

**Mobile Harbour Crane**

**LHM 600**

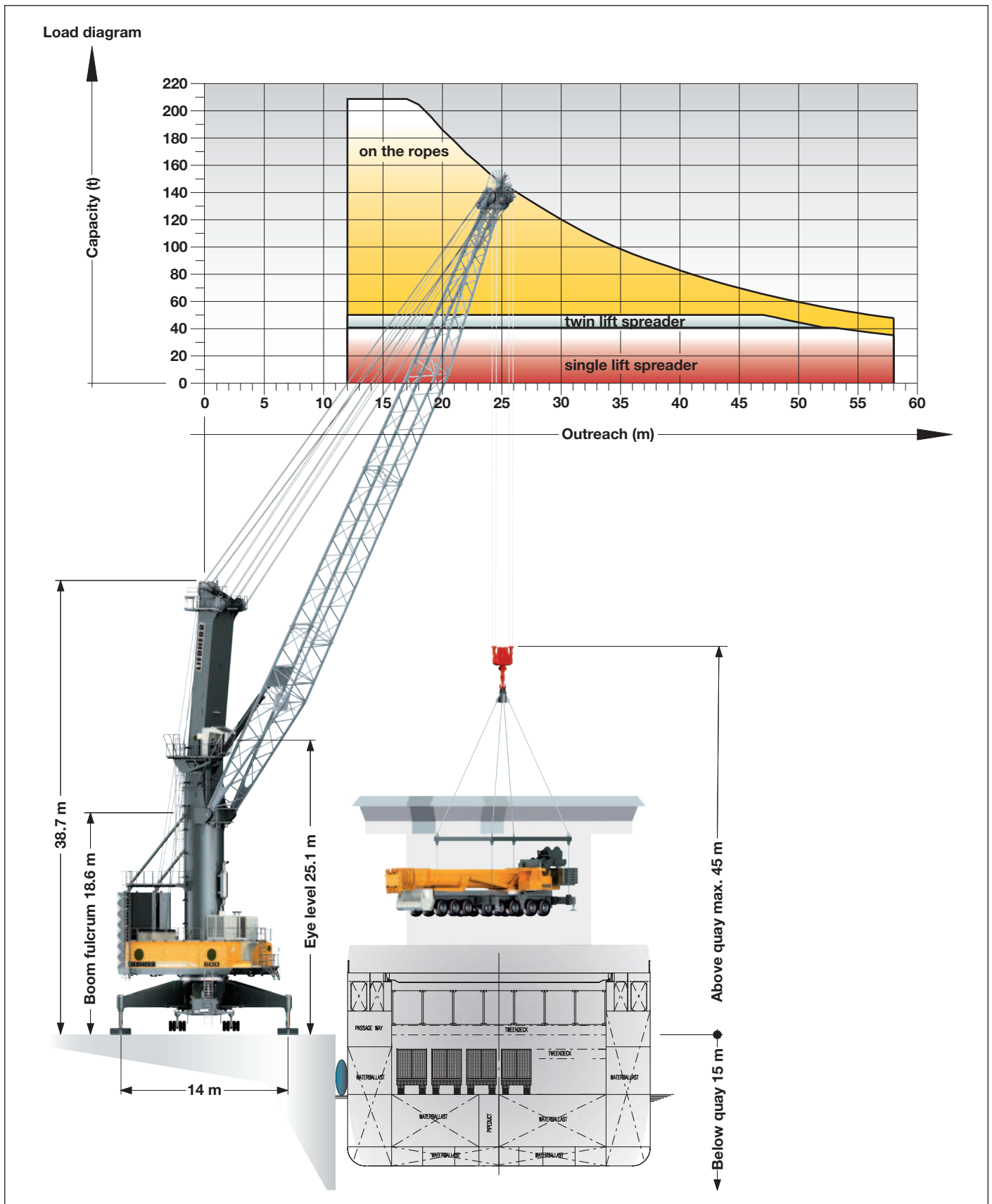


**LIEBHERR**

*Courtesy of Crane.Market*

# Main dimensions

## Heavy duty operation



# Heavy duty operation

Maximum crane capacity 208 t			
Outreach	Hook operation on the ropes	Spreader operation under	
	Heavy lift	Single lift	Twin lift
(m)	(t)	(t)	(t)
12	208.0	41.0	50.0
17	208.0	41.0	50.0
18	203.9	41.0	50.0
20	185.4	41.0	50.0
22	168.4	41.0	50.0
24	153.2	41.0	50.0
26	141.2	41.0	50.0
28	130.4	41.0	50.0
30	120.0	41.0	50.0
32	110.5	41.0	50.0
34	102.0	41.0	50.0
36	94.8	41.0	50.0
38	88.6	41.0	50.0
40	82.7	41.0	50.0
42	77.3	41.0	50.0
44	72.2	41.0	50.0
47	65.4	41.0	50.0
48	63.5	41.0	48.3
50	59.6	41.0	44.4
52	56.1	41.0	40.9
53	54.5	41.0	39.3
56	50.2	36.7	35.0
58	47.8	34.3	32.6

Weight rotator 4.5 t

Weight fully automatic (telescopic) spreader 9 t

Weight twin lift spreader 10.7 t

## Project Cargo & Heavy Duty up to 208 tonnes

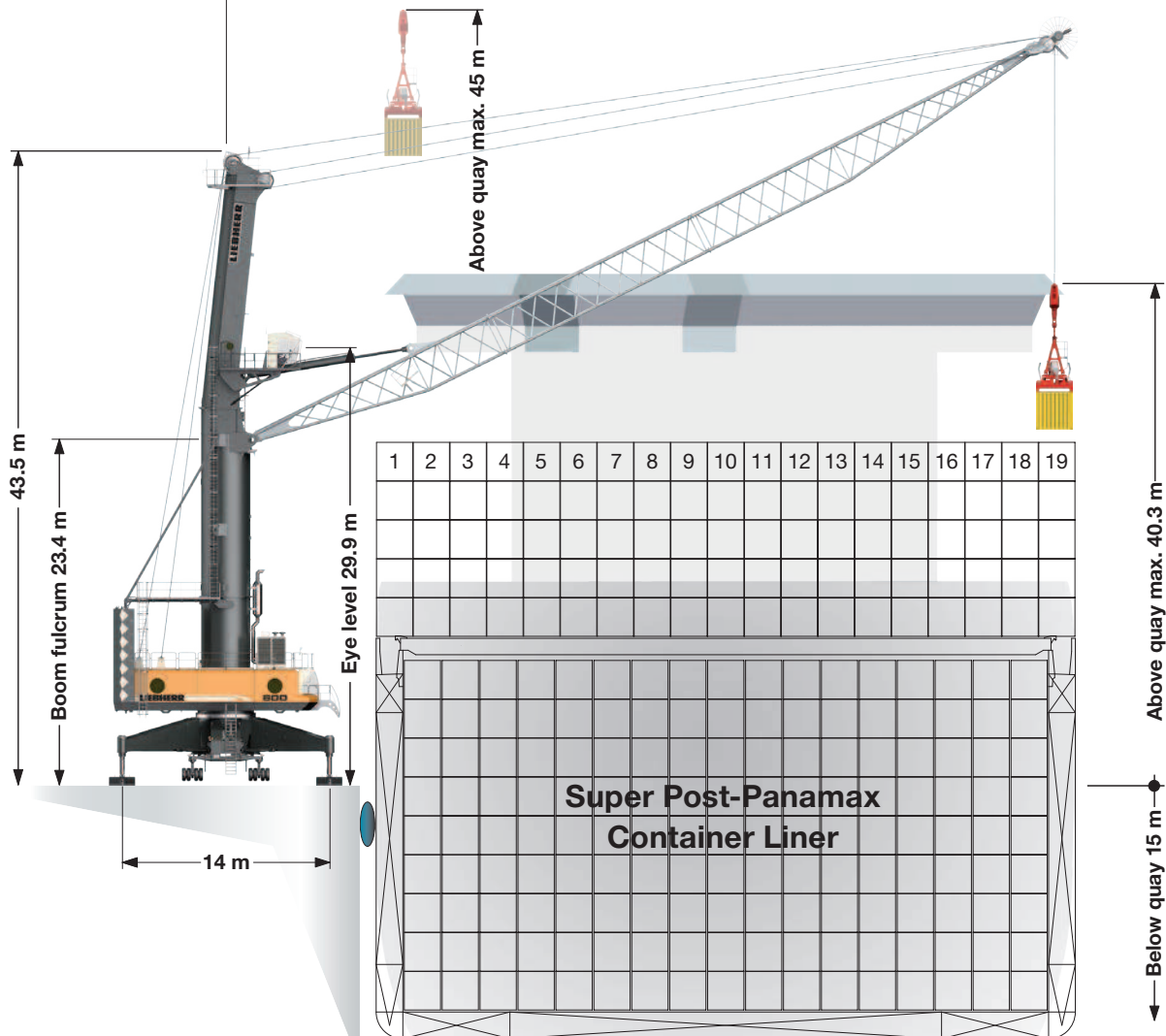
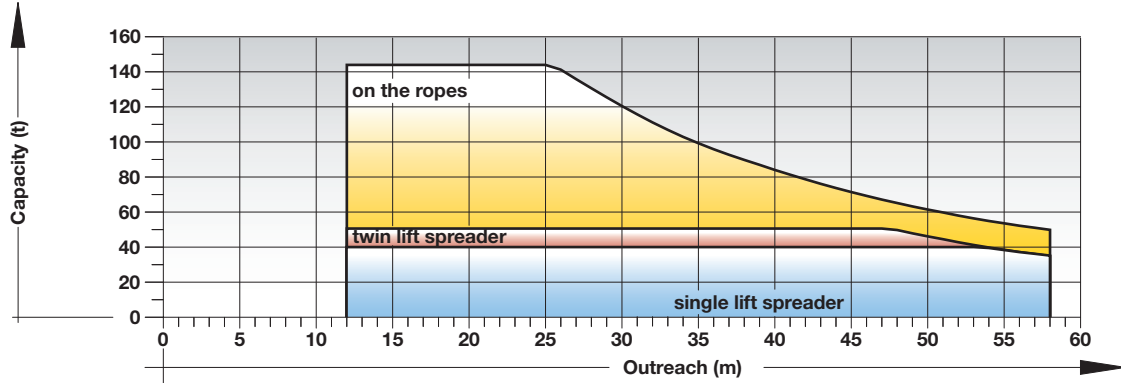
Safety and precision are the most important criteria when lifting heavy goods.

- The hydrostatic drive concept in connection with closed hydraulic circuits guarantees immediate system reaction times for rapid and safe working cycles.
- The X-shaped propping arrangement forms the basis of a unique stress flow-system absorbing all static and dynamic demands resulting from travelling and operation of the crane.
- Stresses and strains occurring during heavy lift operation are thereby transmitted via the shortest route through the centre of the chassis onto the outriggers and further to the ground.
- Torsion strain in the undercarriage is reduced to a minimum.
- Lifetime of the slewing bearing and all supporting parts enhances.
- The luffing cylinder also uses a closed hydraulic circuit, assuring accuracy without vibration.
- Sycratronic® allows two Liebherr mobile harbour cranes to be operated simultaneously by one crane driver for improved speed, capacity and safety.

# Main dimensions

## Container operation

Load diagram



# Container operation

Maximum crane capacity 104 t			
Outreach	Spreader operation under		Hook operation on the ropes
	Single lift	Twin lift	Standard
(m)	(t)	(t)	(t)
12	41.0	50.0	104.0
14	41.0	50.0	104.0
16	41.0	50.0	104.0
18	41.0	50.0	104.0
20	41.0	50.0	104.0
22	41.0	50.0	104.0
24	41.0	50.0	104.0
26	41.0	50.0	104.0
28	41.0	50.0	104.0
30	41.0	50.0	104.0
33	41.0	50.0	104.0
34	41.0	50.0	102.0
36	41.0	50.0	94.8
38	41.0	50.0	88.6
40	41.0	50.0	82.7
42	41.0	50.0	77.3
44	41.0	50.0	72.2
47	41.0	50.0	65.4
48	41.0	49.8	63.5
50	41.0	45.9	59.6
52	41.0	42.4	56.1
54	41.0	39.3	53.0
56	38.2	36.5	50.2
58	35.8	34.1	47.8

Weight rotator 3.0 t  
 Weight fully automatic (telescopic) spreader 9 t  
 Weight twin lift spreader 10.7 t

Maximum crane capacity 144 t			
Outreach	Spreader operation under		Hook operation on the ropes
	Single lift	Twin lift	Standard
(m)	(t)	(t)	(t)
12	41.0	50.0	144.0
14	41.0	50.0	144.0
16	41.0	50.0	144.0
18	41.0	50.0	144.0
20	41.0	50.0	144.0
22	41.0	50.0	144.0
24	41.0	50.0	144.0
25	41.0	50.0	144.0
28	41.0	50.0	130.4
30	41.0	50.0	120.0
33	41.0	50.0	106.1
34	41.0	50.0	102.0
36	41.0	50.0	94.8
38	41.0	50.0	88.6
40	41.0	50.0	82.7
42	41.0	50.0	77.3
44	41.0	50.0	72.2
47	41.0	50.0	65.4
48	41.0	49.2	63.5
50	41.0	45.3	59.6
52	41.0	41.8	56.1
53	41.0	40.2	54.5
56	37.6	35.9	50.2
58	35.2	33.5	47.8

Weight rotator 3.6 t  
 Weight fully automatic (telescopic) spreader 9 t  
 Weight twin lift spreader 10.7 t  
 \*) also available in 4-rope configuration

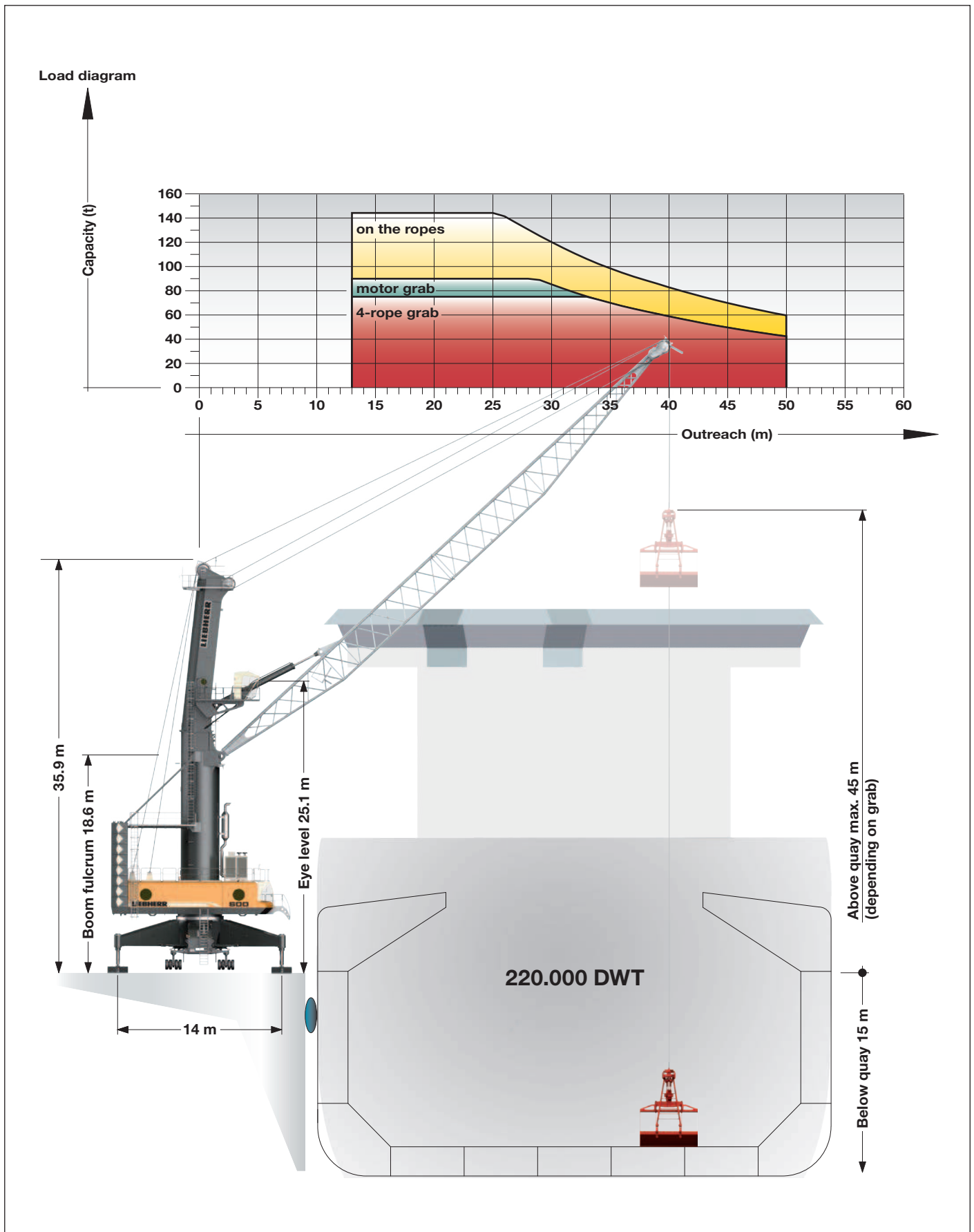
## Standard configuration **Pactronic®** Turnover up to 32 cycles per hour Turnover up to 38 cycles per hour

**Precision to perfection: With incredibly short acceleration times for all crane motions, Liebherr is the top performer in container handling.**

- The Pactronic® Hybrid Drive System is characterized by an energy storage device, which is added to the drive system as a secondary energy source. This results in substantially higher hoisting and lowering speeds. Not only is the crane's efficiency increased, but also the turnover (+30%). In addition, the crane's energy consumption is significantly reduced (-30%).
- Liebherr Cycoptronic® is an accurate, sway-free load motion control system that uses in-house designed software. Cycoptronic® allows for direct load positioning and aids the crane driver in mastering his task. With Cycoptronic® turnover, safety and the confidence of the operator will be improved.
- When loading/unloading containers, the crane driver needs to slew the crane causing the container to deviate from its parallel position to the vessel. With the Advanced Container Control System the container remains parallel to the vessel which eases the positioning for the crane driver and boosts handling figures.
- 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.

# Main dimensions

## Bulk operation



# Bulk operation

Maximum crane capacity 144 t			
Outreach (m)	Hook operation	Grab operation	
	on the ropes (t)	4-rope grab (t)	motor grab (t)
13	144.0	75.0	90.0
13	144.0	75.0	90.0
14	144.0	75.0	90.0
15	144.0	75.0	90.0
16	144.0	75.0	90.0
17	144.0	75.0	90.0
18	144.0	75.0	90.0
19	144.0	75.0	90.0
20	144.0	75.0	90.0
22	144.0	75.0	90.0
25	144.0	75.0	90.0
26	141.2	75.0	90.0
28	130.4	75.0	90.0
30	120.0	75.0	85.3
33	106.1	75.0	75.5
34	102.0	72.5	72.5
36	94.8	67.4	67.4
38	88.6	63.0	63.0
40	82.7	58.8	58.8
42	77.3	54.9	54.9
44	72.2	51.3	51.3
46	67.6	48.1	48.1
48	63.5	45.1	45.1
50	59.6	42.4	42.4

Weight ramshorn hook 3.8 t  
Weight rotator 3.6 t

## Standard configuration **Turnover up to 1500 t per hour** Pactronic® **Turnover up to 2000 t per hour**

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

- The Pactronic® Hybrid Drive System is characterized by an energy storage device, which is added to the drive system as a secondary energy source. This results in substantially higher hoisting and lowering speeds. Not only is the crane's efficiency increased, but also the turnover (+30%). In addition, the crane's energy consumption is significantly reduced (-30%).
- 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 lifetime 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 Cycoptronic® 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 Cycoptronic® 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.

# Technical data

## Heavy duty operation

### Capacity and Classification

	Capacity	Classification
Standard operation	< 73 t	A8
Container	< 73 t	A8
Heavy lift	208 t	A3

### Main dimensions

Min. to max. outreach	12–58 m
Height of boom fulcrum	18.6 m
Tower cabin height (eye level)	25.1 m
Overall height (top of tower)	38.7 m
Overall length of undercarriage	26.7 m
Overall width of undercarriage	6.0 m
Number of axle sets (standard)	26
Number of axle sets (optional)	28

### Working speeds

Hoisting / lowering	0 – 120 m/min
Slewing	0 – 1.6 rpm
Luffing	0 – 100 m/min
Travelling	0 – 5.0 km/h

### Propping arrangements

Standard supporting base	14 m x 14 m
Standard pad dimension	4 x 5.5 m x 1.8 m
Standard supporting area of pads	9.9 m <sup>2</sup>
Optional size of supporting pads and bases on request	

### Quay load arrangements

Uniformly distributed load	2.23 t/m <sup>2</sup>
Max. load per tyre	5.3 t

Due to a unique undercarriage design its parameters (pad sizes, supporting base and number of axle sets) can easily be adapted to comply with the most stringent quay load restrictions.

### Weight

Total weight of crane	
Heavy version with 58 m boom	approx. 555 t

### Hoisting heights

Above quay at minimum radius	45 m
Above quay at maximum radius	35.5 m
Below quay level	15 m

## Optional equipment

1. Pactronic® - power by accumulator and electronics
2. Cycoptronic® - anti-sway system
3. Teach-In - semi-automatic point to point system
4. Sycratronic® - synchronizing crane control system
5. Vertical Line Finder - diagonal pull preventing system
6. Dynamic anti-collision system
7. Lidat® - basic package
8. Lidat® - tele service package
9. Lidat® - turnover package
10. SCULI - crane analyzer with various features
11. Economy software - for optimised fuel consumption
12. Video monitoring system
13. Radio remote control
14. Autopropping undercarriage
15. Cyclone air-intake system for the engine
16. Low temperature package
17. Customer-specific painting & logo
18. Additional (driven) axle sets
19. Axle sets equipped with foamed tyres
20. Different supporting bases and pad sizes
21. Tower extension 4.8 m
22. And many more as per customers' requirements



# Technical data

## Container operation

### Capacity and Classification

	Capacity	Classification
Standard operation	< 73 t	A8
Container	< 73 t	A8

### Main dimensions

Min. to max. outreach	12–58 m
Height of boom fulcrum	23.4 m
Tower cabin height (eye level)	29.9 m
Overall height (top of tower)	43.5 m
Overall length of undercarriage	26.7 m
Overall width of undercarriage	6.0 m
Number of axle sets (standard)	24
Number of axle sets (optional)	28

### Working speeds

Hoisting / lowering	0 – 120 m/min
Slewing	0 – 1.6 rpm
Luffing	0 – 100 m/min
Travelling	0 – 5.0 km/h

### Propping arrangements

Standard supporting base	14 m x 14 m
Standard pad dimension	4 x 5.5 m x 1.8 m
Standard supporting area of pads	9.9 m <sup>2</sup>
Optional size of supporting pads and bases on request	

### Quay load arrangements

Uniformly distributed load	2.23 t/m <sup>2</sup>
Max. load per tyre	5.6 t

Due to a unique undercarriage design its parameters (pad sizes, supporting base and number of axle sets) can easily be adapted to comply with the most stringent quay load restrictions.

### Weight

Total weight of crane	
Container version with 58 m boom and tower extension 4.8 m	approx. 540 t

### Hoisting heights

Above quay at minimum radius	45 m
Above quay at maximum radius	40.3 m
Below quay level	15 m

## Optional equipment

1. Pactronic® - power by accumulator and electronics
2. Cycoptronic® - anti-sway system
3. Teach-In - semi-automatic point to point system
4. Sycratronic® - synchronizing crane control system
5. Vertical Line Finder - diagonal pull preventing system
6. Dynamic anti-collision system
7. Lidat® - basic package
8. Lidat® - tele service package
9. Lidat® - turnover package
10. SCULI - crane analyzer with various features
11. Economy software - for optimised fuel consumption
12. Video monitoring system
13. Radio remote control
14. Autopropping undercarriage
15. Cyclone air-intake system for the engine
16. Low temperature package
17. Customer-specific painting & logo
18. Additional (driven) axle sets
19. Axle sets equipped with foamed tyres
20. Different supporting bases and pad sizes
21. Tower extension 4.8 m
22. And many more as per customers' requirements

# Technical data

## Bulk operation

### Capacity and Classification

	Capacity	Classification
Grab operation	< 63 t	A8
Grab operation	< 75 t	A7

### Main dimensions

Min. to max. outreach	13–50 m
Height of boom fulcrum	18.6 m
Tower cabin height (eye level)	25.1 m
Overall height (top of tower)	35.9 m
Overall length of undercarriage	24.7 m
Overall width of undercarriage	6.0 m
mNumber of axle sets (standard)	24
Number of axle sets (optional)	28

### Working speeds

Hoisting / lowering	0 – 120 m/min
Slewing	0 – 1.6 rpm
Luffing	0 – 100 m/min
Travelling	0 – 5.0 km/h

### Propping arrangements

Standard supporting base	14 m x 14 m
Standard pad dimension	4 x 5.5 m x 1.8 m
Standard supporting area of pads	9.9 m <sup>2</sup>
Optional size of supporting pads and bases on request	

### Quay load arrangements

Uniformly distributed load	2.23 t/m <sup>2</sup>
Max. load per tyre	5.6 t

Due to a unique undercarriage design its parameters (pad sizes, supporting base and number of axle sets) can easily be adapted to comply with the most stringent quay load restrictions.

### Weight

Total weight	approx. 540 t
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### Hoisting heights

Above quay at minimum radius	45 m
Above quay at maximum radius	32.9 m
Below quay level	15 m

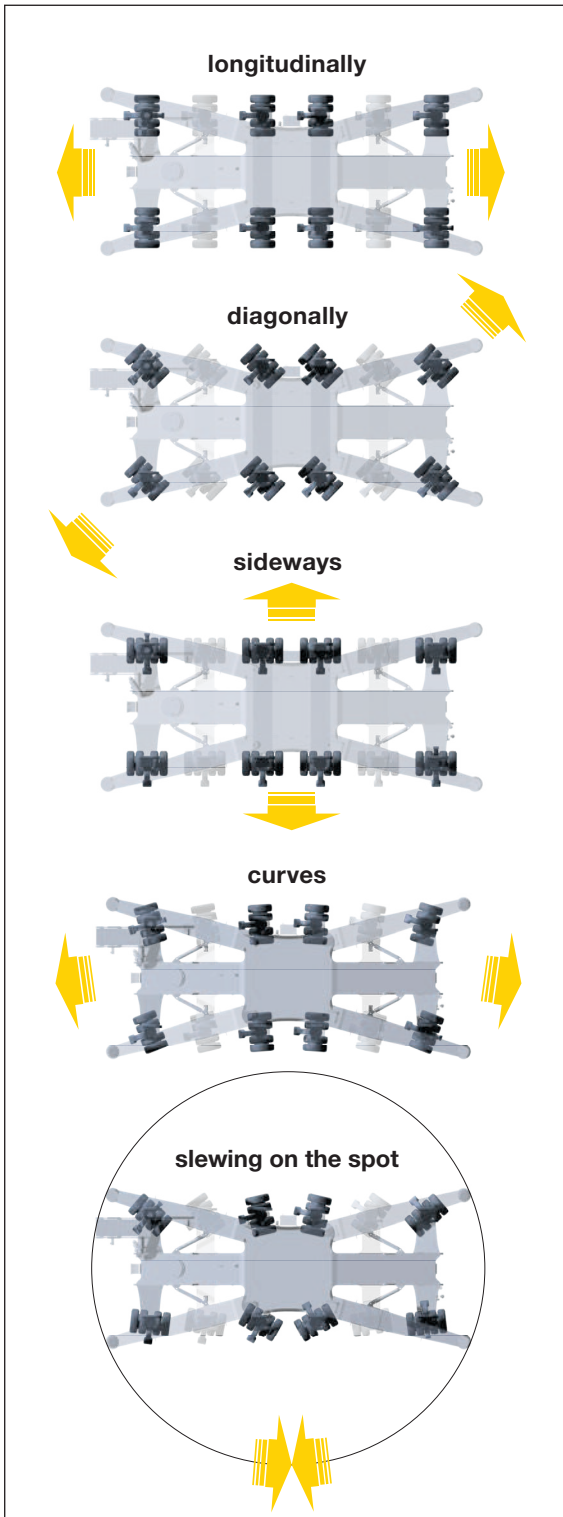
## Optional equipment

1. Pactronic® - power by accumulator and electronics
2. Cycoptronic® - anti-sway system
3. Teach-In - semi-automatic point to point system
4. Syncratic® - synchronizing crane control system
5. Vertical Line Finder - diagonal pull preventing system
6. Dynamic anti-collision system
7. Lidat® - basic package
8. Lidat® - tele service package
9. Lidat® - turnover package
10. SCULI - crane analyzer with various features
11. Economy software - for optimised fuel consumption
12. Video monitoring system
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# Undercarriage

## Mobility

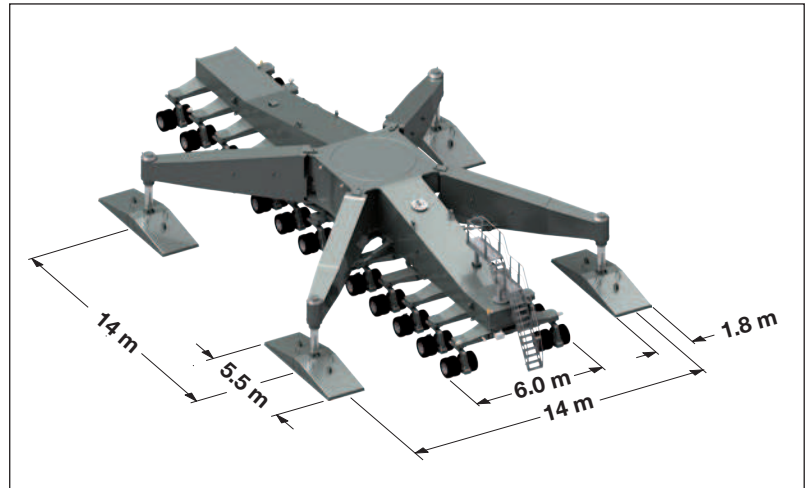
- Outstanding mobility and manoeuvrability
- Curves at any possible radii and even slewing on the spot



Schematic diagram

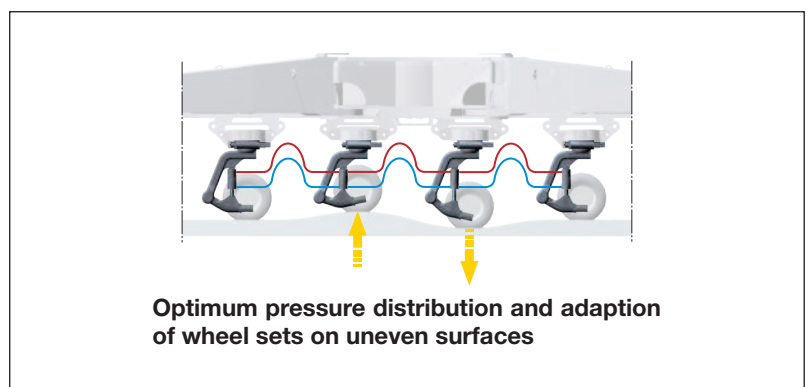
## Modular propping system

- 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



# 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 Floating Cranes (LBS) can be used for transshipment and midstream operation between ocean-going vessels and river barges on different types of waterways, including those having no or few quays. In addition, the LBS solution allows direct cargo transfer from ship to shore – especially when quays reach capacity limits.
- Depending on customer specifications, the LBS range may have varying lifting capacities due to tailor-made design solutions.
- Liebherr Fixed Slewing Cranes (LFS) are an efficient combination of a mobile harbour crane uppercarriage 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.