

Technical Description

Wheel Loader L 551



Bucket capacity	3.5 – 4.5 m³
Operating weight	20.2 – 22.2 t
Engine output	173 kW / 235 hp



Economy through low operating costs

Liebherr has further improved the hydrostatic travel drive system for its range of wheel loaders. This drive system has proven itself in hard applications over and over and its main advantage has proven to be its excellent economy.

- **Low fuel consumption** – due to the low diesel engine rpm and improved utilization of the available engine power.
- **Reduced brake wear** – due to the use of hydrostatic travel drive, the wet multi-disk brakes are virtually wear free.
- **Reduced tire wear** – due to the sensitive drive system and the standard limited slip differentials.

Safety and comfort

Due to the logical control of the travel drive system and attachments. The low noise level and the reliable monitoring system increase both driving comfort and productivity.

Improved environmental protection

The noise emission of the hydrostatically driven Liebherr wheel loader is kept at a low level by the low engine speed of 2000 rpm. Low exhaust emission levels are produced by the lower engine speed.

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Liebherr Diesel Engine

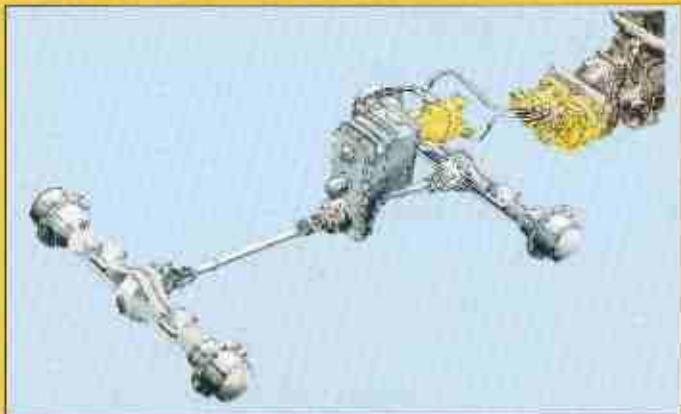


Liebherr diesel engine

Model	D 916 TI
Type	6 cylinder water cooled in-line engine with direct injection; turbocharged with intercooling
Power output	
SAE	245 hp at 2000 rpm
DIN/ISO 3046-1	173 kW (235 hp) at 2000 rpm
Max. torque	940 Nm (96 kpm) at 1400 rpm
Displacement	9.1 l
Bore/stroke	120/135 mm
Lubrication	Pressure lubrication system with main flow filter and oil cooler.
Air cleaner	Dry-type air cleaner with main and safety element. Pre-cleaner with automatic dust ejector and service indicator.
Electrical system	
Voltage	24 V
Battery	2 x 135 Ah/12 V
Alternator	24 V/27 A



Travel Drive



Hydrostatic travel drive system

Type	Closed circuit variable displacement swash plate pump and axial piston motor with 3-speed planetary transmission. Forward and reversing by the flow direction of the travel pump.
Filter	separate filtration for closed circuit system

Regulation

Control of speed and tractive effort by controlling of the engine rpm and by automatic engine speed sensing regulation.

Pressure compensation for constant operating temperature of the hydraulic oil.

Control

Travel drive control by drive and inch pedals. Stepless control of tractive effort and travel speed by using the inch pedal, independently of the engine speed. Forward, reverse and speedranges are controlled by the joystick.

Speed ranges

Forward and reverse with 36.5-25 tires

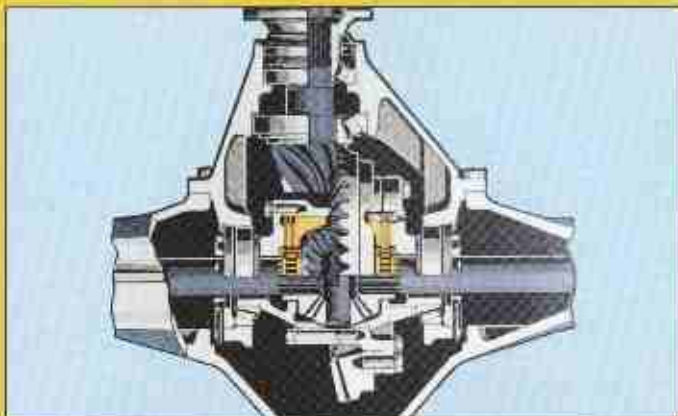
Range 1 _____ - 7.5 km/h

Range 2 _____ - 16.5 km/h

Range 3 (automatic) _____ - 38.0 km/h



Axles



Four wheel drive

Fixed front axle

Oscillating rear axle

Oscillation angle _____

± 13°

Max. obstacle height _____

500 mm

(all wheels remain in contact with the ground)

Differentials

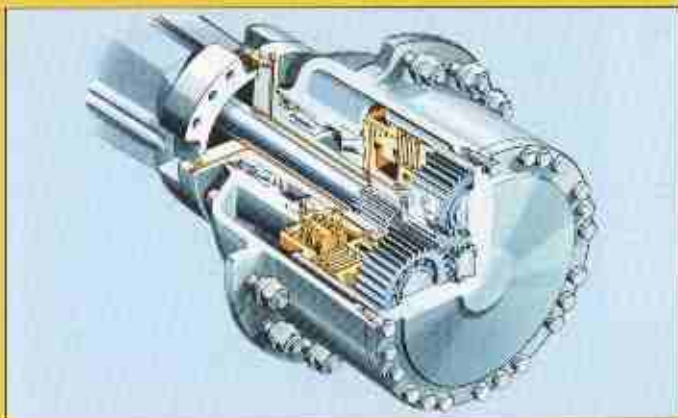
Automatic limited slip differentials with 45 % locking value in both axles.

Reduction gear

Planetary final drive in the wheel hubs.



Brakes



Technical Data

Hydrostatic drive

The hydrostatic drive system provides a wear-free brake operation on all four wheels.

Wet multi-disk brakes

Hydraulic servo brake system with accumulator back up. Wet, oil cooled multi-disk brakes in the wheel hubs. Separate brake circuits for front and rear axle.

Parking brake

Spring applied, servo pressure released, wet multi-disk brake on transmission.

The braking system meets the requirements of the EC guidelines 71/320.



Tires

Tire selection

Tubeless radial or cross ply tires on three piece rims in the following sizes:

26.5-25

23.5-25

for tire protection chains - 23.5-25 L3/L4

Special tires

Please contact factory for special application tires.



Steering

Type

Center articulation with adjustment-free spherical bearings and two double acting hydraulic cylinders.

Articulation angle (to each side) $\pm 40^\circ$

Power supply

Hydraulic servo power steering.

Priority supply from the attachment pump through a flow distribution valve.

Max. pressure _____ 180 bar

Emergency steering

Separate pump driven by the travel transmission.



Attachment Hydraulics

Axial piston pump with engine speed sensing regulation and pressure compensation for optimum utilization of available engine output.

Max. flow _____ 275 l/min.

Max. pressure _____ 270 bar

Cooling

Hydraulic oil cooling by thermostatically controlled fan and oil cooler.

Filtration

Return line filter in the hydraulic reservoir.

Control

Servo controlled joystick lever. The position of the control panel can be adjusted individually to suit the driver.

Lift circuit

Lift, neutral, lower.

Floating position controlled by a separate switch.

Tilt circuit

Tilt back, neutral, dump.

Automatic bucket positioner with adjustable dig-in angle.



Attachment



Geometry

Z-bar linkage with one tilt cylinder

Bearings

Sealed bearings for longer lubrication intervals.

Hydraulic cycle time at rated load

Lift _____ 6.5 sec.

Dump _____ 1.5 sec.

Lower (empty) _____ 3.0 sec.



Operator's Cab



Design

Sound-suppressed ROPS/FOPS cab, rubber mounted on the front frame. 2 doors and 4 sliding windows. Safety glass.

ROPS rollover protection per

DIN/ISO 3471/SAE 1040 C

FOPS falling objects protection per

DIN/ISO 3449/SAE J 231

Operator's seat

8-way adjustable, suspended seat equipped with right hand armrest and seatbelt.

Seat is adjustable for operator's weight.

Heating and ventilation

Water heating system with defroster and 2-stage fan. Fresh air intake through a filter system. Pressurization standard.

Noise Levels

Noise levels meet the requirements of EEC guideline 86/662/EEC.



Capacities

Fuel tank	320 l
Engine oil (with filter)	23 l
Pump distributor gear	2.5 l
Transmission	24 l
Front axle/wheel hubs	24/18 l
Rear axle/wheel hubs	21/10 l
Hydraulic tank	200 l
Hydraulic system	320 l

Safety and Operator Comfort

Elastically mounted cab with integrated ROPS/FOPS. The sound level is below the most stringent sound level standards which make this cab one of the "quietest" cabs installed on wheel loaders. Acoustical and optical warning devices protect drive components and assure extended operating safety.

Logical Operation

Control of travel drive and working hydraulics with only one joystick lever assures increased safety and fatigue free working conditions. The left hand always remains on the steering wheel.

Z-bar Loader Linkage

Z-bar loader linkage for higher breakout forces and faster dumping speed.

High life expectancy and long service intervals through sealed attachment bearings.



Technical Description



Liebherr Diesel Engine

Long life expectancy and high reliability, even under extreme operating conditions are main features of the Liebherr Diesel engine. This engine was developed specially for earth moving equipment and has the following advantages:

- low fuel consumption and reduced emissions due to low engine RPMs
- powerful due to excellent torque characteristics
- robust with low maintenance requirements for hard work on construction sites.

Hydrostatic Travel Drive

The hydrostatic drive with 3-speed transmission is the optimum drive system for a wheel loader. Compared to conventional drive systems, it sets new economical standards regarding:

- full use of available engine horsepower and lower fuel consumption.
- virtually wear free brakes
- smooth and sensitive travel drive
- operator friendly operation.

Limited-Slip Differentials

The automatic acting multi-disc limited-slip differentials in both axles are standard equipment and provide

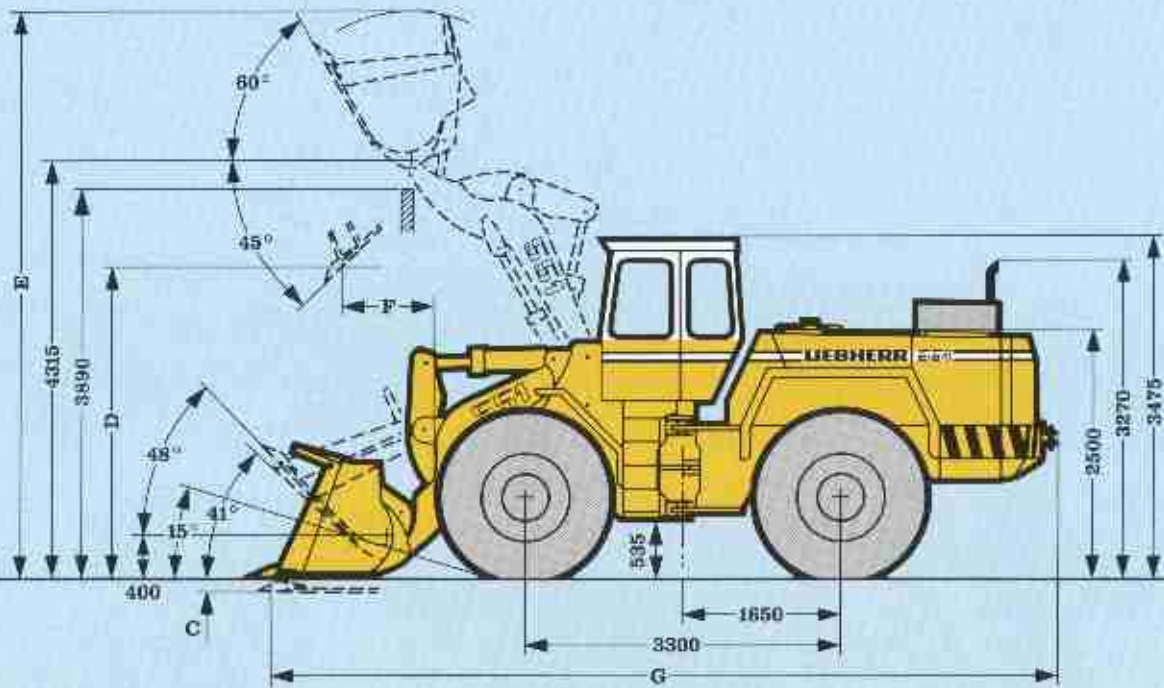
- improved draw bar pull in severe ground conditions
- reduced tire wear
- less fuel consumption.

Wet Disc Brakes

The wet, oil cooled multi-disc brakes are integrated into the wheel hubs of the axles. These fully enclosed brakes, combined with the hydrostatic drive system, are

- virtually wear free and
- provide constant brake performance under all operating conditions.

Dimensions in mm with 26.5 R 25, L 2 tires



Tread 3300 mm with all tires

Tire sizes	Width over tires mm	Ground clearance mm	Change of vertical dimensions mm
26.5 R 25, L 2	2980	535	-
26.5 R 25, L 3	2980	535	-
26.5 R 25, L 4	2980	585	+ 50
23.5-25, 20 PR, L 2	2860	490	- 55
23.5 R 25, L 2	2800	465	- 70
23.5 R 25, L 3	2890	465	- 70
23.5 R 25, L 4	2940	500	- 35
23.5 R 25, L 5	2940	500	- 35

Technical data and dimensions are in accordance with the ISO/SAE standards, where available.

Technical Data

Bucket types and cutting tools		Teeth ¹⁾	Bucket with		Bolt-on edges	Rock bucket with teeth ¹⁾	
			Teeth	Bolt-on edges ²⁾		Delta-edge	Straight-edge
capacity (SAE) heaped 2:1 struck	m ³	3.5	4.0	4.0	4.5	3.1	3.1
	m ²	3.1	3.6	3.6	4.0	2.6	2.6
Specific material weight	t/m ³	2.0	1.8	1.8	1.6	2.0	2.0
Bucket width	mm	3000	3000	3000	3200	3000	3000
D Dump height at max. lift height and 45° discharge	mm	3140	3070	3070	3030	3110	3110
F Reach at max. lift height and 45° discharge	mm	975	1050	1050	1085	1000	1000
Reach at 2130 mm clearance and 45° discharge	mm	1715	1755	1755	1775	1725	1845
E Max. operating height	mm	5815	5890	5890	5960	5670	5670
G Overall length	mm	7985	8090	8090	8140	8030	8030
Turning radius, bucket in transport position	mm	6645	6665	6665	6780	6660	6660
C Digging depth	mm	60	60	60	60	60	60
Lifting force (SAE)	kN	245	245	245	245	245	245
Breakout force (SAE)	kN	180	162	162	156	175	175
* Tipping load straight (SAE) articulated 35° full turn 40°	kg	16855	16680	16400	16300	16610	16610
	kg	15330	15170	14910	14810	15110	15110
	kg	14880	14720	14480	14380	14660	14660
* Operating weight	kg	20900	21100	21400	21500	21100	21100

* Shown numbers include all lubricants, full fuel tank, tire sizes 26.5 R 25, L 2, ROPS/FOPS cab and driver.

* Different tires and optional equipment will change the operating weight and tipping load.

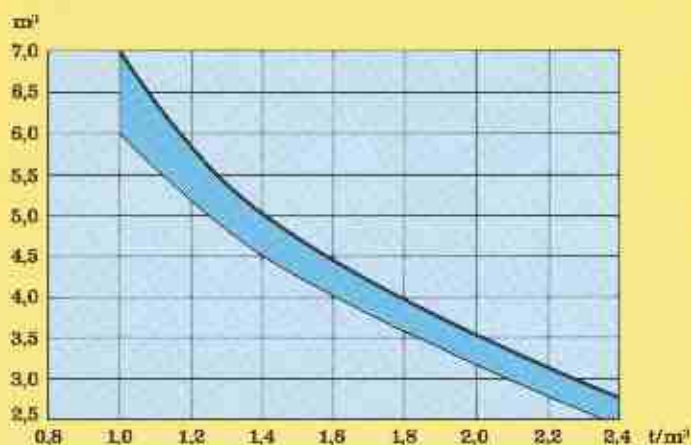
¹⁾ weld on tooth adaptors with exchangeable teeth

²⁾ 3-piece, bolt-on, reversible cutting edges

Additional specifications	Change of operating weight kg	Change of static tipping load full turn (40°) kg
26.5 R 25, L 3	+ 20	-
26.5 R 25, L 4	+ 460	+ 320
23.5-25, 20 PR, L 2	- 990	- 680
23.5 R 25, L 3	- 650	- 450
23.5 R 25, L 5	+ 400	+ 280
Additional counterweight	+ 380	+ 840
Tire ballast 23.5-25	+ 1160	+ 1610
26.5-25	+ 1500	+ 2080

The use of additional counterweight or tire ballast is only recommended to improve stability on firm, level surfaces.
The use of both at the same time is not recommended and should be avoided.

Bucket selection



3.1 m³ rock bucket, for hard and tough materials and rock.

3.5 m³ bucket for normal to heavy materials, general applications.

4.0 m³ loading bucket for standard, allround materials and for rehandling.
With teeth or 3-piece, bolt-on, reversible cutting edges.

4.5 m³ rehandling bucket for easy materials and rehandling.
With 3-piece bolt-on, reversible cutting edges or teeth.

Material densities-loose t/m³

Gravel, moist _____ 1.9	Clay and gravel, dry _____ 1.4	Sandstone _____ 1.6
dry _____ 1.6	wet _____ 1.8	Slate _____ 1.75
wet, 6-50 mm _____ 2.0	Earth, dry _____ 1.3	Bauxite _____ 1.4
dry, 6-50 mm _____ 1.7	wet excavated _____ 1.6	Gypsum, broken _____ 1.8
crushed stone _____ 1.5	Topsoil _____ 1.1	Coke _____ 0.5
Sand, dry _____ 1.5	Decomposed rock 50 % rock, 50 % earth _____ 1.7	Slag, broken _____ 1.8
moist _____ 1.8	Basalt _____ 1.95	Coal _____ 1.1
wet _____ 1.9	Granite _____ 1.8	
Gravel and sand, dry _____ 1.7	Limestone, hard _____ 1.65	
wet _____ 2.0	soft _____ 1.55	
Sand and clay _____ 1.6		
Clay, natural _____ 1.6		
dry _____ 1.4		
wet _____ 1.85		

Standard Equipment

- Sound insulated ROPS/FOPS cab
- Cab heating system with defroster and pressurisation
- Wash/wipe system front and rear
- Suspended 6-way adjustable seat with seat belt
- Working lights front and rear
- Doors, battery box and toolbox lockable
- Internal and external noise levels meet EEC guidelines 86/662
- Emergency steering system
- Limited slip differentials
- Mudguards
- Air cleaner system with automatic dust ejector
- Automatic bucket positioner
- Automatic lift kick out
- Floating position
- Toolbox with toolkit
- Instrument panel with indicators for:
 - engine oil pressure, fuel content, coolant temperature and service hour meter
- Warning lights for:
 - engine oil pressure
 - transmission oil pressure
 - brake system, accumulator pressure
 - parking brake
 - transmission oil temperature
 - coolant level
 - air cleaner service indicator
 - battery charger
- Audible warnings for:
 - engine oil pressure
 - brake system accumulator pressure
 - transmission oil pressure

Standard and optional equipment may vary.

Optional Equipment

- Buckets with and without teeth or with reversible cutting edge
- Hi-dump buckets
- Protective equipment for saw mill applications
- Hydraulic quick-coupler
- Pallet fork
- 3rd hydraulic circuit for hydraulically operated attachments
- LFD-Liebherr travel pitch damper
- Cold climate kit
- Tunneling equipment
- Mudguards with rubber edge
- Rubber stops for frame articulation
- Adjustable steering column
- Tinted glass
- Air conditioning
- Radio
- Air suspension seat
- Beacon
- Rotating
- Back up alarm
- 20 km/h speed limiter

Additional equipment on request.

