PFAFF

Docu-Seam-System

User's guide

Software version 79-001 400-07/001

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1 Proper use

The PFAFF Docu-seam system is a supplementary device, with which high-quality and/or safety-oriented seams can be observed and documented during the sewing process through the measurement of the thread tension (thread force). It is also possible to calculate the average stitch length and control the stitch-regulator position (= stitch length on the Pfaff 3715-2/..). The system can be used to reduce the number of spot-checks previously required, for the analysis and certification of every individual seam and so for quality assurance.

Any use which is unauthorized by the manufacturer is regarded as contrary to the instructions! The manufacturer does not accept responsibility for any damage caused by improper use! Using the device according to the instructions also involves compliance with all operating measures provided by the manufacturer!

2 Installation

2.01 System requirements

Hardware

- PC with Pentium processor, 300 MHz or higher, Disk drive
- 2 ISA slots, Standard hard disk, min. 32 MB RAM
- min. 14" color monitor, Microsoft-compatible mouse, CD-ROM drive

Software

- Microsoft Windows 95/98
- Control panel settings
- High Color 16 bit, Screen: 640 x 480

2.02 Installation of the Software

Attention: The Lab-PC+ board must be removed from the PC !!

In the delivered condition, the following installations have already been carried out and must only be done for a new configuration.
After the PC is switched on, the Docu-seam program is started automatically.

Loading drivers for the data acquisition board (NI-DAQ for Windows)

Depending on the driver version the CD starts automatically or must be called manually. The CD drive could be D:

Manual calling

- Start, Run, Browse, click on symbol "My Computer"
- Click on the CD drive
- Open NI-daq... (D:) with double click
- Directory of the CD is listed
- Open Setup.exe with double click ===> D:\setup.exe, OK
- Open "Install NI-DAQ" with double click
- Go on installation described under point 2.2

CD starts automatically

- Open "Install NI-DAQ" with double click
- NI-DAQ driver files, Next
- Select Destination Directory C:\NI-DAQ, Next
- Select Group is indicated, Next
- Ready to install, Next, file is installed
- Install, OK, Shut down PC, Restart, Shut down PC

2.03 NI-DAQ Hardware Configuration

- Cut off line, plug in Lab-PC+ board, connect the flat wire
- Start the PC, My Computer, Control Panel, Add New Hardware
- Add New Hardware Wizard, Next, Next, Search for your New Hardware, Yes, Next
- Next, Detection progress is running, Next, Hardwaretypes are listed
- Select Data Acquisition Devices, Next
- Models are listed: Select Lab-PC+, Next
- Resourcetype and Settings are listed, Next
- Finish, Shut down PC
- Start Windows
- My Computer, Control Panel, System, System Properties
- Select Device Manager
- Open Data Acquisition Devices, Open Lab-PC+
- Lab-PC+ Properties: Select Resources, if necessary change settings and select new value
  Resource Setting must be corrected:
  Resource type: Input/Output Range xxx
  Interrupt Request xxx
  Direct Memory Access xxx
- Select Input/Output Range, Change Setting, Value 0260-027F, OK
- Select Interrupt Request, Change Setting, Value 05, OK
- If a conflict warning is indicated go to Yes
- Select Direct Memory Access, Change Setting, Value 03, OK
- Conflicting device list: xxx, xxx, OK, Shut down now? Yes
- Start Windows, Control Panel, System, Device Manager, View devices by type
- If Conflict Warning ! is indicated click on device
- Resources, deactivate "Use automatic Settings"
- Change Setting, select value until conflict information indicates
- "No devices are conflicting", OK
- Activate "Use automatic Settings", conflict device list: No conflicts, OK
- Restart the Computer, Yes
- Start PC, Control Panel, System, Device Manager
- If there are more conflict warnings repeat the above procedure otherwise
- go to Start, Programs, NI-DAQ for Windows, NI-DAQ Configuration Utility
- New NI-DAQ Hardware is listed, Configure, Yes
- Resources are listed, Next, Next, Finish, Select menu File, Save, Exit

2.04 Install Docu-Seam-Program from CD

- Start, Run, Browse, My Computer, select CD drive, PFAFF directory is listed
- Open PFAFF, select Pfaffsetup.bat, Open, OK, Program is installed on drive C:
- Start, Programs, Windows Explorer, open directory PFAFF, select small screen
- Click on Icon DS07-00x and drag and drop to desktop screen
- Close Explorer, Arrange Icons
- Install PFAFF Icon: click on with right mouse key, Pop up menu is opened

- Properties, Change Icon, Browse
- In directory PFAFF double click on PFAFF.ico, OK
- OK, OK
- Start Docu-Seam-Program
- If taskbar appears on the screen do the following operation:
- Close the program using keys F1 and F12
- Start, Settings, select Taskbar & Start Menu,
- deactivate "Always on top", activate "Auto hide"
- Apply, OK
- Restart the Docu-Seam-Program from Windows

2.05 Linking the Docu-Seam-Program to Startup

- Click on Start with the right mouse key
- Click on Open, Programs, Startup
- Press Ctrl key and drag and drop the Pfaff Icon to Startup using the left mouse key, Close, shut down PC, OK
- After Restart the Docu-Seam-Program is loaded and started automatically

2.06 Locking the Windows function key (in WIN 98)

- My Computer, Control Panel, System, Device Manager
- Open directory keyboard, Standard (101/102-key) or Microsoft Natural Keyboard is indicated, OK
- Add New Hardware, Next, Next, No, the device is not listed, Next
- No, Select Hardware types, Next
- Hardware types: click on keyboard
- Models: Select Olivetti-keyboard (102-key), Next
- If conflict warning, Next, Finish
- Properties of, General, deactivate device user
- Click on Activate device, Restart PC, Yes
- The Windows key is now locked in Docu-Seam-Program

2.07 Locking the Windows function key (in WIN 95)

- My Computer, Control Panel, Keyboard, General
- Keyboard type is listed, Change, activate "Show all devices"
- Models: Select Olivetti-keyboard (102-key), OK, Close
- Restart your computer now, Yes

2.08 Label Printers

After installation the printers must be selected as default printers!
Do not select Windows-Druckmanager!
The PC must be re-booted!

2.08.01 Gemini T Label printer

- Connect the printer as default printer to the parallel interface LPT 1 of the computer.
- Install the driver software under Windows 95/98 as described in the printer manual (Page 22).

Setting the printer parameters

- Call up the Gemini symbol with a double mouse click.
  The Gemini Control Panel opens.
- Printer: select Setup. Tharo Gemini opens.
- Set unit to mm and type in 155.0 as Label Height (take care of your label size).
- Do not select Continuous Material!
- Select Landscape, X Fast Print.
- Label Printing Mode: Select Options..., Printer Mode opens.
- Select Batch Mode and set Presentation Position on 3.
- Select Thermal Transfer and set Heating Setting on 5, adapt if necessary.
- Set Printer Speed 50 mm/sec. and Label Offset on 0.0.
- Select OK, Tharo Gemini opens.
- Select field and deactivate Always on Top.
- Select field and close.
- Close Gemini.
  Program Manager is displayed.

Loading the barcode

- Call up the symbol Schriften in Windows Systemsteuerung.
- Call up Schriftarten hinzufügen.
- Insert barcode disk and select disk drive ("A:").
- Double click Code 39.
  A list of fonts is displayed.
- Double click Codedreineun Plain (True Type).
  Font is displayed.
- Close function.

2.08.02 Seiko Label Printer

The printer is connected as a default printer to either the serial interface COM2 or the parallel interface LPT 1.
The software can be installed with the enclosed disks for Windows 95/98.

- Insert disk in drive and execute "winsetup.exe".
- Follow the installation instructions.
- If necessary, carry out printer test.

3 Operation

3.01 How the Docu-Seam-System works

A sensor inserted in the needle thread course of the sewing machine determines the actually occurring tensile forces on the needle thread (needle thread tension) at every stitch during the sewing process.
In this way, measuring errors, caused for example by sudden changes in temperature, are eliminated by a special measurement principle.
The signals from the sensor are then evaluated in the PC via a signal input card and a data acquisition card and are displayed on a monitor on a user interface running under Windows 95/98. The analysis of these signals provides information about the machine setting and the quality of every individual completed stitch.
The seam area in which the system is to be activated (docu-seam area), is determined if necessary by a photocell which can detect markings (e.g. notches) in the fabric. The docu-seam system compares the established thread tensile forces with the previously-entered limit values and gives an evaluation of the seam on the monitor.
In the case of a good seam, a test seal or suchlike can be issued, if necessary using a printer, with the relevant signal to the PC interface.
Moreover, the docu-seam system activates a skip stitch detection function and reacts to the following error types:

- skip stitch
- needle thread breakage, end of needle thread
- bobbin thread breakage, end of bobbin thread
- needle breakage

In addition, the docu-seam system offers the possibility of continuing to process the data provided with standard spreadsheet programs.

A function for controlling the number of stitches in the docu-seam area (calculation of the average stitch length) can also be activated.

In conjunction with a PFAFF 3715-2/.. it is possible to control the stitch length setting dial (determination of the stitch regulator position).

Recommendation: in Docu-Seam-Area machine speed should not exceeed 2000 min^{-1}.

3.02 Input Functions

The functions can be called up by clicking with the mouse or with the respective key or combination of keys (in brackets).

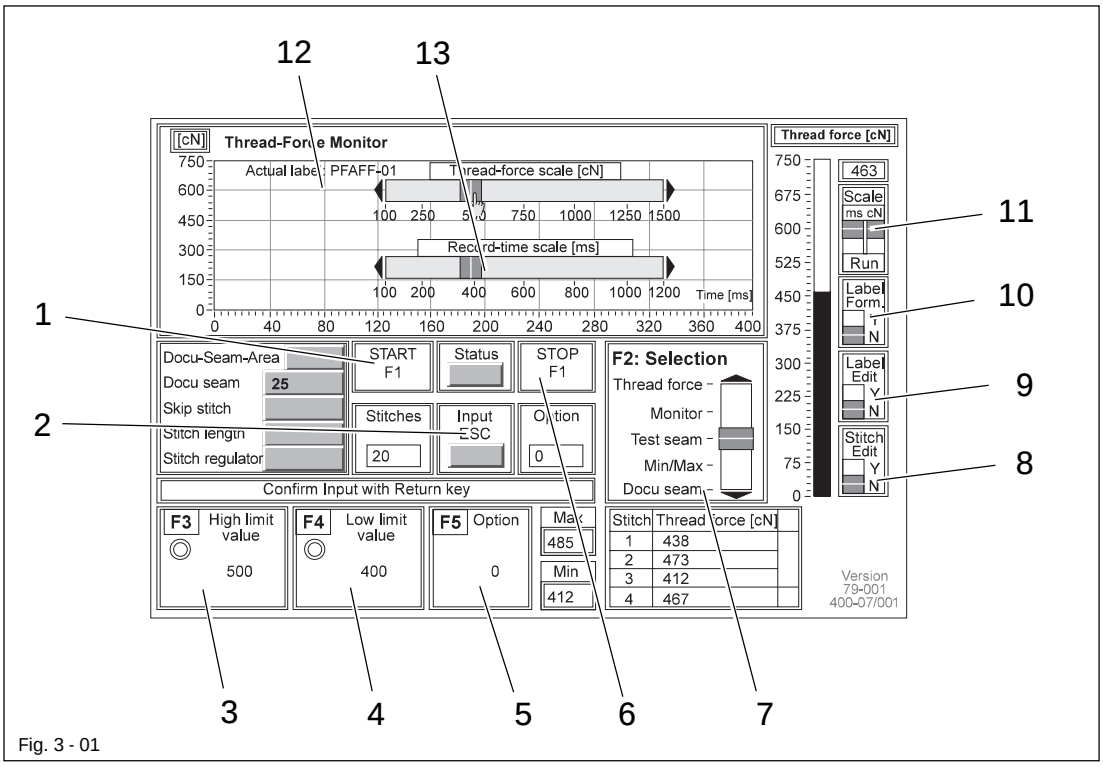


Fig. 3 - 01

1 - Start (F1)
By calling this function, the program is started.

2 - Input (Esc)
This function enables and/or blocks the input of limit values and the use of Option (Input display red = input not active / Input display green = input aktive)

3 - High limit value (F3)
After calling this function when Input is activated, (see above), the high limit value for thread force can be changed. After pressing <Return>, the newly-entered limit value is adopted and saved. At the same time, Input is deactivated again (input display red).

4 - Low limit value (F4)
After calling this function when Input is active (see above, the low limit value for thread force can be changed. After pressing <Return>, the newly-entered limit value is adopted and saved. At the same time, Input is deactivated again (input display red).

5 - Option (F5)
After calling this function when Input is active (see Point 2 - Input), the number of „permissible exceedings“ can be entered, that is, the number of individual stitches, whose thread force may lie outside the prescribed limit values. After pressing <Return>, the entered limit value is adopted and saved. At the same time, Input is deactivated again (input display red).

„Permissible exceedings“ are individual stitches outside the tolerance range which do not cause a serious reduction in seam quality.
Skip stitches, thread breakages, thread ends or needle breakages are still recognized and lead immediately to an error message.

6 - Stop (F1)
By calling this function, the program is stopped (status = red).
After this, the Windows platform can be reached by pressing the key F12.

7 - Selection (F2)
If the options display has been activated with F2, the functions can be selected by using the mouse or the arrow keys on the keyboard.

Thread force (<arrow keys>)
By using this function, the static thread force of both the needle and bobbin threads can be measured, See Chapter 3.05 Measurement of static thread force.

Monitor (<arrow keys>)
With this function, the flow of the dynamic thread force during the sewing process is displayed on the thread force monitor. This function may be employed for the analysis of signals and gives indications of the quality of stitch formation. With a corresponding setting of the measuring ranges for the x- and y-axes, detailed and characteristic features of the flow of the thread force can be recognized.

Test seam (<arrow keys>)
After calling this function, a test seam can be sewn with the slowest and fastest speeds planned for the docu-seam area.

Min / Max (<arrow keys>)
With this function, the user can request the maximum- and minimum-occurring thread forces after a test seam has been completed. The values are displayed in the respective display fields (below right); the table takes over the thread forces attributed to the stitches.

Docu seam (<arrow keys>)
This function can be activated when all necessary values have been entered. The seam supervision is active in the docu-seam function, as soon as the docu-seam area is reached during the sewing process.

8 - Stitch edit
With this function it is possible to activate both the control of the number of stitches (calculation of the average stitch length) and the stitch regulator position. See Chapter 3.06.04 Controlling the number of stitches and 3.06.05 Controlling the stitch-regulator position.

9 - Label Edit
By using this function, information concerning the selected label can be entered. See Chapter 3.06.07 Label name, label selection.

10 - Label Form.
With this function the label size and label printer can be selected.

11 - Selection of measuring ranges (Scale)
The measuring ranges for thread force and time axes can be selected using this function.
For the thread force, full-scale values ranging between 100, 250, 500, 750, 1,000, 1,250 and 1,500 cN may be selected (see Pos. 12 on Fig. 3-01).
For the time axis, you have the full-scale values of 100, 200, 400, 600, 800, 1,000 or 1,200 ms at your disposal (see Pos. 13 on Fig. 3-01).

The full-scale values will be adopted both for display on the monitor and for the bar graph display.

3.03 Display functions

The system offers a whole series of data which are displayed on the screen by the display functions.

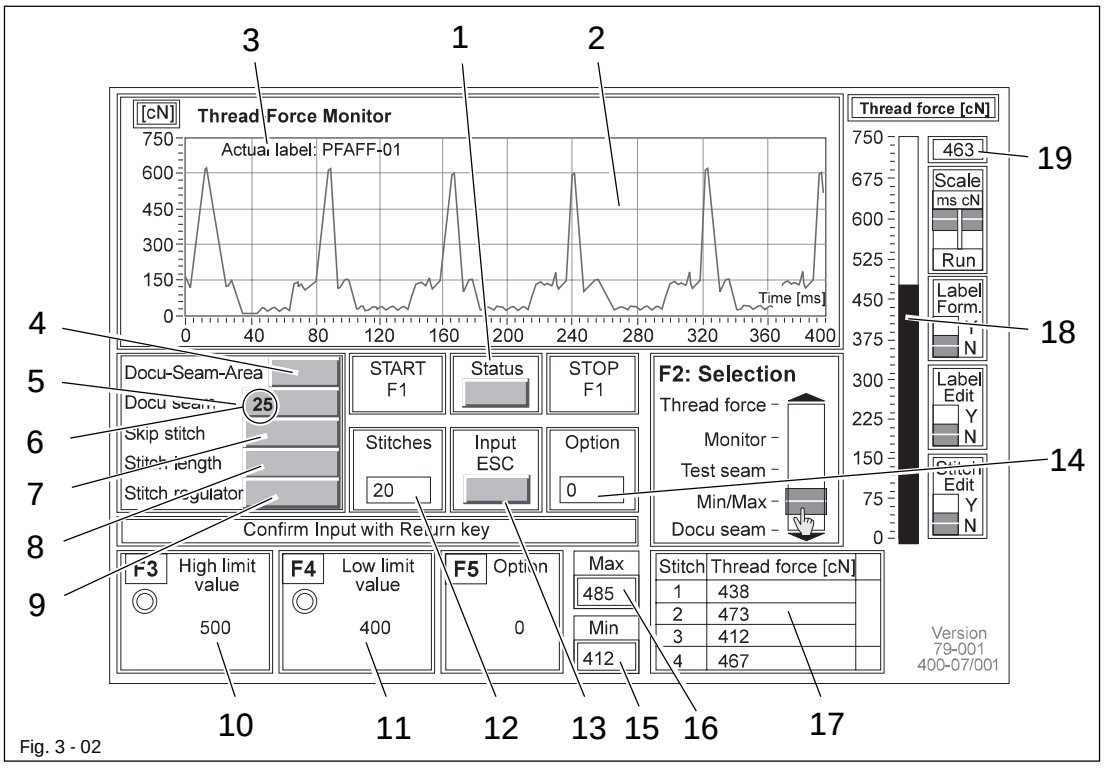


Fig. 3 - 02

1 - Status display
This function displays the current status of the program
(red display = program not yet started / green display = program running).

2 - Thread force monitor
The flow of the dynamic thread force can only be displayed during the sewing procedure by using this function. The measuring ranges of the x-axis (time in ms) and of the y-axis (thread force in cN) can be changed (see 3.04 Selection of measuring ranges).

3 - Actual label
With this function the current label name loaded is displayed.

4 - Docu-seam area
This shows whether the machine is currently in the docu-seam area or not
(green display = docu-seam ara / red display = not in docu-seam area).

5 - Docu-seam
After the docu-seam area is sewn, the display here shows whether the docu-seam was carried out within the limit values.
(Green display = docu-seam in order / red display = docu-seam not in order).

6 - Docu-seam number
The numbers of seams found to be good and documented as such are continuously assigned and displayed here.

7 - Skip stitches
From this display, you can recognize whether skip stitches have appeared in the docu-seam area. (Green display = no skip stitch / red display = skip stitch).

8 - Stitch length
From this display, you can recognize whether the calculated stitch length in the docu-seam area is correct.
(Green display = stitch length in order / red display = stitch length not in order).

9 - Stitch regulator
This display shows whether the position of the stitch regulator has maintained the correct setpoint.
(Green display = position in order / red display = position not in order).

10 - High limit value
In this panel, the adjusted value („actual“ value) for the high limit value is displayed.
This display serves as an adjustment aid, to recognize during a test seam whether the previously-set high limit value is being complied with.
(Green display = limit value not exceeded / red display = limit value exceeded).

11 - Low limit value
In this panel, the adjusted value („actual“ value) for the low limit value is displayed.
This display serves as an adjustment aid, to recognize during a test seam whether the previously-set low limit value is being respected.
(Green display = not below limit value / red display = below limit value).

12 - Stitches
The number of stitches in the docu- and test-seam area is displayed here.

13 - Input display
The mode in which the program is currently operating is displayed here.
(Red display = input not active / green display = input active).

14 - Option (exceedings)
The number of stitches within the docu-seam area falling outside the limit values for thread force is displayed here. (Activate with the keys Esc and F5).

15 - Minimum thread force
The minimum thread force occurring during a test seam or a docu-seam is displayed here.

16 - Maximum thread force
The maximum thread force occurring during a test seam or a docu-seam is displayed here.

17 - Thread force table
All individual stitches sewn during a test seam or a docu-seam are displayed in this table with the accompanying thread force. In this way, a seam analysis related to specific stitches is made possible.

18 - Bar display (bar graph)
When the static thread force is measured, as well as during the test seam and the docu-seam, the value of the thread force that has just been measured is displayed on the bar display.
The division of the scale adjusts itself according to the newly-set full-scale value.

19 - Display panel for thread force
When the static thread force is measured, as well as during the test seam and the docu-seam, the value of the thread force that has just been measured is displayed as a numerical value.

3.04 Selection of measuring ranges

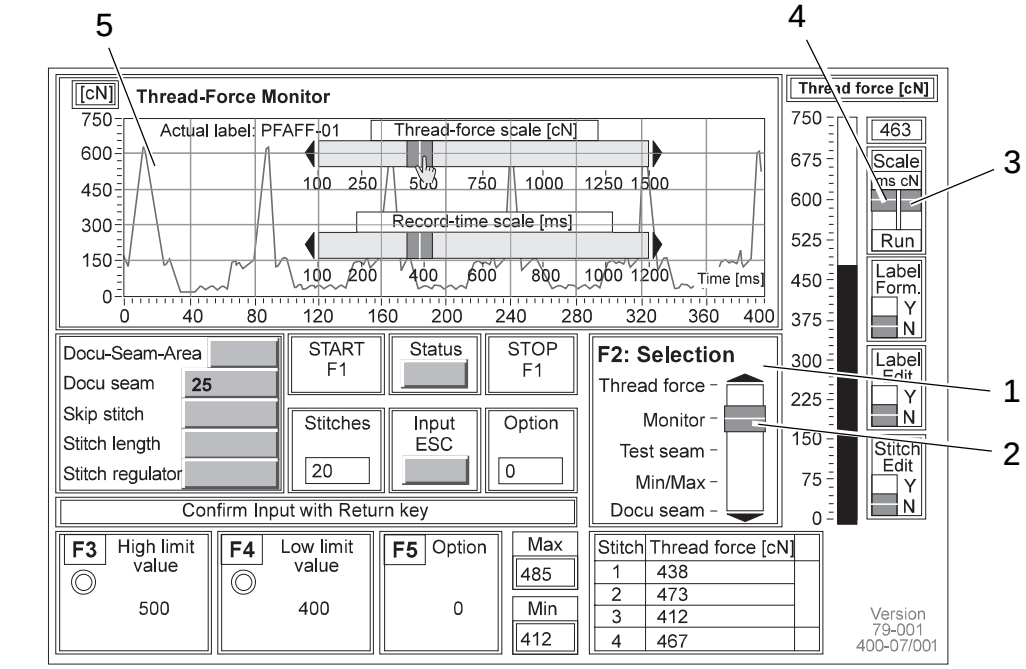


Fig. 3 - 03

- Activate the panel Selection 1 with the key <F2>.
- By using the <arrow keys> or clicking the mouse, set the slide switch 2 to the Monitor function.
- Click with the mouse pointer on the slide switches 3 or 4 for „cN“ or „ms“ and push upwards.
  In both cases, a slide switch appears on the thread force monitor 5 for the adjustment of the full-scale values for the thread force and/or the time axes.
- Click on the desired full-scale value with the mouse pointer.
  The slide switch changes to the selected full-scale value and the new values are adopted on the monitor and in the bar graph.
- Push the slide switches 3 and 4 back down with the mouse pointer.

3.05 Measurement of static thread force

Besides the supervision of the docu-seam area, this system also offers the possibility of measuring both the needle thread tension (force of the needle thread) and the bobbin thread tension (force of the bobbin thread) without any additional device when the machine is stationary.
In this way, you can have optimum, reproducible values for setting the machine which can always be set precisely for every individual sewing process.

3.05.01 Measurement of static force on the needle thread

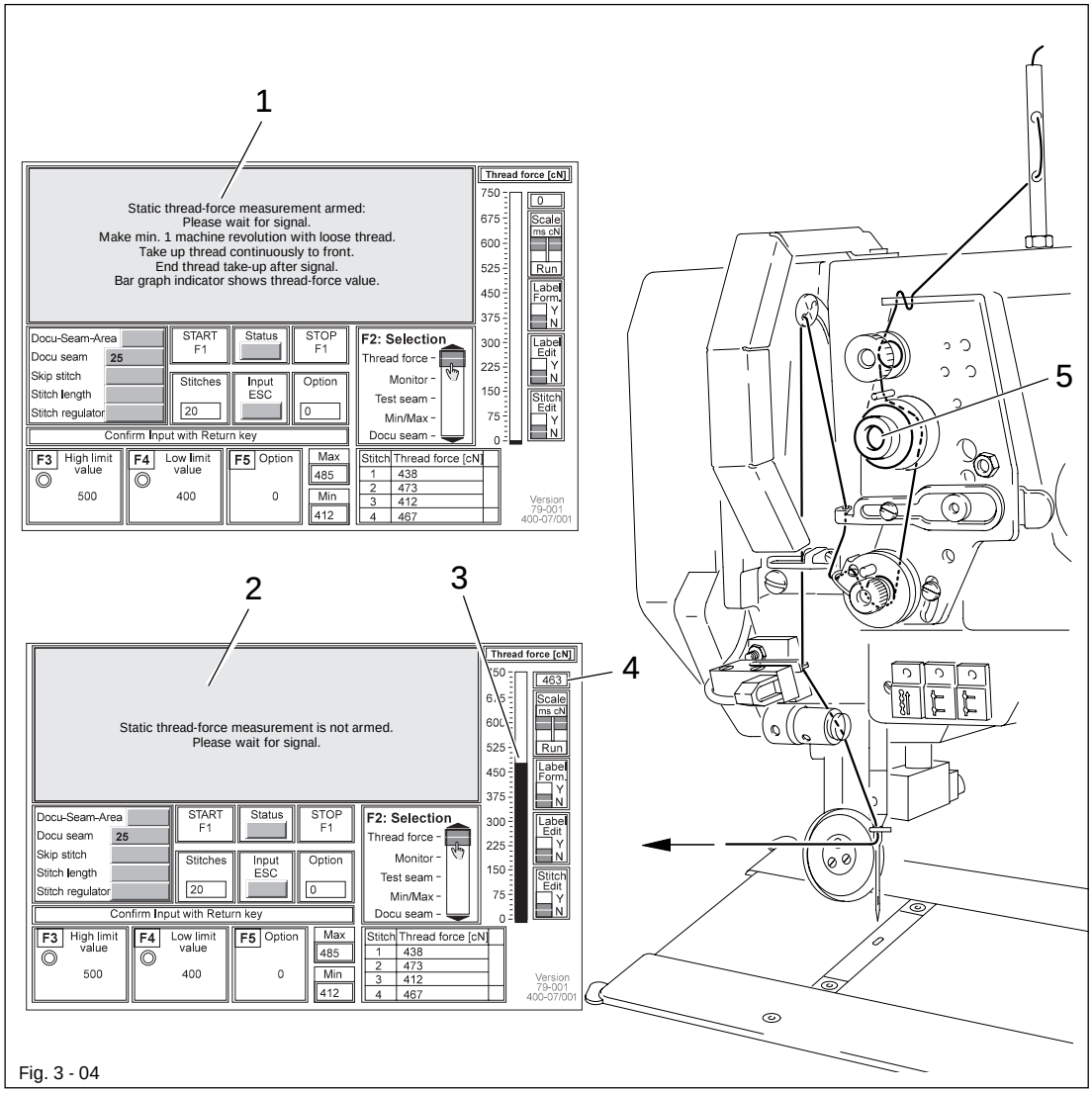


Fig. 3 - 04

- Thread the needle thread according to the machine class, taking into account that the thread is passed through the thread force sensor, but not yet through the needle.
- Call up the Selection field with <F2>.
- If necessary, adjust the measuring range for the thread force (see Chapter 3.04 Selection of measuring ranges).
- Select the function Thread Force using the <arrow keys> or the mouse.
  A green text field 1 with instructions appears on the thread force monitor.
- After the signal, carry out at least one machine revolution.
  Machine stop at take-up lever T.D.C.
- Pull the needle thread evenly and slowly in the direction of the arrow until a red text field 2 appears on the thread force monitor.
  The measured value can be read off the bar graph 3 and the display panel 4.
- If necessary, adjust the thread tension (knurled nut 5) and repeat the measuring procedure after the signal, until the value for the thread force is correct.

The alternating procedure „Measure - read - adjust“ takes place in a 6-second rhythm, once the measuring function has been initialised by the revolution of the machine.

3.05.02 Measurement of static force of the bobbin thread

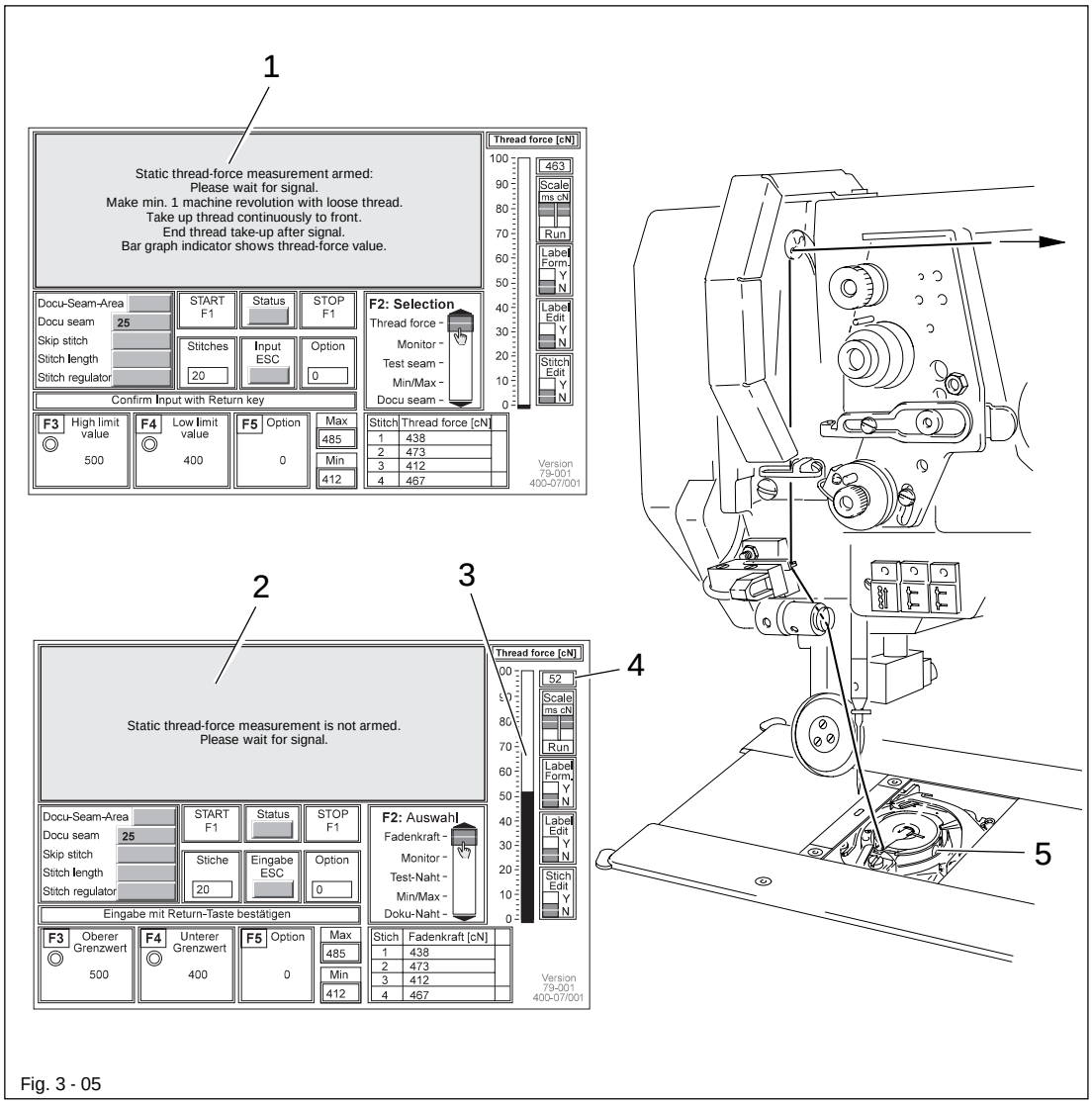


Fig. 3 - 05

- Thread the bobbin thread through the thread force sensor and the take-up lever (depending on the machine type).
- Call up the Selection field with <F2>.
- Set the measuring range for the thread force at 100 cN (see Chapter 3.04 Selection of measuring ranges).
- Select the function Thread Force using the <arrow keys> or the mouse.
  A green text field 1 with instructions appears on the thread force monitor.
- After the signal, carry out at least one machine revolution.
  Machine stop at take-up lever T.D.C.
- Pull the bobbin thread evenly and slowly in the direction of the arrow until a red text field 2 appears on the thread force monitor.
  The measured value can be read off the bar graph 3 and the display panel 4.
- If necessary, adjust the thread tension (screw 5) and repeat the measuring procedure after the signal, until the value for the thread force is correct.

The alternating procedure „Measure - read - adjust“ takes place in a 6-second rhythm, once the measuring function has been initialised by the revolution of the machine.

3.06 Test seam

The necessary requirements for the docu-seam area can be established by stitching off a test seam. In the process, the system saves the thread force of the individual stitches and displays the values on the thread force table 1 at the end of the test seam.
The maximum- or minimum-occurring thread forces can be displayed using the Min/Max function. These thread forces serve as the basis for setting the limit values.

3.06.01 Determining limit values

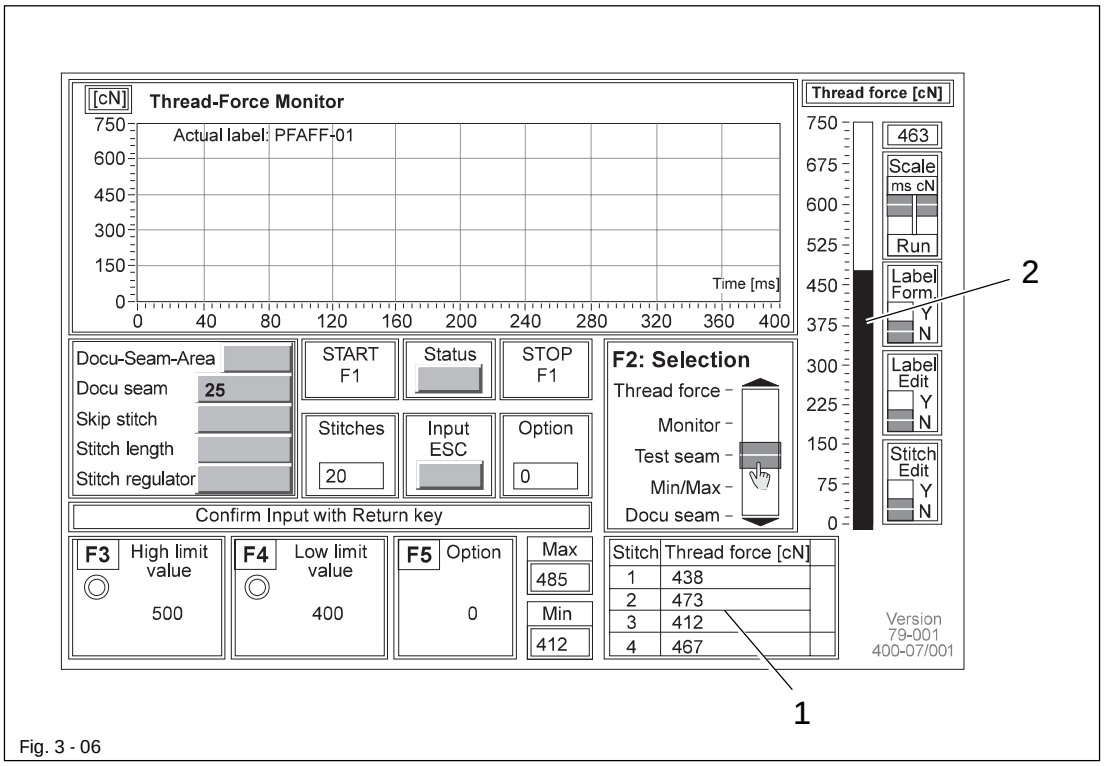


Fig. 3 - 06

First of all, the measuring ranges for the thread force and the time axes should be selected appropriately and the static thread forces for the needle and bobbin threads should be established or adjusted.

- Call up the Selection field with <F2>.
- Select the function Test-Seam using the <arrow keys> or the mouse.
- Stitch off the seam area, using the min. and max. speeds for the docu-seam area. During the sewing procedure, the thread force occurring in every individual stitch is displayed on the bar graph 2.

3.06.02 Setting limit values

After the maximum or minimum thread force by stitching off the test seam are established (see Chapter 3.06.01 Determining limit values), the limit values for the thread force can be entered.

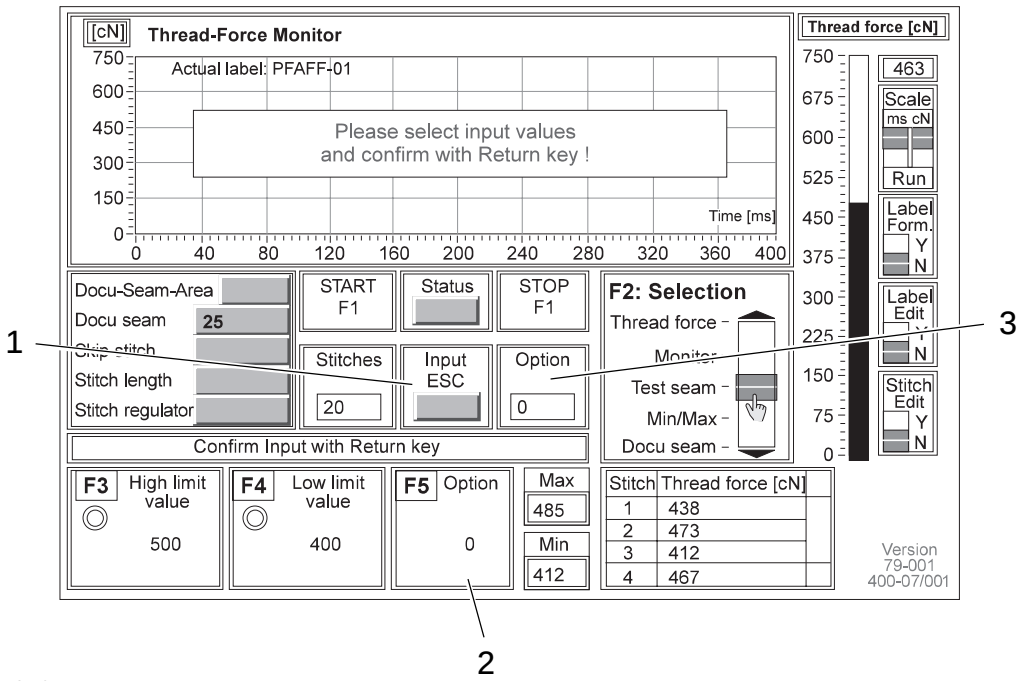


Fig. 3 - 07

The limit values should be set at an appropriate and safe distance, according to normal sewing practice, from the thread force values measured in the test seam.

- Activate the input mode by pressing <Esc>.
  The input display 1 changes from red to green.
- Activate the input field for the high limit value with <F3>.
- Enter the high limit value.
- Activate the input field for the low limit value with <F4>.
- Enter the low limit value.
- Confirm the input limit values by pressing <Return>.
  The altered limit values are adopted and stored on the hard disk.
  The input display 1 changes again from green to red.

In a similar fashion to the input of limit values, the input of „permissible exceedings“ can - if required - be carried out in the selection field 2 („Option“). The occurrence of exceedings becomes more probable with a low tolerance level in the limit values. An evaluation of the seam quality must determine whether exceedings are permissible at all.
The actual number of exceedings occurring is displayed in field 3 (only active within the docu-seam area).

3.06.03 Checking limit values

The sewing procedure (production) with the adjusted limit values can be simulated by stitching off a further test seam.

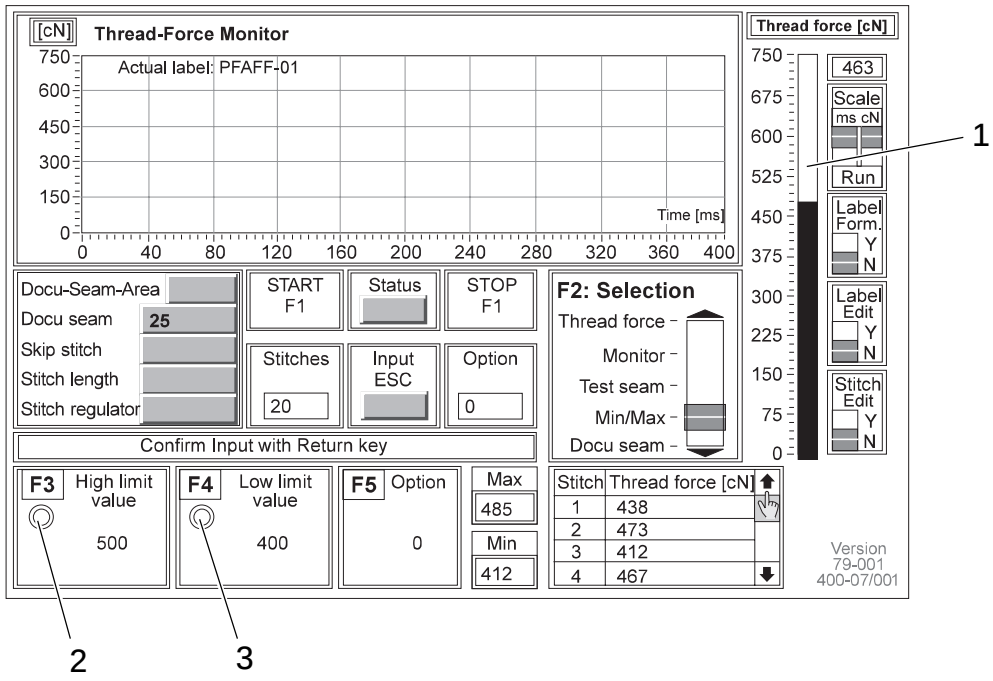


Fig. 3 - 08

- Call up the Selection field with <F2>.
- Select the function Test seam using the <arrow keys> or the mouse.
- Stitch off the seam area.
  During the sewing procedure, the thread force occurring in every individual stitch is displayed on the bar graph 1.

When stitching off a test seam, the display elements 2 and 3 should not change from green to red, unless a real error has occurred!
A check of the thread force values in the table is possible, if the Min/Max function has been selected.

- Correct the limit values, if necessary.

3.06.04 Controlling the number of stitches (calculated stitch length)

- Click on the slider in the panel „Stitch Edit“ and move it to „Y“ (for yes).
  The input window for controlling the number of stitches opens.
- The 4 input fields are activated by clicking on with the left mouse key or by pressing the TAB-key.
  These numerical values can also be increased or reduced by clicking on the corresponding arrow fields.
- Enter the length of the docu-seam area (in millimeters) in the field „seam length“.
- Enter the required number of stitches in the field „setpoint of number of stitches“ (Seam length : number of stitches = ideal stitch length). The stitch length resulting from this calculation is stored in the seam file.
- Enter the allowable tolerance for the number of stitches in the docu-seam area in the fields „+/- number of stitches“. Example:

  Seam length: 400 mm
  Setpoint no. of stitches: 80
  +/- number of stitches: 3

  Result: 82 counted stitches in the docu-seam area, i.e. the docu-seam is in order, because the tolerated number of stitches was not exceeded. The average stitch length was therefore 4.88 mm (400 mm : 82). This is stored automatically as the result in the seam file. The indication panel for the stitch length remains green.

- To save these input values, click on the key „return with saving“.
  If the previous values are to be saved, click on the key „return without saving“.

If the value „0“ is entered for the seam length, the function „controlling the number of stitches“ is deactivated.

3.06.05 Controlling the stitch-regulator position

In the case of sewing machines with manual adjustment of the stitch length with an adjusting dial, an integrated sensor controls the stitch-regulator position for each stitch length.

- The correct stitch length is determined by adjusting the adjusting dial or by making test seams.
- The resulting correct position for the stitch-regulator is taken over as the setpoint by clicking on the function „return with saving“.
  As long as the value of the actual position does not deviate from the setpoint by more than +/-4 after sewing the docu-seam, the stitch-regulator position is considered to be in order, i.e. the stitch-regulator indicator is green, and the setpoint and actual position are stored automatically in the seam file.

To deactivate the function „controlling the stitch-regulator position“, the stitch-regulator adaption must be set to „0“ in the service program.

3.06.06 Label sizes, printer selection

- Click on the slider in the field „Label Form.“ and move it to „Y“ (for yes).
  The input window for the label sizes opens.
- Open the menu by clicking on the arrow symbol.
- Press the left mouse key and position the mouse pointer in the desired field.
- Click on the key „return“.
  The window „Save As“ opens.
- Select your label as described in Chapter 3.06.07 Label name, label selection.

3.06.07 Label name, label selection

- Open the window „Save As“. See Chapter 3.06.06 Label sizes, printer selection.
- Click on the desired label names, if these exist.
- Click on „Save“.
  Text and information about the selected label are displayed.

To create a new label:

- Enter the name of the label in the text field "file name".
- The cursor must blink in the input field.

The label name must have 8 characters, to which .txt is appended automatically.

- Click on „Save“.
  The window for text input opens.

Do not install new directories because program access is done automatically to existing label directories.

3.06.08 Text input for label printer

All functions are explained with the example of the Gemini printer and with a label size of 45 x 155 mm.

- Activate the input fields by clicking on with the mouse (the cursor appears in the appropriate field)
  or by using the TAB-key.

Do not install new directories because there is on automatically program acces to existing label diectories.

Input of clear text

Three rows with approximately 50 characters each can be entered.

- Activate the input field of the first row (the cursor blinks).
- Enter the text and press <Return>.
- Enter the text for the second row and press <Return>.
- Enter the text for the third row and press <Enter>.

Label output

Different output possibilities can be selected.

- Click on the arrow symbol.
  The menu opens.
- Click on desired field.

- Text:
  Only clear text is printed.

- Text and barcode:
  A maximum of 18 characters in the form of numbers and capital letters (no spaces between the characters) can be entered and saved by pressing <Enter>.
  The resulting output is text and barcode.

- Text, only date and time in barcode:
  The output ensues as clear text, with date and time in barcode.

To use the barcode function, the appropriate software (Option) must be installed on the Windows platform. See Chapter 2.03.01 Gemini T Label Printer.

Number of labels

- The desired number of labels, from 0 - 9, can be selected by clicking on the arrow symbol.

If the setting „0“ is selected, the information „no printer existing“ appears.

Label printing

There are 2 possibilities for printing labels:

- After each docu-seam
  At the end of each docu-seam the set number of labels is printed.
- After each second docu-seam
  At the end of each second docu-seam the set number of labels is printed.
  In addition a seam file is saved for every docu-seam, the label printing includes, for example, Seam: 48/-1 OK. This means that seams 47 and 48 are in order.

If the second option is selected, an even docu-seam number must be displayed on the screen at the beginning of the sewing process, so that the first docu-seam has an uneven and the second docu-seam an even seam number.

- Click on the arrow symbol.
  The menu is opened.
- Click on the desired field.

To store all the settings, the key „return with saving“ is clicked on at the end of the data input or label mode selection.

3.06.09 Summary of the label sizes and printer selection

Gemini T, 45 mm x 155 mm

Label output:
- Clear text, 3 rows for customer data.
- Label name, seam number, date, time

- in addition with barcode, max. 18 characters

or in addition with date and time in barcode.

Number of labels: 0 - 9

Label printing: after each docu-seam
after each second docu-seam

Gemini T, 90 mm x 49 mm

Label output:
- Clear text, 3 rows for customer data.
- Label name, seam number, date, time

- in addition with barcode, max. 10 characters
- Label name, seam number, date, time

Number of labels: 0 - 9

Gemini T, 90 mm x 35 mm

Label output:
- Clear text, 3 rows for customer data.
- Label name, seam number, date, time

Number of labels: 0 - 9

Seiko, 28 mm x 89 mm

Label output:
- Clear text, 3 rows for customer data.
- Seam number, date, time

Number of labels: 0 - 9

3.07 Sewing with the Docu-Seam-System

After the limit values for the thread force have been established, entered and tested, production can be carried out under the control of the docu-seam system.

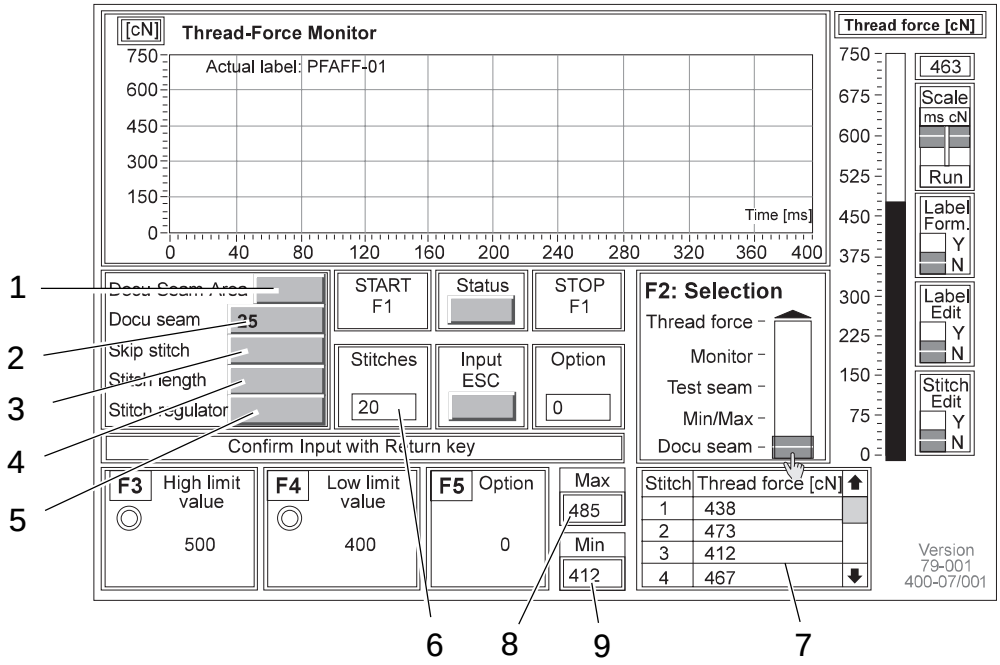


Fig. 3 - 09

- Call up the „Selection“ field using <F2>.
- Select the function „docu-seam“ using the <arrow keys> or the mouse.

If the system is restarted (beginning of operations), a program autostart takes place after the devices are switched on. In this case, the default values from the previous use are installed and the docu-seam function is activated.

- Stitch off the seam.
  As soon as the docu-seam area is reached, the seam control function is activated (display 1 turns green). On leaving the docu-seam area (display 1 turns red again), the seam results are displayed:

Docu-seam is in order:

- Display panels 2, 3, 4 and 5 are green
- PC interface receives a signal (seam is in order)
- Docu-seam number is increased by 1 and displayed in the display panel 2
- Total number of stitches in the docu-seam area is displayed (display panel 6)
- Thread force table 7 contains all the individual stitches with the accompanying thread force
- Maximum/minimum occurring thread force is displayed (display panels 8 and 9)
- Seam file is stored on the hard disk
- The appropriate label is printed

Docu-seam is not in order:

- Display panel 2 and, if necessary, display panels 3, 4 or 5 are red
- PC interface receives no signal
- No docu-seam number is given
- Total number of stitches in the docu-seam area is displayed (display panel 6)
- Thread force table 7 contains all the individual stitches with the accompanying thread force
- Maximum/minimum occurring thread force is displayed (display panels 8 and 9)
- Seam file is not stored
- No label is printed

3.08 Output functions of the Docu-Seam-System

The docu-seam system offers various possibilities for the evaluation and further processing of stored information.

- After calling up the Monitor function, the temporal flux of the thread force is displayed on the thread force monitor.
  In this way one has the possibility of a signal analysis of the dynamic thread force, which gives indications of the quality of the stitch formation.

If the thread force analysis is used intensively in the „Monitor“ function, the signal form (the curve) can be stored on the screen:

- Press <F2> (Selection function).
- During the recording of the signal, switch over from „Monitor“ function to „Test-seam“ function (using arrow keys or mouse click).

- In addition, each individual stitch is listed in the thread force table, together with the accompanying thread force (for test and docu-seams). Seams with a maximum of 999 stitches per docu-seam can be processed. It is possible to scroll through the table by clicking the mouse on the arrow keys at the side, or by moving the slide.
- If a docu-seam is evaluated as good, the seam file (max. 999,999 seam files) is stored with the following parameters on the hard disk:
  ● Seam No., ● date, ● time, ● label size, ● label name, ● number of stitches,
  ● Thread force values of all stitches, ● high/low limit value, ● option, ● seam length,
  ● setpoint of number of stitches, ● +/- number of stitches, ● stitch length (calculated),
  ● setpoint of stitch-regulator position, ● +/- tolerance, ● actual position of stitch regulator
  The seam files can be processed further with a standard spreadsheet program, for example to prepare diagrams and statistics.
- The stored seam files can be deleted or further processed in Windows (access path: c:\pfaff\naht-dat)
- It is recommended that the user should archive the stored seam files at time intervals determined by him-/herself, e.g. on a disk, and then delete the archived seam files on the hard disk.
- On the access path c:\pfaff\zaehler, the file ndz.txt is at your disposal, in which the current docu-seam number, dating from the previous sewing procedure, can be newly adjusted. For this purpose, open the file in the Editor function with a double click and enter the number.
- If existing files are given the same name again, an error signal appears.

3.09 Service Program

This program is needed to preinstall (in the factory) the language selection and to teach in the stitch-regulator data.
If, at a later date, only the language has to be changed, the corresponding language identification number can be selected in the file poti-ref.txt.

3.09.01 Language selection

If only the preselected language has to be changed, use the following procedure:

- Open file manager function.
- In "C:\PFAFF" open the file "poti-ref.txt" with a double click.
  The contents of the file are displayed; the right-hand number group indicates the language:
  - 0.00 = German
  - 1.00 = English
  - 2.00 = French
  - 3.00 = Spanish
  - 4.00 = Italian
  - 5.00 = Dutch
- Enter the appropriate number, close the Editor function and start the docu-seam program.

In the Service program:

- Call up the Service program with a double click on the program symbol.
- Bring the slide switch into the correct position with the mouse.
- Click on the field „Return“ with the mouse.
  The selected language is taken over.

3.09.02 Teach in the stitch-regulator position

- Set both adjusting dials for the stitch length to „0“.
- Turn the main shaft to take over the mechanical gear position.
- Enter the displayed stitch-regulator position in the field „zero position of stitch regulator“.
- Press Return key.
- Set both adjusting dials for the stitch length at the maximum position.
- Turn the main shaft to take over the mechanical gear position.
- Change the preset value of 320 in the field „Adaption of stitch-regulator“ with the mouse using the arrow symbols, so that the „End position of stitch-regulator“ has the exact value „100“.
- Press the Return key.
- Save the input values by clicking on the field „Save data“.

To deactivate the function „Controlling the stitch-regulator position“ (e.g. for the PFAFF 3715-1/...), the value for the adaption of stitch regulator must be „0“.

3.09.03 Service information

- The stitch-regulator potentiometer is installed with a resistance value of 1000 +/- 200 ohm (only PFAFF 3715-2/..).
- If the synchroniser is dismantled, exchanged or adjusted, the starting position of the synchroniser must be taught in again (only PFAFF 3715-2/..).
  - In the operating field OC-TOP activate key 10, TE.
  - Select parameter 700 „Needle position 0“ on the programming level B (mechanical level).
  - Push pedal forward once.
  - Turn hand-wheel forward and position the tip of the needle exactly on the upper edge of the needle plate.
  - Push pedal forward once again.
  - Deactivate key 10, TE.
  - Start sewing procedure.

3.10 Information for ordering the required materials

Gemini T Printer

Supplier: Dalektron GmbH
Hainer Chaussee 55
63303 Dreieich
Telephone: 06103/86051, Telefax: 06103/88976

- Label 45 mm x 155 mm
  In rolls, Tyvek permanent with heat transfer foil, Order-No. AA-300-050-SW
- Label 90 mm x 48,8 mm
  In rolls, Tyvek permanent with heat transfer foil, Order-No. AA-300-090-SW
- Label 90 mm x 35,5 mm
  In rolls, Tyvek permanent with heat transfer foil, Order-No. AA-300-090-SW

Seiko Smart Label Printer 220

Supplier: Inmac Micro Warehouse
Postfach 1280
65433 Flörsheim
Telephone: 0180/5237266, Telefax: 0180/5228229

- Label 28 mm x 89 mm, Inmac-No.: B-AC 7460

3.11 Parameter adjustments on the PFAFF 3715-2/..

On the control panel the paramaters can be adjusted on the display.

Group	Parameter	Meaning	Adjustm. range	Standard setting
2	205	Max. speed in Docu-Seam-Area	100 - 2000	1500
	221	Max. speed for sewing program	300 - 6400	2000
6	607	Max. speed	100 - 10 000	3200
	683	Docu-seam-controlling yes / no I = yes (selection slider F2 must be positioned on Docu seam) If these conditions are not fullfilled, a watchdog function is blocking the machine, a sewing operation is not possible.		I
		II = no (selection slider F2 must be positioned on Min/Max, Test seam, Monitor or Thread force. The machine can be used completely independent on the Docu-Seam-System		
9	991	Windows-M, default	0 - 239	217
	992	Windows-K, default	0 - 239	85

Because of process security watch the parameter 683!

For information please see instruction manual of motor manufacturer.

3.12 Examples of seam programming

3.12.01 PFAFF 3715-1/..

The seam to be programmed should have
- 3 seam areas and
- be stored with the comment „docu“
- under program number 7.

- Call up the operation mode ENTER

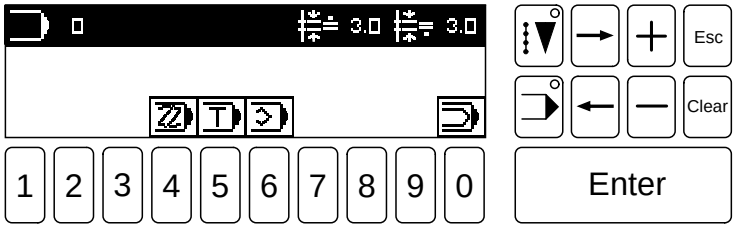


Fig. 3 - 10

- Call up the function Programming (Number key 4)

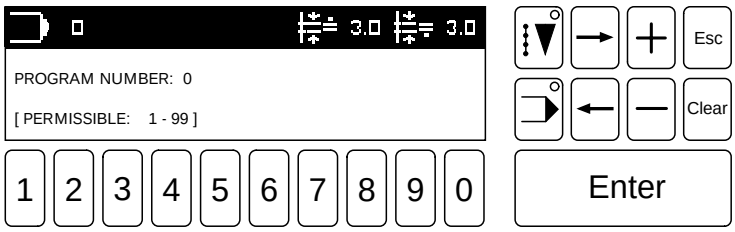


Fig. 3 - 11

7

- Enter programm number 7.

Enter

- Confirm input with Enter key.
  (Display appears for entering comment).

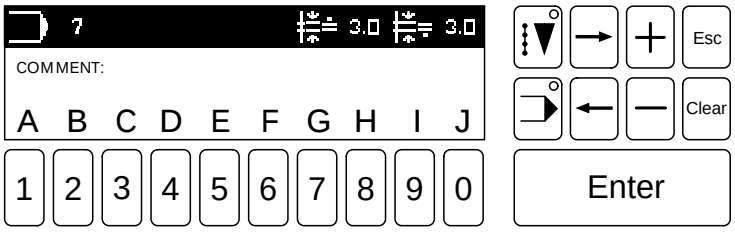
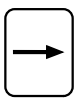


Fig. 3 - 12

4

- Select letter D.



- Press right arrow key.

5

- Select letter O.

- Complete comment using the above method.

Enter

● Confirm input with Enter key.

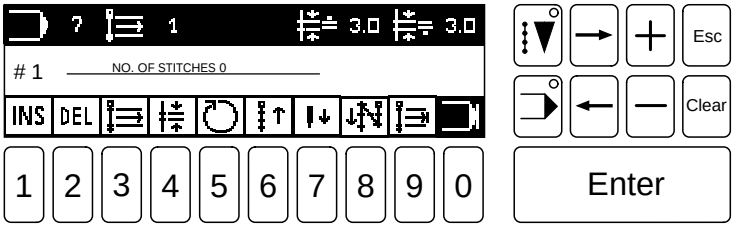


Fig. 3 - 13

● Program the first seam area (before the docu-seam)

The seam area should have
- stitch count (20 stitches)
- and a stitch length of 2.5 mm (for roller presser and wheel feed).

● Call up the function stitch length (Number key 4).

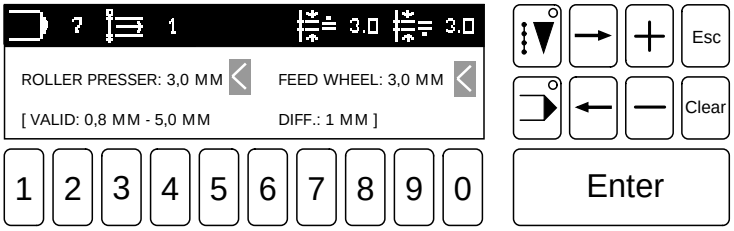


Fig. 3 - 14

The input is used for both stitch lengths. If different values have to be entered, the roller presser and the wheel feed have to be selected with the use of the arrow keys. Pay attention to the cursor.

3 5

● Insert the desired stitch length.

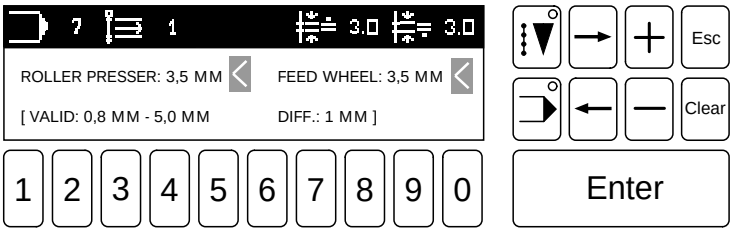


Fig. 3 - 15

Enter

● Confirm stitch length input with Enter key.

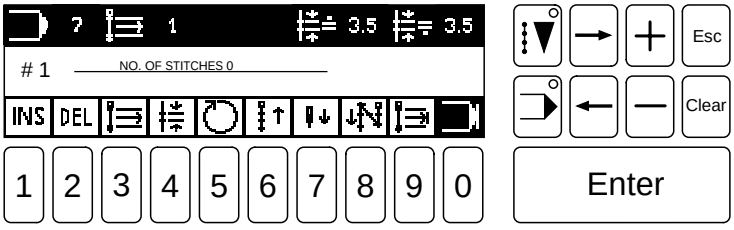


Fig. 3 - 16

- Call up the function End of seam area (Number key 9).

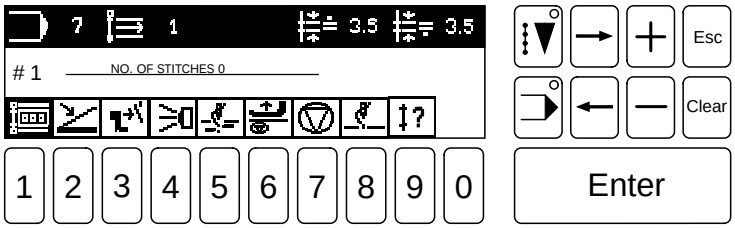


Fig. 3 - 17

- The function stitch counter is already switched on (inverse). By operating the function (Number key 1) the menu for the input of the number of stitches is opened.

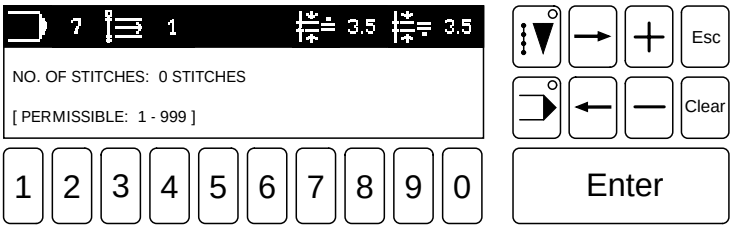


Fig. 3 - 18

2 0

- Enter the desired number of stitches.

Enter

- Confirm input with Enter key.

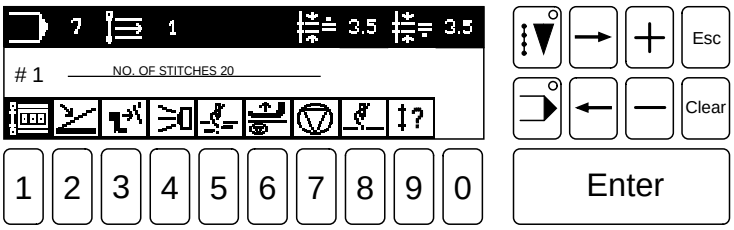


Fig. 3 - 19

Enter

- Close the menu, end of seam area, with Enter key.

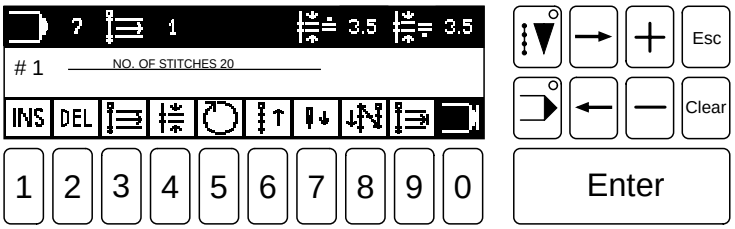


Fig. 3 - 20

- To program the second seam area, switch off the function End of program (Number key 0).

Enter

- Press Enter key to teach in the first seam area.

● Program the second seam area (docu-seam area):

In the seam area
- the stitch length should be 5.0 mm
- the automatic stop function should carry out a stitch count (20 stitches)
- the speed should be reduced to 1500 min^{-1}
- and the seam area should be recorded.

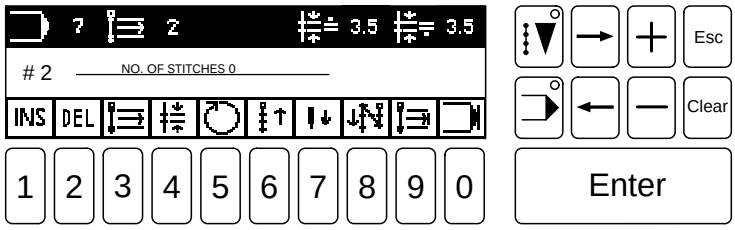


Fig. 3 - 21

● Call up the function stitch length.

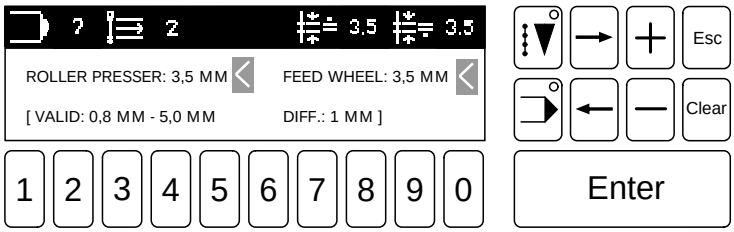


Fig. 3 - 22

5 0

● Enter value for the stitch lengths.

Enter

● Confirm input with Enter key.

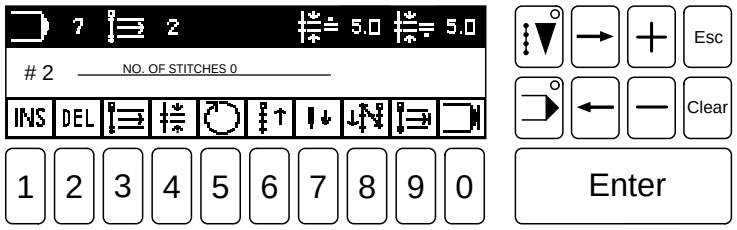


Fig. 3 - 23

● Call up the function for end of seam area (Number key 9).

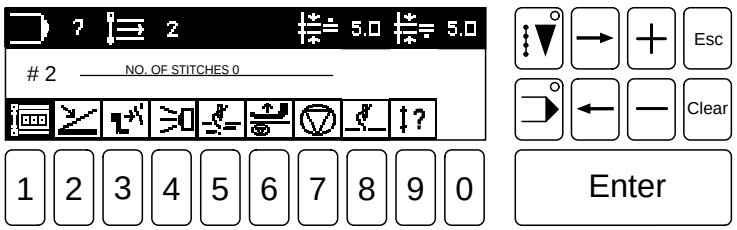


Fig. 3 - 24

● Call up the menu for entering the number of stitches (Number key 1).

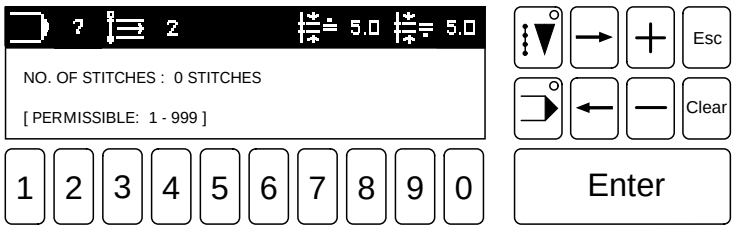


Fig. 3 - 25

2 0 ● Enter desired number of stitches.

Enter ● Confirm number of stitches with Enter key.

● Switch on the function Docu-seam area.

● Switch on the function Stop.

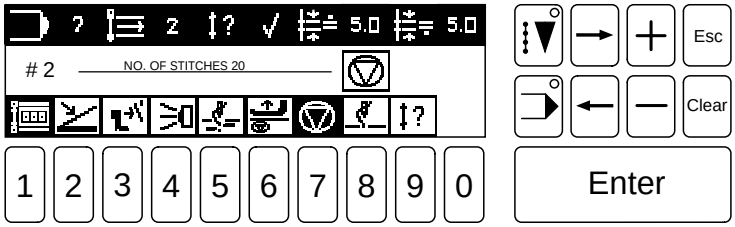


Fig. 3 - 26

Enter ● Press Enter key to teach in the end of the seam area.

● Call up the function Speed.

1 5 0 0 ● Enter desired speed.

Enter ● Confirm speed with Enter key.

Enter ● Press Enter key to teach in the second seam area.
The computer jumps to the input for the third seam area.

- Program the third seam area (docu-seam area):

The seam area should have
- a stitch count function (20 stitches),
- a stitch length of 2.5 mm (for roller presser and feed wheel)
- and a thread trimmer at the end of the seam area.

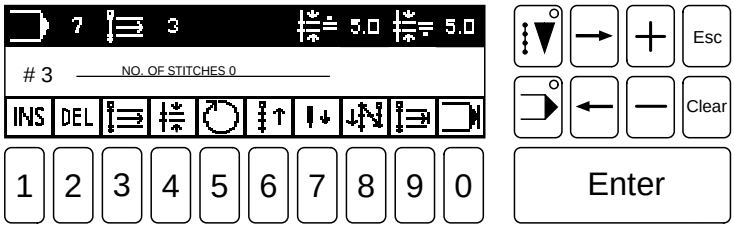


Fig. 3 - 27

- Call up the function stitch length (Number key 4).

2 5

- Enter value for the stitch lengths.

Enter

- Confirm input with Enter key.

- Call up the function for end of seam area (Number key 9).

- If the stitch counter function is not switched on, switch on the function (Number key 1).

- Select the stitch counter function once again to open up the menue for input.

2 0

- Enter number of stitches.

Enter

- Confirm number of stitches with Enter key.

- Switch on the Trim thread function (Number key 5).

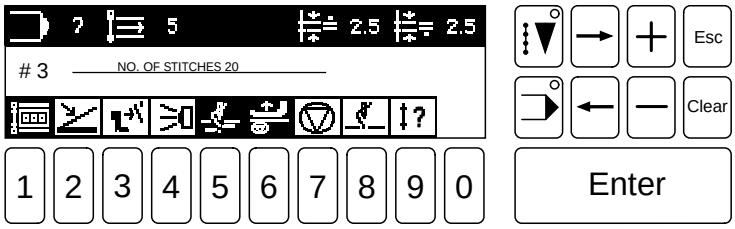


Fig. 3 - 28

Enter

- Press Enter key to teach in the end of the seam area.

- Call up the End of program function.

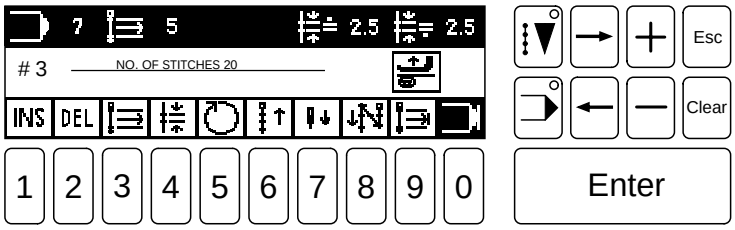


Fig. 3 - 29

Enter

- Press Enter key to save the seam programm.

3.12.02 PFAFF 3715-2/..

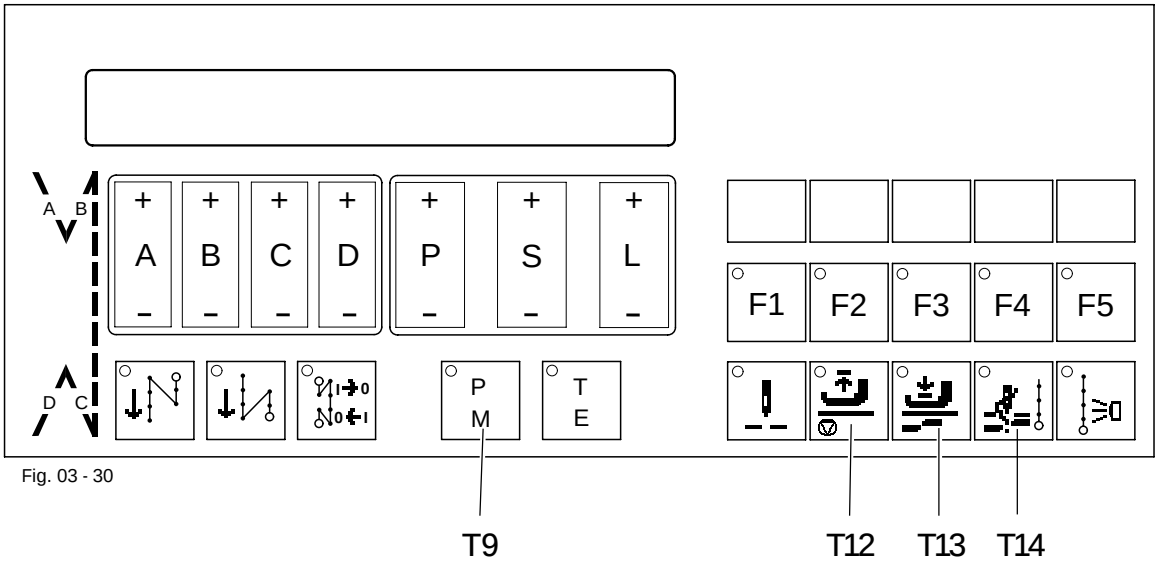


Fig. 03 - 30

Programming „before the docu-seam area“

- Switch on mains switch;
- Key T9 on; PM-LED is on
- P +/- on 1; Program start on program number 1
- D +/- on 2; Switching program 1 to program 2
- A +/- on 2000; Speed = 2000 min^{-1}
- S +/- on 1; Select seam section 1
- L +/- on 20; Enter 20 as number of stitches
- Press F1; LED on, i.e. forward to next program without a stop
- S +/- on 2; Select seam section 2
- L +/- on 0; Program 1 finished, move to program 2
- S +/- on 0; Program combination, L +/- on 1

Programming „in the docu-seam area“

- P +/- on 2; Program 2 selected
- D +/- on 3; Switching program 2 to program 3
- A +/- on 1500; Speed = 1500 min^{-1}
- S +/- on 1; Select seam section 1
- L +/- on 20; Enter 20 as number of stitches
- Press F5; LED on, call up second level of the F-keys
- Press F1; LED on, docu-seam area activated
- Press F5; F5 blinks, F1 LED off, i.e. machine stops
- Press T12; LED on, lift foot
- S +/- on 2; Select seam section 2
- L +/- on 0; Program 2 finished, move to program 3
- S +/- on 0; Program combination, L +/- on 1

Programming „after the docu-seam area“

- P +/- on 3; Program 3 selected
- D +/- on 1; Return to program 1
- A +/- on 2000; Speed = 2000 min^{-1}
- S +/- on 1; Select seam section 1
- L +/- on 20; Enter 20 as number of stitches
- Press T14; LED on, trim thread
- Press T13; LED on, lift foot, end of seam
- S +/- on 2; Select seam section 2
- L +/- on 0; Program 3 finished, move to program 1
- S +/- on 0; Program combination, L +/- on 1
- Return to programm begin No. 1 by pressing P-key

If seams with more than 255 stitches are to be programmed, the appropriate number of seam sections have to be selected. For docu-seams with more than 255 stitches, each additional seam section must be entered with the key sequence F5, F1, F5 (docu-seam activated).

3.13 General information on seam programming on the PFAFF 3715-1/..

To achieve the best possible seam quality, please observe the following information.

- As the thread force values are dependent on the speed, it is useful to avoid changes in speed within the docu-seam area. This enables a better tolerance for the limit values and the number of seams classified as good increases.
- The speed should be reduced 5 stitches before the docu-seam area.
- If a docu-seam is classified as poor, the sewing procedure can be ended or interrupted by switching over to manual sewing. To quit the error indication and to be able to sew manually, the Number key 1 must be operated.
- If the sewing procedure is to be started at certain seam sections, the sewing positions and program positions must coincide. If necessary the program must be set at the required starting point manually.

3.14 General information on seam programming on the PFAFF 3715-2/..

To achieve the best possible seam quality, please observe the following information.

- As the thread force values are dependent on the speed, it is useful to avoid changes in speed within the docu-seam area. This enables a better tolerance for the limit values and the number of seams classified as good increases.
- The speed should be reduced 5 stitches before the docu-seam area.
- The machine stop after the docu-seam must be programmed. The machine then stops 3 stitches after the end of the docu-seam.
- Label printing takes place, if necessary the label can be sewn in.
- The next seam program can only take place after this procedure.
- In the case of manual sewing the docu-seam can be switched on and off by using the knee switch.
- If a docu-seam is classified as poor, the sewing procedure can be ended or interrupted by switching over to manual sewing. The key S+ on the operating panel has to be pressed (to quit the error signal).
- If the sewing process is to be started at certain seam sections, the sewing positions and program positions must coincide. If necessary the program must be set at the required starting point manually.
- Additional symbols on the Quick operating panel
  On the LCD matrix following signs appear at the postion „/“:

X	Docu-seam area activated
!	Error in docu-seam
o	No watchdog function, machine-PC communication is interrupted.
m	Manual sewing within a programmed seam, activated by T4 (F4). Switching to the next programme takes place by pressing the foot pedal fully backwards (Position 2-).
Error 9	Watchdog is missing when the machine stops in docu-seam area Corrective action: Re-start of the docu-seam programme
Error 92	Watchdog is missing in the docu-seam area during machine operation Corrective action: Switch off main switch and switch on again.

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