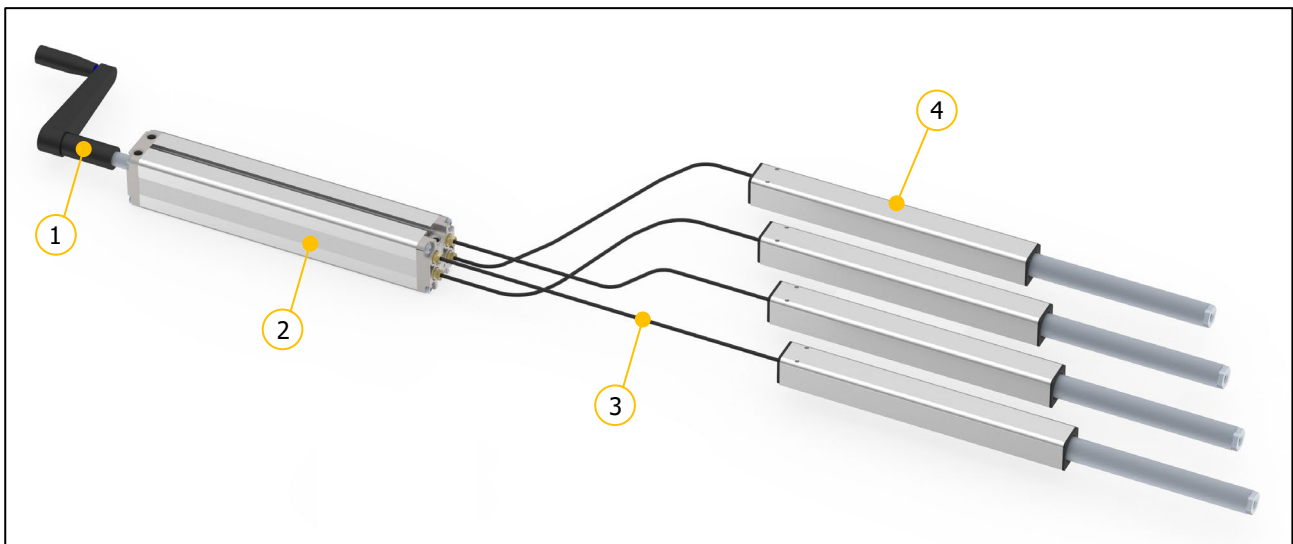


Operating instruction – Hydraulic system with Hand crank



It is essential to read this operating instruction thoroughly before commissioning the system. This operating instruction has to be stored in the immediate vicinity of the system.



① Hand crank

② Pump

③ Hydraulic tubing

④ Lifting element (Cylinder, Linear unit, Table leg)

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.

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This operating instruction applies to:

Pump PA/PB/PF with Hand crank

e.g.: Pump PA 2830 with Hand crank – (Article no.: 310.20003)

e.g.: Pump PF 4830 with Hand crank – (Article no.: 313.20033)

e.g.: Pump PB 6830 with Hand crank – (Article no.: 312.20043)

	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

Other versions

	Description
No tox	with food grade hydraulic oil
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 Directive 2006/42/EC.

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	System description	4
1.1	Explanations of the symbols and notes	4
2	System description	5
2.1	In general.....	5
2.2	Intended purpose use	5
2.2.1	General safety instructions.....	5
2.3	Target group and prior knowledge	6
2.4	Performance characteristics	7
2.4.1	Lifting element.....	7
2.4.2	Pump	7
2.4.3	System data	8
3	Mounting instructions.....	9
3.1	Mounting instructions Lifting element	9
3.2	Mounting instructions Pump.....	9
3.3	Mounting instructions Lifting system.....	9
4	Operation	10
4.1	Extending the lifting system.....	10
4.2	Retracting the lifting system	10
4.3	Folding hand crank – Only with Hand crank foldable!	11
4.4	Remove hand crank – Only with Hand crank removable!	11
5	Maintenance and disposal	12
5.1	Maintenance and cleaning	12
5.2	Repairs and spare parts.....	12
5.3	Disassembly and disposal	12
5.4	Trouble-shooting.....	12
6	Declaration of Incorporation	13

1 System description

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

Please pay attention to the following explanations of the symbols and notes. They are classified according to ISO 3864-2 (ANSI Z535.4).

DANGER



Indicates an immediate threatening danger.
Non-compliance with this information can result in death or serious personal injuries (invalidity).

WARNING



Indicates a possible dangerous situation.
Non-compliance with this information can result in death or serious personal injuries (invalidity).

ATTENTION



Indicates a possible dangerous situation.
Non-compliance with this information can result in damage to property or light to medium personal injuries.



NOTE

Indicates general notes, useful operator advice and operating recommendations which do not affect safety and health of the user.

2 System description

2.1 In general

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 Hand crank

The hand crank moves an internal spindle drive inside the pump, which forces the volume of oil from the pump through the tubing into the lifting elements.

2.2 Intended purpose use

Scope of application	NOT scope of application
<ul style="list-style-type: none"> → Height adjustment of worktops → Height adjustment of machine parts → Height adjustment of profile systems → ... the list is not exhaustive 	<ul style="list-style-type: none"> → Clamping tool → Press (or counterhold for press) → Passenger transport → Security component → ... the list is not exhaustive

2.2.1 General safety instructions

ATTENTION	
	<p>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!</p>

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.
- 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. compressive, bending moment loads).
- subjected to tensile loads (lifting system is a single acting hydraulic system).
- subjected to impulse, impact and impact forces (e.g. setting down loads).
- operated on unstable or sloping ground.
- operated with impermissible or non-designated components.
- operated with damaged components.
- opened, reworked or rebuilt.
- 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 EC Directives 2006/42/EC (Machinery Directive). 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		
Tested product life span	10'000 double strokes, with max. stroke & system load		

① Single acting hydraulic system; cannot absorb any tensile force, requires reset force

② stat. = during standstill; dyn. = during stroke movement


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		
Tested product life span	10'000 double strokes, with max. stroke & system load		


NOTE

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

2.4.3 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	Stroke per turn [mm/U] (in/T)
1	100 (220)	150 (6")	① 1415	PA 1815	5 mm/U (0.2"/T)
		200 (8")	① 1420	PA 1820	
		300 (12")	① 1430	PA 1830	
		400 (16")	① 1440	PA 1840	
		500 (20")	① 1450	PA 1850	
		600 (24")	① 1460	PA 1860	
		700 (28")	① 1470	PA 1870	
2	300 (660)	150 (6")	① 1415	PA 2815	5 mm/U (0.2"/T)
		200 (8")	① 1420	PA 2820	
		300 (12")	① 1430	PA 2830	
		400 (16")	① 1440	PA 2840	
		500 (20")	① 1450	PA 2850	
		600 (24")	① 1460	PA 2860	
		700 (28")	① 1470	PA 2870	
	500 (1'100)	90 (3.5")	① 1815	PA 2815	3 mm/U (0.12"/T)
		110 (4.3")	① 1815	PA 2820	
		180 (7.1")	① 1820	PA 2830	
		240 (9.4")	① 1830	PA 2840	
		300 (12")	① 1830	PA 2850	
		400 (16")	① 1840	PA 2866	
3 ... 10	350 (770)	150 (6")	① 1415	PF/PB x815	5 mm/U (0.2"/T)
		200 (8")	① 1420	PF/PB x820	
		300 (12")	① 1430	PF/PB x830	
		400 (16")	① 1440	PF/PB x840	
		500 (20")	① 1450	PF/PB x850	
		600 (24")	① 1460	PF/PB x860	
		700 (28")	① 1470	PF/PB x870	
	600 (1'320)	110 (4.3")	① 1815	PF/PB x820	3 mm/U (0.12"/T)
		180 (7.1")	① 1820	PF/PB x830	
		240 (9.4")	① 1830	PF/PB x840	
		300 (12")	① 1830	PF/PB x850	
		400 (16")	① 1840	PF/PB x866	
	800 (1'760)	110 (4.3")	① 1815	PF/PB x418	1.8 mm/U (0.07"/T)
		180 (7.1")	① 1820	PF/PB x430	
		240 (9.4")	① 1830	PF/PB x440	

① Cylinder (CB, CD, CE, ...), Linear unit (LA, LD, ...) or Table leg (TA, TL, TT, ...)

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

3.1 Mounting instructions Lifting element



NOTE

The hydraulic tubing is to be assembled to the lifting element in accordance with the assembly instructions. Information on mounting the lifting element can be found in the technical drawings.

3.2 Mounting instructions Pump



NOTE

The lifting element is to be assembled to the pump in accordance with the assembly instructions. Information on mounting the pump 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.

3.3 Mounting instructions Lifting system



NOTE

The pump with hand crank is to be assembled to the existing system in accordance with the assembly instructions. Information on mounting the pump with hand crank and the lifting elements can be found in the technical drawings.



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.

4 Operation

ATTENTION



Danger of squeezing during height adjustment!

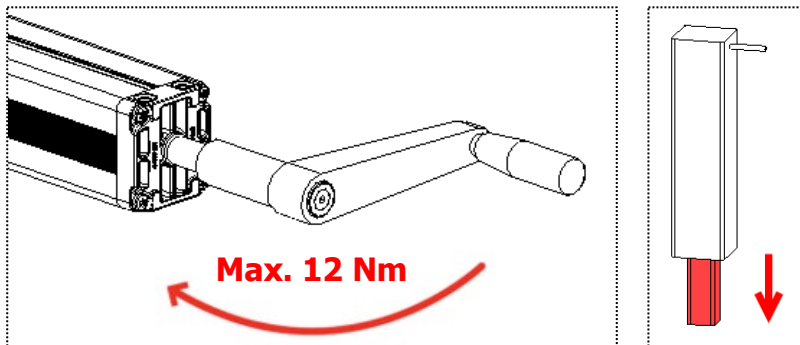
ATTENTION



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.

4.1 Extending the lifting system

By turning the hand crank clockwise the lifting elements are extended.
Turn the crank until the desired working height is reached.

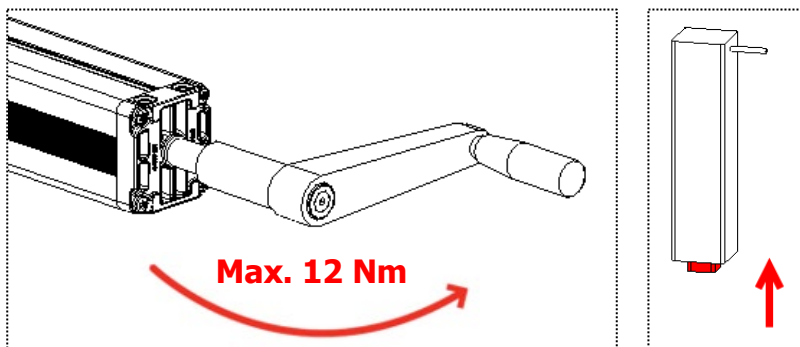


NOTE

The hand crank may be actuated with a maximum torque of $12 \text{ Nm} = 8.8 \text{ lbf}\cdot\text{ft!}$
The system must not be driven towards the end position with momentum!

4.2 Retracting the lifting system

By turning the hand crank counter-clockwise the lifting elements are retracted.
Turn the crank until the desired working height is reached.



NOTE

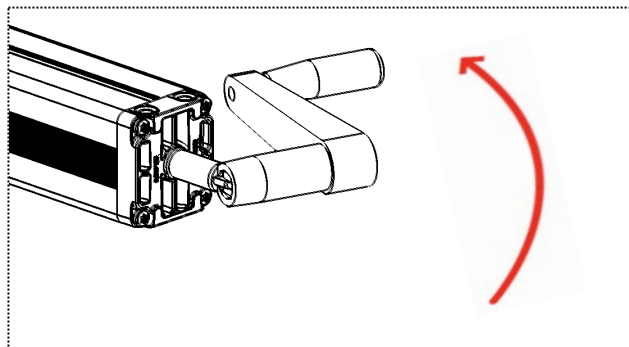
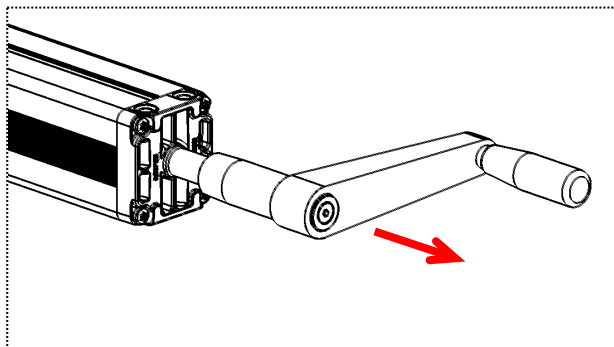
The hand crank may be actuated with a maximum torque of $12 \text{ Nm} = 8.8 \text{ lbf}\cdot\text{ft!}$
The system must not be driven towards the end position with momentum!

4.3 Folding hand crank – Only with Hand crank foldable!

**NOTE**

The Hand crank foldable (113.00005) cannot be removed.
This can be folded, for example under a table top.

The crank body can be folded down by pulling the hand crank handle.
After folding back the crank body again, the pump can be operated again.

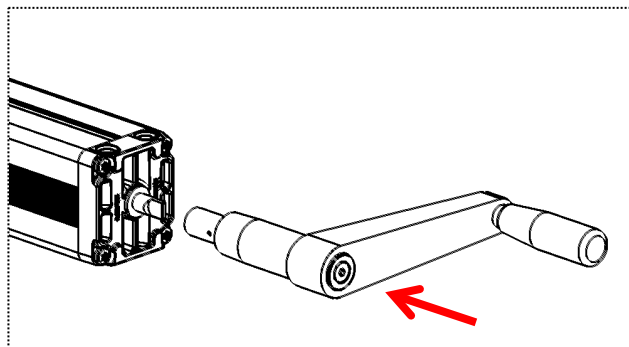
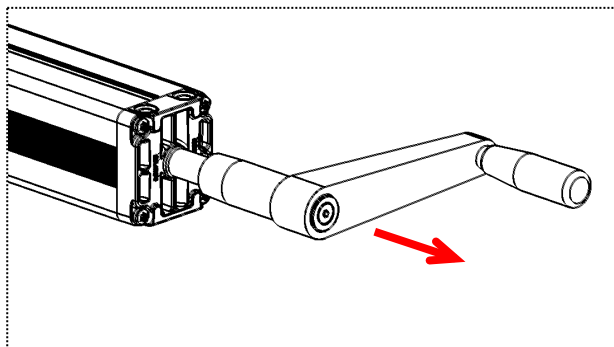


4.4 Remove hand crank – Only with Hand crank removable!

**NOTE**

The Hand crank removable (113.00013) cannot be folded down.
This can be pulled completely away from the pump and then attached again.

By pulling on the hand crank, it can be pulled away from the spindle shaft of the pump.
After reconnecting the hand crank, the pump can be operated again.



5 Maintenance and disposal

5.1 Maintenance and cleaning

The lifting system is maintenance-free during normal operation resp. when complying with the intended use. Therefore a service is not required.

5.2 Repairs and spare parts

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

5.3 Disassembly and disposal

The system consists of components that can be fully recycled and thus they are quite safe from an environmental protection perspective.

5.4 Trouble-shooting

ATTENTION



The lifting system must not be opened, reworked or operated by impermissible components.

Error	Cause	Rectification
Hand crank cannot be turned	Not all lifting elements were connected to the pump	Mount all lifting elements on the pump according to the assembly instructions
	System overloaded	Remove load from the system
Hand crank can be turned, pump does not work	Clamping pin of the hand crank broken	Contact the customer service
Oil loss	Pump, tubing or lifting element defective	Remove load from the system, Contact the customer service

6 Declaration of Incorporation

EG-Declaration of Incorporation in the sense of the Machinery Directive 2006/42/EG annex II 1B

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)				Cylinder CB, CD, CE, CG, CH, CI, Cx (107/109/307/309.xxxxx)
Motor PxA, PxB, PxD (112.xxxxx)		PA, PB, PF (100/102/103.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 Directive 2006/42/EG are applied and complied with:

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

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
EN 60204	Electrical equipment of devices
EN 61000	Electromagnetic compatibility: EMC
EN 62233	Houshold electrical appliances EMC, evaluation and measurement

specific technical documentation have been created in accordance with annex VII, 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:

89/391/EG	Safety and health of workers
2001/95/EG	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 Directive 2006/42/EG and our assembly and service operating instructions have been followed.



Widnau, 13. September 2023
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