasten with C-clamp 6.
- Remove the needle rise gauge 4.
- Turn the balance wheel in the direction of sewing until C-clamp 6 is touching the needle bar bearing 5.
- Adjust hook 1 (screws 2 and 7) in accordance with the **requirement**.

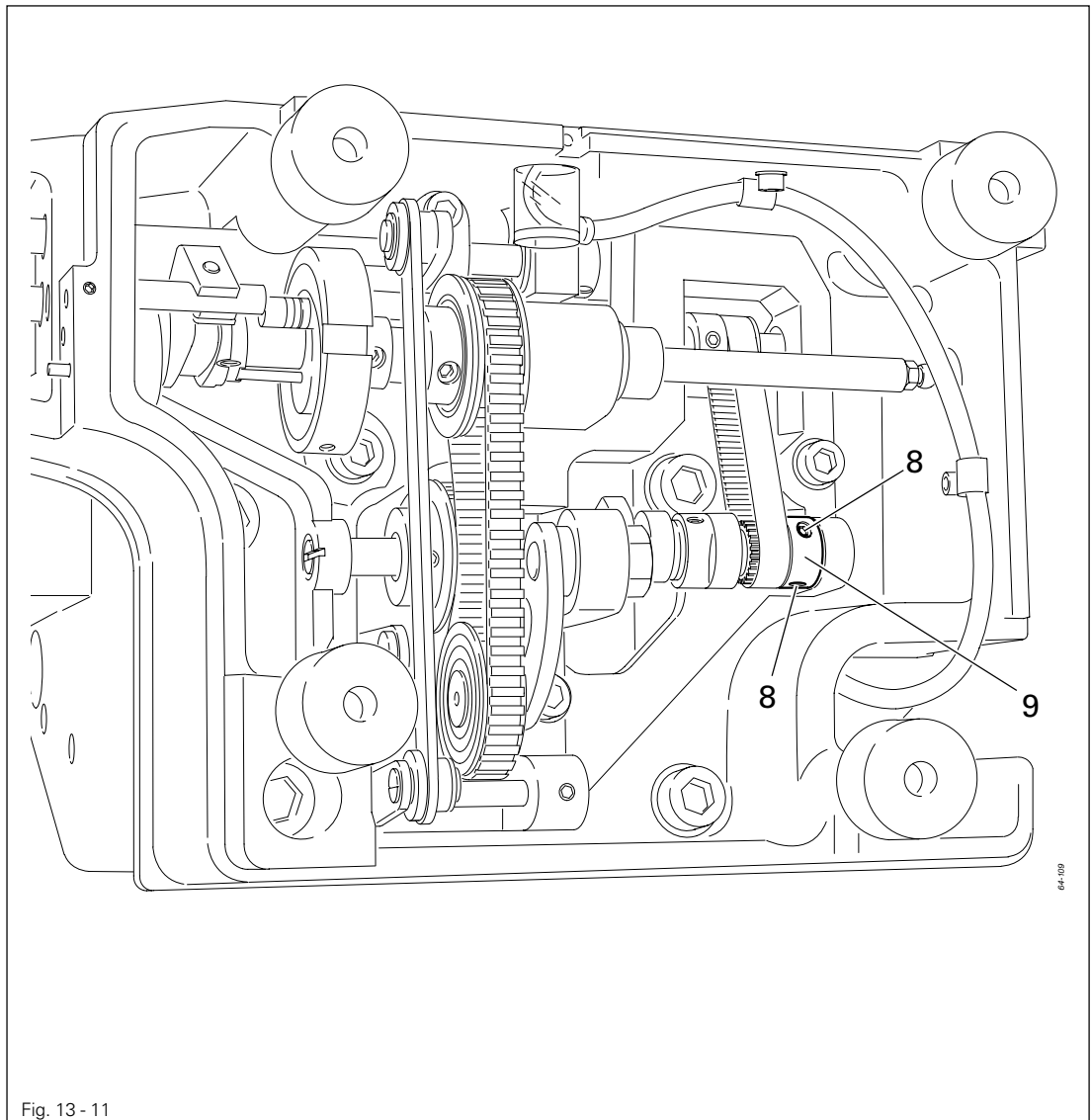
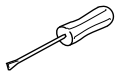


Fig. 13 - 11



- Remove C-clamp 6.
- Fit thread brake.



If the adjustment possibilities on the hook are insufficient, a greater correction can be made with the hook shaft mechanism.
Loosen screws 8 and turn toothed belt wheel 9 or the hook shaft accordingly.

13.14 Readjusting the needle height

Requirement

1. When parameter "610" is set at "2" and the hook point is centred to the needle, the top edge of the needle eye should be **0.5 mm** below the bottom edge of the hook point.
2. Thread puller **3** should be touching clamp **5** and be positioned in the centre of the face plate recess.

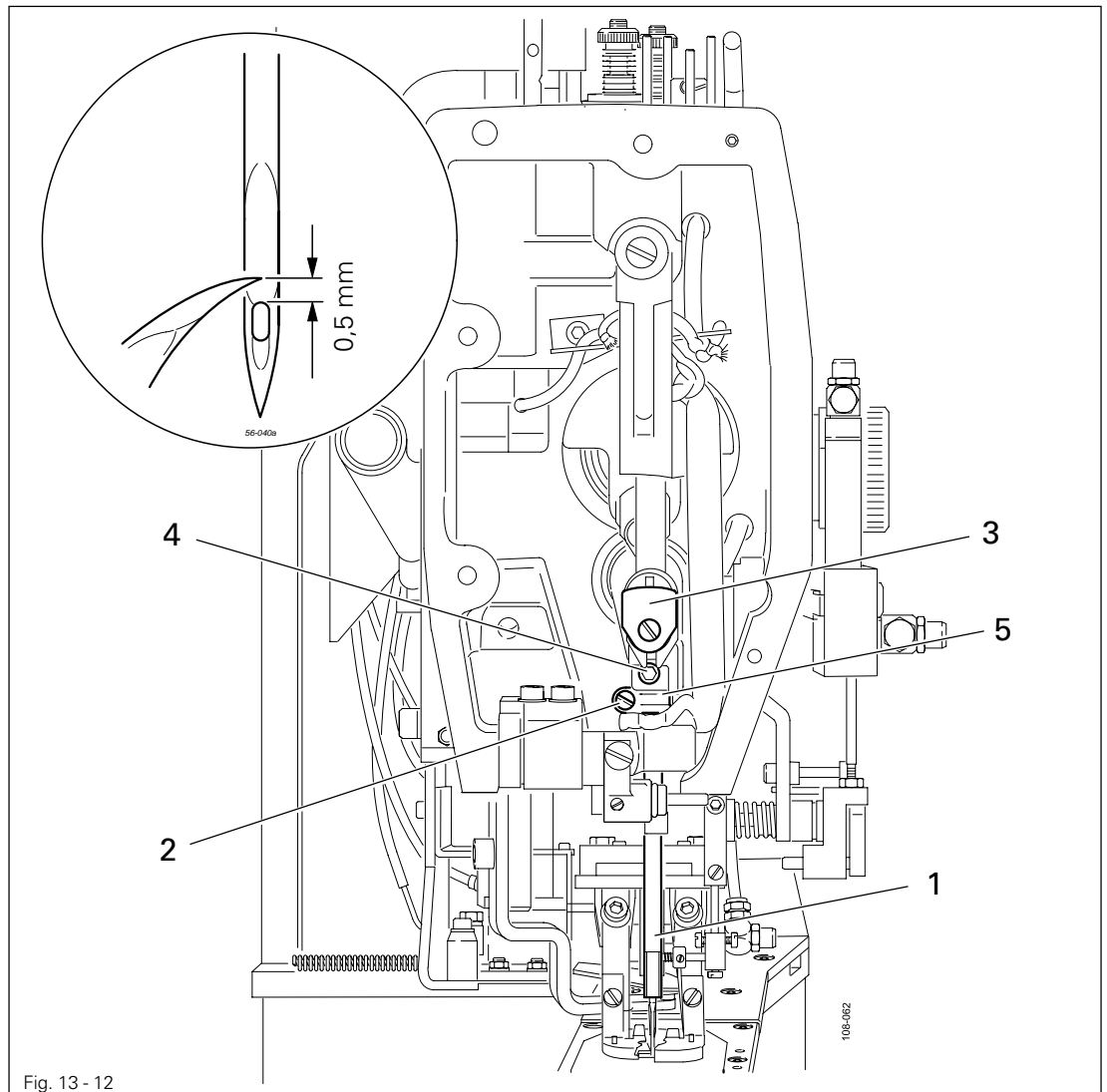
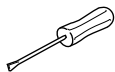


Fig. 13 - 12



- Switch on the machine and set parameter "610" at "2".
- Turn the balance wheel in the direction of sewing until the needle bar is at its bottom stroke.
- Set the hook point to the centre of the needle by continuing to turn the balance wheel.
- Adjust needle bar **1** (screw **2**) and thread puller **3** (screw **4**) in accordance with the **requirements**.
- Switch off the machine.



When checking the left needle entry position (parameter "610" at value "3"), the distance between the top edge of the needle eye and the lower edge of the hook point is greater.

13.15 Adjusting the loop spreader

Requirement

1. When the needle bar is positioned at t.d.c., the milled slot in control cam 4 should be at the bottom.
2. In the needle rise position, loop spreader 7 should begin its reverse movement.
3. When the needle is descending (in the direction of sewing) loop spreader 7 should be at its bottom left stroke, when the needle has reached the top edge of the needle plate.

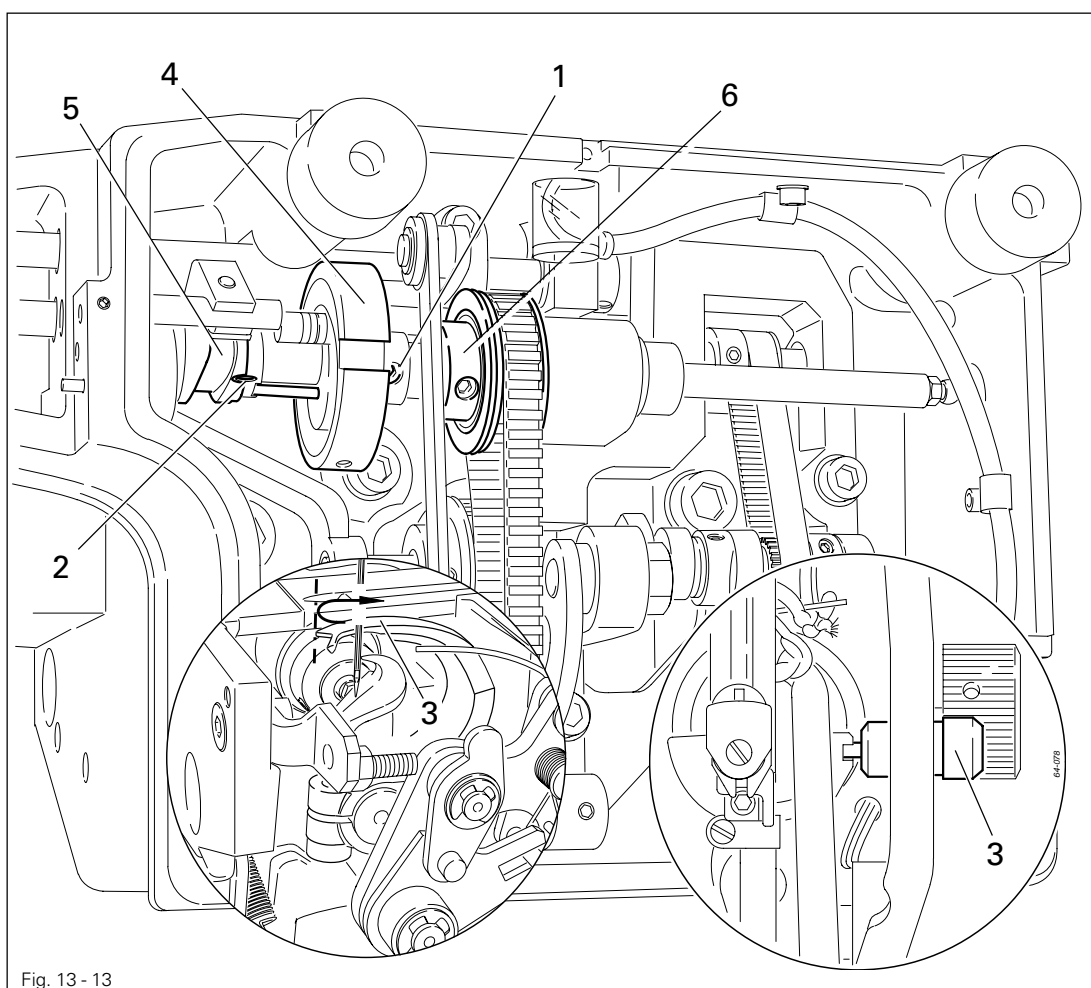
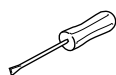


Fig. 13 - 13



- Loosen screws 1 and 2.
- With the balance wheel set the needle bar at its t.d.c. and lock it with locking pin 3.
- Adjust control cam 4 together with control cam 5 in accordance with **requirement 1**.
- Move control cam 4 together with control cam 5 to touch drive wheel 6 and tighten screws 1 and 2.
- Remove locking pin 3.
- Carry out a check in accordance with **requirements 2 and 3**.

13.16 Position of the loop spreader to the needle

Requirement

When the needle bar is positioned at b.d.c. and parameter "610" is set at "3"

1. There should be a distance of **2.4 mm** between the front edge of the loop spreader **1** and the needle.
2. There should be a distance of approx. **1.6 mm** between loop spreader **1** and the needle.

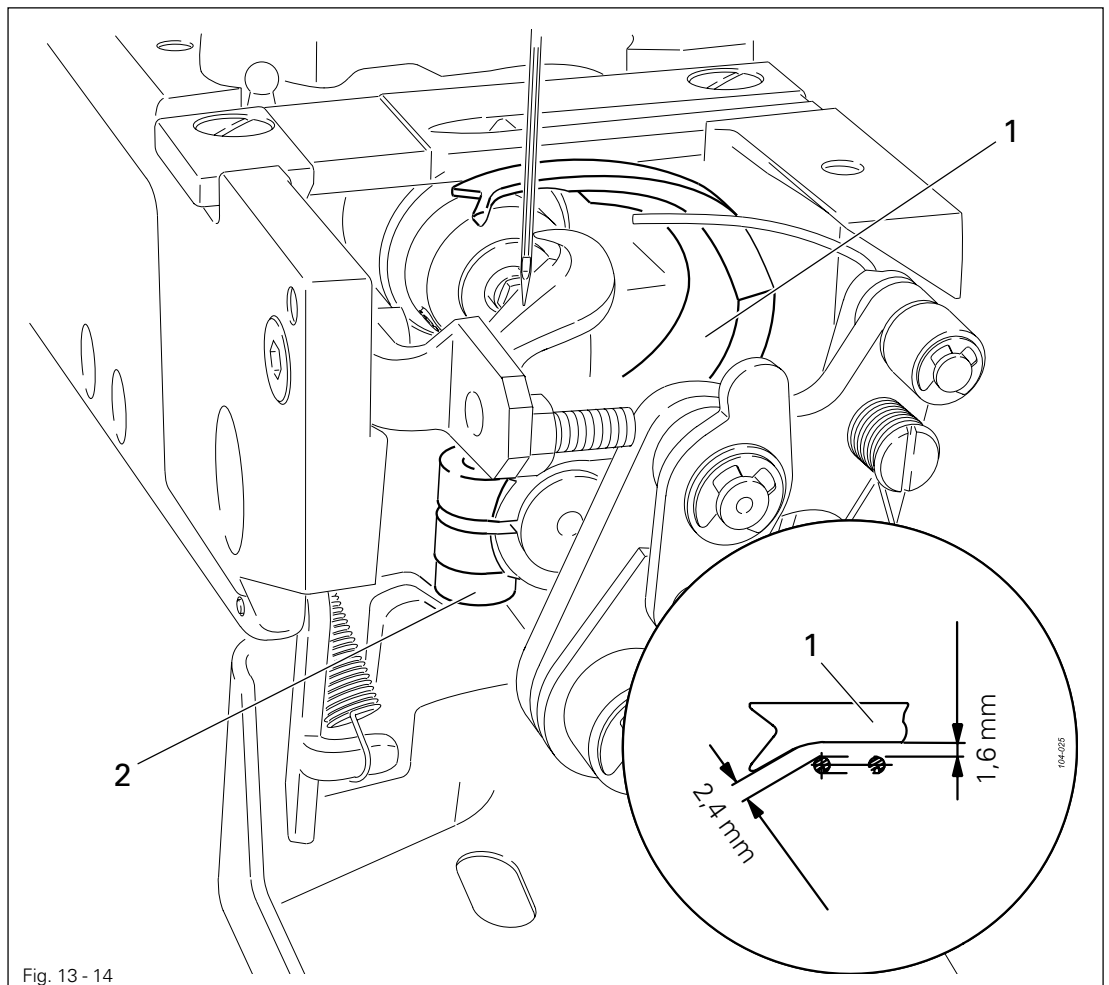
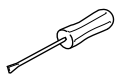


Fig. 13 - 14



- Switch on the machine and set parameter "610" at "3".
- Position the needle at its b.d.c. by turning the balance wheel.
- Adjust loop spreader **1** (screw **2**) in accordance with **requirements 1 and 2**.
- Switch off the machine.

13.17 Adjusting the thread trimmer

Requirement

1. When extended the outer edges of pins **5** and **6** should be at a distance of **103 mm** from each other.
2. When the thread trimmer is in its neutral position, the stationary knife **7** should be parallel to the edge of thread puller **8**.
3. When the thread trimmer is in its cutting position, knife **9** should cut **approx. 1 mm**.

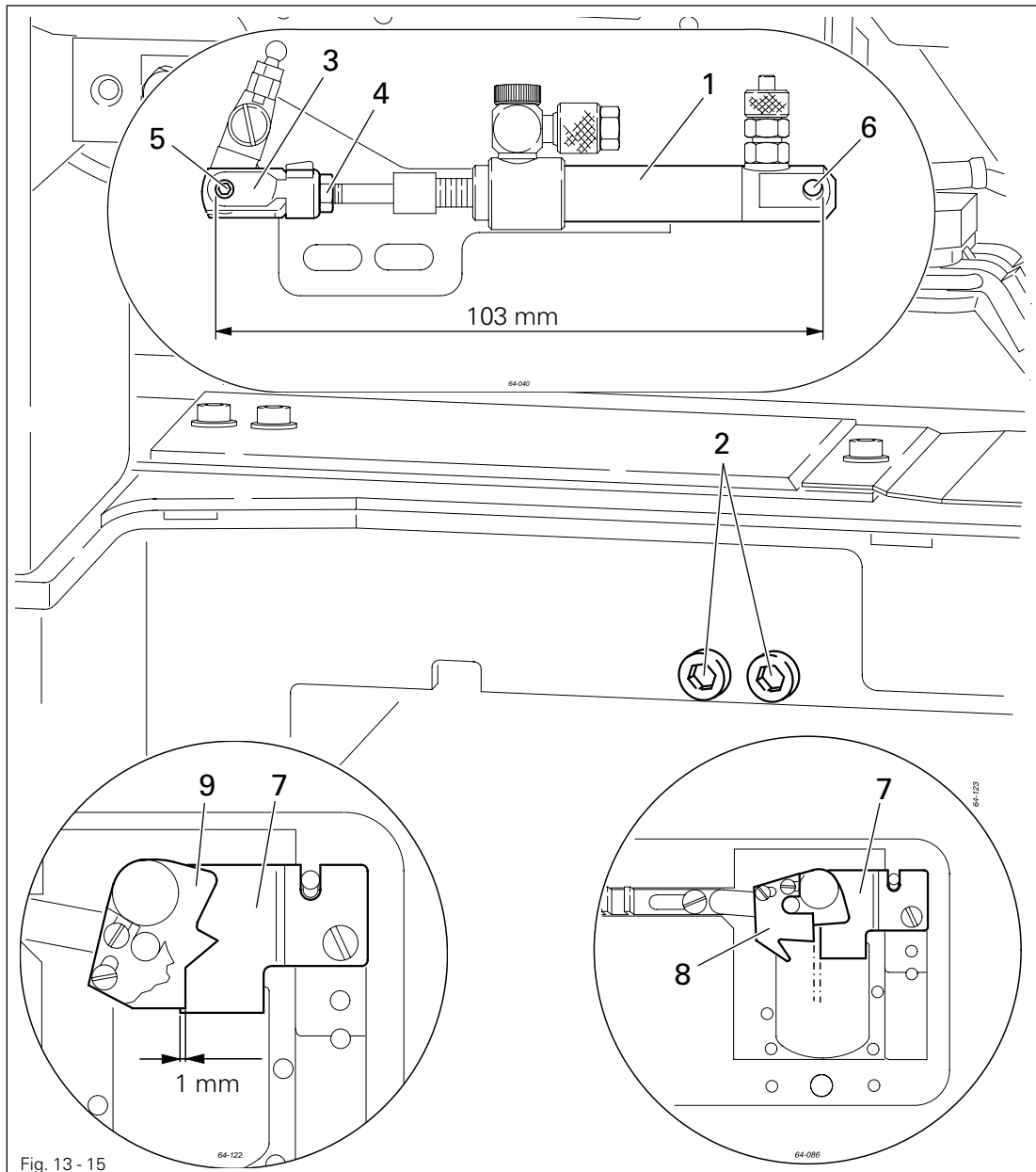
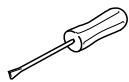


Fig. 13 - 15



- Remove cylinder **1** (screws **2**).
- Adjust hinged section **3** (nut **4**) in accordance with **requirement 1**.
- Install cylinder **1** (screws **2**) and adjust in accordance with **requirement 2** and **3**.
- Carry out a functional test of the thread trimmer with parameter "603" (output 4).

13.18 Manual cutting test

Requirement

In a manual cutting operation the thread should be cut reliably.

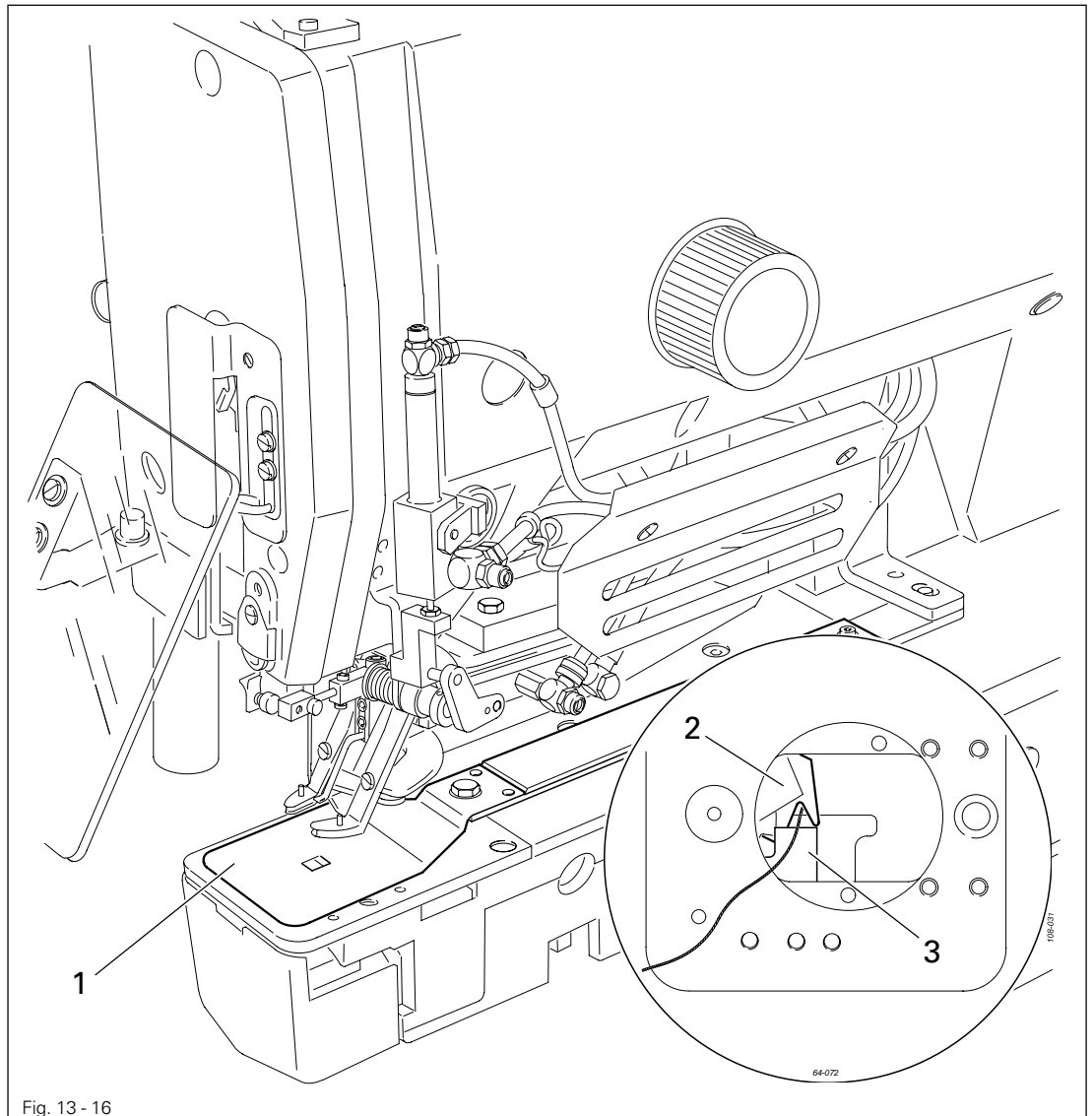
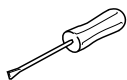


Fig. 13 - 16



- Dismount cloth plate 1 and needle plate insert.
- Place the thread between thread catcher 2 and knife 3.
- Disconnect the machine from the pneumatic power supply.
- Check the **requirement** by carrying out a manual cutting operation.
- Mount the needle plate, taking care to see that the spherical head of the cutting cylinder grips into the corresponding guide section of the needle plate.

13.19 Adjusting the thread catcher

Requirement

In the cutting position the hook **3** should be vertical and the thread catcher **1** should grip reliably in the stitch triangle.

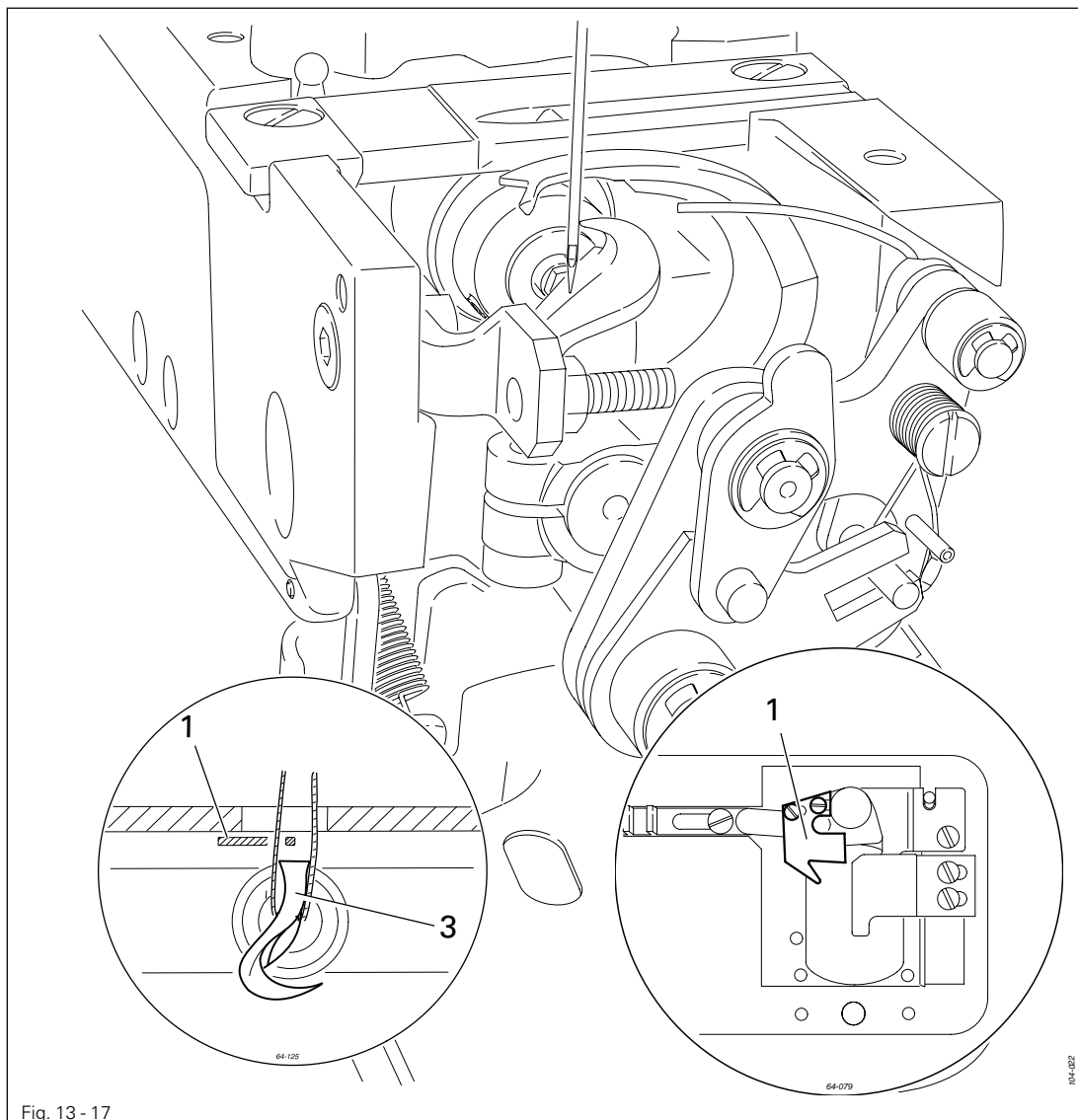
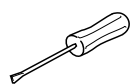


Fig. 13 - 17



- Switch on the machine and set parameter "403" at the maximum value.
- Select the sewing mode and carry out a sewing operation.
- Switch the machine off in the cutting position at the on/off switch and disconnect it from the pneumatic power supply.
- Carry out the cutting operation manually, checking the **requirement** while doing so.
- If necessary, switch on the machine and with the parameters "614" and "615" set the thread catcher **1** in accordance with the **requirement**.
- If the hook **3** is not vertical in the cutting position, check the setting in accordance with **Chapter 13.05 Top needle bar position (reference position)**.
- Switch off the machine and check the cutting operation.
- Switch on the machine, reset parameter "402" to its initial value and switch off the machine.

13.20 Adjusting the thread loop support

Requirement

Both at the extreme right point of penetration and at the extreme left point of penetration the needle should be at a distance of **approx. 0.5 mm** from the thread loop support 1.

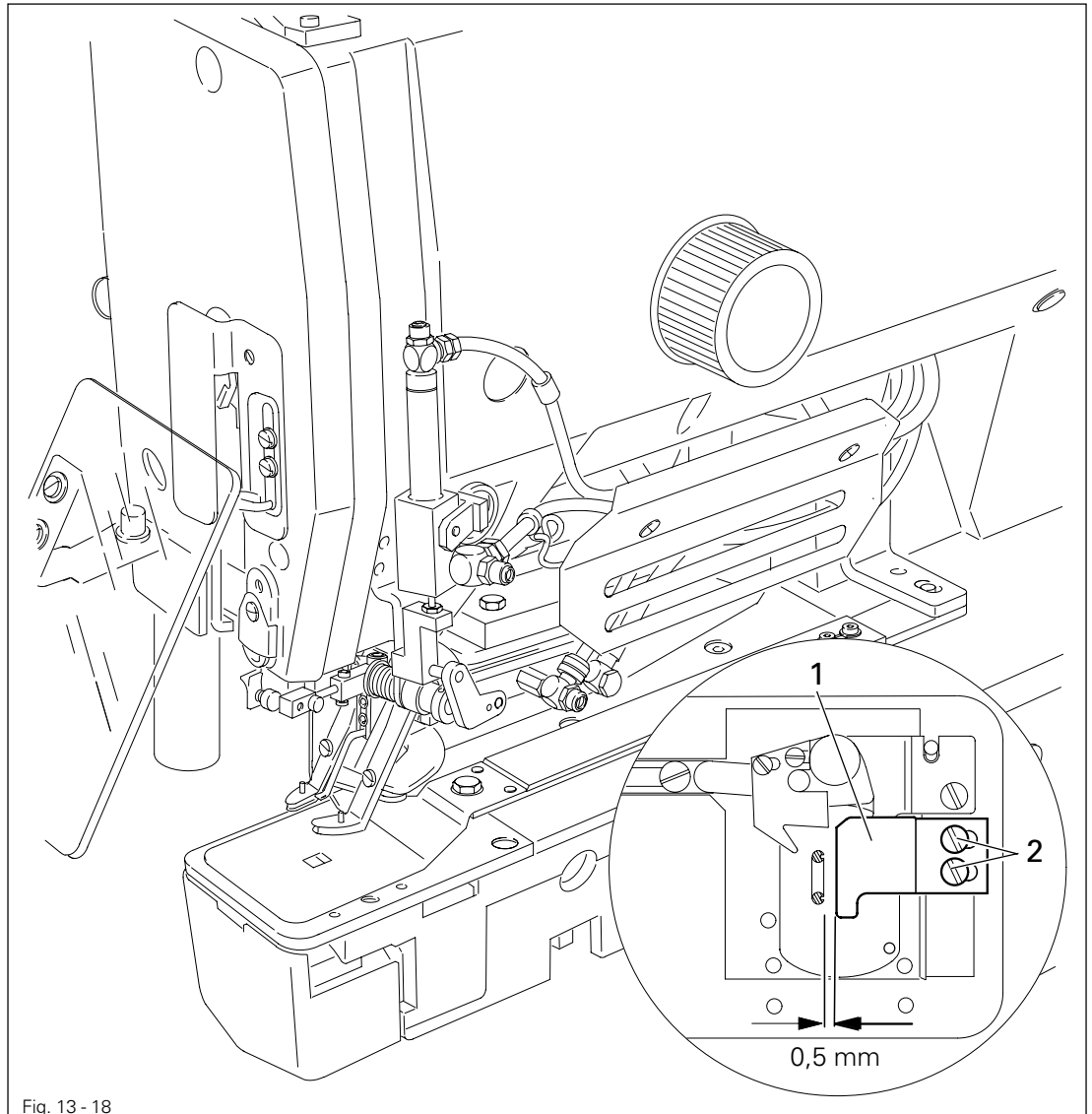
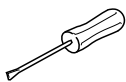


Fig. 13 - 18



- Switch on the machine and bring the needle into the relevant position (value "1, 2 or 3") with parameter "610".
- Adjust thread loop support 1 (screws 2) in accordance with the **requirement**.
- Switch off the machine.



The thread loop support 1 is also used as a knife guard.

13.21 Basic position of the button clamp drive

Requirement

1. After selecting parameter "610" (with value 4) it must be possible to block lever 2 with gauge (4.6 mm).
2. Switch lug 5 should be positioned in the centre of the recess of the light barrier 3.

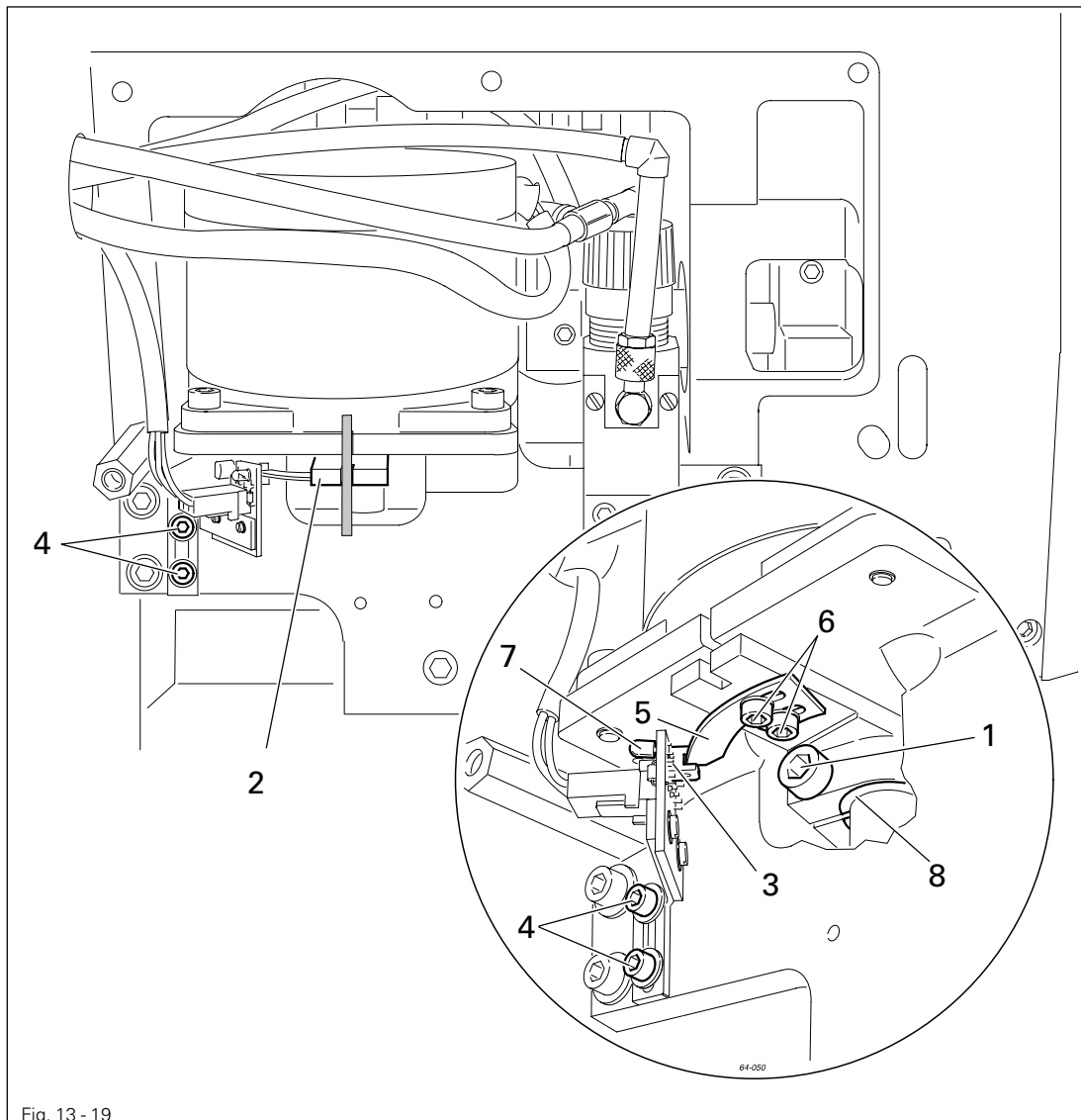
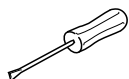


Fig. 13 - 19



- Loosen screw 1.
- Switch on the machine and set parameter "610" at value "4".
- Adjust lever 2 in accordance with **requirement 1** (lock with gauge).
- Tighten screw 1.
- Adjust light barrier 3 (screws 4) in accordance with **requirement 2**.
- With lever 2 locked, move the switch lug 5 (screws 6), until LED 7 lights up and then move it back again until LED 7 has just extinguished.
- Switch off the machine and remove the gauge.

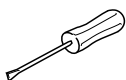
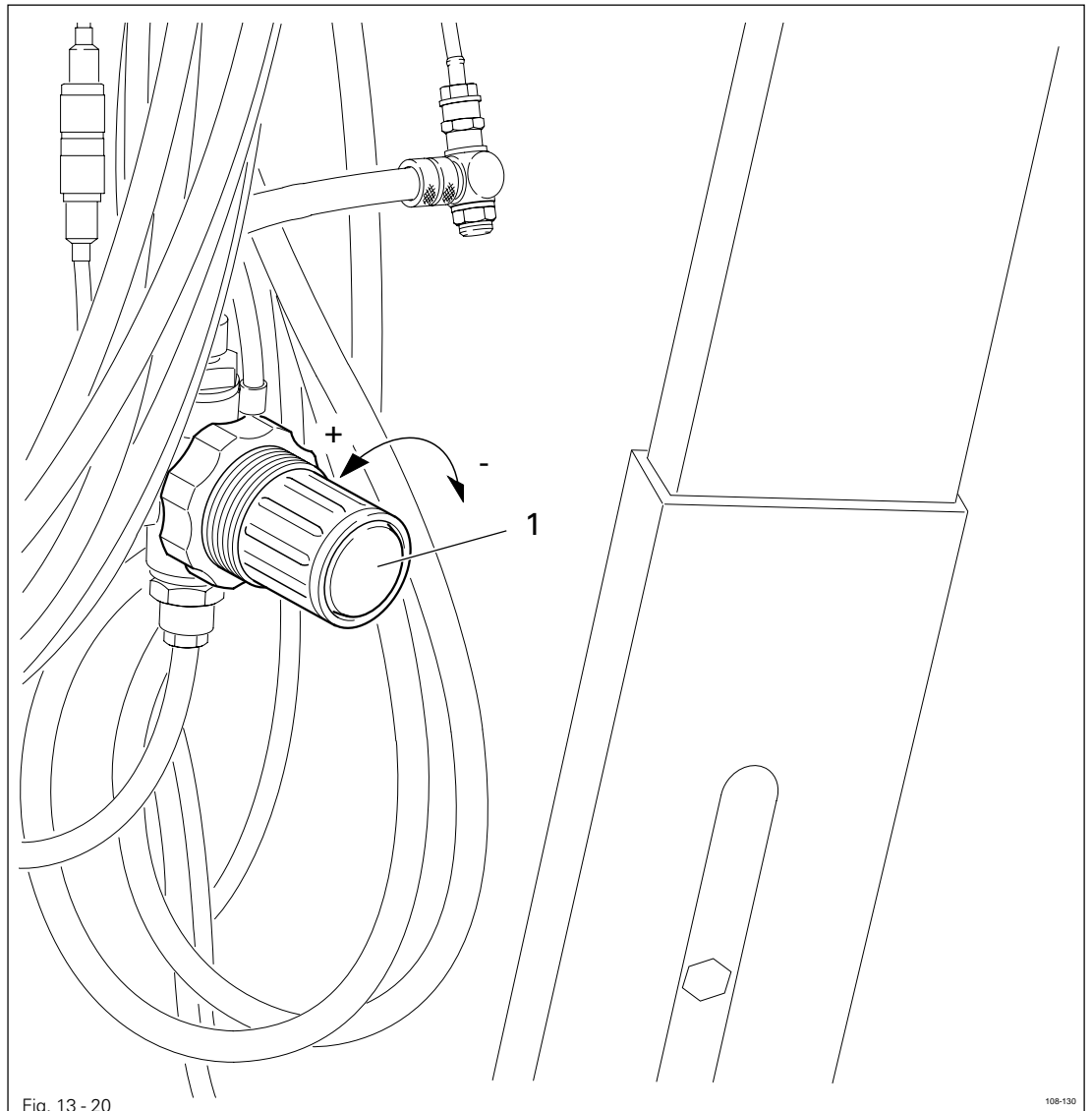


Spring clip 8 serves as an adjustment aid and should be touching lever 2. The open side of the spring clip 8 should be in alignment with the clamp groove of lever 2.

13.22 Adjusting the clamp pressure

Requirement

The clamp pressure is pre-set at 3 bar and may have to be adapted to the requirements.



- Connect the machine to the pneumatic system.
- Turn regulator 1 in accordance with the requirement.
- Disconnect the machine from the pneumatic system.

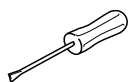
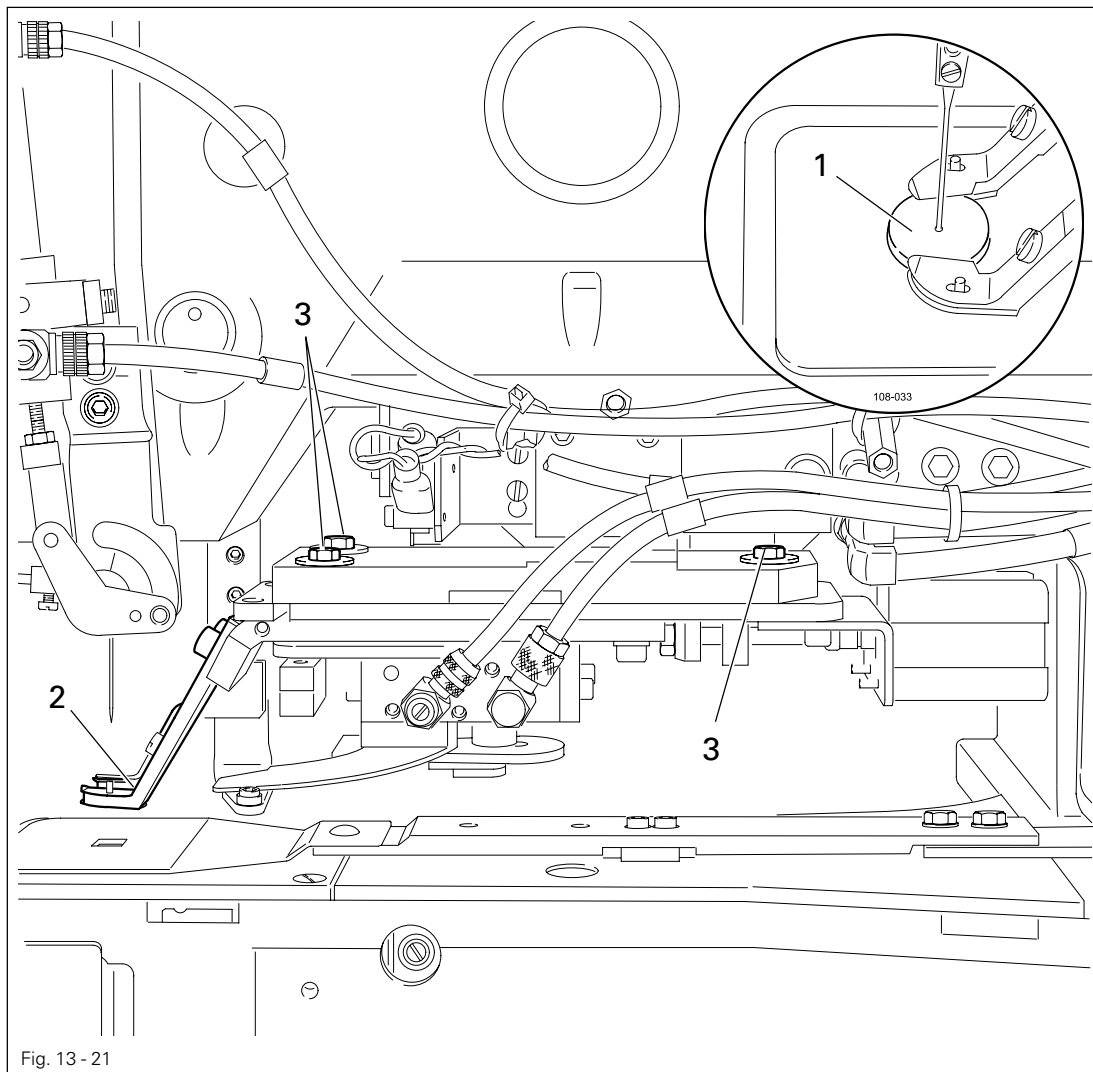


After adjusting the clamp pressure, the alignment of the button clamp must be checked and adjusted, if necessary, see Chapter 13.23 **Aligning the button clamp**.

13.23 Aligning the button clamp

Requirement

After selecting parameter "610", at the value "6" the needle should penetrate in the centre of the opening in adjustment gauge 1.



- Switch on the machine and set parameter "112" at "off" (switch off stem finger).
- Set parameter "610" at value "4" (open button clamp).
- Using tweezers, insert adjustment gauge 1 (needle centre) and set parameter "610" at value "5" (close button clamp).
- Set parameter "610" at value "6" (lower button clamp).
- Adjust button clamp 2 (screws 3) in accordance with the **requirement**.
- Connect the machine to the pneumatic system and check the setting again.
- If necessary, correct the setting of button clamp 2 (screws 3).
- Set parameter "610" at value "1" and remove adjustment gauge 1.
- Switch off the machine and disconnect it from the pneumatic system.

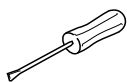
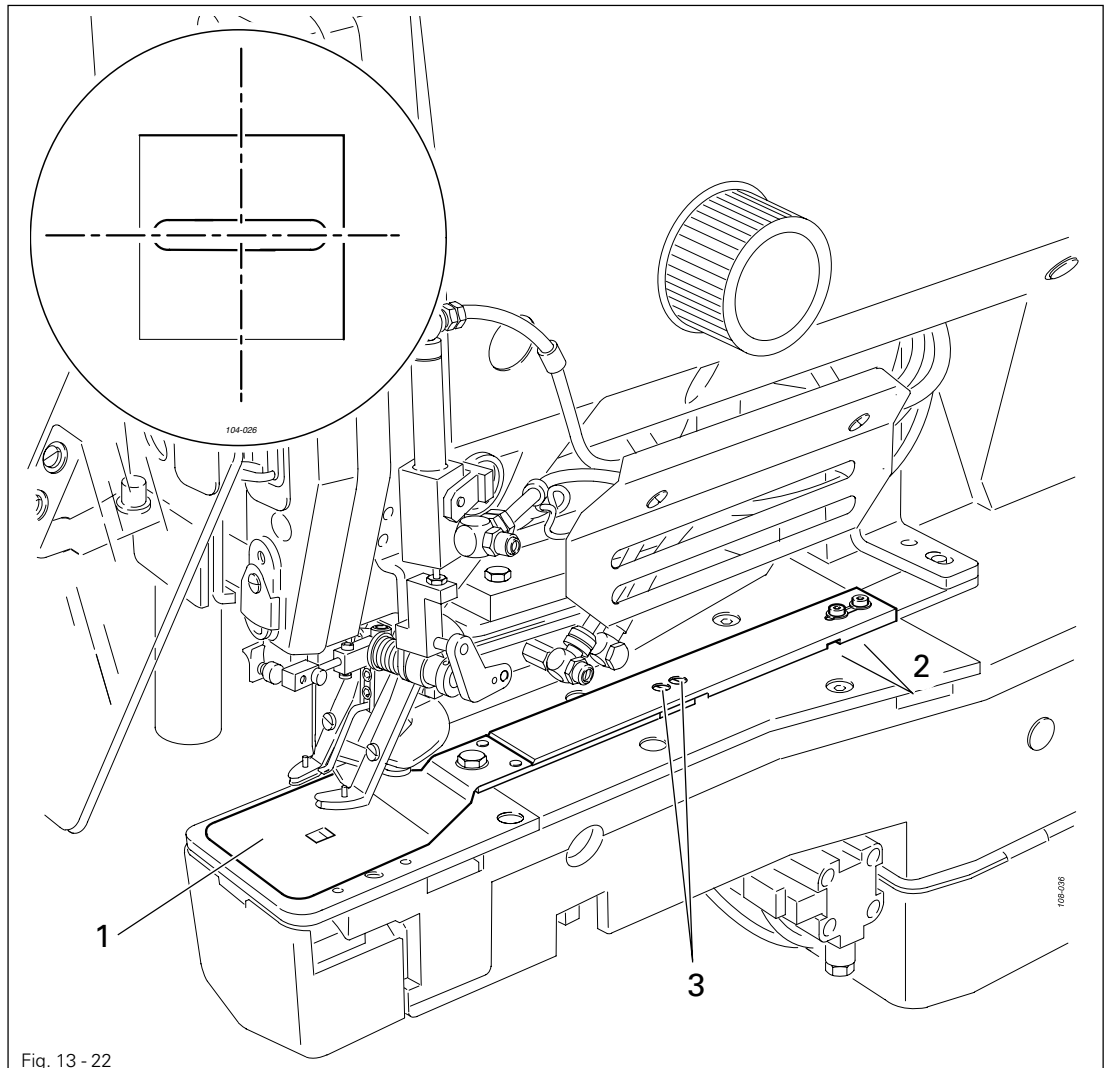


The adjustment gauge 1 varies from button to button and can be ordered from PFAFF (send button sample).

13.24 Aligning the cloth plate

Requirement

When the machine is in its basic position, the cut-out of cloth plate 1 should be in the centre of the needle hole.

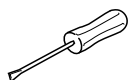
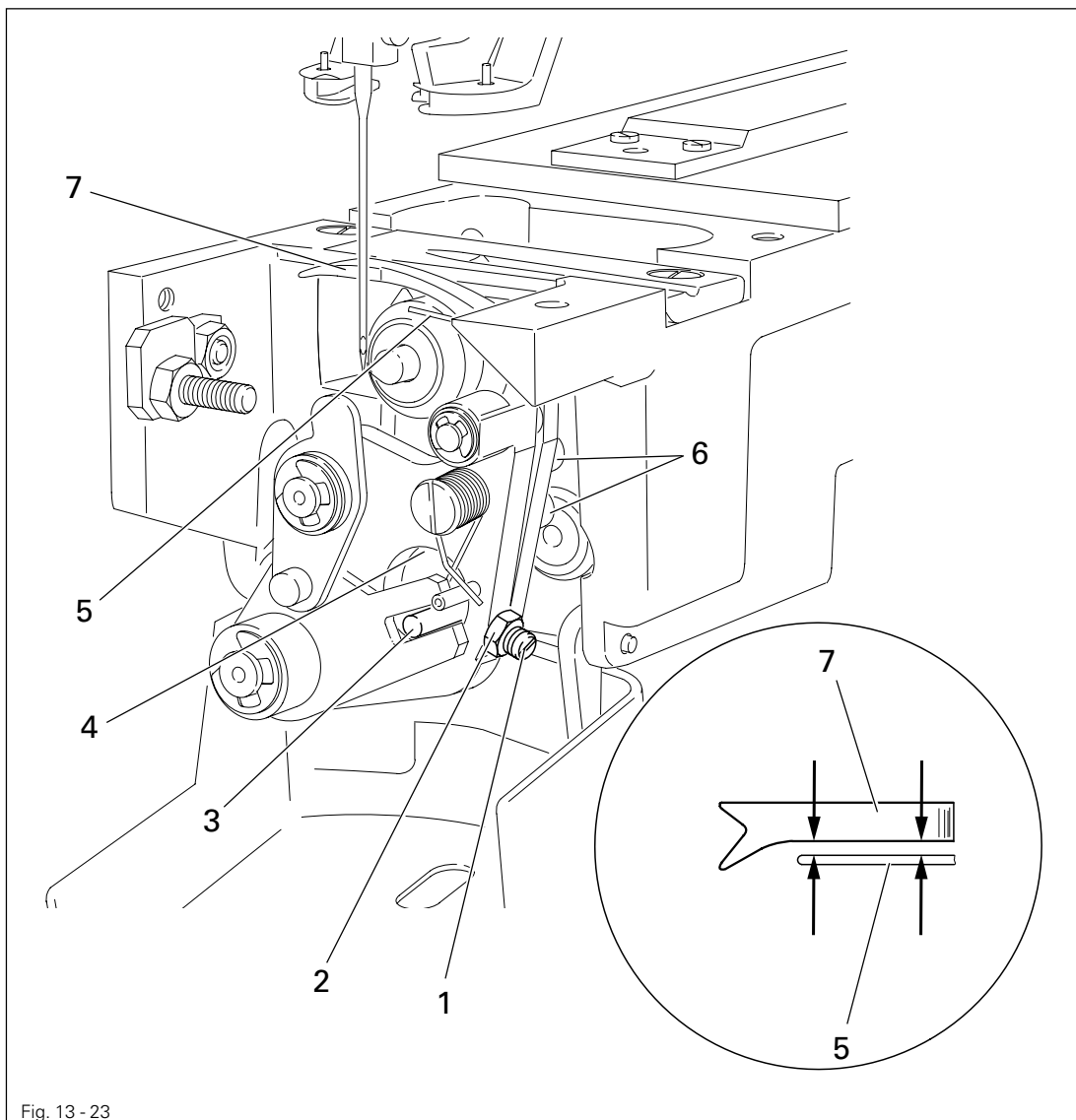


- Switch on the machine and set parameter "610" at value "4".
- Align cloth plate 1 (screws 2) in accordance with the requirement.
- Switch off the machine.

13.25 Basic setting of the end knotting equipment

Requirement

Retaining finger 5 should be parallel to loop spreader 7.



- Dismount cloth plate and needle plate.
- First of all remove screw 1 (nut 2), until pin 3 is touching the wall of hole 4.
- Then turn screw 1 round once and fix with nut 2.
- Align retaining finger 5 (screws 6) in accordance with the **requirement**.

13.26 Adjusting the retaining finger of the end knotting equipment

Requirement

When parameter "610" is set at "1" and the machine is in the needle rise position

1. The bottom edge of retaining finger 2 should be 0.5 mm above the hook point.
2. There should be a distance of 0.5 mm between retaining finger 2 and the needle.
3. There should be a distance of 6 mm between retaining finger 2 and the centre of the needle.

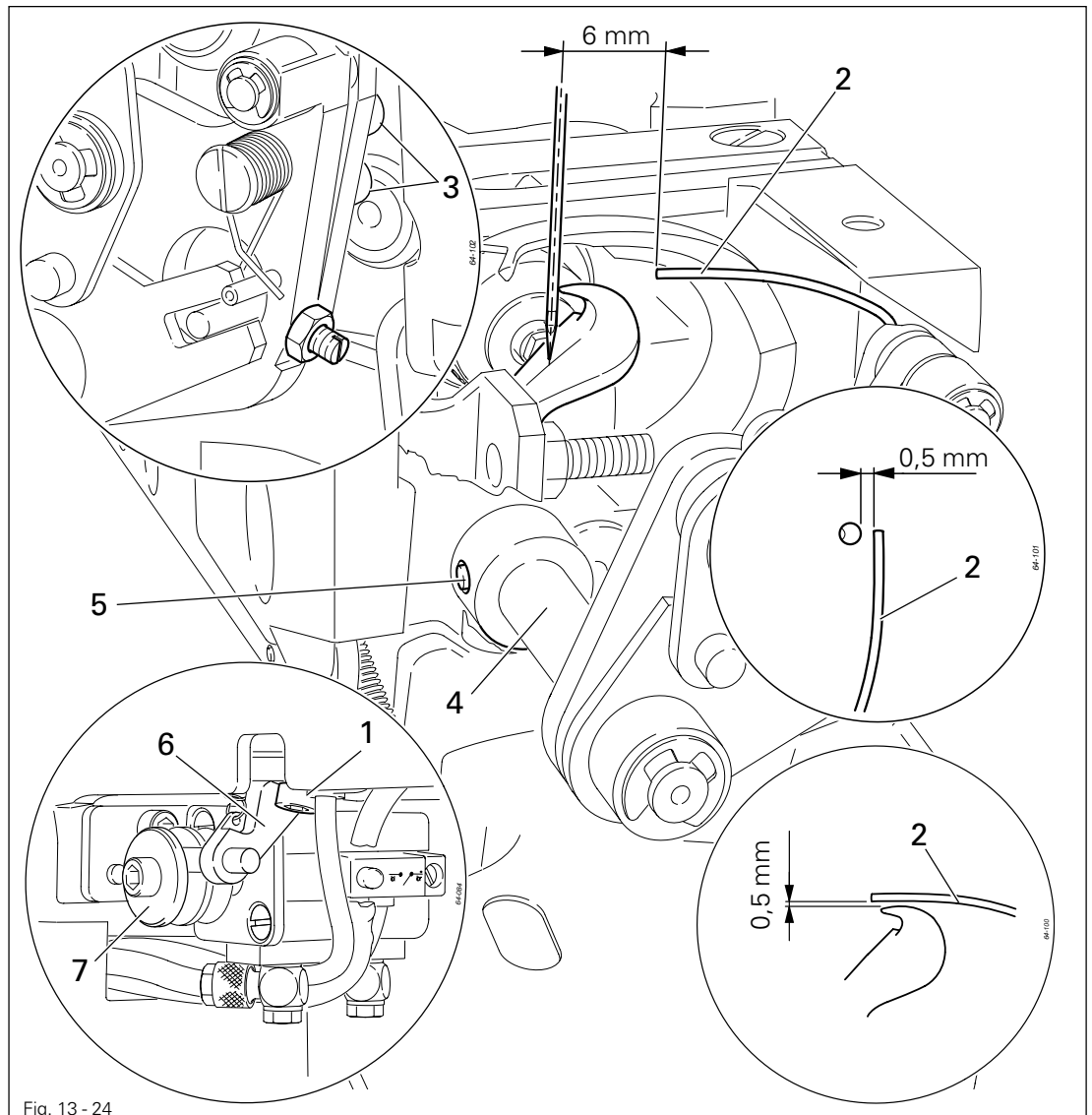
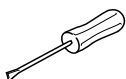


Fig. 13 - 24



- Switch on the machine and connect it to the pneumatic system.
- Set parameter "610" at value "1" and set needle rise position.
- Loosen screw 1.
- Adjust retaining finger 2 (screw 3) in accordance with **requirement 1**.
- Adjust shaft 4 (screw 5) in accordance with **requirement 2**.
- Switch off the machine.
- Adjust retaining finger 2 (screw 1) in accordance with **requirement 3**.

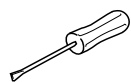
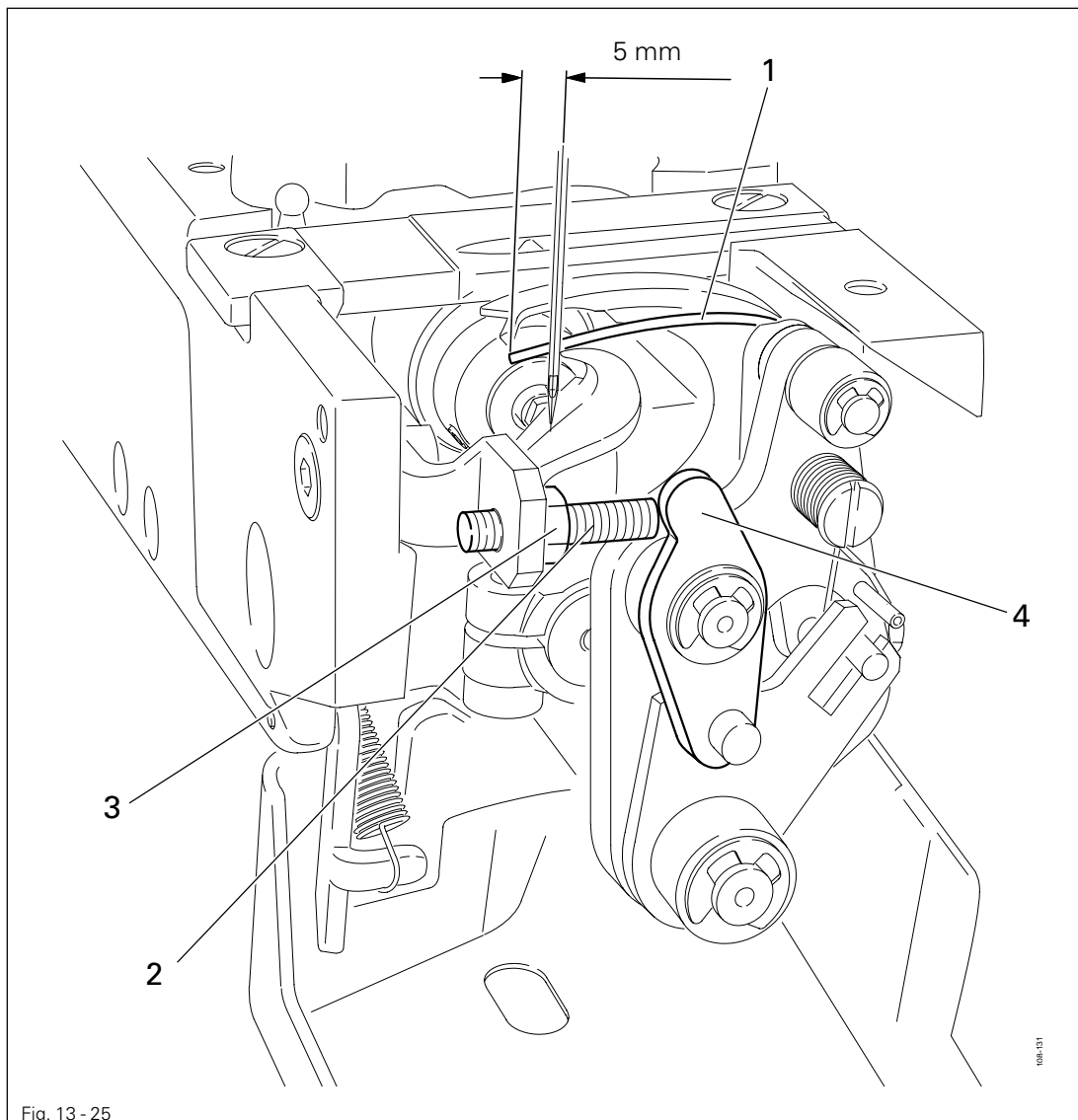


When tightening screw 1 take care to see that lever 6 engages reliably in part 7 and does not block the cylinder.

13.27 Adjusting the lifting lever of the end knotting equipment

Requirement

When parameter "610" is set at "1" and the machine is in the needle rise position, the retaining finger 1 should be positioned 5 mm behind the centre of the needle and the lifting lever 4 should be touching screw 2.



- Switch on the machine, set parameter "610" at "1" and bring the needle bar into the needle rise position.
- Disconnect the machine from the pneumatic power supply.
- Position the retaining finger 1 by hand.
- Turn screw 2 (nut 3) in accordance with the **requirement**.
- Switch off the machine.



Make sure that the retaining finger 1 does not touch the loop spreader.

13.28 Adjusting the reed switch

Requirement

When parameter "610" is set at "1" and the machine is in the needle rise position, the reed switch 1 should operate exactly at the moment when the tip of the retaining finger 3 is positioned at the centre of the needle.

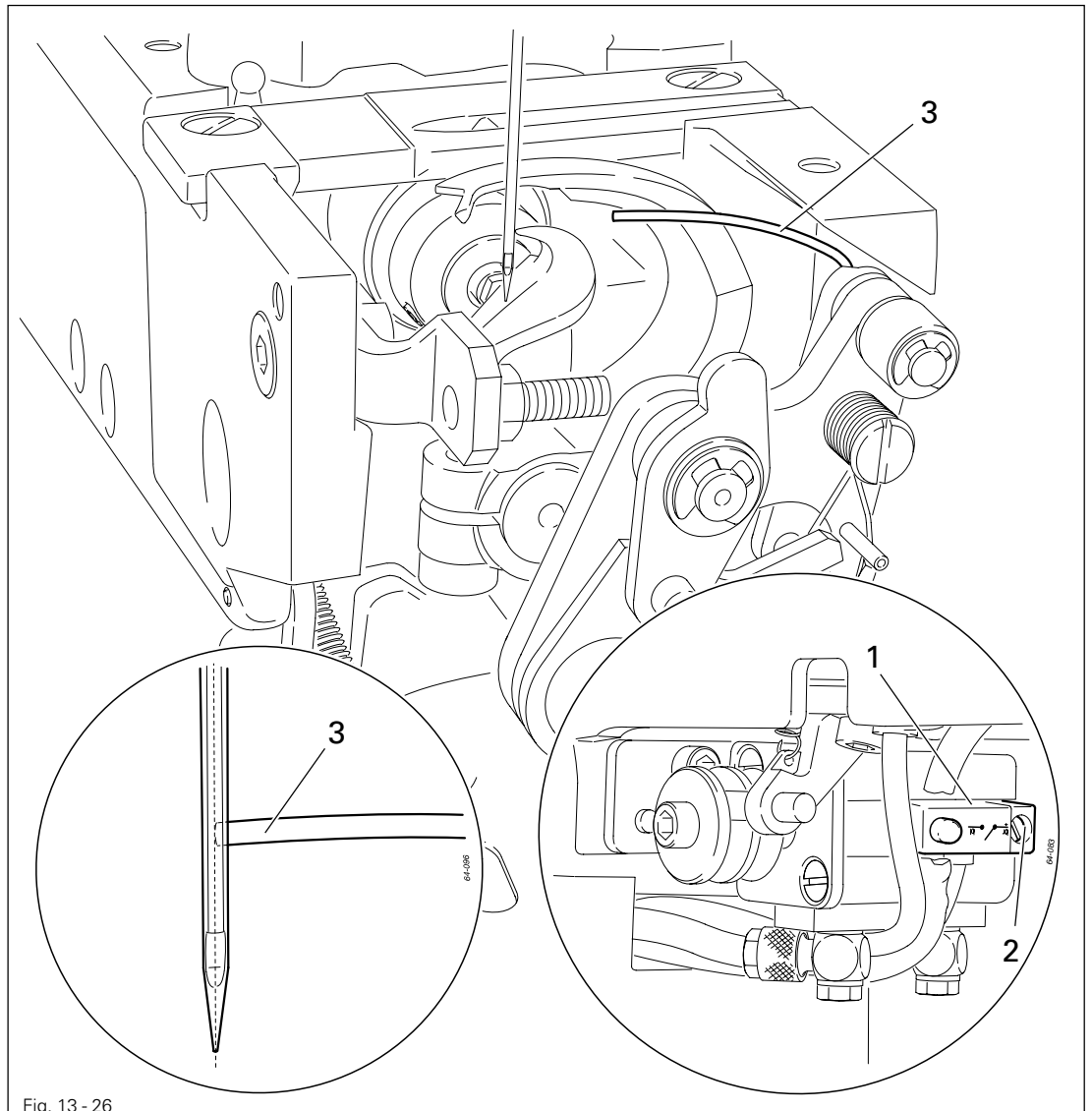
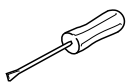
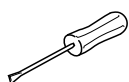
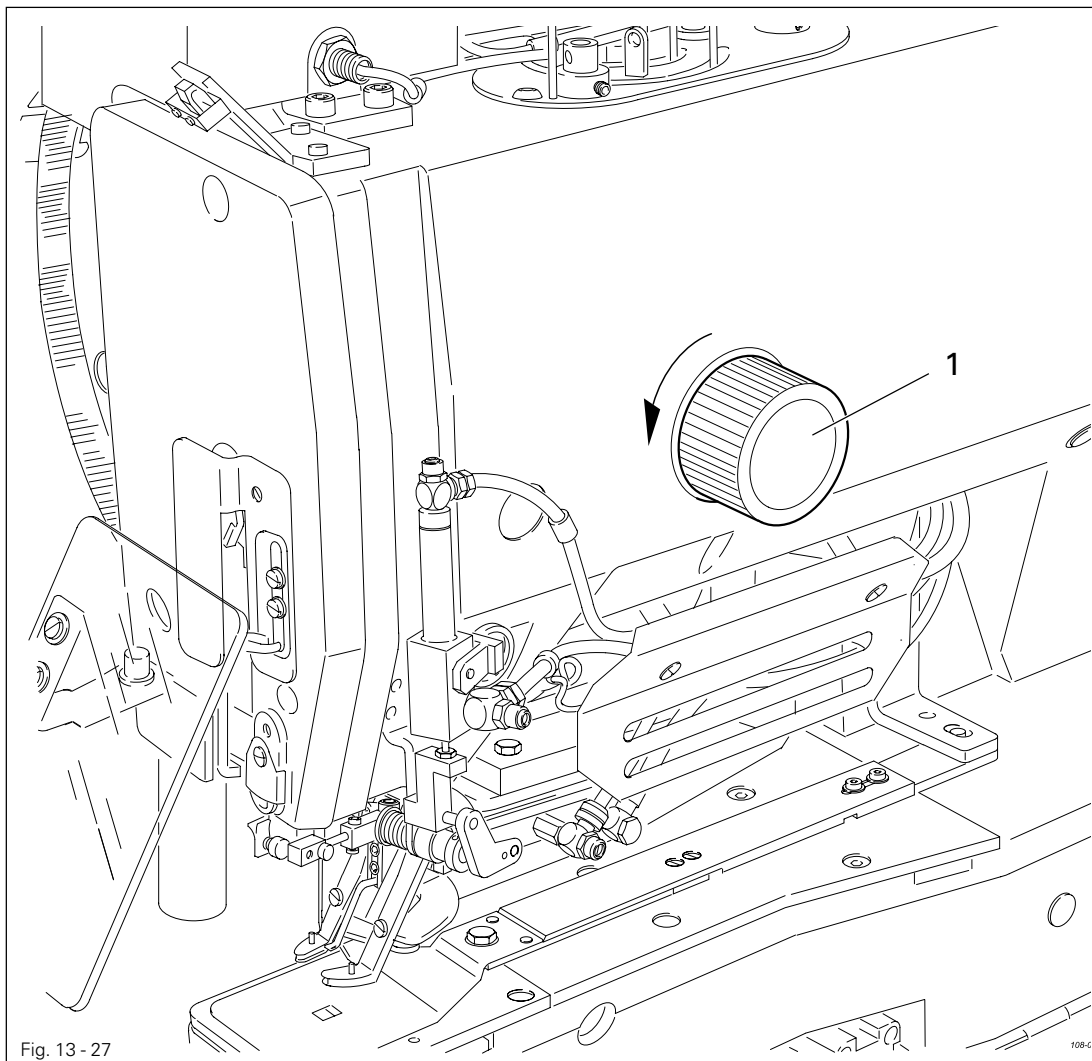


Fig. 13 - 26



- Switch on the machine, set parameter "610" at "1" and bring the needle bar into the needle rise position.
- Loosen screw 1 and move the reed switch 2 completely to the right.
- Place the point of the retaining finger at the centre of the needle and hold it in this position.
- Move reed switch 2 to the left, until reaching the switch point.
- Fasten screw 1.
- Check the switch status of reed switch 2 with parameter "602" (position 4).
- Switch off the machine.

13.29 Setting the angle for the end knotting



- Switch on the machine.
- Switch on the end knotting function, see **Chapter 11 Input**
- By turning the balance wheel 1 to "40" set parameter "506" (engaging position).
- By turning the balance wheel 1 to "70" set parameter "507" (disengaging position).
- Carry out ten sewing operations. Select parameter "604" and interpret the values for the engaging and disengaging position of the last ten sewing operations.
For uneven values (engaging position) the value should be "70".
For even values (disengaging position) the value should be "90".
- Change parameters "506" and "507" accordingly, a deviation of +/- 1 is permitted.
- Switch off the machine.

13.30 Adjusting the moment tension

Requirement

1. When the needle bar is at its t.d.c. eccentric 1 should be positioned with its largest eccentricity towards the top.
2. Tension disks 3 should open **approx. 10 mm** before t.d.c. needle bar and close again **approx. 10 mm** after t.d.c. needle bar.

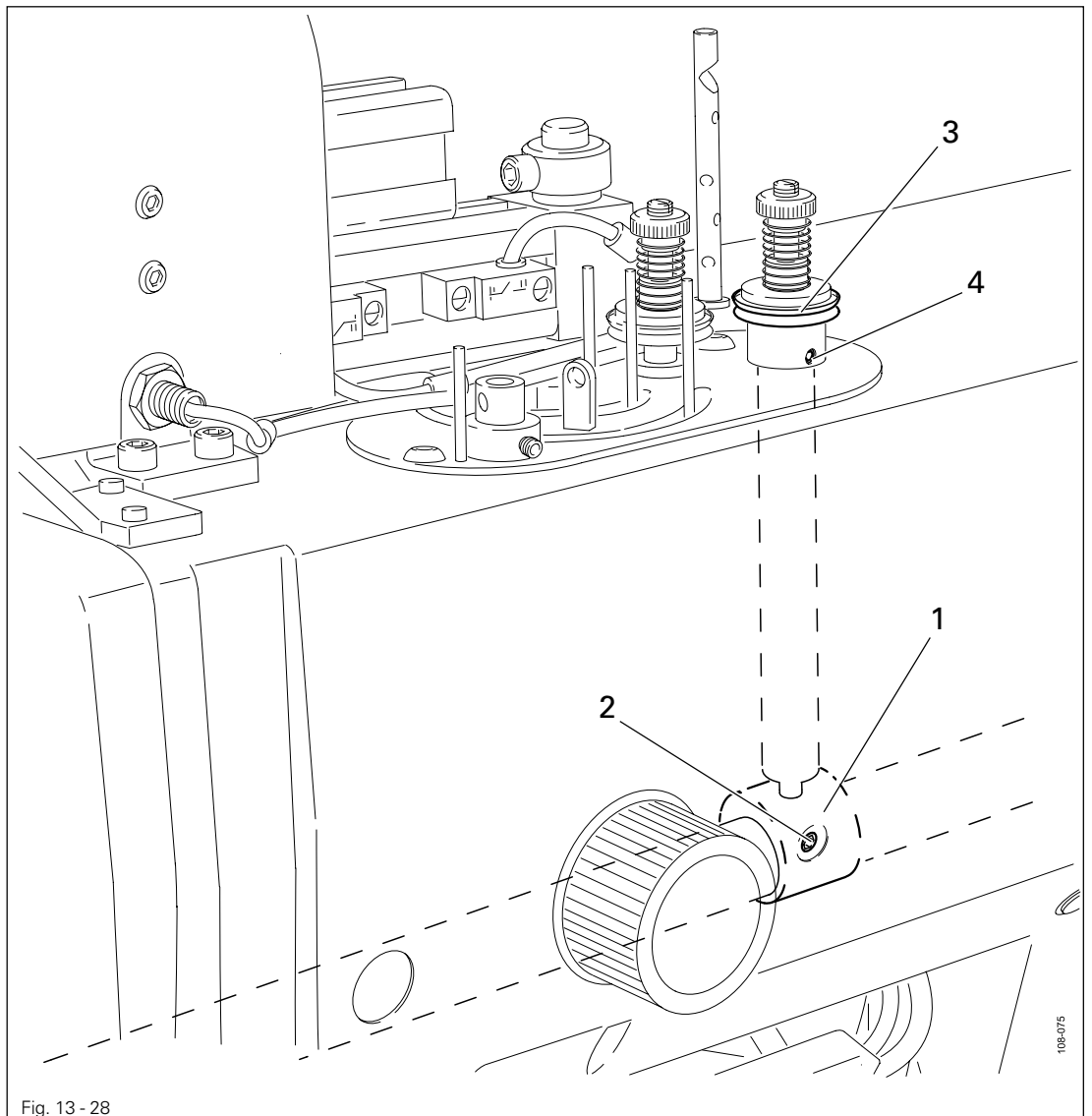
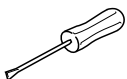


Fig. 13 - 28

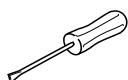
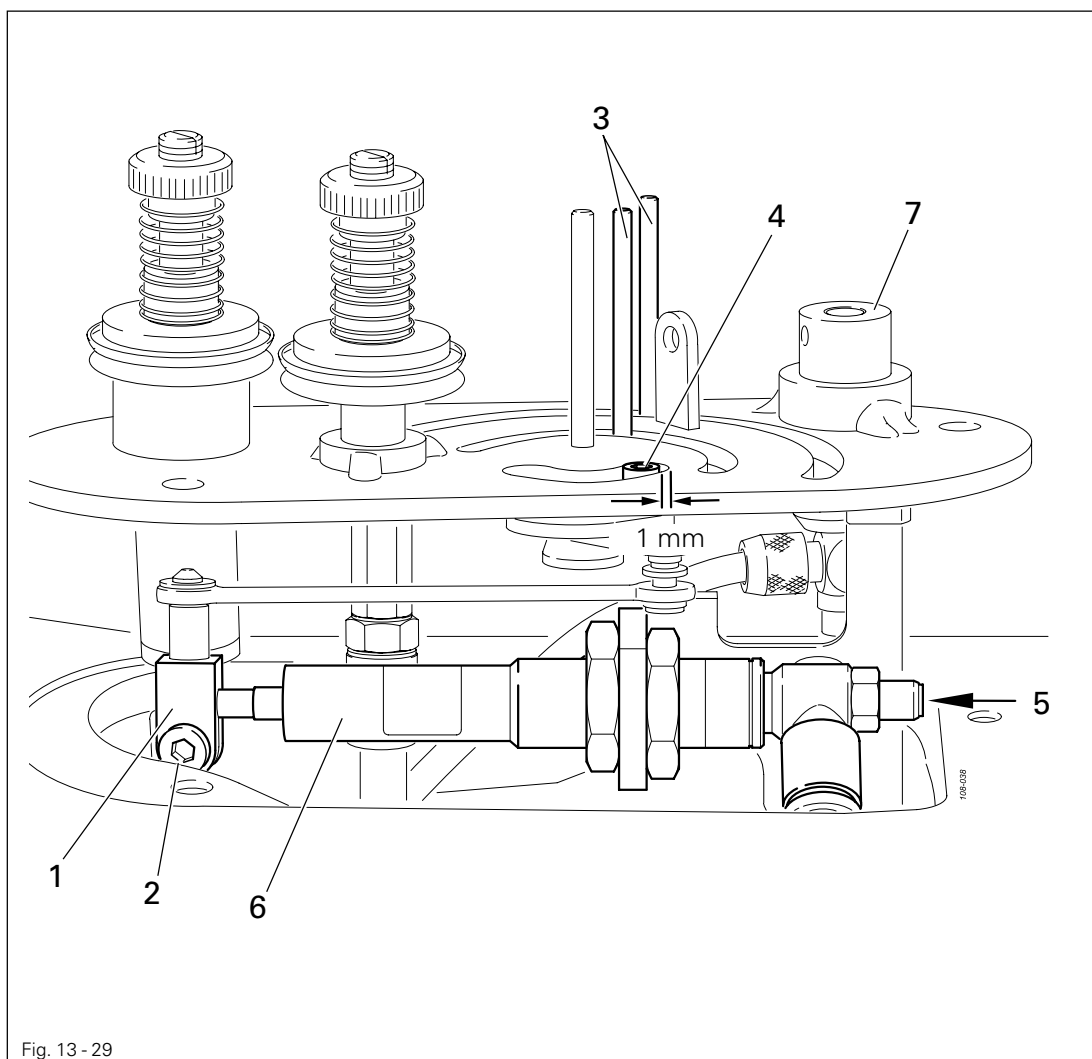


- Turn eccentric 1 (screws 2) in accordance with **requirement 1**.
- Adjust tension disks 3 (screw 4) in accordance with **requirement 2**.

13.31 Adjusting the thread puller

Requirement

1. When cylinder **6** is retracted, screw **4** should be at a distance of approx. **1 mm** from the inside edge of the slot.
2. When thread puller **3** is in its basic position, it should be resting lightly on the thread and should not touch the edge of the slot when cylinder **6** is extended.
3. The thread should be pulled evenly without any jerks.
4. Thread puller **3** should be set so that a reliable sewing start is guaranteed, but no start thread is standing out.



- Adjust clamp **1** (screw **2**) in accordance with **requirement 1**.
- Adjust thread puller **3** (screw **4**) in accordance with **requirement 2**.
- First of all, close throttle **5** completely and then adjust it in accordance with **requirement 3**.
- Adjust thread puller with screw **4** in accordance with **requirement 4**.



If required deviations from this basic setting of thread puller **3** are possible. If necessary, adjust the switch times for thread clamp **7** (parameter "405") and thread puller **3** (parameter "406").

13.32 Adjusting the thread clamp

Requirement

When thread clamp 1 is closed, the thread should be clamped reliably without being cut.

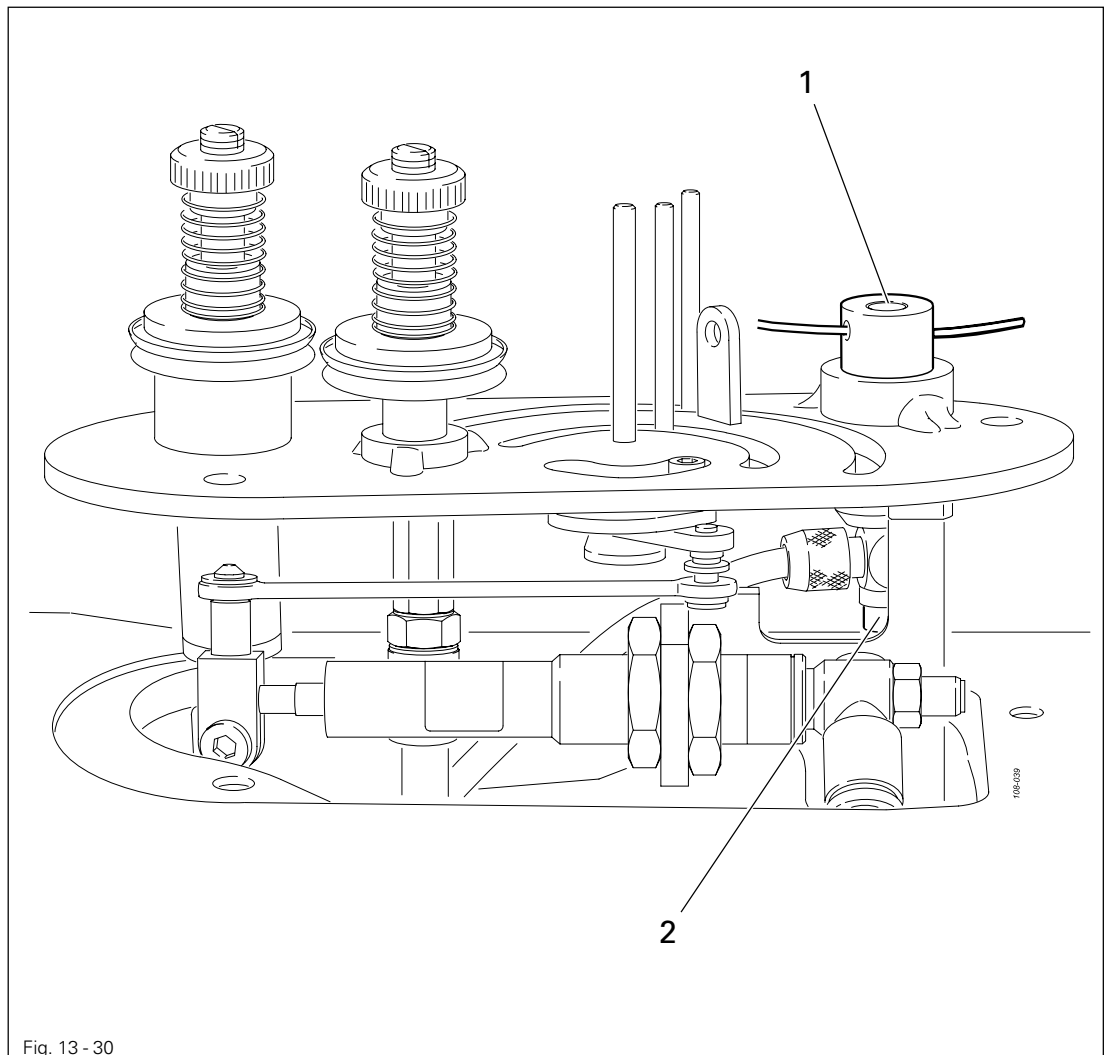
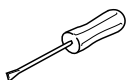


Fig. 13 - 30



- Insert thread in thread clamp 1.
- Carry out a functional test for the thread clamp with parameter "603" (output 3).
- First of all, close throttle 2 completely and then adjust it in accordance with **requirement**.



Following the adjustment, parameters "504", "508" and "510" must be checked, and adapted if necessary.

13.33 Adjusting the thread regulator

Requirement

When the needle bar is at its b.d.c., the slack needle thread should have been used.

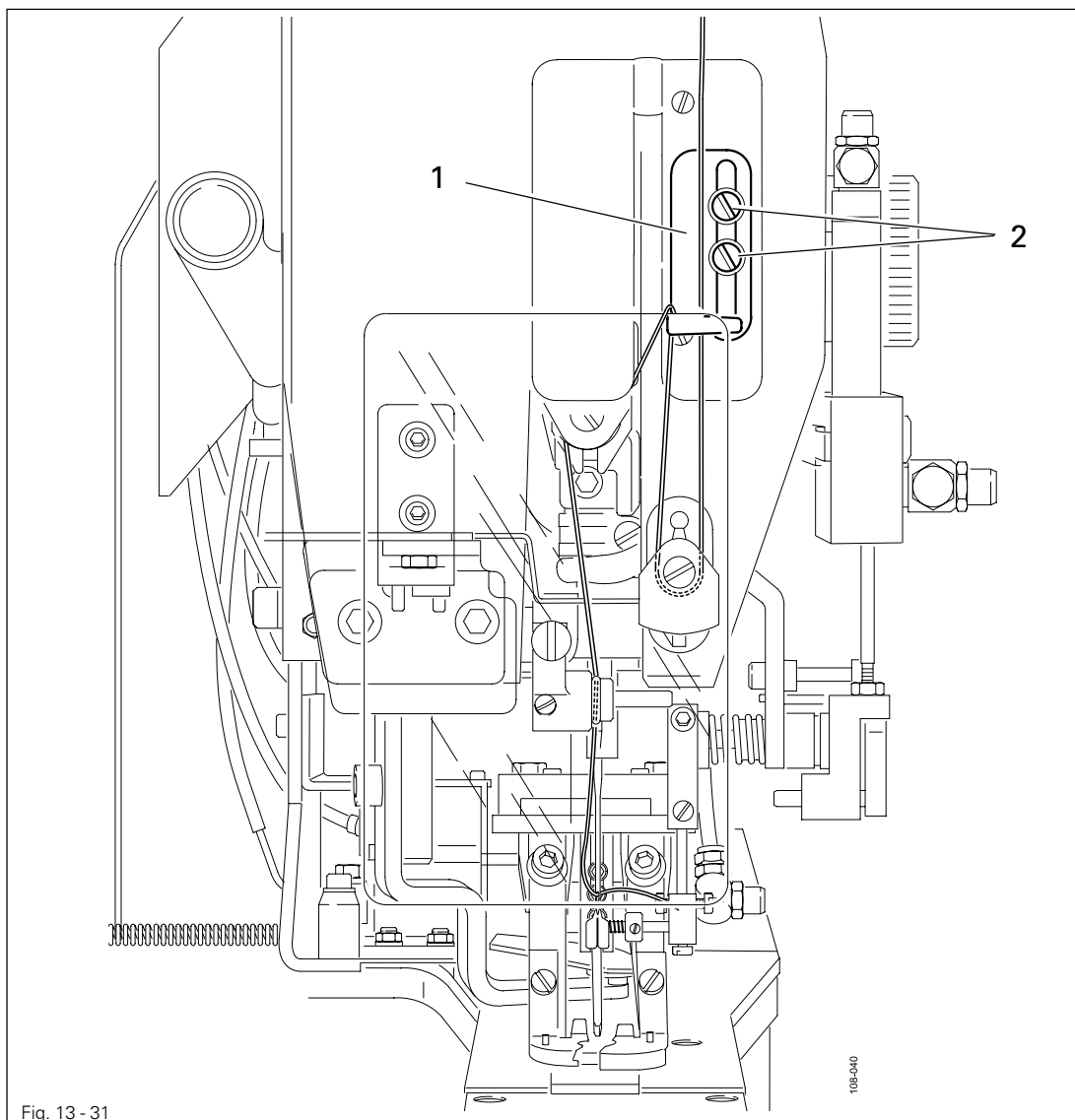
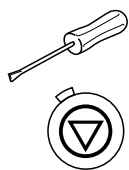


Fig. 13-31

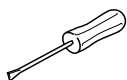
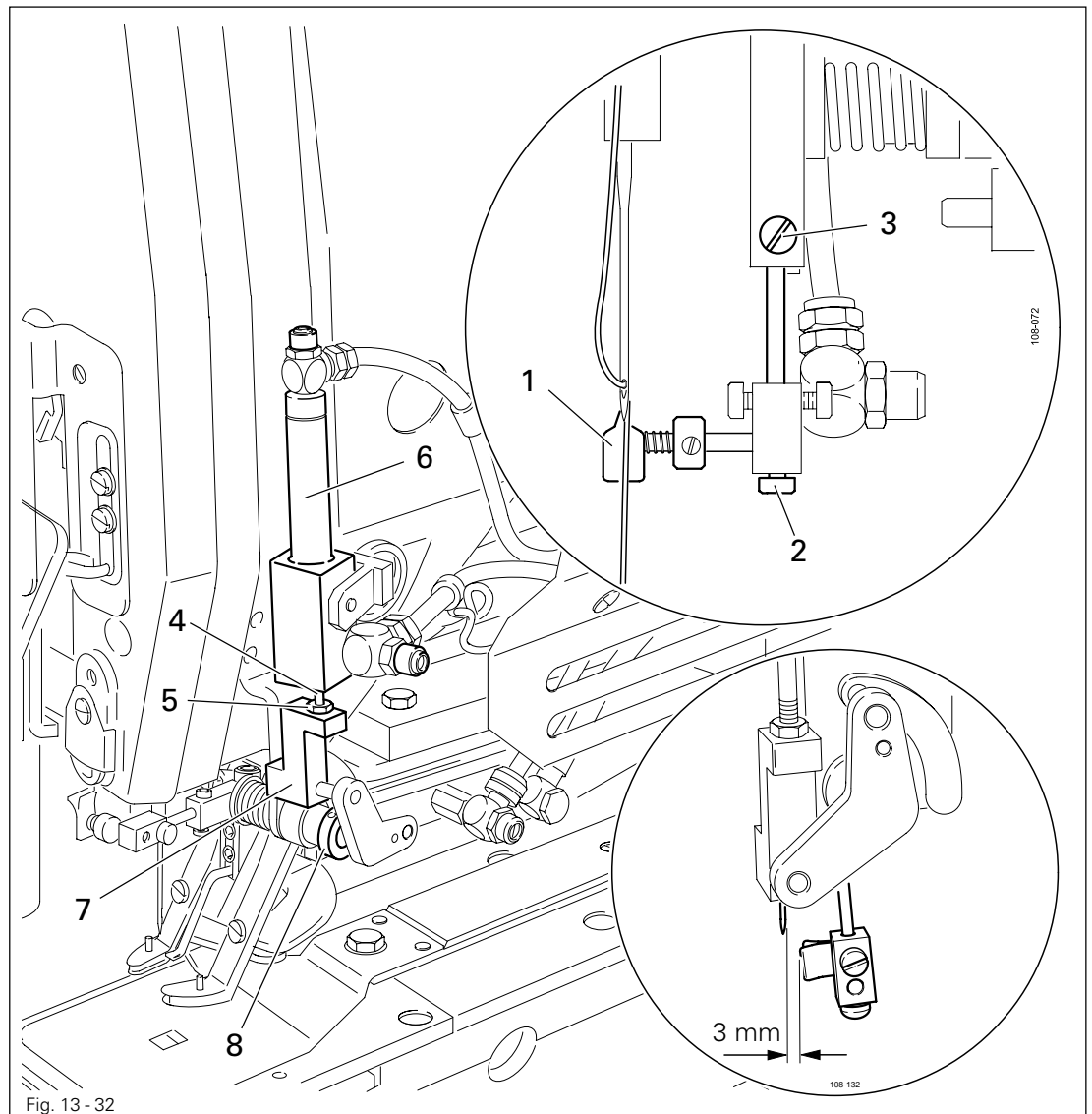


- Switch on the machine and connect it to the pneumatic power supply.
- Place the workpiece in position and start the sewing operation.
- Interrupt the sewing operation and bring the needle bar to its b.d.c. by turning the balance wheel.
- Adjust the thread regulator 1 (screws 2) in accordance with the requirement.
- Switch off the machine and disconnect it from the pneumatic power supply.

13.34 Adjusting the thread wiper

Requirement

1. In cutting position, the thread wiper 1 should be centred to the needle, and with the needle bar at t.d.c. it should swing though under the needle without contact.
2. When the cylinder 6 is extended, bearing block 7 should not collide with adjusting ring 8, and thread wiper 1 should be approx. 3 mm behind the needle.



- Switch on the machine and connect it to the pneumatic system.
- Set parameter "610" at value "6" (set the needle in the centre and lower the button clamp).
- Engage thread wiper 1 using parameter "603".
- Adjust thread wiper 1 (screws 2 and 3) in accordance with **requirement 1**.
- Adjust piston rod 4 (nut 5) in accordance with **requirement 2**.
- Check the setting during the sewing process and correct it if necessary.
- Switch off the machine and disconnect it from the pneumatic system.

13.35 Adjusting the stem finger

Requirement

The stem finger should be located in the centre of the buttonholes and jut out beyond them.

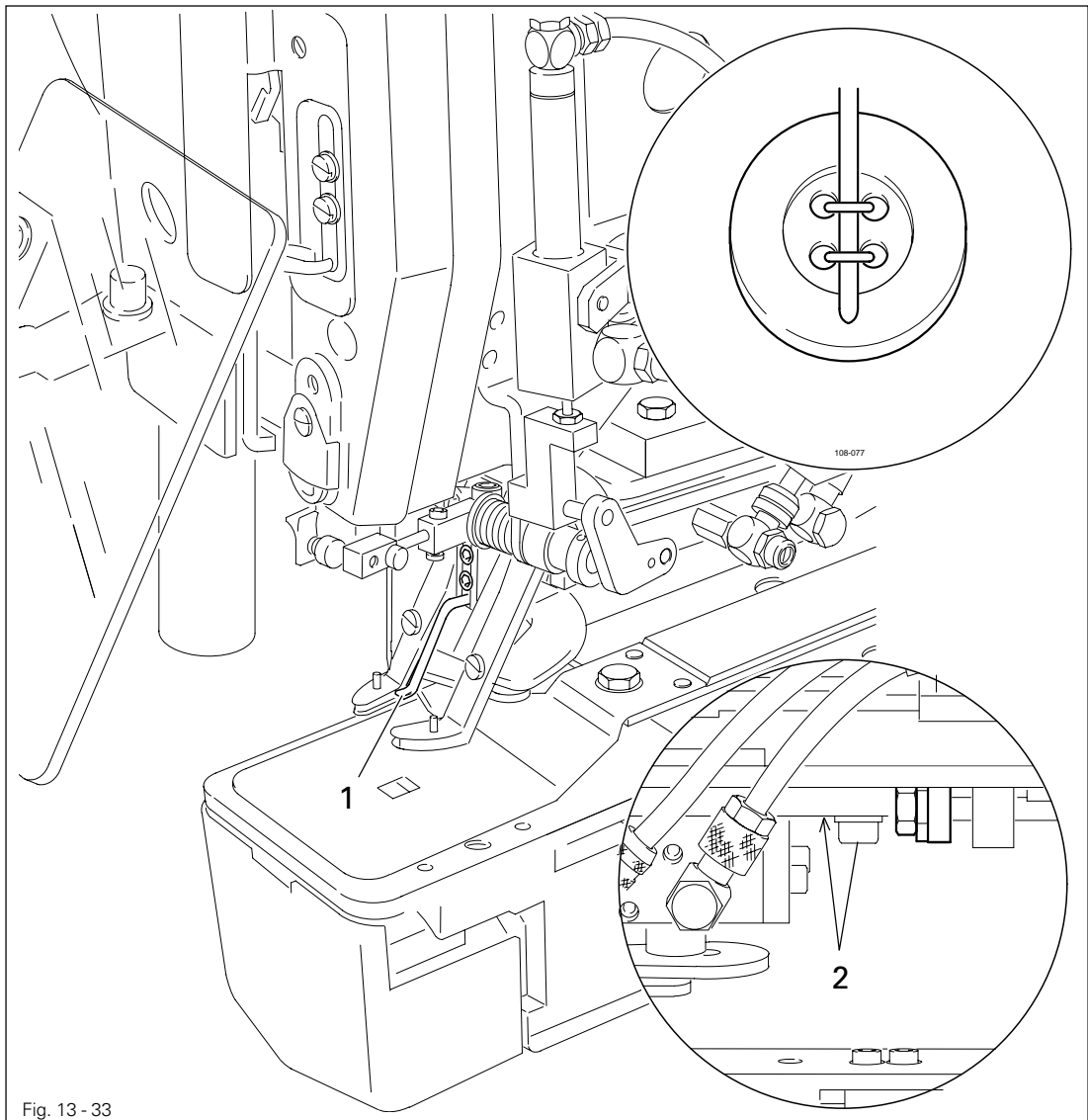
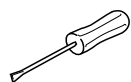


Fig. 13 - 33



- Adjust stem finger 1 (screws 2) in accordance with the requirement and with the required stem height.

13.36 Closing and opening angle of the button clamp

Requirement

1. Without a button inserted, the button clamp should close approx. 1 mm more than with a button inserted.
2. The button clamp should open wide enough for the button to be positioned securely.

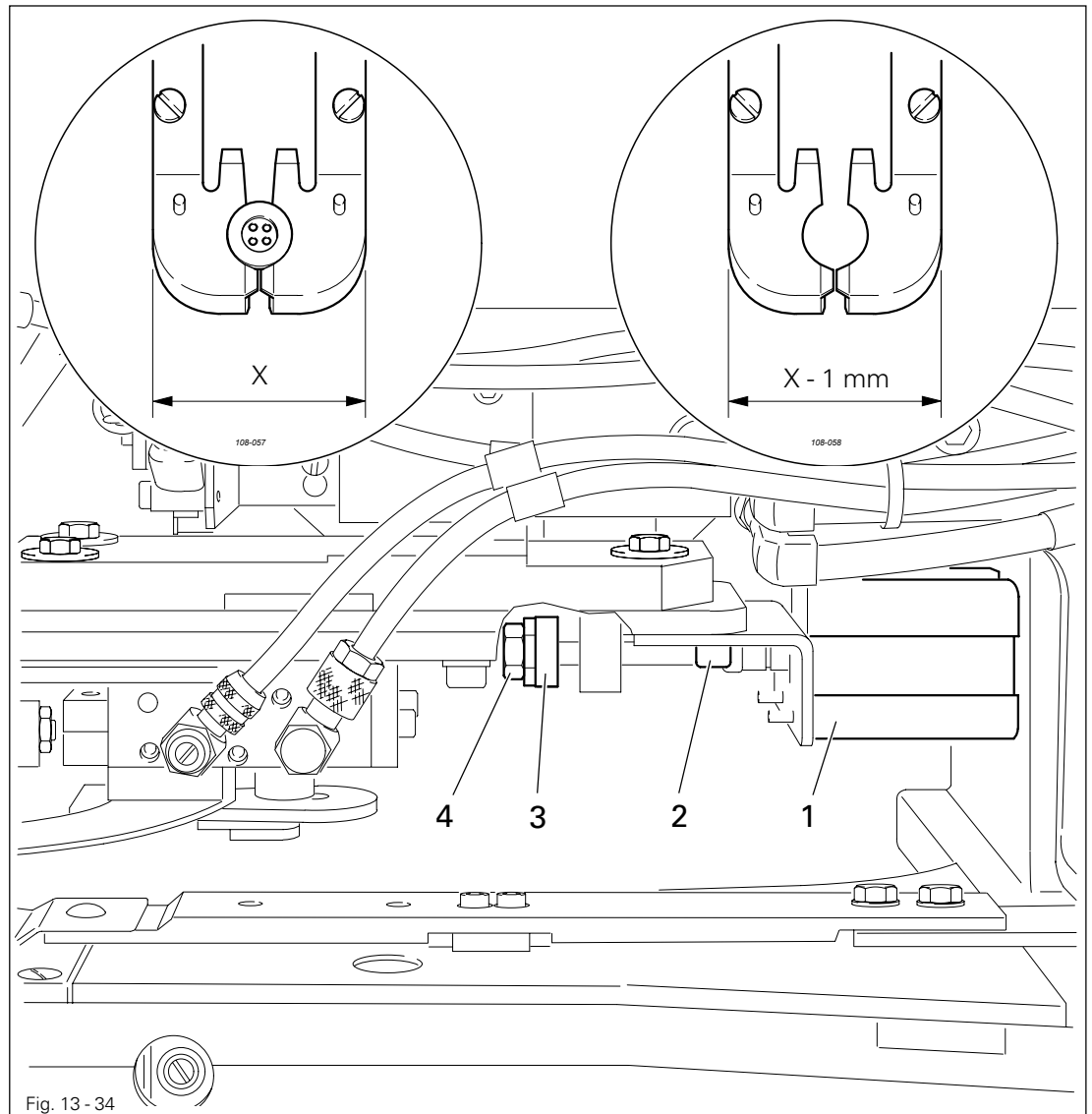
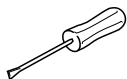


Fig. 13 - 34

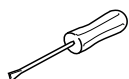
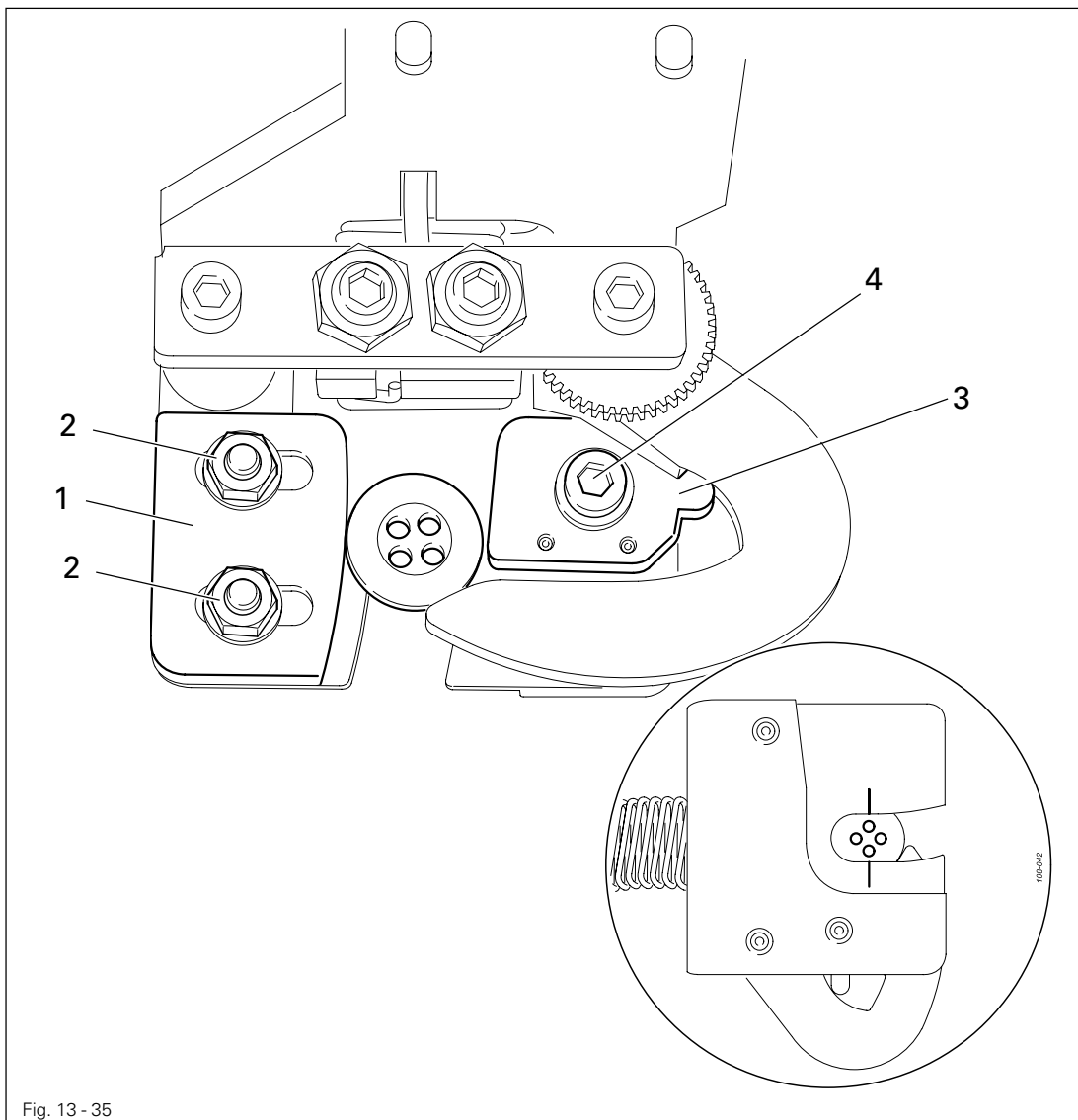


- Adjust cylinder 1 (screws 2) in accordance with requirement 1.
- Adjust nut 3 (nut 4) in accordance with requirement 2.

13.37 Basic setting of the button loading station

Requirement

The button should be positioned in the centre of the cut-out of the button loading station, without jamming (take account of the tolerances in the outside diameter of the buttons).



- Adjust guide plates 1 (screws 2) and 3 (screw 4) in accordance with the **requirement**.



For following adjustments it is necessary to mark the centre of the button after adjustment on the lower side of the loading station.

13.38 Setting the discharge position on the button clamp

Requirement

When the button clamp opens or closes, there should be no displacement

1. of the height or
2. the lateral position of the button.

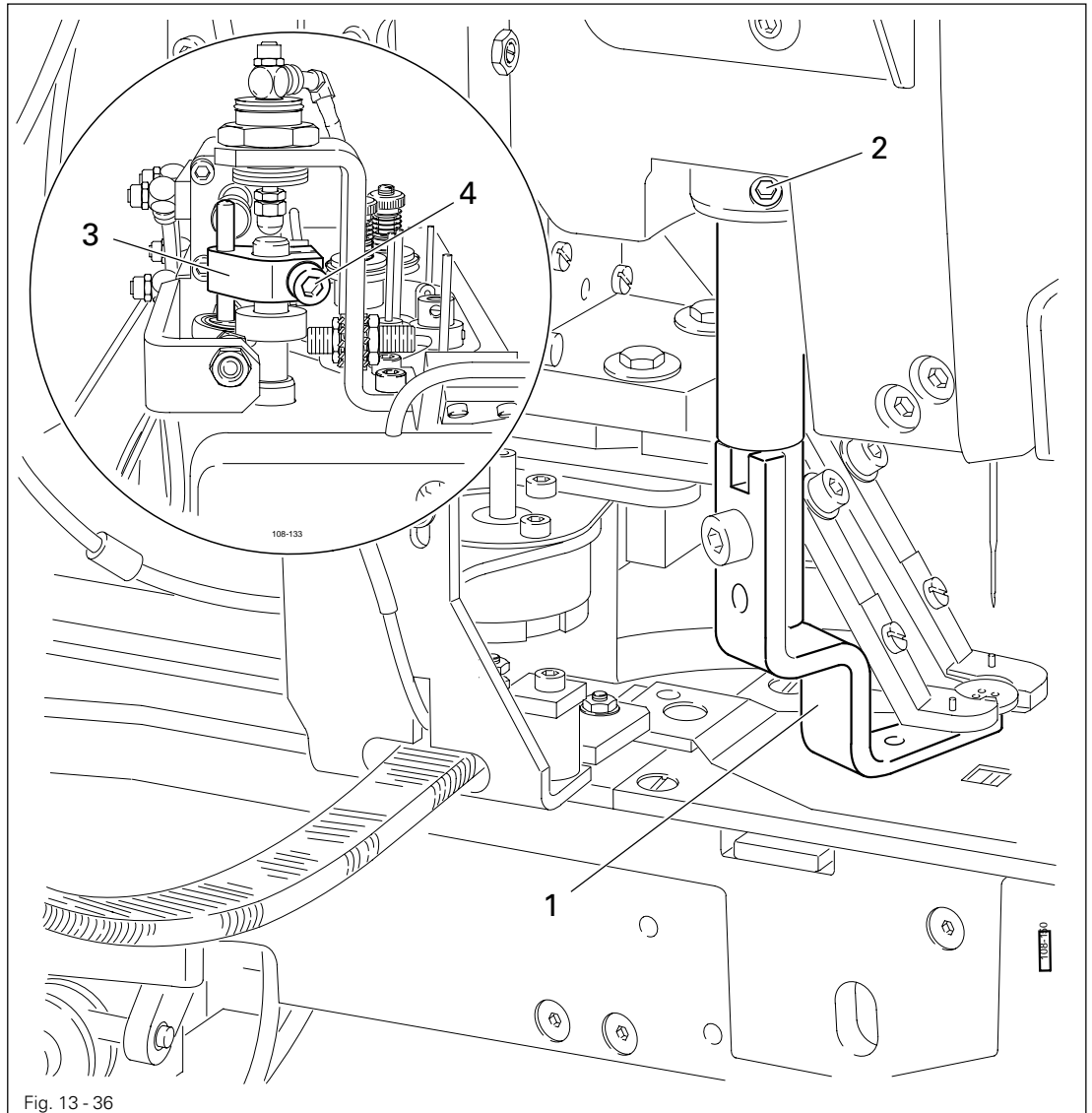
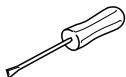


Fig. 13 - 36



- Switch on the machine and connect it to the pneumatic system.
- Set parameter "112" at value "1" (switch off stem finger).
- Using parameter "616" (value "2"), engage button holder 1 and insert the button.
- Using parameter "616" (value "3"), close the button clamp
- Adjust button holder 1 (screws 2) in accordance with **requirement 1**.
- Adjust drive unit 3 (screw 4) in accordance with **requirement 2**.

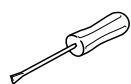
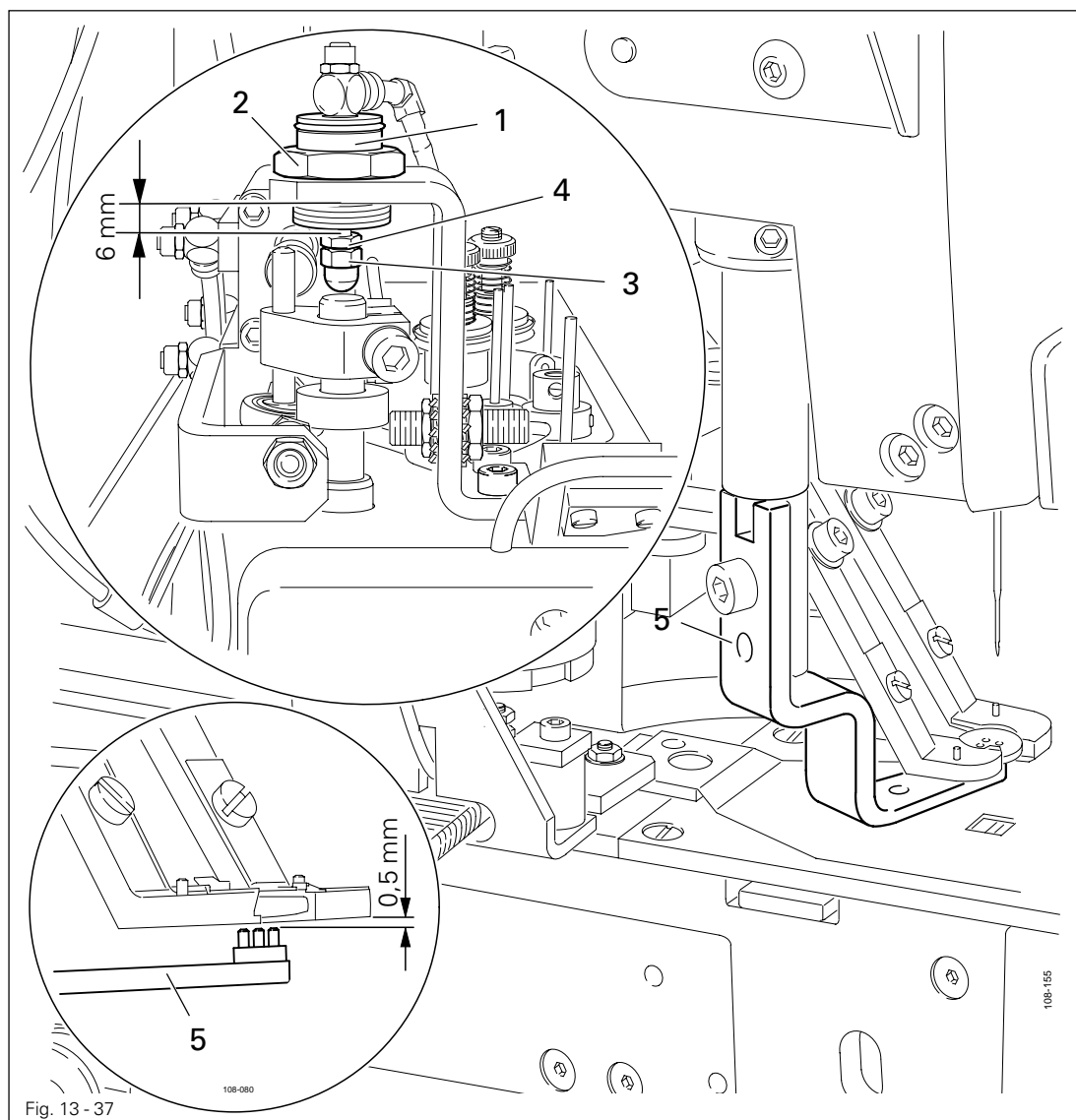


Following this adjustment, without switching off the machine or disconnecting it from the pneumatic system, the adjustment as described in **Chapter 13.37 Basic setting of the button loading station** must be carried out with the same parameters.

13.39 Adjusting the loading cylinder

Requirement

1. The bottom edge of the case of loading cylinder 1 should be positioned **6 mm** below the bracket.
2. When the loading cylinder 1 is lowered, the upper edge of the button holder 5 should be positioned **0.5 mm** below the button clamp.



- Adjust loading cylinder 1 (nut 2) in accordance with **requirement 1**.
- Lower the loading cylinder 1 using parameter "616" (value "4").
- Turn nut 3 (nut 4) in accordance with **requirement 2**.

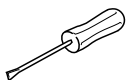
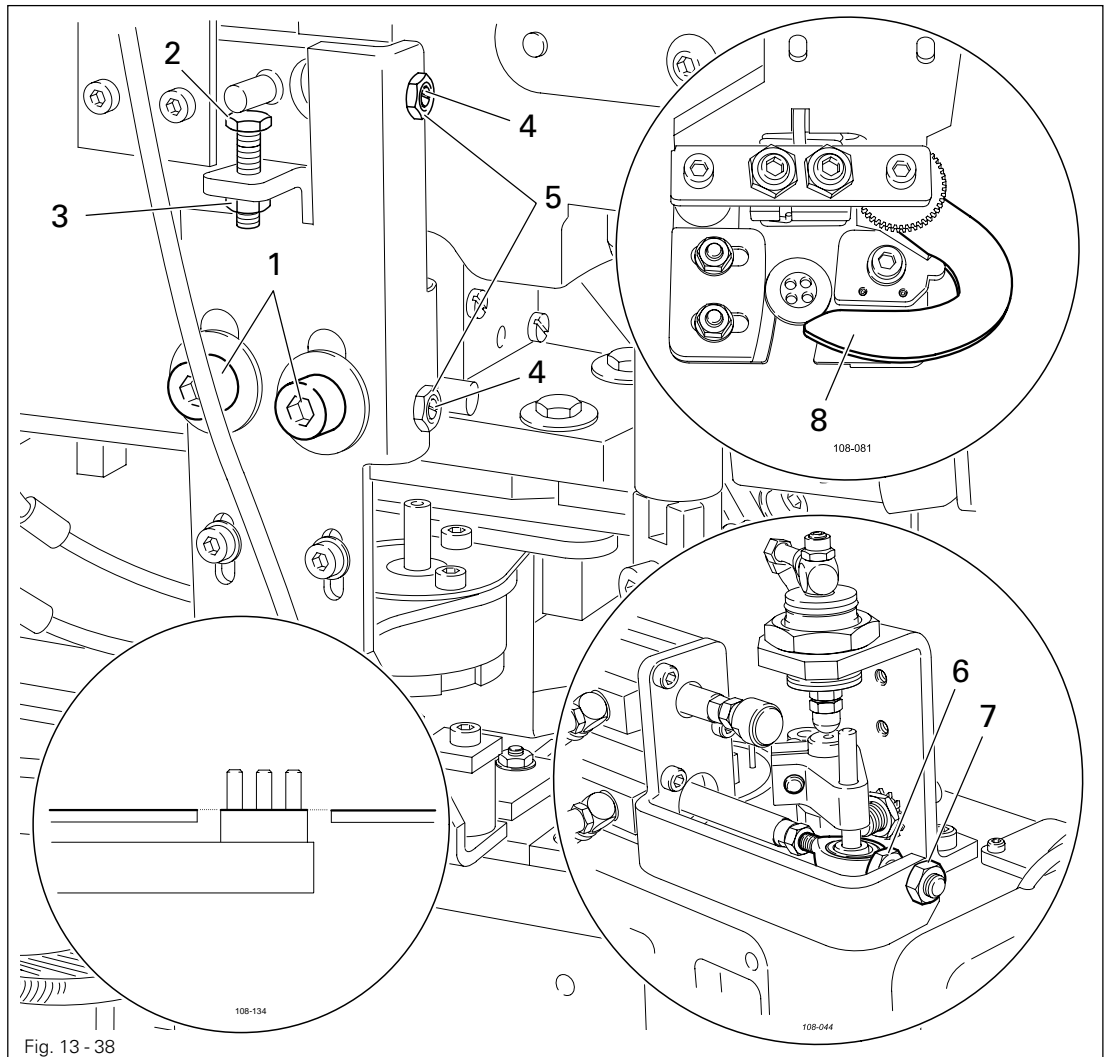


Following this adjustment, without switching off the machine or disconnecting it from the pneumatic system, the adjustment as described in **Chapter 13.38 Setting the discharge position on the button clamp** must be carried out with the same parameters.

13.40 Setting the take-over position on the loading station

Requirement

1. When at the same height, the bearing surface of the loading station should be parallel to the button bearing surface of the button holder, whereby the button holder should position in the centre of the cutout of the loading station.
2. When the button is touching hook **8**, the pins of the button holder should lock into in the button, without moving its height or side position.



- With parameter "616" (value "6") move the button holder to the loading station.
- Slightly loosen screws **1**.
- Adjust screw **2** (nut **3**) and screws **4** (nuts **5**) in accordance with **requirement 1**.
- Tighten screws **1**.
- Adjust screw **6** (nut **7**) in accordance with **requirement 2**.

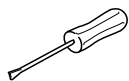
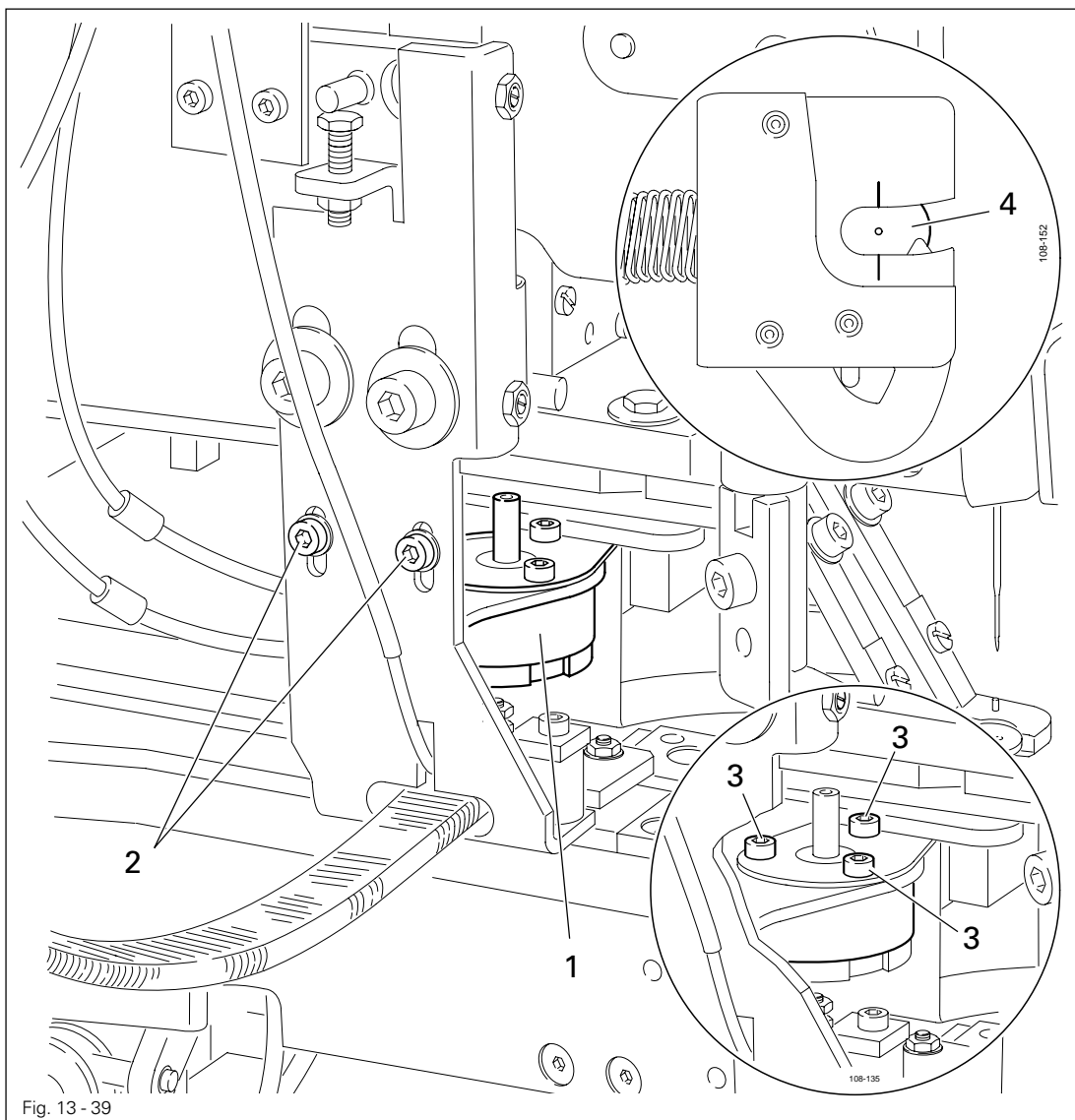


Following this adjustment, without switching off the machine or disconnecting it from the pneumatic system, the adjustment as described in **Chapter 13.39 Adjusting the loading cylinder** must be carried out with the same parameters.

13.41 Adjusting the rotary cylinder

Requirement

1. The turntable of rotary cylinder 1 should be positioned over the loading station, centred and parallel to the button, with a small space between button and guide plates.
2. The opening in turntable 4 should coincide with the line marked beforehand on the bottom side of the button discharge station.

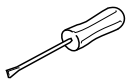
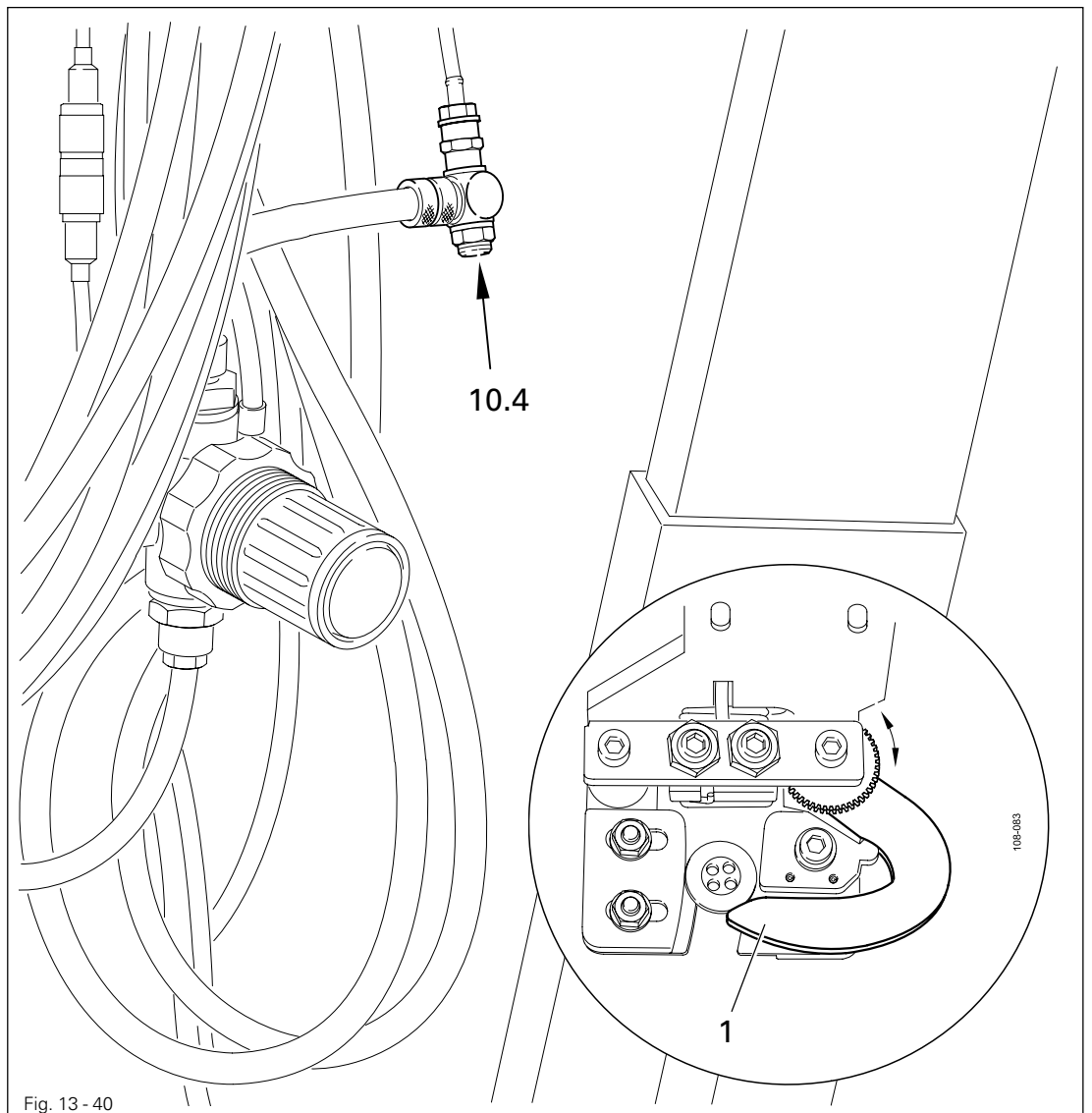


- With parameter "616" (value "8") move the button holder into the stop position.
- Align rotary cylinder 1 (screws 2) in accordance with **requirement 1**.
- Align rotary cylinder 1 (screws 3) in accordance with **requirement 2**.

13.42 Adjusting the air blast nozzle

Requirement

The button must be moved to the holding hook 1 with the air current of the air blast nozzle.



- Position the button holder with parameter "616" (value "5").
- Adjust throttle 10.4 in accordance with the requirement.

13.43 Adjusting the guiding plate

Requirement

In the entire swivelling range of the button holder there should be a clearance of approx. 1 mm between the guiding plate 1 and button 2.

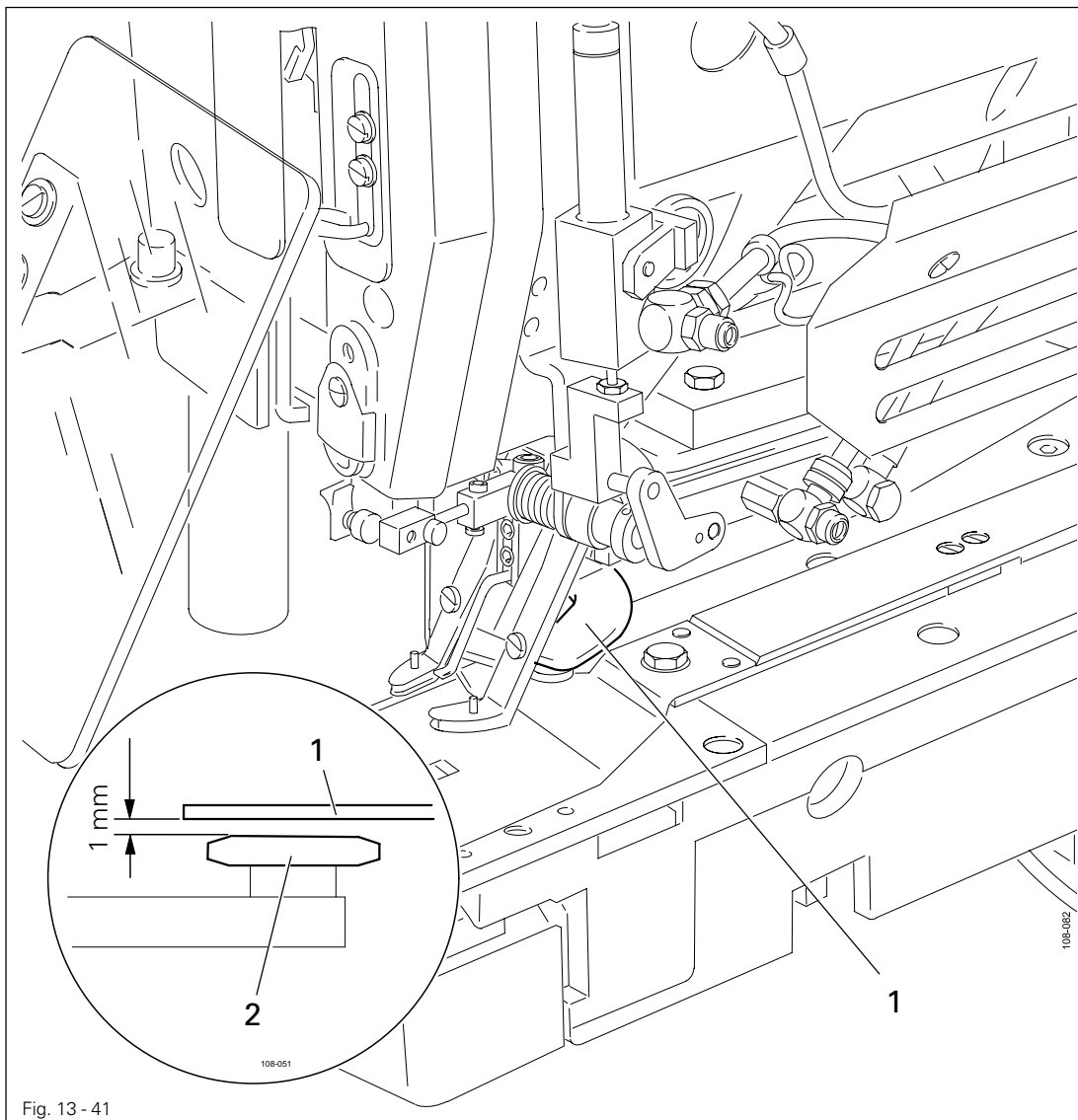
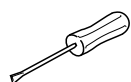


Fig. 13 - 41



- With parameter "616" (value "8") move the button holder into the stop position.
- Align guiding plate 1 in accordance with the **requirement**.

13.44 Adjusting the button loading control unit

Requirement

1. Initiator 1 should be positioned 1 mm from the adjusting ring.
2. When the button holder is in the loading position, the LED of the initiator 1 should not be on.

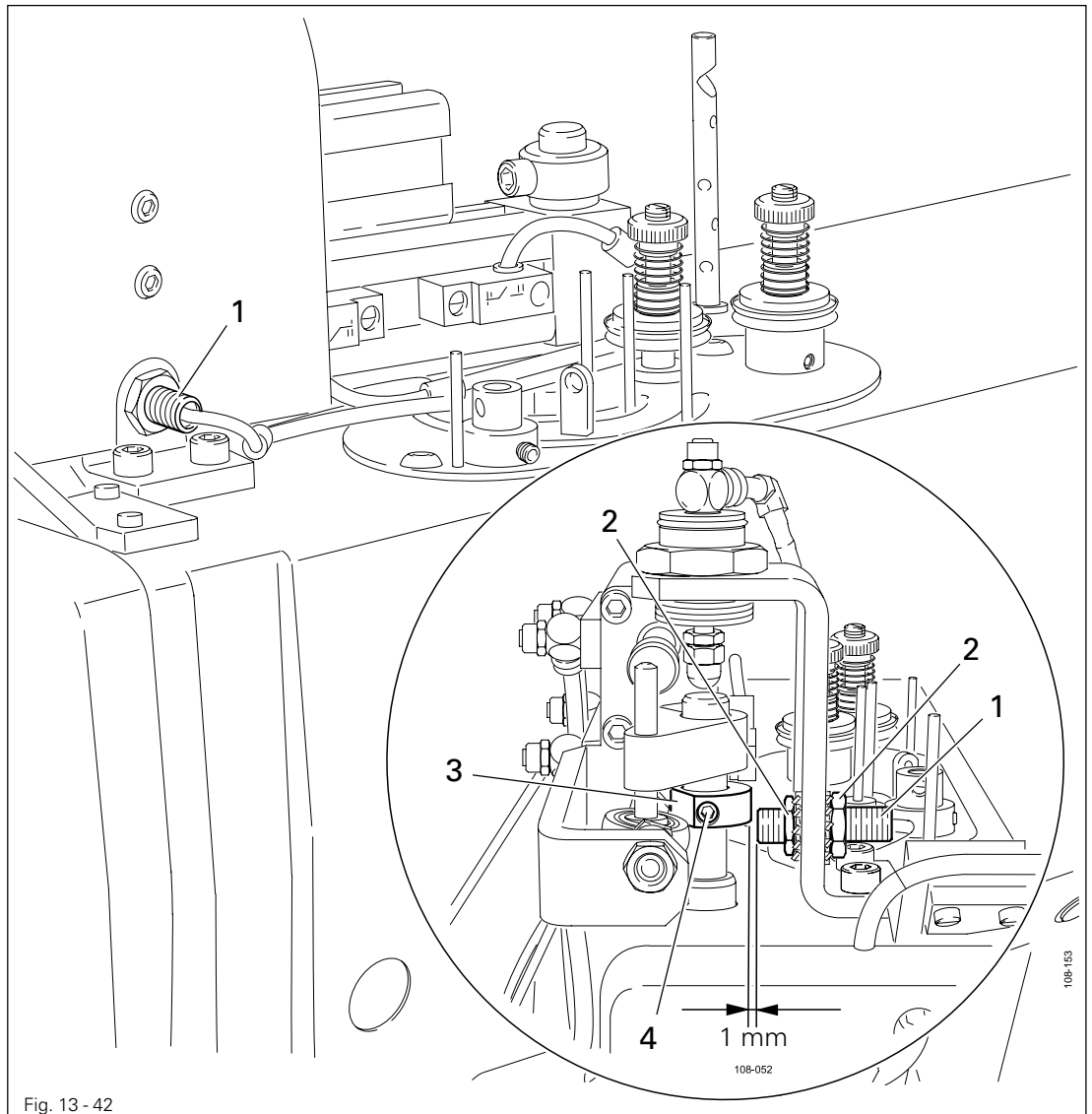
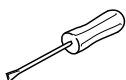


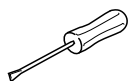
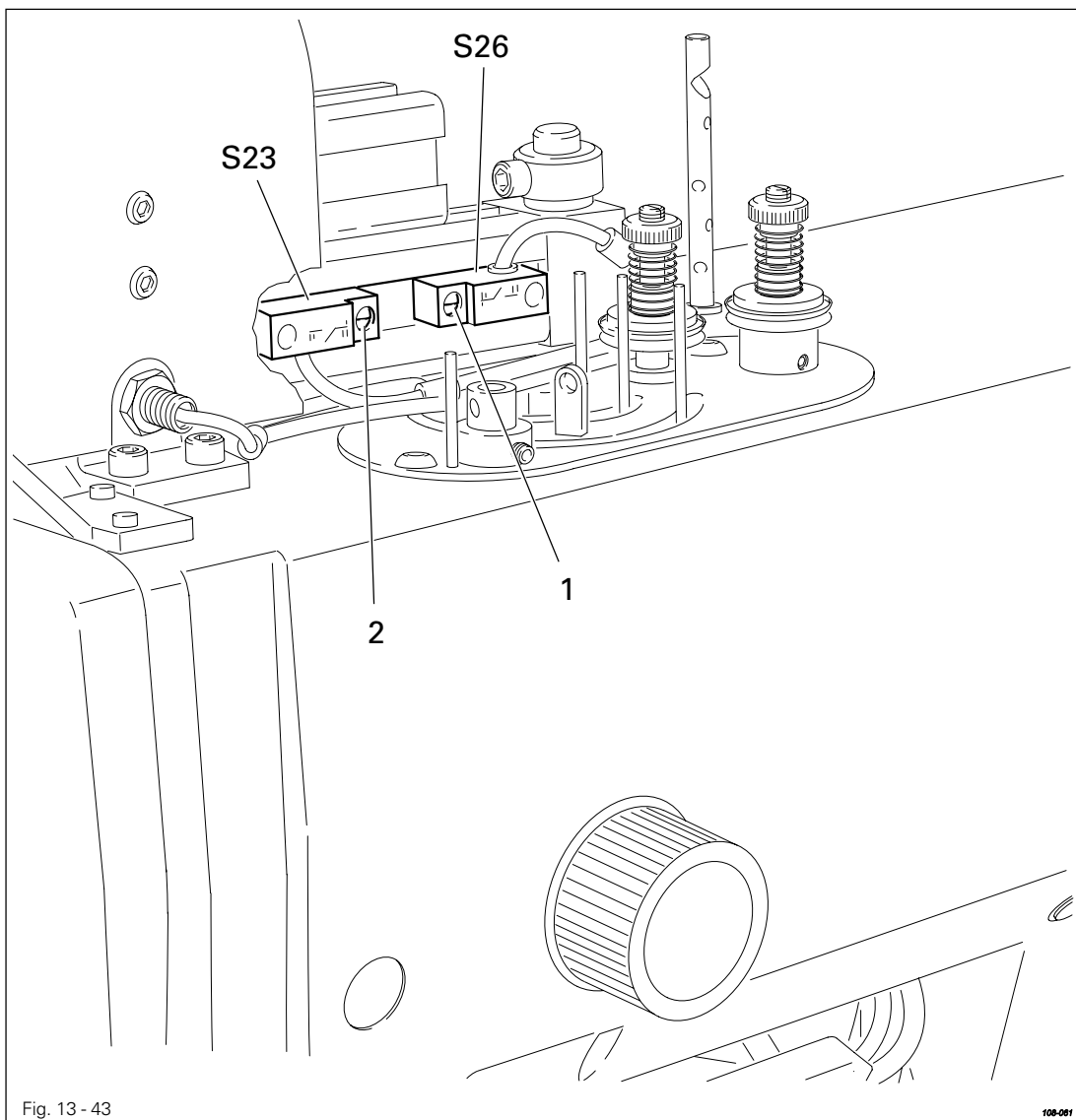
Fig. 13 - 42



- With parameter "616" (value "7") bring the button holder into the loading position.
- Adjust initiator 1 (nuts 2) in accordance with **requirement 1**.
- Without twisting it, slide adjustment ring 3 upwards until the LED of initiator 1 has just extinguished (**requirement 2**).
- Set parameter "616" at value "1", to be able to quit the parameter.



The machine remains switched on and connected to the pneumatic system for further adjustments.



- Open the button clamp with parameter "603" (Pos. "12" at value "1").
- Move the stop cylinder back with parameter "603" (Pos. "11" at value "1").
- Close the button clamp with parameter "603" (Pos. "12" at value "0").
- Select parameter "602".
- Move switch **S26** (screw **1**) from the right until the sixth figure from the right changes from "0" to "1".
- Extend the loading cylinder with parameter "603" (Pos. "9" at value "1").
- Move the button holder to the loading station with parameter "603" (Pos. "10" at value "1").
- Select parameter "602".
- Move switch **S23** (screw **2**) from the left until the third figure from the right changes from "0" to "1".



The machine remains switched on and connected to the pneumatic system for further adjustments.

13.46 Adjusting the throttles of the engaging cylinder

Requirement

The button should be taken over reliably at loading station 2 and be given reliably to button clamp 3 without falling.

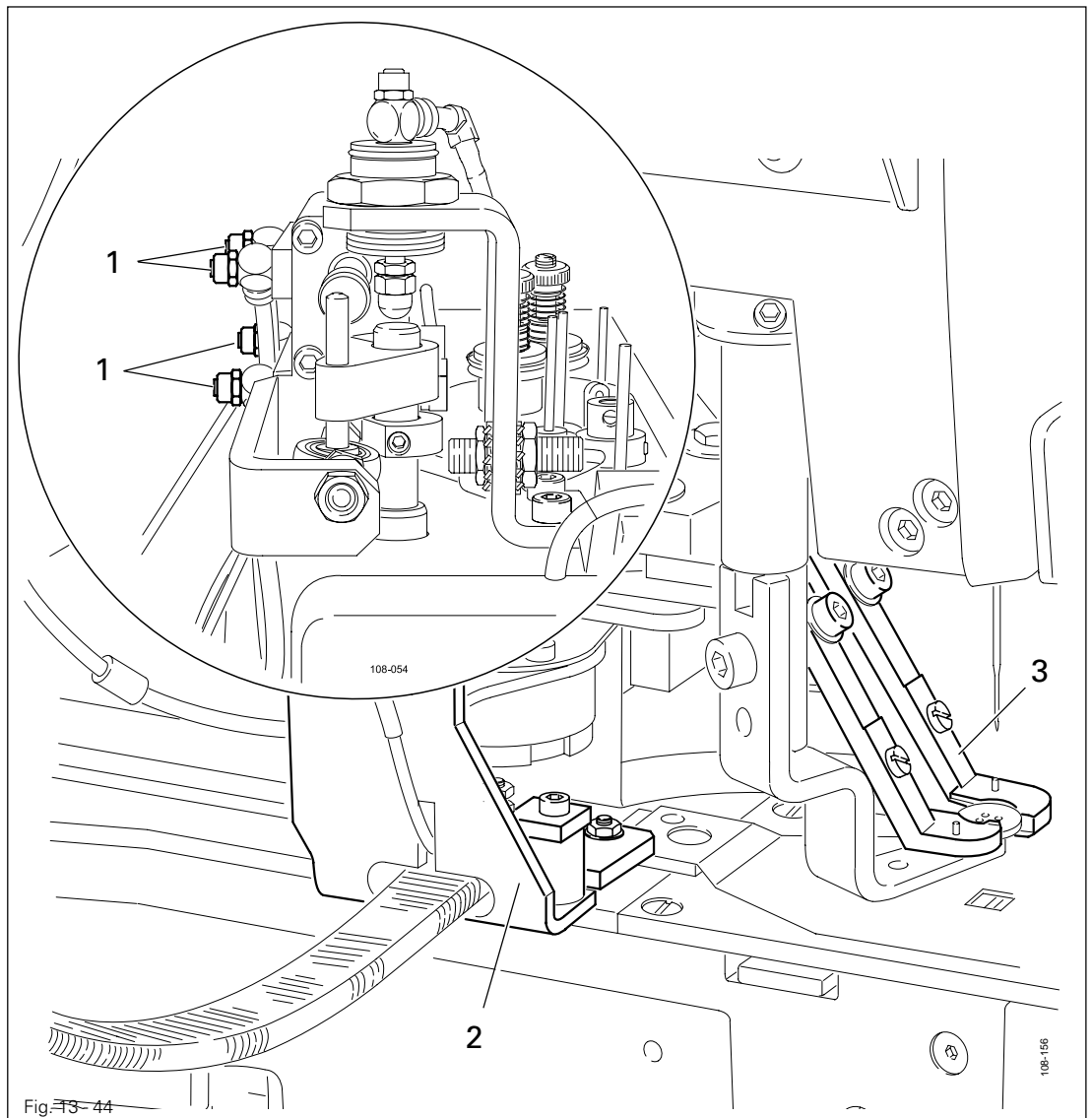
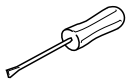


Fig. 13-44



- Adjust throttles 1 in accordance with the requirement.



The machine remains switched on and connected to the pneumatic system for further adjustments.

13.47 Spring adjustment of the retention hook

Requirement

When the button is being positioned with rotary cylinder 2, the retention hook 3 should not move.

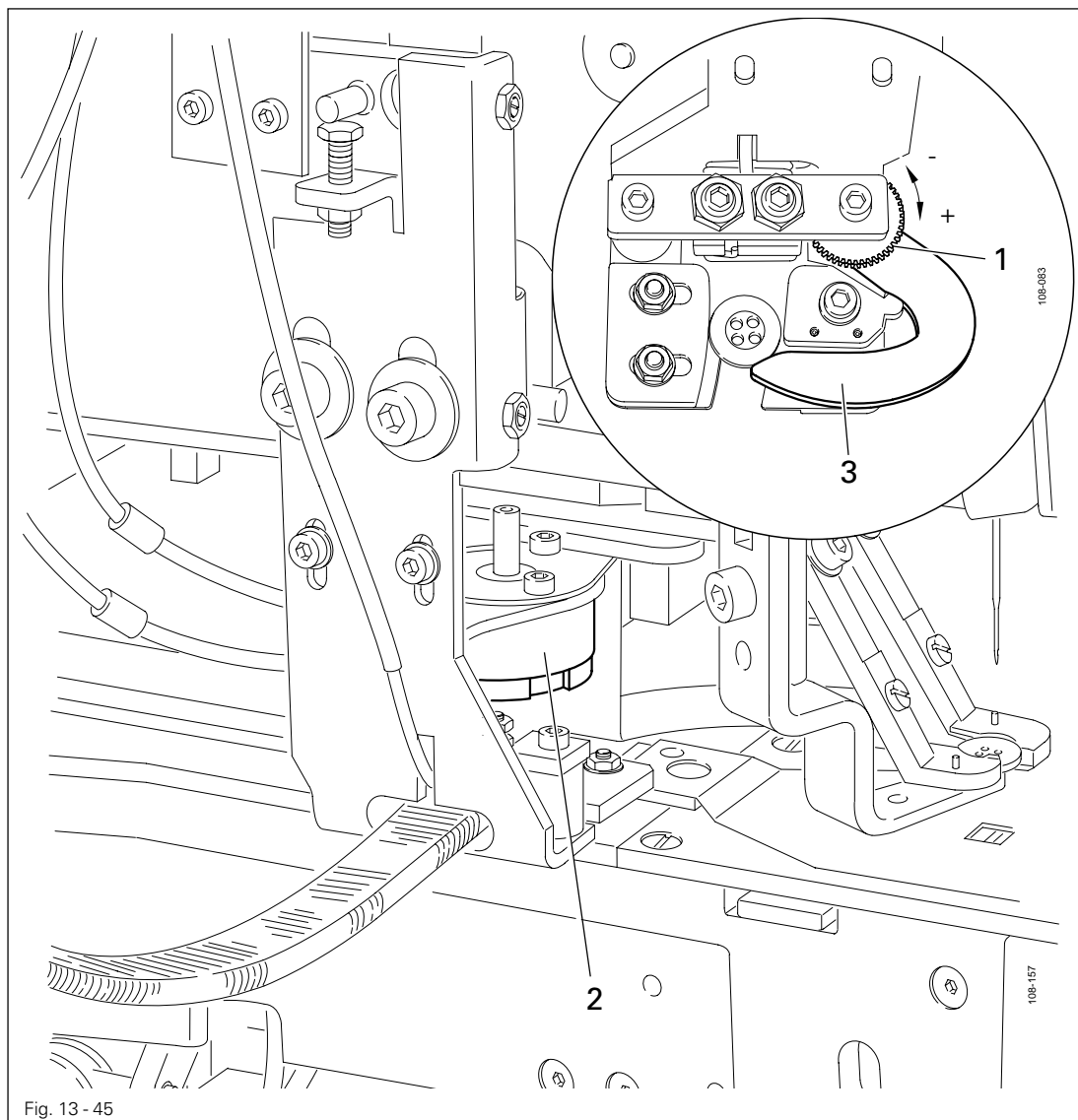
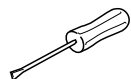


Fig. 13 - 45



- Adjust knurled nut 1 in accordance with the **requirement**.
- Switch off the machine and disconnect it from the pneumatic system.

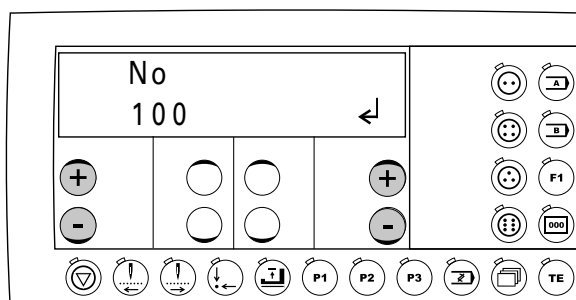
13.48 Parameter settings

13.48.01 Selecting the function group and altering the parameter

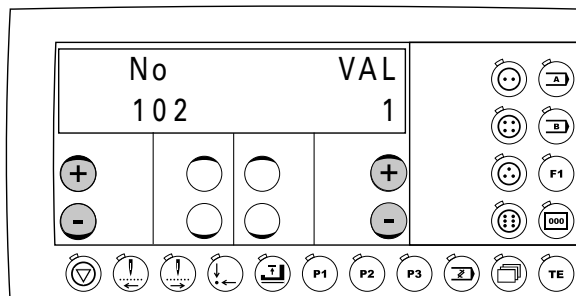
- Switch on the machine.
When the machine is switched on, it is automatically active in the sewing mode.



- Select the input mode (LED in the key is on).



- Using the left +/- keys select the desired function group.
With the factory setting of the machine, only free access to function group "100" is possible, the other function groups are protected against unauthorized access by a code.
- Confirm the selection of the desired function group with the "enter" function by pressing "+" on the right +/- key.



- Select the desired parameter by using the left +/- keys, and change to the desired value with the right +/- keys.
- The altered value is taken over by selecting the next parameter.

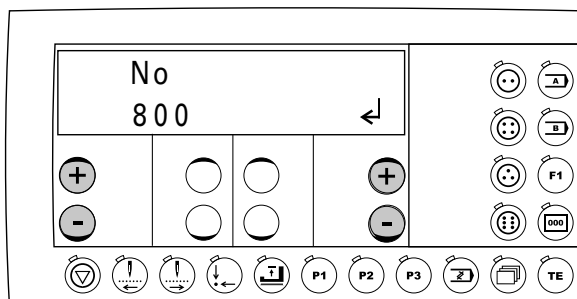
or



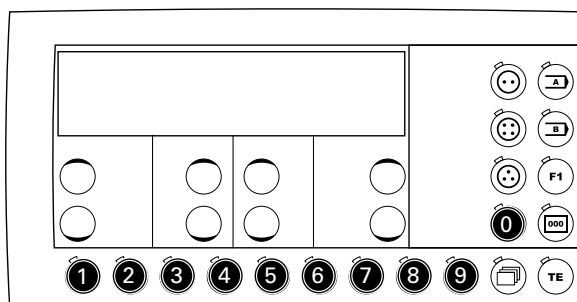
- By calling up the sewing mode the altered value is taken over and the machine changes to the sewing mode (LED in the key goes off).

13.48.02 Entering / altering the access code

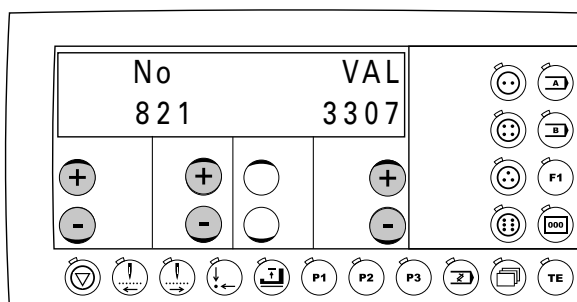
- Switch on the machine.
- Select the input mode (LED in the key is on).



- Select the function group "800" by pressing the left +/- keys.
- Confirm the selection by pressing "+" on the right +/- keys.



- Enter the code.
As shown in the illustration, the figures are entered with the corresponding function keys. The factory setting of the code is "3307".

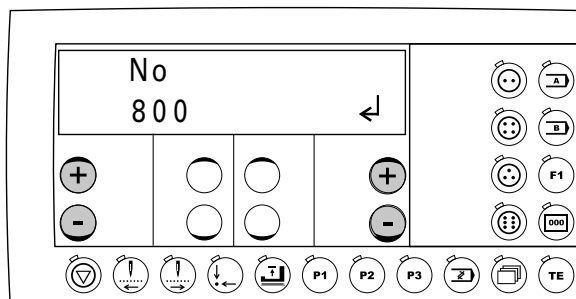


- To alter the access code, call up parameter "821" (entering the access code) with the corresponding +/- keys.
- Enter the new code.
- By calling up the sewing mode the altered value is taken over and the machine changes to the sewing mode (LED in the key goes off).

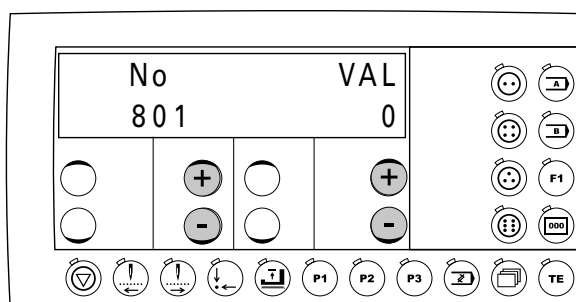


13.48.03 Allocating access rights

- Switch on the machine.
- Select the input mode (LED in the key is on).



- Select the function group "800" by pressing the left +/- keys.
- Confirm the selection by pressing "+" on the right +/- keys.
- Enter the access code, see Chapter 13.48.02 Entering / altering the access code.



- Select the desired parameter "801" to "820" with the left +/- keys, see Chapter 13.48.04 List of parameters.
- With the right +/- keys release or block the selected parameter.
 - 0: Parameter function is freely accessible
 - 1: Parameter function only accessible after entering access code.



If all parameters ("801" to "820") are set at "0", the access code will not be demanded.



- By calling up the sewing mode the altered value is taken over and the machine changes to the sewing mode (LED in the key goes off).

Adjustment

13.48.04 Parameter list

Group	Parameter	Description	Setting range	Set value
100	101	Display software version (0366/xxx)	-	-
	102	Button height (with material) 1 = flat, 6 mm 2 = medium, 12 mm 3 = high, 17,5	1 - 3	1
	107	Button feed with pedal position "-1" I = off, II = on	I, II	I
	108	Time delay during continuous operation [s]	0,00 - 2,00	0,30
	109	Continuous operation I = off, II = on	I, II	II
	110	Software version for motor control	-	-
	111	Software version for thread strength module	-	-
	112	Stem finger I = off, II = on	I, II	II
	113	Sequence input	1 - 9	-
	114	Sequence mode I = off, II = on	I, II	I
	115	Automatic sequence run in continuous operation I = off, II = on	I, II	I
	117	Key tone I = off, II = on	I, II	II
	200	201	Delete program	-
202		Machine version 1 = standard/self-shank button (-1/.. / 5/..) 2 = with blind stitching (-3/..) 3 = with stem wrapping (-9/..) 4 = with button feed (-1/11) 5 = with outer clamp (-1/13) 6 = tacking (-4/..)	1 - 6	4
204		Size of cloth plate cutout (not on stem wrapper), see Chapter 3.02 Seam pattern sizes	1 - 6	1

Group	Parameter	Description	Setting range	Set value
200	205	Missed stitch detection I = OFF, II = ON	I, II	I
	206	Missed stitch detection threshold	0 - 999	120
	207	Suppressed stitches of missed stitch detection function	0 - 9	6
	208	1 - 120 = Display thread size of last program (max. 120 stitches) 0 = Display calculated optimum threshold (for input in para. 206)	0 - 120	
	209	Air jet I = OFF, II = ON Caution! When a thread wiper is attached, the air jet must be switched off!	I, II	I
	210	Air jet starting time [s]	0 - 10	1
	211	Initialise clamp when sewing starts I = OFF, II = ON	I, II	I
400	401	Delay for raising clamp [s]	0,00 - 1,50	0
	402	Start delay after lowering clamp [s]	0,00 - 1,50	0
	403	Delay before thread trimming [s] (switching time to thread wiper forwards)	0,00 - 2,00	0,06
	404	Thread trimming time [s]	0,00 - 2,00	0,06
	405	Time between "thread clamp closed" and "thread wiper on" [s]	0,00 - 2,00	0,10
	406	Response time for thread puller [s]	0,00 - 2,00	0,30
	407	Response time until thread wiper back [s]	0,00 - 4,00	0
	408	Time for added feature clamp [s]	0,00 - 1,50	1
	409	Delay after rotary cylinder on/off [s]	0,00 - 1,50	0,10
	410	Delay after loading cylinder up/down [s]	0,00 - 1,50	0,10


Adjustment

Group	Parameter	Description	Setting range	Set value
400	411	Delay after stop cylinder on/off [s]	0,00 - 1,50	0,10
	412	Delay after clamp open [s]	0,00 - 1,50	0,10
500	501	Soft start stitches	0 - 15	0
		Soft start speed [min-1]	0 - 2000	500
	503	Extras stitches at start (start stitches)	0 - 4	0
	504	Delay time "thread clamp at seam start" [s]	0 - 2	0,02
	506	Angle position for "end knotting on"	0 - 127	40
	507	Angle position for "end knotting off"	0 - 127	70
	508	Number of stitches with "thread clamp closed" at end of seam*	0 - 3	0
		Angle position for "thread clamp closed" at end of seam * Number of stitches (calculated backwards from the last stitch) till the thread clamp is started. (0 means last stitch)	0 - 127	80
	510	Angle position for "thread clamp open" at last needle penetration before trimming	0 - 127	120
511	Securing stitches before thread trimming	0 - 2	0	
512	Measuring point of the missed stitch detection function with thread strength display	0 - 127	115	
600	601	Move step motor clamp and needle		

Group	Parameter	Description	Setting range	Set value
600	602	Inputs: 0123456789ABCDEF Position on the Display 0: Not assigned 1: Not assigned 2: Nadel in den Stoff (NIS) 3: End knotting engaged (E16 - X5:7) 4: Error reset key S101 (E12 - X5:12) 5: Not assigned (E11 – X5:11) 6: Loading control discharge station B30 (E10 – X5:10) 7: Not assigned (E9 – X5:9) 8: Programmable input 1 (E8 – X5:16)) 9: Programmable input 2 (E7 – X5:15) A: Position clamp S26 (E6 – X5:14) B: Not assigned (E5 – X5:5) C: Clamp S24 (E4 – X5:4) D: Position discharge station S23 (E3 – X5:3) E: Reference needle (light barrier) F: Reference clamp (light barrier)	Meaning of the display value 0 - - - off▲ off▲ - engaged - - - off▲ - raised▲ off▲ connected connected	 1 - - on on - not engaged - - on - lowered on free free
		▲ = Basic position		

Adjustment

Group	Parameter	Description	Setting range	Set value
600	603	Outputs:	Meaning of the display value	
		Position on the Display	0	I
		1: Clamp up/down (X13:1)	raised▲	lowered
		2: Not assigned (X13:3)	-	-
		3: Thread clamp (X13:5)	open	closed▲
		4: Thread trimming (X13:6)	off▲	on
		5: End knotting (X13:7)	off▲	on
		6: Thread puller (X13:8)	off▲	on
		7: Thread wiper (X13:9)	off▲	on
		8: Rotary cylinder (X13:10)	off▲	on
		9: Loading cylinder (X13:11)	retracted▲	extended
		10: Swivel cylinder (X13:12)	clamp	discharge station▲
		11: Stop cylinder (X13:13)	retracted▲	extended
		12: Clamp open (X13:25)	closed▲	open
		13: Stem finger (X13:24)	forwards	backwards▲
		14: Not assigned (X13:16)	-	-
		15: Programmable output 1 (X13:17)	-	-
		16: Missed stitch lamp (X5:24)	off▲	on
		▲ = Basic position		
	604	Last engaging and disengaging positions for end knotting		
	605	Needle penetration point in fabric	0 - 127	43
	607	Turn sewing motor in direction of sewing		
	608	Carry out cold start		

Group	Parameter	Description	Setting range	Set value
600	610	Needle penetration points for adjustment 1: Centre 2: Max. penetration point right 3: Max. penetration point left 4: Button gauge: centre 5: Clamp closed 6: Lower clamp		
	611	Suppression thread trimming I = off, II = on	I, II	I
	612	Adjusting aid for zero position of sewing motor using synchronisation mark		0
	614	Set cutting position X on right	(-25) - 25	5
	615	Set cutting position X on left	(-25) - 25	8
	616	Button feed position 1: Clamp open / stem finger back 2: Retract stop cylinder / stem finger forwards 3: Close clamp 4: Lower loading cylinder 5: Swivel cylinder in station 6: Stop cylinder in stop position/raise loading cylinder 7: Turn rotary cylinder 8: Swivel cylinder in stop position  Only leave parameter in position "1"!		
700	701	P-quota speed controller	1 - 50	10
	702	I-quota speed controller	0 - 100	50
	703	P-quota position controller	1 - 50	20
	704	D-quota position controller	1 - 100	30
	705	Time for position controller	1 - 100	25
	706	P-quota position controller for rest brake	1 - 50	25
	707	D-quota position controller for rest brake	1 - 50	15
	708	Maximum moment for rest brake	0 - 100	0
	709	Minimum machine speed	3 - 64	6

Adjustment

Group	Parameter	Description	Setting range	Set value
700	710	Maximum machine speed	100 - 2000	2000
	711	Maximum motor speed	0 - 100	45
	712	Positioning speed	3 - 35	25
	713	Acceleration ramp	1 - 50	35
	714	Brake ramp	1 - 50	30
	715	Reference position	1 - 127	43
	716	Time-out	0 - 255	40
	717	Starting current motor	3 - 10	6
	718	Anti vibration filter	1 - 10	3
	719	Rotation direction allocation	0 - 1	1
	720	Reference position correction	0 - 127	64
800	801	Right of access function group 100	0 - 1 ■	0
	802	Right of access function group 200	0 - 1 ■	1
	803	Right of access function group 300	0 - 1 ■	1
	804	Right of access function group 400	0 - 1 ■	1
	805	Right of access function group 500	0 - 1 ■	1
	806	Right of access function group 600	0 - 1 ■	1
	807	Right of access function group 700	0 - 1 ■	1
	808	Right of access function group 800	0 - 1 ■	1
	809	Right of access key max. speed	0 - 1 ■	0
	810	Right of access key program number selection	0 - 1 ■	0
	811	Right of access key piece counter	0 - 1 ■	0
	812	Right of access F1 key	0 - 1 ■	0
	813	Right of access key two-hole button	0 - 1 ■	0
	814	Right of access key four-hole button	0 - 1 ■	0
	815	Right of access key three-hole button	0 - 1 ■	0
	816	Right of access key six-hole button	0 - 1 ■	0
	817	Right of access key program group A	0 - 1 ■	0
	818	Right of access key program group B	0 - 1 ■	0
	819	Right of access programming key	0 - 1 ■	0
	820	Right of access SD-memory card	0 - 1 ■	0

Group	Parameter	Description	Setting range	Set value
800	821	Enter access code (status on delivery: 3307)	0 - 9999	3307

- 0 = free access, 1 = access only with code input

13.49 Description of the error messages

Display	Description
Error 1	System error
Error 2	Sewing motor ERROR 2/BB/xxx BB = 30: Timeout 20: Dead man 10: Speed 0B: StopX 0A: Reset stitch counter 09: Write parameter 05: Positioning sewing head shortest route 03: Positioning sewing head in reverse 02: Positioning sewing head forwards xxx = Error in sewing motor control unit, see Chapter 13.50 Sewing motor errors
Error 3	Input insert plate at front (E6 –X5:14)
Error 4	Missed stitch detection with number of missed stitch 0: Error during initialisation of missed stitch detection
Error 5	Input Clamp lowered (E4 –X5:4) "Switch clamp" locked, as main drive not in raised position.
Error 6	Time monitoring while running through sewing program
Error 7 - 1 Error 7 - 2 Error 7 - 3 Error 7 - 4 Error 7 - 5	Stepping motor motion: Delay X not ready Delay Y not ready Delays X and Y not ready Ramp X not ready Ramp Y not ready
Error 8	Stitch length
Error 9	Sewing figure outside area
Error 10 - 1 Error 10 - 2 Error 10 - 3 Error 10 - 4 Error 10 - 5 Error 10 - 6 Error 10 - 7 Error 10 - 8 Error 10 - 9 Error 10 - 10 Error 10 - 11 Error 10 - 12 Error 10 - 13 Error 10 - 14	Error when moving to home position Outputs not ready Raise clamp Insert position not reached Blind stitching and input "blind stitching on" = 0 No blind stitching and input "blind stitching on" = 1 or input "insert plate at front" = 1 Pedal operated X-centre not reached X-centre not left Y-centre not reached Y-centre not left Time monitoring home test Absolute position – 0.3 not reached home test Absolute position + 0.6 not reached home test Needle raised position not reached
Error 11	Stepping motor step frequency too high
Error 12	Error in sewing program

Display	Description
Error 13	Stepping motor – targeted position outside sewing area
Error 14 - 3	Time monitoring outputs
Error 14 - 6	Thread clamp
Error 14 - 10	Thread puller
Error 14 - 15	Material shift
Error 14 - 16	Programmable output 1
Error 15	Programmable output 2
Error 15	Input not incoming
Error 16	Non-permissible delay when sewing drive in operation
Error 17	Cutting without previous sewing
Error 18	Incorrect command in data set
Error 19	Incorrect program number
Error 20	Not assigned
Error 21	Power unit overloaded (24 V)
Error 22	Mains voltage
Error 23	Power unit 24 V too low
Error 24	No stepping motor motion prepared (NIS)
Error 25	Stepping motor still not started (NIS)
Error 26	Input blind stitching off (E5 – X5:5)
Error 27 - 1	Error in SD-memory card reader
Error 27 - 2	No SD-memory card inserted
Error 27 - 3	Wrong card (does not match the 3307)
Error 27 - 4	Card not inserted correctly
Error 27 - 5	Card with write protection
Error 27 - 6	Data error on SD-memory card
Error 27 - 7	Formatting failed
Error 27 - 8	File does not match the 3307
Error 27 - 9	Incorrect file size
Error 27 - 10	Transfer error
Error 28 - 1	Data could not be deleted
Error 28 - 1	Button feed
Error 28 - 2	Clamp not raised
Error 28 - 3	Loading position S1 not reached
Error 28 - 4	Stop position S2, or basic position S3 not reached
Error 29 - 1	Loading control (button not in position)
Error 29 - 1	CAN-error
Error 29 - 2	Timeout
Error 29 - 4	Incorrect answer
Error 30	Data lost
Error 30	Error end knotting with penetration point number

13.50 Sewing motor errors

Number	Description
33	Invalid parameter value
34	Brake path too short
35	Communication error
36	Init not ready
37	Command overrun
64	"Mains off" during initialisation
65	Excess current directly after "mains on"
66	Short circuit
68	Excess current during operation
69	No increments
70	Motor stalling
71	No incremental plug
73	Fault in motor operation
74	Incremental transducer missing for transmission/reduction
75	Regulator blocked
170	Invalid transmission
171	Invalid zero mark
173	Motor blocked in 1st stitch
175	Interior starting error
222	Dead man monitoring

13.51 Internet update of the machine software

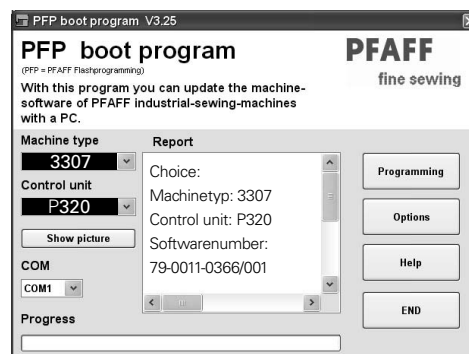
The machine software can be updated with PFAFF flash programming. For this purpose the PFP boot program (from **version 3.25** on) and the appropriate control software for the machine type must be installed on a PC. The transfer of the data to the machine can be carried out with a null modem cable (part no. **91-291 998-91**) or with an SD-card. The SD-card must be formatted in the **FAT16** format and must not exceed a capacity of **2 GBytes**.



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/pfaff/de/service/downloads

13.51.01 Update with null modem cable

- After downloading the PFP tool and the control software, open the PFP program.
- Select the **machine type** and under control unit **P320**.
- The software version is displayed under **report**.



- Switch off the machine.
- Connect the PC (serial interface or appropriate USB-adaptor) and the machine control unit (**RS232**). To do so disconnect the plug of the control panel.



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

- Switch on the machine, keeping the boot key **1** pressed.
- 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 updating process 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.

Adjustment

- Switch on the machine
- A plausibility control is carried out and, if necessary, a cold start.

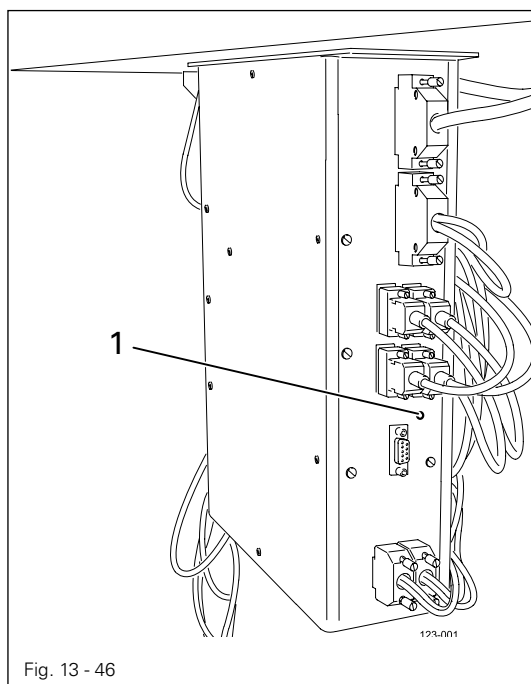


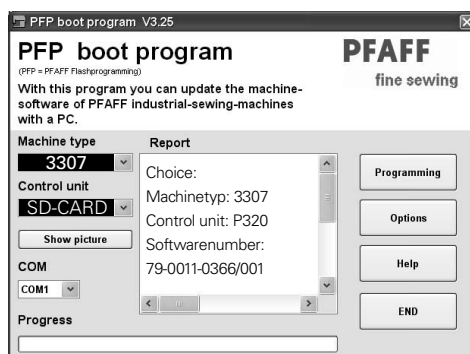
Fig. 13 - 46



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

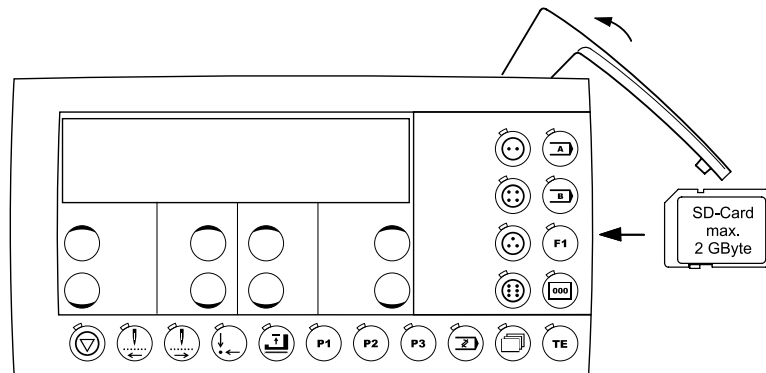
13.51.02 Update with SD-card

- After downloading the PFP tool and the control software, open the PFP program.
- Select the machine type and under control unit SD-CARD.
- The software version is displayed under report.



- Under programming copy the software to the drive with the SD-card.

- With the machine switched off insert the SD-card into the control panel.



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!

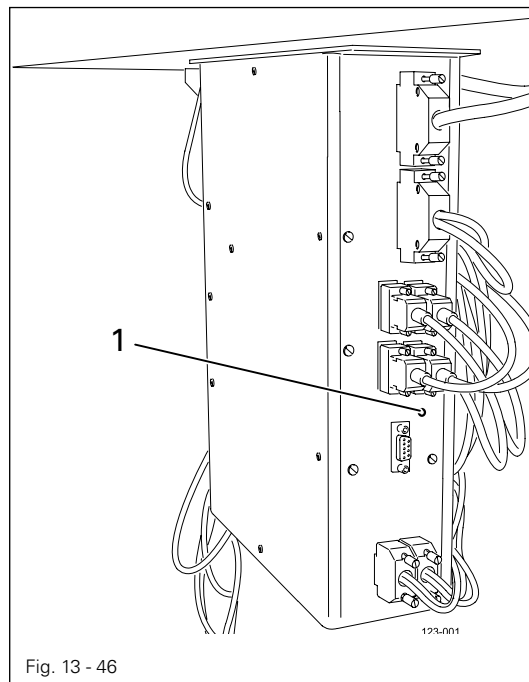


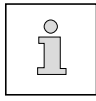
Fig. 13 - 46

- Switch on the machine, keeping the boot key 1 pressed.
- Press the "TE" key.
The software update is carried out. During the updating process the diode in the memory card slot flashes.
- During the updating process the machine must not be switched off.
- When the update has been completed, switch off the machine and remove the SD-card.
- Switch on the machine
- A plausibility control is carried out and, if necessary, a cold start.

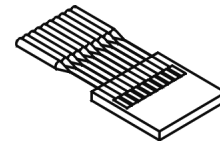
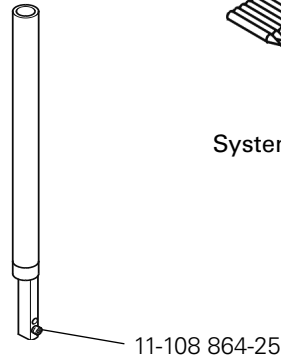
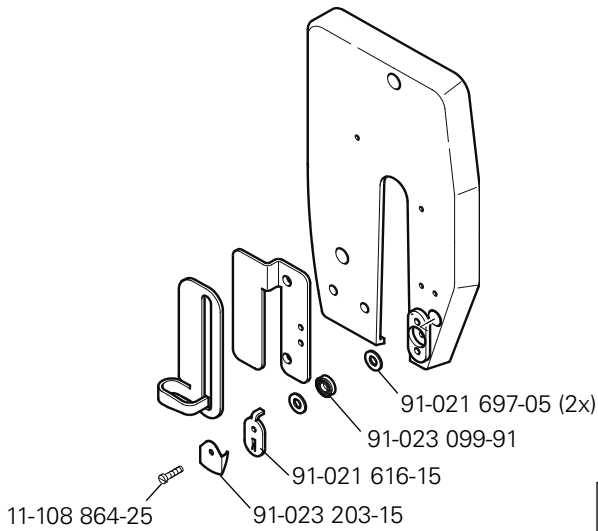


More information and assistance is at your disposal in the file "PFPHILFE.TXT", which can be called up from the PFP boot program by pressing the "help" button.

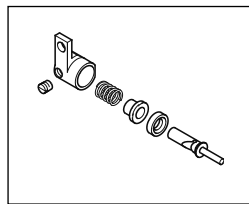
This is a list of the most important wearing parts.



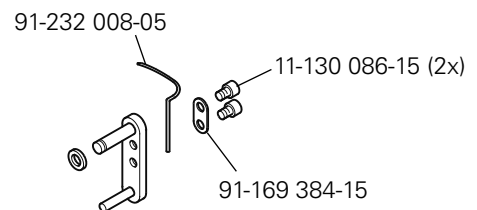
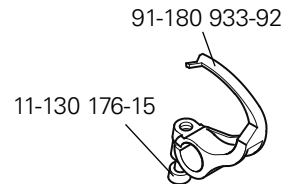
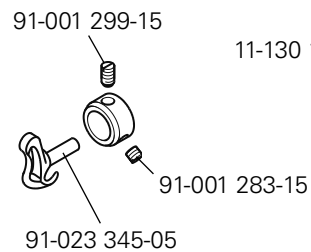
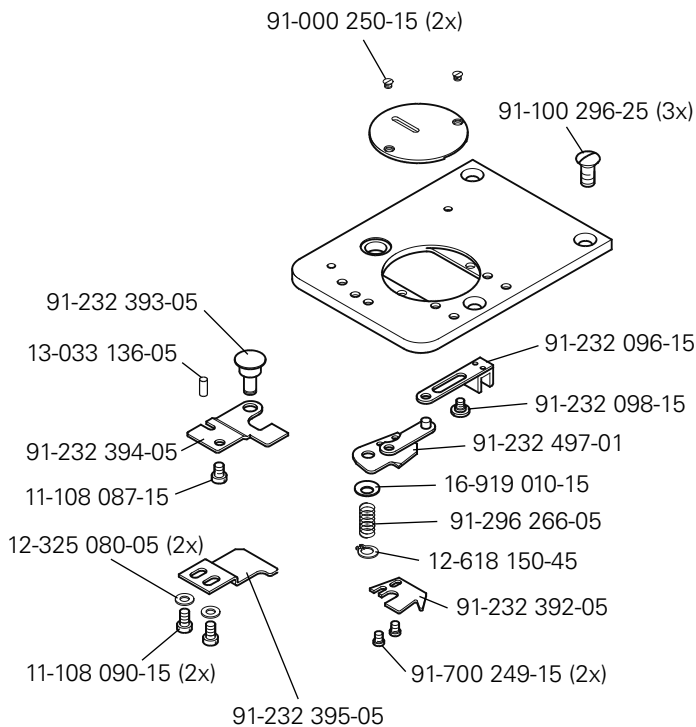
A detailed parts list for the complete machine is included with the accessories. In case of loss, the parts list can be downloaded from the internet address www.pfaff-industrial.com/pfaff/de/service/downloads. As an alternative to the internet download the parts lists can also be ordered in book form under part no. 296-12-19 032.



System 134-35

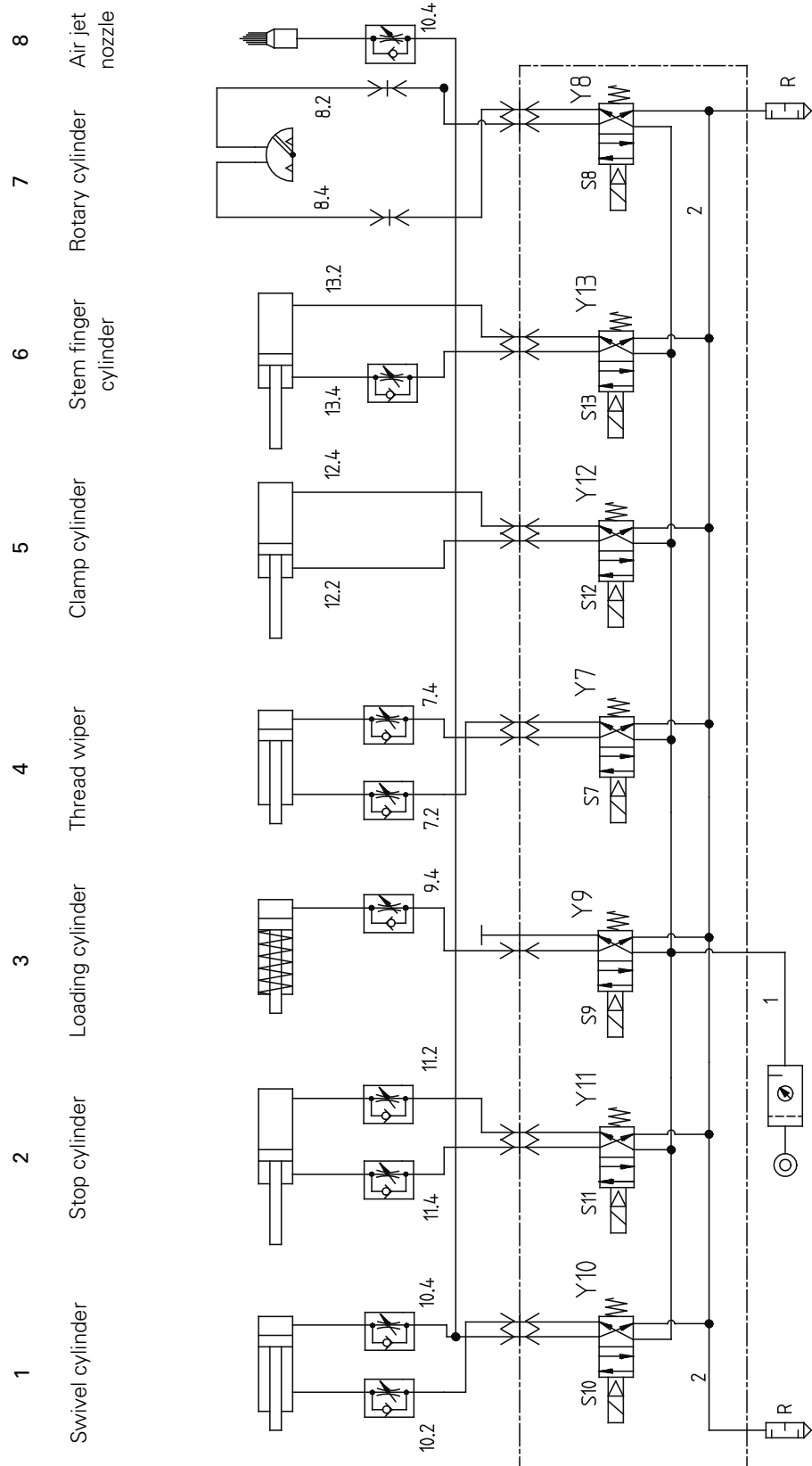


91-232 763-91



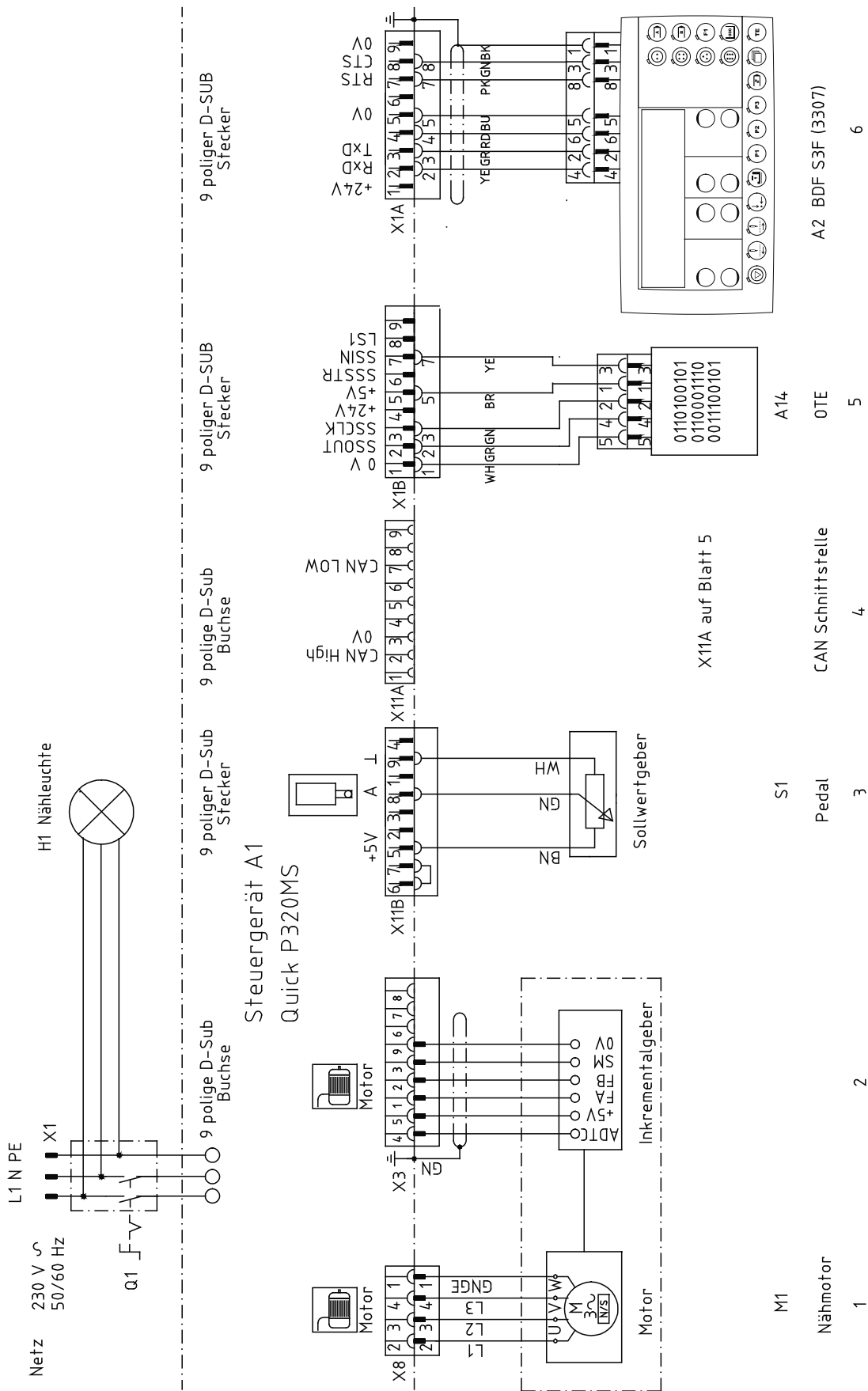
15 Pneumatics-switch diagram

The control elements and valves are in the machine's basic position. Main switch -ON, compressed air -ON



Reference list for circuit diagrams

A1	Controller Quick P 320MS	X21	Stepping motor button clamp
A2	Control panel BDF- S3 F	X24	Key button clamp lowered
A14	Sewing head recognition system (OTE)	X40	Hybrid light barrier needle reference
A100	Thread strength- module	X41	Hybrid light barrier button clamp reference
A110	Thread strength – alarm + reset	X51	Clamp open
B2	Hybrid light barrier needle reference	X53	Thread clamp
B3	Hybrid light barrier clamp reference	X54	Thread trimming
B30	Loading control	X55	End knotting
B100	Thread strength sensor	X56	Thread puller
H1	Sewing lamp	X101	Thread strength – module sensor + supply
H101	Lamp – alarm	X102	Thread strength – module CAN interface
M1	Sewing motor	X103	Thread strength – module RS232
M2	Stepping motor needle	X110	Thread strength – alarm + reset
M3	Stepping motor button clamp	X111	Thread strength – sensor
Q1	Main switch	X112	Thread strength – tension supply
S1	Pedal speed control unit	Y1	Clamp open
S23	Basic position button feed	Y3	Thread clamp
S24	Key button clamp lowered	Y4	Thread trimming
S26	Loading position	Y5	End knotting
S36	Solenoid switch end knotting	Y6	Thread puller
S101	Key – reset	Y7	Thread wiper
X1	Mains plug	Y8	Rotary cylinder
X1A	Control panel BDF S3 F	Y9	Loading cylinder
X1B	Sewing head recognition system (OTE)	Y10	Swivel cylinder
X3	Incremental transmitter (sewing motor)	Y11	Stop cylinder
X4A	Stepping motor needle and hybrid light barrier	Y12	Stem finger
X4B	Stepping motor button clamp and hybrid light barrier	Y13	Stem long
X5	Inputs		
X8	Sewing motor		
X11A	CAN interface		
X11B	Pedal speed control unit		
X13	Outputs		
X20	Stepping motor needle		

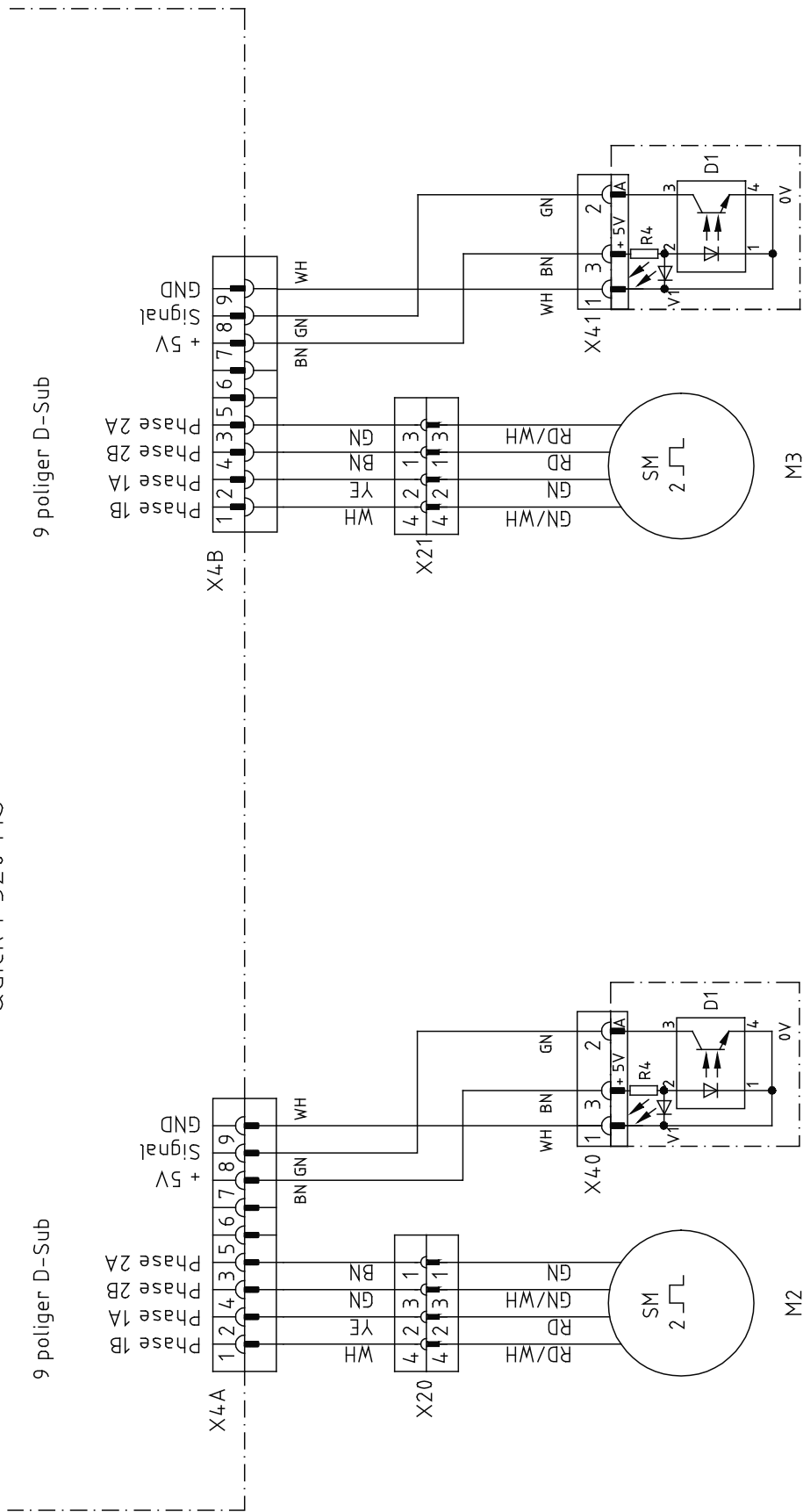


X11A auf Blatt 5

M1	Nähmotor	1
S1	Pedal	3
A14	CAN Schnittstelle	4
OTE		5
A2 BDF S3F (3307)		6

Steuergerät A1
Quick P320 MS

Schrittmotoren



Klammerreferenz
Gabellichtschranke

10

Knopfklammer

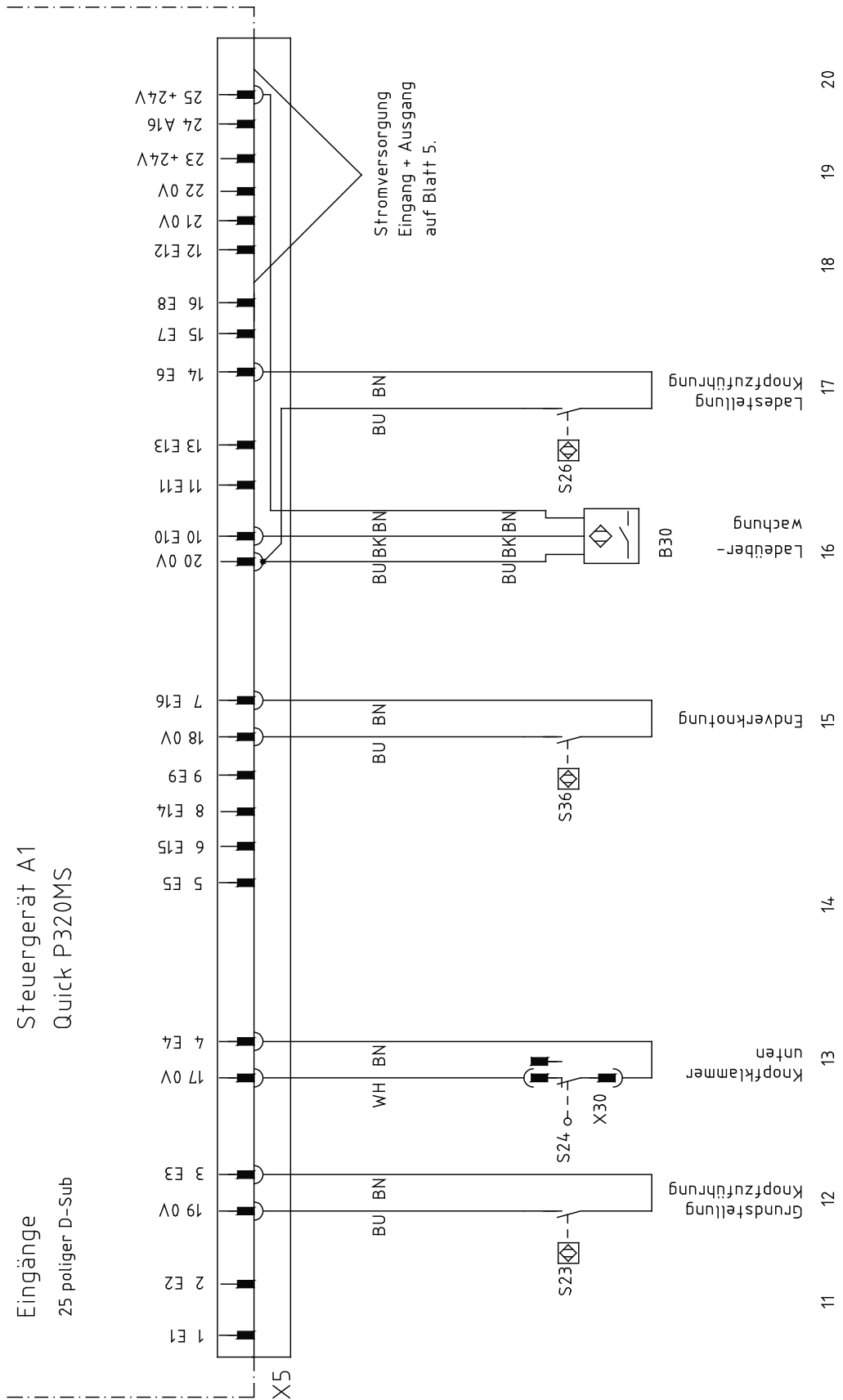
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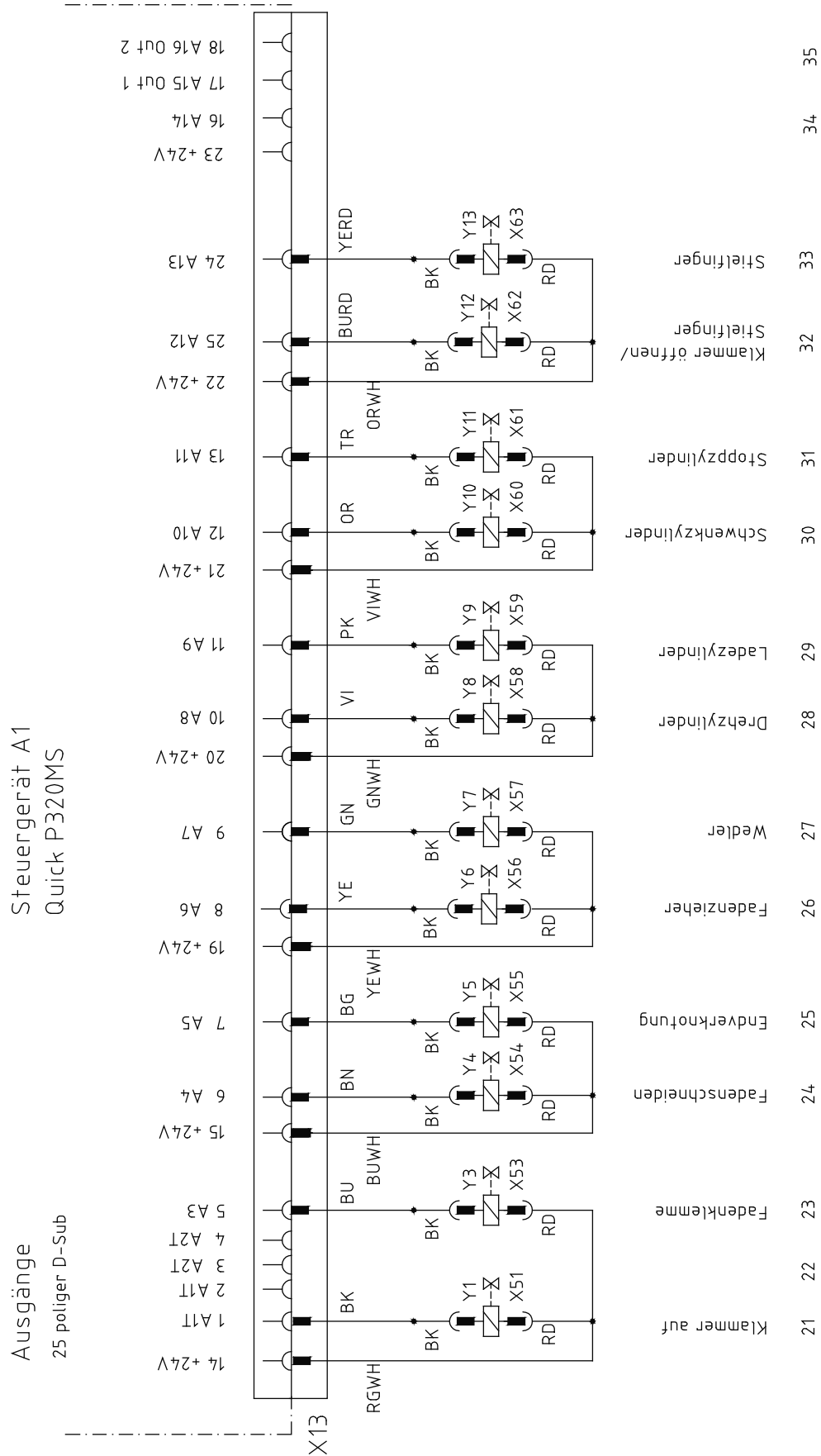
Nadelreferenz
Gabellichtschranke

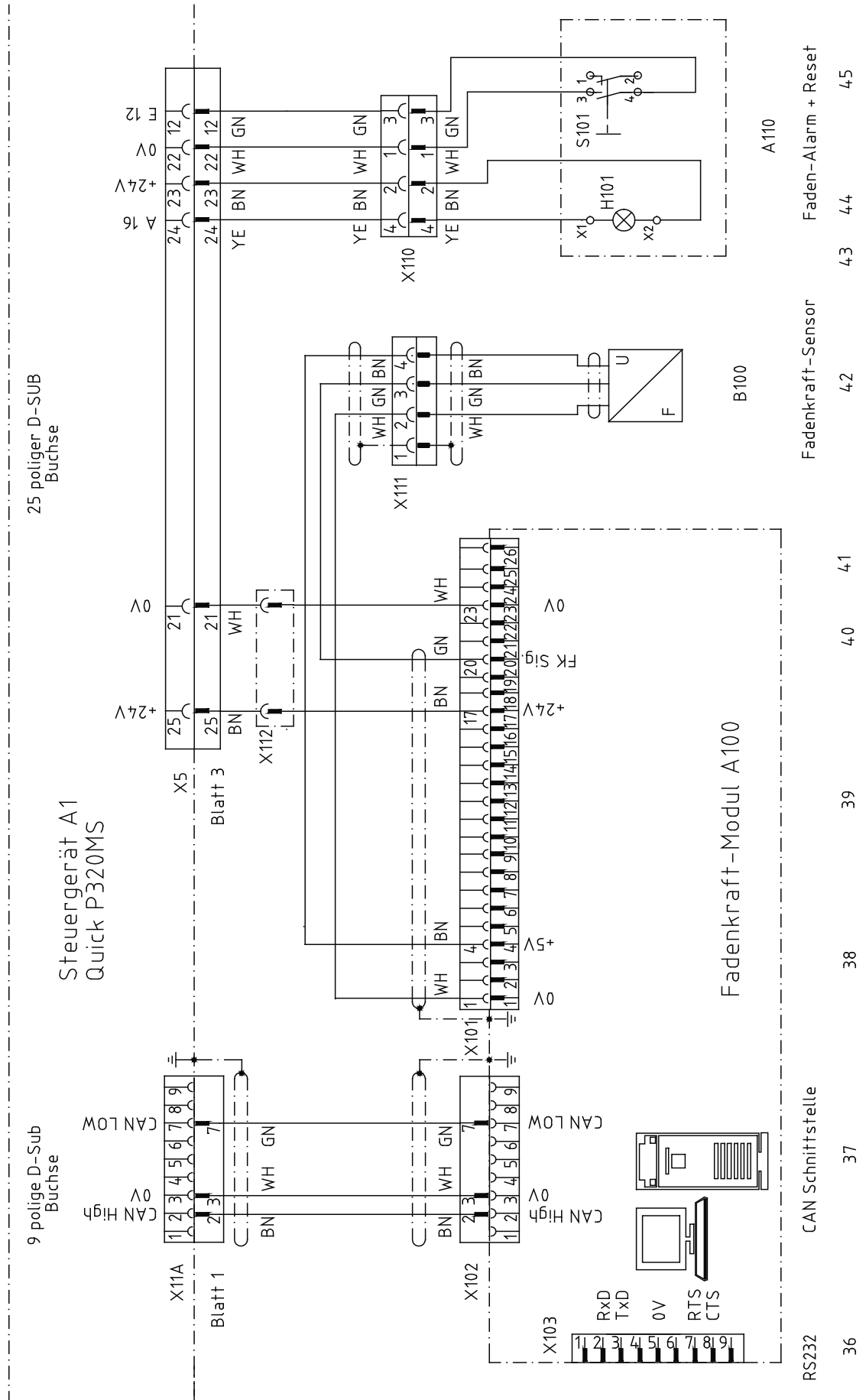
8

Nadel

7









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Printed in Germany