

PFAFF

3307^{-1/..} ^{-4/..}

Instruction manual

This instruction manual applies to machines from
software version onwards

PFAFF # 2679260 →



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

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1 Safety

1.01 Regulations

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

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

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

1.02 General notes on safety

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

1.03 Safety symbols



Danger!
Special points to observe.



Danger of injury to operating or technical staff!



Electric voltage!
Danger to operating or technical staff!



Caution

Do not operate without finger guard and safety devices.
Before threading, changing the needle, cleaning etc.,
switch off the 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!

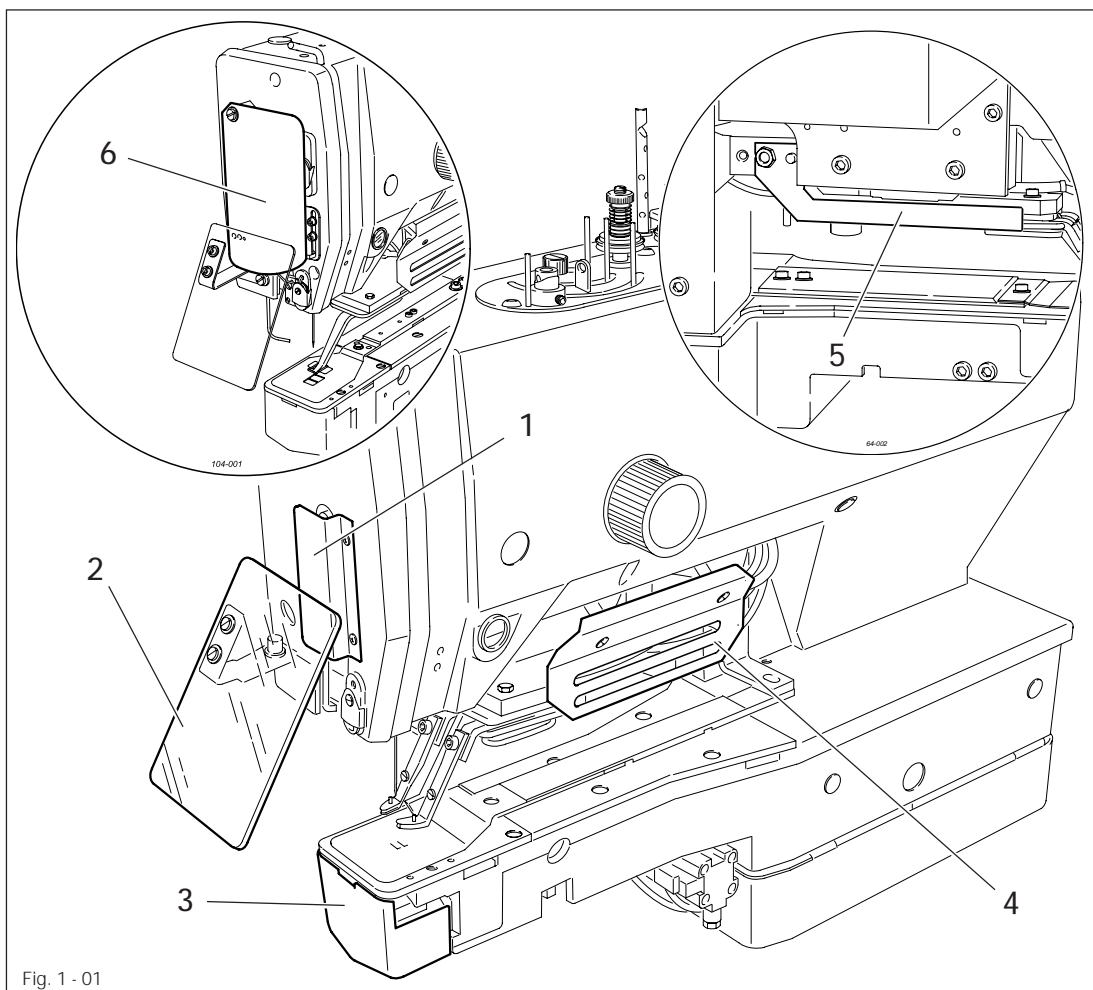


Fig. 1 - 01



Do not use the machine without take-up lever guard 1 (subclasses -1/..), or only with cover 6 closed (subclass -4/..).
Danger of injury through the movement of the 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/.. is used for attaching buttons to articles of clothing automatically.
The PFAFF 3307-4/.. is used for automatic basting stitch work 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!

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:	~1,2 l / work cycle
Noise data:	
Noise emission level at workplace with a sewing speed of 1800 spm	
Sewing cycle 2.5 sec. on and 2.5 sec. Off:	$L_{pA} = 68,5 \text{ dB(A)} \blacksquare$
(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. 450 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. 45 kg
Needle system:	
Sub-class -1/01 and -1/11	134 - 35
Sub-class -1/02, -1/03 and -4/..	190
Needle size for fine materials:	70 - 100
Needle size for medium-weight materials:	100 - 120

* Depending on cut-out size of bed plate

▲ Subject to alterations

■ $K_{pA} = 2.5 \text{ dB}$

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

All machines are delivered completely packed.

5.02 Transportation inside the customer's premises

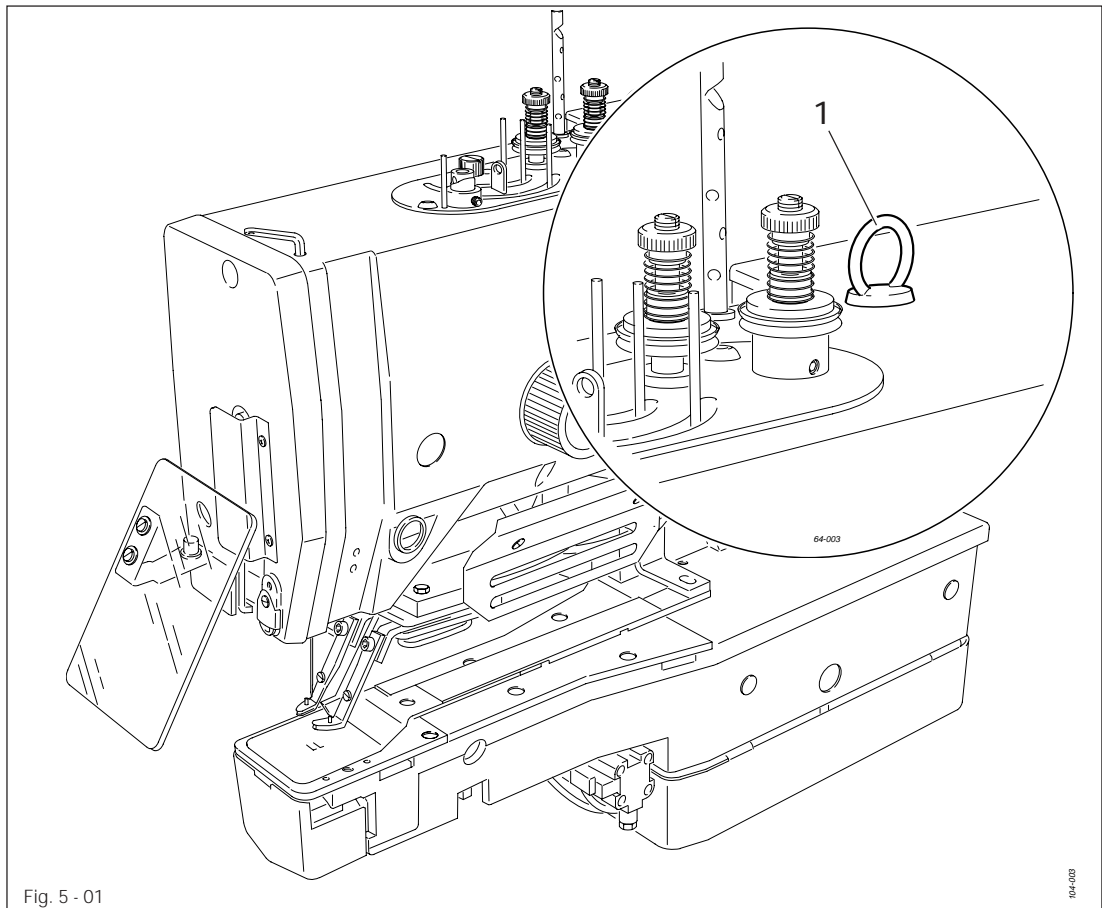


Fig. 5 - 01

The manufacturer cannot be made liable for transportation inside the customer's premises, nor to other operating locations. Care must be taken that the machine is transported in an upright position. To lift the machine with a suitable lifting appliance, lifting ring 1 delivered with the machine can be screwed into the threaded hole on the machine.

5.03 Disposal of packing materials

The packing materials of these machines consist of paper, cardboard and VCE-fibre. Proper disposal of the packing material is the responsibility of the customer.

5.04 Storage

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

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

6 Explanation of symbols

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



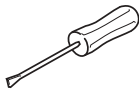
Note, information



Cleaning, care



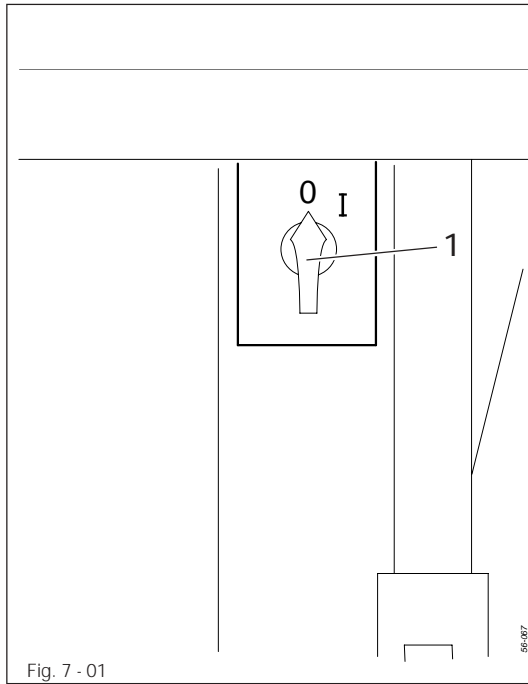
Lubrication



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

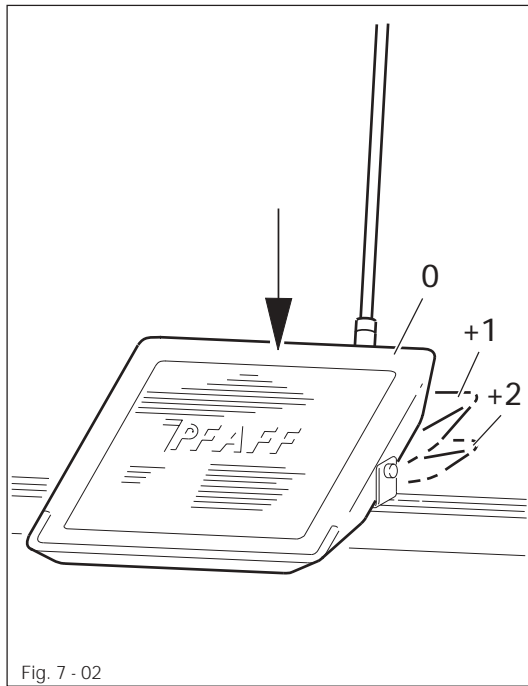
7 Controls

7.01 Main switch



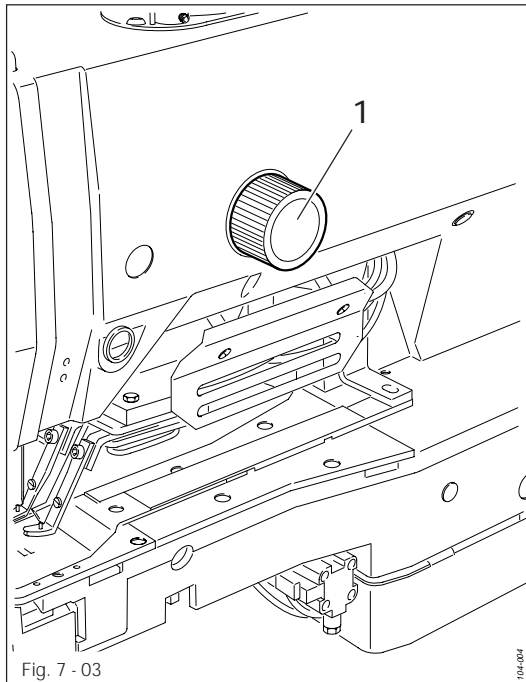
- The machine is switched on or off by turning the main switch 1.

7.02 Pedal



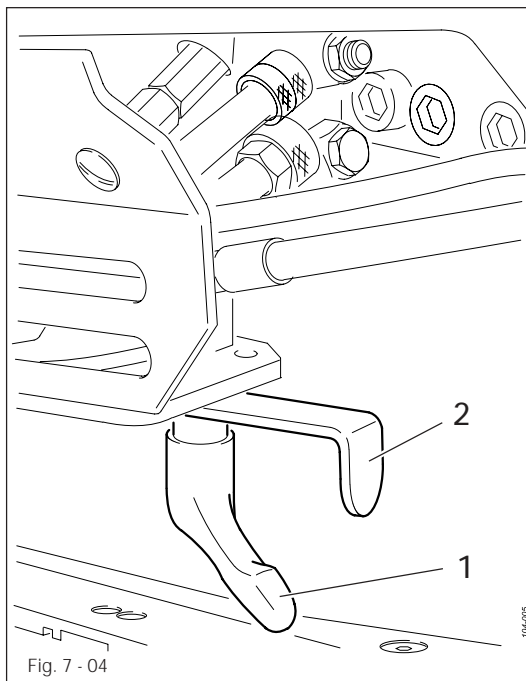
- 0 = Neutral position
- +1 = Lower button clamp
- +2 = Sewing

7.03 Balance wheel



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

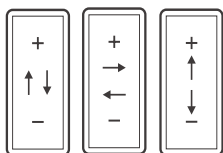
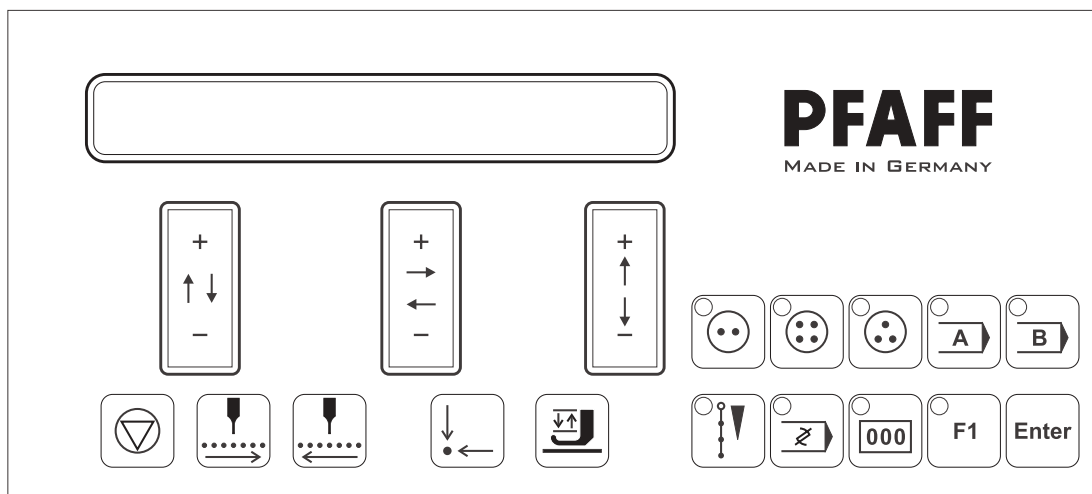
7.04 Adjusting the button clamp (only sub-class -1/..)



- After loosening T-screw 1, with sliding bar 2 the button clamp is adjusted to match the button size, see Chapter 9.05 **Adjusting the button clamp to the button size.**

Control panel

The keys on control panel 1 are used for selecting machine functions for setting-up purposes, for sewing operations and for entering parameters.



Plus/minus keys

- The values shown on the display can be increased or reduced on the respective key with the use of these keys.



Stop

- When operated during a sewing cycle, the machine is stopped.
- When entering the code number this key corresponds to the figure 0.



Tacting forwards/tacting backwards

- Step-by-step movement through the entire sewing cycle forwards or backwards.



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 parameter (sewing mode switched off), the group level of the parameter list is selected (100, 200, ..., 800).



Button clamp raised/lowered

- In the sewing mode the button clamp is raised/lowered.
- When entering the code number this key corresponds to the figure 6.



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- or three-hole button) can be selected.
- When entering the code number these keys correspond to the figures 1, 2 or 3.



Program group A

- When entering the code number this key corresponds to the figure 4.



Program group B

- When entering the code number this key corresponds to the figure 5.



Sewing mode/parameter input

- With this key it is possible to switch from the sewing mode (LED on) and the parameter input mode (LED off).



Entering the seam pattern

- If this key is pressed the seam pattern function is switched on or off, see Chapter 11.01 or 11.02 Entering the seam pattern.
- When entering the code number this key corresponds to the figure 7.



Piece counter

- If this key is pressed the piece counter is reset (LED has no function).
- When entering the code number this key corresponds to the figure 8.



F1 key

- This key is reserved for special functions.
- When entering the code number this key corresponds to the figure 9.

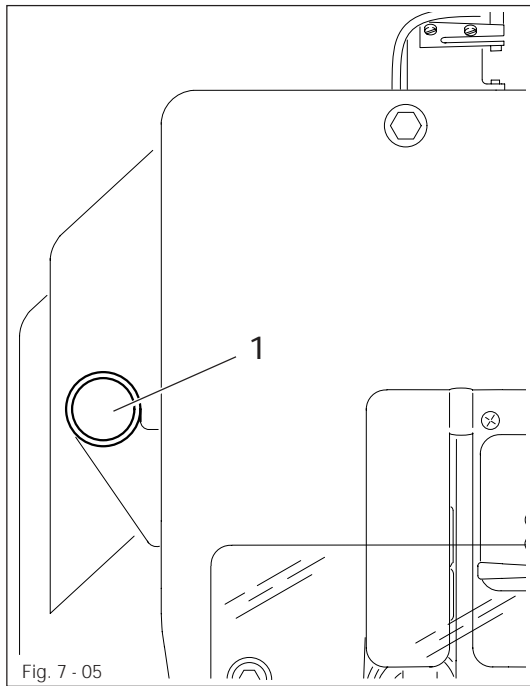


Enter

- This key is used to confirm inputs and acknowledge error corrections.

7.06

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.

8 Installation and commissioning



The machine must only be installed and commissioned by qualified personnel!
All relevant safety regulations must be strictly adhered to!
If the machine is delivered without a table, be sure to use a stand and table top that can hold the weight of the machine with its motor.
It is very important to ensure that the stand of the machine is firm and steady, also during sewing.

8.01 Installation

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

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



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

8.01.01 Adjusting the table height

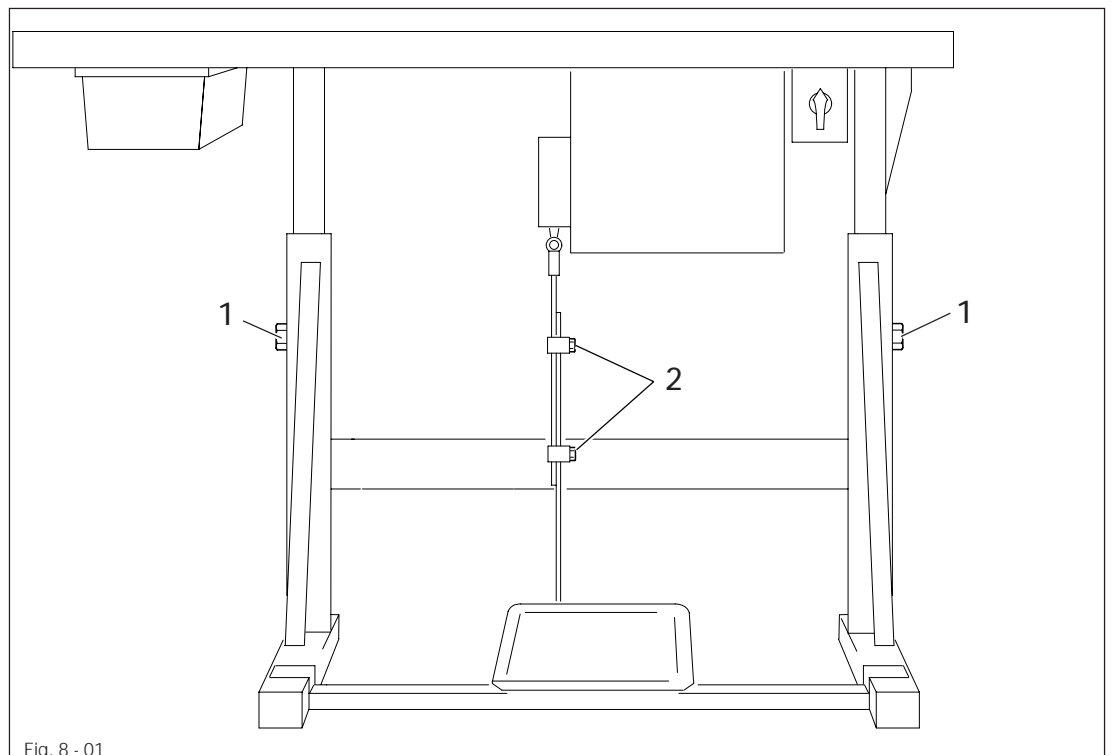


Fig. 8 - 01

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

8.01.02 Drilling template for the table-top

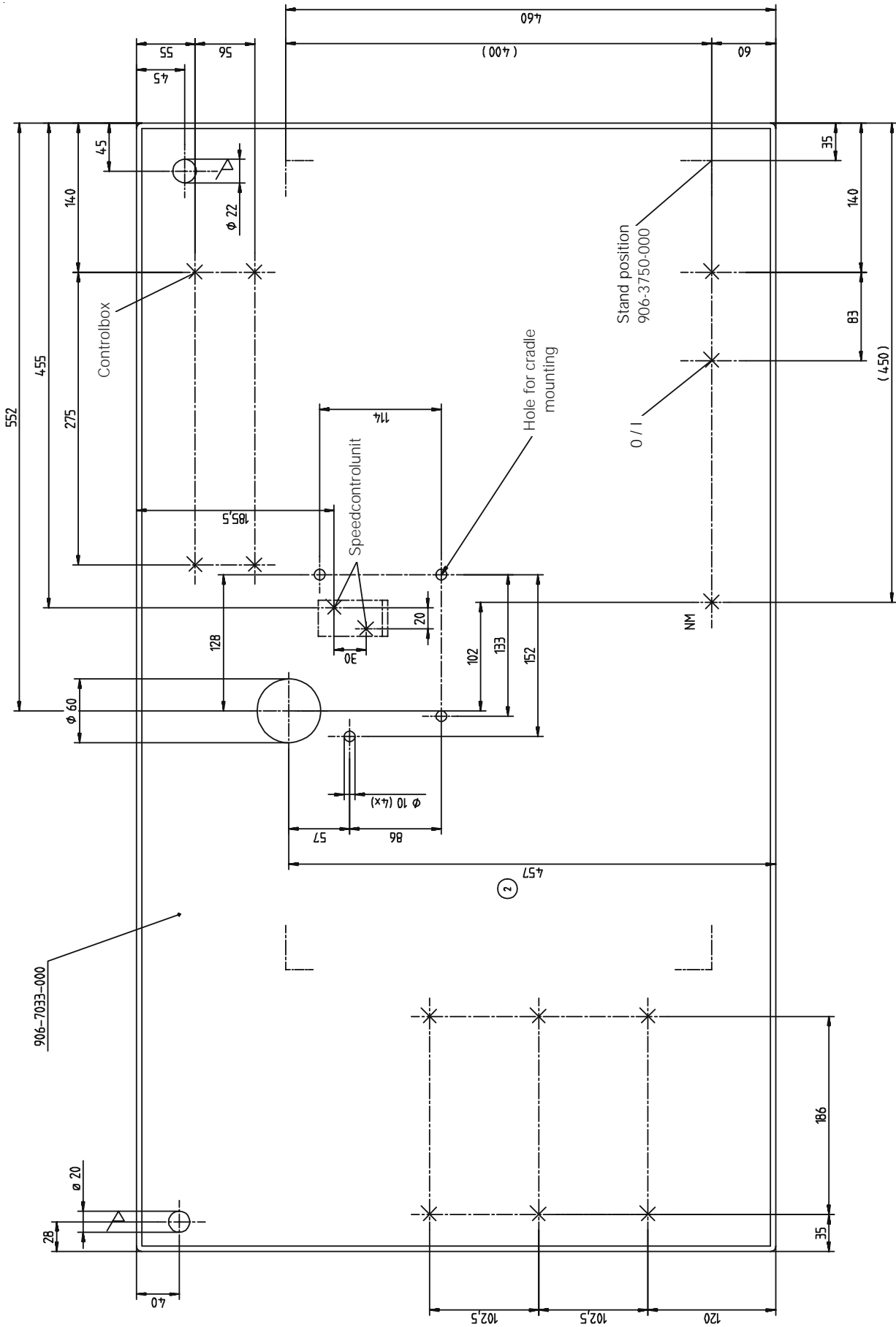
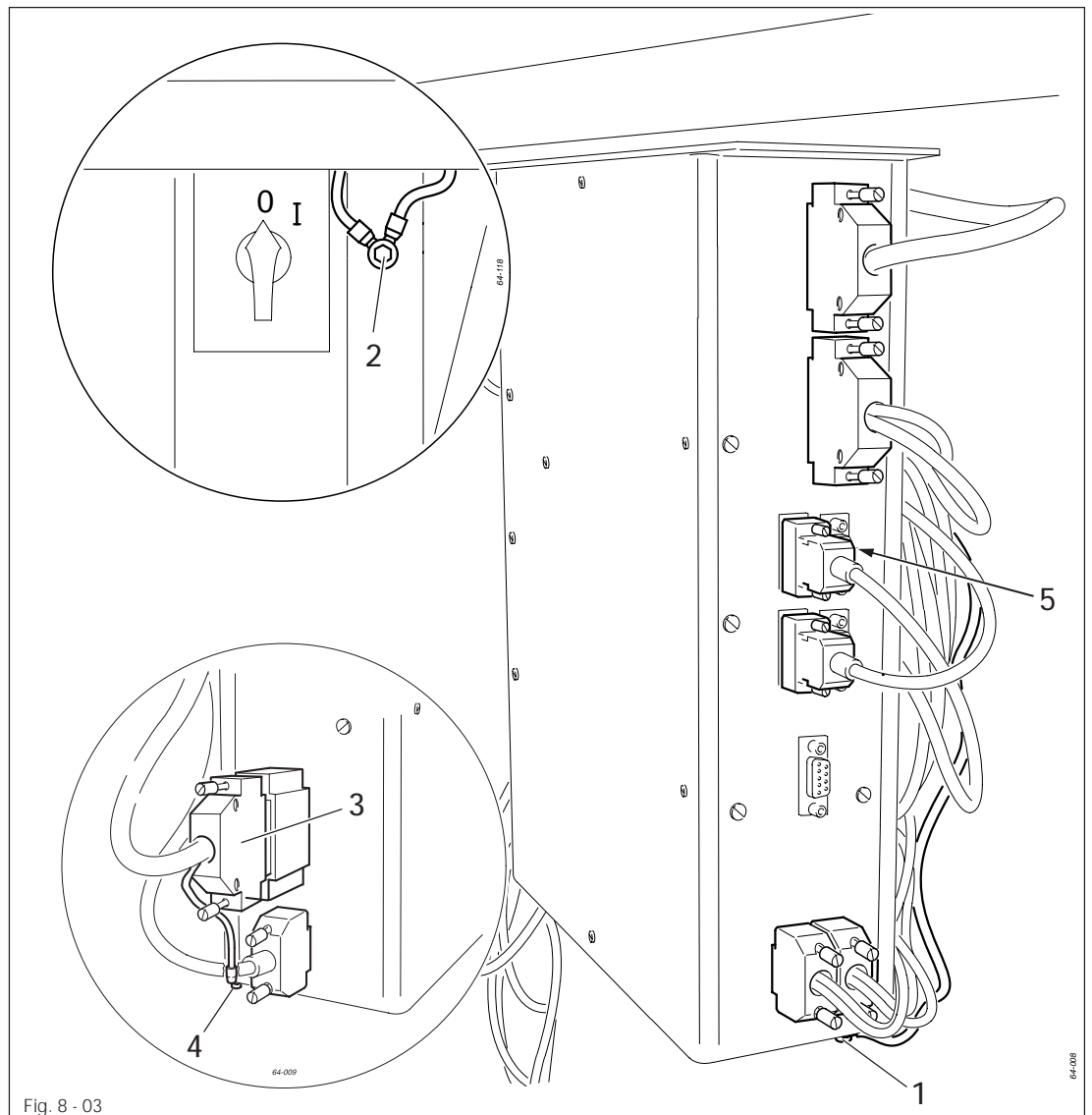


Fig. 8 - 02

8.01.03 Connecting the plug-in connections and earth cable

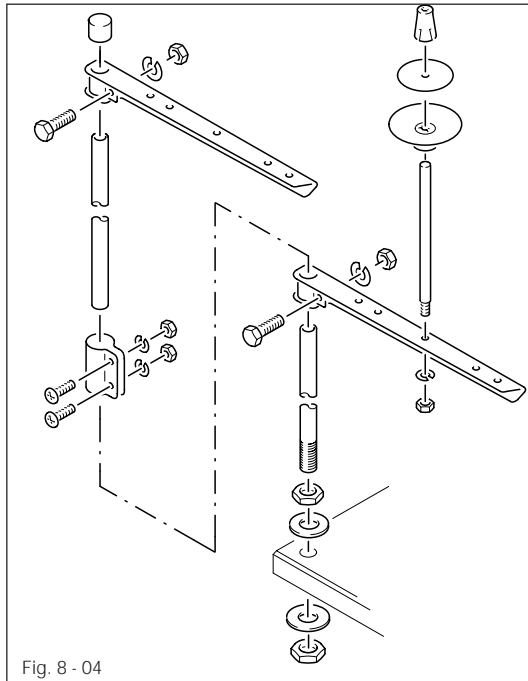


- Connect all plugs as labelled in the control box.
- Screw the machine's earth cable to earth point 1.
- Fasten the earth cable of the main switch and of the control box to the frame with screw 2.
- Screw the earth cable of plug 3 to earth point 4.



The serial interface 5 is used to transfer data between the PC and the machine control unit (e.g. for software updates, work with the SAM and OSCA programs).

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 12.04 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 the machine on or off (see Chapter 7.01 Main switch).

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"

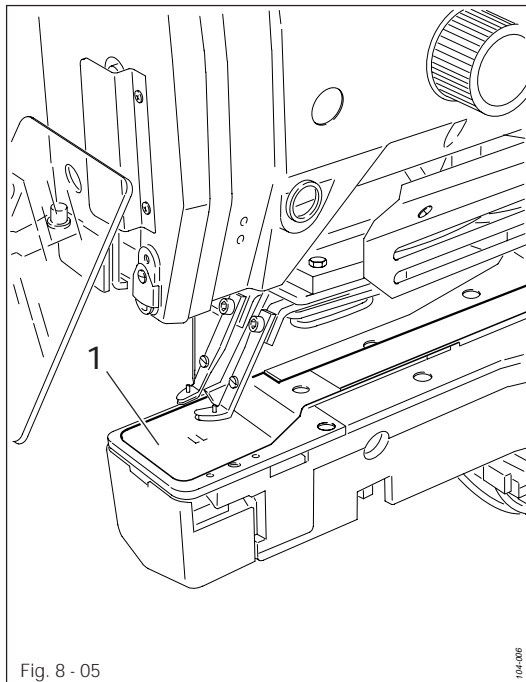


Fig. 8 - 05

- 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".

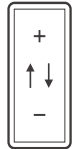
Value for parameter "204"	Bed plate cut-out size	Seam pattern size
1	7 mm x 7 mm	5 mm x 5 mm
2	8 mm x 8 mm	6 mm x 6 mm
3	9 mm x 9 mm	7 mm x 7 mm
4	10 mm x 10 mm	8 mm x 8 mm
5	11 mm x 11 mm	8 mm x 9 mm
6	10 mm x 14 mm	8 mm x 12 mm

8.04.02 Changing parameter "204"

- Switch on the machine.



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



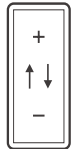
- Using the corresponding **plus/minus** key select the function group "200".

200



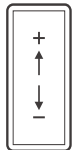
- Confirm selection with **Enter**.

- Enter the code, see [Chapter 11.03.02 Entering/altering the access code](#).



- Using the corresponding **plus/minus** key select the parameter "204".

204 1



- Using the corresponding **plus/minus** key select the value established for the seam pattern size, see [Chapter 8.04.01 Establishing the value for parameter "204"](#).

204 2



- Conclude parameter input by switching to the sewing mode.

9

Setting up



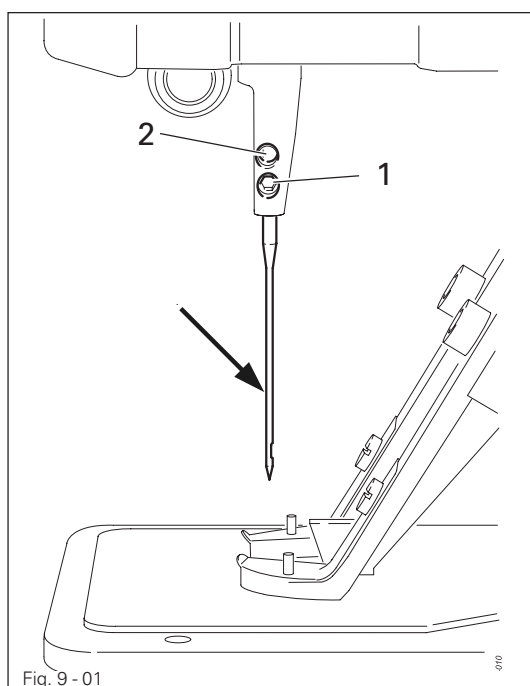
All instructions and regulations in this instruction manual must be observed. Special attention must be given to all safety regulations!



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.

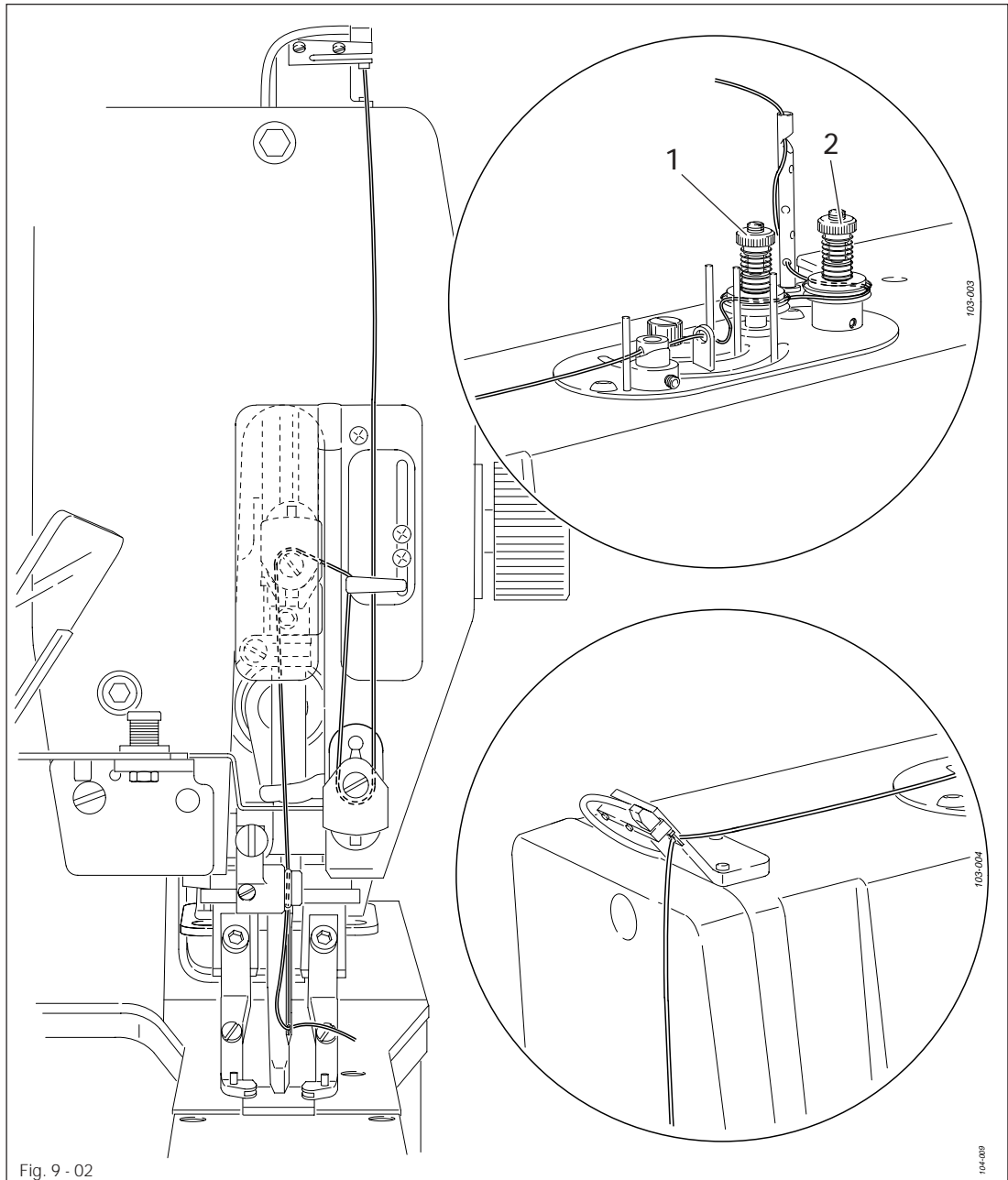


Fig. 9 - 02



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.

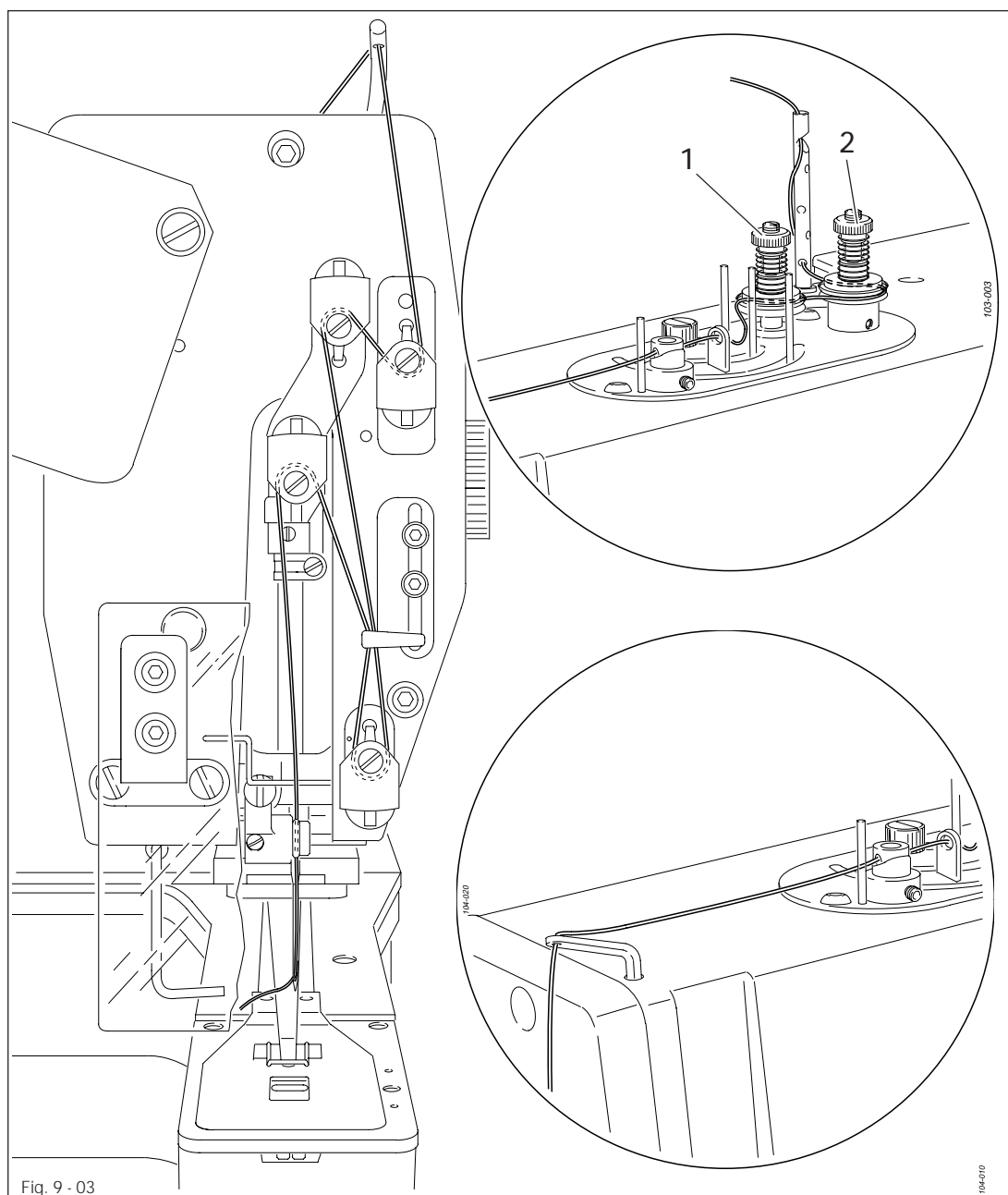


For thin, soft materials a lower thread tension is required, for thicker fabrics a higher thread tension.



Thread the needle from the front!

9.03 Threading the needle thread (Sub-class -4/..)



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

- Thread needle thread as shown in **Fig. 9-03**.
- 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!

9.04 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 or 11.02 Seam pattern input.

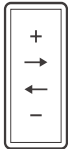
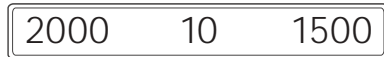
- Switch on the machine.
The sewing mode is activated automatically.



- On machines from subclass -1/... select the desired button type with the corresponding key.
or

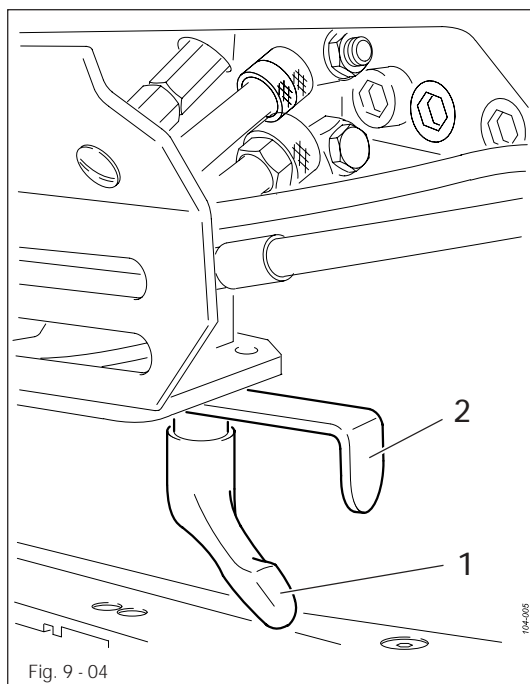


- On machines from subclass -4/... the three-hole button must be selected to activate the basting function.



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

9.05 Adjusting the button clamp to the button size (only for sub-class -1/...)



- Loosen T-screw 1.
- Open the button clamp with sliding bar 2 and insert the button.
- Move sliding bar 2 to the right and tighten T-screw 1.



The button must fit easily into the button clamp, but without play.

10

Sewing



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

10.01

Sewing with sub-class -1/..

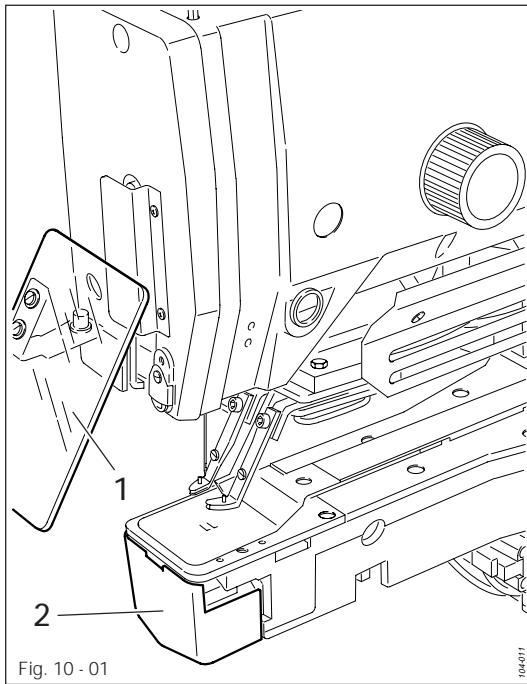


Fig. 10 - 01



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!

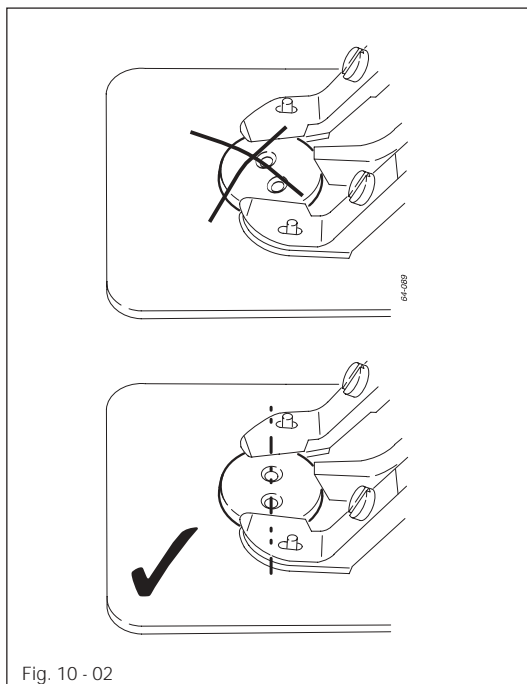


Fig. 10 - 02

- 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 9.04 **Selecting the button type and program number.**
- Insert the button in the button clamp as shown in the illustration.
- Place the material under the button.
- Lower the button clamp with the pedal and start the sewing operation, see Chapter 7.02 **Pedal.**

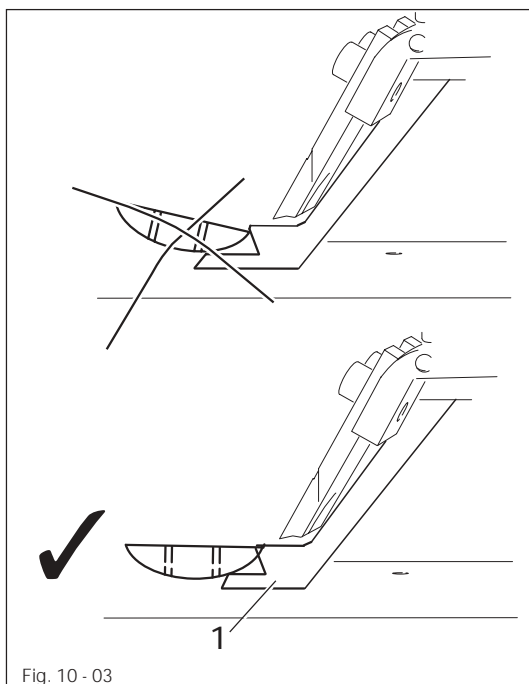


Fig. 10 - 03



Danger of needle breakage!
Make sure that the button is placed in a level position in the button clamp!

- If the button cannot be placed in a level position, the button guide 1 must be appropriately re-machined.

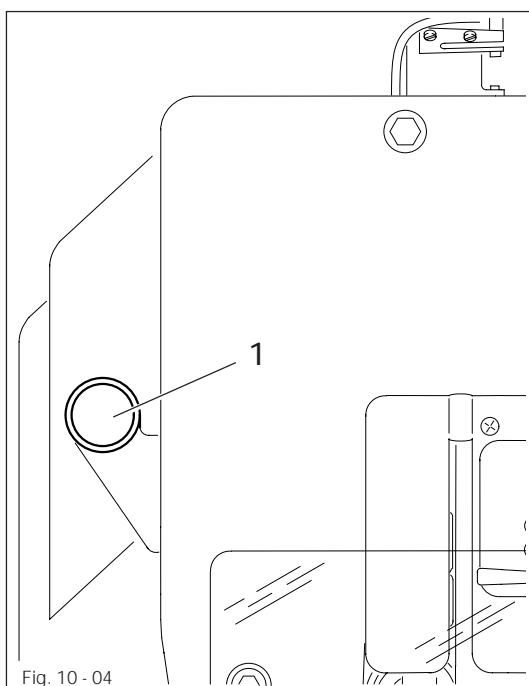


Fig. 10 - 04

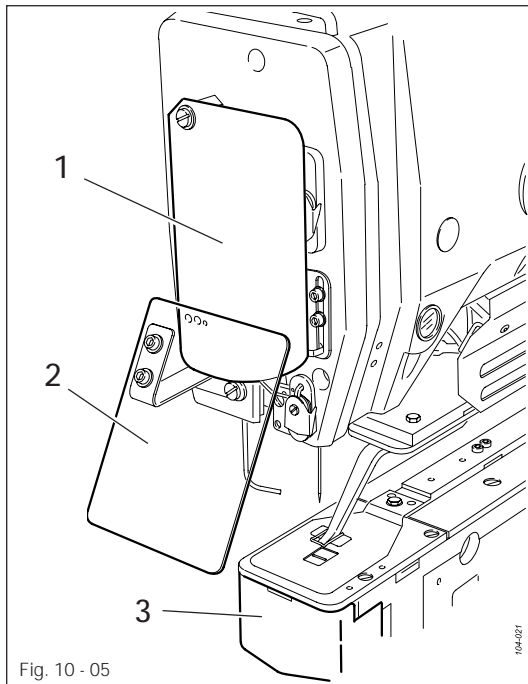
The machine is equipped with a missed stitch detection function, which helps to control the sewing process. If an error occurs, key 1 lights up. The machine start function is blocked.

Following work steps must be carried out:

- Remove the workpiece.
- Press key 1 (lamp goes off).
- Remove the button, place button and material in position again and restart the sewing process.



An error signal can be caused e.g. by an incorrectly positioned button or by an incorrectly set needle. If key 1 still lights up, the machine adjustment must be checked by qualified staff.



Only operate the machine with cover 1 closed!

Danger of injury due to the motion of the take-up lever!



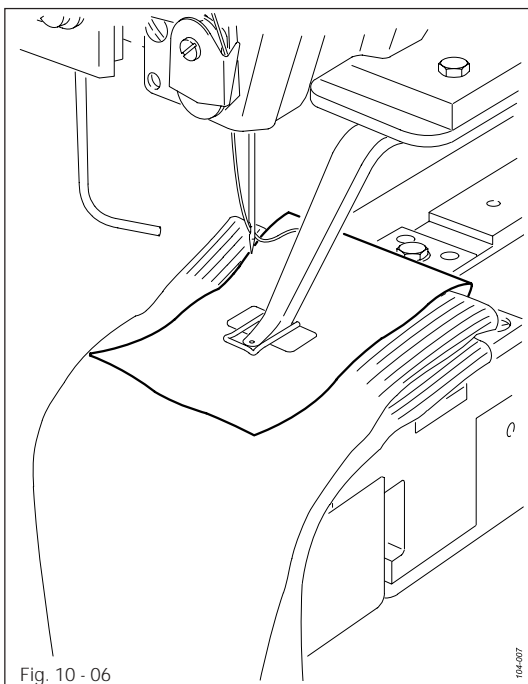
Do not operate the machine without eye shield 2!

Danger of injury from flying needle or button fragments!



Only operate the machine with cover 3 closed!

Danger of injury from rotating hook!



- 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 (three-hole button) and the corresponding program number, see Chapter 9.04 **Selecting the button type and program number.**
- Place the material under the work clamp as shown in the opposite illustration.
- Lower the work clamp with the pedal and start the sewing operation, see Chapter 7.02 **Pedal.**

11 Input

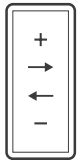
11.01 Seam pattern input

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 buttons



- Activate the sewing mode .
(The LED in the key must be on).



- Select the desired button type and program number, see **Chapter 9.04 Selecting the button type and program number.**

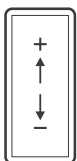
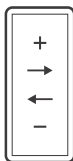


- Activate the seam pattern input function.
The first parameter (P01) with the corresponding values is shown on the display.

P01 0 0

Parameter input two-hole button

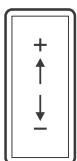
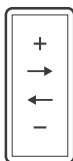
	P01	First needle entry position
	P02	Second needle entry position
	P05	Total number of stitches (1-99).



- Start the first needle entry position (P01) with the corresponding **plus/minus keys.**



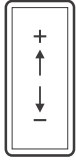
- Confirm input with **Enter.**
Machine moves automatically to input of the next parameter.



- Start the second needle entry position (P02) with the corresponding **plus/minus keys.**



- Confirm input with **Enter.**
Machine moves automatically to input of the next parameter.



- Select the total number of stitches "P05" with the corresponding **plus/minus key**.



- By pressing the **seam pattern input** key the values entered are stored and the machine is in the basic position of the sewing mode.



By pressing the **sewing mode/parameter input** key the values are also stored, and the machine is then in the parameter input mode.



By pressing the **basic position** key the seam pattern input is interrupted, the old values are kept and the machine changes to the sewing mode.

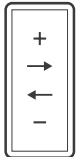


To achieve the best results, cutting should take place at the left needle entry position. This is achieved through the number of stitches and the location of the needle entry positions.

11.01.02 Seam pattern input for three-hole buttons



- Activate the sewing mode .
(The LED in the key must be on).



- Select the desired button type and program number, see **Chapter 9.04 Selecting the button type and program number**.






- Activate the seam pattern input function.
The first parameter (P01) with the corresponding values is shown on the display.

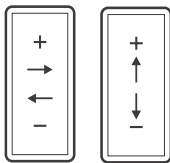
P01 0 0

Parameter input three-hole button

	P01	First needle entry position
	P02	Second needle entry position
	P03	Third needle entry position
	P05	Total number of stitches (2-99)
	P07	Seam pattern: 1 = seam cycle 2 = point 3 = basting

Seam pattern for the three-hole button

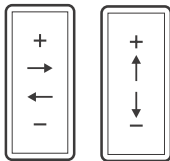
	<p>Seam cycle (P07 = 1)</p>
	<p>Point (P07 = 2)</p>
	<p>Basting (P07 = 3)</p>



- Start the first needle entry position (P01) with the corresponding plus/minus keys.



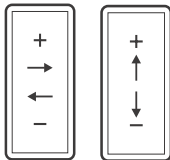
- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



Start the second needle entry position (P02) with the corresponding plus/minus keys.



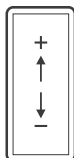
- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Start the third needle entry position (P03) with the corresponding plus/minus keys.



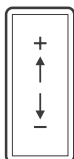
- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Select the total number of stitches "P05" with the corresponding plus/minus key.



- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Select the seam pattern „P07“ with the corresponding plus/minus key



- By pressing the **seam pattern input** key the values entered are stored and the machine is in the basic position of the sewing mode.



By pressing the **sewing mode/parameter input** key the values are also stored, and the machine is then in the parameter input mode.



By pressing the **basic position** key the seam pattern input is interrupted, the old values are kept and the machine changes to the sewing mode.

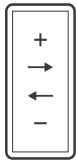


To achieve the best results, cutting should take place at the left needle entry position. This is achieved through the number of stitches and the location of the needle entry positions.

11.01.03 Seam pattern input for four-hole buttons



- Activate the sewing mode .
(The LED in the key must be on).



- Select the desired button type and program number, see **Chapter 9.04 Selecting the button type and program number**.



- Activate the seam pattern input function.
The first parameter (P01) with the corresponding values is shown on the display.

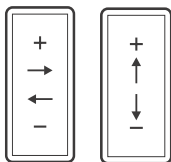
P01	0	0
-----	---	---

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
	P05	Total number of stitches (2-99)
	P06	Intermediate cutting on/off
	P07	Seam pattern: 1 normal, 2 cycle, 3 arrow

Seam pattern examples for the four-hole button

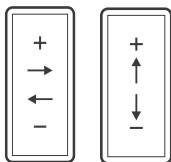
	<p>Seam patterns with intermediate cutting (P06 = II), without seam cycle (P07 = 1).</p>
	<p>Seam patterns without intermediate cutting (P06 = I), and without seam cycle (P07 = 1).</p>
	<p>Seam patterns with seam cycle (P07 = 2), the intermediate cutting function is switched off automatically.</p>
	<p>Seam pattern „arrow“ (P07 = 3) the intermediate cutting function is switched off automatically.</p>



- Start the first needle entry position (P01) with the corresponding plus/minus keys.



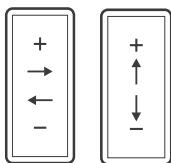
- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Start the second needle entry position (P02) with the corresponding plus/minus keys.



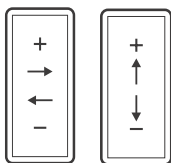
- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Start the third needle entry position (P03) with the corresponding plus/minus keys.



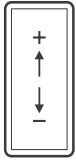
- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Start the fourth needle entry position (P04) with the corresponding plus/minus keys.



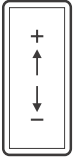
- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Select the total number of stitches "P05" with the corresponding **plus/minus key**.



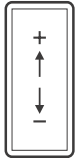
- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Switch off the intermediate cutting function (P06) with the corresponding **plus/minus keys**.



- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Select the seam pattern "PO7" with the corresponding plus/minus key



- By pressing the **seam pattern input** key the values entered are stored and the machine is in the basic position of the sewing mode.



By pressing the **sewing mode/parameter input** key the values are also stored, and the machine is then in the parameter input mode.



By pressing the **basic position** key the seam pattern input is interrupted, the old values are kept and the machine changes to the sewing mode.



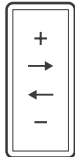
To achieve the best results, cutting should take place at the left needle entry position. This is achieved through the number of stitches and the location of the needle entry positions.

11.02 Seam pattern input on sub-class -4/.. machines

99 programs (basting seams) can be entered and stored under the button type, three-hole button. The basting seams can be entered when starting up or by entering certain seam parameters. The basting seam input is described below.



- Activate the sewing mode .
(The LED in the key must be on).



- Select button type and program number, see **Chapter 9.04 Selecting the button type and program number.**

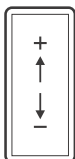
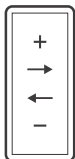


- Activate the seam pattern input function.
The first parameter (P01) with the corresponding values is shown on the display.

P01 0 0

Parameter input basting seam

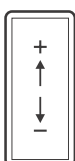
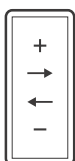
	P01	First needle entry position
	P02	Second needle entry position
	P03	Third needle entry position
	P05	Total number of stitches (2-99)
	P07	This parameter must be set at the value „3“!



- Start the first needle entry position (P01) with the corresponding **plus/minus keys.**



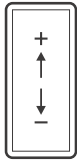
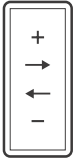
- Confirm input with **Enter.**
Machine moves automatically to input of the next parameter.



- Start the second needle entry position (P02) with the corresponding **plus/minus keys.**



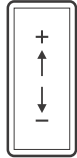
- Confirm input with **Enter.**
Machine moves automatically to input of the next parameter.



- Start the third needle entry position (P03) with the corresponding **plus/minus keys**.



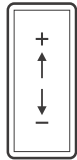
- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- Select the total number of stitches "P05" with the corresponding **plus/minus key**.



- Confirm input with **Enter**.
Machine moves automatically to input of the next parameter.



- With the corresponding plus/minus key select value „3“ („basting“) for parameter „PO7“ (seam pattern)



- By pressing the **seam pattern input** key the values entered are stored and the machine is in the basic position of the sewing mode.



By pressing the **sewing mode/parameter input** key the values are also stored, and the machine is then in the parameter input mode.



By pressing the **basic position** key the seam pattern input is interrupted, the old values are kept and the machine changes to 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.

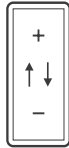
11.03 Parameter input

11.03.01 Selecting and changing parameters

- Switch on the machine.



- Switch to parameter input (LED on the key **is off**).



- Select the function group, e.g. "200" with the corresponding **plus/minus** key.

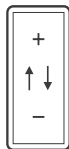
200



- Confirm with **Enter**.

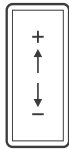
- Enter the code, see Chapter 11.03.02 Entering/changing the access code.

201 1



- Select parameter "204" (seam pattern size) with the corresponding **plus/minus** key.

204 1



- Select the parameter value with the corresponding **plus/minus** key.

204 2



- By pressing the **sewing mode/parameter input** key the values are stored, and the machine is then in the sewing mode.



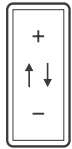
By pressing the **basic position** key the parameter input is interrupted, the old values are kept and the machine changes to the basic position of the parameter input mode.

11.03.02 Entering/changing the access code

- Switch on the machine.



- Switch to parameter input (LED on the key is off).



- Select the function group, e.g. "800" with the corresponding plus/minus key.

800

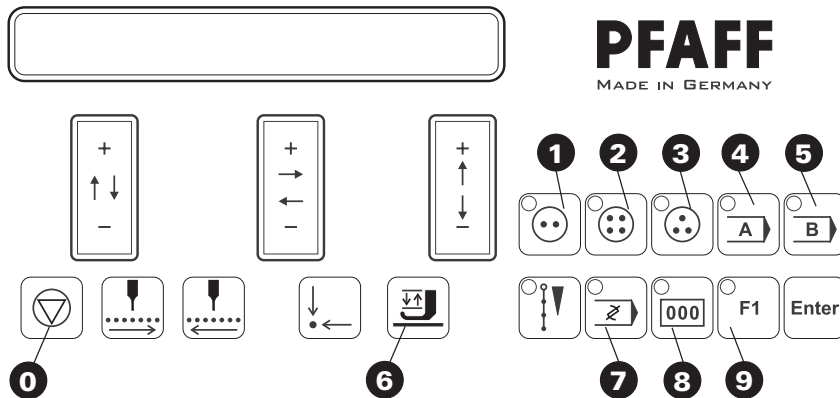


- Confirm with **Enter**.



- Enter the code

As shown below, the figures are entered with the corresponding function keys. The factory code setting is "3307".

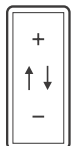


Code: 3307



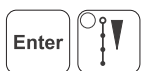
- Confirm with **Enter**.

801 0



- To change the access code, select the parameter "819" (enter access code) with the corresponding plus/minus key.

819 3307



- Enter a new code number and save it by pressing **Enter** or by selecting the **sewing mode**.

11.03.03 Assigning access rights

- Switch on the machine.



- Switch to parameter input (LED on the key is off).



- Select the function group, e.g. "800" with the corresponding plus/minus key.

800



- Confirm with **Enter**.

- Enter the code (e.g. : 3307).

Code: 3307



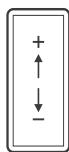
- Confirm with **Enter**.

801



- Select the desired parameter "801 to 818" with the corresponding plus/minus key, see Chapter 13.36 Parameter settings.

818 1



- Use the corresponding plus/minus key to release or block the selected parameter.

0: Free access to parameter function.

1: Access to parameter function only after entering access code.



If all the parameters (801 to 818) are set at "0", the access code will no longer be demanded.



- Take over the setting with **Enter** or by selecting the **sewing mode**.

12 Care and maintenance

Cleaning the hook compartment	daily
Cleaning the entire machine	once a week
Cleaning the air filter/lubricator (air filter)	as required
Topping up oil (gears and sewing head)	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!

12.01 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.



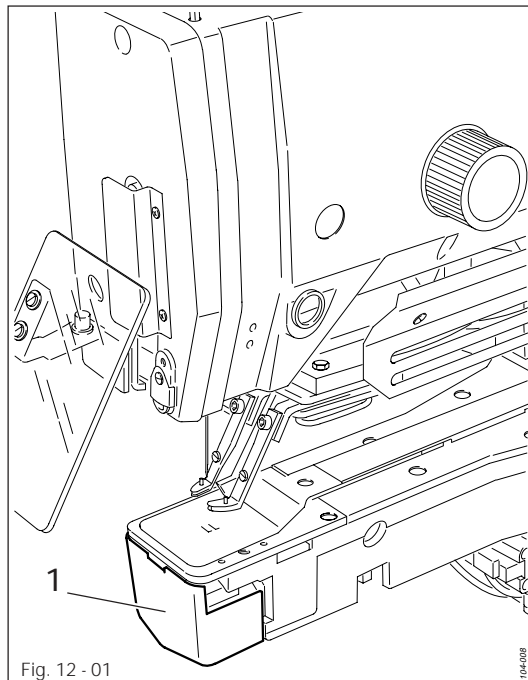
For all cleaning work the machine must be disconnected from the mains by switching off the on/off switch or by removing the mains plug!
Danger of injury if the machine suddenly starts up .



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.

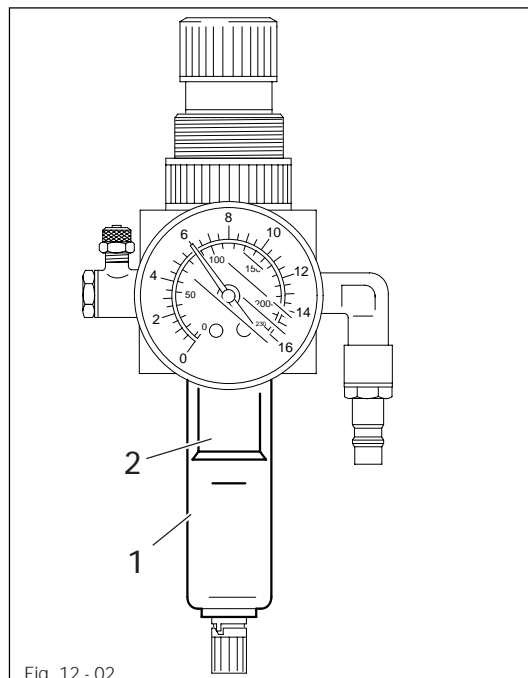
12.02 Cleaning the hook compartment



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.

12.03 Cleaning the air filter/lubricator



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

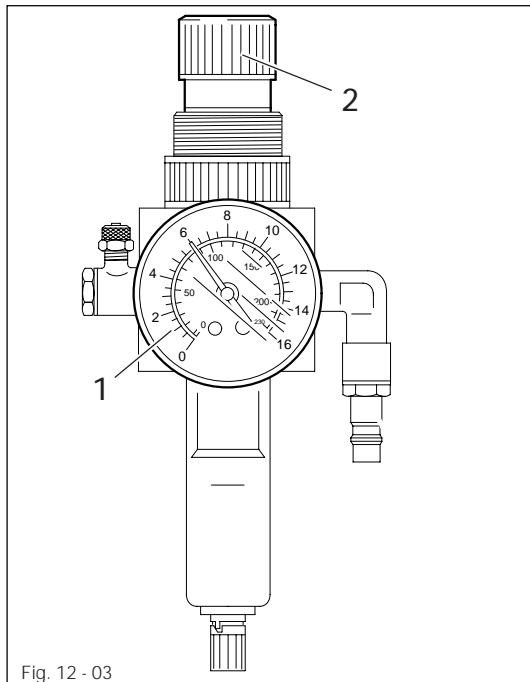
Empty the water tank 1:

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

Clean filter 2:

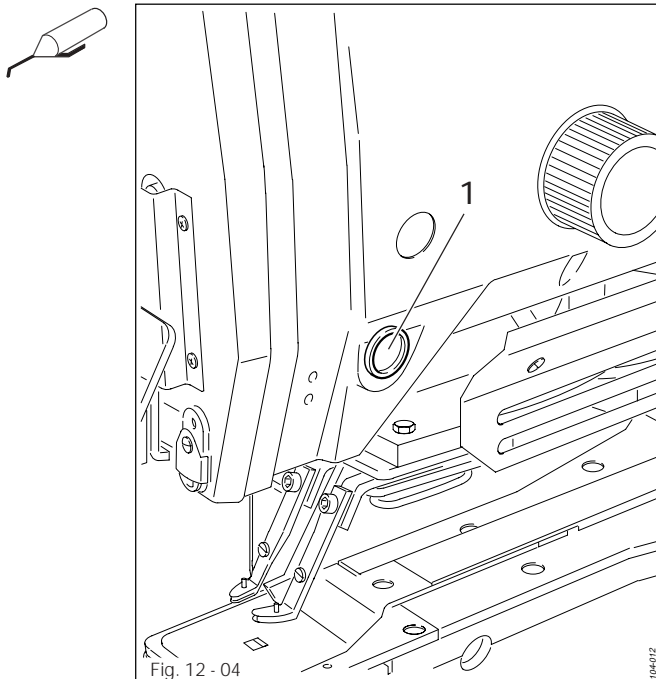
- Unscrew water tank 1.
- Remove filter 2.
- Clean filter 2 with compressed air or with isopropyl alcohol (part no. 95-665 735-91).
- Replace filter 2 and screw water tank 1 back into place.

12.04 Checking/adjusting the air pressure



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

12.05 Ölstand für den Nadelantrieb



Top up oil once a month.

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

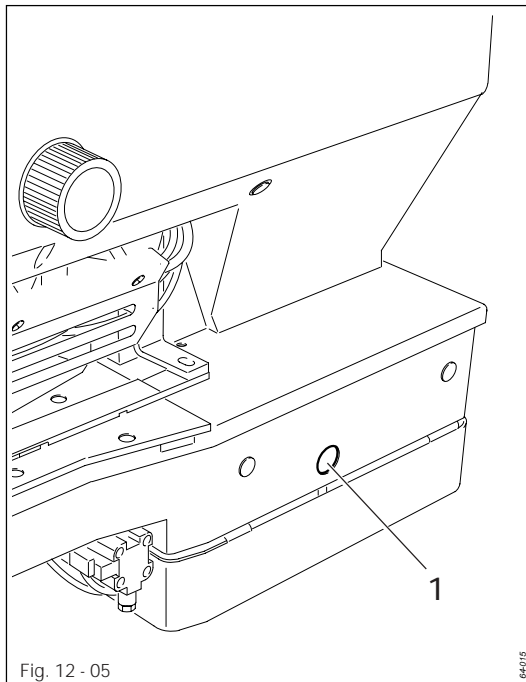


Only use oil with a mean viscosity of 31.0 mm²/s at 40° C and a density of 0.870 g/cm³ at 15° C.



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

12.06 Oil level for the gears

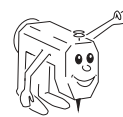


Top up oil once a month.

- 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

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.



For all the general settings in these adjustment instructions, illustrations of the subclass -1/.. have been used, the relevant points of which can be transferred to subclass -4/...

In the heading appropriate reference will be made to special settings, which are only valid for certain subclasses.

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
- 1 C-clamp, part no. 62-111 600-35/001
- 1 needle rise gauge 2.4 mm, part no. 61-111 600-01
- 1 adjustment gauge "hook centre", part no. 08-880 138-00
- 1 button gauge, part no. 61-111 635-66
- 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

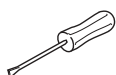
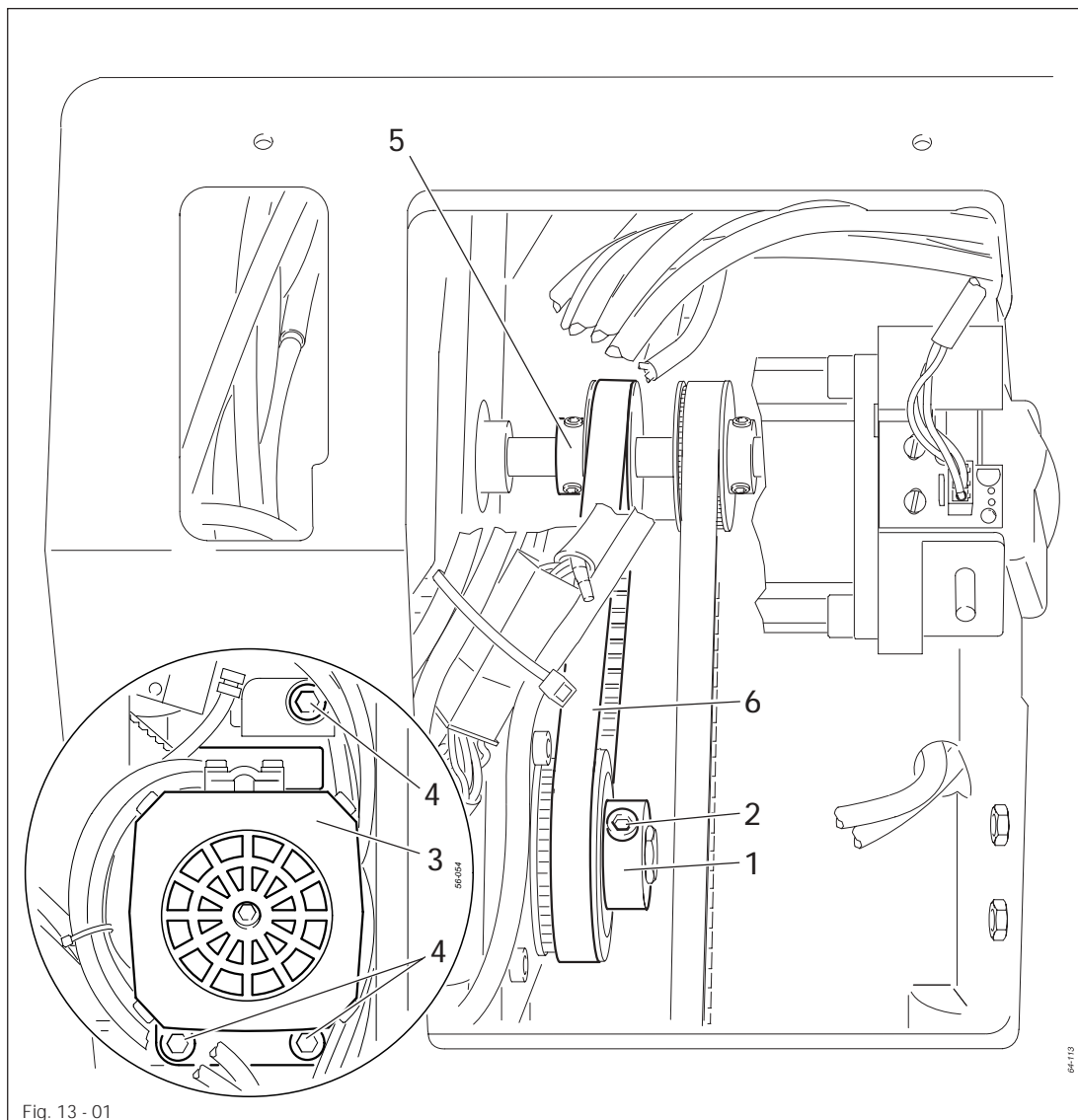
t.d.c. = top dead centre

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.

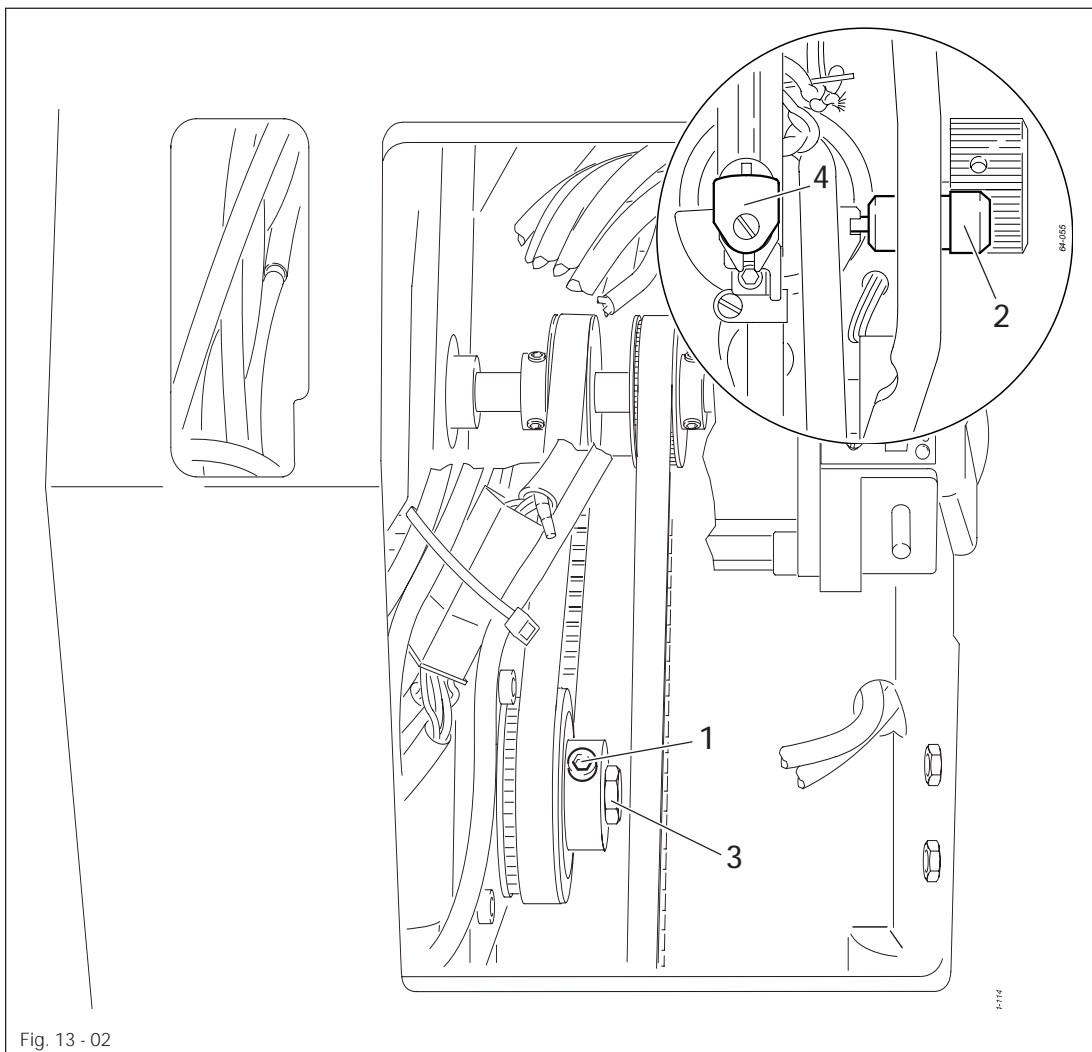
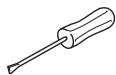


Fig. 13 - 02



- 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 the enter key.
- Tighten screws 1 (to begin with only one screw is accessible).
- Switch off the machine and remove locking pin 2.

Enter

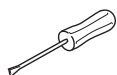
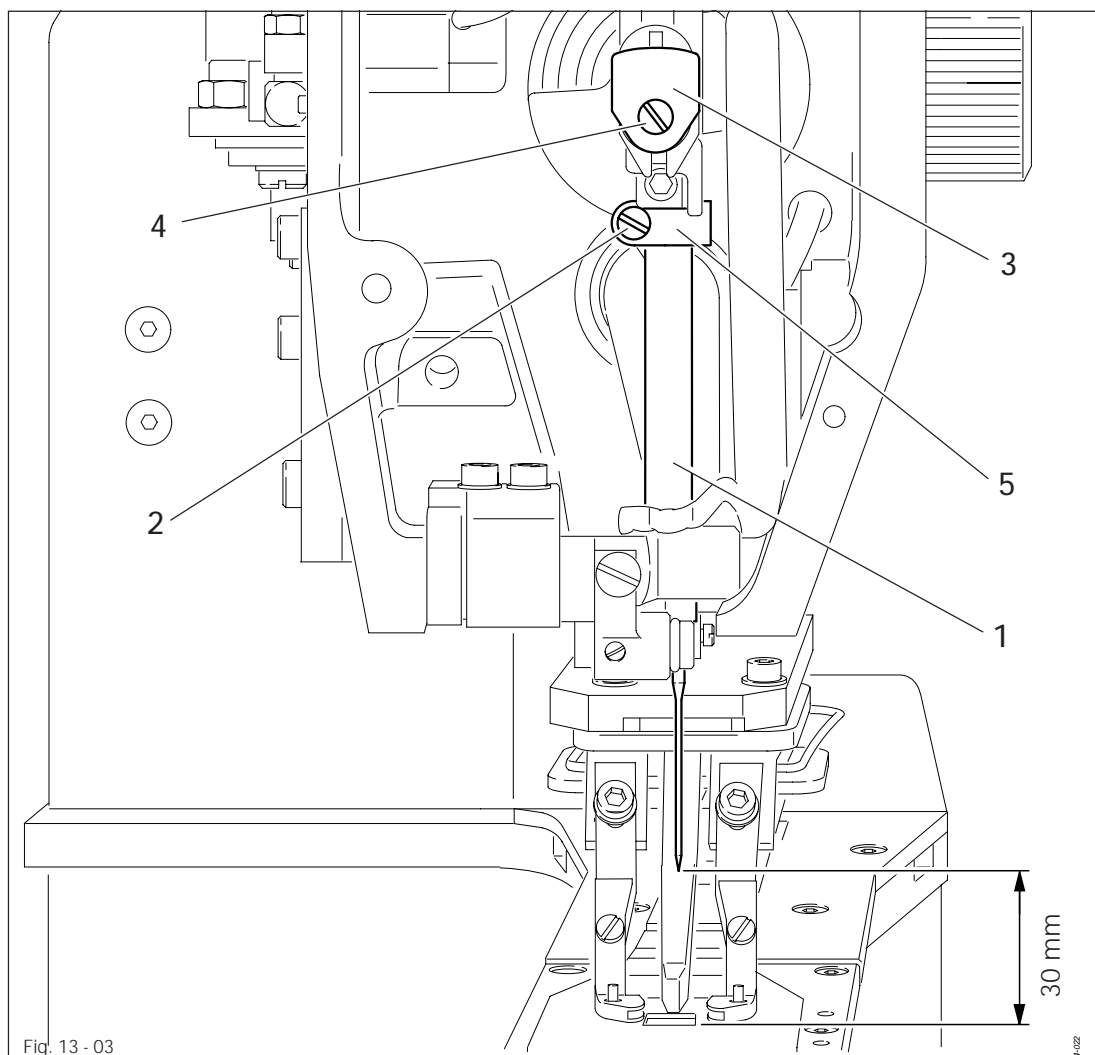


This setting can change again by ± 3 increments after checking.

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.

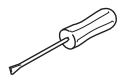
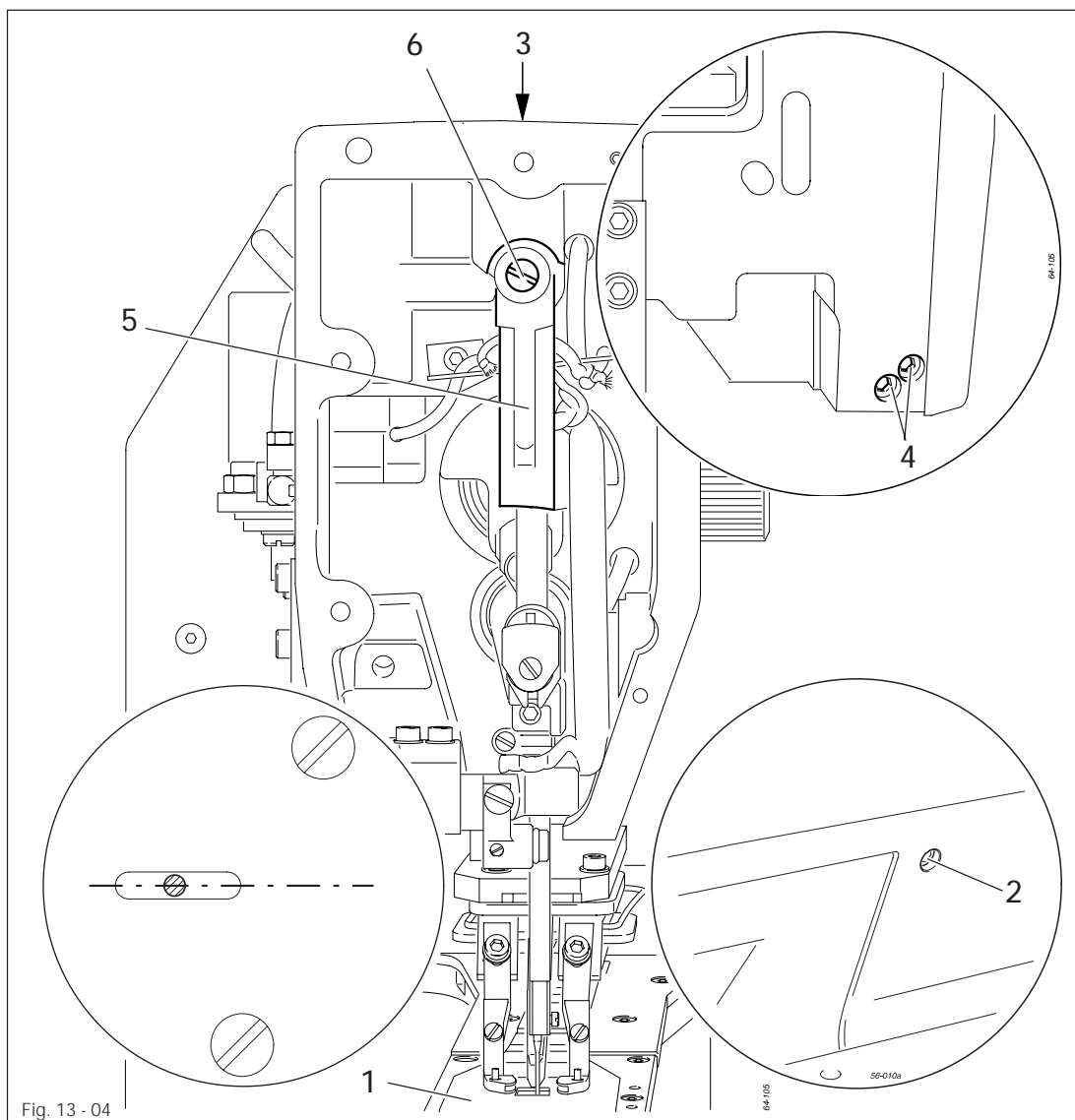


- Adjust needle bar 1 (screw 2) and thread puller 3 (screw 4) in accordance with the requirements.

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 "1".
- 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.

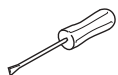
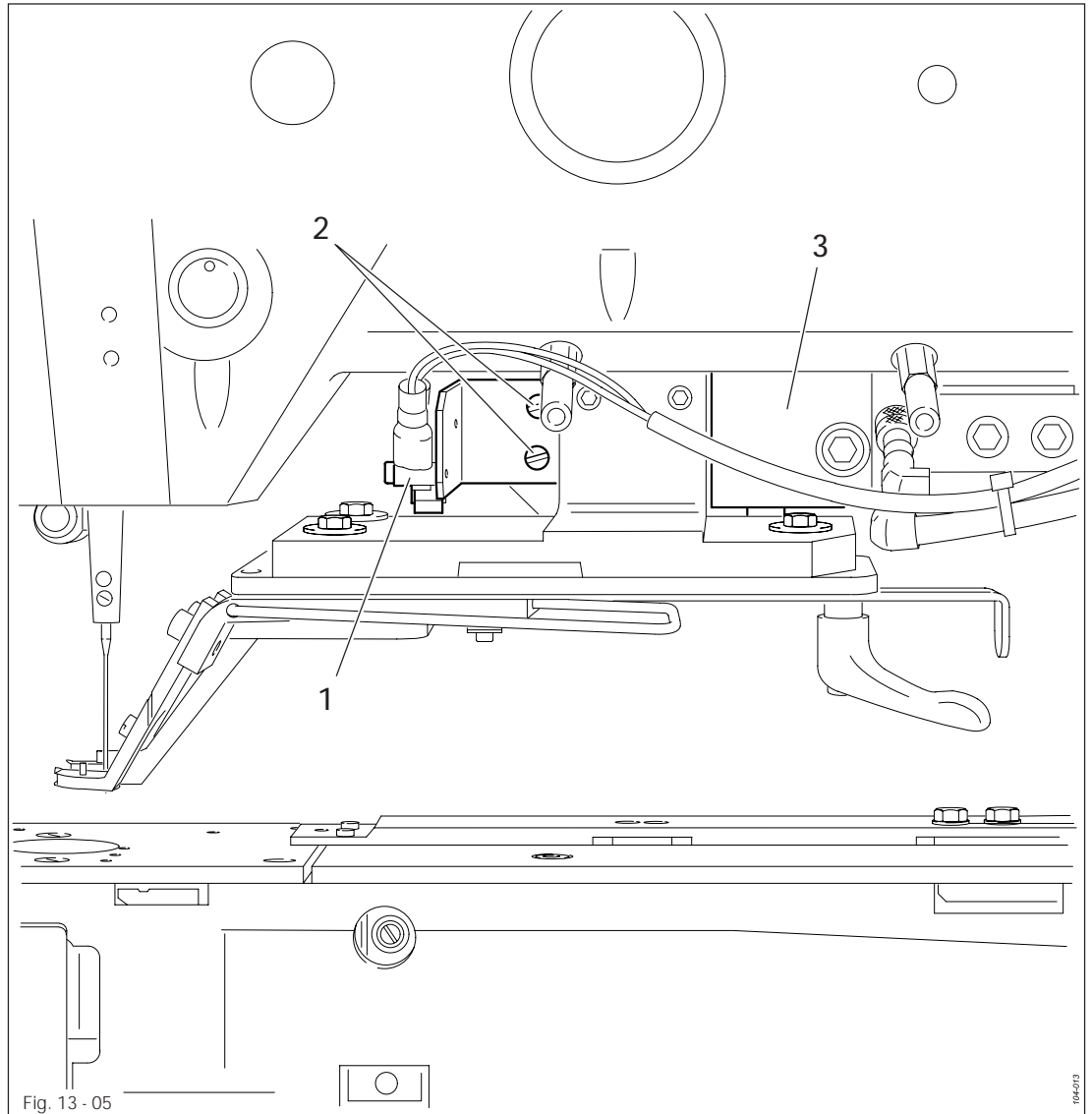


Screw 2 remains loosened for further adjustments.

13.08 Basic position "button clamp raised"

Requirement

When cylinder 3 is retracted completely, switch 1 should operate reliably.



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

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

Requirement

1. When parameter "610" is set at "1", 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.

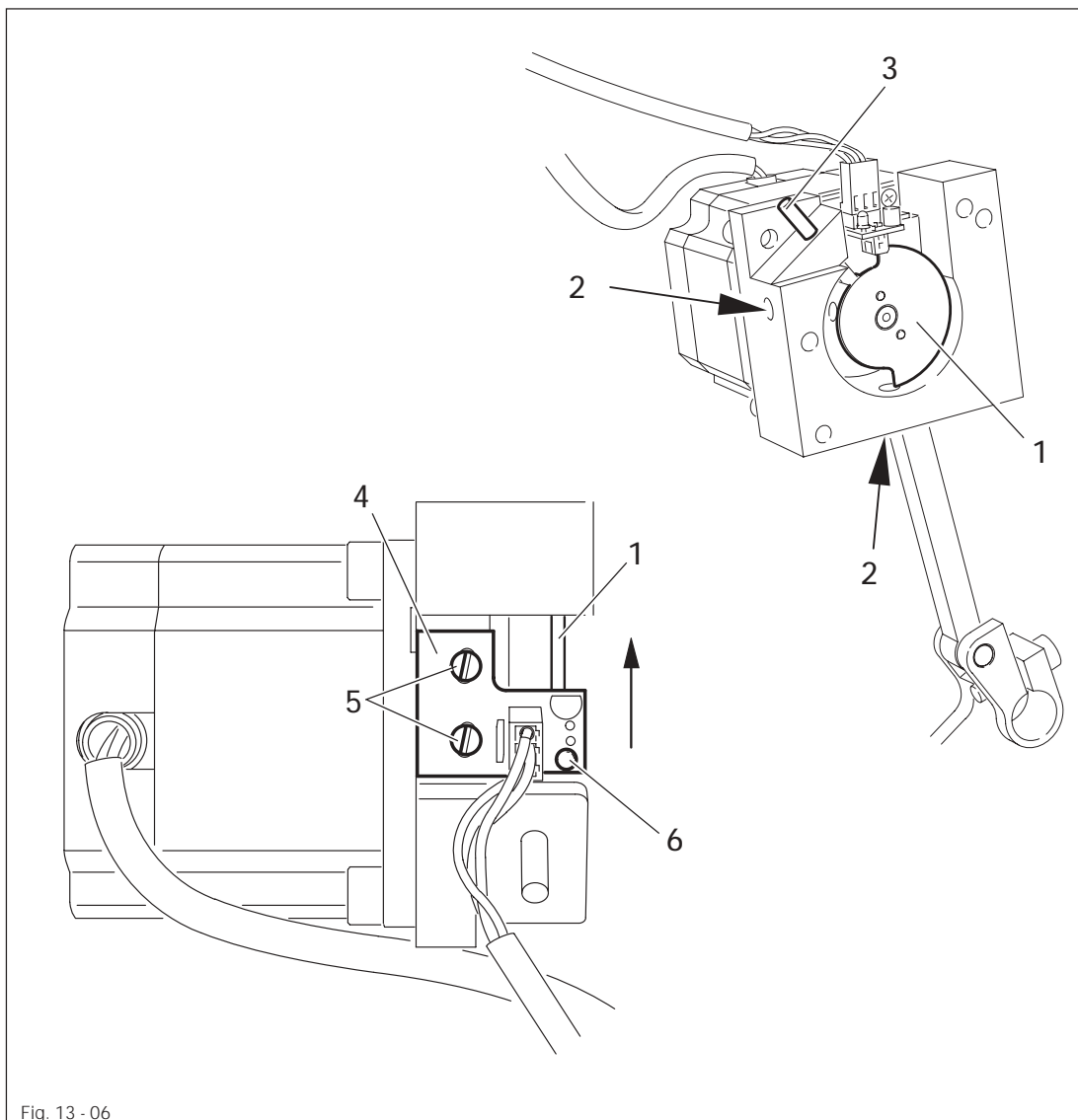


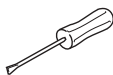
Fig. 13 - 06



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



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

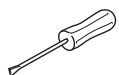
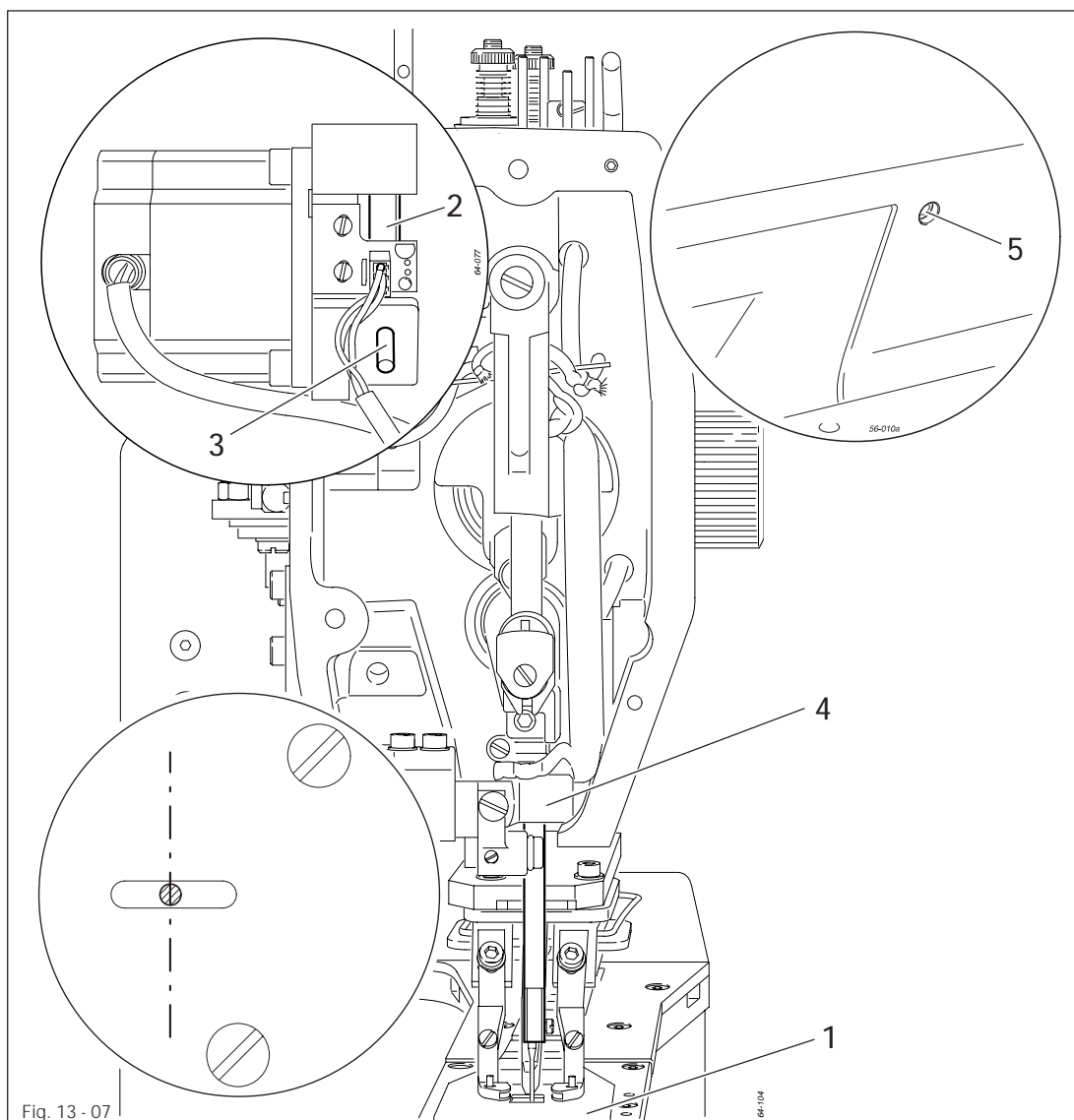


- Completely remove the needle drive unit (plugs remain connected).
- Loosen screws 2.
- Lock eccentric 1 by placing the locking pin 3 (part no. 13-030 272-05) in the locking hole of the mounting bracket.
- Switch on the machine and wait until the stepping motor has stopped running (ignore error message on the control panel).
- Set parameter "610" at "1" (see **Chapter 13.36.01 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.



- Switch on the machine and set parameter "610" at "1".
- 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.

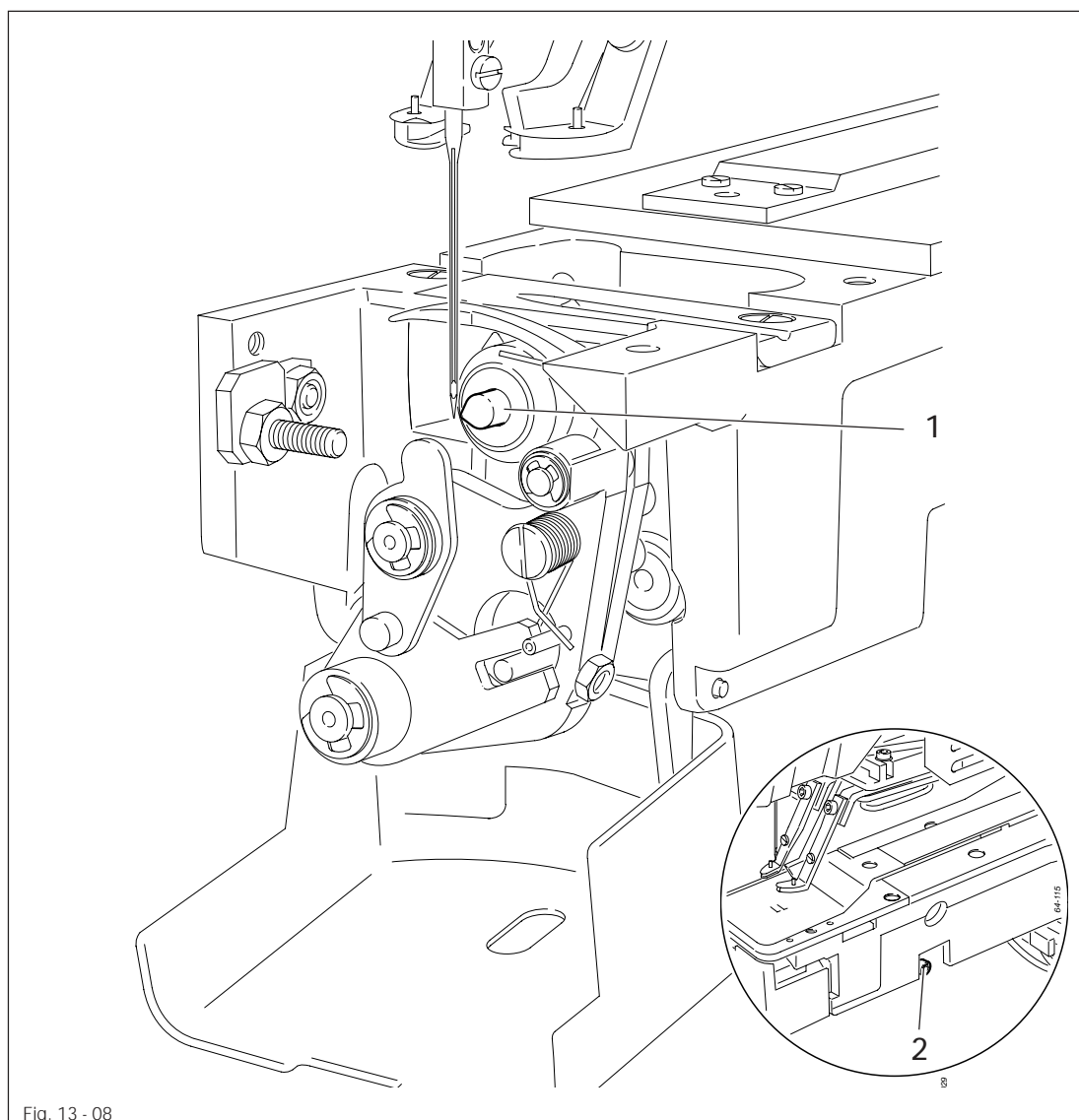
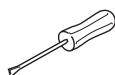


Fig. 13 - 08



- 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.



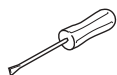
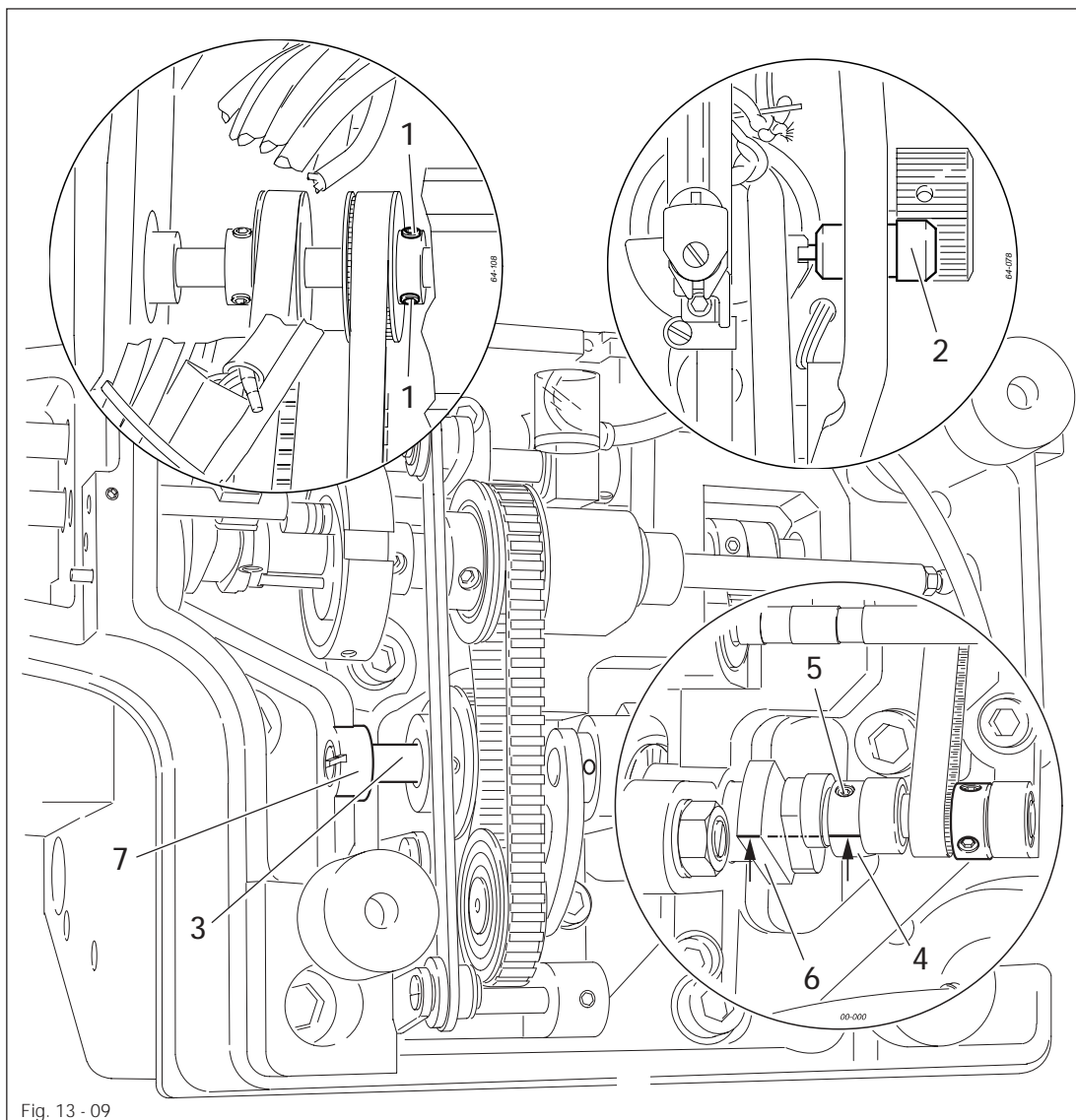
The needle plate and cloth plate as well as the hook remain dismantled for further adjustments.

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.



- 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.

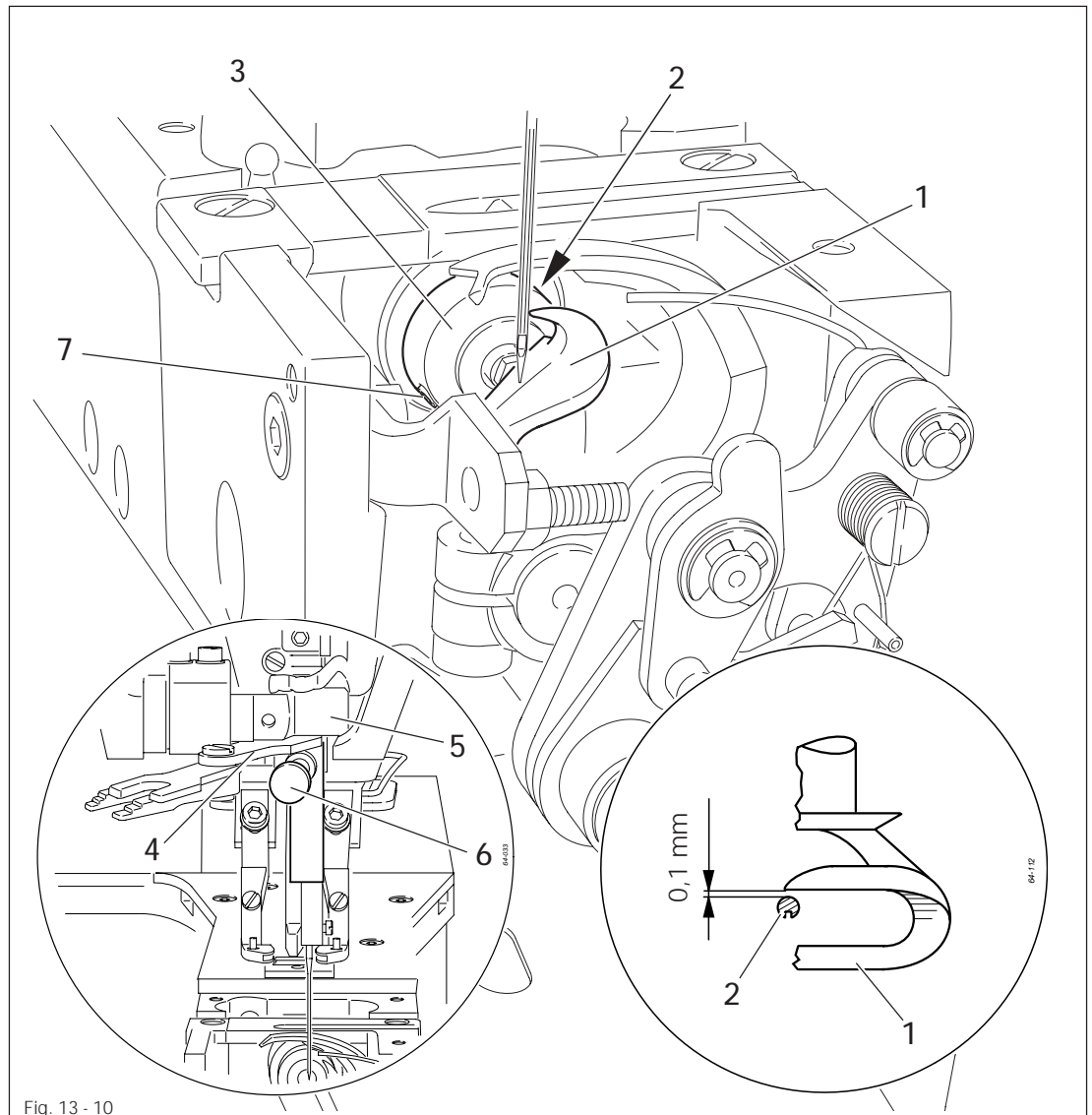
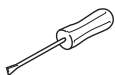


Fig. 13 - 10



- 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.

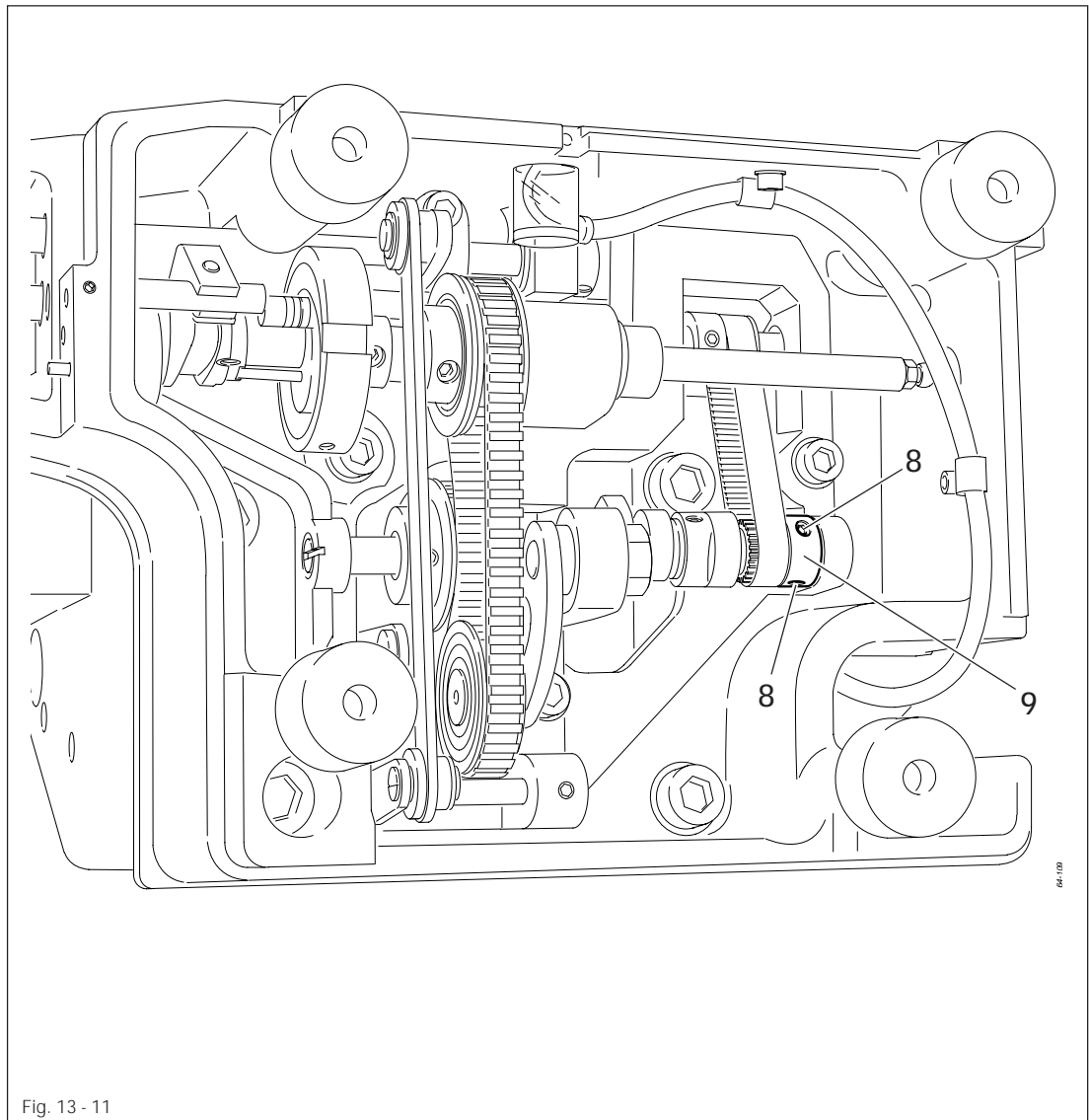
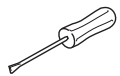


Fig. 13 - 11



- Adjust hook 1 (screws 2 and 7) in accordance with the requirement.
- Remove C-clamp 6.
- Fit thread brake.



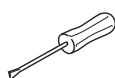
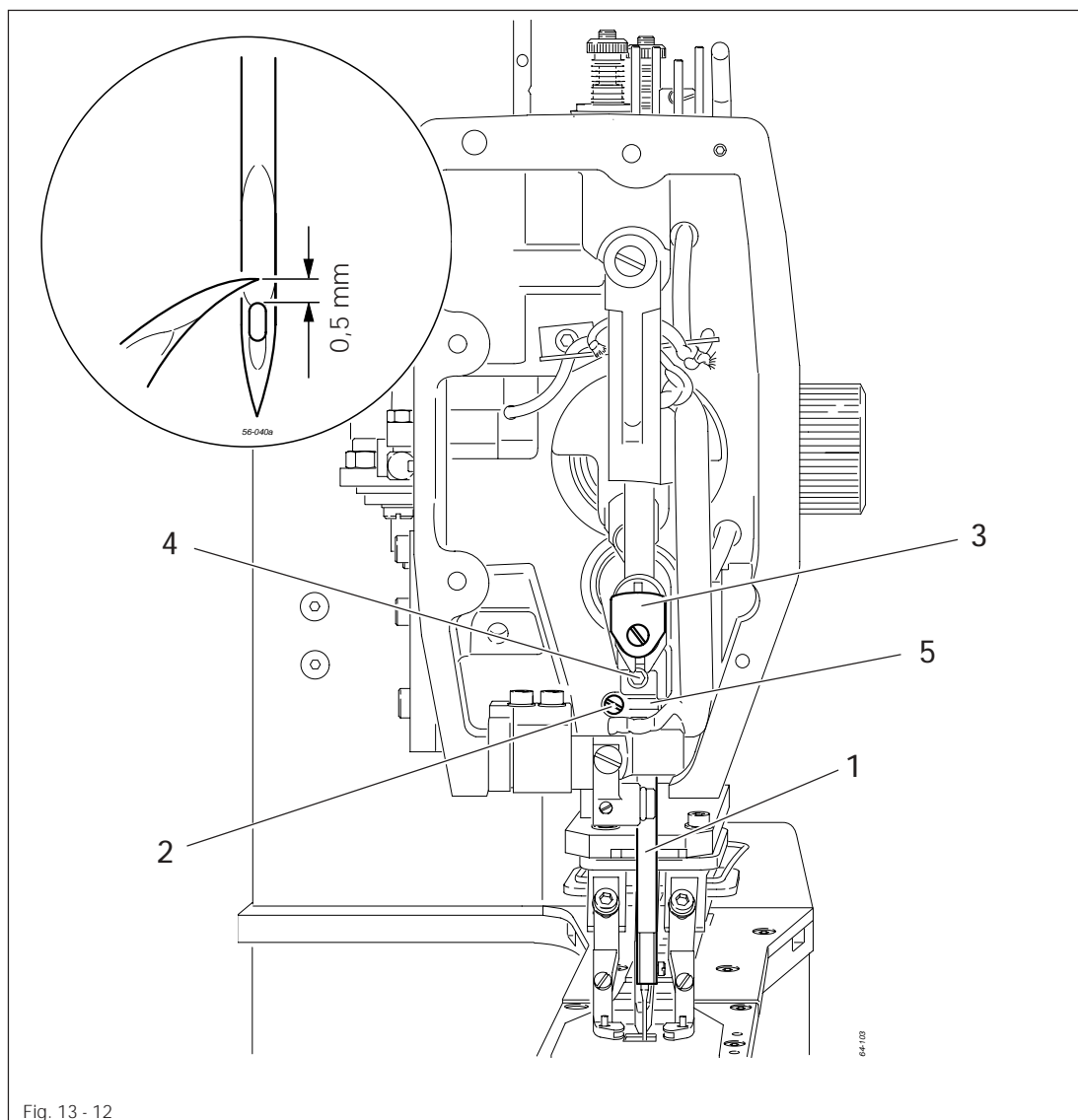
If the adjustment possibilities on the hook are insufficient, a greater correction can be made with the hook shaft mechanism.

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.



- 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.

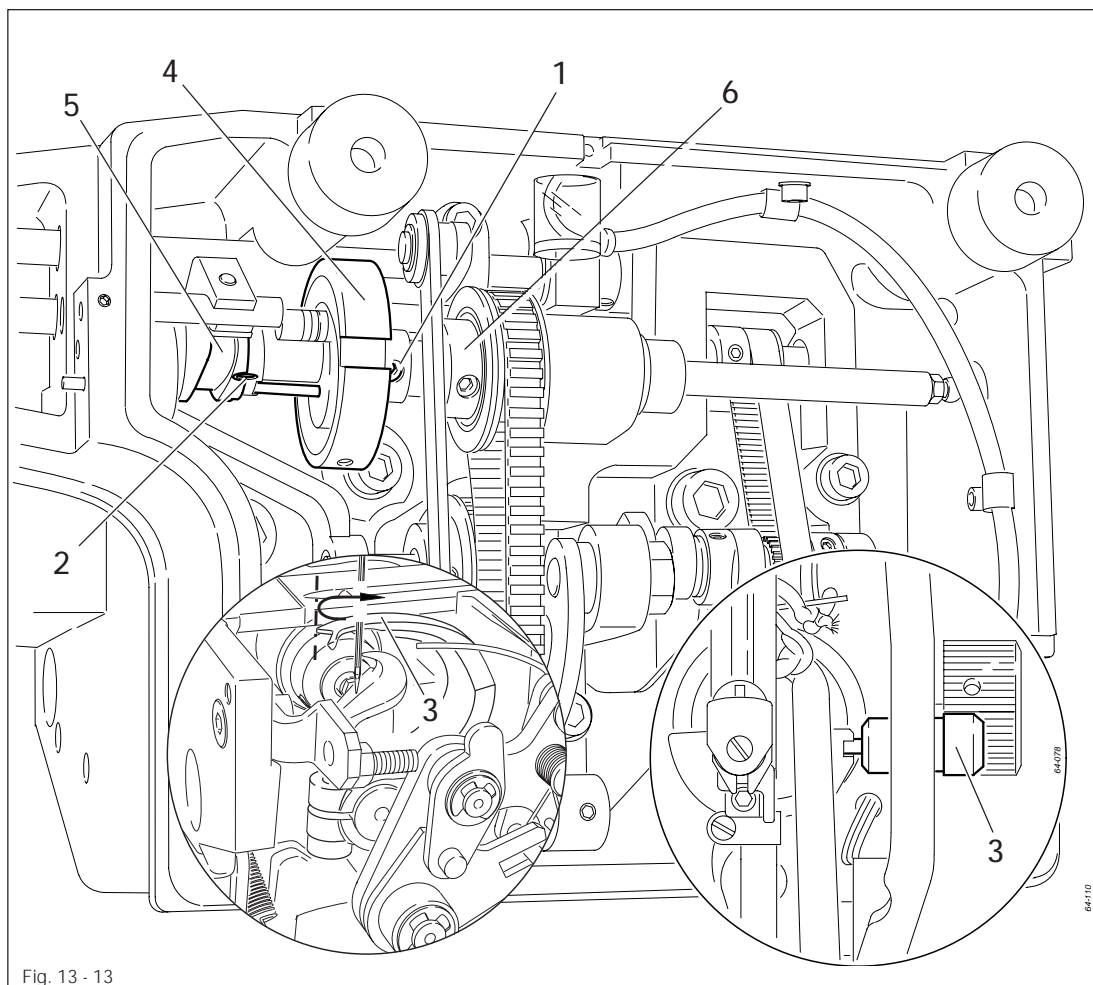
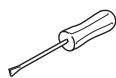


Fig. 13 - 13



- 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.

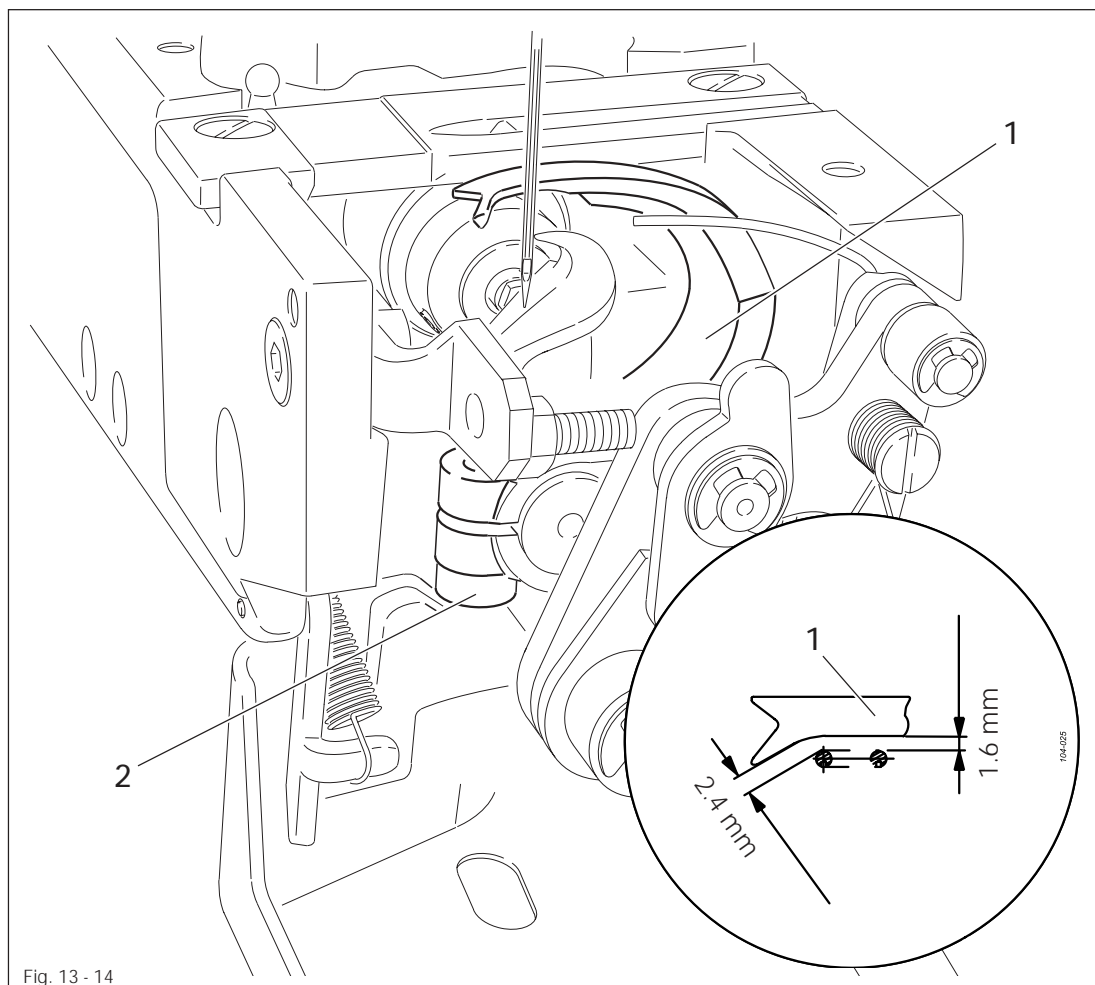
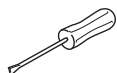


Fig. 13 - 14

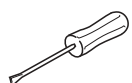
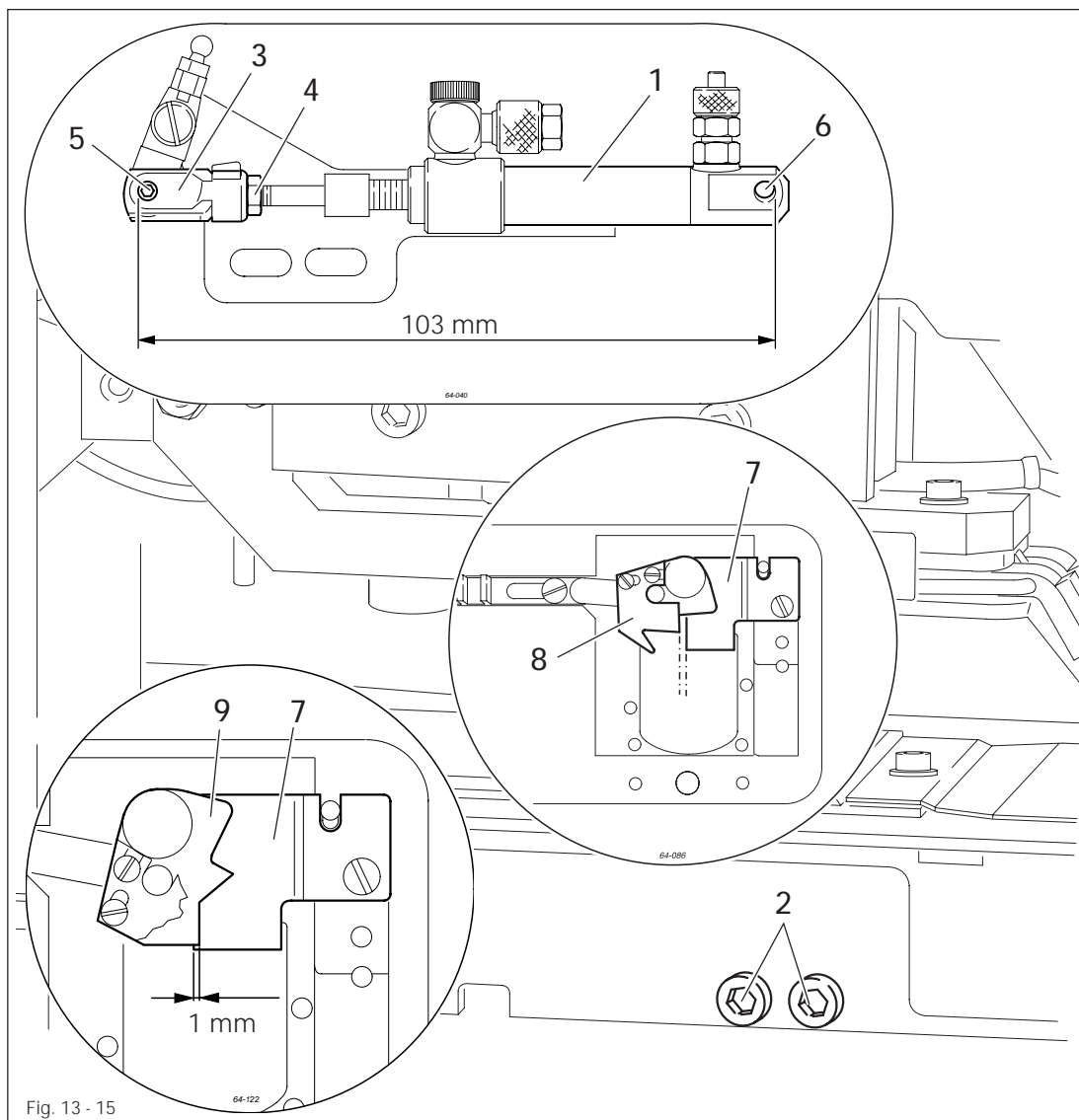


- Switch on the machine and set parameter "610" at "3".
- Position the needle at its b.d.c. by turning the balance wheel.
- Adjust loop spreader 1 (screw 2) in accordance with requirements 1 and 2.
- Switch off the machine.

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**.



- 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.

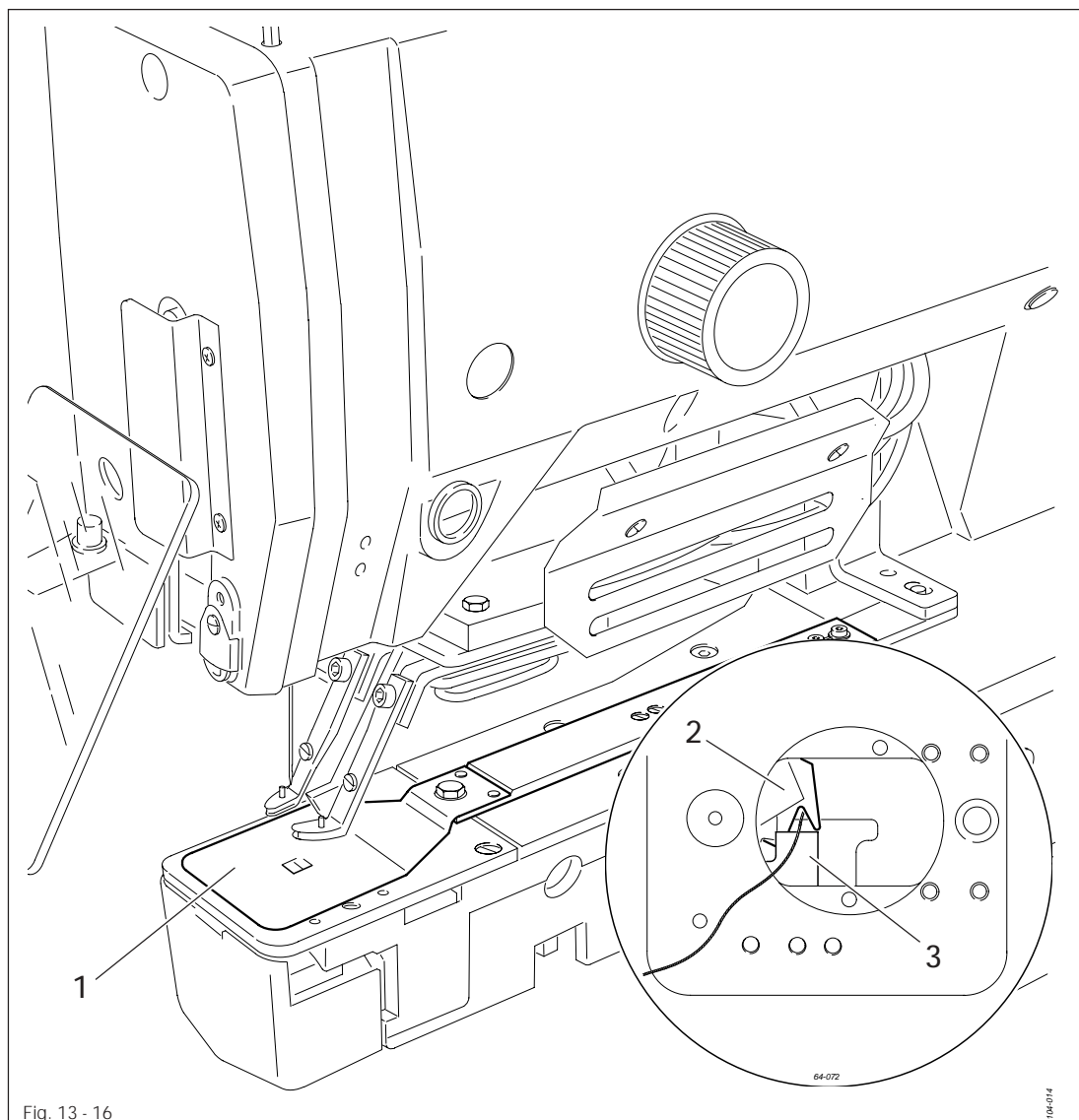
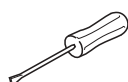


Fig. 13 - 16



- 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.

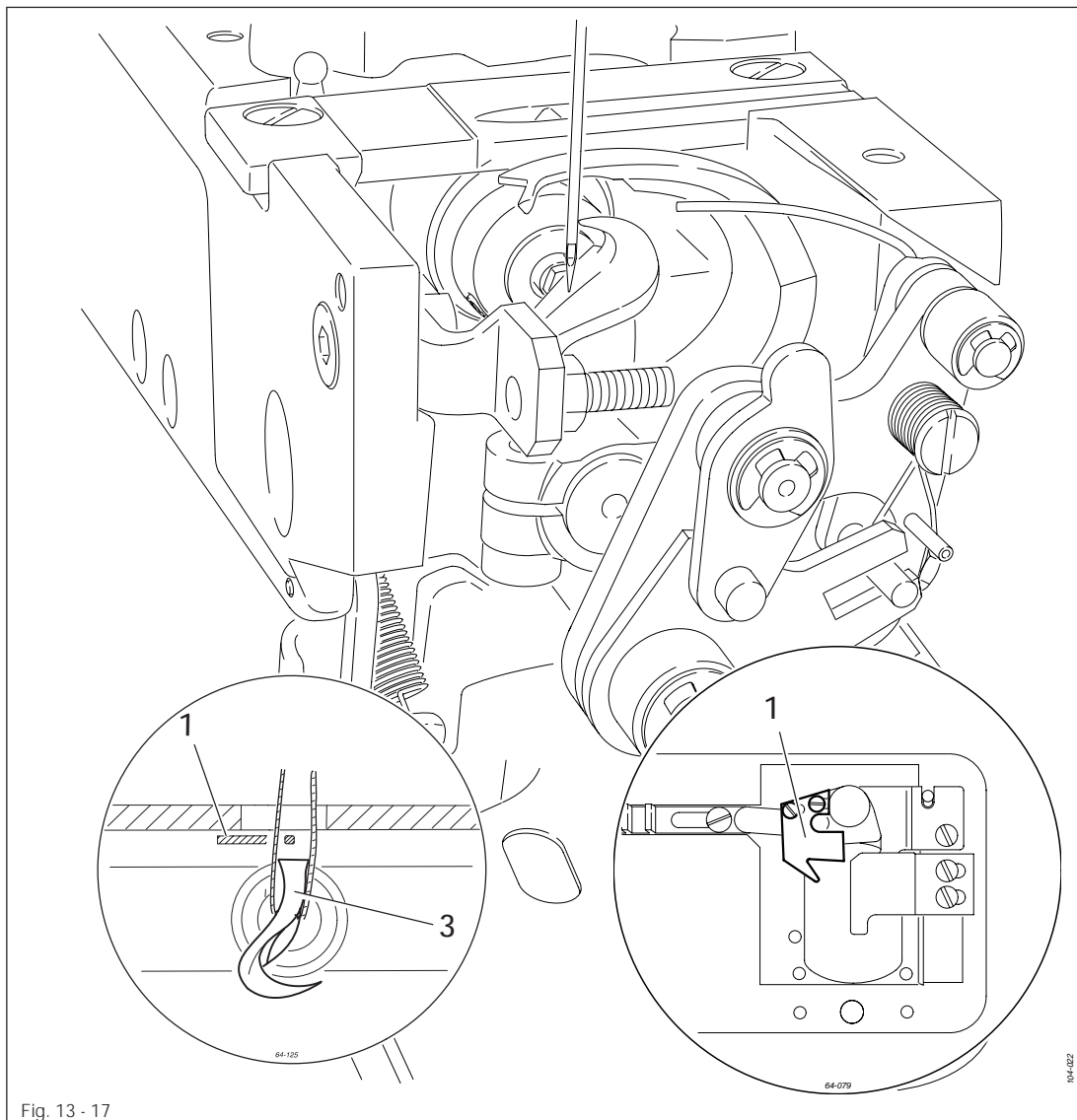
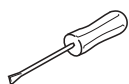


Fig. 13 - 17



- 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.

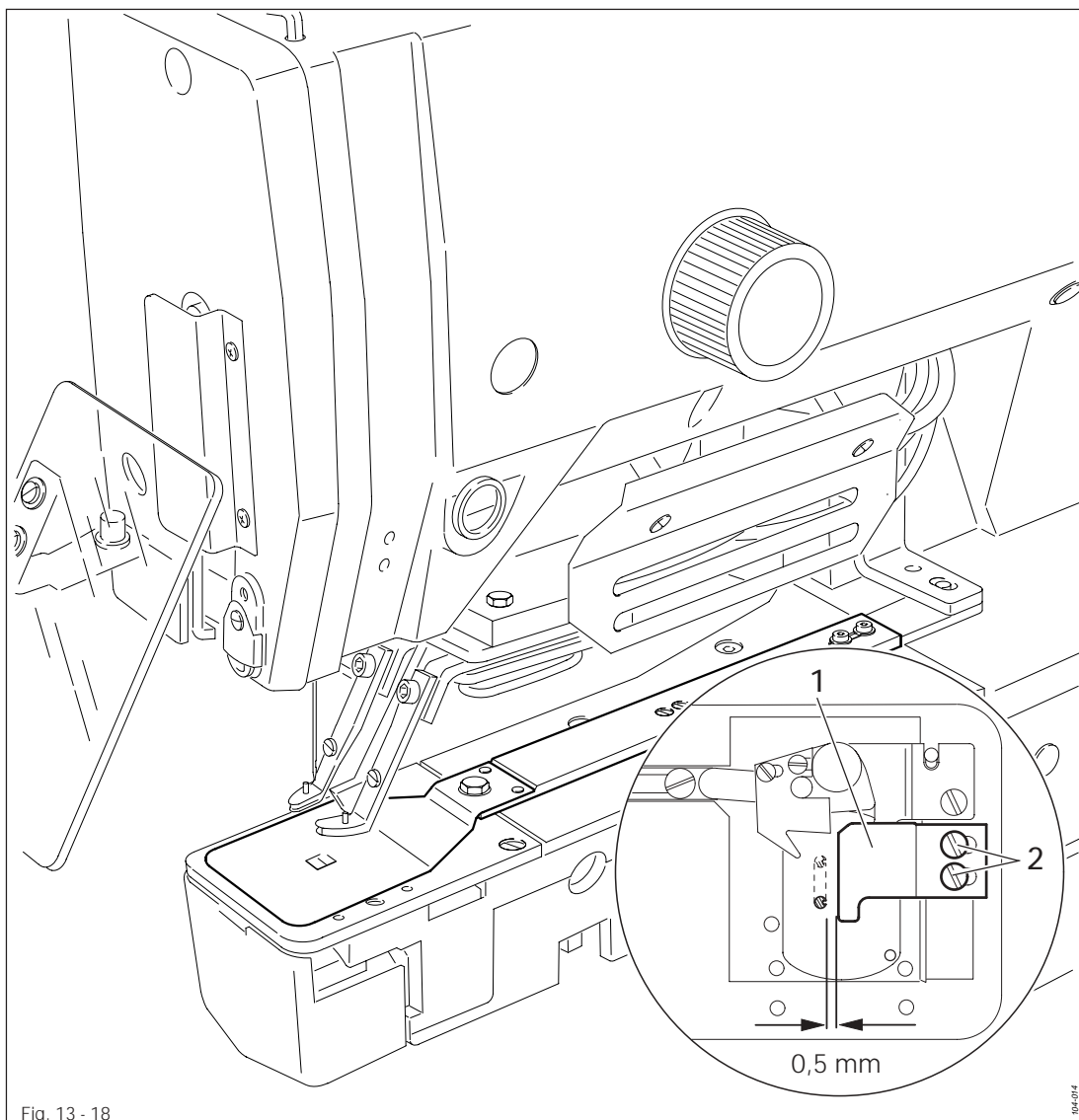
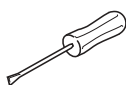


Fig. 13 - 18



- 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 the machine has been switched on, it should be possible to lock lever 1 with the needle rise gauge (2.4 mm).
2. Switch lug 5 should be positioned in the centre of the recess of the light barrier 3.

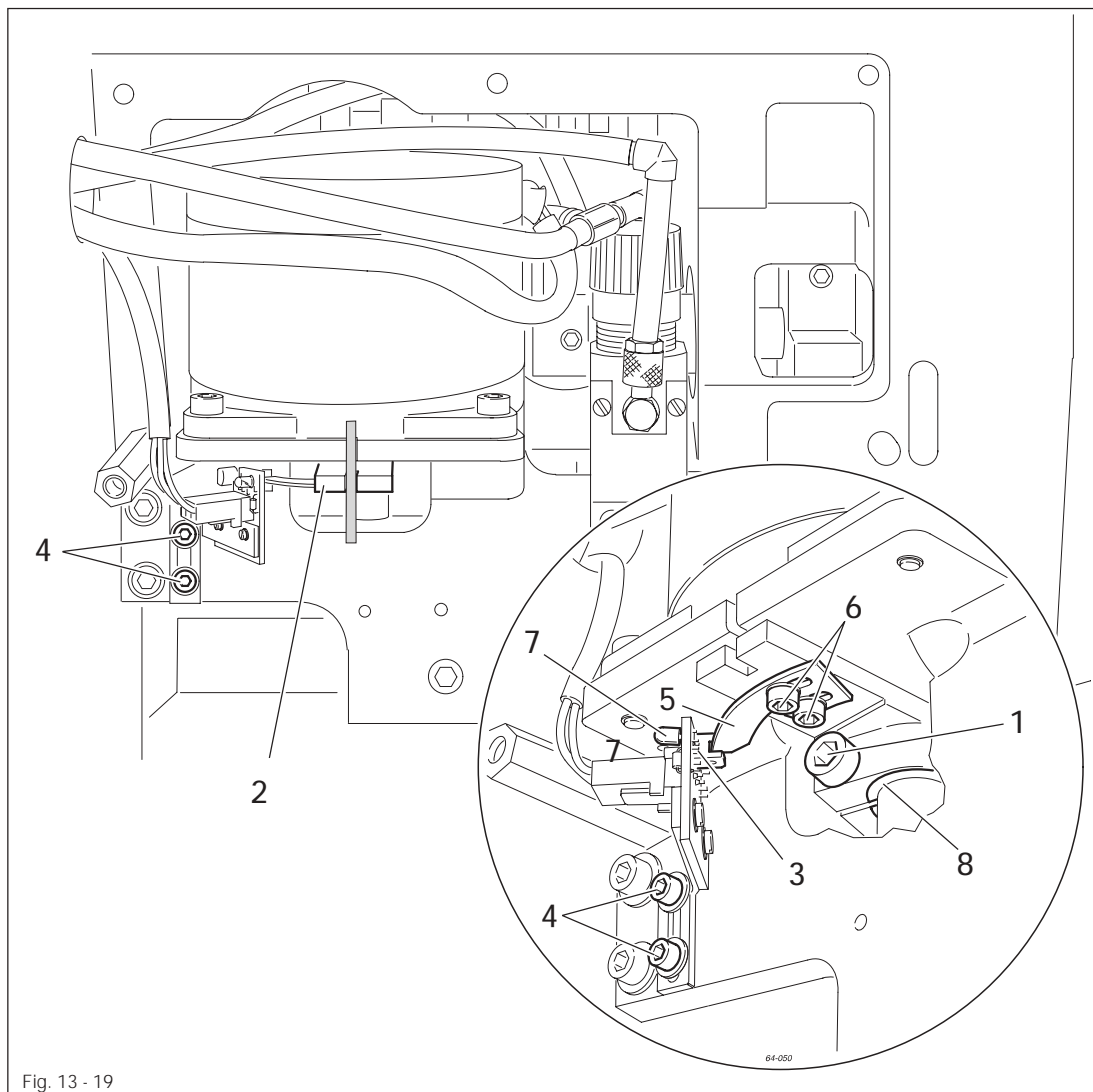
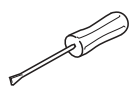


Fig. 13 - 19



- Loosen screw 1.
- Switch on the machine.
- Adjust lever 2 in accordance with **requirement 1** (lock with needle rise gauge).
- Tighten screw 1.
- Adjust light barrier 3 (screws 4) in accordance with **requirement 2**.
- With lever 1 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 needle rise 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 Aligning the button clamp (only on subclass -1/..)

Requirement

After parameter "610" has been selected (with value 4, 5, 6, 7 and 8), the needle should penetrate the centre of the respective hole of button gauge 2.

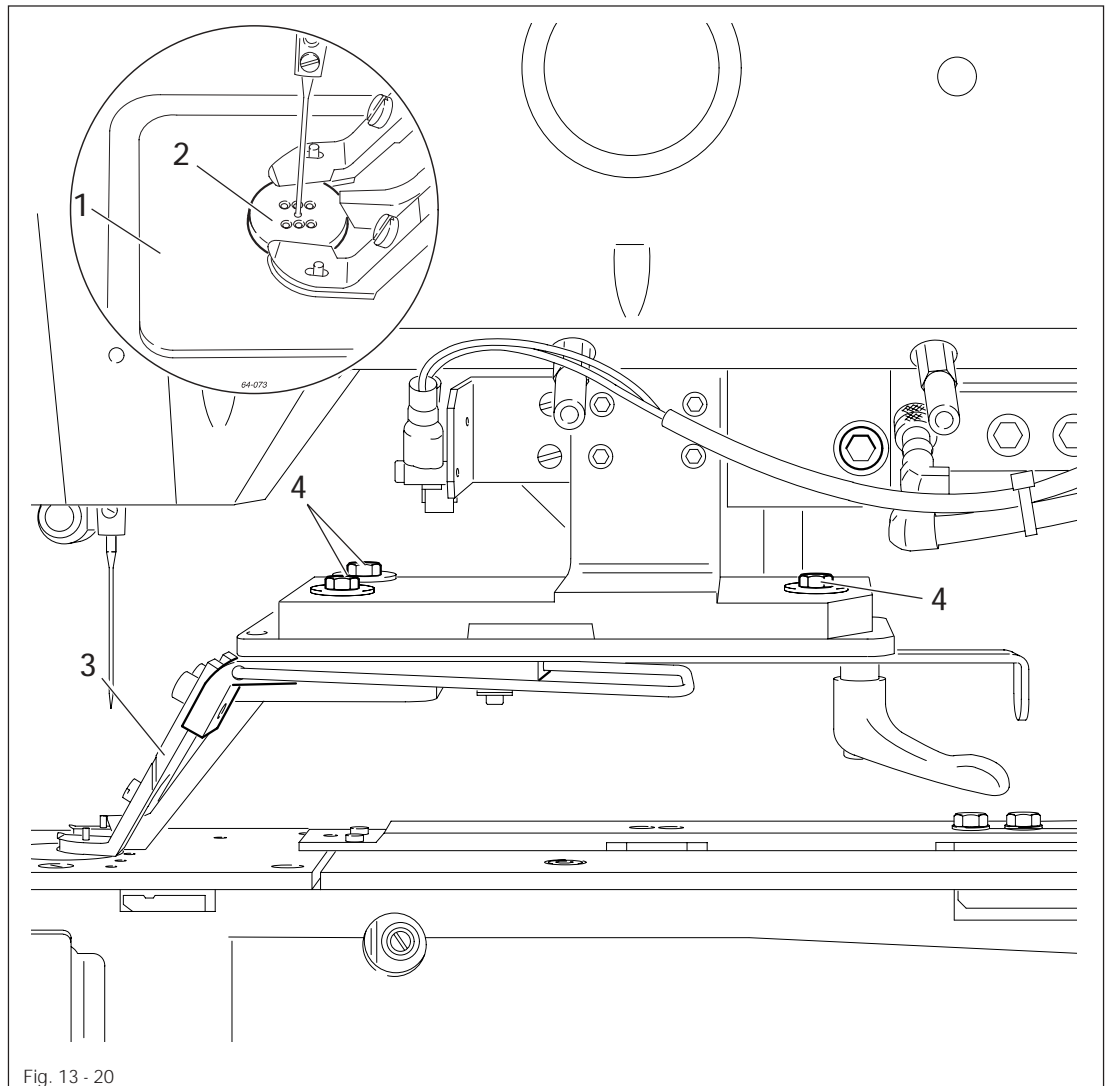
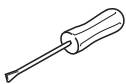


Fig. 13 - 20

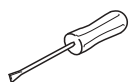
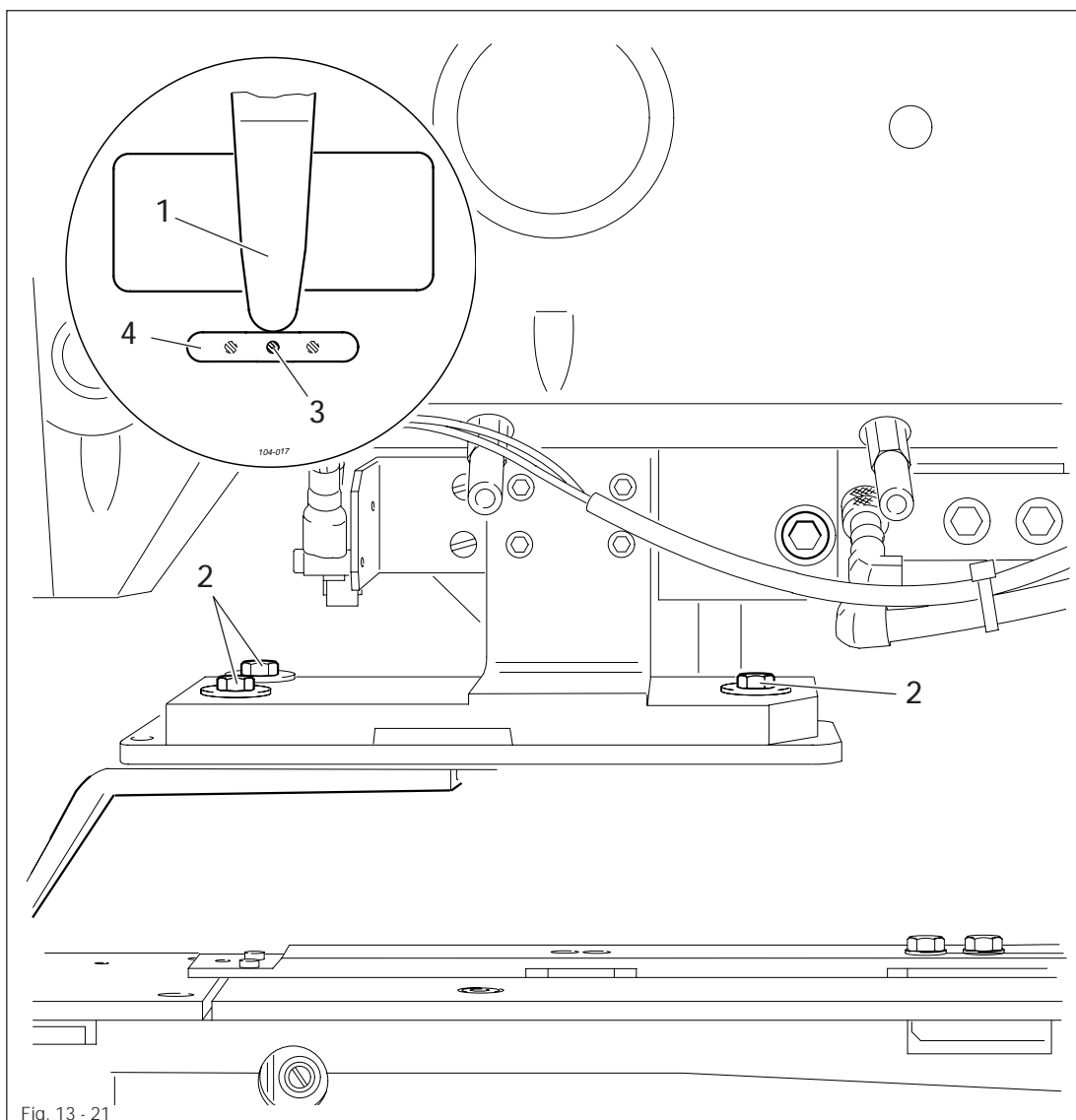


- Remove cloth plate 1.
- Switch on the machine and set parameter "610" at "4" (button gauge: centre).
- Insert and align button gauge 2 (part no. 61-111 635-66).
- Press down the button clamp by hand.
- Adjust button clamp 3 (screws 4) in accordance with the **requirement**.
- Check the remaining penetration positions of the needle in the respective hole of the button gauge 1 with the values "5", "6", "7" and "8" of parameter "610" in accordance with the **requirement**.
- Connect the machine to the pneumatic power supply and check the setting again.
- If necessary correct the position of the button clamp 3 (screws 4).
- Switch off the machine and disconnect it from the pneumatic power supply.
- Remove the button gauge and mount the cloth plate.

13.23 Aligning the work clamp (only on subclass -4/..)

Requirement

1. After selecting value "4" for parameter "610", work clamp 1 should be centred to the needle and be positioned at the front edge of the needle hole.
2. When value "6" is set, needle 3 should be positioned to the left of work clamp 1, and when value "7" is set, needle 3 should be positioned to the right of it.

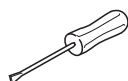
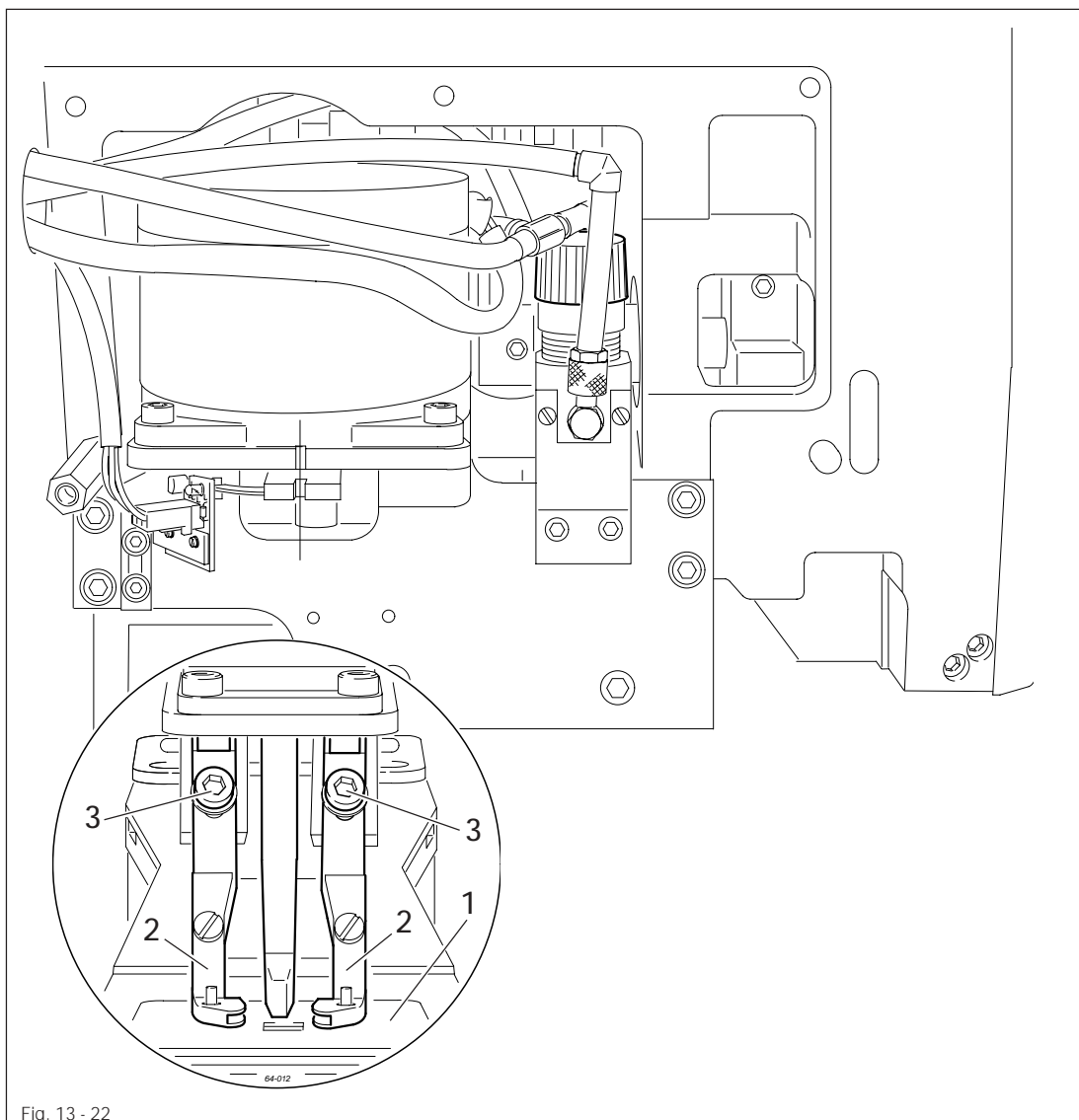


- Switch on the machine and set parameter "610" at "4" (button gauge: centre).
- Push down work clamp 1 by hand.
- Adjust work clamp 1 (screws 2) in accordance with **requirement 1**.
- Check the other needle entry positions for values "6" and "7" of parameter "610" in accordance with **requirement 2**.
- Connect the machine to the pneumatic power supply and check the setting again.
- If necessary correct the position of work clamp 1 (screws 2).
- Switch off the machine and disconnect it from the pneumatic power supply.

13.24 Adjusting the clamp pressure (only on subclass -1/..)

Requirement

When the button clamp is lowered, the clamp jaws 2 should be parallel to each other and touching the cloth plate.



- Remove cloth plate 1.
- Connect the machine to the pneumatic power supply.
- Switch on the machine and lower the button clamp.
- Align clamp jaws 2 (screws 3) in accordance with the **requirement**.
- Switch off the machine and disconnect it from the pneumatic power supply.

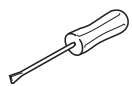
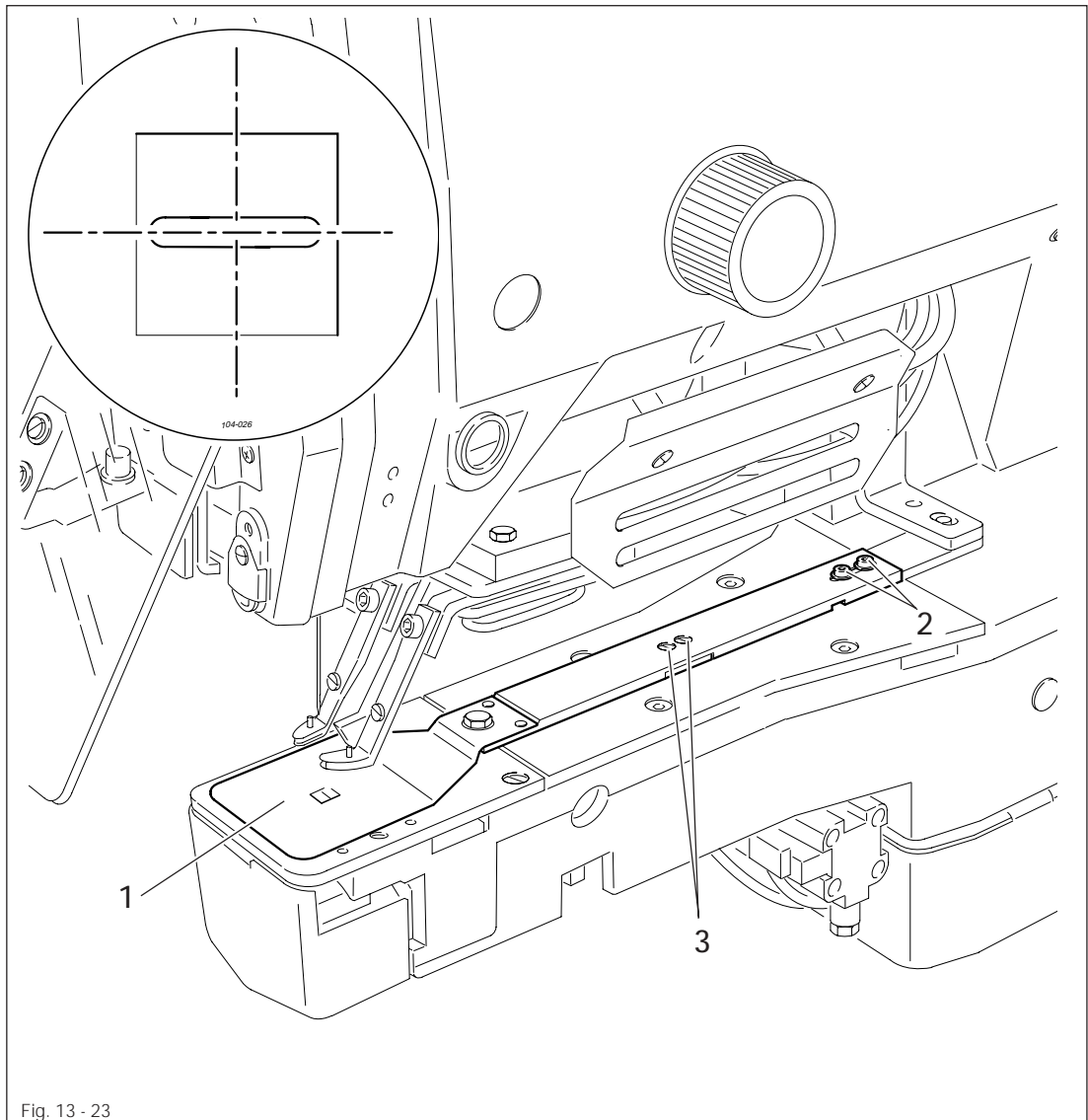


Alteration of the factory setting of the clamp pressure at 4 bar is not permitted.

13.25 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.
- Align cloth plate 1 (screws 2) in accordance with the requirement.
- Switch off the machine.

13.26 Basic setting of the end knotting equipment

Requirement

Retaining finger 5 should be parallel to loop spreader 7.

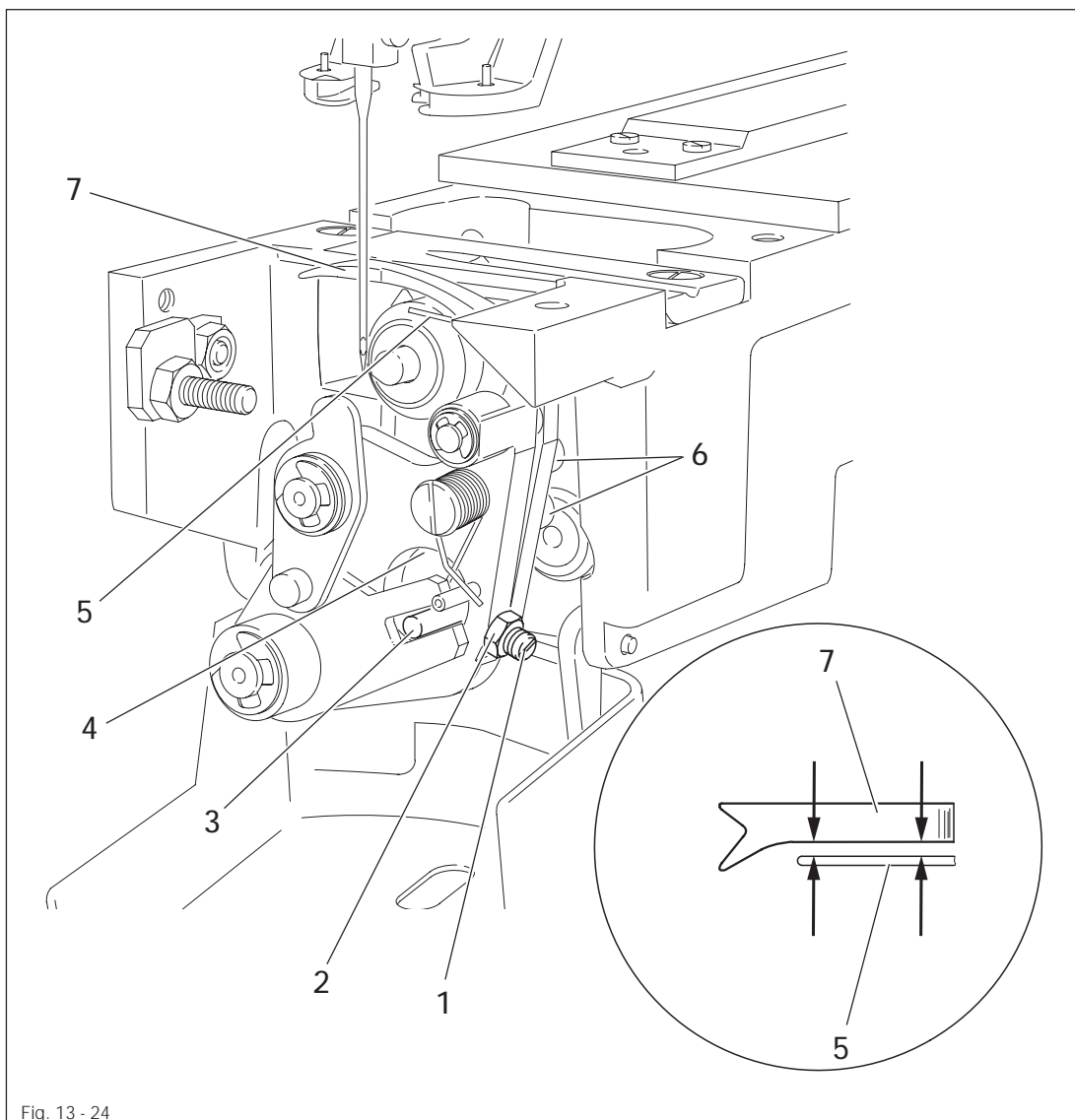
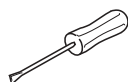


Fig. 13 - 24



- 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.

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.

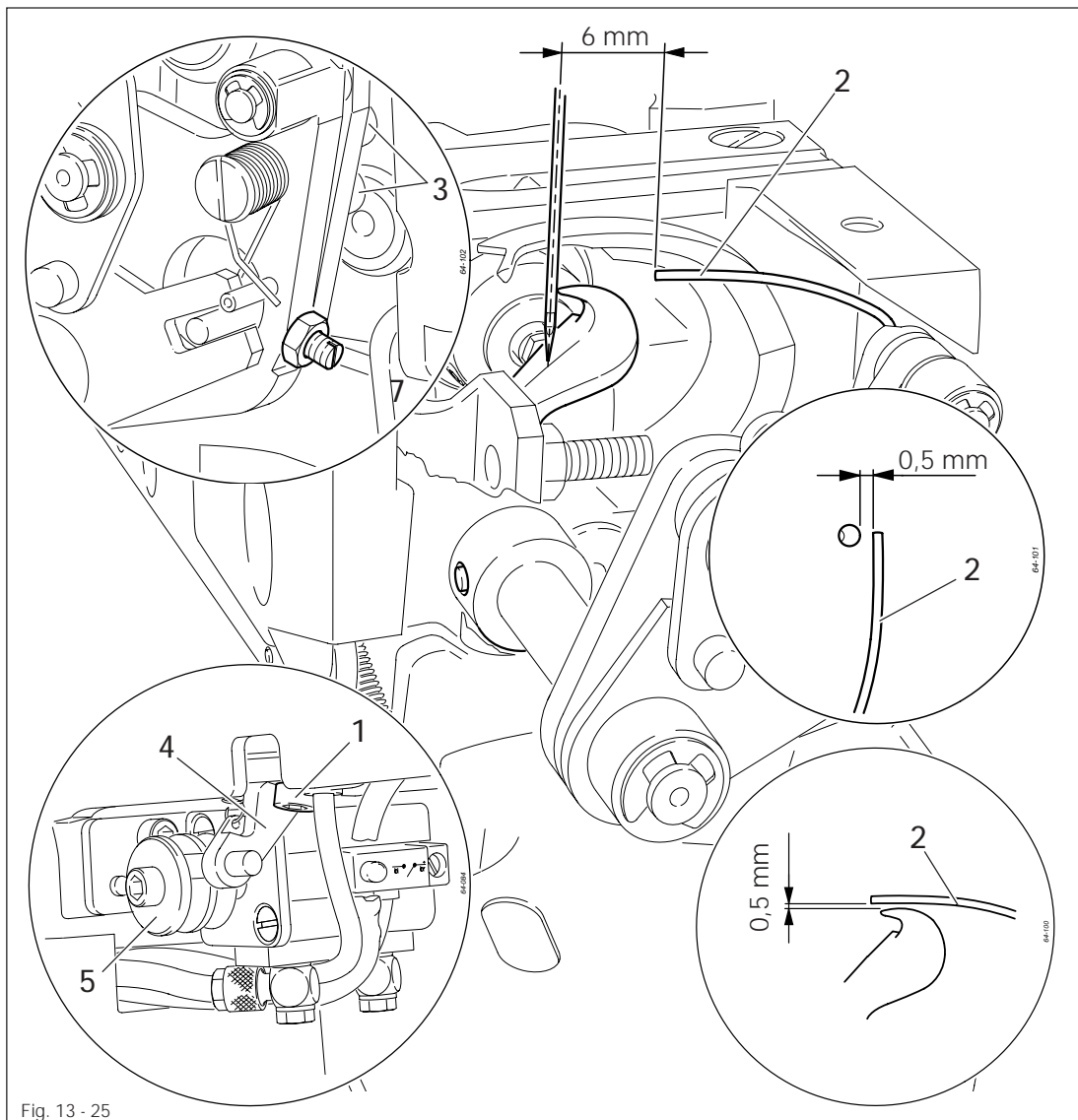
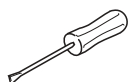


Fig. 13 - 25



- Switch on the machine, set parameter "610" at "1" and bring the needle bar to the needle rise position.
- Loosen screw 1.
- Adjust retaining finger 2 (screw 3) in accordance with requirement 1 and 2.
- Switch off the machine.
- Adjust retaining finger 2 (screw 1) in accordance with requirement 3.



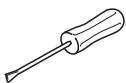
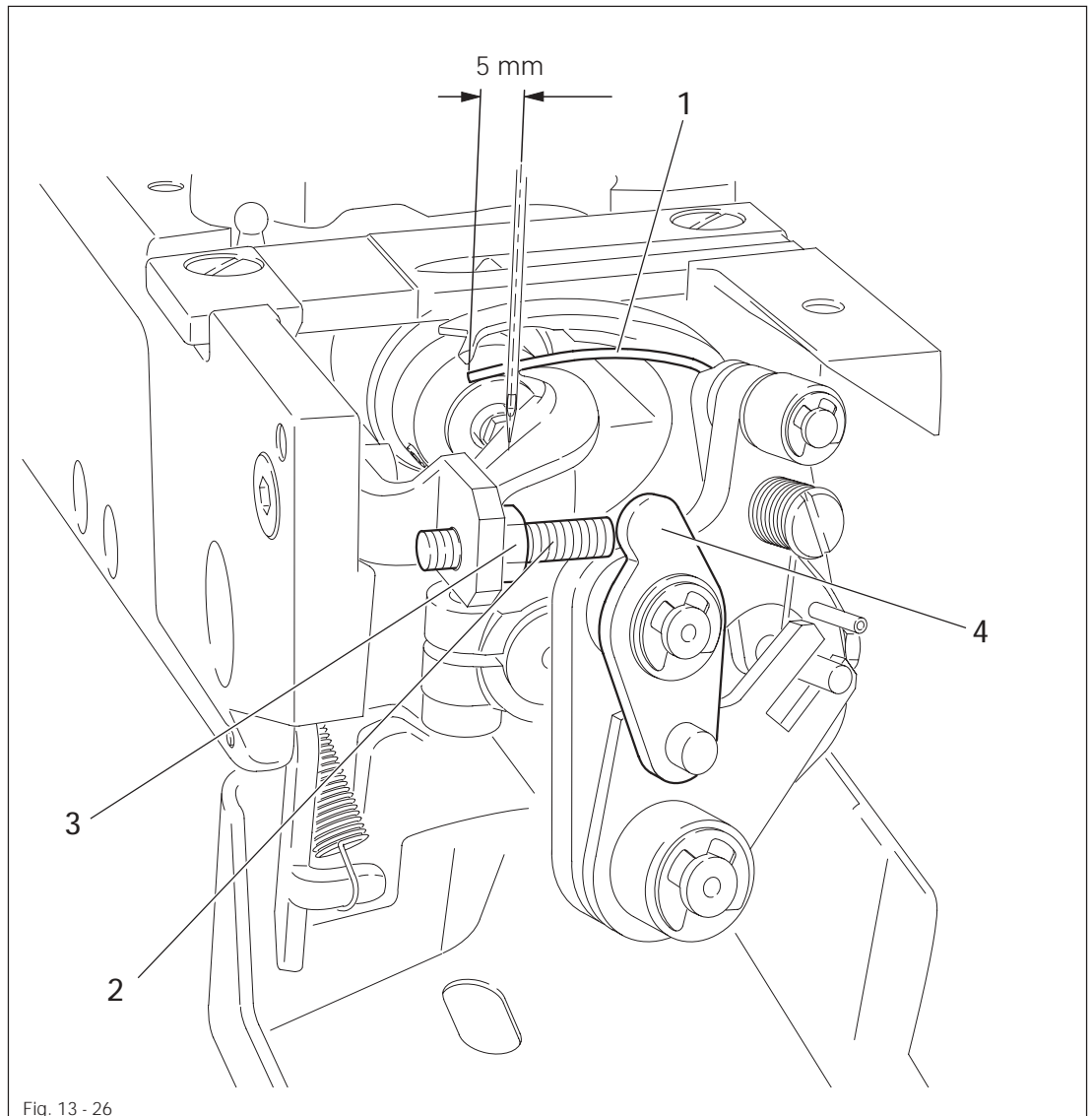
When tightening screw 1 take care to see that lever 4 engages reliably in part 5 and does not block the cylinder.

13.28

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**.



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

13.29 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.

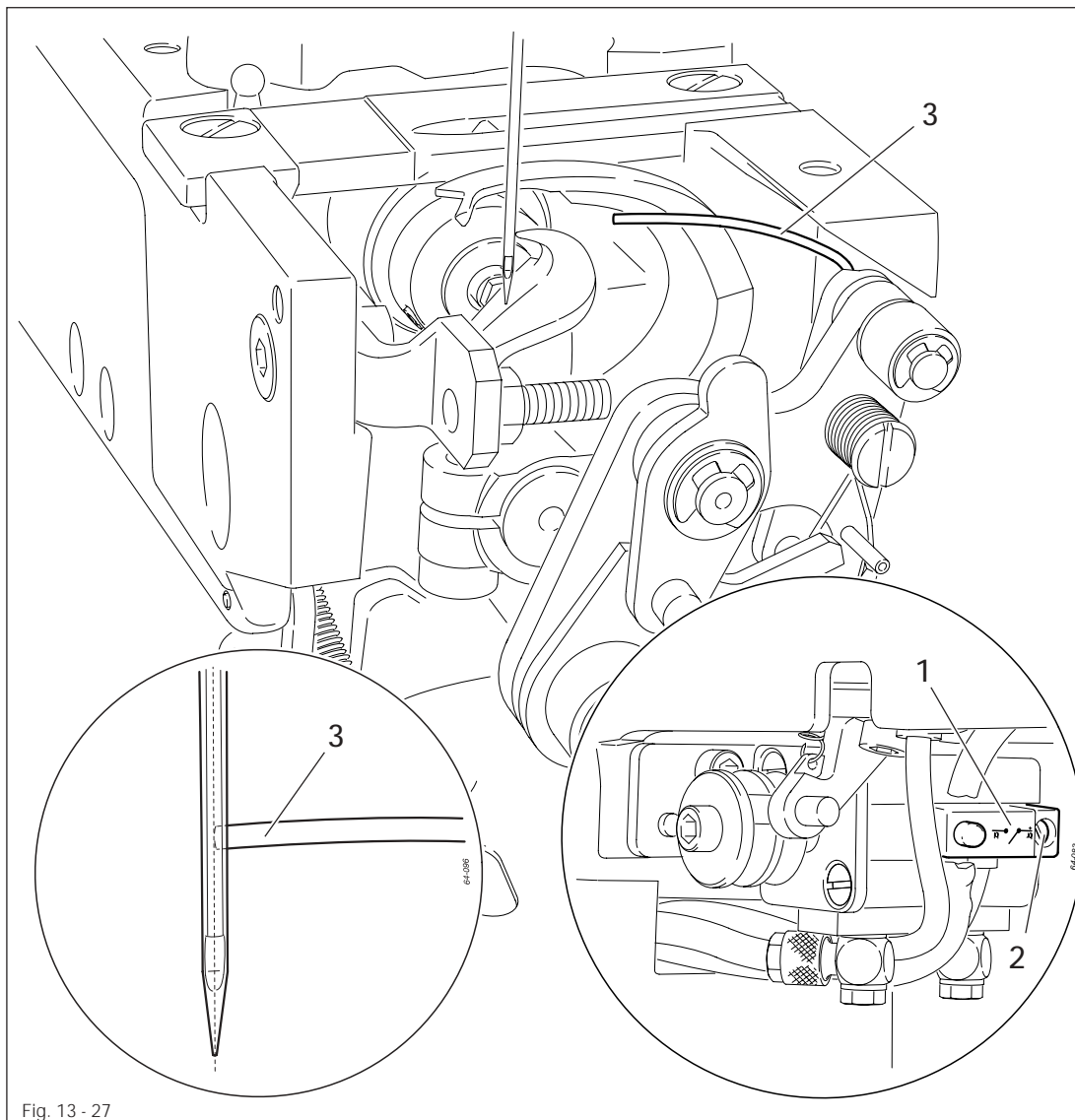
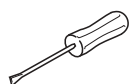
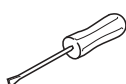
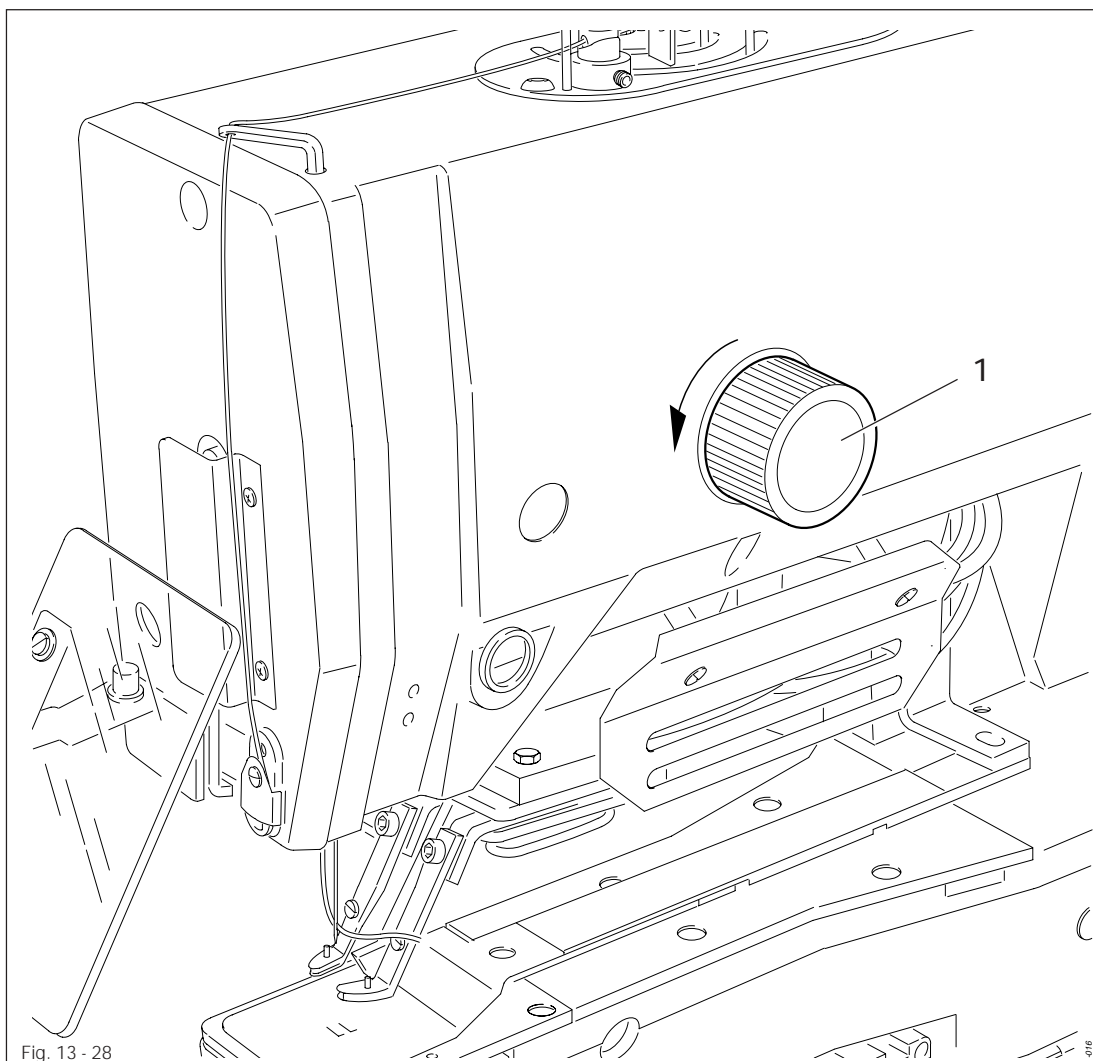


Fig. 13 - 27



- 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.

13.30 Setting the angle for the end knotting



- Switch on the machine.
- Set parameter "505" at "II" (end knotting function on).
- By turning the balance wheel 1 to "36" set parameter "506" (engaging position).
- By turning the balance wheel 1 to "52" 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.

13.31 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.

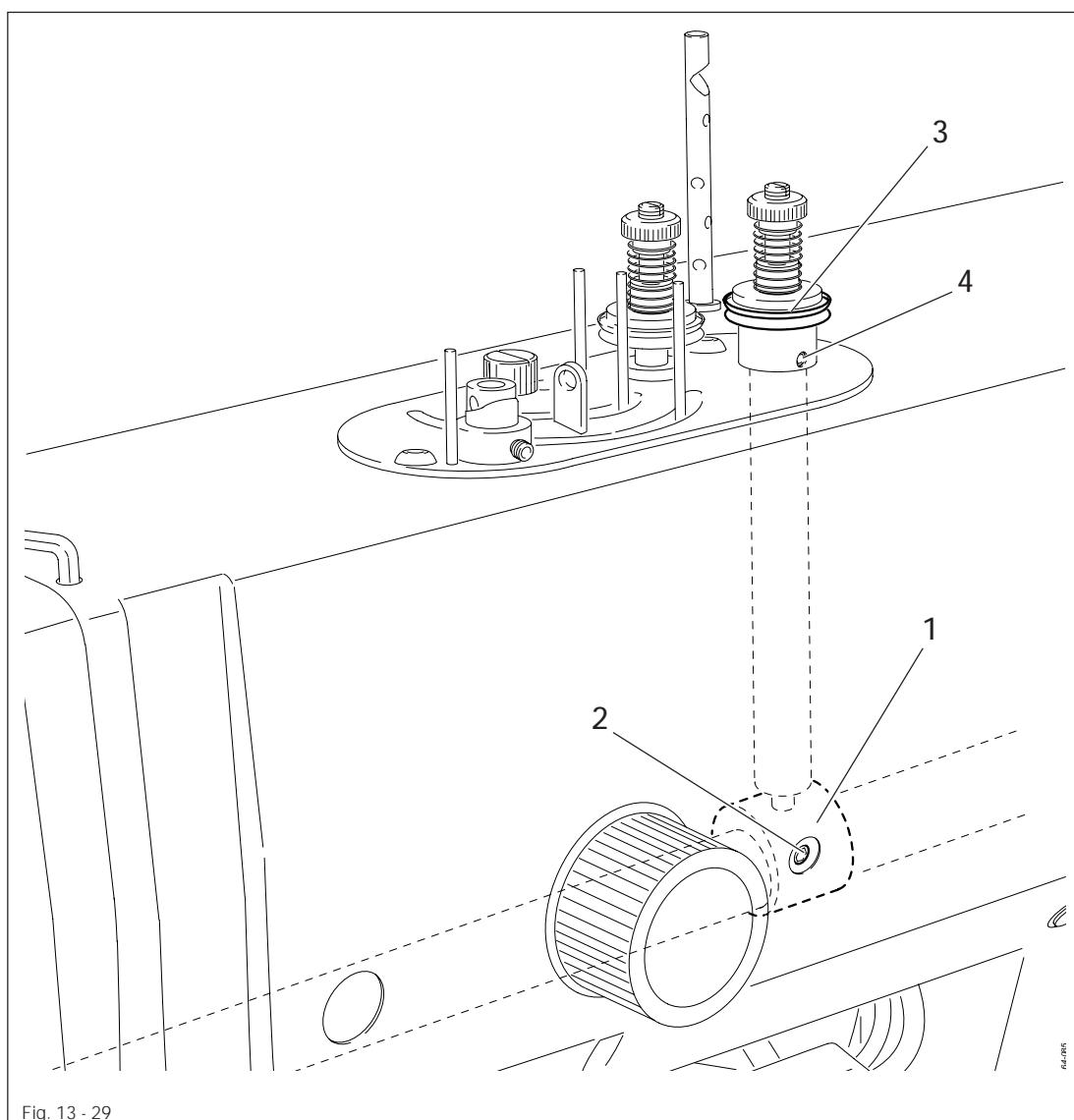
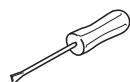


Fig. 13 - 29



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

13.32 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.

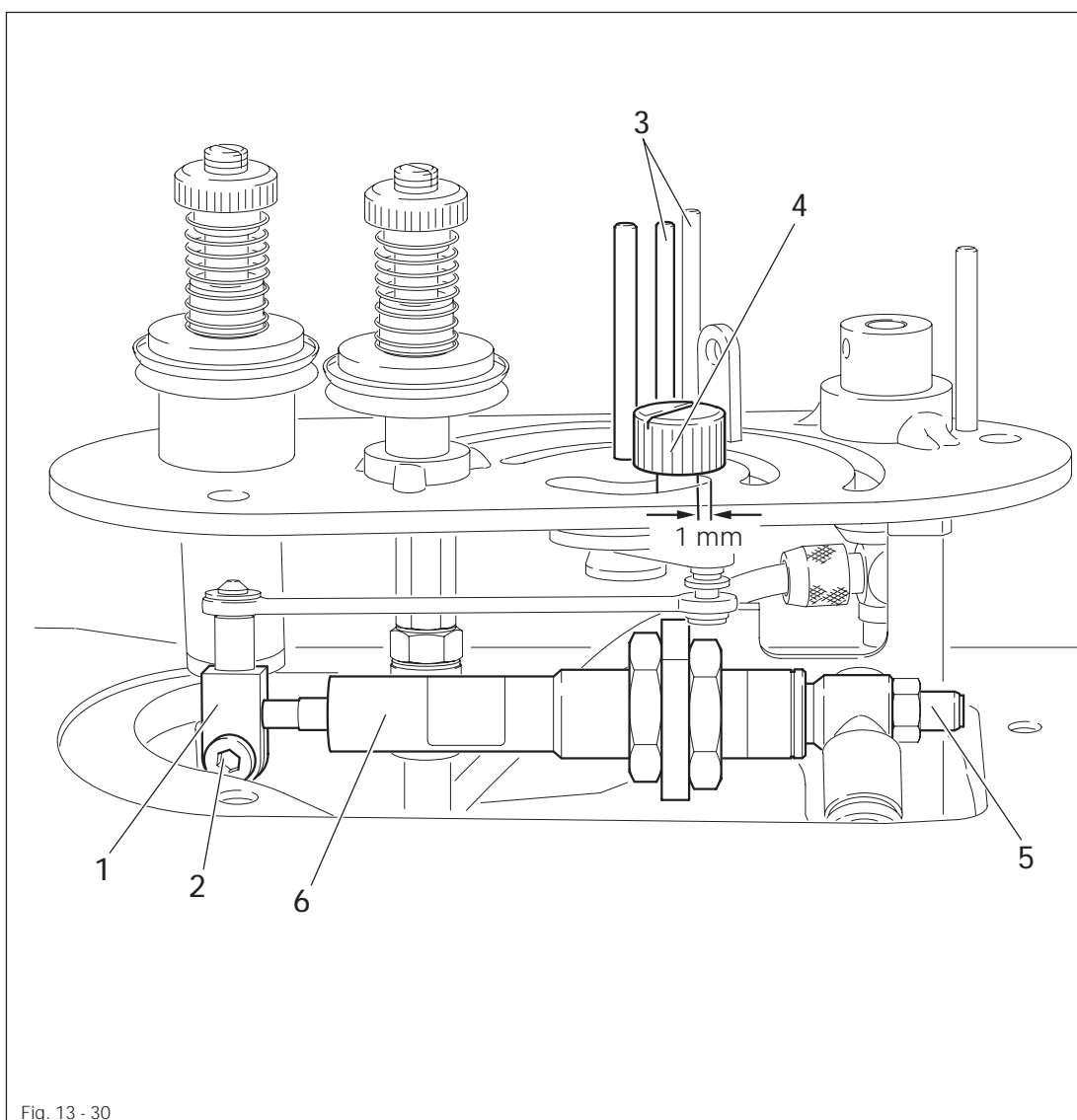
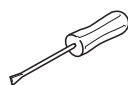


Fig. 13 - 30



- Adjust clamp 1 (screw 2) in accordance with requirement 1.
- Adjust thread puller 3 (screw 4) in accordance with requirement 2.
- Turn the throttle 5 in accordance with requirement 3.
- Adjust thread puller with screw 4 in accordance with requirement 4.

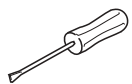
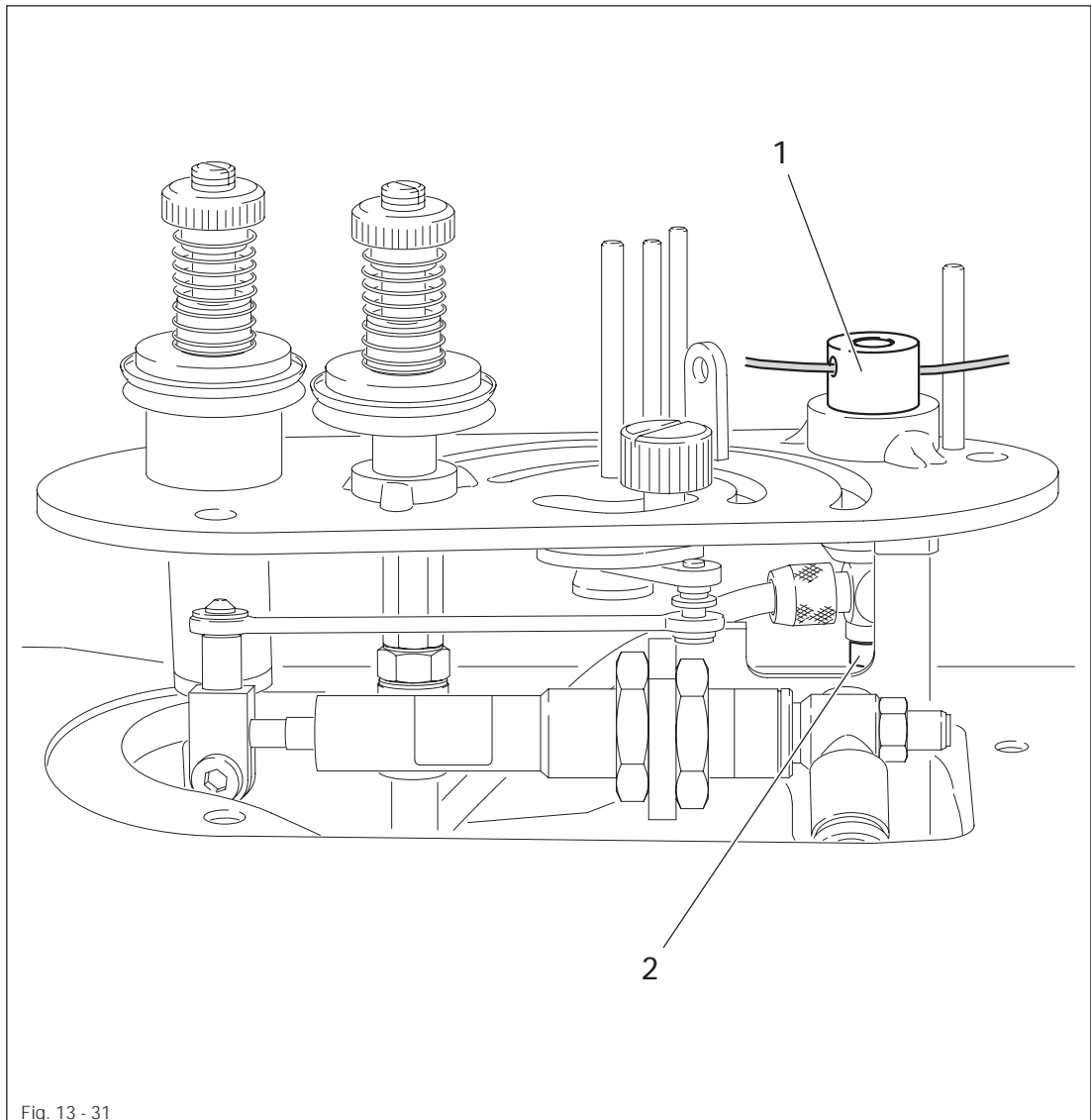


If required deviations from this basic setting of thread puller 3 are possible.

13.33 Adjusting the thread clamp

Requirement

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

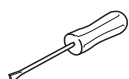
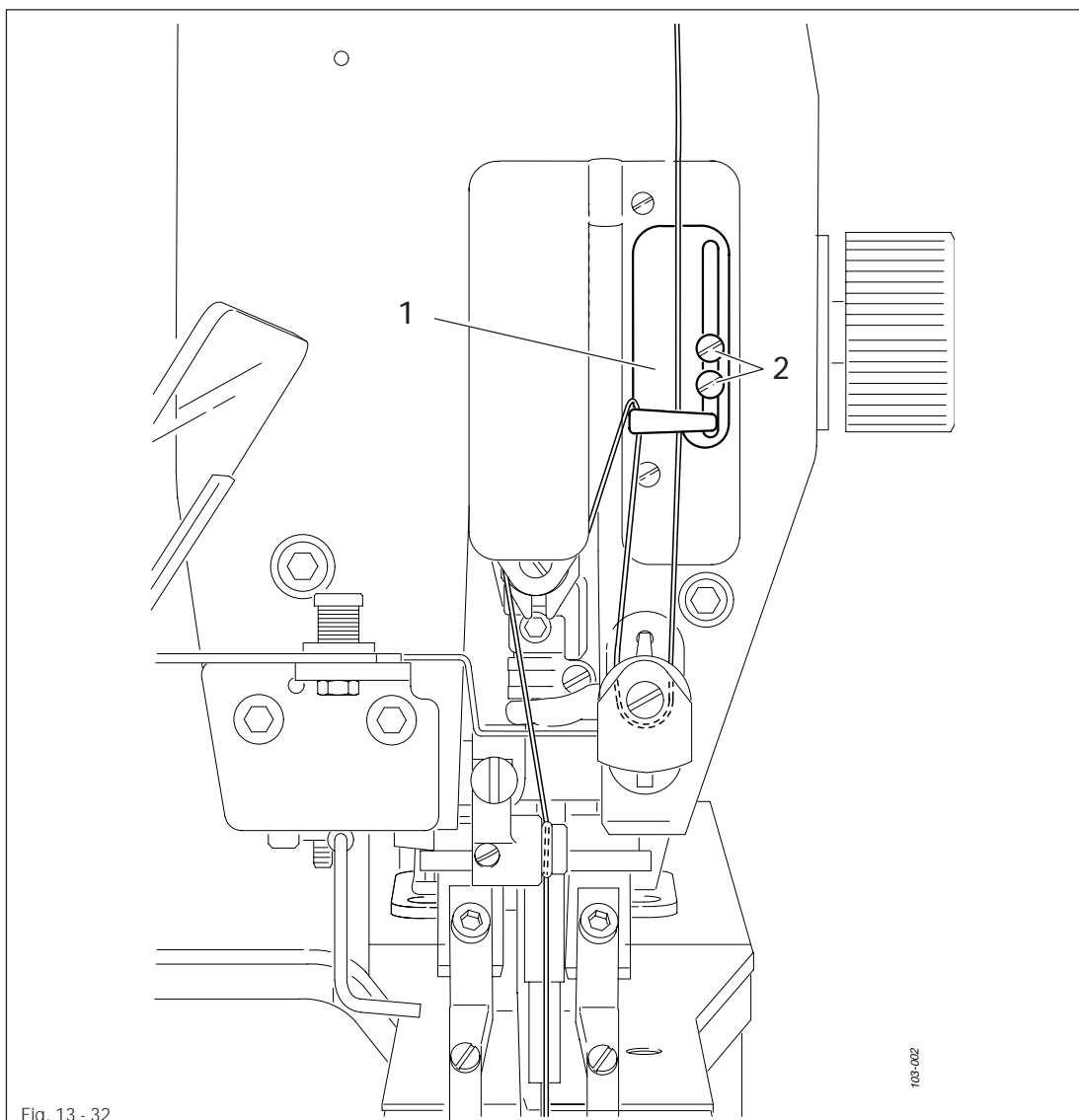


- Insert thread in thread clamp 1.
- Carry out a functional test for the thread clamp with parameter "603" (output 3).
- Turn throttle 2 in accordance with the requirement.

13.34 Adjusting the thread regulator

Requirement

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



- 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.

13.35 Cold start



When a cold start is carried out, all newly created or altered programs, as well as altered parameter settings **are deleted!**

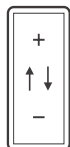
The machine is set back to its condition at the time of delivery.

The altered programs or parameter settings can be stored separately with the PC-program SAM, see **Chapter 13.38 Data backup and protection with PC-program SAM.**

- Switch on the machine.



- Switch to parameter input (LED in the key is **not on**).



- Select the function group "600" with the corresponding plus/minus key.

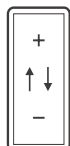
600



- Confirm input with Enter.

- Enter the code, see **Chapter 11.03.02 Entering/altering the access code.**

601



- With the corresponding plus/minus key select e.g. parameter "608" (carry out cold start).

608

RESET



- Confirm input with Enter.

SWITCH OFF

- Switch off the machine twice and on again after about 3 seconds.

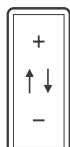
13.36 Parameter settings

13.36.01 Selecting and altering parameters

- Switch on the machine.



- Switch to parameter input (LED in the key is not on).

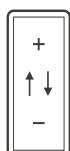


- Select the function group, e.g. "200" with the corresponding plus/minus key.

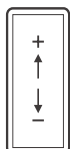


- Confirm the input with Enter.

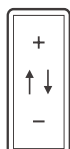
- Enter the code, see Chapter 11.03.02 Entering/altering the access code.



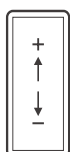
- With the corresponding plus/minus key enter e.g. parameter "102" (button height).

 1


- With the corresponding plus/minus key select "medium button height".

 2


- With the corresponding plus/minus key select e.g. parameter "301" (sensor clamp).

 I


- With the corresponding plus/minus key select "sensor clamp off".

 II


- End the input by switching to the sewing mode.

13.36.02 Parameter list

Group	Parameter	Description	Setting range	Set value
1	101	Display software version		0298/xxx
	102	Button thickness + material in mm (1 = 0 - 6 , 2 = 6 - 12 , 3 > 12)	1 - 3	1
	103	Show display during sewing (I = stem height, II = speed)	I, II	II
	104	Stem height + button thickness + material in mm (1 = 0 - 6 , 2 = 6 - 12 , 3 > 12)	1 - 3	1
	105	Maximum speed	(500 - 2000)	2000
	108	Time delay during continuous operation	0 – 2s	0,3s
	109	Continuous operation I = off, II = on	I, II	I
	110	Software version for motor control		
	111	Software version for thread strength module		
	2	201	Delete program	
202		Machine version 1: 3307 2: - 3: - 4: -	1 - 4	1
203		PC connection		
204		Cloth plate cut-out size see Ch. 3.02 Seam pattern size	1 - 6	1
205		Missed stitch detection I = off, II = on	I, II	II
206		Missed stitch detection threshold	0 - 999	150
207		Fade-out stitches of the misses stitch detection function	0 - 9	6
208		1 = Display thread strength of last program (max. 120 stitches) 0 = Display calculated optimum threshold (for entering param. "206")	0 - 1	1
209		Air jet I = off, II = on	I, II	I
4	401	Raise clamp delay	0.0 - 1.5 s	0.0s
	402	Start delay after clamp lowered	0.0 - 1.5 s	0.0 s
	403	Delay before thread trimming Interval before thread wiper started	0.0 - 2.0 s 0.0 - 2.0 s	0.0 s 0.06 s

Group	Parameter	Description	Setting range	Set value									
4	404	Thread cutting time or waiting time Thread wiper forward	0.0 - 2.0 s	0.06 s									
	405	Time for thread puller	0.0 - 2.0 s	0.1 s									
	407	Waiting time until thread wiper in basic position	0.0 - 4.0 s	0.2 s									
	412	Turn-on time air jet	0 – 10s	1s									
5	501	Soft start stitches Soft start speed	0 - 15 500 - 2000	1 500 spm									
	503	Extra stitches when sewing in same hole	0 - 2	0									
	504	Delay time thread clamp open at beginning of seam	0 – 2s	0,02s									
	505	End knotting I = OFF, II = ON	I, II	I									
	506	Position for "end knotting on"	0 - 127	36 incr.									
	507	Position for "end knotting off"	0 - 127	52 incr.									
	508	Position for "thread clamp closed" end of seam Number of stitches for "thread clamp closed" at end of seam	0 - 127 0 - 3	80 incr. 1									
	510	Position for "thread clamp open" at end of seam	0 - 127	120 incr.									
	511	Securing stitches before cutting	0 - 2	0									
	512	Measuring point of missed stitch detection function with display of the thread strength	0 - 127	115 incr.									
6	601	Move stepping motor clamp and needle											
	602	Display inputs 0123456789ABCDEF Display position 0: Not assigned 1: Not assigned 2: Needle in material (NIS) 3: End knotting (E16 - X5:7) 4: Error reset key S101 (E12 – X5:12)	Meaning of the value displayed <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">0</td> <td style="width: 50%; text-align: center;">I</td> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td style="text-align: center;">off▲</td> <td style="text-align: center;">on</td> </tr> <tr> <td style="text-align: center;">off▲</td> <td style="text-align: center;">on</td> </tr> </table>		0	I	-	-	-	-	off▲	on	off▲
0	I												
-	-												
-	-												
off▲	on												
off▲	on												

▲ = basic position

Adjustment

Group	Parameter	Description	Setting range	Set value
6	602	5: Not assigned (E11 - X5:11) 6: Not assigned (E10 - X5:10) 7: Not assigned (E9 - X5:9) 8: Not assigned (E8 - X5:16) 9: Not assigned (E7 - X5:15) A: Not assigned (E6 - X5:14) B: Not assigned (E5 - X5:5) C: Clamp lowered (E4 - X5:3) D: Not assigned (E3 - X5:3) E: Reference needle (photoelectric barrier) F: Reference clamp (photoelectric barrier)	- - - - - - - raised▲ - switched switched	- - - - - - - lowered - not assigned not assigned
6	603	Switch outputs 1: Clamp (X13:1) 2: Not assigned (X13:3) 3: Thread clamp (X13:5) 4: Thread trimming (X13:6) 5: End knotting (X13:7) 6: Thread puller (X13:8) 7: Thread wiper (X13:9) 8: Not assigned (X13:10) 9: Not assigned (X13:11) 10: Not assigned (X13:12) 11: Not assigned (X13:13) 12: Not assigned (X13:25) 13: Not assigned (X13:24) 14: Not assigned (X13:16) 15: Not assigned (X13:17) 16: Missed stitch lamp (X5:24)	Meaning of the value displayed 0 lowered open off▲ off▲ off▲ off▲ - - - - - - - - off▲	1 raised▲ - closed▲ on on on on - - - - - - - - on
	604	Engaging and disengaging positions for end knotting		
	605	Needle penetration point in fabric	0 - 127	43
	606	Set shifting of reference point clamp (X) and needle (Y)		(0) (0)
	607	Turn sewing motor in sewing direction		
	608	Carry out cold start		
	610	Needle penetration points for adjustment 1: Centre 2: Max. penetration point right 3: Max. penetration point left 4: Button gauge: centre 5: Button gauge: front left 6: Button gauge: back left 7: Button gauge: back right 8: Button gauge: front right		

▲ = basic position

Group	Parameter	Description	Setting range	Set value
6	611	Suppression thread trimming (I = OFF, II = ON)	I, II	I
	612	Adjusting aid for 0-position of sewing motor		0
	614	Set cutting position X on right	± 25	5
	615	Set cutting position X on left	± 25	8
7	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	35
	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
	710	Maximum machine speed	0 - 100	45
	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	7
718	Anti vibration filter	1 - 10	3	
719	Rotation direction allocation	0 - 1	1	
720	Reference position correction	0 - 127	64	

Adjustment

Group	Parameter	Description	Setting range	Set value
8	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 program group A	0 - 1	0
	817	Right of access key program group B	0 - 1	0
	818	Right of access programming key	0 - 1	0
	819	Enter access code (status on delivery: 3307)	0 - 9999	3307

13.37 Error messages

Error 1 System error

Error 2 Sewing motor

- 30: Time out + motor defect
- 20: Time out + motor defect
- 10: Speed + motor defect
- 0B: StopX + motor defect
- 0A: Reset stitch counter + motor defect
- 9: Write parameter + motor defect
- 5: Position tdc shortest path + motor defect
- 3: Position tdc backwards + motor defect
- 2: Position tdc forwards + motor defect

Error 4 Missed stitch with needle penetration number or end knotting error with needle penetration number

Error 5 Clamp entrance at bottom (E4 – X5:4) switch clamp locked as main drive not in t.d.c. position

Error 6 Time monitoring when going through the sewing program

Error 7

- 1 Delay X not finished
- 2 Delay Y not finished
- 3 Delay X and Y not finished
- 4 Ramp X not finished
- 5 Ramp Y not finished

Error 8 Stitch length

Error 9 Seam outside area

Error 10

- 1 Error when moving the machine into home position, outputs not finished
- 2 Raise clamp
- 3 Insert position not reached
- 6 Foot pedal operated
- 7 X-centre not reached
- 8 still at X-centre
- 9 Y-centre not reached
- 10 still at Y-centre
- 11 time control home test
- 12 Absolute position -0.3 not reached home test
- 13 Absolute position +0.6 not reached home test
- 14 Needle raised position not reached

Error 11 Stepping motor frequency too high

Adjustment

Error 12	Error in sewing program
Error 13	Set position of stepping motor outside sewing area
Error 14	3 Time control output thread clamp 6 Time control output thread puller
Error 15	Input signal not received
Error 16	Delay time with running sewing drive not permitted
Error 17	Cutting without sewing
Error 18	Incorrect command in data set
Error 19	Incorrect program number
Error 20	not assigned
Error 21	Power supply unit overload (24 V)
Error 22	Mains voltage
Error 23	Power supply unit 24 V too strong / too weak
Error 24	No stepping motor movement prepared (needle in material)
Error 25	Stepping motor not started yet (needle in material)
Error 27	1 Error on PC-interface Receiver Timeout 2 Transmitter Timeout 3 Transmission error 4 Receiving buffer overflow 5 Data error 6 Answer too long 7 No ASCII HEX 8 Inadmissible program number 9 Incorrect command syntax 10 No number 11 Unknown command
Error 29	CAN-error 1 Timeout 2 Incorrect answer 4 Data lost
Error 30	End knotting error with stitch entry number

Motor errors

34	Brake path too short
35	Communication error
36	Initialisation not completed
65	Extint low at Init
66	Short circuit
68	Extint low in operation
69	No increments
70	Motor blocking
71	No incremental connector
73	Motor running interrupted
75	Controller locked
170	Invalid transmission
171	Zero mark invalid
175	Interior start error
222	Time-out monitoring

13.38 Data backup and protection with PC-program SAM

For the data transfer the PC and the machine are connected to each other with a null modem cable (part-no. 91-291 998-91).

- Switch off the machine and the PC.
- Connect the serial interface (RS232 see Page 8-3) and serial PC-interface (COM 1-4) with the cable provided.
- Switch on the PC. If necessary install SAM with the installation CD provided.
- Start SAM ("Start" "Programme" – "SAM") and set the corresponding COM-interface in the
- "settings" menu. In the "Machine" menu 3307 must be selected.
- Switch on the machine.
- Select parameter "203" on the machine.

Enter

- Press **Enter**.
- "203 ONLINE" appears on the display and the machine is in the slave mode, i.e. all other operations will be started by SAM.
- Set up a connection to the machine using the SAM-menu "Setting up a machine connection".
- If the connection was set up successfully, the data backup item of the SAM menu is activated.



Either a complete (all data and programs) or selective data backup or protection can be carried out. For this purpose the name of a backup database must be entered, or a previously created backup database selected. The name of the backup database can be chosen freely, but the character string "3307" must be part of it.

- After the data has been transferred successfully, the connection to the machine can be disconnected with the SAM menu "Machine – terminate the connection". The machine leaves the slave mode and changes to the function group 200.
- Switch off the machine.
- Remove the cable from the serial interface (RS232).

13.39 Internet update of the machine software

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



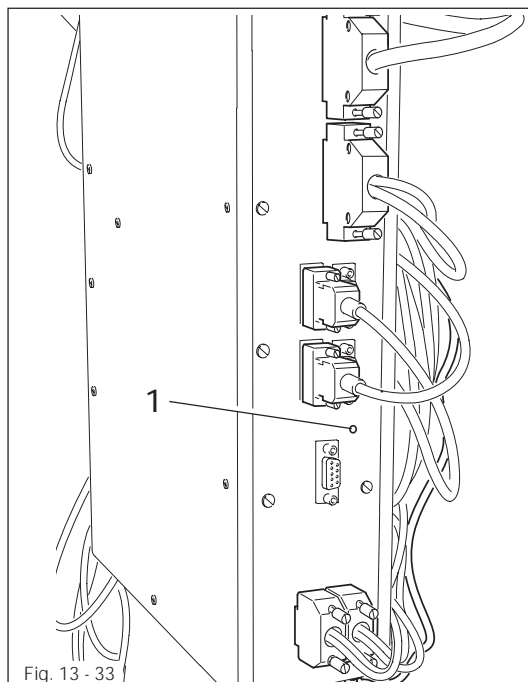
The PFP boot program and the control software of the machine type can be downloaded from the PFAFF-homepage using the following path:
www.pfaff-industrial.com/de/service/download/steuerungssoftware.html

To update the machine software carry out the following steps:



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

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



- Switch on the PC and start the PFP boot program.
- Select the machine type.
- Press the "programming" button.
- Switch on the machine, keeping the boot key 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.
- When the update has been completed, switch off the machine and end the PFP boot program.
- End the connection between the PC and the machine control unit and reconnect the control panel to the machine control unit.

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



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

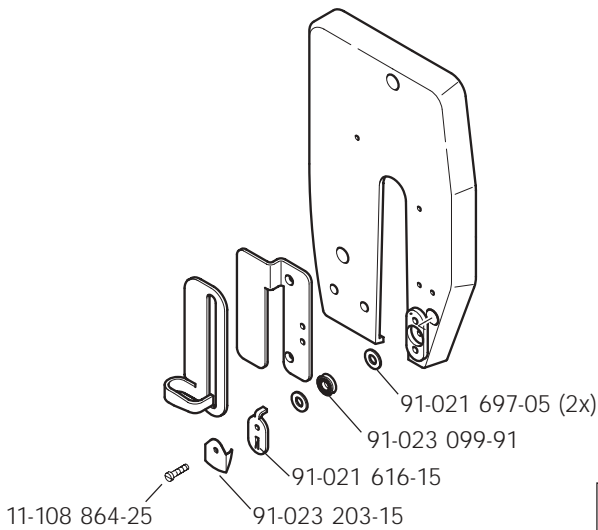
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Wearing parts



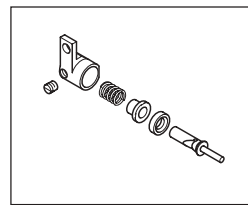
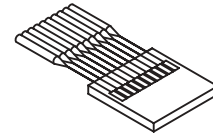
This is a list of the most important wearing parts.

You can order a detailed spare parts list for the complete machine under part no. 296-12-18 808.

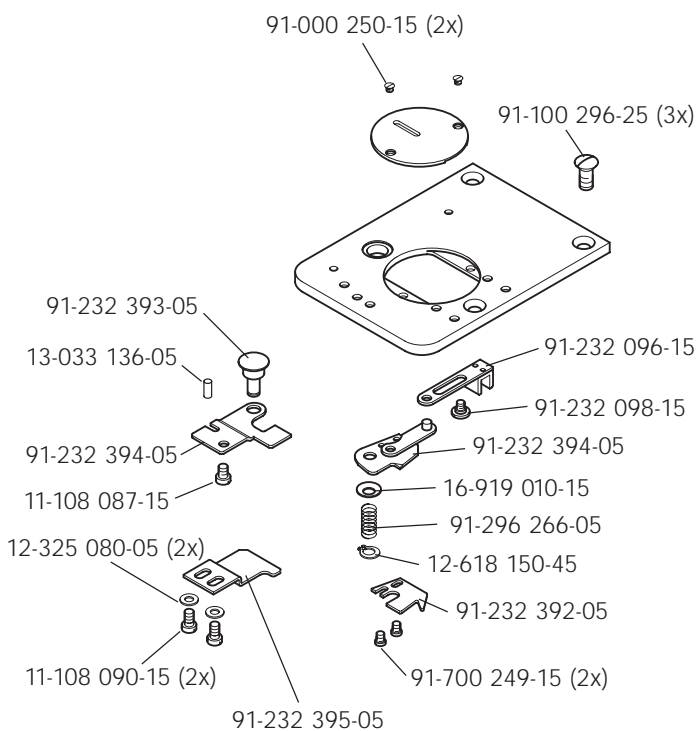


Sub-class -1/01, -1/11 System 134-35
Sub-class -1/02, -1/03, -4/.. System 134-35

11-108 864-25



91-232 763-91



91-001 299-15

91-180 933-92

11-130 176-15

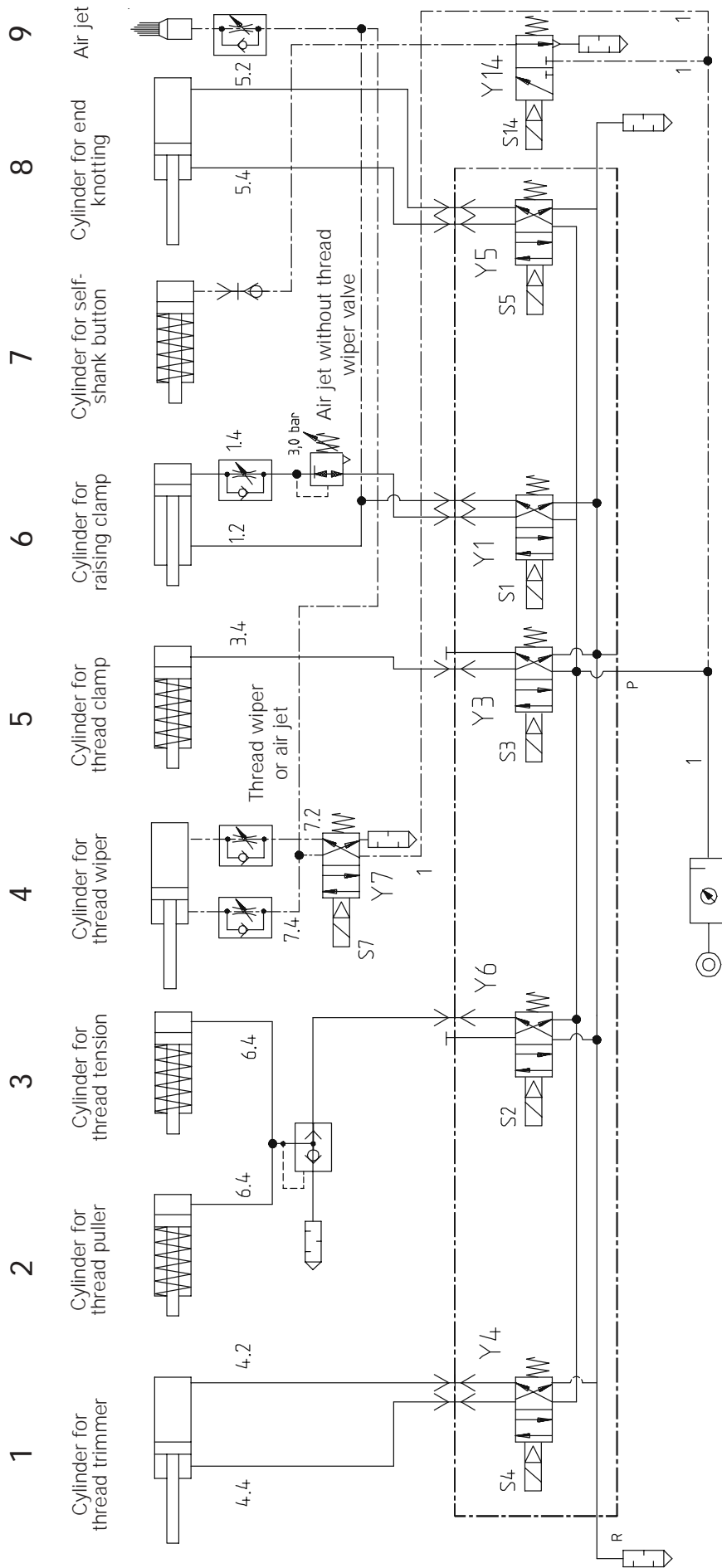
91-023 345-05

91-001 283-15

91-232 008-05

11-130 086-15 (2x)

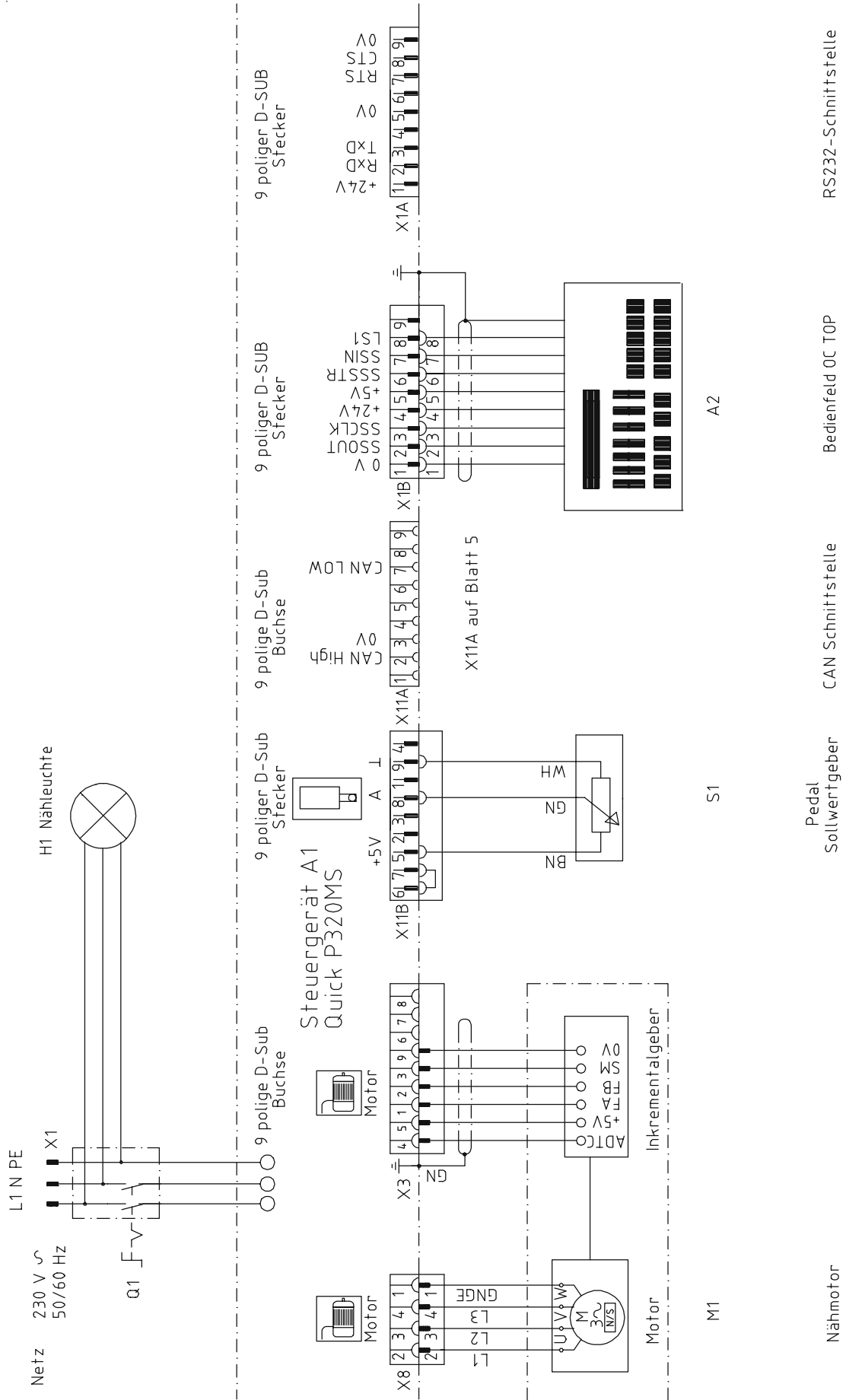
91-169 384-15



The control units and valves are in the output position of the machine.
Main switch -ON, compressed air -ON

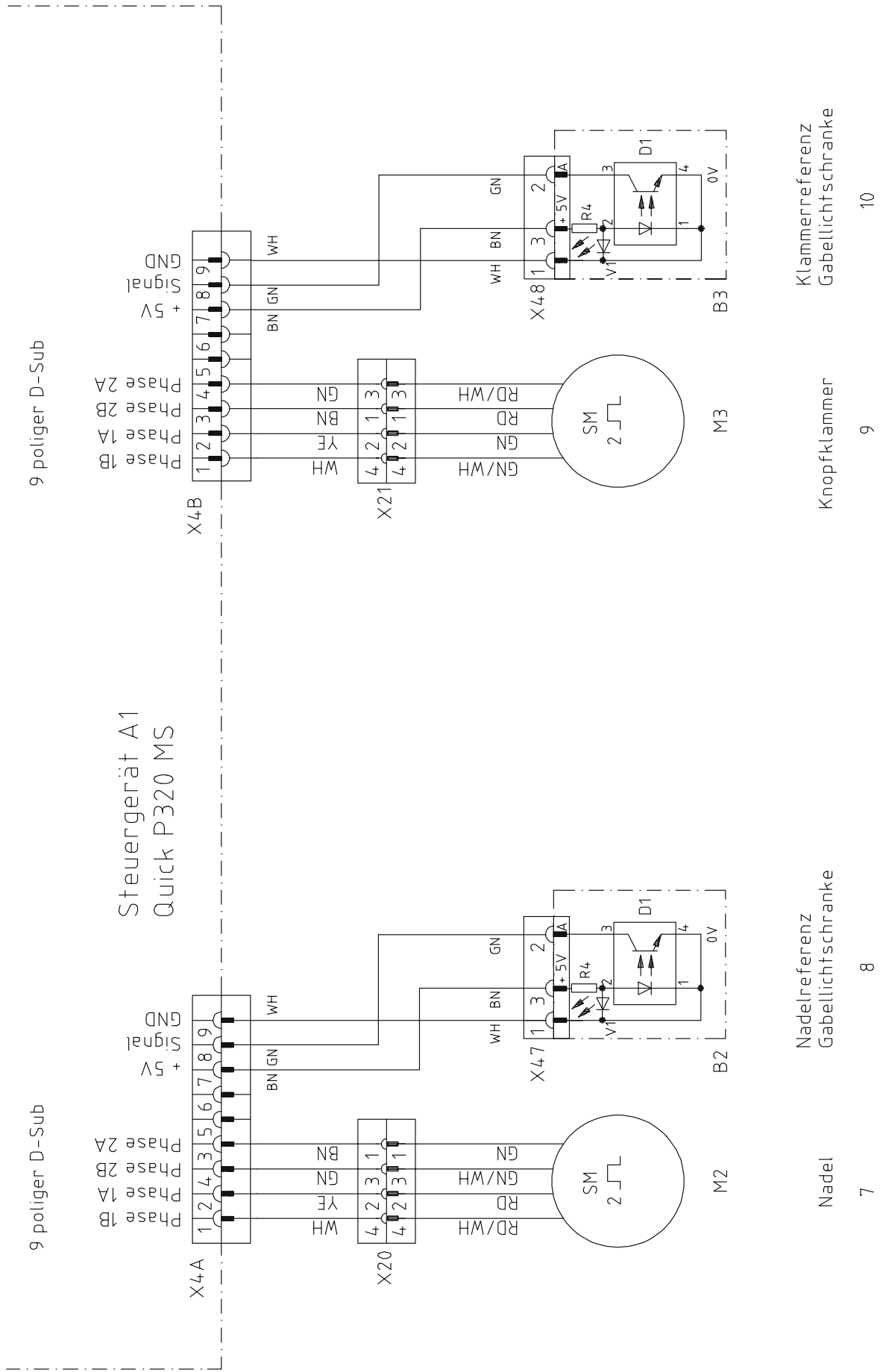
Reference list for circuit diagrams

A1	Steuergerät Quick P 320MS
A2	Bedienfeld OC TOP-Automaten 3307
A100	Fadenkraft- Modul
A110	Fadenkraft- Alarm + Reset
B2	Gabellichtschanke Nadelreferenz
B3	Gabellichtschanke Klammerreferenz
B100	Fadenkraft- Sensor
H1	Nähleuchte
H101	Leuchte- Alarm
M1	Nähmotor
M2	Schrittmotor Nadel
M3	Schrittmotor Knopfklammer
Q1	Hauptschalter
S1	Pedal Sollwertgeber
S24	Taster Knopfklammer unten
S36	Magnetschalter Endverknötung
S101	Taster- Reset
X1	Netzstecker
X1A	RS232 – Schnittstelle 1
X1B	Bedienfeld OC TOP
X3	Inkrementalgeber (Nähmotor)
X4A	Schrittmotor Nadel & Gabellichtschanke
X4B	Schrittmotor Knopfklammer & Gabellichtschanke
X5	Eingänge
X8	Nähmotor
X11A	CAN Schnittstelle
X11B	Fußpedal Sollwertgeber
X13	Ausgänge
X20	Schrittmotor Nadel
X21	Schrittmotor Knopfklammer
X34	Taster Knopfklammer unten
X47	Gabellichtschanke Nadelreferenz
X48	Gabellichtschanke Knopfklammerreferenz
X51	Klammer auf
X53	Fadenklemme
X54	Fadenschneiden
X55	Endverknötung
X56	Fadenzieher
X101	Fadenkraft- Modul Sensor + Versorgung
X102	Fadenkraft- Modul CAN Schnittstelle
X103	Fadenkraft- Modul RS232
X110	Fadenkraft- Alarm + Reset
X111	Fadenkraft- Sensor
Y1	Klammer auf
Y3	Fadenklemme
Y4	Fadenschneiden
Y5	Endverknötung
Y6	Fadenzieher



Schrittmotoren

Steuergerät A1
Quick P320 MS



Klammerreferenz
Gabellichtschranke

10

Knopfklammer

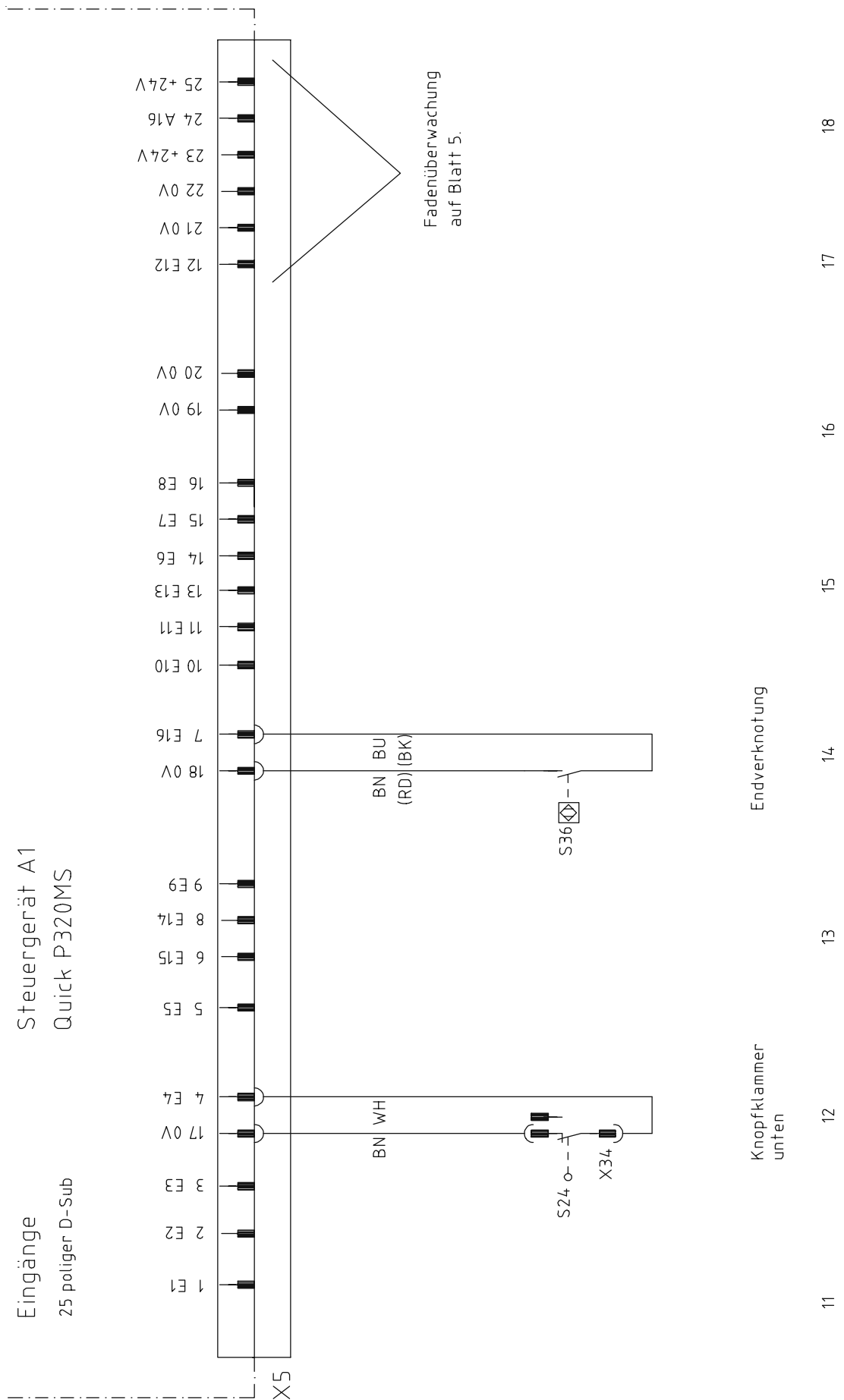
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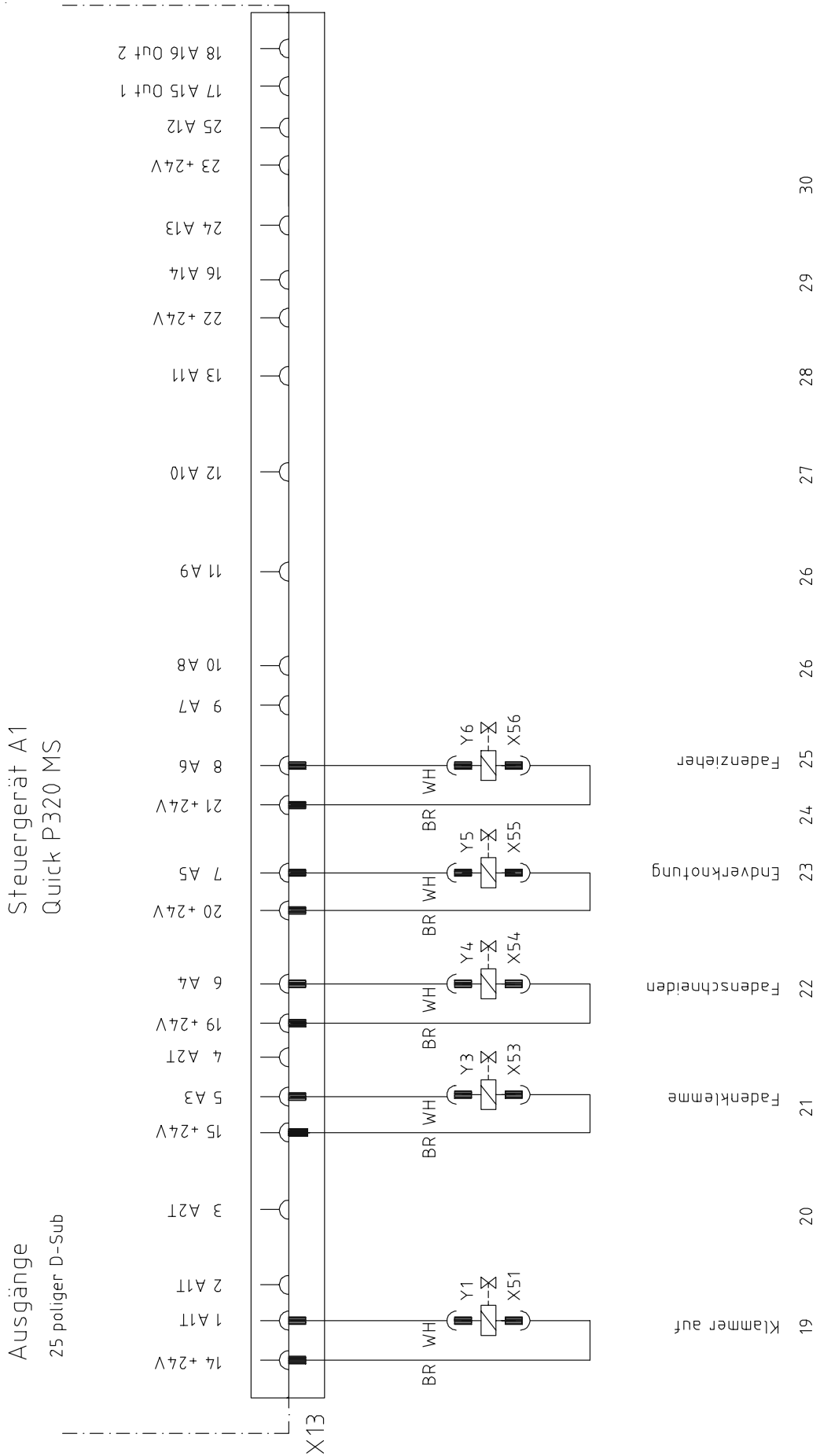
Nadelreferenz
Gabellichtschranke

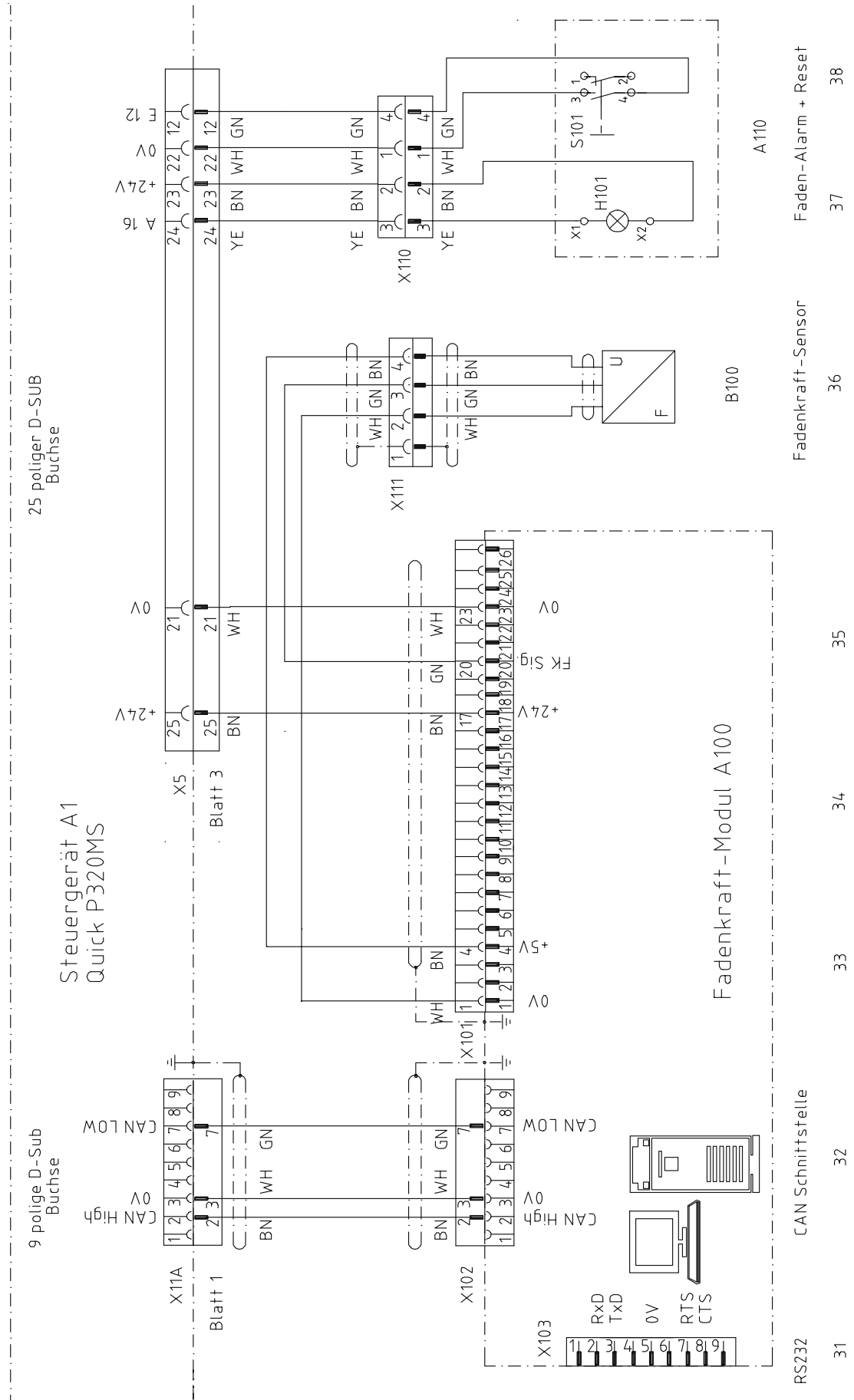
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Nadel

7







RS232	31	CAN Schnittstelle	32
	33		33
	34		34
	35		35
	36	Fadenkraft-Sensor	36
	37	Faden-Alarm + Reset	37
	38		38

PFAFF

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