PFAFF® Industrial

8330

INSTRUCTION MANUAL

This instruction manual applies to machines from the following serial numbers onwards:
2 751 800 →

296-12-18 969/002
Betriebsanleitung engl. 04.11

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und Maschinen AG

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1 Safety

1.01 Directives

This machine is constructed in accordance with the European regulations indicated in the conformity and manufacturer's declarations.
In addition to this instruction manual, please also observe all generally accepted, statutory and other legal requirements, including those of the user's country, and the applicable pollution control regulations! The valid regulations of the regional social insurance society for occupational accidents or other supervisory authorities are to be strictly adhered to!

1.02 General notes on safety

- The machine may only be operated by adequately trained operators and only after these have read the appropriate Instruction Manual!
- The danger and safety instructions attached to the machine must be followed!
- The machine may only be used for the purpose intended and may not be operated without its safety devices. All relevant safety regulations must be adhered to.
- When changing the feed rollers or the hot air nozzle, when leaving the machine unattended or during maintenance work, the machine must be disconnected from the power supply by operating the main switch or by pulling out the plug!
- The daily maintenance work may only be carried out by appropriately trained personnel!
- During repair and maintenance work on pneumatic devices the machine must be disconnected from the pneumatic supply system! The only exceptions permitted are during adjustment work and function tests carried out by appropriately trained personnel!
- Repairs and special maintenance work may only be carried out by qualified service staff or appropriately trained personnel!
- Work on electrical equipment may only be carried out by appropriately trained personnel!
- Work is not permitted on parts and equipment which are connected to the power supply! Exceptions to this 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 operations!
- Only spare parts which have been approved by us are to be used for repairs! We draw special attention to the fact that spare parts and accessories not supplied by us have not been subjected to testing nor approval by us. Fitting and/or use of any such parts may cause negative changes to the design characteristics of the machine. We shall not accept any liability for damage caused by the use of non-original parts.

1.03 Safety symbols



Danger!
Special points to observe.



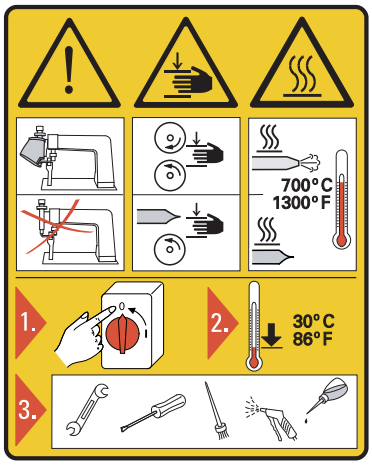
Danger of hands being crushed!



Danger of burns from hot surface!



Danger from electric voltage!



Caution

Do not operate without finger guard and safety devices.

Turn off the main switch and let the **machine cool down** before any setting up, maintenance or cleaning work!

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.
- The user must make sure there is no high-frequency welding equipment being operated in direct proximity to the machine that exceeds the EMC limit values according to EN 60204-31 for the machine.

For further information please refer to your PFAFF agency.

1.05 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 removing any disturbances in the sewing area.

The operating staff is obliged to observe the following points, and must:

- always observe the notes on safety in this instruction manual!
- avoid using any working methods which adversely affect the safety of the machine!
- avoid wearing loose-fitting clothing or jewelry such as necklaces or rings!
- also ensure that only authorized persons are allowed near the danger area of the machine!
- immediately report to the user any changes to the machine that may affect its safety!

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 and repairing the machine.

The technical staff is obliged to observe the following points, and must:

- always observe the notes on safety in this instruction manual!
- switch off the on/off switch before carrying out any maintenance and repair work on the machine!
- never work on parts or equipment still connected to the power supply! Exceptions to this are only permissible according to regulations EN 50110.
- replace all safety covers after maintenance and repair work!

1.06 Danger

When the machine is in operation, a work area of 1 m must be kept free in front of and behind the machine, so that access to the machine is possible at all times without difficulty.

If toxic vapours occur during processing, use extractor (extraction funnel, part no. 95-255 841-71/895)!
Danger to health if the toxic vapours are inhaled!

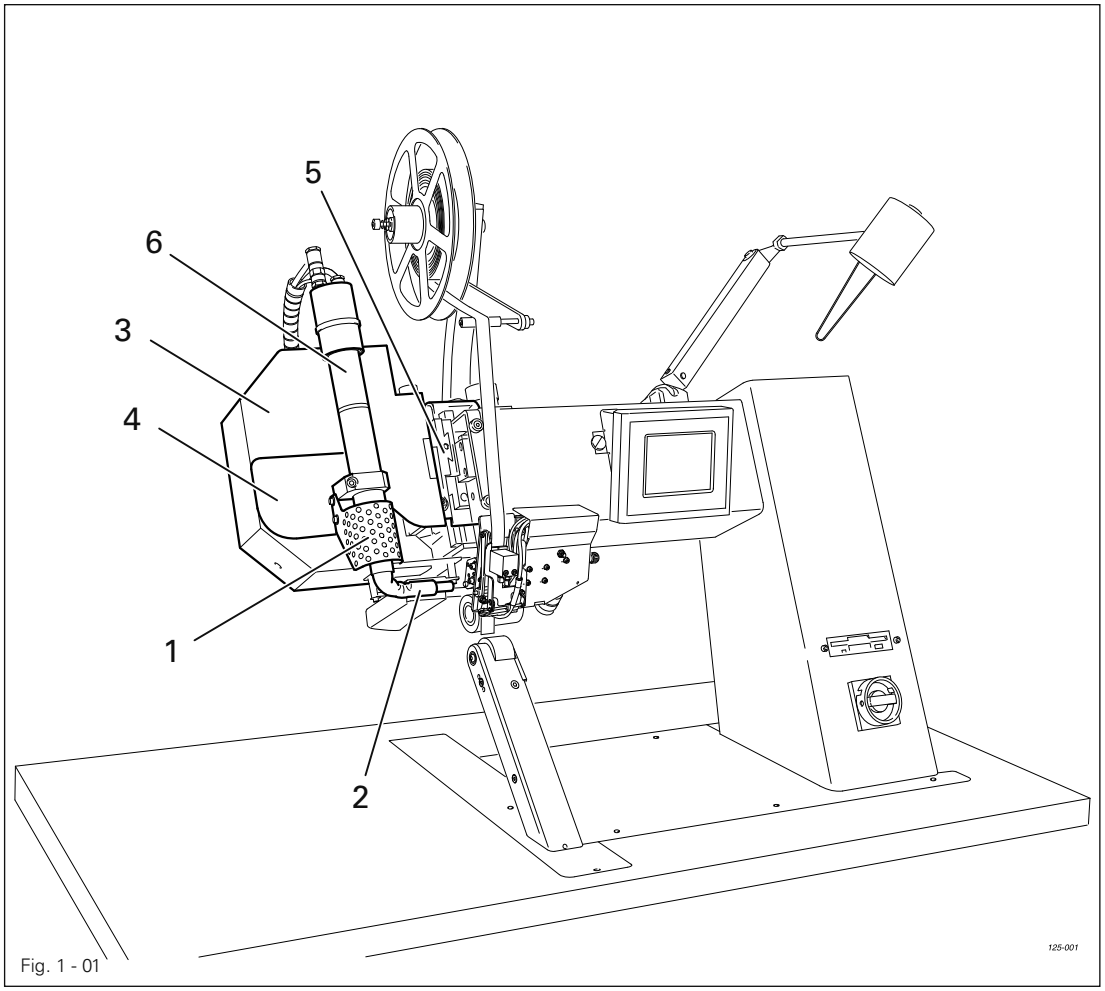


Fig. 1 - 01

Do not operate the machine without protective cover 1!
Danger of burns if heating element 2 is touched!

Do not operate the machine without protective covers 3, 4 and 5!
Danger of crushing when the heating element 2 is engaged or disengaged!

Do not place hands in the swivel area of the heating element 2 and the swivel unit 6 !
Danger of crushing when the heating element is engaged or disengaged!

2 Proper use

The PFAFF 8330 is a hot-air tape sealing machine with post.

The machine is used to seal seams on waterproof and breathable membrane materials of all kinds with a heat-sealing tape.



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 ▲

Dimensions and weight:
Length: ..... approx. 1250 mm
Width: ..... approx. 700 mm
Height: (without tape holder): ..... approx. 1400 mm
Clearance width: ..... approx. 380 mm
Clearance between rollers: ..... approx. 20 mm

Working air pressure: ..... min. 5 bar

Air consumption: ..... 30 – 150 l/min

Sealing speed: ..... max. 7 m/min.◆

Sealing temperature: ..... max. 650°C

Connection data:
Mains voltage (set for): ..... 230 V ± 10%, 50/60 Hz, 1 phase
Power input: ..... approx. 3500 W
Heating capacity: ..... approx. 3300 W
Fuse: ..... 16 A
Leakage current ..... ≤ 5 mA◆

Noise data:
Emission sound level at the workplace: ..... L_{pA} <70 dB(A)■
(Noise measurement in acc. with DIN 45 635-48-A-1, ISO 11204, ISO 3744, ISO 4871)

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

Net weight: ..... approx. 120 kg

▲ Subject to alterations

■ K_{pA} = 2,5 dB

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

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 regula-tions; if necessary, a specialist ist 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:



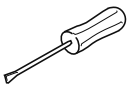
Note, information



Cleaning, care



Lubrication



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

7 Controls

7.01 Summary of controls

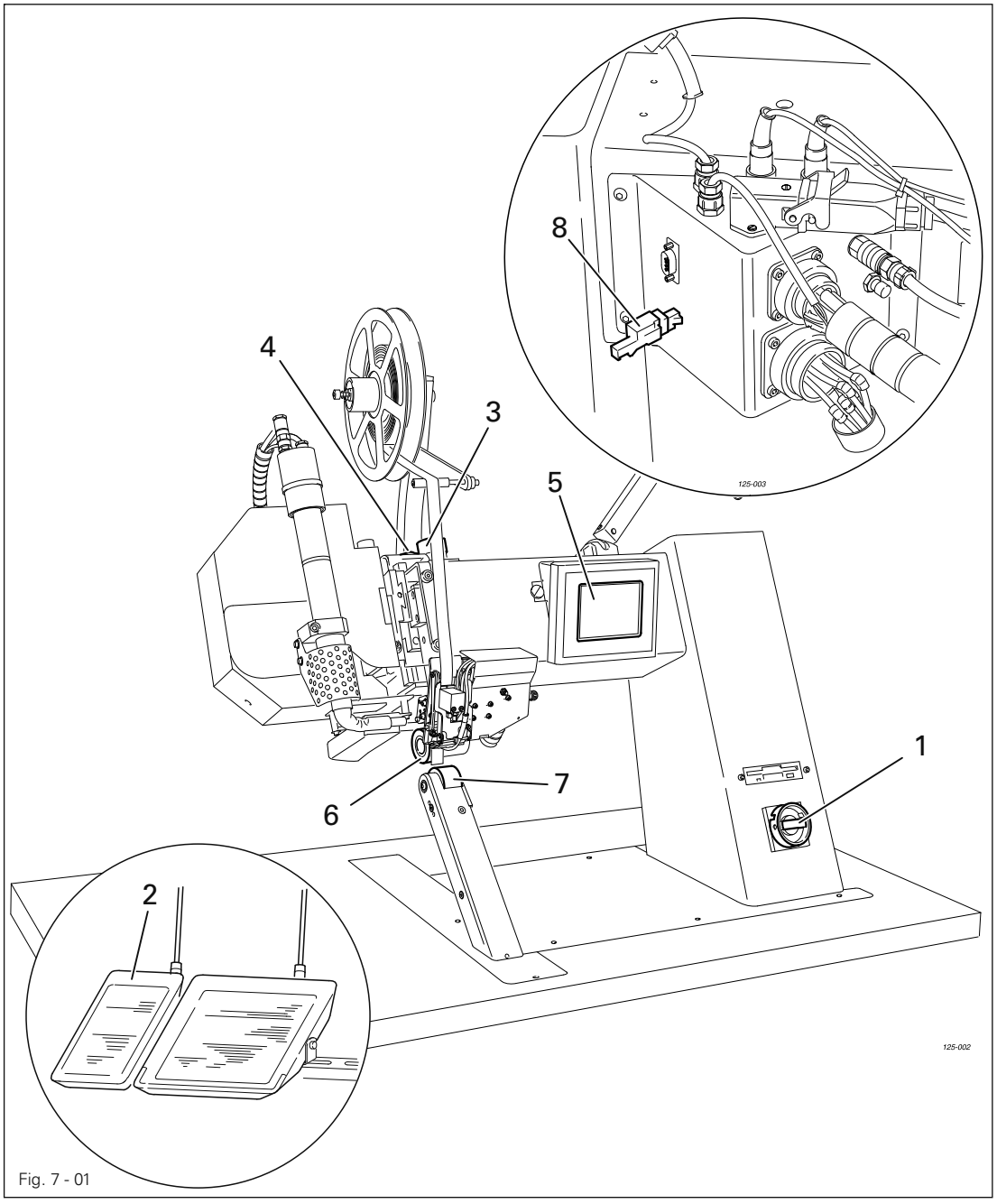


Fig. 7 - 01

- Main switch, see **Chapter 7.02**
- Pedal **2**, see **Chapter 7.03**
- Adjustment wheel **3** for roller clearance, see **Chapter 7.04**
- Lift limiter **4**, see **Chapter 7.05**
- Control panel **5**, see **Chapter 7.06**
- Top feed roller **6**
- Bottom feed roller **7**
- Key-switch, see Chapter **11.04.02** Rights of access

7.02 Main switch

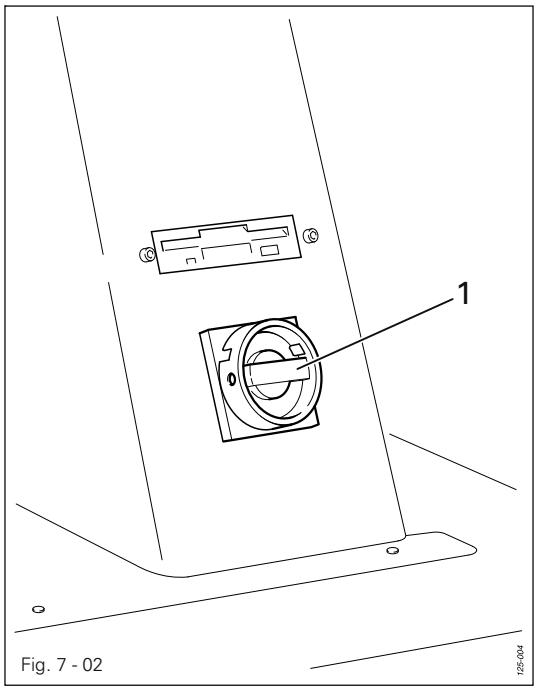


Fig. 7 - 02

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

  Position "**0**" : Machine is switched off
  Position "**1**" : Machine is switched on

After the machine has been switched on, first of all the "basic position" function must be pressed, see Chapter **8.03 Switching the machine on/off.**

7.03 Pedal

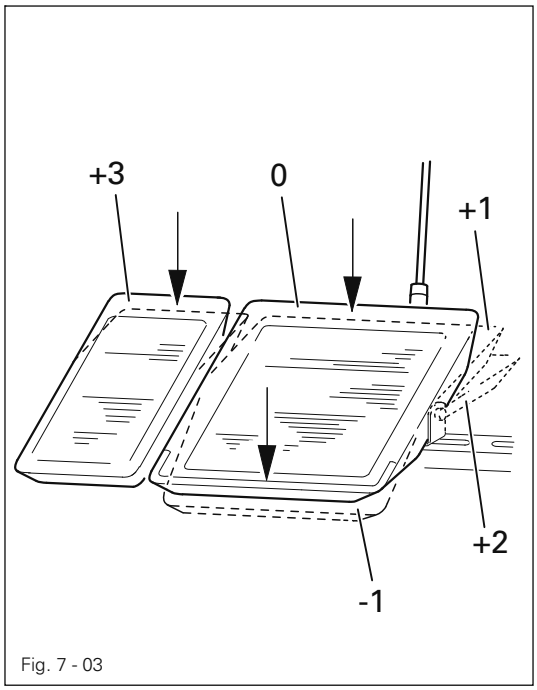


Fig. 7 - 03

The function method of the pedal depends on the selected pedal mode (level or flip-flop mode), see Chapter **11.04** Further settings

0 = neutral position
+1 = lower top feed roller
+2 = engage heating element / sealing start
+3 = Cut tape / switch to cold or hot press
-1 = stop sealing operation / raise top feed roller

7.04 Adjustment wheel for the roller clearance

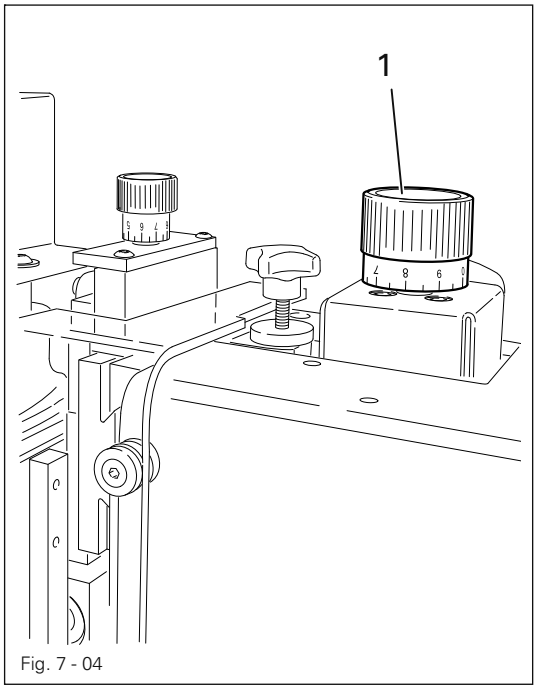


Fig. 7 - 04

- Turn adjustment wheel **1** to change the distance between the top and bottom feed roller.
  The clearance can be read on the scale.

7.05 Lift limiter

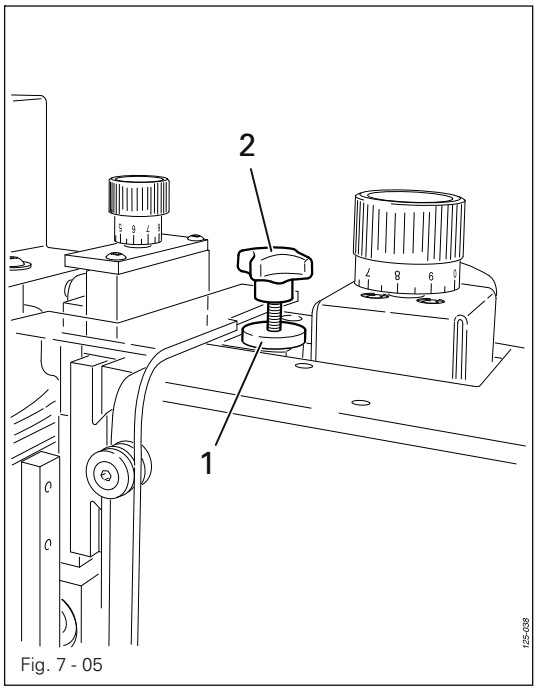


Fig. 7 - 05

- After loosening knurled nut **1**, adjust the top lift limit of the feed roller by turning screw **2**.

7.06 Control panel

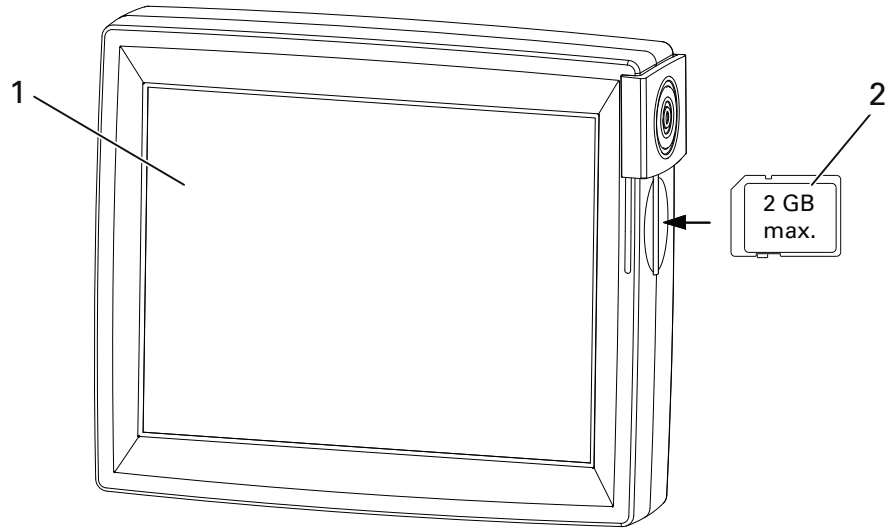


Fig. 7 - 06

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.
To read programs or to install machine software, use the sd-card **2** in the control panel.

Description of the functions

Normal symbol = function switched off (inactive)

Inverted symbol = function switched on (active)

8 Installation and commissioning

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

8.01 Installation

The site where the machine is installed must be provided with suitable connections for the electric current, see Chapter **3** Specifications.
It must also be ensured that the standing surface of the machine site is firm and horizontal, and that sufficient lighting is provided.

The method of packaging used requires that the table top be lowered for transport. The following is a description of how to adjust the height of the table top.

8.01.01 Adjusting the table-top height

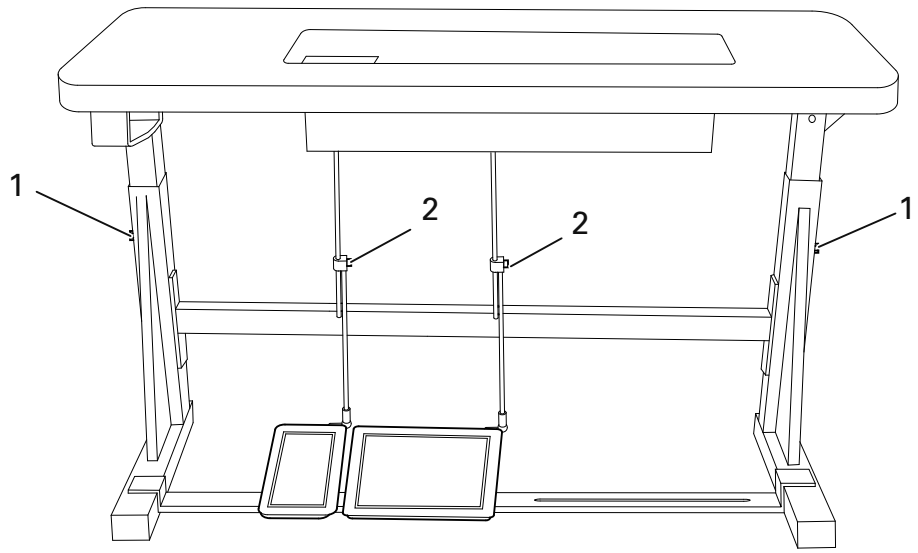


Fig. 8 - 01

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

8.01.02 Fitting the sealing tape reel holder

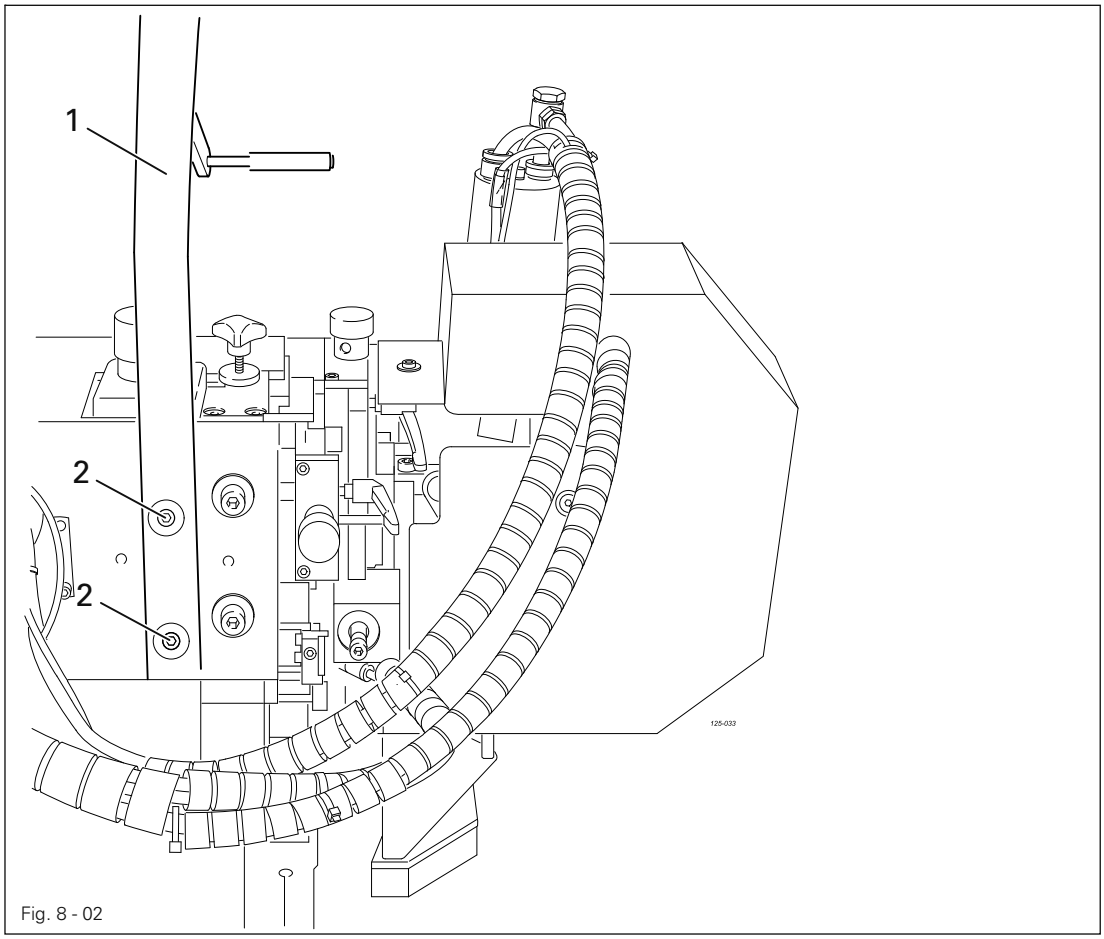


Fig. 8 - 02

- Fasten sealing tape reel holder **1** with screws **2**.

8.02 Commissioning

- Before commissioning the machine clean it thoroughly, see Chapter **12 Care and Maintenance!**
- Check the machine, in particular the electric cables and the pneumatic connection tubes, for any damage.
- Have a qualified person check whether the motor can be driven with the existing power voltage.

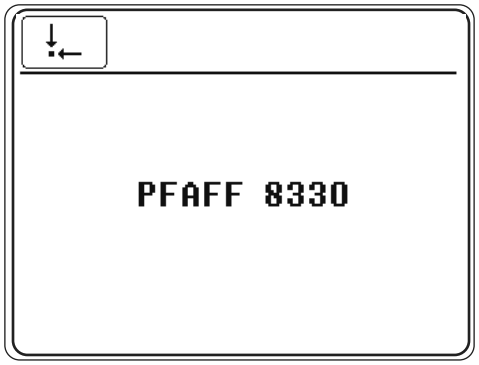
If there are any differences, the machine must definitely not be operated!

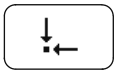
The machine must only be connected to a suitably earthed socket!

- Connect the machine to the compressed air system. A pressure of **6** bar should be displayed on the manometer. If necessary, set this value, see Chapter **12.03 Checking / adjusting the air pressure.**

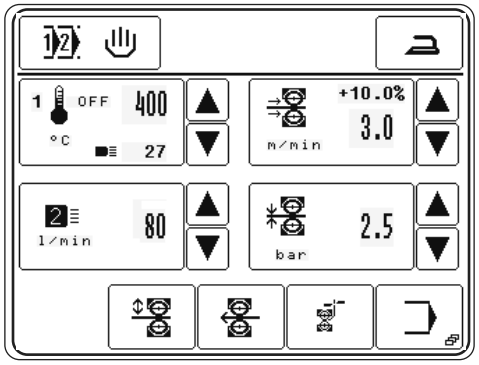
8.03 Switching the machine on/off

- To switch on the machine, turn the main switch to the "I" position, see Chapter **7.02 Main switch**.





- After the boot operation of the control unit, call up the "basic position" function.





- To switch off the machine, call up the input function.



- Call up the "pause" function and wait until the blast air switches off automatically.



Danger of damage to the heating cartridge!

The hot air temperature must not exceed **100°C** when switched off!

Before switching off the compressed air system, wait until the blast air switches off automatically!

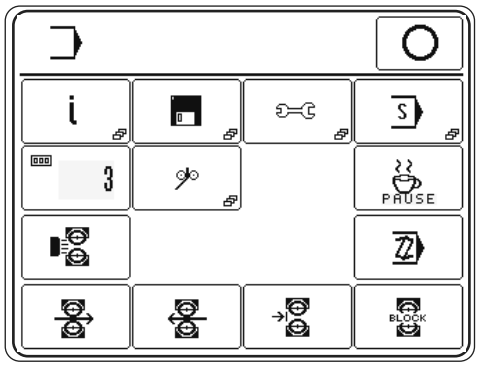
- Turn the main switch to the "**0**" position, see Chapter **7.02 Main switch**.

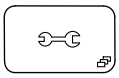
8.04 Selecting the language and units

- Switch on the machine, see Chapter 8.03 Switching the machine on/off.

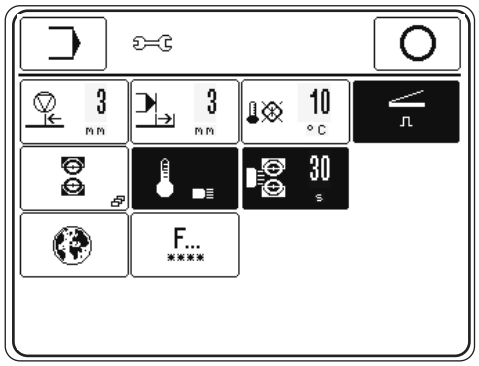


- Call up the input menu.



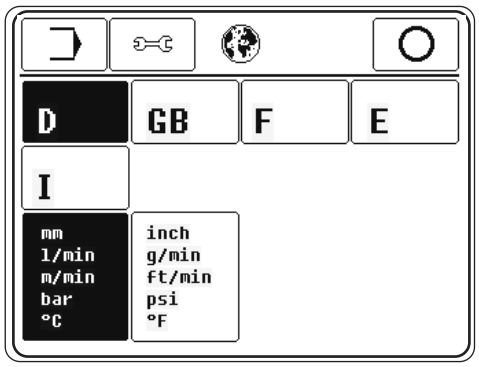


- Call up the settings menu.





- Call up the "language setting" menu.



- Select the appropriate language and units.

9 Preparation

All regulations and notes in this Service Manual must be observed!

Special attention must be paid to the safety regulations!

All setting-up work must only be carried out by personnel with the appropriate training!

9.01 Inserting the sealing tape

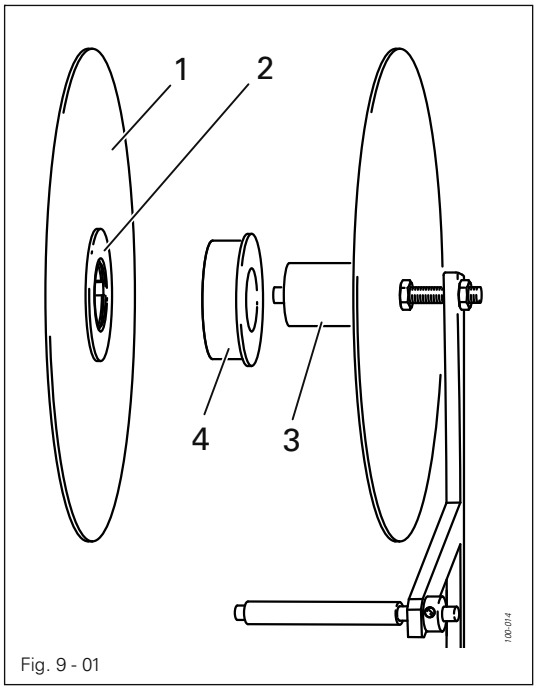


Fig. 9 - 01

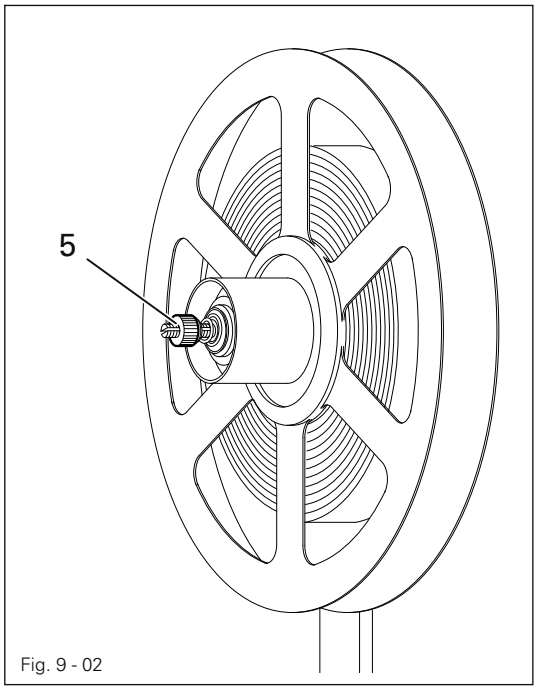


Fig. 9 - 02

The sealing tape real holder must be adapted to the inner diameter of the sealing tape reel:

- For small inner diameters turn the front disk **1**, so that the small disk **2** is positioned opposite holder **3**. The sealing tape reel can be fitted to the holder directly.
- For large inner diameters turn the front disk **1**, so that the large disk **2** is positioned opposite holder **3**. Slide fitting **4** onto holder **3** and push the sealing tape reel onto it.

When the sealing tape unwinds it should not touch the inner wall of the sealing tape reel holder.

9.01.02 Adjusting the sealing tape brake

- Adjust the sealing tape brake with nut **5** so that the sealing tape reel cannot continue moving, but the sealing tape can be drawn off rapidly.

9.01.03 Inserting the sealing tape

The sealing tape should run in the centre of the feed rollers and be guided in a narrow channel but still run easily through the guide.

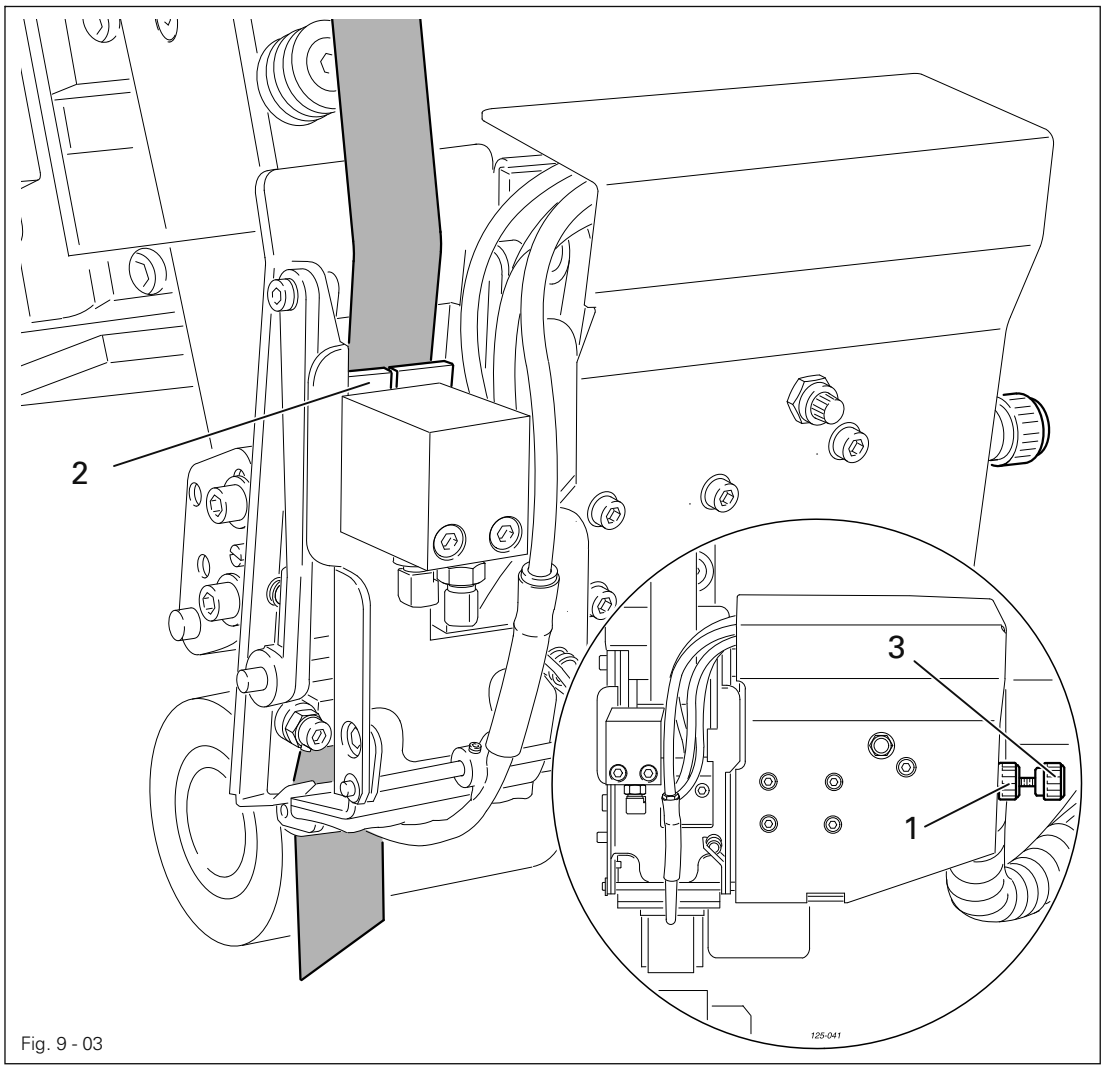


Fig. 9 - 03

- Switch on the machine.
- Loosen knurled nut **1** and adjust guide unit **2** with knurled screw **3**.
- Tighten knurled nut **1**.
- Cut the sealing tape at a slant and lead it through guide unit **2**, until it becomes visible under unit **2**.

- Start a cutting operation.
  The sealing tape is drawn in and cut.

Danger of injury from the tape knife!
Do not touch the tape cutting device by hand!
Use tweezers!

9.02 Adjusting the feed roller clearance

The feed roller clearance depends on the thickness of the material to be sealed. The clearance is adjusted correctly, when one ply of the workpiece fits just between the feed rollers when the top feed roller is lowered.

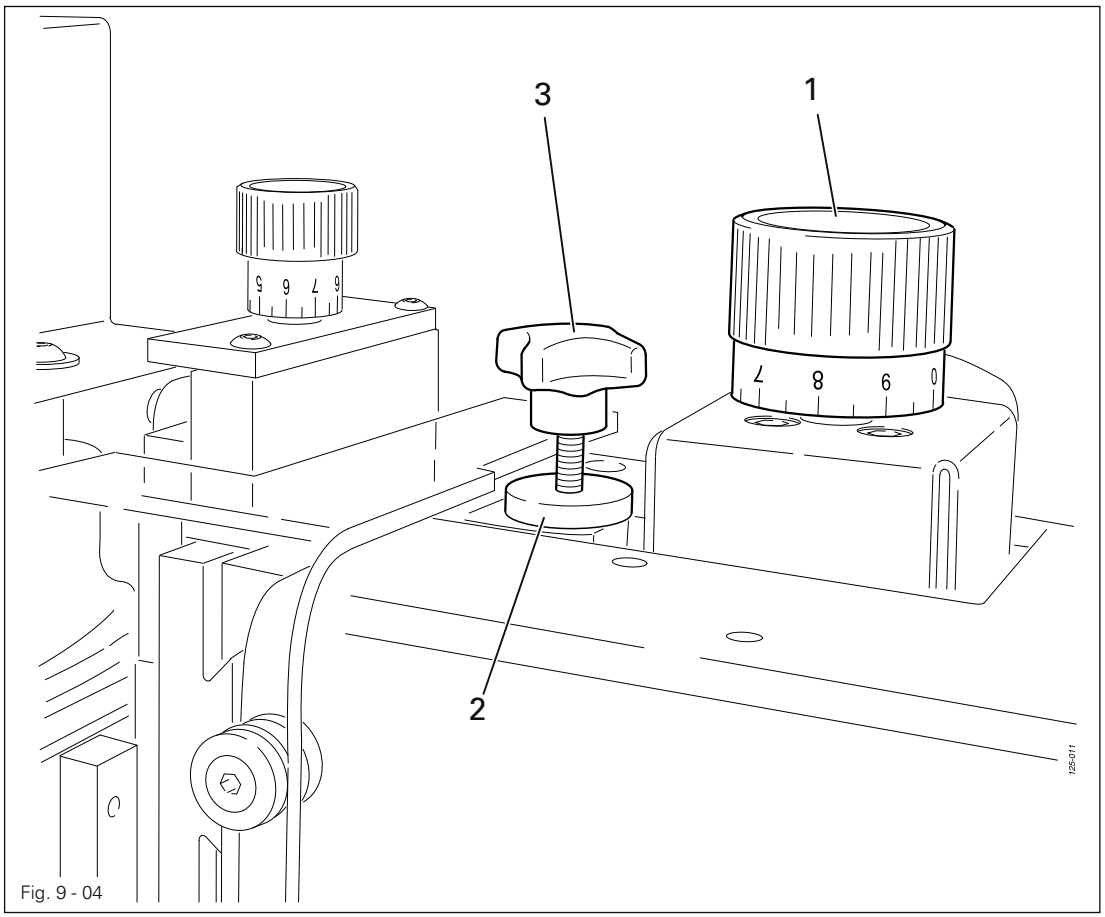


Fig. 9 - 04

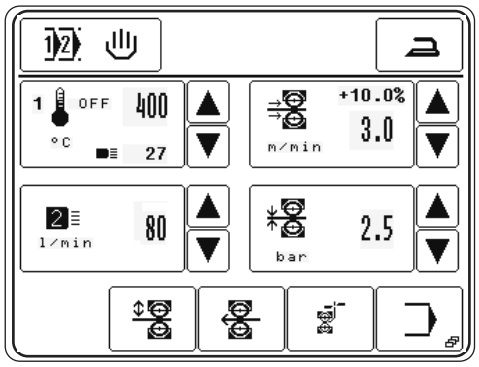
- Switch on the machine.
- Lower the top feed roller.
- Adjust the clearance between the rollers with adjustment wheel **1** depending on the workpiece and sealing method, see Chapter **7.04 Adjustment wheel for roller clearance.**
- Loosen knurled nut **2**.
- Set the lift limit to match the sealing material and application using cross handle screw **3**.
- Tighten knurled nut **2**.

9.03 Selecting the production type

The program selection function is used to choose between the types of production
- Manual heat sealing (Chapter 10.02)
- Programmed heat sealing with individual programs (Chapter 10.05)
- Programmed heat sealing with sequences (Chapters 10.07) and
- Dynamic sealing (see Chapter 10.03).

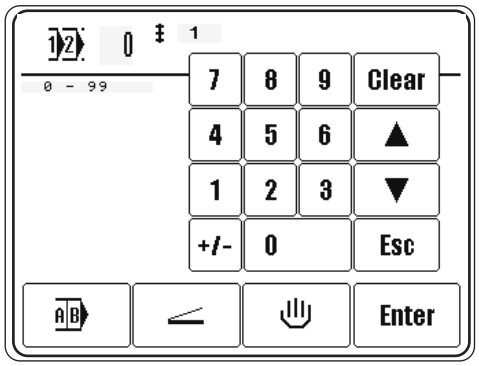
The types of production listed above, particularly their functions, are explained in more detail in Chapter 10 Heat sealing.

● Switch on the machine.





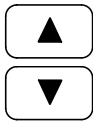
● Call up program selection.



2x 

● Call up manual heat sealing, the production type, "Manual Heat Sealing" is activated.

or



● Select the desired program number.
(Selection can also be made by entering the program number on the figure panel directly.)

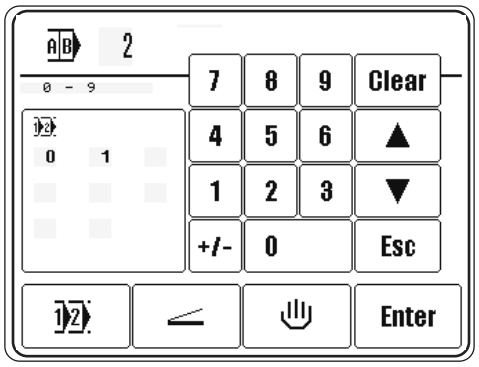
Enter

● Confirm selection and quit selection menu, die production type "Programmed Heat Sealing with individual program" is activated.

or



● Call up sequence selection.



▲ ▼

- Select desired sequence number.
  (Selection can also be made by entering the sequence number on the figure panel directly.)

Enter

- Confirm selection and quit selection menu, die production type "Programmed Heat Sealing with sequence program" is activated.

or

2x

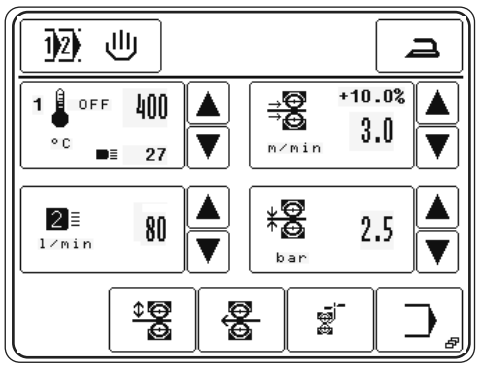
- Call up Dynamic Sealing, the "dynamic sealing" production type is activated.

9.04 Entering the sealing parameters (Manual Heat Sealing)

- Switch on the machine.
- Call up program selection.

2x

- Call up manual heat sealing.



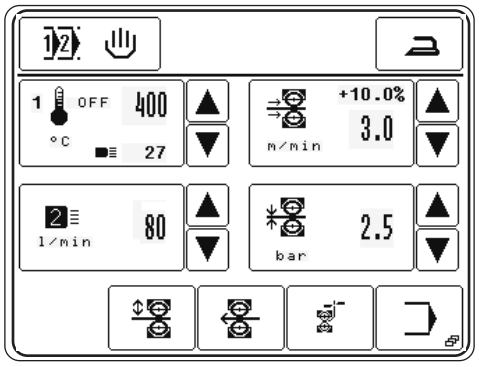
After selecting "Manual Heat Sealing", also see Chapter **9.03 Program Selection**, following values can be entered depending on the sealing method:

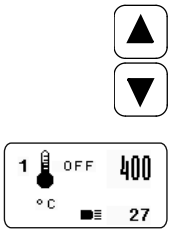
- Sealing temperature
  In addition to the set sealing temperature, the values for the regulation ratio (off = heating off) and the current actual temperature appear in the appropriate symbol.
- Sealing speed
  In addition to the sealing speed, the value for the difference in speed in % between the top and bottom feed rollers appears in the appropriate symbol.
- Type of heating nozzle with hot air volume
- Roller pressure

The values can be entered directly by pressing the appropriate key symbol.

In Programmed Heat Sealing the direct input of sealing parameters is not possible. The alteration must be made in the appropriate sealing program, see Chapter **10.04 Creating/editing a heat sealing program**.

9.04.01 Entering the sealing temperature

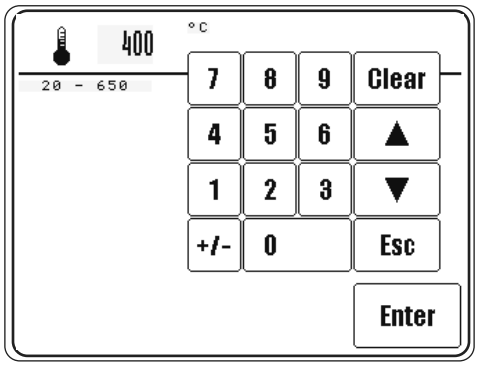




- Increase or reduce the value for the sealing temperature directly.

or

- Call up the figure panel to enter the sealing temperature.



- Enter the value for the sealing temperature within the permitted range.
- Conclude the input, permissible values will be taken over.

Enter

Description of further functions

Clear

Clear

When this function key is pressed, the value is set at "0".

Arrow keys

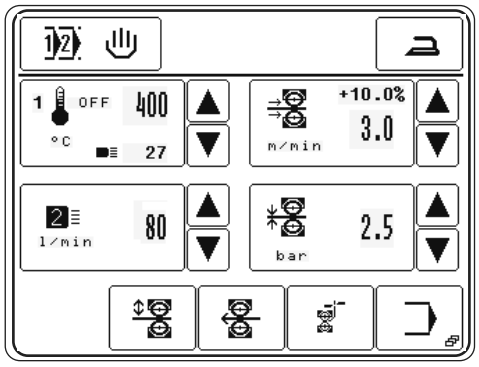
When these function keys are pressed, the value is increased or reduced.

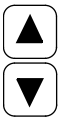
Esc

Esc

When this function key is pressed, the input is cancelled without the value entered being taken over.

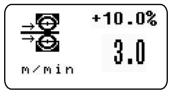
9.04.02 Entering the sealing speed



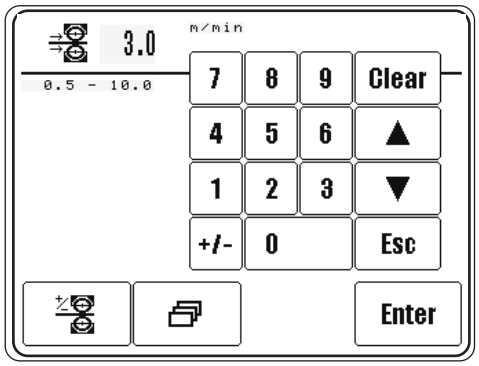


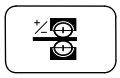
- Increase or reduce the value for the sealing speed directly.

or

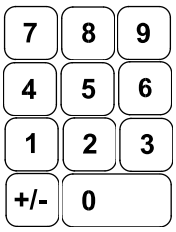


- Call up the figure panel to enter the sealing speed.





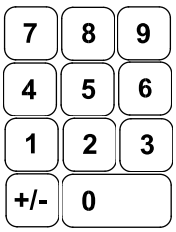
- If necessary call up the figure panel to enter the speed difference between the top and bottom feed roller.



- Enter the value for the speed difference within the permitted range.
- The speed difference results from the change in speed of the top feed roller, which rotates either more quickly or more slowly than the bottom feed roller. The value for the speed difference depends on the material and application.



- Conclude the input, permissible values will be taken over.



- Enter the value for the sealing speed within the permissible range.



- Conclude the input, permissible values will be taken over.

Description of further functions



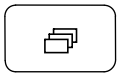
Clear
When this function key is pressed, the value is set at "0".



Arrow keys
When these function keys are pressed, the value is increased or reduced.

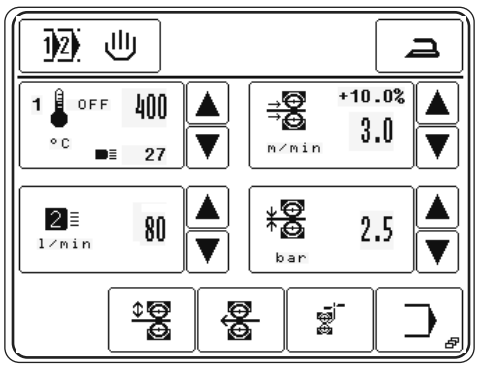


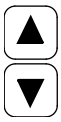
Esc
When this function key is pressed, the input is cancelled without the value entered being taken over



Further parameter
This function key opens a menu for entering the brake and acceleration profile and for setting the start delay.

9.04.03 Choice of the nozzle type and hot air volume



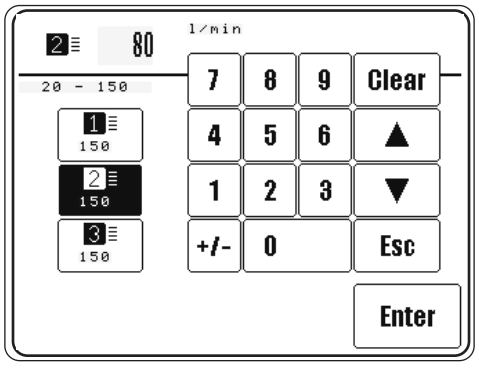


- Increase or reduce the hot air volume directly.

or



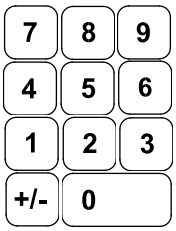
- Call up the menu for selecting the nozzle type or for entering the hot air volume.





- Select the nozzle type in accordance with the width of the nozzle installed.
  The symbol for the selected nozzle type appears as an inverse symbol.

Düsentyp	Breite der Düse
1	< 10 mm
2	10 - 30 mm
3	> 30 mm



- Using the number block, enter the value for the hot air volume within the permitted range.



- Conclude the input, permissible values will be taken over.

Description of further functions



Clear
When this function key is pressed, the value is set at "0".

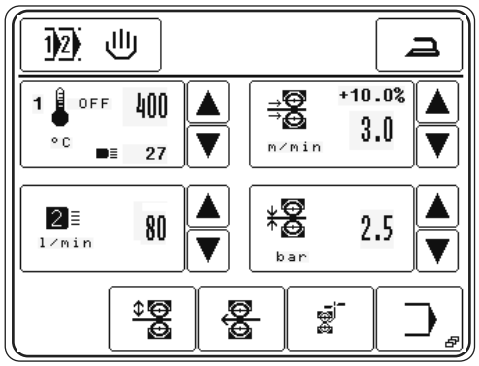


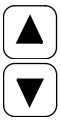
Arrow keys
When these function keys are pressed, the value is increased or reduced.



Esc
When this function key is pressed, the input is cancelled without the value entered being taken over

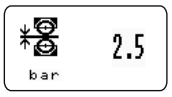
9.04.04 Entering the roller pressure



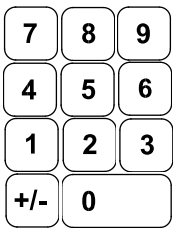


- Increase or reduce the roller pressure directly.

or



- Call up the number panel to enter the roller pressure.



- Enter the roller pressure within the permitted range.



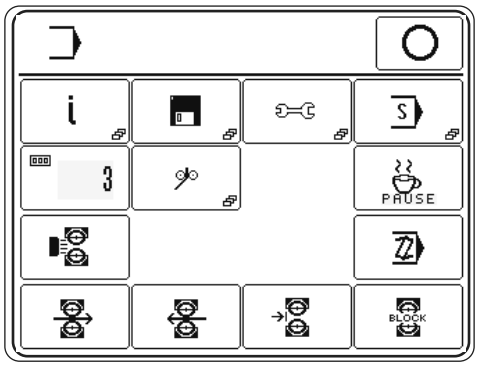
- Conclude the input, permissible values will be taken over.

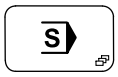
9.05 Adjusting the control panel

- Switch on the machine.

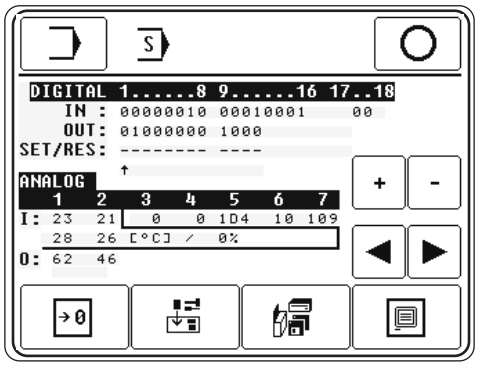


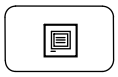
- Call up the input menu.



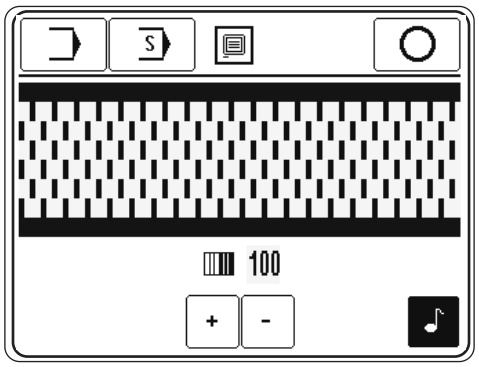


- Select the service menu.



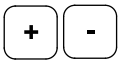


- Select control panel functions.





- Change the display contrast.



- Change the display contrast.



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

10 Heat sealing

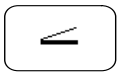


The machine may only be operated by properly instructed personnel. The operating personnel must make sure that only authorised persons are in the danger zone of the machine.

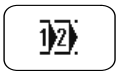
In particular for production, in addition to the input menu (see Chapter 11 Input), the „heat sealing“ mode is available, in which, irrespective of the program selected and the machine status, all functions and settings relevant for the sealing operation are shown on the display. With the program selection function, following production types can be selected in the "heat sealing" mode, see Chapter 9.03 Selecting the production type:



Manual heat sealing, see Chapter 10.02



Dynamic sealing, see Chapter 10.03



Programmed heat sealing with individual programs, see Chapter 10.05



Programmed heat sealing with sequences, see Chapter 10.07

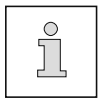
10.01 Heat sealing principle

To achieve optimum sealing results, certain conditions must be fulfilled with regard to material and machine setting.

The material must:
- be heat-sealable,
- suitable for being processed by the machine with regard to thickness and structure and
- and match the sealing tape.

In the seam area, the material to be heat sealed must be clean and free from separating agents, such as e.g. oil or silicone.

The basic conditions depending on the sealing device are:
- correct hot air temperature (sealing temperature);
- correct setting for the hot air nozzle;
- correct setting for the hot air volume;
- correct choice of feed rollers (silicone or steel);
- optimum pressure of the feed rollers on the material being sealed (roller pressure);
- correct distance between the feed rollers and
- correct sealing speed (feed stroke).



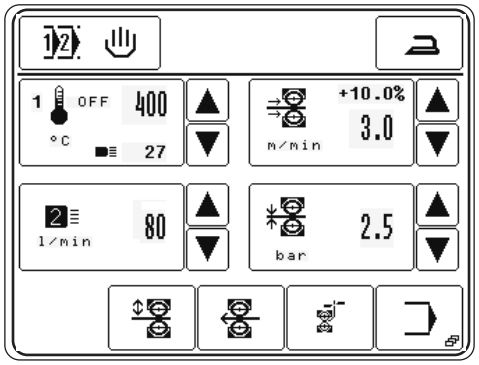
All the settings of the heat-sealing device are principally dependent on the material being sealed and the ambient temperature. Due to the influence of the individual operating parameter on each other, it is only possible to determine the optimum setting values by carrying out test sealing operations.

10.02 Manual heat sealing

In the "Manual heat sealing" mode, all relevant parameters for the sealing operation can be entered or altered directly, see Chapter 9.04 Entering the sealing parameters (manual heat sealing).

2x 

- Select "manual heat sealing", see Chapter 9.03 Selecting the production type.



Description of the functions



Selecting a program
This function opens the menu for entering the program number or for selecting the production type, see Chapter 9.03 Selecting the production type.



Pressing
This function is used to switch on the pressing function. It is possible to choose between two pressing functions:
- Cold pressing
- Warm pressing

The pedal function is used to switch between cold and warm pressing, see Chapter 7.03 Pedal. During cold pressing the rollers are closed with the set roller pressure. The rollers roll over the part without tape, with disengaged hot air nozzle. During cold pressing the speed can be infinitely adjusted with the pedal function. The differential is switched off. During warm pressing, the hot air nozzle is also engaged.



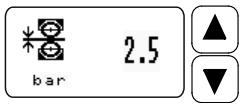
Heat sealing temperature
These functions are used to alter the heat sealing temperature, see Chapter 9.04.01 Entering the sealing temperature.



Feed stroke (sealing speed)
These functions are used to alter the feed stroke or to open the menu for entering the feed stroke difference, the brake and acceleration profiles and the start delay for the feed rollers, see Chapter 9.04.02 Entering the sealing speed.



Nozzle type / hot air volume
These functions are used to alter the hot air volume or to open the menu for choosing the nozzle type, see Chapter 9.04.03 Choice of the nozzle type and hot air volume …



Roller pressure

These functions are used to alter the roller pressure, see Chapter **9.04.04 Entering the roller pressure.**



Start

(This function appears when the top feed roller is lowered.)

With this function the sealing start is called up, analog to the pedal function "+**2**", also see Chapter **7.03** Pedal.



Feed roller up/down

With this function the top feed roller, depending on its position, can be raised or lowered, analog to the pedal functions "-**1**" and "+**1**", also see Chapter **7.03** Pedal.



Feed rollers in reverse

This function makes it possible to call up the reverse running function of the feed rollers.



Tape cutting

This function starts a tape cutting operation.



Input menu

This function is used to call up the Input Menu, see Chapter **11 Input.**



Stop

(This function appears during the sealing operation.)

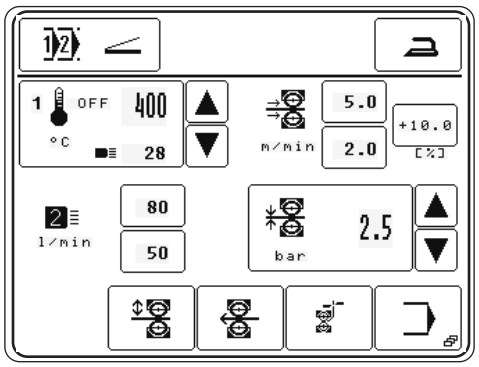
This function is used to stop the sealing operation, analog to pedal function "-**1**", also see Chapter **7.03** Pedal.

10.03 Dynamic heat sealing

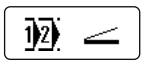
In the dynamic heating sealing mode, all relevant parameters for the sealing operation can be entered or altered directly, see Chapter **9.04 Entering the sealing parameters** (manual heat sealing). The sealing speed can be infinitely varied with the pedal functions. The remaining sealing parameters are appropriately adapted to the changing sealing speeds.

2x 

- Select dynamic sealing, see Chapter **9.03 Selecting a production type**.



Description of the functions



Selecting a program
This function opens the menu for entering the program number or for selecting the production type, see Chapter **9.03 Selecting a production type**.

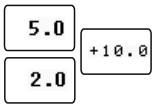


Pressing
This function is used to switch on the pressing function. It is possible to choose between two pressing functions:
- Cold pressing
- Warm pressing

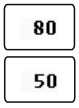
The pedal function is used to switch between cold and warm pressing, see Chapter **7.03 Pedal**. During cold pressing the rollers are closed with the set roller pressure. The rollers roll over the part without tape, with disengaged hot air nozzle. During cold pressing the speed can be infinitely adjusted with the pedal function. The differential is switched off. During warm pressing, the hot air nozzle is also engaged.



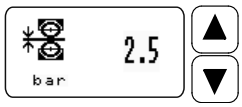
Heat sealing temperature
These functions are used to alter the heat sealing temperature, see Chapter **9.04.01 Entering the sealing temperature**.



Feed stroke (sealing speed)
These functions are used to alter top and bottom limit for the feed stroke or to enter the feed stroke difference.



Nozzle type / hot air volume
These functions are used to alter the top and bottom limit for the hot air volume.



Roller pressure

These functions are used to alter the roller pressure, see Chapter **9.04.04 Entering the roller pressure.**



Feed roller up/down

With this function the top feed roller, depending on its position, can be raised or lowered, analog to the pedal functions "-**1**" and "+**1**", also see Chapter **7**.**03** Pedal.



Feed rollers in reverse

This function makes it possible to call up the reverse running function of the feed rollers.



Tape cutting

This function starts a tape cutting operation.



Input menu

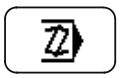
This function is used to call up the Input Menu, see Chapter **11 Input.**

10.04 Creating/editing a heat sealing program

Up to **100** sealing programs (**0** – **99**) each with up to **20** sealing zones can be filed and managed in the machine memory.

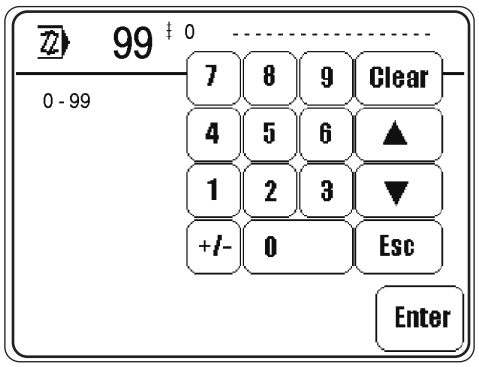


- Call up the input menu.

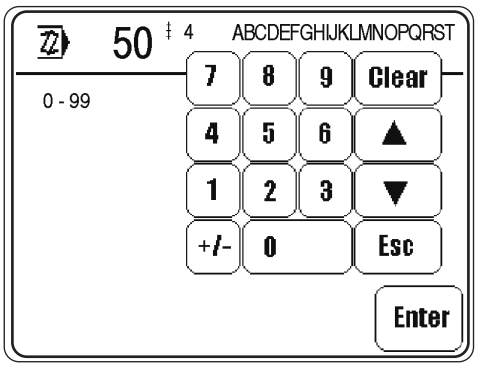


- With the "programming" function from the input menu it is possible to enter the programming function for sealing programs. A number block for entering the desired program number appears.

Creating a new program



Editing a program



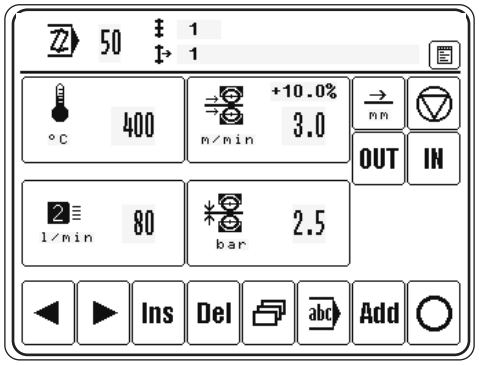
If no program is filed in the memory under the program number selected, the current sealing parameter of the manual heat sealing function will be taken over and a new program created.
As an alternative to the creation of a new program, the program number of an existing program (e.g. **50**) can be selected, and this program can be changed or copied to create a new program. In the case of existing programs, the number of zones and possibly a comment are displayed next to the program number in the headline.

5 **0**

- Enter the program number, e.g. "**50**".

Enter

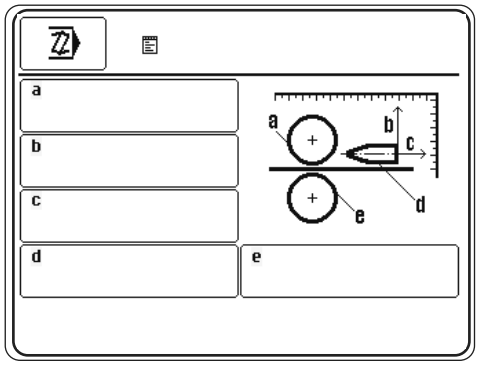
- Confirm selection.



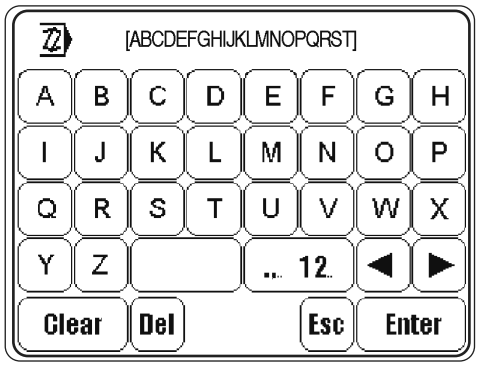
The first zone of the selected program is displayed on the screen with functions for entering sealing parameters, notes, switching to the next zone, as well as basic functions for the program input. For further descriptions of the functions see Chapter **10.04.07 Example for sealing program input.**

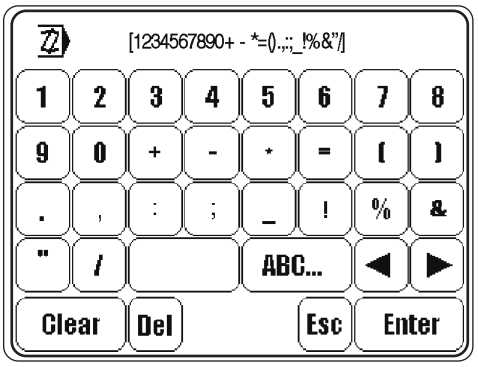
10.04.01 Notepad

When creating a sealing program, this function is used to enter data about the sealing tools for the program. The data serves as information for the operator and can be called up in the programmed sealing mode.



- Press the relevant key panels to enter the data.

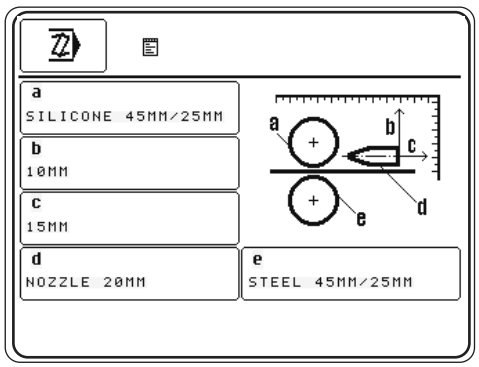




- Enter the relevant data.

Enter

- Conclude the input

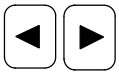


10.04.02 Basic functions for the program input

The following functions are used to enter the basic information for the currently selected program. In addition to functions for navigating in the different zones and functions for inserting and deleting zones, depending on the zone displayed, functions can be called up for entering further parameters and comments as well as for concluding the program input.

- Call up the appropriate functions to process or conclude the program.

Description of the functions



Selecting a zone
These functions are used to switch forwards and backwards to other zones in the current program.



Insert
This function inserts a new zone at the current location. The data of the current zone are copied for the new zone and the following zones are moved one place back.



Delete
This function deletes the current zone.



Further sealing parameters
(This function only appears in the first zone.)
This function opens a menu for entering further sealing parameters.



Comment
(This function only appears in the first zone.)
With this function, when entering a note, see Chapter **10.04.01** Notepad, the analog entry of a comment about the current program is possible. The comment is displayed as information about the appropriate program in the program selection and program management functions.



Add
(This function only appears in the last zone.)
This function is used to copy the data of the current zone and add it as a new zone.

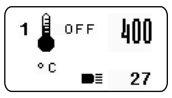


Conclude programming
This function concludes the programming, see Chapter **10.04.06** Concluding the programming.

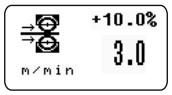
10.04.03 Sealing parameters

- Enter sealing parameters for each zone as described in Chapter **9.04 Entering sealing parameters** (manual heat sealing).

Description of the functions



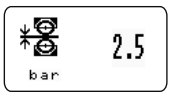
Heat sealing temperature
This function is used to alter the heat sealing temperature, see Chapter **9.04.01 Entering the sealing temperature.**



Feed stroke (sealing speed)
This function is used to open the menu for entering the feed stroke difference, the brake and acceleration profiles and the start delay for the feed rollers, see Chapter **9.04.02** Entering the sealing speed.



Nozzle type / hot air volume
This function is used to open the menu for choosing the nozzle type and the hot air volume, see Chapter **9.04.03** Choice of the nozzle type and hot air volume …



Roller pressure
This function is used to alter the roller pressure, see Chapter **9.04.04 Entering the roller pressure**.

10.04.04 Functions for switching to other zones

In addition to the sealing parameters, further functions can be allocated to each zone, which serve to enable the automatic switch to other zones and a more exact setting of the sealing operation sequence.

- Select appropriate functions for each zone, activated functions are displayed as inverse symbols on the screen.

Description of the functions



Programmed section
This function is used to determine the length of the current zone. The value in millimetres is entered on the appropriate number block. When this function is activated, the machine switches to the next sealing zone after processing the entered section. In the last sealing zone the sealing tape is cut to fit exactly.



Programmed stop
When this function is switched on, the current zone takes on a stop function. The sealing operation stops and the machine moves to the next zone.

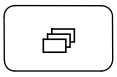


Programmed output
When this function is switched on, the current zone takes on an output switch function. Two outputs can be stipulated with the appropriate menu.



Programmed input
When this function is switched on, the machine does not switch to another zone until an appropriate input signal is given or not given. The two different inputs can be set up with the appropriate menu.

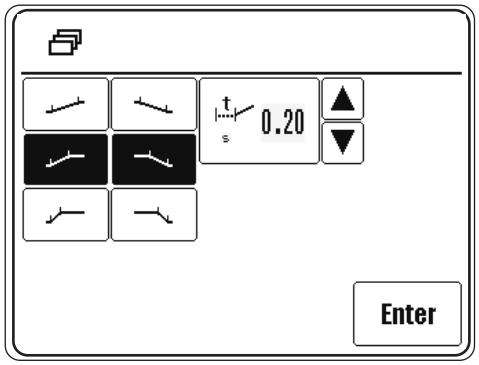
10.04.05 Entering further sealing parameters



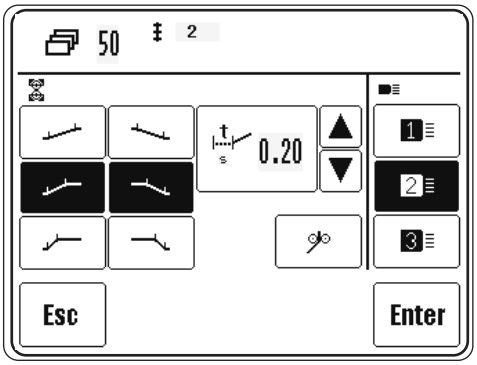
Further sealing parameters can be entered either

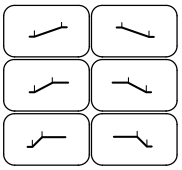
- from the manual resp. dynamic sealing mode in conjunction with the sealing speed input or
- when creating programs in conjunction with the input of the first zone.

Input from manual heat sealing mode



Input while creating programs

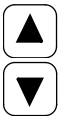




- Select acceleration and brake profile of the feed rollers, dependent on the material for sealing. Each of the profiles selected is displayed as an inverse symbol. A flat ramp stands for slight acceleration of the feed rollers. The selection of a steep ramp means high acceleration.

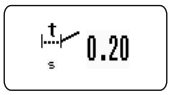


If the sealing result is unsatisfactory, the alteration of the acceleration or brake profile can lead to an improvement.
The values of the different acceleration and brake profiles can be stipulated in the input mode, see Chapter **11.03**.01 **Feed roller parameters.**

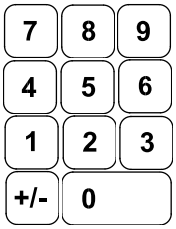


- Increase or reduce the start delay for the feed rollers directly.

or



- Call up the figure panel to enter the start delay.



Enter the start delay depending on the material being processed.

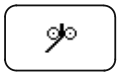


- Conclude the input, permissible values will be taken over.



The start delay function is used to stipulate the amount of time which should pass between the engaging of the heating element and the start of the feed rollers.

Further functions are available for creating programs:



- This function opens a menu for entering the tape parameters, see Chapter **11.03.02 Tape parameters.**





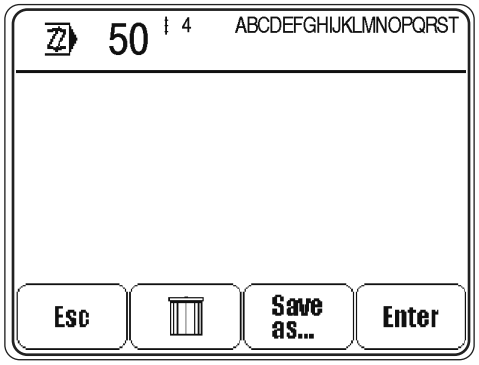


- Select the nozzle type in accordance with the width of the nozzle installed, see Chapter **9.04.03 Choice of the nozzle type and hot air volume** …

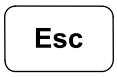
10.04.06 Concluding programming



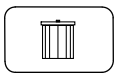
Once all the details for programming have been entered, the programming can be concluded by pressing the appropriate function key.



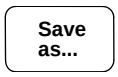
Description of the functions



Esc
The input is interrupted and the machine moves back to the basic programming condition.



Discard alterations
All program alterations are cancelled.



Save as…
If this function key is pressed, the number panel opens to enter any program number.



Enter
All program alterations are saved under the current program number.

10.04.07 Example of how to enter a sealing program

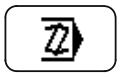
The following example should be filed under program number "**10**" with the comment "**EXAMPLE 1**", and consists of three seam zones:

- Seam zone **1** with switch to another zone after **200 mm** seam length
- Seam zone **2** with reduced sealing speed and speed difference between the top and bottom feed roller, and switch to another zone after **100 mm**
- Seam zone **3** with original sealing speed without speed difference between the feed rollers and with switch to another zone after **400 mm**

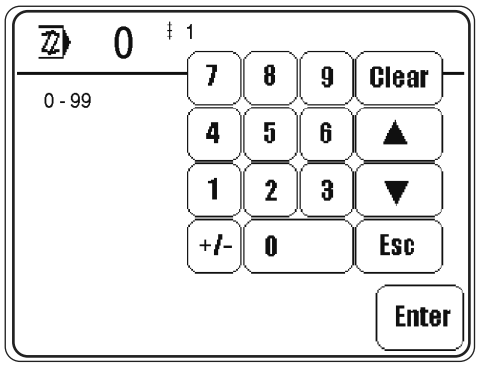
● Switch on the machine.



● Call up the input menu.

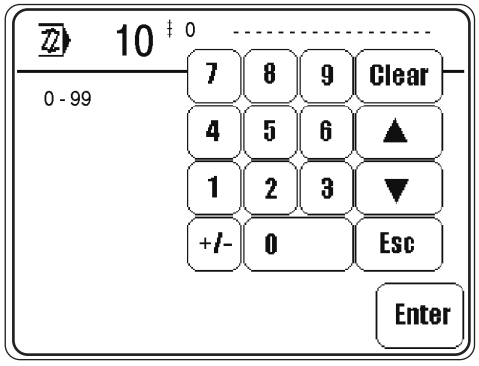


● Call up the programming function.



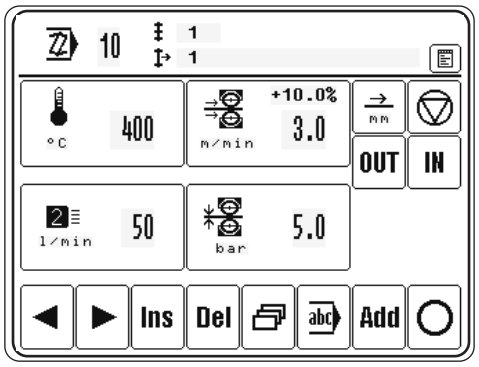
1 **0**

● Enter program number "**10**".



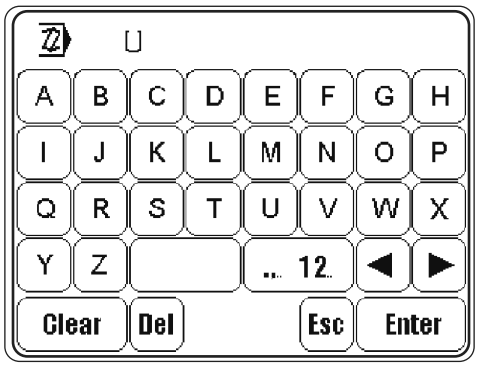
Enter

● Confirm input.
The sealing parameters from the manual sealing mode are taken over for the 1st seam zone.



abc

- Call up comment input.



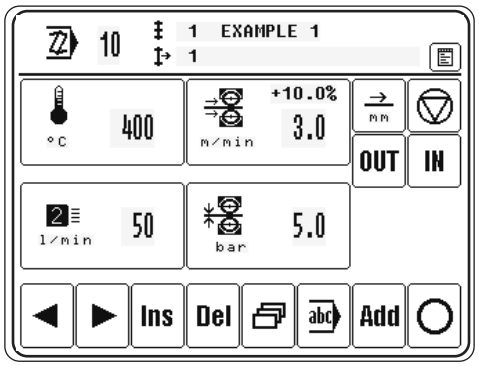
- Enter the term "EXAMPLE" with the appropriate symbols.

... 12

- Change to number input.
- Enter number "1" with the appropriate symbol.

Enter

- Conclude the comment input.

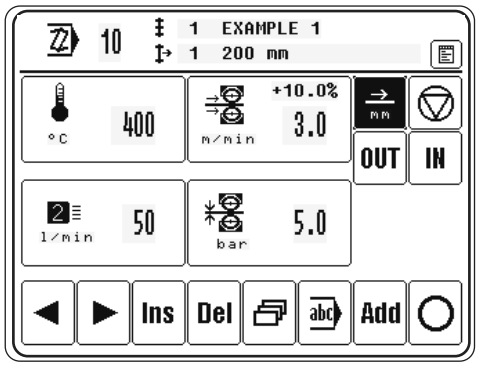


mm

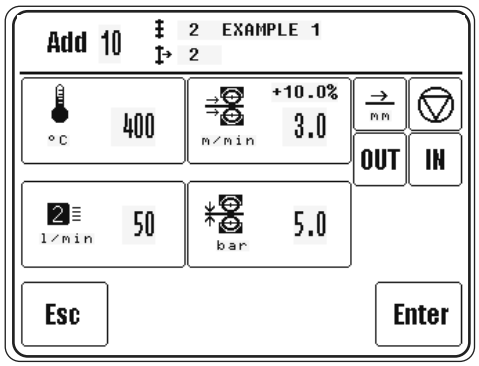
- Activate the switch to another zone using the seam length.
- Enter the value "200" as seam length with the number panel.

Enter

- Conclude the activated function for switching to another zone.



ADD ● Add seam zone 2.

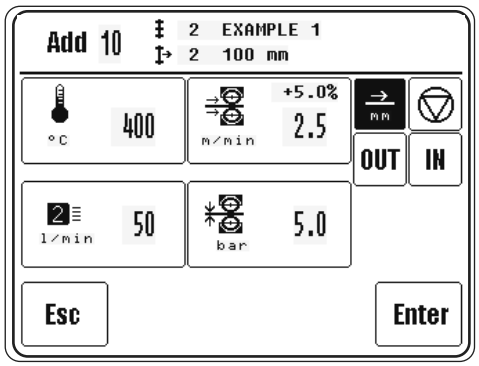




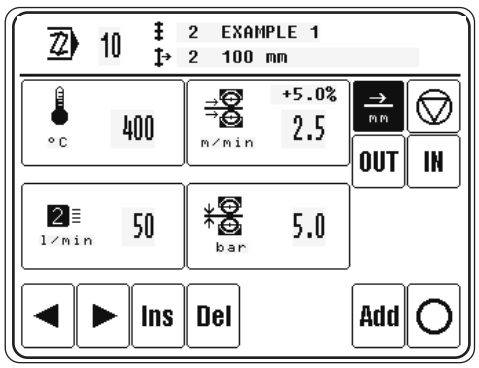
● Change the values for sealing speed and speed difference.



● Activate the switch to another zone with the value "**100**" as seam length.



Enter ● Conclude the input of seam zone 2.

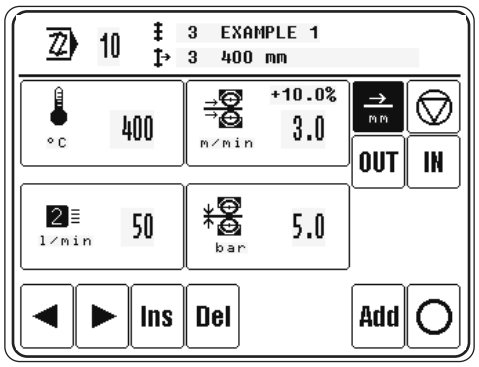


ADD ● Add seam zone 3.

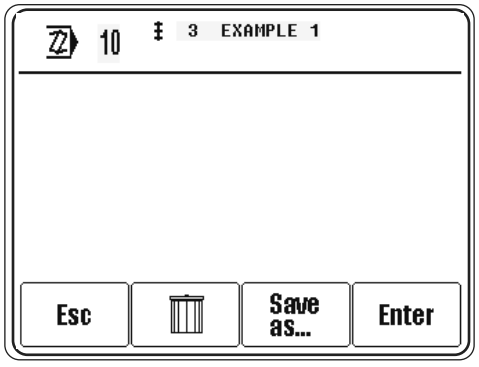
+10.0% 3.0 m/min ● Reset the values for sealing speed and speed difference.

mm ● Activate the switch to another zone with the value "400" as seam length.

Enter ● Conclude the input of seam zone 3.



○ ● Conclude programming.



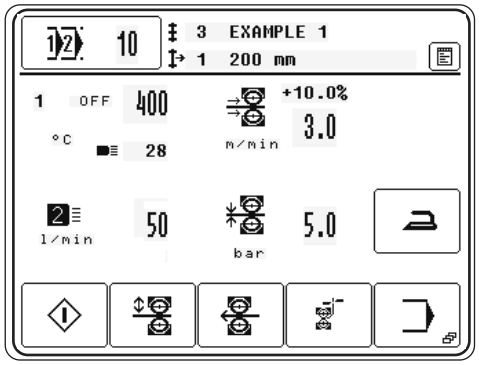
Enter ● Reconfirm the sealing program input.
The programmed sealing function is called up to process the created sealing program.

10.05 Programmed heat sealing with individual programs

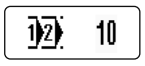
In the headline, in addition to the program number of the selected program, the number of zones, the current zone and the comment for the program are displayed. For the current zone all heat-sealing parameters are displayed. The heat-sealing parameters have been entered during programming and cannot be altered without changing the program.



- Select the desired program, see Chapter 9.03 Selecting a production type.



Description of the functions



Program selection
The function opens the menu for entering the program number or for choosing the production type, see Chapter 9.03 Selecting a production type.



Notepad
This function opens the notepad with program details about the heat-sealing tools to be used.



Pressing
This function is used to switch on the pressing function. It is possible to choose between two pressing functions:
- Cold pressing
- Warm pressing

The pedal function is used to switch between cold and warm pressing, see Chapter 7.03 Pedal. During cold pressing the rollers are closed with the set roller pressure. The rollers roll over the part without tape, with disengaged hot air nozzle. During cold pressing the speed can be infinitely adjusted with the pedal function. The differential is switched off. During warm pressing, the hot air nozzle is also engaged.



Start
(This function appears, when the top feed roller is lowered.)
This function is used to call up the sealing start, analog to pedal function "+2", also see Chapter 7.03 Pedal.



Feed roller up/down
This function is use to raise or lower the top feed roller, depending on its position, analog to the pedal functions "-1" and "+1", also see Chapter 7.03 Pedal.



Feed rollers in reverse

This function makes it possible to call up the reverse running function of the feed rollers.



Tape cutting

This function starts a tape cutting operation (Reference cut).



Input menu

This function is used to call up the Input Menu, see Chapter **11 Input.**



Stop

(This function appears during the sealing operation.)

This function is used to stop the sealing operation, analog to pedal function "**-1**", also see Chapter **7.03 Peda**l.

10.06 Creating/processing sequences

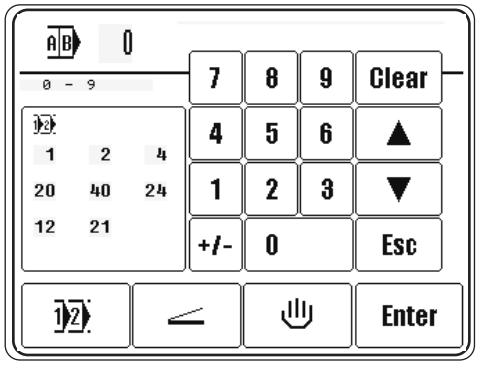
In sequences up to 8 heat sealing programs are combined in any order whatever and filed under a sequence number. A total of up to 10 sequence programs can be filed in the machine's memory.



- To enter sequence programming, first of all call up the Program selection function.

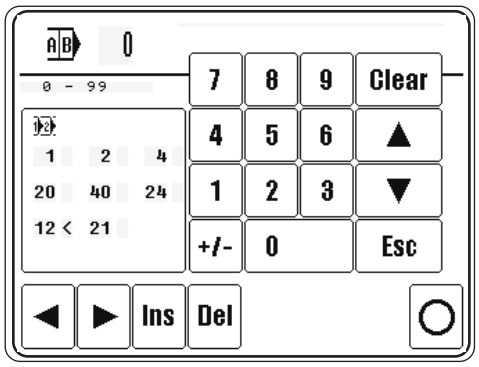


- Call up the Sequence selection function and select the desired sequence number.

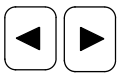




- Call up sequence programming.
  The cursor in the window shows which program is being deleted or at which point a new program is being inserted.



Description of the functions



Arrow keys
These functions are used to move the cursor.



Insert
This function inserts or adds a program to the sequence at the place marked.



Delete
This function deletes the marked program from the sequence.



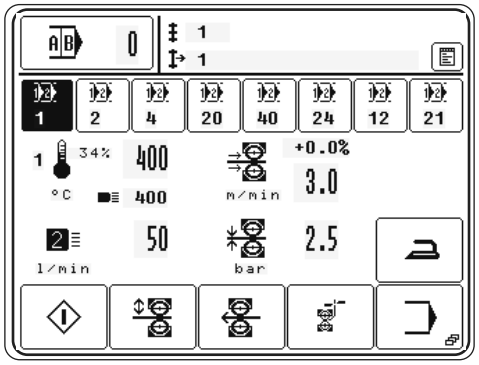
Conclude programming
This function concludes the sequence programming.

10.07 Programmed heat sealing with sequences

In the headline, in addition to the sequence number of the selected sequence, the number of zones, the current zone and the comment for the current program are displayed. For the current zone all heat-sealing parameters are displayed. The heat-sealing parameters have been entered during programming and cannot be altered without changing the program. In addition, in the case of heat sealing with sequence programs, the individual programs belonging to the sequence are displayed, and the current program is shown here as an inverse symbol.



- Select the desired sequence, see Chapter **9.03 Selecting a production type**.



Description of the functions



Program selection
The function opens the menu for entering the program number or for choosing the production type, see Chapter **9.03 Selecting a production type**.



Notepad
This function opens the notepad with program details about the heat-sealing tools to be used.



Heat sealing program
Press this function to select the appropriate heat sealing program.



Pressing
This function is used to switch on the pressing function. It is possible to choose between two pressing functions:
- Cold pressing
- Warm pressing

The pedal function is used to switch between cold and warm pressing, see Chapter **7.03 Pedal**. During cold pressing the rollers are closed with the set roller pressure. The rollers roll over the part without tape, with disengaged hot air nozzle. During cold pressing the speed can be infinitely adjusted with the pedal function. The differential is switched off. During warm pressing, the hot air nozzle is also engaged.



Start
(This function appears, when the top feed roller is lowered.)
This function is used to call up the sealing start, analog to pedal function "+2", also see Chapter **7.03** Pedal.



Feed roller up/down
This function is use to raise or lower the top feed roller, depending on its position, analog to the pedal functions "-1" and "+1", also see Chapter 7.03 Pedal.



Feed rollers in reverse
This function makes it possible to call up the reverse running function of the feed rollers.



Tape cutting
This function starts a tape cutting operation.



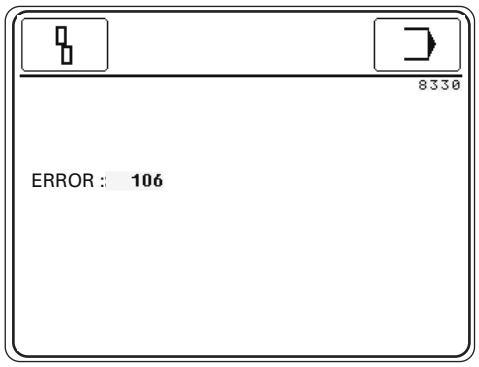
Input menu
This function is used to call up the Input Menu, see Chapter 11 Input.

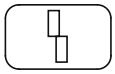


Stop
(This function appears during the sealing operation.)
This function is used to stop the sealing operation, analog to pedal function "-1", also see Chapter 7.03 Pedal.

10.08 Error messages

In case of a malfunction, an error code appears on the display. An error message may be caused by incorrect handling, faults on the machine or by overload conditions.
For the explanation of the error code, see Chapter 13.11 Explanation of the error numbers.





- Eliminate the error.
- Acknowledge the elimination of the error.

or



- Call up the input menu to eliminate the error with the service functions.

11 Input

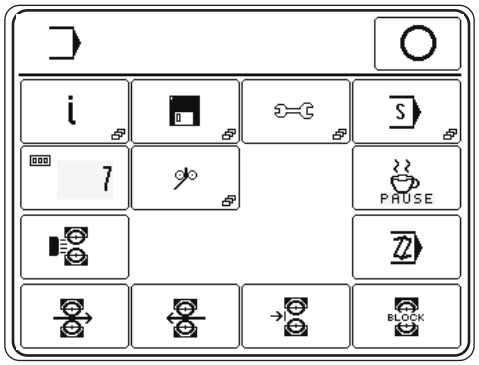
Contained in the input menu are the functions for displaying information, for program management, for machine adjustment and configuration (incl. choice of country and access rights), as well as for supporting service and adjustment work.

11.01 Summary of the functions in the input menu

- Switch on the machine.



- Call up the input menu.



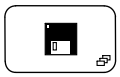
Description of the functions



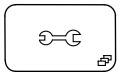
Heat sealing mode
This function is used to change to the heat sealing mode.



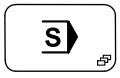
Info
This function opens a menu to display the following information:
- Current software status of the machine
- Current firmware status of the machine
- Current firmware status of the control panel
- Length of sealing tape already used (can be reset with the „clear“ function).
- Number of operating hours (can be reset with the Clear function)
- Number of production hours (can be reset with the Clear function)



Program management
This function is used to manage the data from the machine memory and disks, see Chapter 11.02 Program management.



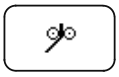
Further settings
This function is used to call up a menu with further machine settings, the choice of country and the access rights, see Chapter 11.04 Further settings.



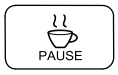
Servicemenu
This function is used to call up the menu for selecting various service functions, see Chapter 13.10 Service menu.



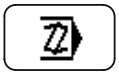
Daily piece counter
This function is used to call up the daily piece counter. The daily piece counter can be reset with the Clear function.



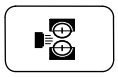
Tape parameters
This function is used to open a menu for entering the tape parameters, see Chapter 11.03 Tape parameters.



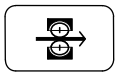
Pause
This function is used to switch off the temperature control of the heating element. The heating element cools down.



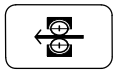
Programming
These functions are used to enter the function for creating and editing seam programs, see Chapter 10.03 Creating/editing seam programs.



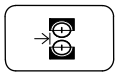
Pre-heating the feed rollers
This function is used to switch the automatic pre-heating function of the feed rollers on or off. When the function is activated, a menu opens for entering the pre-heating time.



Feed rollers forwards
This function makes it possible to turn the feed rollers forwards at a freely selectable speed. For this purpose a menu is opened with functions for selecting the speed of the feed rollers and for starting or stopping the feed rollers.



Feed rollers backwards
This function makes it possible to turn the feed rollers backwards at a freely selectable speed. For this purpose a menu is opened with functions for selecting the speed of the feed rollers and for starting or stopping the feed rollers.



Positioning the heating element
With the use of this function, the heating element can be engaged manually to facilitate the positioning of the heating element to the feed rollers. A menu is opened with functions for carry out the engaging or disengaging operation.

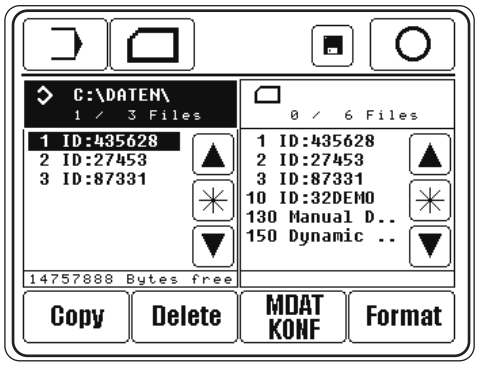


Locking the feed rollers
This function is used to lock the feed rollers in order to facilitate a feed roller change. A menu is opened with a function for releasing the lock again.

11.02 Program management

The program management function is used to manage sealing programs as well as configuration and machine data. Files of the machine memory can be saved to / restored from a SD-Card.

- Switch on the machine.
- Call up the input menu.
- Call up the program management function.



If the machine is equipped with a Floppy Disk drive, the operator can switch between Floppy and SD-Card with the button.

The directoryies of machine memory and SD-Card appear on the display:
- Left window: Machine memory ("C:\DATEN\" - is currently selected)
- Right window: SD-Card

The medium is selected by touching the appropriate field. The selected medium and the selected files are shown as inverse symbols:

Sealing 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 menu
This function is used to call up the input menu.

Refresh directoryies
This function is used to refresh the directoryies of machine memory and SD-Card.

Sealing mode
This function is used to change to the sealing 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
This function is used to copy the selected files from the current storage medium onto the second storage medium.

Delete

Delete

This function is used to delete the selected files.

MDAT KONF

MDAT/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 „MDAT8330“ and „KONF8330.BIN“. In this way the machine data can be copied on to a disk as a backup, or several machines with the same designation can be configured quickly by reading the machine data.

Format

Format

This function is used to format the floppy disk inserted. In case of SD-Card, a folder P8330 is created



In the course of the formatting operation, all data on the disk are deleted!
On SD-Card, only the contend of folder P8330 is deleted!

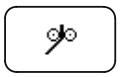
11.03 Tape parameters

In this menu the feed stroke and cutting parameters for the sealing tape are set for manual and dynamic sealing.

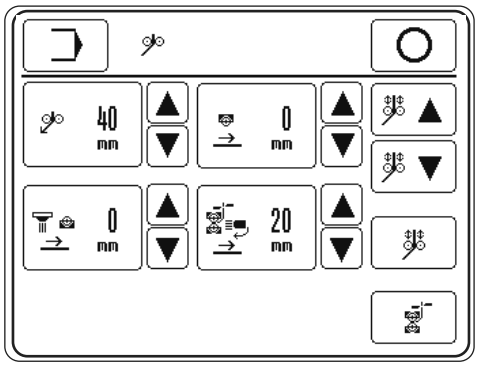
- Switch on the machine.



- Call up the input menu.



- Call up the input menu for tape parameters.



Description of the functions



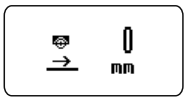
Input menu
This function is used to change from the initial state to the input mode.



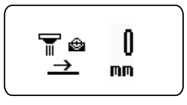
Sealing mode
This function is used to change to the sealing mode.



Tape feed stroke
These functions are used to alter the tape feed stroke.



Automatic start action
These functions are used to set the automatic start action.

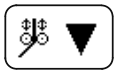


Light barrier path (optional)
These functions are used to set the distance between light barrier and roller contact point.

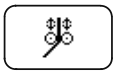


Disengaging path
These functions are used to alter the path for disengagement.





Tape up/down
These functions are used to move the tape forwards and back.



Tape fixation

This function is used to fix the tape in the band guide unit or release the tape from it. (symbol shown inverse).



Tape cutting

This function starts a tape cutting operation (Reference cut).

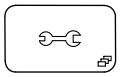
11.04 Further settings

The further settings are used for further machine settings, the choice of country and access rights.

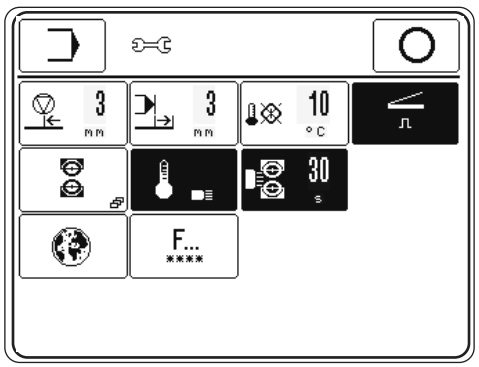
- Switch on the machine.



- Call up the input mode.



- Call up the input menu for further settings.



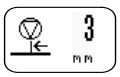
Description of the functions



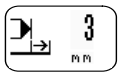
Input menu
This function is used to call up the input menu.



Sealing mode
This function is used to change to the sealing mode.



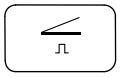
Feed unit backwards after stop
This function is used to enter the distance which the feed unit should move back after a sealing stop.



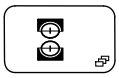
Feed unit forwards at end
The function can be switched on or off. When the function is switched on, the distance, which the feed unit should continue moving after the end of sealing, can be entered.



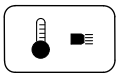
Temperature window for sealing start
This function is used to enter the tolerance between the actual and the set temperature, within which a sealing start is possible. If the actual temperature is outside the tolerance , the sealing start is blocked.



Flip-flop mode (pedal)
This function is used to switch the flip-flop mode for the pedal function on or off:
- Function switched on (symbol shown inverse)
  The pedal function is only carried out as long as the pedal is held in the appropriate position.
- Function switched off
  The pedal function is carried out as soon as the pedal is brought into the appropriate position and remains active after the pedal has been released.



Feed roller parameters
This function opens a menu for entering the feed roller parameters, see Chapter **11.04.01 Feed roller parameters.**



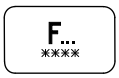
Automatic heat-up
This function switches the automatic heat-up function on or off. When the function is switched on, the heating cartridge in slowly heated in a certain area, to prevent any damage to the heating cartridge through an abrupt heat-up.



Pre-heating the feed rollers
This function is used to switch the automatic pre-heating function of the feed rollers on or off. When the function is activated, a menu opens for entering the pre-heating time.



Country settings
This function opens a menu for setting the language and measuring units for each country., see Chapter **8.04 Selecting the language and units.**



Right of access
This function calls up the menu for defining access rights, see Chapter **11.04.02 Rights of access.**

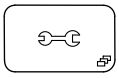
11.04.01 Feed roller parameters

In this menu the relevant parameters for the feed rollers are preset.

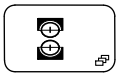
- Switch on the machine.



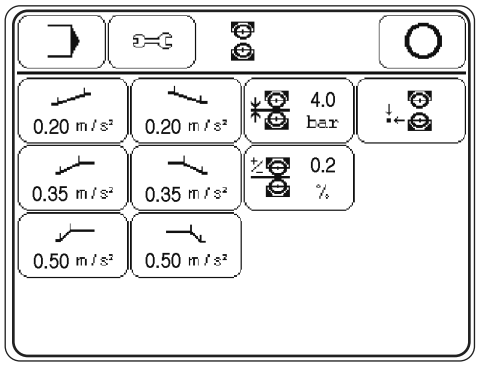
- Enter the input mode.



- Call up further settings.



- Call up the menu for entering the feed roller parameters.



Description of the functions



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

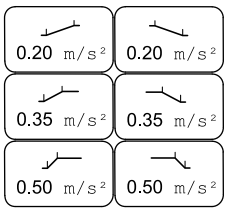


Further settings
This function calls up the menu for entering further settings again.



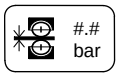
Sealing mode

This function is used to change to the sealing mode.



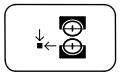
Acceleration and brake profiles

This function is used to enter the values for the corresponding acceleration or brake profiles.



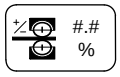
Feed roller pressure limit

This function is used to enter the maximum permissible value for the feed roller pressure.



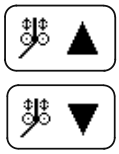
Basic position of the top feed roller

This function is used to select the basic position of the top feed roller. The basic position of the feed roller can be raised or lowered.



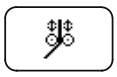
Feed difference inkrement

This function is used to enter the inkrement of the feed difference.



Tape up/down

These functions are used to move the tape forwards and back.



Tape fixation

These functions are used to fix the tape in the band guide unit or release the tape from it. (symbol shown inverse).



Tape cutting

This function starts a tape cutting operation (Reference cut).

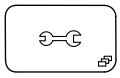
11.04.02 Rights of access

The functions, which can be called up with the control panel, are classified by code numbers and can be protected from unauthorised access. For this purpose, the control unit differentiates between 3 user groups (user 1, 2 and 3), all of which can be assigned a corresponding PIN. If a function is selected, for which the user does not have an authorisation, the user is requested to enter a PIN. After the appropriate PIN has been entered, the selected function is carried out. In addition to the 3 user groups, the control unit also recognises the so-called „super user", who, equipped with a key-switch, has access to all functions and who is authorised to stipulate the rights of access.

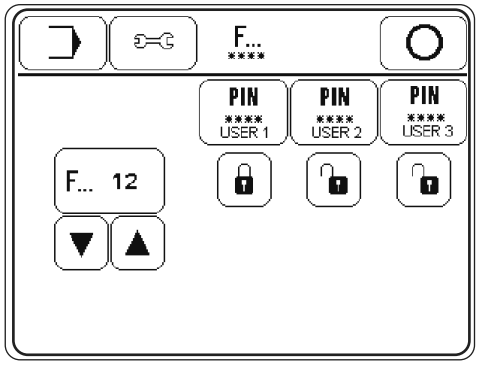
- Enter the key-switch and switch on the machine.



- Call up the input menu.



- Call up further settings.
- Call up the menu for entering rights of access.



Description of the functions



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



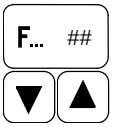
Further settings
This function calls up the menu for entering further settings again.



Sealing mode
This function is used to change to the sealing mode.



Entering the PIN
With this function an individual PIN for each user can be stipulated.



Function selection
These functions are used to select the code number for the function to be locked or released.

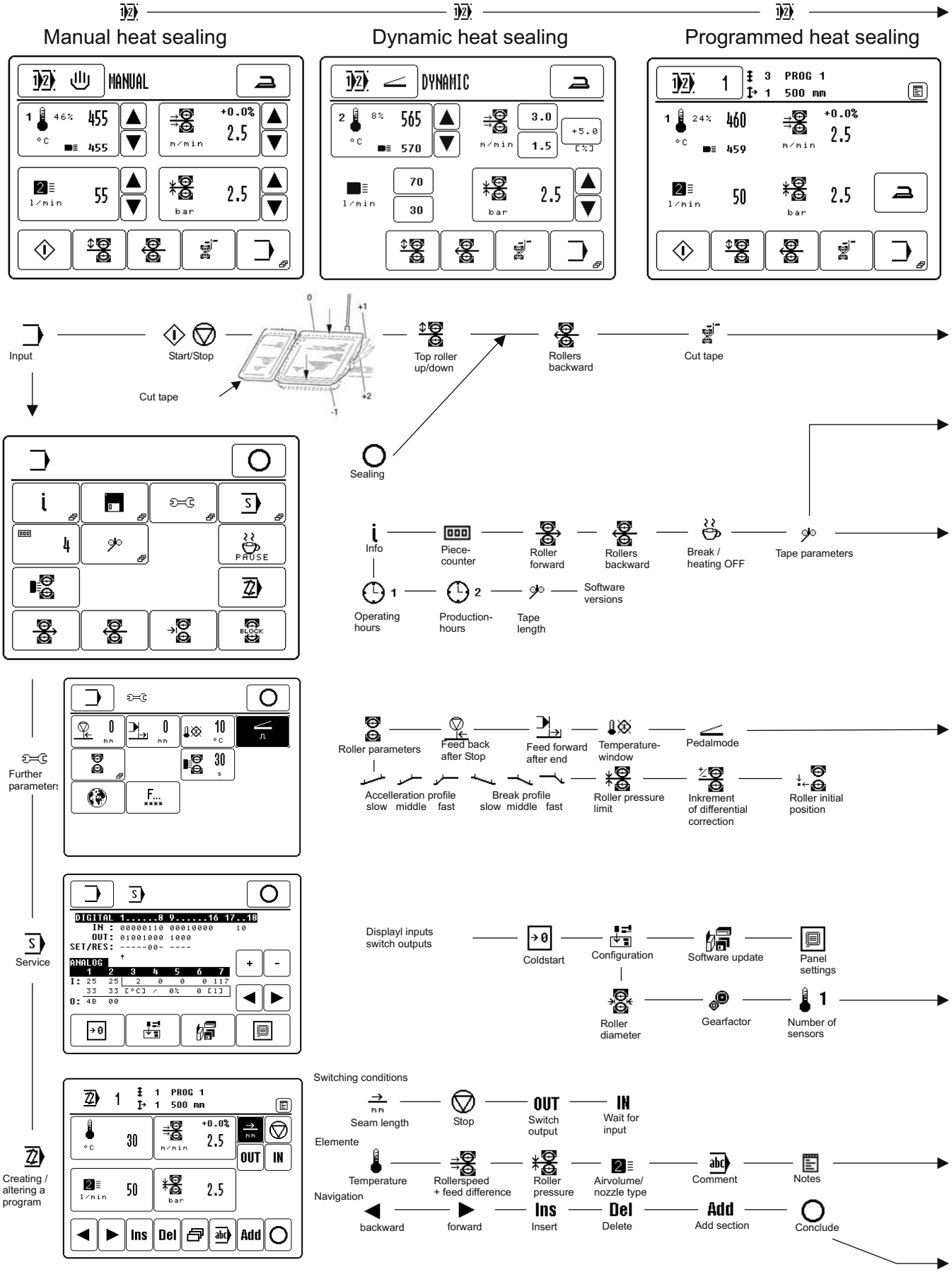


Locking/releasing
These functions are used to lock or release the function for the appropriate user.

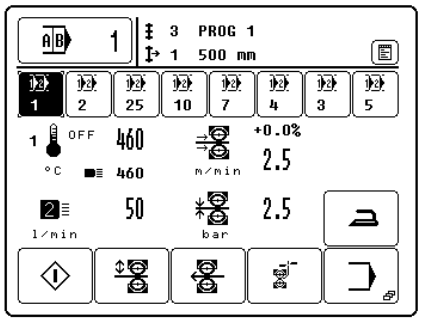
Zuordnung der Kennziffern

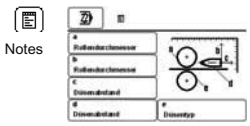
Code number	Function	Symbol	User 1	User 2	User 3
F...0	Program numbers - selection				
F...1	Creating/editing program				
F...2	Input mode				
F...3	Settings				
F...4	Roller settings				
F...5	Section backwards after stop				
F...6	Section forwards after end				
F...7	Temperature window				
F...8	Pedal - mode				
F...9	Automatic pre-heating feed rollers				
F...11	Tape parameters				
F...12	Country settings				
F...13	Lock/release functions	F... ****			
F...14	Program management				
F...15	Service	S			
F...16	Carry out a cold start	→0			
F...17	Machine configuration				
F...18	Load software				
F...19	Reset piece counter	000			
F...20	Reset production hours meter	2			
F...20	Reset tape consumption				
F...21	Parameter	PAR			
F...22	Control panel contrast				

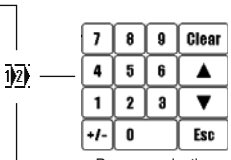
11.05 Abstract



Heat sealing. with sequences



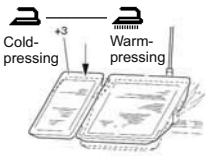

Notes



Program selection



Sequences



Cold-pressing

Warm-pressing

Load manual 130..149

Store manual 130..149

Select manual sealing

Load dynamic 150..169

Store dynamic 150..169

Select dynamic sealing

Parameters of manual sealing and dynamic sealing exist separately.
Parameters of programmed sealing and programmed sealing with sequences are entered in 'Creating/altering a program'.

Temperature

Airvolume/nozzle type

Nozzletype

Roller pressure

Roller speed

Feed difference

Tape feed

Automatic start action

Disengaging distance

Light barrier distance

Further parameters

Acceleration profile slow middle fast

Break profile slow middle fast

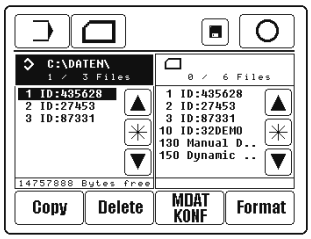
Start delay

Preheating the rollers

Positioning the nozzle

Lock rollers

Program management



Automatic preheating

Local settings

D,GB,F,E,I

Language

mm,inch...
°C,°F ...

Units

Rights of access

Airvolume controller

Tape knife clearence

Parameters (further settings)

Parameter	Range	Init-value
Temp sensors	1..2	1
Flow sensor	0:OFF 1:ON	1:ON
Sequence continue	0:OFF 1:ON	1:OFF
Enable Iron	0:OFF 1:ON	1:ON
Iron mode	0:OFF 1:ON	0:OFF
E4 enable	0:OFF 1:ON	1:ON
NiCr-Ni	0:OFF 1:ON	1:ON
Y1mode	0:lp 1:hp	0:lp
Tapespeed	1..60*0,1m/min	30
Trailer	0..99 mm	10
Overlap	0..1	0
Cutter type	0..1	0
Y11DelayTime	0..1000*10ms	0
PullTapeBack	0:No 1:Yes	1
OpenRollersCutTape	0..2	2
LightBarrierMode	0..1	1

Further parameters

Accelleration profile slow middle fast

Break profile slow middle fast

Start delay

nozzletype

Tape parameters

Discard changes

Enter

Store program

Save as...

Store program with new number

Esc

Tape feed

Automatic start action

Disengaging distance

Light barrier distance

12 Care and Maintenance

12.01 Servicing and maintenance intervals

Cleaning the hot air nozzle	as required
Cleaning the air filter/lubricator	daily, before each start up
Changing the feed roller	as required

12.02 Cleaning



Switch off the machine and let it cool down!

Danger of burns if the heating element is touched!



- Clear the opening of the hot air nozzle from sealing residues as required.

12.03 Checking the air filter/lubricator

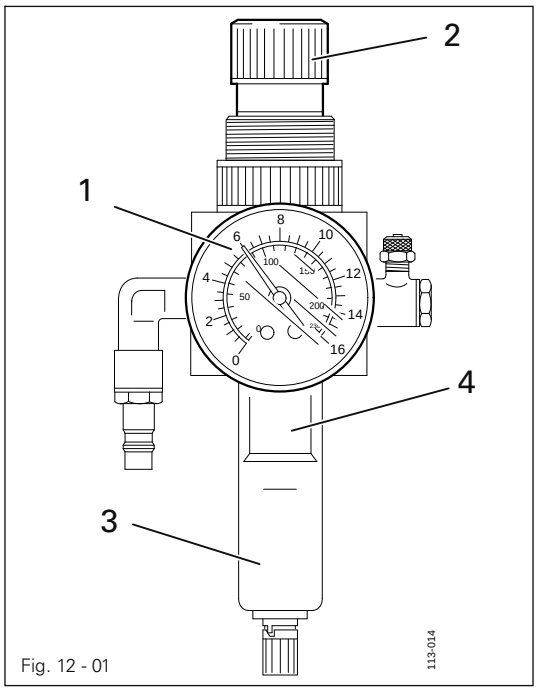


Fig. 12 - 01

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.



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

To drain water bowl

- Water bowl **3** drains itself automatically whe the compressed-air hose is disconnected from the air-filter/lubricator.

Cleaning filter

- Unscrew water bowl **3** and Take out filter **4**.
- Clean filter **4** with compressed air or isopropyl alcohol (part No. **95-665 735-91**).
- Screw in filter **4** and screw on water bowl **3**.

12.04 Changing the feed rollers

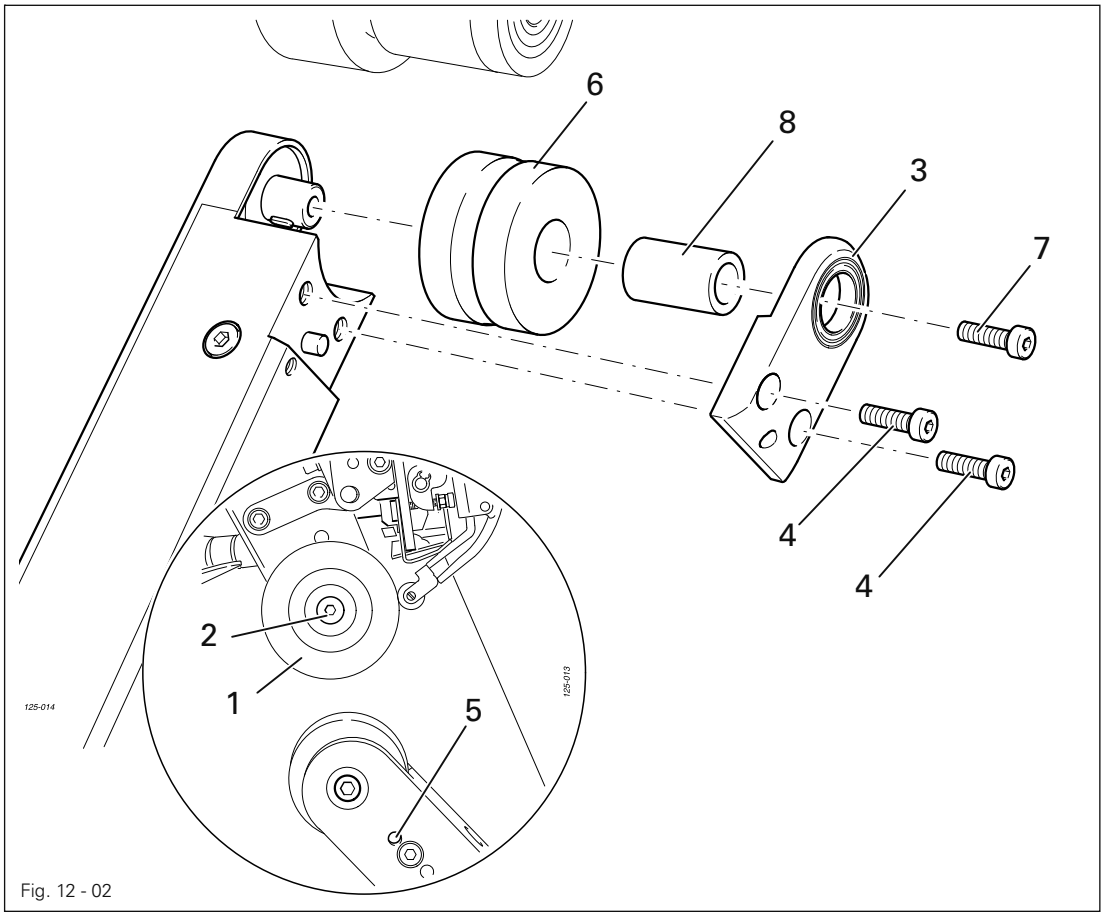


Fig. 12 - 02

- Switch on the machine and set the sealing temperature at its minimum value.

Let the heating element cool down!

Danger of burns if the heating element is touched!

- Call up the input menu.

- Lock the feed rollers.

- Change feed roller **1** (screw **2**).
- Remove cover **3** (screws **4**). If necessary help by placing Allen key through hole **5**.
- Remove feed roller **6** (screw **7**) with sleeve **8**.
- Position new feed roller **6** with sleeve **8** and fasten with screw **7**.
- Screw on cover **3** (screws **4**).

If there is a difference between the diameters of the old and new feed rollers, the machine must be re-configured, see Chapter **13.10.01 Machine configuration.**

- Check the position of the feed rollers and correct it if necessary, see Chapter **13.03 Adjusting the feed rollers.**
- Switch off the machine.

13 Adjustment

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!



Before all adjustment work switch the machine off and let it cool down!
Danger of burns if the hot-air nozzle is touched!

13.02 Tools, gauges and other accessories

- 1 set of screwdrivers with blade widths from 2 to 10 mm
- 1 set of open-ended wrenches with opening sizes from 7 to 14 mm
- 1 set of allen keys from 1.5 to 6 mm

13.03 Adjusting the feed rollers

Requirement
The feed rollers **1** and **3** should be centred and parallel to each other.

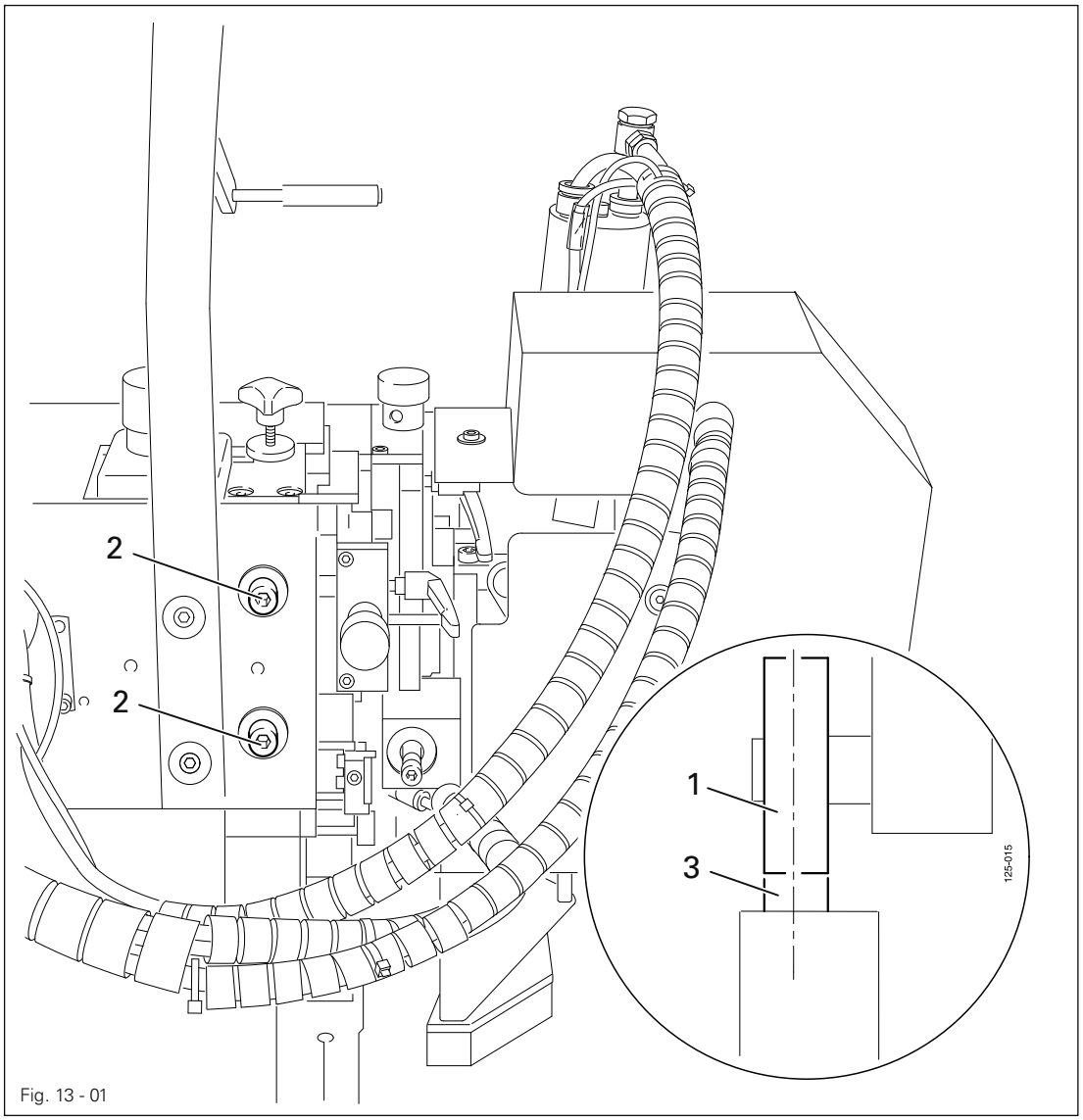


Fig. 13 - 01

- Adjust feed roller **1** (screws **2**) in accordance with the requirement.
- Check the roller clearance, see Chapter **13.04.02 Adjusting the height and the feed roller clearance.**

13.04 Adjusting the hot air nozzle

13.04.01 Lateral adjustment

Requirement
When hot air nozzle **3** is engaged, seen in the feed direction it should be centred to the feed roller **4**.

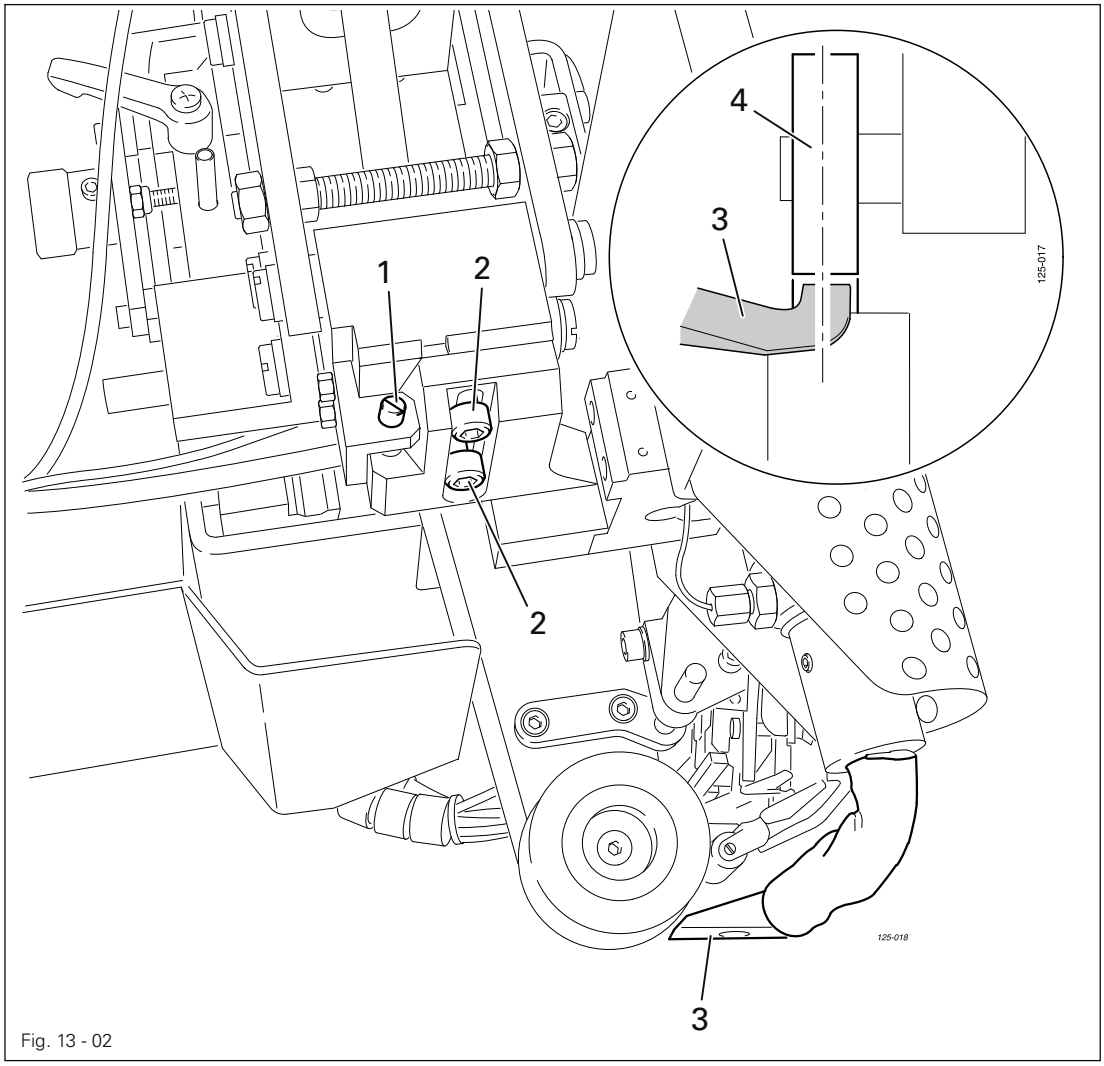
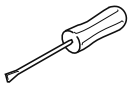


Fig. 13 - 02



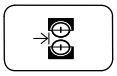
- Switch on the machine and set the sealing temperature to its minimum value.



Let the heating element cool down!
Danger of burns if the heating element is touched!



- Call up the input mode.



- Position the heating element.
- Adjust screw **1** (screws **2**) in accordance with requirement .
- Switch off the machine.

13.04.02 Adjusting the height and the feed roller clearance

Requirement

1. The height adjustment of not air nozzle **5** depends on the material, and the standard setting is centred to the feed rollers.
2. There should be clearance of ca. **1** -**2** mm between hot air nozzle **5** and the workpiece.

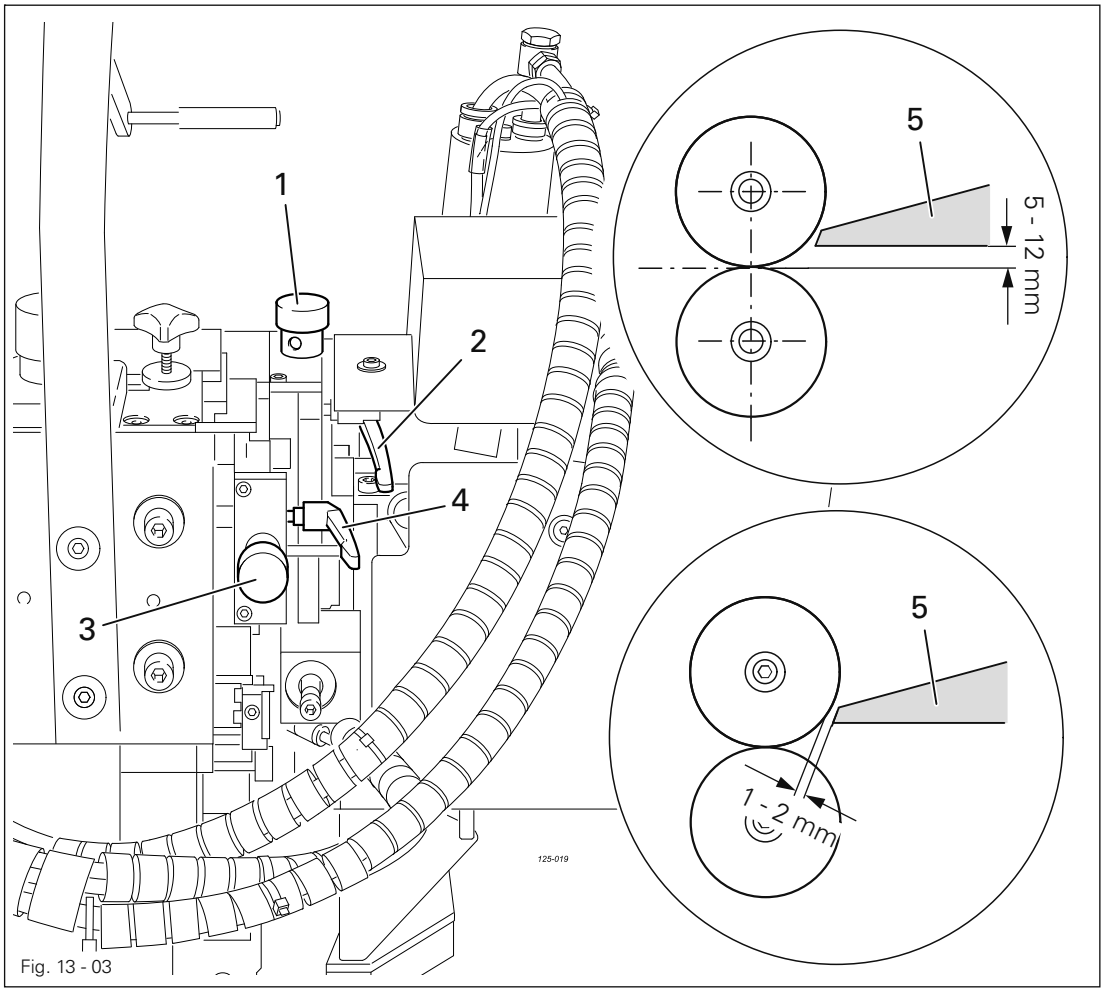
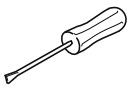


Fig. 13 - 03



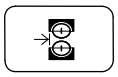
- Switch on the machine and set the sealing temperature to its minimum value.



Let the heating element cool down!
Danger of burns if the heating element is touched!



- Call up the input mode.



- Position the heating element.
- Adjust screw **1** (clamp screw **2**) in accordance with **requirement 1**.
- Adjust screw **3** (clamp screw **4**) in accordance with **requirement 2**.
- Switch off the machine.

13.04.03 Setting the angle

Requirement
Hot air nozzle **1** should be aligned as shown in the blow-up in Fig. **13-04**.

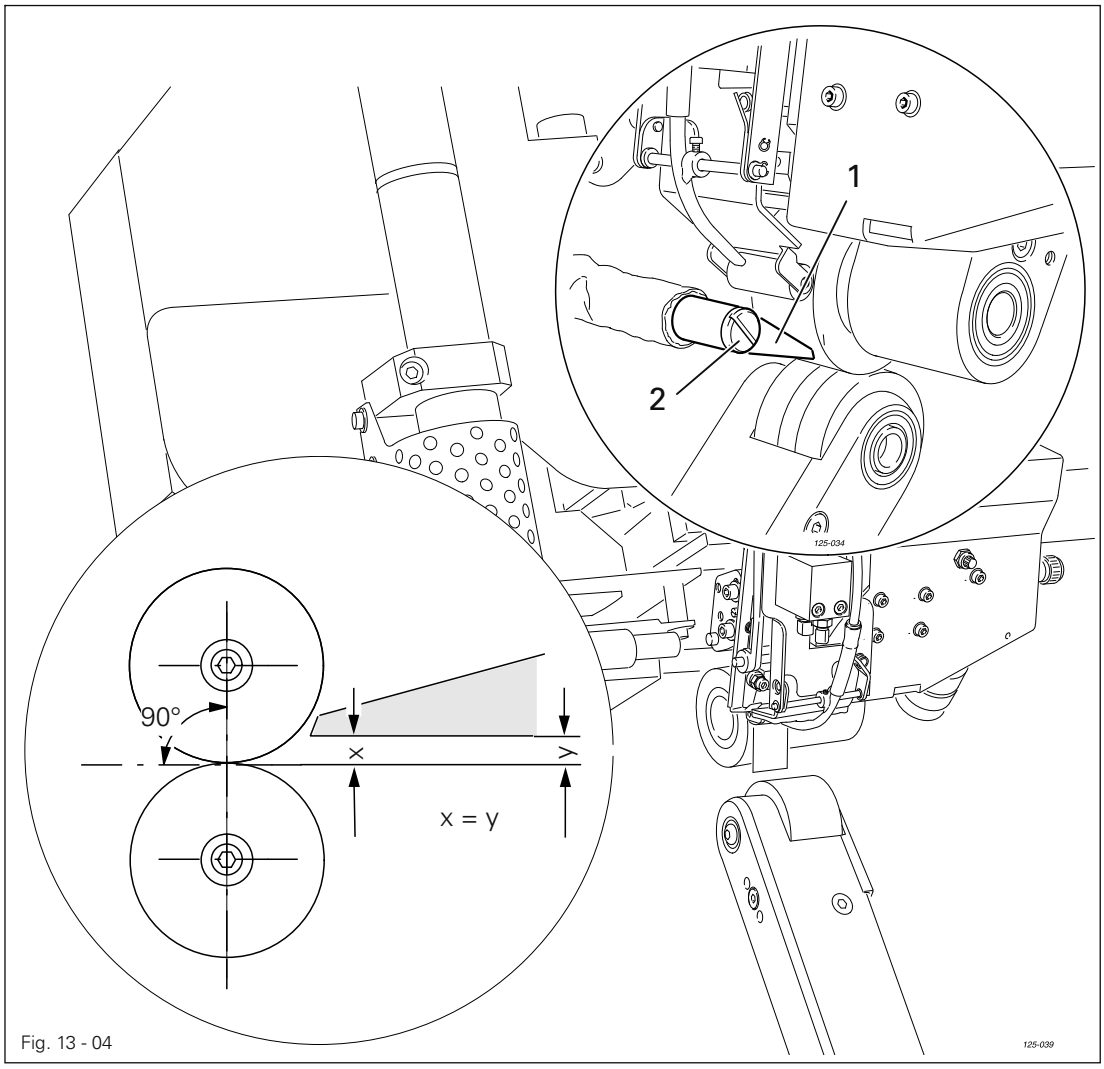
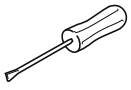


Fig. 13 - 04



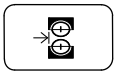
- Switch on the machine and set the sealing temperature to its minimum value.



Let the heating element cool down!
Danger of burns if the heating element is touched!



- Call up the input menu.



- Position the heating element.
- Adjust hot air nozzle **1** (screw **2**) in accordance with the requirement.
- Check the height setting of the hot air nozzle, see Chapter **13.04.02 Adjusting the height and the feed roller clearance**.
- Switch off the machine.

13.05 Changing the heating cartridge

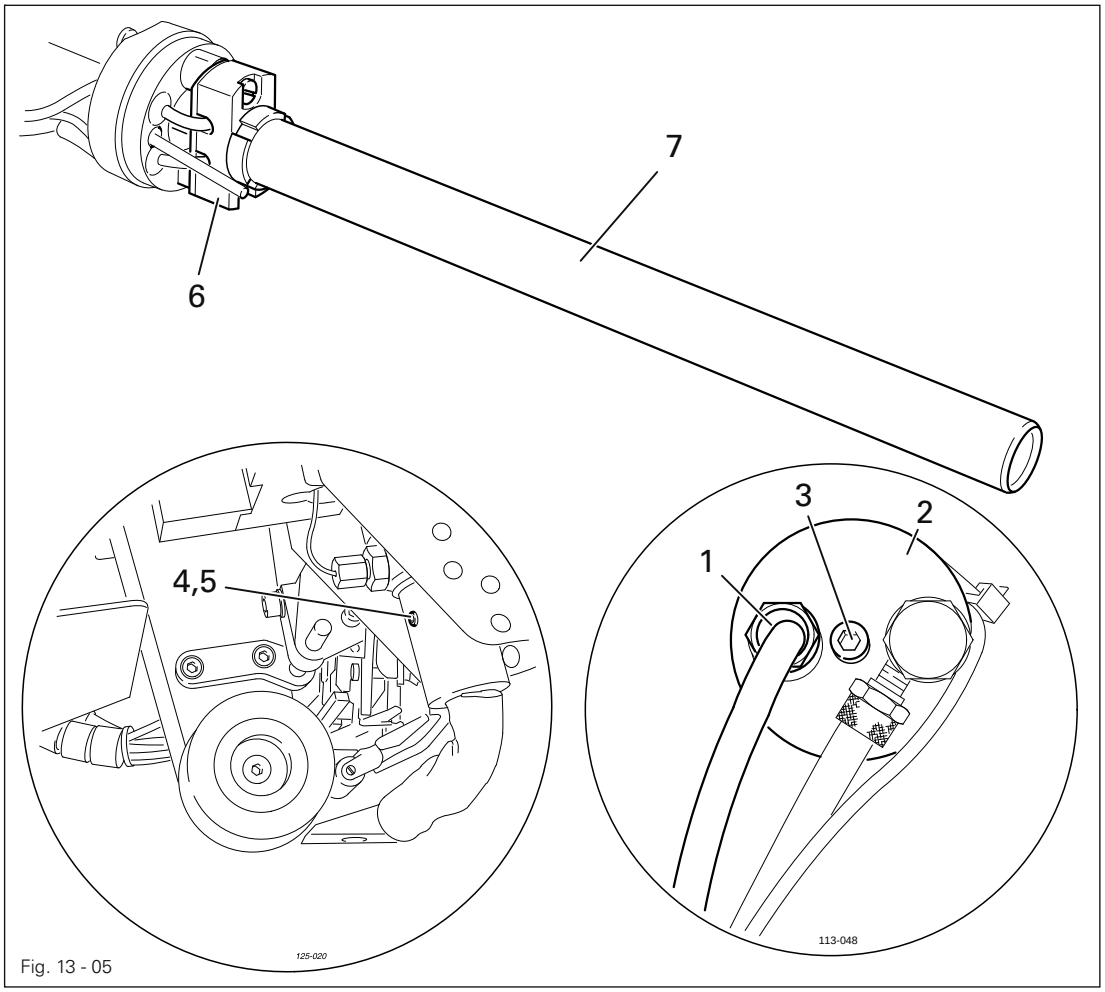
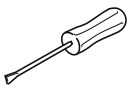


Fig. 13 - 05

Wait until the heating element has cooled down! Danger of burns!

Disconnect the mains plug!

Danger from electric voltage!



- Loosen the cable screw **1**.
- Remove cap **2** (screw **3**).
- Remove screw **4** and loosen screw **5** (underneath).
- Pull out socket **6** together with the heating cartridge **7**.
- Remove heating cartridge **7** from socket **6**.
- Installation takes place in the reverse order, taking care that screw **5** must only be tightened slightly (**max. 1 Nm**).

13.06 Changing the temperature sensor

Requirement
The temperature sensor **5** should be inserted as far as possible into the hot air tube.

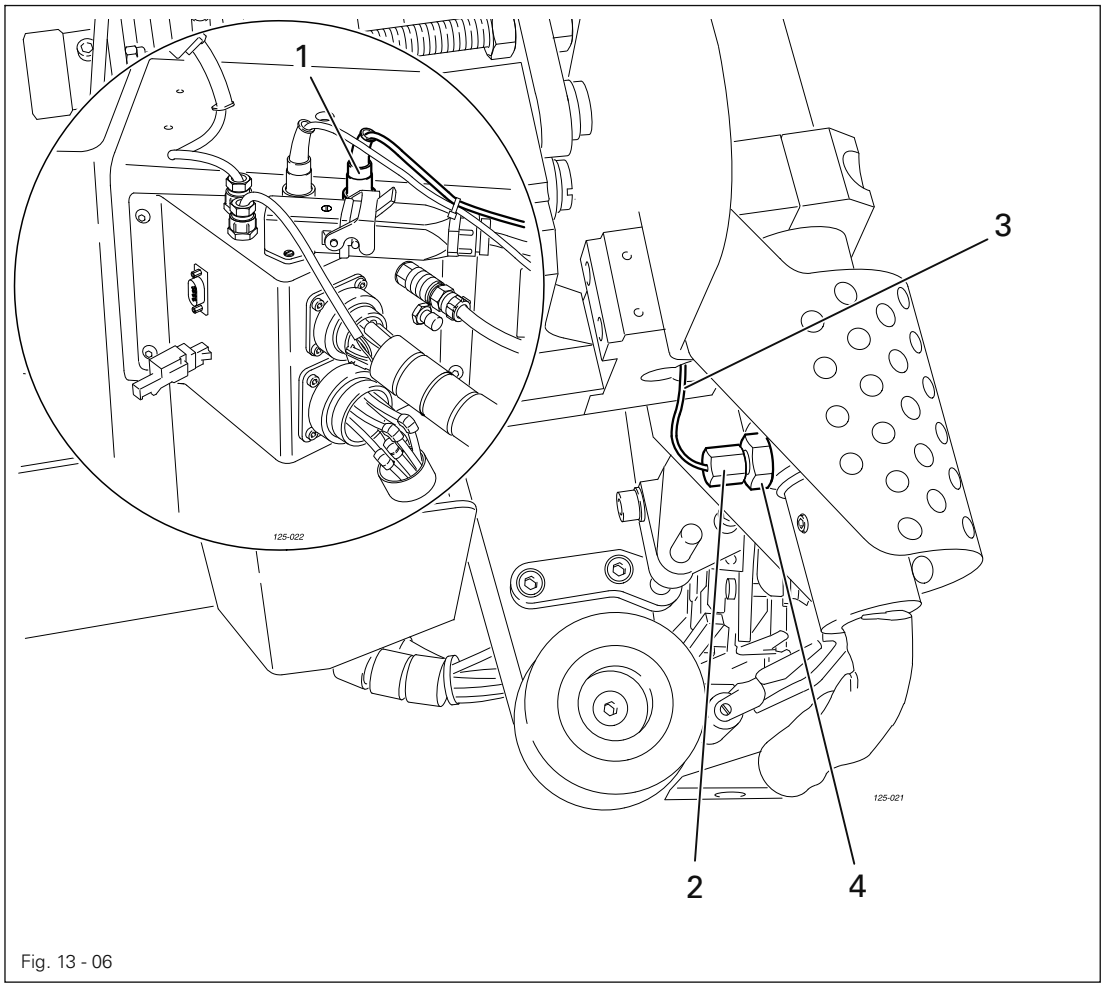


Fig. 13 - 06



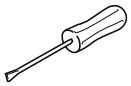
Wait until the heating element has cooled down! Danger of burns!



Disconnect the mains plug!



Danger from electric voltage!



- Disconnect plug **1**.
- Remove nut **2** together with the temperature sensor **3**.
- Attach the new temperature sensor **3** together with new nut **2**.
- Slide temperature sensor **3** as far into the hot air tube as possible and fix it in this position by tightening nut **4**.

- The rest of the installation takes place in the reverse order.
- Carry out adjustments as described in **Chapter 13.04.02 Adjusting the height and feed roller clearance of the hot air nozzle.**

13.07 Tape cutting device

13.07.01 Knife

Requirement
Knife **2** should move easily and cut reliably.

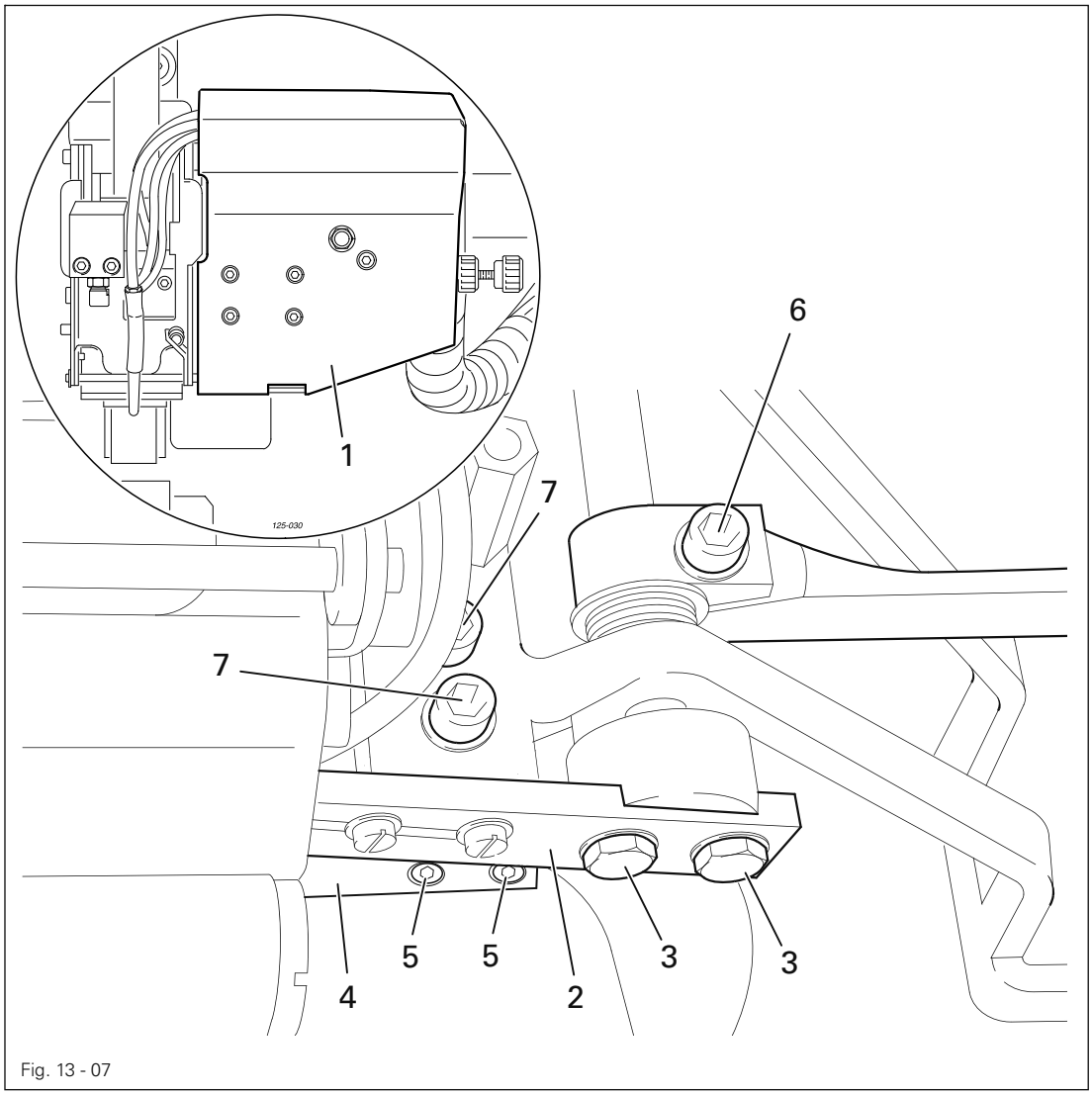
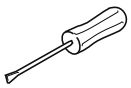


Fig. 13 - 07



- Remove cover **1**.
- Remove loose knife **2** (screws **3**) and counter knife **4** (screws **5**).
- Screw on new knife.
- Adjust the knife pressure (screw **6**) and cutting angle (screws **7**) in accordance with the requirement.
- Carry out a cutting test.
- Screw on cover **1**.

13.07.02 Air jet setting

Requirement

1. During insertion the tape must not roll itself up.
2. After cutting the tape must be pressed against the top feed roller by the air current.

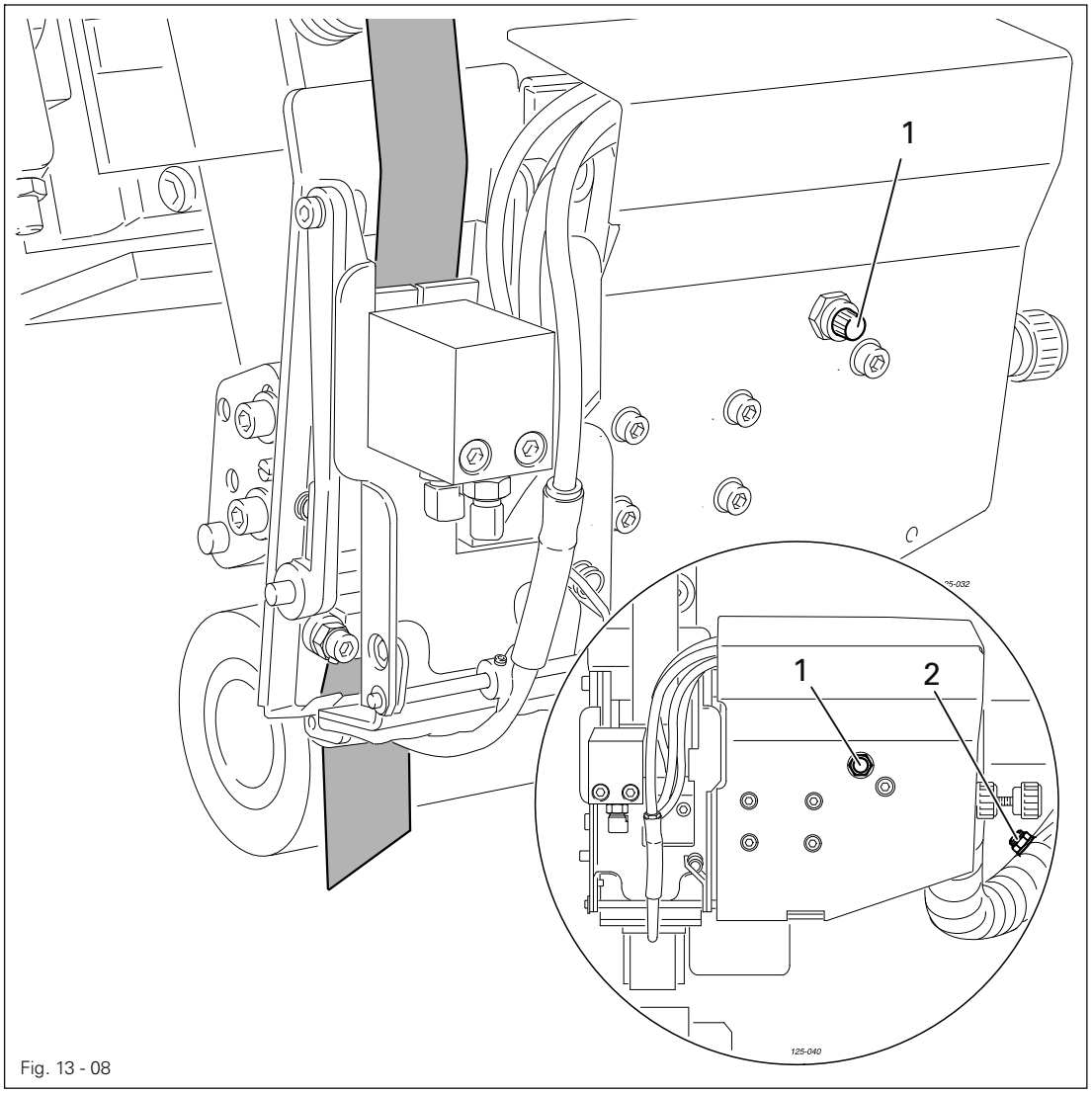


Fig. 13 - 08

- Adjust the throttle **1** in accordance with the requirement **1**.
- Adjust the throttle **2** in accordance with the requirement **2**.

13.08 Protective switch

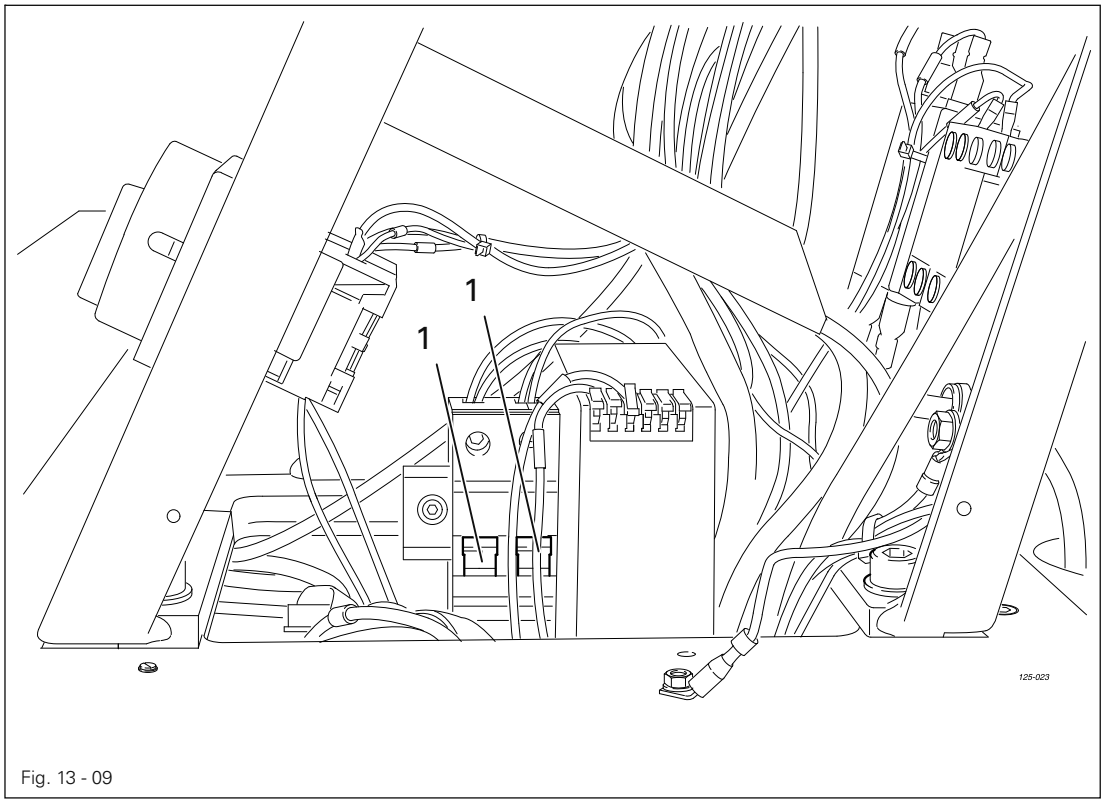


Fig. 13 - 09

The protective switch **1** serves as a protection against major damage in case of a short circuit or overload.



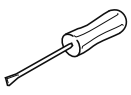
Disconnect the mains plug!



Danger from electric voltage!



Before switching the machine on again, first eliminate the cause of the fault!



- Eliminate the cause of the fault.
- Open the control box and reset protective switch **1**.
- Close the control box again.

13.09 Boot key

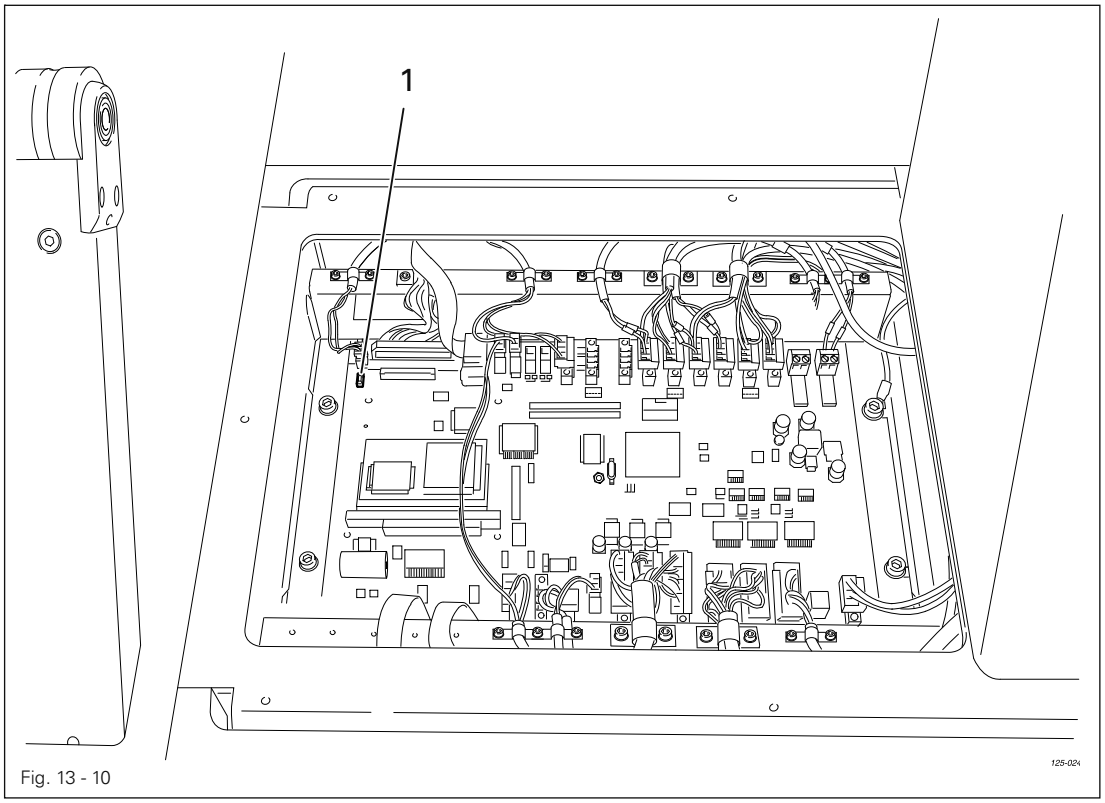


Fig. 13 - 10

The boot key **1** is used to boot-up the machine control unit, see Chapter **13.10.02 Loading/ updating the operating program.**

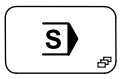
13.10 Service menu

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

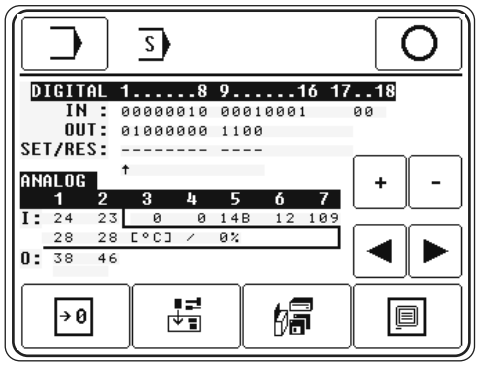
- Switch on the machine.



- Call up the input mode.



- Call up the service menu.



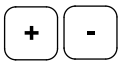
Explanation of the functions



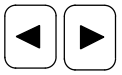
Input mode
This function is used to change to the initial state of the input mode.



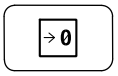
Heat sealing mode
This function is used to change to the heat sealing mode.



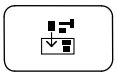
Plus/minus keys
These are used to set (+) or reset (-) the selected output.



Arrow keys
These are used to select the desired outputs.



Cold start
This function is used to carry out a cold start.
After a cold start all machine parameters are set back to their original state.



Machine configuration
This function calls up a menu for configuring the machine, see Chapter **13.10.01 Machine configuration.**



Loading the operating program
This function is used to load the machine operating program, see Chapter **13.10.02 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 **9.05 Setting the control panel.**

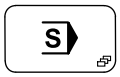
13.10.01 Machine configuration

With the machine configuration function the machine control unit receives the necessary information about the attached components. If the machine components are changed, care must be taken to make the appropriate adjustment in the machine configuration.

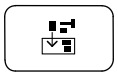
- Switch on the machine.



- Call up the input mode.

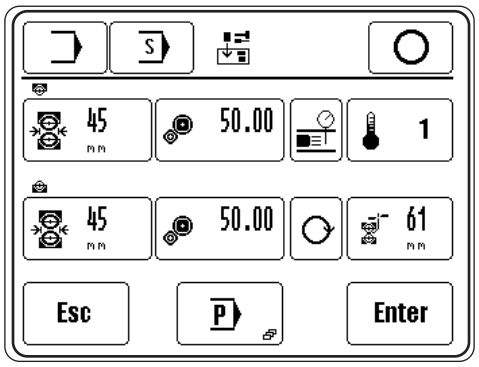


- Call up the service menu.

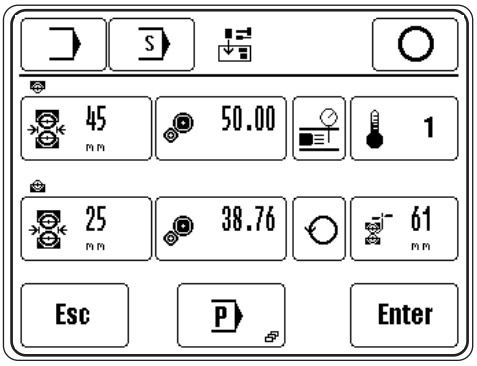


- Call up the menu for entering the machine configuration.

Configuration of standard post



Configuration of small backward post



Explanation of the functions



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



Service menu
This function is used to call up the service menu again.



Heat sealing mode
This function is used to change to the heat sealing mode.



Top/bottom feed roller diameter
These functions are used to enter the diameters of the feed rollers installed.



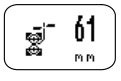
Top/bottom gear factor
These functions are used to enter the gear factor for the top and bottom roller drive.



Air volume control
This function is used to switch the air volume control on or off.



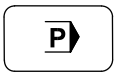
Number of temperature sensors
This function is used to adjust the number of temperature sensors.



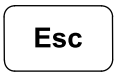
Tape knife clearance
This function is used to enter the tape knife clearance to the roller peak.



Rotating direction of the bottom roller
This function is used to change the rotating direction of the bottom roller.



Further parameters
This function is used to open the menu for entering further parameter values, see Chapter 13.10.03 Entering further parameters.



Esc
The input is interrupted and the machine moves back to the initial state of the programming function.



Enter
All program changes are stored under the current program number.

13.10.02 Loading/updating the operating program

13.10.02.01 Loading/updating the operating program with the Floppy Disk

This function is used to update the machine software. For this purpose an appropriate boot disk must be available.

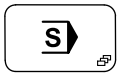


When the operating program is loaded, all data in the machine memory is deleted!

- Switch on the machine.



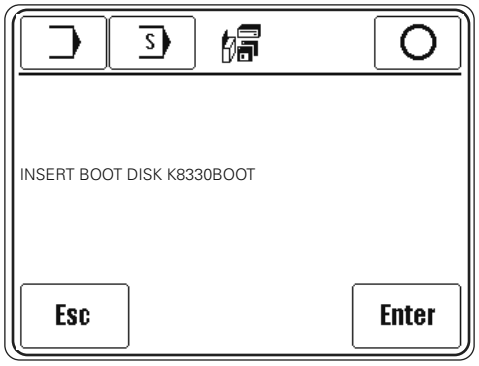
- Call up the input mode.



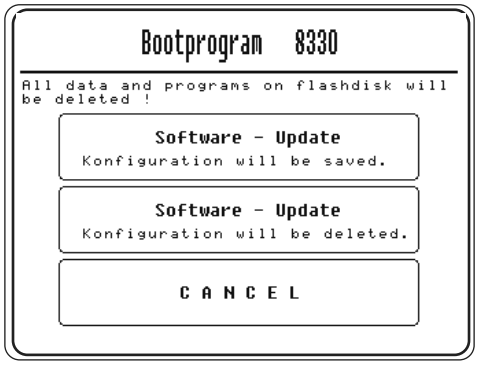
- Call up the service menu.



- Function loading/updating the operating program .

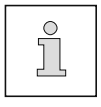


- Insert the boot disk.



- Choose between the 3 options:

1. Load operating program and retain the old machine configuration
   or
2. Load the operating program and delete the old machine configuration. After the operating program has been loaded, the machine must be reconfigured, see Chapter 13.10.01 Machine configuration
   or
3. Interrupt the loading operation and continue working with the old software.

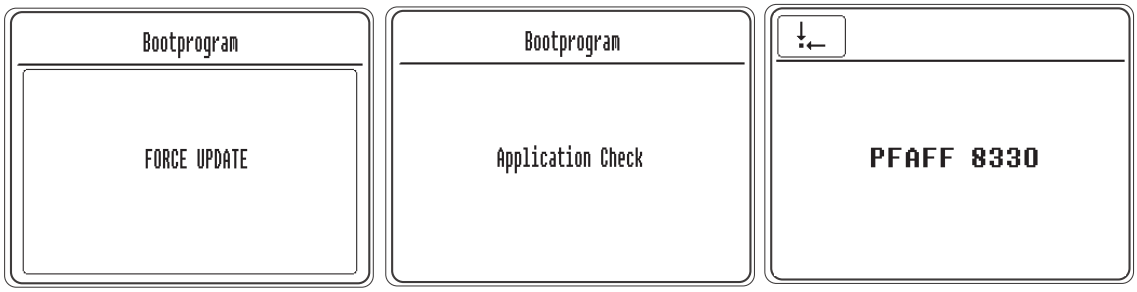


Before loading the operating software for the first time, the boot disk must be inserted before the main switch is operated, and the boot switch pressed during the switch-on operation, see Chapter 13.09 Boot switch.

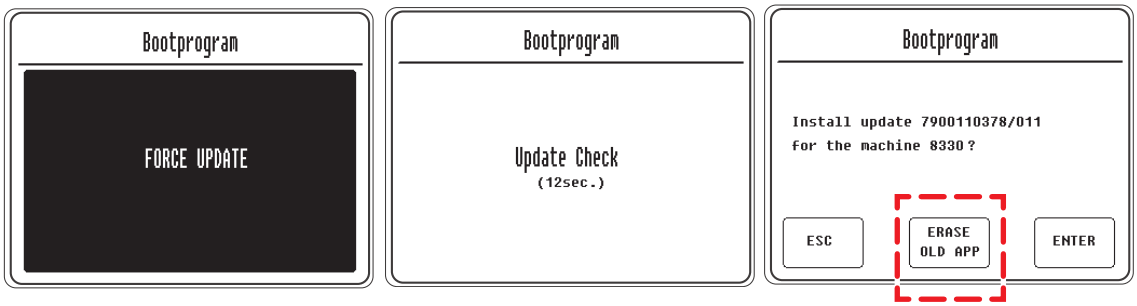
13.10.02.02 Loading/updating the operating program with SD-Card

With the BDF - P1 panel, the software of the machine can be updated with a SD-Card. The factory software includes a bootmanager program to start the application program or to force an update.

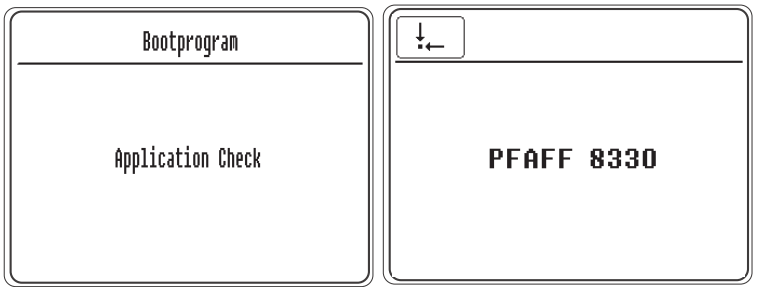
After switch on the machine, the bootmanager checks and starts the application software. No user intervention is required.



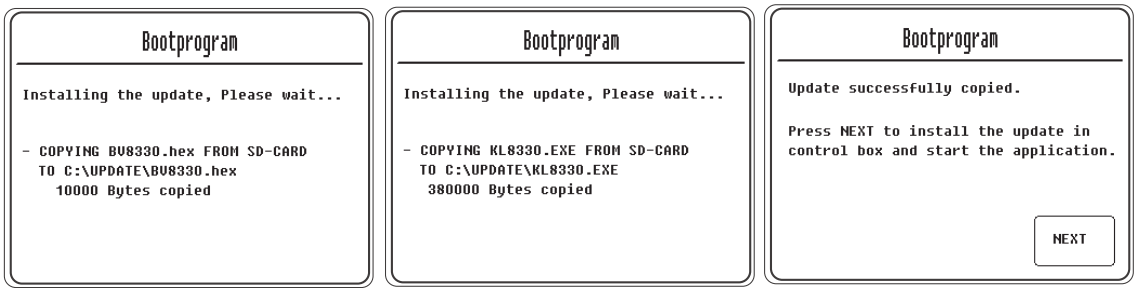
In order to update the application software, the FORCE UPDATE key (appearing in the first screen after power on) must be pushed.



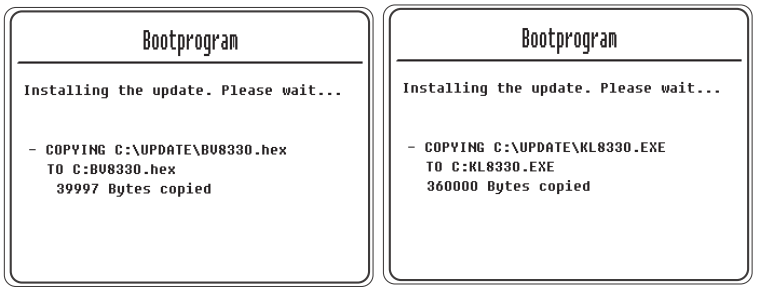
Esc Pushing the ESC key, skips the update function. The bootmanager checks and starts the old existing application software.



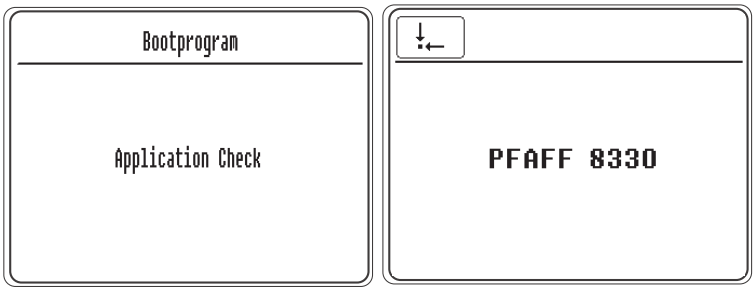
Enter Pushing the ENTER key starts the update function. First the bootmanager copies the files from SD-Card to the machine memory.



NEXT By pushing the NEXT key, the application software gets overwritten with the copied files.



The memory is cleaned up and the bootmanager checks and starts the new application program.



The function "ERASE OLD APP" is recommended for experienced users only!

If a software for another machinetype is loaded by mistake, these files can be erased with this function. The bootmanager queries each file before deleting.

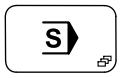
You need a succsessful update to operate the machine again!

13.10.03 Further parameters

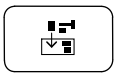
Via the machine configuration the machine control unit receives the necessary information about attached components. If the machine components are altered, it is always necessary to make sure that the appropriate adjustment is made in the machine configuration.



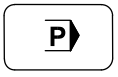
- Switch on the machine and call up the input mode.



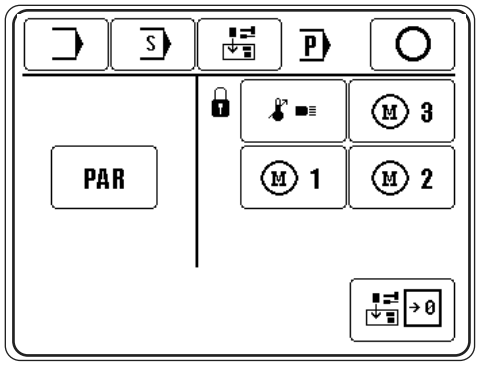
- Call up the service menu.



- Call up the menu for entering the machine configuration.

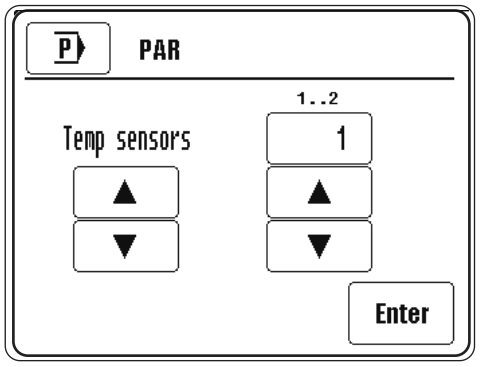


- Call up the menu for entering further parameters.





- Call up the “Parameter” function.





- Select or alter the parameters and values with the appropriate arrow keys.



- Conclude the parameter input.

13.10.04 Parameter list

Parameter	Value range	Init-value	Function
Temp sensors	1...2	2	Number of temperature sensors (copy from config-page)
Flow sensor	0:OFF 1:ON	1:ON	Air flow volume meter installed (copy from config-page)
Sequence continue	0:OFF 1:ON	1:ON	1: Automatic switching to next sequence program0: Sequence programs function as quick selection keys
Enable Iron	0:OFF 1:ON	1:ON	Iron key active when ON
Iron mode	0:OFF 1:ON	0:OFF	0: Switch to warm iron as flip-flop function 1: Switch to warm iron as level function
E4 enable	0:OFF 1:ON	1:ON	1: Switch E4 (nozzle moved forwards) requested 0: Switch E4 ignored
NiCr-Ni ▲	0:OFF 1:ON	1:ON	1: NiCr-Ni sensor (green wires) 0: Fe-CuNi sensor (blue wires)
Y1mode ▲	0:lp 1:hp	0:lp	0: Y1 (roller up/down) with pressure reducer (low pressure) 1: Y1 without pressure reducer with short counter pressure (high pressure)
Tapespeed	10..60 m/min	30x0,1m/min	Tape feed speed
Trailer	0..99 mm	10 mm	Trailer
Overlap	0:OFF 1:ON	0:OFF	0: Tape feed after seam cycle end. 1: Tape feed after disengaging nozzle (overlapping with trailer).
Cutter type	0..1	0	0: 8330 Tape cutter 1: 8330-060 Tape cutter
Y11delayTime	0..1000 x 10ms	0 x 10ms	Switch off delay of the air blast tape cutter (for locating tape) following the engaging of the nozzle.
PullTapeBack	0..1	1	0: Always cut tape 1: Pull tape back to cut position
OpenRollerCut-Tape	0..2	2	0: Open the rollers without tape cut 1: Open the rollers with pedal causes a tape cut, open the rollers with panel key don't cut 2: Open the rollers always cut tape
LightBarrier-Mode	0..1	1	0: Light barrier always cause a tape cut 1: Light barrier cause a tape cut if armed by left pedal

▲ Parameters can by altered with the superpin only.

13.11 Description of the error numbers

13.11.01 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: 9	Firmware version conflict
ERROR: OPERATING DATA CHECK SUM (CARRY OUT COLD START)	Operating data check sum
NEW OPERATING SOFTWARE (CARRY OUT COLD START)	New operating software
COLD START CARRIED OUT	Cold start
ERROR: 101	C167-error
ERROR: 106	Error compressed air
ERROR: 107	Error air volume(when air volume sensor is activated)
ERROR: 110 #Error no. motor	Error DC-motor 1
ERROR: 120 #Error no. motor	Error DC-motor 2
ERROR: 130 #Error no. motor	Error DC-motor 3
ERROR: 140 #Error no. Temp. control	Error temperature control
ERROR: 201	Res. speed for man. sealing outside permissible range
ERROR: 203	Tape not in basic position (resp. not cut)
ERROR: 301	Program too large
ERROR: 302	Contradiction between progpar and progload
ERROR: 303	Flash read error or progr. defect
ERROR: 304	Memory overflow
ERROR: 305	Invalid configuration
ERROR: 310	File not on source
ERROR: 311	Source reading error, file cannot be opened
ERROR: 312	Target write error, file cannot be opened
ERROR: 313	Source reading error
ERROR: 314	Target write error
ERROR: 315	File config cannot be opened
ERROR: 316	Error when opening MDAT-file
ERROR: 317	Write error in MDAT-file
ERROR: 318	Machine data identification incorrect
ERROR: 319	Read error in MDAT-file

Display	Description
ERROR: 330 #Prog. No. #Zone No.	Program. speed > max. gear-controlled speed
ERROR: 331 #Prog. No. #Zone No.	Programmed roller pressure > roller pressure limit
ERROR: 332 #Prog. No. #Zone No.	Speed and differential outside permissible values
ERROR: 340 # Zone No.	Selected temperature too high
ERROR: 341 # Zone No.	Air volume does not match nozzle type
ERROR: 342 # Zone No.	Programmed sealing off not plausible
ERROR: 343 # Zone No.	Programmed output (OUT) not plausible
ERROR: 344 # Program No.	Program not for this machine, nozzle
ERROR: 345 # Zone No.	Section in last program zone smaller than clearance to tape knife (i.e. smaller than length of remaining tape)
PROGRAM XX NOT IN MEMORY	Program XX does not exist
ERROR: 401	Text file cannot be opened
ERROR: 402	Error in read text file
ERROR: 501	Error when opening file “pikto.hex” or “vorlagen.hex”
ERROR: 502	No ACK from control panel

13.11.02 Temperature control error

Error number	Description
0	No error
1	Thermoelement 1 disconnection (HW-alarm-bit)
2	Control circuit not reacting
3	Temperature window (alarm) exceeded
4	Thermoelement 2 disconnection (HW-alarm-bit)
5	Thermoelements 1 and 2 exchanged
6	No temperature increase despite of controller full scale (thermoelement possibly not in its holder)

13.11.03 DC-motors error

Error number	Description
0	No error
10	Incorrect command code
11	Invalid speed
12	Invalid acceleration
13	Start with dead motor
14	Set differential with master
15	Contouring error
16	Overload current
17	Over 8 V positioning voltage with standing motor (possible cause: larger load moment on rollers or break in cable to incremental transmitter)

13.12 List of outputs and inputs

13.12.01 Digital Outputs

HW Term	SW Term	Function	Remark
AUS (OUT) 1 X1/1	Y1	Roller down (reduced pressure)	Valve
AUS (OUT) 2 X1/3	Y2	Addit. blowing off	Valve
AUS (OUT) 3 X1/5	Y3	Engage nozzle	Valve
AUS (OUT) 4 X1/7	Y4	Nozzle forwards	Valve
AUS (OUT) 5 X11/1	Y11	Air blast Tape cutter	Valve
AUS (OUT) 6 X11/3	OUT1	Programmable output 1	
AUS (OUT) 7 X11/5	OUT2	Programmable output 2	
AUS 8 X11/7	Y8	Tape cutter on	Valve
AUS 9 X12/1	Y9	Tape clamp (drive) closed	Valve
AUS 10 X12/3	Y10	Roller clamp closed	Valve

13.12.02 Digital Inputs

HW Term	SW Term	Function
EIN (ON) 1 X2/2	E1	Roller lowered
EIN (ON) 2 X2/3	E3	Nozzle engaged
EIN (ON) 3 X3/2	E4	Nozzle forwards
EIN (ON) 4 X3/3	E10	Reserved for 2KW/3KW cartridge recognition
EIN (ON) 5 X4/2	E12	Foot switch 2 = cut tape
EIN (ON) 6 X4/3	E13	not assigned
EIN (ON) 7 X5/2	E11	Pressure monitor
EIN (ON) 8 X5/3	E14	Knee switch
EIN (ON) 9 X6/2	E15	Increment differential
EIN (ON) 10 X6/3	E16	Decrement differential
EIN (ON) 11 X7/2	E17	Differential correction zero
EIN (ON) 12 X7/3	E18	Lock/release key-switch for functions
EIN (ON) 13X 8/2	IN1	Programmable input 1
EIN (ON) 14 X8/3	IN2	Programmable input 2
EIN (ON) 16X9/3	E20	Start light barrier tape cutting

13.12.03 Analog Outputs

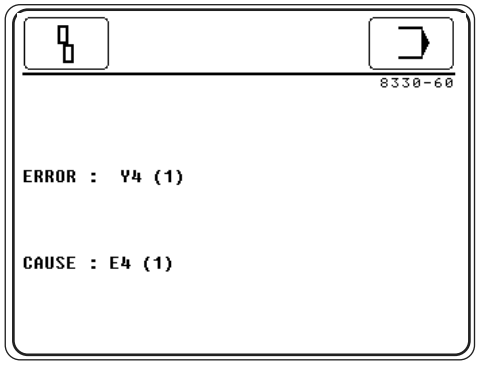
HW Term	SW Term	Function	Remark
Roller up X33	DC-Motor 2	Roller motor up (slave)	DC-Motor
Roller down X34	DC-Motor 1	Roller motor down (master)	DC-Motor
Tape feed X32	DC-Motor 3	Tape feed motion	DC Motor
SSR_EIN X13	SSR-control	Heating capacity control unit	PWM
AOUT1 X24	AIR OUT	Air volume control	Prop.valve
AOUT2 X23	RPRESSURE OUT	Roller pressure set value	Pressure regulating valve

13.12.04 Analog Inputs

HW Term	SW Term	Function
AE1 X35	TEMP1	Temperature sensor 1 (on heating cartridge)
AE2 X36	TEMP2	Temperature sensor 2 (on nozzle tip)
AE3 X16	Not assigned	Not assigned (0..10V)
AE4 X17	Not assigned	Not assigned (0..10V)
AE5 X18	AIRIN	Air volume sensor (4..20mA)
AE6 X19	RPRESSUREIN	Roller pressure regulator actual value control (0..10V)
Pedal X14/8	Pedal	Analog foot pedal

13.12.05 Errors when switching outputs

If an error occurs when switching outputs, the appropriate output is displayed with the desired switch status. In this case (0) means, that the output should be switched off; (1) means that the output should be switched on.
The cause of the error is also displayed. In the following example this means that an error occurred when switching on output **Y4**, because the input **E4** was not activated.



13.12.06 Examples of errors and causes

Error: Y1(1) Cause E1(1)
The close feed rollers function is defective
Actual status: Feed rollers are closed
The motion was too slow
-> Incorrect setting of the exhaust air throttle on counter cylinder side
Switch **E1** signals incorrect status
-> Incorrect setting of switch **E1**
-> Switch **E1** defective, wire to **E1** defective
Actual status: Feed rollers are open
During closing there was an object thicker than **8 mm** between the rollers
-> Safety shut-off, no error
The feed rollers did not move down
-> Valve **Y1** defective, wire to valve defective
-> Incorrect setting of the exhaust air throttle on counter cylinder side

Error: Y1(0) Cause E1(0)
The open feed rollers function is defective
Actual status: Feed rollers are open
The motion was too slow
-> Pressure reducer set too low
Switch E1 signals incorrect status
-> Incorrect setting of switch E1
-> Switch E1 defective, wire to E1 defective
Actual status: Feed rollers are closed
The feed rollers did not move up
-> Valve Y1 defective, wire to valve defective
-> Pressure reducer set too low

Error: Y3 (1) Cause E1 (1)
Engage nozzle function is blocked as non-compliance of E1 (1) (= rollers closed)

Error: Y3 (1) Cause E4 (0)
Engage nozzle function is blocked as non-compliance of E4(0) (= nozzle not moved forwards)

Error: Y3 (1) Cause Y10 (0)
Engage nozzle function is blocked as non-compliance of Y10(0) (= roller clamp closed)

Error: Y3 (1) Cause E3 (1)
Engage nozzle function is defective
Actual status: Nozzle engaged
The motion was too slow
-> Incorrect setting of exhaust air throttle on counter cylinder side
Switch E3 signals incorrect status
-> Incorrect setting of switch E3
-> Switch E3 defective, wire to E3 defective
Actual status: Nozzle is still disengaged
-> Valve Y3 defective, wire to valve defective
-> Incorrect setting of exhaust air throttle on counter cylinder side

Error: Y3 (0) Cause E4 (0)
Disengage nozzle function is blocked as non-compliance of E4 (0) (= nozzle not moved forwards)

Error: Y3 (0) Cause E3 (0)
Disengage nozzle function is defective
Actual status: Nozzle disengaged
The motion was too slow
-> Incorrect setting of exhaust air throttle on counter cylinder side
Switch E3 signals incorrect status
-> Incorrect setting of switch E3
-> Switch E3 defective, wire to E3 defective
Actual status: Nozzle is still engaged
-> Valve Y3 defective, wire to valve defective
-> Incorrect setting of exhaust air throttle on counter cylinder side

Error: Y4 (1) Cause E4 (1)

Nozzle moved forwards function is defective

Actual status: Nozzle is moved forwards

The motion was too slow

-> Incorrect setting of exhaust air throttle on counter cylinder side

Switch E4 signals incorrect status

-> Incorrect setting of switch E4

-> Switch E4 defective, wire to E4 defective

Actual status: Nozzle is moved back

-> Valve Y4 defective, wire to valve defective

-> Incorrect setting of exhaust air throttle V4.2 on counter cylinder side

Error: Y4 (0) Cause E4 (0)

Nozzle moved back function is defective

Actual status: Nozzle is moved back

The motion was too slow

-> Incorrect setting of exhaust air throttle on counter cylinder side

Switch E4 signals incorrect status

-> Incorrect setting of switch E4

-> Switch E4 defective, wire to E4 defective

Actual status: Nozzle is moved forwards

-> Valve Y4 defective, wire to valve defective

-> Incorrect setting of exhaust air throttle V4.2 on counter cylinder side

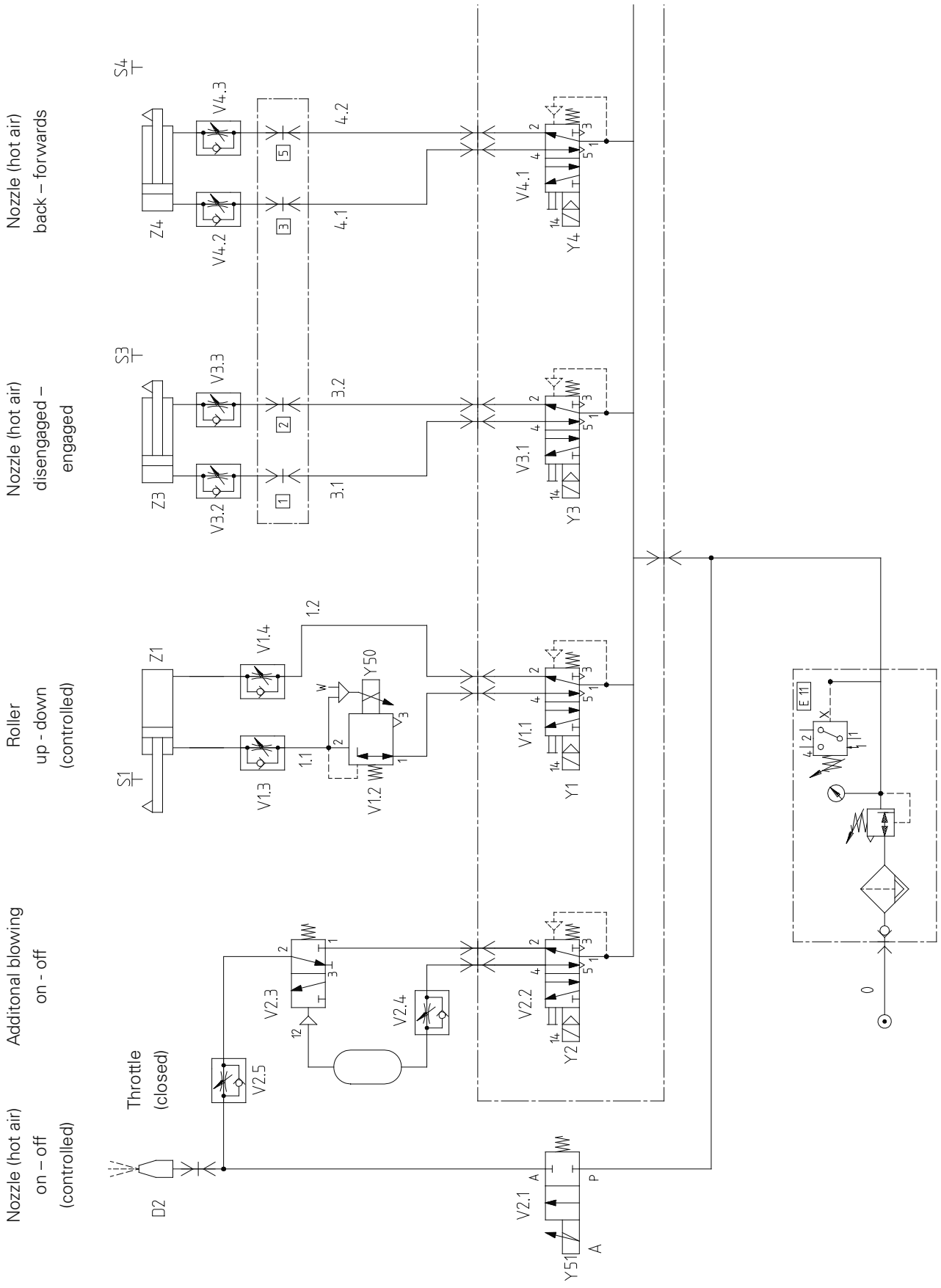
14 Pneumatic-circuit diagrams

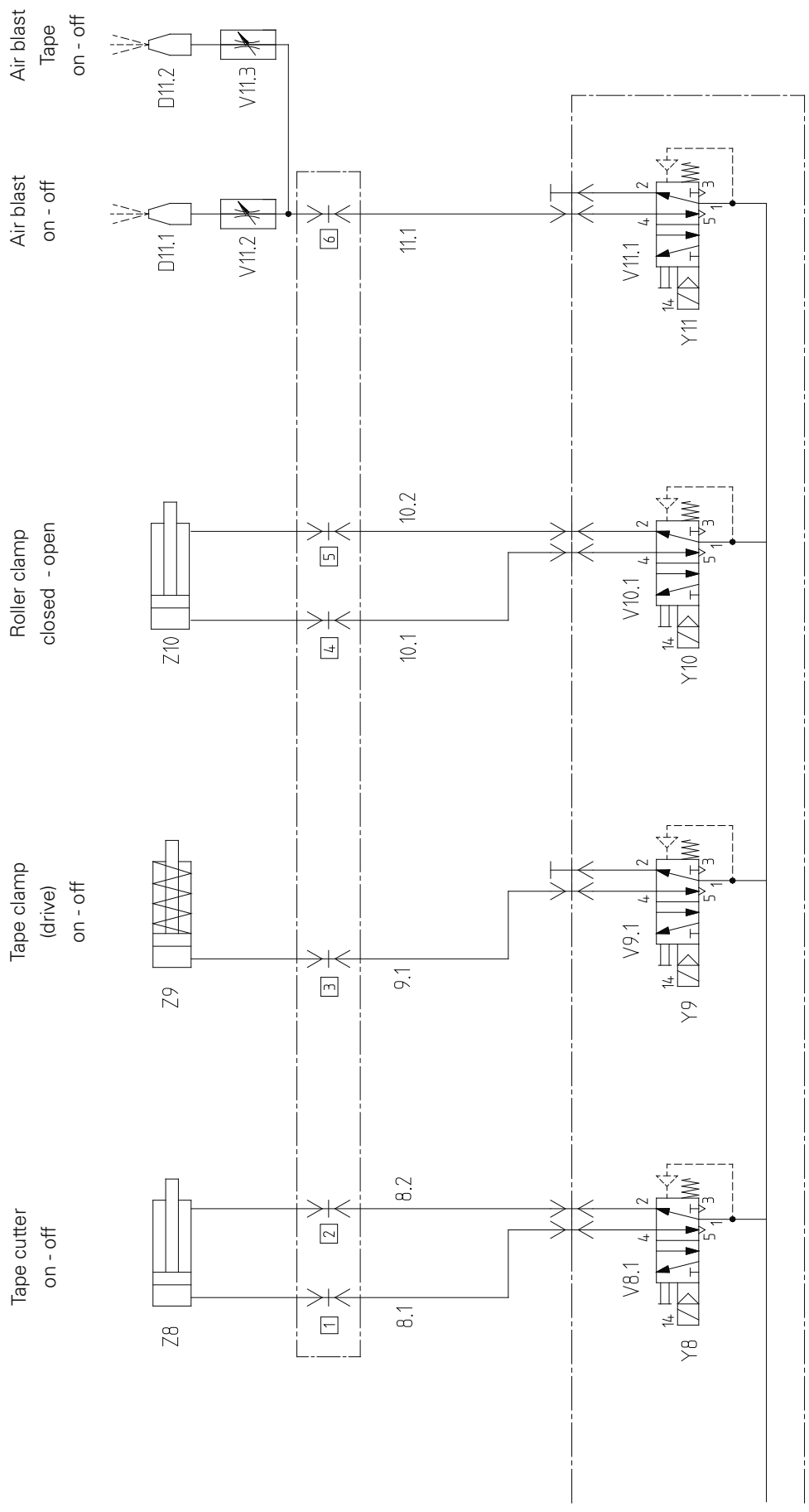
14.01 Reference list for pneumatics circuit diagrams 95-255 810-95

V 1.1 (Y1)	5/2- directional valve (electric actuation)
V 1.2 (Y51)	Proportional valve for roller pressure
V 1.4	Throttle valve 1/8“
V 1.5	Pressure reducer M5
V 2.1 (Y50)	Proportional valve for air volume
V 2.2 (Y2)	5/2- directional valve (electric actuation)
V 2.3	3/2- directional valve M5 (pneumatic actuation)
V 2.4	Throttle valve 1/8“
V 2.5	Throttle check valve for trottled exhaust 1/8“
V 3.1 (Y3)	5/2- directional valve (electric actuation)
V 3.2	Exhaust air throttle M5
V 3.3	Exhaust air throttle M5
V 4.1 (Y4)	5/2- directional valve (electric actuation)
V 4.2	Exhaust air throttle M5
V 4.3	Exhaust air throttle M5
V 8.1 (Y8)	5/2- directional valve (electric actuation)
V 9.1 (Y9)	5/2- directional valve (electric actuation)
V 10.1 (Y10)	5/2- directional valve (electric actuation)
V 10.3	Throttle valve
V 11.1 (Y11)	5/2- directional valve (electric actuation)
V 11.2	Throttle valve
V 11.3	Throttle valve
Z 1	Double acting cylinder Ø32, stroke 30
Z 3	Double acting cylinder Ø20, stroke 50 with return spring
Z 4	Double acting cylinder Ø25, stroke 30
Z 8	Double acting cylinder Ø12, stroke 15
Z 9	Double acting cylinder Ø12, stroke 3,8
Z 10	Double acting cylinder Ø12, stroke 5
D 2	Air jet tape
D 11.1	Air blast for air curtain
D 11.2	Blasrohr am Bandabschneider
S 1 (E1)	Cylinder switch at Z1
S 3 (E3)	Cylinder switch at Z3
S 4 (E4)	Cylinder switch at Z4
E 11	Pressure monitor

14.02 Pneumatics circuit diagram

The pneumatics circuit diagram is shown with the machine in its basic position. Energy (air and electricity) is switched on. The components take on fixed conditions.



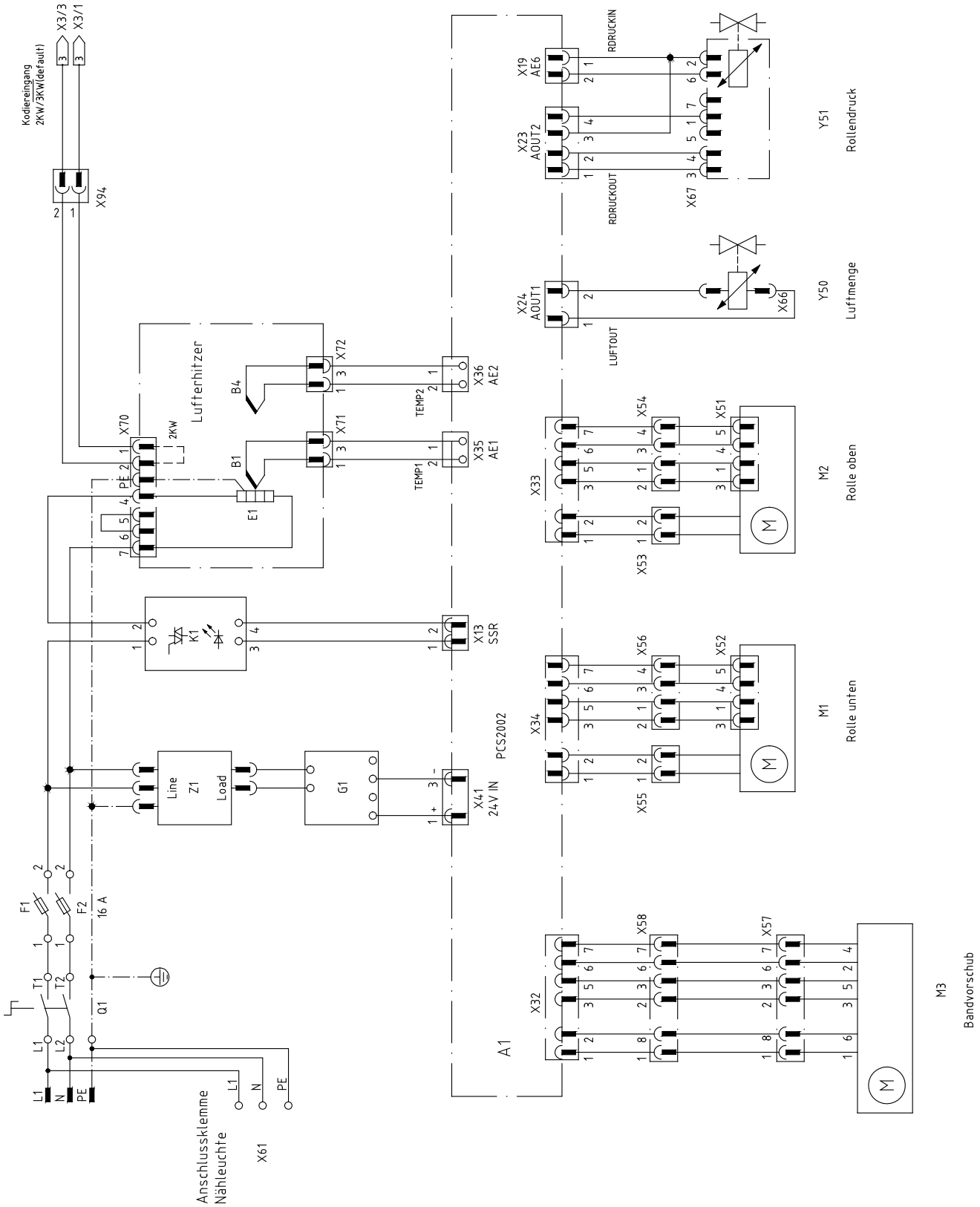

Air blast
Tape
on - off
Air blast
on - off
Roller clamp
closed - open
Tape clamp
(drive)
on - off
Tape cutter
on - off
D11.2
V11.3
D11.1
V11.2
Z10
Z9
Z8
V11.1
Y11
V10.1
Y10
V9.1
Y9
V8.1
Y8
11.1
10.2
10.1
9.1
8.2
8.1

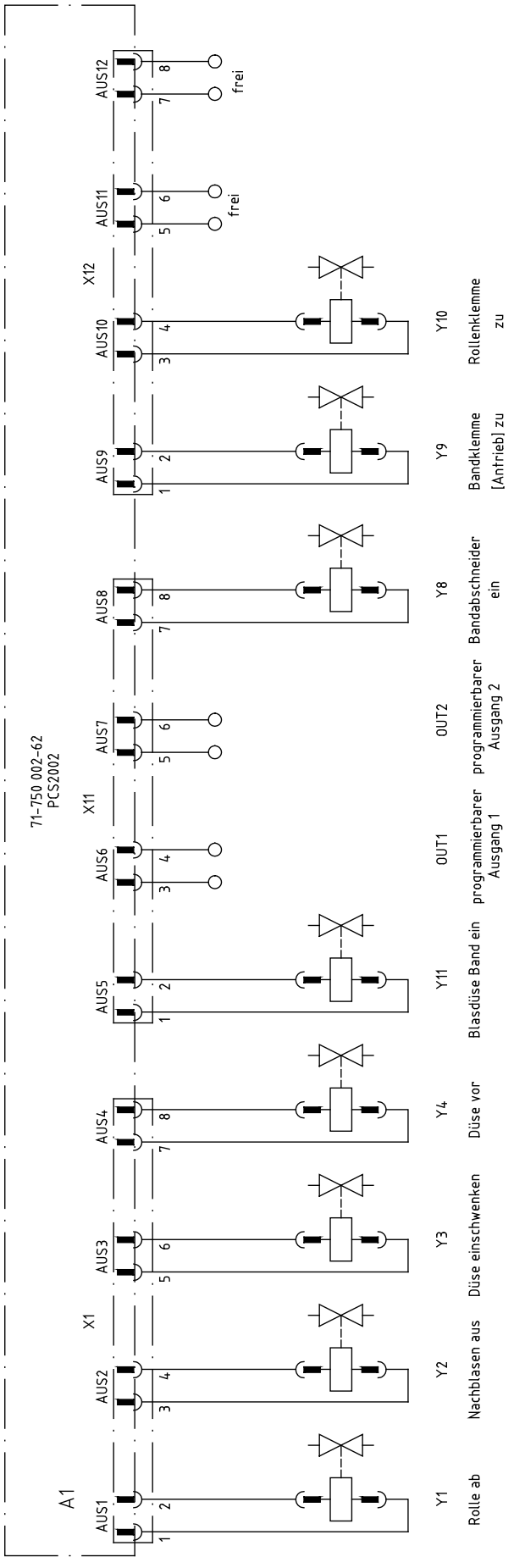
15 Circuit diagrams

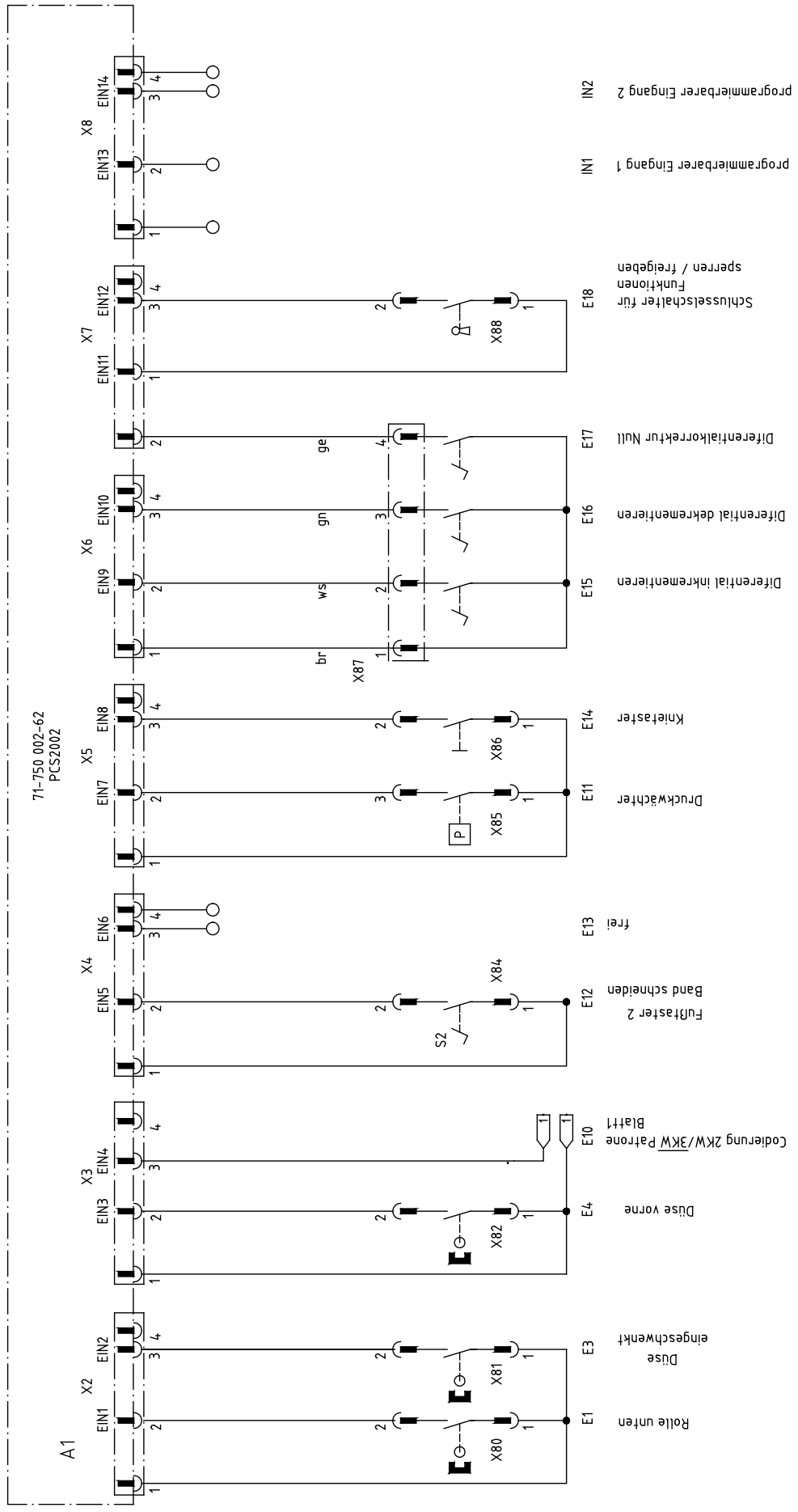
15.01 Reference list for circuit diagrams 95-212 022-95

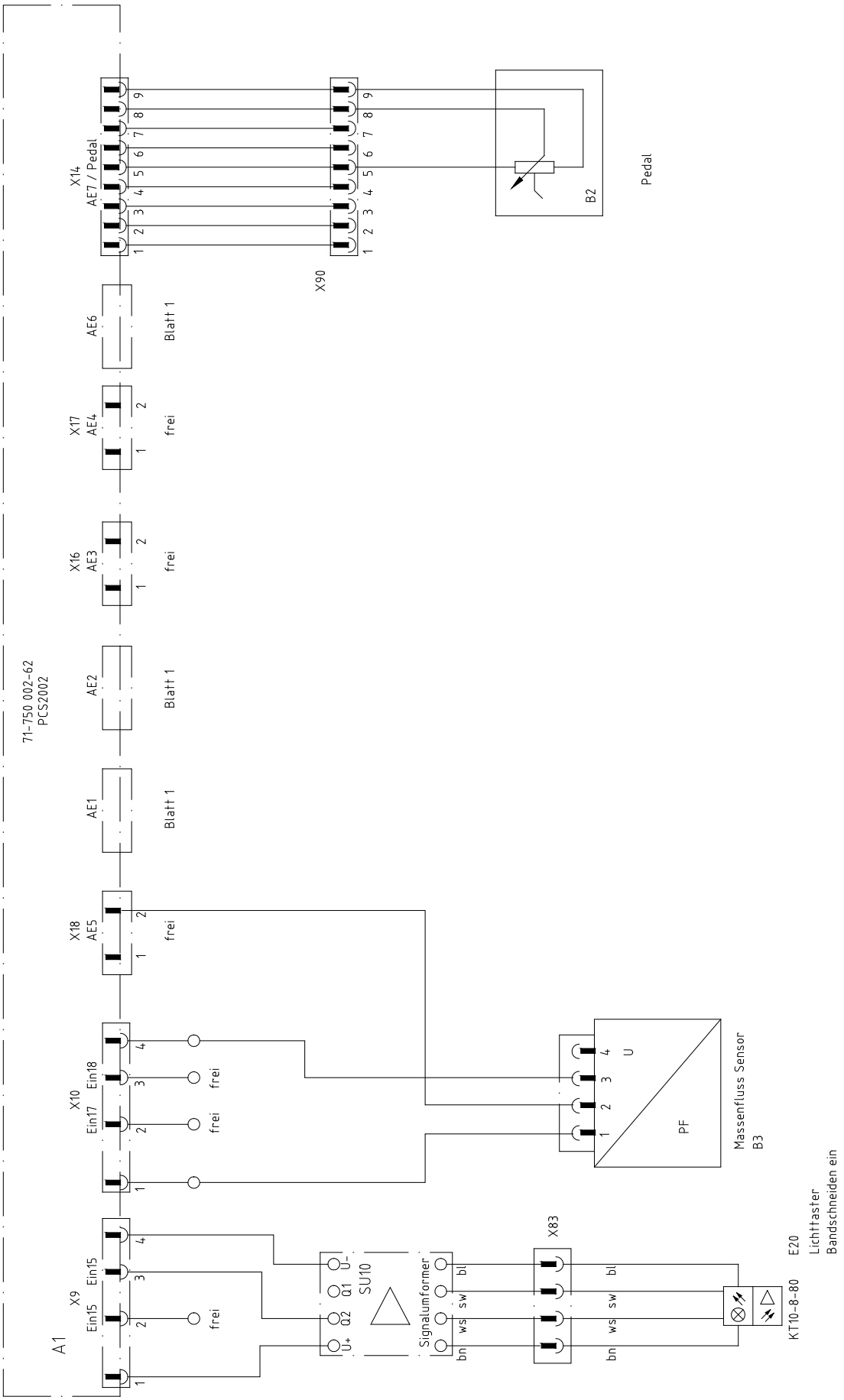
A1	Controller PCS 2002
A2	Control panel T1
A3	Floppy
B1	Temperature sensor 1 (cartridge)
B2	Pedal
B3	Air volume sensor
B4	Temperature sensor 2 (nozzle)
M1	DC motor (roller bottom)
M2	DC motor (roller top)
M3	DC Motor (tape feed)
E1	Roller down
E3	Nozzle engaged
E4	Nozzle forwards
E10	Coding
E11	Pressure monitor
E12	Foot switch 2 (cut tape)
E13	Not assigned
E14	Knee switch
E15	Increment differential
E16	Decrement differential
E17	Differential correction zero
E18	Key-switch
E20	Light key (optional)
SU10	Signal converter (optional)
IN1	Programmable input 1
IN2	Programmable input 2
F1	Fuse 16A L1
F2	Fuse 16A L2
G1	Power supply unit-24V, 5A
K1	Semi-conductor relay
Q1	Main switch
Y1	Roller down
Y2	Additional blowing off
Y3	Engage nozzle
Y4	Move nozzle forwards
Y8	Tape knife
Y9	Tape clamp
Y10	Roller clamp
Y11	Air jet tape
Y50	Air volume
Y51	Roller pressure
Out1	Programmable output 1
Out2	Programmable output 2
Z1	Mains filter

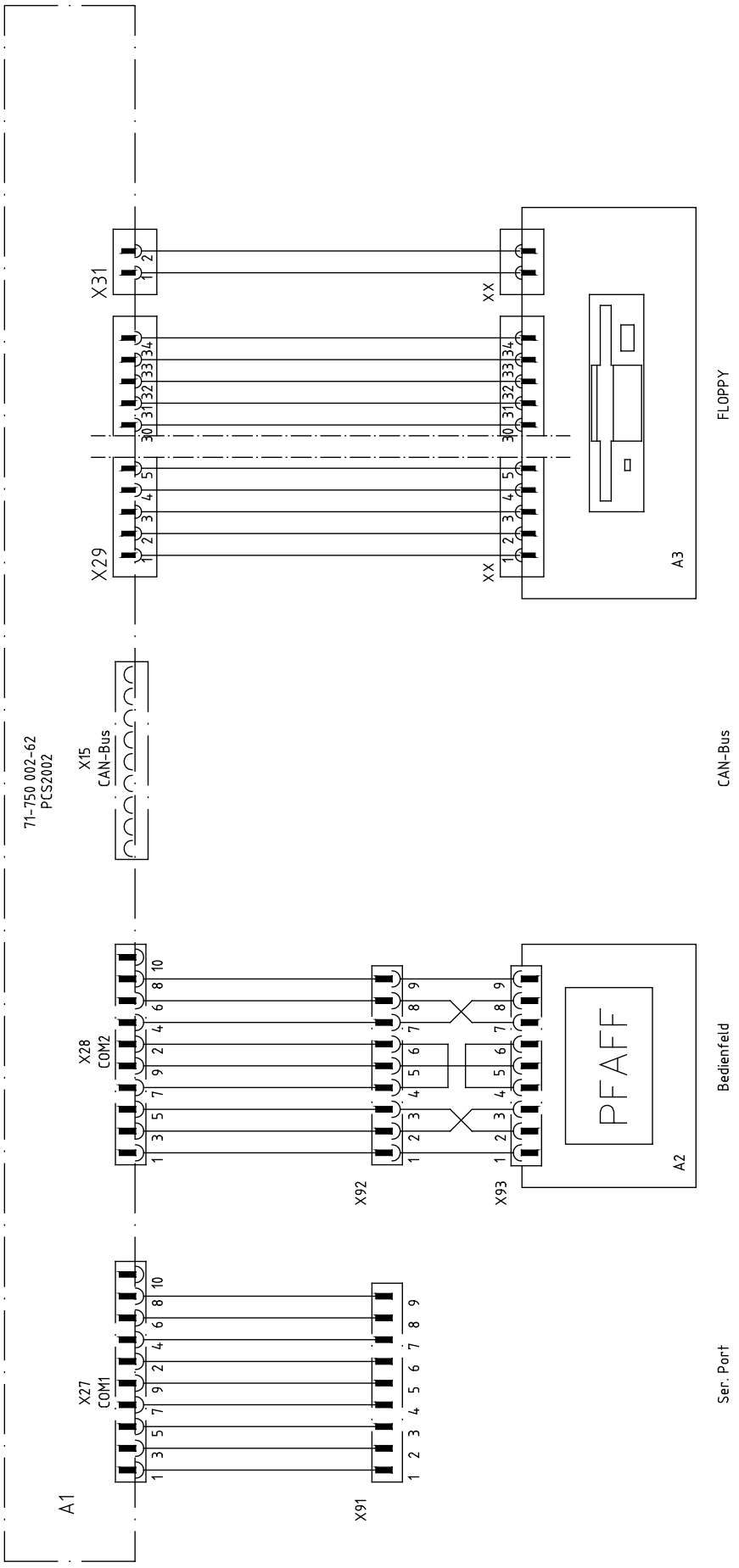
15.02 Circuit diagrams 95-212 022-95




A1
71-750 002-62
PCS2002
X1
X11
X12
AUS1
AUS2
AUS3
AUS4
AUS5
AUS6
AUS7
AUS8
AUS9
AUS10
AUS11
AUS12
Y1
Y2
Y3
Y4
Y11
OUT1
OUT2
Y8
Y9
Y10
Rolle ab
Nachblasen aus
Düse einschwenken
Düse vor
Blasdüse Band ein
programmierbarer Ausgang 1
programmierbarer Ausgang 2
Bandabschneider ein
Bandklemme [Antrieb] zu
Rollenklemme zu
frei
frei


A1
71-750 002-62
PCS2002
X2
EIN1
EIN2
X3
EIN3
EIN4
X4
EIN5
EIN6
X5
EIN7
EIN8
X6
EIN9
EIN10
X7
EIN11
EIN12
X8
EIN13
EIN14
X80
X81
X82
S2
X84
X85
P
X86
X87
X88
br
ws
gn
ge
E1 Rolle unten
E3 Düse eingeschwenkt
E4 Düse vorne
E10 Codierung 2KW/3KW Patrone Blatt1
E12 Fußtaster 2 Band schneiden
E13 frei
E11 Druckwächter
E14 Knietaster
E15 Differential inkrementieren
E16 Differential dekrementieren
E17 Differentialkorrektur Null
E18 Schlüsselschalter für Funktionen sperren / freigeben
IN1 programmierbarer Eingang 1
IN2 programmierbarer Eingang 2


A1
71-750 002-62
PCS2002
X9
Ein15
Ein15
frei
X10
Ein17
Ein18
frei
frei
X18
AE5
frei
AE1
Blatt 1
AE2
Blatt 1
X16
AE3
frei
X17
AE4
frei
AE6
Blatt 1
X14
AE7 / Pedal
X90
B2
Pedal
SU10
U-
Q1
Q2
U+
Signalumformer
bn ws sw bl
X83
bn ws sw bl
PF
U
Massenfluss Sensor
B3
E20
Lichttaster
Bandschneiden ein
KT10-8-80


A1
71-750 002-62
PCS2002
X27
COM1
X91
X28
COM2
X92
X93
X15
CAN-Bus
X31
X29
XX
XX
A2
PFAFF
A3
Ser. Port
Bedienfeld
CAN-Bus
FLOPPY

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