

3588-05/020
-15/020

INSTRUCTION MANUAL

This instruction manual applies to machines from
serial number **2 760 129** and software version
0380/003, 0381/003 onwards



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

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**PFAFF Industriesysteme
und Maschinen AG**

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1 Safety

1.01 Directives

The machine has been constructed in accordance with the requirements listed in the EC Declaration of Conformity and the Declaration of Incorporation.

In addition to this Instruction Manual, also observe all generally accepted, statutory and other regulations and legal requirements and all valid environmental protection regulations! The regionally valid regulations of the social insurance society for occupational accidents or other supervisory organizations are to be strictly adhered to!

1.02 General notes on safety

- This machine may only be operated by adequately trained operators and only after having completely read and understood the Instruction Manual!
- All Notes on Safety and Instruction Manuals of the motor manufacturer are to be read before operating the machine!
- The danger and safety instructions on the machine itself are to be followed!
- This machine may only be used for the purpose for which it is intended and may not be operated without its safety devices. All safety regulations relevant to its operation are to be adhered to.
- When exchanging sewing tools (e.g. needle, roller presser, needle plate and bobbin), when threading the machine, when leaving the machine unattended and during maintenance work, the machine is to be separated from the power supply by switching off the On/Off switch or by removing the plug from the mains!
- Everyday maintenance work is only to be carried out by appropriately trained personnel!
- Repairs and special maintenance work may only be carried out by qualified service staff or appropriately trained personnel!
- Work on electrical equipment may only be carried out by appropriately trained personnel!
- Work is not permitted on parts and equipment which are connected to the power supply! The only exceptions to this rule are found in the regulations EN 50110.
- Modifications and alterations to the machine may only be carried out under observance of all the relevant safety regulations!
- Only spare parts which have been approved by us are to be used for repairs! We expressly point out that any replacement parts or accessories which are not supplied by us have not been tested and approved by us. The installation and/or use of any such products can lead to negative changes in the structural characteristics of the machine. We are not liable for any damage which may be caused by non-original parts.

1.03

Safety symbols



Danger!

Special points to observe.



Danger of injury to operating or technical staff!



Caution

Do not operate without finger guard and safety devices.

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

1.04

Important notes for the user

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

For further information please refer to your PFAFF agency..

1.05 Notes for operating and technical staff

1.05.01 Operating staff

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

The operating staff is obliged to observe the following points:

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

1.05.02 Technical staff

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

The technical staff is obliged to observe the following points:

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

1.06

Danger warnings



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



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



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

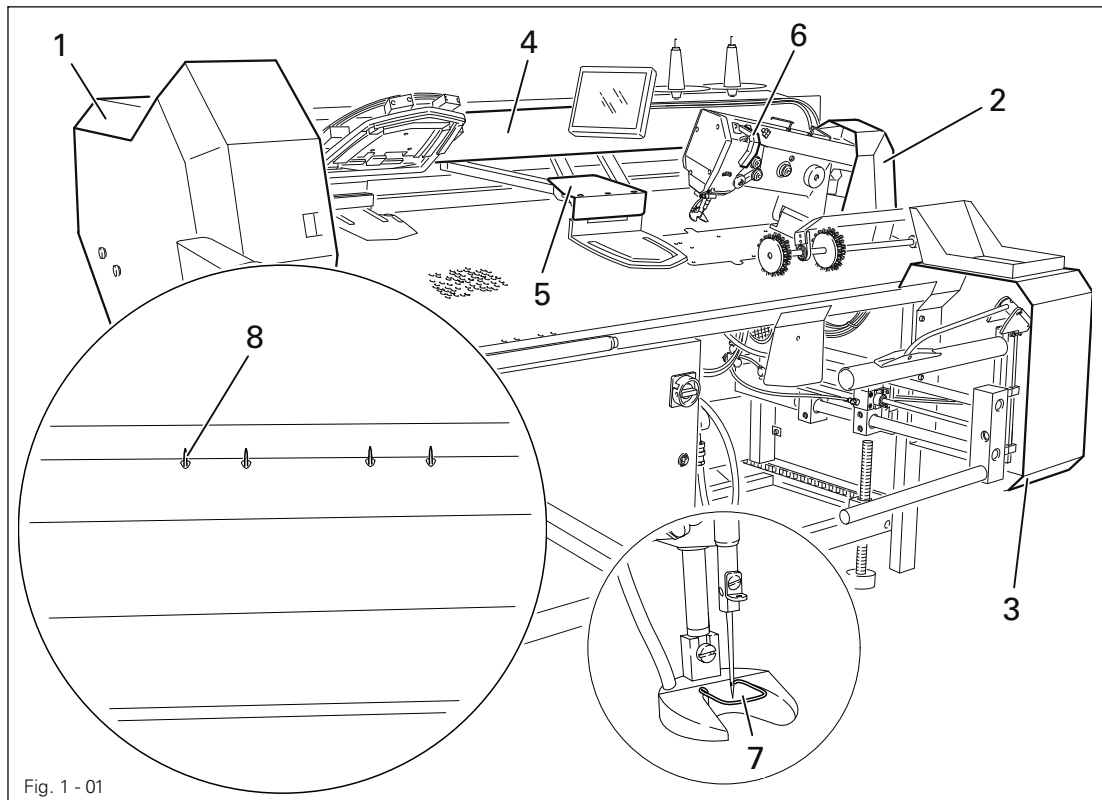


Fig. 1 - 01



Do not operate the machine without protective covers **1, 2, 3, 4** and **5**!
Danger of crushing between moving parts of the pneumatic or feed systems!



Do not operate the machine without take-up lever guard **6**!
Danger of injury by the movement of the take-up lever!



Do not operate the machine without the finger guard **7**!
Danger of injury by the needle!



Do not put your hands or fingers in needles **8** of the fabric retainer!
With the needle strip engaged (needles up) there is danger of injury near the needle strip due to the projecting needles!

2 **Proper use**

The PFAFF 3588-05/020 and PFAFF 3588-15/020 is used for folding and sewing on pockets on jeans, workwear and similar garments.



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

3 Specifications[▲]

Sewing head:PFAFF sewing head for mechanized sewing units with vertical hook

Max. speed:

PFAFF 3588-05/020..... max. 4000 spm

PFAFF 3588-15/020..... max. 3600 spm

Stitch length:..... max. 6 mm

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

Needle system:..... 134, 1955

Needle size: 100 - 140 Nm / MR3 - MR5

Motor speed:max. 4000 rpm

Connection voltage:230 V ± 10%, 50 - 60 Hz AC

Power requirement:2.2 kW

Leakage current ≤ 5 mA[◆]

Max. control range:

PFAFF 3588-05/020..... 250 x 250 mm

PFAFF 3588-15/020..... 280 x 280 mm

Storage capacity: 5 000.000 stitches

Working air pressure:..... min. 6 bar

Air consumption:..... approx. 25 l / cycle

Ambient temperature

85% rel. humidity (condensation not permitted): 5 – 40° C

Noise data

Emission sound pressure level at the workplace

at a sewing speed of 4000 spm $L_{pA} < 78 \text{ dB(A)}$ ■

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

Dimensions of machine:

Length:..... approx. 2250 mm

Width:approx. 1150 mm

Height: approx. 1450 mm

Table height:..... 870 - 1170 mm

Net weight: 600 kg

▲ Subject to alteration

◆ Due to the use of network filters there is a nominal leakage current of ≤ 5 mA.

■ $K_{pA} = 2,5 \text{ dB}$

4 Disposal of Machine

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



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

5 Transportation, packing and storage

5.01 Transportation to customer's premises

The machines are delivered completely packed.

5.02 Transportation inside the customer's premises

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

5.03 Disposal of packing materials

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

5.04 Storage

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

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

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:



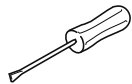
Note, information



Cleaning, care



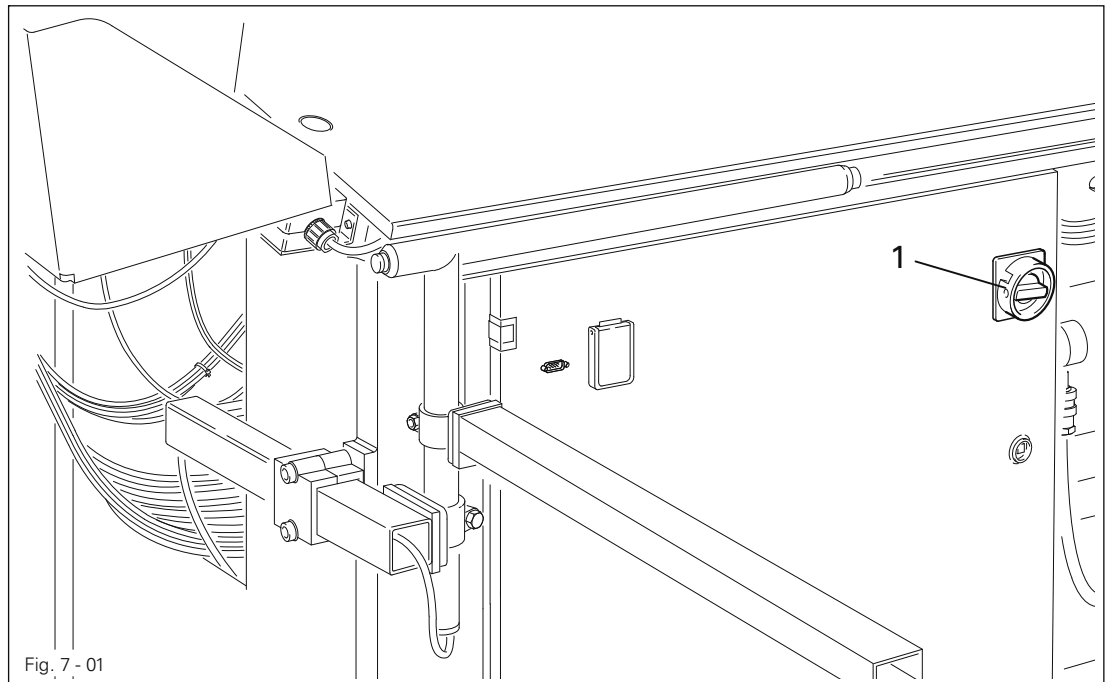
Lubrication



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

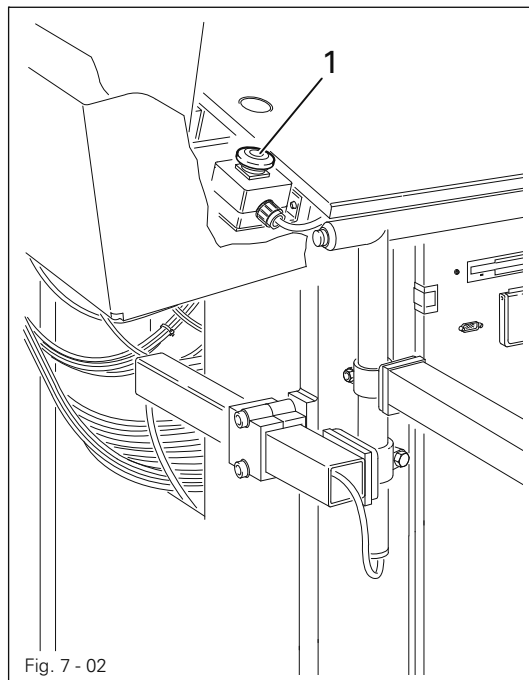
7 Controls

7.01 On/off switch



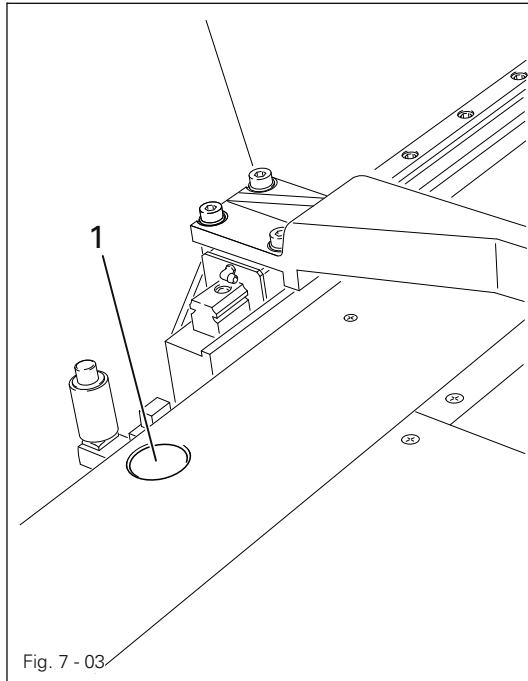
- By turning on/off switch 1, the power supply to the machine is switched on or off.

7.02 Stoptaster



- By pressing the stop switch 1, the complete work cycle is stopped, see chapter 10.04 Program interruption.

7.03 Switch for the loading function



- The function of the switch 1 can be adapted to the various requirements for loading the workpiece.

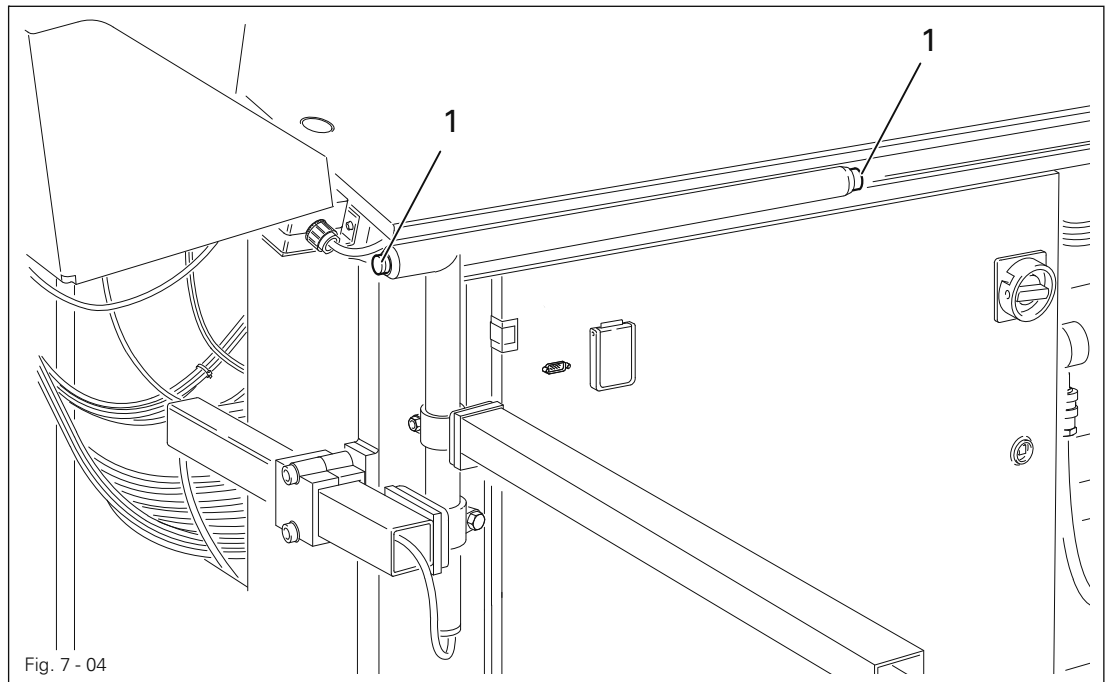


The adjustment is made with parameter "113" and "114", see Chapter 13.10.02 **Parameter List**.



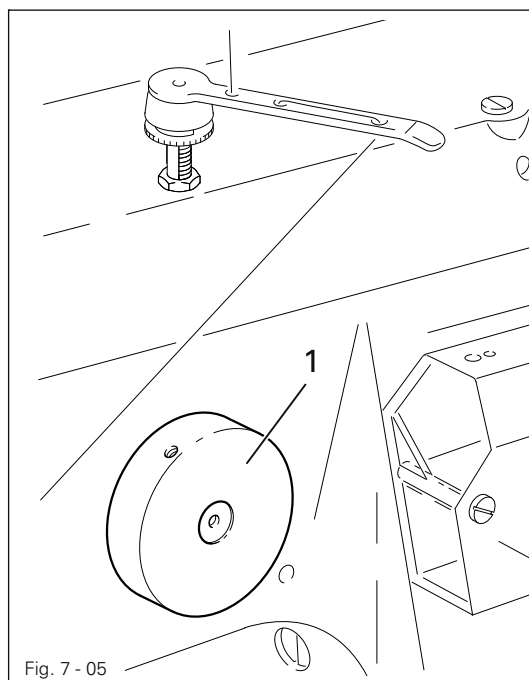
With the needle strip engaged (needles up) there is danger of injury near the needle strip due to the projecting needles!

7.04 Double-start keys

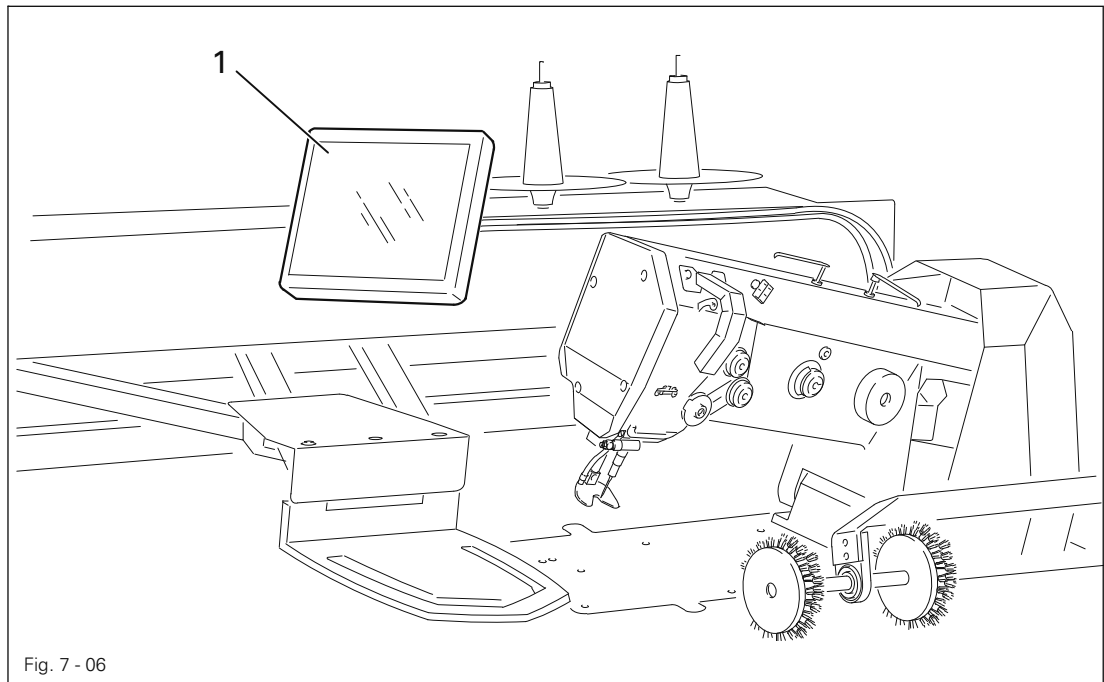


- In MANUAL operation mode, when both double-start keys 1 are activated simultaneously the folder is moved lowered.
- In AUTOMATIC operation mode, when both double-start keys 1 are activated simultaneously the entire program sequence is started.
- The double-start keys 1 also are used to continue the program after the bobbin has been replaced or the program has been interrupted.

7.05 Handwheel





- By turning and simultaneously pushing the handwheel 1 in, the needle bar can be positioned manually as required.



The current operating conditions are displayed on control panel 1. Operation takes place in a constant dialogue between the control unit and the operator. For this purpose, depending on the operating condition of the machine, different symbols and/or texts are displayed. If the symbols or texts are framed, these show functions which can be selected by pressing the appropriate position on the monitor. By pressing the corresponding function this is carried out or switched on or off immediately, or a further menu appears, e.g. for entering a value. Activated functions are shown with inverted symbols. Unframed symbols or texts are only used for display purposes and cannot be selected by pressing.

Description of the functions

-  Normal symbol = function switched off (inactive)
-  Inverted symbol = function switched on (active)

8 Mounting and commissioning the machine

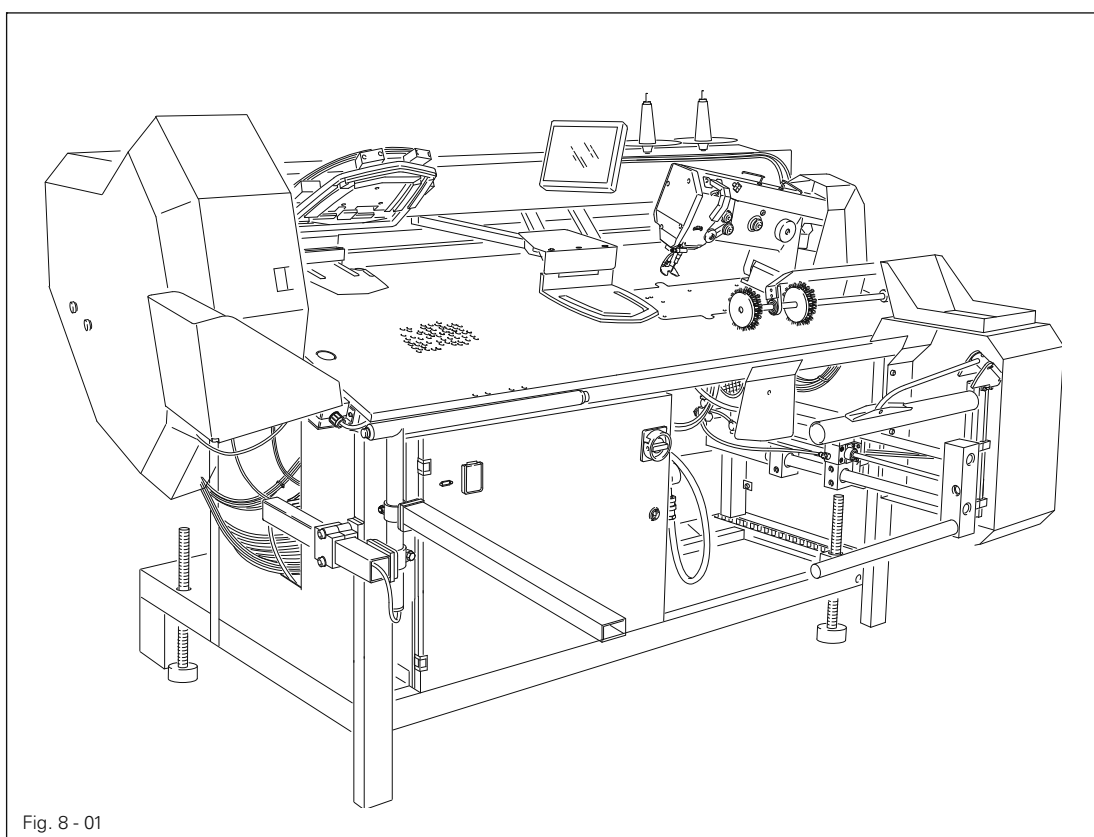
After unpacking the machine, check it for any transport damage. In case of damage, inform the shipping company and the responsible PFAFF dealer.



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

8.01 Mounting

At the machine's location, there must be a stable and horizontal surface as well as suitable electricity and compressed air supplies (see chapter 3 Specifications).



- Lift the machine with a forklift from the shipping pallet.

For machines without vertical adjustment:

- Align the machine horizontally just above the floor and move the four legs accordingly before setting the machine down on the ground.

For machines with vertical adjustment:

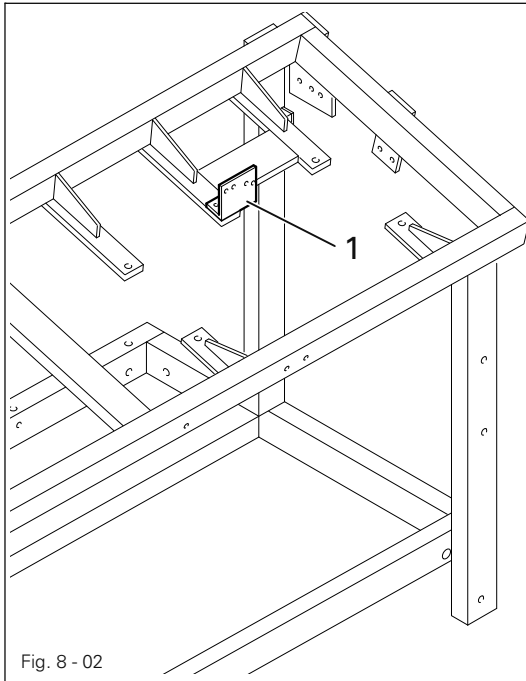
- Set down the machine on the ground and align it by turning the four spindles.



The vertical adjustment is available as an optional feature.
Fig. 8-01 shows a machine with vertical adjustment.

Mounting and commissioning the machine

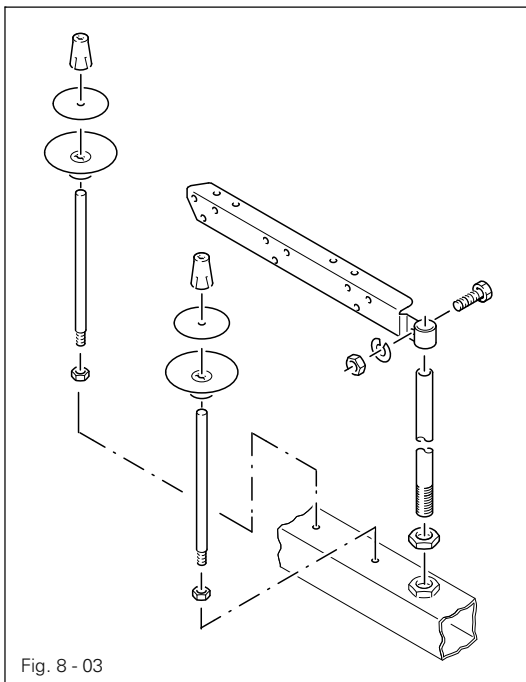
8.02 Removing the transit support bracket



Before the machine is commissioned, transit support bracket 1 must be removed!

Transit support bracket 1 serves to secure the sewing machine during transit and must not be used during sewing.

8.03 Mounting the spool holder



- Mount the spool holder according to Fig. 8.03.

8.04 Commissioning

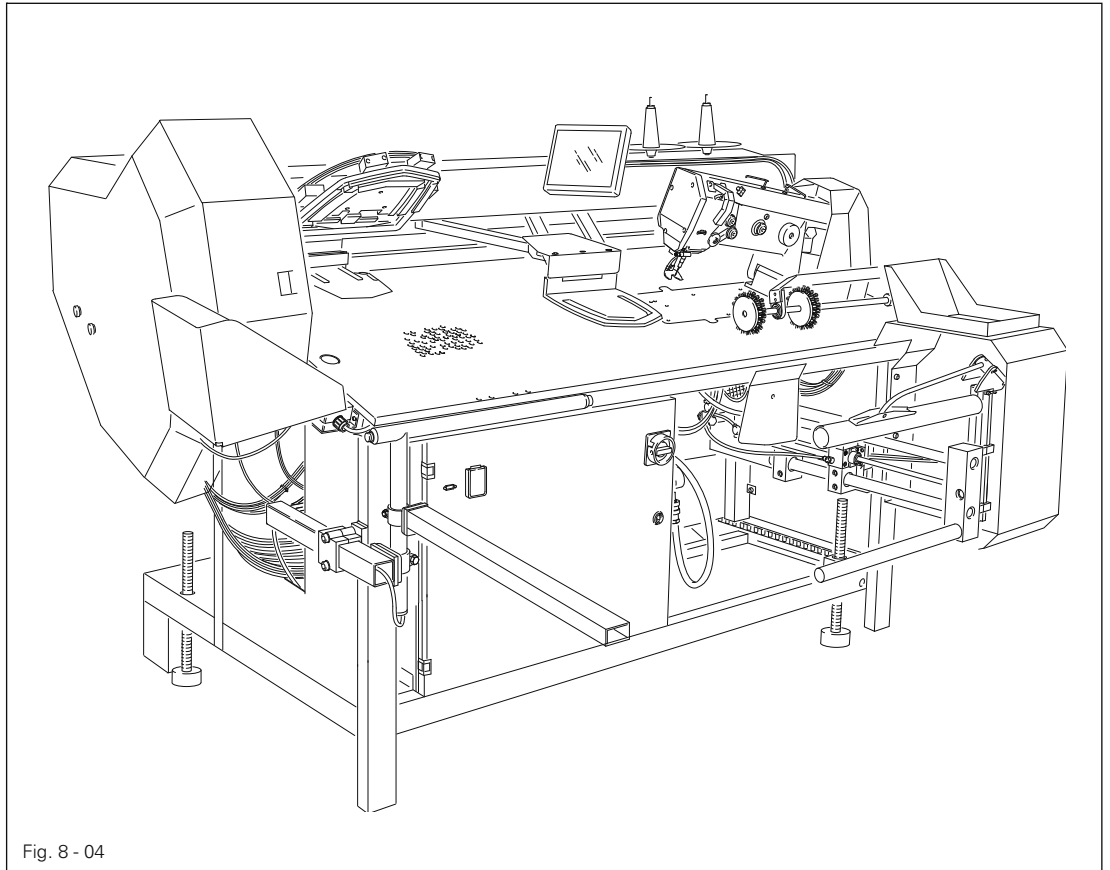


Fig. 8 - 04

- Before commissioning the machine, clean it thoroughly and lubricate it, or pour in oil, see Chapter **12 Care and Maintenance!**
- The machine, in particular the electric wires and pneumatic connection tubes, must be examined for any damage.
- Have skilled personnel check if the machine can be operated with the available mains voltage.



Do not operate the machine if there is any discrepancy.



The machine may only be connected to an earthed socket!

- Connect machine to the compressed air system.
The manometer on the air filter/lubricator unit must display a pressure of **6 bar**.
If necessary, set to the correct value (see chapter **12.06 Checking / regulating air compression**).

8.05 Switching the machine on/off

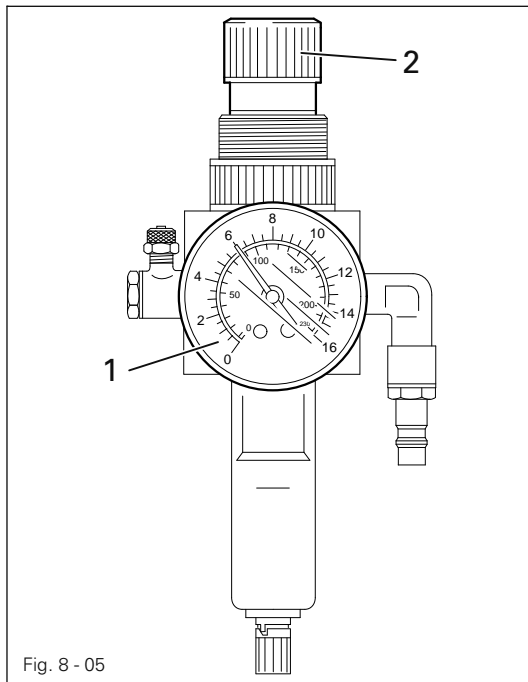


Fig. 8 - 05

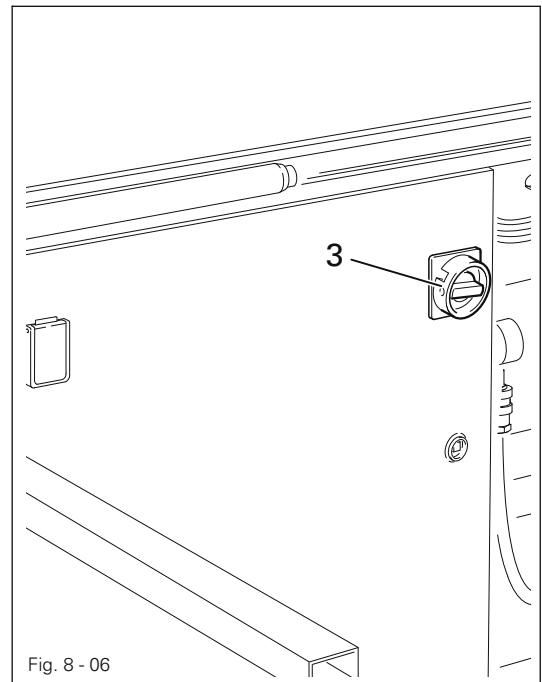


Fig. 8 - 06

- Check air pressure on pressure gauge 1 and, if necessary, adjust air pressure with adjusting knob 2.
- Turn main switch 3 to position "I".



- After booting the machine control unit, to start the machine, move it back to its basic position.
- Carry out a test run, see Chapter 10 Sewing.



When commissioning the machine, the zero points must be checked or adjusted (see Chapter 8.09 Checking / adjusting the zero points).

- To switch off the machine, turn main switch 3 to position "0".

Description of other functions on the display



Input menu

This function is used to call up the input mode, see Chapter 11 Input.

8.06 PC interface

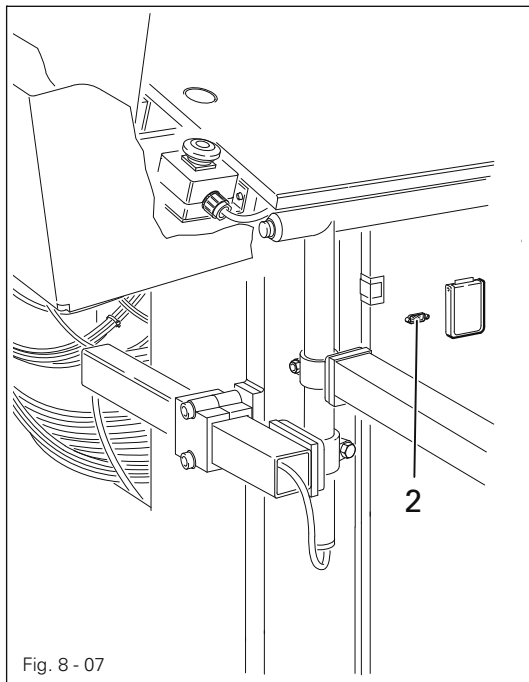
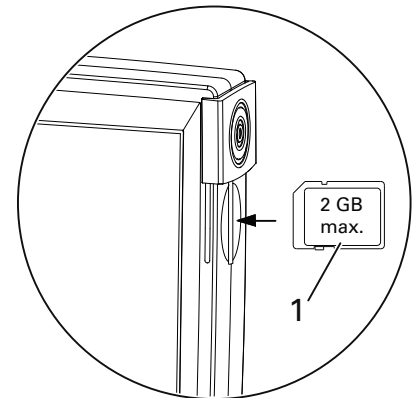


Fig. 8 - 07

- To read sewing programs or install machine software, use the sd-card-slot in the control panel.
- Socket 2 is for connecting the programming system OSCA.

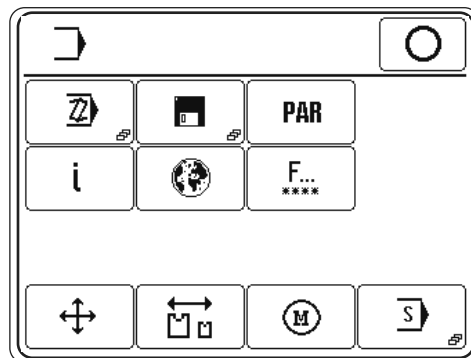


With OSCA existing CAD data records can be used to generate seam programs.

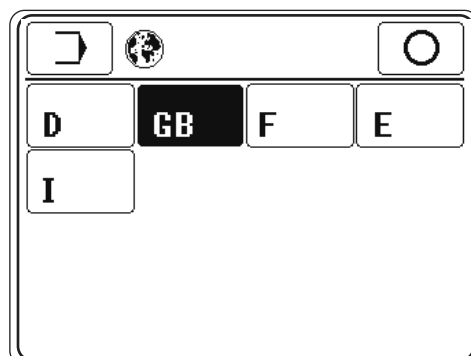


8.07 Selecting the language

- Switch on the machine.
- Call up the input menu.



- Call up the settings menu



- Select the appropriate language.

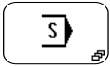
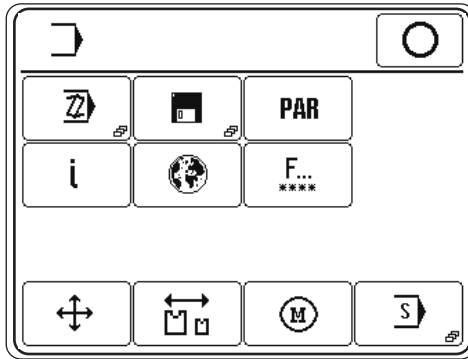
Mounting and commissioning the machine

8.08 Adjusting the control panel

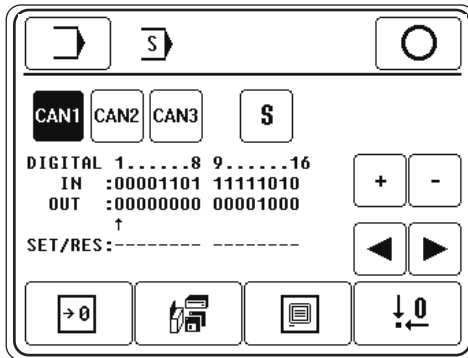
- Switch on the machine.



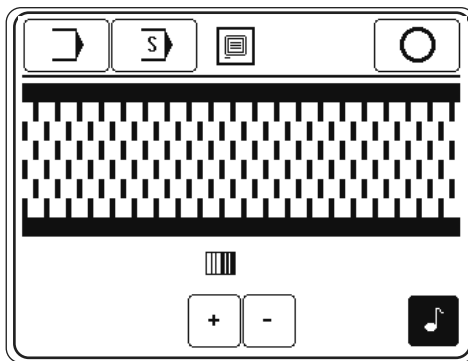
- Call up the input mode.



- Select the service menu.



- Select control panel functions.



- Change the display contrast.



- Switch the key tone off or on.



Never reduce the display contrast to the extent, that the display can no longer be read!



- Conclude the input.

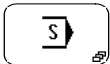
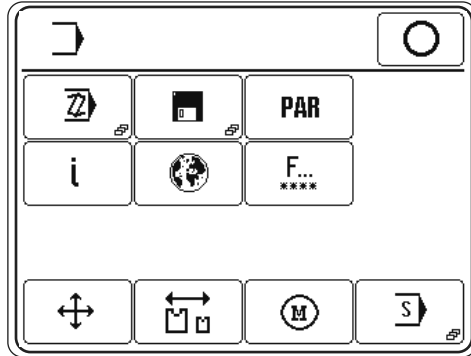
8.09 Checking / adjusting the zero points



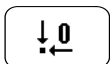
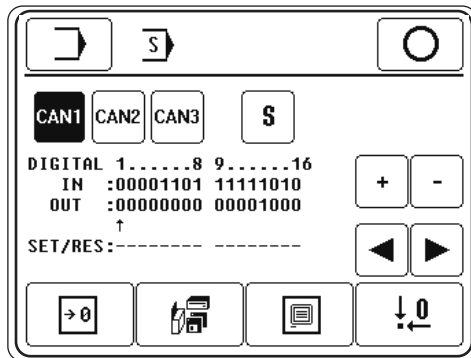
When commissioning the machine and after changing the control unit or one of the initiators of the sewing jig feed unit, it is necessary to adjust the zero points!



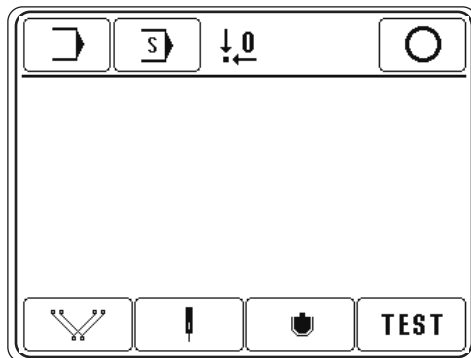
- Call up the input mode.



- Select the service menu.



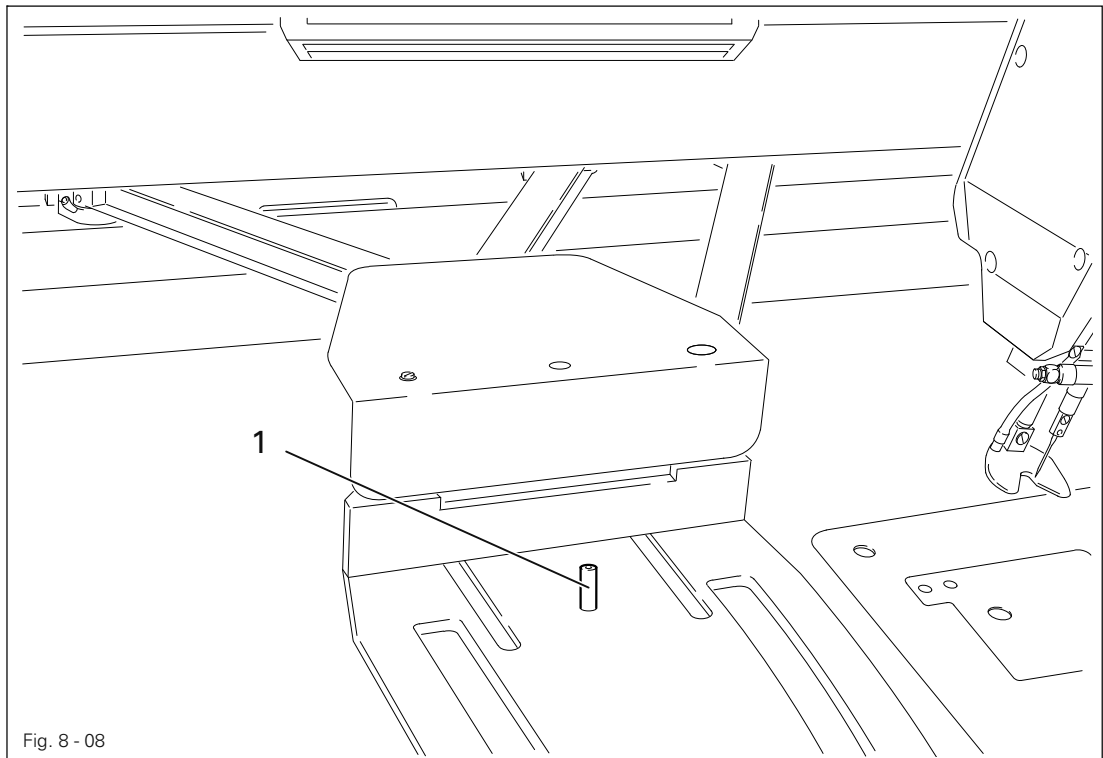
- Call up the "adjusting the zero points" function and enter the code number with the number keys.



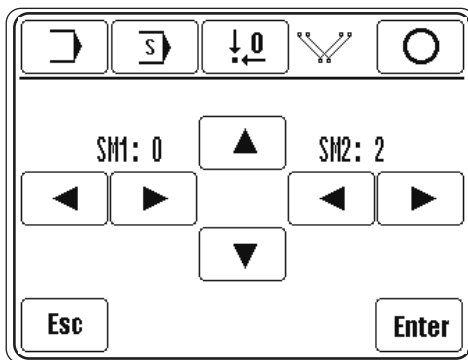
Mounting and commissioning the machine



- Call up the "teach-in position" function.



- Check if adjustment pin 1 can be inserted in the holes of the sewing jig and table when the sewing jig is in this position.



- If necessary, correct the position of the sewing jig accordingly using the direction symbols.




- Save the setting.

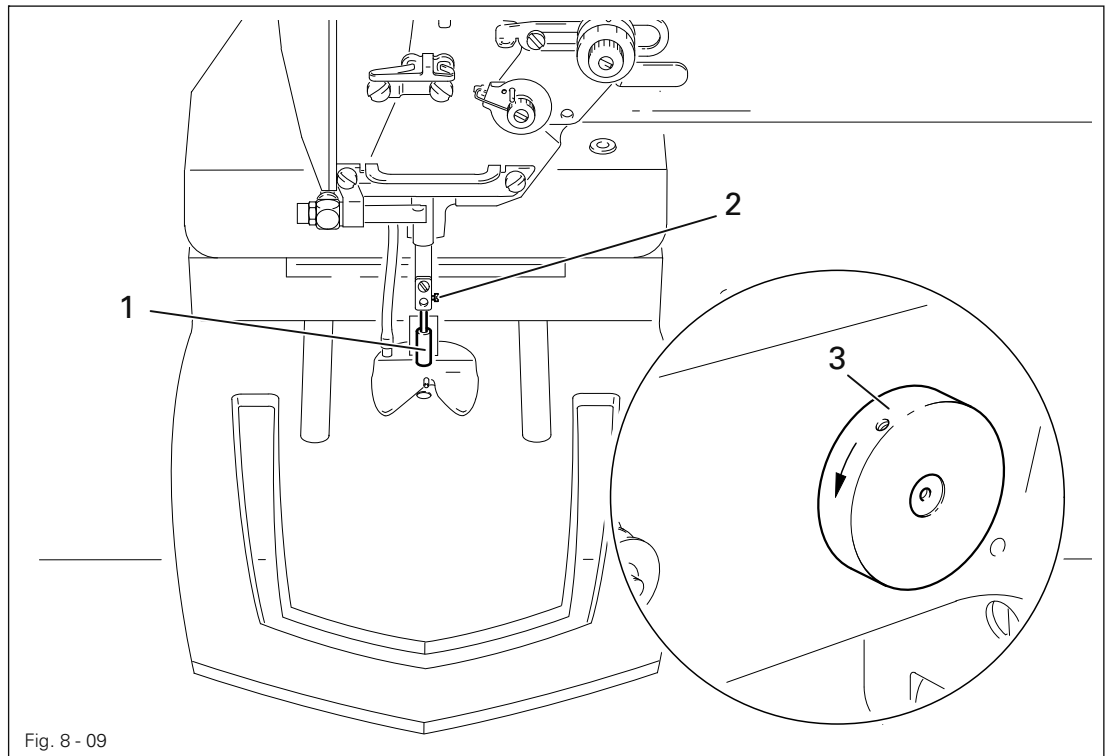


If this position is altered, the needle position must also be adjusted, as described in the following section!

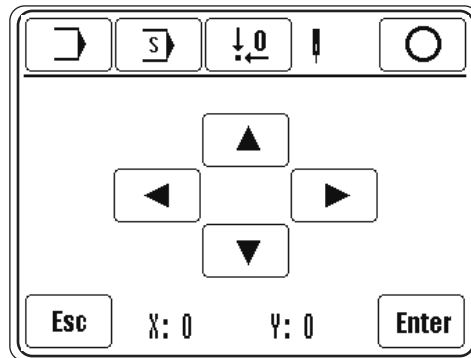


- To quit the menu without taking over the change in position, use the "Esc" function.


-  ● Call up the "needle position" function




- Fix adjustment pin 1 in the needle bar with screw 2.
- By turning balance wheel 3, check whether adjustment pin 1 can be guided into the hole in the sewing jig.

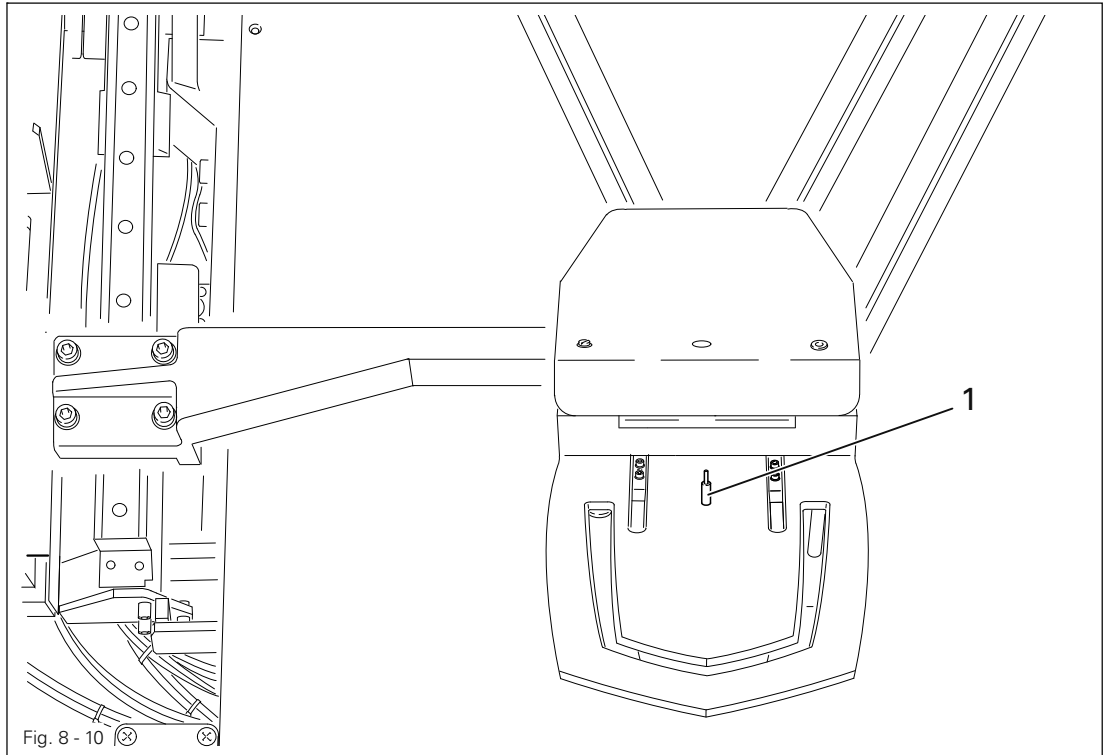


- If necessary, correct the position of the sewing jig accordingly using the direction symbols.

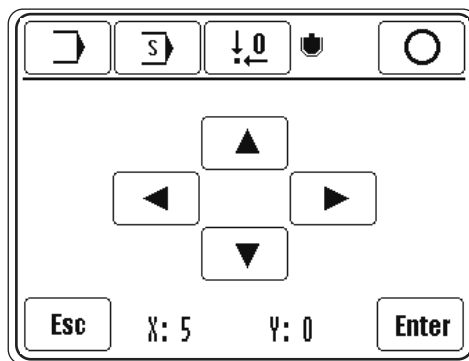
-  ● Save the setting, loosen screw 2 and remove adjustment pin 1.



Mounting and commissioning the machine

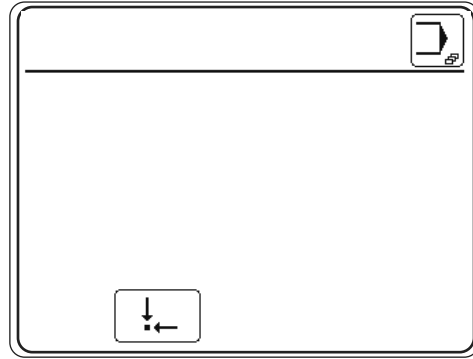
-  ● Call up the "folder position".



- Check whether adjustment pin 1 can be guided into the adjustment hole of the sewing jig and the pocket plate.



- If necessary, correct the position of the sewing jig accordingly using the direction symbols.
-  ● Save the setting.
-  ● Conclude the zero points input.



- Move the machine to its basic position, the machine is ready for operation.

9 Preparation

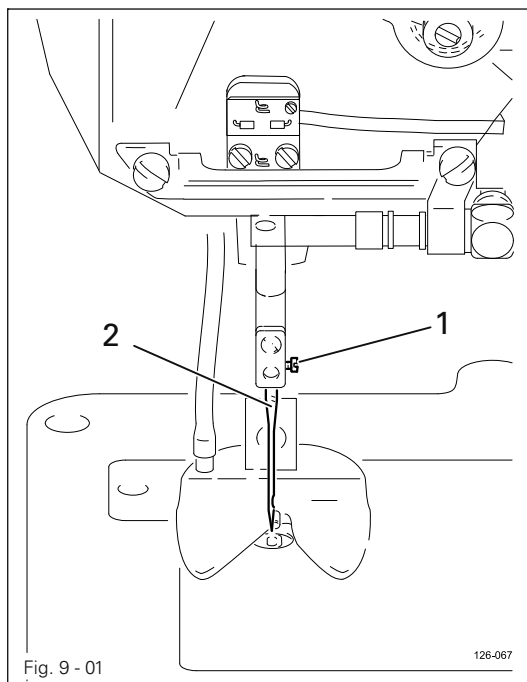


All regulations and instructions in this Instruction Manual are to be observed!
Special attention is to be paid to the safety regulations!



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

9.01 Inserting the needle



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



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

- Raise the needle bar to its highest position by turning the handwheel.
- Loosen screw 1 and insert needle 2 in the needle bar as far as it will go.
- Align needle 2 in such a way that the long needle groove is pointing to the folder station and tighten screw 1.

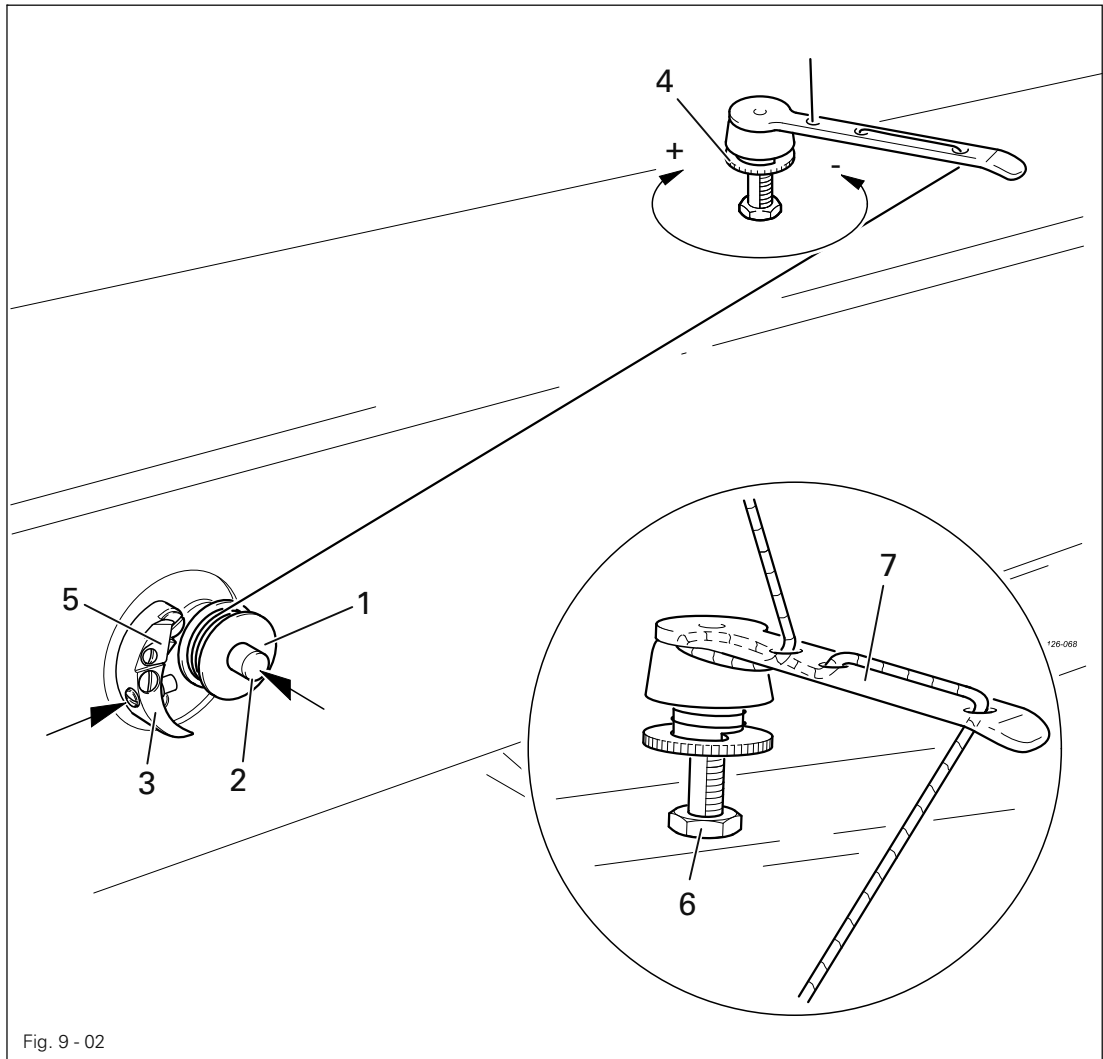


Fig. 9 - 02

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



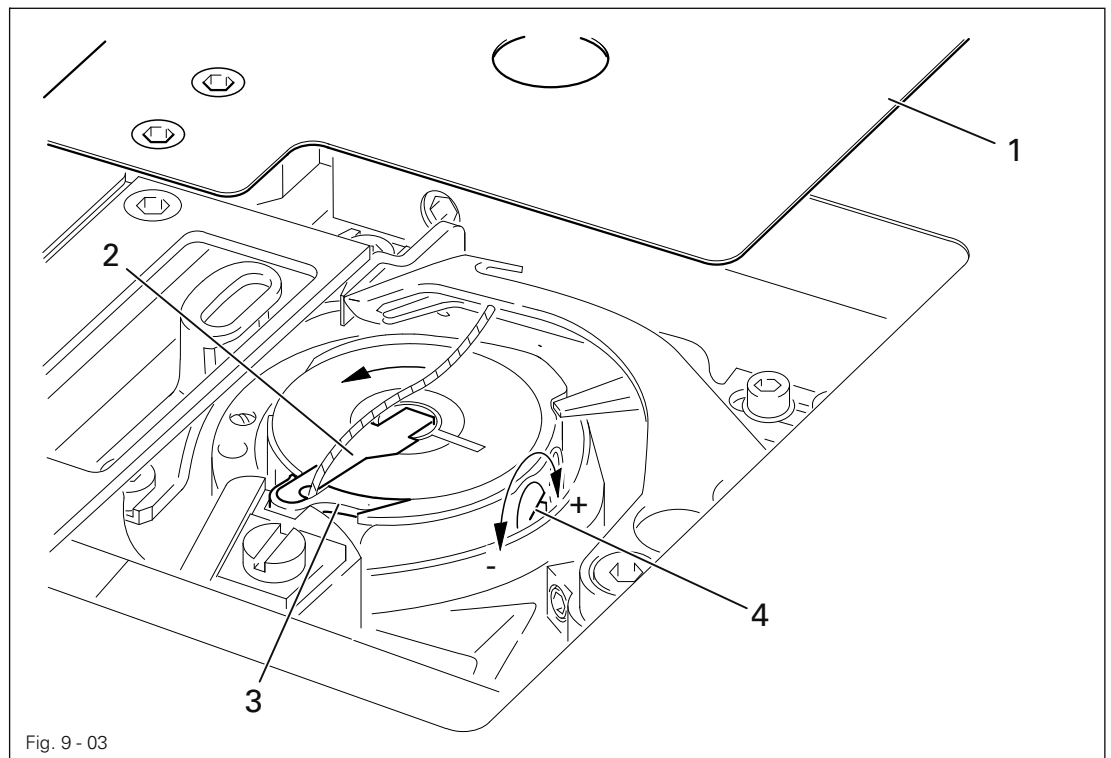
The bobbin fills up during sewing.

- The tension of the thread on bobbin 1 can be adjusted with knurled screw 4.
- The bobbin winder stops automatically when bobbin 1 is full.
- Remove the filled bobbin 1 and cut the thread on knife 5.



If the thread is wound unevenly, loosen nut 6 and turn thread guide 7 accordingly. Retighten nut 6 after the adjustment
To adjust the filling capacity, see Chapter 13.05.22 Bobbin winder.

9.03 Changing the bobbin / adjusting the bobbin thread tension



- When the number of stitches entered previously under the "bobbin thread stitch counter" function (see Chapter 9.09) have been sewn, the sewing jig moves automatically to the folding station and stops there. Hook compartment cover 1 opens.

- Changing the bobbin /adjusting the bobbin thread tension, see following section.



- Confirm the bobbin change.

- Press the double start keys, see Chapter 7.04 Double start keys.

(Program cycle continues)

or



- Call up the "change bobbin" function.

- Changing the bobbin /adjusting the bobbin thread tension (see following section).

- Press the double start keys (hook compartment cover 1 closes).

Changing the bobbin / adjusting the bobbin thread tension

- Lift latch 2 and remove empty bobbin.

- Insert a full bobbin into the hook so that it rotates in the direction of the arrow when pulling the thread.

- Close latch 2.

- Guide the thread first through the groove, then around the horn of bobbin case 3 and finally into the recess of latch 2.

- Adjust the bobbin thread tension by turning screw 4.

9.04 Threading the needle / adjusting the needle thread tension

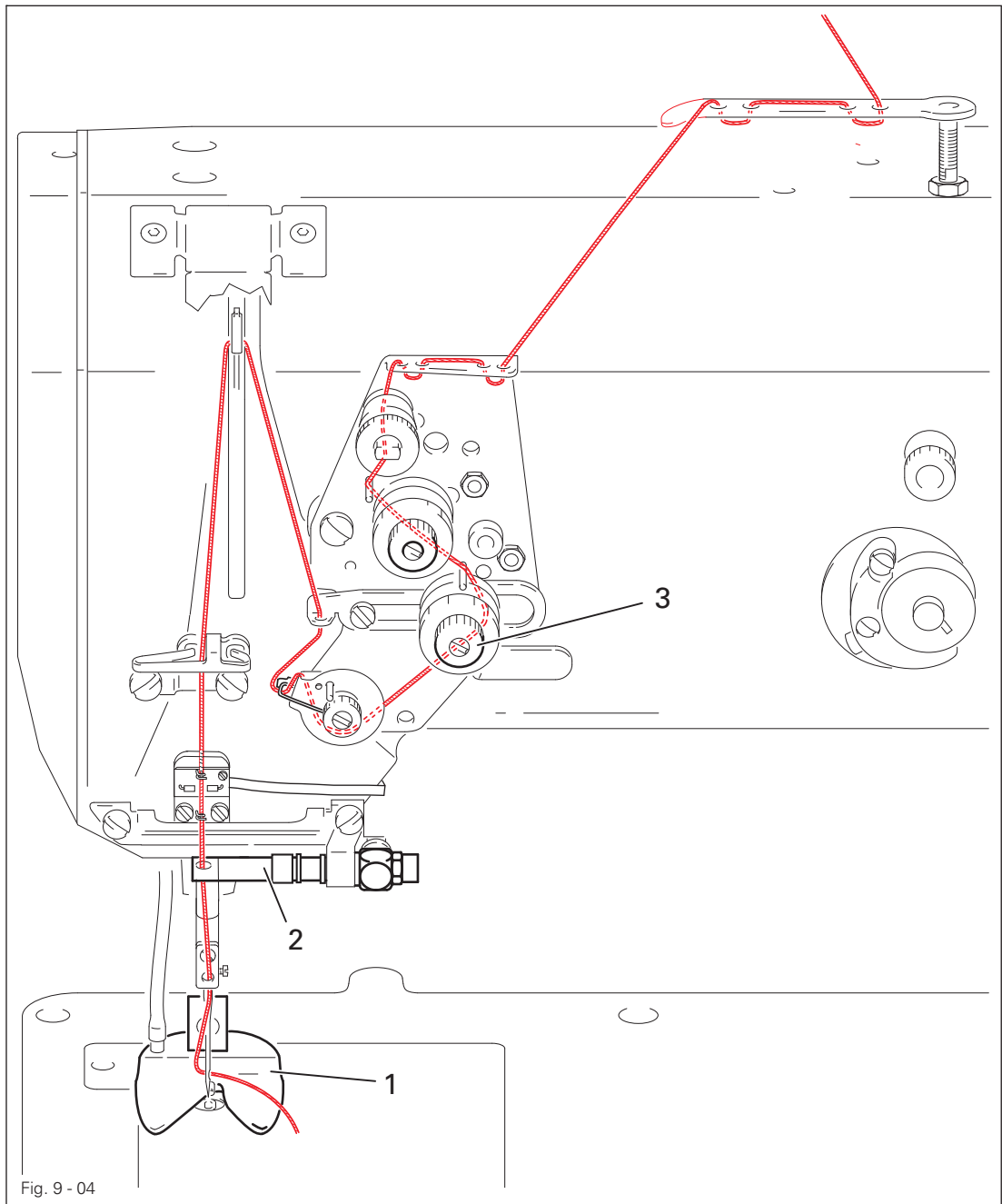





Fig. 9 - 04

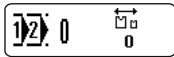
- Switch on the machine.
-  ● Lower the presser foot 1 and open thread trapper 2.
- Thread the needle thread as shown in the above illustration.
- Adjust the needle thread tension by turning knurled screw 3.
-  ● Start the sewing cycle
- or
-  ● Move the machine to its basic position.

9.05 Selecting the program number

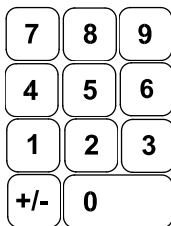
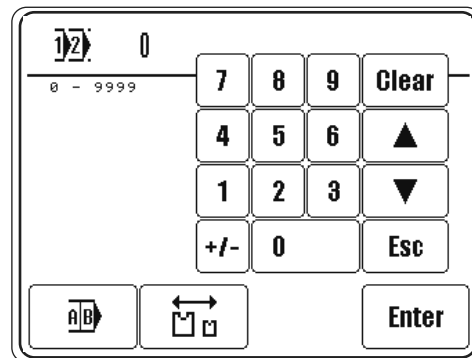


When changing to a different seam program, please make sure that the part set (folder, pocket plate and sewing jig) correspond to the new seam program.

If the wrong combination of parts and seam program is used, the machine may be damaged seriously!



- Switch on the machine.
- Call up the program number input menu.



- Select the desired program number (0 – 9999) using the number block.



- Confirm the selection and quit the selection menu.

Description of the other functions



Clear
Clear
This function sets the value at "0".



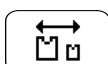
Arrow keys
These functions increase or reduce the value.



Esc
Esc
This function stops the input without taking over the value entered.



Sequence selection
This function opens the menu for selecting or configuring the sequence, see Chapter 9.06 Selecting / configuring the sequence.



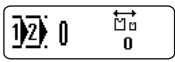
Parts program
This function opens the menu for entering the parts program number.

9.06 Selecting / configuring a sequence

9.06.01 Selecting a sequence

Instead of selecting a program number, it is also possible to select a corresponding sequence, providing that individual seam programs have been allocated to a sequence, see Chapter 9.06.02 **Configuring a sequence**

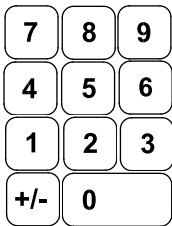
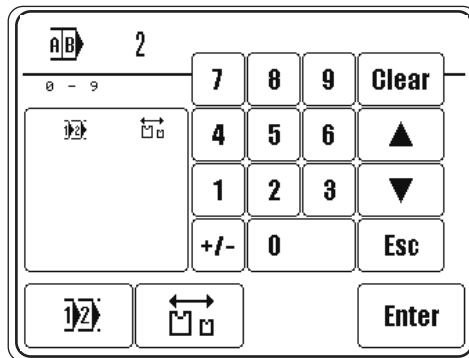
- Switch on the machine.



- Call up the menu for entering the program number.



- Call up the menu for entering the sequence.



- Select the desired sequence number (0 – 9) using the number block.



- Confirm the selection and quit the selection menu.

Description of the other functions



Clear

This function sets the value at "0".



Arrow keys

These functions increase or reduce the value.



Esc

This function stops the input without taking over the value entered.



Program selection

This function opens the menu for selecting a program, see Chapter 9.05 **Selecting a program number**.



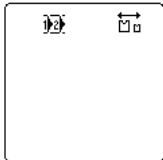
Parts program

This function opens the menu for entering the parts program number.

9.06.02 Configuring a sequence

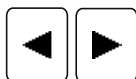
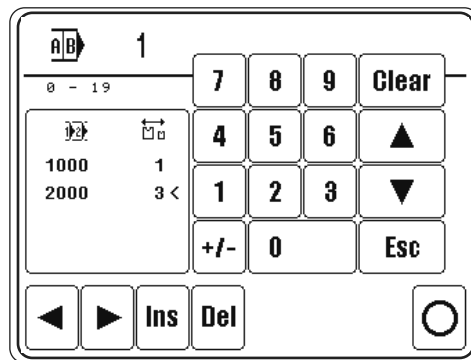
Up to 4 seam programs can be allocated to a sequence. Each seam program is allocated to a parts program. During sewing, the seam programs of a selected sequence appear as a function on the display with the parts program, and can be selected directly.

- Call up the menu for entering the sequence and select the desired sequence number without leaving the selection menu, see 9.06.01 **Selecting a sequence**.



- Call up the sequence programming function.

- Configure the sequence from existing seam programs by entering the program numbers on the number block.



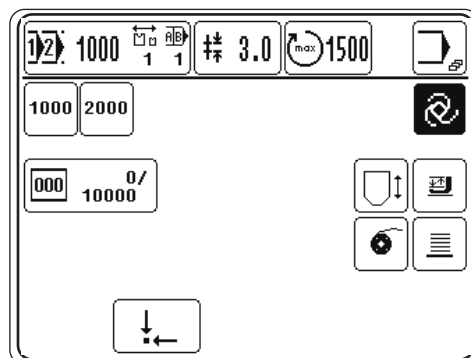
- The cursor in the window shows, which seam program has been taken out of the group, or at which position a new seam program has been inserted. The cursor is moved with the arrow keys.



- If applicable, insert (INS) the seam program or parts program at the current cursor position, or delete (DEL) the marked seam program from the sequence.



- Conclude the sequence programming function.



To enable, for example, quicker access to up to 4 different seam programs, the function for automatic switching to the next seam program of a sequence function can be switched off with parameter "112", see Chapter 13.10.02 **List of parameters**.

9.07 Slide configuration

Different slide configurations can be allocated to the program stations (1 – 4) with parameters "116" to "119". Individual programs can also be allocated to slide configurations with parameter "115".

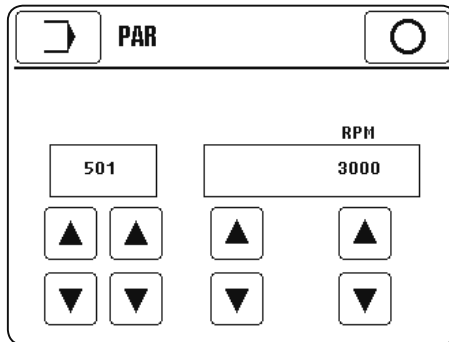
- Switch on the machine.



- Call up the input menu.



- Call up the parameter input function.



- Select parameters "115" to "119" and alter the values accordingly, see Chapter 13.10.02 List of parameters.



- Quit the parameter input function.

9.08 Jig monitor (optional)

To make it possible to monitor the jig, the sewing jig is given a code using magnets which the control can recognize via an additional device. This is a means of preventing pairing a sewing program with the wrong sewing jig which could cause the needle to break.

If the machine is equipped with this optional device, the JIG MONITOR function must be activated, and a jig code must be entered in the sewing program in order to use the jig monitor.

9.08.01 Activating jig monitor

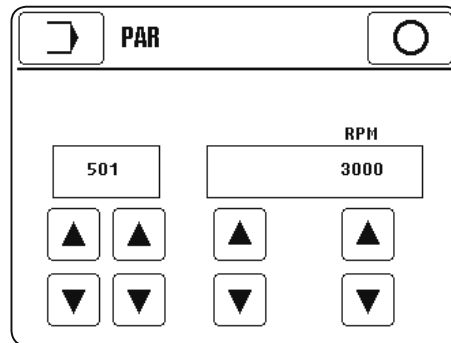
- Switch on the machine.



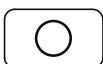
- Call up the input menu.

PAR

- Call up the parameter input function.



- Select parameter "108" and set the value at "1", see Chapter 13.10.02 List of parameters.



- Quit the parameter input function.

9.08.02 Determining the jig code

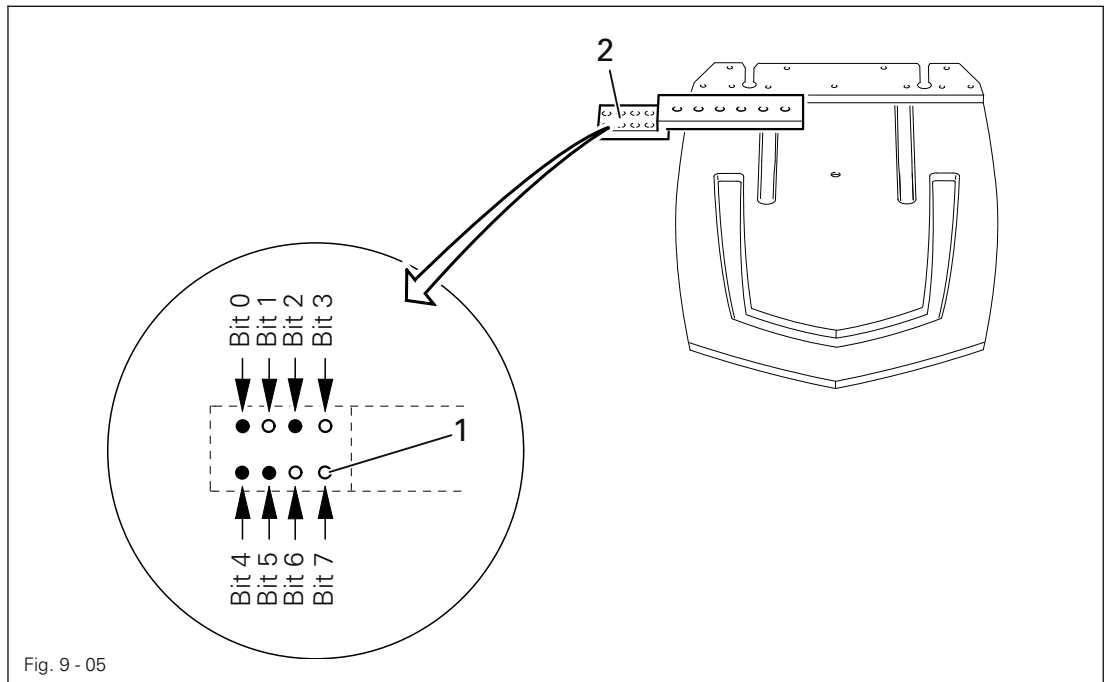


Fig. 9 - 05

The jig code is entered in the sewing program as a number value (0-99).

The code is created on the jig as a binary number by arranging up to eight magnets 1 in a particular way on carrier 2.

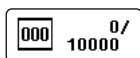
Bit assignment

Example: decimal number (3 5) is equal to the binary combination (1 1 0 0) (1 0 1 0)
 tens place (3) ones place (5)

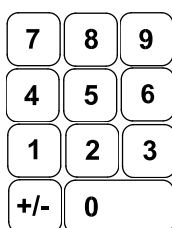
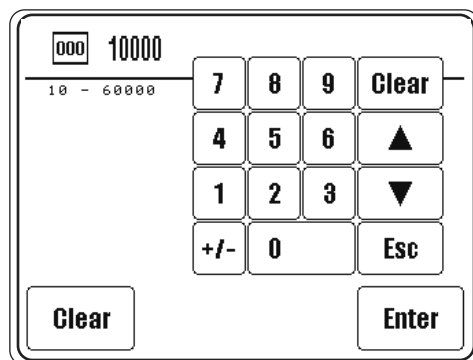
Ones place Tens place	Bit 0 Bit 4	Bit 1 Bit 5	Bit 2 Bit 6	Bit 3 Bit 7
0	free	free	free	free
1	magnet	free	free	free
2	free	magnet	free	free
3	magnet	magnet	free	free
4	free	free	magnet	free
5	magnet	free	magnet	free
6	free	magnet	magnet	free
7	magnet	magnet	magnet	free
8	free	free	free	magnet
9	magnet	free	free	magnet

9.09 Setting the bobbin thread stitch counter

- Switch on the machine.



- Call up the menu for entering the number of bobbin thread stitches.



- Enter the number of stitches on the number block.



- Conclude the input.



After sewing the number of bobbin thread stitches, the machine stops automatically for changing the bobbin.

Description of the other functions



Clear (on number block)

This function sets the input value at "0".



Arrow keys

These functions increase or reduce the value.



Esc

This function stops the input without taking over the value entered.



Clear (in foot text)

This function sets the bobbin thread counter (number of stitches sewn) at "0".

9.10 Changing the part set



The seam program, parts program and parts (folding set, pocket plates and sewing jig) must match and always be used together!
If the wrong combination of parts and seam program is used, the machine may be damaged seriously!

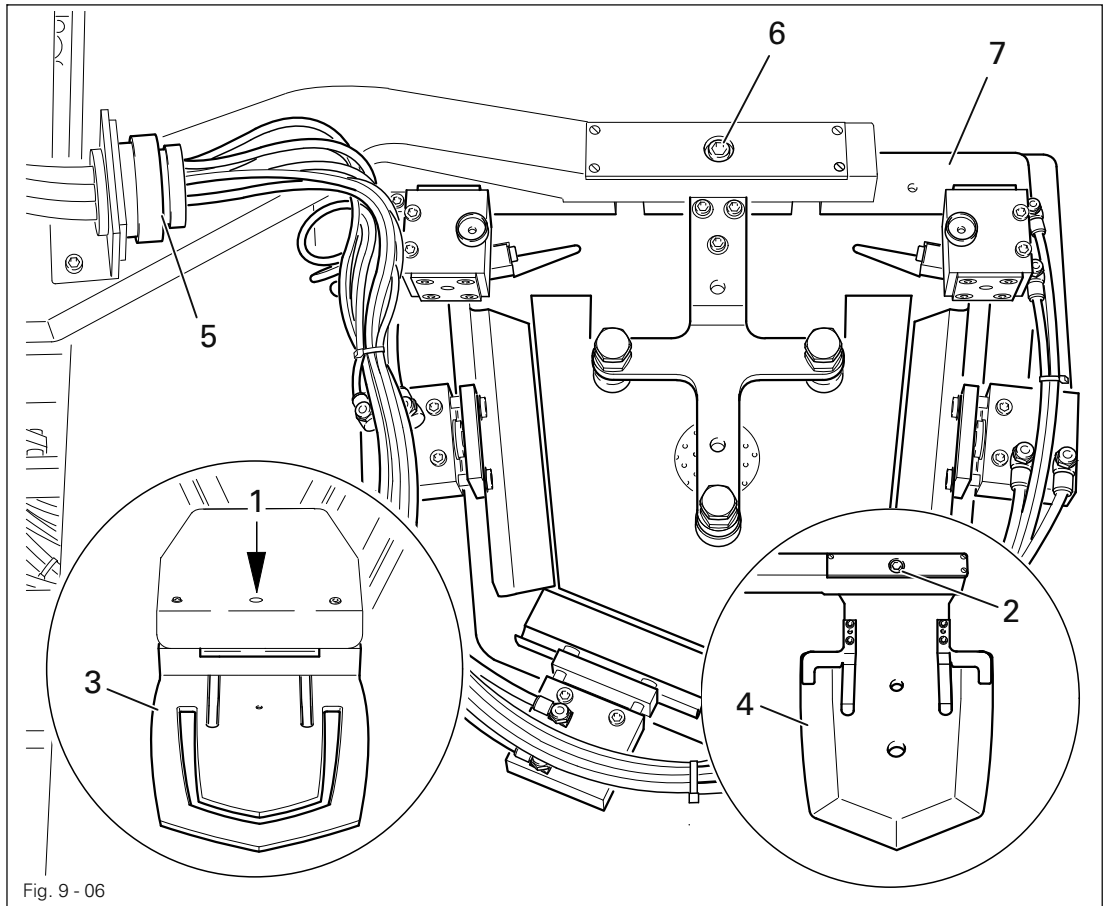


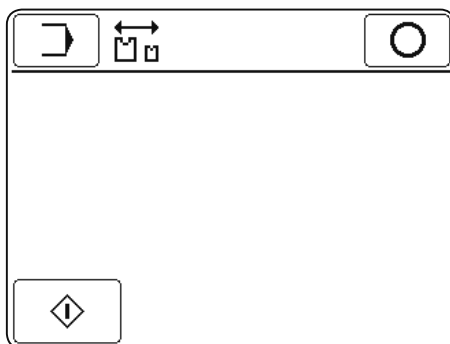


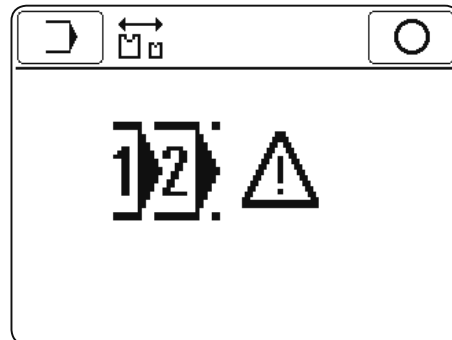
Fig. 9 - 06

- Switch on the machine.
-  ● Call up the input menu.
-  ● Call up "changing the part set" function.



- Loosen screws 1 and 2, and remove both sewing jig 3 and pocket plate 4.

- Insert a new pocket plate and a matching sewing jig.
- Tighten screws 1 and 2.
- Confirm change of pocket plate and sewing jig.



- Unscrew the compressed air supply 5.
- Loosen screw 6 and remove folder set 7.
- Insert the folder set which matches the pocket plate and the sewing jig, tighten screw 6 and screw the compressed air supply 5 back on.



- Conclude the part set change.

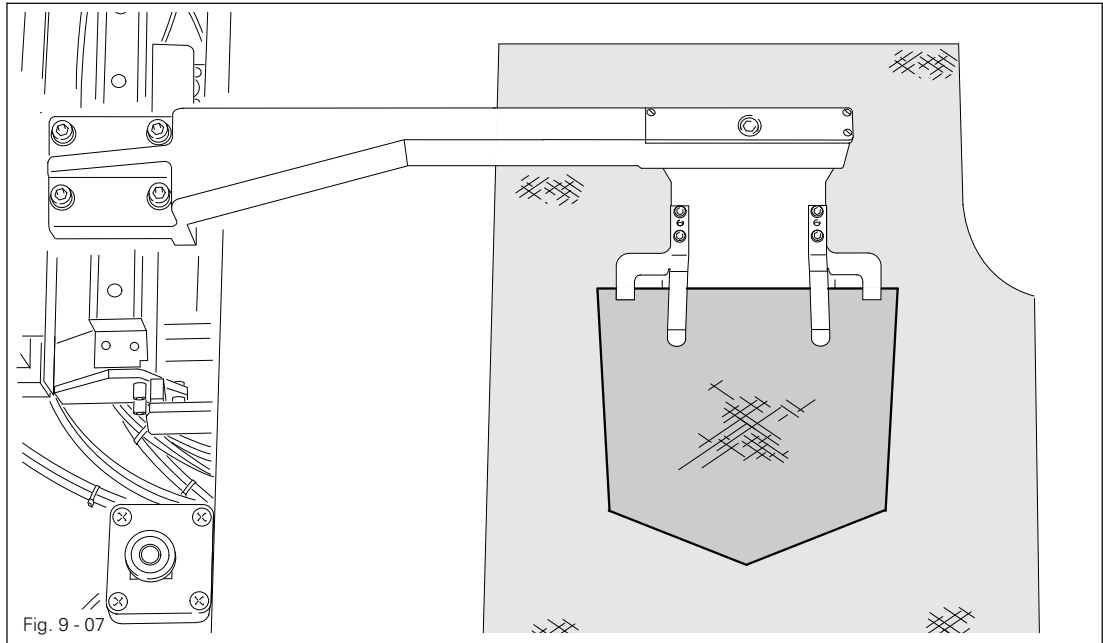


- Move to the basic position, the machine is ready for operation.



Select the matching program number to the part set!
Incorrect combinations can cause severe damage to the machine!

9.11 Loading the pre-cut parts



- Switch on the machine.
- Place the pre-cut parts on the loading table or slide them onto the pocket plate and align them.



The insertion and alignment of the pre-cut parts depends on the selected menu combination, see Parameter **113** and **114** in Chapter **13.10.02**.

Menu combination: "Basic position pocket plate front/plain-materialfabric on"

- Slide the pre-cut pocket part onto the pocket plate according to Fig. **9-07**.

Menu combination: "Basic position pocket plate back/plain-fabric on"

- Actuate the loading function switch twice pocket plate moves forward.
- Slide the pre-cut pocket part onto the pocket plate according to Fig. **9-07**.

Menu combination: "Basic position pocket plate front/plain-materialfabric off"

- Slide the pre-cut pocket part onto the pocket plate according to Fig. **9-07**.
- Activate the inserting function switch - the pocket plate is lowered.
- Activate the inserting function switch to raise the pocket plate so that the trousers cutting can be aligned.
- Activate the inserting function switch to lower the pocket plate again.

Menu combination: "Basic position pocket plate back/plain-fabric off"

- Actuate the loading function switch to move the pocket plate forward.
- Slide the pocket cutting onto the pocket plate according to Fig. **9-07**.
- Actuate the loading function switch twice: the pocket plate is lowered and raised slightly to allow positioning of the pre-cut trouser part.



The machine may only be operated by appropriately instructed personnel! The operating staff must make sure that only authorized persons are in the danger area of the machine!

In particular for the production, in addition to the input mode, see Chapter 11 **Input**, the sewing mode is available. Here, depending on the program selection and the machine status, all relevant functions and settings for the production are shown on the display. Automatic operation is standard, but it is possible to switch to manual operation when setting up and checking operating sequences.

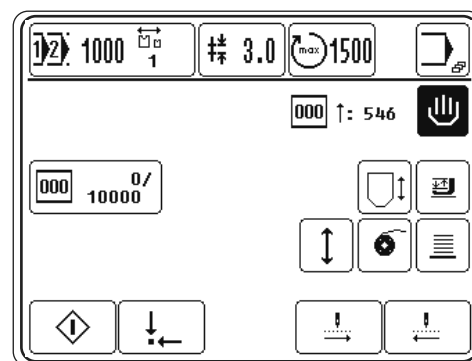
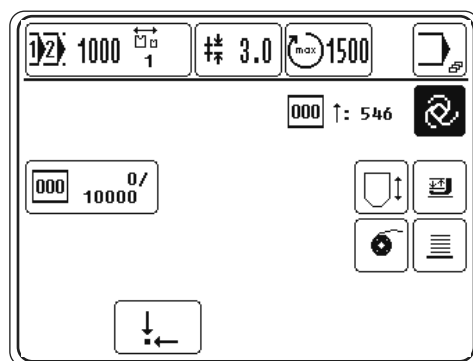
Before production the following conditions must be fulfilled:

- All safety devices must be attached and all covers closed see, Chapter 1.06 **Danger warnings**.
- The machine must be properly installed and commissioned in accordance with Chapter 8 **Installation and commissioning**.
- All setting-up work must have been carried out, see Chapter 9 **Setting-up**.

- Switch on the machine



- Select either automatic or manual sewing. The current operating mode is shown as an inverse symbol.

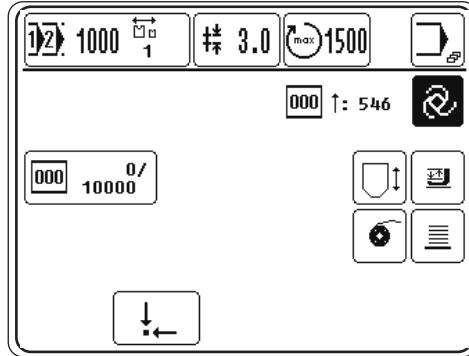


10.01 Automatic sewing mode

- Switch on the machine.



- Select the automatic sewing mode.



- Insert and align the pre-cut parts, see Chapter 9.11 Inserting the pre-cut parts.
- Start the program cycle with the double start keys, see Chapter 7.04 Double start keys.

Description of the functions



Program number selection

This function opens the menu for entering the program number. The current program number is shown in the symbol together with the appropriate parts program number.



Standard stitch length

This function opens the menu for entering the standard stitch length. The current stitch length is shown in the symbol.



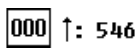
Maximum speed

This function opens the menu for entering the maximum speed. The current maximum speed is shown in the symbol.



Input menu

This function is used to call up the "input mode" see Chapter 11 Input.



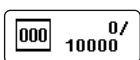
Daily piece counter

Here the day number of pieces is indicated.



Automatic / manual sewing

This function is used to switch between automatic and manual sewing. The appropriate symbol of the current operating mode is shown respectively.



Bobbin thread stitch counter

This function opens the menu for entering and resetting the number of stitches for the bobbin thread, see Chapter 9.09 Setting the bobbin thread stitch counter.



Jig up/down

This function is used to raise or lower the jig.

**Sewing foot up/down**

This function is used to raise or lower the sewing foot. In addition the thread trapper is opened or closed.

**Bobbin change**

This function makes it possible to change the bobbin.

**Stacker up/down**

This function is used to open or close the stacker.

**Basic position**

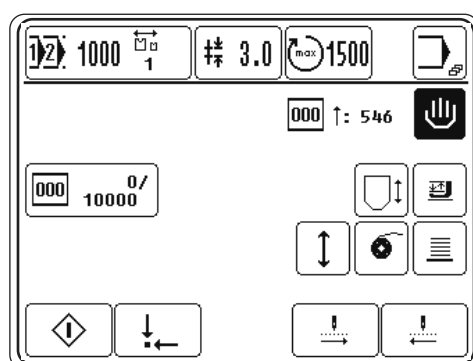
This function is used to move the jig guide, sewing station and jig drive unit to the basic position.

**Stop (only during the program cycle)**

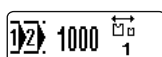
This function is used to stop the entire program cycle, see Chapter 10.04 Program interruption.

10.02 Manual sewing mode

- Switch on the machine.
- Call up the manual sewing mode.



Description of the functions

**Program number selection**

This function opens the menu for entering the program number. The current program number is shown in the symbol together with the appropriate parts program number.

**Standard stitch length**

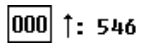
This function opens the menu for entering the standard stitch length. The current stitch length is shown in the symbol.

**Maximum speed**

This function opens the menu for entering the maximum speed. The current maximum speed is shown in the symbol.

**Input menu**

This function is used to call up the "input mode" see Chapter 11 Input.



Daily piece counter

Here the day number of pieces is indicated.



Automatic / manual sewing

This function is used to switch between automatic and manual sewing. The appropriate symbol of the current operating mode is shown respectively.



Bobbin thread stitch counter

This function opens the menu for entering and resetting the number of stitches for the bobbin thread, see Chapter 9.09 **Setting the bobbin thread stitch counter**.



Jig up/down

This function is used to raise or lower the jig.



Sewing foot up/down

This function is used to raise or lower the sewing foot. In addition the thread trapper is opened or closed.



Stand height adjustment

This function opens a menu for adjusting the stand height (only when the machine is in its basic position).



Bobbin change

This function makes it possible to change the bobbin.



Stacker up/down

This function is used to open or close the stacker.



Sewing start

This function is used to start the sewing operation.



Basic position

This function is used to move the machine to the basic position.



Tacting backwards

This function is used to move backwards in sections in the seam pattern tact for tact. The seam cycle is sewn automatically, if the function is pressed longer.



Tacting forwards

This function is used to move forwards in sections in the seam pattern tact for tact. The seam cycle is sewn automatically, if the function is pressed longer.



Single step (after pressing the double start keys)

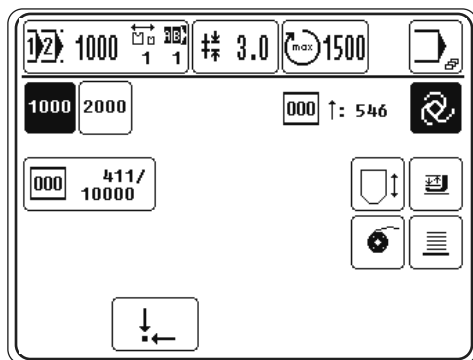
This function is used to move the folder and jig feed tact for tact.

10.03 Sewing with sequences



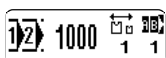
To sew with sequences, parameter "114" must be set at value "1", see Chapter 13.10.02 List of parameters.

- Switch on the machine.
- Select the desired sequence, see Chapter 9.06.01 Selecting a sequence.



- Insert the pre-cut parts.
- Start the program cycle by pressing the double start keys, see Chapter 7.04 Double start keys.

Description of the functions



Program number selection

This function opens the menu for entering the program number. The current program number is shown in the symbol. If the function for moving automatically to the next sequence is activated, the sequence symbol is shown as inverse.



Standard stitch length

This function opens the menu for entering the standard stitch length. The current stitch length is shown in the symbol.



Maximum speed

This function opens the menu for entering the maximum speed. The current maximum speed is shown in the symbol.



Input menu

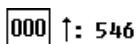
This function is used to call up the "input mode" see Chapter 11 Input.



Individual program

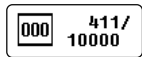
This function depends on the setting of parameter "112" (moving automatically to next sequence), see Chapter 13.10.02 List of parameters.

If the function for moving automatically to the next sequence is activated (value "1", this function is used to show the symbol for the next individual program to be sewn as inverse. If the function for moving automatically to the next sequence is deactivated (value "0",) this function is used for the quick selection of the highlighted seam programs.



Daily piece counter

Here the day number of pieces is indicated.



Bobbin thread stitch counter

This function opens the menu for entering and resetting the number of stitches for the bobbin thread, see Chapter 9.09 **Setting the bobbin thread stitch counter**.



Automatic / manual sewing

This function is used to switch between automatic and manual sewing. The appropriate symbol of the current operating mode is shown respectively.



Jig up/down

This function is used to raise or lower the jig.



Sewing foot up/down

This function is used to raise or lower the sewing foot. In addition the thread trapper is opened or closed.



Bobbin change

This function makes it possible to change the bobbin.



Stacker up/down

This function is used to open or close the stacker.



Basic position

This function is used to move the machine to the basic position.



Stop (only during the program cycle)

This function is used to stop the entire program cycle, see Chapter 10.04 **Program interruption**.

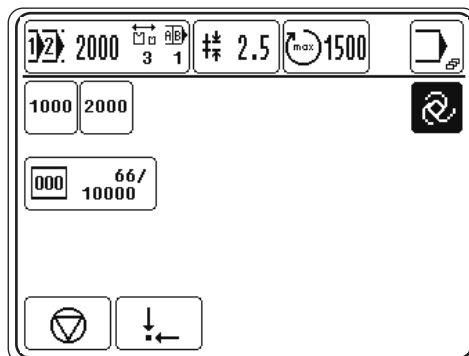
10.04 Program interruption



The program cycle can be interrupted by operating the „stop“ function on the control panel or by pressing the stop keys.



By pressing this button the folder goes in home position.



If the machine is stopped in this way, the sewing station and the folder are not in their basic position!



- Continue the program cycle by operating the appropriate function or
- Press the double start keys, see Chapter 7.04 **Double start keys**.

10.05 Error messages

If a malfunction occurs, an error code appears on the display. An error message may be caused by incorrect operation, machine defects, as well as by overload conditions. (For a description of the error codes see Chapter **14.02 Description of the error codes**).

Errors when connecting outputs

If an error occurs when connecting an output, the output concerned is shown with the desired switching state (0) or (I).

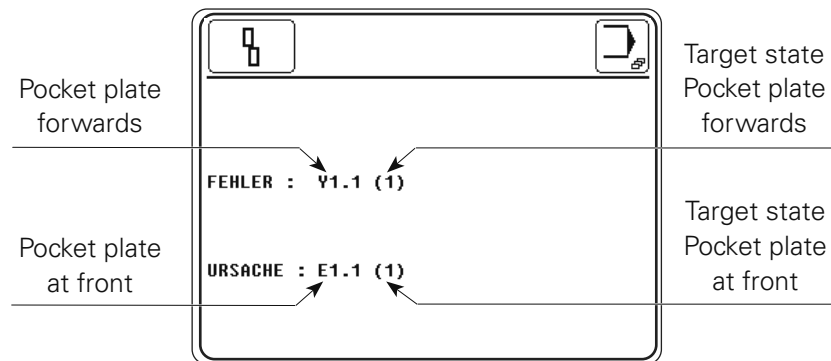
In this case (0) means the output should be disconnected and (I) means that the output should be connected.

In the next line the cause leading to the error is displayed.

The target state for maintaining undisturbed operation is shown in brackets.

In the following example the output **Y1.1** is to be connected.

Requirement: **E1.1** must be set at (1).



- Check **E1.1** and eliminate error.



- Acknowledge elimination of the error..

11 Input

In addition to the functions for entering or editing seam programs, in the input mode there are functions for displaying information, for program management, for machine configuration and settings (country settings and rights of access), as well as for supporting service and adjustment work.

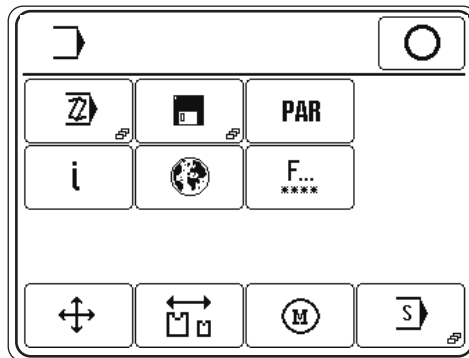
In the input mode the machine start function is blocked to avoid an unintentional start-up of the machine.

11.01 Overview of the functions in the input mode

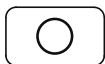
- Switch on the machine.



- Call up the input mode.

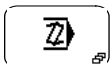


Description of the functions



Conclude input

This function is used to conclude the input, and the machine changes to the sewing mode.



Seam program input

This function is used to call up the menu for entering or editing seam programs, see Chapter 11.02 **Creating / editing seam programs**.



Program management

This function is used to manage the data from the machine memory and CD-Card, see Chapter 11.04 **Program management**.



Parameter settings

This function is used to call up the menu for altering parameter settings, see Chapter 13.10 **Parameter settings**.

**Info**

This function opens a menu for displaying the following information:

- current software status of the machine
- current firmware status of the machine
- current firmware status of the control panel
- day piece counter
- operating hours counter
- production hours counter



The day piece counter can be reset with the "Clear" function.

**Country settings**

This function opens a menu for selecting the language shown on the control panel, see Chapter 8.07 **Selecting the language**.

**Rights of access**

This function opens a menu for fixing the rights of access, see Chapter 11.05 **Rights of access**.

**Stepping motors / reference points**

This function opens a menu for moving the stepping motors, and for moving to reference points with the "test" function.

**Changing part set**

This menu opens a menu for changing the part set, see Chapter 9.10 **Changing part set**.

**Sewing motor**

This function opens a menu for testing and adjusting the sewing motor, see Chapter 13.09 **Sewing motor settings**.

**Service menu**

This function is used to call up the menu for selecting various service functions, see Chapter 13.08 **Service menu**.

11.02 Creating / editing seam programs

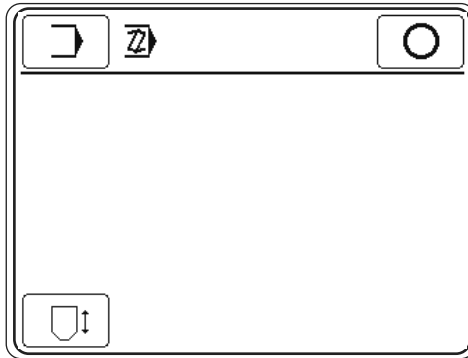
- Switch on the machine.



- Call up the input mode.



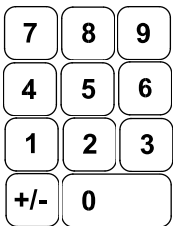
- Call up the seam program input function.



- Lower the jig.



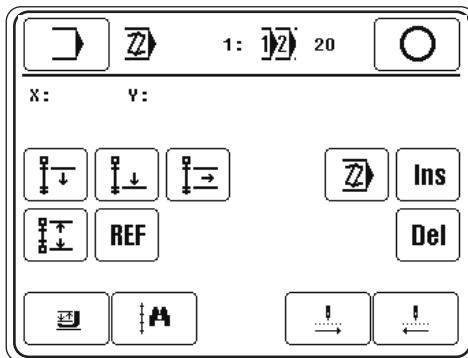
- Confirm operation.



- Reinsert the desired program number or select the desired program.



- Confirm the seam number selection.



Description of the functions



Input menu

This function ends the programming operation and opens the basic input menu, see Chapter 11.01 Overview of the functions in the input mode.

**Conclude input**

This function is used to conclude the input, and the machine changes into the sewing mode.

**Mark block start**

This function is used to define the start of a block, see Chapter 11.02.01 Block functions.

**Mark block end**

This function is used to define the end of a block, see Chapter 11.02.01 Block functions.

**Block functions**

This function opens a menu for entering block functions, see Chapter 11.02.01 Block functions.

**Image functions**

This function opens a menu for entering image functions, see Chapter 11.02.02 Image functions.

**Coordinate reference points**

This function is used to set the coordinates on the display at "0", in this way creating a new reference point.

**Edit**

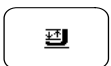
After selecting this function, the current section can be edited.

**Insert**

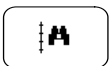
This function is used to insert functions or blocks, see Chapter 11.02.03 Inserting functions.

**Delete**

This function is used to delete the current section.

**Sewing foot up/down**

This function is used to raise or lower the sewing foot. In addition the thread trapper is opened or closed.

**Search**

With this function the sewing head is raised and the carriage can be moved near the desired seam pattern point with appropriate direction symbols. After the position has been confirmed, the machine moves towards the nearest point of the seam pattern.

**Tacting forwards**

This function is used to move forwards in sections in the seam pattern tact for tact. The seam cycle is sewn automatically, if the function is pressed longer.

**Tacting backwards**

This function is used to move backwards in sections in the seam pattern tact for tact. The seam cycle is sewn automatically, if the function is pressed longer.

11.02.01 Block functions

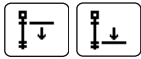
- Switch on the machine.



- Call up the input mode.



- Call up the seam program input function.

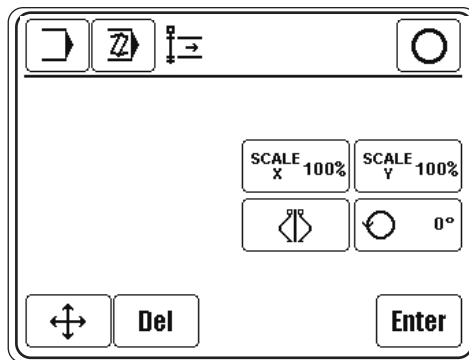


- Define block start and block end

After a desired point in the program has been selected with the tacting through the program function, it is possible to define the block start with the "mark block start" function. The block marking must be concluded by defining a block end. To do so, tact through the program till reaching the desired point and then operate the "mark block end" function. When tacking through the program, the marked block can be recognised by the inverse symbol of the section number.



- Call up the block functions.

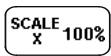


Description of the functions



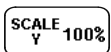
Conclude input

This function is used to conclude the input, and the machine changes into the sewing mode.



Enlargement factor X-axis

This function is used to enlarge or reduce the block in the X-direction.



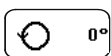
Enlargement factor Y-axis

This function is used to enlarge or reduce the block in the Y-direction.



Mirror

This function is used to mirror the block. Mirroring takes place on the straight line, which runs parallel to the Y-axis and through the block start point.



Turn

This function is used to turn the block. The block is turned around the block start point in an anti-clockwise direction.



Shift block

After this function has been selected, a new point must be approached with the jig drive. With the enter function, this point is taken over and the block shifted.



Delete

When this function is selected, the block is deleted.



Enter

Conclude the block function input and carry out block manipulation.

11.02.02 Image functions

- Switch on the machine.



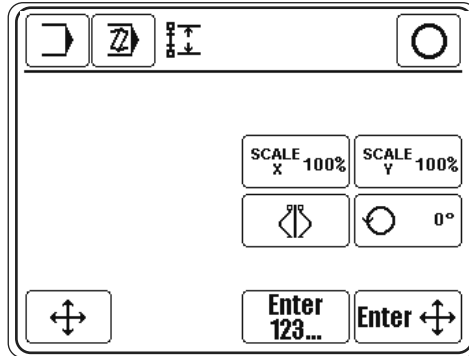
- Call up the input mode.



- Call up the seam program input function.



- Call up image functions.

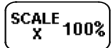


Description of the functions



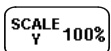
Conclude input

This function is used to conclude the input, and the machine changes into the sewing mode.



Enlargement factor X-axis

This function is used to enlarge or reduce the image in the X-direction. The operation is concluded by selecting the point of symmetry either with the number keys or with the control keys.



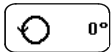
Enlargement factor Y-axis

This function is used to enlarge or reduce the image in the Y-direction. The operation is concluded by selecting the point of symmetry either with the number keys or with the control keys.



Mirror

This function is used to mirror the image. The operation is concluded by selecting the point of symmetry either with the number keys or with the control keys.



Turn

This function is used to turn the image. The image is turned in an anti-clockwise direction. The operation is concluded by selecting the point of symmetry either with the number keys or with the control keys.



Shift image

After this function has been selected, a new point must be approached with the jig drive. With the enter function, this point is taken over and the image is shifted from the current position to the end of the program.

**Point of symmetry using number keys**

The point of symmetry is defined by entering the coordinates with number keys.

**Point of symmetry using control keys**

With this function the point of symmetry is approached (entered) by pressing the appropriate direction symbols.

11.02.03 Inserting functions

- Switch on the machine.



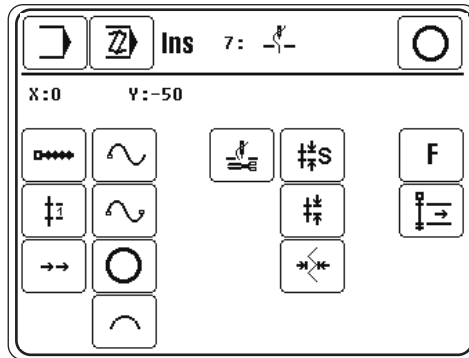
- Call up the input mode.



- Call up the seam program input function.



- Call up "insert" functions.



Description of the functions



Conclude input (in status bar)

This function is used to conclude the input, and the machine changes into the sewing mode.



Straight line

A straight line is a direct connection between two points.
To enter a straight line, a stitch length must be defined.



Single stitch

A single stitch or feed motion is entered without taking the stitch length into consideration.
The single stitch or feed motion can be max. **6 mm**.



Fast motion

The fast motion function is used for the quick motion of the jig drive. Both axes are moved independently from each other to the end point as quickly as possible. The resulting distance moved is therefore not a straight line (watch out for obstacles on the jig). If the path has to be exact, it is necessary to work with a straight line or curve without start sewing.












Curve check points

It is possible to enter any number of check points. The control unit calculates the course of the curve, taking the stitch length into consideration. Check points do not necessarily have to be end points. A stitch length must be defined. The greater the number of check points entered, the more exact the course of the curve.



Curve end

This function changes a curve check point into a curve end point.

-  **Circle**
To enter a circle, three points are necessary. The first point is automatically the starting points. The two missing points still have to be entered. A stitch length must be defined.
-  **Circular arc**
For the circular arc the same applies as for the circle, whereby the last point defines the end of the circular arc.
-  **Start sewing**
This function is used to start sewing. All following sections are sewn until the thread trimming function is selected.
or
-  **Thread trimming**
The thread is cut. The start sewing function must have been activated previously.
-  **Standard stitch length**
This function is used to define the stitch length, which will be used predominantly in the program. During sewing the standard stitch will be displayed in the status bar and can be altered on the machine with the stitch alteration function, without changing into the programming mode.
-  **Stitch length**
A stitch length is defined for a certain seam sector.
This stitch length is not displayed in the status bar during sewing and can only be altered in the programming mode.
-  **Stitch width**
This function carries out a zig-zag motion with the jig drive on the base line. Here the stitch length indicates the feed motion along the base line from needle penetration to needle penetration and must be selected accordingly. The stitch width is carried out vertically to the base line. The position of the zig-zag to the base line must also be defined. If the stitch width function is to be switched off, the width must be entered as **0.0**.
-  **F** **Other functions**
This function is used for the selection of more functions, see Chapter **11.02.04 Other functions**.
-  **Insert block**
This function is used to insert a marked block after the current position.

11.02.04 Other functions

- Switch on the machine.



- Call up the input mode.



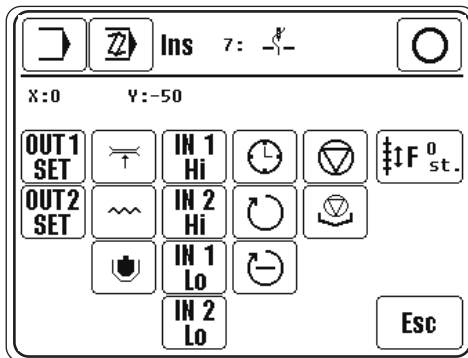
- Call up the seam program input function.



- Call up "insert" functions.



- Call up other functions.



Description of the functions



Conclude input (in status bar)

This function is used to conclude the input, and the machine changes into the sewing mode.



Programmable outputs

The corresponding outputs (1 to 2) are activated with the menu.



Secondary thread tension (depending on machine status)

This function is used to open or close the secondary thread tension.



Zig-zag seam (depending on machine status)

If sewing with a straight seam has been selected, this function is used to select sewing with zig-zag.



Straight seam (depending on machine status)

If sewing with zig-zag has been selected, this function is used to select sewing with a straight seam.



Wide variable sewing slit (depending on machine status)

If the narrow variable sewing slit has been selected, this function is used to select the wide variable sewing slit.



Narrow variable sewing slit (depending on machine status)

If the wide variable sewing slit has been selected, this function is used to select the narrow variable sewing slit.



Wait for input (inputs 1 to 2)

The processing of the program is stopped until the appropriate input (1 to 2) has reached the selected level.



Wait for time

The processing of the program is stopped until the programmed time has elapsed.



Speed

A speed is entered permanently in the program.



Reduced speed (depending on machine status)

This function is used to sew at a reduced speed or to switch off the reduced speed.



Programmed stop

A stop is programmed in the program.

Processing is continued by calling up the "start" function.



Flap stop

This function is used to define the flap stop. The flap program is processed from this point on.



Adjustment parameters

This function is used to adjust the activation or deactivation of various functions. The number of stitches is entered for activating or deactivating the corresponding function sooner or later.



Esc

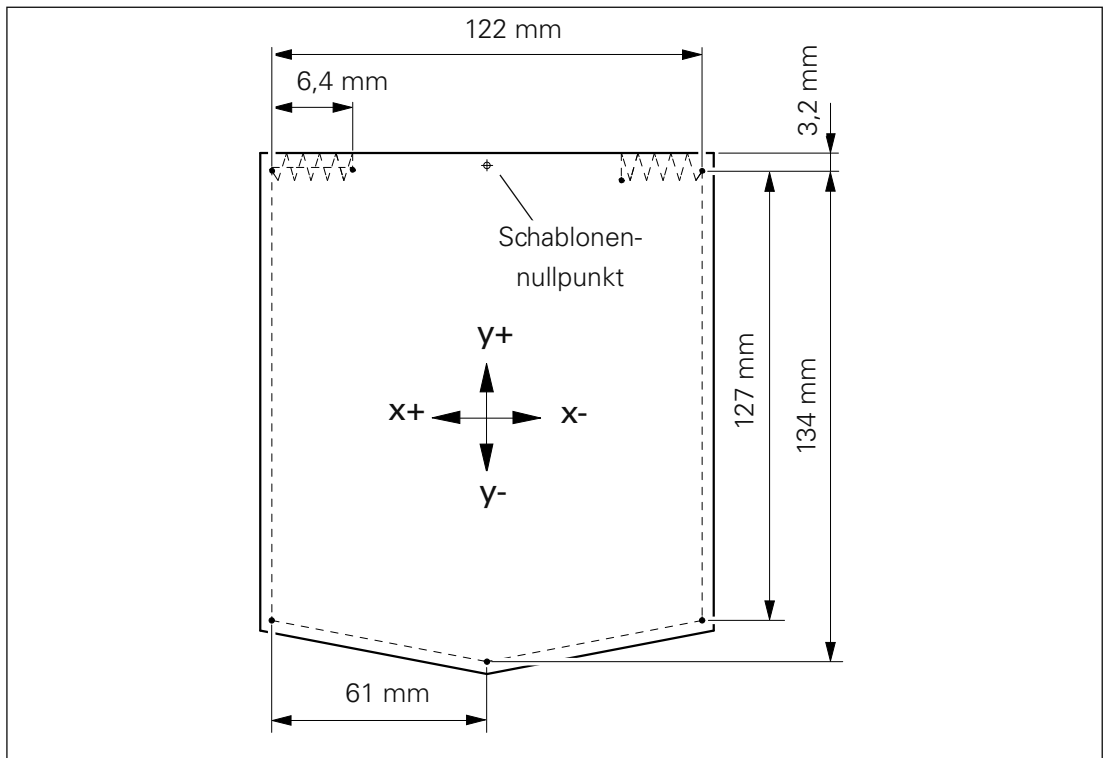
Conclude input without taking over the inputs.



11.03 Seam programming example

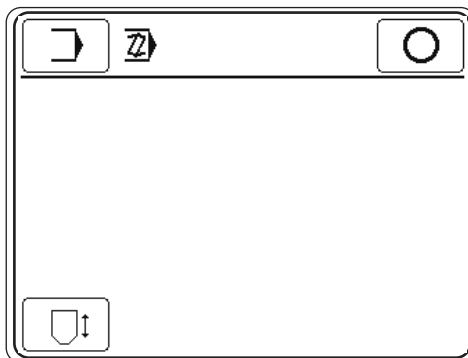
The following example describes the seam program input. A drawing with the corresponding coordinate values serves as a programming guideline, see following illustration.



For the use of the seam program, the sewing jig and the corresponding part set must match.



- Switch on the machine.
-  ● Call up the input mode.
-  ● Call up the seam program input function.
- If necessary, enter appropriate code number.

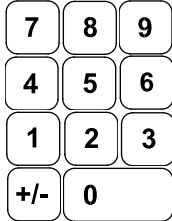




- Lower jig.



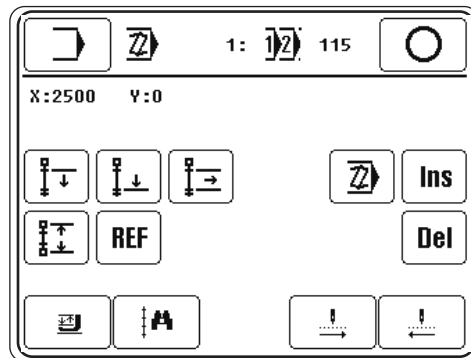
- Confirm operation.



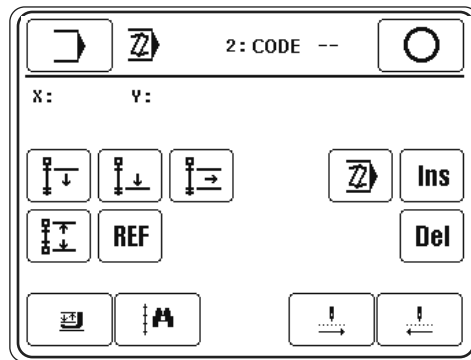
- Enter desired program number (e.g. "115") to create a new seam program.



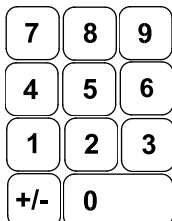
- Confirm program number selection



- Tact forwards.



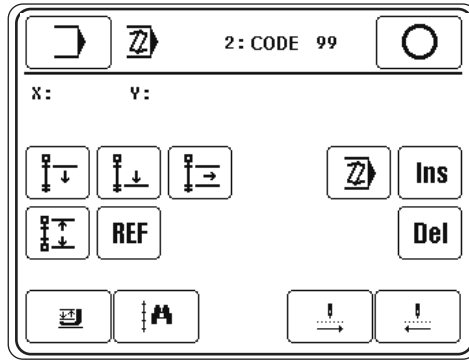
- Call up section editing function.



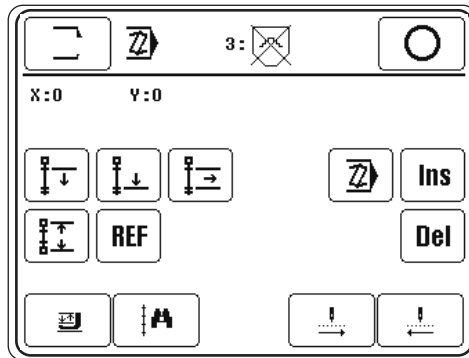
- Enter jig code (e.g. "99").



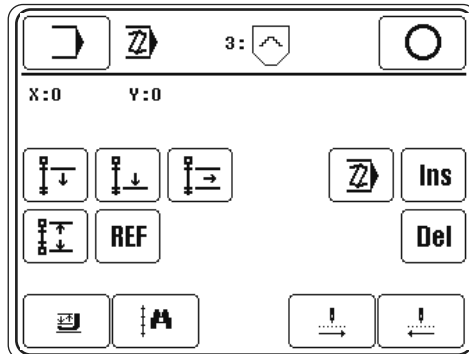
- Confirm input.



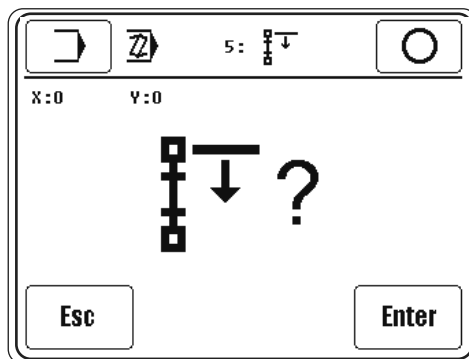
- Tact forwards.



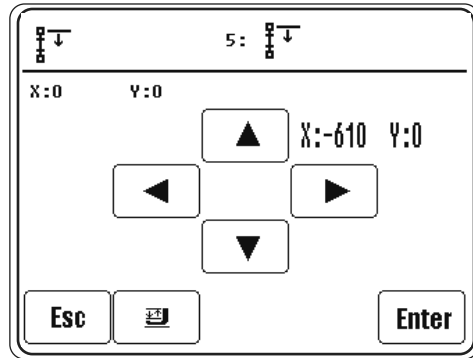
- Call up jig with obstacles with the "edit" function.



- Tact forwards.

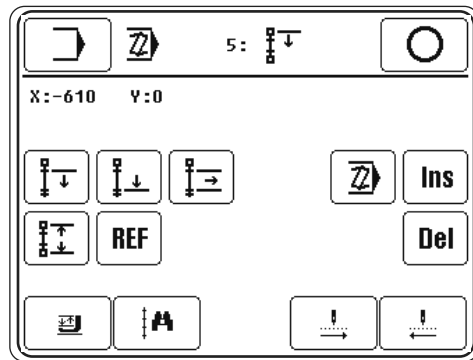


- Esc** ● Call up the "Esc" function, to change the starting point.

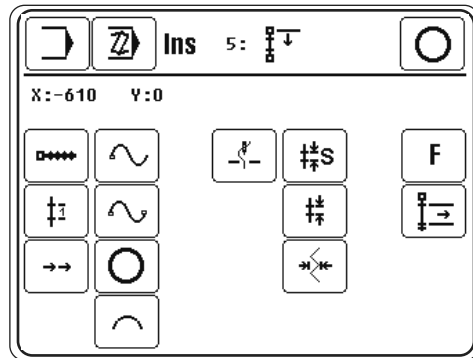



- Move to the starting point with the corresponding direction symbols.

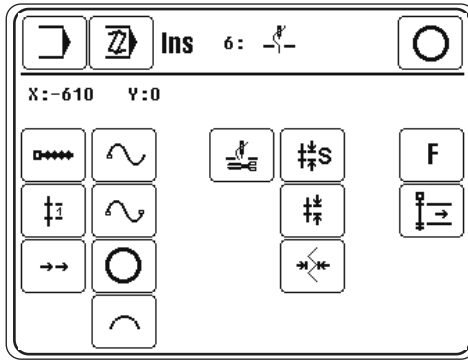
- Enter** ● Save the setting.



- Ins** ● Call up the "insert" function.



-  ● Call up the "start sewing" function.

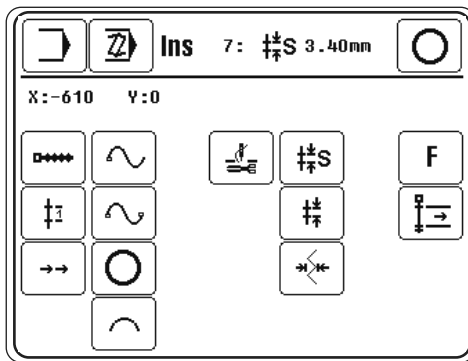


#S ● Call up the "standard stitch length" function.

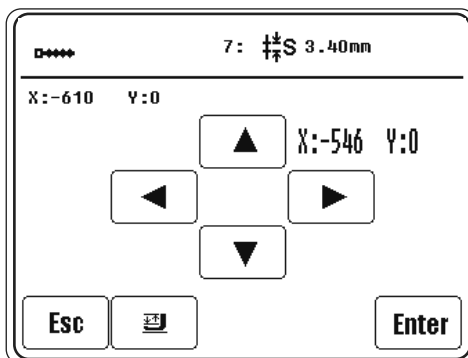
7	8	9
4	5	6
1	2	3
+/-	0	

● Enter the value for the standard stitch length, e.g. 3.40 mm.

Enter ● Confirm input.



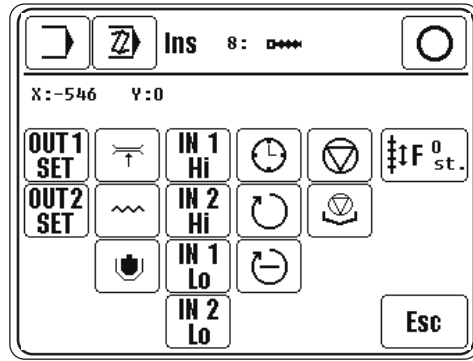
□□□□ ● Call up the "straight line" function to insert a straight line.
 ● Move to the end point of the straight line with the corresponding direction symbols.



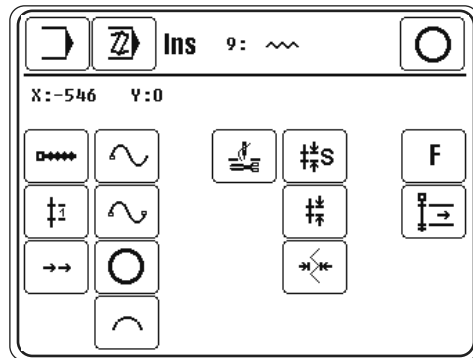
Enter ● Save the setting.

Esc ● Conclude straight line input.

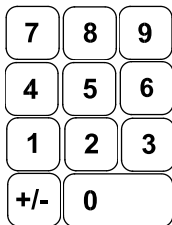
F ● Call up other functions.



- Call up the "zig-zag seam" function.

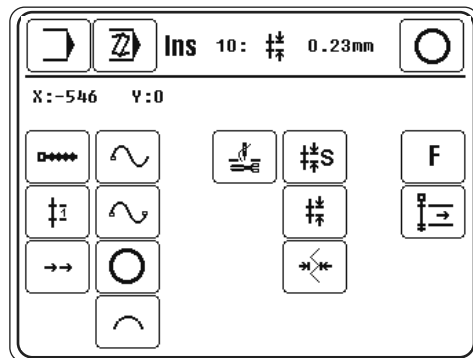


- Call up the "stitch length" function.



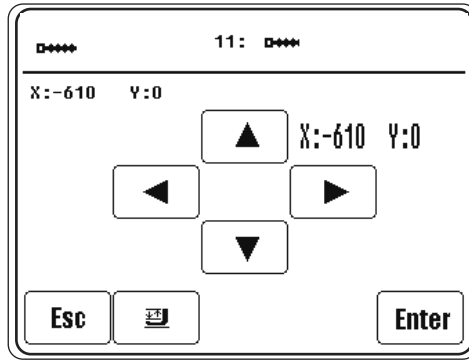
- Enter the value for the stitch length, e.g. 0.23 mm.

- Confirm input.



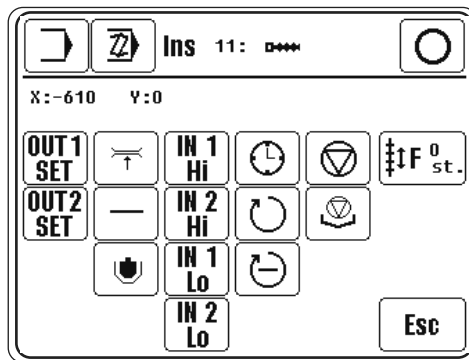
- Call up the "straight line" function to insert a straight line.
- Move to the end point of the straight line with the corresponding direction symbols.

- Save the setting.

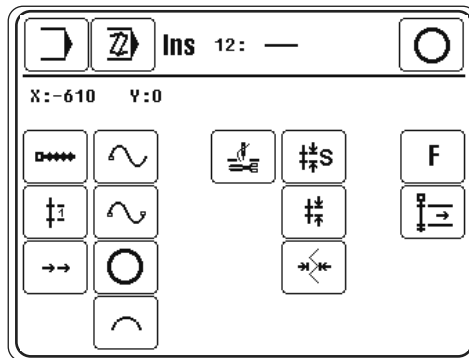


Esc ● Conclude straight line input.

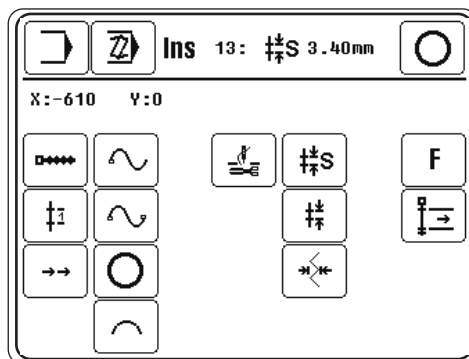
F ● Call up other functions.



— ● Call up "straight seam" function.



#S ● Call up "standard stitch length" function.

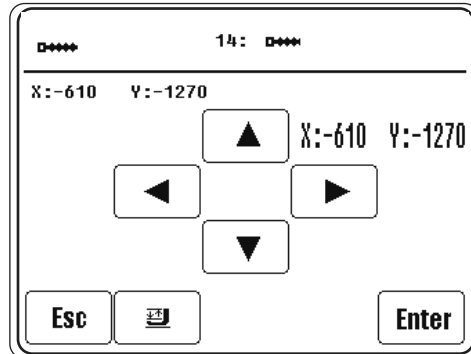




- Call up the "straight line" function to insert a straight line.
- Move to the end point of the straight line with the corresponding direction symbols.



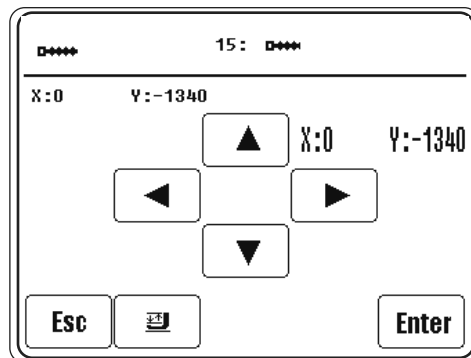
- Save the setting.



- Use the corresponding direction symbols to move to the next straight line end point.



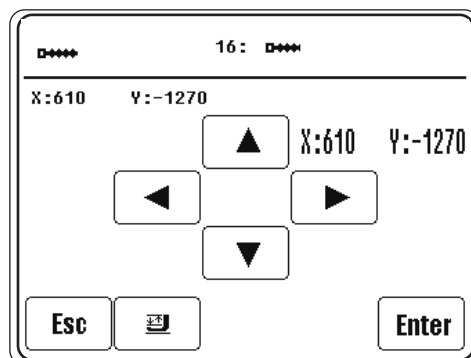
- Save the setting.



- Use the corresponding direction symbols to move to the next straight line end point.



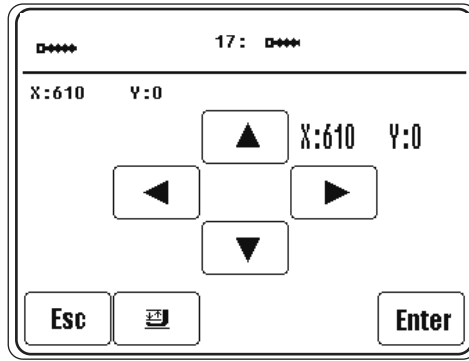
- Save the setting.



- Use the corresponding direction symbols to move to the next straight line end point.

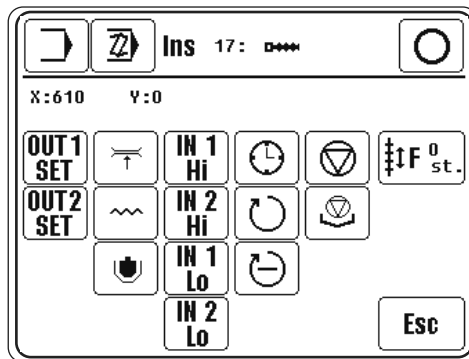



- Save the setting.

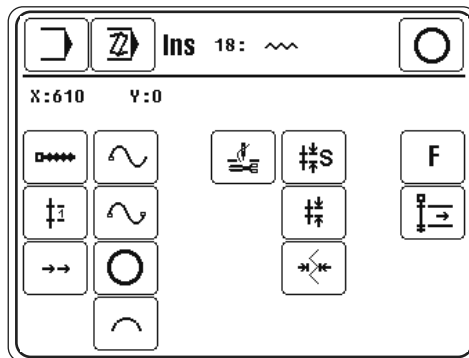



Esc ● Conclude the straight line input.

F ● Call up other functions.



 ● Call up the "zig-zag seam" function.



 ● Call up the "stitch length" function.

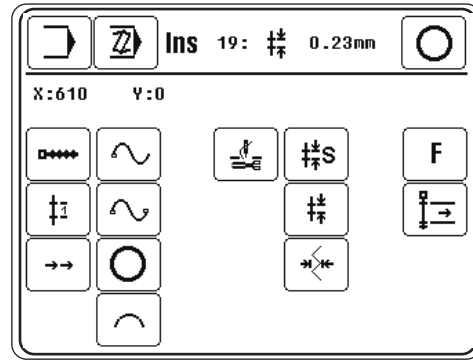
7 **8** **9** ● Enter the value for the stitch length, e.g. 0.23 mm.

4 **5** **6**

1 **2** **3**

+/- **0**

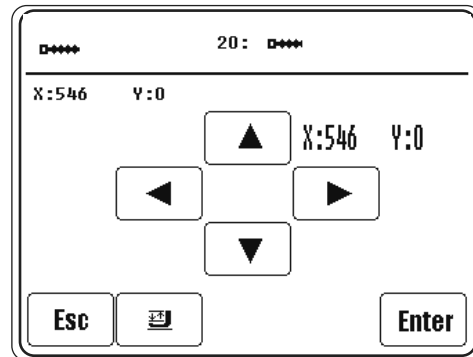
Enter ● Confirm input.



- Call up the "straight line" function to insert a straight line.
- Move to the end point of the straight line with the corresponding direction symbols.



- Save the setting.



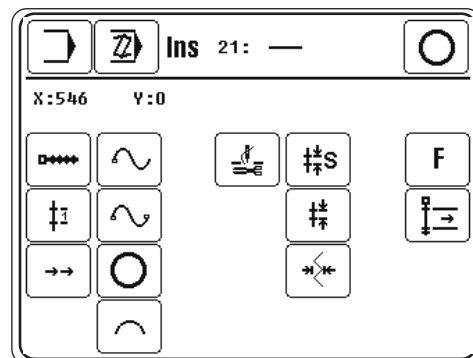
- Conclude straight line input.



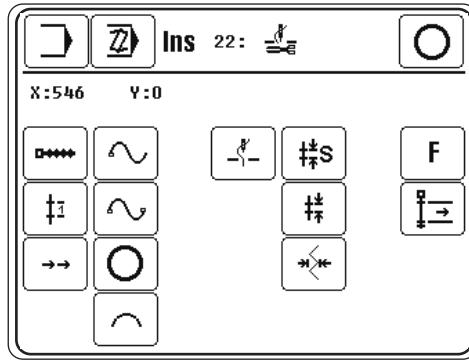
- Call up other functions.




- Call up "straight seam" function.



- Switch on the thread trimming function.





-  ● Conclude the seam program input (function in status bar).



To be able to sew with the newly-created or edited seam program, the stitch generation must be carried out. Incomplete or incorrect programs also can be ended with the "Esc" function without stitch generation. In this case, when the seam program is called up in the sewing mode, an appropriate error message will appear.



-  ● Carry out the stitch generation.
-  ● Move to the basic position.
- After entering the appropriate program number, the created seam program can be selected and processed.



To begin with tact through a newly-created or corrected seam program on the machine, to make sure that it matches the jig!

11.04 Program management

The program management function is used to manage seam programs as well as configuration and machine data. Files can be selected from the machine memory or from a SD-Card and be copied or deleted.

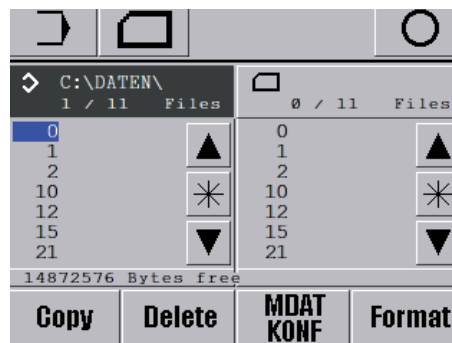
- Switch on the machine.




- Call up the input mode.



- Call up the program management function.



Both data carriers with the corresponding files appear on the display:

- Machine memory ("C:\DATEN") is currently selected
- SD-Card () is currently inserted

The data carrier is selected by touching the appropriate box, and the content of the appropriate data carrier is also updated. The selected drive is shown as a inverted symbol, the selected files are shown blue.



Seam programs are filed at a different level to that for the configuration and machine data, in order to avoid the configuration and machine data being processed by mistake.

Description of the functions



Input mode

This function is used to change to the initial state of the input mode.



Update drives

This function is used to update (upload) the drives.



Conclude input

This function is used to conclude the input and change to the sewing mode.



Data selection

With these functions the desired files are marked in the current drive. Individual files are selected with the arrow keys. In combination with the lock key (*) several files can be selected at one time with the arrow keys.



Copy

Copy

This function is used to copy the files selected from the current data carrier onto the second data carrier.

Delete

Delete

This function is used to delete the selected files.

**MDAT
KONF**

MDAD/KONF

This function is used to call up the level for the configuration and machine data. The current settings and the machine configuration are stored in the files "MDAT3588" and "KONF3588.BIN". In this way the machine data can be copied on to a CD-Card as a backup, or several machines with the same designation can be configured quickly by reading in the machine data.

Format

Format

This function is used to format the CD-Card inserted.



In the course of the formatting operation, all data on the CD-Card is deleted!

11.05 Rights of access

The functions, which can be selected on the control panel, are ordered by code numbers and can be protected from unauthorized access. For this purpose the control unit differentiates between three user groups (User 1, 2 and 3), which are all assigned a corresponding PIN. If a function is selected, to which the user does not have access, the user is requested to enter a PIN. After the corresponding PIN has been entered, the selected function is executed. In addition to the 3 user groups, the control unit also recognises the so-called "super user". The super user is equipped with a key switch and has access to all functions, and is also authorised to define the rights of access.

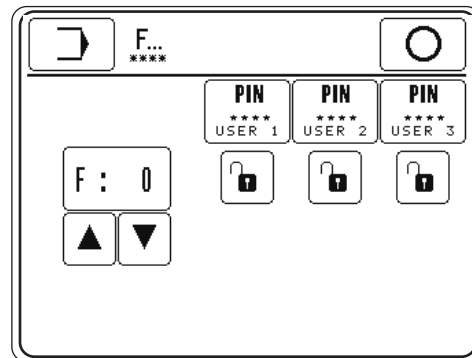
- Insert the key switch and switch on the machine.



- Call up the input mode.



- Call up the menu for entering rights of access.



Description of the functions



Input mode

This function is used to change from the initial state to the input mode.



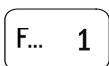
Conclude input

This function is used to conclude the input and change to the sewing mode.



Enter PIN

With this function it is possible to define an individual PIN for each user.



Function selection
















































































This function is used to select the code number for the functions to be blocked or authorised.


























Locking/releasing

These functions are used to lock or release the function for the appropriate user.

Allocation of the code numbers

Function	Symbol	Code number	Standard setting		
			User 1	User 2	User 3
Program number selection		0			
Enter stitch length		1			
Enter speed		2			
Input		3			
Create program		4			
Program management		5			
Parameter settings	PAR	6			
Parameter group 100 General settings	-	7			
Parameter group 200 Seam parameters	-	8			
Parameter group 300 Sewing motor positions	-	9			
Parameter group 400 Times	-	10			
Parameter group 500 Counters	-	11			
Parameter group 600	-	12			
Info	i	16			
Reset day piece counter		17			
Reset bobbin thread stitch counter		18			
Clear operating hours counter		19			
Clear production hours counter		20			
Country settings		21			
Rights of access	F... ****	22			
Service		23			
Carry out a cold start		24			

Function	Symbol	Code number	Standard setting		
			User 1	User 2	User 3
Machine configuration		25			
Load software		26			
Set contrast control panel		27			
Thread trimming cycle		28			
Needle position	POS	29			
Set zero points		30			

12 Care and maintenance

12.01 Care and maintenance intervals

Clean the entire machine	weekly
Clean the hook compartment	several times daily
Clean needle area	several times daily
Check oil level for sewing head lubrication	daily before use
Lubricate needle bar frame eccentric	every 2 months
Lubricate jig guides	every 2 months
Lubricating the pocket plate guide	every 2 months
Clean the blower air filter	as required
Check air pressure	daily before use
Clean air filter of the air filter/lubricator unit	as required



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

12.02 Cleaning the machine

The required cleaning cycle for the sewing machine is dependent on the following factors:

- Single or multi-shift operation
- Accumulation of dust from the various fabrics

Thus, appropriate cleaning instructions can only be determined on an individual basis for each machine.

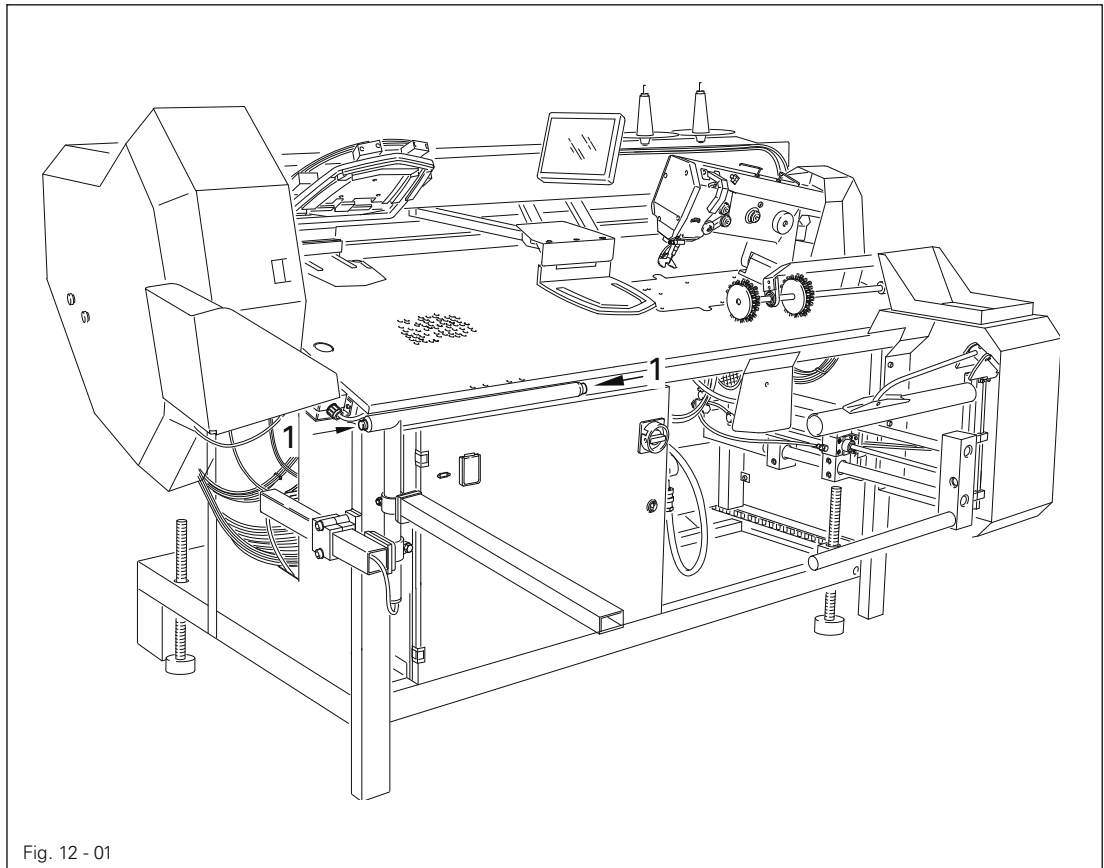


Fig. 12 - 01



To avoid operation disturbances, we recommend the following cleaning work for a machine in single shift operation:

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

Procedure:

- Switch on the machine.

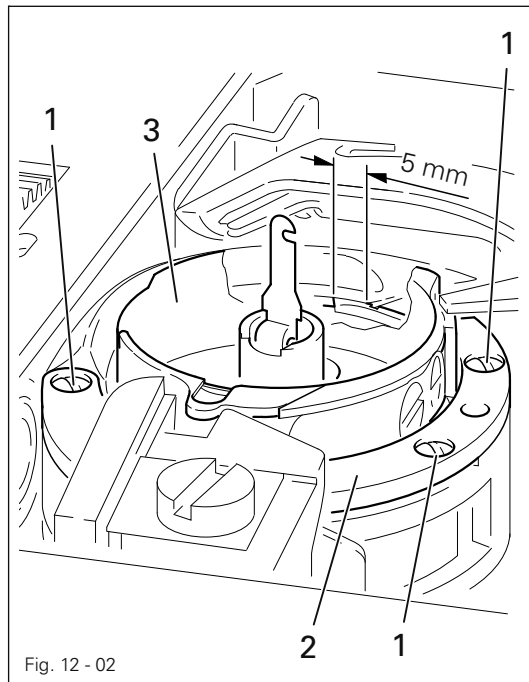


- Call up manual sewing.



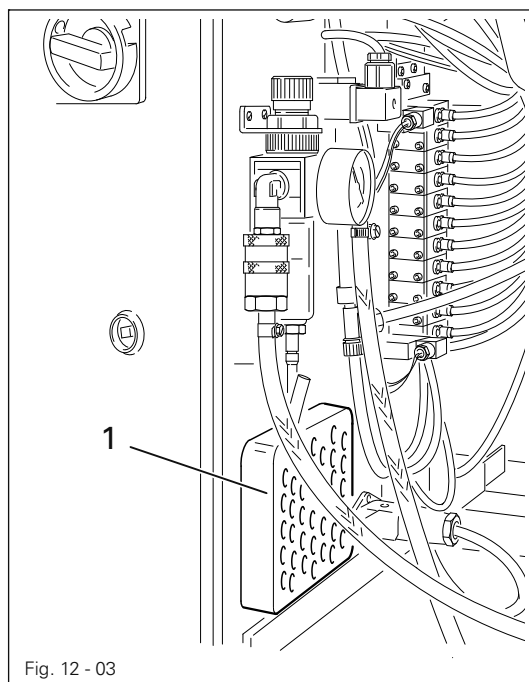
- Call up the "bobbin change" function.
- After cleaning press double start keys 1 at the same time.

12.03 Cleaning the hook



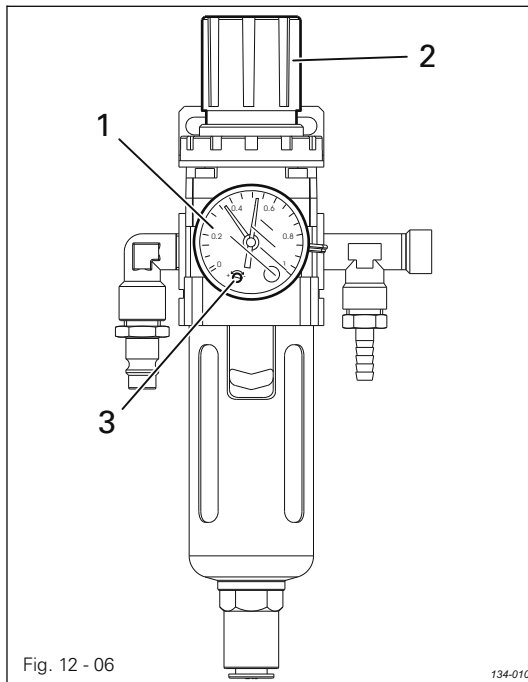
- Unscrew screws 1.
- Remove hook gib 2.
- Turn handwheel until the tip of the bobbin case 3 penetrates the hook race groove by approx. 5 mm.
- Remove the bobbin case 3.
- Clean the hook race.
- Reinsert bobbin case 3.
- Screw on hook gib 2.
- Press double-start keys.

12.04 Cleaning the blower air filter



- Remove cover 1.
- Take out filter element and clean with compressed air.
- Insert the clean filter element and replace cover 1.

12.05 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.

Configuration of the pressure controller:

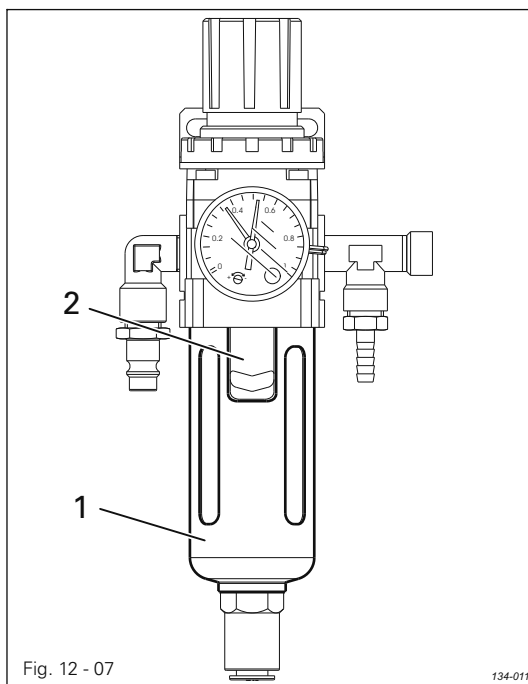
- Turn screw 3 until the green arrow points to 4.5 bar.

The machine is automatically switched off if a pressure of < 4.5 bar is reached, and can be automatically reactivated, once pressure reaches a value > 5.0 bar.



Bar	MPa	psi
4,5	= 0,45	= 65
5	= 0,5	= 73
6	= 0,6	= 87

12.06 Cleaning the air filter of the air-filter/lubricator



Switch the machine off!
Disconnect the air hose at the air-filter/lubricator.

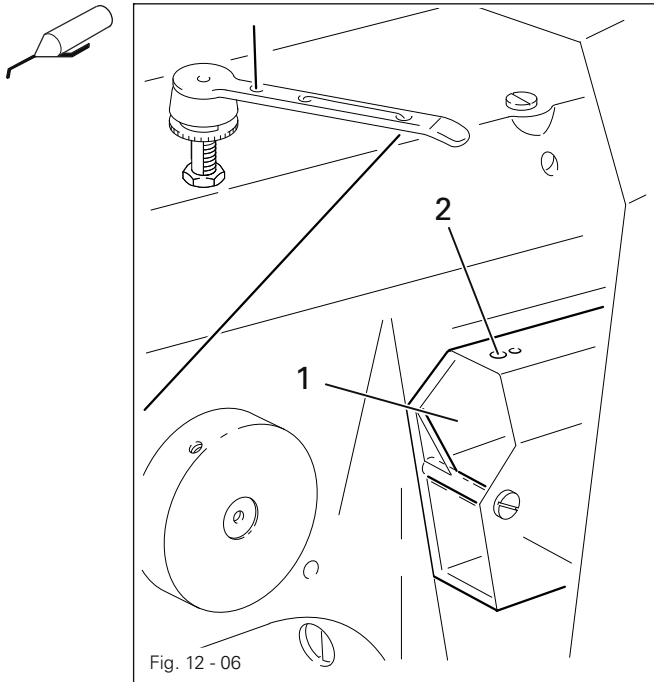
To drain water bowl 1:

- Water bowl 1 drains itself automatically when the compressed-air hose is disconnected from the air-filter/lubricator.

Cleaning filter 2:

- Unscrew water bowl 1.
- Take out filter 2.
- Clean filter 2 with compressed air or isopropyl alcohol (part No. 95-665 735-91).
- Screw in filter 2 and screw on water bowl 1.

12.07 Checking the oil level of the sewing head lubrication

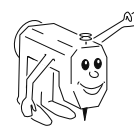


- The oil level in drum 1 must be checked daily before use of the machine.
- The oil level must be between the upper and lower markings of drum 1.
- When necessary, pour oil through hole 2.



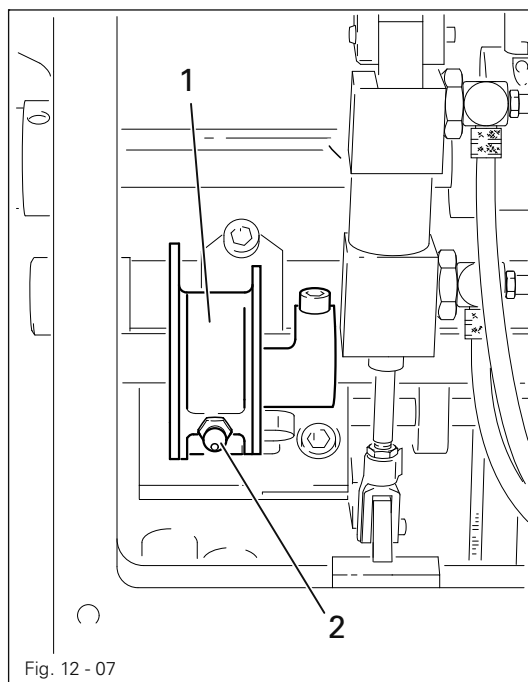
Only use oil with a viscosity of $22.0 \text{ mm}^2/\text{s}$ at 40°C and a density of 0.865 g/cm^3 at 15°C !

- Before the machine is first operated or whenever the machine has been at a standstill for a longer period of time, also add a few drops of oil to the hook race.



We recommend PFAFF sewing-machine oil, part No. 280-1-120 144.

12.08 Lubricating the needle bar frame eccentric



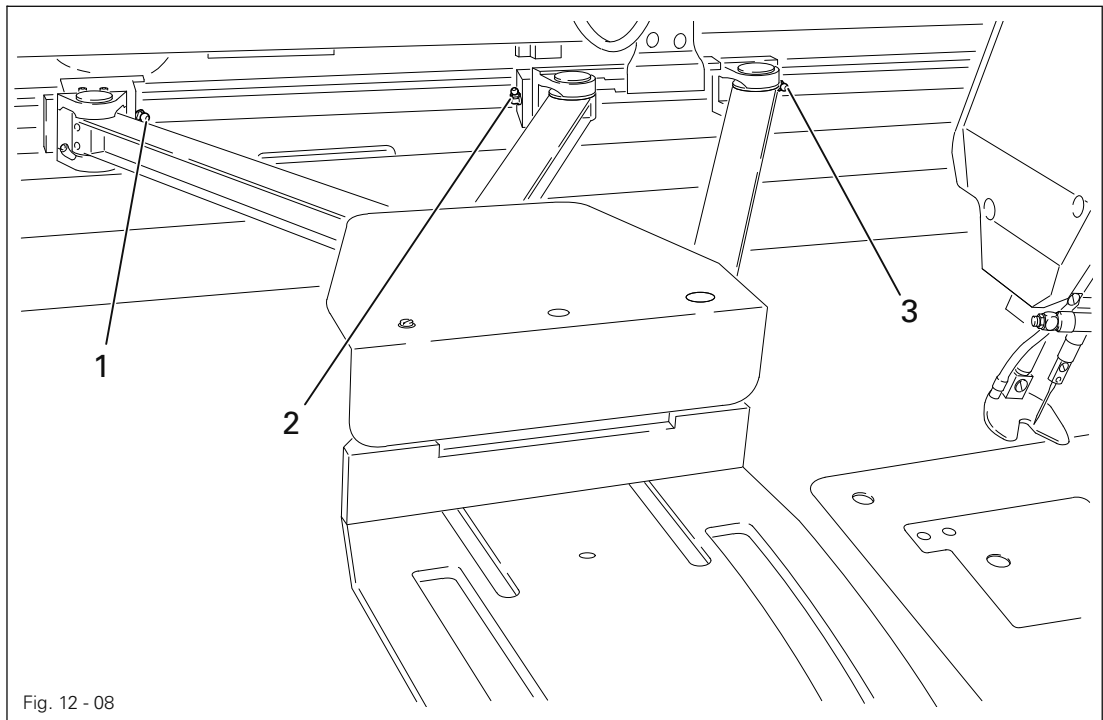
Switch off the machine and ensure that it cannot be switched on accidentally!
Turn off compressed air!



Only use Isoflex Topas L32, high-performance grease, part No. 280-1-120 210.

- Unscrew the cover on the reverse side of the sewing head.
- Grease eccentric 1 via grease nipple 2 using a grease gun every 2 months for single-shift operation and monthly for double-shift operation.
- Screw on cover.

12.09 Lubricating sewing jig feed



Switch off the machine and ensure that it cannot be switched on accidentally!
Danger due to unintentional starting of the machine!

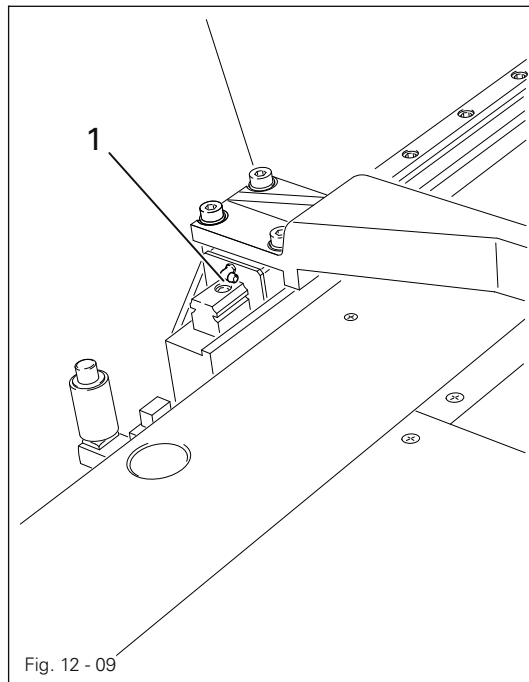


Only use Isoflex Topas L32, high-performance grease, part No. 280-1-120 210.



- Unscrew the cover of the sewing jig feed.
- Grease the guides via grease nipple 1, 2 and 3 using a grease gun every 2 months for single-shift operation and monthly for double-shift operation.
- Screw on cover.

12.10 Lubricating the pocket plate guide



Switch off the machine and ensure that it cannot be switched on accidentally!

Danger due to unintentional starting of the machine!



Only use Isoflex Topas L32, high-performance grease, part No. 280-1-120 210.

- Grease the guide at grease nipple 1 using a grease gun every two months for single-shift operation and monthly for two-shift operation.

13 Adjustment



Please observe all notes from Chapter 1 **Safety!**

In particular care must be taken to see that all protective devices are refitted properly after adjustment, see Chapter 1.06 **Danger warnings!**

13.01 Notes on adjustment

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

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

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

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



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

Danger of injury if the machine is started accidentally!

13.02 Tools, gauges and other accessories for adjusting

- 1 set of screwdrivers with blade widths from 2 to 10 mm
- 1 set of wrenches with jaw widths from 6 to 22 mm
- 1 set of Allan keys from 1.5 to 6 mm
- 1 universal screwdriver with interchangeable blades
- 1 metal ruler
- 1 adjustment pin (zero point adjustment)
- 1 adjustment gauge (for adjustments to sewing head), part no. 61-775 913-15
- 1 adjustment gauge (for adjustments to sewing head), part no. 61-778 162-15
- 1 adjustment gauge (for adjustments to feed)
- 1 needle rise gauge, part no. 61-111 600-01
- 1 adjustable clamp, part no. 08-880 137 00

13.03 Abbreviations

t.d.c. = top dead centre

b.d.c. = bottom dead centre

13.04 Removing/inserting sewing head



Turn off compressed air!

Switch off main switch and ensure that it cannot be turned back on accidentally.

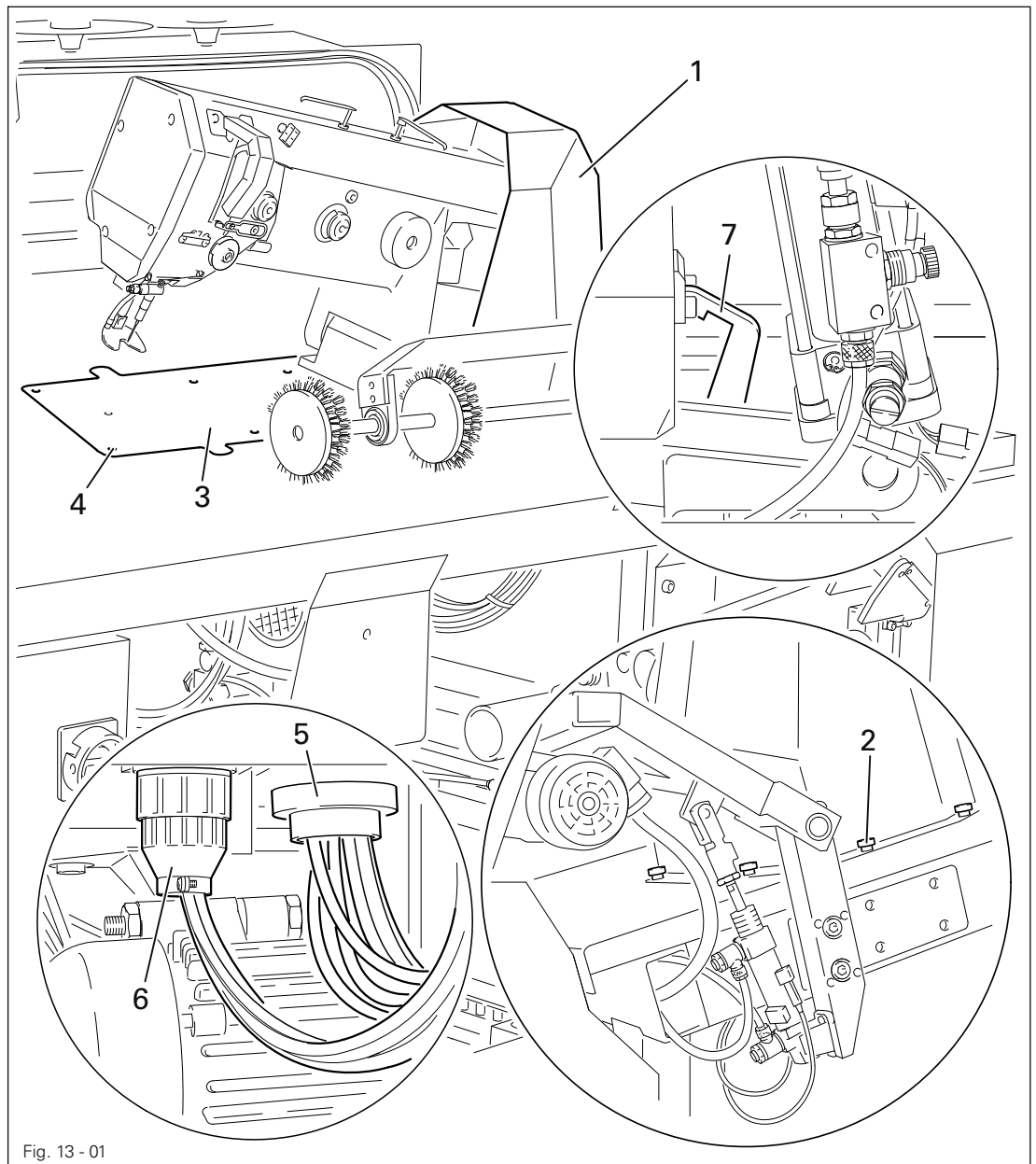
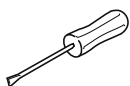


Fig. 13 - 01



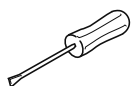
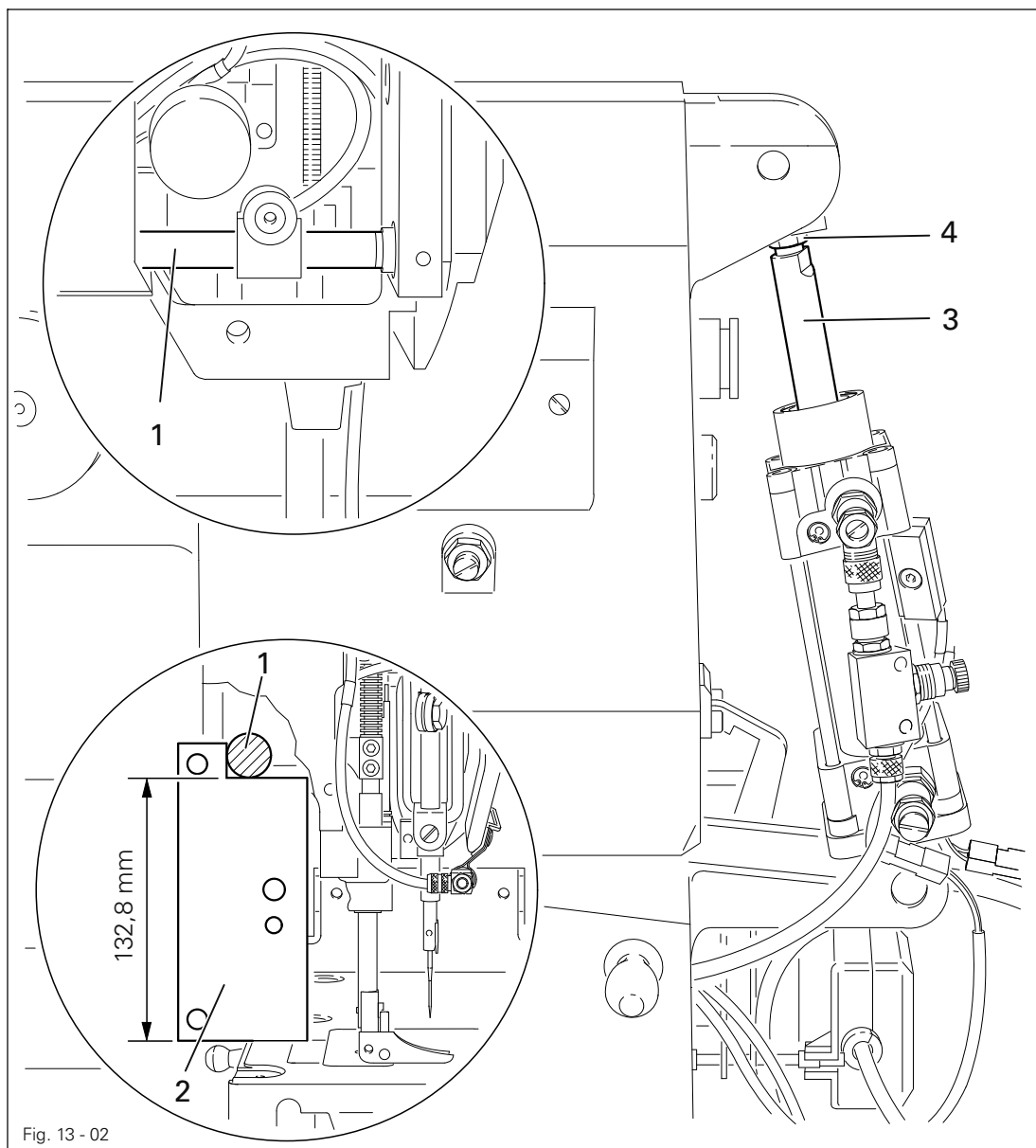
- To remove the sewing head, remove the protective cover 1 (screws 2).
- Remove the cover plate 3 (screws 4; 6 screws altogether)
- Unplug pneumatic power supply 5 and electrical power supply 6.
- Unhook catch 7 and fold down sewing head.
- Remove V-belt from belt pulley on motor.
- Lift sewing head and remove from its bracket.
- Remove the ground cable of the sewing head.
- To insert the sewing head, carry out the steps above in reverse.

13.05 Adjusting the sewing head

13.05.01 Spacing between sewing head and bedplate

Requirement

When the sewing head is lowered, the distance from the lower edge of the shaft 1 to the bedplate must be **132.8 mm**.



- Check the distance between the shaft 1 and the bedplate using adjustment gauge 2 (part no. 61-775 913-15).
- If required, turn plunger 3 (nut 4) according to the **requirement**.

13.05.02 Sewing head position in relation to the bedplate

Requirement

When the sewing head is lowered, after the screws **3** have been loosened, the presser bar **4** must pass exactly through the corresponding hole in the adjustment gauge **1**.

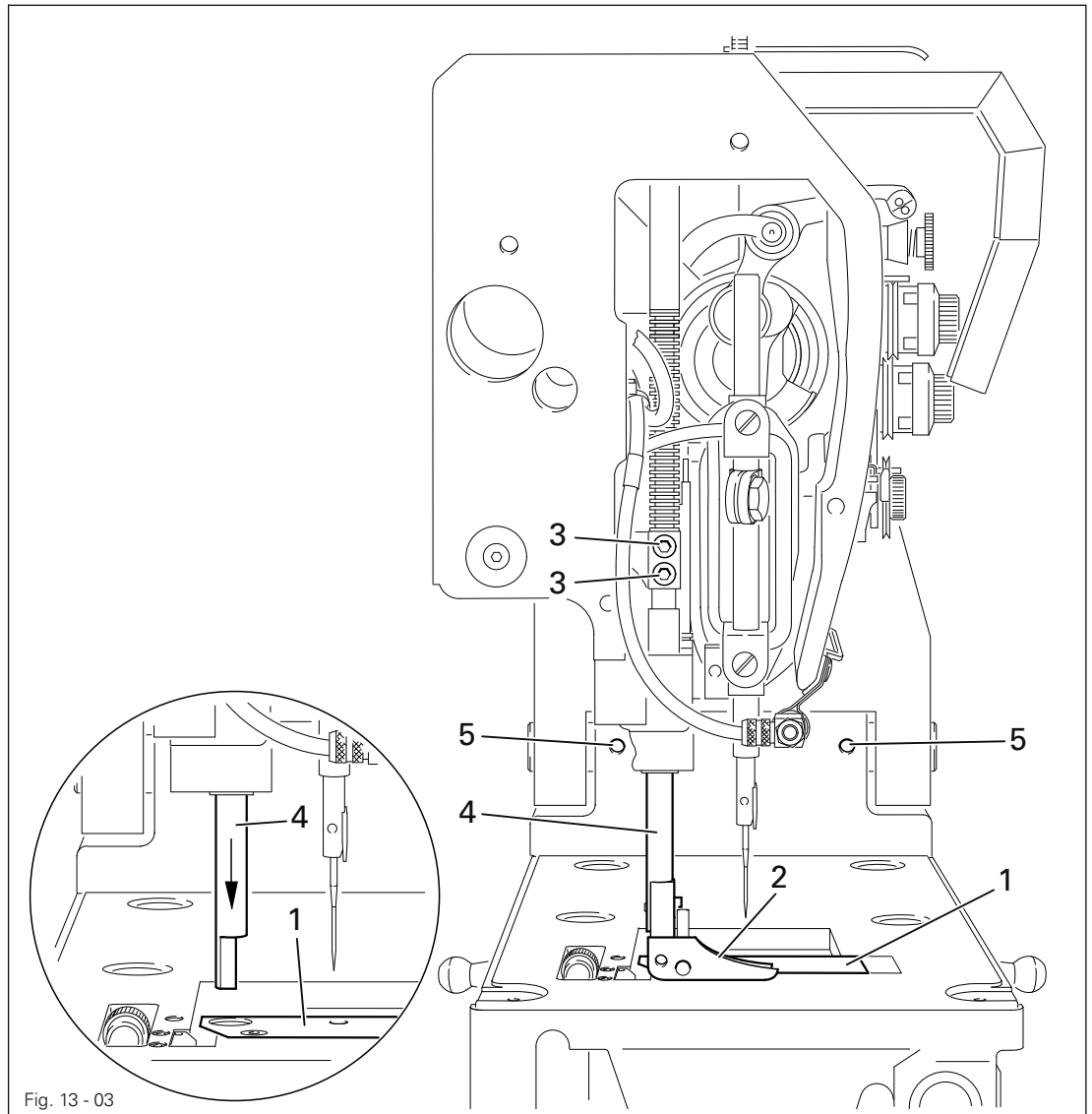
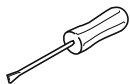


Fig. 13 - 03



- Unscrew needle plate and screw on adjustment gauge **1** (part no. 61-778 162-15).
- Unscrew presser **2**.
- Loosen screws **3** and guide presser bar **4** into the hole in the adjustment gauge **1**.
- If required, move sewing head (screws **5**) according to the **requirement**.
- Move presser bar **4** back to its original position and tighten screws **3** lightly.

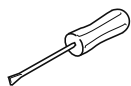
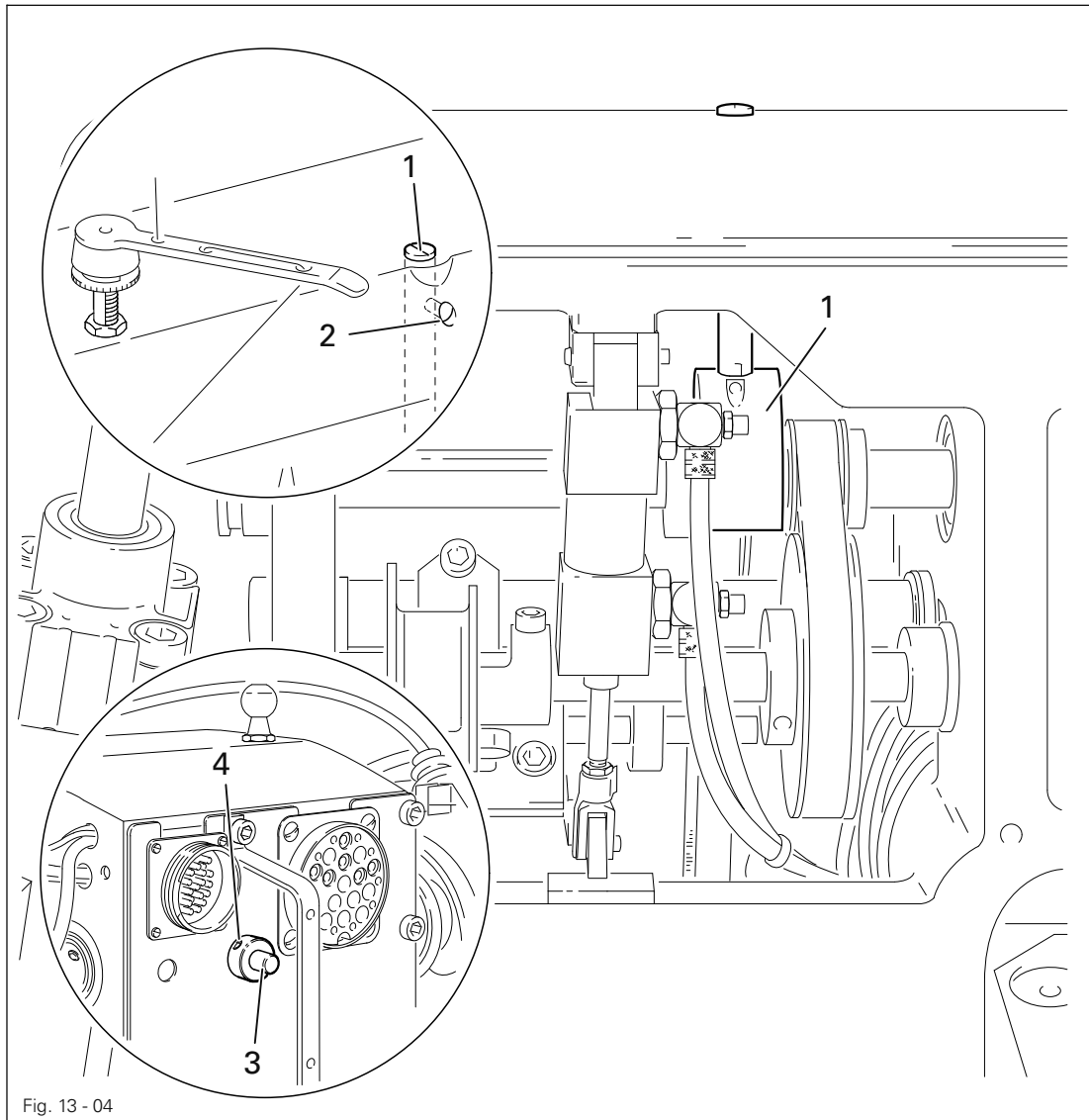


Adjustment gauge **1** remains screwed on for further adjustments.
The precise adjustment of the presser bar **4** is described in chapter 13.05.21
Presser height.

13.05.03 Upper and lower toothed belt guards

Requirement

The upper and lower toothed belt guards must be positioned as close as possible over the toothed belt sprockets without touching them.



- Move the upper 1 (screw 2) and lower toothed belt guards 3 (screws 4) at the underside of the sewing head according to the requirement.

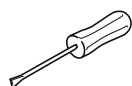
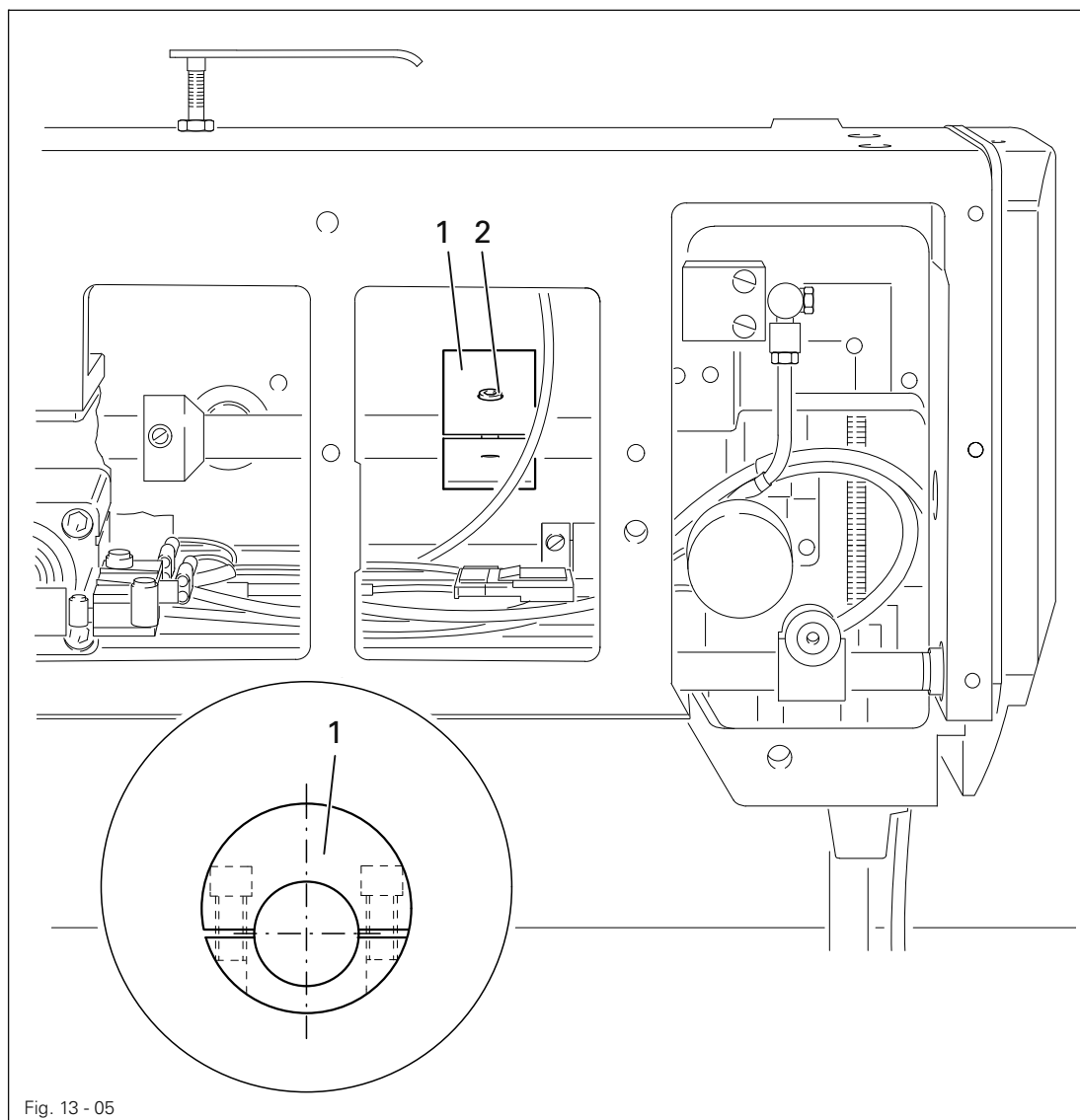


Carry out the adjustment carefully!
Otherwise, when the sewing head is raised up, the toothed belt could disengage!

13.05.04 Counterweight

Requirement

In needle bar position BDC the largest eccentricity of the counterweight **1** must be at the top.

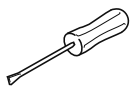
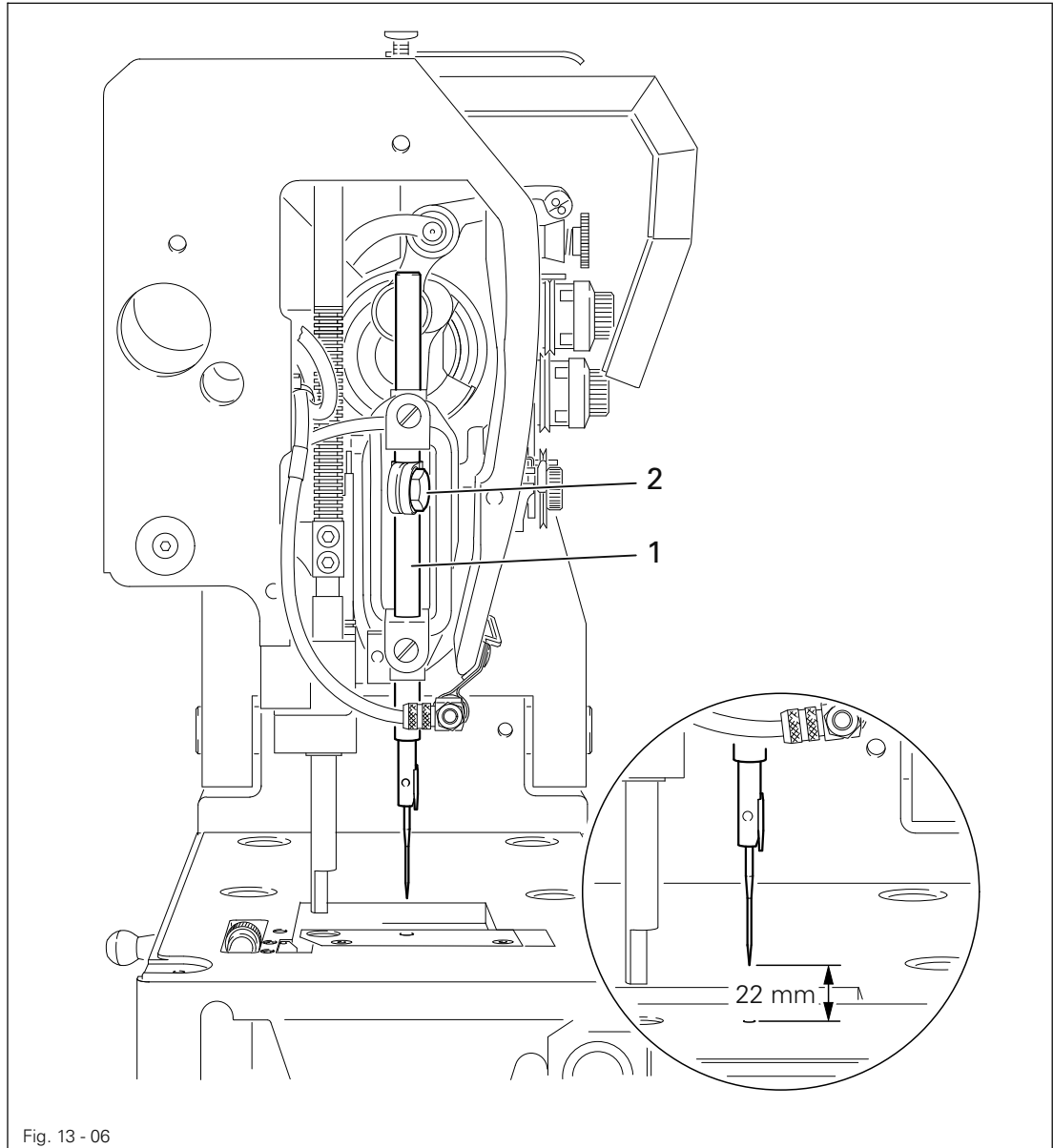


- Move needle bar to BDC.
- Turn counterweight **1** (screws **2**) according to the **requirement**.

13.05.05 Preadjusting the needle height

Requirement

At needle bar position TDC, the distance between the needle point and the adjustment gauge must be approx. **22 mm**.



- Move needle bar 1 (screws 2) without twisting it according to the requirement.

13.05.06 Zero stitch

Requirement

When the cylinder plunger 1 is fully extended (straight stitch position), the crank 2 must not carry out any movement when the handwheel is turned.

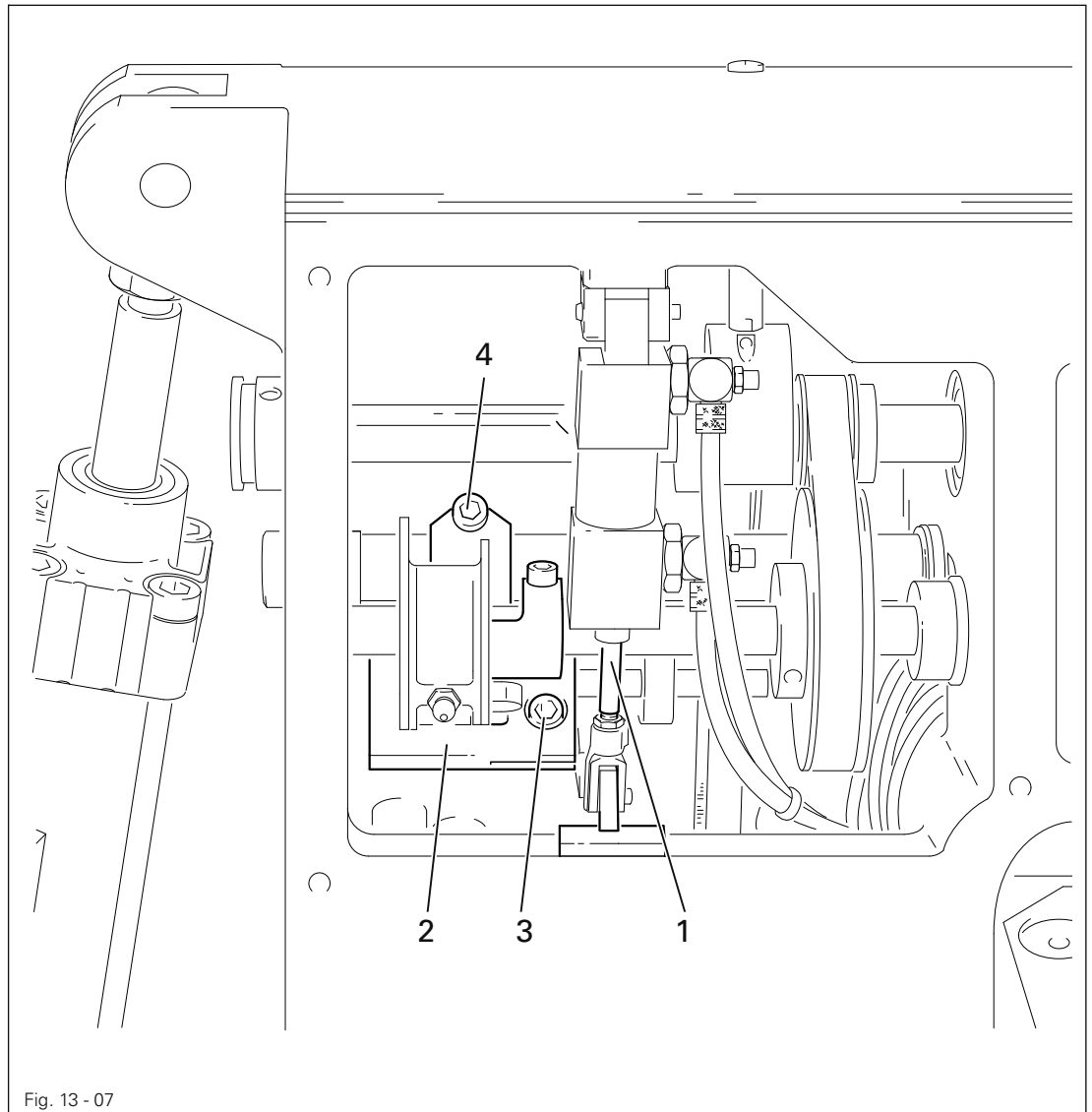
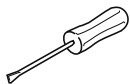


Fig. 13 - 07



- Pull out cylinder plunger 1 fully.
- Turn crank 2 (screw 3) according to the **requirement**.



In order to better recognize the movement of the crank, insert an Allan key into screw 4.

13.05.07 Centering the needle in the needle hole

Requirement

When the cylinder plunger 5 is fully extended (straight stitch position), adjustment pin 1 must fit precisely into the corresponding adjustment hole of the adjustment gauge 8.

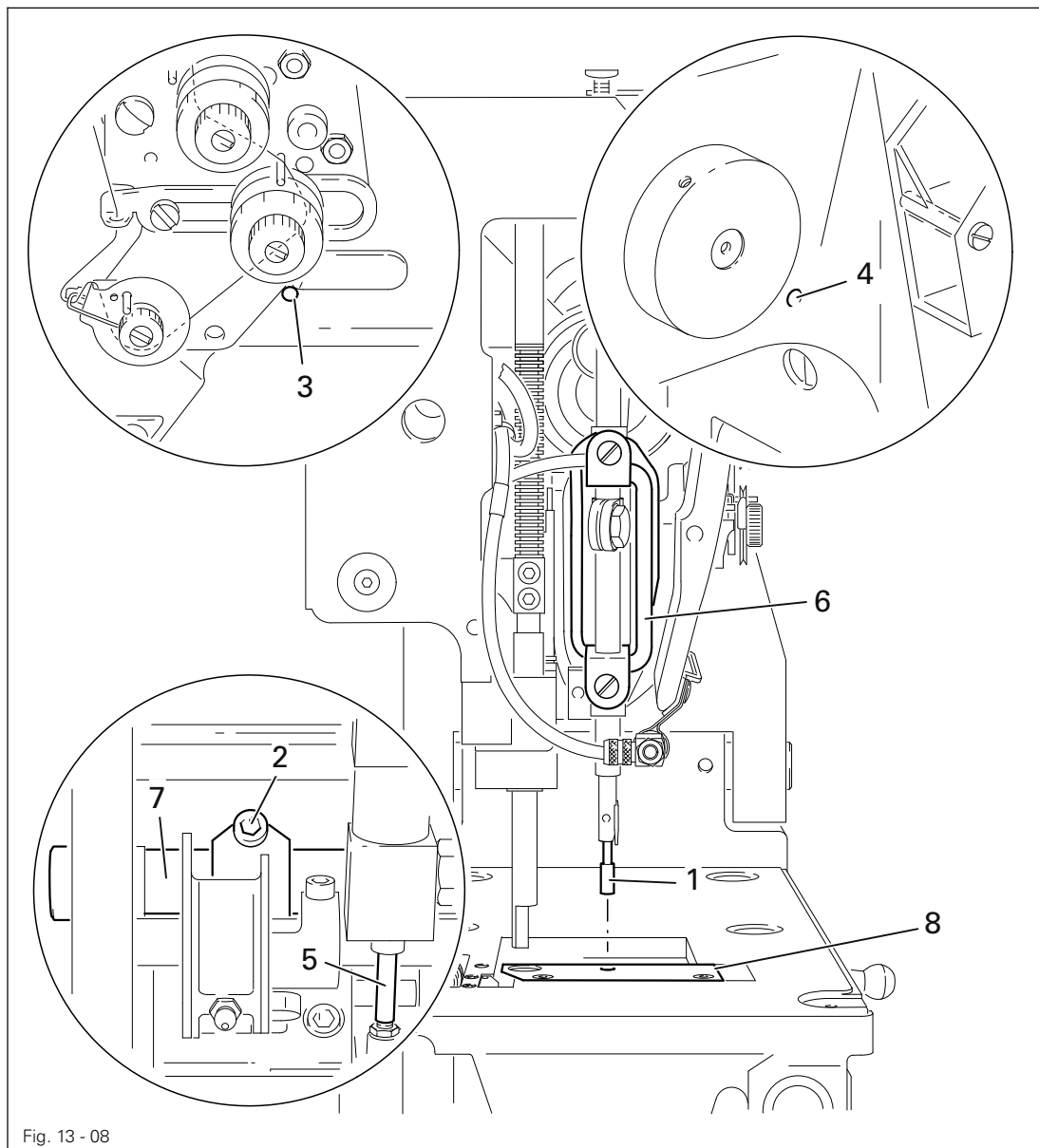
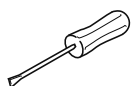


Fig. 13 - 08

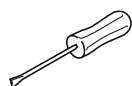
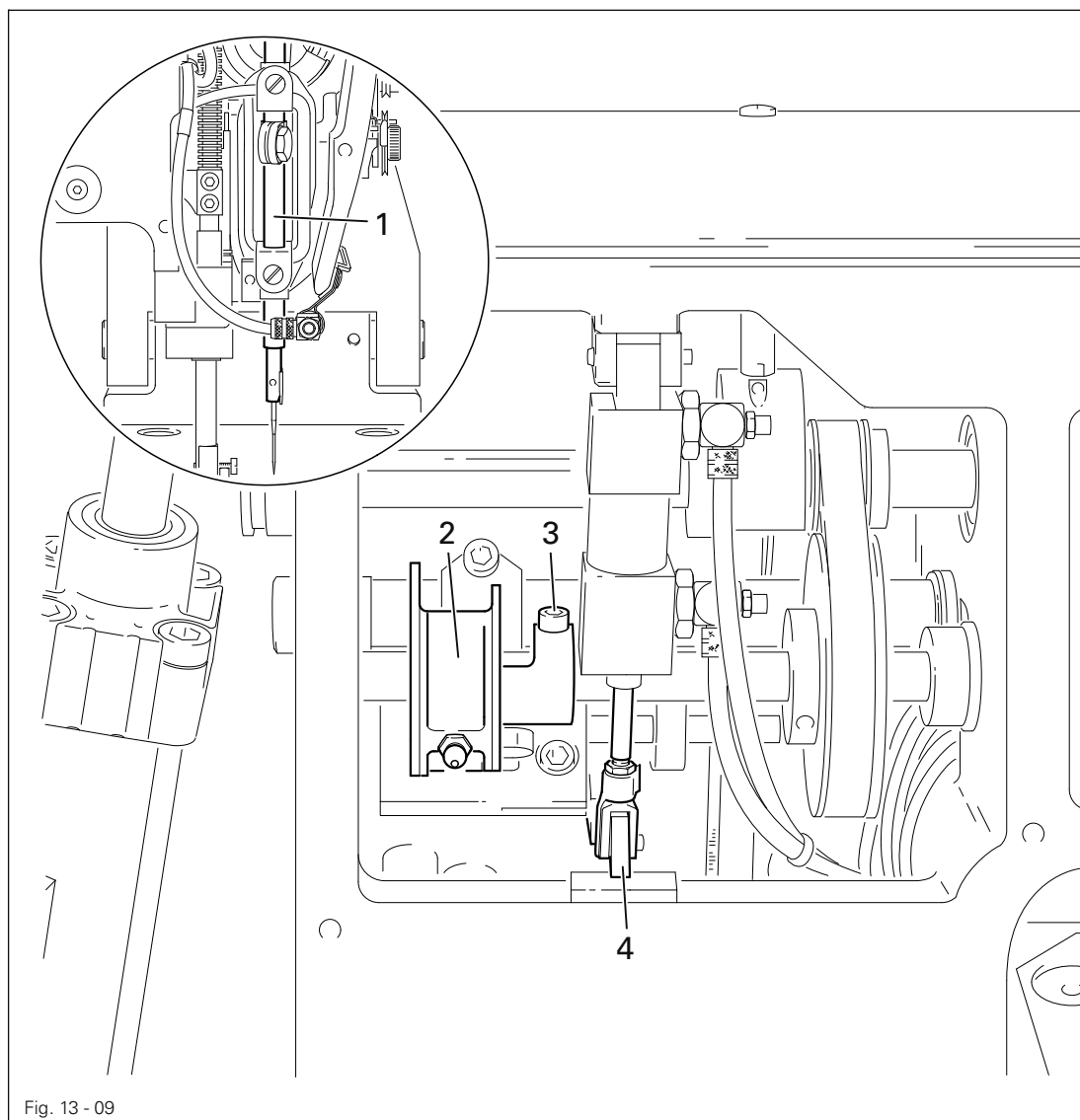


- Insert adjustment pin 1 into the needle bar and screw tight.
- Loosen screws 2, 3 and 4.
- Pull out cylinder plunger 5 until it stops.
- Move needle bar frame 6 according to the **requirement**.
- Turn shaft 7 according to the **requirement**.
- Tighten screws 2, 3 and 4.
- Unscrew adjustment gauge 8 (part no. 61-778 162-15) and adjustment pin 1.

13.05.08 Zigzag stitch movement

Requirement

When the needle is in TDC, the needle bar **1** must not carry out any movement when the lever **4** is operated.



- Bring needle bar **1** to TDC.
- Turn eccentric **2** (screw **3**), without twisting it, according to the **requirement**.

13.05.09 Needle bar rise, hook-to-needle clearance, needle height and needle guard

Requirement

In straight stitch position and with the needle bar 2.4 past BDC,

1. the hook point must be at the middle of the needle; the distance between the needle and the hook point must be from 0.05 to 0.1 mm.
2. the top edge of the needle eye must be 1.0 mm below the hook point, and
3. the needle guard 4 must touch the needle lightly.

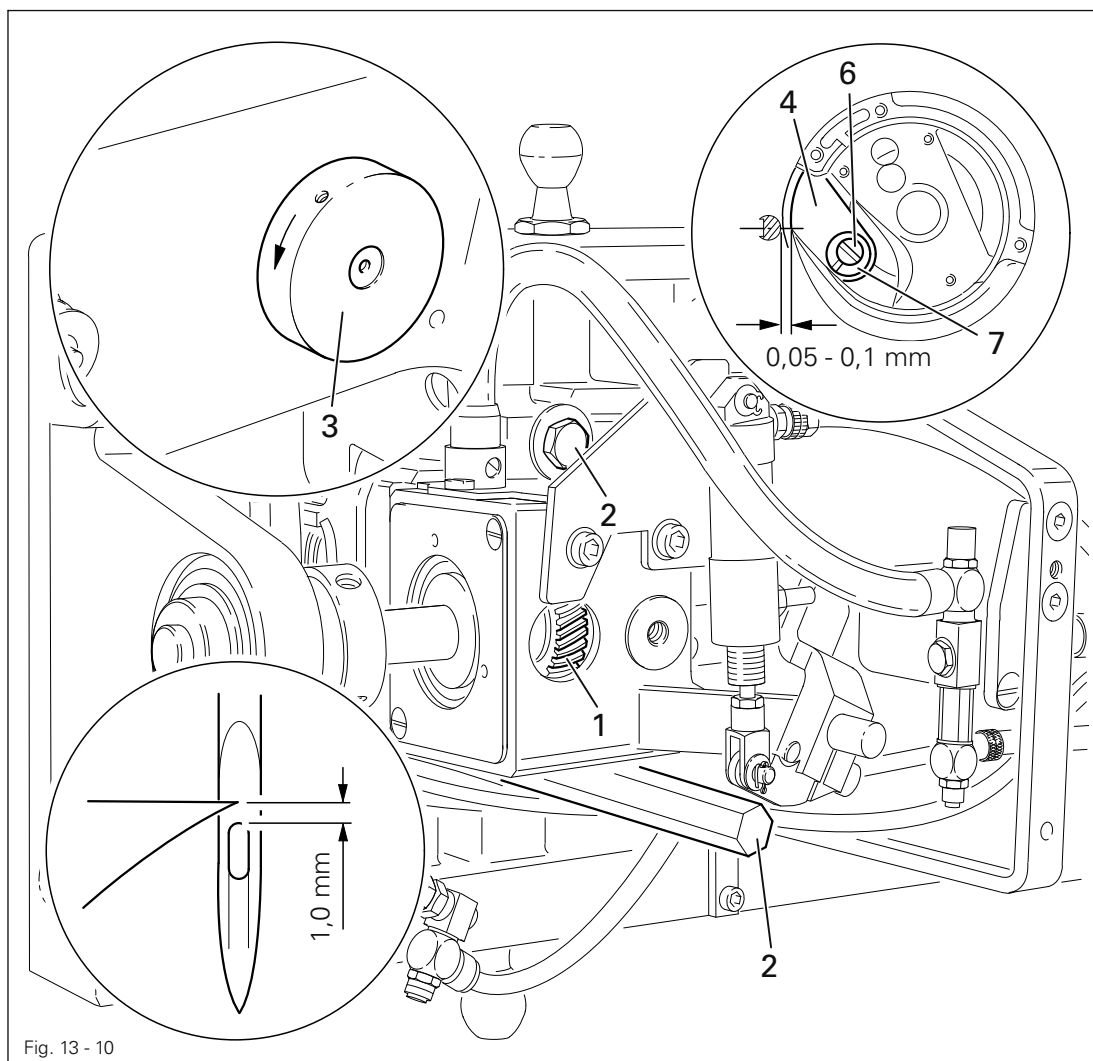
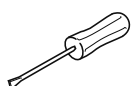
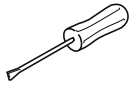


Fig. 13 - 10



- Set the stitch length control to straight stitch position.
- Loosen the fastening screws of the bevel gear 1 and screws 2.
- Move the needle bar to BDC.
- In this position, slide the 2.4 mm thick feeler gauge of the needle bar rise gauge closely under the needle bar bearing.
- Move adjustable clamp (part no. 08-880 137 00) against feeler gauge as far as possible and screw it onto the needle bar.
- Remove the feeler gauge and turn the handwheel 3 in the direction of the arrow until the adjustable clamp is resting on the needle bar.



- Unscrew the hook gib and remove the bobbin case.
- Position the hook point at the center of the needle and move the hook bearing according to **requirement 1**. Make sure that the needle is not pressed against by the needle guard **4**.
- Tighten screws **2**.
- Taking the backlash of the toothed gear into account, tighten the fastening screws of the bevel gear **1**.
- If required, move the needle bar (screw **5**) without twisting it according to **requirement 2**.
- Turn eccentric **6** (screw **7**) according to **requirement 3**.
- Insert bobbin case and screw on hook gib.

13.05.10 Bobbin case opener stroke

Requirement

1. The front edges of the retaining spring 1 and the retaining trip 7 must be flush with each other.
2. When the bobbin case opener 5 is at its rear point of reversal, the distance between the bobbin case base 6 and the retaining spring 1 must be equal to the **thread thickness**.

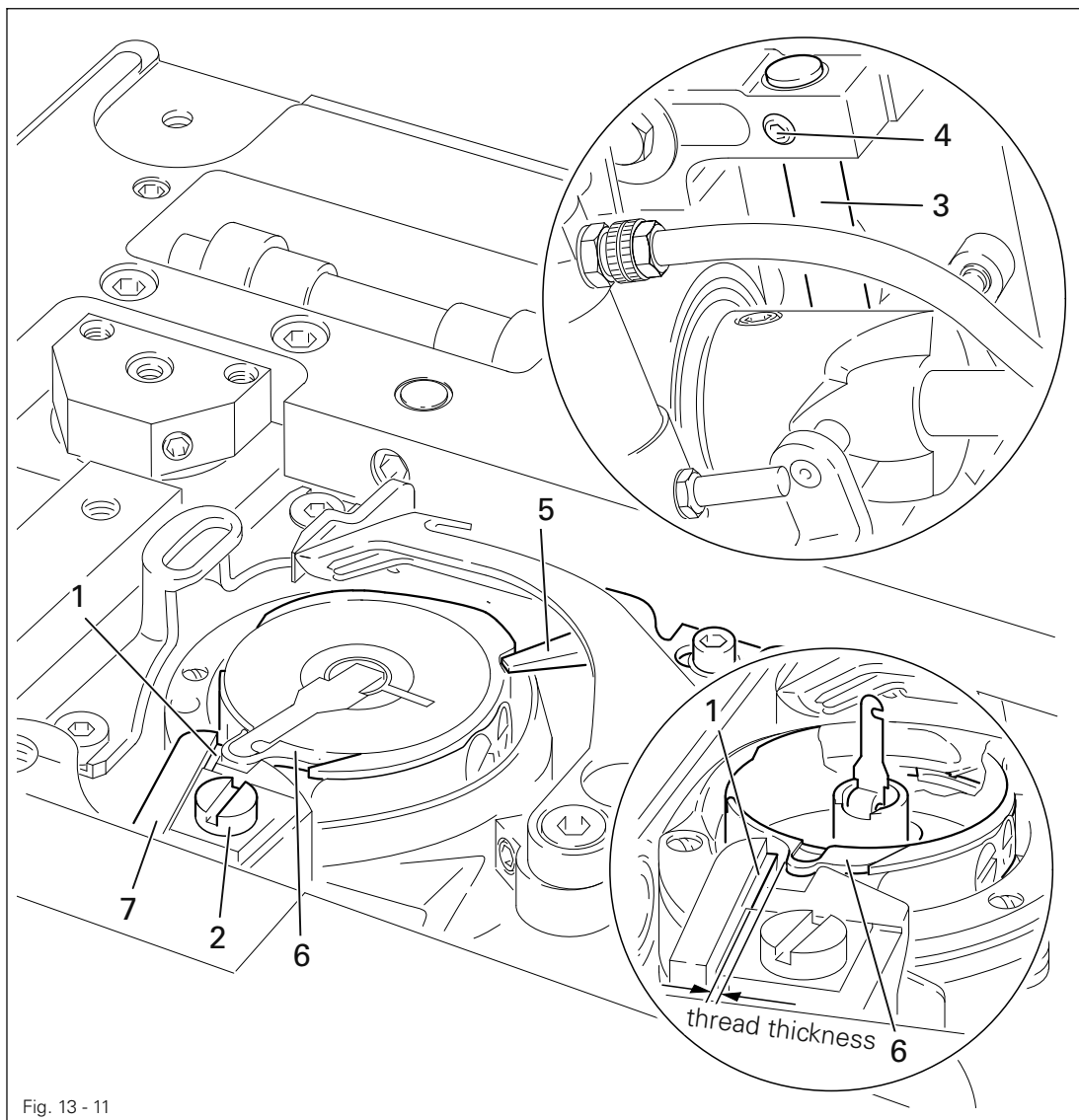
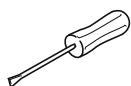


Fig. 13 - 11



- Align the retaining spring 1 (screw 2) according to **requirement 2**.
- Move shaft 3 (screw 4) according to **requirement 1**.

13.05.11 Counter presser lifting stroke

Requirement

At needle bar position BDC, the counter presser **3** must be positioned at its top point of reversal.

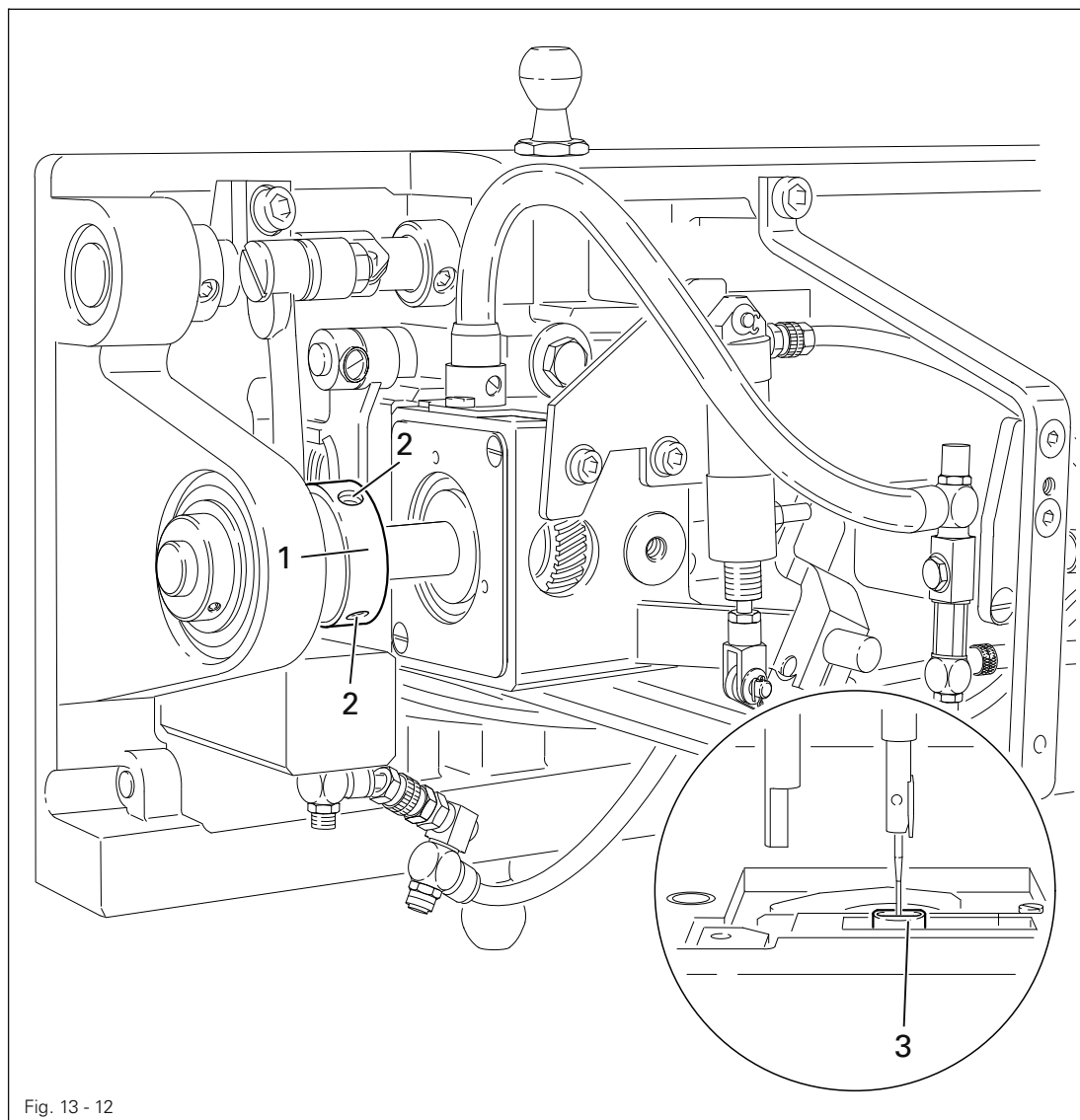
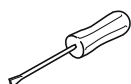


Fig. 13 - 12

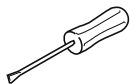
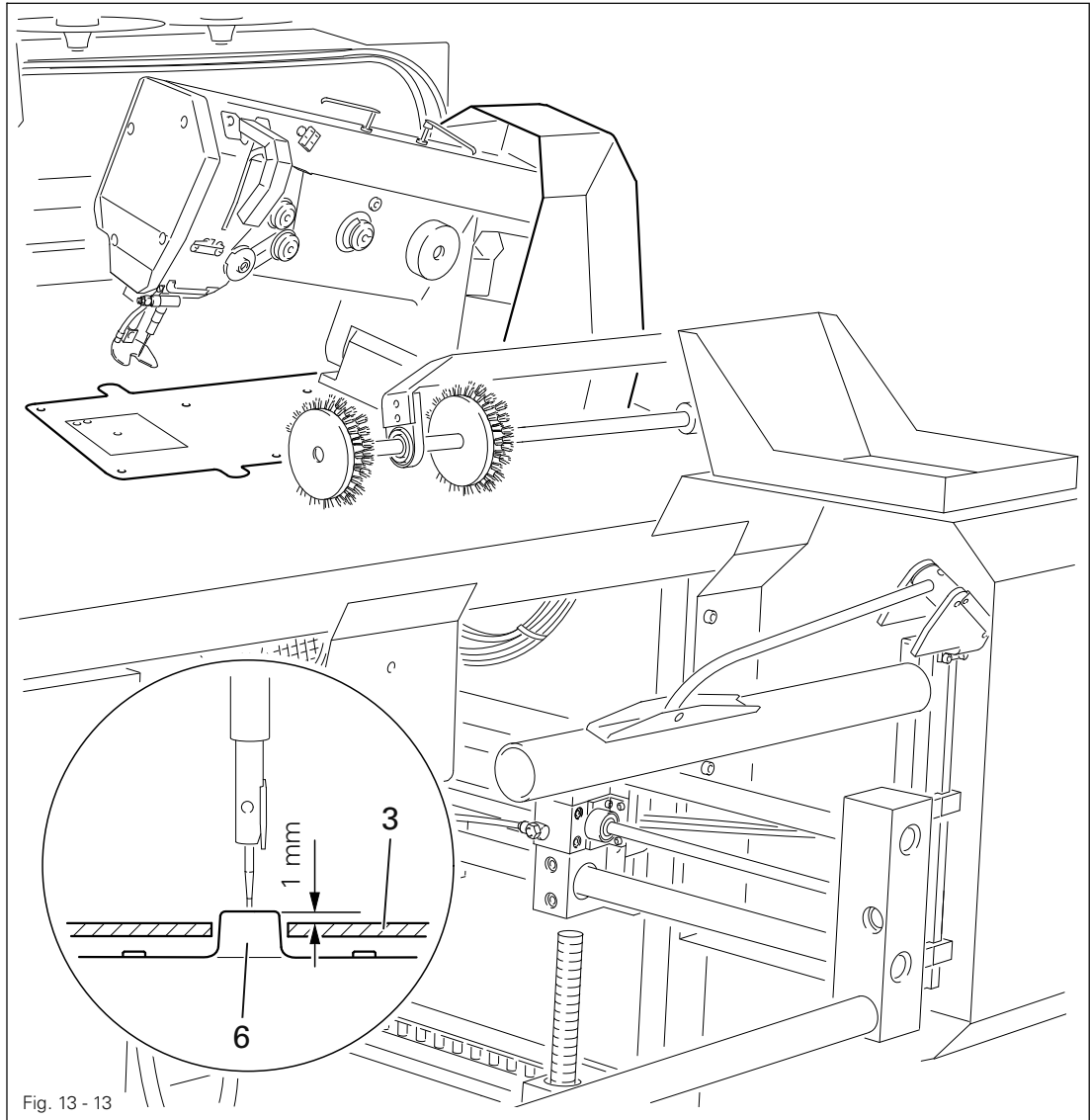


- Move needle bar to BDC.
- Turn eccentric **1** (screws **2**) according to the requirement.

13.05.12 Counter presser height

Requirement

When the needle bar is at BDC, the top edge of the counter presser **6** must be **1 mm** over the closed hook compartment cover **3**.



- Position lever **1** (nut **2**) at its lower stop (see arrow).
- Fit hook compartment cover **3** and turn bracket **4** (screw **5**) according to the **requirement**.

13.05.13 Counter presser position

Requirement

In straight stitch position, when the needle penetrates, it must be centered in the needle hole of the counter presser **2**.

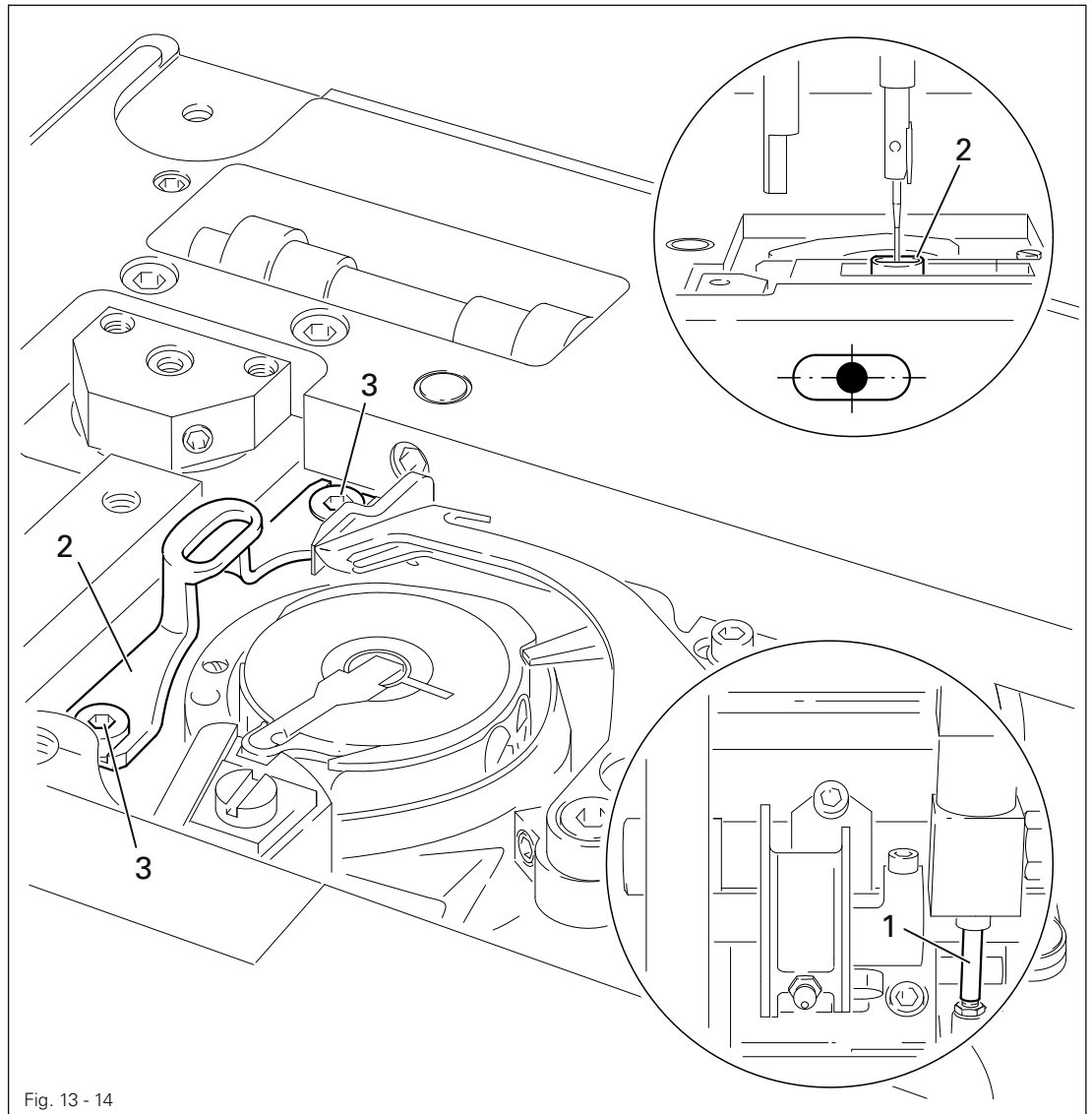
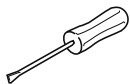


Fig. 13 - 14



- Pull out plunger **1** until it stops (straight stitch position).
- Adjust the counter presser **2** (screws **3**) according to the **requirement**.

Adjustment

13.05.14 Zigzag stitch width

Requirement

At the maximum zigzag stitch width, the needle must not strike against the edge of the counter presser.

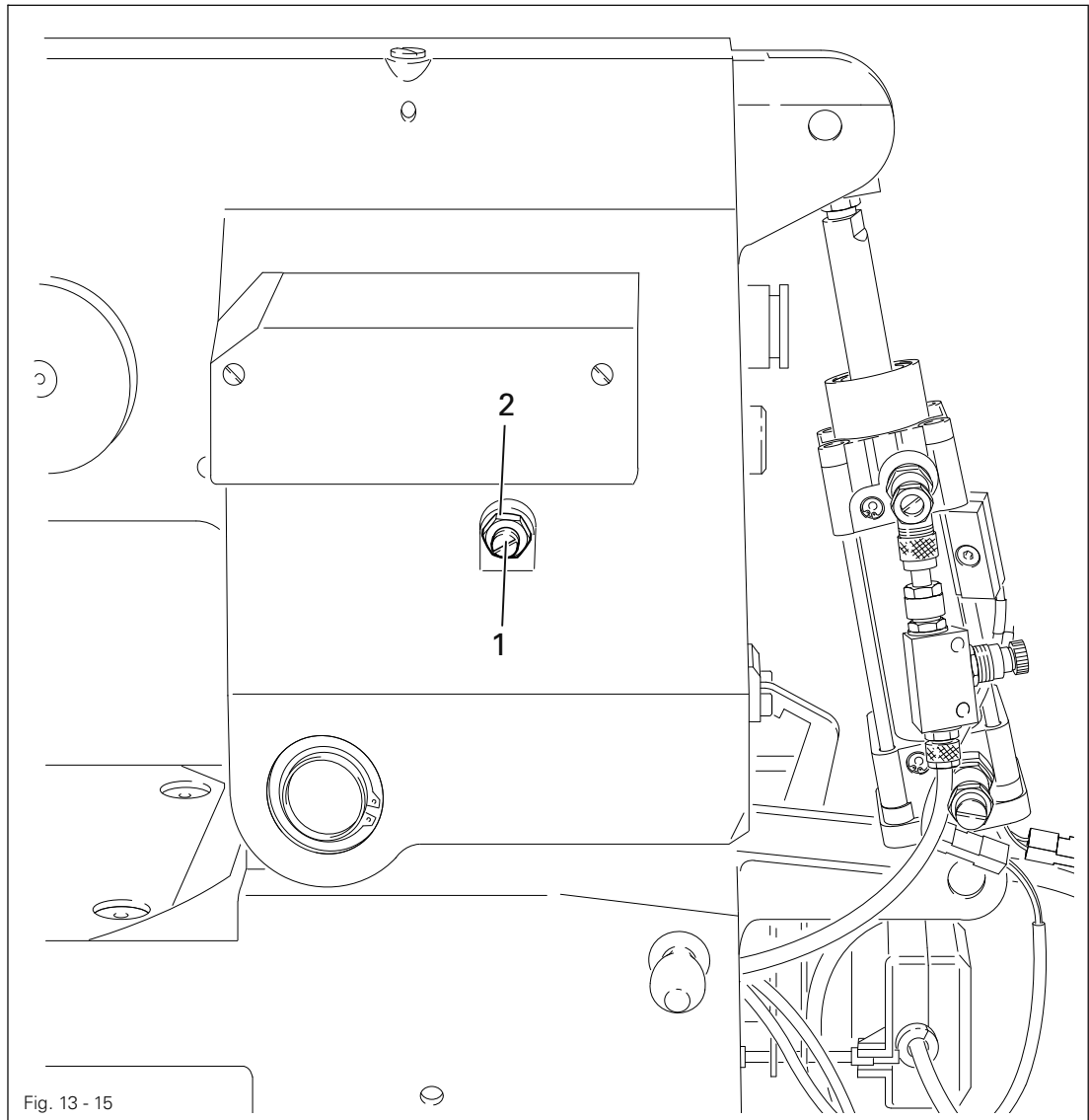
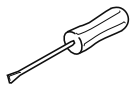


Fig. 13 - 15



- Turn screw 1 (nut 2) according to the **requirement**.

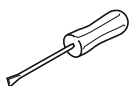
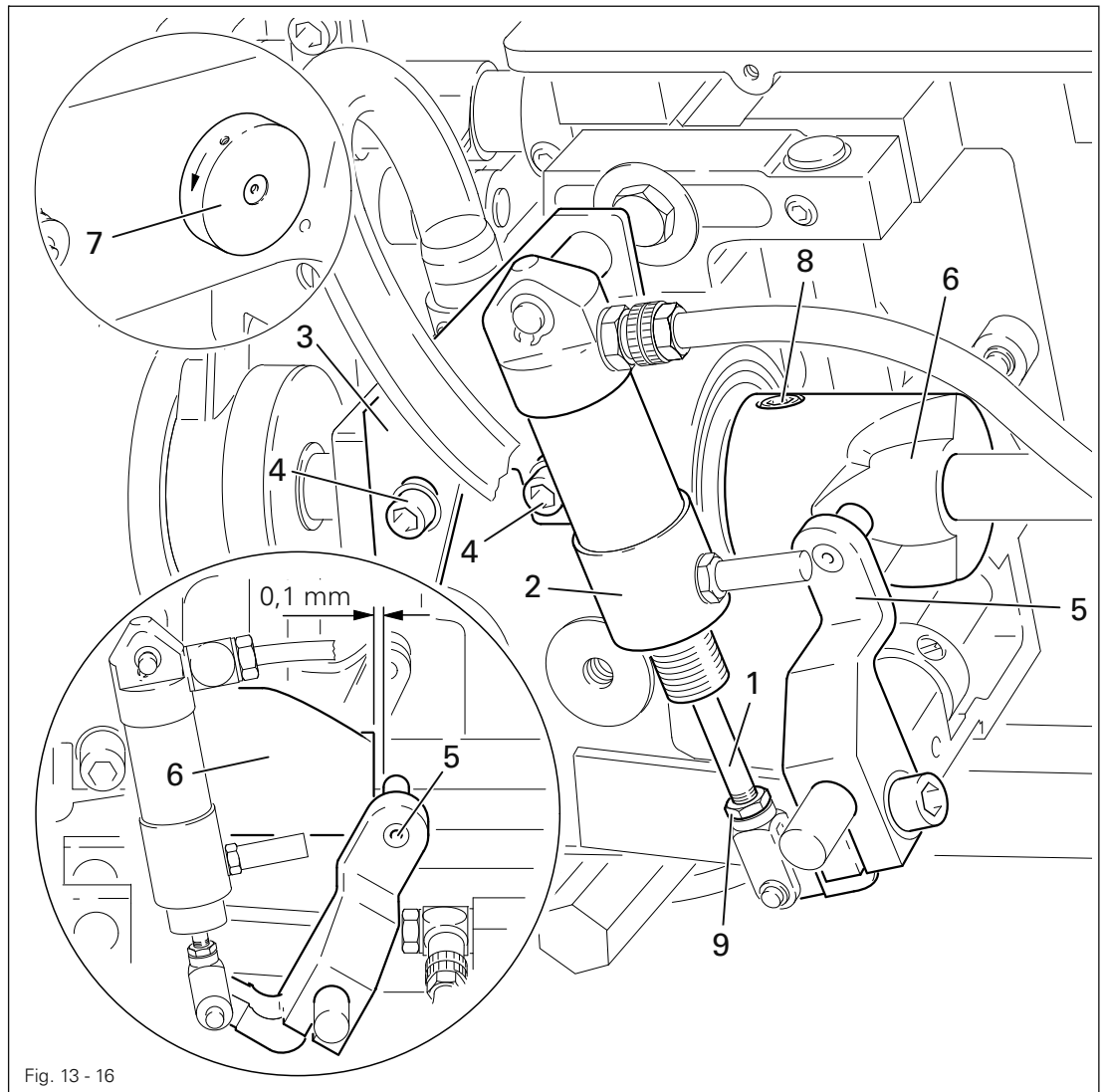


By turning screw 1, the bartack width can be adjusted.

13.05.15 Resting position of the roller lever / radial position of the control cam

Requirement

1. When the plunger 1 is retracted, there must be a distance of **0.1 mm** between the outer edge of the control cam 6 and the roller of the roller lever 5.
2. When the thread trimmer is switched on beforehand, the control cam 6 must have just brought the roller lever 5, in TDC take-up lever, to its resting position.



- Retract the plunger 1 in cylinder 2 until it stops.
- Move the cylinder carrier 3 (screws 4) according to **requirement 1**.
- Bring the take-up lever to BDC and push the roller lever 5 into the control cam 6 by hand.
- By turning the handwheel 7 in the direction of the arrow, bring the take-up lever to TDC and check **requirement 2**.
- If required, turn the control cam 6 (screws 8) according to **requirement 2**.



On plunger 1, the thread should be approx. 1 mm above the lock nut 9.

13.05.16 Thread catcher height

Requirement

The lower edge of the thread catcher **3** must be positioned at a distance of **0.8 mm** above the bobbin case **4**.

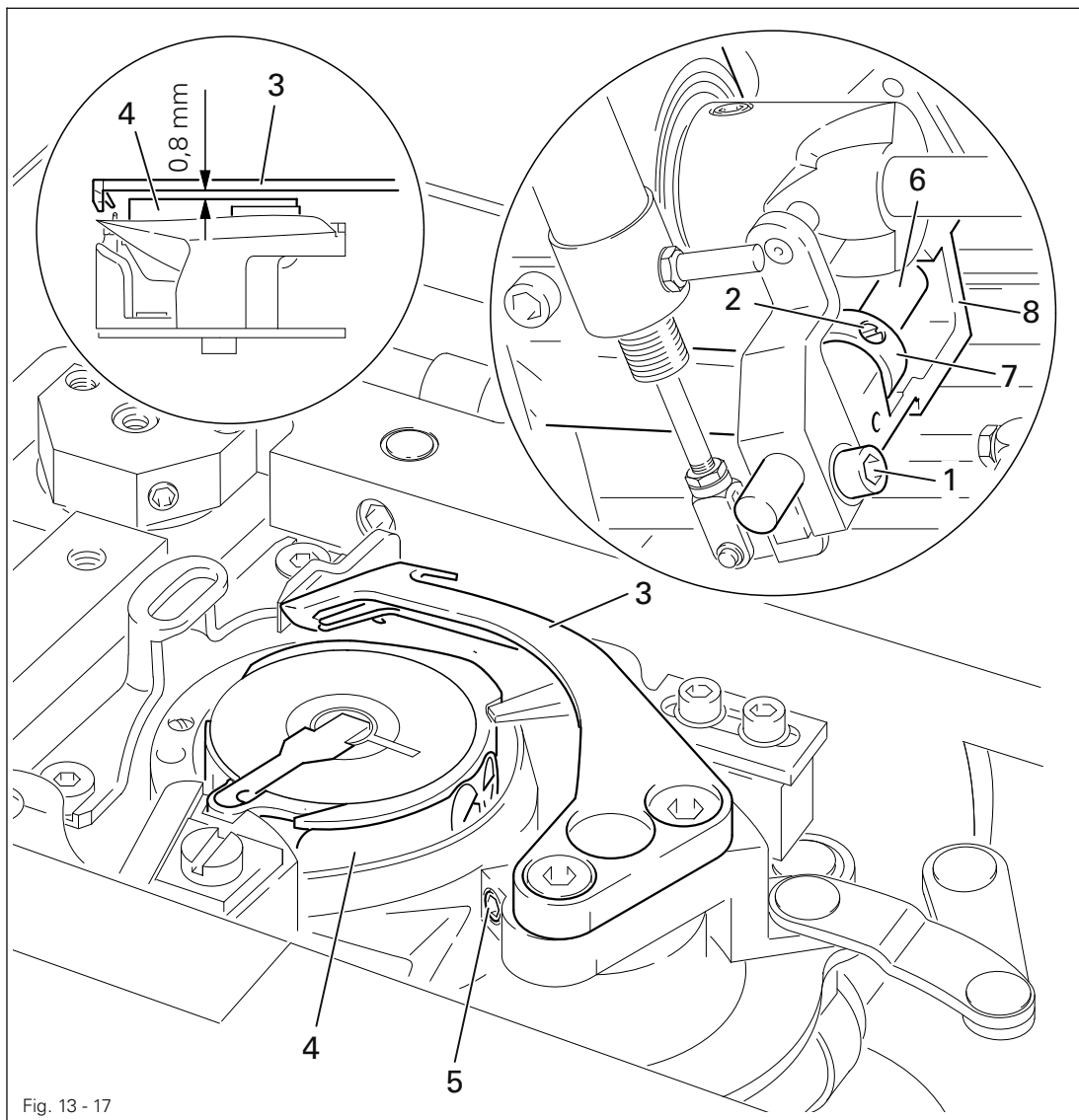
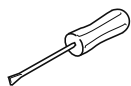


Fig. 13 - 17



- Loosen screws **1** and **2**.
- Position the thread catcher **3** above the bobbin case **4**.
- Move the thread catcher **3** (screw **5**) according to the **requirement**.
- Determine the vertical play of shaft **6**, move retaining collar **7** against bearing housing **8** and tighten screw **2**.



Screw **1** remains slightly unscrewed for further adjustments.

13.05.17 Thread catcher position and knife height

Requirement

When the thread trimmer is in resting position,

1. the front edges of the thread catcher **3** and the knife **5** must be flush with each other.
2. the upper edges of the thread catcher **3** and the knife **5** must be even.

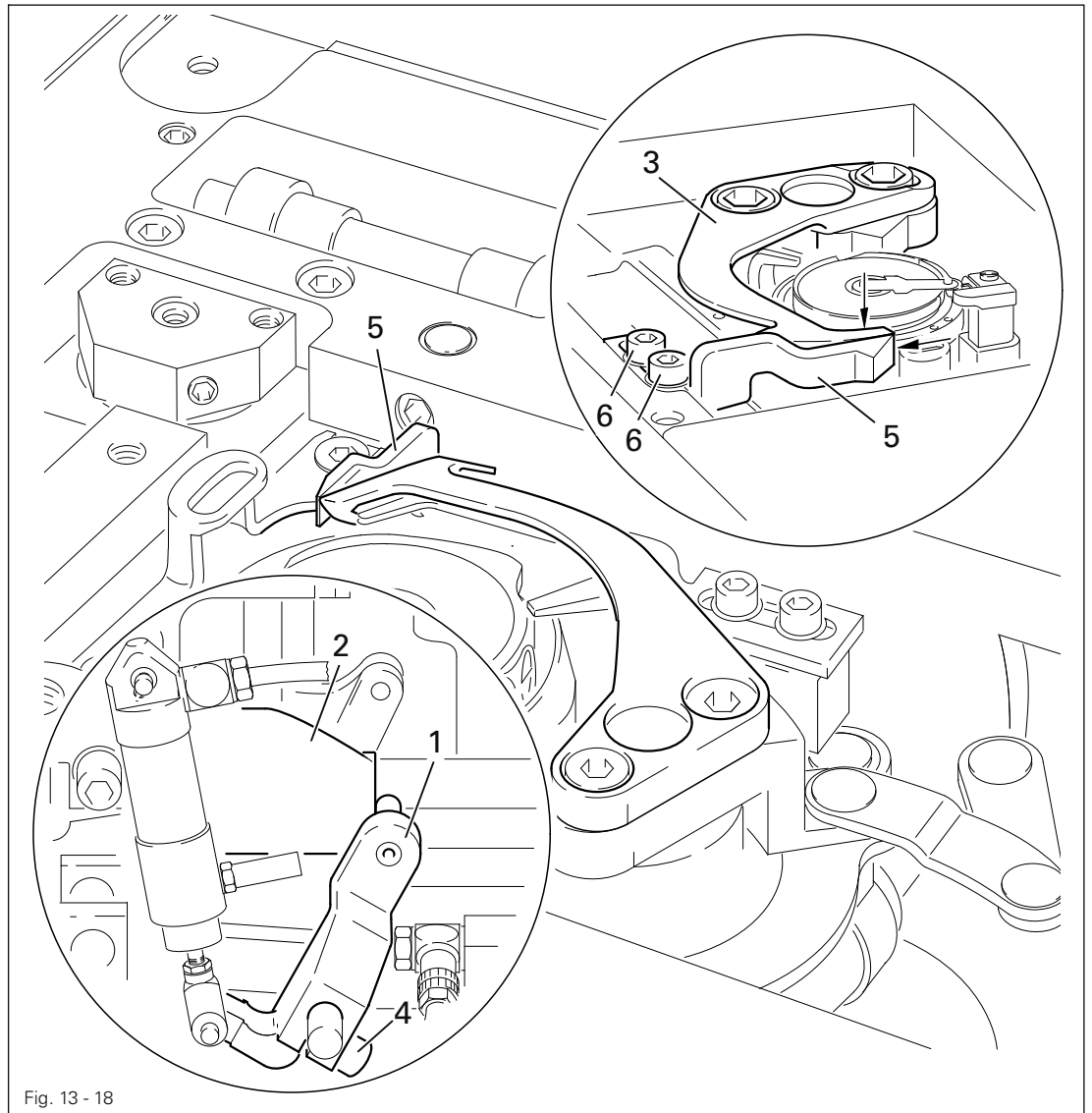
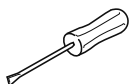


Fig. 13 - 18



- Bring the needle bar to BDC.
- Move roller lever **1** against control cam **2** by hand.
- Turn the thread catcher **3** according to **requirement 1**.
- Tighten screw **4**.
- Check the knife height according to **requirement 2**.



To adjust the height, disassemble knife **5** (screws **6**) and insert shim (part no. **91-141 402-05**) according to the **requirement**.
To align the knife see chapter **13.05.18 Knife pressure**.

Requirement

When the point of the thread catcher 4 is 6 mm in front of the front edge of the knife 4, the cutting edge of the knife must lightly press against the thread catcher 4.

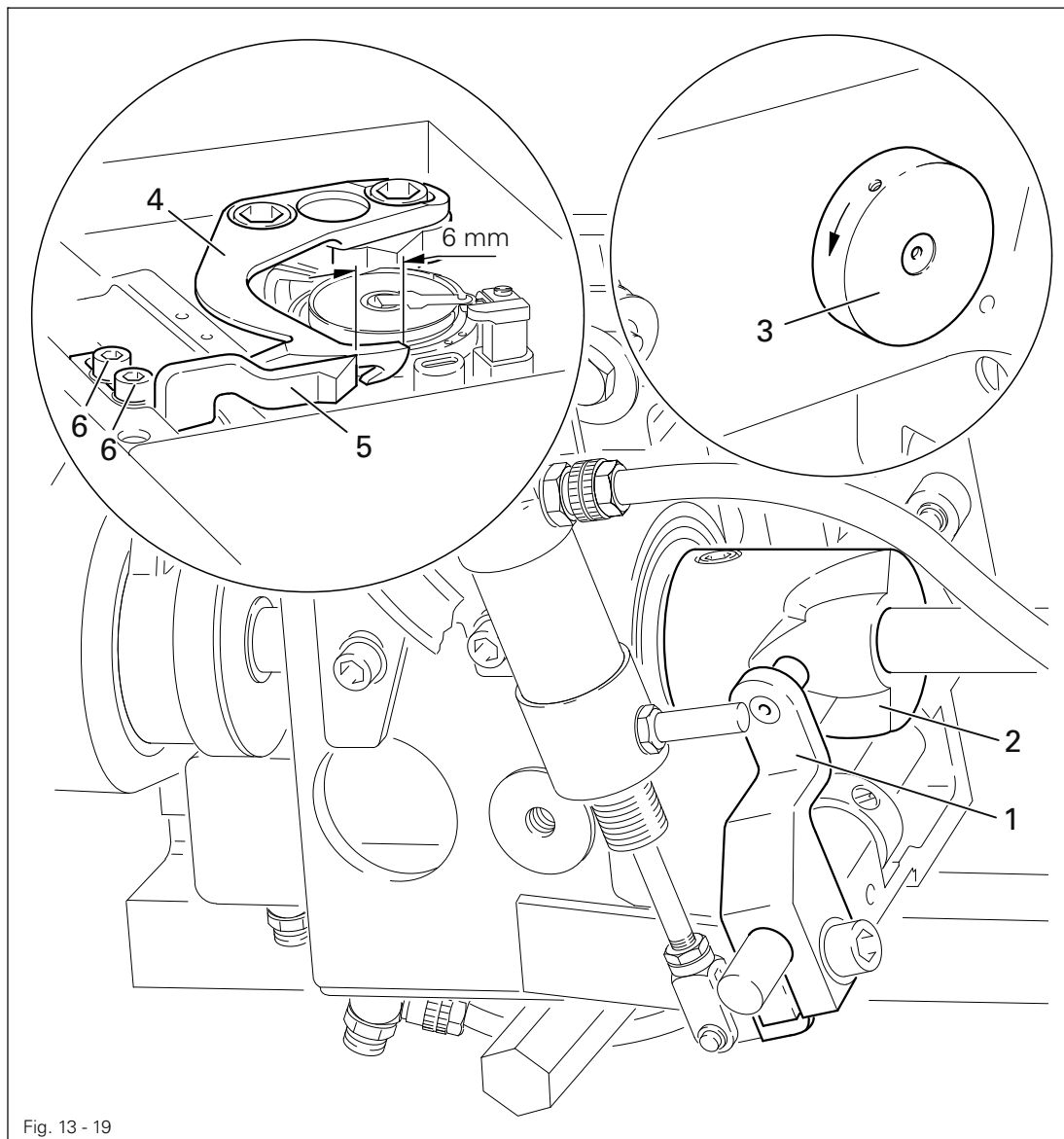
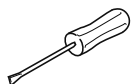


Fig. 13 - 19



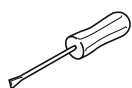
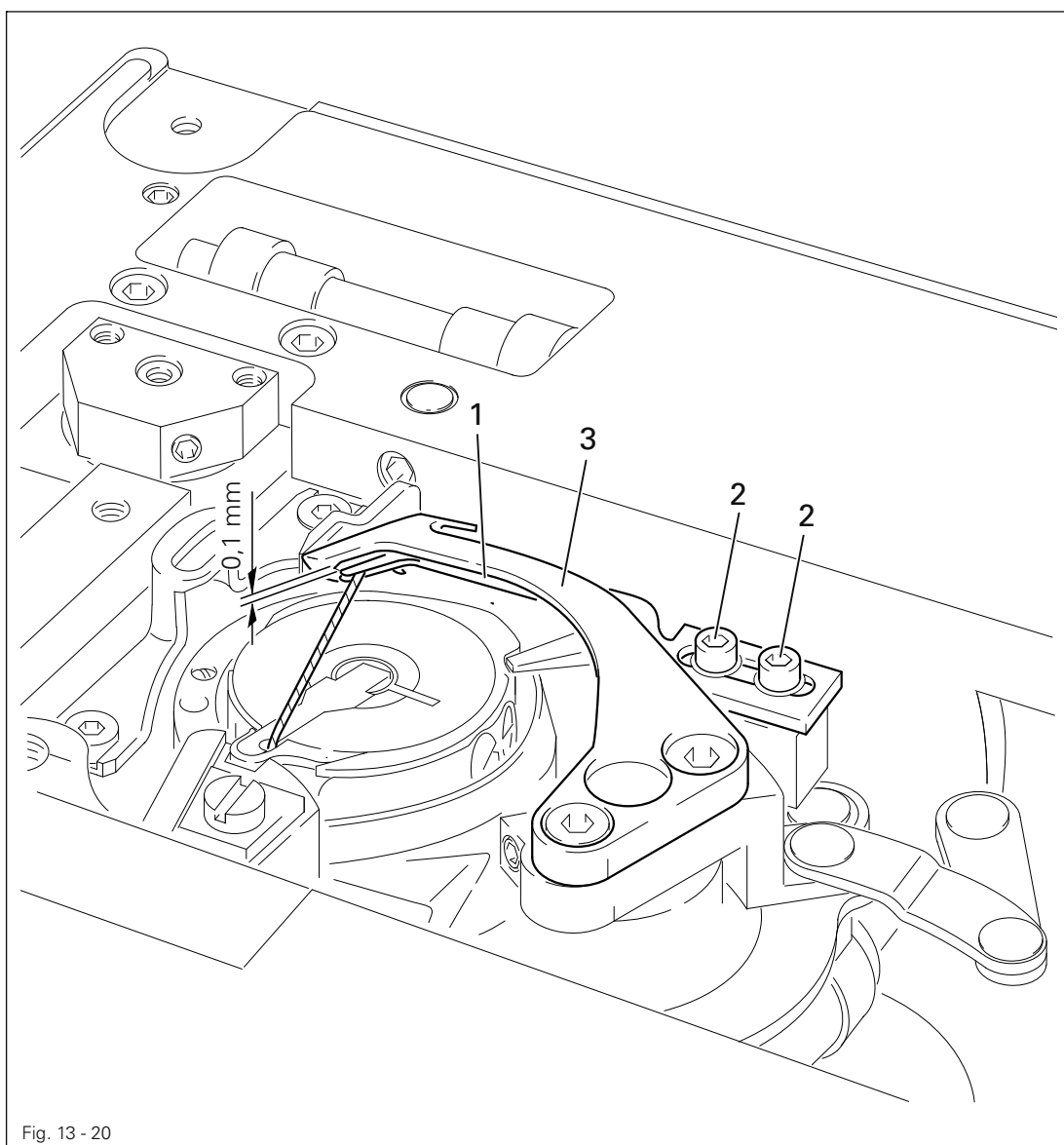
- Bring the take-up lever to BDC.
- Press the roller lever 1 into the control cam 2.
- Turn the handwheel 3 in the direction of the arrow until the thread catcher 4 is approx. 4 mm in front of the knife 4.
- Move the knife 5 (screws 6) according to the requirement.
- Check requirement 1 from chapter 13.05.17 Thread catcher position and knife height.

13.05.19 Bobbin thread clamp spring

Requirement

The clamp spring 1 must

1. not be pressed down during the movement of the thread catcher.
2. clamp the bobbin thread reliably after it is cut
3. not obstruct insertion and removal of the bobbin case.



- Bring the thread trimmer to resting position.
- Move the clamp spring 1 (screws 2) so that the clamp lips are as close as possible to the inside wall and to the front edge of the thread catcher 3.
- Adjust the height by bending the clamp spring 1 so that between the upper side of clamp spring 1 and the lower side of the thread catcher 3 there is a distance of approx. 0.1 mm.

Requirement

1. When it is moving forward, the thread catcher 1 must not push along the bobbin thread 3 in front of it.
2. At the front point of reversal of the thread catcher 1, the bobbin thread 3 must lie approx. 2 mm behind the lug of the thread catcher 1.
3. At the end of the cutting operation, the needle and bobbin threads must be cut perfectly. The bobbin thread 3 must be clamped.

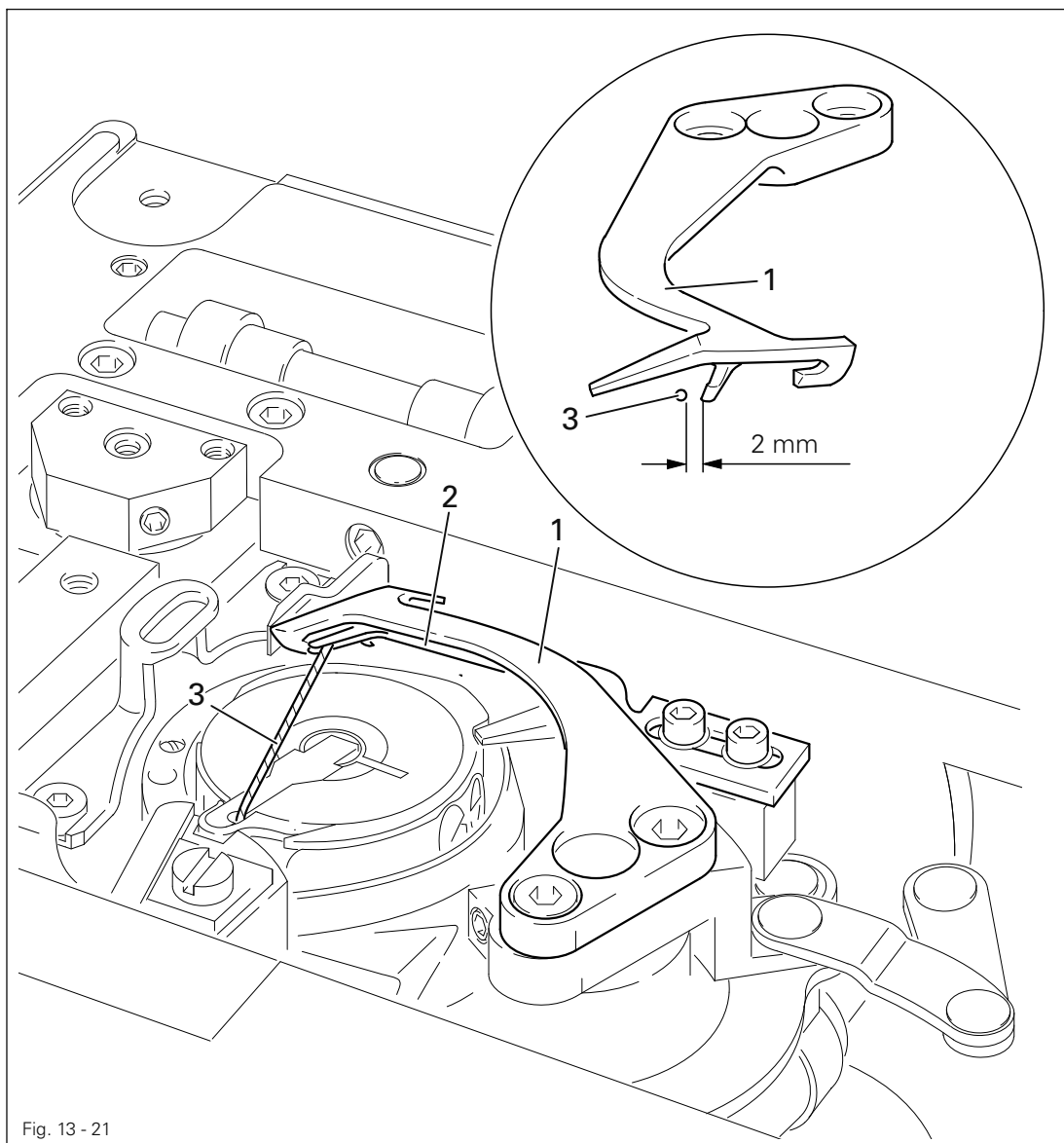
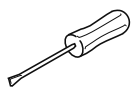


Fig. 13 - 21



- Carry out the cutting operation manually.
- Check **requirement 1**. If necessary, readjust the thread catcher 1 according to chapter 13.05.16 Thread catcher height.
- Check **requirement 2**. If necessary, readjust the thread catcher 1 according to chapter 13.05.17 Thread catcher position and knife height.
- Check **requirement 3**. If necessary, readjust the bobbin thread clamp spring 2 according to chapter 13.05.19 Bobbin thread clamp spring.

13.05.21 Presser height

Requirement

1. When the take-up lever is at TDC, the needle point must not extend under the presser 1 when the presser 1 is raised.
2. The presser 1 must be aligned laterally so that the sewing thread is blown out from under the presser 1 when the sewing jig is moved into position.

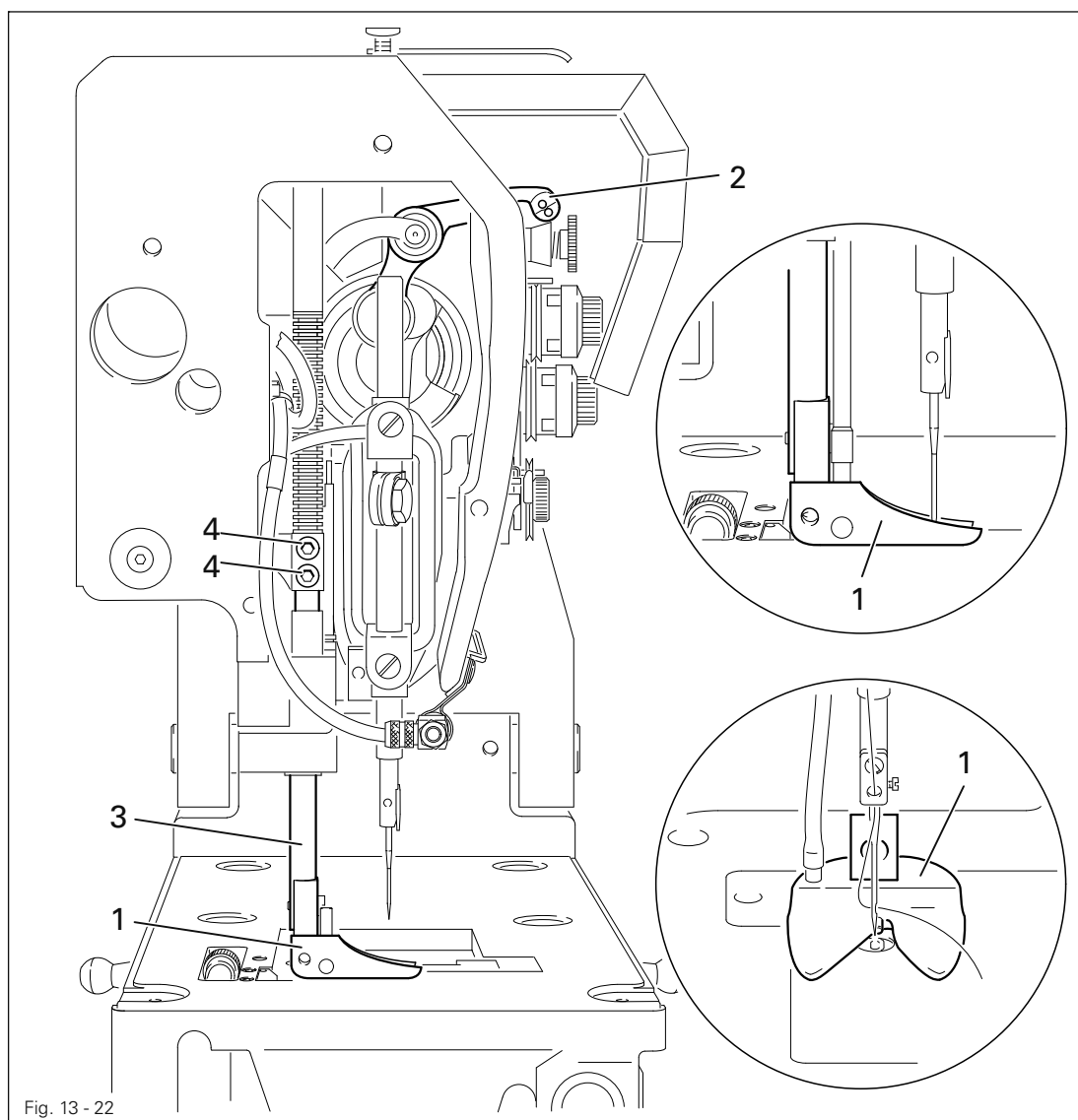
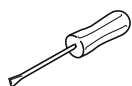


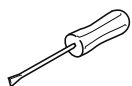
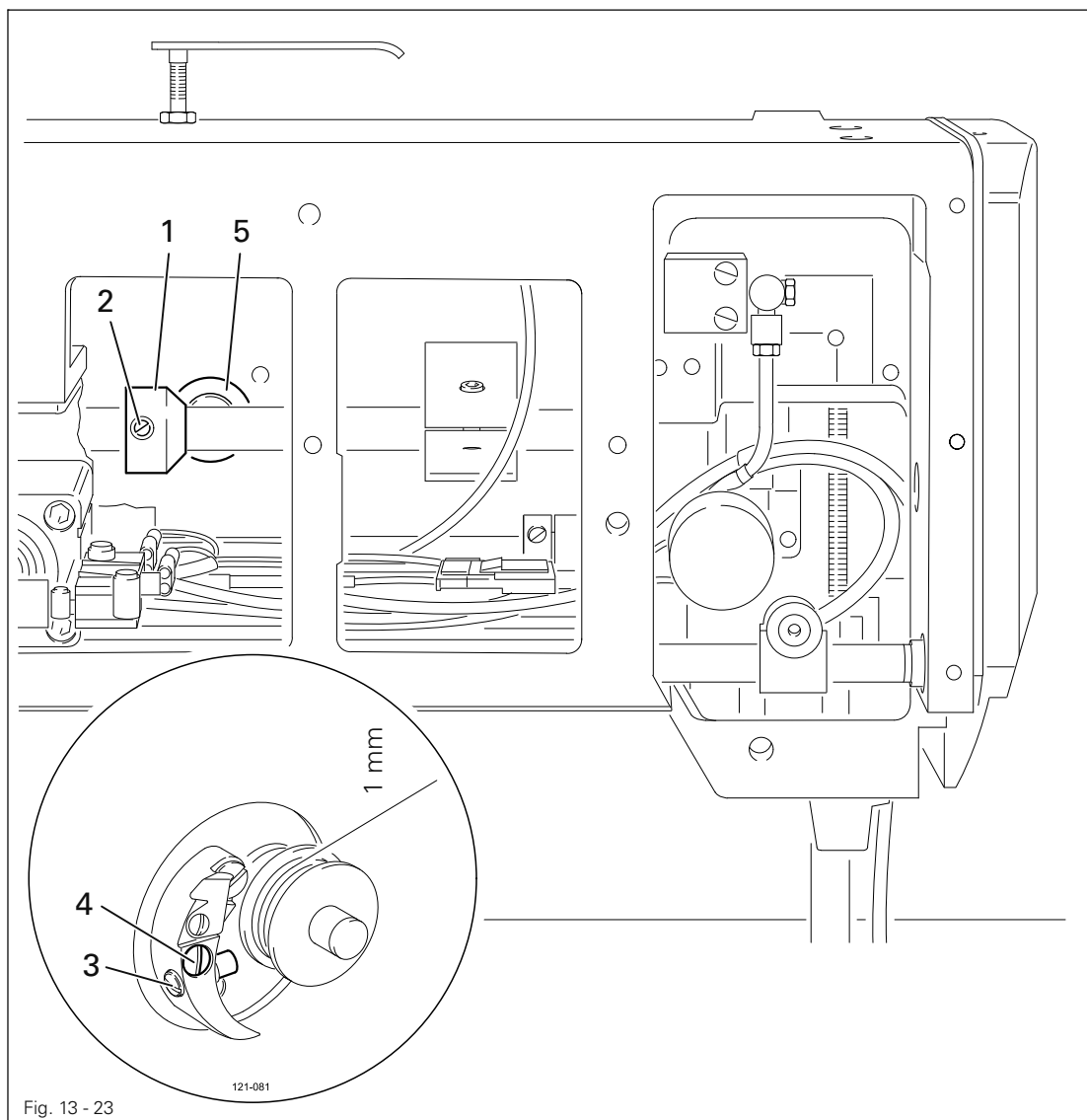
Fig. 13 - 22



- Screw on presser 1.
- Bring the take-up lever 2 to TDC.
- Move the presser bar 3 (screws 4) according to **requirement 1** and/or turn according to **requirement 2**.

Requirement

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

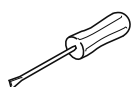
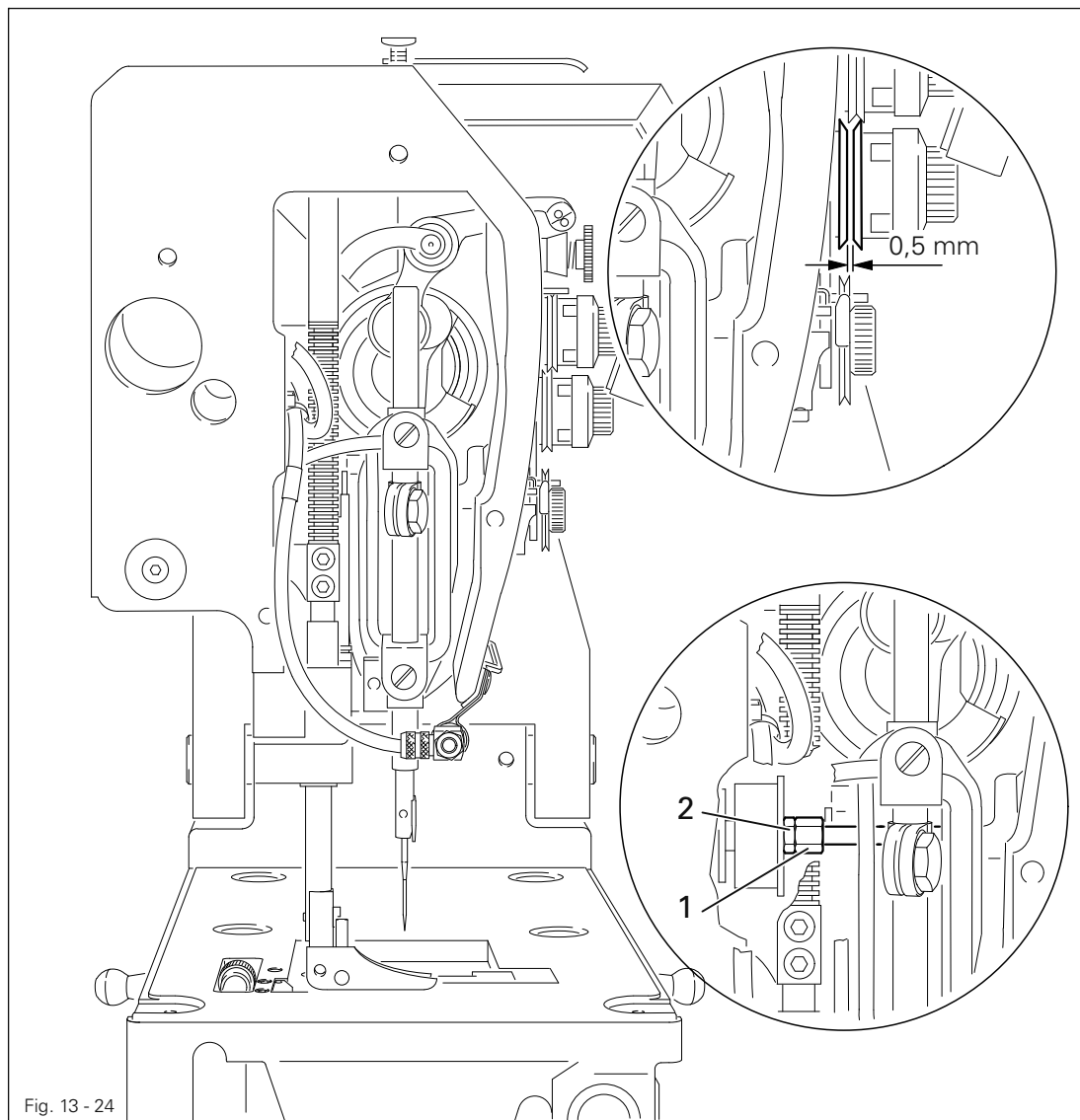


- Move drive wheel 1 (screws 2) according to requirements 1 and 2.
- Move pin 3 (screw 4) according to requirement 3.

13.05.23 Needle thread tension release

Requirement

For the tension release, the distance between the tension disks must be 0.5 mm.



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

13.05.24 Thread check spring and slack thread regulator

Requirement

1. The stroke of thread check spring 7 must be completed when the needle point penetrates the material (travel of the spring approx. 7 mm).
2. When the thread loop is at its largest when going round the hook, the thread check spring 7 must be lifted slightly above support 1.

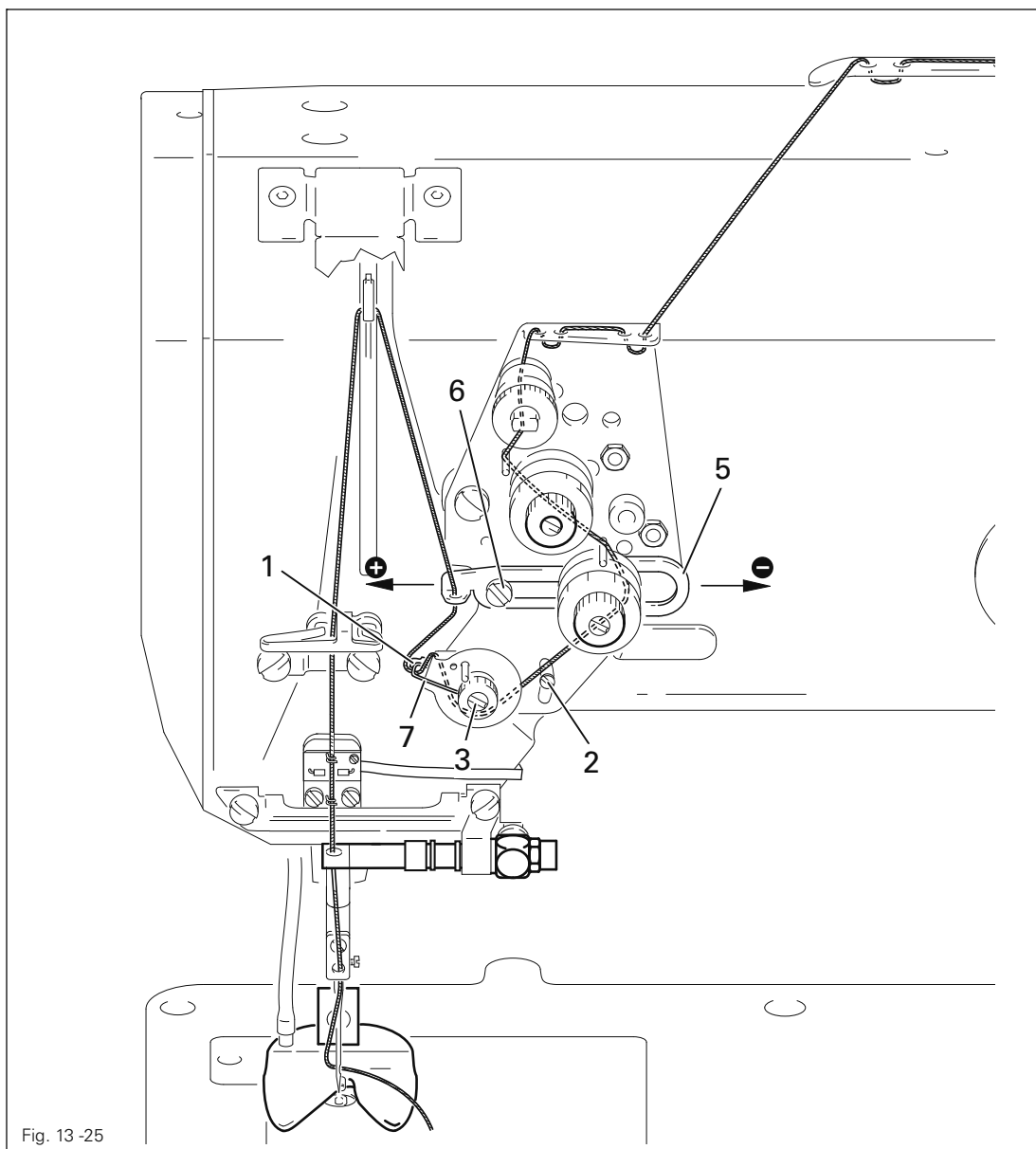
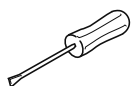


Fig. 13 -25



- Position rest 1 (screw 2) according to **Requirement 1**.
- To adjust the spring tension, turn screw 3 (screw 4).
- Position thread regulator 5 (screw 6) according to **Requirement 2**.



For technical reasons, it may be necessary to deviate from the travel of the spring and/or the spring tension indicated here.

13.05.25 Sewing head lifting cylinder

Requirement

The up and down movement of the sewing head must be uniform.

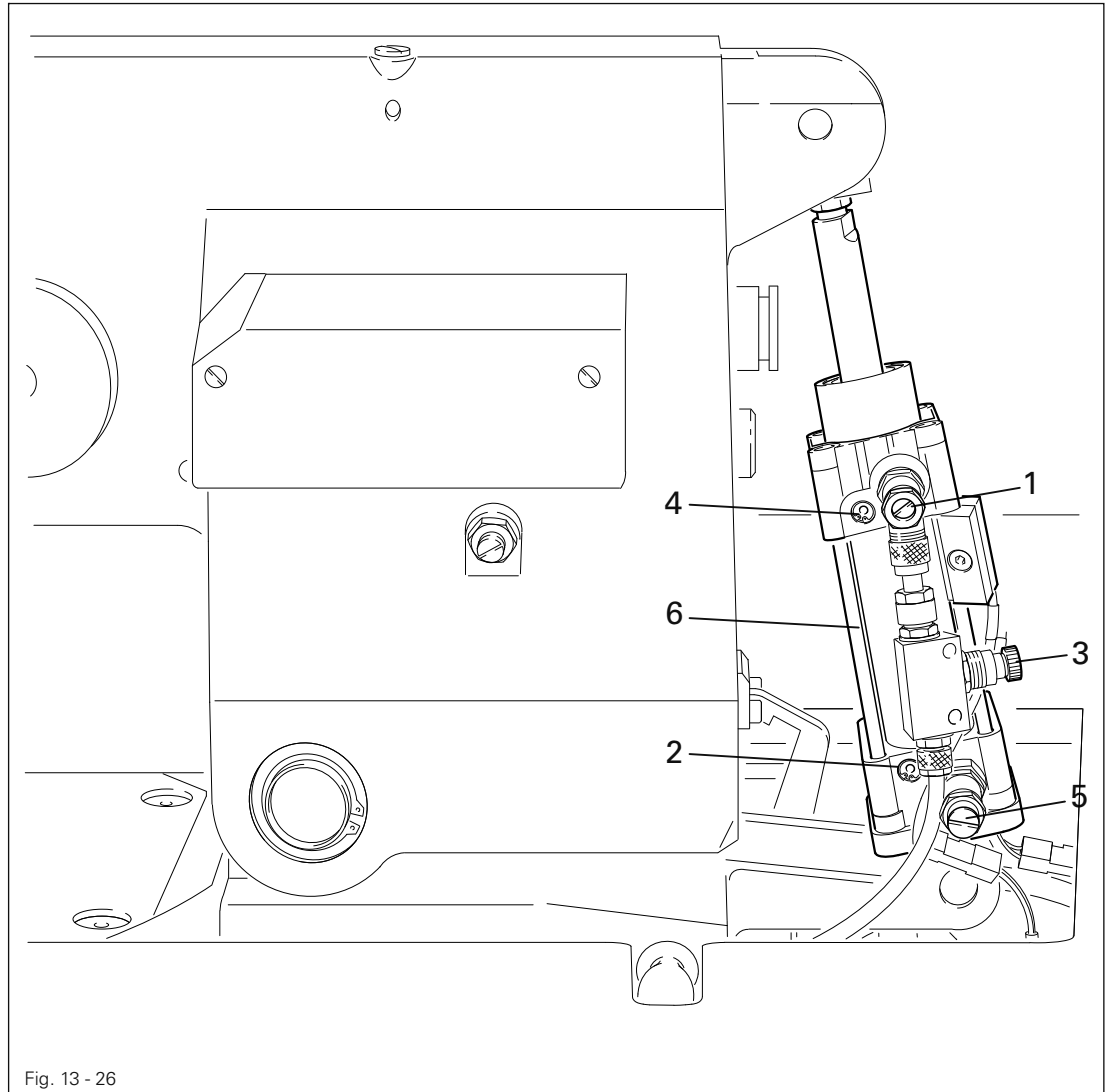
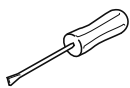


Fig. 13 - 26



- Insert the sewing head and connect. (See chapter 13.04 Removing/inserting sewing head).
- Adjust the speed (screw 1) and shock absorbing action (screw 2) of the upwards movement of the sewing head, and the speed (screw 3) and shock absorbing action (screw 4) of the downwards movement of the sewing head according to the **requirement**.



The pressure for the downward movement can be regulated with screw 5 (standard setting 4.5 bar).



When adjusting the shock absorbing action, make sure that the cylinder 6 moves as far as it can go especially for the downward movement of the sewing head!

13.05.26 Hook lubrication

Requirement

When the machine is running, after approx. **10** seconds a fine line of oil must form on a paper strip **2** held next to the hook.

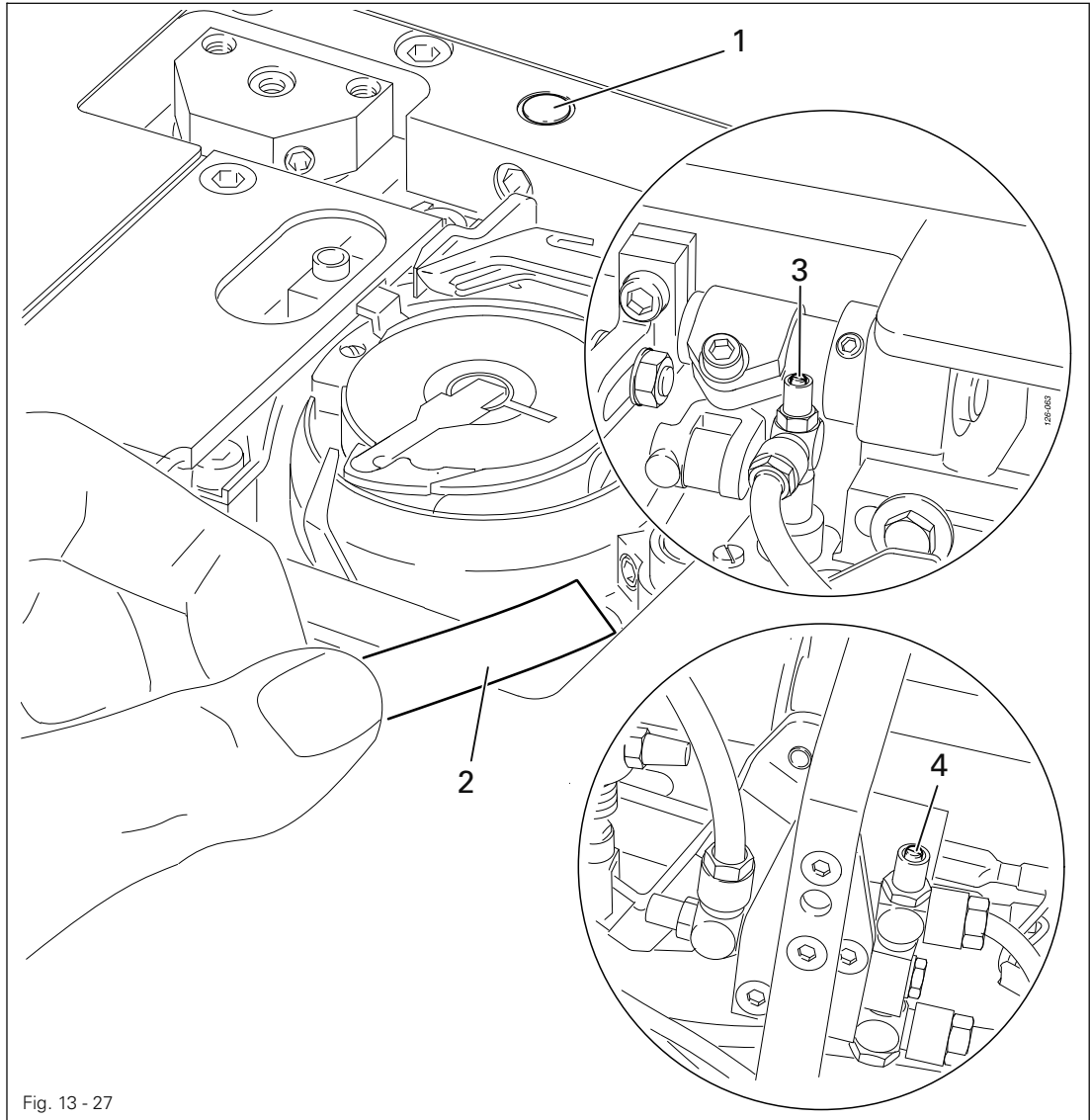
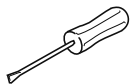


Fig. 13 - 27



- Unscrew the hook compartment cover.
- Remove the cover from sensor **1** with metal gauge.
- Switch on the machine.



- Call up the input menu.



- Call up the "sewing motor adjustment" function, see Chapter **13.09** Sewing motor adjustments.

- Set the speed at **2000** min⁻¹.



When the sewing motor is running, do not reach into the needle area!
Danger of injury by the moving parts!

- Run the sewing motor for 2 – 3 minutes.
- With the motor running, hold a strip of paper 2 next to the hook and check the **requirement**.
- If necessary, adjust the oil supply with screw 3.
- Switch the machine off and screw on the hook compartment cover.



The wick used for lubricating the front parts must always be impregnated with oil. However, oil must not drip onto the bedplate!

- If necessary, regulate the amount of oil with screw 4.

Adjustment

13.06 Adjusting the folding, feed and stacker devices

13.06.01 Aligning the sewing jig

Requirement

The lowered sewing jig must lie evenly and lightly on the table top at both the folding and the sewing stations, and hold the workpiece securely.

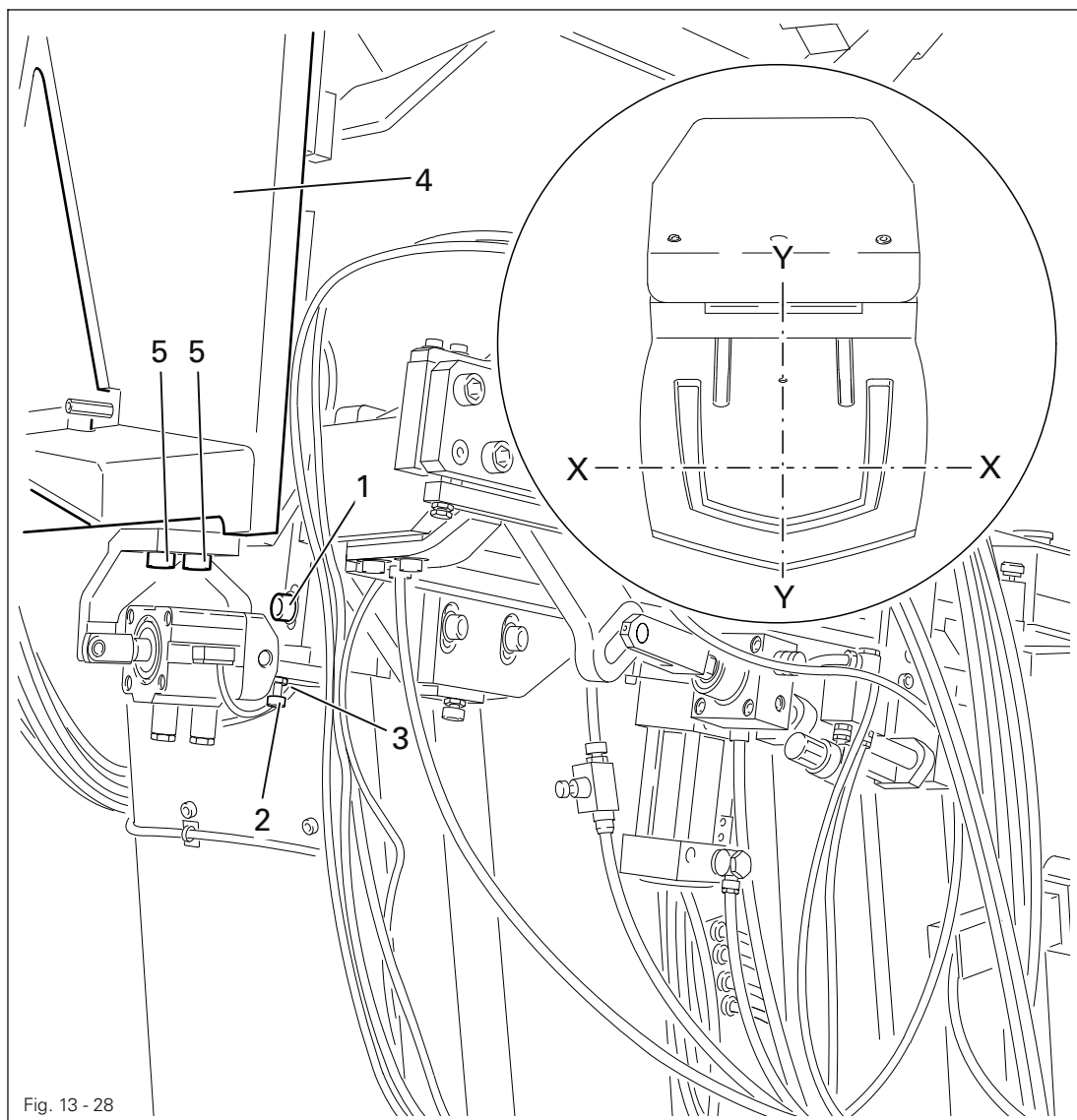
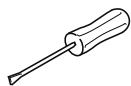


Fig. 13 - 28



- Loosen screws 1 on both sides of the machine.
- Align the sewing jig by turning screws 2 (nuts 3) on both sides of the machine so that it is parallel to the table top in the x-direction.
- Tighten screws 1.
- Align the sewing jig by moving the carrier 4 (screws 5 on both sides of the machine) so that it is parallel to the table top in the y-direction.

13.06.02 Height of the pocket plate guide

Requirement

The lowered pocket plate must be parallel to the top edge of the table.

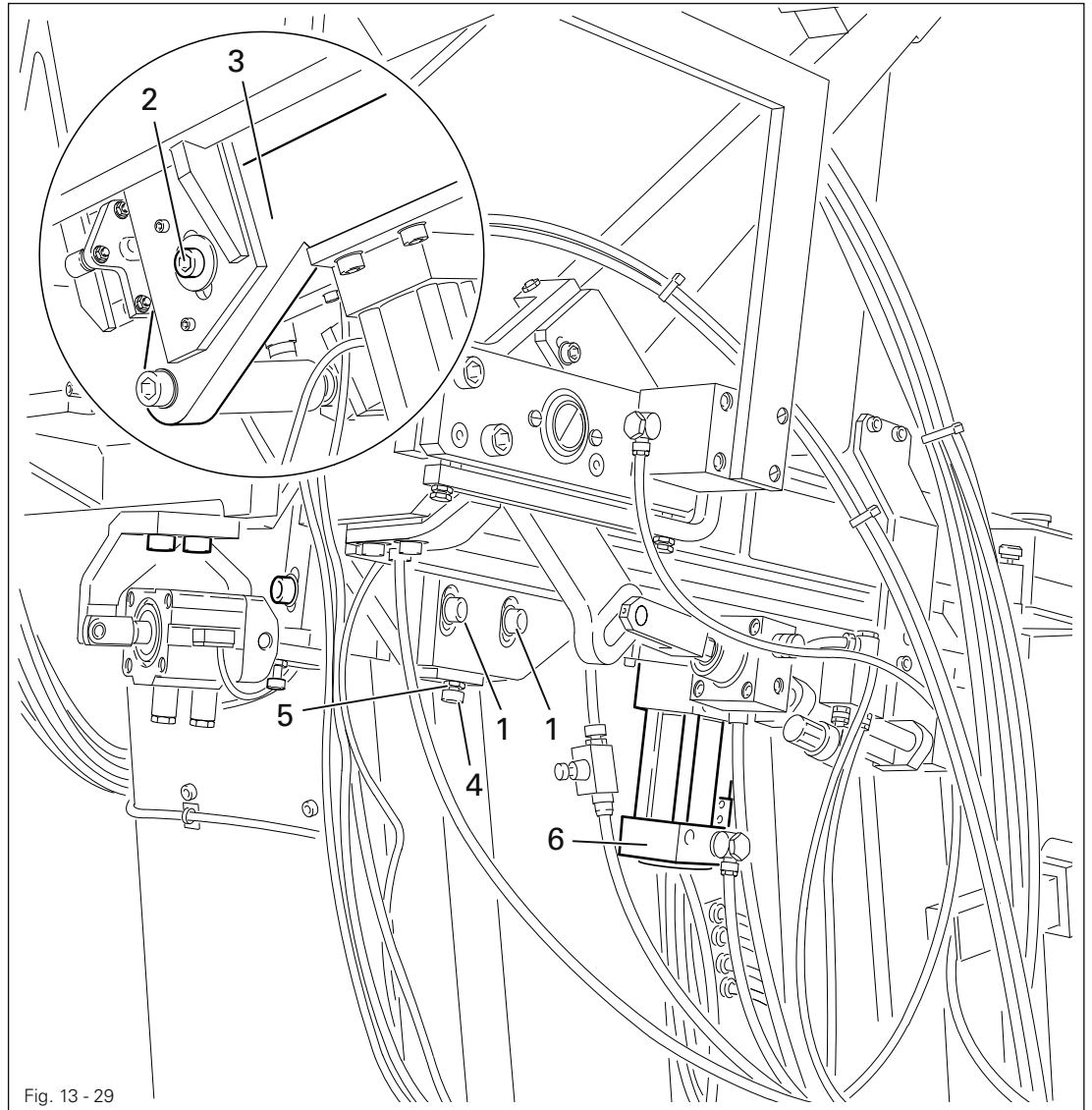
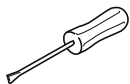


Fig. 13 - 29

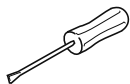
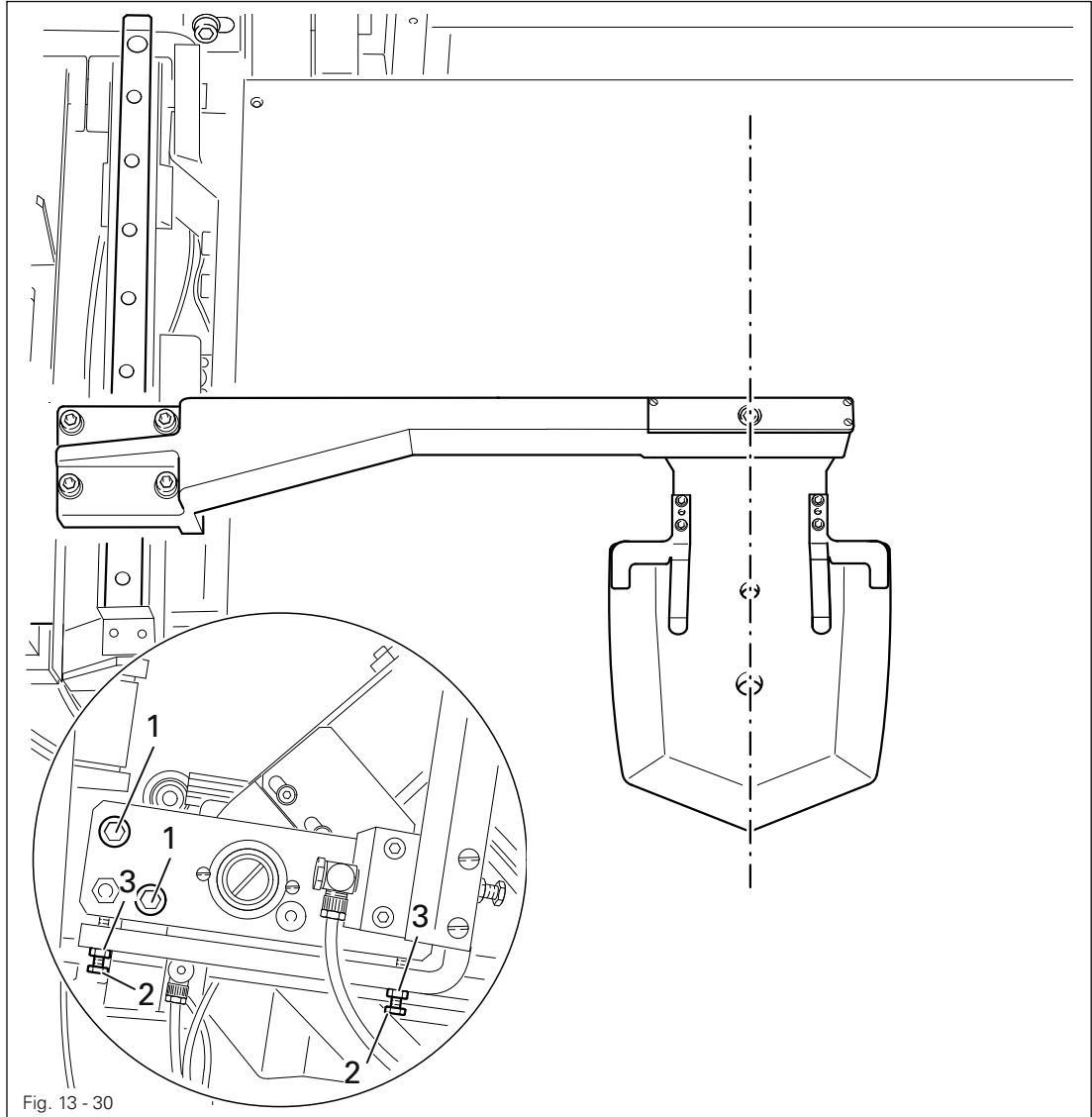


- Check the **requirement** using a metal ruler.
- Loosen screws 1 and 2.
- Adjust the height of the guide 3 with screw 4 (nut 5) according to the **requirement**.
- Turn the plunger (lock nut) of cylinder 6 until the guide 3 is parallel to the table top.
- Tighten screws 1 and 2.

13.06.03 Aligning the pocket plate arm

Requirement

The lowered pocket plate 4 should be resting evenly on the table top.



- Loosen screws 1.
- Turn screws 2 (nuts 3) according to the requirement.
- Tighten screws 1.

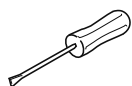
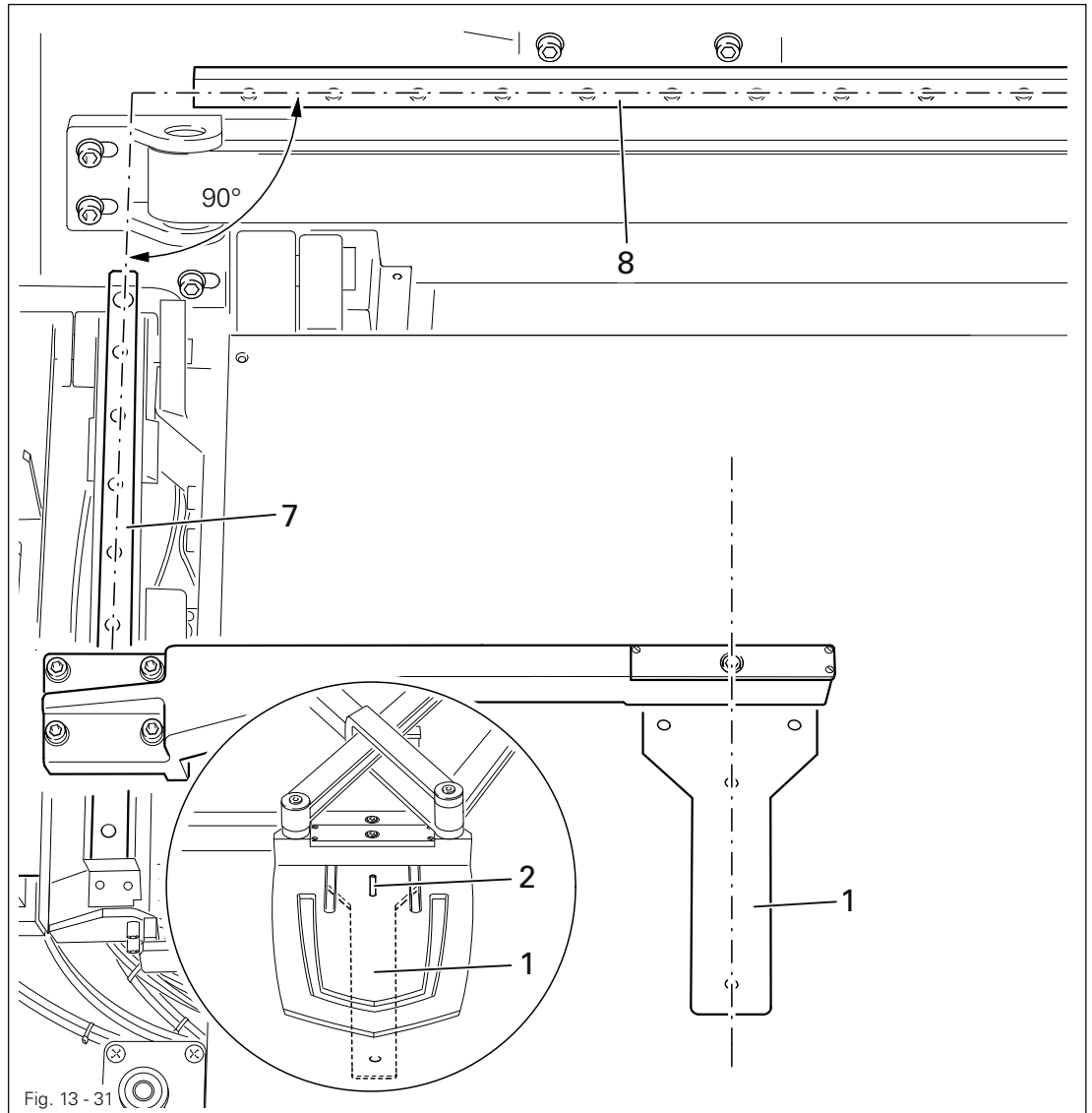


Re-check the height of the pocket plate Chap. 13.06.02.

13.06.04 Aligning the pocket plate guide

Requirement

Guide 7 must be positioned perpendicular to guide 8 of the sewing jig feed.



- Switch on the machine.



- Bring the machine into the basic position.
- Taschenblech entnehmen und Taschenblech-Lehre 1 einsetzen.



- Call up "folder position", see Chapter 8.09 Checking / adjusting the zero points.
- Mittels Absteckstift 2 die Regel überprüfen.
- Druckluft abnehmen.

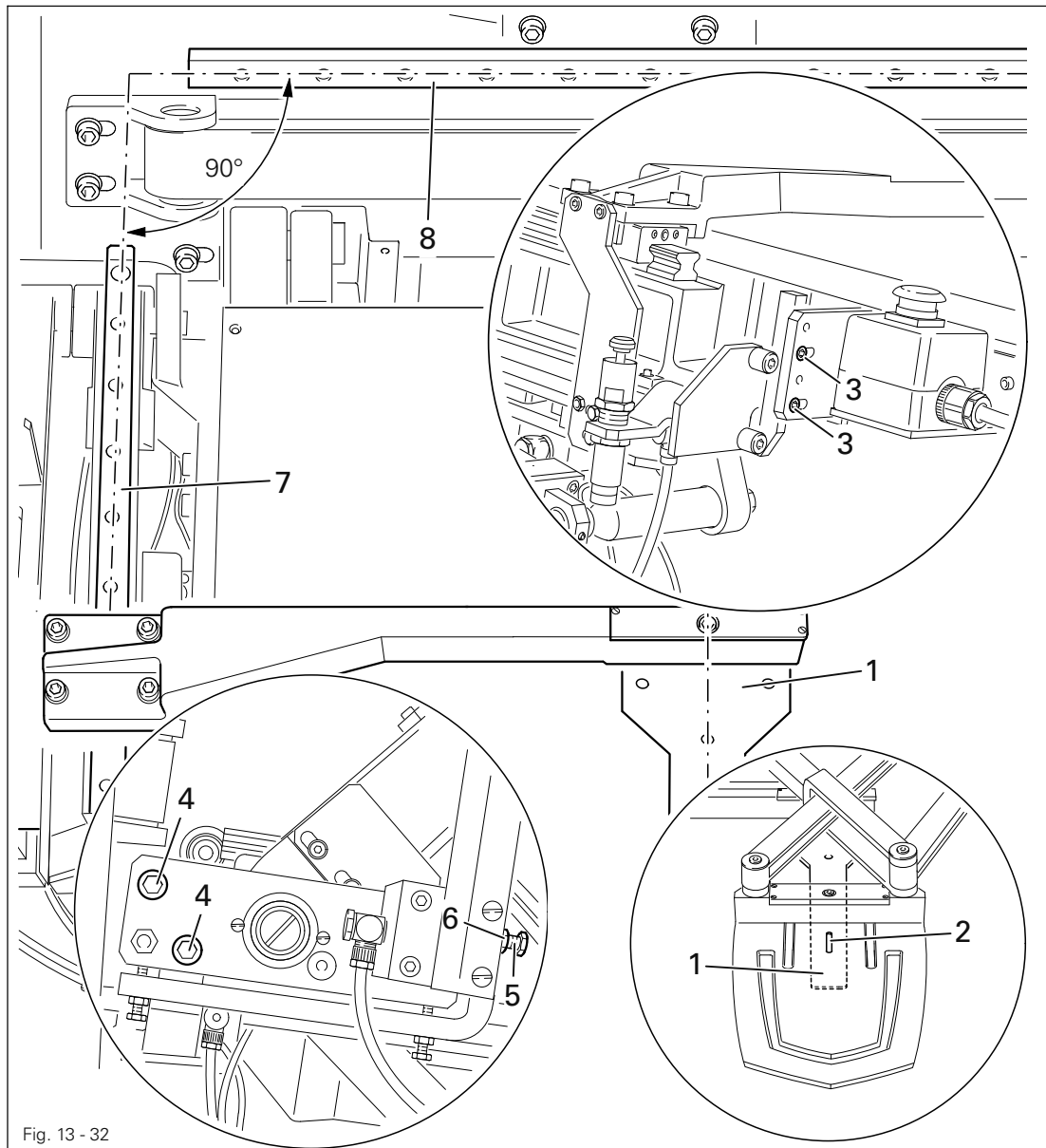
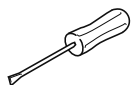


Fig. 13 - 32



- Slide pocket plate gauge 1 to the back and mark front position.
- Loosen screws 3 and 4.
- Turn screw 5 (nut 6) according to the requirement.

13.06.05 Front pocket plate position

Requirement

When the folder is positioned at zero point, the adjustment holes of the pocket plate and the sewing jig must be aligned.

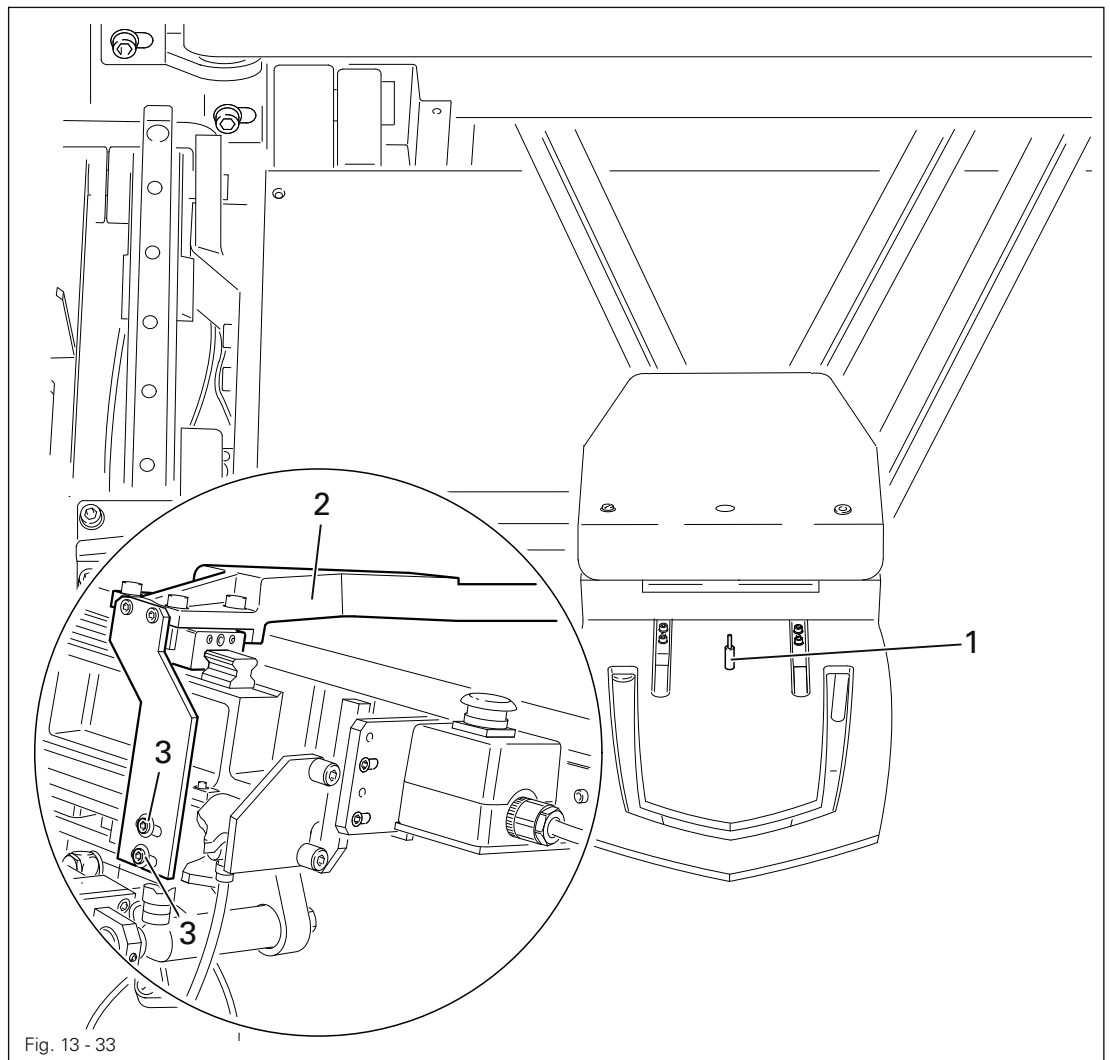
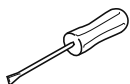


Fig. 13 - 33



- Switch on the machine.



- Bring the machine into the basic position.
- Remove the pocket plate and insert the pocket plate gauge 1.



- Call up "folder position", see Chapter 8.09 Checking / adjusting the zero points.
- Set the value for the y-axis to „0“.
- Check the **requirement** using the adjustment pin 1.
- Change the value for the x-axis according to the **requirement** via the control panel and store.
- Move the pocket plate arm 2 (screws 3) according to the **requirement**.

13.06.06 Monitoring the sewing jig feed

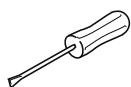
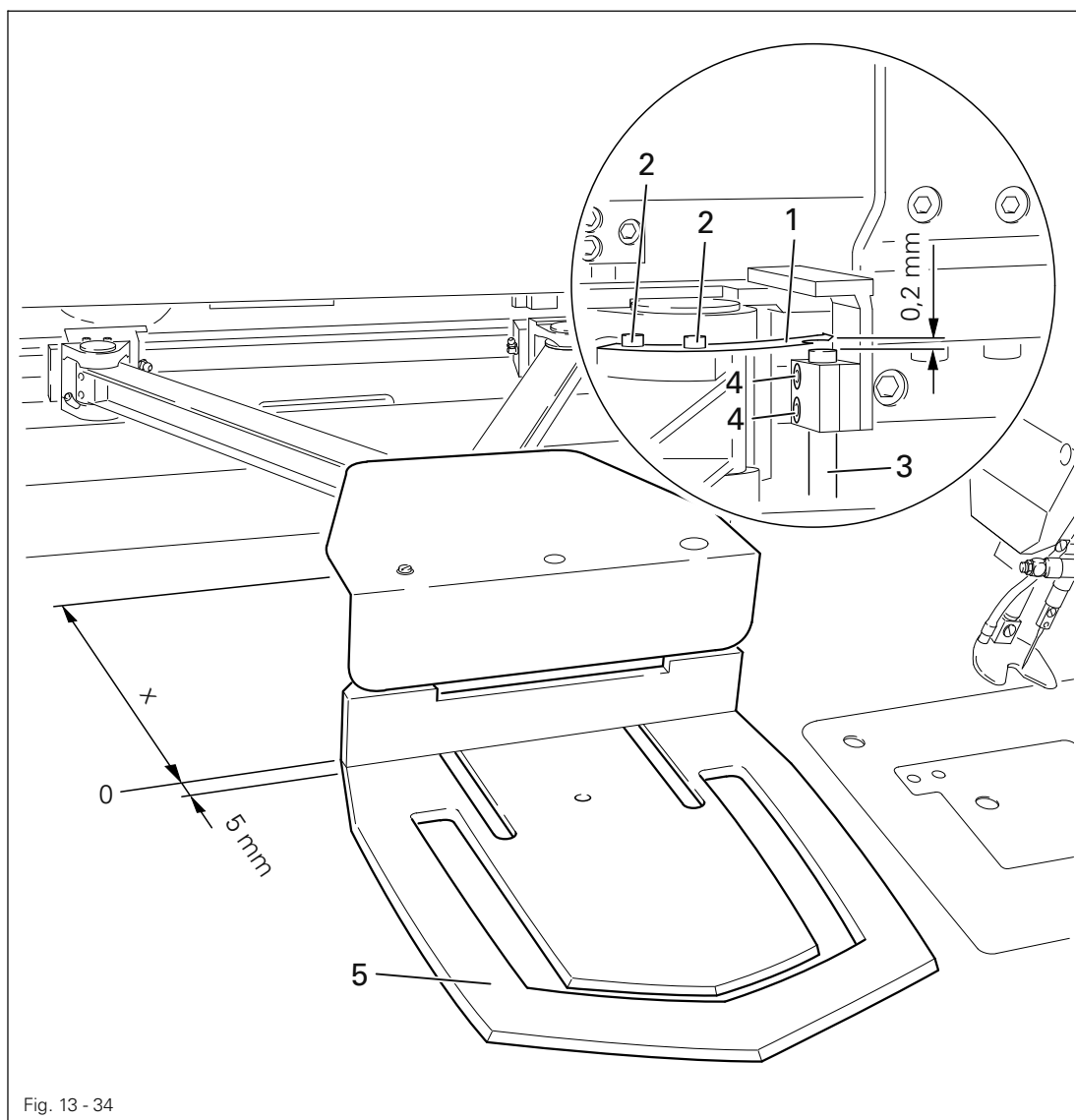
Requirement

1. It should not be possible to move sewing jig **5** beyond its zero point in y-direction, and not more than **5 mm** down or more than the value of measurement x up.
2. Initiator **3** should be positioned **0.2 mm** below cam switch **1**.



PFAFF 3588-05/020: X = 260 mm

PFAFF 3588-15/020: X = 290 mm



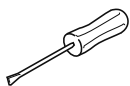
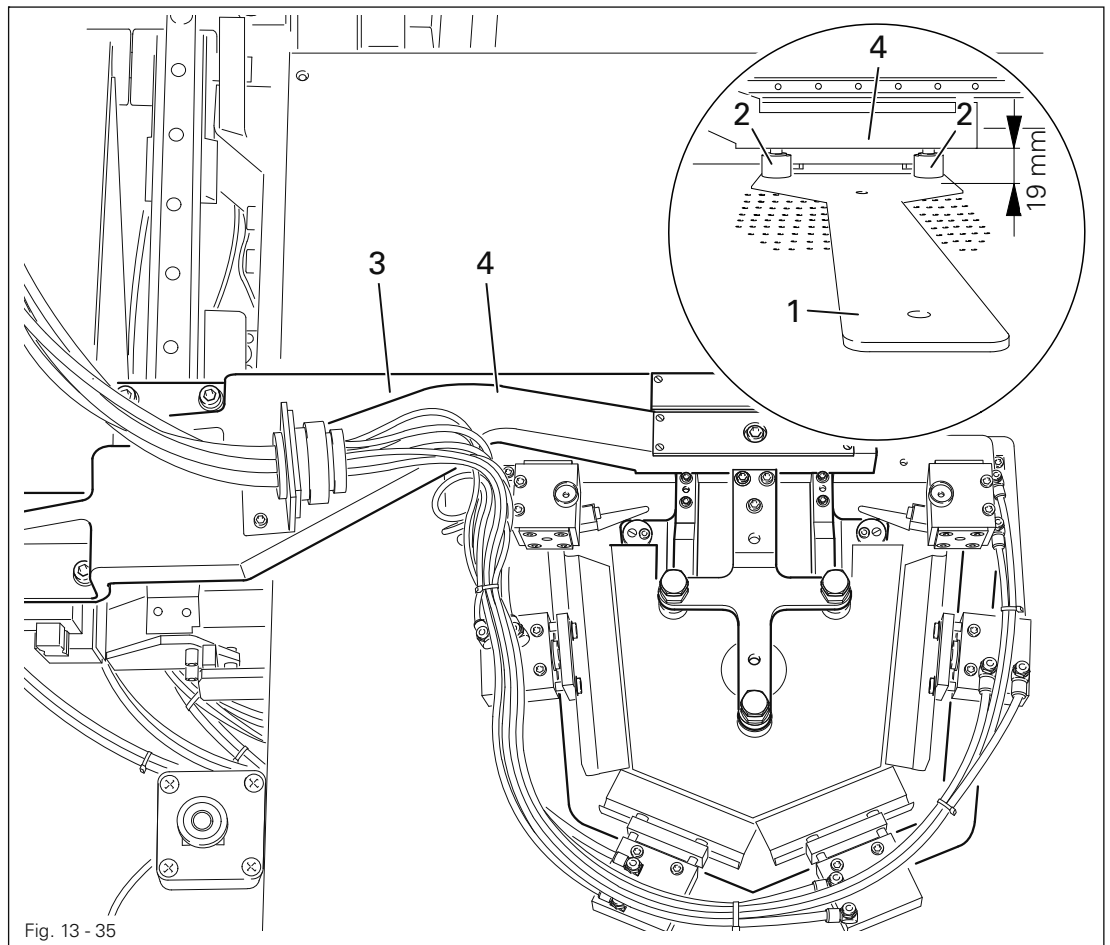
- Move the switch vane **1** (screws **2**) according to **requirement 1**.
- Move the proximity switch **3** (screw **4**) according to **requirement 2**.

13.06.07 Positioning the edge folding unit

Requirement

When the edge folding unit and pocket plate are lowered

1. Folder arm **4** must be parallel with pocket plate arm **3** and the table top.
2. The pins in folder arm **4** and the bushes **2** in pocket plate gauge **1** must be aligned, and
3. there must be a clearance of **19 mm** between folder arm **4** and pocket plate gauge.
4. The folder arm must rest lightly on the table top and hold the workpiece securely.



- Remove pocket plate and edge folder
- Insert pocket plate gauge **1** and bushes **2**.
- Switch on the machine.



- Call up manual sewing.
- Press the double start buttons.



- Operate the "single step" function, until pocket plate arm **3** and folder arm **4** have been lowered.
- Loosen screw **5**.

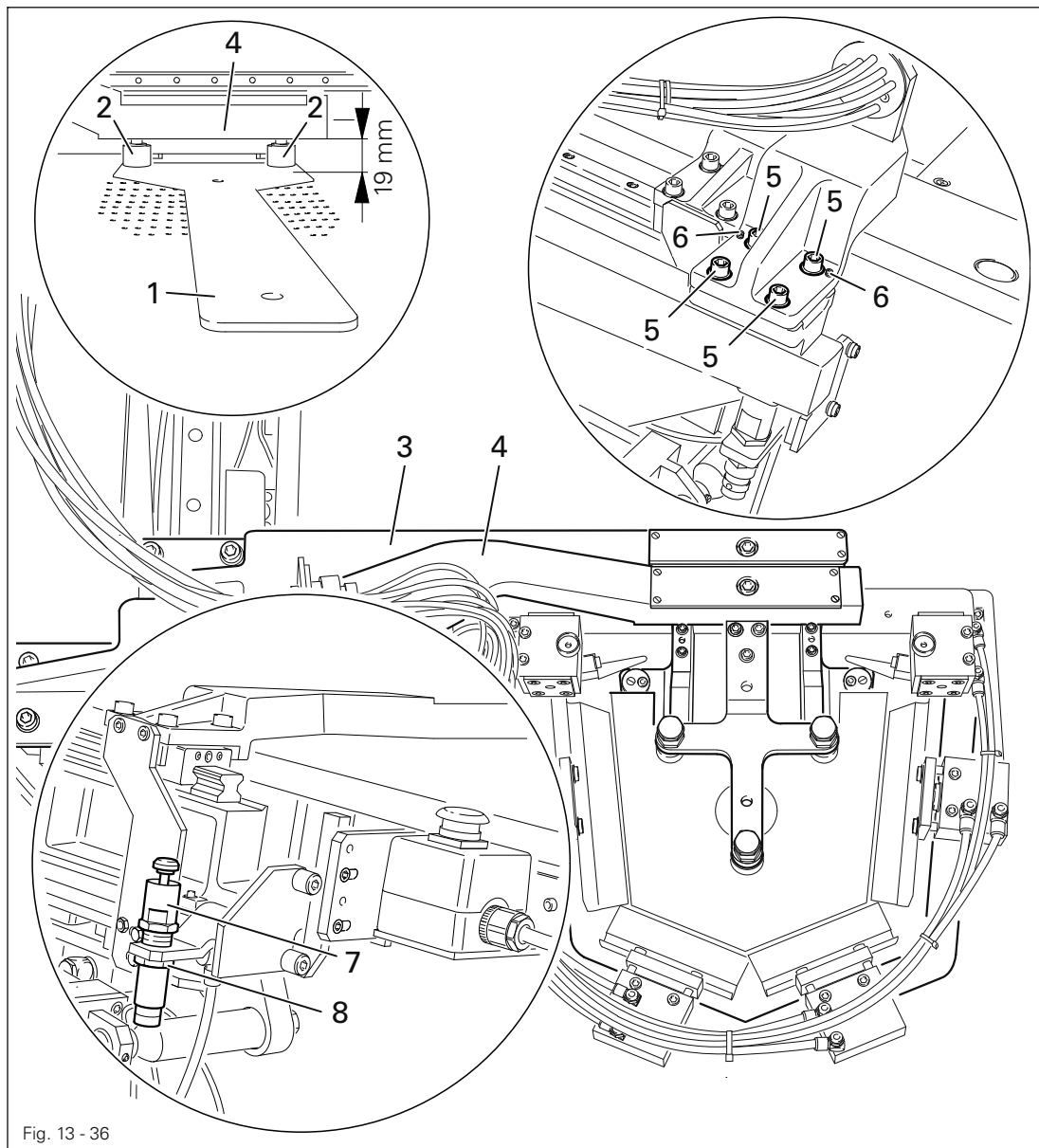
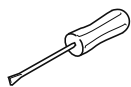


Fig. 13 - 36



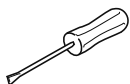
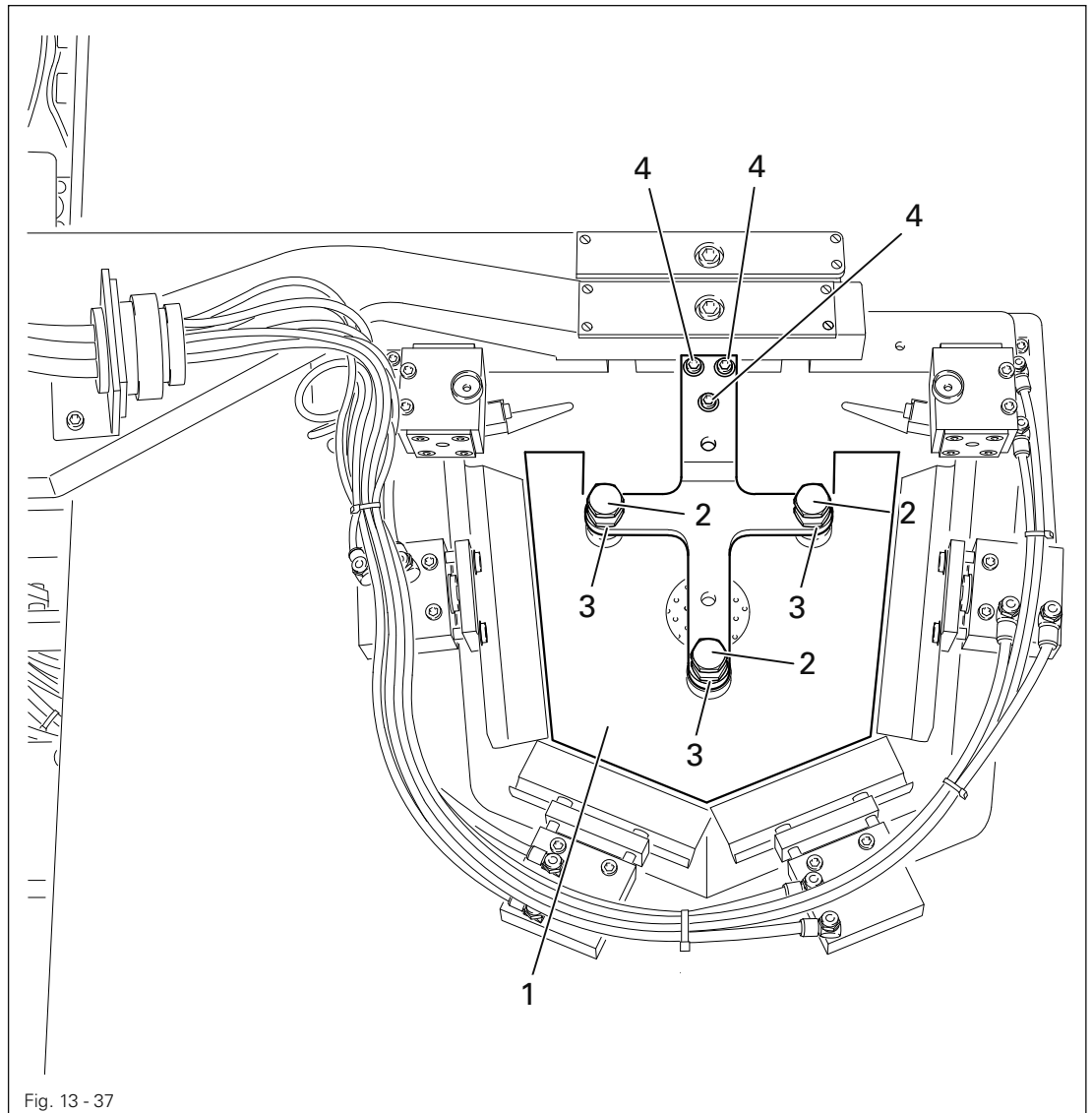
- Carry out the adjustment in accordance with **requirements 1 and 2** by twisting and moving folder arm **4** and by twisting screws **6**.
- Tighten screws **5**.
- Turn shock absorber **7** (nut **8**) according to **requirement 3**.
- Remove pocket plate gauge **1** and fit the folding unit.
- Apply Tesamoll (adhesive tape) to the edge folder frame to fulfil **requirement 4**.

13.06.08 Aligning the die

Requirement

When the folder is lowered and the pocket plate is raised at the same time,

1. the bottom edges of the die's **1** strips must be at a distance of approx. the thickness of the fabric under the underside of the pocket plate.
2. and they must be positioned on all sides at the same distance of **0.3 to 1 mm** (depending on the fabric) to the pocket plate edges.



- Align the bottom edges of the die's **1** strips with the underside of the pocket plate via screws **2** (nuts **3**).
- Turn damper **9** (nut **10**) - see Fig. 13-37 - according to requirement **1**.
- Align die **1** (screws **4**) according to requirement **2**.

13.06.09 Control sequence of the folder plates

Pocket style					
1. Switching position	a + b	a + b	a + b	a + b	a + b
2. Switching position	c + d	c + d + e	c + d	c + d + e	c + d
3. Switching position	e	f	e	f	e
4. Switching position	f + g	g + h	f	g	f + g

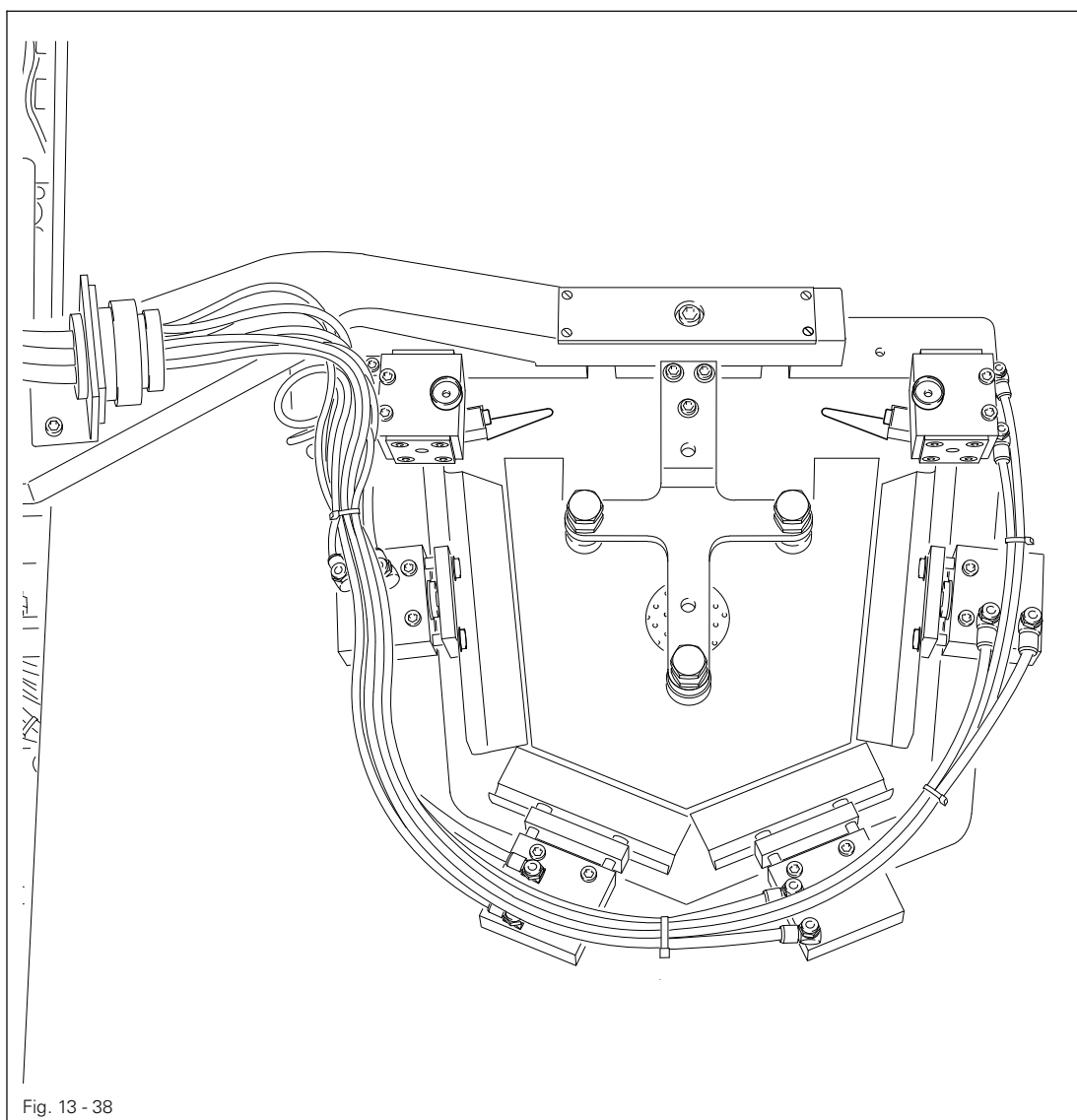


Fig. 13 - 38



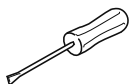
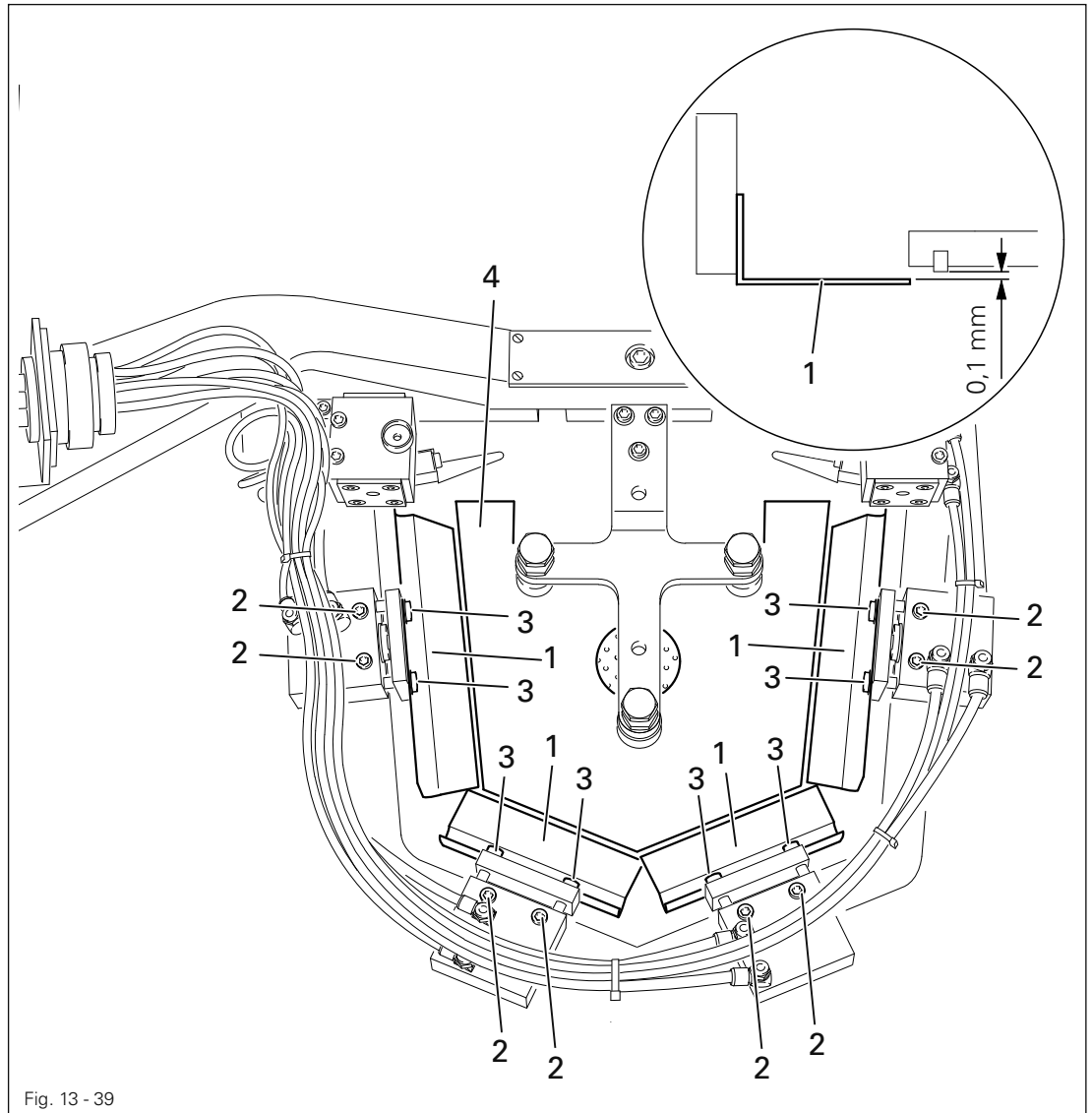
The control sequence and the number of folder plates (and the number of switching positions) depends on the pocket style. The folder installation shown in Fig. 13-38 is for the third pocket style.

For other pocket styles, refer to the above table for the cylinders corresponding to the relevant switching positions.

13.06.10 Position of folder plates

Requirement

1. The front edges of the folder plates 1 must be parallel to the die 4.
2. In the initial position, the folder plates 1 must be positioned on all sides approx. **0.1 mm** under the lower edges of the strips of the die 4.

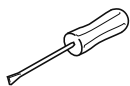
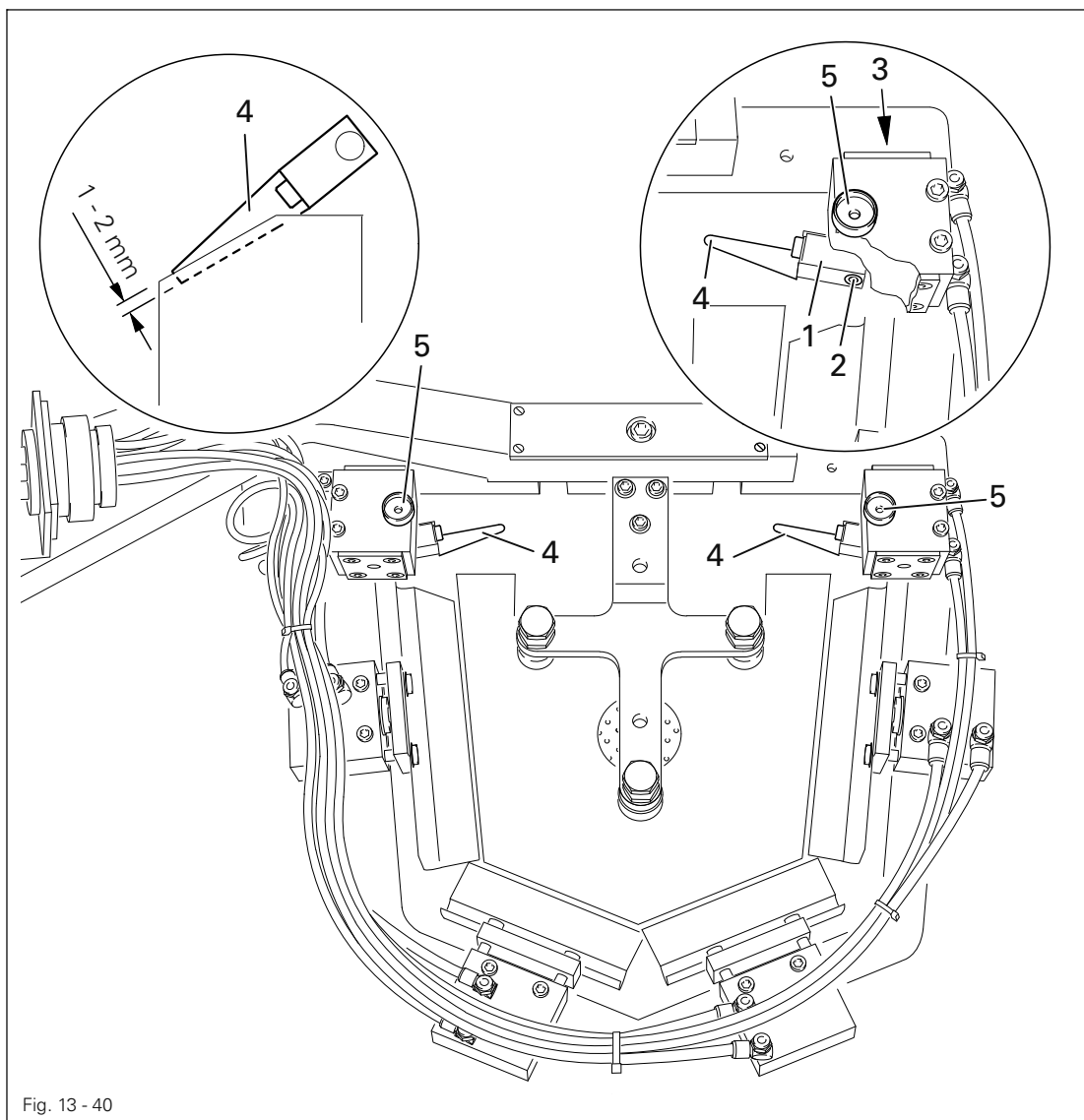


- Remove the folder.
- Align folder plate 1 (screws 2) according to **requirement 1**.
- Insert the folder plates 1 one after another according to the control sequence (see chapter 13.06.09 **Control sequence of the folder plates**) and align according to **requirement 2** (screws 3).
- Remount the folder.

13.06.11 Position of corner folders

Requirement

1. In folder position, the corner folders **4** must be parallel under the slanted side of the folder plate and overlap by **1 to 2 mm**.
2. The corner folders **4** must be positioned **1 to 2 mm** under the folder plates depending on the fabric thickness.



- Preadjust the clamps **1** (screws **2**) according to **requirement 1**.
- For the final adjustment, turn stop screws **3** according to **requirement 1**.
- Adjust the corner folders **4** (screws **5**) according to **requirement 2**.

13.06.12 Aligning the seam in relation to the pocket

Requirement

The seam is to be at the same distance on all sides to the pocket edge.

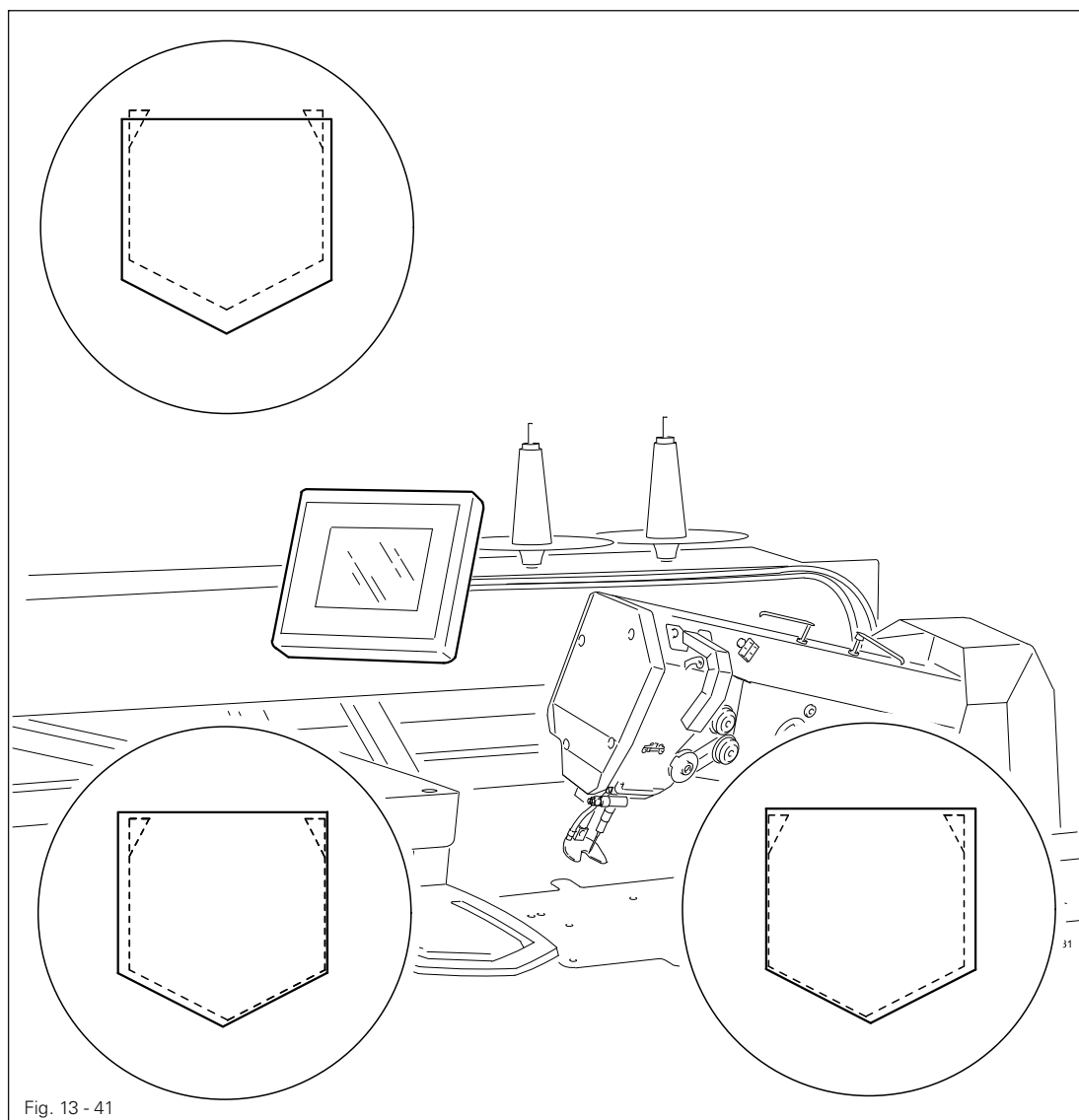
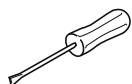


Fig. 13 - 41

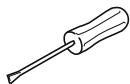
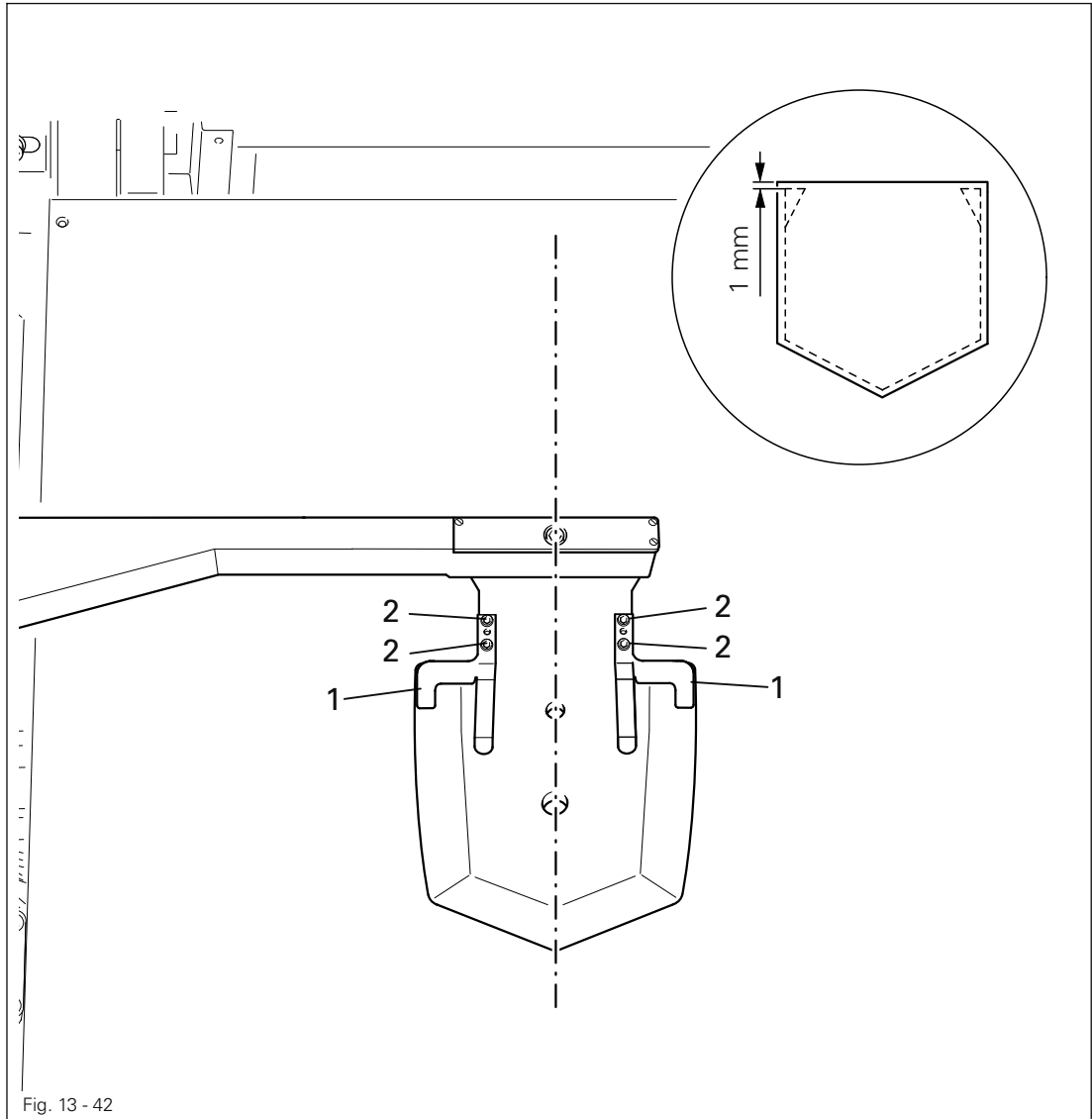


- Switch on the machine.
- Using parameters "608" and "609" adjust the seam in accordance with the **requirement**, see Chapter 13.10 **Parameter settings**.
- Switch off the machine.

13.06.13 Seam backtack distance

Requirement

The distance between the seam backtack and the pocket opening is to be approx. **1 mm**.



- Adjust stops 1 (screws 2) on the pocket plate according to the **requirement**.

13.06.14 Stacking device

Requirement

When it is in operating position, the stacking device **2** must hold the workpiece with the least amount of pressure possible.

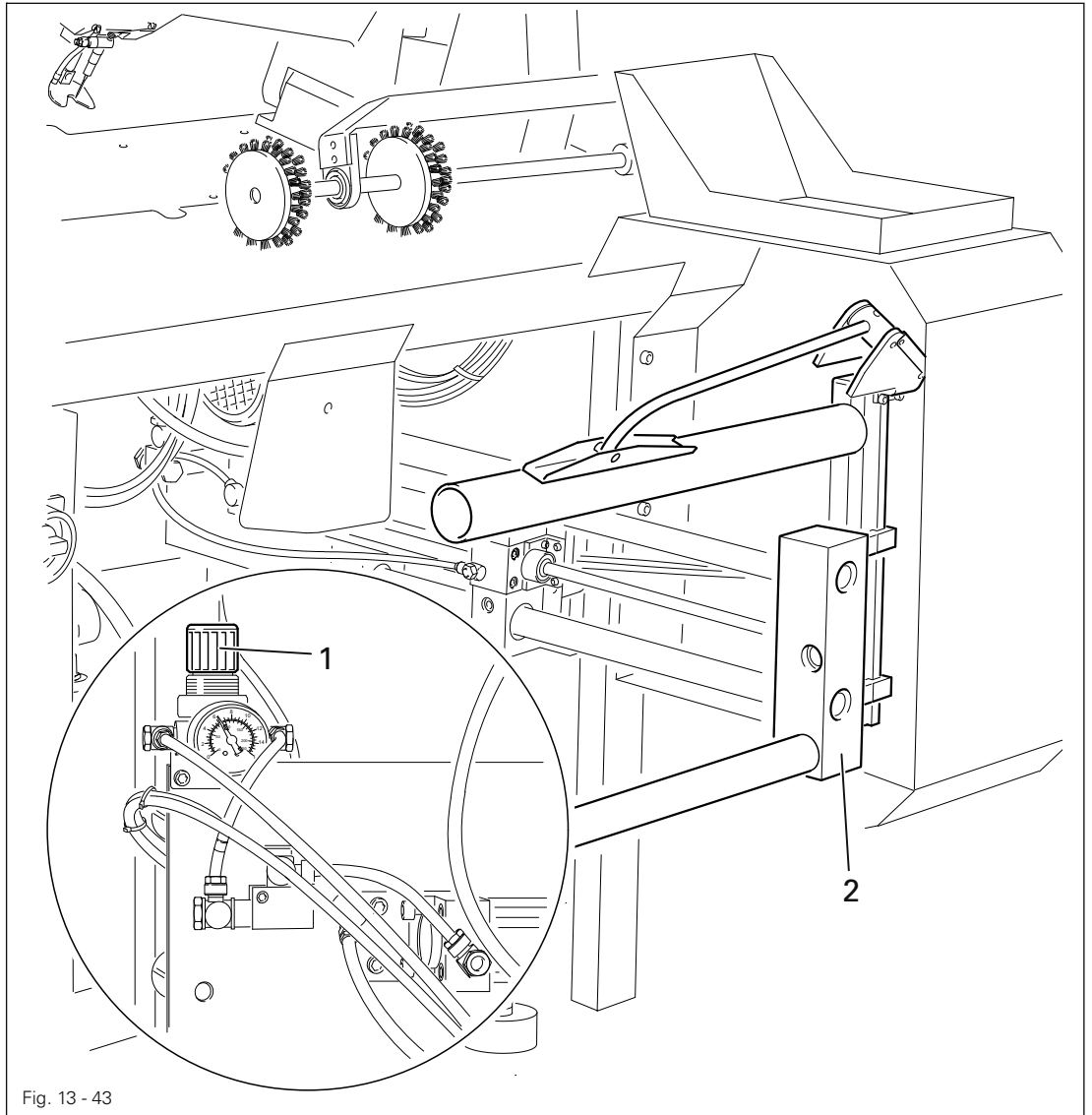
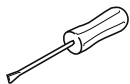


Fig. 13 - 43



- Adjust the pressure at pressure reducing valve **1** according to the **requirement**.



To carry out the adjustments, the outputs **Y 52** and **Y 51** must be switched, see **Kapitel 13.08 Servicemenu**.

13.06.15 Aligning the feed rollers

Requirement

The lowered feed rollers **4** must rest lightly and evenly on the table top, and be positioned parallel to the front edge of the table.

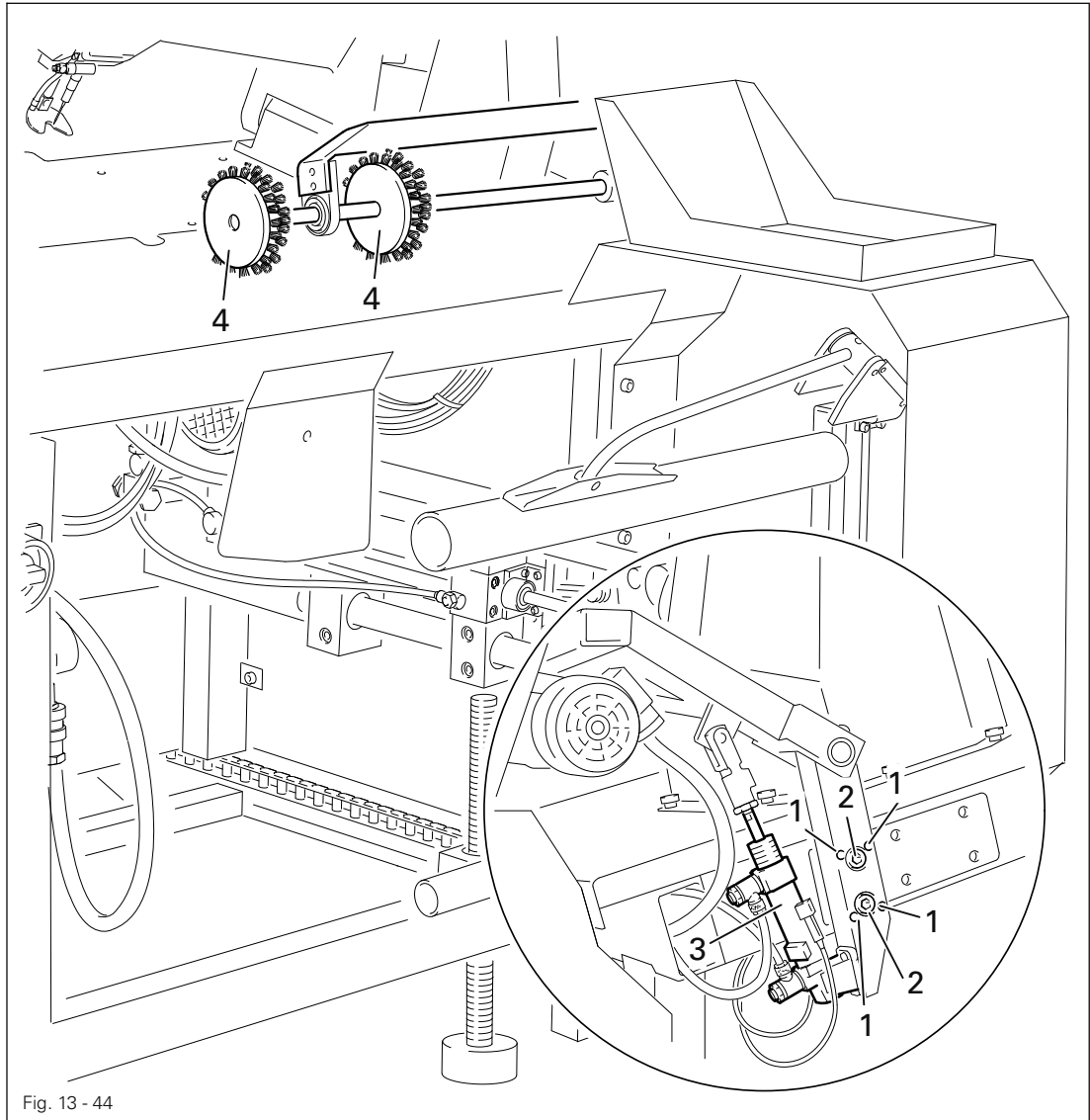
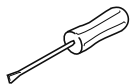


Fig. 13 - 44



- Turn screws **1** (loosen screws **2** slightly) and the plunger of the cylinder **3** according to the requirement.

13.07 Shaping folder plates

13.07.01 New installation / self-manufacture of folder plates

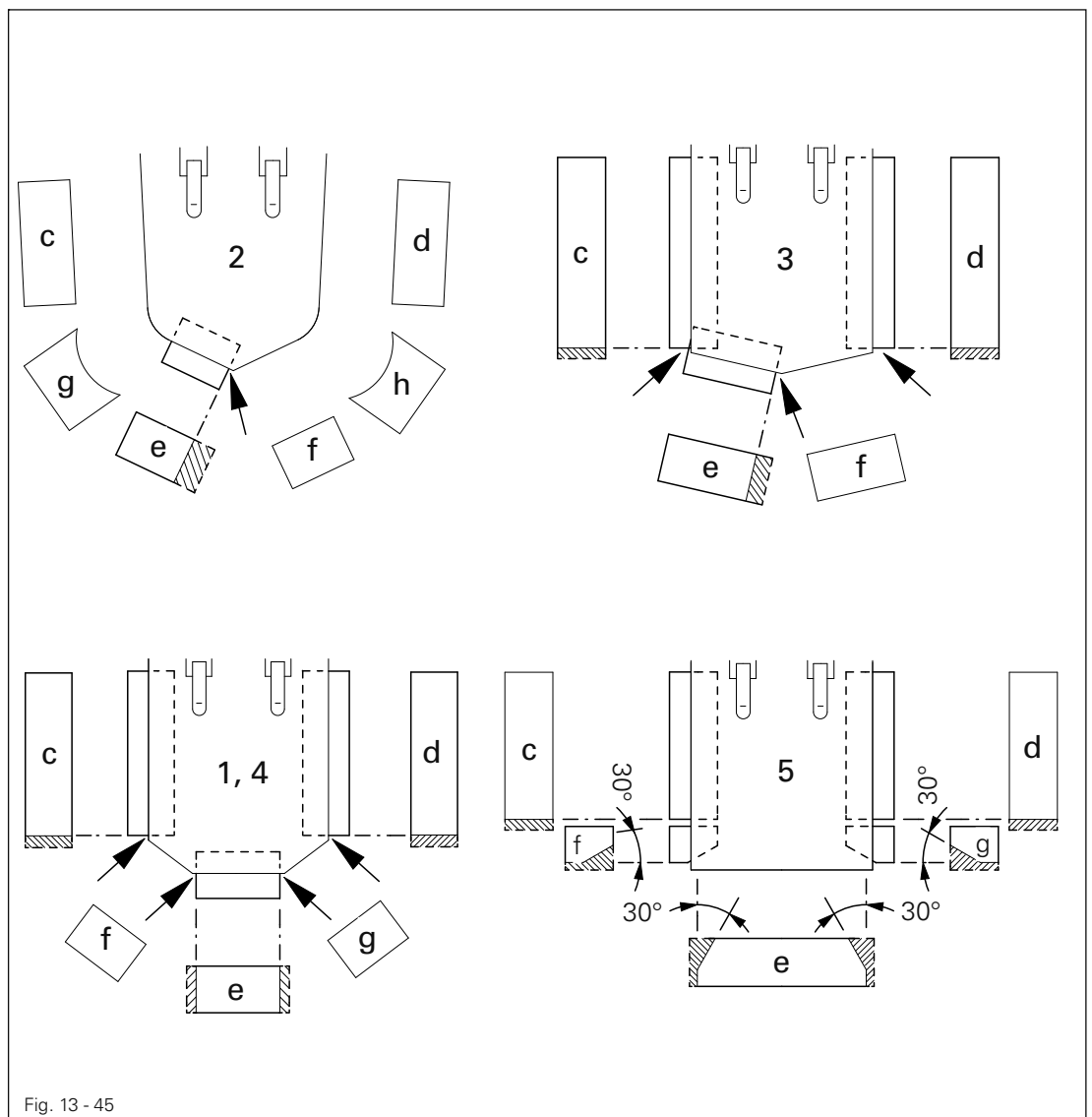
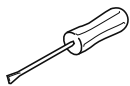


Fig. 13 - 45



- Make and/or install the folder plates according to Fig. 13-45.



When newly installing or making the folder plates, make sure that they lie behind the corners of the pocket plate by at least the amount of the fabric thickness on the marked spots.

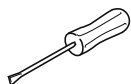
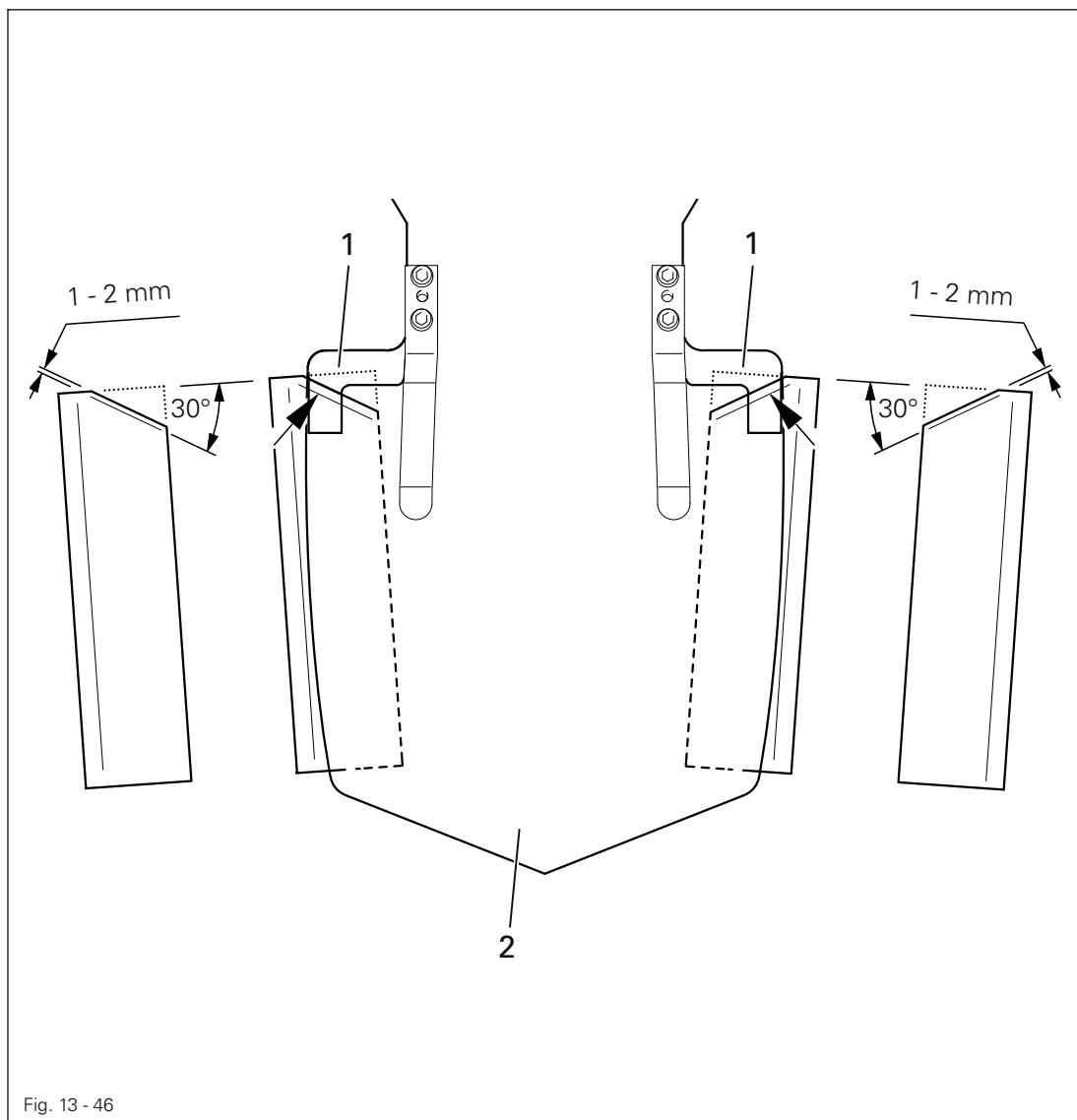


For the fifth pocket style, the folder plates e, f and g must be additionally slanted by 30°.

13.07.02 Slanting the lateral folder plates



Do not begin with this work process until the adjustments in chapters 13.06.12 **Aligning the seam in relation to the pocket** and 13.06.13 **Seam backtack distance** have been carried out!



- With the folder plates fully extended, transfer the front edges of the stops 1 and the outer edge of the pocket plate 2 to the lateral folder plate.
- Trace slanted edge of 30°.
- Work the folder plate up to 1 - 2 mm before the trace.
- Round off the edges of the folder plate and polish.

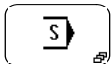
13.08 Service menu

The status of the digital and analog inputs is displayed in the service menu. The outputs can be set or reset manually. In addition it is also possible to call up functions for carrying out a cold start, for loading the operating program and for setting the control panel.

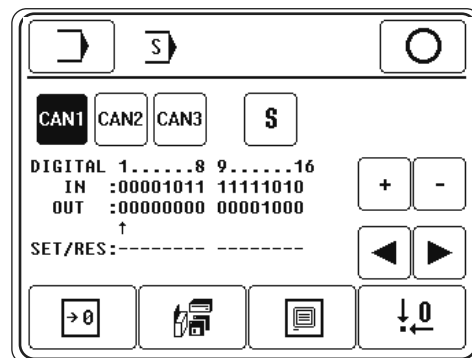
- Switch on the machine.



- Call up the input mode.



- Call up the service menu.



Explanation of the functions

**Input mode**

This function is used to change to the initial state of the input mode.

**Conclude input**

This function is used to conclude the input and change into the sewing mode.

**Can-nodes**

This function is used to select the required Can-node. The currently selected Can-node is shown as an inverse symbol.

**Special outputs**

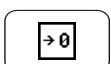
This function is used to set or reset special outputs.

**Plus/minus keys**

These functions are used to set (+) or reset (-) the selected output.

**Arrow keys**

These functions are used to select the desired outputs.

**Cold start**

This function is used to carry out a cold start, see Chapter 13.08.01 Cold start.

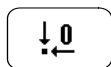
**Loading the operating program**

This function is used to load the machine operating program, see Chapter 13.08.02 Loading/ updating the operating program.



Control panel settings

This function is used to call up a menu for changing the display contrast and for switching the key tone on or off, see Chapter 8.08 **Setting the control panel**.



Adjusting the zero points

This function is used to call up a menu for setting the zero points, see Chapter 8.09 **Adjusting the zero points**.

13.08.01 Coldstart

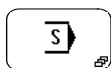


When a cold start is carried out, all newly created or edited programs, as well as all altered parameter settings are deleted!

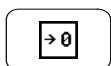
The machine memory is deleted or set back to the status at the time of delivery.



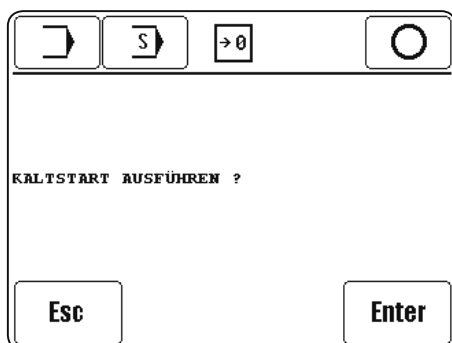
- Switch on the machine and call up the input mode.



- Call up the service menu.



- Call up the cold start function.



- Confirm that a cold start is to be carried out.

Explanation of further functions



Input mode

This function is used to change to the initial state of the input mode.



Service menu

This function is used to return to the service menu, see Chapter 13.08 **Service menu**.



Conclude input

This function is used to conclude the input and change into the sewing mode.



Esc

The input is interrupted.

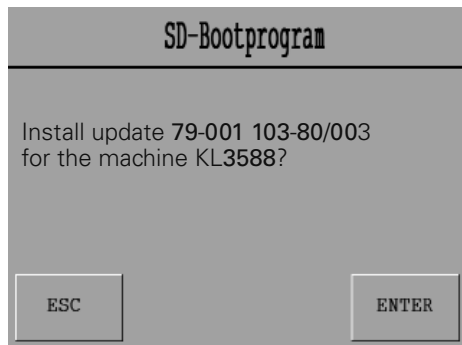
13.08.02 Loading / updating the operating program

To boot a new machine software, a sd-card with the needed files has to be plugged in the sd-slot of the control panel.

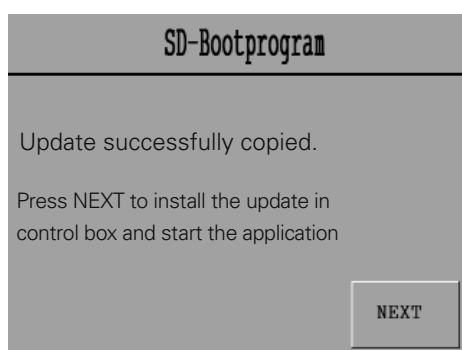
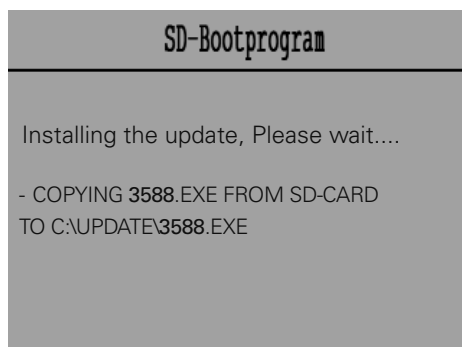


During the loading of the operating program all data in the machine memory is deleted!

- Switch on the machine and push the button "FORCE UPDATE".



- Start the bootsequence with the key "ENTER".



- To install the software, push the key "NEXT".

13.09 Sewing motor adjustments

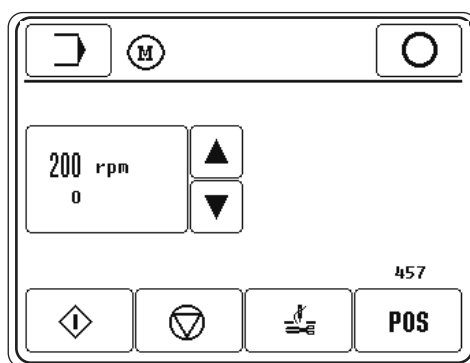
- Switch on the machine.



- Call up the input mode.



- Call up the "sewing motor adjustments".



Description of the functions



Conclude input

This function is used to conclude the input and change to the sewing mode.



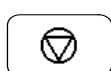
Speed adjustment

This function is used to increase or reduce the set speed.



Start

This function is used to start the motor running.



Stop

This function is used to stop the motor running.



Thread trimming cycle

This function is used to run the thread trimming cycle.



Needle position

The present set position of the needle is displayed.

To adjust the needle bar position to t.d.c., bring the needle bar into the appropriate position by turning the balance wheel, and then operate the "POS" function to take over this position.

13.10 Parameter settings

All parameters, which can be altered, are shown in the list of parameters, see Chapter 13.10.02 List of parameters. A description of how to select parameters and alter the values is given below.

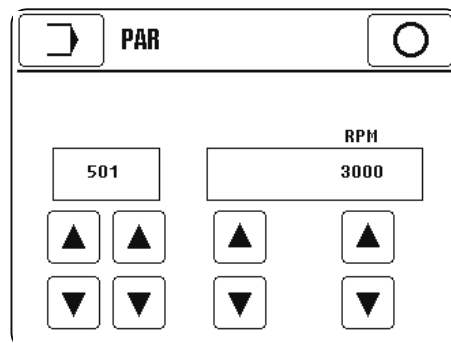
13.10.01 Selecting and altering parameters.



- Switch on the machine and call up the input mode.

PAR

- Call up the parameter input function.



- Select the parameter separately by group (hundred figure) and parameter within the function group.



- Alter the value of the selected parameter.



- Quit parameter input function.

13.10.02 List of parameters

Group	Parameter	Description	Setting range	Set value
100	101	Bobbin thread monitor (0 = off; 1 = counter; 2 = sensor; 3 = sensor +stop)	0 - 3	1
	102	Needle thread monitor (0 = off; 1 = on)	0 - 1	1
	103	Fade-out stitches needle thread monitor. The number of stitches, during which the needle thread monitor is not activated during sewing, is changed.	0 - 99	5
	104	Fade-out stitches bobbin thread monitor. The number of stitches, during which the bobbin thread monitor is not activated during sewing, is changed.	0 - 99	5
	105	Reaction time needle thread monitor. The sensitivity of the needle thread monitor is altered (1 = quickest reaction, max. sensitivity)	1 - 9	1
	106	Retracing stitches The number of stitches which are automatically retracted after a needle thread error, is changed.	0 - 99	15
	107	Sewing (0 = off; 1 = on)	0 - 1	1
	108	Jig monitoring (0 = off; 1 = on)	0 - 1	0
	109	Intermediate stop 0 = off; 1 = 1st stop after folder lowered; 2 = 2nd stop after folding operation; 3 = 1st and 2nd stop Press the double start keys to continue operation.	0 - 3	0
	110	Alternate folding (0 = off; 1 = on)	0 - 1	0
	111	Continuous carriage feed (0 = off; 1 = on)	0 - 1	0
	112	Automatic switching to next sequence (0 = off; 1 = on)	0 - 1	1

Group	Parameter	Description	Setting range	Set value
100	113	Uni-material This parameter changes the function of the loading switch 0 = reverse suction air and ventilate pocket plate 1 = reverse suction air 2 = reverse ventilation pocket plate, 1st position: ventilated 3 = reverse ventilation pocket plate, 1st position: down	0 - 3	0
	114	Basic position pocket plate 0 = forwards; 1 = back	0 - 1	0
	115	Slide configuration Y9 = value 8 Y8 = value 4 Y7 = value 2 Y6 = value 1 Calculate sum of valves to be switched.(e.g.: Switch valves Y9 and Y7 -> 8 + 2 = 10)	0 - 15	15
	116	Slide configuration Program station 1 Y9 = value 8 Y8 = value 4 Y7 = value 2 Y6 = value 1 Calculate sum of valves to be switched. (e.g.: Switch valves Y8 and Y6 -> 4 + 1 = 5)	0 - 15	15
	117	Slide configuration Program station 2 Y9 = value 8 Y8 = value 4 Y7 = value 2 Y6 = value 1 Calculate sum of valves to be switched. (e.g.: Switch valves Y9 and Y6 -> 8 + 1 = 9)	0 - 15	15
	118	Slide configuration Program station 3 Y9 = value 8 Y8 = value 4 Y7 = value 2 Y6 = value 1 Calculate sum of valves to be switched. (e.g.: Switch valves Y7 and Y6 -> 2 + 1 = 3)	0 - 15	15

Adjustment

Group	Parameter	Description	Setting range	Set value
100	119	Slide configuration Program station 4 Y9 = value 8 Y8 = value 4 Y7 = value 2 Y6 = value 1 Calculate sum of valves to be switched. (e.g.: Switch valves Y9 and Y8 -> 8 + 4 = 12)	0 - 15	15
	120	Tilt sewing head 0 = off; 1 = on	0 - 1	0
	121	Folding version 0 = standard 1 = version 1 (only pre-cut part is moved to sewing station) 2 = version 2 (pre-cut part and pocket are moved to sewing station without folding) 3 = version 3, pre-folded pockets 4 = version 4, as standard but for round pockets	0 - 4	0
	122	Jig version 0 = standard 1 = flap version 1 (flap completed) 2 = flap version 2 (flap open) 3 = variable sewing slit 4 = cargo	0 - 4	0
	123	Stop in case of undervoltage 0 = off; 1 = on	0 - 1	0
	124	Reverse needle positioning 0 = off; 1 = on	0 - 1	0
200	201	Tilting sewing head 0 = not fitted; 1 = fitted	0 - 1	1
	202	Hook 0 = horizontal hook; 1 = vertical hook	0 - 1	
	203	Jig monitor 0 = not fitted; 1 = fitted	0 - 1	0
	204	Height adjustment 0 = not fitted; 1 = fitted	0 - 1	0
	205	Cargo unit 0 = not fitted; 1 = fitted	0 - 1	0
	209	Machine typ 0 = Standard (with P200 and QE5542) 1 = Standard (with MMC 1002 and QE5540)	0 - 1	0

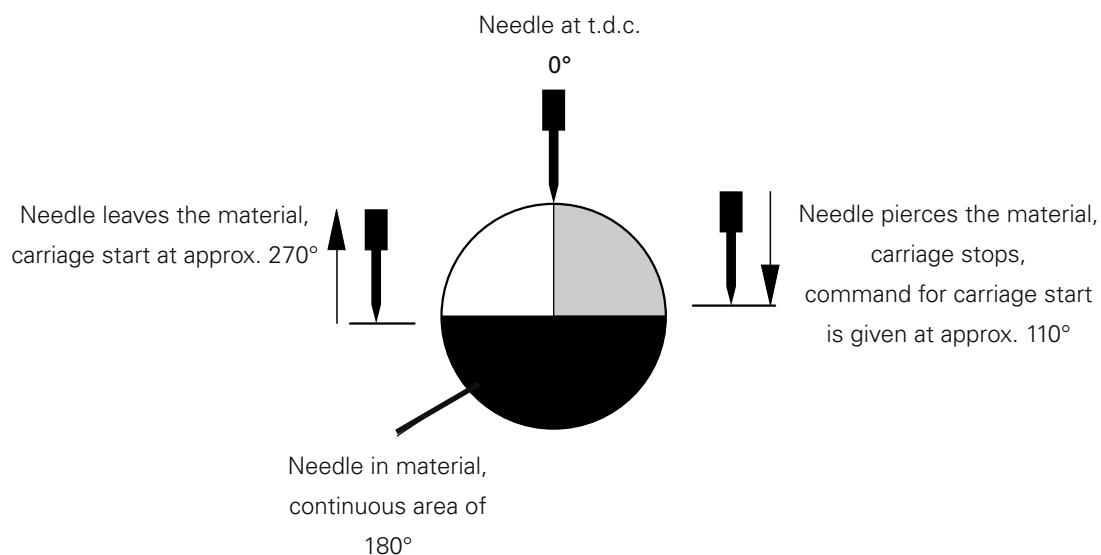
Group	Parameter	Description	Setting range	Set value
300	301	NIS (carriage start) [°], see Chap. 13.10.03	80 – 150	110
	302	Take-up lever tdc [°]	70 – 90	75
	303	Thread trimming on [°] Point at which impulse for thread trimming is given to thread trimming valve is changed (° = degrees after tdc needle bar).	160 – 360	200
	305	Thread trimming off [°]	Parameter 303 / 302	345
	306	Open thread tension	5 - 20	15
400	401	Time for label clamp closed [0.01 s]	10 – 256	20
500	501	Reduced speed	200 – 4000	3600
	502	Cutting speed (positioning speed)	50 - 250	200
	503	Speed for slow start stitches	200 - 700	700
	504	Slow start stitches Number of stitches, which are to be sewn at reduced speed when sewing starts, is changed	0 – 99	2
	505	Delay stitches zig-zag on This parameter is used to enter the number of stitches after which the "zig-zag on" command is given later, see Chapter 13.10.04 Delay zig-zag on/off	0 - 99	3
	506	Delay stitches zig-zag off This parameter is used to enter the number of stitches after which the "zig-zag off" command is given later, see Chapter 13.10.04 Delay zig-zag on/off	0 - 99	3
600	601	Direction of slow rolling stacker 0 = backwards: 1 = forwards	0 - 1	1
	602	Slow rolling time stacker [0.01 s] This parameter is used to enter the time for the slow rolling motion of the stacker roller, see Chapter 13.10.05 Stacker rolling time	0 - 999	50
	603	Quick rolling time stacker [0.01 s] This parameter is used to enter the time for the quick rolling motion of the stacker roller, see Chapter 13.10.05 Stacker rolling time	0 - 999	35

Adjustment

Group	Parameter	Description	Setting range	Set value
600	604	Delay time for stacker frame back [0.01s] The parameter is used to enter the delay time between stacker roller roll slowly and stacker frame back.	0 - 999	0
	605	Time for folder slide back [0.01s] The parameter is used to enter the delay time for the folder slide. The time should be set so that the folder does not move up until the folder plate is in its rear end position.	0 - 999	30
	606	Time for pocket plate open [0.01s] The parameter is used to enter the delay time between pocket plate back and pocket plate open. If the time selected is 0.00 s, the pocket plate opens when the end switch pocket plate back (E1.2) is activated.	0 - 999	50
	607	Speed feed unit [%] The parameter is used to enter the speed of the sewing jig feed unit from the folding to the sewing station.	20 - 100	100
	608	Seam correction X [0.01 mm] This parameter is used to change the position of the seam on the pocket in x-direction.	-20 - +20	0
	609	Seam correction Y [0.01 mm] This parameter is used to change the position of the seam on the pocket in y-direction.	-20 - +20	0
	610	Stacker cycle 0 = standard 1 = short part 2 = off (basic position retracted) 3 = off (basic position extended)	0 - 3	0

13.10.03 Carriage start (NIS)

This function changes the time for starting the motors of the jig drive
(° = degree after t.d.c. needle bar).



The command for the carriage start is given when the needle pierces the material. The carriage, however, starts half a revolution later (**180°**), when the needle leaves the material.

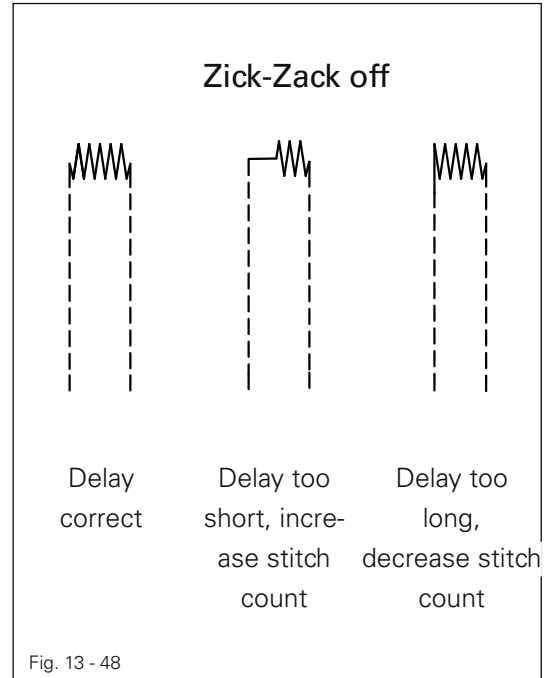
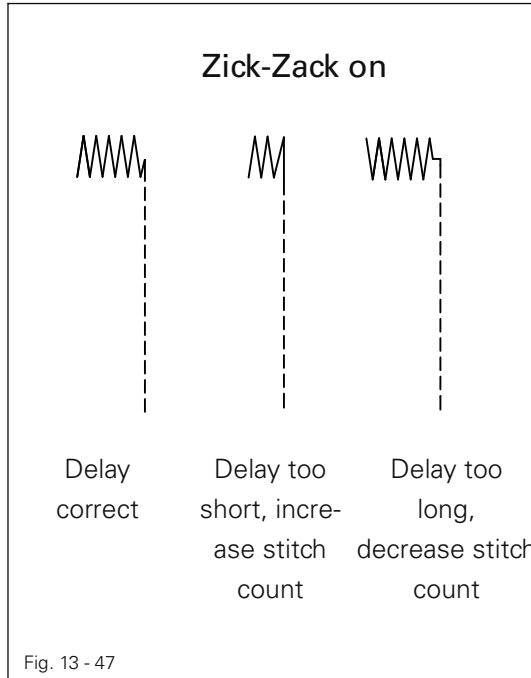


Under certain circumstances the stitch formation can be influenced by the setting.

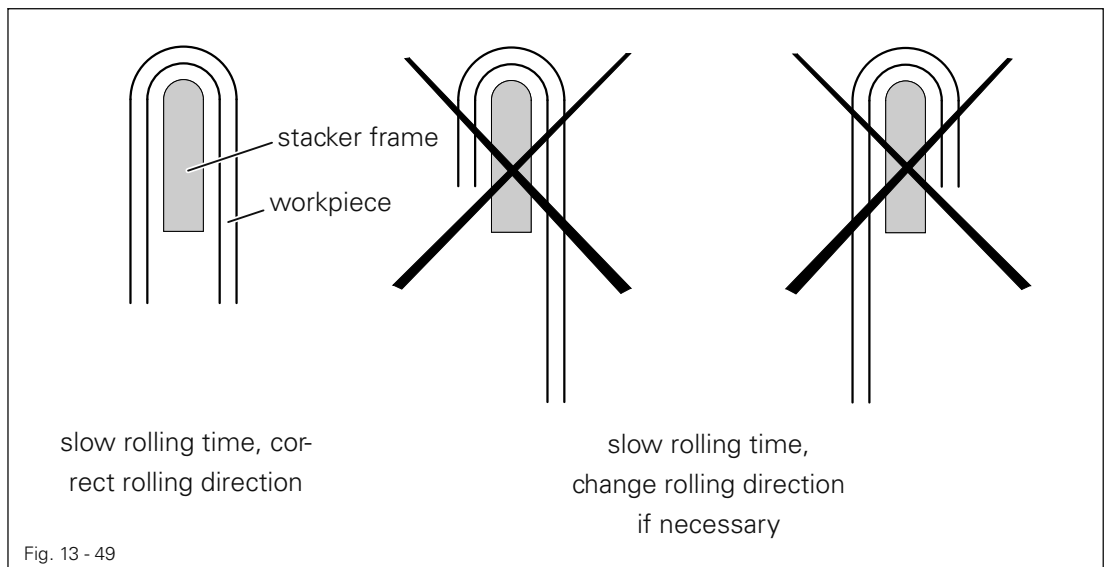
13.10.04 Zig-zag delay on/off



Due to the delay of the valve and cylinder, output of the commands for DELAY ZIGZAG ON and OFF must be delayed as a function of the speed.



13.10.05 Stacker rolling time



14 Control

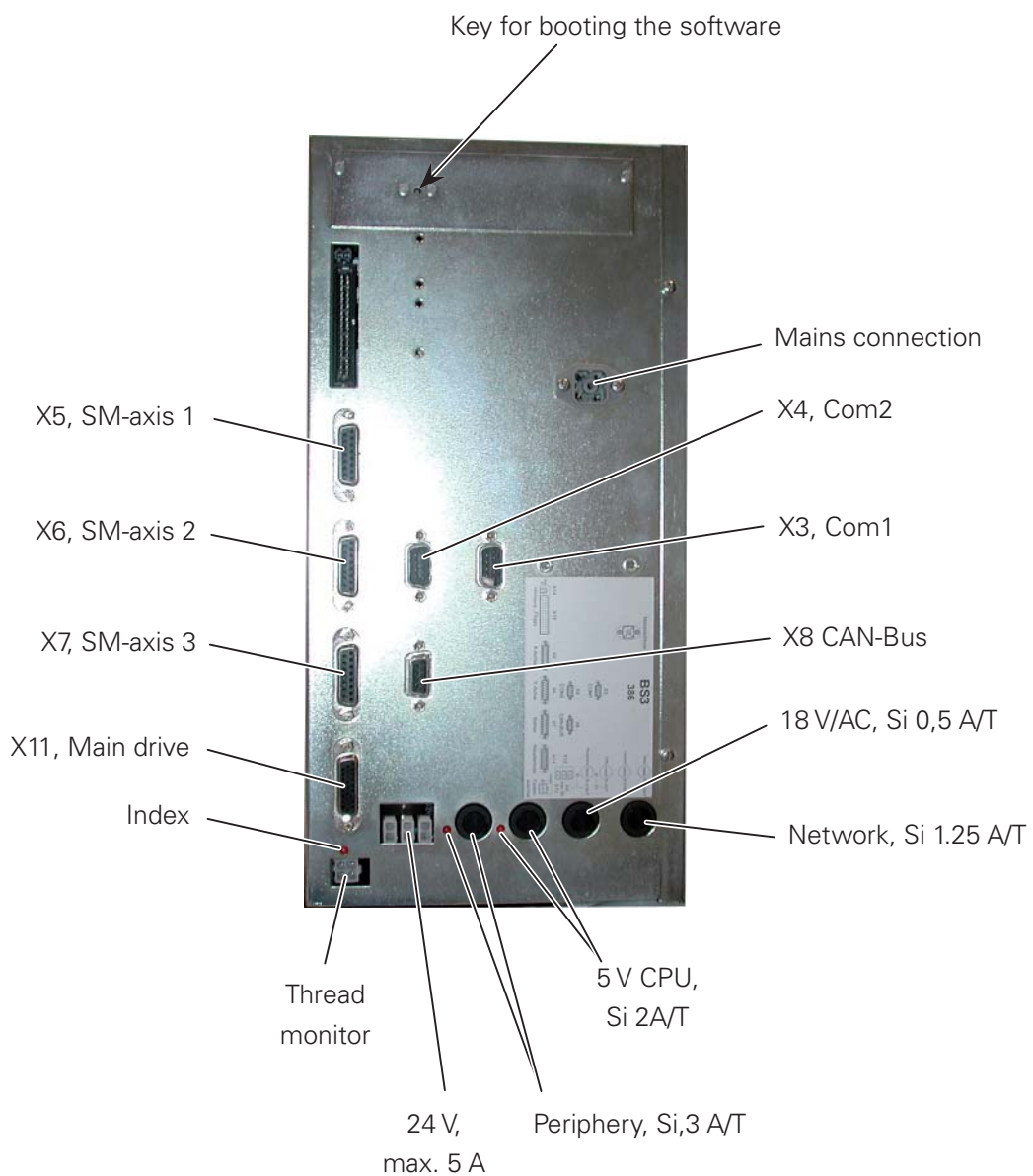
14.01 Basic setting / Diagnosis / Pin assignment

14.01.01 Basic control unit A20



In the factory, the basic control unit is equipped with the necessary operating and ramp software. This may only be replaced by appropriately trained personnel.

Pin locations



Control unit

Operation indicators/Voltage supply

LEDs for various operating voltages are provided on top of the device (see sticker on the device).

These LEDs are for + 12V, + 15.1V and + 24V.

Fuses

2,0 AT / 5V / CPU

6,3 AT / 24V / Periphery

0,5 AT / 16V / Control panel

1,25 AT / 230V / Main

Pin assignment

X3 (COM1) and X4 (COM2)			
PIN	Signal	PIN	Signal
1	Vterm1	6	gedrückt an PIN 6
2	RxD	7	RTS
3	TxD	8	CTS
4	bridged to PIN 6	9	Vterm2
5	GND		

X5 or X3 (Sewing motor)			
PIN	Signal	PIN	Signal
1	Puls +	9	Puls -
2	direction +	10	direction -
3	Fkt1 +	11	Fkt1 -
4	Fkt2 +	12	Fkt2 -
5	Vex +	13	Vex -
6		14	Inp2 -
7	Inp2 +	15	Inp1 -
8	Inp1 +		

X8 (CAN-Bus)			
PIN	Signal	PIN	Signal
1		6	
2		7	
3	DoRi +	8	DoRi -
4	GND	9	GND
5			

X11 (Main drive)			
PIN	Signal	PIN	Signal
1	Puls +	14	A_A
2	direction +	15	A_B
3	Fkt1 +	16	B_A
4	Fkt2 +	17	B_B
5	Vex +	18	I_A
6		19	I_B
7	Inp2 +	20	GND
8	Inp1 +	21	A_OC
9	R1_A	22	B_OC
10	R1_B	23	I_OC
11	R2_A	24	V2
12	R2_B	25	GND
13	GND	26	Vex

14.01.02 Sewing drive A22



Before leaving the factory, the sewing drive controller is equipped with the necessary operating software. This software may only be replaced by appropriate specialist personnel.

The LED Power on indicates if (the sewing drive) is ready to operate. There are no diagnostic functions and fuses available. If error messages occur in the machine display, please refer to **chapter 14.02.04 Sewing motor errors**.

X1 or X7 (Synchronizer)			
PIN	Signal	PIN	Signal
1	FA	6	
2	FB	7	
3	SM	8	
4	ADTC1	9	GND
5	+ 5V		

X2 (Commutating signal generator)			
PIN	Signal	PIN	Signal
1		6	KA
2		7	KB
3		8	KC
4	ADTC2	9	GND
5	+ 5V		

Control unit

X3 (Interface)			
PIN	Signal	PIN	Signal
1	GND	14	A
2	TxD	15	A\
3	RxD	16	B
4	TxD\	17	B\
5	RxD\	18	Index
6		19	Index\
7	GND	20	
8		21	
9	REF1	22	
10	REF1\	23	
11	REF2	24	
12	REF2\	25	
13	GND	26	

X1 or X14 (motor)			
Signal			
PE			
U			
V			
W			

14.01.03 Stepping motor drive A21

The stepping motor controller has the following initial setting:

DIP switch
OFF ON

*		Step no.: 1000
*		Step no.:
*		Current reduction active
*		Enable

Rotary switch

B Position B ==> phase current **5.4 A**



For information on the status indications via LED please refer to **chapter 14.02.05 Errors – Stepping motor drive.**

Pin assignment

X5 (Stepping motor 1) or X6 Stepping motor 2)			
PIN	Signal	PIN	Signal
1	Pulse +	9	Pulse -
2	Direction +	10	Direction -
3		11	
4	Current contro +	12	Current contro -
5		13	
6		13	
7		15	Ready -
8	Ready +		

14.01.04 Stacker motor drive



Before leaving the factory, the stacker motor drive has been set and/or programmed to meet the requirements of this machine. It may only be replaced by a programmed drive.

Operation controls

LED H1 (yellow)	LED H2 (green)	Discription
off	off	Power off, no function
on	off	Power on, after approx 0,5s of self-test ready for operation
off	on	drive has been started
on	on	overload protection active
flashes	off	see chapter 14.02.06Errors - Stacker drive

14.01.05 AC-Line-Controller



The AC-Line-Controller is set in the factory to the requirements of this machine. An exchange is only permissible after prior adjustments.

Default setting

Potentiometer	Value
UL (upper limit)	260V
LL (lower limit)	195V
off Delay	Min

Operation displays

LED H1 (green)	LED H1 (red)	Discription
off	off	line off, no function
on	off	machine functional, voltage outside the set range
on	on	machine functional, voltage within the set range

14.02 Description of the error messages

14.02.01 General errors

Display	Description
ERROR: 3	Error in allocation EMS memory
ERROR: 4	C167 not reacting
ERROR: 5	Boot file (c167boot.bin) cannot be opened
ERROR: 6	Error in flash-programming
ERROR: 7	Error when opening a file
ERROR: 8	Battery
ERROR: 10	CAN-error (reset)
ERROR: 11	CAN-error (no. of nodes)
ERROR: 12	Communication main drive
ERROR: OPERATING DATA CHECK SUM (COLD START CARRIED OUT)	Operating data check sum
NEW OPERATING SOFT- WARE (COLD START CAR- RIED OUT)	New operating software
COLD START CARRIED OUT	Cold start
ERROR: 15	Main drive changed
ERROR: 101	C167-error
ERROR: 102 (#node no.)(status)	CAN-error, status = Bit1 - node inactive, Bit 8 - short circuit
ERROR: 103	End stage (SmX)
ERROR: 104	End stage (SmY)
ERROR: 105	Error compressed air
ERROR: 201 (#sewing mo- tor error)	Sewing motor error (see Chapter 14.02.04 Sewing mo- tor errors)
ERROR: 210	Command byte of NM-interface not free,command could not be given
ERROR: 211	Coordinates outside sewing area
ERROR: 212	Stitch length too long (> 6 mm)
ERROR: 213	Carraige initiators not found
ERROR: 214	Remove material
ERROR: 215	Ramp not completed
ERROR: 216	Insert material
ERROR: 217	No jig inserted, program number could not be read
ERROR: 219	Wrong jig
ERROR: 220	Wrong jig code
ERROR: 221	No carriage start (NIS)
ERROR: 240 (cause)	Move to starting point blocked
ERROR: 241 (cause)	Move to Home blocked

Display	Description
ERROR: 242 (cause)	Move to folder blocked
ERROR: 243 (cause)	Move from folder to mach. zero point blocked
ERROR: 244 (cause)	Move from folder to stacker point blocked
ERROR: 245 (cause)	Move to stacker point blocked
ERROR: 246 (cause)	Tacting blocked
ERROR: 247 (cause)	Moving in sewing program blocked
ERROR: 248 (cause)	Shifting to flap slit blocked
ERROR: 249 (cause)	Move from stacker point to mach. zero point blocked
ERROR: 250 (cause)	Sewing blocked
AC	Undervoltage (error 255)
ERROR: 261	Bobbin thread error
ERROR:301	Carriage position invalid
ERROR: 302	Needle position (carriage) invalid
ERROR: 303	Folder position invalid
ERROR: 305	Configuration invalid
ERROR: 306	Needle position (t.d.c.) invalid
ERROR: 308	Machine not in basic position
ERROR: 310	File not on source
ERROR: 311	Source reading error, file cannot be opened
ERROR: 312	Target writing error, file cannot be opened
ERROR: 313	Source reading error
ERROR: 314	Target writing error
ERROR: 315	File configuration cannot be opened
ERROR: 316	Error when opening MDAT-file
ERROR: 317	Writing error in MDAT-file
ERROR: 318	Machine data identification incorrect
ERROR: 319	Reading error in MDAT-file
ERROR: 320	Prog. with incorrect machine class
ERROR: 321	Prog. with incorrect machine version
ERROR: 322	Prog. with incorrect data set version
ERROR: 323	Incorrect program number
ERROR: 324	No carriage start, NIS
ERROR: 325	Memory overflow when writing file to flash
ERROR: 326	Flash writing error
ERROR: 327	Image leaves sewing area
ERROR: 328	Block not marked or incorrectly marked
ERROR: 329	Program too large
ERROR: 330 (#Stitch generation error) (#Section number)	Conversion error
ERROR: 331	Stitch too large (> 6 mm)

Display	Description
ERROR: 332	Check-point not permitted
ERROR: 341 (#sewing motor error)	Sewing motor error, (see Chapter 14.02.04 Sewing motor errors)
ERROR: 342 (# program number)	Program incomplete
ERROR: 343 (# program number)	Program too large
ERROR: 344 (# program number)	Program does not exist
ERROR: 345 (# program number)	Flash reading error or program defective
ERROR: 401	Text file cannot be opened
ERROR: 402	Error when reading text file
ERROR: 403	Error in allocation of storage space for texts
ERROR: 501	Error when opening file "pikto.hex" or "vorlagen.hex"
ERROR: 502	No acknowledgement from control panel

14.02.02 CAN-errors

Error byte	Description
bit7	End stage error (short circuit)
bit6	-
bit5	-
bit4	Receive status (waiting for input object)
bit3	Transmit status (transmit output object)
bit2	Transmit status
bit1	Node time out
bit0	Node active

14.02.03 Stitch generation error

Display	Description
1	Incorrect machine identification
2	Section "jig type" or section "obstacle" missing or on wrong place
3	Increment too large
4	Program end without thread trimming
5	Impermissible stitch length data
6	Incorrect element in geometrical data set
7	Quick motion although machine is sewing
8	Impermissible stitch length data
9	Impermissible stitch length data
10	Circle check-point = circle end point
11	Division by zero
12	Impermissible stitch length data
13	No coordinates section before curve check-point
14	Sewing area limit exceeded
15	Curve without end point
16	Mach. function buffer overflow
17	Start sewing command in loading point program
18	Incorrect curve check-point
19	Incorrect curve check-point
20	Incorrect curve check-point
21	Incorrect curve check-point
22	Stitch length not initialised
23	Loading point program not ended
24	Stitch width command in loading point program
25	Impermissible value for section stitch direction
26	Cutting command, although thread cut
27	Start sewing command, although machine sewing
28	Cutting command in sewing-off-area
29	Sewing-off command, although thread cut
30	Cutting command directly after start sewing command
31	Start bartack too long

14.02.04 Sewing motor errors

Display	Description
1	Transmission error
2	Timeout serial interface
3	Check sum error in incoming data
4	Timeout command
30h (48)	Timeout-slave expired (command string incomplete)
31h (49)	Incorrect command code
32h (50)	Framing or parity error
33h (51)	Check sum incorrect
34h (52)	Incorrect date request
35h (53)	No parameter programmable (motor operation)
36h (54)	Parameter does not exist
37h (55)	Incorrect parameter value
38h (56)	EEPROM being programmed
39h (57)	Incorrect machine speed
3Ah (58)	Incorrect position
3Bh: (59)	Path for guided positioning too short
3Ch: (60)	Reset of position counter not possible (motor running)
3Dh: (61)	Turning to tdc after mains on not permitted
3Eh: (62)	System mark not recognised
3Fh: (63)	Target position < 3 incr. away from count position
40h - 4Fh -	
50h: (80)	Network control (failure of 2 network half waves)
51h: (81)	Error power electronics during initialization
52h: (82)	Short circuit in motor
53h: (83)	Mains voltage off recognized
54h: (84)	Error power electronics in operation
55h: (85)	No increments
56h: (86)	Motor blocked
57h: (87)	Commutation transmitter connector missing
58h: (88)	Increment transmitter connector missing
59h: (89)	Fault in motor running (target speed not reached)
5Ah: (90)	-
5Bh: (91)	Regulating algorithm blocked
5Ch - 69h -	
6Ah: (106)	EEPROM not programmable
6Bh: (107)	EEPROM missing
6Ch: (108)	Master reset carried out
6Dh: (109)	-
6Eh: (110)	Residual path for path-controlled, guided delay ramp too short
6Fh: (111)	Slave has received 5 successive garbled messages
70h: (112)	Time-out over
71h - FFh -	

14.02.05 Errors – Stepping motor drive

If problems occur with the stepping motor drive during the operation, an error might have occurred in the stepping motor controller.

The error message is indicated by LEDs on the stepping motor controller.

LED	Meaning
01 ROT. ERROR	goes out when <ul style="list-style-type: none">- the motor blocks- the stepping motor amplifier is not ready- the Enable input is not activated- a breakage has occurred in the supply and/or blocking detection line
06 READY	is lit up when <ul style="list-style-type: none">- the amplifier is driven correctly- the supplied voltage is in the rated range
07 FAULT	lights up if a short-circuit occurs between two motor phases
08 TEMP	lights up if the temperature at the cooling device is too high (>75°C)
09 OVER-VOLT	lights up if there is an over-voltage (>400 V) during braking
10 LOW-VOLT	lights up if there is a low voltage (< 200 V)
09 + 10	are lit if the Enable input is not activated

14.02.06 Errors - Stacker drive

If problems occur with the stacker drive during operation, an error might have occurred in the motor drive.

In this case, a flashing LED on the motor controller indicates the error.

H1 (yellow) flashes	Condition/ cause	Correction/ Comment
once _____ _____	processor error on again (Reset)	switch the mains off and back
twice _____ _____ low voltage	power off automatic reset	flashes until UZK <65V,
three times _____ _____ $I > 180\% I_N$ short-circuit	power off due to overcurrent	check drive/motor cable
four times _____ _____ acts as generator	overcurrent or motor check drive	check mains,
five times _____ _____	I^*t power off motor check drive	motor overloaded,
six times _____ _____ converter	I^*t power off frequency check drive	frequency converter overloaded,
seven times _____ _____	motor temperature too high motor overloaded	check bridge X5/10-11
eight times _____ _____ temperature too high	frequency converter check mounting conditions	frequency converter overloaded,
nine times _____ _____	Error in the EEPROM again (Reset)	switch mains off and on

14.03 List of outputs and inputs

14.03.01 CAN-Nodes 1

Output	Term	Function	Remark
OUT1	Y1U1	Pocket plate forwards	Impulse valve
OUT2	Y1U2	Pocket plate backwards	Impulse valve
OUT3	Y2U1	Pocket plate up	Impulse valve
OUT4	Y2U2	Pocket plate down	Impulse valve
OUT5	Y3	Pocket plate ventilation on	Valve
OUT6	K4	Stamp solenoid on	Solenoid
OUT7	K20	Pocket plate solenoid on	Solenoid
OUT8	Y5U1	Folder up	Impulse valve
OUT9	Y5U2	Folder down	Impulse valve
OUT10	Y6	Corner slide forwards	Valve
OUT11	Y7	Folder slide 1 forwards	Valve
OUT12	Y8	Folder slide 2 forwards	Valve
OUT13	Y9	Folder slide 3 forwards	Valve
OUT14	Y10	Suction air on	Valve
OUT15	Y35U1	Jig up	Impulse valve
OUT16	Y35U2	Jig down	Impulse valve

Input	Term	Function
IN1	E1U1	Pocket plate at front
IN2	E1U2	Pocket plate at back
IN3	E2U2	Pocket plate down
IN4		
IN5		
IN6	E5U1	Folder up
IN7	E5U2	Folder down
IN8	TSAUG	Key suction
IN9	TDOPP1	Double start key 1
IN10	TDOPP2	Double start key 2
IN11	E35U1	Jig up
IN12	E35U2	Jig down
IN13	PRESS	Compressed air ok
IN14	FKEY	Key (for secured functions)
IN15	TSSTOP	Separate stop key
IN16	AC_OK	Undervoltage monitoring

14.03.02 CAN-Nodes 2

Output	Term	Funktion	Remark
OUT1	Y30	Sewing foot down, thread clamp open	Valve
OUT2	Y31U1	Raise sewing head	Impulse valve
OUT3	Y31U2	Lower sewing head	Impulse valve
OUT4	K32	Thread tension on	Solenoid
OUT5	Y34	Blower needle cooling on	Valve
OUT6	Y36	Zig-zag on (prog. Outlet 3)	Valve
OUT7	Y37	Secondary thread tension on (prog. Outlet 5)	Valve
OUT8	Y38	ready made flaps ` c TRcX` d]ZUV	Valve
OUT9	Y50	Roller down	Valve
OUT10	Y51	Clamp strap open	Valve
OUT11	Y52	Stacker frame back	Valve
OUT12	Y33	Thread trimming on	Valve
OUT13	OUT1	Programmable outlet 1	Dig. Signal
OUT14	OUT2	Programmable outlet 2	Dig. signal
OUT15	Y39	Bobbin cover open (with vertical hook)	Valve
OUT15	Y39U2	Bedplate up (with horizontal hook)	Impulse valve
OUT16	Y39U1	Bedplate down (with horizontal hook)	Impulse valve

Input	Term	Function
IN1	E30	Sewing foot raised
IN2	E31U1	Sewing head raised
IN3	E31U2	Sewing head lowered
IN4	THERR	Needle thread error
IN5	IN1	Programmable inlet 1
IN6	IN2	Programmable inlet 2
IN7	E39U2	Bedplate up (with horizontal hook)
IN8	E39U1	Bedplate down (with horizontal hook) Bobbin cover closed (with vertical hook)
IN9	E50U1	Roller down
IN10	E50U2	Roller up
IN11		
IN12		
IN13	E52	Stacker frame back
IN14	SM1LI- MIT	Zero position SM1
IN15	SM2LI- MIT	Zero position SM2
IN16	E62	Deflector down (cargo)

14.03.03 CAN-Nodes 3

Output	Term	Funktion	Remark
OUT1			
OUT2	Y11	Label holding jig open (with manual label feed) Swing folder slide 3 (with folder slide 4)	Valve
OUT3	Y12U1	Flap position off or var. sewing slit narrow	Impulse valve
OUT4	Y12U2	Flap position on or var. sewing slit wide	Impulse valve
OUT5			
OUT6	BOBRES	Reset for bobbin thread monitor	Dig. Signal
OUT7			
OUT8	Y40	Hook lubrication on	Valve
OUT9	STR	Start stacker motor clockwise rot.	Dig. Signal
OUT10	STL	Start stacker motor anti-clockwise rot.	Dig. Signal
OUT11	S1IND	Stacker motor frequency 1	Dig. Signal
OUT12	S2IND	Stacker motor frequency 2	Dig. Signal
OUT13	K53	Stand height adjustment on	Relay
OUT14	Y60	Swing in deflector (cargo)	Valve
OUT15	Y61	Deflector forwards (cargo)	Valve
OUT16	Y62	Deflector down (cargo)	Valve

Input	Term	Funktion
IN1	jigcode	Jig code bit 0
IN2	jigcode	Jig code bit 1
IN3	jigcode	Jig code bit 2
IN4	jigcode	Jig code bit 3
IN5	jigcode	Jig code bit 4
IN6	jigcode	Jig code bit 5
IN7	jigcode	Jig code bit 6
IN8	jigcode	Jig code bit 7
IN9	BOBERR	Bobbin thread error
IN10		
IN11		
IN12	ETINKL	Label in clamp, man. label feed
IN13	E14	Jig with obstacles
IN14	E12U2	Flap pos. switched off or sewing slit wide
IN14	E12U1	Flap position activated (for flap version 2)
IN15	E54U1	Stand up
IN16	E54U2	Stand down

14.03.04 Special outputs

Term	Funktion	Remark
S1	Stacker motor forwards slowly	
S2	Stacker motor backwards slowly	
S3	Stacker motor forwards quickly	
S4	Stand up	
S5	Stand down	

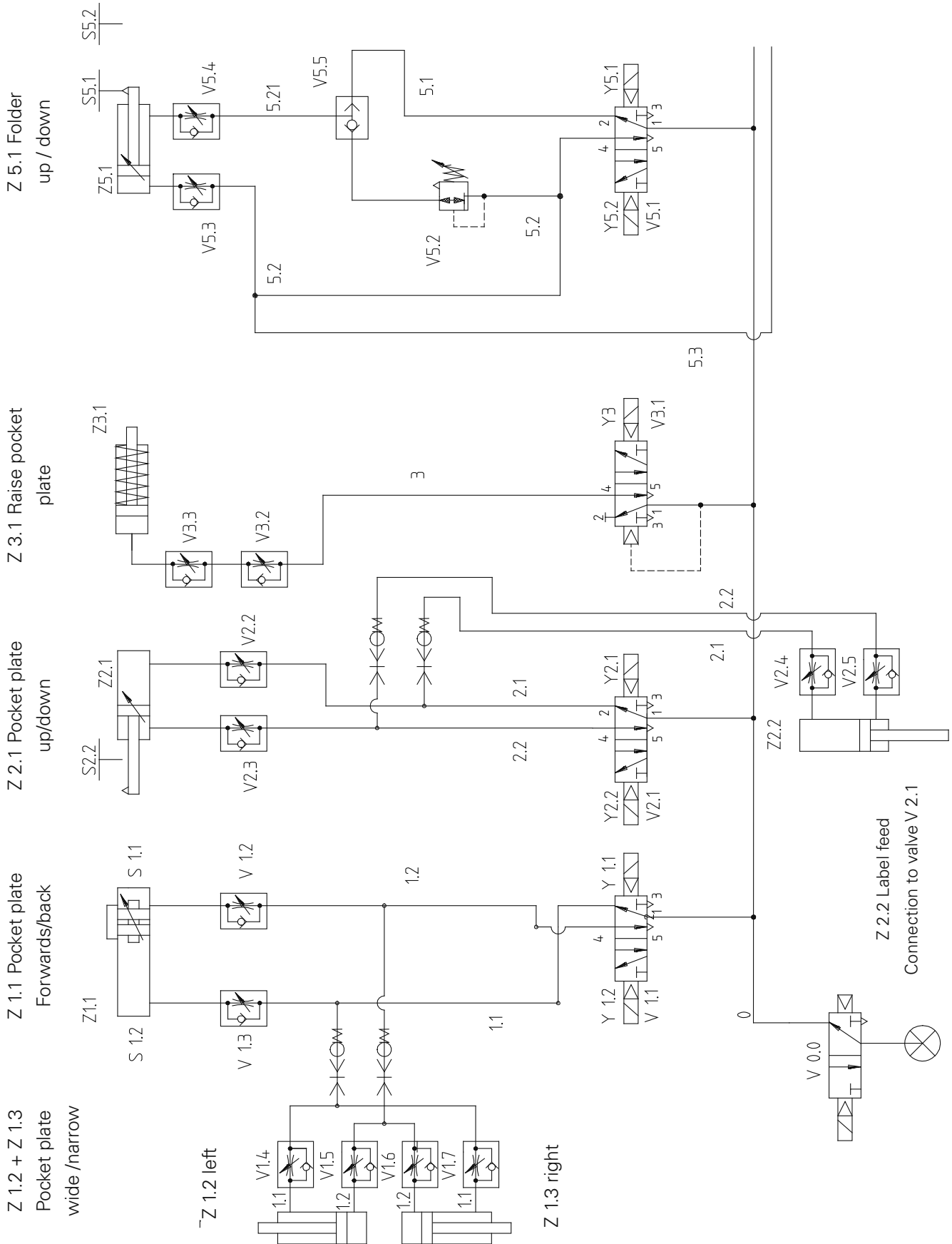
14.04 Boot key

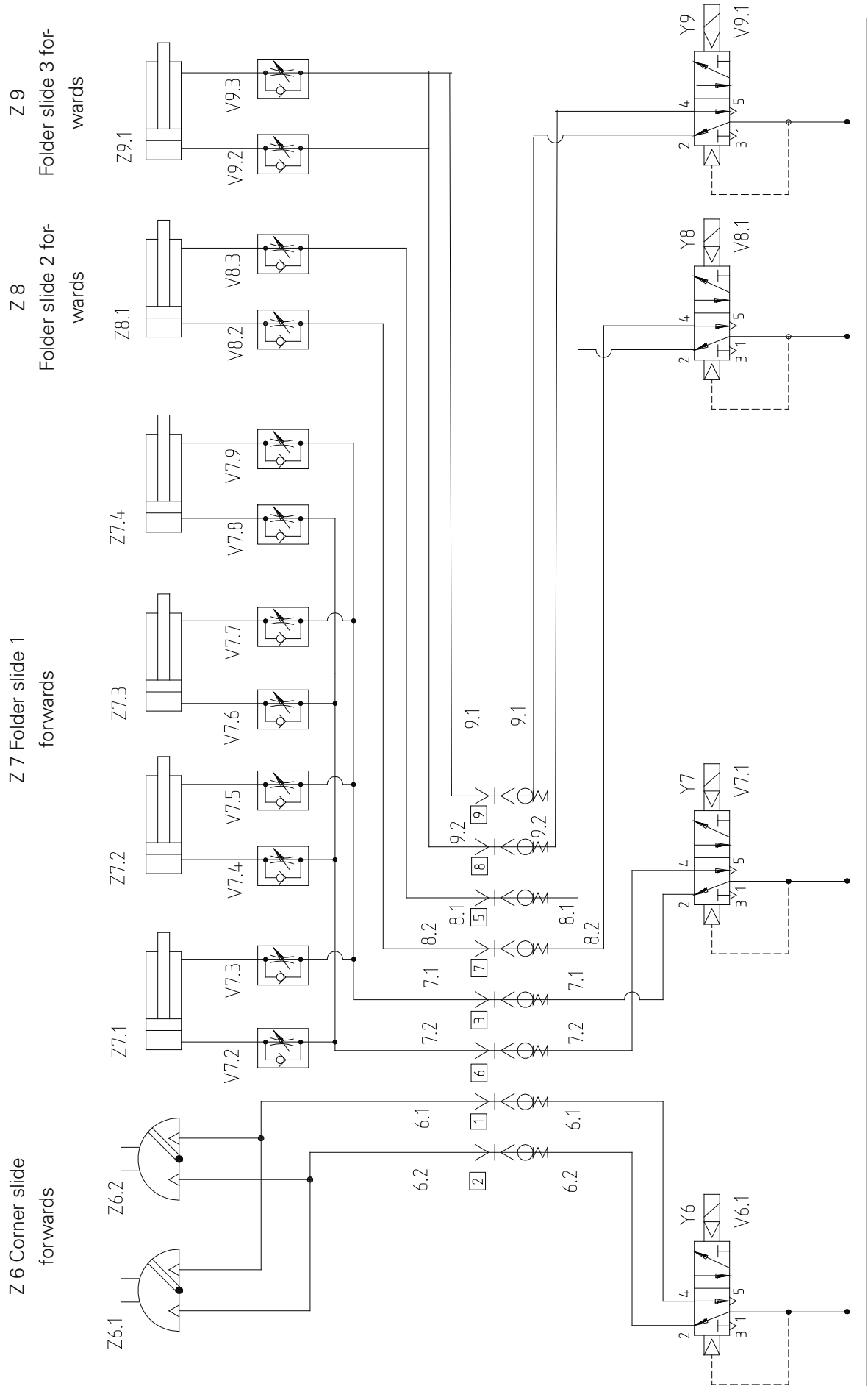


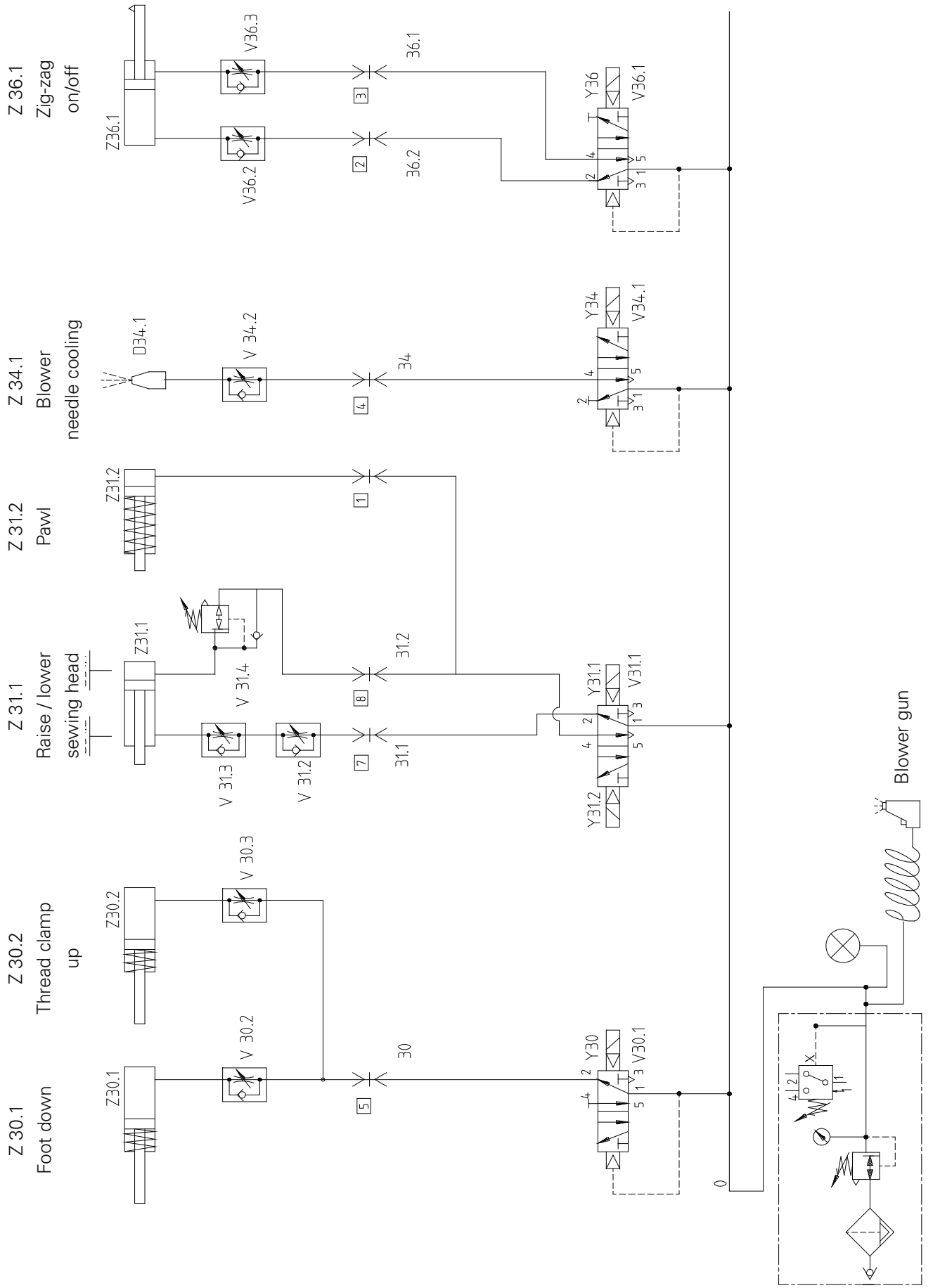
This work may only be carried out by properly instructed personnel!
 Do not touch any live parts!
 Danger to life through electric voltage!

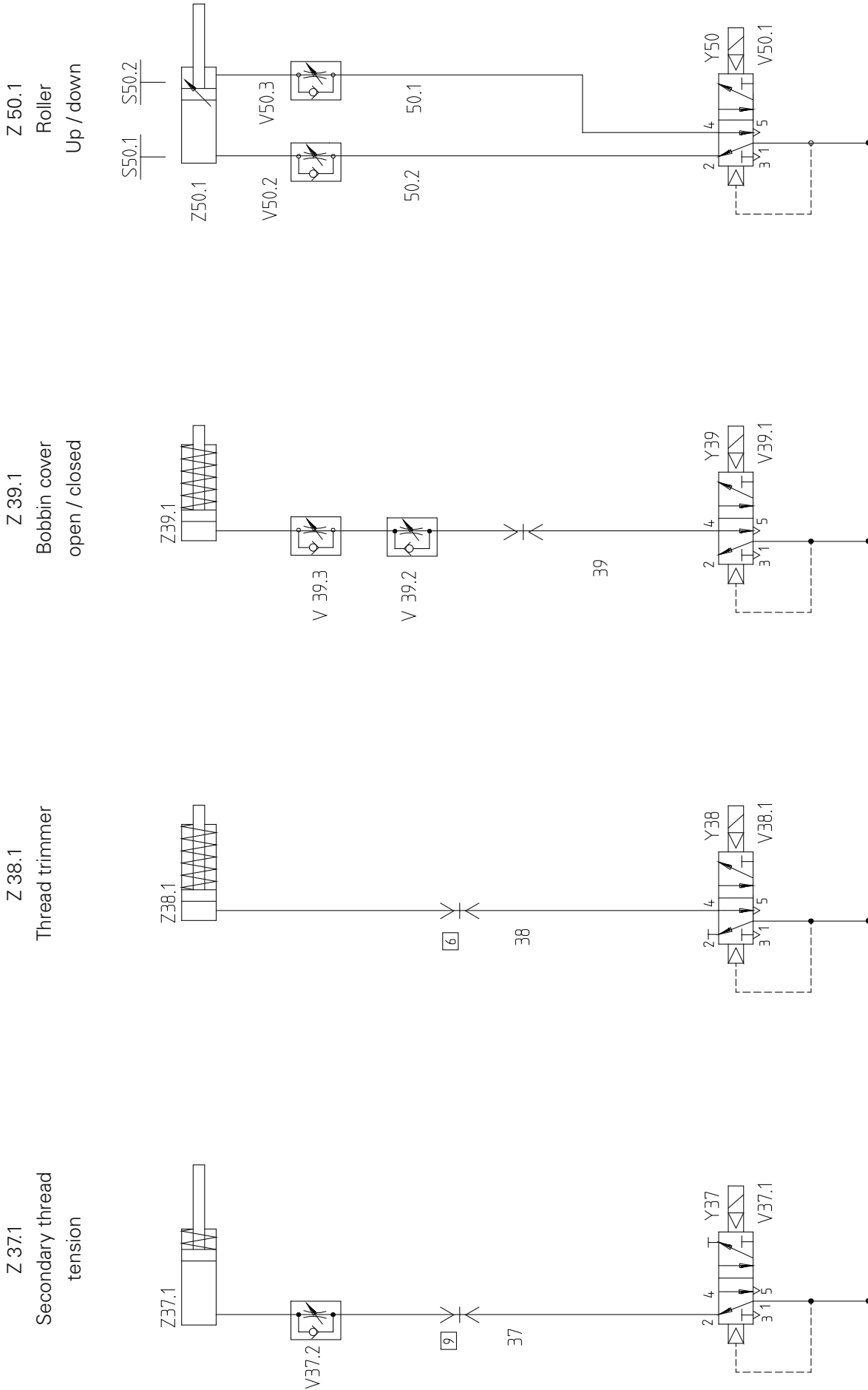
15 Pneumatics-switch diagram

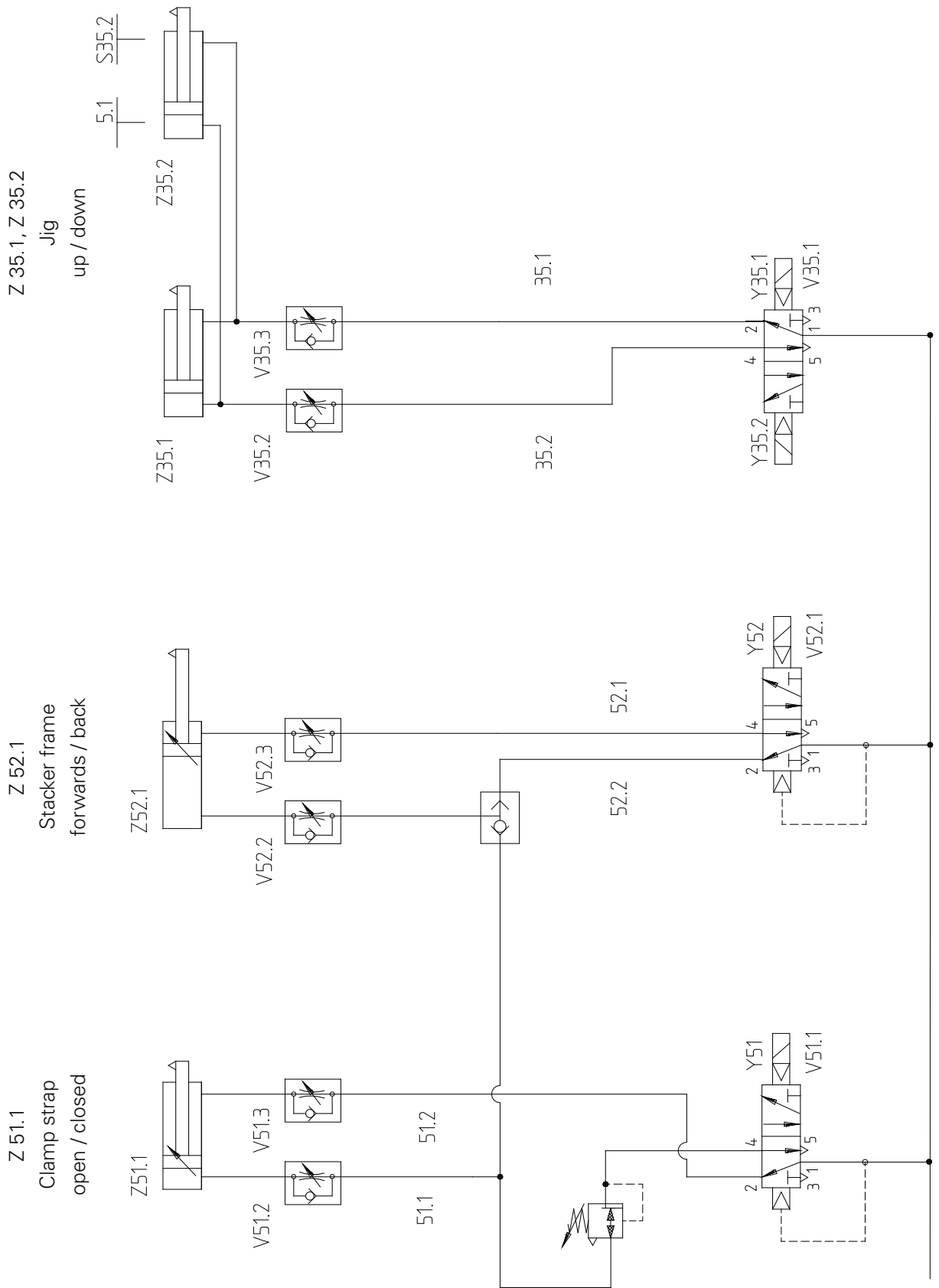
The control elements and valves are in the machine's basic position. Main switch -ON, compressed air -ON

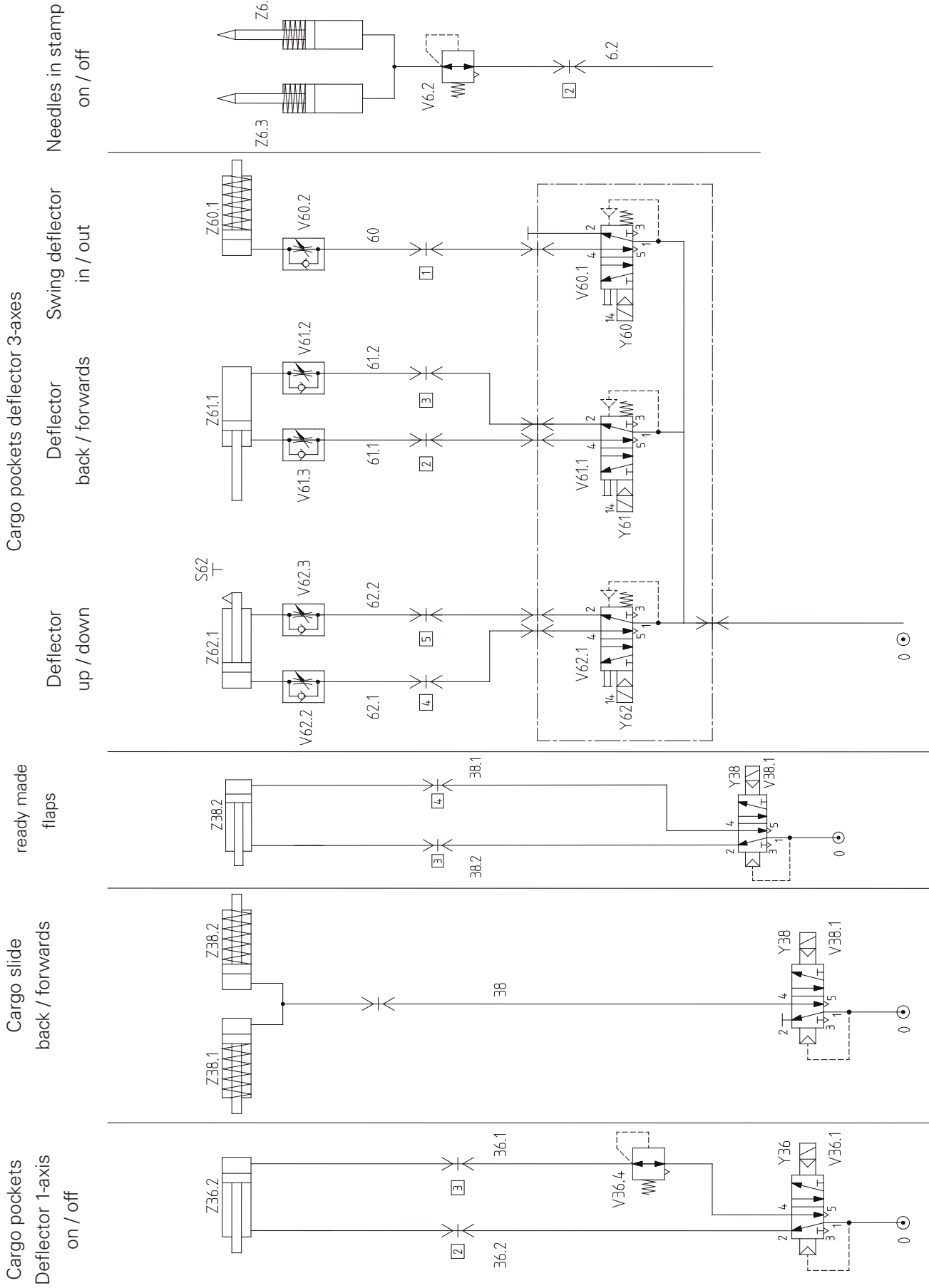












16 Circuit diagrams

Reference list for circuit diagrams

M1	Stepping motor 1
M2	Stepping motor 2
M3	Sewing motor
M4	Stacker motor
M5	Height-adjustment motor
M6	Suction motor
M7	Ventilator control cabinet
A11	CAN node 1
A12	CAN node 2
A13	CAN node 3
A20	Controller BS 3
A21	Stepping motors end phase (dual output amplifier)
A22	Sewing motor, end phase
A23	Synchronizer
A24	Needle thread monitor, monitoring results
A25	Needle thread monitor, sensor
A26	Control panel
A42+A43	Stepping motors end phase (two individual output amplifiers) Rotary switch motor current, setting B = 5.4.A
	Description of LEDs <ol style="list-style-type: none"> 1 DC bus live 2 Operational, power amplifier authorised, motor live 3 Short circuit between 2 motor phases or against protective earth 4 Static = excessive power amplifier temperature, blinking = excessive motor temperature 5 Overvoltage (DC bus > 420VDC) 6 Undervoltage (DC bus > 180VDC) 7 Error message on rotation monitoring 8 Encoder connected and operational 5+6 Power amplifier deactivated, motor currentless 3 - 6 Frequency too high at signal point
A60	Frequency converter
K4	Stamp solenoid
K32	Thread tension is released
K53	Switching relay, height adjustment / stacker
K54	Voltage supervision relay
Z1	Line filter
E1	Sewing lamp
T1	Transformer for sewing lamp
C1	Capacitor for M6 (-4/01)
Q1	On/off switch

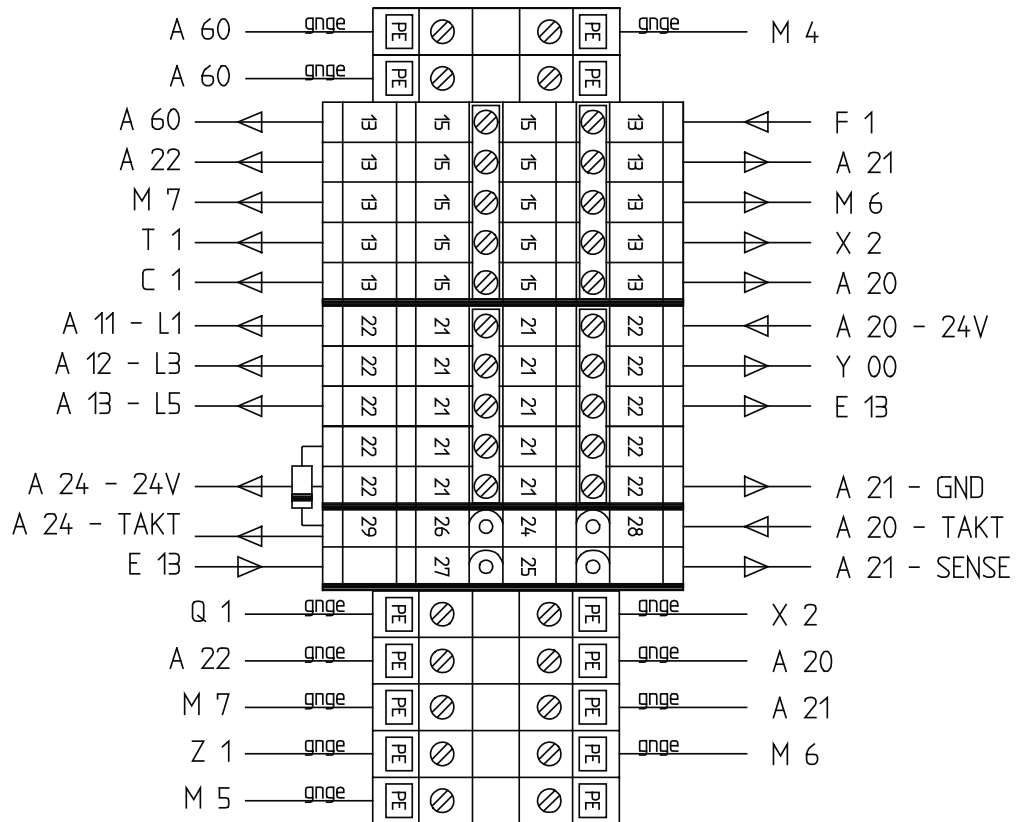
Inputs

E1.1	Pocket plate at front
E1.2	Pocket plate at rear
E2.2	Pocket plate down
E5.1	Folder up
E5.2	Folder down
E12.2	Flap position off / sewing slit wide
E13	Linkage monitoring
E14	Jig with obstacles
E30	Presser foot up
E31.1	Sewing head lifted
E31.2	Sewing head lowered
E35.1	Jig up
E35.2	Jig down
E39	Bobbin cover closed
E39.1	Bedplate down
E39.2	Bedplate up
E50.1	Roller down
E50.2	Roller up
E52	Stacker frame at front
E54.1	Frame up
E54.2	Frame down
E62	Deflector down
in1	Programmable input 1
in2	Programmable input 2
sm1limit	Neutral position SM1
sm2limit	Neutral position SM2
tdopp1	Double-start key 1
tdopp2	Double-start key 2
tsaug	Suction key (foot switch)
press	Air pressure OK
fkey	Key (for secured functions)
tsstop	Separate stop key
therr	Needle thread disturbance
boberr	Bobbin thread disturbance
eterr	Label feed error
etrdy	Label feed completed
etinkl	Label in clamp
jigcode	Jig code

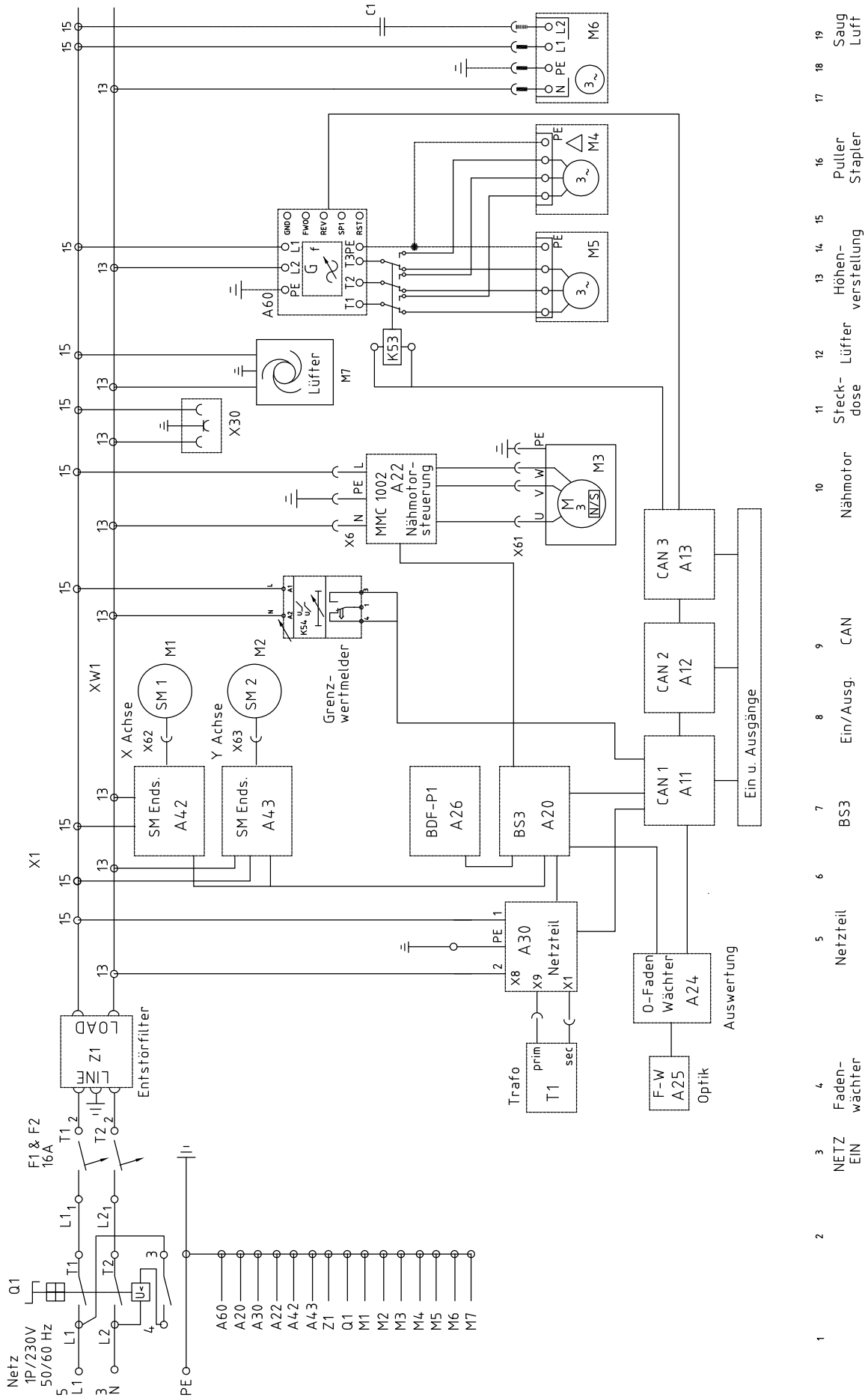
X1	Distribution strip 230 V and 24 V
X10	Neutral position SM1
X11	Neutral position SM2
X12	Feed roller down (stacker)
X13	Feed roller up (stacker)
X15	Central electric plug sewing head
X16	E31.1 (sewing head lifted)
X17	E31.2 (sewing head lowered)
X18	K32 (Thread tension is released)
X19	tdopp1 and tdopp2 (double-start keys)
X20	E54.1 and E54.2 (frame up/down)
X21	Foot switch - suction key (tsaug)
X22	M6 (suction motor)
X23	M5 (height adjustment)
X24	E1.1 (folder)
X25	E1.2 (folder)
X26	E2.2 (folder)
X27	E4.1 (folder)
X28	E4.2 (folder)
X29	E5.1 (folder)
X30	E5.2 (folder)
X31	E39 (bobbin cover opens)
X32	Rotor position
X33	Sewing motor
X34	Press (air filter/lubricator unit)
X35	Linkage monitoring
X36	Key for secured function (fkey (
X37	E13 (linkage monitoring)
X38	Separate stop key
X39	E35.2 jig down
X40	E35.1 jig up
X41	Label in clamp (etinkl)
X42	E12.2 Flap positioning / variable sewing slit
X43	E12.2 Flap positioning / variable sewing slit

Outputs

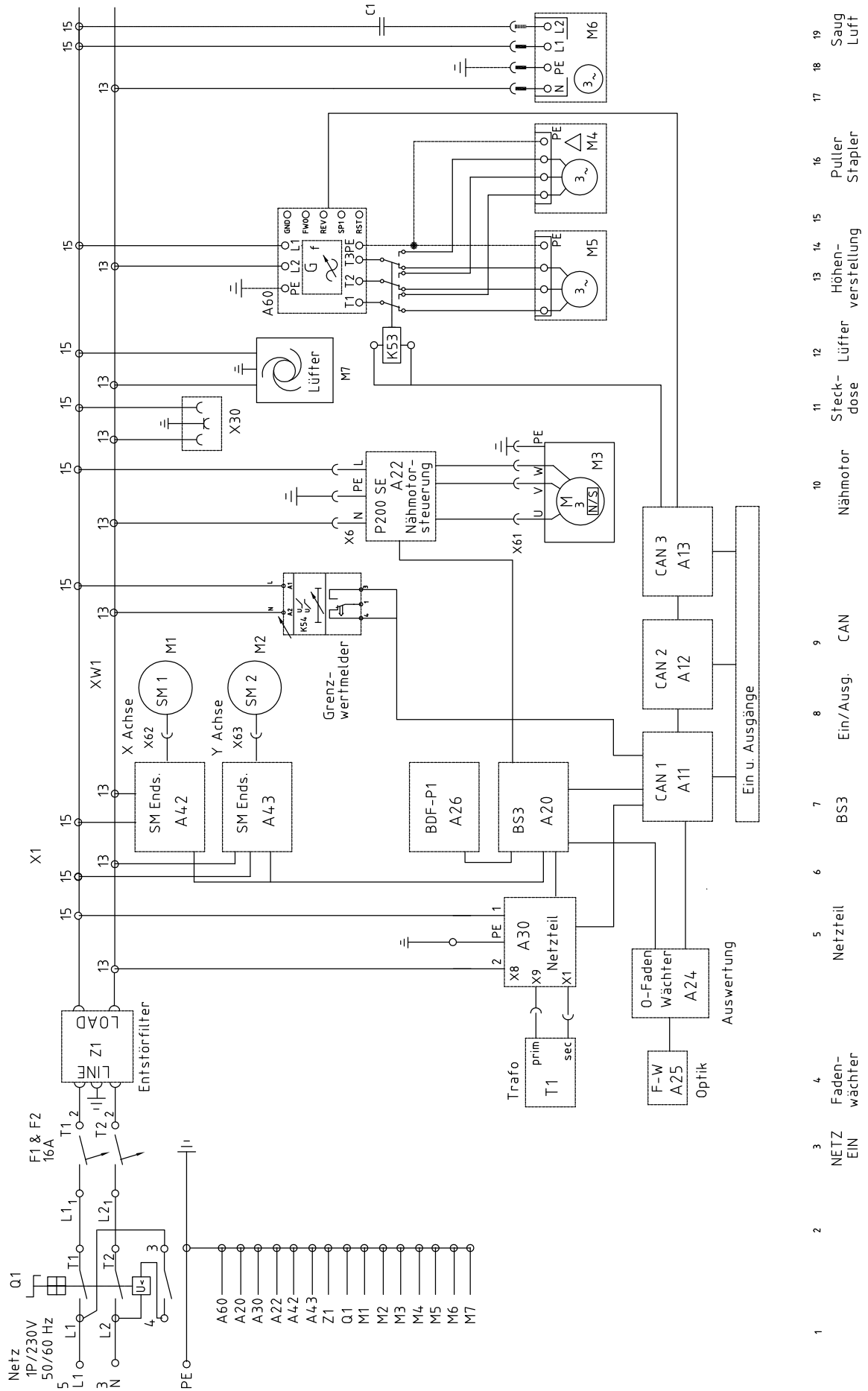
Y1.1	Pocket plate at front
Y1.2	Pocket plate at back
Y2.1	Pocket plate on
Y2.2	Pocket plate off
Y3	Pocket plate ventilation on
Y5.1	Folder up
Y5.2	Folder down
Y6	Corner folder at front
Y7	Edge folder 1 at front
Y8	Edge folder 2 at front
Y9	Edge folder 3 at front
Y10	Suction on
Y11	No pressure on label retaining clamp, or it is open
Y12.1	Flap positioning on / var. sewing slit narrow
Y12.2	Flap positioning off / var. sewing slit wide
Y30	Presser foot up / Thread trapper up
Y31.1	Raise head (arm)
Y31.2	Lower head (arm)
K32	Thread tension release on (Thread tens. up)
K33	Thread cutting on (vertical hook system)
Y33	Thread cutting on (horizontal hook system)
Y34	Air blast / needle cooling on
Y36	Zigzag on (programmable output 3)
Y37	Secondary thread tension (prog. output 4)
Y38	Ready made flaps or cargo slide
Y39	Bobbin cover open
Y39.1	Bedplate off
Y39.2	Bedplate on (tilt)
Y40	Oiling on
Y50	Roller off
Y51	Clamp strap on
Y52	Stacker stand at front
K53	Frame height adjustment on
A60.3	LUST-converter "STR"
A60.4	LUST-converter "STL"
A60.5	LUST-converter "S1 ind"
A60.6	LUST-converter "S2 ind"
A60.7	LUST-converter "GND"
A60.3	Peter-converter "STR"
A60.4	Peter-converter "STL"
A60.6	Peter-converter "S1 ind"
A60.7	Peter-converter "S2 ind"
A60.10	Peter-converter "GND"



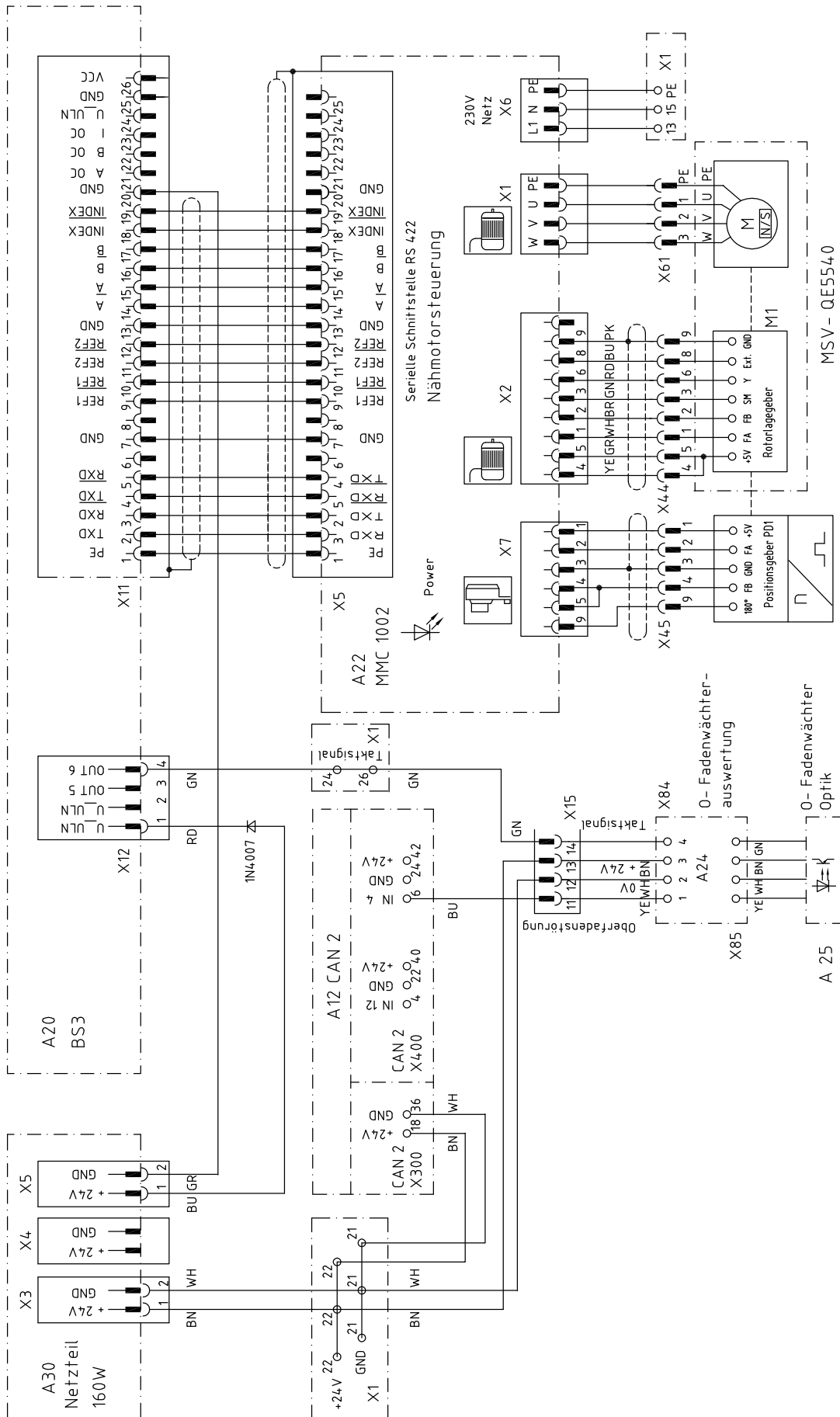
13 = N (230V)
 15 = L (230V)
 21 = GND (24V)
 22 = +24V



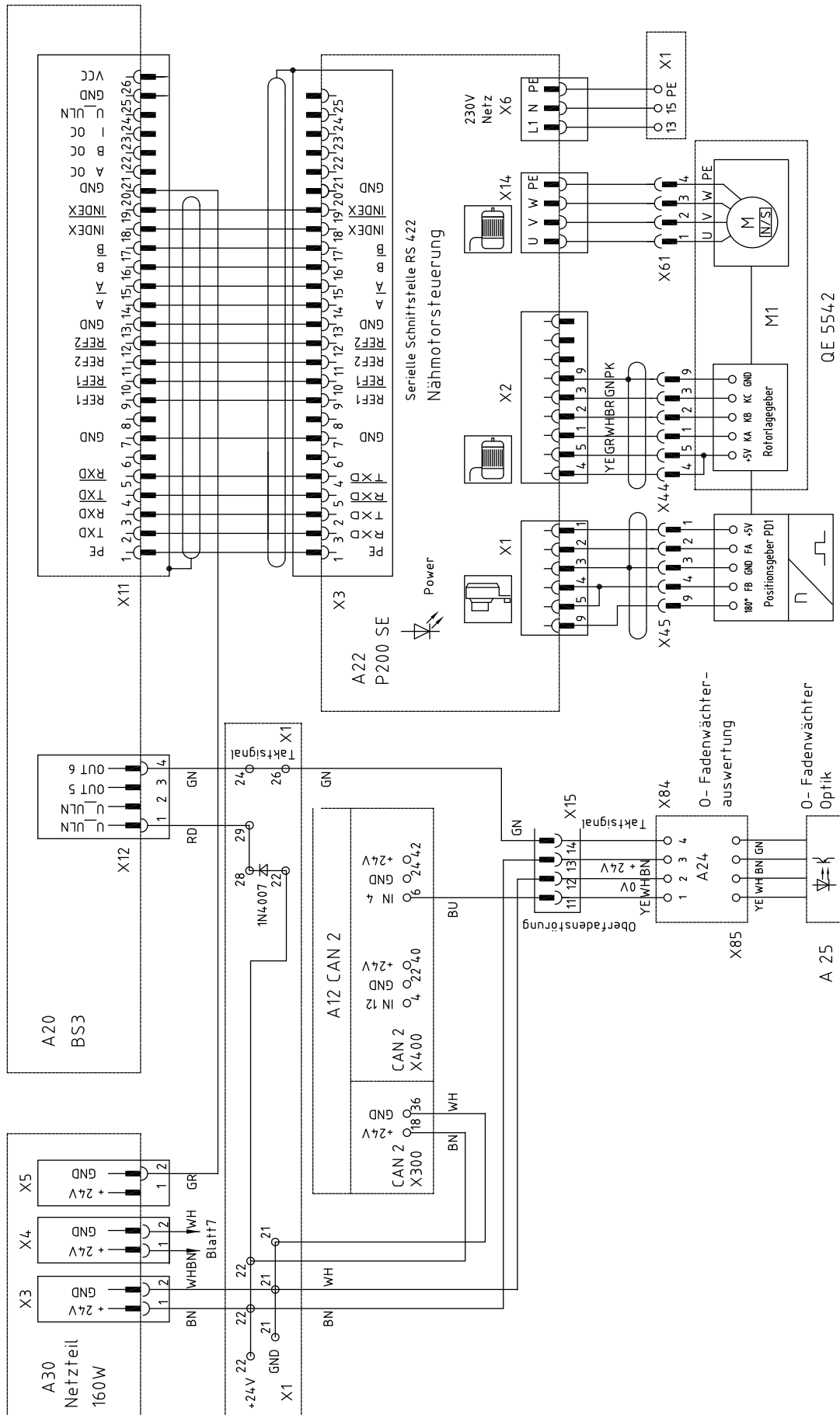
- 1
- 2
- 3 NETZ EIN
- 4 Fadenwächter
- 5 Netzteil
- 6
- 7 BS3
- 8 Ein/Ausg.
- 9 CAN
- 10 Nähmotor
- 11 Steckdose
- 12 Lüfter
- 13 Höhenverstellung
- 14
- 15
- 16 Puller Stapler
- 17
- 18 Saugluft
- 19



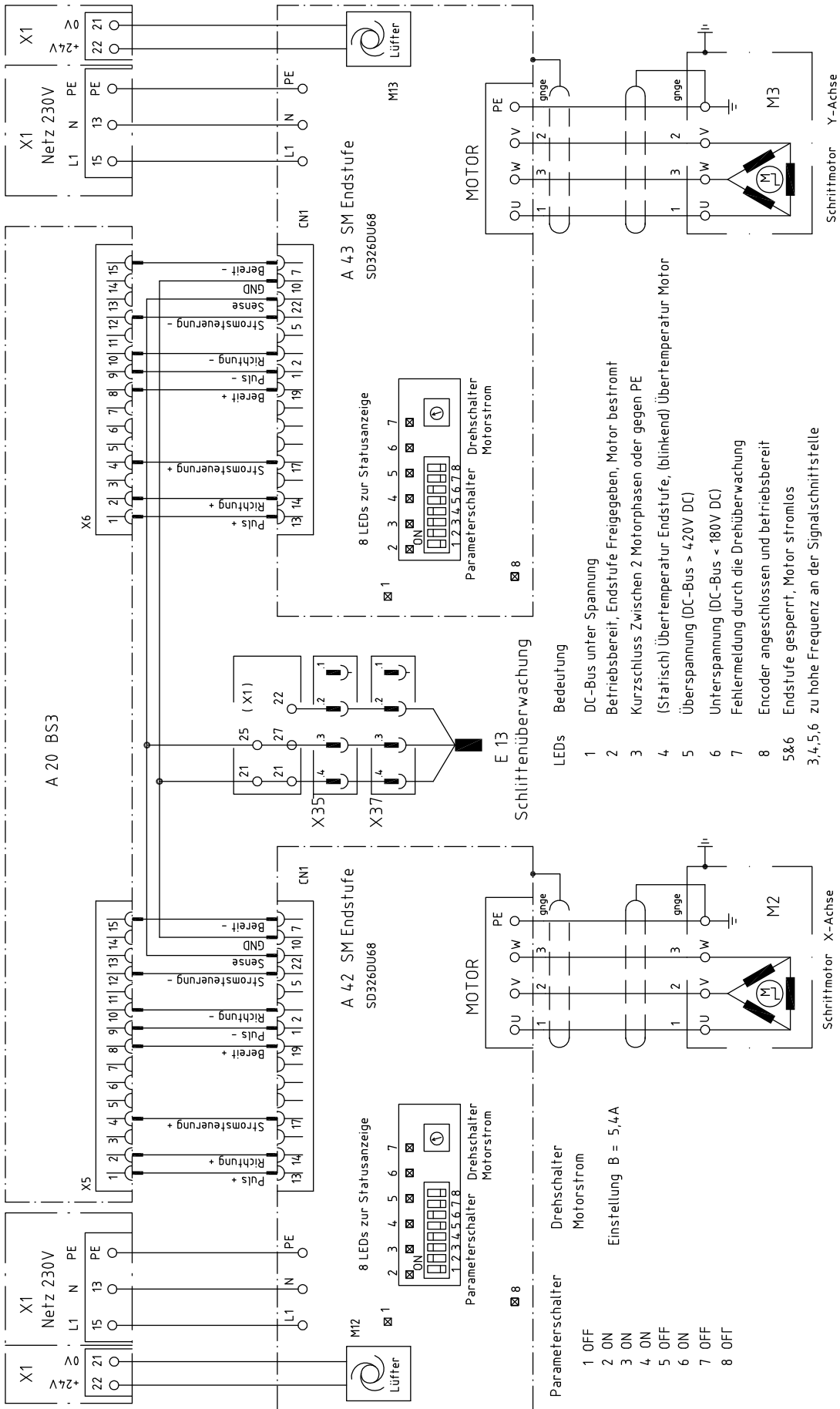
- 1
- 2
- 3 NETZ EIN
- 4 Fadenwächter
- 5 Netzteil
- 6
- 7 BS3
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- 10 Nähmotor
- 11 Steckdose
- 12 Lüfter
- 13 Höhenverstellung
- 14
- 15 Puller Stapler
- 16
- 17
- 18 Saugluft
- 19

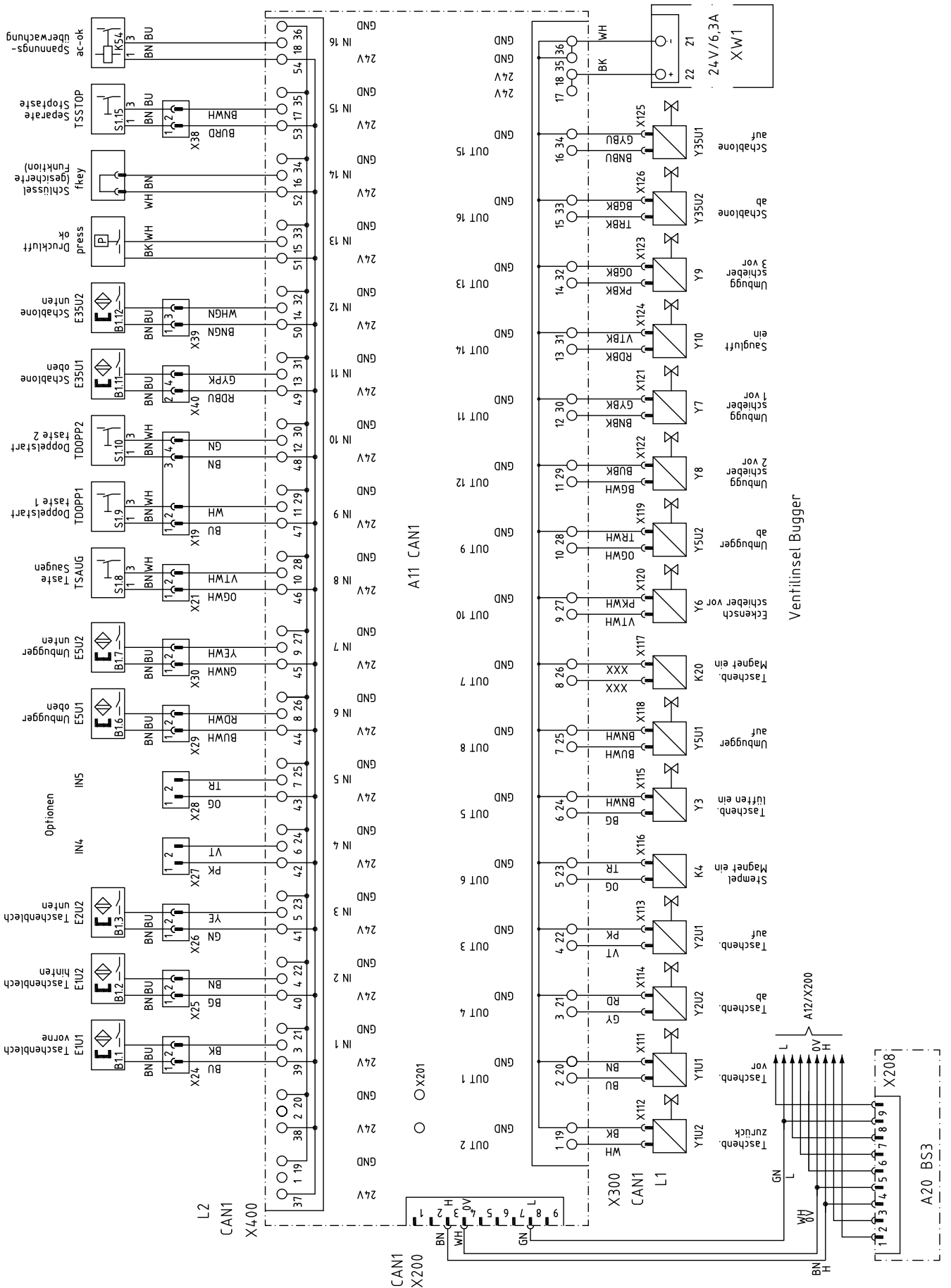


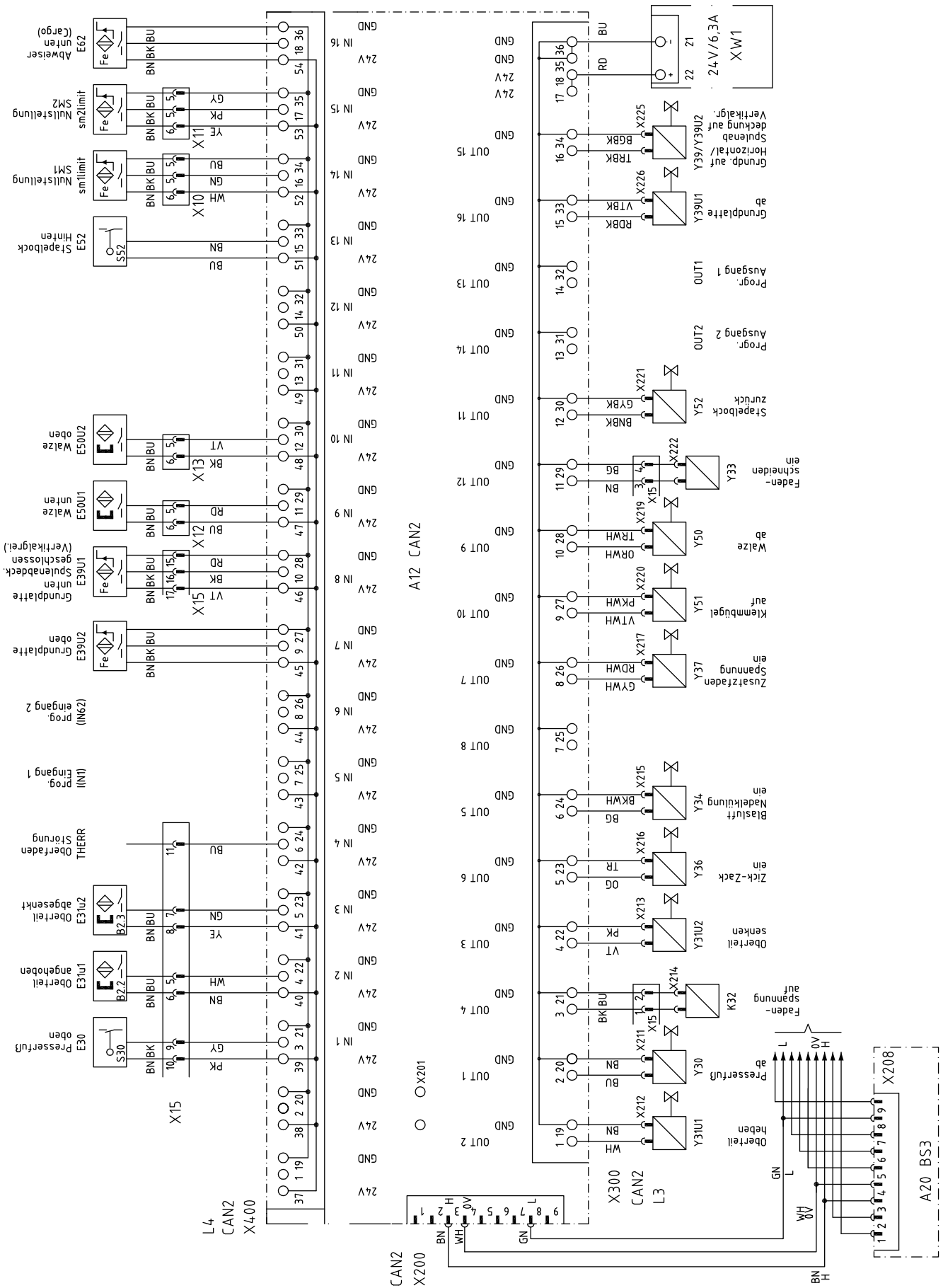
Nähtrieb MMC 1002; QE5540 und Fadenwächter

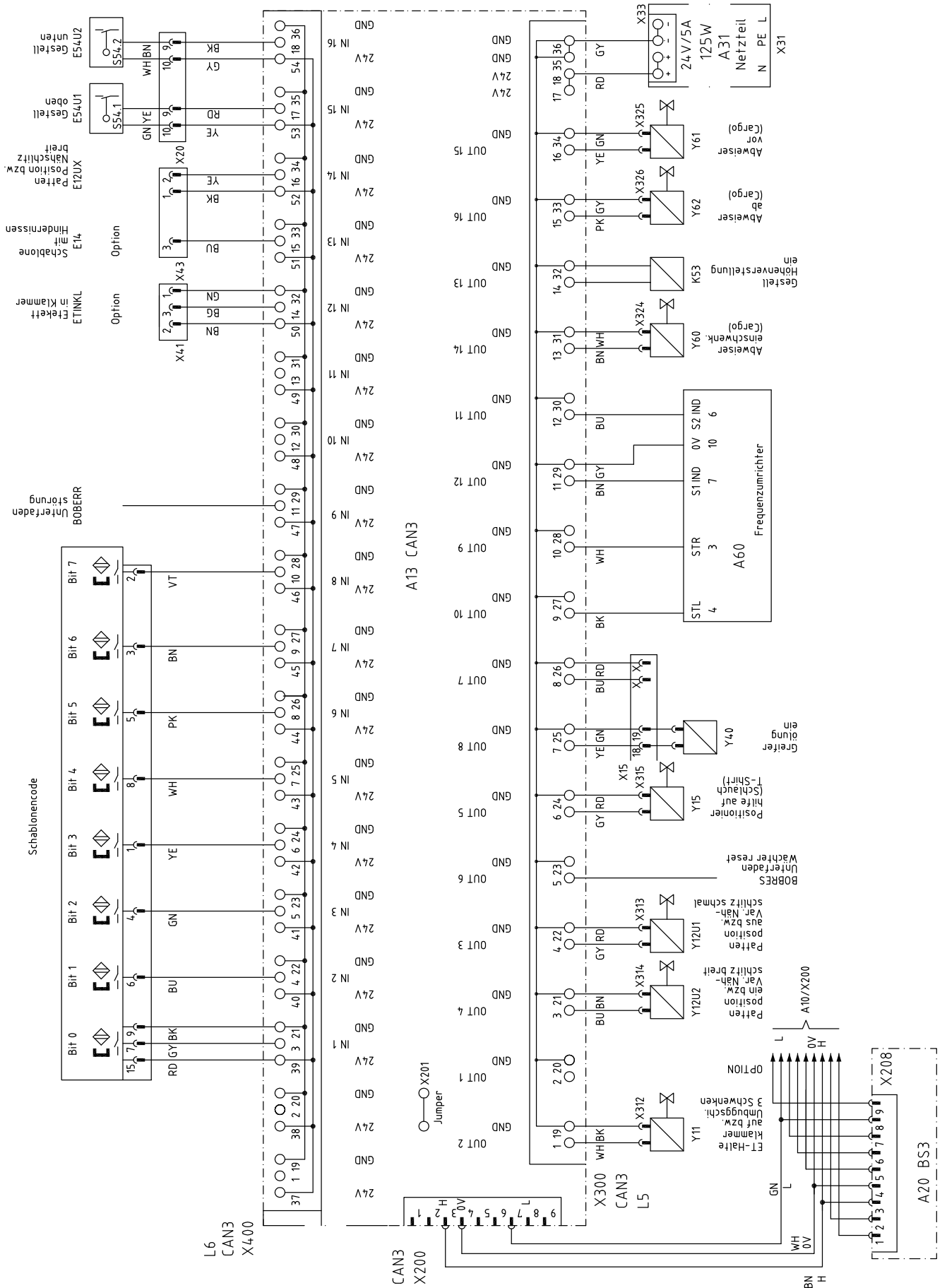


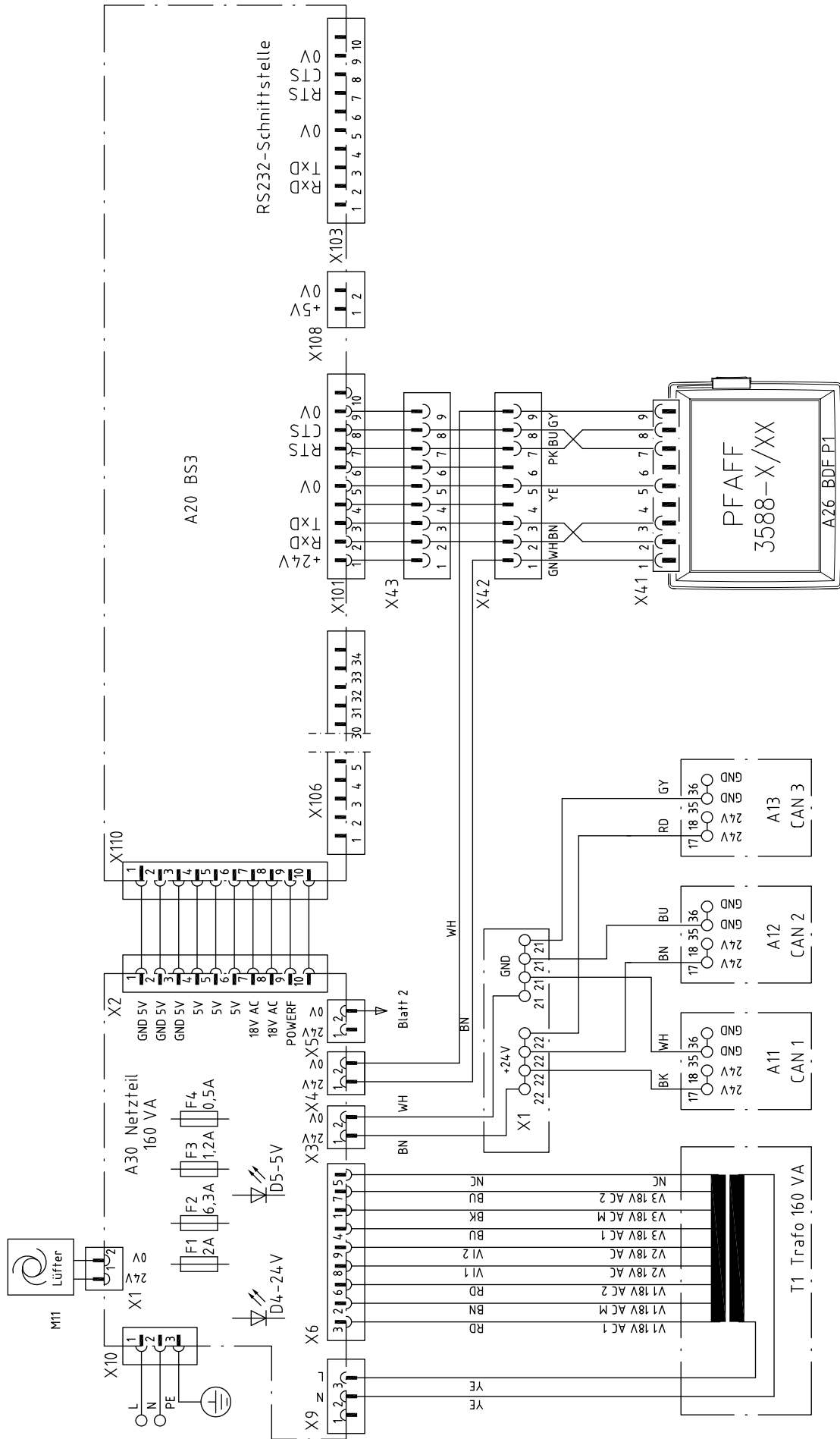
Nähtrieb P200 SE; QE 5542 und Fadenwächter

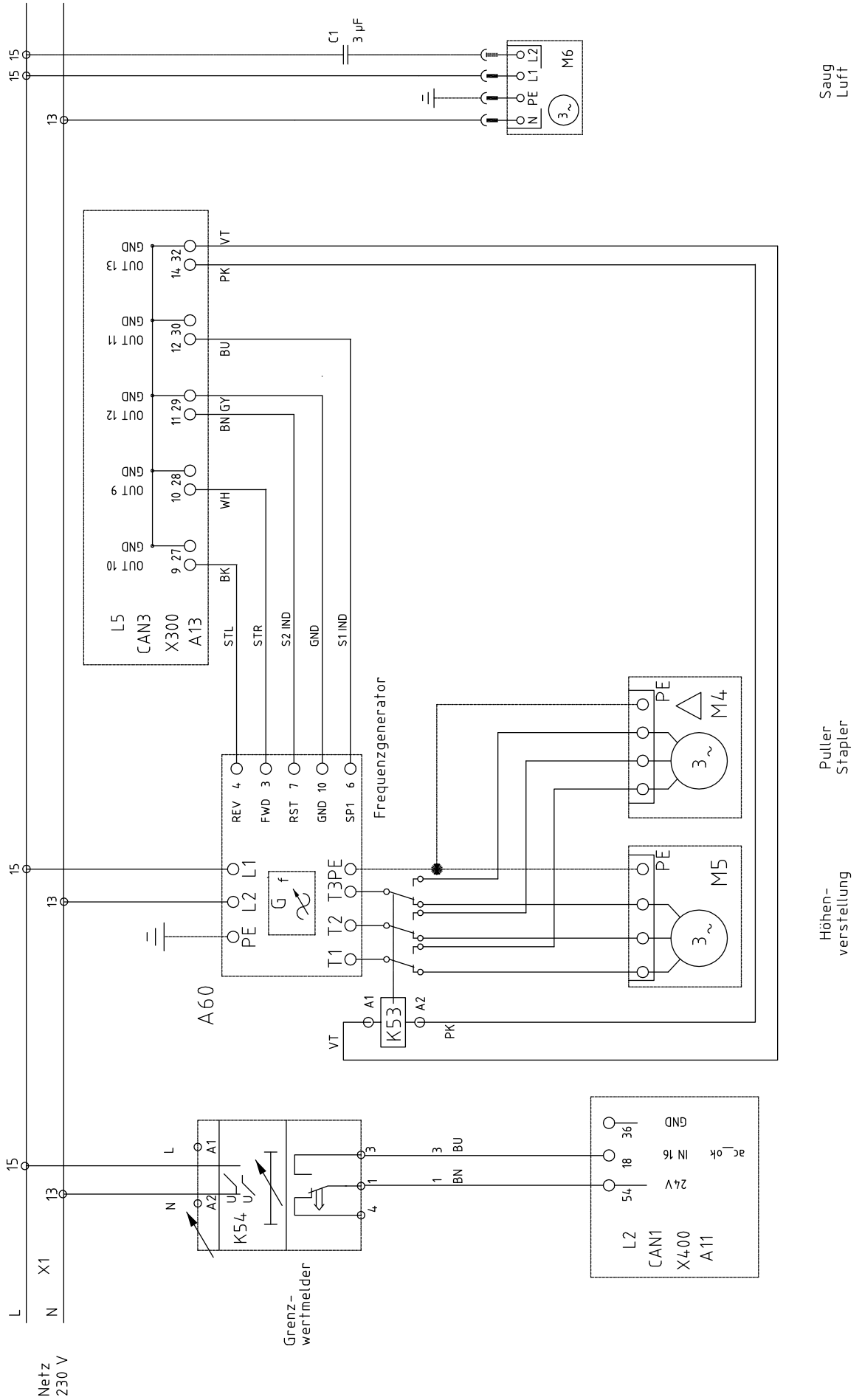














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