

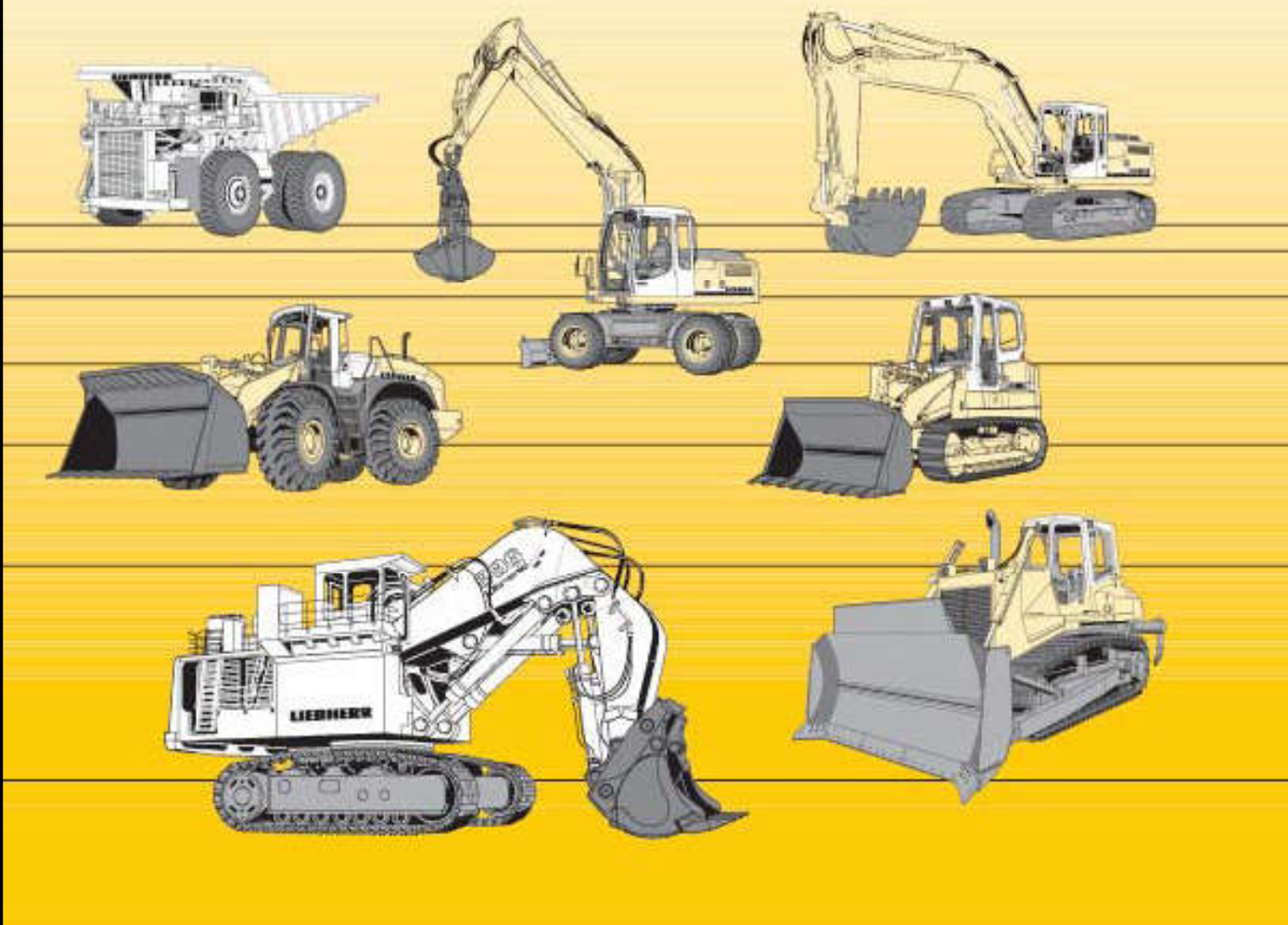
en

## Operating manual

Wheel Loader

L512 Stereo

valid from serial no.: - 466 0501



# LIEBHERR

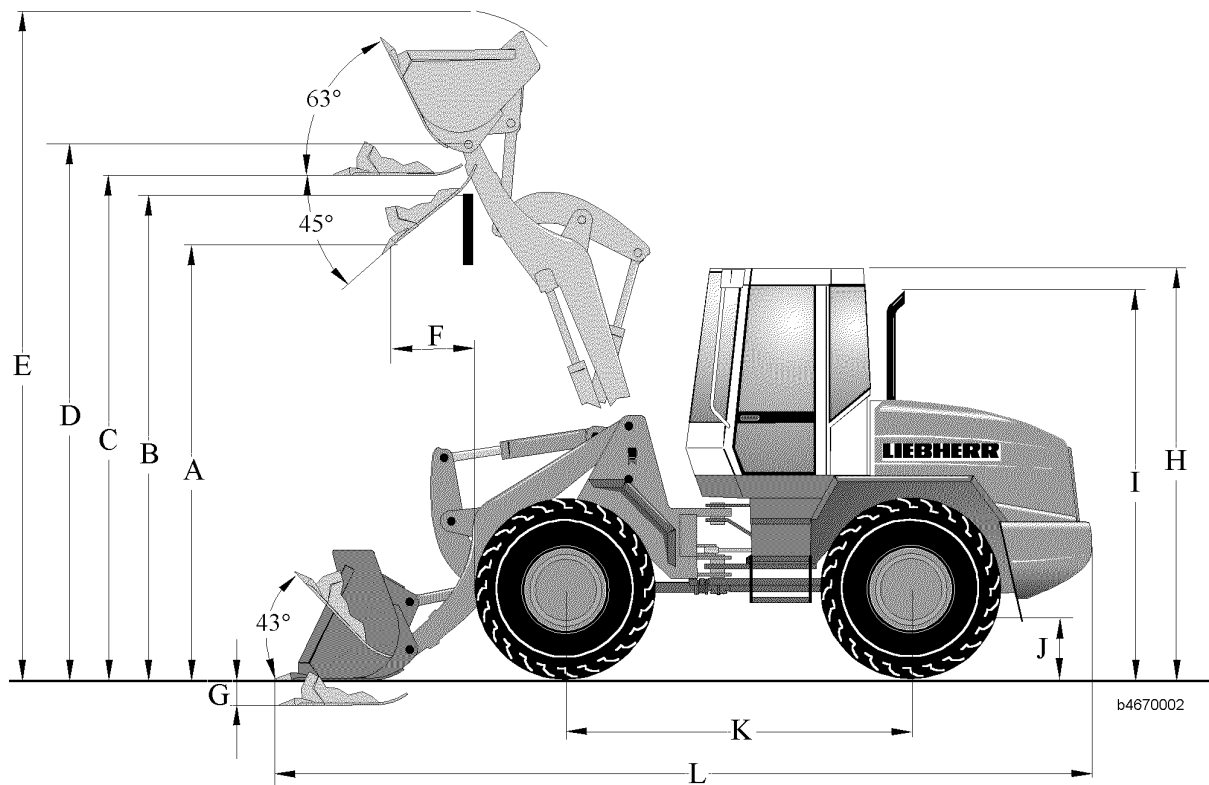
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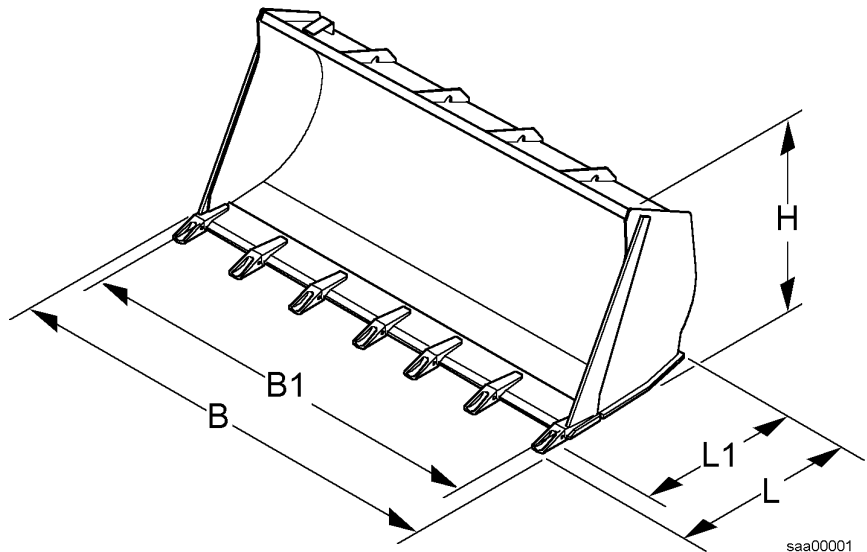
Dimensions – Machine with Z-bar lift arms

Name	Value	Unit
Bucket capacity	1.1	m <sup>3</sup>
Bucket width	2200	mm
Specific bulk material weight	1.8	t/m <sup>3</sup>
A Dumping height with max. lift height and 45° tipping angle	2780	mm
B Max. dumping height	3075	mm
C Max. height bucket base	3295	mm
D Max. height of bucket pivot point	3525	mm
E Max. height of bucket upper edge	4455	mm
A Max. reach with max. lift height and 45° tipping angle	790	mm
G Digging depth	65	mm
H Height above cab	3035	mm
I Height above exhaust	2830	mm
J Ground clearance	355	mm
K Wheel base	2500	mm
L Total length	5990	mm
Turning radius of bucket outer edge	4535	mm
Lifting force (SAE)	59	kN
Breaking out force (SAE)	76	kN
Tipping load when straight *	4880	kg

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### 1.1.10 Attachments, accessories

#### Loading bucket



Main dimensions

Name	Value	Unit
B - Bucket width	2200	mm
B1 - Loading width	2148	mm
H - Height	980	mm
L - Length with teeth	1040	mm
L1 - Length without teeth	970	mm
Specific bulk weight	1.8	t/m <sup>3</sup>
Heaped bucket capacity (ISO 7546)	1.1	m <sup>3</sup>
Weight	475	kg
Teeth – UNI-Z-2000 I	7	pieces

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# 2 Safety regulations

Working with the machine involves possible risks to life and limb of the operator, driver or maintenance technician. If you always pay attention to the various safety instructions, the risk of accidents will be considerably reduced.

This is especially important for personnel who only occasionally work on the machine, to carry out rigging or maintenance for example.

The safety regulations listed below, if conscientiously observed, will guarantee your own safety, that of others and will prevent the machine being damaged.

When work is described in this manual which could result in dangers for personnel or damage to the machine, the safety precautions required are explained.

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

## 2.1 Introduction

1. The headings listed below have the following significance:



**“Danger”**

Warning that without appropriate precautions, certain operational procedures could result in fatal accidents.



**“Warning”**

Warning that without appropriate precautions, certain operational procedures could result in severe physical injuries.



**“Caution”**

Warning that without appropriate precautions, certain operational procedures could result in less severe physical injuries or damage to the machine.

2. **Observance of these instructions does not relieve you of the responsibility to observe other rules and guidelines!**

The following should also be observed:

- the safety rules applicable at the operating site,
- legally enforceable “road traffic regulations”,
- the guidelines issued by the employers' liability assurance associations.

## 2.2 General safety precautions

1. Familiarise yourself with the **“Operating manual”** before starting up the machine.

Make sure that you are in possession of and have read and understood additional instructions applicable for any accessory equipment installed on your machine.

2. Only expressly authorised personnel may operate, service or repair the machine.

Observe the legally enforceable minimum ages!

## 2.8 Safety precautions when starting up

1. Before starting, check that all pilot lamps and instruments are working perfectly.  
Move all control levers to neutral.
2. Before starting the engine, briefly sound the horn, to warn other persons who are in the vicinity of the machine.
3. Only ever start the machine from the driver's seat.
4. Unless otherwise instructed, start the engine in accordance with the instructions in the "**Operating manual**".
5. Start the engine and then check all display and monitoring devices.
6. Never run the engine in an enclosed space, unless it is sufficiently ventilated.  
If necessary, open doors and windows to guarantee an adequate supply of fresh air.
7. Run the engine until both it and the hydraulic oil are at operating temperature; low oil temperatures result in a sluggish performance.
8. Check that the control for the working attachment is functioning perfectly.
9. Drive the machine carefully to an open space and then check that the service brake, the steering and the signal and lighting equipment are all functioning properly.

## 2.9 Instructions for safe working

1. Before commencing work, acquaint yourself with the special features of the building site as well as special regulations and warning signals.  
The working environment includes for example, any obstacles in the working area and on access roads, the load bearing capacity of the ground and any cordoning off to secure the site from the public roads.
2. Always maintain sufficient safety clearance from overhangs, edges, slopes and unstable ground.
3. Be especially careful when the ground conditions are variable, when your field of vision is restricted or when the weather conditions are changeable.
4. Familiarise yourself with the position of the utility supply lines on the site and be especially carefully when working in proximity to them. If necessary, inform the responsible authorities.
5. Maintain a sufficient safety clearance from overhead power lines.  
When working in close proximity to overhead power lines, be especially careful not to let the working attachment get close to the lines.

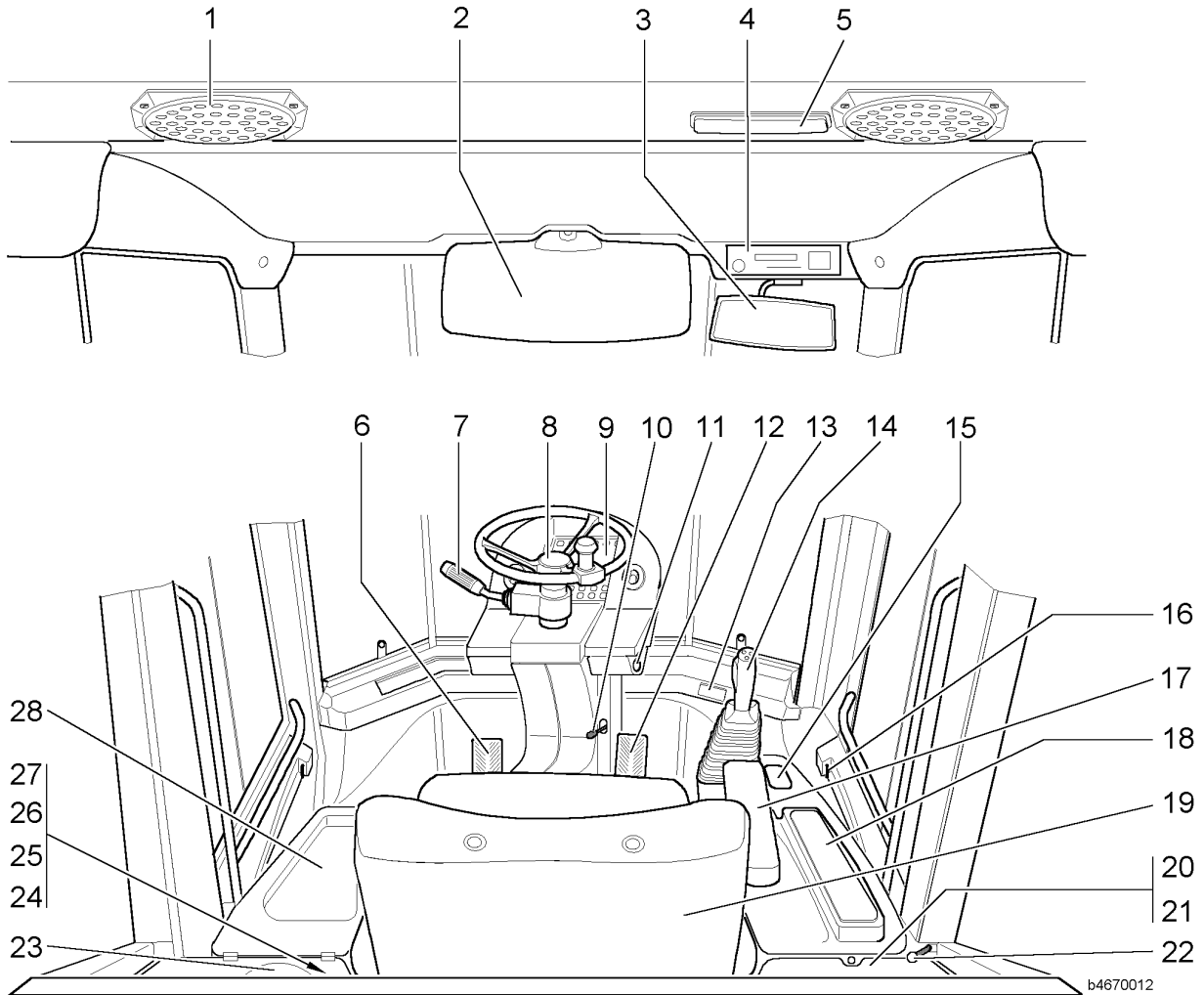
- There is a risk of "**FATAL INJURIES**"!
- Obtain information about the safety clearances to be observed.

### **If you do come into contact with live power lines:**

- Do not attempt to leave the machine!
  - If possible, drive the machine a sufficient distance away from the danger area.
  - Warn others not to come close or to touch the machine.
  - Arrange for lines to be de-energised.
  - Do not get out of the machine until you are certain that the contacted/damage power line is voltage free!
6. Before driving or working with the machine, always make sure that the accessories have been stowed away so as to prevent accidents.

# 3 Operation, handling

## 3.1 Layout of control elements and instruments



*Inside view – driver's cab*

- |  |  |   |
|--|--|---|
| 1 radio loudspeaker                              | 11 starter switch  | 21 box – control electronics – control relay                          |
| 2 sun visor                                      | 12 gas pedal   | 22 lever – air vent adjustment  |
| 3 interior mirror                                | 13 ashtray   | 23 glove compartment, round   |
| 4 radio set (optional)                           | 14 LIEBHERR control lever                                | 24 control element – heater   |
| 5 interior illumination with switch              | 15 control lever – module for optional working functions | 25 control element – ventilation                                      |
| 6 brake- / inch pedal                            | 16 door handle (right-hand door)                         | 26 outlet nozzles – heating/ventilation/air conditioning (8 in total) |
| 7 steering column switch                         | 17 adjustable arm rest                                   | 27 socket – cigarette lighter   |
| 8 adjustable steering column with steering wheel | 18 switches on the side cover (control console)          | 28 glove compartment with cover                                       |
| 9 indicator unit                                 | 19 driver's seat   |   |
| 10 lever – steering column adjustment            | 20 fuse – box  |   |

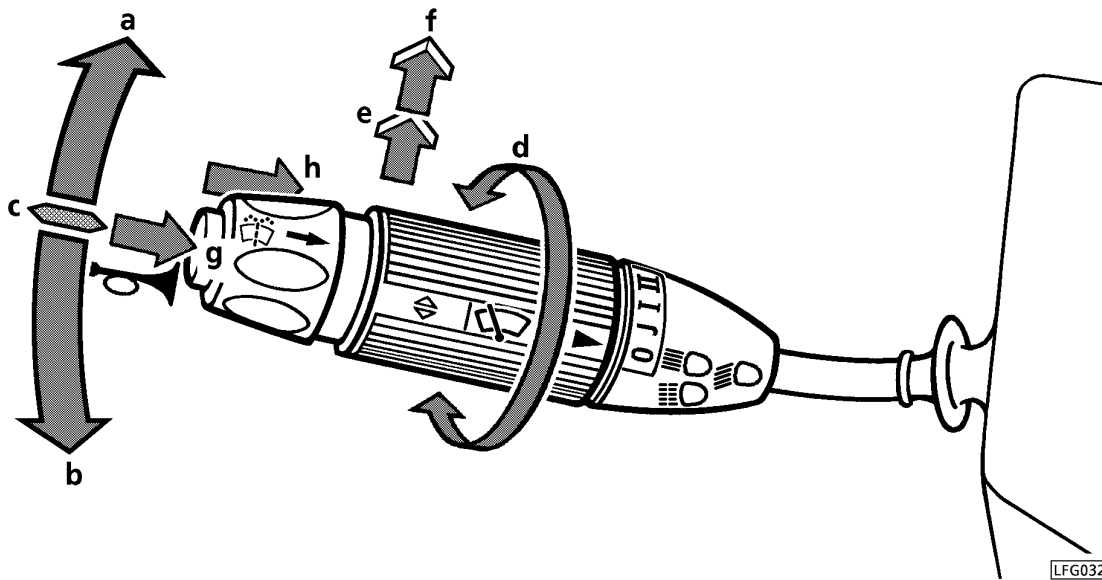
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## Design

The steering column switch contains the control elements for the following:

- direction indicators
- driving light
- acoustic and optical horn
- window wiper for the front windscreen
- window wiping and washing system for the front windscreen

## Function description



*Steering column switch*

Functions of the steering column switch when activated in direction:

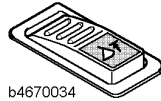
- a – drive direction display: right-hand flashing indicator lights
- b – drive direction display: left-hand flashing indicator lights
- c – central position: neutral position
- d – window wipers: front windscreen
  - 0 – level-0
  - J – Interval
  - I – level-I
  - II – level-II
- e – optical horn: light horn
- f – driving light: high beam
- g – acoustic horn: horn tone
- h – window wiping / washing system front windscreen

- |   |  |
|---|--|
| 6 pilot lamp – emergency steering “check”               | 8 working hydraulics lock – switch                         |
| 7 pilot lamp – hydraulic quick-change device (optional) | 9 button – “MODE”  |
|   | 10 switch – window wiping and washing system – rear window |

The switches and pilot lamps are built into the side cover (control console).

## Function description

### Activating – deactivating lifting limit switch



b4670034

Switch – lifting limit switch 1

Field colour – white

For switching the automatic lifting limit switch function ON or OFF.

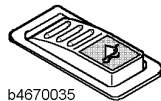
**This function is not available until the engine is started.**

When the switch is pressed, a magnet on the pilot control device is activated.

The “LIEBHERR control lever” is kept in the position – “Raise lift arms” by magnetic force.

Also refer to the Section “Operation” under “Working with the attachment”.

### Activating – deactivating the float position



b4670035

Switch – float position 2

Symbol field colour – green

For switching the float position function ON or OFF.

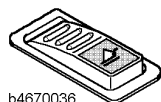
**This function is not available until the engine is started.**

When the switch is pressed, a magnet on the pilot control device is activated.

The “LIEBHERR control lever” is kept in the position – “Lower lift arms” by magnetic force.

Also refer to the Section “Operation” under “Working with the attachment”.

### Activating – deactivating bucket return-to-dig



b4670036

Switch – bucket return-to-dig 3

Symbol field colour – green

For switching the automatic bucket return-to-dig function ON or OFF.

**This function is not available until the engine is started.**

When the switch is pressed, a magnet on the pilot control device is activated.

The “LIEBHERR control lever” is kept in the position – “Tip bucket up” by magnetic force.

Also refer to the Section “Operation” under “Working with the attachment”.

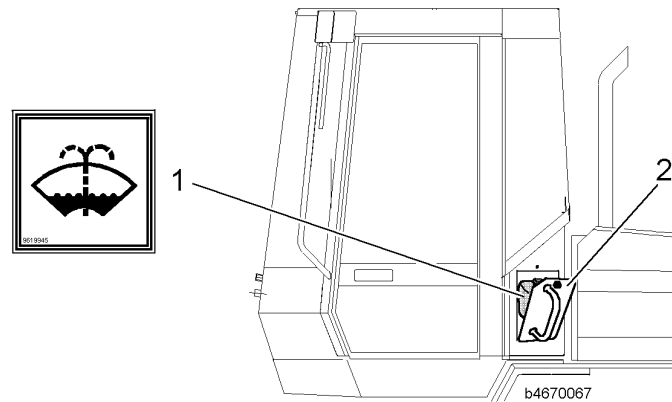
- Wiping and washing window: press the switch 1 a second time and keep it pressed down.

Washing solution is sprayed onto the rear window via an outlet nozzle.

- Switch off the window washing system: Release 1 the switch.
- Switch off the window washing system: Push switch 1 back.

### 3.2.18 Container for windscreen washing solution

#### Design



Container – windscreen washing solution

- 1 container with filling inlet                      2 cover

The container 1 is installed on the left of the driver's cab behind the cover 2 .

#### Topping up windscreen washing solution

Filling quantity approx. 3.5 litres.

- Open the cover 2 .
- When necessary, refill with commercially available window cleaning agent.

**Caution**

Risk of damage to the windscreen wiping and washing system from ice! Icing up can result in the breakdown or damage to the windscreen wiping and washing system. An opaque front or rear windscreen is a safety risk!  
**!** It is essential to protect the windscreen wiping and washing system from ice build-up!



- Use commercially available windscreen frost protection.
- Before the cold season starts, top up with an appropriate quantity of anti-freeze.

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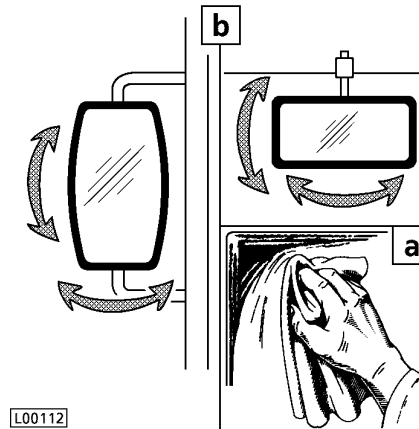
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**Checking inside and outside mirrors**

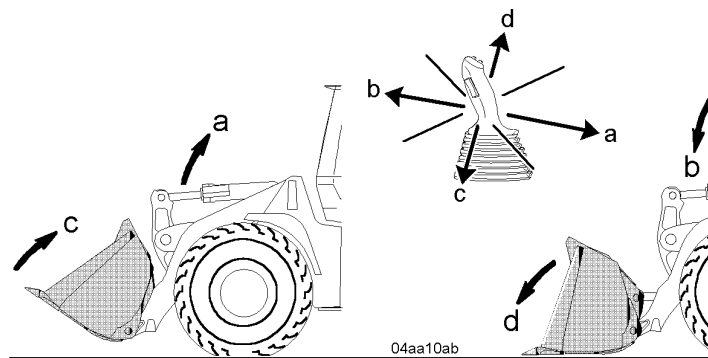


*Inside and outside mirrors*

- Clean the inside and outside mirrors.
- Adjust the inside and outside mirrors.

**Moving the working attachment into position**

You will find detailed information on this in the Sections “LIEBHERR control lever” or “Working with the attachment”.

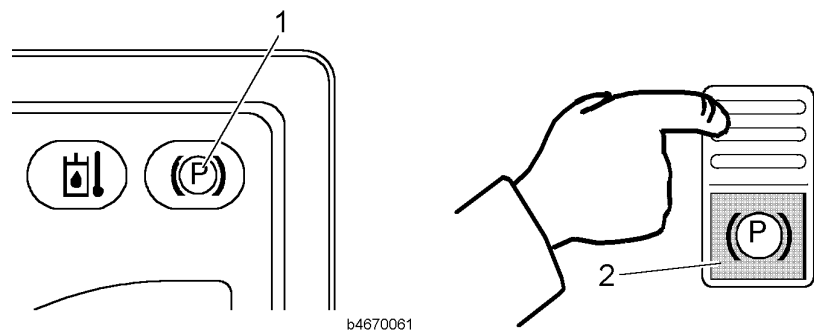


*Bucket position*

- Depending on the starting position, the lift arms should be raised or lowered.
- Move the loading bucket into position.

**Releasing the parking brake**

When the parking brake is engaged, the driving block is active. Preselection of the travel direction is not possible!



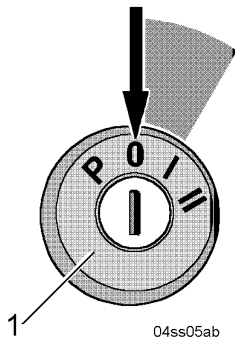
*Indicator unit and switch – parking brake*

- 1 symbol field – parking brake      2 switch – parking brake

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- Reduce the engine speed to idle running speed: take your foot off the gas pedal.
- Let the engine continue idling for – approx. 10 to 15 seconds –.
- Turn the ignition key to position - **0** - and pull it out.

All symbol fields go out.



1  
04ss05ab  
Starter switch – 0-position

### Locking up the machine

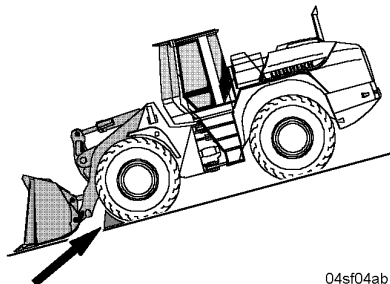
The following precautions should be effected when the machine is to be parked for a prolonged period on a slope.

**Danger**



Risk of accidents due to the unforeseen rolling away by the machine!  
! Secure the machine against rolling away.

- Take the wedges out of their holders.
- Secure the machine against rolling away with the wedges.



04sf04ab  
On downhill slopes

### Parking position

The ignition key cannot be pulled out in the parking position - **P** -.

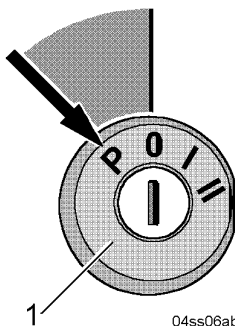
- Turn the ignition key to the parking position - **P** -.

The consumer units listed below are ready for operation.

- parking and driving light
- internal illumination
- hazard warning system
- socket/cigarette lighter
- working floodlights

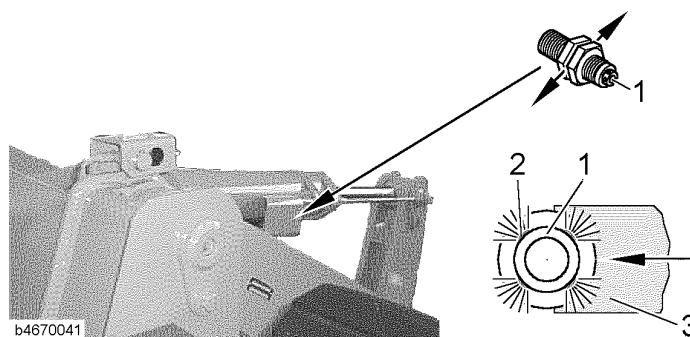
Additionally, when the following items are installed in the machine as optional extras:

- rotating beacon
- radio



1  
04ss06ab  
Starter switch – parking position

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*Device – bucket return-to-dig*

- |  |                 |
|--|-----------------|
| 1 proximity switch – autom. bucket reverse | 2 LED           |
|  | 3 sliding gauge |

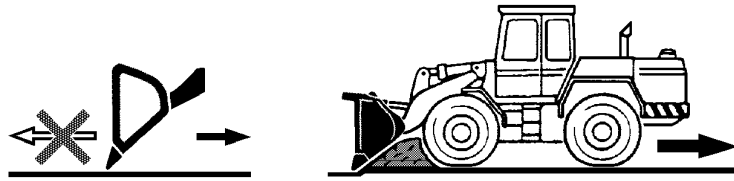
- Release the fixing nuts on the proximity switch 1 .  
Horizontally adjust the proximity switch 1 until the sliding gauge 3 covers up to half of the contact surface of the proximity switch.  
When the sliding gauge enters the switching area of the proximity switch, the four LEDs 2 on the proximity switch light up.
- Retighten the fixing nuts on the proximity switch 1 .  
The coarse adjustment of the required digging position is now complete.
- Testing the “coarse adjustment”: Refer to the Section “Working with the automatic bucket return-to-dig”.
- If required, carry out a “fine adjustment”: Refer to the Section “Fine adjustment”.

#### **Fine adjustment**

The required fine adjustment is obtained after several attempts.

- Move the loading bucket with the LH control lever to the exact digging position.
- Readjust the proximity switch: Procedure detailed in the Section “Coarse adjustment”.
- Testing the “fine adjustment”: Procedure detailed in the Section “Working with the automatic bucket return-to-dig”.

### Dragging bulk material



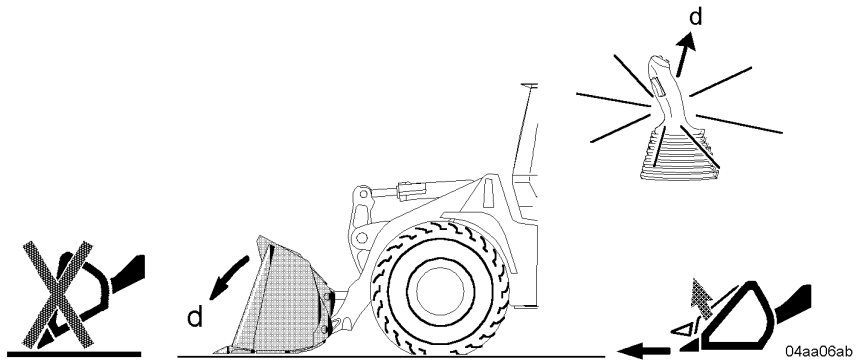
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*Procedure for dragging*

- Tilt the bucket downwards and reverse the machine.

### Loading from a tip

#### Picking up bulk material



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*Bucket position*

**Caution**

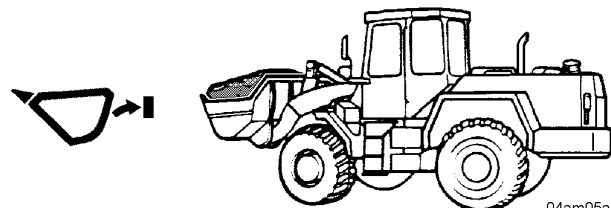


Risk of damage to the machine!

The lift arms may be damaged, if when clearing away bulk material in travel direction “Forward” with a tipped down bucket, you drive into a hard obstacle at speed!

! When clearing away bulk material, do not drive into the pile with the bucket tipped down!

- Lower the loading bucket horizontally onto the ground.
- Drive into the bucket into the material, slightly tipping up the bucket in the process.
- If the flow of the bulk material into the bucket needs to be assisted: When driving the bucket into the material, gently tip it up and down.
- In addition, press the brake- /INCHPEDAL: refer to the Section “Picking up and transferring bulk materials”.



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*Bucket position*

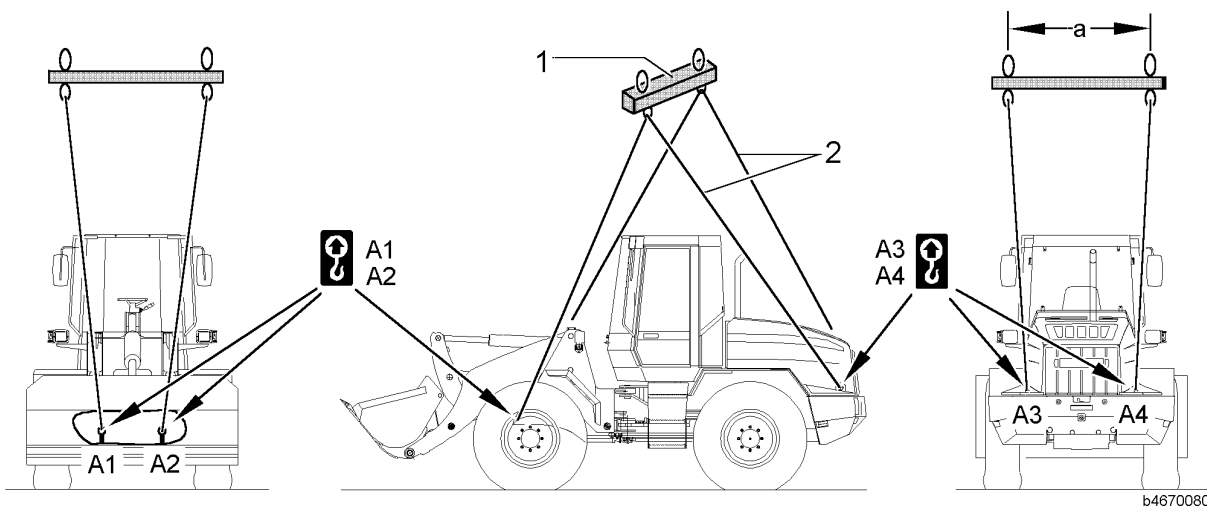
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**Loading for transport by ship**

Execution: when necessary, sling the machine from a crane.

Required equipment:

- slinging device/-bar 1 from the shipping company: Minimum size a = 1.0 m.
- Lifting tackle 2 : Rope length – Min. length = 4.0.



Sketch 2 of slung machine

- 1 slinging device/-bar
- 2 lifting tackle – 2-strand rope
- A1 slinging and lifting point right-hand, front

- A2 slinging and lifting point left-hand, front
- A3 slinging and lifting point right-hand, rear

- A4 slinging and lifting point left-hand, rear

**Danger**



Risk of accidents due to suspended/falling load!

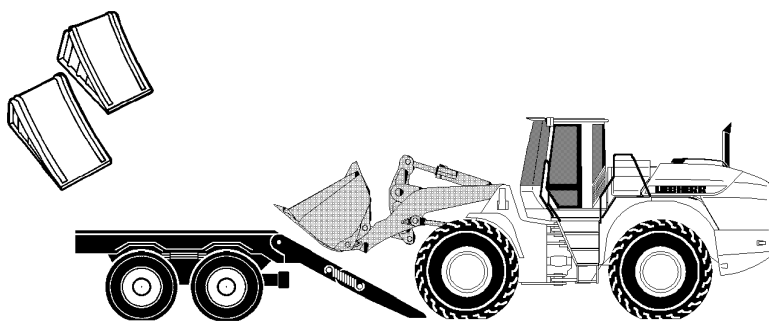
! Remaining under the machine when it is suspended is strictly prohibited.

- Fix/attach the lifting tackle to the slinging and lifting points A1, A2, A3, A4 provided on the machine.
- Raise and load the machine with due care.

**Transport the machine by truck or rail**

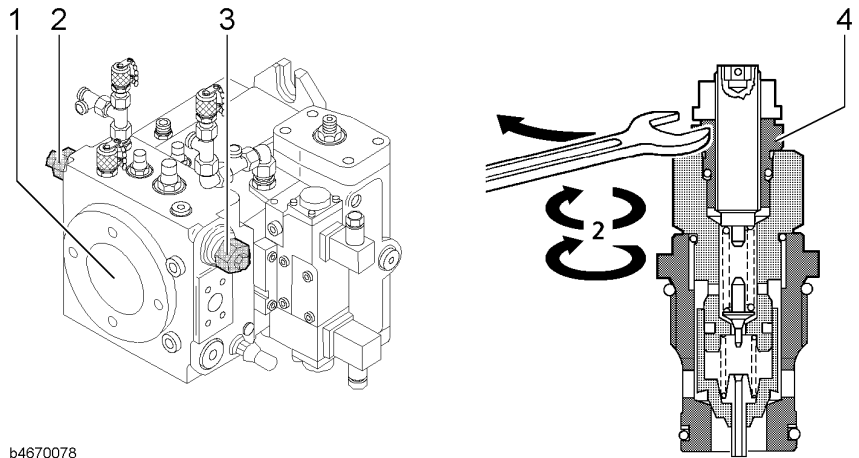
**Before driving onto the loading bed**

The following precautions should be undertaken before driving onto the loading bed.



Loading the machine onto the transporter

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### High pressure relief valves

- |  |                              |
|--|------------------------------|
| 1 variable displacement pump –<br>drive hydraulics | 3 high pressure relief valve |
| 2 high pressure relief valve                       | 4 spring sleeve              |

- Screw in spring sleeve 4 two turns with a wrench (SW 22).

The original adjustment of the high pressure relief valves is thus re-established.

### Towing when the diesel engine is switched off

In the event of serious damage to the machine, such as breakdown of the diesel engine, the braking and steering functions will be impaired.

**The braking effect of the brakes is impaired by switching over to overrun drive.**

- The hydrostatic braking effect is not available.
- The machine can only be braked via the brake pedal via the main braking cylinder.

The following precautions should be effected before towing the machine.

Precautions:

- Turn the battery main switch 1 with the key 2 to position - I - ON.
- Adopt the transport position,
- Make all drive functions inoperational,
- Mechanically release the parking brake.

# 5 Maintenance

## 5.1 Maintenance and inspection schedule

The following abbreviations are used in this chapter:

- Oh = operating hours
- OM = Operating Manual
- SM = service manual
- ATP = authorised technical personnel
- MP = maintenance personnel

The maintenance work is divided into two groups by markings (circle, box, star – filled or circle, box, star – empty).

The markings have the following significance:

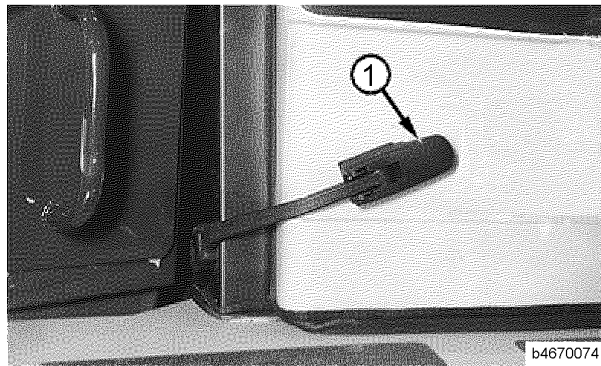
- Circle, box, star – filled means that the responsibility for carrying out the maintenance work lies with the machine operator or his maintenance personnel.

Affects the maintenance intervals: every 10 and 50 operating hours (Oh) and special intervals

- Circle, box, star – empty means, that the maintenance and inspection work must be carried out or directed by authorised technical staff from LIEBHERR or its authorised dealers.

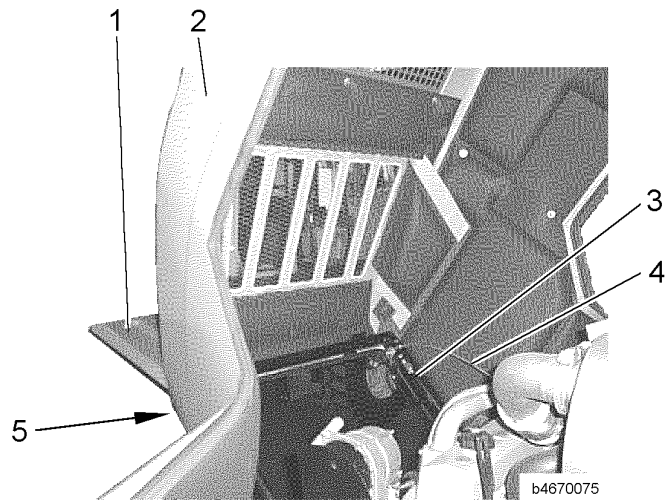
Affects the maintenance intervals: on handing over and every 500, 1000, 2000 operating hours (Oh) and at special intervals

You will find a list of the spare parts which you will need for maintenance and inspection work in the “SERVICE PACKAGE” of the spare parts list.



Clamping lever 1

- Open the clamping levers 1 on the left and right of the engine compartment – hood.



Engine compartment – hood

- |                                   |                 |
|-----------------------------------|-----------------|
| 1 engine compartment – rear hatch | 3 pneumatic ram |
| 2 engine compartment – hood       | 4 holding rope  |
|                                   | 5 handle        |

**Warning**

Risk of accidents due to turning engine parts!  
The rotating or moving engine parts such as – the fan rotors or V-belts, for example are a potential source of injuries!

! Only open the engine compartment – hood when the engine is at rest.

- Completely open the hood 2 with the handle 5 .  
The hood is held in this position by two pneumatic rams 3 .

**Warning**

Risk of injuries due to hood falling closed!

! Check that the fully open position is guaranteed by the pneumatic rams.

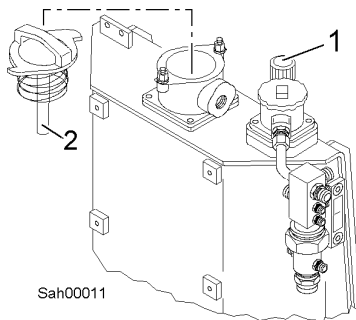
- If this function is not assured, the cause of the defect must be rectified immediately.

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## Checking the magnetic rod on the hydraulic tank

### Procedure

- Clear tank pre-pressure: Unscrew the bleeder filter 1 on the hydraulic tank by two revolutions.
- Release the bolts on the cover and slowly lift the cover with the magnetic rod 2 .



### Trouble shooting

Heavy soiling or larger metal fragments on the magnetic rod could indicate damage in the hydraulic system.

- In this event, isolate and rectify the fault in the hydraulic system.

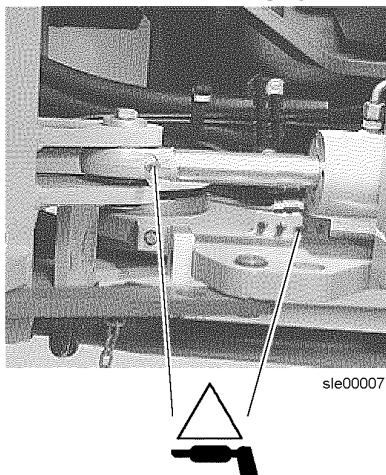
- Clean magnetic rod carefully.
- Place the O-ring and cover with magnetic rod on the housing.
- Tighten the bolts on the cover.
- Tighten up the 1 bleeder filter

## Steering

Make sure that the machine is in maintenance position 1.

- Turn the machine to the right to improve access to the articulated joint zone.
- Lubricate the bearing points on the steering cylinder.

### Lubricate the bearing points on the steering cylinders



**Procedure**

The cooler fins may be damaged if not treated with due care.  
 ! Do not use hard objects or excessive water pressure for cleaning.

- Cleaning the cooler units (A) with compressed air, steam or water.

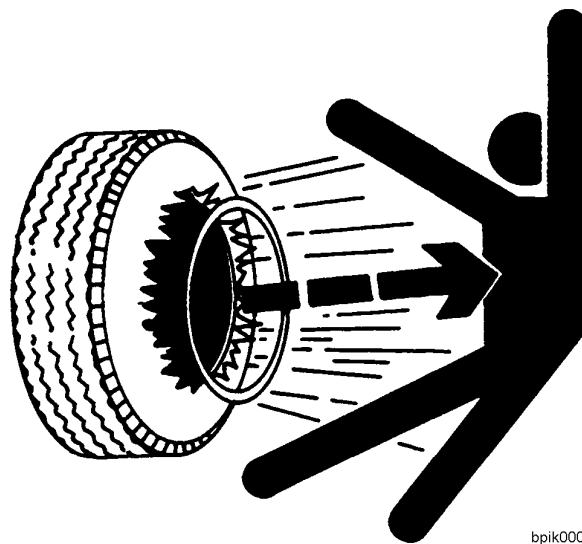
**Axles, tyres****Checking tyre air pressure**

Make sure that the air pressure in the tyres on both axes corresponds to the required values for the tyre type, the actual application and the working attachment.

The reference values are to be found in the Section "Technical data"

**Procedure**

The air pressure in the tyres has a crucial effect on the overall operating performance of the machine.



bpik0001

*Exploding tyres*

Risk of accidents due to exploding tyres!

Incorrect or careless operation of the tyre filling equipment or excess pressure could result in the tyres bursting or failure of the rims, with severe, possibly even fatal injuries as a consequence.

- ! Use a sufficiently long hose for pumping the tyres with a self-locking adapter.
- ! Personnel must always remain outside the danger zone when tyres are being pumped up.

- Check the air pressure in all tyres with a test device and correct it if necessary.

**Cab, air conditioning****Clean or replace the fresh air filter**

The cab fresh air filter can be accessed from the outside of the cab at the rear on the right-hand side.

Make sure that the machine is in maintenance position 1.

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