



**WACKER  
NEUSON**

## Operator's Manual Wheel Loader WL 30



[www.wackerneuson.com](http://www.wackerneuson.com)

December 10 Edition

You have opted for a Wacker Neuson loader – thank you very much for putting your trust in us.

Your Wacker Neuson loader is a powerful product with robust technology and a wide range of applications to aid you in your day-to-day work. In order to familiarize yourself with your loader in a quick, comprehensive manner, please read this Operator's Manual attentively.

In addition to the information regarding operation, this Operator's Manual also contains important maintenance and operating instructions for conserving the value of your loader. Furthermore, we will show you how to operate your loader in an environmentally sound manner.

Should you have any questions or problems relating to your loader, please contact your Wacker Neuson partner or importer. They will be happy to respond to your questions, suggestions or criticisms at any time.

We are confident that you will be very satisfied with your new Wacker Neuson loader.

Wacker Neuson SE

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## PREFACE

This Operator's Manual describes how to operate and service the loader. It provides operating and maintenance personnel with the necessary knowledge of the loader's functional characteristics in order to allow them to operate, diagnose, maintain and repair the loader safely.

Observing the specifications in this Operator's Manual assures:

- proper, safe, professional operation of the loader
- professional service, cleaning and care of the loader

Observe the applicable OSHA 1910 and 1926 safety regulations when they apply to the user.

If required, the user/operator should supplement the Operator's Manual with instructions and regulations regarding environmental protection and national regulations relating to accident prevention.



The Operator's Manual must always be located in the loader or at the place where it is being used.

All persons involved in work on or with the loader must read and apply this Operator's Manual, for example with regard to:

- operation, including setup, maintenance during operation, care, disposal of auxiliary materials and operating materials as well as disposal of the entire loader.
- maintenance (inspection, servicing, care).
- transport.



This Operator's Manual is not designed for purposes of extensive maintenance work. Such work must be performed by approved professionals.

Should you have questions about this Operator's Manual, please contact your dealer or visit us at [www.wackerneuson.com](http://www.wackerneuson.com).

## 8 BASIC INFORMATION

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### 1 BASIC INFORMATION

Each new user must be instructed before using the loader for the first time.

Instructions for using the Operator's Manual:

- Read the Operator's Manual carefully before starting up the loader
- Observe all the safety instructions
- Follow the regulations and laws applicable at the place of use
- Keep the Operator's Manual in the protected compartment provided in the operator station/cab.

If it is not possible to rule out hazards to persons or material during work according to the loader's intended use, these hazards will be indicated by means of safety labels.

Instructions relate to the direction of travel of the loader; this means that, when directional information is given, it can be assumed that this refers to the direction of travel of the loader.

## 1.1 Notes about this Operator's Manual

The specifications, illustrations, weight information and technical data are not binding and correspond to the state of the art at the time of printing. We must reserve the right to make changes without prior notice in the area of design, configuration, appearance and technology on account of the ongoing further development of the products.

Contact your dealer for clarification of use and/or instructions concerning intended use and attachments identified in this Operator's Manual.

Always strictly observe the safety instructions in this Operator's Manual and the legal and trade association regulations at the usage location.

This Manual provides information and procedures to safely operate and maintain this Wheel Loader. For your own safety and to reduce the risk of injury, carefully read, understand, and observe all instructions described in this Manual.

Wacker Neuson Corporation expressly reserves the right to make technical modifications, even without notice, which improve the performance or safety standards of its machines. The information contained in this manual is based on machines manufactured up until the time of publication. Wacker Neuson Corporation reserves the right to change any portion of this information without notice.

## 10 BASIC INFORMATION

### 1.2 Explanation of the symbols used in this Operator's Manual

To ensure safe operation and maintenance of the wheel loader, it is necessary that you follow all the instructions in this Operator's Manual.

The following symbols and the signal words DANGER, WARNING, CAUTION, NOTICE, and NOTE, and the adjacent text, indicate hazards and instructions.



This is the safety alert symbol. It is used to alert you to potential personal hazards.

- Obey all safety messages that follow this symbol.



#### **DANGER**

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

- Obey all safety messages that follow this symbol to avoid injury or death.



#### **WARNING**

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

- Obey all safety messages that follow this symbol to avoid possible injury or death.



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**CAUTION**

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

- Obey all safety messages that follow this symbol to avoid possible minor or moderate injury.
- 

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**NOTICE:** Used without the safety alert symbol, NOTICE indicates a situation which, if not avoided, could result in property damage.

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**Note:** *Contains additional information important to a procedure.*

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Important general instructions

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**ENVIRONMENTAL NOTE**

Important general instructions for environmental protection

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## 12 BASIC INFORMATION

### 1.3 Warranty and liability



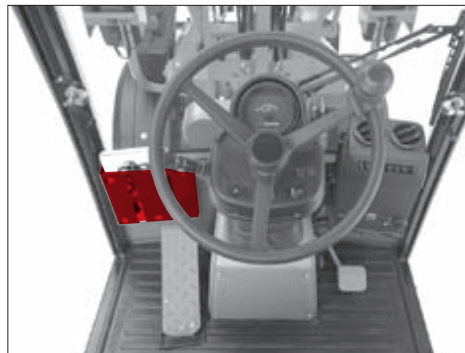
The manufacturer/supplier is not liable for damage resulting from unintended use. The operator/user is the sole bearer of this risk.



The Operator's Manual must always be located in the loader or at the place where it is being used. Place the Operator's Manual in the document pocket at the rear of the operator's platform.

Observe the following points:

- Do not make any changes to the wheel loader.
- Use only Wacker Neuson-approved attachments for your loader.
- The loader may only be started up, operated and serviced as described in the Operator's Manual.
- Use the loader only if all the safety and protection devices are intact.
- Observe the monitoring systems during operation.
- Repairs may only be performed by trained professionals.
- Follow the Operator's Manual exactly.



**Fig. 1**  
Document pocket

## 1.4 Intended use



Unintended use can endanger the lives of operating personnel or other persons and cause injuries or extensive material damage.

The loader has been built according to applicable standards and regulations. Operation by inexperienced persons, or in an unintended manner, can result in hazards that can lead to personal risk and subsequent harm to the operator and persons in the operating area of the wheel loader. Improper use can damage the wheel loader as well as property in the vicinity of operation.

Read and understand the operating instructions in this Manual before operating this wheel loader. Before performing production work, the operator should find a remote site to become familiar with the controls and machine response. The machine shall be in serviceable condition before attempting to use it as described in the operating instructions. If the wheel loader is determined not to be in serviceable condition, notify the site or machine supervisor to have it repaired before use.

The loader is used to dislodge and load material by moving the loader forward, taking into account the safety instructions / regulations and time periods listed by Wacker Neuson in the Operator's Manual. One work cycle consists of picking up, lifting, transporting and unloading the material.

## 14 BASIC INFORMATION

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Similar uses of the loader with alternative attachments which do not change the safety requirements for the loader but modify the way in which it is used are only acceptable when attachments that have been expressly approved by Wacker Neuson are employed. Special conditions apply if you use optional Wacker Neuson attachments.

The intended operation is described in this Operator's Manual. The instructions describe how to operate, maintain, inspect and adjust the wheel loader safely. The repair manual provides additional instruction for safely diagnosing malfunctions and repairing the wheel loader to maintain service and performance levels.

The wheel loader shall not be employed for any of the following work activities:

- lifting or transporting people
- using it as a working platform
- using it to lift or transport loads without providing work equipment for it
- pulling trailer loads
- operating after the machine has received unauthorized repairs
- operating with unauthorized modifications



## 16 BASIC SAFETY INSTRUCTIONS

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### 2 BASIC SAFETY INSTRUCTIONS



This Wheel Loader is equipped with a Starter Lock / Drive Lock which must be kept operational.

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- Use the loader and attachments only as intended and in serviceable condition.
- Observe the operating instructions described in this Operator's Manual and all applicable work site safety regulations.
- Observe the permissible payloads.
- Wheel Loaders may only be used on suitable terrain.

## 2.1 Organizational measures

The following safety instructions are directed at the operator / user of the loader.

- Always keep the Operator's Manual in the compartment provided for it.
- As a supplement to the Operator's Manual, universally valid legal and other binding regulations relating to road traffic, compulsory coverage, accident prevention and environmental protection must be observed, and users must be instructed to observe them. This applies in particular to the maximum speed, depending on the model and the permissible total weight of the loader.
- If required, instruct that personal protective equipment be worn. This applies particularly to the handling of harmful substances at the location of use.
- Supplement the Operator's Manual with instructions, including supervisory and reporting requirements, taking into account differences between various companies, e.g. with regard to the organization of work, work processes or personnel used.
- Personnel who have been assigned to operate the loader must have read the Operator's Manual before operating the wheel loader especially the chapter Basic Safety Instructions.
- Observe all safety messages on the loader and in the Operator's Manual.
- Make sure that all safety messages on the machine are legible.
- If the loader becomes unserviceable, stop operating and inform the supervisor that the wheel loader is not functioning normally. Alternately, contact a trained technician to diagnose and correct the condition before resuming operation.
- No modifications shall be made to the wheel loader. Contact your Wacker Neuson dealer for specific advice regarding the use of the wheel loader and approved attachments.

## 18 BASIC SAFETY INSTRUCTIONS

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- If worn or damaged parts need replacement, use only Wacker Neuson replacement parts to ensure optimum performance and safety.
  - Inspect hydraulic hoses and fittings prior to the start of each work shift. Correct any observed leaks or abrasion issues before operating the machine. Extended environmental exposure can cause undetectable damage. Replace hose assemblies periodically as advised in the maintenance schedule.
  - Thoroughly inspect the wheel loader before each operating shift.
  - The Wheel Loader Repair Manual describes the special tools, diagnosis techniques, repair sequence procedures, lifting and supporting devices needed to repair this machine. To avoid unnecessary hazards and possible damage to the Wheel Loader, do not attempt to repair this machine without complying with the instructions in the Repair Manual.
  - Make the location and means of operation of the fire extinguishers known, and consider the options for fire detection and fighting.
  - A Falling Object Protection System (FOPS) is available for the Wheel Loader Operator Protection System. OSHA and MSHA require this protection when operating with overhead hazards. Contact your Wacker Neuson dealer for advice and availability of a certified FOPS.
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## 2.2 Selection and qualification of personnel / basic duties

- The operator of the wheel loader must be qualified to operate the machine through demonstration of comprehension of the operating instructions. No one shall operate the wheel loader if impaired due to intoxication or drug reaction.
- Diagnosis and repair of the wheel loader shall be performed by trained competent technicians unimpaired by intoxication or drug reaction.
- Prohibit unauthorized and untrained people from access to the starting key and operation of the wheel loader.
- The wheel loader operator is responsible for visually monitoring the work area of the wheel loader and preventing anyone from entering the area without permission. If a person enters the area while the wheel loader is in operation, the operator shall stop the wheel loader and instruct the person to leave the work area until the wheel loader has been stopped in a safe mode. The person may then approach the machine in full view of the operator.
- Personnel being trained, educated, instructed or participating in a general training program may only work on or with the machine under constant supervision of an experienced, authorized supervisor.
- Work on the machine's electrical equipment may only be performed by an electrician or by trained persons under the direction and supervision of an electrician.
- Work on the chassis, brakes and steering system may only be performed by trained, specialized personnel.
- Only trained, specialized personnel with specific knowledge of and experience in hydraulics may work on hydraulic units.

### **2.3 Safety instructions for certain operating phases**

The safety instructions are directed at all persons involved in work on or with the loader.

#### **2.3.1 Safety instructions for normal operation**

- Refrain from any measures that could put safety into question.
  - Before starting work, familiarize yourself with the working environment in which you will be using the loader. The working environment includes, for example, obstacles in the working and traffic area, the bearing capacity of the ground and the necessary safeguarding of the location to allow it to be used as a public traffic area.
  - Take precautions to ensure that the loader is operated only in a safe, serviceable state.
  - Only operate the loader if all the protection devices and safety devices, e.g. detachable protection devices, sound absorbers and exhaust equipment, are serviceable and operational.
  - Check the loader at least once a day for visible defects.
  - If the wheel loader does not respond as expected to the operator command or exhibits a malfunction, stop the machine, contact the supervisor and restore the machine to serviceable condition before resuming operation.
  - Start and operate the loader only from the operator's seat.
  - When switching on and off, observe the indicator displays in accordance with the Operator's Manual.
  - Make sure no one is located in the operating area of the loader before starting the engine.
  - After starting the engine and confirming that the indicators are responding correctly, activate the steering, brakes, lights, signals and loader/accessory functions to confirm that these devices are responding correctly to the control command.
  - To avoid damage to the wheel loader, position the loader bucket or accessories before moving the machine. Re-confirm that there are no people in the work or travel area before moving the machine.
-

- When driving on public roads, lanes and squares, observe the valid road traffic regulations and put the loader into a condition permissible for the road beforehand.
- As a matter of principle, turn on the lights when traveling on public roads to increase awareness for road traffic..
- When driving through underpasses, gates, bridges, tunnels, overhead lines, etc., always make sure that you have enough clearance above and on both sides and a sufficient safety margin.
- Always keep sufficient distance away from excavations, embankments and the edges of piled up material.
- Refrain from any method of operation that could adversely affect the loader's stability. This also includes the duty to pass on information regarding the approved carrying capacity (=payload) for the relevant loader attachments. (carrying capacity / approved payload are specified in the Operator's Manual)
- Do not drive transversely on slopes; always keep work equipment and load near the ground, especially when driving down slopes.
- When driving down a slope, always adjust your driving speed to take account of the respective conditions. Always reduce your speed before reaching a downhill slope, and not after you have reached it.
- The load must be located on the uphill side during driving on downhill or uphill slopes.
- As a matter of principle, always secure the loader from accidentally rolling away and against unauthorized use. Turn off the engine, put on the parking brake, lower the work equipment, remove the starting key and, if necessary, employ a wheel chock.

### 2.3.2 Safety instructions for other operating modes

These safety instructions refer to special tasks relating to the use of the loader and servicing tasks - as well as emergency maintenance during operation or work concerning disposal of the auxiliary and operating materials.

- The Operator's Manual provides adjustment, maintenance and inspection information and schedules in subsequent sections. This information is essential to ensuring peak performance satisfaction and safety over the life of the wheel loader.
- This Operator's Manual provides routine adjustment and maintenance procedures in addition to operating instructions. Diagnosis and repair of the wheel loader requires special skill, training and tools. Your Wacker Neuson dealer has the trained technicians to perform such work safely and effectively.
- Maintenance and repair work shall be performed by operators and technicians trained and knowledgeable of the wheel loader function and attachments.
- Do not attempt to perform maintenance or repair on the wheel loader until the machine and engine is stopped and all attachments are in a stable position. Do not attempt to perform maintenance or repair work on hot surfaces or components of the machine. Read and understand the procedure for maintenance and repair in the Operator's and Repair Manuals for this wheel loader.
- Secure the maintenance area, allowing as large a space as required.
- If the loader is being completely shut off during servicing and maintenance work, please observe the following (see the chapter »Securing the Loader«):
  - Secure the loader from being accidentally turned back on by removing the starting key.
  - Attach a warning note to indicate that the loader is being worked on.
  - Only perform servicing and maintenance work if the loader is parked on an even, hard surface and secured from rolling away and articulating at the steering swivel point..
  - Before performing work with the loader arms raised, install the support provided to prevent the loader arms from lowering suddenly and inadvertently.
  - This device shall conform to ISO 10533.

- Use lifting devices to raise and support parts and assemblies exceeding 10 kg (22 lbs) weight during repair and replacement activity. Use only OSHA approved devices to perform the lifting operation and verify that the lifting devices are in serviceable condition.
- The use of a crane to lift heavy assemblies or components requires that the operator is certified by OSHA. The person attaching the load and signaling the operator must be trained in proper techniques as well as voice and hand signals to instruct the crane operator.
- For assembly above head height, use only climbing aids and working platforms which are intended for this purpose, or which are safe for use in this situation. Do not use machine parts as climbing aids. Keep all handles, steps, pedestals, platforms and ladders free of dirt, snow and ice.
- Clean the entire loader, especially the connections and threaded connections, with oil, fuel or care products when beginning maintenance and servicing work. Use lint-free cleaning rags and no aggressive cleaning agents.
- Before cleaning the loader with water or by steam jet (high-pressure cleaner) or with other cleaning agents, cover up / seal off all the openings into which water, steam and cleaning agents are not permitted to enter. Electrical components, inlets and outlets for the engine's combustion air and reservoir openings are particularly at risk. Completely remove the covers / seals after you have finished cleaning.
- Before restarting, retighten any threaded connections loosened during servicing and repairs, in particular for oil or fuel lines. When performing maintenance and servicing work, check all the lines and threaded connections for leaks and tight fit.

## 24 BASIC SAFETY INSTRUCTIONS

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- Should it be necessary to remove safety devices during setup, servicing or repairs, reinstall and check the safety devices immediately after finishing the work and verify that the devices perform correctly.
- Replace the ROPS (Roll Over Protective Structure) or FOPS structure if it is permanently deflected, a member is deformed, it has become corroded, and/or it has been modified. If the mounting structure, base, or mounting hardware is damaged, consult your Wacker Neuson dealer for assistance. Do not attempt to repair, straighten or reuse a damaged ROPS or FOPS.
- Responsibly dispose of the unwanted materials and fluids resulting from the repair. Hazardous material shall be disposed in a hazardous material container(s). Parts and assemblies can be recycled.

### ROPS / FOPS - protective structures

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#### WARNING

Never use the machine without the ROPS/FOPS properly installed.

- ▶ Do not drill, weld, straighten, or bend the ROPS / FOPS protective structures.
  - ▶ Allow only trained authorized personnel to install new ROPS / FOPS structures.
-

## 2.4 Safety instructions for particular hazards

### 2.4.1 Forklift attachment



#### **WARNING**

Personal injury hazard.

Falling objects can strike the operator.

- ▶ Do not transport large bales or packaged goods without a FOPS (operator canopy or cabin).
- ▶ Ensure that large loads are properly secured and supported. See ANSI B56.1, OSHA1910 and OSHA1926 for regulations on carrying material.
- ▶ Do not stack load higher than fork restraint.

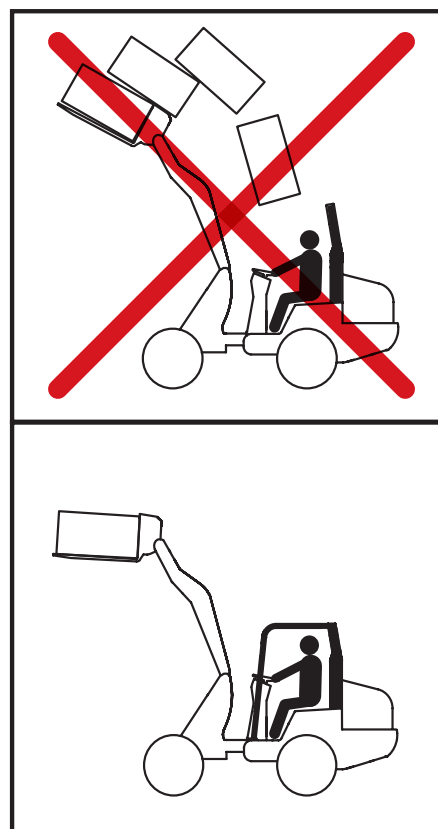


Fig. 2  
Transport of large  
bales or packaged  
goods

## 26 BASIC SAFETY INSTRUCTIONS

### 2.4.2 Working near overhead power lines



#### **WARNING**

Electric shock hazard.

The operator of the Wheel Loader can be killed if the Wheel Loader comes in contact with electrical wires.

- Keep the loader and attachment tools at a sufficient distance from overhead power lines and other electrical lines of more than 50 V (see table below).

If inadvertent contact with a live electric source occurs:

- Do not leave the loader until the electricity has been disconnected and a qualified technician directs the operator to leave the machine..
- If feasible, drive the loader away from the danger area!
- Warn any people around the loader not to get any nearer and not to touch the machine.
- Arrange to have the power turned off.

| Nominal voltage          | Clearance distance |         |
|--------------------------|--------------------|---------|
| up to 1000 V             | 1 m                | 3.3 ft  |
| over 1 kV up to 110 kV   | 3 m                | 9.8 ft  |
| over 110 kV up to 220 kV | 4 m                | 13 ft   |
| over 220 kV up to 380 kV | 5 m                | 16.4 ft |
| Unknown nominal voltage  | 5 m                | 16.4 ft |

#### 2.4.3 Electrical power

- Regularly check the loader's electrical equipment. Defects, such as loose plug connections or cables with burnt insulation, shall be replaced before resuming operation.
- If an electrical malfunction is discovered, stop the wheel loader in a safe location, lower the loader arms and attachment to the ground and stop the engine. Contact the supervisor for diagnosis and repair by a qualified technician before resuming operation.
- Replacement fuses shall be of the same type and capacity as specified by the manufacturer in the Operator's and Repair Manuals. Do not attempt to bypass a fused system to resume operation.

#### 2.4.4 Flying sparks / fire danger



##### **WARNING**

Fire hazard.

Sparks from the exhaust, or electrical equipment, or hot machine parts can ignite explosions and fires.

- ▶ Do not work in enclosed spaces where flammable materials, explosive vapors, or combustible dust are found.
- ▶ Stay clear of flammable materials such as hay and straw.
- ▶ Park the Wheel Loader only in areas free of flammable materials.

#### 2.4.5 Gas, dust, steam, smoke

- Diesel engine exhaust emissions are toxic in concentrated amounts. Do not operate the wheel loader in enclosed spaces or inadequately ventilated spaces.
- Determine and follow regulations regarding safe operation at the specific work site.
  - Do not operate the wheel loader near open flames.
  - Do not perform welding repairs in explosive atmospheres.
  - Do not weld fuel reservoirs or fuel system components.
  - Do not perform any welding operation unless qualified to do so.
- Wear appropriate personal protective equipment (breathing filter, protective suit) for protection against specific dangers, e.g. poisonous gases, corrosive steam, poisonous (i.e. containing toxins) surroundings, etc.

#### 2.4.6 Hydraulics, pneumatics

- When detected, oil leaks shall be repaired to avoid:
  - environmental hazards
  - fire hazards
  - slip hazards
  - explosion hazards
  - personal injury hazards.
- Do not attempt to repair a hydraulic system or component until the hydraulic pressure has been relieved. Relieve the pressure by activating controls as advised in this Operator's Manual or the Repair Manual.
- Replace hydraulic lines and fittings with original equipment parts from your Wacker Neuson dealer to assure original performance and safety. The reinstalled hydraulic line routing and attachment shall conform to the original routing. Confirm that the replacement routing is not interfering with other parts, chafing across sharp surfaces or resting on or near hot surfaces.

#### 2.4.7 Tip-overs



##### **WARNING**

Personal injury hazard.

Falling Loader can strike or crush the operator.

- ▶ Do not operate the wheel loader without fastening the seat belt.
- ▶ Keep the loader lift arms and attachment as low as practical when traveling.

If the machine tips over, or in the event of an extreme slope condition, take the following steps to avoid engine damage:

- ▶ Stop the engine as quickly as practical to avoid damage from lubrication starvation.
- ▶ Do not operate the engine or machine after an incident until a technician has inspected and corrected any damage resulting from the incident.

#### 2.4.8 Noise

- All the loader's sound-proofing devices must be in their protection position during operation.
- If necessary, the operator must wear personal hearing protection.

#### 2.4.9 Oils, grease and other chemical substances

- Observe the valid safety regulations for the respective product when handling oil, grease and other chemical substances.
- Do not service the wheel loader immediately after operation. Wait until hot surfaces have cooled and can be touched comfortably.
- Smoking and open flames are prohibited during fueling. Danger of fire or explosion!

##### **NOTICE**

Use the appropriate fuel for climate temperature ranges to avoid engine stoppage from fuel gelling.

## 30 BASIC SAFETY INSTRUCTIONS

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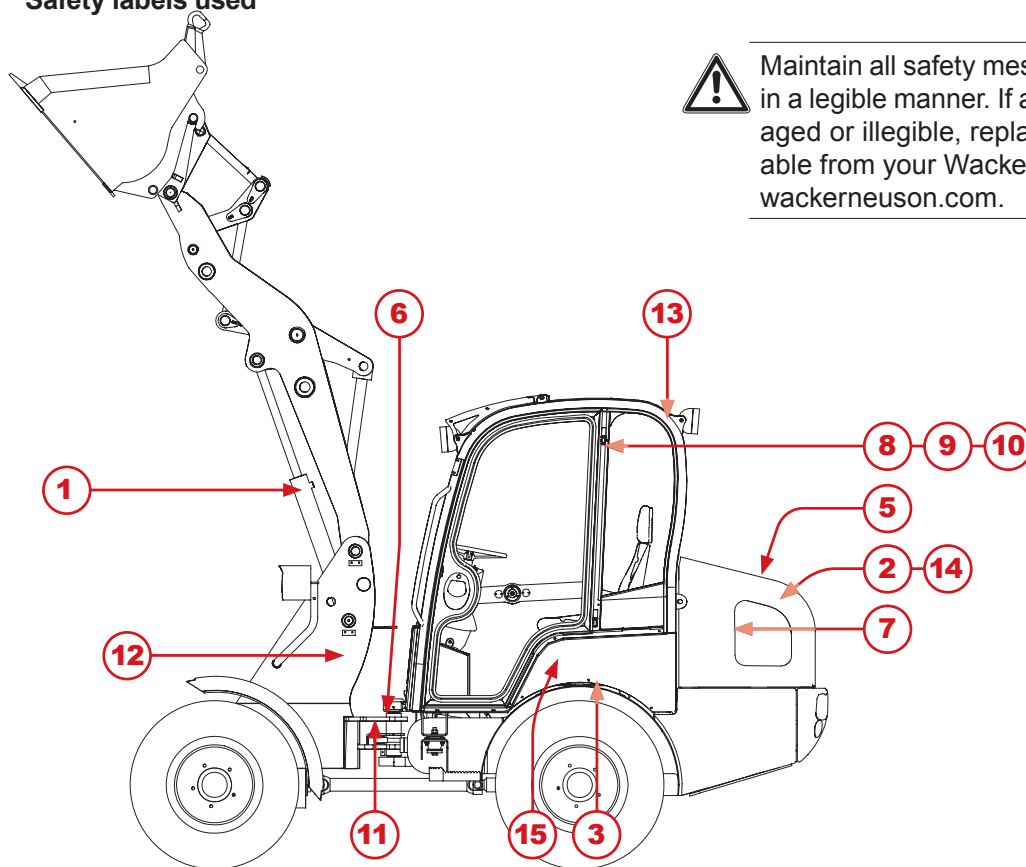
### 2.5 Transporting and towing / restarting

- Instructions are provided in this Operator's Manual for towing, loading and transporting the wheel loader safely without machine damage.
- The towing machine shall be capable of towing the wheel loader.
- The loading and transport equipment shall be appropriate to safely complete the sequence of operation. If the wheel loader is to be lifted by a crane device, consult the machine specifications to select the correct crane capacity and OSHA lifting devices to safely complete the lifting operation.
- Only restart the loader according to the Operator's Manual.
- See Chapter 6 for complete transporting and towing instructions.

### 2.6 Final decommissioning / dismantling

- Drain and dispose of all fluids in suitable containers and dispose of the fluids in an environmentally responsible manner. Do not dispose in sewers, streams, lakes or on the ground.
- Remove the battery and dispose of it at an authorized recycling center. Remove the starting motor to disable the engine.
- Dismantle and recycle the components according to the material instructions on the individual parts. Tires and rubber based parts can be recycled separately.

## 2.7 Safety labels used



Maintain all safety message labels on the machine in a legible manner. If a safety label becomes damaged or illegible, replace it with a new label available from your Wacker Neuson dealer or at [www.wackerneuson.com](http://www.wackerneuson.com).

Fig. 3  
Location of the  
Safety labels

## 32 BASIC SAFETY INSTRUCTIONS



**Safety label 1**

**Warning**

Do not stand near the loader during operation.  
Do not go under the loader lift arms when raised.



**Safety label 3**

**Warning**

Personal injury hazard from falling equipment.  
Never stand in the unsecured danger area.  
Use the safety supports.



**Safety label 2**

**Shearing hazard**

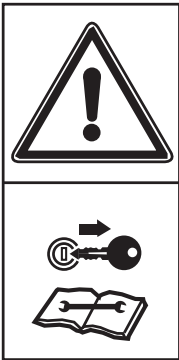
Shearing hazard from rotating fan. Stop the engine before entering the area.



**Safety label 4**

**Warning**

Personal injury hazard. The rollover bar should always be locked in protection position, insofar as this is possible given the working conditions.



**Safety label 5**

**Important**

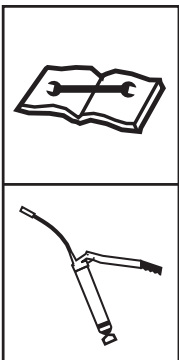
Remove the starting key and read the Repair Manual before proceeding with any work activity on the wheel loader.



**Safety label 7**

**Warning**

Hot surfaces can cause burns.  
Do not touch hot surfaces.



**Safety label 6**

**Important**

Lubricate the center joint daily before beginning work. Refer to your Operator's Manual for more information.



**Safety label 8**

**Warning**

Never lift or transport people with the lifting attachment.

## 34 BASIC SAFETY INSTRUCTIONS



**Safety label 9**

### **Warning**

Personal injury hazard. Always wear the seat belt while operating the wheel loader.



**Safety label 11**

### **Warning**

Pinching/crushing hazard. Avoid the articulation area while the Wheel Loader is in operation. Before working in the articulation area and before transporting, secure the articulation pivot. Refer to Operator's Manual.



**Safety label 10**

### **Warning**

Personal injury hazard. Never transport passengers on the Wheel Loader.



**Safety label 12**

### **Warning**

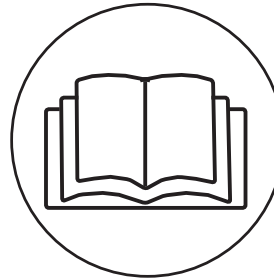
Personal injury hazard. The Wheel Loader can injure people on the work site who are in the danger zone. Keep personnel away from the Wheel Loader during operation!



Safety label 13

**Warning**

If the ROPS / FOPS protective structures are damaged, they can not serve their protective function. Never drill or weld the ROPS / FOPS protective structures. Refer to Operator's Manual.



Label 15

**Possibility of equipment damage**

Close both doors before tilting the cab.



Safety label 14

**Warning**

Hot liquids or steam escaping under pressure can cause burns. Do not open radiator when it is hot. Refer to Operator's Manual.

## 36 BASIC SAFETY INSTRUCTIONS

### 2.8 Safety devices

#### 2.8.1 Fire extinguisher



Contact your Wacker Neuson dealer if you want to install a fire extinguisher or a rotating beacon. Your Wacker Neuson dealer has the trained technicians to perform such work safely and effectively.

A fire extinguisher can be installed to operator cab rail to the right of the operator's seat. (Fig. 4).

#### 2.8.2 Rotating beacon (Optional equipment)



Use the yellow rotating beacon according to local regulations.

The receptacle for the rotating beacon can be attached to the operator cab roof in the back (Fig. 5).

To switch the rotating beacon on and off, see the chapter »Switches / rocker switches«.



Fig. 4  
Fire extinguisher

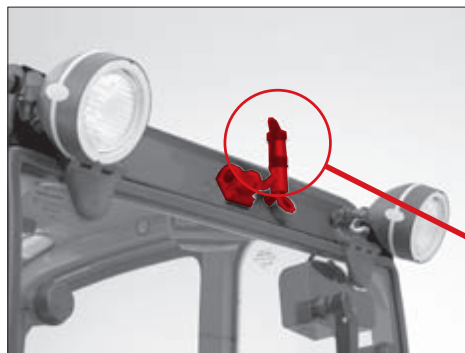


Fig. 5  
Attaching the rotating beacon

### 2.8.3 Seat belt



Before starting the engine:

- adjust the seat to provide comfortable access to all control ranges.
- examine the seat belt webbing for any mechanical or chemical damage and replace if necessary.
- inspect all seat belt hardware for functionality and serviceability, repairing or replacing if necessary.
- fasten the seat belt and adjust to contact the lower torso firmly.

When not in use:

- store the seat belt by placing it across the seat pad.
- ensure that the seat belt retractors work freely.



Fig. 6  
Seat belt

### 2.8.4 Backup alarm for reverse drive

(Optional equipment)

A backup alarm sounds when reverse gear is engaged. The sound is to warn persons who are in the vicinity of the loader that the loader is going into reverse.

## 38 BASIC SAFETY INSTRUCTIONS

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### 2.8.5 Emergency exit



The cab door on the left side of the machine facing the forward direction of travel is the primary access system to the operator station. The right hand access is a secondary opening intended for emergency use only.

---



Fig. 7  
Emergency exit

### 2.8.6 Battery disconnect switch



After removing the disconnect switch key, place the attached cover over the key opening to prevent dirt and water from entering the switch.

To connect the battery to the electrical system, remove the cover, insert the key and rotate the key clockwise. To avoid inadvertent control behavior, do not disconnect the battery from the electrical system with the engine running or any electrical systems activated.

Disconnect the battery from the electrical system by rotating the key counter-clockwise. In an emergency, the disconnect switch can be used to disconnect the battery from the electrical system. Disconnecting the battery from the electrical system will reduce the possibility of discharge before the next use. Also, disconnecting the battery from the electrical system and removing the key is a means of resisting machine theft.

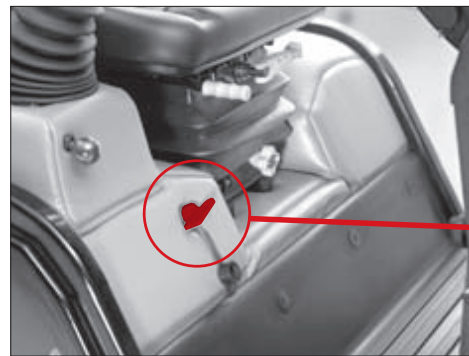


Fig. 8  
Battery disconnect  
switch

- Turn the switch lever counter-clockwise:
  - The battery is disconnected from the electrical system
- Turn the switch lever clockwise:
  - The battery is connected to the electrical system.

## 40 BASIC SAFETY INSTRUCTIONS

### 2.8.7 Loader lift arm locking system



#### CAUTION

Possibility of inadvertent loader lift arm activation. Inadvertent activation can result in the loader arms dropping causing the bucket or attachment to engage the road surface. This can result in loss of machine control with possible injury to the operator and other work site persons.

- ▶ Always lock the loader lift arm control to prevent inadvertent activation during travel.
- ▶ The operator shall not leave the operator seat until the loader arms and attachment have been lowered to and are resting on the ground.



The loader lift arm can be secured against unintentional operation by means of a locking mechanism. If you have switched on the locking mechanism, the loader lift arms will not move if the loader controls are moved. The fact that the loader lift arm is locked is not shown via indicator lights, but instead can be seen from the position of the switching lever (Fig. 9).

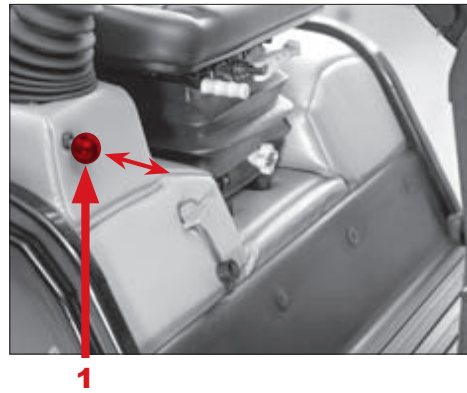


Fig. 9  
Lever for the locking  
mechanism of the  
Loader lift arm

Apply the locking system for the loader lift arm by shifting the lever located to the right of the operator's seat Item 1 (Fig. 9).

- Push the switching control rearward toward the seat frame:
  - the locking system is now on.
- Pull the switching control forward away from the seat frame:
  - the locking system is now off.

### 3 TECHNICAL DATA

#### 3.1 Technical description

The loader consists of the vehicle frame, the drive and the axles. The vehicle frame contains all the drive and control units for the standard configuration. The vehicle frame consists of the front carriage with the loader lift arms, and the rear carriage, in which the drive unit is situated. They are connected by an articulated swivel joint.

##### Drive

The loader is driven by a diesel engine, which powers the steering and working hydraulics and the driving hydraulics.

The propulsion hydraulics provide power to the transfer gear box by a directly attached hydraulic motor. The rear axle is integral with the transfer gear box. The front axle is powered by a driveshaft connecting the transfer gear box to the front axle.

The axles are designed as rigid axles.

##### Brakes

Service braking is provided by the propulsion hydraulic system through the transfer gearbox and driveshaft to both axles. The braking-inching pedal provides a secondary service brake by contacting a hub-mounted differential in the transfer gear box. A separate parking brake with separate control is provided that engages the differential hub in the transfer gear box.

##### Steering

The fully hydraulic articulated swivel steering system operates via a dual action cylinder.

## Hydraulics

The loader has two hydraulic systems supplied by a hydraulic fluid reservoir:

- hydrostatic drive
- steering and working hydraulics

The hydrostatic drive consists of an axial piston variable displacement pump, which drives an axial piston motor. The axial piston variable displacement pump is rigid coupled directly to the diesel engine, while the axial piston motor is directly coupled to the transfer case.

Displacement is automatic and continuous, but depends on speed and load. The travel speed depends on the engine speed and the machine load. Operating speed is set by the accelerator pedal position, engine speed and torque demand of the loading operation. Depending on load, the variable displacement pump automatically adjusts pump displacement to balance torque and speed requirements within the power capability of the diesel engine. Since the

input power is limited to the diesel engine output, increased demands from traversing a grade or loading the bucket will result in speed reduction which increases the torque to meet the performance demand. This adjustment control allows the entire range of performance to be utilized optimally. Actuating the inching pedal is an override control that can reduce wheel loader speed as operation demands. Depressing the pedal to the full range will stop the travel motion of the wheel loader. The inching pedal permits an infinite number of control positions. The inching pedal provides the service brake function by destroying the pump until no fluid is transmitted between the pump and motor.

A gear hydraulic pump supplies the steering and working hydraulics with oil. The gear pump is rigid coupled to the drive's variable displacement pump. Pump flow output is directly proportional to the diesel engine speed.

The hydraulic system is equipped with relief valves, filters and oil coolers.

## Electrical system

The electrical system operates at 12 volts and the electrical circuits are protected by fuses to prevent overload damage to the system and its components.

## Equipment

The loading equipment consists of the loader lift arms with an integrated mechanical or hydraulic quick-change receptacle, lifting and tipping cylinders and the appropriate attachments.

The loader is equipped with a rollover protective structure (ROPS).

## 3.2 Loader data

### Engine

*4-cylinder Perkins diesel engine*

|        |                                                                |
|--------|----------------------------------------------------------------|
| Output | 35.7 kW / 49 hp at 2600 rpm<br>SAE rating according to ISO9249 |
|--------|----------------------------------------------------------------|

|      |                         |
|------|-------------------------|
| Type | 404 D – 22 water-cooled |
|------|-------------------------|

|          |                                               |
|----------|-----------------------------------------------|
| Capacity | 2216 cm <sup>3</sup> (135 inch <sup>3</sup> ) |
|----------|-----------------------------------------------|

### Steering

*Fully hydraulic center-pivot steering*

|                |     |
|----------------|-----|
| Rotating angle | 12° |
|----------------|-----|

|            |     |
|------------|-----|
| Turn angle | 45° |
|------------|-----|

### Electrical system

|                 |          |
|-----------------|----------|
| Working voltage | 12 volts |
|-----------------|----------|

|         |       |
|---------|-------|
| Battery | 77 Ah |
|---------|-------|

### Drive (driving speed)

|         |            |              |
|---------|------------|--------------|
| 1. gear | 0 – 7 km/h | 0 – 4.35 mph |
|---------|------------|--------------|

|         |             |               |
|---------|-------------|---------------|
| 2. gear | 0 – 20 km/h | 0 – 12.43 mph |
|---------|-------------|---------------|

## 44 TECHNICAL DATA

### Hydraulics

#### *Driving hydraulics*

|                  |          |                   |
|------------------|----------|-------------------|
| Flow rate        | 78 l/min | 20.61 gallons/min |
| Working pressure | 450 bar  | 6527 psi          |

#### *Working hydraulics*

|                  |          |                   |
|------------------|----------|-------------------|
| Flow rate        | 49 l/min | 12.94 gallons/min |
| Working pressure | 210 bar  | 3046 psi          |

#### *Steering hydraulics*

|                  |          |                   |
|------------------|----------|-------------------|
| Flow rate        | 49 l/min | 12.94 gallons/min |
| Working pressure | 190 bar  | 2756 psi          |

### Weight specifications

|                                      |         |         |
|--------------------------------------|---------|---------|
| Operating weight                     | 3120 kg | 6878 lb |
| Permissible total weight             | 3400 kg | 7496 lb |
| Permissible axle load per axle       | 2500 kg | 5512 lb |
| Permissible payload with shovel      | 828 kg  | 1825 lb |
| Permissible payload with pallet fork | 798 kg  | 1759 lb |

### Vibrations (weighted effective value)

|                      |              |                       |                        |
|----------------------|--------------|-----------------------|------------------------|
| Upper extremities    | no more than | 2.50 m/s <sup>2</sup> | 8.19 ft/s <sup>2</sup> |
| Feet or seat surface | no more than | 0.80 m/s <sup>2</sup> | 2.64 ft/s <sup>2</sup> |

### Noise values

|                                               |            |
|-----------------------------------------------|------------|
| Average LwA measured at the operator's ear    | 98.4 dB(A) |
| Guaranteed LwA measured at the operator's ear | 100 dB(A)  |
| Specified LpA measured at the operator's ear  | 80 dB(A)   |

### 3.3 Product identification number plates

A product identification number plate is attached to the loader on the right side of the front carriage (Fig. 10).

It lists the following information:

- Manufacturer
- Vehicle ID
- Type
- Engine power
- Axle loads
- Operating weight
- Permissible total weight

In addition, the vehicle ID is engraved on the right side of the rear end near the entry area (Fig. 10/1).

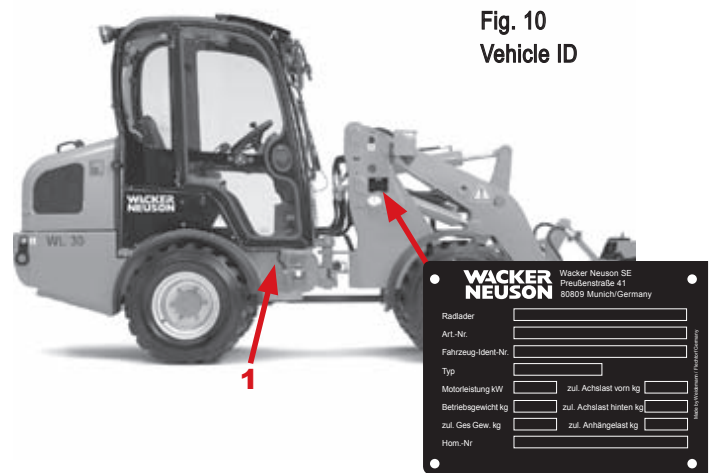


Fig. 10  
Vehicle ID

Furthermore, the following loader components each have their own rating plate:

- The diesel engine
- The axial piston variable displacement pump (hydraulic transmission pump)
- The oil engines (hydraulic traction motor)
- The axles.

### 3.4 Dimensions

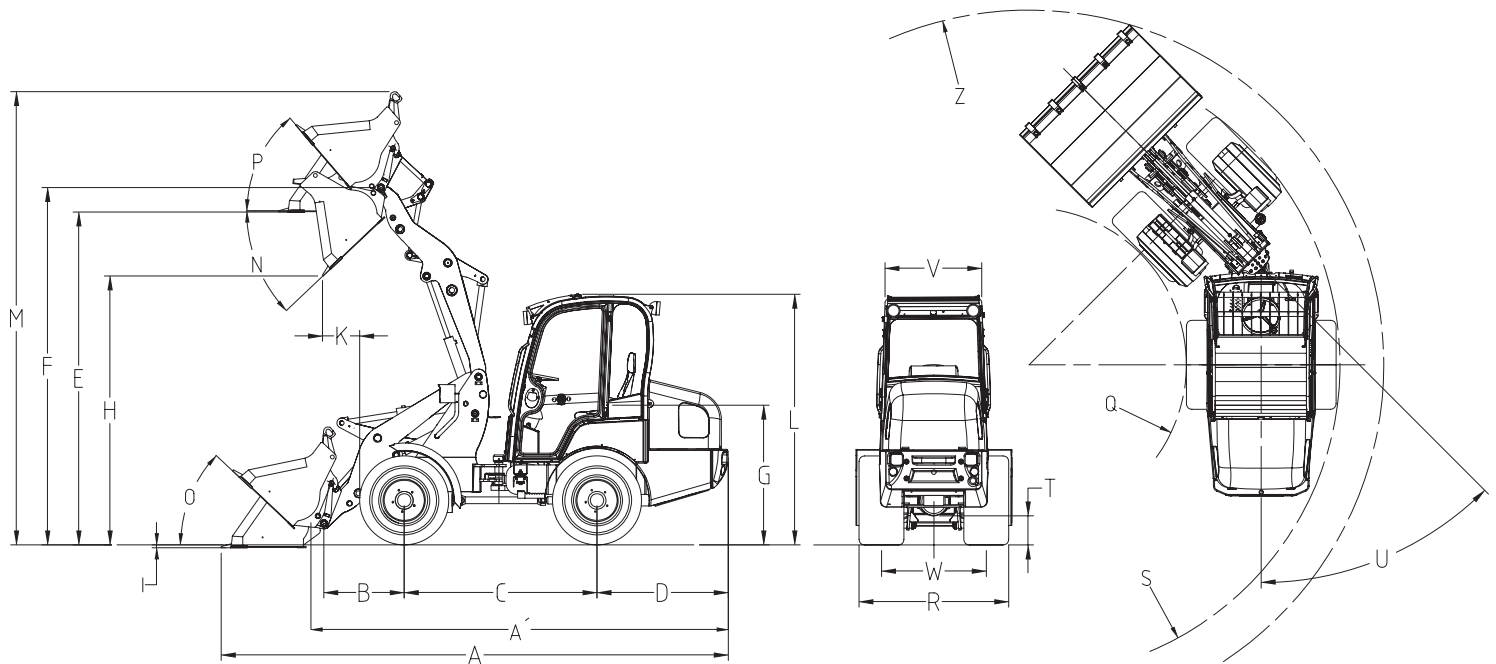


Fig. 11 Dimensions

**Dimensions with 31x15,5-15EM tires**

| Item Designation                      | Value   |             |
|---------------------------------------|---------|-------------|
| A Overall length with standard shovel | 4554 mm | 179.29 inch |
| A' Overall length without shovel      | 3748 mm | 147.56 inch |
| B Axle center to shovel pivot-point   | 722 mm  | 28.43 inch  |
| C Wheelbase                           | 1732 mm | 68.19 inch  |
| D Rear overhang                       | 1179 mm | 46.42 inch  |
| E Overhead loading height*            | 2990 mm | 117.72 inch |
| F Max. height of shovel pivot point*  | 3209 mm | 126.33 inch |
| G Height of seat*                     | 1254 mm | 49.37 inch  |
| H Max. dumping height*                | 2416 mm | 95.12 inch  |
| I Scraping depth*                     | 26 mm   | 1.02 inch   |
| K Reach at H*                         | 334 mm  | 13.15 inch  |
| L Height to top of cab*               | 2251 mm | 88.62 inch  |

| Item Designation                                   | Value   |             |
|----------------------------------------------------|---------|-------------|
| M Total working height*                            | 4070 mm | 160.24 inch |
| N Max. dumping angle at max. lift height           | 43°     |             |
| O Reverse roll angle on ground                     | 43°     |             |
| P Reverse roll angle at max. lift                  | 50°     |             |
| Q Inside turning radius*                           | 1413 mm | 55.63 inch  |
| R Overall width*                                   | 1345 mm | 52.95 inch  |
| S Radius at outer edge*                            | 2793 mm | 109.96 inch |
| T Ground clearance*                                | 261 mm  | 10.28 inch  |
| U Turn angle                                       | 45°     |             |
| V Width across cab                                 | 870 mm  | 34.25 inch  |
| W Track width*                                     | 941 mm  | 37.05 inch  |
| Z Maximum turning radius (depends on shovel width) | 3186 mm | 125.43 inch |

\*In the event of deviating tires or reversed wheel rims the dimensions will change

## 4 DESCRIPTION OF THE INDICATOR, WARNING AND CONTROL ELEMENTS

### 4.1 Operating elements and instruments

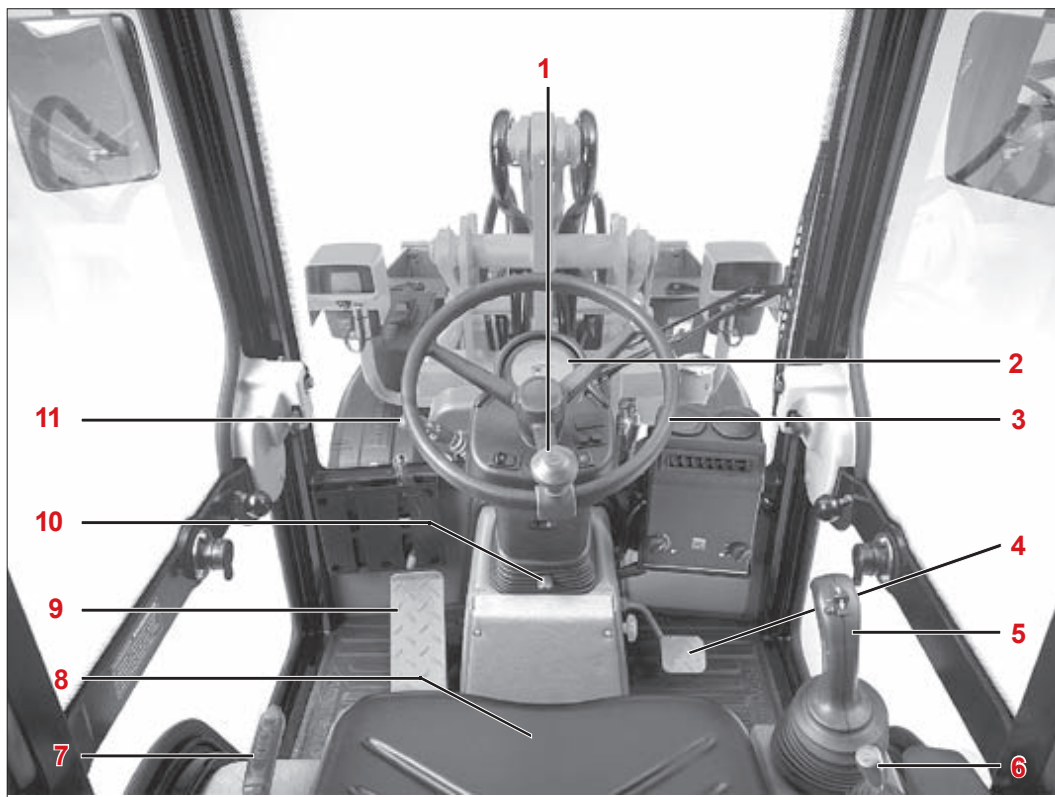


Fig. 12  
Operating elements

| Item Designation |                                                            |
|------------------|------------------------------------------------------------|
| 1                | Steering wheel turning knob                                |
| 2                | Instrument panel                                           |
| 3                | Steering wheel                                             |
| 4                | Accelerator                                                |
| 5                | Operating lever for load arm / drive                       |
| 6                | Operating lever for optional hydraulics                    |
| 7                | Operating lever for parking brake                          |
| 8                | Operator's seat                                            |
| 9                | Braking-inching pedal                                      |
| 10               | Operating lever for adjusting the steering column          |
| 11               | Operating lever for lighting, turn signals and signal horn |

## 4.2 Control and warning indicator lights



- If the indicator lights do not illuminate properly at the starting sequence, repair the malfunction before operating the machine.
- If an indicator light illuminates during operation, move the machine to a safe place, lower the loader arms and stop the engine.
- Do not operate the wheel loader until the reason for the illuminated indicator is determined and corrective action has been completed.



Immediately turn off the engine if a light marked with this \* symbol is illuminated in the adjacent table.

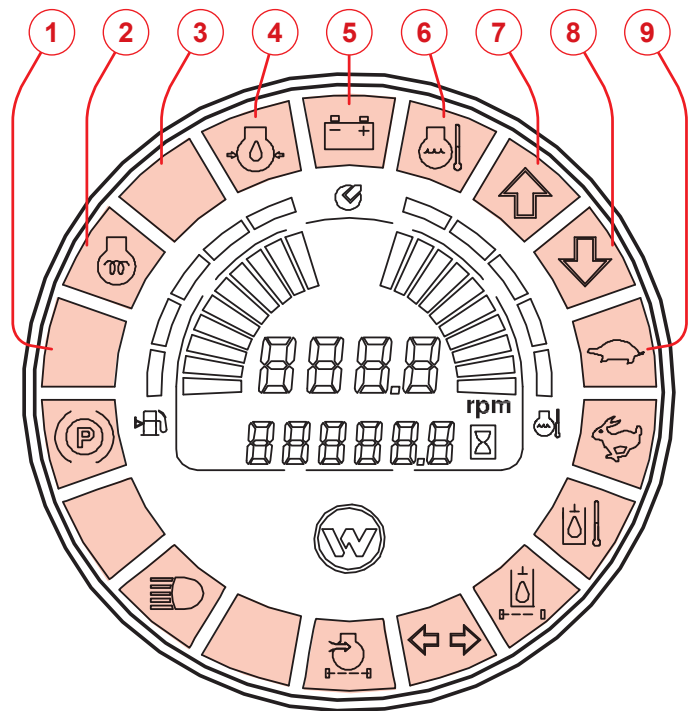


Fig. 13

Control and warning lights

| Item Designation                          | Function                                        | Symbol                                                                                |
|-------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 Not used                                | No function                                     |                                                                                       |
| 2 Heater indicator light                  | Illuminates during preheating                   |    |
| 3 Not used                                | No function                                     |                                                                                       |
| 4 * Warning light for engine oil pressure | Illuminates when engine oil pressure is too low |    |
| 5 * Warning light for generator           | Illuminates if the battery is not charged       |  |
| 6 * Warning light for engine temperature  | Illuminates when engine temperature             |  |
| 7 Indicator light for forward drive       | Illuminates when gear is set to forward drive   |  |
| 8 Indicator light for reverse drive       | Illuminates when gear is set to reverse drive   |  |
| 9 Indicator light for crawler gear        | Illuminates when crawler gear is engaged        |  |

### Control and warning indicator lights



- If the indicator lights do not illuminate properly at the starting sequence, repair the malfunction before operating the machine.
- If an indicator light illuminates during operation, move the machine to a safe place, lower the loader arms and stop the engine.
- Do not operate the wheel loader until the reason for the illuminated indicator is determined and corrective action has been completed.



Immediately turn off the engine if a light marked with this \* symbol is illuminated in the adjacent table.

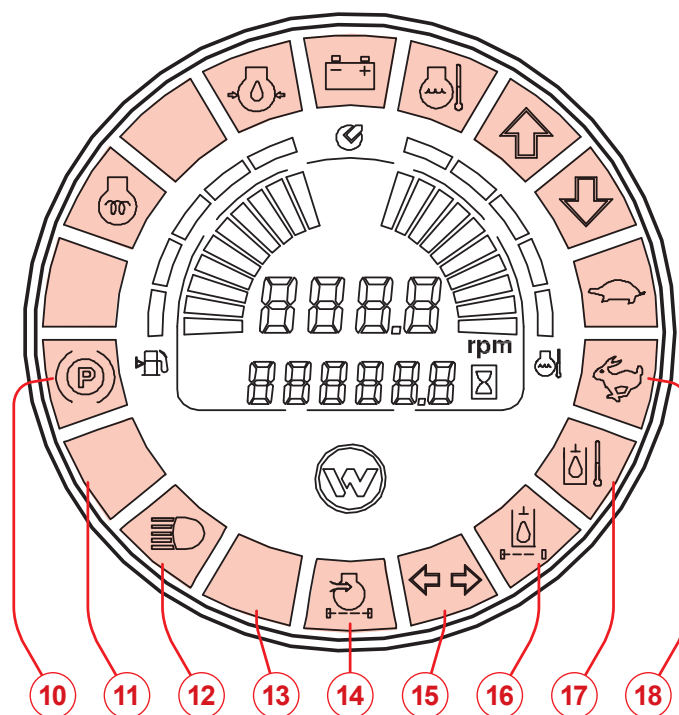
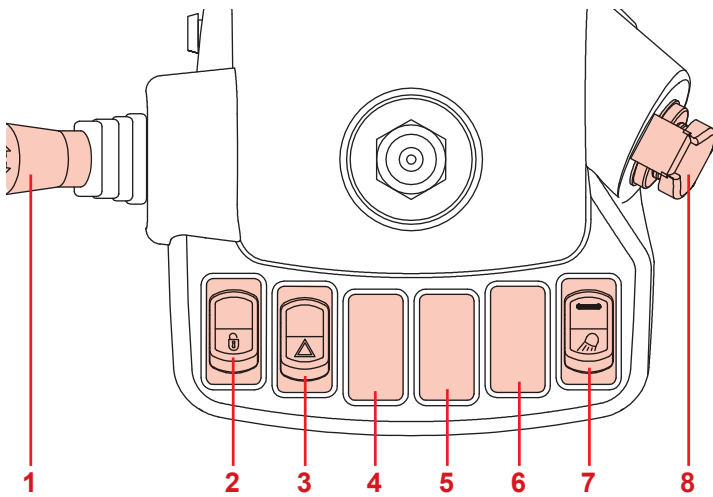


Fig. 13

Control and warning lights

| Item | Designation                                 | Function                                                     | Symbol                                                                                |
|------|---------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 10   | Indicator light for parking brake           | Illuminates when the parking brake is on                     |    |
| 11   | Not used                                    | No function                                                  |                                                                                       |
| 12   | Indicator light for main beam               | Illuminates when the main beam is switched on                |    |
| 13   | Not used                                    | No function                                                  |                                                                                       |
| 14   | Air filter indicator light                  | Illuminates when the air filter is contaminated              |  |
| 15   | Turn signal indicator light                 | Illuminates when a turn signal is on                         |  |
| 16   | Warning light for return filter             | Illuminates if the pressure at the return filter is too high |  |
| 17*  | Warning light for hydraulic oil temperature | Illuminates when hydraulic oil temperature is too high       |  |
| 18   | Indicator light for overdrive               | Illuminates when overdrive is engaged                        |  |

### 4.3 Switches / rocker switches



**Fig. 14** Switches / rocker switches (1)

| Item | Designation                             | Function                                                                                                                              | Symbol                                                                                |
|------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1    | Combination switch                      | Switches lighting and signal horn on/off                                                                                              |                                                                                       |
| 2    | No function                             | Available for optional equipment<br>Switches the optional hydraulics in order to release the hydraulic locking device for attachments |    |
| 3    | Rocker switch for hazard warning lights | Switches hazard warning lights on/off                                                                                                 |    |
| 4    | No function                             | Available for optional equipment<br>Switches electrical connector on the lift arms on/off                                             |   |
| 5    | No function                             | Available for optional equipment                                                                                                      |                                                                                       |
| 6    | No function                             | Available for optional equipment                                                                                                      |                                                                                       |
| 7    | No function                             | Available for optional equipment                                                                                                      |  |
| 8    | Engine starting switch                  | For switching the engine on/off                                                                                                       |                                                                                       |

### Switches / rocker switches

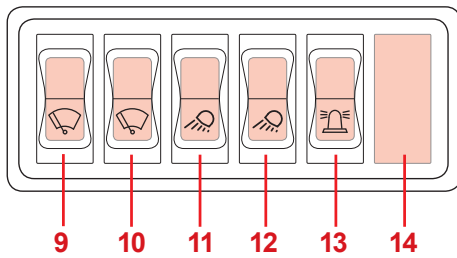
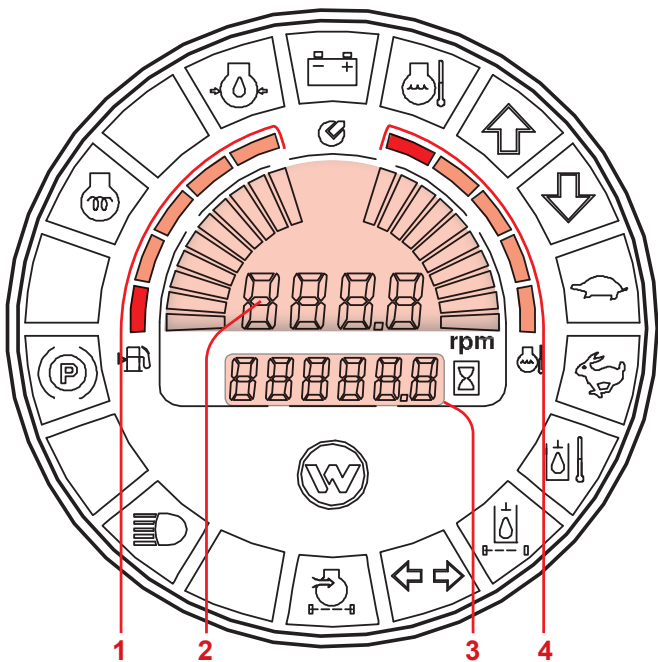


Fig. 15  
Switches / rocker  
switches (2)

| Item | Designation                               | Function                                | Symbol                                                                                |
|------|-------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------|
| 9    | Rocker switch for front windshield wipers | Switches front windshield wipers on/off |    |
| 10   | Rocker switch for rear windshield wipers  | Switches rear windshield wipers on/off  |    |
| 11   | Rocker switch for front headlights        | Switches front headlights on/off        |    |
| 12   | Rocker switch for rear headlights         | Switches rear headlights on/off         |    |
| 13   | Rocker switch for rotating beacon         | Switches rotating beacon on/off         |  |
| 14   | No function                               | Available for optional equipment        |                                                                                       |

4.4 Indicator devices



| Item | Designation        | Function                                                                                                       | Symbol     |
|------|--------------------|----------------------------------------------------------------------------------------------------------------|------------|
| 1    | Fuel gauge         | Shows the fuel quantity                                                                                        |            |
| 2    | Tachometer         | Shows the diesel engine's rpm                                                                                  | <b>rpm</b> |
| 3    | Hour meter         | Adds up the loader's operating time. Plan your service work and inspection work according to the meter reading |            |
| 4    | Engine temperature | Shows the diesel engine's temperature                                                                          |            |

Fig. 16 Indicator devices



## 5 OPERATING AND OPERATION

### 5.1 Before starting up



Read the Operator's Manual before starting up the loader.



- Only operate the loader from the operator's seat.
- Observe OSHA safety regulations.
- Arrange for training with an experienced operator. Practice operating the wheel loader in a remote flat area to become familiar with control response.
- Using this Manual as a reference, conduct an inspection before operating the wheel loader.
- After prolonged storage or inactivity, refer to the procedure for preparing to operate the loader.

### 5.1.1 Fueling



- Lower the loader lift arms and attachment to the ground and stop the engine to fuel the loader.
- Fire hazard – diesel fuel is flammable! Do not smoke and avoid fire and open flames when fueling.
- Do not use gasoline. Use only diesel fuel. Do not add gasoline to diesel fuel.
- Diesel fuel is hazardous to your health. Wear appropriate gloves.
- If an inadvertent incident occurs during fueling, take immediate appropriate measures to avoid hazards. Inform the supervisor or person responsible for the fueling operation.

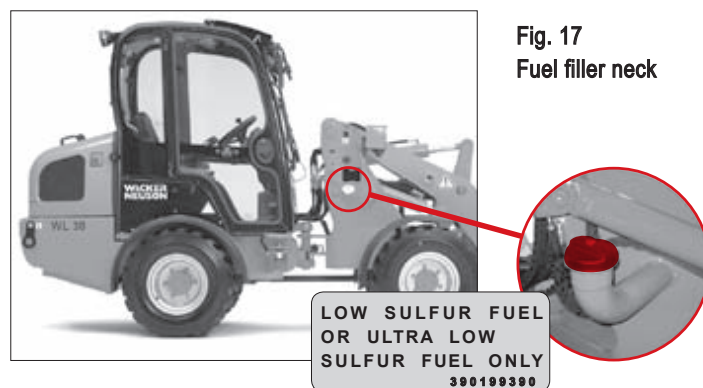
**NOTICE**

Use only clean, conventional high-grade diesel fuel to operate the loader.  
If at all possible, use a fine filter in the filling line.



**ENVIRONMENTAL NOTE**

Diesel fuel is hazardous to the environment.  
Do not allow it to be released uncontrollably into the environment.  
Immediately soak up with binding material any fuel that has leaked, overflowed or been spilled, and dispose of it in an ecologically sound manner.  
Immediately inform the persons responsible if fuel has been released into the environment.



**Fig. 17**  
**Fuel filler neck**

The diesel reservoir is located in the front frame of the loader. The reservoir's filler neck is located on the right side of the front frame (Fig. 17).

- Unscrew the cap from the filler neck.
- Fuel the loader's reservoir through the filler neck.
- Carefully replace the fuel cap on the filler neck after fuelling.

### 5.1.2 Operation



#### **WARNING**

Personal injury hazard.

- ▶ Do not operate the loader if it is not in serviceable condition or responding correctly to control commands.
- ▶ Park the machine in a safe place, lower the loader arms and attachment, stop the engine and notify your supervisor.
- ▶ Do not operate the machine until the problem has been corrected.
- ▶ Check that the safety devices are present and operative each time before you start up the loader.
- ▶ Replace damaged tires to avoid loss of production and stability due to sudden deflation.
- ▶ Maintain a neat uncluttered operator space to prevent slipping, tripping and potential impediments to control movement.
- ▶ Keep the operating elements clean.
- ▶ Follow the daily servicing schedule.

#### **Before entering the cab**

- Check that the loader is clean and undamaged.
- Check that the handles and steps are in good condition and clean.
- Check that the cab windows are in good condition and clean.
- Check that all safety components are present and fully functional.
- Check that the rods, cylinders, hinge pins and coolers are clean.
- Check that all the fasteners, joints and hinge pins fit tightly.
- Check that all the safety messages and instructional labels are present and in good condition.
- Check the loader for oil, fuel and coolant leaks.

Check:

- Engine oil level
- Hydraulic fluid level
- Coolant level
- Fuel level
- Check the condition of the tires, looking for abrasion, cuts or wear. Check the tire pressure! Ensure that the tires are inflated to the proper pressure (see tire pressure table).
- Ensure that the engine enclosures and the caps for the fuel reservoir and hydraulic fluid reservoir are present and have been tightened.

### Operator station access



#### **WARNING**

Slipping hazard.

- ▶ Check that the handles and steps are in good condition and clean before entering and exiting the wheel loader control station..
- ▶ Use the attached handles and steps.
- ▶ Always get in and out with your face turned toward the loader.

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### 5.1.3 Doors and windows



#### CAUTION

Possibility of injury or equipment damage from unlatched cab doors.

- ▶ Close and latch the cab doors during operation.
- ▶ The cab doors may be latched open during operation if circumstances require.
- ▶ Always latch both doors before operating the wheel loader in the open or closed position.

The cab has one door on the left and one on the right.

The cab doors can be locked in two positions:

1. Closed
2. Open (Fig. 18)

The cab door can be locked in »Open« position by releasing the lever (Fig. 19).

Always check that the cab doors and windows are closed before leaving the loader.

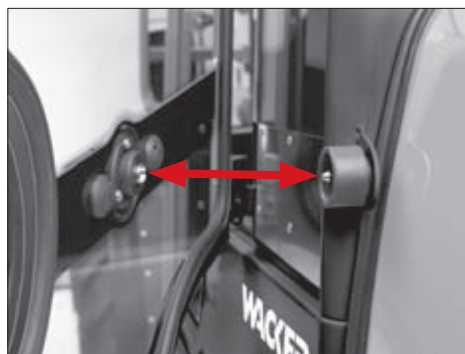


Fig. 18  
Cab door locking



Fig. 19  
Releasing locked  
cab doors

#### 5.1.4 Adjusting the steering column



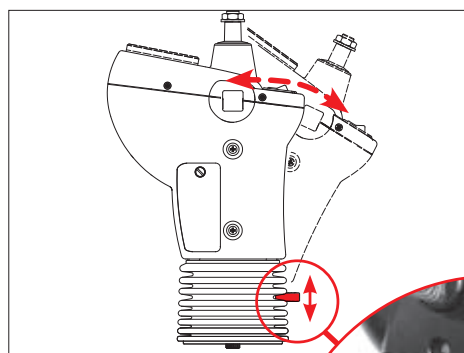
##### **WARNING**

Personal injury or property damage hazard. Adjusting the steering column while the wheel loader is in operation can cause inadvertent machine movement.

- ▶ Do not adjust the steering column while the wheel loader is in operation.
- ▶ Stop the machine first and then adjust the steering column.

You can adjust the position of the steering column lengthwise so that it fits your height and posture.

1. Operate the adjustment lever (Fig. 20).
2. Adjust the steering column as needed.
3. Let go of the adjustment lever.



**Fig. 20**  
Adjusting the steering column



## 5.1.5 Adjusting the operator's seat

**WARNING**

Personal injury or property damage hazard. Adjusting the operator seat while the wheel loader is in operation can cause inadvertent control movements.

- ▶ Do not adjust the operator seat while the wheel loader is in operation.
- ▶ Stop the machine first and then adjust the seat.

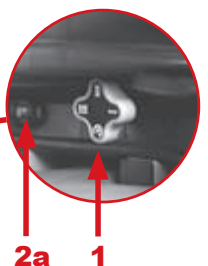
You can adjust the operator's seat to fit your height and posture. This keeps your muscles relaxed and prevents you from tiring while working.

Adjust the seat so that you can comfortably reach the levers and pedals with your back against the backrest.

You can adjust the seat in the following ways (Fig. 21):



Fig. 21  
Adjusting the operator's seat

**1. Height adjustment:**

There are three levels of height adjustment. Adjust the height while sitting in the seat by turning the height adjustment handle. In each case the position set is the one indicated on the bottom of the handle. Re-adjust the weight setting after each height adjustment.

## 2. **Weight adjustment:**

Adjust the weight while sitting in the seat by turning the weight adjustment handle. The weight is set correctly if the height position that has been set via the height adjustment handle can be seen in the view window Item 2a. The middle position of the spring's range for the respective height setting will be indicated.

## 3. **Backrest adjustment:**

Adjust the backrest via the locking lever. The locking lever should lock in the desired position. The backrest should not move again after it has been locked in place.

## 4. **Lengthwise adjustment**

Adjust the length setting by pulling the locking lever upwards. After you have made the adjustment, the locking lever should lock in the desired position. The operator's seat should not move again after it has been locked in place.

### 5.1.6 **Seat belt**



#### **WARNING**

Personal injury hazard.

Not wearing the seat belt, or operating with a damaged seat belt, can result in injury to the operator.

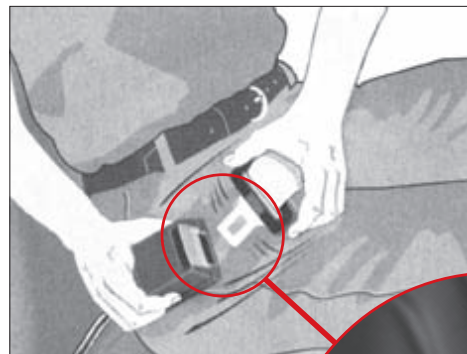
- ▶ To operate the Wheel Loader, you must be seated in the operator's seat and the seat belt must be properly fastened.
- ▶ Make sure seat belt and buckle stay clean.
- ▶ Before operation check function of seat belt and buckle.
- ▶ Replace the belt or buckle immediately if they are damaged.
- ▶ Do not operate the machine if the seat belt is damaged or not functioning correctly.

### **Buckling the seat belt**

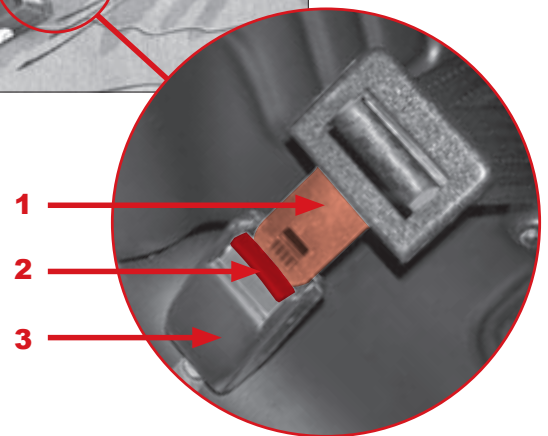
1. Sit back in the operator seat, so that your entire back is touching the seat.
2. Place the seat belt over your lap.
3. Seat belt must not be twisted.
4. Insert the seat belt tab Item 1 into the opening in belt buckle Item 3 until it clicks.
5. If necessary, adjust the seat belt to your body size. See section »Adjusting the seat belt« (page 69).

### **Releasing the seat belt**

1. Press the red button Item 2 on the belt buckle.



**Fig. 22**  
**Buckling the seat belt**



## Adjusting the seat belt



### WARNING

Personal injury or property damage hazard. Adjusting the seat belt while the wheel loader is in operation can cause inadvertent control movements.

- ▶ Do not adjust the seat belt while the wheel loader is in operation.
- ▶ Stop the machine first and then adjust the seat belt.



Fig. 23  
Adjusting the seat  
belt

Lengthening

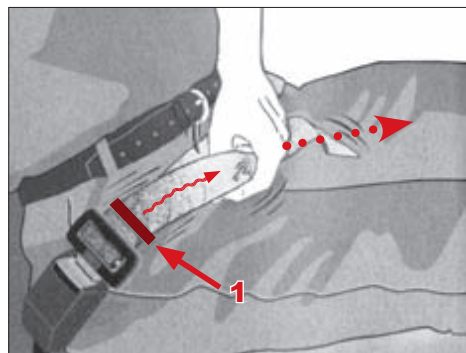
Adjust your seat belt so that it fits snugly.

Lengthening the seat belt:

1. Pull the tongue clasp to draw the seat belt out to the required length.

Shortening the seat belt:

1. When seat belt is buckled, pull at the free end of the seat belt until it lies snugly across your lower lap.
2. Secure the excess seat belt by pushing it through the plastic clasp Item 1 (Fig. 23).



Shortening

## 5.2 Starting up



### **WARNING**

Possibility of injury or equipment damage from inoperable lights or individual functions.

- Do not drive the loader if the entire lighting system or individual functions are not working.



The warning and indicator lights display fault messages from the equipment.

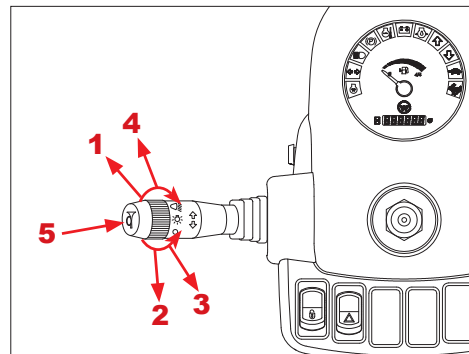
All the rocker switches are switched on by moving them to the down position.

### 5.2.1 Lighting system and forward warning device

The lever (Fig. 24) is used to control the three functions, lighting, turn signals and forward warning device:

Check the lighting, turn signals and forward warning device each time before driving.

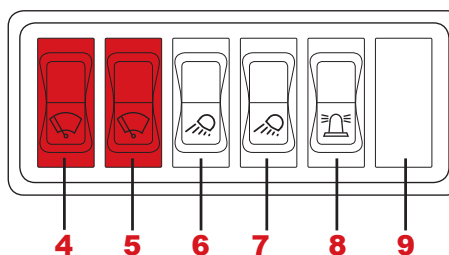
- Push the lever away from the operator (position 1):
  - The right turn signal is activated.
- Pull the lever towards the operator (position 2):
  - The left turn signal is activated.
- Rotate the lever toward the operator:
  - The parking light switches on.
- Continue rotating the lever toward the operator:
  - The driving light switches on.
- Push the lever upwards (position 3):
  - The low beam switches on.
- Push the lever downwards (position 4):
  - The high beam switches on.
- Press the horn symbol (5):
  - The forward warning device is activated.



**Fig. 24**  
**Lighting / forward**  
**warning device**

### 5.2.2 Wipers and windshield washer system

The wipers and windshield washer system are switched on/off using the rocker switches in the cab roof on the right next to the operator's seat Item 4 and 5 (Fig. 25).



**Fig. 25**  
**Switches for wind-**  
**shield wipers**

Front window:

- Put the rocker switch Item 4 in position 1:
  - The windshield wiper switches on.
- Put the rocker switch Item 4 in position 2:
  - The front windshield washer system switches on.
- Put the rocker switch Item 4 in position 0:
  - The windshield wipers and windshield washer system switch off.

Rear window:

- Put the rocker switch Item 5 in position 1:
  - The back wiper switches on.
- Put the rocker switch Item 5 in position 2:
  - The back washer system switches on.
- Put the rocker switch Item 5 in position 0:
  - The windshield wiper and windshield washer system switch off.

### Filling the container for the windshield washer system

The container for the windshield washer system is located on the rear side of the cab to the left. Access it by opening the engine enclosure (Fig. 26).



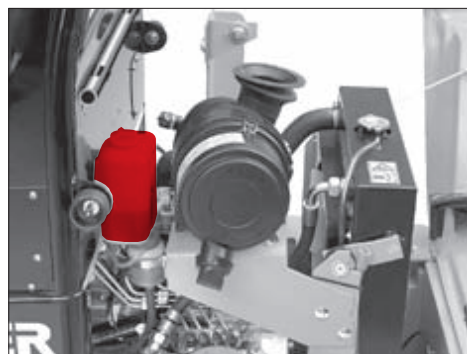
#### **WARNING**

Burn and cutting/shearing hazards from hot or moving engine parts.

- ▶ Do not open the engine enclosure until the engine has stopped.
- ▶ Do not attempt to service the wheel loader until the hot surfaces are comfortable to the touch.



For best cleaning performance, use a formulated windshield fluid that enhances cleaning and protects the system from freezing



**Fig. 26**  
Location of the  
windshield washer  
container

### 5.2.3 Headlights and rotating beacon



#### WARNING

Personal injury or property damage hazard. Working and driving lights can blind passing motorists.

- ▶ Do not drive on public roads with working lights illuminated.
- ▶ Confirm that the driving lights are aimed to avoid blinding oncoming traffic.

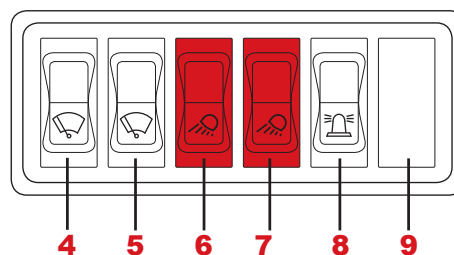


Fig. 27  
Headlight and rotating beacon switches

The loader is equipped with headlights and taillights. The headlights are switched on using the rocker switches in the cab roof on the right next to the operator's seat Item 6 and 7 (Fig. 27).

### Front headlights:

- Put the rocker switch Item 6 in position 1:
  - The headlights switch on.
- Put the rocker switch Item 6 in position 0:
  - The headlights switch off.

### Rear headlights:

 Operate the taillights using the rocker switch Item 7 (Fig. 27) the same way you would the front headlights.

### The rotating beacon (optional equipment)



Use the yellow rotating beacon according to local regulations.

If you want to use a rotating beacon, mount it on the fastener provided (Fig. 5).

The switch for operating the rotating beacon is located in the cab above the operator's seat (Fig. 27).

- Put the rocker switch Item 8 in position 1:
  - The rotating beacon switches on.
- Put the rocker switch Item 8 in position 0:
  - The rotating beacon switches off.

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### 5.2.4 Ventilation and heating of the cab

#### Ventilation

The cab is ventilated via the doors and rear window. The doors must be locked in open condition (Fig. 18).

#### Heating

The cab heater is located on the right next to the steering column.

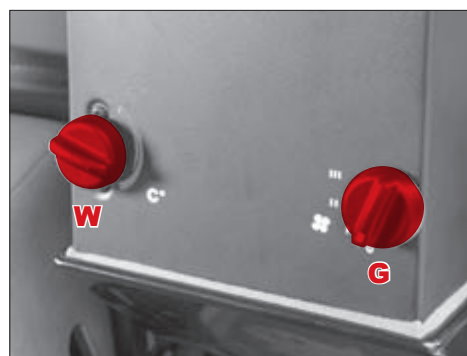


Fig. 28  
Heating controller

#### Temperature

Use the left regulator Item W to adjust the temperature continuously (Fig. 28):

- Turn the left regulator Item W to the left:
  - The temperature rises.
- Turn the left regulator Item W to the right:
  - The temperature decreases.

#### Fan

Adjust the fan by turning the right regulator Item G (Fig. 28). The fan speed can be switched to three levels:

- Level »0« – Fan »OFF«
- Level »1« – Low speed.
- Level »2« – Medium speed.
- Level »3« – High speed.

## Ventilation outlets

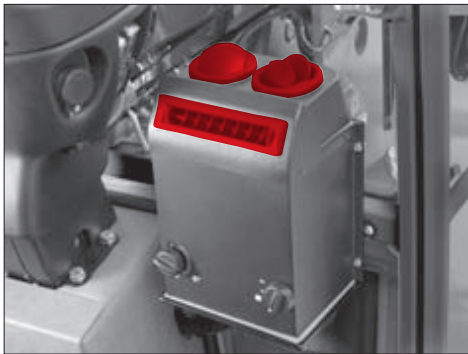


Fig. 29  
Ventilation outlets

You can use the outlets (Fig. 29) to control air flow into cab. In cold weather, warm air supply keeps the windows free of ice and heats the cab in the process.

### 5.2.5 Before starting the engine



Before starting the engine:

- Make sure that no one is on or near the loader.
- Keep the operating elements clean and dry.
- Remove or tighten all loose objects in the cab.
- Make sure that the cab windows and exterior mirrors are clean.
- While in the operator's seat, position the exterior mirrors so that you have a good view of the area immediately behind the loader.
- Make sure that all safety devices are fitted, all tools have been removed after repairs, and the hood is closed.

1. Perform the »Before entering the cab« checks prior to starting the engine (see the chapter »Operation«).
2. Adjust the operator's seat and the steering column as needed.
3. Adjust the rear view mirror / exterior mirror.
4. Put on your seat belt.

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### 5.2.6 Starting the engine



- Due to the high viscosity in the hydraulic system at temperatures below 0°C (32°F), major machine damage can occur when the speed is increased immediately.
- Let the engine run at a low speed at temperatures below 0°C (32°F) until the hydraulic fluid is warm enough to permit smooth responsive operation.
- The lower the outside temperature, the longer the warm-up phase.
- Observe the hydrofilter's pressure display.
- Do not under any circumstances tow-start the loader to start the engine. This could damage the hydraulic system.
- Turn off the engine immediately if the warning lights do not go out when the engine is running.
- Have the malfunction rectified immediately. Do not use the loader again until the malfunction has been rectified.
- Do not suddenly turn off the engine from full load, but rather allow it to idle for 3 minutes before turning it off to equalize the temperature.

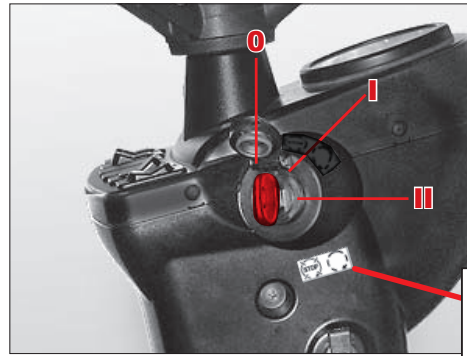


Fig. 30  
Starting switch



- Check that no one is in the loader's danger area.
- Do not use ether as a starting aid.
- Do not use the loader if the »starter inhibitor« does not function.
- Only start the loader from the operator's seat.



### Description of the starting process

Use the starting key to start the loader's engine (Fig. 30).

1. Push the foot accelerator.
2. Put in the key - level 0 = no operating voltage.
3. Turn the key left against the spring pressure until the heater-plug indicator is illuminated

#### Preheating:

- The heating process is automatically activated when level I is switched on.
  - The heater indicator light Item 2 (Fig. 13) lights up.
  - Start the engine at level II as soon as the heater indicator light goes out:
4. Continue to turn the key right against the spring pressure - level II = starting.
  5. Let go of the key as soon as the engine starts - the key will return to level I - and the indicator lights will go out.

Check if all the indicator lights have gone out, correct any possible malfunctions before driving off with the loader.

To stop the engine turn the key anti-clockwise to level "0"

### If the engine does not start



It is absolutely not possible to start the engine by tow-starting the loader. This could damage the hydraulic system.

- Attempt to start the loader for a maximum of 20 seconds.
- Wait one minute.
- Repeat the starting process.
- If the engine will not start after two attempts, look for the cause in the malfunction table («Troubleshooting and emergency maintenance») or contact a specialist garage.

### 5.3 Propulsion operation

#### Description of the propulsion hydraulics

See »Hydraulics« section of 3.1 Technical Description on page 41.

#### 5.3.1 Preparation for travel in public traffic



- Before you start travel, make sure that the machine complies with the relevant local regulations.
- Fork prongs of pallet forks must be dismantled before undertaking trips in public traffic.

1. Secure the attachment:
  - Ensure that the bucket has been emptied and has been lowered to transport position.
  - Put the tooth guard on the bucket.
2. Check the lighting system, and if applicable, the function of the rotating beacon.  
Switch on the headlights.
3. Adjust the attachment height for clearance with the road surface, but not more than necessary for safe transport to avoid visibility restrictions and reduced stability.
4. Do not travel with the loader arms completely raised to avoid collision with overhead objects such as viaducts and electrical power lines.
5. After adjusting the loader arm height, engage the travel lock to prevent unintentional control activation.
6. Confirm that the seat belt is properly adjusted.
7. Survey the surrounding area to ensure that moving into traffic can be done safely.

### 5.3.2 Travel speed



#### **WARNING**

Personal injury hazard from tipping or roll-over incidents.

To avoid tipping and roll-over incidents:

- ▶ Keep the loader lift arms and bucket load as low as practical
- ▶ Keep the loading site level.
- ▶ match the speed to working conditions to maintain control of the machine
- ▶ Constantly survey the work area for obstructions, vehicles and people to avoid collisions and runover incidents.



All functions of the multi-function lever only works if the operator has attached the seat belt firmly and comfortably around the lower torso.

Indicator lights will indicate the travel directions and gears selected.

When the parking brake is engaged the loader's drive is switched off (driving lock). This is shown by the illuminated parking brake indicator. It is not possible to travel until the parking brake has been released and the indicator light has gone out.

### Changing travel directions



#### WARNING

Personal injury and machine damage hazards from abrupt directional changes. Actuating the direction switch when the loader is moving will cause the moving loader to change direction abruptly.

- ▶ Do not change the travel direction switch position when the loader is moving in either forward or reverse.
- ▶ Before and after changing direction with the loader stopped, confirm that the indicator lights are in agreement with the intended direction selected.
- ▶ If the direction control does not respond or the indicator light does not illuminate, move the machine to a safe location, lower the loader arms until the attachment is resting on the ground, stop the engine and inform the supervisor of a service need.
- ▶ Do not operate the loader until a technician has restored the function before operating the machine.



Be careful when traveling in snowy and icy conditions. Reduce your travel speed considerably in the event of bad weather.

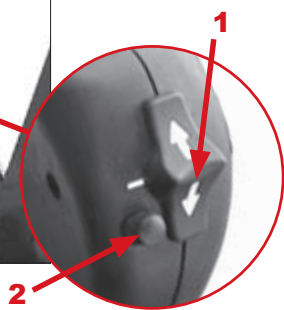
If the loader is equipped with the optional equipment »Backup alarm«, a backup alarm sounds when reverse gear is engaged. The sound is to warn persons who are in the vicinity of the loader that the loader is going into reverse.

Use the slide switch Item 1 (Fig. 31) to change the loader's travel direction. After the engine has been started, the gear changer is in neutral position.

- Travel direction switch in middle position:
  - Gear changer in Neutral
- Push the travel direction switch forward:
  - The indicator light »7« (Fig. 13, page 50) is illuminated. The loader travels forward.
- Push the travel direction switch back:
  - The indicator light »8« (Fig. 13, page 50) is illuminated. The loader travels in reverse.



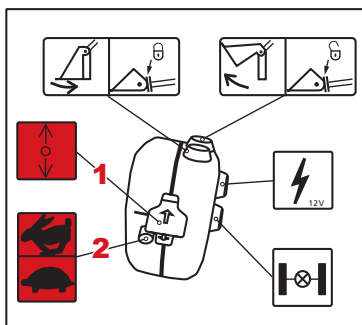
**Fig. 31**  
Changing direction



### Changing speeds

The loader has an overdrive and a crawler gear. Use the button item 2 (Fig. 31) to shift the loader's gears. After starting the engine, overdrive is automatically activated.

- Press the button:
  - The loader shifts from overdrive to crawler gear. Indicator light »9« (Fig. 13 ,page 50) lights up.
- Press the button again:
  - The loader shifts from crawler gear to overdrive. Indicator light »18« (Fig. 13 ,page 52) lights up.



### Loader travel

1. Release the parking brake after the engine has warmed up.
  - The handbrake indicator light will go off. The loader is ready to travel.
2. Select the travel direction by actuating the travel direction switch.
  - The indicator light shows the travel direction selected. You can travel.
  - Push the accelerator.
3. The loader will be brought up to speed smoothly.

The loader's traveling speed is proportional to the accelerator's displacement.

- low engine speed = low traveling speed
- high engine speed = high traveling speed

### Braking and stopping

To change the traveling speed independently of the engine speed, you can push the braking-inching pedal on the operator's platform next to the steering column. The first part of the pedal's path adjusts the travel back down, then the brake system is actuated. Pushing the braking-inching pedal allows you to continuously reduce the pump flow rate until the loader has come to a halt without wearing out the material. This allows you to also travel very slowly at a high engine speed.

1. Reduce the loader's traveling speed by decreasing the engine speed.
2. To brake the loader, step on the braking-inching pedal.
3. To stop, step on the braking-inching pedal until the loader has come to a stop.
4. Shift to neutral.
5. Pull the lever for the parking brake.



## Changing the travel direction



### WARNING

Personal injury and machine damage hazards from abrupt directional changes. Actuating the direction switch when the loader is moving will cause the moving loader to change direction abruptly.

- ▶ Do not change the travel direction switch position when the loader is moving in either forward or reverse.



It is not necessary to depress the inching pedal to the end of the movement every time you change direction.

1. Reduce the travel speed until the loader has come to a halt.
2. Move the travel direction switch in the other direction.
3. Push the accelerator so that the loader starts moving.

## 5.3.3 Stopping and parking



- Stop the machine in a safe location out of the traffic flow pattern and on firm ground.
- Lower the loader arms with bucket or attachment until resting on the ground.
- Remove the starting key before leaving the operator seat.



Bring the loader smoothly to a halt by easing up on the accelerator or actuating the braking-inching pedal and secure it as described in section 9 page 129 »Securing the loader«.

## 5.4 Work operation



Before starting to work with the loader:

- Survey the work area to determine if people, vehicles and obstacles are in the immediate work area. Do not start work until the work area is clear.
- Constantly survey the area during working operation to avoid collision with people, vehicles and obstacles that may inadvertently enter the loader work area.
- Verify that all controls are working correctly and the indicator lights are functioning. Move the lift arm and attachment hydraulics to assure smooth control response.
- Jerky, spongy or delayed control response may indicate that air has entered the hydraulic system. Cycle the hydraulic system a few times. If the controls become smooth, the air has been eliminated from the system. If the problem persists, do not operate the machine in this condition. Advise the supervisor and have a technician determine the source of air entrainment.
- Inspect attachments to confirm they are in serviceable condition and are properly connected to the loader arms.



In the event of power loss (failure of the engine and/or driving or working hydraulics), lower the loader lift arms to the ground immediately and relieve the control circuits and hydraulic lines of pressure. Read section 7 page 125 »Lowering loader arms«.

### Each time before starting work

- Examine the loader for visible defects prior to each work shift.
- Check the functioning of the operating equipment.
- Check the functioning of the brakes and warning devices.
- Report any defects to the supervisor and, when changing shifts, to the operator taking your place.
- Perform the checks described in sections 5.1 (page 60) and 5.2.5 (page 77).

#### 5.4.1 Operating lever for Loader lift arms



- Keep the loader lift arms and attachment as low as practical when traveling. This improves visibility and stability, and reduces the risk of striking overhead objects such as power lines.
- Do not activate float control of the loader arms until the bucket or attachment is in contact with the ground or surface to be back dragged. Engaging float with the lift arms raised will cause rapid descent of the lift arms.
- Do not engage the loader controls unless seated in the operator seat with the seat belt fastened.
- Operate the loader with smooth steady control motion. Rapid and jerky control motion is inefficient and will cause operator fatigue and cause potential harm to the loader.
- Do not leave the operator seat until the loader lift arms and attachment have been lowered to the ground.



The loader lift arms float position is located on the »**Lower**« and »**Tilting out**« function. When the multi-function lever is released, it automatically returns to the neutral position (except when in float position).

Use the multi-function lever to control the movements of the loader lift arms Item A (Fig. 32). The multi-function lever is located on the right next to the operator's seat.

**Float position (↑)**

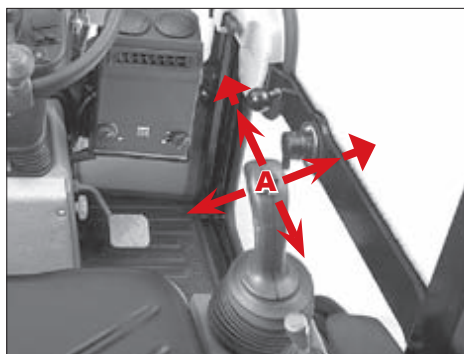
- Press the multi-function lever Item A (Fig. 32) forward across the resistance until it engages:
  - The float position engages.
- Pull back the multi-function lever Item A across the resistance:
  - The float position disengages.

**Loader lift arms**

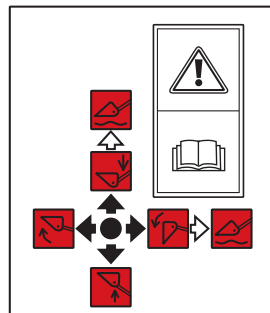
- Pull the multi-function lever Item A rearwards:
  - The loader lift arms are raised.
- Pull the multi-function lever Item A forwards:
  - The loader lift arms are lowered.

**Attachment**

- Pull the multi-function lever Item A to the left:
  - The attachment curls upward for loading.
- Pull the multi-function lever Item A to the right:
  - The attachment curls downward to dump.



**Fig. 32**  
Operating lever for  
loader lift arms



#### 5.4.2 Activating the optional hydraulics

##### Activating the optional hydraulics using the control lever



Place the optional hydraulic control in neutral when the system is not required. This is necessary to avoid overheating the hydraulic system and improve fuel economy.

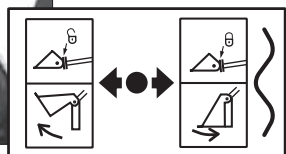
Clean the quick connecting fittings carefully before connecting the optional hydraulic system fittings together. This will avoid introducing contaminants into the system that can cause damage to the hydraulic components. Keep connections covered when not in use.

You can activate the loader lift arms's hydraulic connections (Fig.34) using the control lever for the optional hydraulics item Z (Fig.33).

- Move the control lever for the optional hydraulics to the left (L):
  - The left-hand connection is for the pressure side, the right-hand is for the return line.
- Move the control lever for the optional hydraulics to the right (R):
  - The right-hand connection is for the pressure side, the left-hand is for the return line.



**Fig. 33**  
Operating lever for  
the optional hydraulics



### Detent mechanism for the optional hydraulics

This function allows you to operate the optional hydraulic connections in continuous use. This function is necessary for certain attachments powered by a hydraulic motor that necessitates continuous use (e.g. broom). Then you do not have to constantly hold the control lever for the optional hydraulics.

- Move the control lever for the optional hydraulics to the left (L), past normal operation.
- The lever will be locked, providing continuous hydraulic pressure and flow.



**Fig. 34**  
Hydraulic connections

### (Float position ▲)

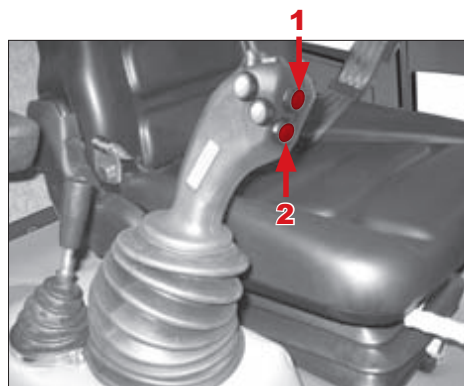
- Move the control lever for the optional hydraulics to the right (R), past normal operation.
- The lever will lock, relieving the optional hydraulic system pressure for safe installation or removal of hydraulic attachment hoses.

### Activating the optional hydraulics using the button

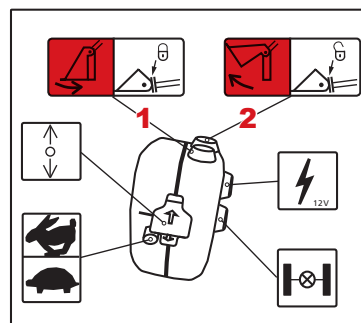
**i** If the detent mechanism or the float position of the optional control lever is engaged, it is not possible to activate the optional hydraulics with the button.

You can activate the hydraulic connections of the loader lift arms (Fig. 34) using the buttons for the optional hydraulics Item 1 and Item 2 (Fig. 35).

- Activate the button for optional hydraulics Item 1:
  - The left-hand connection is for the pressure side, the right-hand is for the return line.
- Activate the button for optional hydraulics Item 2:
  - The right-hand connection is for the pressure side, the left-hand is for the return line.



**Fig. 35**  
Button for optional hydraulics



### Depressurized return line

For some attachments, a depressurized return line is required. The connection for the depressurized return line is located on the front left of the load arm (Fig. 36). The connection is designed in such a way that it is not possible to confuse it with the normal connections for the optional hydraulics.

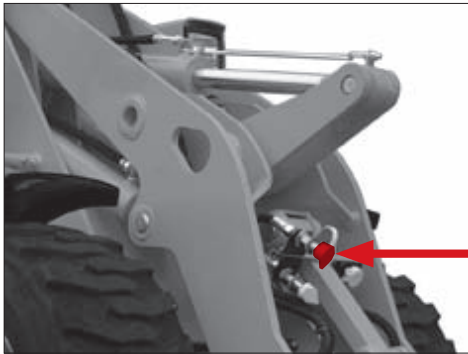


Fig. 36  
Depressurized  
return line

#### 5.4.3 Loader lift arms locking system



- Before traveling from worksite to worksite over extended distances, engage the loader lift arm lock after selecting the height for the travel arms for the travel segment.
- Do not release the loader lift arm lock until starting the work cycle, or after parking the loader and prior to lowering the lift arms to the ground with the attachment.



The loader lift arm can be secured against unintentional operation by means of a locking mechanism. If you have switched on the locking mechanism, the loader lift arms will not move if the loader controls are moved. The fact that the loader lift arm is locked is not shown via indicator lights, but instead can be seen from the position of the switching lever (Fig. 36).

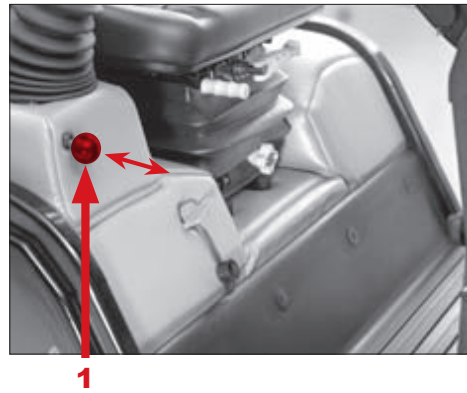


Fig. 37  
Lever for the locking  
mechanism of the  
loader lift arms

Apply the locking system for the loader lift arm by shifting the lever located to the right of the operator's seat Item 1 (Fig. 37).

- Push the switching control rearward toward the seat frame:
  - the locking system is now on.
- Pull the switching control forward away from the seat frame:
  - the locking system is now off.

#### 5.4.4 Differential lock



Avoid damage to the transmission!

Only switch on the differential lock if the wheels are not moving.

Only use the differential lock for loading work on loose or slippery surfaces!

After releasing the button (item 1, Fig. 38), the differential can be locked occasionally. This is noticeable by more effort for steering. Try to release the differential lock by slight right / left steering movements or by changing the direction of travel.

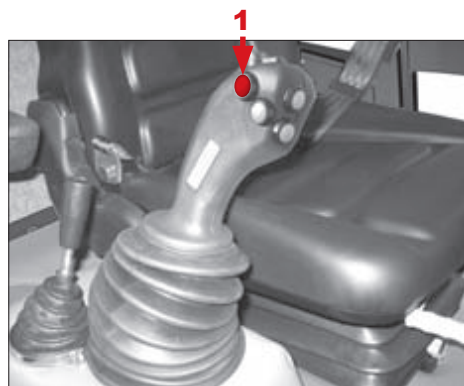
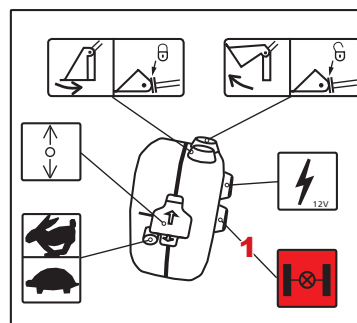


Fig. 38  
Switch for differential lock

Activate the differential lock using the button, item 1, on the multi-function lever (Fig. 38). With the differential lock engaged, both wheels on the axle can transmit torque increasing traction on slippery surfaces.

- Depress the button item 1 (Fig. 38):
  - The differential lock switches on.
- Release the button item 1 (Fig. 38):
  - The differential lock switches off.



#### 5.4.5 Changing attachments

This Operator's Manual describes only the use of the following attachments:

- Light cargo buckets
- Earth buckets
- Earth buckets with digging teeth

If you wish to use optional attachments with your loader, please observe the following:

Contact your Wacker Neuson dealer before using any attachment not in the approved list. The dealer and Wacker Neuson technical staff can determine the compatibility of the proposed attachment.



Wacker Neuson is not liable for changes made without its approval.



- Use only Wacker Neuson -approved attachments for your loader. Wacker Neuson is not liable in the event of other attachments being used.
- Do not exceed the rated load capacity of the wheel loader as stated in the specifications. Exceeding the rated capacity can create unintended hazards and reduce the operating life of the loader.
- Replace the hoses on the loader with original equipment hose assemblies supplied by your Wacker Neuson dealer. These assemblies meet the exacting standards of performance of the new machine.
- Make sure to match the SAE designations when ordering replacement hoses and/or fittings. Contact your Wacker Neuson dealer for assistance in obtaining replacement parts.
- Observe the safety instructions for changing attachments.

---

**NOTICE**

Unapproved attachments could overload the loader.  
This can result in damage to the loader.

---

1. Before assembly, start-up or maintenance, read the Operator's Manual for the relevant attachment.
2. Practice using the attachment before working with it the first time. Familiarize yourself ahead of time with all the functions and control elements.



- When loading, adjust your driving speed to the material being loaded and traction conditions.
  - Avoid contact with hydraulic fluid in the event of pressurized leakage. In the event high pressure fluid comes in contact with skin, or if hydraulic fluid enters the eye, seek immediate treatment in an emergency room.
  - Do not use an attachment unless it is in serviceable condition.
  - Before attempting to uncouple an attachment, read the instructions for the uncoupling process. Confirm that the attachment will not move when removed from the loader lift arms.
  - To avoid personal hazards and potential machine damage, confirm that the attachment is properly and firmly connected to the loader lift arms before use.
  - Do not perform service or repairs on the attachment unless the loader and loader lift arms are secured as described in section 9 page 129 »Securing the Loader«.
-

### Coupling of attachments



#### **WARNING**

Personal injury hazard.

- ▶ Check the locking pins item 4 (figure 39) to avoid unintentional disconnection of the attachment. Confirm that the hydraulic couplings are correctly matched to operate the attachment.
- ▶ Pressurized hydraulic oil can penetrate the skin, causing infections.
- ▶ If this occurs, seek immediate emergency room treatment.
- ▶ Oil entering the eyes must also be treated immediately in an emergency room.

1. Drive the loader up to the attachment (Fig. 39).
2. Bring the receptacle frame Item 1 under the mounting brackets Item 2.
3. Raise the loader lift arms and curl the attachment bracket to mate the coupler surface together.
4. Move the levers of the locking pins Item 3 downward, so that the pins engage in the tabs of the attachment Item 4.
5. Check that the locking pins fit correctly in the tabs Item 4.



#### **ENVIRONMENTAL NOTE**

Hydraulic oil is hazardous to the environment. Do not allow it to be released uncontrollably into the environment.

For hydraulically activated attachments:

6. Stop the engine and actuate the control lever for the optional attachment hydraulics several times in both directions. This will release any residual hydraulic pressure in the lines to enable coupling the attachment hydraulic lines.
7. Insert the attachment's quick couplers in the appropriate connections for the attachment hydraulic lines on the loader lift arms.
8. Check that there are no leaks in the attachment's hydraulic system and the quick couplers of the attachment hydraulic lines. Slowly actuate the attachment control to confirm the controls are working correctly and the couplers and hydraulic lines are not leaking.

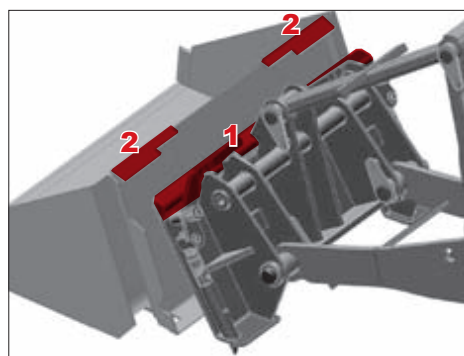
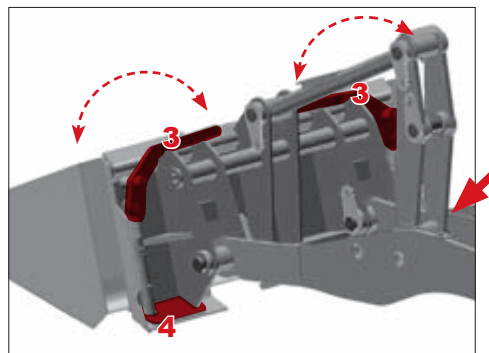


Fig. 39  
Coupling and  
uncoupling tools



### Uncoupling attachments



- Lower the attachment until it is firmly resting on a hard surface.
- Close attachments with movable components such as clamshells.
- Actuate the attachment controls through the full range of motion to release residual hydraulic pressure.
- If the attachment is equipped with integral supports, extend them to the support position.
- Place the attachment only on a hard, even foundation.



#### ENVIRONMENTAL NOTE

When uncoupling the hydraulic connections, hold a pan under the optional hydraulics' quick couplers to catch any oil that might run out. Dispose of it in an ecologically sound way.

1. Lower the attachment.
2. Stop the engine and actuate the control lever for the attachment hydraulics several times in both directions to release residual hydraulic pressure.
3. Disconnect the hydraulic couplers and place covers over the exposed ends to exclude foreign material.
4. Place the hydraulic hoses over the attachment.
5. Move the levers of the locking pins Item 3 (Fig. 39) upward, so that the pins are pulled out of the tabs of the attachment Item 4.
6. Slightly lower the loader lift arms to disengage the upper attachment support coupler halves. Activate the bucket curl, rotating the lower portion of the loader frame coupler away from the attachment coupler.  
(This releases the receptacle frame item 1 (Fig. 39) from the mounting brackets Item 2 (Fig. 39)).
7. Back the loader away from the attachment if the receptacle frame is free.

#### 5.4.6 Bucket

---

**NOTICE**

Avoid overloading. Observe the maximum permissible payload.  
Operate the control lever carefully.

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The light cargo bucket is used for light materials such as grain, maize and pellets.  
The earth bucket is used for heavy materials such as gravel, sand, soil and stone.

---

#### Function

The light cargo bucket / earth bucket attachments are intended for loosening, picking up, transporting and dumping materials.

#### Attaching the bucket

Read the chapter »Changing attachments« (Section 5.4.5, page 96).

#### Operating element

Operate the bucket using the control lever for the loader lift arms. Read the chapter »Operating lever for Loader lift arms« (Section 5.4.1, page 88).

### Operation



Before performing work for the first time, practice handling the bucket.

When dumping the bucket and loading vehicles, you can perform two work movements at the same time if necessary, e.g. lifting and dumping or lowering and curling to load. To do so it is necessary to overlay the movement on the control lever (Fig. 40).

- 0 = Neutral position
- 1 = Lift
- 2 = Lower
- 2a = Float position
- 3 = Tilt in
- 4 = Tilt out
- 4a = Float position

The float position facilitates stripping during resurfacing work. To do so, lower the bucket with the tip to the ground. Then engage the control lever in position 2a. The bucket now lies on the ground, free to move and burdened only by its own weight.

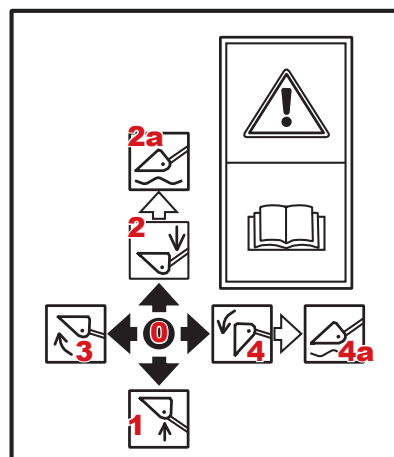


Fig. 40

Control lever movements

### Level indicator



With the attachment in a horizontal position, mark the place on the tipping cylinder on which the level indicator is located with a colored line. Item 1 (Fig. 41).

Use the level indicator (Fig. 41) in order to assess more effectively the curl position of the attachment from the operator's seat.

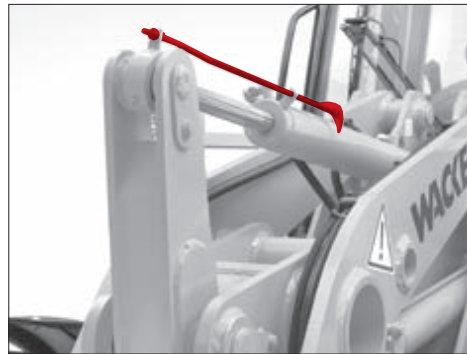


Fig. 41  
Level indicator

### Working with the bucket



#### WARNING

Tipping hazards. Improper use of the loader lift arms and bucket may cause the loader to tip, possibly causing injury or equipment damage.

- ▶ Operate the loader with the bucket as close as practical to the working surface or ground to reduce the risk of tipping the wheel loader.
- ▶ To reduce the risk of tipping the wheel loader, do not raise the loader lift arms and fully loaded bucket unless the ground or operating surface is firm and flat.
- ▶ Do not drive across slopes with the loader arms raised.
- ▶ Do not travel up or down slopes with the loader arms raised.



Adjust your driving speed when driving into the loading material, according to the type of material and the respective conditions.

Make sure that no excessive wheel slip occurs. Tire wear and fuel consumption will increase unnecessarily and the loader's performance will not be fully utilized.

### Loading work

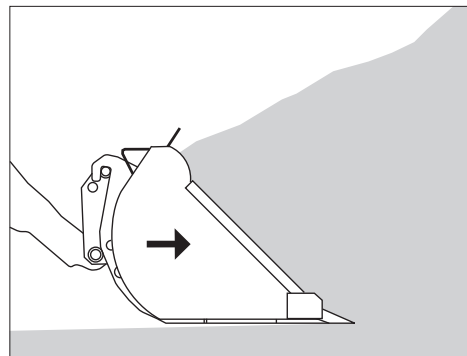


Fig. 42  
Loading work 1

Lower the bucket to pick up loose material so that it is parallel to the ground and move it into the material to be loaded. Here the driving speed should correspond to the type of material and the respective working conditions (Fig. 42).

Now raise the loader lift arms slightly so that the weight is on the loader's front axle. This is to avoid excess wheel slip. You can also manually restrict wheel slip by inching.

To fill the bucket, curl the bucket as shown in Fig. 43 as the loader arms are slowly raised. Carry the loaded bucket in this position to the location or truck where the material in the bucket is to be deposited.

Carry the loaded bucket low until necessary to lift it to the necessary loading height.

If material is to be loaded which the bucket cannot easily penetrate, you can create an up-and-down movement of the bucket cutting edge by alternately curling the bucket slightly upward and downward while penetrating into the material. This makes it easy for the bucket to penetrate the material (Fig. 44).

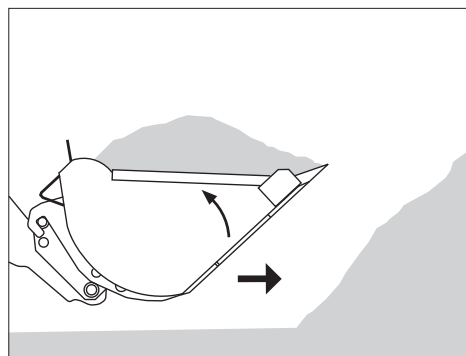


Fig. 43  
Loading work 2

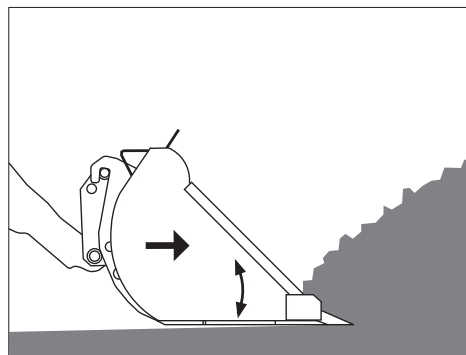


Fig. 44  
Loading work 3

## Excavation work

### Soft material:

Lower the bucket to the ground to lift out soft material and tilt the bucket forward until you have a digging angle. If you start driving the loader forward now, the bucket's digging edge will break into the ground. Now make the tilting angle flat to remove as even a layer as possible and to avoid a large amount of wheel slip (Fig. 45).

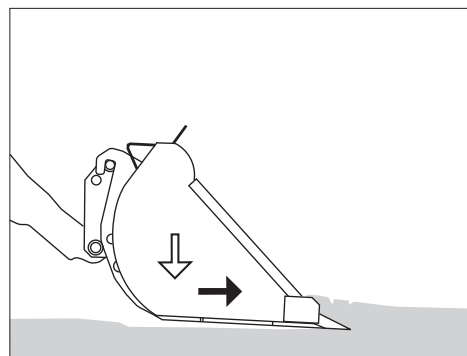


Fig. 45  
Excavation work 4

### Resistant material:

Lower the bucket to the ground to lift out resistant material and tilt the bucket forwards until you have a digging angle. When you drive the loader forwards now, slightly press the bucket downwards so that it can break into the ground. Should the bucket's digging angle penetrate the ground, make the tilting angle flatter. Use the bucket curl control lever to produce an up-and-down movement of the digging edge of the bucket (Fig. 46).

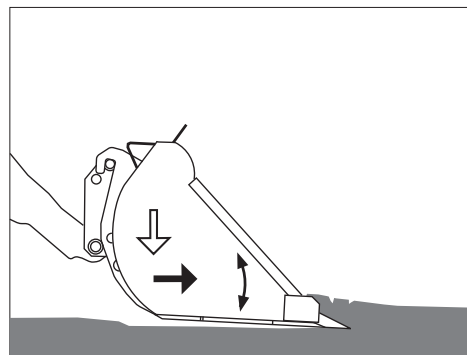


Fig. 46  
Excavation work 5

#### 5.4.7 Tip-overs



If the machine tips over, or in the event of an extreme slope condition, take the following steps to avoid engine damage:

- Stop the engine as quickly as practical to avoid damage from lubrication starvation.
- Do not operate the engine or machine after an incident until a technician has inspected and corrected any damage resulting from the incident.



#### ENVIRONMENTAL NOTE

Right the loader as soon as possible so that oil and fuel cannot escape.

Immediately soak up with binding material any oil or fuel that has leaked, and dispose of it separately from other waste in an ecologically sound manner.

#### 5.4.8 Precaution measures for various temperature conditions

##### At high outside temperatures

Take the following precautions at high temperatures to prevent the loader from being damaged:

- Regularly check the cooling system:
  - Keep the engine coolant and oil coolers clean
  - Make sure that the coolant level is always correct
  - Use the proper coolant mix.
  - Regularly check the cooling system for leaks
  - Regularly check the condition and tension of the fan pulley
- Use engine lubricating oil of the proper viscosity class.
- Regularly check the engine air filter.

##### At low outside temperatures



- Do not use starting aids such as ether. The manifold heating system can ignite the ether, causing an explosion.
- Snow, mud and freezing rain reduce traction. Reduce speed and avoid slopes under these conditions.
- Maintain the windshield cleaning fluid system and keep all windows clean. Visibility is a basic necessity for safe operation.



Additional starting aids may be required if the temperature is  $-18^{\circ}\text{C}$  ( $0^{\circ}\text{F}$ ) or less. Typically, these aids are auxiliary engine oil and coolant heaters along with additional battery cranking capacity.



Hydraulic and lubricating fluids are more viscous when cold. When ambient temperatures are at or near the freezing point of 0°C (32°F), permit the engine, drivetrain and hydraulic system to warm up at idle speed until the temperature indicator for the system indicates warming has progressed.

- Operate the wheel loader slowly and smoothly to accelerate the warming process.
- Observe the hydraulic system filter pressure display to determine if pressure is excessive.
- Do not connect two 12V batteries in series (+ to –) and then connect the remaining battery poles to the starter or starter solenoid. This will damage the electrical system

Take the following precautions at low temperatures to prevent the loader from being damaged and to make the loader easier to start:

- Use the proper coolant mix.
- Use engine lubricating oil of the proper viscosity class.
- Use diesel fuel for low temperatures.
- Fill the fuel reservoir at the end of the work shift.
- Make sure the battery is always fully charged.
- Install the cold starting aid (see note above!).

## 5.5 Optional equipment

### Loader lift arm damping



Activate the loader lift arm damper control to improve ride quality and stability during travel with the loader. Disengage the damper control before attempting to use the loader for loading operations.

Before engaging the damper feature, verify that the loader bucket or attachment has sufficient clearance with the ground to avoid contact while traveling. The loader lift arms will drop when the damper function is activated.

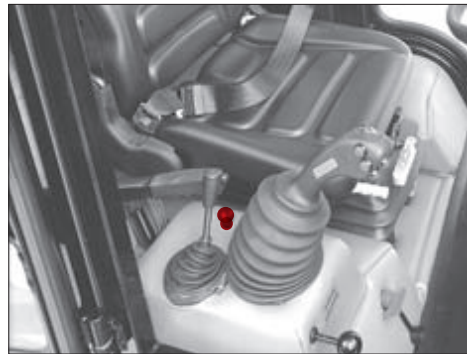
To negate pitching motion of the loader chassis when traveling, raise the bucket or attachment approximately 30 cm (12") to compensate for the vertical movement of the bucket or attachment as the feature moves.

The loader lift arm damping is engaged by means of the pull switch adjacent to the operator's seat on the right hand side (Fig. 47). There is a red indicator light in the switch.

Engaging the feature reduces the effect of uneven ground on the attitude of the machine when traveling at higher speeds. It reduces pitching by use of the loader arm mass and hydraulic system to act as a damper. This reduces the stress on the wheel loader and the motion imparted to the operator through the seat. This feature reduces the effect, but does not replace the operator's responsibility for observing the terrain and making speed reductions to avoid extreme motion over undulating surfaces.

### Loader lift arm damper activation

- Pull the switch (Fig. 47) upwards:  
The red indicator light in the switch is illuminated
  - Damping is engaged. Do not actuate the loader lift arm, bucket or attachment control.
- Push the switch (Fig. 47) downwards:  
The red indicator light in the switch goes off
  - Damping is disengaged. Loader controls can be actuated.



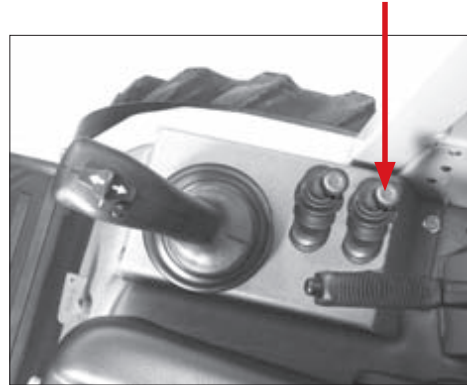
**Fig. 47**  
Switch for loader lift  
arm vibration damp-  
ing

### Optional hydraulics control activation

This function allows you to actuate optional hydraulic connections. This function is necessary if the standard hydraulic connections do not suffice for certain attachments.

This feature is activated by moving the control lever adjacent to the right side of the operator's seat (Fig. 48).

- Move the control lever to the left:
  - The left-hand connection is for the pressure side, the right-hand is for the return line.
- Move the control lever to the right:
  - The right-hand connection is for the pressure side, the left-hand is for the return line.



**Fig. 48**  
Optional hydraulics  
control lever



## 6 TOWING AND TRANSPORTING

### 6.1 Towing



#### **WARNING**

Personal injury or equipment damage hazards from improper towing.

- ▶ Do not attempt to tow the machine if the steering system or brake system is not serviceable. Loss of control during towing can occur. Load the wheel loader and transport it to a repair facility with trained technicians.
- ▶ A tow bar is preferred for towing the wheel loader. Towing straps, cables or chains must be of sufficient capacity to withstand the energy imparted to the towed machine by the towing source. Inspect the towing device to confirm that it is serviceable and will perform to OSHA ratings for the device.
- ▶ The towing machine must be sufficiently powerful and massive enough to control the towing event.
- ▶ Develop a coordinated plan between the towed machine operator and the towing machine operator before attempting to start towing. Agree on visual signals if verbal communication is not feasible.
- ▶ Do not begin the tow until all other people are safely away from the towing area in the event an unforeseen incident occurs.

---

**NOTICE**

Towing the wheel loader can damage the hydrostatic propulsion system unless the following conditions are met:

Do not tow the wheel loader more than 500 meters (0.3 miles).

Do not exceed 2 km/h (1.2 mph) during the towing operation.

Transporting the wheel loader farther than 500 meters (0.3 miles) requires that it be loaded on suitable transport to the repair destination.

---

**Towing equipment**



Do not use the towing equipment to pull trailer loads.

---



**Fig. 51**  
Towing equipment

### Disconnecting the drive (Bypass- switching)



#### WARNING

Possibility of personal injury or equipment damage. An unsecured operator station can move or tip unexpectedly during a towing operation.

- Do not attempt towing the wheel loader until the operator cab/platform has been secured.

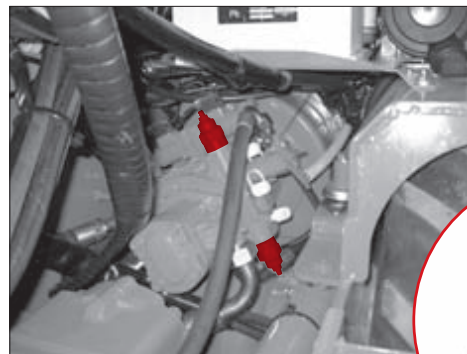
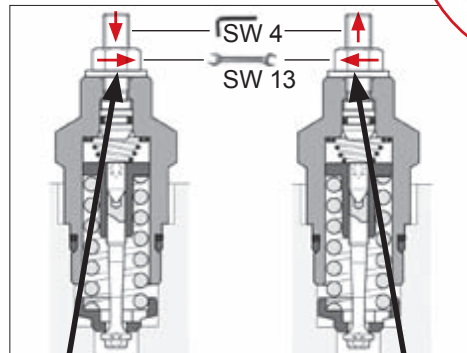
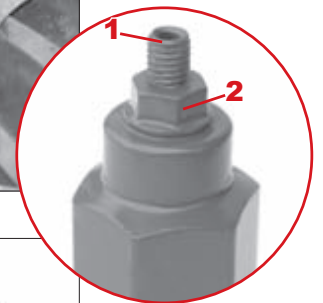


Fig. 52  
Disconnecting the  
drive



Activating the bypass

Deactivating the bypass

To tow the loader, it is necessary that you disconnect the drive. In this case the travel transmission is switched on to free wheeling. For this purpose the variable displacement pump has incorporated high pressure relief valves with bypass function.

1. Tilt the operator cab/platform upward from the left side for access to the high pressure relief valves (refer to Section 10.7.1, pages 158-161).
2. Loosen hex nut Item 2 (Fig. 52).
3. Screw in the stud Item 1 (Fig. 52) until it is level with the hex nut.

---

**Note:** *Turn the studs Item. 1 (Fig. 52) no further than described, otherwise parts of the valve become damaged.*

---

4. Return the operator cab/platform to operating position and follow instructions provided in Section 10.7.1, pages 158-161 to securely fasten the operator cab/platform in the normal operating position.
5. The Wheel Loader can be towed.

After towing:

1. Tilt the operator cab/platform upward from the left side for access to the high pressure relief valves (refer to Section 10.7.1, pages 158-161).
2. Screw back stud Item 1 (Fig. 52) to stopper.
3. Tighten hex nut Item 2 (Fig 52) to a torque of 22 Nm (16 ft.lbs.).

## 6.2 Transporting



Load and transport the loader only according to DOT safety regulations. Only experienced, trained specialized personnel may load and transport the loader.

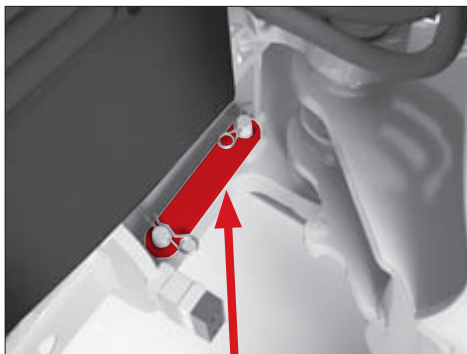
### Articulation frame lock



Personal injury hazard. Install the articulation frame lock slowly and carefully to reduce the risk of injury. The articulation frame lock is stored on the front frame of the wheel loader as illustrated in Fig 53. It is secured by two pins which are retained by spring pins. To install the articulation frame lock, remove the spring pin from the rear locking pin, pivot the articulation frame lock down, and fit over the front locking pin. Secure with spring pin.

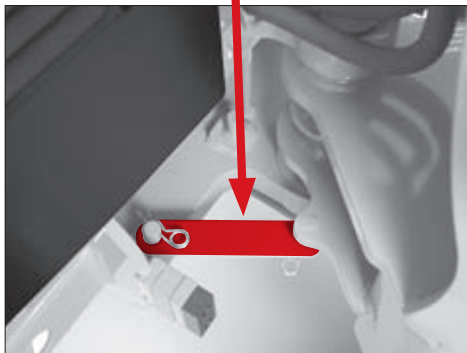


An articulation frame lock is provided as illustrated in Fig 53 for preventing unintended frame articulation during transport. After securely tying the wheel loader to the platform of the transport vehicle with OSHA or DOT rated devices for the wheel loader mass, install the articulation joint lock as shown in Fig 53. Reverse the procedure at the point the wheel loader is to be unloaded from the transport.



**Fig. 53**  
**Articulation frame**  
**lock**

**Articulation frame**  
**lock storage posi-**  
**tion**



**Articulation frame**  
**lock installed**

### Loading on a transport vehicle



Clean the wheel loader to reduce the hazard of dirt and debris falling from the machine during transport.

Clean the wheel loader tires, loading ramp and transport vehicle load deck to reduce the slipping hazard during loading.

Use a transport vehicle rated to carry the mass of the wheel loader and attachments.

Confirm that the transport vehicle is serviceable for the transport task.

Move the loader slowly and follow directions from people assisting with loading and alignment on the transport vehicle.

Install the frame articulation lock.

Secure the wheel loader to the transport per the instructions in Section 9 »Securing the Loader« on page 129.

### Loading with crane



#### **WARNING**

Possibility of equipment damage or personal injury from improper lifting.

- ▶ Confirm that the lifting device has adequate lifting capacity and reach to perform the lifting operation.
- ▶ Confirm that the lifting devices (slings, cables or chains) are OSHA rated for the wheel loader and attachment mass.
- ▶ Confirm that the lifting devices are in serviceable condition according to the rating.
- ▶ Install the frame articulation lock.
- ▶ After completing the lift and correctly positioning the wheel loader on the transport, secure the loader using instructions in Section 9 »Securing the Loader« on page 129.

Use the attachment points (Fig. 55) that are marked with labels (Fig. 54) indicating the lifting points. Rotate the eyelets on the rear attachment points by loosening the mounting screws. Retighten the mounting screws after rotating the eyelets into lifting position.

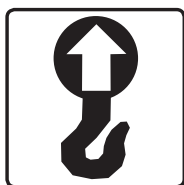


Fig. 54  
Attachment point  
label

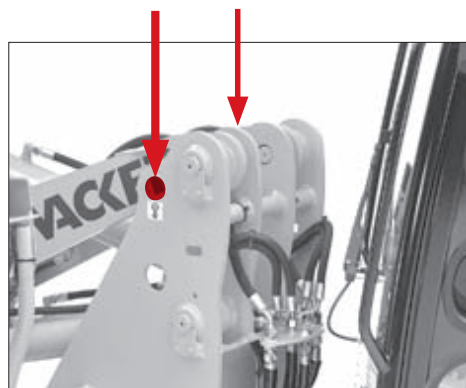
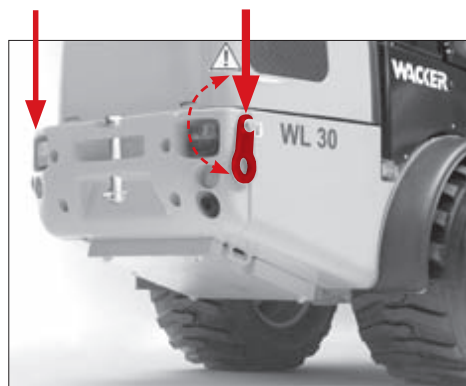


Fig. 55  
Attachment points

front



rear

### Independent driving onto the transport device



Clean the wheel loader to reduce the hazard of dirt and debris falling from the machine during transport.

Clean the wheel loader tires, loading ramp and transport vehicle load deck to reduce the slipping hazard during loading.

Use a transport vehicle rated to carry the mass of the wheel loader and attachments.

Confirm that the transport vehicle is serviceable for the transport task.

Move the loader slowly and follow directions from people assisting with loading and alignment on the transport vehicle.

Install the frame articulation lock.

Secure the wheel loader to the transport per the instructions in Section 9 »Securing the Loader« on page 129.

### Loader Tie-Down

#### **NOTICE**

Failure to securely bind the loader to the transport can cause the loader to shift. This can lead to instability in the behavior of the transport or the wheel loader being lost from the transport.

Confirm that the articulation frame lock is correctly installed.

Use wheel chocks to prevent the loader from slipping or rolling away.

Tie down the loader only to the special attachment points as depicted in Fig. 58.

Use tie down devices with OSHA or DOT ratings for the mass of the wheel loader and attachment.

As attachment points to which to tie down the loader, use the towing equipment and the attachment points marked with labels (Fig. 56), which are located on the steps on the right and the left (Fig. 57).

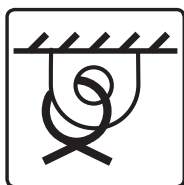


Fig. 56  
Tie down point label

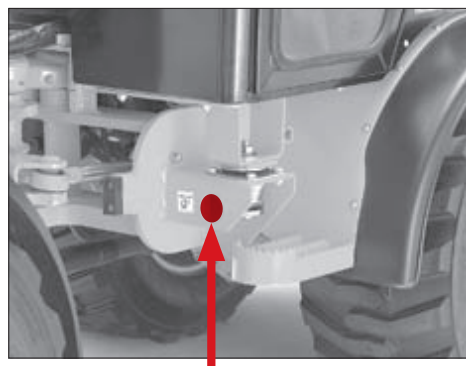


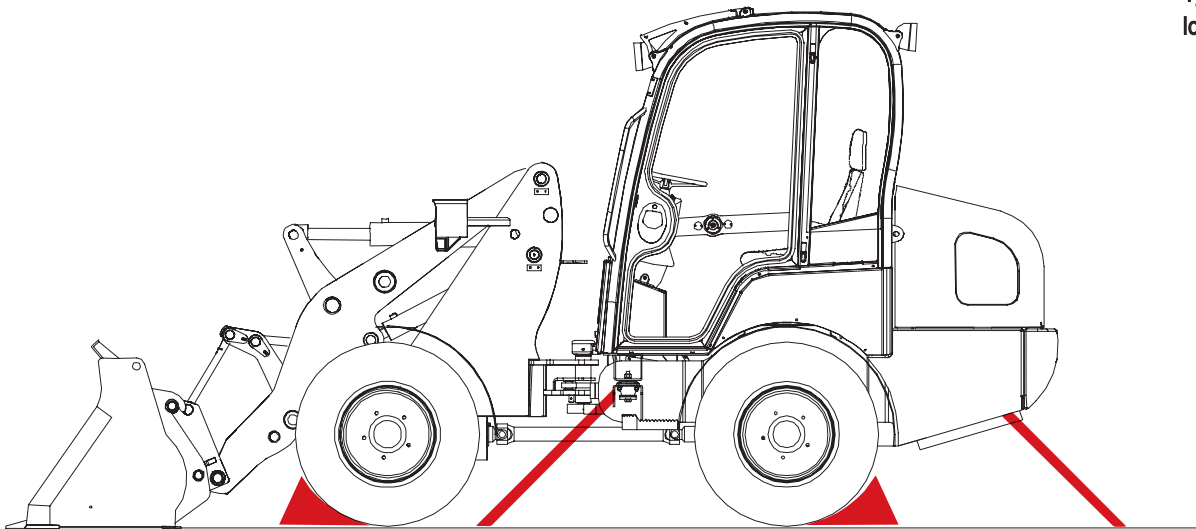
Fig. 57  
Tie down points

front



rear

Fig. 58  
Tying down the  
loader



## 7 LOWERING LOADER ARMS



### WARNING

Personal injury or equipment damage hazards.  
In the event the engine stops and can not be re-started with the loader lift arms elevated:

- Lower the loader lift arms and attachment until they rest on the ground or work surface.

The same procedure shall be used if the hydrostatic propulsion system stops responding.

In the event of a working hydraulic system failure:

- Lower the loader lift arms and attachment as quickly and safely as possible.

If a hydraulic hose fails:

- Avoid contact with the oil stream. Working hydraulic oil can exceed 93°C (200°F) causing severe burns. High pressure oil streams can penetrate the skin causing
- using serious injury.
- Relieve working circuit pressure by activating the control through the full stroke range several times.

Loaders equipped with a load holding control device in compliance with ISO8643 will stop the loader lift arms from falling more than 15cm (6") before stopping if a hose or hydraulic line suffers a rupture and rapid leak. Refer to Section 8 »Relieving residual pressure in the hydraulic system« on page 126.

## 8 RELIEVING RESIDUAL PRESSURE IN THE HYDRAULIC SYSTEM



### WARNING

Personal injury hazard.

A fine jet of hydraulic fluid under high pressure can pierce the skin. Seek medical assistance immediately if you get hydraulic fluid in your eyes or on your skin.

- ▶ Open only unpressurized hydraulic systems. Residual hydraulic pressure can still be present in the working hydraulic circuits after the loader lift arms and attachment are resting on the ground or working surface.
- ▶ Do not attempt repair work on hydraulic circuits until the temperature of the components is comfortable to touch (typically less than 49°C (120°F)).

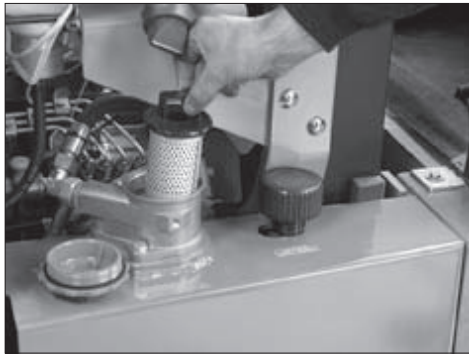
Proceed as follows to reduce the residual pressure in the hydraulic circuits (adhere to the order of the individual work steps):

1. Lower the loader lift arms as far as they will go.
2. Turn off the engine.
3. Immediately after turning off the engine, actuate all the control levers and pedals for the hydraulic system several times in all directions.
4. Relieve the hydraulic reservoir by opening the filler neck, illustration 1 (Fig. 59).
5. Remove the preload from the drive's system by opening the return filter, illustration 2 (Fig. 59).



**Fig. 59**  
**Reducing residual pressure**

**Illustration 1**



**Illustration 2**

### Opening the load holding control valves



#### **WARNING**

Personal injury hazard.

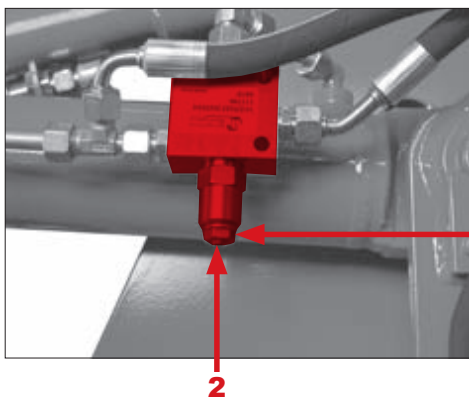
A fine jet of hydraulic fluid under high pressure can pierce the skin.

► Seek medical assistance immediately if you get hydraulic fluid in your eyes or on your skin.



Only trained personnel may open the load holding control valves.

After maintenance/repairs, close the load holding control valves again and return them to their original state.



**Fig. 60**  
**Load holding control**  
**valve**

For loaders with load holding control valves on the lifting and attachment cylinder, open the valves (Fig. 60).

1. Unscrew the nuts Item 1
2. Unscrew the screw Item 2 until the loader lift arms slowly lowers.
  - Should the loader lift arms not lower due to friction or insufficient mass, you will have to augment the process using a control cable or ratchet straps.
3. Screw the screw Item 2 back in as soon as the loader lift arms is completely lowered and retighten the nuts Item 1.

For machines with load holding control valves on the lifting and attachment cylinder which can be electrically unblocked, the engine starter must be turned on and the switch for unblocking actuated so that the work equipment can be lowered to the ground.

## 9 SECURING THE LOADER



The following instructions apply to stopping and parking the loader after daily operation, transporting the loader and to all servicing, inspection and repair work.

- Place the loader on an even, dry surface that can support sufficient weight.
- Lower the loader lift arms.
- Engage the parking brake and stop the engine.
- Switch off all electrical switches.
- Relieve the pressure in all hydraulic circuits by cycling the controls after the engine has stopped.
- Secure the loader with the wheel chock.
- Clean dirt off the loader.
- Perform a visual inspection to make sure there are no leaks:
  - in the hydraulic system
  - in the cooling system
  - in the fuel system
- Perform a visual inspection for damage to the loader, especially on the tires, attachments and locking mechanism for the attachments.
- Fill the fuel reservoir and check the operating level of the other fluid reservoirs after the temperature has been reduced to a level that is comfortable to touch.
- Secure the loader against unauthorized use:
  - Remove the starting key
  - Close the windows, doors, reservoir lid and engine enclosure.

## **10     SERVICING AND INSPECTION**

### **10.1     Basic safety instructions for servicing and inspection**

#### **Operator's Manual**

- Perform servicing and inspection work only if you have read and understood the Operator's Manual.
- Observe the basic safety instructions and all the warning signs attached to the loader.
- The Operator's Manual describes the work to be performed. However, the descriptions of work processes provide the necessary instructions only for experienced specialized technicians.
- Keep the Operator's Manual with the loader at all times.

#### **Personnel**

- Maintenance and inspection personnel must have specialized knowledge of servicing and inspection work on the loader. The specialized knowledge required can be obtained at training sessions from Wacker Neuson Service.
- Perform servicing and inspection work only with suitable work clothing and personal protective equipment.
- Wear hearing protection should there be noise exceeding 90 dbA.

## Securing the loader and attachment



- Perform servicing and inspection work only if the loader is secured as described in the chapter »Securing the loader«.
- Crushing hazard. An improperly supported loader lift arm may fall unexpectedly.
- Do not perform maintenance or service tasks under raised loader lift arms until the loader lift arm support device (ISO10533) has been inserted and locked between the hydraulic lift cylinder end and the loader lift arm to prevent any movement of the loader lift arms during maintenance and service.
- Extensive repair information is provided in the separate Repair Manual.
- Position the attachments on the ground so that no movements can occur when mechanical or hydraulic connections are released.
- Do not attempt any service repair requiring the technician to perform the work standing in the articulated steering crush zone. Do not repair the hydraulic steering cylinders or remove the hydraulic lines until the articulated frame lock has been installed to prevent inadvertent steering movement.
- Secure equipment or components that are to be attached or removed, or whose installation position is to be changed, to prevent them from unintentionally moving, slipping or falling, by means of suitable lifting gear, or suspension or support equipment.
- Clean dirt from steps and handles and keep them ready for use.

### Tools

- Use diagnostic and repair tools that are in serviceable condition and have been calibrated regularly to ensure accuracy. Consult the Repair Manual for recommended special tools necessary to safely complete the repair task.

### Cleaning



- Clean the machine before attempting to diagnose or repair the wheel loader.
- Do not use flammable solvents.
- Do not use cleaning agents that create harmful vapors.
- Avoid any contact with electrical or rubber products when using water or steam.
- High pressure washers are not recommended for cleaning the inside of the cab or the operator station.
- Wear appropriate protective clothing such as goggles and gloves to supplement protective clothing for the rest of the body.

### Handling combustible fluids



Fire hazard.

- Do not smoke when handling combustible fluids and avoid fire or open flames.
- Do not use water to extinguish fires on the loader or burning fluids. Use suitable extinguishing agents, such as powder, carbon dioxide or foam extinguishers.
- Always call the fire department in the event of a fire.

### Residual pressure in the hydraulic system



Personal injury hazard.

- Pressurized jets of fluid can penetrate human skin.
- In the event that oil penetrates the skin, seek immediate medical attention to reduce the risk of infection and complications from infection.
- Confirm that the hydraulic system pressure has been relieved before attempting to repair the system or component.
- Even for a loader parked on a horizontal surface with its loader lift arms completely lowered and engine turned off, there can still be considerable residual pressure in parts of the hydraulic system.
- Residual pressure reduces gradually at first. If a hydraulic system is to be opened immediately after being shut down, the system shall be relieved before repairs are attempted. Do not attempt to work on the system if the components are not comfortable to touch. Hot surfaces and liquids can cause severe burns.
- For loaders with load holding control devices on the lifting and/or tipping cylinder, you must open the valves as described in Section 8, page 126 »Relieving residual pressure in the hydraulic system« in order to lower the loader lift arms.

### Handling fuel, oil and grease



#### Burn hazard.

- The operating temperature of the engine and hydraulic system fluids exceeds 93°C (200°F). Contact with human skin will cause severe burns.
- Do not touch hot fluid.
- In the event of contact with hot fluid seek emergency room treatment immediately.
- Avoid skin and eye contact with oils and greases. Wear protective gloves and safety goggles.
- Do not use fuel or solvents to clean your skin.
- Eliminate any oil or fuel leaks immediately.
- Avoid environmental damage. Do not allow oil and oil-containing waste to spill on the ground or get into bodies of water!
- Immediately soak up with binding material any oil or fuel that has leaked, and dispose of it separately from other waste in an ecologically sound manner.
- Even biodegradable »environmentally friendly« oil must be disposed of separately, just like other oil.

### Threaded connections, pipes, hydraulic hoses



#### **WARNING**

#### Personal injury hazard.

- Pressurized jets of fluid can penetrate human skin.
  - In the event that oil penetrates the skin, seek immediate medical attention to reduce the risk of infection and complications from infection.
  - Do not use your hands to look for leaks. To look for leaks, use a piece of cardboard or paper on which you can identify oil which has escaped.
- 
- Eliminate any leaks in the hydraulic fittings, hoses or steel conduits immediately.
  - Do not repair damaged pipes and hydraulic hoses; rather, replace them immediately with new ones available from your Wacker Neuson dealer even if only moisture penetration is visible.

## Batteries



Personal injury hazard. Battery acid is corrosive to metallic surfaces and harmful to human skin.

- Wear protective clothing, goggles and gloves when working near batteries.
- If battery acid contacts the skin, wash immediately in clear water.
- Seek the advice of a doctor for treatment of skin burns.
- In the event acid contacts eyes, rinse immediately with clear water and seek immediate medical attention.



Explosion hazard.

A rapidly discharged battery vents explosive gases.

- Do not use open flames or smoke near batteries. -Use particular caution to vent the battery storage area well to avoid gas accumulation.
- Follow jump start procedures to reduce the potential for arcing when the cables are connected and disconnected.
- Do not place metallic objects on or near the battery terminals to avoid short circuits from contact with both poles of the battery. This will generate extreme heat and potentially ignite explosive battery gases.

- Always take off jewelry and metal watches before working on the battery or the electrical system.
- Dispose of old batteries in an ecologically sound way, separate from other waste.

### Engine exhaust fumes



- Diesel engine exhaust fumes are harmful. Do not inhale exhaust gas. Do not operate the wheel loader in a closed space.
  - For servicing and inspection work performed in a closed space, extract the exhaust fumes using an extraction system and ventilate the space well.
- 

### Electrical system

- Always observe the correct order when disconnecting the battery.
  - Disconnecting: First the negative pole and then the positive pole.
  - Connecting: First the positive pole and then the negative pole.
- Always disconnect the battery before working on the electrical system if tools, spare parts, etc. with electrical components or contacts could touch it.
- Always disconnect the battery before welding.

### After maintenance

- After completing maintenance and inspection work, always reattach all the safety devices.
- Do not start the engine until the loader is no longer being worked on and everyone has left the danger area.
- Only start the engine from the operator's seat.
- Perform a functional test with the loader after completing servicing and inspection work.

## **10.2 Servicing and inspection intervals**

### **Daily servicing**

Perform the following tasks:

- Clean the machine
  - Clean the air filter
  - Check for general damage
  - Check the coolant level/condition
  - Check the engine oil level/condition
  - Check the engine leakage
  - Check the hydraulic fluid level
  - Check the hydraulic system
  - Check the brake fluid level
  - Check the condition of the tires and the tire pressure
  - Make sure all fasteners are tight
  - Check the wheel bolts
  - Check that the brake system is functional
  - Check the windshield washer system
  - Check the seat belt
  - Check the instruments, indicator lights and audible warning devices
  - Check the electrical system
  - Check the foot brake
  - Check the hydraulic steering
  - Check that the hydraulic power units are functional
  - Check the attachments
  - Check the exhaust pipe for defects or excessive smoke emission
  - Grease lubrication according to lubrication drawing
  - Grease the tools
  - Check ROPS structure (all mounting bolts must be present and tightened)
-

## Weekly servicing

Perform the following tasks:

- Clean fuel filter for the presettling reservoir (if present)
- Check axles for leaks
- Check hydraulic fluid cooler and water radiator for leaks and dirt
- Check exterior condition of the radiators, i.e. the hoses
- Check the tension and condition of the fan belt
- Check the acid level of the battery
- Check the attachments
- Check the piston rods for the hydraulic cylinders
- Check the routing of the hoses and pipes
- Check the air filter hose
- Check the routing of the electrical wiring (rubbing/damage)
- Oil lubrication for all the levers
- Oil lubrication for all the cables and hinges
- Retighten all the screws
- Observe in particular the engine suspension and the axle mounting
- Perform the general safety check

**First inspection after 50 operating hours**

Maintenance and inspection personnel must have specialized knowledge of servicing and inspection work on the loader.  
Follow the Operator's Manual for the engine.



To assure proper functioning of the machine, it is required that the first inspection be performed after 50 operating hours, but at the latest 3 months after initial start-up, by a Wacker Neuson dealer or a mechanic at a Wacker Neuson factory agent.

| Tasks to be performed (check)                                                                           | 50 hours inspection      |
|---------------------------------------------------------------------------------------------------------|--------------------------|
| Check the transmission, engine and hydraulic system for leaks                                           | <input type="checkbox"/> |
| Check the hydraulic, engine coolant and engine oil coolers for dirt                                     | <input type="checkbox"/> |
| Check the coolant level and antifreeze                                                                  | <input type="checkbox"/> |
| Check the tension and condition of the V-belt                                                           | <input type="checkbox"/> |
| Make sure all hoses and pipes fit tightly                                                               | <input type="checkbox"/> |
| Check the routing of the hoses and pipes                                                                | <input type="checkbox"/> |
| Check the piston rods for the hydraulic cylinders for damage or dirt                                    | <input type="checkbox"/> |
| Check the routing of the bowden cables and electrical wiring                                            | <input type="checkbox"/> |
| Retighten all the fasteners. Observe in particular the engine suspension, axle mounting and drive shaft | <input type="checkbox"/> |
| Check: Instruments + audible warning devices                                                            | <input type="checkbox"/> |

| Tasks to be performed (check)                                        | 50 hours inspection      |
|----------------------------------------------------------------------|--------------------------|
| Check the electrical system                                          | <input type="checkbox"/> |
| Check the foot brake and parking brake, adjust if necessary          | <input type="checkbox"/> |
| Check the hydraulic steering                                         | <input type="checkbox"/> |
| Check the lighting system (if present)                               | <input type="checkbox"/> |
| Check the idle speed                                                 | <input type="checkbox"/> |
| Check the valve clearance, adjust if necessary (only Perkins 1004-4) | <input type="checkbox"/> |
| Check the functioning of the door and engine enclosure mechanisms    | <input type="checkbox"/> |
| Check ROPS / cab                                                     | <input type="checkbox"/> |
| Check the condition of the tires                                     | <input type="checkbox"/> |
| Change the engine oil and filter                                     | <input type="checkbox"/> |
| Clean the air filter, replace if necessary                           | <input type="checkbox"/> |
| Change the hydro return filter                                       | <input type="checkbox"/> |
| Have all the grease nipples been lubricated? Lubricate if necessary  | <input type="checkbox"/> |
| Lubricate the drive shafts (universal joint)                         | <input type="checkbox"/> |
| Lubricate all the levers, cables and hinges with oil                 | <input type="checkbox"/> |
| Check all oil levels, also the transmission and axles.               | <input type="checkbox"/> |

**Inspection after 500 operating hours**

Maintenance and inspection personnel must have specialized knowledge of servicing and inspection work on the loader.  
Follow the Operator's Manual for the engine.



This inspection is performed **once** after the first 500 operating hours. Should the loader not reach 500 operating hours during the first year of operation, perform this inspection **once** 12 months after starting up the loader.

| Tasks to be performed (check)                                                                           | 500 hours inspection     |
|---------------------------------------------------------------------------------------------------------|--------------------------|
| Check transmission, engine and hydraulic system for leaks                                               | <input type="checkbox"/> |
| Check the hydraulics, water and hydraulic fluid radiators for dirt                                      | <input type="checkbox"/> |
| Check the coolant level and antifreeze                                                                  | <input type="checkbox"/> |
| Check the tension and condition of the V-belt                                                           | <input type="checkbox"/> |
| Check the routing of hoses and pipes                                                                    | <input type="checkbox"/> |
| Check the piston rods for the hydraulic cylinders                                                       | <input type="checkbox"/> |
| Check the air filter hose                                                                               | <input type="checkbox"/> |
| Check routing of bowden cables and electrical wiring                                                    | <input type="checkbox"/> |
| Retighten all the fasteners. Observe in particular the engine suspension, axle mounting and drive shaft | <input type="checkbox"/> |
| Check the engine suspension's rubber pad                                                                | <input type="checkbox"/> |

| Tasks to be performed (check)                                                                  | 500 hours inspection     |
|------------------------------------------------------------------------------------------------|--------------------------|
| Check the acid level of the battery                                                            | <input type="checkbox"/> |
| Check: Instruments, indicators + audible warning devices                                       | <input type="checkbox"/> |
| Check the electrical system                                                                    | <input type="checkbox"/> |
| Check the foot brake and parking brake, adjust if necessary                                    | <input type="checkbox"/> |
| Check the hydraulic steering                                                                   | <input type="checkbox"/> |
| Check the lighting system – (if present)                                                       | <input type="checkbox"/> |
| Check the exhaust system                                                                       | <input type="checkbox"/> |
| Check the hinge pins and joint bushings                                                        | <input type="checkbox"/> |
| Check the center pivot bolts and bearings                                                      | <input type="checkbox"/> |
| Check the idle speed                                                                           | <input type="checkbox"/> |
| Check the functioning of the engine enclosure and door locking mechanisms, adjust if necessary | <input type="checkbox"/> |
| Check the condition of the tires and the tire pressure                                         | <input type="checkbox"/> |
| Change the engine oil and filter                                                               | <input type="checkbox"/> |
| Change the fuel filter – clean the pre-filter                                                  | <input type="checkbox"/> |
| Clean the fuel feed pump (Deutz engines only)                                                  | <input type="checkbox"/> |
| Clean the air filter, replace if necessary                                                     | <input type="checkbox"/> |

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| Tasks to be performed (check)                                 | 500 hours inspection     |
|---------------------------------------------------------------|--------------------------|
| Set the valve clearance                                       | <input type="checkbox"/> |
| Change the hydraulic fluid                                    | <input type="checkbox"/> |
| Change the hydro return filter                                | <input type="checkbox"/> |
| Change the hydro pressure filter                              | <input type="checkbox"/> |
| Change the oil in the transfer case                           | <input type="checkbox"/> |
| Change the oil in the axles                                   | <input type="checkbox"/> |
| Are all the grease nipples lubricated? Lubricate if necessary | <input type="checkbox"/> |
| Lubricate the drive shafts                                    | <input type="checkbox"/> |
| Lubricate all the levers, cables and hinges with oil          | <input type="checkbox"/> |
| Check all the oil levels                                      | <input type="checkbox"/> |

The following inspection intervals apply after this inspection:

---

## Inspection intervals



Maintenance and inspection personnel must have specialized knowledge of servicing and inspection work on the loader.

Follow the Operator's Manual for the engine.

Perform the maintenance work listed in the inspection schedule depending on which interval has been reached first, that is, if either the number of operating hours have been reached or the time specified in the schedule has elapsed.

At the end of the Operator's Manual you will find the form »Inspection verification«, in which the inspections to be performed must be recorded.

| Work to be performed                                                                                       | Operating hours:<br>250, 750, 1000,<br>1250, 1750,<br>2000, 2250,<br>2750, 3000, etc. | Operating<br>hours: 1500,<br>2500, 3500,<br>4500, etc. | monthly | annually |
|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------|---------|----------|
| Check transmission, engine and hydraulic system for leaks                                                  | X                                                                                     | X                                                      | X       | X        |
| Check the hydraulic and water radiators for dirt                                                           | X                                                                                     | X                                                      | X       | X        |
| Check the coolant level and antifreeze                                                                     | X                                                                                     | X                                                      | X       | X        |
| Check the tension and condition of the V-belt                                                              | X                                                                                     | X                                                      | X       | X        |
| Check the routing of hoses and pipes                                                                       |                                                                                       | X                                                      |         | X        |
| Check the piston rods for the hydraulic cylinders                                                          |                                                                                       | X                                                      |         | X        |
| Check the air filter hose                                                                                  | X                                                                                     | X                                                      | X       | X        |
| Check routing of bowden cables and electrical wiring                                                       |                                                                                       | X                                                      |         | X        |
| Retighten all screws, observing in particular the engine suspension, the axle mounting and the drive shaft |                                                                                       | X                                                      |         | X        |
| Check the acid level of the battery                                                                        | X                                                                                     | X                                                      | X       | X        |
| Clean the battery terminals/check the acid density                                                         |                                                                                       | X                                                      |         | X        |
| Check: Instruments, indicators + audible warning devices                                                   | X                                                                                     | X                                                      | X       | X        |
| Check the electrical system                                                                                | X                                                                                     | X                                                      | X       | X        |
| Check the foot brake and parking brake, adjust if necessary                                                | X                                                                                     | X                                                      | X       | X        |
| Check the hydraulic steering                                                                               | X                                                                                     | X                                                      | X       | X        |

| Work to be performed                                                                                                                                                      | Operating hours:<br>250, 750, 1000,<br>1250, 1750,<br>2000, 2250,<br>2750, 3000, etc. | Operating<br>hours: 1500,<br>2500, 3500,<br>4500, etc. | monthly | annually |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------|---------|----------|
| Check the lighting system – (if present)                                                                                                                                  | X                                                                                     | X                                                      | X       | X        |
| Check the exhaust system                                                                                                                                                  |                                                                                       | X                                                      |         | X        |
| Check the hinge pins and joint bushings                                                                                                                                   |                                                                                       | X                                                      |         | X        |
| Check the center pivot bolts and bearings                                                                                                                                 |                                                                                       | X                                                      |         | X        |
| Check the pressure relief valves in the hydraulic system                                                                                                                  |                                                                                       | X                                                      |         | X        |
| Check the idle speed                                                                                                                                                      | X                                                                                     | X                                                      | X       | X        |
| Check max. speed when loaded and unloaded                                                                                                                                 |                                                                                       | X                                                      |         | X        |
| Check the starter and alternator (engine manual)                                                                                                                          |                                                                                       | X                                                      |         | X        |
| Check the heater plugs and fuel injectors (engine manual)                                                                                                                 |                                                                                       | X                                                      |         | X        |
| Check the valve clearance, adjust if necessary                                                                                                                            |                                                                                       | X                                                      |         |          |
| For Deutz engines: Check the timing belt for engine timing and, if available, for auxiliary drive system (do not retighten, change every 5 years or after 4500 op. hours) |                                                                                       | X                                                      |         | X        |
| Check the fuel injectors (every 3000 operating hours)                                                                                                                     |                                                                                       |                                                        |         |          |
| Check the functioning of the engine enclosure locking mechanism, adjust if necessary                                                                                      | X                                                                                     | X                                                      | X       | X        |

| Work to be performed                                                            | Operating hours:<br>250, 750, 1000,<br>1250, 1750,<br>2000, 2250,<br>2750, 3000, etc. | Operating<br>hours: 1500,<br>2500, 3500,<br>4500, etc. | monthly | annually |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------|---------|----------|
| Check ROPS/FOPS structures                                                      |                                                                                       | X                                                      |         | X        |
| Check the condition of the tires and the tire pressure                          | X                                                                                     | X                                                      | X       | X        |
| Change the engine oil and filter (every 500 operating hours)                    |                                                                                       |                                                        |         | X        |
| Change the fuel filter – clean the pre-filter                                   |                                                                                       | X                                                      |         | X        |
| Clean the fuel feed pump (for Deutz engines)                                    |                                                                                       | X                                                      |         | X        |
| Clean the air filter, replace if necessary                                      | X                                                                                     | X                                                      | X       | X        |
| Change the hydraulic fluid                                                      |                                                                                       | X                                                      |         | X        |
| Change the hydro return filter                                                  |                                                                                       | X                                                      |         | X        |
| Pressure filter (first change after 500 op. hours, further changes as needed *) |                                                                                       |                                                        |         |          |
| Change the oil in the transfer case                                             |                                                                                       | X                                                      |         | X        |
| Change the oil in the axles                                                     |                                                                                       | X                                                      |         | X        |
| Change the coolant – every 2 years                                              |                                                                                       |                                                        |         |          |
| Are all the grease nipples lubricated? Lubricate if necessary                   | X                                                                                     | X                                                      | X       | X        |
| Lubricate the drive shafts (universal and slip joint)                           | X                                                                                     | X                                                      | X       | X        |
| Lubricate all the levers, cables and hinges with oil                            | X                                                                                     | X                                                      | X       | X        |

| Work to be performed                                                                                           | Operating hours:<br>250, 750, 1000,<br>1250, 1750,<br>2000, 2250,<br>2750, 3000, etc. | Operating<br>hours: 1500,<br>2500, 3500,<br>4500, etc. | monthly | annually |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------|---------|----------|
|                                                                                                                |                                                                                       |                                                        |         |          |
| Check all the oil levels                                                                                       | X                                                                                     |                                                        | X       |          |
| Check according to the Ordinance on Industrial Safety and Health                                               |                                                                                       | X                                                      |         | X        |
| * Required if there is a damage in the hydraulic system which is supposed to be caused by strong abrasive wear |                                                                                       |                                                        |         |          |

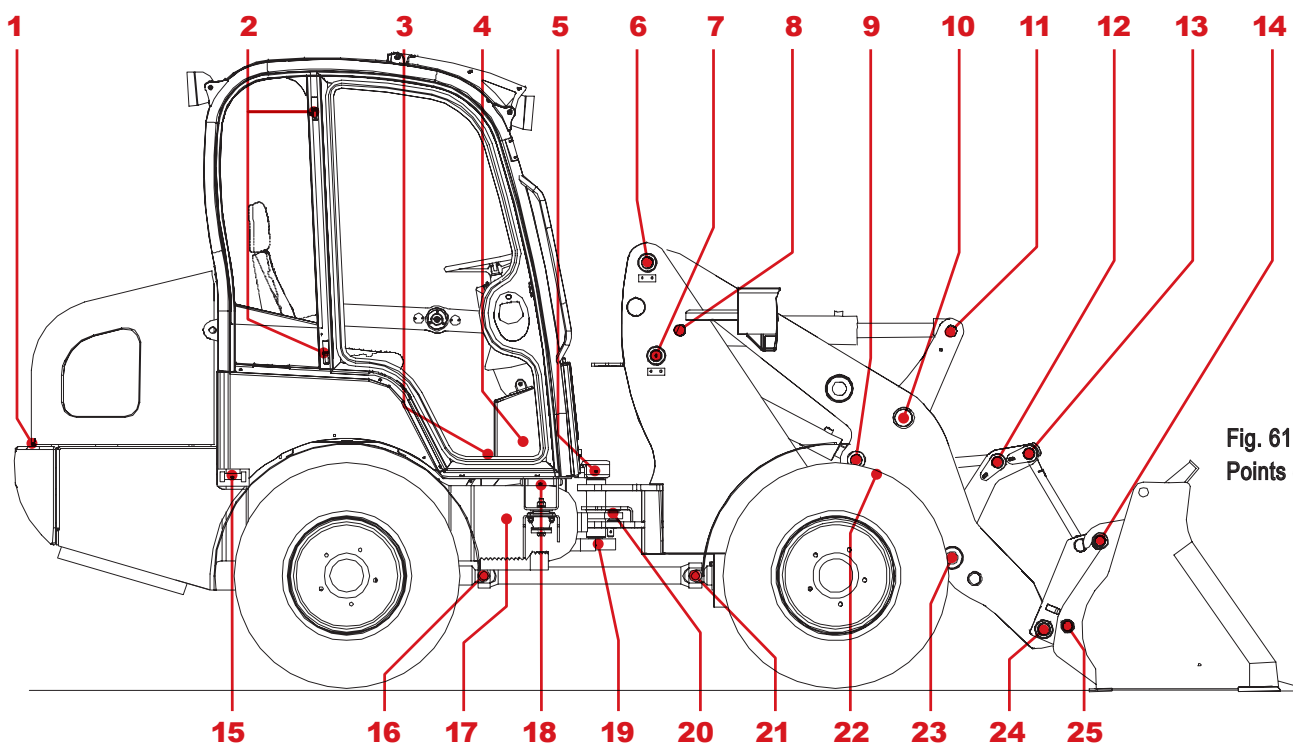
Valve clearance for Perkins 400 series: 0.2 mm (0.008") inlet and outlet for a cold engine

Valve clearance for Perkins 1000 series: 0.2 mm (0.008") inlet and 0.45 mm (0.04") outlet for a cold engine

Valve clearance for Deutz 2011 series: 0.3 mm (0.012") inlet and 0.5 mm (0.04") outlet for a cold engine

### 10.3 Lubrication schedule

Lubricate all the points of lubrication daily with water-resistant multi-purpose grease. Lubricate all other moving parts such as the handbrake lever, foot pedals, cables, etc. using the oil can.



**Fig. 61**  
**Points of lubrication**

| Item | Point of lubrication                | Nipples |
|------|-------------------------------------|---------|
| 1    | Engine enclosure hinges             | [2]     |
| 2    | Door hinges                         | [4]     |
| 3    | Brake pedal bearing (in the cab)    | [1]     |
|      | Brake lever bearing (under the cab) | [1]     |
| 4    | Accelerator (in the cab)            | [1]     |
| 5    | Center pivot bearing, top           | [2]     |
| 6    | Arm, top                            | [2]     |
| 7    | Lifting cylinder, rear              | [2]     |
| 8    | Tipping cylinder, rear              | [1]     |
| 9    | Lifting cylinder, front             | [2]     |
| 10   | Bearing for large reversing lever   | [1]     |
| 11   | Tipping cylinder, front             | [1]     |
| 12   | Large tie rod, front                | [1]     |

| Item | Point of lubrication                         | Nipples |
|------|----------------------------------------------|---------|
| 13   | Small tie rod, rear                          | [1]     |
| 14   | Small tie rod, front                         | [1]     |
| 15   | Cab tilting hinge, rear                      | [1]     |
| 16   | Drive shaft, rear                            | [1]     |
| 17   | Steering cylinder, rear (remote lubrication) | [1]     |
| 18   | Cab tilting hinge, front                     | [1]     |
| 19   | Center pivot bearing, bottom                 | [1]     |
| 20   | Steering cylinder, front                     | [1]     |
| 21   | Drive shaft, front                           | [1]     |
| 22   | Large tie rod, rear                          | [1]     |
| 23   | Bearing for small reversing lever            | [1]     |
| 24   | Pivot point of tool attachment               | [2]     |
| 25   | Tool locking bolts                           | [2]     |

## 10.4 Cleaning the loader



### **WARNING**

Burn hazard.

High pressure water at the maximum recommended temperature (80°C (176°F)) will cause severe burns and is extremely hazardous if contact is made with the eyes.

- Wear protective clothing and safety goggles while cleaning the machine.



Clean the wheel loader frequently, particularly the access systems, to prevent slips and falls when entering and leaving the operator station.

To avoid potential fires, remove flammable debris and dust from the hot surfaces in the engine enclosure and hydraulic system.

### **NOTICE**

- When cleaning the loader, pay particular attention to its underside. Do not allow mud to collect on the engine and transmission.
- Make sure that the radiator is thoroughly clean all over.
- Do not damage the radiator fins when cleaning the radiator with a high-pressure cleaner.
- Always cover up the suction connection of the air filter before washing the engine.
- Do not clean sensitive electrical components (instrument panel, alternator, compact plug, multi-function lever, etc.) with a high-pressure cleaner.



When the loader is new (in the first three months), only clean it with a sponge.

As the paintwork on the underside is not fully hardened, the paintwork can be damaged if cleaned with a high-pressure cleaner.

Please note when cleaning the loader with a high-pressure cleaner:

Maximum water pressure 130 bar (1885 psi).

Maximum water temperature 80°C (176°F).

When cleaning, do not hold the jets of the high-pressure cleaner too close to the labels and other sensitive parts, so that nothing gets damaged.



#### ENVIRONMENTAL NOTE

Avoid environmental damage.

Clean the loader only in a suitable place where the waste water can be collected in an ecologically sound manner.

Collect contaminated waste water and dispose of it in an ecologically sound manner.

## **10.5 General safety check**



Immediately rectify any damage detected during the safety check. Damaged parts must be immediately repaired or replaced. Do not use the loader again until the damage has been rectified professionally.

---

Check:

- all steel parts for damaged and loose screws/bolts, particularly the ROPS structure,
- the condition of the seat belt,
- the quick-change system for the attachments,
- that all the hinge pins are in the correct position and are secured by their locking devices,
- that the step and handles are in good condition, clean and fit well,
- cab windows for cracks and fractures,
- the condition of the reflectors and the lighting, including the work lights,
- the tires for damage and any sharp-edged objects that have penetrated them,
- the condition of all warning and message labels.

## 10.6 Specifications and filling quantities



When filling oil, the oil level must correspond to the dip stick or control screw markings.

| Item                      | Capacity in liters / gallons |       | Fluid / grease nipple                                                      | Specification                            |
|---------------------------|------------------------------|-------|----------------------------------------------------------------------------|------------------------------------------|
| Fuel reservoir            | 53                           | 14.00 | Diesel fuel                                                                | #1 or #2, see engine manual              |
| Engine oil with filter    | 8,3                          | 2.19  | Engine oil SAE 10 W 40 Ambient temperature -20°C to +40°C (-4°F to +104°F) | API CG-4 / API CH-4<br>See engine manual |
| Cooling system contents   | 11,5                         | 3.04  | Water with conventional HD coolant / antifreeze                            | HD coolant / antifreeze: ASTN D4985      |
| Front axle                | 3,2                          | 0.85  | Transmission oil SAE 90 GL 5                                               |                                          |
| Rear axle                 | 3,9                          | 1.03  |                                                                            |                                          |
| Complete hydraulic system | 40                           | 10.57 | Hydraulic fluid HLP                                                        | ISO VG 46                                |
| Hydraulic reservoir       | 32                           | 8.45  | Hydraulic fluid HLP                                                        | ISO VG 46                                |
| Points of lubrication     |                              |       | Multi-purpose grease                                                       | water-resistant                          |
| Brake system              | 0,7                          | 0.18  | ATF oil                                                                    |                                          |

## 10.7 Maintenance and inspection work



Perform maintenance and inspection work only if the loader is secured as described in Section 9, page 129 »Securing the loader«.

The operator cab/platform can be tilted for access to the wheel loader systems for inspection, maintenance and repair. Refer to section 10.7.1 pages 158-161 for detailed instructions on how to tilt the operator cab/platform.

### 10.7.1 Preparation for maintenance and inspection work

#### Opening the engine enclosure



##### **WARNING**

Crushing/shearing hazard.

Moving engine parts can crush and cut.

- ▶ Do not open the engine enclosure unless the engine is stopped to avoid hazards from moving objects (cooling fan and drive belts for the fan and alternator).



##### **WARNING**

Burn hazard.

Engine components can get very hot during operation.

- ▶ Do not touch the engine mass, exhaust system, or cooling system immediately after stopping the engine.
- ▶ Wait until the stopped engine has cooled to the point that the exhaust system, engine mass and cooling system are comfortable to touch.

If the engine stops and can not be restarted from the operator position, check to determine if there is fuel in the fuel reservoir. If fuel is not the problem, notify the supervisor and wait for a qualified technician to diagnose and repair the problem.



Remove all tools and objects from the engine and the engine compartment before closing the engine enclosure.

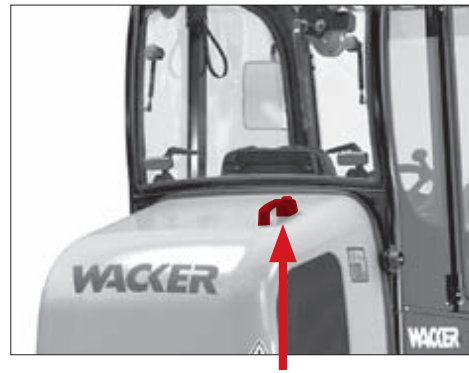


Fig. 62  
Handle for the  
engine enclosure

Open and close the engine enclosure using the handle provided. The handle is lockable.

### Tilting the operator's platform



#### **WARNING**

Improperly tilting the cab can cause personal injury or damage to equipment.

- ▶ Before tilting the cab remove loose objects from the cab to avoid control/indicator damage.
- ▶ Close and confirm that the doors are latched
- ▶ Do not attempt to tilt the cab until the wheel loader has cooled to the point that the engine and hydraulic system are comfortable to touch.
- ▶ Always immediately secure the tilted cab from tilting back by using the safety support.
- ▶ Do not remove the bearing plate from the loader rear frame member.
- ▶ Do not operate the wheel loader until the cab has been rigidly bolted to the main frame.
- ▶ Tilt the cab slowly and keep hands and arms clear of pinch points.

#### **NOTICE:**

Avoid damage to the cab doors.  
Either close the doors or remove them.



Tilting the operator's platform is accomplished by removing two mounting bolts from the main frame, and then using the supplied lever to tilt the operator's platform. The lever (item 1, Fig. 63) is stored beneath the engine enclosure on the rear wall of the operator's platform. The complete procedure for tilting the operator's platform is found on page 160.

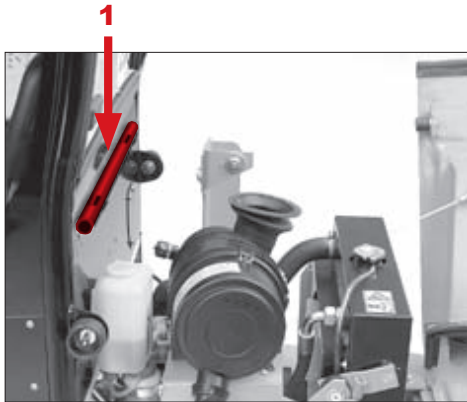
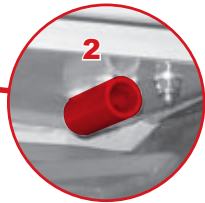


Fig. 63  
Cab tilt lever



Tilting the operator's platform:

1. Remove any loose objects from the operator's platform.
2. Make sure there is sufficient room to the right of the loader.
3. Close the cab doors.
4. Open the engine enclosure.
5. Remove the two mounting bolts from the support bracket on the left of the operator's platform (Fig. 64).

**Note:** Do not remove the bolts that hold the support bracket to the rear frame.

6. Remove the lever (item 1, Fig. 63) from the retaining clips and insert it into the holder (item 2, Fig. 63) beneath the operator's platform.
7. Pull upward on the lever to tilt the operator's platform to the right.
8. Prop the tilted operator's platform by raising the support bar stored in the cross member on the bottom of the cab floor and inserting it into the pocket (Fig. 65).

Fig. 64 Position of the cab mounting bolts

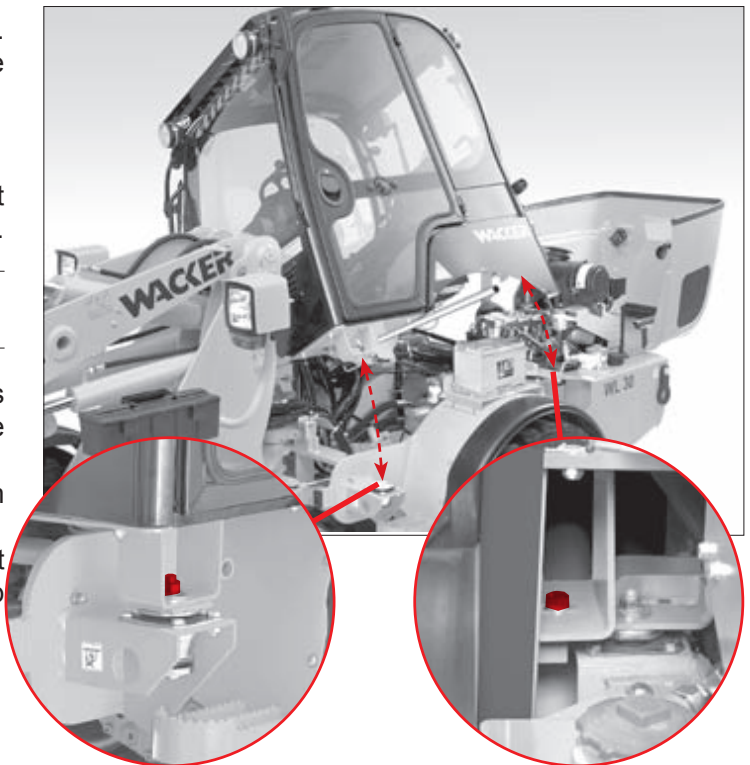
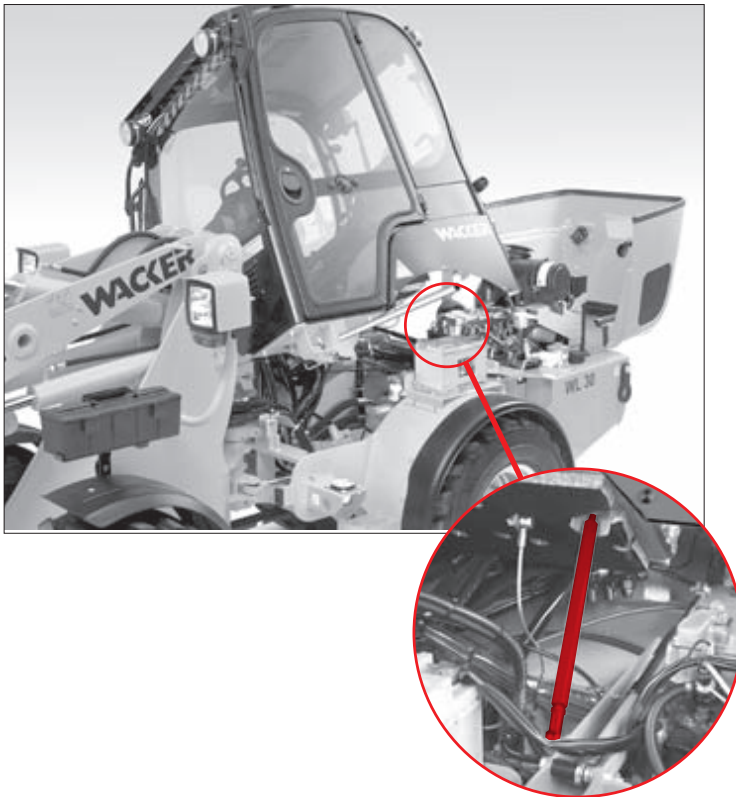


Fig. 65 Cab safety support



Lowering the operator's platform:

1. Remove the support bar from the pocket and return it to storage on the crosspiece underneath the operator's platform.
2. Lower the operator's platform by hand. Ensure that the upper sections of the bearing for the operator's platform lie precisely on the lower sections.
3. Re-install in the mounting bolts immediately after lowering the operator's platform back in place.
4. Store the tilt lever on the back of the cab

### 10.7.2 Servicing the engine



#### **WARNING**

Shearing, pinching, and crushing hazards exist when the engine is running.

- ▶ Do not open the engine enclosure until the engine has stopped.

Burn hazard.

The engine, engine exhaust and cooling system exceed 93°C (200°F) at operating temperature. Touching the engine compartment components can cause severe burns.

- ▶ Stop the engine and wait until the engine compartment components are cool enough to touch before performing service work.

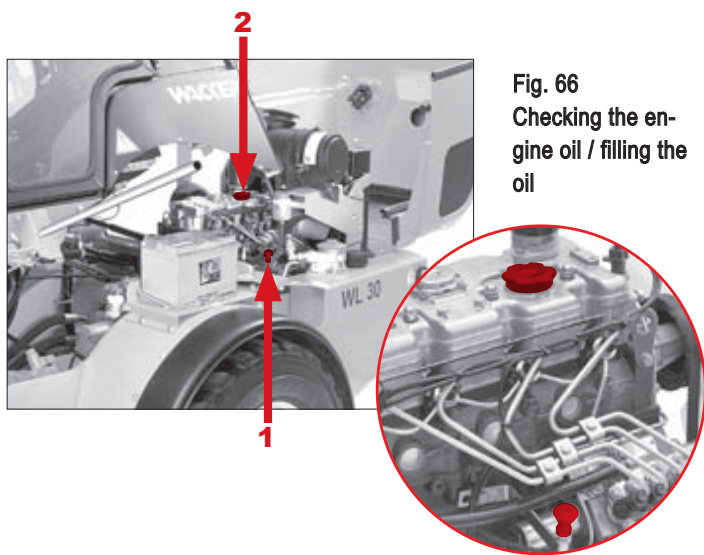
### Checking the engine oil level



The engine lubricating oil dipstick is located on the left side of the engine facing the direction of machine travel.

Check the oil level (Fig. 66, location 1) according to the maintenance schedule and confirm that the level is between the minimum and maximum marks. If the level is at or below the minimum level add the specified oil (Fig. 66, location 2) before operating the engine.

Do not exceed the maximum engine oil level when adding lubricating oil to the engine. Excessive oil levels can cause engine damage.



**Fig. 66**  
Checking the engine oil / filling the oil

1. Stop the loader on a horizontal surface and set the parking brake.
2. Lower the loader lift arms and attachment to the ground or working surface.
3. Stop the engine.
4. Wait until the engine has cooled and the dipstick is comfortable to touch.
5. Open the engine enclosure.
6. Pull out the dip stick (left side of the engine; Item 1 Fig. 66).
7. Wipe the dip stick with a clean, lint-free cleaning rag.
8. Put the dip stick back in.
9. Pull the dip stick out again.
10. Check the oil level. The oil level must be between the »minimum« and »maximum« marks.
11. Put the dip stick back in after checking the oil level.

### Adding engine oil



Use the correct oil grade (see Section 10.6, page 155 »Specifications and filling quantities«).  
Use a funnel with tube extension as aid for filling.

If the fluid level is under the »Maximum« mark, the fluid must be added:

1. Open the oil filler neck Item 2 (Fig. 66).
2. Add the engine oil.
3. Check the oil level.
4. Add engine oil until the oil level is at the »Maximum« mark.
5. Close the oil filler neck Item 2 (Fig. 66).

### Changing the engine oil



#### **WARNING**

Burn hazard.

The operating oil temperature in the diesel engine is more than 93°C (200°F). Skin contact with hot oil will result in severe burns.

- Stop the engine and wait until the engine oil drain plug is comfortable to touch before draining the oil.



Refer to Section 10.6, page 155 »Specifications and filling quantities« for replacing the drained engine lubricating oil.



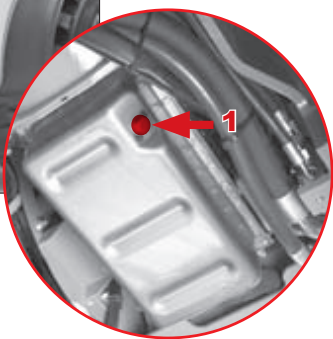
#### **ENVIRONMENTAL NOTE**

Avoid environmental damage.

Collect old engine oil in a large enough container to avoid spillage and dispose of it in an ecologically sound manner.



**Fig. 67**  
Engine oil drain  
opening



1. Bring the engine to operating temperature and allow to cool until the drain plug is comfortable to touch.
2. Stop the loader on a horizontal surface and set the parking brake.
3. Lower the loader lift arm and attachment to the ground or working surface.
4. Stop the engine.
5. Place a container with sufficient volume to avoid spillage under the drain opening.
6. Remove the sealing plug Item 1 and attach the supplied hose Item 2 (Fig. 67). The oil will now flow out of the engine.

Once the engine oil has been drained:

1. Change the engine oil filter (see the section »Changing the engine oil filter«).
2. Unscrew the supplied hose Item 2 (Fig. 67) and screw the sealing plug back in.
3. Open the oil filler neck Item 2 (Fig. 66):
4. Add engine oil until the oil level has reached the »Maximum« mark.
5. Start the engine and let it idle until the engine oil indicator light goes out.
6. Check the oil level and, if necessary, fill to the »Maximum« mark.
7. Close the oil filler neck Item 2 (Fig. 66):
8. Dispose of the old engine oil in an ecologically sound manner.

### Changing the engine oil filter



#### **WARNING**

Burn hazard.

The operating oil temperature in the diesel engine is more than 93°C (200°F). Skin contact with hot oil will result in severe burns.

- Stop the engine and wait until the engine oil drain plug is comfortable to touch before draining the oil.



The engine oil filter contains a bypass valve that opens when the filter is clogged.



#### **ENVIRONMENTAL NOTE**

Avoid environmental damage.

Collect old engine oil and dispose of it in an ecologically sound manner.

The engine oil filter is located on the left side of the engine (Fig. 68).

1. Put a receptacle for draining oil under the engine oil filter.
2. Unscrew the engine oil filter item 1 (Fig. 69):
3. Clean the sealing surface of the filter holder Item 2 (Fig. 69).
4. Lightly oil the rubber seal of the new engine oil filter item 3 (Fig. 69).
5. Screw on the new engine oil filter until it stops against the rubber seal.
6. Tighten the new engine oil filter by hand by another half rotation.
7. Check the oil level and, if necessary, fill to the »Maximum« mark.
8. Dispose of the old engine oil filter in an ecologically sound manner.

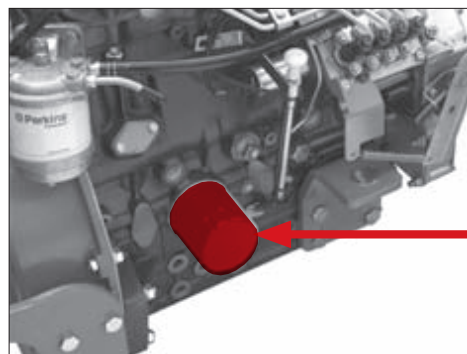


Fig. 68  
Location of the  
engine oil filter

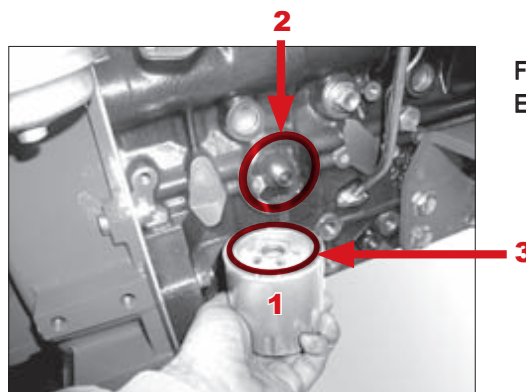


Fig. 69  
Engine oil filter

### 10.7.3 Servicing the fuel system

The fuel passes from the reservoir through a pre-filter and a sieve with water separator and is then conveyed by an electric feed pump through the main filter to the fuel injection pump.

The filters and the feed pump are located in the engine compartment. To access them, open the engine enclosure and tilt the operator's platform.



#### **WARNING**

Personal injury hazard.

Moving engine components can crush or cut. Hot engine components can cause serious burns.

- ▶ Do not open the engine enclosure until the engine stops.
- ▶ Do not touch engine components until they have cooled.

Fire/explosion hazard.

Fuel and fumes can explode or catch fire.

- ▶ Do not smoke or change the fuel filter near an open flame.
- ▶ Do not mix gasoline with diesel fuel.



Service the fuel system according to the inspection intervals specified in this Operator's Manual.

Use only clean, high-grade diesel fuel. Do not use gasoline.

Always replace all the fuel filters at the same time.



#### **ENVIRONMENTAL NOTE**

Avoid environmental damage.

Collect leaking fuel and dispose of it in an ecologically sound manner.

### Servicing the water separator

1. Place a receptacle under the water separator Item 1 (Fig. 70).
2. Unscrew the drain plug from the inspection glass Item a (Fig. 70).
3. The collected water now runs out.
4. Retighten the drain plug when the collected water has run out.

Check the filter screen in the water separator. If required:

5. Remove the inspection glass and clean it.
6. Clean or replace the filter screen.
7. Screw the inspection glass back on.

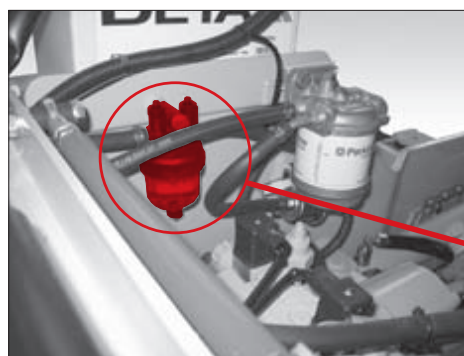
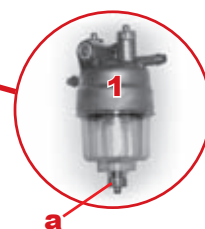


Fig. 70  
Water separator

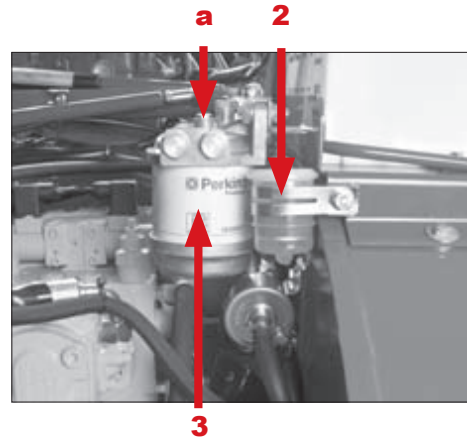


### Changing the fuel pre-filter



The fuel pre-filter Item 2 (Fig. 71) can only be replaced in conjunction with the entire housing.

1. Place a receptacle under the fuel pre-filter.
2. Remove the hose clamps from the fuel pre-filter.
3. Disconnect the fuel hoses.
4. Replace the fuel pre-filter.
5. Connect the fuel hoses.
6. Attach the hose clamps for the fuel pre-filter.



**Fig. 71**  
Fuel pre-filter, main  
fuel filter

### Changing the main fuel filter

1. Place a receptacle under the main fuel filter item 3 (Fig. 71).
2. Unscrew the screw Item a (Fig. 71).
3. Remove the main fuel filter Item 3 (Fig. 72).
4. Clean the sealing surfaces of the filter base and the filter cover Item c. (Fig. 72).
5. Replace the gaskets Item b. (Fig. 72). Moisten the new gaskets with diesel fuel and make sure that they fit correctly.
6. Replace the main fuel filter.
7. Put on the filter cover.
8. Tighten the screw Item a (Fig. 71).
9. Vent the fuel system.

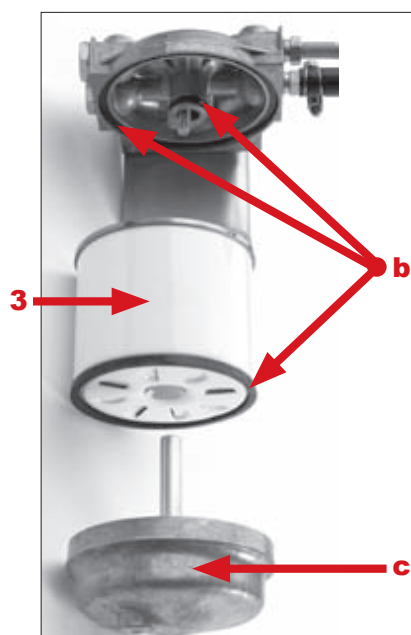
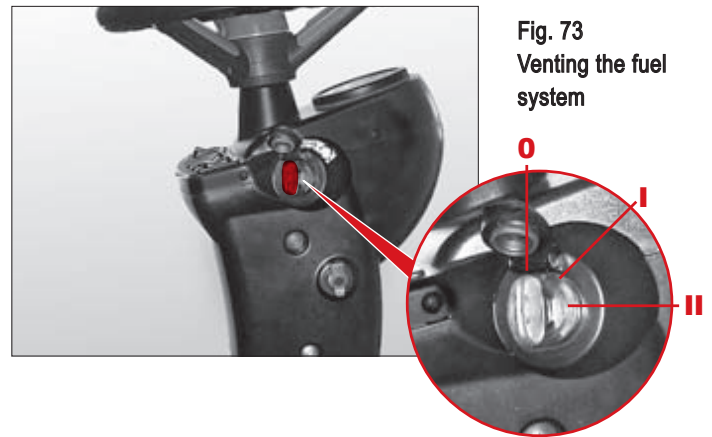


Fig. 72  
Changing the main  
fuel filter

### Venting the fuel system

1. Fill the fuel reservoir.
2. Switch the starting key to position I (operation) so that the electrical fuel feed pump is working.
3. Wait 1 minute; the system will vent itself automatically.
4. The engine can now be started.



**Fig. 73**  
**Venting the fuel**  
**system**

#### 10.7.4 Servicing the air filter system

The loader is equipped with a dry air filter for filtering the engine intake air. The dry air filter consists of a main filter and a safety filter element. To access the dry air filter, open the engine enclosure.



##### **WARNING**

Crushing/shearing hazard.

Moving engine parts can crush and cut.

- ▶ Do not open the engine enclosure unless the engine is stopped to avoid hazards from moving objects (cooling fan and drive belts for the fan and alternator).

Burn hazard.

Engine components can get very hot during operation.

- ▶ Do not touch the engine mass, exhaust system, or cooling system immediately after stopping the engine.
- ▶ Wait until the stopped engine has cooled to the point that the exhaust system, engine mass and cooling system are comfortable to touch



Service the air filter according to the inspection intervals specified in this Operator's Manual.

Dirty, contaminated air entering the engine will cause damage and reduce performance.

Never let the engine run if parts of the air intake system are removed.

Replace damaged air filters immediately.

### Air filter dust valve

Check if the outlet slot on the dust valve Item 1 (Fig. 74) is clear. Remove dust accumulation by pinching the valve.

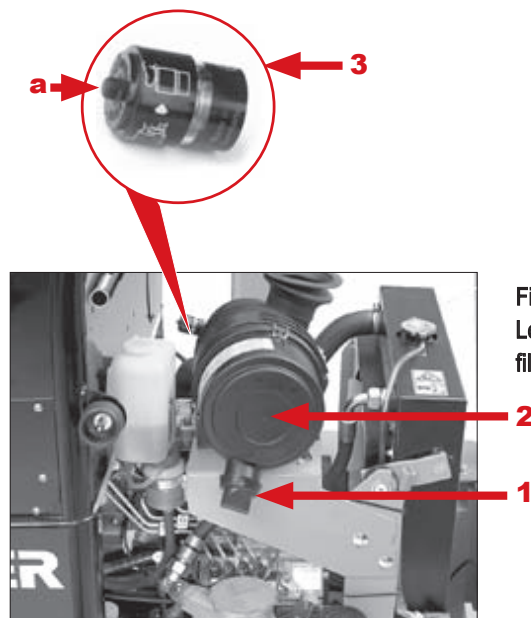


Fig. 74  
Location of the air  
filter

### Check main air filter element / clean / replace



Clean or replace the main filter element item 1 (Fig. 75) during the inspection or if the red cover is visible between inspection intervals in the inspection glass in the maintenance display, Item 3 (Fig. 74).

To reset the display, press the button Item a (Fig. 74).

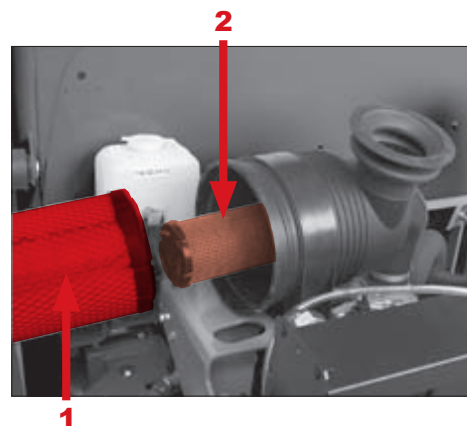


Fig. 75  
Air filter elements

1. Remove the fasteners on the cover Item 2 (Fig. 74) and take off the cover.
2. Remove the main filter element Item 1 (Fig. 75). Do not remove the safety filter element in the process.
3. Perform a visual inspection of the intake manifold between the filter and the engine for leaks and tight fit. The intake manifold must not display any exterior damage.
4. Clean the main filter element (knock off lightly and blow out with compressed air from the inside to the outside). Should the main filter element be too dirty or damaged, replace it.

Install a new or cleaned main filter element, repeating the steps in the reverse order.

Before installing a new or cleaned main filter element, reset the maintenance display. After the engine has been allowed to run, the red cover should no longer be visible in the inspection glass in the maintenance display. Should this nevertheless be the case, replace the safety filter.

### Checking / changing the safety filter



Replace the safety filter if necessary, and at least after cleaning the main filter for the fifth time.

Should it be apparent while servicing the dry air filter that a maintenance fault was present or that the main filter element is damaged, replace the safety filter element Item 2 (Fig. 75).

1. Remove the three fasteners on the cover Item 2 (Fig. 74).
2. Remove the cover Item 2 (Fig. 74):
3. Pull out the main filter element Item 1 (Fig. 75).
4. Pull out the safety filter element Item 2 (Fig. 75).
5. Insert a new safety filter element..

Assembly takes place in the reverse order.

### 10.7.5 Servicing the cooling system

The radiator is installed behind the diesel engine. The left part contains hydraulic oil; the right part is intended for cooling the engine (Fig. 76).



#### **WARNING**

Crushing/shearing hazard.

Moving engine parts can crush and cut.

- ▶ Do not open the engine enclosure unless the engine is stopped to avoid hazards from moving objects (cooling fan and drive belts for the fan and alternator).

Burn hazard.

Engine components can get very hot during operation.

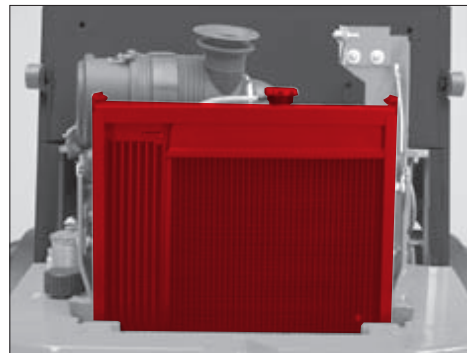
- ▶ Do not touch the engine mass, exhaust system, or cooling system immediately after stopping the engine.
- ▶ Wait until the stopped engine has cooled to the point that the exhaust system, engine mass and cooling system are comfortable to touch.



Service the cooling system according to the inspection intervals specified in this Operator's Manual.

Turn off the engine immediately if the temperature indicator in the instrument panel is illuminated.

If the temperature indicator is illuminated, either the engine or the hydraulic oil or both have become too hot.

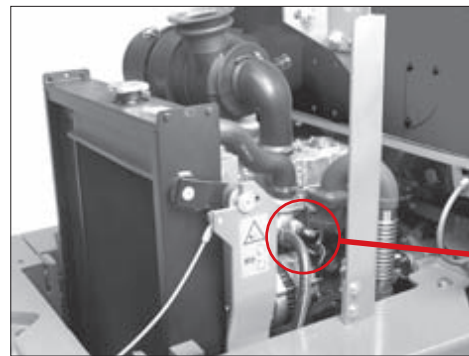


**Fig. 76**  
**Radiator**

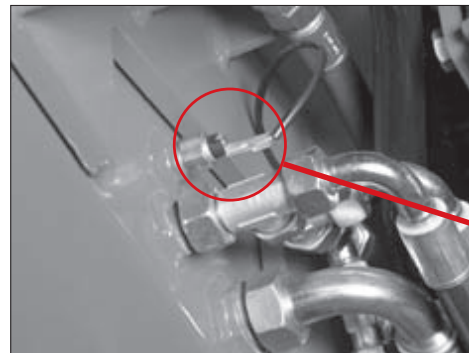
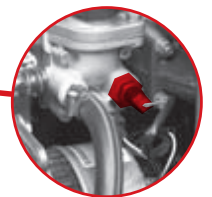
The temperature indicator light is connected to two temperature sensors; one is located on the engine (Fig. 77), the other on the hydraulic oil reservoir (Fig. 78). To ascertain whether the engine or hydraulic oil (or both) have become too hot, disconnect the cable on one of the two temperature sensors.

In the event of cooling system overheating, check the following:

- Is there enough coolant in the radiator and is it the correct coolant mix?
- Is the fan's V-belt taut and in good condition?
- Is the radiator air flow restricted?



**Fig. 77**  
Engine temperature sensor



**Fig. 78**  
Hydraulic oil temperature sensor



### Checking the coolant level / refilling the coolant



#### **WARNING**

Burn hazard.

Hot fluid (exceeding 93°C (200°F)) will spray under pressure. Contact with skin will cause severe burns.

- ▶ Do not remove the radiator cap if the engine is at operating temperature.

Poison hazard.

Coolant can be harmful or fatal if swallowed.

- ▶ If hot coolant makes contact with the skin or eyes, rinse immediately with clear water and seek immediate medical attention.
- ▶ If coolant is swallowed, seek immediate medical attention.



The coolant must consist of equal parts of water and antifreeze. This mix guarantees an optimal ratio of cooling performance and corrosion protection. Do not pour in the coolant too quickly if the full amount is to be poured in, e.g. when changing the coolant.

Do not exceed a refill rate of 5 l/min (1.3 gpm) to reduce the potential for air entrapment during filling. Use the capacity guide on page 155. Fill until the coolant is below the neck of the radiator cap spout. Replace the cap and run the engine briefly. Stop the engine and check the level. Add coolant if the level has dropped.



#### **ENVIRONMENTAL NOTE**

Avoid environmental damage.

Do not allow antifreeze and coolant to be released uncontrollably into the environment.

Collect antifreeze and coolant and dispose of it in an ecologically sound manner.

Check the coolant level at regular intervals. If you look into the radiator opening (Fig. 79) from above, the radiator fins should be covered with coolant.

Make sure that enough antifreeze is always present in the coolant, even in summer, as antifreeze also prevents internal corrosion of the radiator and the engine.

### Checking the antifreeze mix

Antifreeze prevents the coolant from freezing at temperatures below zero and protects the engine block and the radiator from internal corrosion. Under normal conditions, the antifreeze concentration is sufficient for protection down to between  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) and  $-30^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$ ). You can determine the antifreeze concentration by using a conventional antifreeze tester (Fig. 80).

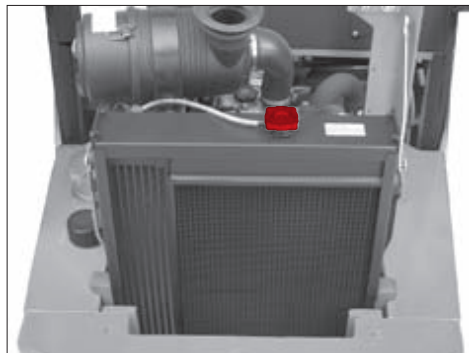


Fig. 79  
Radiator opening



Fig. 80  
Checking the anti-  
freeze mix

## Changing the coolant

### **NOTICE**

Replace the coolant after two years of use.

The coolant must consist of equal parts of water and antifreeze. This mix guarantees an optimal ratio of cooling performance and corrosion protection.

Do not exceed a refill rate of 5 l/min (1.3 gpm) to reduce the potential for air entrapment during filling.

Use the capacity guide on page 155. Fill until the coolant is below the neck of the radiator cap spout.

Replace the cap and run the engine briefly.

Stop the engine and check the level. Add coolant if the level has dropped.

After the coolant has drained completely, flush the system with clear water and making certain to capture the drained liquid in a container.

1. Stop the loader on a horizontal surface and set the parking brake.
2. Lower the loader lift arms and attachment to the ground or the work surface..
3. Stop the engine.
4. Refer to Section 10.6, page 155 for the volume of coolant and select a drain container of sufficient capacity to avoid spillage.
5. Remove the radiator cap.
6. Remove the lower radiator hose (remove the hose clamp and remove the hose).

1. Correctly reattach the lower radiator hose.
2. Mix new coolant using equal parts of clean tap water and new antifreeze.
3. Pour the new coolant into the radiator opening until the radiator fins are covered with coolant. Do not add the new coolant at a rate faster than 5 l/min (1.3 gpm) to reduce the risk of air pockets in the cooling system.
4. Install the radiator cap.
5. Check the coolant level once again after half an hour of operation.

## Cleaning the cooling system



The greater the amount of dust in the air, the more frequently the radiator has to be checked and cleaned.

Always cover up the suction connection of the air filter before cleaning the radiator.

Do not damage the radiator fins when cleaning the radiator. Straighten any twisted radiator fins carefully.



### ENVIRONMENTAL NOTE

Avoid environmental damage

Clean the loader only in a suitable place where the waste water can be collected in an ecologically sound manner.

Collect contaminated waste water and dispose of it in an ecologically sound manner.

Clean the dirty radiator with compressed air (Fig. 81). You can also clean heavily contaminated radiators with water under high pressure.

### Clean

- the engine's radiator
- the hydraulic fluid cooler
- the alternator (with compressed air only!)

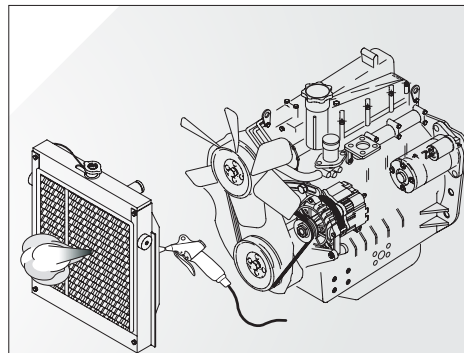


Fig. 81  
Cleaning the cooling system

### 10.7.6 Servicing the hydraulic system



#### **WARNING**

Crushing/shearing hazard.

Moving engine parts can crush and cut.

- ▶ Do not open the engine enclosure unless the engine is stopped to avoid hazards from moving objects (cooling fan and drive belts for the fan and alternator).

Burn hazard.

The operating temperature of the hydraulic system is 93°C (200°F). Contact with skin will cause severe burns.

- ▶ Rinse with water immediately and seek medical treatment.

Injury hazard.

High pressure hydraulic streams can penetrate skin, resulting in infections.

- ▶ If oil penetrates the skin, seek medical treatment immediately.
- ▶ If hydraulic fluid enters an eye, seek medical attention immediately.
- ▶ Use a piece of cardboard or heavy paper to search for hydraulic system leaks

Open hydraulic systems only if they have been relieved of pressure. Even if a loader is parked on a horizontal surface with its loader lift arms completely lowered and engine turned off, there can still be considerable residual pressure in parts of the hydraulic system. Residual pressure reduces gradually at first. Should a hydraulic system be opened immediately after shutting down, the system has to be depressurized as described in Section 8, page 126 »Relieving residual pressure in the hydraulic system«.

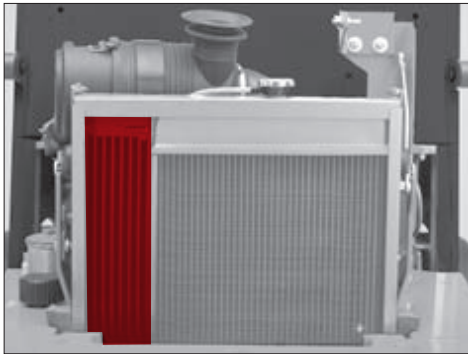


Service the hydraulic system according to the inspection intervals specified in this Operator's Manual.

Exercise extreme cleanliness when performing service work on the hydraulic system. Impurities in the hydraulic fluid in the form of dirt or water can result in premature wear or failure of the entire system.

### Hydraulic fluid cooler

The oil radiator is installed behind the diesel engine (Fig. 82). The left part contains hydraulic oil; the right part is intended for cooling for the engine. Should the loader get too hot during long drives on the road or at high outside temperatures, check whether the fan's V-belt is taut and in good condition and whether the radiator air flow is blocked.



**Fig. 82**  
Hydraulic fluid  
cooler

### Ventilation filter / hydraulic fluid filler neck



Replace the ventilation filter after 1000 operating hours.

The ventilation filter is located on the hydraulic fluid reservoir item 1 (Fig. 83). It ensures that the hydraulic reservoir is ventilated and exhausted when the hydraulic fluid level fluctuates. The air filter contains a filter element which prevents dust and dirt from penetrating and oil spillings from escaping. The air filter has a valve that keeps the reservoir pressure at approx. 0.5 bar (7 psi). This pressure will escape if the hydraulic fluid filler neck is opened.

### Checking the hydraulic fluid level

The hydraulic oil reservoir is located on the left side of the rear frame. To access it, open the engine enclosure (reference Section 10.7.1, pages 158-161).

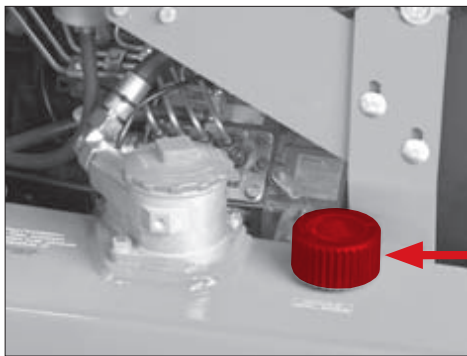


Never let the oil level drop below the »Minimum« mark on the dip stick.

When adding oil, never let the »Maximum« mark on the dip stick be exceeded.

Oil cloudiness means that water or air is in the system, which could damage the hydraulic pump. Contact trained specialized personnel to eliminate the fault. Do not drive the loader until the fault has been eliminated.

1. Stop the loader on a horizontal surface and set the parking brake.
2. Lower the loader lift arms and attachment to the ground or work surface.
3. Stop the engine.
4. Remove the hydraulic oil filler neck Item 1 (Fig. 83) slightly so that the pressure can escape from the reservoir before removing the cap completely.
5. The dip stick is located on the underside of the air filter. Remove the dip stick (Fig. 84).
6. Wipe the dip stick with a clean, lint-free cleaning rag.
7. Put the dip stick back in.
8. Pull the dip stick out again.
9. Check the oil level. The oil level must be between the »minimum« and »maximum« marks.
10. Put the dip stick back in after checking the oil level.
11. Close the hydraulic fluid filler neck item 1 (Fig. 83).



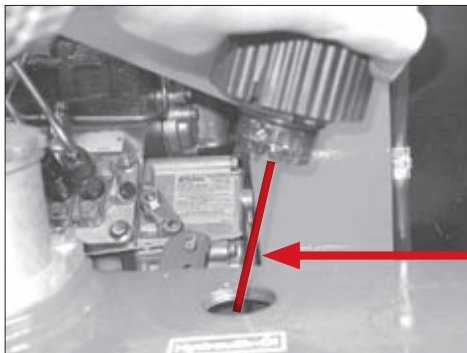
**Fig. 83**  
Ventilation filter



Use the correct oil grade (reference Section 10.6, page 155 »Specifications and filling quantities«). Open the hydraulic oil filler neck cap Item 1 (Fig. 83) carefully so that the pressure can escape from the reservoir.

If the fluid level is under the »Maximum« mark, add hydraulic fluid until the maximum level is reached.

1. Open the hydraulic fluid filler neck cap Item 1 (Fig. 83).
2. Add hydraulic fluid.
3. Check the hydraulic fluid level.
4. Add hydraulic fluid until the fluid level is at the »Maximum« mark.
5. Close the hydraulic oil filler neck cap Item 1 (Fig. 83).



**Fig. 84**  
Hydraulic fluid dip  
stick

### Changing the hydraulic fluid



#### **WARNING**

Burn hazard.

The operating temperature of the hydraulic system is 93°C (200°F). Contact with skin will cause severe burns.

- ▶ Wear protective clothing.
- ▶ Rinse affected areas with water immediately and seek medical treatment.



Refer to Section 10.6, page 155 »Specifications and filling quantities« to determine the necessary container volume to avoid spillage.

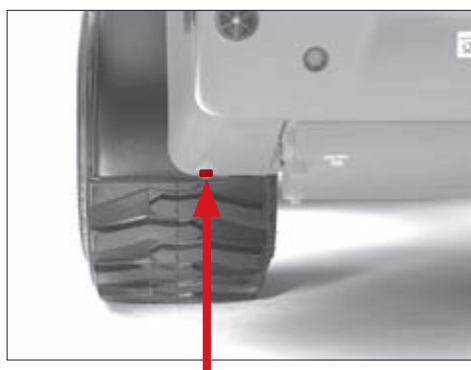


#### **ENVIRONMENTAL NOTE**

Avoid environmental damage.

Collect old hydraulic fluid and dispose of it in an ecologically sound manner.

1. Stop the loader on a horizontal surface and set the parking brake.
2. Lower the loader lift arms and attachment to the ground or work surface.
3. Stop the engine.
4. Relieve residual hydraulic system pressure using the procedure described in Section 8, page 126.
5. Refer to Section 10.6, page 155 »Specifications and filling quantities« to determine the necessary container volume to avoid spillage.
6. Remove the sealing plug (Fig. 85).



**Fig. 85**  
**Hydraulic fluid drain**  
**plugs**

Once the hydraulic fluid has been drained:

1. Remove the filter insert Item b (Fig. 87).
2. Clean the reservoir bottom and reservoir interior with hydraulic or detergent oil through the opening.
3. Replace the filter element of the return filter (see the section »Changing the return filter element«).
4. Install the plug (Fig. 85).
5. Add hydraulic oil into the hydraulic oil filler neck Item 1 (Fig. 83) until the oil level has reached the »Maximum« mark.
6. Close the hydraulic fluid filler neck cap.
7. Vent the hydraulic system (see the section »Venting the hydraulic system«).
8. Check the hydraulic fluid level and add hydraulic fluid if necessary.
9. Dispose of the old hydraulic fluid in an ecologically sound manner.

### Changing the return filter element

The hydraulic system is equipped with a return filter Item 2 (Fig. 86). It is connected to an indicator light. An installed bypass valve secures the return valve against positive pressure.



Replace the filter element of the return filter Item b. (Fig. 87) during inspections or if the indicator light for the return filter on the instrument panel is illuminated between inspection intervals.

After installing a new filter element, the indicator light on the instrument panel should no longer be illuminated.

Replace the filter element in a timely manner, as the filter's effect is overridden when the bypass valve is open.



#### **ENVIRONMENTAL NOTE**

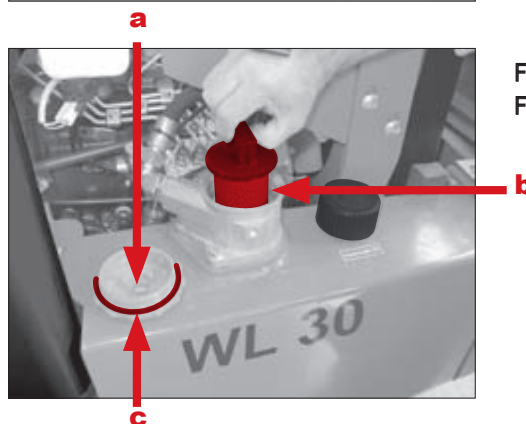
Let the pressure from the hydraulic fluid reservoir escape by opening the hydraulic fluid filler neck cap Item 1 (Fig. 83) before you unscrew the cover of the filter housing Item a (Fig. 87). Otherwise, hydraulic fluid will be forced out of the filter housing and could get into the environment.

Dispose of the old filter element and any leaking hydraulic fluid in an ecologically sound manner.

1. Stop the loader on a horizontal surface and set the parking brake.
2. Lower the loader lift arms and attachment to the ground or work surface.
3. Stop the engine.
4. Relieve the residual hydraulic pressure using the procedure described in Section 8, page 126.
5. Remove the cover of the filter housing Item 1 (Fig. 87).
6. Remove the filter element item b (Fig. 87).
7. Insert a new filter element.
8. Check the gasket Item c (Fig. 87): Replace the gasket if it is damaged.
9. Screw on the cover of the filter housing Item a (Fig. 87):
10. Close the hydraulic oil filler neck Item 1 (Fig. 83).
11. Vent the hydraulic system (see the section 10.7.6, page 190 »Venting the hydraulic system«).
12. Check the hydraulic fluid level and add hydraulic fluid if necessary.



**Fig. 86**  
Return filter



**Fig. 87**  
Filter insert

### Venting the hydraulic system



#### **WARNING**

Possibility of injury or equipment damage.  
Trapped air in the hydraulic system will cause erratic or inadvertent movement of the loader arms.

- Before returning the loader to work after servicing, it is necessary to purge any air trapped in the hydraulic system.

---

1. Check the fluid level in the hydraulic fluid reservoir. If necessary, add hydraulic fluid until the fluid level is at the »Maximum« mark.
2. Start the engine and let it idle for a few minutes.
3. To purge air from the cylinders, slowly actuate each cylinder several times through its complete stroke.
4. With the engine running, turn the steering wheel to its maximum angle of turn in both directions until the steering can be actuated faultlessly and without any noises.
5. Check the oil level in the hydraulic fluid reservoir after exhausting has been completed. If necessary, add hydraulic fluid until the fluid level is at the »Maximum« mark.

### 10.7.7 Servicing the axles



Service the transmission and the axles according to the inspection intervals specified in this Operator's Manual.

Checking / filling and draining screws can be found in the same place on the front and rear axles.

The axial piston oil motor of the loader's drive hydraulics is mounted on the transfer case. The transfer case is connected to the rear axle of the loader. The front axle is powered via the drive shaft. The wheels are driven via two reduction gears on each axle.

### Checking the axle oil level



The complete axle (transfer case, differential, axle tube wheel drives) shares a common oil supply. You can check the oil level on the differential housing, the transfer case and on the wheel reduction gears.

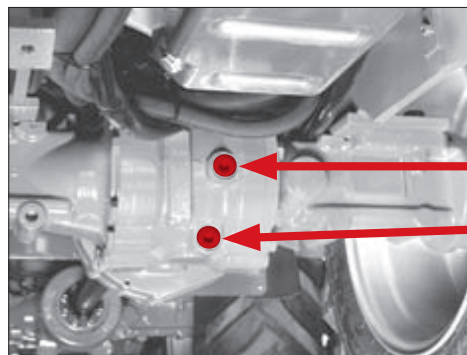
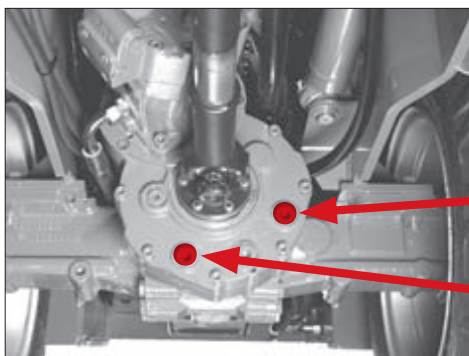


Fig. 88  
Differential



**Fig. 89**  
**Transfer case**



**Fig. 90**  
**Wheel reduction**

1. Stop the loader on a horizontal surface and set the parking brake.
2. Lower the loader lift arms and attachment to the ground or work surface.
3. Stop the engine.
4. Remove the hex socket screws items a, c, e (Fig. 88/89/90). For the wheel reduction gears raise the wheel with a jack first and turn it so that the hex socket screw item e (Fig. 90) is horizontal.
5. The transmission oil must be at or below the bottom edge of the filler neck.
6. If necessary, add transmission oil.
7. Replace the hex socket screws items a, c, e (Fig. 88/89/90).

## Changing the axle oil



### WARNING

Burn hazard.

The transmission oil operating temperature can cause serious burns if contact is made with skin.

- If hot oil contacts the skin, seek medical attention immediately for burn treatment.



### ENVIRONMENTAL NOTE

Avoid environmental damage.

Do not allow oil and waste containing oil to enter the ground or bodies of water.

Collect leaking transmission oil and dispose of it in an ecologically sound manner.



The complete axle (transfer case, differential, axle tube, wheel drives) shares a common oil supply. If some of the oil must be changed, then afterwards, all oil levels must be checked to ensure that sufficient oil is in the axle.

Refer to section 10.6, page 155 to determine the correct size container to avoid spillage of the drained lubricant.

The transmission oil is viscous. Change the axle oil while the oil is warm and open the filler plugs, so that the oil runs out more quickly.

1. Stop the loader on a horizontal surface and set the parking brake.
2. Lower the loader lift arms and attachment to the ground or work surface.
3. Stop the engine.
4. Place a sufficiently large receptacle under the drain opening of the differential housing item b (Fig. 88).
5. Remove the hex socket plug Item a (Fig. 88); the transmission oil will now drain more quickly.
6. Remove the hex socket plug Item b (Fig. 88).
7. The transmission oil drains off.
8. Lift the wheels with a jack and turn them so that the sealing plugs Item e (Fig. 90) are down.
9. Place a receptacle under the sealing plugs Item e (Fig. 90) and remove them.

Once the transmission oil has been drained:

1. First fill the wheel reduction transmission, after you have aligned the wheels as illustrated in (Fig. 90).
2. The transmission oil must be at or below the bottom edge of the opening.
3. Insert the sealing plug Item e.
4. Install the hex socket screw on the differential housing Item b (Fig. 88) back in.
5. Pour new transmission oil through the filler neck into the axle Item a (Fig. 88).
6. The transmission oil must be at or below the bottom edge of the filler neck.
7. Install the hex socket plug Item b (Fig. 88) on the differential housing back in.
8. Check the axle oil level once again after half an hour of operation on the transfer case housing, the differential housing, and the wheel reduction gears, and add transmission oil if necessary.

### 10.7.8 Servicing the cab vent filter



Change the cab air filter annually, or more frequently under dusty conditions.

The loader is equipped with a dry air filter for filtering the engine intake air for cab ventilation. The filter is located on the front of the cab above the middle joint of the loader (Fig. 91).

1. Remove the lid of the filter housing.
2. Remove the filter.
3. Insert a new filter.
4. Replace the lid of the filter housing.



Fig. 91  
Cab vent filter

### 10.7.9 Servicing the brakes



#### **WARNING**

Personal injury hazard.

The service and parking brakes are essential for safe operation of the wheel loader. Loss of control is hazardous to the operator as well as other people on the work site or public roads.

- ▶ Always check brake performance at the start of each work shift and stay alert to changes in response or capacity. A loss in response or capacity must be corrected.
- ▶ Stop the wheel loader in a safe place and lower the loader lift arms and attachment to the ground.
- ▶ Stop the engine and notify the supervisor or a technician to diagnose the brake system and make any needed repairs before resuming work.

The hydrostatic drive is used as an operating brake and operates equally without wear resistance on all four wheels. In addition, the loader has a foot brake and parking brake. The foot brake and parking brake consists of a hub brake on the differential. The parking brake is actuated via a bowden cable, by means of the handbrake lever. The foot brake is activated hydraulically via brake lines and main brake cylinders by means of the braking-inching pedal.

### Checking the brake fluid level / adding brake fluid



#### **WARNING**

Health hazard.

Brake fluid can be absorbed into the skin or cause infections.

- ▶ Avoid contact with skin and eyes.
- ▶ Wear protective gloves and eye protection.



Using the wrong brake fluid damages the brake system.

Only use brake fluid approved by Wacker Neuson for the braking system (see section 10.6, page 155 »Specifications and fill quantities«).

If you are frequently adding brake fluid between inspections, then there is a system leak. Do not work with the loader again until the faults have been eliminated.



#### ENVIRONMENTAL NOTE

Avoid environmental damage.

Do not allow oil and waste containing oil to spill on the ground or get into bodies of water.

Collect leaking transmission oil and dispose of it in an ecologically sound manner.

The brake fluid reservoir is on the left at the back, underneath the engine enclosure (Fig. 92). The control marks »MAX« and »MIN« are on the side of the container.

If the brake oil level in the brake fluid container falls below the »MIN« mark, fill with prescribed brake fluid up to the »MAX« mark and have the brake system checked by a trained specialist.

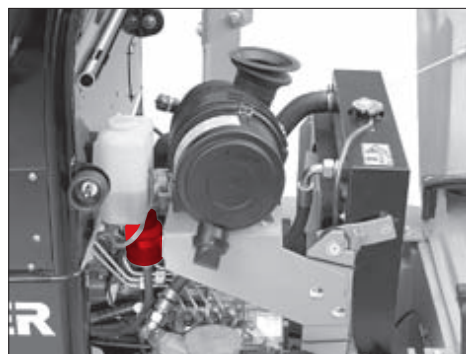


Fig. 92  
Brake fluid container

#### 10.7.10 Servicing the tires and wheels



##### **WARNING**

Injury or explosion hazards.

- ▶ Do not attempt to remove or install tires on the rims. Special tools and training are required to dismount and mount tires safely. Contact a qualified technician for tire repair service.
- ▶ Do not weld or attempt to use any type of flame to heat the rim with the tire mounted on the rim. Tires can release gas with age creating an explosive atmosphere internally. Heat or flames can cause an explosion.

##### **NOTICE**

Different wheel or tire sizes can result in damage to the loader's differentials.

Install only wheels or tires from the same manufacturer which are the same size and have the same wear.

#### Inflating the tires



##### **WARNING**

Explosion hazard.

Overinflating tires can cause them to explode.

- ▶ Use only filling devices with a calibrated pressure gauge to pump up tires.
- ▶ Make sure that no one is in the danger area when you pump up tires.



These instructions refer to inflating in the event of loss of air pressure. Observe the air pressure specified for the loader's tire size (see air pressure table for tires).

In the case of complete air pressure loss, this work may only be performed by trained, experienced specialized personnel with appropriate equipment.

1. Stop the loader on a horizontal surface and set the parking brake.
2. Lower the loader lift arms and attachment to the ground or work surface.
3. Stop the engine.
4. Remove the valve stem cap on the tire valve.
5. Place the pneumatic chuck of the filling device on the tire valve so that it stays in place.
6. Inflate the tires to the specified pressure.
7. Remove the pneumatic chuck of the filling device from the tire valve.
8. Replace the valve stem cap back on the tire valve.

Air pressure table for tires

| Tires           | PR | Air pressure |        |
|-----------------|----|--------------|--------|
| 7.00-12 AS      | 6  | 3,2 bar      | 47 psi |
| 27x8.50-15 EM   | 8  | 4,2 bar      | 62 psi |
| 27x10.50-15 EM  | 8  | 4,2 bar      | 62 psi |
| 31x15.50-15 AS  | 8  | 3,1 bar      | 45 psi |
| 10.0/75-15,3 AS | 8  | 3,1 bar      | 45 psi |
| 11.5/80-15,3 AS | 10 | 4,5 bar      | 66 psi |
|                 | 8  | 3 bar        | 44 psi |
| 10.5/80-18 AS   | 10 | 3,7 bar      | 54 psi |
| 12.5/80-18 AS   | 12 | 4,7 bar      | 69 psi |
| 10x16.5 EM      | 8  | 3,6 bar      | 53 psi |
| 12x16,5 EM      | 10 | 4,5 bar      | 66 psi |
| 15.5/55-18 EM   | 14 | 4,0 bar      | 60 psi |
| 405/70 R18 EM   |    | 4,0 bar      | 60 psi |
| 15.0/55-17 AS   | 10 | 3,5 bar      | 50 psi |
| 405/70 R20 AS   |    | 3,5 bar      | 50 psi |

## Changing wheels



### **WARNING**

Injury hazard.

An improperly secured machine can move or fall unexpectedly while changing wheels.

To remove a wheel for service:

- ▶ stop the loader on a flat surface
- ▶ lower the loader lift arms and attachment to the ground or work surface
- ▶ engage the parking brake
- ▶ chock a wheel
- ▶ Determine the mass of the wheel loader and use a lifting device rated for the mass.



Observe the direction of the tread of the tires so that the greatest force of the loader is achieved during forward travel.

Always tighten the wheel bolts with a torque wrench to the specified tightening torque.

Always alternately tighten the wheel bolts opposite each other.

After changing tires, check the tightening torque of the wheel bolts every two hours until they do not change anymore.

You will find the tightening torque in the table below:

|                      | Front wheels            | Rear wheels             |
|----------------------|-------------------------|-------------------------|
| Wheel bolts M18 x1,5 | 285 Nm<br>(210 ft.lbs.) | 285 Nm<br>(210 ft.lbs.) |

1. Stop the loader on a horizontal surface with a hard foundation and set the parking brake.
2. Lower the Loader lift arms and attachment to the ground or work surface.
3. Stop the engine.
4. Position the jack under the axle next to the wheel to be changed. Make sure that the loader cannot slip off the jack.
5. Loosen the wheel bolts.
6. Raise the jack just high enough so that the wheel does not touch the ground.
7. Remove the wheel bolts and the wheel.
8. Install the new wheel and the wheel bolts.
9. Tighten the wheel bolts.
10. Lower the jack.
11. Alternately tighten the wheel bolts opposite each other to the specified tightening torque.

### 10.7.11 Servicing the electrical system



#### **WARNING**

Electric shock hazard.

- ▶ Always disconnect the battery before working on the electrical system if tools, spare parts, etc. with electrical components or contacts could touch it.

Electric shock and burn hazards.

- ▶ Do not clean sensitive electrical components (instrument panel, alternator, compact plug, multi-function lever, etc.) with a high-pressure cleaner.
- ▶ Do not touch incandescent lamps and headlight reflectors with your fingers if the bulbs have been illuminated.



Have malfunctions in the electrical system corrected by trained specialized personnel.

### Fuse allocation

The electrical circuits of the wheel loader are fused to prevent damage from short circuits and malfunctions. The fuses are located in box 1 and 2 near the starting key receptacle on the right side of the steering column. The second location box 3 is on the right hand side of the cab next to the wiper and light control switches.

#### **NOTICE:**

If an electrical device fails to respond to a control movement, stop the wheel loader as if stopping at the end of a work shift and check the fuse for that circuit. If the fuse has failed, determine the cause of failure and repair the cause.

Insert a new fuse of the specified rating and return to work.

Do not continue work with a failed fuse.

Do not install a fuse with a higher rated capacity than the failed fuse. This can result in serious damage to the electrical circuit.



A 40 ampere capacity master fuse is located below the operator's platform (Fig. 93).

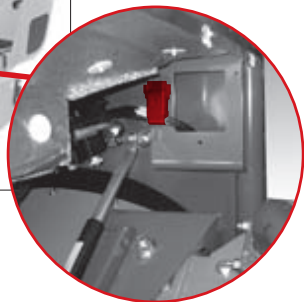


Fig. 94  
Fuse boxes

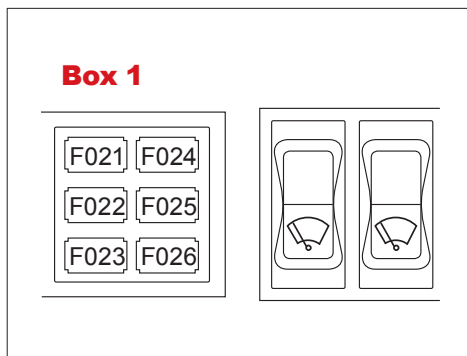
**Box 1**



Fig. 93  
Master fuse

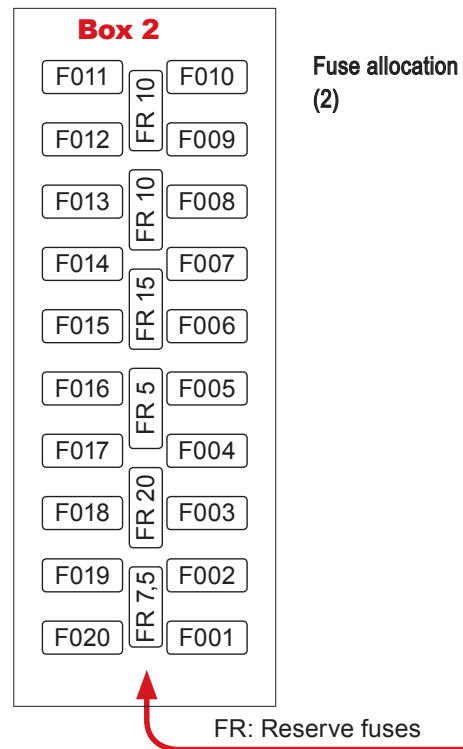


**Box 2**



**Fig. 95**  
**Fuse allocation**  
**(1)**

| Item | Fused function for Box 1  | Rating (A) |
|------|---------------------------|------------|
| F021 | Front headlights          | 15         |
| F022 | Front windshield wipers   | 10         |
| F023 | Rear windshield wipers    | 10         |
| F024 | Rear tail lights          | 15         |
| F025 | Rotating beacon, radio    | 10         |
| F026 | Cab courtesy light, radio | 10         |



| Item | Fused function for Box 2                                        | Rating (A) |
|------|-----------------------------------------------------------------|------------|
| F001 | Turn signal (blinkers), hazard warning lights                   | 15         |
| F002 | Horn, rotating beacon                                           | 10         |
| F003 | Electrical connector on the lift arms, other optional equipment | 15         |
| F004 | Stopper, generator, fuel pump                                   | 10         |
| F005 | Available                                                       | 10         |
| F006 | Optional equipment                                              | 10         |
| F007 | Optional equipment, locking device for attachments              | 10         |
| F008 | Instrument lighting, switch illumination                        | 5          |
| F009 | Headlights                                                      | 15         |
| F010 | Available                                                       | 7,5        |

| Item | Fused function for Box 2                                                      | Rating (A) |
|------|-------------------------------------------------------------------------------|------------|
| F011 | Available                                                                     | 20         |
| F012 | Turn signal (blinkers), hazard warning lights, Dashboard electrical connector | 15         |
| F013 | Available                                                                     |            |
| F014 | Available                                                                     | 10         |
| F015 | Available                                                                     |            |
| F016 | Left low beam                                                                 | 7,5        |
| F017 | Right low beam                                                                | 7,5        |
| F018 | Main beam                                                                     | 15         |
| F019 | Left side lamp                                                                | 7,5        |
| F020 | Right side lamp                                                               | 7,5        |

## Battery



### WARNING

Explosion and burn hazard.

Batteries produce and vent gases that can be explosive if concentrated in an unventilated space.

- ▶ Do not smoke or use open flames near a storage battery.
- ▶ Do not place objects on the battery. If a metallic object such as a wrench contacts both the positive and negative post on the battery, it will cause a direct short and a possible explosion. Severe burns can result .
- ▶ Cover the battery with protective insulation, or remove the battery entirely, if service work is to be conducted near the battery.



### WARNING

Battery fluid is poisonous and corrosive.

- ▶ Prevent battery fluid from coming into contact with your skin, eyes, mouth, or clothing.
- ▶ Wear protective gloves and safety goggles.
- ▶ If battery fluid contacts skin, immediately rinse the contaminated area with plenty of clean water and seek medical treatment.

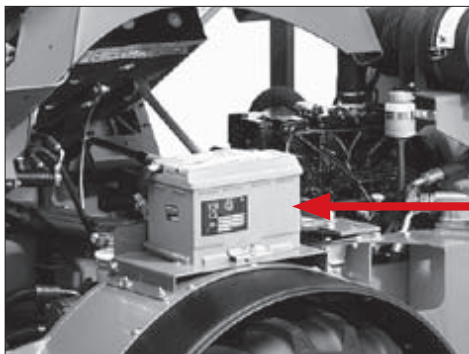


### ENVIRONMENTAL NOTE

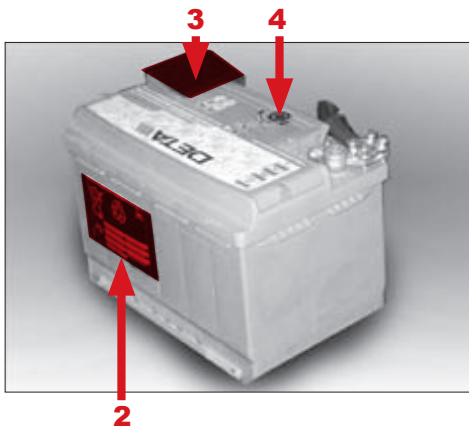
Avoid environmental damage.

Dispose of old batteries in an ecologically sound way, separate from other waste.

The battery has a nominal voltage of 12 volts; the battery capacity is 77 Ah. The battery is located on the left side of the loader in the engine compartment Item 1 (Fig. 96). To access it, open the engine enclosure and tilt the operator cab/ platform.



**Fig. 96**  
Location of the battery



**Fig. 97**  
Servicing the battery

### Servicing the battery

Refer to the operator's manual for the battery. The operator's manual for the battery is attached to the side of the battery item 2 (Fig. 97).

- Always keep the terminals on the battery and on the connecting cables clean and lubricate them with anti-corrosion grease.
- Make sure that the protective cover of the positive terminal is always in place and closed item 3 (Fig. 97).
- Note the battery indicator lamp. The indicator lamp is located on the top of the battery item 4 (Fig. 97):
  - Green - battery charge is OK
  - Black - battery needs to be charged
  - White - battery needs to be replaced.

### Disconnecting and connecting the battery / changing the battery



#### **WARNING**

Personal injury hazards.

Do not open the engine enclosure or attempt to tilt the operator cab/platform if the engine is running. Follow the instructions in Section 10.7.1, pages 156- 161, for opening the engine enclosure and tilting the cab.

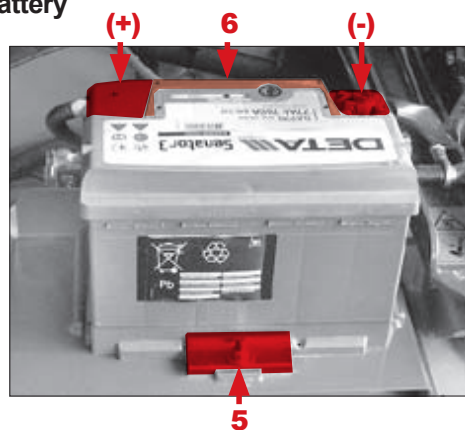
Always follow the correct sequence when disconnecting the battery.

#### **– Disconnecting:**

First the negative pole and then the positive pole.

#### **– Connecting:**

First the positive pole and then the negative pole.



**Fig. 98**  
**Removing the bat-**  
**tery**

### Removing the battery:

1. Stop the loader on a horizontal surface and set the parking brake.
2. Lower the loader lift arms and attachment to the ground or work surface.
3. Stop the engine.
4. Before disconnecting the battery, switch off all electrical controls (and the battery disconnect switch) and remove the starting key.
5. Open the engine enclosure (Ref. section 10.7.1, page 156).
6. Tilt the operator cab/ platform (Ref. section 10.7.1, pages 158-161).
7. Loosen the negative battery cable clamp item (-) (Fig. 98) and remove the clamp from the post. Position the cable so it is not touching the machine. Wrap an insulating material around the conducting part of the cable clamp to eliminate the risk of electrical shock.
8. Remove the protective cover item 3 (Fig. 97) to gain access to the cable clamp bolt. Loosen the positive battery cable clamp and remove the clamp from the post. Position the cable so it is not touching the machine. Wrap an insulating material around the conducting part of the cable clamp to eliminate the risk of electrical shock.
9. Remove the battery support retaining bolt, item 5 (Fig. 98).
10. Remove the battery with the lifting aid incorporated in the battery identified as item 6 (Fig 98). If the battery does not have an integral lifting aid, use a special strap that fits over each pole and provides a means to remove the battery.

Install the battery following the steps in the reverse order.

## **10.8 Jump-starting / emergency starting**

---



### **WARNING**

Explosion and burn hazard.

Batteries produce and vent gases that can be explosive if concentrated in an unventilated space.

- ▶ Do not smoke or use open flames near a storage battery.
  - ▶ Do not place objects on the battery. If a metallic object such as a wrench contacts both the positive and negative post on the battery, it will cause a direct short and a possible explosion. Severe burns can result .
  - ▶ Cover the battery with protective insulation, or remove the battery entirely, if service work is to be conducted near the battery.
  - ▶ If a second machine or vehicle is used as the jump start battery source, ensure that the vehicles/machines do not touch.
  - ▶ Do not attempt to jump start a frozen or defective battery. A short circuit or rapid increase in heat within the battery can cause an explosion.
  - ▶ Do not connect two batteries in series (negative post to positive post) because the voltage output will be 24 volts and damage the electrical system of the wheel loader.
  - ▶ Use only jump-starting batteries with the same voltage.
  - ▶ Use serviceable jumper cables with a heavy duty 12 volt rating.
  - ▶ Lay out the jumper cables so that they cannot be struck by rotating engine parts.
-

Before jump-starting, check if the loader's dead battery is functional:

1. Switch off all the loader's electrical controls.
2. Switch the starting key to position 1 (operation). The warning lights must light up now!
3. If the warning lights do not light up, the battery is defective. In that case, the loader must not be started! Install a new replacement battery.

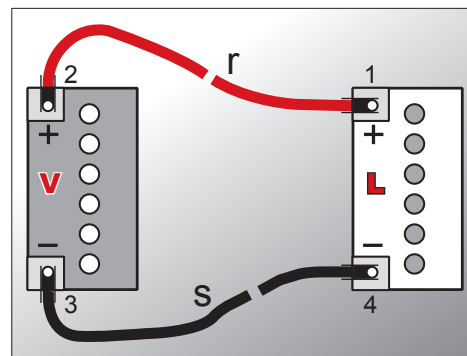


Fig. 99  
Connecting the  
jumper cables

### **Getting ready**

1. Switch off all the loader's electrical controls.
2. Switch the starting key to position 0.
3. Drive the vehicle with the good battery (charged battery) near but not touching the loader.
4. Switch off all electrical controls on the vehicle with the good battery and stop the engine.

### **Connect the jumper cables**

(The correct sequence must be adhered to)

1. Connect the red jumper cable Item r (Fig. 99) to the positive pole of the dead battery Item L.
2. Connect the red jumper cable to the positive pole of the charged battery Item V (Fig. 99).
3. Connect the black jumper cable Item s to the negative pole of the charged battery.
4. Connect the black jumper cable to the negative pole of the dead battery.

### **Starting the engines**

1. Start the engine of the vehicle with the good battery and let it run at an increased speed.
2. Attempt to start the loader engine.
3. If the engine does not start after 15 seconds, wait one minute before trying again.
4. Once the engine has started, let both engines continue to idle with the jumper cables connected for about another two minutes.

### **Detach the jumper cables**

(As with connecting, follow the correct sequence):

1. Disconnect the black jumper cable first from the negative pole of the dead battery and then from the negative pole of the charged battery.
2. Disconnect the red jumper cable first from the positive pole of the charged battery and then from the positive pole of the dead battery.

## 10.9 Loader storage

The specified measures refer to shutting down and re-starting the loader over longer periods of time.



Follow the Operator's Manual for the engine.

### Note:

*Before beginning the shutdown procedures, drive the Wheel Loader to its storage location.*

### Shutting down the loader

1. Park the loader as described in section 9, page 129 »Securing the loader«.
2. Engage the articulated frame lock (Ref. Section 6.2, page 118).
3. Raise the loader so that the tires no longer touch the ground.
4. Release the parking brake.
5. Lower the loader lift arms and attachment to the ground.
6. Relieve residual hydraulic pressure, ref. Section 8, page 126 »Relieving residual pressure in the hydraulic system«. Move all hydraulic controls to the neutral position.
7. Spray bare metal parts of the loader (e.g.: the piston rods of the hydraulic cylinders if they are not retracted) with an anti-corrosion agent.
8. Preserve the engine.

#### Preserving the engine

1. Clean the engine in a suitable place using a high-pressure cleaner.
2. Bring the engine to operating temperature.
3. Drain the engine oil and dispose of it in an ecologically sound manner.
4. Pour anti-corrosion oil into the engine.
5. Drain the fuel from the reservoir.
6. Produce a mixture of 90% fuel and 10% anti-corrosion oil and pour it into the fuel reservoir.
7. Let the engine idle for 10 minutes before turning it off.
8. To preserve the cylinders and combustion chamber, crank the engine by hand several times.
9. Remove the fan belt and pack it for storage so that it is airtight and light-proof.
10. Spray the belt pulley contact surface with anti-corrosion agent.
11. Close the intake and exhaust opening of the engine.

#### Storing the battery:

1. Remove the battery.
2. Clean the battery.
3. Charge the battery.
4. Store the battery in a dry, well-ventilated room at approx. 20°C (68°F).
5. Check the acid level once a month.
6. Recharge the battery before installing it again.

### Restarting the loader

1. Remove the engine preservative.
2. Install the battery.
3. Check the air pressure of the tires.
4. Remove the preservative for the hydraulic cylinders' piston rods.
5. Lower the loader.
6. Check the functioning of the electrical system.
7. Unblock the articulated joint.
8. Vent the hydraulic system.
9. Check the functioning of the steering and the brakes.

### Remove preservatives from the engine

1. Remove the closures from the intake and exhaust opening of the engine.
2. Remove the anti-corrosion agent from the pulley.
3. Install the fan belt.
4. Drain the preservative oil and pour in engine oil.
5. Start up the engine.
6. Check the V-belt tension after the first two operating hours.

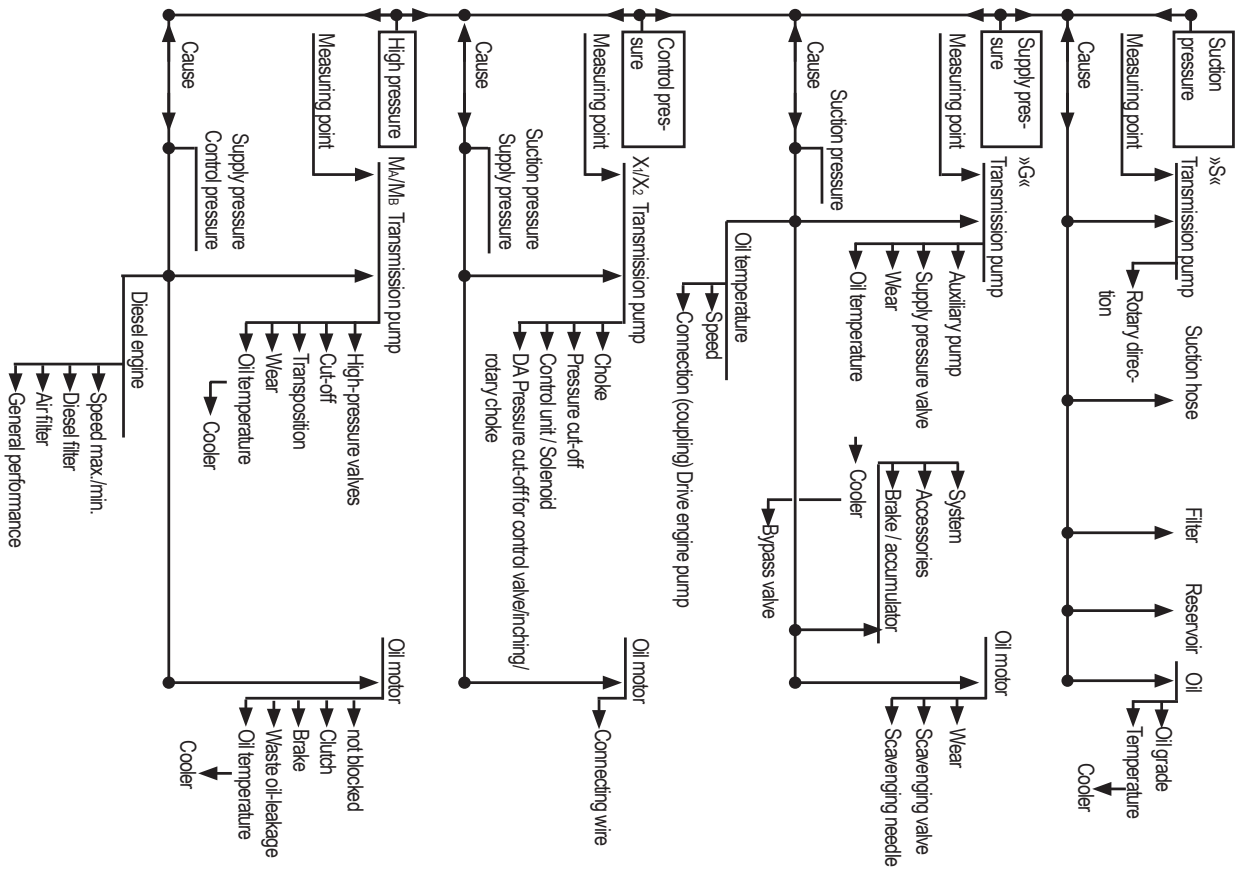
## 216 TROUBLESHOOTING AND EMERGENCY MAINTENANCE

### 11 TROUBLESHOOTING AND EMERGENCY MAINTENANCE

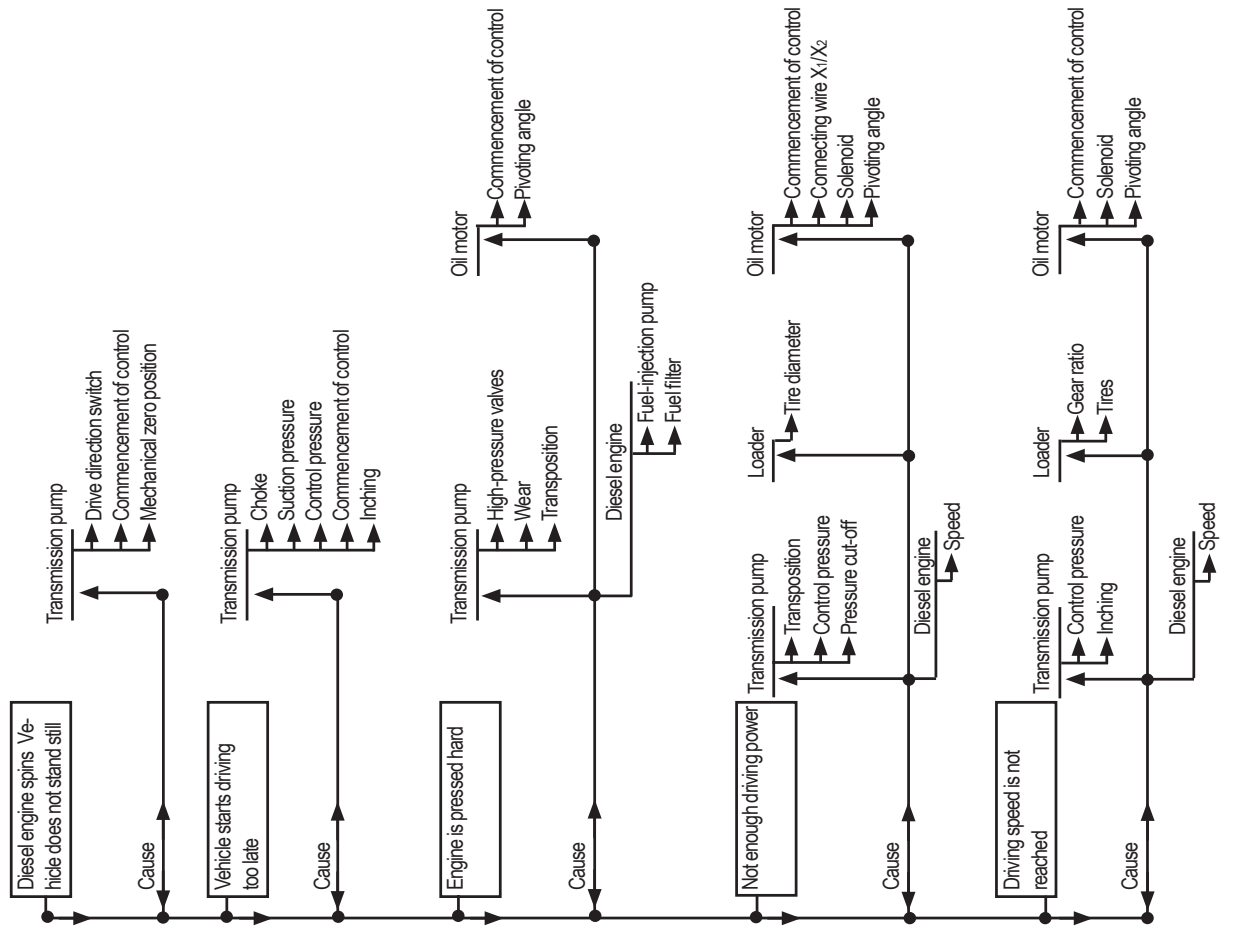
| Fault / malfunction                                | Possible cause                                                   | Remedy                                                                                       |
|----------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <i>Engine does not start</i>                       | Handbrake not set, drive direction switched                      | Set the handbrake, shift to neutral                                                          |
|                                                    | Fuel reservoir empty                                             | Fill up the reservoir and vent the fuel system if necessary                                  |
|                                                    | Fuel filter clogged, paraffin separation in winter               | Change the fuel filter, use winter diesel                                                    |
|                                                    | Release solenoid on the engine does not attract                  | Check the fuses                                                                              |
|                                                    | Fuel line is leaky                                               | Retighten all the threaded connections and clamps                                            |
|                                                    | Starting speed too low                                           | Check and charge the battery, check that battery terminals fit tightly                       |
| <i>Engine is running but loader will not drive</i> | Set the handbrake                                                | Release the handbrake                                                                        |
|                                                    | Handbrake switch is defective                                    | Replace the handbrake switch                                                                 |
|                                                    | Inch cartridge is not in neutral position                        | Check and, if necessary, repair the inch cartridge and brake shoe return spring              |
|                                                    | The solenoids on the transmission pump are not getting any power | Check the fuses, and have the multi-function lever and the electronics checked at the garage |

| Fault / malfunction                            | Possible cause                                                    | Remedy                                     |
|------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------|
| <i>The engine is getting too hot</i>           | The engine radiator / oil cooler air flow is restricted by debris | Clean it                                   |
|                                                | Coolant level is too low                                          | Fill it up                                 |
|                                                | The thermostat is jammed                                          | Have the thermostat replaced at the garage |
|                                                | V-belt loosened from the fan blade                                | Tighten the V-belt                         |
|                                                | Oil level is too low or too high                                  | Adjust the oil level                       |
| <i>The hydraulic system is getting too hot</i> | Hydraulic oil cooler is dirty                                     | Clean it                                   |
|                                                | V-belt loosened from the fan blade                                | Tighten the V-belt                         |
|                                                | Hydraulic fluid level is too low                                  | Top up the hydraulic fluid                 |
|                                                | Load too high                                                     | Reduce the machine load, take breaks       |
| <i>Machine performance is too low</i>          | Air filter is dirty                                               | Replace it                                 |
|                                                | Wrong fuel grade                                                  | Change the fuel                            |
|                                                | Inching is stuck                                                  | Check, repair                              |
|                                                | Engine speed is too low                                           | Adjust it                                  |

## Troubleshooting for transmission pump / oil engine



# Troubleshooting for the loader



## 12 SAFETY INSTRUCTIONS FOR REPAIRS



The »Safety instructions for repairs« section does not consist of instructions for repairs, but rather of safety instructions which, in addition to the generally valid safety regulations for repair work, refer to hazards that could occur during repair work, and of notes which should prevent the machine from being damaged during repairs. Specific repair instructions are not included in this Operator's Manual.

Observe in particular:

- The basic safety instructions.
- The basic safety instructions for servicing and inspection.
- All warning signs and instructions attached to the loader.
- That the descriptions of work processes provide the necessary instructions only for experienced specialized personnel.
- That the Operator's Manual is always kept with the loader

Repair personnel:

- Repair personnel must have specialized knowledge and experience in repairing this or comparable loaders.
- Should knowledge be lacking, training by experienced repair, e.g. Wacker Neuson Service, should be performed.

### 12.1 General safety regulations for repairs

Operator's Manual:

- Perform repairs only if you have read and understood the Operator's Manual.

#### Articulated frame lock

- Always install the articulating joint lock when performing repair work in the articulation crush zone.
- Remove the articulated joint lock and store it properly (Ref. Section 6.2, page 118) after completing the repair work.

#### Accumulators:

- Do not attempt to repair accumulators. These are pressurized devices requiring special technical skill and tools to repair. Replace the entire assembly.
- Relieve hydraulic pressure in hydraulic lines and hose assemblies, cylinders, coolers, the hydraulic reservoir, pressure reservoirs and other systems or accumulators before beginning work.
- Replace defective components before using the wheel loader.
- Clean components carefully before removing them.
- Mark the parts removed in the correct order so that you do not make mistakes when installing them.
- When removing a component, plug the cleared connections, open holes and housing carefully so that no dirt can infiltrate.

#### Removing components:



#### **WARNING**

Burn hazard.

Engine components and fluids can get very hot during operation.

- ▶ Do **not** remove components when the loader is warm from operation.

Do not remove seals or sealing wax:

- Changing rated pressures for relief valves is prohibited without the express consent of Wacker Neuson.
- Do not damage or remove seals and sealing wax on the engine, the pressure limiting valves and accumulators.
- If an area is repainted and a safety label is damaged or obliterated, replace the label before using the machine. If a removed component or assembly had a safety message label, replace the label with the replacement part. Your Wacker Neuson dealer can help you to get replacement labels for your machine

After completing the repair:

- Put protective paint on all uncoated machine parts to prevent corrosion damage.
- Install the cab mounting screws again after the repair work has been completed.
- Reattach all safety devices, covers and noise/vibration insulation after repair work has been completed.
- Check the functioning of the loader, in particular the parts repaired in trial operation. Make sure that no one is in the loader's danger area.
- Do not approve the loader for operation until all the loader's areas function properly.

## 12.2 Engine

- Perform repair work only if the loader is secured as described in Section 9, page 129 »Securing the loader«.

## 12.3 Welding work



### WARNING

Improper handling of the ROPS/FOPS can compromise its integrity.

- ▶ Do not drill, weld, straighten, or bend the ROPS / FOPS protective structures.
- ▶ Allow only trained authorized personnel to install new ROPS / FOPS structures.

- Only a certified trained welder shall perform welding work.
- Only certain authorized individuals under the supervision of a competent person may weld containers which contain or have contained substances that are combustible, promote combustion, are explosive, or can, during welding, produce vapor, gas, mist or dust that are hazardous to health. Should you have problems or questions, it is imperative that you consult the Wacker Neuson Service.

Before performing welding work on the loader

- Disconnect the battery as described in this Operator's Manual.
- Disconnect the positive pole (terminal B+) on the generator.
- Switch OFF the battery disconnect switch (if present).
- Protect bare terminals and connections against short-circuiting.
- Attach the welding grounding terminal in the immediate vicinity of the welding site. Do not allow the welding current to pass through gears, bolts, articulated joints or hydraulic cylinders.

After welding has been completed:

- Reconnect all the electrical connections and check that they function.
- Connect the battery as described in this Operator's Manual.

## 12.4 Hydraulic system

- Before performing repair work, relieve the pressure in the hydraulic system as described in Section 8, page 126 »Relieving residual pressure in the hydraulic system«.
- Replace damaged and leaky hydraulic lines and hoses with new ones. Do not use used hoses.
- Replace hydraulic hoses after six years of use.
- Dispose of any leaking oil and waste containing oil in an ecologically sound manner.
- Observe the »Basic safety instructions for servicing and inspection«, page 130.

## 12.5 Brakes

- Repair work on brakes may only be performed by qualified technicians.
- Using a brake fluid other than the one specified by the manufacturer is prohibited.
- Observe the notes on health hazards and environmental protection when working with brake fluid.
- Perform repair work on the brakes only if the loader is secured as described in Section 9, page 129 »Securing the loader«.

## 13 FINAL SHUTDOWN OF THE LOADER / DECOMMISSIONING



### ENVIRONMENTAL NOTE

Avoid environmental damage. Do not allow oil and waste containing oil to spill on the ground or get into bodies of water!

Dispose of different materials and operating fluids/ auxiliary materials separately and in an ecologically sound manner.

Should you no longer plan to use the loader as intended, make sure that it is shut down, i.e. decommissioned, and disposed of according to the valid regulations.

Before disposing of the loader:

- Observe all safety procedures regarding shutdown of the loader.
- Make sure that the loader cannot be operated from the time of shutdown to further disposal.
- Make sure that no environmentally hazardous operating fluids or fuel escape and that the machine poses no other dangers in the place where it is standing.
- Protect the loader against unauthorized use. Close all openings (doors, windows, engine enclosure) and secure the loader as described in Section 9, page 129 »Securing the loader«.
- Attach all the safety devices.
- Eliminate leaks on the engine, reservoirs and hydraulic system.
- Remove the battery.
- Store the loader in a place protected against access by unauthorized persons.

Disposing of the loader:

- Subsequent recycling of the loader must take place in accordance with the current state of the art at the time of recycling, taking into account the accident prevention regulations.
- Dispose of all parts at the sites provided for them, depending on the material.
- Take care to separate the materials when recycling.
- Make sure that operating and auxiliary aids are disposed of in an ecologically sound manner.

## 14 APPENDIX

### 14.1 Ordering replacement parts



Use only »original Wacker Neuson replacement parts« for your loader. This is especially necessary in the case of hydraulic hoses. Use only original hydraulic hoses or hydraulic hoses of comparable quality.



Always provide the following data for ordering replacement parts. This is the only way we can assure smooth processing of your order and delivery of the replacement parts.

- Wacker Neuson- machine type
- Specify the serial number of the machine (see rating plate) For the engine, specify the respective engine number
- Item number and designation of the replacement part
- Address with telephone number (in the event of questions)
- Customer number (if available)
- Name of the orderer

We reserve the right to change the replacement parts list.



Enter the most important data for your loader on this page. In this way, you can quickly access the vehicle ID no. and other important data when ordering replacement parts.

Importer (name; address):

---

---

---

---

Loader type:

Vehicle ID no.:

Engine type:

Engine no.:

Delivery date:

Service garage (name; address):

---

---

---

---

## 14.2 Inspection verification



Enter the inspections as they are performed.

### 2nd Inspection

Performed on: .....

Operating hours: .....

### 1st Inspection

Performed on: .....

Operating hours: .....

Stamp / signature of the garage

### 3rd Inspection

Performed on: .....

Operating hours: .....

Stamp / signature of the garage

Stamp / signature of the garage

---

**4th Inspection**

---

Performed on: .....

Operating hours: .....

---

Stamp / signature of the garage

---

**5th Inspection**

---

Performed on: .....

Operating hours: .....

---

Stamp / signature of the garage

---

---

**6th Inspection**

---

Performed on: .....

Operating hours: .....

---

Stamp / signature of the garage

---

**7th Inspection**

---

Performed on: .....

Operating hours: .....

---

Stamp / signature of the garage

---

---

**8th Inspection**

---

Performed on: .....

Operating hours: .....

---

Stamp / signature of the garage

---

**10th Inspection**

---

Performed on: .....

Operating hours: .....

---

Stamp / signature of the garage

---

**9th Inspection**

---

Performed on: .....

Operating hours: .....

---

Stamp / signature of the garage

---

**11th Inspection**

---

Performed on: .....

Operating hours: .....

---

Stamp / signature of the garage

---

For personal notes

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