

# Material Handling Machines

## **LH 22 Industry**

Litronic®

Operating Weight:  
**19,200 – 22,200 kg**

Engine:  
**105 kW / 143 HP**

**Stage IV**



# **LIEBHERR**

## LH 22 M Industry Litronic

### Operating Weight:

19,200 – 21,900 kg\*

### Engine:

105 kW / 143 HP

Stage IV

## LH 22 C Industry Litronic

### Operating Weight:

21,000 – 22,200 kg\*

### Engine:

105 kW / 143 HP

Stage IV

## Performance

Power plus speed –  
Redefined performance



\* Without working tool

# Technical Data



## Diesel Engine

<b>Rating per ISO 9249</b>	105 kW (143 HP) at 1,800 RPM
<b>Model</b>	Liebherr D924
<b>Type</b>	4 cylinder in-line
Bore/Stroke	104/132 mm
Displacement	4.5 l
<b>Engine operation</b>	4-stroke diesel Common-Rail turbo-charged and after-cooled reduced emissions
<b>Air cleaner</b>	dry-type air cleaner with pre-cleaner, primary and safety elements
<b>Engine idling</b>	sensor controlled
<b>Electrical system</b>	
Voltage	24 V
Batteries	2 x 135 Ah / 12 V
Alternator	three-phase current 28 V / 140 A
<b>Stage IV</b>	
Harmful emissions values	in accordance with 97/68/EG stage IV
Emission control	Liebherr-SCR technology
Option	Liebherr particle filter
Fuel tank	369 l
Urea tank	46 l



## Cooling System

<b>Diesel engine</b>	water-cooled compact cooling system consisting cooling unit for water, hydraulic oil and charge air with stepless thermostatically controlled fan, fans for radiator cleaning can be completely folded away
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## Hydraulic Controls

<b>Power distribution</b>	via control valves with integrated safety valves, simultaneous and independent actuation of chassis, swing drive and attachment
<b>Servo circuit</b>	
Attachment and swing	with hydraulic pilot control and proportional joystick levers
Chassis	
Mobile	electroproportional via foot pedal
Crawler	with hydraulic proportionally functioning foot pedals or adjusted with plugable levers
<b>Additional functions</b>	via switch or electroproportional foot pedals
Proportional control	proportionally acting transmitters on the joysticks for additional hydraulic functions



## Hydraulic System

<b>Hydraulic pump</b>	Liebherr axial piston variable displacement pump
for attachment and travel drive	
Max. flow	300 l/min.
Max. pressure	350 bar
<b>Hydraulic pump regulation and control</b>	Liebherr-Synchron-Comfort-system (LSC) with electronic engine speed sensing regulation, pressure and flow compensation, torque controlled swing drive priority
<b>Hydraulic tank</b>	155 l
<b>Hydraulic system</b>	350 l
<b>Hydraulic oil filter</b>	1 main return filter with integrated partial micro filtration (5 µm)
<b>MODE selection</b>	adjustment of engine and hydraulic performance via a mode pre-selector to match application, e.g. for especially economical and environmentally friendly operation or for maximum material handling and heavy-duty jobs
S (Sensitive)	mode for precision work and lifting through very sensitive movements
E (Eco)	mode for especially economical and environmentally friendly operation
P (Power)	mode for high performance with low fuel consumption
P+ (Power-Plus)	mode for highest performance and for very heavy duty applications, suitable for continuous operation
<b>Engine speed and performance setting</b>	stepless alignment of engine output and hydraulic power via engine speed
Option	Tool Control: ten preadjustable pump flows and pressures for add on tools



## Swing Drive

<b>Drive</b>	Liebherr axial piston motor with integrated brake valve and torque control
<b>Swing ring</b>	Liebherr, sealed race ball bearing swing ring, internal teeth
<b>Swing speed</b>	0 – 9.0 RPM stepless
<b>Swing torque</b>	53 kNm
<b>Holding brake</b>	wet multi-disc (spring applied, pressure released)
<b>Option</b>	pedal controlled positioning swing brake



## Operator's Cab

<b>Cab</b>	TOPS safety cab structure (tip-over protection) with individual windscreens or featuring a slide-in subpart under the ceiling, work headlights integrated in the ceiling, a door with a sliding window (can be opened on both sides), large stowing and depositing possibilities, shock-absorbing suspension, sounddamping insulating, tinted laminated safety glass, separate shades for the sunroof window and windscreen
<b>Operator's seat</b>	
Comfort	air cushioned operator's seat with 3D-adjustable armrests, headrest, lap belt, seat heater, adjustable seat cushion inclination and length, lockable horizontal suspension, automatic weight adjustment, adjustable suspension stiffness, pneumatic lumbar vertebrae support and passive seat climatisation with active coal
Option	
Premium	in addition to operator's seat comfort: active electronic weight adjustment (automatic readjustment), pneumatic low frequency suspension and active seat climatisation with active coal and ventilator
<b>Control system</b>	joysticks with arm consoles and swivel seat, folding left arm console
<b>Operation and displays</b>	large high-resolution operating unit, self-explanatory, colour display with touchscreen, video-compatible, numerous setting, control and monitoring options, e.g. air conditioning control, fuel consumption, machine and tool parameters
<b>Air-conditioning</b>	automatic air-conditioning, recirculated air function, fast de-icing and demisting at the press of a button, air vents can be operated via a menu; recirculated air and fresh air filters can be easily replaced and are accessible from the outside; heating-cooling unit, designed for extreme out-side temperatures, sensors for solar radiation, inside and outside temperatures



## Attachment

<b>Type</b>	high-strength steel plates at highly stressed points for the toughest requirements. Complex and stable mountings of attachment and cylinders
<b>Hydraulic cylinders</b>	Liebherr cylinders with special seal system as well as shock absorption
<b>Bearings</b>	sealed, low maintenance



## Undercarriage

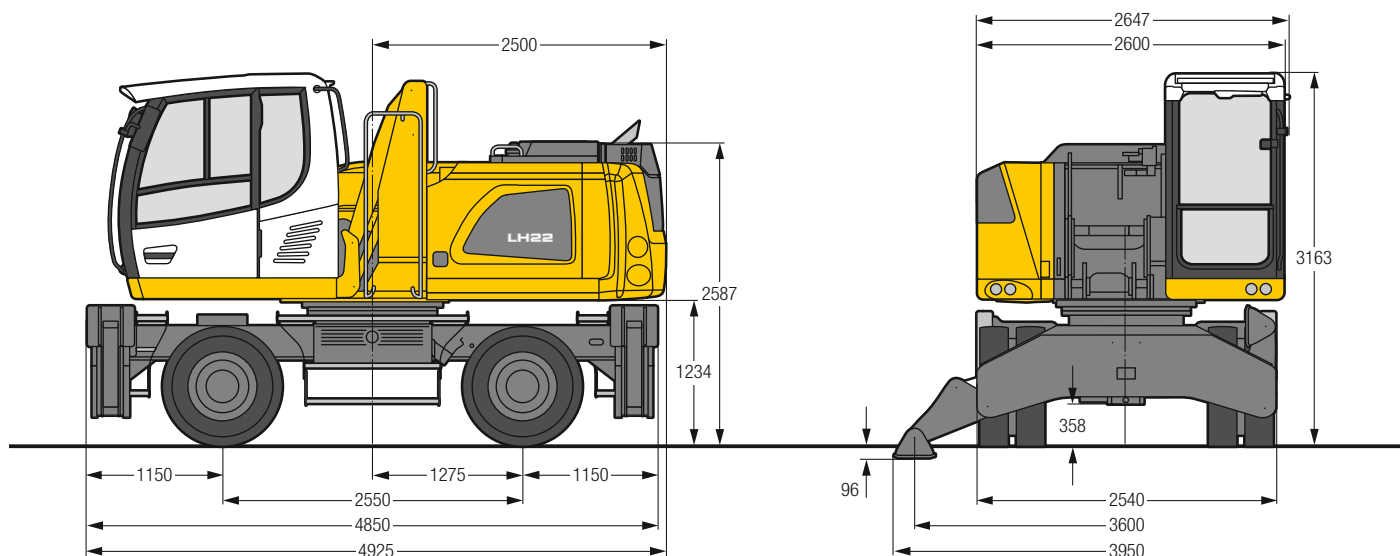
<b>Mobile</b>	
Drive	oversized two speed power shift transmission with additional creeper speed, Liebherr axial piston motor with functional brake valve on both sides
Travel speed	
Joystick steering	0 – 3.5 km/h stepless (creeper speed + transmission stage 1) 0 – 7.0 km/h stepless (transmission stage 1) 0 – 12.0 km/h stepless (creeper speed + transmission stage 2) 0 – 12.0 km/h stepless (transmission stage 2)
Option	
Wheel steering	0 – 3.5 km/h stepless (creeper speed + transmission stage 1) 0 – 7.0 km/h stepless (transmission stage 1) 0 – 13.0 km/h stepless (creeper speed + transmission stage 2) 0 – 20.0 km/h stepless (transmission stage 2)
Driving operation	automotive driving using accelerator pedal, cruise control function: storage of variable accelerator pedal positions
Axles	38 t drive axles; manual or automatic hydraulically controlled front axle oscillation lock
Service brake	two circuit travel brake system with accumulator; wet and backlash-free disc brake
Holding brake	wet multi-disc (spring applied, pressure released)
Stabilization	blade + 2 point outriggers 4 point outriggers
Option	dozer blade, at the front, for 4 point outriggers
<b>Crawler</b>	
Version	LC
Drive	Liebherr compact planetary reduction gear with Liebherr axial piston motor per side of undercarriage
Travel speed	0 – 2.7 km/h stepless (creeper speed) 0 – 4.6 km/h stepless
Brake	functional brake valves on both sides
Holding brake	wet multi-disc (spring applied, pressure released)
Track pads	triple grouser



## Complete Machine

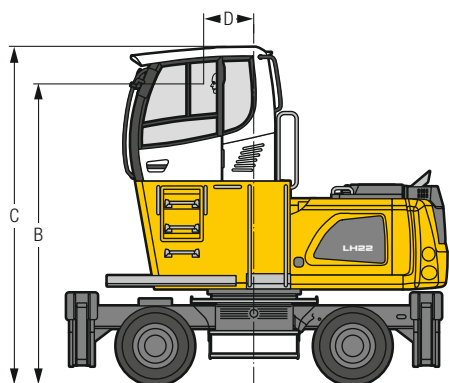
<b>Lubrication</b>	Liebherr central lubrication system for uppercarriage and attachment, automatically
Option	
Mobile	Liebherr central lubrication system for undercarriage, automatically
<b>Steps system</b>	safe and durable access system with anti-slip steps main components hot-galvanised
<b>Noise emission</b>	
ISO 6396	$L_{pA}$ (inside cab) = 70 dB(A)
2000/14/EC	$L_{WA}$ (surround noise) = 100 dB(A)

# LH 22 M - Dimensions



## LH 22 M - Choice of Cab Elevation

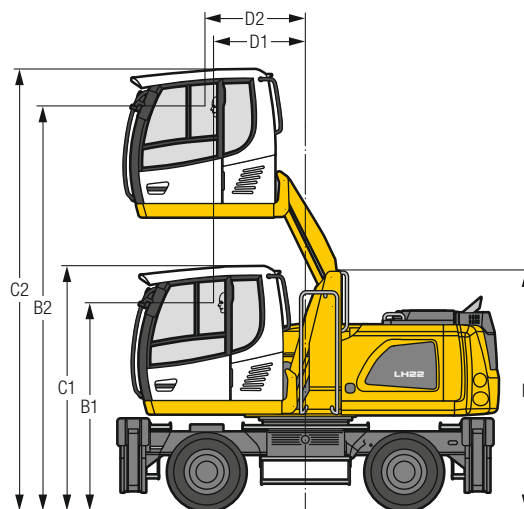
### Cab Elevation LFC (Rigid Elevation)



Increase type	LFC 120
Height	1,200 mm
B	3,889 mm
C	4,361 mm
D	653 mm

A rigid cab elevation has a fixed eye level height. For a lower transport height, the shell of the cab can be removed and replaced by a transport device. The dimension C is in this machine design for all rigid cab elevations 3,465 mm.

### Cab Elevation LHC (Hydraulic Elevation)

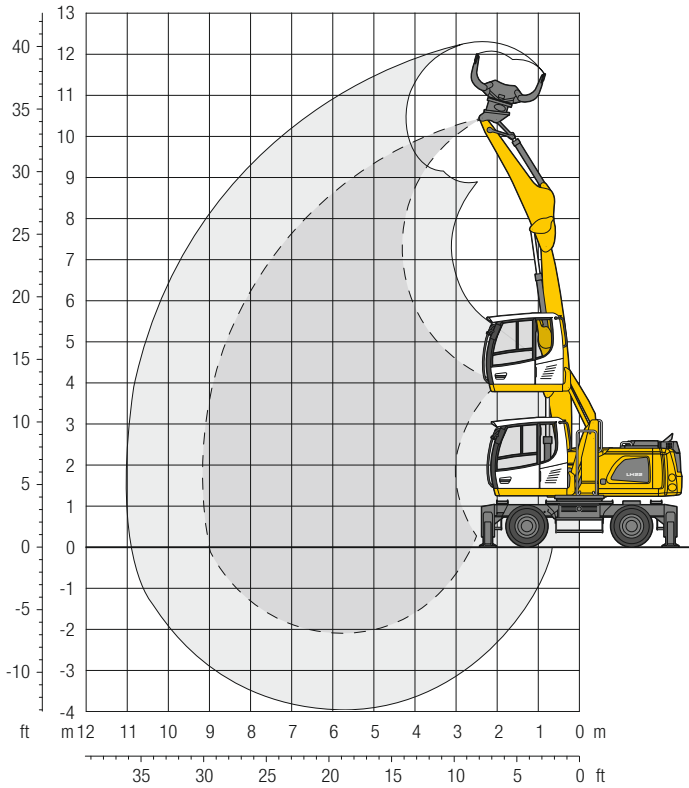


Increase type	LHC 255
B1	2,696 mm
B2	5,236 mm
C1	3,163 mm
C2	5,704 mm
D1	1,190 mm
D2	1,299 mm
E	3,104 mm

The hydraulically adjustable cab allows the driver, that he can choose his field of view freely and at any time within the stroke.

Tyres 10.00-20

# LH 22 M - Attachment GK9

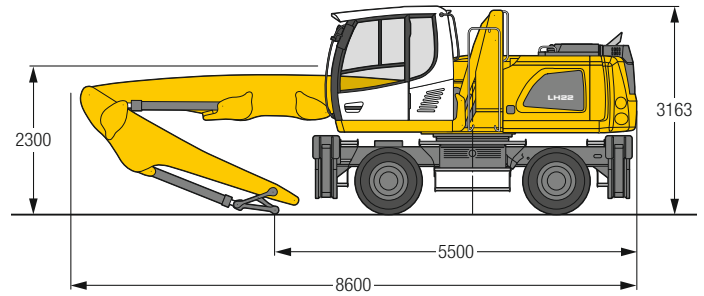


## Operating Weight

The operating weight includes the basic machine with 4 point outriggers, hydr. cab elevation, 8 solid tyres plus intermediate rings, straight boom 5.50 m, stick with tipping kinematics 3.50 m and sorting grab SG 20B/0.50 m<sup>3</sup> perforated shells.

Weight 22,700 kg

## Dimensions



m	Undercarriage	3.0 m		4.5 m		6.0 m		7.5 m		9.0 m		10.5 m		m
		Stabilizers raised	4 pt. outriggers down	Stabilizers raised	4 pt. outriggers down	Stabilizers raised	4 pt. outriggers down	Stabilizers raised	4 pt. outriggers down	Stabilizers raised	4 pt. outriggers down	Stabilizers raised	4 pt. outriggers down	
10.5	Stabilizers raised													
	4 pt. outriggers down													
9.0	Stabilizers raised			5.7	7.1*							3.9	5.0*	5.5
	4 pt. outriggers down			7.1*	7.1*							5.0*	5.0*	
7.5	Stabilizers raised			5.8	7.1*	3.6	4.9					2.6	3.6	7.1
	4 pt. outriggers down			7.1*	7.1*	5.9*	5.9*					4.2*	4.2*	
6.0	Stabilizers raised			5.7	7.3*	3.6	4.8	2.4	3.3			2.1	2.9	8.1
	4 pt. outriggers down			7.3*	7.3*	5.9*	5.9*	4.9*	4.9*			3.8*	3.8*	
4.5	Stabilizers raised	7.6*	7.6*	5.4	7.4	3.5	4.7	2.4	3.3			1.8	2.5	8.8
	4 pt. outriggers down	7.6*	7.6*	7.8*	7.8*	6.1*	6.1*	4.9*	4.9*			3.7*	3.7*	
3.0	Stabilizers raised	9.0	13.3	5.0	6.9	3.2	4.5	2.3	3.2	1.7	2.4	1.7	2.3	9.1
	4 pt. outriggers down	13.5*	13.5*	8.6*	8.6*	6.3*	6.3*	4.9*	4.9*	3.7*	3.7*	3.5*	3.5*	
1.5	Stabilizers raised	0.9*	0.9*	4.5	6.4	3.0	4.2	2.2	3.1	1.7	2.3	1.6	2.3	9.2
	4 pt. outriggers down	0.9*	0.9*	8.7*	8.7*	6.3*	6.3*	4.8*	4.8*	3.3*	3.3*	3.1*	3.1*	
0	Stabilizers raised	2.0*	2.0*	4.3	6.1	2.9	4.1	2.1	3.0			1.7	2.3	9.0
	4 pt. outriggers down	2.0*	2.0*	7.9*	7.9*	5.8*	5.8*	4.2*	4.2*			2.5*	2.5*	
-1.5	Stabilizers raised			4.2	6.0*	2.8	4.0	2.1	3.0			2.0	2.9	7.7
	4 pt. outriggers down			6.0*	6.0*	4.6*	4.6*	3.1*	3.1*			2.9*	2.9*	

Height Can be slewed through 360° In longitudinal position of undercarriage Max. reach \* Limited by hydr. capacity

The lift capacities on the stick end without attachment are stated in metric tons (t) and are valid on a firm, level supporting surface with blocked oscillating axle. These capacities can be slewed through 360° with the undercarriage in the transverse position. Capacities in the longitudinal position of the undercarriage (+/- 15°) are specified over the steering axle with the stabilizers raised and over the rigid axle with the stabilizers down. Indicated loads based on the ISO 10567 standard and do not exceed 75% of tipping or 87% of hydraulic capacity. The lift capacity of the unit is limited by its stability, the lifting capability of the hydraulic elements, or the maximum permissible lifting capacity of the load hook.

In accordance with the harmonised European Standard EN 474-5, hydraulic excavators used for lifting operations must be equipped with pipe fracture safety valves, an overload warning device, a load hook and a lift capacity chart.

# Machine Stabilities Sorting Grabs

## LH 22 M – Max. material weight in t/m<sup>3</sup>

Grab	Shell type	Capacity m <sup>3</sup>	Direct mounting with mounting plate						Mounting with SWA48					
			4 pt. outriggers down			Blade + 2 pt. outriggers down			4 pt. outriggers down			Blade + 2 pt. outriggers down		
			GK9	GK10	VK8	GK9	GK10	VK8	GK9	GK10	VK8	GK9	GK10	VK8
SG 20B	perforated	0.40	3.2	2.0	1.5	2.2	1.0	1.5	2.5	1.3	0.8	1.5	0.3	0.8
SG 20B	perforated	0.50	2.5	1.5	1.1	1.7	0.7	1.1	1.9	0.9	0.5	1.1	–	0.5
SG 20B	perforated	0.60	2.0	1.1	0.8	1.3	0.5	0.8	1.5	0.7	0.3	0.8	–	0.3
SG 20B	perforated	0.70	1.6	0.9	0.6	1.0	0.3	0.6	1.2	0.5	–	0.7	–	–
SG 20B	closed	0.40	3.2	1.9	1.4	2.2	0.9	1.4	2.5	1.2	0.7	1.5	–	0.7
SG 20B	closed	0.50	2.4	1.4	1.0	1.6	0.6	1.0	1.9	0.9	0.5	1.1	–	0.5
SG 20B	closed	0.60	2.0	1.1	0.8	1.3	0.5	0.8	1.5	0.7	0.3	0.8	–	0.3
SG 20B	closed	0.70	1.6	0.9	0.6	1.0	0.3	0.6	1.2	0.5	–	0.6	–	–


– = Load values at maximum outreach insufficient


## LH 22 C – Max. material weight in t/m<sup>3</sup>


Grab	Shell type	Capacity m <sup>3</sup>	Direct mounting with mounting plate LC-Undercarriage			Mounting with SWA48 LC-Undercarriage		
			GK8	GK9	VK8	GK8	GK9	VK8
			SG 20B	perforated	0.40	2.7	1.2	1.5
SG 20B	perforated	0.50	2.1	0.9	1.1	1.5	0.3	0.5
SG 20B	perforated	0.60	1.6	0.6	0.8	1.2	–	0.3
SG 20B	perforated	0.70	1.3	0.5	0.6	0.9	–	–
SG 20B	closed	0.40	2.7	1.2	1.4	2.0	0.5	0.7
SG 20B	closed	0.50	2.0	0.8	1.0	1.5	0.3	0.5
SG 20B	closed	0.60	1.6	0.6	0.8	1.2	–	0.3
SG 20B	closed	0.70	1.3	0.5	0.6	0.9	–	–

– = Load values at maximum outreach insufficient


# Equipment


 Undercarriage	22 M	22 C
Track pads, variants		+
Individual control outriggers	+	
Shuttle axle lock, automatic	•	
Outrigger monitoring system	+	
Dozer blade	+	
Tyres, variants	+	
Protection for travel drive	+	
Protection for piston rods, outriggers	+	
Undercarriage, variants	+	
Two lockable storage boxes	•	


 Uppercarriage	22 M	22 C
Uppercarriage rear light, 2 pieces, LED	+	+
Uppercarriage right side light, 1 piece, LED	•	•
Refuelling system with filling pump	+	+
Railing on uppercarriage	+	+
Generator	+	+
Main battery switch for electrical system	•	•
Recycling package	+	+
Warning beacon on uppercarriage, LED	+	+
Protection for headlights	+	+
Protection for rear lights	+	+
Tool equipment, extended	+	+


 Hydraulic System	22 M	22 C
Electronic pump regulation	•	•
Liebherr hydraulic oil from –20 °C to +40 °C	•	•
Liebherr hydraulic oil, biologically degradable	+	+
Magnetic rod in hydraulic tank	•	•
Bypass filter	+	+
Preheating hydraulic oil	+	+

 Engine	22 M	22 C
Fuel anti-theft device	+	+
Preheating fuel	+	+
Preheating coolant*	+	+
Preheating engine oil*	+	+

 Cooling System	22 M	22 C
Radiator, large-mesh, for dust-intensive operation	•	•
Reversible fan drive, fully automatic	+	+
Protective grid (close-mesh) in front of cooler intake, extendible	•	•

 Operator's Cab	22 M	22 C
Stabilizer, proportional control on left joystick	•	
Cab lights front, halogen	+	+
Cab lights front, halogen (under rain cover)	•	•
Cab lights front, LED	+	+
Cab lights front, LED (under rain cover)	+	+
Left arm console, folding	•	•
Armrest adjustable	•	•
Operator's seat Comfort	•	•
Operator's seat Premium	+	+
Driving alarm		
(acoustic signal is emitted during travel, can be switched ON/OFF)	+	+
Fire extinguisher	+	+
Footrest	•	+
Horn, button on left joystick	•	•
Joystick steering (max. 12 km/h)	•	
Joystick and wheel steering (slim version)	+	
Cab elevation, hydraulic (LHC)	•	•
Cab elevation, rigid (LFC)	+	+
Automatic air conditioning	•	•
Wheel steering (slim version)	+	
LiDAT, vehicle fleet management	•	•
Automatic engine shut-down (time adjustable)	+	+
Proportional control	•	•
Radio Comfort, control via display with handsfree set	+	+
Preparation for radio installation	•	•
Back-up alarm		
(acoustic signal is emitted traveling backward, can not be switched off)	+	
Warning beacon on cab, LED	+	+
Windows made from impact-resistant laminated safety glass	+	+
Windscreen wiper, roof	+	+
Windshield wiper, entire windscreen	•	•
Top guard	+	+
Front guard, adjustable	+	+
Sun visor	+	+
Flashing light (xenon)	+	+

 Attachment	22 M	22 C
Boom lights, 2 pieces, halogen	•	•
Boom lights, 2 pieces, LED	+	+
Stick lights, 2 pieces, halogen	•	•
Stick lights, 2 pieces, LED	+	+
Filter system for working tool	+	+
Height limitation and stick shutoff, electronically	+	+
Boom cylinder cushioning	+	+
Stick camera (with separate monitor), bottom side, with protection	+	+
Liebherr multi coupling system	+	+
Liebherr quick coupler, hydraulic	+	+
Pipe fracture safety valves hoist cylinders	•	•
Pipe fracture safety valves stick cylinders	•	•
Quick coupling system LIKUFIX	+	+
Protection for piston rods, hoist cylinder	+	+
Overload warning device	+	+

 Complete Machine	22 M	22 C
Lubrication		
Lubrication undercarriage, manually – decentralised (grease points)	•	
Lubrication undercarriage, manually – centralised (one grease point)	+	
Central lubrication system for uppercarriage and attachment, automatically	•	•
Central lubrication system for undercarriage, automatically	+	
Central lubrication system, extension for tool attachment	+	+
Special coating, variants	+	+
Monitoring		
Rear view monitoring with camera	•	•
Side view monitoring with camera	•	•

• = Standard, + = Option  
 \* = country-dependent

Options and/or special attachments, supplied by vendors other than Liebherr, are only to be installed with the knowledge and approval of Liebherr in order to retain warranty.

S 222 - S 302 - S 402 - S 600 - S 802 - S 1102  
S 1402 - S 1702 - S 2002 - S 2301 - S 3001

## Sorting Grabs S

Multi purpose grabs for demolition, recycling, sorting, loading.

- 1 Top Plate for bolt on bracket.
- 2 Continuous 360° hydraulic rotation.
- 3 One cylinder from S202 to S1102, twin cylinders from S1402 to S3001. Cylinders protected inside the mainframe. Dash-pot from S802 to S3001.
- 4 Body in high tensile steel. HF treated pins.
- 5 Shells in wear resistant steel, vertical shell opening to the ground.
- 6 Reversible bolt on wear blades in 450HB steel.

**Option :**

- Closed shells for ROC version



L

L Roc

A

B

C

D

E

H



V

F



kg

mm

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mm

mm

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≈ mm

mm

Litres

daN

bar

Litres/min

sec

bar

Litres/min

tr/min

t

	kg	L	L Roc	A	B	C	D	E	H	V	F	bar	Litres/min	sec	bar	Litres/min	tr/min	t
S 222	725	600	600	1740	1255	855	1000	550	510	555	1000	550	50/85	2/4	140	14/20	10/15	18/21
S 302	1020	1010	1010	2000	1434	1046	1281	300/400	616	700	6200	350	60/120	2/4	140	14/20	10/15	18/21

Weight without top plate.

**S222 - S302 - S402 - S600**

**S802 - S1102 - S1402 - S1702 - S2002 - S2301 - S3002**

