Original Instruction Manual
Bergmann Dumper
C810-C

05.10.2023 |1.0 | 50-020-1231-900

Content

Preamble

This manual includes a description of the product but no guarantees of specific qualities or results of use. Unless otherwise stated, the relevant state of engineering is that at the time of the joint delivery of the product and operating instructions by Sample GmbH.

The design and circuitry are subject to ongoing development and improvement. Subject to technical changes.

1 Basic data

1.1 Manufacturer

Bergmann Maschinenbau GmbH
Essener Strasse 7
49716 Meppen-Hüntel
Germany

Telephone: +49 5932 7292-0
Fax: +49 5932 7292-92
E-mail: info@bergmann-mb.de
Internet: www.bergmann-dumper.de

1.2 Validity of the documentation

Designation:	Bergmann Dumper
Model:	C810-C

Validity of the documentation

This documentation is valid for machines with serial number(s):

Serial number

1.3 Scope of the documentation

This documentation is part of the machine and includes the following items:

- Operating Instructions
- Supplier documentation

1.4 Foreword

The Bergmann Dumper is in accordance with the generally accepted rules of technology and the technical safety regulations applicable at the time of delivery. Relevant laws and regulations have been consistently applied.

The purpose of these operating instructions is to make it easier to get to know the Bergmann Dumper and to use it within the possibilities of its designated use.

The operating instructions contain important information for operating the Bergmann Dumper safely, proficiently and efficiently. Complying with them helps to avoid dangers, reduce repair costs and downtimes as well as to increase the reliability and service life of the Bergmann Dumper.

1.5 Liability and warranty

The “General terms of delivery and business” of Bergmann Maschinenbau GmbH & Co. KG apply generally.

Bergmann Maschinenbau GmbH & Co. KG excludes warranty and liability claims for personal and property damage if and when they are the result of one or more of the following causes:

- Use of the machine for a purpose not intended
- Failure to observe the instructions, precepts and prohibitions in this documentation
- Unauthorized constructional changes to the machine; improper operation of the machine
- Incorrect or unprofessional connection of electrical/hydraulic/pneumatic components
- Use of accessories or spare parts not approved or supplied by Bergmann Maschinenbau GmbH & Co. KG
- Use of the wrong/unapproved operating materials; poor monitoring of parts that are subject to wear
- Maintenance work performed incorrectly or too late
- Accidents due to outside influences and force majeure

1.5.1 Warranty

The “General terms of delivery and business” of Bergmann Maschinenbau GmbH & Co. KG apply generally.

1.5.2 Copyright

This documentation is a document in the sense of the law on unfair competition.

The copyright is held by:

Bergmann Maschinenbau & Co. KG

Essener Strasse 7

49716 Meppen-Hüntel

Germany

This documentation is intended for the machine owner and their personnel. The documentation contains texts and drawings which, without the express permission of the manufacturer, may be neither fully or partly

- reproduced,
- distributed or
- otherwise disclosed

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Violations will be liable to damage prosecution.

1.6 About this documentation

The following terms are used in this documentation for simplification purposes:

Operating instructions will be referred to hereinafter as **documentation**.

Bergmann Dumper will be referred to hereinafter as **machine**.

Any add-on parts such as round tipper body, rear tipper body, tipper bed etc. will be referred to hereinafter as **body**.

The illustrations in this documentation do not necessarily represent the actual scope of supply. If features for special series or scopes of supply are to be considered, this will be given special reference.

1.6.1 Target group

The documentation is intended exclusively for use by specialized personnel and instructed personnel.

The documentation must be read and applied by all individuals involved in at least one of the following activities:

- transport
- assembly and installation
- initial commissioning and function test
- operation
- maintenance and care
- troubleshooting
- repairs
- dismantling
- disposal

1.6.2 Explanation of terms

Owner

The owner refers to the entrepreneur/company who operates the machine and uses it for the intended purpose or has it operated by specialized and instructed personnel.

Instructed personnel

Instructed personnel are individuals who have been provably trained by Bergmann Maschinenbau GmbH & Co. KG or in accordance with the technical documentation of Bergmann Maschinenbau GmbH & Co. KG. Instructed personnel are able to perform the work assigned to them and to avoid familiar hazards.

Operators

Operators are individuals who have been instructed and authorized to operate the machine by the machine owner.

Specialized personnel

Specialized personnel are individuals who, due to their training, skills and experience and knowledge of the pertinent standards and regulations, are able to perform the work assigned to them and to independently recognize possible dangers and avoid hazards.

The specialized personnel are individuals employed by the owner or authorized by them to perform the work.

Electrical specialist

An electrical specialist is an individual whose technical training has given them knowledge and experience in electrical systems. In addition, the electrical specialist must have knowledge of the pertinent standards and regulations and must be able to assess the work assigned to them and to recognize and avoid possible hazards.

1.6.3 Use and storage

The documentation must be kept at the machine's application site at all times.

The documentation must be handed over with the machine in the event that it is resold.

1.6.4 Text formats

The following symbols/numbers are used for specific text passages in the documentation:

Symbol	Explanation
•	Identification of lists
–	Identification of sub-lists
1. …2.	Identification of work steps
Fig. 1	Numbering of figures (consecutive)
Tab. 1	Numbering of tables (consecutive)
1	Identification of item numbers in figures
(1)	Identification of item numbers in the text
(→ Chap. 1.1)	Identification of cross-references
Italics	Identification of the function name in the text and in figure legends

Tab. 1: Text formats

1.7 Type plate

The type plate contains the following data:

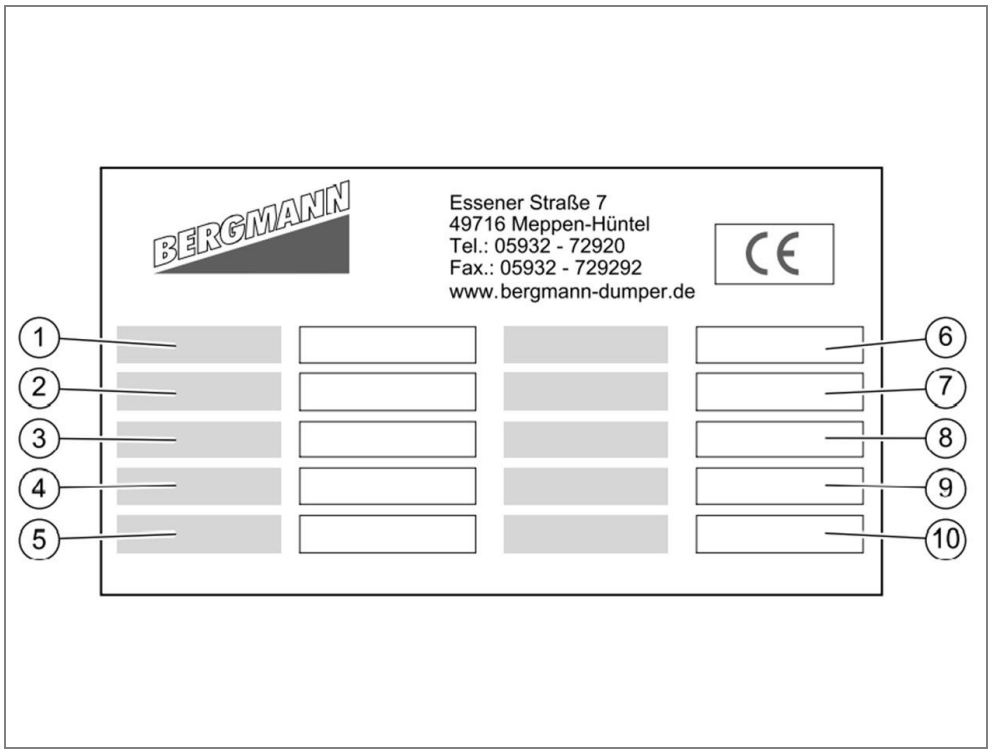


Fig. 1: Type plate

1	Type	2	Year of manufacture
3	Chassis number	4	Total weight (kg)
5	Dead weight (kg)	6	Useful load (kg)
7	Motor power (kW)	8	Permissible axle load front (kg)
9	Permissible axle load rear (kg)	10	–

Please state the type, year of manufacture and chassis number for spare parts orders and technical support.

1.7.1 Position of the signs

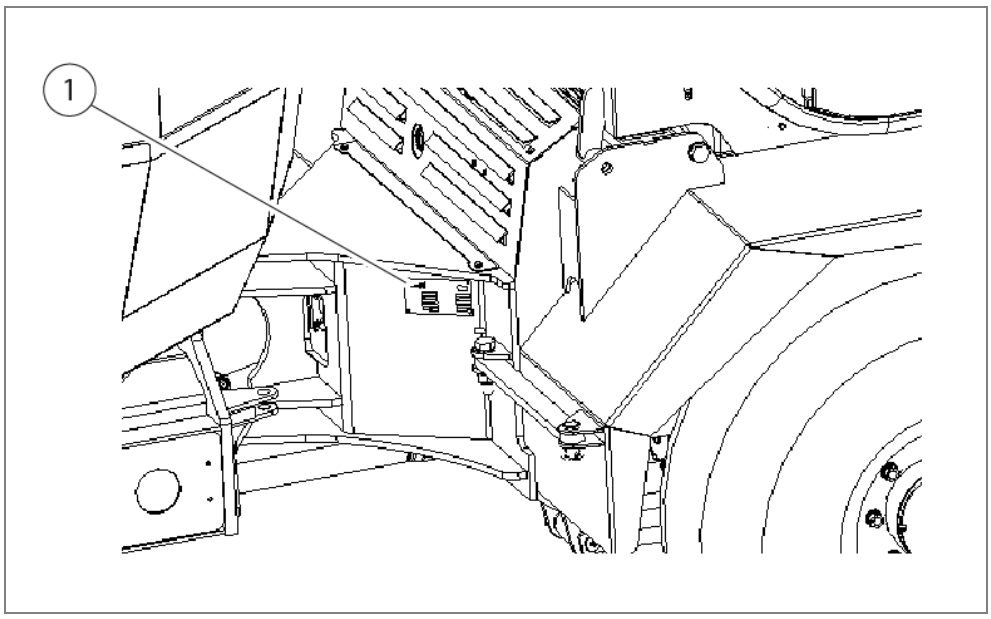


Fig. 2: Location of signs

1 Chassis number 2 Type plate

The chassis number (1) is punched into the frame above the type plate (2).

1.8 Spare parts

The following applies when ordering and using spare parts:

- Defective parts must be replaced only by genuine parts from Bergmann Maschinenbau GmbH & Co. KG.
- The warranty will be voided if third-party products are used.
- Spare part numbers should be taken from the spare parts catalog.
- Contact data for spare parts orders

1.9 Data storages

Many of the machine's electronic components contain data storages which store technical information about the machine status, events and errors temporarily or permanently. This technical information documents the general condition of a component, module, system or the environment such as

- operating states of system components (e.g. filling levels),
- status messages of the machine and its individual components (e.g. wheel revs, wheel speed, movement delay, lateral acceleration)
- malfunctions and defects in important system components (e.g. lights and brakes)
- reactions of the machine is special situations (e.g. display of an overload, by overloading of the dumper box)
- ambient conditions (e.g. temperature).

These data are of an exclusively technical nature and serve for detection and elimination of faults as well as for the optimization of machine functions. Movement profiles over covered distances cannot be created from these data.

When services are called upon (e.g. repair services, service processes, warranty cases, quality assurance), this technical information can be read out of the event and error data storages with special diagnostic equipment by service network staff (including the manufacturer). They can acquire further information there as required. The information in the error memory is erased or continuously overwritten after elimination of an error.

1.10 Regional regulations

The machine reflects state-of-the-art technology and has been developed and tested in accordance with the European standards.

The operating company informs Bergmann Maschinenbau GmbH & Co. KG of any regional regulations or mining regulations which have to be observed, at the project planning stage. Adherence to regional regulations or rules is the responsibility of the operating company.

The researching of standards in target markets is not the responsibility of the machine manufacturer.

2 Safety

2.1 General

Personnel in charge of carrying out work on the unit or system must have read and understood this manual and in particular the section on safety.

If necessary, in-house instruction should be provided, taking into account the technical qualifications of the personnel concerned.

Certain components have additional warning plates or labels to ensure safe operation. Plates or labels must not be covered or removed.

Observe all of the safety instructions. Compliance with these instructions is in the interest of your safety.

The relevant accident prevention regulations and other generally recognized health and safety regulations must be observed.

The manual must be stored so that it is easily accessible at any time. It must be complete, remain with the machine, and must be available to all authorized persons.

Avoid any working practice that:

- endangers the health and safety of the user or third parties,
- is detrimental to the unit or system or other material assets,
- impairs the safety or functionality of the unit or system,
- does not comply with the safety instructions.

Maintenance and service work may only be carried out by suitably qualified persons who are familiar with the dangers involved and who have the necessary qualifications.

⚠ WARNING

There is an increased risk of injury if the safety devices are dismantled. Never dismantle or put any safety device out of operation.

Please observe the following:

- Check the function of safety devices on a daily basis.
- Report all malfunctions and defects of safety devices to the after-sales service immediately.
- Keep housings closed during operation and only open to rectify function breakdowns or perform maintenance work.
- Perform repairs of the pipe systems and tanks only when they are depressurized.
- Observe the respective manufacturer's safety data sheets and disposal instructions as well as all of the local safety regulations when using chemicals. Wear protective clothing!

If the removal of safety devices is necessary for set-up, repair or maintenance purposes, please replace and check the functions of these immediately upon completion of the maintenance and repair work.

Pay particular attention to the general accident prevention and safety regulations in this case.

2.2 Personnel qualification

The table below shows the prescribed qualifications for the various activities.

Activity	Personnel
Transport	Instructed personnel
Assembly	Specialized personnel
Initial commissioning	Specialized personnel
Operation	Instructed personnel
Daily maintenance work	Instructed personnel
Maintenance	Specialized personnel
Troubleshooting	Specialized personnel
Repairs	Specialized personnel
Decommissioning	Instructed personnel
Disassembly	Specialized personnel
Disposal	Specialized personnel

Tab. 2: Required personnel qualifications

- Deploy only specialized personnel or instructed personnel.
- Do not allow persons to work on the machine whose powers of response are impaired by drugs, alcohol, medicines or similar. Observe specific local age restrictions.
- Observe other nationally applicable regulations of the respective country of the owner.

2.3 Intended use

The machine serves for transporting, distributing and dumping diggable ground and bulk materials on surfaced and unsurfaced paths. Its intended scopes of application are both enclosed construction sites of factory premises and operation on public roads.

The machine is operated by instructed personnel (only with suitable anthropometric data[1)2)]) by operating the control elements from the driver's seat. The operator is responsible for ensuring that no other persons within the radius of action of the vehicle are injured.

The machine is designed for the "manual operation" mode and is intended for use in trade and industry.

The maximum permissible ascent, descent and transverse tilt according to the technical data for maintaining the stability may not be exceeded.

Any other use above and beyond this constitutes a misuse.

The manufacturer will not be liable within his warranty for resulting damages.

The machine design ensures equipping, operation and maintenance without danger to persons when used properly. Equipping, maintenance and cleaning work may only be performed with the machine at a standstill.

The intended use also includes observance of the documentation and compliance with the inspection and maintenance conditions.

[1)] DIN EN ISO 7250-1:2010-06 | Basic human body measurements for technological design - Part 1: Body measurement definitions and measuring points

[2)] DIN CEN ISO/TR 7250-2:2013-08 (DIN SPEC 91279:2013-08) | Basic human body measurements for technological design - Part 2: Anthropometric databases of individual national populations

2.4 Foreseeable misuse

- Do not manipulate or bypass existing safety devices.
- Do not perform work on the machine without personal protective equipment.
- Modifications to the machine that change the delivery condition
- of the machine
- Use of the machine in closed rooms
- Use of the machine underground
- Driving with an open driver's door
- Modification of the vehicle superstructure
- Transporting or carrying persons additionally to the driver
- Towing of trailers with weights above the values specified in the technical data as well as disregard of further restrictions in the field of trailer operation
- Operation of the machine outside the permissible application limits
- Use with equipment and in combinations not described in the documentation
- Transport of liquid concrete
- Use of the dumper box as a bulldozer blade
- Driving with tipped dumper box

2.5 Safety notices in the documentation

2.5.1 General safety notices

General safety notices cover instructions that serve basically for safe use or maintenance of the safe condition of the machine.

2.5.2 Action-related warning notices

Necessary action-related warning notices in the documentation are introduced by signal words which express the degree of damage to be expected.

The warning notices are structured as follows:

⚠ DANGER

Type and source of danger

Possible consequences of failure to heed as well as an explanation of the source of danger.

- Measures/handling instructions to be performed to avoid dangers and damages

2.5.3 Hazard classes

⚠ DANGER

This symbol in connection with the signal word "Danger" identifies an imminent hazard. Non-observance of the safety information will result in death or extremely serious injuries.

⚠ WARNING

The symbol in connection with the signal word "Warning" identifies a possible dangerous situation. Non-observance of the safety information can result in death or extremely serious injuries.

⚠ CAUTION

The symbol in connection with the signal word "Caution" identifies a possible dangerous situation. Non-observance of the safety information can result in minor or slight injuries. It may also be used as a warning against property damage.

NOTICE

The symbol identifies a potentially harmful situation.

Non-observance of the safety information can result in damage or destruction of the product and/or of other system components.

NOTE

Information or notes can be found here.

2.6 Pictograms

The used pictograms are divided into 3 groups:

Warning signs

Warning signs warn the user of a possible hazard.

The information details are shown graphically in the pictogram or described in the text.

Prohibition signs

Prohibition signs prohibit concrete actions.

The information details are shown graphically in the pictogram or described in the text.

Mandatory signs

Mandatory signs prescribe concrete actions.

The information details are shown graphically in the pictograms or described in the text.

2.7 General safety notices

NOTE

- Safety notices of the manufacturer for safe use of the machine
- Safety regulations of the owner
- Regional specifications and regulations for safety at work and for the avoidance of environmental damages.

The owner is responsible for safe and intended use.

The following safety and warning notices have been developed in accordance with the knowledge of the manufacturer. They make no claim to being complete. Local or national safety regulations as well as special specifications on accident prevention complete this list.

The machine owner/user must add the respective local specifications of the application region to the following general safety notices.

2.7.1 Working under noise and vibrations

The machine generates a high noise level in normal operation.

Therefore, hearing protection must be worn permanently in the immediate vicinity of the machine.

Hearing protection is recommended in the driver's cab.

Conversations and communication are heavily restricted in the vicinity of the machine. The operating personnel must communicate largely by sign language.

The working movements of the machine cause vibrations in the whole machine environment.

2.7.2 Working on mechanical systems

Even though the machine is designed and built safely and equipped with safety precautions, the machine can nevertheless present hazards. Especially when specified sequences of action and safety regulations are ignored. Regular work will protect the personnel from these hazards.

Some machine components present an increased risk of injury from being struck by protruding parts, cut by sharp metal edges and possible product residues in corners. The danger points are marked by warning signs/pictograms.

Cleaning or maintenance work must never be performed whilst the machine is running.

- Unless specified otherwise in this documentation, protective devices must never be removed, bypassed or deactivated.
- Only start the machine if you know how to switch it off again!
- Only operate the machine or work on it if you have been appropriately trained, authorized and instructed in the function of the machine.
- The space on and around the machine as well as escape routes must be kept free from objects to avoid risks of stumbling and tripping and to guarantee fast evacuation.
- Listen out for unusual noises during operation of the machine because these could indicate a beginning malfunction which could develop into a potentially dangerous situation.
- Use suitable lifting gear for working with heavy sub-assemblies to avoid injuries, especially to the spine.
- Pick up heavy objects with bended knees and a straight back.
- Always wear suitable protective equipment for assembly, maintenance and process work.
- Cleaning and maintenance work must be performed properly.
- Only use suitable and intact tools and suitable aids when working with and on the machine. Defective tools can cause injuries.
- Do not leave any tools lying on or in the machine during work. Tools could become dangerous objects and damage the machine.
- Screw connections must be fastened properly with the prescribed tightening torques.

- Do not make any unauthorized changes to the machine settings other than those procedures described in the machine documentation. This could lead to dangerous, unwanted movements.

2.7.3 Working on hydraulic systems

Leakages on the hydraulic system can influence the safe functioning of the machine and present a serious hazard for the operating personnel.

Hydraulic fluid can ignite when exposed to great heat.

- The hydraulic system must be switched off and secured against switching back on during work inside the machine or in the range of movement of hydraulically controlled components.
- Check the tightness of the hydraulic system, especially lines, pumps, cylinders, screw connections, pressure-bearing and pressure-holding components and pressurized vessels regularly according to the manufacturer's specifications.
- Report leakages at once and seal immediately if possible.
- Hydraulic fluid is harmful to health. Never swallow, inhale or allow hydraulic fluid to penetrate the unprotected skin.
- In case of contact of the body or clothing with hydraulic fluid, take off clothing immediately and take the protective or aid measures according to the safety data sheet of the hydraulic fluid and/or according to the employer's/owner's directives.
- Hydraulic fluid gets very hot during operation of the machine. There is a risk of burns when making checks. Let the machine components cool down before possible contact.
- Always wear suitable protective clothing or the personal protective equipment.
- Leakages in the hydraulic system, e.g. cracks/holes in hydraulic lines may on no account be plugged with parts of the body. This can lead to severe or fatal injury. Leaks must be fixed immediately and professionally.

Observe the age of hydraulic hoses

Even if a visual inspection reveals no visible damage to hydraulic hoses, the bond between the inner and outer layers may be damaged. Hydraulic hoses are subjected to an aging process during use even with proper storage and permissible stress levels.

The maximum period of use for pre-assembled hydraulic hoses is 6 years and includes a maximum storage time of 2 years.

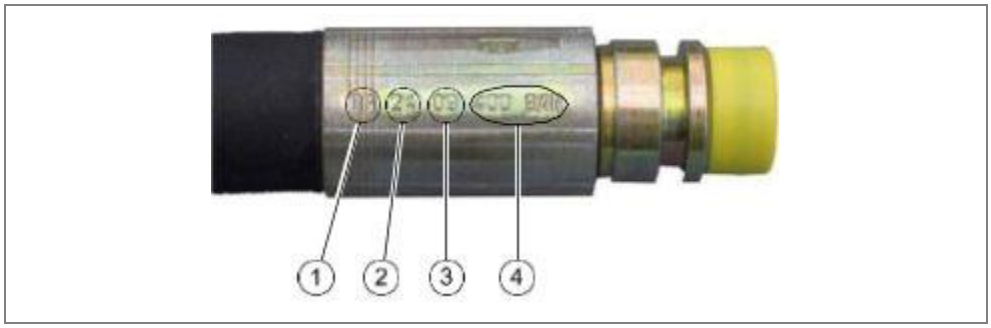


Fig. 3: Labeling of hydraulic hoses

1	Manufacturer	2	Calendar week
3	Year	4	Maximum operating pressure

Observe the embossed manufacture date (2) (3) of the hydraulic hose fittings. No hydraulic hoses may be fitted which have been stored for longer than 2 years.

Make sure that hydraulic hoses of the same type are used. Compare the hydraulic hose type labeling with the internal diameter and the maximum permissible operating pressure (4). Ask Bergmann Maschinenbau GmbH & Co. KG for information if necessary.

Only new hydraulic hoses may be used as replacements.

2.7.4 Working on electrical systems

Electrical voltages occur on the machine that can cause severe injuries if the safety regulations are ignored.

The following must be observed when working on electrical systems:

- Do not bridge or bypass electrical switching elements because resulting malfunctions could have fatal effects.
- There is always a possibility of residual voltages on parts of the electrical system.
- Before working on the electrical system, please bear in mind that capacitances need a certain time to discharge.
- Only use suitable, sufficiently insulated, demagnetized or anti-static tools for work on the electrical system.
- Only use suitable measuring instruments/test equipment for work on the electrical system.
- Do not damage line marks and labels when loosening connections because these are needed again for assembly.
- Only use parts with the same specification when replacing electrical components.
- The specifications of the appropriate standard apply for the electrical system (→ EN 60204-1 Safety of machinery - Electrical equipment of machines - Part 1: General requirements).

2.7.5 Working during operation

- Only start and operate the machine from the driver seat. Do not short-circuit the engine.
- Ensure that the machine is safe to operate before every use. Familiarize yourself with the environment before starting work.
- If faults or changes in the operating behavior occur during work, stop all work with the machine immediately, switch off the machine and inform the supervisor.
- If control lamps or waring messages light up during operation, shut down the machine and inform the supervisor.
- Ensure stability of the machine.
  - Do not exceed the permissible longitudinal and transverse tilting of the machine. Adapt the travel speed to the loading process and nature of the ground (bend radius, downhill/uphill gradient and road surface).
  - The nature of the ground must be such that it is suitable to take the floor load exerted by the machine.
  - Keep a safe distance from excavations and embankments.
  - Only operate superstructures on flat/level ground.
  - Observe the material properties of the materials to be transported. Sticky materials, for example, can adhere to the machine and cause the weight to shift.
- Observe longer braking distances at higher travel speed, on slippery surfaces and downhill driving.
- Adapt operation of the machine to external influences (gravity, wind, precipitation, soiling, etc.).
- Always stop and leave the machine as described in the documentation.

2.7.6 Working near to electric cables

When working near to open and overhead cables, safety distances must be kept between the cables and the machine. The safety distances depend on the rated voltage of the cable.

Rated voltage	Safety distance
up to 1000 V (1 kV)	1.0 meters
above 1 kV to 110 kV	3.0 meters
above 110 kV to 220 kV	4.0 meters
above 220 kV to 380 kV	5.0 meters
at unknown rated voltage	5.0 meters

Tab. 3: Safety distances

If a flashover/electric arc should still occur:

- Move the machine or add-on parts out of the electrical danger area. For example, by:
  - Lowering superstructures.
  - Swinging away booms.
  - Driving out the machine.

If this is not possible:

- Stay in the driver's cab.
- Warn bystanders from approaching and touching the machine.
- Have the power switched off.

2.8 Machine-specific danger notices

The manufacturer, Bergmann Maschinenbau GmbH & Co. KG, cannot foresee all possible situations that could harbor potential risks under the actual application and operating conditions. For this reason, the warnings listed in this documentation might not cover all potentially hazardous situations.

If procedures, equipment and methods are used for the various work that are not expressly recommended by

Bergmann Maschinenbau GmbH & Co. KG, it must be ensured that the work is performed under observation of the personal safety of the individual performing the work and all other persons involved in the work.

It must be ensured that the machine does not suffer any damage or become unsafe due to operating, maintenance or repair procedures prescribed by the owner.

2.8.1 Danger areas on the machine

The machine is operated from the driver's cab.

There are areas on the machine that are not constantly visible to the operator, e.g. the area below the machine.

The operator must ensure by suitable measures that no persons are standing in these areas. Work with the machine must be stopped immediately if persons enter the danger area.

2.8.2 Danger area in operation

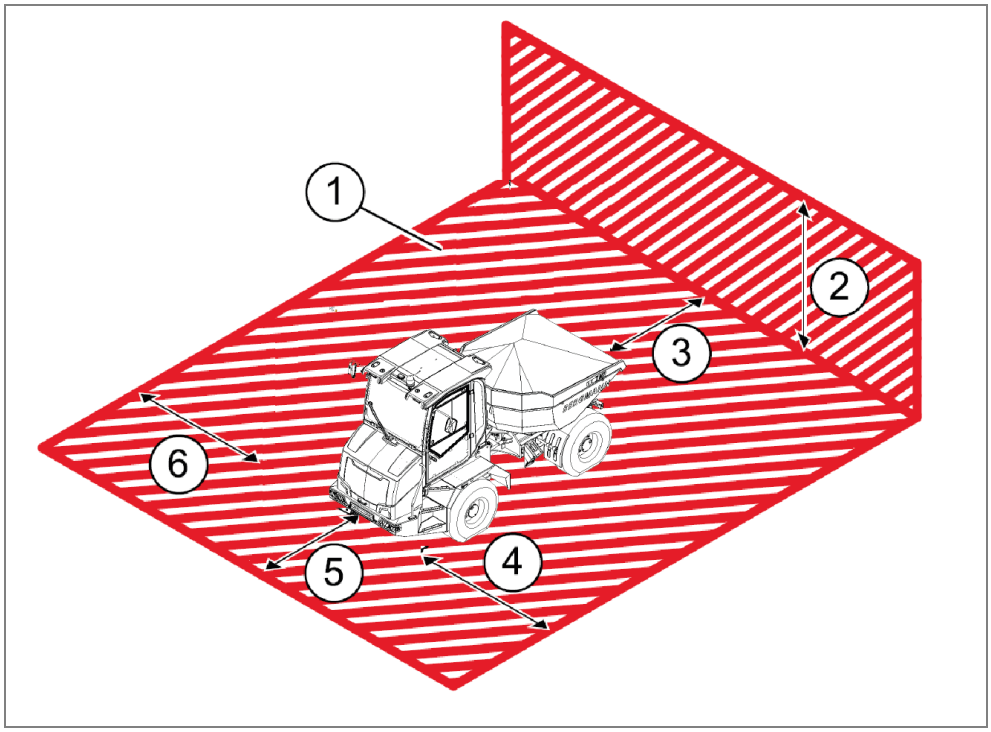


Fig. 4: Danger area in operation

1	Danger area	2	Minimum distance 5 m
3	Minimum distance 5 m	4	Minimum distance 3 m
5	Minimum distance 5 m	6	Minimum distance 3 m

The danger area (1) around the machine may not be entered when the machine is in operation. The danger area is given by the range of movement of the machine and the superstructures.

2.8.3 Danger area/space requirements for maintenance/repair work

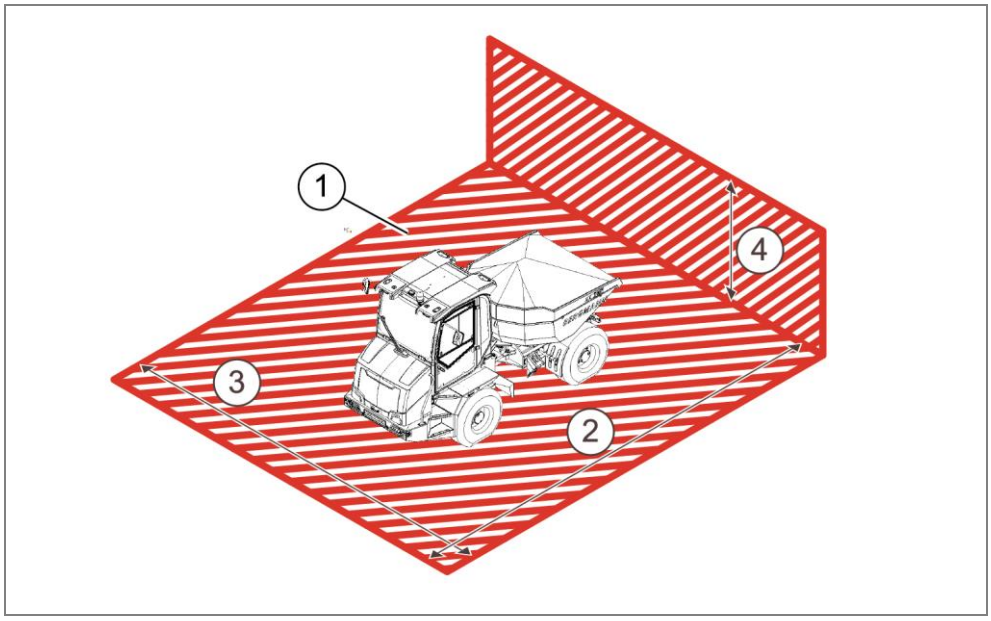


Fig. 5: Danger area for maintenance/repair work

1	Danger area	2	Minimum distance 7 m
3	Minimum distance 4.8 m	4	Minimum distance 5 m

A minimum space is required for maintenance and repair work in order to be able to perform the servicing work properly. Failure to provide this space could put personnel working on the machine at risk.

2.8.4 Danger area of the rotary dumper box

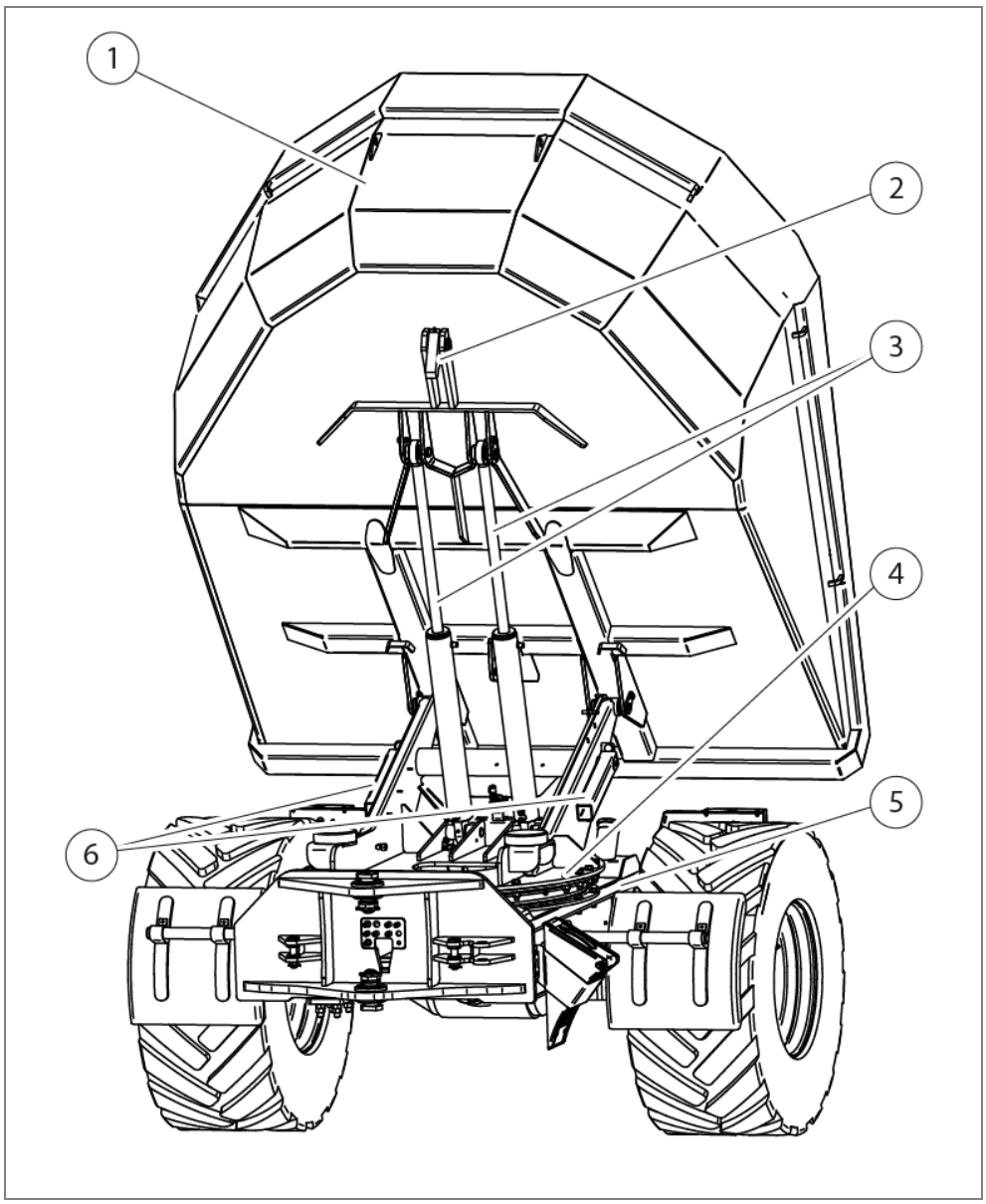


Fig. 6: Danger area of the rotary dumper box

1	Dumper box	2	Lock *Dumper box*
3	Lifting cylinder *Dumper box*	4	Slewing ring
5	Machine frame	6	Lifting cylinder support *Dumper box*

The danger area of the tilted rotary dumper box is between the dumper box (1) and the machine frame (5). The danger area may only be entered when the dumper box is secured against unintentional movements by the lifting cylinder support of the dumper box (6).

Securing the rotary dumper box:

1. Set up the supports of the *lifting cylinder dumper box* vertically on both sides.

NOTE

Only move the support into position from the outside.

2.9 Safety devices

- Check the safety devices of the machine constantly for proper functioning.
- The machine must not be operated if they are not working or not working properly.

Important instructions regarding the technical safety and operating protection are specially highlighted and described in this chapter.

2.10 Safety and information signs

Several safety and information signs are affixed to the machine which, if unheeded, could result in severe injuries or death as well as damages to the machine.

- Check the safety and information signs constantly for completeness and legibility.
- Clean dirty pictograms immediately.
- Replace missing or illegible/damaged signs immediately.

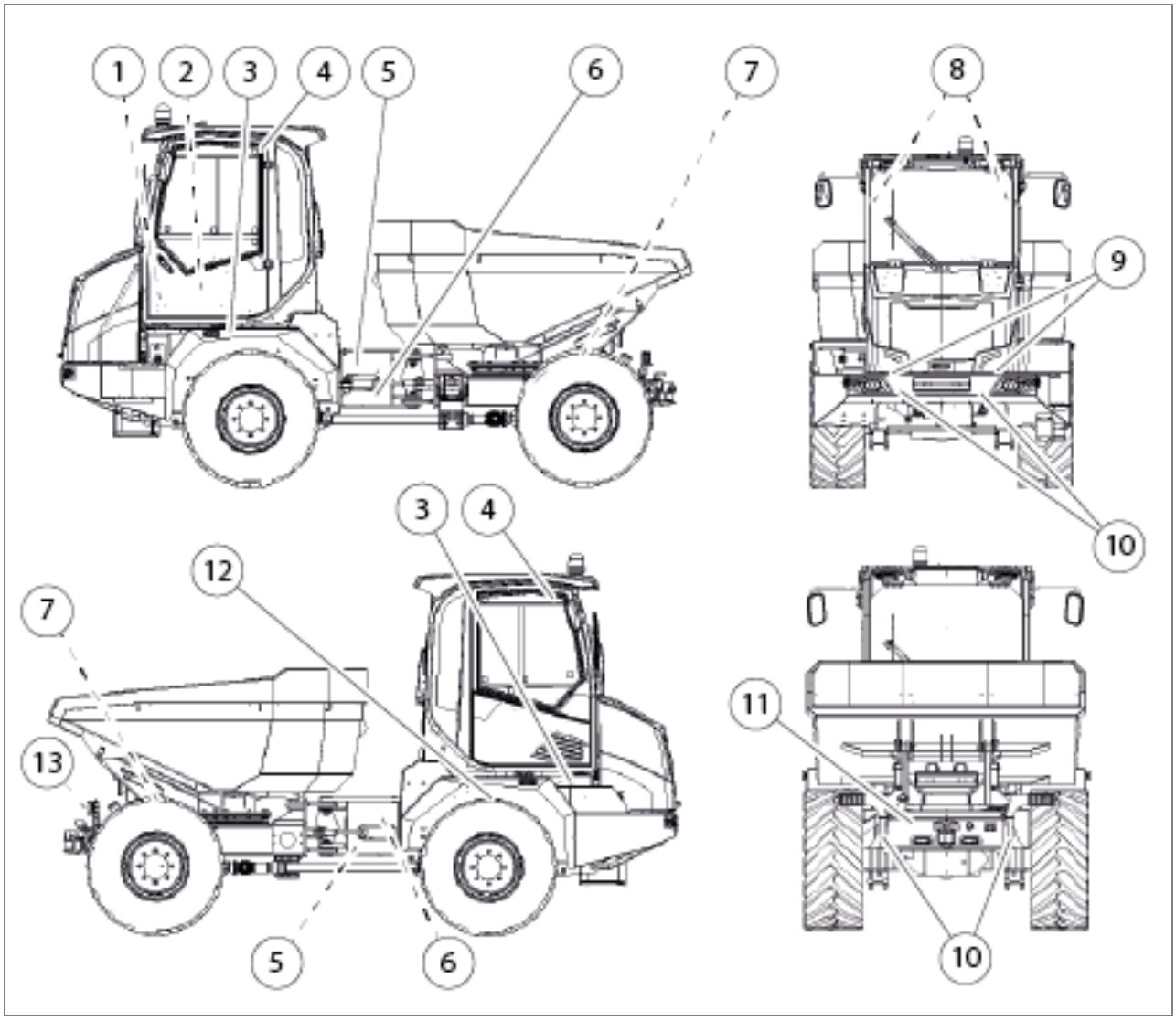
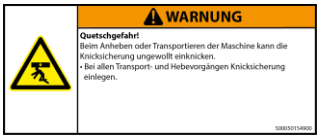
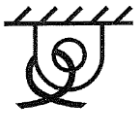
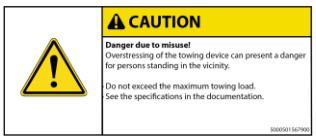


Fig. 7: Position of the information and safety signs

Safety signs

Item	Sign	Item number	Number	Description
1	ACHTUNG Gefahr von Maschinenschäden! Nach Ausschalten der Maschine 2 Minuten warten, bis der Batterietrennschalter betätigt wird.	50-005-2370-900	1	Attention: Do not operate the battery disconnecter until 120 sec. after switching off the machine.
2	Caution Danger of accident due to incorrect locking of the revolving seat! Prüfen Check every time before setting off that the lock is properly engaged and locks the seal in both directions of rotation. Danger of accident due to actuation of the lock during travel! Never actuate the lock during travel.	50-005-1820-900	2	Caution: Revolving seat not engaged
3	Reifendruck: 2,9 bar		2	Tire pressure: 2.9 bar

Item	Sign	Item number	Number	Description
4		50-005-1890-900	2	Emergency cabin exit
5		50-005-0377-900	2	Off limits
6		50-005-0154-900	1	Danger of crushing: Engage articulation lock
7		50-005-1913-900	2	**Risk of accident due to incorrectly inserted safety support!**
8		50-005-0770-901	1	Danger: Information sign with safety pictograms and text notices • Mounted visibly in the cab next to the driver's seat
9		50-005-1911-900	2	Warning: Hot surfaces
10		50-005-1280-900	4	Lashing point
11		50-005-0156-900	1	Caution: Clutch overload
12			1	Sound power level specification • On the front frame, rear right-hand side

Item	Sign	Item number	Number	Description
13			2	Tire pressure: 3.5 bar

Tab. 4: Safety signs on the machine

2.11 Owner obligations

The owners must convince themselves that the operator has read and understood the documentation before operating for the first time.

The owner must conduct a risk analysis of the workplace and derive suitable protective measures as well as work/operating instructions from it. The risk analysis must be repeated at reasonable intervals.

The pertinent safety/accident prevention regulations and occupational health rules as well as the safety recommendations of the professional associations and employers' liability insurance associations which may differ according to country and/or professional association, must be observed for operation of the machine.

2.12 Condition of the machine

Only operate the machine in a technically perfect and safe condition. Check whether all protection and safety devices are fully available and functional every time before starting operation.

Do not make modifications or make additions or conversions to the machine without the manufacturer's consent.

Observe the prescribed intervals for maintenance work in the appropriate documentations.

Observe fire alarm and fire fighting possibilities.

Check the machine for external signs of damage and defects at least once per shift. This includes, for example, checking the hydraulic system for leaks as well as general cleanliness of the machine.

Report any detected changes (including those in the operating behavior) to the supervisor immediately. Shut down and secure the machine immediately if necessary. Eliminate faults immediately.

2.13 Selection of personnel

Obligations in the selection and qualification of operating personnel:

- Only professionally trained, qualified, experienced and reliable operators who are familiar with the appropriate technical terminology and work procedures may work with the machine.
- The legally prescribed minimum age according to local regulations must be observed.
- The owner must define the areas of responsibility of the operators for transport, assembly/disassembly, operation, maintenance and disposal.
- The delegated, qualified specialized personnel must be trained or instructed for the activities concerned. Operators undergoing training or instruction may only work on the machine under constant supervision by an experienced individual.
- The owner must ensure that the appropriate activities are only performed by authorized and trained specialist personnel.

2.14 Expert inspection

The machine must be inspected by an expert before initial commissioning and at least once a year.

Experts are individuals who, based on their technical qualification and experience, have sufficient knowledge of the machines, equipment and systems and are familiar with the pertinent legal work safety regulations, rules for the prevention of accidents, directives and generally recognized rules of technology to an extent that they are able to judge the safe working order of machines, equipment and systems.

The inspection results must be documented and kept until the next inspection. A copy must be kept at the machine.

2.15 Fire protection

Important prerequisites for proper fire safety:

- Keep all objects clean and tidy.
- Make sure that all devices and pieces of equipment are in perfect working order.
- Fire and naked flames are prohibited. Activities which cause a fire risk are prohibited.
- Inflammable liquids or objects must not come into contact with hot machine parts.
- Staff must be briefed on how to act in case of fire, and the use of portable fire extinguishers (first-aid extinguishing).
- The operator must supervise the machine constantly during operation and be alert to any signs of fire or smouldering fire.
- All operators must ensure that no highly inflammable materials come into contact with hot machine parts.
- Check and clean the machine before first use every day.
- Check and clean the machine regularly during the working day.
- Make sure that the jet of exhaust gas is not directed at combustible objects.
- If possible, disable the automatic DPF regeneration in the vicinity of combustible materials or in dry environments.

2.16 Environmental protection

The following information must always be observed for protection of the environment:

- The respective national regulations for environmental protection must be observed generally.
- Collect escaping oils/hydraulic fluids during assembly and disassembly.
- Dispose of oils/hydraulic fluids as well as all auxiliary and operating materials used according to local regulations and in an environmentally friendly way.
- Ensure that the parts are disposed of in an environmentally friendly way after finally taking the machine or individual components out of operation.
- Recycle metal and plastic parts.

3 Technical data

NOTE

The data may minimally deviate due to manufacturing tolerances.

3.1 Machine

Weights and dimensions	
Length	5382 mm
Width	2420 mm
Height	3090 mm
Ground clearance	392 mm
Weight	6250 kg

Ambient conditions	
Application temperature range	-20 °C – +40 °C
Application site	• open country • operation in buildings, pits, tunnels and similar only permitted with adequate extraction or fresh air supply

Tab. 5: Ambient conditions

3.2 Drive unit

Drive unit	
Manufacturer	Deutz
Type	Diesel engine
Rated power (acc. to DIN 6271)	74.4 kW
Number of cylinders, arrangement	4, in series
Capacity	3600 ccm
Cooling system	Cooled by water
Pollutant class	Exhaust stage 5
Fuel type	Diesel
Coolant	Water
Fuel system	
Fuel tank volume	68 l
with a reserve of	4 l
Fuel prefilter	See spare parts list
Main fuel filter	See spare parts list

Tab. 6: Diesel engine

NOTE

See the supplier documentation for further information on the technical data of the Diesel engine.

3.3 Tires

Standard tires	
Tire size	500/60 – R22.5
Tire type	Alliance - 331
Tire pressure front	2.9 bar
Tire pressure rear	3.5 bar
Tightening torque	500 Nm

Tab. 7: Tires

3.4 Braking system

Brake system	
Service brake	Oil bath multi-disc brakes - hydraulically via pedal
Parking brake	Oil bath multi-disc brakes - electrically via switch
Brake fluid	HLP 46

Tab. 8: Brake system

3.5 Steering

Steering	
Type	Articulated steering
Drive unit	Hydraulic power-assisted steering with Orbitrol valve acting on two double-action working cylinders
Oil supply	Hydraulic pump with priority valve control
Steering lock	68° (34° each to left/right)

Tab. 9: Steering

3.6 Electrical system

General	
Operating voltage	12 V
Number of batteries	1
Battery voltage	12 V
Battery capacity	100 Ah

Tab. 10: Electrical system

3.7 Hydraulic system

NOTE

To determine which oil to use, see the label near the hydraulic oil filling nozzle or contact the Bergmann after-sales service.

Hydraulic fluid	
mineral	HLP 46
biological	HLP SYNTH 46
Tank capacity	52 l

Tab. 11: Hydraulic fluid

Hydraulic pump	
Travel hydraulics	
Feed pump	Axial piston variable displacement pump
Number	1
Max. delivery pressure	450 bar
Working hydraulics	
Feed pump	Gear pump
Number	1
Delivery capacity	73.3 l/min
Max. delivery pressure	250 bar
System hydraulics	
Feed pump	Gear pump
Number	1
Delivery capacity	21.9 l/min
Max. delivery pressure	250 bar
Hydraulic oil filtration	
Back suction filter	See spare parts list

Tab. 12: Hydraulic pump

4 Structure and function

4.1 General

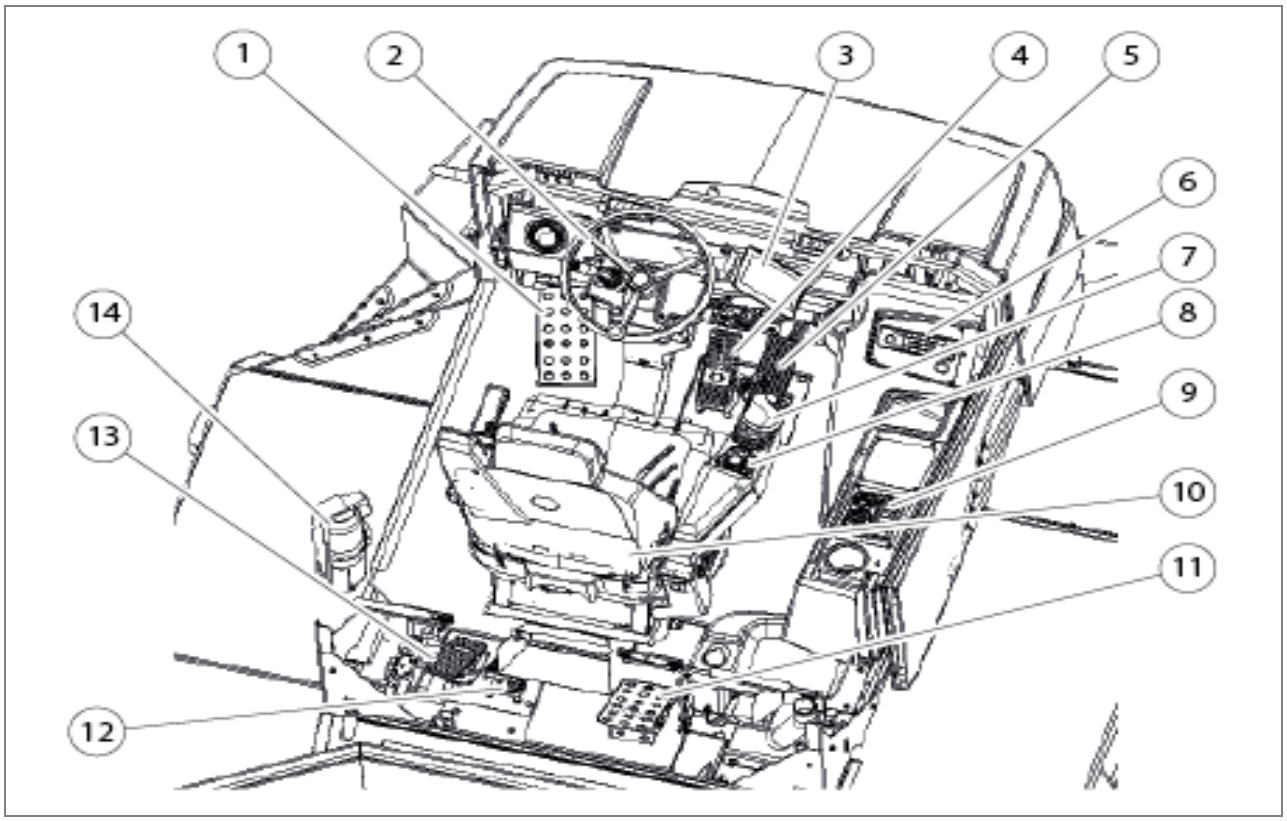


Fig. 8: Structure of the machine

1	Driver's cab	2	Rotary dumper box
3	Articulated steering	4	Drive unit

The machine is designed for transportation and work on surfaced and unsurfaced roads.

The machine is equipped with a rotary dumper box (2). The rotary dumper box is used to pick up, transport and dump loose bulk materials.

The front and rear frames are connected by an articulated joint with steering cylinder (3).

The machine is operated from the driver's cab (1).

The drive system (4) is located under the service access to the drive unit behind the hood.

The machine is equipped with a lighting system.

4.2 Hydraulic system

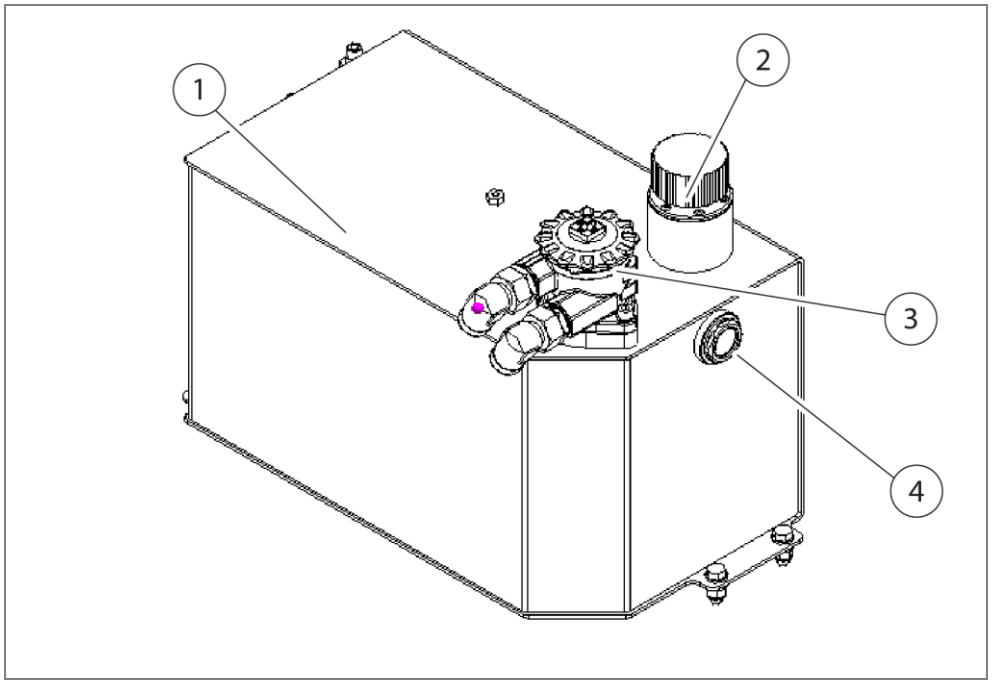


Fig. 9: Hydraulic tank structure

1	Hydraulic tank	2	Venting filter
3	Return intake filter	4	Sight glass

The hydraulic tank serves as a collection and intake tank for hydraulic fluid. The hydraulic pumps are connected to the suction connections on the suction side. Returning hydraulic fluid flows through the return filter (3) back into the hydraulic tank and is cleaned.

The sight glass (4) serves to check the hydraulic fluid level.

4.3 Rotary dumper box

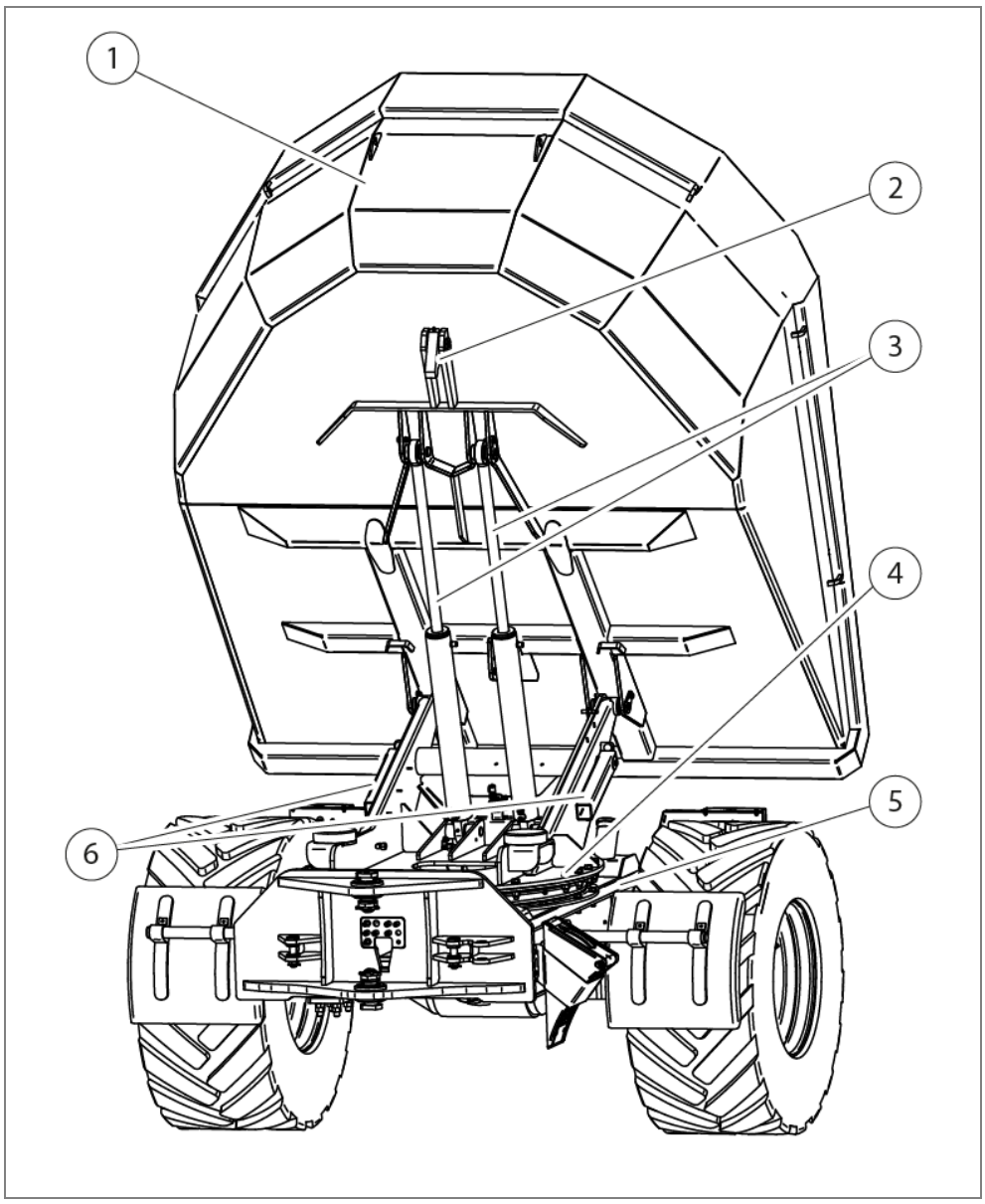


Fig. 10: Chassis structure

1	Dumper box	2	Lock *Dumper box*
3	Lifting cylinder *Dumper box*	4	Slewing ring
5	Machine frame	6	Lifting cylinder support *Dumper box*

The rotary dumper box serves for picking up, transporting and tipping out loose bulk materials. The rotary dumper box can be swiveled to the left or to the right by up to 87° from travel direction.

The dumper box (1) is connected to the slewing ring (4) by pivot points. The tipping movement is made by the lifting cylinder *Dumper box* (3). The hydraulic cylinder is bolted to the dumper box and slewing ring.

The dumper box is connected to the machine frame (5) by the slewing ring. The swiveling movement is made by swivel cylinders in the frame which are connected to the swivel console underneath the slewing ring.

The lock *Dumper box* (2) locks the dumper box in its lowered state.

In its tipped state, the dumper box can be secured against unintentional lowering by the support (6).

4.4 Chassis

The rear axle is rigidly connected to the frame, the front axle is damped by leaf springs with hydraulic shock absorbers.

Steering

Hydraulic articulated steering is provided by a priority valve on the articulated joint.

Brake system

The machine is equipped with an independently operating parking and service brake system. The parking brake secures the parked machine on slopes. The service brake is used for deceleration during operation and prevents unintentional acceleration of the machine during downhill travel.

The service brake operates via maintenance-free oil bath multi-disc brakes in the wheel hubs of the front and rear axle.

The parking brake is a hydraulic brake that acts on the front and rear axles via the prop shaft.

4.5 ECO Mode (Option)

The machine can be optionally equipped with an ECO mode for idle shutdown.

For the engine to switch off automatically after five minutes, the following operating conditions must be fulfilled:

- Engine is at operating temperature.
- Engine is idling without load.

The start of the timer is indicated by the flashing and yellow engine control lamp.

Once switched off, the engine can be restarted using the key switch.

NOTE

If the machine is equipped with the ECO mode by the factory, it cannot be deactivated by the driver.

5 Transport, packing and storage

5.1 Safety instructions

The requirements of the regulations for the prevention accidents, environmental protection and national safety regulations, where applicable, must be observed during packing, transport and unpacking of the machine.

5.2 Transport and installation

The owner or the personnel contracted for the transport must ensure that the machine is transported as intended and consciously of the necessary safety and potential hazards.

Before beginning transport

- all the necessary information about first aid and rescue possibilities (emergency doctor, fire brigade, etc.) must be familiar,
- the personnel contracted for the transport must familiarize themselves with the working environment (e.g. obstructions in the working area),
- the personnel contracted for the transport must convince themselves that no-one is standing in the danger zone.

The danger zone is the area in which persons are within reach of work-related movements of the machine and its equipment or swinging and falling parts.

5.3 Transport position

Remove the rotating beacon to ready the machine for transport.

5.4 Packing

NOTE

Disposing of packing material

All packing materials must be disposed of properly and in an environmentally friendly way after installation of the machine.

5.5 Transport inspection

The scope of delivery must be checked against the shipping documents on delivery of the machine to the application site.

- Scope of delivery
  - Completeness of the scope of delivery, comparison of the scope of delivery with the scope of order
  - Shortages
- Condition of the transported components
  - Transport damages

Check sub-assemblies and parts for visible signs of damage and defects. Report any changes immediately to the supervisor. If necessary, stop work immediately and cordon off the workplace.

5.6 Storage

Unless specified otherwise in the order, the parts are prepared for short-term installation.

Storage conditions of the machine:

- protected against weather influences
- covered
- dry
- dust-protected
- well-ventilated

5.7 Transport of the sub-assemblies

Before attaching a load, check whether the lashing eyes and slings have sufficient load capacity.

Check lashing eyes before use for damage such as deformed eyes and cracked welding seams.

Damaged lashing eyes must not be used until they have been repaired.

Agree working procedure for lifting and assign the responsibilities.

Wear gloves for handling ropes. Do not uses twisted, frayed, kinked or otherwise damaged ropes.

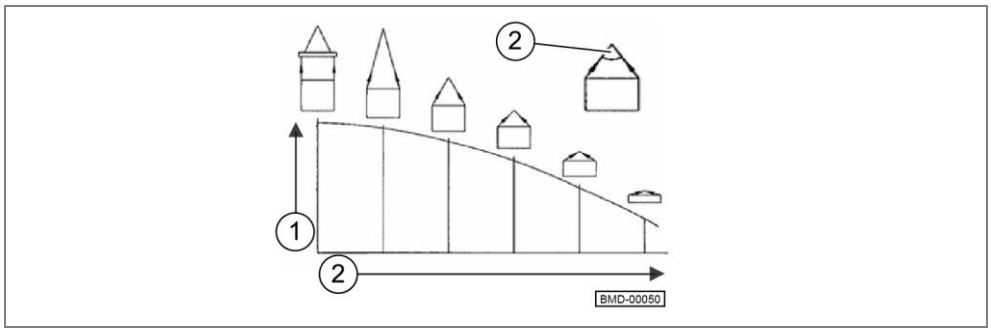


Fig. 11: Transport of the sub-assemblies

Attach ropes so that the splaying angle (2) between the lengths of rope is as small as possible. The smaller the splaying angle, the greater the permissible load capacity (1) of the ropes.

Before lifting sub-assemblies, parts or the whole machine, make sure that the ropes have uniform tension.

Before lifting sub-assemblies, parts or the whole machine, check that accessories and other parts are attached safe from accident.

5.8 Transport by flatbed truck and rail

Flatbed trucks and rail are prescribed for transporting the machine over long distances. If such a transport is necessary, the loading and transport must be agreed with a company with experience in the field of heavy goods transport.

The transport company or their representative bears the responsibility for loading and transport.

The appropriate safety regulations must be observed for transport and loading.

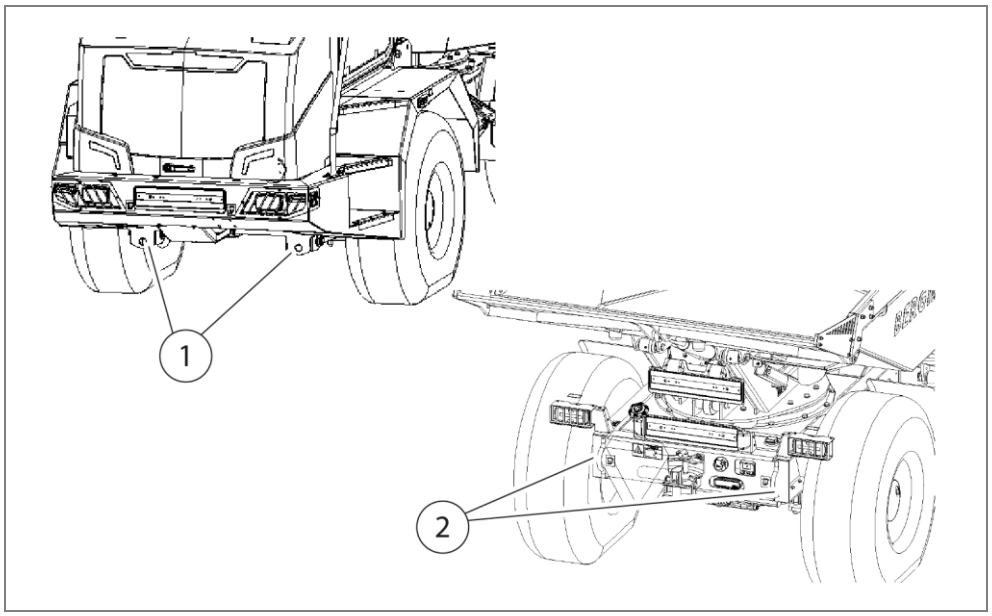


Fig. 12: Lashing points

1. Lash the machine onto the transport vehicle at the marked lashing points at the front (1) and rear (2).

5.9 Hand signals for directions

If the operator does not have a sufficient overview of the working area, the respective area must be cordoned off by fixed barriers. If this is not possible, another person must give the necessary instructions for safe transport by hand signals.

The most important hand signals are described in the annex.

5.10 Transportation components

For the breakdown into transportation components and information on

- dimensions
- fastening points
- weight
- permitted load bearing capacity of the fastening points
- position of the centre of gravity

of the transportation components, refer to the appendix.

6 Commissioning

⚠ DANGER

Danger due to fire in the driver's cab!

In case of a driver's cab fire, inflammable materials can quickly burst into flames and injure persons.

- In the event of a fire, leave the driver's cab immediately.
- Carry out fire fighting measures from the outside only with suitable fire extinguishers.

⚠ DANGER

Mortal danger due to liquids escaping under pressure!

Severe to fatal injuries possible if hydraulic fluid spurts out due to bursting or leakages.

- Have hydraulic lines older than 6 years replaced.

⚠ DANGER

Risk of injury due to fire!

Severe to fatal injuries possible if batteries ignite due to a short-circuit in the electrical system, internal/external heat or accident.

- Leave the danger zone around the vehicle immediately in case of fire.

⚠ DANGER

Mortal danger due to liquids escaping under pressure!

Severe to fatal injuries possible if hydraulic fluid escapes when changing an add-on device by loosening the plug coupling.

- Only change the add-on device with the control switched off.

⚠ DANGER

Risk of accident!

Severe to fatal injuries possible if dangers are not recognized due to missing, damage or dirty safety signs.

Check safety signs regularly for completeness and legibility.

6.1 Safety instructions

During installation and initial commissioning of the machine the requirements of the regulations for the prevention of accidents, environmental protection and any specific national safety regulations must be observed.

Only ever operate the machine in a technically perfect and safe condition.

Check beforehand whether all protective equipment and safety devices are complete in number and fully functional.

6.2 Assembly

The machine is delivered fully assembled. No assembly is necessary.

6.3 Initial commissioning

6.3.1 Preparatory activities

Refrain from working in any way that is detrimental to the safety. Commission the machine as intended, consciously of safety and dangers and under consideration of the documentation. The rules for the prevention of accidents and environmental protection must be observed.

- Obtain information about first aid and rescue possibilities (emergency doctor, fire brigade, etc.).
- Familiarize yourself with the working environment including all obstructions in the working area.
- Check completeness of operating signs.
- Check the hydraulic fluid level.
- Check the battery capacity and recharge if necessary.

⚠ **WARNING** – Danger from inhaling health hazardous gases! There is a risk of injury when the drive unit batteries overheat due to short-circuiting or overloading and emit toxic gases.

  - Only use the included charger.
  - If toxic gases are emitted, air the room thoroughly and leave as quickly as possible.

- Check the tire pressure.
- Check the electrical system.

⚠ **WARNING** – Risk of injury due to short-circuiting of the battery!

A short-circuit can lead to explosion of the battery.

  - Do not remove any protective covers when the battery is on.

- Check steering for smooth action.
- Check joystick for smooth action.
- Check that the revolving driver's cab is locked.
- Check steering orbitrol and rotary joint for leaks.
- Check machine for visible signs of damage.

If missing or loose screws, missing covers, oil puddles, defective, torn off or bent lines are detected, commissioning is prohibited until the defects have been eliminated.

- Prepare optional accessories and equipment according to the specifications of the respective manufacturer for initial commissioning, see the respective supplier documentation.

6.3.2 Function test

⚠ DANGER

Risk of accident when standing in danger zones!

There is a risk of accident when persons are standing in the danger zones during operation of the machine.

- The operator must ensure that no persons are standing in the danger zones during operation of the machine.
- If the operator does not have a clear view of all danger zones, a second person must be recruited to give directions.

⚠ DANGER

Danger of being trapped or pulled in!

Severe to fatal injuries possible if persons get caught in the wheels.

- The operator must ensure that no persons are standing in the danger zones during operation of the machine.

⚠ DANGER

Risk of injury when reversing!

When reversing, the field of vision might be obstructed to such an extent that persons are overlooked and run over.

- The machine driver must ensure that no persons are standing in the danger zone.
- Have another person give hand signals if necessary.
- Use the optional equipment such as reversing hazard warning signal and reversing camera if available.
- Honk the horn briefly before reversing.

⚠ WARNING

Danger of impact!

There is a risk of injury if the driver stretches arms or other parts of the body out of the driver's cab.

- Never hold the arms or other parts of the body outside the driver's cab during travel.

⚠ WARNING

Danger of impact!

There is a risk of injury when parts fall off the bed during transport of piece goods and injure bystanders.

- Always lash piece goods securely and observe other properties of piece goods.

⚠ WARNING

Danger of impact!

There is a risk of injury when the passenger accidentally presses the accelerator or brake pedal and accelerates or decelerates the machine.

Always fold in the additional pedals and protect with the cover when carrying a passenger.

⚠ CAUTION

Risk of injury!

There is a risk of injury when the operator gets near the turning wheels during travel.

- Do not hang an arm down out of the driver's cab.

- Watch out for unusual noises and increased surface temperatures during the function test which could indicates a defect.
- In case of malfunctions during the function test, shut down the machine immediately, secure it and repair the faults.
- Observe control and warning indicators according to the documentation.

Operate the machine according to the documentation.

When the machine is in operation, no other persons apart from the operator and the persons necessary to the technical proceedings may stand near the machine.

- Carry out the preparatory activities.
- Switch on the machine.
- Check the perfect function of the control and warning lamps.
- Check the perfect function of the signaling and lighting equipment.
- Check the chassis and the braking effect on a level stretch of ground if possible and check the correct function of the movements according to the operating signs for forward and reverse driving.
- Switch on all consumers singly and check the correct function and movements according to the operating signs.
  - Run through the hydraulic functions several times beginning at low speed. Check the hydraulic system for leaks.
  - Drive to the end positions of all hydraulic cylinders once. Then, stop the hydraulic cylinders at the intermediate points and make sure that the hydraulic cylinders comes to an immediate standstill and hold this position.

⚠ **DANGER** – Danger of impact! Severe to fatal injuries possible if persons are standing in the danger zone during rotating/tipping of the dumper box/tipper bed.

- Make sure that no persons are standing in the danger zone during rotating/tipping of the dumper box/tipper bed.
- Perform function test/initial commissioning of optional accessories and equipment according to the respective manufacturer's specifications.
- Switch off the machine.

6.3.3 Inspections after initial commissioning/function test

- Check hydraulic system for leaks. Retighten loose screw connections. Defects on the bindings, damp, torn off or bent hydraulic lines must be replaced immediately.
- Check filling level in the hydraulic tank.
- Check machine for external damages.
- Check all screw connections for tight fit and retighten if necessary. Observe the permissible tightening torques.

7 Operating and display elements

7.1 Drive and operating elements

7.1.1 Driver's cab

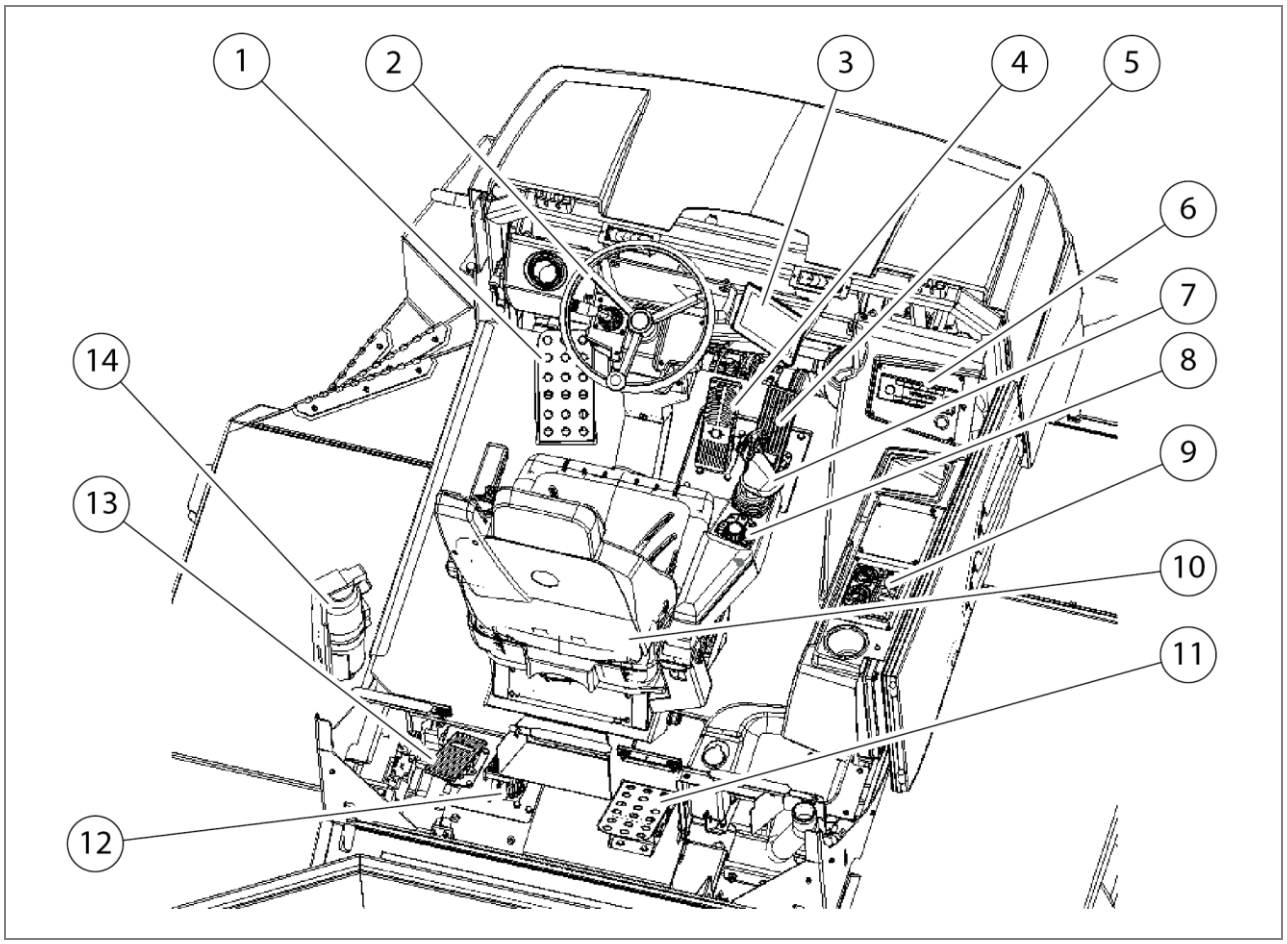


Fig. 13: Driver's cab control elements

1	Foot rest	2	Steering wheel
3	Display	4	Brake pedal
5	Gas pedal	6	Radio (option)
7	Joystick	8	Rotary switch
9	Control panel	10	Driver seat
11	Foot rest	12	Brake pedal (opposite direction)
13	Gas pedal (opposite direction)	14	Fire extinguisher (option)

7.1.2 Foot pedals

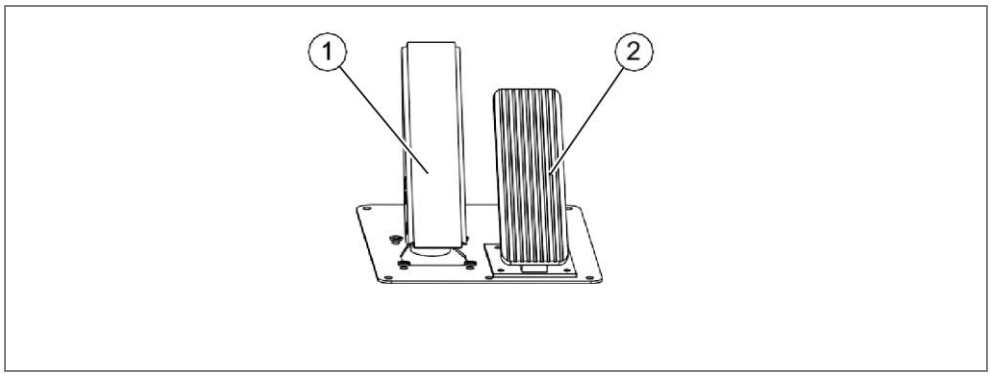


Fig. 14: Foot pedals

The travel speed is regulated by the accelerator (2).

By pressing the brake pedal (1) and relaxing the accelerator (recuperation), the travel movement of the machine is delayed.

7.1.3 Key-operated switch

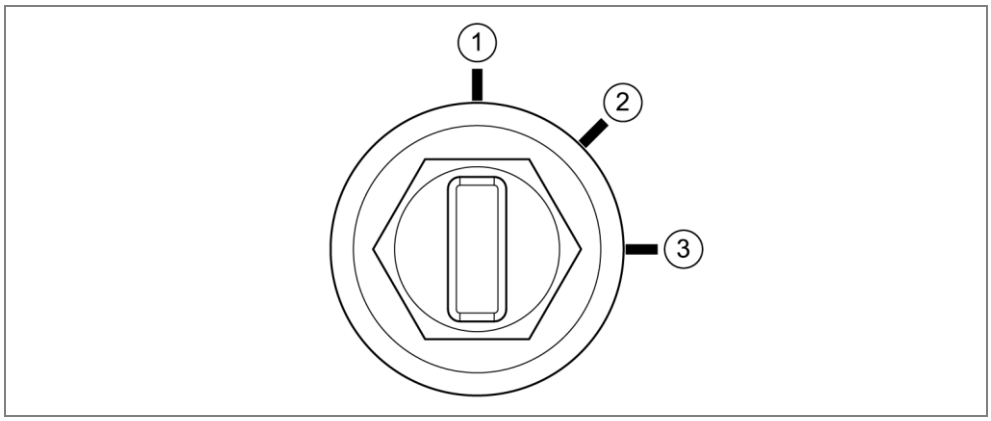


Fig. 15: Key-operated switch

Position 1 - engine off

Position 2 - ignition on

Position 3 - start engine

7.1.4 Joystick Console

Joystick assignment direction of travel *Dumper box rear*

Fig. 16: Joystick assignment

The assignment (front/rear) changes when the driver seat is turned.

Joystick assignment direction of travel *Dumper box front*

Fig. 17: Joystick assignment opposite direction

7.1.5 Switch panel

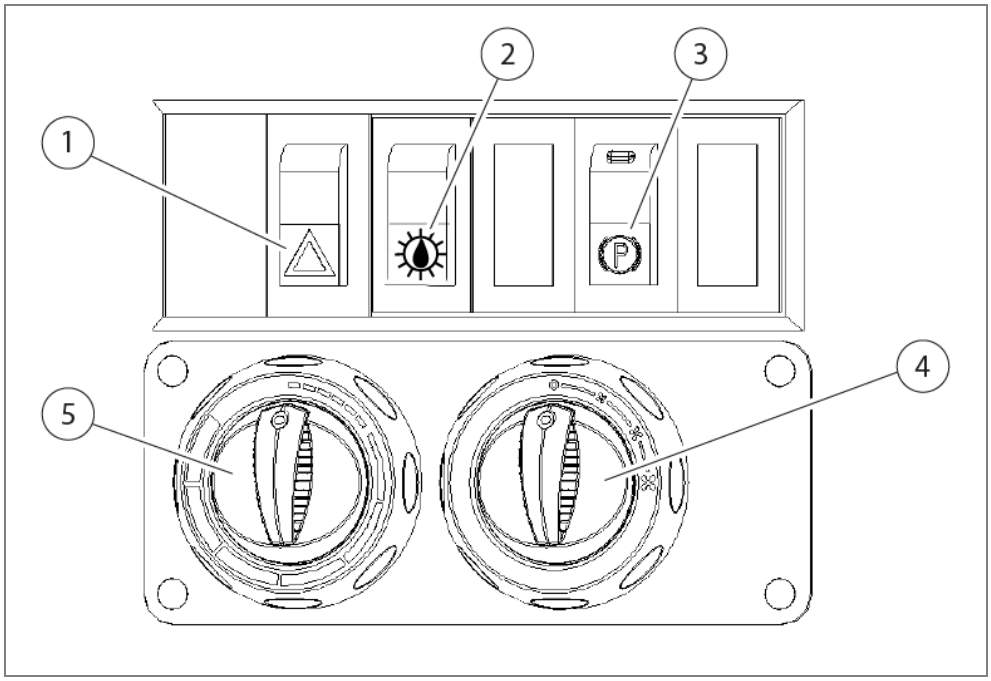


Fig. 18: Switch panel

1	Hazard light system	2	Intermediate lubrication (central lubrication system)*
3	Parking brake	4	Heating control panel - Ventilation controller
5	Heating control panel - temperature controller		

* Option; otherwise not assigned

7.1.6 Rotary switch

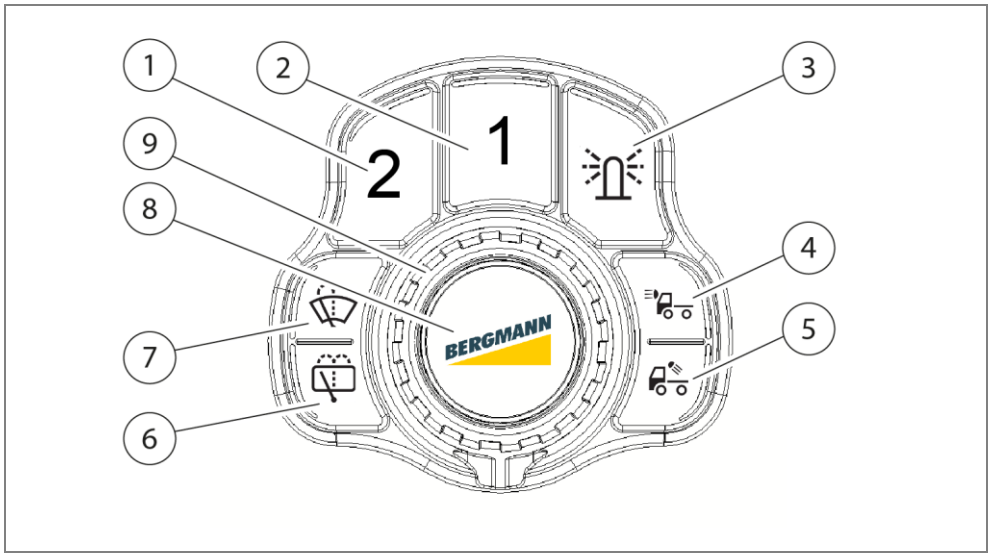


Fig. 19: Rotary switch

1	Standstill transmission (for gear stage 2)	2	Not used
3	Rotating beacon	4	Front work light
5	Rear work light	6	Rear windshield wiper and windshield wiper water
7	Front windshield wiper and windshield wiper water	8	Confirm selection
9	Thumbwheel; change menu		

7.2 Display

7.2.1 Main screen

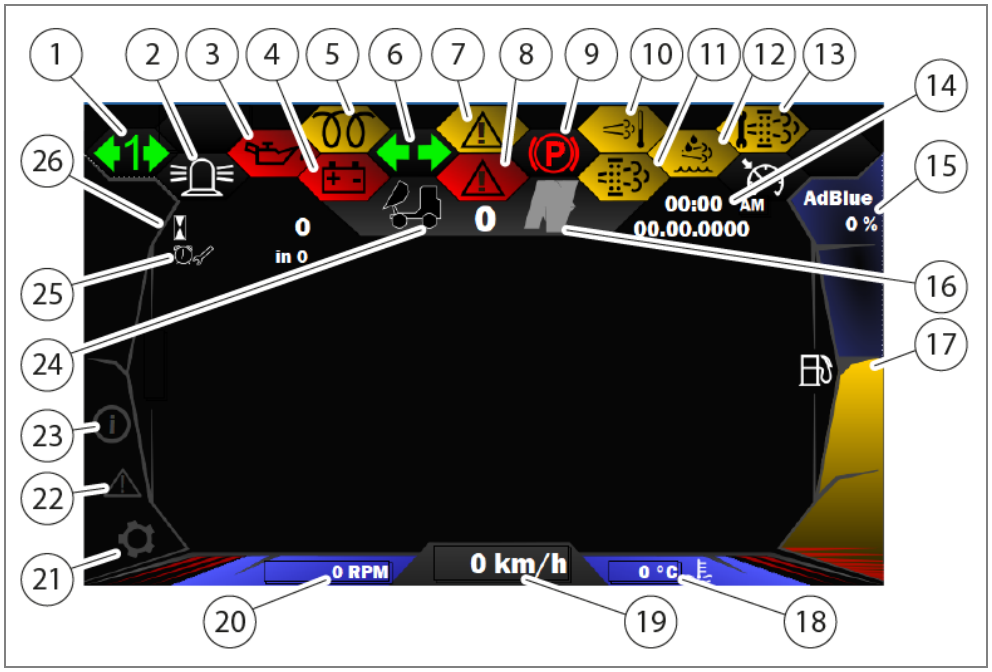


Fig. 20: Display Main screen

1	Hazard light system	2	Rotating beacon
3	Check oil level	4	Battery
5	Preglow	6	Indicators
7	Error message	8	Serious error message
9	Parking brake	10	DPF Regeneration - high temperature reached
11	DPF Regeneration	12	No function
13	DPF Warning	14	Date/Time
15	AdBlue filling level indicator	16	Direction of travel
17	Fuel filling level indicator	18	Cooling water temperature
19	Speedometer	20	Rotational speed
21	Settings	22	Error message present
23	Information	24	"Dumper tipped" display
25	Next service in h	26	Operating hours

The menu is operated via a rotary switch.

8 Operation

8.1 Safety instructions

The requirements of the regulations for the prevention accidents, environmental protection and national safety regulations, where applicable, must be observed when operating the machine.

⚠ DANGER

Risk of accident due to operation on ascents, descents or tilted position!

There is a risk of accident by tipping of the machine during operation on ascents, descents (e.g. slopes, trenches, hills), in a tilted position as well as abrupt steering and drive movements.

- Determine maximum permissible ascent, descent and titled position under examination of the ground, weather conditions and consideration of the loading condition.
- Only operate the machine on very slight ascents/descents and tilted at very slight angles.
- Only tip out the dumper box with the machine in a level position on firm ground.
- The safety belt on the driver seat (optionally also on the passenger seat) must be worn.

⚠ DANGER

Risk of accident on downhill slopes!

Severe to fatal injury possible if the permissible towing load or the permissible weight of the vehicle/trailer combination is exceeded with a hitched trailer.

- Do not exceed the permissible towing load or the permissible vehicle/trailer combination weight.
- Only hitch and unhitch the trailer on level ground.

⚠ DANGER

Mortal danger due to liquids escaping under pressure!

Severe to fatal injuries possible if hydraulic fluid spurts out due to bursting or leakages.

- Have hydraulic lines older than 6 years replaced.

⚠ DANGER

Risk of injury due to fire!

Severe to fatal injuries possible if batteries ignite due to a short-circuit in the electrical system, internal/external heat or accident.

- Leave the danger zone around the vehicle immediately in case of fire.

⚠ DANGER

Danger due to fire in the driver's cab!

In case of a driver's cab fire, inflammable materials can quickly burst into flames and injure persons.

- In the event of a fire, leave the driver's cab immediately.
- Carry out fire fighting measures from the outside only with suitable fire extinguishers.

⚠ DANGER

Risk of accident!

Severe to fatal injuries possible if dangers are not recognized due to missing, damage or dirty safety signs.

Check safety signs regularly for completeness and legibility.

⚠ WARNING

Risk of injury due to short-circuiting of the battery!

A short-circuit can lead to explosion of the battery.

- Do not remove any protective covers when the battery is on.

⚠ CAUTION

Risk of injury due to loose wheel nuts!

There is a risk of injury if the wheel nuts are not checked or retightened after a wheel change.

- Check wheel nuts after 10 operating hours and retighten if necessary.

⚠ CAUTION

Risk of injury from falling!

There is a risk of injury when persons stumble when climbing into the dumper box/tipper bed and injure themselves when falling.

Climbing into the dumper box/tipper bed is prohibited.

8.2 Switching on the machine

Prerequisites for starting the machine:

- Tests are carried out before starting work.
- All control elements are in neutral position.

1. Switch on key switch.

The instrument panel runs a lamp function test. The control lamps light up briefly.

The machine is ready to drive.

8.3 Warming up the machine

At ambient temperatures < 0 °C, the drive motor and the hydraulic system must be warmed up.

To do so, run the machine for a few minutes with no load and low speed and lift and lower the dumper once completely.

8.3.1 Inspections during operation

1. Monitor the machine for unusual movements and noises.
2. Observe control and warning indicators.
3. Check the machine continuously for fluid leakages.
4. If foreign bodies in the tires are suspected, stop the machine immediately and remove the foreign bodies, go to a specialized workshop if necessary.

8.3.2 Travel direction and driving

Changing the travel direction

NOTE

The travel direction should be changed at standstill or at low travel speed to avoid abrupt jolting of the machine.

Select the travel direction with the travel direction switch.

Decelerating the machine

⚠ CAUTION

Danger of accident by activating the parking brake while driving!

Activating the parking brake while driving leads to an immediate standstill of the machine.

- Never activate the parking brake while driving.
- The lap belts on the driver's seat and on the passenger seat must be fastened.

1. Press the brake pedal to decelerate the machine.

Driving

1. Select the travel direction.
2. Regulate the travel speed with the accelerator.

Shifting gear stages

To shift from gear stage 1 (1st + 2nd gear) to the second gear stage (3rd + 4th gear), perform the following steps:

1. Vehicle is stationary
2. Activate the parking brake.

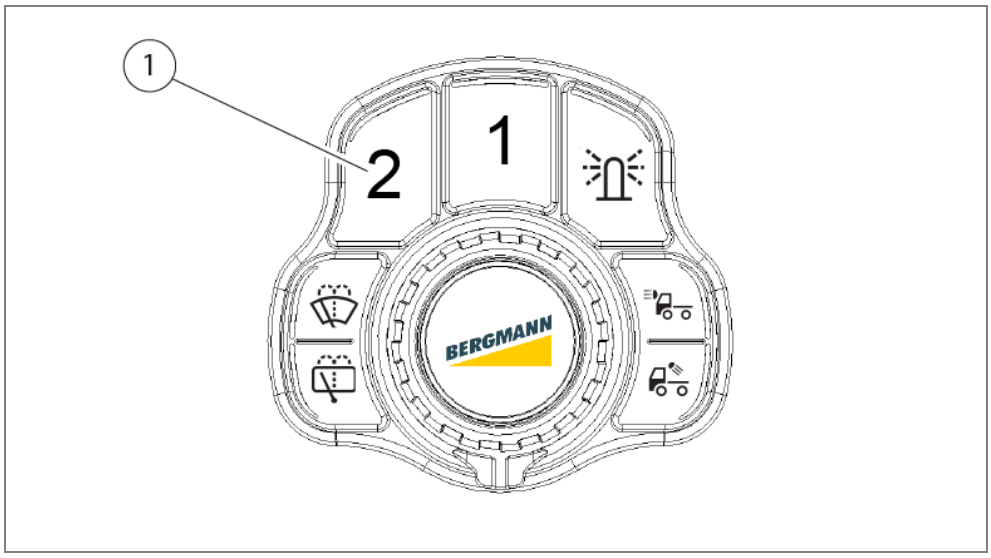


Fig. 21: Activating gear stage 2

3. Press button (1) on the rotary switch.

The parking brake is engaged via the switch panel on the control station.

8.4 Switching off the machine

1. Turn the travel direction switch to the center position
2. Activate the parking brake.
3. Switch off the ignition and remove the key.

Parking the machine

Procedure for parking the machine, e.g. at the end of a shift.

1. If in place, bring superstructures into transport position
2. Switch off the drive motor.
3. Remove the key.
4. Close the side window.
5. Lock the driver's door after leaving the driver's cabin.

It also applies for longer parking times:

- Interrupt the power supply at the battery master switch

8.5 Turning the driver’s cab

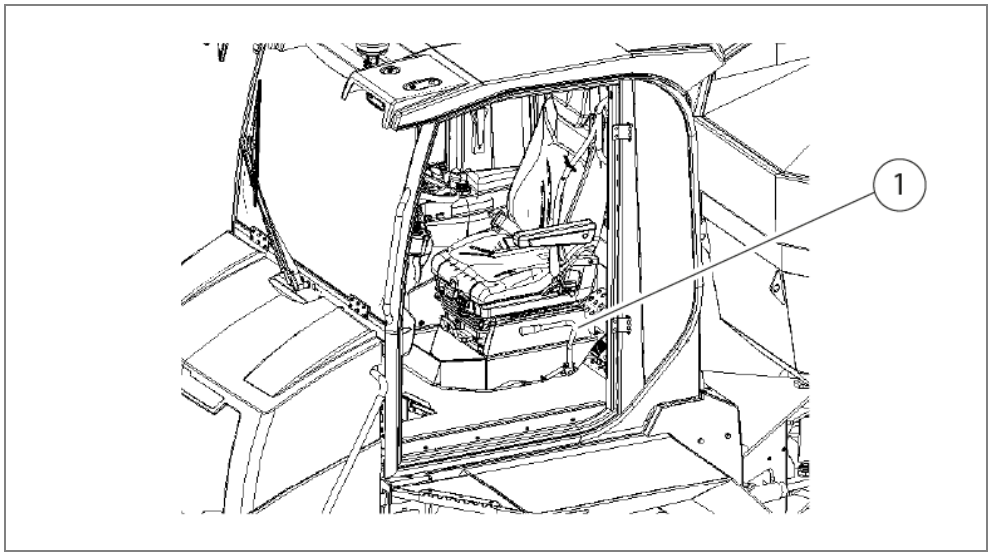


Fig. 22: Turning the driver’s cab

1. Machine is stationary.
2. Pull lever (1).
3. Turn the driver’s seat by 180°.
4. Release the lever and make sure that it snaps in.

8.6 Filling the machine with fuel

⚠ WARNING

Risk of fire and explosion!

Risk of serious injuries and even death if the fuel ignites

- Smoking, fire and naked flames are prohibited when handling fuels.
- Prevent sparking.
- Shut off the drive motor before filling with fuel.
- Before opening the tank cap or touching the nozzle, touch the vehicle body in order to discharge any electrostatic charges.

⚠ WARNING

Risk of poisoning!

Serious injury or death may result from contact, ingestion or inhalation of fuel and fuel vapors.

- Do not inhale fuel vapors.
- In case of skin contact, wash off fuel immediately with soap and water.
- In case of contact with eyes, rinse thoroughly with water and consult an ophthalmologist.
- If swallowed, seek medical attention immediately.
- May cause vomiting.
- Immediately change wetted clothing.

CAUTION

Risk of machine damage!

Risk of machine damage if the wrong fuel, contaminated fuel or fuel of inferior quality is used for filling.

- Only ever fill the machine with approved fuel in accordance with the specifications in the documentation.
- Do not switch on the machine after filling it with the wrong fuel. Contact the Customer Service department.

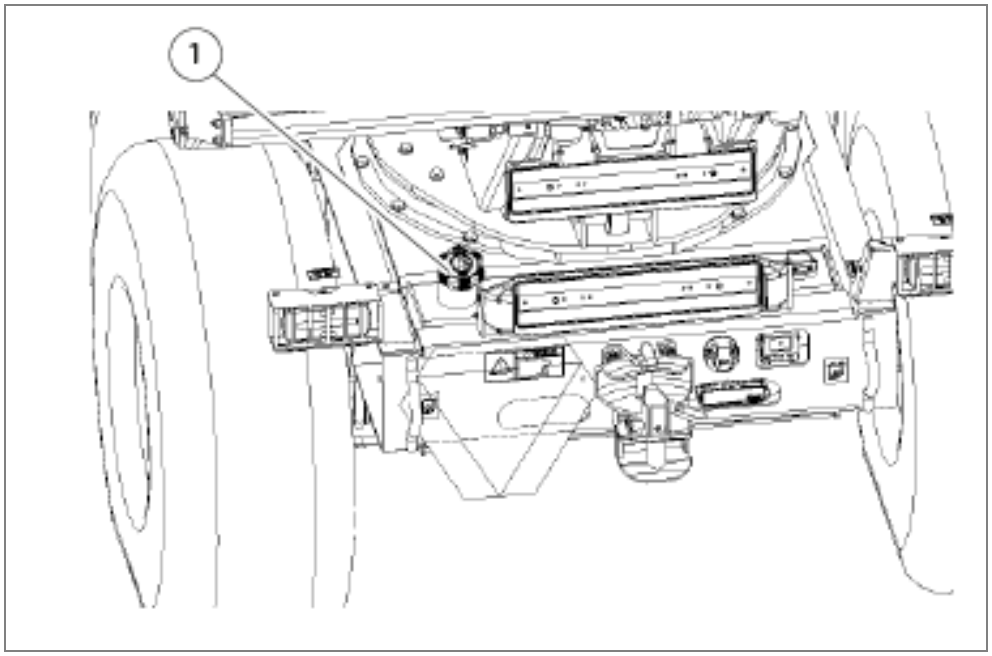


Fig. 23: Fueling the machine

1. Park the machine on a level surface.
2. Switch off the machine,
3. Remove the key.
4. Open the lid (1) of the fuel tank.
5. Refuel through the filler neck.
6. Once the machine is fully refueled, close the lid of the fuel tank again.

NOTE

It is recommended to fill up the machine with fuel at the end of the shift to avoid forming of condensation.

8.7 Filling up the machine with AdBlue

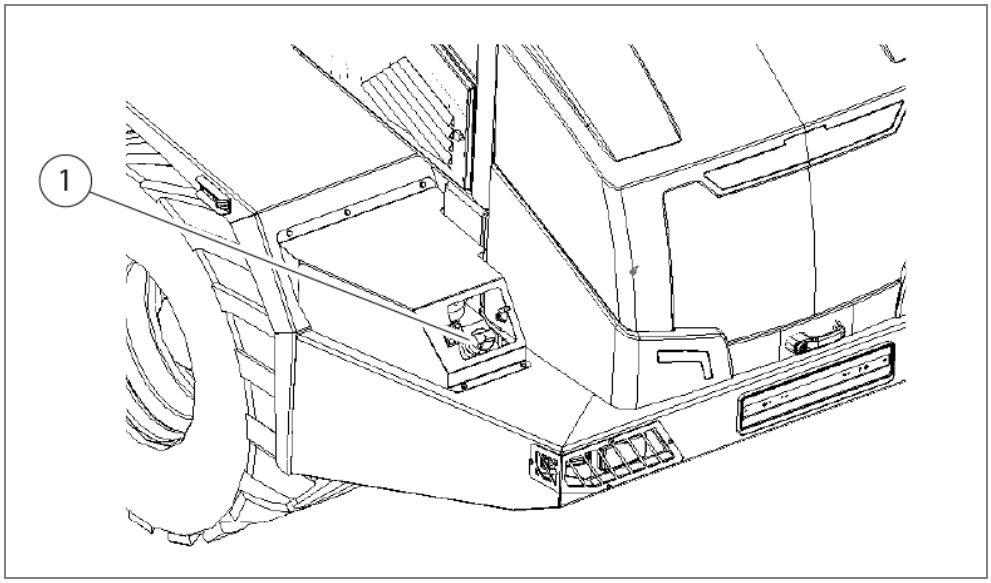


Fig. 24: Filling up the machine with AdBlue

1. Park the machine on a level surface.
2. Switch off the machine,
3. Remove the key.
4. Open the lid (1) of the AdBlue tank.
5. Fill up AdBlue.
6. Close the lid of the AdBlue tank again when the machine has been filled up completely.

8.8 Salvaging the machine

After an accident, the machine must be recovered and transported away. Towing of the machine is prohibited.

- Contact the customer service Further infomation in chapter Customer Service on page 89
- Contact a specialist company to have the machine salvaged.
- Lift the machine onto a suitable transport vehicle by crane.

Information regarding transport by crane Further infomation in chapter Transport of the sub-assemblies on page 47

9 Maintenance

9.1 Safety instructions

The demands of the accident prevention regulations, environmental protection and, where necessary, national safety regulations must be observed during maintenance of the machine.

⚠ DANGER

Risk of accident due to missing safeguards during maintenance and repair work!

There is a risk of accident when carrying out maintenance and repair work without suitable safety measures against switching back on.

- Always remove the ignition key and keep it on your person when the machine is switched off.

⚠ DANGER

Danger due to fire in the driver's cab!

In case of a driver's cab fire, inflammable materials can quickly burst into flames and injure persons.

- In the event of a fire, leave the driver's cab immediately.
- Carry out fire fighting measures from the outside only with suitable fire extinguishers.

⚠ WARNING

Risk of burns!

Severe burns possible from hot machine parts.

- Always wear the personal protective equipment.
- Always let the machine cool down before performing repair and maintenance work.

⚠ WARNING

Risk of accident due to inadequate protective devices!

There is a risk of accident due to missing, defective or incorrectly fitted protective devices.

- Equip all areas where protective devices are prescribed with the protective devices intended for this purpose.
- Always check protective devices for defects before use.
- Only fit protective devices as prescribed.

⚠ CAUTION

Risk of cutting injuries!

There is an increased risk of cutting injuries on sharp corners and parts during servicing work.

- Always wear the personal protective equipment.
- Only perform servicing work on the machine after it has been switched off and secured against switching back on.

9.2 Consumables

The operating resources overview contains all types of lubricants (oils, greases) and also other substances to be used for the individual service points. Only if these lubricants or demonstrably equivalent lubricants are used do we assume warranty for the machine within the warranty period.

9.2.1 Engine oil

ATTENTION

Danger of machine damage!

There is a risk of damage to the machine if the engine is operated with unsuitable engine oil.

- Use only engine oil that meets the following specifications.

Quantity	Ambient temperature	Specification	
		Viscosity class	Quality class
8.9 liters	0 °C … 40 °C	SAE 10W-40	DQC III LA or DQC IV LA

Tab. 1: Engine oil

NOTE

See the appropriate supplier documentations in the annex for further information.

9.2.2 Coolant liquid

Quantity	Freezing point	Specification	
		Mixture	Mixing ratio
approx. 17.5 liters	approx. -37 °C	Clean low mineral water + Deutz DQC CB-14 radiator antifreeze	1:1 (depending on long-life coolant)

Tab. 2: Coolant

9.2.3 Hydraulic fluid

The machine can be operated with mineral or biological hydraulic oil.

ATTENTION

Danger of machine damage!

Hydraulic oils must only be mixed under the following conditions. Non-compliance can result in increased machine wear including total destruction.

- Never mix mineral hydraulic oil with biological hydraulic oil.
- When using biological hydraulic oil: only use oils of the same brand.
- When using mineral hydraulic oil: only use oils of the same brand.

ATTENTION

Danger of machine damage!

When changing from mineral to biological hydraulic oil or vice versa, the hydraulic system must be flushed with the respective new hydraulic oil. Non-compliance can result in increased machine wear including total destruction.

- Disconnect the hydraulic lines to drain the entire hydraulic system
- Flush the hydraulic system twice

9.2.4 Biological hydraulic oil

Quantity	Maintenance point	Specification	Manufacturer's designation	Standard
43.5 liters	Hydraulic tank	ATF DEXRON II-D	Panolin Synth 46	DIN ISO 15380

Tab. 3: Biological hydraulic oil

9.2.5 Mineral hydraulic oil

Quantity	Maintenance point	Specification	Manufacturer's designation	Standard
43.5 liters	Hydraulic tank	ATF DEXRON II-D	HLP 46	DIN 51524 or ISO 11158

Tab. 4: Mineral hydraulic oil

9.2.6 Axle oil

Quantity	Manufacturer's designation
approx. 9 liters per axle	Shell Spirax S4

Tab. 5: Axle oil

9.2.7 Greases/lubricants

Maintenance point	Specification	Standard
Hydraulic cylinders Door hinges	Grease KP2K-30	DIN 51825

Tab. 13: Greases/lubricants

9.3 Performing the maintenance work

If defects or faults which endanger safe handling of the machine are detected during maintenance, starting the machine is prohibited until this defect/fault has been eliminated! The detected defects must be reported to the owner immediately so that they can take suitable countermeasures.

The work listed in the following chapters must be performed once in the period of time specified there.

Daily maintenance, for example, must be carried out once a day at a favorable time from an operational point of view.

Maintenance work according to operating hours must be performed after the appropriate number of operating hours.

Maintenance activities must be recorded in the machine's maintenance log. The maintenance log must be provided by the owner and is the prerequisite for any warranty claims.

Lubricants must be kept in clean, sealed containers in a dry and cool place until being used.

See the maintenance/repair instructions for maintenance work that is not listed below.

NOTE

In multiple shift operation, it must be determined which person carries out the necessary maintenance.

NOTE

The specified time periods apply for normal operating conditions. Shorter intervals may be advisable under extreme application and operating conditions. Please consult us in such cases.

9.4 Maintenance schedule

NOTE

Daily maintenance work and lubrication specifications are listed separately in this documentation.

Maintenance activity	Interval (in operating hours)			Remark
	100[1]	500[2]	1000[2]	
Change axle and gear oil – front axle	X		X	2.2 liters
Change axle and gear oil – rear axle	X		X	6.2 liters
Check hydraulic oil level at the sight glass	X	X	X	
Check brake fluid level	X	X	X	
Lubricate the machine	X	X	X	
Measure through the machine	X	X	X	
Change hydraulic filter element			X	

Tab. 14: Maintenance plan

[1] once at 100 operating hours

[2] once at 500/1000 operating hours

Lubricants

Axle and gear oil	SAE 85W-90

9.5 Visual inspection (daily)

1. Check the machine for completeness and fastening of the hoods/covers.
2. Check the machine for external signs of damage.
3. Watch the machine for oil leakages. If leakage occurs, the leaks must be fixed.
4. Open the access to the drive unit,
5. Check the drive motor visually.
6. Check the intake system.
7. Check the exhaust system.
8. Check the fan.
9. Check the drive motor for oil leakage.
10. Close the access to the drive unit.
11. Check the tank for external damages and leakages.
12. Check tires for damage.

9.6 Lubricating the machine

9.6.1 Articulated joint

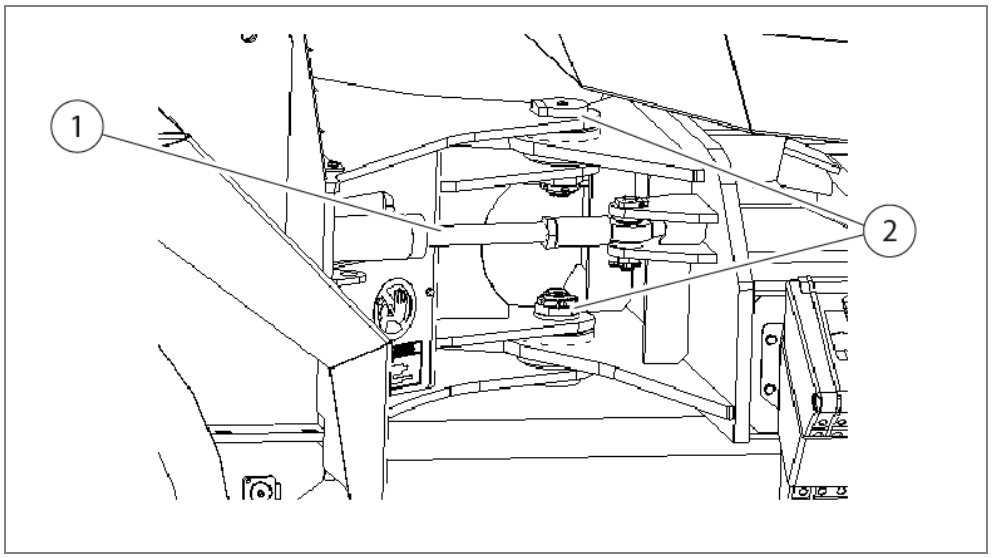


Fig. 25: Lubricating points of articulated joint

Maintenance point		Interval	Specification	Quantity	Remark
1	Steering cylinder	weekly	Grease KP2K-30 DIN 51825	until grease emerges	2 grease nipples
2	Pivot points of articulated joint	weekly	Grease KP2K-30 DIN 51825	until grease emerges	2 grease nipples

Tab. 15: Lubricating points of articulated joint

9.6.2 Prop shaft

Fig. 26: Lubricating points of prop shaft

Item	Maintenance point	Interval	Lubricant specification	Quantity	Remark
1	Universal joint	weekly	KP2K-30 DIN 51825	until grease emerges	1 grease nipple per universal joint

Tab. 16: Lubricating points of prop shaft

9.6.3 Rotary dumper box

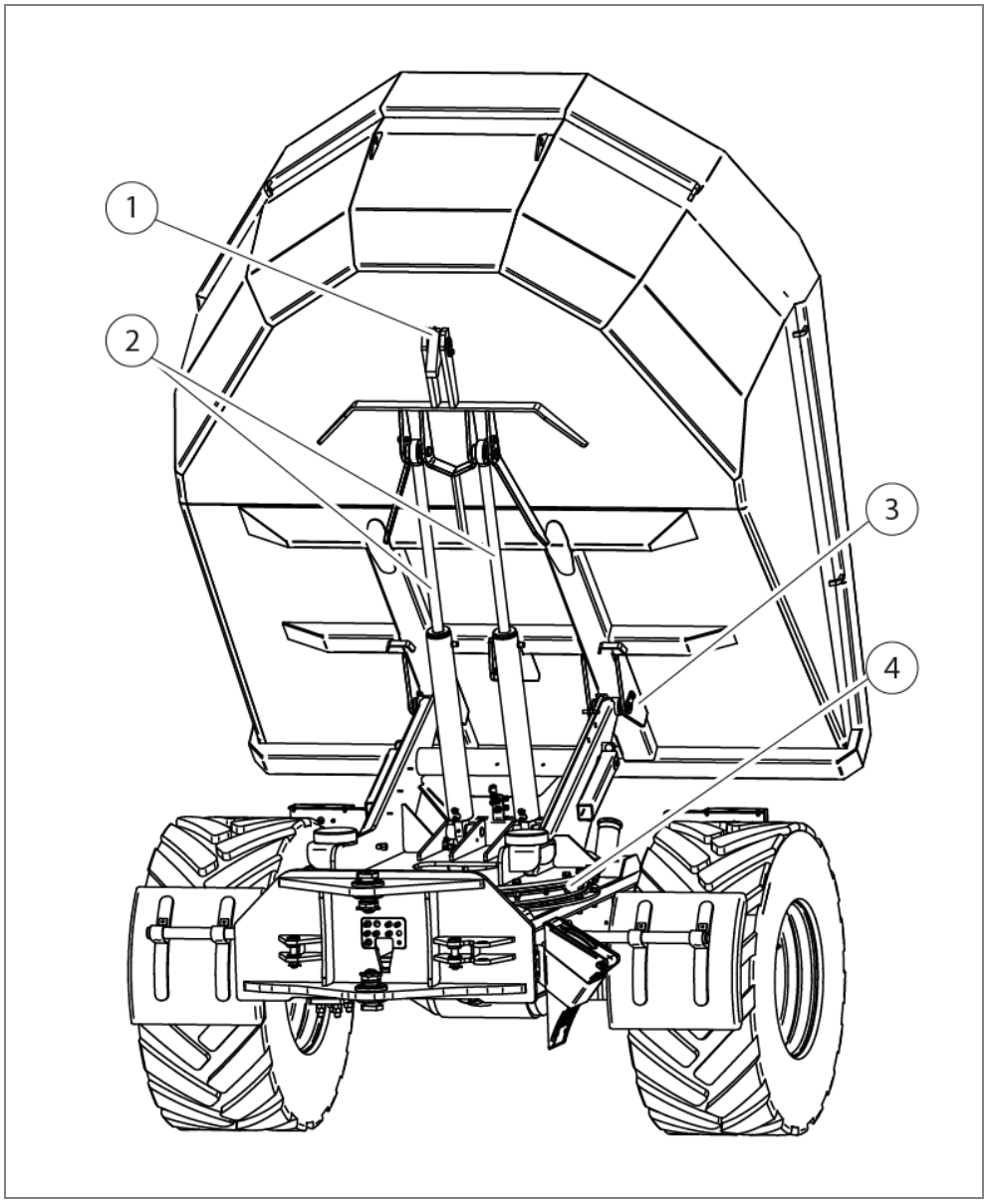


Fig. 27: Rotary dumper box lubricating points

Item	Maintenance point	Interval	Lubricant specification	Quantity	Remark
1	Locking lever *Dumper box*	daily	KP2K-30 DIN 51825	until grease emerges	1 grease nipples
2	Hydraulic cylinder *Dumper box*	daily	KP2K-30 DIN 51825	until grease emerges	4 grease nipples
3	Pivot points *Dumper box*	daily	KP2K-30 DIN 51825	until grease emerges	2 grease nipples
4	Slewing ring	daily	KP2K-30 DIN 51825	until grease emerges	4 grease nipples

Tab. 17: Rotary dumper box lubricating points

9.7 Checking filling levels

9.7.1 Engine oil level check

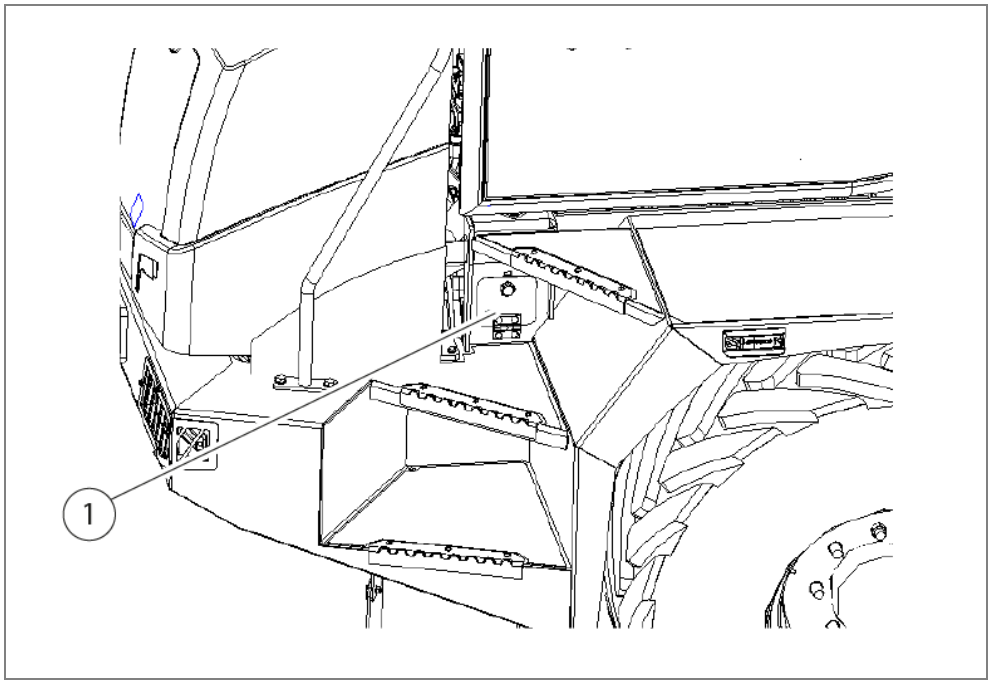


Fig. 28: Engine oil level check

1. Open flap (1).
2. Pull out the oil dipstick.
3. Wipe off the oil dipstick with a clean, lint-free cloth.
4. Push the oil dipstick back all the way in.

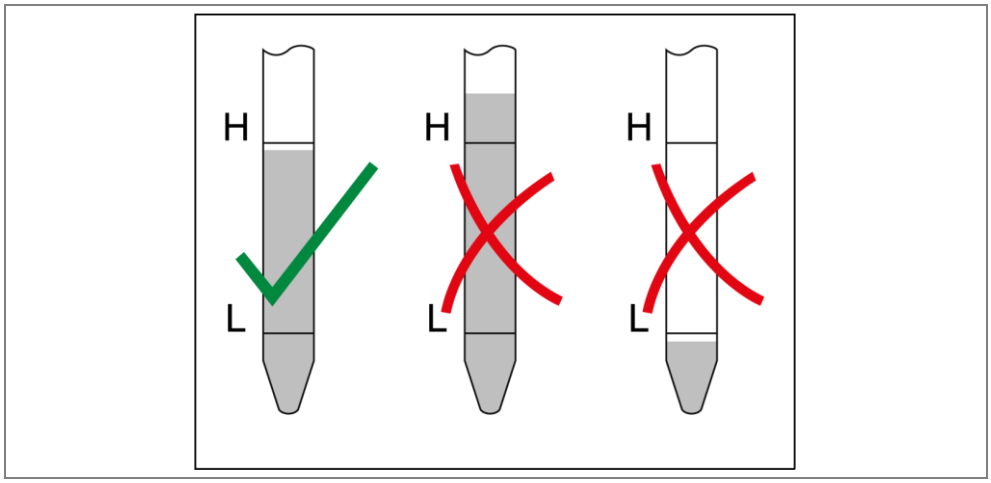


Fig. 29: Oil level marking

5. Pull the oil dipstick out again and read off the engine oil level from the markings on the oil dipstick.

6. The correct oil level must be between the L marking (minimum) and the H marking (maximum).
7. If there is a deviation from the correct oil level: Top up oil through the filling nozzle (2) or drain off oil.
8. Close flap (1).

9.7.2 Engine coolant level check

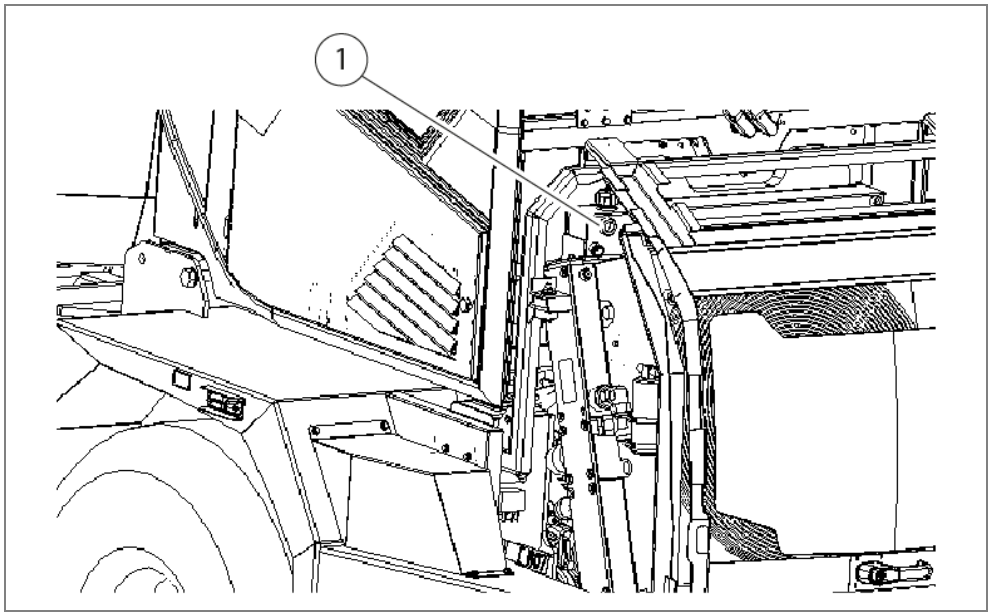


Fig. 30: Checking coolant levels

1. Open the hood
2. Check the coolant level via the sight glass (1) on the coolant tank. The coolant level must be in the center of the sight glass.
3. If too low, replenish coolant.

9.7.3 Hydraulic fluid level check

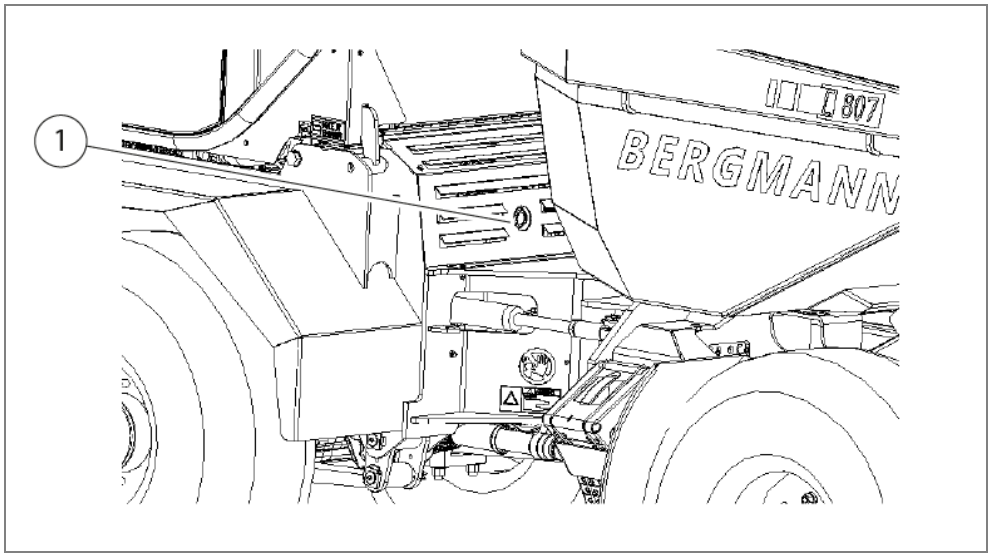


Fig. 31: Hydraulic fluid level check

1. Warm up the machine.
2. Read the level of the hydraulic fluid on the level/thermometer display (1) after a few minutes of operation.

- The filling level is correct when it does not drop below minimum with fully extended working cylinders and does not exceed maximum with fully retracted working cylinders.
- If necessary, have the hydraulic fluid level corrected.

9.7.4 Fuel level check

1. Read the fuel level on the right of the display.
2. Fill up with fuel immediately at low fuel level.

9.7.5 DEF level check

The level of AdBlue is shown on the main screen of the display when the ignition is switched on.

10 Faults

10.1 Safety instructions

⚠ WARNING

Risk of burns!

Severe burns possible from hot machine parts.

- Always wear the personal protective equipment.
- Always let the machine cool down before performing repair and maintenance work.

⚠ WARNING

Risk of accident due to inadequate protective devices!

There is a risk of accident due to missing, defective or incorrectly fitted protective devices.

- Equip all areas where protective devices are prescribed with the protective devices intended for this purpose.
- Always check protective devices for defects before use.
- Only fit protective devices as prescribed.

Unusual noises, faults or changes in the operating behavior of the machine indicate a machine defect. In such cases, the causes of the fault must be determined by consulting the fault table.

Work may only be continued after the fault has been completely eliminated.

When repairing faults, remember that there may still be residual mechanical, hydraulic and electrical/electronic energy.

NOTE

Consult the electrical circuit diagrams and hydraulic plans for troubleshooting. See annex.

10.2 General faults

Fault	Possible causes of malfunction	Troubleshooting
Consumers not working correctly	Dirty hydraulic fluid filter	• Replace hydraulic filter element
	Hydraulic fluid gets too hot.	• Check hydraulic fluid heat exchanger for soiling and clean with air if necessary

Fault	Possible causes of malfunction	Troubleshooting
	Heavy leakage at hydraulic connections or defective hydraulic line	• Check hydraulic system for leaks and repair if necessary
	Incorrect hydraulic settings	• Check set values and correct if necessary
All consumers not working	Battery master switch not on or defective	• Switch on the battery main switch • Replace defective battery master switch if necessary
Pilot light for *Alternator light* is on	Alternator not working	• V-belt defective – Replace V-belt • Dynamo defective – Replace defective alternator
Pilot light for *Engine oil pressure* is on.	Low engine oil level	• Switch off the machine immediately • Check engine oil level • Top up engine oil if necessary
	Engine oil pump defective	• Switch off the machine immediately • Contact the customer service
Pilot light *Engine temperature too high* is on	Insufficient coolant level	• Switch off the machine immediately and allow to cool down • Check coolant level • Determine and eliminate the cause of the low coolant level • Contact customer service if necessary • Top up coolant if necessary
	Defective cooling circuit	• Switch off the machine immediately and allow to cool down • Contact the customer service
Drive motor does not start	Preglow temperature not reached	• Preglow drive motor again
	Fuel supply error	• Check fuel level • Refuel machine again if necessary • Check fuel filters and replace if necessary

Fault	Possible causes of malfunction	Troubleshooting
	Battery capacity exhausted	• Check battery • Recharge or replace battery if necessary
Drive motor goes off	Fuel supply error	• Check fuel level • Refuel machine again if necessary. • Check fuel filters and replace if necessary
Air temperature in mobile control station is too low	Temperature control set incorrectly	
	Cabin air filter/filter screen dirty	• Check settings on the control unit and correct if necessary
	Control unit fuse defective	• Check cabin air filter/filter screen for dirt • Clean or replace cabin air filter/filter screen of necessary
	Control unit fuse defective	• Replace defective fuse
Air temperature in mobile control station is too high	Temperature control set incorrectly	• Check settings on the control unit and correct if necessary

Tab. 18: General faults

10.3 Faults on the hydraulic system

Fault	Cause	Note
Unusual noises in the hydraulic system	Hydraulic fluid level too low	• Find the cause for the low hydraulic fluid level. Eliminate the cause if necessary. • Top up the hydraulic fluid.
	Dirty hydraulic fluid filter	• Replace the hydraulic filter element.
Consumers not working correctly	Hydraulic fluid gets too hot.	• Check hydraulic fluid heat exchanger for soiling and clean with air if necessary.
	Heavy leakage at hydraulic connections or defective hydraulic line	• Check hydraulic system for leaks and repair if necessary.
	Incorrect hydraulic settings	• Check set values and correct if necessary.

Tab. 19: Faults on the hydraulic system

10.4 Faults on the electrical system

Fault	Cause	Note
Electrical components not working	Defective electric fuse	• Check electric fuses and replace if necessary.
Headlights not working	Defective fuse or lamp	• Check position of the respective switch. • Check electric fuses and replace if necessary.

Tab. 20: Faults on the electrical system

NOTE

See the appropriate supplier documentations in the annex for further information.

10.5 Towing

Towing of the machine is prohibited. If the machine is unable to move by itself, the machine must be loaded and transported on a trailer. Further infomation in chapter Transport, packing and storage on page 45

11 Dismantling

The requirements of the regulations for the prevention accidents, environmental protection and national safety regulations, where applicable, must be observed when dismantling the machine.

NOTE

- The machine should be dismantled with the assistance of the Bergmann Maschinenbau GmbH & Co. KG customer service.
- Contact the customer service in the case of dismantling.

Before dismantling the machine:

1. Clean the machine roughly.
2. Drive/transport the machine to a suitable site for dismantling.

NOTE

- Collect the operating media in a suitable vessel.
- Dispose of operating media properly according to regulations; observe regional regulations for the disposal of oils and lubricants, for example.

3. Drain operating media.
4. Provide assembly aids (e.g. tools, chain hoists).

12 Shutting down, recommissioning and disposal

12.1 Shutting down

1. Clean the machine thoroughly.
2. Drive/transport the machine to the site for shutting down.
3. Check the tire pressure and inflate if necessary.
4. Check the tightening torque of the wheel nuts.
5. Jack up the machine to avoid damage to the tires (stand plates).
6. Completely degrease the machine.
7. Fill the transmissions of the drive unit completely with oil.
8. Fill the hydraulic tank completely with hydraulic fluid and seal air-tight.
9. Fill up the fuel tank completely with fuel and seal air-tight.
10. Interrupt the power supply at the battery main switch.
11. Preserve machined (unpainted) surfaces.

NOTE

See the appropriate supplier documentations in the annex for further information.

12.2 Recommissioning

The owners must convince themselves of the proper condition of the machine prior to recommissioning.

1. Completely degrease the machine.
2. Check the oil level in the drive unit transmission.
3. Check the hydraulic fluid level.
4. Check the tire pressure.
5. Check the connections of cables and lines.
6. Check the effectiveness of safety devices.
7. After longer periods of standstill, it is advisable to carry out a trial run or perform the procedure according to commissioning.

12.3 Disposal

If the machine is to be scrapped and dismantled, there are different ways to do this:

- Contract a specialist company.
- This can also be done by your own personnel if they have the appropriate knowledge and tools.

In both cases, the applicable rules and regulations for scrapping and disposal in the respective countries must be observed.

If the scrapping is performed by your own personnel, it is necessary to separate the different parts according to type/material.

The sale of the different parts/materials should be left to specialized and licensed companies.

The most important materials are:

- steels
- cables
- plastic materials
- operating media such as oils, fuel, greases, lubricants

NOTE

Collect the operating media in a suitable vessel and dispose of properly.

If the machine is not scrapped soon after being dismantled, the parts must stored in a protected area.

Make sure that remaining operating materials on and in the parts cannot get into the ground.

13 Customer Service

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49716 Meppen-Hüntel
Germany
Telephone: +49 5932 7292-0
Fax: +49 5932 7292-92
Internet: www.bergmann-mb.de

Division	Telephone	E-mail
Lease/Sale	+49 5932 7292-37 +49 5932 7292-50	rental@bergmann-mb.de
Technical Customer Service	+49 5932 7292-29	service@bergmann-mb.de
Spare parts	+49 5932 7292-77 +49 5932 7292-43	parts@bergmann-mb.de
Warehouse/Store	+49 5932 7292-19	versand@bergmann-mb.de

Tab. 21: Contact spare parts and customer service

14 Index

15 Annex

15.1 Hand signals for directions

The most important signals are shown below. Additional signals for understanding between the operator and the individual giving directions must be agreed if necessary.

Hand signal	Meaning and execution
	**Attention** Hold up outstretched arm with open hand
	**Stop** Both arms stretched out horizontally
	**Stop! Danger** Stretch out both arms horizontally alternately and bend at the elbow
	**Drive off** Move outstretched arm with open hand to and fro
	**Drive forward slowly** Bend both elbows and wave on with both palms facing inwards
	**Drive back slowly** Bend both elbows and wave away with both palms facing outwards
	**Drive to right** Left thumb to the left away from you
	**Drive to left** Right thumb to the right away from you
	**Swing crane to the right** Left thumb to the left away from you, describe circles with right index finger
	**Swing crane to the left** Right thumb to the right away from you, describe circles with left index finger
	**Lift load**

Hand signal	Meaning and execution
	Extended right index finger pointing up, left hand up and down
	**Lower load** Extended right index finger pointing down, left hand up and down
	**Extend radius** Both thumbs pointing outwards
	**Reduce radius** Both thumbs pointing inwards

Tab. 22: Hand signals

15.2 Tightening torques

General tightening torques

Recommended tightening torques for screwed connections are listed below. In justified individual cases, different tightening torques may be necessary which are then specified in the respective sub-assembly drawings and must be observed under all circumstances, see plans in original size.

NOTE

The tightening torques specified here apply for unlubricated steel setscrews with head contact dimensions such as DIN 912, 931, 933, 934/ISO 4762, 4014, 4017, 4032, etc.

Setscrews, metric standard thread DIN 13, Part 13

Dimension	Wrench width (mm)	Screw tightening torque M_A (Nm)		
		Strength class 8.8	Strength class 10.9	Strength class 12.9
M4	7	3.0	4.4	5.1
M5	8	5.9	8.7	10
M6	10	10	15	18
M8	13	25	36	43
M10	17	49	72	84
M12	19	85	125	145
M14	22	135	200	235
M16	24	210	310	365
M18	27	300	430	500
M20	30	425	610	710
M22	32	580	820	960
M24	36	730	1050	1220
M27	41	1100	1550	1800
M30	46	1450	2100	2450

Tab. 23: General tightening torques - metric standard thread

Setscrews, metric fine thread DIN 13, Part 13

Dimension	Wrench width (mm)	Screw tightening torque M_A (Nm)		
		Strength class 8.8	Strength class 10.9	Strength class 12.9
M8 x 1	13	27	39	46
M10 x 1.25	17	52	76	90
M12 x 1.25	19	93	135	160
M12 x 1.5	19	89	130	155
M14 x 1.5	22	145	215	255
M16 x 1.5	24	225	330	390
M18 x 1.5	27	340	485	570
M20 x 1.5	30	475	680	790
M22 x 1.5	32	630	900	1050
M24 x 2	36	800	1150	1350
M27 x 2	41	1150	1650	1950
M30 x 2	46	1650	2350	2750

Tab. 24: General tightening torques - metric fine thread

15.3 Plans in original size

NOTE

The plans in original size are obtainable on request from Aftersales or Service.