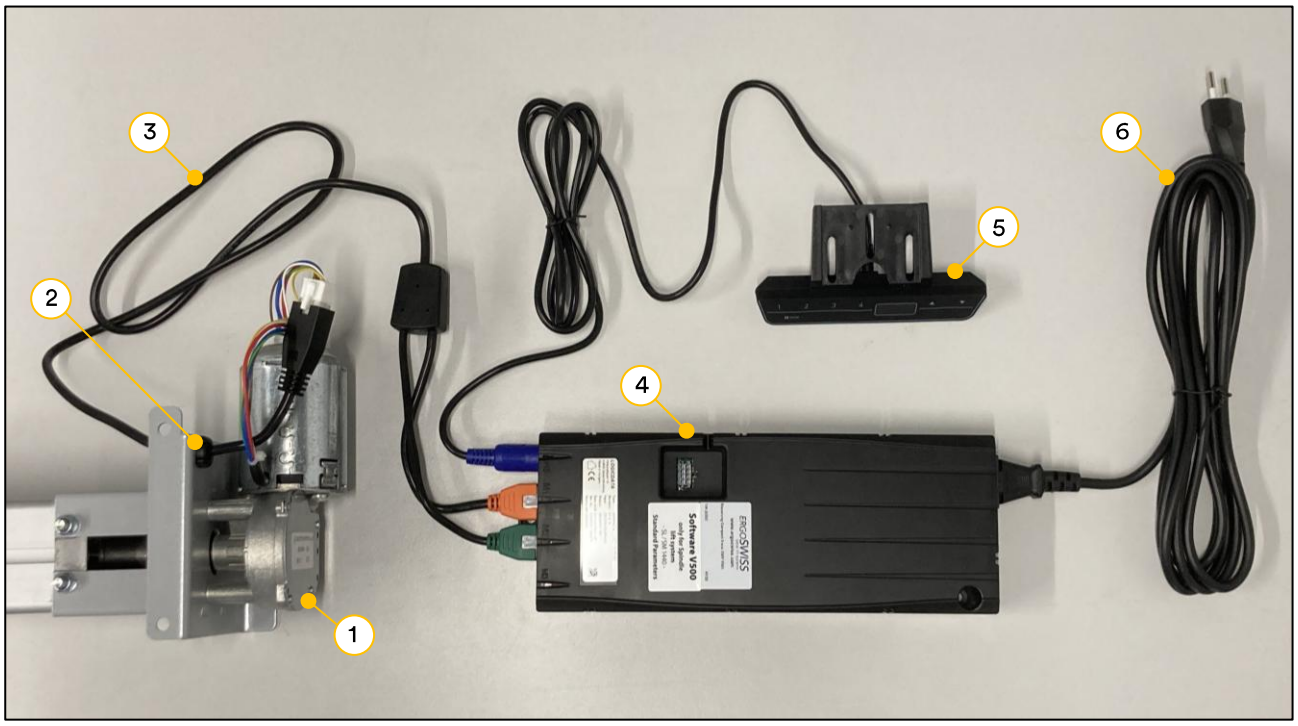
Operating manual –Lifting system Hydraulic with Motor drive PXD.2 Compact

It is essential to read this operating instruction thoroughly before commissioning the system. The manual must be kept in close proximity to the system for future reference.



① Pump with Motor PXD.2
② Cable strain relief
③ Motor cable PXD.2
④ Control box Compact-3-eco
⑤ Hand switch Memory
⑥ Power cable

Errors and technical changes reserved.

Ergoswiss AG does not assume any liability for operating errors or using the products outside of the intended purpose use.

At the time of delivery Ergoswiss AG will replace or repair defect products within accordance with the warranty provisions.
In addition, Ergoswiss assumes no other liability.

For your questions and special custom demand Ergoswiss AG will be at your disposal.

Ergoswiss AG
Nöllenstrasse 15a
CH-9443 Widnau
Tel.: +41 (0) 71 727 06 70
Fax: +41 (0) 71 727 06 79

info@ergoswiss.com
www.ergoswiss.com

This operating instruction applies to:

Pump PA/PB/PF with Motor drive
e.g.: Pump PA 2830 with Motor drive (EU) – (Article no.: 320.20003)
e.g.: Pump PF 4830 with Motor drive (CH) – (Article no.: 333.20033)
e.g.: Pump PB 6830 with Motor drive (US) – (Article no.: 362.20043)

	Description	Standard variations
PF	Type of pump	PA, PB, PF
4830	Number of driven cylinders	1, 2, 3, 4, 5, 6, 7, 8, 9, 0 = 10
4830	Code for piston diameter	4 = 14 mm, 8 = 18 mm, 6 = 26 mm
4830	Stroke of cylinder on the 14xx-series in cm	15, 20, 30, 40, 50, 60, 70 cm
EU	Country specific power cable	EU, CH, US

Other versions

	Description
GS	milled pusher block
GZ	milled center plate
AL	Aluminum center plate
s01-s99	Special variation: special stroke, special front panel, color, special oil, etc.

Notes over the operating instruction:

Lifting systems from Ergoswiss AG are intended for installation in an overall system (e.g. assembly table) and classified under the category of incomplete machines in accordance with the Machinery Regulation (EU) 2023/1230.

This operating instruction contain information on the commissioning, handling and safety of the lifting system and are aimed at the further- user and manufacturer of the entire system. The further-user of this lifting system is obliged to create an operating manual with all usage information and hazard warnings for the entire system.

The declaration of incorporation is only valid for the Ergoswiss lifting system and not for the overall system created by the further-user.

Table of content

1 Safety requirements

The safety instructions must be paid attention to! If the system is operated improperly or not in accordance with the intended use, there may be a risk to persons and property!

Before installing and operating the lifting system, this operating instruction must be read and understood. The manual must be kept in the close proximity to the system for future reference.

1.1 Explanations of the symbols and notes

The following explanations of symbols and notes must be observed. These are classified according to ISO 3864-2 (ANSI Z535.4).

DANGER

Indicates an imminent danger.
Failure to follow the information will result in death or severe physical injury (disability).

WARNING

Indicates a potentially dangerous situation.
Failure to follow the information will result in death or severe physical injury (disability).

ATTENTION

Indicates a potentially dangerous situation.
Failure to follow the information will result in damage to property and minor or medium physical injuries will result.

NOTE
Indicates general information, useful user tips and work recommendations, which have no impact on the health and safety of staff.

2 System description

2.1 General information

The basic functionality of a hydraulic lifting system by Ergoswiss AG is the lifting and lowering of work surfaces, machine parts, profile systems, etc.

An operative hydraulic lifting System consists of a minimum of following components:
→ Lifting element (Table leg Tx, Linear unit Lx, Cylinder Cx) with tubing
→ Pump (PA, PB, PF) with Motor drive
→ Control box Compact-3-eco
→ Hand switch Memory
→ Country specific power cable

The motor drive PXD Compact consists of a motor PXD (already mounted to the pump), a control box Compact-3-eco, various connection cables, a hand switch Memory and a plastic housing as engine cover. The motor drive PXD Compact moves an internal spindle drive inside the pump, which forces the volume of oil from the pump through the tubing into the lifting elements.

The intelligent control box Compact-3-eco is equipped with a highly efficient switched-mode power supply (SMPS) and a monitoring software (overload, duty cycle, overheat). Due to the optimised driving comfort, the end positions are gently approached as low-speed zones up to the standstill. Additional functions, such as the synchronisation of two to four control boxes or the connection of safety strips (squeezing protection) can be used.

With the hand switch Memory the lifting system can be operated comfortably, the work surface will be adjusted steplessly in its height.
The current height of the work surface is shown continuously on the display (in cm or inches). In addition, up to four different memory positions can be saved and approached individually. Errors that occur are also shown on the display.

2.2 Intended purpose use

System is designed for:	NOT scope of application:
→ Height adjustment of worktops → Height adjustment of machine parts → Height adjustment of profile systems → ... the list is not exhaustive	→ Clamping toolor press → Security component → Lifting platforms / personnel transport only in consultation with Ergoswiss AG

2.2.1 General safety instructions

ATTENTION

The safety instructions must be paid attention to! If the system is operated improperly or not in accordance with the intended use, there may be a risk to persons and property!

The lifting system may be used if:
→ it is located in closed rooms, in a dry and non-explosive environment.
→ the ambient temperature is between +10 °C and +40 °C.
→ the relative humidity range is between 30% and 85% (non-condensing).
→ there are no strong electromagnetic fields nearby.
→ This device can be used by children aged 8 and over and by persons with reduced physical, sensory or mental abilities or lack of experience and knowledge if they are supervised or have been instructed in the safe use of the device and the resulting dangers to understand.

The lifting system must not be:

→ operated outside of the performance data (max. tensile, compressive, bending moment loads).
→ subjected to impulse, impact and impact forces (e.g. setting down loads).
→ operated with an incorrect mains voltage! Adhere to the type plate of the control box!
→ designed for continuous operation (below the duty cycle ratio of 2/18).
→ operated on unstable or sloping ground.
→ operated with impermissible or non-designated components.
(e.g. different types of lifting elements; replacement of the control (control software))
→ operated with damaged components.
→ opened, reworked or rebuilt.
→ operated if the power cable is not freely accessible. Disconnect the power cord in the event of a fault.
→ Children must not play with the device. Cleaning and user maintenance shall not be made by children without supervision.

When installing and operating the lifting system, the intended use of the entire system must be adhered to. Commissioning is prohibited until the entire system complies with the provisions of the Machinery Regulation (EU) 2023/1230. For this purpose, it is essential to perform a risk analysis, so that possible residual hazards can be reacted to (e.g. through constructive measures or through instructions in the operating instructions and/or through safety indication on the system). In the event of improper use, the liability of Ergoswiss AG and the general operating permit for the lifting system will expire.

2.3 Target group and prior knowledge

Before installing and operating the lifting system, this operating instruction must be read and understood. The manual must be kept in close proximity to the system for future reference.

This operating instruction addresses the following groups of people:

The **manufacturer of the overall system** who integrates this lifting system into an overall system and integrates these operating instructions into the operating instructions for the overall system.

The **commissioning personnel** who install the lifting system in a workplace, a machine, etc. and put it into operation. For commissioning basic mechanical and electrical knowledge are required.

2.4 Performance characteristics

2.4.1 Lifting element

	Lifting element 14xx	Lifting element 18xx	Lifting element 16xx
Cross-section Cylinder	Piston Ø = 14 mm	Piston Ø = 18 mm	Piston Ø = 26 mm
Cross-section Guiding	→ see technical drawing		
Standard stroke length	150, 200, 300, 400, 500, 600, 700 mm *(5.9", 7.9", 11.8", 15.7", 19.6", 23.6", 27.6")*		
Installation length	→ see technical drawing		
Weight	→ see technical drawing		
Max. allowed pressure load per lifting element	1'500 N *(337 lbf)*	2'500 N *(562 lbf)*	5'200 N *(1'169 lbf)*
Max. allowed system load	→ see system combination table		
Lifting speed	→ see system combination table		
Max. allowed tensile load	0 N *(0 lbf)* ①		
Reset force per lifting element ①	→ see system combination table		
Max. bending moments	→ see technical drawing ②		
End switch	No, storage of end positions (reading encoder)		
Tested product life span	10'000 double strokes, with max. stroke & system load, Duty cycle 2/18 ③		

① Single acting hydraulic system; cannot absorb any tensile force, requires reset force
② stat. = during standstill; dyn. = during stroke movement
③ Duty cycle 2/18; operating max. 2 min, pause 18 min

NOTE
For further information on the lifting element, see the system combination table and technical drawings.

2.4.2 Pump

	Pump PA	Pump PF	Pump PB
Number of connections for lifting elements	1 … 2	3 … 4	3 … 10
Cross-section Pump	35 x 85 mm *(1.38" x 3.35")*	65 x 60 mm *(2.56" x 2.36")*	60 x 120 mm *(2.36" x 4.72")*
Standard stroke length	150, 200, 300, 400, 500, 600, 700 mm *(5.9", 7.9", 11.8", 15.7", 19.6", 23.6", 27.6")*		
Installation length	→ see technical drawing		
Weight	→ see technical drawing		
Max. allowed system load	→ see system combination table		
Protection class (DIN EN 60529)	IP 41; PA, PF, PB 3xxx-6xxx IP 10; PB 7xxx-0xxx		
End switch	No, storage of end positions (reading encoder)		
Tested product life span	10'000 double strokes, with max. stroke & system load, duty cycle 2/18 ①		

① Duty cycle 2/18; operating max. 2 min, pause 18 min

NOTE
For further information on the pump, see the system combination table and technical drawings.

2.4.3 Motor PXD

Constructive data	Brush type commutation, worm gear
Nominal voltage	24 V
Idle speed	170 min^{-1}
Idle current	1.7 A
Protection class (DIN EN 60529)	IP 30
Dimensions (L x W x H)	164 x 94 x 94 mm *(6.46" x 3.7" x 3.7")*
Weight	1.13 kg *(2.5 lbs)*
Continuous noise level	< 60 dBA
End switch	No (reading encoder)
Tested product life span	10'000 double strokes, with max. stroke & system load, duty cycle 2/18 ①

① Duty Cycle 2/18; operating max. 2 min, pause 18 min

2.4.4 Control box Compact-3-eco

Dimensions (L x W x H)	264 x 103 x 37 mm *(10.39" x 4.06" x 1.46")*
Weight	0.55 kg *(1.2 lbs)*
Supply voltage	EU: 207 – 253 V 50 – 60 Hz US: 90 – 127 V 50 – 60 Hz
Primary standby power	≤0.3 W
Power	360 VA ; 15 A @ 24 V DC
Protection class (DIN EN 60529)	IP 20
Performance Level (DIN EN 13849-1)	PL b
Firmware	1.9

2.4.5 Hand switch Up/Down and Memory

Electrical connection	Plug DIN 45329; Cable length 1.8 m *(71")*
Supply voltage	5 VDC ± 10 %
Power consumption	50 mA (average)
Protection class (DIN EN 60529)	IP 30

2.4.6 System data

An excerpt of the system combination table is shown below.

# Lifting elements	Max. system load [kg] *(lbs)*	Stroke length [mm] *(in)*	Lifting element Type	Pump Type	Motor Type ②	Lifting speed	① Duty cycle [On/Off]
1	100 *(220)*	150 *(6")*	③ 1415	PA 1815	PAD (-10 mm stroke) ④	15 mm/s *(0.59"/s)*	2/18 min
		200 *(8")*	③ 1420	PA 1820			
		300 *(12")*	③ 1430	PA 1830			
		400 *(16")*	③ 1440	PA 1840			
		500 *(20")*	③ 1450	PA 1850			
		600 *(24")*	③ 1460	PA 1860			
		700 *(28")*	③ 1470	PA 1870			
2	300 *(660)*	150 *(6")*	③ 1415	PA 2815	PAD (-10 mm stroke) ④	15 mm/s *(0.59"/s)*	
		200 *(8")*	③ 1420	PA 2820			
		300 *(12")*	③ 1430	PA 2830			
		400 *(16")*	③ 1440	PA 2840			
		500 *(20")*	③ 1450	PA 2850			
		600 *(24")*	③ 1460	PA 2860			
		700 *(28")*	③ 1470	PA 2870			
	500 *(1'100)*	90 *(3.5")*	③ 1815	PA 2815	PAD (-6 mm stroke) ④	9 mm/s *(0.35"/s)*	
		110 *(4.3")*	③ 1815	PA 2820			
		180 *(7.1")*	③ 1820	PA 2830			
		240 *(9.4')*	③ 1830	PA 2840			
		300 *(12")*	③ 1830	PA 2850			
		400 *(16")*	③ 1840	PA 2866			
3 ... 10	350 *(770)*	150 *(6")*	③ 1415	PF/PB x815	PFD / PBD (-10 mm stroke) ④	15 mm/s *(0.59"/s)*	
		200 *(8")*	③ 1420	PF/PB x820			
		300 *(12")*	③ 1430	PF/PB x830			
		400 *(16")*	③ 1440	PF/PB x840			
		500 *(20")*	③ 1450	PF/PB x850			
		600 *(24")*	③ 1460	PF/PB x860			
		700 *(28")*	③ 1470	PF/PB x870			
	600 *(1'320)*	110 *(4.3")*	③ 1815	PF/PB x820	PFD / PBD (-6 mm stroke) ④	9 mm/s *(0.35"/s)*	
		180 *(7.1")*	③ 1820	PF/PB x830			
		240 *(9.4')*	③ 1830	PF/PB x840			
		300 *(12")*	③ 1830	PF/PB x850			
		400 *(16")*	③ 1840	PF/PB x866			
	800 *(1'760)*	110 *(4.3")*	③ 1815	PF/PB x418	PFD / PBD (-4 mm stroke) ④	5 mm/s *(0.20"/s)*	
		180 *(7.1")*	③ 1820	PF/PB x430			
		240 *(9.4')*	③ 1830	PF/PB x440			

① Duty cycle 2/18; operating max. 2 min, pause 18 min
② Voltage at the Motor drive (230 or 110 VAC)
③ Cylinder (CB, CD, CE, ...), Linear unit (LA, LD, ...) or Table leg (TA, TL, TT, ...)
④ The control box automatically offsets the upper and lower end positions by 1 motor revolution each as a safety measure.

NOTE
The lifting system can be subjected to uneven loads as long ...
→ the max. load on the single lifting element is not exceeded,
→ the max. bending torque of the lifting element is not exceeded,
→ the entire system is located on sufficient safe ground
... and the entire plant has been constructed in accordance with the provisions of the mechanical equilibrium. → Conducting a risk analysis

ATTENTION

High pulse / impact forces due to the discontinuation of loads are not allowed.
(e.g. discontinuation of loads in feed with crane or forklift)

3 Mounting instructions

NOTE
The hydraulic tubing is to be assembled to the lifting element in accordance with the assembly instructions.

The lifting element with tubing is to be assembled to the pump in accordance with the assembly instructions.

The pump with motor drive or with Hand crank is to be assembled to the existing system in accordance with the assembly instructions.

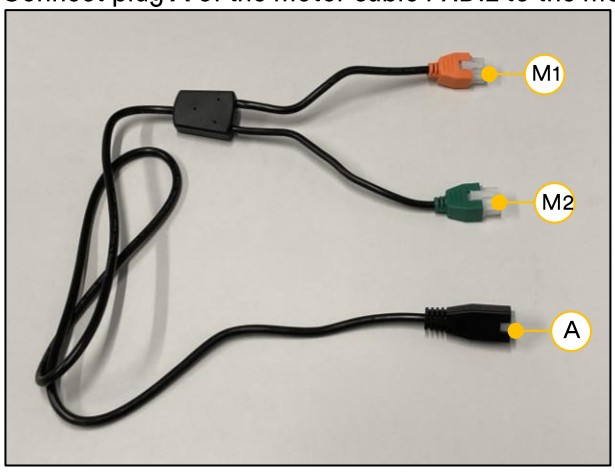
Information on mounting the pump, the pump with motor drive and the lifting element can be found in the technical drawings.

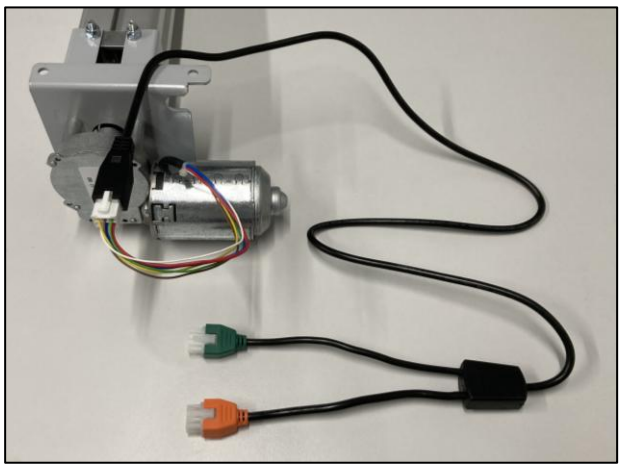
NOTE
To all connections of the pump a lifting element must be connected to, otherwise the pump will block and the lifting system will be damaged.

NOTE
The minimum tubing bending radius is 25 mm. The tubing must be routed in such a way that it is not exposed to any mechanical stress, no aggressive media (chemicals), no direct sunlight (UV radiation) and no heat.

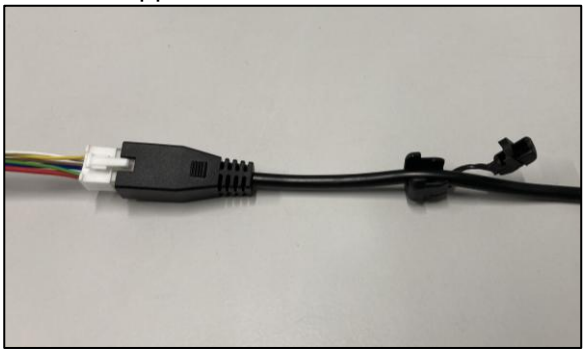
NOTE
The lifting system must be installed in such a way that all lifting elements can be fully retracted at any time.
Otherwise no initial operation and no reset of the system can be carried out.

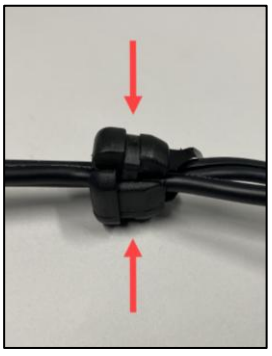
1. Connect plug **A** of the motor cable PXD.2 to the motor.



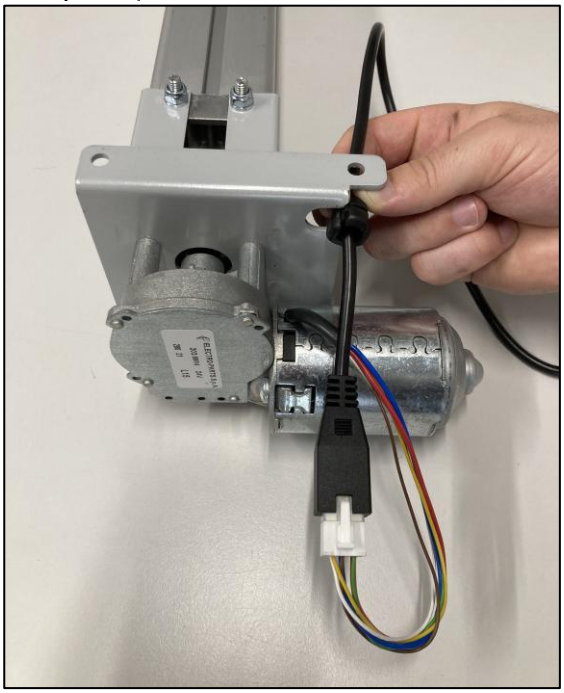


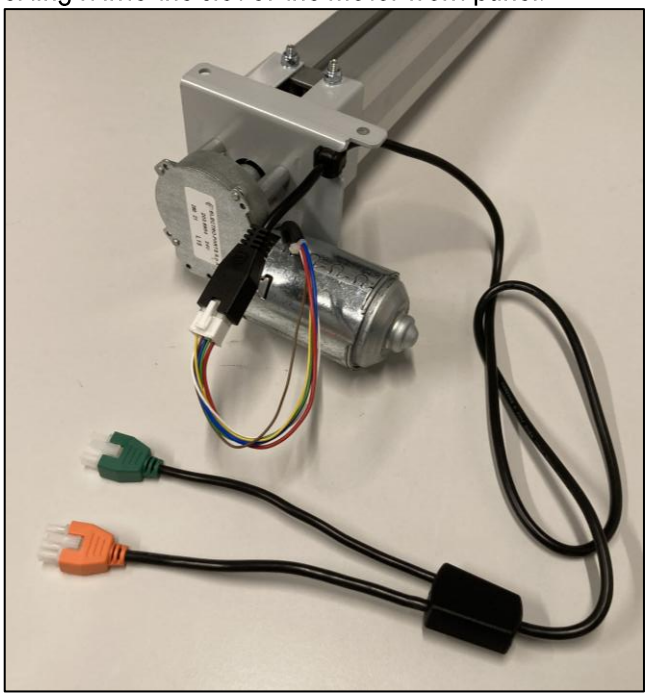
2. Place both lines of the motor cable into the cable strain relief. The bendable tab of the cable strain relief should point away from the motor. The distance between the cable strain relief and the plug **A** should be approx. 70 mm.



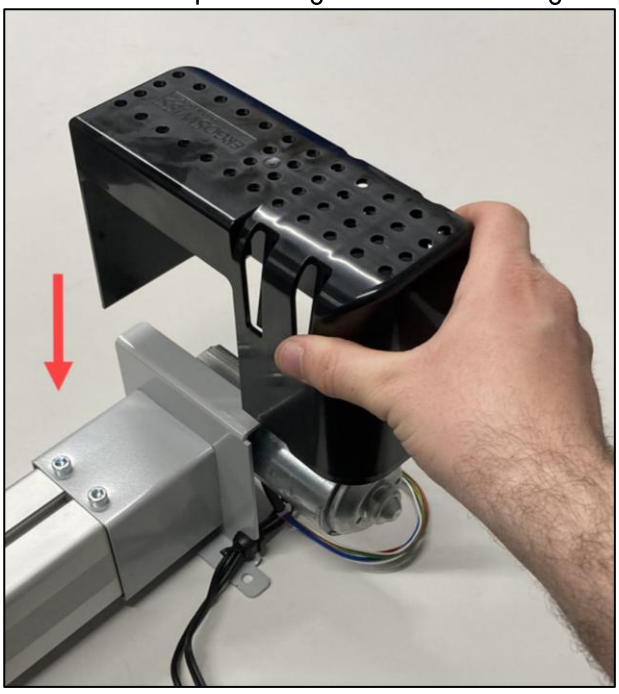


3. Firmly compress the cable strain relief while inserting it into the slot of the motor front panel.





4. The plastic housing PXD can be snapped on the motor after wiring the motor and mounting the cable strain relief. Snap-fits integrated in the housing clasp the cylinder of the motor.



3.1 Preparation for initial operation

ATTENTION

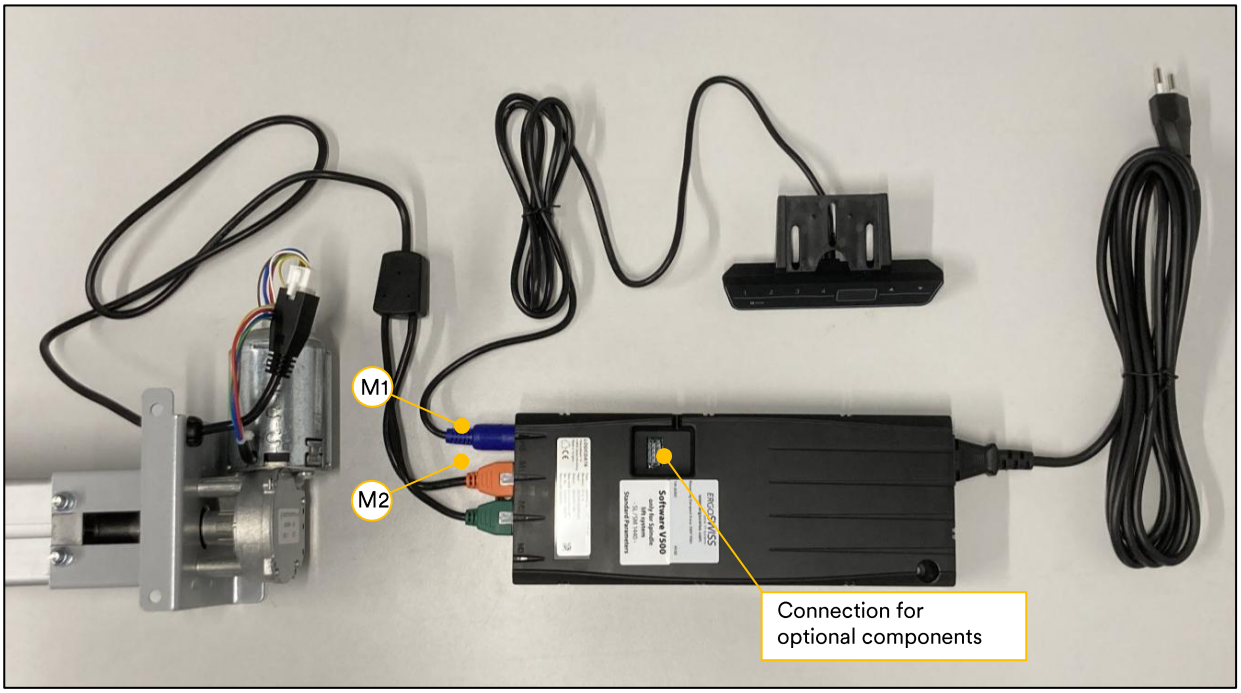
During mounting of the control box the power cable needs to be disconnected from the mains!

NOTE
The control box has an integrated tilting sensor as standard. To ensure the smooth normal operation, the control box must be fixed rigidly to the system before initial commissioning. (e.g. below the tabletop)

ATTENTION

Connecting homemade products to the control box is prohibited!
Only use supplied components.

1. Connect the motor cable to the control box.
   - Insert the cable end with the orange marking into motor socket **M1**.
   - Insert the cable end with the green marking into motor socket **M2**.
2. Connect the hand switch to the control box.
   If necessary, optional components can now be connected (e.g. safety strips, sync cable).
3. Connect the power cable to the control box.



NOTE
Before connecting the power cable to the mains the following must be verified:
→ Does the mains voltage correspond to the value on the name plate of the control box?
→ Are the plugs of the motor cable connected to the correct sockets (1 to 4)?
→ Is the entire lifting system assembled according to the assembly instructions?

4. Connect power cable to the mains. (Click sound -> ready for initial operation).

4 Initial operation

ATTENTION

Danger of squeezing during height adjustment!

ATTENTION

The entire lifting area of the lifting element must always remain free. The lifting element is not allowed to hit a stop before it reached its upper and lower block positions. Otherwise air will be pulled into the system or too much pressure will build up.

ATTENTION

The system may only be fully loaded after the initial operation has been completed.
During the initial operation, the lifting system may be loaded with max. 50% of the system load.

NOTE
During the initial operation, the lifting system drives with half the speed.

4.1 Initial operation with Hand switch Type Memory

The display is blinking «068» (US – 110 V version «027»)

1. Press the button ▼ to drive to the desired lower end position (or to the under block position). The system moves downwards at half speed. Upward movement is disabled.

2. Press the buttons 1 (plus) and 2 (minus) to set the current height of the work surface on the display. (in cm, US – 110V version in inch)

3. To confirm, press S (Save).

The display is blinking «088» (US – 110V version «035»)

4. Press the button ▲ to drive to the desired upper end position (or to the upper block position).

5. Press the buttons 1 (plus) and 2 (minus) to set the current height of the work surface on the display. (in cm, US – 110V version in inch)

6. To confirm, press S (Save).

After confirmation the height is displayed (no more blinking).

The initial operation is completed.

NOTE
The control box automatically offsets the end positions by one motor turn. Depending on the system combination (hydraulic transmission ratio), the system stops its movement 2 mm, 3 mm, or 5 mm before the defined end position.

4.2 Initial operation with Hand switch Type Up-Down

1. Press the button ▼ to drive to the desired lower end position (or to the lower block position). The system moves downwards at half speed. Upward movement is disabled.
2. Press the buttons ▲ and ▼ at the same time for at approx. 5 seconds.
3. Press the button ▲ to drive to the desired upper end position (or to the upper block position).
4. Press the buttons ▲ and ▼ at the same time for at approx. 5 seconds.

The initial operation is completed.

> **NOTE**
> The control box automatically offsets the end positions by one motor turn. Depending on the system combination (hydraulic transmission ratio), the system stops its movement 2 mm, 3 mm, or 5 mm before the defined end position.

4.3 Duty cycle monitoring

The duty cycle monitoring checks the ratio between the operation time and standstill time. To avoid overheating of the system a duty cycle of 2/18 (ON/OFF) should be maintained.

The maximum continuous operating time is 2 minutes. Afterwards a pause of at least 18 minutes needs to be observed before the system can be operated again.

5 Operation with Hand switch Type Memory

Hand switch Compact Memory HSC – Article no. 124.00223

NOTE
When using a Hand switch of the Type Up / Down (Article no. 124.00059) only the following sections are relevant..

- 5.1 Drive Up / Down
- 5.5 Reference drive

5.1 Drive Up / Down

This function is used for easy height adjustment of the system.

Keep the button ▲ or ▼ pressed until the desired working height is reached.

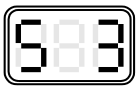
5.2 Saving and approaching a memory position

With this function it is possible to memorise a certain position/height and approach it at a later time by pushing one button. With the 4 memory buttons up to 4 different positions can be stored and approached.

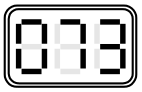
1. Drive to the desired position and press the button S (Save).

Display:	

2. Press one of the buttons 1 2 3 4.
   After pressing a memory button the display shows «S» and the number of the pressed button.

Example:	

After saving there is a double click sound, and after approx. 2 seconds the current height is displayed again.

Example:	

To approach a stored memory position:

Keep one of the buttons 1 2 3 4 pressed until the desired working height is reached.

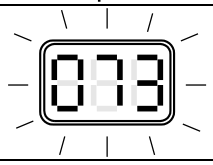
5.3 Setting the shown height on the display

The displayed height can be adjusted with this feature.

1. Drive to any desired height and press the button S (Save).

Display:	

2. Keep the button ▼ pressed for about 5 seconds, until the display starts flashing.

Example:	

3. Now the button ▲ (plus) or ▼ (minus) can be used to set the current height.
   While doing so, the system does not move!

4. With the correctly set value the new height is saved by pressing S (Save).

5.4 Changing the displayed unit of measurement (cm/inch) – Reset «S 5»

This function can be used to change the height unit on the display from «cm» to «inch» or from «inch» to «cm».

NOTE
No lifting movement is allowed during the reset.

1. Press the buttons 1, 2 and ▲ simultaneously, until «S 5» or «S 7» is displayed.
   The control box is now in setting mode.

2. Press the button ▲ until **«S 5»** is displayed.

3. Press the button S (Save).
   Control box clicks 2 times …

The unit of measurement on the display has now been changed from centimeters (cm) to inches (inch) or from inches to centimeters (2.54 cm = 1 inch).

5.5 Reference drive – Referencing the end positions – «Long Key Down»

ATTENTION

Before the reset, it must be ensured that:
- the lifting element can retract completely.
- the lifting system is loaded with a maximum of 50% of the maximum allowed system load.

If the lifting element cannot retract completely and hits a stop before it reached its lower block position, the zero position is set incorrectly. This leads to a collision when moving up to the upper block position.

NOTE
During restoring to the factory settings, the lifting system drives with half the speed.

1. Drive the system to the programmed lowest position.
2. Keep the button ▼ pressed for 5 seconds («Long Key Down»).
   The system moves downwards to the lower block position and resets itself like during the initial operation.

5.6 Restore to factory settings – Factory reset «S 0»

ATTENTION

Before restoring to factory settings, it must be ensured that:
- the lifting element can retract completely.
- the lifting system is loaded with a maximum of 50% of the maximum allowed system load.

If the lifting element cannot retract completely and hits a stop before it reached its lower block position, the zero position is set incorrectly. This leads to a collision when moving up to the upper block position.

NOTE
During restoring to the factory settings, the lifting system drives with half the speed.

When restoring the factory settings, the entire system is newly set up again.
All settings such as Memory positions or End positions are lost.

1. If possible: Drive to lowest position ▼
   → This saves time because the system only drives with half speed when doing a reset.
2. Press the buttons 1, 2 and ▲ simultaneously, until «S 5» or «S 7» is displayed.
   The control box is now in setting mode.
3. Press the button ▲ until **«S 0»** is displayed.
4. Press the button S (Save).
   The display is blinking «068» (US – 110 V version «027»)
5. Perform the initial operation according to chapter 4.

6 Synchronize 2, 3 or 4 control boxes

6.1 Cable connections

One Motor drive PXD can be connected to each Compact-3-eco controller.
By cascading (synchronizing) multiple control boxes they can be controlled simultaneously with just one hand switch. The control boxes can be connected using the SYNC-2 cable (124.00088) or the SYNC-4 cable (124.00089).

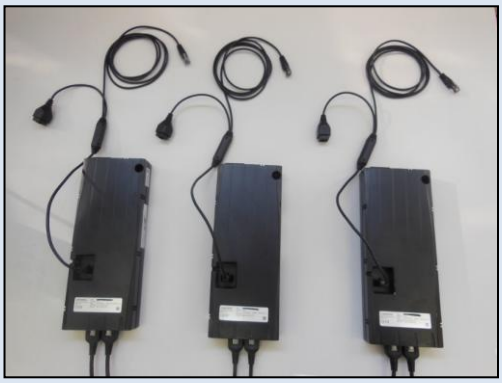
SYNC-2 Cable

With the SYNC-2 cable 2 control boxes Compact can be connected and synchronised.
The length of the SYNC-2 cable is 550 mm *(21.7")*.

The SYNC cable cannot be extended. If necessary, the motor cables can be extended!

NOTE
Always do reset before disconnecting!
Disconnect plug carefully → Risk of rip-out!

SYNC-4 Cable



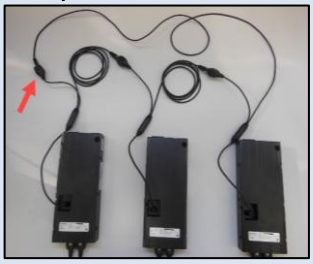
With the SYNC-4 cable 2, 3 or 4 control boxes Compact can be connected and synchronised.
The length of SYNC-4 cable is 1'800 mm *(71")*.
Two connected SYNC-4 cables have a length of 2.0 m *(78.7")*.

Each control box needs one SYNC-4 cable.

The SYNC cable cannot be extended. If necessary, the motor cables can be extended!

The SYNC-4 cables of each control box are to be connected to each other.

→ The loose ends do not have to be connected. However, connecting the loose ends will not have any influence on the system.



6.2 Initial operation of the synchronized systems

1. Wire the motor drive according to chapter 3.

2. Connect the control boxes using the SYNC-2 cable for two control boxes, or the SYNC-4 cable for 2, 3 or 4 control boxes.

3. Only one hand switch is necessary. The control box with the hand switch is the master control box. All other control boxes are subordinated.
   → Connect hand switch to desired control box.

4. Connect power cable to the mains.
   (Click sound of all control boxes → ready for initial operation)

5. Perform the initial operation according to chapter 4.

ATTENTION

The SYNC cable must be connected to the control box before the control box is connected to the mains.
If the SYNC cables are connected afterwards, they will not be recognised by the control box and only one control box works, which can lead to jamming of the entire system!

NOTE
When disconnecting the SYNC cable uncarefully, the plug can be ripped out of the print platine!

6.3 Operation scenarios – FAQ

Scenario: Connecting the hand switch to another control box
→ *Display blinks «- - -».*
→ Hand switch doesn't work.
→ Hand switch ONLY works on the the master control box.

Scenario: Disconnecting or reconnecting the synchronisation cable
→ *Display blinks «000».*
→ *Then display blinks «E93».*
→ Perform a Factory reset «S 0» according to chapter 5.6
(all controls are reset to factory settings).

Scenario: Power cut
→ All saved positions are stored.
→ Synchronisation is stored.
→ Getting back the power, no initial operation necessary.
The system can be used as usual.

Scenario: Power cut on only one control box
→ *Display blinks «000».*
→ *Then display blinks «E93».*
→ Perform a Factory reset «S 0» according to chapter 5.6
(all controls are reset to factory settings).

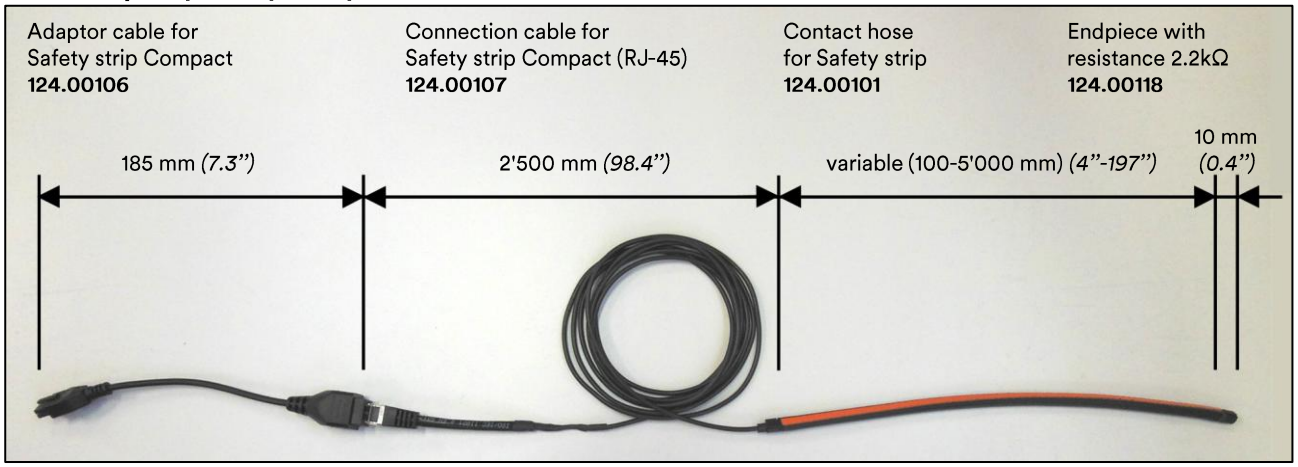
7 Safety strip – Squeezing protection

ATTENTION

With lifting systems of Ergoswiss AG it is important to make sure that no objects or people are trapped during the lifting movement.
Danger of squeezing during lifting movement!

Attach the safety strip to an assumed squeeze zone. If the safety strip gets squeezed while the system moves, the motor will stop instantly and turn back for one motor rotation.
Depending on the system combination (hydraulic transmission ratio), one motor rotation results in a stroke movement of 2 mm *(0.08")*, 3 mm *(0.12")*, or 5 mm *(0.20")*.

The Safety strip Compact cpl. (124.00105) consists of:

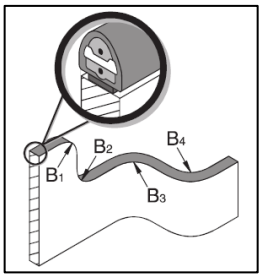


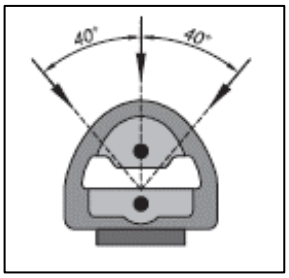
Functional properties of the contact tube

Contact angle	< 80 °
Switching pressure	< 25 N bei 23 °C
Switching travel	< 2 mm bei 23 °C
Minimum bending radius	B1 120 mm / B2 150 mm B3 20 mm / B4 20 mm
Max. tensile load	20 N

Electrical properties

Terminal resistance	2.2 kΩhm
Max. switching capacity	250 mW
Max. voltage	DC 24 V
Current min. / max.	1 mA / 10 mA





7.1 Commissioning

Gluing the contact tube in the squeeze zone

1. Clean and degrease the contact face.
2. Remove 10-15 cm (4" to 6") of protective film from the adhesive surface.
3. Place it on the contact face and press on well.
4. Repeat steps 2 and 3 until the contact tube is completely glued on.
5. Maximum adhesion is reached after 24 h.

Initial operation of control box with the safety strip	Adding the safety strip to existing control box
1. Wire the control box according to chapter 3. 2. The safety strip is connected in step 2. 3. Perform an initial operation according to chapter 4.	1. Reset the controller to factory setting (Factory reset «S 0») according to chapter 5.6. 2. The safety strip is connected in step 2.b.

8 Error codes and trouble shooting

8.1 Error codes on the display

Display	Cause	Trouble shooting
	The control box compact is equipped with an overheating protection. This overheating protection will activate due to too high temperatures	Wait until the control box has cooled down and the message **«HOT»** is no longer displayed. Then the control box is ready for operation again.
	There is an internal error at the control box.	Proceed according to the following error list.
blinking 000	Motor position lost	Perform a «Long Key Down».
00	Internal error channel 1	Disconnect the power cable from the mains and contact the customer support.
01	Internal error channel 2	
02	Internal error channel 3	
12	Defective channel 1	Insert the motor cable correctly.
13	Defective channel 2	
14	Defective channel 3	
24	Excess current motor M1	System overloaded → Remove load from the system System jammed → Remove clamped object
25	Excess current motor M2	
26	Excess current motor M3	
48	Excess current motor group 1	
49	Excess current motor group 2	
60	Collision protection	
62	Excess current at the control	
36	Plug detection at motor socket M1	Plug in the motor cable correctly at the respective socket. Perform a Factory reset «S 0».
37	Plug detection at motor socket M2	
38	Plug detection at motor socket M3	
61	Motor replaced	
55	Synchronising of the motor group 1 impossible	Remove load from the system. Perform a Factory reset «S 0». Contact the customer support if the error remains displayed.
56	Synchronising of the motor group 2 impossible	
67	Too high voltage	Disconnect the power cable from the mains. Contact the customer support.
70	Change of the drive configuration	Disconnect the power cable from the mains and wait at least for 5 seconds. Reconnect the power cable. Perform a Factory reset «S 0».
81	Internal error	Disconnect the power cable from the mains and wait at least for 5 seconds. Reconnect the power cable. Perform a Factory reset «S 0». Contact the customer support if the error remains displayed.

93	Connection error while synchronising The error is displayed for 15 seconds, then the control box changes to the reset mode with a flashing display of **«000»**.	Disconnect the power cable from the mains and wait at least for 5 seconds. Reconnect the power cable. Perform a Factory reset «S 0».

ATTENTION
If the system malfunctions, do not open any system components! Risk of electrical shock! Contact customer service.

8.2 Click codes

As soon as the lifting system is supplied with current the control utilises the integrated relays to acoustically indicate the system state as well as the reason of the last shut down to the user.

Number of clicks	Status information
2x	Normal operation: The system works flawlessly.
1x	Emergency operation: The system is in emergency mode; the motors cannot be operated. There is an error code to be checked on the display.
3x – 6x	Last shut down incomplete / forced reset: There is an error code to be checked on the display.

9 Maintenance, cleaning and disposal

The lifting system is maintenance-free during normal operation throughout its entire lifespan.

ATTENTION

The control box and the hand switch must only be cleaned with a dry or damp cloth. Before cleaning, the power cable has to be separated from the mains!
No liquid is allowed to enter the plug connections!

Repairs must only be conducted by specialists. Only original replacement parts may be used. For all repair work the system must always be unloaded and voltage-free.

ATTENTION

In no case may the control box be opened! There is the risk of an electrical shock!

When decommissioning and disposing of the lifting system the electronic parts must be disposed of separately. The system consists of components that can be fully recycled and thus they are quite safe from an environmental protection perspective. The electronic parts comply with the RoHs directive.

The lifting system is not covered by the Electrical and Electronic Equipment Act (WEEE Directive 2012/19/EU).
Lifting systems from Ergoswiss AG are intended for installation in an overall system (e.g. assembly table) and classified under the category of incomplete machines in accordance with the Machinery Regulation (EU) 2023/1230.
Therefore, these systems are not intended for private use.

10 Declaration of Incorporation

ergoSwiss engineering better workspaces

Ergoswiss AG
Nöllenstrasse 15a
9443 Widnau
Schweiz

Tel. +41 (0) 71 727 0670
Fax +41 (0) 71 727 0679
info@ergoswiss.com
www.ergoswiss.com

EG Declaration of Incorporation in the sense of the Machinery Regulation (EU) 2023/1230 annex V, Part B

We hereby declare that for the incomplete machine „hydraulic lifting system", for ergonomically height adjustable workplaces or similar, with the variants

Hydraulic system				
Drive	**+**	**Pump**	**+**	**Lifting element**
Hand crank (113.xxxxx) Motor PxA, PxB, PxD (112.xxxxx)		PA, PB, PF (100/102/103.xxxxx)		Cylinder CB, CD, CE, CG, CH, CI, Cx (107/109/307/309.xxxxx) Linear unit LA, LB, LD, LG, LH, Lx, (106/306.xxxxx) Table leg TA, TL, TM, TQ, TT, TU, Tx (106/306.xxxxx) Lifting castor HR, Hx (501.xxxxx)

the following essential requirements of the Machinery Regulation (EU) 2023/1230 are applied and complied with:

1.1.2.; 1.1.3.; 1.1.5.; 1.1.6.; 1.2.; 1.3.2.; 1.3.4.; 1.3.9.; 1.5.1.; 1.5.3.; 1.5.4.; 1.5.7.; 1.5.8.; 1.5.9.

In particular the applied harmonized standards:

EN 1005	**Safety of machinery: Physical performance**
EN ISO 12100	**Safety of machinery: 2011**
EN 55014	**Electromagnetic compatibility**
EN 60335	**Safety of electrical appliances for household use (110V version: UL 60950)**
EN 60204	**Electrical equipment of devices**
EN 61000	**Electromagnetic compatibility: EMC (110V version: FCC Part 15 Class A)**
EN 62233	**Houshold electrical appliances EMC, evaluation and measurement**

specific technical documentations have been created in accordance with annex IV, part B, and will be sent to the national authorities by registered letter or electronically, if the request is justified, and this incomplete machine is in conformity with the relevant provisions of other EU Directives and Regulations:

89/391/EG	**Safety and health of workers**
2023/988/EU	**Regulation on general product safety**
2014/30/EU	**Directive on electromagnetic compatibility**
2014/35/EU	**Low voltage directive**

Furthermore, we declare that this incomplete machine may only be commissioned if it has been determined that the machine in which the incomplete machine is to be installed complies with the provisions of the Machinery Regulation (EU) 2023/1230 and our assembly and service operating instructions have been followed.

Widnau, 26. November 2025
Martin Keller
Managing Director / CEO

Document responsibility EU:

Ergoswiss Deutschland GmbH
Kronenstrasse 1
DE-72555 Metzingen