



P40 CD

Service Manual

Control Panel BDF S4

*This service manual is valid for drives starting
with software version 0435 / 001.*

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1 About this Manual

This **P40 CD** service manual was written with the utmost care. It contains information and instructions for enabling many years of safe operation.

We kindly request your feedback if you should discover any discrepancies or have suggestions for improvement (📖 11.2 After-sales service, Page 52).

Please consider the manual as part of the product and keep it at an easily accessible location. Read the complete manual before the first usage. Give the product to third parties only together with the manual.

The service manual is shipped together with an operating manual and a parameter list.

1.1 Scope of the manual

This manual describes the set-up and proper usage of the **P40 CD**.

1.2 Target group of the manual

The service manual is intended for:

- Technical staff:
This group of persons has suitable technical training which qualifies it to perform maintenance and to clear faults.

Please refer also to chapter 📖 2 Safety, Page 7 for the minimum qualifications of the staff and additional requirements placed on them.

1.3 Conventions used in the presentation – symbols and signs

Various types of information in this manual are displayed or emphasised by the following symbols to promote easy and quick understanding:

Proper setting

Indicates how the proper setting appears.





Disturbances

Indicates disturbances which can occur if the setting is incorrect.



Cover

Indicates which covers you need to remove to access the components to be set.



Work steps for operation (sewing and set-up)



Work steps for service, maintenance and assembly



Work steps using the software control panel

The individual work steps are numbered:

1. 1. First work step
 2. 2. Second work step
 - ...
- Always follow the step sequence.
- Lists are marked with a bullet



Result of a work step

Change in the machine or on the display.



Important

You must pay particular attention to this when performing a work step.



Information

Additional information, e. g. about alternative operating options.




Sequence

Indicates the work needing to be performed before or after a setting is made.

References

A reference is made to another passage in the text.



Important warnings for the user of the machine are specially labelled. Since safety is of particular importance, hazard symbols, danger levels and their signal words are separately described in chapter  2 *Safety*, Page 7.

Safety

If no other clear location can follow from an illustration, then location information is always seen from the staff viewpoint using the terms *right* or *left*.

Location information

1.4 Additional documents

The device contains installed components from other manufacturers. Each of these manufacturers has performed a risk assessment for these purchased parts and declared the conformity of their design with the applicable European and national requirements. The proper usage of the installed components is described in the manuals of each manufacturer.

1.5 Liability

All of the specifications and instructions in this manual were compiled in line with the state of the art and the applicable standards and requirements.

The manufacturer shall assume no liability for damage due to:

- Breakage and shipping damage
- Non-compliance with the manual
- Improper usage
- Unauthorised changes to the machine
- Employment of untrained staff
- Usage of unauthorised spare part, replacement parts


1.5.1 Shipping

PFAFF is not liable for breakage and shipping damage. Inspect the delivery immediately upon receipt. Report damage to the last carrier. This also applies when the packaging is not damaged.

Leave the machines, devices and packing material in the same condition as they were in when the damage was discovered. This will secure your claims against the carrier.

Report all other complaints to PFAFF immediately following receipt of the delivery.

1.5.2 Intended use


The **P40 CD** is not an independently functioning unit but rather intended for the installation in a sewing machine (referred to in the following as *machine*) (See  *Declaration of Conformity* for additional information).

The control is intended for industrial use.

Operate the control only in dry and well maintained areas.

Do not operate the control when aerosols (sprays) or oxygen are used.

Intended use also includes compliance with the operating, maintenance and repair conditions specified by the manufacturer!

Only authorised persons may work on the control
( 2 *Safety*, Page 7).

CAUTION



Improper use can cause hardware damage!

Follow all of the instructions in this manual.

2 Safety

This chapter contains basic instructions concerning your safety. Read the instructions carefully before you set up or operate the control. Always follow the specifications in the safety instructions. Failure to do so can result in serious injuries and property damage.




2.1 Basic safety instructions

The **P40 CD** control may only be used as described in this manual.

The manual must always be available at the control's usage site.

Work on live parts is prohibited.

The control was built and tested in accordance with the applicable regulations and safety requirements and was shipped from the factory in a perfectly safe operating condition.

The **P40 CD** only operates safely and reliably when the control is used for its intended purpose ( 1.5.2 *Intended use*, Page 6).

Before leaving the work station:

- Switch off the control
- Wait for the machine to come to a standstill
- Wait for the LEDs to extinguish

Comply with the country-specific safety and accident prevention regulations and the legal requirements for occupational safety and environmental protection.

All of the warning signs and safety symbols on the control must always be kept in a legible condition and must not be removed. Missing or damaged signs must be replaced immediately.

The control may only be set up by qualified technical staff. Technical staff are persons with technical training in electronics and mechanics.

Duties of the owner-operator

Requirements on the personnel

The following work may only be performed by qualified technical staff:

- Maintenance work
- Repairs
- Work on electrical equipment

Only authorised persons may work on the machine. Everyone who works on the machine is part of the operating personnel. The operating personnel must have understood the manual before working on the machine.

Set-up The control must be carefully set up and commissioned by qualified technical staff to prevent any health hazards for the operating personnel.

The connection cable must have a power plug approved for the country of usage. Only qualified technical staff may attach the power plug to the connection cable.

Operation Check the control during operation for externally recognisable damage.

Interrupt the work if you notice any changes. Report all changes to the supervisor in charge.

A damaged control may no longer be used.

Conversions or modifications to the control are generally not permitted.

2.2 Signal words and symbols in warning signs

Warnings in the text are marked off by vertical bars. Their colours correspond to the severity of the danger. Signal words identify the severity of the danger:






Signal words and the dangers they describe:

Signal words

Signal word	Danger
WARNING	Performing an action can result in serious or dangerous consequences.
CAUTION	Performing an action has undesired consequences such as data loss or hardware damage.
NOTE	Hints or detailed information, which makes operation easier for the user.

In cases of personal danger, the following symbols indicate the type of hazard:

Symbols

Symbol	Type of hazard
	General hazard
	Electric shock
	Sharp objects
	Crushing
	Environmental damage

Examples Examples for the placement of the warnings in the text.

WARNING



Type and source of the hazard!

Consequences if not observed.

Actions to avert the danger.

-
- ↪ This is how a warning appears which can have serious or hazardous consequences if not observed.

CAUTION



Type and source of the hazard!

Consequences if not observed.

Actions to avert the danger.

-
- ↪ This is how a warning appears which can have undesired consequences such as data loss or hardware damage if not observed.

NOTE

Hint.

-
- ↪ This is how a detailed note appears which can make operation easier for the user.

3 Components and Functions

The **P40 CD** includes the following components in its delivery condition:

- Control panel **S4**
- Fastening parts
- Foot pedal linkage
- Nominal value transmitter

➤ Control unit **P40 CD**

3.1 Control P40 CD

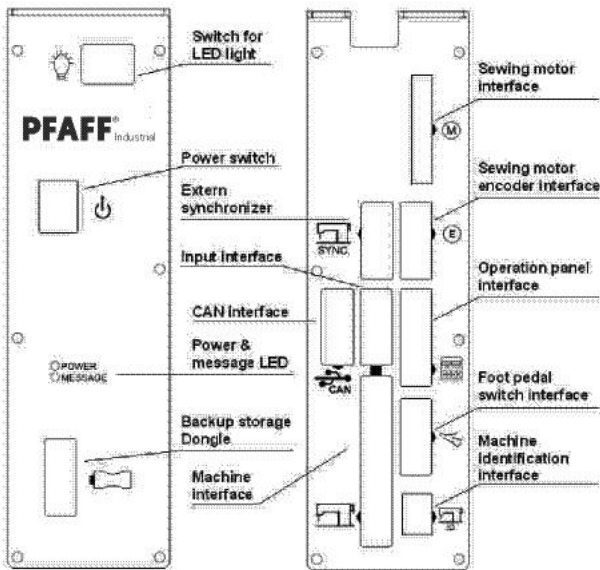


Fig. 1: P40 CD

3.2 Control panel S4

The control panel is located above the machine and is connected to the control.

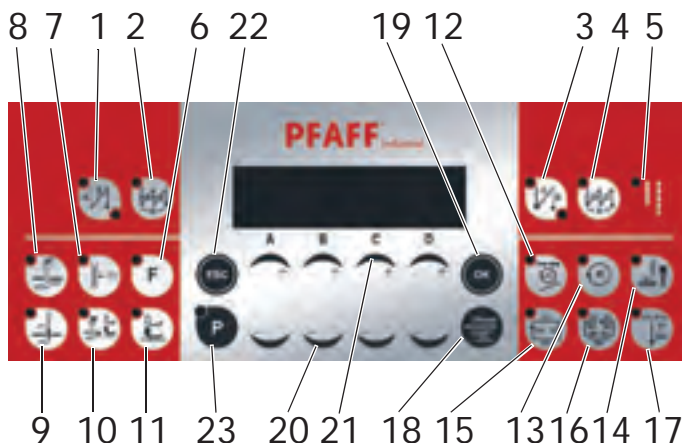
The control panel consists of

- *Display*
- *Buttons*

The control panel enables you to:

- Use button groups for calling machine functions
- Read service and error messages (📖 Page 51)

Fig. 2: Control panel S4



- (1)- Start backtack
- (2)- Multiple start backtack
- (3)- End backtack
- (4)- Multiple end backtack
- (5)- Second stitch length
- (6)- Freely programmable button
- (7)- Thread clamp
- (8)- Thread trimmer
- (9)- Needle position following sewing stop
- (10)- Needle position after thread trimmer

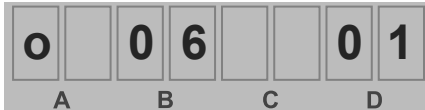
- (11)- Raise sewing foot after sewing stop
- (12)- Soft start
- (13)- Reduced sewing speed
- (14)- Light barrier
- (15)- Seam program I
- (16)- Seam program II
- (17)- Seam program II
- (18)- Coil reserve
- (19)- Confirmation button (OK)
- (20)- Minus button
- (21)- Plus button

3.2.1 Display

The display is divided into:

- *User levels*
- *Categories*
- *Parameters* (📖 *Parameter list*)

Fig. 3: Example of a display



(A) - User level

(B) - Category

(D) - Parameter

The user level includes:

- *o* (operator)
- *t* (technician)

The following expanded machine functions belong to the categories:

- Production control (e. g. bobbin winding stitch counter)
- Needle cooling
- Light barrier











Parameters are represented by a number from 00-99.







3.2.2 Buttons







The buttons are divided into the following groups:





- Thread
- Programming
- Seam program

Buttons and functions of the S4

Item	Button	Function
①	Thread button group	
	 Start backtack	<ul style="list-style-type: none"> • Sets start backtack
	 Multiple start backtack	<ul style="list-style-type: none"> • Sets multiple start backtack
	 End backtack	<ul style="list-style-type: none"> • Sets multiple end backtack
	 Multiple end backtack	<ul style="list-style-type: none"> • Sets multiple end backtack
	 Thread trimmer	<ul style="list-style-type: none"> • Activates or deactivates the thread trimmer
	 Thread clamp	<ul style="list-style-type: none"> • Activates or deactivates the thread clamp
	 Needle position following sewing stop	<ul style="list-style-type: none"> • Sets the needle position following a sewing stop
	 Raising sewing foot after thread trimmer	<ul style="list-style-type: none"> • Activates or deactivates raising sewing foot after the thread trimmer
	 Raising the sewing foot after a sewing stop	<ul style="list-style-type: none"> • Activates or deactivates the raising sewing foot after a sewing stop
	 Soft start	<ul style="list-style-type: none"> • Activates or deactivates the soft start

Item	Button	Function
	 Speed	<ul style="list-style-type: none"> • Reduces the motor speed
②	 Function button	<ul style="list-style-type: none"> • Activates or deactivates any desired stored function
③	Button group programming	
	 ESC	<ul style="list-style-type: none"> • Ends the setting mode
	 A+	<ul style="list-style-type: none"> • Increases parameters • Changes the user level • Selects subprogram
	 B+	<ul style="list-style-type: none"> • Increases parameters • Changes to the next highest category • Selects subprogram
	C+	<ul style="list-style-type: none"> • Increases parameters • Selects subprogram
	 D+	<ul style="list-style-type: none"> • Increases parameters • Selects subprogram

Item	Button	Function
	 OK	<ul style="list-style-type: none">• Calls or saves parameters
	 P	<ul style="list-style-type: none">• Starts or ends setting mode
	A- 	<ul style="list-style-type: none">• Decreases parameters• Changes the user level• Selects subprogram
	B- 	<ul style="list-style-type: none">• Decreases parameters• Changes to the next lowest category• Selects subprogram
	C- 	<ul style="list-style-type: none">• Decreases parameters• Selects subprogram
	D- 	<ul style="list-style-type: none">• Decreases parameters• Selects subprogram

Item	Button	Function
		<ul style="list-style-type: none"> Resets the (piece) counter
④	Seam program button group	
		<ul style="list-style-type: none"> Activates seam program I
		<ul style="list-style-type: none"> Activates seam program II
		<ul style="list-style-type: none"> Sets seam program III

3.3 Nominal value transmitter

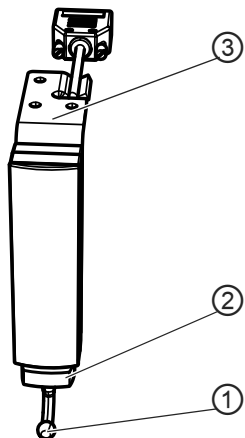
The nominal value transmitter converts the values coming from the foot pedal into voltage values. The nominal value transmitter specifies the speed and starts the thread trimmer or raising sewing foot.

The nominal value transmitter is attached under the frame by a mounting bracket.

The nominal value transmitter includes:

- a push/pull rod (1), which is connected to the machine's foot pedal by a linkage
- a spring preload (2), on which 3 settings can be made for the push/pull rod (no, 1/8 or 1/4 rotation)

Fig. 4: Nominal value transmitter




(1)- Push/pull rod
(2)- Spring preload

(3)- Fastening parts

4 Individual Settings

The individual settings described below must be made for every machine.

4.1 Initial commissioning

Before the initial commissioning of the **P40 CD**, it is essential that you refer to chapter  2 *Safety*, Page 7. It is

CAUTION



Overload due to faulty connection!

Hardware damage is possible.

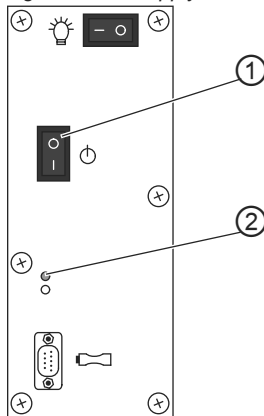
Operate additional devices or production equipment on the control only with low voltage.

Please ensure the following:

- Selection of the machine class
- Setting of the positions






4.2 Activate technician parameter level

Fig. 5: Power supply



- (1) - Master switch
(2) - POWER LED



1. Press and hold button  and button  simultaneously.
2. Press the master switch (1) downwards to position I.
✦ The POWER LED (2) lights up. The POWER LED lights up green on the control panel.
3. Release button  and button .
4. Press button .
- ✦ The technician level is activated.

NOTE

The technician level is only activated as long as the control is switched on.

You can make individual settings.

4.3 Check machine class


All machine-specific basic functions are already factory installed on the machine ID of sewing head of the machine. Check for your own safety that the set machine class corresponds to the one on the serial tag.

How to display the machine class:

1. Call up parameter $t \ 51 \ 04$.

2. Press .



If the correct machine class is not displayed, you need a dongle with the current software version to change the machine class ( 7.2 Perform update, Page 42).

4.4 Positions

You need to set the following positions after the set-up:

- Reference position
- Position 1
- Position 2
- Arrow position
- Thread-in position

4.4.1 Set reference position

The reference position establishes a link between the synchronizer and the actual mechanical position.

How to set the reference position:

1. Call up parameter $t \ 08 \ 10$.

2. Press .




 *Syn?*: appears on the display.

3. Turn the handwheel.

 *Ref.Pos?*: appears on the display.

4. Turn the handwheel in the running direction of the needle until

it lowers to the height of the upper edge of the stitch plate.

5. Confirm by pressing .

4.4.2 Set position 1

Position 1 (bottom position) denotes the bottom position of the sewing machine needle.

How to set position 1:




1. Call up parameter $t \ 08 \ 12$.

2. Press .

 The LED in button  flashes. The factory set position appears on the display.

3. Turn the handwheel in the running direction of the needle until it lowers to the height of the stitch plate and the desired position has been reached.

4. Confirm by pressing .



Information

You can set the position values not only with the handwheel but also with the plus and/or minus buttons (except A).

4.4.3 Set position 2

Position 2 (top position) denotes the top position of the sewing machine needle.

How to set position 2:




1. Call up parameter $t \ 08 \ 13$.

2. Press .

↗ The LED in button  flashes. The factory set position appears on the display.


3. Turn the handwheel in the running direction of the needle until it lowers to the height of the stitch plate and the desired position has been reached.

4. Confirm by pressing .

4.4.4 Set arrow position

The arrow position helps to achieve a very precise prick for the seam start.

Important

The arrow position must be allocated to the function button ( 5.3 Set function button, Page 35).



How to set the arrow position:


1. Call up parameter $t\ 08\ 14$.

2. Press .



↗ The LED in button  flashes. The factory set position appears on the display.

3. Turn the handwheel in the running direction of the needle until it lowers to the height of the stitch plate and the desired position has been reached.

4. Confirm by pressing .

4.4.5 Set thread-in position

The thread-in position helps to thread in the sewing thread without the machine starting up. All machine functions are locked when the threading aid function is activated.



Important


The thread-in position must be allocated to the function button (📖 5.3 Set function button, Page 35).

How to set the thread-in position:




1. Call up parameter t_{0815} .

2. Press .

↗ The LED in button  flashes. The factory set position appears on the display.

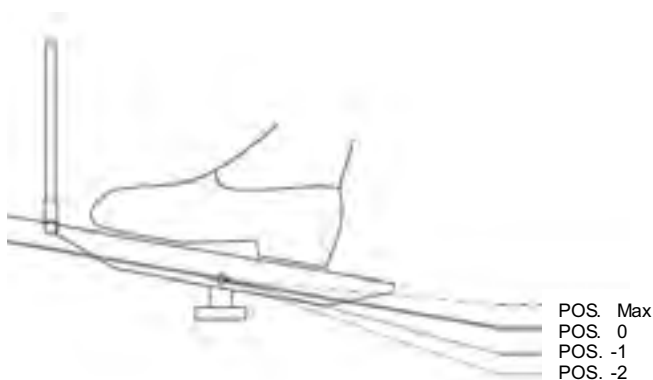
3. Turn the handwheel in the running direction of the needle until it lowers to the height of the stitch plate and the desired position has been reached.

4. Confirm by pressing .

4.5 Calibrate foot pedal

The foot pedal must be calibrated after assembling the speed control unit. In addition, a speed curve can be determined, which influences the acceleration of the sewing head of the machine. The speed curves apply to the maximum and minimum speed set and the following pedal positions.

Fig. 6: Positions for the foot pedal



How to calibrate the foot pedal:

1. Call up parameter t_{0820} .



2. Press **OK**.

⚡ The LED in button **P** flashes. *POS -2?* appears on the display.

3. Operate the foot pedal in position -2.

4. Confirm by pressing **OK**.

⚡ *POS -1?* appears on the display.

5. Operate the foot pedal in position -1.

6. Confirm by pressing **OK**.

⚡ *POS -0?* appears on the display.

7. Operate the foot pedal in position -0.

8. Confirm by pressing **OK**.

⚡ *POS Max?* appears on the display.

9. Press the foot pedal all the way forwards.

10. Press .

↩ The display jumps back to parameter *t 08 20*.


You can navigate to the next parameter to change the treadle stages.

Change treadle stages

You can use the treadle stage function to specify how quickly the maximum speed is achieved. The fewer treadle stages you specify, the quicker you achieve the maximum speed.


How to change the treadle stages:

1. Call up parameter *t 08 21*.

2. Press .

↩ The LED in button  flashes. The current number of treadle stages set appear on the display.

3. Keep pressing *D+* or *D-* until the desired number appears on the display.

4. Confirm by pressing .

You can navigate to the next parameter to change the speed curve.

Change speed curve

How to change the speed curve:

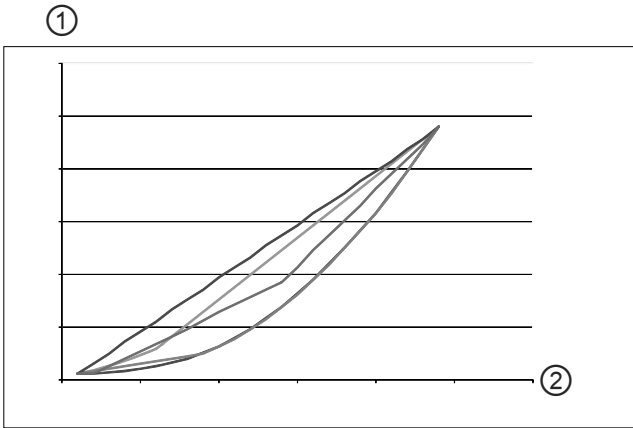


1. Call up parameter *t 08 22*.

2. Press .

↩ The LED in button  flashes. The value for the current speed curve set appears on the display:

Fig. 7: Speed curves



(1)- Speed

(2)- Treadle stage

If the desired value does not appear:

Keep pressing button $D+$ until the desired value appears.

3. Confirm by pressing **OK**.

Press **ESC** to exit setup mode if you do not want to make any other settings.

4.6 Switch off the control

WARNING



Puncture or prick due to accidental activation!

Minor injuries may occur.

Pull out the power plug before leaving the work station during prolonged idle times.

1. Switch off the control on the main switch.



Power Off appears on the display.


The POWER LED on the control panel lights up red.

The MESSAGE LED on the control also light up red.

The LEDS then go off.

5 Service Settings via the Software

The control is operated **P40 CD** exclusively by the control panel **S4**.

Knowledge of the basic operation (see  *Operating manual*) is expected.

5.1 Advanced operation

This chapter teaches you some of the advanced operating principles of working with the control. These include:

- Change the user level
- Switch the button lock on and off

5.1.1 Change user level





The user level is activated by default. This means that you are denied access to many functions. Therefore, activate the technician level.

How to activate the technician level:

Important

The control must be switched off.



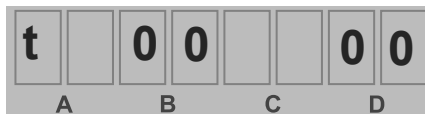
1. Press and hold button  and button  simultaneously.
2. Switch on the control on the main switch.
- ↳ The POWER LED lights up. The POWER LED lights up green on the control panel.
3. Release button  and button .
- ↳ The following appears on the display.





4. Press button **A+**.

↳ The following appears on the display.



The technician level is activated.

You can make settings on the control panel.

5.1.2 Switch button lock on and off

You can use the button lock to prevent button groups being used (inadvertently). You also have the option to lock buttons for front and end backtack.

CAUTION



Undesirable work restrictions due to the locking of the *Programming* button groups!


The button lock should only be removed with a software update.

Always carefully consider locking buttons.

Switch on the button lock for individual button groups

An example should illustrate how you switch on the button lock for an individual button group.

How to lock the *Seam program* button group:

1. Press .

✚ Setup mode is started.




2. Call up parameter *t* 52 43.

3. Press .


✚ The LED in button  flashes. 0 appears on the display.

4. Press button *D+*.

✚ 1 appears on the display.

✚ Press  to confirm the selection.


✚ The *Seam program* button group is locked.

5. Press  to exit setup mode.

✚ *Ready* appears on the display.

Change the parameter in category 52 from 43 to 0 to switch off the button lock again.

Information

Please refer to the  *Parameter list* if you would like to lock other button groups.



5.2 Thread settings

It is assumed that you are in setup mode when making changes for the *Thread* button group. You can make the following settings:



- Darning program
- Soft start
- Raising sewing foot
- Light barrier (if available)

5.2.1 Activate multiple start backtack as darning program

You need to activate the multiple start backtack as a function if the operating personnel are using it as a darning program.

How to activate the multiple start backtack as a darning program:





1. Call up parameter $t\ 00\ 23$.
2. Press  .
↳ 0 appears on the display.
3. Press button $D+$.
↳ 1 appears on the display.
4. Press  to confirm the selection.
↳ The darning program is activated.

5.2.2 Set soft start

You can set the stitch count for which the soft start is activated.

How to set the soft start:





1. Call up parameter $t\ 05\ 01$.
2. Press  .
↳ The factory set stitch count appears on the display.
3. Keep pressing button $D+$ until the desired stitch count appears on the display.
4. Press  to confirm the selection.

5.2.3 Set raising sewing foot

You can set whether there is a delay for raising the sewing foot.
You can also set the holding power of the magnet for the raising sewing foot.

Switch-on delay when machine is stationary

How to set the switch-on delay when the machine is stationary:



1. Call up parameter $t_{03\ 11}$.
2. Press .
3. Keep pressing button $D+$ until the desired duration appears on the display.
4. Press  to confirm the selection.



You can set the switch-on delay at the seam end.

Switch-on delay at the seam end

How to set the switch-on delay at the seam end:

1. Call up parameter $t_{03\ 12}$.
2. Press .
3. Keep pressing button $D+$ until the desired duration appears on the display.
4. Press  to confirm the selection.

You can set the holding power of the magnet for the raising sewing foot.

Holding power of the magnet

The sewing foot is fully controlled and raised with a magnet.
The control switches to partial control after a certain time to reduce the load.

CAUTION







Magnet overload due to an excessive load!

Hardware damage is possible.

Please observe the permissible switch-on duration of the magnet.

How to change the holding power of the magnet:



1. Call up parameter $t_{03.51}$.
2. Press .
3. Keep pressing button $D+$ until the desired mark-space ratio for the time period t_1 appears on the display.
A value of 100 corresponds to full control.
4. Press  to confirm the selection.
5. Call up parameter $t_{03.53}$.
6. Press .
7. Keep pressing button $D+$ until the desired mark-space ratio for the time period t_2 appears on the display.
8. Press  to confirm the selection.



5.2.4 Set light barrier


Activate filter for stitch top

The filter for the stitch top prevents the light barrier from being triggered prematurely.


How to activate the filter for the stitch top:






1. Call up parameter $t_{16.03}$.
 2. Press .
-  0 appears on the display.

3. Press button $D+$.
- ☞ 1 appears on the display.
4. Press  to confirm the selection.

5.3 Set function button

Your favourites can be saved using the function button . What you activate with the function button is set at the factory depending on the machine class. You can change this setting. An example should illustrate how you allocate a function module to a function button.

How to activate function module 1:


1. Call up parameter $t \ 52 \ 20$.
 2. Press .
 3. Keep pressing button $D+$ until 8 appears on the display.
 4. Press  to confirm the selection.
- ☞ The display switches automatically to  *Set function module 1*, Page 35.




You can find out in the following section how you determine which machine functions you call up via the function modules.

5.4 Function modules

5.4.1 Set function module 1

1. Call up parameter $t \ 11 \ 00$.
2. Press .

3. Keep pressing button $D+$ until the desired machine function appears on the display.
4. Press  to confirm the selection.


5.4.2 Set function module 2

1. Use parameter $t\ 11\ 30$.




5.4.3 Set function module 3

1. Use parameter $t\ 11\ 60$.

5.5 Store and load data

The sewing data and seam programs can be stored or loaded using a dongle (see  *Operating manual, extra equipment*).

5.5.1 Store data

1. Connect a **DATA** type dongle.
2. Call up parameter $t\ 51\ 11$.
3. Press .
4. Keep pressing button $D+$ until 1 appears on the display.
5. Press  to confirm the selection.
 - ↳ The sewing data is stored on the dongle.
Store and *Pl. Wait!* appears on the display.
The MESSAGE LED flashes until the process is complete.
6. Keep pressing button $D+$ until 3 appears on the display.
7. Press  to confirm the selection.
 - ↳ The seam programs are stored on the dongle.
Store and *Pl. Wait!* appears on the display.
The MESSAGE LED flashes until the process is complete.



CAUTION




Early removal of the dongle causes the storage process to terminate!

Loss of data.

Remove the dongle only after the MESSAGE LED goes off.

8. Remove the dongle when the MESSAGE LED goes off.

5.5.2 Load data




1. Connect a **DATA** type dongle.
2. Call up parameter *t 51 10*.
3. Press .
4. Keep pressing button *D+* until *1* appears on the display.
5. Press  to confirm the selection.
- ↳ The sewing data are loaded from the dongle.
Load... and *Pl. Wait!* appear on the display.
 The MESSAGE LED flashes until the process is complete.
6. Keep pressing button *D+* until *3* appears on the display.
7. Press  to confirm the selection.
- ↳ The seam programs are loaded from the dongle.
Load... and *Pl. Wait!* appear on the display.
 The MESSAGE LED flashes until the process is complete.
8. Remove the dongle when the MESSAGE LED goes off and the parameter display appears.



You can perform a mater reset, i.e. reset the control to the factory settings, if the data on the dongle cannot be used.

5.5.3 Perform master reset



1. Call up parameter *t 51 10*.
2.  Press
3. Keep pressing button *D+* until *4* appears on the display.
4. Press  to confirm the selection.
5.  The factory settings are loaded from the machine ID.
Load... and *Pl. Wait!* appear on the display.
The MESSAGE LED flashes until the process is complete.
5. Switch off the control the MESSAGE LED goes off and the parameter display appears.

6 Electrical Installation

WARNING



Risk of electric shock from live parts!

Dangerous life-threatening injuries are possible.

ONLY qualified technical staff or people with appropriate training may carry out work on electrical equipment.

ALWAYS disconnect the mains plug when working on electrical equipment.

6.1 Connect power supply

Connect the control to an earthed AC mains according to the wiring diagram (*Appendix*, Page 53). Always use a multi-pin plug with earthing contact (9850 001313) for the connection.

The following systems are suitable for the power supply connection:

- TN system
- TT system
- IT system

6.2 Connect sewing lamp



The control offers the option to connect various sewing lamps, which are turned on using the switch on the front (*3.1 Control P40 CD*, Page 11).

The following connections are available:

- Terminal X5 (24 V)
- Terminal X3 (230 V)
- Terminal X4 (protective conductor)

Important

Terminal X5 is only intended for machine-specific sewing lamps from Dürkopp Adler.




(1)- Connection for 24 V
(2)- Connection for 230 V



7 Software Update

It is possible to perform a software update of the **P40 CD** as well as the standard parameters of the machine.

A dongle (see  *Operating manual, extra equipment*) and the **Dongle Copy** program are required for a software update.

This extra equipment is available on the PFAFF website:

Please follow the **sequence**:



1. Check the version
2. Switch off the control
3. Perform the update

7.1 Check version

The control offers the option to check the version of the software installed to see if it is the latest version.


How to check the version of the software installed:

1. Call up parameter $t\ 51\ 00$.



2. Press .

 The control type appears on the display.

3. Press .

↳ The software version appears on the display.

4. Press .

↳ The date (YYYY,MM,DD) of the publication appears on the display.

You can switch ff the control to perform the update. Do not perform an update if the version installed is newer than the one on the dongle.

NOTE

You can look at the version on the dongle using the **Dongle Copy** program.

7.2 Perform update

CAUTION



The dongle overwrites the version installed!

Loss of data.

Check the version installed before the software update.



Important

Make sure that the control is switch off before starting the update.



How to perform a software update:

1. Connect the dongle with the downloaded software.

2. Switch on the control.

- ☞ Both LEDs on the control (POWER and MESSAGE) flash.
The current progress is shown on the display.

Default? appears on the display when the update is complete.

CAUTION




Early removal of the dongle causes a control malfunction!

Loss of data. Remove the dongle only after switching off the control.


You have the following options:

- Retain the settings (recommended)
- Load the default values
- Select the machine class

Retain settings




1. Press .
2. Switch off the control.
3. Remove the dongle if the LEDs on the control panel and control are off.

Load default values

1. Press .
2. Switch off the control.
3. Remove the dongle if the LEDs on the control panel and control are off.

Select machine class



1. Select the machine class with button $A+$ or $A-$.
2. Confirm the selection by pressing twice. 
3. Confirm the query with .
4.  *Load...* and *Pl. Wait!* appear on the display.
4. Switch off the control when the parameter display appears.
5. Remove the dongle if the LEDs on the control panel and control are off.

8 Inspection

You can determine the current condition of the control and identify the necessary ramifications for future use by performing a hardware test. You can perform the following tests:

- Analog input
- Digital input
- Check digital output and analog input

You can check all analog inputs during the analog test.

How to perform a hardware test:

1. Call up parameter $t\ 51\ 12$.



2. Press .

 1. *Analog* appears on the display.

3. Press .

4. Keep pressing button $A+$ until the desired input appears on the display.

5. Press .

You can check other inputs or continue with the digital input test.

8.1 Check digital input

WARNING



Puncture or prick due to the running machine!

Minor injuries may occur.





Perform the input test only with the utmost caution.

You can check all digital inputs during the input test. These may be the following depending on the machine class:

- Button panel
- Knee lever
- Light barrier

How to perform the test:



1. Call up parameter *t 51 12*.
2. Press  .
3. Keep pressing button *A+* until *2. Inputs* appears on the display.
4. Press  .
 One input appears on the display.
5. Press the corresponding button.
6. Press  .

You can check other inputs or continue with the digital output test.

8.2 Check digital output

CAUTION



Danger of breakage caused by collisions with other machine components!

Hardware damage is possible.




Check whether collisions are possible before switching on every output.

You can check all digital outputs during the output test.

How to perform the test:



1. Call up parameter *t 51 12*.

2. Press .
3. Keep pressing button *A+* until 3. *Outputs* appears on the display.
4. Press .
- ↳ One input appears on the display.
5. Keep pressing button *A+* until the desired output appears on the display.
6. Press .



You can activate the output with button *D+*.

You can deactivate the output with button *D-*.


8.3 Check FLASH

You can display a check sum during the FLASH test and compare this with the one specified on the PFAFF website.

How to perform the test:

1. Call up parameter *t 51 12*.
2. Press .
3. Keep pressing button *A+* until 4. *Flash* appears on the display.
4. Press .
- ↳ A check sum appears on the display.



Please contact the after-sales service ( Page 52) if the check sums do not match.



9 Disposal

The control **P40 CD** must not be disposed of together with normal household waste.

The control must be disposed of in an appropriate and proper way in accordance with the national regulations.

CAUTION



Risk of environmental damage due to incorrect disposal!

Incorrect disposal of the control can lead to serious environmental damage.

ALWAYS follow the statutory waste disposal regulations.

Please bear in mind when disposing of the control that it is made up of different materials (steel, plastic, electrical parts, etc.). Please observe the applicable national regulations when disposing of it.

10 Technical Data

The technical data changes depending on the sewing motor.


Rating data and usage conditions

Data / motor type	unit	73-071 009-91	73-071 010-91
Rating data			
Mains voltage (U _N)	[V]	190-250, single phase	190-250, single phase
Mains frequency (f _N)	[Hz]	50/60	50/60
Capacity rating (P ₂ , delivered)	[W]	400	600
Motor speed (n _N)	[1/min]	600	4000
Motor torque (M _N)	[Nm]	3.5	5.8
Operating mode	S5 Intermittent service with electric brake, relative duty cycle 40 %, operating time 2.5 s		
Protection class	IP40		
Insulation class	E		
Usage conditions			
Ambient temperature	[°C]	+ 5 to 50	

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11 Troubleshooting

The control **P40 CD** includes 3 types of error messages, which are displayed by the control panel.

If you experience an error that is not described in the  *Parameter list*, please contact the manufacturer. Do not try to eliminate the error yourself.

11.1 Error messages

Error table

Type	Abbreviation	Description	Remedy
Error	Err XXXX	Major error It is not possible to continue working	<ul style="list-style-type: none"> • Switch off the control • Contact technical staff and have the error repaired
Warning	Wrn XXXX	Error It is not possible to continue working	<ul style="list-style-type: none"> • Eliminate the condition which caused the warning
Information	Inf XXXX	Information: It is possible to continue working	<ul style="list-style-type: none"> • Press  .

XXXX is the place holder for the respective counter code

A list of the counter codes can be found in the  *Parameter list*.

11.2 After-sales service

Point of contact for breakdowns, repairs or damage to the control:

**PFAFF Industriesysteme
und Maschinen GmbH**

Hans-Geiger-Str. 12 - IG Nord
D-67661 Kaiserslautern

Tel.: +49 - 6301 3205 - 0

Fax: +49-6301 3205 - 1386

E-Mail: info@pfaff-industrial.com

12 Appendix

Fig. 9: Wiring diagram for TN system

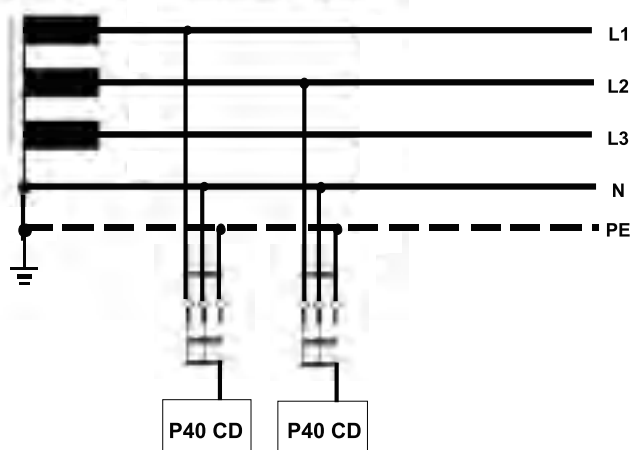


Fig. 10: Wiring diagram for TT system

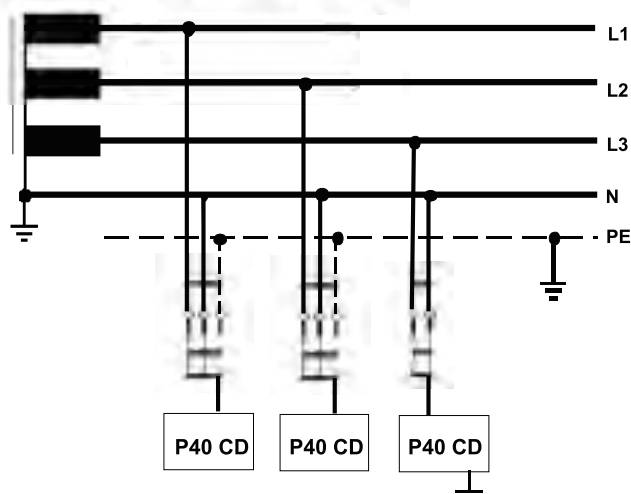
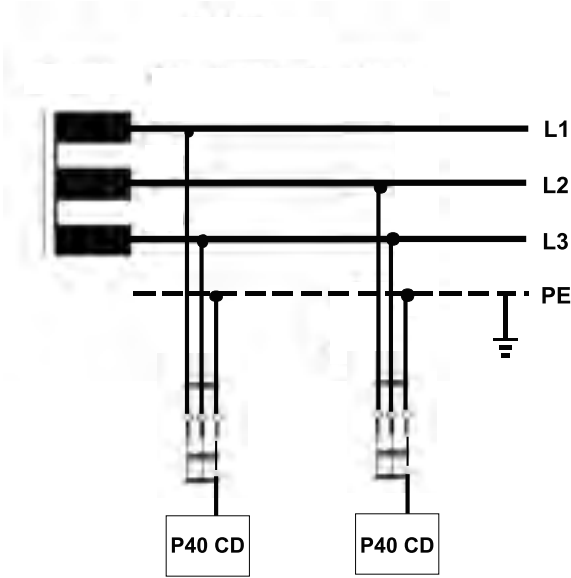


Fig. 11: Wiring diagram for IT system





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