

# Technical Description Hydraulic Excavator

**R 954 B**  
Litronic®

**Operating Weight with Backhoe Attachment 106,830 - 121,160 lb**  
**Engine Output 298 BHP (222 kW)**  
**Bucket Capacity 1.7 - 5.1 cuyd**



# LIEBHERR

# Technical Data



## Engine

Rating per SAE J 1995	298 BHP (222 kW) at 2000 RPM
Model	Liebherr D 926 TI-E
Type	6 cylinder in-line
Bore/Stroke	4.80/5.60 in
Displacement	610 cu.in
Engine operation	4-stroke diesel direct injection turbo-charged and after-cooled reduced emissions
Cooling	water-cooled and integrated motor oil cooler
Air cleaner	dry-type air cleaner with pre-cleaner, primary and safety elements, automatic dust discharge
Fuel tank	187 gal
Standard	sensor controlled engine idling
Electrical system	
Voltage	24 V
Batteries	2 x 110 Ah/12 V
Starter	24 V/6.6 kW
Alternator	three phase current 28 V/80 A



## Hydraulic System

Hydraulic pump for attachment and travel drive	Liebherr variable flow, swash plate double pump
Max. flow	2 x 92.5 gpm
Max. pressure	5076 PSI
Pump regulation	electro-hydraulic with electronic engine speed sensing regulation, pressure compensation, flow compensation, automatic oil flow optimizer
Hydraulic pump for swing drive	reversible, variable flow, swash plate pump, closed-loop circuit
Max. flow	49 gpm
Max. pressure	5568 PSI
Hydraulic tank	119 gal
Hydraulic system	211 gal
Hydraulic oil filter	2 full flow filters in return line with integrated fine filter area (5 µm), 1 high pressure filter for each main pump
Hydraulic oil cooler	compact cooler, consisting of a water cooler, sandwiched with hydraulic oil cooler and after-cooler cores
MODE selection	adjustment of machine performance and the hydraulics via a mode selector to match application
LIFT	for lifting
FINE	for precision work and lifting through very sensitive movements
ECO	for especially economical and environmentally friendly operation
POWER	for maximum digging power and heavy duty jobs
R.P.M. adjustment	stepless adjustment of engine output via the r.p.m. at each selected mode



## Hydraulic Controls

Power distribution	via control valves in single block with integrated safety valves
Flow summation	to boom and stick
Closed-loop circuit	for uppercarriage swing drive
Servo circuit	
Attachment and swing	– proportional via joystick levers
Travel	– proportional via foot pedals or removable hand levers
Additional functions	via foot pedals or joystick toggle switch



## Swing Drive

Drive system	Liebherr swash plate motor with integrated brake valves
Transmission	Liebherr compact planetary reduction gear
Swing ring	Liebherr, sealed single race ball bearing swing ring, internal teeth
Swing speed	0–6,2 RPM stepless
Swing torque	115,440 lbft
Holding brake	wet multi-disc (spring applied, pressure released)
Option	pedal controlled positioning brake



## Operator's Cab

Cab	built from deep drawn components, resiliently mounted, sound insulated, tinted windows, front window stores overhead, door with sliding window
Operator's seat	shock absorbing suspension, adjustable to operator's weight, 6-way adjustable seat with mountable head rest
Joysticks	integrated into adjustable seat consoles
Monitoring	menu driven query of current operating conditions via the LCD display. Automatic monitoring, display, warning (acoustical and optical signal) and saving machine malfunction data, for example, engine overheating, low engine oil pressure or low hydraulic oil level
Heating system	standard air conditioning, combined cooler/heater, additional dust filter in fresh air/recirculated



## Undercarriage

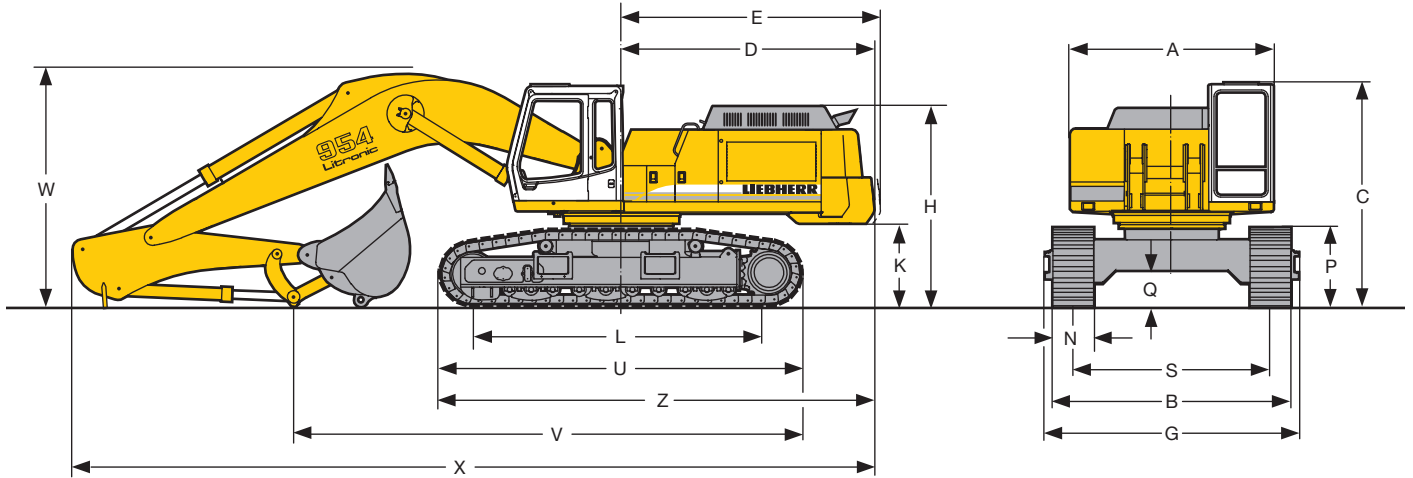
Drive system	Liebherr swash plate motors with integrated brake valves on both sides
Transmission	Liebherr planetary reduction gears
Travel speed	low range –2.1 mph high range –3.1 mph
Drawbar pull max.	90,900 lb
Track components	HD D 7 G, maintenance-free
Track rollers/Carrier rollers	HD 10/2
Track pads	HD triple grouser
Digging locks	wet multi-discs (spring applied, pressure released)



## Attachment

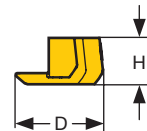
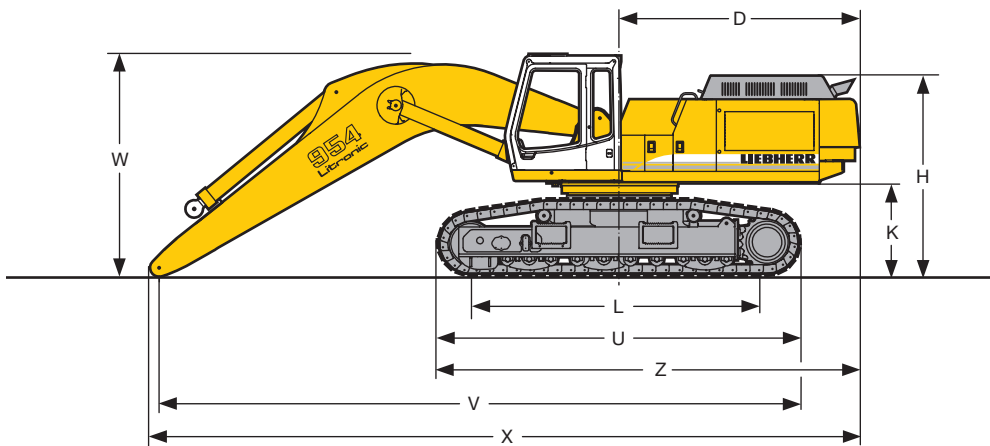
Type	combination of resistant steel plates and cast steel components
Hydraulic cylinders	Liebherr cylinders with special seal-system, shock absorbed
Pivots	sealed, low maintenance
Lubrication	easily accessible centralized lubrication
Hydraulic connections	pipes and hoses equipped with SAE split-flange connections
Bucket	standard equipped with 30 tons lifting eye

# Dimensions



	ft-in
A	9' 9"
C	10' 10"
D	12' 3"
E	12' 7"
H	9' 9"
K	4' 2"
L	14' 5"
P	3' 10"
Q	1' 9"
S	9' 6"
U	17' 8"
N	20" 24" 30"
B	11' 7" 11' 7" 12' 0"
G	12' 2" 12' 2" 12' 2"
Z	21' 1"

	Stick Length ft-in	Gooseneck Boom 22'0" ft-in	Gooseneck Boom 24'11" ft-in
V	7'9" 9'6" 12'6"	24'11" 23' 4" 20' 8"	28' 5" 26' 7" 23' 4"
W	7'9" 9'6" 12'6"	12' 2" 12' 2" 13' 0"	12' 8" 12'10" 12'10"
X	7'9" 9'6" 12'6"	39' 4" 39' 4" 39' 6"	42' 8" 42' 8" 42' 8"

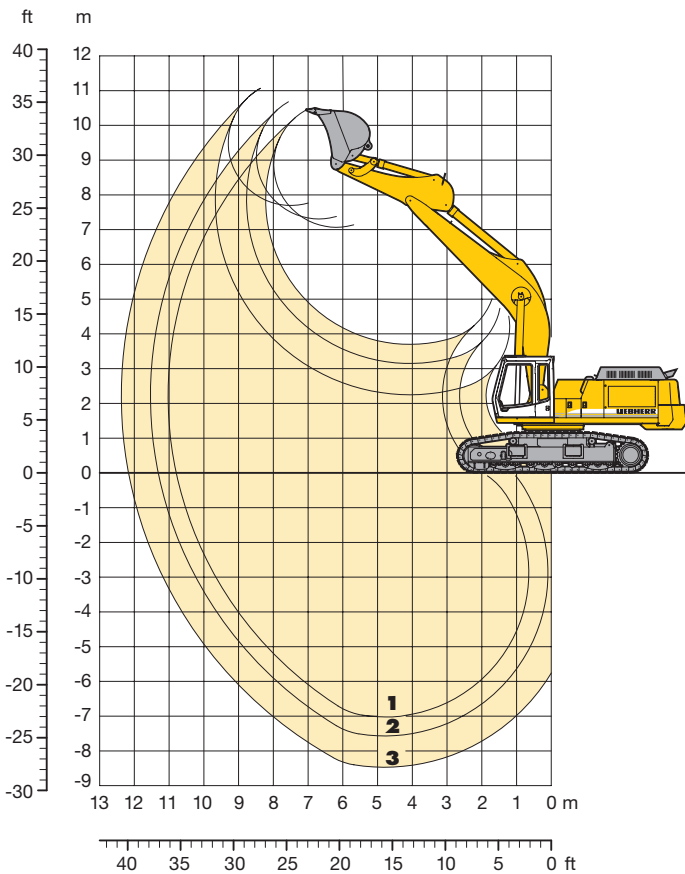


Gooseneck Boom	22'0"	24'11"
D	11' 8"	11' 8"
H	9' 9"	9' 9"
K	4' 6"	4' 6"
L	14' 5"	14' 5"
U	17' 8"	17' 8"
Z	20' 6"	20' 6"
V	31' 2"	34' 3"
W	10'10"	11' 4"
X	34' 5"	37' 7"
Weight with 20" pads	77,845 lb	78,820 lb
Weight with 24" pads	78,950 lb	79,920 lb
Weight with 30" pads	81,890 lb	82,860 lb

	ft-in
L Length	4'2"
H Height	2'2"
Width	9'9"
Weight	9.4 sht

# Backhoe Attachment

with Gooseneck Boom 22'0"



## Digging Envelope

		1	2	3
Stick lengths	ft-in	7'9"	9' 6"	12' 6"
Max. digging depth	ft-in	23'0"	24' 7"	27' 7"
Max. reach at ground level	ft-in	35'5"	37' 1"	39'11"
Max. dump height	ft-in	23'0"	23'11"	25' 3"
Max. teeth height	ft-in	34'1"	35' 1"	36' 4"
Digging force	lb	55,350	48,600	40,500
Breakout force	lb	64,125	64,125	64,125

## Operating Weight and Ground Pressure

Operating weight includes basic machine with gooseneck boom 22'0", stick 7'9" and bucket 3.5 cu.yd.

Undercarriage		HD		
Pad width	in	20"	24"	30"
Weight	lb	106,830	107,930	110,880
Ground pressure	PSI	14.48	12.21	10.02

## Buckets

Cutting width	in	59 <sup>1)</sup>	61 <sup>2)</sup>	67 <sup>3)</sup>	69 <sup>2)</sup>	75 <sup>3)</sup>	77 <sup>2)</sup>	75 <sup>3)</sup>	87 <sup>4)</sup>
Capacity	cuyd	2.6	2.6	3.1	3.1	3.5	3.5	4.2	5.1
Weight	lb	4520	5290	4850	5680	5180	6020	5620	5840
Suitable for material up to a specific weight of									
with stick 7'9"	lb/cuyd	–	–	3700	3700	3000	3000	2550	2000
with stick 9'6"	lb/cuyd	3700	3700	3000	3000	3550	2550	2000	–
with stick 12'6"	lb/cuyd	3000	3000	2550	3550	2000	–	–	–

<sup>1)</sup> Medium-duty bucket with Liebherr teeth size 20 (appropriate for materials up to classification 5, according to VOB, Section C, DIN 18300)

<sup>2)</sup> Heavy-duty rock bucket with Liebherr teeth size 25 (appropriate for materials above classification 6, according to VOB, Section C, DIN 18300)

<sup>3)</sup> Loading bucket with Liebherr teeth size 20

<sup>4)</sup> Loading bucket with Liebherr teeth size 16

Installation of optional side cutters onto medium-duty and loading buckets with Liebherr teeth size 25 and 20 increase cutting width by approx. 6" and 7" respectively.

Side cutters installation kit consist of:

- Weld-on set of adapters
- Set of bolt-on side cutters

# Lift Capacities

with Gooseneck Boom 22'0"

## Stick 7'9"

Height (ft)	Radius of load from centerline of machine (ft)					
	10	15	20	25	30	35
25				16270# (16270#)		
20				19820# (19820#)		
15		34613# (34613#)	25970# (25970#)	20966 (21870#)	15036 (16976#)	
10		42770 (45107#)	27955 (30777#)	19709 (24383#)	14440 (20944#)	
5		39330 (44004#)	25926 (34723#)	18585 (26676#)	13867 (22134#)	
0		38405 (49957#)	24780 (36795#)	17813 (28153#)	13448 (22134 )	
- 5	38493# (38493#)	38471 (50354#)	24405 (36839#)	17483 (28285#)		
- 10	55997# (55997#)	39198 (46341#)	24670 (34657#)	17703 (26433#)		
- 15	52933# (52933#)	38956# (38956#)	25662 (29101#)			
- 20						
- 25						

## Stick 9'6"

Height (ft)	Radius of load from centerline of machine (ft)					
	10	15	20	25	30	35
25						
20				17857# (17857#)	12170# (12170#)	
15			23479# (23479#)	20040# (20040#)	15013 (18188#)	
10		41028# (41028#)	28351 (28550#)	19731 (22774#)	14330 (19621#)	
5		40234 (48854#)	26147 (33047#)	18497 (25375#)	13647 (21054#)	
0	20944# (20944#)	38515 (50640#)	24714 (35847#)	17593 (27249#)	13118 (21826 )	
- 5	34282# (34282#)	38140 (51213#)	24097 (36641#)	17108 (27933#)	12875 (21561 )	
- 10	48414# (48414#)	38559 (48171#)	24119 (35318#)	17108 (26918#)		
- 15	59767# (59767#)	39661 (42064#)	24780 (31151#)			
- 20	42152# (42152#)	30446# (30446#)				
- 25						

## Stick 12'6"

Height (ft)	Radius of load from centerline of machine (ft)					
	10	15	20	25	30	35
25					9237# ( 9237#)	
20					14021# (14021#)	
15				17350# (17350#)	15366 (16028#)	6989# ( 6989#)
10	41954# (41954#)	34480# (34480#)	25022# (25022#)	20260 (20371#)	14595 (17747#)	10362# (10362#)
5	17306# (17306#)	42285 (44379#)	27007 (30269#)	18872 (23435#)	13779 (19533#)	10252 (11795#)
0	21826# (21826#)	39353 (49979#)	25177 (34150#)	17747 (25904#)	13095 (21032#)	9899 (10163#)
- 5	30093# (30093#)	38184 (51654#)	24119 (36134#)	17020 (27359#)	12655 (21319 )	
- 10	40301# (40301#)	38052 (50398#)	23766 (36068#)	16733 (27403#)	12522 (21186 )	
- 15	52955# (52955#)	38669 (46253#)	24030 (33687#)	16932 (25375#)		
- 20	55424# (55424#)	38118# (38118#)	25022 (27602#)			
- 25						

The lift capacities are stated in lb 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 30" wide triple grouser pads.

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

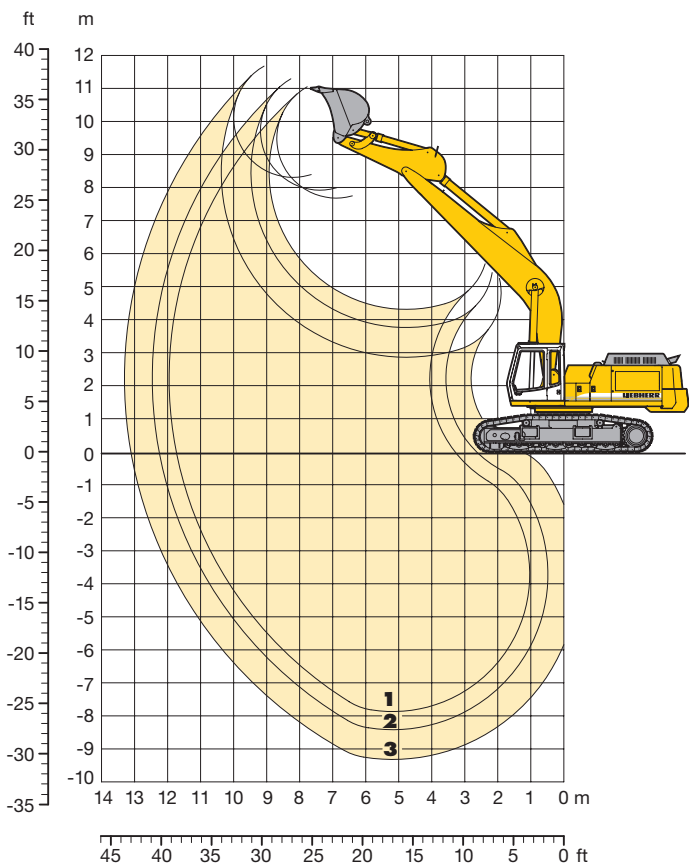
Maximum load for the backhoe bucket's load hook is 30 tons.

Without bucket (3.1 cuyd), the lift capacities will increase by 5680 lb, without bucket cylinder, link and lever they increase by an additional 1500 lb.

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

# Backhoe Attachment

with Gooseneck Boom 24'11"



## Digging Envelope

		1	2	3
Stick lengths	ft-in	7'9"	9' 6"	12'6"
Max. digging depth	ft-in	25'7"	27' 7"	30'6"
Max. reach at ground level	ft-in	38'5"	40' 0"	43'0"
Max. dump height	ft-in	25'3"	25'11"	27'3"
Max. teeth height	ft-in	36'1"	37' 1"	38'5"
Digging force	lb	55,350	48,600	40,500
Breakout force	lb	64,125	64,125	64,125

## Operating Weight and Ground Pressure

Operating weight includes basic machine with gooseneck boom 24'11", stick 7'9" and bucket 3.5 cu.yd.

Undercarriage	HD			
Pad width	in	20"	24"	30"
Weight	lb	107,490	108,590	111,540
Ground pressure	PSI	14.54	12.29	10.13

## Buckets

Cutting width	in	43 <sup>1)</sup>	45 <sup>2)</sup>	51 <sup>1)</sup>	53 <sup>2)</sup>	59 <sup>1)</sup>	61 <sup>2)</sup>	67 <sup>1)</sup>	69 <sup>2)</sup>	75 <sup>3)</sup>	77 <sup>2)</sup>	75 <sup>3)</sup>
Capacity	cuyd	1.7	1.7	2.2	2.2	2.6	2.6	3.1	3.1	3.5	3.5	4.2
Weight	lb	3750	4450	4080	4960	4520	5290	4850	5680	5180	6020	5620
Suitable for material up to a specific weight of												
with stick 7'9"	lb/cuyd	–	–	–	–	3700	3700	3000	3000	2550	2550	2000
with stick 9'6"	lb/cuyd	–	–	3700	3700	3000	3000	2550	2550	2000	–	–
with stick 12'6"	lb/cuyd	3700	3700	3000	3000	2550	2550	2000	–	–	–	–

<sup>1)</sup> Medium-duty bucket with Liebherr teeth size 20 (appropriate for materials up to classification 5, according to VOB, Section C, DIN 18300)

<sup>2)</sup> Heavy-duty rock bucket with Liebherr teeth size 25 (appropriate for materials above classification 6, according to VOB, Section C, DIN 18300)

<sup>3)</sup> Loading bucket with Liebherr teeth size 20

<sup>4)</sup> Loading bucket with Liebherr teeth size 16

Installation of optional side cutters onto medium-duty and loading buckets with Liebherr teeth size 25 and 20 increase cutting width by approx. 6" and 7" respectively.

Side cutters installation kit consist of:

- Weld-on set of adapters
- Set of bolt-on side cutters

# Lift Capacities

with Gooseneck Boom 24'11"

## Stick 7'9"

Height (ft)	Radius of load from centerline of machine (ft)					
	10	15	20	25	30	35
25						
20				18365# (18365#)	15631 (16865#)	
15		38206# (38206#)	25860# (25860#)	20371 (20746#)	14925 (18056#)	
10			26015 (30644#)	18850 (23369#)	14110 (19533#)	
5			24052 (34061#)	17615 (25596#)	13382 (20900#)	
0		25397# (25397#)	23149 (35539#)	16821 (27029#)	12853 (21517 )	
- 5	26676# (26676#)	36641 (42505#)	22972 (35428#)	16513 (27403#)	12655 (21297 )	
-10	43343# (43343#)	37368 (44269#)	23303 (33885#)	16645 (26522#)		
-15	51985# (51985#)	38647 (39375#)	24119 (30512#)	17328 (23634#)		
-20		30887# (30887#)	23457# (23457#)			
-25						

## Stick 9'6"

Height (ft)	Radius of load from centerline of machine (ft)					
	10	15	20	25	30	35
25					14683# (14683#)	
20				16645# (16645#)	15388# (15388#)	
15		33224# (33224#)	23545# (23545#)	19136# (19136#)	14903 (16733#)	10979 (12875#)
10		27888# (27888#)	26566 (28572#)	18938 (21914#)	14021 (18342#)	10538 (16292#)
5		20481# (20481#)	24339 (32584#)	17593 (24427#)	13206 (19886#)	10097 (16998 )
0		28219# (28219#)	23104 (34789#)	16645 (26191#)	12588 (21054#)	9766 (16645 )
- 5		36090 (39661#)	22686 (35296#)	16182 (26963#)	12258 (20878 )	
-10		36663 (46099#)	22796 (34326#)	16160 (26544#)	12280 (20900 )	
-15		37699 (41778#)	23391 (31658#)	16579 (24515#)		
-20		34502# (34502#)	24626 (26191#)			
-25						

## Stick 12'6"

Height (ft)	Radius of load from centerline of machine (ft)					
	10	15	20	25	30	35
25						
20					13360# (13360#)	11662 (11861#)
15				16777# (16777#)	14881# (14881#)	11222 (13801#)
10		37501# (37501#)	25375# (25375#)	19555 (19798#)	14308 (16711#)	10670 (14859#)
5		31901# (31901#)	25265 (30115#)	18012 (22686#)	13360 (18519#)	10119 (15961#)
0		30821# (30821#)	23545 (33356#)	16843 (24956#)	12610 (20040#)	9634 (16535 )
- 5		35825 (36927#)	22686 (34877#)	16116 (26323#)	12103 (20723 )	9348 (16226 )
-10		35979 (46672#)	22443 (34877#)	15851 (26632#)	11905 (20503 )	9326 (12544#)
-15		36707 (45129#)	22730 (33268#)	15984 (25596#)	12081 (20062#)	
-20		38008 (39573#)	23545 (29564#)	16645 (22487#)		
-25		29873# (29873#)	21782# (21782#)			

The lift capacities are stated in lb 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 30" wide triple grouser pads.

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

Maximum load for the backhoe bucket's load hook is 30 tons.

Without bucket (2.2 cuyd), the lift capacities will increase by 3570 lb, without bucket cylinder, link and lever they increase by an additional 1500 lb.

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

# Equipment



## Undercarriage

S O

Two-stage travel motors	•	
Three track guide per track	•	
Lifetime lubricated track rollers	•	
Hydraulic hose protection	•	
Idler protection	•	
Tracks sealed and greased	•	
Different undercarriage versions		•
Different track pad width		•
Four track guide		•
Reinforced cover		•
Streng. bottom sheet center part		•



## Uppercarriage

S O

Engine hood with lift help	•	
Lockable tool box	•	
Handrails, non slip surfaces	•	
Tool kit	•	
Maintenance-free swing brake lock	•	
Maintenance-free HD-batteries	•	
Sound insulation	•	
Mechanical swing lock upper/lower	•	
Electric fuel tank filler pump		•
Foot pedal swing positioning brake		•
Extended tool kit		•
Customized colors		•



## Hydraulics

S O

Electronic pump regulation	•	
Stepless work mode selector	•	
Pressure storage for controlled lowering of attachments with engine turned off	•	
Hydraulic tank shut-off valve	•	
Pressure compensation	•	
Flow compensation	•	
Filter with integrated fine filter area (5 µm)	•	
High pressure filter	•	
Pressure test ports	•	
Additional hydraulic circuits		•
Bio-degradable hydr. oil		•
Filter for secondary circuit		•



## Engine

S O

After-cooled	•	
Direct injection	•	
Turbo charger	•	
Dry-type air cleaner w/pre-cleaner, main and safety element	•	
Air filter with automatic dust ejector	•	
Sensor controlled engine idling	•	
Engine cold starting aid		•



## Operator's Cab

S O

Deep drawn cab shell components	•	
All tinted windows	•	
Door with sliding, window	•	
All-round adjustable roof flap	•	
Rain protective shade for front window	•	
Washer and wiper	•	
6-way adjustable cloth suspension seat	•	
Seat and consoles independently adjustable	•	
Removable handle for travel pedals	•	
Air conditioner	•	
Coat hook	•	
Dome light	•	
Sun visor	•	
Inside rear mirrors	•	
Radio installation prep-kit	•	
Removable handle for travel pedals	•	
Cigar lighter and ashtray	•	
Removable custom floor mat	•	
Storage and Literature tray	•	
Digital instrumentation	•	
Digital instruments for oil temp. engine RPM and oil pressure	•	
Removable lower section of front window		•
AM/FM stereo radio w/cassette		•
Air power seat adjustment with heating		•
Warning beacon		•
Additional flood lights		•
Ventilator		•
Armored glass		•



## Attachment

S O

Cylinders with shock absorbers	•	
Sealed pivots	•	
Centralized lube points	•	
SAE split flanges on all high pressure lines	•	
30 sh tons lifting eye on buckets	•	
Work light on boom	•	
O-ring sealant between bucket and stick	•	
Safety check valves for hoist cylinder		•
Overload warning device		•
Hydr. or mechanical quick change coupler		•
Liebherr line of clams and grapples		•
Quick disconnect hose couplers		•
Special application buckets		•
Hydr. lines, on stick, for clam operation		•
Two-way selector valve for bucket/clam		•
Two-way selector valves for bucket/clam use		•
Customized colors		•

S = Standard, O = Option

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

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