

Mobile Harbour Crane

LHM 420

Maximum lifting capacity

124t

Maximum outreach

48m

Ship size

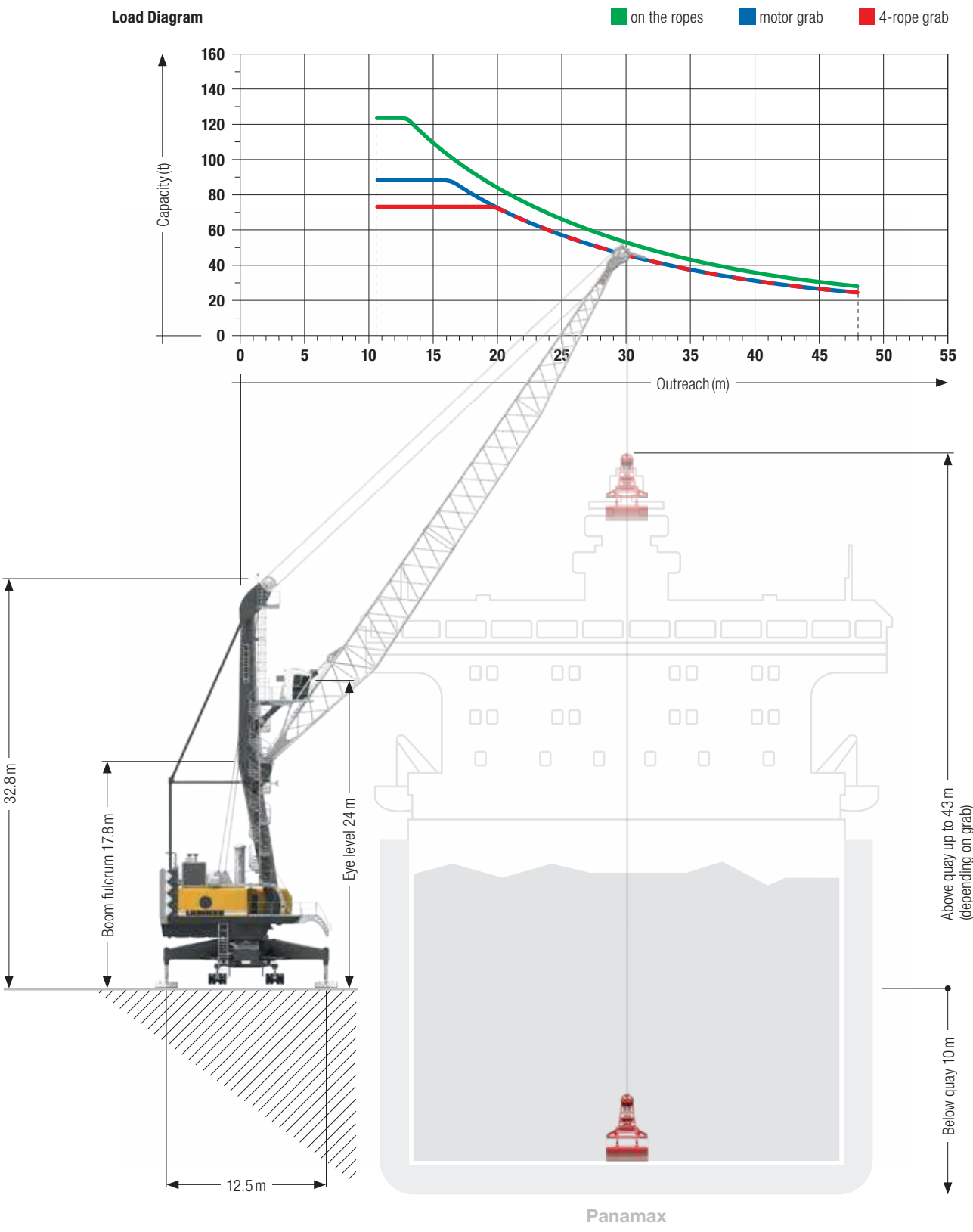
Panamax, Post-Panamax



LIEBHERR

Main Dimensions

Bulk Operation



Lifting Capacities

Bulk Operation

Maximum crane capacity 124 t

Outreach (m)	Hook operation	Grab operation	
	on the ropes (t)	4-rope grab (t)	motor grab (t)
10.5 – 12	124.0	75.0	90.0
13	117.6	75.0	90.0
14	111.5	75.0	90.0
15	105.6	75.0	90.0
16	100.1	75.0	90.0
18	90.0	75.0	81.0
19	85.3	75.0	76.8
20	81.0	72.9	72.9
22	73.1	65.8	65.8
24	66.2	59.6	59.6
26	60.2	54.2	54.2
28	55.1	49.5	49.5
30	50.6	45.5	45.5
32	48.6	42.1	42.1
34	43.4	39.1	39.1
36	40.5	36.5	36.5
38	38.0	34.2	34.2
40	35.7	32.1	32.1
42	33.5	30.2	30.2
44	31.4	28.3	28.3
46	29.3	26.3	26.3
48	27.3	24.5	24.5

Weight ramshorn hook 3.0 t; Weight rotator 3.5 t

Maximum crane capacity 84 t

Outreach (m)	Hook operation	Grab operation	
	on the ropes (t)	4-rope grab (t)	motor grab (t)
10.5 – 12	84.0	45.0	52.0
13	84.0	45.0	52.0
14	84.0	45.0	52.0
15	84.0	45.0	52.0
16	84.0	45.0	52.0
18	84.0	45.0	52.0
19	84.0	45.0	52.0
20	81.0	45.0	52.0
22	73.1	45.0	52.0
24	66.2	45.0	52.0
26	60.2	45.0	52.0
28	55.1	45.0	48.9
30	50.6	45.0	45.0
32	48.6	41.6	41.6
34	43.4	38.6	38.6
36	40.5	36.0	36.0
38	38.0	33.8	33.8
40	35.7	31.7	31.7
42	33.5	29.8	29.8
44	31.4	27.9	27.9
46	29.3	26.0	26.0
48	27.3	24.2	24.2

Weight ramshorn hook 3.0 t; Weight rotator 2.5 t

Standard Configuration / Turnover up to 1,500 t per Hour

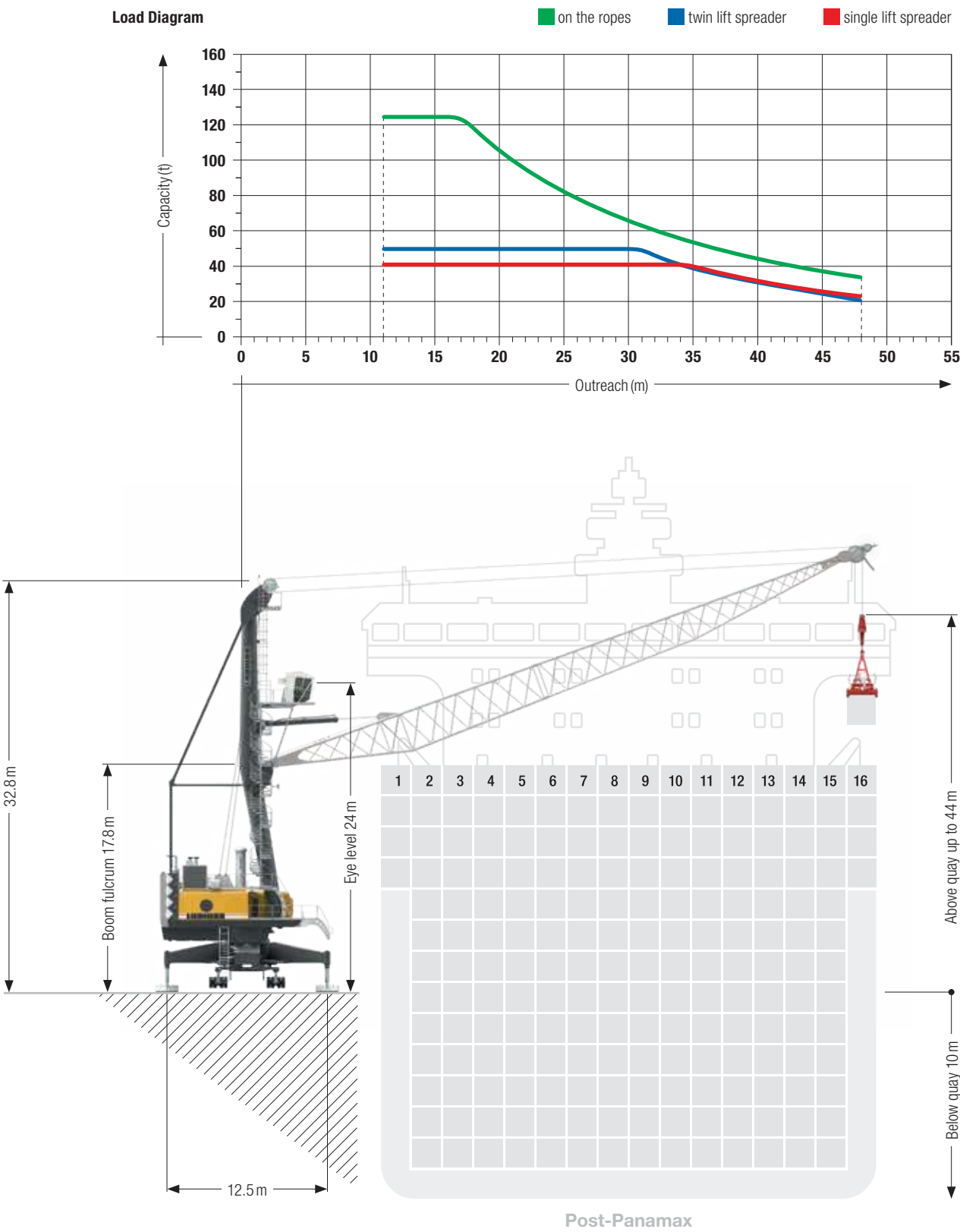
Pactronic® / Turnover up to 2,000 t per Hour

The powerful hydrostatic transmission and advanced Liebherr electronics ensure short, productive working cycles during bulk handling.

- During grab operation, hoisting, slewing, and luffing are driven simultaneously at maximized speed to achieve the highest (possible) turnover.
- During grab filling, features such as automatic lowering and hoisting guarantee the optimum filling level of the grab.
- The slack rope monitoring system ensures extended life-time of the ropes and increases operational safety.
- Reverse power is returned to the drive process through closed loop hydraulics which results in reduced fuel consumption.
- The Cycloptronic® anti-sway system automatically compensates for all rotational swing, transverse and longitudinal sway of the load at maximum speeds.
- To provide safe and stress-free working conditions for the operator, Liebherr offers the Cycloptronic® including Teach-In® feature, a semi-automatic system, which pilots the crane from the vessel hatch to the quay without any sway. Especially for bulk operation into hoppers, the Teach-In® system increases turnover and ensures consistent turnover rates during the entire ship unloading.
- Liebherr technology is absolutely resistant to all types of dust and dirt due to the closed hydraulic system and an electronic system which is military proven and tested.
- The airflow needed for cooling hydraulic and engine systems is routed external from the main machinery house. This helps keep the engine room clean and free of debris.

Main Dimensions

Container Operation



Lifting Capacities

Container Operation

Maximum crane capacity 124 t

Outreach (m)	Spreader operation under		Hook operation on the ropes Heavy lift (t)
	Single lift (t)	Twin lift (t)	
11	41.0	50.0	124.0
12	41.0	50.0	124.0
13	41.0	50.0	124.0
14	41.0	50.0	124.0
16	41.0	50.0	124.0
18	41.0	50.0	113.9
20	41.0	50.0	102.5
22	41.0	50.0	92.5
24	41.0	50.0	83.8
26	41.0	50.0	76.2
28	41.0	50.0	69.7
30	41.0	49.9	64.1
32	41.0	45.0	59.2
34	41.0	40.8	55.0
35	40.5	38.8	53.0
36	38.8	37.1	51.3
38	35.6	33.9	48.1
40	32.7	31.0	45.2
42	30.0	28.3	42.5
44	27.3	25.6	39.8
46	24.6	22.9	37.1
48	22.0	20.3	34.5

Weight rotator 3.5 t
Weight fully automatic (telescopic) spreader 9 t
Weight twin lift spreader 10.7 t

Maximum crane capacity 84 t

Outreach (m)	Spreader operation under		Hook operation on the ropes Heavy lift (t)
	Single lift (t)	Twin lift (t)	
11	41.0	50.0	84.0
12	41.0	50.0	84.0
13	41.0	50.0	84.0
14	41.0	50.0	84.0
16	41.0	50.0	84.0
18	41.0	50.0	84.0
20	41.0	50.0	84.0
23	41.0	50.0	84.0
24	41.0	50.0	83.8
26	41.0	50.0	76.2
28	41.0	50.0	69.7
30	41.0	50.0	64.1
32	41.0	46.0	59.2
34	41.0	41.8	55.0
35	41.0	39.8	53.0
36	39.8	38.1	51.3
38	36.6	34.9	48.1
40	33.7	32.0	45.2
42	31.0	29.3	42.5
44	28.3	26.6	39.8
46	25.6	23.9	37.1
48	23.0	21.3	34.5

Weight rotator 2.5 t
Weight fully automatic (telescopic) spreader 9 t
Weight twin lift spreader 10.7 t

Standard Configuration / Turnover up to 32 Cycles per Hour

Pactronic® / Turnover up to 38 Cycles per Hour

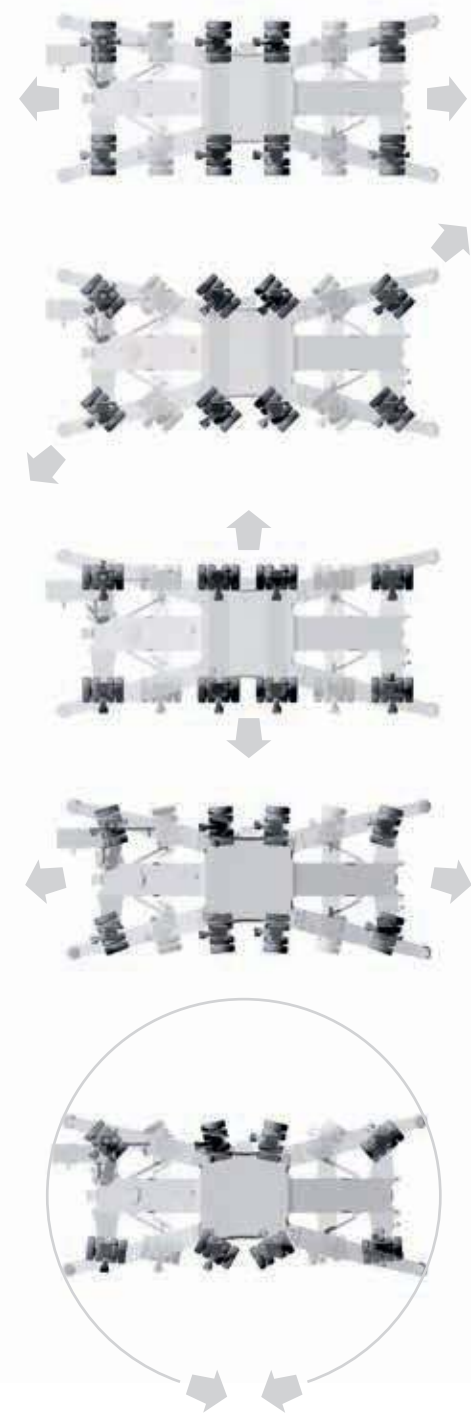
- Precision to perfection:** With incredibly short acceleration times for all crane motions, Liebherr is the top performer in container handling.
- The crane can be fitted with various types of spreaders (fixed or telescopic) connected to the rotator. Manual, semi or fully automatic telescopic spreaders are available for various container sizes.
 - Liebherr Cycloptronic® is an accurate, sway-free load motion control system that uses in-house designed software. Cycloptronic® allows for direct load positioning and aids the crane driver in mastering his task. With Cycloptronic® turnover, safety and the confidence of the operator will be improved.
 - Safety: The luffing cylinder is positioned above the lattice boom. This eliminates the possibility of any damage to the cylinder through swinging loads or highly stowed rows of containers on board the vessel.
 - The Liebherr hydrostatic drive is the most reliable and highest performing drive system for mobile harbour cranes. Independent closed loop hydraulic systems utilize the minimum number of components to guarantee highly responsive, smooth and precise operation while maximizing operational safety.

Undercarriage

Mobility

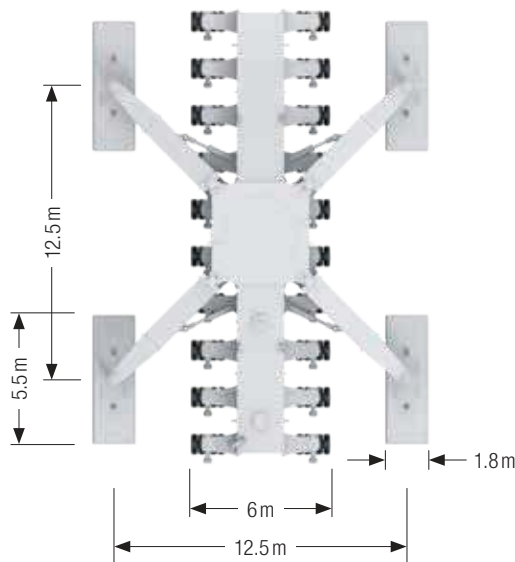
- Outstanding mobility and manoeuvrability
- Curves at any possible radii and even slewing on the spot

Schematic diagram



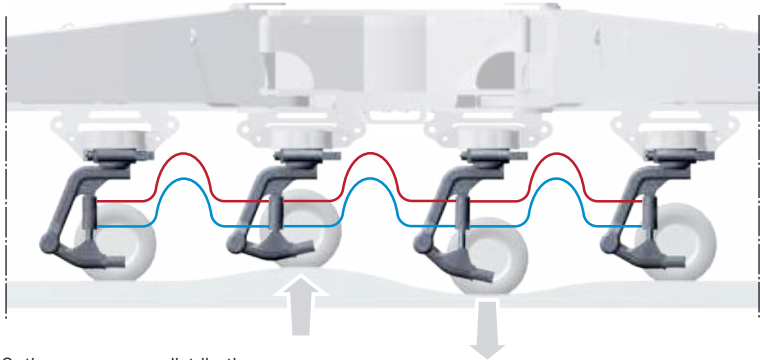
Modular propping system

- Minimised stress and strain of undercarriage due to cruciform support base which directs the load path from boom tip to quay
- Modular system allows further reduction of quay loads by installing additional axle sets
- Easy adaptation to various sizes of support pads and bases



Hydraulic load distribution

- Hydraulic suspension avoids overloading of individual wheel sets
- Standard trailer tyres making requisition of spares economical and time-saving
- Increased lifetime of tyres due to individually steerable wheel sets



Optimum pressure distribution and adaption of wheel sets on uneven surfaces

Technical Data

Capacity and Classification

	Capacity	Classification
Four rope grab operation	≤ 52 t	A8
Four rope grab operation	≤ 60 t	A7
Motor grab operation	≤ 52 t	A8
Container operation	≤ 57 t	A7
Heavy lift operation	≤ 124 t	A3

Main Dimensions

Min. to max. outreach	11 — 48 m	
Height of boom fulcrum	17.8 m	
Tower cabin height (eye level)	24.0 m	
Overall height (top of tower)	32.8 m	
Overall length of undercarriage	20.0 m	
Overall width of undercarriage	6.0 m	
	Bulk	Container
Number of axle sets (standard)	14	16
Number of axle sets (optional)	24	24

Working Speeds

Hoisting / lowering	0 — 120 m/min
Slewing	0 — 1.6 rpm
Luffing (average horizontal speed)	0 — 55 m/min
Travelling	0 — 5 km/h

Propping Arrangements

Standard supporting base	12.5 m x 12.5 m
Standard pad dimension	5.5 m x 1.8 m
Standard supporting area of pads	9.9 m²

Optional size of supporting pads and bases on request

Quay Load Arrangements

	Bulk	Container
Uniformly distributed load	1.9 t/m²	1.9 t/m²
Max. load per tyre	6.0 t	5.8 t

Due to a unique undercarriage design the quay loads specified above can even be reduced. Pad sizes, supporting base and the number of axle sets can easily be adapted to comply with the most stringent quay load restrictions.

Weight

	Bulk	Container
Total weight of crane LHM 420	approx. 342 t	approx. 371 t

Hoisting Heights

Above quay at minimum radius	45.0 m
Above quay at maximum radius	29.0 m
Below quay level (approx.)	12.0 m

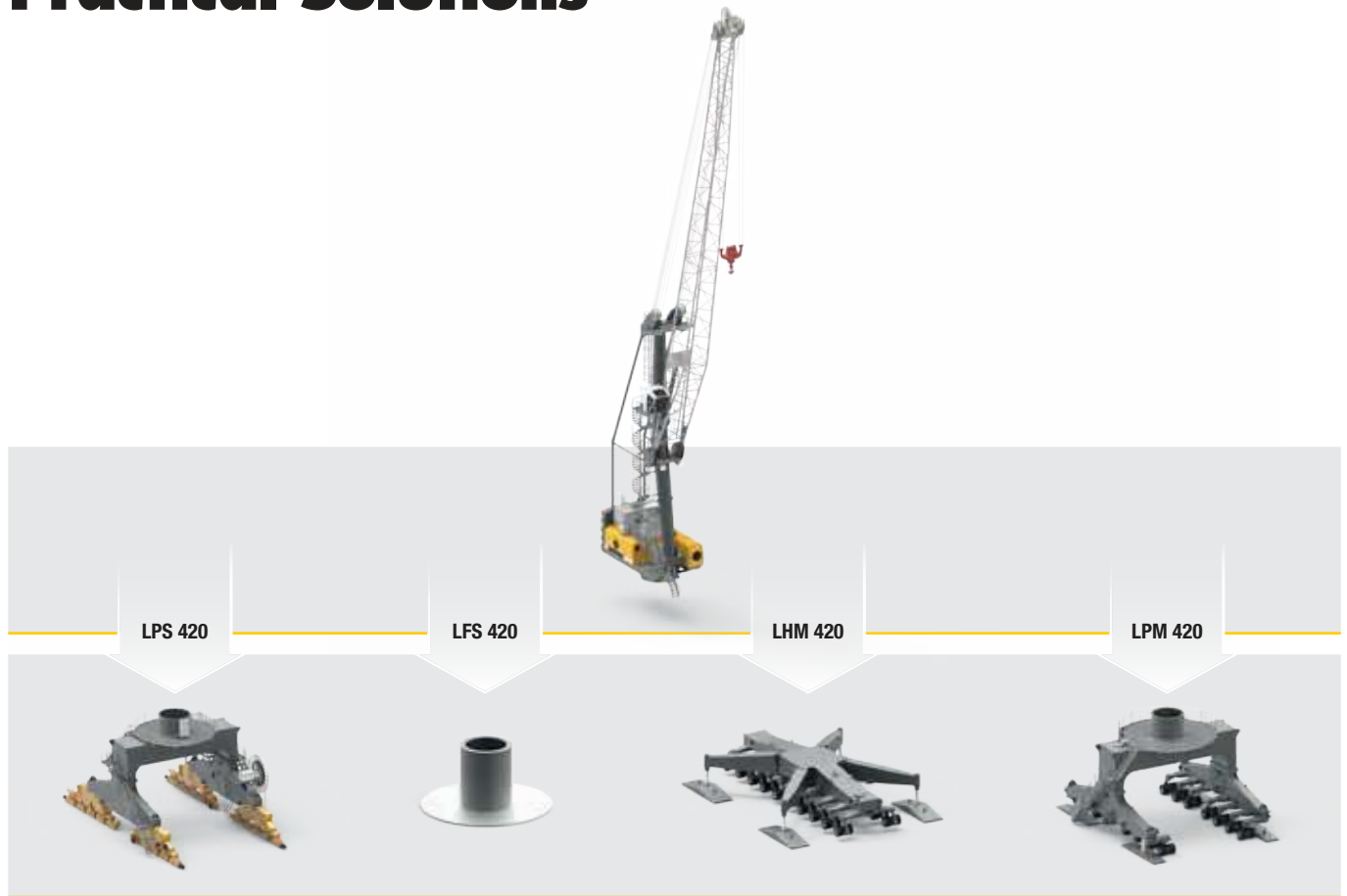
Optional Equipment

Additional products and services

- Pactronic® - power by accumulator and electronics
- SmartGrip – intelligent grabbing
- Cycloptronic® - anti-sway system
- Teach-In - semi-automatic point to point system
- Syctratronic® - synchronizing crane control system
- Vertical Line Finder - diagonal pull preventing system
- Collision alert system
- LiDAT® – smartApp
- Economy software - for optimised fuel consumption
- Video monitoring system
- Radio remote control
- Autopropping undercarriage

- Cyclone air-intake system for the engine
- Low temperature package
- Customer-specific painting & logo
- Additional (driven) axle sets
- Axle sets equipped with foamed tyres
- Different supporting bases and pad sizes
- And many more as per customers' requirements

Practical Solutions



Liebherr develops and produces special designs and solutions to meet customer-specific requirements

- The Liebherr Portal Crane (LPS) is an efficient combination of a space-saving portal (mounted on rails) and the proven mobile harbour crane concept. Particularly on narrow quays, individual portal solutions permit (railway) trains and (road) trucks to travel below the portal.
- Liebherr Fixed Slewing Cranes (LFS) are an efficient combination of a mobile harbour crane upper carriage and a fixed pedestal. LFS cranes provide an economical and space-saving solution for the installation on quaysides and jetties, especially where room for manoeuvring is limited and low ground pressure is essential. Additionally LFS solutions are also ideally suited for the installation on crane barges.
- The Liebherr Portal Mobile Crane (LPM) is the perfect combination of a space-saving portal undercarriage, efficient mobile harbour crane technology and unrestricted mobility. A gantry on rubber tyres enables the crane to be travelled from one quay to another. Supporting pads allow the crane to be used on quays with or without rail tracks. The LPM offers the same 360-degree mobility as the LHM. Driving in longitudinal, diagonal or transverse direction. Performance of conventional steering or slewing on the spot is possible and provided as standard.