

PicoDrive P45 PD2-L

EcoDrive P74 ED-L

INSTRUCTION MANUAL

This Instruction Manual is valid for drives
from the following software version on:

P45 PD2-L # 4_045_05 →
P74 ED-L # 1_074_08 →

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1 Safety

1.01 Directives

This sewing machine drive was built in accordance with the European regulations stated in the Conformity and Manufacturer's Declaration.

In addition to this Instruction Manual, please also observe all generally accepted, statutory and other regulations and legal requirements – also those of the country of operation – and all valid environmental protection regulations! The applicable local regulations of the social insurance society for occupational accidents or other supervisory organisations must also be strictly adhered to!

1.02 General notes on safety

- Before unpacking and commissioning the sewing machine drive this Instruction Manual must be read carefully. Please become familiar with the safety, assembly, operating and maintenance regulations before you set the sewing machine drive, its accessories and attachments into operation for the first time.
- All work on an with the sewing machine drive may only be carried out in compliance with the following general and special safety notes in this Instruction Manual!
- All persons concerned must be aware of these safety notes and must comply with them. Non-compliance with the safety notes can lead to personal injury, damage to objects or to defects and damage to the sewing machine drive.
- The danger and safety warnings attached to the sewing machine drive must be observed!
- The sewing machine drive may only be operated with a protective earth conductor which is connected to a functioning protective system in accordance with all local provisions and regulations.
- The installation and commissioning of the sewing machine drive must be carried out carefully by properly trained personnel. The accident prevention regulations valid in the respective user country and the rules for safe and professional work must be observed.
- To reduce the risk of burns, fire, electric shock or injuries, the alteration or rebuilding of the sewing machine drive are not permitted under any circumstances.
- If additional equipment or appliances are attached to the control unit of the sewing machine drive, these may only be operated with low voltage produced by a safety transformer!
- The sewing machine drive may only be used for the purpose for which it is intended and must not be operated without its safety devices. All applicable safety regulations must be observed.
- Before the removal of covers, the fitting of additional attachments or accessories, such as speed control unit, light barrier etc., the sewing machine drive must be switched off and disconnected from the mains, and the sewing machine drive must have come to a standstill. The case of the control unit may only be opened after **10 minutes!**
- Before leaving the workplace, the machine must be switched off at the main switch. If the machine will be out of operation for a longer period, the mains switch should be disconnected, to protect the sewing machine drive from being switched on accidentally.

- Work is not permitted on parts and equipment which are connected to the power supply! Exceptions to this are contained in the regulations EN 50110.
- Repair work and special maintenance work must only be carried out by specialists or appropriately trained personnel!
- Only spare parts which have been approved by us are to be used for repairs! We expressly point out that any replacement parts or accessories not supplied by us have not been tested and approved by us. The installation and /or use of such products may result in negative changes to the constructional characteristics of the machine. We are not liable for any damage caused by non-original parts.

1.03 Safety and work symbols



Danger!
Points for particular attention



Danger of injury to operating or technical staff!



Dangerous voltage!
Danger of death for operating and technical staff!



Note, information

1.04 Important notes for the user

- This instruction manual belongs to the equipment of the sewing machine drive and must be available to the operating staff at all times. The instruction manual must be read before the equipment is operated for the first time.
- Both operating and technical staff must be instructed on the safety devices of the sewing machine drive and on safe working methods.
- It is the duty of the user to operate the sewing machine drive in perfect running order only.
- The user must ensure that none of the safety devices are removed or put out of working order.
- The user must ensure that only authorized persons work on the sewing machine drive.

For further information please contact your PFAFF agency.

1.05 Operating and technical staff

1.05.01 Operating staff

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

The operating staff is obliged to observe the following points:

- For all work the notes on safety in this Instruction Manual must always be observed!
- Any working methods, which adversely affect the safety of the machine, must be avoided!
- Any changes occurring on the sewing machine drive, which may affect its safety, must be reported to the user immediately!

1.05.02 Technical staff

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

The operating staff is obliged to observe the following points:

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

1.06

Notes on danger



Only operate the sewing machine drive with a protective earth conductor connected to a functioning protective system in accordance with all local regulations and directives! Danger of electric shocks!



Do not disconnect the protective earth conductor!
Do not neutralize the protection by using extension lines without a protective earth conductor!
Danger of electric shocks!



Never operate the sewing machine drive if the air vents are clogged!
Danger of damage to the sewing motor!
Remove threads, fluff, dust etc. from the air vents.



Do not stick or drop any objects, e.g. needles, in the openings!
Danger of damage to the sewing machine drive!



Do not place fingers near moving parts! Danger of injury!



Do not operate the sewing machine drive if aerosols (sprays) or oxygen have been used! Danger of explosions!

2

Proper use

The sewing machine drives **P45 PD2-L** and **P74 ED-L** are not machines which are ready for use. They are intended for installation in machines for the sewing thread processing industry, which are operated in clean, dry rooms.



Any and all uses of this machine, e.g. use outdoors or in a wet environment, or where there is a risk of explosion, which have not been approved by the manufacturer, are considered to be inappropriate! The manufacturer cannot be held liable for any damage caused by inappropriate use! The appropriate use includes the observance of all operational, adjustment, maintenance and repair measures specified by the manufacturer!

3 Specifications[▲]

Rated values

Voltage:	230 V, single-phase
Frequency:	50/60 Hz
Current for drive:	5.0 A
Current for control unit:	0.6 A
Power output:	550 W
Speed:	4000 min ⁻¹
Torque:	1.2 Nm
Moment of inertia of motor (without belt pulley):	1.0 kgcm ²
Operating mode:	S5 (40% rel. on-time for 2.5 s runtime)
Protection system:	IP40
Insulation class:	E

Limit values

Rated voltage range:	180 – 260 V, single-phase
Max. motor speed:	4500 min ⁻¹
Max. torque (short time):	7.0 Nm
Max. power output (short-time):	1500 W
Moment of inertia of machine (reduced to motor shaft):	9.0 kg cm ²



Before connecting the sewing machine drive make sure that the mains voltage is in the specified rated voltage range.

Operating requirements

Ambient temperature:	+5 to +45° C
Average ambient temperature (over 24 hours):	<35° C
Relative humidity:	.85% at 30° C

External control elements

Voltage with engine idling:	25 V
Voltage under load:	24 V at 4A / 20 V at 10 A (short-time)
Output:	
P45 PD2-L	.96W / 200 W (short-time)
P74 ED-L	192 W / 400 W (short-time)
Load current:	4 A
Max. load current (short-time):	10 A



The sum of the load currents of all simultaneously activated control elements must not continuously exceed 4 A .

Weights

Net weight (drive complete with all accessories):	approx. 9 kg
Gross weight:	approx. 11 kg

[▲] Subject to alteration

4

Disposal

- Proper disposal of the sewing machine drive is the responsibility of the customer.
- The materials used for the sewing machine drive are steel, aluminium, brass and various plastic materials. The electrical equipment comprises plastic materials and copper.
- The sewing machine drive must be disposed of according to the locally valid pollution regulations. If necessary, a specialised company should be commissioned.



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

5 Transportation packing and storage



The sewing machine drive can be transported and stored at temperatures in the range from **-25** to **+55 ° C**. For a period of less than 24 hours temperatures up to **+70° C** are permitted.

5.01 Transportation to the customer's premises

The sewing machine drives are delivered completely packed.

5.02 Transportation inside the customer's premises

The manufacturer cannot be made liable for transportation inside the customer's premises or to the other operating locations.

5.03 Disposal of packing materials

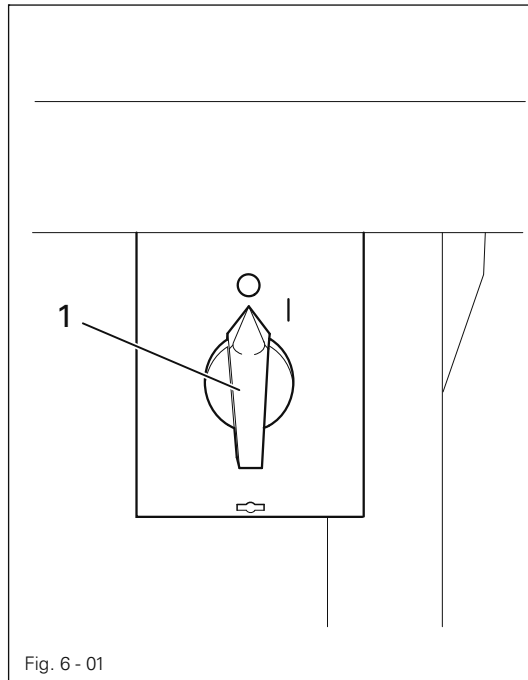
The packing materials for this sewing machine drive comprise PVC, cardboard and styrofoam. Proper disposal of the packing material is the responsibility of the customer.

5.04 Storage

When the machine is not in use, it can be stored in its packing in a dry environment. If the sewing machine drive is stored for longer periods, the individual parts, in particular the surfaces of moving parts, must be protected against corrosion, e.g. with a film of oil.

6 Control elements

6.01 Main switch



- Turn main switch 1 to switch the power supply of the sewing machine drive on or off.

Fig. 6 - 01

6.02 Control panel

The control panel is used to display and call up the machine functions for setting up and for sewing operation, for entering parameter values and for reading error messages and service settings.

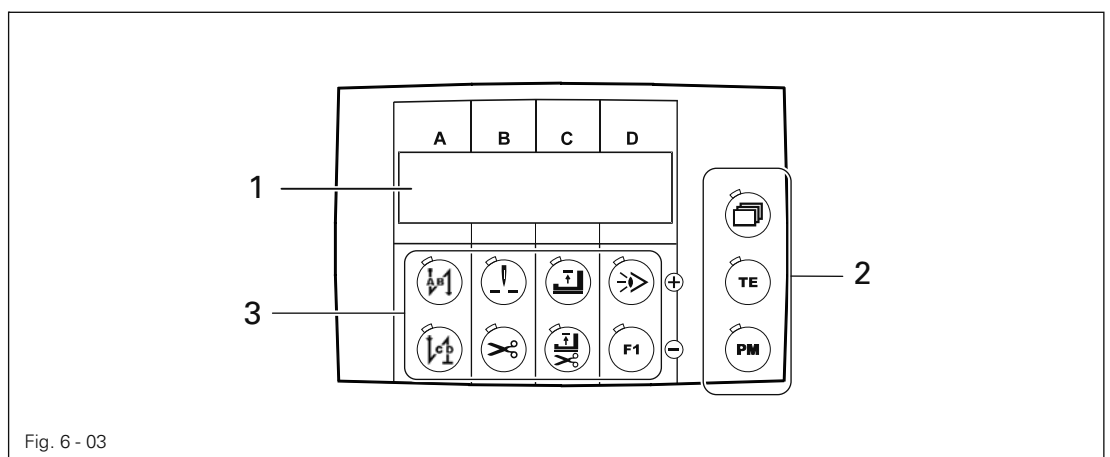


Fig. 6 - 03

The control panel has the following operating and display elements:

- The display 1 consists of a one-line display with an 8-figure LCD-matrix and is used to show appropriate information and selection parameter.
- The selection keys 2 are used to change the screen display, to switch the function keys and to select the operating mode (**manual / programmed sewing**).
- The function keys 3 below the display are used to switch the appropriate functions on or off, depending which key is selected, or to change the values of the appropriate setting range (A, B, C or D).

6.02.01 Selection keys

The functions of the selection keys **2** are described in detail below:



Scrolling

- This selection key is used to change between the different menus shown on the display. The selection of the menu and the setting values shown depend on the selection of the operating mode, also see Chapter 9.01 **Manual sewing** or Chapter 9.02 **Programmed sewing**.
- Press this selection key to acknowledge the correction of an error, see Chapter 8.03 **Error messages**.



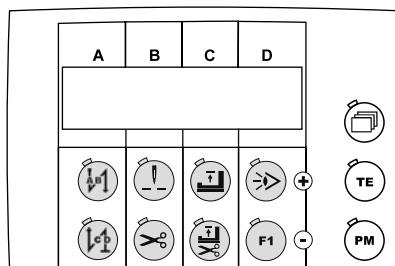
TE / input

- This selection key is used to switch the function keys **3**, also see Chapter 6.03.02 **Function keys**:

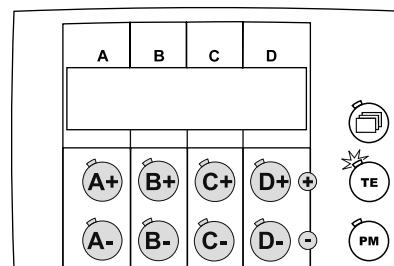
When this function is switched off (**LED off**), the appropriate sewing function can be switched on or off with the function keys **3**.

When this function is switched on (**LED on**), the set values of the appropriate setting ranges (**A**, **B**, **C** and **D**) can be altered.

TE / input off



TE / input on



PM / operating mode

- Press this selection key to switch between manual sewing and programmed sewing. When the LED is illuminated, the programmed sewing mode is activated.

6.02.02 Function keys

The function keys **3** described below generally have two basic functions:

- To switch the sewing function on or off (**LED** in the "TE/Input" key is **off**)
An activated function is always shown by the corresponding illuminated LED.
- To alter the set values shown on the display (**LED** in the "TE/Input" key is **on**)
Press and hold the appropriate function key to slowly change the set value shown above it. If the function key is pressed longer, the set value changes more quickly.

Description of the individual functions:

**Start bartack / A+**

- If the "TE / Input" key is switched off, the bartacks at the beginning of the seam (start bartacks) are switched on or off, see Chapter **9.01.03 Entering bartack stitches**.
- If the "TE / Input key" is switched on, this function key serves as a plus function for the setting range (A).

**End bartack / A-**

- If the "TE / Input" key is switched off, the bartacks at the end of the seam (end bartacks) are switched on or off, see Chapter **9.01.03 Entering bartack stitches**.
- If the "TE / Input key" is switched on, this function key serves as a minus function for the setting range (A).

**Raised needle position after sewing stop / B+**

- If the "TE / Input" key is switched off, the "raised needle position after sewing stop" function is switched on or off. If the function is switched on, the needle positions in t.d.c. take-up lever after sewing stops
- If the "TE / Input key" is switched on, this function key serves as a plus function for the setting range (B).

**Thread trimming / B-**

- If the "TE / Input key" is switched off, the thread trimmer is switched on or off.
- If the "TE / Input key" is switched on, this function key serves as a minus function for the setting range (B).

**Raised foot position after sewing stop / C+**

- If the "TE / Input key" is switched off, the "raised foot position after sewing stop" function is switched on or off. If the function is switched on, the sewing foot is raised after sewing stops.
- If the "TE / Input key" is switched on, this function key serves as a plus function for the setting range (C).

**Raised foot position at end of seam sector / C-**

- If the "TE / Input key" is switched off, the "raised foot position at end of seam sector" function is switched on or off. If the function is switched on, the sewing foot is raised at the end of the seam sector.
- If the "TE / Input key" is switched on, this function key serves as a minus function for the setting range (C).



Sewing with light barrier / D+

- If the "TE / Input key" is switched off, the sewing with light barrier functions is switched on or off. When sewing with light barrier, the number of stitches entered corresponds to the light barrier compensation stitches.
- If the "TE / Input key" is switched on, this function key serves as a plus function for the setting range (D).



F1 / D-

- If the bobbin thread is monitored by stitch counting, the counter is reset after "Bobbin" is displayed on the monitor. Afterwards the next counting operation begins.
- If the "TE / Input key" is switched on, this function key serves as a minus function for the setting range (D-).
- For control unit **P45 PD2-L** other functions can be allocated to this key with parameter "488" (see Chapter 9.03 Parameter input).

7 Installation and commissioning



Only operate the sewing machine drive with a protective earth conductor connected to a functioning protective system in accordance with all local regulations and directives! Danger of electric shocks!



Do not disconnect the protective earth conductor!
Protection is neutralized by the use of extension lines without a protective earth conductor! Danger of electric shocks!



Before connecting the sewing drive make sure that the mains voltage is within the specified rated voltage range, see Chapter **3 Specifications**.



If the sewing machine drive was stored at temperatures below **+5° C**, it must reach ambient temperature before being operated.



The sewing machine drive may only be operated after establishing that the machine in which this sewing machine drive is to be installed, complies with the regulations of the EC-machine directives.



Never operate the sewing machine drive if the air vents are clogged!
Danger of damage to the sewing motor!
Remove threads, fluff, dust etc. from the air vents.

During installation and commissioning the appropriate Instruction or Set-up Manual for the sewing machine must be observed!

8 Sewing

In the sewing mode all settings, which are relevant for the sewing operation, are shown on the display. Functions can be switched on or off by pressing a key, set values for the most important parameters can be altered directly.



The "PM" selection key is used to choose between manual sewing (**LED** in the selection key is **off**) and programmed sewing (**LED** in the selection key is **on**).

8.01 Manual sewing

- Switch on the machine.

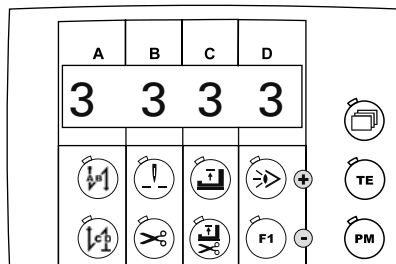


- Select manual sewing (**LED** in the selection key is **off**) by pressing the "PM" key.

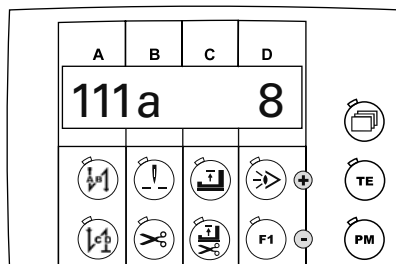


- By pressing the "scroll" key it is possible to choose one of the following display diagrams:

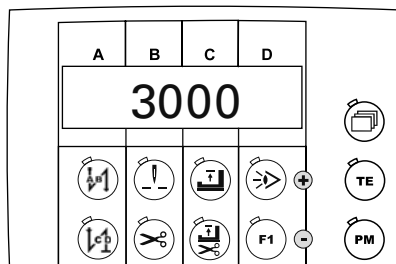
Start and end tacks



Parameters



Speed



When the machine is switched on, the display diagram, which was activated before the machine was switched off, always appears.

8.01.01 Switching the sewing functions on / off

- When the "TE / input" selection key is switched off, the sewing functions for manual sewing can be switched on or off. If a function is activated, the LED in the corresponding key is illuminated:



Start tacks on/off



Foot position raised after sewing stops on/off



End tacks on/off



Foot position raised at end of seam sector on/off



Needle position raised on/off



Light barrier on/off



Thread trimming on/off



Function on/off

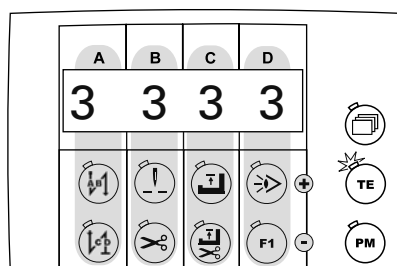
8.01.02 Altering the number of bartacks



- Call up the display diagram for the start and end bartacks (if necessary, press key several times).



- Switch on the "TE / input" function (**LED is illuminated**).



The number of bartack stitches are shown on the display, which can be altered as follows when the machine has stopped:



Increase the number of forwards stitches for start bartack (A+)



Increase the number of reverse stitches for the end bartack (C+)



Reduce the number of forwards stitches for start bartack (A-)



Reduce the number of reverse stitches for the end bartack (C-)



Increase the number of reverse stitches for start bartack (B+)



Increase the number of forward stitches for the end bartack (D+)



Reduce the number of reverse stitches for start bartack (B-)



Reduce the number of forward stitches for the end bartack (D-)

- Enter the set values for the start and end bartacks.

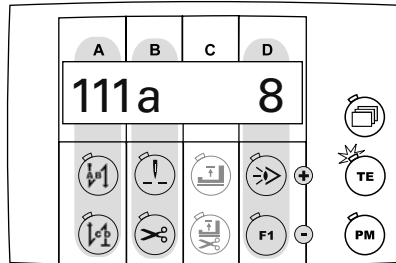
8.01.03 Selecting the parameter input



- Call up the display diagram for the parameters (if necessary, press the key several times).



- Switch on the "TE / input" function (**LED is illuminated**).



The first parameter with the corresponding set value is shown on the display.

The parameter selection and the alteration of the value can be carried out as follows:



Selecting the hundred figure of the parameter (A+)



Selecting the ten and unit figure of the parameter (B-)



Selecting the hundred figure of the parameter (A-)



Increase the set value of the parameter (D+)



Selecting the ten and unit figure of the parameter (B+)



Reduce the set figure of the parameter (D-)

- Select the parameter and alter the set value, see Chapter 9.03 Parameter input.

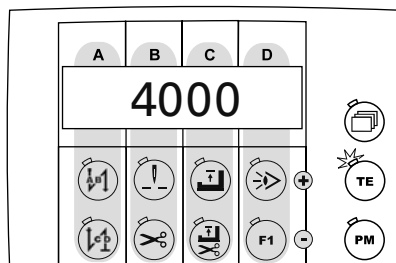
8.01.04 Selecting the maximum speed



- Call up the display diagram for the speed (if necessary, press the key several times).



- Switch on the "TE / input" function (**LED is illuminated**).



When the machine stops, the maximum speed is displayed and can be altered with the function keys in hundred steps.

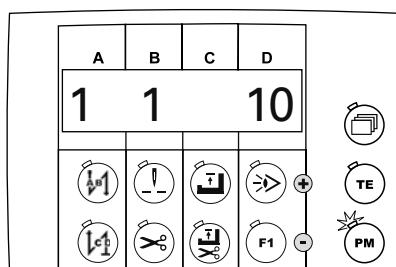


When the value for parameter "605" is set at "1", the actual machine speed appears on the display after sewing starts.

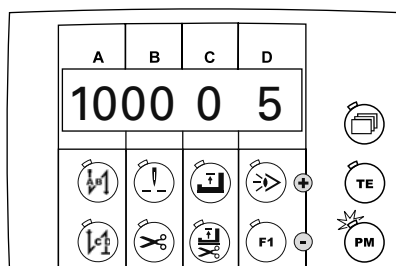
8.02 Programmed sewing

- Switch on the machine.
- Select programmed sewing (**LED** in the selection key is illuminated) by pressing the "PM" key.
- By pressing the "scroll" key it is possible to choose one of the following display diagrams:

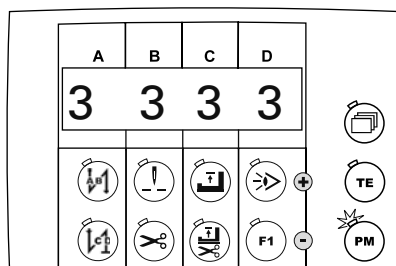
Seam program number, seam segment number and number of seam segment stitches



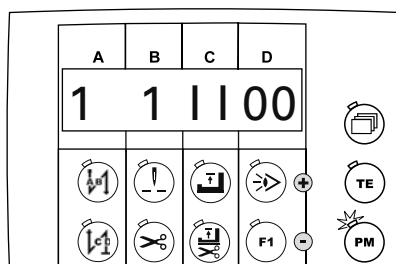
Seam program speed, seam program number of next program and number of seam segments



Start and end tacks











Seam program number, seam segment and special function





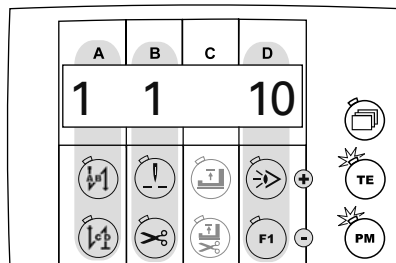
8.02.01 Switching the sewing functions on / off

When the "TE / input" selection key is **switched off**, the sewing functions for the current seam sector can be switched on or off. If a function is activated, the LED in the corresponding key is illuminated:





- | | |
|---|---|
|  Start tacks on/off |  Foot position raised after sewing stops on/off |
|  End tacks on/off |  Foot position raised at end of seam sector on/off |
|  Needle position raised on/off |  Light barrier on/off |
|  Thread trimming on/off |  Function on/off |

8.02.02 Selecting seam program, seam segment or number of seam segment stitches

-  Call up the display diagram for the seam program number, seam segment number and the number of the seam segment stitches (if necessary, press key several times).
-  Switch on the "TE / input" function (**LED is illuminated**).



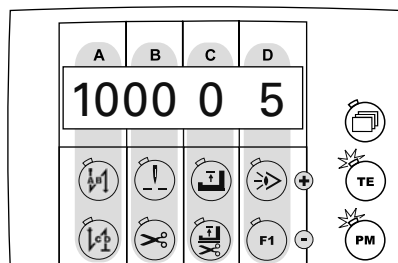
The corresponding set values are shown on the display and can be altered as follows:

- | | |
|--|---|
|  Select the seam program (A+) |  Select the seam segment (B-) |
|  Select the seam program (A-) |  Increase the number of seam segment stitches (D+) |
|  Select the seam segment (B+) |  Reduce the number of seam segment stitches (D-) |









- Enter the set values accordingly.

8.02.03 Selecting the speed, next program and number of seam segments

- Call up the display diagram for the speed, the next program and the number of seam segments (if necessary, press key several times).
- Switch on the "TE / input" function (LED is illuminated).



The corresponding set values are shown on the display and can be altered as follows:

- | | |
|--|--|
|  Alter the speed (A+) |  Select the next program (C+) |
|  Alter the speed (A-) |  Select the next program (C-) |
|  Alter the speed (B+) |  Alter the number of seam segments (D+) |
|  Alter the speed (B-) |  Alter the number of seam segments (D-) |

- Enter the set values for the start and end bartacks..

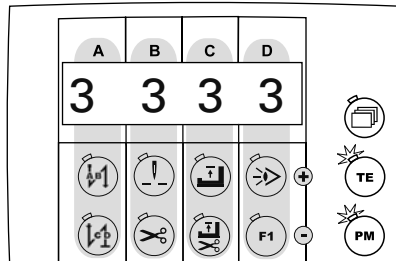
8.02.04 Altering the number of bartacks



- Call up the display diagram for the start and end bartacks (if necessary, press key several times).



- Switch on the "TE / input" function (**LED is illuminated**).



The number of bartack stitches are shown on the display, which can be altered as follows when the machine has stopped:



Increase the number of forwards stitches for start bartack (**A+**)



Increase the number of reverse stitches for the end bartack (**C+**)



Reduce the number of forwards stitches for start bartack (**A-**)



Reduce the number of reverse stitches for the end bartack (**C-**)



Increase the number of reverse stitches for start bartack (**B+**)



Increase the number of forward stitches for the end bartack (**D+**)



Reduce the number of reverse stitches for start bartack (**B-**)



Reduce the number of forward stitches for the end bartack (**D-**)

- Enter the set values for the start and end bartacks.

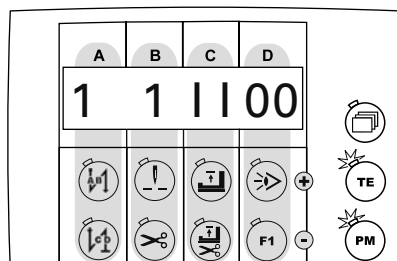
8.02.05 Special functions



- Call up the display diagram for the special functions (if necessary, press key several times).



- Switch on the "TE / input" function (LED is illuminated).



The special functions together with the corresponding seam program and seam segment are shown on the display:



Select the seam program (A+)



Stop at seam end on/off (C+)



Select the seam program (A-)



Constant speed on/off (C-)



Select the seam segment (B+)



Feed changeover on/off (D+)



Select the seam segment (B-)

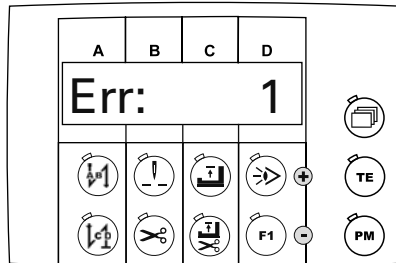


Manual seam segment on/off (D-)

- Enter the set values, see Chapter 9.01.04 **Entering the special functions**.

8.03 Error messages

When an error occurs, the text "Err:" appears on the display together with an error code, as shown in the example below. An error message can be caused by incorrect settings, defective elements or overload conditions.



- Eliminate error.
- If necessary, acknowledge error elimination.

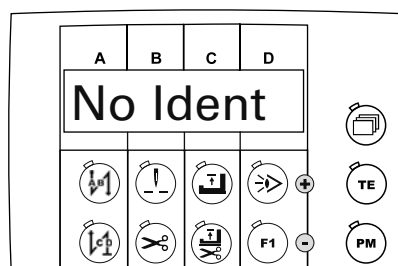
8.03.01 Description of the error messages

Error-code	Cause	Remedy
Err: 1	Pedal not in rest position	Check pedal
Err: 9	Start inhibitor at standstill	Bring sewing head to its basic position (Check parameter "665")
Err: 10	Machine class altered	Switch control unit off, then on again.
Err: 14	Bobbin cover open	Close bobbin cover
Err: 62	Voltage of power supply unit (24 V) too low	Check connected consumers
Err: 63	Power supply unit (24 V) overloaded	Check connected consumers
Err: 64	"Mains off" signal when machine is switched on	Contact service
Err: 65	IGBT error when machine is switched on	Contact service
Err: 66	IGBT test with error recognition	Contact service
Err: 68	Overcurrent motor during operation	Contact service
Err: 70	Motor blocking	Check machine for binding

Error-code	Cause	Remedy
Err: 71	Incremental transmitter of motor not connected	Check plug of incremental transmitter
Err: 73	Faulty running of motor (set rotation speed not reached)	Check machine for binding
Err: 74	No synchronisation impulse from sewing head	Check transmitter
Err: 92	Start inhibitor running during drive	Check end switch
Err: 173	Motor not connected	Check motor connection

8.03.02 Error messages for sewing head recognition unit (only on EcoDrive P74 ED-L)

The sewing head recognition unit is an external component, in which the corresponding parameters for the sewing machine are filed. Following messages can appear on the display:





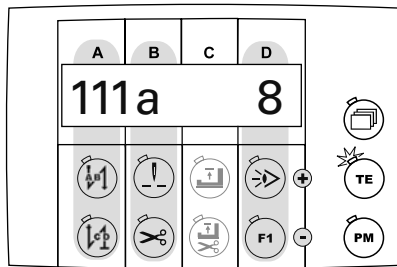
Error code	Cause	Remedy
No Ident	No sewing head recognition unit recognized when machine switched on	Replace sewing head recognition unit
New Ident	A new sewing head recognition unit was installed	Select and confirm machine class (under Parameter 799)
ILLIdent	Sewing head recognition unit and software do not match	
CRC bad	Test sum of sewing head recognition unit inaccurate	Replace sewing head recognition unit
BadIdent	Sewing head recognition unit defective	Replace sewing head recognition unit







8.04 Bobbin thread monitor

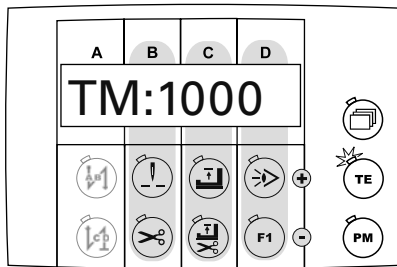


The adjustment of the bobbin thread monitor is carried out with parameters "660", "727" and "760" (760 only on P74 ED-L), see Chapter 9.03 Parameter input.








- Switch on the machine.
- 
 - Call up the display diagram for the parameters (if necessary, press key several times).
- 
 - Switch on the "TE / input" function (LED is illuminated).

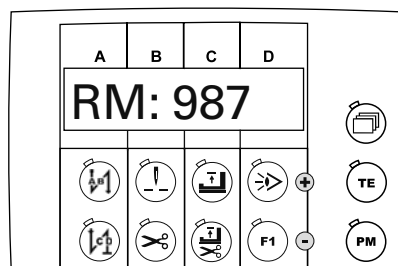


- 

 - Select parameter "660".
- 

 - Enter set value "2".
- 

 - With the scroll function call up the following display diagram ("TM" = Thread Monitor)



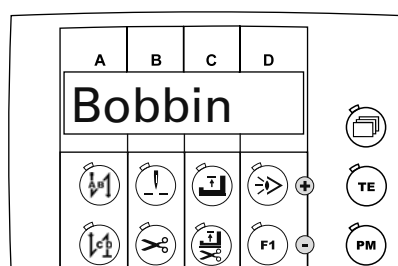
- Press the corresponding function keys to set the number of stitches, which can be sewn with a filled bobbin.

- 

 - Function keys for selecting the thousand figure of the parameter..
- 

 - Function keys for selecting the hundred figure of the parameter.
- 

 - Function keys for selecting the ten figure of the parameter.
- 
 - Switch off the "TE / input" function (LED is off).



- Reset the stitch counter by operating the "F1-key".
The number of remaining stitches till bobbin change appears on the display.

Depending on the drive unit and parameter setting, the following message appears on the display after the number of remaining stitches have been sewn:



The machine positions and the LED in the function key "F1" flashes.

- Press pedal all the way forwards twice and finish sewing the current seam.
- Trim thread at end of seam.
- Change bobbin case.



- Acknowledge message and reset stitch counter.

9 Input

9.01 Seam programming



The display diagrams shown below serve as an example for the corresponding input possibilities. The set values described on the machine may differ from these.



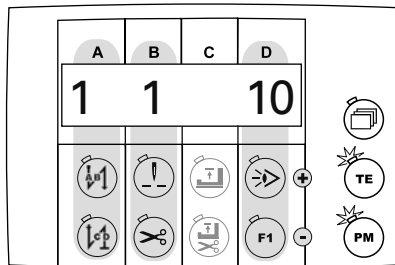
- Switch on the machine.

- Select programmed sewing function by pressing the "PM" key (LED on the selection key is illuminated).



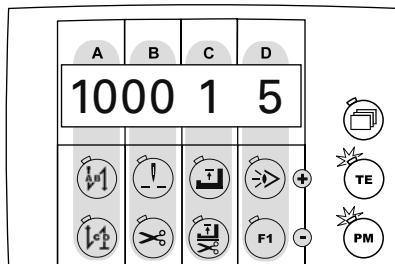
- Switch on the "TE / input" function (LED is illuminated).

The set values for seam program number, seam segment number and number of seam segment stitches appear on the display.

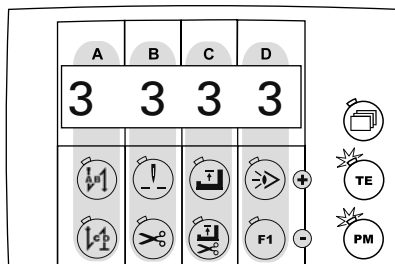


- Further set values can be called up as follows by pressing the selection key "scroll":

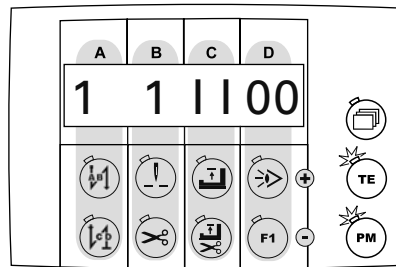
Seam program speed, seam program number of next program and number of seam segments



Start and end bartacks



Seam program number, seam segment and special function



- The set values can be adjusted in each case by pressing the corresponding function keys.

9.01.01 Selecting the seam program number and seam segment

- Switch on the machine.



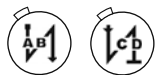
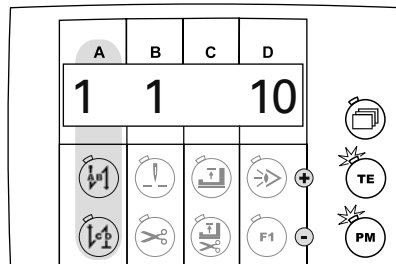
- Select programmed sewing function by pressing the "PM" key (LED on the selection key is illuminated).



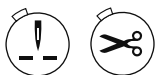
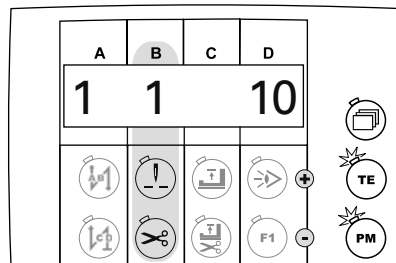
- Switch on the "TE / input" function (LED is illuminated).



- Press the selection key until the seam program number appears on the display together with the seam segment number and the number of seam segment stitches.



- Select the seam program number with the corresponding function keys. Up to 5 different seam programs can be selected.



- Select the seam segment with the corresponding function keys.



- If necessary select further set values

or



- "Switch off the "TE / input" function (LED is off).

9.01.02 Entering the speed, next program and number of seam segments

- Switch on the machine.



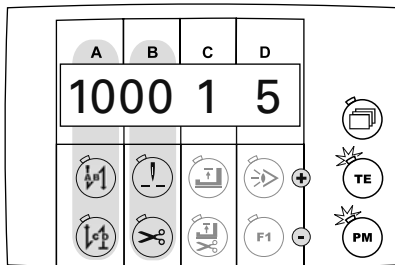
- Select programmed sewing function by pressing the "PM" key (LED on the selection key is illuminated).



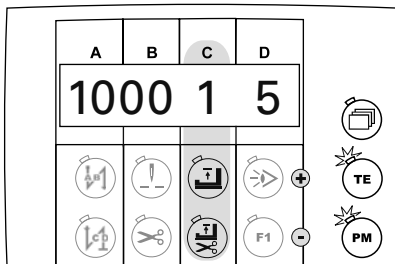
- Switch on the "TE / input" function (LED is illuminated).



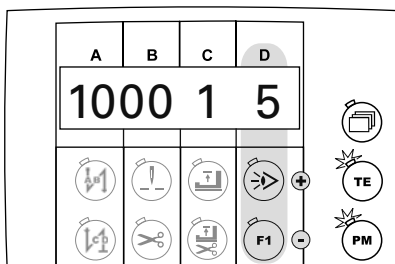
- Press the selection key until the display for entering the speed, the next program and the number of seam segments appears on the screen.



- Select the desired speed for the current seam program with the corresponding function keys.



- Select the seam program number for the desired next program with the corresponding function keys. The next program is called up automatically after the current seam program has been completed.



- Specify the number of seam segments in the current seam program with the corresponding function keys. Up to 9 seam segments can be defined for each seam program.



- If necessary select further set values

or



- "Switch off the "TE / input" function (LED is off).

9.01.03 Entering bartack stitches

- Switch on the machine.



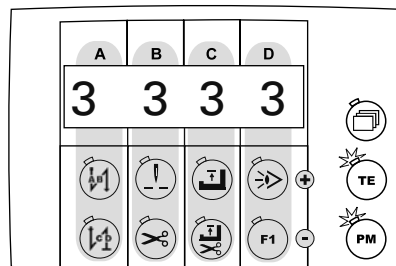
- Select programmed sewing function by pressing the "PM" key (LED on the selection key is illuminated).



- Switch on the "TE / input" function (LED is illuminated).



- Press the selection key until the display for entering the bartack stitches appears on the screen.



- Select the desired number of stitches for each case with the corresponding function keys.



Number of forward stitches for the start bartack (setting range A)



Number of reverse stitches for the start bartack (setting range B)



Number of reverse stitches for the end bartack (setting range C)



Number of forward stitches for the end bartack (setting range D)



- If necessary select further set values

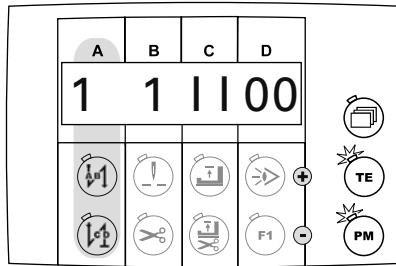
or



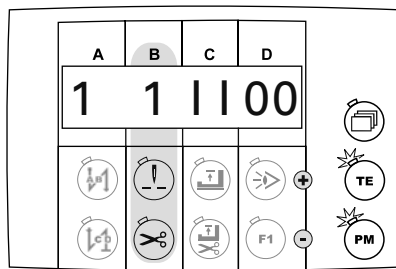
- "Switch off the "TE / input" function (LED is off).

9.01.04 Entering special functions

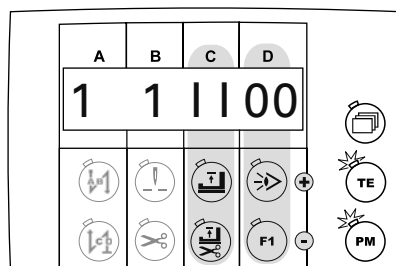
- Switch on the machine.
- Select programmed sewing function by pressing the "PM" key (LED on the selection key is illuminated).
- Switch on the "TE / input" function (LED is illuminated).
- Press the selection key until the display for entering special functions appears on the screen.




- If necessary, select the desired seam program with the corresponding function keys (setting range A).




- If necessary, select the desired seam segment with the corresponding function keys (setting range B).



- Allocate the desired special functions with the following function keys for the selected seam segment (setting range C + D).

 Switching the "stop at end of seam" function on/off (1 = on; 0 = off)
If the function is switched on, the machine stops automatically at the end of the selected seam segment.

 Switching the "constant speed" function on/off (1 = on; 0 = off)
If the function is switched on, the selected seam segment is sewn constantly at the selected speed. If the function is switched off, the appropriate pedal setting is used for the adjustment until the set speed is reached.



Switching the feed changeover function on/off (1 = on; 0 = off)

If the function is switched on, the feed unit is switched at the end of the selected seam segment.



Switching the manual seam segment on/off (1 = on; 0 = off)

If the function is switched on, the selected seam segment is sewn without stitch counting. The end of the seam segment is called up with the pedal function.



- Select further set values

or



- "Switch off the "TE / input" function (LED is off).

9.01.05 Entering the seam segment stitches

- Switch on the machine.



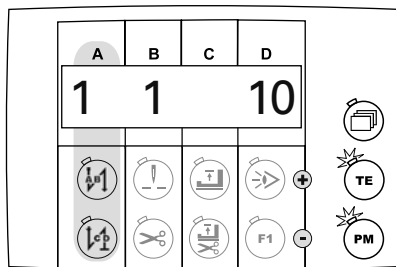
- Select programmed sewing function by pressing the "PM" key (LED on the selection key is illuminated).



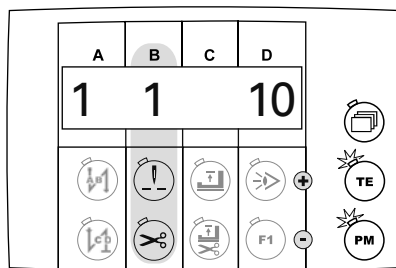
- Switch on the "TE / input" function (LED is illuminated).



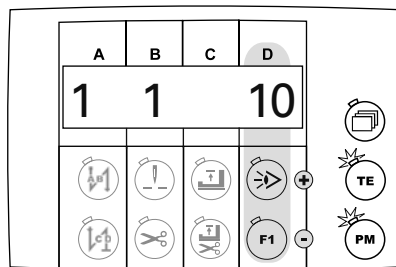
- Press the selection key until the seam program number appears on the display together with the seam segment number and the number of seam segment stitches.



- If necessary, select the seam program number with the corresponding function keys.



- Select the desired seam segment with the corresponding function keys.



- Enter the desired number of seam segment stitches for the selected seam segment with the corresponding function keys. A maximum of **250** stitches can be entered.



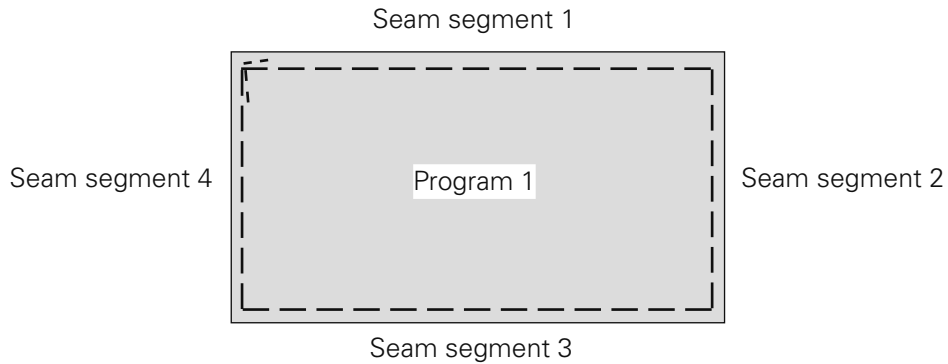
- Select further set values

or



- "Switch off the "TE / input" function (LED is off).

9.02 Example of how to enter a seam program



Example: Attaching a label

- Program number: 1
- Speed: 1500 min-1
- Seam segment 1
with 20 stitches, start bartack, programmed stop and raise sewing foot at end of seam
- Seam segment 2
with 10 stitches, programmed stop and raise sewing foot at end of seam
- Seam segment 3
with 20 stitches, programmed stop and raise sewing foot at end of seam
- Seam segment 4
with 10 stitches, end bartack, programmed stop and raise sewing foot at end of seam and thread trimming

- Switch on the machine.



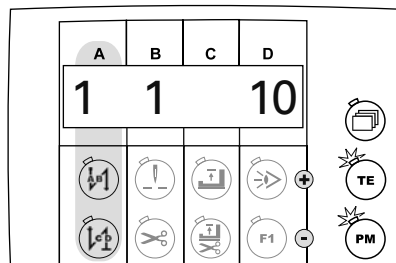
- Select programmed sewing function by pressing the "PM" key (LED on the selection key is illuminated).



- Switch on the "TE / input" function (LED is illuminated).



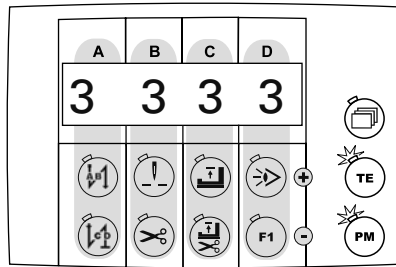
- Press the selection key until the seam program number appears on the display together with the seam segment number and the number of seam segment stitches.



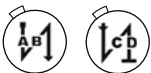
- Select the seam program number "1" with the corresponding function keys.



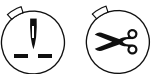
- Press the selection key until the display for entering the bartack stitches appears on the screen.



- Select the desired number of stitches for each case with the corresponding function keys.



Number of forward stitches for the start bartack (setting range A)



Number of reverse stitches for the start bartack (setting range B)



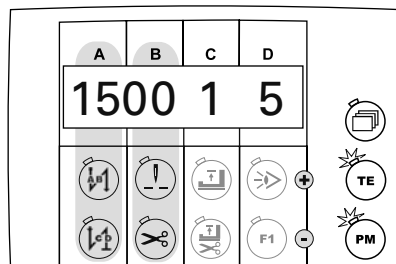
Number of reverse stitches for the end bartack (setting range C)



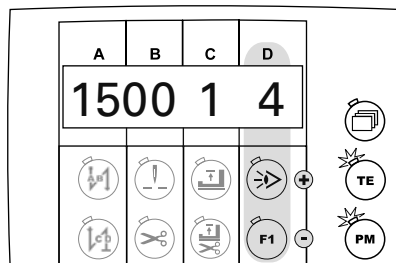
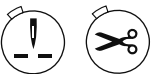
Number of forward stitches for the end bartack (setting range D)



- Press the selection key until the display for entering the speed, the next program and the number of seam segments appears on the screen.



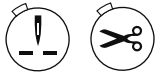
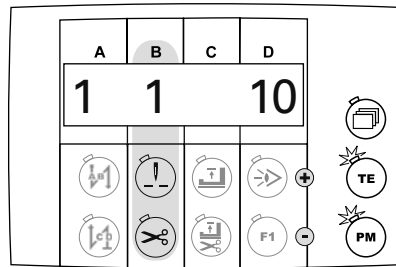
- Using the corresponding function keys, select the speed "1500" for the current seam program.



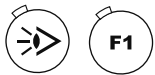
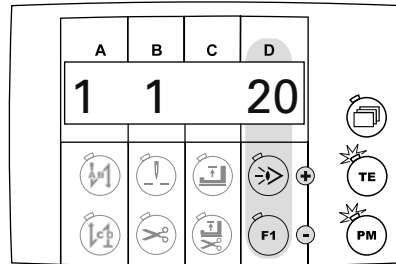
- Using the corresponding function keys, specify the number of seam segments ("4") in the current seam program.



- Press the selection key until the display for the seam program number appears on the screen together with the seam segment number and the number of seam segment stitches.



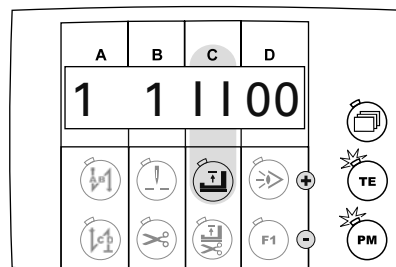
- Using the corresponding function keys, call up seam segment "1".



- Enter the number of seam segment stitches ("20") for seam segment "1" with the corresponding function keys.



- Press the selection key until the display for entering the special functions appears on the screen.



- Using the corresponding function key, switch on the "stop at end of seam" function (I = on; 0 = off).



- "Switch off the "TE / input" function (LED is off).

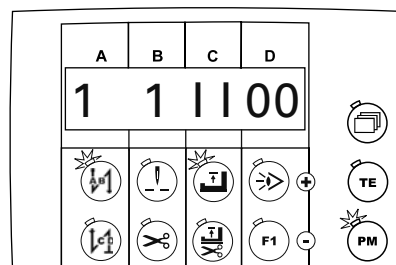
- Enter the sewing functions for the seam sector "1":



- Switch on start bartack (LED is illuminated).



- Switch on the "foot position raised after sewing stops" function (LED is illuminated).



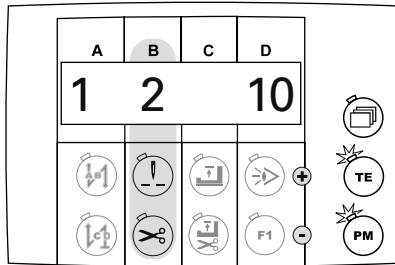
Input



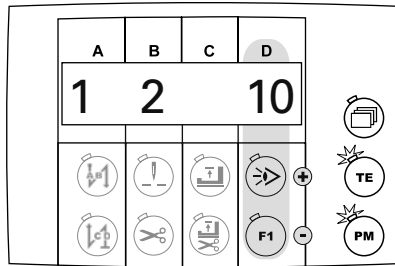
- Switch the "TE / input" function on again (LED is illuminated).



- Press the selection key until the display for the seam program number appears on the screen together with the seam segment number and the number of seam segment stitches.



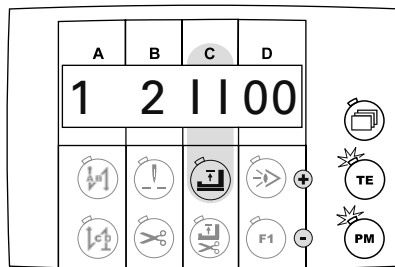
- Using the corresponding function keys, call up seam segment "2".



- Enter the number of seam segment stitches ("10") for seam segment "2" with the corresponding function keys.



- Press the selection key until the display for entering the special functions appears on the screen.



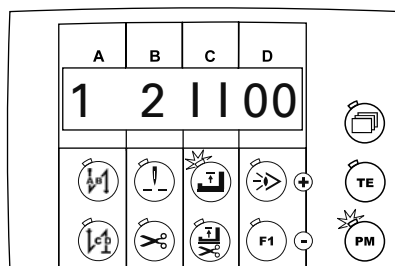
- Using the corresponding function key, switch on the "stop at end of seam" function (I = on; 0 = off).



- "Switch off the "TE / input" function (LED is off).



- Switch on the "foot position raised after sewing stops" function (LED is illuminated).

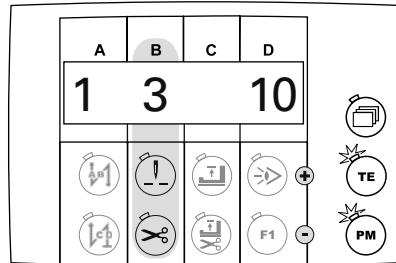




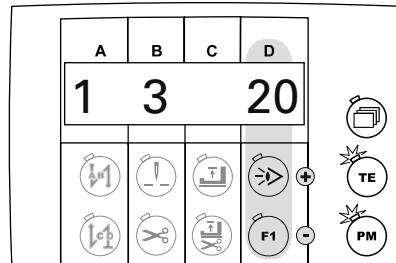
- Switch the "TE / input" function on again ((LED is illuminated)



- Press the selection key until the display for the seam program number appears on the screen together with the seam segment number and the number of seam segment stitches.



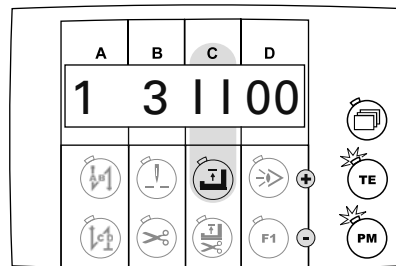
- Using the corresponding function keys, call up seam segment "3".



- Enter the number of seam segment stitches ("20") for seam segment "3" with the corresponding function keys.



- Press the selection key until the display for entering the special functions appears on the screen.



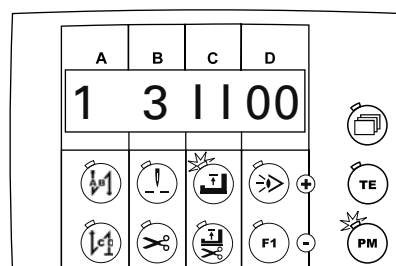
- Using the corresponding function key, switch on the "stop at end of seam" function (I = on; 0 = off).



- "Switch off the "TE / input" function (LED is off).



- Switch on the "foot position raised after sewing stops" function (LED is illuminated).



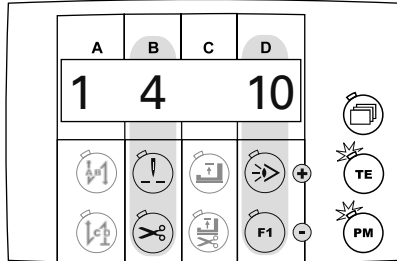
Input



- Switch the "TE / input" function on again ((LED is illuminated).



- Press the selection key until the display for the seam program number appears on the screen together with the seam segment number and the number of seam segment stitches.



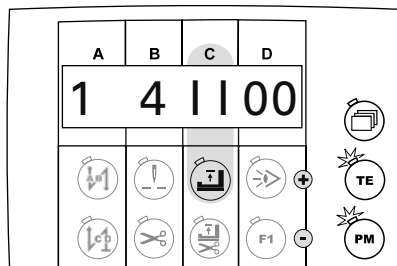
- Using the corresponding function keys, call up seam segment "4".



- Enter the number of seam segment stitches ("10") for seam segment "4" with the corresponding function keys.



- Press the selection key until the display for entering the special functions appears on the screen.



- Using the corresponding function key, switch on the "stop at end of seam" function (1 = on; 0 = off).



- "Switch off the "TE / input" function (LED is off).

- Enter the sewing functions for the seam sector "4":



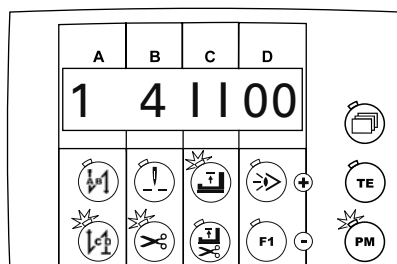
Switch on end bartack (LED is illuminated)



Switch on the "foot position raised after sewing stops" function (LED is illuminated)



Switch on the thread trimming function ((LED is illuminated)



9.03 Parameter input

9.03.01 Example of how to enter the parameters

- Switch on the machine.



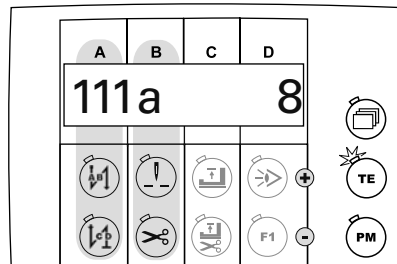
- Select the manual sewing mode by pressing the "PM" key (LED in the selection key is off).



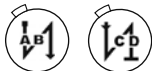
- Switch on the "TE / input" function (LED is illuminated).



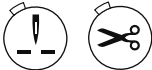
- Press the selection key until the following display appears on the screen.



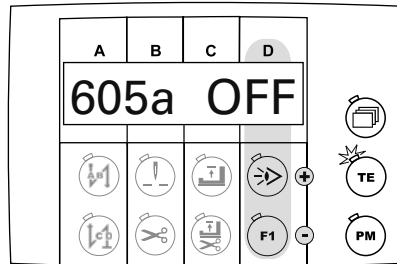
- Select the desired parameter, e.g. "605" Speed display on/off, by pressing the corresponding function keys.



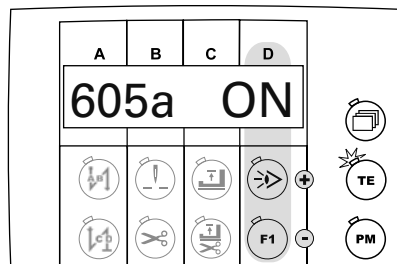
Function keys for selecting the hundred figure of the parameter



Function keys for selecting the ten and unit figures of the parameter



- Press the corresponding function keys to alter the set value as desired, e.g. "1" for speed display or "0" for no speed display.



- "Switch off the "TE / input" function (LED is off).

9.03.02 Selecting the user level

- Switch on the machine.



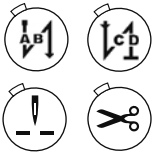
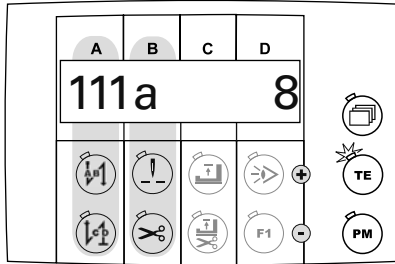
- Select the manual sewing mode by pressing the "PM" key (LED in the selection key is off).



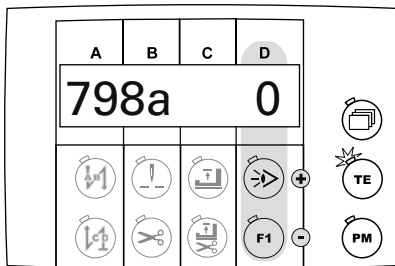
- Switch on the "TE / input" function (LED is illuminated)..



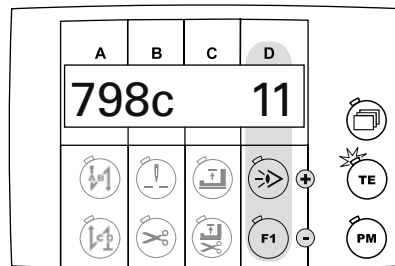
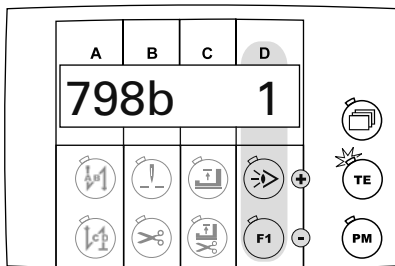
- Press the selection key until the following display appears on the screen.



- Select parameter "798" by pressing the corresponding function keys.



- The standard set value is set at "0" (= operator level "A"). Press the corresponding function keys to select the desired user level.



Set value "0" = User level "A"
 Set value "1" = Mechanic level "B"
 Set value "11" = Service level "C"

The selected user level is shown next to the parameter number.



- "Switch off the "TE / input" function (LED is off).




If the main switch is switched off and on again, the machine changes back automatically to user lever "A".

9.03.03 List of parameters for control unit P45 PD2-L



Only appropriately trained personnel is authorized to alter the set values in the parameters of user level "B" and "C".

Group	Parameter	Description	User level	Setting range	Set value
1	105	Speed at seam start	B	300 - 2000	800
	110	Speed at seam end	B	300 - 2000	800
	111	Light barrier compensating stitches	A	1 - 30	8
	112	No. of stitches for blocking out light barrier for knitted fabrics	A	0 - 100	0
	113	Start with light barrier ON = only if light barrier dark OFF = also when light barrier bright	B	ON - OFF	OFF
	116	Soft starting stitches (soft start)	A	0 - 30	0
	117	Speed for soft starting stitches (soft start)	B	120 - 1000	400
	189	Drive runtime in life test in 0.1sec	C	10 - 600	50
	190	Drive stop time in life test in 0.1sec	C	10 - 600	50
	199	Speed for light barrier compensating stitches	B	300 - 2000	1200
2	206	Interrupt /stop seam section at fixed speed ON = with pedal -2, OFF = with pedal 0	B	ON - OFF	OFF
	219	Poti for stroke adjustment ON = activated, OFF = off			
		2231, 2235, 2545/46	B	ON - OFF	OFF
		2335	B	ON - OFF	ON
402	Speed at max. stroke adjustment	B	300 - 6400	1000	
4	422	Output 1 = wiper 2 = thread clamp 3 = motor operation	B	0 - 3	2
		438	Output A3 is 0 = magnetic trimming, 1 = motor operation 2 = Stitch length 0, 3 = 2. thread tension 4 = 2. stitch length		
		2231, 2235, 2545/46	B	0 - 4	1
		2335	B	0 - 4	3


Group	Parameter	Description	User level	Setting range	Set value
4	446 	Function of "needle position change" key 1 = needle raised without trimming 2 = needle position change 3 = single stitch 4 = not allocated 5 = tack inversion 6 = tack suppression 12 = Raise presserfoot (flip-flop) 13 = 2. thread tension (flip-flop) 14 = 2. stitch length (flip-flop)	B	1 - 14	2
	488	Function of F1 key on control panel 1 = needle up without trimming 2 = needle position change 3 = single stitch 4 = single stitch with shortened stitch length 5 = tack inversion 6 = tack suppression	B	1 - 6	1
5	501	Level of presser foot lift at which the speed reduction starts (top inflexion point of curve)	B	0 - 255	0
	502	Level of presser foot lift at which the minimum speed is reached (bottom inflexion point of curve)	B	0 - 255	255
	522	Needle position at stop during ornamental tack ON = raised; OFF = lowered	B	ON - OFF	OFF
	523	Tack ON = ornamental tack (stitch-in-stitch) OFF = standard tack	A	ON - OFF	ON
	530	Maximum speed for ornamental tack	B	300 - 2000	800
	538	Tacting output (thread tension release)	B	10 - 100	50
	584	Tack ON = quadruple, OFF = double	B	ON - OFF	OFF
	585	Speed limitation with tack	B	300 - 4800	1000

Group	Parameter	Description	User level	Setting range	Set value
6	605	Actual speed value in display ON = on, OFF = off	B	ON - OFF	OFF
	606	Minimum speed	B	80 - 800	180
	607	Maximum speed	B	300 - 3000	▲
	608	Speed stage curve (pedal characteristic) 0 = 12 stages non-linear 1 = 12 stages linear 2 = 24 stages non-linear 3 = 24 stages linear 4 = stages 1..8 minimum speed, stages 9...24 linear	B	0 - 4	1
	609	Trimming speed 1	B	100 - 700	180
	615	End recognition with light barrier ON = from bright to dark Off = from dark to bright	B	ON - OFF	OFF
	618	Return after seam end ON = yes, OFF = no	B	ON - OFF	ON
	623	Switch-on delay for return in [ms]	B	50 - 9000	100
	636	Thread tension release in conjunction with presser foot lift ON = yes, OFF = no	B	ON - OFF	OFF
	642	Presser foot lift time from switch-on to ten- sion reduction	B	10 - 150	100
	643	Feed adjustment time from switch on to ten- sion reduction	B	10 - 150	100
	644	Number of tying stitches"	B	0 - 20	0
	653	Bearing position before sewing ON = yes, OFF = no	B	ON - OFF	OFF
	660	Bobbin thread monitoring 0 = off, 1 = not used 2 = by stitch counting	A	0 - 2	0
665	Lock/stop when ON = contact closed OFF = contact open	B	ON - OFF	ON	

▲ = See Chapter 3 Specifications of the Instruction Manual for the machine

Group	Parameter	Description	User level	Setting range	Set value
6	668	Thread wiper ON = yes, OFF = no	B	ON - OFF	OFF
	688	Thread tension release in conjunction with presser foot lift during intermediate stop, if parameter 636 is at ON ON = on, OFF = off	B	ON - OFF	OFF
7	700*	Needle position 0 Needle reference position	B	0 - 255	27
	702*	1 st needle position (lowered) (no. of degrees on balance wheel - 220°)			
		2231, 2235, 2545/46	B	0 - 255	79
		2335	B	0 - 255	20
	703*	Thread take-up lever position raised (no. of degrees on balance wheel - 70°)	B	0 - 255	235
	705*	End of cutting signal (no. of degrees on balance wheel - 0°)			
		2231, 2235, 2545/46	B	0 - 255	185
		2335	B	0 - 255	175
	706*	Start of cutting signal (no. of degrees on balance wheel - 173°)	B	0 - 255	85
		2231, 2235, 2545/46	B	0 - 255	85
		2335	B	0 - 255	90
	707*	Start thread tension release (no. of degrees on balance wheel - 17°)	B	0 - 255	
		2231, 2235, 2545/46			195
		2335			185
	710*	Needle position raised (no. of degrees on balance wheel - 0°)	B	0 - 255	185
	715	Switch-on time [ms] for thread wiper	B	0 - 9000	60
	718	Stop brake tacting (0 = brake off)	B	0 - 50	15
719	Tacting output (presser foot) 100 = 100 % starting	B	10 - 100	100	

* = These parameters remain unchanged when the set parameter values are reset, see Chapter 10.01.02 Resetting the set parameter values.

Group	Parameter	Description	User level	Setting range	Set value
7	721	Tacting output (feed adjustment) 100 = 100 % starting	B	10 - 100	100
	722	Acceleration ramp for sewing motor 1 = flat, 50 = steep	B	0 - 50	22
	723	Brake ramp for sewing motor 1 = flat, 50 = steep	B	1 - 50	22
	727	Bobbin monitoring effective ON = sewing motor stop and signal lamp on OFF = signal lamp on	B	ON - OFF	ON
	729	Start delay after lowering presser foot [ms]	B	10 - 9000	120
	730	Lift delay for presser foot at end of seam	B	0 - 9000	50
	734	Tacting output (cutting magnetic)	B	1 - 100	0
	748	Function of "threading aid" key 1 = threading aid + needle raised without trimming 2 = needle position change 3 = single stitch 4 = not allocated 5 = tack inversion 6 = tack suppression 12 = Raise presserfoot (flip-flop) 13 = 2. thread tension (flip-flop) 14 = 2. stitch length (flip-flop)			
					
		2231, 2235, 2545/46	B	1 - 14	1
		2335	B	1 - 14	13
	761	Extension thread tension release / thread pulling [ms]			
		2231, 2235, 2545/46	B	0 - 80	0
		2335	B	0 - 80	60
770	Lifting delay for presser foot when pedal position is "-1" [ms]	B	10 - 1000	150	
775	Stop time for ornamental tack [ms]	B	10 - 1000	150	

* = These parameters remain unchanged when the set parameter values are reset, see Chapter 10.01.02 Resetting the set parameter values.

Group	Parameter	Description	User level	Setting range	Set value	
7	789	Needle position 10 (bearing position)	B	0 - 255	248	
	793	Delay for feed adjustment on during trimming with shortened trim stitch (ms)	B	0 - 200	70	
	797	Hardware test OFF = off, ON = on	C	ON - OFF	OFF	
	798	User level 0 = user level A 1 = mechanic level B 11 = service level C	A	0 - 20	0	
	799*	Selected machine class				
		2231, 2235, 2545/46		C	1 - 2	1
		2335		C	1 - 2	2
8	800*	Motor rotating direction when looking at V-belt pulley 1= anti-clockwise, 0 = clockwise	C	0 - 1	1	
	801	Reversing angle at end of seam	B	10 - 212	35	
	802*	Speed reduction main drive 1 = variable, 0 = 1:1	C	0 - 1	1	
	881	Adaptation of positioning behaviour of motor to the machine to avoid vibrations	C	10 - 200	100	
	884	Proportional amplification of speed control of sewing motor				
		2231, 2235, 2545/46		B	5 - 40	20
		2335		B	5 - 40	15
	885	Integral amplification of speed control of sewing motor	C	10 - 100	55	
	886	Proportional amplification of positioning controller (sewing motor)	C	1 - 100	45	
887	Differential amplification of positioning controller (sewing motor)	C	20 - 100	40		

* = These parameters remain unchanged when the set parameter values are reset, see Chapter 10.01.02 Resetting the set parameter values.

Group	Parameter	Description	User level	Setting range	Set value
8	889	Time for positioning control in [ms], 0 = always	C	0 - 2500	300
	890	Proportional amplification of stop brake	C	1 - 200	100
	897*	MINI-motor variant 1 = long, 0 = short	C	0 - 1	1
9	900	Proportional amplification of speed controller during trimming	B	5 - 50	20
	933	Switchover of display on screen >1 = diagnosis display 0 = standard display	C	0 - 4	0
	939	Hold-back time (premature electrical switchover) for feed adjustment when switching on [ms]	B	10 - 200	50
	968	Hold-back time (premature electrical switchover) for feed adjustment when switching off [ms]	B	10 - 200	50
	969	Switch off position for presser foot when thread is clamped at beginning of seam	B	0 - 255	100
	985	Switch on position for thread clamp	B	0 - 255	67
	986	Switch off position for thread clamp	B	0 - 255	206
	989	Thread clamp at beginning of seam 0 = Thread clamp off 1 = Thread clamp without presser foot lift 2 = Thread clamp with presser foot lift	B	0 - 2	1
	996	Timer thread clamp (max. switch-on time of electrical thread clamp after end of thread [100 ms])	B	1 - 600	50

9.03.04

List of parameters for control unit P74 ED-L





Only appropriately trained personnel is authorized to alter the set values in the parameters of user level "B" and "C".

Group	Parameter	Description	User level	Setting range	Set value
1	101	Control panel key tone	A	ON - OFF	ON
	105	Speed at seam start	B	100 - 6400	800
	106	Speed at seam start ON = variable (pedal-controlled) OFF = constant (as for parameter 105)	B	ON - OFF	OFF
	107	Speed at seam start ON = limited by parameter 105 OFF = limited by parameter 607	B	ON - OFF	OFF
	110	Speed at seam end	B	100 - 6400	800
	111	Light barrier compensating stitches	A	1 - 255	8
	112	No. of stitches for blocking out light barrier for knitted fabrics	A	0 - 255	0
	113	Start with light barrier ON = only if light barrier dark OFF = also when light barrier bright	B	ON - OFF	OFF
	116	Soft starting stitches (soft start)	A	0 - 255	1
	117	Speed for soft starting stitches (soft start)	B	30 - 640	400
	118	Signal at output is ON = needle cooling, OFF = motor operation	B	ON - OFF	ON
	151	On position for feed reverse with intermediate backtack	B	0 - 255	20
	152	On position for feed reverse with intermediate backtack	B	0 - 255	20
	153	Start tack (when parameter 523 is set at "1") ON = ornamental tack, OFF = standard tack	B	ON - OFF	ON
154	End tack (when parameter 523 is set at "1") ON = ornamental tack, OFF = standard tack	B	ON - OFF	ON	
157	Third seam section at start of decorative backtack	B	ON - OFF	OFF	

Group	Parameter	Description	User level	Setting range	Set value
1	160	Function selection for knee switch 0 = Function off 1 = Stroke adjustment manual 2 = Feed reverse manual	B	0 - 2	1
	199	Speed for light barrier compensating stitches	B	300 - 6400	1200
2	201	Emission power of laser diode on bobbin thread monitor (0 = off, 255 = maximum light)	B	0 - 255	100
	206	Interrupt /stop seam section at fixed speed ON = with pedal -2, OFF = with pedal 0	B	ON - OFF	OFF
	218	Interruption of programmed seam with pedal -2. Off = possible, On = not possible	B	ON - OFF	OFF
	219	Poti for stroke adjustment ON = activated, OFF = off	B	ON - OFF	ON
	263	Number of stitches with additional thread tension	B	0 - 20	0
3	303	Needle position at end of seam section with end tack without trimming ON = lowered, OFF = raised	B	ON - OFF	OFF
	307	Delay time till switching off output "needle cooling" after the machine stops	B	0 - 2000	50
	309	Position for short thread trimmer ON			
		2235, 2542, 2545/46-900/81, 2595/96	B	130 - 255	130
		2545/46-900/82	B	180 - 255	180
	310	2335, 3705	B	140 - 255	140
		Function selection for output A16 0 = Function OFF, 1 = Seam centre guide 2 = Short thread trimmer			
		2235, 2335, 2542, 2545/46-900/81, 2595/96, 3705	B	0 - 2	1
	2545/46-900/82	B	0 - 2	2	
	311	Stop stitch counting ON = with thread trimming OFF = without thread trimming	B	ON - OFF	OFF
312	Variant seam centre guide ON = Seam centre guide lifts when output ON OFF = Seam centre guide lifts when output OFF	B	ON - OFF	OFF	

Group	Parameter	Description	User level	Setting range	Set value
3	314	Function selection for output A7 0 = Function OFF, 1 = Edge trimmer 2 = Thread puller at seam start			
		2235, 2335, 2542, 2545/46-900/81, 2595/96, 3705	B	0 - 2	1
		2545/46-900/82	B	0 - 2	2
	315	Function selection for output A15 0 = Function OFF, 1 = Clean stop motion device 2 = Second thread clamp			
		2235, 2335, 2542, 2545/46-900/81, 2595/96, 3705	B	0 - 2	1
		2545/46-900/82	B	0 - 2	2
	316	Position thread puller at seam start	B	0 - 255	235
	317	Continuous thread pulling at seam start	B	10 - 1000	100
	322	Selection of tack type 1 = programmable start tack as loose tack 2 = programmable start tack as ornamental tack	B	1 - 2	1
	323	No. of forward stitches for programmable start tack	B	1 - 9	2
	324	No. of reverse stitches for programmable start tack	B	1 - 9	1
	325	Speed of programmable start tack	B	200 - 1500	700
	326	No. of repeats of programmable start tack	B	1 - 10	3
	327	Switchover time [ms] for programmable start tack	B	0 - 200	70
	328	Selection of tack type 1 = programmable end tack as loose tack 2 = programmable end tack as ornamental tack	B	1 - 2	1
	329	No. of forward stitches for programmable end tack	B	1 - 9	2
	330	No. of reverse stitches for programmable end tack	B	1 - 9	1
	331	Speed of programmable end tack	B	200 - 1500	700
	332	No. of repeats of programmable end tack	B	1 - 10	3
	333	Switchover time [ms] for programmable end tack	B	0 - 200	70

Group	Parameter	Description	User level	Setting range	Set value
3	360	Straight edge ON/OFF	B	ON - OFF	OFF
	361	Number of masking stitches for straight edge	B	0 - 50	5
	364	Backtack variant ON = Backtack, OFF = Stitch condensation	B	ON - OFF	ON
	367	Straight edge error ON = Stop at straight edge error OFF = Display message only	B	ON - OFF	ON
	368	Start tack / ornamental start tack ON = quadruple, OFF = double	B	ON - OFF	OFF
	369	End tack / ornamental end tack ON = quadruple, OFF = double	B	ON - OFF	OFF
4	401	Function of "stroke adjustment" key 0 = off  1 = when key pressed constant second stroke 2 = second stroke only as long as key pressed	B	0 - 2	1
	402	Speed at max. stroke adjustment	B	300 - 6400	1000
	403	Delay time till speed release at end of stroke adjustment [ms]	B	0 - 2500	150
	404	No. of stitches with stroke adjustment	B	0 - 250	1
	406	Special function On = bartack with short stitch length, seam with long stitch length, control for stitch length without function	B	ON - OFF	OFF
	417	On = second thread tension activated while stitches are being tied.	B	ON - OFF	OFF
5	501	Level of presser foot lift at which the speed reduction starts (top inflexion point of curve)	B	0 - 255	0
	502	Level of presser foot lift at which the minimum speed is reached (bottom inflexion point of curve)	B	0 - 255	255
	522	Needle position at stop during ornamental tack ON = raised; OFF = lowered	B	ON - OFF	OFF
	523	Tack, ON = ornamental tack (stitch-in-stitch) OFF = standard tack	A	ON - OFF	ON

Group	Parameter	Description	User level	Setting range	Set value
5	530	Maximum speed for ornamental tack	B	100 - 1000	800
	538	Tacting output (thread tension release)	B	10 - 100	100
	573	Stitch-length regulated speed limitation	B	300 - 6400	2200
	585	Speed limit at 2. Stitch length	B	300 - 6400	3000
6	605	Actual speed value in display ON = on, OFF = off	B	ON - OFF	OFF
	606	Minimum speed	B	30 - 650	180
	607	Maximum speed 2235, 2335, 2545/46, 2595/96	B	300 - 3800	▲
		2542	B	300 - 5000	▲
	608	Speed level curve (pedal characteristic ON = linear, OFF = non-linear)	B	ON - OFF	OFF
	609	Trimming speed 1	B	60 - 300	180
	615	End recognition with light barrier ON = from bright to dark Off = from dark to bright	B	ON - OFF	OFF
	618	Return after seam end ON = yes, OFF = no	B	ON - OFF	ON
	623	Switch-on delay for return in [ms]	B	0 - 2000	50
	634	Function of "intermediate tacking" key ON = Feed adjustment when machine has stopped and when machine is running OFF = Feed adjustment only when machine is running	B	ON - OFF	ON
					
	636	Thread tension release in conjunction with presser foot lift ON = yes, OFF = no	B	ON - OFF	OFF
644	Number of tying stitches"	B	1 - 20	1	
653	Bearing position before sewing ON = yes, OFF = no	B	ON - OFF	OFF	

▲ = See Chapter 3 Specifications of the Instruction Manual for the machine

Group	Parameter	Description	User level	Setting range	Set value
6	657	Stitch securing (knotting), ON = on, OFF = off			
		2235, 2542, 2545/46-900/81, 2595/96	B	ON - OFF	ON
		2545/46-900/82	B	ON	ON
		2335, 3705	B	ON - OFF	OFF
	660	Bobbin thread monitoring 0 = off, 1 = by sensor 2 = by stitch counting 3 = by two sensors (2542, 2546)	A	0 - 3	0
	665	Starting lock-out when machine tilted back ON = if contact closed, OFF = if contact open	B	ON - OFF	ON
	666	Monitoring the gripper space slide ON = Stop if contact open OFF = Stop if contact closed		ON - OFF	OFF
	668	Thread wiper, ON = yes, OFF = no	B	ON - OFF	OFF
	680	Start inhibitor when drive is running and machine is tilted back ON = Error 92 appears on the display. After the machine has been set in an upright position, the drive must be switched off then on again. The start inhibitor function is then out of action. OFF = Error 9 appears on the display. After the machine has been set in an upright position, the start inhibitor function is out of action.	B	ON - OFF	ON
	688	Thread tension release together with raising the presser foot at intermediate stop, if parameter 636 is ON ON = on, OFF = off	B	ON - OFF	ON
695	Function of "needle position change" key 0 = function off 1 = needle raised without trimming 2 = needle position change 3 = single stitch 4 = single stitch in reverse 5 = moving forwards to needle position step by step 6 = programmable tack on / off	B	0 - 6	2	





Group	Parameter	Description	User level	Setting range	Set value	
6	698	Speed for needle cooling if parameter 118 = on	B	0 - 5000	800	
7	700*	Needle position 0 Needle reference position	B	0 - 255	243	
	702*	1 st needle position (lowered) (no. of degrees on balance wheel - 220°)	B	0 - 255	20	
	703*	Thread take-up lever position raised (no. of degrees on balance wheel - 70°)				
		2235, 2542, 2545/46	B	0 - 255	235	
		2335, 2595/96, 3705	B	0 - 255	240	
	705*	End of cutting signal (no. of degrees on balance wheel - 0°)				
		2235, 2542, 2545/46-900/81	B	0 - 255	120	
		2595/96	B	0 - 255	140	
		2545-900/82	B	0 - 255	200	
		2335, 3705	B	0 - 255	175	
	706*	Start of cutting signal (no. of degrees on balance wheel - 173°)				
		2235, 2542, 2545/46-900/81, 2595/96	B	0 - 255	50	
		2335, 3705	B	0 - 255	60	
		2545-900/82	B	0 - 255	100	
	707*	Start thread tension release (no. of degrees on balance wheel - 17°)				
		2235, 2542, 2545/46	B	0 - 255	190	
		2335, 2595/96, 3705	B	0 - 255	185	
710*	Needle position raised (no. of degrees on balance wheel - 0°)	B	0 - 255	200		
715	Switch-on time [ms] for thread wiper	B	0 - 2550	40		
716	Switch-on time delay for thread wiper [ms]	B	0 - 2000	120		
718	Stop brake tacting (0 = brake off)	B	0 - 40	20		
722	Acceleration ramp for sewing motor 1 = flat, 50 = steep	B	1 - 50	40		

* = These parameters remain unchanged when the set parameter values are reset, see Chapter 10.01.02 Resetting the set parameter values.

Group	Parameter	Description	User level	Setting range	Set value	
7	723	Brake ramp for sewing motor 1 = flat, 50 = steep	B	6 - 60	45	
	727	Bobbin monitoring effective ON = sewing motor stop and signal lamp on OFF = signal lamp on	B	ON - OFF	ON	
	729	Start delay after lowering presser foot [ms]	B	10 - 2550	140	
	730	Lift delay for presser foot at end of seam	B	0 - 2000	100	
	760	Remaining no. of stitches after reaction of bobbin thread monitor during bobbin thread monitoring (fixed value x 10)	A	1 - 250	10	
	761		Extension thread tension release / thread pulling [ms]			
			2235, 2542, 2545/46, 2595/96	B	0 - 3000	0
			2335, 3705	B	0 - 3000	60
	764	Thread tension control during stroke adjustment, ON = on, OFF = off	B	ON - OFF	OFF	
	770	Lifting delay for presser foot when pedal position is "-1" [ms]	B	10 - 2000	100	
	771	No. of stitches for stitch length "0" at beginning of seam	B	0 - 20	0	
	775	Stop time for ornamental tack [ms]	B	10 - 2000	200	
	777	Reset time for bobbin thread monitor [ms]	B	10 - 500	100	
	778	Blowing time for cleaning thread monitor [ms]	B	10 - 5000	100	
780	Function of "tack suppression" key 0 = function off 1 = tack inversion (once) 2 = tack suppression (all tacks switched off) 3 = reverse move to needle position step by step 4 = edge trimmer on / off 5 = programmable tack on / off	B	0 - 5	1		



* = These parameters remain unchanged when the set parameter values are reset, see Chapter 10.01.02 Resetting the set parameter values.

Group	Parameter	Description	User level	Setting range	Set value
7	785	Start inhibitor when bedplate slide is open ON = on (lock function is out of action when bedplate slide closed), OFF = off (lock function is set out of action by pressing the scroll key on the control panel).	B	ON - OFF	OFF
	786	Function of the "second stitch length" key 0 = function off, 1 = second stitch length 	B	0 - 1	1
	787	Function of the "threading aid" key 0 = threading aid, 1 = switching on second thread tension (if the key is pressed for longer than 2 seconds, the "threading aid" function is activated) 	B	0 - 1	1
	789	Needle position 10 (bearing position)	B	0 - 255	225
	793	Delay for feed adjustment on during trimming with shortened trim stitch [ms]	B	0 - 2000	140
	797	Hardware test, OFF = off, ON = on	C	ON - OFF	OFF
	798	User level 0 = user level A, 1 = mechanic level B 11 = service level C	A	0 - 20	1
	799*	Selected machine class	C	1 - 6	
		2235, 2545/46-900/81			1
		2545-900/82			2
	2542			3	
	2595/96			4	
	3705			5	
	2335			6	
8	800*	Motor rotating direction when looking at V-belt pulley, 1= anti-clockwise, 0 = clockwise			
		2235, 2335, 2545/46, 2595/96	C	0 - 1	1
		3705	C	0 - 1	0

* = These parameters remain unchanged when the set parameter values are reset, see Chapter 10.01.02 Resetting the set parameter values.

Group	Parameter	Description	User level	Setting range	Set value	
8	801	Reversing angle at end of seam	B	10 - 200	30	
	802*	Speed reduction main drive 1 = variable, 0 = 1:1	C	0 - 1	1	
	814	Change-over of positioning method 1 = Ramp braking in target position 2 = Max. braking at positioning speed and wait till target position is reached.	C	1 - 2	2	
	815	Determine rotor position after mains On. 1 = using rotary field, 2 = using current pulses	C	1 - 2	1	
	880	Max. starting current [A]	C	1 - 20	10	
	881	Adjust positioning behaviour of motor to the machine to avoid vibrations	C	10 - 1000	250	
	884	Proportional amplification of speed control of sewing motor				
		2235, 2542, 2545/46-900/81, 2545-900/82		B	3 - 24	18
		2335, 3705, 2595/96		B	3 - 24	10
	885	Integral amplification of speed control of sewing motor	C	10 - 80	40	
	886	Proportional amplification of positioning controller (sewing motor)	C	1 - 30	24	
	887	Differential amplification of positioning controller (sewing motor)				
		2235, 2335, 2542, 2545/46, 3705		C	1 - 20	10
		2595/96		C	1 - 20	4
	889	Time for positioning control in [ms], 0 = always	C	0 - 2500	200	
	890	Proportional amplification of stop brake	C	1 - 10	5	
	897*	MINI-motor variant 1 = long, 0 = short	C	0 - 1	1	
898	Motor current limitation ON = 15A, OFF = 10A	C	ON - OFF	ON		

* = These parameters remain unchanged when the set parameter values are reset, see Chapter 10.01.02 Resetting the set parameter values.

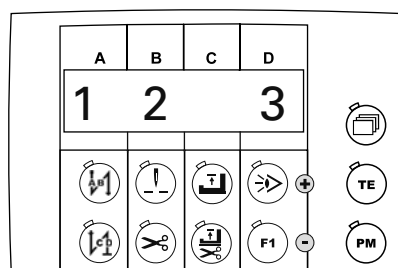
Group	Parameter	Description	User level	Setting range	Set value	
9	900	Proportional amplification of speed controller during trimming	B	1 - 30	18	
	901	Trimming release-speed	B	30 - 500	300	
	933	Switchover of display on screen >1 = diagnosis display 0 = standard display	C	0 - 3	0	
	939	Hold-back time (premature electrical switchover) for feed adjustment when switching on [ms]	B	10 - 200	30	
	968	Hold-back time (premature electrical switchover) for feed adjustment when switching off [ms]	B	10 - 200	42	
	969	Switch off position for presser foot when thread is clamped at beginning of seam	B	0 - 255	100	
	985	Switch on position for thread clamp				
		2235, 2542, 2545/46-900/81, 2595/96		B	0 - 255	240
		2335, 3705		B	0 - 255	255
		2545-900/82		B	0 - 255	245
	986	Switch off position for thread clamp				
		2235, 2542, 2545/46-900/81, 2595/96		B	0 - 255	160
		2545-900/82, 2335, 3705		B	0 - 255	150
	988	Shortened trim stitch ON = on, OFF = off	B	ON - OFF	OFF	
	989	Thread clamp at beginning of seam 0 = Thread clamp off 1 = Thread clamp without presser foot lift 2 = Thread clamp with presser foot lift	B	0 - 2	1	
996	Timer thread clamp (max. switch-on time of electrical thread clamp after end of thread [100 ms])	B	1 - 600	100		

10 Service functions
 10.01 Resetting the control unit
 10.01.01 Calling up the reset function

- Switch off the machine.



- Press and hold the "start bartack" and "sewing with light barrier" function keys simultaneously and switch on the machine. Continue pressing the function keys until the following display appears on the screen.



The reset function offers three different reset possibilities:

- Parameter Reset, see Chapter 10.01.02 Resetting the set parameter values
- Seam Program Reset, see Chapter 10.01.03 Deleting all seam programs
- Cold start, see Chapter 10.01.04 Cold start



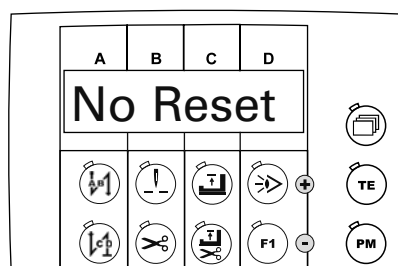
Danger of unintentional data loss!

After operating the corresponding function key, the selected reset is carried out without further check.



- If the "TE / input" selection key is pressed, the machine switches back to its previous status, without carrying out a reset.

The following display appears on the screen for a short time.



10.01.02 Resetting the set parameter values

With this function all set values, with the exception of the specially marked parameters, are set back to their default value (status at time of delivery), see Chapter 9.03.03 List of parameters.

- Call up the reset function, see Chapter 10.01.01 Calling up the reset function.

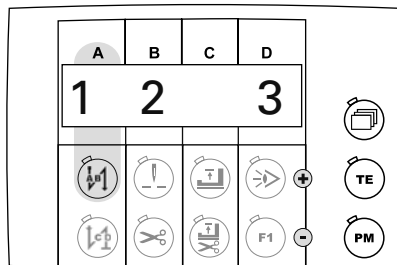


Danger of unintentional data loss!

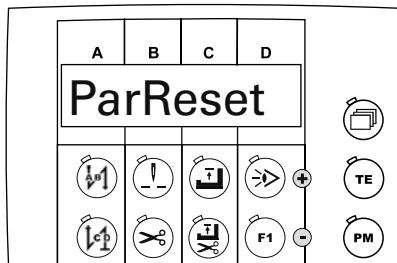
After operating the corresponding function key, the selected reset is carried out without further check.



- Reset the set parameter values by pressing the corresponding function key.



The set parameter values are reset. The following display appears on the screen for a short time.



After the operation is completed, the previous machine status is called up again automatically.

10.01.03 Deleting all seam programs

With this function all seam program inputs are deleted.

- Call up the reset function, see Chapter 10.01.01 Calling up the reset function.

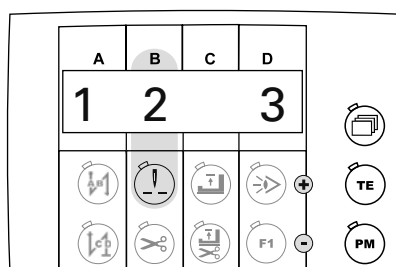


Danger of unintentional data loss!

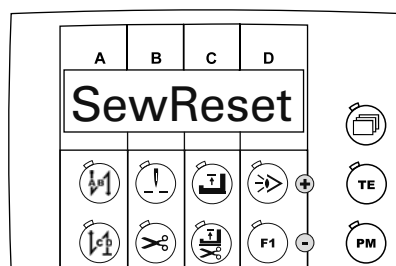
After operating the corresponding function key, the selected reset is carried out without further check.



- Delete the seam program inputs by pressing the corresponding function key.



The seam program inputs are deleted. The following display appears on the screen for a short time.



After the operation is completed, the previous machine status is called up again automatically.

10.01.04 Cold start

With this function a cold start is carried out. All inputs are deleted and all set parameter values are set back to their default value (status at time of delivery), see Chapter 9.03.03 List of parameters.

- Call up the reset function, see Chapter 10.01.01 Calling up the reset function.

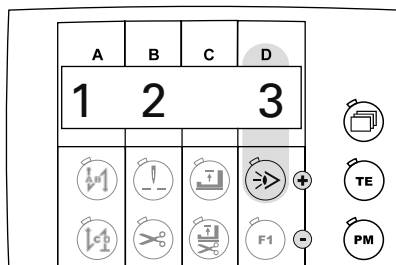


Danger of unintentional data loss!

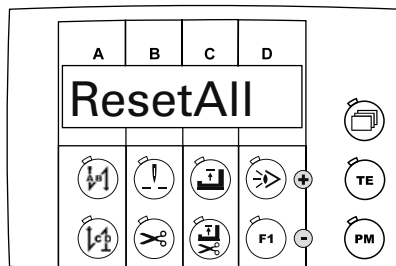
After operating the corresponding function key, the selected reset is carried out without further check.



- Reset the set parameter values by pressing the corresponding function key.



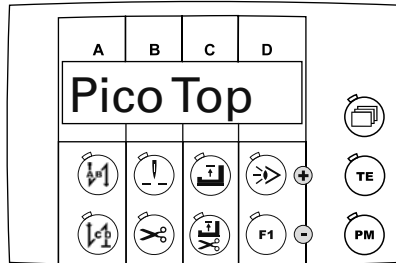
The cold start is carried out. The following display appears on the screen for a short time.



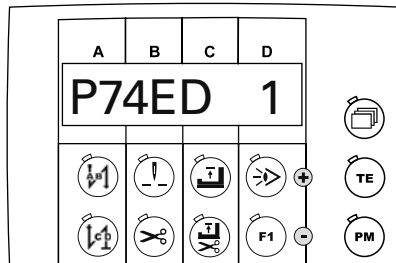
After the operation is completed, the previous machine status is called up again automatically.

10.03 Display of software version for EcoDrive P74 ED-L

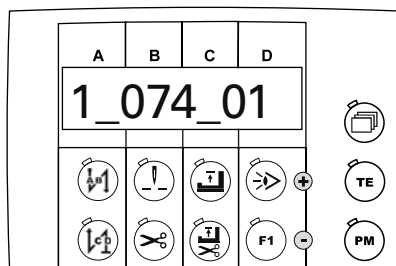
- Switch on the machine.
First the type of control panel is shown.



Then the type of control unit and the set machine class are shown.



Then the software version is shown for a short time.



10.04 Hardware test for the PicoDrive P45 PD2-L

- Switch on the machine.



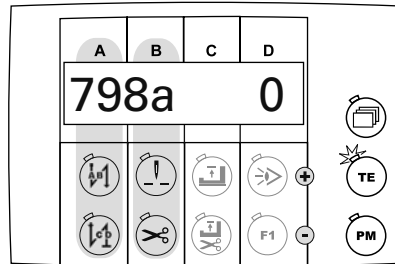
- Select the manual sewing mode by pressing the "PM" key (LED in the selection key is off).



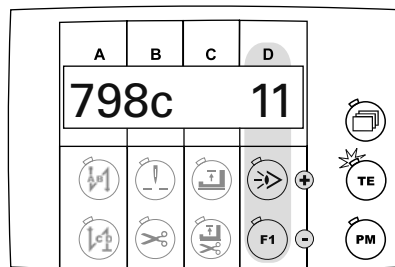
- Switch on the "TE / input" function (LED is illuminated).



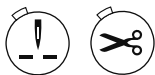
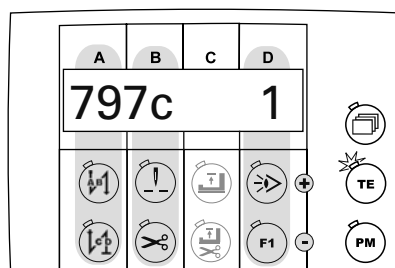
- Press the selection key until the parameter input function appears on the screen.



- Select parameter "798" by pressing the corresponding function keys.



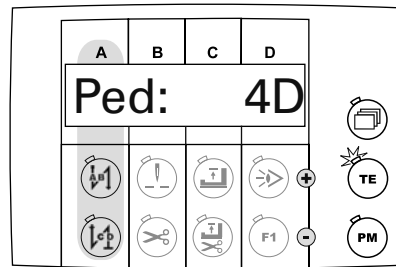
- Select service level "C" by pressing the corresponding function keys.



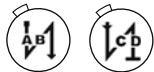
- Select parameter "797" by pressing the corresponding function keys.



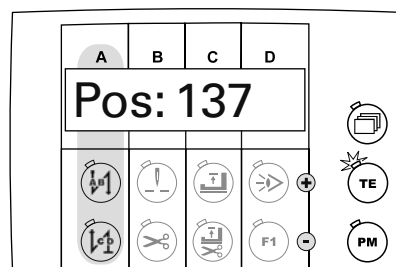
- Set the set value at "1" by pressing the corresponding function keys. The first test block showing the inputs appears on the display.



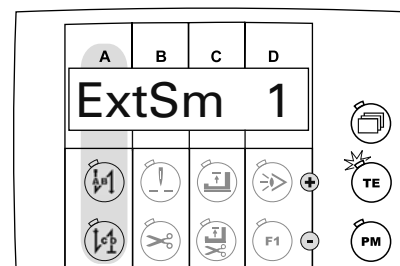
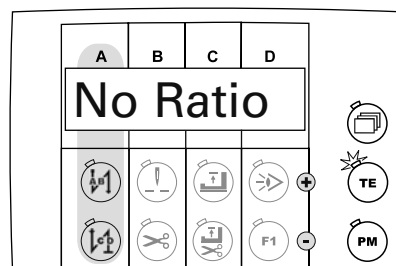
- Operate the pedal.
The activated pedal stages are shown in setting range D.



- Call up the test for the synchronizer in the motor with the corresponding function keys.



- Turn the balance wheel and check the needle bar reference position (parameter "700").
- With the corresponding function keys, call up the speed reduction test.
The speed reduction or increase ratio status of the motor is displayed. The adjustment is carried out with parameter "802".



- Conclude the hardware test (LED in the selection key is off).



If the main switch is switched off and on again, the machine changes back automatically to user lever "A".

10.05 Hardware test for the EcoDrive P74 ED-L

- Switch on the machine.



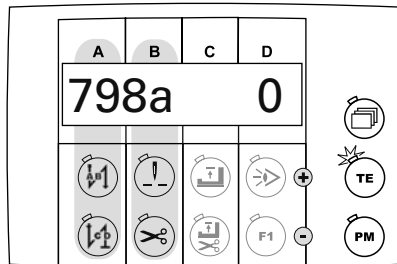
- Select the manual sewing mode by pressing the "PM" key (LED in the selection key is off).



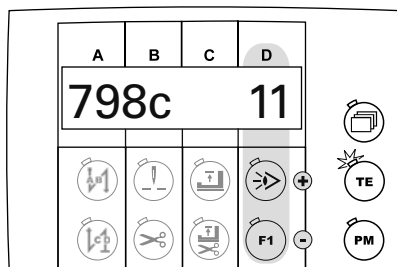
- Switch on the "TE / input" function (LED is illuminated).



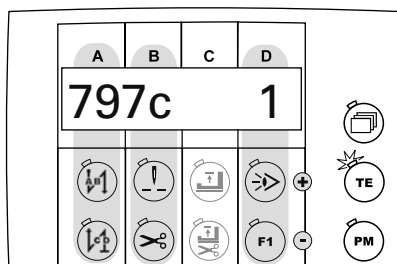
- Press the selection key until the parameter input function appears on the screen.



- Select parameter "798" by pressing the corresponding function keys.



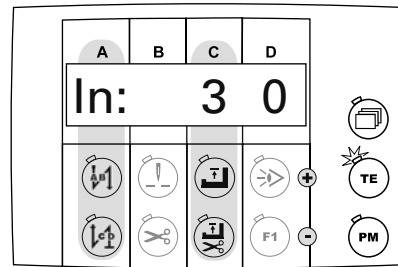
- Select service level "C" by pressing the corresponding function keys.



- Select parameter "797" by pressing the corresponding function keys.



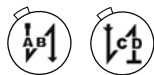
- Set the set value at "1" by pressing the corresponding function keys. The first test block showing the inputs appears on the display.



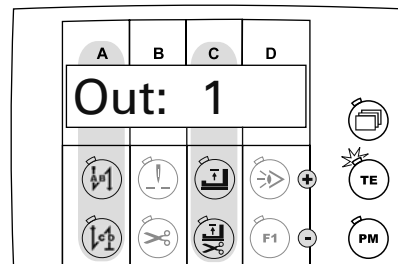
- Select the desired input with the corresponding function keys (setting range C). The switch status of the current input is shown in setting range D.

Following inputs can be shown:

- In 3: Slide sensor
- In 6: Stop / start inhibitor
- In 7: Stroke lift adjustment
- In 8: Speed limiter
- In 9: Knee switch for seam centre guide
- In 11: Bobbin thread monitor



- Call up the display of the outputs with the corresponding function keys.



- Select the desired output with the corresponding function keys (setting range C).

- Out 1: Motor operation
- Out 3: Thread clamp
- Out 4: Presser foot tacted
- Out 5: Feed changeover tacted
- Out 6: Stroke lift adjustment
- Out 7: Edge cutter
- Out 8: Thread tension release (tacted in hardware test with fixed 50%)
- Out 9: Pneumatic thread cutting
- Out 11: Thread tension release (tacted in hardware test with fixed 50%)
- Out 12: Secured stitch (stitch length "0")
- Out 13: Stitch length changeover
- Out 14: Thread tension control
- Out 15: Cleaning bobbin thread monitor
- Out 16: Seam centre guide

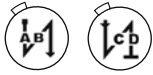


- Switch on selected output.

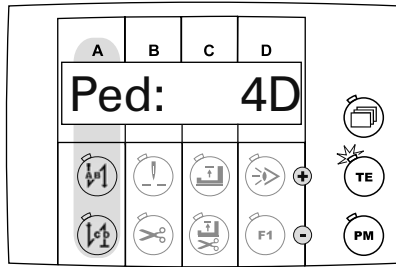


- Switch off selected output.

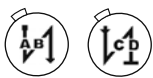
Service functions



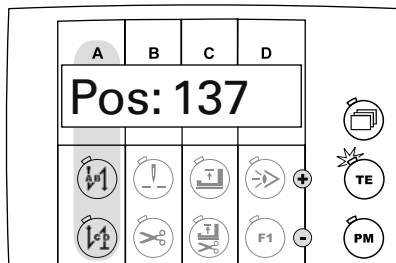
- Select the test mode for the pedal with the corresponding function keys.



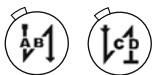
- Operate the pedal.
The activated pedal stages are shown in setting range D.



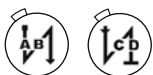
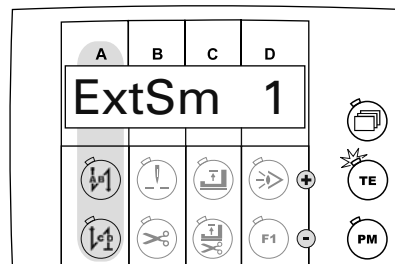
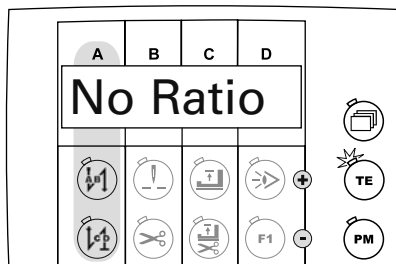
- Call up the test for the synchronizer in the motor with the corresponding function keys.



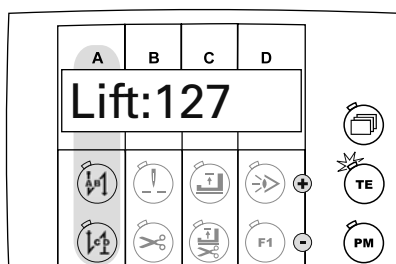
- Turn the balance wheel and check the needle bar reference position (parameter "700").

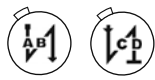


- With the corresponding function keys, call up the speed reduction test.
The speed reduction or increase ratio status of the motor is displayed. The adjustment is carried out with parameter "802".

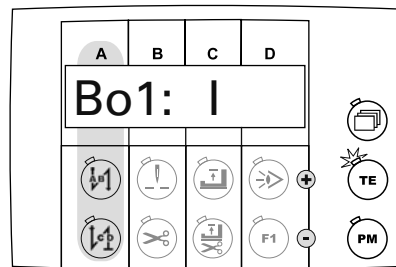


- With the corresponding function keys call up the display of the maximum analogue value of the potentiometer for the stroke lift adjustment.

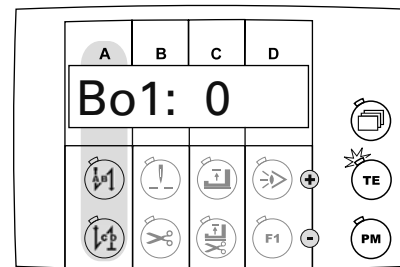




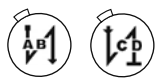
- Select the test mode for bobbin thread monitoring with the corresponding function keys.
- Bo1 = machine with 1 Sensor, B02 = machine with 2 Sensoren (only 2542 and 2546)



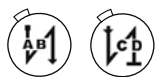
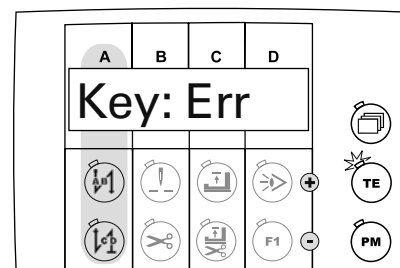
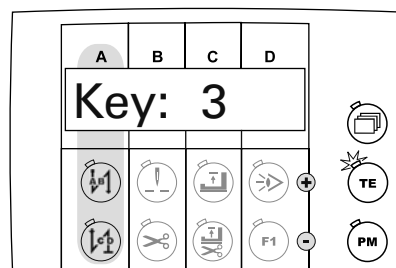
1 = error



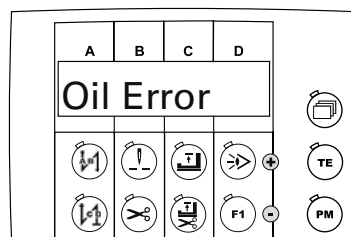
0 = OK



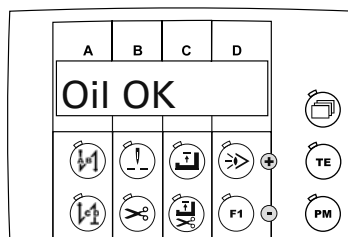
- With the corresponding function keys, call up the display for testing the LEDs on the key panel of the sewing machine head.
The corresponding number of the pressed key appears on the display. If no key panel is connected, the message "Err" appears.



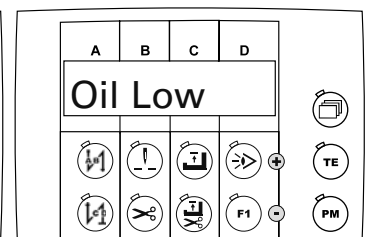
- With the corresponding function keys call up the display of the sewing machine's oil level.



No signal from oil level sensor



Oil level OK



Oil level too low



- Conclude the hardware test (LED in the selection key is off).



If the main switch is switched off and on again, the machine changes back automatically to user lever "A".



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