

# LIEBHERR

**MOBILE HARBOUR CRANE**

**TYPE**

**LHM 550 Litronic®**

**TECHNICAL DATA**

**3512.03.04**

MCR  
19.10.2018

Rev. 2017/06

## TECHNICAL DATA

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# 1 MAIN DATA

Dead weight Rotator = 4,0 t

Dead weight Single Lift Spreader = 9,0 t

SWL spreader = 41,0 t

## 1.1 Load Table

### 1.1.1 Load Capacity Chart

Radius (m)	Hook Operation Utilisation of Tipping		Spreader Operation under Single Lift Spreader (t)	Motor Grab Operation on Rope (t)
	on Rope	on Hook		
	(t)	(t)		
11	154,0	150,0	41,0	90,0
12	154,0	150,0	41,0	90,0
13	154,0	150,0	41,0	90,0
14	154,0	150,0	41,0	90,0
15	154,0	150,0	41,0	90,0
16	154,0	150,0	41,0	90,0
17	154,0	150,0	41,0	90,0
18	154,0	150,0	41,0	90,0
19	152,6	148,6	41,0	90,0
20	144,9	140,9	41,0	90,0
21	137,5	133,5	41,0	90,0
22	130,5	126,5	41,0	90,0
23	123,9	119,9	41,0	88,1
24	117,9	113,9	41,0	83,8
25	112,3	108,3	41,0	79,9
26	107,2	103,2	41,0	76,2
27	102,5	98,5	41,0	72,9
28	97,7	93,7	41,0	69,5
29	93,3	89,3	41,0	66,3
30	89,2	85,2	41,0	63,4
31	85,6	81,6	41,0	60,9
32	82,3	78,3	41,0	58,5
33	79,0	75,0	41,0	56,2
34	76,0	72,0	41,0	54,1
35	73,3	69,3	41,0	52,1
36	70,7	66,7	41,0	50,3
37	68,3	64,3	41,0	48,5
38	66,0	62,0	41,0	47,0
39	63,9	59,9	41,0	45,5
40	62,0	58,0	41,0	44,1
41	60,1	56,1	41,0	42,8
42	58,4	54,4	41,0	41,5
43	56,8	52,8	41,0	40,4
44	55,2	51,2	41,0	39,3
45	53,7	49,7	40,7	38,2
46	52,2	48,2	39,2	37,1
47	50,7	46,7	37,7	36,0
48	49,3	45,3	36,3	35,0
49	47,8	43,8	34,8	34,0
50	46,4	42,4	33,4	33,0
51	45,0	41,0	32,0	32,0
52	43,6	39,6	30,6	31,0
53	42,2	38,2	29,2	30,0
54	40,9	36,9	27,9	29,1

### 1.1.2 Travelling Window

For travelling the boom of crane must be positioned either over front part (slew angle = 0°) or over rear part of undercarriage (slew angle = 180°).

The maximum load on ropes during travelling is (travelling in both directions) 25t .

## 1.2 Operating Speeds

- \* 100 percent infinitely variable speed control from zero to maximum speed
- \* electronic-controlled acceleration/deceleration, to avoid shocks to crane and load and to enable smoother speed control
- \* automatic power output regulators
- \* slewing, luffing, hoisting can be operated simultaneously

	ac- / deceleration time		
Hoisting / Lowering	appr. 1 sec	14,0 m/min with	154 t
		28,0 m/min with	80 t
		37,0 m/min with	60 t
		55,0 m/min with	40 t
	appr. 3 sec	120,0 m/min with	empty hook
Slewing	appr. 5-6 sec	0 - 1,6 rpm	
		280 m/min	max speed boom head
		360 °	unlimited slewing range
Luffing	appr. 2 sec	47 (57) sec	with full load from max. to min. working radius (theoretical without ac- and deceleration)
		55 (45) m/min	average horizontal speed
Travelling	appr. 6 sec	0 - 5 km/h	without load
Max. inclination in transverse direction		2%	without load, during travelling
Max. inclination in longitudinal direction		5%	without load, during travelling

## 1.3 Weights

Total weight of crane appr. 438 t

## 1.4 Dimensions

Support base	13,5 m x 13,5 m	
Size of supporting pads	5.5 m x 1.8 m	
Supporting area of pads	9,9 m <sup>2</sup>	
Overall width without supporting pads	6,5 m	
Overall width with supporting pads and swung in outriggers	10,2 m	
Overall width in traveling position and deployed outriggers	15,3 m	
Overall length of undercarriage	20,7 m	
Length of boom (centre sheaves)	55,0 m	
Overall height (top of tower)	35,9 m	
Height of boom fulcrum	17,8 m	
Cab height (eye level)	24,3 m	
Turning radius	0 m	inner
incl. supporting pads	13,8 m	outer
Tail swing radius	7,4 m	
Max. hoisting height (measured at crane rope socket) above quay at minimum radius	45,0 m	
above quay at maximum radius	31,5 m	
below quay	15,0 m	
Winchconfiguration	1x144t	
Number of winches	1 (2 ropes per winch)	
Diameter of hoisting rope	54 mm	
Diameter of sheaves at boom head	1304 mm	
Ratio between diameter of hoisting rope to sheaves	1 : 24,1	
Diameter of rope drum	1200 mm	
Ratio between diameter of rope to drum	1 : 22,2	
Number of axle sets	20	
Axle sets driven	6	
Axle sets steerable	all	
No. of tyres	4 per axle set	
Tyres	285/70 R 19,5 make Continental	
Tyre pressure	10 bar max	

## 1.5 Environmental Conditions

Ambient temperature	-30° C to +45 ° C
Humidity (relative)	97 %
Max. wind speed in operation	24 m/s
Max. wind speed out of operation	42 m/s
Max. wind speed during travelling	20 m/s

## 1.6 Requirements on Quay

During crane operation and driving, the following pressures are relevant

### Assumed Conditions:

Normal	=	all static loads are included
Extreme	=	all static loads and dynamic factors are included

Max. axle set loading: ( 2 axle sets = 1 axle line)	Normal	appr.	21,9 t
	Extreme	appr.	26,8 t

### Max. Corner Loading:

		Hook	Grab
Normal (static excl. wind)	boom 45°	276,3 t	219,9 t
	boom 90°	238,4 t	193,8 t
Normal (static incl. wind)	boom 45°	290,1 t	232,1 t
	boom 90°	248,2 t	202,4 t
Extreme (dynamic incl. wind)	boom 45°	308,8 t	248,4 t
	boom 90°	252,6 t	213,2 t

### Max. Area Pressure:

		Hook	Grab
Normal (static excl. wind)	boom 45°	27,9 t/m <sup>2</sup>	22,2 t/m <sup>2</sup>
	boom 90°	24,1 t/m <sup>2</sup>	19,6 t/m <sup>2</sup>
Normal (static incl. wind)	boom 45°	29,3 t/m <sup>2</sup>	23,4 t/m <sup>2</sup>
	boom 90°	25,1 t/m <sup>2</sup>	20,4 t/m <sup>2</sup>
Extreme (dynamic incl. wind)	boom 45°	31,2 t/m <sup>2</sup>	25,1 t/m <sup>2</sup>
	boom 90°	25,5 t/m <sup>2</sup>	21,5 t/m <sup>2</sup>

## 1.7 Drive System

Prime mover	Diesel Engine	
Make	LIEBHERR	
Type	D 9512 A7	
Combustion system	Diesel	
Emission standard	none	
Number of cylinder	12	
Cooling system	Water	
Max. torque	4750 Nm	at 1500 rpm
Output on the drive shaft	750 kW	at 1700 rpm acc. ISO 9249
Average consumption	198 g/KWh	
Fuel tank capacity	13000 l	

Starter	Bosch QB
Output	9 kW
Dynamo	Bosch
Nominal current	140 Amp
Voltage	24 V

The crane is equipped with an additional LV electric main drive with the following main data:

Prime mover	Two electric motors installed opposite of the Diesel engine
Make	ABB or equal
Type	315 MLB-4
Nominal Voltage	400V, 50Hz
Nominal Rating	2x295 kW
Max. Crane Power Consumption	610 kW
Starter	Star/Delta, motors start in sequential order
Duty	S6-40% DC

## 1.8 Hydraulic Oil

Oil	See table of lubricants
Oil cooling	The hydraulic driven oil cooler is located outside the machinery room, protected via cover, cooling medium is fresh air

## 1.9 Lighting

Appropriate illumination is fitted in

- machinery room
- switch cabinet room
- cabs
- access to the crane

Floodlight type

- LED

Position

- three on the boom
- Two on the tower

Rating (per floodlight)

- 450 W

Two aircraft warning lights

Steps from the tower cabin are provided with battery-buffered 24 VDC emergency lights. Two warning lights (on undercarriage) and a ringing bell when travelling are standard.

## 1.10 Heating

- Heating of driver's cabin (tower cab 6 kW, optional lower cab 4 kW)
- Heating of switch cabinet room (1 x 2 kW)
- Standstill heating of slipring collector, switch cabinet
- Heating of the hydraulic tank (1.4 kW)
- Preheating of cooling water (2 kW)



## 1.11 Group Classification of Crane and Components

Authorities, Regulations

EN, FEM, DIN, VDE, VDI, IEC, ISO

### Classification of crane as a whole in appliance groups

	Crane group at operation with	<b>Hook</b>	<b>Grab</b>
Hook operation	SWL < 144t	A3	
Hook operation	SWL < 77t	A6	
Spreader Operation	SWL < 63t	A7	
Motor Grab Operation	SWL < 52t		A8

### Classification of individual mechanisms

	Mechanism group			
	<b>Hook operation</b>	<b>Hook operation</b>	<b>spreader</b>	<b>motor grab</b>
Winch gear	M7 (70t)	M3 (154t)	M8 (63t)	M8 (63t)
Luffing gear	M7	M7	M7	M7
Slewing gear	M6	M7	M6	M7
Travelling gear	M4	M4	M4	M4

## 1.12 Documentation

Standard scope of delivery includes

- 3 operation/maintenance manuals
- 3 spare parts books
- 3 works certificates

### 1.13 Protective Coat/Painting

#### I GENERAL

- Liebherr LH N° 983593014
- Cleaning and Substrate Preparation  
Solvent Cleaning/Degreasing  
Shot Blasting SA 2.5 (ISO 8501-1)
- Surface Profile: Comparator Type "G"  
Segment 2-3 (ISO 8503-1)

#### II CRANE - INTERNAL SURFACES

**Film thickness**

##### 1 Priming Coat

2-Pack Zinc Rich Epoxy Primer Interzinc 315 HS	<b>75</b> (+30/-20)	microns
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##### 3 Finish Coat

2-Pack Epoxy Amerlock 400C	<b>110</b> (+15/-15)	microns
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<b>Total Min. Dry Film Thickness</b>	<b>185</b>	<b>microns</b>
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#### III CRANE - EXTERNAL SURFACES

**Film thickness**

##### 1 Priming Coat

2-Pack Zinc Rich Epoxy Primer Interzinc 315 HS	<b>75</b> (+30/-20)	microns
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##### 2 Intermediate Coat

2-Pack Epoxy Amerlock 400 C or Interseal 670 HS	<b>100</b> (+25/-15)	microns
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##### 3 Finish Coat

2-Pack Polyurethane Finish Interfine 979 or PSX 700	<b>75</b> (+15/-15)	microns
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<b>Total Min. Dry Film Thickness</b>	<b>250</b>	<b>microns</b>
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**Note:**

Above values are related to primary structure.

The final colour shade for undercarriage, slewing platform steel construction, counter weights and tower is RAL 7043.

The colour shade for the slewing platform is Liebherr yellow (RAL 1006-1007), jib and housing of the cooling devices are in RAL 7047.

The cabin is in RAL 9002.

All ladders, stairs, walkways, etc. are hot dip galvanised.

- Subject to engineering modification -