

# Technical Description Hydraulic Excavator

# R 312

**Operating Weight** 14,4 – 16,5 t  
**Engine Output** 62 kW (84 HP)  
**Bucket Capacity** 0,14 – 0,75 m<sup>3</sup>



**Hydraulic "Compact" Excavators** are put to work in the most confined places, and at the same time are to provide highest productivity. This requires small dimensions and modern technology. The Liebherr R 312 excavator has both, and more!

**Powerful** – turbo-charged, liquid cooled 4 cylinder Diesel engine, with direct injection and low operating RPM.

**Productive** – variable flow double pump with summated horsepower control, flow summation and pressure compensation.

**Strong traveller** – independent travel drive in each side-frame; mounted within the frame for complete protection.

**Compact** – short tail overhang with a tail swing of only 1,95 m.

**Comfortable** – large well equipped and sound insulated cab. Seat and joystick consoles independently adjustable to individual operator's size and weight.

**Environmentally sound** – low noise and exhaust emission. Optional: Bio degradable oil.

**Easy service** – clear and easy access to all components. Sealed attachment pivots and extended service intervals reduce maintenance costs.

**Versatile** – hydraulically adjustable and off-set booms, gooseneck booms, assortment of sticks, quick change tool adapters and an extensive variety of buckets and clamshells provide application versatility. Auxiliary hydraulics further allow special tools like hammers, augers etc.

**Economical** – the combination of all the above, results in top performance at low operating costs.

# LIEBHERR

The Better Machine.



## Engine

Deutz diesel engine	
Rating per ISO 9249	62 kW (84 HP) at 2300 RPM
Model	BF 4 M 1012 E
Type	4 cylinder in-line, water cooled, direct injection, turbo-charged
Air cleaner	dry-type air cleaner with pre-cleaner, primary and safety element
Fuel tank capacity	250 l
Electrical system	
Voltage	24 V
Batteries	2 x 92 Ah/12 V
Alternator	24 V/40 A
Option	sensor controlled engine idling



## Swing Drive

Drive	Liebherr swash plate motor with integrated brake valves
Transmission	planetary reduction gear
Swing ring	Liebherr sealed single race ball bearing swing ring, internal teeth
Swing speed	0 - 10 RPM
Swing torque	33,6 kNm
Positioning and holding brake	spring operated, pressure released multi-disc brake, maintenance-free



## Hydraulic System

Hydraulic pump	Liebherr variable displacement, swash plate, in line double pump
Max. flow	2 x 120 l/min
Max. hydr. pressure	320 bar
Pump regulation	summated horsepower regulation, pressure compensation
Hydraulic tank	250 l
Hydraulic system	max. 345 l
Hydraulic oil filter	1 full flow filter in return line
ECO-control	adjustment of machine performance to match application
	- "High" mode setting for highest performance in severe applications
	- "Econo" mode setting for general digging and loading
	- "fine control" mode setting for precision work and lifting



## Operator's Cab

Cab	resiliently mounted, sound insulated, with large windows for excellent 360 degree view, front window stores overhead
Operator's seat	fully adjustable, shockabsorbing suspension, adjustable to operator's weight
Joysticks	integrated into adjustable seat consols
Monitoring	instrument and control panel within easy range of operator
Heating system	hot water heat exchanger, to provide heated fresh air, circulated air or fresh cool air
Noise emission (86/662/EWG)	L <sub>pA</sub> (inside cab) = 77 dB(A) L <sub>wA</sub> (surround noise) = 102 dB(A)



## Undercarriage

Travel drive	axial piston motor with automatic brake valves
Travel gear	compact planetary gears
Travel speed	0 - 2,5 km/h
Drawbar pull, max.	155 kN
Tractor component size	D 4, maintenance-free
Bottom/top rollers	9/1
Track pads	triple grouser
Chain tensioning	hydraulically
Digging and parking brakes	wet discs, spring applied - servo pressure released
Option	with two speed travel motors
Travel speed	slow speed 0 - 2,1 km/h high speed 0 - 4,5 km/h
Drawbar pull, max.	189 kN



## Hydraulic Controls

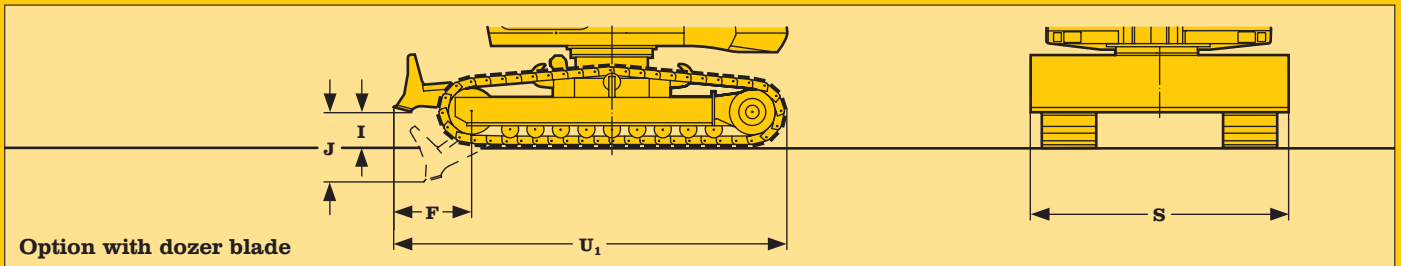
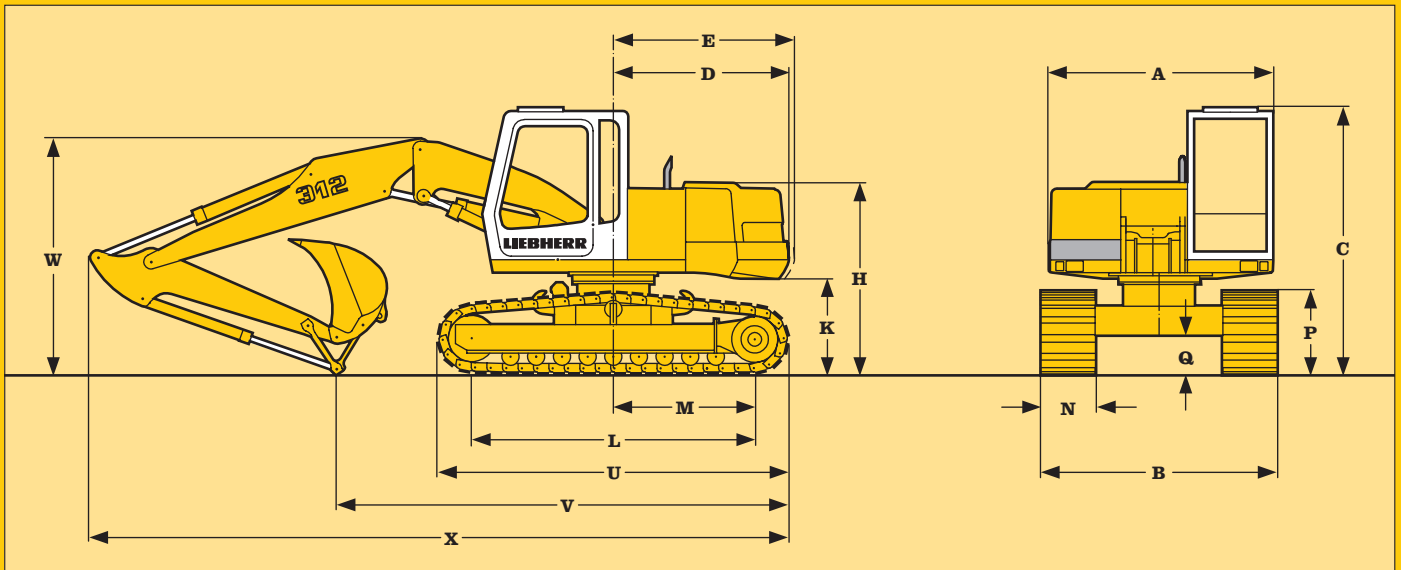
Power distribution	via single housing valve block with directly attached secondary valves
Flow summation	to boom and stick
Priority selection	to swing drive
Control type	
Attachment and swing	proportional via joystick levers
Travel	proportional via foot pedals
Additional functions	via switch and/or proportional foot pedals



## Attachment

Hydraulic cylinders	Liebherr cylinders with special seal system. Shock absorption
Pivots	sealed, extra long maintenance intervals, high performance bushings
Buckets	standard equipped with 8 t safety hook for lifting

# Technical Data



		mm		Stick	with hydr. adjustable boom	with gooseneck boom	with gooseneck boom and blade
A		2500					
C		2940					
D		1920					
E		1980					
F		860					
H		2120	V	1,60	6000	5350	5820*
I		395		2,20	4980	4330	4800*
J		770		2,60	4710	4000	4470*
K		1060					
L		3100					
M		1550	W	1,60	2800	2800	2800
P		935		2,20	2700	2650	2650
Q		435		2,60	2850	2700	2700
S	2500 2750	2900					
U		3885					
U1		4350	X	1,60	7850	7500	7970*
N	500 600	750		2,20	7800	7350	7820*
B	2500 2600	2750		2,60	7800	7400	7870*

E = tail radius

Attachment shown over idler end.  
Numbers with \* are with attachment over sprocket end for better transport dimensions.

# Dimensions

## To order a complete machine you need the following:

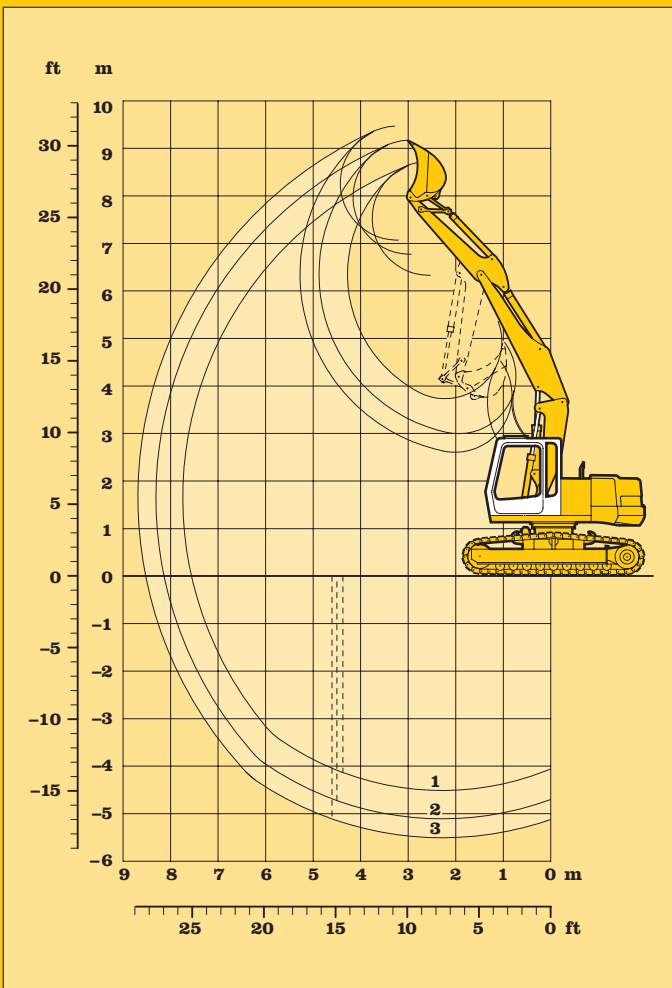
- Basic machine see page 12
- Auxiliary circuit in basic machine AHS 1
- Hoist cylinders
- Basic boom for hydraulically adjustable boom
- Main boom for hydraulically adjustable boom
- Stick
  - 1,60 m
  - 2,20 m
  - 2,60 m
- Bucket see chart below

### Digging envelope

- 1 with stick 1,60 m
- 2 with stick 2,20 m
- 3 with stick 2,60 m

Stick length	m	1,60	2,20	2,60
Max. digging depth	m	4,50	5,10	5,50
Max. reach at ground level	m	7,55	8,15	8,55
Max. dumping height	m	6,35	6,75	7,05
Max. teeth height	m	8,75	9,15	9,45
Min. attachment radius	m	2,70	2,40	2,50

Max. digging force: 68,1 kN (6,9 t)  
 Max. breakout force: 96,5 kN (9,8 t)<sup>4)</sup>



### Buckets

Cutting width SAE	mm	230 <sup>1)</sup>	330 <sup>2)</sup>	390 <sup>2)</sup>	500 <sup>3)</sup>	550 <sup>5)</sup>	550 <sup>4)</sup>	650 <sup>5)</sup>	850 <sup>5)</sup>	1050 <sup>5)</sup>	1250 <sup>5)</sup>
Capacity SAE (haeaped)	m <sup>3</sup>	0,14	0,20	0,25	0,35	0,26	0,25	0,35	0,45	0,60	0,75
Max. material weight	t/m <sup>3</sup>	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Weight of bucket	kg	320	350	360	390	260	550	280	330	380	430
For machine stability per ISO 10567 the max. stick length is:											
Standard undercarriage	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,20
Undercarriage with blade	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60

- <sup>1)</sup> Bucket with ejector and Bofors teeth (max. digging depth 1,1 m, since bucket suspension is wider than bucket)
- <sup>2)</sup> Bucket with ejector and Bofors teeth (max. digging depth 1,2 m, since bucket suspension is wider than bucket)
- <sup>3)</sup> Bucket with ejector and Bofors teeth
- <sup>4)</sup> Ripper bucket with Liebherr teeth Z 13 P
- <sup>5)</sup> Bucket with UNI-Z teeth

# Backhoe Attachment with Hydr. Adjustable Boom



with stick 2,20 m							
Height m	Undercarriage	Radius of load from centerline of machine in m					
		2,0	3,0	4,0	5,0	6,0	7,0
7,0	Standard without blade with blade down			3,0# (3,0#) 3,0# (3,0#)	1,6# (1,6#) 1,6# (1,6#)		
6,0	Standard without blade with blade down			3,0# (3,0#) 3,0# (3,0#)	2,8# (2,8#) 2,8# (2,8#)	1,5# (1,5#) 1,5# (1,5#)	
5,0	Standard without blade with blade down			3,2# (3,2#) 3,2# (3,2#)	2,8# (2,8#) 2,8# (2,8#)	2,1 (2,5#) 2,5# (2,5#)	
4,0	Standard without blade with blade down	6,7# ( 6,7#) 6,7# ( 6,7#)	4,4# (4,4#) 4,4# (4,4#)	3,5# (3,5#) 3,5# (3,5#)	2,9 (3,0#) 3,0# (3,0#)	2,2 (2,6#) 2,5 (2,6#)	1,5# (1,5#) 1,5# (1,5#)
3,0	Standard without blade with blade down	7,3# ( 7,3#) 7,3# ( 7,3#)	5,2# (5,2#) 5,2# (5,2#)	3,9 (3,9#) 3,9# (3,9#)	2,8 (3,2#) 3,2# (3,2#)	2,2 (2,7#) 2,5 (2,7#)	1,5 (1,8#) 1,8# (1,8#)
2,0	Standard without blade with blade down	6,3# ( 6,3#) 6,3# ( 6,3#)	5,6 (5,7#) 5,7# (5,7#)	3,7 (4,3#) 4,3# (4,3#)	2,8 (3,4#) 3,2 (3,4#)	2,1 (2,8#) 2,5 (2,8#)	1,5 (2,4#) 1,8 (2,4#)
1,0	Standard without blade with blade down	7,3# ( 7,3#) 7,3# ( 7,3#)	5,6 (6,1#) 6,1# (6,1#)	3,7 (4,6#) 4,3 (4,6#)	2,8 (3,6#) 3,2 (3,6#)	2,0 (2,9#) 2,4 (2,9#)	1,5 (2,4#) 1,8 (2,4#)
0	Standard without blade with blade down	8,5# ( 8,5#) 8,5# ( 8,5#)	5,6 (6,4#) 6,4# (6,4#)	3,8 (4,6#) 4,3 (4,6#)	2,7 (3,6#) 3,3 (3,6#)	2,1 (2,9#) 2,4 (2,9#)	1,5 (2,1#) 1,9 (2,1#)
- 1,0	Standard without blade with blade down	9,8# ( 9,8#) 9,8# ( 9,8#)	5,8 (6,5#) 6,5# (6,5#)	3,8 (4,7#) 4,4 (4,7#)	2,6 (3,7#) 3,2 (3,7#)	2,0 (2,8#) 2,4 (2,8#)	
- 2,0	Standard without blade with blade down	10,6# (10,6#) 10,6# (10,6#)	5,8 (6,7#) 6,7# (6,7#)	3,7 (4,9#) 4,5 (4,9#)	2,6 (3,8#) 3,2 (3,8#)	1,8 (2,5#) 2,3 (2,5#)	
- 3,0	Standard without blade with blade down	11,0# (11,0#) 11,0# (11,0#)	5,6 (6,4#) 6,4# (6,4#)	3,6 (4,5#) 4,3 (4,5#)	2,5 (3,0#) 3,0# (3,0#)		
- 4,0	Standard without blade with blade down	7,2# ( 7,2#) 7,2# ( 7,2#)	4,4# (4,4#) 4,4# (4,4#)	2,2# (2,2#) 2,2# (2,2#)			

with stick 2,60 m							
Height m	Undercarriage	Radius of load from centerline of machine in m					
		2,0	3,0	4,0	5,0	6,0	7,0
7,0	Standard without blade with blade down				1,6# (1,6#) 1,6# (1,6#)		
6,0	Standard without blade with blade down				2,6# (2,6#) 2,6# (2,6#)	1,6# (1,6#) 1,6# (1,6#)	
5,0	Standard without blade with blade down			3,0# (3,0#) 3,0# (3,0#)	2,6# (2,6#) 2,6# (2,6#)	2,2 (2,4#) 2,4# (2,4#)	1,1# (1,1#) 1,1# (1,1#)
4,0	Standard without blade with blade down		4,2# (4,2#) 4,2# (4,2#)	3,2# (3,2#) 3,2# (3,2#)	2,8# (2,8#) 2,8# (2,8#)	2,2 (2,5#) 2,5# (2,5#)	1,6 (1,6#) 1,6# (1,6#)
3,0	Standard without blade with blade down	7,2# ( 7,2#) 7,2# ( 7,2#)	4,8# (4,8#) 4,8# (4,8#)	3,7# (3,7#) 3,7# (3,7#)	2,8 (3,1#) 3,1# (3,1#)	2,1 (2,6#) 2,5 (2,6#)	1,6 (2,3#) 1,9 (2,3#)
2,0	Standard without blade with blade down	6,8# ( 6,8#) 6,8# ( 6,8#)	5,6 (5,8#) 5,8# (5,8#)	3,8 (4,2#) 4,2# (4,2#)	2,7 (3,3#) 3,2 (3,3#)	2,1 (2,8#) 2,5 (2,8#)	1,5 (2,4#) 1,9 (2,4#)
1,0	Standard without blade with blade down	6,1# ( 6,1#) 6,1# ( 6,1#)	5,5 (6,0#) 6,0# (6,0#)	3,7 (4,5#) 4,3 (4,5#)	2,7 (3,5#) 3,2 (3,5#)	2,1 (2,8#) 2,5 (2,8#)	1,5 (2,4#) 1,8 (2,4#)
0	Standard without blade with blade down	7,7# ( 7,7#) 7,7# ( 7,7#)	5,6 (6,3#) 6,3# (6,3#)	3,7 (4,6#) 4,3 (4,6#)	2,8 (3,5#) 3,2 (3,5#)	2,0 (2,9#) 2,4 (2,9#)	1,5 (2,4#) 1,8 (2,4#)
- 1,0	Standard without blade with blade down	9,3# ( 9,3#) 9,3# ( 9,3#)	5,6 (6,4#) 6,4# (6,4#)	3,8 (4,6#) 4,3 (4,6#)	2,6 (3,6#) 3,2 (3,6#)	2,0 (2,9#) 2,3 (2,9#)	1,5 (2,1#) 1,8 (2,1#)
- 2,0	Standard without blade with blade down	10,4# (10,4#) 10,4# (10,4#)	5,9 (6,5#) 6,5# (6,5#)	3,8 (4,7#) 4,6 (4,7#)	2,6 (3,6#) 3,2 (3,6#)	1,8 (2,7#) 2,3 (2,7#)	
- 3,0	Standard without blade with blade down	10,7# (10,7#) 10,7# (10,7#)	5,9 (6,9#) 6,9# (6,9#)	3,6 (4,8#) 4,3 (4,8#)	2,5 (3,4#) 3,0 (3,4#)	1,9 (2,3#) 2,3# (2,3#)	
- 4,0	Standard without blade with blade down	9,1# ( 9,1#) 9,1# ( 9,1#)	5,4# (5,4#) 5,4# (5,4#)	3,7 (3,9#) 3,9# (3,9#)	2,1# (2,1#) 2,1# (2,1#)		

The lift capacities are stated in metric tonnes (t) on the backhoe bucket's load hook, and can be lifted 360° on firm, level supporting surface. Values quoted in brackets are valid for the undercarriage when in longitudinal position.

Capacities are valid for 600 mm wide triple grouser pads with adjusting cylinder(s) in optimal position.

Indicated loads are based on ISO 10567 standard and do not exceed 75% of tipping or 87% of hydraulic capacity (indicated via #).

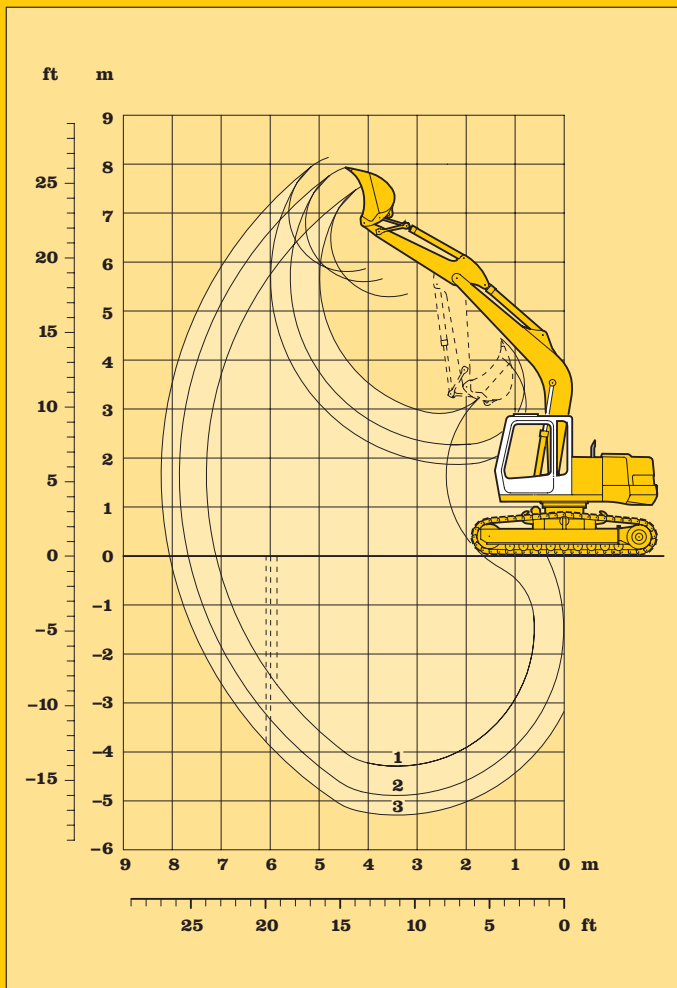
Maximum load for the backhoe bucket's load hook is 8 t.

Without bucket (0,45 m<sup>3</sup>), the lift capacities will increase by 370 kg, without bucket cylinder, link and lever they increase by an additional 150 kg.

Lifting capacity of the excavator is limited by machine stability, hydraulic capacity and maximum permissible load of the load hook.

According to European Standard, EN 474-5: In the European Union excavators have to be equipped with an overload warning device and automatic check valves on the hoist cylinders, when they are used for lifting operations which require the use of lifting accessories.

# Lift Capacities with Hydr. Adjustable Boom



## To order a complete machine you need the following:

- Basic machine see page 12
- Hoist cylinders
- Gooseneck boom 4,50 m
- Stick
  - 1,60 m
  - 2,20 m
  - 2,60 m
- Bucket see chart below

### Digging envelope

- 1 with stick 1,60 m
- 2 with stick 2,20 m
- 3 with stick 2,60 m

Stick length	m	1,60	2,20	2,60
Max. digging depth	m	4,30	4,90	5,30
Max. reach at ground level	m	7,10	7,65	8,05
Max. dumping height	m	5,30	5,60	5,80
Max. teeth height	m	7,65	7,95	8,15
Min. attachment radius	m	3,00	2,80	2,75

Max. digging force: 68,1 kN (6,9 t)  
 Max. breakout force: 96,5 kN (9,8 t)<sup>4)</sup>

## Buckets

Cutting width SAE	mm	230 <sup>1)</sup>	330 <sup>2)</sup>	390 <sup>2)</sup>	500 <sup>3)</sup>	550 <sup>5)</sup>	550 <sup>4)</sup>	650 <sup>5)</sup>	850 <sup>5)</sup>	1050 <sup>5)</sup>	1250 <sup>5)</sup>
Capacity SAE (heaped)	m <sup>3</sup>	0,14	0,20	0,25	0,35	0,26	0,25	0,35	0,45	0,60	0,75
Max. material weight	t/m <sup>3</sup>	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Weight of bucket	kg	320	350	360	390	260	550	280	330	380	430
For machine stability per ISO 10567 the max. stick length is:											
Standard undercarriage	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60
Undercarriage with blade	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60

- <sup>1)</sup> Bucket with ejector and Bofors teeth (max. digging depth 1,1 m, since bucket suspension is wider than bucket)
- <sup>2)</sup> Bucket with ejector and Bofors teeth (max. digging depth 1,2 m, since bucket suspension is wider than bucket)
- <sup>3)</sup> Bucket with ejector and Bofors teeth
- <sup>4)</sup> Ripper bucket with Liebherr teeth Z 13 P
- <sup>5)</sup> Bucket with UNI-Z teeth

# Backhoe Attachment with Gooseneck Boom 4,50 m

with stick 2,20 m							
Height m	Undercarriage	Radius of load from centerline of machine in m					
		2,0	3,0	4,0	5,0	6,0	7,0
7,0	Standard without blade with blade down				1,5# (1,5#) 1,5# (1,5#)		
6,0	Standard without blade with blade down				2,4# (2,4#) 2,4# (2,4#)	1,4# (1,4#) 1,4# (1,4#)	
5,0	Standard without blade with blade down			2,9# (2,9#) 2,9# (2,9#)	2,6# (2,6#) 2,6# (2,6#)	2,1 (2,3#) 2,3# (2,3#)	
4,0	Standard without blade with blade down	6,3# (6,3#) 6,3# (6,3#)	4,0# (4,0#) 4,0# (4,0#)	3,3# (3,3#) 3,3# (3,3#)	2,8 (2,8#) 2,8# (2,8#)	2,1 (2,6#) 2,5 (2,6#)	
3,0	Standard without blade with blade down		5,3# (5,3#) 5,3# (5,3#)	3,8 (3,9#) 3,9# (3,9#)	2,7 (3,2#) 3,2# (3,2#)	2,0 (2,7#) 2,4 (2,7#)	
2,0	Standard without blade with blade down	2,6# (2,6#) 2,6# (2,6#)	5,4 (6,3#) 6,3# (6,3#)	3,6 (4,5#) 4,3 (4,5#)	2,6 (3,5#) 3,1 (3,5#)	2,0 (2,9#) 2,4 (2,9#)	
1,0	Standard without blade with blade down	3,2# (3,2#) 3,2# (3,2#)	5,3 (6,6#) 6,5 (6,6#)	3,5 (4,7#) 4,2 (4,7#)	2,5 (3,7#) 3,0 (3,7#)	1,9 (3,0#) 2,3 (3,0#)	
0	Standard without blade with blade down	5,0# (5,0#) 5,0# (5,0#)	5,3 (6,4#) 6,4# (6,4#)	3,4 (4,7#) 4,1 (4,7#)	2,5 (3,7#) 3,0 (3,7#)	1,9 (2,9#) 2,3 (2,9#)	
- 1,0	Standard without blade with blade down	7,0# (7,0#) 7,0# (7,0#)	5,3 (5,8#) 5,8# (5,8#)	3,4 (4,4#) 4,1 (4,4#)	2,5 (3,4#) 3,0 (3,4#)		
- 2,0	Standard without blade with blade down	6,4# (6,4#) 6,4# (6,4#)	4,9# (4,9#) 4,9# (4,9#)	3,5 (3,7#) 3,7# (3,7#)	2,5 (2,9#) 2,9# (2,9#)		
- 3,0	Standard without blade with blade down		3,3# (3,3#) 3,3# (3,3#)	2,9# (2,9#) 2,9# (2,9#)			
- 4,0	Standard without blade with blade down						

with stick 2,60 m							
Height m	Undercarriage	Radius of load from centerline of machine in m					
		2,0	3,0	4,0	5,0	6,0	7,0
7,0	Standard without blade with blade down				1,3# (1,3#) 1,3# (1,3#)		
6,0	Standard without blade with blade down				1,3# (1,3#) 1,3# (1,3#)		
5,0	Standard without blade with blade down				2,2# (2,2#) 2,2# (2,2#)	1,5# (1,5#) 1,5# (1,5#)	
4,0	Standard without blade with blade down				2,3# (2,3#) 2,3# (2,3#)	2,2 (2,2#) 2,2# (2,2#)	
3,0	Standard without blade with blade down		4,0# (4,0#) 4,0# (4,0#)	3,0# (3,0#) 3,0# (3,0#)	2,6# (2,6#) 2,6# (2,6#)	2,1 (2,4#) 2,4# (2,4#)	1,2# (1,2#) 1,2# (1,2#)
2,0	Standard without blade with blade down	3,2# (3,2#) 3,2# (3,2#)	4,8# (4,8#) 4,8# (4,8#)	3,5# (3,5#) 3,5# (3,5#)	2,7 (3,0#) 3,0# (3,0#)	2,0 (2,6#) 2,4 (2,6#)	1,6 (1,7#) 1,7# (1,7#)
1,0	Standard without blade with blade down	2,4# (2,4#) 2,4# (2,4#)	5,5 (5,9#) 5,9# (5,9#)	3,6 (4,2#) 4,2# (4,2#)	2,6 (3,3#) 3,1 (3,3#)	2,0 (2,8#) 2,4 (2,8#)	1,5 (1,8#) 1,8# (1,8#)
0	Standard without blade with blade down	3,4# (3,4#) 3,4# (3,4#)	5,3 (6,4#) 6,4# (6,4#)	3,5 (4,6#) 4,2 (4,6#)	2,5 (3,5#) 3,0 (3,5#)	1,9 (2,9#) 2,3 (2,9#)	1,5 (1,5#) 1,5# (1,5#)
- 1,0	Standard without blade with blade down	4,6# (4,6#) 4,6# (4,6#)	5,2 (6,5#) 6,5 (6,5#)	3,4 (4,7#) 4,1 (4,7#)	2,4 (3,7#) 3,0 (3,7#)	1,9 (2,9#) 2,3 (2,9#)	
- 2,0	Standard without blade with blade down	6,1# (6,1#) 6,1# (6,1#)	5,2 (6,1#) 6,1# (6,1#)	3,4 (4,5#) 4,1 (4,5#)	2,4 (3,5#) 2,9 (3,5#)	1,9 (2,7#) 2,3 (2,7#)	
- 3,0	Standard without blade with blade down	7,3# (7,3#) 7,3# (7,3#)	5,3 (5,3#) 5,3# (5,3#)	3,4 (3,9#) 3,9# (3,9#)	2,4 (2,9#) 2,9# (2,9#)		
- 4,0	Standard without blade with blade down	5,3# (5,3#) 5,3# (5,3#)	4,0# (4,0#) 4,0# (4,0#)	2,8# (2,8#) 2,8# (2,8#)			

The load values are quoted in tons (t) on the backhoe bucket's load hook, and may be swung 360° on firm and even ground.

Values quoted in brackets apply to the undercarriage when in longitudinal position.

Capacities are valid for 600 mm wide triple grouser pads.

Indicated loads are based on ISO 10567 standard and do not exceed 75% of tipping or 87% of hydraulic capacity (indicated via #).

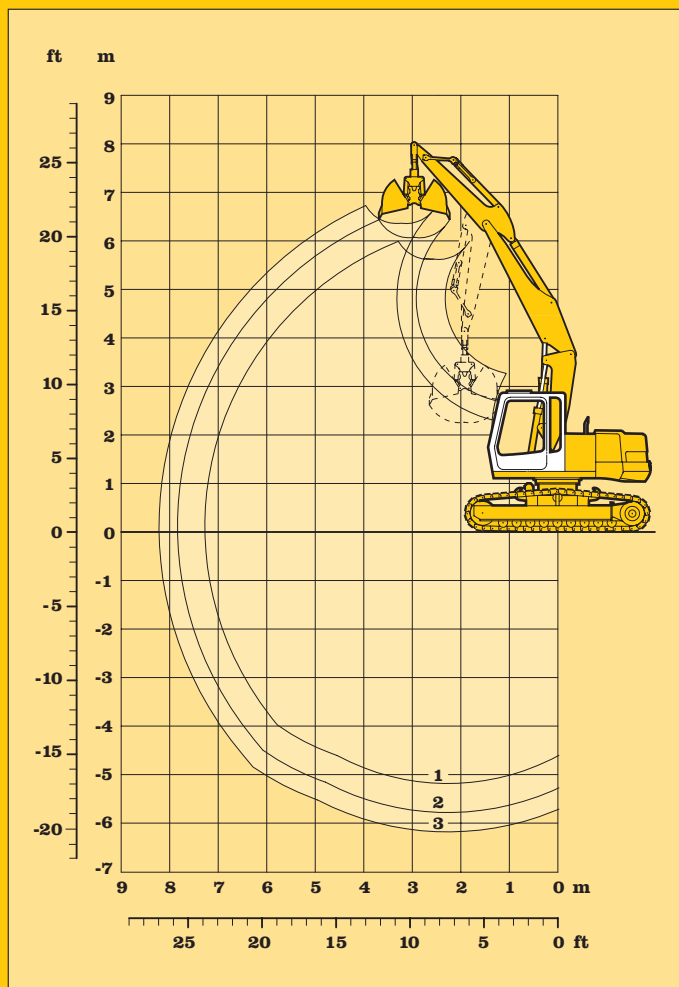
Maximum load for the backhoe bucket's load hook is 8 t.

Without bucket (0,45 m<sup>3</sup>), the lift capacities will increase by 370 kg, without bucket cylinder, link and lever they increase by an additional 150 kg.

Lifting capacity of the excavator is limited by machine stability, hydraulic capacity and maximum permissible load of the load hook.

According to European Standard, EN 474-5: In the European Union excavators have to be equipped with an overload warning device and automatic check valves on the hoist cylinders, when they are used for lifting operations which require the use of lifting accessories.

# Lift Capacities with Gooseneck Boom 4,50 m



## To order a complete machine you need the following:

- Basic machine see page 12
- Auxiliary circuit in basic machine AHS 1
- Extra hydr. control for hydr. swivel
- Hoist cylinders
- Basic boom for hydr. adjustable boom
- Main boom for hydr. adjustable boom
- Stick
  - 1,60 m
  - 2,20 m
  - 2,60 m
- Piping for hydraulic swivel for hydraulically adjustable boom
  - for stick 1,60 m
  - for stick 2,20 m
  - for stick 2,60 m
- Clamshell model 6 or 8 B see clamshell spec sheet

## Digging envelope with model 6

- 1 with stick 1,60 m
- 2 with stick 2,20 m
- 3 with stick 2,60 m

Clamshell model	Stick length	6			8 B		
		m	1,60	2,20	2,60	1,60	2,20
Max. digging depth	m	5,15	5,75	6,15	5,60	6,20	6,60
Max. reach at ground level	m	7,25	7,85	8,20	7,35	7,90	8,30
Max. dumping height	m	5,60	6,05	6,35	5,10	5,50	5,80
Min. attachment radius	m	3,00	2,70	2,80	3,10	2,80	2,90
Max. tooth force:		46 kN (4,7 t)			52 kN (5,3 t)		
Max. torque of hydraulic swivel:		0,88 kNm			1,76 kNm		

## Clamshell Model 6 (standard)

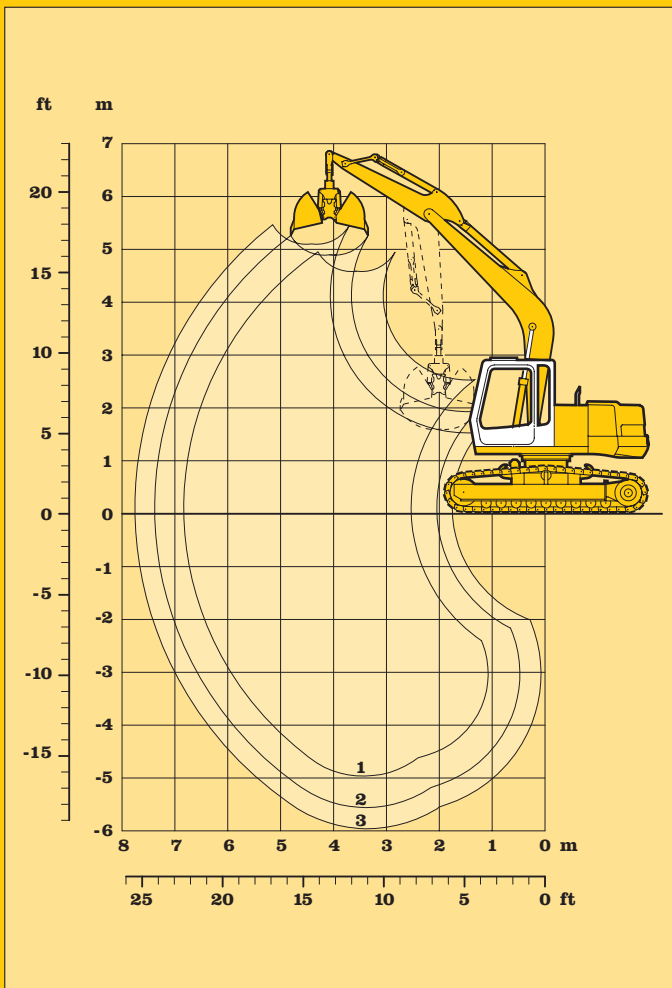
		without ejector				with ejector			
		350	450	600	800	350	450	600	800
Width of shells	mm	350	450	600	800	350	450	600	800
Capacity	m <sup>3</sup>	0,12	0,17	0,23	0,30	0,12	0,17	0,23	0,30
Max. material weight	t/m <sup>3</sup>	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Weight incl. suspension and hydr. swivel	kg	370	390	410	440	400	420	440	480
For machine stability per ISO 10567 the max. stick length is:									
Standard undercarriage	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60
Undercarriage with blade	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60

## Clamshell Model 8 B

		without ejector				with ejector				
		320	400	600	800	1000	320	400	600	800
Width of shells	mm	320	400	600	800	1000	320	400	600	800
Capacity	m <sup>3</sup>	0,17	0,22	0,30	0,40	0,80	0,17	0,22	0,30	0,40
Max. material weight	t/m <sup>3</sup>	1,8	1,8	1,8	1,8	1,2	1,8	1,8	1,8	1,8
Weight incl. suspension and hydr. swivel	kg	710	750	750	790	890	760	810	840	890
For machine stability per ISO 10567 the max. stick length is:										
Standard undercarriage	m	2,60	2,60	2,60	2,60	2,20	2,60	2,60	2,60	2,60
Undercarriage with blade	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60

# Clamshell Attachment with Hydr. Adjustable Boom





## To order a complete machine you need the following:

- Basic machine see page 12
- Extra hydr. control for hydr. swivel
- Hoist cylinders
- Gooseneck boom 4,50 m
- Stick
  - 1,60 m
  - 2,20 m
  - 2,60 m
- Piping for hydraulic swivel for hydraulically adjustable boom
  - for stick 1,60 m
  - for stick 2,20 m
  - for stick 2,60 m
- Clamshell model 6 or 8 B see clamshell spec sheet

## Digging envelope with model 6

- 1 with stick 1,60 m
- 2 with stick 2,20 m
- 3 with stick 2,60 m

Clamshell model		6			8 B		
		1,60	2,20	2,60	1,60	2,20	2,60
Stick length	m	1,60	2,20	2,60	1,60	2,20	2,60
Max. digging depth	m	4,95	5,55	5,95	5,40	6,00	6,40
Max. reach at ground level	m	6,85	7,40	7,75	6,90	7,45	7,85
Max. dumping height	m	4,60	4,90	5,10	4,05	4,35	4,55
Min. attachment radius	m	3,00	2,80	2,75	3,10	2,90	2,85
Max. tooth force:		46 kN (4,7 t)			52 kN (5,3 t)		
Max. torque of hydraulic swivel:		0,88 kNm			1,76 kNm		

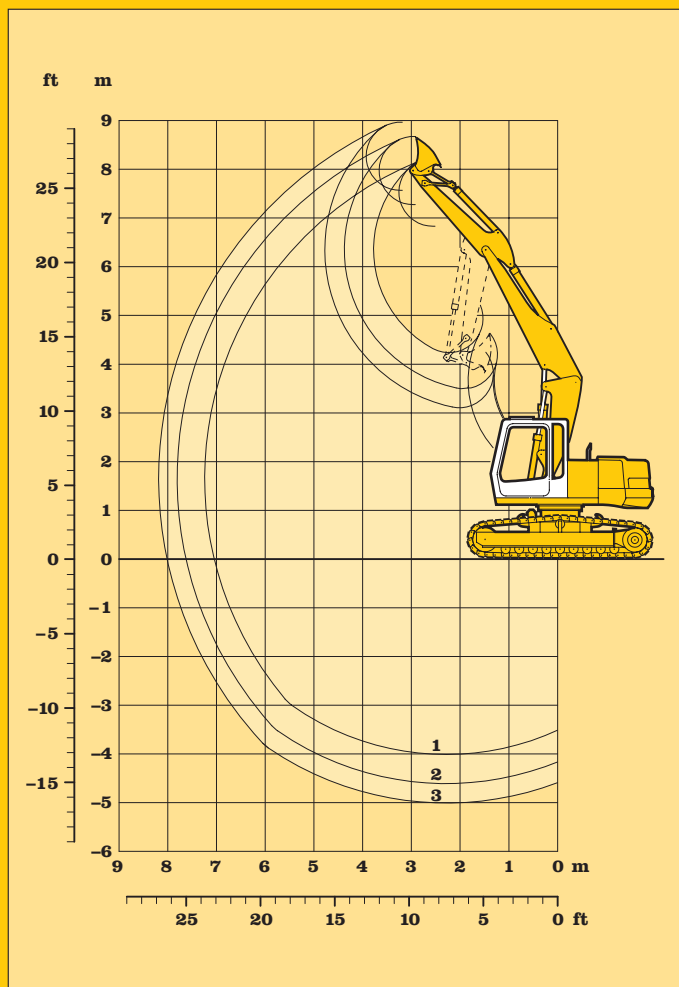
## Clamshell Model 6 (standard)

		without ejector				with ejector			
		350	450	600	800	350	450	600	800
Width of shells	mm	350	450	600	800	350	450	600	800
Capacity	m <sup>3</sup>	0,12	0,17	0,23	0,30	0,12	0,17	0,23	0,30
Max. material weight	t/m <sup>3</sup>	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Weight incl. suspension and hydr. swivel	kg	370	390	410	440	400	420	440	480
For machine stability per ISO 10567 the max. stick length is:									
Standard undercarriage	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60
Undercarriage with blade	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60

## Clamshell Model 8 B

		without ejector				with ejector				
		320	400	600	800	1000	320	400	600	800
Width of shells	mm	320	400	600	800	1000	320	400	600	800
Capacity	m <sup>3</sup>	0,17	0,22	0,30	0,40	0,80	0,17	0,22	0,30	0,40
Max. material weight	t/m <sup>3</sup>	1,8	1,8	1,8	1,8	1,2	1,8	1,8	1,8	1,8
Weight incl. suspension and hydr. swivel	kg	710	750	750	790	890	760	810	840	890
For machine stability per ISO 10567 the max. stick length is:										
Standard undercarriage	m	2,60	2,60	2,60	2,60	2,20	2,60	2,60	2,60	2,60
Undercarriage with blade	m	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60	2,60

# Clamshell Attachment with Gooseneck Boom 4,50 m



## To order a complete machine you need the following:

- Basic machine see page 12
- Auxiliary circuit in basic machine AHS 1
- Hoist cylinders
- Basic boom for hydr. adjustable boom
- Main boom for hydr. adjustable boom
- Stick
  - 1,60 m
  - 2,20 m
  - 2,60 m

- Ditchcleaning bucket see chart below

For ditchcleaning bucket with 2 x 45° rotator, the following additional items are required:

- Extra hydr. control for hydr. swivel
- Piping for hydraulic swivel for hydraulically adjustable boom
  - for stick 1,60 m
  - for stick 2,20 m
  - for stick 2,60 m

## Digging envelope

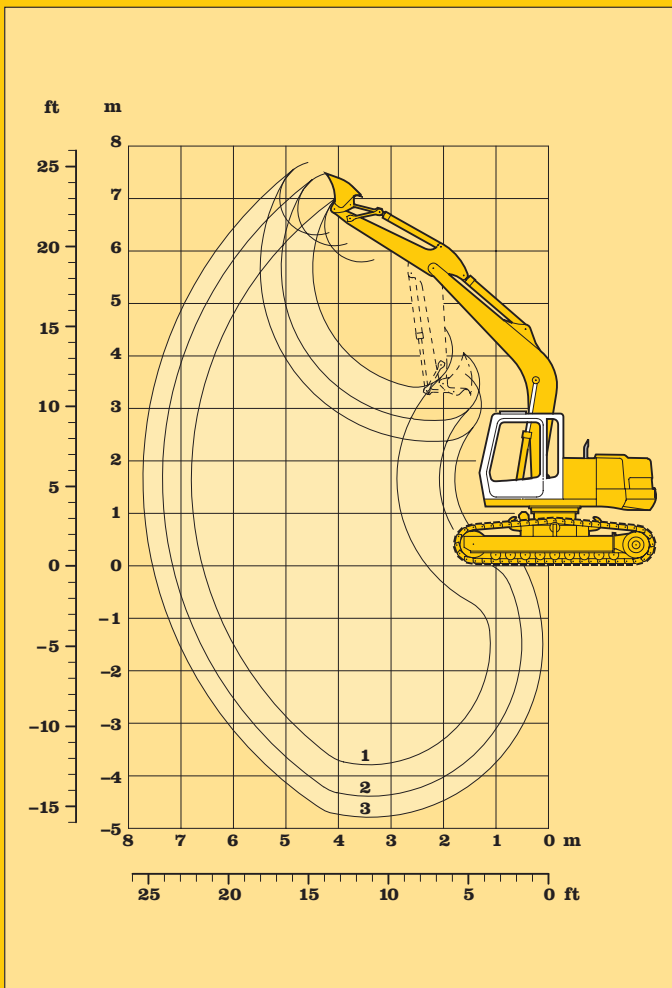
- 1 with stick 1,60 m
- 2 with stick 2,20 m
- 3 with stick 2,60 m

Stick length	m	1,60	2,20	2,60
Max. digging depth	m	4,00	4,60	5,00
Max. reach at ground level	m	7,05	7,65	8,00
Max. dumping height	m	6,85	7,25	7,55
Max. cutting edge height	m	8,25	8,65	8,95
Min. attachment radius	m	2,70	2,40	2,50

## Ditchcleaning Buckets

Cutting width SAE	mm	1700	2000	2000	2000 (with 2 x 45° rotator)
Capacity SAE (heaped)	m <sup>3</sup>	0,29	0,50	0,65	0,50
Max. material weight	t/m <sup>3</sup>	1,8	1,8	1,8	1,8
Weight of bucket	kg	280	330	360	570
For machine stability per ISO 10567 the max. stick length is:					
Standard undercarriage	m	2,60	2,60	2,60	2,60
Undercarriage with blade	m	2,60	2,60	2,60	2,60

# Ditchcleaning Attachment with Hydr. Adjustable Boom



## To order a complete machine you need the following:

- Basic machine see page 12
- Hoist cylinders
- Gooseneck boom 4,50 m
- Stick
  - 1,60 m
  - 2,20 m
  - 2,60 m
- Ditchcleaning bucket see chart below

For ditchcleaning bucket with 2 x 45° rotator, the following additional items are required:

- Extra hydr. control for hydr. swivel
- Piping for hydraulic swivel for gooseneck boom
  - for stick 1,60 m
  - for stick 2,20 m
  - for stick 2,60 m

## Digging envelope

- 1 with stick 1,60 m
- 2 with stick 2,20 m
- 3 with stick 2,60 m

Stick length	m	1,60	2,20	2,60
Max. digging depth	m	3,80	4,40	4,80
Max. reach at ground level	m	6,60	7,15	7,55
Max. dumping height	m	5,80	6,10	6,30
Max. cutting edge height	m	7,15	7,50	7,70
Min. attachment radius	m	3,00	2,80	2,75

## Ditchcleaning Buckets

Cutting width SAE	mm	1700	2000	2000	2000 (with 2 x 45° rotator)
Capacity SAE (heaped)	m <sup>3</sup>	0,29	0,50	0,65	0,50
Max. material weight	t/m <sup>3</sup>	1,8	1,8	1,8	1,8
Weight of bucket	kg	280	330	360	570
For machine stability per ISO 10567 the max. stick length is:					
Standard undercarriage	m	2,60	2,60	2,60	2,60
Undercarriage with blade	m	2,60	2,60	2,60	2,60

# Ditchcleaning Attachment with Gooseneck Boom 4,50 m

## Basic Machine

- R 312 Standard
- Triple grouser pads 500 mm  
Triple grouser pads 600 mm  
Triple grouser pads 750 mm

### Option

- Suspension bracket for blade  
with extra hydr. control for hydr. swivel
- Dozer blade 2500 mm  
Dozer blade 2750 mm  
Dozer blade 2900 mm

## Operating Weight and Ground Pressure

Operating weight includes basic machine and backhoe attachment with 2,20 m stick and 0,45 m<sup>3</sup> bucket.

### with hydraulically adjustable boom

with triple grouser pads 500 mm:	14900 kg - 0,44 kg/cm <sup>2</sup>
with triple grouser pads 600 mm:	15200 kg - 0,37 kg/cm <sup>2</sup>
with triple grouser pads 750 mm:	15600 kg - 0,31 kg/cm <sup>2</sup>

### with hydraulically adjustable boom and dozer blade

with triple grouser pads 500 mm:	14800 kg - 0,47 kg/cm <sup>2</sup>
with triple grouser pads 600 mm:	16100 kg - 0,39 kg/cm <sup>2</sup>
with triple grouser pads 750 mm:	16500 kg - 0,32 kg/cm <sup>2</sup>

### with gooseneck boom

with triple grouser pads 500 mm:	14400 kg - 0,43 kg/cm <sup>2</sup>
with triple grouser pads 600 mm:	14700 kg - 0,36 kg/cm <sup>2</sup>
with triple grouser pads 750 mm:	15100 kg - 0,30 kg/cm <sup>2</sup>

### with gooseneck boom and dozer blade

with triple grouser pads 500 mm:	15300 kg - 0,45 kg/cm <sup>2</sup>
with triple grouser pads 600 mm:	15600 kg - 0,38 kg/cm <sup>2</sup>
with triple grouser pads 750 mm:	16000 kg - 0,31 kg/cm <sup>2</sup>

# Contents Basic Machine and Operating Weight

## Standard Equipment

### Undercarriage

- Chain guides on idler end
- Life lubricated bottom/top rollers
- Complete travel drives integrated into side frames

### Uppercarriage

- Engine hood with lift help
- Lockable tool box
- Handrails, slip resistant surfaces
- Tool kit
- Maintenance-free swing brake lock
- Maintenance-free HD-batteries
- Sound insulation
- Pin lock upper/lower

### Hydraulics

- Stepless mode system (ECO)
- Pressure compensation
- Summated horsepower regulation
- Hook ups for pressure checks

### Engine

- Direct injection
- Turbo charger
- Air filter with precleaner, main- and safety element
- Main switch for electric circuit

### Operator's Cab

- All tinted windows
- Door with sliding window
- Cab heater with defroster
- All-round adjustable roof vent
- Rain hood over front window opening
- Wiper/washer
- 6-way adjustable seat
- Seat and consoles independently adjustable
- Removable lower section of front window with inside storage place
- Cloth hook
- Dome light
- Sun shade
- Cigarette lighter and ashtray
- Removable customized foot mat
- Storage tray
- Digital instruments for oil temp, engine RPM and oil pressure
- Hour meter

### Attachment

- Cylinders with shock absorber
- Sealed, low maintenance bearings
- Locking of connecting link during clam work
- Safety lift hook on hoe buckets
- Hydr. lines for clam operation on stick
- Hose quick connections
- Two way valves for bucket/clam use
- Flood light on boom

## Optional Equipment

- Two speed travel motors
- Chain guides in center and on sprocket end
- Customized colors

- Electric fuel tank filler pump
- Extended tool kit
- Customized colors

- Additional hydraulic circuits
- Bio degradable hydraulic oils

- Automatic idling

- Airpressure adjustable seat
- Beacon
- Electronic drive away lock
- Air condition
- Stereo radio
- Preparation for radio installation

- Safety check valves for all attachment cylinders
- Overload warning device
- Hydraulic or manual quick change tool adaptor
- Liebherr line of clams and grapples
- Special buckets and other tools
- Ditchcleaning buckets
- Customized colors

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

# Standard and Optional Equipment



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**With compliments:**