



**WACKER
NEUSON**
all it takes!

Operator's Manual

Wheel Loader

WL28



Vehicle Model	A01-01
Material Number	1000448645
Version	1.5
Date	12/2021
Language	[en]



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Original operator's manual

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WEIDEMANN

EC Declaration of Conformity

Manufacturer

Weidemann GmbH, Elfringhäuser Weg 24, 34497 Korbach, Germany

Product

Vehicle type	Wheel loader
Type/design	A01-01
Trade name	WL28
Chassis number	WMWA0101 _ _ _ _ _
Power kW at rated speed min-1	18,4 (2600) / 33,3 (2600) / 40,1 (2600)
Measured sound power level dB(A)	99,3 / 98,1 / 97,7
Guaranteed sound power level dB(A)	100 / 99 / 99

Conformity assessment procedure

In accordance with 2000/14/EC Annex VIII

Notified Body involved in the procedure

European Notified Body, Identification No. 0515 DGUV Test, Testing and Certification Body, Department of Civil Engineering

Am Knie 6, 81241 Munich, Germany

Applicable directives and standards

We hereby declare that this product complies with the relevant provisions of these directives and standards: 2006/42/EG, 2000/14/EG, 2014/30/EU, DIN EN ISO 12100 and DIN EN 474-1 and 3

Authorized representative for compiling the technical file

Weidemann GmbH, Elfringhäuser Weg 24, 34497 Korbach, Germany

Korbach,

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Managing Director



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Manufacturer Declaration

Due to the emission level, this vehicle is not approved for use within the European Union (EU).

Manufacturer

Weidemann GmbH, Elfringhäuser Weg 24, 34497 Korbach, Germany

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The following standards and/or technical specifications have been used to ensure proper implementation of the safety and health requirements specified in the EC directives:

2006/42/EG, 2000/14/EG, 2014/30/EU, DIN EN ISO 12100 and DIN EN 474-1 and 3

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WEIDEMANN

UK Declaration of Conformity

Manufacturer

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Product

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Guaranteed sound power level dB(A)	100 / 99 / 99

Conformity assessment procedure

In accordance with Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001

Office named in the procedure

AMTRI Veritas Limited, Issue No.: 5969
Pierce Street, Macclesfield, SK11 6ER

AnP Certification Limited, Issue No.: 8500
2 Parkfield Street, Manchester, M14 4PN

Directives and standards applied

We hereby declare that this product complies with the relevant provisions of these directives and standards
Supply of Machinery (Safety) Regulations 2008; Electromagnetic Compatibility Regulations 2016; Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001
BS EN ISO 13766-1:2018, BS EN ISO 13766-2:2018, BS EN 1459-1:2017 + A1:2020

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1 Foreword

1.1 Operator's manual

1.1.1 Information on this operator's manual

- This operator's manual is only valid for the vehicles listed on the title page.
- The operator's manual provides information on the use, settings, operation and maintenance of the vehicle, including different attachments approved for the vehicle. The operator's manual is therefore intended for the operator and the operating company.
- This operator's manual also includes descriptions of additional equipment and options. These sections are not marked separately. The scope of description in the operator's manual can therefore deviate from the actual equipment present on your vehicle without a claim for retrofitting being able to be derived from this.
- The operator's manual and any amendments form part of the vehicle and must always be available at the place of use of the vehicle.
- Store this operator's manual in the place provided for this in or on the vehicle.
- Immediately replace an incomplete or illegible operator's manual with a new one.
- In addition to the operator's manual, observe statutory, generally applicable and other binding regulations on accident prevention and environmental protection.
- The manufacturer constantly keeps abreast of the latest technical developments and constantly improve its products. For this reason, we may from time to time need to make changes to figures and descriptions in this documentation that do not reflect products that have already been delivered and that will not be implemented on these vehicles.
- Technical specifications, dimensions and weights are not binding and correspond to the state at the time of printing. Responsibility for errors or omissions not accepted.
- The specifications "left" and "right" in the descriptions always refer to the vehicle in the travel direction.
- For further questions about the vehicle and the operator's manual, please contact your service partner at any time.

1.1.2 Storing the operator's manual



Fig. 1: Storage location for the operator's manual

The operator's manual and any supplements are part of the vehicle and must be available to the operator at all times. The vehicle is equipped with a storage location for the operator's manual.

The storage location is a position **A** in the cab.

If necessary, the seat must be moved to the forwardmost position in order to access the storage location.

1.1.3 Understanding These Instructions

This section helps to understand the operator's manual and the illustrations used therein.



Target group

On the one hand, this operator's manual is intended for the operating personnel of the vehicle. It describes the operating activities that must be read in order to operate the vehicle safely and efficiently.

On the other hand, this operator's manual is intended for the operating company of the vehicle. It provides him with the necessary information to ensure safe working conditions for the personnel deployed and, if necessary, to take measures to protect the operating personnel.

This operator's manual is also intended for the maintenance personnel of the vehicle. Work that is not described must not be carried out. For all other activities, contact the service partner or an authorized service center.

Explanation of symbols

Symbol	Explanation
1., 2., 3...	Indicates an activity. The sequence of the steps must be observed.
⇒	Indicates a result or an intermediate result of an action.
✓	Indicates prerequisites that must be established for the activity.
•	Indicates a list, e.g. if several components are named one after the other.
-	Indicates a sub-list, e.g. if components consist of further components
Ⓛ	Identifies a position, usually a component or control element, in a graphic. The numbering may be sequential or in Roman numerals.
1; A	Indicates the naming of components in explanatory texts. It is identical with the adjacent positions in the illustrations.
 	Indicates a direction of movement or different positions for switches.
▶	Indicates the avoidance of hazards in warning notices.
[▶52]	Indicates a cross-reference in tables. Here e.g. reference to page 52

1.1.3.1 Explanation of symbols

The symbols used in the operator's manual are explained below. The symbols are used exclusively in warning or environmental instructions or information. Warnings must always be observed to protect the operator and third parties from personal injury and damage to property.



Symbol for warning notices

This symbol marks general warnings. It is used to alert you of possible hazards, e.g. risks of injury or accidents.



Symbol for explosions

This symbol is a warning symbol that indicates an explosion hazard. It is used to indicate special situations where there is an explosion hazard.



Symbol for crushing

This symbol is a warning symbol that indicates a hazard of crushing. It is used to indicate special situations where there is a hazard of crushing body parts. The hand symbol is used to represent all body parts.



Symbol for burns

This symbol is a warning symbol that indicates a hazard of burning. It is used to indicate special situations where there is a risk of burns due to hot surfaces, hot vapors or hot liquids.



Symbol for electrical voltage

This symbol is a warning symbol that indicates a hazard as a result electrical voltage. It is used to indicate special situations where there is a risk of injury due to electrical voltage.



Symbol for indications of technical damage

This symbol is a warning symbol that indicates a danger of technical damage. It is used to indicate situations where damage to the vehicle or third-party property may occur.



Symbol for environmental information

This symbol indicates environmental information. It is used to warn of possible environmental hazards.



Symbol for information

This symbol indicates information. This information can include tips on operation, for example. It helps to better understand and use the machine.

1.1.3.2 Abbreviations

Abbreviations that may be used in the instructions are listed below. When an abbreviation is used for the first time, it is first written out in full and the abbreviation is placed in brackets. Common abbreviations (e.g., etc.) are not explained. If necessary, a brief explanation is placed in brackets.

Abbreviation	Meaning
Fig.	Number of the figure beneath an illustration

Abbreviation	Meaning
ABE	National Type Approval (Germany)
GTC	General terms and conditions
ATF	Automatic Transmission Fluid (lubricating oil in the axles)
OO	Operating hours
DGUV	German statutory accident insurance
DOC	Diesel Oxidation Catalyst (component in the system for exhaust gas aftertreatment)
DPF	Diesel particulate filter (component in the system for exhaust gas aftertreatment)
EBE	Authorization for stand-alone operation
ECU	Electronic Control Unit (electronic control unit in the vehicle)
EC	European Community
FOPS	Falling Object Protective Structure
LED	Light-emitting diode
LWA	Sound power level
LPA	Sound pressure level
ROPS	Roll Over Protection Structure
SAE	Society of Automotive Engineers (viscosity class of oils)
StVZO	Road Traffic Licensing Regulations

1.1.4 Information for the buyer and operating company

- The buyer or operating company is responsible for the user's/operators' training in safe working on and with the vehicle.
 - We recommend repeating training at regular intervals.
- The buyer or operating company is responsible for ensuring that any additional safety regulations applicable in the country of use of the vehicle are followed.
- In Germany, the Operational Safety Ordinance (BGV A1/Be-trSichV §10) requires the buyer or operating company to have the vehicle as well as the corresponding attachments inspected regularly.
 - In other countries, observe the relevant national regulations.
- At the beginning of this manual an illustration of the declaration of conformity is shown. The illustration shows the declaration of conformity without the data corresponding to the vehicle. The corresponding data for the vehicle varies depending on the equipment. The corresponding data is contained in the original declaration of conformity, which is supplied with the vehicle as an original document.

1.1.5 Information for the operator

- You must always obey the safety regulations in this operator's manual and the safety rules applicable in each case for operating the vehicle.
- The vehicle may only be operated by persons who are physically, mentally and professionally suited for this work.
- Persons under the influence of alcohol or drugs may not use the vehicle.
- The operator is the person operating and/or driving the vehicle.
- The operator must have received instruction on the vehicle before the first journey or the first operation.
- The operator must carefully read and understand the operator's manual before the first drive or the first operation. In particular, the chapter on safety [see Safety on page 19](#).
- Before working with the vehicle, operators must familiarize themselves with all the control elements and their functions, and with the handling of the vehicle.
- Before commissioning the vehicle, the operator of the vehicle must ensure that it is in a perfect condition, and during operation, the operator must observe the regulations regarding operation.
- The operator is responsible for ensuring that the vehicle and its use do not pose a risk.
- Work on the vehicle may only be performed by instructed technically trained personnel that has been authorized by the operating company. Any person involved in operation, care, maintenance, servicing, repair work or transport of the vehicle must read, understand and follow the complete instructions in the operator's manual and in particular the safety instructions.
- Observe and follow the legal regulations of your country.

1.2 Warranty and liability

1.2.1 Warranty

Warranty claims can be made only if the conditions of warranty have been observed. They are included in the General Conditions of Sales and Delivery for new vehicles and spare parts sold by the dealers. Furthermore, the instructions of this operator's manual are to be observed.

1.2.2 Limitation of liability

In the event of the following infringements, the manufacturer disclaims any liability for personal injury and damage to property:

- Actions contrary to this operator's manual.
- Non-designated use
- Deployment of untrained personnel.
- Use non-approved spare parts and accessories.
- Improper handling.
- Structural changes of any kind.
- Non-observance of the General Terms and Conditions (GTC).

2 Usage

2.1 Use of the vehicle

2.1.1 Designated use

The following chapter describes the range of application of the vehicle. The listed works were classified by the manufacturer as intended and thus as safe.

The vehicle may only be operated in accordance with its intended purpose, safety and danger-consciously, taking into account the operator's manual and in a technically perfect condition. In particular, faults which could impair safety must be rectified immediately!

The vehicle is used to carry out work cycles. A work cycle consists of picking up, raising, transporting and unloading material. The material must correspond to the use of the attachment, e.g. move solid earth with only one earth bucket. The safety instructions, warning notices and regulations listed in this operator's manual must be observed for each work cycle.

Approved attachments can change the intended use of the vehicle (e.g. pallet fork). Ensure that only attachments approved for the vehicle are used with any necessary additional equipment.

Intended use also includes observing the operator's manual and observing the maintenance conditions!

Any other or more use of the vehicle beyond this is not intended!

2.1.2 Unintended use

The manufacturer is not liable for personal injury or damage to property resulting from unintended use. Among other things, the following activities with the vehicle are not intended:

- Lifting or transporting persons in the vehicle or attachment.
- Using the vehicle as a working platform.
- Lifting or transporting loads without the attachment being designed for this purpose.
- Using the vehicle after a malfunction or damage without having it professionally repaired.
- Using the vehicle after major modifications have been made.
- Using the vehicle for demolition or forestry applications where there is a risk of falling objects.

2.1.3 Reasonably foreseeable misuse

Not using the vehicle according to its designated use means that it is used for an application that is not specified by the manufacturer. Therefore, this is misuse in the terms of the Machinery Directive. The operator is solely liable for any resulting damage.

The manufacturer is obliged to identify foreseeable misapplications by means of market observation measures. The following lists are examples of such foreseeable misuse. The list does not claim to be exhaustive:

- The use of areas and rooms that are not described as work or maintenance areas in these operator's manual.
- Carrying out operating, adjustment, cleaning or maintenance work contrary to the information given in operator's manual.
- Carrying out maintenance work or troubleshooting while drives or diesel engines are running.
- Non-observance of safety and warning notices in this operator's manual or on the vehicle (safety labels).
- Carrying out maintenance work that is not described in this operator's manual.
- Performance of maintenance work by inadequately trained personnel.
- The unauthorized modification of the vehicle and its attachment.
- The installation of non-authorized or non-approved attachments.
- The use of non-approved or non-original spare parts.
- The use of the vehicle for crop protection and fertilizer application.
- Use as carrier vehicle for attachments not authorized or approved by the manufacturer.
- The use of the vehicle for forestry or forest work.
- The use of the vehicle in waters or floodplains.
- The transport of persons in the vehicle or attachment.
- Installation of work platforms.

2.2 Limits of the vehicle

2.2.1 Spatial limits of the vehicle

The use outside the spatial limits is an application not intended by the manufacturer of the vehicle and thus constitutes a misuse within the meaning of the Machinery Directive. The operator is solely liable for any resulting personal injury or damage to property.

The vehicle is not to be used in the following areas:

- Partial or complete operation under water
- Below-ground or mining applications
- Operation in enclosed areas
- Operation in potentially explosive areas
- Operation in contaminated areas

2.2.2 Climatic limits of the vehicle

The operating and storage temperature range for the vehicle is between -15 °C and +40 °C.

Operating temperatures below -15 °C or above +40 °C require special equipment or vehicle fluids (fuel, engine oil and hydraulic oil).

The service partner is available at any time to answer any further questions regarding use in extreme temperature ranges.

2.2.3 Precautions for different weather conditions

At temperatures above 40°C

Perform the following activities more often than described in the chapter [see Maintenance on page 187](#).

- Check the cooling system regularly.
 - Keep the radiator and, if necessary, the condenser of the air conditioning system clean.
 - Make sure that the coolant level is correct.
 - Use coolant with the prescribed mixing ratio.
 - Check the cooling system regularly for leaks.
 - Check the fan blades of the cooling system regularly for damage.
 - Check the drive of the fan blade regularly for wear.
- Fill engine oil according to table with operating fluids, [see Vehicle fluids on page 197](#).
- Check and clean the air filter regularly, especially in dusty environments.

At temperatures below -15°C



NOTICE

At temperatures below -15 °C, an additional starting aid is required, e.g. fuel, engine oil or coolant heaters.

- ▶ Do not connect two batteries in series to generate a starting voltage of 24 volts.

Avoid damage to the vehicle and facilitate vehicle start up by taking the following measures.

- Use the correct mixing ratio of coolant.
- Use engine oil of the correct viscosity class.
- Use fuel designed for low temperatures.
- Fill the fuel level completely at the end of the work shift.
- Ensure that the battery is always fully charged.
- Have a jump-starting aid installed by an authorized service center (e.g. engine and hydraulic oil preheating).

3 Safety

3.1 Safety symbols and signal words

The following symbol identifies safety instructions. It is used for warning against potential personal risk or danger.



DANGER

DANGER identifies a situation causing death or serious injury if it is not avoided.

Consequences in case of non-observance.

- ▶ Avoidance of injury or death.



WARNING

WARNING identifies a situation that can cause death or serious injury if it is not avoided.

Consequences in case of non-observance.

- ▶ Avoidance of injury or death.



CAUTION

CAUTION identifies a situation that can cause injury if it is not avoided.

Consequences in case of non-observance.

- ▶ Avoidance of injury.



NOTICE

INFORMATION identifies a situation that causes damage if it is not observed.

Consequences in case of non-observance.

- ▶ Avoidance of damage to property.

3.2 Qualification of operating personnel

3.2.1 Owner's duties

- Only allow specifically authorized, trained and experienced persons to operate, drive and perform maintenance on the vehicle.
- Do not allow persons to be trained or instructed by anyone other than an authorized and experienced person.
- Have persons to be trained or instructed practice under supervision until they are familiar with the vehicle and its behavior (for example with the steering and braking behavior).
- Access to the vehicle or vehicle operation is prohibited for children and persons under the influence of alcohol, drugs or medicine.
- Clearly and unequivocally define the responsibilities of the operating and maintenance personnel.
- Clearly and unequivocally define the responsibilities on the work area, also in view of traffic regulations.
- Give the operator the authority to refuse safety instructions from third parties.
- Have the vehicle serviced and repaired only by an authorized service center.

3.2.2 Required knowledge of the operator

- The operator is responsible towards third parties.
- Avoid any operational mode that might pose a risk to safety.
- The specific national driving license is required.
- The vehicle may only be operated by authorized and safety-conscious operators who are fully aware of the risks involved in operating the vehicle.
- The operator and owner are obligated to operate the vehicle only in a safe and working condition.
- All persons working on or with the vehicle must have read and understood the safety instructions in this operator's manual before starting work.
- Follow, and instruct the operator in, legal and other mandatory regulations relevant to accident prevention.
- Observe and instruct the operator in regulations regarding road traffic and environmental protection.
- Use only the defined accesses for getting on and off the vehicle.
- Be familiar with the emergency exit of the vehicle.

3.2.3 Preparatory measures for the operator

- Before starting, check the vehicle whether it can be driven and operated safely.
- Increased caution if the driver has untied, long hair or wears jewelry.
- Wear close-fitting work clothes that do not hinder movement.

3.3 Conduct

Prerequisites for operation

- The vehicle has been designed and built in accordance with state-of-the-art standards and the recognized safety regulations. Nevertheless its use can cause danger to the operator or third parties, or damage to the vehicle.
- Store this operator's manual in the place provided for this in or on the vehicle. Immediately replace a damaged or illegible operator's manual and any supplements to it.
- The vehicle must only be operated in accordance with its designated use and the instructions set forth in this operator's manual.
- The operator and owner are obligated to operate the vehicle only in a safe and working condition.
 - If a damage or malfunction occurs during operation, put the vehicle out of operation immediately and secure it against restart.
 - Have all malfunctions jeopardizing the safety of the operator or third parties immediately repaired by an authorized service center.
- Do not put the vehicle into operation or operate it after an accident; have it inspected for damage by an authorized service center.
 - Have the seat belt replaced by an authorized service center after an accident, even if there is no visible damage.
 - Pay particular attention to damage to the cab and protective structures.
- Keep climbing aids (handholds and footholds) free from dirt, snow and ice.
- The owner is responsible for requiring the operating and maintenance personnel to wear protective equipment as required by the circumstances.

3.4 Operating

3.4.1 Preparative measures

- Operation is only allowed with correctly installed and intact protective structures.
- Keep the vehicle clean. This reduces injury, accident and fire hazards.
- Safely store objects you carry with you in the places provided for this (for example in the storage compartment, drinks holder).
- Do not carry objects with you that protrude into the operator's work space. They can create another danger in case of an accident.
- Observe all safety and information labels.
- Start and operate the vehicle only with the seat belt fastened and only from the place provided for this.
- Check the condition and the fastening of the seat belt. Have malfunctioning seat belts and mounting hardware replaced by an authorized service center.
- Before starting work, adjust the seating position so that all control elements can be reached and fully operated.
- Only make personal settings when the vehicle is at a standstill (e.g. seat, steering column).
- Ensure that all safety devices are properly installed and functional before starting work.
- Before starting work or after interrupting work, ensure that the brake, steering, signaling and light systems are functional.
- Before commissioning the vehicle, ensure that nobody is in the danger zone.

3.4.2 Job site

- The operator is responsible for third parties.
- Before starting work, familiarize yourself with the job site. This applies to, for example:
 - Obstacles in the work area and vehicle travel area.
 - Any barriers separating the job site from public roads.
 - Load-bearing capacity of the soil.
 - Existing overhead and underground lines.
 - Special operating conditions (e.g. dust, steam, smoke, asbestos).
- The operator must know the maximum dimensions of the vehicle and the attachment.
- Maintain a safe distance (e.g. from buildings, edges of building pits).
- When working in buildings or in enclosed areas, pay attention to:
 - Ceiling heights and passage heights.
 - Width of the entrances and passages.
 - Maximum ceiling load and maximum ground load.
 - Sufficient room ventilation (e.g. danger of carbon monoxide poisoning).
- Use existing visual aids to stay aware of the danger zone.
- In conditions of darkness and poor visibility, switch on existing work lights and ensure that motorists are not blinded by these lights.
- If the existing lights of the vehicle are not sufficient for performing work safely, ensure additional lighting of the job site.
- Hot vehicle parts and exhaust gases increase the risk of fire.

3.4.3 Danger zone

- The danger zone is the area in which persons are at risk by the movements of the vehicle, the attachment or the load.
- The danger zone also includes the area that can be reached by falling load, a falling device or ejected parts.
- Extend the danger zone sufficiently in the immediate vicinity of buildings, scaffolds or other elements of construction.
- Seal off the danger zone should it not be possible to keep a sufficient safety distance.
- When persons are in the danger zone, stop work immediately.

3.4.4 Transporting passengers

- Transporting passengers with the vehicle is not allowed.
- Transporting persons on and in attachments is not permitted.
- Transporting persons on and in trailers is not permitted.

3.4.5 Mechanical integrity

- The operator and owner are obligated to operate the vehicle only in a safe and working condition.
- Only operate the vehicle if all protective and safety-related equipment (e.g. protective structures such as cab or roll bar, detachable protective devices) are installed and functional.
- Check the vehicle for visible damage and defects.
- If a damage or malfunction occurs during operation, put the vehicle out of operation immediately and secure it against restart.
- Have all malfunctions jeopardizing the safety of the operator or third parties immediately repaired by an authorized service center.

3.4.6 Starting the engine of the vehicle

- Start the engine only according to the operator's manual.
- Observe all warning lights and control lights.
- Do not use any liquid or gaseous starting aids (e.g. ether or starting fuel).

3.4.7 Vehicle operation

- Start and operate the vehicle only with the seat belt fastened and only from the place provided for this.
- Put the vehicle into operation only if visibility is sufficient (have another person guide you if necessary).
- When parking on slopes:
 - Travel or work only uphill or downhill.
 - Avoid vehicle travel across a slope, observe the vehicle's permissible inclination (and of the trailer if necessary).
 - Keep loads on the uphill side of the vehicle and as close as possible to it.
 - Keep attachments close to the ground.
- Adapt the travel speed to the circumstances (e.g. the ground conditions, weather conditions).
- There is increased danger during backward vehicle travel. Persons in the blind spot of the vehicle cannot be seen by the operator.
 - Ensure that nobody is in the danger zone when you change the travel direction.
- Never get on a moving vehicle and never jump off the vehicle.

3.4.8 Vehicle travel on public roads and sites

- The specific national driving license is required.
- When driving on public roads or sites, observe the national regulations (e.g. road traffic regulations).
- Ensure that the vehicle is in compliance with the national regulations.
- In order not to blind other motorists, using the existing work lights during vehicle travel on public roads or sites is prohibited.
- When crossing underpasses, bridges, tunnels, e.g. ensure that the clearance height and width is sufficient.
- The mounted attachment must be approved for driving on public roads or sites (see the registration papers).
- When transferring the vehicle on public roads, the attachment must be brought into transport position and emptied if necessary.
- The attachment fitted onto the vehicle must be equipped with the mandatory lights and protective equipment.
- Take measures against unintentional operation of the working hydraulics.
- If the vehicle has different steering modes, ensure that the mandatory steering mode is selected.

3.4.9 Parking the vehicle

Stopping the engine of the vehicle

- Stop the engine only according to the operator's manual.
- Before stopping the engine, lower the attachment to the ground.

3.4.10 Securing the vehicle

- Unbuckle the seat belt only after stopping the engine.
- Secure the vehicle from rolling away before leaving the vehicle (e.g. parking brake, suitable chocks).
- Remove the starting key and secure the vehicle against unauthorized operation.

3.5 Lifting gear applications

3.5.1 Requirements

- Have loads fastened and the operator guided by a qualified person who has specific knowledge of lifting gear applications and the usual hand signals.
- The person giving instructions to the operator must stay in visual contact with the operator when fastening, guiding or removing the load (maintain visual contact).
- If this not be possible, ask one more person with the same qualifications to guide.
- The operator may not leave his seat as long as the load is raised.

3.5.2 Fastening, guiding and removing loads

- Follow the applicable specific regulations for fastening, guiding and removing a load.
- Wear protective equipment when fastening, guiding and removing loads (e.g. a hard hat, safety glasses, protective gloves, safety shoes).
- Do not place lifting and fastening gear over sharp edges or rotating parts. Loads must be fastened so as to prevent them from slipping or falling.
- Move loads only on horizontal, level and firm ground.
- Move loads close to the ground.
- In order to avoid oscillating movements of loads:
 - Perform smooth, slow movements with the vehicle.
 - Use cables to guide the load (do not use hands to guide).
 - Bear in mind the weather conditions (for example the wind force).
 - Keep a minimum safety distance from objects.
- The operator may allow the load to be fastened and removed only if the vehicle and its attachment are not being moved.
- Danger zones must not overlap with the work zones of other vehicles.

3.5.3 Lifting gear applications

- The vehicle and the attachment must be certified for lifting gear applications.
- Observe the national regulations for lifting gear applications.
- Lifting gear applications are procedures involving raising, transporting and lowering loads with the help of lifting and fastening gear.
- The help of an accompanying person is necessary for fastening, guiding and removing the load.
- There must be nobody under the load.
- Stop the vehicle immediately and stop the engine if persons enter the danger zone.
- Only operate the vehicle in lifting gear applications if the prescribed lifting gear (e.g. joint rod linkage and load hook) and safety equipment are present and functional (e.g. visual and audible warning equipment, line break protection, stability table).
- Use only lifting and fastening gear certified by a test or certification body, observe the inspection intervals. Adhere to the inspection intervals .
- Only use undamaged attachments and shackles. No belts, slings or cables.
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- Do not interrupt the work process with a load attached.

3.6 Trailer operation

- The vehicle must be certified for trailer operation.
- Observe the national regulations for trailer operation.
- The specific national driving license is required.
- Transporting persons on and in trailers is not permitted.
- Observe the maximum permissible drawbar load and trailer load.
- Do not exceed the permissible trailer speed.
- Trailer operation with the towing gear of the vehicle is prohibited.
- Trailer operation changes the vehicle's operating behavior; the operator must be familiar with this and act accordingly.
- Bear in mind the vehicle's steering mode and the trailer's turning circle.
- Before coupling/uncoupling the trailer, secure it to prevent it from rolling away (e.g. with the parking brake, suitable wheel chocks).
- There must be nobody between the vehicle and the trailer when hitching a trailer.
- Couple the trailer onto the vehicle correctly.
- Ensure that all equipment works correctly (for example the brakes, lights).
- Before starting vehicle travel, ensure that nobody is between the vehicle and the trailer.

3.7 Operation of attachments

3.7.1 Attachments

- Only use attachments that are certified for the vehicle or its protective equipment (for example splinter protection).
- All other attachments require the vehicle manufacturer's release.
- The danger zone and the work area depend on the attachment used.
 - See charger operator's manual.
- Secure the load.
- Do not overload attachment.
- Check the correct position of the lock.

3.7.2 Operating

- Transporting persons on/in an attachment is prohibited.
- Installing a work platform is prohibited.
 - Exception: The vehicle is certified and equipped with the necessary safety equipment.
- Attachments and counterweights modify handling, as well as the steering behavior and brake capability of the vehicle.
- The operator must be familiar with these modifications and act accordingly.
- Before starting work, operate the attachment to check that it works correctly.
- Before putting the attachment into operation, ensure that nobody is at risk
- Lower the attachment to the ground before leaving the seat.

3.7.3 Removing and fitting attachments

- Before coupling or uncoupling hydraulic connections:
 - Stop the engine.
 - Releasing the pressure from the working hydraulics.
- Picking up and lowering attachments to the ground requires special care:
 - Pick up and safely lock the attachment in accordance with the operator's manual,
 - Lower the attachment only to firm, level ground and secure it to prevent it from tipping over or rolling away.
- Put the vehicle and the attachment into operation only if:
 - The protective equipment has been installed and is functional.
 - The connections for the lights and the hydraulic system have been established and are functional.
- Perform a visual check of the lock after locking the attachment.
- There must be nobody between the vehicle and the equipment when picking up or lowering an attachment to the ground.

3.8 Towing, recovery, loading and transporting

3.8.1 Towing

- Seal off the danger zone.
- Ensure that no one is near the towing bar or cable. The safety distance is equal to 1.5 times the length of the towing equipment.
- Observe the mandatory transport position, permissible speed and itinerary.
- Do not use the towing bore to tow the vehicle.
- A vehicle of at least the same weight category must be used as the tractor vehicle. Furthermore, the tractor vehicle must be equipped with a safe braking system and sufficient tractive power.
- Only use towing bars or cables approved by a testing or certification body. Adhere to the inspection intervals .
- Do not use any towing bars or cables that are dirty, damaged or not of sufficient size.
- Fasten towing bars or cables only at the defined points.
- Tow away only in accordance with this operator's manual to avoid damage to the vehicle.
- When towing on public roads or sites, observe the national regulations (e.g. lighting regulations).

3.8.2 Crane-lifting

- Seal off the danger zone.
- The crane and the lifting gear must have suitable dimensions.
- Take into account the vehicle's overall weight.
- Wear protective clothing and equipment when fastening, guiding and removing the vehicle (for example a hard hat, safety glasses, safety boots).
- Use only lifting and fastening gear certified by a test or certification body, observe the inspection intervals.
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- Visually inspect to ensure that all attachment points are not damaged or worn (e.g. no widening, no sharp edges, no cracks).
- Have loads fastened and crane operators only guided by experienced persons.
- The person guiding the crane operator must be within sight or sound of him.
- Observe all movements of the vehicle and lifting gear.
- Secure the vehicle against unintentional movement.
- Raise the vehicle only after it is safely attached and the signalman has given his approval.
- Use only the slinging points provided for fastening the lifting gear (for example cables, belts).
- Do not attach the vehicle by twining the lifting gear (for example cables, belts) around it.
- Ensure an even load distribution when fastening the lifting gear.
- Ensure that no one is in, on or under the vehicle when loading the vehicle.
- Observe the national regulations.
- Load the vehicle only in accordance with this operator's manual to avoid damage to the vehicle.
- Do not raise a vehicle that is stuck or frozen onto the ground, for example.
- Bear in mind the weather conditions (for example the wind force).

3.8.3 Transporting

- For the safe transportation of the vehicle:
 - The transport vehicle must have a sufficient bearing load and loading surface.
 - The maximum weight rating of the transport vehicle must not be exceeded.
- Use only lifting and fastening gear certified by a test or certification body, observe the inspection intervals. Adhere to the inspection intervals .
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- In order to secure the vehicle on the loading surface, use only the fastening points provided for this purpose.
- Ensure that nobody is in or on the vehicle during transporting.
- Observe the national regulations.
- Bear in mind the weather conditions (e.g. ice, snow).
- Ensure the minimum load on the steering axle(s) of the transport vehicle, and ensure an even load distribution.

3.9 Maintenance

3.9.1 Maintenance

- Observe the intervals prescribed by law and those specified in this operator's manual for routine checks/inspections and maintenance.
- For maintenance activities, ensure that all tools and service center equipment are adapted to the performance of the task described in this operator's manual.
- Do not use any damaged or malfunctioning tools.
- The vehicle and the engine must be stopped during maintenance.
- Once maintenance is over, correctly install safety equipment again that has been removed.
- Wait for the vehicle to cool down before touching components.

3.9.2 Personal safety measures

- Avoid any operational mode that might pose a risk to safety.
- Wear protective equipment (for example hard hat, protective gloves, safety shoes).
- Tie back long hair and remove all jewelry.
- If maintenance on a running engine cannot be avoided:
 - only work in groups of two.
 - Both persons must be authorized and trained for the operation of the vehicle.
 - One person must be seated on the seat and stay in contact with the second person.
 - Keep a safe distance from rotating parts (e.g. from fan blades, belts).
 - Keep a sufficient distance to hot parts (e.g. exhaust system).
 - Perform maintenance only in well-ventilated rooms or rooms with an exhaust-gas suction system.
- Safely lock or support vehicle components before starting work.
- Take special care when working on the fuel system due to the increased risk of fire.

3.9.3 Preparative measures

- Attach a warning label to the control elements (e.g. "Vehicle being serviced, do not start").
- Before performing assembly work on the vehicle, support the areas to be serviced and use suitable lifting and supporting equipment for the replacement of parts over 9 kg.
- Perform maintenance only if:
 - the vehicle is positioned on firm and level ground.
 - the vehicle is secured against rolling away (e.g. parking brake, chocks) and the attachment is placed on the ground.
 - The engine is stopped.
 - the starting key has been removed.
 - the pressure in the working hydraulics has been released.
- If maintenance has to be performed under a raised vehicle or attachment, support the vehicle or attachment (e.g. with a lift platform, trestles) to ensure safety and stability.
- Hydraulic cylinders or jacks alone do not sufficiently secure a raised vehicle or attachment.

3.9.4 Measures for performing maintenance

- Perform only the maintenance described in this operator's manual.
- All work that is not described in this operator's manual must be performed by qualified and authorized technically trained personnel.
- Follow the maintenance plan.
- Always use specially designed or otherwise safety-oriented ladders and working platforms to perform overhead maintenance. Do not use vehicle parts or attachments as a climbing aid.
- Do not use attachments as a lift platform for persons.
- Keep climbing aids (handholds and footholds) free from dirt, snow and ice.
- Disconnect the negative terminal of the battery before working on the electrical system.

3.9.5 Modifications and spare parts

- Do not modify the vehicle and the attachment (e.g. the safety devices, lighting, tires, straightening and welding work).
- Modifications must be approved by the manufacturer and performed by an authorized service center.
- Use only original spare parts.

3.9.6 Protective structures

- The cab, roll bar and protective screen are tested protective structures and may not be changed (e.g. no drilling, bending, welding).
- Perform a visual check according to the maintenance plan (for example check fastenings for damage).
- If damage or defects are detected, have them immediately checked and repaired by an authorized service center.
- Have retrofitting work only performed by an authorized service center.
- Replace self-locking fasteners (for example self-locking nuts) by new ones after removing them.

3.10 Measures for avoiding risks

3.10.1 Tires

- Have repair work on the tires only performed by trained technical personnel.
- Check the tires for correct pressure and visible damage (for example cracks, cuts).
- Check the wheel nuts for tightness.
- Use only approved tires.
- The vehicle must have identical tires (for example profile, revolutions per mile).

3.10.2 Hydraulic and compressed-air system

- Check all lines, hoses and screw connections regularly for leaks and visible damage.
- Splashed oil can cause injury and fire.
- Leaking hydraulic and compressed-air lines can cause the full loss of the braking effect.
- Have damage and leaks immediately repaired by an authorized service center.
- Check the hydraulic hoses at the recommended intervals and have them replaced.

3.10.3 Electrical system

- Use only fuses with the specified current rating.
- In case of damage or malfunction in the electrical system:
 - Put the vehicle out of operation immediately and secure it against restart.
 - Actuate the battery master switch.
 - Disconnect the battery.
 - Have the fault repaired.
- Ensure that work on the electrical system is only performed by technically trained personnel.
- Regularly check the electrical system. Have malfunctions repaired immediately (for example loose connections, scorched cables).
- The operating voltage of the vehicle, the attachment and the trailer must coincide (e.g. 12 V).

3.10.4 Battery

- Batteries contain caustic substances (for example sulfuric acid). When handling the battery observe the specific safety instructions and regulations relevant to accident prevention.
- A volatile oxyhydrogen mixture forms in batteries during normal operation and especially during charging. Always wear gloves and eye protection when working with batteries.
- Do not perform battery maintenance near open flames.
- Perform battery maintenance only in well-ventilated areas (e.g. due to vapors harmful to health, explosion hazard).
- Starting the vehicle with battery jumper cables is dangerous if performed improperly. Observe the safety instructions regarding the battery.

3.10.5 Safety instructions regarding internal combustion engines

- Internal combustion engines present special hazards during operation and fueling.
- Failure to follow the warnings and safety instructions can cause serious injury or death.
- Keep the area around the exhaust system free of flammable materials.
- Check the engine and fuel system for leaks (e.g. loose fuel lines). Don't start or let the engine run in case of leaks.
- Breathing the exhaust fumes causes death very quickly.
- Engine exhaust fumes contain invisible and odorless gases (e.g. carbon monoxide and carbon dioxide).
 - Operate the vehicle only on appropriately ventilated areas.
- The respective safety instructions must be observed when using the vehicle in areas where there may be explosion hazards.
- Do not touch the engine, exhaust system and cooling system as long as the engine is still running or has not cooled down yet.
- Do not remove the filler cap of the radiator when the engine is running or hot.
- The coolant is hot, under pressure and can cause serious burns.

3.10.6 Bleeding the fuel system and refueling

- Do not bleed the fuel system or refuel near open flames.
- Bleed the fuel system and refuel only in well-ventilated areas (e.g. due to vapors harmful to health, explosion hazard).
- Wipe away fuel spills immediately (e.g. due to fire hazard, slipping hazard).
- Firmly close the fuel tank cap; replace a malfunctioning fuel tank cap.

3.10.7 Handling oil, grease and other substances

- Observe the safety data sheet when handling oils, greases and other chemical substances (e.g. battery acid, coolant, urea solution).
- Wear appropriate protective equipment (e.g. protective gloves, safety glasses).
- Be careful when handling hot vehicle fluids and consumables – there is a risk of burning and scalding.
- Only work with corresponding personal protective equipment, e.g. respiratory protection in exposed areas (e.g. dust, steam, smoke, asbestos).
- Do not operate the vehicle in radioactively, biologically or chemically contaminated areas.

3.10.8 Fire hazard

- Fuel, lubricants, grease and coolants are flammable.
- Do not use flammable detergents.
- Keep the area around the exhaust system free of flammable materials.
- Hot vehicle parts and exhaust gases increase the risk of fire.
 - Stop and park the vehicle only in safe areas.
- If the vehicle is equipped with a fire extinguisher, have it installed in its specific location.
- Keep the vehicle clean. This reduces fire hazards.

3.10.9 Working near electric supply lines

- Before performing any work, the operator must check whether there are any electrical supply lines in the designated work area.
- If there are electrical supply lines, only a vehicle with cab may be used (Faraday cage).
- Keep a safe distance from existing electric supply lines.
- If this is not possible, the operator must initiate other safety measures in agreement with the owner or operating company of the supply lines (e.g. shutdown the power).
- If supply lines are exposed, they must be fastened, supported and secured accordingly.
- If live supply lines are touched nevertheless:
 - do not leave or touch the cab (Faraday cage).
 - If possible, drive the vehicle out of the danger zone.
 - Warn others against approaching and touching the vehicle.
 - Have the live wire de-energized.
 - Do not leave the vehicle until the supply lines that have been touched or damaged have been safely de-energized.

3.10.10 Working near non-electric supply lines

- Before performing any work, the operator must check whether there are any non-electrical supply lines in the designated work area.
- If non-electrical supply lines exist, the operator must initiate safety measures in agreement with the owner or operating company of the supply lines (e.g. shutdown the supply line).
- If supply lines are exposed, they must be fastened, supported and secured accordingly.

3.10.11 Behavior during thunderstorms

- Stop vehicle operation if a thunderstorm is gathering.
 - Stop the vehicle, secure and leave it, and avoid being near it.

3.10.12 Noise

- Observe the noise regulations (for example during applications in enclosed premises).
- Bear in mind external sources of noise (compressed-air hammer, concrete saw).
- Do not remove the sound baffles of the vehicle and attachment.
- Have damaged sound baffles immediately replaced (e.g. an insulating mat, muffler).
- Before starting work, get informed on the noise level of the Vehicle/attachment (e.g. on the label).
 - Wear ear protectors.
- Do not wear ear protectors during vehicle travel on public roads or sites.

3.10.13 Cleaning

- Risk of injury from compressed air and high-pressure cleaners.
 - Wear appropriate protective equipment.
- Do not use any dangerous and aggressive detergents.
 - Wear appropriate protective equipment.
- Operate the vehicle only in a clean condition.
 - Keep climbing aids (handholds and footholds) free from dirt, snow and ice.
 - Keep the cab windscreens and visual aids clean.
 - Keep the headlights and work lights clean.
 - Keep the control elements and control lights clean.
 - Keep the safety and information labels clean, and replace damaged and missing labels by new ones.
- Perform cleaning work only if the engine is stopped and cooled down.
- Bear in mind sensitive components and protect them accordingly (e.g. electronic control units, relays).

4 Vehicle Description

4.1 Vehicle view

4.1.1 Vehicle view

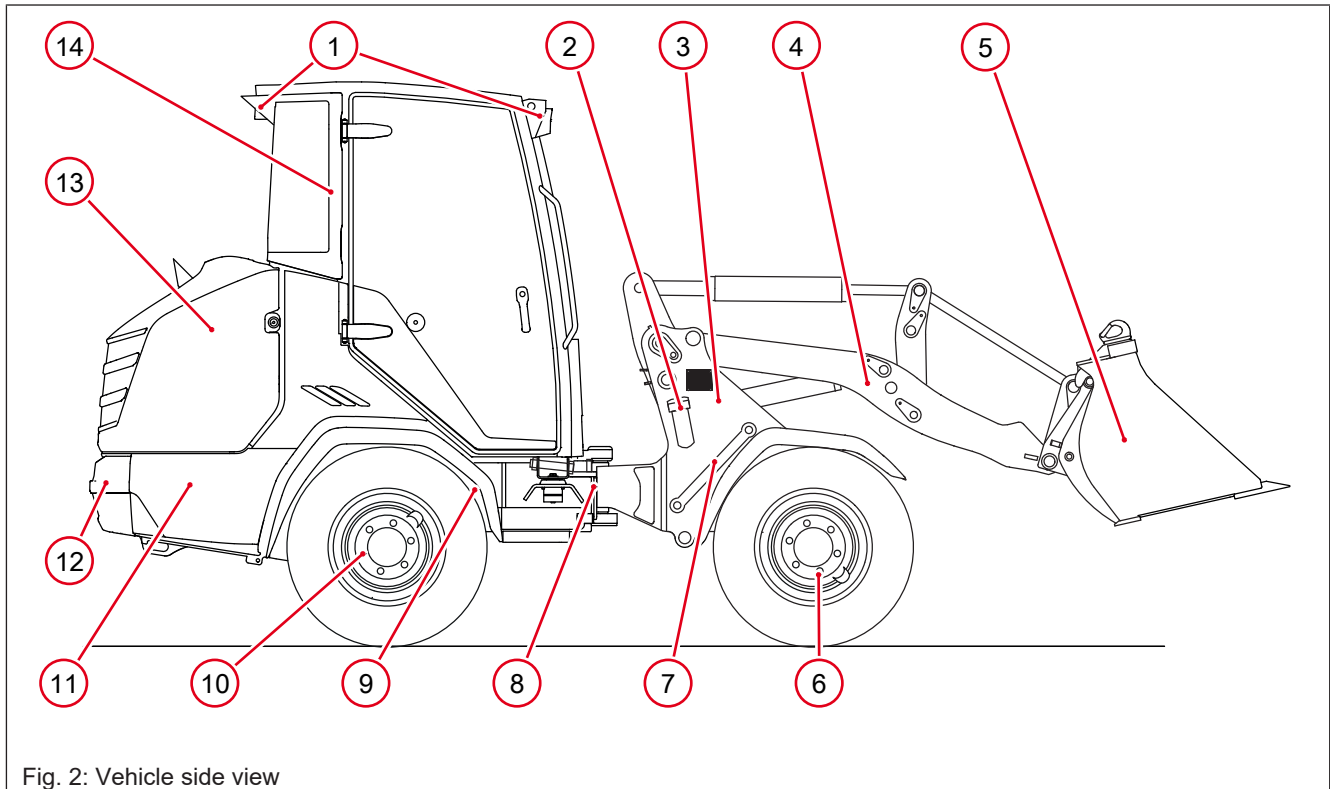


Fig. 2: Vehicle side view

- 1 Front and rear work lights
- 2 Diesel tank fill opening
- 3 Vehicle chassis front section
- 4 Loader unit
- 5 Attachment
- 6 Front wheels
- 7 Blocking for articulated pendulum joint (left)
- 8 Articulated pendulum joint
- 9 Vehicle chassis rear section
- 10 Rear wheels
- 11 Hydraulic oil tank (left)
- 12 Rear weight
- 13 Engine hood
- 14 ROPS/FOPS protective structure (overhead guard or cab)

4.2 Brief description

4.2.1 Models and trade names

The vehicle is identified by two designations.

Type designation	Trade name
The type designation is stamped on the type label.	The trade name is affixed to the vehicle.
A01-01	WL28

4.2.2 Main components of the vehicle

Vehicle frame

- Sturdy steel chassis

Engine

- Three-cylinder in-line engine; mounted on vibration damping elements; water-cooled

Driver's platform

- ROPS/FOPS tested cab/overhead guard, depending on design, mounted on vibration damping elements
 - ROPS is the abbreviation for Roll Over Protective Structure
 - FOPS is the abbreviation for Falling Object Protective Structure

Drive system

- Drive system via progressively adjustable hydraulic system
- Maximum speed
 - Standard: 20 km/h
 - Option 30 km/h

Steering system

- Fully hydraulic articulated pendulum steering

Axles

- Front and rear planetary axles

Brake

- Service brake: Multi-disc brake acting in the front axle via drive shaft on rear axle
- Parking brake: Electro-hydraulic multiple disc brake with spring brake in the front axle, acting on the rear axle via drive shaft, incl. hill-hold function

Loader unit

- Loader unit with mechanical or hydraulic lock for attachments

The vehicle is equipped with a "telematics module" (EquipCare) for transmitting operating data, location, etc. via satellite. The service partner is available at all times for any questions about the telematics module.

The vehicle is a self-propelled work vehicle according to German road traffic regulations (StVZO). Observe the legal regulations of your country.

Refer to chapter Intended use for the different applications the vehicle can be used for.

The vehicle consists of the vehicle chassis, drive and axles. The drive and control units, the driver's platform and the loader unit are located in/on the vehicle frame.

4.2.3 Diesel engine

For engines >19 kW, the diesel engine is equipped with a system for exhaust gas aftertreatment. This means that the engine complies with the exhaust emission standards according to Stage 5 / Stage 4 Final (valid in EU member states, the USA, Canada and Switzerland).

The system for exhaust gas aftertreatment system is a closed system. it consists of:

- a diesel particulate filter (DPF) combined with a diesel oxidation catalyst (DOC).

4.2.4 Cooling system

In the engine compartment, there is a combined water/hydraulic oil cooler that cools the diesel engine and hydraulic oil.

If the vehicle is equipped with an engine >19 kW, the radiator is designed as a combined water/hydraulic oil and charge air cooler.

The radiator fan is mechanically driven by the diesel engine via V-belts.

Control lights and control displays in the instrument panel of the vehicle ensure that the engine and hydraulic oil temperature can be constantly monitored.

4.2.5 Hydraulic system

The hydraulic system is equipped with control units, pressure relief valves, filters and a radiator.

Depending on the vehicle equipment, plug-in couplings are fitted at the front and rear of the vehicle for connecting hydraulically operated attachments.

The vehicle has two hydraulic systems that are fed from a hydraulic oil tank:

- Hydrostatic drive system
- Steering hydraulics and working hydraulics

Pipe rupture safety devices on the loader unit

The vehicle can be equipped as standard or as an option with pipe rupture protection on the hydraulic cylinders of the loader unit. Pipe rupture safety devices prevent an abrupt and unintentional lowering of the loader unit in the event of a hydraulic line or hydraulic hose bursting.

The pipe rupture safety devices consist of lowering brake valves. Depending on the equipment of the vehicle, the lowering brake valves can be bypassed by means of a switch in the cab (lowering brake bypass). This is necessary for functions such as floating position and loader unit stabilizer.

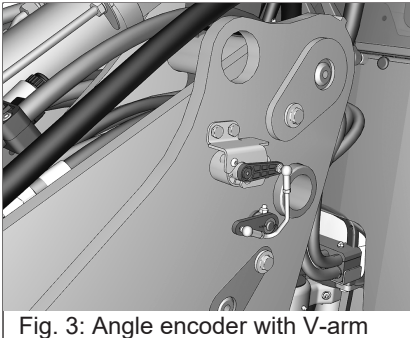


Fig. 3: Angle encoder with V-arm

Angle encoder for lowering brake valves

If the vehicle is equipped with lowering brake valves that can be bypassed by means of a switch, there is an angle sensor on the loader unit. The angle sensor prevents the lowering brake valves from being bypassed when the loader unit is raised.

Hydrostatic drive system

The diesel engine permanently drives a variable displacement pump, the oil flow of which is sent to a variable displacement engine flanged on the transfer gearbox. The force of the displacement engine is transmitted to the rear axle via the transfer gearbox, and to the front axle via the drive shaft.

Adjustment is automatic and continuous, but depends on engine speed and load. The travel speed is aligned with the speed of the engine and the load of the vehicle.

Depending on the load of the vehicle, the variable displacement pump is automatically regulated back so that the most favorable torque is always maintained. The higher the load on the vehicle (for example during loading work or uphill vehicle travel), the more the achieved maximum speed is reduced. This type of vehicle regulation makes the best possible use of the entire power range.

By actuating the brake/inching pedal (inching = deceleration; left foot pedal), the control can also be influenced. When the inching function of the brake/inching pedal is actuated, the vehicle brakes in fine doses to a standstill, regardless of the engine speed. This control provides the working hydraulics with full engine power when the accelerator pedal and brake/inching pedal are actuated simultaneously.

Steering hydraulics and working hydraulics

Steering hydraulics and working hydraulics are supplied with oil by a gear pump. The diesel engine constantly drives the gear pump. The gear pump is flanged to the variable displacement pump of the drive system. The oil flow is led via a priority valve through the steering orbitrol to the control valve of the working hydraulics. The priority valve ensures that the steering system is primarily supplied with hydraulic oil. By turning the steering wheel, the steering orbitrol controls the oil flow to the double-acting hydraulic cylinders of the steering system.

The functions of the working hydraulics are controlled via the joystick with the control valve. The control valve directs the oil flow to the corresponding hydraulic cylinders of the loader unit and the plug couplings for connecting hydraulically operated attachment and back into the hydraulic oil tank.

4.2.6 Brakes

The brake is activated with the brake/inching pedal. The first part of the pedal travel reduces the drive system, and then the braking is engaged. The brake is located on the differential gear of the front axle. The brake acts on the front and rear wheels as it is mounted on the drive shaft.

The parking brake is actuated with a switch and also acts on the brake on the drive shaft.

4.2.7 Steering system

The steering system is designed as articulated pendulum steering. It is operated hydraulically via a steering orbitrol and double-acting hydraulic cylinders.

Emergency steering feature

The steering system is only operational when the engine is running normally.

The vehicle can still be steered if the diesel engine or the pump drive breaks down. However, operating the steering system then requires greater strength and the steering will only respond slowly. Take this into account especially when towing the vehicle. Adjust the towing speed to the changed steering behavior (walking pace)!

4.2.8 Electrical system

The electrical system operates at a voltage of 12 V. Consumers and their supply circuits are protected with fuses.

4.2.9 Loader unit

The loader unit consists of a lifting frame and the power coupler system for attachments.

The hydraulic functions of the loader unit are carried out with various hydraulic cylinders. Various hydraulic connections for attachments with hydraulic functions are located on the loader unit. The loader unit also includes the attached attachment.

4.2.10 Driver's platform

Depending on the equipment, the ROPS/FOPS protective superstructure for the driver is designed as an overhead guard or cab and tested with category 1.

- ROPS is the abbreviation for: Roll Over Protective Structure
- FOPS is the abbreviation for Falling Object Protective Structure

The operator's seat and the operating and control elements are located on the driver's platform.

4.2.10.1 Fire extinguisher

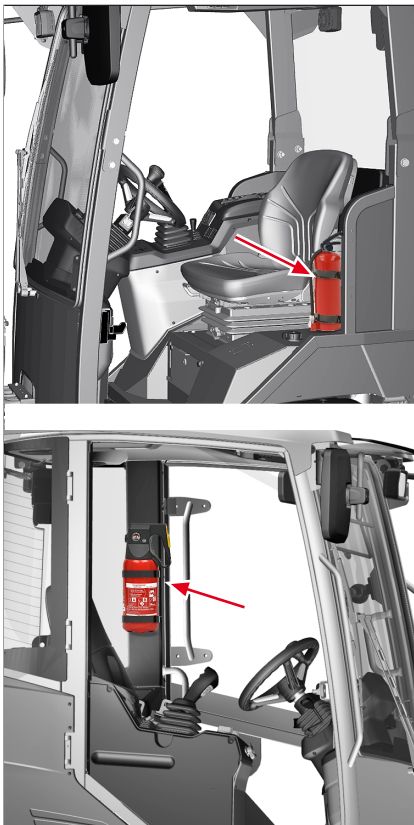


Fig. 4: Installation site for the fire extinguisher

The fire extinguisher is not included in the vehicle's standard equipment. Only have the fire extinguisher retrofitted by an authorized specialist service center. Operate the fire extinguisher according to the instructions printed on the fire extinguisher.

To maintain the functionality of the fire extinguisher, follow the instructions below:

- Have fire extinguishers checked regularly or refilled. A corresponding test badge is located on the container.
- Only use fire extinguishers in an emergency.
- If the fire extinguisher has been used, have it checked immediately by an authorized service center and refilled. It may be necessary to replace it with a new fire extinguisher.

4

4.2.11 Overview of options

The following table shows all options available for the vehicle.

The vehicle is not equipped with all options described in this operator's manual.

The options described in this operator's manual are not available in all countries.

Name of option	Chapter	on page
Foldable overhead guard eps	Foldable overhead guard	Foldable overhead guard
Front and rear window incl. front and rear window wipers	Operate window wiper and washer system front and rear	▶ 124

Name of option	Chapter	on page
Imitation leather seat (standard for overhead guard)	Seat MSG83	▶ 72
Seat imitation leather, air cushioned	Seat MSG93	▶ 73
Seat imitation leather air cushioned, seat heating	Seat MSG93 and the chapter Seat heating	▶ 73 ▶ 74
Air conditioning system (Only for 33.3 kW or 40.1 kW engine and vehicle with cab)	Using the air conditioning system	▶ 127
Lighting according to StVZO (also applies to LED lighting)	Lighting and signaling system	▶ 118
Rotating beacon LED (yellow)	Operating the rotating beacon	▶ 121
Rotating beacon (yellow) with magnetic base (only for foldable overhead guard eps)	Operate rotating beacon with magnetic base	▶ 122
Manual throttle	Accelerating vehicle with manual throttle	▶ 105
Engine preheating (cooling water) + hydraulic oil preheating (only for 33.3 kW or 40.1 kW engine)	Engine and hydraulic oil preheating	▶ 87
Thrust limitation	Operating the traction force control	▶ 137
Drive mode	Drive modes	▶ 104
Lowering brake valve (pipe rupture protection for lifting and tilting cylinders) floating position	Switching on the floating position	▶ 138
Loader unit stabilizer (only with P-Kinematics)	Operating the loader unit stabilizer	▶ 139
Bucket position display	Level indicator for attachments	▶ 163
	Indicator for the position of the loader unit	▶ 163
3rd control circuit proportional incl. continuous function via switch	Operating standard hydraulic connections	▶ 149
	Standard hydraulic connections in continuous operation	▶ 150
Pressure relief 3rd control circuit at the front of the loader unit	Releasing the pressure from the hydraulic connections	▶ 144
Oil volume setting	Oil volume adjustment during continuous operation of the hydraulic connections	▶ 150
3rd control circuit proportional serial incl. continuous function via switch	Operating additional hydraulic connections	▶ 152
Pressure relief 4th control circuit front on loader unit	Releasing the pressure from the hydraulic connections	▶ 144
High Flow – Power hydraulics single-acting	Operating hydraulic connections High-Flow	▶ 154
Pressureless return flow at the front incl. leakage oil line	Hydraulic connections Unpressurized return flow, leak oil line	▶ 153
Quick coupler Faster 2-fold	Operating the hydraulic connections	▶ 155
Quick coupler Faster 2x 2-fold	Multi-quick coupler	

Name of option	Chapter	on page
Two rear hydraulic connections double-acting incl. separate control valve	Double-acting rear hydraulic connections	▶ 156
Two rear hydraulic connections double-acting via changeover valve	Operate hydraulic connections at the rear using control lever	▶ 158
	Operating rear hydraulic connections with the scroll wheel	▶ 158
Pressureless return flow at the rear incl. leakage oil line	Return without pressure at the rear	▶ 159
Front plug receptacle 13-pin	Operating the 13-pole plug receptacle at the loader unit	▶ 159
Plug receptacle rear 3-pin	Operating 3-pole plug receptacle at the rear	▶ 160
Rear plug receptacle 7-pin for lighting rear attachments	7-pole plug receptacle at the rear	▶ 161
Backup warning system (acoustic)	Reversing warning buzzer	▶ 103
Drive interlock KAT	Setting the drive interlock with the key system	▶ 90
Trailer coupling ball head K50	Using the ball-type hitch	▶ 116
Automatic trailer hitch	Operating the automatic trailer coupling	▶ 117
EquipCare 36 months (incl. App and Manager)	Drive interlock with keypad	▶ 92
Central lubrication system	Central lubrication system	▶ 210

4.3 Operating elements at the operator station

4.3.1 Information on the operating elements



⚠ WARNING

Risk of accidents due to damaged control elements and non-functioning warning lights and control lights!

Damaged control elements, control lights and warning lights cannot function properly. This may result in accidents that could result in serious injury or death.

- ▶ Have defective operating elements repaired immediately by an authorized service center.
- ▶ Defective warning lights and control lights must be repaired immediately by an authorized service center.

The description contains information about the functions of the warning and control lights and the control elements in the cab.

The vehicle is not equipped with all options described in this operator's manual.

The options described in this operator's manual are not available in all countries.

The configuration of the switch panels/keypads may vary depending on the equipment of the vehicle.

4.3.2 General overview of control elements

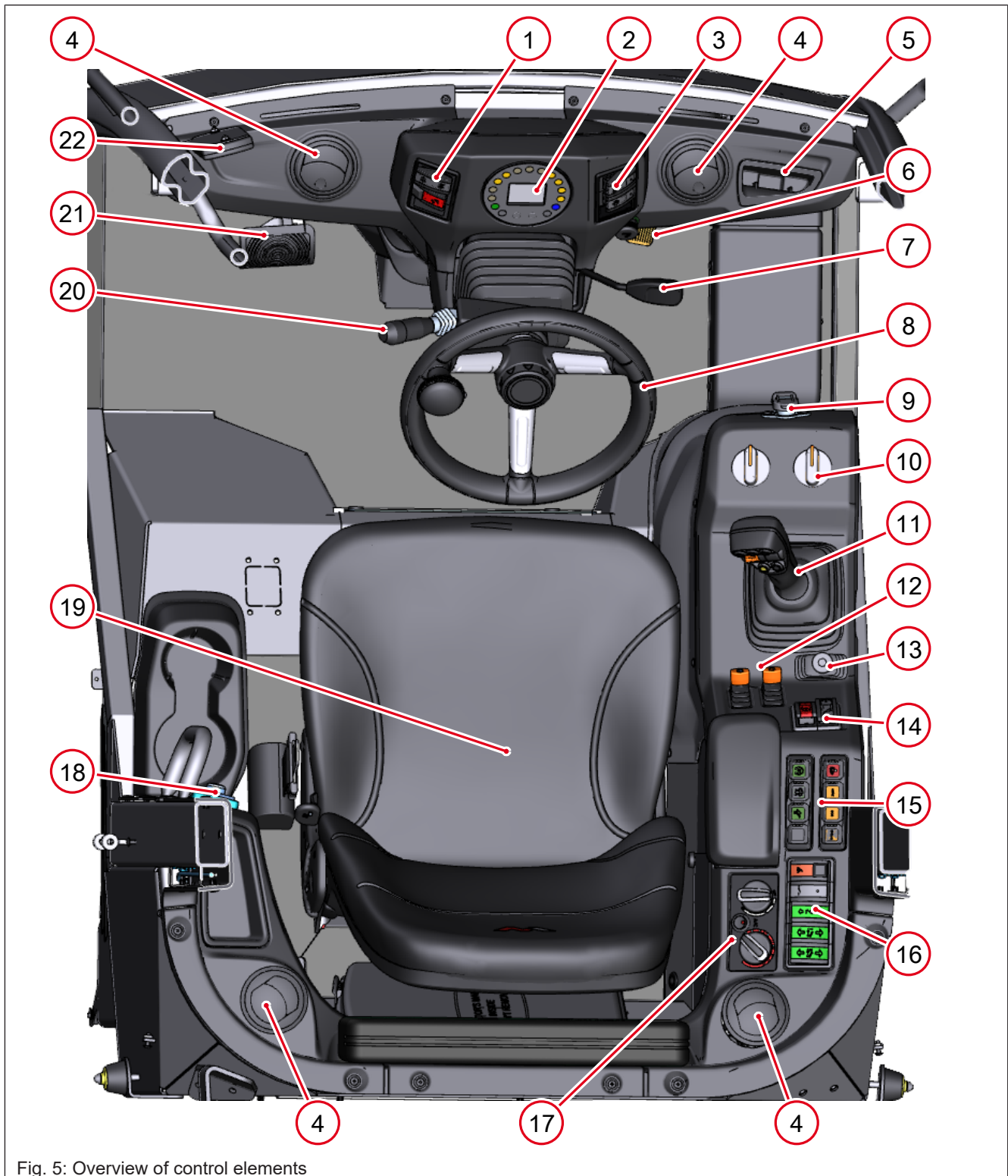




Fig. 5: Overview of control elements

- 1 Switch panel 1 on instrument panel
- 2 Display
- 3 Switch panel 2 on instrument panel
- 4 Breather nozzle
- 5 Storage compartment for e.g. smartphones
- 6 Accelerator pedal
- 7 Control lever for steering column adjustment
- 8 Steering wheel
- 9 3-pole plug receptacle
- 10 Rotary switch for oil quantity adjustment and thrust limiters
- 11 Joystick
- 12 Control lever for speed limiter and manual throttle
- 13 Control lever for additional hydraulic connections
- 14 Switch panel 3 in the side console
- 15 Keypads in the side console
- 16 Switch panel 4 in the side console
- 17 Controls for heating, ventilation and air conditioning system
- 18 Radio
- 19 Seat
- 20 Steering column switch
- 21 Brake/inching pedal
- 22 Control panel for drive interlock


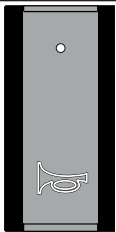

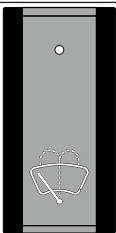


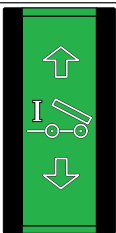


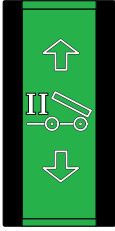

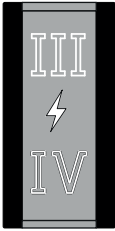
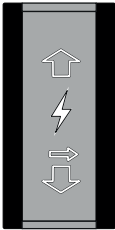
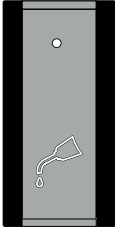

4.3.3 Overview: Switch

The table shows all switches available for the vehicle. Depending on the vehicle's equipment, it may not be equipped with all the switches described in this table.

Switch	Function
	<p>Switch for hydraulic lock</p> <p>For unlocking the hydraulic lock for attachments.</p> <ul style="list-style-type: none"> • Switch has a lock. <p>Switch positions:</p> <p>0 – Neutral</p> <p>1– Pushbutton function</p>
	<p>Switch for work lights</p> <p>To switch on and off the work lights.</p> <p>Switch positions:</p> <p>0 – Neutral</p> <p>1 – Switch function</p> <p>2 – Switch function</p>










4.3 Operating elements at the operator station




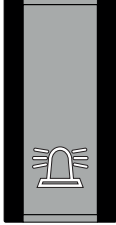
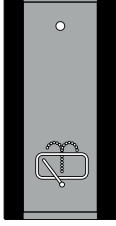
Switch	Function
	<p>Switch for DPF regeneration</p> <p>To interrupt or start a DPF regeneration.</p> <p>Switch positions:</p> <ul style="list-style-type: none"> 1 – Switch function 0 – Neutral 2 - Pushbutton function
	<p>Switch for horn</p> <p>To activate the horn.</p> <p>Switch positions:</p> <ul style="list-style-type: none"> 0 – Neutral 1 - Pushbutton function
	<p>Switch for hazard warning system</p> <p>To activate or deactivate the hazard warning system.</p> <p>Switch positions:</p> <ul style="list-style-type: none"> 0 – Neutral 1 - Switch function
	<p>Front window wiper switch</p> <p>To activate or deactivate the window wiper.</p> <p>To activate the washer system front.</p> <p>Switch positions:</p> <ul style="list-style-type: none"> 0 – Neutral 1 – Switch function 2 - Pushbutton function
	<p>Switch for parking brake</p> <p>To switch the parking brake on and off.</p> <p>Switch positions:</p> <ul style="list-style-type: none"> 0 – Neutral 1 - Pushbutton function
	<p>Switch for changing rear hydraulic connections</p> <p>To switch the hydraulic function of the standard hydraulic connections to the hydraulic connections at the rear.</p> <p>Switch positions:</p> <ul style="list-style-type: none"> 0 – Neutral 1 - Switch function
	<p>Switch for rear hydraulic connections</p> <p>To switch the hydraulic connections on and off at the rear.</p> <p>Switch positions:</p> <ul style="list-style-type: none"> 1– Pushbutton function 0 – Neutral 2 - Switch function

Switch	Function
	<p>Switch for additional hydraulic connections at the rear</p> <p>To switch the additional hydraulic connections at the rear on and off.</p> <p>Switch positions:</p> <p>1– Pushbutton function</p> <p>0 – Neutral</p> <p>2 – Switch function</p>
	<p>Switch for lowering brake bypass</p> <p>To release the lowering brake valves to use the floating position of the loader unit.</p> <p>To release the lowering brake valves for emergency lowering of the loader unit.</p> <ul style="list-style-type: none"> • Switch has a lock. <p>Switch positions:</p> <p>0 – Neutral</p> <p>1 - Switch function</p>
	<p>Switch for electrical function 3 and 4</p> <p>To operate the electric functions 3 and 4 of the 13-pin plug receptacle on the loader unit.</p> <p>Optionally for operating electric function 3 and 4 of the 3-pole plug receptacle at the rear.</p> <p>Switch positions:</p> <p>1 – Switch function</p> <p>0 – Neutral</p> <p>2 - Switch function</p>
	<p>Switch for changeover to electric function at rear</p> <p>To switch the electrical function 3 and 4 of the 13-pin plug receptacle on the loader unit to the 3-pin plug receptacle at the rear.</p> <p>Switch positions:</p> <p>1 – Switch function</p> <p>2 - Switch function</p>
	<p>Switch for central lubrication system</p> <p>To trigger an intermediate lubrication of the central lubrication system.</p> <p>Switch positions:</p> <p>0 – Neutral</p> <p>1 - Pushbutton function</p>
	<p>Switch for locking function of the joystick</p> <p>To lock the joystick functions against unintentional operation.</p> <p>Switching on and off</p> <p>Switching function</p>



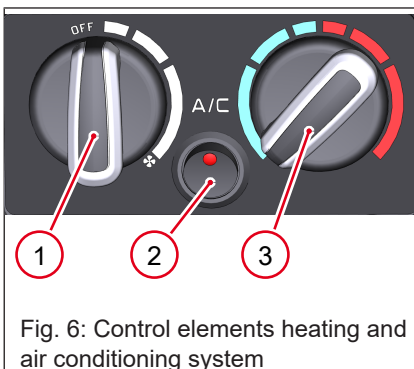
4.3 Operating elements at the operator station

Switch	Function
	<p>Switch for AUTO mode</p> <p>To select the AUTO drive mode</p> <p>Switch on</p> <p>Switching function</p>
	<p>Switch for ECO mode</p> <p>To select the ECO drive mode</p> <p>Switch on</p> <p>Switching function</p>
	<p>Switch for Attachments mode</p> <p>For selecting the attachment mode.</p> <p>Switch on</p> <p>Switching function</p>
	<p>Switch for M-Drive mode</p> <p>Selects the M-Drive mode.</p> <p>Switch on</p> <p>Switching function</p>
	<p>Switch for continuous operation of hydraulic connections</p> <p>To switch the operation of the hydraulic connections on and off in continuous operation.</p> <p>Switching on and off</p> <p>Switching function</p>
	<p>Switch for continuous operation of the additional hydraulic connections</p> <p>To switch the operation of the additional hydraulic connections on and off in continuous operation.</p> <p>Switching on and off</p> <p>Switching function</p>
	<p>Switch for hydraulic connections High Flow</p> <p>To switch the hydraulic connections High-Flow on and off.</p> <p>Switching on and off</p> <p>Switching function</p>
	<p>Switch for loader unit stabilizer</p> <p>To switch the loading oscillation damping on and off.</p> <p>Switching on and off</p> <p>Switching function</p>
	<p>Switch for work lights</p> <p>To switch the work lights front and rear on and off.</p> <p>Switching on and off</p> <p>2 switch functions</p>

Switch	Function
	<p>Switch for rotating beacon</p> <p>To switch the rotating beacon on and off.</p> <p>Switching on and off</p> <p>Switching function</p>
	<p>Switch for rear window heating</p> <p>To switch the rear window heating on and off.</p> <p>Switching on and off</p> <p>Switching function</p>
	<p>Switch for rear window wiper</p> <p>To switch the rear window wipers on and off.</p> <p>Switching on and off</p> <p>Switching function</p>
	<p>Switch for rotating beacon</p> <p>To switch the rotating beacon on and off.</p> <p>Switch positions:</p> <p>0 – Neutral</p> <p>1 - Switch function</p>
	<p>Switch for the rear window wiper</p> <p>To switch the rear window wiper on and off.</p> <p>To operate the rear washer system.</p> <p>Switch positions:</p> <p>0 – Neutral</p> <p>1 – Switch function</p> <p>2 - Pushbutton function</p>



4.3.4 Overview: Control elements heating and air conditioning system

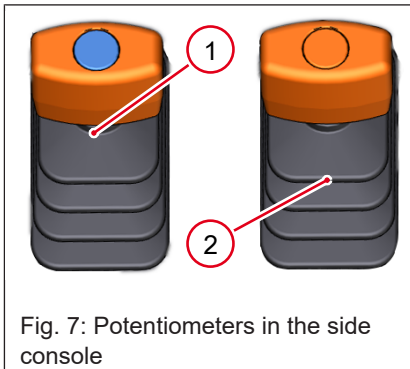


- 1 Fan control
- 2 Switch for air conditioning system
- 3 Temperature control

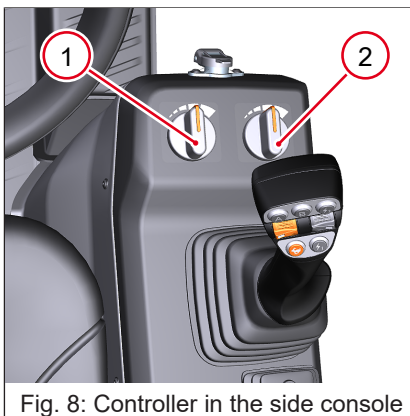
Fig. 6: Control elements heating and air conditioning system

4.3 Operating elements at the operator station

4.3.5 Overview: Other control elements

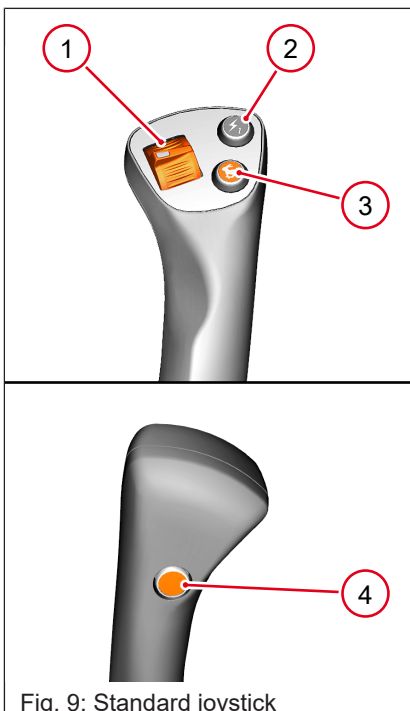


- 1 Control lever for speed limiter
- 2 Control lever for manual throttle



- 1 Controller for oil volume adjustment
- 2 Control for thrust limiter

4.3.6 Overview: Joystick



- 1 Switch for forward/reverse driving direction
- 2 Switch for electrical plug receptacle on loader unit
- 3 Switch for high speed/crawler gear button
- 4 Switch for the operation of the differential lock

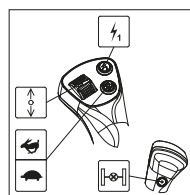
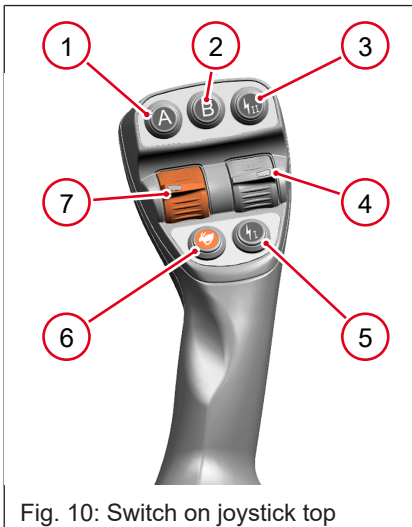


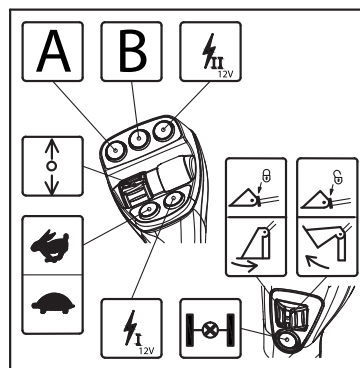
Fig. 9: Standard joystick



- 1 Switch for function **A**
- 2 Switch for function **B**
- 3 Electrical connection switch **2** front
- 4 Not assigned or switch for additional hydraulic connections
- 5 Electrical connection switch **1** front
- 6 Switch for high speed/crawler gear button
- 7 Switch for forward/reverse driving direction

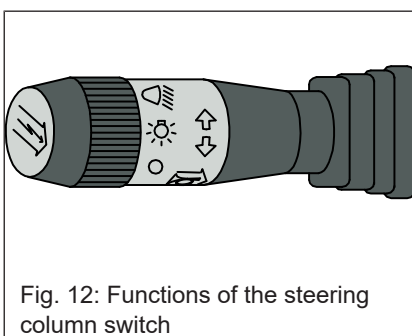


- 1 Switch for operating the additional hydraulic connections
- 2 Switch for the operation of the differential lock



The label shows the assignment of the joystick. The assignment of the joystick varies depending on the equipment of the vehicle. The label for the joystick also changes according to the equipment.

4.3.7 Overview: Steering column switch



The steering column switch is located on the left of the steering column. The following functions can be operated with the steering column switch.

- Parking light and high/low beam light can be switched on by turning.
- Right turn signal can be switched on by pushing forward.
- Left turn signal can be turned on by pulling back.
- Low beam can be activated by pulling up.
- High beam can be activated by pushing down.
- Headlight flasher can be activated by pulling upward beyond the resistance.
- Horn can be activated by pushing the steering column switch toward the steering wheel.

4.4 Type plates and stickers

4.4.1 Type label

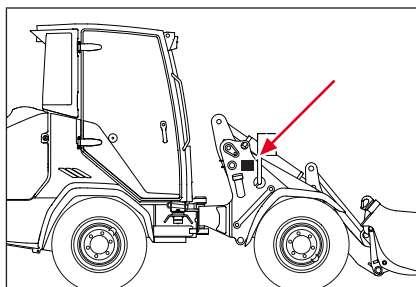
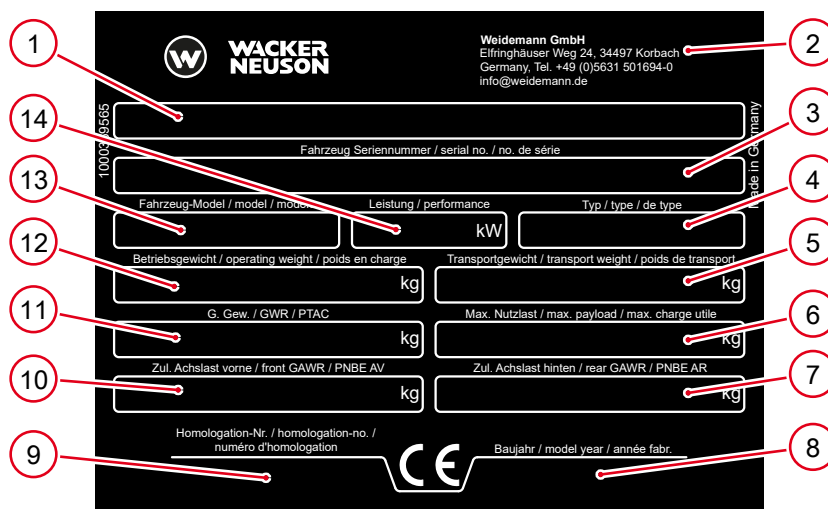


Fig. 13: Position of nameplate on vehicle

A name plate is permanently affixed to the vehicle. It contains the following information:




- 1 Vehicle category
- 2 Name and address of manufacturer
- 3 Identification number
- 4 Type
- 5 Transport weight in kg
- 6 Maximum payload in kg
- 7 Permissible rear axle load in kg
- 8 Year of construction
- 9 Homologation number
- 10 Permissible front axle load in kg
- 11 Total weight in kg
- 12 Operating weight
- 13 Vehicle model
- 14 Output in kW

Symbols on the type label

Various symbols and markings for national and international approvals may be shown on the type label.

	<p>Symbol for compliance with EC directives</p> <p>The CE mark documents that the machine complies with the valid EC directives.</p>
	<p>Symbol for compliance with Eurasian directives</p> <p>The EAC mark documents that the machine complies with the Technical Regulations of the Eurasian Economic Union.</p>

	<p>Symbol for compliance with British directives</p> <p>The UKCA mark documents that the machine complies with the Technical Regulations in Great Britain.</p>
---	---

Identification number

The identification number is stamped on the vehicle chassis and the type label. The indicated identification number is composed as follows:

	XXX	XXXXXX	X	X	XXXXXXXX	
	①	②	③	④	⑤	
	1	2	3	4	5	
	1	*XXX	Manufacturer/works			
	2	XXXXXX	Vehicle model with version			
	3	X	Standard specific check digit			
	4	X	Factory coding			
	5	XXXXXXXX*	Sequential number			

Other type labels

The following vehicle elements also have their own type label:

- the diesel engine
- the oil pump (hydraulic drive pump)
- the axles
- the ROPS/FOPS protective structure
- the hydraulic accumulator (if installed)
- the trailer coupling (if installed)

4.4.2 Safety label and information labels



⚠ WARNING

Injury hazard due to missing or damaged labels!

A missing, incomplete or poor indication of danger can cause serious injury or death.

- ▶ Never remove safety labels and information labels.
- ▶ Immediately replace damaged safety labels and information labels.

Various safety labels and information labels are affixed on the vehicle. New safety labels and information labels can be ordered from the manufacturer's service department.

4.4.2.1 Safety labels



Information

Continuous lines show labels affixed on the outside of the vehicle.

Dotted lines show labels affixed in the cab or under the engine hood.

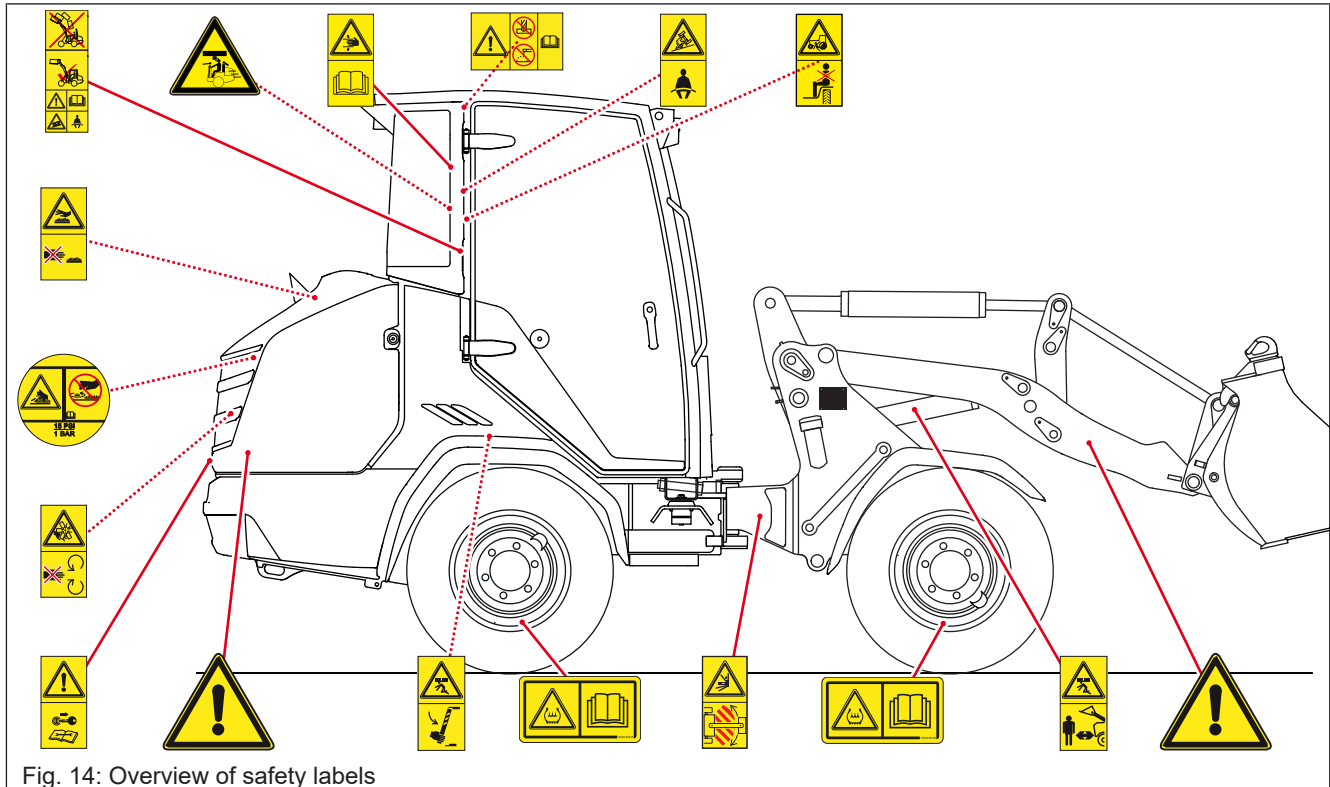


Fig. 14: Overview of safety labels

Meaning of safety labels



Fig. 15: Label distance to loader unit

Safety label: Maintain a safe distance from the loader unit

CAUTION! Risk of injury due to lowering of the raised loader unit.

- During operation, no persons may be in the danger zone of the vehicle.
- Do not step under the raised loader unit.



Safety label: Insert safety prop

CAUTION! Risk of injury due to lowering of the tilted cab.

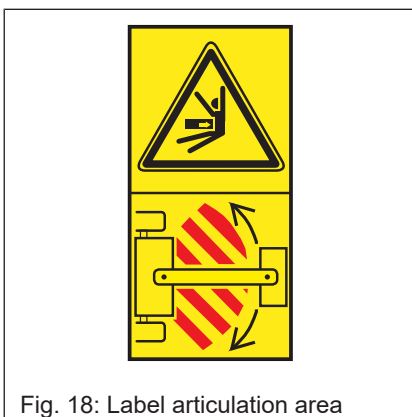
- Insert the prop before working under a tilted cab.



Safety label: General hazards

CAUTION! Injury hazard in the work area of the vehicle.

- During operation, no persons may be in the danger zone of the vehicle.



Safety label: Standing in the articulation area

CAUTION! Risk of injury in the area of the vehicle's articulated joint.

- During operation, no persons may be in the vehicle's danger zone.

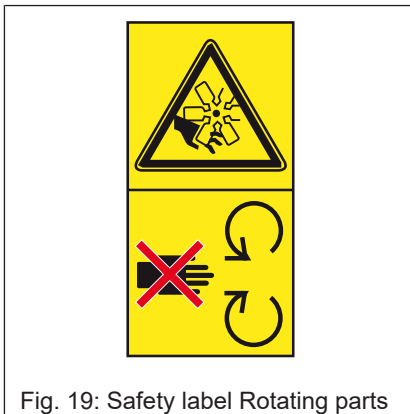


Fig. 19: Safety label Rotating parts

Safety label: Rotating parts

CAUTION! Injury hazard - Shear hazard due to rotating parts.

- Do not touch any moving or turning parts.
- Perform inspections and maintenance work only when the engine is at standstill.



Fig. 20: Label Seat belt

Safety label: Fastening the seat belt

CAUTION! Fasten seat belt; ensure the vehicle's stability.

- Operate the vehicle only from the operator seat.
- Fasten your seat belt during vehicle operation.
- Observe the stability and tipping resistance of the vehicle.



Fig. 21: Low clearance label

Safety labels: Low clearance

CAUTION! Risk of injury when driving with the overhead guard (FSD) folded down.

Protection is no longer provided to the operator if the overhead guard is folded down.

- Always bring the foldable overhead guard into the protective position if the working conditions permit.
- Fold down the folding overhead guard only if this is absolutely necessary to carry out the work (e.g. passing through low gates).
- Observe the operator's manual.



Fig. 22: Label Accompanying persons

Safety label: Do not allow any persons to ride along

CAUTION! Risk of injury, additional persons riding on the vehicle can fall off and be injured.

- Never transport persons with the vehicle.



Fig. 23: Label Protective ROPS/ FOPS structure

Safety label: Do not damage ROPS/FOPS protective structure

CAUTION! Damaged protective ROPS/FOPS structures cannot serve their protective function.

- Never drill or weld protective ROPS/FOPS structures.
- Follow the operator's manual.



Fig. 24: Label Hot parts

Safety label: Hot parts!

CAUTION! After stopping the engine, some parts of the vehicle are very hot.

- Allow the vehicle parts to cool down.
- Wear protective clothing when performing maintenance.

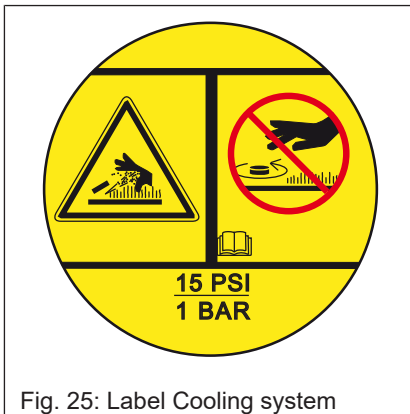


Fig. 25: Label Cooling system

Safety label: Hot coolant

CAUTION! Scalding hazard due to hot engine coolant.

At operating temperature the coolant is hot and the cooling system is under pressure.

- Open the filler cap of the cooling system only after the coolant has cooled down.
- Open the filler cap of the cooling system carefully to allow the pressure to escape slowly.
- Wear protective gloves and safety glasses.



Fig. 26: Label starting key

Safety label: Remove the starting key

CAUTION! Risk of injury from maintenance work.

- Remove starting key before performing inspections and maintenance on the vehicle.
- Read and observe the operator's manual prior to performing maintenance.



Fig. 27: Risk of crushing label

Safety label: Risk of crushing due to moving parts

CAUTION! Risk of injury due to crushing between moving parts.

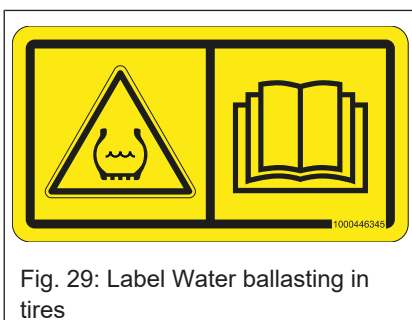
- Do not reach into or between any moving parts.
- Read and observe the operator's manual.



Safety labels: Falling objects

CAUTION! Never transport several large bales or crates at the same time!

- Do NOT load large bales or general cargo with vehicles without a driver's protective roof or cab!
- Read the operator's manual prior to startup!
- Wear seat belt when operating the vehicle!
- Always bring the foldable overhead guard into the protective position if the working conditions permit!



Safety label: Water ballasting in tires

CAUTION! Risk of accident due to altered driving behavior.

- There is an increased risk of tipping when driving in curves.
- Familiarize yourself with the driving behavior.
- Take the longer stopping distance into consideration.

For more information: [see Changing wheels on page 242](#)

4.4.2.2 Information label



Information

Continuous lines show labels affixed on the outside of the vehicle.

Dotted lines show labels affixed in the cab or under the engine hood.

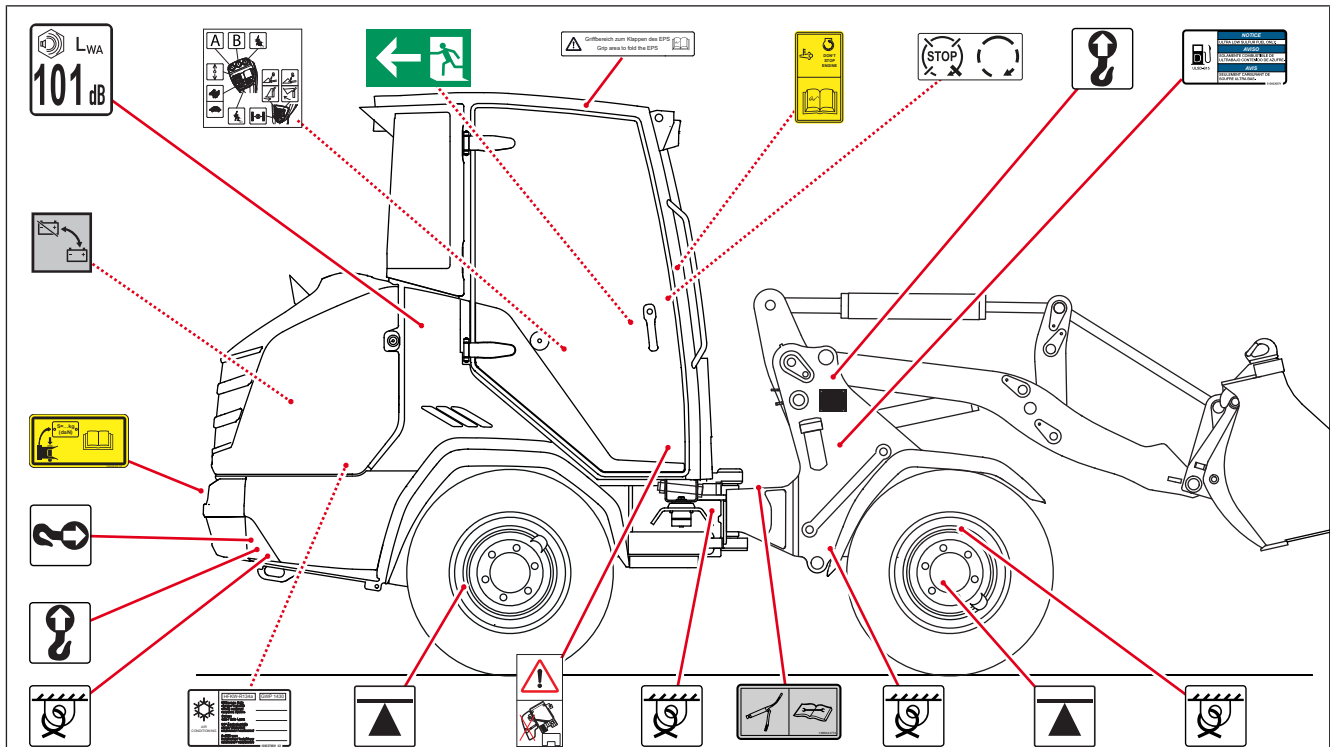


Fig. 30: Overview of the information labels

Meaning of information labels

Tie-down points

The label identifies the tie-down points on the vehicle.

Lashing gear can be attached to the tie-down points so that the vehicle can be secured for transport.

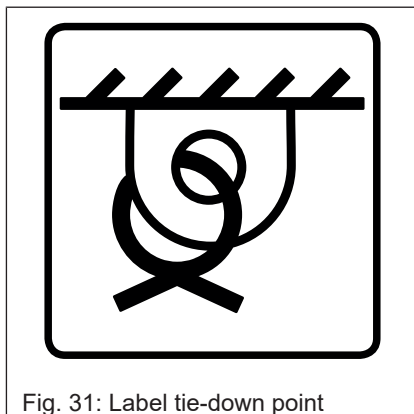


Fig. 31: Label tie-down point

Towing points

The stickers identify the towing points where a tow rope can be attached whenever it is necessary to recover the vehicle.

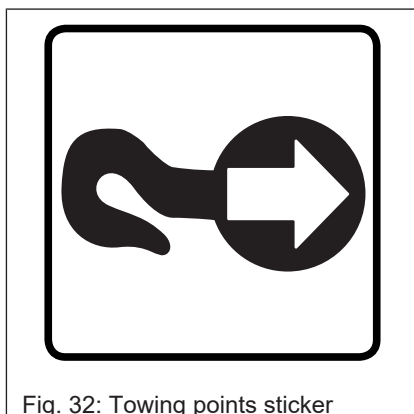
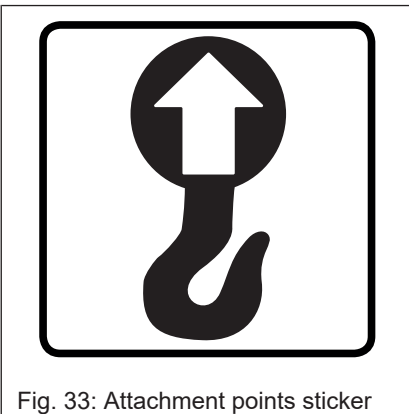
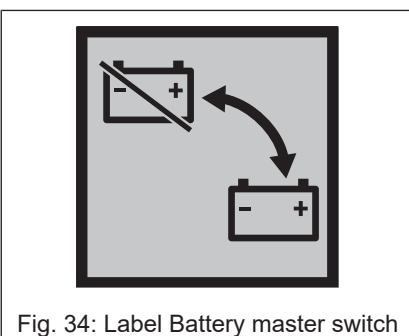


Fig. 32: Towing points sticker



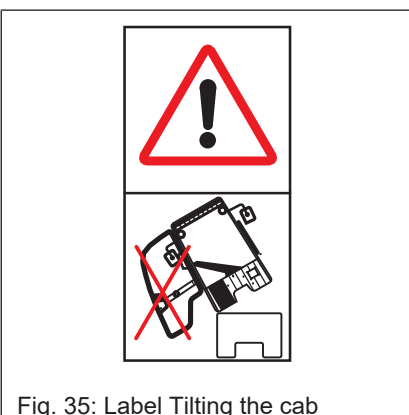
Attachment points

The stickers identify the attachment points with which the vehicle can be safely lifted and loaded by crane with the aid of a supporting frame.



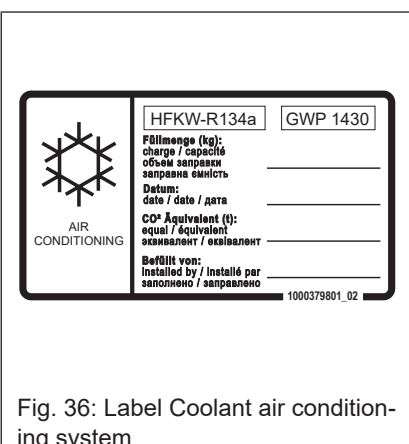
Battery master switch

The vehicle is equipped with a battery master switch. The battery master switch can be used to disconnect the battery supply to the vehicle electrical system. This adhesive label identifies the position of the battery master switch.



Close the doors

The cab can be tilted for maintenance on the vehicle. The label indicates that the cab should not be tilted with the doors open. Otherwise the doors will be damaged. Close the doors before tilting the cab!



Coolant of the air conditioning system

There is coolant in the air conditioning systems. The label contains information about the coolant used in the air conditioning system. The label is located near the condenser on vehicles with air conditioning system.

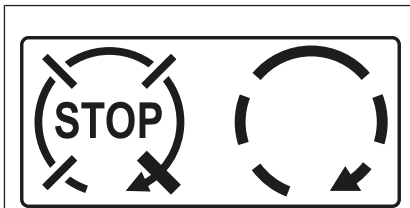


Fig. 37: Label Motor stop

Stop the engine

The adhesive label indicates the position of the starting key in which the engine is started and stopped.

The engine is started by turning the starting key to the right. The running engine is stopped by turning the starting key to the left.

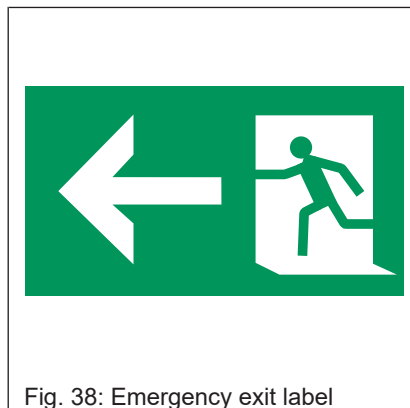


Fig. 38: Emergency exit label

Emergency exit

The adhesive label identifies the emergency exit.

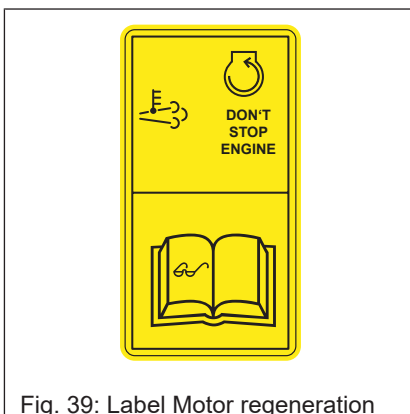


Fig. 39: Label Motor regeneration

Do not stop the engine - Regeneration is running

The vehicle is equipped with a system for exhaust gas aftertreatment. The label indicates that the engine should not be switched off while the system for exhaust gas aftertreatment is being regenerated. The exhaust gas aftertreatment system may otherwise be damaged.

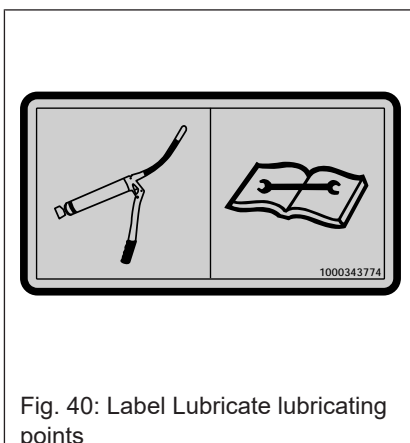


Fig. 40: Label Lubricate lubricating points

Observe lubrication plan

The label indicates that all lubrication points must be lubricated regularly according to the lubrication plan in the operator's manual.

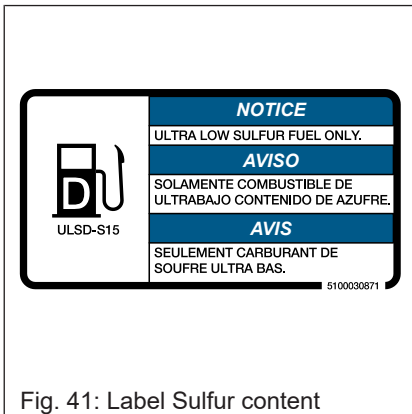


Fig. 41: Label Sulfur content

Sulfur content in diesel

The label indicates the specification of the diesel engine to be used for the vehicle. The engine may be damaged by incorrect fuel. Only use diesel with very low sulfur content ($S \leq 15$ mg/kg)!

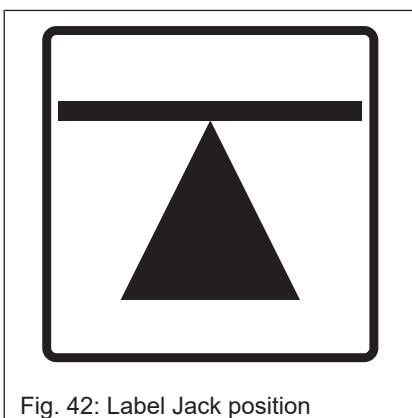


Fig. 42: Label Jack position

Jack position

The label indicates the points on the vehicle where the jack must be positioned when a wheel is to be lifted.

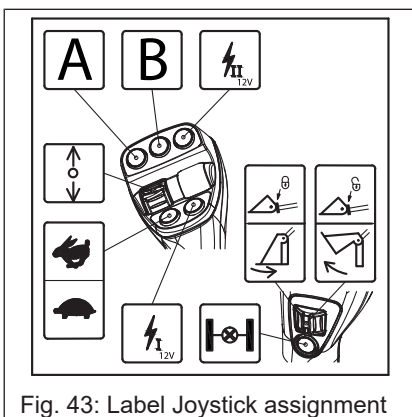


Fig. 43: Label Joystick assignment

Joystick functions

The label shows the functions of the joystick. Other chapters describe the functions.

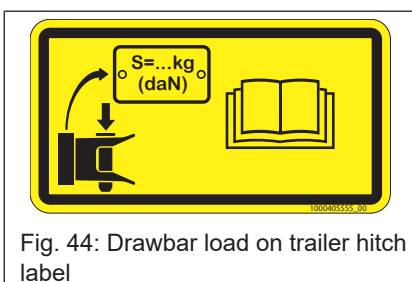


Fig. 44: Drawbar load on trailer hitch label

Drawbar load on trailer hitch

The label on the vehicle indicates that the maximum trailer load and support load of the trailer coupling should not be exceeded, [see Trailer loads and drawbar load on page 281](#).

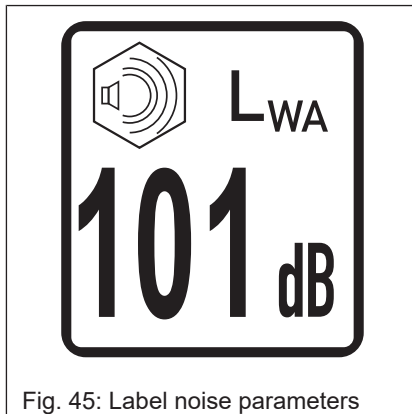


Fig. 45: Label noise parameters

Maximum sound power level

The adhesive label identifies the maximum sound power level of the vehicle. The value indicated on the adhesive label is not exceeded during vehicle operation.



Fig. 46: Label Fold in the EPS

Handle area for folding the EPS

The label indicates where on the roof of the folding driver's protective roof EPS must be touched when folding it down. It is not possible to jam the hands in this area.

5 Putting into operation

5.1 Boarding and disembarking

5.1.1 Entering the vehicle



⚠ CAUTION

Risk of falling when entering or exiting!

Entering or exiting incorrectly can cause injuries.

- ▶ Keep the mandatory climbing aids clean.
- ▶ Use prescribed climbing aids for entering and exiting.
- ▶ Face the vehicle as you enter and leave it.
- ▶ Have damaged climbing aids replaced.



NOTICE

Damage to the steering column due to entering and exiting!

Holding onto the steering wheel when getting on and off the vehicle can cause damage to the steering column.

- ▶ Only use the climbing aids.
- ▶ The steering wheel and steering column are not suitable climbing aids.

5

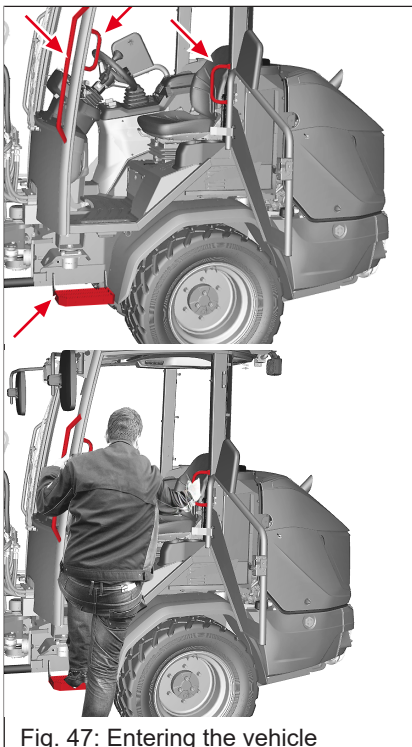


Fig. 47: Entering the vehicle

All locks on the vehicle can be opened and closed with the starting key. Locks are located on the following components of the vehicle:

- starter
- Cab doors
- Engine hood
- Fuel tank

If the vehicle is equipped with a cab, the cab is equipped with two doors. The main entrance is on the left side. The right door is intended as an emergency exit.

If the vehicle is equipped with a driver's protective roof, the vehicle is equipped with restraining brackets on the left and right. The left restraining bracket can be opened for getting in and out.

Climbing aids are attached to the vehicle. The climbing aids are firmly connected to the vehicle. Before leaving the vehicle, check that the doors and windows of the cab are closed.

5.1.1.1 Opening and closing restraining bars



CAUTION

Crushing hazard due to unlocked restraining bars!

The restraining bars can cause crushing when closing.

- ▶ Always lock the restraining bars.
- ▶ Use provided handles for closing.

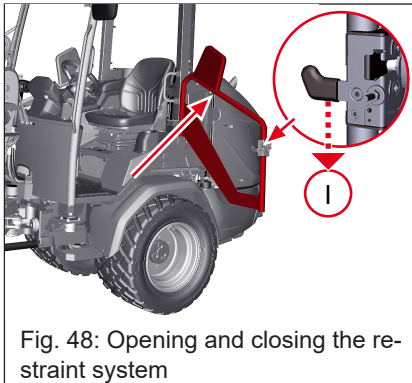


Fig. 48: Opening and closing the re-straint system

The protective roof is equipped with restraining brackets to the right and left.

Opening the restraining bars

- Move the release lever in direction I.
 - ⇒ The restraining bar can be opened.

Closing the restraining bar

- Engage the restraining bar in the lock.
 - ⇒ Restraint bar is closed.

5.1.1.2 Open the doors



CAUTION

Crushing hazard due to unlocked doors!

Crushing can be caused by the doors slamming shut.

- ▶ Always lock doors.
- ▶ Use provided handles for closing.

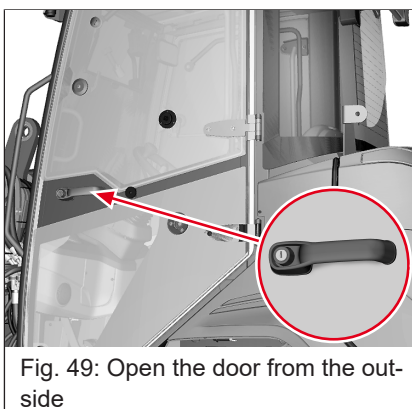
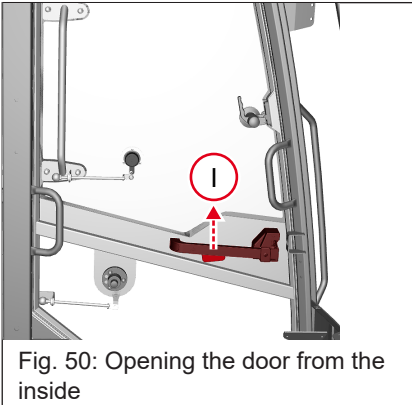


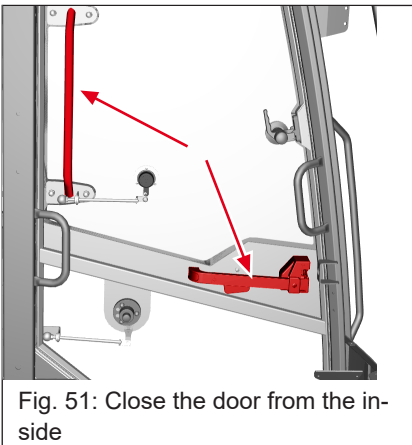
Fig. 49: Open the door from the outside

1. Unlock the lock with the starting key.
2. Press the button and pull the door handle.
 - ⇒ Open the door.



- Pull the lever in the direction I.
- ⇒ Open the door.

5.1.1.3 Closing the doors



Close the door from the inside

There is a bracket on the inside of the door. This allows the cab door to be closed from the inside.

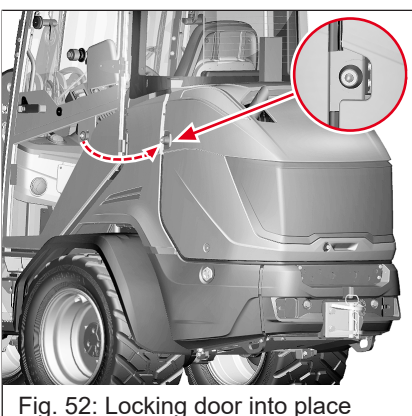
1. Pull the bracket inwards when the door is open.
2. Door locks into the door lock.
- ⇒ Door is closed.

Close door from outside

To prevent third parties from using the vehicle, always lock both doors after getting out and lock them with the starting key.

1. Push the door against the spring.
2. Door locks into the door lock.
- ⇒ Door is closed.
3. Lock the door with the starting key.

5.1.1.4 Locking doors into place and opening doors



Locking the doors into place

The doors can be opened together with the side window and locked in this position.

1. Open the door.
2. Fold the door back.
3. Lock the door by snapping it into place.
- ⇒ Door is locked into place.

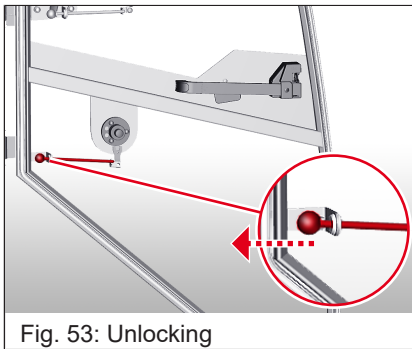


Fig. 53: Unlocking

Release door lock

1. Press button 1 of the release.
⇒ Locking is released.
2. Fold the door forward.
3. Engage the door in the door lock.
⇒ Door is closed.

5.1.1.5 Opening and closing the side window



⚠ CAUTION

Crushing hazard due to unlocked windows!

The windows can cause crushing when closing.

- ▶ Always lock the windows.
- ▶ Use provided handles for closing.

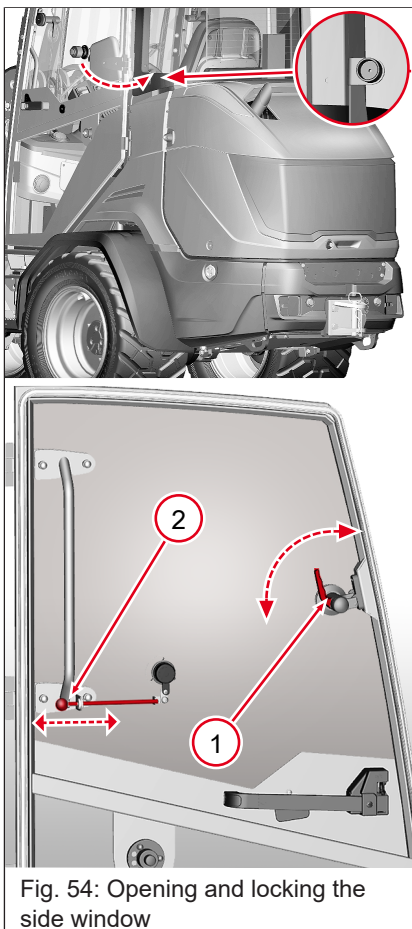


Fig. 54: Opening and locking the side window

The side windows can be locked in the open position. The side windows are opened and closed with lever 1.

1. Actuate lever 1.
⇒ Side window is open.
2. Press the side window against the locking mechanism.
⇒ Side window is locked.
1. Actuate lever 2.
⇒ The locking mechanism of the side window is released.
2. Closing the side window with lever 1.
3. Lock the side window.
⇒ Side window is closed.

5.1.2 Emergency exit



The right door of the cab is provided as an emergency exit if the left door is blocked. The right door is marked with the label shown.

5.2 Setting up the operator station

5.2.1 Adjusting the seat



⚠ WARNING

Risk of accident when adjusting the seat during operation!

Adjusting the seat during operation may result in an accident, serious injury or death.

- ▶ Adjust the seat before commissioning the vehicle.
- ▶ Ensure that the levers for seat adjustment are locked into place.

Always adjust the seat to individual needs, e.g. height and posture. These settings prevent tension and fatigue when working.

Adjust the seat so that all control levers, pedals and switches are easily accessible while your back is resting against the backrest.

The seat is of essential importance for reducing the vibrations transferred to the operator. If the seat must be replaced, contact the manufacturer.

The vehicle is equipped with a seat switch. The drive system and the working hydraulics of the vehicle can only be activated when the operator of the vehicle is seated in the seat. When the operator leaves the seat, the drive system and hydraulic functions are deactivated after five seconds, even while driving.

5.2.1.1 Seat MSG83

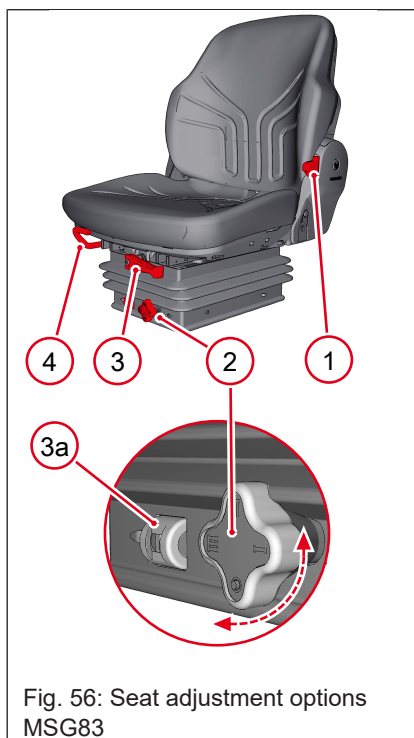


Fig. 56: Seat adjustment options MSG83

Sit on the seat to adjust.

Adjusting the backrest

1. Pull lever **1** upward and hold.
2. Move the backrest forwards or backwards until the backrest is at the desired angle.
3. Release lever **1**.

After adjustment, lever **1** must engage in the desired position. Once it is locked in place the backrest must no longer move.

Height adjustment

The height of the seat can be adjusted in four steps with the rotary handle **2**. The position indicated at the *bottom* of the rotary handle **2** is set.

1. Turn rotary handle **2** in position **O** - Low seat height
2. Turn rotary handle **2** in position **I** - Middle seat height low
3. Turn rotary handle **2** in position **II** - Middle seat height high
4. Turn rotary handle **2** in position **III** - Highest seat height

If the height of the seat has been adjusted, the suspension must also be readjusted.

Adjusting the suspension

- Turn lever **3** clockwise.
 - ⇒ Spring tension is reduced - suspension becomes softer.
- Turn lever **3** counterclockwise.
 - ⇒ Spring tension is increased- suspension becomes harder.

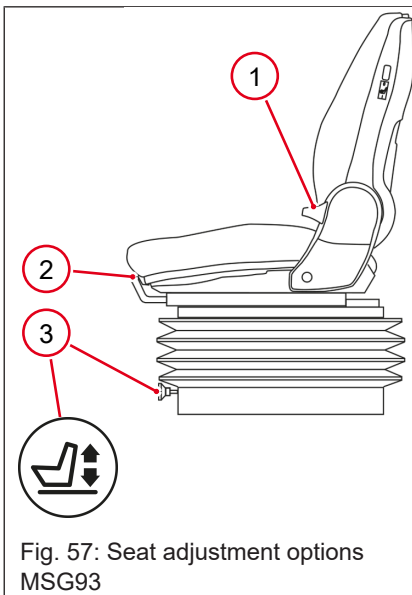
The suspension is correctly adjusted when the position indicated at the *bottom* of the rotary handle **2** is visible in the oil sight glass **3a**.

Adjusting longitudinal direction

1. Pull lever **4** upward and hold.
2. Push the seat forwards or backwards into the desired position.
3. Release lever **4**.

After adjustment, lever **4** must engage in the desired position. It shall not be possible to move the seat after it has been locked.

5.2.1.2 Seat MSG93



Sit on the seat to adjust.

Adjusting the backrest

1. Pull lever **1** upward and hold.
2. Move the backrest forwards or backwards until the backrest is at the desired angle.
3. Release lever **1**.

After adjustment, lever **1** must engage in the desired position. Once it is locked in place the backrest must no longer move.

Adjusting longitudinal direction

1. Pull lever **2** upward and hold.
2. Push the seat forwards or backwards into the desired position.
3. Release lever **2**.

After adjustment, lever **2** must engage in the desired position. It shall not be possible to move the seat after it has been locked.

Adjusting suspension and height

The seat MSG93 is air suspended. The suspension and height of the seat can be continuously adjusted with lever **3** via a compressor. The reaching of the lower and upper end stops of the suspension is indicated when the sound of the compressor changes audibly.



NOTICE

Damage to the compressor.

Too long operation of the suspension adjustment can cause damage to the compressor.

- Do not operate the suspension adjustment for more than one minute.

The individually desired height can be adjusted up to a minimum spring travel.

- ✓ The ignition must be switched on.
1. Pull lever **3** to the front.
 - ⇒ The seat moves upwards and the suspension travel increases.
 2. Press lever **3** to the back.
 - ⇒ The seat moves downwards, the suspension travel becomes smaller.
 3. Release lever **3** when the seat has reached the desired position.
 - ⇒ Suspension and height are adjusted.

5.2.1.3 Heated seat

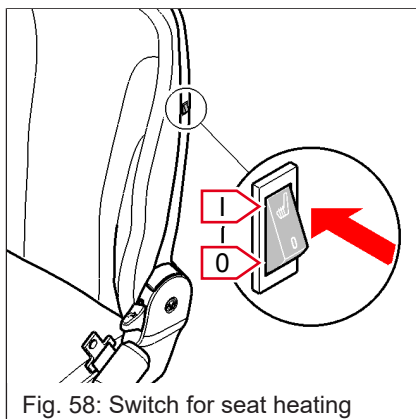


Fig. 58: Switch for seat heating

If the seat has a seat heater, this is operated via the rocker switch on the left-hand side of the backrest.

- Move rocker switch to position **I**.
⇒ The heated seat is switched on.
- Move rocker switch to position **0**.
⇒ The heated seat is switched off.

5.2.2 Seat belt



⚠ WARNING

Injury hazard if the seat belt is not fastened correctly or not at all!

Fastening the seat belt incorrectly, or not at all, can cause serious injury or death.

- ▶ Fasten the seat belt before operation.
- ▶ Do not fasten a twisted seat belt.
- ▶ Do not place the seat belt over hard, edged or fragile items in your clothes.
- ▶ Firmly fasten your seat belt over your hips.



⚠ WARNING

Risk of injury due to damaged or contaminated seat belt

A damaged or dirty seat belt can cause serious injury or death.

- ▶ Keep the seat belt and buckle clean.
- ▶ Check the seat belt and buckle for damage.
- ▶ Have a damaged seat belt and buckle immediately replaced by an authorized service center.
- ▶ Have the seat belt replaced by an authorized service center after an accident, even if there is no visible damage. Have the seat fastening and anchoring points checked for further load-bearing capacity.

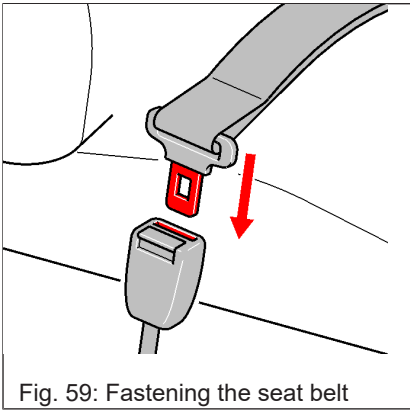


⚠ WARNING

Risk of accident from adjusting the seat belt while driving!

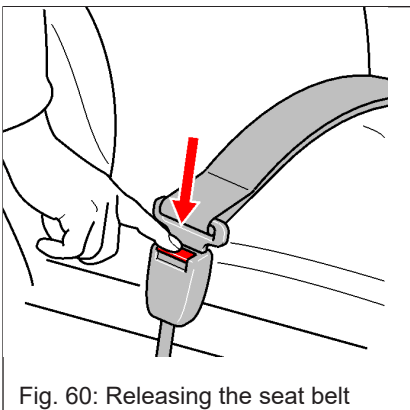
The operator is distracted by adjusting the seat belt while driving. This can cause accidents with serious injuries or death.

- ▶ Adjust the seat belt before commissioning the vehicle.
- ▶ Check by tensile test that the belt buckle is engaged.



Fastening the seat belt

1. Sit down on the operator seat.
2. Guide the seat belt over the pelvis to the buckle.
⇒ There must be no twists in the belt.
3. Insert the buckle latch into the belt buckle until it audibly engages.
⇒ Check correct locking with tension test.
4. Pull the end of the belt to tighten the seat belt.
⇒ Seat belt is fastened.



Releasing the seat belt

1. Hold the seat belt.
2. Press the button on the buckle.
⇒ The latch is released from the buckle.
3. Slowly return the seat belt to the retractor.

5.2.3 Adjusting the steering wheel

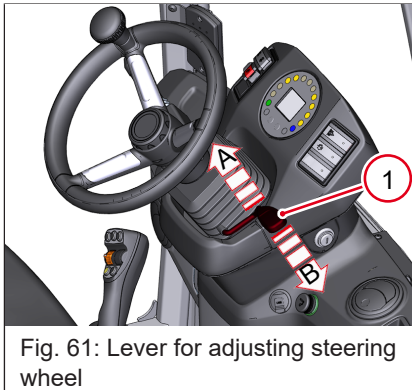


⚠ WARNING

Danger of accident when adjusting the steering wheel during operation!

Adjusting the steering wheel during operation may result in an accident, serious injury or death.

- ▶ Adjust the steering wheel before commissioning the vehicle.
- ▶ Make sure that the lever for adjusting the steering wheel is engaged.



The height and tilt of the steering column can be individually adjusted according to body size.

Adjusting height of steering wheel

1. Pull lever **1** upward (**A**) and hold.
⇒ The steering wheel is unlocked.
2. Pull/push steering wheel to the desired height.
3. Release lever **1**.
⇒ Steering wheel locked- height of steering wheel is set.

Adjusting tilt of steering wheel

1. Push lever **1** downward (**B**) and hold.
⇒ The steering wheel is unlocked.
2. Pull/push steering wheel to the desired angle.
3. Release lever **1**.
⇒ Steering wheel locked - inclination of steering wheel is set.

5.2.4 Restriction of field of vision



⚠ WARNING

Accident hazard due to persons in the risk zone!

Persons who are in the risk zone of the vehicle or suddenly enter it can be injured by working movement or the moving vehicle. This may result in accidents that could result in serious injury or death.


- ▶ Interrupt work immediately if persons enter the risk zone.
- ▶ Adjust the mirror correctly. Use visual aids such as, e.g. a camera.
- ▶ Observe extreme caution when reversing.

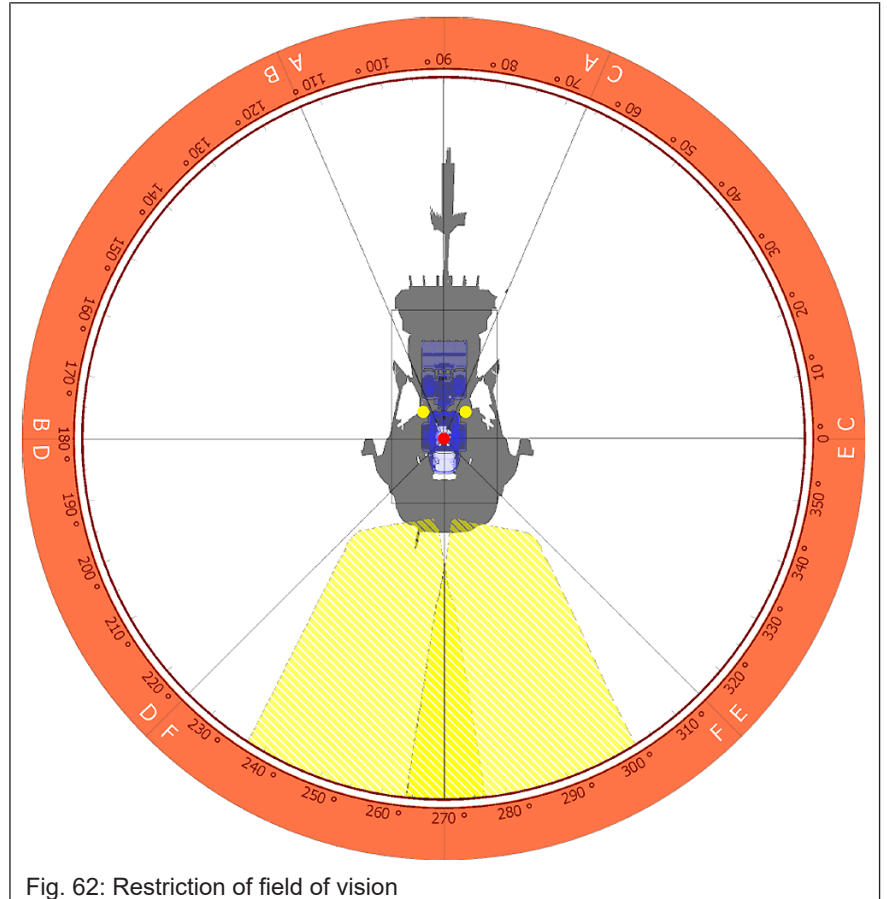
The field of vision describes the area that the operator can see from the seat, even with the aid of the mirrors.






Hazards due to restriction of field of vision may arise during operation with loader unit raised and when in reverse. Additional field of view restrictions can be caused by vehicle components, protective screen, attachments and loads on the pallet fork.

The field of vision was determined according to ISO 5006:2017 under the following conditions:

- Attachment in transport position.
- Visibility is measured at ground level in a radius of 12 m.
- At a distance of 1 m the visibility is measured at 1.2 m height.

The gray areas  indicated the areas in which visibility may be restricted.



-  Test circuit
-  Position of the driver's eyes
-  Mirror field of vision
-  Limited field of vision
-  Mirrors

5.2.5 Adjusting the mirrors

The field of vision describes the visible area that the operator can see from the seat. Mirrors or camera systems can be installed on the vehicle to support the operator.

5.3 Display

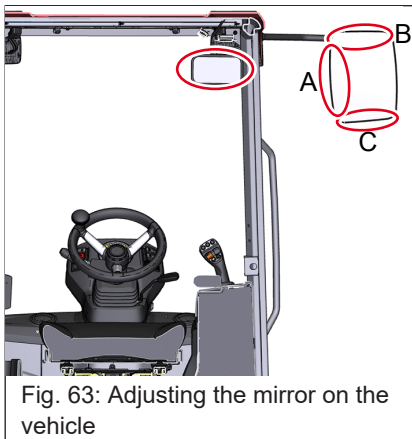


Fig. 63: Adjusting the mirror on the vehicle

Adjusting the rearview mirrors

1. Adjust the rearview mirrors as shown.
 - ⇒ In order to prevent the mirror from touching the door, turn the mirror bracket sufficiently forward (about 90°).
2. Adjust the rearview mirrors.
 - The outer edge of the vehicle must be visible on the inside **A**.
 - The horizon must be visible at the upper edge **B**.
 - At the lower edge **C**, the visible area must be as close as possible to the vehicle.

Adjust the inside mirror in the same way, so that the area directly behind the vehicle is visible.

5.3 Display

5.3.1 Overview: Display

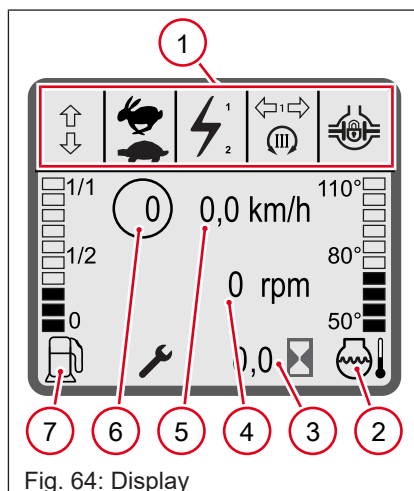


Fig. 64: Display

- 1 Display with symbols for additional information
- 2 Engine temperature display
- 3 Operating hours indicator
- 4 Speed indicator
- 5 Indicator for actual driven speed
- 6 Indicator for possible maximum speed (dependent on the selected drive stage and drive mode)
- 7 Fuel level gauge for diesel tank

5.3.2 Reading information on the display

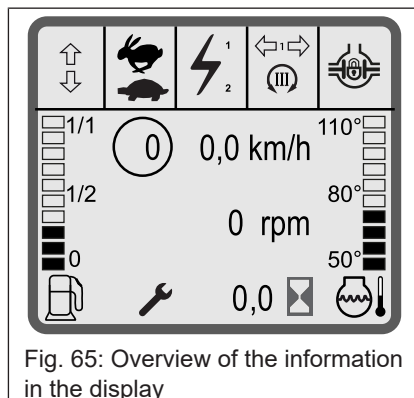


Fig. 65: Overview of the information in the display

Control lights serve as a source of information. The symbols in the display indicate various operating states.

The display lights up after switching on the ignition for the self-test.



Drive direction indication

A symbol illuminates depending on the drive direction selected.

- No symbol is displayed in the display when the ignition is switched on.
- When the drive direction scroll wheel is actuated, the display shows the selected drive direction.
 - Symbol **1** is displayed during forward drive direction.
 - Symbol **2** is displayed during backward drive direction.
 - No symbol is displayed in neutral position.



Travel mode Indication

A symbol illuminates depending on the travel mode selected.

- The travel mode last selected appears in the display when the ignition is switched on.
- When the travel mode control push-button is pressed, the display shows the selected travel mode.
 - Symbol **1** appears if the high speed travel mode is selected.
 - Symbol **2** appears if the crawler gear travel mode is selected.



Display for electrical connection

This position is only used for the option "Loader unit plug receptacle".

- No symbol is displayed in the display when the ignition is switched on.
- When the push-buttons for the electrical connection are pressed, the display shows the symbol.
 - When the push-button for electrical function 1 is pressed, the symbol is displayed together with the number 1.
 - When the push-button for electrical function 2 is pressed, the symbol is displayed together with the number 2.



Display for trailer turn signal

- No symbol is displayed in the display when the ignition is switched on.
- Symbol flashes when the turn signal is switched on and the trailer is connected.
- If the symbol does not flash when the turn signal is on and the trailer is connected, the reason may be that the trailer's turn signal is an LED indicator. The turn signal must generate a pulse in accordance with ISO 13207-1 for the turn signal on the trailer to function correctly.



Display for continuous operation of third control circuit

The symbol indicates that the continuous operation of the third control circuit is active. Switch off continuous operation when it is not required.



Differential lock indicator

- No symbol is displayed in the display when the ignition is switched on.
- When the differential lock push-button is pressed, the symbol appears on the display.
 - When the differential lock push-button is pressed, the symbol appears on the display.
 - When the differential lock push-button is released, the symbol is no longer displayed.



Floating position indicator (load lowering brake bypass)

- No symbol is displayed in the display when the ignition is switched on.
- When the floating position rocker switch is actuated, the display shows the symbol.



Display for loader unit stabilizer

- No symbol is displayed in the display when the ignition is switched on.
- The display shows the symbol when the loader unit stabilizer is switched on.

rpm

Display for the engine speed

This readout indicates the current engine speed.



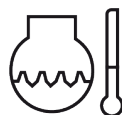
Display for operating hours

The display shows the current operating hours. Observe inspections after hours of operation.



Display for fuel fill level

Display shows the fuel fill level.



Engine temperature display

This indicator shows the engine temperature.



Display for inspections

The indicator shows the remaining time until the next inspection.

5.3.3 Indication of error messages in the display

Error messages in the form of symbols may appear on the display.

For a detailed description of the error messages: [see Troubleshooting on page 245.](#)

Error messages with symbol

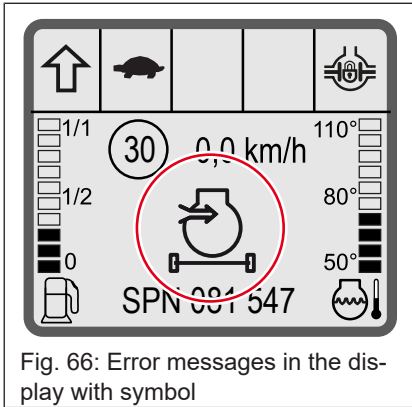


Fig. 66: Error messages in the display with symbol



Dirt accumulation on air filter

The symbol appears when the air filter contamination level is too high.

Clean the air filter and replace it if necessary.



Temperature of coolant too high

The symbol appears if the temperature of the coolant is too high.

- 1) Stop the engine.
- 2) Let the engine and radiator cool down.
- 3) Clean radiator if necessary.



Coolant level too low

Symbol appears when the coolant level is too low.

- 1) Turn off the engine.
- 2) Let the engine and radiator cool down.
- 3) Check the engine, radiator and radiator hoses for leaks.
- 4) Add coolant.



Water in fuel

The symbol appears if too much water has accumulated in the water separator on the fuel filter.

Drain water in the water separator.



Temperature of hydraulic oil too high

The symbol appears when the maximum permissible temperature of the hydraulic oil has been reached.

Switch off the engine and let the hydraulic oil cool down. Determine the cause of the fault and eliminate it, e.g. clean the radiator.

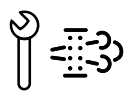
If the error still occurs, contact an authorized service center.



Return filter from hydraulic oil

The symbol appears when the resistance of the oil flow in the return filter becomes too high.

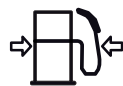
Switch off the engine and have the return filter changed by an authorized service center.



Exchange diesel particulate filter (DPF)

Symbol appears when the diesel particulate filter has to be exchanged.

Switch off the engine and have the diesel particulate filter changed by an authorized service center.



Pressure in the fuel line too low

Symbol appears when the pressure in the fuel line is too low.

Have an authorized service center replace the fuel filter.



Error in exhaust gas aftertreatment

Symbol appears if an error has occurred in the exhaust gas aftertreatment.

Contact an authorized service center and indicate the displayed error code.



Oil change required

Symbol appears when the engine oil must be changed.

Have the oil changed by an authorized service center.

Error messages with error code



NOTICE

Technical damage due to failure to observe the error code! Failure to observe the error codes can cause serious technical damage!

In case of a malfunction during vehicle operation, the operating hours and engine speed readout is replaced by an error code.

- ▶ Proceed as specified in the error code table.
- ▶ Get in touch with a service center if the error persists in spite of proceeding as specified.
- ▶ Make a note of error codes that are not listed and inform the service center of them.

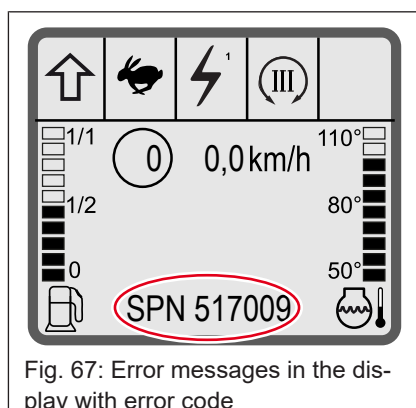




Fig. 67: Error messages in the display with error code

Measures to be taken if an error code occurs

1. Stop the vehicle immediately if one of the following control lights are illuminated:
⇒  Or 
2. Contact an authorized service center.
⇒ Have the error code ready for diagnosis.
3. Put the vehicle back into operation only after correcting the error.

If the engine switches itself off, there is a critical fault in the engine or the engine electronics.

5.3.4 Meaning of the warning lights and control lights



NOTICE

Defective warning lights and control lights cannot correctly indicate operating states.

Warning lights and control lights indicate the operating status of the vehicle. If these lights are defective, possible faults, e.g. in the motor control, cannot be detected.

- ▶ Defective warning lights and control lights must be repaired immediately by an authorized service center.

Warning lights and control lights serve as a source of information.

Warning lights warn of damage to the vehicle. If a warning light illuminates during operation, immediately shut down the vehicle and contact an authorized service center.

The warning lights and control lights illuminate for self-testing when the ignition is switched on.

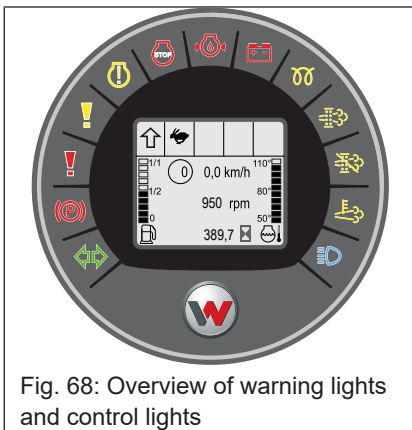


Fig. 68: Overview of warning lights and control lights

Overview of warning lights and control lights



"Turn signal" control light

Flashes intermittently when the direction indicator lamp is used.



Warning light "Parking brake"

- Lights up when the parking brake is applied. The drive system is locked when the parking brake is applied.



Warning light "vehicle electronics"

If the warning light illuminates during operation – stop the engine.

- If no error code appears in the vehicle display:
 - Start the engine and resume vehicle travel.
- If an error code appears in the vehicle display:
 - Obtain information on page [▶ 247](#).
 - Contact a Wacker Neuson service center.
- The warning light also indicates when the brake fluid level is too low.



Warning light "vehicle electronics"

If the warning light illuminates during operation – stop the engine.

- If no error code appears in the vehicle display:
 - Start the engine and resume vehicle travel.
- If an error code appears in the vehicle display:
 - Obtain information on page [▶ 247](#).
 - Contact a Wacker Neuson service center.

**Warning light "Engine electronics"**

Illuminates or flashes if one or more engine-operation values are outside the normal range – stop the engine.

- If no error code appears in the vehicle display:
 - Start the engine and resume vehicle travel.
- If an error code appears in the vehicle display:
 - Obtain information on page [▶ 247](#).
 - Contact a Wacker Neuson service center.

**Warning light "Engine electronics"**

Illuminates or flashes in case of one or more errors in the engine electronics – stop the engine if it does not do so itself.

- If no error code appears in the vehicle display:
 - Start the engine and resume vehicle travel.
- If an error code appears in the vehicle display:
 - Obtain information on page [▶ 247](#).
 - Contact a Wacker Neuson service center.

**Warning light "Engine oil pressure"**

Illuminates when the ignition is turned on and goes out as soon as the engine runs.

Illuminates if the engine oil pressure is too low.

In this case:

- 1) Stop the vehicle.
- 2) Stop the engine and check the oil level.
 - Engine lubrication system on page [▶ 200](#)

**Warning light "Generator charge function"**

Illuminates when the ignition is turned on and goes out as soon as the engine runs.

Indicates with the engine running:

- Malfunctioning V-belt or malfunction in charging circuit of the alternator. The battery is no longer charged.
 - V-belt / toothed belt on page [▶ 230](#)

**Control light "Preheating"**

Illuminates if the key in the ignition is in position I.

- Preheating and starting engine on page [▶ 89](#)

**Control light "Regeneration of the diesel particulate filter (DPF) necessary"**

The display shows information about the soot load of the diesel particulate filter. The display is off when the soot load of the diesel particulate filter is normal.

- If the control light lights up or flashes, regeneration of the diesel particulate filter is necessary.
- The regeneration starts automatically.
- Regeneration can be started manually.

**Control light "Suppress regeneration of the diesel particulate filter (DPF)"**

The display shows that regeneration has been suppressed.

- Regeneration can be started manually.

**Control light "Regeneration of the diesel particulate filter (DPF) active"**

Illuminates during active regeneration. The display indicates increased exhaust-gas temperatures.

**"High beam" control light**

Illuminates when the high beams are switched on or when flashing the headlights.

- [see Operating the vehicle lighting on page 118](#)

5.4 Putting the vehicle into operation

5.4.1 Before commissioning

Before putting into operation, the following requirements must be met:

- Read and understand the operator's manual.
- Operate the vehicle only from the operator seat.
- Have technically trained personnel instruct you before using the vehicle for the first time. Carry out driving tests on spacious terrain.
- Check the condition of the vehicle before starting vehicle travel.
- Remove ice from windscreens before starting the journey.
- Have the vehicle checked by technically trained personnel before putting it into operation again after it has been out of operation over a longer period of time.
- Switch on the battery master switch.

Set up control stand:

1. Adjust the seat.
 2. Adjust the steering wheel.
 3. Adjust the mirrors.
 4. Fasten your seat belt.
 5. Apply the parking brake.
 6. Turn off all switches and control elements.
 7. Deactivate drive interlock if necessary.
- ⇒ Start the vehicle.

5.4.2 Information on avoiding engine damage



NOTICE

The engine may be damaged!

- ▶ Do not put full load on the engine immediately after starting.
- ▶ Allow the engine to idle for approx. three minutes. Then slowly increase the speed.
- ▶ Do not fully load the engine during the first 100 operating hours.
- ▶ Do not use any additional starting aids (e.g. start pilot).
- ▶ Contact an authorized service center if the engine does not start.



NOTICE

The starting motor may be damaged!

- ▶ Do not start the engine again immediately after stopping it. Wait at least 15 seconds.
- ▶ Abort the start attempt after a maximum of 15 seconds if the engine does not start.
- ▶ Wait one minute between two start attempts.

To avoid engine damage, follow the instructions in this section.

Due to the hydrostatic drive system, the engine cannot be started by towing the vehicle.

Fuel, engine and hydraulic oil preheating recommended for operation at outside temperatures below -10°C .

Running-in period

The engine must be use gently during the first 100 operating hours. Follow the instructions below.

- Drive and work gently with the vehicle.
- Avoid loading the engine at idling speed.
- Do not run the engine continuously at maximum speed.
- Increase load gradually while varying the engine speed.
- Observe the prescribed maintenance intervals and have the maintenance carried out accordingly.

5.4.3 Battery master switch



NOTICE

Risk of technical damage

- ▶ Cover the opening with the protective cap to prevent humidity from penetrating into the switch.
- ▶ Never operate the battery master switch under load.
- ▶ Do not insert the starting key unless the battery master switch is operated.
- ▶ Do not operate the battery master switch unless the starting key is removed.

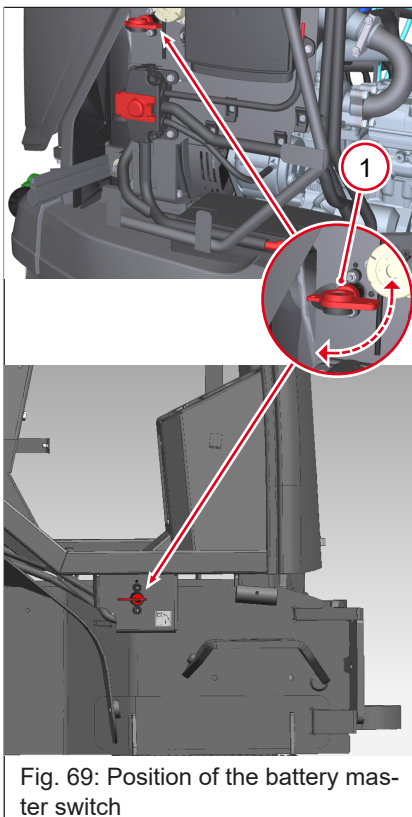


Fig. 69: Position of the battery master switch

The complete electrical system can quickly separated from the battery in an emergency by means of the battery master switch. Switch off the battery overnight to avoid discharging the battery or to prevent other possible damage. The battery master switch can also be used as an additional anti-theft device when the battery master switch is removed.

Operating the battery master switch

The battery master switch is located under the engine cover. This disconnects the minus line from the battery (single circuit disconnecter).

Optionally, the battery master switch can be mounted on the right-hand entrance. In this case, both the positive line is disconnected from the battery and the generator is disconnected from the vehicle electrical system (dual-circuit disconnecter).

Switching off the battery master switch

1. Stop the engine.
2. Operate and remove the battery master switch.
 - ⇒ The battery is disconnected from the electrical system.

Switching on the battery master switch

- Insert and operate the battery master switch.
 - ⇒ The battery is connected to the electrical system.

5.4.4 Engine preheating and hydraulic oil preheating



⚠ WARNING

Risk of injury due to electric shock!

The engine and hydraulic oil preheating is operated with 230 volts. Defective cables can lead to electric shocks which can result in death or serious injury.

- ▶ Run the engine and hydraulic oil preheating only in a dry place.
- ▶ Immediately replace malfunctioning cables.



NOTICE

Inadequate coolant and hydraulic oil levels can damage the heating cartridge of the preheating unit!

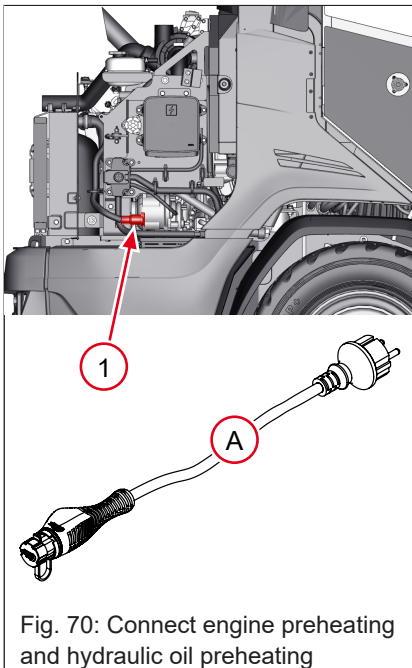
- ▶ Use preheating only for cold starts for operating times described in the table (overheating protection).
- ▶ Ensure the correct coolant and hydraulic oil level before each heating, otherwise the heating cartridges may burn out.
- ▶ Check for leaks, even when the vehicle is warm.
- ▶ The coolant must always have a sufficient amount of antifreeze compound.
- ▶ Check cables regularly for damage or aging. Immediately replace a damaged cable.

The vehicle can be fitted with an engine and hydraulic oil preheating. It preheats the coolant and hydraulic oil. The following operating times are recommended depending on outside temperatures.

Temperature °C	Operating time in hours (h)
-20°	3
-10°	2
-5°	1.5
0°	1
+10°	1

Requirements for connecting the engine and hydraulic oil preheating

- ✓ 230 volt mains supply
- ✓ Maximum 16 ampere fuse protection
- ✓ Fault current protective switch
- ✓ Plug receptacle with grounding contact
- ✓ The vehicle body and the grounding conductor of the plug receptacle must be conductively connected together under all circumstances.
- Connect engine preheating and hydraulic oil preheating.



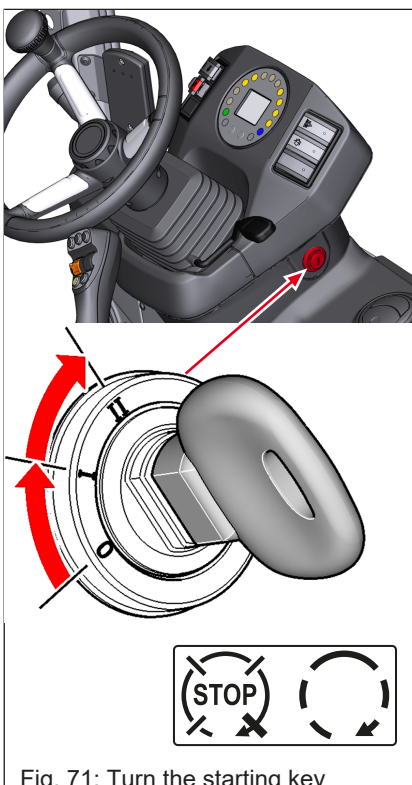
Connect engine preheating and hydraulic oil preheating

1. Park the vehicle near a plug receptacle with a fault current protective switch.
2. Connect special cable **A** supplied with vehicle plug receptacle **1**.
3. Insert plug into the plug receptacle.
⇒ Coolant and hydraulic oil are preheated.

Before starting the engine

1. Pull the plug out of the plug receptacle.
2. Unplug special cable **A** from vehicle plug receptacle **1**.
3. Securely store special cable **A**.
⇒ The engine can be started.

5.4.5 Starting the engine



The ignition lock is located on the right of the steering column.

Start the engine as follows:

- ✓ Parking brake of the vehicle is activated.
1. Insert the starting key in the ignition lock.
⇒ Position **0** – no operating voltage.
 2. Turn the starting key to position **I**.
⇒ All warning lights and control lights illuminate for self-test.
 3. Turn the starting key via the resistor to position **II**.
⇒ The starting motor is actuated - the engine starts.
 4. Release the starting key as soon as the engine starts.
⇒ The starting key returns to position **I**.

If one of the warning lights or control lights does not go out during starting (except for the parking brake), stop the engine immediately and have the cause checked by a service center!

If the engine does not start



NOTICE

The drive system may be damaged!

Due to the hydrostatic drive system, the engine cannot be started by towing the vehicle.

▶ Do not attempt to start the engine by towing the vehicle.

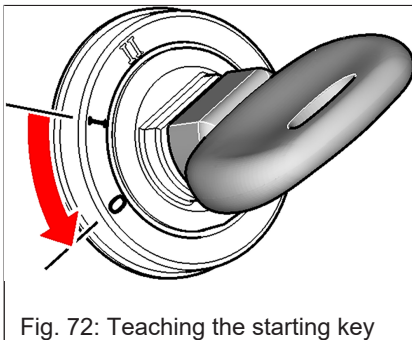
1. Actuate the starting motor continuously for a maximum of 20 seconds.
2. Wait one minute.
3. Repeat the start procedure.
 - ⇒ If the engine does not start after trying twice, search for the cause with the troubleshooting table or contact an authorized service center.

5.4.5.1 Setting the drive interlock with the key system

The drive interlock is integrated in the ignition lock and can be disabled only with the blue starting keys.

The equipment of the vehicle with drive interlock is included in the scope of delivery:

- Drive interlock installed in the vehicle.
- Two coded blue starting keys.
- One red master key.



Coding new starting keys

New personal starting keys can be coded with the red master key. Store the red master key carefully and separately from the vehicle. Up to ten blue starting keys can be coded.

The drive interlock has only one master key. If the master key is lost, the complete drive interlock must be replaced by an authorized service center.

The master key can only be used to code new starting keys. The drive interlock cannot be deactivated with the master key.

✓ Blue starting keys and master keys to be coded are available.

✓ Switch on the parking light to code new blue starting keys.

1. Insert the master key into the ignition lock.
2. Switch ignition to position **I** for a maximum of five seconds.
3. Switch ignition to position **0** and remove master key.
 - ⇒ The electronics system expects a starting key to be coded within the next 15 seconds.
4. Insert the blue starting key and switch the ignition to position **I** for at least one second.
 - ⇒ The new blue starting key has been taught/coded.

If several starting keys are to be coded, the starting keys to be coded can be coded one after the other without having to reinsert the master key into the ignition lock. However, no more than 15 seconds must elapse between the removal of the master key or the starting key that has been coded and the next starting key to be coded. Repeat the procedure from step 1 if more than 15 seconds have elapsed.

Store the master key outside the cab to avoid incorrect information from the electronics system, e.g. the signal from the master key and an additional signal from a coded starting key.

Enabling the drive interlock

Always remove the starting key when the drive interlock is to be switched on. If the starting key is left inserted, the drive interlock is not activated.

1. Apply the parking brake.
2. Switch off engine, move ignition to position **0**.
3. Remove the starting key.
 - ⇒ The drive interlock is activated after 30 seconds.

Disabling the drive interlock

1. Insert the starting key in the ignition lock.
 - ⇒ The drive interlock is deactivated after five seconds.
2. Start the engine.
 - ⇒ The drive interlock is permanently deactivated when the engine is running.

Deleting coded keys

If a coded blue starting key is lost, all other coded keys must also be deleted. The master key code is not deleted during the deletion process.

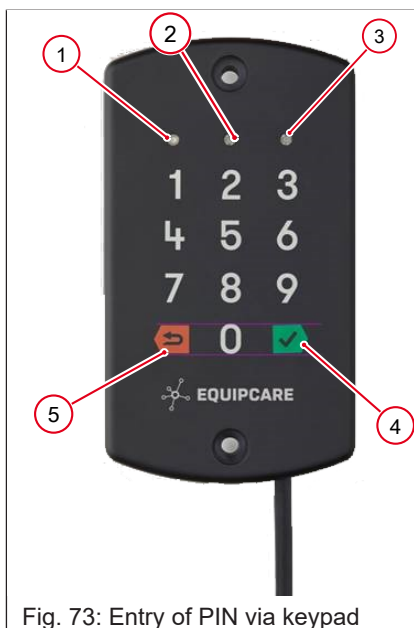
After the deletion process, the remaining starting keys can be coded anew.

1. Switch on the parking lights.
2. Insert the master key into the ignition lock.
3. Switch ignition to position I for at least 20 seconds.
 - ⇒ Coding for the blue starting key is deleted.
 - ⇒ Blue starting keys can be recoded.

Safety functions

1. If more than 5 keys with different invalid codes are operated in the ignition lock within 1 minute, the drive interlock remains activated for 15 minutes and does not accept any valid keys during this time.
2. This procedure prevents the "trying out" of different keys and the accidental finding of the correct key.
3. Accepting valid keys only takes place after the 15 minutes and the recognition of position I of the ignition lock. This prevents keys from being tested without actuating the mechanical ignition lock, e.g. if the ignition lock has been forcibly moved to position I.
4. Interruption of the supply line or other control lines does not lead to deactivation of the drive interlock or deletion of data (e.g. data codes).
5. All relevant data are stored in a non-volatile memory

5.4.5.2 EquipCare Dual ID Key Pad for starting lock



A PIN for unlocking the vehicle is entered via the keypad. Vehicle can only be started after entering a PIN via the keypad.

Position	Element	Function
1	LED 1	Lights up orange when the keypad is ready
2	LED 2	Without function
3	LED 3	Lights up green if PIN is entered correctly Does not light up if PIN is incorrect
4	Button to confirm	Confirms the PIN entry
5	Cancel button	Cancels the entry and allows the PIN to be entered again

Fig. 73: Entry of PIN via keypad

Use PIN

The user can set the PIN in EquipCare Manager at the following link equipcare.wackerneuson.com. As long as no PIN has been set and stored via EquipCare Manager, the vehicle can also be started without a PIN.

1. LED 1 lights orange.
2. Enter the PIN using the keypad.
3. Confirm entry with button 4.
 - ⇒ LED 3 lights up green if the entry is correct.
 - ⇒ If a wrong PIN was entered, LED 3 is not lit.
 - ⇒ The vehicle cannot be started.

If a wrong PIN is already noticed during the input, the input can be canceled via button 5.

5.4.6 Do not operate the engine at low load

Running performance can be negatively affected if the vehicle is operated at high engine speed and at less than 20% of the load. Possible consequences of low-load operation:

- Operating temperature is too low.
- Lube-oil consumption rises.
- Engine contamination due to lubricating oil in exhaust system.
 - This contamination is recognizable by bluish exhaust gases; lubricating oil is burnt.

Operate the engine at a load greater than 20 %.

5.4.7 Stopping the engine



NOTICE

Damages to the engine!

If the engine is switched off directly from full load operation, the engine may be damaged due to an excessively high operating temperature.

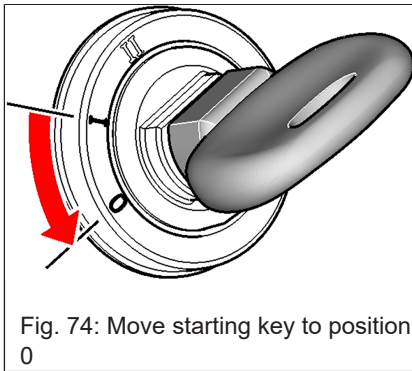
- ▶ Allow the engine to idle for approx. three minutes.
- ▶ Then switch off the engine.



NOTICE

Immediate starting of the engine after shutdown can cause damage to the starting motor.

- ▶ Wait approx. 15 seconds before restarting the engine.



1. Lower the loader unit to the ground.
2. Secure the vehicle with the parking brake.
3. Switch off all electric consumers.
4. Allow the engine to idle for approx. three minutes.
5. Move starting key to position 0.
6. Remove the starting key.

5.4.8 Jump-starting the engine



NOTICE

The electrical system can be damaged by a short-circuit when starting from another source.

- ▶ Make sure that both vehicles do not touch each other.
- ▶ Do not jump-start the vehicle if the battery is malfunctioning or frozen.
- ▶ Do not connect two batteries in series.
- ▶ Use starting aid batteries with the same voltage.
- ▶ Use tested jumper cables with sufficient cross-section and insulated terminal clamps.
- ▶ Route jumper cable so that they cannot be caught by starting or rotating parts in the engine compartment.

An undercharged battery cannot provide the starting motor with sufficient power to prevent the engine from starting. Jump-starting the engine is possible. Follow these instructions:

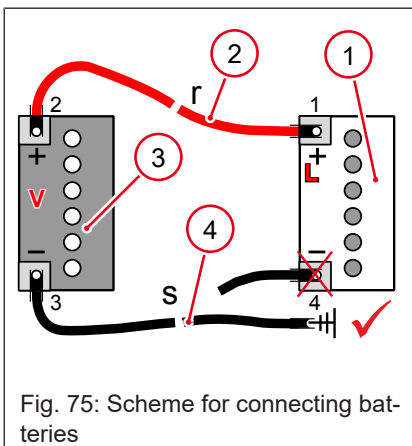
Before jump starting, check whether the battery of the vehicle works properly.

- ✓ Battery master switch is switched on.

1. Move starting key to position I.
 - ⇒ The control lights in the display must be on.
 - ⇒ If the control lights are not on, there is a fault in the vehicle's electrical system or the battery is defective.
2. If the control lights are not on, do not jump start. Contact an authorized service center

Preparation for jump-starting

- ✓ All control levers and switches of the vehicle receiving power are in zero position.
- 1. Move starting key to position **0**.
- 2. Switch off the battery disconnect relay.
- 3. The electrical system is voltage-free after an afterlap period.
- 4. Move jump-starting vehicle (charged battery) up to the vehicle receiving power (battery to be charged).
 - ⇒ Make sure that both vehicle do not come in contact, but the jumper cables can be connected.
- 5. Move all control levers and switches on the jump-starting vehicle to zero position.
- 6. Switch off ignition of the jump-starting vehicle, since voltage spikes can damage the vehicle's electronics during jump starting.
 - ⇒ Jumper cable can be connected.



- 1 Discharged vehicle battery
- 2 Red jumper cable (positive terminal)
- 3 Charged, current-generating vehicle battery; external power pack
- 4 Black jumper cable (ground point)

Connect jumper cable

Use jumper cables of sufficient length and sufficient cable cross-section.

- ✓ Battery terminal covers are removed.
- 1. Connect the red jumper cable **2** to the positive terminal of the discharged battery **1**.
- 2. Connect the other end of the red jumper cable **2** to the positive terminal of the battery supplying power **3**.
- 3. Connect the black jumper cable **4** to the negative terminal of the battery supplying power **3**.
- 4. Connect the other end of the black jumper cable **4** to an electrically conducting point on the engine block of the vehicle receiving power.
 - ⇒ Do not connect the jumper cable to the negative terminal of the discharged battery, since explosive vapors may ignite in case of sparking. Maintain a distance of 30 cm at least to the battery.
- 5. Switch on the battery master switch.
- 6. Start the engine of the vehicle with the empty battery.
 - ⇒ If the vehicle's engine does not start after 15 seconds, wait one minute and repeat the process.

Once the engine has started

1. Disconnect the black jumper cable **4** from the engine block of the vehicle receiving power.
2. Disconnect the black jumper cable **4** from the negative terminal of the battery supplying power.
3. Disconnect the red jumper cable **2** from the positive terminal of the battery supplying power.
4. Disconnect the red jumper cable **2** from the positive terminal of the discharged battery.
5. Replace battery terminal covers again.

6 Operation

6.1 Brakes

6.1.1 Operating the service brake



⚠ WARNING

Accident hazard due to malfunctioning brakes!

Malfunctioning brakes can cause serious and fatal accidents. All repair work on the braking system must be performed by the trained personnel of a qualified service center.

- ▶ Check the brake function once a day.
- ▶ There is a malfunction if the brake fluid level drops from check to check.
- ▶ Do not operate the vehicle with malfunctioning brakes.
- ▶ Have the braking system regularly checked by experienced technically trained personnel on the occasion of the inspections.



⚠ WARNING

Accident hazard due to blocked or dirty pedals!

Loose objects in the cab or dirty pedals can impair the function of the pedal and lead to accidents with serious injuries or death.

- ▶ Keep pedals clean.
- ▶ Do not place any objects in the area of the pedals.

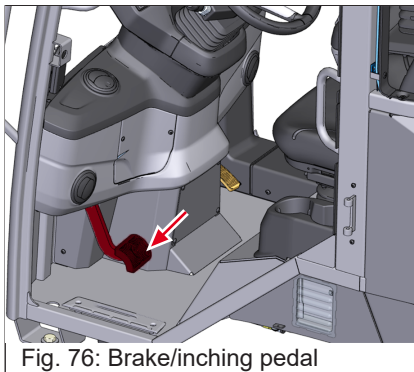


Fig. 76: Brake/inching pedal

Inching function

The inching function regulates the supply of the drive system with hydraulic oil. If the brake/inching pedal is not actuated, the drive system has the full oil volume available. The more the brake/inching pedal is actuated, the less the amount of oil provided to the drive system. The output from the working hydraulics is not impaired. Owing to this rule, even with a high engine speed you can drive very slowly, while the full engine output is available to the working hydraulics.

If you continue to actuate the brake/inching pedal, the service brake will be actuated.

Braking function

The vehicle's braking function is already achieved with inching. If you continue to actuate the brake/inching pedal, the vehicle braking system will be actuated hydraulically.

Inching with the brake/inching pedal

In the inching range - pedal pressed lightly- the pedal can be used like a car's clutch. In this case, the drive system is supplied with less hydraulic oil.

Braking with the brake/inching pedal

- Press the pedal.
 - ⇒ A firm resistance can be felt after half the pedal travel at the latest. The brake lights are on.
 - ⇒ The vehicle brakes.

6.1.2 Operating the parking brake



⚠ CAUTION

Risk of accidents when activating the parking brake while driving!

The parking brake may only be used in an emergency and as an auxiliary brake while driving if the service brake has failed. Danger of injury.

- ▶ In normal operation, use the brake/inching pedal for braking.
- ▶ Only activate the parking brake while driving in an emergency.

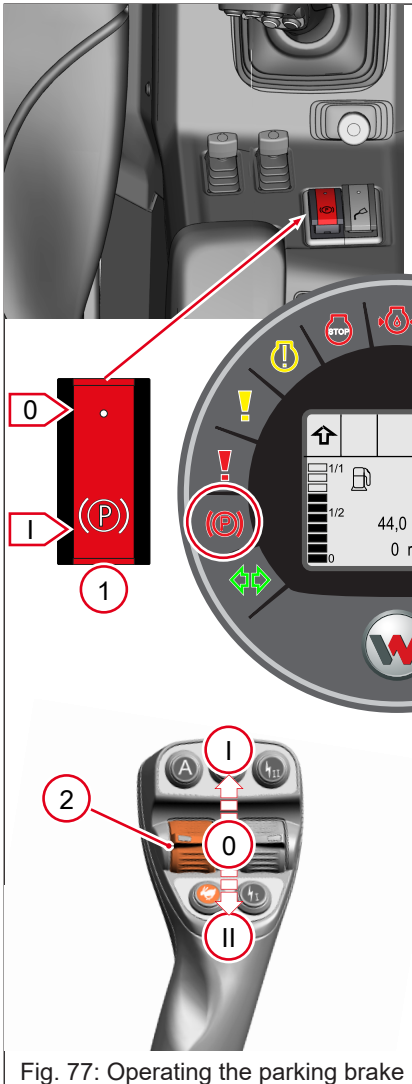


Fig. 77: Operating the parking brake

The parking brake secures the vehicle against unintentional rolling away. When the engine is switched off, the parking brake is automatically activated. When the parking brake is activated and the ignition is switched on, the warning lamp lights up in the display instrument (P).

Deactivating the parking brake

- Press switch **1** briefly in position **I** or select the travel direction with scroll wheel **2**.
 - ⇒ The symbol (P) in the display goes out.
 - ⇒ Parking brake is released.

Activate the parking brake

- ✓ Apply the parking brake only when the vehicle is stationary.
- Press switch **1** to position **I** or switch off the engine.
 - ⇒ The symbol (P) in the display illuminates.
 - ⇒ The parking brake is activated.

When the engine is running and the parking brake is activated, the symbols ↑ or ↓ flash in the display if the corresponding direction of travel is selected.

Auto-hold function

The parking brake is automatically activated when the vehicle is stationary, the direction of travel is set to **0** or the driver leaves the seat. When the parking brake is automatically activated, the vehicle's drive system is switched off. This is indicated by the warning light (P) flashing. As long as the warning light is flashing, driving can be continued by pressing the accelerator pedal. Changing the drive direction is possible. The warning light goes out as soon as driving continues.

6.2 Steering

6.2.1 Steering modes



⚠ WARNING

Accident hazard due to steering system not working correctly!

Driving with a defective steering system can lead to accidents and injuries or death.

- ▶ Check that the steering system is working before starting a journey.
- ▶ Do not drive the vehicle if the steering system is defective.
- ▶ Have the steering system that is not working correctly repaired by a service center before continuing to drive the vehicle.

The vehicle has an articulated pendulum steering. The steering system is controlled via the steering wheel. The steering wheel acts via a steering column and a steering orbitrol on double-acting hydraulic cylinders.

- Turn the steering wheel to the left.
 - ⇒ The vehicle articulates to the left.
 - ⇒ The vehicle travels to the left.
- Turn steering wheel to the right.
 - ⇒ The vehicle articulates to the right.
 - ⇒ The vehicle travels to the right.

Emergency steering feature

The steering system is only operational when the engine is running normally.

The vehicle can still be steered if the diesel engine or the pump drive breaks down. However, operating the steering system then requires greater strength and the steering will only respond slowly. Take this into account especially when towing the vehicle. Adjust the towing speed to the changed steering behavior (walking pace)!

6.3 Drive

6.3.1 Warnings for driving



⚠ WARNING

Risk of injury due to vehicle tipping over!

A tipping vehicle can cause serious injury or death.

There is an increased risk of tipping when driving in curves.

When the attachment is loaded, the weight ratios of the vehicle change.

- ▶ Keep the loader unit as close as possible to the ground when moving.
- ▶ Do not exceed the permissible payload.
- ▶ Adjust travel speed.
- ▶ Always wear your seat belt.
- ▶ Close the restraining bars/cab doors.



⚠ WARNING

Accident hazard due to restricted field of vision!

The operator may fail to see persons and objects due to the limited field of vision.

- ▶ Check field of vision before commissioning.
- ▶ Adjust the mirrors before commissioning the vehicle.
- ▶ Remove obstacles within the work area.
- ▶ Move the loader unit to the transport position when moving loads.
- ▶ Ensure a clear field of vision using suitable measures (e.g. guide or camera).



⚠ CAUTION

Risk of accident due to reduced visibility!

Frozen windows can lead to a restricted view of your surroundings and thus to accidents with minor injuries.

- ▶ Remove ice from windscreens before starting the journey.



⚠ CAUTION

Risk of accidents due to snow and ice on roads and paths!

Failure to adjust the speed may result in accidents with minor injuries on snowy or icy roads and paths.

- ▶ Reduce travel speed.



NOTICE

The engine may be damaged if the vehicle is in an extremely inclined position or tips over.

If the vehicle has tipped over, proceed as follows:

- ▶ Switch off the ignition immediately and remove the key.
- ▶ Right the vehicle again as soon as possible.
- ▶ Do not start the engine after righting the vehicle.
- ▶ Contact an authorized service center. The vehicle must be checked and released by technically trained personnel prior to restarting.



Environment

Environmental damage due to leaking vehicle fluids.

Leaking vehicle fluids may get into the soil or water.

- ▶ Right the vehicle again as soon as possible to ensure that no vehicle fluids can leak out.
- ▶ Catch leaking vehicle fluids using a suitable container if that can be done safely and dispose of it in an environmentally friendly manner.
- ▶ Notify the competent authorities if vehicle fluids have leaked out.

6.3.2 Selecting a drive mode

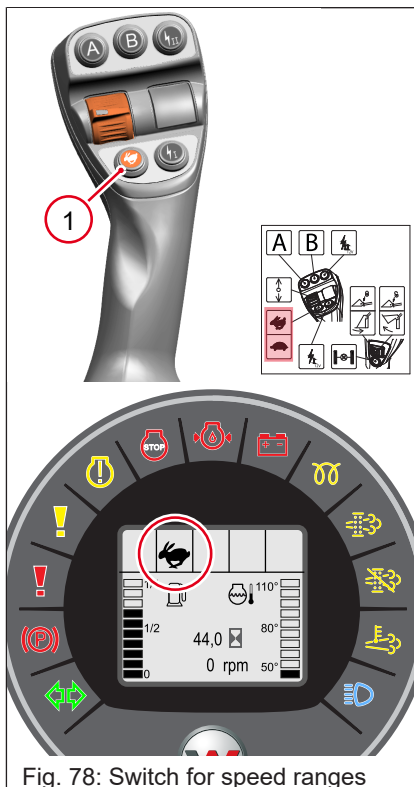


Fig. 78: Switch for speed ranges

The vehicle has two speed ranges. The maximum speed depends on the engine speed selected.

Symbol	Speed range	Recommended activity
	Crawler gear: • 0 – 7 km/h	For work requiring precise speed adjustment
	High speed: • 0 – 20 km/h Option: • 0 – 30 km/h	For long transport distances



30 km/h version

Vehicles with a design-induced maximum speed of more than 20 km/h have special requirements for the operator and the owner. A different driving license may be required for the operator. The owner must comply with the vehicle's insurance obligation.

Furthermore, there may be an obligation to register the vehicle for public road traffic and an obligation to affix license plates to the vehicle.

The responsibility for meeting these requirements and obligations lies solely with the owner of the vehicle.

Changing drive mode

- Press button 1.
 - ⇒ The drive mode changes from crawler gear to high speed, or from high speed to crawler gear.
 - ⇒ Symbols  and  appear in the display.

When restarting the vehicle, the last selected drive mode is automatically switched on.

6.3.3 Selecting a travel direction



⚠ WARNING

Accident hazard when changing drive direction during vehicle travel!

Changing the direction of travel while driving means that the vehicle immediately travels in the opposite direction. This may result in accidents that could result in serious injury or death.

- ▶ Do not change the drive direction while driving.
- ▶ First stop the vehicle completely, then select the drive direction.

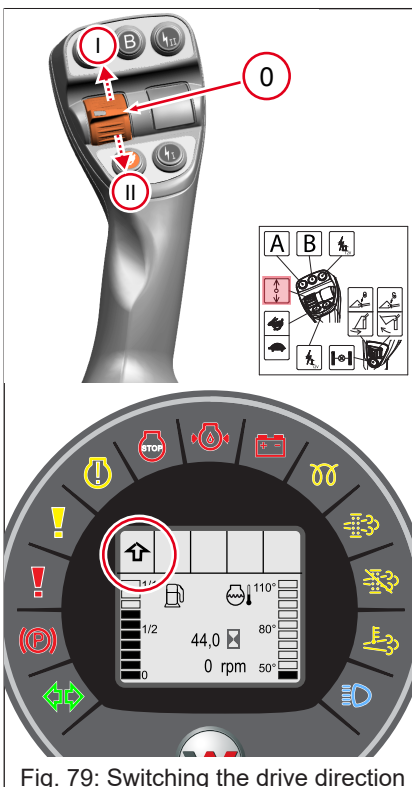




Fig. 79: Switching the drive direction

Use the switch to select the drive direction of the vehicle. After starting the engine, the direction switch is in zero position 0, regardless of the switch position.

- Move the switch to position 0.
 - ⇒ No direction symbol in the display.
 - ⇒ No direction of travel switched on.
- Move the switch to position I.
 - ⇒ Symbol  appears in the display.
 - ⇒ Direction of travel forward switched on.
- Move the switch to position II.
 - ⇒ Symbol  appears in the display.
 - ⇒ A warning tone sounds as an option.
 - ⇒ Reverse driving direction switched on.

6.3.3.1 Travel warning device

Acoustic backup warning system

A warning tone sounds when the reverse drive direction is switched on. The sound is intended to warn people in the vicinity of the vehicle when the reverse drive direction is switched on.

6.3.4 Accelerating the vehicle with pedal



CAUTION

Risk of accident through malfunctions of the accelerator pedal!

Dirt accumulation and objects in the area of the accelerator pedal can result in malfunctions and accidents.

- ▶ Do not place any loose objects in the cab.
- ▶ Keep cab clean.

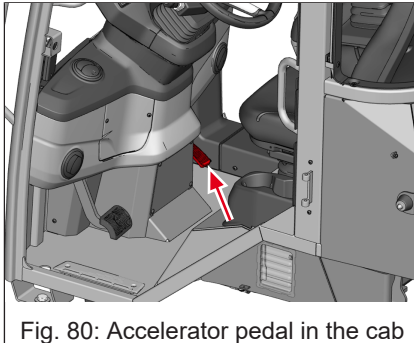


Fig. 80: Accelerator pedal in the cab

The pedal controls the engine speed variably. The engine speed affects the following functions:

- the work movements of the loader unit
- the working movements of the attachment
- the hydraulic functions of the attachment
- the traction and thrust
- the travel speed

The further the pedal is pressed, the more the engine speed increases. The attainable speed depends on the selected pace.

6.3.5 Drive modes

The vehicle has an electronically controlled drive system, whereby different driving modes can be selected. This facilitates the operator's work with the vehicle because they can select the driving mode that is most compatible with the work to be performed.

The following options can be selected:

- AUTO mode
- ECO mode
- Attachment mode
- M-Drive mode

For some driving modes the functions manual throttle and speed limiter are required.

6.3.5.1 Accelerating vehicle with manual throttle



⚠ WARNING

Risk of accident due to increased engine speed!

When the direction switch is actuated and the engine speed is increased, the vehicle starts moving immediately when the parking brake is released.

- ▶ Before starting the engine, check the manual throttle lever and pull it back completely (II).
- ▶ After finishing work with increased engine speed, pull the lever of the manual throttle completely back (II).
- ▶ For loading and maneuvering work, pull the manual throttle lever back completely (II).

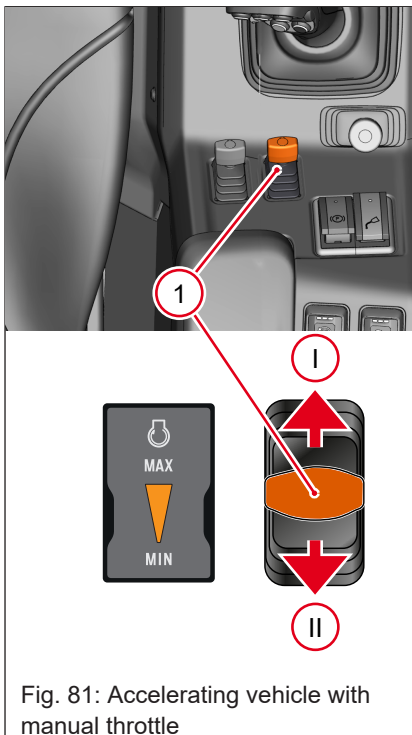


Fig. 81: Accelerating vehicle with manual throttle

Operating the manual throttle

With the manual throttle function, the engine speed can be infinitely adjusted without having to press the accelerator pedal. This function is useful when working with hydraulically driven attachments that require a constant oil flow rate. In this case, the speed of the vehicle can be controlled with the brake/inching pedal without changing the oil flow rate at the attachment.

The manual throttle is operated with lever 1.

- ✓ Lever is fully in position II.
- Move the lever in direction I.
 - ⇒ The speed of the engine increases.
- Move the lever in direction II.
 - ⇒ The speed of the engine decreases.



6.3.5.2 Operating the speed limiter

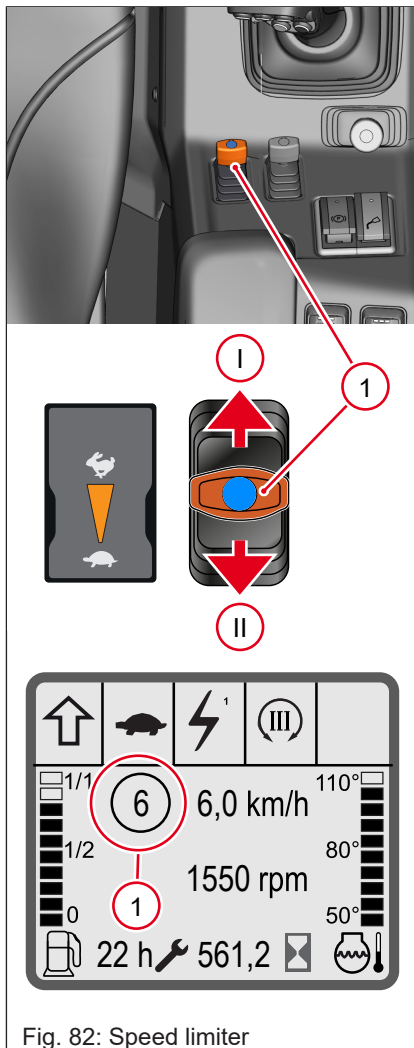


Fig. 82: Speed limiter

With the speed limiter function, the travel speed can be individually and continuously adjusted.

The speed limiter function allows you to drive very slowly, even at high engine speed, without constantly pressing the brake/inching pedal.

The speed limiter is operated with lever 1.

Functionality in AUTO mode and ECO mode:

- ✓ Lever is fully in position II.
- Move the lever in direction I.
 - ⇒ Maximum speed is increased.
- Move the lever in direction II.
 - ⇒ Maximum speed is reduced.

Function in attachment mode:

- ✓ Lever is fully in position II.
- Move the lever in direction I.
 - ⇒ Travel speed of the vehicle is increased.
- Move the lever in direction II.
 - ⇒ Travel speed of the vehicle is reduced.

6.3.5.3 Description of driving modes



Fig. 83: Switch for AUTO mode

AUTO mode

AUTO mode is suitable for all work.

The vehicle can be accelerated using the accelerator pedal. The manual throttle and the speed limiter can be used if the vehicle is equipped with them.



Fig. 84: Switch for ECO mode

ECO mode

In ECO mode, the engine speed is automatically reduced when less power is required. This can reduce fuel consumption and exhaust and noise emissions. The ECO mode is suitable for light work (e.g. stacking of light unit loads) and journeys for material transport and road travel.

The vehicle can be accelerated using the accelerator pedal. The manual throttle and the speed limiter can be used if the vehicle is equipped with them.



Information

Optional driving modes

In addition to AUTO mode and ECO mode, the vehicle can optionally be equipped with either attachment mode or M-Drive mode. Both options at the same time are not possible.



Fig. 85: Switch for Attachments mode

Option attachment mode

The attachment mode facilitates the operator's work with attachments which have a hydraulic oil engine that must be supplied with a continuous flow of oil, e.g. mulchers. With the attachment mode, speeds can be infinitely adjusted very finely.

The attachment mode can only be used if the vehicle is equipped with manual throttle and speed limiter.



Fig. 86: Switch for M-Drive mode

M-Drive-Mode

The M-Drive mode makes it easier for the operator to perform loading operations, such as loading a trailer with bulk material from a pile.

M-Drive Mode can only be used if the vehicle is equipped with manual throttle.

Selecting operating mode

Driving modes can only be changed when the driving direction switch is in the neutral position.

The operating modes are activated using the switches in the keypad in the side console. The activated operating mode is indicated by illumination of the LED in the corresponding switch. Upon activation of an operating mode, the previously activated operating mode is deactivated.

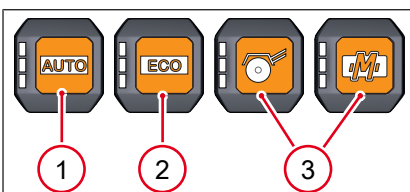


Fig. 87: Switch for operating modes

- ✓ The driving direction switch is in the neutral position.
- Start the engine.
 - ⇒ LED in switch of last selected operating mode illuminates.
 - ⇒ The last selected operating mode is activated.
- Press switch 1.
 - ⇒ The LED in the switch illuminates.
 - ⇒ The AUTO mode is switched on.
- Press switch 2.
 - ⇒ The LED in the switch illuminates.
 - ⇒ The ECO mode is switched on.
- Press switch 3.
 - ⇒ The LED in the switch illuminates.
 - ⇒ Attachment mode/M-Drive mode is switched on.

6.3.5.4 Operating the vehicle in attachment mode




⚠ WARNING

Risk of accident with the drive direction switch!

If the drive direction switch is switched to the zero position in attachment mode and reactivated or the drive direction is changed, the speed setting remains unchanged. This may result in accidents that could result in serious injury or death.

- ▶ Do not change the drive direction while driving.
- ▶ First stop the vehicle completely, then select the drive direction.
- ▶ Before activating a drive direction, step on the brake/inching pedal.

Requirements for switching on the attachment mode:

- ✓ Attachment is coupled.
- ✓ Hydraulic connections are coupled.
- ✓ Manual throttle lever is at **min**.
- ✓ The speed limiter lever is set to .
- ✓ Drive direction switch is in zero position.
- ✓ Vehicle engine is running.

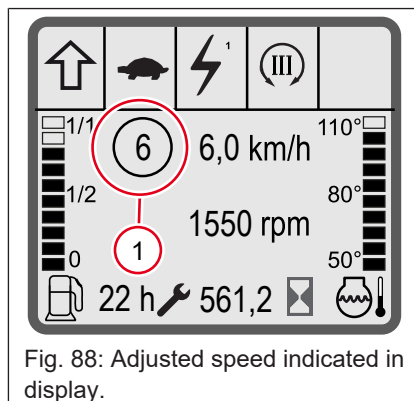


Fig. 88: Adjusted speed indicated in display.


1. Switch on the attachment mode.
2. Select a travel direction.
3. Activate continuous operation of the hydraulic connections (or High Flow).
4. Set the desired speed of the engine with the manual throttle lever.
 - ⇒ The hydraulic oil engine of the attachment is at the desired speed.
5. Set the desired speed with the speed limiter.
 - ⇒ A maximum speed of 10 km/hr can be set.
 - ⇒ The adjusted speed is shown in the display at pos. 1.
 - ⇒ Vehicle can be operated in attachment mode.

The adjusted speed and rpm can be changed during operation.

In attachment work mode, the vehicle can be accelerated using the accelerator pedal. Stopping is also possible in attachment mode by actuating the brake/inching pedal.

If the drive direction switch is switched to the zero position and reactivated or the drive direction is changed, the speed setting remains unchanged.

Exiting the attachment mode

1. Set the drive direction switch to the zero position.
2. Reset manual throttle lever to **min**
3. Set the speed limiter lever to .
4. Selecting different operating mode.

6.3.5.5 Driving a vehicle with M-Drive

The M-Drive option is only possible in conjunction with the manual throttle adjustment option. With the M-Drive, the full power of the working hydraulics is available even at low speeds during travel.

The M-Drive option changes the function of pedal **2**. The engine speed is not controlled with pedal **2**, but infinitely variable with control lever **3**.



Fig. 89: Switch in the keypad for M-Drive

Switch on M-Drive

The M-Drive function is activated via the keypad in the side console.

- Press the switch in the keypad.
 - ⇒ The LED in the switch illuminates.
- ⇒ M-Drive is switched on.
- Press the switch in the keypad again.
 - ⇒ The LED in the switch goes out.
- ⇒ M-Drive is deactivated.

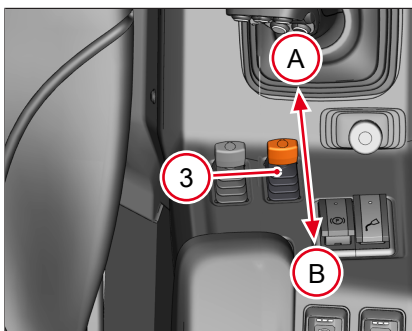


Fig. 90: Setting the engine speed

Adjusting the engine speed

- Move the control lever **3** in direction **A**.
 - ⇒ Engine speed increases.
- Move the control lever **3** in direction **B**.
 - ⇒ Engine speed is decreases.

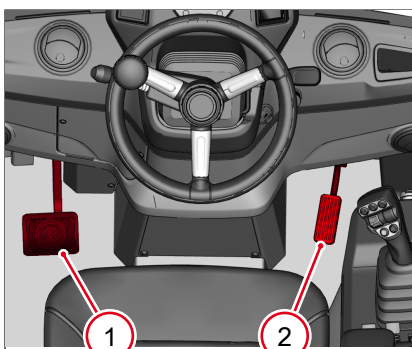


Fig. 91: Operation of M-Drive

Driving with M-Drive

Press pedal **2** to drive. The more pedal **2** is depressed, the higher the driving speed.

1. Select a drive mode.
2. Set the desired speed of the engine with the control lever **3**.
3. Release parking brake.
4. Press pedal **2** to drive.
 - ⇒ The vehicle moves.
5. To stop, release pedal **2**, remove foot from pedal **2**.
 - ⇒ The vehicle slows down and stops.
 - ⇒ To stop the vehicle, the function of the brake inching pedal **1** is additionally available.
6. Apply the parking brake.



6.3.6 Braking, stopping and parking the vehicle

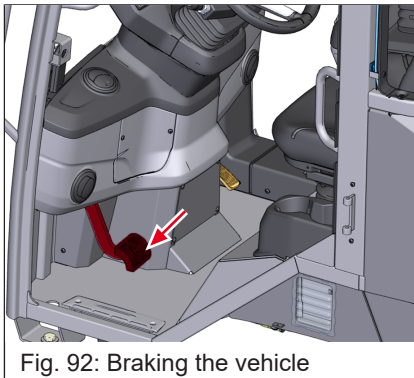


Fig. 92: Braking the vehicle

Press pedal to change the travel speed independently of the engine speed. The first part of the pedal travel reduces the drive system, and then the braking system is engaged. By pressing the pedal, the displacement of the pump can be reduced steplessly, without material wear, until the vehicle comes to a standstill. This allows very slow driving even at high engine speeds.

1. Reducing the speed of the engine.
⇒ Travel speed of the vehicle is reduced.
2. Press the pedal.
⇒ The vehicle brakes.
3. Keep pressing the pedal.
⇒ The vehicle stops.
4. Set the switch for the drive direction zero position.
⇒ The drive system is in neutral position.
5. Apply the parking brake.
⇒ Parking brake control light lights up in the display.
⇒ The drive interlock is activated.

6.3.7 Securing the vehicle

Stop the vehicle without jolting by releasing the accelerator pedal or by actuating the brake/inching pedal and secure as described in the following section.

The following activities apply to parking the vehicle after daily use. In addition, the activities for the transport of the vehicle, as well as all maintenance and inspection work apply, provided that they are described in these operating instructions.

- Park the vehicle on a stable, level and dry surface.
- Lower the loader unit completely to the ground.
- Move all switches and levers to zero position.
- Apply the parking brake.
- Turn off the engine.
- Depressurize the hydraulic system.
- Secure the vehicle with a wheel chock.
- Clean the vehicle.
- Perform visual check of the following assemblies for leaks.
 - Hydraulic system
 - Cooling system
 - Fuel system
- Perform a visual check for damage to the vehicle, especially to the tires, the attachment and the lock for the attachment.
- Fill up with fuel.
- Check all liquid levels and top up if necessary.
- Secure the vehicle against unauthorized use.
 - Remove the starting key.
 - Close the windows.
 - Lock the doors, filler caps of the tanks and engine cover.

6.3.8 Operation of the system for exhaust gas aftertreatment



NOTICE

Damage to the exhaust gas aftertreatment (DPF) system!

If the DPF switch is in position **1**, regeneration is permanently suppressed.

- ▶ Switch the DPF switch to position **0** to enable automatic regeneration.

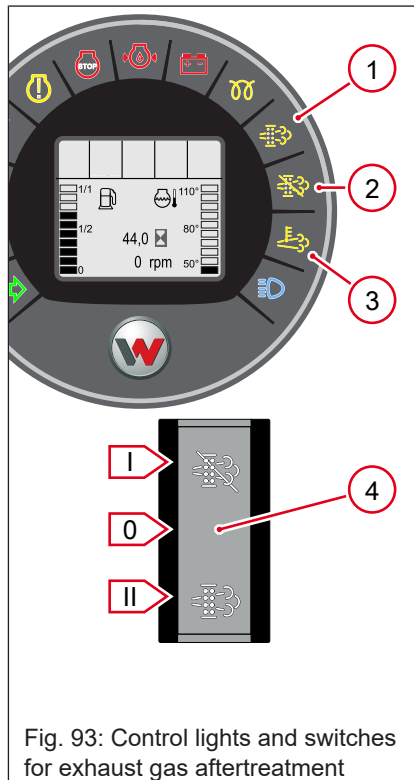


Fig. 93: Control lights and switches for exhaust gas aftertreatment

Meaning of the control lights and switch

1 Control light "Regeneration of the diesel particulate filter (DPF) necessary"

The display shows information about the soot load of the diesel particulate filter. The display is off when the soot load of the diesel particulate filter is normal.

- If the control light lights up or flashes, regeneration of the diesel particulate filter is necessary.
- The regeneration starts automatically when the engine has warmed up.
- Regeneration can be started manually.

2 Control light "Suppress regeneration of the diesel particulate filter (DPF)"

The display shows that regeneration has been suppressed.

- Regeneration can be started manually.

3 Control light "Regeneration of the diesel particulate filter (DPF) active"

Illuminates during active regeneration. The display indicates increased exhaust-gas temperatures.

4 Switch for the exhaust aftertreatment system

The switch can be used to start or stop regeneration of the diesel particulate filter.

- Switching stage 0 = Switch in neutral position
- Switching position I = Interrupts regeneration
- Switching position II = Triggers manual regeneration.

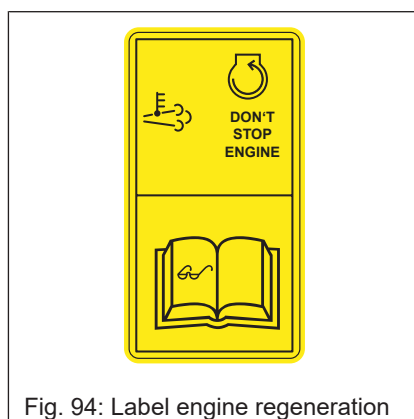


Fig. 94: Label engine regeneration

The label indicates that the engine should not be switched off while the system for exhaust gas aftertreatment is being regenerated. The exhaust gas aftertreatment system may otherwise be damaged.

For description and operation: [see Exhaust gas aftertreatment on page 231.](#)

6.3.9 Vehicle travel on public roads



WARNING

Accident hazard due to pallet fork tines!

The fork tines of the pallet fork can cause serious injury or death during operation.

- ▶ Remove the pallet fork before driving on public roads and transport it separately.
- ▶ In the case of a pallet fork with folding forks, fold them up before driving on public roads.
- ▶ Bent, torn or otherwise damaged forks must not be used.
- ▶ Before starting work, ensure that the fork tines on the fork carriage are safely locked.
- ▶ Lower the pallet fork to the ground before leaving the vehicle.



⚠ WARNING

Accident hazard due to blinded motorists!

With work lights switched on, other road users can be blinded. This may result in accidents that could result in serious injury or death.

- ▶ Switch off the work lights when driving on public roads.
- ▶ Pay attention to national regulations on construction site lighting.

Before starting to drive, ensure that the vehicle complies with the relevant local regulations and has a valid type-approval or registration. Vehicles may only be driven on public roads if the operator is in possession of a driving license as defined by national traffic laws. Only use attachments on public roads that are approved for this purpose. Follow the instructions below when driving on public roads.

- 1) Remove attachments not approved for use on public roads.
- 2) Secure attachments approved for use on public roads:
 - The bucket is emptied and the guard bar is attached to the bucket.
 - The folding pallet fork is folded up and secured.
- 3) Lift the loader unit to transport position (approx. 200 mm above the ground).
- 4) Check the lighting system and, if necessary, the function of the rotating beacon.
- 5) Check and if necessary adjust the rearview mirrors.
- 6) Move steering column to foremost position.
- 7) Close the restraining bars.
- 8) Close driver's door and window.
- 9) Switch off the work lights.
- 10) Locking loader unit, [see Using the joystick lock function on page 136](#).
- 11) If a trailer is attached, check that the trailer is securely locked in the trailer coupling, that the lines are correctly connected, that trailer lighting functions, that trailer loads and support loads of the trailer coupling have been observed and that the loads on the trailer are secured against slipping.
- 12) Fasten the seat belt.
- 13) Start vehicle travel ensuring safety.

6.4 Driving with a trailer

6.4.1 Safety instructions for trailer operation

Observe the safety instructions in the chapter [see Trailer operation on page 27](#).

In addition, the following safety instructions apply:

- Trailer operation is only permitted with a type-approved, authorized trailer coupling.
- Trailer operation with the towing device of the vehicle is prohibited.
- Observe the maximum permissible drawbar load and trailer load, [see trailer loads and drawbar loads on page 281](#).
- Trailer operation changes the vehicle's operating behavior; the operator must be familiar with this and act accordingly.
- Bear in mind the vehicle's steering mode and the trailer's turning circle.
- Before downhill vehicle travel, reduce travel speed or adapt it to the circumstances.

6.4.2 Requirements for driving with a trailer

Trailer operation is only allowed with a model -approved trailer coupling. In Germany, only trailers with agricultural or forestry consumables or with the vehicle's attachments may be transported on public roads.

The transport of other trailers or goods is only permitted with tractor registration. Refer to the operation license for the specific requirements on trailer operation.

The relevant national regulations must be observed and applied.

Also note the following points:

- Observe the permissible trailer loads and drawbar loads.
- Ensure the rotatability of the trailer coupling.
- Carry out or have carried out regular maintenance work on the trailer coupling.

6.4.3 Trailer couplings



⚠ WARNING

Risk of injury to persons in the danger zone!

Persons in the area between vehicle and trailer may be overlooked by the operator when coupling and uncoupling and may be seriously or fatally injured.

- ▶ Ensure that there are no persons in the danger zone.

This operator's manual describes the use and operation of the following trailer couplings.

- Maneuvering coupling
- Automatic trailer coupling
- Ball-type hitch

Observe permissible drawbar loads and trailer loads: [see Trailer loads and drawbar load on page 281](#).

6.4.3.1 Using ball-type hitch

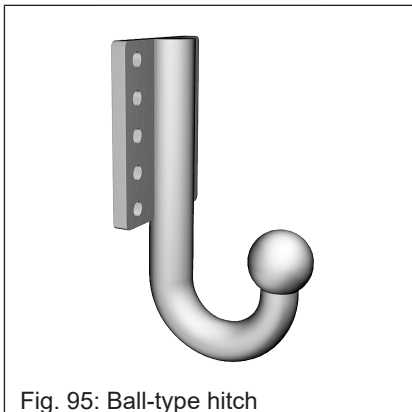


Fig. 95: Ball-type hitch

The ball hitch is used to tow trailers that are equipped with ball-type couplers. Any other use is regarded as unauthorized. Check the ball hitch regularly for any wear and tear. If there are visible cracks and if the diameter of the ball head is less than 49.0 mm at a spot, do NOT use the ball hitch any more and have it replaced by an authorized service center.

To use the ball hitch and the trailer tow-bar, read the owner's manual for the trailer.

6.4.3.2 Operating the maneuvering coupling

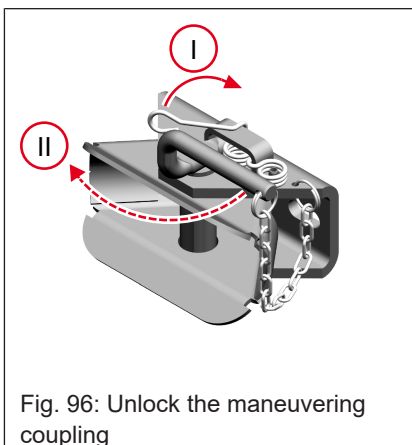


Fig. 96: Unlock the maneuvering coupling

To attach, proceed as follows.

1. Release the pin by pressing the spring I.
 2. Turn pin 90° with lever II.
 3. Pull out the pins.
 4. Slowly reverse the vehicle toward the trailer drawbar.
 5. Insert the pin and turn it 90° with the lever.
- ⇒ The trailer is coupled to the maneuvering coupling.

6.4.3.3 Operating the automatic trailer coupling



⚠ WARNING

Danger of crushing due to unintentional actuation of the trailer coupling!

When the trailer coupling lock is actuated, the trailer pin closes abruptly. Limbs within the range of the trailer pin can be crushed and severely injured.

- ▶ Keep all parts of the body away from the range of action of the automatic trailer coupling.
- ▶ Always keep the trailer coupling closed when it is not in use.

To ensure the prescribed swivel angle when coupled, the trailer coupling may only be used in conjunction with drawbar lugs in accordance with DIN 11026 (ISO 5692), DIN 74053 (ISO 1102) or DIN 74054 (ISO 8755).

Observe the maximum permissible drawbar load and trailer load: [see Trailer loads and drawbar load on page 281](#).

The permissible lugs are listed on the type label on the trailer coupling.

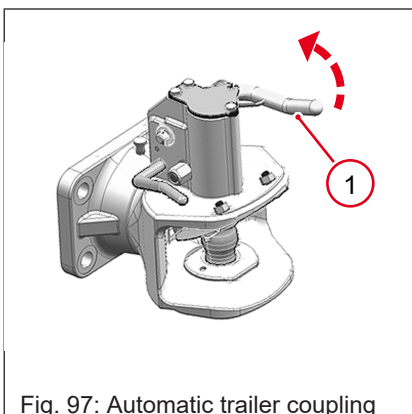


Fig. 97: Automatic trailer coupling

Couple the trailer to the vehicle

1. Press lever **1** all the way up.
2. Adjust the trailer drawbar to the correct height.
3. Slowly reverse the vehicle toward the trailer drawbar until the drawbar eye touches and sets off the trigger mechanism.
 - ⇒ When the trigger is touched by the drawbar lug, the coupling pin quickly moves downwards.
 - ⇒ The trailer is locked in the coupling jaw.
4. Check the correct locking.
5. Connect the trailer supply lines to the vehicle.
6. Remove the equipment (e.g. chocks, support wheel) used for securing the trailer.
 - ⇒ The trailer is coupled and connected.

Uncoupling the trailer from the vehicle

1. Park the trailer on a stable, level and dry surface.
2. Apply parking brake and secure trailer (e.g. with chocks, support wheel, etc.).
3. Remove the trailer supply lines from the vehicle.
4. Press lever **1** all the way upward until the coupling pin audibly engages in the open position.
5. Slowly move the vehicle away from the trailer.
6. Close the trailer coupling by hand.
 - ⇒ The trailer is uncoupled. The automatic trailer coupling is secured.

Close trailer coupling by hand



▲ WARNING

Danger of crushing due to the trailer coupling pins falling down!

The sudden falling of the coupling pin can lead to injuries.

- ▶ Do not touch the coupling pin with your hands.
- ▶ Wear protective gloves.

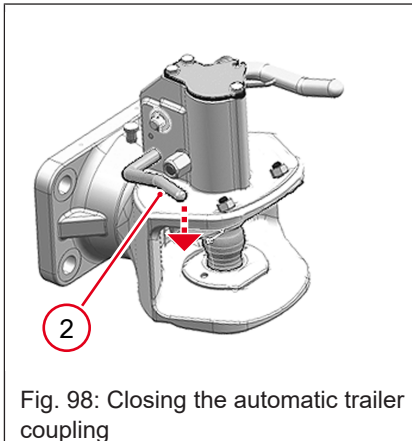


Fig. 98: Closing the automatic trailer coupling

The automatic trailer coupling can be closed manually without a trailer drawbar touching the trigger. This may be necessary, for example, if a tow rope is to be hooked into the trailer coupling.

- Push lever **2** downwards.
- ⇒ The trigger is activated manually. The trailer coupling pin closes automatically.

6.5 Lighting and signaling system

6.5.1 Operating the vehicle lighting

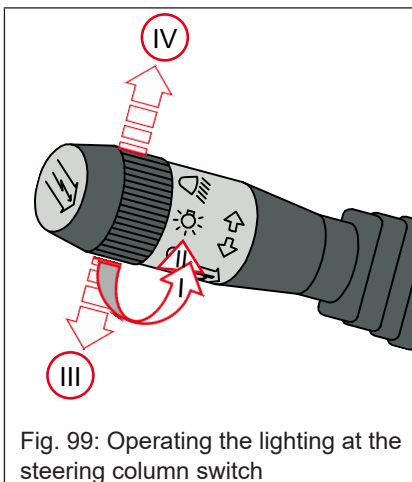



Fig. 99: Operating the lighting at the steering column switch

Check lights, direction indicator lamps and horn before each journey.

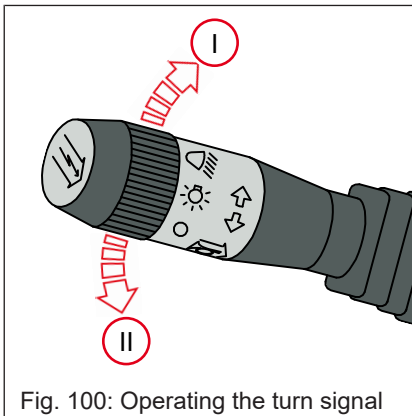
The steering column switch is used to switch the lighting, turn signal and signal horn functions.



Operating the vehicle lighting

1. Turn lever forward (I).
⇒ The parking lights are switched on.
2. Turn lever further forward (II).
⇒ The driving lights are switched on.
3. Move the lever downwards (III).
⇒ High beam is switched on.
⇒ Control light  in the display lights up.
4. Move the lever upwards (IV).
⇒ Low beam is switched on.

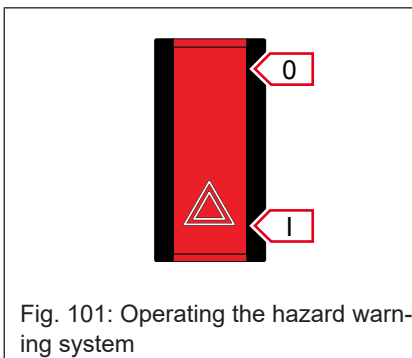
Turn the lever to switch off the lighting in the opposite direction.

6.5.2 Operating the turn signal





- Push the steering column switch forwards in direction I.
 - ⇒ The control light  flashes.
 - ⇒ Turn signal on the right flashes.
- 1. Move the steering column switch into position II.
- 2. Pull the steering column switch backwards in direction II.
 - ⇒ The control light  flashes.
 - ⇒ Turn signal on the left flashes.

6.5.3 Operating the hazard warning system



The switch for the hazard warning system is located in the instrument panel. The switch has two switch positions.

- Move the switch to position I.
 - ⇒ The control light  flashes.
 - ⇒ Turn signal is activated on both sides.
- Move the switch to position 0.
 - ⇒ The control light  does not flash.
 - ⇒ Turn signal is deactivated on both sides.

6.5.4 Operating the work lights



⚠ WARNING

Accident hazard due to blinded motorists!

With work lights switched on, other road users can be blinded. This may result in accidents that could result in serious injury or death.

- ▶ Switch off the work lights when driving on public roads.
- ▶ Pay attention to national regulations on construction site lighting.

The vehicle is equipped with front and rear work lights.

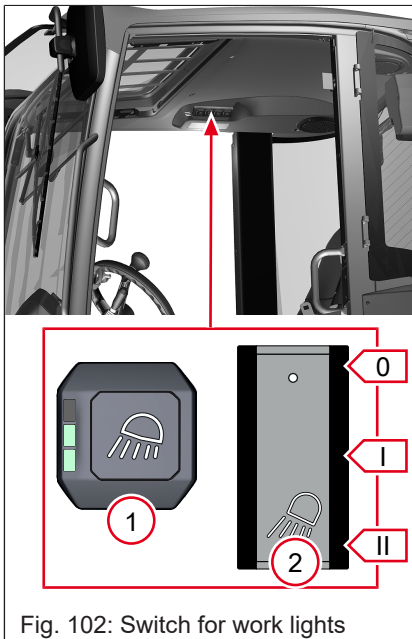


Fig. 102: Switch for work lights

Operating the work lights

- 1 Version vehicle with cab
- 2 Version vehicle with overhead guard

Version vehicle with cab

Operate the work lights with the switch shown. The switch is located in the keypad panel in the roof of the cab.

- Press switch.
 - ⇒ All the LEDs in the switch light up.
 - ⇒ All work lights are switched on.
- Press the switch again.
 - ⇒ One LED in the switch goes out.
 - ⇒ Work lights are switched off at the rear and on at the front.
- Press the switch again.
 - ⇒ A further LED in the switch goes out.
 - ⇒ Work lights are switched off at the front and switched on at the rear.
- Press switch for more than one second.
 - ⇒ All LEDs in the switch are off.
 - ⇒ All work lights are switched on.



Information

Coming home function

The vehicle is equipped with a coming home function in the cab version. If the work lights are not switched off and the starting key is turned to position 0, the work lights continue to light up for 40 seconds and then switch off automatically.

Version vehicle with overhead guard

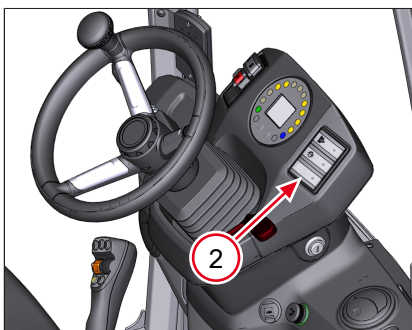


Fig. 103: Switch for work lights with folding overhead guard

In the version with folding overhead guard (eps – easy protection system), the switch for the work lights is located on the instrument panel.

- Move rocker switch to position I.
 - ⇒ The front work lights are switched on.
- Move rocker switch to position II.
 - ⇒ The front and rear work lights are switched on.
- Move rocker switch to position 0.
 - ⇒ Work lights are switched off.

6.5.5 Operating the horn

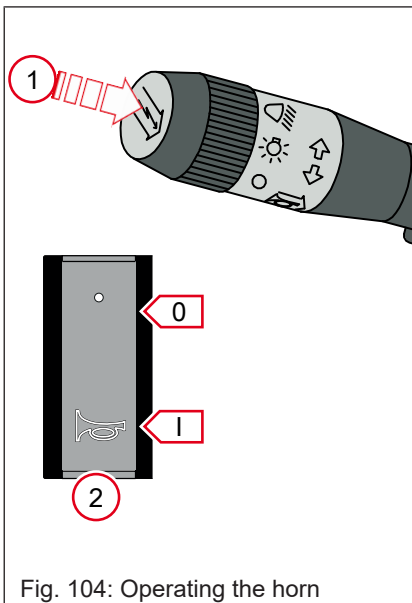


Fig. 104: Operating the horn

The horn is operated with the steering column switch or the switch, depending on the equipment.

Vehicle with lighting:

- Press switch 1 on the steering column switch.
 - ⇒ The horn sounds.
- Release the switch on the steering column switch.
 - ⇒ The horn no longer sounds.

Vehicle without lighting:

- Move switch 2 to position I and hold.
 - ⇒ The horn sounds.
- Release switch.
 - ⇒ The horn no longer sounds.

The horn is operated with steering column switch.

- Press steering column switch.
 - ⇒ The horn sounds.
- Release the steering column switch.
 - ⇒ The horn no longer sounds.

6.5.6 Operating the rotating beacon

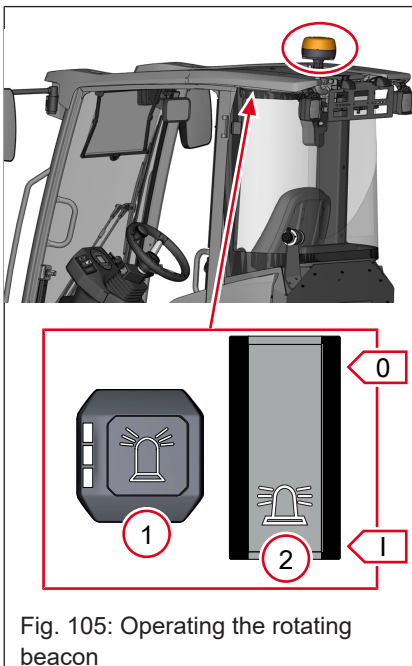


Fig. 105: Operating the rotating beacon

- 1 Version vehicle with cab
- 2 Version vehicle with overhead guard

The rotating beacon is attached to the mounting provided for this purpose. Use rotating beacon only in accordance with legal regulations!

Version vehicle with cab

Operate the rotating beacon with the switch shown. The switch is located in the keypad panel in the roof of the cab.

- Press switch.
 - ⇒ The LED in the switch illuminates.
 - ⇒ Rotating beacon is switched on.
- Press the switch again.
 - ⇒ The LED in the switch is off.
 - ⇒ Rotating beacon is switched off.

Version vehicle with overhead guard

Operate the rotating beacon with the switch shown. The switch has two switch positions.

- Move the switch to position **I**.
⇒ Rotating beacon is switched on.
- Move the switch to position **0**.
⇒ Rotating beacon is switched off.

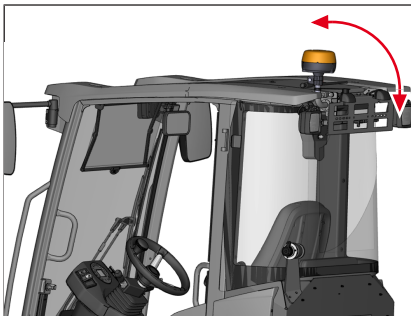


Fig. 106: Folding down the rotating beacon

Folding down the rotating beacon

The rotating beacon can be folded down for low passages.

6.5.7 Operate rotating beacon with magnetic base



Fig. 107: Rotating beacon with magnetic base

Use rotating beacon only in accordance with legal regulations!

The 12 volt plug receptacle **1** may be loaded with a maximum of 15 amperes.

- Plug the cable plug into plug receptacle **1** on the right-hand side of the steering column.
⇒ Rotating beacon is permanently switched on.
- Pull out the plug of the cable from the plug receptacle **1** on the right of the steering column.
⇒ Rotating beacon is switched off permanently.

6.5.8 Entry lighting

If the vehicle is equipped with a cab, entry lighting is fitted. The step lighting is switched on when the left-hand cab door is opened and switched off when the cab door is closed.

When the ignition key is in position 0 and the left-hand cab door is opened, the lighting switches on automatically. After 40 seconds the lighting is automatically switched off again.

6.5.9 Operating the cab interior light

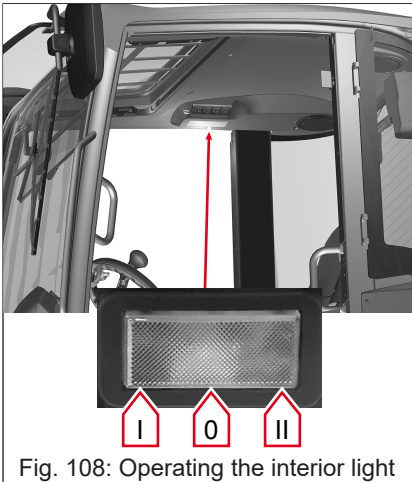


Fig. 108: Operating the interior light

The interior light of the cab is controlled by the interior light.

- Move the interior lamp to position **I** or **II**.
⇒ Interior light is switched on.
- Move the interior light into position **0**.
⇒ The interior light goes out.

6.5.10 12 volt plug receptacle at the driver's platform



NOTICE

Technical damage to the vehicle electrics

The 12 volt plug receptacle is fused at 15 amps. If electrical devices with a higher current consumption are connected, the fuse will blow.

- ▶ Do not connect electrical devices with a current consumption of more than 15 amperes.

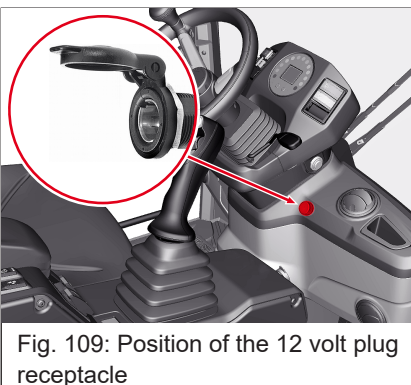


Fig. 109: Position of the 12 volt plug receptacle

The 12 volt plug receptacle is intended for the operation of electrical devices that work with 12 volts and have a suitable plug. For example, a light for maintenance work can be connected here.

To operate the 12 volt plug receptacle, the battery master switch must be switched on. The ignition does not need to be on.

Connecting electrical devices will discharge the battery if the vehicle's engine is not running while doing so.

6.6 Washer system

6.6.1 Operating the window wiper and washer system at the front

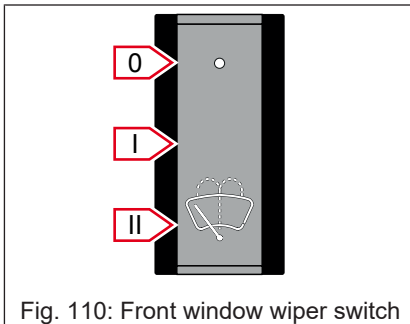


Fig. 110: Front window wiper switch

The vehicle is equipped with a window wiper and washer system for the front window. They are operated with the rocker switch in the instrument panel.

- Move the switch to position **I**.
⇒ Front window wiper is switched on.
- Move the switch to position **II**.
⇒ The front washer system is switched on.
- Move the switch to position **0**.
⇒ The window wiper and washer system are switched off.

6.6.2 Operating the rear window wiper and washer system

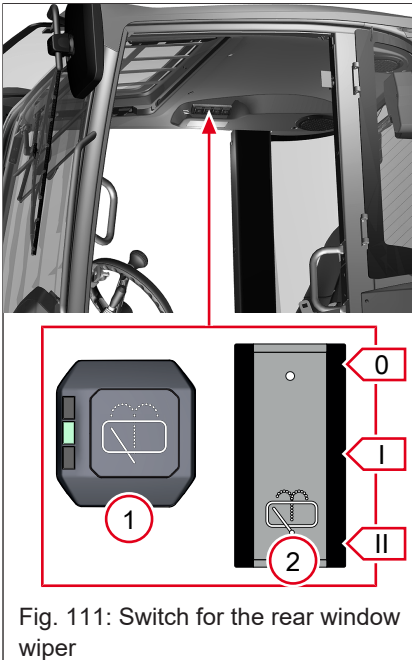


Fig. 111: Switch for the rear window wiper

- 1 Version vehicle with cab
- 2 Version vehicle with overhead guard

Version vehicle with cab

If the vehicle is equipped with a window wiper and washer system for the rear window, these are operated with the depicted switch. The switch is located in the keypad panel in the roof of the cab.

Operating the rear window wiper

- Press switch.
 - ⇒ The LED in the switch illuminates.
 - ⇒ Rear window wiper is switched on.
- Press the switch again.
 - ⇒ Window wiper for the rear window is switched off.
 - ⇒ The LED in the switch turns off.

Operate the washer system for the rear window

- Press and hold switch
 - ⇒ The LED in the switch illuminates.
 - ⇒ Rear window washer system is switched on.
- Release switch.
 - ⇒ Rear window washer system is switched off.
 - ⇒ The LED in the switch turns off.

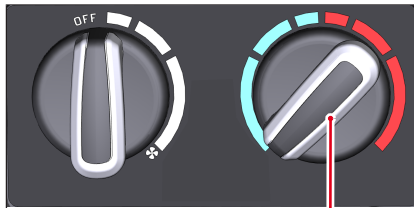
Version vehicle with overhead guard

The window wiper for the rear window is operated with a switch in the switch panel in the roof. The switch has three positions.

- Move the switch to position **I**.
 - ⇒ Window wiper for the rear window is switched on.
- Move the switch to position **II**.
 - ⇒ The washer system is switched on.
- Move the switch to position **0**.
 - ⇒ The window wiper and washer system are switched off.

6.7 Heating, ventilation and air conditioning system

6.7.1 Operating heating



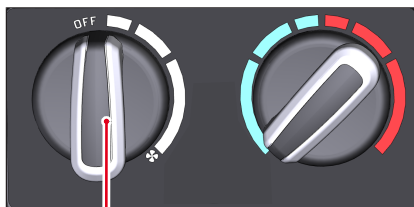
1

Fig. 112: Adjusting the heater temperature

The cab is equipped with a fan-assisted heating system. The temperature of the heating is controlled with the rotary switch 1. The temperature can be infinitely adjusted.

- ✓ Fan is switched on.
- Turn switch clockwise.
 - ⇒ The temperature increases.
- Turn switch counterclockwise.
 - ⇒ The temperature decreases.

6.7.2 Adjusting the fan and air vents



2

Fig. 113: Adjusting the fan intensity

The cab is equipped with a fan-assisted heating system. The fan is operated with the rotary switch 2 in the instrument panel. Adjust the fan by turning the switch. The fan can be set to four different levels.

- Level 0
 - ⇒ Fan is switched off.
- Level 1
 - ⇒ Low ventilation
- Level 2
 - ⇒ Medium ventilation
- Level 3
 - ⇒ High ventilation

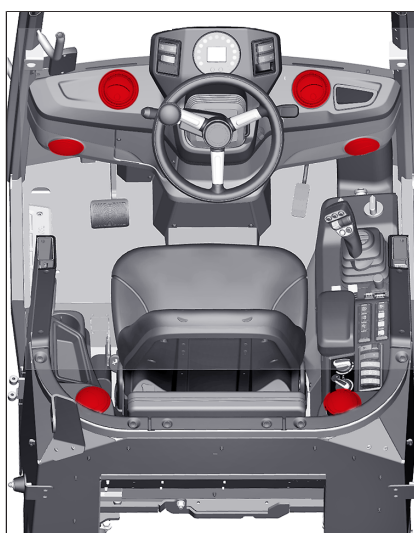


Fig. 114: Overview of air vents nozzles

Adjusting the air vents nozzles

The air flow is directed in the cab with the nozzles. In cold weather with warm air supply, the windows are cleared of ice and the cab is heated.

Ventilate cab

With the heating switched off, the cab can be ventilated with the fan or the windows. Always lock the side windows or cab doors in the open position.

6.7.3 Using the air conditioning system



NOTICE

Damage to the air conditioning system!

If the air conditioning system is not used for too long, malfunctions may occur.

- ▶ In order to avoid malfunctions and possible loss of refrigerant, put the air conditioning system into operation at least once a month.

Observe the following points in order to achieve optimum performance of the air conditioning system:

- If there is accumulated heat in the cab, ventilate with the doors and windows before commissioning the air conditioning system.
- Then close the windows and doors.
- At the beginning, set the air conditioning system to the highest level and open all vents, then dose.
- To prevent condensation from forming on the condenser, switch off the air conditioning system five minutes before the end of the journey or work.
- If the windows are fogged, aim the vents of the air conditioning system at the windows.

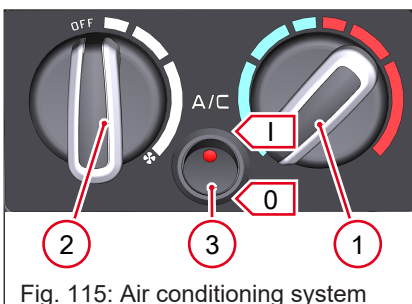


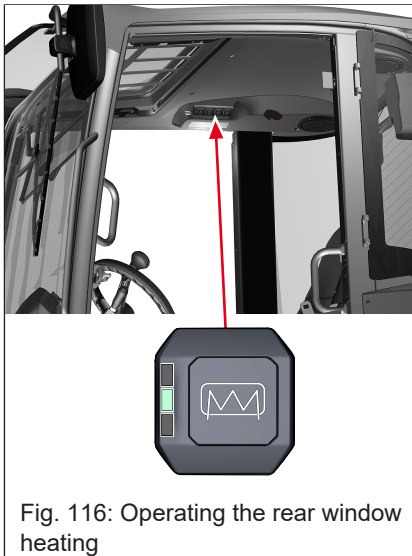
Fig. 115: Air conditioning system

Using the air conditioning system

Switch the air conditioning system on and off with rocker switch 3. Rotary switch 2 must be at least at level 1.

1. Move switch 3 to position I.
⇒ The air conditioning system is switched on.
2. Set switch 3 to position 0.
⇒ The air conditioning system is switched off.
3. The temperature can be continuously adjusted using rotary switch 1.
4. Adjust the fan's speed using rotary switch 2.

6.7.4 Operating the rear window heating



The cab is equipped with a heated rear window. With rear window heating, fogging of the rear window can be prevented in cold weather.

Rear window heating is operated with a switch in the keypad panel in the roof of the cab. The switch has two positions.

- Press switch.
 - ⇒ The LED in the switch illuminates.
 - ⇒ Rear window heating is switched on.
- Press the switch again.
 - ⇒ Rear window heating is switched off.
 - ⇒ The LED in the switch turns off.

6.8 Working with the vehicle

6.8.1 Warnings regarding work



⚠ DANGER

Danger to life if approaching electric overhead lines!

Approaching overhead electric lines causes electric arcs to form. Improper behavior in this situation will result in serious injury or death.

- ▶ Keep away from electrical overhead lines.
- ▶ Do not attempt to leave the cab in the event of electric arcs.
- ▶ Before working under electric overhead lines, contact the energy supplier and cause the current to be switched off.

Distances to electrical overhead lines

A VDE recommendation specifies the following minimum distances to electrical overhead lines.

Rated voltage	Safety distance
Up to 1000 volts	1 m
Over 1000 volts to 110 kilovolts	3 m
Over 110 kilovolts to 220 kilovolts	4 m
Over 220 kilovolts	5 m
Unknown rated voltage	5 m

If in doubt about the rated voltage, maintain the minimum distance of five meters.



⚠ WARNING

Accident hazard due to persons in the risk zone!

Persons who are in the risk zone of the vehicle or suddenly enter it can be injured by working movement or the moving vehicle. This may result in accidents that could result in serious injury or death.

- ▶ Interrupt work immediately if persons enter the risk zone.
- ▶ Adjust the mirror correctly. Use visual aids such as, e.g. a camera.
- ▶ Observe extreme caution when reversing.

Falling objects



⚠ WARNING

Risk of injury from falling load when the loader unit is raised and extended!

Falling load (e.g. large bales or bale stacks) can lead to serious injury or death.

- ▶ Never lift or transport several large bales or crates at the same time.
- ▶ The stacking of general cargo with vehicles without a driver's protective roof or cab is prohibited.
- ▶ Do not step under the raised loader unit.
- ▶ Do not tilt the attachment up to the stop when the loader unit is raised.

6

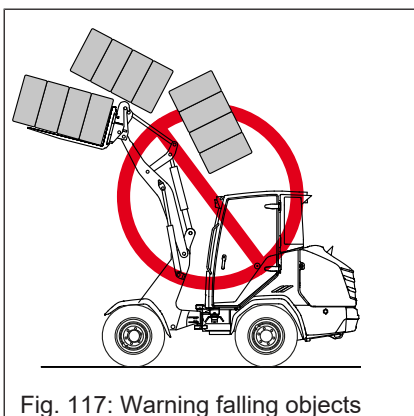


Fig. 117: Warning falling objects

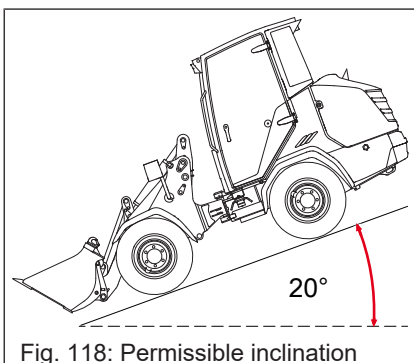


Fig. 118: Permissible inclination

Permissible tilt of vehicle

The vehicle's permissible tilt may NOT be exceeded when in use. The value applies when the vehicle is not folded in and the loader unit is lowered.

6.8.2 Foldable overhead guard

6.8.2.1 Warning notices for the foldable overhead guard



⚠ WARNING

Risk of accident due to falling objects!

Falling objects or falling stacks of bales can cause serious or fatal injuries.

The foldable overhead guard serves as a FOPS protective structure.

- ▶ The loading of general cargo or large bales is only permitted with an overhead guard or cab.
- ▶ Always bring the foldable overhead guard into the protective position if the working conditions permit.
- ▶ In areas where large bales or general cargo are stored, the foldable overhead guard must always be in the protective position!
- ▶ Never transport or stack several large bales or crates at the same time.



⚠ WARNING

Risk of injury due to vehicle tipping over!

A tipping vehicle can cause serious injury or death.

The foldable overhead guard serves as a ROPS protective structure.

- ▶ Always bring the foldable overhead guard into the protective position if the working conditions permit.
- ▶ Fold down the folding overhead guard only if this is absolutely necessary to carry out the work (e.g. passing through low gates).

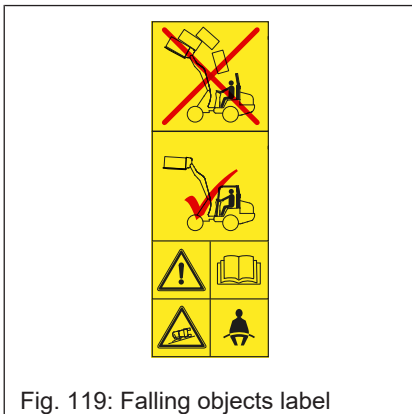


⚠ WARNING

Risk of injury when driving with the overhead guard (FSD) folded down!

Protection is no longer provided to the operator if the overhead guard is folded down. This can cause serious injury or death when driving through low passages.

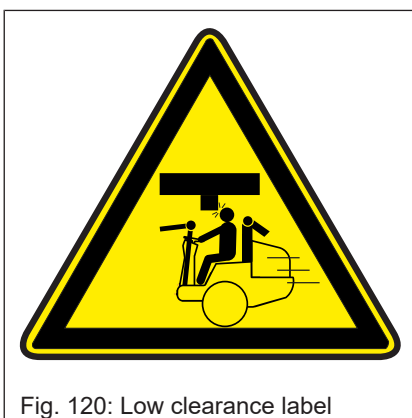
- ▶ When driving through low passages with the overhead guard folded down, drive slowly and use extra caution.
- ▶ Pull in head and bend upper body forward.
- ▶ Always bring the foldable overhead guard into the protective position if the working conditions permit.
- ▶ Fold down the folding overhead guard only if this is absolutely necessary to carry out the work (e.g. passing through low gates).



Safety labels: Falling objects

CAUTION! Never transport several large bales or crates at the same time!

- Do NOT load large bales or general cargo with vehicles without a driver's protective roof or cab!
- Read the operator's manual prior to startup!
- Wear seat belt when operating the vehicle!
- Always bring the foldable overhead guard into the protective position if the working conditions permit!



Safety labels: Low clearance

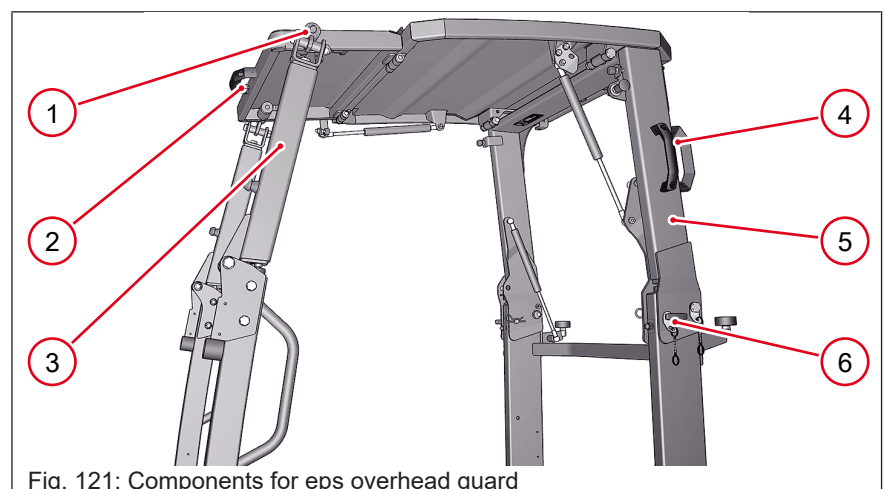
CAUTION! Risk of injury when driving with the overhead guard (FSD) folded down.

Protection is no longer provided to the operator if the overhead guard is folded down.

- Always bring the foldable overhead guard into the protective position if the working conditions permit.
- Fold down the folding overhead guard only if this is absolutely necessary to carry out the work (e.g. passing through low gates).
- Observe the operator's manual.

6.8.2.2 Description of the foldable overhead guard

The folding overhead guard (eps – easy protection system) can be folded down if required. This makes it possible for the vehicle to drive through low passages through which the vehicle would otherwise not be able to pass.



- 1 Two locking pins for front supports
- 2 Handle for front roof section
- 3 Front supports

- 4 Two handles for rear support
- 5 Rear support
- 6 Two locking pins for rear support

The overhead guard consists of two movable roof parts, which are connected by hinges. The front part of the roof is secured with two locking pins **1**. The roof parts are held by three supports. The front supports **3** are folded forward individually. The rear support **5** is secured with two locking pins **6** and is folded back together with the roof sections. Handles **2** and **6** are provided for folding the roof. Four gas struts support the folding process.

When the overhead guard is in the protective position, the roof sections protect the driver from falling objects and the rear support **5** serves as a ROPS protective structure.

6.8.2.3 Folding down the overhead guard

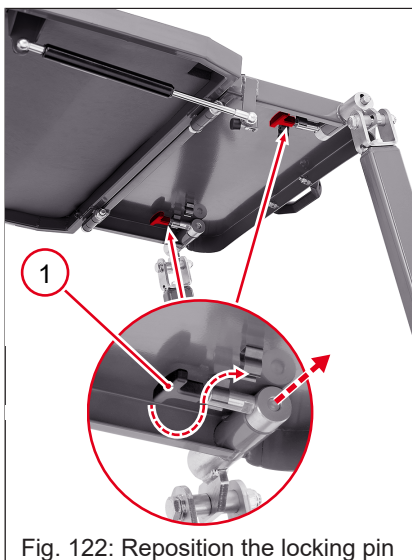


Fig. 122: Reposition the locking pin

Preparation

1. Park the vehicle on a stable, level and dry surface.
 2. Apply the parking brake.
 3. Lower the mast to the ground.
 4. Switch off the engine.
- ⇒ The overhead guard can be folded down.

Unlock the locking pin

1. Pull both levers of the locking pins **1** down out of the clamp.
 2. Pull out the locking pin.
 3. Press both levers of the locking pins upward into the other clamp.
- ⇒ The locking pins are loosened.

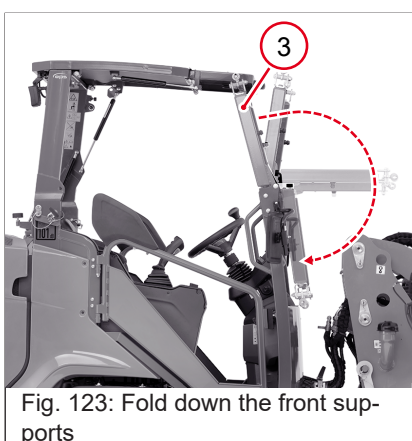


Fig. 123: Fold down the front supports

Fold the front supports forward

1. Press front supports **3** slightly outward to fold down.
 2. Grasp the front part of the roof by the handle and lift it slightly.
 3. Fold both front supports forward.
 4. Engage the front supports in the folded position in the brackets.
- ⇒ Supports are locked.

Fold down roof parts



⚠ CAUTION

Risk of injury from crushing between moving parts!

By overcoming the back pressure of the gas spring, the front part of the roof can collapse suddenly, which can cause crushing of the fingers.

- ▶ Do not reach for the hinges when folding down the overhead guard.
- ▶ Only use the handle provided for this purpose.
- ▶ Observe the operator's manual!



Fig. 124: Label Handle area for folding the EPS

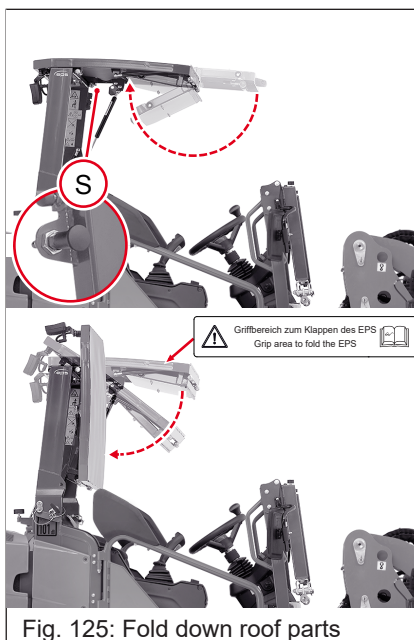
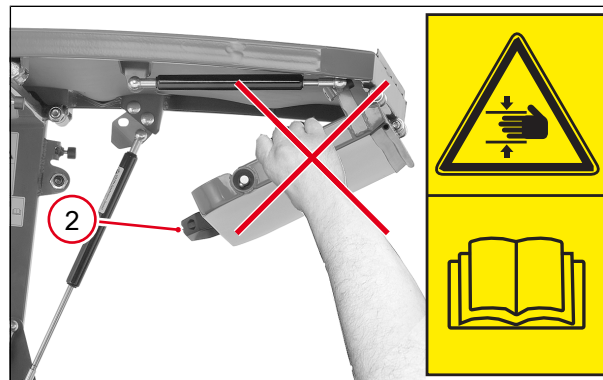


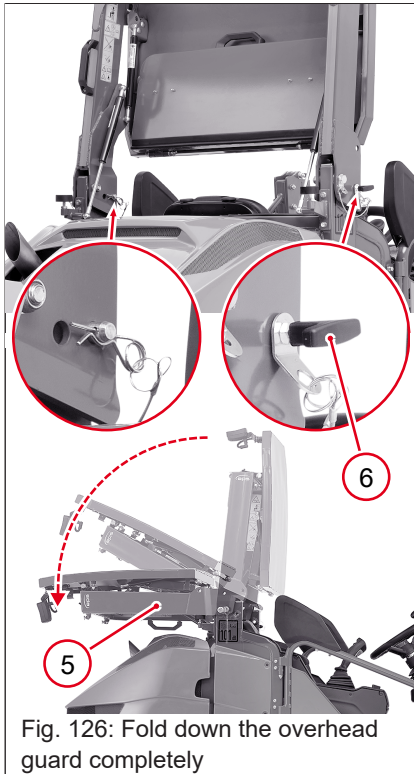
Fig. 125: Fold down roof parts

Use the provided handle **2** to fold down the front roof section.

The label "Handle area for folding the EPS" indicates where on the roof of the folding EPS overhead guard you must hold the handle when folding it down. It is not possible to jam the hands in this area.

1. Grasp the front part of the roof by the handle and pull it downwards.
2. Fold the front roof part under the rear roof part.
3. Pull the folded roof down and fold it back until the locking pin **S** engages.

⇒ Roof parts are folded.



Fold down the rear supports

- ✓ Roof parts are folded.
- 1. Remove the locking pin of the securing pin **6**.
- 2. Remove both securing pins **6** of the rear supports.
- 3. Fold back the rear support **5** together with the folded roof parts until they rest on the rubber buffers.
⇒ Rear support is folded down.
- 4. Reinsert and secure securing pin **6** of the rear supports.
⇒ The overhead guard is folded down.

6.8.2.4 Move overhead guard to protective position



⚠ WARNING

Risk of accidents due to falling objects

Falling objects can hit the operator and cause serious or fatal injuries.

- ▶ When "bringing into protective position" always make sure that all securing bolts (also those of the rear support) are correctly positioned and secured!

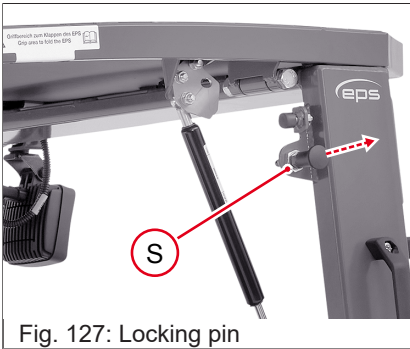


Fig. 127: Locking pin

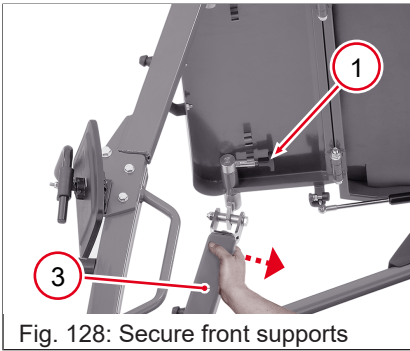


Fig. 128: Secure front supports

To bring the overhead guard into the protective position, proceed in the reverse order to "Fold down the overhead guard":

- ✓ Prepare the vehicle as described in "Folding down the overhead guard".
 - 1. Fold up the rear supports with the folded-in roof sections and secure them with the securing pins.
 - 2. Pull the securing pin **S** and unfold the folded roof sections.
 - 3. Fold up the front supports.
 - 4. To insert the front locking pins **1**, pull the front supports **3** slightly outwards.
- ⇒ When the overhead guard is fully unfolded and all pins are secured, the vehicle can be used again.

6.8.3 Operating the loader unit with a joystick

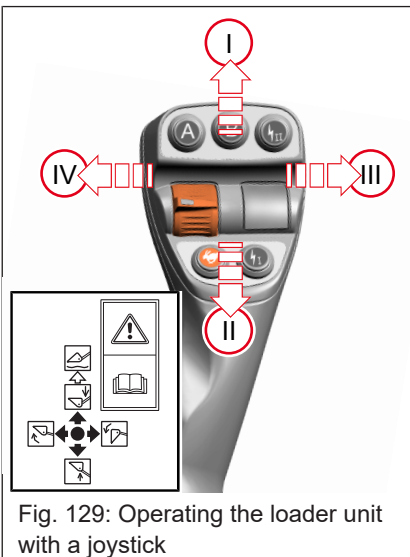


Fig. 129: Operating the loader unit with a joystick

The joystick controls the working movements of the loader unit. The joystick is located to the right of the seat. The control lever automatically returns to the middle position as soon as it is released (with the exception of the floating position).

- Move the lever in direction **I**.
⇒ The loader unit lowers itself.
- Move the lever in direction **II**.
⇒ The loader unit is raised.
- Move the lever in direction **III**.
⇒ Attachment tilts out.
- Move the lever in direction **IV**.
⇒ Attachment tilts in.

6.8.4 Using the joystick lock function



⚠ CAUTION

Risk of accident due to unintentional operation of the joystick when driving on the road!

Unintentional operation of the joystick can lead to unintentional movements of the loader unit. This can cause accidents that lead to injuries.

- ▶ Always lock the loader unit when driving on the road.
- ▶ Always lock the loader unit before leaving the vehicle.
- ▶ First take a seat on the seat, then unlock the joystick.

Using locking function

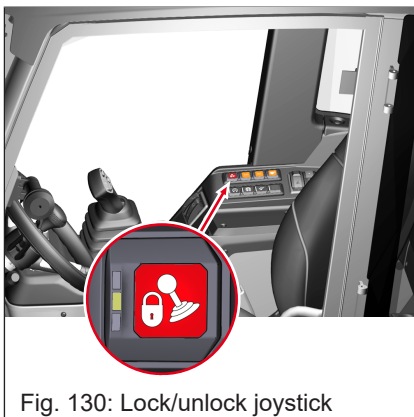


Fig. 130: Lock/unlock joystick

The joystick for the loader unit can be secured against unintentional actuation with the locking function. When the locking function is activated, it is not possible to operate the loader unit.

The lock function is operated with switch **1** on the keypad.

- Press switch.
 - ⇒ The LED in the switch illuminates.
- ⇒ Locking function is switched on.
- Press the switch again.
 - ⇒ The LED in the switch turns off.
- ⇒ Locking function is switched off.

6.8.5 Operating the differential lock



⚠ WARNING

Risk of accident due to locked differential!

An engaged differential lock can lead to accidents in curves. The differential can still be locked even though the symbol of the differential lock has disappeared from the display .

- ▶ Only switch on the differential lock during straight ahead vehicle travel.
- ▶ Ensure that the differential lock is released before driving in a curve.
- ▶ Turn the steering wheel slightly to the left and right, or change the travel direction to disengage the differential lock.



NOTICE

Damage to the gearbox due to locked differential!

- ▶ Only switch on the differential lock when the wheels are at a standstill.
- ▶ Only switch on the differential lock for loading work on loose or slippery ground.
- ▶ The symbol of the differential lock disappears from the display as soon as the switch is released. The differential may still be locked even though the symbol of the differential lock has disappeared from the display. The effect is a higher amount of force required for steering. Release the differential lock by slightly steering in both directions or by changing the driving direction.



Fig. 131: Button for differential lock

The differential is locked with the differential lock. This avoids uneven wheel spin. The differential lock in the axles prevents the differential gear from having a compensating effect, i.e. the driving force acts uniformly on all wheels.

Operate the differential lock with the button on the joystick.

- Press and hold the button.
 - ⇒ The differential lock is switched on.
- Release button.
 - ⇒ The differential lock is switched off.

6.8.6 Operate the thrust force limiter



Fig. 132: Control for thrust limiter

The thrust force of the vehicle can be regulated with controller 1. This can reduce wheel slip on slippery surfaces.

Operate the thrust force limiter:

- Turn the controller clockwise.
 - ⇒ Thrust increases.
 - ⇒ More wheel slip.
- Turn controller counterclockwise.
 - ⇒ Thrust decreases.
 - ⇒ Less wheel slip.

6.8.7 Switching on the floating position



▲ WARNING

Injury hazard due to uncontrolled movements of the loader unit!

Sudden lowering of the loader unit can lead to a loss of control over the vehicle. This may result in accidents that could result in serious injury or death.

- ▶ Do not switch on the floating position when the loader unit is raised.
- ▶ Only switch on the floating position when the loader unit is on the ground.

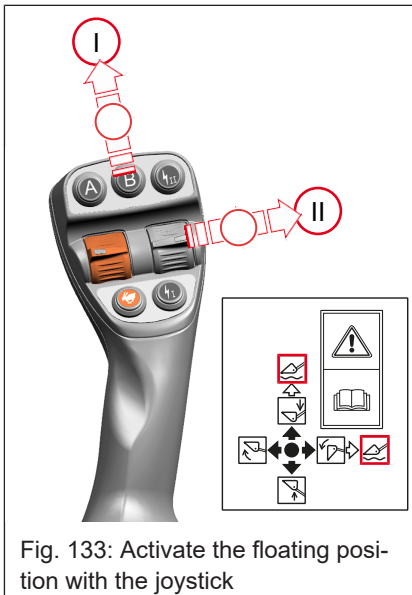


Fig. 133: Activate the floating position with the joystick

The floating position of the loader unit is located on the “Lower” and “Tilt-out” function. The floating position makes it possible to remove material for leveling a surface. To do this, lower the loader unit system to the ground with the cutting edge of the lightweight material /earth bucket and drive backwards over the surface to be leveled.

1. Lower the loader unit to the ground.
2. Move the joystick beyond the resistance towards I or II.
 - ⇒ The joystick engages.
 - ⇒ The floating position is switched on.
3. Move the joystick back to the middle position, beyond the resistance.
 - ⇒ The floating position is switched off.

6.8.7.1 Activating the floating position with the lowering brake valve

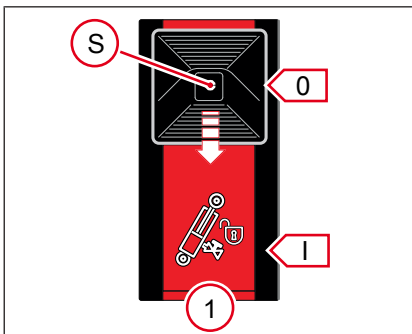



Fig. 134: Activating the floating position with the lowering brakes

If the vehicle is equipped with lowering brake valves, the lowering brake valves must be released before the floating position is switched on. Only then can the floating position be activated via the joystick. The lowering brake valves are released with the switch in the switch panel in the side console. The switch has two positions.

Bypassing the lowering brake valves is only possible in a lower position of the loader unit. The position of the loader unit is detected by an angle sensor on the left side of the loader unit.

1. Lower the loader unit to the ground.
2. Press lock **S** on the switch **1** in the direction of the arrow and move switch to position **I**.
 - ⇒ The symbol  appears on the display. Load lowering brake bypass is switched on.
 - ⇒ It is now possible to operate the loader unit in floating position.
3. Move the joystick beyond the resistance towards **I**.
 - ⇒ The joystick engages.
 - ⇒ The floating position is switched on.
4. Move the joystick beyond the resistance back to the middle position.
 - ⇒ The floating position is switched off.

After the work with the floating position has been completed, move the switch to position **0**.

6.8.8 Operating the loader unit stabilizer



NOTICE

Danger of technical damage to the hydraulic system!

- ▶ Switch on loader unit stabilizer only for transportation.
- ▶ Switch off the loader unit stabilizer for loading work.

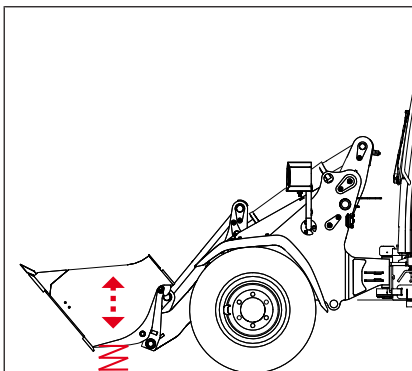


Fig. 135: Loader unit stabilizer function

The loader unit stabilizer dampens shocks that are transferred from the loader unit to the vehicle during vehicle travel on uneven ground at higher speed. This avoids pitching movements of the vehicle during travel operation.

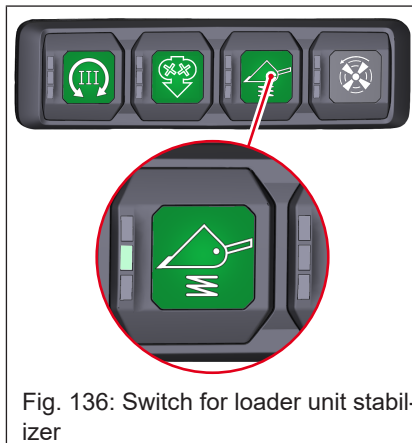




Fig. 136: Switch for loader unit stabilizer

The loader unit stabilizer is operated with the switch in the keypad of the side console:

1. Lower the loader unit.
2. Raise the loader unit approx. 20 cm above the ground.
 - ⇒ This allows the attachment to maintain sufficient clearance from the ground as a suspension travel.
3. Press switch.
 - ⇒ The LED in the switch illuminates.
 - ⇒ The symbol  appears on the display.
 - ⇒ The loader unit stabilizer is switched on.
- Press the switch again.
 - ⇒ The LED in the switch is off.
 - ⇒ The symbol  disappears on the display.
 - ⇒ The loader unit stabilizer is switched off.

If the vehicle is equipped with electric lowering brake valves, switching on the loader unit stabilizer automatically switches on the bypassing of the lowering brake valves. Switching on the loader stabilizing unit is possible only in a lower position of the loader unit.

6.8.9 Lowering the loader unit in case of engine malfunction



▲ WARNING

Accident hazard due to uncontrolled movements of the loader unit!

If the engine fails, the loader unit is no longer supplied with hydraulic oil. This may result in accidents that could result in serious injury or death.

- ▶ If the power supply to the vehicle should fail, the loader unit should be lowered immediately and carefully to the ground.
- ▶ Depressurize individual control circuits of the working hydraulics by actuating the joystick.

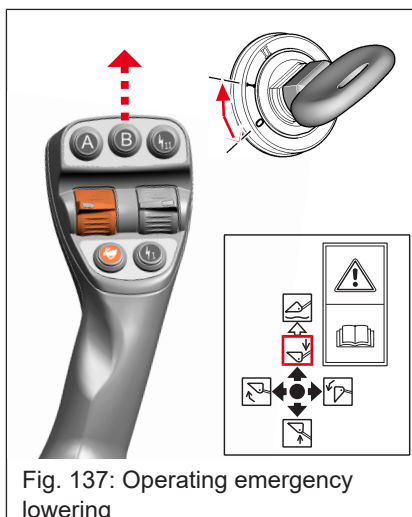
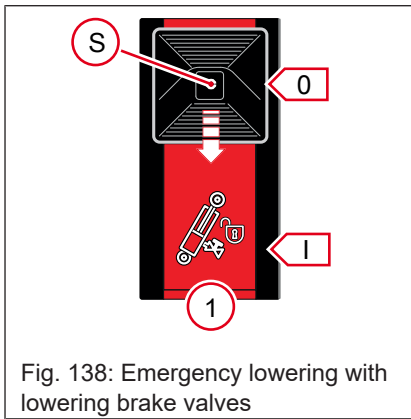


Fig. 137: Operating emergency lowering

The loader unit can only be operated during a limited period of time if the power supply fails. The loader unit must be lowered immediately after the power failure has been detected.

- ✓ Operator sits on the seat.
1. Move starting key to position I.
 - ⇒ Warning lights and control lights illuminate.
 2. Lower the loader unit with the joystick using the lower function.
 - ⇒ The loader unit lowers to the ground.



Vehicle with electrically unlockable lowering brake valves

If the vehicle is equipped with electrically unlockable lowering brake valves, the switch must first be set to position I.

✓ Operator sits on the seat.

1. Move starting key to position I.
⇒ The control lights illuminate.
2. Press lock **S** on the switch **1** in the direction of the arrow and move switch to position **I**.
3. Lower the loader unit with the joystick using the lower function.
⇒ The loader unit lowers to the ground.

Releasing residual pressure in the hydraulic system



⚠ WARNING

Risk of injury due to pressure!

A fine jet of hydraulic oil under high pressure can penetrate through the skin. This can cause serious injury.

- ▶ Seek medical attention immediately if hydraulic oil penetrates the skin or eyes.
- ▶ Only open hydraulic systems after the pressure in them has been released.
- ▶ Wear protective gloves and safety glasses.

If a hydraulic system is to be opened immediately after stopping the vehicle, the hydraulic system must first be depressurized. The loader unit can be operated during a limited period of time in case of engine malfunction.

The loader unit must be lowered immediately after the power failure has been detected. Reduce residual pressure in the hydraulic system as follows.

1. Lower the loader unit completely to the ground.
2. Stop the engine.
3. Move the joystick several times in all directions. Move all hydraulic system switches to zero position.
4. Unload the tank for the hydraulic oil by opening the fill opening.
⇒ The pressure in all hydraulic systems is released.

6.8.10 Coupling attachments

Notes on attachments



▲ WARNING

Risk of accident due to vehicle tipping over!

When the attachment is loaded, the weight ratios of the vehicle change. There is a tipping hazard, in particular in curves. This may result in an accident, which may result in serious injury or death.

- ▶ Keep the loader unit as close as possible to the ground during vehicle travel.
- ▶ Do not exceed the permissible payloads.
- ▶ Adapt the travel speed to the surrounding conditions and material to be loaded.
- ▶ Close the cab doors.
- ▶ Fasten your seat belt.



▲ WARNING

Risk of accident due to incorrect or damaged attachments!

Incorrect or damaged attachment can cause accidents, which can lead to serious injuries or death.

- ▶ Do not use attachments that are not approved.
- ▶ Use only approved attachments.
- ▶ Do not use damaged attachments.
- ▶ Before starting work, always check the attachments for damage, correct locking and firm installation.
- ▶ Do not work with a damaged attachment mount or lock.

Permissible attachments



NOTICE

Damage caused by non-approved attachments!

To prevent damage to the vehicle and attachments, only certain attachments are permitted for the vehicle, see [Permissible attachments on page 256](#).

- ▶ For the installation of attachments which are not listed there, approval must be obtained from the manufacturer of the vehicle and, if applicable, an EBE (individual type approval) from the competent authorities is required.
- ▶ If you have any questions relating to attachments, contact an authorized service center.

Only attachments approved by the vehicle manufacturer may be used. The vehicle manufacturer accepts no liability for the use of non-approved attachments.

Avoid overloading the vehicle. Do not use excessively large buckets for heavy loads.

If new hydraulic hose lines have to be laid for an attachment, contact an authorized service center. Only an authorized service center is allowed to install new hydraulic hoses.

Coupling attachments



⚠ WARNING

Risk of accident due to unintentional release of the attachment lock!

The locking of incorrectly locked attachments can disengage unintentionally. This may result in accidents that could result in serious injury or death.

- ▶ Always check for correct locking after attaching attachments.

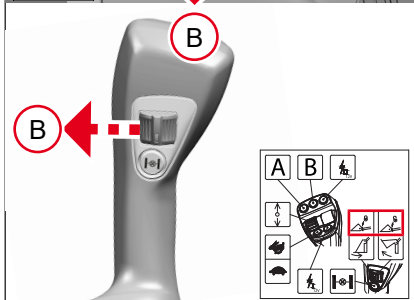
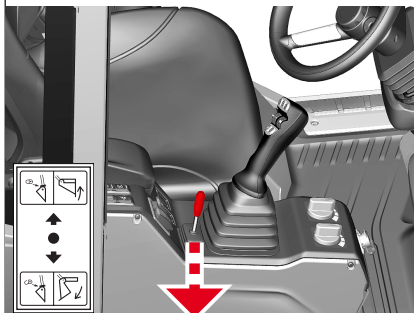
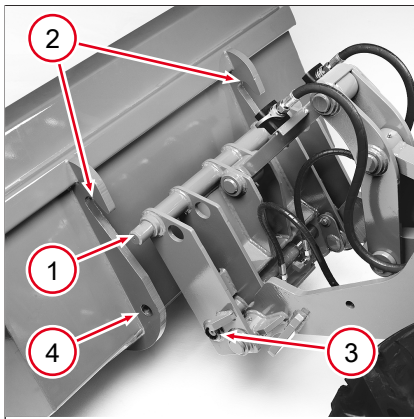


Fig. 139: Coupling and locking attachments

Coupling the attachment with the hydraulic power coupler

✓ The locking pins **3** must be fully retracted so that an attachment can be coupled. Retract to the locking pin: see [Uncoupling attachments on page 148](#).

1. Lower the loader unit.
2. Move the vehicle up to the attachment.
3. Position the pin **1** under catch hooks **2**.
4. Lift the loader unit and tilt in the attachment.
5. Depending on the version, move the additional control lever or the control wheel on the joystick in direction **B**.
6. Move switch on joystick in the direction .
 ⇒ Locking pin **3** moves into the holes **4**.
 ⇒ Attachment is locked.

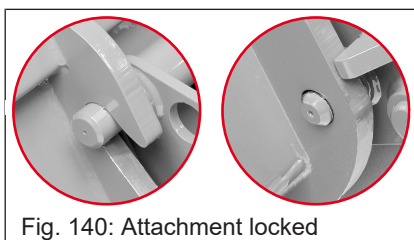


Fig. 140: Attachment locked

Check for correct locking

Both pins **1** must be anchored in the provided catch hooks **2**. Both lock pins **3** must be visible in the bores **4** provided on the attachment.

To check, additionally press the attachment onto the ground.

6.8.11 Releasing the pressure from the hydraulic connections

The hydraulic connections on the loader unit must be depressurized in order to be able to couple or uncouple hydraulic connections from attachments.

Optionally, the vehicle can be equipped with hydraulic connections that can be coupled and uncoupled under pressure.

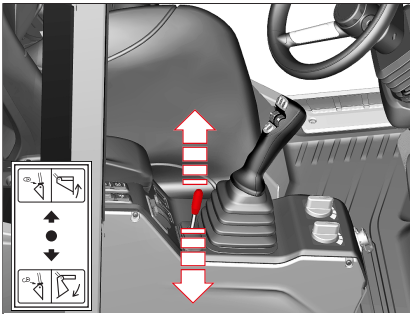


Fig. 141: Depressurizing by using the lever

Depressurizing hydraulic connections with the additional lever

1. Stop the engine of the vehicle.
 2. Move the lever repeatedly in either direction.
- ⇒ Hydraulic connections are pressureless and can be coupled or uncoupled.

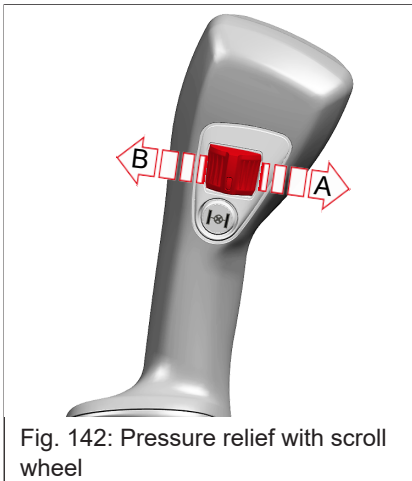


Fig. 142: Pressure relief with scroll wheel

Release hydraulic connections with the switch on the joystick

In this version, the hydraulic connections are depressurized using the switch on the joystick.

1. Stop the engine of the vehicle.
 2. Switch ignition of the vehicle to position I.
 3. Move the switch on the joystick repeatedly in either direction.
- ⇒ Hydraulic connections are pressureless and can be coupled or uncoupled.

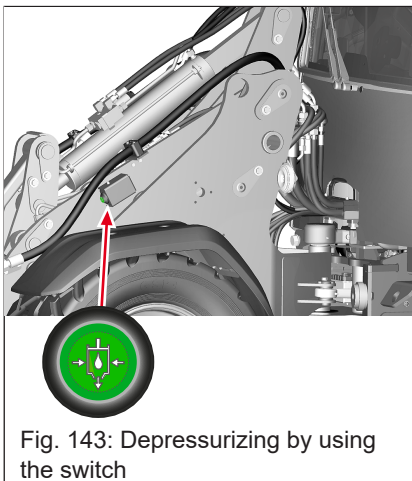


Fig. 143: Depressurizing by using the switch

Depressurizing the hydraulic connections by using the switch on the loader unit

In addition, the vehicle can be equipped with a pushbutton on the loader unit, which can also be used to depressurize the hydraulic connections. With this option it is not necessary to switch off the vehicle's engine.

✓ Attachment is attached and securely locked.

1. Stop the vehicle.
 2. Lower the loader unit.
 3. Apply the parking brake.
 4. Get out of the vehicle and press and hold the button briefly.
- ⇒ Hydraulic connections are pressureless and can be coupled or uncoupled.

6.8.12 Coupling and uncoupling the hydraulic connections



⚠ WARNING

Risk of injury due to pressure!

A fine jet of hydraulic oil under high pressure can penetrate through the skin. This can cause serious injury.

- ▶ Seek medical attention immediately if hydraulic oil penetrates the skin or eyes.
- ▶ Only open hydraulic systems after the pressure in them has been released.
- ▶ Wear protective gloves and safety glasses.



NOTICE

Soiled hydraulic connections can cause dirt to penetrate into the hydraulic system and cause damage!

- ▶ Clean hydraulic connections before connecting or disconnecting.
- ▶ Seal unused hydraulic connections with protective caps.
- ▶ Replace missing protective caps.



Environment

Hydraulic oil is harmful to the environment!

When coupling and uncoupling the hydraulic connections, hydraulic oil may leak.

- ▶ Avoid releasing it into the environment.
- ▶ When coupling and uncoupling, hold the tank under the hydraulic connections to catch any leaking hydraulic oil.
- ▶ Dispose of leaked hydraulic oil in an environmentally friendly manner.

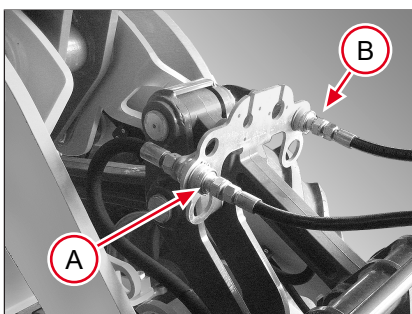


Fig. 144: Coupling hydraulic connections

- A Hydraulic connection left - flow
- B Hydraulic connection right - return flow

Coupling hydraulic connections

In order to be able to use hydraulically actuated attachments, the attachment's hydraulic connections must be coupled with the hydraulic connections on the loader unit.

- ✓ The attachment must be coupled with the loader unit and securely locked.
- ✓ The hydraulic connections are depressurized.
- 1. Remove the protective caps from the hydraulic connections on the loader unit.
 - ⇒ To do this, press the hydraulic connections with the hydraulic hose forward.
- 2. Remove the protective caps from the hydraulic connections on the attachment.
- 3. Push the hydraulic connections from the attachment into the opening of the hydraulic connections on the loader unit.
- 4. To check whether the hydraulic connections are correctly engaged, gently pull the hydraulic hoses from the attachment.
 - ⇒ Ensure that the hydraulic connections do NOT come loose.
- 5. Check that the attachment's hydraulic system and the hydraulic connections do not leak.
 - ⇒ Hydraulic connections are coupled.

For working with attachments: [see Operating the front hydraulic connections on page 149.](#)

Uncoupling the hydraulic connections

- ✓ The hydraulic connections are depressurized.
- 1. Place a tray under the hydraulic connections to catch any hydraulic oil leakage.
- 2. Release the hydraulic connections.
 - ⇒ To do this, press the hydraulic connections on the loader unit forward and simultaneously pull on the hydraulic hose of the attachment.
 - ⇒ Hydraulic connection is disconnected.
- 3. Fit the protective caps onto the hydraulic connections.
- 4. Place the hydraulic lines over the attachment.
 - ⇒ The attachment can be uncoupled.

6.8.13 Uncoupling attachments



CAUTION

Injuries due to tipping over of removed attachments!

Attachments that tip over can cause injury to persons.

- ▶ Ensure that no one is in the danger zone.
- ▶ Only park the attachments on firm and level ground.
- ▶ Close attachments with moving parts (e.g. grab bucket).
- ▶ Ensure the safe and stable position of the attachment, if necessary use supports provided for this purpose.

Uncoupling the attachment with hydraulic power coupler

The hydraulic lock is enabled with the switch. The switch is located in the switch panel in the instrument panel. The switch has two switch positions.

- ✓ Lower the attachment only to firm, level ground and secure it to prevent it from tipping over or rolling away.

1. Lower the loader unit.
2. Press the lock (S) in the switch downwards.
3. Move switch to position I and hold.
4. Depending on the version, move the additional control lever or the control wheel on the joystick in direction A.
 - ⇒ The lock pins are retracted.
5. Lower the loader unit and tilt out the attachment.
 - ⇒ The pins are released from the catch hooks.
6. Drive the vehicle back as soon as the hooks are released.
 - ⇒ The attachment is uncoupled.

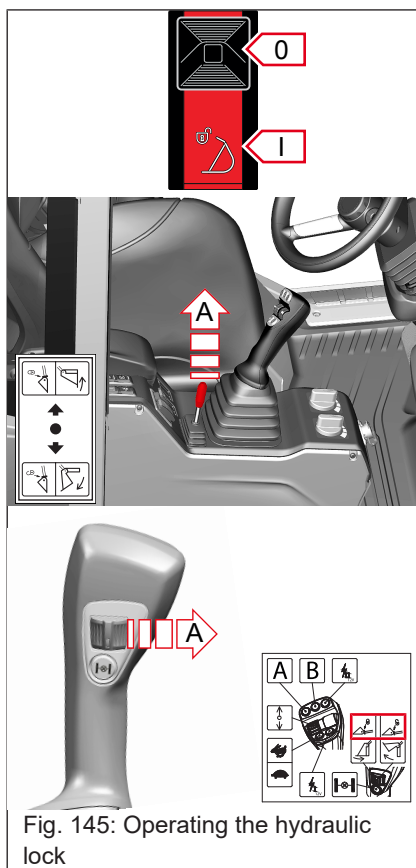


Fig. 145: Operating the hydraulic lock

6.9 Operating the front hydraulic connections

6.9.1 Hydraulic connections on the loader unit



NOTICE

Soiled hydraulic connections can cause dirt to penetrate into the hydraulic system and cause damage!

- ▶ Clean hydraulic connections before connecting or disconnecting.
- ▶ Seal unused hydraulic connections with protective caps.
- ▶ Replace missing protective caps.

The vehicle is equipped as standard with hydraulic connections of the third control circuit on the loader unit. The hydraulic hoses of attachment with hydraulic functions can be coupled to these hydraulic connections - see [Coupling and uncoupling the hydraulic connections on page 147](#).

As an option, the following hydraulic connections can be installed on the loader unit:

- Additional hydraulic connections fourth control circuit
- Hydraulic connections Unpressurized return flow, leak oil line
- High Flow hydraulic connections
- Hydraulic connections Multi-quick coupler

6.9.2 Operating standard hydraulic connections

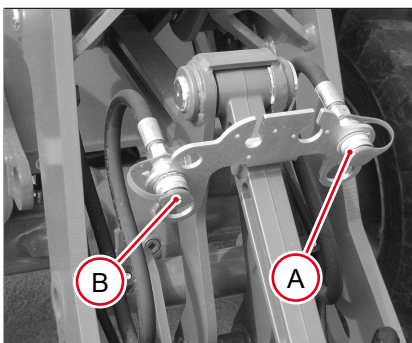


Fig. 146: Hydraulic connections

- A Left hydraulic connection
- B Right hydraulic connection

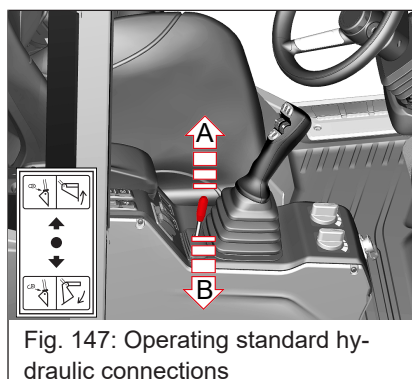
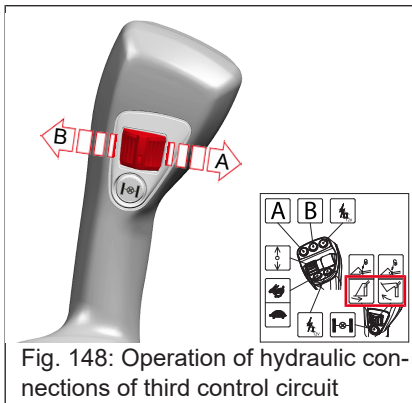


Fig. 147: Operating standard hydraulic connections

Operating hydraulic connections with the control lever

The hydraulic connections on the loader unit are operated using the control lever for the standard hydraulic connections on the right side. The control lever automatically returns to its zero position as soon as it is released.

- Move the control lever in direction **A**.
⇒ Hydraulic connection **A** is the pressure side, hydraulic connection **B** is the return line.
- Move the control lever in direction **B**.
⇒ Hydraulic connection **A** is the return line, hydraulic connection **B** is the pressure side.



Operation of hydraulic connections with the control wheel

The hydraulic connections on the loader unit can be operated with the control wheel on the joystick. The control wheel automatically returns to its zero position as soon as it is released.

- Move the control wheel on the joystick in direction **A**.
 - ⇒ Hydraulic connection **A** is the pressure side, hydraulic connection **B** is the return line.
- Move the control wheel on the joystick in direction **B**.
 - ⇒ Hydraulic connection **A** is the return line, hydraulic connection **B** is the pressure side.

6.9.3 Standard hydraulic connections in continuous operation



NOTICE

Damage due to overheating of the hydraulic system!

When continuous operation is switched on and no attachment is connected, the hydraulic system overheats very quickly.

- ▶ Always bring the auxiliary lever or switch for continuous operation to the zero position when continuous operation is not required.

With this function the hydraulic connections can be operated in continuous operation. The scroll wheel then does not need to be operated continuously. This function is required for certain attachments that have a hydraulic oil engine that must be supplied with a continuous flow of oil, e.g. sweeping brushes.

The continuous operation of the hydraulic connections on the loader unit must be operated in different ways depending on the design of the vehicle:

Operating standard hydraulic connections in continuous operation via additional lever

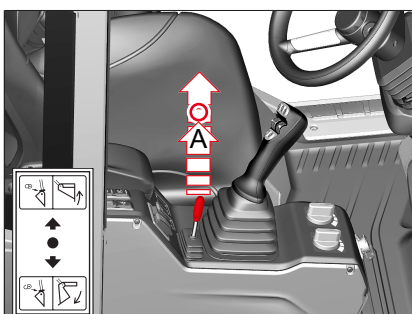


Fig. 149: Continuous operation via additional control lever

- Move the additional lever beyond the resistance in direction **A**.
 - ⇒ The continuous operation for the hydraulic connections is switched on. Hydraulic connection **A** is the pressure side, hydraulic connection **B** is the return line.
- Move the additional lever over the resistor back to the middle position.
 - ⇒ Continuous operation is switched off.

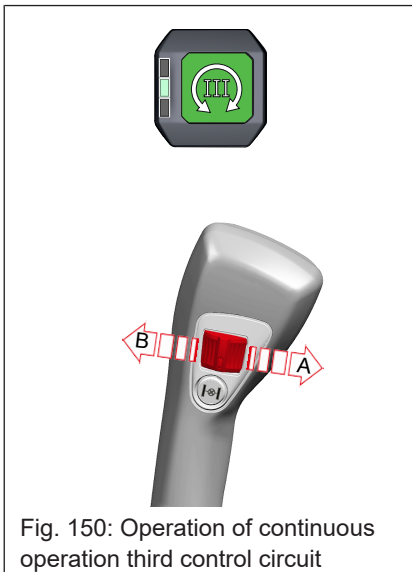




Fig. 150: Operation of continuous operation third control circuit

Continuous operation of the hydraulic connections by operating the scroll wheel

The continuous operation function of the hydraulic connections is activated using the switch in the keypad panel in the side console.


- Press switch.
 - ⇒ The LED in the switch illuminates.
 - ⇒ Continuous operation function is activated.
- Move the scroll wheel in direction **A** and release it.
 - ⇒ Symbol  illuminates in the display.
 - ⇒ Continuous operation is switched on. Hydraulic connection **A** is pressure side, hydraulic connection **B** is return flow.

If necessary, the continuous operation of the hydraulic connections can also be switched to the right-hand hydraulic connection.

- Move the scroll wheel in direction **B** and release it.
 - ⇒ Symbol  illuminates in the display.
 - ⇒ Continuous operation is switched on. Hydraulic connection **A** is return, hydraulic connection **B** is pressure side.


Switch off continuous operation of hydraulic connections

If continuous operation is to be interrupted only briefly, proceed as follows:

- ✓ Continuous operation is switched on.
- Move the scroll wheel in direction **A** and release it.
 - ⇒ Symbol  illuminates in the display again.
 - ⇒ Continuous operation is disabled.
- Move the scroll wheel again in any direction.
 - ⇒ Continuous operation is enabled again.

Switch off continuous operation of hydraulic connections

If continuous operation is no longer needed, proceed as follows:

- Press the switch again.
 - ⇒ The LED in the switch goes out
 - ⇒ Symbol  disappears from the display.
 - ⇒ Continuous operation function is disabled.

Oil volume adjustment during continuous operation of the hydraulic connections



Fig. 151: Controller for oil volume adjustment

Controller 1 can be used to regulate the oil volume during continuous operation of the hydraulic connections. This allows the speed of hydraulically driven work tools to be continuously adjusted during operation.

Operating the oil volume setting:

- ✓ Continuous operation is switched on.
- Turn the controller clockwise.
 - ⇒ The oil volume at the hydraulic connections increases.
 - ⇒ Rotational speed on the attachment increases.
- Turn controller counterclockwise.
 - ⇒ Oil volume at the hydraulic connections decreases.
 - ⇒ Rotational speed of the attachment decreases.

6.9.4 Operating additional hydraulic connections

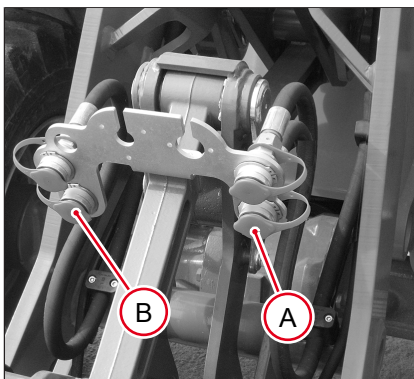


Fig. 152: Additional hydraulic connections on the loader unit

- A** Hydraulic connection left – flow
- B** Hydraulic connection right - return flow

This function can be used to operate additional hydraulic connections on the loader unit. This function is necessary if the standard hydraulic connections are not sufficient for certain attachments.

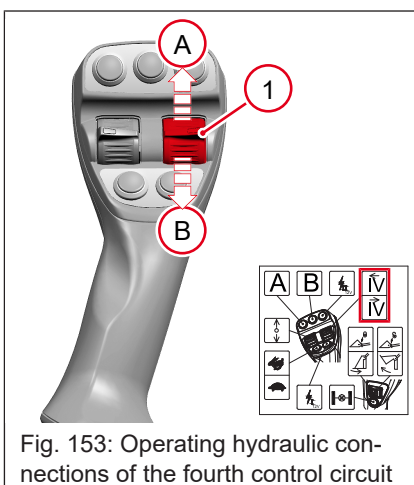


Fig. 153: Operating hydraulic connections of the fourth control circuit

Operating additional hydraulic connections with the scroll wheel

The hydraulic connections are operated with the scroll wheel 1 in the joystick.

1. Move scroll wheel 1 in direction **A**.
 - ⇒ Left hydraulic connection is pressure side, right hydraulic connection is return flow.
2. Move scroll wheel 1 in direction **B**.
 - ⇒ Left hydraulic connection is return flow, right hydraulic connection is pressure side.

Releasing the pressure on additional hydraulic connections

To couple the additional hydraulic connections, they must first be depressurized.

1. Switch off the engine of the vehicle.
2. Move starting key to position I.
3. Move the scroll wheel **1** back and forth several times.
 - ⇒ The hydraulic connections on the loader unit are depressurized.

Coupling and uncoupling additional hydraulic connections

To couple and uncouple the hydraulic connections, see [Coupling and uncoupling hydraulic connections on page 147](#).

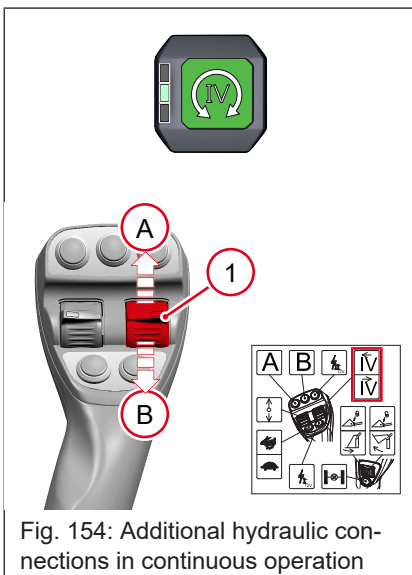


Fig. 154: Additional hydraulic connections in continuous operation

The continuous operation function of the additional hydraulic connections is activated with the switch in the keypad panel in the side console.

- Press switch.
 - ⇒ The LED in the switch illuminates.
 - ⇒ Continuous operation function is activated.
- Press the switch again.
 - ⇒ Continuous operation function is disabled.
 - ⇒ The LED in the switch goes out.

For operating see [Standard hydraulic connections in continuous operation on page 150](#).



6.9.5 Hydraulic connections Unpressurized return flow, leak oil line



NOTICE

Technical damage to hydraulic components of attachments!

Excessive oil flow in the leakage oil line can lead to technical damage to hydraulic oil engines.

- ▶ Only connect leakage oil lines from attachments.
- ▶ Do not connect any hydraulic connections that lead to larger oil volumes.
- ▶ Changes to the hydraulic connections, e.g. from replacing couplings, are not allowed.

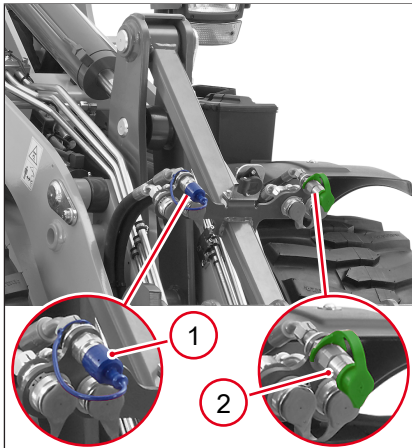


Fig. 155: Hydraulic connections: un-pressurized return, leak oil line

The hydraulic connections for unpressurized return flow and leakage oil line are located on the loader unit. The hydraulic connections are designed in such a way that they cannot be confused with other hydraulic connections.

Return without pressure

For certain attachments on which components are driven by a hydraulic oil engine, a pressureless return flow is required. This connection returns the return oil of the hydraulic oil engine of an attachment directly to the hydraulic oil tank of the vehicle. The connection for the pressureless return flow is located at position **1** at the front of the loader unit.

Leak oil line

A leakage oil line is required for certain attachments on which components are driven by a hydraulic oil engine. This connection returns the leakage oil from the hydraulic oil engine of an attachment directly to the hydraulic oil tank of the vehicle. The connection for the leakage oil line is located at the front of the loader unit at position **2**.

For coupling and uncoupling of pressureless return flow and leak oil line: [see Coupling and uncoupling the hydraulic connections on page 147](#). These hydraulic connections do not have to be relieved of pressure for coupling.

6.9.6 Operating hydraulic connections High-Flow

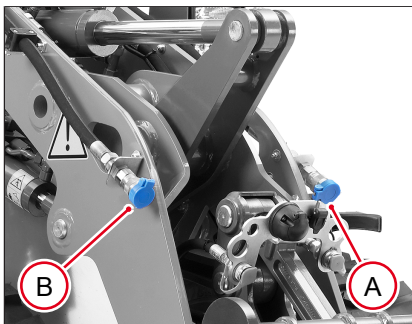


Fig. 156: Operating hydraulic connections High-Flow

- A** Operating hydraulic connection High-Flow left
- B** Operating hydraulic connection High-Flow right

The “High Flow” hydraulic connections are located on the right and left of the loader unit. These connections are necessary for the operation of attachments which are constantly driven with high oil volume.

For coupling and uncoupling the high flow hydraulic connections [see Coupling and uncoupling the hydraulic connections on page 147](#).



NOTICE

Damage due to overheating of the hydraulic system!

When High-Flow is switched on and no attachment is connected, the hydraulic system overheats very quickly.

- ▶ Always bring the High Flow switch to zero position when the High Flow is not needed.

Switching High-Flow on and off

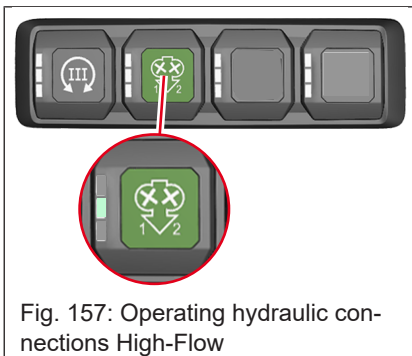


Fig. 157: Operating hydraulic connections High-Flow

The High Flow hydraulic connections are operated using the switch in the keypad panel on the side console.

- Press switch.
 - ⇒ The LED in the switch illuminates.
 - ⇒ High Flow is switched on.

Switching off High Flow hydraulic connection:

- Press the switch again.
 - ⇒ The LED in the switch goes out.
 - ⇒ High Flow is switched off.

6.9.7 Operating the hydraulic connections Multi-quick coupler

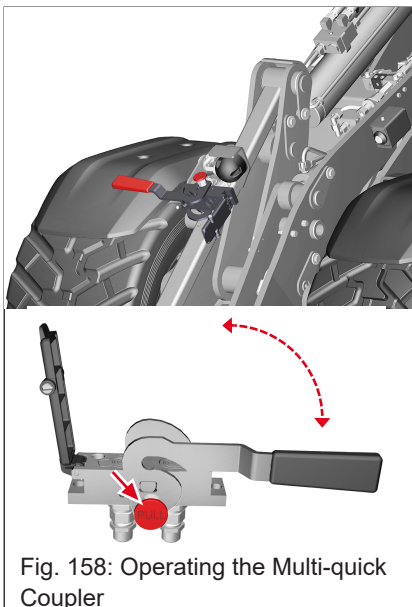


Fig. 158: Operating the Multi-quick Coupler

The hydraulic connections multi-quick couplers are located on the loader unit. With this option, several hydraulic connections can be coupled simultaneously in a simple and time-saving manner. The attachment must have the appropriate counterparts.

To couple the multi-quick coupler hydraulic connections, the hydraulic connections must first be depressurized. Depressurize the hydraulic connections: [see Coupling attachments on page 142](#).

For the operation of the hydraulic connections see:

- Operating standard hydraulic connections
- Operating additional hydraulic connections

Coupling the hydraulic connections multi-quick coupler

- ✓ The hydraulic connections are depressurized.
1. Pull out the red safety button.
 - ⇒ The locking clip is unlocked.
 2. Flip the locking clip over.
 3. Open the protective cap.
 4. Put on the counterpart of the attachment.
 5. Flip the locking clip over.
 - ⇒ The red safety button engages.
- ⇒ Hydraulic connections are coupled and can be operated.

Uncoupling hydraulic connections multi-quick coupling

- ✓ The hydraulic connections are depressurized.
- 1. Pull out the red safety button.
 - ⇒ The locking clip is unlocked.
- 2. Flip the locking clip over.
- 3. Remove counterpart from the attachment.
- 4. Close the protective cap so that the hydraulic connections do not become dirty.
- 5. Flip the locking clip over.
 - ⇒ The red safety button engages.
 - ⇒ Hydraulic connections are uncoupled.

6.10 Operating the rear hydraulic connections

6.10.1 Double-acting rear hydraulic connections



NOTICE

Soiled hydraulic connections can cause dirt to penetrate into the hydraulic system and cause damage!

- ▶ Clean hydraulic connections before connecting or disconnecting.
- ▶ Seal unused hydraulic connections with protective caps.
- ▶ Replace missing protective caps.



NOTICE

Damage due to overheating of the hydraulic system!

When continuous operation is switched on and no attachment is connected, the hydraulic system overheats very quickly.

- ▶ Always bring the auxiliary lever or switch for continuous operation to the zero position when continuous operation is not required.

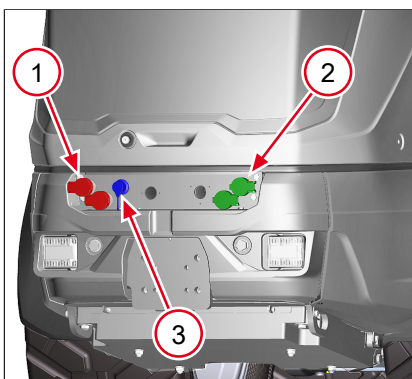


Fig. 159: Rear hydraulic connections

- 1 Rear hydraulic connections
- 2 Additional hydraulic connections at the rear
- 3 Pressureless return flow

Coupling and uncoupling the hydraulic connections at the rear

To couple and uncouple the hydraulic connections at the rear, they must first be depressurized:

1. Stop the engine.
2. Switch on ignition.
3. Press rocker switch several times in all positions.
 - ⇒ The hydraulic connections at the rear are depressurized.

Coupling/uncoupling hydraulic connections at the rear: [see Coupling and uncoupling the hydraulic connections on page 146](#).

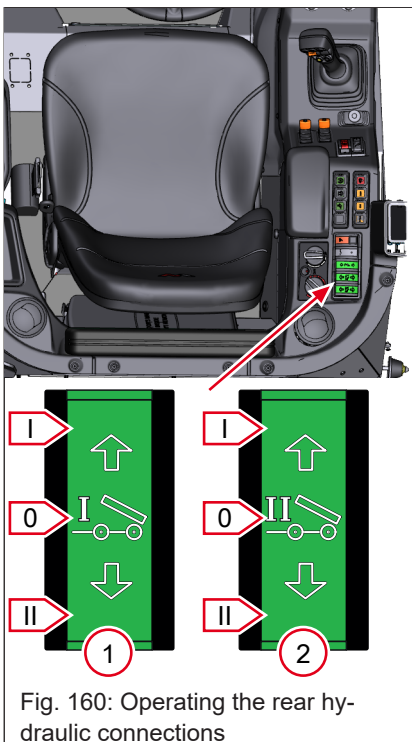


Fig. 160: Operating the rear hydraulic connections

Operating the rear hydraulic connections

The hydraulic connections at the rear are controlled with switches **1** and **2** in the switch panel in the side console. The switches have three positions.

The hydraulic connections, which are fitted with red protective caps, are operated with switch **1**. The hydraulic connections, which are fitted with green protective caps, are operated with switch **2**. One hydraulic connection each is pressure side and one hydraulic connection is return flow.

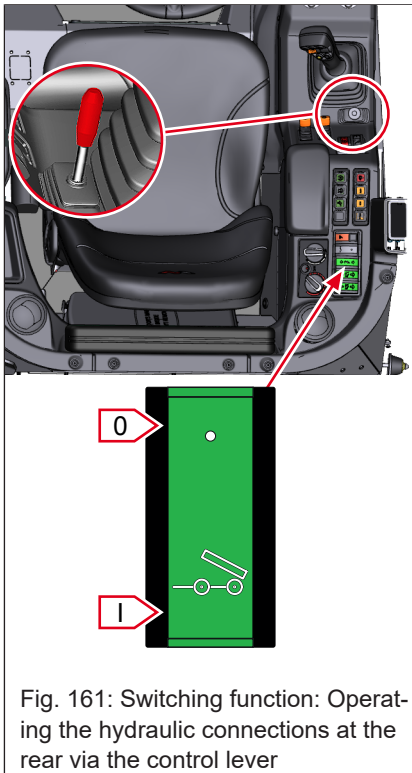
- Move switch to position **I** and hold.
 - ⇒ Hydraulic connections at the rear are switched on.
- Release switch.
 - ⇒ Switch returns to position **0**.
 - ⇒ The rear hydraulic connections are switched off.

Continuous operation:

- Move the switch to position **II**.
 - ⇒ Switch remains in position **II**.
 - ⇒ Continuous operation is switched on.
- Move the switch to position **0**.
 - ⇒ Continuous operation is switched off.



6.10.2 Operate hydraulic connections at the rear using control lever



The vehicle can be optionally equipped with a switch-over function. The switch-over function enables hydraulic connections at the rear to be operated via the auxiliary lever for the third control circuit.

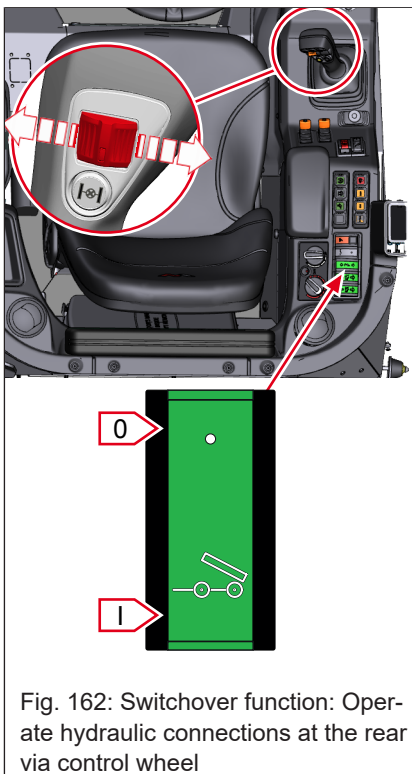
If this function is used, the hydraulic connections can also be used in continuous operation. To operate the hydraulic connections in continuous operation: see [Standard hydraulic connections in continuous operation on page 150](#). The hydraulic connections on the loader unit and the rear hydraulic connections cannot be operated at the same time for this function.

The function is switched via the button in the switch panel in the side console. The switch has two switch positions.

- Move the switch to position **I**.
 - ⇒ Rear hydraulic connections can be operated using the auxiliary lever.
- Move the switch to position **0**.
 - ⇒ Hydraulic connections on the loader unit can be operated with the auxiliary lever.

Fig. 161: Switching function: Operating the hydraulic connections at the rear via the control lever

6.10.3 Operating rear hydraulic connections with the scroll wheel



The vehicle can be optionally equipped with a switch-over function. The switch-over function enables the rear hydraulic connections rear to be operated via the scroll wheel for the third control circuit on the joystick.

If this function is used, the hydraulic connections can also be used in continuous operation. To operate the hydraulic connections in continuous operation: see [Standard hydraulic connections in continuous operation on page 150](#). The hydraulic connections on the loader unit and the rear hydraulic connections cannot be operated at the same time for this function.

The function is switched via the button in the switch panel in the side console. The switch has two switch positions.

- Move the switch to position **I**.
 - ⇒ Rear hydraulic connections can be operated using the joystick scroll wheel.
- Move the switch to position **0**.
 - ⇒ Hydraulic connections on the loader unit can be operated with the scroll wheel on the joystick.

Fig. 162: Switchover function: Operate hydraulic connections at the rear via control wheel

6.10.4 Return without pressure at the rear

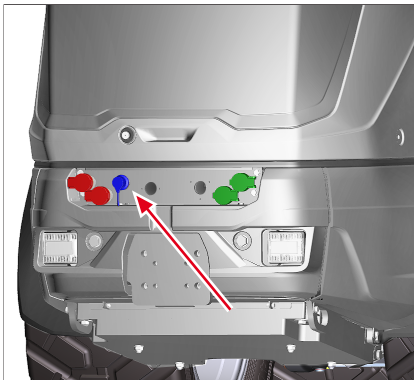


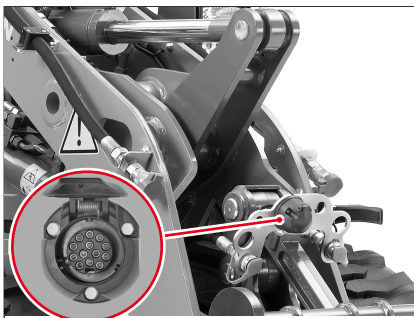
Fig. 163: Return without pressure at the rear

For some attachments or trailers where components are driven by a hydraulic oil engine, an unpressurized return flow is required. This connection returns the return oil of the hydraulic oil engine directly to the hydraulic oil tank of the vehicle. The hydraulic connection for the unpressurized return flow is located on the right-hand side of the rear of the vehicle and is fitted with a blue protective cap.

Coupling and uncoupling from the unpressurized return flow at the rear: see [Coupling and uncoupling the hydraulic connections on page 146](#). However, the pressure does not have to be relieved from this hydraulic connection for coupling.

6.11 Operating electrical functions

6.11.1 Operating the 13-pole plug receptacle at the loader unit



The 13-pin plug receptacle is used to connect attachments equipped with lights, e.g. snow plow, street sweeper, etc.

Moreover, the 13-pin plug receptacle is necessary for connecting attachments that have certain electrically operated functions.

Operating the electrical functions I and II.

The electrical functions I and II are operated with the control buttons I and 2 on the joystick.

Pushbutton function:

- Press the control button 1 and hold down.
 - ⇒ The symbol ⚡¹ appears on the display.
 - ⇒ The electrical function I is activated.
- Release control button 1.
 - ⇒ The symbol ⚡¹ disappears on the display.
 - ⇒ The electrical functions I is deactivated.

Hold function:

- Press control button 2.
 - ⇒ The symbol ⚡₂ appears on the display.
 - ⇒ The electrical function II is activated.
- Press control button 2 again.
 - ⇒ The symbol ⚡₂ disappears on the display.
 - ⇒ The electrical function II is deactivated.

The pushbutton and hold function are possible on both control buttons. The operation occurs in the same way.

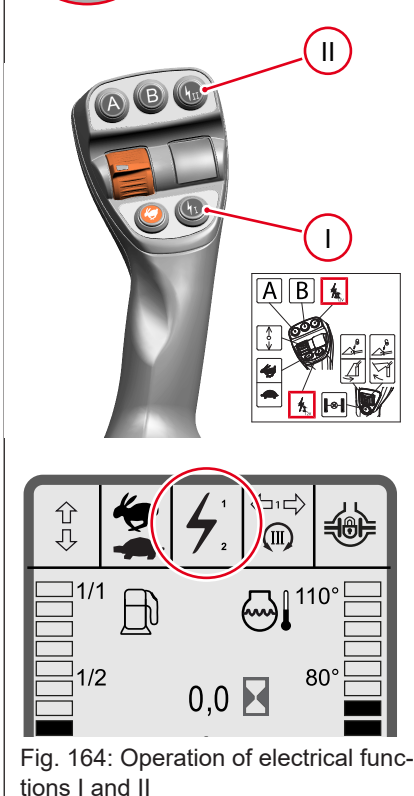


Fig. 164: Operation of electrical functions I and II

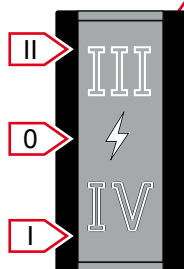


Fig. 165: Operation of electrical functions III and IV

Operating the electrical functions III and IV

The electrical functions **III** and **IV** are operated with the switch **1**. The switch has three switch positions.

- Move the switch to position **III**.
 - ⇒ The symbol ⚡ appears on the display.
 - ⇒ The electrical function **III** is activated.
- Move the switch to position **0**.
 - ⇒ The symbol ⚡ disappears on the display.
 - ⇒ The electrical function **III** is deactivated.
- Move the switch to position **IV**.
 - ⇒ The symbol ⚡ appears on the display.
 - ⇒ The electrical function **IV** is activated.
- Move the switch to position **0**.
 - ⇒ The symbol ⚡ disappears on the display.
 - ⇒ The electrical function **IV** is deactivated.

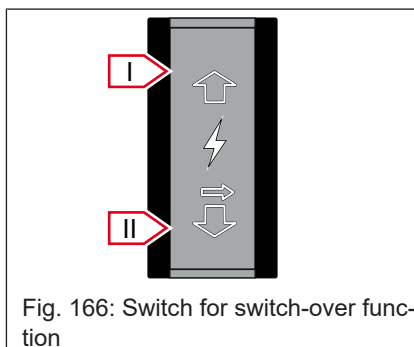


Fig. 166: Switch for switch-over function

The operation of the electrical functions **III** and **IV** can be switched over with a switch-over function on the rear plug receptacle.

For operation of the electrical functions **III** and **IV** of the 13-pole plug receptacle at the loader unit, the switch for the switch-over function must be switched to position **I**.

6.11.2 Operating 3-pole plug receptacle at the rear

The electric 3-pin plug receptacle at the rear is required for the connection of rear attachments or trailers with specific electric functions.

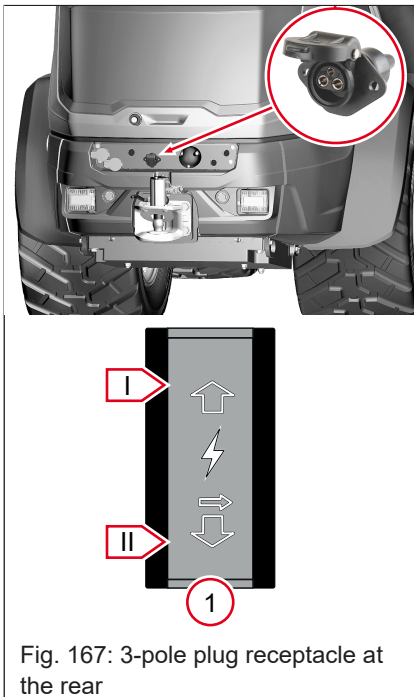


Fig. 167: 3-pole plug receptacle at the rear

Switch-over function for electrical functions

In order to operate the 13-pole plug receptacle on the loader unit and the 3-pole electrical plug receptacle on the rear, the vehicle must be equipped with a switch-over function. The switch-over function is operated using the switch **1**. The switch has two switch positions.

The 3-pole electric plug receptacle on the rear is equipped with the electrical functions **III** and **IV**. The electrical functions **I** and **II** are not available.

- Move the switch to position **II**.
⇒ The 3-pole electrical plug receptacle at the rear can be operated.
- Move the switch to position **I**.
⇒ The 13-pole plug receptacle on the loader unit can be operated.

Operation occurs as described in the section "Operating the electrical functions III and IV."

6.11.3 3 pole plug receptacle in the cab

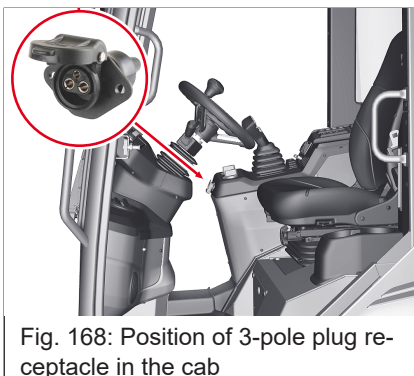


Fig. 168: Position of 3-pole plug receptacle in the cab

The 3-pole electrical plug receptacle in the cab is required for attachments which require a continuous current connection (e.g. electrically driven salt spreader).

6.11.4 7-pole plug receptacle at the rear

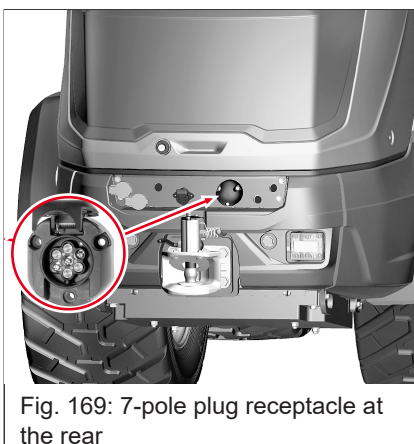


Fig. 169: 7-pole plug receptacle at the rear

This plug receptacle is used for connecting lights, turn signals and electrical devices on the trailer or attachment. Always install additional lights on an attachment if the rear lights and other lights are covered by the attachment.



6.12 Working with attachments

6.12.1 Warnings regarding work operation



⚠ WARNING

Crushing hazard due to tipping over of vehicle!

There is an increased risk of tipping when driving in curves. This may cause crushing which may result in serious injury or death.

- ▶ Keep the loader unit lowered during vehicle travel.
- ▶ Adapt the driving speed to the ambient conditions.
- ▶ Adapt the driving speed to the material loaded.
- ▶ Pay attention to persons and obstacles.
- ▶ Observe tipping limit of the vehicle.
- ▶ Reduce speed before downhill travel.
- ▶ Always fasten your seat belt.
- ▶ Ensure that no parts of the body protrude outside the vehicle.
- ▶ Carefully steer the vehicle if the loader unit is raised.
- ▶ Do not exceed the permissible payload.



⚠ WARNING

Accident hazard due to persons in the risk zone!

Persons who are in the risk zone of the vehicle or suddenly enter it can be injured by working movement or the moving vehicle. This may result in accidents that could result in serious injury or death.

- ▶ Interrupt work immediately if persons enter the risk zone.
- ▶ Adjust the mirror correctly. Use visual aids such as, e.g. a camera.
- ▶ Observe extreme caution when reversing.



⚠ CAUTION

Accident hazard due to overload and sudden movements!

Overload and sudden movements can cause accidents and injury.

- ▶ Take into account the vehicle's payloads.
- ▶ Actuate the control lever carefully.



Information

Adjust the travel speed when driving into the material to be loaded according to its type and the given conditions.

Avoid too much wheel spin. Tire wear and fuel consumption increase unnecessarily and the vehicle's output is not fully utilized.

6.12.2 Described attachments

This operator's manual describes exclusively the use of the following attachments.

- Light-weight materials bucket
- Earth bucket
- Earth bucket with digging teeth
- 4-in-1 bucket
- Pallet fork
- Fork-and-grab attachment

If other attachments are to be used with the vehicle, only use permissible attachments, [see Permissible attachments on page 256](#).

If other attachments are to be used, the operator's manual for the attachments must be observed. Specific operator's manuals can be ordered from your dealer.

6.12.3 Level indicator for attachments

The level indicator for attachments allows you to better estimate the tilt position of the attachment.

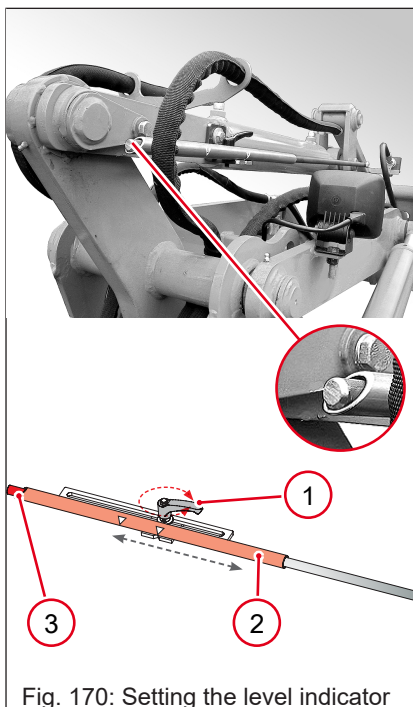


Fig. 170: Setting the level indicator

Setting the level indicator

1. Lift the attachment slightly and align the lower side parallel to the ground.
2. Release lever **1** by turning it counterclockwise.
3. Move the guide tube **2** so that the indicator rod **3** ends with the end of the guide tube.
4. Tighten lever **1** by turning it clockwise.
5. In the lowered position of the loader unit, the underside of the attachment is parallel to the ground when the indicator rod ends with the end of the guide tube.

When using different attachments, a mark can be made on the guide tube for each attachment.

6.12.4 Indicator for the position of the loader unit

Adjusting the loader unit to the indicated height prevents the attachment from touching the ground while driving and the headlights from being concealed.

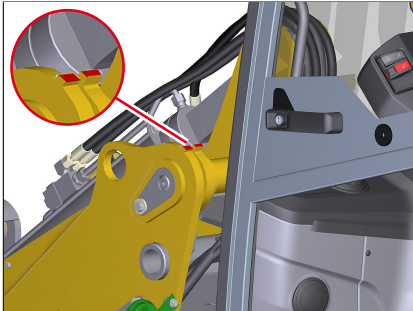


Fig. 171: Indicator for the position of the loader unit

The display of the position for the loader unit is located on the top of the loader unit.

- Raise the loader unit until the colored marked positions are next to each other.
- ⇒ The height is set.

6.12.5 Using the lightweight material bucket and earth bucket

Use the lightweight material bucket for lightweight materials such as grain, maize and concentrated feed.

Use the earth bucket for heavy materials such as gravel, sand, soil and rock.

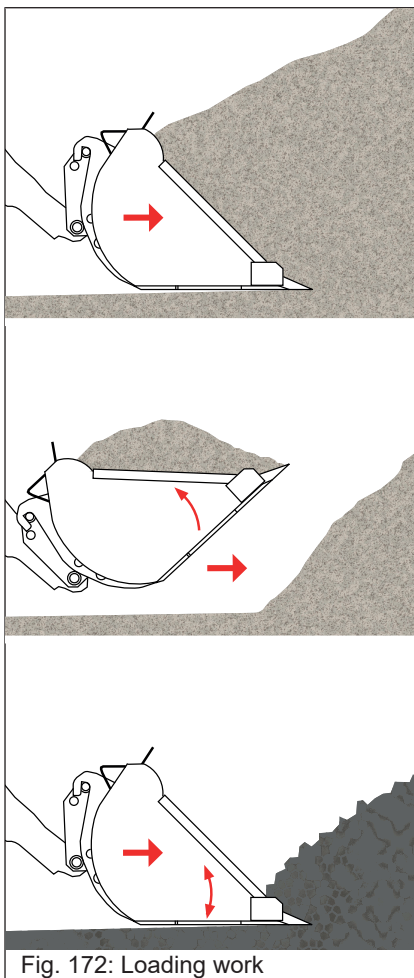
Designated use

The designated use of the attachments lightweight material/earth bucket is loosening, picking up, transporting and dumping material.

Transporting persons in the lightweight material/earth bucket is not in compliance with the designated use.

Working with the lightweight material or earth bucket

The bucket can be used for loading or excavation work. Practice working with the bucket on free and safe terrain before starting work for the first time.



Loading work

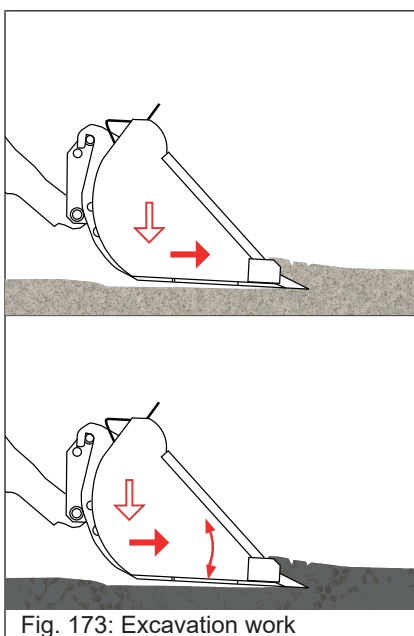
Pick up material:

1. Lower the attachment and align it parallel to the ground.
2. Drive into the material to be loaded.
⇒ Pay attention to the travel speed.
3. Raise the loader unit a little to load the front axle of the vehicle.
⇒ The wheel slip can be reduced manually by inching.
4. Tilt the attachment when it fills.
⇒ Attachment is filled.

If material is to be loaded into which the cutting edge of the bucket can only penetrate with difficulty, the joystick can be used to generate an up and down movement of the cutting edge. This facilitates the penetration of the cutting edge into the material.

Unload Material:

1. Drive to unloading position with filled attachment.
⇒ Keep the loader unit as close to the ground as possible
2. Travel to the unloading position in a straight line.
3. Lift the attachment to the required height just before the unloading position.
4. Drive forward as far as necessary.
5. Tilt out the attachment.
⇒ The material falls out.



Excavation work

1. Lowering the attachment.
2. Tilt out the attachment slightly.
⇒ A digging angle is established.
3. Travel forward.
4. Press the loader unit slightly downwards with the joystick.
⇒ The attachment penetrates the ground.
5. Make the digging angle flatter.
⇒ An even layer is removed. Wheel slip is avoided.
⇒ Attachment fills up.

If material is to be excavated into which the cutting edge of the bucket can only penetrate with difficulty, the joystick can be used to create an up and down movement of the cutting edge. This facilitates the penetration of the cutting edge into the material.

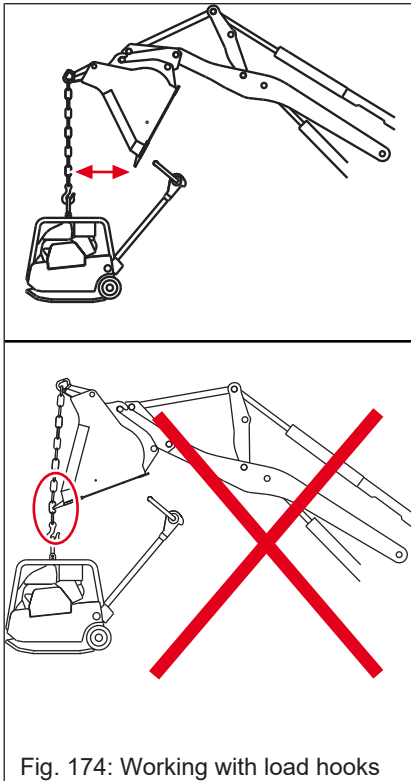


Fig. 174: Working with load hooks

Working with a load hook

When working with the load hook, the safety instructions for operating lifting gear applications are to be observed. [see Lifting gear applications on page 25.](#)

Chains must be used for lifting and transporting loads with the load hook. The load must be freely suspended on the load hook. The chain must not rub against the cutting edge.

1. Hitch the chain onto the load hook.
 2. Lift the loader unit to the required height.
 3. Tilt out the attachment.
 4. Drive over the load to be lifted.
 5. Safely hitch the chain onto the load.
- ⇒ The load can be raised and transported.

6.12.6 Using a 4-in-1 bucket

Practice using the 4-in-1 bucket before working with it for the first time.

Designated use

The 4-in-1 bucket attachment is designed for loading, digging, grabbing, levelling, digging and spreading loose material such as sand, soil and gravel.

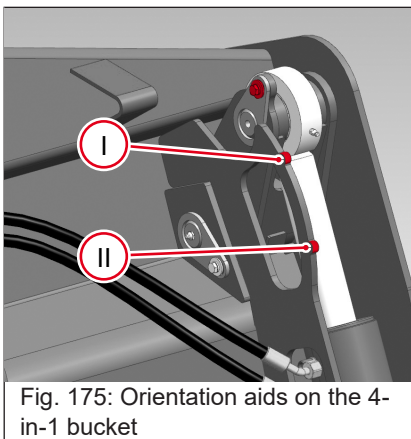


Fig. 175: Orientation aids on the 4-in-1 bucket

Working with the 4-in-1 bucket

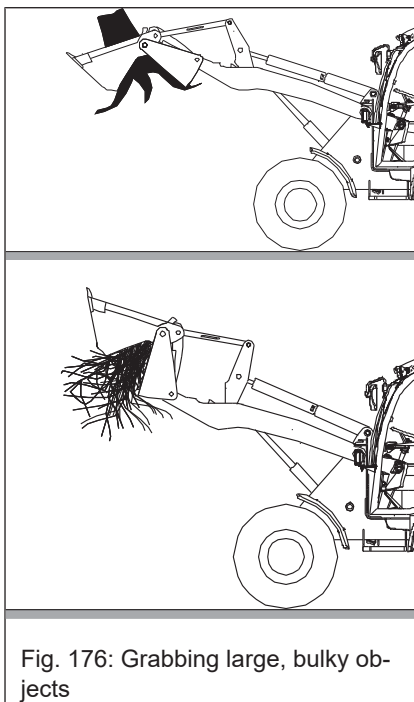
Orientation aids are affixed to the attachment. The fastening screw for the cylinder lock is marked in color. Marks are attached to the bucket itself next to the hydraulic cylinders. The marks indicate how far the bucket is open. This facilitates the application of, e.g. chippings or sand.

- Position I = Bucket is slightly open.
- Position II = Bucket is wide open.

Loading and excavation work

The closed 4-in-1 bucket can be used as a lightweight material bucket or earth bucket. For operating the 4-in-1 bucket: [see Using the lightweight material bucket and earth bucket on page 164.](#)

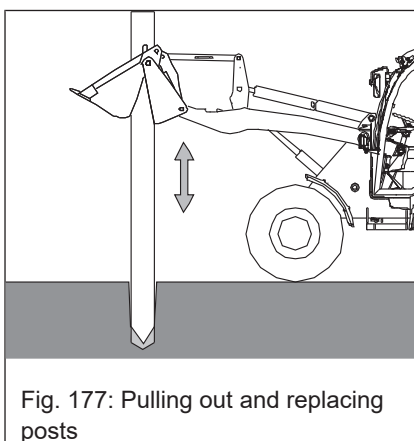
The bucket is opened, and not tilted out, for unloading at higher heights.



Grabbing large objects

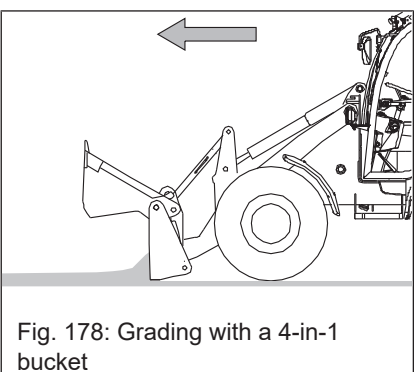
Bulky or large objects can be grabbed and safely transported with the 4-in-1 bucket.

1. Open the bucket.
 2. Position the bucket over the object to be grabbed.
 3. Lower the loader unit.
 4. Close the bucket.
- ⇒ Lift and transport the object to be picked up.



Pulling out and replacing posts

1. Open the bucket.
 2. Place bucket over the post.
 3. Lower the loader unit.
 4. Close the bucket.
 5. Grasp the post securely.
 6. Loosen the post by carefully moving it upwards and downwards.
 7. Raise the loader unit.
- ⇒ Pull out the pole.



Grading

1. Fold up the front half of the bucket.
 2. Lower the bucket to the ground.
 3. Set the depth of the layer you want to remove with the lift hydraulics.
 4. Set the angle of the rear cutting edge.
- ⇒ Grade the surface by performing forward vehicle travel.

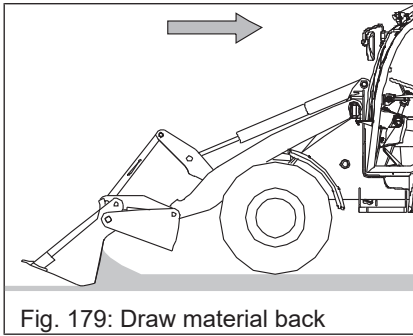


Fig. 179: Draw material back

Draw material back

1. Fold up the front half of the bucket.
2. Lower the bucket to the ground.
3. Set the angle of the front cutting edge.
 - ⇒ By reversing, the bucket fills slowly.

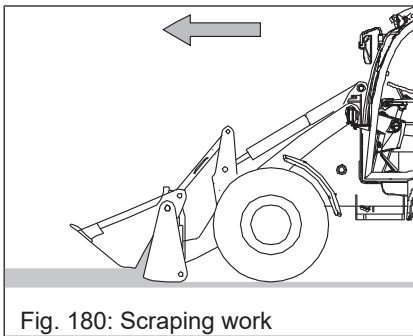


Fig. 180: Scraping work

Scraping work

1. Set a flat digging angle.
 2. Fold up the front half of the bucket by about 10 to 15 cm.
 3. Lower the bucket to the ground.
 4. Set the depth of the layer you want to remove with the lift hydraulics.
 5. Pick up material by performing forward vehicle travel.
 - ⇒ The material rolls into the bucket and is picked up at the same time.
- This position allows to strip grass turf, e.g. down to a thickness of about 8 cm

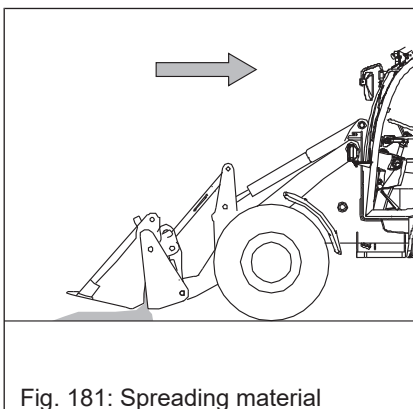


Fig. 181: Spreading material

Spreading material in thin layers

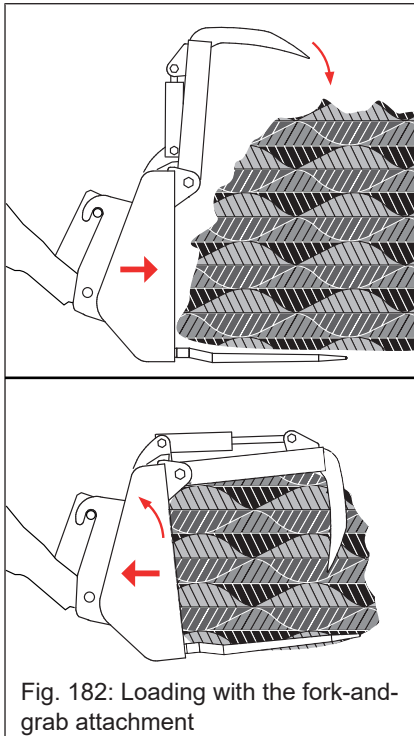
1. Fill bucket with material to be spread.
2. Open the bucket according to the material and flow rate.
 - ⇒ Spread the material evenly on the surface.

6.12.7 Using the fork and grab

Practice using the fork-and-grab attachment before working with it for the first time.

Designated use

The fork-and-grab attachment is used for picking up, transporting, loading and spreading loose material such as silage, hay, straw, green fodder and manure. The transportation of tree trunks, stones and similar materials as well as persons does not constitute intended use.



Working with the fork-and-grab attachment

1. Open the attachment.
2. Lowering the attachment.
3. Set the attachment parallel to the ground.
4. Drive into the material to be loaded.
⇒ Pay attention to the travel speed.
5. Slightly raise the loader unit.
⇒ A load is applied to the front axle of the vehicle.
⇒ The wheel slip can be reduced manually by inching.
6. Close the attachment.

For solid materials, such as solidified manure in stables, the load can be loosened by tilting in the attachment.

1. Travel to the unloading position in a straight line.
2. Lift the attachment to the required height just before the unloading position.
3. Drive forward as far as necessary.
4. Tilt out the attachment.
5. Open the attachment.
⇒ The material falls out.

6.12.8 Using the pallet fork



⚠ WARNING

Accident hazard due to pallet fork tines!

The fork tines of the pallet fork can cause serious injury or death during operation.

- ▶ Remove the pallet fork before driving on public roads and transport it separately.
- ▶ In the case of a pallet fork with folding forks, fold them up before driving on public roads.
- ▶ Bent, torn or otherwise damaged forks must not be used.
- ▶ Before starting work, ensure that the fork tines on the fork carriage are safely locked.
- ▶ Lower the pallet fork to the ground before leaving the vehicle.

Practice using the pallet forks before working with them for the first time.

Designated use

The pallet fork attachment is used for raising, transporting and setting down loads. Any other use of the pallet forks is not in accordance with its designated use. The pallet forks consist of the fork carriage and forks. The forks must always be used in pairs as delivered. The operator must receive special training for using the pallet forks.

Setting the gap between the fork tines



⚠ WARNING

Tipping hazard due to incorrect adjustment of fork arms!

A tipping vehicle can cause serious injury or death.

- ▶ Adjust the spacing of the fork arms so that they are symmetrical to the center line of the vehicle.
- ▶ Adjust the spacing of the fork arms so that they are as far apart as possible.



⚠ CAUTION

Danger of crushing when shifting the fork arms!

Fingers and hands can be crushed between the fork carriage and fork arms.

- ▶ Do not touch the sliding surface of the fork carriage when shifting the fork arms.
- ▶ Wear protective gloves.

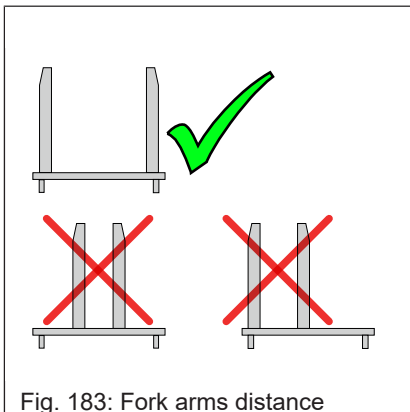
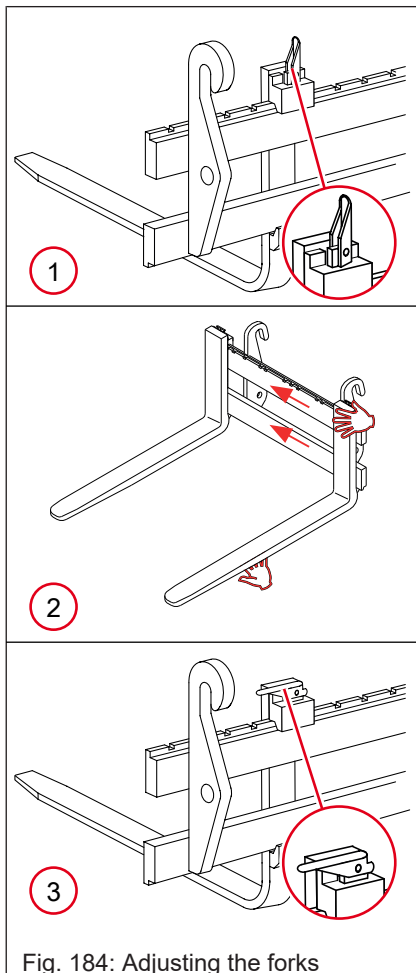


Fig. 183: Fork arms distance

The forks of the pallet fork are adjustable.



1. Raising the attachment.
⇒ Recommended height is approx. 10 to 30 cm.
2. Move the forks to position 1 .
⇒ Locking is released.
3. Push the forks into the required position.
⇒ Handle forks only as shown in position 2.
4. Move the forks to position 3.
5. Move the forks until the lock engages.
⇒ Handle forks only as shown in position 2.
⇒ The lock is engaged.
⇒ Distance is set.

Picking up a load



⚠ WARNING

Risk of injury from falling load when the loader unit is raised!

Falling load (e.g. large bales or bale stacks) can lead to serious injury or death.

- ▶ Never lift or transport several large bales or crates at the same time.
- ▶ The stacking of general cargo with vehicles without a driver's protective roof or cab is prohibited.
- ▶ Do not step under the raised loader unit.
- ▶ Do not tilt the attachment up to the stop when the loader unit is raised.

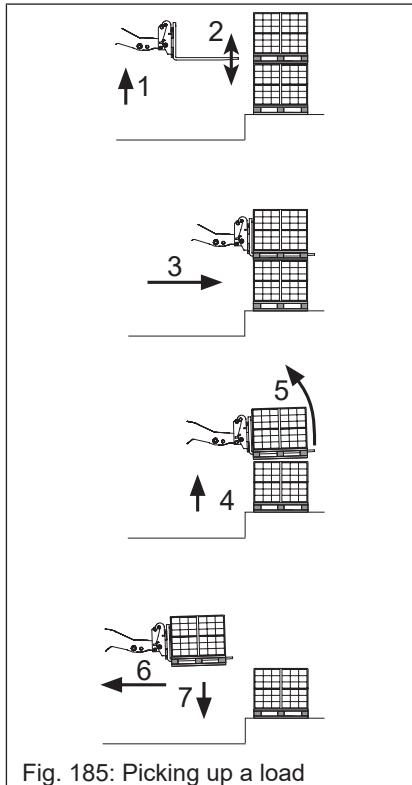


Fig. 185: Picking up a load

Check whether the permissible bearing load of the vehicle and pallet forks is appropriate for the weight of the load.

- ✓ Adjust the fork spacing and lock the forks.

1. Approach the load in a straight line.
2. Set the pallet forks to the required height (1) in a horizontal position (2).
3. Travel forward until the load touches the fork carriage (3).
4. Slightly raise (4) and tilt back (5) the pallet forks.
5. Reverse the vehicle (6) and set the load to transport height (7).

Transporting a load

- Transport the load as close as possible to the ground.
- Adjust a transport height that allows moving the pallet forks across uneven ground without touching it. Adjust the height during transportation if necessary.
- During vehicle travel up or down a slope the load must always be on the uphill side.
- Secure the load with ratchet straps if necessary.
- If necessary, transport large, bulky loads in reverse to ensure sufficient visibility.

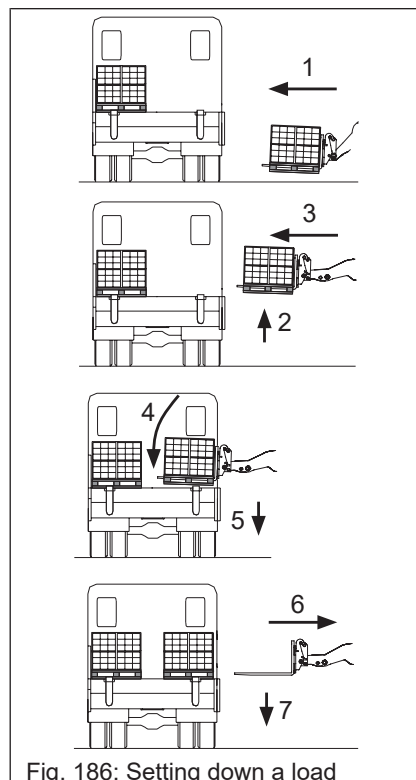


Fig. 186: Setting down a load

Setting down a load

1. Travel to the unloading position in a straight line (1).
2. Do not lift the load to the required height until immediately in front of the unloading position (2).
3. Drive forward until the load is above the unloading position (3).
4. Position the pallet fork horizontally (4), lower the loader unit and lower the load (5).
5. Retract until the pallet fork can be lowered freely (6).
⇒ Lower the pallet fork (7).
6. Reverse away from the unloading position.

6.12.9 Work platform

The attachment of a working platform to this vehicle is prohibited.

7 Transportation

7.1 Towing

7.1.1 Warnings for towing



⚠ WARNING

Risk of accident due to towing of the vehicle!

Towing the vehicle may cause situations that cannot be foreseen. This may result in accidents that could result in serious injury or death.

- ▶ Only tow the vehicle if the steering and braking systems are fully functional.
- ▶ Only tow the vehicle with towing gear of sufficient dimensions.
- ▶ No persons are allowed to stay in the range of action of the towing gear during towing.
- ▶ Secure the vehicle against unintentional movement and unauthorized use once towing is over.



NOTICE

Only tow the vehicle if the steering and brake are fully functional!

- ▶ Only tow the vehicle to the extent necessary for the towing operation, but not more than 500 meters.
- ▶ Do not exceed a maximum speed of 5 km/h.
- ▶ For longer distances, use a transport vehicle or have the vehicle repaired on site.

Emergency steering feature

The steering system is only operational when the engine is running normally.

The vehicle can still be steered if the diesel engine or the pump drive breaks down. However, operating the steering system then requires greater strength and the steering will only respond slowly. Take this into account especially when towing the vehicle. Adjust the towing speed to the changed steering behavior (walking pace)!

7.1.2 Towing the vehicle

The drive system must be short circuited in order to tow the vehicle. In this case the power transmission is switched from power transmission to freewheeling. For this purpose the variable displacement pump is equipped with high-pressure limiting valves with bypass function.

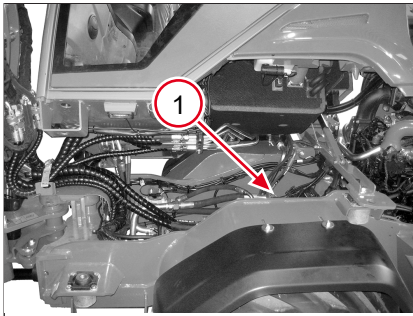


Fig. 187: Position of the variable displacement pump

Preparation for short circuiting the drive system

1. Apply the parking brake.
2. Switch off the ignition and remove the key.
3. Open the engine cover.
4. Raising the cab sideways: [see Maintenance accesses on page 188](#)
 ⇒ The variable displacement pump **1** becomes accessible.

Short circuit the drive system



NOTICE

Risk of damaging the hydraulic system!

- ▶ Do not screw in the threaded bolts of the bypass valves any further than described, otherwise important parts of the valves of the variable displacement pump are destroyed.
- ▶ After towing, unscrew the threaded bolts of the bypass valves again as far as the stop and secure them with the hexagon nuts! Otherwise vehicle operation is not possible!

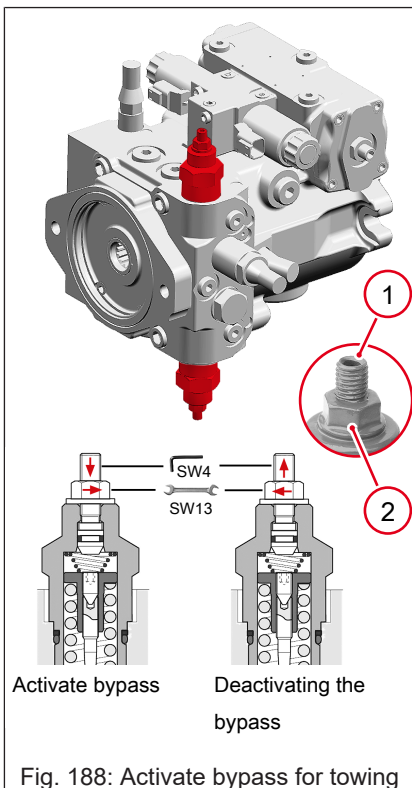


Fig. 188: Activate bypass for towing

Activate bypass

- ✓ Required tools: Hexagon socket wrench size 4 mm and wrench size 13 mm.
1. Loosen hexagon nuts **2** of the bypass valves.
 2. Screw in threaded bolts **1** until they are flush with the hexagon nuts.
 ⇒ The drive system is short circuited.

Deactivating the bypass

After towing, immediately restore the original setting of the bypass valves. Otherwise vehicle operation is not possible.

- ✓ Required tools: Hexagon socket wrench width 4 mm and wrench wrench width 13 mm
1. Unscrew threaded bolts **1** as far as they will go.
 2. Tighten hexagon nut **2** to 22 Nm torque.
 3. Check drive system carefully for function.
 ⇒ Vehicle is ready to drive after repair.

Manually release the parking brake



⚠ WARNING

Risk of accident due to manually released parking brake!

If the parking brake is released manually, the vehicle may roll away and cause accidents with serious injuries or death.

- ▶ Before manually releasing the parking brake, secure the vehicle against unintentional rolling away (e.g. by placing wedges under it).
- ▶ Do not release the parking brake manually on inclines and declines.
- ▶ Do not park the vehicle unsecured with the parking brake released manually.



NOTICE

Damage to the vehicle caused by incorrectly adjusted parking brake

An incorrectly adjusted parking brake can damage the brake or cause the vehicle to roll away unintentionally.

- ▶ After towing, the manually released parking brake must be reactivated and set by an authorized service center.

To tow the vehicle in case of engine failure, it is necessary to release the parking brake manually.

Preparation for releasing the parking brake before starting to drive

1. Switch off the ignition.
2. Secure the vehicle against rolling away unintentionally, e.g. by placing wedges underneath it.
3. Place the oil collection container under the screws to be loosened, oil may leak out.

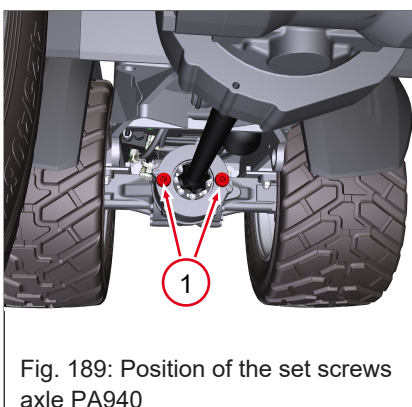


Fig. 189: Position of the set screws axle PA940

Release the parking brake

Axle PA940:

Required tools: Hexagon socket spanner width 17 mm and socket spanner width 17 mm.

1. Loosen and unscrew both locking screws **1** by turning to the left with the hexagon socket spanner SW 17 mm.
⇒ The locknuts become accessible.
2. Tighten both locknuts evenly by turning them clockwise with the socket spanner SW17 alternately half a turn each until resistance is felt. Maximum torque 30 Nm.
⇒ Parking brake is released, the vehicle can be towed.

Getting ready for towing

- ✓ The drive system is short circuited.
- ✓ Parking brake is manually released.
- 1. Tilt back cab and fasten.
- 2. Close and lock the engine hood.
- 3. Remove wheel chocks before towing.
 - ⇒ The vehicle can be towed.

Towing

Observe the safety instructions for cooling: [see Towing, loading and transporting on page 29](#)

1. Put the towing vehicle, with sufficient traction force and a safe braking system, in the towing position.
2. Attach suitable towing equipment (tow bore) to the salvage equipment (eyelets, towing device) on the vehicle.
3. Bear in mind the vehicle's dimensions and weights.
4. Vehicle at a maximum speed of 5 km/h. For recovery, if possible, keep the engine running at idle speed.

7.1.3 Towing gear



▲ WARNING

Accident hazard when pulling trailer loads!

Pulling trailer loads changes the braking effect and driving behavior of the vehicle. This may result in accidents that could result in serious injury or death.

- ▶ Do not use the towing gear to tow trailer loads.
- ▶ Only hitch trailer loads if the vehicle is equipped with special trailer coupling.

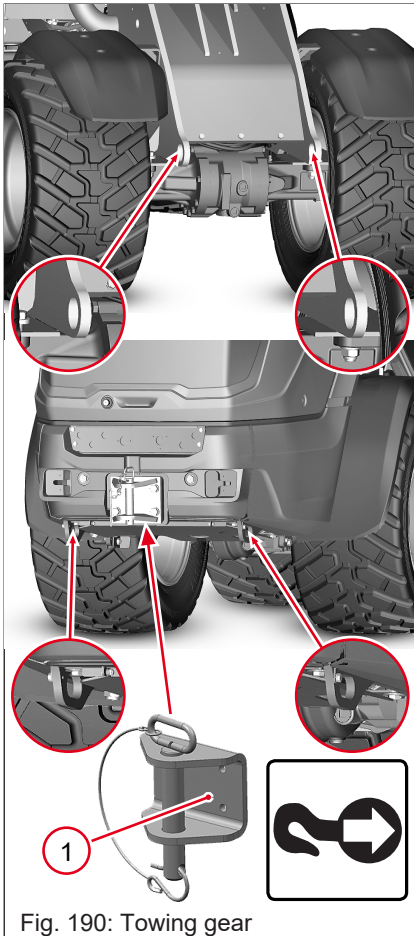


Fig. 190: Towing gear

Use the vehicle's lashing eyelets on the front or rear to tow the vehicle. Attach the towing equipment to both eyelets respectively.

The bypass valves of the variable displacement pump must be activated and the parking brake must be released for towing.

The towing gear (e.g. tow cable) must be securely connected to the towing lugs.

The vehicle can be optionally equipped with a hill coupling 1. The hill coupling may not be used to pull trailer loads.

If the vehicle is equipped with an automatic trailer coupling or a maneuvering coupling instead of the hill coupling, this can be used for towing the vehicle, [see Trailer couplings on page 116](#).

7.2 Loading

7.2.1 Information on loading the vehicle



⚠ WARNING

Accident hazard due to incorrect loading!

Incorrect loading can cause the vehicle to tip over, for example. This may result in accidents that could result in serious injury or death.

- ▶ Clean the vehicle before loading or transporting it.
- ▶ Use a transport vehicle with the appropriate load-bearing capacity.
- ▶ Pay attention to the vehicle's operating weight.
- ▶ Proceed with special care when loading the vehicle in conditions of snow and ice.

In order to avoid injury or accidents, observe the following instructions when loading the vehicle.

- The transport vehicle must be of sufficient size. Do not exceed the permissible maximum height.
 - Refer to chapter for the weight and dimensions of the vehicle to be loaded [see Technical Data on page 268](#).
- Remove any mud, snow or ice from the tires so that the vehicle can be safely driven onto the ramps.
- The loading area must be clean and non-slip, use anti-slip mats if necessary.
- When positioning the vehicle on the loading surface, ensure that the center of gravity of the load is as low as possible and in the longitudinal center line of the transport vehicle if possible.
- The permitted total weight or the axle load of the transport vehicle must not be exceeded during loading or transportation.
- Place partial loads so as to ensure an even load on all axles of the transport vehicle.
- In order to avoid accidents and injuries, the following instructions must be observed when loading the vehicle.
 - Usual transportation conditions are conditions in the which the brakes are slammed on, evasive maneuvers are performed with the vehicle or in which uneven roadways are traveled on.
 - Auxiliary means are e.g. anti-slip bases and linings, load-securing straps and chains, clamping beams, protective paddings, nets, edge protectors, etc.
- Always use the existing tie-down points when using load-securing straps and chains.
- Adjust travel speed of the transport vehicle.

7.2.2 Loading the vehicle

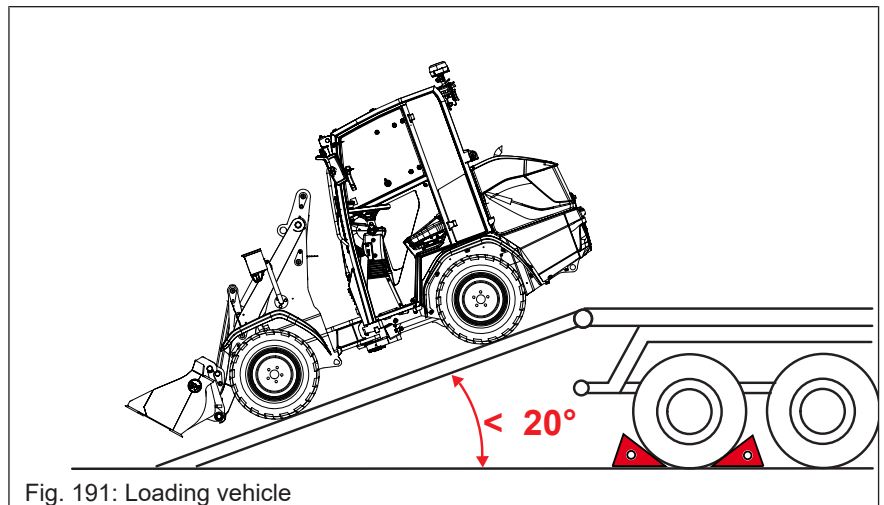


Fig. 191: Loading vehicle

The prerequisites for loading are listed in the following:

- Secure the transport vehicle with wheel chocks to prevent it from rolling away.
- Place the access ramps at the smallest possible angle.
 - Do not exceed the maximum slope.
 - Use access ramps only with an anti-skid surface.
- Ensure that the loading surface is clear and access to it is not obstructed, e.g. by superstructures.
- Ensure that the access ramps and the wheels of the vehicle are free of snow, ice, oil or grease.
- Check the engine oil level.
 - The oil level must be visible at the max. mark on the oil dipstick.

Prepare for loading

1. Start the engine of the vehicle.
2. Lift the loader unit so that it is not possible to touch the ramps with the attachment.
3. Ensure that the attachment is securely locked.

Carry out loading

1. Carefully drive the vehicle onto the middle of the transport vehicle.
2. Lower the loader unit completely. The attachment must rest on the loading area of the transport vehicle.
3. Bring the vehicle's drive system to zero position and switch off all electrical consumers.
4. Apply the parking brake.
5. Switch off the ignition and remove the ignition key.
⇒ If the vehicle is equipped with a drive interlock, the drive interlock is activated.
6. Exit the cab, close doors, windows and engine hood, lock and unlock.
7. Block the articulated pendulum joint [see Blocking articulated pendulum joint on page 180](#)
8. Tie down the vehicle [see Tying down the vehicle on page 183](#).

7.2.3 Blocking articulated pendulum joint

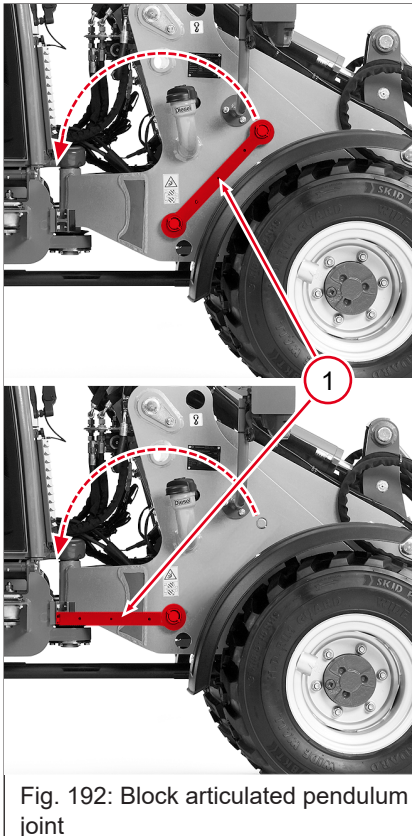


NOTICE

Vehicle damage.

The vehicle may be damaged by steering movements if the articulated pendulum joint is blocked.

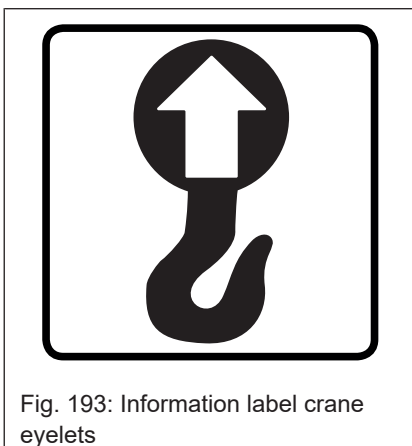
- ▶ Do not operate the steering system when the articulated pendulum joint is blocked.
- ▶ First park the vehicle on the transport vehicle, then set the blocking device.
- ▶ After the transport, first release the block, then drive the vehicle down from the transport vehicle.



Blocking device 1 is attached to the front of the vehicle by bolts and secured with spring clips.

1. Park the vehicle in a straight line.
 2. Remove the spring plugs.
 3. Fasten the blocking device in the blocking position.
 - ⇒ Position the blocking device on the pin on the rear chassis section and if necessary, adjust with the steering wheel, and the engine stopped, until the blocking device is positioned on the pin on the front chassis section.
 4. Secure the blocking device with the spring plugs.
- Remove the blocking device in the reverse order.

7.2.4 Safety instructions regarding crane-lifting



Only use crane eyelets marked with the labels to attach the loading gear.

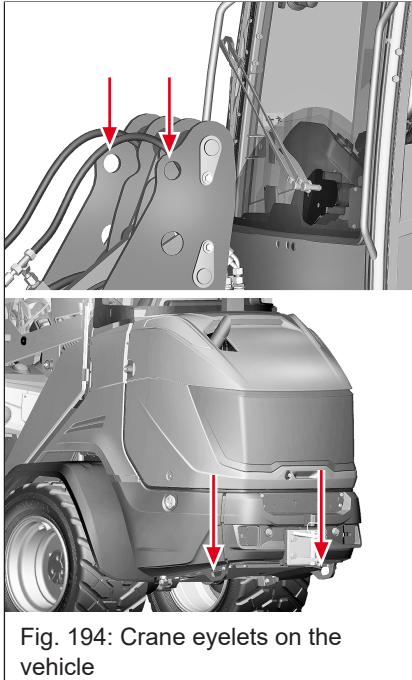


Fig. 194: Crane eyelets on the vehicle

In order to avoid injury or accidents, observe the following instructions when loading the vehicle.

- Seal off the danger zone.
- The crane and the lifting gear must have suitable dimensions.
- Take into account the vehicle's overall weight.
- Use only tested ropes, belts, hooks, shackles (screw and socket pins with lockable brackets) for fastening the vehicle.
- Have loads fastened and crane operators only guided by experienced persons.
- The person guiding the crane operator must be within sight or sound of him.
- The crane operator must observe all movements of the load and the lifting gear. Secure the vehicle against unintentional movement.
- The crane operator may move a load only after making sure that the load is safely fastened and nobody is within the danger zone, or after receiving a signal from the signalman.
- The load must not be fastened by winding the lifting rope or chain around it.
- Pay attention to load distribution when attaching the lifting gear. Note the center of gravity.
- The vehicle may only be loaded in transport position without attachment or in conjunction with an empty standard bucket.
- Ensure that no one is in or on the vehicle.
- Stay clear of a raised load.
- Observe the information in the notebook Earth-moving vehicles of the civil engineering employers' liability insurance association and the safety instructions in the operator's manual [see Towing, loading and transport on page 29](#).

7.2.5 Crane-lifting the vehicle



⚠ DANGER

Fatal hazard from falling objects or falling vehicle!

Unsecured objects or an incorrectly fastened vehicle may fall. If persons are hit by these parts or the vehicle, serious or fatal injuries may result.

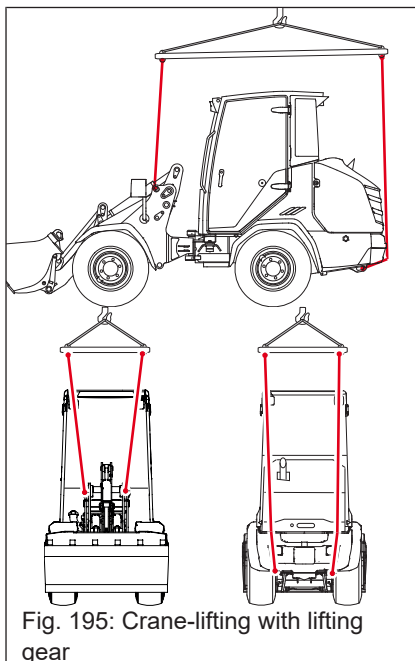
- ▶ Use tested, undamaged and sufficiently dimensioned lifting gear.
- ▶ Check that the lifting gear is safely fastened.
- ▶ Ensure that nobody remains under the raised vehicle.
- ▶ Always block the articulated pendulum joint before lifting the vehicle.



NOTICE

Crane chains can damage the vehicle when it is lifted at the rear!

- ▶ Before raising the vehicle, protect it against damage with a suitable protection between the crane chains and the rear of the vehicle.



Preparation for loading with crane

1. Install and safely lock the standard bucket.
2. Empty standard bucket, tilt in and lower to transport position (approx. 30 cm above the ground).
3. Move all switches and levers to zero position.
4. Switch off the ignition and remove the key.
5. Block the articulated pendulum joint [see Blocking articulated pendulum joint on page 180](#)
6. Apply the parking brake.
7. Exit the cab, close doors, windows and engine cover, lock and unlock.

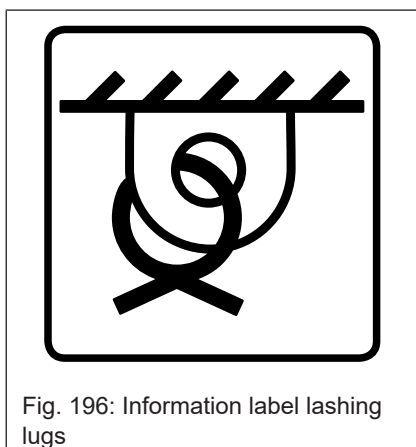
Loading with crane

1. Fasten the vehicle at the crane eyelets with lifting gear. Fasten the vehicle at the crane eyelets with tested lifting gear of sufficient dimensions.
2. Raise the vehicle carefully with a crane, slowly position it over the unloading position and lower it carefully.

7

7.3 Transportation

7.3.1 Tying down the vehicle



Only use lashing eyelets marked with the labels to attach the lashing straps or chains.

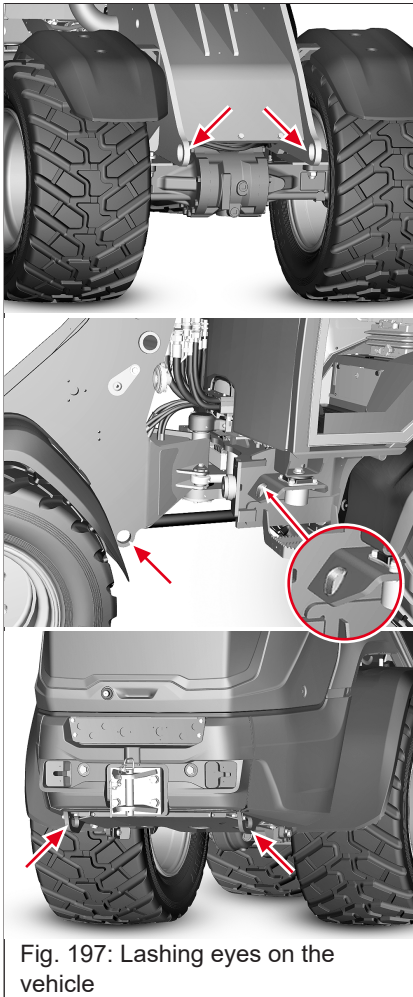


Fig. 197: Lashing eyes on the vehicle

Safety instructions on tying down the vehicle

- The transport vehicle must have a sufficient bearing load and a suitable loading surface.
- The loading surface of the transport vehicle must be clean.
- The gross weight rating and the axle loads of the transport vehicle must not be exceeded.
- Only use certified lifting and fastening gear. Adhere to the inspection intervals .
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- In order to secure the vehicle on the loading surface, use only the fastening points provided for this purpose.
- Ensure that nobody is in or on the vehicle during transportation.
- The load-securing regulations must be observed.
- Bear in mind the weather conditions (e.g. ice, snow).
- For rail and sea transport, the vehicle must be additionally secured against slipping with anti-slip mats, positive locking or by means of wheel chocks.

Lashing instructions



⚠ WARNING

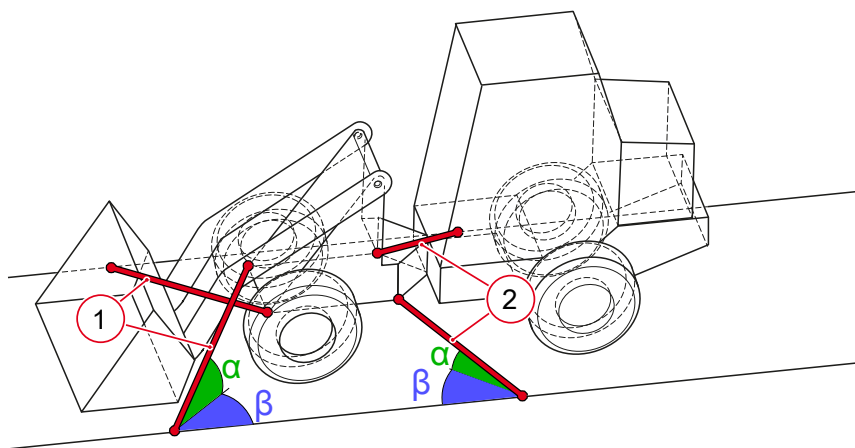
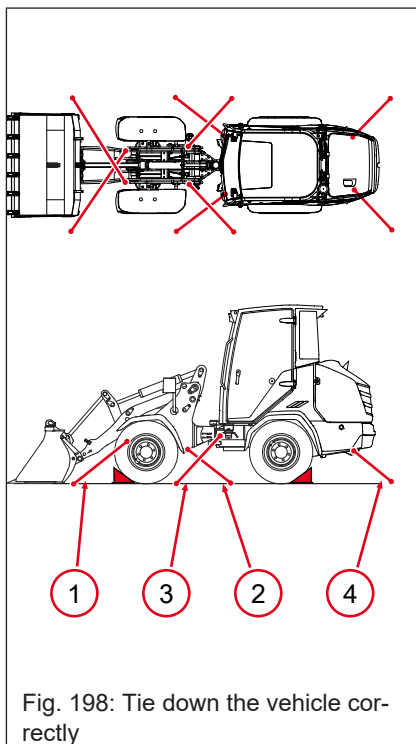
Risk of accident due to improper lashing!

Improper lashing can cause the vehicle to slip, tip over or fall during transport. This may result in accidents that could result in serious injury or death.

- ▶ Always lash the vehicle to the front **and** rear of the vehicle.
- ▶ Secure the vehicle additionally with wheel chocks on the loading area of the transport vehicle.
- ▶ The specified lashing angles ($\pm 5^\circ$) and lengths (± 0.2 m) must be observed.
- ▶ The fastening gear must be designed for the specified forces.
- ▶ Apply the specified forces to tighten the fastening gear.

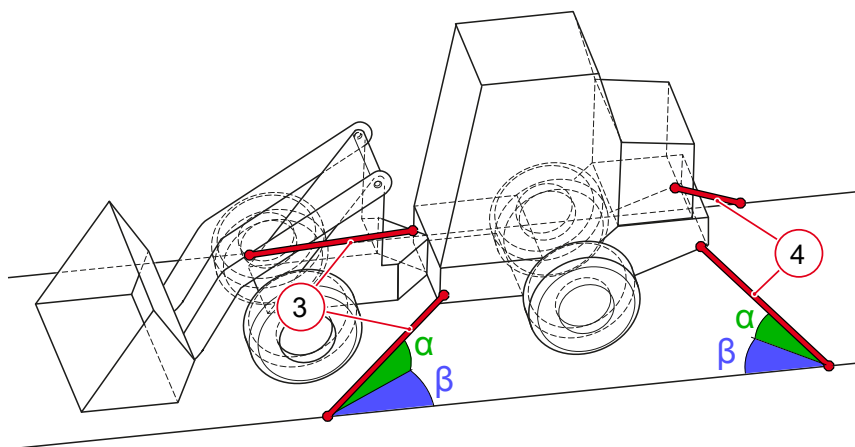
Tie down the vehicle for transport:

1. Stopping and securing the vehicle.
2. Block the articulated pendulum joint [see Blocking articulated pendulum joint on page 180](#)
3. Secure all wheels of the vehicle at the front and rear with wheel chocks.
4. Tie down the vehicle as shown.
5. Close the outlet of the muffler with a suitable cap or adhesive tape in case the vehicle is transported backward, so that no rain drops can enter.
6. Ensure that the driver of the transport vehicle knows the total height, width and weight of his transport vehicle including the loaded vehicle before departure.
7. Ensure that the driver is familiar with the legal transport regulations of the country, in which the transport is to take place.



1 Tie-down angle on the front of the front vehicle

2 Tie-down angle at the rear of the front vehicle



3 Tie-down angle at the front of the rear vehicle

4 Tie-down angle at the rear of the rear vehicle

Item	α	β	daN
1	20°	57°	1847
2	23°	40°	1311
3	30°	40°	1357
4	20°	40°	1298

The following combinations are possible for tying down the vehicle:

- Item 1 & 4
- Item 2 & 3
- Item 1 & 2 & 3 & 4

8 Maintenance

8.1 Information on maintenance

8.1.1 Responsibilities and prerequisites

- Perform maintenance and inspection work only with suitable protective equipment.
- Perform only the maintenance and inspection work described in this operator's manual.
- For questions concerning the maintenance and service work, please contact your service partner at any time.

8.1.2 Safety instructions

Information on the vehicle and the attachment

- Only perform maintenance and inspection work if the vehicle is secured.
- A raised loader unit can fall suddenly and cause serious injury.
- If working under the raised loader unit is unavoidable, then the loader unit must be secured by a suitable support.
- Lower attachment on the ground ensuring that no movements can occur when releasing mechanical or hydraulic connections.
- Remove dirt from steps and handholds to keep them safe and ready for use.

Information on handling flammable liquids

- Do not smoke and avoid open fire when handling flammable liquids.
- Do not extinguish burning liquids with water.
- Use suitable extinguishing agents, such as powder, carbon dioxide or foam fire extinguishers.
- Always call the fire department in the event of a fire.

Information on handling fuels, oils and greases

- Burn hazard due to hot lubricating oil or hydraulic oil.
- Avoid skin and eye contact with oil and grease.
- Wear protective equipment.
- Do not use fuel or solvents to clean your skin.
- Rectify any oil or fuel leaks immediately.
- Do not allow the oil and oily wastes to get into the ground or stretches of water.
- Absorb the escaping oil or fuel immediately with a binding agent, and dispose of it in an environmentally friendly manner and separately from other waste.
- Even biodegradable, "environmentally friendly" oil must be disposed of separately, just like every other type of oil.

Information on screw connections, pipes, hydraulic hoses

- Have any leaks in the line system rectified immediately.
- A fine jet of hydraulic oil under high pressure can penetrate through the skin. Seek medical attention immediately if oil penetrates the skin or eyes.
- Do not search for leaks with your hands.
- Search for leaks using cardboard or paper on which the escaping oil can be seen.
- Do not repair damaged pipe lines and hydraulic hoses, but replace them immediately by new ones.

Information on engine exhaust

- Engine exhaust is hazardous to your health. Do not breathe in engine exhaust.
- If maintenance and inspection work has to be performed in enclosed spaces with a running engine, extract the exhaust gases with an extraction system and ensure that the space is well ventilated.

8.2 Maintenance accesses

8.2.1 Engine cover

**▲ WARNING****Injury hazard due to hot and rotating parts!**

When the engine is running and for a short time thereafter, parts in the engine compartment may still be hot or rotate. This may cause crushing which may result in serious injury or death.

- ▶ Do not open the engine cover if the engine is running.
- ▶ Let the engine cool down.
- ▶ Wear protective equipment.

**NOTICE****Damage to the engine caused by loose objects in the engine compartment!**

- ▶ Remove all tools and objects from the engine compartment before closing the engine cover.

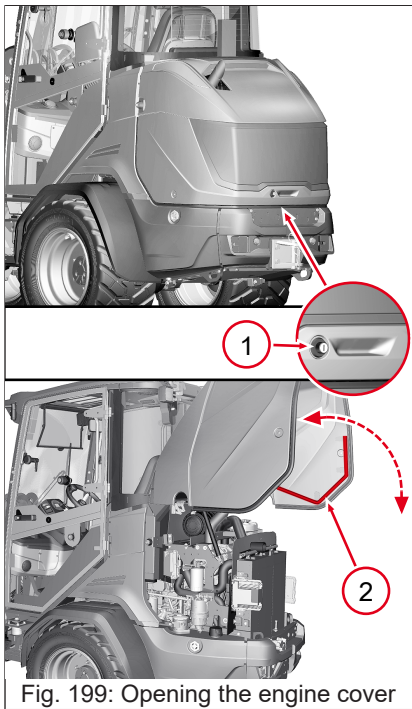


Fig. 199: Opening the engine cover

Opening the engine cover

Open the engine cover with the handle. The handle is lockable.

✓ Switch off the ignition and remove the ignition key.

1. Unlock engine cover with the key.
⇒ The engine cover is unlocked.
2. Open the engine cover by pressing button 1.
⇒ The engine cover is unlocked.
3. Raise the engine cover by pulling the handle.
⇒ The engine cover is pushed up by gas springs.

Closing the engine cover

1. Hold the engine cover at bar 2 at the lower edge and pull it downward against the pressure of the gas springs.
2. Make the engine cover lock into place by pressing it downward.
3. Pull on the handle to check whether the engine cover is locked in place.

8.2.2 Driver's platform



⚠ WARNING

Risk of injury from tilting driver's platform!

If the fastening bolts are not fitted back on again correctly, the driver's platform can tilt sideways on its own. This may result in accidents that could result in serious injury or death.

- ▶ After tilting the driver's platform back, immediately reattach the fastening screws.
- ▶ Do not use the vehicle if the fastening screws are not fitted.



NOTICE

The cab doors/ restraint brackets may be damaged if the driver's platform is tilted.

If the driver's platform is tilted, the cabin doors/ restraint brackets may collide with the vehicle frame and be damaged.

- ▶ Close cab doors/ restraint bars before the driver's platform is tilted.

Tilting preparations to the driver's platform

1. Park the vehicle on a stable, level and dry surface.
2. Secure the vehicle with the parking brake.
3. Lower the loader unit to the ground.
4. Stop engine and remove starting key.
5. Let the engine cool down.

Tilting the driver's platform

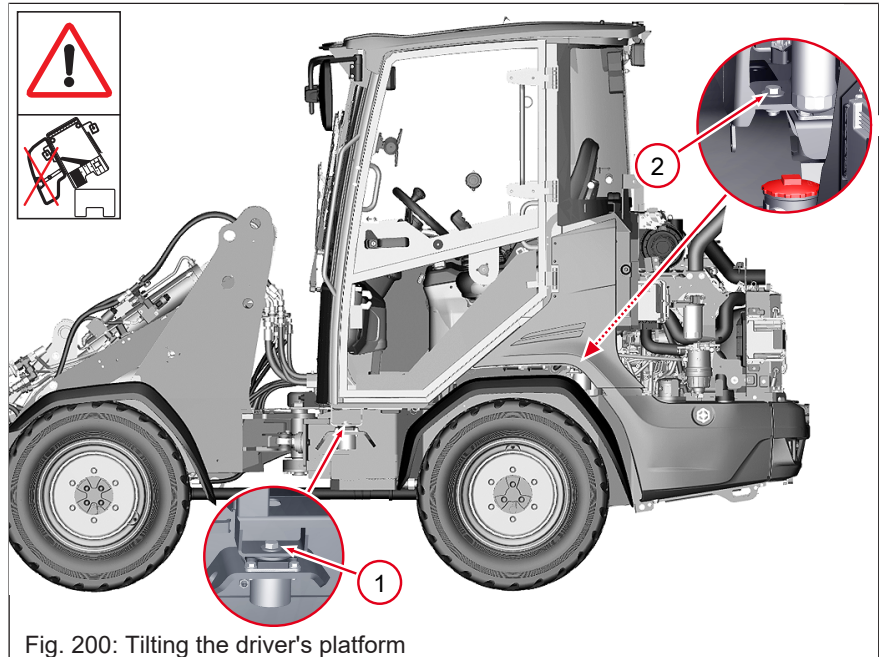


Fig. 200: Tilting the driver's platform

- ✓ Required tools: Two wrenches Wrench size 24 mm.
 - ✓ Only tilt an empty driver's platform. No person may be on the driver's platform.
1. Remove loose objects from the driver's platform.
 2. Ensure that there is enough space to the right of the vehicle .
 3. Close the cab doors/restraining bars.
 4. Open the engine hood.
 5. Loosen and unscrew fastening screws **1** and **2** (wrench size 24).
⇒ Keep screws, nuts and washers.
 6. Lift the driver's platform manually and tilt it to the side.

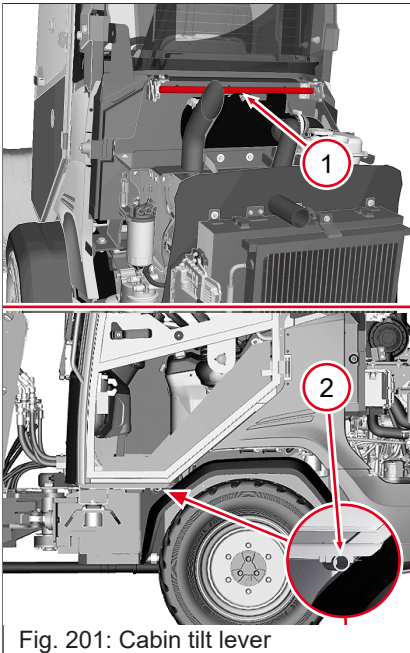


Fig. 201: Cabin tilt lever

Tilt cab with lever

Vehicles with a cabin have a cab tilt lever at the rear of the cabin. With the help of the cab tilt lever, the cab can be tilted with little effort.

✓ Fastening screws (wrench size 24) are loosened.

1. Remove cab tilt lever **1** from the bracket.
2. Insert the cab tilt lever into the provided attachment **2**.
3. Lift the cab by hand and tilt it to the side.

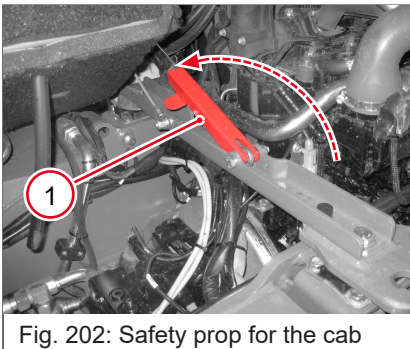


Fig. 202: Safety prop for the cab

Supporting the cab with the safety prop

Fold down the safety prop **1** until it rests on the gas spring.

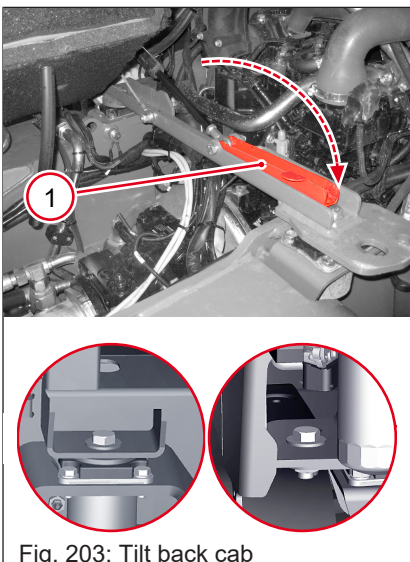


Fig. 203: Tilt back cab

Tilt back cab

1. Fold down the safety prop **1** until it rests on the crossbar under the cab.
2. Tilt the cab back manually until the cab bearings are in contact.
3. Mount both fixing screws (wrench size 24) immediately and tighten to 195 Nm.
4. Close the engine cover.

8.3 Visual check

8.3.1 Checking components

Check the following components weekly:

- Check all steel parts for damage and loose threaded fittings, in particular the protective ROPS/FOPS structure.
- Check the condition and function of the seat belt.
- Check the power coupler for the attachment.
- Check whether all pivot pins are in their correct positions and secured with their locks.
- Check the climbing aids and handholds for correct position.
- Check cab windows for breaks, cracks and stone chips.
- Check the condition of the lights and work lights.
- Check the tires for damage and penetration of sharp-edged objects.
- Check tires for wear.
- Check the condition of all safety labels and warning labels.

8.3.2 Leakage check



⚠ WARNING

Risk of injury due to pressure!

A fine jet of hydraulic oil under high pressure can penetrate through the skin. This can cause serious injury.

- ▶ Wear protective gloves and safety glasses.
- ▶ Never search for leaks with your bare hands.
- ▶ Search for leaks using a piece of cardboard or paper on which the escaping oil can be seen.
- ▶ Seek medical attention immediately if hydraulic oil penetrates the skin or eyes.

Check the following components to see if they are tight:

- Check air intake line from air filter to engine.
- Check the hose pipes of the cooling system.
- Check engine oil filter.
- Check fuel lines.
- Check the hose pipes and hydraulic cylinders of the steering system.
- Check the hydraulic system, control valve, lowering brake valves, hydraulic hoses and hydraulic cylinders.
- Check hydraulic connections of all control circuits, auto-hitch trailer coupling, tipper connections.
- Check the hose pipes of the braking system and the tank for the brake fluid.
- Check front and rear axle.

Have defects and leaks repaired by an authorized service center.

8.4 Maintenance plan

8.4.1 Daily and weekly maintenance

Maintenance cycle	Personnel	For further information	
Daily	Operating personnel	[▶ 192]	Checking components
		[▶ 201]	Checking the engine oil level
		[▶ 203]	Check the coolant level
		[▶ 215]	Cleaning the vehicle from the outside
		[▶ 216]	Cleaning pedals and floor mat
		[▶ 219]	Cleaning the radiator
		[▶ 220]	Cleaning the air filter
		[▶ 224]	Checking the service brake and parking brake for function
		[▶ 225]	Checking steering system for function
		[▶ 226]	Checking the lighting
		[▶ 230]	Checking/tensioning the belt
		[▶ 240]	Checking function of seat switch
		[▶ 241]	Checking the tires
Every week	Operating personnel	[▶ 192]	Checking components
		[▶ 192]	Leakage check
		[▶ 199]	Water separator maintenance
		[▶ 203]	Check the coolant level
		[▶ 205]	Check the hydraulic oil level
		[▶ 207]	Check fill level of brake fluid.
		[▶ 208]	Windshield wiper water level
		[▶ 209]	Lubricating the vehicle
		[▶ 215]	Cleaning the vehicle from the outside
		[▶ 216]	Cleaning the cab
		[▶ 216]	Cleaning pedals and floor mat
		[▶ 217]	Check/replace cab breather filter
		[▶ 217]	Clean engine and engine compartment
		[▶ 219]	Cleaning the radiator
		[▶ 219]	Cleaning the condenser
		[▶ 220]	Cleaning the air filter
		[▶ 223]	Check air intake line
		[▶ 225]	Checking steering system for function
		[▶ 225]	Checking the steering column adjustment
		[▶ 226]	Checking window wiper and washer system
		[▶ 226]	Battery maintenance
		[▶ 229]	Checking the locking function for the joystick
		[▶ 229]	Checking the function of the lock
[▶ 230]	Checking the hydraulic control circuits for function		

Maintenance cycle	Personnel	For further information	
		[▶ 230]	Checking/tensioning the belt
		[▶ 239]	Checking the seat
		[▶ 239]	Checking the seat belt for proper function
		[▶ 240]	Checking doors and windows
		[▶ 240]	Checking safety labels and information labels
		[▶ 240]	Checking heating, ventilation and air conditioning system
		[▶ 241]	Checking the tires

8.4.2 Inspection intervals



NOTICE

Technical damage due to delayed or non-executed inspections.

Regular inspections and maintenance are a prerequisite for the technically flawless operation of the vehicle. If inspections and maintenance are not carried out, not carried out on time or not carried out properly, this can lead to technical damage to the vehicle.

- ▶ Observe the inspection indication on the display.
- ▶ Observe inspection intervals.
- ▶ Plan inspections in good time and have them carried out by an authorized service center.

Certain inspection intervals apply to the vehicle.

The vehicle's display shows the operating hours until the next inspection, see [Display for inspections on page 194](#).

The first inspection is to be carried out once at 100 operating hours. Further inspections are to be carried out every 500 and every 1500 operating hours, but at least annually.

The inspections must be carried out by a service center. Inspections are documented in the inspection booklet by the service center carrying out the inspection.

8.4.2.1 Display for inspections

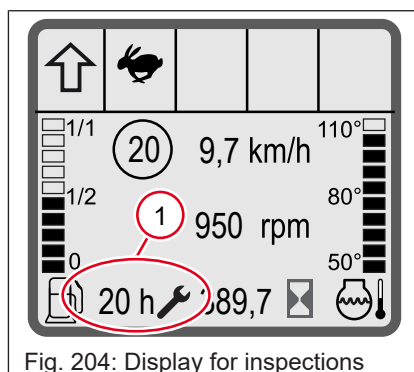


Fig. 204: Display for inspections

The vehicle is equipped with an inspection display. The symbol indicates that the inspection display is active. The inspection indicator shows the remaining time in operating hours (**h**) or weeks (**w**) until the next inspection at position 1 on the display. If less than 30 operating hours have elapsed before the next inspection, the remaining number of hours is shown continuously on the display.

If the time of the inspection due is exceeded, the display shows the hours counted as the inspection due date with one (-) before the number of hours.

Once the inspection has been carried out, the inspection display is reset by the service center.

8.4.2.2 Inspections to be carried out

The inspection intervals are subdivided as follows:

- A** Once after 100 operating hours.
- B** Every 500 operating hours.
- C** Every 1500 operating hours or annually.

Explanation of the markings in the inspection plan:

- ◆ Means that this activity must be performed at the marked inspection interval.
- ◇ Means that this activity does not have to be performed at all inspection intervals. The interval is indicated in the activity.

Activity	A	B	C
Service and parking brake			
Check the operating and parking brake for correct function	◆	◆	◆
Check brake fluid (ATF), fill if necessary	◆	◆	◆
Change brake fluid (ATF) every 3000 3000 operating hours			◇
Perform function check on accelerator pedal and brake/inching pedal	◆	◆	◆
Steering system			
Check steering column adjustment	◆	◆	◆
Electrical system			
Check the lighting system and electrical system (if fitted)	◆	◆	◆
Battery: Check charge condition	◆	◆	◆
Check window wiper/washer system (if fitted)	◆	◆	◆
Working hydraulics			
Control lever (joystick): Check safety device for road travel	◆	◆	◆
Hydraulic oil: Check engine oil, fill if necessary	◆	◆	◆
Check breather filter of hydraulic system for soiling, replace if necessary	◆	◆	◆
Check hydraulic oil for contamination, replace if necessary, incl. high-pressure and return filter	◆	◆	◆
Check the pressure accumulator, correct the pressure level if necessary			◆
The hydraulic oil must be changed every 1500 operating hours at the latest.			◇
Axles and transmissions			
Transfer gearbox: Check engine oil; fill if necessary	◆	◆	◆
Differential front axle / rear axle: Check engine oil; fill if necessary	◆	◆	◆
Planetary drives front axle / rear axle (left / right): Check engine oil, fill if necessary	◆	◆	◆
Change transmission oil in transfer case			◆
Change transmission oil in front and rear axle differential			◆
Exchange transmission oil in front and rear axle planetary drives (left and right)			◆
Diesel engine			
Change engine oil		◆	◆
Exchange engine oil filter		◆	◆
Check fuel filter, replace if necessary	◆	◆	◆
Check radiator for contaminants and clean if necessary	◆	◆	◆

Activity	A	B	C
Cooling water: check level, refill if necessary	◆	◆	◆
Check belt for wear and pretension, replace if necessary	◆	◆	
Change belt			◆
Clean air filter and safety cartridge, replace if necessary	◆	◆	◆
Replace air filter and safety cartridge every 3000 operating hours			◇
Check crankcase ventilation system		◆	◆
Check fuel lines, lubricating oil lines, coolant lines and breather hose and replace if necessary		◆	◆
Check turbocharger (if fitted)			◆
Check inlet-exhaust valve clearance and adjust if necessary every 1000 operating hours			◇
Changing the coolant			◆
Check inlet throttle valve			◆
Check/clean fuel injectors			◆
Check exhaust gas recirculation valve (EGR valve)			◆
Clean/check DPF DOC (if fitted)			◆
Change diesel particulate filter (DPF) every 9000 operating hours			◇
Driver's cab / chassis			
Check driver's seat, seat belt for wear, function and fastening	◆	◆	◆
Check seat switch	◆	◆	◆
Check locks/door latches, clean, lubricate, oil if necessary	◆	◆	◆
Cab filter – clean driver's cab check, replace if necessary	◆	◆	◆
Check heating, ventilation (driver's cab)	◆	◆	◆
Check warning and information signs for damage and loss	◆	◆	◆
Tires			
Check tires for damage, inflation pressure, tread depth	◆	◆	◆
Loader unit			
Power coupler: Check lock	◆	◆	◆
Options			
Air conditioning: Check function, refill if necessary, clean condenser, check filter for contamination, replace if necessary	◆	◆	◆
Trailer coupling: Check function, damage, wear – if present	◆	◆	◆
Additional control circuits: Checking for correct function	◆	◆	◆
Check lowering brake valves for function, - if present	◆	◆	◆
Lubricate			
Lubricate according to lubrication plan	◆	◆	◆
Lubricate drive shafts universal joints, if nipples are present	◆	◆	◆
Hinges, joints, fittings (e.g. door opener)	◆	◆	◆
Lubricate center joint and check for function and wear (axial play max. 1.5 mm)	◆	◆	◆
Further activities			
Visual leakage check of all air and fluid lines	◆	◆	◆
Check screws and nuts or screw connections for tightness. Retighten if necessary	◆	◆	◆

8.5 Vehicle fluids

8.5.1 Overview of vehicle fluids and filling quantities



Information

The oil level up to the markings on the measuring rods or check plugs is binding for the oil filling!

Position	Capacity	Fluid	Specification
Hydraulic system complete	40.0 l	Hydraulic oil HLP	ISO VG 46
Hydraulic oil tank	30.0 l		
Front axle PA940	3.2 l	Transmission oil SAE 90 GL 5	API GL5 – MIL2105
Rear axle PA940	3.9 l		
Braking system	0.5 l	ATF oil	Hydraulic oil
Air conditioning system	0.5 kg	Refrigerant R134a	DIN 9860
Grease lubrication points		Multi-purpose grease	Water-resistant

Engine fluids



NOTICE

Damage to the engine due to incorrect filling quantity or incorrect specification of vehicle fluids!

If the vehicle can be equipped with different engine types, the filling quantities and specifications of the vehicle fluids of the engine types may differ. The type label of the vehicle indicates the engine power in kW.

- Ensure that the data is read from the correct table.

Vehicle fluids engine Yanmar 3TNV80FT – MWM2 (18.4 kW)

Position	Capacity	Fluid	Specification
Fuel tank	50.0 l	Diesel fuel	ASTM D 2896
Engine oil with filter	4.4 l	Engine oil SAE 10W40 ambient temperature: -20 °C to +40 °C	API CH-4
Cooling system capacity	7.0 l	Water with commercially available HD-coolant/anti- freeze compound	HD-coolant/antifreeze compound: ASTM D 4985

Vehicle fluids Engine Yanmar 3TNV86CHT - MWM2 (33,3 kW) and Yanmar 3TN86CHT - HP (40.1 kW)

Position	Capacity	Fluid	Specification
Fuel tank	50.0 l	Diesel with very low sulfur content (<15 mg/kg)	ASTM D 2896

8.6 Levels

Position	Capacity	Fluid	Specification
Engine oil with filter	5.5 l	Engine oil SAE 10W40 ambient temperature: -20 °C to +40 °C	API CJ-4, ACEA E-6, JASO DH-2
Cooling system capacity	7.5 l	Water with commercially available HD-coolant/anti- freeze compound	HD-coolant/antifreeze compound: ASTM D 4985

8.6 Levels

8.6.1 Fuel level

**⚠ CAUTION****Health hazard due to fuel!**

Fuel and its vapors are harmful to health.

- ▶ Avoid contact with the skin, eyes and mouth.
- ▶ Seek medical attention immediately in case of accidents with fuel.
- ▶ Wear protective equipment.

**⚠ CAUTION****Fire hazard due to fuel!**

Fuels form flammable vapors. This can cause fires that lead to injuries.

- ▶ Do not smoke, avoid fire and open flames.
- ▶ Gasoline admixtures for diesel are prohibited.
- ▶ Keep vehicle clean and wipe up spilled fuel immediately.

**NOTICE****Damage due to excessive sulfur content in the fuel!**

Low-grade fuel can cause damage to the engine.

- ▶ Do not use heating oil.
- ▶ Do not add gasoline.

8.6.1.1 Refueling

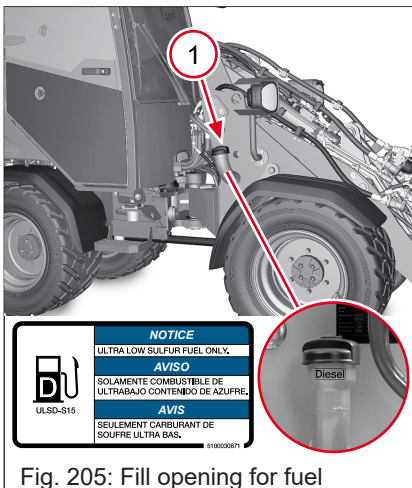


Fig. 205: Fill opening for fuel

The fill opening is located at position 1 on the vehicle.

1. Lower the loader unit to the ground.
2. Switch off the ignition and remove the ignition key.
3. Unscrew the lid of the fill opening.
4. Refuel the vehicle.
5. Close the fill opening carefully after refueling.



Environment

Fuel is harmful to the environment!

- ▶ Avoid releasing it into the environment.
- ▶ Immediately absorb diesel fuel leaks, spills or overflowing fuel with a binding agent.
- ▶ Dispose of fuel or binding agent in an environmentally friendly manner and separately from other waste.
- ▶ If larger quantities of fuel are released, notify the competent authorities (e.g. nature conservation authority, fire brigade, etc.).

8.6.1.2 Water separator maintenance

Preparation for maintenance In the engine compartment

1. Park the vehicle on a stable, level and dry surface.
2. Secure the vehicle with the parking brake.
3. Lower the loader unit to the ground.
4. Switch off the ignition and remove the starting key.
5. Let the engine cool down.
6. Open the engine hood.

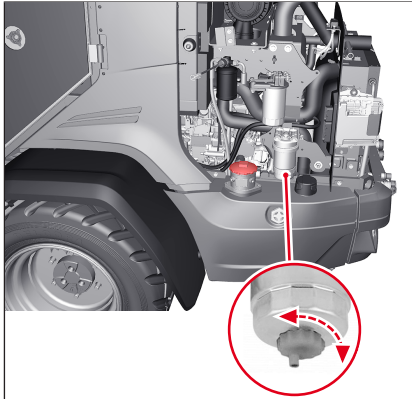



Fig. 206: Position of the water separator

The vehicle is equipped with a water separator on the fuel filter. Water in the fuel may cause functional disruptions and damage. The water separator on the fuel filter must be checked regularly.

If the symbol  appears on the display, check the fuel filter immediately. Collected water must be drained in the sight glass of the fuel filter.

Drain water

1. Place a container under the water separator .
2. Remove the drain plug from the filter.
⇒ The collected water drains.
3. Firmly re-tighten the drain plug.
4. Bleed the fuel system.
5. Start the engine and check the fuel pre-filter for leaks.

8.6.1.3 Bleeding the fuel system

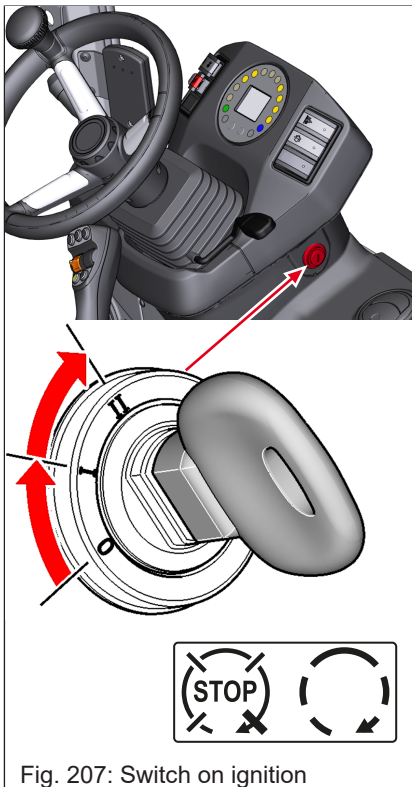


Fig. 207: Switch on ignition

✓ Water from the fuel filter was drained.

1. Check the fuel level from the fuel tank. Add fuel if necessary.
2. Move starting key to position I.
⇒ Electric fuel pump working.
3. Wait one minute.
⇒ The fuel system vents automatically.
⇒ Engine is ready to start.

8.6.2 Fill level engine oil



NOTICE

Damage to the engine due to incorrect fill level of the engine oil!

- ▶ The oil level must not fall below the MIN mark on the oil dipstick.
- ▶ The oil level must not exceed the MAX mark on the oil dipstick.

Preparation for maintenance In the engine compartment

1. Park the vehicle on a stable, level and dry surface.
2. Secure the vehicle with the parking brake.
3. Lower the loader unit to the ground.
4. Switch off the ignition and remove the starting key.
5. Let the engine cool down.
6. Open the engine hood.

8.6.2.1 Checking the engine oil level

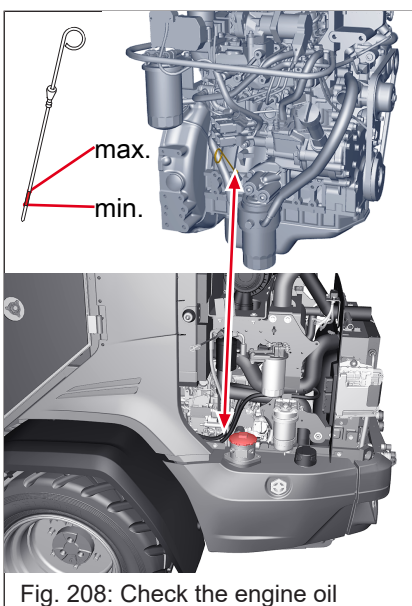


Fig. 208: Check the engine oil

1. Pull out oil dipstick.
2. Wipe the oil dipstick with a clean and fiber-free cloth.
3. Plug the oil dipstick back in.
4. Pull out the oil dipstick again.
5. Check the oil level.
6. Plug the oil dipstick back in.

8.6.2.2 Adding engine oil



NOTICE

Using the wrong engine oil can damage the engine!

- ▶ Only use engine oil with the correct specification.
- ▶ Use a funnel with a hose extension as a filling aid.

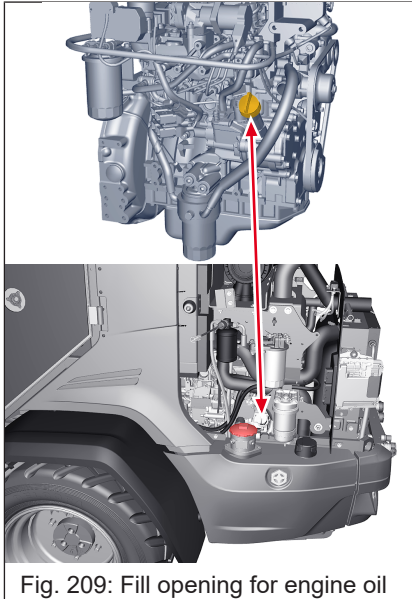


Fig. 209: Fill opening for engine oil

If the oil level is below the MIN mark, the engine oil must be refilled at the fill opening **1**.

✓ Engine oil level was checked.

1. Open the cover of the fill opening for engine oil.
2. Add engine oil.
3. Check the engine oil level.
4. If necessary, continue filling with engine oil until the MAX mark is reached.
5. Close the fill opening.

8.6.3 Level of coolant



⚠ WARNING

Risk of scalding due to hot coolant!

The cooling system is under pressure after switching off the engine. The coolant has heated up and expanded. When the fill opening is opened, the pressure escapes and hot liquid can splash out. Severe scalding can occur.

- ▶ Never open the fill opening when the engine is hot or the cooling system is under pressure.
- ▶ Allow engine to cool sufficiently.
- ▶ Wear protective equipment.



NOTICE

Technical damage due to incorrect or insufficient coolant!

- ▶ Only use coolant with the correct specification. See tables for vehicle fluids and filling quantities.
- ▶ The coolant should consist of equal parts of water and antifreeze compound. This mixture ensures the best possible ratio between cooling performance and anti-corrosion protection.
- ▶ Do not fill coolant too quickly. Fill in a maximum of five liters per minute. If the coolant is added too quickly to the cooling system, air bubbles can be trapped in the cooling system and cause engine overheating.

Preparation for maintenance In the engine compartment

1. Park the vehicle on a stable, level and dry surface.
2. Secure the vehicle with the parking brake.
3. Lower the loader unit to the ground.
4. Switch off the ignition and remove the starting key.
5. Let the engine cool down.
6. Open the engine hood.

8.6.3.1 Check the coolant level

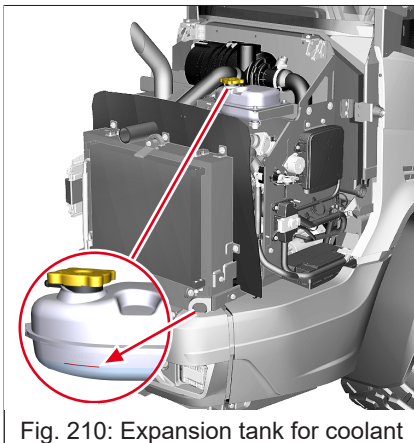


Fig. 210: Expansion tank for coolant

Check cooling system at regular intervals.

Ensure that sufficient antifreeze compound is always added to the coolant, even in summer. The antifreeze compound prevents internal corrosion of the radiator and engine.

The coolant level can be checked at the expansion tank in the engine compartment. Level must be between the MIN and MAX markings.

8.6.3.2 Adding coolant



⚠ WARNING

Risk of scalding due to hot coolant!


The cooling system is under pressure after switching off the engine. The coolant has heated up and expanded. When the fill opening is opened, the pressure escapes and hot liquid can splash out. Severe scalding can occur.

- ▶ Never open the fill opening when the engine is hot or the cooling system is under pressure.
- ▶ Allow engine to cool sufficiently.
- ▶ Wear protective equipment.



NOTICE

Technical damage due to insufficient filling level!

- ▶ Check or refill the filling level according to the service intervals specified in these operating instructions.
- ▶ Add coolant when the symbol  appears on the display between service intervals.

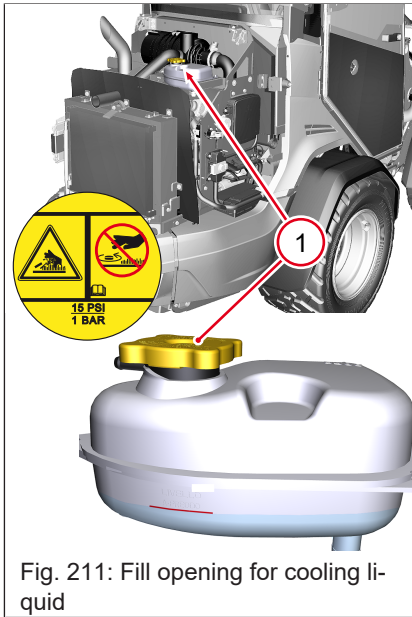


Fig. 211: Fill opening for cooling liquid

If the coolant level is below the MIN mark, the coolant must be refilled at the fill opening 1.

- ✓ Preparations for maintenance in the engine compartment were carried out.
- ✓ Protective equipment is on.

1. Open the lid of the fill opening for coolant.
2. Add coolant.
3. If necessary, add coolant until the MAX mark is reached.
4. Close fill opening for coolant.



Environment

Possible environmental damage.

- ▶ Avoid release of antifreeze compound and coolant.
- ▶ Collect antifreeze compound and coolant and dispose of in an environmentally friendly manner.

8.6.3.3 Checking the antifreeze compound

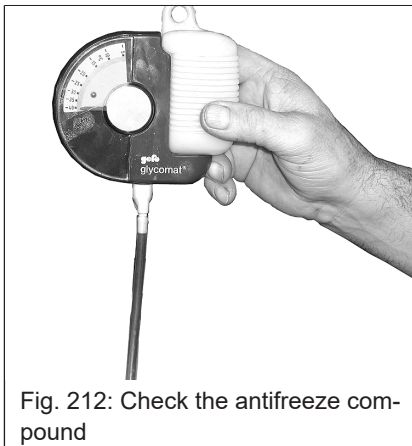


Fig. 212: Check the antifreeze compound

The antifreeze compound prevents the coolant from freezing at sub-zero temperatures and protects the engine block and radiator from internal corrosion. Under normal conditions an antifreeze compound content of -20 °C to -30 °C is sufficient. The antifreeze concentration can be checked with an antifreeze tester.

Coolant compound table

Outside temperature 1)	Water content	Antifreeze compound ²⁾
-37 °C	50 %	50 %

- 1) Use the 1:1 concentration for warm outside temperatures, too, to ensure protection against corrosion, cavitation, and deposits.
- 2) Do not mix the coolant with other coolants.

8.6.4 Hydraulic oil level



NOTICE

Damage to hydraulic system due to incorrect fill level!

- ▶ The hydraulic oil level must be visible in the middle of the oil sight glass.
- ▶ Check fill level regularly.
- ▶ Do not use the vehicle if the fill level is not correct.



NOTICE

Damage to the hydraulic system due to incorrect or contaminated hydraulic oil!

- ▶ Only use approved hydraulic oil.
- ▶ Oil turbidity means that there is water or air in the hydraulic system which can damage the hydraulic oil pump. Have the problem only rectified by an authorized service center.
- ▶ Do not use the vehicle until the fault has been rectified.

8.6.4.1 Check the hydraulic oil level

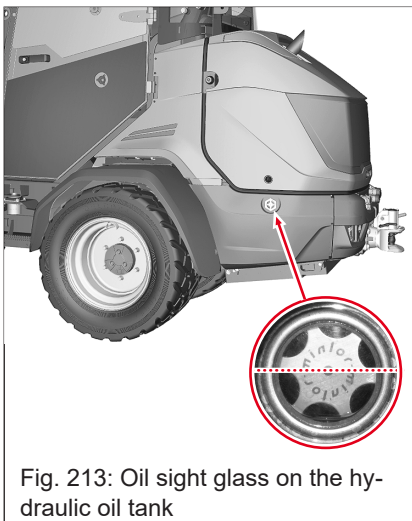


Fig. 213: Oil sight glass on the hydraulic oil tank

- ✓ Park the vehicle on a stable, level and dry surface.
1. Secure the vehicle with the parking brake.
 2. Retract the loader unit and lower it to the ground.
 3. Switch off the ignition and remove the key.
 - ⇒ Check the hydraulic oil level in the gauge glass on the hydraulic oil tank.
 - ⇒ The hydraulic oil level must be visible in the middle of the oil sight glass.

8.6.4.2 Adding hydraulic oil

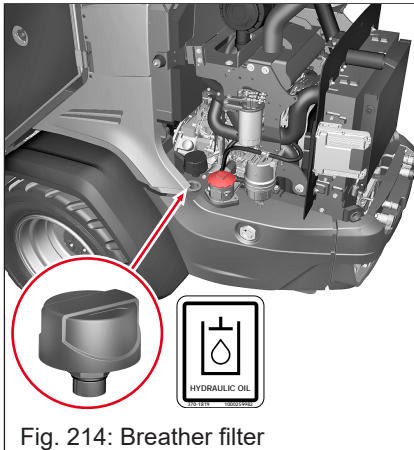


Fig. 214: Breather filter

If no or too little hydraulic oil is visible in the inspection window, hydraulic oil must be topped up.

- ✓ Check the hydraulic oil level.

 1. Unscrew the breather filter.
 2. Add hydraulic oil.
 3. Check fill level of hydraulic oil.
 4. Screw in the breather filter.

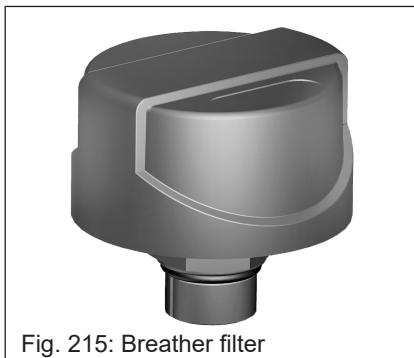


Fig. 215: Breather filter

Breather filter for the hydraulic oil tank

The breather filter ensures the ventilation of the hydraulic oil tank when the hydraulic oil level varies. The breather filter contains a filter element that prevents dust and dirt from entering and squirts of oil from escaping. There is a valve in the breather filter that holds the tank under light pressure. This pressure escapes when the hydraulic oil filler neck is opened. Replace the breather filter every 1,000 operating hours at the latest!

8.6.4.3 Bleeding the hydraulic system



⚠ WARNING

Injury hazard due to uncontrolled movements of the loader unit!

Air inclusions in the hydraulic system can cause uncontrolled movements of the loader unit due to pressure loss. This may result in accidents that could result in serious injury or death.

- ▶ Bleed the hydraulic system in case of malfunctions of the hydraulic system or after longer downtimes.
- ▶ Bleed the hydraulic system only from the seat.
- ▶ Bleed the hydraulic system only when the vehicle is at a standstill.
- ▶ Ensure that there are no persons in the danger zone.

✓ The fill level in the hydraulic oil tank is checked.

1. Sit down on the operator seat.
2. Start the engine of the vehicle and let it idle for a few minutes.
3. Completely retract and extend the piston rods of all hydraulic cylinders several times using the joystick.
4. Actuate the steering system in both directions as far as it will go. Repeat this procedure until the steering system works correctly and without noise.
5. Check the fill level in the hydraulic oil tank and top up hydraulic oil if necessary.

8.6.5 Check fill level of brake fluid.



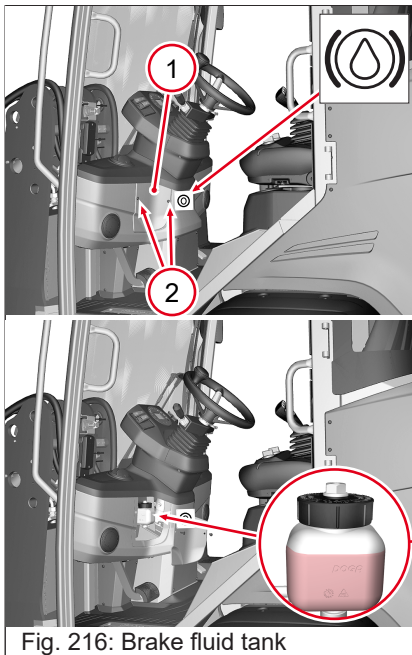
⚠ WARNING

Accident hazard due to malfunctioning brakes!


The braking system is a safety device. Improper maintenance can lead to failure of the braking system. This may result in accidents that could result in serious injury or death.

All repair work on the braking system may only be carried out by trained personnel at an authorized service center.

- ▶ Check the brake function once a day.
- ▶ If the brake fluid level drops between two checks or the warning light comes on, there is a defect in the brake system.
- ▶ Do not operate the vehicle with malfunctioning brakes.
- ▶ Perform service according to the service intervals.



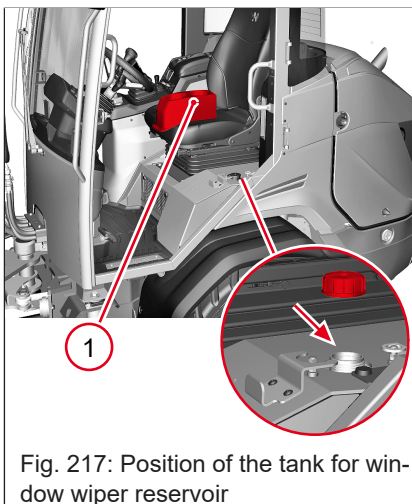
Check the brake fluid

The brake fluid level is monitored by a switch in the container. When the brake fluid level is too low, the warning light "vehicle electronics"  lights up continuously and a warning sound is heard.

The reservoir for the brake fluid is located on the left side in the cab. The container is accessed by removing the cover **1**. To remove the cover, unscrew the screws **2**. After checking the brake fluid level, reattach the cover.

If the brake fluid level in the reservoir is too low, do not drive the vehicle anymore. Only drive the vehicle again after it has been inspected and approved by an authorized service center.

8.6.6 Windshield wiper water level



The windshield wiper reservoir is located to the left of the driver's seat in the cab. The reservoir is covered with a panel.

Make sure that the windshield wiper reservoir always has enough fluid in it. Add only clean tap water. Add a suitable window cleaner if necessary. During winter, add antifreeze to the water.

Checking/refilling windshield wiper water

✓ Park the vehicle on a stable, level and dry surface.

1. Secure the vehicle with the parking brake.
2. Lower the loader unit to the ground.
3. Switch off the ignition and remove the starting key.
4. Remove side console **1**. The side console is fixed with magnets.
 - ⇒ The container for the window wiper is accessible.
5. Check the level of the windshield wiper water in the reservoir.
 - ⇒ Refilling the windshield wiper water if necessary:
 1. Open the fill opening in the reservoir.
 - ⇒ Use filling aid, e.g. hose, if necessary.
 2. Fill with water, if necessary mixed with window cleaner or antifreeze compound.
 3. Close the fill opening.
 4. Put on side console **1**.

8.7 Lubricating the vehicle and attachment

8.7.1 Lubricating the vehicle

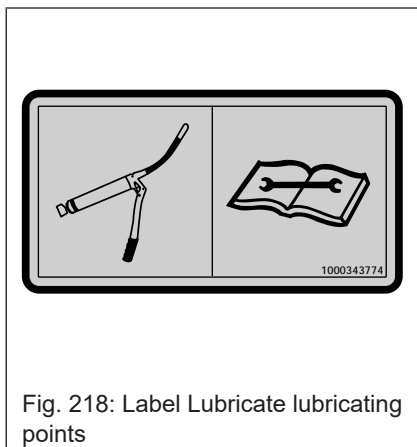


Fig. 218: Label Lubricate lubricating points

There are various lubrication points on the vehicle which must be lubricated every 20 operating hours with water-resistant multi-purpose lubricant. The following lubrication plan shows the lubrication points on the vehicle.

The number of grease nipples is indicated in square brackets under the lubrication plan. For example: **1** Automatic trailer coupling [1]

This means that there is automatically a grease nipple at position 1 on the trailer coupling.

Depending on the equipment variant, the number of grease nipples may vary. If different numbers of grease nipples are possible, the number is shown as follows: [1]/[2].

The standard version has one grease nipple, the variant has two grease nipples.

When lubricating, check the bearings of the loader unit and the hydraulic cylinder. Worn bearing bushings must be replaced by an authorized service center.

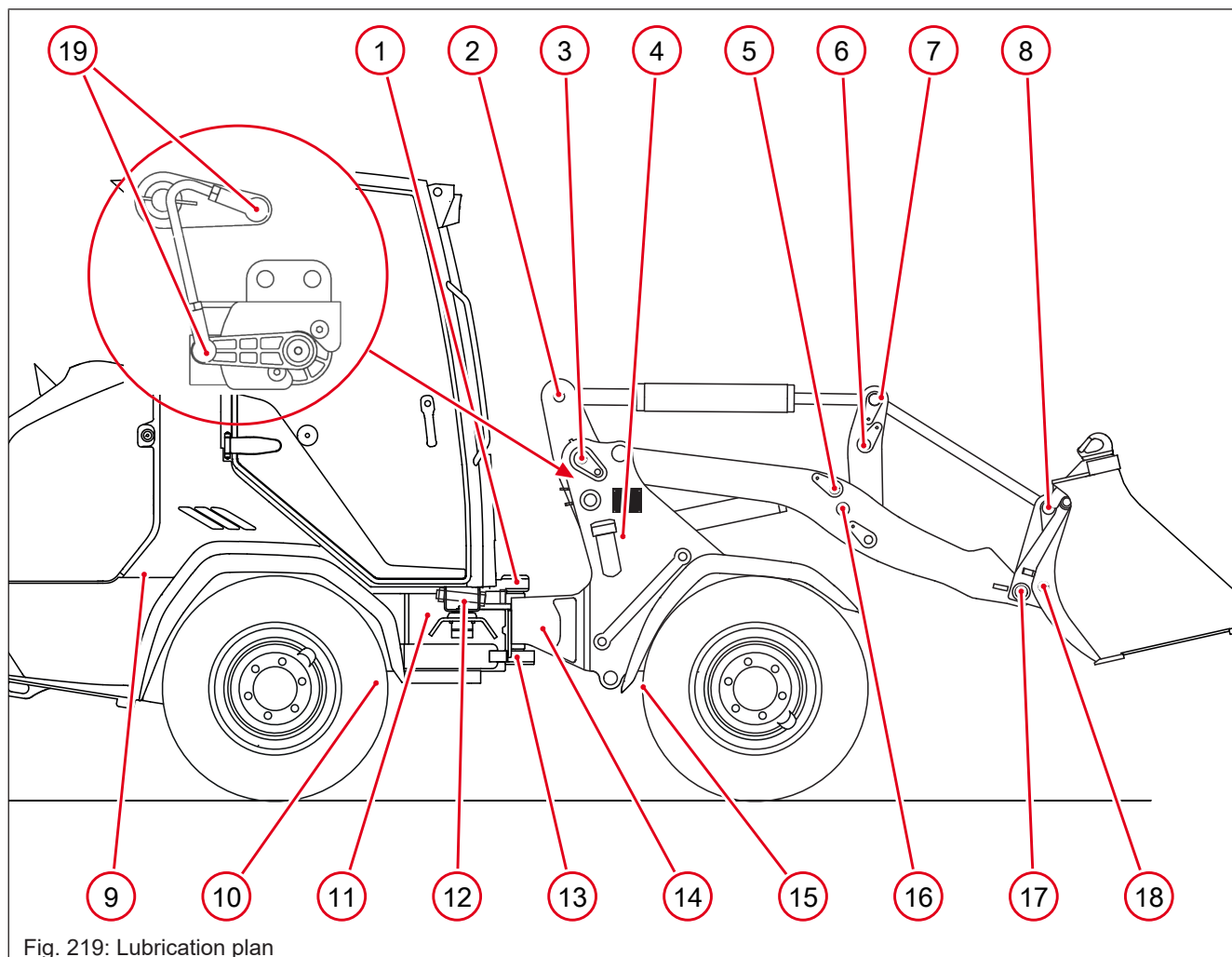



Fig. 219: Lubrication plan

Lubrication point and number [x]		
1	Bearing of the central joint at the top	[2]
2	Bearing of tilt cylinder rear	[1]
3	Loader unit bearing	[2]
4	Rear bearing of the lift cylinders	[2]
5	Front bearing of the lift cylinders	[2]
6	Bearing of tilt cylinder front	[1]
7	Bearing of drawbar rear	[1]
8	Bearing of drawbar front	[1]
9	Rear cab tilt hinge	[1]
10	Drive shaft rear (if equipped with nipple)	[1]
11	Bearing of the steering cylinder at the rear (remote lubrication at entry)	[1]
12	Front cab tilt hinge	[1]
13	Bearing of the central joint bottom	[1]
14	Bearing of steering cylinder front	[1]
15	Drive shaft front (if equipped with nipple)	[1]
16	Bearing of the return lever	[1]
17	Pivot point of quickhitch	[2]
18	Hydraulic locking bolt for attachments	[2]
19	Ball heads of the angle sensor (if available)	

8.7.2 Central lubrication system



Fig. 220: Positioning of the central lubrication system on the vehicle

The central lubrication system automatically lubricates the vehicle's lubrication points periodically. The integrated electronic control unit has a data memory for saving the times that have been set or that have elapsed. The time is taken and saved if the ignition is switched off during lubrication or during a break. The remaining lubrication time or break time is read from the memory upon switching the ignition on again, and lubrication is resumed where it was interrupted.

Lubrication time control



NOTICE

Water penetrating into the controls of the central lubrication system can destroy them!

- ▶ Always close the lid of the central lubrication system correctly.

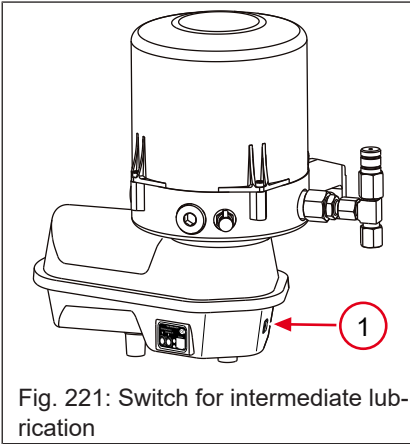


Fig. 221: Switch for intermediate lubrication

Break and lubrication times can be set with the time-dependent control of the central lubrication system. Break times are the periods between two lubrication times.

When the ignition is switched on, intermediate lubrication can be triggered at any time by actuating switch **1** on the side of the pump. This intermediate lubrication can also be used as a functional check.

The pump then immediately starts with a lubrication cycle. The lubrication or break time that has elapsed so far or that has been saved is reset and starts over again.

A fault in the central lubrication system can also be reset by pressing switch **1**. The pump restarts a lubrication cycle.

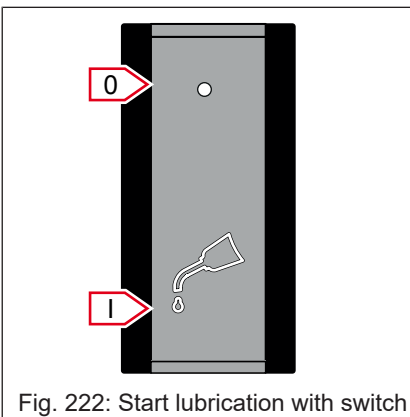


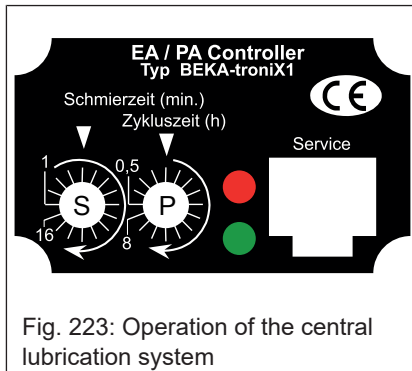
Fig. 222: Start lubrication with switch

Start lubrication manually with switch

The vehicle may be equipped with the switch shown in the cab. The switch is located in the switch strip in the side console and has two switch positions. The switch can be used to manually activate intermediate lubrication between automatic lubrication operations from the seat.

1. Move switch to position **I** and hold.
 - ⇒ Intermediate lubrication is started.
2. Release switch.
 - ⇒ Switch returns to position **0**.

After actuating the switch, a complete lubrication cycle is carried out.



Lubrication times and break times

The break time and the lubrication time are set by means of ratchet switches **S** and **P** in the control viewing window.

1. To set the time, remove the frame on the pump of the central lubrication system with a flat screwdriver.
2. Loosen exposed screws.
⇒ Remove the cover.
3. Set the pause time **P** and lubrication time **S** with a flat screwdriver.
4. Reinstall the protective cover and frame.

Lubrication time **S** can be adjusted between one and 16 minutes. There are 16 detents of one minute each available for this purpose.

Break time **P** can be adjusted between 30 minutes and eight hours. There are 16 detents of 30 minutes each available for this purpose.

The LEDs signal different operating states of the central lubrication system.

- When the ignition is switched on, both self-test LEDs light up for 1.5 seconds.
- During the lubrication process, the green LED lights up permanently.
- If faults occur in the central lubrication system, the red LED flashes.

The original operator's manual for the central lubrication system must for the central lubrication system must be observed.

Repair work



NOTICE

Damage to the vehicle due to non-lubricated lubrication points!

If lubricant escapes at the central lubrication system, one or more lubrication points are not lubricated.

- ▶ Have the error repaired by an authorized service center.

Repair work on the central lubrication system may only be performed by authorized service centers!

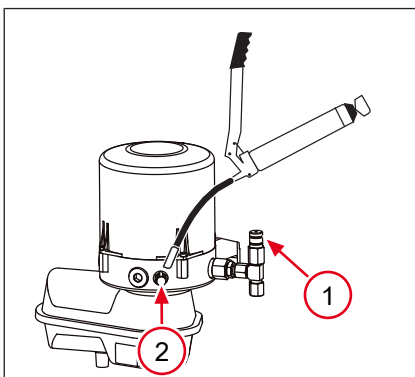


Fig. 224: Filling up the central lubrication system

Filling up the central lubrication system

The central lubrication system can be filled via grease nipple **2** or via a filling coupling with manually operated or pneumatic grease gun. For the specifications of the multi-purpose grease: see [Vehicle fluids on page 197](#).

8.7.3 Lubricating the attachments

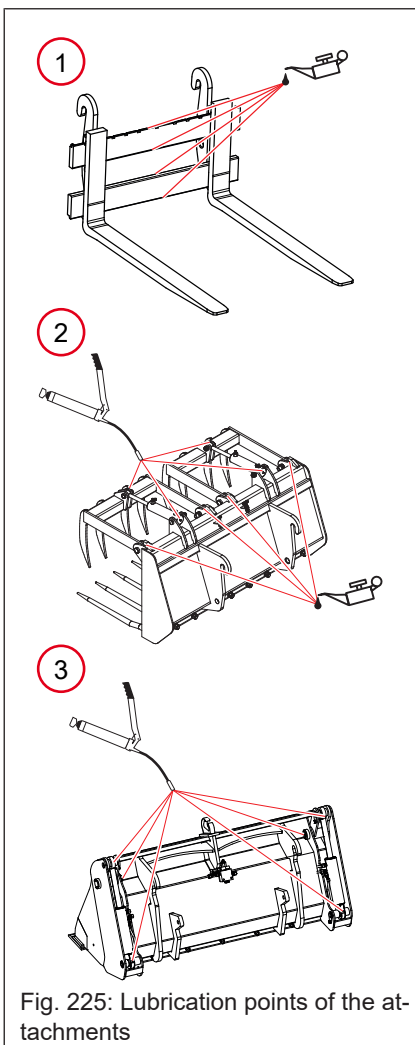


Fig. 225: Lubrication points of the attachments

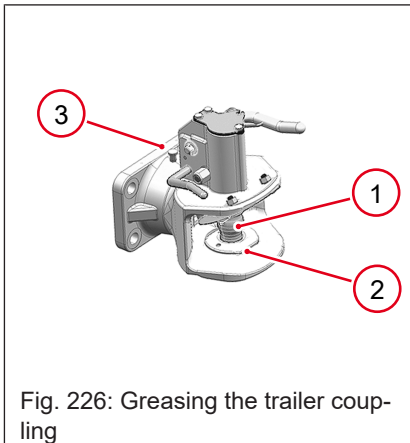
- 1 Pallet fork
- 2 Fork-and-grab attachment
- 3 4-in-1 bucket

Correct maintenance and service is absolutely necessary for smooth and continuous operation, and for a long service life of the attachments. The lubrication, maintenance and care instructions in the corresponding operator's manual for the attachments must be observed.

Clean attachments after use and check for damage. Have any damage repaired by an authorized service center. Do not work with damaged attachments.

Grease all lubrication points on the attachment weekly or every 20 operating hours with water-resistant multi-purpose grease. Lubricate all other moving parts with an oil can.

8.7.4 Greasing the trailer coupling



In order to ensure the correct function of the trailer coupling, coupling pin **1** must be closed when cleaning with a high-pressure cleaner.

1. Close the trailer coupling.
2. After cleaning, lubricate coupling pin **1** and base ring **2** with tough, water-resistant multi-purpose grease.
3. Grease the grease nipple **3** on the swivel joint.

8.8 Cleaning and care

8.8.1 Information on cleaning and care



NOTICE

Damage to vehicle due to cleaning work!

- ▶ When cleaning the vehicle, pay particular attention to the underside of the vehicle. Do not allow dirt to collect on the engine or gearbox.
- ▶ Do not clean sensitive electrical components such as alternators, fuse boxes, control levers, etc. with a high-pressure cleaner.



Environment

Avoid environmental damage!

- ▶ Clean the vehicle in a suitable place where the dirty waste water can be collected in an environmentally friendly manner.
- ▶ Collect contaminated water and dispose of it in an environmentally friendly manner.

Information on cleaning work

- Rubber parts and electrical components must not be cleaned with solvents or steam. Water can cause short circuits in the electrical system and cause new hazards.
- Do not use solvents that give off harmful or flammable vapors.
- Avoid skin contact with cleaning agents!
- Wear protective equipment.

When cleaning the vehicle with a high-pressure cleaner, observe the following:

- Maximum water pressure 130 bar.
- Maximum water temperature 80 °C.

In order to avoid damage to labels and other sensitive parts, do not hold the nozzle of the high-pressure cleaner too close to the vehicle.

Preparations for cleaning

1. Park the vehicle on firm and level ground.
2. Activate parking brake.
3. Place the loader unit on the ground using the attachment without applying pressure.
4. Switch off the ignition and remove the key.

8.8.2 Cleaning the vehicle from the outside



NOTICE

Damage due to rusting on paintwork, joints, screwed connections, etc.

A salty environment can promote rust formation on the paintwork, joints, screw connections, etc.

- ▶ Clean the vehicle thoroughly with water after any travel on saline ground conditions or roads and going to a different site!

The following aids are recommended for cleaning:

- High-pressure cleaner
- Steam jet
- Water with soap solution
- Sponge, brush

Clean the vehicle from the outside

- ✓ Preparations for cleaning carried out
- 1. Clean the outside and underside of the vehicle with a high-pressure cleaner.
- 2. Clean the notice and warning label.
- 3. Ensure that the engine and gear unit are free of dirt.
- 4. Clean cab windows and mirrors.

8.8.3 Cleaning the cab**NOTICE**

Do not clean the inside of the cab with a high-pressure cleaner, steam jet or strong water jet.

- ▶ Water under high pressure can penetrate into the electrical system and cause short circuits.
- ▶ Seals may be damaged and controls may be disabled.

The following aids are recommended for cleaning:

- Broom
- Vacuum cleaner
- Damp cloth
- Bristle brush
- Water with mild soap solution

Cleaning the seat belt

- ✓ Preparations for cleaning carried out
- 1. Check seat belt for dirt and damage.
- 2. Clean the seat belt when installed with mild soapy water. Do not clean chemically as this will destroy the tissue.
- 3. Have defective seat belts replaced immediately by an authorized service center.

8.8.3.1 Cleaning pedals and floor mat

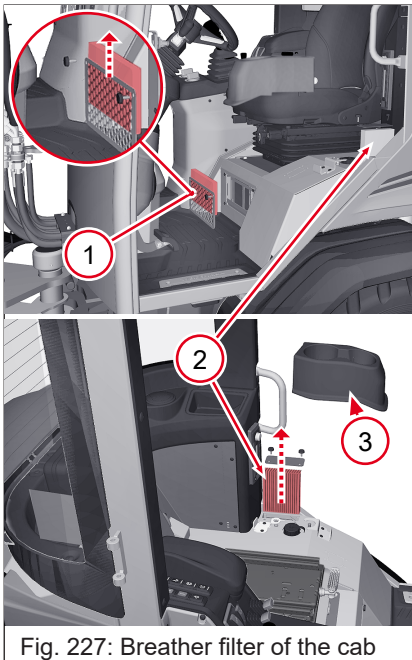
- ✓ Preparations for cleaning carried out
- 1. Clean pedals thoroughly.
- 2. Clean the floor area under the pedals.
- 3. Thoroughly clean the inside of the foot area.

8.8.3.2 Check/replace cab breather filter

The vehicle is equipped with two dry air filters to filter the intake air for cab ventilation. The filters are located in the cab.

Check/clean breather filter weekly. For cleaning, lightly tap the filter or blow it out carefully with compressed air.

Change breather filter annually. Replace more frequently if the vehicle is used for dusty applications. Only use original breather filters from the vehicle manufacturer.



Filter 1:

Filter 1 is located at the bottom of the footwell under the seat.

✓ Cab door is opened.

1. Unscrew the screws of the filter holder.
2. Remove the filter holder and pull the filter out of the holder.
3. Clean filter or use new filter.
4. Insert the filter into the filter holder.
5. Insert and screw on the filter holder.

Filter 2:

The filter 2 is located at the left next to the seat.

1. Remove the side console 3.
2. Unscrew the screws of the filter cover.
3. Remove the filter cover and pull out the filter.
4. Clean filter or use new filter.
5. Insert the filter into the filter holder.
6. Screw on the filter cover.

8.8.4 Clean engine and engine compartment



▲ WARNING

Injury hazard due to hot and rotating parts!

When the engine is running and for a short time thereafter, parts in the engine compartment may still be hot or rotate. This may cause crushing which may result in serious injury or death.

- ▶ Do not open the engine cover if the engine is running.
- ▶ Let the engine cool down.
- ▶ Wear protective equipment.



NOTICE

<otor damage due to moisture in electronics after cleaning!

When cleaning the engine with a water or steam jet, the moisture penetrating the electronics causes it to fail and leads to engine damage!

- ▶ Do not clean electrical transducers such as temperature and oil pressure switches or control units with a high-pressure cleaner.
- ▶ Protect electrical parts, e.g. three-phase generators, cable connectors, relays, etc. from moisture.

The following aids are recommended for cleaning:

- High-pressure cleaner
- Steam jet

Clean engine and engine compartment

- ✓ Engine is stopped and secured against starting.
 - ✓ Engine has cooled down.
 - ✓ Electrical components are protected from water.
 - ✓ Preparations for cleaning carried out
1. Carefully clean the engine and engine compartment with a water or steam jet.
 2. If electronic components in the engine compartment have come into contact with water, then dry them with compressed air and spray them with contact spray.

8.8.5 Radiator

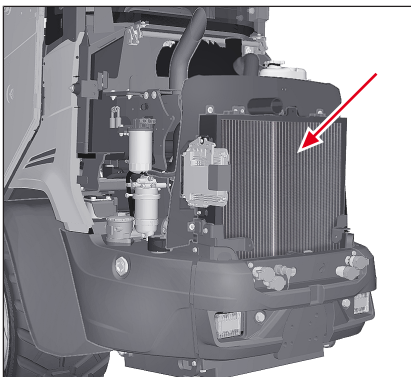


Fig. 228: Radiator in engine compartment

A combination radiator is located in the engine compartment. It consists of several parts. One part cools the hydraulic oil, the second part is intended for engine cooling and possibly another part cools the combustion air of the engine.

If the vehicle becomes too hot during prolonged operation or high outside temperatures, check the following points.

- Is there sufficient coolant in the radiator?
- Has the mixing ratio of the coolant been observed?
- Are the radiators and the spaces between the radiator fins clean and not blocked?
- Are all seals fitted around the radiator?

8.8.6 Cleaning the radiator



NOTICE

Risk of technical damage!

- ▶ The higher the dust content in the circulating air, the more frequently all radiators must be checked and cleaned.
- ▶ Always cover up the intake connection of the air filter before cleaning.
- ▶ Do not damage the fins when cleaning the radiator.
- ▶ Carefully straighten bent fins.



Environment

Avoid environmental damage!

- ▶ Clean the vehicle in a suitable place where the dirty waste water can be collected in an environmentally friendly manner.
- ▶ Collect contaminated water and dispose of it in an environmentally friendly manner.

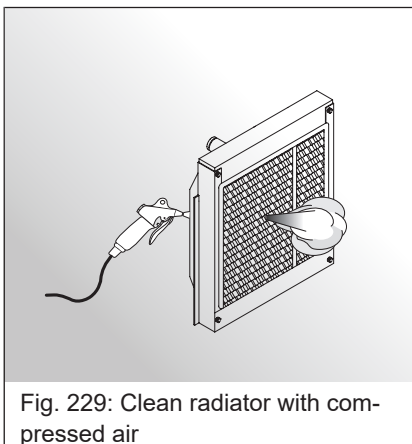


Fig. 229: Clean radiator with compressed air

Clean dirty radiator with compressed air. Heavily soiled radiators can also be cleaned with water and low pressure.

Clean the following components:

- Engine radiator
- Additional radiators for hydraulic oil, if available
- Radiators for fuel, if available
- Clean alternator only with compressed air!

8.8.7 Cleaning the condenser



NOTICE

Damage to the engine due to overheating when equipped with an air conditioning system!

If the vehicle is equipped with air conditioning, the condenser must be removed to clean the radiator and condenser of the air conditioning system.

- ▶ Handle the condenser with care. The condenser fins are very sensitive and can be easily damaged.

Preparation for maintenance In the engine compartment

1. Park the vehicle on a stable, level and dry surface.
2. Secure the vehicle with the parking brake.
3. Lower the loader unit to the ground.
4. Switch off the ignition and remove the starting key.
5. Let the engine cool down.
6. Open the engine hood.

Remove the condenser from the air conditioning system.

✓ Required tools: Wrench size 13 mm

1. Unscrew screw I.
2. Turn away bracket II.
3. Tilt the condenser forward.
 - ⇒ The radiator and condenser can now be cleaned.

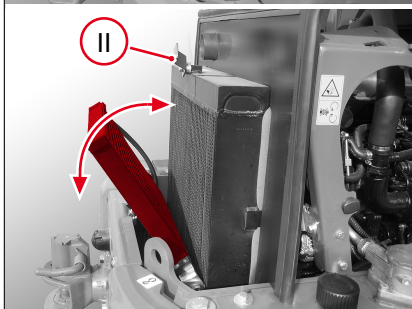
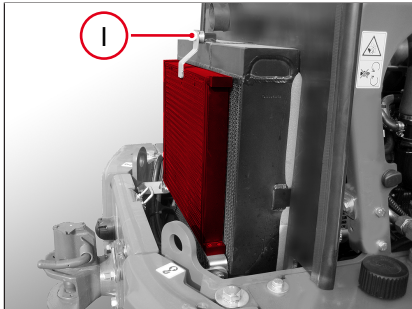


Fig. 230: Clean the condenser

Installing the condenser of the air conditioning system

1. Tilt the condenser backward.
2. Turn back holder II.
3. Tighten screw I.
4. Close the engine cover.
 - ⇒ The vehicle is operational.

8.8.8 Cleaning the air filter



NOTICE

Damage to the engine caused by a dirty air intake system!

Engine damage can occur if the engine draws in dirty air.

- ▶ Perform maintenance on the air filter according to the maintenance intervals specified in this operator's manual.
- ▶ Do not let the engine run if parts of the air intake system are removed.
- ▶ Immediately replace damaged air filters.
- ▶ Do not operate the engine without an air filter element.

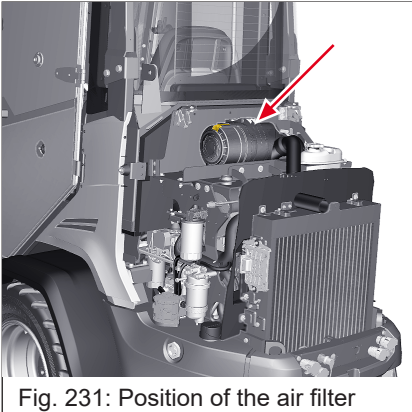


Fig. 231: Position of the air filter

The vehicle is equipped with an engine air filter for filtering the engine intake air. The air filter consists of a main filter and a safety filter.

Replace the main filter in time. If it is allowed to get too dirty, exhaust gas emissions will increase.

Preparation for maintenance In the engine compartment


1. Park the vehicle on a stable, level and dry surface.
2. Secure the vehicle with the parking brake.
3. Lower the loader unit to the ground.
4. Switch off the ignition and remove the starting key.
5. Let the engine cool down.
6. Open the engine hood.

8.8.8.1 Checking the dust valve



NOTICE

Technical damage due to dirty air filter!

- ▶ Perform maintenance on the air filter according to the maintenance intervals specified in this operator's manual.
- ▶ Clean the air filter when the symbol  appears on the display between maintenance intervals.

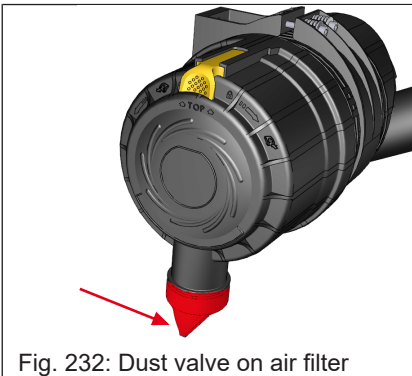


Fig. 232: Dust valve on air filter

✓ Preparations for maintenance in the engine compartment were carried out.

1. Check the dust valve for dirt.
2. Remove dust deposits by pressing the dust valve together.

8.8.8.2 Maintenance display for air filter

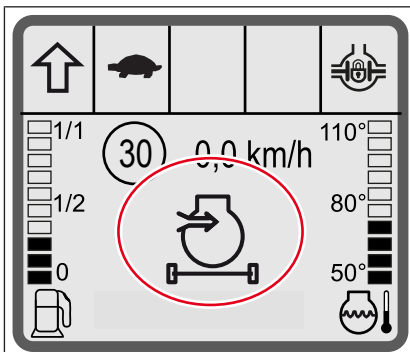



Fig. 233: Contaminant display of the air filter

Clean or replace the engine air filter when the symbol  appears in the display instrument between maintenance intervals.

8.8.8.3 Removing and cleaning the main filter

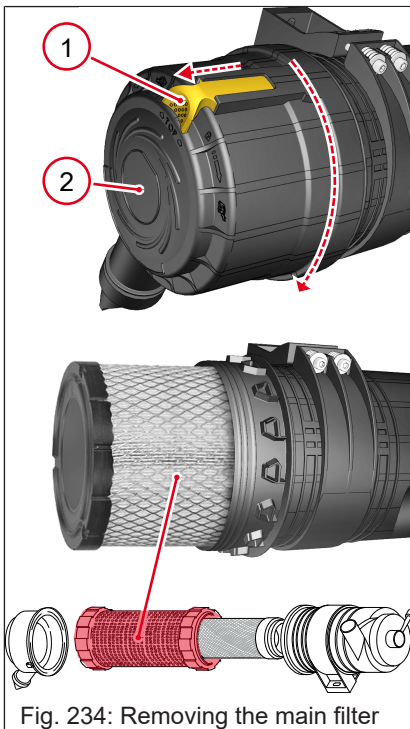



Fig. 234: Removing the main filter

Removing the main filter

✓ Preparations for maintenance in the engine compartment were carried out.

1. Pull out lock 1.
2. Replace the cover 2 and turn it counterclockwise until it stops.
3. Remove the cover.
4. Pull out the main filter.
 - ⇨ The safety filter remains in the housing.
5. Clean the main filter by knocking it gently and blowing compressed air from inside toward outside.
6. Replace the main filter if it is too dirty.

After cleaning the main filter, the symbol  on the display must not light up when the engine is running. If this is still the case, replace the main filter.

8.8.8.4 Checking and replacing the safety filter



NOTICE

Technical damage from the incorrect assembly of the air filter!

- ▶ The safety filter must be firmly seated in the housing.
- ▶ Do not force the main filter into the housing.

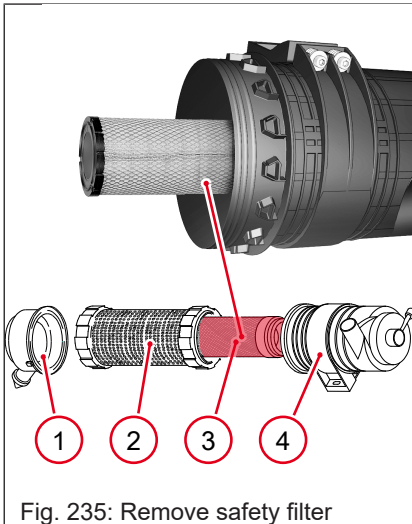


Fig. 235: Remove safety filter

- 1 Cover of the housing
- 2 Main filter
- 3 Safety filter
- 4 Housing

Remove safety filter

✓ Preparations for maintenance in the engine compartment were carried out.

1. Pull out lock 1.
2. Replace the cover 2 and turn it counterclockwise until it stops.
3. Remove the cover.
4. Pull out the main filter.
⇒ The safety filter can be seen now.
5. Pull out the safety filter.
6. Install a new safety filter.

Installing the safety filter

The air filter is installed in reverse order. Make sure that the air filter is firmly seated in the housing. If the main filter is difficult to install, the safety filter is not correctly seated in the housing. The main filter may be damaged.

1. Insert safety filter.
2. Insert the main filter into the housing.
3. Do not force the main filter into place.
4. Reapply cover. The dust valve must be pointing downwards.
5. Put on cover and turn counterclockwise until it stops.
6. Push in lock.

8.8.8.5 Check air intake line

Check air intake hose between air filter and engine:

- The hose must not be porous, cracked or damaged.
- The hose must sit firmly on the connection piece, it must not slip from the connection pieces. The fastening clamps must be tightened firmly.

8.9 Braking system

8.9.1 Checking the service brake and parking brake for function



⚠ WARNING

Accident hazard due to malfunctioning brakes!

The braking system is a safety device. Improper maintenance can lead to failure of the braking system. This may result in accidents that could result in serious injury or death.

All repair work on the braking system may only be carried out by trained personnel at an authorized service center.

- ▶ Check the brake function once a day.
- ▶ If the brake fluid level drops between two checks or the warning light comes on, there is a defect in the brake system.
- ▶ Do not operate the vehicle with malfunctioning brakes.
- ▶ Perform service according to the service intervals.

Check the function of the brake:

- ✓ There must be no persons in the immediate vicinity of the vehicle.
- Carry out braking tests at low speed.
 - ⇒ If the brake reacts differently than usual, do not operate the vehicle.
- ⇒ Contact an authorized service center immediately.

Further activities on the braking system

All repair work on the braking system may only be carried out by trained personnel at an authorized service center. The only exceptions to this are the brake fluid check and the brake functional check.

8.10 Steering system

8.10.1 Checking steering system for function



⚠ WARNING

Accident hazard due to steering system not working correctly!

Driving with a defective steering system can lead to accidents and injuries or death.

- ▶ Check that the steering system is working before starting a journey.
- ▶ Do not drive the vehicle if the steering system is defective.
- ▶ Have the steering system that is not working correctly repaired by a service center before continuing to drive the vehicle.

Daily before starting to drive, check the steering system for proper functioning. Proceed as follows:

1. Start the engine of the vehicle.
2. With the vehicle at a stand still, carry out uniform steering movements to the left and right up to the stop.
 - ⇒ There must be no jerky movements or noises.
 - ⇒ The steering system is operational.

Do not operate the vehicle if you detect jerky movements or noises.

All maintenance work on the steering system must be carried out by trained personnel in an authorized specialist service center.

8.10.2 Checking the steering column adjustment

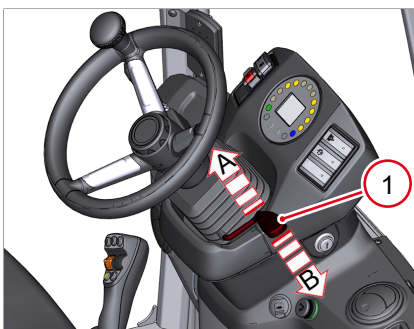


Fig. 236: Checking the steering column adjustment

1. Operate lever and hold.
2. Move the steering wheel once in all possible directions.
3. Release the lever.
4. The steering wheel is locked. Check correct locking by gently jerking.

8.11 Electrical system

8.11.1 Fuses

The circuits are protected by different types of fuses and main fuses. The fuses are located in different fuse boxes in the cab and in the engine compartment, [see Electrical system on page 272](#).

8.11.2 Checking the lighting

Switch on the following lights and check that they function correctly:

- Vehicle lights
 - Parking light
 - Low beam
 - High beam
 - Reversing lights and rear lights
 - Brake lights
- Hazard warning system and turn signals
- Work lights:
 - Front cab work lights
 - Rear cab work lights
 - Work lights at the loader unit, if fitted
 - Rotating beacon, if fitted.

The lenses of the headlights and lamps must not be dirty or damaged. The reflectors in the headlights and lamps must reflect sufficiently.

Have defective bulbs, damaged diffusing lenses and blunted reflectors replaced.

8.11.3 Checking window wiper and washer system

Replace wiper blades in good time if the wiper performance decreases.

The window wiper tank is located on the left-hand side of the rear of the cab. [see Windshield wiper water level on page 208.](#)

Check window wiper system and washer system for function by actuating the following functions:

- Front window wiper.
- Front washer system.
- Rear window wiper.
- Rear washer system.

8.11.4 Battery maintenance



⚠ WARNING

Caustic injury hazard due to battery acid!

Battery acid can cause serious burns in case of skin contact.

- ▶ Avoid contact of the battery acid with the skin, eyes and mouth.
- ▶ In case of contact with battery acid, immediately rinse the affected parts of the body with plenty of clear water and seek medical attention at once.
- ▶ Wear protective equipment.



⚠ WARNING

Explosion hazard due to batteries!

Batteries give off explosive gases that can cause deflagrations if ignited.

- ▶ Do not smoke, avoid fire and open flames.
- ▶ Do not place any tools or other metallic objects on the battery that could cause a short circuit.



NOTICE

Short-circuit in the electrical system due to incorrect sequence when connecting and disconnecting!

- ▶ Disconnecting: First the negative terminal, and then the positive terminal.
- ▶ Connecting: First the positive terminal, and then the negative terminal.

Information on batteries

- Always take off metal jewelry and watches before performing work on the battery or the electrical system.
- Dispose of old batteries in an environmentally friendly manner and separately from other waste.

Battery data

The battery has a nominal voltage of 12 volts.

The battery capacity is 77 Ah.

Preparation for maintenance In the engine compartment

1. Park the vehicle on a stable, level and dry surface.
2. Secure the vehicle with the parking brake.
3. Lower the loader unit to the ground.
4. Switch off the ignition and remove the starting key.
5. Let the engine cool down.
6. Open the engine hood.

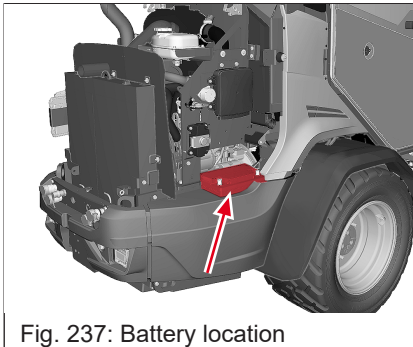


Fig. 237: Battery location

Removing the battery

Required tools: Wrench size 13 mm

- ✓ Preparations for maintenance in the engine compartment were carried out.
- ✓ Switch off the battery master switch: [see Battery master switch on page 87](#).

1. Unscrew the battery cover (4 screws wrench size 13).
2. Unscrew the line from the negative terminal (-).
3. Unscrew the line from the positive terminal (+).
4. Unscrew the battery holder with a wrench.
5. Remove the battery.

The installation of a new battery takes place in reverse order. Dispose of old batteries in an environmentally friendly manner and separately from other waste.

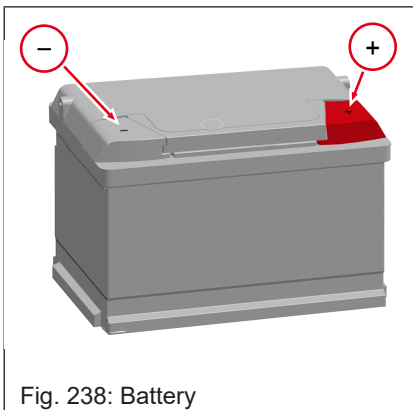


Fig. 238: Battery

Battery maintenance

Follow the operator's manual of the battery. The operator's manual of the battery is fastened on one side of the battery.

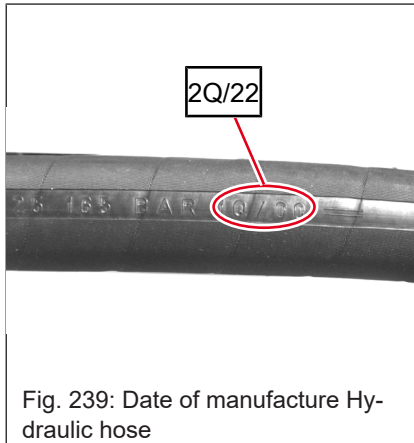
- Always keep the terminal heads of the battery and the terminals of the connecting cables clean and lubricate with anti-corrosion grease.
- Ensure that the cover of the positive terminal is always present and closed.

8.12 Working hydraulics

8.12.1 Checking the condition and age of hydraulic hoses

Important information for the owner of the vehicle

The entrepreneur/owner of the vehicle must ensure that hose pipes are replaced in appropriate intervals, even if no safety-relevant malfunctions can be detected on the hose pipe.



- Have hose assemblies checked by an expert (qualified person) before they are put into operation for the first time and at least once a year thereafter for their safe working condition.
- Have leaks immediately repaired and damaged pressure lines replaced by an authorized service center.
- Have hydraulic hoses checked by authorized technically trained personnel at the recommended intervals.
- Observe the following inspection intervals.
 - With normal wear, every 12 months.
 - In case of increased wear (longer operating times, multi-shift operation, high outside temperatures etc.), every 6 months.
- In the event of visible defects, have hydraulic hoses and lines replaced by an authorized service center.

In this context, reference is also made to the "Safety regulations for hydraulic lines", issued by the central office for accident prevention and industrial medicine. As well as to relevant standards, such as DIN 20066, TI.

The date of manufacture (month or quarter and year) is indicated on the flexible line.

Example:

- "2Q/22" indicates production in the 2nd quarter of 2022.

8.12.2 Checking the locking function for the joystick

Check the locking function of the joystick regularly. Carry out the function test only when the vehicle is at a standstill.

When the locking function is switched on, the loader unit must not move when the joystick is operated. If the loader unit does move, there is a technical defect which must be repaired by an authorized service center. Do not put the vehicle back into operation

To operate the joystick lock function, use [see Using the joystick lock function on page 136](#).

8.12.3 Checking the function of the lock

Check the mechanical and/or hydraulic locking mechanism for attachments regularly. Carry out the function test only when the vehicle is at a standstill. If a fault is detected in the hydraulic locking system, do not operate the vehicle and contact an authorized service center.

To operate the lock [see Coupling attachments on page 142](#) and [see Uncoupling attachments on page 148](#).

8.12.4 Checking the hydraulic control circuits for function

A hydraulically operated attachment is required to control the hydraulic control circuits.

The following functions must be checked and functional.

- All functions of the front hydraulic connections, if present, [see operate front hydraulic connections on page 149](#).
- All functions of the rear hydraulic connections, if present, [see operate rear hydraulic connections on page 156](#).

8.13 Engine

8.13.1 Checking/tensioning the belt



NOTICE

Cracked and stretched belts cause engine damage!

- ▶ Service the belts according to the maintenance intervals in this operator's manual.
- ▶ Observe the operator's manual of the engine.
- ▶ Have the belts only replaced by an authorized service center.

Preparation for maintenance In the engine compartment

1. Park the vehicle on a stable, level and dry surface.
2. Secure the vehicle with the parking brake.
3. Lower the loader unit to the ground.
4. Switch off the ignition and remove the starting key.
5. Let the engine cool down.
6. Open the engine hood.

Checking the belts

Press with your thumb to check whether the V-belt can be deflected between the pulleys by no more than about 10 mm. Check the belt for cracks and the like at the same time. If there are visible cracks, have the belts replaced immediately by an authorized service center.

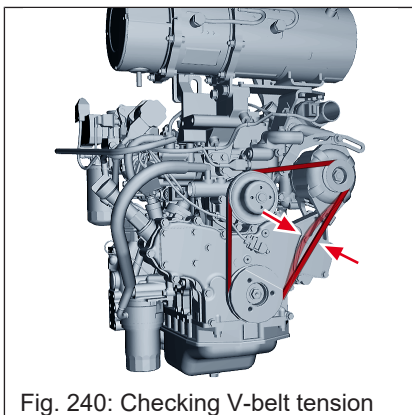


Fig. 240: Checking V-belt tension

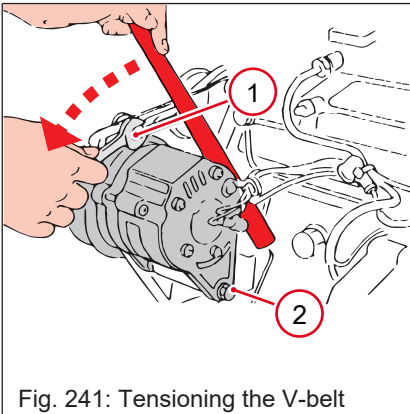


Fig. 241: Tensioning the V-belt

Tensioning the belt

1. Loosen fastening screws **2** of the alternator and set screw **1**.
2. Apply pressure to the alternator with a suitable tool until reaching the correct V-belt tension.
3. Hold the alternator in this position and tighten bolts **1** and **2**.
 ⇒ The V-belt is now tensioned.

8.14 Exhaust gas aftertreatment

8.14.1 Information on exhaust gas aftertreatment

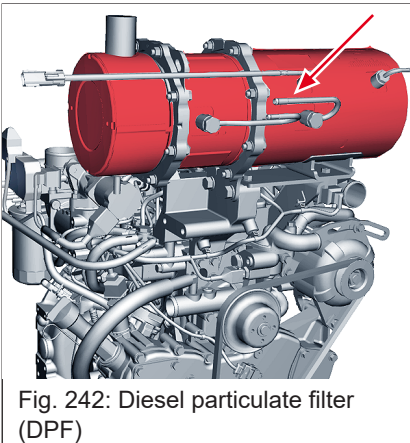


Fig. 242: Diesel particulate filter (DPF)

Maintenance and repair work involving the diesel oxidation catalytic converter and diesel particulate filter may only be performed by an authorized service center. The diesel particulate filter is a wear part and has to be checked and serviced by an authorized service center every 6000 operating hours.

Depending on the engine installed, the vehicle may be fitted with a system for exhaust gas aftertreatment.

- Yanmar 3TNV80FT engine (18.4 kW): Without exhaust gas aftertreatment
- Yanmar 3TNV86CHT engine (33.3 kW): With diesel particulate filter (DPF)
- Engine Yanmar 3TNV86CHT HP (40.1 kW): With diesel particulate filter (DPF)

8.14.2 Safety instructions on diesel particulate filter



⚠ WARNING

The exhaust system becomes very hot. There is a risk of burning!

During regeneration, exhaust gas temperatures of approx. 650 °C can occur in the exhaust system, even when the engine is idling.

- ▶ Keep your hands clear of the exhaust outlet.
- ▶ Keep a safe distance from the exhaust system.
- ▶ Do not open engine cover during regeneration and shortly after.

**NOTICE****The exhaust system becomes very hot. There is a risk of fire!**

Hot exhaust gases can cause fires in environments with highly flammable materials and cause significant property damage.

- ▶ When regenerating the diesel particulate filter, make sure that there are no easily flammable materials in the direct vicinity of the exhaust system, e.g. paper, dry grass, wood, wooden ceilings, oil, fuels, etc.
- ▶ Do not park the vehicle with the engine running in direct proximity to easily flammable materials.
- ▶ Do not use corrosion-protection agents for the exhaust system. These can ignite at the exhaust system.
- ▶ In environments with highly flammable materials, interrupt regenerations in progress.
- ▶ Do not start regeneration in environments with flammable materials.

**NOTICE****Damage to the diesel particulate filter!**

If the soot load in the diesel particulate filter reaches a critical value, this can lead to damage to the diesel particulate filter or the engine. For safety reasons, the engine power is reduced.

- ▶ If the engine power is reduced, carry out a manual regeneration immediately.
- ▶ Wait until manual regeneration is finished.

**NOTICE****Damage to the diesel particulate filter**

When the engine is running at idling speed and the electrical consumers on the vehicle are switched on, the current regeneration can be interrupted.

- ▶ During regeneration at idling speed, switch off all electrical loads on the vehicle, e.g. rotating beacon, lighting, radio, etc.

8.14.3 Diesel particulate filter engine 3TNV86CHT

8.14.3.1 Explanations for the diesel particulate filter

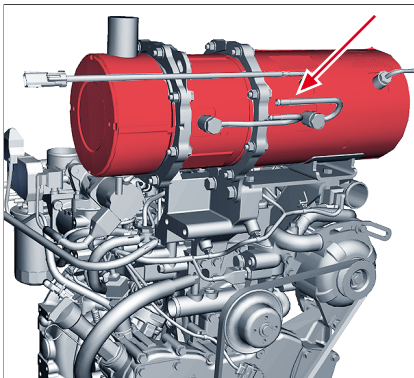


Fig. 243: Location of the diesel particulate filter

The combustion of diesel produces soot. The soot is collected in the diesel particulate filter and burnt at regular intervals. During combustion, the so-called regeneration, exhaust gas temperatures of up to approx. 650 °C occur at the silencer outlet.

The degree of soiling of the diesel particulate filter provides information on the amount of soot in the filter and is referred to as the load. The soot load is influenced, among other things, by the load on the engine.

- High engine loads mean less deposits.
- Low engine loads mean higher deposits.

8.14.3.2 Operating states of the regeneration

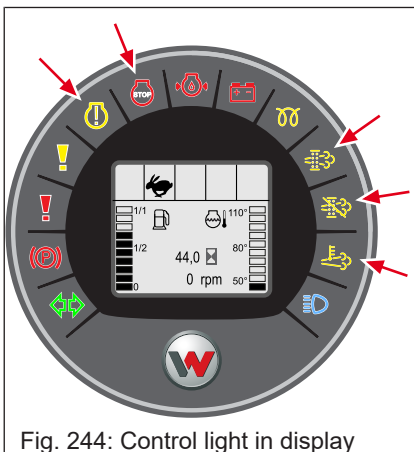






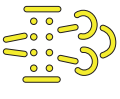
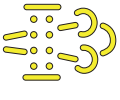






Fig. 244: Control light in display

During use of the vehicle, soot particles are deposited in the diesel particulate filter. This soot load increases and is removed from the diesel particulate filter by regeneration.

- If the engine is operated with sufficient load, passive regeneration takes place during operation. This regeneration has no effect on the performance of the vehicle.
- If the engine load is not sufficient, the diesel particulate filter accumulates soot. When a certain soot load is reached and the engine is at operating temperature, regeneration starts automatically. The control light  indicates that regeneration is in progress.
- If automatic regenerations are interrupted too often, the soot load in the diesel particulate filter will continue to increase. In this case the control light  indicates that regeneration is necessary. In this case place a greater load on the vehicle so that automatic regeneration takes place, start a manual regeneration or carry out a regeneration while stationary.
- If this regeneration is also interrupted or not carried out, the soot load will increase to a level at which the engine power is reduced. The control light  also flashes. The control light flashes to indicate that there is the last chance for regeneration before the diesel particulate filter is damaged. Carry out regeneration at a standstill!
- If this regeneration is also aborted or not carried out, the control light  is illuminated and the control light  flashes. Switch off the engine and inform the service department. Do not continue to work with the vehicle! A regeneration or repair can only be performed by the service department.

Control lights during regeneration

Symbol	Meaning
 Illuminates	High exhaust gas temperature! Illuminates during regeneration. Goes out when regeneration is complete and the exhaust system has cooled down.
 Illuminates	Regeneration of the diesel particulate filter necessary. Lights up when regeneration is necessary. <ul style="list-style-type: none"> • Regeneration starts automatically when the engine is at operating temperature. • Regeneration can be triggered manually.
 Illuminates  Flashes	Maximum soot load particles in the diesel particulate filter achieved. Regeneration urgently necessary! <ul style="list-style-type: none"> • Regeneration at standstill must be carried out.
 illuminates  Flashes	Maximum soot load particles in the diesel particulate filter exceeded! The soot load of the diesel particulate filter is too high. <ul style="list-style-type: none"> • Turn off the engine. • Inform service. • Do not continue to work with the vehicle. A regeneration or repair can only be performed by the service department.
 Illuminates	Regeneration interrupted Lights up during manually interrupted regeneration. <ul style="list-style-type: none"> • Switch DPF switch to position 0 if the interruption of regeneration is to be terminated. • Regeneration can be started manually.

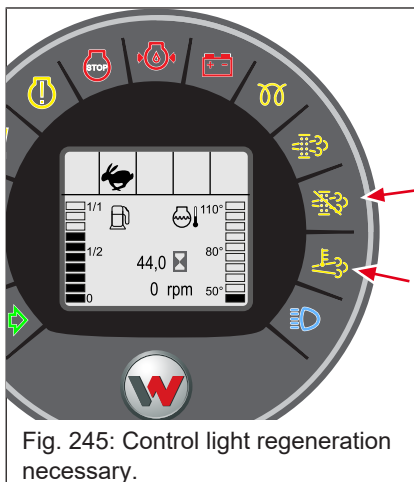
8.14.3.3 Automatic regeneration




NOTICE

Repeated interruption of regeneration can cause damage to the diesel particulate filter/engine.

- ▶ If possible, terminate triggered regeneration without interruption.
- ▶ Only carry out manual interruption of regeneration in exceptional cases, e.g. the vehicle is in the immediate vicinity of easily flammable materials.
- ▶ Do not interrupt started regenerations more than once.
- ▶ Do not switch off the engine until all regeneration control lights have gone out.
- ▶ Switching off the engine leads to an interruption of regeneration.



The "Automatic regeneration" mode is preset when the engine is started. Diesel particulate filter regeneration is only started when the engine is at operating temperature.

If the diesel particulate filter reaches a certain soot load, an automatic regeneration is triggered. The control light illuminates during the regeneration .

The vehicle can be operated without restriction during automatic regeneration as long as there are no easily flammable materials in the immediate vicinity. If an automatic regeneration is triggered while the vehicle is in the immediate vicinity of easily inflammable materials, the regeneration must be interrupted manually with the switch.

Regeneration stops if it is interrupted manually, or if the starting key is moved to position **0** during regeneration. This has the effect that the soot particles are not removed from the diesel particulate filter. The subsequent regeneration lasts longer due to the increased soot load. Regeneration takes about 30 minutes. If regeneration is started, the engine must run until regeneration is over, even if work with the vehicle is finished before.

Interrupting automatic regeneration manually



NOTICE

Damage to the exhaust gas aftertreatment (DPF) system!

If the DPF switch is in position **1**, regeneration is permanently suppressed.

- ▶ Switch the DPF switch to position **0** to enable automatic regeneration.

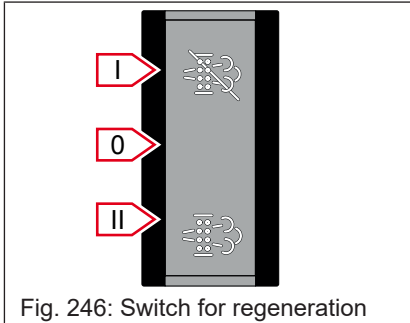




Fig. 246: Switch for regeneration

Regeneration can be interrupted in exceptional cases using the DPF switch. The switch is located in the instrument panel and has three switch positions.

- Switching stage **0** = Switch in neutral position
- Switching position **I** (switch function) = Interrupts regeneration
- Switching position **II** (pushbutton function) = Triggers manual regeneration.

Suppressing regeneration

- Switch to position **I**.
 - ⇒ Control light  lights up in the display.
 - ⇒ Control light  in the display goes out.
- ⇒ Regeneration is interrupted.

If the interruption of the regeneration is to be terminated, switch the switch back to position **0** or trigger a regeneration manually.

After restarting the engine, an automatic regeneration is triggered again as soon as the engine has reached the required temperature.

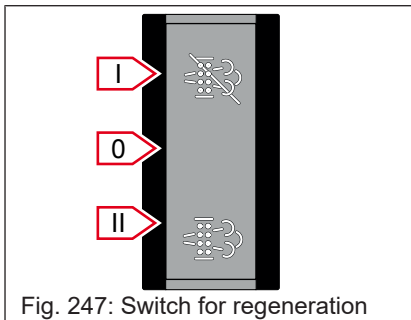
Consequences of an interruption

If a regeneration is interrupted manually or the ignition is switched off, the regeneration stops. This means that the soot load cannot be removed from the diesel particulate filter. The subsequent regeneration lasts longer due to the increased soot load.

8.14.3.4 Manual regeneration



If automatic regeneration was interrupted manually, it starts again after restarting the engine as soon as the engine reaches its operating temperature.

However, regeneration can also be started manually as soon as the vehicle is no longer in the direct vicinity of easily flammable material. This is appropriate if it helps to avoid interrupting automatic regeneration repeatedly, e.g. if the vehicle is in regular operation in the direct vicinity of easily flammable material.




Manually trigger regeneration

Prerequisites for manual regeneration:



- ✓ The engine must reach a certain temperature.
 - ✓ Control light  must illuminate.
 - ✓ The vehicle is operated in a safe environment. No materials can ignite.
- Press and hold the switch in position II for approx. three seconds.
 - ⇒ Control light  lights up during the entire regeneration.
 - ⇒ During regeneration, the vehicle can be operated without restriction in safe areas.

Regeneration takes about 30 minutes. This means that: If regeneration is started, the engine must run until regeneration is over, even if work with the vehicle is finished before.

The control light goes out once regeneration is over and the exhaust system has cooled down .

Interrupting manual regeneration

Manual regeneration can be interrupted in case of an emergency. Interrupting manual regeneration may cause damage to the diesel particulate filter.

- Switch to position I.
 - ⇒ Manual regeneration is interrupted. Control light  goes out in the display.
 - ⇒ Manual regeneration is interrupted. Control light  illuminates in the display.

If a regeneration was interrupted

If the interruption of the regeneration is to be terminated, switch the switch back to position 0 or trigger a regeneration manually again.

8.14.3.5 Regeneration at a standstill

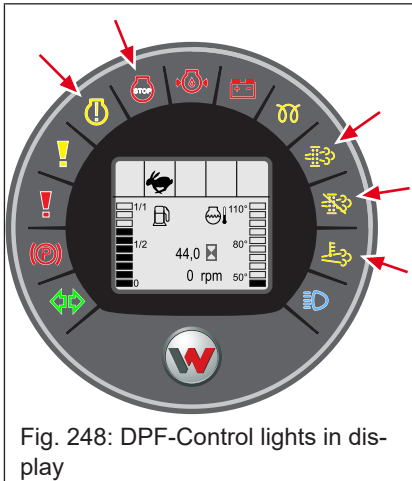






Fig. 248: DPF-Control lights in display

As soon as the control lamp lights  up, regeneration can be carried out when the engine is at a standstill.


If regenerations have been interrupted frequently, the load of the diesel particle filter will increase to such an extent that the engine power is reduced. The control light  is illuminated and the indicator light  flashes.

At this point at the latest a regeneration must be carried out at a standstill.

The vehicle may not be moved during a regeneration at a standstill. If this regeneration is not carried out correctly, a regeneration or a repair can only be carried out by the service department.

As soon as the control light  lights up in the display and the control light  flashes, the diesel particulate filter is damaged and must be serviced or replaced by an authorized service center. Switch off the engine and inform the service department. Do not continue to work with the vehicle!

Perform the following steps for a regeneration at a standstill:

1. Park the vehicle into a safe area.
2. Lower the loader unit to the ground.
3. Let the engine run.
4. Apply the parking brake.
 - ⇒ The drive system is disabled.
5. Switch on the lock for the loader unit.
 - ⇒ The hydraulically activated functions are disabled.
6. Press the rocker switch in position II for at least three seconds.
7. The engine's rotational speed increases automatically.
 - ⇒ Regeneration starts.
8. Do not release the parking brake and do not move the vehicle during regeneration.
9. Wait until the control light  goes out.
 - ⇒ Regeneration is completed.
 - ⇒ The vehicle can be operated again.

8.15 Cab

8.15.1 Checking the seat

A loose or defective seat can lead to accidents.

- Check the correct fastening of the seat, check the fastening screws.
 - ⇒ The seat must not wobble or be able to be lifted.
- Check all seat positions and their locks.
 - ⇒ When the locks are engaged, the seat may no longer move.
- Check seat suspension.
 - ⇒ Suspension adjustment and suspension must function.
- Check seat upholstery.
 - ⇒ The seat upholstery must not be too worn or damaged.

If damage or defects are found, they must be repaired by an authorized service center before the vehicle is put into operation.

8.15.2 Checking the seat belt for proper function

Defective belts can no longer fulfill their protective function and must be replaced.

- Check seat belt for dirt and damage.
 - ⇒ If necessary, remove dirt.
 - ⇒ The seat belt must not be damaged.
- Check the function of the roll stop.
 - ⇒ If the seat belt is pulled with a jerking movement, the unrolling must stop.
- Check the retraction function of the seat belt.
 - ⇒ The seat belt must retract automatically.
- Have the seat belt replaced by an authorized service center after an accident, even if there is no visible damage. Have the seat fastening and anchoring points checked for further load-bearing capacity.

If damage or defects are found, they must be repaired by an authorized service center before the vehicle is put into operation.

8.15.3 Checking function of seat switch

The seat switch is a safety component. If there is no one in the seat when the engine is running, the drive system and working hydraulics are deactivated after five seconds.

✓ Carry out check on open and safe terrain:

1. Sit down on the operator seat.
2. Start the engine.
3. Get up from your seat.
4. After 5 seconds, operate the loader unit with the joystick.
 - ⇒ The loader unit must not make any movements.

If the loader unit should move despite the unloaded seat, there is a defect which must be repaired by an authorized service center.

8.15.4 Checking doors and windows

- Check door and windows.
 - ⇒ The window panes must not be damaged.
 - ⇒ The windows must fit tightly and securely in the seals and fastenings.
 - ⇒ The window seals must not be damaged.
- Check door and window locks: Open, close and lock doors and windows.
 - ⇒ Doors and windows must engage and hold firmly and securely in the latches.

If damage or defects are found, they must be repaired by an authorized service center before the vehicle is put into operation.

8.15.5 Checking safety labels and information labels

- Check safety labels and information labels [see Safety label and information labels on page 55](#)
 - ⇒ The labels must be legible and complete.
- If necessary, remove dirt.

If labels are no longer legible, damaged or missing, they must be replaced.

8.15.6 Checking heating, ventilation and air conditioning system

- Start heating, ventilation and air conditioning system, [see Heating, ventilation and air conditioning system on page 126](#).
 - ⇒ All functions must function correctly.

If damage or defects are found, they must be repaired by an authorized service center.

8.16 Tires

8.16.1 Checking the tires



Fig. 249: Label Water ballasting in tires

If this label is affixed to the rim at the tire valve, it is a water ballasted tire.

Checks that must be performed by the operator

Check the following conditions on the tires:

- Are there signs of damage to the tires or rim?
- Are the tires sufficiently and evenly filled with air on all four wheels?
- Is there sufficient profile on all four wheels?
- Check the lug nuts for correct seat and tighten if necessary.
- Remove any traces of oil or grease from the tires.
- Check for foreign bodies on the treads.

Contact a Wacker Neuson service center in case of doubt.

8.16.2 Inflating the tires



⚠ WARNING

Injury hazard due to bursting tires!

Inflating the wheels can cause accidents resulting in serious injury or death.

- ▶ Use only filling devices with calibrated pressure gages to inflate the tires.
- ▶ When inflating the tires, ensure that no one is in the danger zone.
- ▶ Fill the tires only with the filling pressure from the air pressure table.

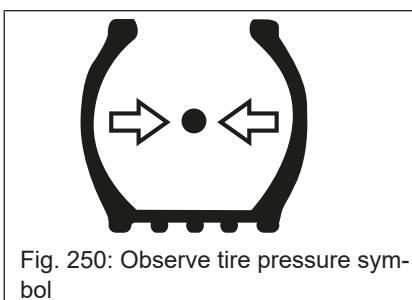


Fig. 250: Observe tire pressure symbol

These instructions refer to inflating tires after loss of pressure. Observe the air pressure prescribed for the tires of the vehicle [see Tires on page 278](#).

If there is a complete loss of pressure, this work may only be carried out by an authorized service center.

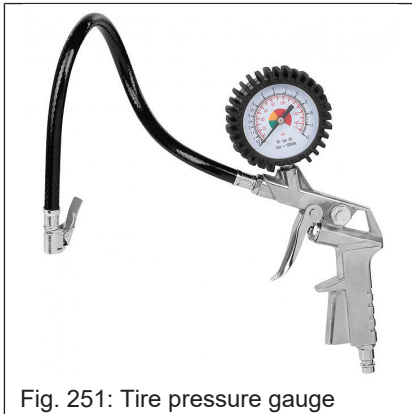


Fig. 251: Tire pressure gauge

Preparation to inflate tires

- ✓ Functioning compressed air compressor, tire pressure gauge and compressed air hose are available.

 1. Park the vehicle on a stable, level and dry surface.
 2. Secure the vehicle with the parking brake.
 3. Lower the loader unit to the ground.
 4. Switch off the ignition and remove the starting key.

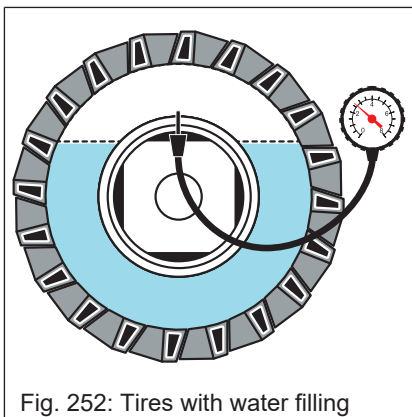


Fig. 252: Tires with water filling

Inflating the tires

- ✓ When inflating water-filled tires, the wheels must be turned so that the tire valve is at the top.

 1. Unscrew the protective cap from the tire valve.
 2. Position the valve connection of the filling device on the tire valve so that it securely remains in place.
 3. Pump up the tire to the prescribed pressure.
 4. Remove the valve connection of the filling device from the tire valve.
 5. Screw the protective cap onto the tire valve.

8.16.3 Changing wheels



⚠ WARNING

Danger of crushing if the vehicle slips off the jack during a wheel change!

Getting squeezed under the vehicle causes serious injury or death.

- ▶ Park the vehicle on firm, level, and horizontal ground.
- ▶ Use only a safe and suitable jack with sufficient lift capacity.
- ▶ Secure the vehicle with trestles.



⚠ WARNING

Danger to life due to improper installation!

Improper installation of tires and rims can cause accidents which can lead to serious or fatal injuries.

- ▶ Have assembly work performed by an authorized service center only.
- ▶ Welding and cutting the rims is prohibited.
- ▶ Replace damaged rims by new ones.



⚠ CAUTION

Danger of crushing from water-ballasted tires during a wheel change!

Wheels with water-ballasted tires are significantly heavier than standard wheels.

Getting squeezed under a wheel causes injury.

- ▶ Change wheels with water-ballasted tires only with specialized wheel mounting devices.
- ▶ Have an authorized service center change the wheels.



NOTICE

Damage to differentials due to different-sized wheels and tires!

- ▶ Only install wheels or tires on the vehicle from the same manufacturer, of the same size and that have the same wear condition.



Fig. 253: Label Water ballasting in tires

If this label is affixed to the rim at the tire valve, it is a water ballasted tire.

Preparations for wheel change

1. Park the vehicle on a stable, level and dry surface.
2. Secure the vehicle with the parking brake.
3. Lower the loader unit to the ground.
4. Switch off the ignition and remove the starting key.

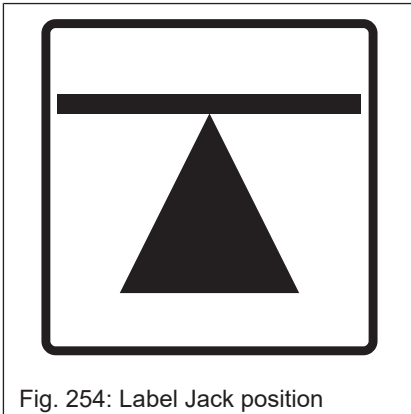


Fig. 254: Label Jack position

Changing wheels

1. Position the jack underneath the axle, next to the wheel to be changed.
 - ⇒ The position at which the jack must be positioned is marked with the label next to it.
2. Ensure that the vehicle cannot slip off the jack. Secure the vehicle with additional supports if necessary.
3. Loosen the wheel bolts.
4. Lift the jack only until the wheel no longer touches the ground.
5. Unscrew the wheel bolts.
 - ⇒ The wheel can be removed.
1. Position a new wheel.
2. Tighten the wheel bolts hand-tight.
3. Lower the jack.
4. Alternately tighten the opposite wheel bolts to the defined tightening torque.
 - ⇒ Tighten the wheel bolts again after 2 hours of operation. If necessary, repeat until the tightening torque no longer changes.

Tightening torques

Tightening torques for tires: [see Tightening torques for wheels on page 278](#).

9 Troubleshooting

9.1 Faults, causes, remedy

9.1.1 Information on malfunctions



NOTICE

Ignoring a fault or error message

Ignoring a fault or an error message can result in damage to the vehicle.

- ▶ If the fault cannot be rectified by the measures described, contact an authorized service center and have the fault or error rectified.

Repair work on the electrical systems and hydraulics of the vehicle may only be carried out by an authorized service center.

If a fault is to be reported to the authorized service center, have the error code displayed at hand: [see Symbol for faults on page 247](#).

9.1.2 Troubleshooting aids

The information in this chapter is intended to help you locate faults and identify them quickly and reliably so that they can be rectified.

Please contact your dealer if the malfunction cannot be remedied.

Repairs may only be carried out by authorized service centers and trained personnel.

9.1.3 Possible faults and remedies on the engine

Error/fault	Possible cause	Remedy
Engine does not start	Parking brake not activated.	Apply the parking brake.
	Parking brake switch defective.	Have the parking brake switch replaced.
	Starting speed too low.	Check and charge the battery. Check battery terminals for tightness.
Engine does not start Engine stops during operation	Operator is not sitting on the seat.	Sit down on the operator seat.
	Malfunctioning seat switch.	Have the seat switch replaced.
	Continuous operation of the hydraulic connections is switched on.	Switch off continuous operation of the hydraulic connections.
	Empty fuel tank.	Fill the tank and prime the fuel system if necessary.
	Fuel filter clogged. Paraffin deposits in winter.	Have the fuel filter changed. Use winter diesel.
	Leaking fuel line. Diesel particulate filter full.	Tighten all screws and clamps. Contact an authorized service center.

Error/fault	Possible cause	Remedy
Engine overheats	The radiator is dirty	Clean the radiator: ▶ 218
	Coolant level too low	Refill coolant
	Malfunctioning thermostat	Contact an authorized service center
	V-belt tension too loose, malfunctioning V-belt	Check V-belt tension and tighten if necessary. Take the vehicle to a service center
	Seals in the area of the radiator are damaged or have been lost	Check the seals and have them replaced if necessary
	Visco coupling of fan defective	Check Visco coupling and have it replaced if necessary
Engine does not have enough output	Dirty air filter	Clean the air filter
	Fuel filter clogged.	Have the fuel filter changed.
	Paraffin deposits in winter	Use winter diesel.
	Leaking fuel line	Tighten all screws and clamps.
	Regeneration interrupted too often or not possible	Carry out manual regeneration Contact an authorized service center
	Continuous operation of the hydraulic connections is switched on and operates against pressure	Switch off continuous operation of the hydraulic connections.
The engine speed increases on its own	There is no error/fault.	Regeneration is carried out

9.1.4 Possible faults and remedies on the drive system

Error/fault	Possible cause	Remedy
Engine is running but vehicle will not travel	Operator is not sitting on the seat, seat switch defective.	Take a seat on the seat, have the seat switch replaced.
	Parking brake is applied	Release the parking brake
	Parking brake switch defective	Contact an authorized service center
	Inching cartridge not in zero position	Contact an authorized service center
	The solenoids on the hydraulic pump are not receiving any electrical power	Check fuses, have the joystick and electrical system checked by an authorized service center
	Hand inching is activated	Handing inching is deactivated
Vehicle does not have enough output	Inching is stuck	Contact an authorized service center
	Hand inching is activated	Handing inching is deactivated
	Continuous operation of the hydraulic connections is switched on and operates against pressure	Switch off continuous operation of the hydraulic connections.

9.1.5 Possible faults and remedies on the hydraulic system

Error/fault	Possible cause	Remedy
Hydraulic system overheats	Continuous operation of the hydraulic connections is switched on and operates against pressure	Switch off continuous operation of hydraulic connections
	The radiator is dirty	Cleaning the radiator
	V-belt tension too loose, malfunctioning V-belt	Check V-belt tension and tighten if necessary. Contact a service center.
	Hydraulic oil level not correct	Correct fill level of hydraulic oil
	Load too high	Reduce the load on the vehicle, take breaks
Engine does not have enough power	Hydraulic oil level too low	Search for leaks on the hydraulic system, add hydraulic oil
	Clogged hydraulic oil filter	Check hydraulic oil filter and if necessary have it checked/exchanged by a service center
	Continuous operation of the hydraulic connections is switched on and operates against pressure	Switch off continuous operation of hydraulic connections
	Hydraulic oil pump defective	Take the vehicle to a service center
	Hydraulic control valves defective	
	Hydraulic pressure limiting valves misaligned or defective	

9.2 Fault indications

9.2.1 Symbol for faults

In the vehicle display, faults from the electronics are indicated by the following warning lights: (At the same time an error code may be displayed at position 1.)

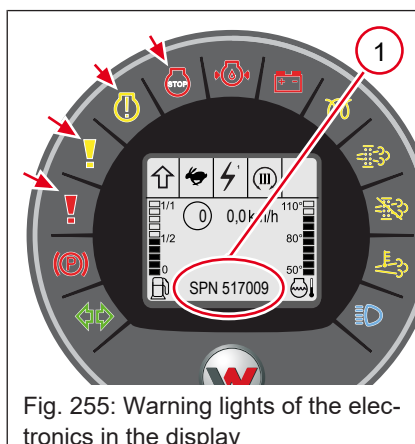


Fig. 255: Warning lights of the electronics in the display



Warning light for vehicle electronics

If the warning light lights up during operation, switch off the engine and switch on the ignition.

- If no error code appears in the vehicle display:
 - Start the engine and resume vehicle travel.
- If an error code appears in the vehicle display:
 - Note the error code and contact an authorized service center.



Warning light for vehicle electronics

If the warning light lights up during operation, switch off the engine and switch on the ignition.

- If no error code appears in the vehicle display:
 - Start the engine and resume vehicle travel.
- If an error code appears in the vehicle display:
 - Note the error code and contact an authorized service center.



Warning light for engine electronics

Illuminates or flashes if one or more engine-operation values are outside the normal range – stop the engine and switch on the ignition.

- If no error code appears in the vehicle display:
 - Start the engine and resume vehicle travel.
- If an error code appears in the vehicle display:
 - Note the error code and contact an authorized service center.



Warning light for engine electronics

Illuminates or flashes in case of one or more errors in the engine electronics. The engine switches itself off. If the engine does not switch itself off - turn it off.

- If no error code appears in the vehicle display:
 - Start the engine and resume vehicle travel.
- If an error code appears in the vehicle display:
 - Note the error code and contact an authorized service center.

Error messages with symbol

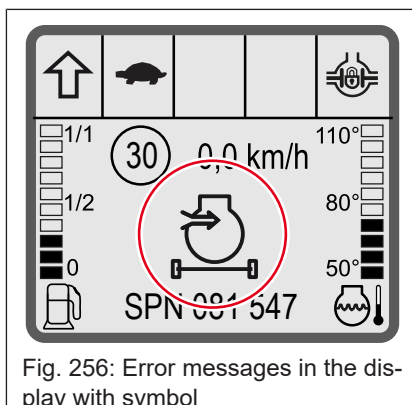


Fig. 256: Error messages in the display with symbol



Dirt accumulation on air filter

The symbol appears when the air filter contamination level is too high.

Clean the air filter and replace it if necessary.



Temperature of coolant too high

The symbol appears if the temperature of the coolant is too high.

- 1) Stop the engine.
- 2) Let the engine and radiator cool down.
- 3) Clean radiator if necessary.



Coolant level too low

Symbol appears when the coolant level is too low.

- 1) Turn off the engine.
- 2) Let the engine and radiator cool down.
- 3) Check the engine, radiator and radiator hoses for leaks.
- 4) Add coolant.



Water in fuel

The symbol appears if too much water has accumulated in the water separator on the fuel filter.

Drain water in the water separator.



Temperature of hydraulic oil too high

The symbol appears when the maximum permissible temperature of the hydraulic oil has been reached.

Switch off the engine and let the hydraulic oil cool down. Determine the cause of the fault and eliminate it, e.g. clean the radiator.

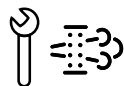
If the error still occurs, contact an authorized service center.



Return filter from hydraulic oil

The symbol appears when the resistance of the oil flow in the return filter becomes too high.

Switch off the engine and have the return filter changed by an authorized service center.



Exchange diesel particulate filter (DPF)

Symbol appears when the diesel particulate filter has to be exchanged.

Switch off the engine and have the diesel particulate filter changed by an authorized service center.



Pressure in the fuel line too low

Symbol appears when the pressure in the fuel line is too low.

Have an authorized service center replace the fuel filter.



Error in exhaust gas aftertreatment

Symbol appears if an error has occurred in the exhaust gas aftertreatment.

Contact an authorized service center and indicate the displayed error code.



Oil change required

Symbol appears when the engine oil must be changed.

Have the oil changed by an authorized service center.

9.2.1.1 Error codes



NOTICE

Technical damage due to failure to observe the error code! Failure to observe the error codes can cause serious technical damage!

In case of a malfunction during vehicle operation, the operating hours and engine speed readout is replaced by an error code.

- ▶ Proceed as specified in the error code table.
- ▶ Get in touch with a service center if the error persists in spite of proceeding as specified.
- ▶ Make a note of error codes that are not listed and inform the service center of them.

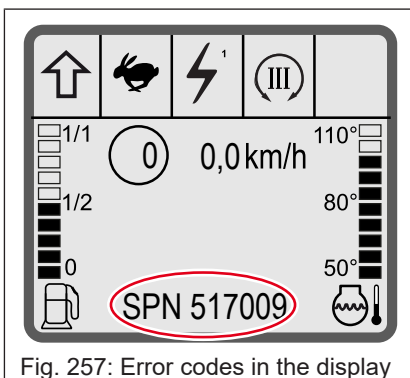


Fig. 257: Error codes in the display

If the vehicle electronics issues an error, an error code is displayed in the indicating instrument. Note down the error code before stopping the engine. Some error codes no longer appear after the ignition is switched off, although the error may still exist. If an error code that is not listed in the table appears, contact an authorized service center.

Error code	Error description	Measures to be taken
SPN0097 FMI15 SPN0097 FMI16	Water in fuel	Water separator maintenance
SPN0100 FMI1	Oil pressure too low or too high	Stop the engine immediately Check engine oil level, add engine oil if necessary
SPN0107 FMI15 SPN0107 FMI16	Dirty air filter	Cleaning the air filter
SPN0110 FMI15 SPN0110 FMI16	Cooling temperature too high	Stop the engine Check the radiator

10 Shutdown

10.1 Temporary shutdown

10.1.1 Putting the vehicle out of operation

The measures indicated below refer to putting the vehicle out of operation and back into operation again after a longer period of time.

- Stopping and securing the vehicle.
- Jack up the vehicle so that the tires do not touch the ground any more.
- Release parking brake.
- Lower the loader unit fully.
- Reduce the residual pressure in the hydraulic system and bring the control levers to the zero position.
- Spray bare metal parts of the vehicle (e.g. the piston rods of the hydraulic cylinders, if not retracted) with anti-corrosion agent.
- Preserve the engine.

10.1.2 Preserving the engine

Also observe the operator's manual of the engine!

- Clean the engine with a high-pressure cleaner in a suitable place.
- Bring engine up to operating temperature.
- Drain the engine oil and dispose of it in an environmentally friendly manner.
- Fill anti-corrosion oil into the engine.
- Drain the fuel from the tank.
- Create a mixture of 90% fuel and 10% anti-corrosive oil and fill the fuel tank with it.
- Let the engine run ten minutes at idling speed and then stop it.
- Crank the engine several times by hand to preserve the cylinders and combustion chambers.
- Remove the fan belt and wrap it for storage protecting it from air and light.
- Spray an anti-corrosion agent onto the running surfaces of the pulleys.
- Close the intake and exhaust openings of the engine.

10.1.3 Storing the battery

- Remove the battery.
- Clean the battery.
- Charge the battery.
- Store the battery in a dry and well-ventilated room at around 20 °C.
- Charge the battery again before installing it.

10.1.4 Removing engine preservation

- Remove the covers from the intake and exhaust openings of the engine.
- Remove the anti-corrosion agent from the pulleys.
- Install the fan belt.
- Drain the preservation oil and add engine oil.
- Start up the engine.
- Check the belt tension after the first two hours of operation.

10.1.5 Putting the vehicle back into operation

- Remove engine preservation.
- Install the battery.
- Check tire inflation pressure.
- Remove the preservation from the piston rods of the hydraulic cylinders.
- Set the vehicle on its wheels.
- Check the operation of the electrical system.
- Bleed the hydraulic system.
- Check the operation of the steering system and brakes.
- Carry out maintenance work as before initial commissioning.

10.2 Permanent shutdown

10.2.1 Information on permanently putting the vehicle out of operation

If the vehicle is no longer used according to its designated use, ensure that it is put out of operation and disposed of according to applicable regulations.

Do not allow the oil and oily wastes to get into the ground and stretches of water! Dispose of different materials and consumables separately and in an environmentally friendly manner!

Dispose of batteries in an environmentally friendly manner and in accordance with the applicable regulations.

10.2.2 Prior to disposal

- All applicable safety regulations relating to the decommissioning of the vehicle must be complied with.
- Ensure that the vehicle cannot be operated from decommissioning until further disposal.
- Ensure that there is no leakage of environmentally hazardous fluids and consumables, and that the vehicle presents no other hazards at its storage place.
- Secure the vehicle against unauthorized use! Close all openings (doors, windows, engine hood) and secure the vehicle.
- Install all protective devices.
- Repair leaks in engine, tanks and hydraulic system.
- Remove the battery.
- Store the vehicle in a place that is protected against unauthorized access.

10.2.3 Disposing of the vehicle

- Further recycling of the vehicle must be carried out in accordance with the state of the art valid at the time of recycling and in compliance with the accident prevention regulations.
- All parts must be disposed of in the correct waste disposal sites for the different materials.
- Separate the material as you recycle parts.
- Ensure environmentally compatible disposal of fluids and consumables.

11 Accessories

11.1 Attachments

11.1.1 Information on attachments



NOTICE

Technical damage to the loader unit due to incorrect attachments!

Incorrect attachments can overload the vehicle.

- ▶ Only mount attachments to the vehicle that are listed in this operator's manual.

Not all attachments are approved for use on public roads. The approved attachments and the corresponding requirements can be found in the EBE, the data confirmation or the approval certificate.

Attachments that are not approved for use on public roads must be removed and transported to the place of use using a suitable transport vehicle.

Only attachments listed in the EBE, the data confirmation or the approval certificate may be attached. Please contact the service partner for other attachments. An individual operating permit from the competent authorities is required for the use of other attachments.

The following attachments are described in this operator's manual:

- Standard bucket (lightweight and earth bucket)
- 4-in-1 bucket
- Fork-and-grab attachment
- Pallet fork

Descriptions of other approved attachments can be found in the operator's manuals of the attachments.

The service partner is always available for further questions regarding the power coupler and the associated attachments.

Bulk densities of materials

The bulk densities given in the table are approximate values. The actual bulk density may vary.

Material	Bulk density t/m ³
Building material	
Soil, moist	2.10
Soil, dry	1.50
Lime	1.60
Mortar	2.20
Sand, dry	1.65
Sand, moist	2.00
Gravel	2.00
Other	

Material	Bulk density t/m ³
Waste paper	1.10
Household garbage	0.70
Bulky refuse	1.00
Snow, loose	0.13
Snow, moist	0.65
De-icing salt	1.30
Logs	0.80
Wood chips	0.35
Wood pellets	0.65
Granite	1.80
Sandstone	2.40
Slate	2.20
Bauxite	1.40
Plaster, broken	1.80
Coke	0.50
Glass waste, broken	1.40
Glass waste, whole	1.00
Compost	1.00



Fig. 258: Material number attachment

Determine load on loader unit

The load on the loader unit can be determined with the aid of the bulk densities of materials as well as the volume and weight of the attachments.

Procedure:

1. Determine the bulk density of the material.
 - ⇒ To do this, find the corresponding bulk density of the material in the table above.
2. Determine which attachment will be used.
 - ⇒ Find the material number of the attachment on the type label of the attachment.
3. Determine the volume and weight of the attachment.
 - ⇒ To do this, select the material number of the corresponding attachment from the table below and read off the volume and weight.

Example

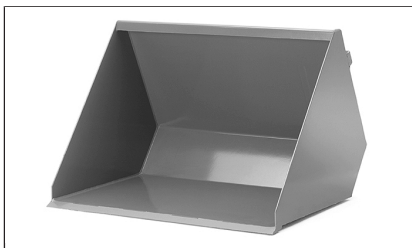
- Material Sand
 - Bulk density 2 t/m³
- Earth bucket without teeth
 - Capacity 0.74 m³
 - Weight 375 kg = 0.375 t
- Calculation
 - Bulk density of the material x contents of the attachment + weight of the attachment = load on the loader unit.
 - (2 t/m³ x 0.74 m³) + 0.375 t = 1.855 t

11.1.2 Permissible attachments

Some attachments are not approved for vehicle travel on public roads. Remove these attachments before driving on public roads.

The decimal places for the values in the following tables are separated by a period.

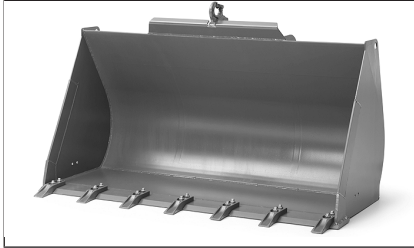
11.1.2.1 Buckets



Light-weight materials bucket

Usage: Loosening, picking up, transporting and loading loose material.

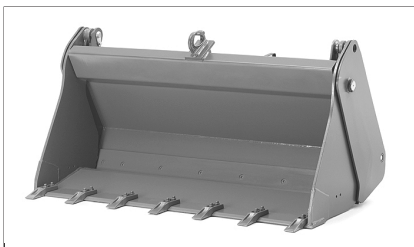
	Width in mm	Capacity in m ³	Weight in kg
1000227290	1400	0.72	170
1000276557	1450	0.55	147
1000227362	1500	0.77	195
1000227533	1600	0.82	225
1000287633	1650	0.62	172
1000227581	1700	0.87	235
1000227673	1800	0.92	245



Earth bucket

Usage: Loosening, picking up, transporting and loading of loose or solid material.

	Width in mm	Capacity in m ³	Weight in kg
1000365466	1350	0.42	220
1000368434	1350	0.42	238
1000358063	1400	0.44	225
1000367579	1400	0.54	248
1000368771	1400	0.54	266
1000368433	1400	0.44	244
1000368432	1450	0.56	267
1000359357	1450	0.56	254
1000368436	1500	0.58	280
1000368415	1500	0.47	258
1000366860	1500	0.47	232
1000366862	1500	0.58	260
1000350018	1600	0.50	248
1000369212	1600	0.50	270

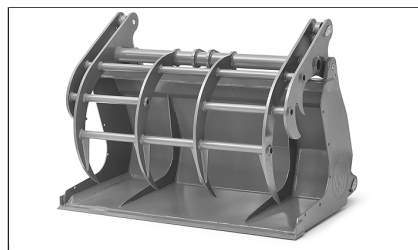


4-in-1 bucket

Usage: Loosening, picking up, transporting and loading of loose or solid material.

	Width in mm	Capacity in m ³	Weight in kg
1000450113	1400	0.44	390
1000450111	1400	0.44	410
1000450120	1550	0.36	300

	Width in mm	Capacity in m ³	Weight in kg
1000450119	1550	0.36	315



Multi-purpose bucket

Usage: Loosening, picking up, transporting and loading loose and bulky material.

	Width in mm	Capacity in m ³	Weight in kg
1000450109	1300	0.40	279
1000450110	1350	0.68	450
1000450116	1400	0.43	288
1000450123	1600	0.49	319



Gravel and stone bucket

Usage: Loosening, picking up, transporting and loading loose stones and rubble.

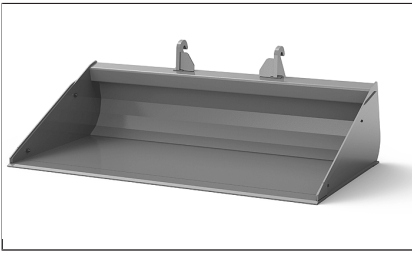
	Width in mm	Capacity in m ³	Weight in kg
1000227286	1390	0.37	243



High tipping bucket

Usage: Loosening, picking up, transporting and loading loose material, whereby a higher dumping height can be achieved.

	Width in mm	Capacity in m ³	Weight in kg
1000450106	1200	0.60	360
1000450115	1400	0.71	380

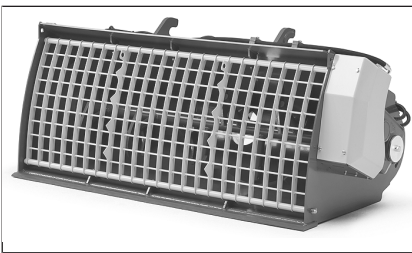


Dozer bucket

Usage: Leveling areas, picking up, transporting and loading loose material.

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000353204	1400	0.38	239
1000352591	1400	0.52	271



Concrete mixing bucket

Usage: Picking up, mixing and transporting materials for producing concrete.

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000450038	1000	0.15	225
1000450048	1100	0.20	280

11.1.2.2 Fork-and-grab attachments and manure forks



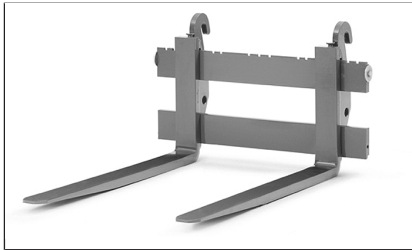
Fork-and-grab attachment

Usage: Loosening, picking up, transporting and loading silage, loose hay, green fodder, and manure, etc.

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000450077	1100	-	225
1000450078	1300	-	240

11.1.2.3 Pallet forks

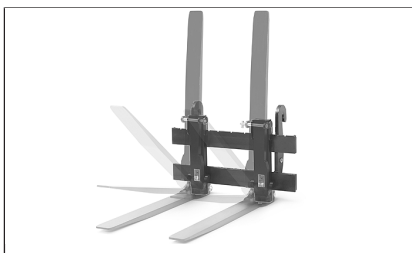


Standard pallet fork

Usage: Raising, transporting, setting down and stacking loads.

Not authorized for use on roads!

	Length in mm	Payload in kg	Weight in kg
1000228378	1000	2000	155
1000335643	1200	2000	164
1000334435	1200	2500	195
1000227130	1200	2500	186
1000227287	1400	2500	199

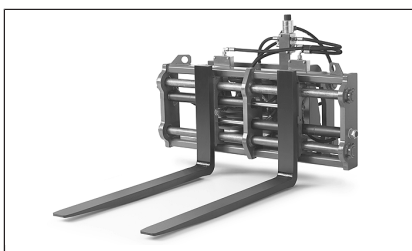


Pallet fork with folding tines

Usage: Raising, transporting, setting down and stacking loads, whereby the tines can be folded up when not required.

This pallet fork is only approved for street traffic if the tines are folded up in traffic.

	Length in mm	Payload in kg	Weight in kg
1000335629	1000	2000	199
1000302352	1000	2000	215
1000335628	1200	2500	239

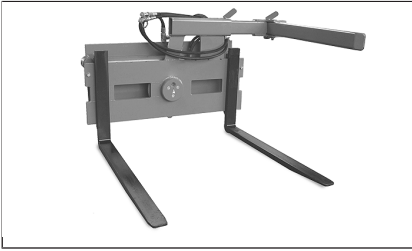


Hydraulically adjustable pallet fork

Usage: Raising, transporting, setting down and stacking loads, whereby the tine distance can be continuously variably hydraulically adjusted.

Not authorized for use on roads!

	Length in mm	Payload in kg	Weight in kg
1000450085	1200	2500	360



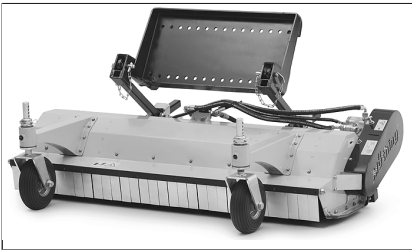
Pallet fork with rotary module

Usage: Raising, transporting, setting down and stacking loads, whereby the pallet fork can be hydraulically rotated vertically.

Not authorized for use on roads!

	Length in mm	Payload in kg	Weight in kg
1000450084	1100	1500	426

11.1.2.4 Green space maintenance



Flail mower

Usage: Mowing grass and vegetation on level surfaces.

Not authorized for use on roads!

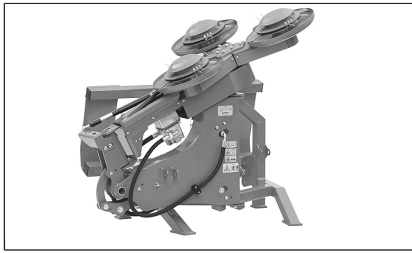
	Width in mm	Capacity in m ³	Weight in kg
1000450130	1150	-	250
1000450132	1200	-	280
1000450134	1400	-	320
1000450131	1500	-	310
1000450135	1600	-	350
1000450026	1600	-	350



Double blade mower unit

Usage: Mowing green areas.

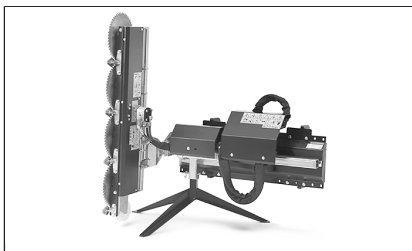
	Width in mm	Capacity in m ³	Weight in kg
1000450041	1500	-	200



Fence mower

Usage: Mowing grass and vegetation on level surfaces alongside fences.
Not authorized for use on roads!

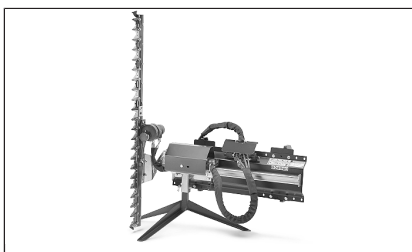
	Width in mm	Capacity in m ³	Weight in kg
1000450042	1500	-	220



Pruning saw

Usage: Cutting off branches from hedges and forest edges.
Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000450064	-	-	142
1000450052	-	-	142

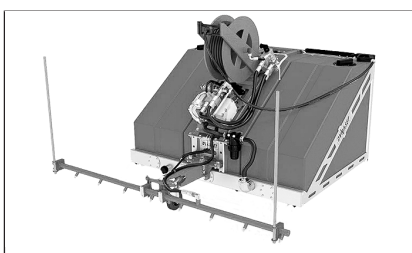


Hedge trimmer

Usage: Cutting off branches from hedges and forest edges.
Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000450058	-	-	140
1000450057	-	-	140

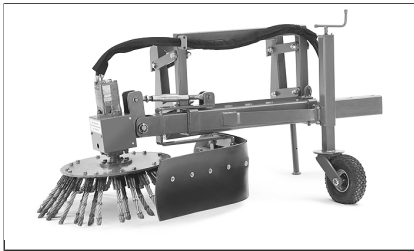
11.1.2.5 Cleaning



High-pressure cleaner

Usage: For various cleaning tasks with water under high pressure.

	Width in mm	Capacity in m ³	Weight in kg
1000450060	-	-	746



Weed brush

Usage: Removing vegetation from joints and cracks in pavement.

Not authorized for use on roads!

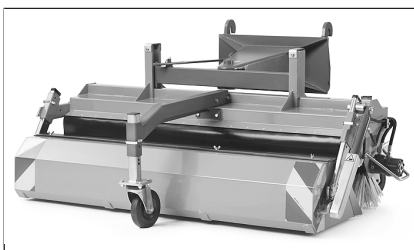
	Width in mm	Capacity in m ³	Weight in kg
1000450040	-	-	240



Sweeper

Usage: Sweeping different kinds of material on firm ground.

	Width in mm	Capacity in m ³	Weight in kg
1000359396	1500	-	175
1000359397	2000	-	227
1000359398	2500	-	275



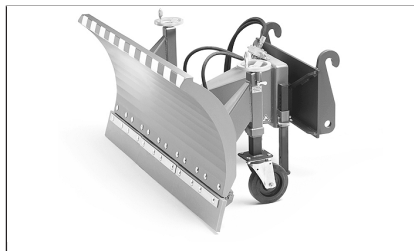
Rotary sweeper

Usage: Sweeping different kinds of material on firm ground.

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000450062	1250	-	150
1000450063	1250	-	305
1000450065	1400	-	313
1000450066	1550	-	170
1000450067	1550	-	343
1000450068	1550	-	320
1000450069	1700	-	328
1000450073	1850	-	335
1000450071	1850	-	190
1000450072	1850	-	368

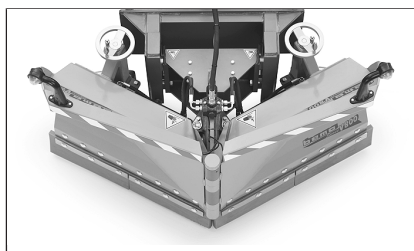
11.1.2.6 Winter service



Snow plow

Usage: Winter service

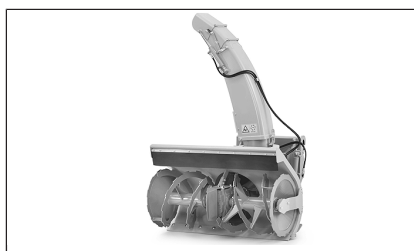
	Width in mm	Capacity in m ³	Weight in kg
1000227220	1300	-	167
1000450030	1300	-	167
1000450031	1550	-	183
1000227517	1550	-	183
1000450037	1630	-	350
1000227674	1800	-	194
1000450032	1800	-	194
1000450039	1860	-	375



Snowplough

Usage: Winter service

	Width in mm	Capacity in m ³	Weight in kg
--	-------------	----------------------------	--------------



Snow cutter

Usage: Winter service

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000306396	1400	-	295

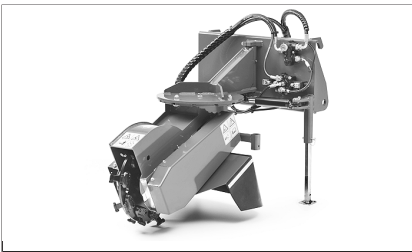


Road gritter

Usage: Winter service.

	Width in mm	Capacity in m ³	Weight in kg
1000228221	-	0.11	38
1000249568	-	0.17	42

11.1.2.7 Special applications



Stump grinder

Usage: Grinding stumps and roots.

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000450088	-	-	70
1000450100	-	-	70
1000450112	-	-	125
1000450124	-	-	125



Dozer blade

Usage: Laser-supported leveling of surfaces.

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000478710	2300	-	808
1000478711	2300	-	770

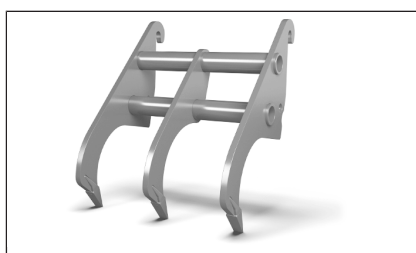


Waste bin

Usage: Transport of shrub cuttings, waste etc. (The waste basket is picked up with a pallet fork).

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000434527	1000	1.00	110
1000228215	1000	1.00	110



Scarifier

Usage: Loosening of soil on unpaved surfaces.

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000227515	104	-	104

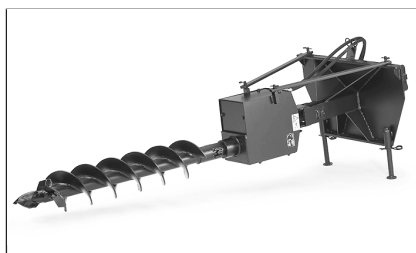


Surface grader

Usage: Leveling of loose surfaces.

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000324315	1600	-	195
1000324316	2000	-	212



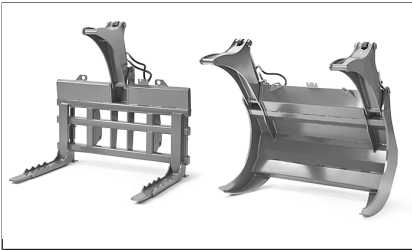
Earth auger

Usage: Drilling holes in the ground.

Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000199191	-	-	22

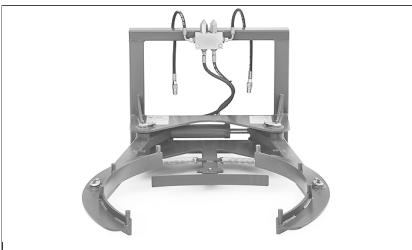
	Width in mm	Capacity in m ³	Weight in kg
1000199196	-	-	24
1000199192	-	-	34
1000199197	-	-	36
1000199198	-	-	46
1000199207	-	-	48
1000450046	-	-	150



Log fork

Usage: Raising, transporting, setting down and stacking tree trunks.
Not authorized for use on roads!

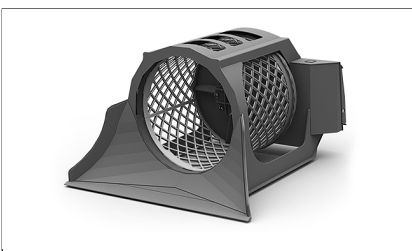
	Width in mm	Capacity in m ³	Weight in kg
1000450086	-	-	305
1000450087	-	-	385



Pot gripper

Usage: Grabbing, transporting and setting down large plant pots.
Not authorized for use on roads!

	Width in mm	Capacity in m ³	Weight in kg
1000450125	-	-	140



Screening drum

Usage: Picking up, transporting, sieving and loading loose material.

	Width in mm	Capacity in m ³	Weight in kg
1000461936	1200	-	420

12 Technical Data

12.1 Dimensions

12.1.1 Vehicle dimensions

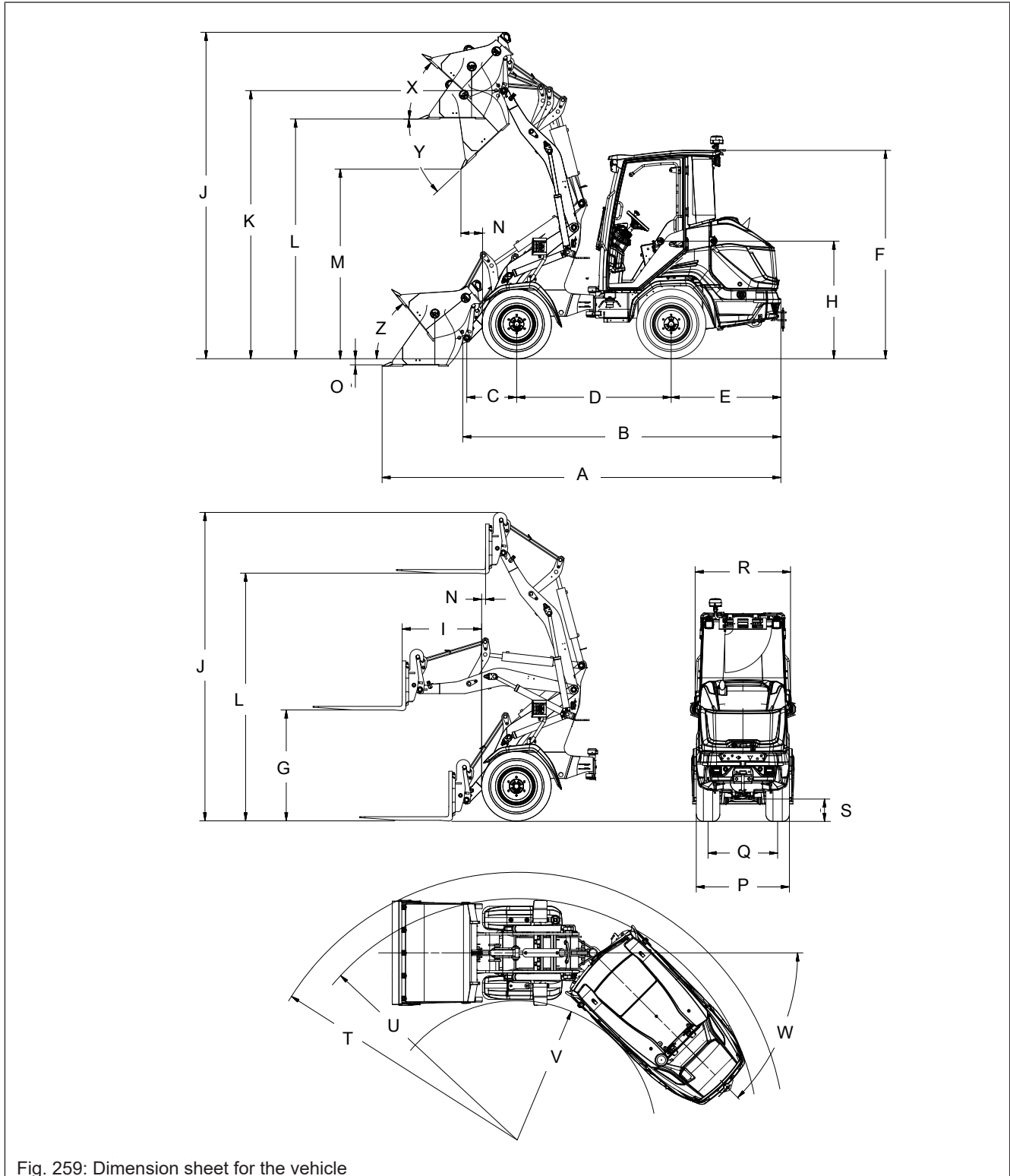


Fig. 259: Dimension sheet for the vehicle

Dimensions version loader unit standard

All dimensions with tires 12-16.5 BKT SkidPower ET 0.

If the rim is different or turned, the dimensions will change.

Item	Designation	mm
A	Overall length (with standard bucket)	4520
A	Overall length (with pallet fork)	4870
B	Overall length (without standard bucket)	3710
C	Bucket pivot point (to center of axle)	670
D	Wheelbase	1760
E	Rear overhang	1230
F	Height with overhead guard fixed	2340
F	Height folding overhead guard (eps)	2375
F	Height of folding overhead guard (eps), folded	1870
F	Height with cab	2350
H	Seat height	1350
J	Overall operating height (with standard bucket)	3210
J	Overall operating height (with pallet fork)	3013
K	Max. height blade pivot point	2560
L	Load-over height (with standard bucket)	2240
L	Load-over height (with pallet fork)	2333
M	Dumping height	1700
N	Reach at M	520
N	Maximum reach load-over height	226
O	Scraping depth	130
P	Overall width	1245
Q	Track width	940
R	Width across overhead guard	980
R	Width across cab	1020
S	Ground clearance	270
T	Maximum outer radius (depending on bucket width)	3200
U	Radius at outer edge	2800
V	Inside radius	1510
W	Articulation angle/steering angle	45°
X	Rollback angle at maximum lifting height	47°
Y	Dumping angle at max. lift height	41°
Z	Roll back angle at ground	50°
	Oscillation angle	8°

Item	Designation
A	Overall length (with standard bucket)
A	Overall length (with pallet fork)
B	Overall length (without standard bucket)
C	Bucket pivot point (to center of axle)
D	Wheelbase
E	Rear overhang
F	Height with overhead guard fixed
F	Height folding overhead guard (eps)
F	Height of folding overhead guard (eps), folded
F	Height with cab
H	Seat height
J	Overall operating height (with standard bucket)
J	Overall operating height (with pallet fork)
K	Max. height blade pivot point
L	Load-over height (with standard bucket)
L	Load-over height (with pallet fork)
M	Dumping height
N	Reach at M
N	Maximum reach load-over height
O	Scraping depth
P	Overall width
Q	Track width
R	Width across overhead guard
R	Width across cab
S	Ground clearance
T	Maximum outer radius (depending on bucket width)
U	Radius at outer edge
V	Inside radius
W	Articulation angle/steering angle
X	Rollback angle at maximum lifting height
Y	Dumping angle at max. lift height
Z	Roll back angle at ground
	Oscillation angle

12.2 Engine

12.2.1 Engine data

Designation	Yanmar 3TNV80FT
Manufacturer	Yanmar
Design	In-line engine
Vehicle fluid	Diesel
Number of cylinders	3

Designation	Yanmar 3TNV80FT
Fuel injection system	Indirect injection
Charging	Turbocharger
Cooling	Water
Exhaust gas aftertreatment system	not available
Exhaust-emission level	EU Stage V / EPA Tier4 final
Displacement in cm ³	1226
Idling speed in rpm	-
Power at nominal speed in kW	18.4
Power at nominal speed in hp	24.7
Rated speed at rpm	2600
Maximum torque (Nm @ rpm)	85 @ 1800
Maximum permissible inclination (in all directions) in degrees	20
Specific fuel consumption in g/kWh	-

Designation	Yanmar 3TNV86CHT
Manufacturer	Yanmar
Design	In-line engine
Vehicle fluid	Diesel
Number of cylinders	3
Fuel injection system	Common rail direct injection
Charging	Turbocharger with charge air cooler
Cooling	Water
Exhaust gas aftertreatment system	DPF (diesel particulate filter)
Exhaust-emission level	EU Stage V / EPA Tier4 final
Displacement in cm ³	1568
Idling speed in rpm	-
Power at nominal speed in kW	33.3
Power at nominal speed in hp	44.7
Rated speed at rpm	2600
Maximum torque (Nm @ rpm)	142 @ 1690
Maximum permissible inclination (in all directions) in degrees	20
Specific fuel consumption in g/kWh	-

Designation	Yanmar 3TNV86CHT-HP
Manufacturer	Yanmar
Design	In-line engine
Vehicle fluid	Diesel
Number of cylinders	3
Fuel injection system	Common rail direct injection
Charging	Turbocharger with charge air cooler
Cooling	Water
Exhaust gas aftertreatment system	DPF (diesel particulate filter)

Designation	Yanmar 3TNV86CHT-HP
Exhaust-emission level	EU Stage V / EPA Tier4 final
Displacement in cm ³	1568
Idling speed in rpm	1000
Power at nominal speed in kW	40.1
Power at nominal speed in hp	53.8
Rated speed at rpm	2600
Maximum torque (Nm @ rpm)	142 @ 1690
Maximum permissible inclination (in all directions) in degrees	25
Specific fuel consumption in g/kWh	-

12.3 Electrical system

12.3.1 Technical data

Operating voltage: 12 V

Battery: 77 Ah

Battery master switch: [see Battery master switch on page 87](#)

12.3.2 Fuse assignment

The different electrical circuits are protected with fuses with different current ratings. The fuses are located in different fuse boxes in the cab and engine compartment.

12.3.2.1 Fuses in the driver's platform

The fuse holders in the driver's platform are located on the right in the side console and can be accessed by removing the cover. To remove the cover, push the seat all the way forward and fold the backrest forward.

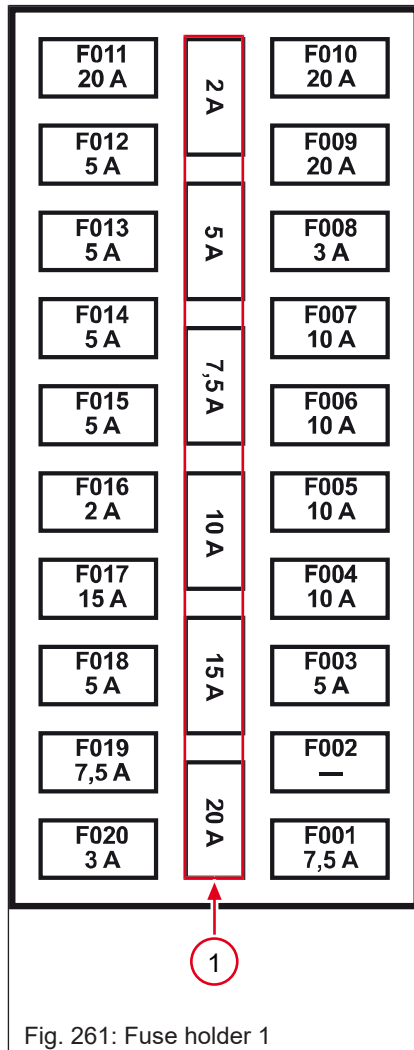
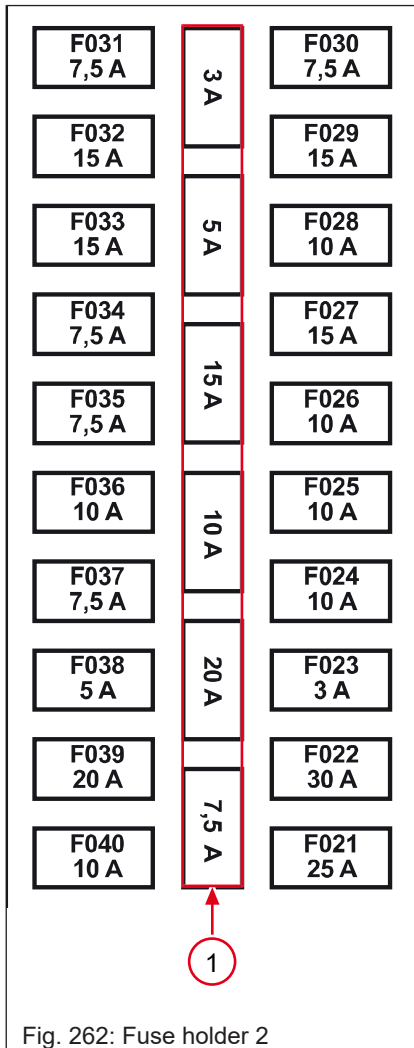


Fig. 261: Fuse holder 1

Fuse holder 1 assignment

1 Reserve fuses

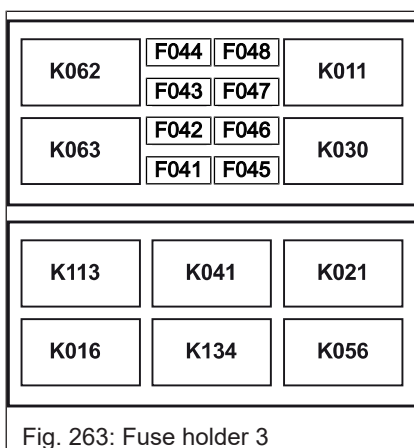
Item	Protected function	Ampere
F001	Ignition lock	7.5
F002	---	---
F003	Diagnostic connector, telematics, option controller TTC77	5
F004	Option controller TTC77	10
F005	Option controller TTC77	10
F006	Option controller TTC77	10
F007	Radio, cigarette lighter, interior light	10
F008	Cab controller (keypad in the roof)	3
F009	Cab controller	20
F010	Cab controller	20
F011	Cab controller	20
F012	Electrical function 1	5
F013	Electrical function 2	5
F014	Electrical function 3 & 4	5
F015	Traction drive controller, cabin controller, keypad 1, keypad 2, keypad 3, option controller TTC77, brake fluid reservoir	5
F016	Diagnostic connector, telematics, option controller TTC77 & TTC30, angle sensor for lowering brake valves	2
F017	Air seat, seat heating	15
F018	Switch illumination	5
F019	Window wiper front & rear, horn	7.5
F020	Display, oil quantity adjustment, thrust limitation	3



Fuse holder 2 assignment

1 Reserve fuses

Item	Protected function	Ampere
F021	Cab plug receptacle	25A
F022	Drive system controller	30A
F023	Option controller TTC30, traction drive controller	3A
F024	Option controller TTC30	10A
F025	Option controller TTC30	10A
F026	Option controller TTC30	10A
F027	Hazard lights	15A
F028	Turn signal	10A
F029	Back-up fuse, side marker light	15A
F030	Left-side clearance lights	7.5A
F031	Right-side clearance lights, license plate lights	7.5A
F032	High beam	15A
F033	Back-up fuse, low beam	15A
F034	Right low beam	7.5A
F035	Left low beam	7.5A
F036	Brake lights	10A
F037	Reversing light	---
F038	---	---
F039	Heating	20A
F040	Radio, USB port	10A



Fuse holder 3 assignment

Item	Protected function	Ampere
F041	Air conditioning system	7.5A
F042	Central lubrication system	5A
F043	Pressure relief	7.5A
F044	Differential lock, valve road lock	7.5A
F045	---	---
F046	---	---
F047	---	---
F048	---	---

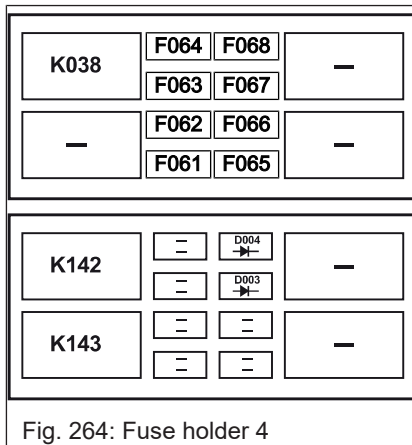


Fig. 264: Fuse holder 4

Fuse holder 4 assignment

Item	Protected function	Ampere
F061	---	---
F062	Front work lights	7.5A
F063	Rear work lights	7.5A
F064	---	---
F065	---	---
F066	Rotating beacon	7.5A
F067	---	---
F068	---	---
D003	Diode 4th control circuit	
D004	Diode 4th control circuit	

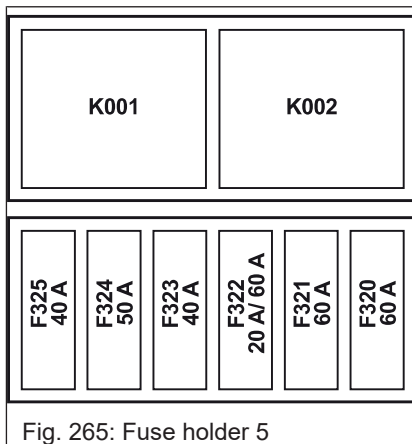


Fig. 265: Fuse holder 5

Fuse holder 5 assignment

Item	Protected function	Ampere
F320	Back-up fuse relay K001	60A
F321	Back-up fuse relay K002	60A
F322	Back-up fuse relay K038	20A
	Cab controller	60A
F323	Back-up fuse F021, F022, F028, F029	40A
F324	Back-up fuse F023-F026	50A
F325	Back-up fuse F001-F008	40A

12.3.2.2 Engine compartment fuses

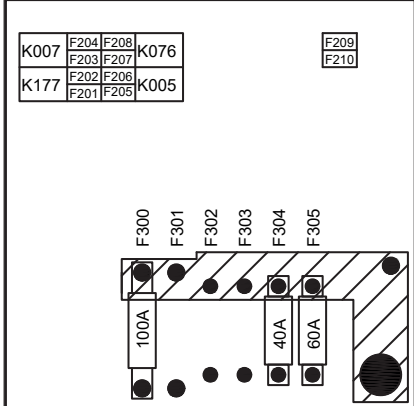
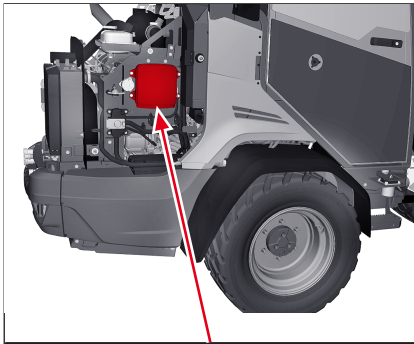


Fig. 266: Location of the fuse holders in the engine compartment

The fuse holders in the engine compartment are accessible by opening the engine hood and removing the covers.

Assignment of fuse holder in engine compartment

Item	Protected function	Ampere
F300	Back-up fuse cab/FSD	100
F301	---	---
F302	---	---
F303	---	---
F304	ECU engine	40
F305	14p. Plug receptacle	60
F201	Start relay K007	15
F202	AGR relay K177	20
	Engine main relay	10
F203	---	---
F204	---	---
F205	ECU engine	2
F206	Fuel pump	5
	Water separator	
	Air filter contamination	
F207	---	---
F208	---	---
F209	Relief relay K076	30
F210	Pre-heating K005	30

12.4 Drive system

12.4.1 Axles

Description of axles	
Front axle	Rigid, bolted to the vehicle frame
Rear axle	

12.4.2 Braking system

Description of the brake	
Service brake	

Location	Front axle
Brake fluid	ATF oil
Design	Hydraulically operated multi-disk brake, acting on both axles via cardan shaft

Parking brake	
Location	Front axle
Design	Actuation with switch in the dashboard, electro-hydraulic multiple-disc brake with spring brake in the front axle and acting on the rear axle via drive shaft

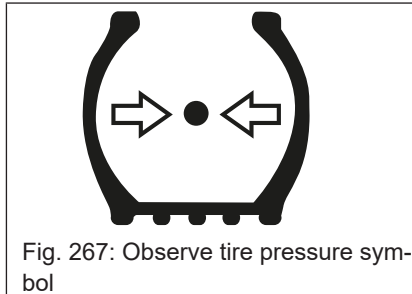
12.4.3 Air pressure table for the tires



NOTICE

Incorrect tire pressure can damage the tires!

- ▶ Observe the tire manufacturer's instructions.
- ▶ Check tire pressure regularly.



Tires	Air pressure in bar
12x16.5 BKT SkidPower ET+45	3.0
12x16.5 BKT SkidPower ET0	3.0
12x16.5 BKT SkidPower ET+45	2.7
15.0/55-17 Mitas TR-01 ET 0	2.6
15.0/55-17 BKT AS-504 ET-40	2.6
31x15.50-15 AS ET0 Mitas	3.1
31x15.5-15 BKT TR-315 ET-37	3.1
31x15.5-15 BKT SPHD ET 0	3.1
31x15.5-15 BKT SPHD ET-37	3.1
31x15.5-15 BKT TracMast. ET 0	3.1
33x15.5-15 BKT TracMast. ET-37	3.1
425/55R17 Alliance 570 ET-40	2.5
10-16.5 BKT SureTraxHD ET+40	5.2
12-16.5 BKT SureTraxHD ET+45	5.2
31x15.50-15 (400/50-15) AS ET0 Starco	3.0
400/50-15 StarcoAS-Dump. ET-37	3.0
305/70R16.5 Alliance 550 ET 0	2.8
425/40B17PR14 Delcora GSP+ ET0	3.0
260/70 R16.5 ET-60 Michelin BIB-STEEL	3.2
315/55 R16 ET-20 Continental MPT81	2.5

12.4.3.1 Tightening torques for wheels

Thread	Tightening torque
M14x1.5	150 Nm
M18x1.5	285 Nm

Thread	Tightening torque
M20x1.5	400 Nm
M22x1.5	500 Nm

12.5 Hydraulics

12.5.1 Drive hydraulics data

Variant	Delivery rate l/min	Working pressure bar
Axle with planetary gear	72.8	400
Axle with planetary gear with high speed (opt.)		470

Max. speed	km/h
Crawler gear	0 – 7
High speed	0 – 20
High speed (opt.)	0 – 30

12.5.1.1 Tightening torques for high-pressure valves

Thread	Tightening torque
M8	22 Nm
M10	10 Nm

12.5.2 Data of working hydraulics

Data	Unit	Value
Displacement Option 1	l/min	41.6
Displacement Option 2	l/min	49.4
Displacement Option 3	l/min	58.5
Flow rate rear hydraulic connections	l/min	25.8
Flow rate "High Flow" hydraulic connections	l/min	85
Working pressure	bar	210

12.5.3 Data of steering hydraulics

Description and data of steering system	
Fully hydraulic articulated pendulum steering with double-acting hydraulic cylinder	
Flow rate	see Data of working hydraulics on page 279
Working pressure	175 – 190 bar
Articulation angle	40°-45°
Oscillation angle	8°

12.6 Emissions

12.6.1 Exhaust emissions

To the exhaust emissions see [Engine data on page 270](#).

12.6.2 Noise values

Overview of noise parameters dB(A)	Overhead guard	Cab
Engine Yanmar 3TNV80FT (18,4 kW)		
Average sound power level LwA	99.3	99.3
Guaranteed sound power level LwA	100	100
Specified sound pressure level LpA	84	80
Engine Yanmar 3TNV86CHT (33,3 kW)		
Average sound power level LwA	98.1	98.1
Guaranteed sound power level LwA	99	99
Specified sound pressure level LpA	84	80
Engine Yanmar 3TNV86CHT-HP (40,1 kW)		
Average sound power level LwA	97.7	97.7
Guaranteed sound power level LwA	99	99
Specified sound pressure level LpA	84	76

12.6.3 Vibration

Hand-arm vibrations

The hand-arm vibrations do not exceed 2.5 m/s².

Whole body vibrations

This vehicle is equipped with a driver's seat that meets the requirements of EN ISO 7096: 2000. When the vehicle is used as intended, the whole body vibrations vary from less than 0.5 m/s² to a short-term maximum value.

It is recommended to use the values given in the table when calculating the vibration values according to ISO/TR 25398: 2006. Actual conditions of use must be taken into account.

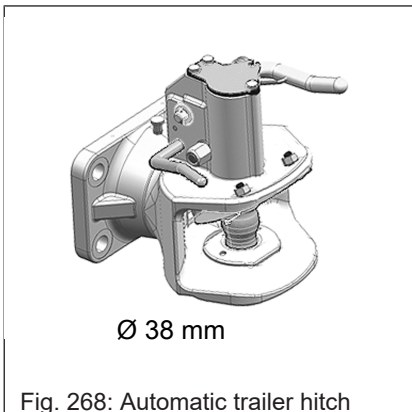
Telehandlers, like wheel loaders, are classified according to their operating weight.

Vehicle category	Typical operating condition	Average			Standard deviation(s)		
		1,4*aw,eq x	1,4*aw,eq y	aw,eqz	1,4*sx	1,4*sy	sz
Compact wheel loader operating weight <4,500 kg	Load & carry (loading and transport work)	0.94 m/s ²	0.86 m/s ²	0.65 m/s ²	0.27 m/s ²	0.29 m/s ²	0.13 m/s ²

Vehicle category	Typical operating condition	Average			Standard deviation(s)		
		1,4*aw,eq x	1,4*aw,eq y	aw,eqz	1,4*sx	1,4*sy	sz
Wheel loader operating weight >4,500 kg	Load & carry (loading and transport work)	0.84 m/s ²	0.81 m/s ²	0.52 m/s ²	0.23 m/s ²	0.20 m/s ²	0.14 m/s ²
	Use in extraction (rough operating conditions)	1.27 m/s ²	0.97 m/s ²	0.81 m/s ²	0.47 m/s ²	0.31 m/s ²	0.47 m/s ²
	Transfer trip	0.76 m/s ²	0.91 m/s ²	0.49 m/s ²	0.33 m/s ²	0.35 m/s ²	0.17 m/s ²
	V operation (loading work)	0.99 m/s ²	0.84 m/s ²	0.54 m/s ²	0.29 m/s ²	0.32 m/s ²	0.14 m/s ²

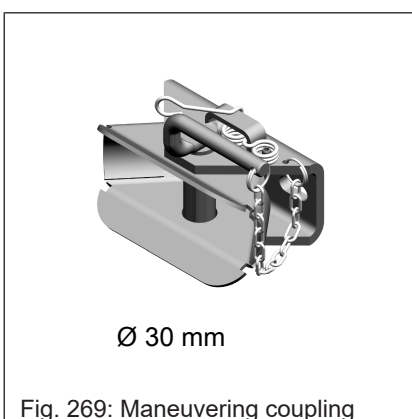
12.7 Weights

12.7.1 Trailer loads and drawbar load



Automatic trailer hitch

Weight	in kg
Permissible trailer weight with braked trailer (max. Incline 10 %)	3500
Permissible trailer loads with an unbraked trailer (max. Incline 10%)	750
Permissible drawbar load on trailer hitch	75



Maneuvering coupling

Weight	in kg
Permissible trailer weight with braked trailer (max. Incline 10 %)	3500
Permissible trailer loads with an unbraked trailer (max. Incline 10%)	750
Permissible drawbar load on trailer coupling	50

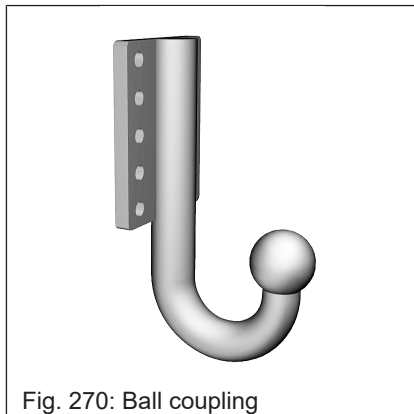


Fig. 270: Ball coupling

Ball coupling

Weight	in kg
Permissible trailer weight with braked trailer (max. Incline 10 %)	3500
Permissible trailer loads with an unbraked trailer (max. Incline 10%)	750
Permissible drawbar load on trailer coupling	100

12.7.2 Weight of the vehicle

The weight of the vehicle may vary due to different equipment (e.g. when the tires are filled with water).

Version loader unit standard

Designation	kg
Operating weight	3000
Permissible total weight	3490
Permissible axle load front	2000
Permissible axle load rear	2400
Tipping load with bucket loader unit horizontal, vehicle straight	1860
Tipping load with bucket loader unit horizontal, vehicle bent	1560
Payload with bucket (S=2)	780
Tipping load with pallet fork loader unit horizontal, vehicle straight	1550
Tipping load with pallet fork loader unit horizontal, vehicle bent	1310
Bearing load with pallet fork (S =1,25)	1050
Bearing load with pallet fork (S =1,67)	790

Payload and bearing load

Specified payloads and bearing loads are values for the vehicle with basic equipment. Payloads and bearing loads change due to different vehicle configurations. Values given are for the minimum vehicle performance. The payloads and bearing loads are determined starting from the "Tipping load with bucket loader unit horizontal, vehicle bent".

The payload of the vehicle with bucket is determined as follows:

- The vehicle is on uneven and soft ground (S = 2).

The payloads of the vehicle with pallet fork are determined using two values:

- The vehicle is on level and stable ground (S = 1.25).
- The vehicle is on uneven and soft ground (S = 1.67).

The payload for pallet forks applies with a load center of gravity (LSP) 500 mm from the back of the fork. The further the LSP is from the back of the fork, the lower the load capacity.

Other influencing factors on the payload and bearing load include, among other things:

- Transport on slopes and inclines
- Tires and air pressure
- Water filling in the tires
- Additional ballast weights

12.7.3 Load diagrams

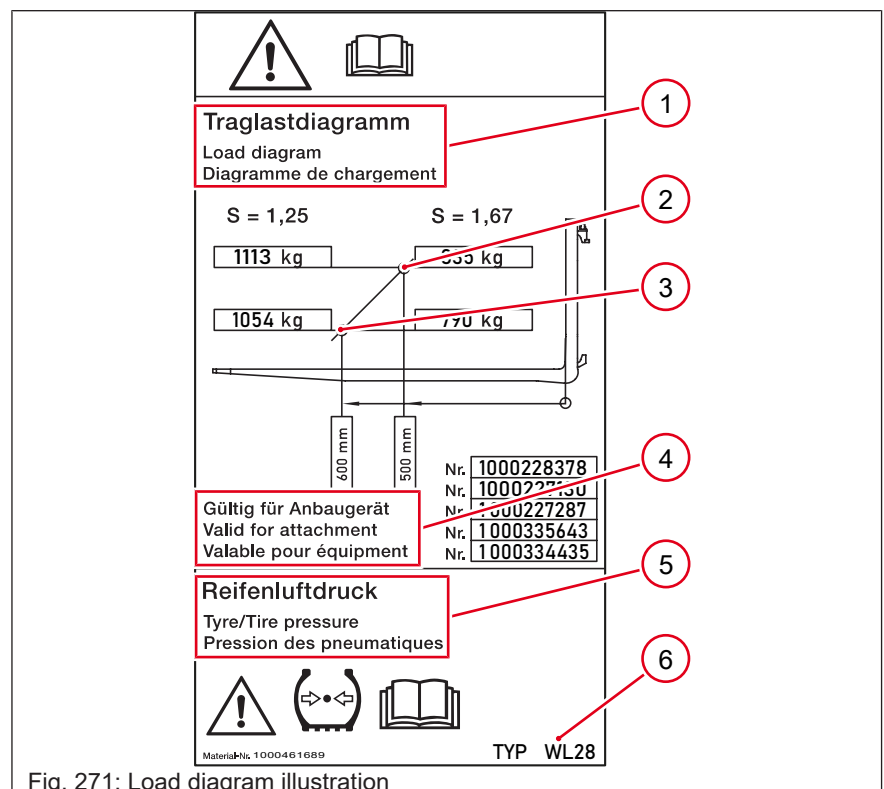


Fig. 271: Load diagram illustration

1 Vehicle load diagram

- 2** Load with center of gravity 500 mm from the back of the pallet fork.
- 3** Load with center of gravity 600 mm from the back of the pallet fork.
- 4** Specification of the pallet forks for which the load diagram is valid.
- 5** Observe the operating instructions for tire pressure.
- 6** Specification of the type for which the load diagram is valid.

13 Annex

13.1 Introduction

Dear customer,

The prescribed regular inspection intervals are listed below. Note that additional maintenance must be performed outside the inspection intervals listed here as specified in the operator's manual. Please observe the safety instructions in the operator's manual!

We recommend that you carry out all control and maintenance measures prescribed by us regularly and in time. This will ensure the best possible performance, reliability and safety of your machine.

To maintain your warranty claim, all maintenance and repair work during the warranty period should be carried out by a service center.

Only use spare parts, accessories and additional equipment approved by the manufacturer. Components that have not been tested and approved by the manufacturer can considerably impair the functionality of the machine and thus the driving and work safety!

Any liability is excluded for damage resulting from the use of components or accessories that are not from or approved by the manufacturer.

Please make sure that the proper completion of each inspection is confirmed with a stamp and signature from the service center in this booklet. In case of a possible resale of the machine the completely filled out booklet is a quality certificate and a valuable sales aid for you.

13.2 Warranty

We have provided a warranty to the responsible service partner.

Warranty and liability claims for personal injury and damage to property are not valid if they can be attributed to one or more of the following causes:

- Damage caused by improper operation or maintenance of the machine (contrary to the manufacturer's recommendations).
- Damage caused by tampering with the machine or modifications made to it (if not approved in writing by the manufacturer).
- Damage caused by the use of lubricants or spare parts not approved by the manufacturer.
- Damage caused by the use of non-original Wacker Neuson spare parts.
- Damage caused by the use of attachments or accessories that have not been approved by the manufacturer.
- Damage caused by wear and tear.
- Removal of sealings or seals. The manufacturer's liability is governed by the applicable general terms and conditions of sale.

Special conditions for traction batteries / accumulators. The sales partner is not entitled to warranty, especially in case of:

- repeated deep discharge of the battery or continued operation or storage in a deep discharged state.

**Information**

The warranty guideline in force at the time of conclusion of the contract is decisive!

**Information**

The warranty regulations only come into force once the completed handover confirmation has been signed by the recipient and then handed over to the service partner for storage in the machine file.

The handover of the vehicle to the customer must be reported by the service partner to the manufacturer directly via the dealer access (e.g. extranet / e-commerce).

13.3 Vehicle information

Vehicle information

Vehicle model:

Vehicle identification number:

Engine type:

Engine number:

Delivery date

Importer

Name:

Street:

Postcode/city

Telephone:

Fax:

E-mail:

Service center (name, address)

Name:

Street:

Postcode/city

Telephone:

Fax:

E-mail:

Customer (name, address)

Name:

Street:

Postcode/city

Telephone:

Fax:

E-mail:

PDI (handover inspection)

PDI performed:





PDI entered in e-Partner:





(Stamp, date, signature)

13.4 Inspection certificates

The inspection intervals are subdivided as follows:

- A** Once after 100 operating hours.
- B** Every 500 operating hours.
- C** Every 1500 operating hours or annually.

<p>1. Inspection after 100 operating hours</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 60%;"> <input style="width: 90%; border: 1px solid black;" type="text" value="WL28 A01-01"/> Machine designation </div> <div style="width: 30%; text-align: center;">  </div> </div> <div style="margin-top: 10px;"> <input style="width: 90%; border: 1px solid black;" type="text"/> Chassis number </div> <div style="margin-top: 10px;"> <input style="width: 60%; border: 1px solid black;" type="text"/> Operating hours </div> <p style="font-size: small;">The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr style="border: 0.5px solid black; margin-top: 20px;"/> <div style="display: flex; justify-content: space-between; width: 90%; margin: 0 auto;"> Stamp and Signature Service partner Date </div>	<p>3. Inspection after 1000 operating hours</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 60%;"> <input style="width: 90%; border: 1px solid black;" type="text" value="WL28 A01-01"/> Machine designation </div> <div style="width: 30%; text-align: center;">  </div> </div> <div style="margin-top: 10px;"> <input style="width: 90%; border: 1px solid black;" type="text"/> Chassis number </div> <div style="margin-top: 10px;"> <input style="width: 60%; border: 1px solid black;" type="text"/> Operating hours </div> <p style="font-size: small;">The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr style="border: 0.5px solid black; margin-top: 20px;"/> <div style="display: flex; justify-content: space-between; width: 90%; margin: 0 auto;"> Stamp and Signature Service partner Date </div>
<p>2. Inspection after 500 operating hours</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 60%;"> <input style="width: 90%; border: 1px solid black;" type="text" value="WL28 A01-01"/> Machine designation </div> <div style="width: 30%; text-align: center;">  </div> </div> <div style="margin-top: 10px;"> <input style="width: 90%; border: 1px solid black;" type="text"/> Chassis number </div> <div style="margin-top: 10px;"> <input style="width: 60%; border: 1px solid black;" type="text"/> Operating hours </div> <p style="font-size: small;">The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr style="border: 0.5px solid black; margin-top: 20px;"/> <div style="display: flex; justify-content: space-between; width: 90%; margin: 0 auto;"> Stamp and Signature Service partner Date </div>	<p>4. Inspection after 1500 operating hours</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 60%;"> <input style="width: 90%; border: 1px solid black;" type="text" value="WL28 A01-01"/> Machine designation </div> <div style="width: 30%; text-align: center;">  </div> </div> <div style="margin-top: 10px;"> <input style="width: 90%; border: 1px solid black;" type="text"/> Chassis number </div> <div style="margin-top: 10px;"> <input style="width: 60%; border: 1px solid black;" type="text"/> Operating hours </div> <p style="font-size: small;">The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr style="border: 0.5px solid black; margin-top: 20px;"/> <div style="display: flex; justify-content: space-between; width: 90%; margin: 0 auto;"> Stamp and Signature Service partner Date </div>

<p>5. Inspection after 2000 operating hours</p>	<p>7. Inspection after 3000 operating hours</p>
<p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>	<p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>
<p>6. Inspection after 2500 operating hours</p>	<p>8. Inspection after 3500 operating hours</p>
<p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>	<p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>

9. Inspection

after 4000 operating hours

WL28 | A01-01

Machine designation



Chassis number

Operating hours

The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner

Date

11. Inspection

after 5000 operating hours

WL28 | A01-01

Machine designation



Chassis number

Operating hours

The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner

Date

10. Inspection

after 4500 operating hours

WL28 | A01-01

Machine designation



Chassis number

Operating hours

The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner

Date

12. Inspection

after 5500 operating hours

WL28 | A01-01

Machine designation







Chassis number





Operating hours





The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner

Date

<p>13. Inspection after 6000 operating hours</p> <p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>	<p>15. Inspection after 7000 operating hours</p> <p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>
<p>14. Inspection after 6500 operating hours</p> <p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>	<p>16. Inspection after 7500 operating hours</p> <p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>

<p>17. Inspection after 8000 operating hours</p> <p><input type="text" value="WL28 A01-01"/>  Machine designation</p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>	<p>19. Inspection after 9000 operating hours</p> <p><input type="text" value="WL28 A01-01"/>  Machine designation</p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>
<p>18. Inspection after 8500 operating hours</p> <p><input type="text" value="WL28 A01-01"/>  Machine designation</p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>	<p>20. Inspection after 9500 operating hours</p> <p><input type="text" value="WL28 A01-01"/>  Machine designation</p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>

<p>21. Inspection after 10000 operating hours</p> <p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>	<p>23. Inspection after 11000 operating hours</p> <p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>
<p>22. Inspection after 10500 operating hours</p> <p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>	<p>24. Inspection after 11500 operating hours</p> <p><input type="text" value="WL28 A01-01"/> Machine designation </p> <p><input type="text"/> Chassis number</p> <p><input type="text"/> Operating hours</p> <p>The inspection and maintenance work listed in the operator's manual has been carried out properly.</p> <hr/> <p>Stamp and Signature _____ Date _____ Service partner</p>

25. Inspection

after 12000 operating hours

Machine designation


Chassis number
Operating hours

The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner_____
Date**27. Inspection**

after 13000 operating hours

Machine designation


Chassis number
Operating hours

The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner_____
Date**26. Inspection**

after 12500 operating hours

Machine designation


Chassis number
Operating hours

The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner_____
Date**28. Inspection**

after 13500 operating hours

Machine designation


Chassis number
Operating hours

The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner_____
Date

29. Inspection

after 14000 operating hours

WL28 | A01-01

Machine designation



Chassis number

Operating hours

The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner

Date

30. Inspection

after 14500 operating hours

WL28 | A01-01

Machine designation



Chassis number

Operating hours

The inspection and maintenance work listed in the operator's manual has been carried out properly.

Stamp and Signature
Service partner

Date

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NEUSON**
all it takes!

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