

en

Service Manual
Wheel loader
L550 - L580 2plus2



LIEBHERR

en

Service Manual
Wheel loader
L550 - L580 2plus2

Address

Address: LIEBHERR-WERK BISCHOFSHOFEN GMBH

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Product ID

| | | | | | |
|---------------------------|----------------------------------|-------|-------|-------|-------|
| Manufacturer: | LIEBHERR-WERK BISCHOFSHOFEN GMBH | | | | |
| Product group: | Wheel loader | | | | |
| Type: | L550 | L556 | L566 | L576 | L580 |
| Production number: | 456 | 454 | 460 | 457 | 459 |
| Serial number: | 16978 | 15653 | 14171 | 14171 | 14171 |

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Preface

- Intended readership** This service manual is addressed to anyone whose task it is to ensure that the machines are ready for everyday use. This especially includes mechanics and workshop staff of Liebherr dealers and branches.
- Contents** The first chapter contains information on safety regulations and on the special tools needed for maintenance and repairs.
- Chapter 2 gives you an overview of all the most important technical data of the machine as a whole and its individual assemblies.
- Next comes the maintenance chapter, with the maintenance and inspection schedule, the testing and adjustment checklists, lubrication charts, description of maintenance tasks, testing and adjustment tasks and specifications of fuel and lubricants.
- The technical description of the machine is in the following chapters, structured according to fifteen function groups. The layout, function and technical data of the groups, components and parts are explained.
- Chapter 19 contains information on troubleshooting, the service code table and a description of the "SCULI" service software.
- Chapter 20 will be gradually updated with the latest options.
- Instructions on use** This manual describes several types and versions of machines. The information generally applies to the types and serial numbers stated at the bottom of the page. The exception to this is information which only applies to specific types and serial numbers, which are stated at the beginning of the section concerned (for example technical data of parts).
- Where possible, the ID numbers of parts and components are stated in the heading.
- This manual is available in German, English, French, Spanish and Italian.
- Working instructions** Always follow the safety regulations whenever you work on the machine. You will find a reference to this in the "**General Information**" section.
- In order to perform these tasks you need a complete set of basic tools and certain special tools, all in perfect working order. All tasks require absolute cleanliness.
- Replace seals such as O-rings and surface seals during repairs.

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1 General Informations

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1.1 Safety regulations

Working on the machine poses safety risks to the operator, driver or maintenance engineers. You can prevent risks and accidents by regularly reading and observing the various safety instructions.

This is especially important for personnel who only occasionally work on the machine, for example, carrying out rigging or maintenance work. The safety regulations listed below, if conscientiously followed, will ensure your own safety and that of others, and will prevent the machine from being damaged.

Whenever tasks which could cause danger to personnel or damage to the machine are described, the necessary safety precautions are explained in this manual.

These are indicated by the headings Danger, Warning or Caution.

1.1.1 Introduction

1. The symbols below have the following meanings:



Danger

Risk of personal injury.

Denotes an impending dangerous situation which can lead to serious injury or death if not avoided.

! Note the warning.



Warning

Risk of personal injury.

Denotes a potentially dangerous situation which can lead to serious injury or death if not avoided.

! Note the warning.



Caution

Risk of personal injury.

Denotes a potentially dangerous situation which can lead to slight injury if not avoided.

! Note the warning.

Caution

Risk of damage to the machine.

Denotes actions or circumstances which may result in damage to the machine.

! Note the warning.



Note

Useful information

Denotes information on correctly handling the machine and the lubricants and fuels used.

! Observe the instructions.

2. Observance of these instructions does not exempt you from following any additional rules and guidelines that may apply

The following should also be observed:

- The safety rules in force at the operating site
- Legally enforceable road traffic regulations
- Guidelines issued by trade associations

1.1.2 Overview of the safety regulations

A detailed description of these can be read in the relevant section of the safety regulations chapter in the operating manual.

The following sections are included in the operating manual:

- 1 Introduction
- 2 General safety regulations
- 3 Proper use
- 4 Decals on the machine
- 5 Instructions on preventing crushing injuries and burns
- 6 Instructions on preventing fires and explosions
- 7 Safety instructions for start-up
- 8 Safety precautions during start-up
- 9 Instructions for safe working
- 10 Safety instructions for driving on slopes
- 11 Parking safely
- 12 Transporting the machine safely
- 13 Towing the machine safely
- 14 Measures for ensuring safe maintenance
- 15 Safety instructions for working on machines with hydro accumulators
- 16 Safety instructions for welding work on the machine
- 17 Instructions for working safely on the working attachment
- 18 Safety instructions for transporting the machine by crane
- 19 Safe maintenance of hydraulic hoses and hose lines
- 20 Attachments and accessories
- 21 Protection against vibrations

1.2 Special tools for maintenance and repair work

1.2.1 Special tools in general

| Description | ID no. | Use | Remarks |
|--------------------------------------|-----------|-------------------|--|
| Anti-freeze and battery tester | 7408922 | All wheel loaders | For checking the acid concentration (battery charging state) and anti-freeze |
| 24 volt vacuum pump | 7408148 | All wheel loaders | For preventing oil loss |
| Filling and testing device with case | 8145359 | All wheel loaders | For checking the hydro accumulator |
| Manometer 0 - 40 bar | 7361288 | All wheel loaders | For checking the hydraulic pressure |
| Manometer 0 - 250 bar | 5002932 | All wheel loaders | For checking the hydraulic pressure |
| Manometer 0 - 600 bar | 5002866 | All wheel loaders | For checking the hydraulic pressure |
| Manometer connection | 7002436 | All wheel loaders | Connection for the manometer |
| High pressure hose 1500 mm | 7002475 | All wheel loaders | High pressure hose for manometer |
| High pressure hose 4000 mm | 7009134 | All wheel loaders | High pressure hose for manometer |
| Screw connection M 10 x 1 | 5005180 | All wheel loaders | For checking the hydraulic pressure |
| Draining hose | 7005660 | All wheel loaders | For draining oil via a drain valve |
| Drain piece | 7402657 | All wheel loaders | For the drain hose |
| Safety cap 10 mm | 7009315 | All wheel loaders | For securing the valves on the variable adjustment motor |
| Safety cap 13 mm | 7615515 | All wheel loaders | For securing the valves on the pumps |
| Safety cap 17 mm | 7615589 | All wheel loaders | For securing the valves on the pumps |
| Safety cap 19 mm | 7009317 | All wheel loaders | For securing the valves on the pumps |
| Safety cap 17 mm | 7622068 | All wheel loaders | For securing the valves on the control block |
| USB dongle | 10333608 | L550 - L580 | With SERVICE authorisation |
| Diagnostic data cable | 10035410 | L550 - L580 | For adjusting the travel hydraulics, and testing the electrical system and options |
| Adapter cable RS232<->USB | 693190714 | All wheel loaders | For communicating with the wheel loader electronics if there is an error with the RS232 interface on the notebook. |
| SDCF-03 memory card adapter | 10223098 | L550 - L580 | For writing to the compact flash card |
| Compact flash card | 10223095 | L550 - L580 | Blank compact flash card. Data medium for application software. |

1.2.2 Special tools for Liebherr diesel engines

| Description | ID no. | Use | Remarks |
|---------------------------|----------|--------------------|--|
| Mandrel | 9078118 | L550 - L556 engine | For installing the mass equalisation shafts (D 934) |
| Mandrel | 9078119 | L550 - L556 engine | For installing the mass equalisation shafts (D 934) |
| Rotary angle device | 0524062 | L550 - L580 engine | For installing and removing the cylinder head |
| Holder | 0528464 | L550 - L580 engine | For checking projection of the cylinder bushings |
| Dial gauge holder | 10023885 | L550 - L580 engine | For checking projection of the cylinder bushings |
| Compression tester | 8008782 | L550 - L580 engine | For checking the compression |
| Compression tester insert | 10012817 | L550 - L580 engine | For checking the compression |
| Adapter | 10297211 | L550 - L580 engine | For checking the compression |
| Claw | 10117612 | L550 - L580 engine | For checking the compression |
| Engine turner | 0524045 | L550 - L580 engine | For installing and removing the pistons and rods |
| Holder | 0528464 | L550 - L580 engine | For installing and removing the pistons and rods |
| Piston strap | 8000592 | L550 - L580 engine | For installing and removing the pistons and rods |
| Rotary angle device | 0524062 | L550 - L580 engine | For installing and removing the pistons and rods |
| Piston ring tongs | 7009319 | L550 - L580 engine | For installing and removing the piston rings |
| Extractor tool | 0526855 | L550 - L580 engine | For installing and removing the cylinder bushing |
| Extractor tool | 0528462 | L550 - L580 engine | For installing and removing the cylinder bushing |
| Mounting pin | 0528470 | L550 - L580 engine | For installing and removing crankshaft attachments |
| Hook and lever | 7019858 | L550 - L580 engine | For installing and removing the front crankshaft seal |
| Inserter | 10116249 | L550 - L580 engine | For installing and removing the front crankshaft seal |
| Mounting pin | 0528470 | L550 - L580 engine | For installing and removing the flywheel |
| Inserter | 10116250 | L550 - L580 engine | For installing and removing the rear crankshaft seal |
| Special spanner | 10020852 | L550 - L580 engine | For installing and removing the injection line |
| Adapter | 0524029 | L550 - L580 engine | For installing and removing the pressure pipe port and injection nozzles |
| Adapter | 10220689 | L550 - L580 engine | For installing and removing the pressure pipe port and injection nozzles |
| Hammer puller | 0524072 | L550 - L580 engine | For installing and removing the pressure pipe port and injection nozzles |
| Pusher tube | 10289319 | L550 - L580 engine | For installing and removing the injection pump and roller tappet |
| Pusher tube | 10289320 | L550 - L580 engine | For installing and removing the injection pump and roller tappet |
| Mounting pin | 0528472 | L550 - L580 engine | For installing and removing the exhaust pipe |

1.2.3 Special tools for hydraulic cylinders

| Description | ID no. | Use | Remarks |
|--|---------|--|------------------------------------|
| Assembly sleeve 80 mm | 9227165 | L550, L556 steering cylinder | For fitting the seals |
| Assembly sleeve 90 mm | 9227161 | L566, L576, L580 steering cylinder | For fitting the seals |
| Assembly sleeve 130 mm | 9998624 | L550, L556 lift cylinder | For fitting the seals |
| Assembly sleeve 150 mm | 9998622 | L550, L556 tilt cylinder L566, L576, L580 lift cylinder | For fitting the seals |
| Assembly sleeve 170 mm | 9107931 | L566, L576, L580 tilt cylinder | For fitting the seals |
| Expansion sleeve 80 mm | 9227166 | L550, L556 steering cylinder | For fitting the seals |
| Expansion sleeve 90 mm | 9227162 | L566, L576, L580 steering cylinder | For fitting the seals |
| Expansion sleeve 130 mm | 9110408 | L550, L556 lift cylinder | For fitting the seals |
| Expansion sleeve 150 mm | 9110410 | L550, L556 tilt cylinder L566, L576, L580 lift cylinder | For fitting the seals |
| Expansion sleeve 170 mm | 9110412 | L566, L576, L580 tilt cylinder | For fitting the seals |
| Bearing head assembly spanner 70/8 mm | 9210219 | L550, L556 steering cylinder | For fitting the piston rod bearing |
| Bearing head assembly spanner 75/12 mm | 9239572 | L566, L576, L580 steering cylinder | For fitting the piston rod bearing |

1.2.4 Special tools for electronics

| Description | ID no. | Use | Remarks |
|---|-----------|-------------------|--|
| Digital multimeter | 8502956 | All wheel loaders | For measuring voltage, current, resistance and frequency |
| Test probe, red | 884191214 | All wheel loaders | For testing DEUTSCH connectors |
| Test probe, black | 884191114 | All wheel loaders | For testing DEUTSCH connectors |
| Magnet tester | 8145743 | All wheel loaders | For checking solenoid valves |
| Stripping and crimping pliers 0.5 – 6.0 mm ² | 8460263 | All wheel loaders | For MATE-N-LOK connectors |
| Crimping pliers | 8503647 | All wheel loaders | For DEUTSCH connectors |
| Wedge extractor tool | 7026267 | All wheel loaders | For DEUTSCH connectors |
| Extraction tool size 12 for pin and bushing | 8145674 | All wheel loaders | For DEUTSCH connectors |
| Extraction tool size 16 for pin and bushing | 8145673 | All wheel loaders | For DEUTSCH connectors |
| Extraction tool size 20 for pin and bushing | 8503630 | All wheel loaders | For DEUTSCH connectors |

1.2.5 Special tools for axles

| Description | ID no. | Use | Remarks |
|---------------------|---------|---|--|
| Hand pump | 8145835 | L550 - L580 axles | For finding leaks on disc brakes |
| Collet | 7009536 | L550 - L576 axles | For installing and removing the snap ring in the planetary drive |
| Spring hook | 8145767 | L550 - L576 axles | For attaching and detaching the return springs |
| Slip bushing 260 mm | 7017559 | L556 front axle L556 rear axle | For fitting the brake piston |
| Slip bushing 315 mm | 7017556 | L566, L576 front axle L566, L576 rear axle | For fitting the brake piston |

Special tools for maintenance and repair work

| Description | ID no. | Use | Remarks |
|---|----------|--|--|
| Slip bushing M 90 x 1.5 mm | 7017558 | L556 rear axle | For fitting ring gear carriers |
| Slip bushing M 110 x 1.5 mm | 7017557 | L556 front axle L566, L576 rear axle | For fitting ring gear carriers |
| Slip bushing M 130 x 1.5 mm | 7017555 | L566, L576 front axle | For fitting ring gear carriers |
| Handle | 7017566 | L550 - L576 axles | Handle for mounting tool |
| Handle | 7011518 | L550 - L576 axles | Handle for various mounting tools |
| Mounting tool | 7017563 | L556 rear axle | For fitting cartridge seal ring |
| Mounting tool | 7017560 | L556, L566, L576 front axle; L566, L576 rear axle | For fitting cartridge seal ring |
| Centring bracket | 7013775 | L556 - L576 axles | For groove nut spanner |
| Groove nut spanner 111 mm | 7009537 | L556 rear axle | For fitting the grooved nuts |
| Groove nut spanner 140 mm | 7011251 | L556 front axle L566, L576 rear axle | For fitting the grooved nuts |
| Groove nut spanner 169 mm | 7013774 | L566, L576 front axle | For fitting the grooved nuts |
| Measuring screw M 16 x 1.5 | 7019556 | L556 front axle L556, L566, L576 rear axle | For measuring wear on the brake discs |
| Measuring screw M 16 x 1.5 | 8145771 | L566, L576, L580 front axle; L580 rear axle | For measuring wear on the brake discs |
| Clamp fork | 7011522 | L556 - L580 axles | For fitting the drive flange |
| Mounting tool | 7013922 | L556 - L580 axles | For fitting the shaft seal ring |
| Slotted nut spanner 81 mm | 10017840 | L550 - L576 axles | For fitting the grooved nuts on the axle shaft |
| Mounting tool (used with grip 7011518) | 7624271 | L550 axles, MT-L 3085 | For fitting the dust protection axle insert |
| Mounting tool | 7624272 | L550 axles, MT-L 3085 | For fitting the shaft seal ring axle insert |
| Centring bracket | 10008138 | L550 - L576 axles MT-L 3085-3105 | For detaching the output |
| Socket wrench | 10008139 | L550 MT-L 3085 axles L556 rear axle | For detaching the output |
| Socket wrench | 10218794 | L550 MT-L 3085 front axle L556 - L576 axles | For detaching the output |
| Clamp fork | 10008140 | L550 MT-L 3085 axles | For removing and fitting the drive pinion |
| Special tool kit for Hercules axles | 10286181 | L580 Hercules axles | Contains the following items: 10286183 - 10286198 |
| Driver for lubrication and oil seal | 10286183 | L580 Hercules axles | For fitting the lubrication and oil seal, to be used with grip 10286788 |
| 3" bushing driver with guide and grip | 10286186 | L580 Hercules axles | For installing bushing, including grip 10286788 |
| Grip for seal driver and shell | 10286788 | L580 Hercules axles | For fitting the outer lip seal, to be used with appropriate driver |
| Driver for inner lip seal | 10286189 | L580 Hercules axles | For fitting the inner lip seal, to be used with grip 10286788 |
| Driver for wear bushing with guide | 10286190 | L580 Hercules axles | For installing the wear bushing |
| Grooved nut socket | 10286192 | L580 Hercules axles | For removing and fitting the grooved nuts |
| Seal holder installation tool | 10286193 | L580 Hercules axles | For fitting the seal holder |
| Driver for oil bearing casings, bevel gear | 10286194 | L580 Hercules axles | For installing the bearing casings, bevel gear |

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| Description | ID no. | Use | Remarks |
|-------------------------------------|----------|---------------------|---|
| Driver for grease seal and disc | 10286195 | L580 Hercules axles | For fitting the grease seal and disc, to be used with grip 10286788 |
| Rolling apparatus | 10286196 | L580 Hercules axles | For testing the rolling torque of the wheel hubs |
| Lifting tackle | 10286197 | L580 Hercules axles | For removing the wheel hub |
| Installation tool for Lifetime seal | 10286198 | L580 Hercules axles | For fitting the Lifetime seal |

1.2.6 Special tools for the transmission

| Description | ID no. | Use | Remarks |
|----------------|----------|-------------|--|
| Fixing spanner | 10016179 | L550 - L580 | For loosening and tightening the grooved nut on the coupling 1 |
| Special socket | 10016180 | L550 - L580 | For loosening and tightening the grooved nut on the coupling 1 |
| Mounting tool | 10016181 | L550 - L580 | For removing and attaching the snap ring on the couplings |

1.2.7 Central lubrication system

| Description | ID no. | Use | Remarks |
|--|----------|-------------------|---|
| BEKA Max filling press | 10009239 | All wheel loaders | For quickly filling the BEKA Max reservoir |
| Groeneveld filling press | 10333342 | All wheel loaders | For quickly filling the Groeneveld reservoir |
| Filling connection | 7029283 | All wheel loaders | For filling the reservoir |
| Gröneveld central lubrication data cable | 7624289 | All wheel loaders | For inspecting the central lubrication system |
| Gröneveld central lubrication plug adapter | 7624290 | All wheel loaders | For inspecting the central lubrication system |

1.2.8 Special tools for the air conditioning system

| Description | ID no. | Use | Remarks |
|------------------------------|---------|-------------------|---|
| Vacuum pump | 7027552 | All wheel loaders | For evacuating the air conditioning system |
| 4-valve test fitting | 7027558 | All wheel loaders | For testing, evacuating and filling the air conditioning system |
| Filling hose, blue 1500 mm | 7027553 | All wheel loaders | For the test fitting |
| Filling hose, yellow 1500 mm | 7027554 | All wheel loaders | For the test fitting |
| Filling hose, red 1500 mm | 7027555 | All wheel loaders | For the test fitting |
| Car coupling 253a | 7027556 | All wheel loaders | For the test fitting |
| Car coupling 254a | 7027557 | All wheel loaders | For the test fitting |

1.2.9 Special tools for cab windows

| Description | ID no. | Use | Remarks |
|-------------------------------------|----------|-------------------|-------------------------------------|
| Complete tool box with suction pads | 10021147 | All wheel loaders | For installing and removing windows |

2 Production description

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