Der Spezialist für Lader

AHLMANN BAUMASCHINEN GMBH

OPERATING INSTRUCTIONS ARTICULATED-LOADER

1007683A GB

AL 70e / AL 100t
AL 85t / AL 100ti

Ahlmann Baumaschinen GmbH
Am Friedrichsbrunnen 2 D-24782 Büdelsdorf
Telefon 04331/351-325
Internet: www.ahlmann-baumaschinen.de
Telefax 04331/351404
E-Mail: info@ahlmann-baumaschinen.de

Introduction

Preface

Ahlmann's swivel shovel loaders, articulated loaders and loader excavators with backhoe are machines included in **Ahlmann's** vast product range covering a wide variety of working tasks.

Decades of experience in the construction of earth-moving machines, the wide range of attachments available as well as modern production facilities, careful testing and highest quality demands guarantee the highest degree of reliability of your **Ahlmann** machine.

The extent of documentation delivered by the manufacturer includes the following:

- Loader operating instructions
- Engine operating instructions
- Loader spare parts list
- Engine spare parts list
- EC conformity declaration

Operating instructions

The operating instructions contain all the information which the user requires for operation and maintenance.

In the "Maintenance" section, all maintenance work and operation tests are described which can be carried out by trained personnel.

Repairs on a larger scale which may only be carried out by specialised personnel or by personnel authorised and trained by the manufacturer, in particular on those units subject to the Motor Vehicle Construction and Use Regulations and the Regulations for the Prevention of Accidents, are not described.

Due to the construction modifications reserved by the manufacturer, there may be differences in the figures; however, this has no influence on the technical contents.

How to handle this manual

Explanations

- The designations **"left"** and **"right"** are to be seen from the driver's seat in driving direction.

- Optional equipment means: not fitted in series.

Information about illustrations

- (3-35)
  means: chapter 3, fig. 35

- (3-35/1)
  means: chapter 3, fig. 35, item 1

- (3-35/arrow)
  means: chapter 3, fig. 35, ←

Abbreviations used:

UVV = Unfallverhütungsvorschrift
(Accident Prevention Regulations)
StVZO = Straßenverkehrzulassungsordnung
(German Traffic Regulations)
opt. = optional equipment

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Table of contents

Safety regulations

1 Fundamental safety instruction

1.1 Warnings and symbols

In this operation manual the following designations or symbols are used for important information.

NOTE

Special information for the economical use of the machine.

CAUTION

Special information for necessities and prohibitions for avoiding damages.

DANGER

Information or necessities and prohibitions for prevention of damage to persons or extensive damage to goods.

1.2 Use of the loader as authorized

1.2.1 This machine was designed according to the state of the art and recognized safety rules. Nevertheless the use of the machine may cause danger for the user or third parties or impairments to the machine or other real values.

1.2.2 The machine and attachments may only be used in a technical non-objectionable condition, taking all safety regulations especially with regard to the operating manuals (machine and engine). In particular defects which could have a detrimental effect on the safety of the machine should be eliminated immediately.

1.2.3 The machine is determined exclusively for the purposes described in this operating manual. Any other utilization is not permitted. The manufacturer is not liable for any damage caused in this connection. The user solely carries the risk.

The authorized use of the machine also requires the observation of the operating manual (machine and engine) as well as the observation of the inspection and maintenance conditions.

1.3 Organizational measures

1.3.1 The operating manual (machine and engine) must be available at all times and at the site where the machine is in operating condition.

1.3.2 In addition to the operating manual (machine and engine) the general applicable and other binding regulations for the prevention of accidents (especially the safety regulations of the German Trade Association - VBG 40) as well as the regulations for environment protection must be observed and the personnel must be accordingly.

Traffic regulations must also be observed.

1.3.3 The personnel in charge of working with the machine must read the operating manual (machine and engine) before start of work, especially the chapter concerning safety precautions.

This also applies to personnel working occasionally with the machine, e.g. during maintenance work.

1.3.4 The driver must wear a seat belt during operation.

1.3.5 Personnel working with the machine must not wear long flowing hair, loose clothing or jewelry including rings as this could cause injuries by getting caught up or pulled in by the machine.

1.3.6 All safety and danger plates on the machine must be observed.

1.3.7 All safety and danger plates must be attached to the machine and must be kept in legible condition.

1.3.8 In case of modifications to the machine, especially in case of damages or changes in the operating behavior of the machine which could influence the safety of the machine, stop the machine immediately and inform the competent person in charge about the incident.

1.3.9 Without the manufacturer's consent, do not make any modifications or conversions to the machine which could affect safety. This also applies to the installation and adjustment of safety devices, valves and welding work to supporting parts.

1.3.10 Check hydraulic system, especially hydraulic pipes, at regular intervals for defects. Immediately eliminate any defects found.

1.3.11 The prescribed inspection periods set down in the operating manual (machine and engine) and the maintenance plan must be observed.

1.4 Selection of personnel and necessary qualifications

Fundamental obligations

1.4.1 The machine may only be driven and maintained by personnel selected by the employer for this purpose.
These persons must:

- have attained the age of 18 years,
- be physically and intellectually suitable,
- have been instructed in the operation or maintenance of the machine and must have demonstrated their ability to their employer,
- must be expected to carry out the work conveyed to them in diligent manner.

1.4.2 Electrical work on the machine may only be carried out by a qualified electrician or persons supervised by a qualified electrician according to the electrotechnical regulations.

1.4.3 Only qualified specialists may carry out work on the transmission mechanism and to the hydraulic system.

1.4.4 Only personnel with special experience and the necessary know-how are permitted to carry out work on the hydraulic system.

1.5 Safety Information for Certain Operating Phases

1.5.1 Normal Operation

1.5.1.1 Other persons must not be transported!

1.5.1.2 Start and drive the machine from the driver's seat only!

1.5.1.3 During starting and switching-off operation observe the control lamps according to the operation manual (machine and engine)!

1.5.1.4 Before commencing work/driving check brakes, steering, signal lights and lights for their functioning!

1.5.1.5 Before moving the machine always check that the attachments are safely stowed so that no accident may occur!

1.5.1.6 Before commencing work make yourself familiar with the working environment. This means observing obstacles on the working site, quality and resistance of the soil ground, undertaking the necessary protection precautions between the building site and the public traffic.

1.5.1.7 Before starting the machine make sure that no person is endangered by the machine!

1.5.1.8 Take measures so that the machine can be operated in a safe and functional manner. The machine may only be operated when all safety devices, e. g. detachable safety devices, sound-absorption, exist and function.

1.5.1.9 Avoid any work operation which appears to be dangerous!

1.5.1.10 Persons must not be carried in the working equipment, e.g.in the attachments!

1.5.1.11 The operator may only carry out work with the machine when no persons are in the danger zone. The danger zone means that area near the machine where persons may be injured

- by work-induced movements of the machine,
- by work attachments and devices,
- by loads swiveling out,
- by loads falling down,
- by attachments falling down from the machine.

1.5.1.12 In case of danger to persons the operator must give appropriate warning signs. It may be necessary to stop work.

1.5.1.13 In case of functional defects stop machine immediately and safeguard it. Eliminate defects immediately!

1.5.1.14 Check machine at least once every shift for external visible damage and defects with regard to any changes and to the operating behavior of the engine. Report any defects or changes immediately to the person in charge. If necessary stop the machine immediately and safeguard it.

1.5.1.15 The driver may only slew the attachments overhead driving, operating and working areas if these areas are suitably safeguarded by protective roofing. These protection roofs must offer appropriate safety against loads and goods falling down.

1.5.1.16 When driving, the attachment is to be kept as close to the ground as possible.

1.5.1.17 Please observe the applicable traffic regulations when driving on public roads, paths or open spaces. The machine must be brought into road-worthy condition in beforehand.

1.5.1.18 In general, switch on lights in poor visibility and during darkness.

1.5.1.19 If lights of the machine are not adequate for the safe execution of certain work, additional lighting must be provided on the working site, especially at dumping points.

1.5.1.20 Should the driver's sight of his driving and working area be restricted due to work-induced influences, he must be given guidance or he must safeguard the working area by a firm barrier.

1.5.1.21 The person giving guidance must be a reliable person and must be informed about his tasks before commencement of the work.

1.5.1.22 The driver and guide must agree on signals for communication. These signals may only be given by the driver and guide.

1.5.1.23 The guide must be easily recognizable e.g. by wearing warning clothing and must always be in the driver's field of vision.

1.5.1.24 When passing subways, bridges, tunnels, electrical overhead lines make sure that there is adequate clearance!

1.5.1.25 Keep good clearance when working at the edge of quarries, pits, rubbish dumps and embankments to eliminate any danger of the machine plunging down. The contractor or his deputy must stipulate the distance from the edge taking the soil bearing capacity into consideration.

1.5.1.26 The machine may only be used at stationary dumping areas when firmly integrated installation are provided to prevent the machine from running or sliding down.

1.5.1.27 Avoid such work which could have detrimental effect on the stability of the machine.

The stability can be detrimented by:

- overloading,
- too soft ground,
- abrupt acceleration or deceleration of driving movement or working movement,
- reversing out of high driving speed,
- working on slopes,
- driving too quickly round sharp bends,
- driving the machine on rough terrain.

1.5.1.28 Do not drive along slopes in traverse direction. Always carry working equipment and loads near the ground, especially when driving down slopes. Sudden cornering is forbidden!

1.5.1.29 On steep inclines and gradients, the load is to be carried on the uphill side.

1.5.1.30 Always adapt the speed of the machine to the environmental conditions when driving down slopes! Never change into low gear when driving on slopes but before entering the slope!

1.5.1.31 Reversing over a longer period must be avoided!

1.5.1.32 When leaving the machine always safeguard the machine to prevent it from unintentionally rolling away or prevent non-authorized persons from using it!

1.5.1.33 The driver must not leave the machine if the attachments are not lowered or safeguarded.

1.5.1.34 During work-brakes and after work hours the driver should endeavor to leave the machine on good bearing soil and if possible on level ground and safeguard the machine to prevent it from unintentionally rolling away.

1.5.2 Special work within the exploitation of the machine and elimination of defects during process or work; disposal

1.5.2.1 The prescribed dates for adjustment work, maintenance work and inspections laid down in the operating manual (machine and engine) must be strictly observed. This also applies to details regarding the interchanging of parts/ part equipment. This work may only be executed by skilled personnel.

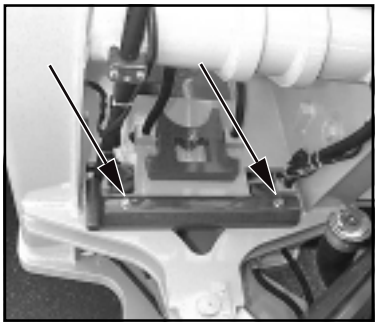
1.5.2.2 For all work concerning the operation, conversion or adjustment of the machine and its safety devices as well as inspection, maintenance and repair work please observe the switching and stopping operation in accordance with the operating manual (machine and engine) as well as the related instructions for maintenance work.

1.5.2.3 The engine must be switched off before maintenance or repair work is carried out.

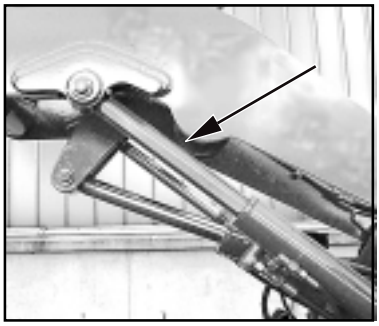
1.5.2.4 The stability of the machine or the attachments must be guaranteed at all times during maintenance and repair work.

1.5.2.5 Maintenance and repair work may only be carried out when the attachment is set down on the ground or supported or when equivalent measures against unintentional movement were taken.

During maintenance and repair work under the bucket arm:
- the bucket arm support must be removed after loosing of the fixing bolt (1-1/arrows)
- the bucket arm must be supported (1-2/arrow) and
- the ball block valve for working and additional hydraulic (1-3/arrow) must be closed.



1.5.2.6 Fix the articulated link form-locking during maintenance and repair work. Remove the bend in protection after loosing of the fixing screw, insert the bend in protection into the articulated link and fasten it (1-4/arrow).

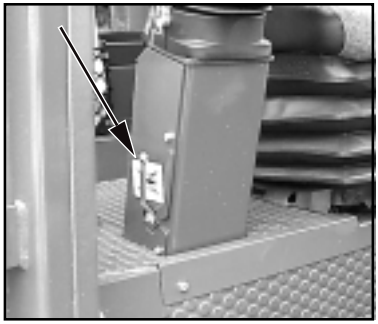


1.5.2.7 If necessary, protect the maintenance area on a large scale.

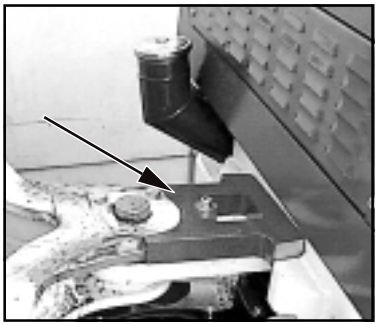
1.5.2.8 The machine must be protected from unintentionally starting after it was switched off for maintenance and repair work:
- remove the ignition key
- attach warning sign at battery main switch, if installed.

This applies especially to works to the electrical equipment.

1.5.2.9 Individual pieces and large assemblies must be carefully secured to hoisting equipment when being substituted to avoid any damage. Only suitable and technical sound hoisting equipment may be used as well as crane equipment with adequate payload. Do not stand or work underneath suspended loads!



1.5.2.10 Only experienced personnel should be entrusted with the securing of loads!
Loads must be secured so that they cannot slip or fall down.



1.5.2.11 Attached loads may only be moved with the machine when the road is graded.

1.5.2.12 When working with hoisting equipment / elevators the slingers may only work with the approval of the driver and from the side of the boom. The driver may only give his consent if the machine is standing still and the working attachment is not being moved.

1.5.2.13 Persons assisting with the guidance of loads and slingers may only stay in visual or communication reach of the driver.

1.5.2.14 The operator must move the load as close to the ground as possible and avoid to swivel the load.

1.5.2.15 The operator may not move the load over the heads of persons.

1.5.2.16 In the case of erection work having to be carried out above normal human height, suitable safety ascent devices and working platforms must be used. Do not use engine parts as climbing and descending facilities. Use safety harnesses when working at very great heights.
All handles, steps, railings, podests, platforms, ladders must be kept free from dirt and ice.

1.5.2.17 Clean the machine, especially connections and screw connections before commencement of maintenance work and make sure that the machine is free from oil, fuel oil or dirt. Do not use aggressive detergents. Use lintless cleaning rags!

1.5.2.18 Before cleaning the machine with water or steam jet (high pressure cleaning unit) or with detergent protect all areas where water/ steam/ detergent may penetrate and affect the functions or safety of the machine by a suitable cover or by applying tape. In particular, such parts as engine components, e.g. injection pump, generator governor, starter are very delicate.

1.5.2.19 After cleaning completely remove all protection covering and tape.

1.5.2.20 After cleaning check all pipelines for fuel, engine oil and hydraulic oil for leakages, loose connections, abrased parts and damages. Eliminate defects immediately.

1.5.2.21 Always fasten screw connections after completion of maintenance and repair work.

1.5.2.22 Should it be necessary to dismantle safety devices during mounting, maintenance or repair work, these safety devices must be re-installed and checked carefully after completed maintenance and repair work.

1.5.2.23 Make sure that fuel, accessory material and interchanged parts are safely disposed of with no danger to the environment.

1.5.2.24 The machine should be checked by a specialist before commissioning. In addition, it should be checked after essential modifications before it returns to service.

1.5.2.25 The machine must be checked by a specialist once a year. Furthermore, a specialist must check the machine whenever necessary because of operating conditions.

1.5.2.26 The test results must be recorded and kept in the archives at least until the following control date.

1.6 Instructions regarding special categories of danger

1.6.1 Electrical energy

1.6.1.1 Only use original fuses (mandatory current). Immediately switch off machine in case of breakdown of electrical supply.

1.6.1.2 When working near overhead lines and overhead wires, a safety clearance must be kept between the machine and its working equipment in order to prevent sparking over. The safety clearance depends on the nominal voltage of the overhead/wire line. This also applies to the distance between the lines and to the attachments and slung loads.

The following safety clearance must be observed, to meet the above mentioned requirement:

Nominal voltage (kilovolt)			Safety clearance (meter)
	up to	1 kV	1,0 m
above	1 kV	up to 110 kV	3,0 m
above	110 kV	up to 220 kV	4,0 m
above	220 kV	up to 380 kV	5,0 m
unknown nominal voltage			5,0 m

When approaching overhead lines all working movements of the machine must be taken into consideration, e.g. the position of jibs, the swinging of ropes and the dimensions of slung loads.

In addition, attention must be paid to any roughness of soil which could cause an inclined position of the machine thus getting it closer to the overhead line. The fact that overhead lines may swing out during windy weather and may reduce the distance must also be taken into consideration.

1.6.1.3 In the case of sparking over any work or movement must stop. Instructions to be followed: bring the machine out of the danger area by lifting or lowering the attachments or by swiveling away or driving the machine out of the area. If this is not possible then the following rules must be observed:

- do not leave the driver's cabin
- warn persons standing near the machine not to approach or touch the machine
- give immediate instructions to have the power cut off
- leave the machine only when it is sure that the electricity in the damaged / contacted power line is switched off so that the line is dead!

1.6.1.4 Work on the electrical system or on the operating system may only be carried out by a skilled electrician or by personnel instructed or supervised by such trained electrician according to electrotechnical regulations.

1.6.1.5 The electrical installation of a machine must be reviewed/ inspected at regular intervals. Any defects, e.g. loose connections or scorched cabling, must be eliminated immediately.

1.6.1.6 The cable must be disconnected from the negative pole of the battery before inspection, maintenance or repair of machine parts and components.

1.6.2 Hydraulic systems

1.6.2.1 Only experts may carry out work on the hydraulic system.

1.6.2.2 All pipelines, hoses and screw connections must be checked regularly for leakages and visible damages. Immediately eliminate such defects. Spurting hydraulic oil may cause injuries and fire.

1.6.2.3 Those hydraulic system segments which are to be opened must be made free of pressure before commencement of the repair work according to the assembly group description.

1.6.2.4 The hydraulic pipelines must be correctly laid and connected. Do not get the connections mixed up. The spare parts must be in an accordance with the technical requirements stipulated by the manufacturer. This is, of course, guaranteed when original spare parts are ordered.

1.6.3 Noise

Sound protection equipment must be in protective position during operation of the machine.

1.6.4 Oil, grease and other chemical substances

1.6.4.1 The relevant safety regulations must be observed when using oil, grease or other chemical substances.

1.6.4.2 Caution when working with hot fuel and other accessory material (danger of burning and scalding).

1.6.4.3 Caution when working with brake fluid and battery acid.

TOXIC AND CAUSTIC!

1.6.4.4 Be careful when working with fuel.

FIRE HAZARD!

- Before refuel, switch off engine and remove ignition key.
- Do not refuel in a closed operating area.
- Never refuel near open fire or sparks.
- Do not smoke during refueling.
- Immediately wipe up spilled fuel.
- Keep machine free of fuel, oil and grease.

1.6.5 Gas, dust, steam, smoke

1.6.5.1 The machine may only be started and run in closed operating areas where there is sufficient ventilation.

The regulations for the respective working site must be strictly observed.

1.6.5.2 Only carry out welding, burning and grinding work on the machine when this is explicitly approved. Otherwise danger of fire and explosion!

1.6.5.3 Before carrying out welding, burning and grinding work clean the machine and its vicinity from combustibles and make sure that the room is adequately ventilated.

Explosion hazard!

1.7 Transport and towing, restart

1.7.1 The machine may only be towed if the brakes and steering function.

1.7.2 Towing may be carried out only by means of an adequately dimensioned towing bar in connection with towing devices.

1.7.3 When towing drive slowly. Persons must not remain near the towing bar.

1.7.4 When the machine is loaded and transported the necessary auxiliary equipment must be fitted to prevent any unintended movement. The tires must be kept clean of mud, snow and ice so that the machine can drive on the ramp without danger of sliding.

1.7.5 Restart the machine strictly observing the regulations of the operating manual.

1.8 Safety information for the contractor or the contractor's authorized personnel

1.8.1 Organizational measures

1.8.1.1 Spare parts must be in accordance with the technical requirements of the manufacturer. Original spare parts ensure the fulfillment of these requirements.

1.8.1.2 Make public the location of the fire extinguishers (1-5) as well as their mode of operation.

1.8.2 Selection of personnel qualifications; additional duties

1.8.2.1 Only reliable persons are allowed to work on / with the machine. The minimum legal age must be observed.

1.8.2.2 Only employ trained or instructed personnel. Clearly define the competencies of the personnel regarding operation, installation, maintenance and repair work. Ensure that only authorized personnel may work on/ with the machine.

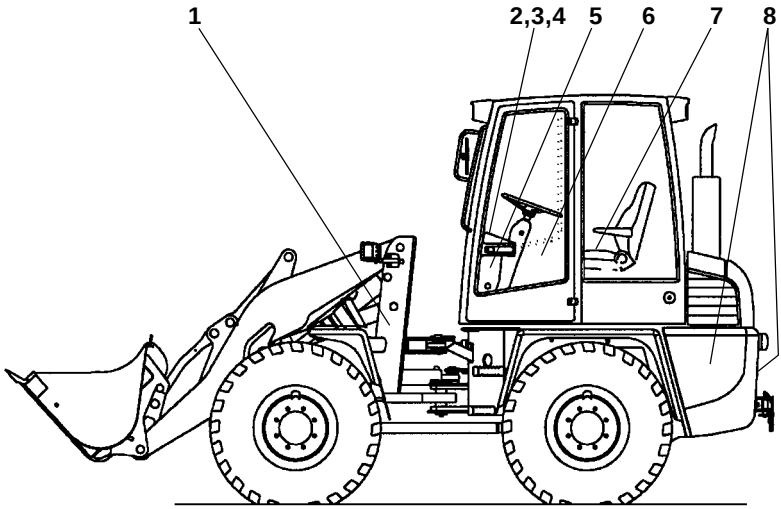
1.8.2.3 Determine the driver's responsibility regarding traffic regulations. Authorize him to refuse instructions given by third parties when these instructions are detrimental to the safety of the driver and the machine.

1.8.2.4 Personnel who are to be trained, instructed or working on/ with the machine in the scope of professional training must not work on/ with the machine, unless they are supervised by an experienced person.

Signs

2 Signs

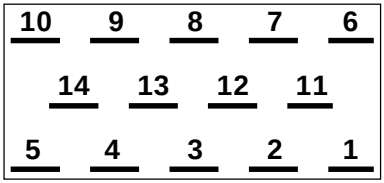
2.1 Warning and information signs



1 - Loader type plate - right-hand side of the loader -
(includes the identification number of the vehicle)
2 - **CAUTION!** - The hydraulic quick-change device must only be **locked** if an attachment has been mounted.
3 - **CAUTION!** - Steering only possible when engine is running!
4 - **CAUTION!** - Only switch the fast loader to the distribution gear drive stages "I" and "II" when the loader is standing still!
5 - Moving loads on the forks is only permitted close to the ground!
6 - Maintenance schedule
7 - **CAUTION!** - Use mineral oil DIN 51524-HVLP 46 ISO VG 46 VI > 180 (via the brake fluid reservoir to the right of the driver's seat)
8 - Maximum speed

2.2 Fuses (4-13/17)

View on the fuse box:

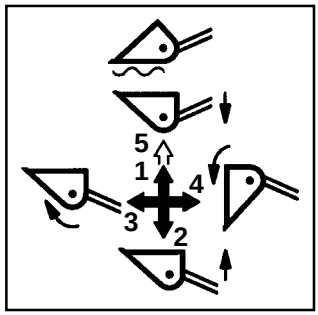


1	Traction drive	10,0 A
2	Turn indicator	7,5 A
3	Hydraulic	15,0 A
4	Heater	20,0 A
5	Rear window heater	20,0 A
6	High beams	15,0 A
7	Dimmed headlights	15,0 A
8	Tail light, left, parking light, left	5,0 A
9	Tail light, right, parking light, right	5,0 A
10	Hazard flasher	15,0 A
11	Window wiper/washer	20,0 A
12	Motor stopper	5,0 A
13	Working lights, brake light	30,0 A
14	Warning beacon (opt.), signal horn, plug socket, interior lighting	30,0 A

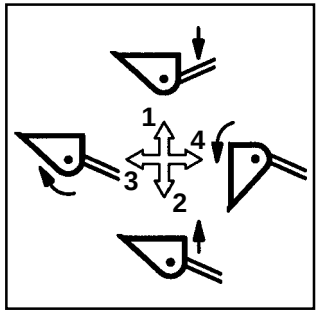
opt. = optional equipment

2.3 Symbols

AL 85t / AL 100t / AL 100ti



AL 70e



Hand lever for working hydraulics (4-12/5)

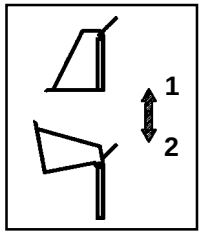
Bucket arm
1 - lower
2 - raise
5 - floating position
(AL 85t / AL 100t / AL 100ti only)

Quick-change device
3 - tilt up
4 - dump

Bucket
3 - tilt up
4 - dump

Fork-lift attachment
3 - tilt up forks
4 - tip forks

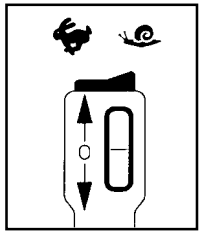
Hand lever for auxiliary hydraulics (4-12/1)



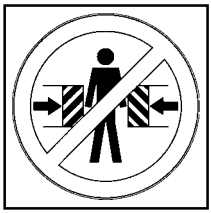
Quick-change device
1 - lock
2 - unlock *
* only in conjunction with push-button (4-13/14)

Multi-purpose bucket
1 - close
2 - open

Hydraulic drive stages (4-12/7)
Hare symbol - fast
Snail symbol - slow

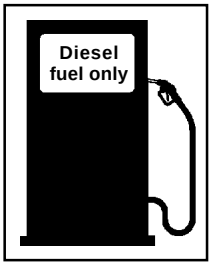


Travel direction (4-12/6)
- forward
- 0
- backward

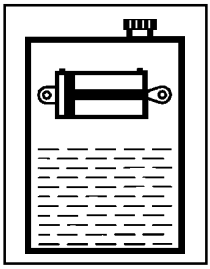


Stay out of the unprotected articulation area

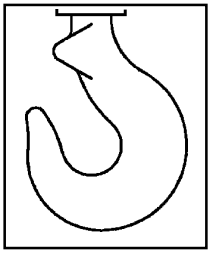
Open only when the engine is not running



Fuel tank

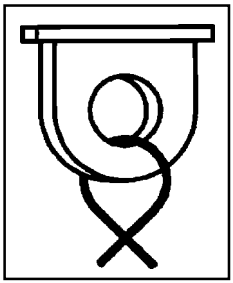


Hydraulic oil reservoir

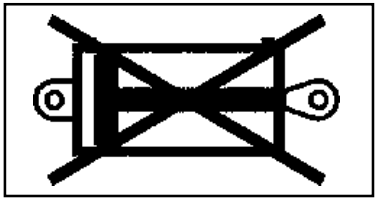


Lifting points for transportation by crane

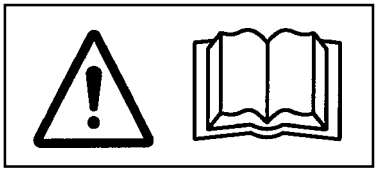
Fixing eyes for towing and lashing



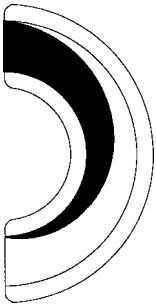
Ball block valve for working/auxiliary hydraulics closed



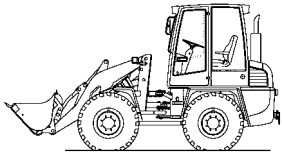
Before start-up, read and observe the operating instructions. Make sure that all other users have also read the safety instructions!



Heating



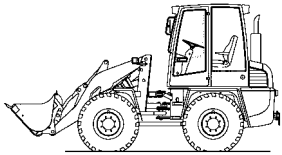
Stay out of the danger zone



12.5 - 18	3,0	2,5-3,0 bar
335/80 R 18	3,0	3,0 bar
15.5/55 R 18	3,2	2,7-3,2 bar
405/70 R 18	3,0	2,5-3,0 bar

Tire pressure

AL 70e



365/70 R 18	3,7	3,0-3,7 bar
405/70 R 18	3,0	2,5-3,0 bar
365/80 R 20	3,0	2,5-3,0 bar
375/75 R 20	3,0	2,5-3,0 bar
405/70 R 20	3,0	2,5-3,0 bar
14.5 - 20	3,0	2,5-3,0 bar

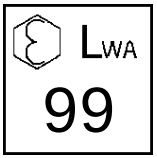
Tire pressure

AL 85t / AL 100t / AL 100ti

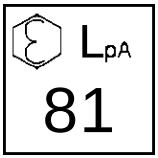
Silent

Lettering
“Low-noise construction machine”

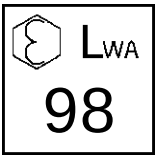
Acoustic power level **AL 70e**
Noise outside: 99 dB(A)



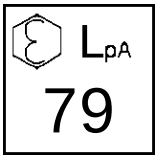
Acoustic pressure level **AL 70e**
Noise in the driver's cabin: 81 dB(A)



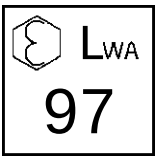
Acoustic power level **AL 85t**
Type “20 km/h”
Noise outside: 98 dB(A)



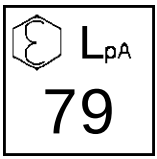
Acoustic pressure level **AL 85t**
Type “20 km/h”
Noise outside: 79 dB(A)



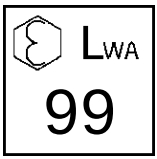
Acoustic power level **AL 85t**
Type “30 km/h”
Noise in the driver's cabin: 97 dB(A)



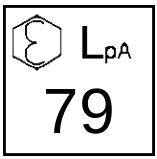
Acoustic pressure level **AL 85t**
Type “30 km/h”
Noise outside: 79 dB(A)

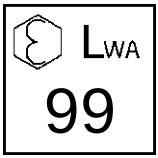


Acoustic power level **AL 100t**
Type “20 km/h”
Noise in the driver's cabin: 99 dB(A)

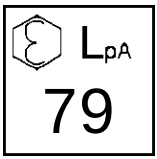


Acoustic pressure level **AL 100t**
Type “20 km/h”
Noise outside: 79 dB(A)

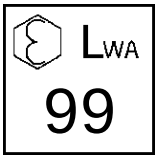




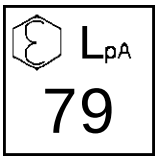
Acoustic power level **AL 100t**
Type “30 km/h”
Noise in the driver's cabin: 99 dB(A)



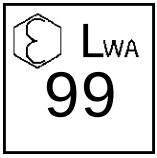
Acoustic pressure level **AL 100t**
Type “30 km/h”
Noise outside: 79 dB(A)



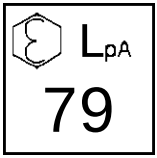
Acoustic power level **AL 100ti**
Type “20 km/h”
Noise in the driver's cabin: 99 dB(A)



Acoustic pressure level **AL 100ti**
Type “20 km/h”
Noise outside: 79 dB(A)



Acoustic power level **AL 100ti**
Type “30 km/h”
Noise in the driver's cabin: 99 dB(A)



Acoustic pressure level **AL 100ti**
Type “30 km/h”
Noise outside: 79 dB(A)

Technical data

3 Technical data

3.1 AL 70e

NOTE

The technical data refer to tires of size 335/80 R 18.

3.1.1 Machine

- Height		2665 mm
- Width (over tires)		1775 mm
- Wheel base		1950 mm
- Track width		1450 mm
- Operating weight without attachment		4380 kg
- Ground clearance	- vehicle centre	420 mm
	- rear axle gear	295 mm
- Turning radius (across the rear)		3900 mm
- Articulation angle	- left	40 °
	- right	40 °
- Embankment angle		27 °
- Climbing ability with payload		60 %
- Max. lifting capacity		34 kN

3.1.2 Engine

- Oil-/air-cooled diesel engine
- 4 cylinders, 4-stroke, direct injection
- Displacement 2732 cm³
- Power according to ECE 24/03 appendices 10 36,5 kW at 2300 rpm
- Exhaust emission regulation according to EPA nonroad TIER 1

3.1.3 Starter

- 2.2 kW, 12 V

3.1.4 Alternator

- 60 A, 14 V

3.1.5 Hydrostatic traction drive

- Stage I	0.....7 km/h
- Stage II	0.....20 km/h

3.1.6 Axle loads

- Perm. axle loads acc. to StVZO	- front	3500 kg
	- rear	4000 kg
- Perm. total weight acc. to StVZO		6000 kg

3.1.7 Tires

The following tire sizes are permitted:

- Size		335/80 R 18
- Pressure	- front	3,0 bar
	- rear	3,0 bar
- Size		12.5 - 18 10PR
- Pressure	- front	3,0 bar
	- rear	2,5-3,0 bar
- Size		15.5/55 R 18
- Pressure	- front	3,2 bar
	- rear	2,7-3,2 bar
- Size		405/70 R 18
- Pressure	- front	3,0 bar
	- rear	2,5-3,0 bar

3.1.8 Steering system

- Hydrostatically via priority valve
- Pressure max. 180 bar

3.1.9 Brake system

- Hydraulic service brake (front axle: wet lamella brake), acting on all four wheels via a cardan shaft.

- Hydraulic parking brake/auxiliary brake system (front axle: wet lamella brake), acting on the front axle via a spring reservoir and on all four wheels via a cardan shaft.

3.1.10 Electrical system

- Battery 88 Ah

3.1.11 Hydraulic system

- Contents	100 l
- Hydraulic oil reservoir	70 l
- Flow rate	61 l/min
- Max. operating pressure	190 bar
- 2 lifting cylinders	Ø 80/50 mm
- 1 tilt cylinder	Ø 100/60 mm
- 1 steering cylinder	Ø 85/35 mm
- Times acc. to DIN ISO 7131	
- Lift (with payload)	5.8 s
- Lower (without payload)	3.8 s
- Dump 90°	1.2 s
- Tilt 45°	1.0 s

3.1.12 Fuel supply system

- Contents fuel tank	70 l

3.1.13 Heating and ventilation system

- Oil heater	COBO
- Type	2/9008/COMB-10/A45
- Heat output, 3-stage	Q_{80} max. 10.5 kW at $\mathring{V}_{oil}$ 30 l/min
- Fan power, 3-stage	max. 785 m³/h

3.1.14 Return-flow suction filter

- Filter mesh	15 µm abs.
- By-pass activation pressure	Δ p = 2.5 bar
- Pretension	0.5 bar

3.1.15 Electrical contamination indicator

- Activation pressure	p = 2 bar

3.1.16 Oil cooler with temperature-controlled fan

- Power	max. 15 kW
- Flow rate	23 l/min

3.2 AL 85t

NOTE

The technical data refer to tires of size 365/80 R 20.

3.2.1 Machine

- Height		2720 mm
- Width (over tires)		1790 mm
- Wheel base		1950 mm
- Track width		1440 mm
- Operating weight without attachment		4680 kg
- Ground clearance	- vehicle centre	484 mm
	- rear axle gear	345 mm
- Turning radius (across the rear)		3900 mm
- Articulation angle	- left	40 °
	- right	40 °
- Embankment angle		30 °
- Climbing ability with payload		60 %
- Max. lifting capacity		41 kN

3.2.2 Engine

- Oil-/air-cooled diesel engine	
- 4 cylinders, 4-stroke, direct injection	
- Displacement	2732 cm³
- Power according to ISO 9249	44 kW at 2300 rpm
- Exhaust emission regulation according to RL 97/68 EC step 1 + EPA nonroad TIER	

3.2.3 Starter

-	2.2 kW, 12 V

3.2.4 Alternator

-	60 A, 14 V

3.2.5 Hydrostatic traction drive

"20 km/h" model

- Stage I	0.....7 km/h
- Stage II	0.....20 km/h

"30 km/h" model

Gear stage 1

- Stage I	0.....7 km/h
- Stage II	0.....15 km/h

Gear stage 2

- Stage I 0.....14 km/h
- Stage II 0.....30 km/h

3.2.6 Axle loads

- Perm. axle loads acc. to StVZO - front 3500 kg
  - rear 4000 kg
- Perm. total weight acc. to StVZO 6000 kg

3.2.7 Tires

The following tire sizes are permitted:

- Size 365/70 R 18
  - Pressure - front 3,7 bar
    - rear 3,0-3,7 bar
- Size 405/70 R 18
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar
- Size 365/80 R 20
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar
- Size 375/75 R 20
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar
- Size 405/70 R 20
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar
- Size 14.5 - 20
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar

3.2.8 Steering system

- Hydrostatically via priority valve
- Pressure max. 180 bar

3.2.9 Brake system

- Hydraulic service brake (front axle: wet lamella brake), acting on all four wheels via a cardan shaft.
- Hydraulic parking brake/auxiliary brake system (front axle: wet lamella brake), acting on the front axle via a spring reservoir and on all four wheels via a cardan shaft.

3.2.10 Electrical system

- Battery 88 Ah

3.2.11 Hydraulic system

- Contents	100 l
- Hydraulic oil reservoir	70 l
- Flow rate	61 l/min
- Max. operating pressure	230 bar
- 2 lifting cylinders	Ø 80/50 mm
- 1 tilt cylinder	Ø 100/60 mm
- 1 steering cylinder	Ø 85/35 mm
- Times acc. to DIN ISO 7131	
- Lift (with payload)	5.8 s
- Lower (without payload)	3.8 s
- Dump 90°	1.2 s
- Tilt 45°	1.0 s

3.2.12 Fuel supply system

- Contents fuel tank	70 l

3.2.13 Heating and ventilation system

- Oil heater	COBO
- Type	2/9008/COMB-10/A45
- Heat output, 3-stage	Q_{80} max. 10.5 kW at $\mathring{V}_{oil}$ 30 l/min
- Fan power, 3-stage	max. 785 m³/h

3.2.14 Return-flow suction filter

- Filter mesh	15 µm abs.
- By-pass activation pressure	Δ p = 2.5 bar
- Pretension	0.5 bar

3.2.15 Electrical contamination indicator

- Activation pressure	p = 2 bar

3.2.16 Oil cooler with temperature-controlled fan

- Power	max. 15 kW
- Flow rate	23 l/min

3.3 AL 100t

NOTE

The technical data refer to tires of size 14.5 - 20.

3.3.1 Machine

- Height		2720 mm
- Width (over tires)		1790 mm
- Wheel base		1950 mm
- Track width		1440 mm
- Operating weight without attachment		5060 kg
- Ground clearance	- vehicle centre	484 mm
	- rear axle gear	345 mm
- Turning radius (across the rear)		3900 mm
- Articulation angle	- left	40 °
	- right	40 °
- Embankment angle		31 °
- Climbing ability with payload		60 %
- Max. lifting capacity		51 kN

3.3.2 Engine

- Oil-/air-cooled diesel engine
- 4 cylinders, 4-stroke, direct injection
- Displacement 2732 cm³
- Power according to ISO 9249 51,5 kW at 2500 rpm
- Exhaust emission regulation according to RL 97/68 EC step 1 + EPA nonroad TIER 1

3.3.3 Starter

- 2.2 kW, 12 V

3.3.4 Alternator

- 60 A, 14 V

3.3.5 Hydrostatic traction drive

"20 km/h" model

- Stage I 0.....7 km/h
- Stage II 0.....20 km/h

"30 km/h" model

Gear stage 1

- Stage I 0.....7 km/h
- Stage II 0.....14 km/h

Gear stage 2

- Stage I 0.....15 km/h
- Stage II 0.....30 km/h

3.3.6 Axle loads

- Perm. axle loads acc. to StVZO - front 3500 kg
  - rear 4000 kg
- Perm. total weight acc. to StVZO 6000 kg

3.3.7 Tires

The following tire sizes are permitted:

- Size 365/70 R 18
  - Pressure - front 3,7 bar
    - rear 3,0-3,7 bar
- Size 405/70 R 18
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar
- Size 365/80 R 20
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar
- Size 375/75 R 20
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar
- Size 405/70 R 20
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar
- Size 14.5 - 20
  - Pressure - front 3,0 bar
    - rear 2,5-3,0 bar

3.3.8 Steering system

- Hydrostatically via priority valve
- Pressure max. 180 bar

3.3.9 Brake system

- Hydraulic service brake (front axle: wet lamella brake), acting on all four wheels via a cardan shaft.
- Hydraulic parking brake/auxiliary brake system (front axle: wet lamella brake), acting on the front axle via a spring reservoir and on all four wheels via a cardan shaft.

3.3.10 Electrical system

- Battery 88 Ah

3.3.11 Hydraulic system

- Contents	100 l
- Hydraulic oil reservoir	70 l
- Flow rate	80 l/min
- Max. operating pressure	230 bar
- 2 lifting cylinders	Ø 90/50 mm
- 1 tilt cylinder	Ø 110/70 mm
- 1 steering cylinder	Ø 85/35 mm
- Times acc. to DIN ISO 7131	
- Lift (with payload)	5.7 s
- Lower (without payload)	4.0 s
- Dump 90°	1.3 s
- Tilt 45°	1.1 s

3.3.12 Fuel supply system

- Contents fuel tank	70 l

3.3.13 Heating and ventilation system

- Oil heater	COBO
- Type	2/9008/COMB-10/A45
- Heat output, 3-stage	Q_{80} max. 10.5 kW at $\mathring{V}_{oil}$ 30 l/min
- Fan power, 3-stage	max. 785 m³/h

3.3.14 Return-flow suction filter

- Filter mesh	15 µm abs.
- By-pass activation pressure	Δ p = 2.5 bar
- Pretension	0.5 bar

3.3.15 Electrical contamination indicator

- Activation pressure	p = 2 bar

3.3.16 Oil cooler with temperature-controlled fan

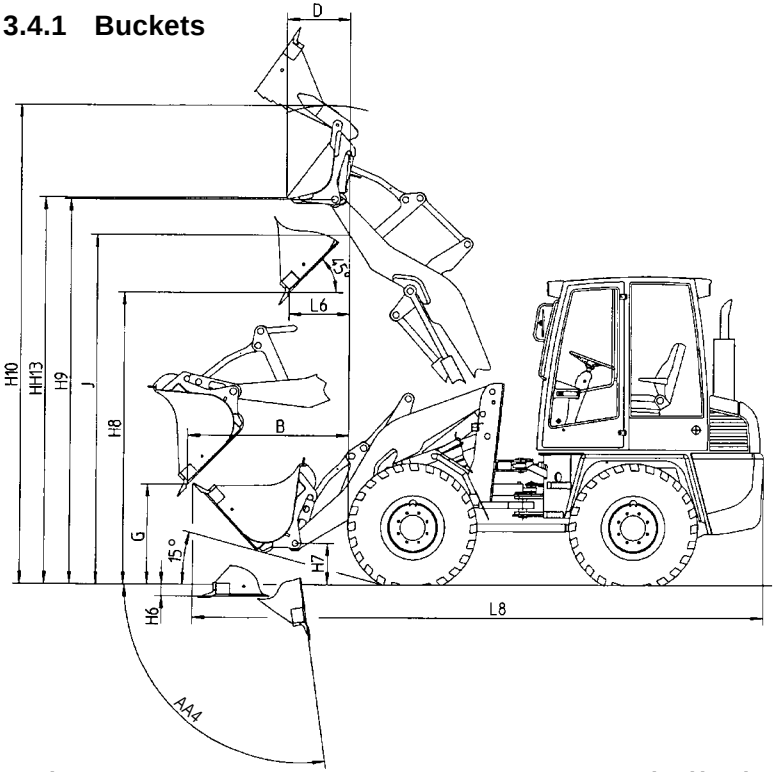
- Power	max. 15 kW
- Flow rate	25 l/min

3.4 Attachments AL 70e

NOTE

- The technical data refer to tires of size 335/80 R 18.

3.4.1 Buckets



Bucket type		**Standard bucket**
Bucket volume	m³	**0,7**
Bucket width	mm	1800
Dead weight	kg	260
Loads according to DIN 24094 *		
Bulk density	t/m³	2,0
Rated dump load		
- frontal	kg	3240
- swiveled	kg	2840
Rated payload		
- frontal	kg	1620
- swiveled	kg	1420
Operating weight without attachment *	kg	4620

* with water in the rear axle wheels

3.4.1 Buckets

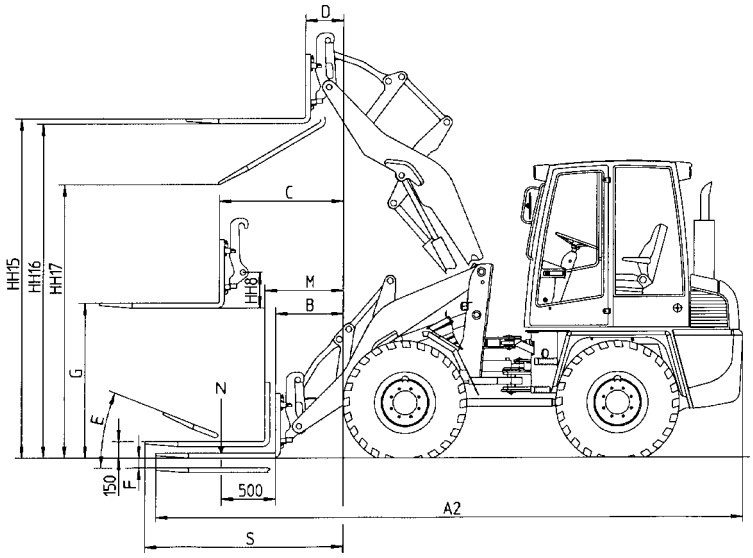
Bucket type			Standard bucket	Lightweight bucket	Multi-purpose bucket
Bucket volume		m³	**0,7**	**1,0**	**0,55**
Bucket width		mm	1800	2000	1870
Dead weight		kg	260	302	454
Loads according to DIN 24094					
Bulk density		t/m³	1,9	1,25	2,0
Rated dump load					
- frontal		kg	2990	2880	2840
- swiveled		kg	2620	2520	2470
Rated payload					
- frontal		kg	1495	1440	1420
- swiveled		kg	1310	1260	1235
Loads according to ISO 8313					
Bulk density		t/m³	1,65	1,1	1,8
Rated dump load					
- frontal		kg	2800	2700	2660
- swiveled		kg	2240	2140	2100
Rated payload					
- frontal		kg	1400	1350	1330
- swiveled		kg	1120	1070	1050
Tear-out force (ISO 8313)		daN	4230	3450	4425
Pushing force		kN	35,3	35,3	35,3
AA4	Max. dump angle	°	93	93	90
B	Max. dumping distance at dump angle 45°	mm	1285	1340	1380
G	Dumping height at max. dumping distance and dump angle 45°	mm	880		790
H6	Depth of feed-in	mm	135		175
H7	Distance to the bolt center (quick-change device)	mm	410	410	410
H8	Dumping height at max. lifting height and dump angle 45°	mm	2575	2550	2490
H9	Distance to the bolt center (quick-change device)	mm	3355	3355	3355
H10	Maximum working height	mm	4030		4055
J	Free lift height	mm	2960	2960	2960
L6	Dumping distance at max. lifting height and dump angle 45°	mm	530	550	535
L8	Overall length	mm	5055		5040
	Angle, transport position	°	49	49	49
Multi-purpose bucket opened:					
D	Max. dumping distance at max. lifting height and swivelled bucket	mm	-	-	565
HH13	Max. dumping height with swivelled bucket	mm	-	-	3325

NOTE

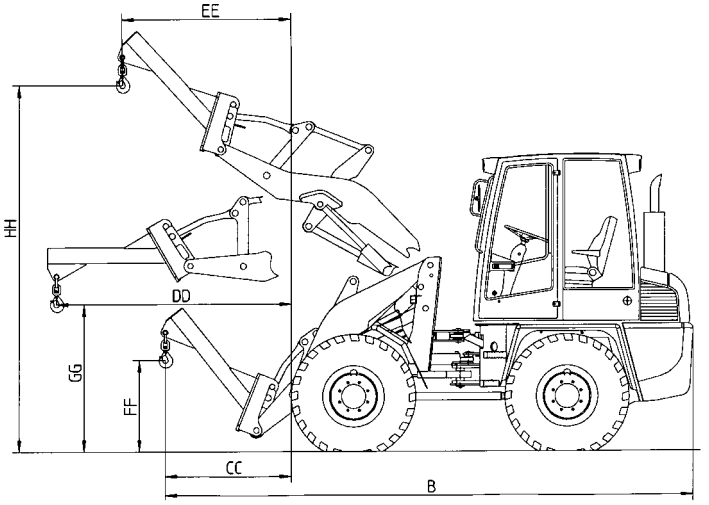
- The technical data refer to tires of size 405/70 R 18.

Bucket type:		**Standard bucket**
Bucket volume	m^3	**0,7**
Bucket width	mm	1950
Dead weight	kg	262
Loads according to DIN 24094		
Bulk density	t/m^3	1,9
Rated dump load		
- frontal	kg	3000
- swiveled	kg	2630
Rated payload		
- frontal	kg	1500
- swiveled	kg	1315
Loads according to ISO 8313		
Bulk density	t/m^3	1,65
Rated dump load		
- frontal	kg	2810
- swiveled	kg	2240
Rated payload		
- frontal	kg	1405
- swiveled	kg	1120
Tear-out force (ISO 8313)	daN	
Pushing force	kN	35,3

3.4.2 Fork-lift attachment



3.4.3 Lifting hook



3.4.2 Fork-lift attachment

Fork length	1100 mm
Fork height	45 mm
Fork spacing (centre - centre)	
- min.	216 mm
- max.	1054 mm
Dead weight	192 kg

Permissible payload N acc. to DIN 24094

frontal	
- level terrain (stability safety factor 1.25)	2020 kg
- rough terrain (stability safety factor 1.67)	1515 kg
swiveled	
- level terrain (stability safety factor 1.25)	1775 kg
- rough terrain (stability safety factor 1.67)	1330 kg

Permissible payload N acc. to ISO 8313

frontal	
- level terrain (stability safety factor 1.25)	1920 kg
- rough terrain (stability safety factor 1.67)	1440 kg
swiveled	
- level terrain (stability safety factor 1.25)	1575 kg
- rough terrain (stability safety factor 1.67)	1180 kg

Permissible payload N acc. to ISO 8313 **(height of upper tine edge: 150 mm)**

frontal	
- level terrain (stability safety factor 1.25)	2380 kg
- rough terrain (stability safety factor 1.67)	1780 kg
swiveled	
- level terrain (stability safety factor 1.25)	2000 kg
- rough terrain (stability safety factor 1.67)	1500 kg

A2	Total length	5515 mm
B	Min. operating span	710 mm
C	Max. operating span	1200 mm
D	Operating span at max. lifting height	380 mm
E	Tilt angle	15 °
F	Depth of feed-in	75 mm
G	Free lift height at max. reach	1415 mm
HH15	Free lift height at max. lifting height (Upper edge of tines)	3125 mm
HH16	Free lift height at max. lifting height (Lower edge of tines)	3080 mm
HH17	Height with maximum lifting height and tilted tines	2445 mm
M	Reach (height of upper tine edge: 150 mm)	785 mm
S	Distance between tire and tine point (height of upper tine edge: 150 mm)	1885 mm

3.4.3 Lifting hook

Permissible payload according to DIN EN 474-3	
- Max. outreach (stability safety factor 2)	750 kg
Dead weight	145 kg

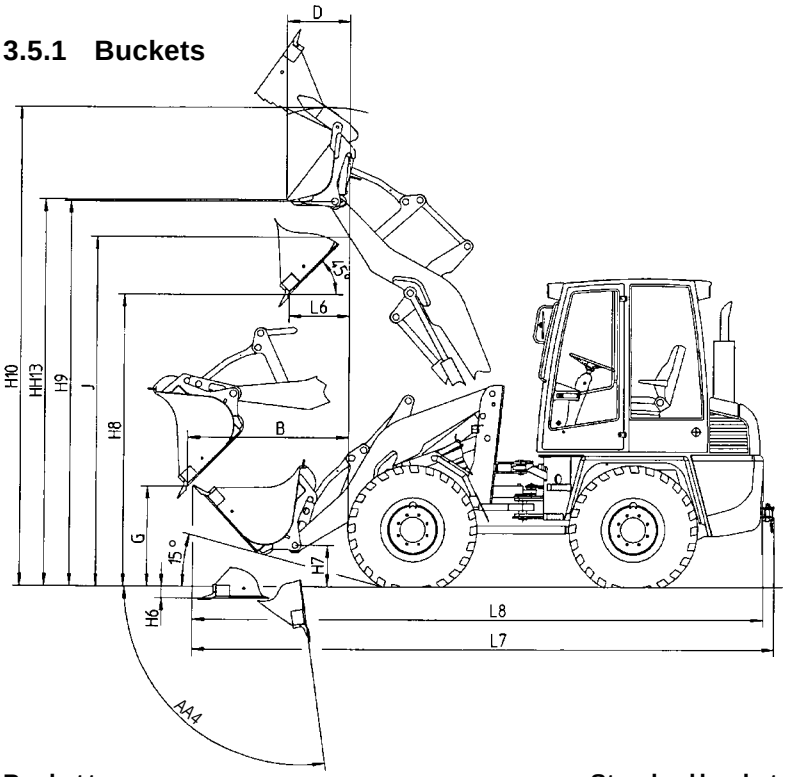
B	Total length	4815 mm
CC	Minimum reach with bucket arm in lowermost position	1200 mm
DD	Max. outreach	2210 mm
EE	Reach with bucket arm in uppermost position	1050 mm
FF	Min. lifting height	825 mm
GG	Lifting height with maximum reach	1300 mm
HH	Max. lifting height	3950 mm

3.5 Attachments AL 85t

NOTE

- The technical data refer to tires of size 365/80 R 20.

3.5.1 Buckets



Bucket type		**Standard bucket**
Bucket volume	m³	**0,8**
Bucket width	mm	1850
Dead weight	kg	283
Loads according to DIN 24094 *		
Bulk density	t/m³	2,0
Rated dump load		
- frontal	kg	3670
- swiveled	kg	3230
Rated payload		
- frontal	kg	1835
- swiveled	kg	1615
Operating weight without attachment *	kg	4990

* with water in the rear axle wheels

3.5.1 Buckets

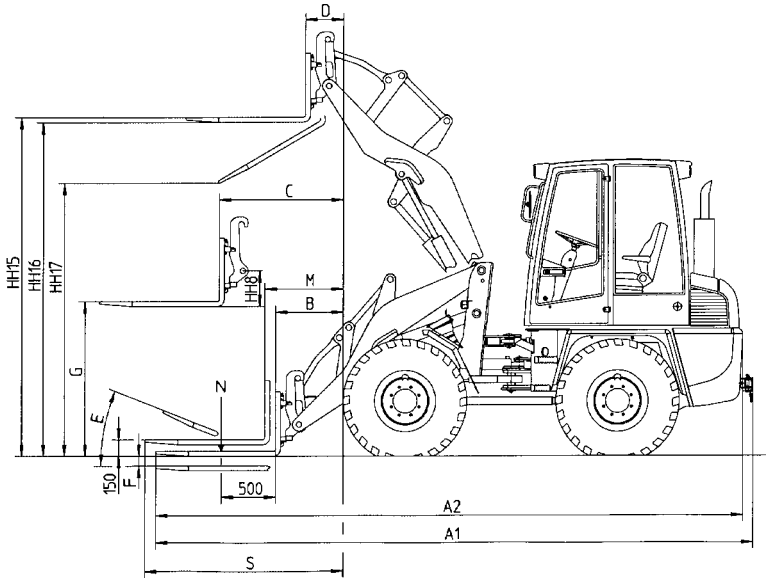
Bucket type		Standard bucket	Lightweight bucket	Multi-purpose bucket
Bucket volume	m³	**0,8**	**1,2**	**0,65**
Bucket width	mm	1850	2000	1850
Dead weight	kg	283	378	430
Loads according to DIN 24094				
Bulk density	t/m³	1,8	1,1	1,9
Rated dump load				
- frontal	kg	3340	3160	3160
- swiveled	kg	2930	2760	2760
Rated payload				
- frontal	kg	1670	1580	1580
- swiveled	kg	1465	1380	1380
Loads according to ISO 8313				
Bulk density	t/m³	1,65	1,0	1,8
Rated dump load				
- frontal	kg	3170	3000	3000
- swiveled	kg	2610	2460	2460
Rated payload				
- frontal	kg	1585	1500	1500
- swiveled	kg	1305	1230	1230
Tear-out force (ISO 8313)	daN	4560	3625	4405
Pushing force	kN	38,0	38,0	38,0
AA4 Max. dump angle	°	93	93	90
B Max. dumping distance at dump angle 45°	mm	1335	1465	1370
G Dumping height at max. dumping distance and dump angle 45°	mm	890		760
H6 Depth of feed-in	mm	60		135
H7 Distance to the bolt center (quick-change device)	mm	400	400	400
H8 Dumping height at max. lifting height and dump angle 45°	mm	2600	2420	2475
H9 Distance to the bolt center (quick-change device)	mm	3420	3420	3420
H10 Maximum working height	mm	4130		4090
J Free lift height	mm	3150	3150	3150
L6 Dumping distance at max. lifting height and dump angle 45°	mm	500	675	575
L7 Overall length	mm	5115		5150
L8 Overall length	mm	5025		5060
Angle, transport position	°	49	49	49
Multi-purpose bucket opened:				
D Max. dumping distance at max. lifting height and swivelled bucket	mm	-	-	535
HH13 Max. dumping height with swivelled bucket	mm	-	-	3385

NOTE

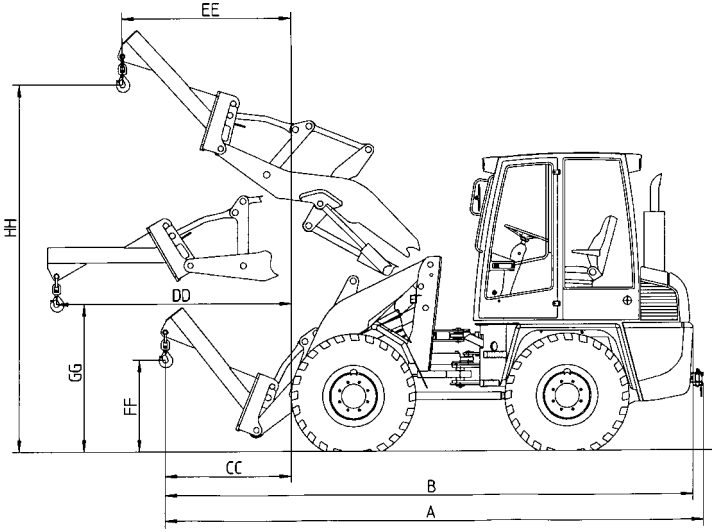
- The technical data refer to tires of size 405/70 R 20.

Bucket type:		**Standard bucket**	**Multi-purpose bucket**
Bucket volume	m^3	**0,85**	**0,75**
Bucket width	mm	2000	2000
Dead weight	kg	324	470
Loads according to DIN 24094			
Bulk density	t/m^3	1,7	1,8
Rated dump load			
- frontal	kg	3270	3060
- swiveled	kg	2860	2670
Rated payload			
- frontal	kg	1635	1530
- swiveled	kg	1430	1335
Loads according to ISO 8313			
Bulk density	t/m^3	1,5	1,6
Rated dump load			
- frontal	kg	3100	2910
- swiveled	kg	2550	2380
Rated payload			
- frontal	kg	1550	1455
- swiveled	kg	1275	1190
Tear-out force (ISO 8313)	daN		
Pushing force	kN	38,0	38,0

3.5.2 Fork-lift attachment



3.5.3 Lifting hook



3.5.2 Fork-lift attachment

Fork length	1100 mm
Fork height	45 mm
Fork spacing (centre - centre)	
- min.	216 mm
- max.	1054 mm
Dead weight	192 kg

Permissible payload N acc. to DIN 24094

frontal	
- level terrain (stability safety factor 1.25)	2275 kg
- rough terrain (stability safety factor 1.67)	1705 kg
swiveled	
- level terrain (stability safety factor 1.25)	2000 kg
- rough terrain (stability safety factor 1.67)	1500 kg

Permissible payload N acc. to ISO 8313

frontal	
- level terrain (stability safety factor 1.25)	2185 kg
- rough terrain (stability safety factor 1.67)	1640 kg
swiveled	
- level terrain (stability safety factor 1.25)	1825 kg
- rough terrain (stability safety factor 1.67)	1365 kg

Permissible payload N acc. to ISO 8313 **(height of upper tine edge: 150 mm)**

frontal	
- level terrain (stability safety factor 1.25)	2775 kg
- rough terrain (stability safety factor 1.67)	2080 kg
swiveled	
- level terrain (stability safety factor 1.25)	2325 kg
- rough terrain (stability safety factor 1.67)	1745 kg

A1	Total length	5455 mm
A2	Total length	5375 mm
B	Min. operating span	610 mm
C	Max. operating span	1145 mm
D	Operating span at max. lifting height	320 mm
E	Tilt angle	15°
F	Depth of feed-in	10 mm
G	Free lift height at max. reach	1475 mm
HH15	Free lift height at max. lifting height (Upper edge of tines)	3190 mm
HH16	Free lift height at max. lifting height (Lower edge of tines)	3145 mm
HH17	Height with maximum lifting height and tilted tines	2500 mm
M	Reach (height of upper tine edge: 150 mm)	690 mm
S	Distance between tire and tine point (height of upper tine edge: 150 mm)	1790 mm

3.5.3 Lifting hook

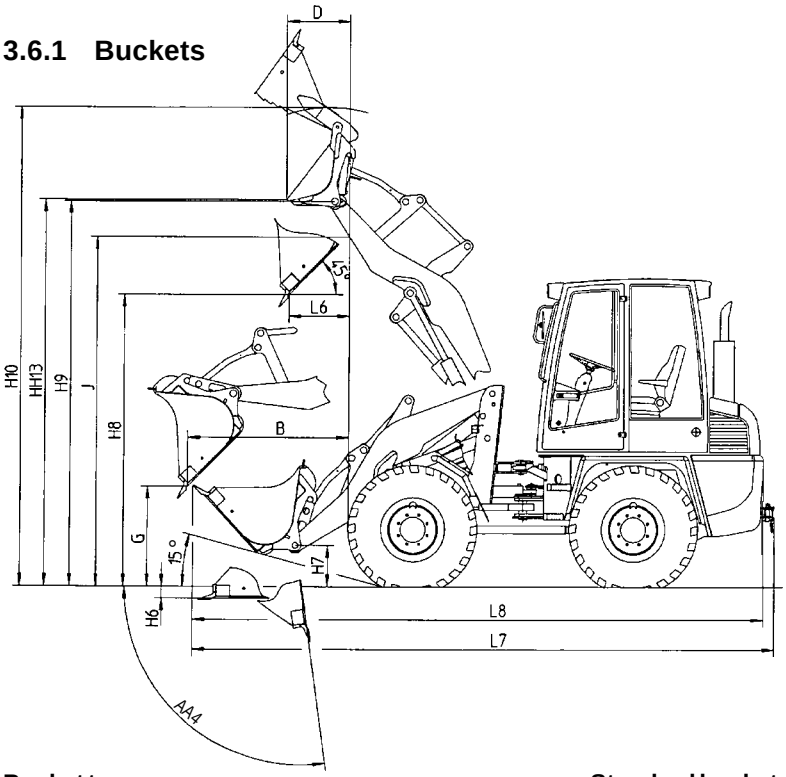
Permissible payload according to DIN EN 474-3		
- Max. outreach (stability safety factor 2)		850 kg
Dead weight		145 kg
A	Total length	4895 mm
B	Total length	4815 mm
CC	Minimum reach with bucket arm in lowermost position	1145 mm
DD	Max. outreach	2150 mm
EE	Reach with bucket arm in uppermost position	965 mm
FF	Min. lifting height	890 mm
GG	Lifting height with maximum reach	1350 mm
HH	Max. lifting height	4030 mm

3.6 Attachments AL 100t

NOTE

- The technical data refer to tires of size 14.5 - 20.

3.6.1 Buckets



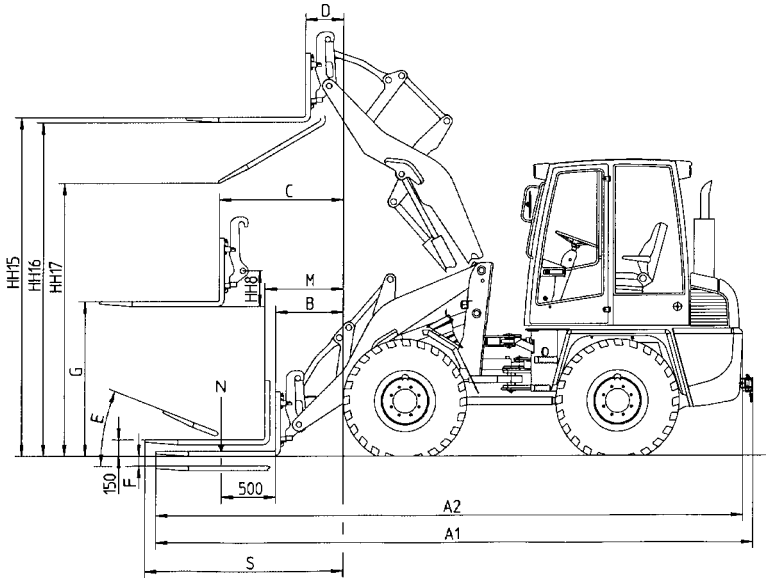
Bucket type		**Standard bucket**
Bucket volume	m³	**0,9**
Bucket width	mm	1950
Dead weight	kg	306
Loads according to DIN 24094 *		
Bulk density	t/m³	2,0
Rated dump load		
- frontal	kg	4170
- swiveled	kg	3660
Rated payload		
- frontal	kg	2085
- swiveled	kg	1830
Operating weight without attachment *	kg	5320

* with water in the rear axle wheels

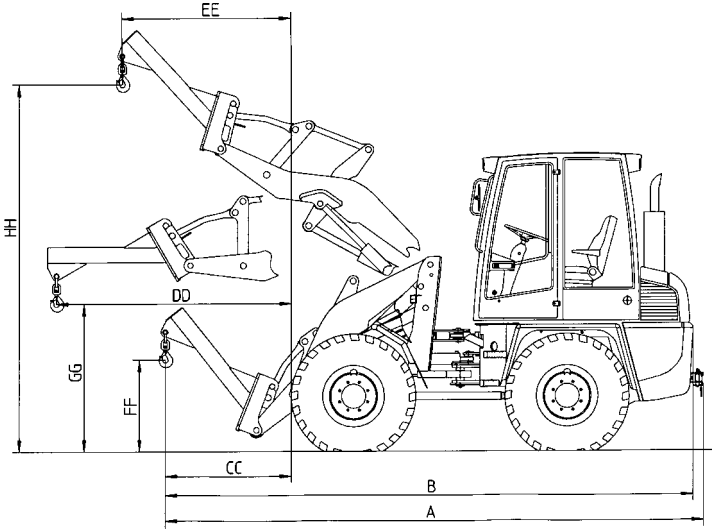
3.6.1 Buckets

Bucket type		Standard bucket	Lightweight bucket	Multi-purpose bucket
Bucket volume	m^3	**0,9**	**1,4**	**0,75**
Bucket width	mm	1950	2000	2000
Dead weight	kg	306	408	470
Loads according to DIN 24094				
Bulk density	t/m^3	1,9	1,15	1,9
Rated dump load				
- frontal	kg	3890	3660	3640
- swiveled	kg	3420	3200	3180
Rated payload				
- frontal	kg	1945	1830	1820
- swiveled	kg	1710	1600	1590
Loads according to ISO 8313				
Bulk density	t/m^3	1,65	1,0	1,7
Rated dump load				
- frontal	kg	3550	3340	3320
- swiveled	kg	2930	2760	2740
Rated payload				
- frontal	kg	1775	1670	1660
- swiveled	kg	1465	1380	1370
Tear-out force (ISO 8313)	daN	5390	4095	5135
Pushing force	kN	41,7	41,7	41,7
AA4 Max. dump angle	°	93	93	90
B Max. dumping distance at dump angle 45°	mm	1340	1520	1320
G Dumping height at max. dumping distance and dump angle 45°	mm	865		860
H6 Depth of feed-in	mm	65		105
H7 Distance to the bolt center (quick-change device)	mm	400	400	400
H8 Dumping height at max. lifting height and dump angle 45°	mm	2575	2360	2560
H9 Distance to the bolt center (quick-change device)	mm	3425	3425	3425
H10 Maximum working height	mm	4210		4115
J Free lift height	mm	3150	3150	3150
L6 Dumping distance at max. lifting height and dump angle 45°	mm	515	735	495
L7 Overall length	mm	5145		5070
L8 Overall length	mm	5055		4980
Angle, transport position	°	49	49	49
Multi-purpose bucket opened:				
D Max. dumping distance at max. lifting height and swivelled bucket	mm	-	-	530
HH13 Max. dumping height with swivelled bucket	mm	-	-	3390

3.6.2 Fork-lift attachment



3.6.3 Lifting hook



3.6.2 Fork-lift attachment

Fork length	1100 mm
Fork height	45 mm
Fork spacing (centre - centre)	
- min.	216 mm
- max.	1054 mm
Dead weight	192 kg

Permissible payload N acc. to DIN 24094

frontal	
- level terrain (stability safety factor 1.25)	2670 kg
- rough terrain (stability safety factor 1.67)	2000 kg
swiveled	
- level terrain (stability safety factor 1.25)	2345 kg
- rough terrain (stability safety factor 1.67)	1755 kg

Permissible payload N acc. to ISO 8313

frontal	
- level terrain (stability safety factor 1.25)	2555 kg
- rough terrain (stability safety factor 1.67)	1915 kg
swiveled	
- level terrain (stability safety factor 1.25)	2140 kg
- rough terrain (stability safety factor 1.67)	1605 kg

Permissible payload N acc. to ISO 8313 **(height of upper tine edge: 150 mm)**

frontal	
- level terrain (stability safety factor 1.25)	3330 kg
- rough terrain (stability safety factor 1.67)	2490 kg
swiveled	
- level terrain (stability safety factor 1.25)	2715 kg
- rough terrain (stability safety factor 1.67)	2030 kg

A1	Total length	5460 mm
A2	Total length	5370 mm
B	Min. operating span	595 mm
C	Max. operating span	1135 mm
D	Operating span at max. lifting height	305 mm
E	Tilt angle	15°
F	Depth of feed-in	10 mm
G	Free lift height at max. reach	1485 mm
HH15	Free lift height at max. lifting height (Upper edge of tines)	3200 mm
HH16	Free lift height at max. lifting height (Lower edge of tines)	3155 mm
HH17	Height with maximum lifting height and tilted tines	2525 mm
M	Reach (height of upper tine edge: 150 mm)	670 mm
S	Distance between tire and tine point (height of upper tine edge: 150 mm)	1770 mm

3.6.3 Lifting hook

Permissible payload according to DIN EN 474-3	
- Max. outreach (stability safety factor 2)	1000 kg
Dead weight	145 kg

A	Total length	4915 mm
B	Total length	4830 mm
CC	Minimum reach with bucket arm in lowermost position	1150 mm
DD	Max. outreach	2140 mm
EE	Reach with bucket arm in uppermost position	975 mm
FF	Min. lifting height	880 mm
GG	Lifting height with maximum reach	1355 mm
HH	Max. lifting height	4015 mm

3.7 AL 100ti » with industrial arm «

NOTE

The technical data refer to tires of size 14.5 - 20.

3.7.1 Machine

- Height		2720 mm
- Width (over tires)		1790 mm
- Wheel base		1950 mm
- Track width		1440 mm
- Operating weight without attachment		4990 kg
- Ground clearance	- vehicle centre	484 mm
	- rear axle gear	345 mm
- Turning radius over the rear (exterior)		3900 mm
- Articulation angle	- left	40 °
	- right	40 °
- Embankment angle		31 °
- Climbing ability with payload		60 %
- Max. lifting capacity		4500 kg

3.7.2 Engine

- Oil-/air-cooled diesel engine	
- 4 cylinders, 4-stroke, direct injection	
- Displacement	2732 cm³
- Power according to ISO 9249	51,5 kW at 2500 rpm
- Exhaust emission regulation according to RL 97/68 EC step 1 + EPA nonroad TIER 1	

3.7.3 Starter

-	2.2 kW, 12 V

3.7.4 Alternator

-	60 A, 14 V

3.7.5 Hydrostatic traction drive

"20 km/h" model

- Stage I	0.....7 km/h
- Stage II	0.....20 km/h

"30 km/h" model

Gear stage 1

- Stage I	0.....7 km/h
- Stage II	0.....14 km/h

Gear stage 2

- Stage I	0.....15 km/h
- Stage II	0.....30 km/h

3.7.6 Axle loads

- Perm. axle loads acc. to StVZO	- front	3500 kg
	- rear	4000 kg
- Perm. total weight acc. to StVZO		6000 kg

3.7.7 Tires

The following tire sizes are permitted:

- Size		365/70 R 18
- Pressure	- front	3,7 bar
	- rear	3,0-3,7 bar
- Size		405/70 R 18
- Pressure	- front	3,0 bar
	- rear	2,5-3,0 bar
- Size		365/80 R 20
- Pressure	- front	3,0 bar
	- rear	2,5-3,0 bar
- Size		375/75 R 20
- Pressure	- front	3,0 bar
	- rear	2,5-3,0 bar
- Size		405/70 R 20
- Pressure	- front	3,0 bar
	- rear	2,5-3,0 bar
- Size		14.5 - 20
- Pressure	- front	3,0 bar
	- rear	2,5-3,0 bar

3.7.8 Steering system

- Hydrostatically via priority valve	
- Pressure	max. 180 bar

3.7.9 Brake system

- Hydraulic service brake (front axle: wet lamella brake), acting on all four wheels via a cardan shaft.
- Hydraulic parking brake/auxiliary brake system (front axle: wet lamella brake), acting on the front axle via a spring reservoir and on all four wheels via a cardan shaft.

3.7.10 Electrical system

- Battery	88 Ah

3.7.11 Hydraulic system

- Contents	100 l
- Hydraulic oil reservoir	70 l
- Flow rate	80 l/min
- Max. operating pressure	230 bar
- 2 lifting cylinders	Ø 90/50 mm
- 1 tilt cylinder	Ø 110/70 mm
- 1 steering cylinder	Ø 85/35 mm
- Times acc. to DIN ISO 7131	
- Lift (with payload)	5.7 s
- Lower (without payload)	4.0 s
- Dump 90°	1.3 s
- Tilt 45°	1.1 s

3.7.12 Fuel supply system

- Contents fuel tank	70 l

3.7.13 Heating and ventilation system

- Oil heater	COBO
- Type	2/9008/COMB-10/A45
- Heat output, 3-stage	Q_{80} max. 10.5 kW at $\mathring{V}_{oil}$ 30 l/min
- Fan power, 3-stage	max. 785 m³/h

3.7.14 Return-flow suction filter

- Filter mesh	15 µm abs.
- By-pass activation pressure	Δ p = 2.5 bar
- Pretension	0.5 bar

3.7.15 Electrical contamination indicator

- Activation pressure	p = 2 bar

3.7.16 Oil cooler with temperature-controlled fan

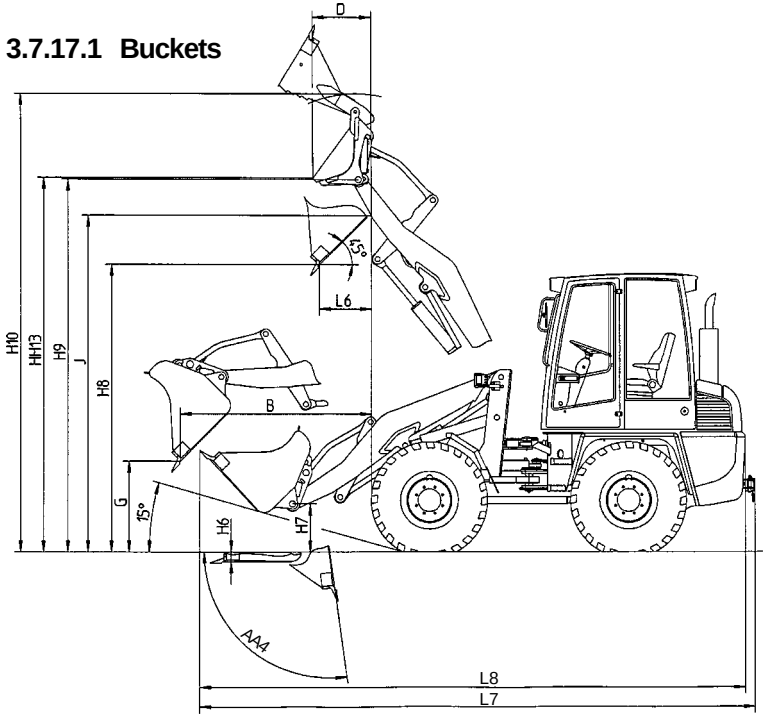
- Power	max. 15 kW
- Flow rate	25 l/min

3.7.17 Attachments AL 100ti

NOTE

- The technical data refer to tires of size 14.5 - 20.

3.7.17.1 Buckets



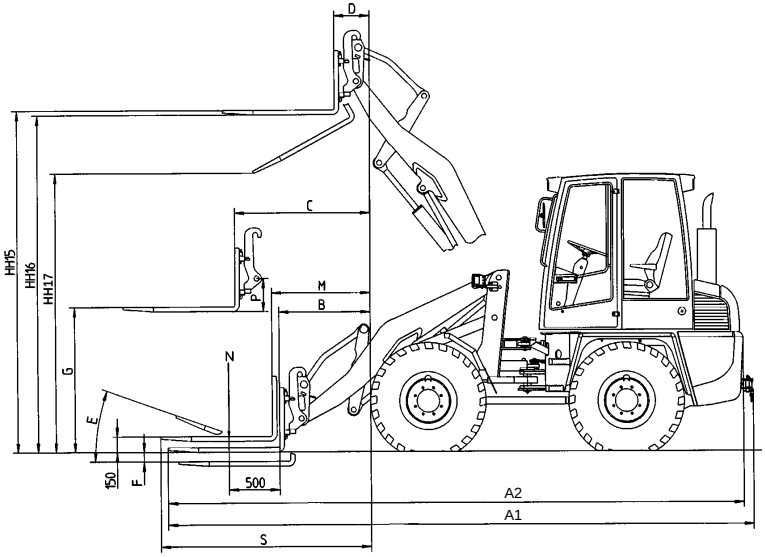
Bucket type		**Standard bucket**
Bucket volume	m^3	**0,8**
Bucket width	mm	1850
Dead weight	kg	283
Loads according to DIN 24094 *		
Bulk density	t/m^3	2,0
Rated dump load		
- frontal	kg	3770
- swiveled	kg	3310
Rated payload		
- frontal	kg	1885
- swiveled	kg	1655
Operating weight without attachment *	kg	5250

* with water in the rear axle wheels

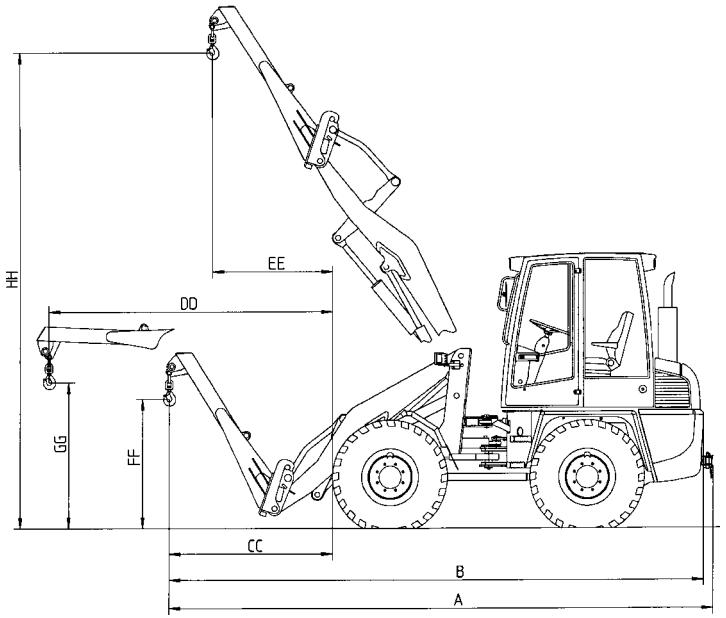
3.7.17.1 Buckets

			Standard bucket	Lightweight bucket	Multi-purpose bucket
Bucket type					
Bucket volume		m³	**0,8**	**1,2**	**0,65**
Bucket width		mm	1850	2000	1850
Dead weight		kg	283	378	430
Loads according to DIN 24094					
Bulk density		t/m³	1,95	1,2	2,0
Rated dump load					
- frontal		kg	3520	3320	3320
- swiveled		kg	3090	2900	2900
Rated payload					
- frontal		kg	1760	1660	1660
- swiveled		kg	1545	1450	1450
Loads according to ISO 8313					
Bulk density		t/m³	1,8	1,0	1,8
Rated dump load					
- frontal		kg	3400	3220	3220
- swiveled		kg	2680	2520	2520
Rated payload					
- frontal		kg	1700	1610	1610
- swiveled		kg	1340	1260	1260
Tear-out force (ISO 8313)		daN	5200	4150	5200
Pushing force		kN	41,7	41,7	41,7
AA4	Max. dump angle	°	90	90	89
B	Max. dumping distance at dump angle 45°	mm	1500	1675	1545
G	Dumping height at max. dumping distance and dump angle 45°	mm	890		770
H6	Depth of feed-in	mm	40		110
H7	Distance to the bolt center (quick-change device)	mm	440	440	440
H8	Dumping height at max. lifting height and dump angle 45°	mm	2875	2665	2770
H9	Distance to the bolt center (quick-change device)	mm	3670	3670	3670
H10	Maximum working height	mm	4400		4365
J	Free lift height	mm	3380	3380	3380
L6	Dumping distance at max. lifting height and dump angle 45°	mm	535	685	595
L7	Overall length	mm	5425		5360
L8	Overall length	mm	5335		5270
	Angle, transport position	°	50	50	50
Multi-purpose bucket opened:					
D	Max. dumping distance at max. lifting height and swivelled bucket	mm	-	-	485
HH13	Max. dumping height with swivelled bucket	mm	-	-	3680

3.7.17.2 Fork-lift attachment



3.7.17.3 Lifting hook



3.7.17.2 Fork-lift attachment

Fork length	1100 mm
Fork height	45 mm
Fork spacing (centre - centre)	
- min.	216 mm
- max.	1054 mm
Dead weight	192 kg

Permissible payload N acc. to DIN 24094

frontal	
- level terrain (stability safety factor 1.25)	2410 kg
- rough terrain (stability safety factor 1.67)	1805 kg
swiveled	
- level terrain (stability safety factor 1.25)	2115 kg
- rough terrain (stability safety factor 1.67)	1585 kg

Permissible payload N acc. to ISO 8313

frontal	
- level terrain (stability safety factor 1.25)	2340 kg
- rough terrain (stability safety factor 1.67)	1755 kg
swiveled	
- level terrain (stability safety factor 1.25)	1880 kg
- rough terrain (stability safety factor 1.67)	1410 kg

Permissible payload N acc. to ISO 8313 **(height of upper tine edge: 150 mm)**

frontal	
- level terrain (stability safety factor 1.25)	2880 kg
- rough terrain (stability safety factor 1.67)	2160 kg
swiveled	
- level terrain (stability safety factor 1.25)	2280 kg
- rough terrain (stability safety factor 1.67)	1710 kg

A1	Total length (comprising shunting and towing coupling)	5700 mm
A2	Total length	5610 mm
B	Min. operating span	835 mm
C	Max. operating span	1320 mm
D	Operating span at max. lifting height	265 mm
E	Tilt angle	21 °
F	Depth of feed-in	10 mm
G	Free lift height at max. reach	1485 mm
HH15	Free lift height at max. lifting height (Upper edge of tines)	3455 mm
HH16	Free lift height at max. lifting height (Lower edge of tines)	3410 mm
HH17	Height with maximum lifting height and tilted tines	2770 mm
M	Reach (height of upper tine edge: 150 mm)	900 mm
S	Distance between tire and tine point (height of upper tine edge: 150 mm)	2000 mm

3.7.17.3 Lifting hook

Permissible payload according to DIN EN 474-3	
- Max. outreach (stability safety factor 2)	1000 kg
Dead weight	145 kg

A	Total length (comprising shunting and towing coupling)	5190 mm
B	Total length	5100 mm
CC	Minimum reach with bucket arm in lowermost position	1410 mm
DD	Max. outreach	2310 mm
EE	Reach with bucket arm in uppermost position	865 mm
FF	Min. lifting height	880 mm
GG	Lifting height with maximum reach	1360 mm
HH	Max. lifting height	4330 mm

Description

4 Description

4.1 Overview

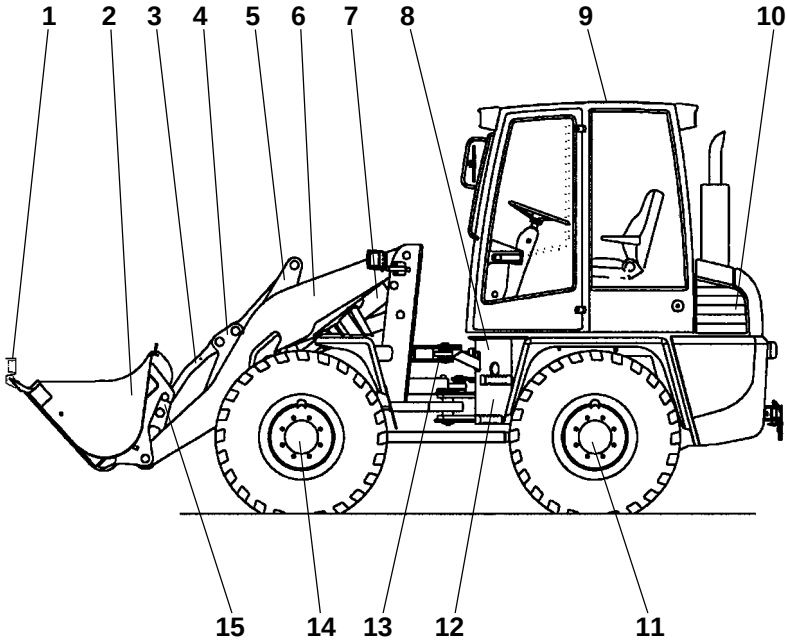


Figure 4-1

1 - Bucket protection
2 - Bucket/attachment
3 - Tip rod
4 - Tip lever
5 - Pivot arm
6 - Bucket arm
7 - Tip cylinder
8 - Fuel tank (right-hand side of vehicle)
9 - Driver's cabin
10 - Drive motor
11 - Rear axle
12 - Hydraulic oil reservoir
13 - Articulation pivot joint
14 - Front axle
15 - Quick-change device

4.2 Loader

Undercarriage

The axial piston pump for the hydraulic drive is driven by the diesel engine. Pressure hoses for extremely high pressure connect the axial piston pump with the axial piston engine. The axial piston engine is flanged to the distribution/intermediate gear of the rear axle (with planetary gear). The distribution/ intermediate gear transmits the torque of the axial piston engine directly to the rear axle and via a cardan shaft) to the front axle (with planetary gear.

CAUTION

The maximum speed of the axial piston engine is governed by settings made at the factory. Any adjustment will render the warranty invalid.

The front and rear axles are equipped with a self-locking differential (locking value 45%).

Tires

The following tires are permitted:

AL 70e

12.5 - 18	335/80 R 18
15.5/55 R 18	405/70 R 18

AL 85t / AL 100t / AL 100ti

365/70 R 18	405/70 R 18
365/80 R 20	375/75 R 20
405/70 R 20	14.5 - 20

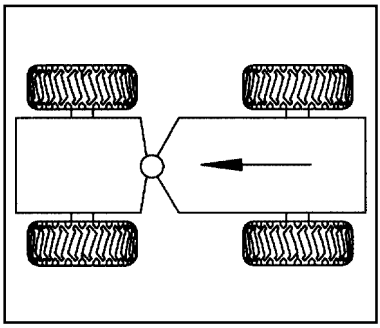


Figure 4-2

For the running direction, see Fig. 4-2.

NOTE

All four wheels must be identical and have be same PR rating (PR = ply rating: number of textile plies).

Steering system

The power for the hydrostatic steering system is supplied via a priority valve from a gear-type pump. With a minimum of effort on the steering wheel, the oil flow is directed by a steering unit into the steering cylinder.

Emergency steering

The hydrostatic steering system can also be used in a limited way if the diesel engine fails. The loader can be steered using a considerable amount of manual effort.

NOTE

See chapter 7, “Towing the loader”.

Service and parking brake

The loader is equipped with a combined service/auxiliary and parking brake that acts as a service and a parking brake.

The foot-actuated service brake is operated by a double pedal to the left and to the right of the steering column (4-3/arrows). The brake is a fully hydraulical wet lamella brake in the front axle. When the pedal is pressed down, the control pressure of the drive pump to the reservoir is first relieved via an inching gear. Then the hydraulic pressure in the main brake cylinder is built up. This means that the service brake is supported by the hydrostatic drive unit. The parking brake, which also acts as an auxiliary brake, works as a negative coefficient brake. This means that the pistons prestressed by spring packs are loosened when a defined actuating pressure is applied. The parking brake is actuated via a hand lever (4-4/arrow) located to the right of the operator's seat.

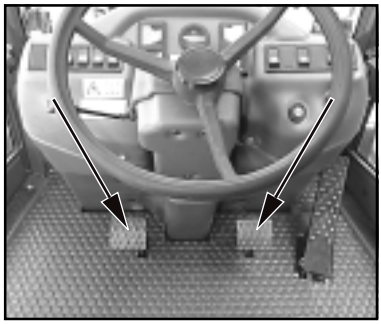


Figure 4-3

Figure 4-4

Inching

(option)
The inching pedal is located next to the left-hand service brake pedal. By stepping on this pedal, the driving speed can be reduced to a standstill while the engine speed is retained. The continuously adjustable inching function is required if a high lifting speed (high diesel engine speed) is required at low driving speeds (inching).

Electrical system

2 headlights, front
2 working lights, front
2 working lights, rear
Hazard flasher
Interior lighting
1 plug socket, 7-pin, front
Rear window heater
Battery main switch
Signal horn
Reverse warning system (opt.)
Radio system (opt.)
Warning beacon (opt.)
Heatable rearview mirror (opt.)
Engine compartment illumination (opt)
Transponder for drive-away interlock (opt.)
(opt. = option)

Battery

The battery compartment contains a maintenance-free battery (4-5/ arrow) with an increased cold start performance. The battery is to be kept clean and dry. Lightly grease the terminals with acid-free and acid-resistant grease.

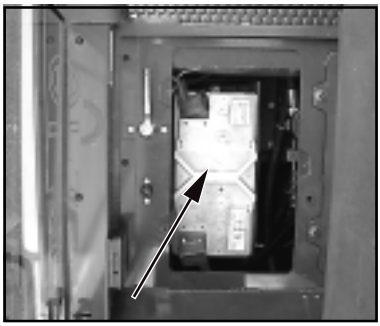


Figure 4-5

CAUTION

Electric arc welding on the loader is only to be performed when the battery main switch (4-11/3) has been disconnected.

Fuel supply system

The fuel tank is located on the right-hand side of the loader rear. An electrical fuel gauge (4-13/7) in the operator's cabin monitors the fuel level in the tank. The filler neck (4-6/arrow) is located on the right side in the cabin access area.

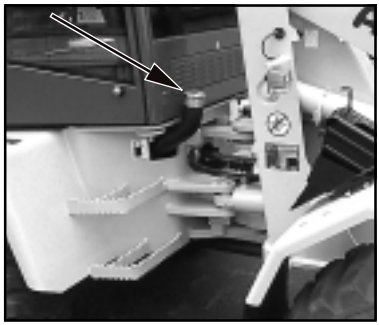


Figure 4-6

Air filter device

Dry air filter device with safety cartridge and dust discharge valve.

Lift and tip devices

- Two lift cylinders and
- one tip cylinder

are fed by a double-acting gear-type pump via a control valve.

All movements of the bucket arm, the bucket, the attachments and the quick-change device are controlled from the operator's seat by pilot valves.
The pilot valves provide continuous speed control from "slow" to "fast".

Float position

(optional equipment for AL 70e)
The loader is equipped with a floating position function which allows work such as levelling (grading) to be carried out in a rough terrain.
For this purpose, the toggle switch (4-13/14) must be unlocked and actuated.

DANGER

The floating position may only be activated when the bucket is in the lowermost position.

Floating position

(AL 85t / AL 100t / AL 100ti)
The loader is equipped with a floating position that is activated by moving the hand lever (4-12/5) beyond its pressure point to the frontmost position. The hand lever remains in this position until it is pulled back.

DANGER

The floating position may only be activated when the bucket is in the lowermost position.

NOTE

The floating position is disabled if the loader is equipped with a pipe rupture protection.

Pipe break safety device

(option)
A pipe break safety valve is installed underneath each lift and tip cylinder. In the event of a pipe or hose break in the lift and/or tip system, the movements of the bucket arm and the tipping rod are blocked until the damage is repaired.

Lifting device suspension

(option)
When the loader must be driven over larger distances, especially with a loaded bucket, the lifting device suspension (4-13/15) should be activated to avoid resonant motion. This becomes even more important with increasing unevenness of the terrain and increasing speed of the loader.

CAUTION

The lifting device suspension must only be used **for driving over long distances,** but not for working with the loader.

Bucket position mark

The driver can see the position of the bucket by the coloured markings on the reversing rod and the reversing lever. When the coloured marks (4-7/arrow) form a line, the bucket floor is parallel to the ground.

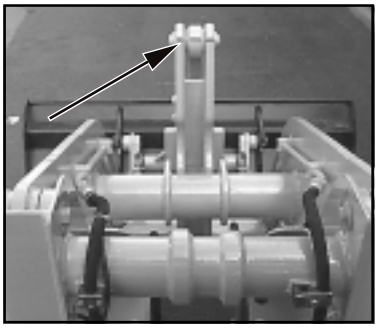


Figure 4-7

Lifting height restriction

(option)
A device allowing the maximum lifting height to be restricted is installed at the junction of the bucket unit and the center support.

Adjustment:

(1) Lift the bucket arm to the desired height.
(2) Shut down the engine and close the ball block valves for the working and auxiliary hydraulics (1-3/arrow).
(3) Loosen the hex screw (size 10) (4-8/3) of the shift gate and turn the shift gate (4-8/2) towards the roller switch (4-8/1) until it switches audibly.
(4) Tighten the hex screw of the shift gate.

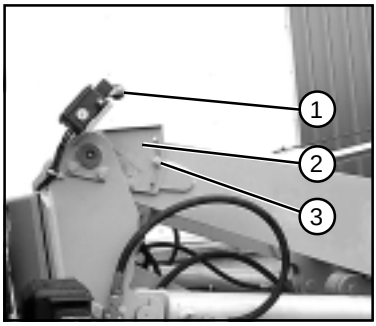


Figure 4-8

DANGER

Perform a function check before starting work with the lifting height restriction. Observe the lifting height restriction from the driver's seat during work.

Bucket arm (stops)

The deflection lever (4-8a/1) and the quick-change device (4-8a/2) are fitted with adjustable stops on either side. These stops are to prevent the quick-change device from getting stretched (see Fig. 4-8a/line) or from dropping into the bucket arm.

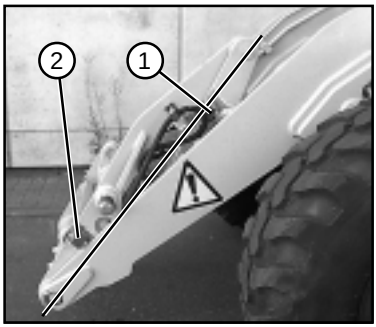


Figure 4-8a

CAUTION

Never change the stop settings made at the factory; otherwise, it may no longer be possible to tilt up or dump the quick-change device.

Equipment

Driver's seat

The driver's seat has a hydraulic suspension and is provided with a pelvis safety belt and arm rests (height-adjustable). The weight compensation, the horizontal and height position as well as the back-rest and the seat inclination can be adjusted.

Operator's cabin

Standard ROPS design with ECC conformity certificate. Comfortable entry and exit from both sides, lock-able doors, front and rear wind-shield wipers/washers, sun visor, good all-round vision, multi-speed heating/ventilation system.

4.3 Changing a wheel

DANGER

Before changing a wheel on public roads, the danger area must be properly marked.

(1) Park the loader on solid ground and not on inclines if possible.
(2) Lower the attachment to the ground.
(3) Set the drive switch (4-12/6) to “0”.
(4) Apply the parking brake (4-12/3).
(5) Turn the ignition key to the left to position “0” (5-1).

(6) Close the ball block valve for the working and auxiliary hydraulics (1-3/arrow).
(7) Insert the articulation safeguard into the articulation joint (1-4/arrow).
(8) Secure the machine by placing two wedges under one wheel of the axle where **no** wheel is to be changed.
(9) Loosen the wheel nuts of the wheel to be changed so that they can be turned manually.
(10) Fit a suitable jack (minimum capacity 3.0 tons) from the side under the axle bridge in the vicinity of the axle fixture so that it is centred and cannot slip (4-9). Lift the front/ rear axle until the wheel does not have any contact to the ground.

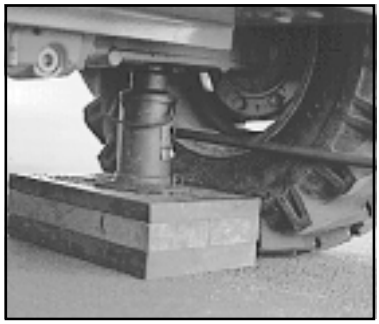


Figure 4-9

DANGER

- Secure the jack by a suitable support to prevent it from sinking into the ground.
- Make sure that the jack is fitted well.

(11) Loosen the wheel nuts completely and remove them.
(12) Lower the loader slightly with the jack until the wheel bolts are free.
(13) Push off the wheel from the wheel hub by moving it back and forth. Remove the wheel and roll it aside.
(14) Mount the new wheel onto the planetary axle.
(15) Tighten the wheel nuts by hand.
(16) Lower the front/rear axle using the jack.
(17) Tighten the wheel nuts with a torque wrench to 440 Nm.

CAUTION

Tighten the wheel nuts after the first 8-10 operating hours.

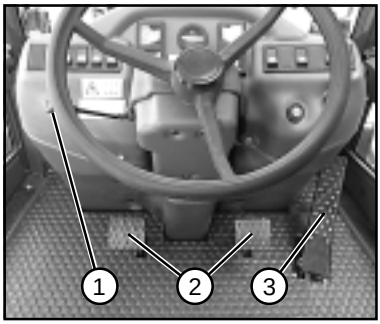


Figure 4-10

4.4 Controls

1 - Steering column switch
- Fwd.: turn indicator, right
- Bwd.: turn indicator, left
- Up - dipped beam
- Down - high beam
- Pushbutton - signal horn

2 - Double pedal for service brake/inching
3 - Accelerator pedal

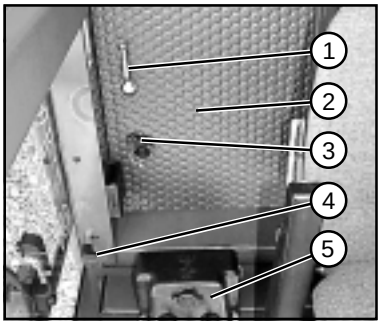


Figure 4-11

To the left of the operator's seat:

1 - Ball block valve for heater
2 - Maintenance flap (battery) (below damping mat)
3 - Battery main switch
4 - Door release
5 - Water tank for windshield washer system

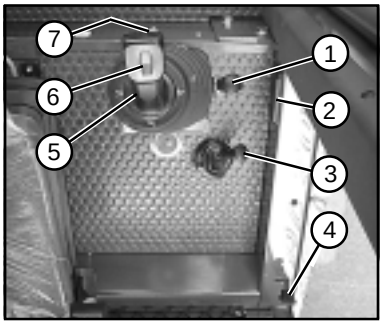


Figure 4-12

To the right of the operator's seat:

1 - Pilot valve for auxiliary hydraulics
2 - Ash tray
3 - Hand lever for parking brake
4 - Door release
5 - Pilot valve for working hydraulics
6 - Drive switch: forward/0/reverse
7 - Hydraulic driving steps:
- right - speed I: slow
- left - speed II: fast

4.5 Instrument panel

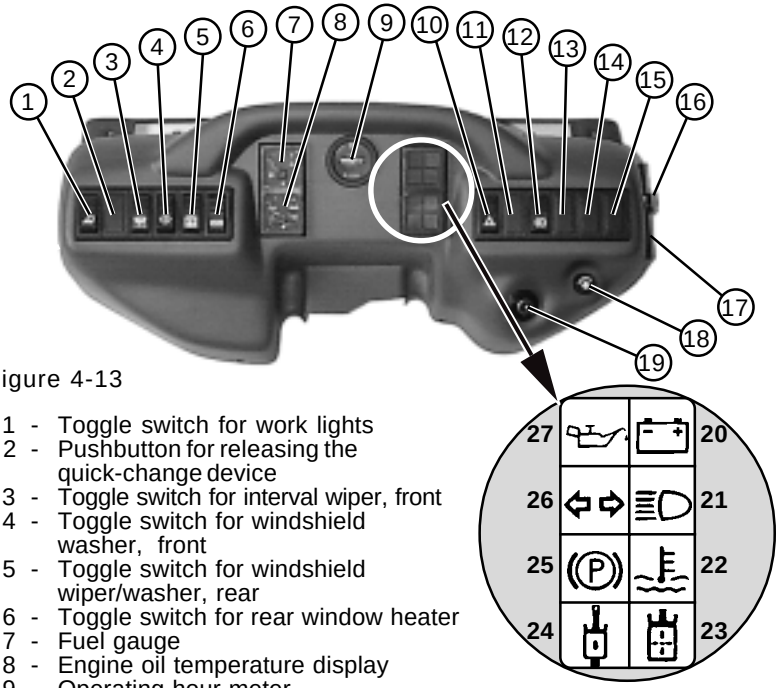


Figure 4-13

1 - Toggle switch for work lights
2 - Pushbutton for releasing the quick-change device
3 - Toggle switch for interval wiper, front
4 - Toggle switch for windshield washer, front
5 - Toggle switch for windshield wiper/washer, rear
6 - Toggle switch for rear window heater
7 - Fuel gauge
8 - Engine oil temperature display
9 - Operating hour meter
10 - Toggle switch for hazard flasher system
11 - Toggle switch for beacon light (option)
12 - Toggle switch for driving lights
13 - Transmission switch (only for fast loaders - 30 km/h)
UP: transmission step II; DOWN: transmission step I
14 - Toggle switch with unlocking device for floating position (option)
» only for AL 70e «
15 - Toggle switch for lifting device suspension (option)
16 - Socket
17 - Fuse box
18 - Rotary switch for ventilation/fan
19 - Starter switch
20 - Control lamp for battery charging
21 - Control lamp for high beam
22 - Indicator lamp for cooling water temperature
23 - Hydraulic oil filter clogging indicator
24 - Control lamp for hydraulic oil temperature
25 - Control lamp for parking brake
26 - Control lamp for directional indicator
27 - Control lamp for engine oil pressure

Operation

5 Operation

5.1 Checks before start-up

- Engine oil level (see the ope-rating instructions for the engine)
- Brake fluid level
- Hydraulic oil level
- Fuel level
- Tire pressure
- Profile depth
- Lighting system
- Seat position
- Ball block valve for the working and auxiliary hydraulics (1-3/ arrow); open if necessary »only if work is to be commenced«
- Bucket arm support (1-2/arrow); remove if necessary
- Articulation safeguard (1-4/ arrow); remove if necessary
- General state of the loader, e.g. check for leaks

5.2 Starting up

5.2.1 Starting the diesel engine

(1) Pull the lever for the parking brake (4-12/3).
(2) Set the drive switch (4-12/6) to position "0" (starter interlock!).
(3) Insert the battery main switch (4-11/3).
(4) Insert the ignition key into the starter switch (4-13/19) and turn the key clockwise to position "I" (5-1).

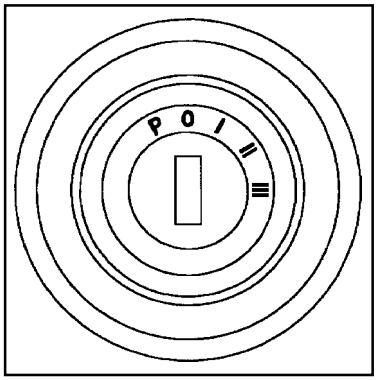


Figure 5-1

NOTE

- The control lamp for battery charging, the parking brake indicator lamp and the engine oil pressure lamp light up. The fuel gauge, the engine oil temperature gauge and the operating hour meter function.
- Start the engine in position "0" of the drive switch (4-12/6).

(5) Turn the ignition key clockwise to position "III" (5-1). As soon as the engine starts, release the ignition key.

NOTE

- If the engine has not started after two attempts, determine the cause using the malfunction table in the operating instructions for the engine (section 7.1).
- For operation at extremely low temperatures, see the operating instructions for the engine.
- The clogging indicator for the hydraulic oil filter (4-13/23) may light up prematurely after a cold start. It will go out when the hydraulic oil warms up. Operate the loader at a **low** speed until the indicator lamp goes out. Never subject the loader to full loads in this state.

5.2.2 Winter operation

CAUTION

If the outside temperature is below 0 °C, the machine must be properly "warmed up" to avoid damage to certain assemblies. To do so, actuate all cylinders (lifting and tipping cylinders) for some time (depending on the ambient temperature) with the machine idling.

Proper operation of the machine can only be guaranteed even for subzero temperatures if the following measures have been taken:

5.2.2.1 Fuel

At low temperatures, paraffin precipitating from the fuel can cause the fuel system to clog up.
For this reason, always use winter diesel fuel (suitable for temperatures down to -15 °C) when the outside temperature is below 0 °C.

NOTE

The fuelling stations normally start offering winter diesel fuel in good time before the cold season starts. Often, they offer diesel fuel that can be used down to temperatures of -20 °C (super-grade diesel fuel).
If the temperature is below -15 °C or -20 °C, paraffin oil must be added to the diesel fuel. For the mixture ratio, refer to the diagram (5-2).

I = Summer diesel fuel
II = Winter diesel fuel
III = Super-grade diesel fuel

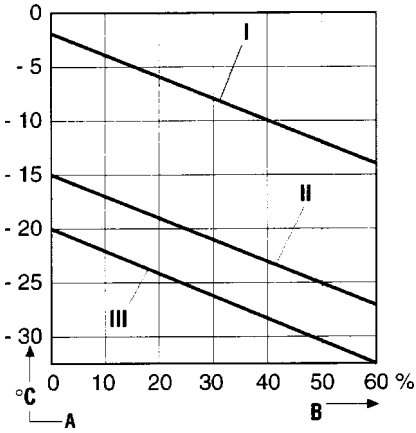


Figure 5-2

CAUTION

Only mix the ingredients in the tank! First, fill in the required amount of paraffin oil, then top up with diesel fuel.

5.2.2.2 Changing the engine oil

See the operating instructions for the engine and the operating instructions for the machine (section 8.2.2).

5.2.2.3 Changing the oil in the hydraulic system

CAUTION

The viscosity of the hydraulic oil changes according to the temperature; therefore, the ambient temperature in the place where the machine will be used determines what viscosity class (SAE class) must be chosen. If the hydraulic oil used matches the expected ambient temperature, optimum operating conditions can be attained. Therefore, use hydraulic oil of an appropriate grade if required.
See section 8.2.12 for the oil change procedure required for the hydraulic system.

5.2.2.4 Anti-freezing agent for the windshield washer system

CAUTION

If the temperature is expected to drop below 0 °C, add a sufficient amount of anti-freezing agent to the water in the windshield washer system (4-11/5) to prevent it from icing up.
Heed the instructions provided by the manufacturer for the mixture ratio.

5.2.3 Driving the loader on public roads

CAUTION

- Driving on public roads is **only** permitted with an **empty** standard, multi-purpose or light-weight material bucket and **only** with bucket protection.
- A warning triangle and a first-aid kit must be provided in the loader.
- The drive stages of the distribution gear may only be selected when the loader is at a standstill (4-13/13) and only if the travel direction switch (4-12/6) is set to "0" » only for fast loaders - 30 km/h «.

NOTE

- The driver of the loader must possess a valid driver's license.
- The driver must carry his driving license (original) and the operating permit (original) with him.

Before driving on public roads, the following safety measures must be taken:

(1) Lower the bucket arm until the lowest point of the bucket arm or the bucket is at least 30 cm above the road (5-3).

(2) Close the ball block valve for the working and auxiliary hydraulics (1-3/arrow).

CAUTION

When closed (rear position), the ball block valve is perpendicular to the flow direction. This prevents the bucket arm from being lowered and the bucket from tipping while driving.

(3) Cover the bucket cutting edge and teeth with the bucket protector (5-3/arrow).

(4) Insert the plug of the bucket protector into the socket (5-4/arrow).

(5) Check that the lighting system functions correctly.

(6) Close both doors.

DANGER

- Driving on public roads with the bucket filled is forbidden.
- The working searchlights must be switched off (4-13/1).

(7) Release the parking brake (4-12/3).

(8) Preselect hydraulic drive stage II (4-12/7).

(9) Set the gear shift to "II" (4-13/13) » only for fast loaders - 30 km/h «.
(10) Preselect the travel direction (4-12/6).

Figure 5-3

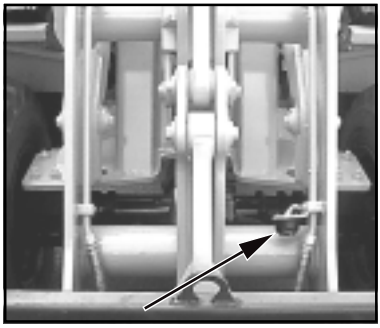


Figure 5-4

(11) Press the accelerator pedal (4-10/3).

NOTE

- The loader starts. The travel speed is determined by the position of the accelerator pedal.
- The service brake is activated by depressing the brake pedal (4-10/2).

DANGER

Changing the travel direction during driving is **not** allowed to avoid any danger to other road users.

5.2.4 Working with the loader

Normally, all work is executed in hydraulic drive stage II (4-12/7) and a gear stage that matches the working conditions (4-13/13) » only for fast loaders - 30 km/h «.

CAUTION

The drive stages of the distribution gear may only be selected when the loader is at a standstill (4-13/13) and only if the travel direction switch (4-12/6) is set to "0" » only for fast loaders - 30 km/h «.

For special tasks which ask for a more sensitive control of the speed or a higher engine speed at reduced travel speed, hydraulic drive stage "I" (4-12/7) can be selected. The travel speed can thus be reduced to 6 km/h (AL 70e) or 7 km/h (AL 85t, AL 100t and AL 100ti).

To attain full performance, the combined action of propulsion and of the working hydraulics is necessary. It is up to the operator to control the available power using the accelerator, the inching function and the hand lever for the working hydraulics.

NOTE

The hydraulic drive stage can be switched from I to II or vice versa while driving. However, switching from drive stage II to I is not recommended when driving at high speeds since the loader is then braked very abruptly.

(1) Close both doors.
(2) Release the parking brake (4-12/3).
(3) Preselect the gear stage (4-13/13) » only for fast loaders - 30 km/h «.
(4) Preselect the hydraulic drive stage (4-12/7).
(5) Select the desired travel direction (4-12/6).
(6) Press the accelerator pedal (4-10/3).

NOTE

- The travel speed and the thrust force are altered exclusively by depressing the accelerator pedal.
- When driving up gradients, the travel speed decreases in spite of full throttle in favour of the thrust force.
- The thrust forces and travel speeds are the same in forward and reverse direction.

Figure 5-5

CAUTION

- The hydraulic quick-change device must only be **locked** if an attachment has been mounted.
- If the control lamp for the hydraulic oil temperature (4-13/24) lights up during operation, the loader must be switched off immediately, the cause must be determined by a hydraulics expert and the malfunction must be eliminated.

5.2.5 Heating and ventilation system

Figure 5-6

5.2.5.1 Adjusting the amount of air

(1) Turn the rotary switch (5-5/ arrow) for the blower to position 0, 1 or 2, depending on the amount of air desired.

(2) Adjust the direction of the air flow by means of the lateral nozzles (5-6/arrow).

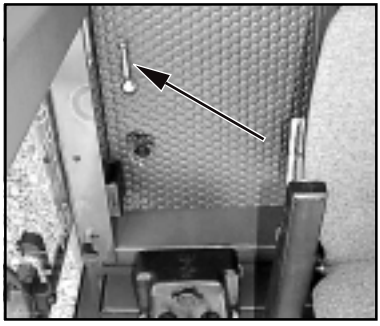


Figure 5-7

5.2.5.2 Switching on the heater

(1) Depending on the heat required, turn the ball valve lever (5-7/arrow) to the front or to the side.

NOTE

Lever to the front - warm.
Lever to the side - cold.

(2) Adjust the amount of air as described under 5.2.5.1.

5.3 Stopping loader operation

5.3.1 Parking the loader

(1) Stop the loader on solid ground; if possible, not on a slope.

(2) Place the bucket or the front-mounted attachment on the ground.

(3) Set the drive switch (4-12/6) to "0".

(4) Apply the parking brake (4-12/3).

DANGER

If parking on a gradient cannot be avoided, wheel chocks must be used and placed on the sloping side of the front axle wheels in addition to applying the parking brake, and the articulation safeguard must be inserted. On slopes, the wheel chocks must be placed on the sloping side of the rear axle wheels.

5.3.2 Switching off the diesel engine

CAUTION

If the diesel engine is very hot or has been subjected to heavy loads, let the engine idle for a short time before switching it off.

Turn the ignition key to the left to position "0" (5-1) and remove the key.

NOTE

In position "P", the parking light and the dashboard illumination remain switched on.

5.3.3 Switching off the heating and ventilation system

(1) Shut off the warm air supply (5-7/arrow).
(2) Turn the rotary switch (5-5/ arrow) for the blower to position "0".

5.3.4 Leaving the loader

(1) Close the ball block valve for the work and auxiliary hydraulics (1-3/arrow).
(2) Remove the ignition key and lock the doors.
(3) Remove the battery main switch (4-11/3).

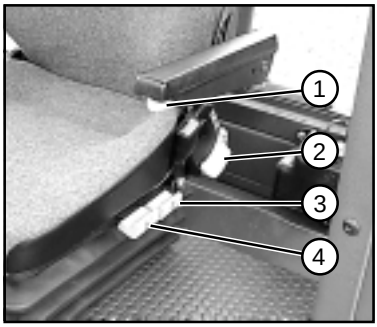


Figure 5-8

5.4 Adjusting the operator's seat

(1) Adjust or swing forward the back support using the hand lever (5-8/2).

(2) Adjust the rear seat height and inclination by pulling the hand lever (5-8/3) upwards.

(3) Adjust the front seat height and inclination by pulling the hand lever (5-8/4) upwards.

(4) Adjust the height of the arm rest by turning the knob (5-8/1).

(5) The seat suspension can be adjusted to the driver's weight (40 ... 130 kg) using the hand wheel (5-9/1).

(6) The operator's seat can be adjusted in the horizontal direction to suit the driver's requirements by pulling the handle (5-9/2) upwards and moving the seat forward or backward.

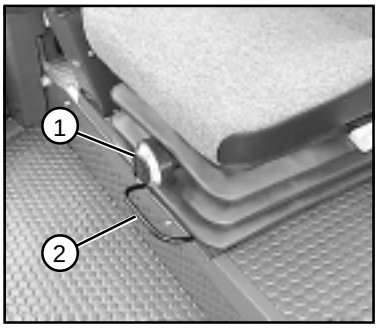


Figure 5-9

Attachments

6 Attachments

6.1 Mounting and dismounting attachments without hydraulic connections

6.1.1 Standard/lightweight bucket

Mounting

(1) Bring the bucket to its lowest position and tip the quick-change device.

(2) Drive the loader up to the bucket (6-1).

(3) Pick up the bucket using the quick-change device and, by simultaneously tilting the quick-change device, raise the bucket until the quick-change device is next to it (6-2).

(4) Lock the bucket by using the hand lever for the auxiliary hydraulics (4-12/1).

(5) Check the suspension and the lock on both sides.

DANGER

The two bolts of the quick-change device must be in the bore holes of the bucket suspension and must be clearly visible (6-3/arrow).

Figure 6-1

Figure 6-2

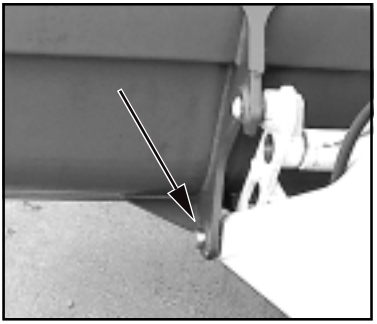


Figure 6-3

Figure 6-4

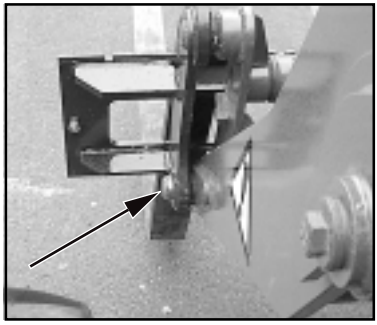


Figure 6-5

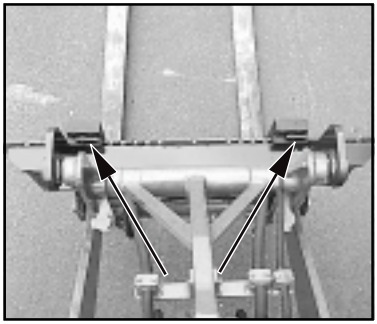


Figure 6-6

Dismounting

(1) Place the bucket firmly on the ground.

(2) Press the release button for the quick-change device (4-13/2) and, while keeping the button depressed, unlock the bucket by using the hand lever for the auxiliary hydraulics (4-12/1).

(3) Tilt the quick-change device and reverse out.

CAUTION

The hydraulic quick-change device must only be **locked** when an attachment has been mounted.

NOTE

The type plate is on the rear of the bucket, on the right-hand side below the cross arm.

6.1.2 Fork-lift attachment

NOTE

- Figure 6-4 shows the loader with the fork-lift attachment in the topmost bucket arm position.
- Mounting and dismounting are carried out in the same way as for the standard/lightweight bucket (section 6.1.1).

DANGER

- The two bolts of the quick-change device must be in the bore holes of the fork-lift attachment suspension and must be clearly visible (6-5/arrow).
- Distribute the load equally on both fork tines and secure it against moving and falling off.
- Let the load rest against the rear of the fork and tilt the fork-lift attachment.
- Position both fork tines at an equal distance from the centre (6-6/ arrows) and lock them.

- Moving loads on the forks is only permitted close to the ground!

CAUTION

The hydraulic quick-change device must only be **locked** when an attachment has been mounted.

NOTE

- The fork tines are locked correctly when the two tiltable locking levers fully rest on the fork carrier.
- The type plate is on the rear of the upper fork carrier, on the right-hand side.

6.1.3 Lifting hook

NOTE

- Figure 6-7 shows the loader with the lifting hook.
- Mounting and dismounting are carried out in the same way as for the standard/lightweight bucket (section 6.1.1).

Figure 6-7

DANGER

- The two bolts of the quick-change device must be in the bore holes of the lifting hook suspension and must be clearly visible (6-8/arrow).
- Check the safety flap of the crane hook for proper functioning.

CAUTION

The hydraulic quick-change device must only be **locked** when an attachment has been mounted.

NOTE

The type plate is on the upper side of the crane hook support, on the right-hand side.

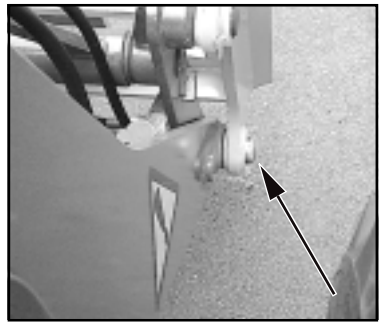


Figure 6-8

Figure 6-9

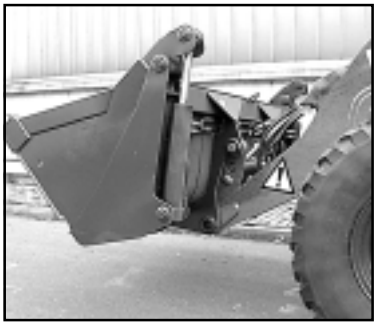


Figure 6-10

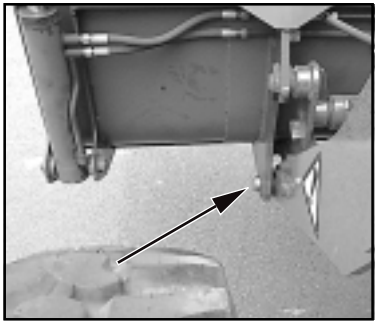


Figure 6-11

6.2 Mounting and dismounting attachments with a hydraulic connection

6.2.1 Multi-purpose bucket

Mounting

(1) Bring the bucket arm to its lowest position and tip the quick-change device.

(2) Drive the loader up to the bucket (6-9).

(3) Pick up the bucket using the quick-change device and, by simultaneously tilting the quick-change device, raise the bucket until the quick-change device is next to it (6-10).

(4) Lock the bucket by using the hand lever for the auxiliary hydraulics (4-12/1).

(5) Check the connection and the lock on both sides.

DANGER

The two bolts of the quick-change device must be in the bore holes of the bucket suspension and must be clearly visible (6-11/arrow).

(6) Stop the engine.

(7) Remove the pressure from the hydraulic lines. For this purpose, move the hand lever for the auxiliary hydraulics (4-12/1) back and forth several times.

(8) Pull off the protective caps from the hoses of the quick-change device (6-12/1).

(9) Swing up the protective flaps of the quick-change couplings on the multipurpose bucket (6-12/2) and connect them with the hoses of the quick-change device (6-12) by tightly pushing them in.

CAUTION

When making connections, make sure that the hydraulic connections are clean and completely connected.

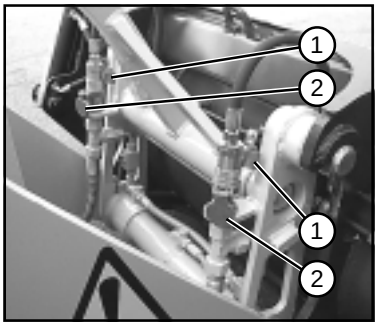


Figure 6-12

Dismounting

(1) Place the multi-purpose bucket firmly on the ground.

(2) Stop the engine.

(3) Remove the pressure from the hydraulic lines. For this purpose, move the hand lever for the auxiliary hydraulics (4-12/1) back and forth several times.

(4) Dismounting takes place in the reverse order of mounting. However, to unlock the multi-purpose bucket, the release button for the quick-change device (4-13/2) must be used.

CAUTION

The hydraulic quick-change device must only be **locked** when an attachment has been mounted.

NOTE

The type plate is on the rear of the bucket, on the right-hand side beneath the cross arm.

Figure 6-13

Notes on the application of the multi-purpose bucket

The multi-purpose bucket can be used for:

- peeling (6-13)

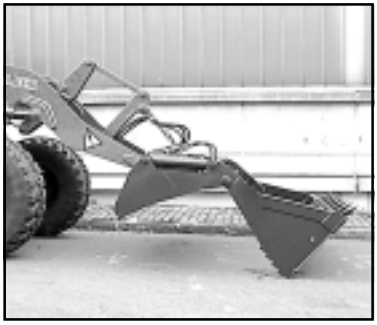


Figure 6-14

- scraping (6-14)

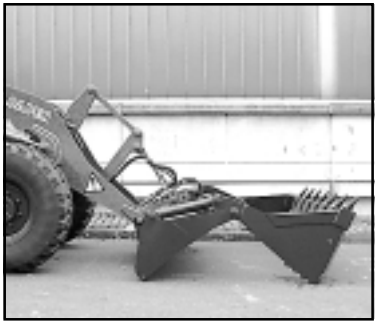


Figure 6-15

- grabbing (6-15) and

- in bucket operation.

6.3 Using other attachments

DANGER

1. Only those attachments described in the present operating instructions may be used.

2. We emphasize that attachments that are not supplied by us are also not tested and approved by us. Use of such products can under certain conditions adversely affect the present constructional qualities of your loader and thus limit the active and passive driving safety. The manufacturer cannot be held responsible for damage that occurs through the use of such products.

Rescue, towing, lashing, lifting by crane

7 Rescue, towing, lashing, lifting by crane

7.1 Rescue, towing, lashing

7.1.1 Rescue/towing of the articulated loader if the engine or drive has failed

CAUTION

The articulated loader must not be tow-started. Any attempt to tow-start leads to damage.

DANGER

Secure the rescue location if it is on a public road.

NOTE

- Towing is only permitted to clear the area of use or a street.
- Preparation for towing depends on whether the engine has failed, thus causing a failure of the entire hydraulic system, or if only the drive has failed and the engine can drive the rest of the hydraulic system.

7.1.1.1 Towing the articulated loader if the engine has failed

(1) Press the toggle switch for the hazard flasher (4-13/10).
(2) Set the drive switch (4-12/6) to position "0".
(3) Apply the parking brake (4-12/3).

CAUTION

If the rescue location is on a slope, wheel chocks must be placed on the sloping side of both front axle wheels in addition to applying the parking brake.

NOTE

The preparations described in steps (4) and (5) are only necessary if the rescue location is **not** on a public road:

(4) Cover the bucket cutting edge and teeth with the bucket protector (5-3/arrow).
(5) Insert the plug of the bucket protector into the socket (5-4/arrow).
(6) Only for AL 70e:
With the ignition turned on, unlock and actuate the toggle switch for the floating position (4-13/14).
Refer to illustration 7-7 and the pertaining text if the loader has no floating position.
(6) For AL85t / AL100t / AL100ti:
Push the valve lever for the working hydraulics (4-12/5) beyond its pressure point into the forward position.
(7) Using a suitable lifting device, e.g. a second articulated loader with an attached bucket, lift the bucket arm of the articulated loader to be towed until the bucket arm support can be inserted into the loader to be towed (7-1).

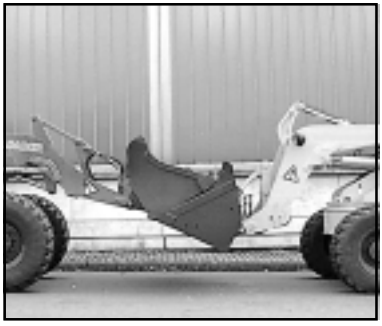


Figure 7-1

(8) Insert the bucket arm support (1-1/arrow) and lower the bucket arm onto the bucket arm support.
(9) Close the ball block valve (1-3/arrow) for the working and auxiliary hydraulics.
(10) Connect the towing rod to the loader to be towed (7-2/2) and to the towing vehicle.
Attach the towing rod to the loader chassis (7-6/1) if the loader has no shunting and towing coupling.
(11) Release the parking brake lever (4-12/3).
(12) Release the brake. To do so, remove both screw plugs (7-3/1 and 7-3/2) from the housing (size 24).

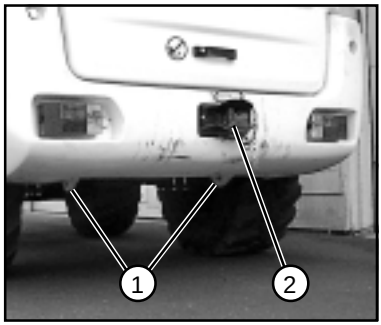


Figure 7-2

NOTE

- The tools required are contained in the tool kit.
- Screw plug 7-3/2 has already been removed.
- Collect any oil that escapes.

(13) Remove the sleeves (7-3/2 and 7-4/2) from the setscrews.
(14) Tighten the lock nuts (7-4/3) (size 19).

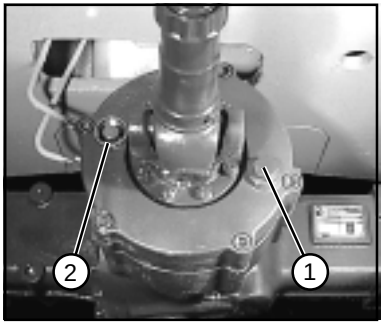


Figure 7-3

CAUTION

The lock nuts must be tightened synchronously, i.e. tightening must be carried out in steps of half a revolution that are repeated synchronously for the two nuts to prevent the piston from getting jammed.

(15) Push the sleeves (7-3/2 and 7-4/2) onto the setscrews again.
(16) Screw in the screw plugs with an O-ring into the housing.

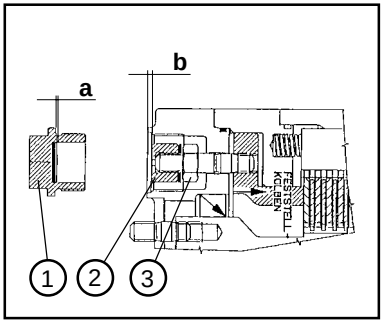


Figure 7-4

CAUTION

After towing has been completed, restore the operating state of the brake.

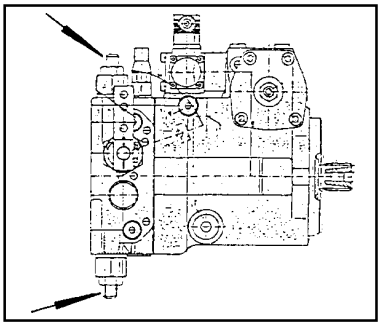


Figure 7-5

(17) Switch the hydrostatic drive motor to free oil flow before towing. For this purpose, screw in the setscrews at both high pressure relief valves (7-5/arrows) of the drive pump until they are level with the hexagon nuts (size 13) loosened beforehand. Then tighten the hexagon nuts.

NOTE

After towing has been completed, loosen the hexagon nuts again. Screw the setscrews out of both high pressure relief valves until they stop. Tighten the lock nuts.

(18) Remove the chocks (if applicable).

DANGER

- More power is required to steer if the engine has failed.
- Tow the loader at walking speed (2 km/h).
- The towing distance should not exceed 1 km.
- For a longer distance, the defective loader must be loaded onto a truck (for the lashing points, see 7-2/1, 7-2/2 and 7-6/1).
  - The max. permissible load of the shunting and towing coupling (7-2/2) is 4.5 t horizontally in the longitudinal direction.
  - The max. permissible load of the lashing points/load-bearing points (7-2/1 and 7-6/1) is 2.0 t at an assumed bracing angle of 45°.

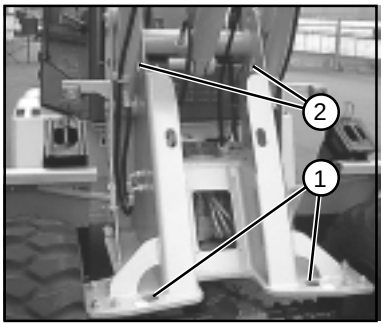


Figure 7-6

NOTE

- If the loader has been out of operation for a longer period of time or if it has no floating position, the hydraulic hoses (7-7/arrows) must be disconnected from the lifting cylinders before attaching the lifting gear. Collect the escaping hydraulic oil in a sufficiently large oil pan.
- After towing has been completed, fill the lifting cylinders with hydraulic oil and deaerate them by raising and lowering the bucket arm several times.

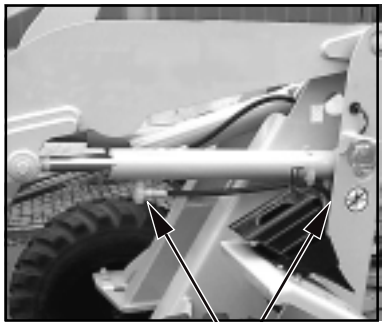


Figure 7-7

7.1.1.2 Towing the articulated loader if the drive has failed

(1) Press the toggle switch for the hazard flasher (4-13/10).
(2) Set the drive switch (4-12/6) to position "0".
(3) Apply the parking brake (4-12/3).

CAUTION

If the rescue location is on a slope, wheel chocks must be placed on the sloping side of both front axle wheels in addition to applying the parking brake.

NOTE

The preparations described in steps (4) and (5) are only to be carried out if the rescue location is **not** on a public road:

(4) Cover the bucket cutting edge and teeth with the bucket protector (5-3/arrow).

(5) Insert the plug of the bucket protector into the socket (5-4/arrow).

(6) Lift the bucket arm, insert the bucket support (1-1/arrow) and lower the bucket arm onto the bucket arm support by actuating the hand lever for the working hydraulics (4-12/5).
(7) Close the ball block valve (1-3/arrow) for the working and auxiliary hydraulics.
(8) Connect the towing rod to the loader to be towed (7-2/2) and to the towing vehicle.
Attach the towing rod to the loader chassis (7-6/1) if the loader has no shunting and towing coupling.

(9) Switch the hydrostatic drive motor to free oil flow before towing. For this purpose, screw in the set-screws at both high pressure relief valves (7-5/arrows) of the drive pump until they are level with the hexagon nuts (size 13) loosened beforehand. Then tighten the hexagon nuts.

NOTE

After towing has been completed, loosen the hexagon nuts again. Screw the setscrews out of both high pressure relief valves until they stop. Then tighten the hexagon nuts.

(10) Remove the chocks (if applicable).
(11) Release the parking brake (4-12/3).

DANGER

- With the engine running, tow the loader at walking speed (2 km/h).
- The towing distance should not exceed 1 km.
- For a longer distance, the defective loader must be loaded onto a truck (for the lashing points, see 7-2/1, 7-2/2 and 7-6/1).

- The max. permissible load of the shunting and towing coupling (7-2/2) is 4.5 t horizontally in the longitudinal direction.
- The max. permissible load of the lashing points/load-bearing points (7-2/1 and 7-6/1) is 2.0 t at an assumed bracing angle of 45°.

7.2 Lifting by crane

The loader to be lifted must be prepared as follows:

(1) Set the drive switch (4-12/6) to position "0".

(2) Set transmission stage "I" (4-13/13) (only for fast loaders - » 30 km/h «.

(3) Set hydraulic drive stage "I" (4-12/7).

(4) Apply the parking brake (4-12/3).

(5) Lift or lower the bucket arm until the lowest point of the bucket arm or of the bucket is at least 30 cm above the road (5-2).

(6) Close the ball block valve for the working and auxiliary hydraulics (1-3/arrow).

(7) Remove the bend in protection after loosing of the fixing screw, insert the bend in protection into the articulated link and fasten it (1-4/arrow).

(8) Lock the doors.

(9) Fold the outside mirror inwards.

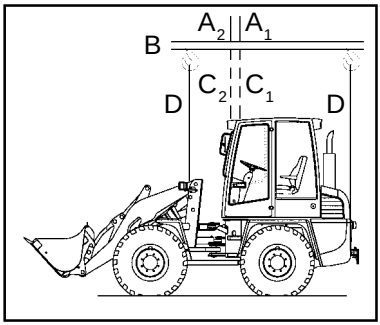


Figure 7-8

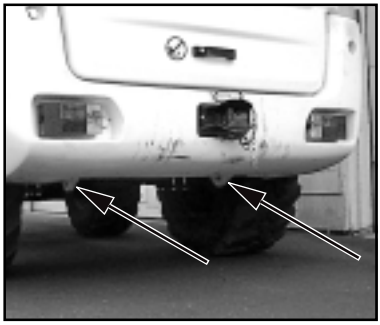


Figure 7-9

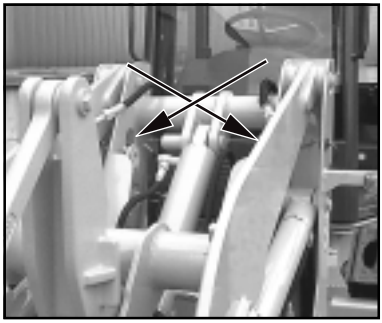


Figure 7-10

CAUTION

The following items must be observed when lifting the loader by crane (Figure 7-8):

- The lifting point (A_1 - loader without standard bucket or A_2 - loader with standard bucket) of the lifting device (B) must be precisely vertically over the centre of gravity (C_1 or C_2) of the loader so that the lifting device is **horizontally** above the longitudinal axis of the loader.

- The lifting gear (D) must lead vertically upwards from the lifting points of the loader (7-9/arrows and 7-10/arrows).

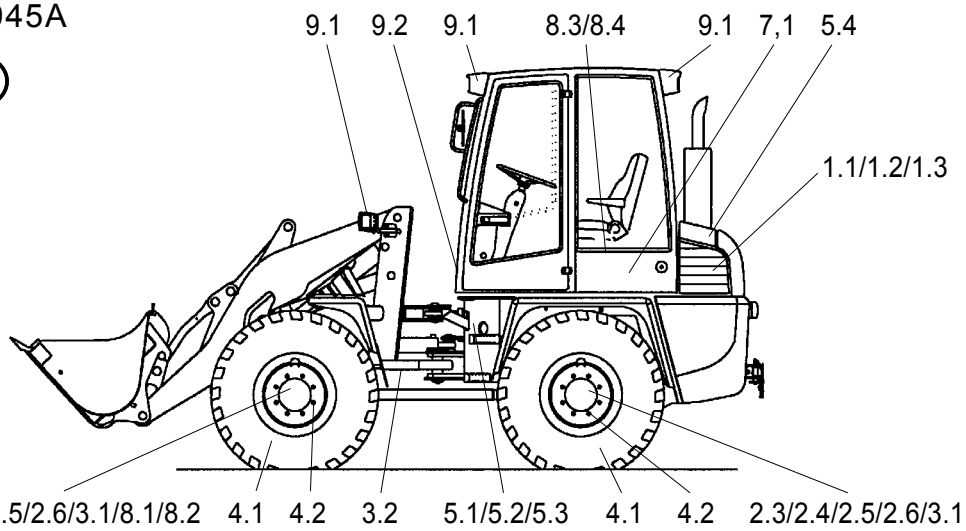
DANGER

The lifting gear must have a lifting capacity of at least 3.0 t.

Maintenance

4102945A

GB



	Item	Designation	Specification	Viscosity	Filling amount
*	1	Motor oil	MIL-L-2104 C = API-CD	acc. to manufacturer	ca. 10 l with oil lfilter
*	2.2	Transmission oil with LS additive	MIL-L-2105 D = API-GL5-6-LS	SAE 85 W 90-LS	ca. 7.7 l
*	2.4	Transmission oil with LS additive	MIL-L-2105 D = API-GL5-6-LS	SAE 85 W 90	ca. 8.0 l (20 km/h) ca. 9.5 l (30 km/h)
*	2.6	Transmission oil	MIL-L-2105 D = API-GL5-6	SAE 85 W 90	ca. 2 x 0.7 l each
*	5.2	Hydraulic oil	DIN 51524 - HVLP 46	ISO VG 46, VI > 180	ca. 100 l
	6	Grease	DIN 51825 - KPF 1/2 N-20		as required
	7	Distilled water			as required
*	8	Mineral oil	DIN 51524 - HVLP 46	ISO VG 46, VI > 180	as required

Key to symbols

△ First oil change, first filter replacement or first check

○ Check; eliminate any determined problems

◇ Change

* The markings, filling and check plugs are binding

Refer to operating instructions

STOP **Caution**
When carrying out maintenance work, heed the accident prevention regulations!

Lubrication points (indicated in red)
Lubricate glide points as required and always after cleaning using grease DIN 51825 - KPF 1/2 N-20.

Oil lubrication points →

Optional equipment: biodegradable hydraulic oil
Ester-based synthetic hydraulic oil, viscosity class ISO VG 46 VI > 180 →

⚠ **CAUTION** Use only mineral oil for the service/parking brake

Every x operating hours — max. permissible intervals or shorter (depending on use)

10	50	500	1500	Item	Maintenance points
				1	**Engine**
○	△			1.1	Maintenance according to manufacturer's regulations
				1.2	Dry air filter system
	○				Activate dust removal valve
	○				Check maintenance display
				1.3	Replace filter element if maintenance display is red →
				2	**Axles / power shift gear**
	○			2.1	Check oil level in front axle →
		△	◇	2.2	Change oil in front axle →
	○			2.3	Check oil level in rear axle with power shift gear →
		△	◇	2.4	Change oil in rear axle with power shift gear →
	○			2.5	Check oil level in planetary gear →
		△	◇	2.6	Change oil in planetary gear →
				3	**Axles / cardan shaft / articulated pendulum joint**
	△	○		3.1	Check fastening of axles (385 Nm)
	△	○		3.2	Check fastening of cardan shaft (49 Nm)
				4	**Wheels and tyres**
	○			4.1	Check air pressure
△		○		4.2	Check fastening of wheel nuts (440 Nm)
				5	**Hydraulic system**
○				5.1	Oil level check (view glass)
			◇	5.2	Oil change →
	△		◇	5.3	Replace filter inserts, observe electr. control lamp →
	○			5.4	Check and clean hydraulic oil cooler
				6	**Lubrication points (indicated in red)** →
				7	**Battery**
		○		7.1	Visual check
				8	**Brake system**
				8.1	Service and parking brake: Take function and visual check before starting work
		○		8.2	Service brake: check brake lining, adjust if necessary →
○				8.3	Service brake: visually check compensation tank
		○		8.4	Parking brake: check brake lining, adjust if necessary →
				9	**Lighting system / fresh air filter**
				9.1	Take function test before starting work
		○		9.2	Check fresh air filter →

8 Maintenance

8.1 Notes regarding maintenance

DANGER

- The engine must be turned off.
- For work to be carried out under the bucket arm:
  - the bucket must be emptied or the attachment must be relieved,
  - the bucket arm support (1-2/ arrow) must be inserted,
  - the ball block valve for the working and auxiliary hydraulics (1-3/arrow) must be closed.
- For work to be carried out in the area of the articulation joint, the articulation safeguard must be inserted (1-4/arrow).
- The loader must be secured against rolling by applying the parking brake (4-12/3) and by setting the drive direction switch (4-12/6) to position "0". In addition, wheel chocks must be placed on both sides of one of the two wheels of the front axle.

CAUTION

- Change the oil when the units are luke warm.
- Check the oil level when the loader is on level ground and when the bucket arm is in its lowest position.
- Immediately replace damaged filter inserts and gaskets.
- Clean pressure lubrication fittings before lubricating.

NOTE

- For the maintenance work required, refer to the maintenance plan (page 8-1).
- Damage caused by failure to observe the maintenance plan is not covered by the guarantee.
- The lubricants listed in the maintenance plan can be used at ambient temperatures ranging from **-15°C** to **+40°C**.

CAUTION

For ambient temperatures below -15 °C, refer to the description given in section 5.2.2, “Winter operation”.

8.2 Maintenance work

8.2.1 Checking the engine oil level

See the operating instructions for the engine.

NOTE

The engine can be accessed via the engine hood.

8.2.2 Changing the engine oil

See the operating instructions for the engine.

NOTE

The engine can be accessed via the engine hood.

8.2.3 Replacing the fuel prefilter

NOTE

Maintenance (visual inspection) of the fuel prefilter must be carried out every **500 operating hours**. The fuel prefilter must be replaced when soiled, but at least once a year.

(1) Open the engine hood.

(2) Loosen the two clamps in front of and behind the prefilter (8-1/2).

(3) Bend the fuel line (8-1/1) on one side of the prefilter to prevent the fuel from escaping, pull the line off the old prefilter and immediately push it onto the new prefilter. Then pull off the fuel line (8-1/3) on the other side of the prefilter and push it onto the new prefilter.

NOTE

- Collect any fuel that escapes.
- When installing the new prefilter, heed the flow direction.

(4) Fasten both clamps.

(5) Check for leaks.

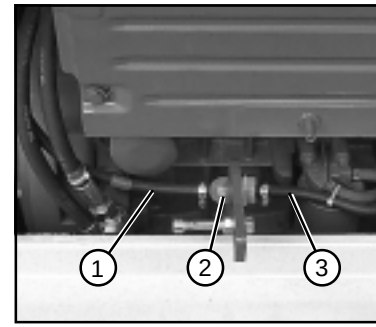


Figure 8-1

8.2.4 Maintaining/ replacing the air filter

NOTE

Maintenance of the filter cartridge is necessary when the red range is visible in the maintenance indicator (8-2/1) or after 12 months have elapsed, whichever is sooner.

(1) Open the engine cover.

(2) Loosen the three retaining clamps of the air filter lid (8-2/2) and remove the air filter lid.

(3) Pull out the filter cartridge (8-3/ arrow) by carefully turning it back and forth.

(4) Clean the filter cartridge.

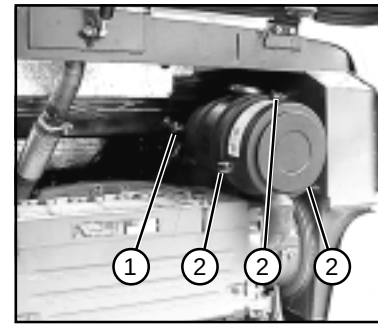


Figure 8-2

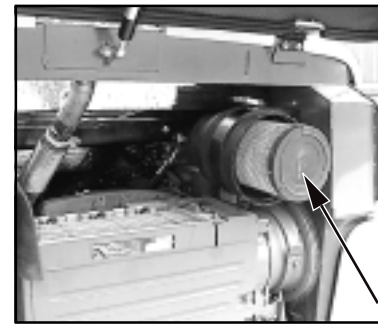


Figure 8-3

CAUTION

- For cleaning, use a compressed air gun to which a pipe (angled at 90°) has been attached. The pipe must be sufficiently long to reach the bottom of the cartridge. Use dry compressed air of no more than 5 bar to blow out the cartridge by moving the pipe back and forth in the interior of the cartridge. Cleaning can be stopped when dust formation ceases.
- Do not use petrol or hot liquids for cleaning.

(5) Use a hand-held lamp to check the cartridge paper and the rubber gasket of the filter cartridge for damage. If the cartridge or the gasket is damaged, replace the cartridge.

(6) Carefully insert the filter cartridge.

(7) Install the air filter lid on the filter housing in such a way that the direction arrow in the marking "**OBEN-TOP**" points upwards. This ensures that the dust removal valve faces downwards.

NOTE

The dust removal valve must be checked from time to time and cleaned if necessary.

(8) When the indicator field of the maintenance indicator (8-2/1) turns red, press the reset button. The field becomes clear.

CAUTION

Check all connection pipes and hoses of the air filter system for damage before starting the engine.

8.2.5 Replacing the safety cartridge

CAUTION

- The safety cartridge must not be cleaned.
- The safety cartridge must be replaced after the filter cartridge has been maintained/cleaned 5 times, but at the latest after two years.
- Make sure that no dirt or dust can enter the filter housing when replacing the safety cartridge.

(1) Remove the filter cartridge (section 8.2.4).

(2) Pull out the safety cartridge (8-4/arrow) by carefully turning it back and forth and replace the safety cartridge and the filter cartridge with new cartridges.

(3) The remaining steps of assembly are carried out as described in section 8.2.4 (6)...(8).

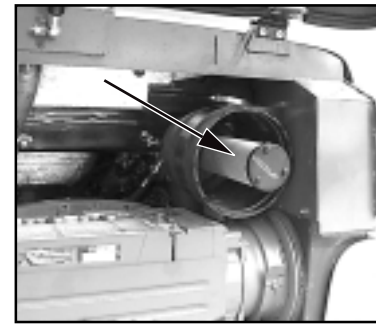


Figure 8-4

8.2.6 Checking the oil level in the front axle

(1) Unscrew the plug from the axle arch (8-5/arrow).

NOTE

- The oil level must reach the plug bore.
- Collect any oil that escapes.

(2) Screw in the plug again.

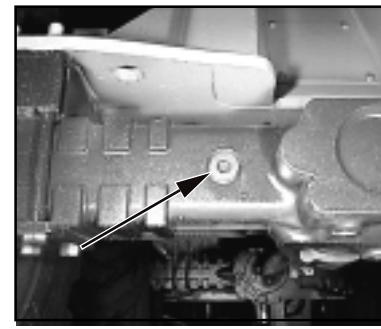


Figure 8-5

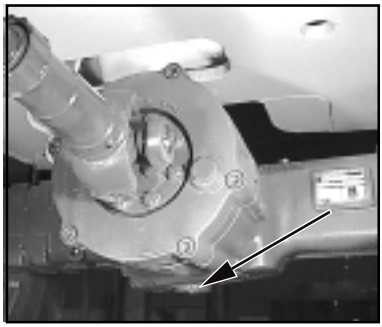


Figure 8-6

8.2.7 Changing the oil in the front axle

(1) Place a sufficiently large oil drain pan underneath the axle.

(2) Unscrew the plugs from the axle arch (8-6/arrow and 8-7/arrow) and drain the oil.

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

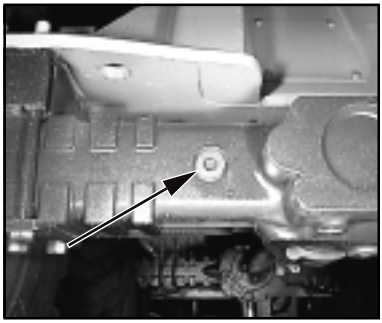


Figure 8-7

(3) Screw in the plug (8-6/arrow) again.

(4) Fill in oil via the plug bore (8-7/arrow) until the oil level reaches the opening.

NOTE

- The vent valve of the axle (8-8/arrow) must be free from dirt.
- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.

(5) Screw in the plug (8-7/arrow) again.

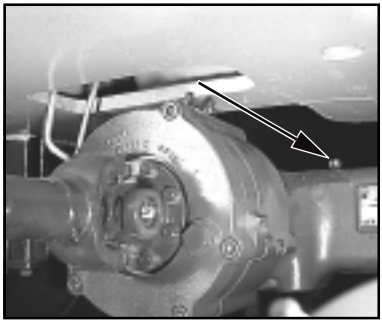


Figure 8-8

8.2.8 Checking the oil level in the rear axle

8.2.8.1 Slow loader » 20 km/h «

(1) Unscrew the plug from the axle arch (8-9/arrow).

NOTE

- The oil level must reach the plug bore.
- Collect any oil that escapes.

(2) Screw in the plug again.
(3) Unscrew the plug from the intermediate gear (8-10/arrow).

NOTE

- The oil level must reach the plug bore.
- Collect any oil that escapes.

(4) Screw in the plug again.

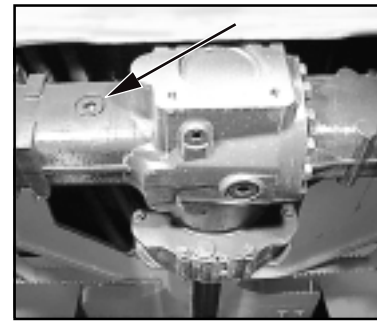


Figure 8-9

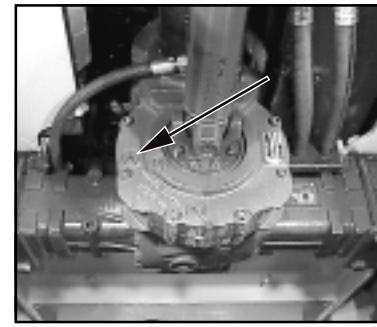


Figure 8-10

8.2.8.2 Fast loader » 30 km/h «

(1) Unscrew the plug from the axle arch (8-11/arrow).

NOTE

- The oil level must reach the plug bore.
- Remove any oil that escapes.

(2) Screw in the plug again.

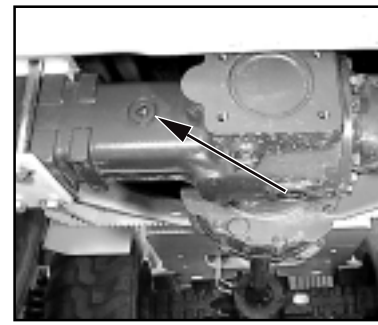


Figure 8-11

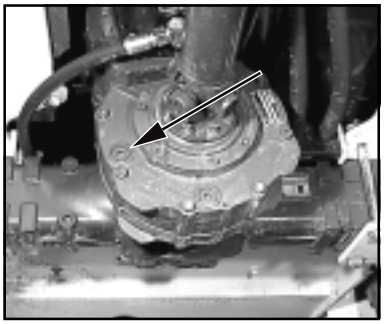


Figure 8-12

(3) Unscrew the plug from the distribution gear (8-12/arrow).

NOTE

- The oil level must reach the plug bore.
- Collect any oil that escapes.

(4) Screw in the plug again.

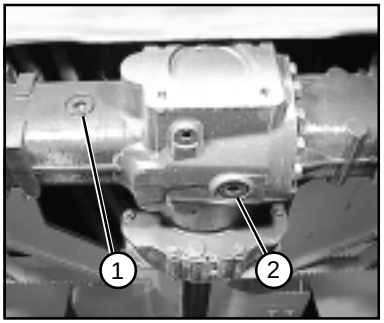


Figure 8-13

8.2.9 Changing the oil in the rear axle

8.2.9.1 Slow loader » 20 km/h «

(1) Place a sufficiently large oil drain pan underneath the axle.

(2) Unscrew the plugs from the axle arch (8-13/1 and 8-13/2) and the intermediate gear (8-14/1 and 8-14/2) and let the oil drain out.

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

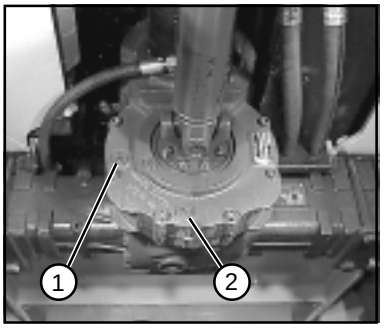


Figure 8-14

(3) Screw in the plugs for the axle arch (8-13/2) and the intermediate gear (8-14/2) again.

(4) Fill oil into the plug bore of the intermediate gear (8-14/1) until the oil level reaches the opening.

NOTE

- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.

(5) Screw in the plug of the intermediate gear (8-14/1) again.
(6) Fill oil into the plug bore of the axle arch (8-13/1) until the oil level reaches the opening.

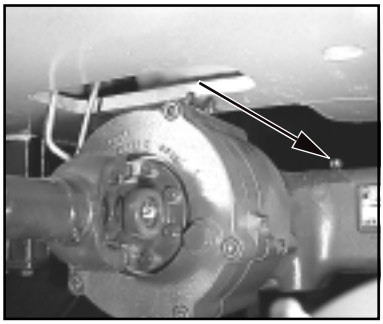


Figure 8-15

NOTE

- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.
- The vent valve of the axle (8-15/ arrow) must be free from dirt.

(7) Screw in the plug of the axle arch (8-13/1) again.

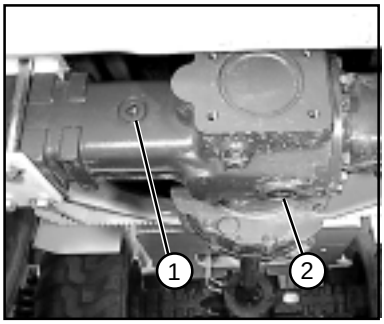


Figure 8-16

8.2.9.2 Rear axle of the fast loader » 30 km/h «

(1) Place a sufficiently large oil drain pan underneath the axle.
(2) Unscrew the plugs from the axle arch (8-16/1 and 8-16/2) and the distribution gear (8-17/1 and 8-17/2) and drain the oil.

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

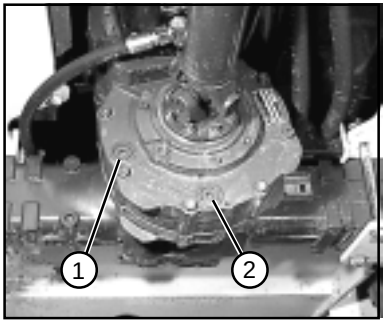


Figure 8-17

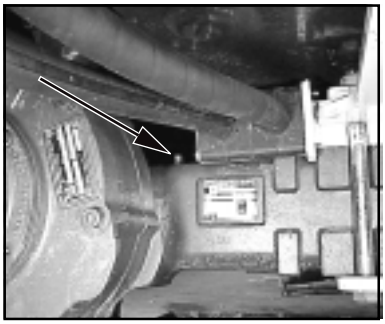


Figure 8-18

(3) Screw in the plugs for the axle arch (8-16/2) and the distribution gear (8-17/2) again.

(4) Fill in oil via the plug bore in the distribution gear (8-17/1) until the oil level reaches the opening.

NOTE

- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.

(5) Screw in the plug for the distribution gear (8-17/1) again.

(6) Fill in oil via the plug bore in the axle arch (8-16/1) until the oil level reaches the opening.

NOTE

- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.
- The vent valve of the axle (8-18/ arrow) must be free from dirt.

(7) Screw in the plug for the axle arch (8-16/1) again.

8.2.10 Checking the oil level in the planetary gear

(1) Move the loader until the marking line "OIL LEVEL/OEL-STAND" is horizontal and the plug is located to the left above this marking line (8-19/arrow).
(2) Unscrew the plug.

NOTE

- The oil level must reach the plug bore.
- Collect any oil that escapes.

(3) Screw in the plug with a new gasket.

Figure 8-19

8.2.11 Changing the oil in the planetary gear

(1) Move the loader so that the plug (8-20/arrow) is positioned at 6 o'clock.
(2) Place an oil drain vessel with a drain channel underneath the gear.
(3) Unscrew the drain plug and let the oil drain out.

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

(4) Move the loader until the marking line "OIL LEVEL/OEL-STAND" is horizontal and the plug is located to the left above this marking line (8-19/arrow).
(5) Fill in oil via the plug bore until the oil level reaches the opening.
(6) Screw in the plug with a new gasket.

Figure 8-20

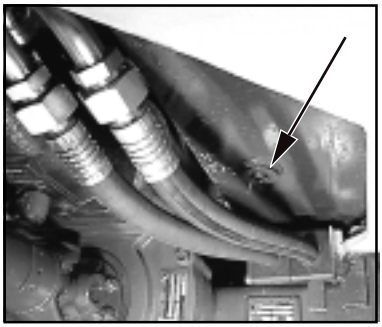


Figure 8-21

8.2.12 Changing the oil in the hydraulic system

(1) Place an oil drain pan (min. capacity: 110 l) underneath the drain point.
(2) Unscrew the oil drain plug (8-21/arrow) (size 8).
(3) Drain the oil into the drain pan.

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

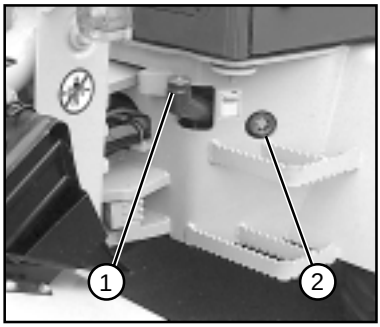


Figure 8-22

(4) Screw in the oil drain plug again.
(5) Replace the hydraulic oil filter insert (section 8.2.13).
(6) Fill in oil into the filler neck (8-22/1).

CAUTION

For those loaders which are fitted to run with biodegradable hydraulic oil (ester-based synthetic hydraulic oil of viscosity class ISO VG 46 VI > 180) - (designation can be found on the hydraulic oil reservoir and on the dashboard), only this type of oil may be used for oil changes.
Mineral and biodegradable hydraulic oils must **never** be mixed!
Biodegradable hydraulic oil must be changed every **1000 operating hours**.
To switch from hydraulic oil based on mineral oil to biodegradable hydraulic oil, conversion guidelines VDMA 24 569 must be observed!

CAUTION

Use only mineral oil for the service/ parking brake

(7) Check the oil level at the sight glass (8-22/2).
(8) Close the filling nozzle.

8.2.13 Replacing the hydraulic oil filter insert

CAUTION

Replace the filter insert according to the maintenance plan or when the clogging indicator lamp (4-13/23) lights up.

NOTE

The clogging indicator lamp may briefly light up after a cold start but will go out when the hydraulic oil has reached its operating temperature.

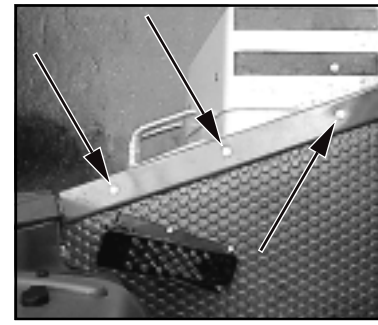


Figure 8-23

(1) Loosen the gussets first on the right-hand side (8-23/arrows) and then on the left-hand side of the loader.

(2) Remove the gussets and the bottom cover.

(3) Loosen the fastening screws (8-24/arrows) (size 13) and remove the maintenance plate.

(4) Remove the lid of the hydraulic oil filter (8-25/arrow) and replace the filter insert with a new one.

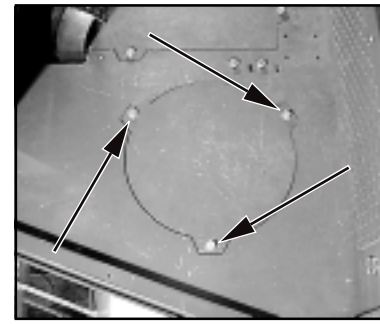


Figure 8-24

CAUTION

The replaced hydraulic oil filter insert must be disposed of in such a way that it does not cause pollution.

(5) Lock the lid of the hydraulic oil filter.

(6) Install the maintenance plate and the bottom cover.

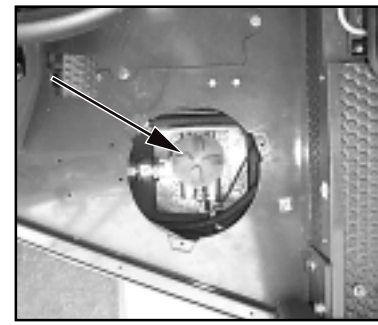


Figure 8-25

Figure 8-26

8.2.14 Lubrication points

NOTE

The lubrication points are marked in red on the loader.

8.2.14.1 Door of the driver's cabin

CAUTION

The hinges of the doors of the driver's cabin (8-26/arrows) must be lubricated **every 50 operating hours.**

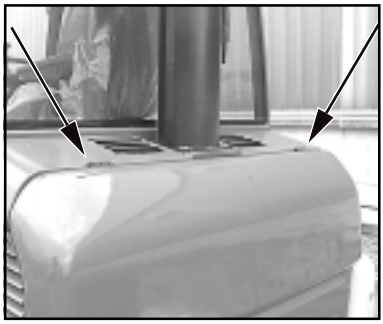


Figure 8-27

NOTE

Lubricate the hinges on both doors of the driver's cabin.

8.2.14.2 Engine hood

CAUTION

The hinges of the engine hood (8-27/arrows) must be lubricated **every 50 operating hours.**

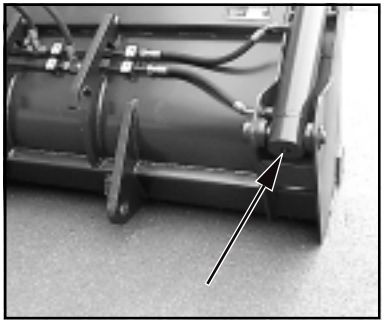


Figure 8-28

8.2.14.3 Multi-purpose bucket

CAUTION

The bearing bolts of the multi-purpose bucket (8-28/arrow) must be lubricated **every 10 operating hours.**

NOTE

The bolts must be lubricated on both sides of the multi-purpose bucket.

CAUTION

The bearing bolts of the multi-purpose bucket (8-29/arrows) must be lubricated **every 10 operating hours.**

NOTE

The bolts must be lubricated on both sides of the multi-purpose bucket.

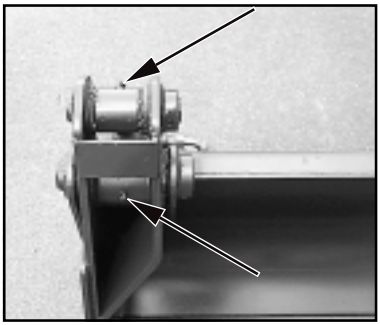


Figure 8-29

8.2.15 Replacing the starter battery

NOTE

The starter battery is a maintenance-free part according to DIN 72311, section 7. It is located beneath the maintenance plate to the left of the driver's seat.

(1) Remove the battery main switch (4-11/3).
(2) Remove the insulation mat to the left of the driver's seat.
(3) Loosen the fastening screws (8-30/arrows) (size 13) and remove the maintenance plate.
(4) Loosen and remove the fastening screw (8-31/1) (size 17) of the battery holder.
(5) Fold up the cover caps (8-31/2) and disconnect and remove the terminals from the battery (size 13).

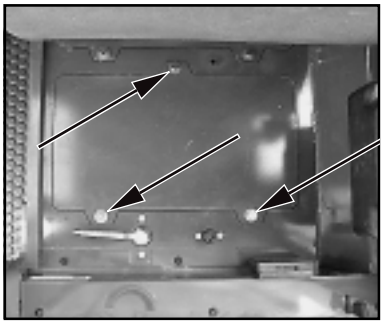


Figure 8-30

DANGER

Always remove the negative terminal first and then the positive terminal. Installation is in the reverse order.

(6) Remove the battery and replace it.
(7) Apply grease to the terminals before fastening them.
(8) Installation is in the reverse order.

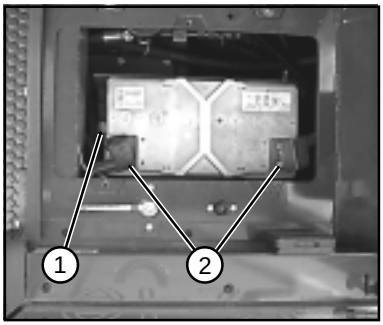


Figure 8-31

DANGER

Make sure the fastenings are secure.

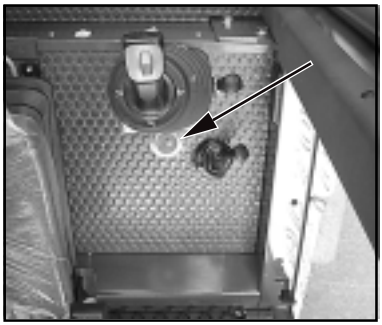


Figure 8-32

8.2.16 Checking/adjusting the service/parking brake

DANGER

- The combined service/parking brake must be checked and, if necessary, adjusted every **500 operating hours.**
- All work on the brake system must only be carried out by authorised personnel.
- Oil loss (leaks) in the brake system must be immediately reported to authorised personnel.

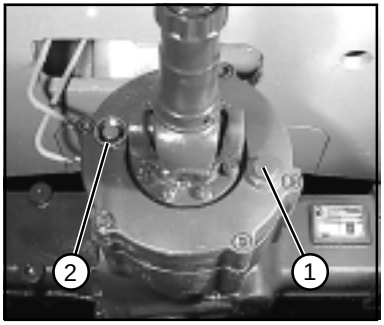


Figure 8-33

(1) Check the brake fluid level at the equalising reservoir (8-32/ arrow); if necessary, add brake fluid.
(2) Visually check the entire system for leaks.
(3) Release the hand lever for the parking brake (4-12/3).
(4) Remove both screw plugs (8-33/1 and 8-33/2) from the housing (size 24).

NOTE

- The tools required are contained in the tool kit.
- Screw plug 8-33/2 has already been removed.
- Collect any oil that escapes.

(5) Determine the play (l = b - a) (Figure 8-34). To do so, determine gap "a" (8-34/a) between the stop discs and the stud end of the screw plug and gap "b" (8-34/b) between the sleeve and the sunk face of the housing.

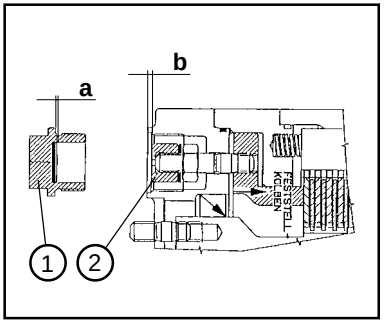


Figure 8-34

DANGER

The brake must be readjusted if the play is larger than 2 mm.

Readjustment:

(6) Pull off the sleeves (8-33/2 and 8-34/2).
(7) Remove the adjusting discs and insert them in the screw plugs (8-33/1 and 8-34/1), adding them to the stop discs.

DANGER

- The two screw plugs must be readjusted synchronously to prevent the piston from getting jammed.
- For each of the screw plugs, there is only one adjusting disc beneath the sleeve. The brake cannot be adjusted any further.

(8) Push the sleeves (8-33/2 and 8-34/2) onto the setscrews again.
(9) Screw the screw plugs into the housing.
(10) Carry out a function check.

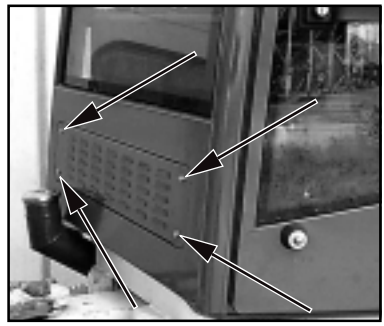


Figure 8-35

8.2.17 Maintaining/replacing the fresh air filter

(1) Lower the bucket arm and insert the articulation safeguard (1-4/arrow).
(2) Loosen the four fastening screws (8-35/arrows) of the heater cover and remove the cover.
(3) Remove the filter element (8-36/arrow) and clean it using compressed air.

CAUTION

Do not use any petrol, hot fluids or compressed air for cleaning.

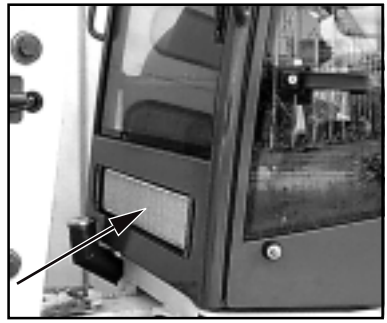


Figure 8-36

(4) Check the filter element for damage.

NOTE

The filter element must be replaced when it is damaged, but at least every **1500 operating hours.**

(5) Insert the filter element and install the heater cover.

Malfunctions, causes and remedies

9 Malfunctions, causes and remedies

NOTE

*****) Malfunctions may only be remedied by authorised personnel.

Malfunction	Possible cause	Remedy
Engine		See the operating instructions for the engine
Engine does not start	Drive switch (4-12/6) is not in the neutral position	Set the drive switch to the neutral position
Generator does not start	Plug connection is loose	Push in and secure the plug connection
	V-belt is torn	Replace the V-belt
	Generator speed is too low	Check V-belt tension; if necessary, tighten
Bucket arm cannot be raised or lowered	Pressure relief valve in the control valve is open	Completely dismantle and clean the pressure relief valve; readjust *****
	Pilot valve for the working and auxiliary hydraulics (4-12/5) is locked	Unlock the pilot valve (1-3/arrow)
	Pilot pressure is not available or is too low	Open the pressure relief valve in the control line, clean it and readjust it *****
	Diesel engine has failed	Using storage pressure, it is possible to bring the bucket arm to its lower-most position directly after the engine has failed. »Not with built-in pipe break safety device«
Steering requires increased effort	Pressure relief valve in the steering unit is open	Completely dismantle and clean the pressure relief valve; readjust *****
	Pusher in the priority valve is stuck	Replace the priority valve *****

Malfunction	Possible cause	Remedy
Defect in the drive and working hydraulics	Filter is clogged	Replace the filter insert (section 8.2.13)
	Lack of oil in the hydraulic oil reservoir	Top up the oil
	Electrical connections to the axial piston pump are loose, disconnected or oxidised	Connect according to the wiring diagram or clean
	High-pressure valves are soiled	Clean
Defects in the braking system	Parking brake does not hold the loader	Check the setting; if necessary, readjust *
		Check whether the electr. drive cut-off is connected to the brake lever
Heating/ventilation has failed	Fuse in the fuse box is defective	Replace the fuse
Hose couplings of the attachments cannot be connected	Increased pressure resulting from influence of heat on the attachment	**Carefully** loosen the coupling at the hose end above the quick coupling; oil sprays off; the excess pressure drops. Tighten the coupling **NOTE** Make sure that the collected oil cannot cause any pollution
	Increased pressure in the basic loader	Stop the engine. Remove the pressure in the lines by moving the valve lever for the auxiliary hydraulics (4-12/1) back and forth several times

Protection against theft

10 Protection against theft

Instances where construction machines were stolen have considerably increased in recent years. To make it possible for the police, customs and other authorities to find and identify machines much faster, **Ahlmann** construction machines are fitted with the following identifying features:

Figure 10-1

10.1 Identifying features on the loader

(1) Loader type plate (10-1/arrow). Among other details, the loader type plate also gives the 17-digit **FIN** number (truck identification number) starting with W09.

(2) The **FIN** number is also stamped into the front part (10-2/arrow) and the rear part (10-3/arrow) of the loader.

(3) ROPS plate (10-4/arrow). This plate gives the name of the manufacturer as well as details on the ROPS type, the loader type and the permissible overall weight.

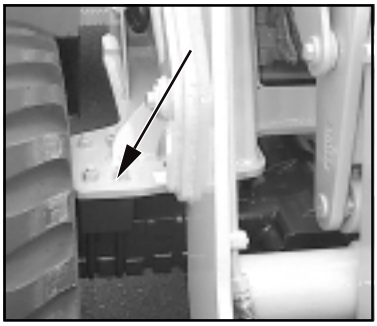


Figure 10-2

10.2 Parking the loader

(1) Turn the steering wheel fully to the left or the right.
(2) Apply the parking brake (4-12/3).
(3) Tip the quick-change device until

- the tines of the bucket,
- the tines of the fork-lift attachment or
- the boom of the lifting hook

is placed on the ground.

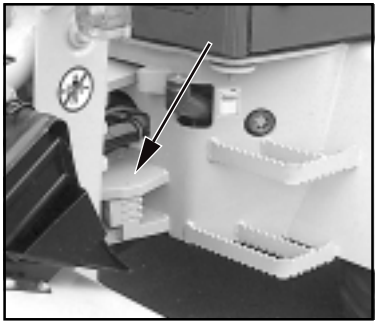


Figure 10-3

Figure 10-4

(4) Close the ball block valve for the working and auxiliary hydraulics (1-3/arrow) (horizontal position).
(5) Set the drive switch (4-12/6) to "forward" or "reverse".
(6) Set hydraulic drive stage "I" (4-12/7).
(7) Set transmission stage "I" (4-13/13) »only for fast loaders«.
(8) Remove the ignition key.
(9) Remove the battery main switch (4-11/3).
(10) Switch on the working lights (4-13/1).
(11) Switch on the warning beacon (opt.) (4-13/11).
(12) Switch on the hazard flasher (4-13/10).
(13) Push the steering column switch (4-10/1) to the “High beam” position.*****
(14) Lock both doors.
(15) Lock the engine hood.
(16) Lock the tank lid.

***** In case of short-circuiting persons in the vicinity should be made aware of the extraordinary lighted machine.

10.3 Transponder for drive-away interlock

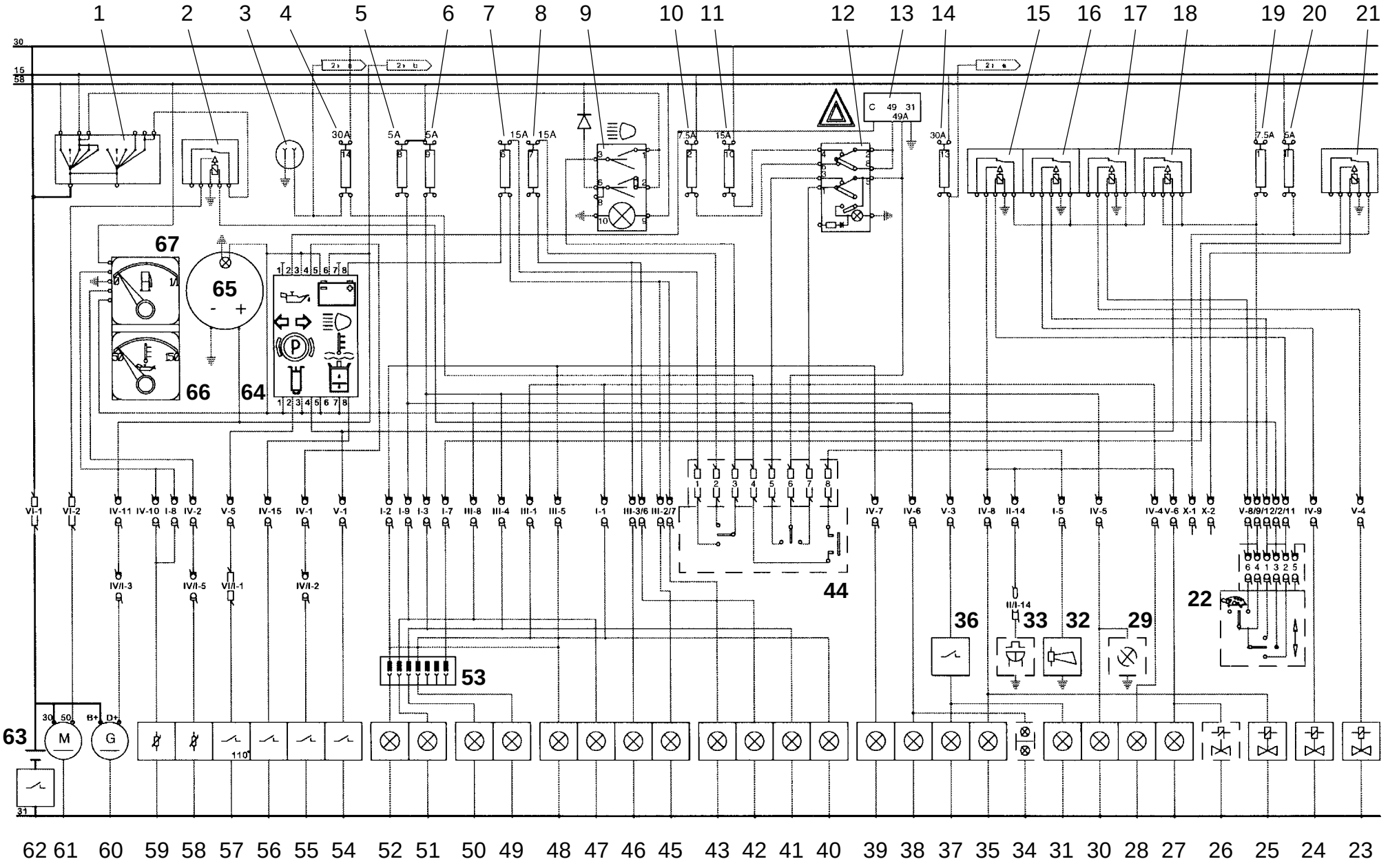
(Option)
The "transponder for drive-away interlock" is an electronic drive-away interlock the deactivates vital loader functions.
If the transponder (e.g. a tag at the iginition key) is taken away from the receiver unit (in the immediate vicinity of the ignition lock), these vital functions are interrupted.

Advantages if an event insured against occurs:

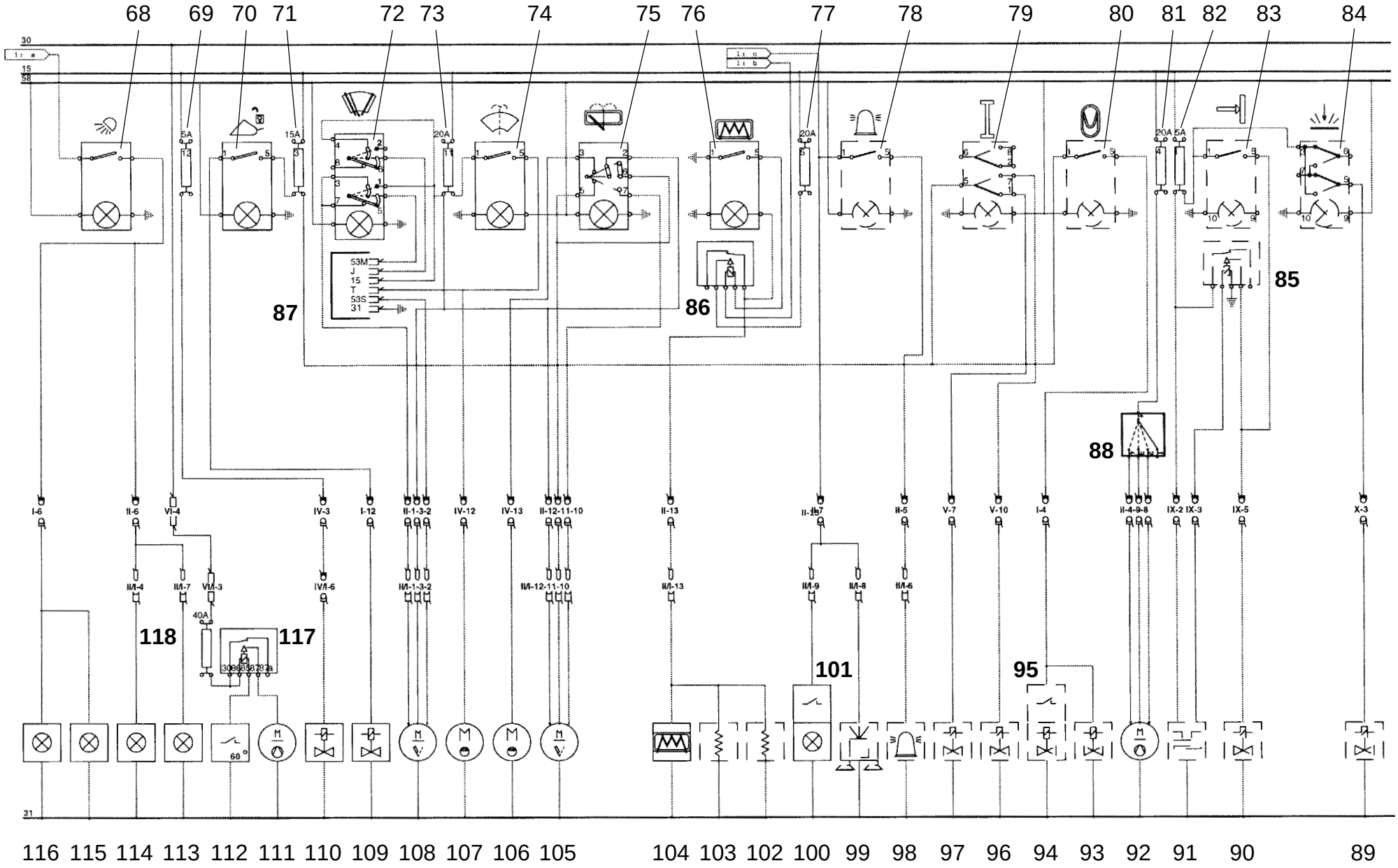
The transponder for drive-away interlock meets the new, stricter requirements of the insurance companies.
Ask your insurance company for the appropriate details!

Appendices

11.1 - 09.99 Elektrik-Schaltplan/Schéma électrique/Wiring diagramm/Elektrisch schakelschema/El-oversigt/ Diagrama de conexiones eléctricas/Elektrisk koblingsskjema



11.1 - 08.2000 Elektrik-Schaltplan/Schéma électrique/Wiring diagramm/Elektrisch schakelschema/El-oversigt/ Diagrama de conexiones eléctricas/Elektrisk koblingsskjema



11.1 Wiring diagram

Item Designation

01 Starter switch
02 Start blocking relay
03 Socket on instrument panel
04 Fuse (chapter 2.2, item 14)
05 Fuse (chapter 2.2, item 8)
06 Fuse (chapter 2.2, item 9)
07 Fuse (chapter 2.2, item 6)
08 Fuse (chapter 2.2, item 7)
09 Switch for driving lights required by German traffic regulations
10 Fuse (chapter 2.2, item 2)
11 Fuse (chapter 2.2, item 10)
12 Hazard flasher light switch
13 Flasher transmitter
14 Fuse (chapter 2.2, item 13)
15 Relay for performance adaptation, backwards
16 Relay for performance adaptation, forwards
17 Relay for performance adaptation, fast/slow
18 Drive cut-off relay
19 Fuse (chapter 2.2, item 1)
20 Fuse (opt.)
21 Relay (option, auxiliary hydraulics)
22 Activation of: fast/slow driving stages, forwards/backwards
23 Valve, slow/fast driving speed
24 Valve, forward drive direction
25 Valve, reverse drive direction
26 Valve, determination of direction (opt.)
27 Reversing light, right
28 Turn indicator light, rear right
29 Motor compartment illumination (opt.)
30 Rear light, right
31 Brake light, right

Item Designation

32 Horn
33 Reversing warning indicator (opt.)
34 License plate illumination (opt.)
35 Reversing light, left
36 Brake light switch
37 Brake light, left
38 Rear light, left
39 Turn indicator light, rear left
40 Turn indicator light, front right
41 Parking light, right
42 Dipped beam, right
43 High beam, right
44 Steering column switch
45 High beam, left
46 Dipped beam, left
47 Parking light, left
48 Turn indicator light, front left

Bucket protection:

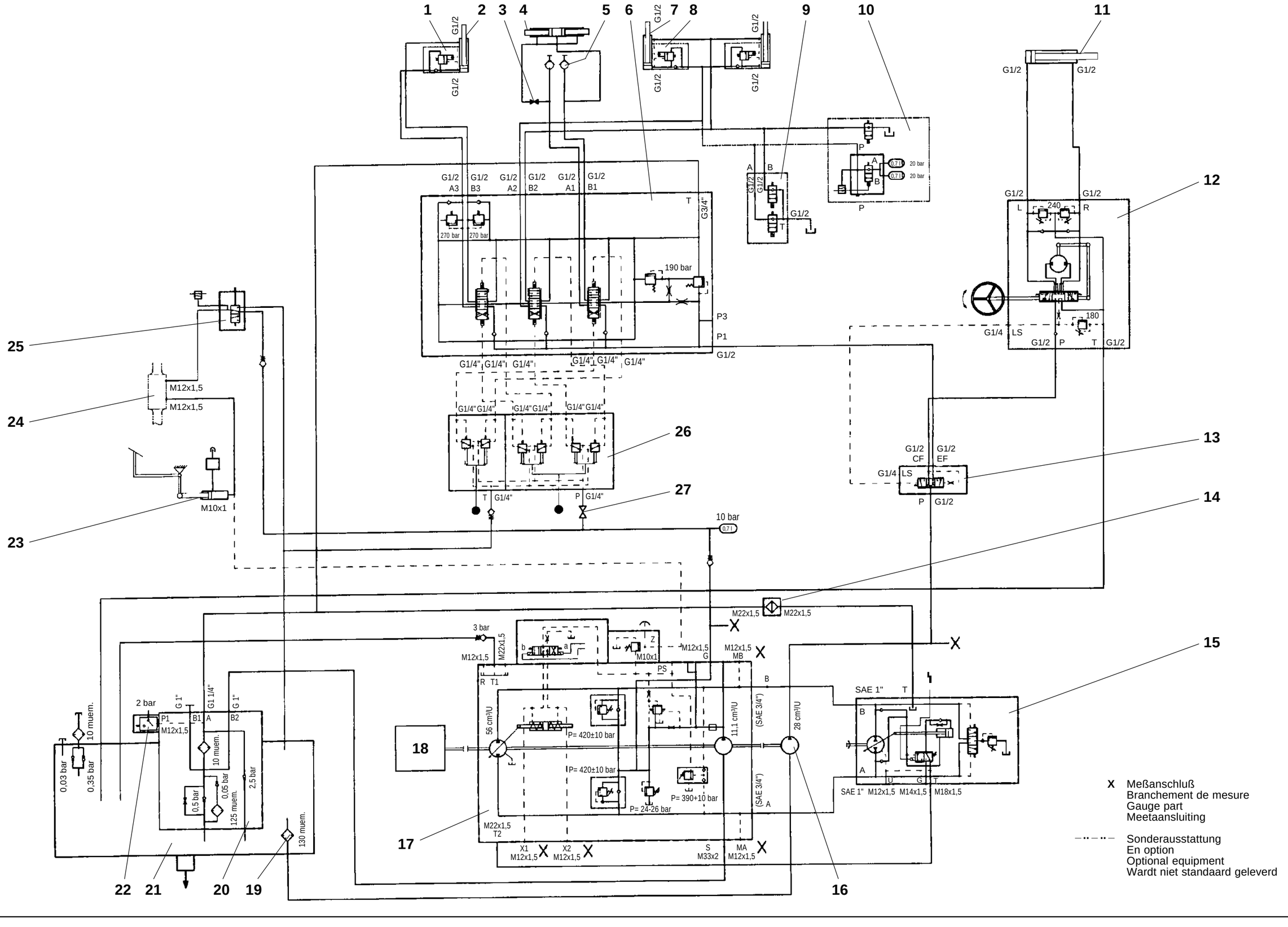
49 Turn indicator, right
50 Contour light, right
51 Contour light, left
52 Turn indicator, left

53 Socket, 7-pin
54 Parking brake switch
55 Switch, engine oil pressure
56 Switch, hydraulic oil filter
57 Switch, hydraulic oil temperature
58 Engine oil pressure sensor
59 Immersion tube sensor
60 Generator
61 Starter motor
62 Battery main switch
63 Battery
64 Indicator light unit
65 Operating hour meter
66 Engine oil temperature display
67 Fuel level display

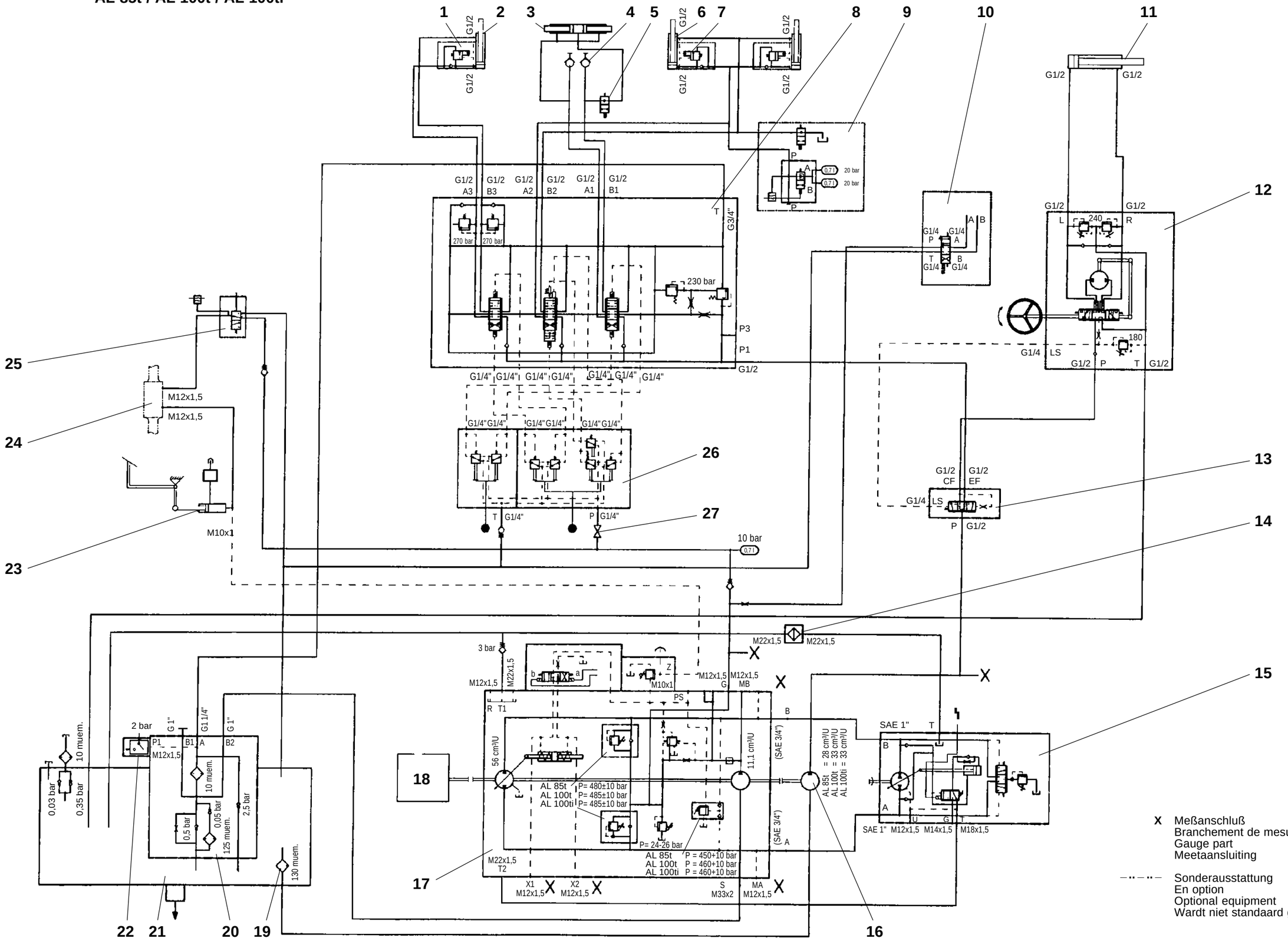
Item	Designation
68	Activation of working lights
69	Fuse (chapter 2.2, item 12)
70	Activation of release for quick-change device
71	Fuse (chapter 2.2, item 3)
72	Activation of front interval wiper
73	Fuse (chapter 2.2, item 11)
74	Activation of front washer
75	Activation of rear wiper/ washer
76	Activation of rear window heater
77	Fuse (chapter 2.2, item 5)
78	Activation of beacon light (opt.)
79	Activation of switch gear (opt.)
80	Activation of lifting device suspension (opt.)
81	Fuse (chapter 2.2, item 4)
82	Fuse (option)
83	Activation of lifting restriction (opt.)
84	Activation of permanent operation of auxiliary hydraulics (opt.)
85	Relay, lifting restriction (opt.)
86	Relay, rear window heater
87	Interval transmitter
88	Activation of ventilation/fan
89	Valve, permanent operation of auxiliary hydraulics (opt.)
90	Valve, lifting restriction (opt.)
91	Proximity switch, lifting restriction (opt.)
92	Fan motor, heating
93	Reservoir valve, lifting device suspension (opt.)
94	Reservoir valve, lifting device suspension
95	Pressure switch, lifting device suspension (opt.)
96	Valve, gear stage 2 (opt.)
97	Valve, gear stage 1 (opt.)
98	Beacon light (opt.)
99	Radio (opt.)
100	Interior lights
101	Switch, interior lights
102	Heatable rearview mirror, right (opt.)
103	Heatable rearview mirror, left (opt.)
104	Rear window heater
105	Motor, rear wiper
106	Motor, rear washer
107	Motor, front washer
108	Motor, front wiper
109	Valve, release for quick-change device
110	Valve, engine switch-off
111	Ventilation motor, oil cooler
112	Temperature switch, oil cooler
113	Working light, rear left
114	Working light, rear right
115	Working light, front left (opt.)
116	Working light, front right (opt.)
117	Relay, oil cooler
118	Fuse (oil cooler)

opt. = optional equipment

11.2.1 - 09.99 Hydraulikschaltplan/Schéma hydraulique/Hydraulisch schakelschema/Hydraulic circuit diagram/Hydraulikoversigt/Plano de conexiones hidráulicas/Hydraulisk koblingsskjema AL 70e



11.2.2 - 09.99 Hydraulikschaltplan/Schéma hydraulique/Hydraulisch schakelschema/Hydraulic circuit diagram/Hydraulikoversigt/Plano de conexiones hidráulicas/Hydraulisk koblingsskjema
AL 85t / AL 100t / AL 100ti



11.3 Muster "Prüfhinweise für Schaufellader"

TBG Tiefbau-Berufsgenossenschaft

Sachkundigenprüfung nach VBG 40 § 50
Lader, Baggerlader und Bagger (Rad- und Kettenmaschinen)

Betreiber/
Maschineneigner: .....

Maschinenart: .....

Prüfer: .....

Hersteller/Typ: .....

Prüfdatum: .....

Serien-Nr. .....

Datum letzte Prüfung: .....

Firmen-Inventar-Nr.: .....

Nr.	Baugruppe/Bauteil		Prüfung			i.O		Beanstandung Meßergebnis Bemerkung	Mangel	
			Vollständigkeit	Zustand/Befest.	Funktion	ja	nein		beseitigt am	von (Unterschrift)
1	**Kennzeichnung**									
1.1	Fabrikschild	Hersteller/Typ	X	X	---					
		Serien-Nr.	X	---	---					
		Baujahr	X	---	---					
		Motorleistung	X	---	---					
		Betriebsgewicht	X	---	---					
		Zugkraft am Zughaken	X	---	---					
1.2	Arbeitsaus-	Hersteller	X	X	---					
	rüstung	Typ-/Teile-Nr.	X	---	---					
		Betriebsdruck (falls erf.)	X	---	---					
		Tragfähigkeit (falls erf.)	X	---	---					
		Gewicht	X	---	---					
1.3	Schnell-	Hersteller	X	X	---					
	wechseleinrichtung	Typ-/Teile-Nr.	X	---	---					
	(falls vorh.)	Betriebsdruck (falls erf.)	X	---	---					
		Tragfähigkeit	X	---	---					
		Gewicht	X	---	---					
1.4	CE-Kennzeichnung,		X	X	---					
	ggf. weitere Prüfzeichen		X	X	---					
1.5	Lärmkenn-	Außengeräusch	X	X	---					
	zeichnung	am Fahrerohr	X	X	---					
2	**Rahmen**									
2.1	Kotflügel	bewegl./abnehmbar	X	X	X					
		Arretierungen	X	X	X					
		Verschlüsse	X	X	X					
	falls Ver-	rutschfest	---	X	---					
	kehrswege:	Tragfähigkeit	---	X	---					
2.2	Abschlepp-	Bolzen	---	X	---					
	einrichtung	Bolzensicherung	---	X	X					
2.3	Verzurren	mind. 3 Punkte vorh.	X	X	---					
		Kennzeichen	X	X	---					
2.4	Heben	mind. 3 Punkte vorh.	X	X	---					
		Kennzeichnung	X	X	---					
2.5	Transport	Transportsicherung	---	X	X					
		Verriegelung	---	X	X					
		Knickgelenksicherung	---	X	X					

10.000 – 5.2000 – mei

Abruf-Nr. 943.8

11.3 Muster "Prüfhinweise für Schaufellader"

TBG Tiefbau-Berufsgenossenschaft

Sachkundigenprüfung nach VBG 40 § 50
Lader, Baggerlader und Bagger (Rad- und Kettenmaschinen)

Nr.	Baugruppe/Bauteil		Prüfung			i.O		Beanstandung Meßergebnis Bemerkung	Mangel	
			Vollständigkeit	Zustand/Befest.	Funktion	ja	nein		beseitigt am	von (Unterschrift)
2.6	Rahmen	Hauptrahmen	---	X	---					
		Gegengewichte	---	X	---					
		Bolzen/Lager	---	X	---					
3	**Fahrwerk**									
3.1	Räderfahr-	Reifen/Druck	---	X	X					
	werk	Felgen	---	X	---					
		Achsen/Achsbefestigung	---	X	---					
3.2	Kettenfahr-	Kettenstrang	---	X	---					
	werk	Kettenbuchsen	---	X	---					
		Laufrollen	---	X	---					
		Kettenspannung	---	X	X					
		Leitrad	---	X	---					
		Kettenrad	---	X	---					
		Kettenspanneinrichtung	---	X	X					
		Fahrmotore	---	X	---					
4	**Hydraulikanlage**									
4.1	Schläuche,	dicht	---	X	---					
	Leitungen	beschädigt	---	X	---					
		Befestigung	---	X	---					
4.2	Zylinder einschl. Befestigung		---	X	---					
4.3	Ölbehälter/Restdruck		---	X	X					
4.4	Pumpen/Antriebe		---	X	X					
4.5	Ventile, Betriebsdruck		---	X	X					
4.6	Stellteile/alle Funktionen		---	X	X					
4.7	Hydro Motore		---	X	X					
4.8	Filter		---	X	---					
5	**Druckluftanlage**									
5.1	Leitungen,	dicht	---	X	---					
	Schläuche	beschädigt	---	X	---					
		Befestigung	---	X	---					
5.2	Druckbe-	Kennzeichnung/Hersteller/Typ	---	X	---					
	hälter	Seriennr./Los-Nr./Baujahr	---	X	---					
		Inhalt	---	X	---					
		Kondenswasserventil	---	X	X					
5.3	Betriebsdruck		---	---	X					
5.4	Systemfunktionen		---	---	X					
6	**Elektrische Anlage**									
6.1	Funktion aller Systeme		---	X	X					
6.2	Stellteile/Schalter		---	X	X					
6.3	Kontrollanzeigen		---	X	X					
6.4	Sicherungen		---	X	X					
6.5	Leitungen,Verbindungen		---	X	---					
6.6	Absicherung der Warnanzeige		---	X	---					
6.7	Batterien	Haltegriffe	---	X	---					
		Trennung/Abschaltung	---	X	X					
6.8	Steckdosen/Kupplungen		---	X	X					

11.3 Muster "Prüfhinweise für Schaufellader"

TBG Tiefbau-Berufsgenossenschaft

Sachkundigenprüfung nach VBG 40 § 50
Lader, Baggerlader und Bagger (Rad- und Kettenmaschinen)

Nr.	Baugruppe/Bauteil		Prüfung			i.O		Beanstandung Meßergebnis Bemerkung	Mangel	
			Vollständigkeit	Zustand/Befest	Funktion	ja	nein		beseitigt am	von (Unterschrift)
7	**Antrieb/Kraftübertragung**									
7.1	Motor/Aufhängung		---	X	X					
7.2	Abgasanlage einschl. Schalldämpfer		---	X	X					
7.3	Neutral-Motorstart		---	X	X					
7.4	Kraftstoff-	Behälter	---	X	---					
	anlage	Leitungen, Filter	---	X	---					
		Einfüllstutzen	---	X	---					
7.5	Getriebe	Schaltung	---	X	X					
		Aufhängung	---	X	---					
		Kardanwellen	---	X	---					
		Filter	---	X	---					
8	**Lenkanlage**									
8.1	Rad-	allgemeiner Zustand	---	X	X					
	maschinen	Lenkdruck	---	X	X					
		Notlenkung	---	X	X					
		Lenkkraft/Lenkzeit	---	X	X					
8.2	Ketten-	allgemeiner Zustand	---	X	---					
	maschinen	Lenkkuppl./-Bremse links	---	X	X					
		Lenkkuppl./-Bremse rechts	---	X	X					
9	**Bremsanlage**									
9.1	Betriebs-	Betätigung	---	X	X					
	bremsanlage	Bremsdruck/Verzögerung	---	X	X					
		Leitungen/Schläuche	---	X	---					
		Bremsbelege	---	X	---					
9.2	Hilfsbremsanlage		---	X	X					
9.3	Feststell-	Betätigung	---	X	X					
	bremsanl.	Verzögerung	---	---	X					
		Arretierung	---	X	X					
10	**Arbeitseinrichtung**									
10.1	Ausleger od.	Betätigung	---	X	X					
	Hubarme	Befestigung/Lagerung	---	X	X					
		Bolzensicherung	---	X	X					
10.2	Löffel- oder Schaufelkippgestänge		---	X	---					
		Befestigung/Lagerung	---	X	X					
		Bolzensicherung	---	X	X					
10.3	Arbeitswerkzeug/Schaufel		---	X	---					
10.4	Schnellwechsel-	allgemeiner Zustand	---	X	X					
	einrichtung	Verriegelung	---	X	X					
		v. Bedienungsplatz einzusehen	---	---	X					
		Leitungen, Schläuche	---	X	---					
		Lagerungen/Bolzen	---	X	X					
11	**Gefahrenbereich-Kennzeichnung**									
	Warnschild: Aufenthalt im Gefahrenbereich !		X	X	---					
		Knickgelenk	X	X	---					
		Motorverkleidungsöffnung	X	X	---					

11.3 Muster "Prüfhinweise für Schaufellader"

TBG Tiefbau-Berufsgenossenschaft

Sachkundigenprüfung nach VBG 40 § 50
Lader, Baggerlader und Bagger (Rad- und Kettenmaschinen)

Nr.	Baugruppe/Bauteil		Prüfung			i.O		Beanstandung Meßergebnis Bemerkung	Mangel	
			Vollständigkeit	Zustand/Befest.	Funktion	ja	nein		beseitigt am	von (Unterschrift)
12	**Schutzeinrichtungen**									
12.1	bewegliche Teile abgedeckt		---	X	X					
12.2	Kompaktmaschinen		---	X	X					
12.3	Abdeckungen	Betätigung	---	X	X					
		Verriegelung	---	X	X					
12.4	Scharfe Kanten		---	X	---					
12.5	Feuerlöscher		---	X	X					
13	**Beleuchtungseinrichtung (soweit vorhanden)**									
		Fern-/Abblendlicht	---	X	X					
		Rücklicht/Bremsleuchte	---	X	X					
		Fahrtrichtungsanzeiger	---	X	X					
		Arbeitsscheinwerfer	---	X	X					
		Warnblinkanlage	---	X	X					
		Funktionskontrolleuchten	---	X	X					
		Rundumleuchte	---	X	X					
14	**Warneinrichtung, Hupe**		---	X	X					
15	**Zugangssysteme zum Fahrerplatz**									
		Aufstiege/Treppen, Stufen	---	X	---					
		Haltegriffe/Haltestangen	---	X	---					
		Scharfe Kanten/Ecken	---	X	---					
		Laufstege, Plattformen	---	X	---					
		rutschfest	---	X	---					
		Absturzsicherung	---	X	X					
16	**Fahrer-/Bedienerplatz**									
16.1	Türen, Fenster	leicht öffnen/schließen	---	X	X					
16.2	Scheiben		---	X	---					
16.3	Scheibenwasch-/wischanlage		---	X	X					
16.4	Defrosteranlage		---	X	X					
16.5	Fahrersitz, Federung, Höhen-/Längsverstellung		---	X	X					
16.6	Rückhaltesystem		---	X	X					
16.7	Heizung/Lüftung		---	X	X					
16.8	Frischluftfilter		---	X	X					
16.9	Leitungen/Schläuche abgedeckt		X	X	---					
16.10	Abdeckung heißer Teile		X	X	---					
16.11	Notausstieg		---	X	X					
16.12	Verbandskasten, BA		X	X	---					
16.13	ROPS/FOPS	Schweißnähte	---	X	---					
16.14	Kennzeichnung	Hersteller	X	X	---					
		Typ/Teile-Nr.	X	X	---					
		Maschinentyp	X	X	---					
		zuläss. Maschinengewicht	X	X	---					
		Test-Norm	X	X	---					
16.15	Sicht nach vorn/hinten		---	X	---					
16.16	Spiegel	Außen/Innen	---	X	X					
16.17	Funktion aller Stellteile/Pedale		---	X	X					
16.18	Kontrolleuchten		---	X	X					

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Nr.	Baugruppe/Bauteil		Prüfung			i.O		Beanstandung Meßergebnis Bemerkung	Mangel	
			Vollständigkeit	Zustand/Befest.	Funktion	ja	nein		beseitigt am	von (Unterschrift)
16.19	Diebstahl-	Tür verschließbar	---	X	X					
	sicherung	Zündschloß	---	X	X					
16.20	Sicherheitsstartvorrichtung		---	X	X					
16.21	Schalldämmung		---	X	---					
17	**Fernsteuerung (falls vorhanden)** **Prüfen nach extra Bedienungsanleitung**		---	X	---					
18	**Wartung**									
18.1	Schmierstellen gut zu erreichen u. abgeschmiert		---	X	X					
18.2	Fülleinrichtungen gut zu erreichen		---	X	X					
18.3	Türen, Öffnung/Arretierung/Verriegelung		---	X	X					
18.4	Zugangs-	Aufstiege/Treppen/Stufen	---	X	X					
	systeme zu	Haltegriffe/Haltestangen	---	X	X					
	Wartungs-	Laufstege/(Plattformen	---	X	X					
	stellen	rutschfest	---	X	---					
18.5	Absturz-	Geländer	---	X	X					
	sicherung	Knieleiste	---	X	X					
	H > 3000 mm	Fußleiste	---	X	X					
18.6	Ablaßmög-	Kraftstoff	---	X	---					
	lichkeiten	Wasser	---	X	---					
	Betriebs-	Motoröl	---	X	---					
	mittel	Getriebeöl	---	X	---					
		Hydrauliköl	---	X	---					
		Druckluftentwässerung	---	X	X					
18.7	Filterwechsel	Kraftstoff	---	X	X					
		Motoröl	---	X	X					
		Getriebeöl	---	X	X					
		Hydrauliköl	---	X	X					
		Luftfilter	---	X	X					
19	**Hebezeugbetrieb**									
19.1	Anbauhaken	vorhanden	X	X	X					
19.2	Kennzeichnung	Hersteller	X	---	---					
		zulässige Last	X	---	---					
		richtige Größe	X	---	---					
		Befestigung	---	X	---					
19.3	keine Quetsch- oder Scherstellen für Anschlagmittel		---	X	X					
19.4	andere Anschlageinrichtungen/Ösen, Schecke!		---	X	X					
20	**StVZO (soweit vorhanden)**									
20.1	Schaufelschutz		X	X	---					
20.2	Warndreieck		X	X	---					
20.3	Warnlampe		X	X	X					
20.4	Unterlegkeile		X	X	---					
20.5	Warntafeln, > 2,75 m		X	X	---					
20.6	Kennzeichen, > 20 km		X	X	---					
20.7	Betriebserlaubnis		X	---	---					
20.8	Ausnahmegenehmigung		X	---	---					

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		Vollständigkeit	Zustand/Befest.	Funktion	ja	nein		beseitigt am	von (Unterschrift)
21	**Betriebsanleitung/Schmierplan/ Dokumente**								
21.1	Schmierplan vorhanden	X	---	---					
21.2	Betriebsanleitung der Maschine vorhanden	X	---	---					
21.3	Betriebsanleitung für Sonderausstattung vorh.	X	---	---					
21.4	Hublastdiagramm vorhanden	X	---	---					
21.5	Ablagefach für BA	X	---	---					
21.6	Konformitätserklärung	X	---	---					
21.7	Bordwerkzeug/Aufbewahrung	X	X	---					
22	**Sondereinrichtungen**								
22.1									
22.2									

Bemerkungen (z. B. zu Punkt):

Ort, Datum

Unterschrift (u. Stempel) des Sachkundigen

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