

en

Operating Manual

Wheel Loader
L514 -790 from 10620



LIEBHERR

en

Operating Manual

Wheel Loader
L514 - 790 from 10620

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Type no.: 790
Serial number: from 10620
Conformity:



Address

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Manufacturer

Address: LIEBHERR-WERK BISCHOFSHOFEN GMBH

Machine data:

Please enter the following details on receipt of your vehicle: *You will find these details on the vehicle type plate. They will be useful when ordering spare parts.

*** Serial no.**

VATZ ZZB

*** Year of manufacture**

.

Initial start-up date

. . / . . / . .

This operating manual has been written for the **driver** and for the **maintenance personnel** of the machine.

It describes:

- Chapter 1 - Product description
- Chapter 2 - Safety regulations
- Chapter 3 - Operation and handling
- Chapter 4 - Malfunctions
- Chapter 5 - Maintenance

This operating manual must be carefully read before initial operation and should be read and used later at regular intervals by anyone responsible for working on the machine.

Working with or on the machine includes:

- **Operation**, including equipping, troubleshooting during operation, removing production debris, maintenance, removing operating and auxiliary materials.
- **Servicing**, including maintenance, inspection and repairs.
- **Transport** or loading the machine.

This manual helps the driver to become acquainted with the machine and prevents malfunctions due to improper operation.

Observation of the operating manual by maintenance staff:

- Increases reliability during operation
- Extends the service life of your machine
- Reduces repair costs and downtime

This manual must be kept with the machine. Place a copy within easy reach in the glove compartment in the driver's cab.

In addition to the operating manual follow the instructions based on existing national accident prevention and environmental protection regulations.

In addition to the operating manual and applicable national and local legal accident prevention rules, observe the recognised technical regulations for safe and proper operation.

This operating manual contains all the information you need to operate and service your machine.

If you should, however, require more detailed explanations or information, our technical information and customer services departments will be happy to provide assistance.

You will understand that we cannot accept warranty claims for damage due to improper use, insufficient maintenance, use of non-approved consumables or failure to follow the safety instructions.

LIEBHERR will cancel without prior notice all obligations such as warranty agreements and service contracts entered into by **LIEBHERR** and/or its agents if spare parts other than genuine **LIEBHERR** parts or those purchased from **LIEBHERR** are used for maintenance and repairs.

In extreme conditions, maintenance may be required more often than stated in the inspection schedule.

Modifications, conditions, copyright:

- We reserve the right to alter the technical details of the machine regardless of the specifications and illustrations in these documents.
- The warranty and liability terms contained in LIEBHERR's general conditions of trade are not affected by the information in the manual.
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Abbreviations used:

CPU = central processing unit
Hydr. = hydraulic
LCD = liquid crystal display
LED = light emitting diode
LECU = Liebherr Electronic Control Unit
LFD = Liebherr ride control
LH = Liebherr
LKW = truck
MC = Microcontroller
MV = solenoid valve
NLP = Emergency steering pump
P-kinematics = kinematic version of the lift arms
SKW = heavy lorry
SW = quick-change device
UEC = Universal Earth Mover Controller
Z-kinematics = kinematic version of the lift arms

Symbols and pictograms:

Direction of operation or movement



bsym0059



bsym0066



bsym0065



bsym0029



bsym0049



bsym0061



bsym0060



bpik0006



bsym0063

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Fax: 0043 6462 888 287

E-mail: roland.weber@liebherr.com

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Excellent	
Very good	
Good	
Satisfactory	
Poor	

Your data: Machine / serial number: _____

Company: _____

Name: _____

Address: _____

Telephone number: _____

Dealer: _____

Thank you for your help.

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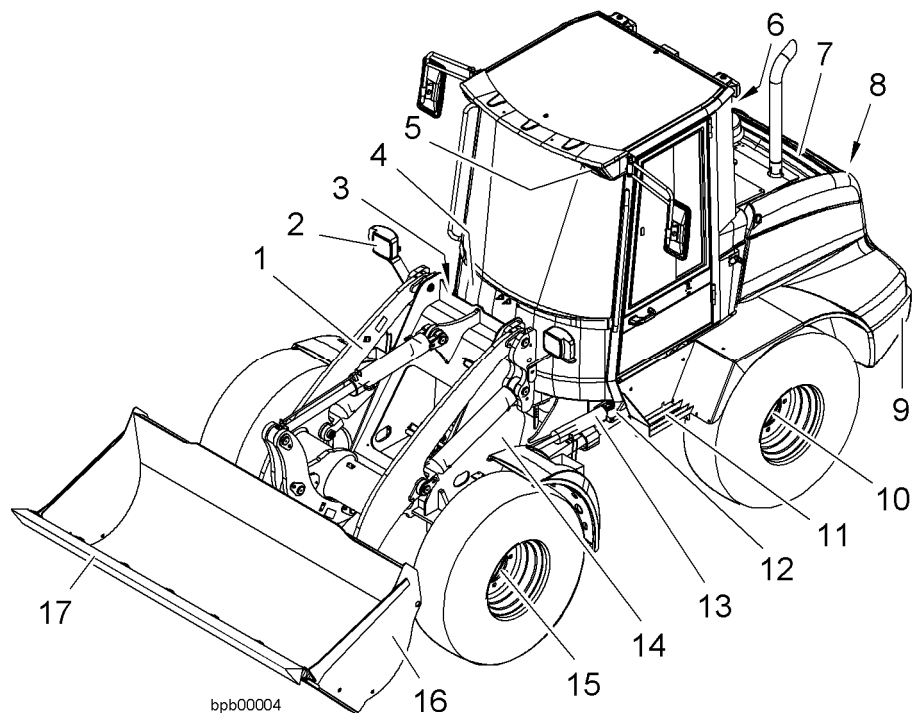
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1 Product description

Equipment layout

This section contains an overview of the machine and the names of the components shown.

The machine is equipped with either Z-kinematic or parallel kinematic lift arms.



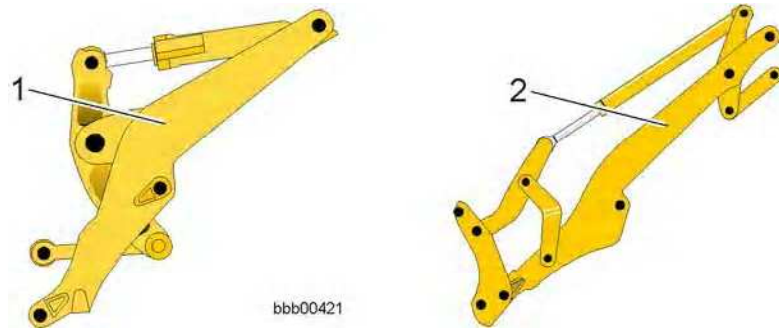
Left view of machine

- | | |
|---------------------------|----------------------|
| 1 Lift arms ¹⁾ | 10 Rear axle |
| 2 Lighting | 11 Cab access |
| 3 Articulation lock | 12 Rear section |
| 4 Driver's cab | 13 Steering cylinder |
| 5 Working floodlight | 14 Front section |
| 6 Battery compartment | 15 Front axle |
| 7 Engine compartment hood | 16 Bucket |
| 8 Towing device | 17 Tooth guard |
| 9 Ballast weight | |

¹⁾Z-kinematic or parallel kinematic version

Lift arm versions

The machine is equipped with parallel kinematic lift arms as standard.



Alternative lift arm versions of the machine

1 Lift arms with Z kinematics

2 Lift arms with parallel kinematics

1.1 Technical data

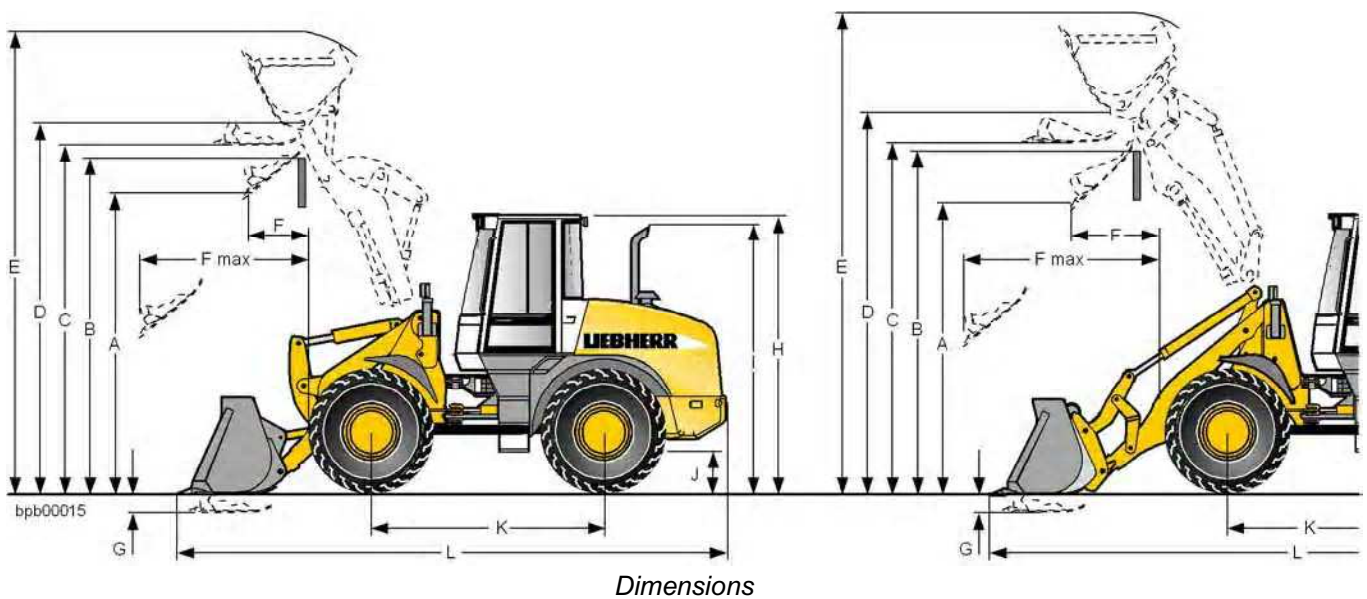
1.1.1 Complete machine with bucket



The values stated refer to the machine:

- With 17.5R25 tyres
- Including all lubricants
- With a full tank
- With ROPS/FOPS cab and driver

Tyre sizes and additional attachments affect the operating weight and tipping load.



Dimensions

	Description	Unit	Value			
			ZK	ZK	ZK	PK
	Load geometry		ZK	ZK	ZK	PK
	Hydraulic quick change device		No	No	Yes	Yes
	Cutting tool		Z	Z	Z	Z
	Bucket capacity as per ISO 7546 ¹⁾	m ³	1.5	1.7	1.5	1.4
	Bucket width	mm	2400	2400	2400	2400
	Specific material weight	t/m ³	1.8	1.6	1.7	1.8
A	Dump height at maximum lifting height and 44° tilt-out angle	mm	2855	2710	2775	2985
B	Dump height	mm	3260	3260	3260	3430
C	Maximum bucket base height	mm	3440	3440	3440	3610
D	Maximum bucket pivot point height	mm	3675	3675	3675	3860
E	Maximum bucket top height	mm	4550	4725	4680	4840
F	Reach at maximum lifting height and 44° max. tilt-out angle	mm	830	955	915	785
F max	Max. reach at 44° tilt-out angle	mm	1500	1560	1608	1703
G	Digging depth	mm	53	53	53	35
H	Height above the cab	mm	3030	3030	3030	3030
I	Height above exhaust	mm	2890	2890	2890	2890
J	Ground clearance	mm	385	385	385	385
K	Wheel base	mm	2600	2600	2600	2600

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Technical data

	Description	Unit	Value			
			L	ZK	PK	Z
L	Overall length	mm	6135	6340	6395	6330
	Turning radius over bucket outer edge (transport position)	mm	4510	4610	4565	4610
	Lifting force (SAE)	kN	88	83	83	83
	Breakout force (SAE)	kN	77	72	72	77
	Tipping load when straight	kg	6200	6100	5745	5385
	Tipping load articulated at 30°	kg	5680	5590	5260	4920
	Operating weight	kg	8350	8390	8510	8520
	Tractive force	kg	58.3	58.3	58.3	58.3

¹⁾In practice, the bucket capacity can be around 10 % greater than as calculated using the ISO 7546 method. This depends on the type of material.

ZK = Z kinematics

PK = parallel kinematics

Z = Welded tooth holder with plug-in teeth

1.1.2 Engine



bpik0027

Water-cooled Liebherr diesel engine with turbocharger.

The exhaust emissions are below the threshold levels in EU directive 97/68/EC – Stage II.

Name	Value	Units
Diesel engine	D504T-03	
Number of cylinders	4	Pc.
Combustion	Four-stroke direct injection	
Rated power according to ISO 9249 at 2400 min ⁻¹	72	kW
Maximum torque at 1400 min ⁻¹	395	Nm
Cylinder capacity	4.5	Litres
Idle speed	min.830 ^{±50} max.2550 ⁺⁸⁰	min ⁻¹ min ⁻¹
Longitudinal / traverse inclinability	30	°

1.1.3 Electrical system



bpik0028

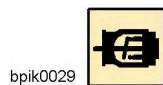
Name	Value	Units
Battery voltage	12	V
Battery capacity	100	Ah
Number of batteries	2	Pc.

Name	Value	Units
Operating voltage	12	V
Alternator	12/65	V/ A
Starter	12/4.8	V / kW

Battery fastening

Name	Value	Units
Tightening torque	10	Nm

1.1.4 Travel drive



Continuously variable hydrostatic travel drive

Travel drive controlled by gas pedal and combined inch/brake pedal.

The inch pedal allows you to smoothly adapt the tractive and thrust force to the terrain and conditions.

Forward and reverse travel are selected using the Liebherr control lever

Speed data:

- For forward and reverse travel
- With standard tyres

Name	Value	Units
Travel range 1	0 – 8.0	km/h
Travel range 2	0 – 30.0	km/h

1.1.5 Axles



Front axle

Rigidly mounted planetary axle

Name	Value	Units
Width	1920	mm
Differential lock, automatic action	45	%

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Rear axle Oscillating planetary axle
Kingpin steering

Name	Value	Units
Width	1920	mm
Differential lock, automatic action	45	%
Angle of articulation to each side	5	°

1.1.6 Braking



bpik0031

The braking system complies with the roadworthiness certification regulations.

Service brake Two-circuit brake system, drum brake and wet disc brake in the front axle.

Parking brake Negative brake system in the front axle acting on the wet disc brakes.

1.1.7 Steering



bpik0033

“Stereo steering”, central articulation joint with absorbers in combination with kingpin steering on the rear axle.

Name	Value	Units
Angle of articulation to each side	30	°
Angle of articulation of articulated joint to each side	6	°
Maximum operating pressure	180 ±10	bar

1.1.8 Working hydraulics



bpik0034

Single lever control with Liebherr control lever, hydraulic pilot control.

Design:

- Gear pump and pressure cut-off

Name	Value	Units
Maximum flow	115	l/min
Maximum operating pressure	230 ^{±5}	bar

1.1.9 Working attachment



Lift arm Sealed bearing points

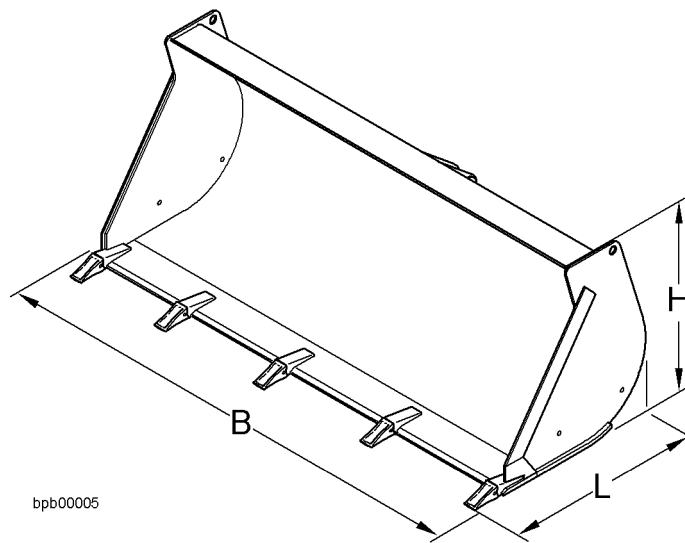
Lift arms with Z kinematics:

- This equipment is optional,
- without standard hydraulic quick-change device.

Lift arms with parallel kinematics:

- Standard version
- With standard hydraulic quick-change device.

Bucket



bpb00005

Dimensions

Description	Unit	Value			
		ZK	ZK	ZK	PK
Load geometry		ZK	ZK	ZK	PK
Hydraulic quick change device		No	No	Yes	Yes
Bucket capacity as per ISO 7546	m ³	1.5	1.7	1.5	1.4
Specific material weight	t/m ³	1.8	1.6	1.7	1.8
B Bucket width	mm	2400	2400	2400	2400
H Height	mm	1055	1080	1055	1077
L Length with teeth	mm	1170	1225	1100	1051
Weight	kg	620	655	570	590
Teeth – UNIZ-2000–1	Pc.	7	7	7	7

ZK = Z kinematics

PK = parallel kinematics

1.1.10 Driver's cab



bpik0036

On elastic bearing on rear section, soundproof ROPS/FOPS cab.

Design:

- 2 detachable doors
- The right door is the emergency exit.
- Left door with sliding window
- Tinted windows made of hardened single-glazed safety glass
- Adjustable steering column.
- ROPS rollover protection in accordance with DIN/ISO 13510/ EN 474-3.
- FOPS stone impact protection in accordance with DIN/ISO 13627/ EN 474-1.

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- Driver's seat** Alternative versions:
- Driver's seat with mechanical suspension
 - Driver's seat with pneumatic suspension.
- This equipment is optional.

1.1.11 Heating and ventilation



bpik0043

Driver's cab with defroster, fresh air filter, circulated air filter and warm water heating.

Name	Value	Units
Number of blower levels	3	
Heating power	12	kW

1.1.12 Sound emission



bpik0037

Sound pressure

Name	Value	Units
ISO 6396 – L _{pA} (in driver's cab)	70	dB (A)

Sound output You can read the level on the decal on the machine.
See the section on "Decals on the machine " in chapter 2.

1.1.13 Towing device



bpik0041

The towing device is attached to the back of the machine.

- Purpose:
- For towing the machine out of a danger area
See the section on emergency operation in chapter 3.
 - For lifting the machine by crane
See the section on transporting the machine in chapter 3.

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