



## 1 Guide for system selection

A lifting system can be configured by using the table (page 2) and the following steps:

1.	<b># Lifting elements:</b>	How many lifting elements does the application require?
2.	<b>Max. system load:</b>	What is the maximum load that needs to be moved?
<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <div style="display: flex; align-items: center; gap: 10px;">  <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>- Take weight of table top and frame into account</li> <li>- Load distribution even – don't overload the leg</li> <li style="padding-left: 20px;">Max. load lifting element 14xx: 1'500 N</li> <li style="padding-left: 20px;">Max. load lifting element 18xx: 2'500 N</li> <li>- Nos hock loads allowed (pressure peaks)</li> <li>- No tensile loads allowed</li> <li>- Don't exceed max. allowed bending moments</li> </ul> </div> </div>		
3.	<b>Stroke length:</b>	What stroke length is required?

### Selected configuration

a)	<b>Lifting element type:</b>	The following lifting element fits the selected configuration. - Observe drawings and data sheets!
<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <div style="display: flex; align-items: center; gap: 10px;">  <p><b>NOTE</b></p> <p>Following lifting element variants are available:</p> <ul style="list-style-type: none"> <li>- Cylinder CX (CB, CD, CE, CG, CH, CI, ...)</li> <li>- Linear Units LX (LA, LD, LG, ...)</li> <li>- Table Legs TX (TA, TL, TM, TQ, TT, TU, ...)</li> </ul> </div> </div>		
b)	<b>Pump type:</b>	The following pump fits the selected configuration. - Observe drawings and operating manual!

### Operating data

i.	<b>Lifting speed with hand crank:</b>	If the hydraulic lifting system is configured with a hand crank, the system moves at the following lifting speed [mm per crank revolution].
ii.	<b>Lifting speed with motor PXD</b>	If the hydraulic lifting system is configured with a motor, the system moves by using the hand switch at the following lifting speed [mm per second].

## 2 System combinations table

# Lifting elements	Max. System load [kg] (lbs)	Stroke length [mm] (in)	Lifting element type	Pump type	Lifting speed with hand crank [mm/U] (in/R)	Lifting speed with motor PXD [mm/s] (in/s)	Motor type
1	100 (220)	150 (5")	⓪ 1415	PA 1815	5 (0.2")	15 (0.6")	PAD ② (-10 mm stroke) (-0.4" stroke)
		200 (8")	⓪ 1420	PA 1820			
		300 (12")	⓪ 1430	PA 1830			
		400 (16")	⓪ 1440	PA 1840			
		500 (19.5")	⓪ 1450	PA 1850			
		600 (23.5")	⓪ 1460	PA 1860			
		700 (27.5")	⓪ 1470	PA 1870			
2	300 (660)	150 (5")	⓪ 1415	PA 2815	5 (0.2")	15 (0.6")	PAD ② (-10 mm stroke) (-0.4" stroke)
		200 (8")	⓪ 1420	PA 2820			
		300 (12")	⓪ 1430	PA 2830			
		400 (16")	⓪ 1440	PA 2840			
		500 (19.5")	⓪ 1450	PA 2850			
		600 (23.5")	⓪ 1460	PA 2860			
		700 (27.5")	⓪ 1470	PA 2870			
	500 (1100)	90 (3.5")	⓪ 1815	PA 2815	3 (0.12")	9 (0.35")	PAD ② (-6 mm stroke) (-0.24" stroke)
		110 (4.5")	⓪ 1815	PA 2820			
		180 (7")	⓪ 1820	PA 2830			
		240 (9.5")	⓪ 1830	PA 2840			
		300 (12")	⓪ 1830	PA 2850			
		400 (16")	⓪ 1840	PA 2866			
3	350 (770)	150 (5")	⓪ 1415	PF 3815	5 (0.2")	15 (0.6")	PFD ② (-10 mm stroke) (-0.4" stroke)
		200 (8")	⓪ 1420	PF 3820			
		300 (12")	⓪ 1430	PF 3830			
		400 (16")	⓪ 1440	PF 3840			
		500 (19.5")	⓪ 1450	PF 3850			
		600 (23.5")	⓪ 1460	PF 3860			
		700 (27.5")	⓪ 1470	PF 3870			
	600 (1320)	110 (4.5")	⓪ 1815	PF 3820	3 (0.12")	9 (0.35")	PFD ② (-6 mm stroke) (-0.24" stroke)
		180 (7")	⓪ 1820	PF 3830			
		240 (9.5")	⓪ 1830	PF 3840			
		300 (12")	⓪ 1830	PF 3850			
		400 (16")	⓪ 1840	PF 3866			
4	350 (770)	150 (5")	⓪ 1415	PF 4815	5 (0.2")	15 (0.6")	PFD ② (-10 mm stroke) (-0.4" stroke)
		200 (8")	⓪ 1420	PF 4820			
		300 (12")	⓪ 1430	PF 4830			
		400 (16")	⓪ 1440	PF 4840			
		500 (19.5")	⓪ 1450	PF 4850			
		600 (23.5")	⓪ 1460	PF 4860			
		700 (27.5")	⓪ 1470	PF 4870			
	600 (1320)	110 (4.5")	⓪ 1815	PF 4820	3 (0.12")	9 (0.35")	PFD ② (-6 mm stroke) (-0.24" stroke)
		180 (7")	⓪ 1820	PF 4830			
		240 (9.5")	⓪ 1830	PF 4840			
		300 (12")	⓪ 1830	PF 4850			
		400 (16")	⓪ 1840	PF 4866			
	800 (1760)	110 (4.5")	⓪ 1815	PF 4418	1.8 (0.07")	5 (0.2")	PFD ② (-3.6 mm stroke) (-0.14" stroke)
		180 (7")	⓪ 1820	PF 4430			
		240 (9.5")	⓪ 1830	PF 4440			

① Cylinder, Linear Units or Table Legs (CB, CD, CE, ..., LA, LD, LG, ..., TA, TL, TM, ...)

② The motor PXD is connected to the control box Compact-3 (100V/230V) and ensures a safety distance margin of one crank revolution at the upper and lower end positions.

# Lifting elements	Max. System load [kg] (lbs)	Stroke length [mm] (in)	Lifting element type	Pump type	Lifting speed with hand crank [mm/U] (in/R)	Lifting speed with motor PXD [mm/s] (in/s)	Motor type	
5	350 (770)	150 (5")	Ⓛ 1415	PB 5815	5 (0.2")	15 (0.6")	PBD ② (-10 mm stroke) (-0.4" stroke)	
		200 (8")	Ⓛ 1420	PB 5820				
		300 (12")	Ⓛ 1430	PB 5830				
		400 (16")	Ⓛ 1440	PB 5840				
		500 (19.5")	Ⓛ 1450	PB 5850				
		600 (23.5")	Ⓛ 1460	PB 5860				
		700 (27.5")	Ⓛ 1470	PB 5870				
	600 (1320)	110 (4.5")	Ⓛ 1815	PB 5820	3 (0.12")	9 (0.35")	PBD ② (-6 mm stroke) (-0.24" stroke)	
		180 (7")	Ⓛ 1820	PB 5830				
		240 (9.5")	Ⓛ 1830	PB 5840				
		300 (12")	Ⓛ 1830	PB 5850				
		400 (16")	Ⓛ 1840	PB 5866				
	800 (1760)	110 (4.5")	Ⓛ 1815	PB 5418	1.8 (0.07")	5 (0.2")	PBD ② (-3.6 mm stroke) (-0.14" stroke)	
		180 (7")	Ⓛ 1820	PB 5430				
		240 (9.5")	Ⓛ 1830	PB 5440				
	6	350 (770)	150 (5")	Ⓛ 1415	PB 6815	5 (0.2")	15 (0.6")	PBD ② (-10 mm stroke) (-0.4" stroke)
			200 (8")	Ⓛ 1420	PB 6820			
			300 (12")	Ⓛ 1430	PB 6830			
400 (16")			Ⓛ 1440	PB 6840				
500 (19.5")			Ⓛ 1450	PB 6850				
600 (23.5")			Ⓛ 1460	PB 6860				
700 (27.5")			Ⓛ 1470	PB 6870				
600 (1320)		110 (4.5")	Ⓛ 1815	PB 6820	3 (0.12")	9 (0.35")	PBD ② (-6 mm stroke) (-0.24" stroke)	
		180 (7")	Ⓛ 1820	PB 6830				
		240 (9.5")	Ⓛ 1830	PB 6840				
		300 (12")	Ⓛ 1830	PB 6850				
		400 (16")	Ⓛ 1840	PB 6866				
800 (1760)		110 (4.5")	Ⓛ 1815	PB 6418	1.8 (0.07")	5 (0.2")	PBD ② (-3.6 mm stroke) (-0.14" stroke)	
		180 (7")	Ⓛ 1820	PB 6430				
		240 (9.5")	Ⓛ 1830	PB 6440				
7		350 (770)	150 (5")	Ⓛ 1415	PB 7815	5 (0.2")	15 (0.6")	PBD ② (-10 mm stroke) (-0.4" stroke)
			200 (8")	Ⓛ 1420	PB 7820			
			300 (12")	Ⓛ 1430	PB 7830			
	400 (16")		Ⓛ 1440	PB 7840				
	500 (19.5")		Ⓛ 1450	PB 7850				
	600 (23.5")		Ⓛ 1460	PB 7860				
	700 (27.5")		Ⓛ 1470	PB 7870				
	600 (1320)	110 (4.5")	Ⓛ 1815	PB 7820	3 (0.12")	9 (0.35")	PBD ② (-6 mm stroke) (-0.24" stroke)	
		180 (7")	Ⓛ 1820	PB 7830				
		240 (9.5")	Ⓛ 1830	PB 7840				
		300 (12")	Ⓛ 1830	PB 7850				
		400 (16")	Ⓛ 1840	PB 7866				
	800 (1760)	110 (4.5")	Ⓛ 1815	PB 7418	1.8 (0.07")	5 (0.2")	PBD ② (-3.6 mm stroke) (-0.14" stroke)	
		180 (7")	Ⓛ 1820	PB 7430				
		240 (9.5")	Ⓛ 1830	PB 7440				

① Cylinder, Linear Units or Table Legs (CB, CD, CE, ..., LA, LD, LG, ..., TA, TL, TM, ...)

② The motor PXD is connected to the control box Compact-3 (100V/230V) and ensures a safety distance margin of one crank revolution at the upper and lower end positions.

# Lifting elements	Max. System load [kg] (lbs)	Stroke length [mm] (in)	Lifting element type	Pump type	Lifting speed with hand crank [mm/U] (in/R)	Lifting speed with motor PXD [mm/s] (in/s)	Motor type	
8	350 (770)	150 (5")	Ⓢ 1415	PB 8815	5 (0.2")	15 (0.6")	PBD ② (-10 mm stroke) (-0.4" stroke)	
		200 (8")	Ⓢ 1420	PB 8820				
		300 (12")	Ⓢ 1430	PB 8830				
		400 (16")	Ⓢ 1440	PB 8840				
		500 (19.5")	Ⓢ 1450	PB 8850				
		600 (23.5")	Ⓢ 1460	PB 8860				
		700 (27.5")	Ⓢ 1470	PB 8870				
	600 (1320)	110 (4.5")	Ⓢ 1815	PB 8820	3 (0.12")	9 (0.35")	PBD ② (-6 mm stroke) (-0.24" stroke)	
		180 (7")	Ⓢ 1820	PB 8830				
		240 (9.5")	Ⓢ 1830	PB 8840				
		300 (12")	Ⓢ 1830	PB 8850				
		400 (16")	Ⓢ 1840	PB 8866				
	800 (1760)	110 (4.5")	Ⓢ 1815	PB 8418	1.8 (0.07")	5 (0.2")	PBD ② (-3.6 mm stroke) (-0.14" stroke)	
		180 (7")	Ⓢ 1820	PB 8430				
		240 (9.5")	Ⓢ 1830	PB 8440				
	9	350 (770)	150 (5")	Ⓢ 1415	PB 9815	5 (0.2")	15 (0.6")	PBD ② (-10 mm stroke) (-0.4" stroke)
			200 (8")	Ⓢ 1420	PB 9820			
			300 (12")	Ⓢ 1430	PB 9830			
400 (16")			Ⓢ 1440	PB 9840				
500 (19.5")			Ⓢ 1450	PB 9850				
600 (23.5")			Ⓢ 1460	PB 9860				
700 (27.5")			Ⓢ 1470	PB 9870				
600 (1320)		110 (4.5")	Ⓢ 1815	PB 9820	3 (0.12")	9 (0.35")	PBD ② (-6 mm stroke) (-0.24" stroke)	
		180 (7")	Ⓢ 1820	PB 9830				
		240 (9.5")	Ⓢ 1830	PB 9840				
		300 (12")	Ⓢ 1830	PB 9850				
		400 (16")	Ⓢ 1840	PB 9866				
800 (1760)		110 (4.5")	Ⓢ 1815	PB 9418	1.8 (0.07")	5 (0.2")	PBD ② (-3.6 mm stroke) (-0.14" stroke)	
		180 (7")	Ⓢ 1820	PB 9430				
		240 (9.5")	Ⓢ 1830	PB 9440				
10		350 (770)	150 (5")	Ⓢ 1415	PB 0815	5 (0.2")	15 (0.6")	PBD ② (-10 mm stroke) (-0.4" stroke)
			200 (8")	Ⓢ 1420	PB 0820			
			300 (12")	Ⓢ 1430	PB 0830			
	400 (16")		Ⓢ 1440	PB 0840				
	500 (19.5")		Ⓢ 1450	PB 0850				
	600 (23.5")		Ⓢ 1460	PB 0860				
	700 (27.5")		Ⓢ 1470	PB 0870				
	600 (1320)	110 (4.5")	Ⓢ 1815	PB 0820	3 (0.12")	9 (0.35")	PBD ② (-6 mm stroke) (-0.24" stroke)	
		180 (7")	Ⓢ 1820	PB 0830				
		240 (9.5")	Ⓢ 1830	PB 0840				
		300 (12")	Ⓢ 1830	PB 0850				
		400 (16")	Ⓢ 1840	PB 0866				
	800 (1760)	110 (4.5")	Ⓢ 1815	PB 0418	1.8 (0.07")	5 (0.2")	PBD ② (-3.6 mm stroke) (-0.14" stroke)	
		180 (7")	Ⓢ 1820	PB 0430				
		240 (9.5")	Ⓢ 1830	PB 0440				

① Cylinder, Linear Units or Table Legs (CB, CD, CE, ..., LA, LD, LG, ..., TA, TL, TM, ...)

② The motor PXD is connected to the control box Compact-3 (100V/230V) and ensures a safety distance margin of one crank revolution at the upper and lower end positions.

### 3 Retracting force

The hydraulic lifting system is a single-acting system. Therefore an external retracting force is always required to move the system downwards. The amount of retracting force required depends on the lifting element type, the number of lifting elements and the tubing length.

Calculation of the minimum required retracting force **per lifting element**:

Lifting element type	Minimum required retracting force	Additional retracting force (if cylinder is installed in a guiding)
Cylinder CX 14xx	3 kg + (1.5 kg x tubing length [m])	LX: +0.5 kg TA / TU: +1 kg TQ: +1 kg TT: +7 kg TL / TM: +7 kg
Cylinder CX 18xx	3.5 kg + (2.5 kg x tubing length [m])	
Cylinder CX 14xx V	43 kg + (1.5 kg x tubing length [m])	
Cylinder CX 18xx V	53.5 kg + (2.5 kg x tubing length [m])	



V = Tubing protection valve (Cylinder with integrated non-return valve)



**NOTE**

- Max. allowed tubing length 10m (Cylinder with protection valve V= max. allowed tubing length 4m)
- More retracting force necessary, if lifting elements are not built in frame parallel
- More retracting force necessary, if strong side forces and bending moments occur

### 4 Hand crank, control box and hand switch

Hand crank H	Control box & hand switch	
 113.00105	 Compact-3	 124.00223



**NOTE for synchronized control boxes**

- 2 control boxes = (2x max. allowed system load) x 70%
- 3 control boxes = (3x max. allowed system load) x 60%
- 4 control boxes = (4x max. allowed system load) x 50%

The first initial operation has to be done with half of the system load.