PFAFF® Industrial

POWERLine

3721

DOCU-SEAM SYSTEM

Contents ....Page

Table of Contents

Contents ....Page

PFAFF®Industrial

Contents ....Page

Section 05

Table of Contents

Contents ....Page

Section 06

1 Safety

1.01 Directives

The machine was built in compliance with the regulations specified in the EC declaration of conformity and declaration of incorporation.
As a supplement to this instruction manual, please also observe the generally applicable, legal and other regulations and legislation – also in the country of use – and the valid environmental protection regulations! Always comply with the locally applicable regulations of the professional associations and other supervisory authorities!

1.02 General safety instructions

The machine may only be operated after you have become acquainted with the associated instruction manual and only by operating personnel who have received appropriate training!

Always read the safety instructions and the instruction manual of the motor manufacturer before starting up the machine!

Always follow the hazard and safety instructions attached to the machine!

The machine may only be operated for its intended purpose and only with the associated safety covers, while adhering to all the relevant safety requirements.

The machine must always be disconnected from the power supply by pressing the main switch or pulling out the mains plug when sewing tools are replaced (such as the needle, presser foot, needle plate and bobbin) and when threading, leaving the workstation, or performing maintenance!

The daily maintenance work may only be carried out by suitably qualified personnel!

Repairs and special maintenance work may only be carried out by technical staff or people with appropriate training!

Work on electrical equipment may only be carried out by qualified technical staff!

Work on parts and equipment under voltage is not permitted!

Exceptions are regulated by the EN 50110 standards.

Modifications and changes to the machine may only be made in compliance with all of the relevant safety requirements!

Only the replacement parts approved by us for usage may be used for repairs! We warn you expressly that spare parts and accessories that are not supplied by us are also not tested and approved by us.
Fitting or using these products may therefore have negative effects on features which depend on the machine design. We are not liable for any damage caused by the use of non-Pfaff parts.

1.03 Safety symbols

Hazard point!
Special points of attention.

Risk of injury to operating personnel or technical staff!

Caution!
Do not operate without the finger guard and safety covers! Turn off the main switch before threading, changing the bobbin or needle, cleaning, etc.!

1.04 Special points of attention for the owner-operator

This instruction manual is a part of the machine and must be made available to the operating personnel at all times. The instruction manual must have been read before the initial start-up.

The operating personnel and technical staff must be instructed about the machine's safety covers and about safe working methods.

The owner-operator may only operate the machine in a flawless condition.

The owner-operator must ensure that no safety covers are removed or disabled.

The owner-operator must ensure that only authorised persons work on the machine.

Additional information can be requested from the responsible sales centre.

PFAFF® Industrial

1.05 Operating personnel and technical staff

1.05.01 Operating personnel

Operating personnel are persons responsible for equipping, operating and cleaning the machine and for fault clearance in the sewing area.

The operating personnel are obligated to comply with the following points:

The safety instructions provided in the instruction manual must be followed for all work!

Any work method jeopardising machine safety must be refrained from!

Tight-fitting clothing must be worn. The wearing of jewellery such as chains and rings is prohibited!

Care must be taken to ensure that no unauthorised persons are located in the machine's hazard zone!

Any changes occurring on the machine which impair its safety must be reported to the owner-operator immediately!

1.05.02 Technical staff

Technical staff are persons with technical training in electricity/electronics and mechanics. They are responsible for lubricating, servicing, repairing and adjusting the machine.

The technical staff are obligated to comply with the following points:

The safety instructions provided in the instruction manual must be followed for all work!

Turn off the main switch and secure it against reactivation before starting any adjustment and repair work!

Never work on live parts and equipment!
Exceptions are regulated by the EN 50110 standards.

Reattach the safety covers following repair and maintenance work!

1.05.03 Restoring the PC to its factory settings

A PC backup image created with the "**Backup/restore**" function in the system control menu (WIN**7**) can be found on the "**D**" drive.
It is recommended to store this PC backup image externally (external hard drive or network) and save it.
The factory settings can be restored at any time with the help of this image.

1.06 Danger warnings

⚠ A work area of **1 m** must be kept free in front of and behind the machine during operation to ensure unobstructed access at all times.

⚠ Do not reach into the needle range during the sewing operation!
Risk of injury from the needle!

⚠ Do not allow any objects to be placed on the table during the adjustment work!
The objects could become jammed or be slung away!
Risk of injury from parts flying around!
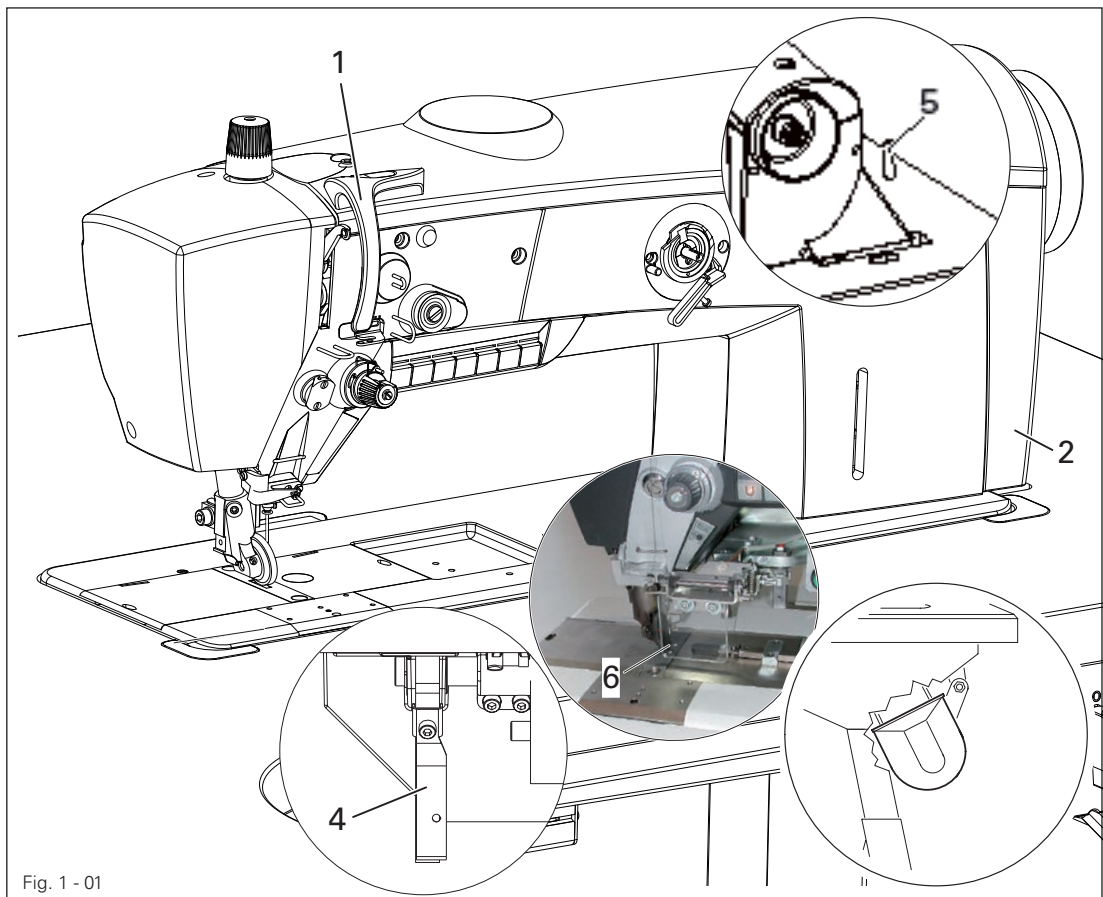
Fig. 1 - 01

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

⚠ Do not operate the machine without the belt guard **2** and **3**!
Risk of injury due to the rotating V-belt!

⚠ Do not operate the machine without the anti-tipping device **4**!
Risk of injury from crushing between the sewing head and the table top!

⚠ Do not operate the machine without the support **5**! Risk of damage due to the top-heavy sewing head! Machine can tip over backwards when moving it!

⚠ Do not operate machines with an edge trimmer without the finger guard **6**!
Risk of injury from the knife!

Declaration acknowledging the
PFAFF-DOCU-SEAM SYSTEM Documentation

Client:..

Address:..

Machine: **PFAFF 3721** ....   Sewing head no.: ....

PC software: ....Control software:................................

Any person working on a **PFAFF DOCU-SEAM SYSTEM** must be familiar with and understand the contents of this technical documentation. The operating personnel and technical staff must be authorised accordingly to handle the machine, i.e. qualified and instructed. The owner-operator is obliged to instruct their personnel accordingly.
In addition, the owner-operator must ensure that the machine is recalibrated after replacing the thread force module or the thread force sensor.

We hereby confirm that we have read and understood the documentation for the **PFAFF DOCU-SEAM SYSTEM** and that we take the local safety and accident regulations into account in addition to the information in this documentation when operating the machine.

Place:..   Date:......................................

Owner-operator:..

PFAFF®Industrial

POWERLine

3721

QUICK INPUT GUIDE

This guide applies to machines
from software version **5.0** and
serial number **2 811 567** onwards.

2	Quick Input Guide

2.01	General

The actual tensile forces applied to the needle thread (needle thread tension) with every stitch during the sewing operation is defined by a sensor mounted in the needle thread course of the sewing machine.

Measurement errors, for example due to temperature fluctuations, are excluded by a special measuring principle.

The signals are evaluated in the PC and displayed on a user interface on the touch screen monitor running on Windows® XP. The analysis of these signals provides information about the machine settings and the quality of each individual stitch that is sewn.

The seam zone in which the system should be activated (docu-seam zone) is either defined via a photo cell, knee switch, preset seam length or stitch count.

The docu-seam system compares the calculated thread tensile forces with the preset limit values and provides an evaluation of the seam via the touch screen monitor.

A label that can be sewn in to mark the corresponding quality of the seam can be printed out via a printer following a corresponding signal on the PC interface when a good seam is sewn. The label can be designed individually via an editor.

The docu-seam system also activates skip stitch recognition and reacts to the following error types depending on the setting:

- Skip stitch
- Needle thread breakage, needle thread end
- Bobbin thread breakage, bobbin thread end
- Needle breakage
- Deviations from the edge guide

The use of predefined materials can be guaranteed and documented by prompting the input of corresponding codes (e.g. scanning barcodes for the thread spindle, material, bobbin).

All entries can be made separately by user groups directly via the user interface of the touch screen monitor. Several languages are available for the user interface. All data entered and determined by means of standard databases and spreadsheet programs are processed further.

PFAFF® Industrial

2.02 Overview of the functions

Commissioning the camera

Commissioning the scanner

Version

Thread force

Edge guide on/off

Drives

Inputs/outputs

Feed regulator configuration

2.4. Jumping to the desktop / shutting down the computer

Label editor

2.3. Changing the user

Users + rights

Options + interfaces

Backup + restore

Evaluate + print function

2.2. Tools

Parametrisation

Service

Calibration

Cold start

1. Logon

2. Operating mode selection

2.1. Seam program selection + configuration

Creating a seam program

Pop-ups: Setting

Work order

Production

Info display

Pop-ups: Manual interruption

Manual sewing

Test seam

Work order

Bobbin winding

Pop-ups: - Error - Warning

Pop-ups: - Instruction window - Error - Warning

Keyboard

Language selection

Help mode

2.03　Description of the functions

The functions are selected on the touch screen monitor by tapping on the corresponding symbols.

2.03.01　General functions

Operating mode selection
The menu is called up for activating the operating mode, see **chapter 2.03.02 Operating modes**.

Language selection
A menu opens for selecting the language setting, see **chapter 8 Set-up** of the instruction manual.

Help mode
The next selected function is explained after calling up the help mode.

Online help
The online help with language and document selection can be activated after calling up the help mode.

Confirm
The selection is confirmed and values that have been entered or changed are saved.

Cancel
The selection process is cancelled and values that have been entered or changed are not saved.

Back
The superordinate level is called up.

Drag and drop
This function can be used to move the window to any position.

Work order
This function can be used to display a previously created work order.

2.03.02   Operating modes

Seam program selection and configuration
Functions are called up for selecting, processing and creating seam programs, see **chapter 2.04 Creating a seam program**.

Tools
A menu is called up for selecting the sewing head, control and printer functions.

Changing the user
The field is called up for entering the user.

Shutting down the computer
The application is terminated and the computer is shut down. This function is only displayed when the user or a guest is logged on.

Desktop
The application is terminated and the Windows desktop is called up. This function is only displayed when the administrator or machine setter is logged on.

2.03.03   Tools

Parametrisation
A menu is called up for setting the parameters, see adjustment manual.

Service
The service menu is called up, see **chapter 2.05 Service**.

Calibration
A menu is called up for calibrating the machine, see calibration instructions.

Cold start
A cold start is performed, see **chapter 2.06 Cold start**.

Users - rights
A menu is called up for entering users and rights, see **chapter 2.07 Users - rights**.

Options and interfaces
A menu opens for assigning work aids to corresponding COM interfaces, see **chapter 2.10 Defining options and interfaces**.

Backup and restore
A menu is called up for running a backup or restore, see **chapter 2.08 Backup - restore**.

Evaluate and print function
A selected docu-seam is displayed with all relevant values.

Label editor
A menu is called up for editing labels, see **chapter 2.09 Label editor**.

2.04 Creating a seam program

Log on as the machine setter.

Call up the seam program selection.

PFAFF Industrial
003
24812579462017538461   Max Mustermann

-1	Default-Programm	20.06.2006
000	Manual	29.03.2012
001	Unterfaden-Kamera	04.04.2012
998	Doku-Test	29.03.2012
999	Test-Seam	17.02.2012
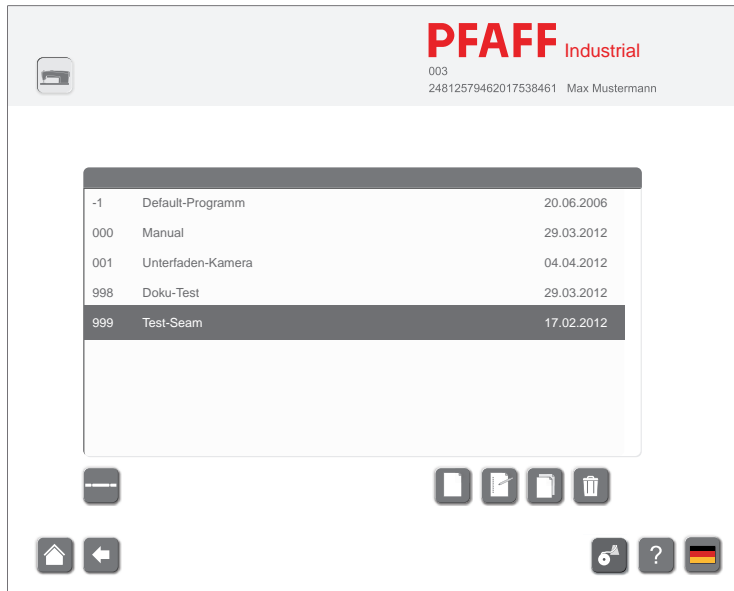
Several options are available for creating a seam program.

Select a seam program from the list.

Change an existing seam program.

or

Select a seam program from the list.

Copy a seam program in order to create a new seam program based on the existing seam program.

or

Create a new seam program.

or

Delete a seam program.

PFAFF® Industrial
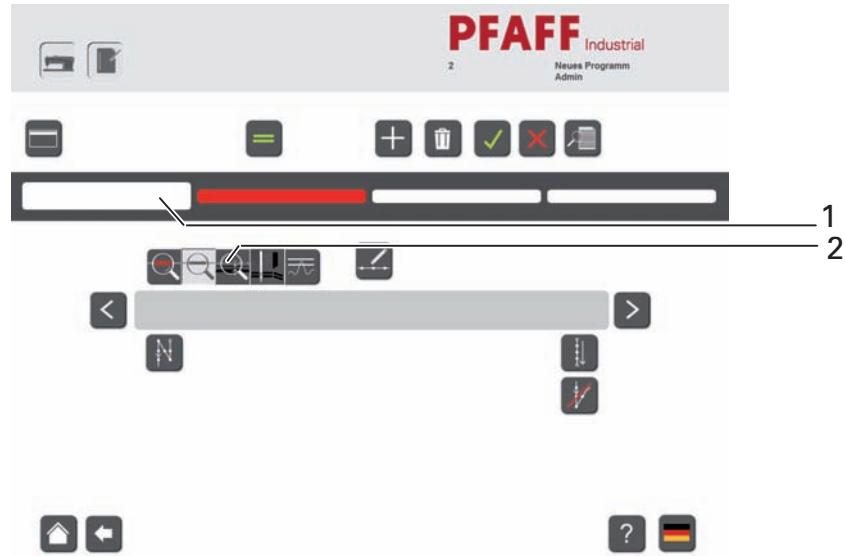
Call up the "Program header" function.
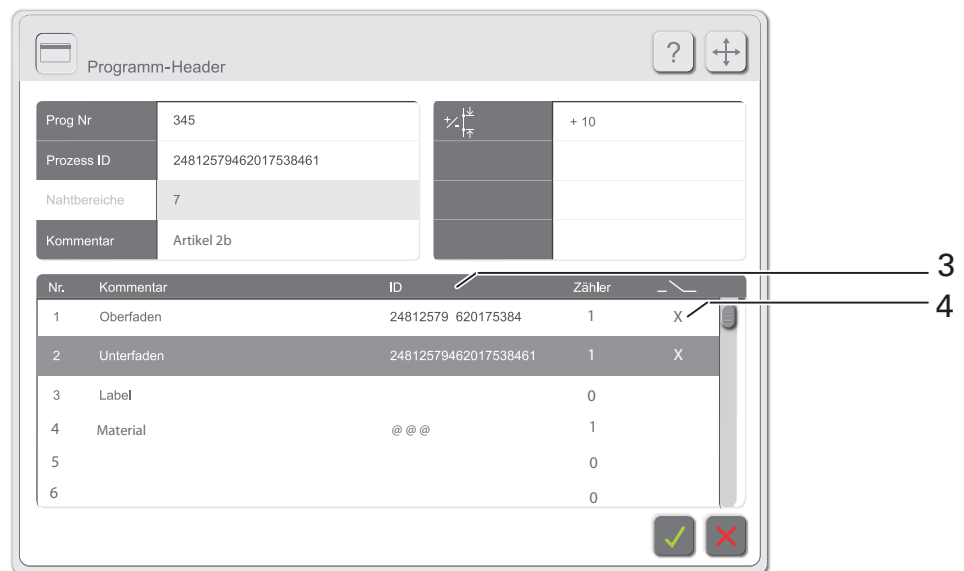
Enter/change the program number, process ID and comment if necessary.

Enter the value for the stitch length adjustment depending on the material.

Enter the needle thread and bobbin thread ID in input field **3** or scan it in via the manual scanner and then activate this function in input field **4.**

The control then only accepts sewing material with this ID.

Programm-Header			?	✛
Prog Nr	998			0
Prozess-ID				
Nahtbereiche	4			
Kommentar	Docu-Test			

Nr.	Kommentar	ID	Zähler	
1	Oberfaden	$$123456789$$	1	X
2	Unterfaden	027859584045921900	1	X
3	Label		0	
4	Material	@@@	1	
5			0	

✓ ✗

Scan options in the header by entering wildcard characters

1. By entering $$ before a character string or $$ after a character string, only the character string is checked to ensure it is correct.
   All characters (regardless of the number) before or after the character string are only documented.

Example:

Entry in the header: $$123456789$$

Barcode :   888881234567895555 OK documented in the protocol

Barcode :   777777123456789333333 OK documented in the protocol

Barcode :   888881234567805555 not OK, error message, no documentation.

2. Enter @ @ @ in input field **3.**
   The control does not make an adjustment, only IDs are logged.

   Define the information for scanning the end label
   (Value "**1**" = scan the label every time; value "**10**" = scan the label every tenth time).

   Select the seam section from section **1.**

   Delete the selected seam section if necessary.

   Insert the seam section after the selected seam section if necessary.

   Make the following definitions for the selected seam zone via function **2:**
   - Activate/deactivate the docu-seam zone
   - Activate/deactivate skip stitch recognition
   - Activate/deactivate edge guide recognition
   - Define the thread forces, see **chapter 2.04.05 Thread force**

   Call up the menu for entering the sewing parameters and enter the corresponding values, see **chapter 2.04.01 Entering the sewing parameters**.

   Call up the menu for entering the action at the seam zone start. The symbol make look different depending on the action selected; the double start backtack is selected in this example.

PFAFF® Industrial

Select the action and enter/change the corresponding values, see **chapter 2.04.02 Entering the action at the seam zone start**.

Call up the menu for entering recognition of the seam zone end. The symbol make look different depending on the function selected; recognition of the seam zone end is selected via the knee switch in this example.

Select the functions for recognising the seam zone end and enter/change the corresponding values if necessary, see **chapter 2.04.03 Entering the seam zone end**.

Call up the menu for entering the actions at the seam zone end. The symbol make look different depending on the action selected; the end stitch condensation is selected in this example.

Select the actions and enter the label number if necessary, see chapter **2.04.04 Entering the actions at the seam zone end**.

Adjust the seam zones within the seam if necessary.

Save the seam program and exit seam programming after entering or changing the desired seam zones.
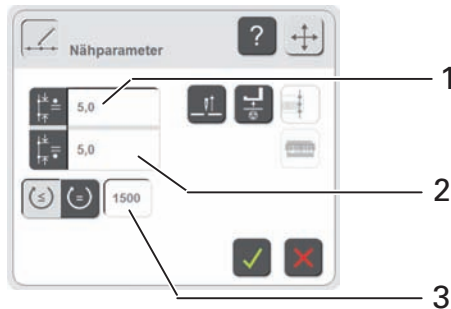
Call up production.

Input

2.04.01   Entering the sewing parameters

Call up the menu for entering the sewing parameters within the seam programming.

Description of the functions

Enter the roller presser stitch length
The input menu for the roller presser stitch length in the current seam zone is called up after tapping on section **1**.

Enter the feed wheel stitch length
The input menu for the feed wheel stitch length in the current seam zone is called up after tapping on section **1**.

Enter speed
The input menu for the speed in the current seam zone is called up after tapping on section **3**.

This function is used to select the variable speed. The speed can be controlled via the pedal position up to a maximum value. (This function is switched off in the example).

This function is used to select the constant speed. The speed cannot be controlled via the pedal position.

Needle raised when sewing stops
The function is switched on or off for the current seam zone. If the function is switched on, the needle moves to the top position when the sewing stops.

Foot raised when sewing stops
The function is switched on or off for the current seam zone. If this function is switched on, the foot is raised when the sewing stops.

Sew in label (only after a docu-seam zone)
The function is switched on or off for the current seam zone. If the function is switched on, a label is sewn in after processing the seam zone.

Scan label
The function is switched on or off for the current seam zone. If the function is switched on, the label must be scanned.

Conclude input
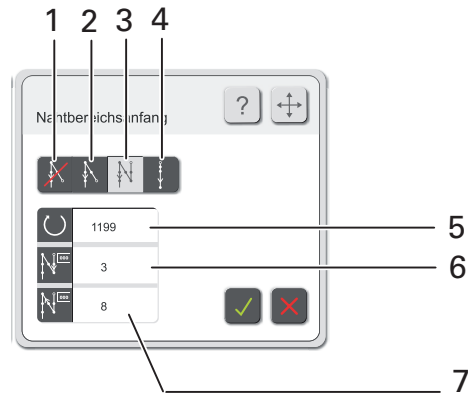The input is terminated by accepting the selection and the values entered.

Cancel input
The input is terminated without accepting the selection and the values entered.

2.04.02   Entering the action at seam zone start

Call up the menu for entering the action at seam start, see **chapter 2.04 Creating a seam program**.

Description of the functions

Start backtack and starting stitch condensation off
Neither a start backtack nor a starting stitch condensation is carried out at the seam zone start after selecting function **1**.

Start backtack
The start backtack is carried out with the corresponding values at the seam zone start after calling up the function and entering the values for the backtack speed in section **5** and the number of backtack stitches.

Double start backtack (currently active)
The double start backtack is carried out with the corresponding values at the seam zone start after calling up the function and entering the values for the backtack speed in section **5,** the number of forward stitches in section **6** and the number of reverse stitches in section **7.**

Starting stitch condensation
The stitch condensation is carried out with the corresponding values at the seam zone start after calling up the function and entering the values for the stitch length and the number of stitches.

Conclude input
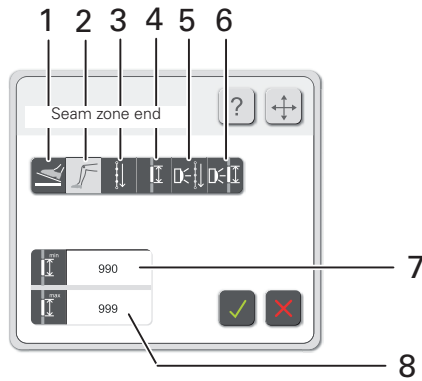The input is terminated by accepting the selection and the values entered.

Cancel input
The input is terminated without accepting the selection and the values entered.

2.04.03 Entering the seam zone end

Call up the menu for entering recognition of the seam zone end, see **chapter 2.04 Creating a seam program**.

Description of the functions

Seam zone end via pedal function
The seam zone end is initiated via the pedal function after selecting function **1**.

Seam zone end via knee switch
The seam zone end is initiated via the pedal function after selecting function **2**. The minimum number of stitches for the seam zone is defined via section **7** and the maximum number of stitches for the seam zone is defined via section **8**.

Seam zone end via stitch counting
The seam zone end is initiated after sewing the corresponding number of stitches after selecting function **3** and entering the value for the number of stitches.

Seam zone end via seam length
The seam zone end is initiated after sewing the corresponding seam length after selecting function **4** and entering the value for the seam length.

Seam zone end via photo cell with stitch counting
The seam zone end is initiated via the photo cell according to the input of the number of stitches after selecting the function **5** and entering the values for the max. and min. stitch count.

Seam zone end via photo cell with seam length
The seam zone end is initiated via the photo cell within the corresponding length specifications after selecting the function **6** and entering the values for the max. and min. seam length.

Conclude input
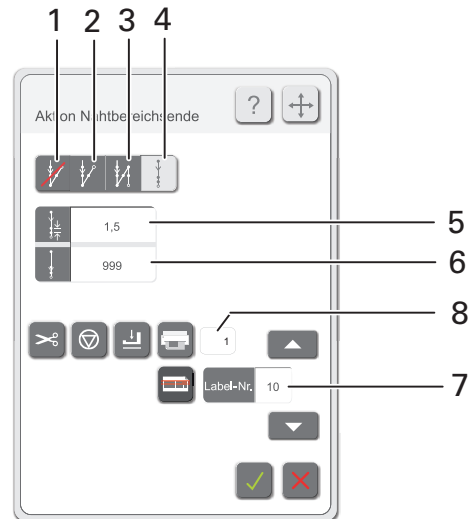The input is terminated by accepting the selection and the values entered.

Cancel input
The input is terminated without accepting the selection and the values entered.

2.04.04   Entering the actions at seam zone end

Call up the menu for entering the actions at seam end, see **chapter 2.04 Creating a seam zone**.

Description of the functions

End backtack and end stitch condensation off
Neither an end backtack nor an end stitch condensation is carried out at the seam zone end after selecting function **1.**

End backtack
The end backtack is carried out with the corresponding values at the seam zone end after calling up function **2** and entering the values for the backtack speed and the number of backtack stitches.

Double end backtack
The double end backtack is carried out with the corresponding values at the seam zone end after calling up function **3** and entering the values for the backtack speed, the number of forward stitches and the number of reverse stitches.

End stitch condensation (currently active)
The stitch condensation is carried out with the corresponding values at the seam zone end after calling up function **4** and entering the values for the stitch length in section **5** and the number of stitches in section **6.**

Thread trimming on/off
This function is used to switch the thread trimming at the seam zone end on or off.

Sewing stop
The function is switched on or off. If the function is switched on, the machine stops at the seam zone end.

Foot down
The function is switched on or off. If the function is switched on, the foot remains down at the seam zone end.

Label printing on/off

This function is used to switch the printing of the label at the seam zone end on or off.

Select label

The label that should be sewn on can be selected in section **7.**

Select label

The number of labels to be printed can be selected in section **8.**

Scan label

The function is switched on or off for the current seam zone. If the function is switched on, the label must be scanned.

Conclude input

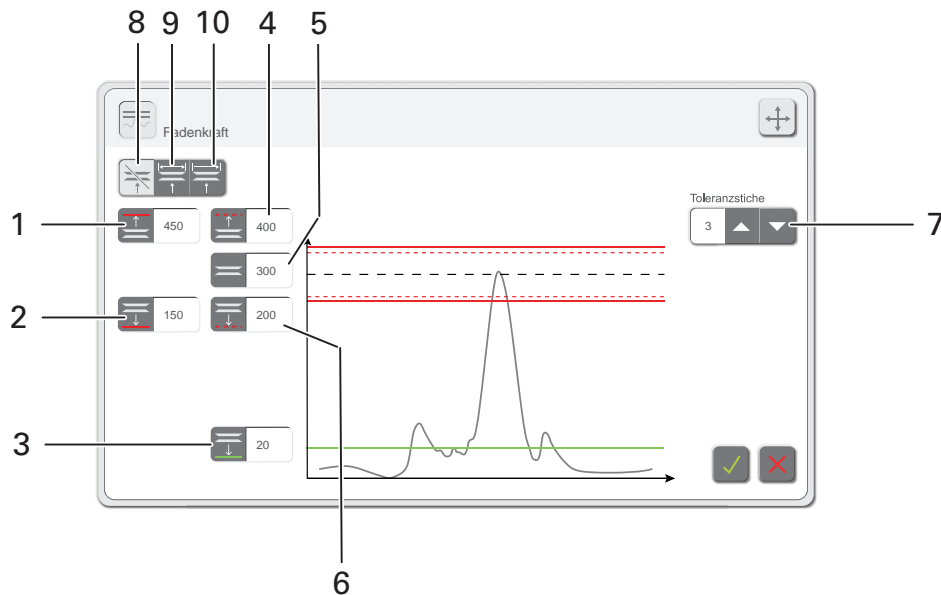The input is terminated by accepting the selection and the values entered.

Cancel input

The input is terminated without accepting the selection and the values entered.

PFAFF® Industrial

2.04.05   Thread force

Call up the menu for entering the thread force parameters within the seam programming or from the service menu.

Description of the functions

Hard upper limit value
The limit value is entered via section **1.** This value must never be exceeded in the docu-seam section.

Hard lower limit value
The limit value is entered via section **2.** This value must never be undershot in the docu-seam section.

Lower limit value for skip stitch recognition
The limit value is entered via section **3.** Skip stitch recognition takes place if this value is undershot.

Soft upper limit
The limit value is entered via section **4.** This value can be exceeded a few times in the docu-seam zone. The number of tolerance stitches is entered in section **7.**

Setpoint
The setpoint is entered via section **5.**

Soft lower limit
The limit value is entered via section **6.** This value can be undershot a few times in the docu-seam zone. The number of tolerance stitches is entered in section **7.**

Tolerance stitches
The number of tolerance stitches is entered via section **7.** The number of tolerance stitches is used to define how often the thread force may be above or below the soft limit values within the docu-seam zone.

Thread tension control

Pressing key **8** deactivates the "Thread tension control" function during sewing and key **9** activates the function.

Pressing key **10** activates the "Thread tension control" function only at the end of the section.

Conclude input

The input is terminated by accepting the selection and the values entered.

Cancel input

The input is terminated without accepting the selection and the values entered.

2.05 Service

The status of the digital and analogue inputs are displayed in the service menu. The outputs can be set or reset manually. Furthermore, functions can be called up for setting the drives, sensors and edge guide and information about software and firmware versions can be displayed.
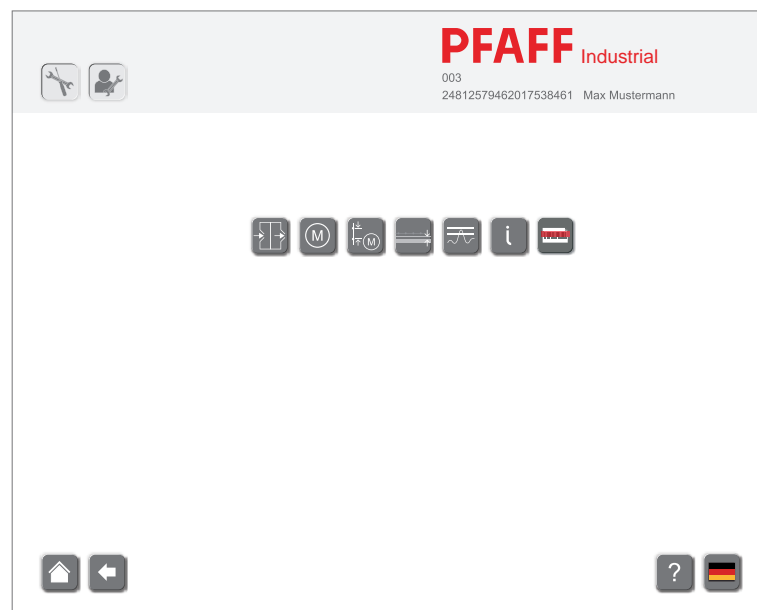Only machine setters and administrators have access to the service menu.

Log on as the administrator or machine setter.

Select the "Tools" function.

Call up the service menu.

Description of functions in the service menu

Inputs / outputs
The machine inputs are displayed after selecting this function. Outputs can be set or reset. The pedal function can be checked.

Drives
The motor functions can be checked and the value for the motor reference position can be changed after selecting this function.

Edge guide on/off
The setting function of the edge guide can be switched on or off after selecting this function.

Sensors
The current value for the thread force is displayed after selecting this function. Settings for the thread force and bobbin thread recognition can be made.

Version
The current machine software and firmware versions are displayed after selecting this function.

Scanner

For commissioning the scanner, see chapter **4.07.02** in the adjustment manual.

Camera

For commissioning the camera, see chapter **4.07.03** in the adjustment manual.

2.06   Cold start

⚠ When performing a cold start, all changed sewing head parameters are deleted and reset to the default values (factory settings)!

Log on as the administrator

Select the "Tools" function.

Select the "Cold start" function.

2.07   Users - rights

A user ID must be entered at initial power up of the machine.
"pfaff" must be entered as the user ID when the machine is delivered.

Benutzer-ID
pfaff

Any number of users can be created or edited. The rights of the respective users are defined by assigning them to corresponding user groups.

User groups

- Administrator
- Machine setter
- Operator
- Guest

Only the administrator can create and edit users and assign them to the desired user groups.

Log on as the administrator

Select the "Tools" function.

Call up the menu for entering the users and their rights.

In order to change data for a specific user, the relevant entry (name **1**, code **2** or user group **3**) is selected from the list and edited via the input field.

Function can be activated or deactivated by tapping on the corresponding columns (**X** = function is activated, **-** function is deactivated).

Create a new user.

Select and delete a user in the list.

Description of the functions

Docu-seam can be ended

Label copy can be created

Manual seam interruption can be switched on

Test seam mode can be activated

Seam program can be activated

Production can be interrupted

Seam program can be created

Docu-seam error can be ignored

PFAFF® Industrial

2.08   Backup - restore

The current database is backed up during a backup. The backup can be saved on the hard drive of the PC or on an external data carrier (e.g. USB stick).
A backup should be performed at regular intervals by the machine setter.

Log on as the administrator

Select the "Tools" function.

Call up the menu for creating the backup or for retrieving restored data.

Click on window **1** at the first backup.

Select the target directory and start to backup the database.

Select the time, day, and month for the backup.

The day is specified in numbers (**1** = Monday).

Place a checkmark next to the relevant window in order to allow the backup to proceed at the specified time and date.

The PC associated with the machine must be switched on at the set backup time.

In order to revert to a previous status, select the "Restore" function .

Select the relevant directory containing the backup data, and start the restore process.

Define the database size and type of monitoring in window **2**.

Import a seam program
Select the relevant seam program from the transfer database.

Initialise a database
All previously recorded sewing protocol data is deleted by selecting this function.

Make sure to **create a backup** first!

After a restore or a database initialisation, the program has to be restarted.

Database explorer

The content of the database is displayed by selecting this function.

Database settings

The type of database connection can be chosen by selecting this function (see windows **3** and **4**).
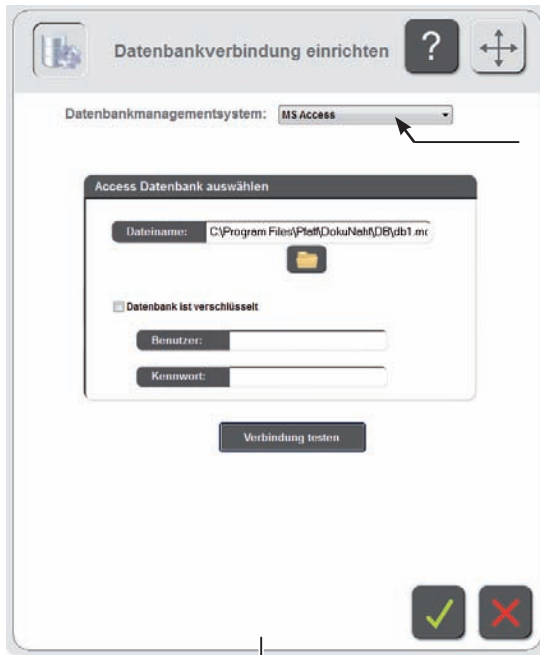
3
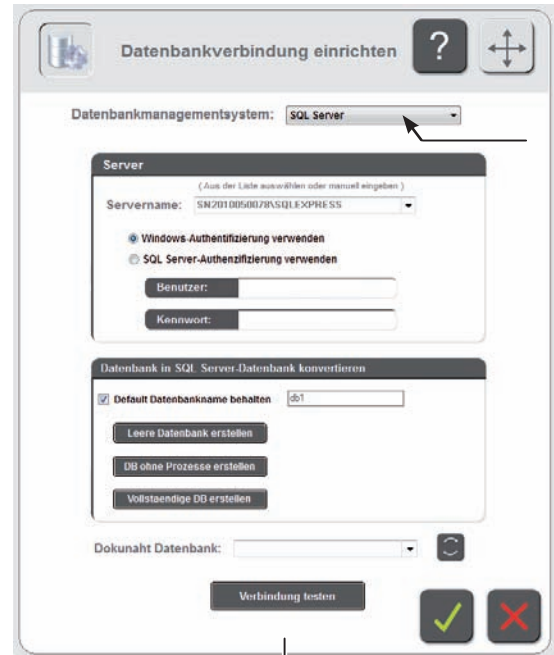
4

2.09 Label editor

Different labels can be individually created and saved via the label editor.

Log on as the administrator or machine setter.

Select the "Tools" function.

Call up the label editor.
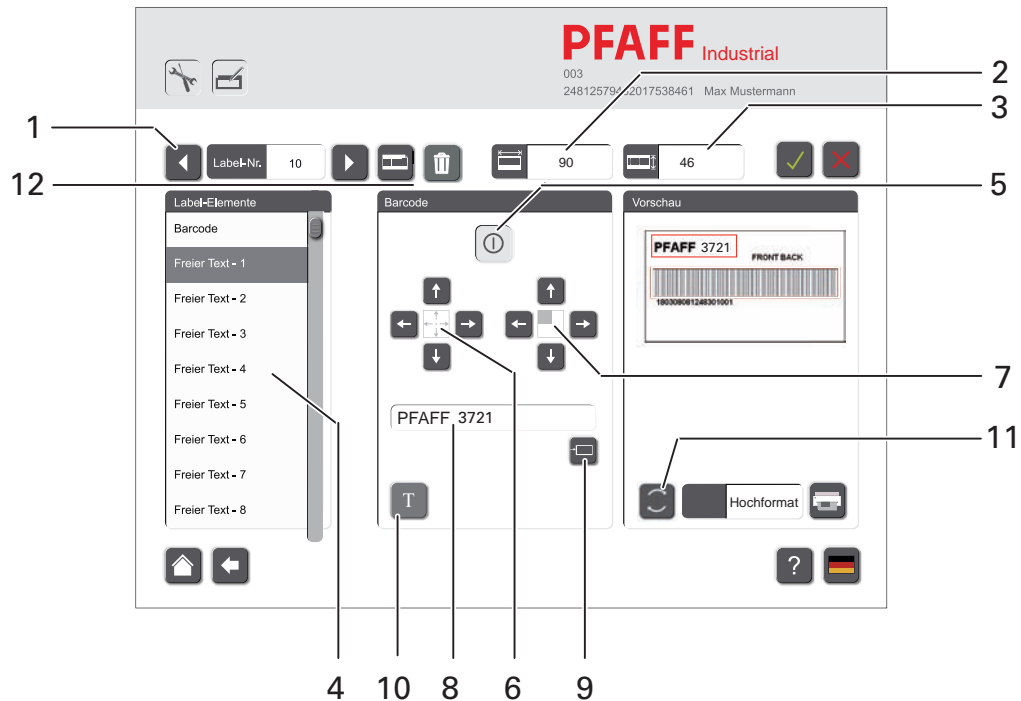
Select the desired label (label no.) by tapping on the arrow keys **1**.

Change the dimensions of the label if necessary by tapping on selection fields **2** and **3**.

Select the desired label element by tapping on the them from list **4**.

Activate the selected label element via function **5**, the label element is visible in the preview.

Change the position of the selected label element if necessary via function **6**.

Change the size of the selected label element if necessary via function **7**.

Enter the text for the selected label element by tapping on field **8**.

Select variables (time, date, counter etc.) for the selected label element via function **9**.

Change the font of the selected label element via function **10**.

Change the format if necessary via function **11**.

Change the element if necessary via function **12**.

Add other label elements if necessary or deactivate existing label elements via function **5**.
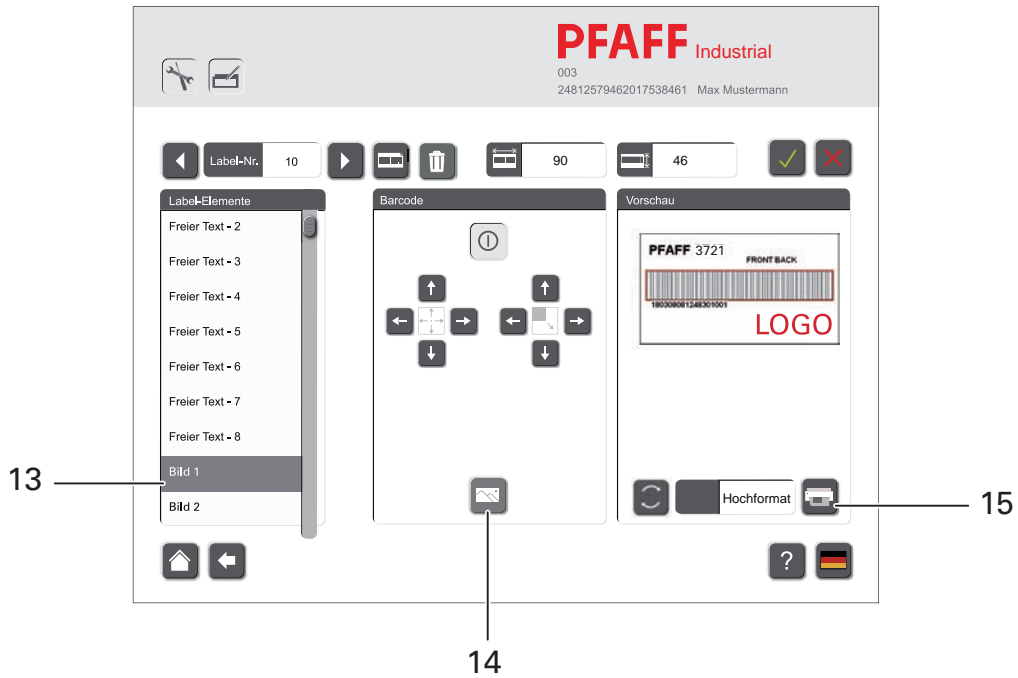
The symbol **14** appears on the monitor when selecting an image element from list **13.**

Select the corresponding label element (e.g. "Image 1") by tapping on it from list **13.**

Select the desired image file via function **14.** The image appears in the preview. The image element can be moved and the size can be changed as described above.

Print a test label by selecting function **15.**

The input is terminated by accepting the selection.

The input is terminated without accepting the selection.

2.10   Defining options and interfaces

Options can be defined, such as the label printer, thread type, material type service and day counter as well as control interfaces.

Log on as the administrator or machine setter.

Select the "Tools" function.

Call up the "Options and interfaces" function.

Tabelle zulässige Fäden

Neu	Löschen

1

KEY	Barcode	Number	Name	Manufacturer	Needle thread	Bobbin thread
1	091027001	80/3	Serafil	Amann	X	X

Tabelle zulässige Teile

Neu	Löschen

2

KEY	Barcode	Number	Name	Manufacturer
1	091027001	091111001	Leather	

Define relevant threads by entering the barcode, thread thickness, thread type and thread manufacturer in windows **1** for needle and bobbin threads.

Input relevant material by entering the barcode, material number, and material type in windows **2.**

If no thread and material are selected, any type of thread or material can be used.
If material and thread are selected, only the selected items can be used.

The COM interfaces must be adjusted as shown in Figure **3.**

Select the interface to be set

Schnittstellen

Comnr. Steuerung	Comnr. Labelscanner	Comnr. Oberfadenscanner	Comnr. Unterfadenscanner	Comnr. Spulenscanner
Com1	kein	kein	kein	kein

3

The scanners for the label, needle thread, bobbin thread and bobbin can be adjusted in the same way. This example shows the label scanner. Serial scanners can be run via a comport or also a camera scanner.

Select the comport or camera depending on the scanner type.
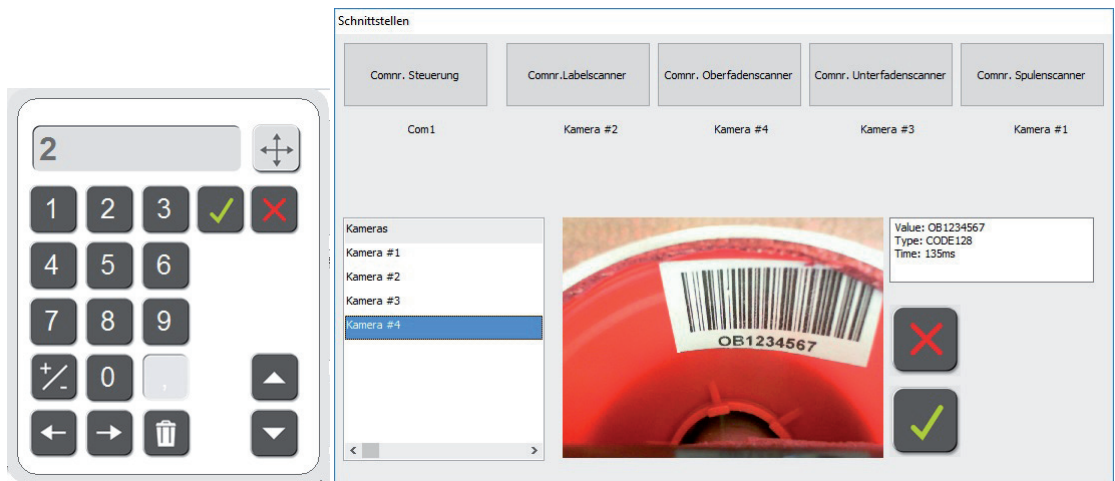
Adapt the translation texts in the four languages in the language editor **4**

Labeldrucker

5 ——— PDF24 PDF ▼

Protokolldrucker

6 ——— Druckvorschau ▼
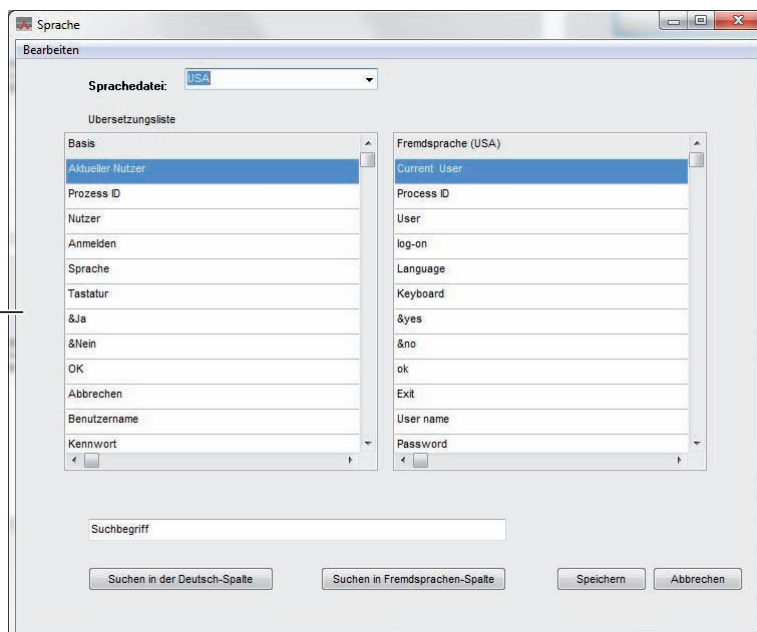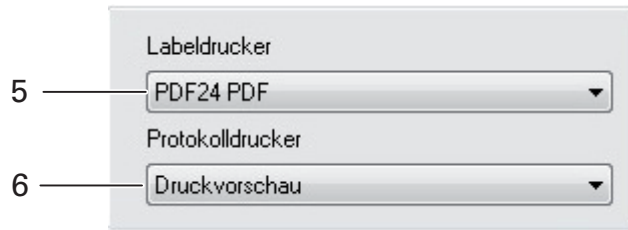
Enter the label printer in window **5.**

Define the print process for protocol printing in window **6.**

Servicezaehler Nadelwechsel | Teilezaehler

Istwert

7 ——— [ ] Reset

Grenzwert

8 ——— [ ] Setzen
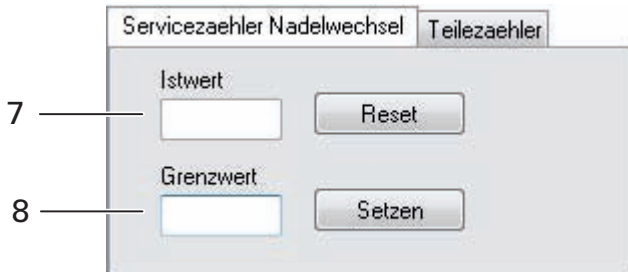
Enter the number of stitches until the needle change in window **7** (once the preset threshold value **8** is reached, the error message "Change needle" is displayed; the counting process restarts when the actual value is reset).

Servicezaehler Nadelwechsel | Teilezaehler

9 ——— [ ] taeglicher reset
[ ] woechentlicher reset

10 ——— Istwert: 643   Setzen   Reset
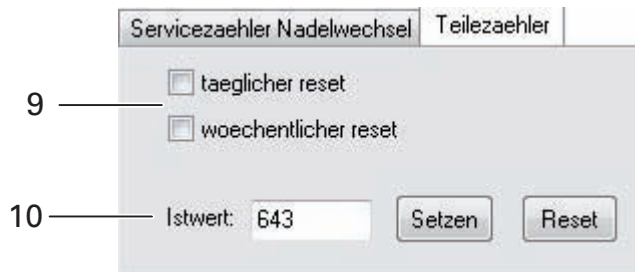
Daily or weekly counting can be set in window **9** of the parts counter.

The counter start value can be entered in the actual value window **10.**

Maschine Einstellungen | Betriebseinstellungen

[ ] KL 3741

11 ——— [ ] mechanische Fadenspannung

[ ] mechanisches Spulen
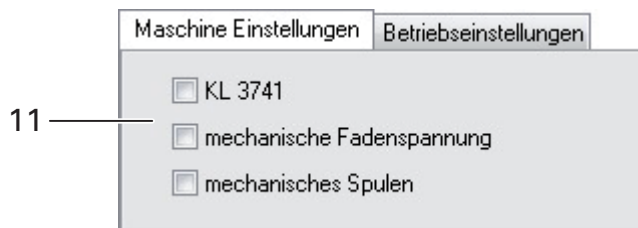
Machine configurations must be selected in window **11.**

Maschine Einstellungen | Betriebseinstellungen

Herstellung Ort   [ ]   Ok

12 ———

Interne MaschinenNr   [ ]   Ok
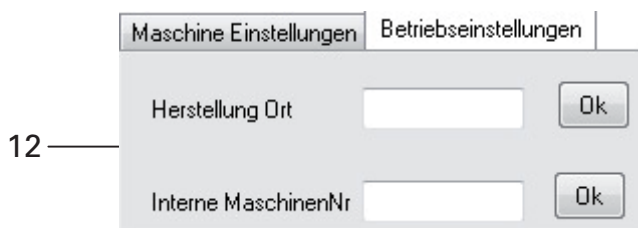
Operation-specific data can be entered in window **12.**

---

13 ———
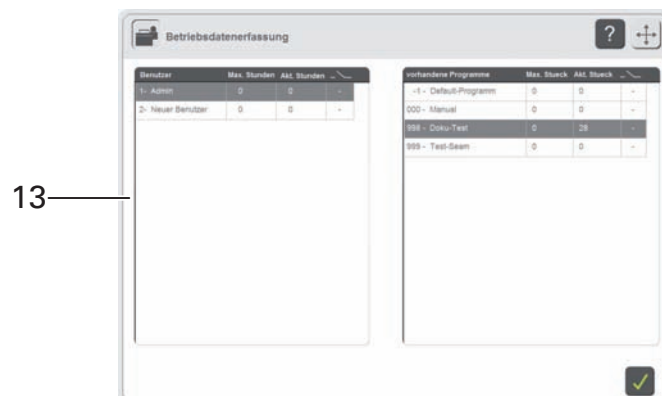
All operating data is recorded in window **13.**

Parameter

14 — Barcodeanzeige anstatt Label drucken
15 — XML-Protokolle
16 — DRX IPST
17 — BMW Intac
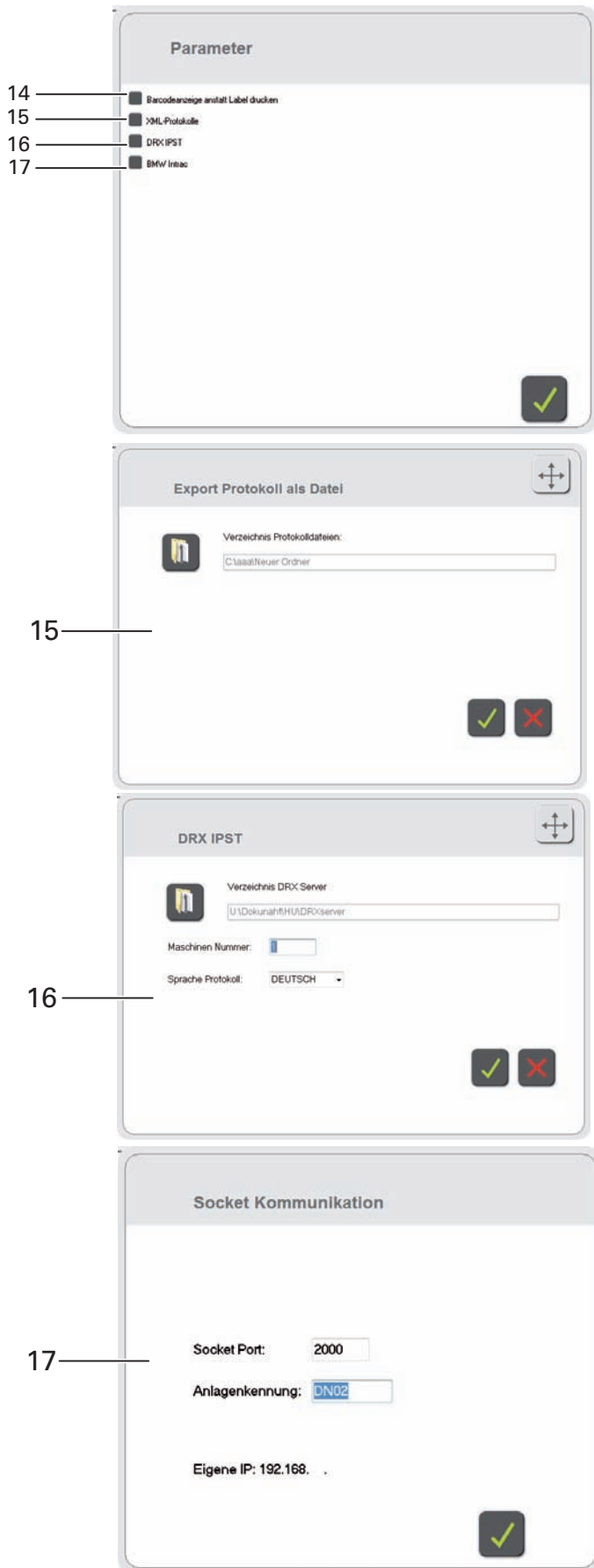
The label barcode is only displayed in window **14** at the end of the sewing process.

No label is printed.

Export Protokoll als Datei

Verzeichnis Protokolldateien:

C:\aaa\Neuer Ordner

15 —

An XML file is stored as a protocol in the specified directory in window **15** at the end of the sewing process.

DRX IPST

Verzeichnis DRX Server

U:\Dokunah\fi\HI\DRX\server

Maschinen Nummer:

Sprache Protokoll: DEUTSCH

16 —

The settings of the DRX IPST system are displayed in window **16.**

Socket Kommunikation

Socket Port: 2000

Anlagenkennung: DN02

Eigene IP: 192.168. .

17 —

The socket communication with the master computer is displayed in window **17.**

> ℹ The program has to be restarted after any changes!

PFAFF® Industrial

POWERLine

3721

INSTRUCTION MANUAL

This instruction manual applies to machines from software version **5.0** and serial number **2 811 567** onwards.

3.01   Proper Use

The **PFAFF 3721** is a work station with a special single-needle, high-speed seamer to create lockstitch seams with a forwards- and backwards-moving feed wheel and roller presser as well as a feed-synchronised needle, electrically controlled tensioning, an electric bobbin winder and a large hook and docu-seam system.

The machines are used for sewing safety-relevant lockstitch seams, e.g. in the automotive industry.

⚠ Any usage not approved by the manufacturer is deemed misuse!
The manufacturer shall assume no liability for damage caused by misuse!
Proper use also includes compliance with the operating, maintenance, adjustment and repair measures specified by the manufacturer!

PFAFF® Industrial

3.02   Technical Data*

Stitch type:..301 (lockstitch)

Needle system:... 134

Model:.. BN5

Needle size in 1/100 mm: .... 80 - 100

Max. stitch length: ....5 mm
Max. thread thickness (synthetics): 30/3
Max. speed: ....3500 min^{-1}**

Clearance beneath the presser foot:..7 mm
Passage width:..350 mm
Clearance height: ....120 mm
Bed plate dimensions: ....640 x 200 mm

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

Noise data:
Emissions sound pressure level in the workplace at n = 2400 min^{-1}: ....L_{pA} = 80 dB(A)■
(Noise measurement in accordance with DIN 45 635-48-A-1, ISO 11204,
ISO 3744, ISO 4871)

Motor data: ....see motor specification plate
Leakage current: ....≤ 5 mA
Air consumption per switching cycle: ....0.146 Nl

Net weight of sewing head:...approx. 72 kg
Gross weight:...approx. 82 kg

*   Subject to technical changes

**   Depending on the material, workstep and stitch length

         or comparable thicknesses of other types of yarn

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

         K_{pA} = **2.5** dB

3.03   Disposal of the Machine

It is up to the customer to dispose of the machine properly.

The materials used for the machine include steel, aluminium, brass and various plastics. The electrical equipment consists of plastics and copper.

The machine must be disposed of in accordance with the locally valid environmental protection regulations, with a specialised company being contracted if necessary.

⚠️ Please ensure that parts coated with lubricants are disposed of separately in accordance with the locally valid environmental protection regulations!

PFAFF® Industrial

3.04 Transportation, Packaging and Storage

3.04.01 Transportation to the customer's premises

All machines are completely packed for delivery.

3.04.02 Transportation within the customer's premises

The manufacturer assumes no liability for transport within the customer's premises or to the individual usage sites. Please ensure that the machines are only transported in a vertical position.

3.04.03 Disposal of the packaging materials

The packaging materials of these machines consist of paper, cardboard and VCI fleece. It is up to the customer to dispose of the packaging properly.

3.04.04 Storage

The machine can be stored for up to **6** months when not in use. It must then be protected from dirt and moisture. For longer storage periods, the machine's single components, especially its sliding surfaces, must be protected against corrosion, e.g. by an oil film.

3.05   Work Symbols

Activities to be performed or important information in this instruction manual are emphasised by symbols. The symbols used have the following meaning:
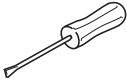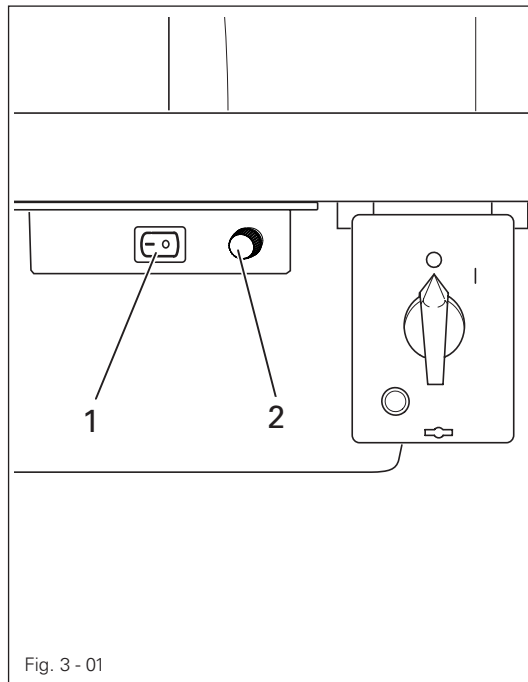
Note, information

Cleaning, care

Lubrication

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

PFAFF® Industrial

3.06 Operating Controls

3.06.01 Main switch / sewing switch lamp

Fig. 3 - 01

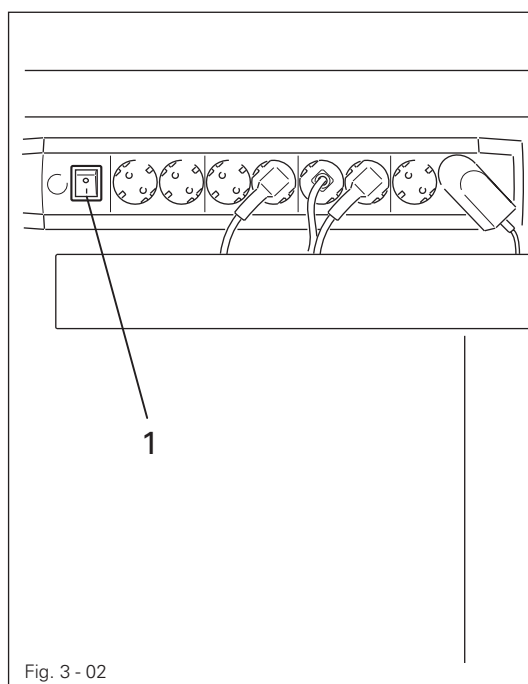The machine control unit is switched on or off by turning the main switch **1**.

Please note that when activating the machine, the machine must be activated first and then the power bar.

The sewing lamp integrated into the machine head is switched on or off by pressing the switch 1.

The button **2** regulates the brightness of the sewing lamp.

3.06.02 Power bar

Fig. 3 - 02

The complete power supply for the PC components (PC, touch screen monitor, manual scanner, printer etc.) are switched on or off by pressing the switch **1**.

If the individual devices are not switch on after turning on the power bar, it is necessary to check if the switches for the individual devices are turned on.
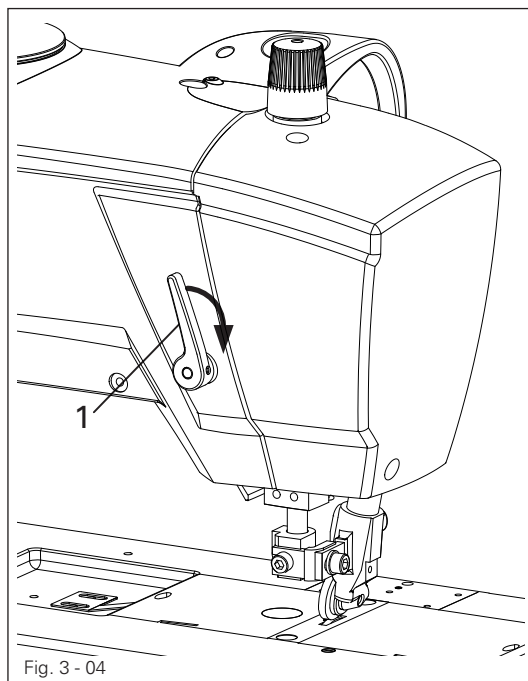
Operating Controls

3.06.03   Pedal

Fig. 3 - 03
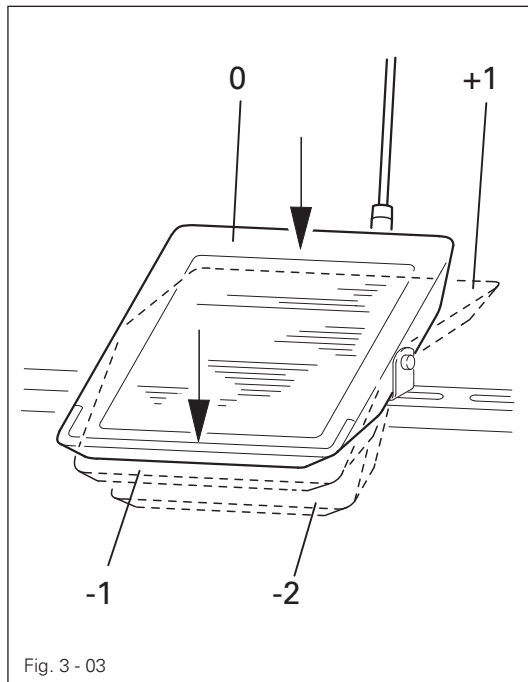
When the main switch is turned on

0   =   Neutral position

+1   =   Sew

- 1 =   Raise presser foot
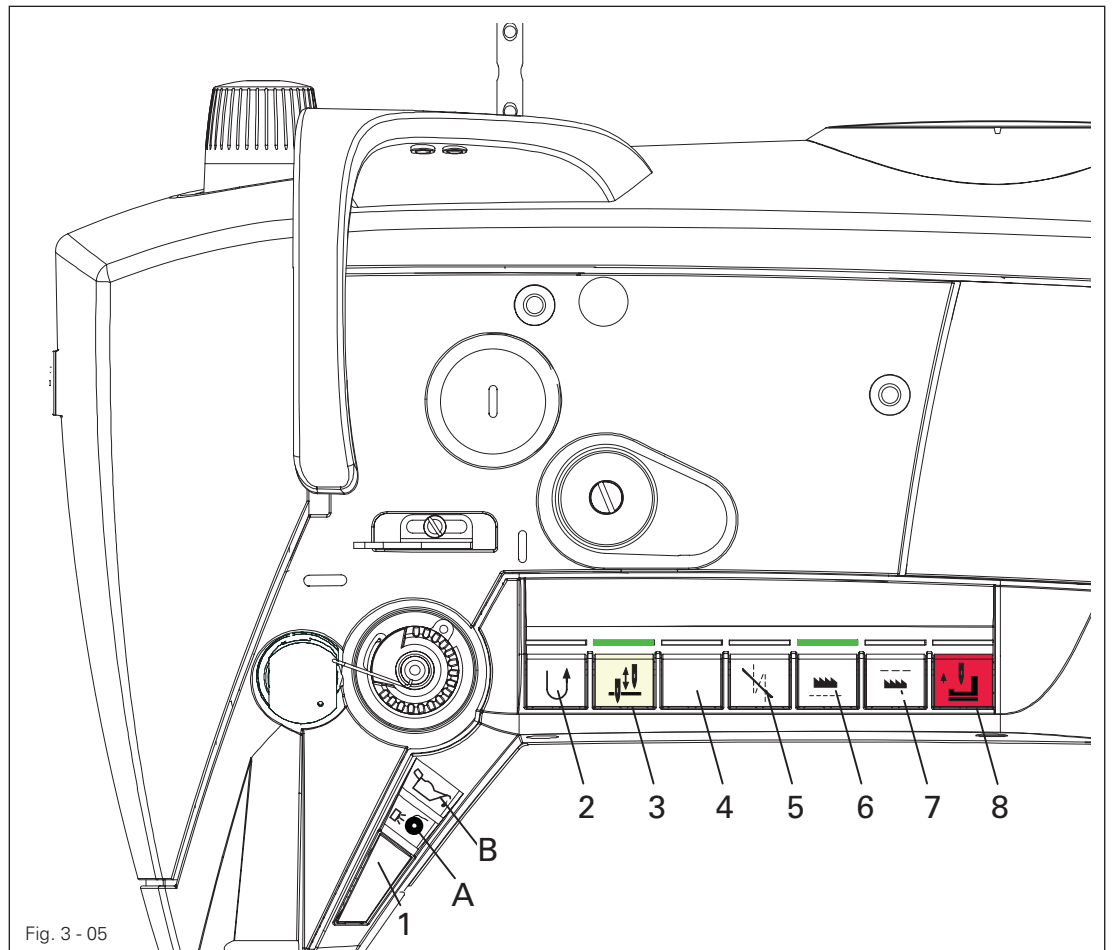
- 2 =   Trim thread

(in machines with a thread trimmer)

3.06.04   Hand lever to raise the roller presser

Fig. 3 - 04

Turning the hand lever **1** raises the roller presser.

PFAFF®Industrial

3.06.05   Keypad on the machine head

Fig. 3 - 05

The machine has a keypad with **8** keys for activating different functions.

There are yellow LEDs in the keys **2** - **7**. These light up when the corresponding function has been allocated to the key **1**.

Green LEDs are arranged above the keys **2** - **7**. These light up when the function is switched on.

There are two symbol lights above the key **1**.
Light **A** signals the status of the bobbin thread monitor.
Light **B** lights up when the minimum level of oil supply is reached.

The functions listed below are executed by pressing the keys **1** - **8**.

Key **1**:   This key can be allocated with the functions of the keys **2** - **7**.
To program the key **1**, press one of the keys **2** - **7** and the key **1** simultaneously for approx. **3 sec**. The function of the selected key is applied and the yellow LED in this key lights up)

Key **2**:   Reverse sewing or intermediate back tacking within the seam

Key **3**:	Needle position change-over
	Needle up without trimming

Key **4**:	The machine switches to the next section when this key is pressed.

Key **5**:	Backtack suppression for one backtack.

Key **6**: Half-stitch
The machine carries out one stitch of half the set stitch length when this key is pressed.

Key **7**: Whole stitch
The machine carries out one additional stitch of the set stitch length when this key is pressed.

Key **8**: Emergency switch-key
Needle is raised without thread trimming; thread clamp opens; thread tension is released; presser foot is raised and the motor starting lock-out is activated.
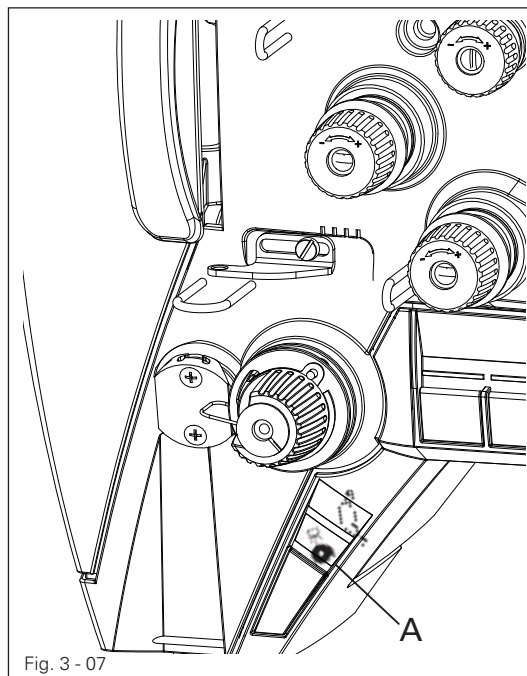Pressing the key again deactivates the motor starting lock-out

The method for setting parameters is described in the adjustment manual, and may only be carried out by certified professionals!

PFAFF®Industrial

3.06.06   Knee switch (option)

Fig. 3 - 06
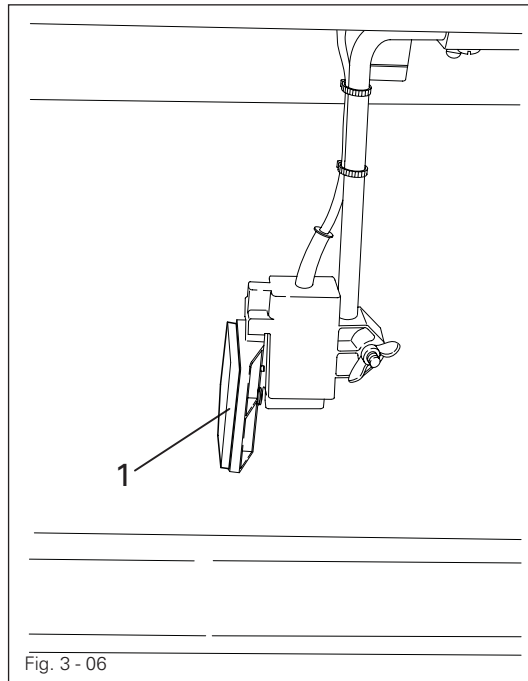
The docu-seam zone is switched on or off by pressing the knee switch.

3.06.07   Bobbin thread supply monitor
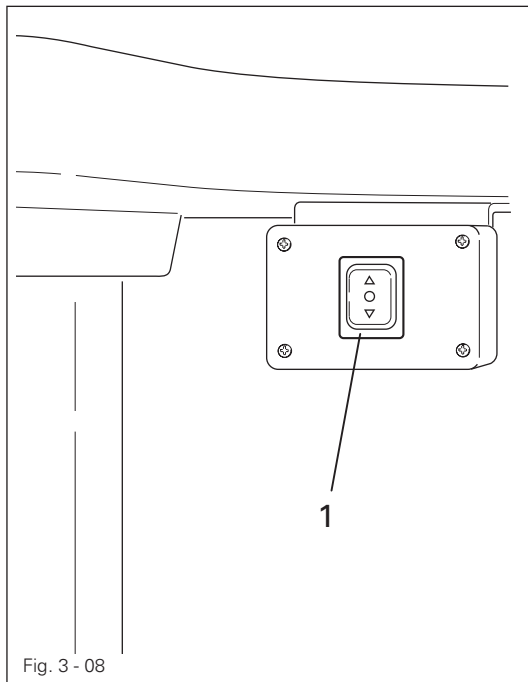

Fig. 3 - 07

The symbol light **A** flashes on reaching the residual thread quantity.

A corresponding message is displayed on the touch screen monitor after the next thread trimming.

The work process can be continued after the bobbin has been changed and the message has been acknowledged.

3.06.08   Height adjustment of the stand (option)

Fig. 3 - 08

The stand height is changed by pressing the key **1** accordingly.

3.06.09   Touch screen monitor

Fig. 3 - 09
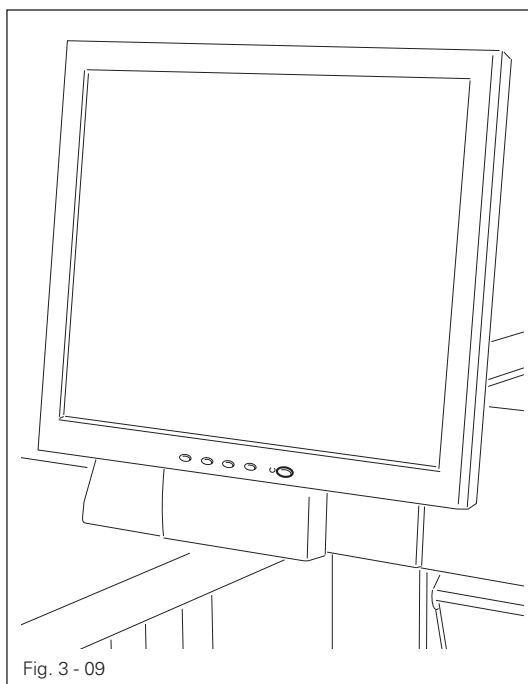
All necessary entries can be made via the touch screen monitor. The corresponding operating statuses, messages, parameters etc. are displayed.

PFAFF Industrial

3.06.10   Label printer
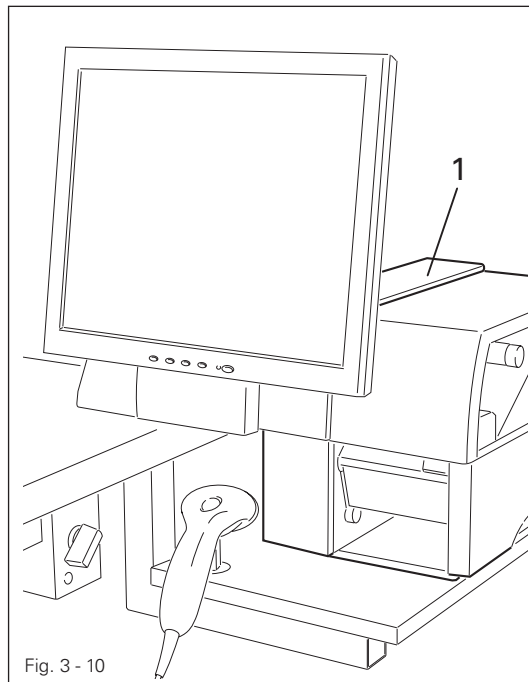
The label printer **1** is used to print the label.
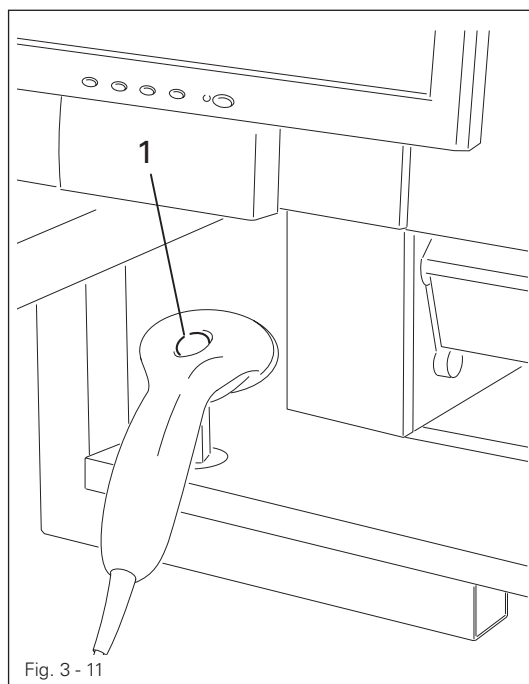
Fig. 3 - 10

3.06.11   Manual scanner

The manual scanner can be used to import user and process data after pressing the key **1**. For example, the user can log on and material, needle thread and bobbin thread data can be entered via the manual scanner.

Fig. 3 - 11

3.06.12   PC

⚠ The PC should never be switched off if the PC has still not completely shut down!
Risk of data loss!

3.07   Set-up

⚠ Observe and comply with all regulations and information in this instruction manual.
Pay particular attention to all safety regulations!

⚠ All set-up work may only be carried out by appropriately instructed personnel.

3.07.01   Logon

Switch on the machine via the switch on the power bar and wait until the PC has started up.
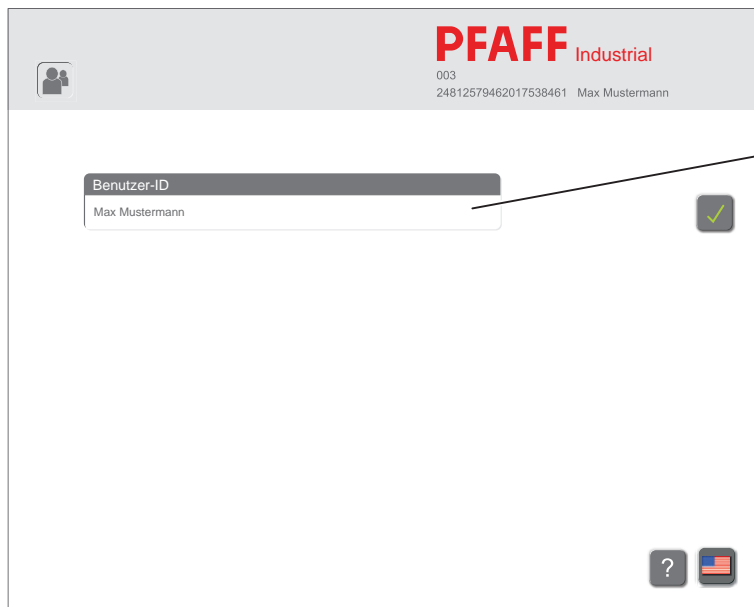
Tap on the input field **1.**
A field for inputting the user appears.

Enter the user.

✓ Confirm the input.

ℹ If the user has an ID card with a corresponding barcode, the user can also alternatively be entered via the manual scanner.

3.07.02   Language selection

Log onto the machine.

🇺🇸 Call up the language selection menu.

Select the desired language (flag).
The selected language is immediately implemented for the entire application.

PFAFF Industrial

3.07.03   Inserting the needle
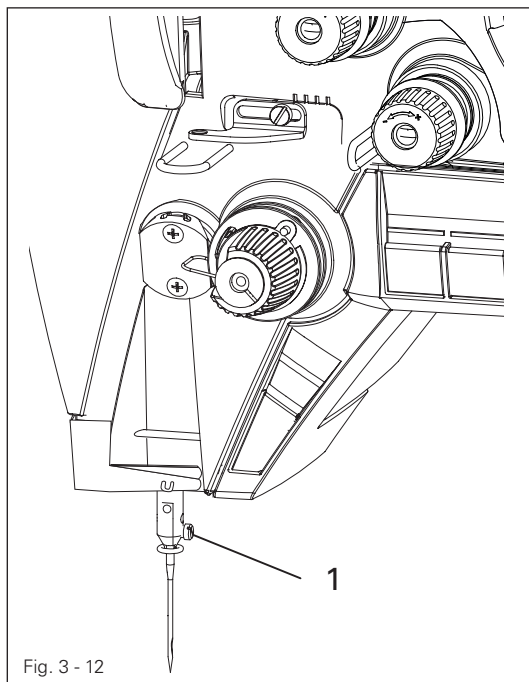
Fig. 3 - 12

Only change the needle when the threading aid function is switched on!

Risk of injury from the machine suddenly starting up!

Only use needles of the system intended for the machine, see **chapter 4 Technical Data**!

Switch on the threading aid function on the machine head by pressing the switch-key.

Loosen the screw **1.**

Insert the needle until you feel it stop. The long needle groove must point to the left.

Tighten the screw **1.**

Switch off the threading aid function on the machine head by pressing the switch-key again.

3.07.04   Winding the bobbin thread, adjusting the thread tension
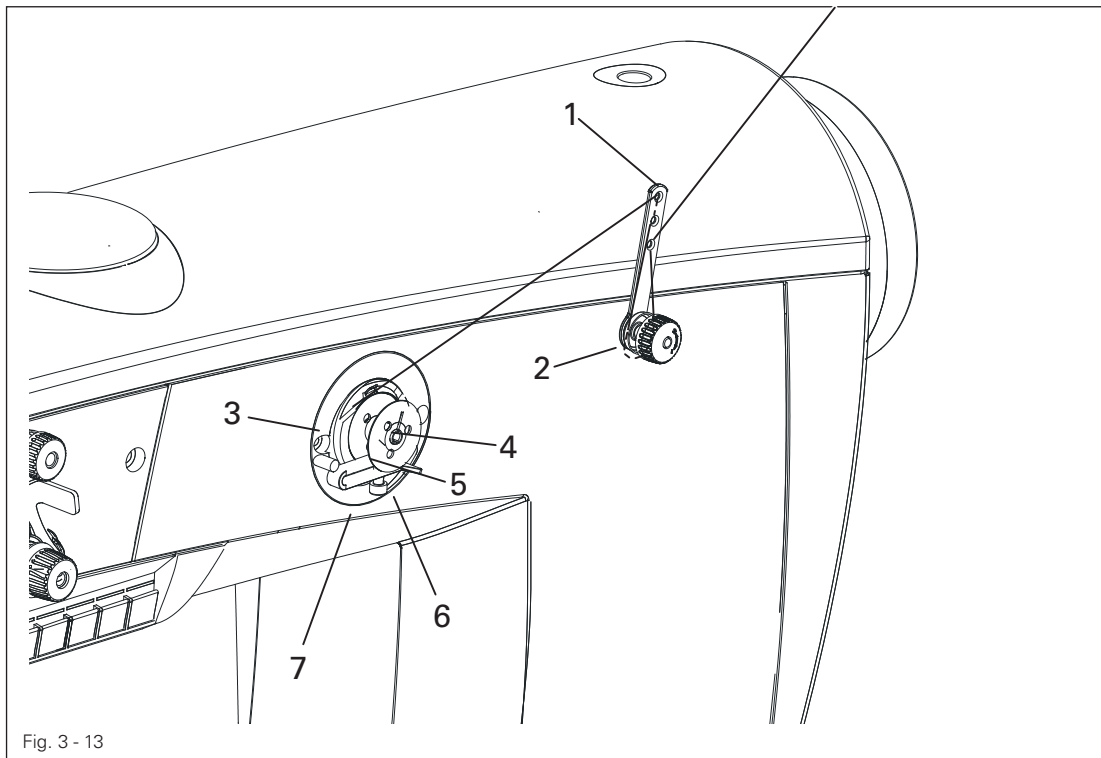
Fig. 3 - 13

A prerequisite for the following steps is that the machine is in production operating mode, see **chapter 3.08 Sewing**.

Select the "Bobbin winding" function.

Pull the reel stand thread through the guide **1** into the pre-tensioner **2** and then behind the thread clamp **3.**

Tear off the thread in the thread clamp **3.** The thread is now fixed in position.

Attach the empty bobbin **4** to the bobbin winder spindle **5.**

Press the lever **6** upwards to activate the winder.

Enter or scan the bobbin number.
Enter the value "**0"** if no thread assignment is desired.

The winder starts automatically after entering the bobbin number and stops again when the bobbin **4** is sufficiently full.

Remove the filled bobbin **4** and tear off the thread at the thread clamp **3.**

The thread tension on the bobbin **4** can be set via the pre-tensioner **2.**

The fill amount of the bobbin **4** can be adjusted on the setting screw **7.**

3.07.05   Changing the bobbin / threading the bobbin thread and adjusting the tension
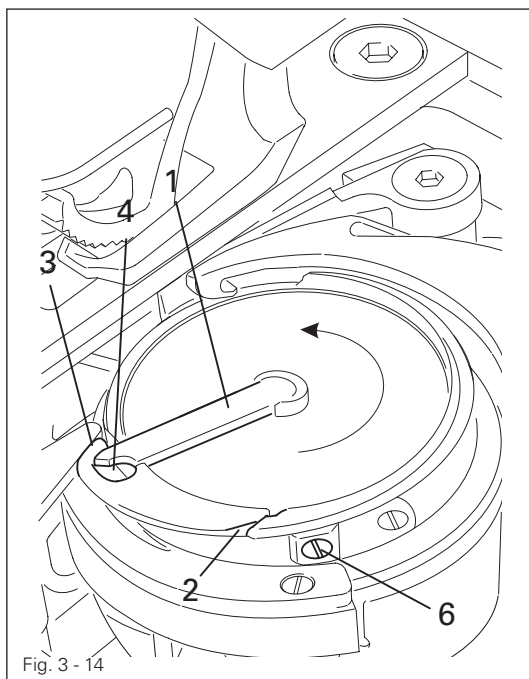
Fig. 3 - 14

Fig. 3 - 15

Only change the bobbin when the threading aid function is switched on!
Risk of injury from the machine suddenly starting up!

Switch on the threading aid function on the machine head by pressing the switch-key.

Push down the spring latch and open the bed plate slide.

Raise the lever **1** and remove the bobbin.

Place the filled bobbin into the hook so that the bobbin turns in the direction of the arrow when the thread is drawn off.

Flip open the lever **1.**

Pull the thread through the slot **2** to pull the horn **3** into the hole **4.**

Select the "Tools" function.

Call up the service menu.

Select the "Thread force" function.

Thread the bobbin thread through the sensor **5** and pull off evenly according to Fig. **3 - 15.**

Compare the displayed value with the standard value and adjust the bobbin thread tension on the screw **6** accordingly, if necessary.

Close the bed plate slide.

Sensorik

Switch off the threading aid function on the machine head by pressing the switch-key again.
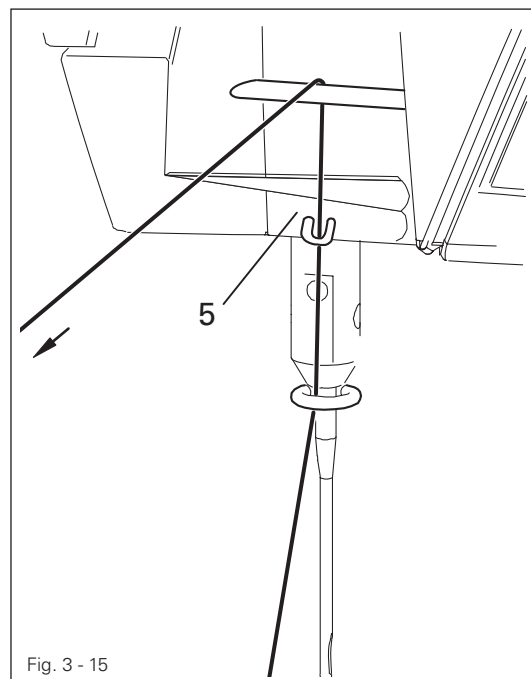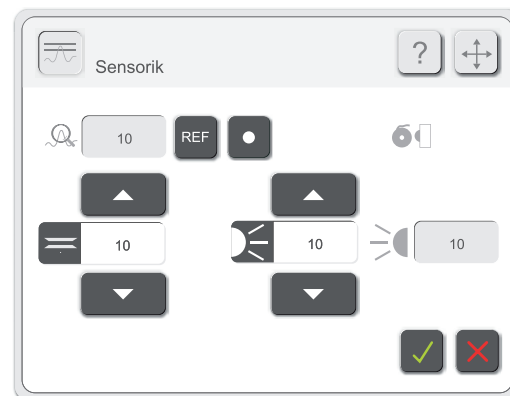
3.07.06 Threading the needle thread
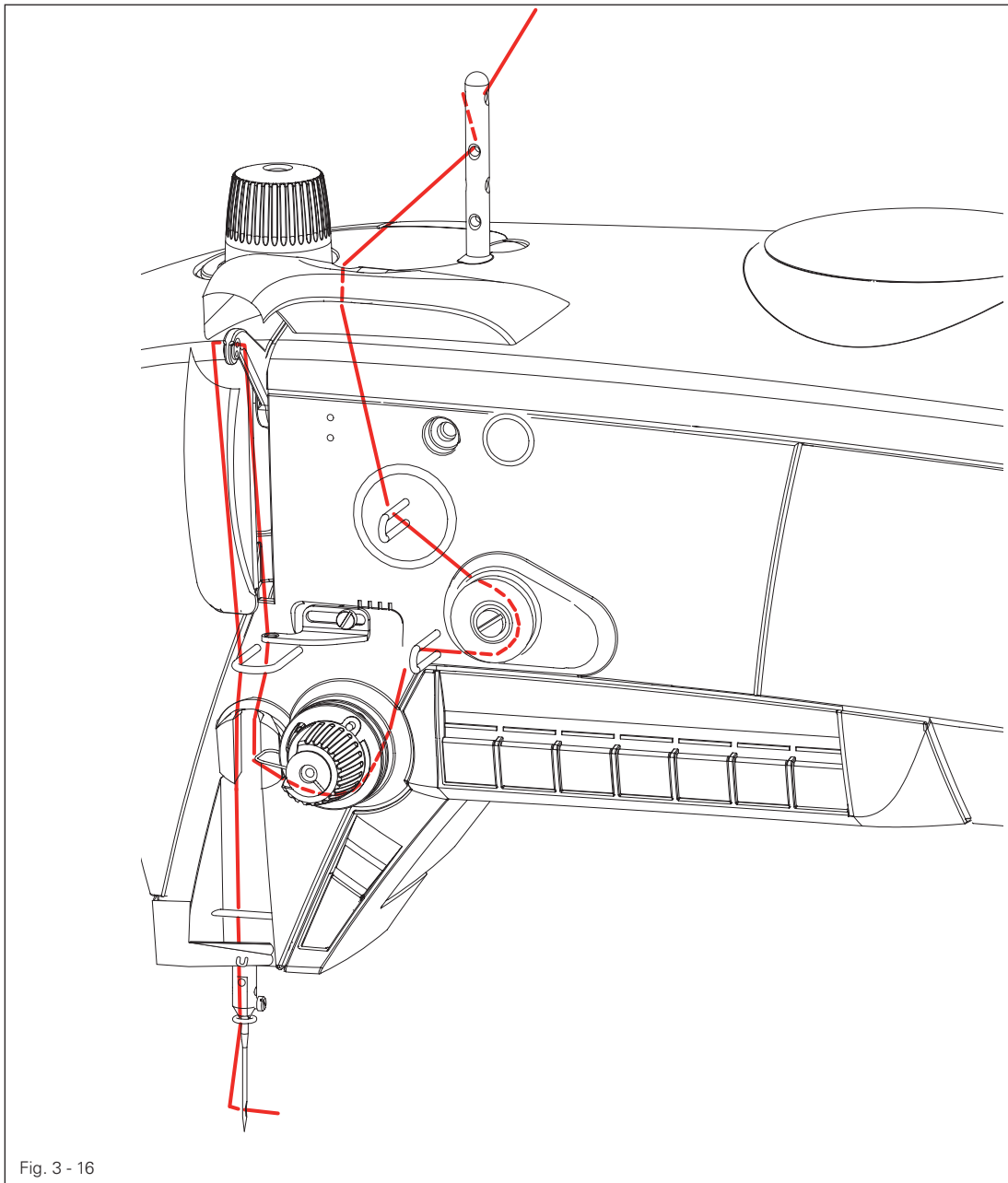
Fig. 3 - 16

Only thread the needle thread when the threading aid function is switched on!
Risk of injury from the machine suddenly starting up!

Switch on the emergency switch-key / threading aid function on the machine head by pressing the switch-key.

Thread the needle thread as shown in Fig. **9 - 06.**

Switch off the emergency switch-key / threading aid function on the machine head by pressing the switch-key again.

3.08   Sewing

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!

The following conditions must be fulfilled in order to sew:

All safety devices must be fitted, see **chapter 1.06 Hazard information**.

The machine must have been set up and started up in accordance with the set-up instructions.

All set-up work must have been carried out, see **chapter 3.07 Set-up**.

3.08.01   Calling up / performing the sewing process (without a bobbin thread monitor camera)

The following steps must be performed after the user has logged in.

Call up the seam program selection.

PFAFF Industrial
003
24812579462017538461   Max Mustermann

-1	Default-Programm	20.06.2006
000	Manual	29.03.2012
001	Unterfaden-Kamera	04.04.2012
998	Doku-Test	29.03.2012
999	Test-Seam	17.02.2012
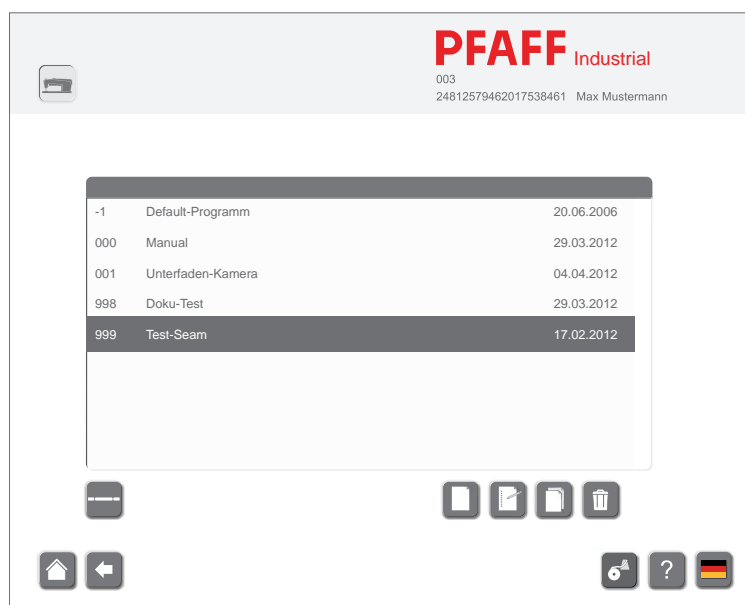
Select the desired program from the list.

As an alternative to the manual seam program selection, the appropriate seam program can also be selected via the manual scanner if a corresponding barcode is available.

Call up production.

Insert the material.

Start the production process by pressing the pedal.

3.08.02   Calling up / performing the sewing process (with a bobbin thread monitor camera)

The following steps must be performed after the user has logged in.

Call up the seam program selection.

-1	Default-Programm	20.06.2006
000	Manual	29.03.2012
001	Unterfaden-Kamera	04.04.2012
998	Doku-Test	29.03.2012
999	Test-Seam	17.02.2012

003
24812579462017538461   Max Mustermann

Select the desired program from the list.

Warning!
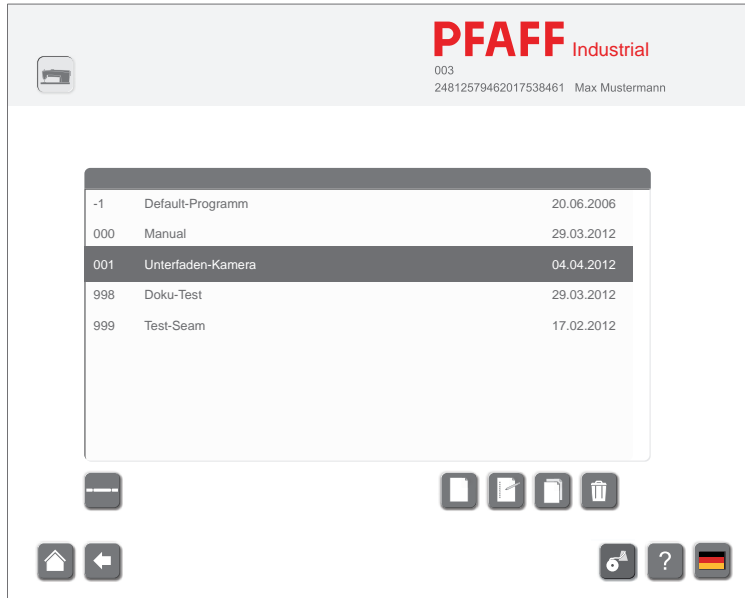
Move the bobbin cover to the reading position!

The following message will be displayed on the monitor
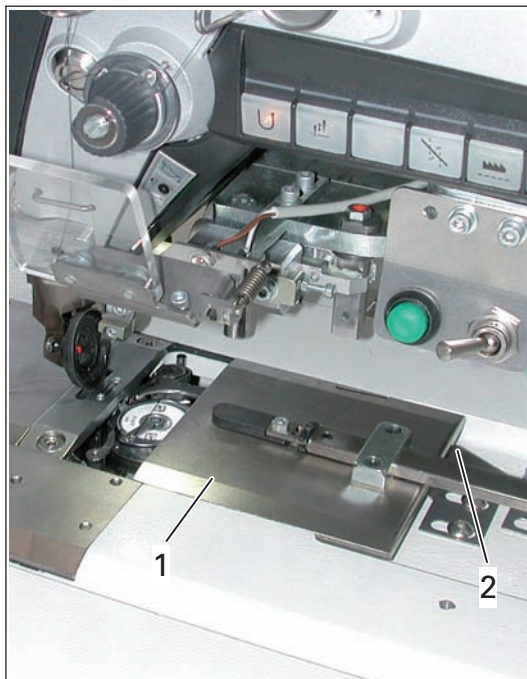
Move bobbin cover **1** into the reading position by retracting to the spring plate **2)**.

Confirm the position.

Green bar above the image means
- Reading process is under way .

Turn the bobbin as needed to allow reading of the DATA Matrix code.

Red bar above the image means
- Reading process is not under way, (camera error or the bobbin cover **1** not in the reading position).

Close the bobbin cover **1.**

   Call up production.

Insert the material.

Start the production process by pressing the pedal.

3.08.03 Adjusting the needle thread tension

Call up the seam program selection.

	PFAFF Industrial	
	003	
	24812579462017538461 Max Mustermann	

-1	Default-Programm	20.06.2006
000	Manual	29.03.2012
001	Unterfaden-Kamera	04.04.2012
998	Doku-Test	29.03.2012
999	Test-Seam	17.02.2012
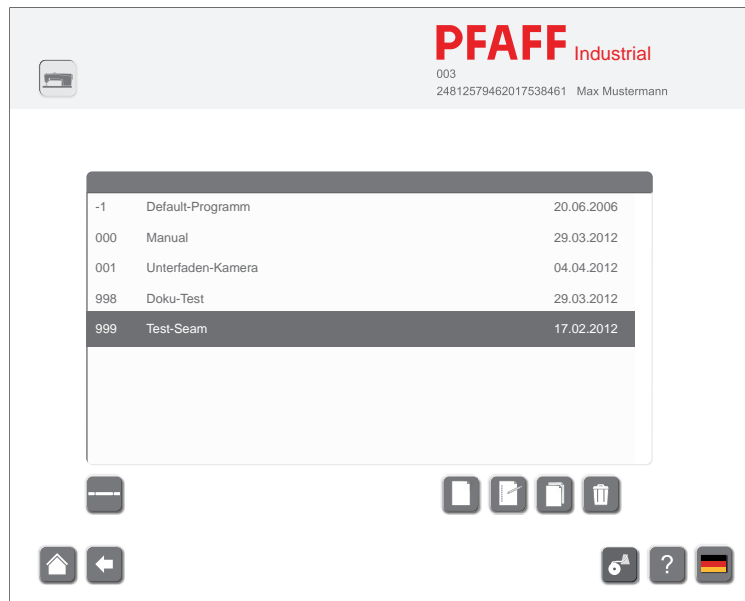
Select the desired program from the list.

Call up production.

PFAFF Industrial
003
24812579462017538461   Max Mustermann

ok   nok
13   1
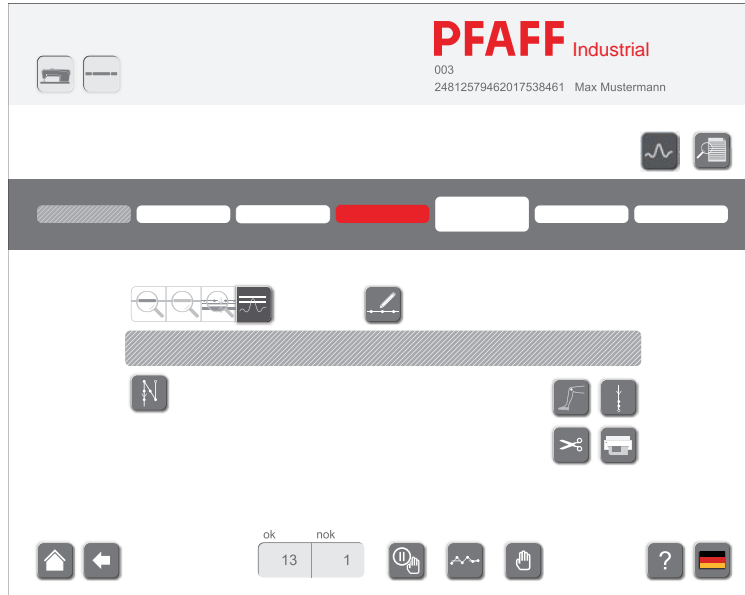
Call up the "Test seam" function.

Insert the material.

Create a test seam.

Set the value for the upper thread tension via the arrow keys **1** so that the upper thread tension is set to the median value of the monitoring range.

The new value is stored by pressing the 'Test seam' key again.

3.08.04 Description of the functions

The following menu appears after calling up production:

Work order
The work instructions for the selected seam program is displayed after calling up the function.

Displaying the seam zones
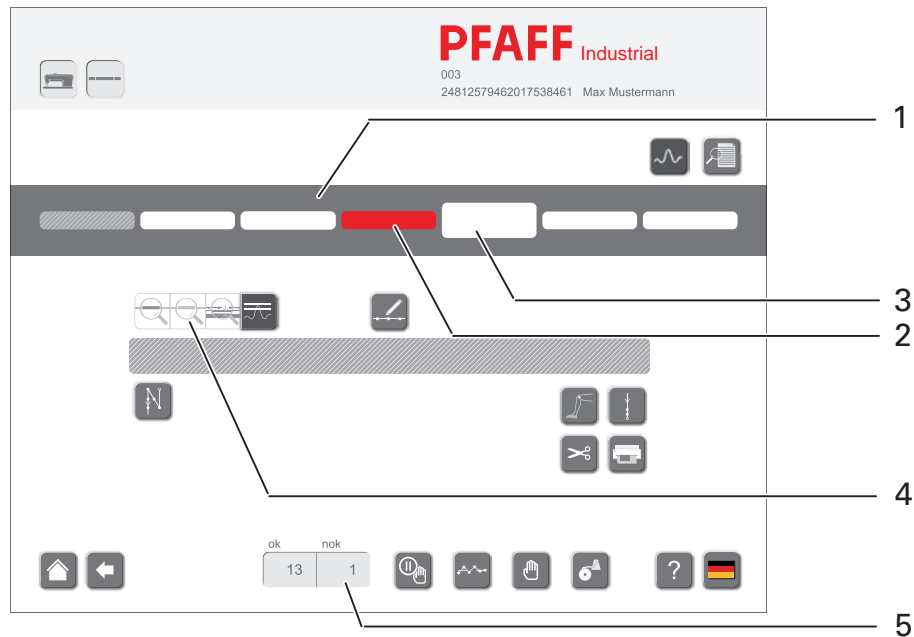The seam zones of the seam program are displayed in section **1**.
The docu-seam section **2** is shown in red.
Seam zone **3** is the current seam zone to be machined.

Displaying the monitoring functions
The symbols in section **4** are used to display the monitoring functions defined in the seam program for the seam zone. Inactive functions are shown in light grey. The following monitoring functions can be activated individually:

- Docu-seam zone
- Skip stitch recognition
- Edge guide recognition (optional)

Thread tension
The values for the set thread force limit values and the tolerance range for skip stitches are shown after calling up this function.

Sewing parameters
The sewing parameters are displayed after calling up this function. The sewing parameters are defined while inputting the seam program, see quick input guide.

Action at the seam zone start
The symbol shows the action at the seam zone start (e.g. start backtack here). The action for the seam zone start is defined while inputting the seam program, see quick input guide.

Seam zone end

The symbol shows the type of recognition of the seam zone end (e.g. recognition by pressing the knee switch here). This is defined while inputting the seam program, see quick input guide.

Action at the seam zone end

The symbol shows the action at the seam zone end (e.g. stitch condensation). The action for the seam zone end is defined while inputting the seam program, see quick input guide.

Thread trimming on/off

This function is used to switch the thread trimming at the seam zone end on or off.

Label printing on/off

This function is used to switch the printing of the label at the seam zone end on or off.

Operating mode selection

This function is used to call up the menu for selecting the operating mode.

Back

This function is used to call up the previous level.

Displaying the sewing results

The number of the good ("ok") and bad ("nok") seams are displayed in section **5.**

Manual interruption

The seam sequence is interrupted. The seam zone can be reselected to continue the seam program.

Manual sewing

Sewing is carried out without defined seam zones. The course of the thread force during the sewing process can be displayed (monitor on/off) and saved temporarily (frozen) as a snapshot.

Test seam

A test seam (= simulated docu-seam) is sewn after calling up this function in order to check all standards. No label is printed and no identification number is created in the database.

Bobbin winding

The bobbin winding process is carried out, see **chapter 3.07.04 Winding the bobbin thread, ...**

Help mode

The next selected function is explained after calling up the help mode.

Language selection

A menu opens for selecting the language setting, see **chapter 3.07 Set-up** in the instruction manual.

Monitor

3.08.05   Ending the sewing process

The superordinate level is called up to end the sewing process.

Shutting down the PC

Switch off the machine on the power bar and at the main switch.

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3.09 Maintenance and Care

3.09.01 Maintenance intervals

Clean the hook area .... daily, several times if in continuous operation
Check oil level .... daily, before start-up
Check / set the air pressure .... daily, before start-up
Cleaning the maintenance unit air filter .... as needed

These maintenance intervals are based on an average running time of a single shift production shop. Shorter maintenance intervals are recommended for increased running times.

3.09.02 Cleaning the machine

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

Single or multi-shift operation

Dust formation caused by the workpieces

Optimal cleaning instructions can therefore only be defined on a case-by-case basis.

Disconnect the machine from the electricity mains for all cleaning work by shutting off the main switch or removing the mains plug! Risk of injury due to accidental machine start-up!
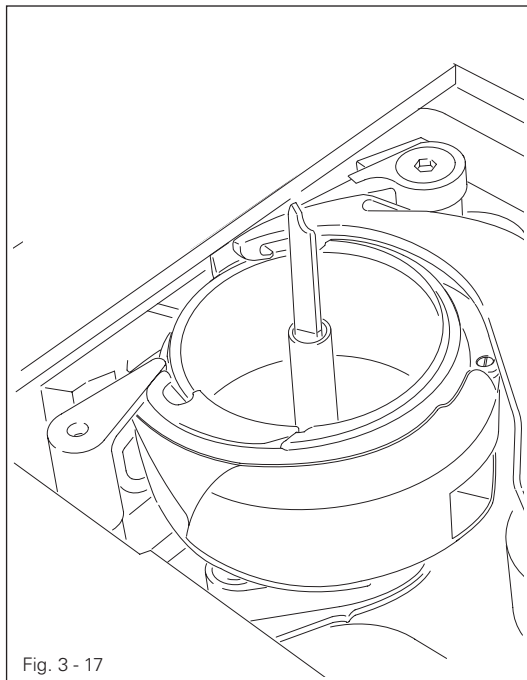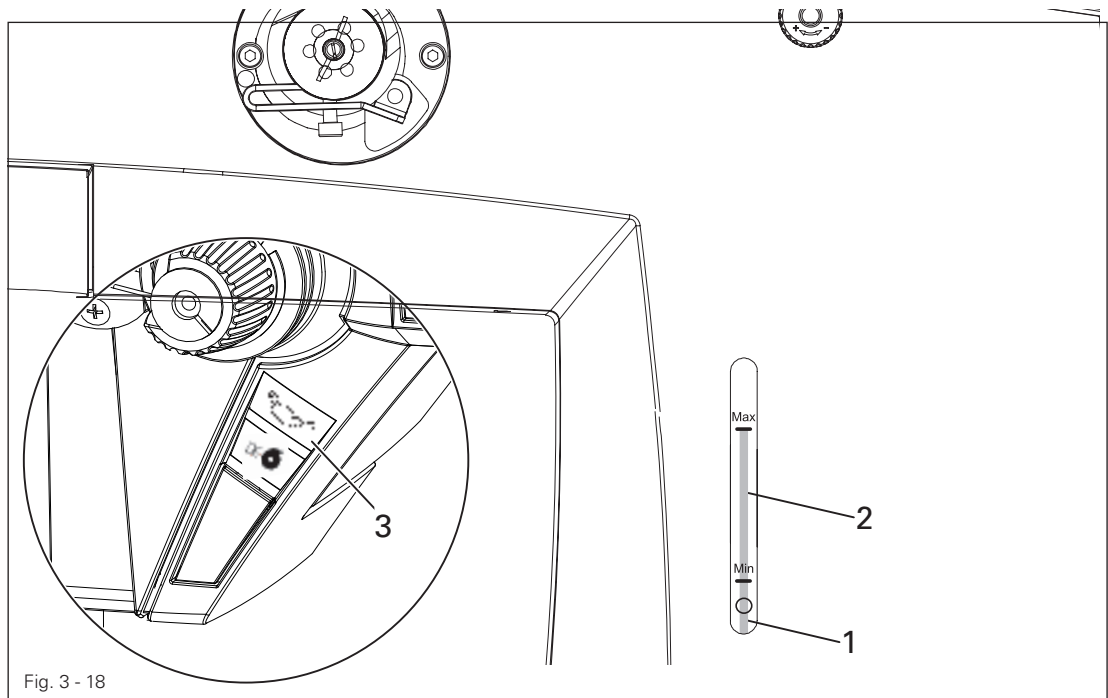

Fig. 3 - 17

The following tasks are recommended during single shift operation to avoid operational errors:

Open the bed plate slide and remove the bobbin.

Clean the hooks and hook area daily, or more often during continuous operation.

Insert the bobbin and close the bed plate slide.

3.09.03   Oiling

Fig. 3 - 18

Before the initial start-up, add oil through the hole **1** until the oil level gauge **2** is on the "**MAX.**" marking.
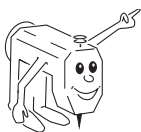
The oil level is monitored by a sensor.
The symbol light **3** on the machine head lights up red when the minimum oil level is reached.
Add oil to the container through the hole **1** as required.
The oil level gauge **2** must not rise above the "**MAX.**" marking.

Only use oil with a centre viscosity of **22.0 mm²/s** at **40 °C** and a density of **0.865 g/cm³** at **15 °C**!

We recommend PFAFF sewing machine oil, order no. **280**-**1**-**120 144**.

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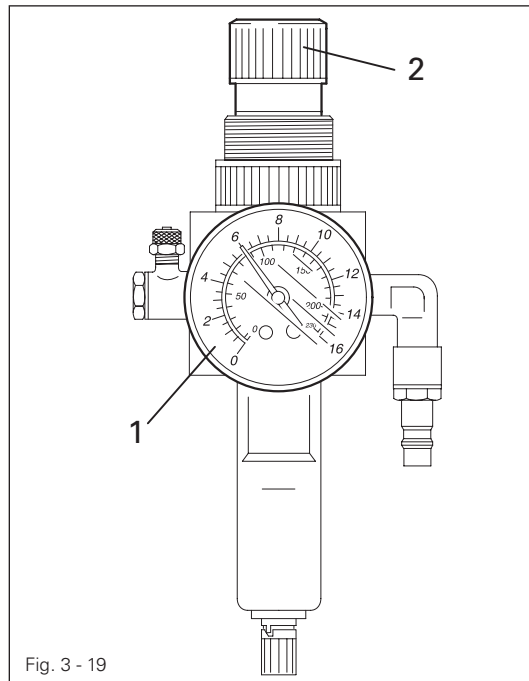### 3.09.04   Checking / setting the air pressure

Fig. 3 - 19

Check the air pressure on the manometer **1** before every start-up.

The manometer **1** must show a pressure of **6** bar.

Adjust this value if needed.

Pull up the button **2** to do this and turn it out of position accordingly.

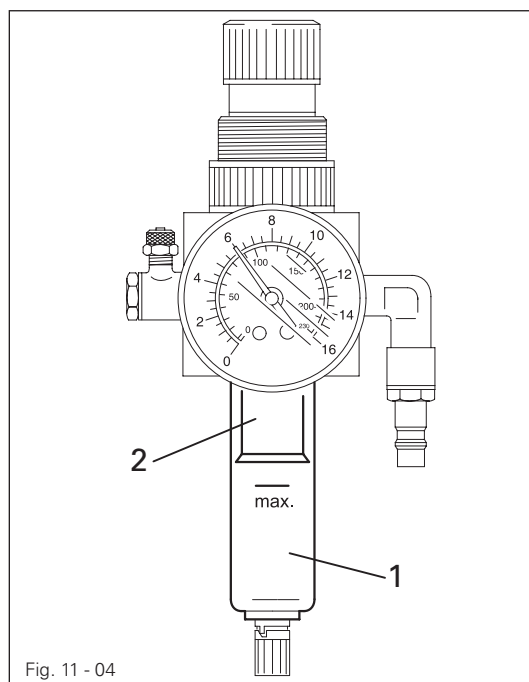### 3.09.05   Emptying / cleaning the maintenance unit's water tank

Fig. 11 - 04

Switch the machine off. Detach the compressed air tube on the maintenance unit.

Empty the water tank

The water tank **1** empties itself automatically after the compressed air tube for the maintenance unit has been removed.

Clean the filter

Unscrew the water tank **1** and take out the filter **2**.

Clean the filter with compressed air or isopropyl alcohol, part number **95-665 735-91**.

Screw in the filter **2** and screw on the water tank **1**.

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POWERLine

3721

ADJUSTMENT MANUAL

4 Adjustment

Observe and comply with all instructions in the instruction manual's **chapter 1 Safety**! In particular make sure that all safety covers are installed again correctly after making adjustments, see **chapter 1.06 Instruction manual** hazard information!

Unless otherwise stated, the machine must be disconnected from the mains before all adjustment work!
Risk of injury due to accidental machine start-up!

4.01 Notes on adjustment

All adjustments in this manual are based on a fully assembled machine and may only be carried out by technical 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 that have to be completely adjusted. Both the preceding and following chapters must be observed if only specific individual work steps are carried out. The screws and nuts indicated in brackets ( ) are fastenings for machine parts, which must be loosened before any adjustment and tightened again afterwards.

4.02 Tools, gauges and other accessories

1 set of screwdrivers with knife widths of 2 to **10 mm**

1 set of wrenches with jaw widths from **7** to **14 mm**

1 set of Allen keys of **1.5** to **6 mm**

1 gauge for the **5.0 mm** vibrating presser stroke (order no. **61-111 633-60**)

1 metal ruler (order no. **08-880 218-00**)

Thread and testing material

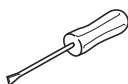### 4.03 Abbreviations

t.d.c. = top dead centre
b.d.c. = bottom dead centre

4.04 Explanation of symbols

Activities to be performed or important information in this adjustment manual are emphasised by symbols. The symbols used have the following meaning:

Note, information

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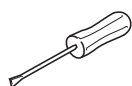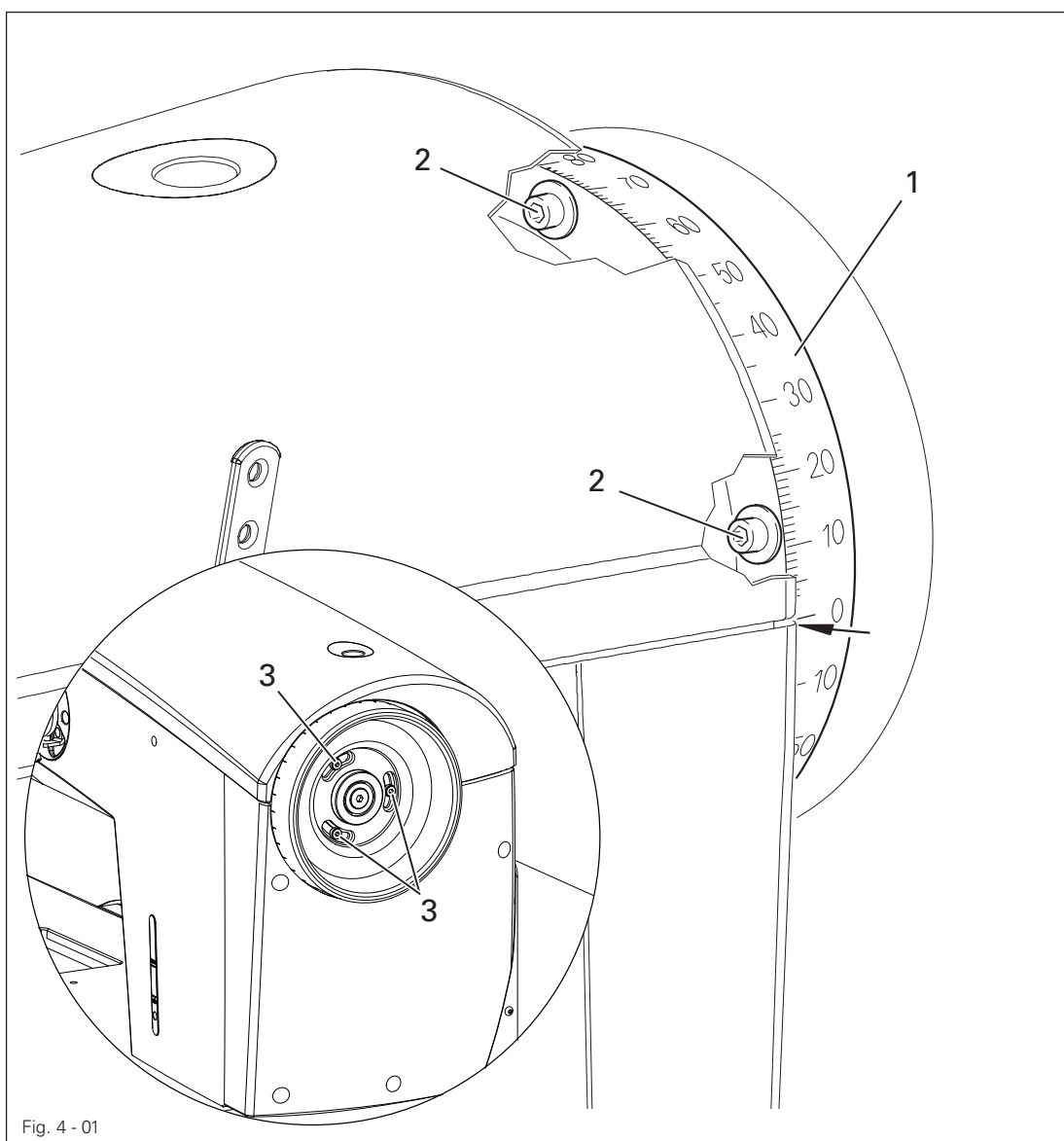(only to be carried out by technical staff)

4.05   Adjusting the basic machine

4.05.01   Home position of the handwheel (adjustment aid)

> **Rule**
> When the needle bar is at t.d.c., the "**0**" marking on the scale should be on the upper edge of the belt guard (see arrow).

Fig. 4 - 01

Turn the scale dial **1** (screws **2** or **3** depending on the model) according to the **rule**.

Adjustment

4.05.02   Compensation weight

Rule

1. When the needle bar is in b.d.c. (handwheel position **170°**), the largest eccentricity of the compensation weight **1** should be at the top of the arm shaft.
2. When the needle bar is in b.d.c. (handwheel position **250°**), the largest eccentricity of the compensation weight **3** should be at the top of the hook shaft.
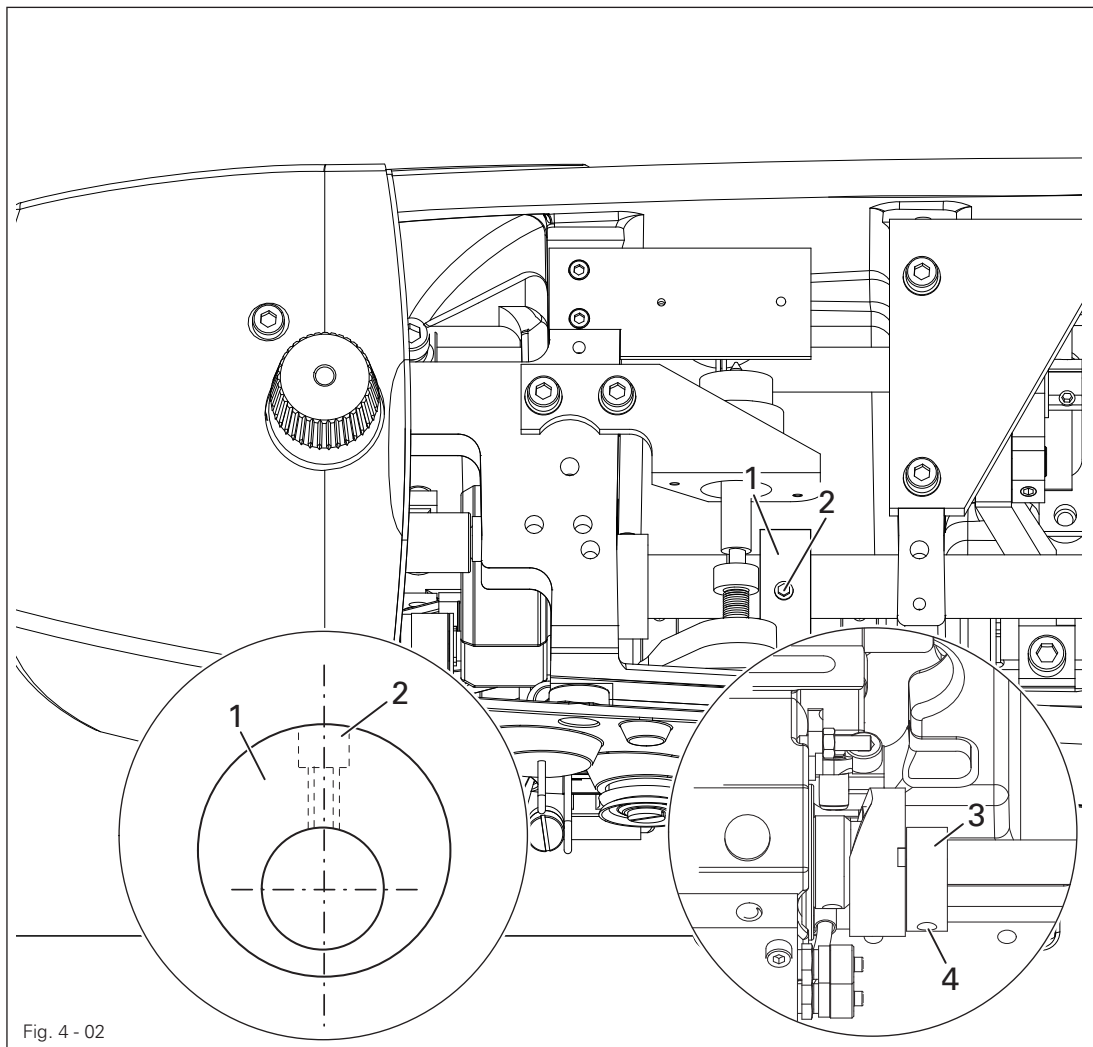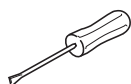

Fig. 4 - 02

Turn the compensation weight **1** (screw **2**) according to **rule 1**.

Turn the compensation weight **3** (screw **4**) according to **rule 2**.

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4.05.03   Needle position in sewing direction

Rule

With a stitch length regulation of " **5** ", the needle should have the same clearance to the inner edges of the needle hole in its front and rear reverse position.
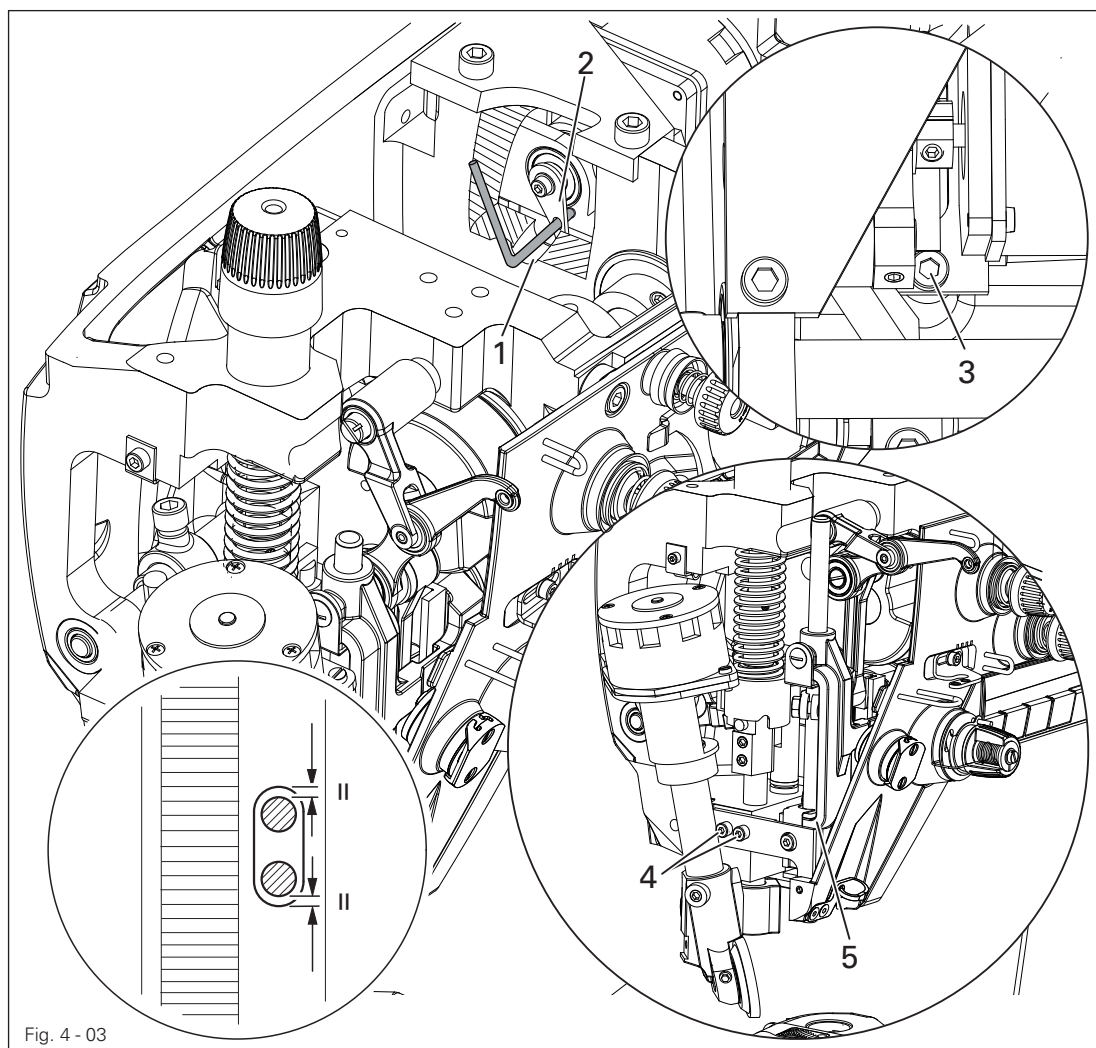

Fig. 4 - 03

Switch the machine off.

Push the angled part of the adjusting pin (order no. **61-111 641-48** through the hole **1** into the hole in the lever **2**.

Loosen the screws **3** and **4** and move the needle bar frame **5** so that the needle is at the centre of the needle hole.

Tighten the screws **3**.

Check

Turn on the machine and set the stitch length to "**5**".

Turn the machine off and on (synchronise the needle bar to the stitch length).

Sew a stitch and check the rear position of the needle according to the **rule**.

Press the reverse-feed key, sew a stitch and check the forward position of the needle according to the **rule** (repeat the adjustment if necessary).

The screws **4** remain loosened for the subsequent adjustment.

Adjustment

Rule

With a stitch length regulation of " **5** ", the screw **3** should have the same clearance to the inner edge of the clamp hole in the front and rear reversal point of the needle.
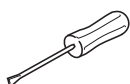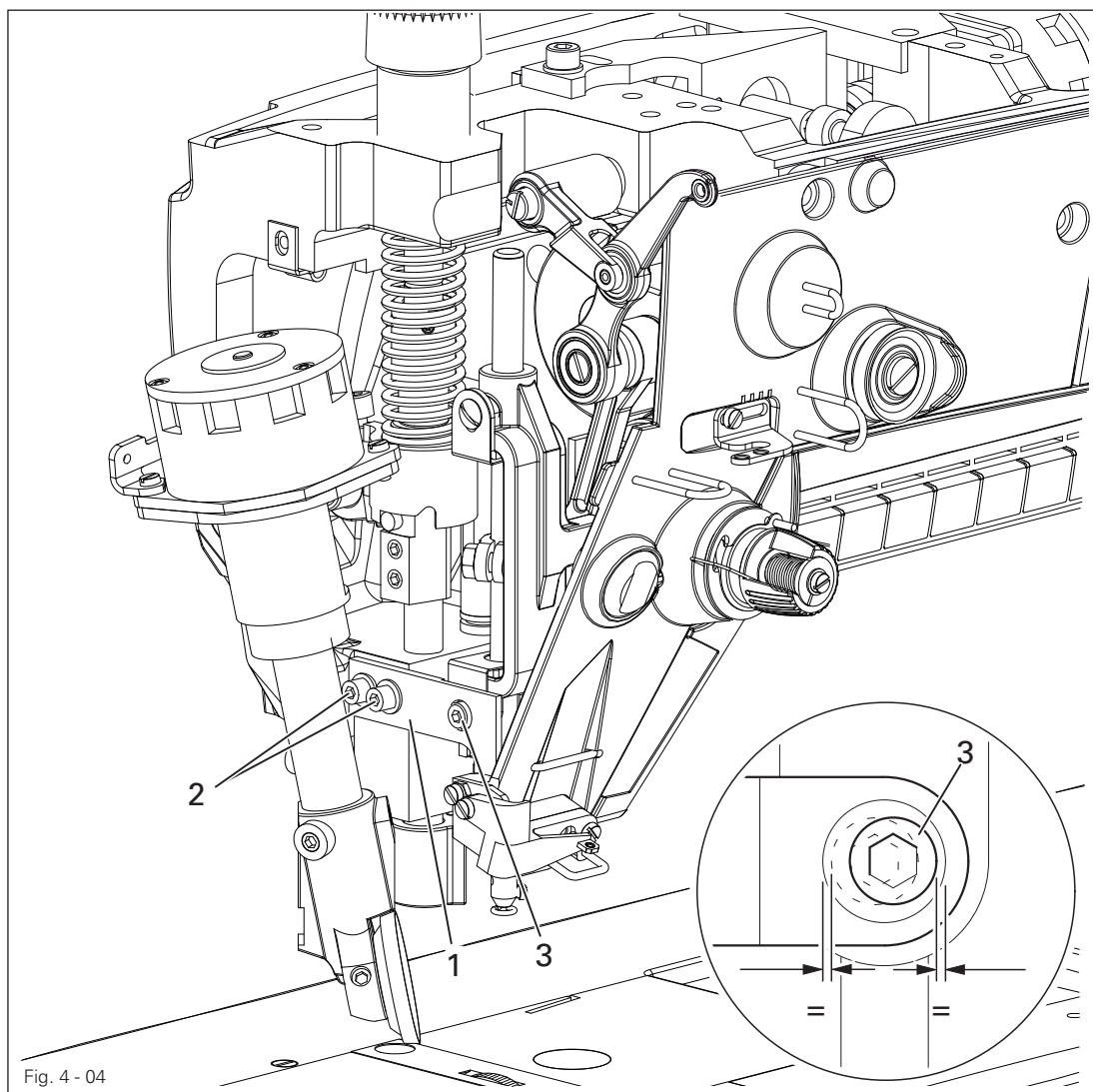

Fig. 4 - 04
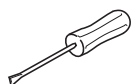
Turn on the machine and set the stitch length to "**5**".

Turn the machine off and on (synchronise the needle bar to the stitch length).

Sew a stitch and check the rear position of the screw according to the **rule**.

Press the reverse-feed key, sew a stitch and check the forward position of the screw according to the **rule**.

If necessary move the regulating bow **1** (screw **2**).

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4.05.05   Pre-calibrating the needle height

> **Rule**
> When the needle bar is at t.d.c. (handwheel position **0°**), the clearance between the upper edge of the needle bar and the upper edge of the needle pendulum should be approx. **40 mm**.

Fig. 4 - 05
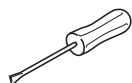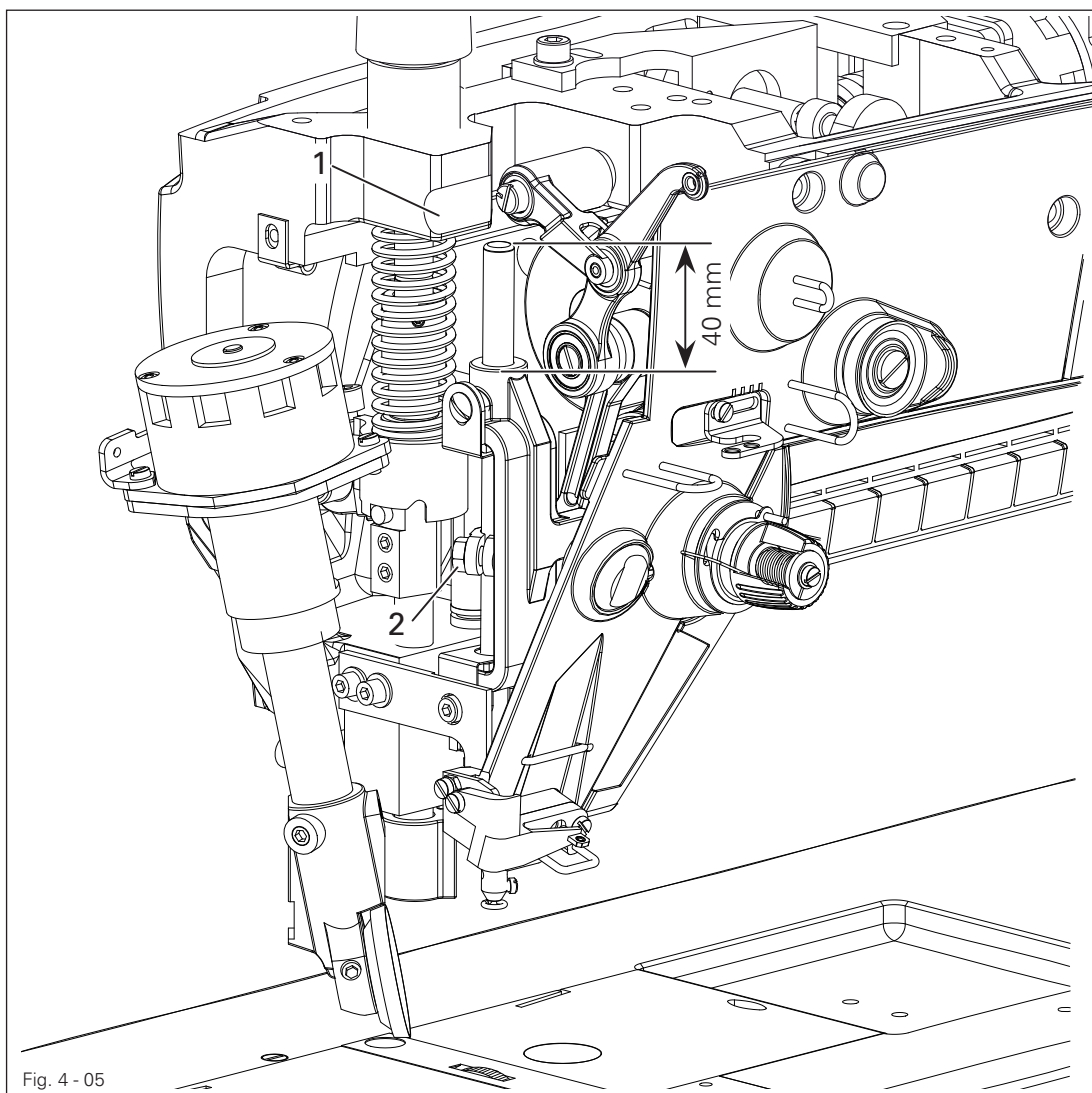
Adjust the needle bar **1** (screw **2**) without twisting according to the **rule**.

Adjustment

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

---

Rule

With a stitch length setting of "**4.0**" and when the needle bar is positioned **2.0 mm** after
b.d.c. (= handwheel position **202°**) :

1. The hook point should be at the needle midpoint and should be a distance of
    0.05 - 0.10 mm to the fillet of the needle.
2. The upper edge of the needle eye should be **0.8 mm** below the hook point **6** and
3. the needle guard **7** should lightly touch the needle.

Fig. 4 - 06
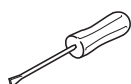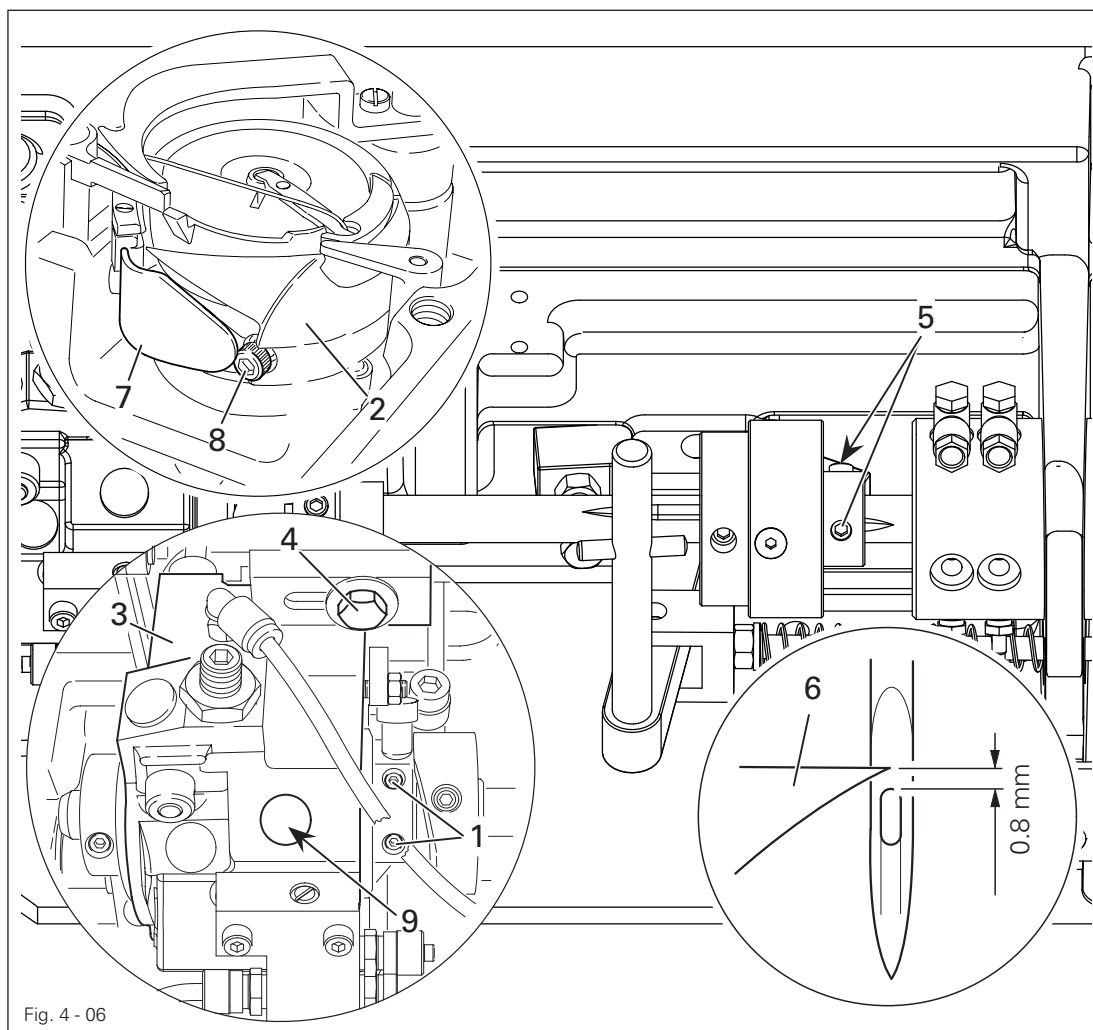
Loosen both of the screws **1** for the hook **2**.

Adjust the hook **2** and the hook bearing bracket **3** (screws **4** and **5**) according to **rule 1**.

Move the needle bar without turning in accordance with **rule 2**; see also **chapter 4.05.08
Pre-calibrating the needle bar**.

Adjust the needle guard **7** (screw **8**) according to **rule 3**.

Set a low cog clearance for the screw **9**.

When the needle thickness is changed, a quick adjustment of the hook bearing
bracket **3** can be made by loosening the screws **4** and **5**.

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4.05.07   Bobbin lifter

Rule
1. When turning the handwheel, the horn **4** should be lifted off the needle plate **5** on the right reversal point of the bobbin lifter **1** by the thread thickness.
2. Bobbin lifter upper edge, and lower bobbin upper edge should be at same level.
3. The bobbin lifter **1** should be at its right reversal point in handwheel position "**300** ".
4. The screw **7** to the return spring of the bobbin lifter should be positioned approx**.** **10 mm** above the lock nut **8**.

Fig. 4 - 07
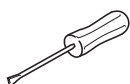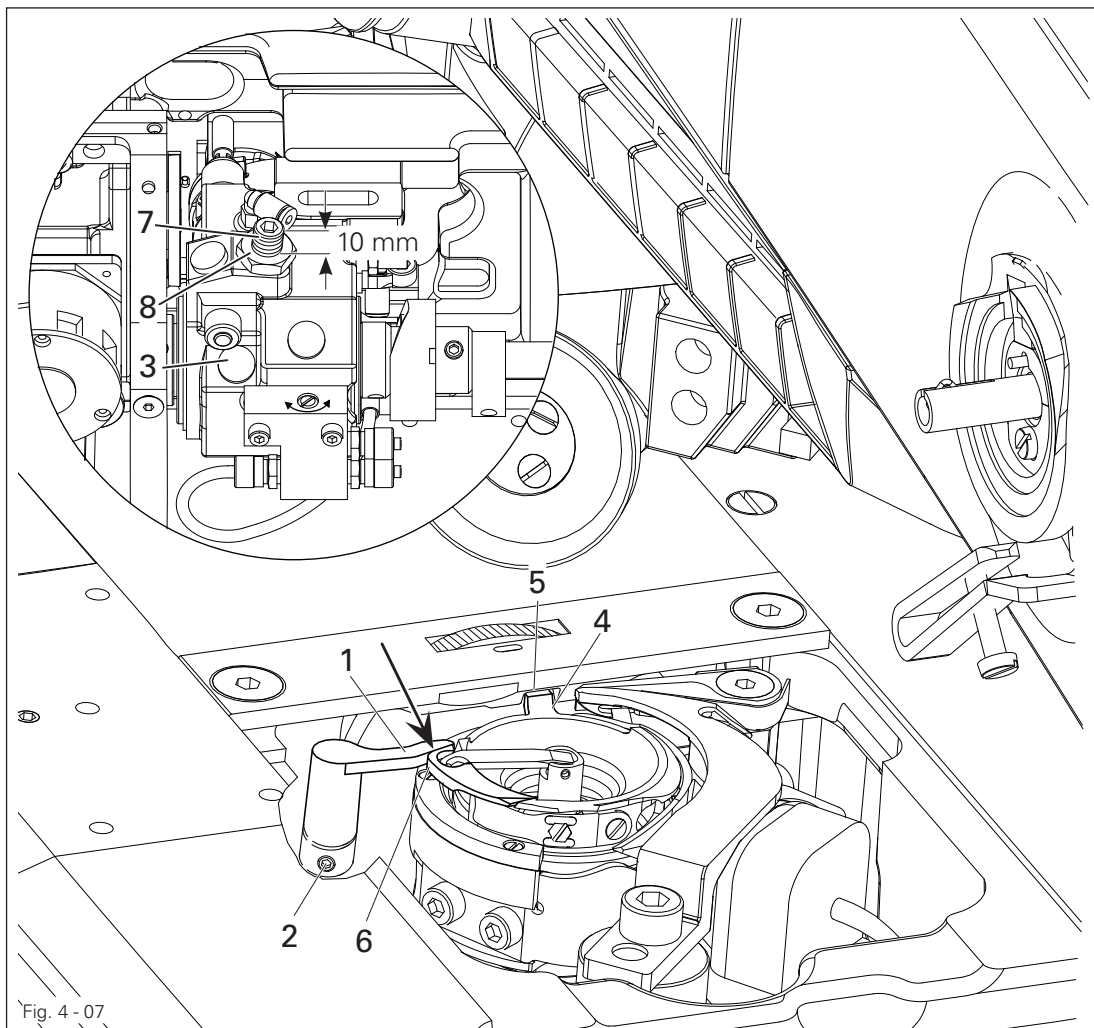
Turn and adjust the bobbin lifter **1** (screw **2**) according to **rules 1** and **2**.

Turn the eccentric (screw under the cover **3**) according to **rule 3**.

Turn the screw **7** (nut **8**) according to **rule 4**.

The thread must pass freely between bobbin lifter **1** and bobbin case **6**.

Adjustment

4.05.08   Feed wheel

Rule
1. The feed wheel should be crossways to the sewing direction in the centre of the needle plate cutout.
2. The teeth of the gear wheel should be **0.5 - 0.8 mm** above the upper edge of the needle plate, depending on the fabric.
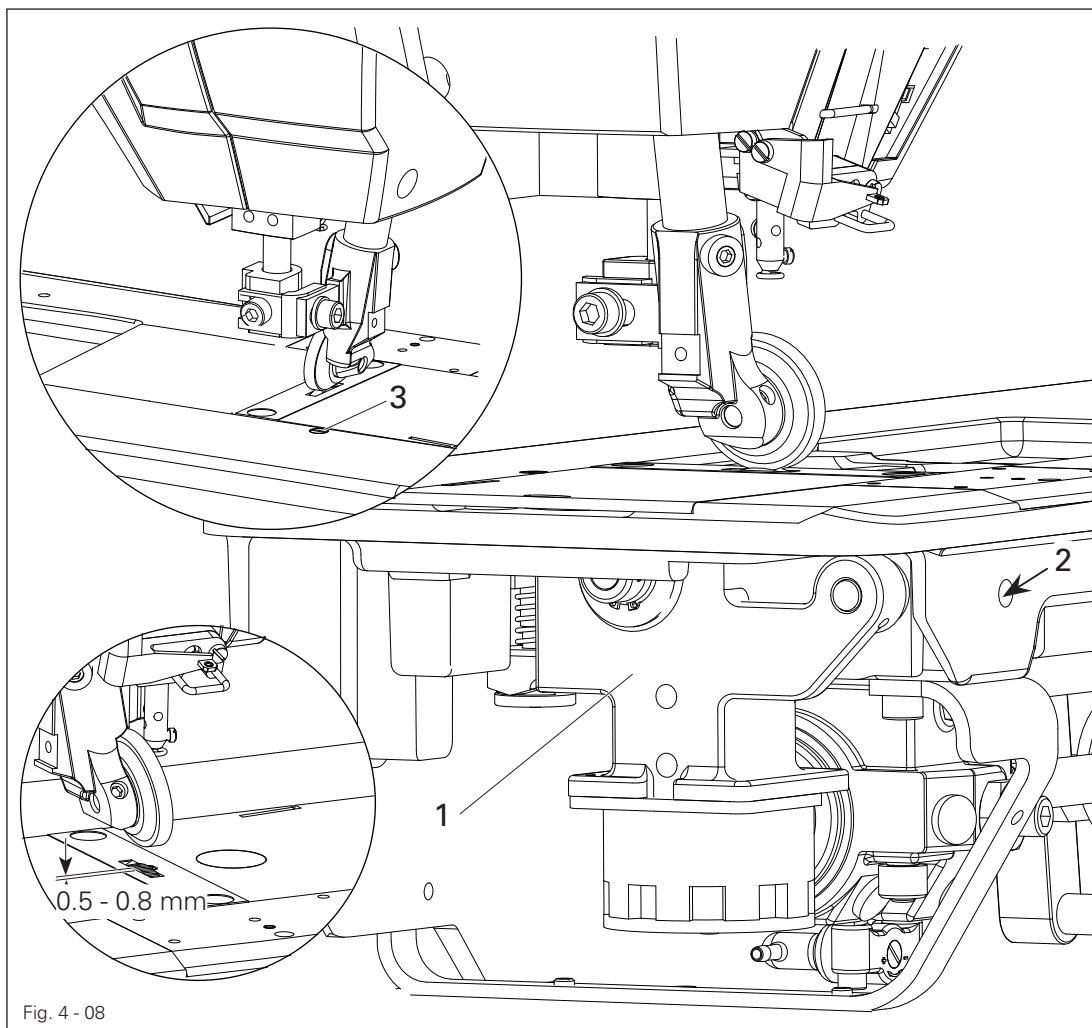
Fig. 4 - 08
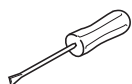
Move the feed wheel drive **1** (screw **2**) according to **rule 1**.

Turn the screw **3** according to **rule 2**.

4.05.09   Clearance between roller presser and feed wheel

> **Rule**
> 1. With a resting roller presser there should be a gap between the lift piece **1** and the housing of approx. **3 mm**.
> 2. With a raised roller presser the distance between roller presser and feed wheel should be **8 mm**.
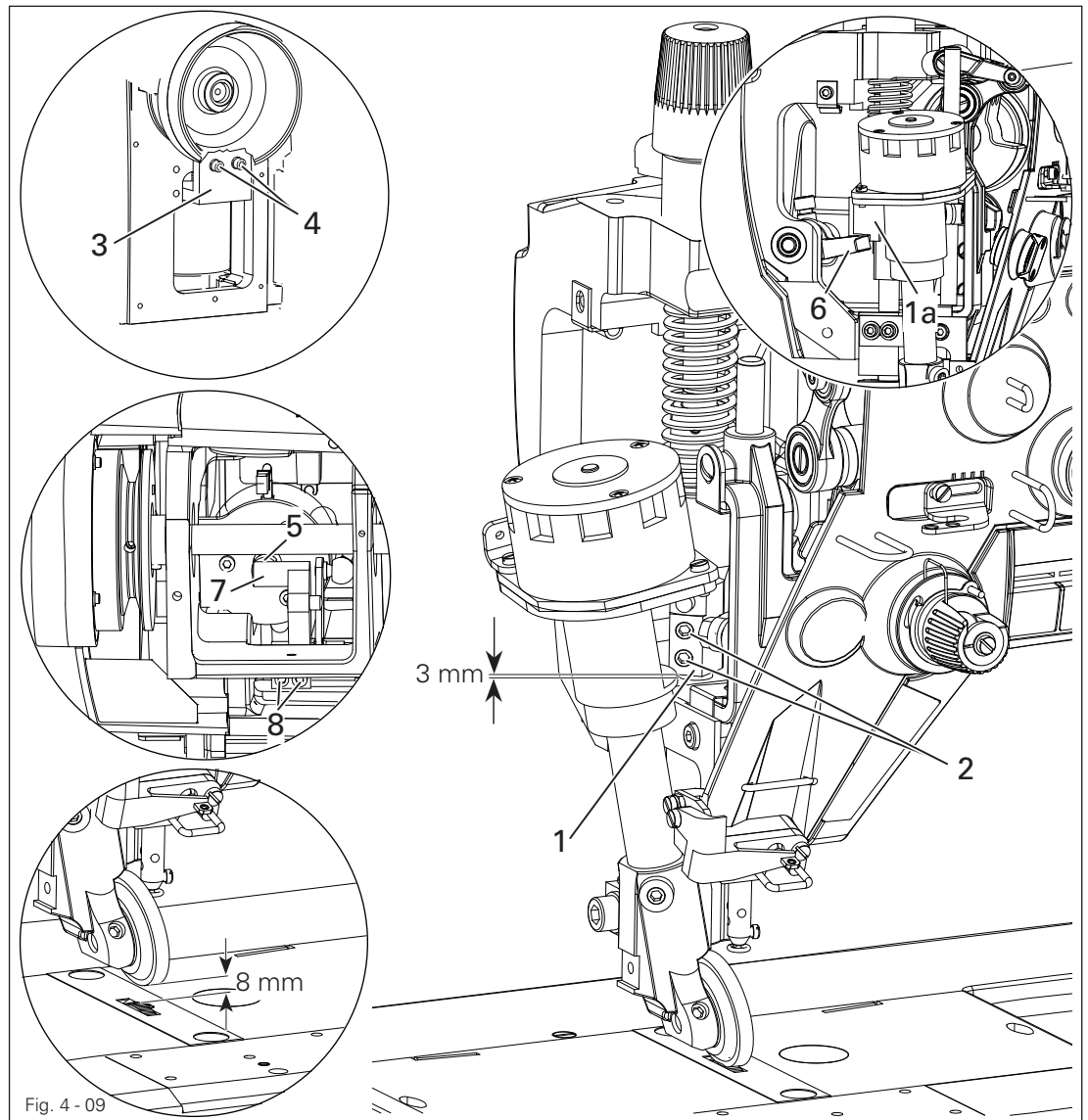
Fig. 4 - 09
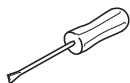
Set the roller presser down on the needle plate.

Decrease the roller presser pressure.

Adjust the lift piece **1** (screws **2**) according to **rule 1**.

Push the solenoid carrier **3** (screws **4**) downwards as far as it will go.

Raise the roller presser and place an **8 mm** gauge under the roller presser.

With the magnet plunger **5** extended, move the lever **6** up against the lift piece **1a** and mount the lever **7** (screws **8**) onto the magnet plunger **5**.

Carry out a check according to the **rules**.

Adjustment

4.05.10   Roller presser

Rule

If the roller presser **1** is fitted to the feed wheel **6**, it should

1. be parallel to the feed wheel **6** looking in the sewing direction,
2. be positioned at the centre of the needle in the sewing direction
3. be as close as possible to the needle looking crossways to the sewing direction.

Fig. 4 - 10
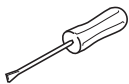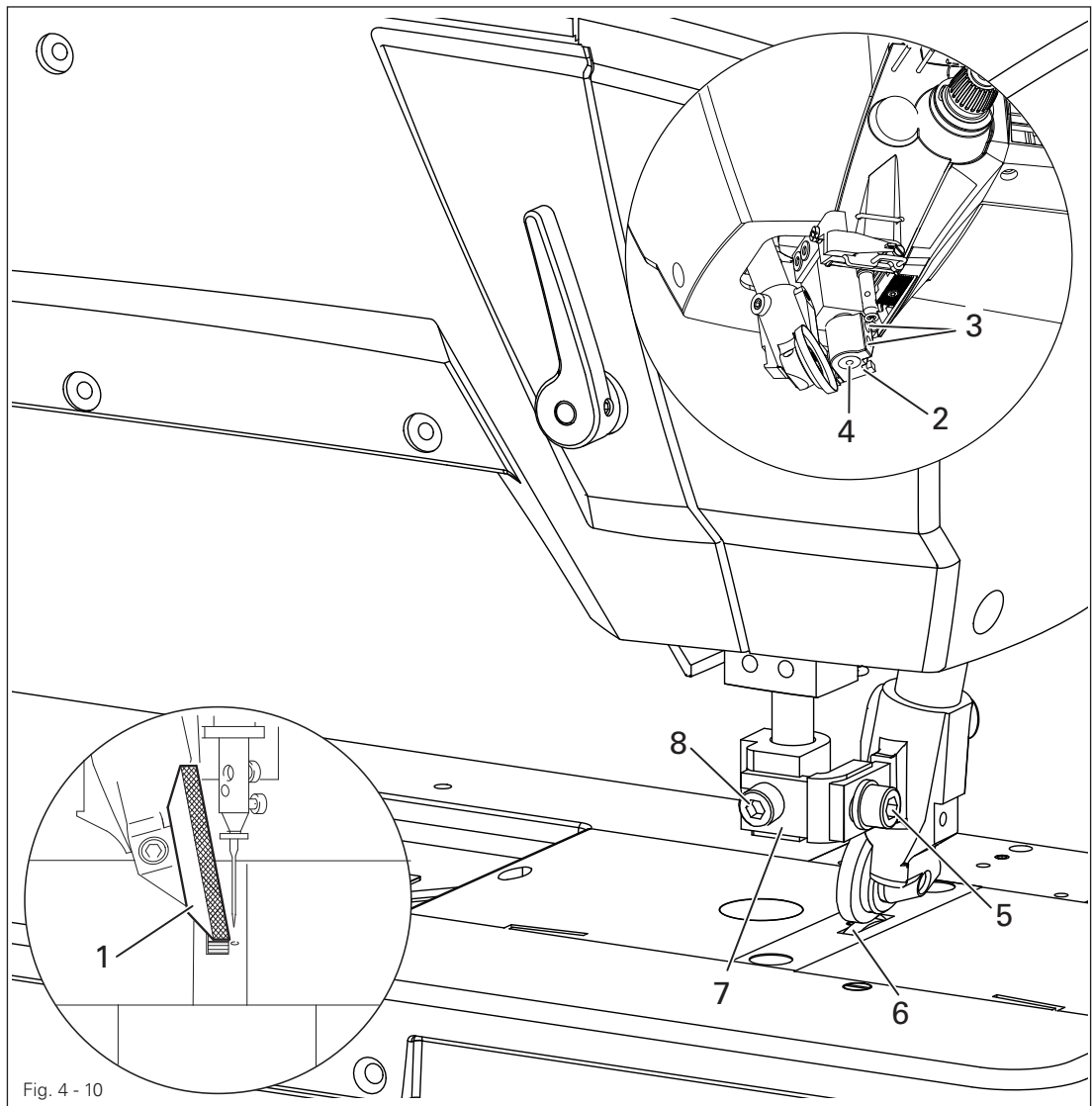
Raise the roller presser **1**.

Place the roller presser bracket **2** (screws **3**) flush with the lower edge of the presser bar **4**.

Always observe **rule 1** with the following adjustments.

Adjust the roller presser **1** (screw **5**) according to **rule 2**.

Rest the roller presser **1** on the feed wheel **6**.

Adjust the bracket **7** (screw **8**) according to **rule 3**.

The roller presser **1** should be adjusted slightly towards the operator when sewing very tight curves.

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4.05.11   Bobbin winder

> **Rule**
> 1. After deactivating the bobbin winder, the knife should be in the **11** o'clock position and the microswitch **4** should be pressed.
> 2. The bobbin winder speed must be set so that the bobbin winder switches off once the bobbin is full and does not overflow.
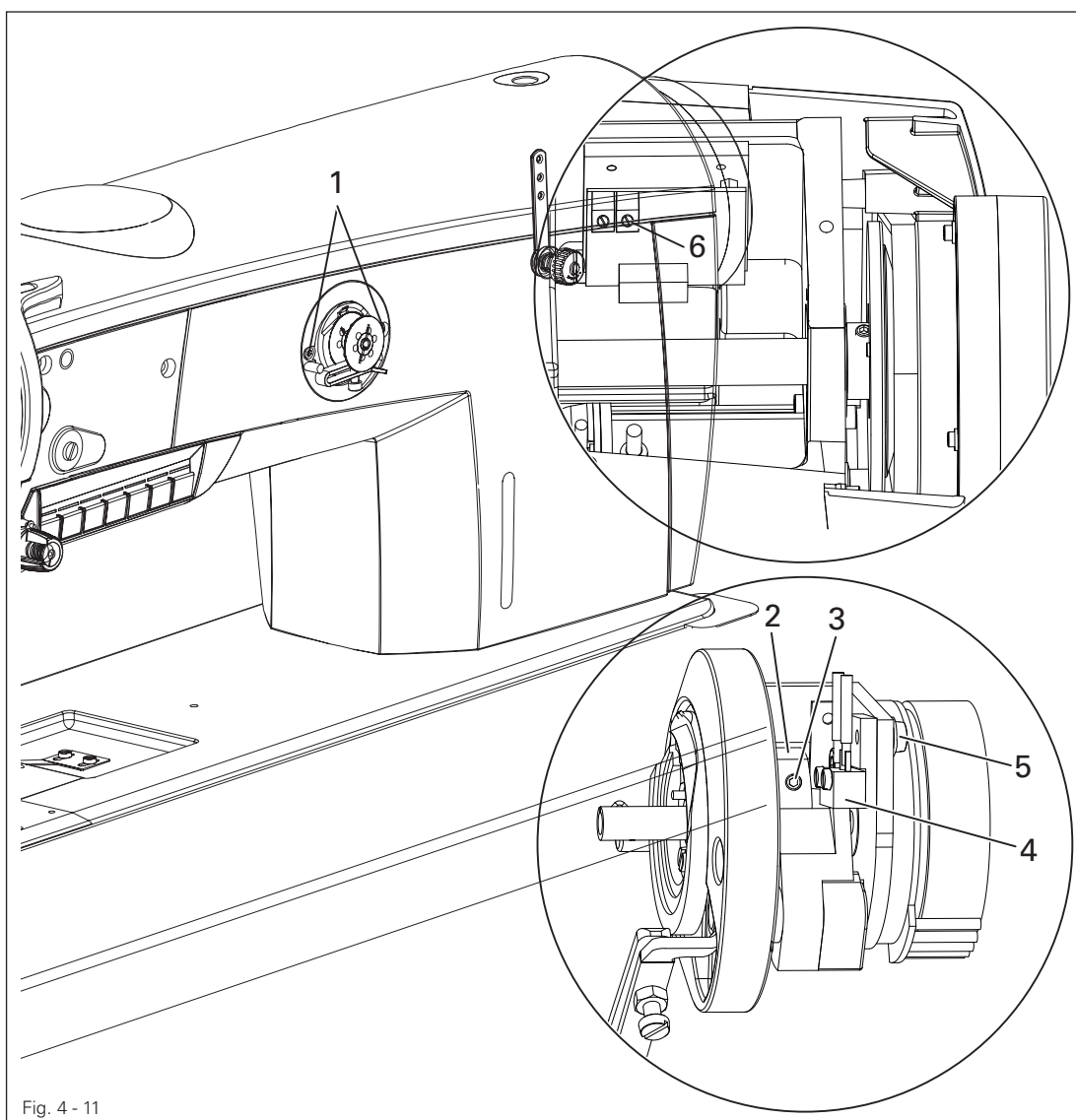
Fig. 4 - 11
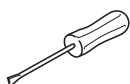
Switch the machine off.

Unscrew the screw **1** and remove the bobbin winder.

Turn the positioning ring **2** (screws **3**) according to **rule 1**.

Turn the microswitch **4** (screw **5**) according to **rule 1**.

Adjust the speed of the bobbin winder on the potentiometer **6** according to **rule 2**.

Adjustment

4.05.12   Thread check spring and slack thread regulator

Rule
1. The movement of the thread check spring **3** should be finished when the needle point punctures the material (spring deflection approx. **7 mm**).
2. The thread check spring **3** should lift slightly off the support **1** when forming the maximum thread loop while passing the thread around the hook.
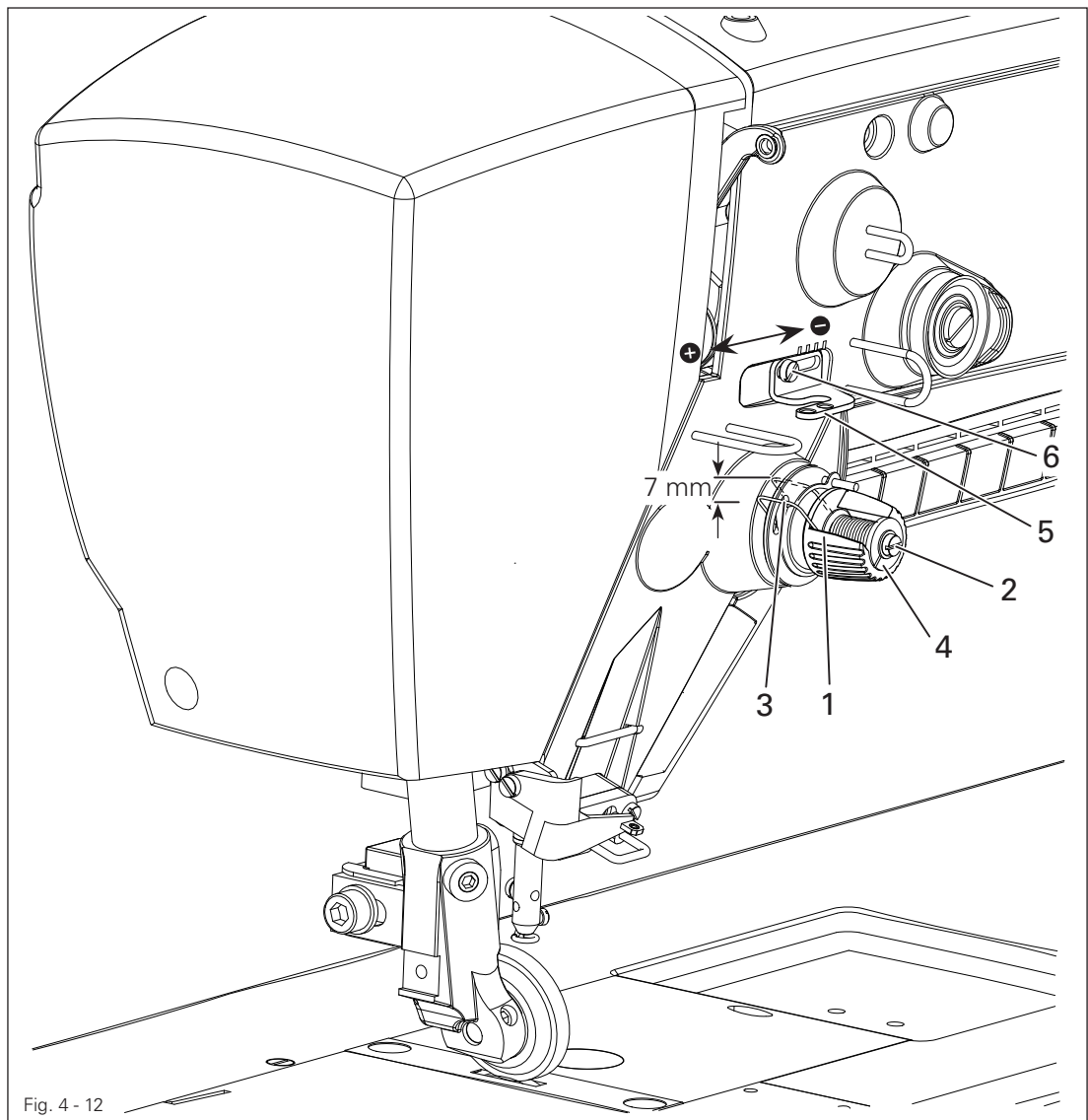
Fig. 4 - 12
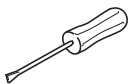
Turn the support **1** (screw **2**) according to **rule1**.

Turn the sleeve **4** (screw **2**) to set the spring tension of the thread check spring **3**.

Adjust the slack thread regulator **5** (screw **6**) according to **rule 2**.

It may be necessary to deviate from the specified spring deflection or spring tension for reasons relating to the sewing technology.
Adjust the slack thread regulator **5** (screw **6**) by "**+**" (= more thread) or "**-**" (= less thread).

4.05.13   Needle thread tension

> **Rule**
> After switching the machine on (reference position), the tension spring **3** should touch
> the motor tappet **4** lightly, with a **1 mm** gauge inserted between the tension discs **5**.
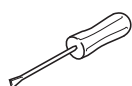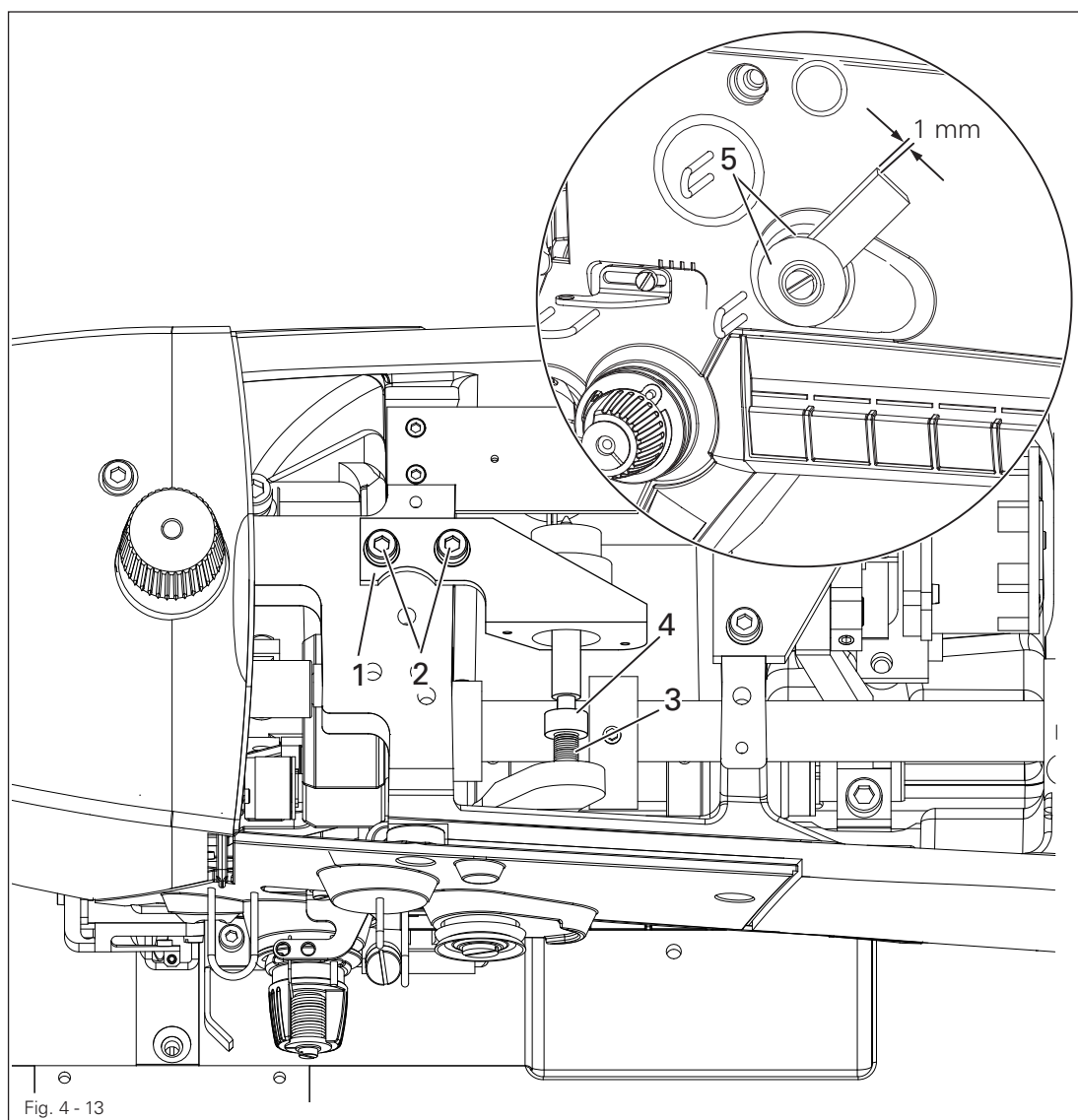
Fig. 4 - 13

Adjust the bracket **1** (screws **2**) according to the rule.

Adjustment

4.05.14   Presser foot pressure

Rule
The material should be transported properly even at top speed and minimal lift.
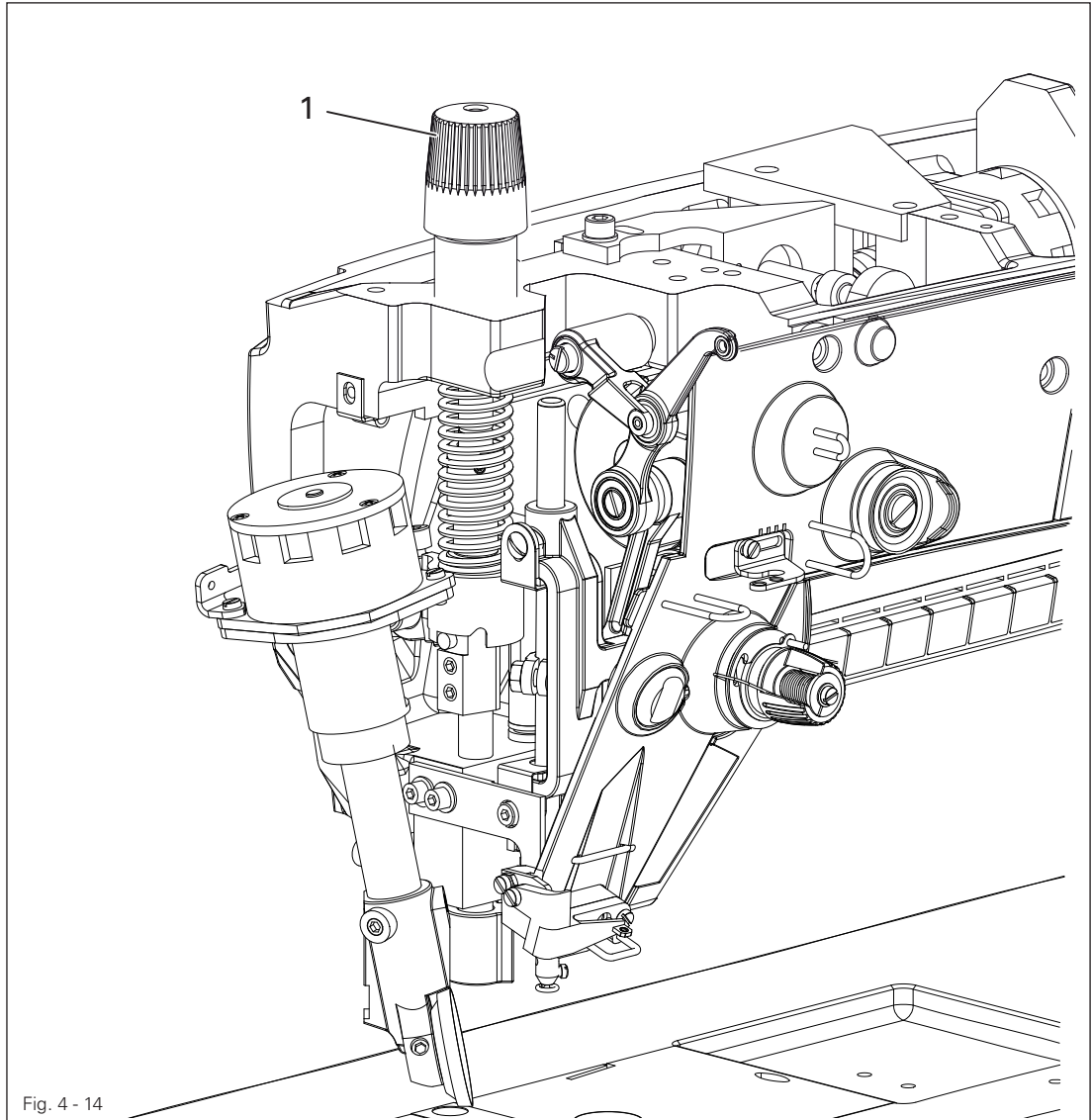
Fig. 4 - 14
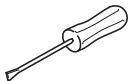
Turn the setting wheel **1** according to the **rule**.

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4.05.15   Lubrication

> **Rule**
> After 10 seconds operation at **800** rpm, a light oil strip should appear on a paper strip held to the hook foot.
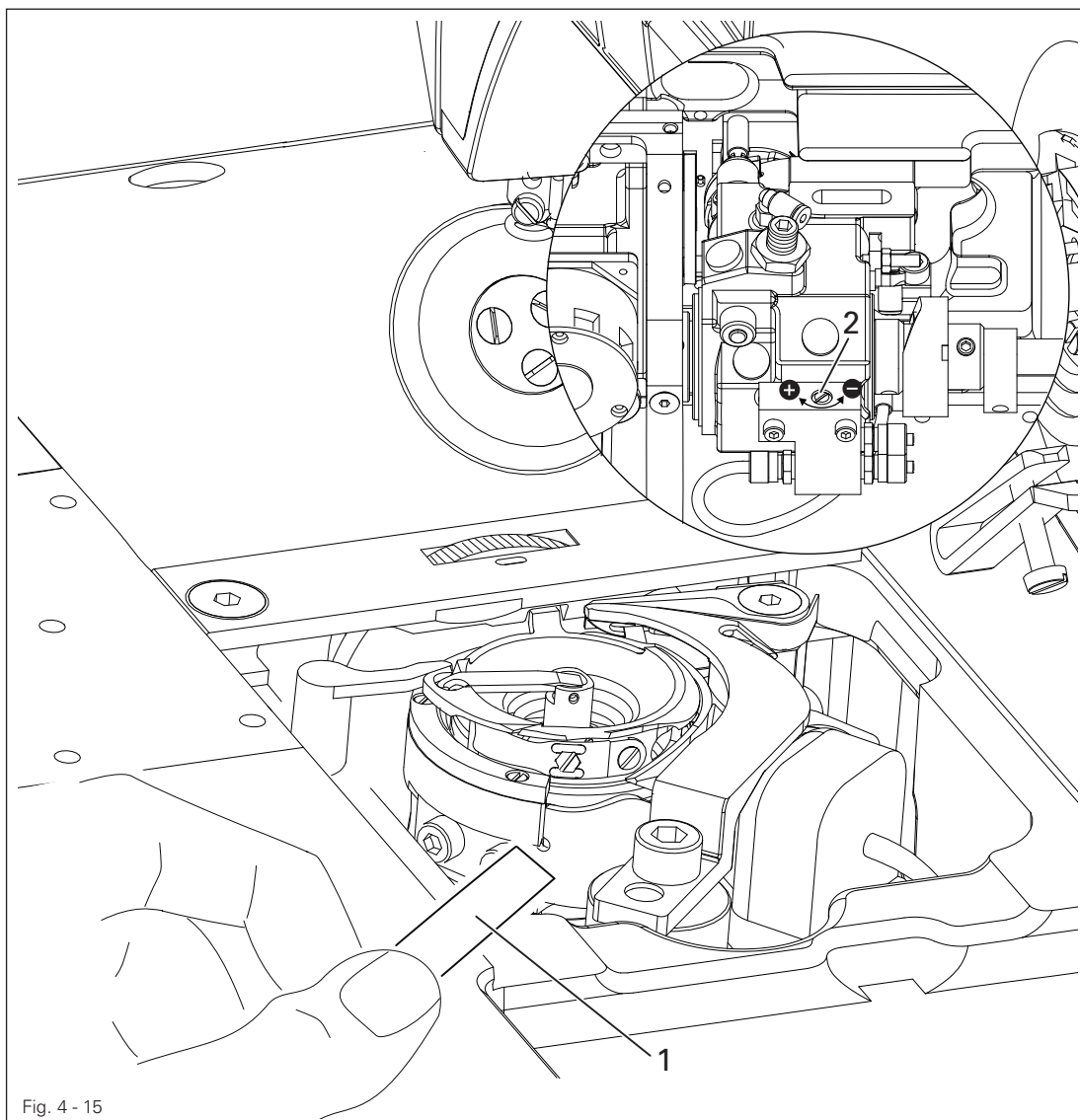
Fig. 4 - 15

Call up monitor in the **Manual seam** section.
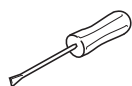
Check whether the oil has been added and the oil tubes are free of air.
Let the machine run for **2 - 3 min.**

Do not reach into the needle area while the machine is running!
Risk of injury due to moving parts!

Hold a paper strip on the hook while the machine is running and check the **rule**.

If necessary, adjust the oil delivery rate on the screw **1**.

Adjustment

4.05.16 Re-engaging the safety clutch

> ℹ️ The clutch **1** is set ex works. If the thread jams, the clutch **1** disengages to avoid damage to the hooks.
>
> The process to engage the clutch **1** is described below.
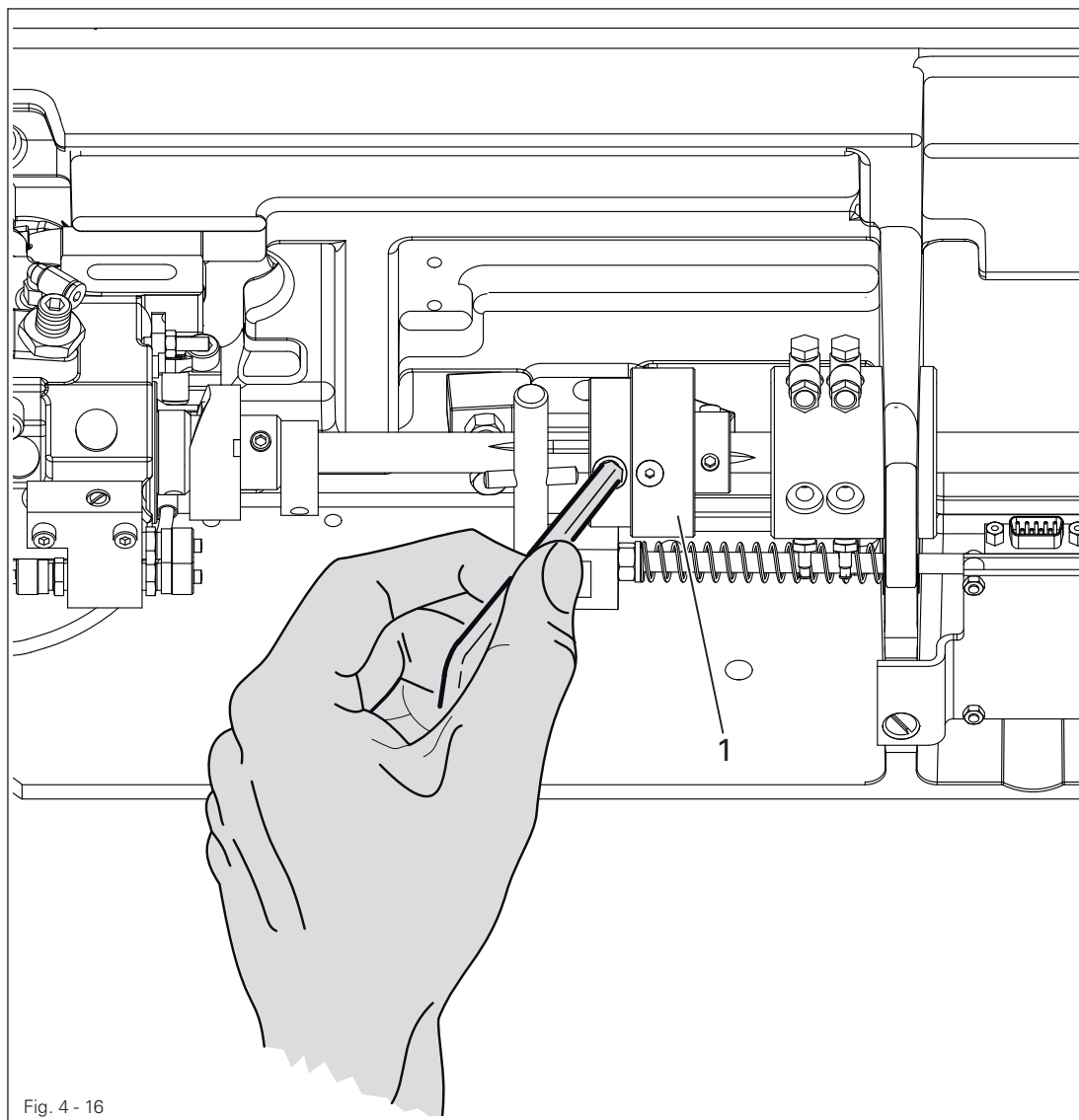
Fig. 4 - 16

Remove the thread jam.

Hold the clutch **1** against the screw **16** as shown in **Fig. 4 - 16** and turn the handwheel until you notice that the clutch **1** re-engages.

4.05.17   Fitting the toothed belt

> **Rule**
> The value "**8 ± 2**" should be displayed if the needle approaching from above is at the height of the needle plate.
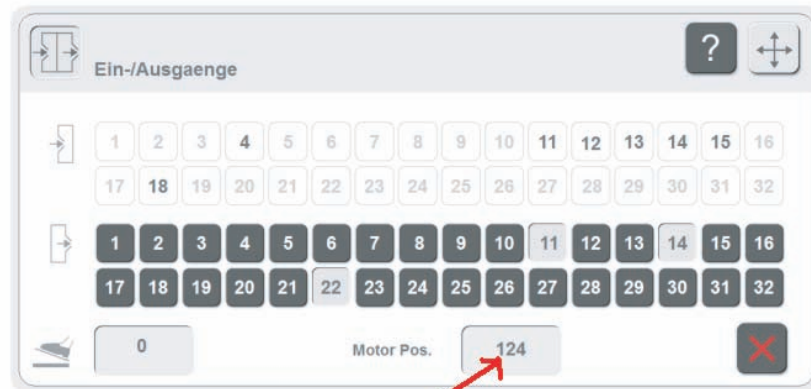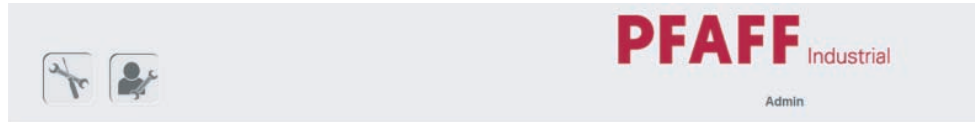
Turn the handwheel in the direction of rotation until the needle point approaching from above is at the upper edge of the needle plate, then adjust according to the **rule.**
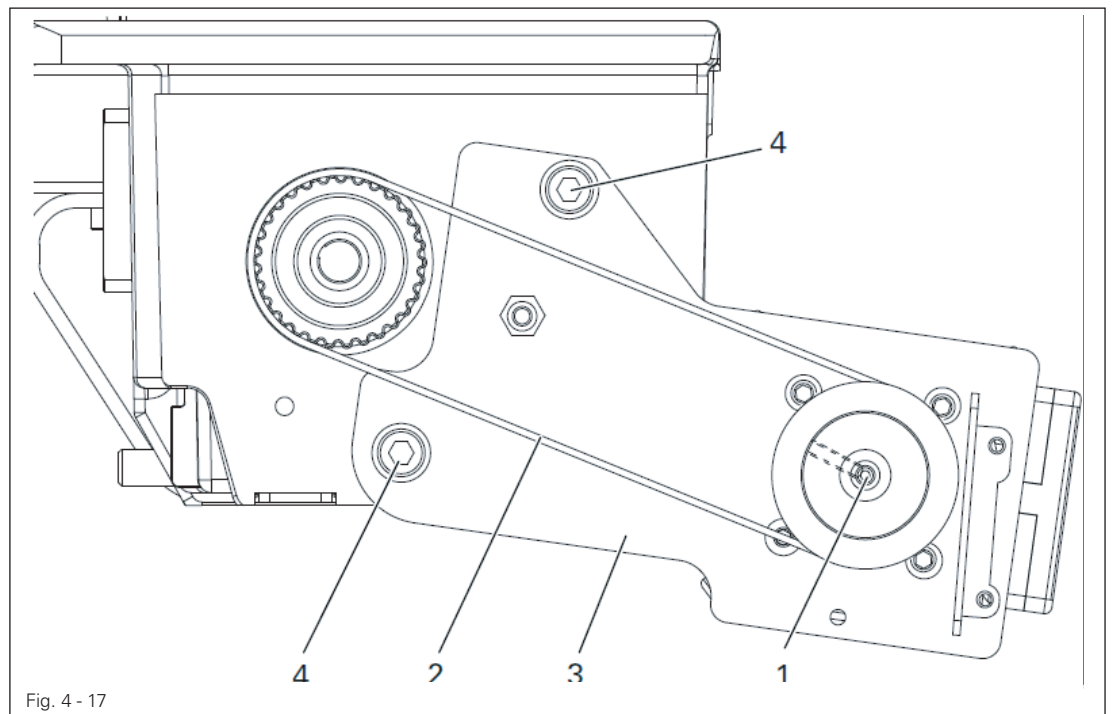
Fig. 4 - 17
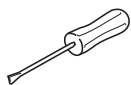
Turn the motor shaft **1** by hand until the display shows the value "**8± 2**" (see arrow).

Lay on the toothed belt **2** while making sure that both the motor shaft **1** and the handwheel are not twisted.

Pivot the motor bearing plate **3** so that the toothed belt **2** is taut.

Tighten the screws **4** in this position.

Adjustment

4.06　　Adjusting thread trimmer -900/81

4.06.01　　Roller lever neutral position / control cam radial position

Rule
1. When the take-up lever is at t.d.c. (handwheel position **60°**), the control cam **1** should have just brought the roller lever **5** to its home position.
2. When the thread trimmer is in its idle state, a clearance of **0.1 mm** should exist between the roller lever **5** and the control cam **1**.

Fig. 4 - 18
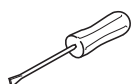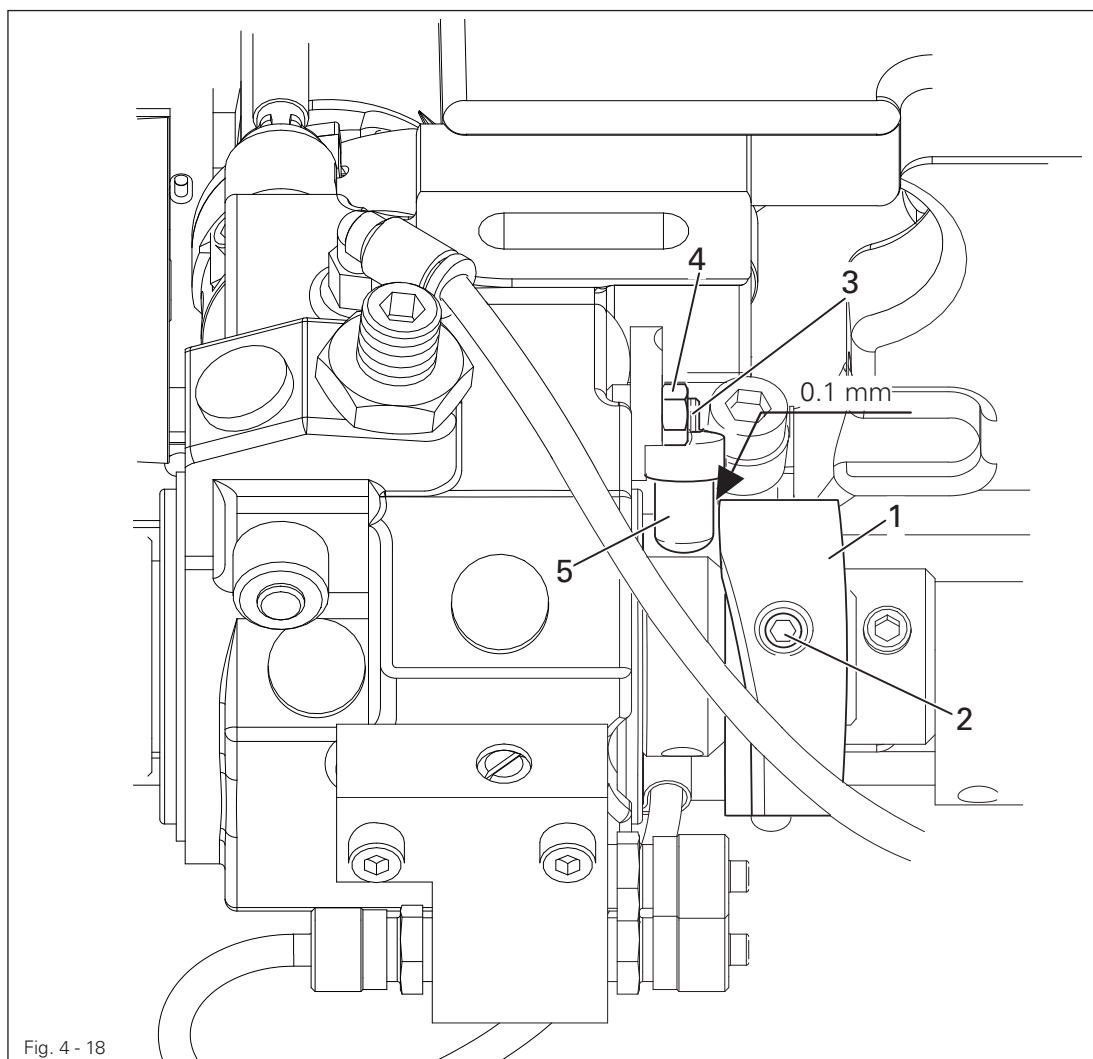
Adjust the control cam **1** (screws **2**) according to **rule 1**.

Adjust the screw **3** (nut **4**) according to **rule 2**.

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4.06.02   Position and height of the thread catcher

> **Rule**
> When the needle bar is positioned at b.d.c. (handwheel position **180°**), the edges of the
> thread catcher **3** and the knife **5** should be flush (see arrow).

Fig. 4 - 19
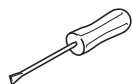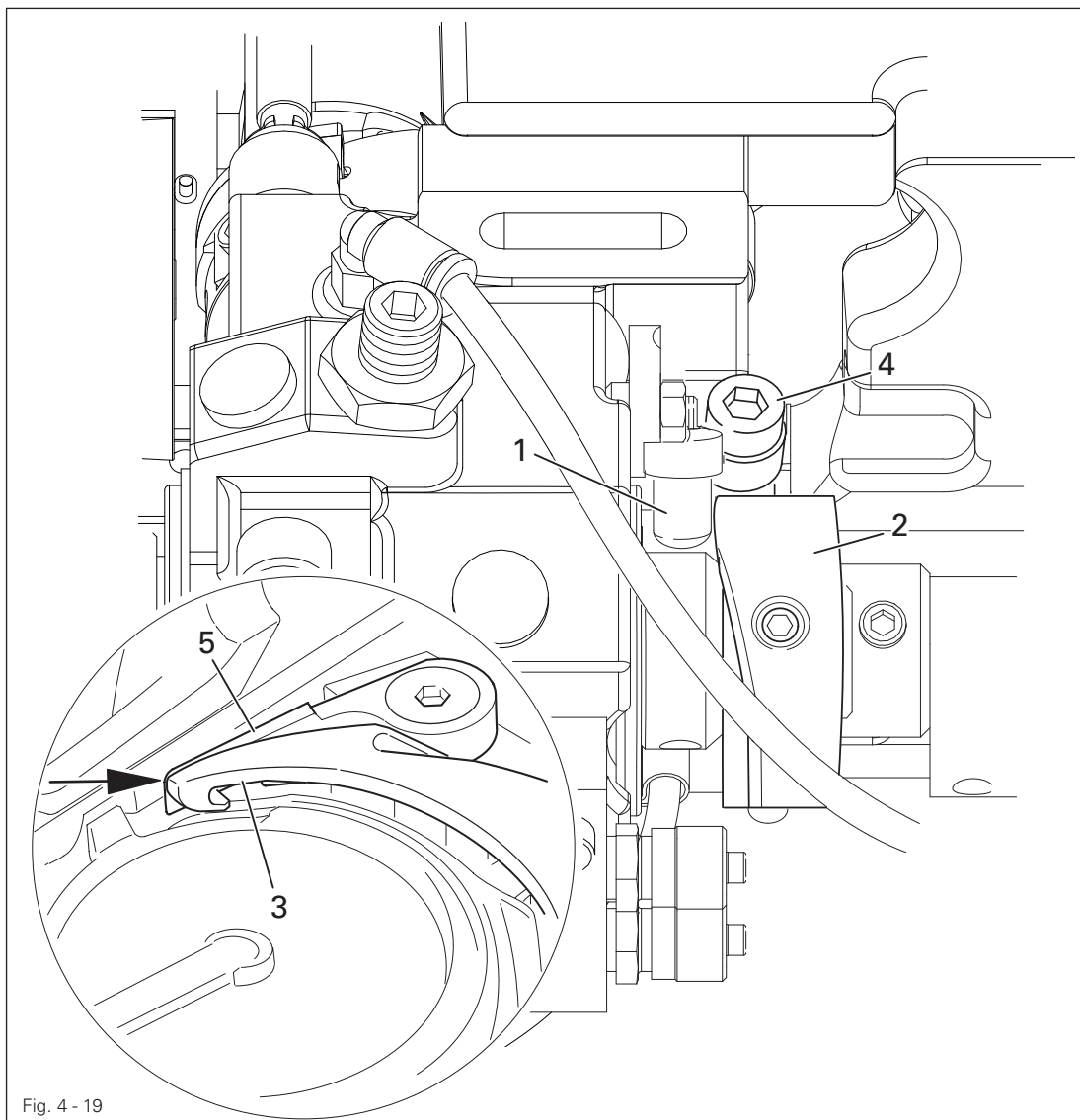
Press the roller lever **1** to the control cam **2**.

Turn the thread catcher **3** (screw **4**) according to the **rule**.

The height of the thread catcher **3** is factory preset and can be adjusted via
shims below the thread catcher **3** on the base of the hook bearing bracket.

Adjustment

4.06.03   Knife pressure

Rule
If the front edge of the thread catcher **3** is positioned **5 - 6 mm** in front of the knife edge, the knife **4** should abut the edge of the thread catcher with slight pressure.
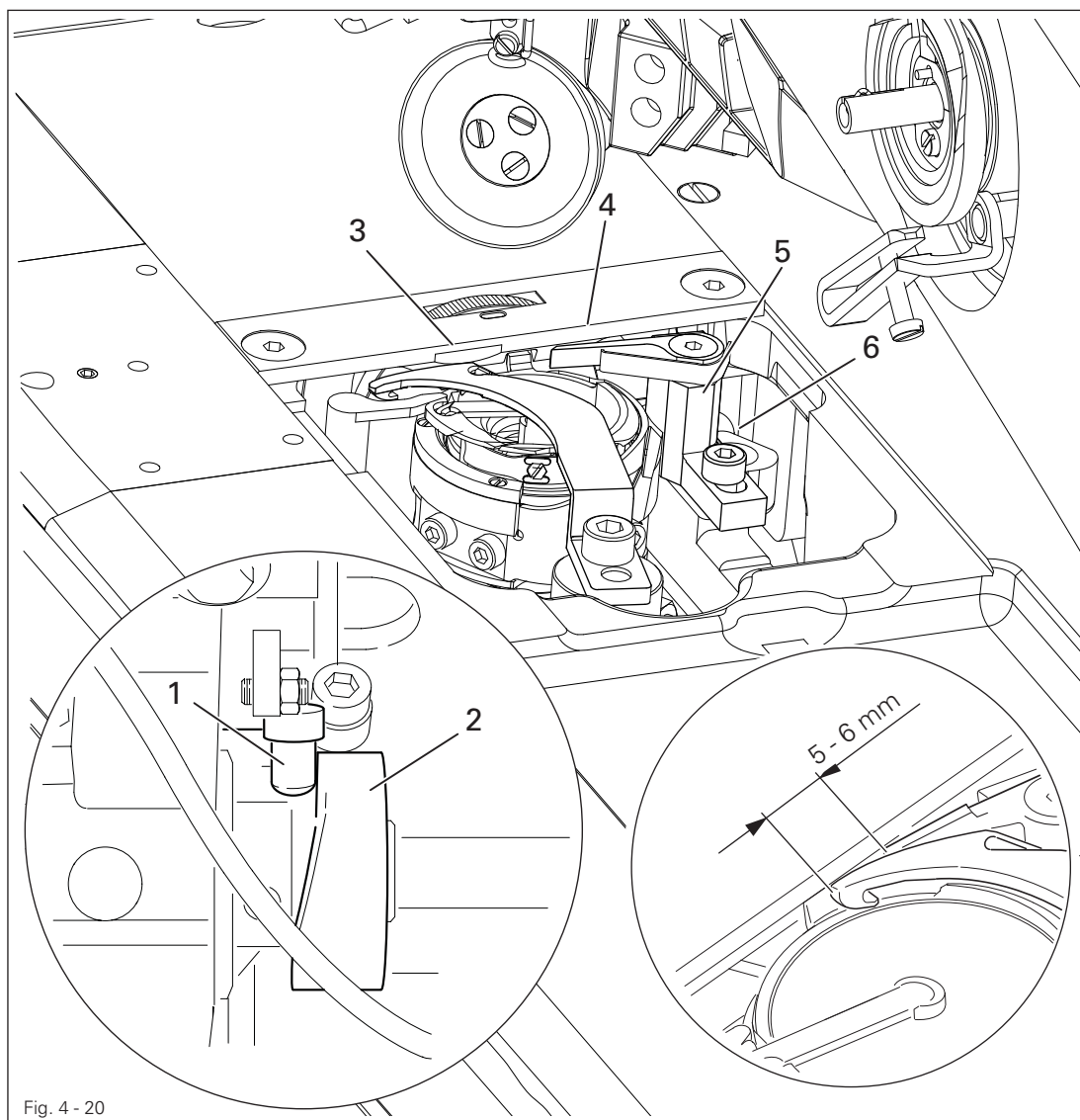
Fig. 4 - 20
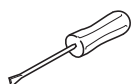
Move the take-up lever to b.d.c. and press the roller lever **1** into the control cam **2**.

Turn the handwheel until the front edge of the thread catcher **3** is positioned **5 - 6 mm** in front of the cutting edge of the knife **4**.

Pivot the knife support **5** (screw **6**) according to the **rule**.

When the adjustment has been made, check the thread catcher position again in accordance with **chapter 4.06.02 Position and height of the thread catcher**.

4.06.04   Bobbin thread clamp spring

Rule
When the thread catcher is in the trim position, the clamp spring should lightly abut the thread catcher and securely clamp the thread.
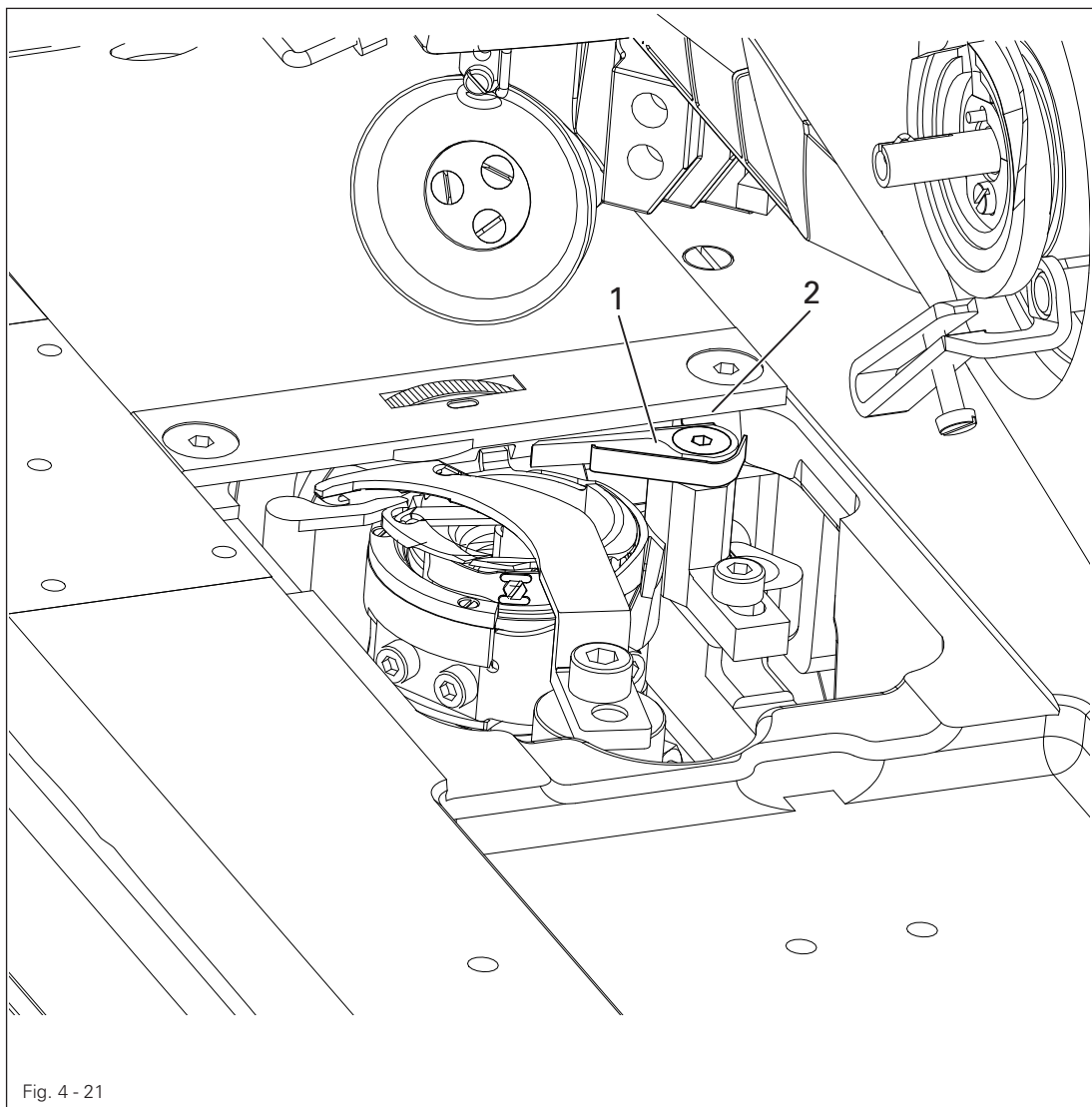
Fig. 4 - 21
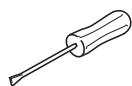
Adjust the clamp spring **1** (screw **2**) according to the **rule**.

Carry out the cutting operation manually, check the adjustment and re-adjust if necessary.

Adjustment

4.06.05   Manual test cut

Rule

1. The thread catcher **1** must not push the bobbin thread **3** in front of it during its forward movement.
2. The bobbin thread **3** should be in the middle of the marked area when the thread catcher **1** is in the front reversal point (see arrow).
3. The needle thread and bobbin thread should be cut precisely and the bobbin thread **3** should be clamped after completing the cutting operation.

Fig. 4 - 22
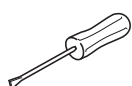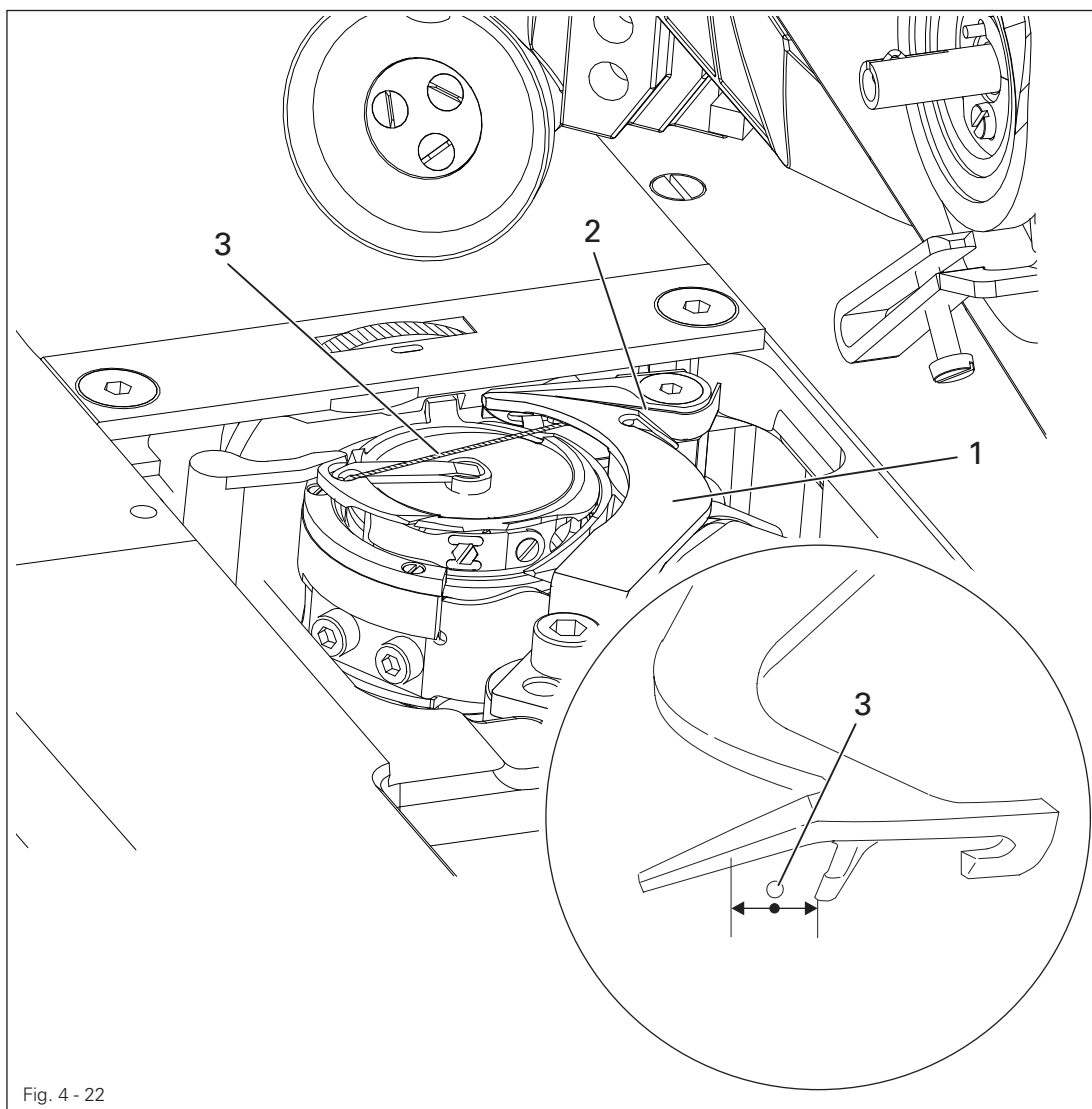
Sew a few stitches.

Turn off the main switch and switch off the compressed air.

Carry out the cutting operation manually.

Check **rules 1** and **2** and re-adjust the thread catcher **1** if necessary in accordance with **chapter 4.06.02 Position and height of the thread catcher**.

Check **rule 3** and re-adjust the bobbin thread clamp spring **2** if necessary in accordance with **chapter 4.06.04 Bobbin thread clamp spring**.

4.07   Set-up

4.07.01   Thread tension adjustment

Select the "Seam program" function.

Select the "Production" function.

Select the "Test seam" function.

Produce a test seam and monitor the thread tension.

Adjust the offset value until the current thread tension corresponds to the setpoint.
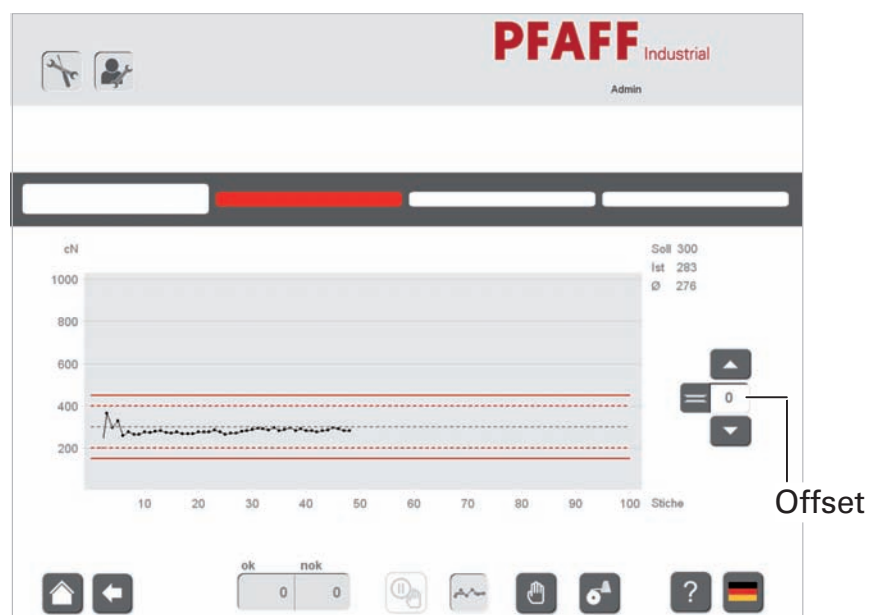
Offset

The calculated offset value must be added or subtracted in parameter **407**.

Basic setting **407 = 50**.

If there is a significant deviation from the setpoint, the adjustment must be repeated in accordance with **chapter 5.05.13 Needle thread tension**.

Adjustment

4.07.02   Commissioning the scanner

Select the "Tools" function.

Select the "Service" function.

Select the "Scanner commissioning" function.

Switch the scanner on.

Position the barcode.

Set the scanner at the head of the machine in height and directionality using its mount, until the barcode is read continuously.

Conclude the entry.

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4.07.03   Commissioning the scanner

Select the "Tools" function.

Select the "Service" function.

Select the "Scanner commissioning" function.

Explanation of the symbols in the "Camera commissioning" menu

Switch the camera on

Adjustment
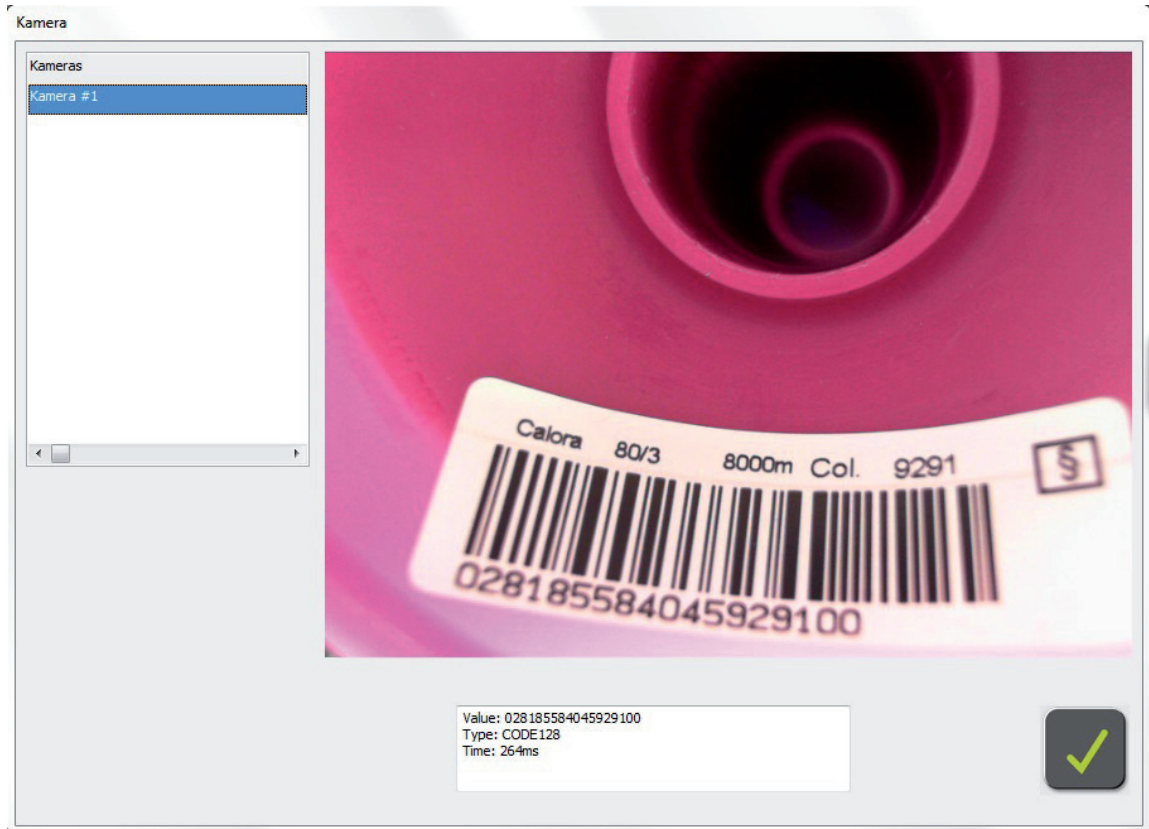
Switch the camera on

Select the "Read DMC" function.
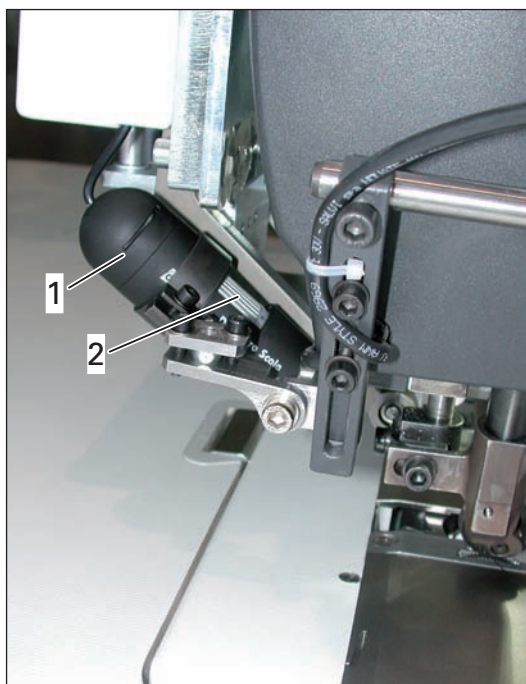
Select **640** x **480** in the "Resolution" window.

The data matrix code must appear in the "Code" window.

Proceed as follows if "- - - - -" is displayed in the "Code" window:

Switch off the camera light on the control **1**, adjust the image focus on the focus **2**, turn bobbin so that the data matrix can be read.
Set the exposure
(see next page)

Adjustment

4.08   Parameter settings

4.08.01   Selecting and changing parameters

Changes to the parameter values can only be made by the machine setter or the administrator.

Log on as the administrator or machine setter.

Select the "Tools" function.

Call up the menu for changing the parameter values.
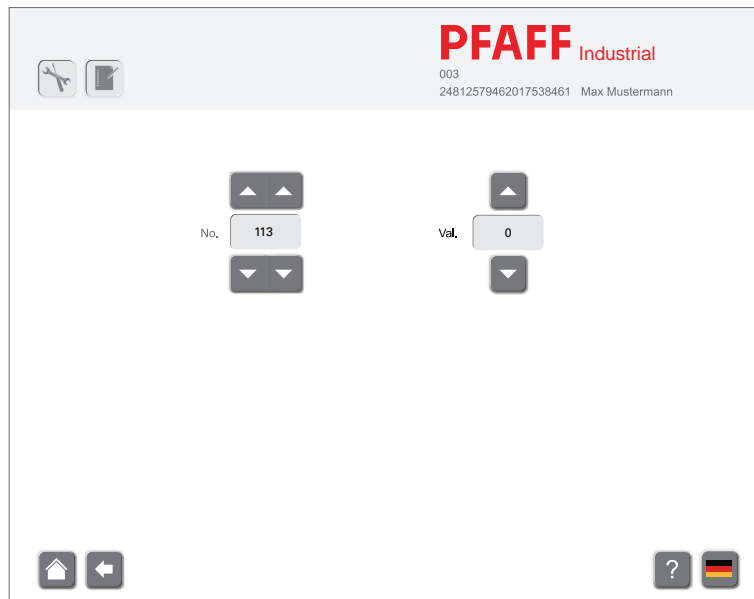
Select the desired parameter ("No.") by tapping on the corresponding arrow symbols.

Change the value ("Val.") of the selected parameter by tapping on the corresponding arrow symbols.

4.08.02   List of parameters

Group	Parameter	Description	Setting range	Set value
1	101	Pedal controlled start backtack (I = OFF, II = ON)	0 -1	1
	102	Reverse rotation (I = OFF, II = ON)	0 -1	1
	103	Placed stitch (I = OFF, II = ON)	0 -1	1
	104	Bobbin thread monitor 0= off, 1= counter, 2= thread monitor	0 - 2	0
	105	Bobbin thread counter	0 - 99999	12000
	106	Remaining bobbin thread counter	0 - 999	100
	113	Key tone when moving from one zone to another (I = OFF, II = ON)	0 -1	0
	115	Thread clamp (I = OFF, II = ON)	0 -1	0
2	201	Machine configuration 14 = 3721	1 - 15	14
	202	Roller presser field discharge 0 = roller presser is lowered slowly. Should be set for high foot pressure 1 = roller presser is lowered quickly. Should be set for low foot pressure	0 -1	0
	206	Open thread tension on stop and roller presser lift	0 -1	1
	207	Open thread tension after trimming and roller presser lift	0 -1	1
3	301	Take-up lever at t.d.c. position	0 - 127	125
	302	Needle at b.d.c. position	0 - 127	10
	303	Thread trimming solenoid position on	0 - 127	20
	305	Thread trimming solenoid position off	0 - 127	120
	306	Reverse rotation position	0 - 127	100
	307	Placed stitch position	0 - 127	7
	308	Thread tension ventilation position	0 - 127	30
	309	Thread clamp position on	0 - 127	20
	310	Thread clamp position off	0 - 127	60
	311	Thread force sensor compensation position	0 - 127	40

Group	Parameter	Description	Setting range	Set value
3	312	Thread force sensor skip stitch position	0 - 127	81
	313	Thread force sensor thread force measurement position	0 - 127	113
	314	Window around the skip stitch position	0 -20	10
	315	Window around the thread force position	0 - 20	10
4	401	Holdoff time roller presser lift	0.01s - 1.5s	0.02s
	402	Start delay after lowering roller presser	0.01s - 1.5s	0.15s
	403	Set roller presser lift (must be increased for high foot pressure if necessary).	0.01s - 0.2s	0 03s
	404	Thread trimming solenoid timing (10% – 50%; 35%)	10% - 50%	35%
	405	Time to clean the thread monitor	0.01s - 1.5s	0.25s
	406	Fade-out stitches for skip stitch recognition	0 - 20	8
	407	Zero position of the thread tension solenoid	0 - 1000	50
	408	Thread force at maximum power	0 - 5000	2000
5	501	Maximum speed	100 - 3500	3500
	504	Soft start speed	100 - 3500	1500
	505	Soft starting stitches	0 - 15	0

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Group	Parameter	Description	Setting range	Set value
7	701	P-section speed regulator	1 - 50	30
	702	I-section speed regulator	0 - 100	50
	703	P-section position controller	1 - 50	20
	704	D-section position controller	1 - 100	30
	705	Time for position controller	0 - 100	25
	706	P-section position controller for remainder brake	1 - 50	25
	707	D-section position controller for remainder brake	1 - 50	15
	708	Maximum torque for remainder brake	0 - 100	0
	709	Minimum machine speed	3 - 64	6
	710	Maximum machine speed	1 - 35	35
	711	Maximum motor speed	1 - 35	35
	712	Positioning speed	3 - 25	18
	713	Acceleration ramp	1 - 50	35
	714	Braking ramp	1 - 50	30
	715	Reference position	0 - 127	20
	716	Dead man time	0 - 255	40
	717	Motor starting current	3 - 10	8
	718	Anti-vibration filter	1 - 10	6
	719	Rotation direction assignment	0 - 1	0
	720	Move positioner 1 = time-optimised, 2 = path-optimised	1 - 2	2
20	2023	Selection mode for soft limit for docu-seam 1 = Docu-seam error once tolerance stitches sequentially surpass the limit. 2 = Docu-seam error once the number of tolerance stitches has surpassed the soft limit.	1 - 2	2
	2026	Thread tension values 1 = no median value generated	-	1

Adjustment

Display	Description
100	System error
233	Invalid parameter value
235	Communication error
236	Init. not ready
237	Command overrun
264	Mains off during initialisation
265	Excess current directly after mains on
266	Short circuit
268	Excess current during operation
270	Motor blocked
271	No incremental plug
274	Incremental encoder missing for transmission/reduction
373	Motor blocked in 1st stitch
375	Internal starting error
422	Dead man monitoring
300	Seam zone data
400	Seam zone end
500	Pedal or half stitch key or single stitch key (on the machine head) activated when machine turned on
600	Communication error with the stepping motor processor
700	End of ramp
800	Needle drive end position not found
900	Needle drive mid-point not found
1000	Stepping motor processor error
1100	Stepping motor step frequency too high
1200	Sewing displacement error
1400	Incorrect program number (larger than 99)
1500	Incorrect section number
1600	Memory full
1700	Incorrect stitch length
1900	External control interface
2000	Incorrect control (no P321ED, no thread force module)
2001	Machine requires P**321**
2002	Thread force module is missing
2003	Incorrect software on the thread force module (**37**x**1**)
2004	Sewing head **25**xx requires control P**32**xED
2100	Power supply overloaded (24V)
2200	Mains voltage
2300	Power supply 24V too low
2400	CAN interface error

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4.10   Inputs / outputs
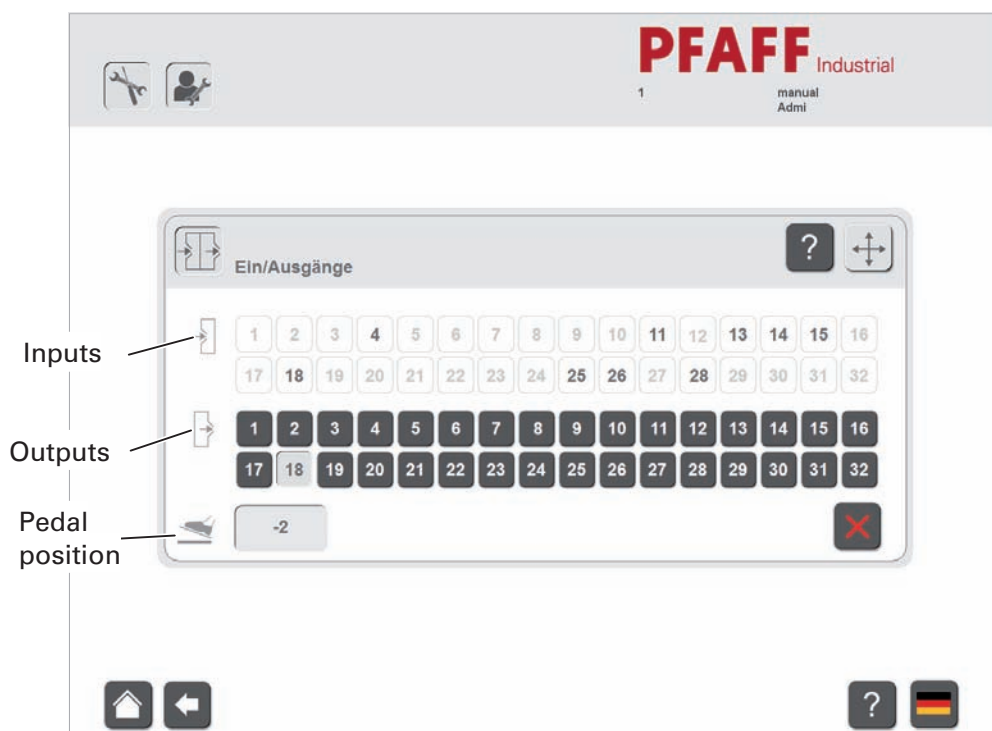
Inputs

Key	Input	Function
4	E4	Start inhibitor S24
5	E5	Photo cell B15
6	E6	Knee switch S27
7	E7	Electric bobbin winder S22
10	E10	Bobbin cover in reading position
11	E11	Bobbin cover closed
12	E12	Cop needle thread
13	E13	Cop bobbin thread
14	E14	Intermittent identification
15	E15	Needle end position
16	E16	Needle midpoint
25 - 31		Machine keypad
32		Hot key

Outputs

Key	Output	Function
1	A1	Roller presser lift
2	A2	Thread trimming
3	A3	Electric bobbin winder
5	A5	Thread clamp
6	A6	Clean bobbin thread monitor
15	A15	Signal tone on changing ranges
17 - 32		LEDs in machine keypad

Adjustment

Control panel on machine

Port Service — A 21   A 19   A 17   A 31   A 29   A 27   A 25

Port Service
Port Service
Port Service

A 20
A 23
In32

A 22   A 20   A 18   A 32   A 30   A 28   A 26
In31   In30   In29   In28   In27   In26   In25

Port Service
Port Service
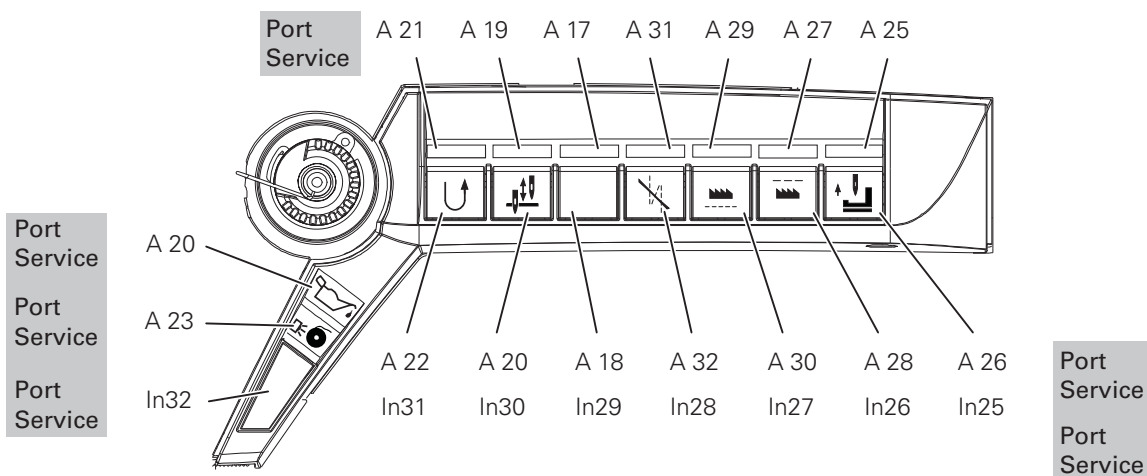
4.11 Important maintenance information

⚠️ **Attention!**

The machine must be recalibrated after replacing the thread force module **1** or the thread force sensor **2** to avoid incorrect measurements.

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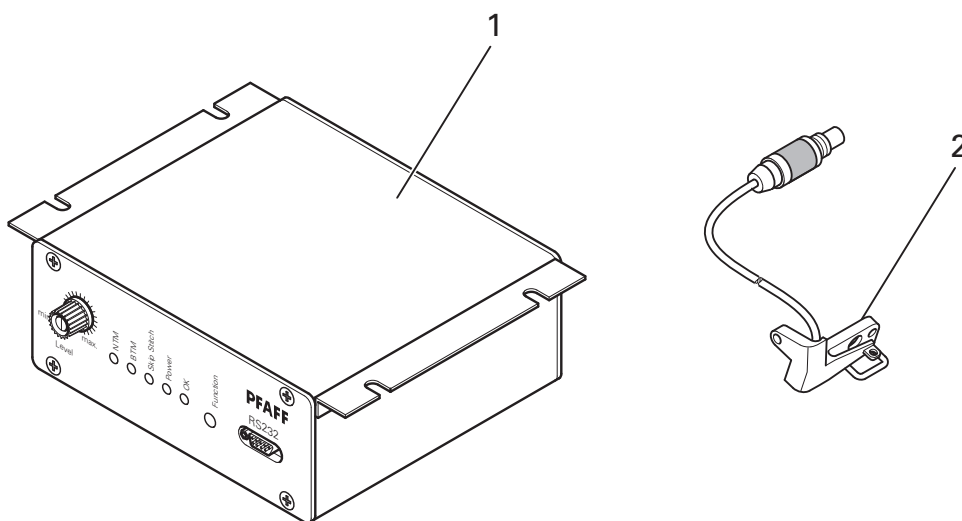
POWERLine

3721

CALIBRATION INSTRUCTIONS

5   Calibration

5.01   General

The importance of a calibration service continues to grow within the framework of global competition due to a heightened awareness of quality. The use of quality assurance systems is therefore of equal interest to manufacturers and also users of test equipment. This results in high customer demands for the monitoring of test equipment arising from the DIN ISO 9000 standard.

The monitoring of test equipment should ensure that all quality-relevant test equipment meets the given specifications. For this reason, test equipment and measuring equipment must be calibrated and traceable to national standards. Physical effects, such as ageing and drift, necessitate a calibration service to ensure the validity of the measurement results.

5.01.01   Calibration

The calibration is a process by means of which measuring equipment is tested with an unknown measurement deviation. The test is done by making a comparison with measurement standards whose accuracy is confirmed in accordance with an official test certificate. If the measured values are outside the permissible tolerance during the calibration, the equipment is readjusted so that the values are within the permissible tolerances, then the equipment is recalibrated.

It is permitted for anyone to perform a calibration; there is **no** legal background unlike with standardisation.

5.01.02   Traceability

Traceability is understood to mean that the measurements taken when testing measuring equipment can be traced back to a legal measurement standard through documentation, i.e. the recorded measured values are compared with the national measurement standard for the measured value.

5.01.03   Measurement standards

Measurement standards are comparative test equipment that refer to one of the seven base units of the international system of units (SI system). Measurement standards must be regularly calibrated themselves, whereby their traceability is ensured through calibration or standardisation certificates from DKD centres (German Calibration Service) or Offices of Weights and Measures.

The PFAFF calibration system uses a weight force of 500 cN = 5 N (cN = centinewton) as a measurement standard, which is acquired from the product of the mass of a body (SI unit mass in kg = kilograms) and the gravitational acceleration (g = 9.80992 m/s²). The physical measurement unit of the thread tensile force in cN is therefore traced back to the measurement standard for mass in kilograms (calibration certificate no. ...., Albstadt Office of Weights and Measures).

The mass of 0.509765 kg = 509.765 g +/- 7.5 mg used here corresponds to a weight force of 5 N = 500 cN.

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| 5.01.04 | Office of Weights and Measures, German Calibration Service (DKD) |

The measurement standards used constitute unquestionable evidence of traceability in accordance with DIN ISO 9000 through proof from calibration certificates and enjoy international recognition through multilateral agreements.

The higher authority of the entire calibration services in Germany is the Physikalisch-Technische Bundesanstalt (PTB), the national metrology institute providing scientific and technical services.

| 5.02 | Calibration process |

The process is carried out in accordance with the calibration certificate at the end of this manual. All the values defined or set must be entered in the corresponding calibration certificate.

| 5.02.01 | Checking/adjusting the reference position of the needle |

(Point **1** of the calibration certificate)

● Log on as the administrator

● Call up the "Tools" function.

● Call up the service menu.
● Chapter **4.05.17** Fitting the toothed belt / checking and adjusting this if necessary

● Acknowledge the setting.

● Call up the operating mode selection.

Calibration

5.02.02   Checking/adjusting trigger signals

(Point **2** of the calibration certificate)

● Select the "Tools" function.

● Call up the menu for changing the parameter values.
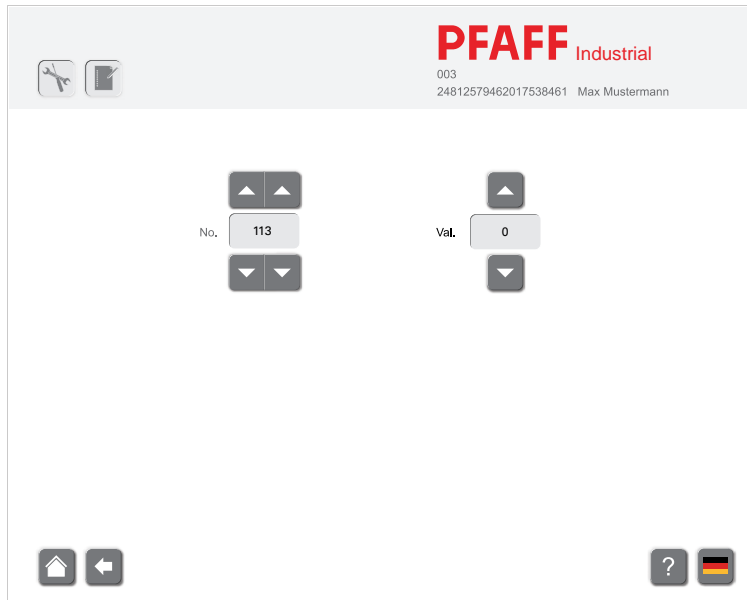
● Select the parameter **501** for the maximum speed by tapping on the corresponding arrow symbols ("No.").

● Enter the value "500" by tapping on the corresponding arrow symbols ("Val.").

● Call up the operating mode selection.

● Call up the seam program selection and select the "Manual" program by tapping on it from the list of programs.

● Call up production.
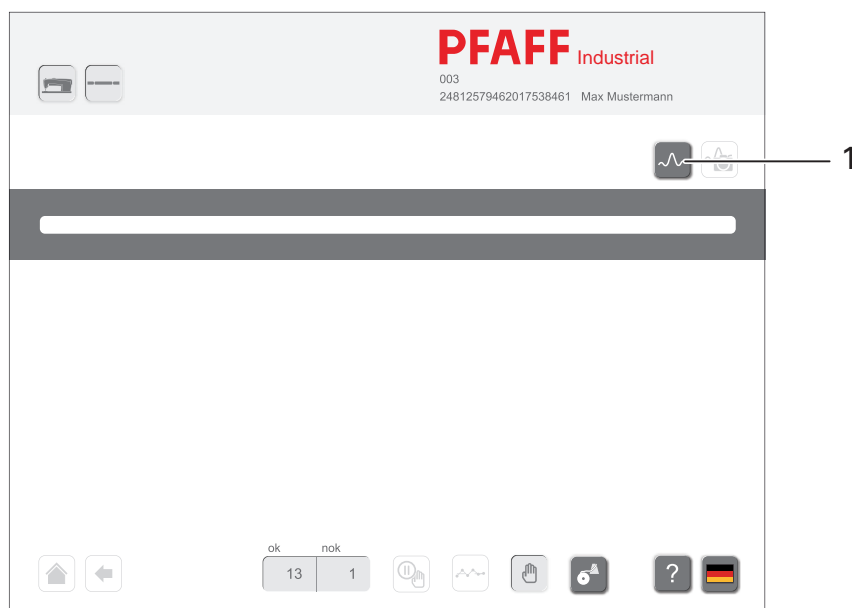
● Switch on the monitor via function **1.**

● Produce a test seam.
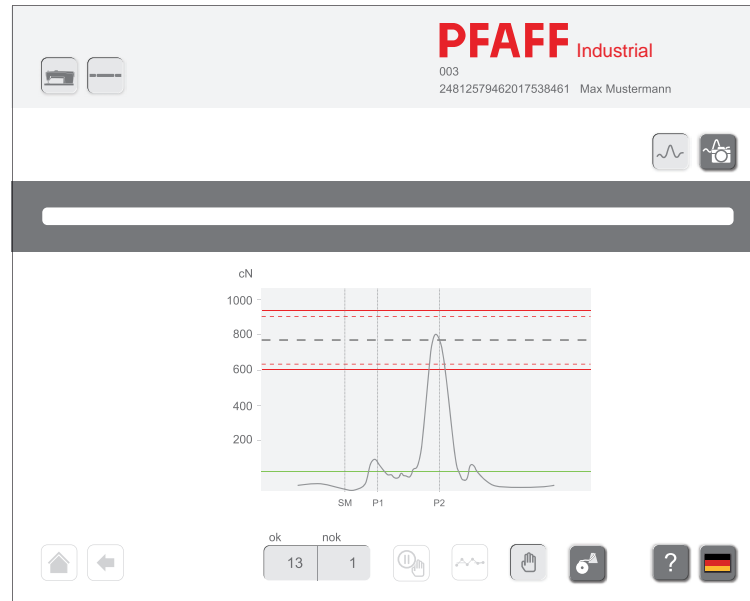
● Check whether the trigger signals are in the maximum range of the thread force signal at the largest hook loop and in the top reversal point of the cover-thread carrier.

● If necessary, change the value for parameter **312** (maximum hook periphery, standard value: "**81**") accordingly.

● If necessary, change the value for parameter **313** (top reversal point of the cover-thread carrier, standard value: "**113**") accordingly.

● Produce a test seam again and check the changed values.

● Repeat the process if necessary until the setting corresponds to the trigger signals.

● Enter the values for the speed (500 min^{-1}) and the parameter **312** or **313** in the calibration certificate.

● Call up the operating mode selection.

5.02.03   Checking the zero position of the monitor force signal

(Point **3** of the calibration certificate)

● Select the "Tools" function.

● Call up the menu for changing the parameter values.

● Call up parameter **311.**

● Check whether the value "**40**" is set, enter this value if necessary.

● Call up the operating mode selection.

5.02.04 Checking the adjustment of the sewing head

(Point **4** of the calibration certificate)

● Check the mechanical setting of the sewing head in accordance with the adjustment manual and adjust the sewing head if necessary

5.02.05 Recording the thread strength characteristic curve

(Point **5** of the calibration certificate)

A synthetic thread size **40** is recommended as the calibration thread (the calibration weight is attached here).
It must be ensured that the ball bearings in the calibration device move freely.

● Call up the "Tools" function.

● Call up the "Calibration" function.

_Fasten the calibration thread **1** to the thread guide (loose loop).

_Thread the calibration thread **1** according to the instruction manual but instead of threading it through the needle, the thread is placed from the eye on the needle bar over the ball bearing **2** of the calibration device **3**.

● Follow the instructions on the touch screen monitor.

● Scroll further.
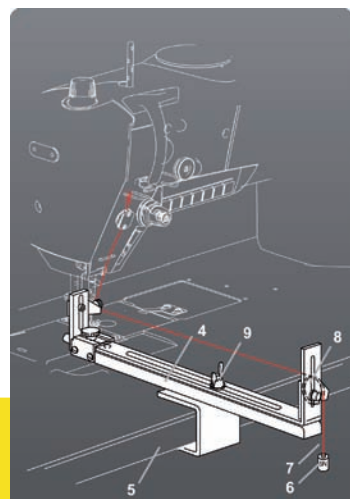
_Fasten the calibration device **4** to the table plate **5** so that the calibration weight **6** is attached as shown in the sketch.

_The length of the vertical thread piece **7** after the 2 turns around the second bearing **8** should be approx. **250** mm.

_The required length of the calibration device **4** can be set via the nut **9.**

● Follow the instructions on the touch screen monitor.

● Scroll further.
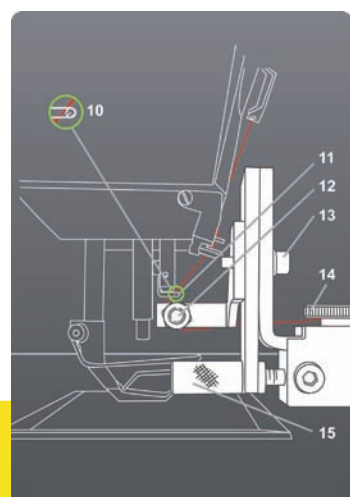
_Remove the needle and unscrew the hopping foot.

_Turn the handwheel and position the machine in the take-up lever t.d.c. (66 degrees on the handwheel scale dial).

_Place the second bearing **12** with the screw **13** under the thread guide eye of the needle bar **11.**

_Move the red calibration thread horizontally with the knurled thumb screw **15** until the thread rests gently on the thread guide of the needle bar **11** (see the cutout **10**).

● Follow the instructions on the touch screen monitor.

● Complete the preparations.
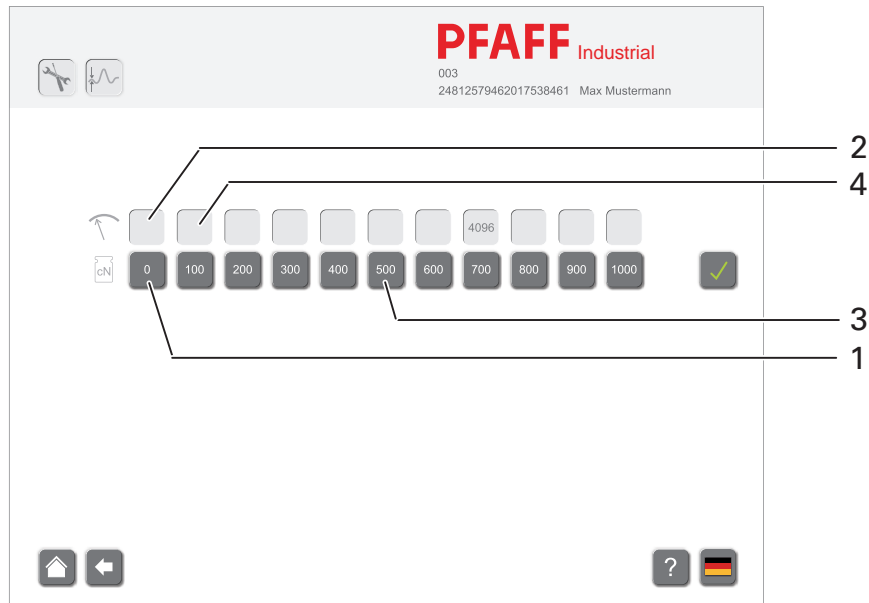
Calibration

● Call up function **1.**

● Do not attach or remove a weight.

● Acknowledge the measurement process.
The measured value appears in field **2.**

● Enter the value from field **2** in the calibration certificate.

● Call up function **3.**

● Attach the corresponding weight (500 cN).

● Acknowledge the measurement process.
The measured value appears in field **4.**

● Enter the value from field **4** in the calibration certificate.

● Take all measurements one after the other from **100** cN to **1000** cN and enter the corresponding values in the calibration certificate.

● Leave the calibration menu after all measurements have been taken.
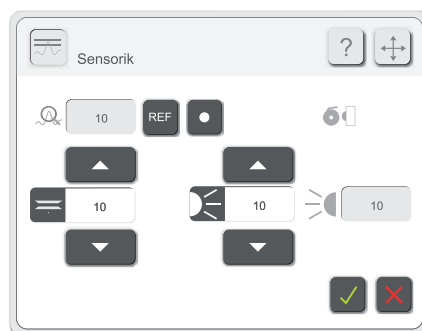
5.03   Checking the calibration (calibration result)

● Perform the calibration in accordance with **chapter 5.02 Calibration process**.

● Call up the service menu.

● Call up the sensor function

1
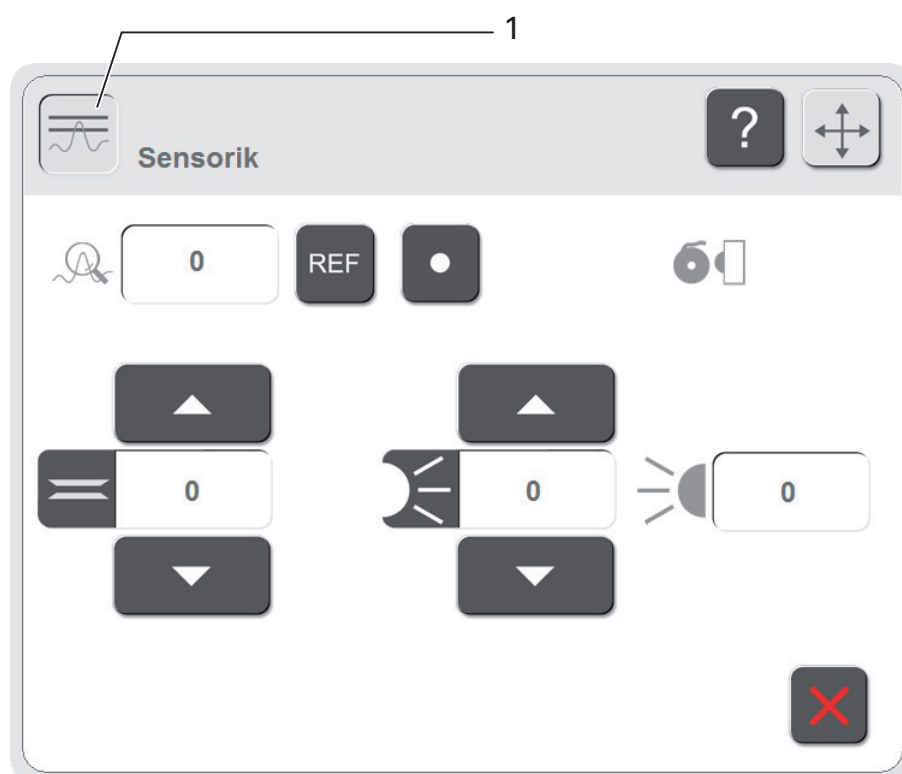
● Hang the calibration weight (**500 cN**) on the thread and wait until there is no longer any pendulum motion.

● Press the "Evaluate" key.

● Enter the measured value displayed in field **1** in the calibration certificate.

● Repeat the measurement four times and enter each of the measured values in the calibration certificate. The displayed measured value must always be within **500 cN +/- 30 cN.**

● If deviations occur here, the thread force characteristic curve must be recorded again in accordance with **chapter 5.02.05 Thread force characteristic curve**.

● Exit the menu.

● Call up the operating mode selection.

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PFAFF Industriesysteme und Maschinen AG, 67661 Kaiserslautern

Calibration certificate for the PFAFF docu-seam system

Client:...

Address:...

Machine: **PFAFF 3721**.................................... Serial no.: ....

PC software: .... Control software:...

Setpoint of the weight force for the standard measuring range: **5 N = 500 cN**

Traceability to a national mass measurement standard, guaranteed in accordance with DIN ISO 9000 by Albstadt Office of Weights and Measures, number of the calibration certificate:...

Measuring range end value: 1500 cN   Accuracy: +/- 2 %

Calibration process:

1. Needle reference position: (Parameter 700)   ....   ☐

2. Trigger signals: Speed   .... min⁻¹   ☐
          Parameter 311   ....   ☐
          Parameter 312   ....   ☐

3. Zero position of the monitor force signal: Parameter 313   ....   ☐

4. Adjustment of the sewing head   ☐

5. Thread force characteristic curve   ☐
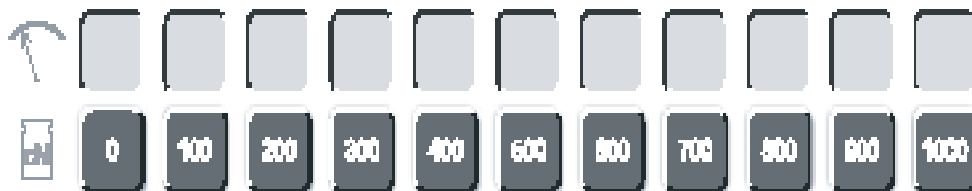
Check calibration result with 500 cN

Measurement	1	2	3	4	5
Measured value [cN]					
Deviation from the setpoint [cN]					

Permissible measurement uncertainty: +/- **2** % of the measuring range end value = +/- **30** cN.

Assessment: All measured values are within the product-specific limit values.

Place:.. Date:................................. Inspector:...

6 Circuit Diagrams

6.01 Pneumatic circuit diagram

The pneumatic diagram is drawn in the machine's home position. The power (air and electricity) is connected. The components are in a fixed state.
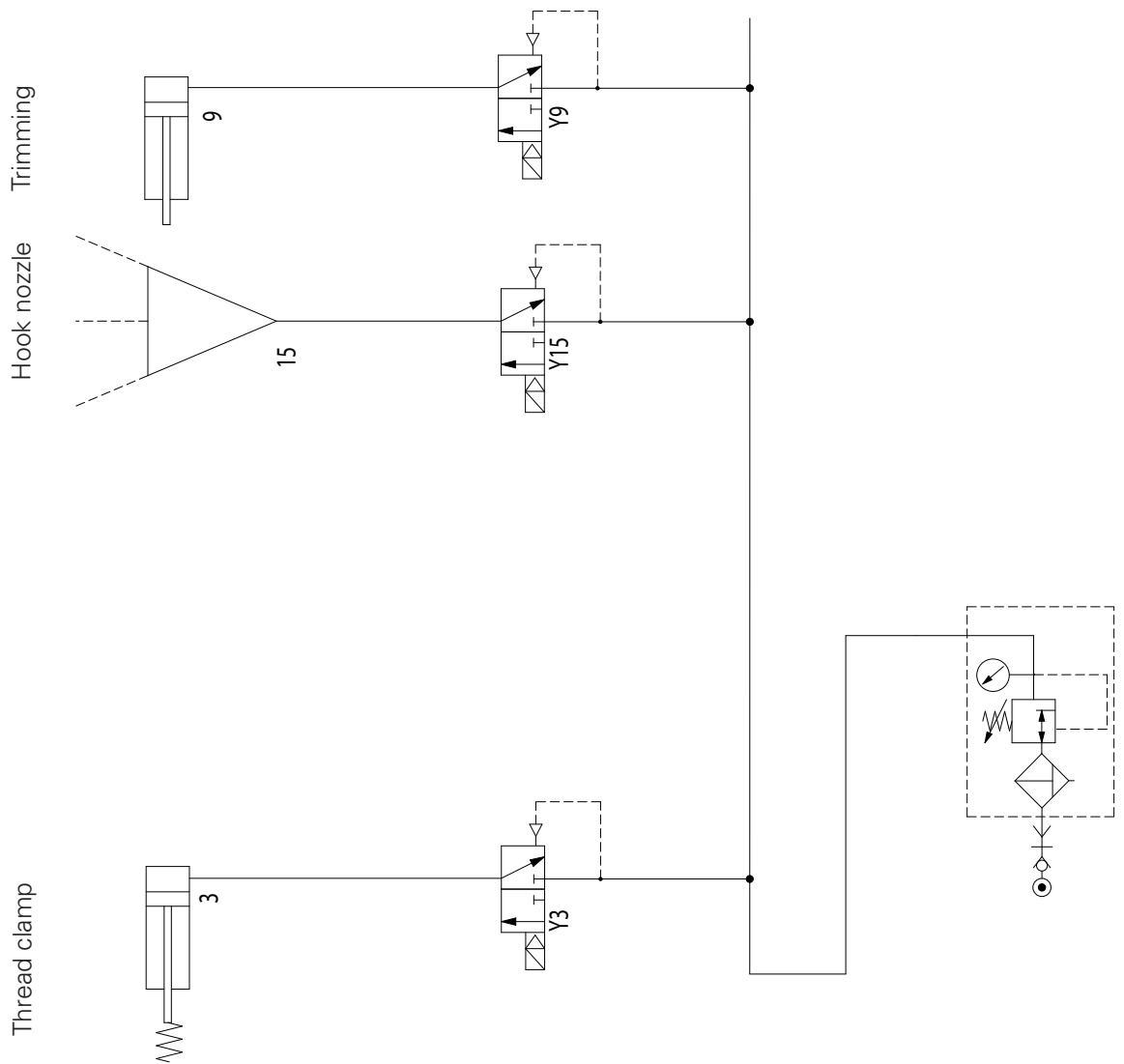
Reference list

6.02 Circuit Diagrams

6.02.01 Reference list for circuit diagrams 91-191 547-95

A1	Control device P321 MS
A2	Control panel BDF- P1 (option)
A14	Sewing head recognition (OTE)
A15	Oil sensor (I²C-bus)
A16	Keyboard (I²C-bus)
A20	Bobbin thread monitor
A50	CAN- I²C converter
A100	Thread force module
B15	Light barrier
B30	Initiator - reading position
B31	Initiator - feed regulator
B33	Initiator - slide monitoring
B41	Oil sensor (I²C-bus)
B100	Thread force sensor
H1	Sewing lamp
M1	Sewing motor
M2	Stepping motor - feed wheel
M3	Stepping motor - roller presser
M4	Stepping motor - needle
M11	Motor - electric bobbin winder
M14	Stepping motor - thread tension
Q1	Main switch
S1.1	Pedal nominal value transmitter
S1	Key 1 Another function depending on the parameter
S2	Key 2 Another function depending on the parameter
S3	Key 3 Another function depending on the parameter
S4	Key 4 Another function depending on the parameter
S5	Key 5 Another function depending on the parameter
S6	Key 6 Another function depending on the parameter
S7	Key 7 Another function depending on the parameter
S8	Key 8 Another function depending on the parameter
S22	Push-button - electric bobbin winder
S27	Push-button - seam section
S34	Push-button - safety device
S51	Cop switch - needle thread
S52	Cop switch - bobbin thread

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X11A	CAN interface
X6B	RS 232 interface (PC)
X8	Sewing motor
X1A	RS 232/BDF P1 interface
X3	Incremental encoder
X11B	Nominal value transmitter
X1A	Control panel BDF- P1
X15	Stepping motor - thread tension
X4A	Stepping motor - feed wheel
X4/B	Stepping motor - roller presser
X6A	Stepping motor - needle
X5	Input connector
X13	Output connector
XB15	B15 Light barrier connector
X11	free
X20	A20 Bobbin thread monitor and B19 Thread force sensor
XS27	Knee switch seam section
X44	Stepping motor - thread tension
X1B	A14 Sewing head recognition (OTE)
XA15.1	A15 Oil sensor (I²C-bus)
XA15.2	A15 Oil sensor (I²C-bus) > A14 (OTE) (I²C-bus)
XA16	A16 Keyboard (I²C-bus)
XB30	B30 Initiator - reading position
XB33	B31 Initiator - bobbin cover closed
X30	DX 355 Needle pendulum
XS22	S22 Push-button - electric bobbin winder
XS50	Cop switch S51 and S52
XS51	Cop switch S51
XS52	Cop switch S52
X103	Thread force module
X201	A100 Thread force module
X202	A100 Thread force CAN module
X211	B100 Thread force sensor
X212	A20 Bobbin thread monitor
X45	909/..
X41	910/..
X42	900/..
X46	926/..
Y5	909/..
Y1	910/..
Y2	900/..
Y16	926/..

6.03.02   Reference list for circuit diagrams 91-191 536-95

A1	Control device P374 ED-L
A100	PC
A101	Screen & touch screen
A104	Barcode label printer
B102	Manual scanner
B110	Barcode scanner - label
B111	Barcode scanner - needle thread
B112	Barcode scanner - bobbin thread
A1	Control device P374 ED-L
A100	PC
A101	Screen & touch screen
A104	Barcode label printer
B102	Manual scanner
B110	Barcode scanner - label
B111	Barcode scanner - needle thread
B112	Barcode scanner - bobbin thread
X0	RS 232 interface for control unit P374 ED-L
X98	Connector for PCI serial RS-232 card
X99	RS 232 adapter X98-X0
X100	PC mains plug
X101	USB connector PC-A101 Touch screen
X102	USB connector PC- B102 Manual scanner
X103	USB connector, PC-free
X104	USB connector PC-XUSB7 Barcode label printer
X105	USB connector, PC-free
X106	USB connector, PC-free
X107	USB connector, PC-free
X108	USB connector, PC-free
X109	VGA connector PC- A101 Screen
X110	B110 Barcode scanner - bobbin thread
X111	B111 Barcode scanner - needle thread
X112	B112 Barcode scanner - label
X113	Interfaces for distributor- B110 Barcode scanner - bobbin thread
X114	Interfaces for distributor- B111 Barcode scanner - needle thread
X115	Interfaces for distributor- B112 Barcode scanner - label

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Control device A1 P321 MS

Inputs
25-pin D-Sub

X5

1 E1
2 E2
3 E3
4 E4
20 0V
15 E7
21 0V
5 E5
19 0V
25 +24V
11 E11
9 E9
10 E10
17 0V
14 E6, Program
16 E8
12 E12
22 0V
13 E13
24 U-Alarm LED
7 E16 Needle midpoint, initiator
6 E15 Needle end position
8 E14 Not intermittent
18 0V Initiator
23 +24V Initiator

Control device P321
Needle pendulum
20

X30   DX355
GN YE GR WH BN

Cop switch
19
S52   BN WH
S51   BN WH
XS50

Knee switch
18
XS27   S27   BN WH

Bobbin cover Reading position
B30
XB30   GN WH BN   BK BU BN

Bobbin cover closed
17
B33
XB33   GN WH BN   BK BU BN

Photo cell
16
B15
XB15   PK GY YE   BK BU BN
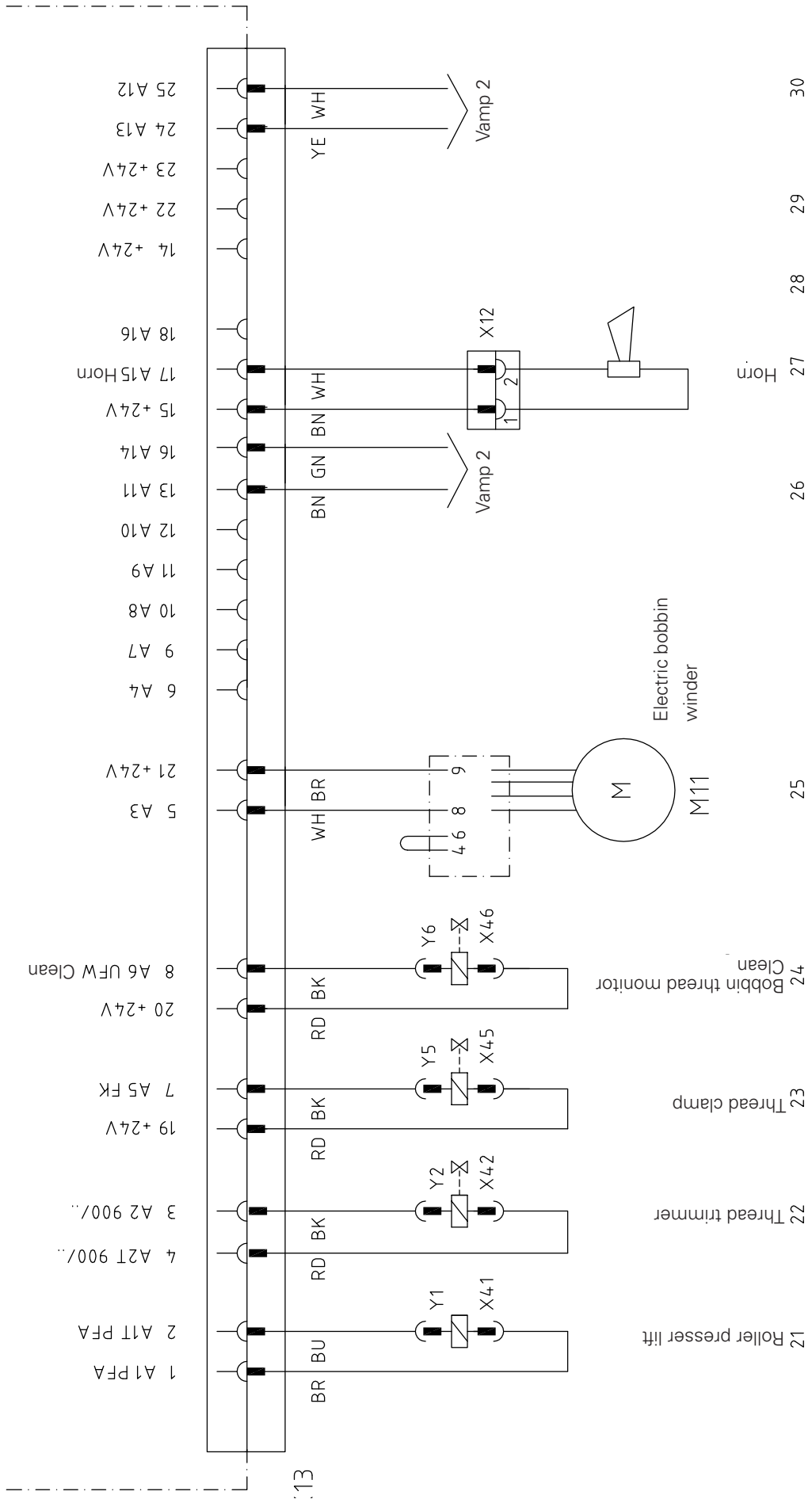
Electric bobbin winder
15
XS22   S22   BN WH

Start inhibitor
14
S24   X34   BN WH

13

Control device A1 P321 MS

Outputs
25-pin D-Sub

Pin				Device
25 A12	YE WH		Vamp 2	30
24 A13				
23 +24 V				
22 +24 V				29
14 +24 V				
				28
18 A16		X12		
17 A15 Horn	BN WH			Horn 27
15 +24 V	GN BN			
16 A14			Vamp 2	
13 A11	BN			26
12 A10				
11 A9				
10 A8				
9 A7				
6 A4				
21 +24 V	WH BR	M11	Electric bobbin winder	25
5 A3				
8 A6 UFW Clean	RD BK	Y6 X46	Bobbin thread monitor Clean	24
20 +24 V				
7 A5 FK	RD BK	Y5 X45	Thread clamp	23
19 +24 V				
3 A2 900...	RD BK	Y2 X42	Thread trimmer	22
4 A2T 900...				
2 A1T PFA	BR BU	Y1 X41	Roller presser lift	21
1 A1 PFA				

X13

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