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HOLDER

Operating Instructions

C-Trac 4.74

Order No.: 149 443

Date of Issue: 19.11.2010

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Foreword

Congratulations on having bought a product from HOLDER. You also ensure getting full value from your vehicle, save yourself trouble and maintain your warranty. The operating instructions provide you with the required information.

Development

Due to the continuous improvements made in the design and equipment of our vehicles, deviations between these operating instructions and your vehicle may be possible.
Despite taking all care possible in the creation of this manual, we can not fully exclude mistakes. Please note therefore that the information, illustrations and descriptions contained herein can not be used for any legal claims.
These operating and maintenance instructions are supplied with each vehicle. Keep them in a safe place where they are available for the driver and owner at any time. If it should get lost, the owner must get a replacement from the manufacturer.
The personnel concerned with the operation and maintenance of the vehicles must be made acquainted with the operating and maintenance instructions. The owner must ensure that every operator has received, read and understood this manual.

We thank you for reading and observing this manual. In case you still have any questions, suggestions for improvements or discovered mistakes, please contact our customer service.

General notes on service

On receipt of the machine please make sure that your HOLDER dealer will take care of the online registration.
This registration is the proof in case of any warranty claims .
Have the scheduled services carried out at the proper intervals and have it confirmed with the dealer's stamp and signature in this manual. Please note that warranty can only be claimed if the regular services have been carried out as scheduled.

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Foreword

In case of questions regarding your vehicle, please state the following data:

Machine type ..... eg C 4.74
Engine serial number ..... eg 00953643
Chassis serial number ..... eg 204000101
Date of sale or date of
complaint ..... eg 11.05.2005
Service hours ..... eg 500 hours

Date of issue and manual version

August 2007

We wish you safe driving and troublefree working with your HOLDER C-Trac.

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Explanation of terminology:

DANGER
Indicates procedures which must be observed exactly to prevent danger to the life and limbs of persons.

CAUTION
Indicates procedures which must be observed exactly to prevent personal injuries.

ATTENTION
Indicates procedures which must be observed exactly to prevent damage to and/or destruction of objects and equipment.

☞ ***NOTE***
Indicates technical requirements needing particular attention.

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Instructions for the vehicle

This vehicle has received the type approval acc. to 74/150/EEC after a safety inspection. The vehicle conforms to the EMC (Electromagnetic Compatibility) requirements of directive 89/336/EEC. The regulations for exhaust gas identification and the noise emissions are observed. The vehicle must be registered and the licence plate must be attached at the front and rear.

Intended Use

The vehicle can be used for towing trailers and for mounting various implements. The maximum trailer load, which must not be exceeded, is stated on the identification plate. The transportation of persons is not allowed.
The vehicle is designed solely for the customary type of operation in farming and forestry, the upkeep of municipal facilities, including operation in winter.
The intended use also includes the performance of the specified maintenance. The vehicle and its implements may only be used, serviced and repaired by persons familiar with this equipment and have been warned of possible risks. The applicable safety regulations must be strictly observed, along with all other recognized rules regarding industrial health, safety at work and the highway traffic code.

Site of operation

The vehicle must be used in the open. Its operation on public roads is allowed. Observe the applicable regulations in your country for driving your vehicle on public roads.

Unintended applications

Any use not intended as described as above is an unintended use. HOLDER will not be responsible for any hazard which may result from unauthorized use. The manufacturer will also not be responsible for any resulting damages; these shall be solely borne by the user. The vehicle may not be used for any other purposes than those described in this manual. Do not carry persons on the load platform or on the implements.

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Instructions for the vehicle

Residual hazards and risks

Despite all care being taken and compliance with standards and regulations, it is not possible to exclude all risks in the handling of the vehicle.
The vehicle and all other system components conform to currently applicable safety regulations. A residual risk can not be excluded even with approved use of the vehicle and with observation of all the safety notices given.
For this reason, persons standing in the area the vehicle and implements must exercise particular caution in order to be able to react directly in case of malfunction, an incident, a failure, etc.

CAUTION
All persons standing in the area of the vehicle and implements must be advised of the risks which can result from their operation. Furthermore, read and observe the other safety rules and regulations contained in these operating instructions.

The risks can include:
- Unexpected movements of the implements and the vehicle.
- Escape of fuel and lubricants due to leaks, broken lines and containers, etc.
- Risk of accidents when driving, steering and braking due to unfavourable ground conditions such as slopes, icy roads, unevenness or poor visibility, etc.
- Falling, stumbling, etc. when moving on the vehicle, particularly if it is wet.
- Danger of fires and explosion through the battery and electric voltages.
- Danger of poisoning through diesel exhaust fumes.
- Danger of fire through diesel fuel and oils.
- Human misconduct through the non-observance of safety rules.

Notes on disposal of vehicle

Your vehicle is made of different materials. Each material should be disposed of/treated/recycled according to different regional/national regulations. We recommend contacting a salvage company.

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Operating instructions

Driver's licence

For the driving of this vehicle you require a **driver's licence** depending on the maximum driving speed and the permissible total weight of the vehicle and combinations. See the tables below.

Driver's licence classes

Tractors for farming and forestry (also with implements)

Maximum Speed (dependent on type)	Maximum Total Weight	Driver's License Class (Minimum Requirements)	Former Driver's License Class (Germany)
up to 32 km/h	no limitation	B, L, T	1, 1a, 1b, 2, 3, 4, 5
over 32 km/h	up to 3.5 tons	B T: 60 km/h, under 18 years only 40 km/h	2, 3
	over 3.5 tons to 7.5 tons	C1 T: 60 km/h, under 18 years only 40 km/h	2, 3

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Single-axle trailers or two-axle trailers with axle base of up to 1 metre maximum

Maximum Total Weight	Driver's License Class (Minimum Requirements)	Former Driver's License Class
up to 750 kg trailer weight	B, C1, C, T L: (25) only with additional sign and maximum tractor speed of 25 km/h (depending on type)	1, 1a, 1b, 2, 3, 4, 5
over 750 kg trailer weight	BE, C1E, CE, T B, C1, C: only up to 3.5 tons adm. total weight of the combination and adm. total weight of trailers ≤ kerb weight of tractor; otherwise: (25) C1E: only up to 12 tons adm. total weight of combination and adm. total weight of trailer ≤ kerb weight of tractor; otherwise: (25) L: (25)	1, 1a, 1b, 2, 3, 4, 5

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Multiple-axle trailers or two-axle trailers with an axle base over 1 metre

Maximum Total Weight	Driver's License Class (Minimum Requirements)	Former Driver's License Class
up to 750 kg trailer weight	B, C1, C, T L: (25) only with additional sign and maximum tractor speed of 25 km/h (depending on type)	2, 3
over 750 kg trailer weight	BE, C1E, CE, T	2, 3
up to 3.5 tons Maximum Total Weight	B, C1, C: only up to 3.5 tons adm. total weight of the combination and adm. total weight of trailers ≤ kerb weight of tractor; otherwise: (25)	1, 1a, 1b, 4, 5: in each case (25)
up to 12 tons Maximum Total Weight	C1E: only up to 12 tons adm. total weight of combination and adm. total weight of trailer ≤ kerb weight of tractor; otherwise: (25) L: (25)	

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Two trailers behind tractors for farming and forestry

Maximum Total Weight	Driver's License Class (Minimum Requirements)	Former Driver's License Class
	BE, C1E, CE, T	2, 3
up to 3.5 Maximum Total Weight	B, C1, C in each case only up to 3.5 tons adm. total weight of the combination and adm. total weight of trailers ≤ kerb weight of tractor; otherwise: (25)	1, 1a, 1b, 4, 5, (25)
up to 12 Maximum Total Weight	C1E: only up to 12 tons adm. total weight of combination and adm. total weight of trailer ≤ kerb weight of tractor; (25) otherwise: L: (25)	

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Safety

General notes on safety

- Observe your national regulations on safety and health protection.
- Do not allow children under 16 to use the vehicle.
- When using the public highway, respect the highway code.
- Do not allow anyone to stand around where they might get hurt.
- Do not run the engine in enclosed spaces.
- Exercise extreme caution when handling fuels - there is a high risk of fire.
- Exercise caution when handling brake fluid and battery acid (poisonous and corrosive).
- To prevent the danger of fire, keep the vehicle and implements clean.
- Observe the warning notices and symbols on your vehicle.
- In case of an **emergency stop** with a defective inching pedal or defective traction hydraulics, the vehicle can only be brought to a halt by turning the ignition to 0 and applying the service brake.

Work clothing

- Only wear close-fitting clothing when working with the vehicle.
- If necessary, wear suitable headwear to keep loose hairs and pigtails from being caught in rotating parts.
- Do not wear any jewellery and similar objects, eg rings, when working with the vehicle.

Safety notes for later installations

The vehicle has electronic components whose proper functioning can be influenced by electromagnetic emissions from other equipment. These influences can endanger persons if the following safety precautions are not observed.

- Have the equipment installed by an authorized workshop only.
- Before the installation of electric or electronic equipment connected to the vehicle's electrical system, check if these installations can interfere with the vehicle's electronic system or other system components.

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- The installed equipment must conform to the applicable EMC directive 89/336/EU and carry the CE symbol.
- If you must install a mobile communications system (or have it installed) (eg radio, mobile phone), the following requirements must be met:
- Only approved equipment (ie with type approval) may be installed.
- The equipment must be installed firmly.
- The operation of portable or mobile equipment inside the vehicle is only allowed if connected to a permanently installed external antenna.
- The transmitting section must be installed away from the vehicle's electronic system.
- When installing the antenna, install it properly and with a good connection to vehicle ground.
- Do not exceed the maximum permissible current rating of the wiring according to the installation instructions of the equipment manufacturer.
- When doing electric welding, disconnect all cable plugs from the electronic units.

Safety precautions for handling fuels and oils

Gear oil, engine oil, diesel fuel

Do not eat, drink or smoke when handling these fuels and oils. Prolonged intensive contact may cause degreasing and irritation of the skin. Wash skin with water and soap, use skin care products. If required, wear personal protective gear. Change soaked clothes and shoes immediately. If vapour or mist was inhaled, breathe fresh air. Consult a doctor if the complaint persists. After contact with the eyes, rinse the eyes thoroughly with water (at least 10 minutes), then consult an eye doctor. If swallowed, do not force to vomit, but consult a doctor. Danger of slipping on the spilled product, particularly in connection with water.
Oils can contaminate water. Always keep them in approved containers. Avoid spilling oils. Remove spilled fluids immediately with an oil binding agent and discard in accordance with laws and regulations. Discard drained fluids as specified. Observe applicable laws and regulations. Oils are inflammable. Do not let them come in contact with hot engine parts as fire can result.

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Hydraulic oil, brake fluid

During operation, these fluids are pressurized and pose a health hazard. Do not spill these fluids. Remove any spilled fluids immediately with oil binding agent and discard them. Discard drained fluids as specified. Observe applicable laws and regulations. Do not allow them to come in contact with hot engine parts. Danger of fire!
Avoid contact with the skin. Avoid the inhalation of spray fog. The penetration of pressurized fluids into the skin is particularly dangerous if these fluids are under high pressure and escape from the hydraulic system through leaks. Seek medical aid at once in case of such injuries.
If injuries can not be excluded, use suitable personal protector (for example, protective gloves, glasses and skin protection and skin care creams).

Battery acid

Battery acid contains dissolved sulphuric acid. This acid is poisonous and caustic. When working with battery acid, always wear protective clothing and eye protectors. Do not allow acid to contact the clothing, skin or eyes; in case of contact wash immediately with ample clean water. In case of personal injuries, consult a doctor at once. Neutralize spilled battery acid immediately.
Discard drained fluids as specified. Observe applicable laws and regulations.

Emissions

Exhaust gases

During operation, the engine emits exhaust gas into the environment. The exhaust gas mainly consists of water vapour, carbon dioxide (CO2), carbon monoxide (CO), hydrocarbon (CH), nitrogen oxide (NOX) and soot. The components CO, CH and NOX are poisonous or hazardous to health and should not be inhaled in high concentrations. Soot is considered to be a carcinogenic material.

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Particularly the particles contained in the exhaust gas can cause cancer. For this reason the engine should not be operated in enclosed spaces.

Heat

The exhaust gases are very hot and can ignite inflammable material. The exhaust gas pipe should therefore be kept away from ignitable materials.

Battery

During charging, the battery produces a mixture of oxygen and hydrogen (detonating gas). This mixture of gases is explosive and must not be ignited. The risk of explosion can be avoided with the appropriate ventilation and keeping naked flames away. Observe the safety rules for handling the battery.

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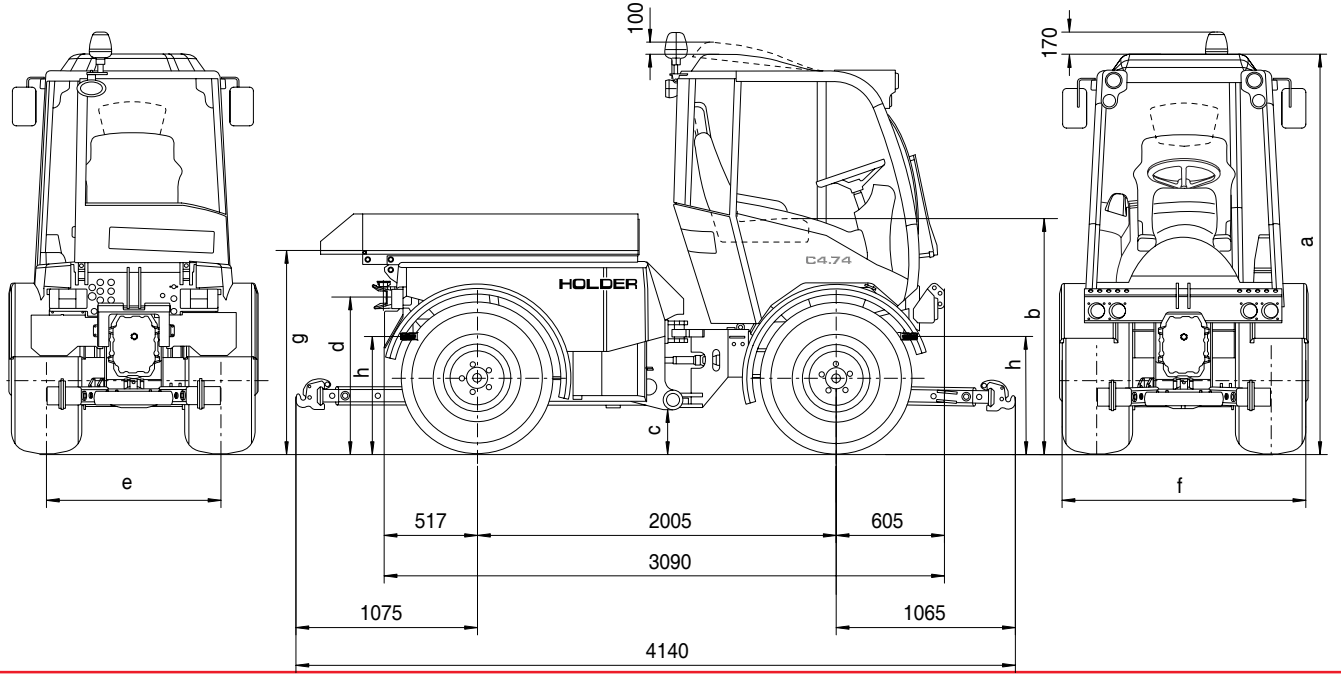
Technical data

Vehicle dimensions

Dimensional drawing



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Technical data

Table of dimensions C 4.74

Tires	Type	Total height	Avg. height	Ground clearance	Trailer hitch Lowest position	Trailer hitch Highest position	Height of body	Height of PTO
		a mm	b mm	c mm	d mm	d mm	g mm	h mm
275/80 R18 275/80 R18 S	4131-14 422-31-2	2250	1260	240	850	970	1140	650
36x13.50-15	204-31-03	2245	1260	230	840	960	1130	640
340/65 R18	422-31-06 422-31-07	2245	1260	230	840	960	1130	640
10.5-18 MPT 10.5-18 MPT S	4131-22 422-31-3	2240	1255	230	835	955	1130	640
320/65 R18	422-31-4 422-31-05	2230	1245	215	825	945	1115	625
425/55 R17	204-31-02	2230	1240	215	825	945	1115	625
33x12.50 R15	4131-23	2215	1230	205	810	930	1105	615
33/18LL-16.1	204-31-01	2215	1230	205	810	930	1105	615
33x15.50-15	4131-18	2200	1215	190	795	915	1090	600
31x11.50 R15	203-31-1	2195	1210	180	790	910	1080	590
31x15.50-15	4131-8	2190	1200	175	785	905	1075	585

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Track widths

Tires		Min. turning radius to DIN 7020 (measured at outermost point of vehicle)	Normal track 1040 mm			
			Track width e		Total width f	
Dimension	Type	m	min. mm	max. mm	min. mm	max. mm
	422-31-3	6.28 m for track 990	990	1106	1264	1380
275/80 R18 S	422-31-2	6.28 m for track 990	990	1106	1270	1386
320/65 R18	422-31-05	6.31 m for track 990	990	1106	1301	1417
340/65 R18	422-31-07	6.33 m for track 990	990	1106	1313	1429
31x11.50 R15	203-31-1	6.31 m for track 1000	1000	1096	1318	1414
33x12.50 R15	4131-23	6.35 m for track 1006	1006	1090	1349	1433
36x13.50-15	204-31-03	6.40 m for track 1006	1006	1090	1387	1471
10.5-18MPT	4131-22	6.33 m for track 1040	1040	1056	1314	1330
275/80 R18	4131-14	6.33 m for track 1040	1040	1056	1320	1336
320/65 R18	422-31-4	6.36 m for track 1040	1040	1056	1351	1367
340/65 R18	422-31-06	6.38 m for track 1040	1040	1056	1363	1379
425/55 R17	204-31-02	6.52 m for track 1080	-	1080	-	1511
31x15.50-15	4131-8	6.52 m for track 1130	-	1130	-	1524
33x15.50-15	4131-18	6.52 m for track 1130	-	1130	-	1525
33/18LL-16.1	204-31-01	6.65 m for track 1170	-	1170	-	1645

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Technical data

Weights

	Weight in kg
Permissible total weight	4000
Permissible load on front axle	2500
Permissible load on rear axle	2500
Permissible supporting load on trailer hitch	600

Auxiliar assemblies	Total	Front	Rear
Rear power lift	81 kg	-11 kg	92 kg
Rear PTO gear	60 kg	-5 kg	65 kg
Variable-displacement pump	60 kg	0 kg	60 kg
Loading platform	75 kg	5 kg	70 kg

Tires		31x11.50R15	33x12.50R15	31x15.50-15 33x15.50-15	10.5-18MPT	275/80 R18 340/65 R18	320/65 R18	33/18LL-16.1	36x13.50-15	425/55 R17
Weight of C-Trac 4.74 (with driver 75 kg)										
Tota:	kg	2230	2250	2270	2310	2320	2310	2330	2290	2390
Front	kg	1240	1250	1260	1280	1285	1280	1290	1270	1320
Rear	kg	990	1000	1010	1030	1035	1030	1040	1020	1070

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Tires

The pressure can vary depending on the make and use - observe the manufacturer's information.

Type of tire	Load capacity	Profile	Tube	Inflation pressure (in bar)		Wheel ballasts	
				Kerb weight	Max. loading	Type	Weight
10.5-18 MPT	10	Cleat profile	Yes	2.2	2.2	4134-1	ca. 42 kg
275/80 R18	130B	Cleat profile	No	1.0	2.0	4134-1	ca. 42 kg
320/65 R18	109A8	Cleat profile	No	0.8	1.6	4134-1	ca. 42 kg
340/65 R18	113A8	Cleat profile	No	0.6	1.6	4134-1	ca. 42 kg
31x10,5R15	109Q	M + S	No	2,0	3,0	4134-1	ca. 42 kg
31x11.50R15	110Q	Profile	No	1.7	2.8	4134-1	ca. 42 kg
31x15.50-15	8	Profile	No	1.1	3.2	4134-2	ca. 43 kg
33x15.50-15	6	Profile	No	0.7	1.7	4134-2	ca. 43 kg
33x12.50-R15	108Q	M + S	No	1.7	2.5	4134-2	ca. 43 kg
36x13.50-15	114B	Lawn	No	1.6	1.6	4134-2	ca. 43 kg
425/55 R17	134G	Profile	No	1.0	1.6	4134-2	ca. 43 kg
33/18LL-16.1	10	Lawn	No	0.6	1.1	-	-

Note: Observe the specified tire inflation pressure when carrying the maximum axle loading and when driving on roads. For maximum drawbar pull off the road and to reduce ground pressure, adapt the inflation pressure to the axle loading as specified by the tire manufacturer.

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Technical data

Engine specifications

	C 4.74
Manufacturer	Deutz AG
Type	BF4L 2011 Turbo
Mode of operation	Four-stroke Diesel
Number of cylinders	4
Cubic capacity	3108
Fuel consumption	229g/KW-h at 1700-1850 rpm
Rated speed	2500 rpm
Maximum idling speed	2500 rpm +350 rpm
Minimum idling speed	900-980 rpm
Rated power acc. to 97/68 EC at n = 2500 rpm	54.6 KW (74 HP)

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Theoretical driving speeds

Hydrostatic drive **Engine output** 54.6 kW **Speed** 2500 rpm		**30 km/h Model**		**40 km/h Model**		
		Driving range 1 Forward and reverse	**Driving range 2** Forward and reverse	**Driving range 1** Forward and reverse	**Driving range 2** Forward and reverse	
Tires	**Type**					
340/65 R18	422-31-06	33.0	16.7	41.2	20.6	km/h
340/65 R18 S	422-31-07	33.0	16.7	41.2	20.6	km/h
275/80 R18	4131-14	33.0	16.6	41.0	20.5	km/h
275/80 R18 S	422-31-2	33.0	16.6	41.0	20.5	km/h
36x13.50-15	204-31-03	33.0	16.5	40.8	20.4	km/h
10.5-18 MPT	4131-22	32.6	16.3	40.3	20.1	km/h
10.5-18 MPT S	422-31-3	32.6	16.3	40.3	20.1	km/h
320/65 R18	422-31-4	32.3	16.2	40.0	20.0	km/h
320/65 R18 S	422-31-05	32.3	16.2	40.0	20.0	km/h
425/55 R17	204-31-02	31.6	15.8	39.0	19.5	km/h
33x12.50 R15	4131-23	30.9	15.4	38.2	19.1	km/h
33/18LL-16.1	204-31-01	30.5	15.2	37.7	18.9	km/h
33x15.50-15	4131-18	30.5	15.2	37.7	18.9	km/h
31x11.50 R15	203-31-1	29.0	14.5	35.9	18.0	km/h
31x15.50-15	4131-8	28.0	14.0	34.7	17.3	km/h

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Technical data

Technical data /filling quantities

Assembly	Suppl. information	Description
Hydrostatic unit		Stepless driving speed, 2 driving ranges
Traction hydraulics		
Variable-displacement pump		Bosch Rexroth AG
- Type		Axial-piston variable-displacement pump
- Model	Twin pump	A4 VG 40 EP1D1 / A4 VG 40 EP1D1
- Displacement		40 cm³/rev, 100 l/min at rated engine speed
- Operating pressure		420 bar
Wheel motor		Bosch Rexroth AG
- Type		Radial piston motor
- Quantity		4 items
- Model		MCR 05
- Displacement	In driving range 1	235 cm³/rev with 30 km/h model, 190 cm³/rev with 40 km/h model
	In driving ranges 2,3,4	470 cm³/rev with 30 km/h model, 380 cm³/rev with 40 km/h model
- Operating pressure		420 bar
Hydraulic oil tank		42 l (common oil tank for traction and working hydraulics)

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Assembly	Suppl. information	Description
Steering		
- Type		Hydrostatic with 2 steer cylinders, double-acting
- Steering control valve		Orbitrol OSPC 125 LS (1-stage) or OSPD 125/205 (2-stage)

Brakes		
- Service brake		Knott drum brake, 250x55 hydraulic power assisted
- Operation		Hydraulic
- Parking brake		Knott drum brake, 250x55 hydraulic power assisted
- Operation		Electro-hydraulic accumulator brake

Trailer hitch		
- Type		Scharmüller, height-adjustable and pivotabler

Front power lift		
- Type		HOLDER regular 3-point, top link adjustable
- Mounting		Category I and II
- Lifting power		2000 kg (measured at pintle hook hitch, at medium position)
- Power lift height		approx. 612 mm depending on tires
- No. of cylinders		2 items, double-acting

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Technical data

Assembly	Suppl. information	Description
Rear power lift		
- Type		HOLDER regular 3-point, top link adjustable
- Mounting		Category I and II
- Lifting power		2000 kg, (measured at tow hook, medium extension length)
- Lift height		approx. 720 mm, depending on tires
- Cylinders		2 items, double-acting

Loading platform		
- Dimensions	LxWxH	1530x1140x300 mm
- Useful load		1400 kg

Working hydraulics (with steering)		
Pump		Sauer Sundstrand
- Type		SNP 2
- Displacement		17 cm³/rev (42.5 L/min at 2500 rpm engine speed)
- Operating pressure		180-190 bar
Hydraulic oil tank		42 L (common oil tank for traction and working hydraulics)

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Technical data

Assembly	Suppl. information	Description
PTOs		2 it. (front and rear) sense of rotation: CW when looking on PTO
- Front speed		1000 rpm at 2400 rpm of engine
- Rear speed		540 rpm at 2214 rpm of engine
- Spline profile		1 3/8 “ (6) DIN 9611
PTO clutch		Hydraulically-controlled single disc dry clutch
Differential lock		Front and rear simultaneously selectable

Electrical system		
- Operating voltage		12 V VDC
- Battery		12 V / 100 Ah
- Alternator		12 V / 80 A (up to 02.2006 60 A)
- Starter		12 V / 2.3 kW

Fuel system		
Fuel tank	Diesel fuel	60 L

Vehicle overall		
- Operating range		-30° to +50°C

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Technical data

Noise level

The vehicle emits the following noise level (measured at the driver's ear) according to EC Standard 77/311/EEC; measurement according to Appendix II).

Table of noise levels and absorption rating

Model	Engine Type	Engine Output	Noise Level dB(A)				Absorption rating
			Cabin open*		Cabin closed		
			left	right	left	right	
C 4.74	BF4 L 2011	54,6 kW (74 HP)	81	83	79	79	0,8

*Roof vent and side window open

Exhaust gas identification

The absorption rating is stated on the identification plate.

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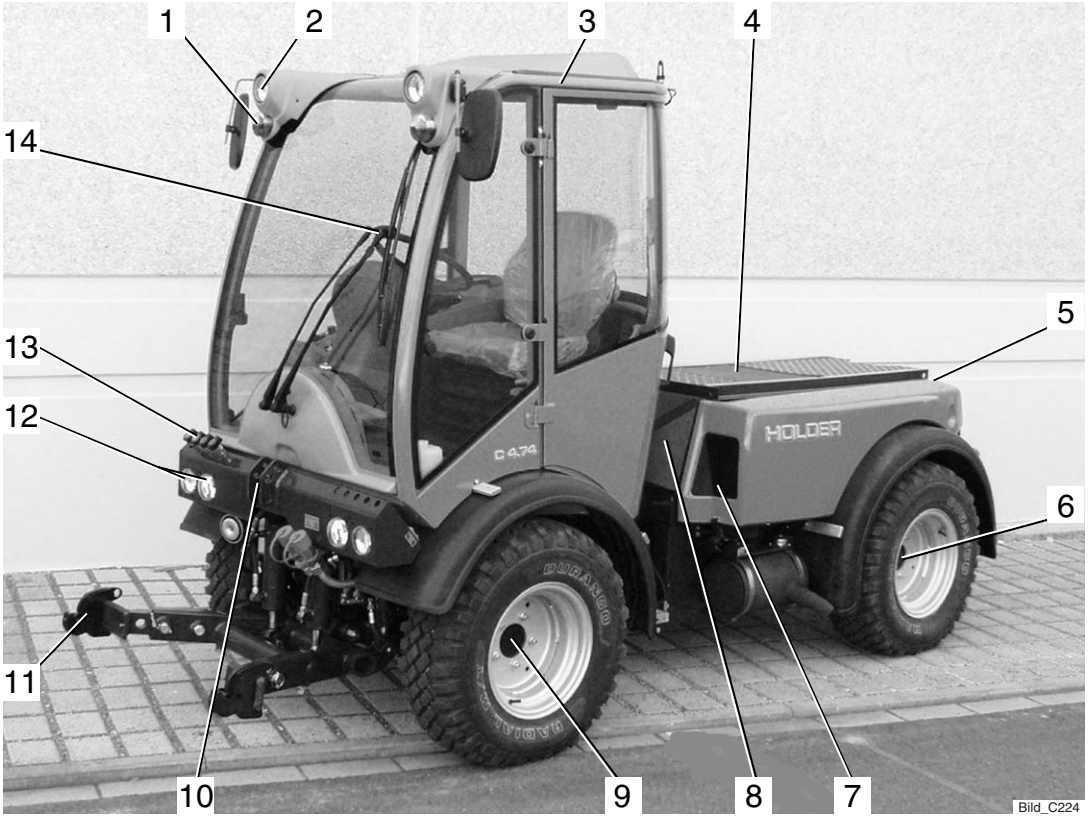
Description

Views

Vehicle

Front left view

1 Turn signal, position light
2 Headlight, top
3 Driver's cab
4 Dump body (dumper)
5 Rear of vehicle
6 Rear axle
7 Intake screen for oil cooler of traction drive
8 Intake screen for engine
9 Front axle
10 Upper link support
11 Front power lift - lower link support
12 Headlight
13 Hydraulic quick couplings for implement*
14 Windshield wiper/ washer



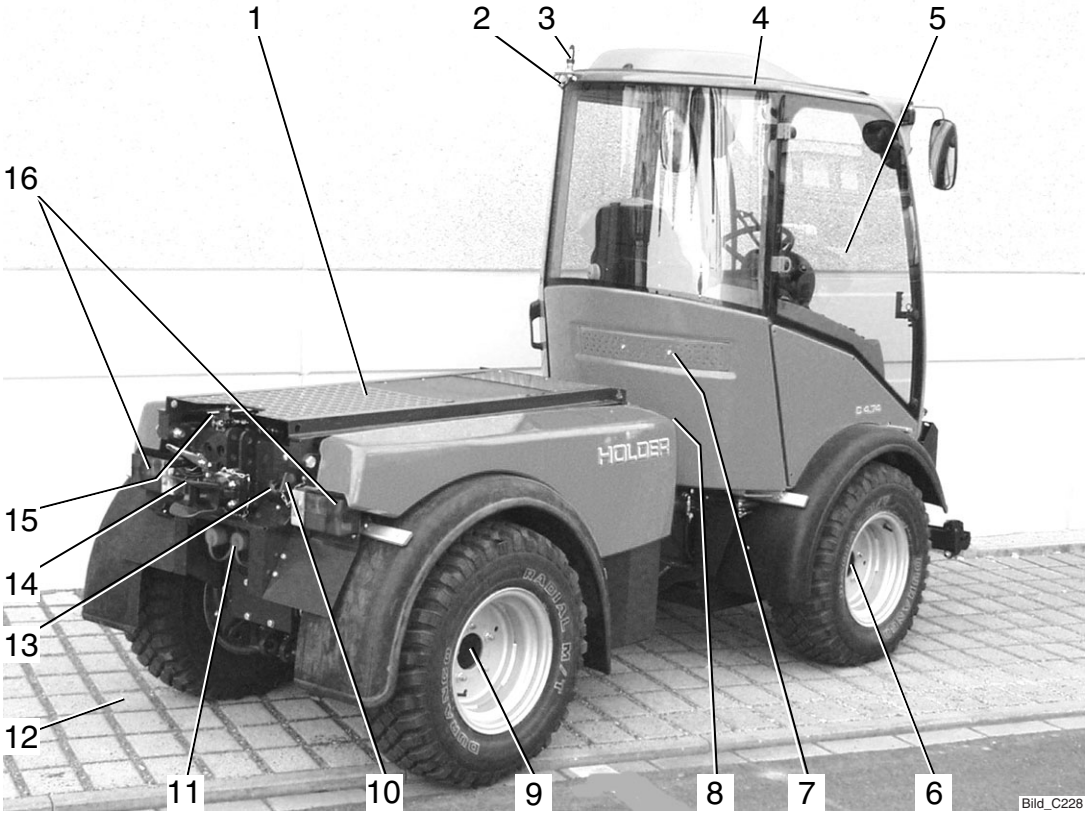
https://truckmanualshub.com/

Description

Vehicle

Rear right view

1 Dump body
2 Flood light*
3 Support for rotating beacon
4 Driver's cab
5 Front part of vehicle
6 Front axle
7 Intake screen for fresh air blower
8 Fuel filler neck
9 Rear axle
10 Battery isolating switch
11 Hydraulic quick couplings for implement*
12 Rear power lift* Lower link support
13 Connector socket for trailer lighting
14 Trailer hitch
15 Two-port cock for dump body/rear power lift
16 Tail light, LH/RH



Bild_C228

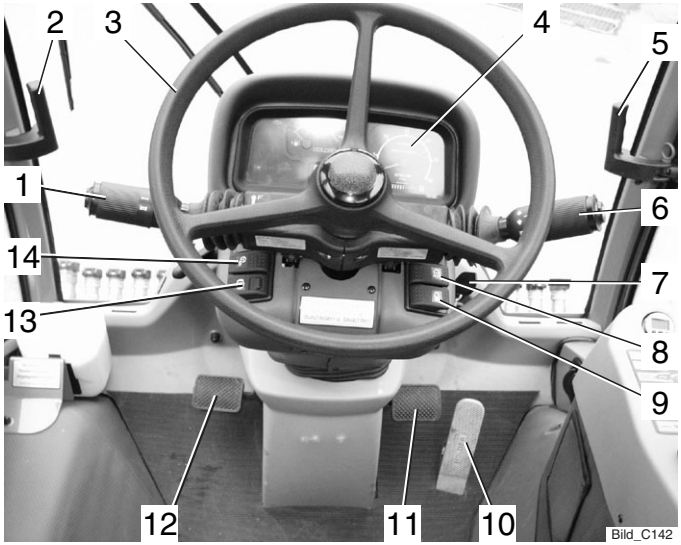
* Option

https://truckmanualshub.com/

Driver's station

Operating controls

1 Direction lever
2 Handle for LH side window
3 Steering wheel
4 Multifunctional display
5 Handle for RH side window
6 Turn signal and wiper control lever
7 Ignition lock
8 Light switch
9 Top headlight switch
10 Accelerator pedal
11 Brake pedal
12 Inching pedal
13 Parking brake switch
14 Switch for two-stage steering*



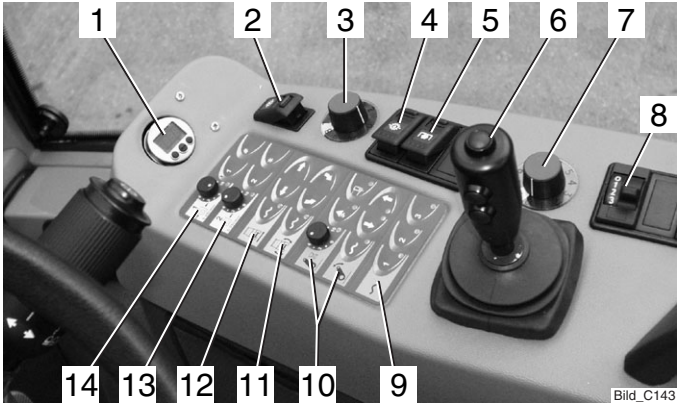
* Option

https://truckmanualshub.com/

Description

Right front controls console

1 Pressure gauge for hydraulic cushioning*
2 Main switch for implement hydraulics
3 Fine control knob for implement variable-displacement pump*
4 Switch for implement variable-displacement pump*
5 Switch for front PTO*
6 Joystick for working hydraulic system
7 Fine control knob for driving speed (in the driving speed ranges 3 and 4)
8 Driving program switch
9 Floating positions for 3 quick couplings
10 Keyboard for front power lift
11 Keyboard for tilting
12 Keyboard for sideshifting*
13 Keyboard for flow divider 2nd circuit*
14 Keyboard for flow divider 1st circuit*



Bild_C143

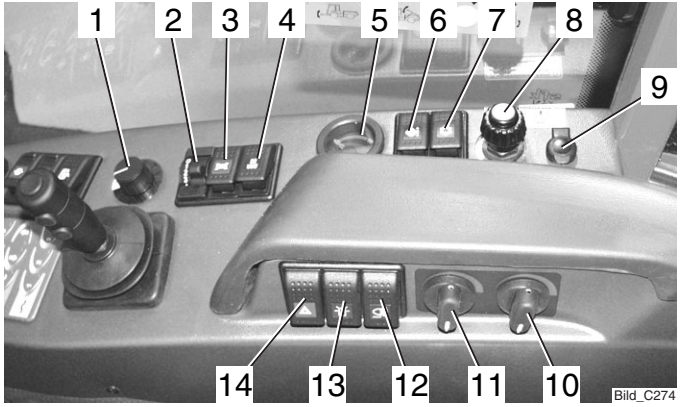
* Option

https://truckmanualshub.com/

Description

Right rear console controls

1 Fine control knob for driving speed (in the driving speed ranges 3 and 4)
2 Driving program button
3 Differential lock switch
4 Fan switch
5 Hydraulic oil temperature gauge
6 Fan reversing switch*
7 Air conditioning switch*
8 Hand throttle knob
9 Power socket
10 Heater control
11 Air conditioning control*
12 Flood light switch*
13 Rotating beacon switch
14 Hazard warning switch



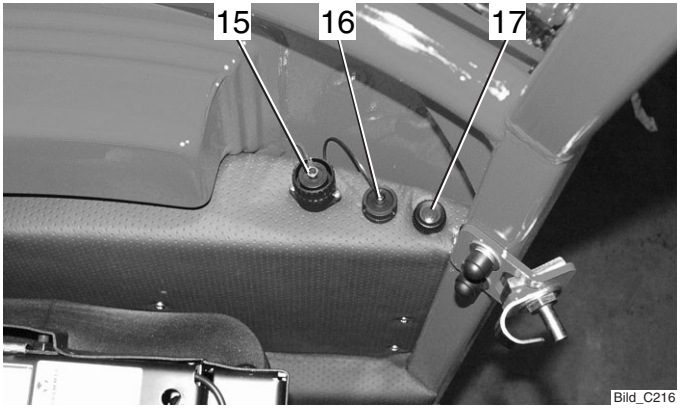
* Option

https://truckmanualshub.com/

Description

Rear console controls

15 Diagnosis socket for working hydraulics
16 Diagnosis socket for traction hydraulics
17 Traction electronics warning light

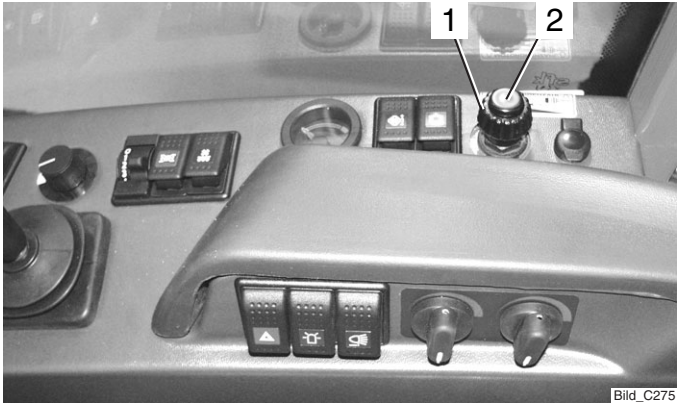


Bild_C216

Hand throttle

1 Outer ring for fine control:
- Turn clockwise to decrease rpm
- Turn counter-clockwise to increase rpm

2 Inner knob for coarse adjustment
- Pull out to increase rpm
- Push in to decrease rpm
- Push in fast for emergency reset to idle rpm



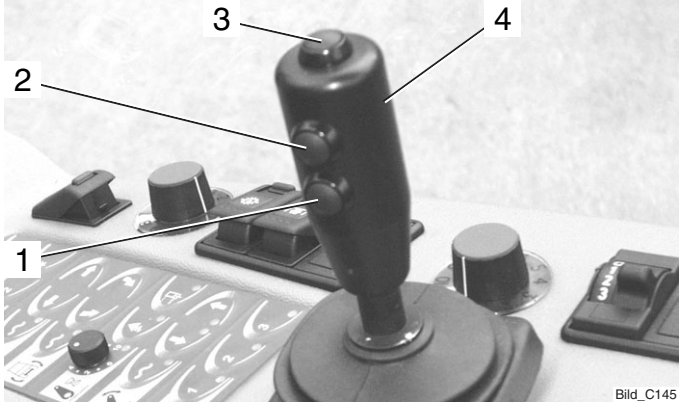
Bild_C275

https://truckmanualshub.com/

Description

Joystick

1 Pushbutton 1 for joystick level 1
2 Pushbutton 2 for joystick level 2
3 Pushbutton 3 for joystick level 3
4 Joystick (with no button pressed = joystick level 0)



Bild_C145

Pedals

1 Inching pedal
2 Brake pedal
3 Accelerator pedal

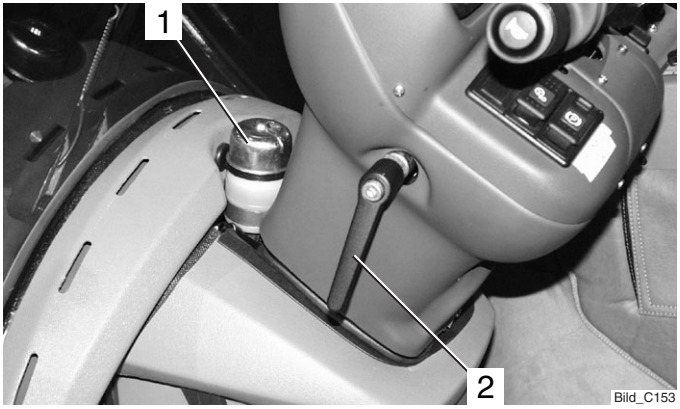
Bild_C146

https://truckmanualshub.com/

Description

Steering wheel adjustment

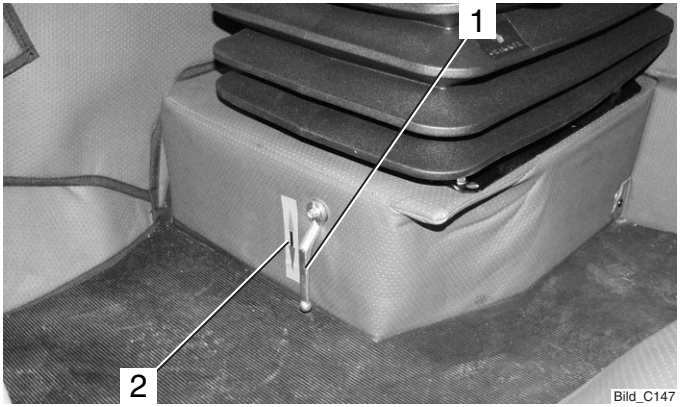
1 Brake fluid reservoir
2 Steering wheel adjustment lever



Bild_C153

Heater until 04.2005

1 Heater control valve
2 Heating temperature label
- horizontal - cooler
- vertical - warmer



Bild_C147

https://truckmanualshub.com/

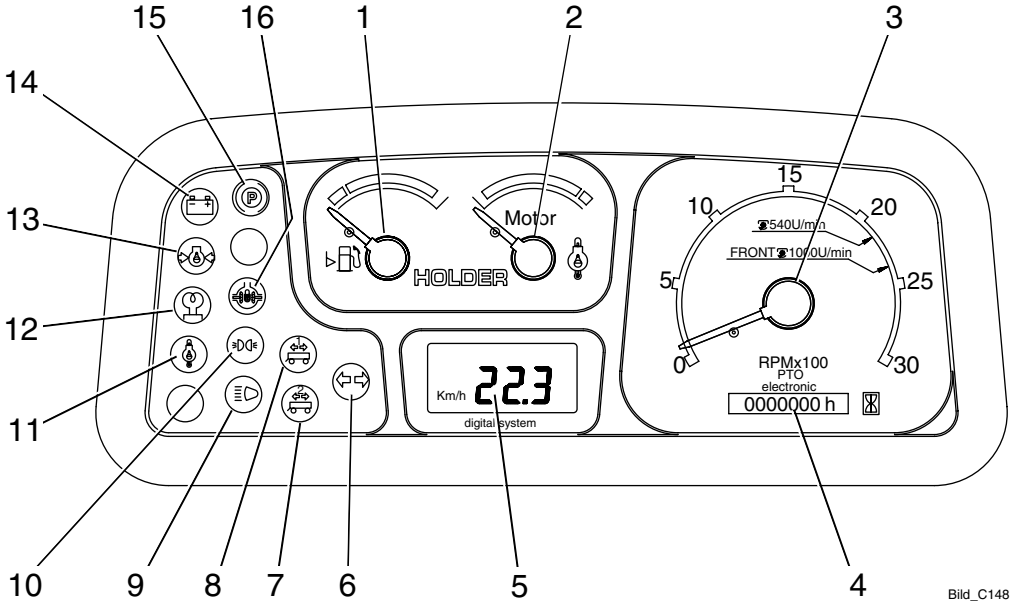
Description

Multifunctional display, legend

1 Fuel gauge
2 Engine oil temperature gauge
3 Tachometer with markings for PTO rpm
4 Hour meter
5 Digital speedometer

Indicator lights:

6 Turn signal indicator
7 Turn signal indicator for 2nd trailer
8 Turn signal indicator for 1st trailer
9 High beam
10 Dip beam
11 Engine oil temperature
12 Preheating indicator
13 Engine oil pressure warning light
14 Battery charging indicator
15 Parking brake
16 Differential lock



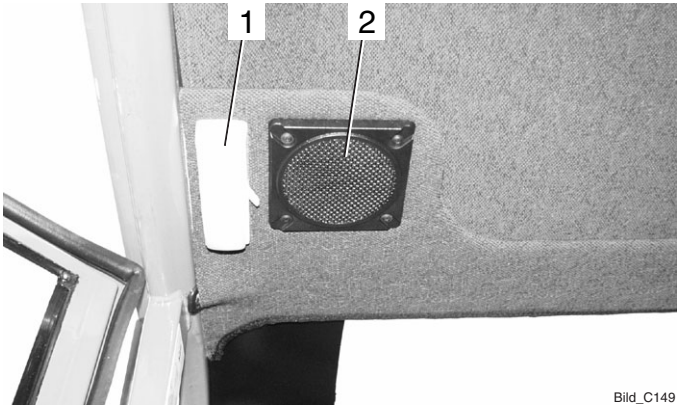
Bild_C148

https://truckmanualshub.com/

Description

Controls in cabin at front top

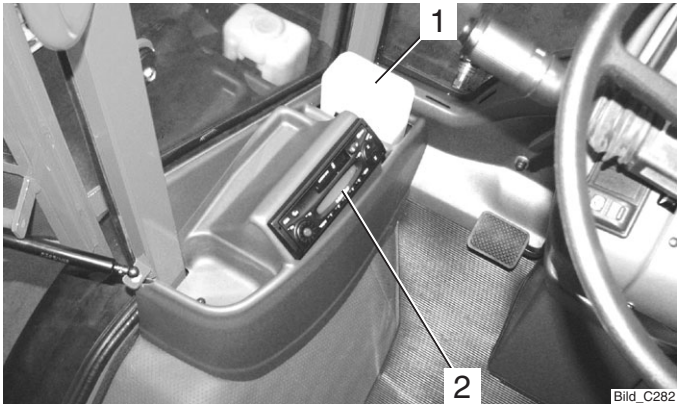
1 Interior light
2 Loudspeaker



Bild_C149

Controls in cabin at front bottom

1 Washing water reservoir
2 Radio



Bild_C282

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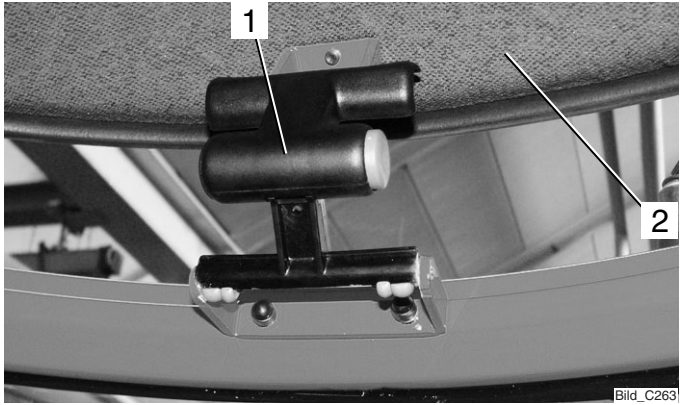
Controls in cabin at rear

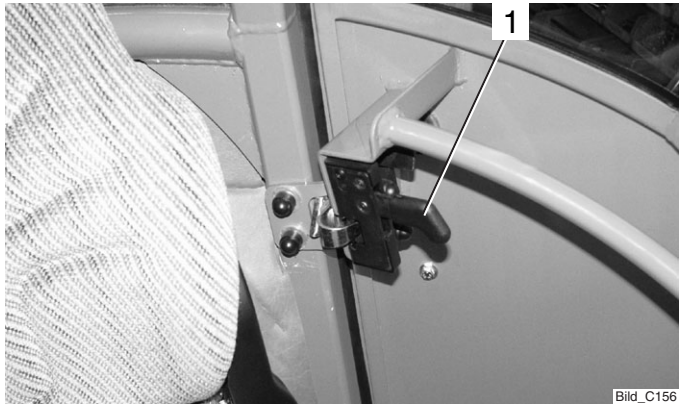
1 Roof hatch handle
2 Roof hatch



Bild_C263

Door controls

1 Door opener



Bild_C156

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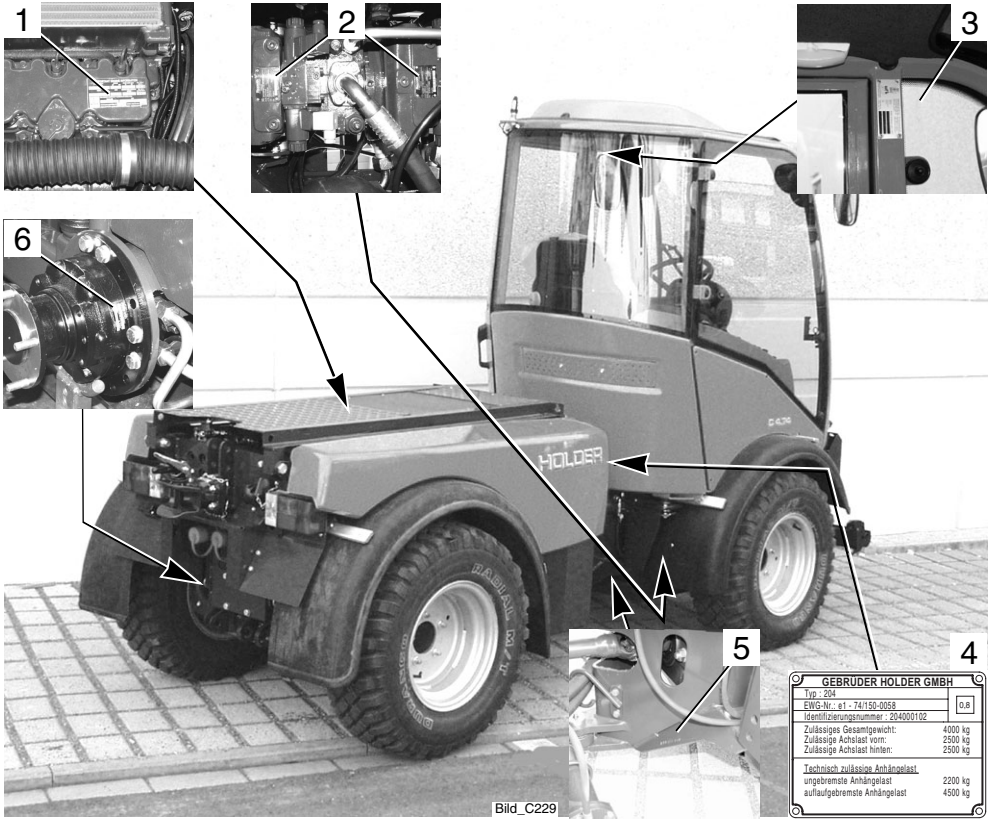
Description

Location of plates and labels

Identification plates

1 Engine type plate
2 Variable-displacement pump type plate
3 Cab type plate
4 Machine type plate (on fuel tank)
5 Chassis number (On front frame at right looking forward)
6 Wheel motor type plate



Bild_C229

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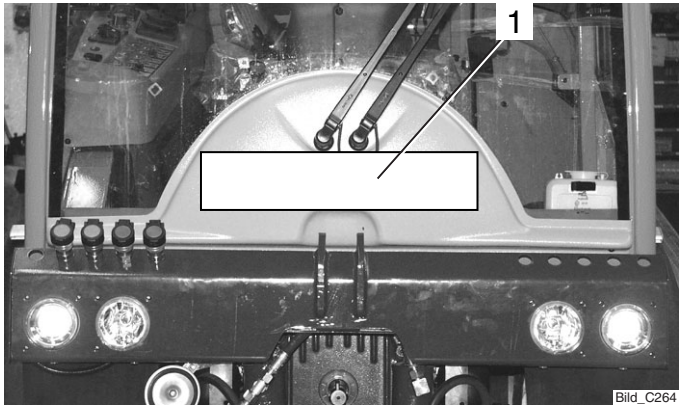
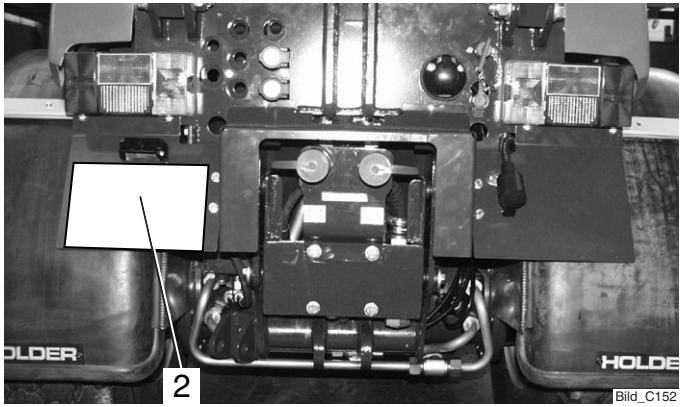
Mounting instructions for licence plates

- Install the front licence plate (1) on the cover below the windshield wipers.
  First remove the cover before installing the licence plate.



Bild_C264

- Install the rear license plate (2) at the rear below the left tail light.



Bild_C152

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Description

Overview of options and variants (selection)

Assembly	Additional information	Dimension/Order No./Type
Hydraulic sideshift		204-01-01
Heating element for preheating oil (engine)	from –20°C (230 VAC)	204-34-69
Air conditioning		204-34-79
Backrest extension, comfort		204-34-80
Food light, rear		204-34-88
Front power lift		204-51-01
Rear power lift		204-51-02
Trailer hitch, automatic		204-51-70
Trailer hitch, manual		204-51-71
Front PTO 1000 rpm		204-62-01
Front PTO 540 rpm		204-62-02
Rear PTO 540 rpm		204-62-03
Hydraulic cushioning		204-80-19
Rotating beacon		526-34-74

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Description

Assembly	Supplementary information	Dimension/Order No./Type
Flow divider, 1st circuit		204-80-04
- Pump	Series pump	
- Delivery capacity		17 cm³/rev
- Flow rate		0-25 litres/min
- Maximum pressure		200 bar
Flow divider, 2nd circuit		204-80-15
- Pump	Tandem pump	
- Delivery capacity		14 cm³/rev
- Flow rate		0-25 litres/min
- Maximum pressure		200 bar
Variable-displacement pump	0-100 litres/min adjustable	204-80-30
- Delivery capacity		0-40 cm³/rev
- Maximum pressure		280 bar

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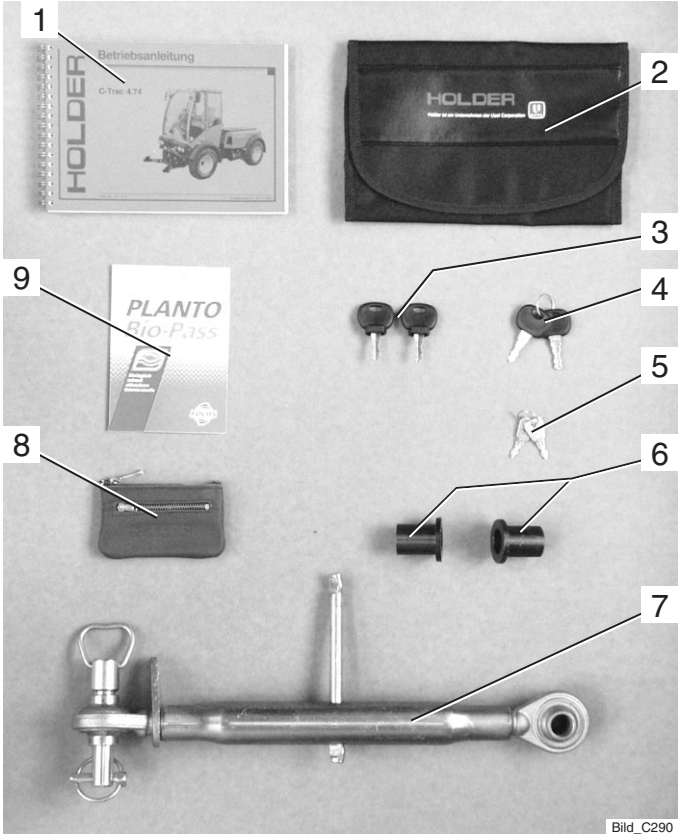
Description

Accessories

The vehicle is delivered with the following accessories:

1 Operating instructions
2 Folder
3 Two ignition keys
4 Two door keys
5 2 tank cap keys
6 Two reducers for category I implements
7 Upper link with retaining pins
8 Key holder
9 Bio-pass for certification of filling with environment-friendly hydraulic oil



Bild_C290

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Taking into operation

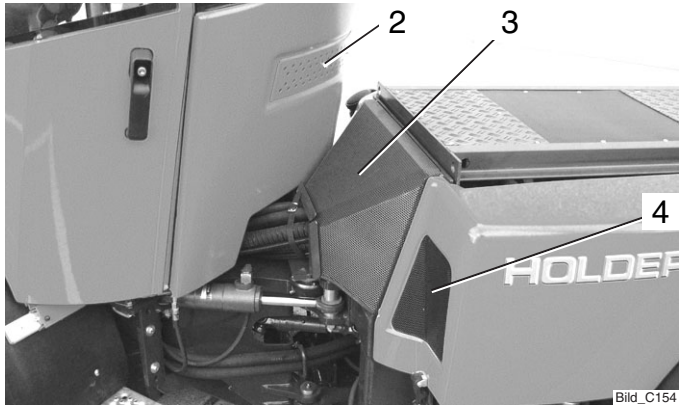
Daily checks and services prior to taking into operation

If damage or defects are found during the following checks, they must be eliminated before taking the vehicle into service. Do not operate the vehicle before proper repairs are carried out. Safety and protective devices should not be removed or disabled. Fixed specified settings may not be changed.
Before starting work, make yourself familiar with all the functions and protective devices of the vehicle.

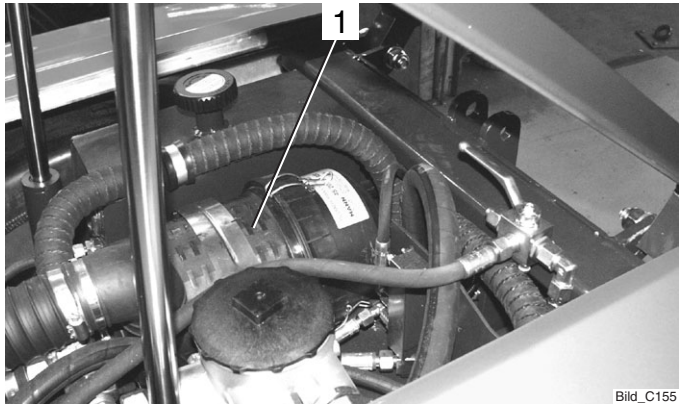
Check and clean the cooler and debris screens

☞ ***NOTE***

- *Check if the debris screens (2,3 and 4) are clean.*
- *Clean the screens if necessary.*
  The screen (3) can be pulled out laterally to the left after removing the two screws and then cleaned easily.
- *The air intake of the air cleaner (1) must be clean.*



Bild_C154



Bild_C155

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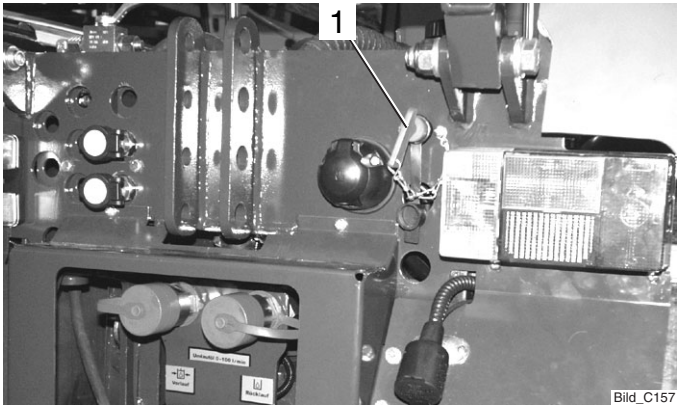
Taking into operation

Turn on the battery isolating switch

☞ ***NOTE***
The battery can be switched off completely with the removable key.

- Insert the key (1) into the battery isolating switch and turn it to the vertical position.
  The battery circuit is turned on.

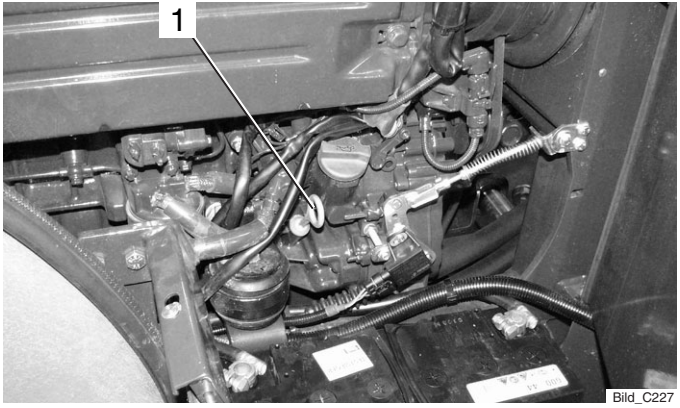


Bild_C157

Check the engine oil level

☞ ***NOTE***
Check the engine oil level only when the vehicle is on level ground.

- Let the engine run approx. 2 minutes with the heater temperature control open.
- Stop the engine and pull the oil dipstick (1) out after about 1 minute.
- The oil level should be between the minimum and maximum marks.
- Top up oil as specified in the maintenance instructions.



Bild_C227

⚠ ***ATTENTION***
Do not fill too much oil.

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Check the trailer hitch (option) if required

- Check the trailer hitch for proper condition and operation. Carry out the check according to the instructions in the section “Operating the trailer hitch“.

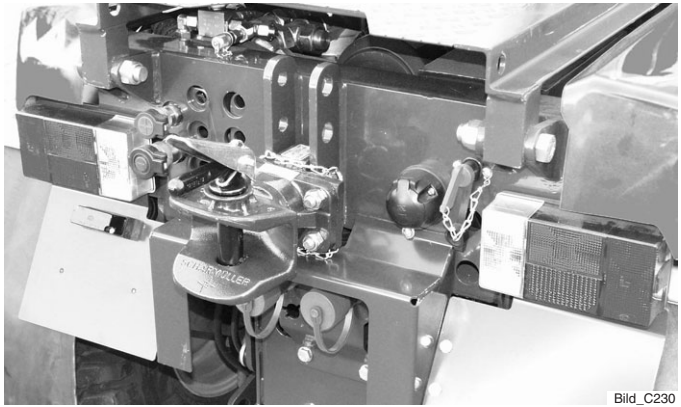
Check the tire inflation pressure

☞ ***NOTE***
Your vehicle can be equipped with different types of tires. The specified inflation pressure for your tires is given in the table entitled “Tires“ in the technical data section.

- Check the inflation pressure at all four tires. All tires must have the same pressure. The rolling resistance increases if the pressure is too low. This causes an increase in fuel consumption and tire wear, the driving characteristics become poorer.

⚠ ***DANGER***
If the inflation pressure is too high, the tires can explode.

- The tires should not be damaged or worn.
- Have damaged tires replaced without delay. Due to the longer braking distance the risk of an accident is increased.


Bild_C230

Bild_C225

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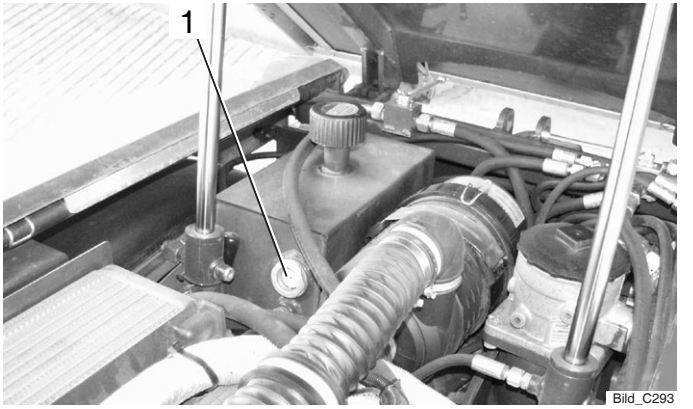
Taking into operation

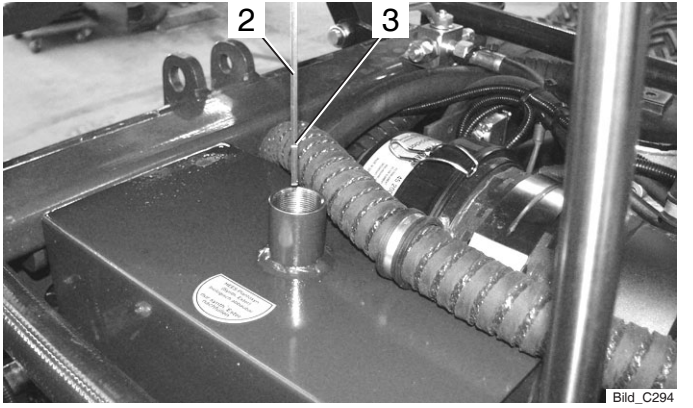
Check the hydraulic oil level

- Raise the dump body (dumper).
- Retract all hydraulic cylinders.
- Check the oil level at the sight glass (1).
- The oil level must be at the centre of the sight glass.
- Top up oil as specified in the maintenance instructions.

☞ ***NOTE***
The first 30 machines have an oil dipstick (2) installed. If this is the case, the oil level must reach the mark (3).



Bild_C293



Bild_C294

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Filling fuel

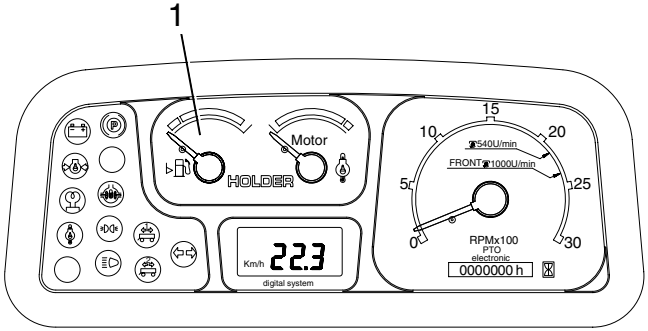
- If necessary, read the fuel level (1) on the multifunctional display.

CAUTION
Danger of fire when handling fuels. Turn off the engine. Do not fill any fuels in the vicinity of naked flames, ignition sparks or hot engine parts. Do not smoke when refuelling.

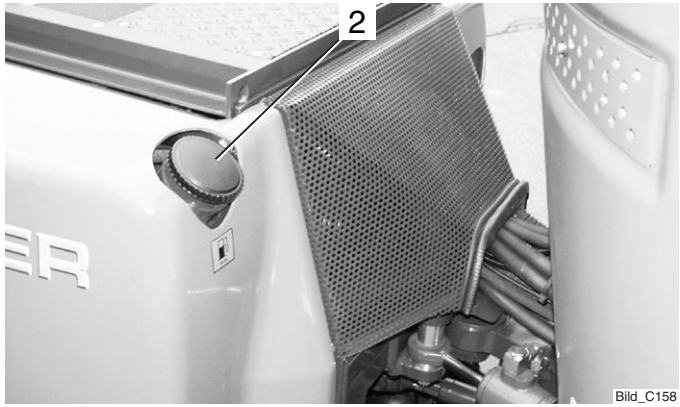
- Remove the oil filler cap (2) of the fuel tank.
- Top up diesel fuel as specified in the maintenance instructions.

Filling capacity ..... approx. 60 L

- Refit the filler cap (2).



Bild_C219



Bild_C158

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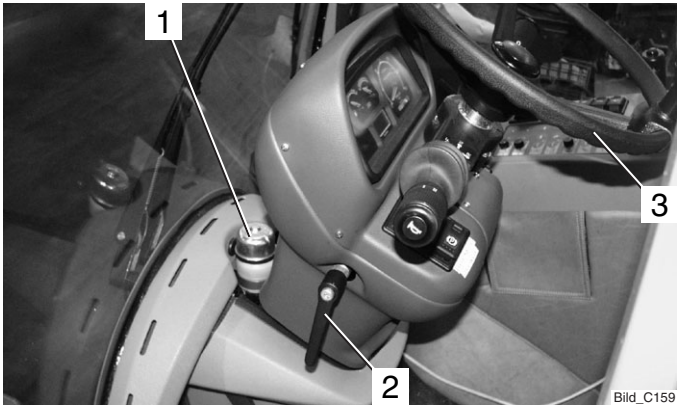
Taking into operation

Check the brake fluid level

- Check the brake fluid level at the brake fluid reservoir (1).
- The brake fluid level should be between the minimum and maximum marks on the reservoir.
- Top up brake fluid as specified in the maintenance instructions.



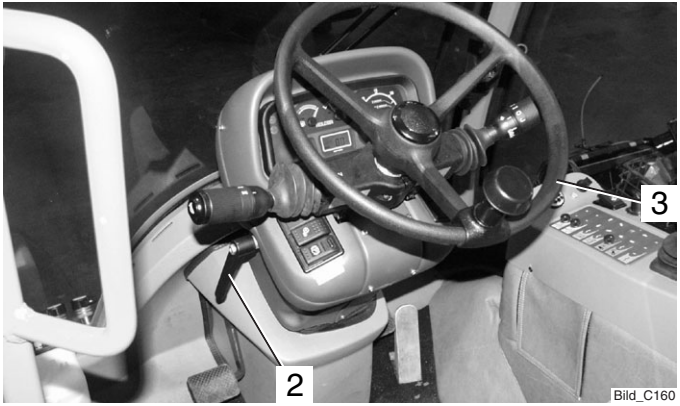
Bild_C159

Adjust the steering wheel

☞ ***NOTE***
The angle of the steering wheel can be set to a comfortable position.

⚠ ***DANGER***
Do not adjust the steering wheel while driving.

- Loosen the lever (2).
- Adjust the angle and height of the steering wheel (3).
- Retighten the lever (2).



Bild_C160

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Adjust the driver's seat with mechanical suspension

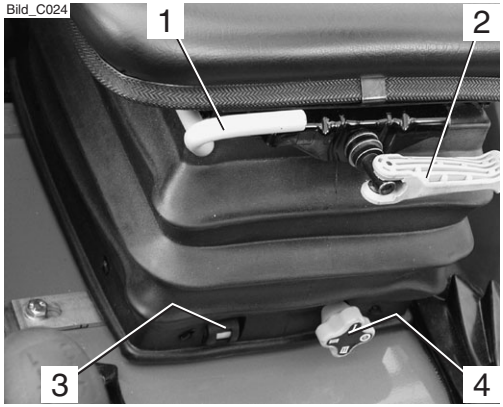
DANGER
Do not adjust the seat while driving. Risk of accidents!

1 Horizontal adjustment
- Raise the handle (1) and push the seat to the front or rear.
- Release the handle and allow the seat lock to engage.

2 Weight adjustment
- Adjust the desired driver's weight by turning the weight adjustment lever (2).
- If the adjustment is correct, the position set at the height adjustment handle (4) is indicated in the window (3).

3 Height adjustment
- Three different heights can be set with the hand-wheel (4).
- The weight should be adjusted after each height adjustment.

Bild_C024



☞ ***NOTE***
To prevent damage to your health, the individual adjustment should be checked and adjusted before taking the vehicle into service.

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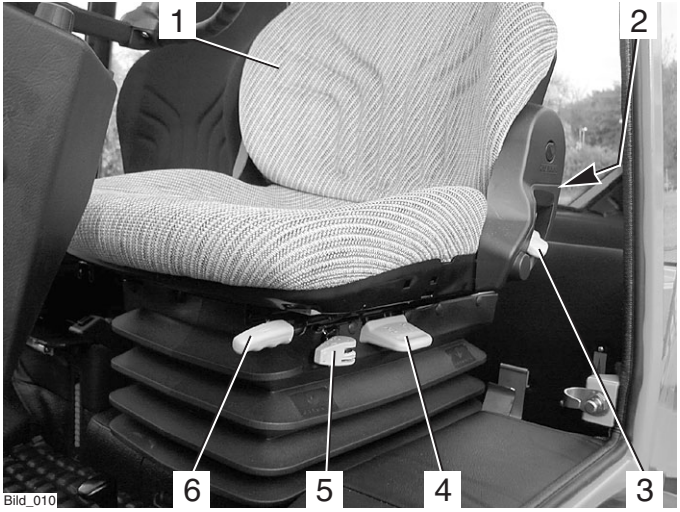
Taking into operation

Adjusting the driver's seat with pneumatic suspension

1 Backrest
2 Adjustment knob for lumbar padding
3 Backrest inclination
4 Weight adjustment
5 Horizontal cushioning
6 Horizontal adjustment



DANGER
Do not adjust the seat while driving. Risk of accidents!

- Adjust the seat so that all controls can be reached and operated safely.

NOTE
Observe the operating instructions for the seat supplied with your vehicle.

Adjusting the lumbar padding

- Be seated on the seat and lean against the backrest (1).
- Turn the adjustment knob for lumbar padding (2) until the most comfortable position is reached.

Adjusting the backrest inclination

- Pull the inclination lever (3) up.
- Adjust the inclination of the backrest with your back.
- Release the inclination lever.

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Adjusting the driver's weight

- Sit down on the driver's seat.
- Pull the weight adjustment handle (4) up.

☞ ***NOTE***
An alarm sounds. The seat is automatically set to the weight of the driver; the alarm ceases.

- Release the lever.

Adjusting the horizontal suspension

- Pull the horizontal suspension lever (5) back:
  Seat suspension is free in the horizontal direction.
- Pull the horizontal suspension lever (4) forward:
  Seat suspension is locked in the horizontal direction.

Adjusting the seat horizontally

- Pull the horizontal adjustment lever (6) up.
- Slide the seat horizontally to the front or rear to the suitable seat position.
- Release the horizontal adjustment lever.

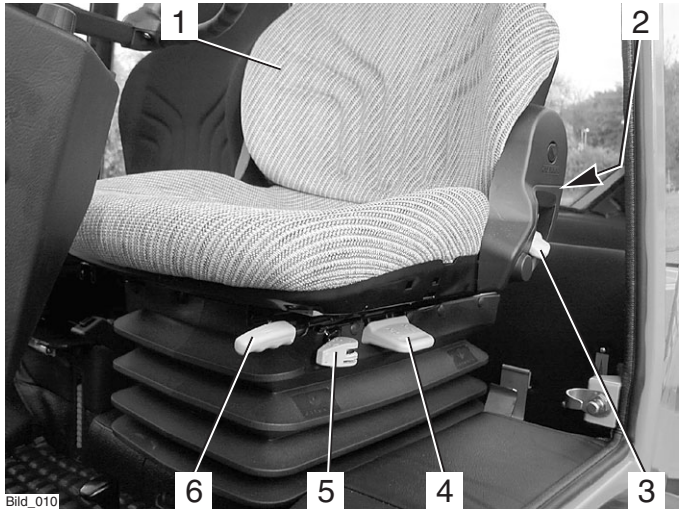

Bild_010

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Taking into operation

Filling washing water

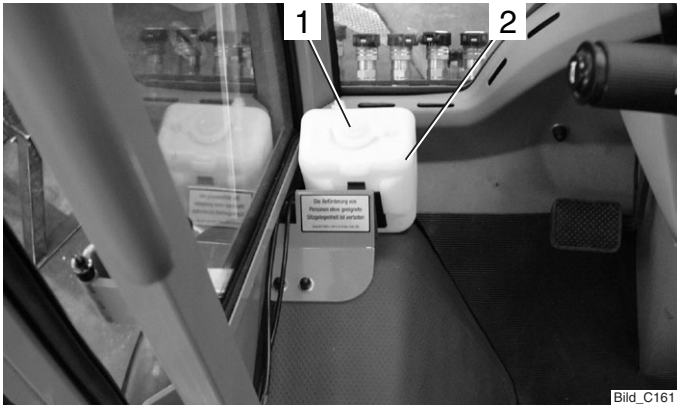
☞ ***NOTE***
The washing water reservoir for the windshield washer is located behind the driver's seat.

- Open the filler cap (1) and add washing water into the reservoir (2).

Filling quantity ..... approx. 1.3 L

Check the lights and rear view mirror

- Check the lights for proper operation. Carry out the check according to the instructions in the section entitled "Lights"
- Adjust the rear view mirror so that the roadway behind the vehicle and the working area are easily seen.



Bild_C161

Bild_C231

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Starting the engine

Notes on the engine before starting up

DANGER
Do not start or run the engine in enclosed spaces. Danger of poisoning through exhaust gases!

Notes on starting

CAUTION
Before starting, make sure no-one is in the vicinity of the vehicle.

ATTENTION
Do not use any starting aids such as Startpilot or similar products. Turn off the drive or driven attaching implements.

CAUTION
Start the engine only from the driver's station.

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Taking into operation

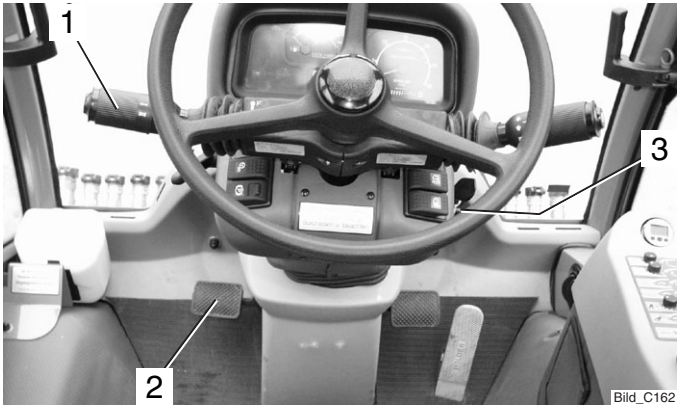
Start the engine

- Set the forward/reverse selector switch (1) to the neutral position (centre).
- Fully depress the inching pedal (2).

☞ ***NOTE***
The engine can only be started if the pedal is fully depressed (starting safety switch).

- Set the hand throttle button (4) to idle (push in fully).
- Insert the ignition key and turn the preheat/starter switch (3) to position 1.

☞ ***NOTE***
The battery charging indicator (6), engine oil pressure indicator (7), parking brake indicator come on (8) (if parking brake is applied).



Bild_C162

Bild_C163

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Taking into operation

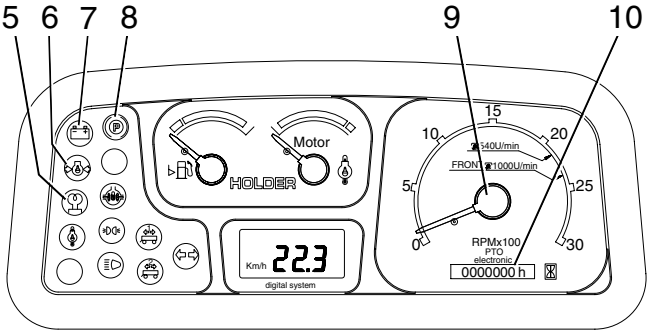
- Turn the ignition key to position 2.
  The engine is being preheated. The preheating indicator (5) comes on.

☞ ***NOTE***
When starting at low temperatures, hold the ignition key longer (approx. 1 minute) in position 2.

- When the preheating indicator extinguishes, turn the ignition key to position 3 to start the engine.
  The engine starts.

⚠ ***ATTENTION***
Operate the starter for a maximum of 20 seconds. Wait one minute before repeating the starting procedure. Repeat the starting procedure only twice at most. In case the engine does not start, carry out a troubleshooting according to the section entitled "Troubleshooting guide".

- Release the ignition key after the start.
  The battery charging indicator (7) and the engine oil pressure indicator (6) extinguish.
- Set the engine speed with the hand throttle button or accelerator pedal to the desired rpm (9).
- The hour meter (10) is activated.



Bild_C164

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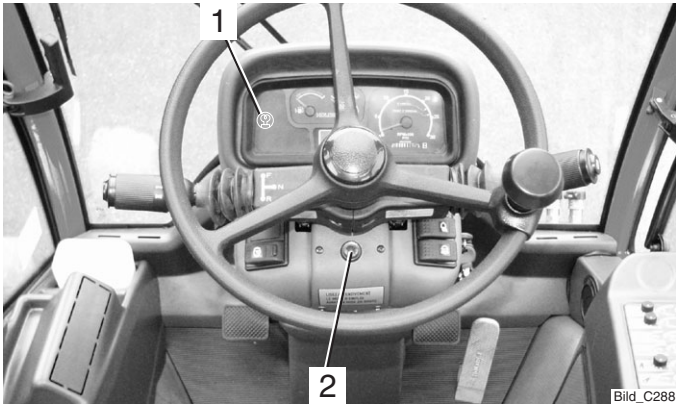
Taking into operation

Starting the engine with automatic preheating

Starting procedure

- Turn the ignition key to position 1.
- The engine will be preheated. At temperatures below +10°C the yellow lamp (2) and the preheating indicator light (1) will come on.
- When the yellow lamp (2) extinguishes, turn the ignition key to position 3 to start the engine.
- The automatic preheating will turn off some time after starting and the preheating indicator light (1) will go out.

☞ ***NOTE***
If the engine is not started, the preheating procedure will cease approx. 10 s after the yellow lamp (2) has gone out.



Check the brakes and steering for proper operation

- Make a short trial run and check the steering and brakes for proper operation.

DANGER
Do not drive a vehicle with a defective steering and/or braking system.

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Operation

Before starting to drive

When driving on public highways, observe the rules and regulations of the highway code.

Driving safety rules

- Drive the vehicle only from the driver's station with the cab doors closed.
- Always adjust your speed to the driving conditions and the load you are carrying.
- Before driving, check that no-one is standing in the immediate vicinity of the vehicle.
- The driving behaviour of the vehicle is strongly affected by the weight and swing range of the implements, trailers and, if fitted, ballasting. Therefore drive slowly with heavy equipment and take the longer braking distance into consideration.
- When following a curve with a trailer or other implements, do not forget to take the added length and drag into consideration.

DANGER
Any parts of the implements posing a traffic hazard must be covered before driving or identified with warning signs.

- Switch off the differential lock in curves.
- When driving on slopes, always drive straight downhill if possible; if you have to turn, turn only uphill.
- On steep slopes you can improve traction by activating the differential lock.
- Drive across slopes only in accordance with the notes at the end of this chapter.

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Operation

Driving

Driving with hydrostatic drive and digital electronics

- Start the engine.
- Preselect the direction of travel with the direction switch (1).
- Pull up the forward/reverse selector switch (1) and move it to the front or rear (forward or reverse).

Bild_C165

☞ ***NOTE***
After starting the engine, the forward/reverse selector switch must be operated once if it was in the forward or reverse position when starting. This prevents any accidental movement of the vehicle when starting the engine.

☞ ***NOTE***
You can also select the new direction when travelling at reduced speed.

⚠ ***CAUTION***
The vehicle will brake strongly and accelerate in the opposite direction.

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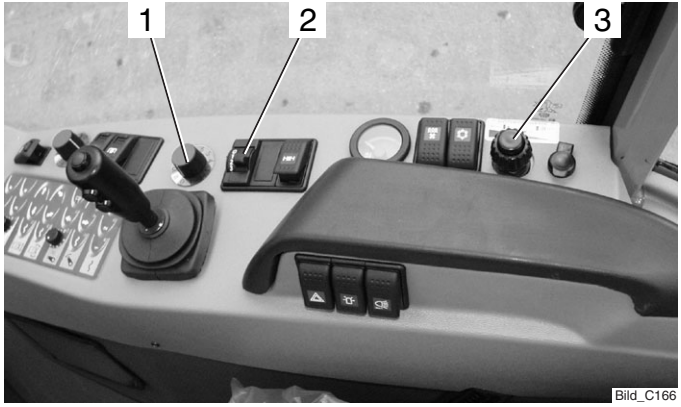
Table of driving ranges

- Select the desired driving program with the driving program switch (2). The selected position is illuminated:

You can select between 4 programs:

Range 1 and 2	eg on-road travel
Range 3 and 4	eg working



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Operation

Table of driving programs •

Position	Symbol	Function	Utilisation
Range 0	STOP	Drive off	
Range 1	Rabbit symbol	Maximum speed	eg for highway driving
Range 2	Turtle symbol	Reduced speed	eg for slow on-road travel
Range 3	PTO symbol	Travel speed adjustable with fine adjustment knob, is controlled automatically in case of high power demand of implement	eg for mowing
Range 4 ••	Snow blower symbol	Travel speed adjustable with fine adjustment knob, is controlled automatically in case of high power demand of implement	eg special setting for snow blower

• The driving programs can be optimised for special operations by your Service, eg controlled constant driving speed

•• With SDS* driving comfort, the vehicle speed is controlled with the accelerator.

* Option

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Selecting on-road travel (transport speed)

The vehicle is stationary.

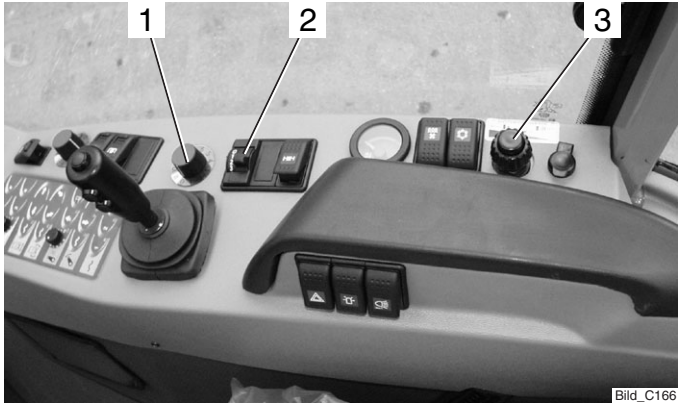
- Set the program switch (2) to range 1 or 2.

☞ ***NOTE***
The driving range can also be switched while driving at reduced speed.

- Release the parking brake.
- Depress the accelerator pedal for the desired speed. The vehicle starts and can be driven up to the maximum speed of the chosen range.
- You can read the engine speed (5) and driving speed (4) on the multifunctional display.

Setting the working speed of programs 3 and 4

☞ ***NOTE***
With programs 3 and 4 you can select the driving speed independent of the PTO rpm.



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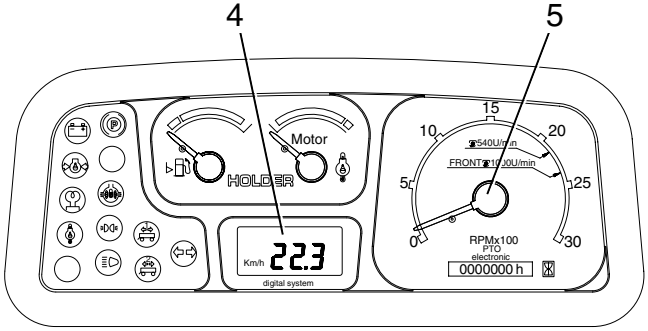

Bild_C167

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Operation

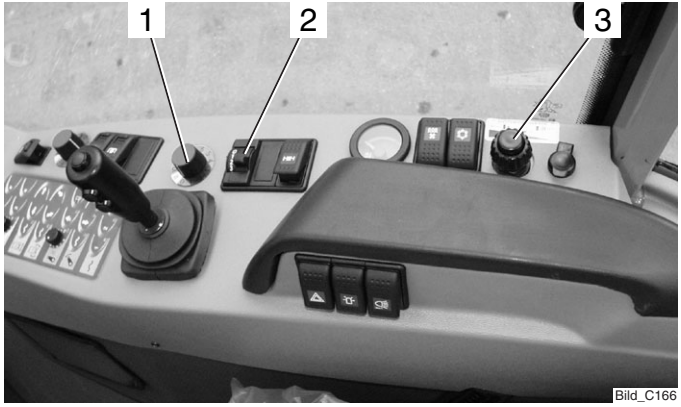
The vehicle is stationary.
- Set the fine control knob (1) to 0.
- Set the program switch (2) to range 3 or 4.
- Adjust the PTO rpm with the hand throttle (3).

☞ ***NOTE***
The engine speed must reach at least 1500 rpm as the control is only effective beginning at this speed.

☞ ***NOTE***
You can also switch ranges while driving.

The ranges 3 and 4 provide a speed as required by the load on the PTO. This means that if, for example, the snow blower requires more power when meeting high resistance, the vehicle will drive more slowly. As the resistance decreases, the vehicle accelerates again to the previously selected driving speed. Driving range 4 is especially adapted for certain applications.

- Release the parking brake.
- The driving speed is controlled with the fine control knob (1).



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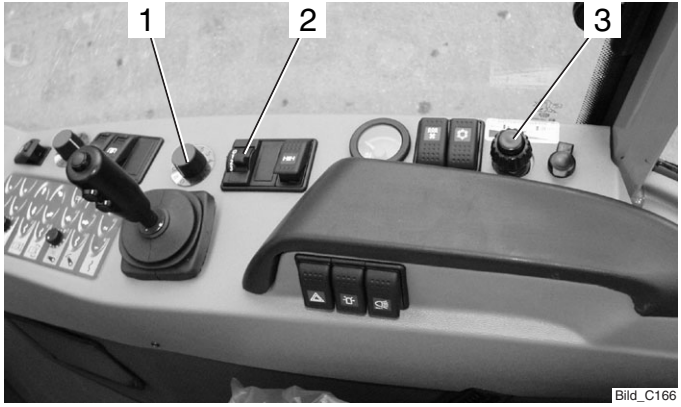
Adjusting the fine control knob

☞ ***NOTE***
You can adjust the fine control knob (1) at any time while driving for fine and infinitely variable control of the driving speed.

- In position 0 the vehicle is stationary. When turned further clockwise, the vehicle starts driving and at the maximum scale position 11, the maximum speed of the driving range is achieved.
- You read can the engine speed and driving speed on the multifunctional display.

☞ ***NOTE***
In this operating mode, the vehicle drives automatically and needs only to be steered.

This mode is best for operating an implement as you can concentrate fully on controlling the implements.



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Operation

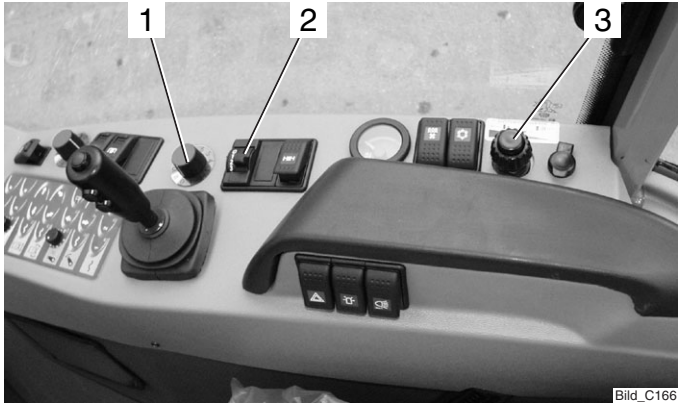
Driving with SDS (Special Drive System)*

For setting programs 1-3 with the program switch (2) see the operation section on pages 61 and 62.

Driving program 4 (SDS)
- Set the program switch (2) to driving range 4.

☞ ***NOTE***
At this level the fine control knob (1) is not working. The function is assumed by the pedal (4).

- Adjust the engine rpm with the hand throttle (3).
- You can now control the vehicle speed steplessly with the pedal (4) (accelerator).



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* Option

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Operating the inching pedal

7 Inching pedal
8 Accelerator pedal

This function is active for all driving programs.

NOTE
The inching pedal allows driving speed to be reduced temporarily.

ATTENTION
If the inching pedal is floored, for example, for an EMERGENCY STOP, the vehicle will decelerate quickly.

Bild_C169

- Depress the inching pedal (7) to reduce driving speed and to stop completely.
- Release the inching pedal again after passing the obstacle.
  The vehicle will resume the previously selected speed.

Changing the direction of travel

- Preselect the new direction with the forward/reverse selector switch (9).
- The vehicle will come to a standstill and accelerate again in the opposite direction.

Bild_C170

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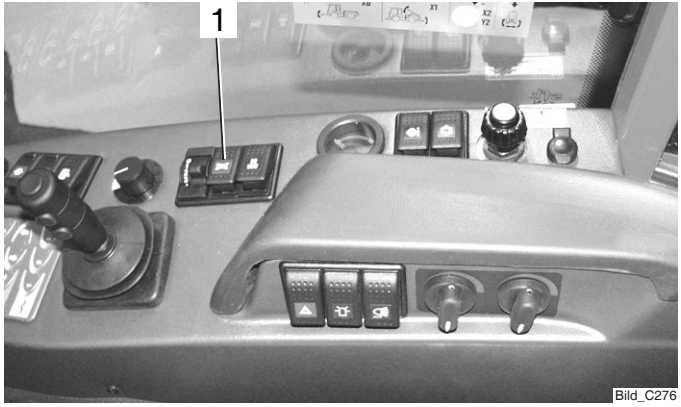
Operation

Engaging the differential lock

NOTE
With the differential lock you can improve traction on soft, slippery ground. The engine speed should be over 1000 rpm during its use. You can engage the differential lock only briefly by toggling the switch momentarily.

ATTENTION
The differential lock may only be used when driving straight ahead.

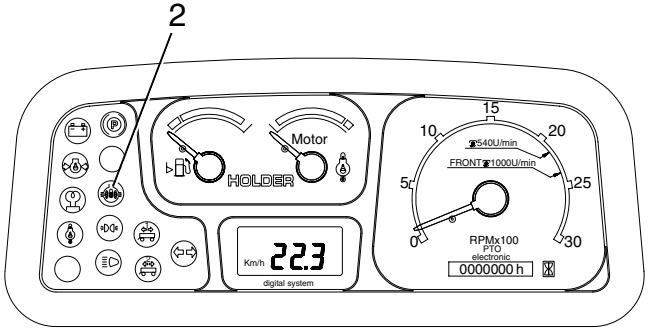


Bild_C276

- Depress the rear end of the differential lock switch (1) and hold it.
  The indicator (2) in the multifunctional display lights up red. An intermittent alarm sounds at the same time.
  The differential lock acts on both axles.

Disengaging the differential lock

- Release the differential lock switch (1).
  The indicator (2) goes out and the alarm in the multifunctional display ceases.



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Steering

The vehicle has a hydraulically-operated articulated steering. The wheels also stay in track in curves so that implements are guided without any lateral offset.

Steering

- Turn the steering wheel (1) in the desired direction.

The possible turning radii depend on the tires and track widths of your vehicle. For exact information refer to the track width table in the section „Technical data“.

Two-stage steering*

The vehicle can be driven with two steering speeds.
- Indirect steering (travel mode- slow steering speed)
- Direct steering (working mode - fast steering speed)

- Depress the toggle switch (2) on the left. The indicator light in the toggle switch comes on and the steering for the working mode is turned on.

Bild_C173

☞ ***NOTE***
With direct steering the steering lock is about twice as large as with indirect steering for the same steering movement.
(ratio approx. 1:2)

⚠ ***ATTENTION***
For on-road travel the two-step steering must be set to indirect steering (indicator light off) (danger).

* Option

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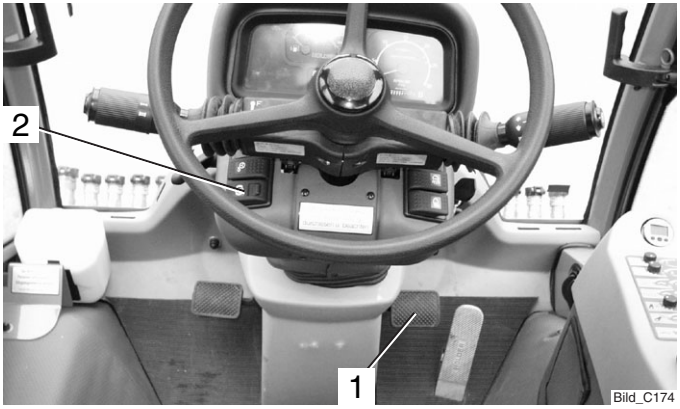
Operation

Brakes

The service brake is a drum brake mounted in the front axle and it is actuated hydraulically. The parking brake is applied with the parking brake switch.



Bild_C174

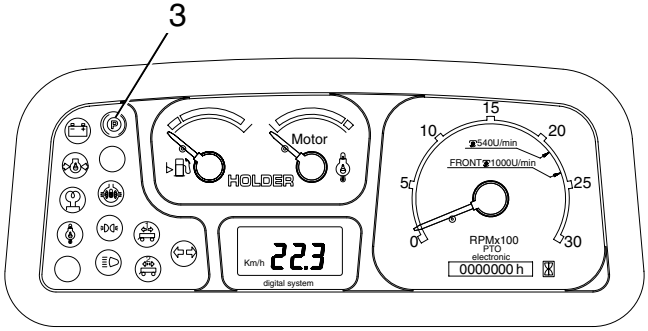
Applying the service brake

- Depress the brake pedal (1).

Applying the parking brake

ATTENTION
The parking brake is not intended to be used for braking while driving.

- Unlock the lock at the parking brake switch (2) and depress the switch to the left.
  The parking brake is applied and the indicator light in the switch and the parking brake warning light (3) in the multifunctional display come on.



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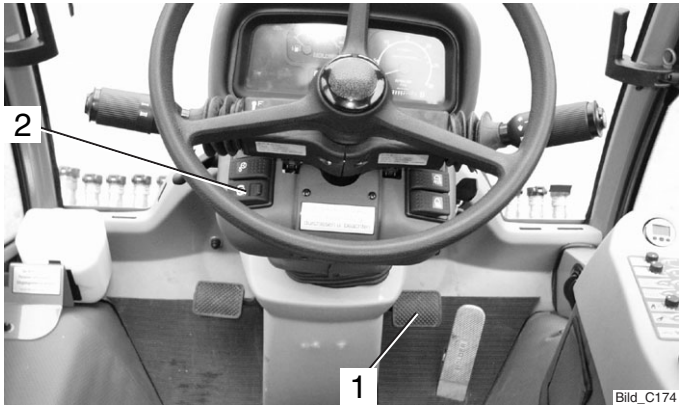
Releasing the parking brake

- Turn off the parking brake switch (2).
  The parking brake is released and the indicator light in the switch and the parking brake warning light (3) go out.
- If the parking brake warning light (3) in the multifunctional display comes on with the parking brake released, there is too little pressure for releasing the parking brake in the pressure accumulator.
- Start the engine to build up pressure to release the parking brake.

ATTENTION
An alarm is sounded when driving with the hand brake applied.



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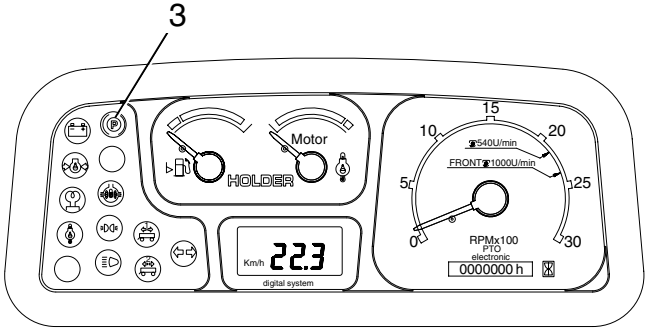

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Operation

Driving on slopes

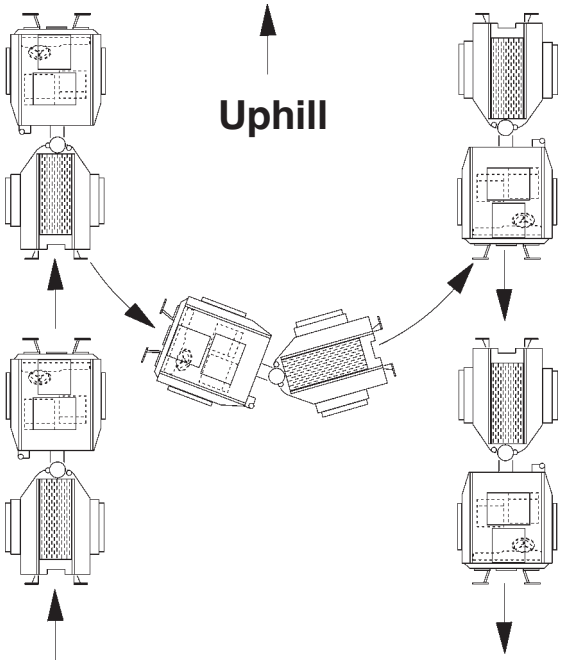
DANGER
Driving on slopes is dangerous as the vehicle can tip over if the centre of gravity exceeds the tip-over limit on an extreme slope.

The following factors reduce the hazard:
- small or no load
- low driving speed
- low gradient
- low tire inflation pressure

NOTE
The driving comfort and the traction of the vehicle can be improved by reducing the inflation pressure.

- large track width
- level, non-bumpy terrain

When turning on slopes we recommend proceeding as shown in the drawing on the right.



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Special operating instructions

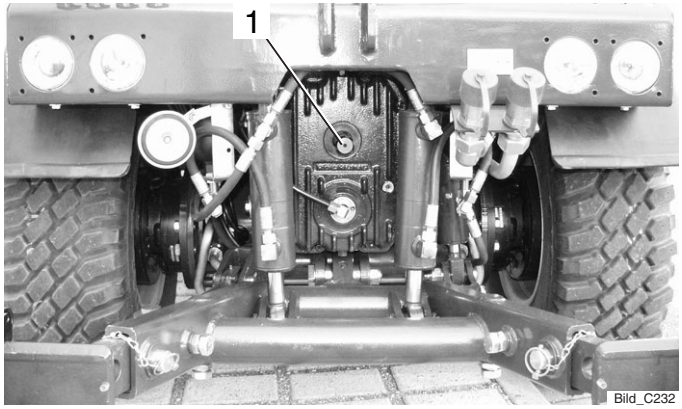
Stationary operation

The vehicle can be used for stationary operation, for example, to drive a water pump via the PTO shaft.

ATTENTION
Place the vehicle n level ground in both directions.

- Attach the stationary equipment to the PTO shaft (1).
- Set the program switch to 0.
- Operate the parking brake.

DANGER
Before switching on the PTO, make sure no-one is standing in the vicinity of the vehicle and the rotating PTO shaft.



Bild_C232

Removal of hydraulic oil for stationary operation

When the vehicle is stationary, hydraulic oil can be removed, for example, for the operation of a hydraulic dump.

Max. quantity of oil removed ..... 12 L

ATTENTION
Before starting to drive after stationary operation, first check if the power steering is working. Turn the steering wheel fully to the right and left several times to release air from the steering system.

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Special operating instructions

Adjusting the track width

You can adjust the track width of the vehicle by mounting the wheels inside out.

DANGER
Observe the safety notes on a safe shutdown and jacking up for the wheel change in the maintenance instructions.

- Remove the wheels. Turn the wheels inside out, or from the left to the right.

NOTE
The arrows on the tires must show in the forward direction of rotation again.

- Tighten the wheel nuts to the specified torque.

Torque ..... 215 Nm

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Operation in winter

Oil preheating*

Before starting the engine at temperatures below -20°C, turn on the heating element* to preheat the oil.

- Connect the preheating system plug to a 230 VAC source.

Observe the operating instructions of the battery manufacturer.

Winter diesel fuel

Whenever temperatures fall below 0°C, use winter diesel or super diesel fuel or additives recommended in the maintenance instructions.

Engine oil for winter operation

Fill engine oil with a suitable SAE class as recommended the maintenance instructions.
The cold start capability of the engine can be reduced if the temperature limits are underrun occasionally, but this does will not damage the engine.

Hydraulic system

The hydraulic functions are sluggish and slower during cold temperatures. Bring the hydraulic system to operating temperature with some movements without a load.

* Option

Putting on snow chains

Snow chains can be mounted on the tires to improve grip. In the following table you will find the order numbers for RUD chains which fit on the listed tires. You can also fit snow chains from other manufacturers if these have the proper dimensions.

Tires	Snow chain type (RUD Order No.)
10.5-18 MPT / 10.5/80-18	22 553 and 24 553
275/70 R18 / 320/65 R18	24 553
31x11.50 R15	22 055
31x15.50-15 Terra	24 548
33x12,50 R15	22 167 and 24 167
33x15.50-15	22 174
36x13.5-15	24 178

Ballast weights

The weight of the machine can be increased with ballast weights. The same ballast weights must be mounted on each axle and side.

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Operating the implements

We have tested and approved a large number of possible implements for use with this vehicle. Only implements with the CE symbol may be used. We recommend contacting our customer service before installing special equipment.

Possible implements

For example for:
vineyards and orchards
agriculture
mowers
snow fighting equipment
and other street cleaning equipment.

Safety instructions for handling implements

The vehicle must be parked safely before the installation of implements.
It must be secured against rolling, for example, with the parking brake or, if required, with chocks.

DANGER
Be careful when attaching implements: risk of injury by pinching and shearing parts.

DANGER
No persons are allowed to stand between the vehicle and implement when the vehicle is not secured against rolling.
For driving on roads the implement must be lifted and secured against lowering.
Observe the applicable safety regulations for your implement. Observe the operating instructions and the safety rules for your implement.

DANGER
During work breaks, the implement must always be lowered to the ground in order to relieve the hydraulic cylinders. Accidents can occur if the lowering is uncontrolled, for example, due to damage or accidental movement of the control levers.

DANGER
Any parts of the implements posing a traffic hazard must be covered before driving or identified with warning signs.

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Operating the implements

Additional information on implements

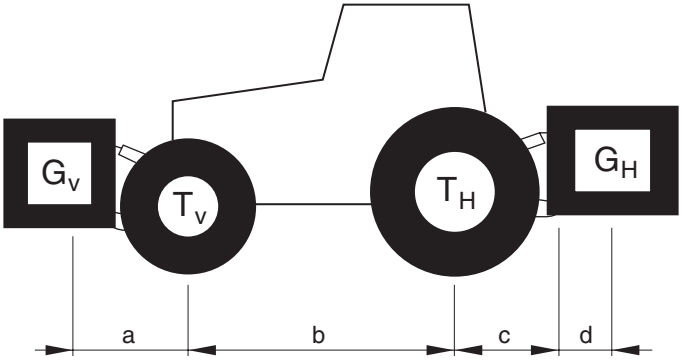
Do not exceed the permissible total weight, the permissible axle loads and tire carrying capacities of the vehicle when installing implements on the front and rear 3-point lift. The front axle of the vehicle must always be loaded with at least 20 % of the vehicle's kerb weight. Before purchasing equipment, make sure these conditions are met by performing the following calculations or by weighing the vehicle-equipment combinations.

Determining the total weight, axle loads and tire carrying capacity including the minimum ballasting.

For their calculation you need the following data:

T_L (kg)	Kerb weight of the vehicle [1]
T_V (kg)	Front axle load of the empty vehicle [1]
T_H (kg)	Rear axle load of the empty vehicle [1]
G_H (kg)	Total weight of rear implement/rear ballast [2]
G_V (kg)	Total weight of front implement/front ballast [2]
a (m)	Clearance between centre of gravity of front implement/front ballast and centre of front axle [2] [3]
b (m)	Vehicle wheelbase [1] [3]
c (m)	Distance between centre of rear axle and centre of lower link ball [1] [3]
d (m)	Distance between centre of lower link ball and centre of gravity of rear implement/rear ballast [2]

[1] See technical data in the operating instructions
[2] See price list and/or operating instructions of the implement
[3] Measure



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Rear implement or front/rear combinations

1) Calculation of the minimum front ballasting $G_{V\ min}$

$$G_{V\,min}=\frac{G_H\cdot(c+d)-T_V\cdot b+0.2\cdot T_L\cdot b}{a+b}$$

Enter the calculated minimum ballasting required for the front of the vehicle in the table.

Front implement

2) Calculation of the minimum rear ballasting $G_{H\ min}$

$$G_{H\,min}=\frac{G_V\cdot a-T_H\cdot b+X\cdot T_L\cdot b}{b+c+d}$$

Enter the calculated minimum ballasting required for the rear of the vehicle in the table.
(Value X for Holder vehicle 0.25 4-wheel)

3) Calculation of the actual front axle load $T_{V\ tat}$

(If the minimum front ballasting ($G_{V\ min}$) is not obtained with the front implement (G_V) , the weight of the front implement must be increased to the weight of the minimum front ballasting.)

$$T_{V\,tat}=\frac{G_V\cdot(a+b)+T_V\cdot b-G_H\cdot(c+d)}{b}$$

Enter the calculated actual and the permissible front axle load specified in the operating instructions of the vehicle in the table.

4) Calculation of the actual total weight G_{tat}

(If the required minimum rear ballasting ($G_{H\ min}$) is not obtained with the rear implement ($G_{H\ min}$), the weight of the rear implement must be increased to the weight of the minimum rear ballasting.)

$$G_{tat}=G_V+T_L+G_H$$

Enter the calculated actual and the permissible total weight specified in the operating instructions of the vehicle in the table.

5) Calculation of the actual rear axle load $T_{H\ tat}$

$$T_{H\,tat}=G_{tat}-T_{V\,tat}$$

Enter the calculated actual and the permissible rear axle load specified in the vehicle operating instructions in the table.

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Operating the implements

6) Tire carrying capacity

Enter the double value (two tires) of the permissible tire carrying capacity (eg see tire manufacturer documentation) in the table.

	Actual Calculated Weight		Specified Permissible Weight acc. to operating instructions		Double Permissible Tire Load Capacity (Two Tires)
Minimum ballast at front/rear	/ kg		-		-
Total weight	kg	≤	kg		-
Front axle	kg	≤	kg	≤	kg
Rear axle	kg	≤	kg	≤	kg

The minimum ballasting must be mounted on the tractor either as attachment or ballast weight!
The calculated weights must be lower than/equal to (≤) the permissible weights!

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Attaching implements

The various implements are attached to the front or rear power lift*.
There are 2 different fastening categories:
Category I Pin diameter 22 mm
Category II Pin diameter 28 mm
The vehicle can be adjusted to both categories by adjusting the pintle hook bars and providing the pintle hooks with or without reducer sleeves.

DANGER
Only use the following specified devices for attaching your implement.
Secure the implement against shifting or rolling.

* Option

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Operating the implements

Adjusting the pintle hooks and pintle hook bars

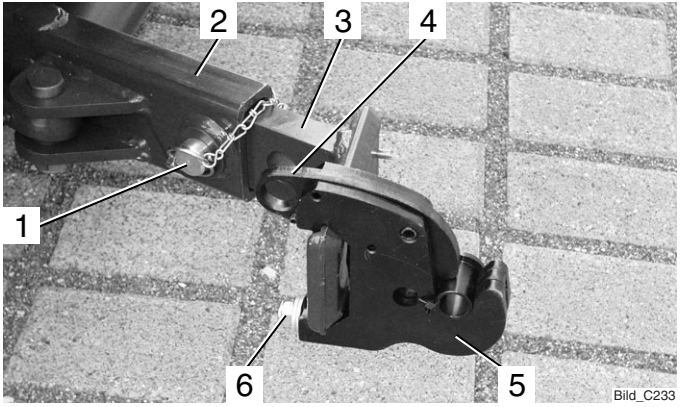
You can adjust the pintle hooks laterally and longitudinally.
- Measure the stand-off of the pins on your implement.
- Loosen the clamping screws (6) on both sides.
- Slide the pintle hooks laterally until the required distance is reached.
- Retighten the clamping screws.
- Equipment of category IIcan be attached with the pintle hooks (5) directly.
- For equipment of category I install the reducing sleeves on the left and right side.

Adjusting the length of the pintle hook bar

- Loosen the 2 locknuts and clamping screws (inside and at bottom) on the lower link (2).
- Pull the retaining clip out of the pin (1) and remove the pin.
- You can put the pintle hook bar (3) in one of 3 positions.
- Insert the pin (1) in the hole and secure with the retaining clip.
- Retighten the locknuts and clamping screws.

DANGER
Make sure no-one is standing between the vehicle and implement.

- Drive the vehicle to the implement to be attached.



1 Pin with retaining clip
2 Lower link support
3 Pintle hook bar (adjustable) with 3 positions
4 Catch
5 Pintle hook
6 Clamping screw

Hole	Position	Used for
1st hole	Front	Category I and II
2nd hole	Centre	Category I
3rd hole	Rear	Optional attachments

- Steer the pintle hooks (5) under the attaching pin of the implement.
- Raise the front power lift until the catch (4) closes and engages.

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Adjusting the upper link

The upper link can be secured at different holes. The required height depends on your implement (for a better adaptation of the equipment, to increase the lifting force and depending on the lifting height).

Upper hole

- More lifting power, lower lifting height.

Lower hole

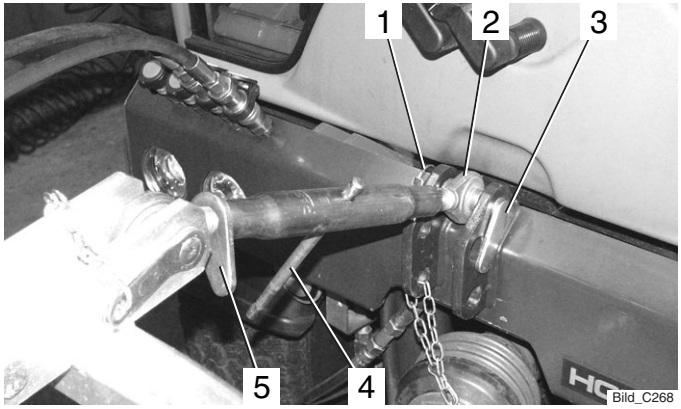
- Lower lifting power, higher lifting height.

ATTENTION

The equipment must not hit the cabin.

1 Retaining clip
2 Top link
3 Top link pin
4 Toggle
5 Locking lever

- Secure the top link (2) with the pin (3) and secure the pin with the retaining clip (1).
- Adjust the top link (2) to the required length (by turning the toggle (4) to screw it in or out); secure the top link with the locking lever (5).



ATTENTION

Both threads must be screwed in equally far.

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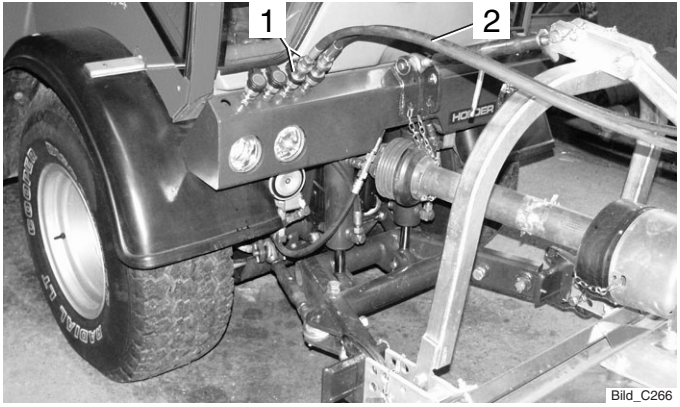
Operating the implements

Connecting hydraulic lines

ATTENTION
The hydraulic couplings on the vehicle must not carry any pressure before the connection is made. The couplings on the vehicle and the hydraulic hoses must be clean.

NOTE
Each implement has different functions and hydraulic lines to the control unit. Observe the operating instructions supplied with your implement and make yourself familiar with the functions and colour codes.



Bild_C266

- Open the protective caps of the hydraulic couplings (1).
- Attach the colour coded hydraulic hoses (2) of the implement to the hydraulic couplings of the same colour on the vehicle.

ATTENTION
The hydraulic male couplings fit on each coupling and can therefore be connected incorrectly. With the connection you decide which function/movement of the implement is actually to be performed with the control lever assigned to the coupling.

DANGER
If you are not sure about the functions, determine them by making trials at a safe place.

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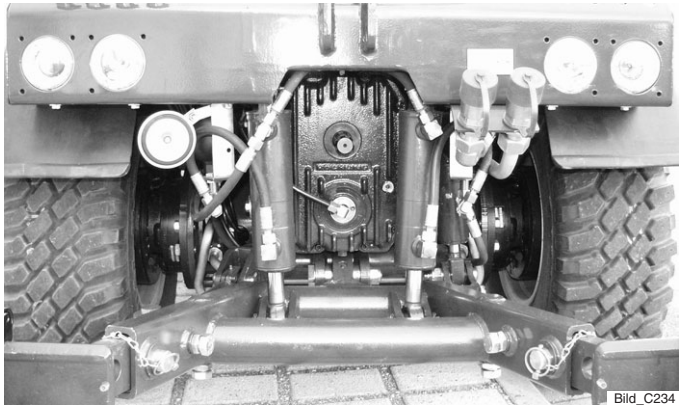
Installing the cardan shafts

Only use shafts suitable and intended for the implement. These shafts are supplied with the implement. The length the of the shaft must be adjusted before the first installation. In case of doubt, please contact our after-sales service. Observe installation instructions for the cardan shaft when installing it.

DANGER
Shut off the engine before the installation. Fit the protective devices as specified after the installation.

Removing implements

- Drive the implement to its storage place and lower it with the front power lift.
- Stop the engine, but do not turn the ignition off.
- Operate all control levers for the front power lift several times in all directions. This will relieve the pressure in the hydraulic system.
- Slide the outer ring of the hydraulic couplings (1) back and disconnect the hydraulic hoses (2).
- Close the protective caps on the hydraulic couplings (as with item 4).
- Remove the upper link from the pin of the upper link support.
- Pull the catches (3) up to release the implement pins.
- Lower the front power lift and drive forward carefully.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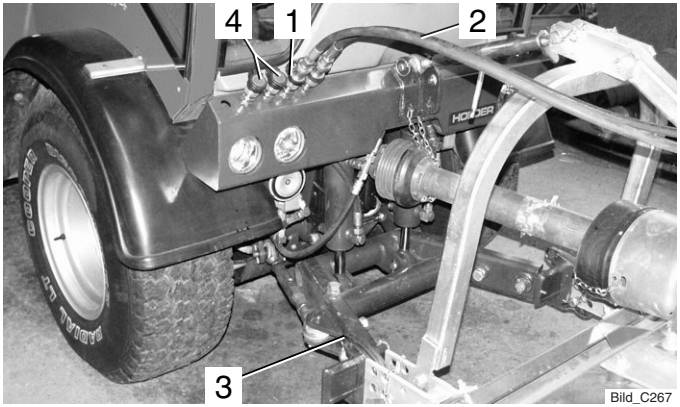

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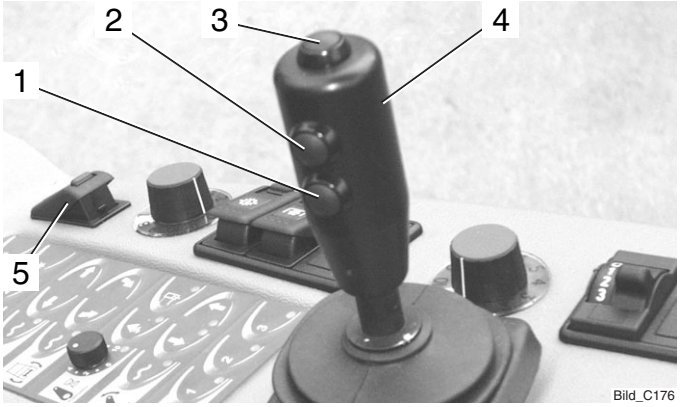
Operating the implements

Operating the joystick

1 Pushbutton 1 for joystick level 1
2 Pushbutton 2 for joystick level 2
3 Pushbutton 3 for joystick level 3
4 Joystick (joystick level 0 without pushbutton operation)
5 Main switch for working hydraulic system

NOTE
The joystick controls those functions of the implements which are connected to the front or rear hydraulic couplings. The couplings and notice plates for the joystick are colour coded, ie the colours and the function are matched.

DANGER
Due to the variety of implements and connections, however, we recommend a trial run of the movement at a safe place without danger to persons or risk of material damage before starting operation.



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The function of the joystick can only be carried out if the main switch (5) is turned on.

NOTE
The joystick can be operated forward and back as well as to the right and left: The functions are shown on the notice plate.

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Joystick operation

(Proportional, for sensitive operation).

	Joystick direction	
	Longitudinally (forward / back)	Across (left / right)
Joystick level 0 (without button)	Front power lift Y0 Forward: lowering Back: lifting Float position on keyboard	Front right quick coupling X0 Float position X0 on keyboard 2
Joystick level 1 (with button 1 pressed)	Dumper / rear power lift * Y1 Forward: lowering Back: lifting Float position Y1 on keyboard 1	Front right quick coupling X1 Float position X1 on keyboard 3
Joystick level 2 (with button 2 pressed)	Front left quick coupling Y2 No float position planned	Rear left quick coupling X2 No float position planned
Joystick level 3 (with button 3 pressed)	Tilting front power lift Y3 (included in front power lift) Forward: tilt to the right Back: tilt to the left	Sideshifting of front power lift X3 Alternative: quick coupling Left: swing to the left Right: swing to the right

* Selectable with 3-port cock

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Operating the implements

Operating the front power lift

The following movements are possible:

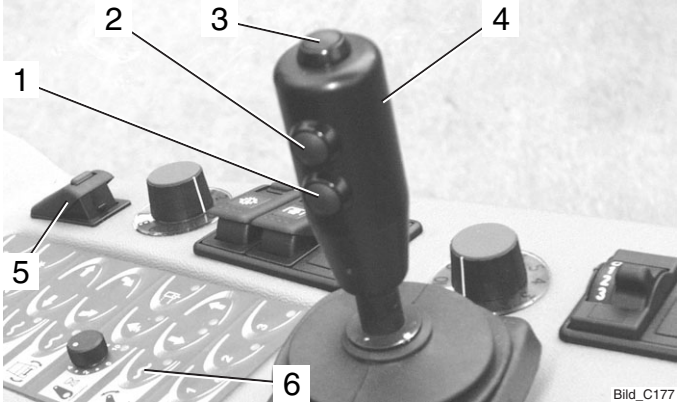
Turn on the main switch (5) for working hydraulics.
- Push the joystick (4) forward.
  - The front power lift (implement) is lowered.

You can stop the movement by releasing the joystick.
- Pull the joystick (4) back.
  - The front power lift (implement) is raised.

The float position is turned on with the keyboard.
- To turn it on, press button (6). The red LED comes on.
  - The float position of the front power lift is turned on, ie the implement can be moved by external force.
- Press button (6) to turn it off. The red LED goes off.

Tilting the front power lift

- Hold button (3) depressed and push the joystick (4) forward.
  - The front power lift tilts to the right.



- Keep button (3) depressed and pull the joystick (4) back.
  - The front power lift tilts to the left.

Sideshifting the front power lift

- Hold button (3) depressed and push the joystick (4) to the right.
  - The front power lift pivots to the right.
- Hold button (3) depressed and push the joystick (4) to the left.
  - The front power lift pivots to the left.

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Operating the front power lift with keyboard

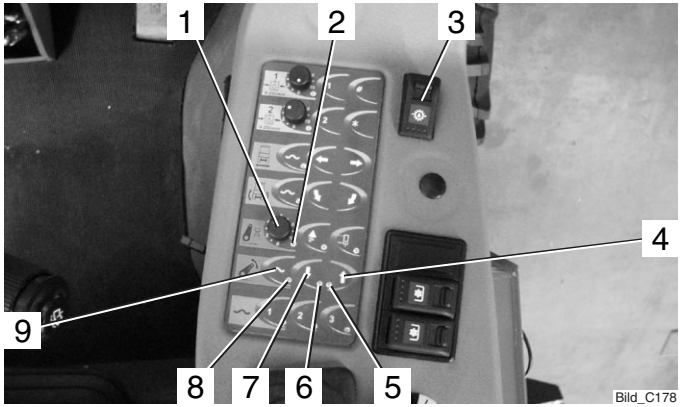
The following movements are possible:

Turn on the main switch (3) for working hydraulics.

- Keep button (4) depressed for about 1 second. The red LEDs (5 and 2) come on for about 5 seconds.
  - The front power lift (implement) is raised until the LEDs go off.

You can stop the movement by pressing the button (4,7) or by moving the joystick.
- For lowering press button (7) for about 1 second. The red LEDs (6 and 2) come on.
  - The front power lift (implement) is lowered until the LEDs go off.

The lifting and lowering speed can be adjusted with the set knob (1).
- Turn rotary knob (1) to the left - slower.
- Turn rotary knob (1) to the right - faster.



Bild_C178

You can also select the float position:
- For selection press button (9) for about 1 second. The red LED (8) comes on.
  - The float position of the front power lift is turned on, ie the implement can be moved by external force.
- Press button (9,7 or 4) or move the joystick to turn it off. The red LED (8) goes off.

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Operating the implements

Switching the front power lift to double-acting

The front power lift can be switched from single-acting to double-acting.

- To switch to double-acting press button (5). The red LED (6) goes off.
- To switch to single-acting toggle button (5). The red LED (6) comes on.

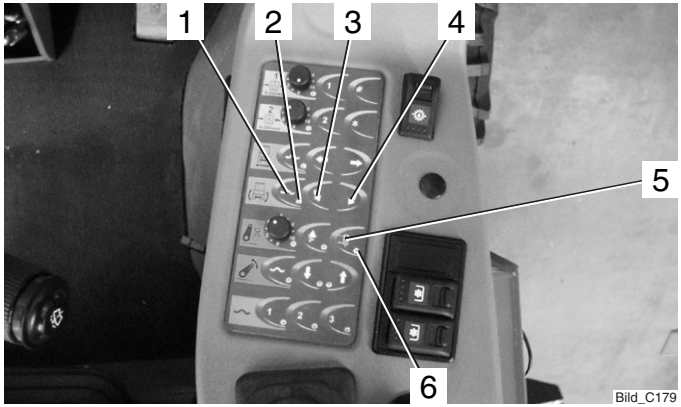
☞ ***NOTE:***
The front power lift is always single-acting when the vehicle is started or when the main switch for the working hydraulic system is turned on.

Operating the tilting device with the keyboard

- Keep button (4) depressed.
  - The front power lift tilts to the right.

You can stop the movement by releasing the button.

- Keep button (3) depressed.
  - The front power lift tilts to the left.



Bild_C179

- Press button (1). The red LED (2) comes on.
  - The float position of the tilting device is turned on, ie the implement can be moved by external force.
- Press button (1,3 or 4) or move the joystick to turn it off. The red LED (2) goes off.

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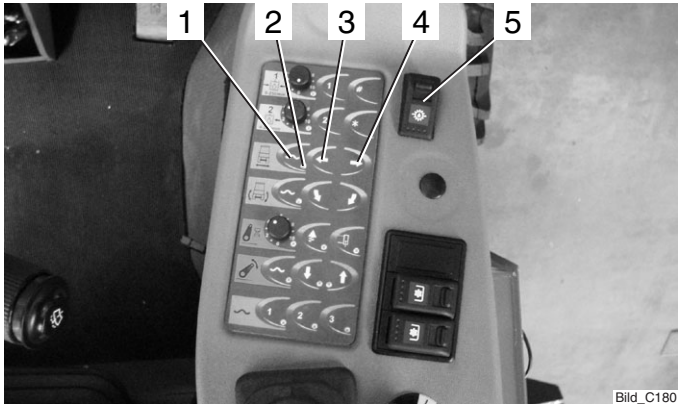
Operating the sideshift with the keyboard

- Keep button (4) depressed.
  - The front power lift pivots to the right.

You can stop the movement by releasing the button.

- Keep button (3) depressed.
  - The front power lift pivots to the left.
- Press button (1) for about 1 second. The red LED (2) comes on.
  - The float position of the sideshift is turned on, ie the implement can be moved by external force.
- Press button (1,3 or 4) or move the joystick to turn it off. The red LED (2) goes off.



Bild_C180

Transport safety

The joystick and keyboard movements can be locked with the main switch (5):

- Main switch off - joystick movement and membrane keypad disabled
- Main switch on - joystick movement and membrane keypad enabled

☞ ***NOTE***
When joystick movement is disabled, you can prevent the implement from being moved through unintentional contact with the joystick or keyboard.
Transport lock for on-road travel.

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Operating the implements

External operation of the front power lift

The front power lift can be operated from outside the cab.

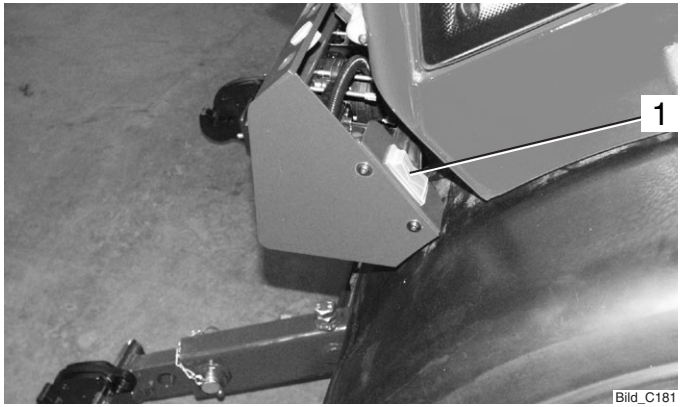
ATTENTION
When leaving the cab, set the forward/reverse selector switch to neutral and apply the parking brake to secure the vehicle against rolling.

- To raise the front power lift push toggle switch (1) up.

The front power lift will be raised as long as the toggle switch is depressed.

- To lower the front power lift push toggle switch (1) down.

The front power lift will be lowered as long as the toggle switch is pushed.



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Flow limiter for joystick

1 Button for individual flow limitation for each individual joystick function.

- Turn on the main switch for working hydraulics.

The lifting and lowering speed of the power lift can be stored individually with the flow limitation.
- Operate the joystick (4) until the desired cylinder speed is reached, then press button (1).

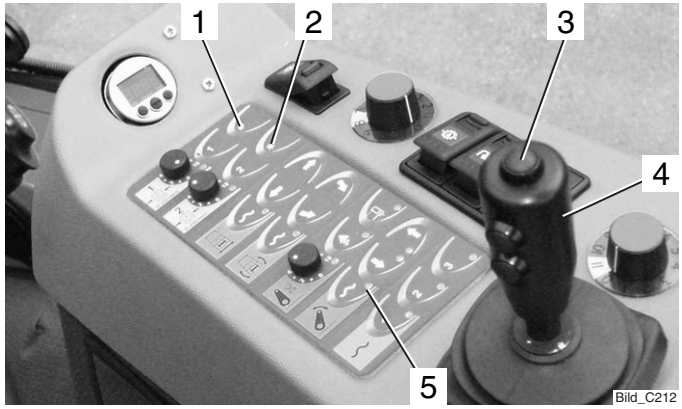
This value is stored as the maximum speed and it applies for the full stroke of the joystick.

If the full oil flow is required again, proceed as follows:
- Move the joystick (4) as far as possible and press button (1).

The full oil flow is released for the full stroke of the joystick.

Toggle button for Float Position Button

2 Button for setting the joystick button (3) to “float position of front power lift“



Bild_C212

- Press the button (2).

The button (3) is now also activated as float position button for the front power lift.
Its activation is indicated with two flashing LEDs.

☞ ***NOTE***
You can also toggle the float position on and off with button (3).
Its activation is indicated with the LED (5).

- Press the button (2) again to toggle the switch.

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Operating the implements

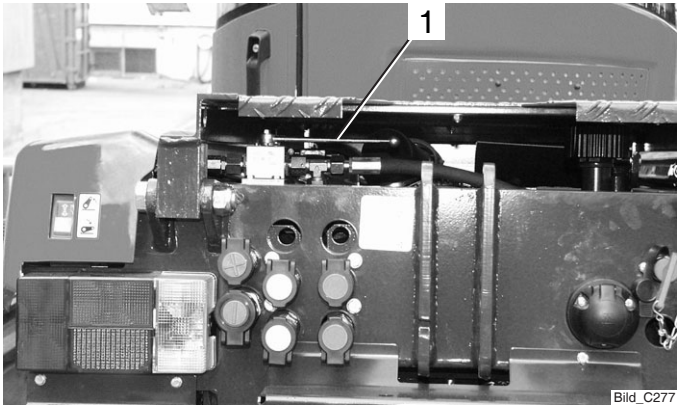
Operating the rear power lift*

The following movements are possible:

Turn on the main switch for working hydraulics.
- Set the switch lever (1) at the rear to the position „Rear Power Lift“.
- To raise the lift, press button (2) and pull the joystick (3) back.
  - The rear power lift (implement) will be raised.

You can stop the movement by releasing the joystick.
- Press button (2) and push the joystick (3) forward.
  - The rear power lift (implement) will be lowered.

The float position is turned on with the keyboard.
- To turn it on, press button (4). The red LED comes on.
  - The float position of the rear power lift is turned on, ie the implement can be moved by external force.
- Press button (4) to turn it off. The red LED will go off.



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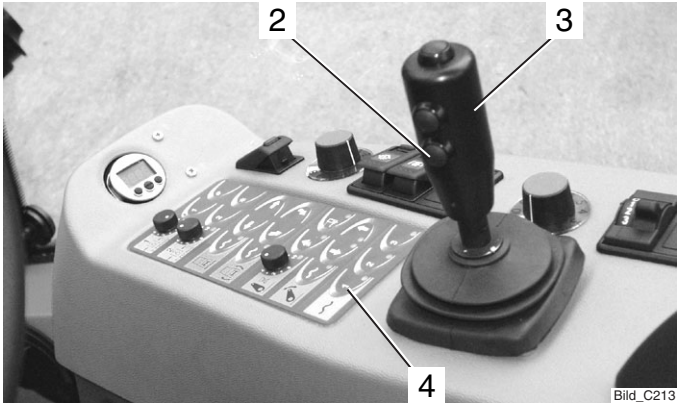

Bild_C213

* Option

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External operation of the rear power lift*

The rear power lift can be operated from outside the cab.

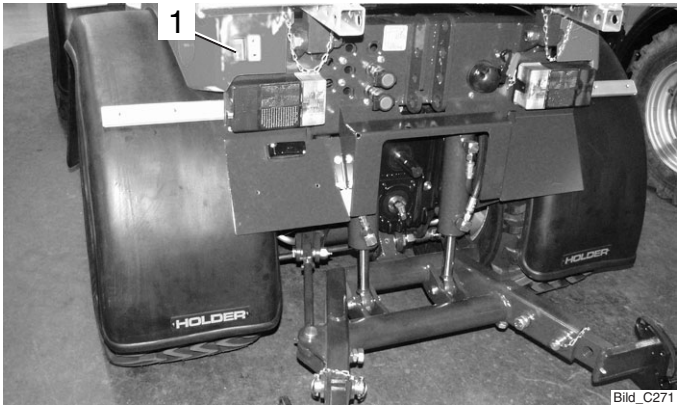
ATTENTION
When leaving the cab, set the forward/reverse selector switch to neutral and apply the parking brake to secure the vehicle against rolling.

- To raise the rear power lift push toggle switch (1) up.

The rear power lift will be raised as long as the toggle switch is depressed.

- To lower the rear power lift push toggle switch (1) down.

The rear power lift will be lowered as long as the toggle switch is depressed.



Bild_C271

* Option

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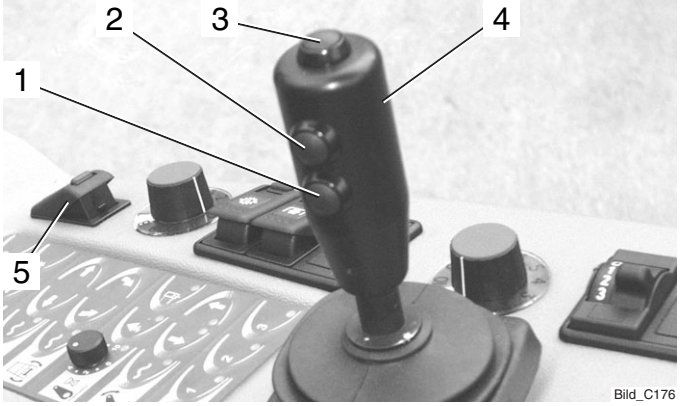
Operating the implements

Operating the hydraulic couplings

1 Pushbutton 1 for joystick level 1
2 Pushbutton 2 for joystick level 2
3 Pushbutton 3 for joystick level 3
4 Joystick (joystick level 0 without pushbutton operation)
5 Main switch for working hydraulic system



Bild_C176

NOTE
The joystick controls those functions of the implements which are connected to the front or rear hydraulic couplings. The couplings and notice plates for the joystick are colour coded, ie the colours and the function are matched.

DANGER
Due to the variety of implements and connections, however, we recommend a trial run of the movement at a safe place without danger to persons or risk of material damage before starting operation.

The function of the joystick can only be carried out if the main switch (5) is turned on.

NOTE
The joystick can be operated forward and back as well as to the right and left: The functions are shown on the notice plate.

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Operating the implements

Operating the green hydraulic couplings*

- Push the joystick (4) to the left or right.
  - The green front right hydraulic couplings will be supplied with oil.

You can stop the movement by releasing the joystick.
The float position is turned on with the keyboard.

- To turn it on, press button (7). The red LED comes on.
  - The float position of the green hydraulic couplings is turned on, ie the implement can be moved by external force.
- Press button (7) to turn it off. The red LED will go off.

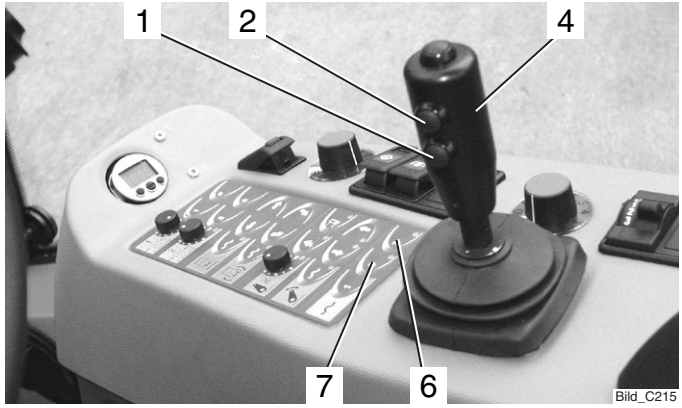
Operating the blue hydraulic couplings*

- Press button (1) and move the joystick (4) to the left or right.
  - The blue front right hydraulic couplings will be supplied with oil.

You can stop the movement by releasing the joystick.
The float position is turned on with the keyboard.

- To turn it on, press button (6). The red LED comes on.
- Press button (6) to turn it off. The red LED will go off.

* Option



Bild_C215

Operating the yellow and white hydraulic couplings*

- Press button (2) and move the joystick (4) to the left or right.
  - The yellow rear left hydraulic couplings will be supplied with oil.
- Press button (2) and move the joystick (4) to the left or right.
  - The white front right hydraulic couplings will be supplied with oil.

☞ ***NOTE***
The yellow and white hydraulic couplings do not have a float position.

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Operating the implements

Turning on the front PTO

DANGER
Before turning on the PTO, make sure no-one is standing close enough to the vehicle and the driven implement to be hurt.

ATTENTION
Check the mounting angle of the cardan shaft. Turn on the PTO at low speed, then increase the speed.

NOTE
The PTO is provided with a delay circuit to allow a smooth starting of the PTO.

- Release the lock at the starting safety switch (1) and depress the switch. The front PTO is turned on.

- To turn it off, depress the safety switch at the top.

Bild_C182

NOTE
If the engine is overheated, an audible signal will sound. The engine must cool at idle speed before being turned off. Restart the engine after checking for the cause.

DANGER
After the installed implement is turned off, it can continue to run. Wait until the implement is stationary before working on it again.

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Operating the implements

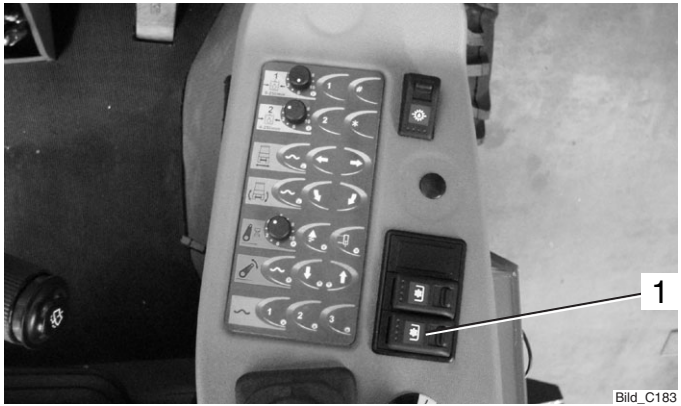
Turning on the rear PTO*

DANGER
Before turning on the PTO, make sure no-one is standing close enough to the vehicle and the driven implement to be hurt.

ATTENTION
Check the mounting angle of the cardan shaft. Turn on the PTO at low speed, then increase the speed.

- Release the lock at the safety switch (1) and depress the switch. The rear PTO is turned on.
- To turn it off, depress the safety switch at the top.

NOTE
If If the engine is overheated, an audible signal will sound. The engine must cool at idle speed before being turned off. Restart the engine after checking for the cause.



Bild_C183

DANGER
After the installed implement is turned off, it can continue to run. Wait until the implement is stationary before working on it again.

* Option

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Operating the implements

Operating the hydraulic cushioning* (front power lift)

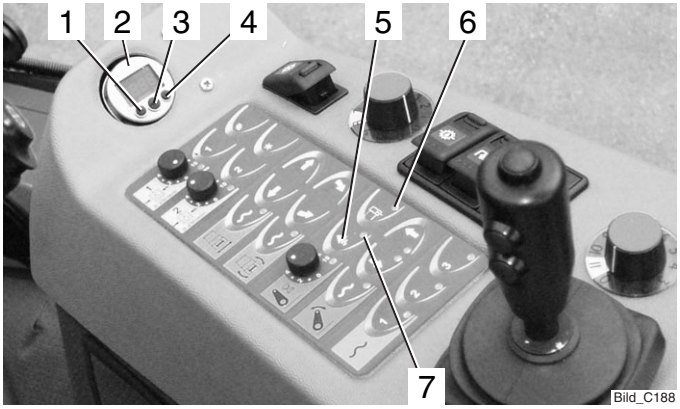
The hydraulic cushioning allows the ground pressure of the implement to be decreased steplessly and to increase the front axle loading. This improves the climbing ability.

- Press button (5). LED (7) will come on.

The electronic pressure sensor (2) with a digital display always indicates the current pressure of the front power lift when float position is turned off.

- Press the mode button (3).
- S.P.1 will appear in the display and after 2 seconds the current setting will start to blink.
- You can change the setting with the decrementing button (1) or incrementing button (4), until the ground pressure of the device is reduced as desired.
- The value S.P.1 must be less than the pressure with a raised implement.

☞ ***NOTE***
After 3 seconds without a button being pressed, the display reverts and the settings are stored.



Adjusting the hysteresis

- Press the mode button (3) twice within 3 seconds.
- HYS.1 will appear in the display and after 2 seconds the current setting will start to blink.
- You can change the setting with the decrementing button (1) or incrementing button (4). It should be between 5 and 10 bar.

☞ ***NOTE***
The gas pressure in the diaphragm accumulator is 30 bar.

* Option

https://truckmanualshub.com/

Operating the implements

NOTE
A cushioning pressure of less than 30 bar (light implements) will result in too many control operations as the accumulator can not act.

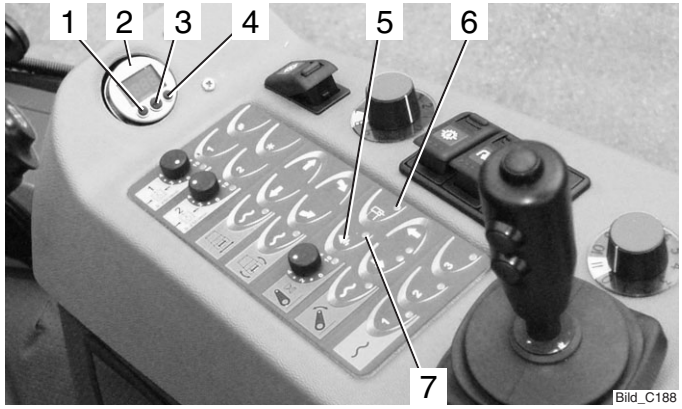
Operation with implement cushioning

NOTE
If the implement adapts to uneven ground with delay, reduce the cushioning pressure or HYS.1.

- Turn the implement cushioning off for light implements (eg rotary mower).

Turning the implement cushioning off

- Press button (5), select float position or operate the joystick. The LED (7) goes off.



Bild_C188

https://truckmanualshub.com/

Operating the implements

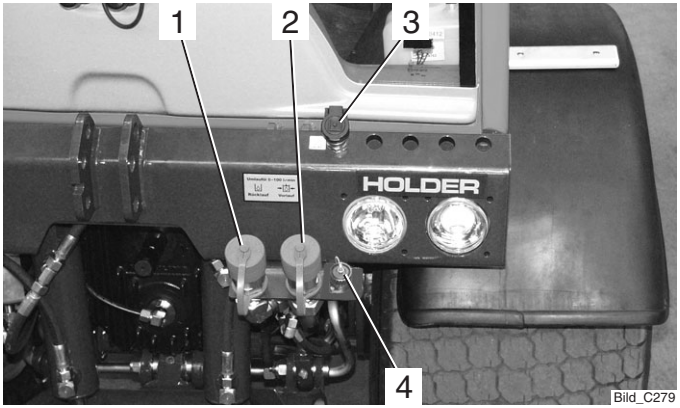
Operating the variable pump for implements* (setting from - 0 - 100 litres)

The variable pump for the implements is a devices for driving implements with a high hydraulic power demand such as a spiral-bladed lawn mower. It is operated electrically from the driver's station.

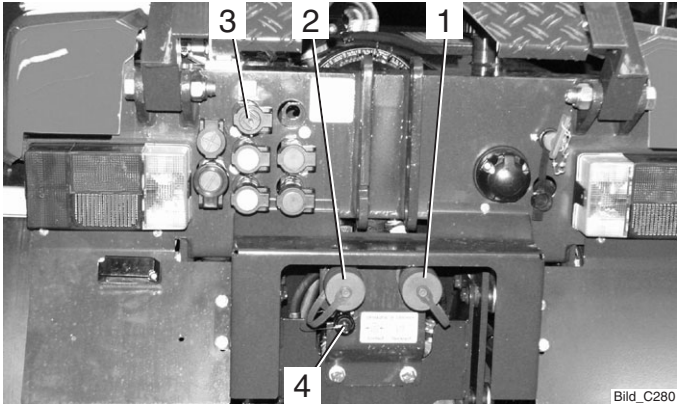
- Connect the hydraulic hoses of the front or rear implement to the quick couplings (1) for return flow and (2) for boost pressure and, if required, to the black leakage oil coupling (3).
- Insert the implement encoded plug into the socket (4) next to the quick couplings.

☞ ***NOTE***
Only one implement coded plug may be inserted at the front or rear.

☞ ***NOTE***
If a new or unknown implement is to be installed, the wiring harness for implement coding 204-80-72 must be used. The correct coding must be established in consultation with the implement manufacturer and Holder.



Bild_C279



Bild_C280

* Option

https://truckmanualshub.com/

Operating the implements

ATTENTION
Turn on the starting safety switch (6) only at low engine speed.

- Set the rotary knob (5) to 0.
- Release the lock at the starting safety switch (6) and depress the switch. The indicator in the switch comes on.

ATTENTION
After the speed of the motor was raised, the oil flow may only be raised slowly.

- Turn the rotary knob (5) for adjusting the oil flow from 0 to 100 litres/min until the performance of the implement is reached.

NOTE
The implement coded plug specifies the maximum oil flow for the related implement (for safety reasons).

The number 11 on the ring corresponds to the maximum oil flow specified by the coding.

Bild_C185

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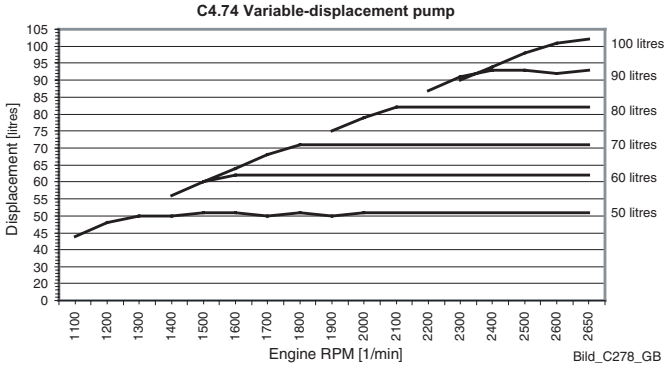
Operating the implements

NOTE

The implement variable-displacement pump attempts to maintain the oil flow specified by the coded plug and potentiometer, even when the engine speed is reduced.
The oil flow is only reduced at lower rpm when the maximum swash angle of the pump is reached (see diagram).

ATTENTION

If the implement is not in use, turn the pump off with the safety switch to prevent any unnecessary overheating of the hydraulic oil.



Turning off the implement variable-displacement pump

- Turn the safety switch (6) off. The indicator in the switch extinguishes.

NOTE

If you shut down the engine without first turning off the implement variable-displacement pump, the pump can not immediately be turned on again on for safety reasons.

Before a new start you must first either:
- set the rotary knob to 0, or
- turn the safety switch off and on again once,

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Operating the hydraulic dumper

With the hydraulic dumper it is possible to lift the dump body fast and easily. The dumper tilts loading platform* to the rear.

- Start the engine.

Switch lever for device to be operated:
- Put the switch lever(1) at the rear to the “dumper“ position (side position).

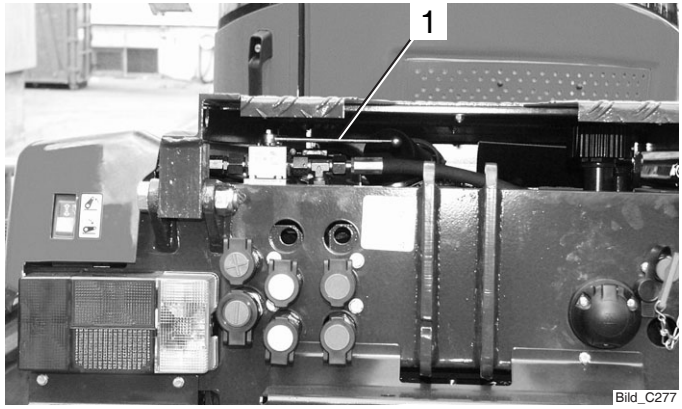
DANGER
Make sure no-one is standing in the danger zone at the rear.

- Press button (2) and pull the joystick (3) back.
  - The dumper will be raised. To stop dumping, release the joystick.
- To lower it, press button (2) and push the joystick (3) forward.

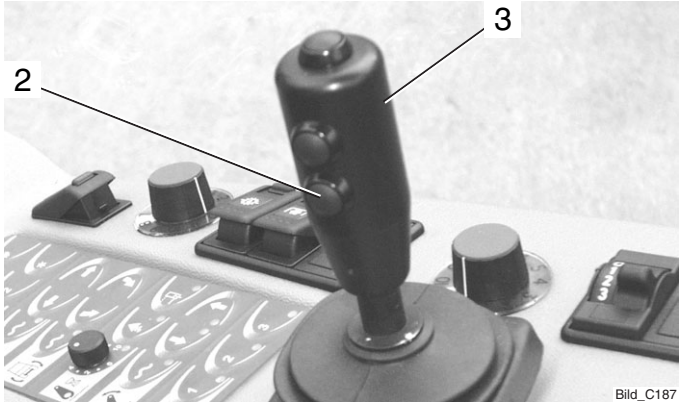
DANGER
Make sure no-one is standing in the danger zone at the rear - danger of being crushed.

The dumper will be lowered.

* Option



Bild_C277



Bild_C187

https://truckmanualshub.com/

Operating the implements

Operating priority flow valve I*

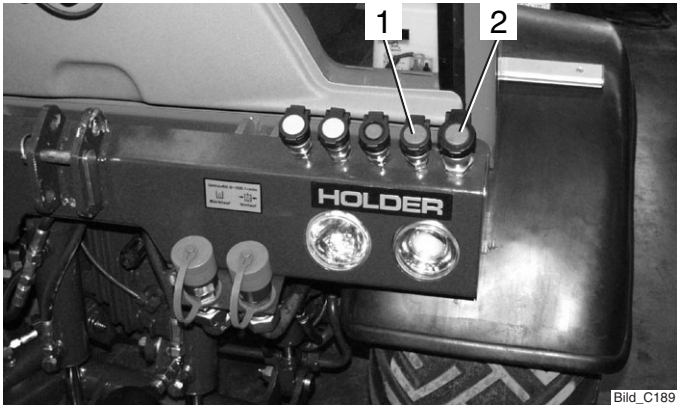
Priority flow valve I is used to drive the servo motor in an implement with a variable hydraulic power demand, for example, salt spreader, hedge cutter, etc. The working speed can be set independently of the vehicle engine speed. The priority flow valve is supplied by the (standard) working pump and operated from the driver's station.

- Connect the hydraulic hoses of the implement to the red quick couplings for the drive (1) and return line (2) at the front of the vehicle.
- Turn on the main switch (5) for working hydraulics.

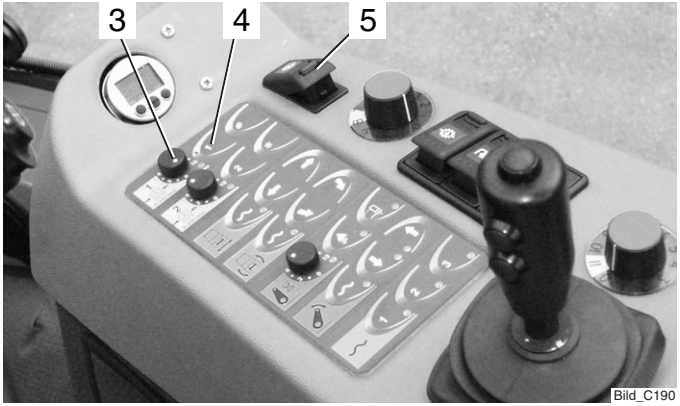
ATTENTION
Press button (4) only at low engine speed.

- Press button (4). The red LED will come on.

ATTENTION
Slowly increase the speed of the engine.



Bild_C189



Bild_C190

* Option

https://truckmanualshub.com/

- Select the desired engine speed with the hand throttle.
- Set the rotary knob (3) to the operating speed required for the implement.
  Turning clockwise increases, turning counterclockwise lowers the speed.
- The servo motor in the implement is supplied with an oil flow of 0 to 25 litres/min.

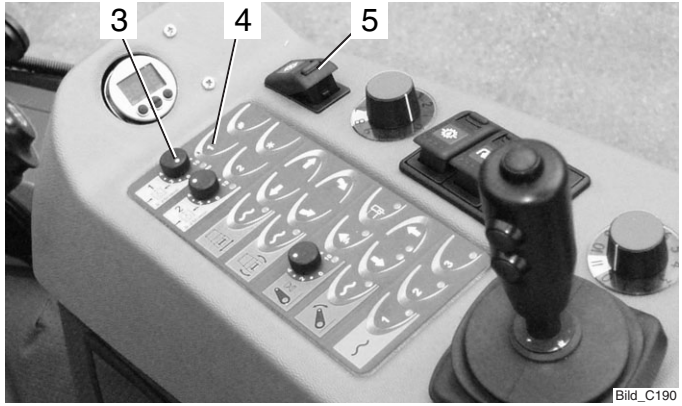
ATTENTION
If the implement is not in use, always turn the priority flow valve off with button (4) to prevent any unnecessary overheating of the hydraulic oil.

Do not leave the priority flow valve on:
- If the engine is running and no load is connected to the couplings
- or is not in operation,
- when driving without needing oil

The overheating can damage the hydraulic system.

Turning off the priority flow valve

- Press button (4). The red LED red will extinguish.



Bild_C190

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Operating the implements

Operating priority flow valve II up to 04.06

Priority flow valve II is used to drive the servo motor in an implement with a variable hydraulic power demand, for example, salt spreader, hedge cutter, etc. The working speed can be set independently of the vehicle engine speed. The priority flow valve is fed by the tandem working pump and set at the rear of the vehicle.

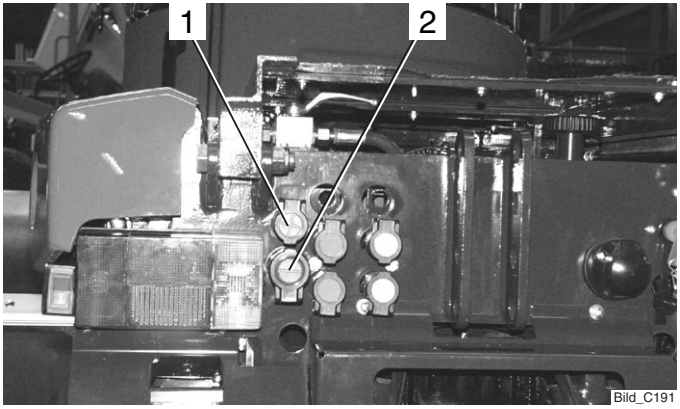
- Connect the hydraulic hoses of the implement to the red quick couplings for the drive (1) and return line (2) at the rear of the vehicle.
- Turn on the main switch (4) for working hydraulics.

ATTENTION
Press button (3) only at low engine speed.

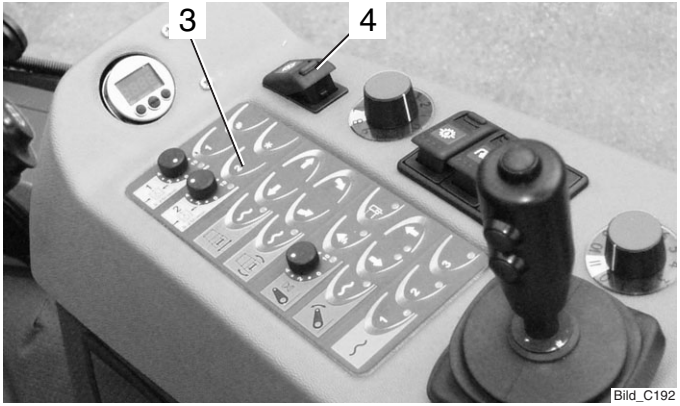
- Press button (3). The red LED will come on.

ATTENTION
Slowly increase the speed of the engine.

* Option



Bild_C191

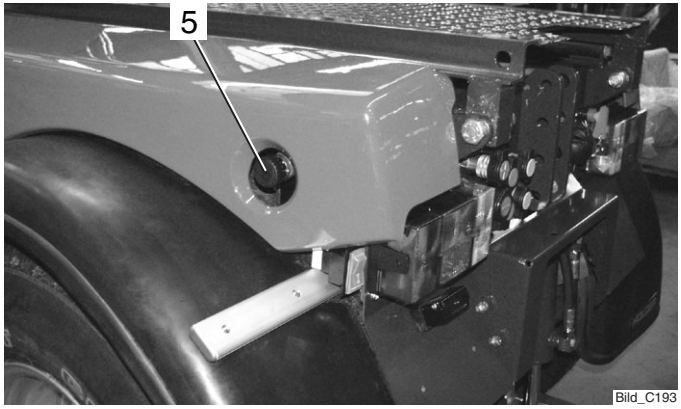


Bild_C192

https://truckmanualshub.com/

Operating the implements

- Select the desired engine speed with the hand throttle.
- Go to the rear of the vehicle and adjust the hand wheel (5) of the priority flow valve to the working speed required for the implement.
  Turning clockwise increases, turning counterclockwise lowers the speed.
- The servo motor in the implement is supplied with an oil flow of 0 to 25 litres/min.

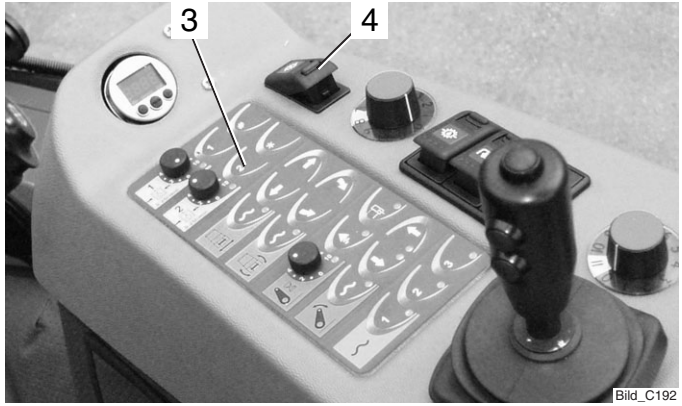


Bild_C193

ATTENTION
If the implement is not in use, always turn the priority flow valve off with button (3) to prevent any unnecessary overheating of the hydraulic oil.

Do not leave the priority flow valve on:
- If the engine is running and no load is connected to the couplings
- or it is not in operation
- when driving without needing oil

The overheating can damage the hydraulic system.



Bild_C192

Turning off the priority flow valve

- Press button (3). The red LED red will extinguish.

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Operating the implements

Operating priority flow valve II from 05.06

The priority flow valve II is used to drive a servo motor in an implement with a variable hydraulic power demand, eg salt spreader, hedge clipper, etc. The operating speed can be set independent of the engine speed of the vehicle. The priority flow valve is supplied with oil by the tandem pump and is operated at the driver's station.

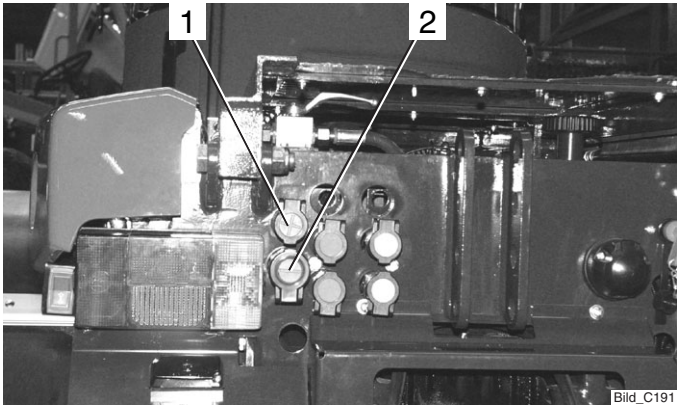
- Connect the hydraulic hoses of the attachment to the red quick couplings for the drive (1) and return line (2) at the rear of the vehicle.
- Turn on the main switch (5) for the working hydraulics.

ATTENTION
Press button (4) only at low engine speed.

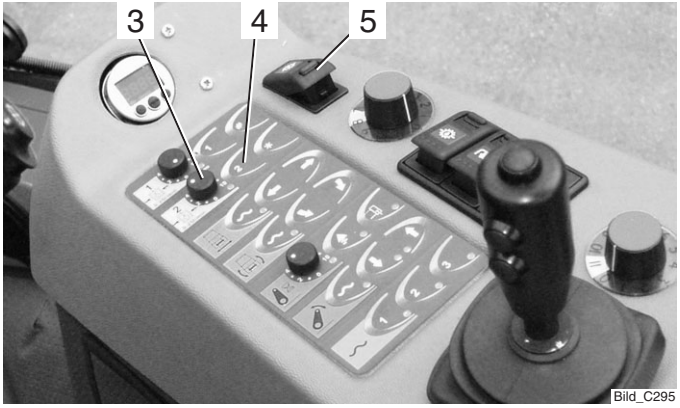
- Press button (4). The red LED will come on.

ATTENTION
Increase the speed of the engine slowly.

* Option



Bild_C191



Bild_C295

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- Select the desired engine speed with the hand throttle.
- Set the rotary knob (3) to the operating speed required for the implement.
  Turning clockwise increases the speed, turning anticlockwise lowers it.
- The servo motor in the implement is supplied with an oil flow of 0 to 25 litres/min.

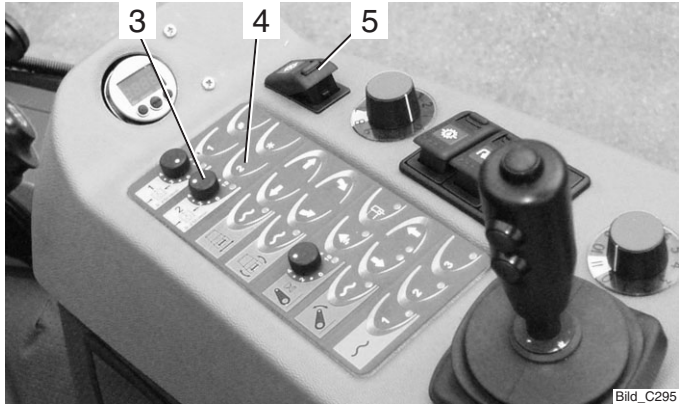
ATTENTION
If the implement is not in use, always turn the priority flow valve off with the button (4) to prevent any unnecessary overheating of the hydraulic oil.

Do not leave the priority flow valve on:
- If the engine is running and no load is connected to the couplings
- or it is not in operation
- when driving without needing oil.

The resulting overheating can damage the hydraulic system.

Turning off the priority flow valve

- Press button (4). The red LED will go out.



Bild_C295

https://truckmanualshub.com/

https://truckmanualshub.com/

Other activities

Operating the driver's cab

Operating the roof hatch

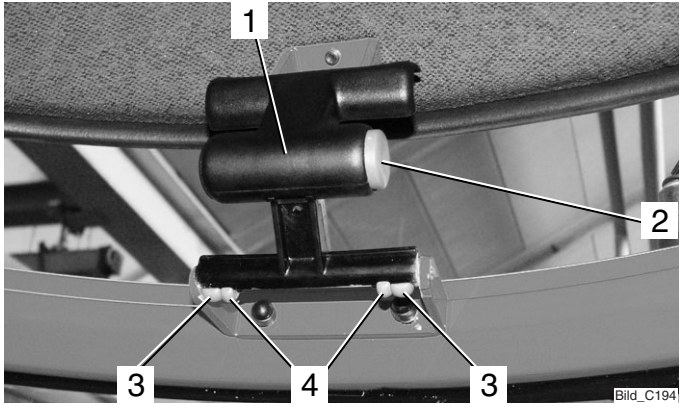
Opening the roof hatch

- Press the button (2) on the side of the handle.
- Push the handle (1) up to open the roof hatch at the rear.

Removing the roof hatch

☞ ***NOTE***
The roof hatch can be used as an emergency exit in case of danger.

- Open the roof hatch.
- Press out the inner plastic clip (4) to the back.
- Press the outer plastic clip (3) inward.
- Push the hatch up with the handle (1).



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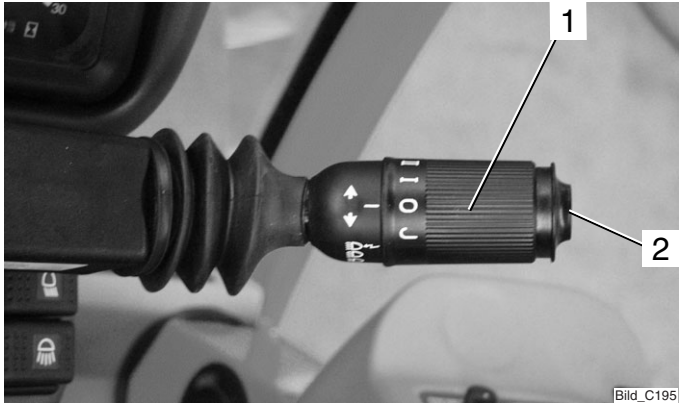
Other activities

Turning on windshield wiper/washer

☞ ***NOTE***
The vehicle is provided with a front wiper. A washer system is also installed. The washer system draws its water from the washing water reservoir at the front left-hand side in the cabin.



Front windshield wiper/washer

- Turn the rotary switch (1) for the front windshield wiper to stage J.
  The front windshield wiper is turned on to intermittent operation.
- Turn the rotary switch (1) to stage I.
  The windshield wiper is turned on to slow continuous operation.
- Turn the rotary switch (1) to stage II.
  The windshield wiper is turned on to quick continuous operation.
- Press button (2) on the lever.
  The front windshield washer is on and sprays only as long as the button is pressed.

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Lights

Turning on and operating the lights

☞ ***NOTE***
Turn the preheat/starter switch to position 1.

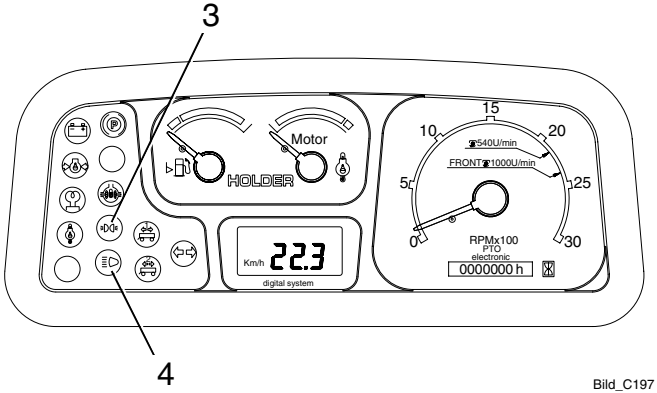
- Set the light switch (2) to position 1.
  The front clearance lights (3,6) and the tail lights (10,14) (parking light) are switched on.
- The clearance light indicator (3) in the multifunctional display will come on.
- Set the light switch (2) to position 2.
  The front headlights (1, 8) (dip beam) are turned on.

Bild_C196

Turning on high beam

- Set the light switch (2) to position 2.
- Move the turn signal lever (1) down. The headlights (2, 7) are set to high beam.
- The high beam indicator (4) in the multifunctional display will come on.

☞ ***NOTE***
To use the headlight flasher, pull the turn signal lever up.



Bild_C197

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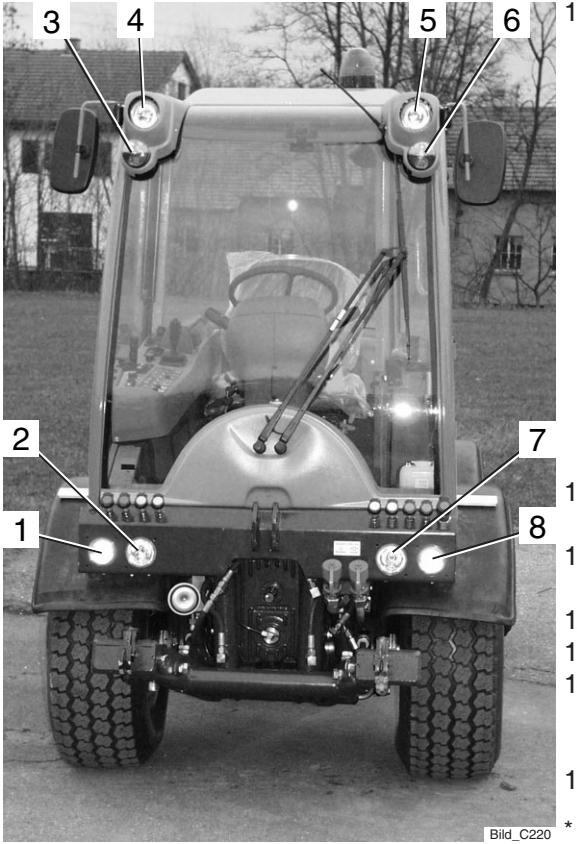
Other activities



Bild_C220

1 Right headlight, dip beam
2 Right headlight, high beam
3 Turn signal and clearance light, right
4 Headlight, top
5 Headlight, top
6 Turn signal and clearance light, left
7 Left headlight, high beam
8 Left headlight, dip beam
9 Stop light
10 Tail light
Turn signal light, left
11 Rotating beacon mount
12 Flood light*
13 Reversing light
14 Tail light
Turn signal light, right
15 Stop light

* Option

Bild_C221

https://truckmanualshub.com/

Turning on the top headlights

☞ ***NOTE***
If front implements are installed and the bottom headlights are hidden, you may turn on the upper headlights.

- Turn on the toggle switch for the top headlights (2).
- The top headlights (4, 5) will go on.

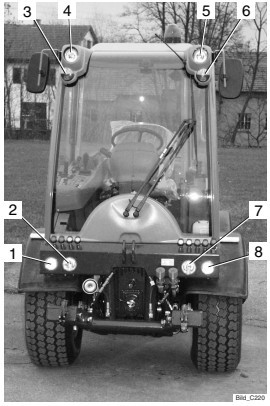
☞ ***NOTE***
The high beam and headlight flasher functions are only available for the bottom head lights.

Signalling to the left, signalling to the right

- Move the turn signal lever (1) back to turn the left turn signal lights (6, 10) on.
- The turn signal indicator in the multifunctional display will come on.
- Move the turn signal lever (1) forward to turn the right turn signal lights (3, 14) on.

Operating the horn

- Press turn signal lever (3) in to sound the horn.

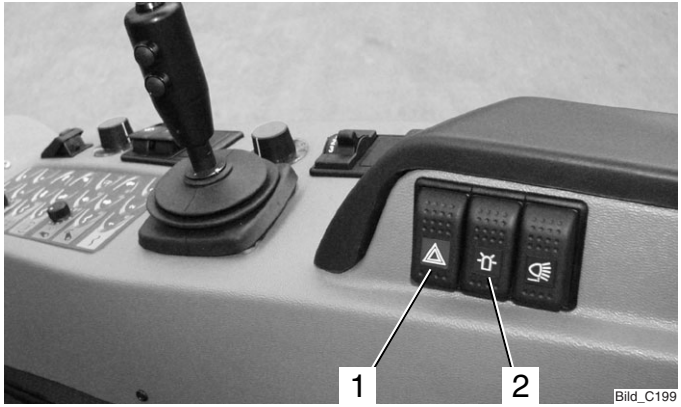


https://truckmanualshub.com/

Other activities

Operating the hazard warning flasher system

- Turn on the hazard warning flasher switch (1) to let all the turn signal lights flash.

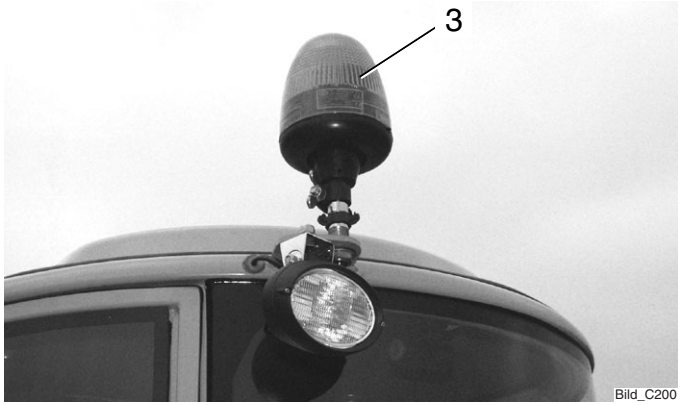


Bild_C199

Turning on the rotating beacon*

☞ ***NOTE***
The rotating beacon may only be turned on if the vehicle is used for applications in public traffic areas.

- Turn the rotating beacon switch (2) on.
  The rotating beacon (3) will be on.



Bild_C200

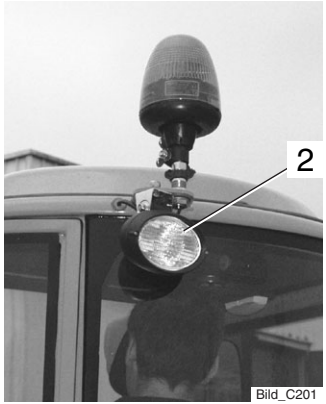
* Option

https://truckmanualshub.com/

Turning on the flood light*

☞ ***NOTE***
The flood light must not be used in the public traffic area.

- Turn the flood light switch (1) on.
  The flood light (2) will be on.



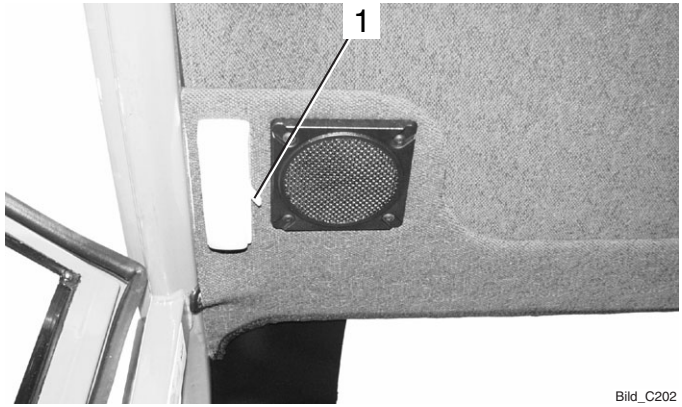
Bild_C201

Interior light

Turning on the interior light

☞ ***NOTE***
There is an interior light on the left and right in the cabin roof.

- To turn on the interior lights, operate the light switch (1).



Bild_C202

* Option

https://truckmanualshub.com/

Other activities

Radio* and loudspeakers*

Operating the radio

☞ ***NOTE***
There is a separate operating manual for the radio.

Please observe the instructions in this manual for operation of the radio.
The loudspeakers are installed at the front in the roof of the cabin.

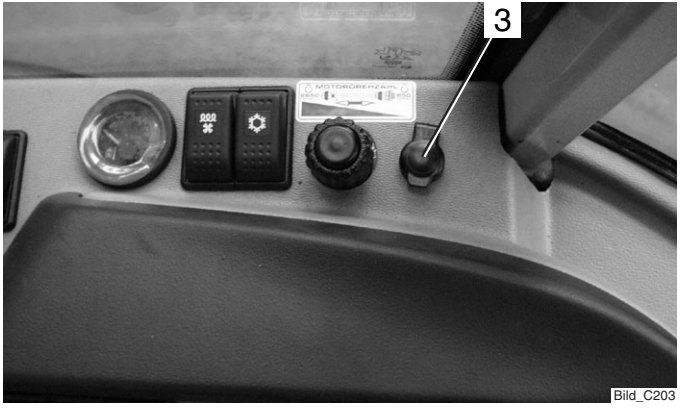
Bild_C283

Power socket

Connecting equipment to the power socket

- You can connect
  12 VDC equipment with a maximum power rating of 15 A to the power socket (3) with a commercial automotive plug.

ATTENTION
Do not leave any equipment running unattended; if the engine is not running the battery can be discharged.



Bild_C203

* Option

https://truckmanualshub.com/

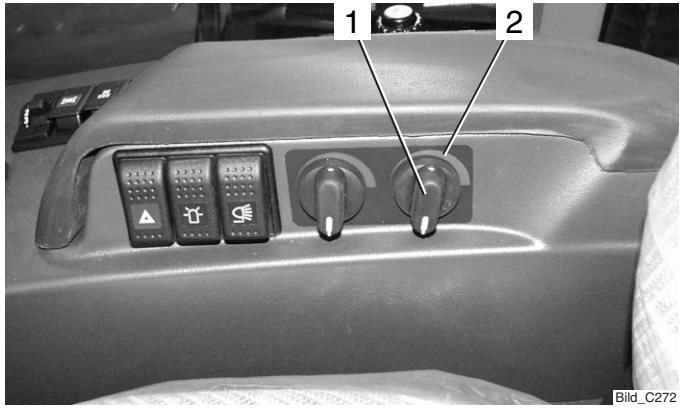
Heater

Heating and ventilating

Turning on the heater

NOTE
The cabin heater is heated by the engine cooling oil.

- To heat the cabin, turn the rotary knob (1) clockwise. You may select any intermediate position. Turn the knob CCW to reduce the heating capacity, CW to increase it. See the label (2) behind the rotary knob.
- To turn the heater off, turn rotary knob (1) CCW.



Bild_C272

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Other activities

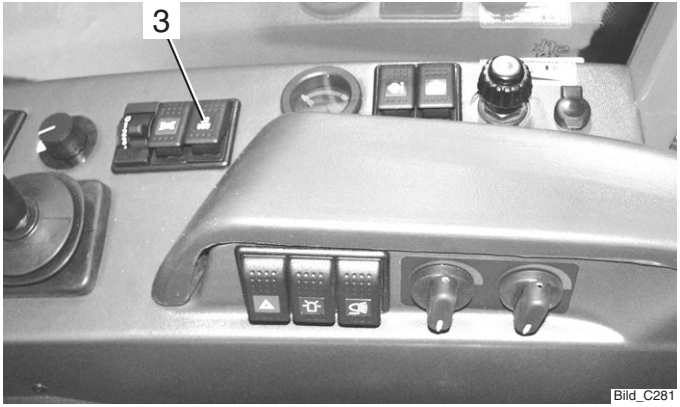
Turning on the ventilation

- To ventilate the cabin turn on the fresh air blower switch (3).

☞ ***NOTE***
The fresh air blower has 2 speeds.

- Position 1 slow
- Position 2 fast

There are several air vent nozzles (4, 5) fitted in the cabin:
- 1 adjustable nozzle (4) at the bottom front right in the foot room
- 13 air slots (5) in the dash for front and side windows
- 1 nozzle for circulating air supply to the right of the driver's seat
- Set the air vent nozzles to the desired direction and desired air flow.



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Air conditioning

Operating the air conditioning*

☞ ***NOTE***
A separate operating manual is supplied for the air conditioning.
Please observe the instructions in this manual for operation of the A/C.

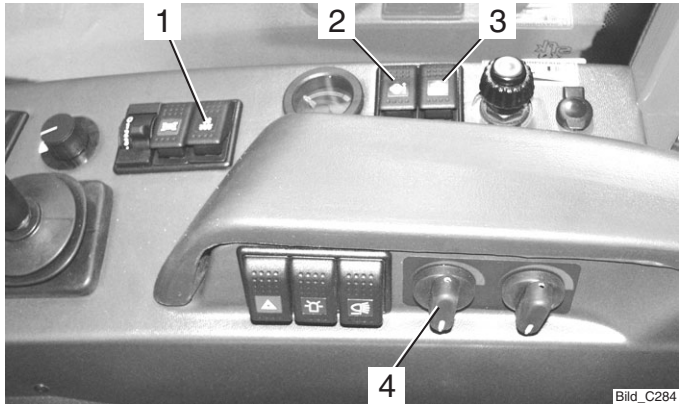
Air conditioning*

1 Switch for 2-speed blower
2 Blower reversing switch
3 On/off switch
4 Temperature control
5 Air slots
6 Adjustable air vent nozzle

- Set the air vent nozzles to the desired direction and desired air flow.

Cleaning the condenser

- Turn on the ignition (engine off).
- Operate the blower reversing switch (2).
- The blower will run in the opposite direction as long as the switch is operated.



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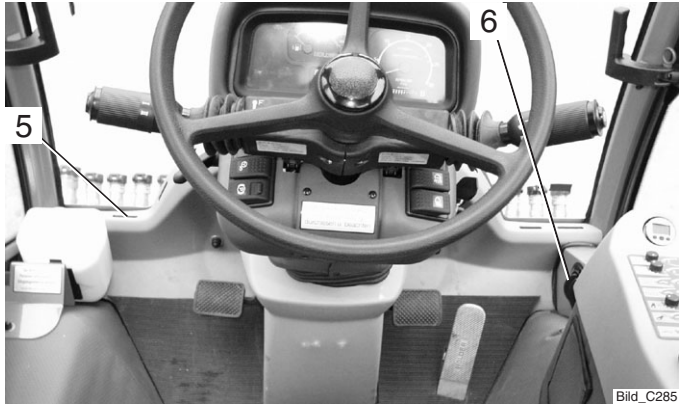

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Other activities

Fuses

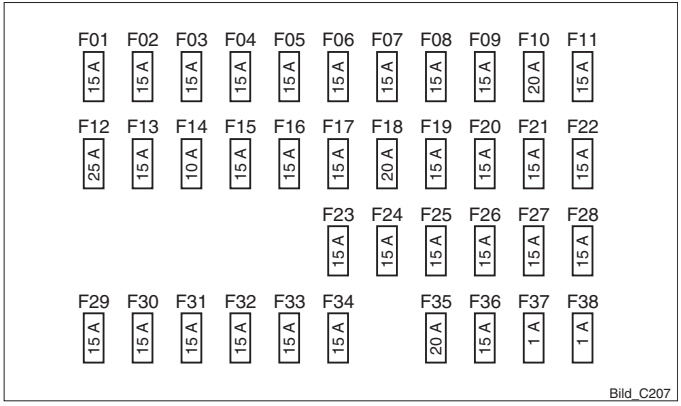
CAUTION
Before carrying out any work on the electrical equipment, for example, replacing the fuses, always turn the battery isolating switch off.

Vehicle fuses

NOTE
The fuses for the vehicle are installed below the console at the right-hand side. Open the flap for access.

Bild_C206

F01 Multifunctional display, remote thermometer, hydraulic system
F02 Inductive speed switch/rear 3-pin connector socket
F03 Rotating beacon
F04 Parking light, rear 58R
F05 Lighting for multifunctional display/hydr. remote thermometer/hazard warning switch
F06 Parking light, left 58L/rear number plate light
F07 Headlight, high beam/high beam indicator light
F08 Headlight, low beam
F09 Intermittent front wiper
F10 Warning light



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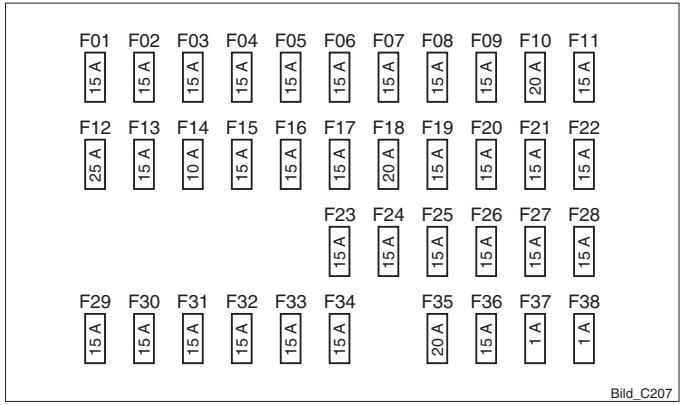
Other activities

F11 Radio 30/interior light
F12 Air conditioner
F13 2-pin socket/electric seat adjuster 15
F14 Heatable external mirrors
F15 Stop light
F16 Headlight flasher/0-position wiper/washer
F17 Cigarette lighter/rear cab flood light
F18 Deutz shutoff solenoid
F19 Cooling air blower/heater/A/C
F20 Spare
F21 Radio 15
F22 Turn signal light
F23 Spare
F24 Spare
F25 Seat heater
F26 Reversing pushbutton/pump coding
F27 Spare
F28 Spare
F29 Diff. lock/2-stage steering/parking brake solenoid valve
F30 Solenoid valve, PTO, rear
F31 Solenoid valve, PTO, front
F32 Bucher hydraulic system pin 23 / supply on/off switch
F33 Bucher electronics pin 05
F34 Bucher electronics pin 34



F35 Electronic traction control, Bosch RC 6-9 it. 1 and 27/back-up lights
F36 Horn/air cleaner maintenance switch
F37 Electronic traction control Bosch RC 6-9 it. 13,41,42
F38 Electronic traction control Bosch RC 6-9 it. 10,11,12,23,37,48 & 61/diagnosis socket/ forward/reverse selector switch/variable-displacement pump control

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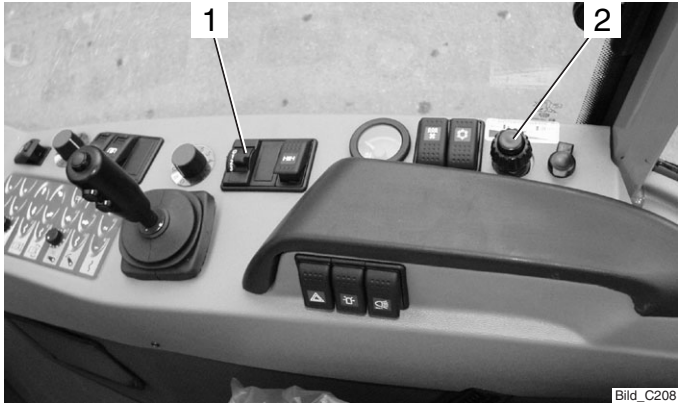
Taking out of operation

Leaving the vehicle

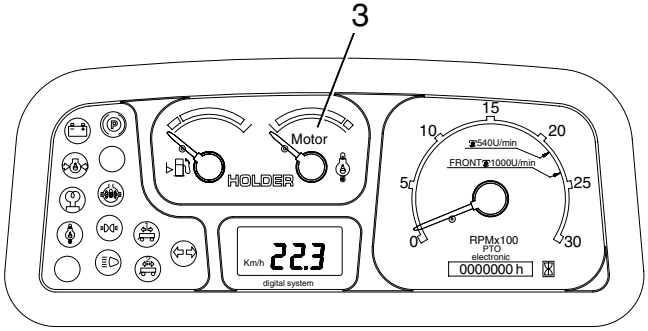
Stopping

- Lower the implement completely.
- Engage the parking brake.
- Fully push in the hand throttle button (2) (idle position).
- Set the forward/reverse selector switch to 0.
- Set the driving program switch (1) to 0.



Bild_C208

ATTENTION
If the engine is overheated (engine temperature gauge (3) in the red field), let the engine run without a load until the temperature has dropped to the green area. Do not let the engine run unattended!



Bild_C209

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Taking out of operation

Shutdown

ATTENTION
If the vehicle is parked on gradients, it must be secured against rolling with chocks.

- If equipped with a hydrostatic drive, also use chocks to secure the vehicle.
- Turn the ignition key (3) back to 0. The engine is shut down.
- Remove the ignition key and take it with you.

CAUTION
Do not leave the cabin without taking the ignition key.

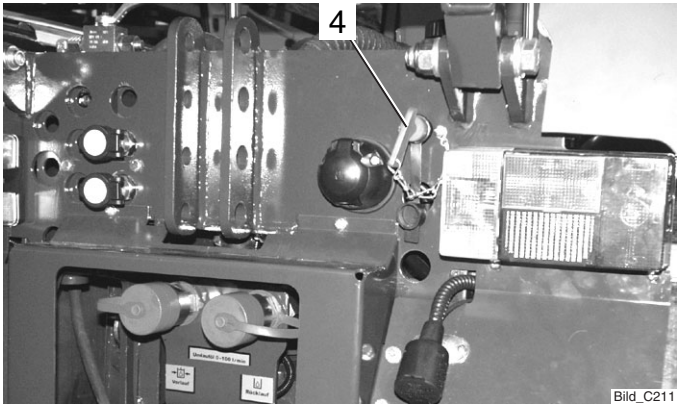
- Turn off the battery isolating switch (4).

Emergency stop
In case of an emergency stop with a defective inching pedal or defective traction hydraulics, the vehicle can only be brought to a halt by turning the ignition to 0 and applying the service brake.

Leaving the vehicle

- Lock the cab door with the key.
- If necessary, secure the vehicle against rolling with chocks.

Bild_C210



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Trailers, towing

Your vehicle can tow the following trailers:

Table of trailers

Type of Trailer	Permissible Total Weight	Braking System
Single axle trailer	2.2 t	No braking system
Single and multiple axle trailer	Up to 2.2 tons	With own braking system if the trailer brake lever can be mounted easily accessible beside the driver's seat
Single axle tailer	Up to 4.5 tons	With overrunning brake
Multiple axle trailer	Up to 4.5 tons	With service brake system and parking and rapid-emergency brake
Trailer	Up to 6 tons	With hydraulic or pneumatic braking system

The following trailer combinations are allowed:

1 Vehicle with single-axle trailer with brakes or without brakes.
2 Vehicle plus single-axle trailer with brake or without brake plus two-axle trailer with override brake.
3 Vehicle plus two-axle trailer with brake plus two-axle trailer with override brake.
4 Vehicle plus two trailers with override brakes, one single-axle trailer plus one two-axle trailer, or one two-axle trailer plus one single-axle trailer.

☞ ***NOTE***
The total length of the vehicle-trailer train must not exceed 18 m.

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Trailers, towing

Operating the trailer hitch manually, attaching trailers

- Put the trailer hitch (5) in the two lower holes provided on the adjustment rail (2) with the fastening pin (3) and secure the pins with the retaining clips.

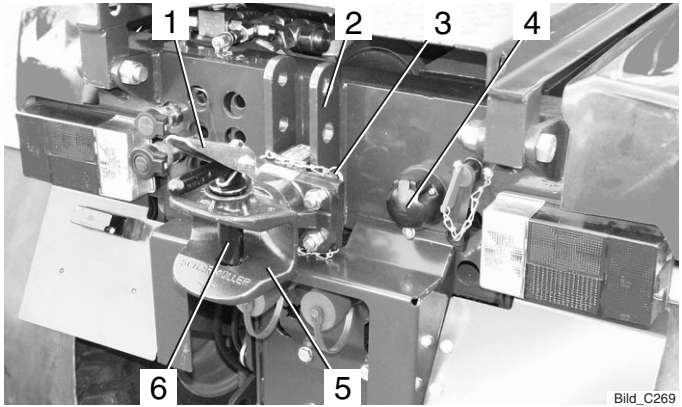
Bearing load

ATTENTION
The bearing load must be at least 25 kg (4 % of the trailer load), while the maximum bearing load must not exceed 600 kg.
If the bearing load is underrun or exceeded when unloading the trailer, the load must be shifted so that the bearing load returns to the permissible range.

- Drive the vehicle in front of the trailer to be attached.

DANGER
The trailer must be secured against unintentional movement (rolling).

- Push the safety (1) down and pull the tow pin (6) out of the hitch (5).



Bild_C269

DANGER
Make sure no-one is standing between the vehicle and trailer.

- Drive the vehicle with the coupler head into the trailer tongue.
- Reinsert the tow pin and lock it.
- Connect the trailer lighting to the connector socket (4).
- Remove the wheel chocks from the trailers.

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Operating the trailer hitch automatically, attaching trailers

- Put the trailer hitch (6) in the two lower holes provided on the adjusting rail (3) with the fastening pin (4) and secure the pins with the retaining clips.

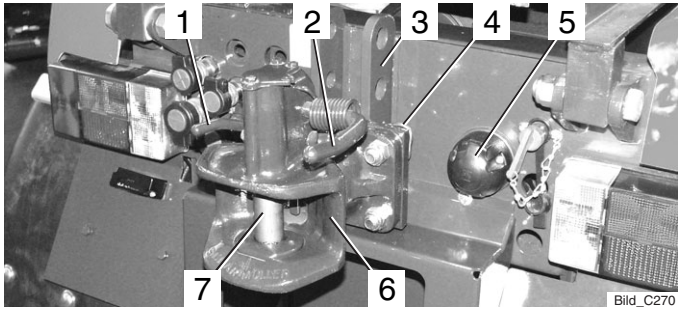
Bearing load

***ATTENTION**: The bearing load must be at least 25 kg (4 % of the trailer load), while the maximum bearing load must not exceed 600 kg. If the bearing load is underrun or exceeded when unloading the trailer, the load must be shifted so that the bearing load returns to the permissible range.*

- Drive the vehicle in front of the trailer to be attached.

***DANGER**: The trailer must be secured against unintentional movement (rolling).*

- Pull the release lever (2) up until the tow pin (7) opens the coupler head.



Bild_C270

DANGER
Make sure no-one is standing between the vehicle and trailer.

- Drive the vehicle with the coupler head into the trailer tongue. The hitch will close on contact, the tow pin (7) goes through the eye of the tongue. The hitch can also be closed by pressing the lever (1).

DANGER
The trailer hitch must be completely closed.

- Connect the trailer lighting to the connector socket (5).
- Remove the wheel chocks from the trailers.

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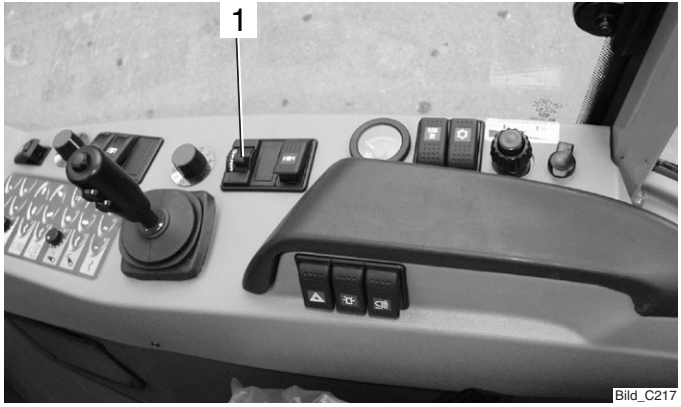
Trailers, towing

Driving with trailers

- Turn the driving program switch (1) to range 1 or 2. The maximum drawbar pull is achieved in range 2.
- Drive the vehicle as described in the section on driving.

DANGER
If a trailer not requiring a permit is attached, the driving speed is limited to 25 km/h. The trailer must be identified with a 25 km/h sign.



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Transport, hoisting, towing

Instructions for transport

- Drive the vehicle on the hauling vehicle.
- Shut down the vehicle as described in section “Leaving the Vehicle“.
- Secure the vehicle against rolling with chocks at the wheels and, if needed, with wood blocks at the sides to prevent it from sliding.
- Tie the vehicle down at the front to the upper link support (1), at the rear to the trailer hitch (2).

Hoisting instructions

DANGER
When hoisting the vehicle, only use lifting equipment and a crane with a sufficient load capacity.

- The hoisting weight must not exceed the permissible total weight:

The hoisting weight is given on the vehicle identification plate and in the tables of weights in the technical data.

- Hoist the vehicle only with the lifting equipment attached to all 4 wheels.

Bild_C222

DANGER
Do not step or stand under a suspended load. Danger!

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Transport, hoisting, towing

Towing instructions

Your vehicle can be towed if disabled due to damage. Use the upper link support at the front at the driver's cab for towing.

DANGER
The towing vehicle must have sufficient tractive and braking force for the towed load without brakes.

- The towed load must not exceed the permissible total weight.
  The total weight of the vehicle is given on the identification plate and in the tables of weights in the technical data.
- Attach the towing device (only a rigid tow bar in case of a brake malfunction) to the trailer coupling (1).
- Turn on the ignition.
- Turn off the parking brake switch.
- If the parking brake does not release, start the engine to build up pressure in the accumulator so that the parking brake will disengage.
- During the towing procedure, the engine must be turned off to prevent the wheel motors from blocking.

Bild_C292

CAUTION
If the engine is not running during towing or the hydraulic system has failed, steering is difficult. Increased effort is required for steering in this case.

- Only have the vehicle towed out of the danger zone at a maximum of 5 km/h. Do not tow it over long distances, as this might cause damage to the hydrostatic drive.
- Park the vehicle secured against rolling.

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Transport, hoisting, towing

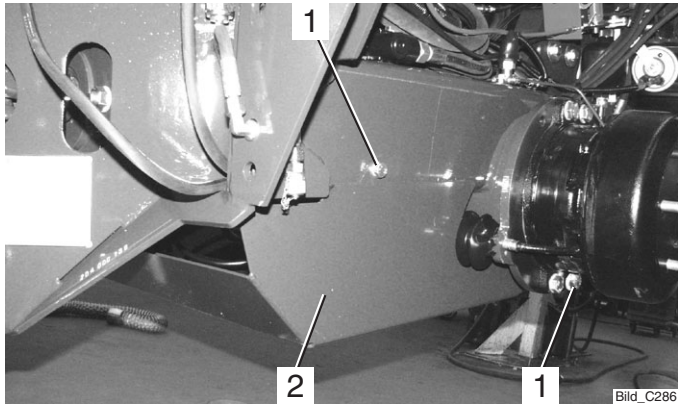
ATTENTION
If the parking brake can not be released due to a lack of pressure in the accumulator and pressure can not be built up on account of a failure of the engine or hydraulic system, remove the brake cable on the hydraulic cylinder so that the vehicle can be towed.

DANGER
Secure the vehicle against rolling with chocks.

CAUTION
The brake cable is very taut - risk of injury.

- Remove the bolts (1) on the left and right side of the protective hull.
- Remove the protective hull (2).
- Remove the boot (3) on the right and push it back.
- Loosen the locknut (4).
- Fully remove the setscrew (5).

The parking brake is now released and the vehicle can be towed.
The parking brake may only be restored by an authorized workshop.



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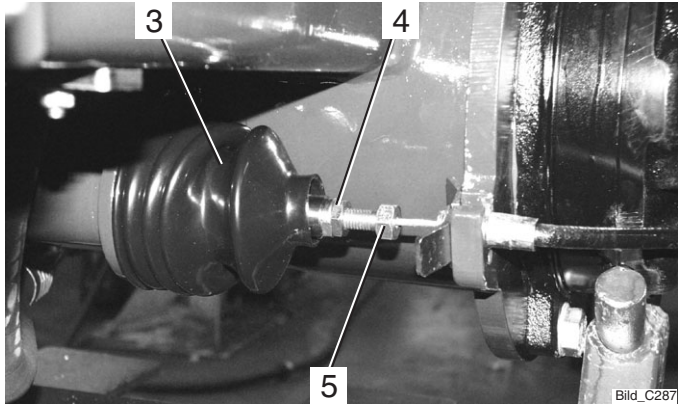

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Indicators, adjustments

Adjusting the speedometer

The adjustment of the speedometer in the multifunctional display is required when changing from large to smaller tires and vice versa.

Please refer to the maintenance instructions for the adjustment of the speedometer.

Indication of special operating conditions

The built-in horn indicates the following condition:

- clogged air filter.

The built-in buzzer indicates the following condition: (Only with the engine running)

- Turn signal indicator
- Hazard warning light
- Differential Lock
- Oil temperature of engine over 130 °C
- Oil pressure of the engine
- Parking brake applied - only when driving

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Troubleshooting guide

The following tables list problems and their possible causes. If you can not carry out the remedy yourself, please contact an authorized workshop or our customer service.
Test and Control Box BB3 or the Bodem PC software, with which further troubleshooting/diagnostics are possible, are available as an option.

Problems in engine and exhaust gas turbo-charger

Please observe the notices in the operating instructions for the engine.

Problems in electronic and hydraulic driving systems

Problem	Cause	Remedy
Traction electronics - general	Faults in the traction electronics Warning light is on or flashes if the following conditions are met: • Ignition on • Driving program switch on 1,2,3 or 4 • Forward/reverse selector switch in neutral	Read out fault history with BB3 or Bodem Eliminate faults Clear faults in the fault history

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Troubleshooting guide

Problem	Cause	Remedy
Low tractive force	Fault in boost or high-pressure system	Check suction filter in return line Check boost pressure in hydraulic system Check high-pressure hydraulic system Check for leaks on variable-displacement pumps and wheel motors Check control units and proportional solenoids of variable-displacement pumps Check maximum current at proportional solenoids Eliminate detected faults
No forward and reverse travel	Drive of variable-displacement pumps defective	Repair
	Forward/reverse selector switch in neutral	Put forward/reverse selector switch in desired direction of travel
	Machine started with preselected direction of travel	Put forward/reverse selector switch in neutral and preselect desired direction of travel
	No power supplied to the electronics	Check fuses Check electric connection
	Electrical connection to the variable pump interrupted	Make connection

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Troubleshooting guide

Problem	Cause	Remedy
No forward and reverse travel	Forward/reverse selector switch defective or bad contact	Replace forward/reverse selector switch, make contact
	Drive program switch at 0	Select desired driving program
No forward and reverse travel or only one direction	Fault in boost or high pressure system	Check boost pressure in hydraulic system
		Check high-pressure hydraulic system
		Check control units and proportional solenoids of variable-displacement pumps
		Eliminate detected faults
No fast-slow available	Driving program switch defective	Renew driving program switch
	Hydraulic valve for slow/fast defective or no pressure available	Check hydraulic valve
	Electric connection to hydraulic valve for slow/fast interrupted or bad contact	Make connection
Vehicle drives in one direction only	Forward/reverse selector switch defective	Replace forward/reverse selector switch
	Electrical connection to the variable-displacement pump interrupted	Make connection

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Troubleshooting guide

Problem	Cause	Remedy
No maximum speed	Diesel engine does not attain maximum speed	Check throttle linkage Check diesel engine
	Inching pedal not at maximum speed	Adjust inching pot, calibrate
	Variable-displacement pump not at full delivery	Check maximum current, check proportional solenoid valve
Does not remain stationary with inching pedal depressed	Inching pedal at wrong position, maybe foreign objects in the control	Adjust properly, remove any foreign objects
	Inching pot not adjusted properly	Adjust inching pot, calibrate
Inching pedal not functioning (warning light flashes)	Inching pot defective or no contact	Replace inching pot, calibrate Repair cable connector
	Electronic unit faulty	Renew electronic unit
Machine does not stop without depressing accelerator in driving program 1 or 2	Engine idle speed too high	Check engine, adjust idling speed, check actuator
	Incorrect calibration	Carry out calibration

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Troubleshooting guide

Problem	Cause	Remedy
Differential lock does not operate	Fuse blown or bad contact	Check fuse, remake contact
	Switch defective	Check / renew the switch
	Hydraulic valve for differential lock defective or no pressure exists	Check hydraulic system and hydraulic valve
	No power	Check and repair electrical connections, cables
	Differential lock on wheel motor too hard to operate	Repair
Parking brake can not be released	Switch defective	Check / replace switch
	Too little pressure in accumulator	Start engine to build up pressure

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Troubleshooting guide

Problems in the hydraulic system and steering

☞ ***NOTE***
These notes only apply for valve arrangements conforming to our circuit diagrams or approved by Bucher Hydraulics.

Problem	Cause	Remedy
Power lift or hydraulic cylinders not lifting. No pressure build-up noticeable (steering working normally).	Slide valve in input plate stuck due to foreign objects.	Remove and clean slide valve in input plate LU8SSCS-OM22/04! Do not change pressure setting!
Power lift lifting with too little power.	Pressure setting too low Oil level too low.	Reset pressure with pressure gauge (190 bar). Fill up specified type of oil
Operating pressure is only reached with high RPM	Pump defective	Replace pump
Power lift not lifting Not enough power Drops after operation.	Lift cylinder leaky Valve leaky	Clean / replace

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Troubleshooting guide

Problem	Cause	Remedy
Hydraulic oil heats too quickly, system works against excess pressure. (engine under load)	Cylinder at limit stop	Put joystick in neutral position (free circulation)
	Implement not connected but joystick in work position (quick coupling)	Put joystick in neutral position (free circulation)
Hydraulic oil foams	Leaks in suction area	Check all pipe connections and tighten, if required
Hydraulic system working too slowly, accompanied by whistling noise	Hydraulic oil level too low	Fill up as specified
	Temperatures too low	Fill proper type of oil as specified in maintenance instructions
Steering not working	Proportional valve dirty	Clean proportional valve (installed on right side of body)
	Relief valve in hydraulic steering not closing	Remove and clean (authorized workshop)
Lost steering motion when steering direction is changed rapidly	Leaks in steering return line	Check hose couplings for leaks

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Troubleshooting guide

Problems in the working hydraulic system

The diagnostic unit OPUS and PC software are available as options with which further troubleshooting/diagnosis/adjustment of the electronics in the working hydraulic system is possible.

☞ ***NOTE***
These notes only apply for valve arrangements conforming to our circuit diagrams or approved by Bucher Hydraulics.

Problem	Cause	Remedy
All hydraulic functions not active	Control unit (box) without power	Turn on main switch (toggle switch)
	Connector or cable set defective	Repair or replace connectors, cables
	Control unit defective, watch flashing code of LED on box	Replace
Individual functions not active	Function disabled	Enable with Opus or PC software, also see operating instructions.
	Connectors or cables damaged	Repair or replace
	Solenoid or valve defective	Repair or replace

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Troubleshooting guide

Problem	Cause	Remedy
Joystick inoperative	Joystick disabled Buttons defective	Enable with Opus or PC software Determine defect with Opus, send joystick in for repair or replace, also see the operating instructions. “Remote control troubleshooting”
Keyboard inoperative	Mechanical or electric defect	Determine defect with Opus or PC software, replace keyboard and/or related p. c. board
Many joystick and keyboard functions malfunctioning simultaneously	Power supply cut off (3 separate positive cables, pins 05, 23, 34	Determine and eliminate defect (cable break, contact problems in connector). Attention: Despite applied voltage in off-state, power can fail during operation
Functions too slow or too fast	Flow limitation out of adjustment Power value for certain channel too low	Reset with “#” button and joystick or Opus or PC software Using Opus or PC software set in “Channels” area from 800 to 1900 mA
4th control level on the joystick malfunctioning	Activated with special function of “*” button	Press “*” button again
Joystick or keyboard malfunction	Bus line defective (Opus not showing connection)	Ensure connection or replace cable

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Troubleshooting guide

Problem	Cause	Remedy
Many malfunctions	Some parameters out of adjustment	Load “default settings” with Opus or PC software
Buttons respond too slowly	Set incorrectly to “slow”	Can be set to “fast” with Opus or PC software
Buttons “locked” instead of “active”	Set incorrectly	Can be set with Opus or PC software
Hydraulic implement cushioning inoperative	Turned off	Turn on with keyboard
	Electronic pressure sensor defective	Replace
	Specified pressure too low	Change on electric pressure sensor
	Function switched to rear power lift	Set to “Front” with Opus
Implement cushioning pulsing a lot	Specified pressure and hysteresis too low or too high	Change pressure sensor settings
	Implement weight too low	Turning off the implement cushioning
	Hydraulic pressure accumulator defective, no cushioning noticeable	Renew pressure accumulator

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Troubleshooting guide

Problem	Cause	Remedy
Directional control valve leaky	Foreign particles in seat valve	Remove, clean or replace valve cartridge
No pressure build-up	Slide valve in input plate stuck (foreign particles)	Remove, clean slide valve or replace plate
Strong oil flow fluctuation in flow divider I or oil flow too low	Lack of oil	Higher RPM, reduce demand of 2nd load

Troubleshooting is also possible with Opus (Order No. 204-80-70) or the PC software in the menu

- Keyboard Check: Keyboard buttons.
- Output functions XO...Y3: Check if box provides current for valves.
- Rear power lift position limiter: Functions of lift position control.
- Cushioning device: Functions of hydraulic implement cushioning
- Desired value channel.
- FCE1: Joystick functions.
- Diagnosis of master inputs.
- Diagnosis of BKN nodes.

Use the circuit diagrams and wiring diagrams.
Also refer to the Bucher Hydraulics operating instructions (ELMR223-10, software until V2.6).

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General remarks on maintenance

To keep your vehicle always in peak condition, we would ask you to study the information in these maintenance instructions very carefully. These chapters contain all the information you need for a conscientious treatment and care of the vehicle. Place particular value on the performance of the periodic maintenance.

Service

Please have all scheduled vehicle services (acc. to maintenance schedule) and repairs carried out regularly by your dealer (authorized workshop) and confirmed with a stamp and signature in this manual.
Detach the double guarantee card, have it filled in by your dealer and send it signed by the customer directly to:

Holder Industries GmbH
P. O. Box 15 55
72545 Metzingen/Württ.

The warranty and product liability will only be maintained if the maintenance services and inspections are carried out regularly.

Qualification of service personnel

The vehicle, together with its attachments, may only be used, serviced and repaired by persons who are familiar with this equipment and have been warned of possible risks. The qualified personnel entrusted with the work must have the required tools.
The applicable safety regulations and rules must be observed.

How to value the vehicle?

As you know, a car is judged by its age together with the number of kilometres driven. The way to judge vehicles is to consider their age together with the number of service hours according to the following table:

Service hours	Kilometres driven
1	50
10	500
150	7500
300	15000
600	30000
1500	75000

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General remarks on maintenance

Service

The following services were carried out:

In the maintenance table below you can enter the properly carried-out services and inspections and have them confirmed. (These entries are required to keep your warranty claims intact):

Service Interval	Hours of Operation	Date	Signature
50			
125			
250			
375			
500			
625			
750			
875			
1000			
1125			
1250			
1375			
1500			

Service Interval	Hours of Operation	Date	Signature
1625			
1750			
1875			
2000			
2125			
2250			
2375			
2500			
2625			
2750			
2875			
3000			

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Handling fuels and lubricants

- Fuels and oils must always be handled properly and as specified by the manufacturer.
- Fuels and oils may only be stored in approved containers at specified places of storage. They can be inflammable, therefore do not allow them to come in contact with hot objects or with naked flames.
- Exercise caution when handling fuels - increased danger of fire. Do not fill any fuels in the vicinity of naked flames, ignition sparks or hot engine parts. No smoking when refuelling!
- Before refuelling, shut off the engine and remove the ignition key. Do not refuel within enclosed spaces. Do not spill fuels! (use suitable filling aids).
- Exercise caution when handling brake fluid and battery acid (poisonous and corrosive).
- Only use clean vessels when filling fuel and oil.
- When using fuels, oils and cleaners, follow the safety and disposal instructions of the manufacturer.
- Always avoid spilling. Eliminate spilled brake fluid immediately with a suitable binding agent and discard as specified by regulations.
- Oils, fuels, batteries, brake fluid and filters must be disposed of separately and as specified by regulations.
- Before beginning lubrication, changing filter or opening the hydraulic system, clean the area surrounding the affected part carefully.
- Replaced parts must be discarded in a way friendly to the environment.
- Observe all local and national laws and regulations.

CAUTION
The penetration of hydraulic oil under pressure into the skin, eg through leaks, is dangerous. If such injuries occur, seek medical aid.

Safety notes for maintenance

Observe the notes in these maintenance instructions and the general applicable safety and accident prevention rules!

- Do not allow anyone to stand around where they might get hurt!
- When starting the engine, the traction and implement drive must be shut off!
- Start the engine only from the driver's station. Do not start the engine by short circuiting the starter terminals, as the machine could start moving immediately.

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General remarks on maintenance

- Do not run engine in enclosed spaces! Danger of poisoning!
- To prevent the danger of fire, keep the vehicle and implements clean!
- When leaving the vehicle, secure it against rolling and unauthorized use (parking brake, chocks), stop the engine, remove the ignition key and, if required, lock the cabin!
- Never leave the vehicle unattended while the engine is running!
- If external power loads are connected, eg equipment with solenoid valves, protect them with diodes against back currents. If not, the traction electronics could be affected.
- Operate the equipment only if all guards are installed and in position.
- Install and remove the articulated shaft only with the engine stationary.
- When working with the PTO shaft, no-one should be standing in the area of the rotating PTO and articulated shaft.
- The guards for the articulated shaft and the PTO shaft must be installed as specified.
- When the articulated shaft is removed, refit the protective cap on the PTO shaft.
- Do not perform any welding, cutting and grinding work on carrying and other safety-relevant parts such as vehicle frame, axles, trailer hitch, etc.
- When doing electric welding, disconnect all connector plugs from the electronic units.
- The mounting of tires requires sufficient knowledge and special mounting tools.
- Only use genuine HOLDER replacement parts! Use the parts in the list of maintenance parts in the chapter entitled “Maintenance data“.
- The vehicle and the implement must be checked for road worthiness and operating safety before taking it into operation and after servicing or repairs.

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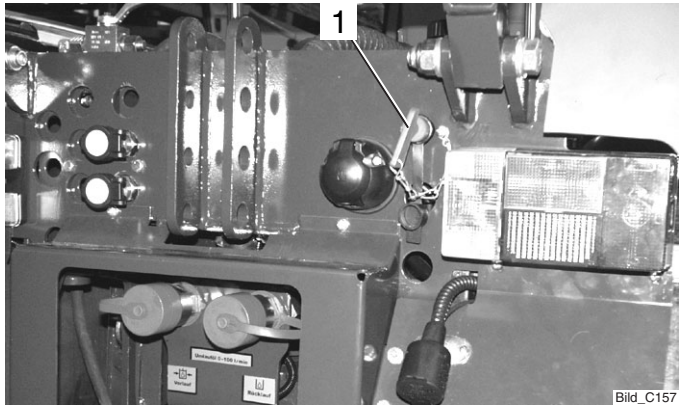
Work on the electrical system

Before performing any services on the electrical equipment, switch off power with the battery isolating switch (1).

- The switch must be horizontal, the toggle removed.



Bild_C157

CAUTION
Disconnect the battery ground lead (2).

Do not place any metal parts on the battery terminals. Risk of short circuit!

Bild_C235

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General remarks on maintenance

Jack lift points

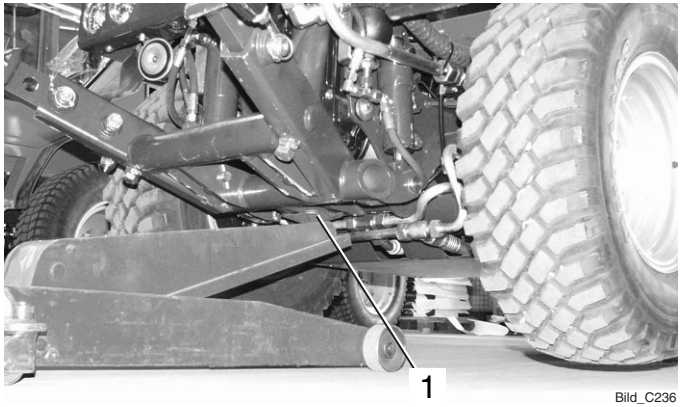
Jacking up

DANGER
When using the jack, be sure the vehicle is shut down and secured against rolling (chocks)!

The vehicle may only be jacked up at the shown locations (1 and 2).

DANGER
The weight to be lifted should not exceed the permissible load capacity of the jack.

When carrying out repairs, the raised vehicle must also be secured against lowering with supports. Place the supports under the axles on both sides.



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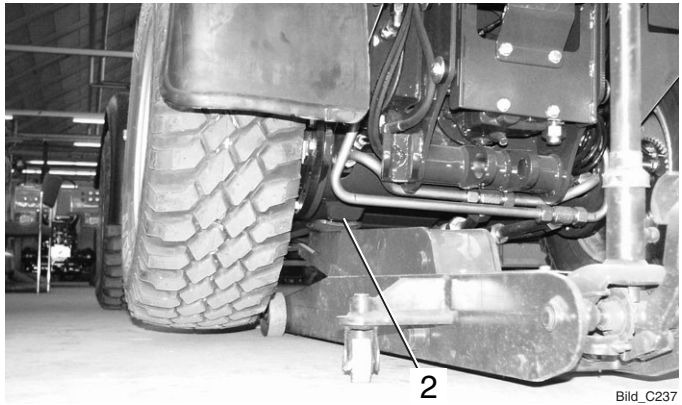

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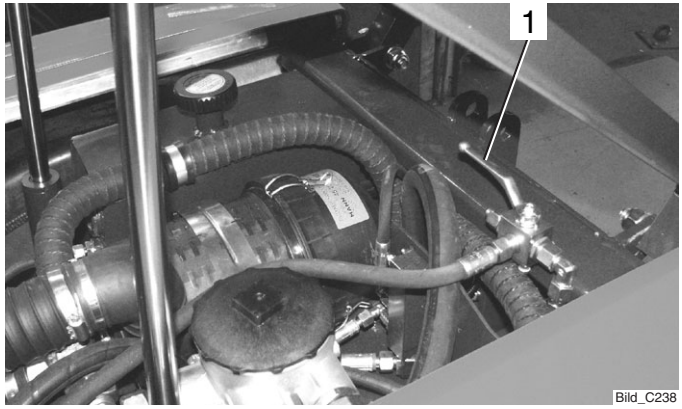
Securing the dump body (loading platform*)

For all services requiring the dump body (loading platform*) to be raised, secure it against accidental lowering.

- Turn the changeover lever (1) to the right (hydraulic lock).

☞ ***NOTE***
To lower it, return the changeover lever (1) to the left.



Bild_C238

* Option

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General remarks on maintenance

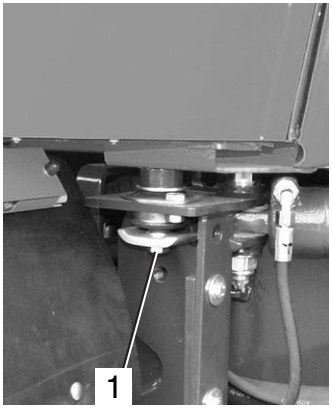
Tilting the cab

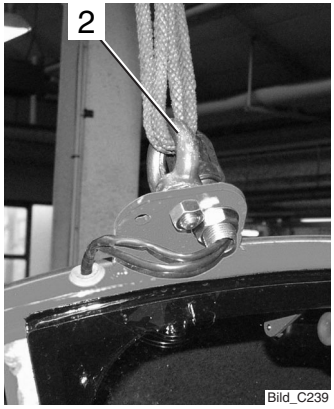
The cabin can be tilted for repairs and servicing.

ATTENTION
Raise the cabin carefully.

- Remove the front fender by removing the socket head screw and pushing the roller back.
- Remove the nuts (1) and retaining plate at the rear of the cabin.
- Attach the M14 eyebolt* (2) to the top of the cab frame.
- Attach a hook or rope and slowly lift the cabin up with a hoist.
- Take the stay rod (3) out of the support, insert it on the vehicle frame and secure it with the retaining pin (4).

DANGER
Working under the cabin is only allowed with the stay rod in place.





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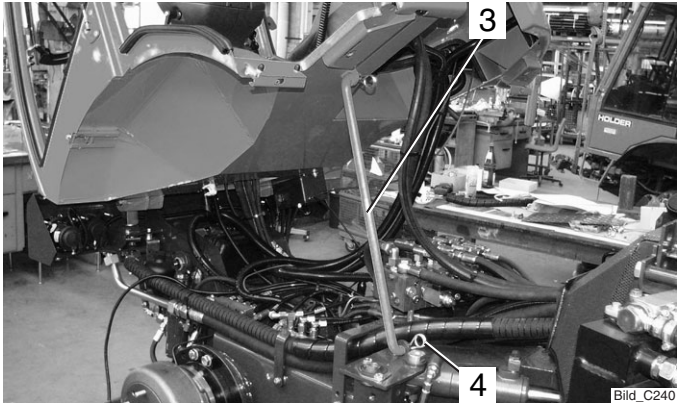

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* Option (commercially available)

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Maintenance schedule

Maintenance during the first period of operation

Interval	Service or check	See page
Maintenance after the first 50 hours	Check the engine for leaks	161
	Check the hydraulic oil level	48
	Check the braking system	170
	Grease the vehicle	171, 182
	Tighten nuts and bolts	172
	Tighten wheel nuts	172
	Change the filter for the traction and working hydraulics return line	184
Maintenance after the first 500 hours	Change hydraulic oil for traction and working hydraulics	183
	Change the filter for the traction and working hydraulics return line	184
	Check or clean hydraulic oil suction filter of implement hydraulics	184

The checks and services specified below must be carried out when the stated number of service hours is reached. The checks and services of the lower intervals must be carried out at the same time.

Example:
At 1000 hours of operation, the checks and services for 500 and 125 hours must also be carried out.

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Maintenance schedule

Routine maintenance

Interval	Service or check
Maintenance as required	Adjust the speedometer Check the air cleaner system
Periodic maintenance	
Maintenance every 125 hours	Check the cooling system Clean cooling system Check the battery and cable terminals Check hydraulic oil level, see page 48 Check the high pressure hoses Check the steering cylinder and orbitrol Check the brake fluid level for the foot brake Check the braking system Grease the vehicle Tighten nuts and bolts Tighten wheel nuts Check the electrical system Clean the fresh air filter
Maintenance every 500 hours	Change the engine oil } **At least once annually** Change the engine oil filter } **At least once annually** Check hose couplings for leaks Check the heating system

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Periodic maintenance

Interval	Checks and services
Maintenance every 1000 hours	Check engine valve clearances Check the battery Check V-belt tension and condition Change the fuel filter Clean/replace the fuel pump strainer Lubricate the cardan joint nipples
Maintenance every 1500 hours	Change hydraulic oil for traction and working hydraulics Clean the filter for the traction and working hydraulics return line and change it, if necessary. Check / clean for suction filter for working hydraulic system.
Maintenance every 3000 hours	Check the injection nozzles Change the toothed belt
Annual maintenance	Change the brake fluid of the foot brake

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Maintenance during the first period of operation

The following checks and services are due during the first period of operation:

Maintenance after the first 50 hours
Maintenance after the first 500 hours

Maintenance after the first 50 hours

Check the engine for leaks

- Raise the dump body (loading platform*) and secure it against accidental lowering.
- Check the engine and implements for leaks.

Carry out the other services in accordance with the maintenance schedule. You can find the description of the services using the indications in the maintenance schedule or in the alphabetical index.

* Option

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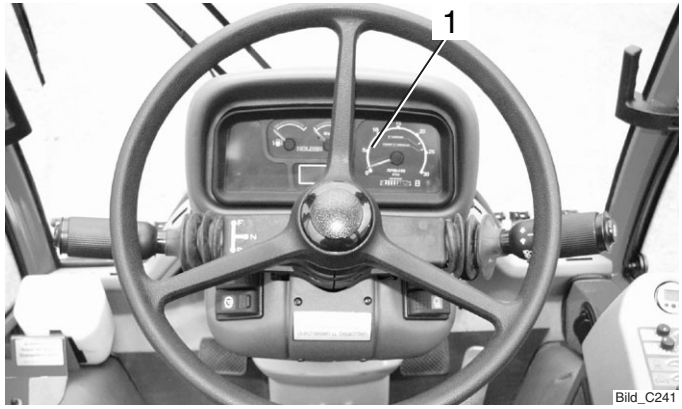
Maintenance as required

Adjusting the speedometer

The adjustment of the speedometer in the multifunctional display is required when changing from large to smaller tires and vice versa.

- Carefully pull the multifunctional display (1) out at the right and left side and rotate it.
- Remove the cover from the combination switch (2) on the back.
- Set the first 6 of 8 DIP switches to the positions shown in the table as required for the size of your tires.



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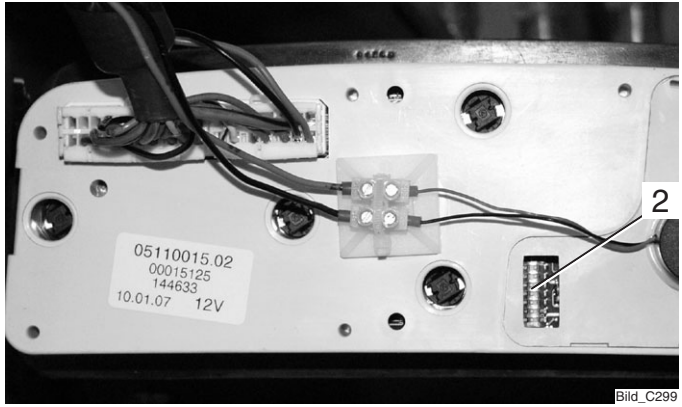

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Maintenance as required

Serial number 05110015.01 on multifunction display until approx. 04.07

		Switch layout							
		Combination							
Tire size	Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
340/65 R18	422-31-06 & 422-31-07	1	0	1	0	1	0	-	-
275/80 R18	4131-14 & 422-31-2	1	0	1	0	1	0	-	-
36x13.50-15	204-31-03	1	0	1	0	1	0	-	-
10.5-18 MPT	4131-22 & 422-31-3	1	0	1	0	1	0	-	-
320/65 R18	422-31-4 & 422-31-05	1	0	1	0	1	0	-	-
425/55 R17	204-31-02	1	0	1	0	1	0	-	-
33x12.50 R15	4131-23	1	0	1	0	1	0	-	-
33x15.5-15	4131-18	1	0	1	0	1	0	-	-
33/18LL-16.1	204-31-01	1	0	1	0	1	0	-	-
31x11.50 R15	203-31-1	1	0	1	1	0	0	-	-
31x15.5-15	4131-8	1	0	1	1	0	0	-	-

- Switch positions 7 and 8 are not used.

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Maintenance as required

Serial number 05110015.02 on multifunction display from approx. 04.07		Switch layout							
		Combination							
Tire size	Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
340/65 R18	422-31-06 u. 422-31-07	0	0	1	0	0	0	-	-
280/80 R18	422-31-11 u. 422-31-12	1	0	1	0	0	0	-	-
275/80 R18	4131-14 u. 422-31-2	1	0	1	0	0	0	-	-
36x13.50-15	204-31-03	1	0	1	0	0	0	-	-
10.5-18 MPT	4131-22 u. 422-31-3	1	0	1	0	0	0	-	-
400/60-15.5	422-31-08	0	1	1	0	0	0	-	-
320/65 R18	422-31-4 u. 422-31-05	0	1	1	0	0	0	-	-
425/55 R17	204-31-02	0	1	1	0	0	0	-	-
33x12.50 R15	4131-23	0	1	1	0	0	0	-	-
33x15,5-15	4131-18	1	1	1	0	0	0	-	-
33/18LL-16,1	204-31-01	1	1	1	0	0	0	-	-
31x11.50 R15	203-31-1	0	0	0	1	0	0	-	-
31x15,5-15	4131-8	0	0	0	1	0	0	-	-

- Switch positions 7 and 8 are not used.
- Refit the multifunctional display.

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Maintenance as required

Check the air cleaner system

The filter cartridge must be serviced when the flow resistance of the filter is highest due to the restriction of the element. This is indicated by the sounding of an alarm.

- Stop the engine.
- Raise the dump body (loading platform*) and secure it against accidental lowering.
- Remove the clamping band (1) from the air cleaner housing and turn the air cleaner housing up.
- Open the air cleaner cover clips (2).
- Pull off the housing cover and clean the dust ejection valve (4).
- Pull the air filter element (3) out of the housing by rotating it slightly.

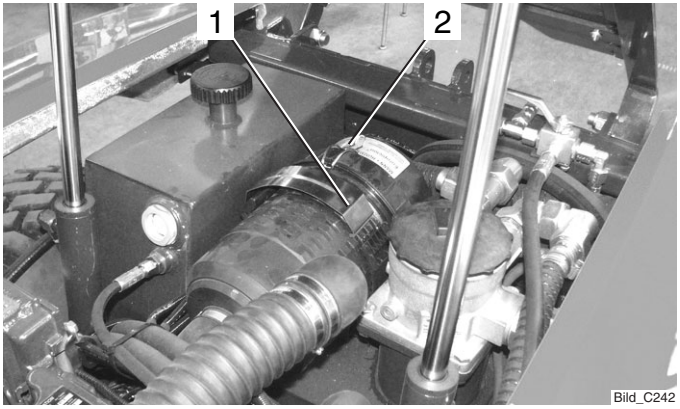
Cleaning:

- Blow out the filter element from the inside with compressed air having a pressure of maximum of 5 bar.

Replacement:

- Install a new filter element.

Clean the air cleaner housing with a moist cloth before installation.
The installation of the air filter element is performed in the reverse order.



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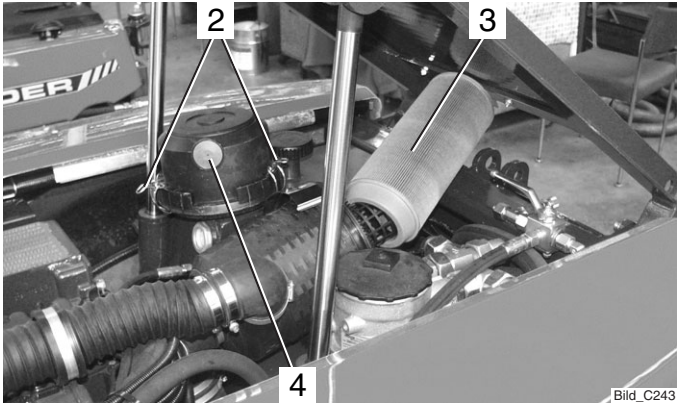

Bild_C243

* Option

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Periodic maintenance
Maintenance every 125 hours

ATTENTION
Carry out the checks and services only with the engine turned off.

Check the cooling system

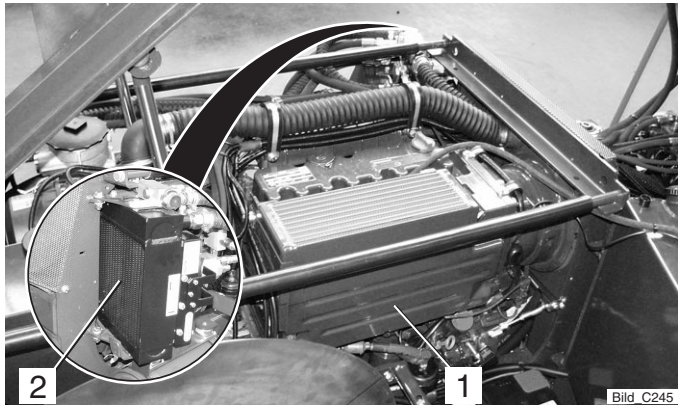
- Inspect the cooling fins and oil cooler for the accumulation of dirt.

Clean the cooling system
Clean with compressed air

- Raise the dump body (loading platform*) and secure it against accidental lowering.
- Remove the left and right side panels.
- Remove the cover plate (1) at the right-hand side of the engine.
- Blow dirt out of the engine compartment taking special care on the radiator and radiator fins (start from the exhaust air side). Remove any dirt blown into the engine compartment.
- Clean the hydraulic oil cooler (2) in the same way.

Clean with cold cleaner or pressure washer

ATTENTION
Max. spray pressure is 60 bar. Steam temperature is 60°C



- Preparations as described above.
- Spray the oil cooler and engine with a cold cleaner and allow it to soak in for 10 minutes.
- Clean the oil cooler and engine with a strong water jet.

ATTENTION
Do not aim the water jet directly at sensitive parts such as the alternator. Cover them if necessary.

- Run the engine warm to evaporate any water residues.

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Maintenance every 125 hours

Check the battery and cable terminals

CAUTION
When working on the electrical equipment, always disconnect the ground lead (1) at the battery.

- Check the battery acid level and inspect the battery for leaks. Observe the information of the battery manufacturer.
- Remove any corrosion on the battery terminals.
- Grease the battery terminals with non-acidic battery grease.
- Check cables and cable ends for secure connection and damage.
- Replace any damaged cables and terminals.

Bild_C246

Check the high pressure hoses

- Check the high pressure hoses for cracks, bending and chafing, and for porous surfaces.
  Replace damaged high-pressure hoses immediately.

This work may only be carried out by an authorized workshop.

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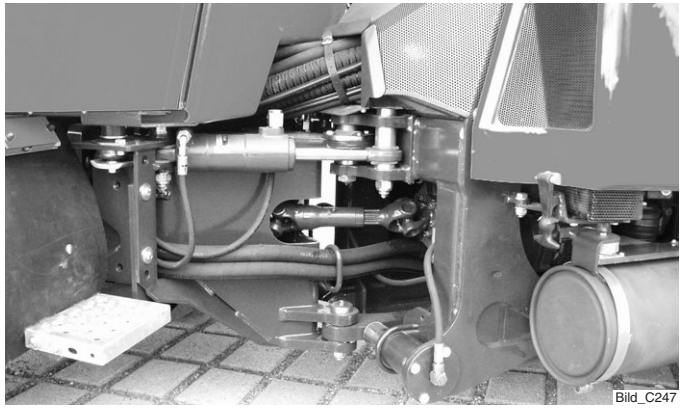
Check the steering cylinder and orbitrol

- Check the steering cylinder and orbitrol for damage and leaks.
- Have damaged or leaky parts replaced by an authorized workshop.


Bild_C247

Check the brake fluid level for the foot brake

- Check the brake fluid reservoir for the foot brake (1). The brake fluid level must be between the markings.
- To fill brake fluid, unscrew the reservoir cap (1) and fill recommended brake fluid as far as the marking.

Filling capacity ..... approx. 0.4 L

ATTENTION
Do not mix different kinds of brake fluids.

Bild_C248

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Maintenance every 125 hours

Check the braking system

DANGER
Do not operate the vehicle with a defective braking system.

- Apply the parking brake.
- Set the vehicle to driving range 1 or 2 and start driving slowly.
  A noticeable resistance should be felt when starting to drive and an alarm should sound.

CAUTION
When the foot brake pedal (1) is depressed, the vehicle is braked strongly.

- Depress the foot brake pedal (1) while driving slowly.
  The vehicle should brake strongly.

DANGER
In case of irregularities with the braking system, stop the vehicle immediately and have it checked by an authorized workshop.

Bild_C249

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Maintenance every 125 hours

Grease the vehicle

- Grease all moving parts lightly.
- Lubricate the grease nipples (1) according to the lubrication chart. Only use recommended grease.

ATTENTION
Lubricate the grease nipples (2) only every 1000 hours. (Do not inject too much grease to prevent damage to the seal.)

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Maintenance every 125 hours

Tighten nuts and bolts

- Tighten the pump, axle and engine fasteners.
- Tighten fasteners to the specified torque according to tables in the maintenance data.

Tighten wheel nuts

- Tighten all wheel nuts on the front and rear wheels (1 and 2).

Torque ..... 215 Nm

Bild_C251

Check the electrical system

CAUTION
When working on the electrical system, always disconnect the ground lead of the battery!

- Raise the dump body (loading platform*) and secure it against accidental lowering.
- Check cables, plugs and cable ducts for damage and security.
- Have any damaged parts replaced by an authorized workshop.

* Option

https://truckmanualshub.com/

Maintenance every 125 hours

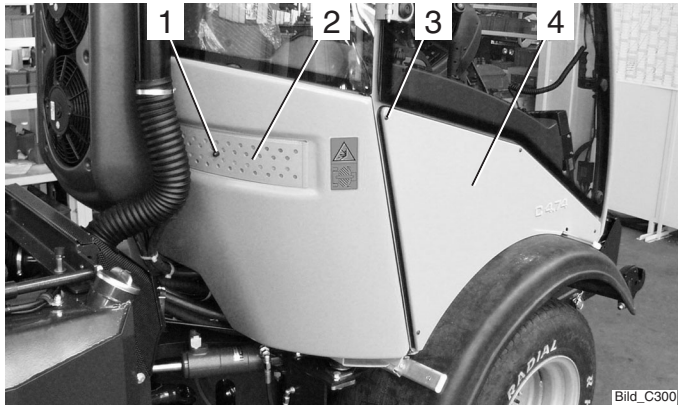
Clean the fresh air filter

- Remove the fastening screws (1).
- Remove the filter cover (2) and take out the filter element.
- Clean the filter element or replace it.

☞ ***NOTE***
A charcoal filter is available for applications such as spraying insecticides, etc.*

- Install the filter element and refit the filter cover.
- Remove the fastening screws (3).
- Remove the filter cover (4)
- When the air condition is mounted detach the gasket strip and take out the capillary tube (6) from the evaporator
- Take out the filter element (5).
- Clean the filter mat or replace it.

Refitting is the reverse of removal.



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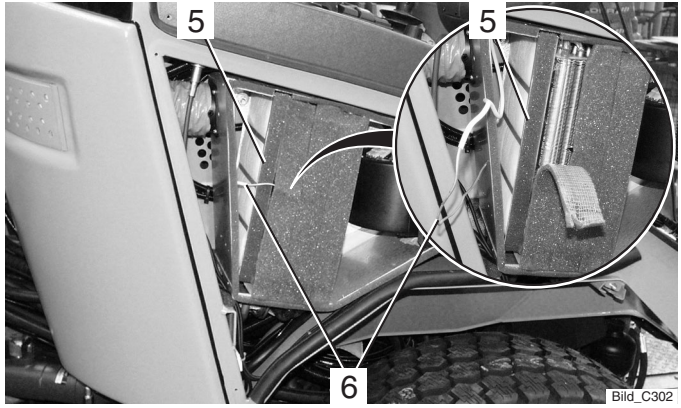

Bild_C302

* Option

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Maintenance every 500 hours

Change the engine oil

- Run the engine warm to operating temperature.
- Set the heating control to high.
- Place the vehicle on level ground and turn off the engine.
- Place a suitable oil pan underneath the engine.

CAUTION
Danger of scalding when draining hot engine oil.

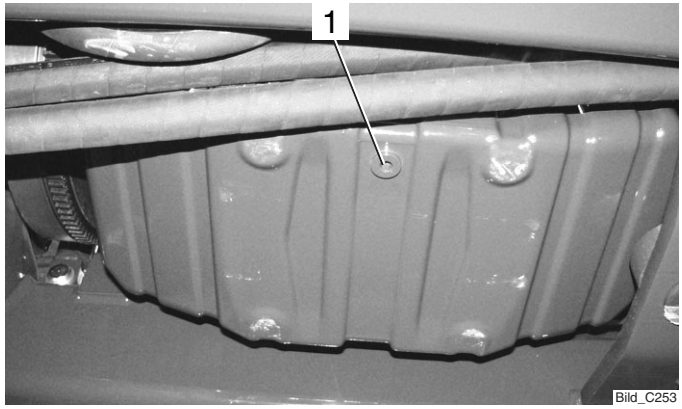
- Unscrew the oil drain plug (1).
- Allow the oil to drain completely.

ATTENTION
Observe the instructions for handling fuels and lubricants.

- Refit the oil drain plug with a new gasket and tighten it to a torque of 55 Nm.
- Fill new engine oil at the filler neck (2). Only use recommended engine oil.

Filling capacity with filter and heater ..... 10.5 litres

- Let the engine idle briefly.
- After approx. 1 minute, check the oil level with the dipstick (3).



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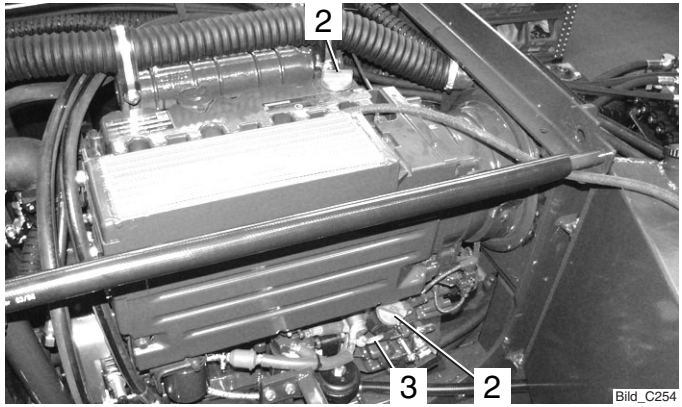

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Maintenance every 500 hours

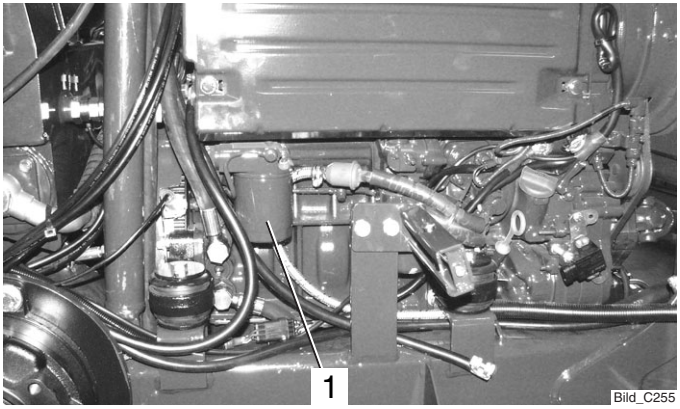
Change the engine oil filter

See the operating instructions of the engine manufacturer.

- Drain the engine oil.
- Remove the filter element (1) with a filter wrench.

ATTENTION
Observe the instructions for handling fuels and lubricants.

- Clean the sealing surface of the filter element mounting base.
- Install a new filter element with a new gasket until the gasket contacts the base.
- Tighten the filter element half a turn.
- Top up engine oil. Check the oil level.



Bild_C255

Check hose couplings for leaks

- Check all hose couplings for leaks. Use leakage spray if necessary. Eliminate any leaks immediately.

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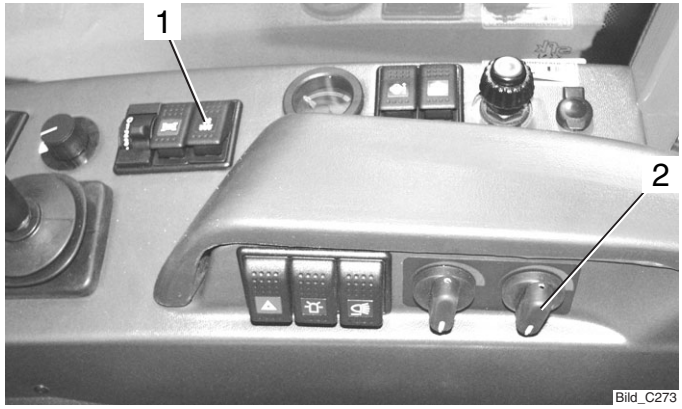
Maintenance every 500 hours

Check the heating system

- Turn the rotary knob (2) CCW to the OFF position.
- Run the engine warm.
- Turn the rotary knob (2) CW to the ON position.
- Set the heating blower switch (1) to stage 2. Warm air should flow out of the heating nozzles.



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Maintenance every 1000 hours

Check engine valve clearances

See the operating instructions of the engine manufacturer.

Check the battery

CAUTION
For the sake of your safety, observe the following instructions.
The battery contains dissolved sulphuric acid, which is poisonous and caustic.
When working with battery acid, wear personal protective equipment (protective apron, protective gloves) and eye protectors. If your clothing, skin or eyes have nevertheless come in contact with battery acid, the affected parts must be rinsed at once with water. If the eyes are affected, seek medical aid immediately. Neutralise spilled battery acid immediately.

Gases are released when batteries are charged. To prevent an explosion, keep sparks, naked fires away. Rooms, in which batteries are charged or stored, must be ventilated accordingly.

NOTE
The charging, servicing and care of the battery must always be according to the maintenance instructions of the battery manufacturer.

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Maintenance every 1000 hours

Check V-belt tension and condition

See the operating instructions of the engine manufacturer.

CAUTION
Service V-belts only with the engine stationary.

- Inspect V-belts for cracks and tears over the entire length.
- Replace damaged V-belts.
- Using thumb pressure, check if the V-belt can not be depressed more than 10 - 15 mm.
- To tighten V-belts: Loosen the idler pulley mounting screws and push the pulley outwards until the proper V-belt tension is reached.
- Tighten the idler pulley mounting fastening screws.

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Change the fuel filter and fuel prefilter

See the operating instructions of the engine manufacturer.

- Remove the fuel filter cartridge with a filter wrench.

ATTENTION
Observe the instructions for handling fuels and lubricants.

- Clean the sealing surface of the filter base.
- Coat the new gasket with oil.
- Install the new filter cartridge with a new gasket in the filter base and tighten by hand.

NOTE
The fuel system is bled automatically.

Clean/replace the fuel pump strainer

See the operating instructions of the engine manufacturer.

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Maintenance every 1000 hours

Lubricating the cardan joint nipples

- Steer the vehicle as far as steering stop.

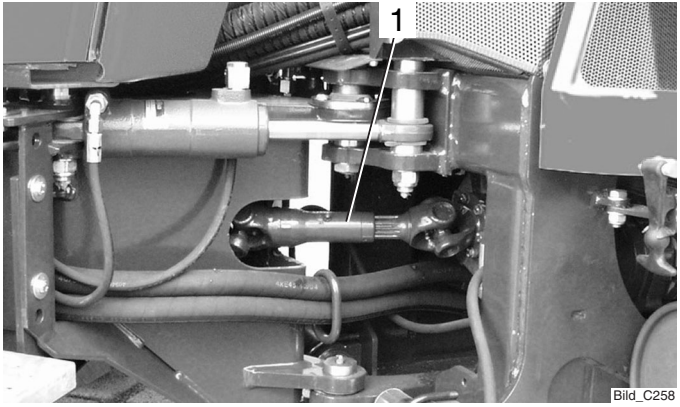
CAUTION
Carry out services in the articulated joint area only with the engine shut off.

- Move centre cardan shaft (1) with starter until grease nipples are easily accessible.

CAUTION
Make sure no-one is standing in the area of the articulated joint when the starter is operated.

- Grease the cardan shaft and cardan joints.

CAUTION
Do not inject too much grease to prevent damage to the seal.



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Maintenance every 1500 hours

Change hydraulic oil for traction and working hydraulic system

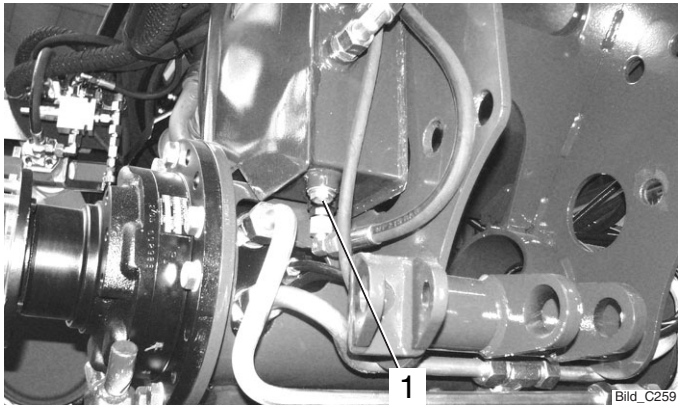
NOTE
Change the hydraulic oil while at operating temperature.

- Place the vehicle on level ground. Raise the dump body.

CAUTION
Secure the dump body (loading platform) against accidental lowering.*

- Place a suitable oil container beneath the hydraulic oil tank.
- Relieve any pressure in the hydraulic system by operating the control levers.

CAUTION
Danger of scalding when draining hot hydraulic oil.



- Unscrew the oil drain plug (1).
- Drain the oil.

Please ensure the oil is disposed of properly.

- Flush the hydraulic oil tank with clean hydraulic oil if necessary.

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Maintenance every 1500 hours

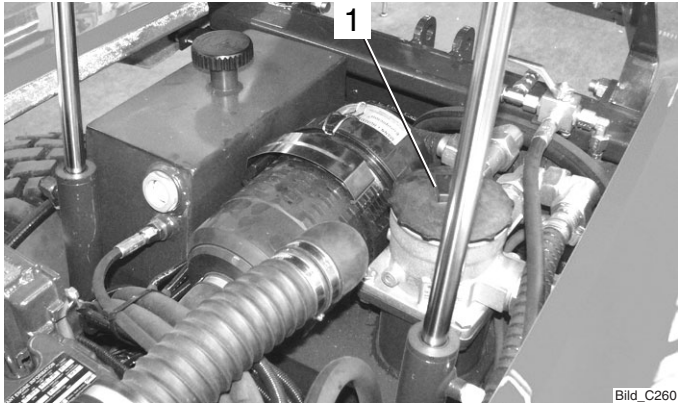
Change the filter for the traction and working hydraulics return line.

- Remove the filter cover (1).
- Pull the filter element out.

ATTENTION
Observe the instructions for handling fuels and lubricants.

- Install a new filter element in filter housing.

Refitting is the reverse of removal.



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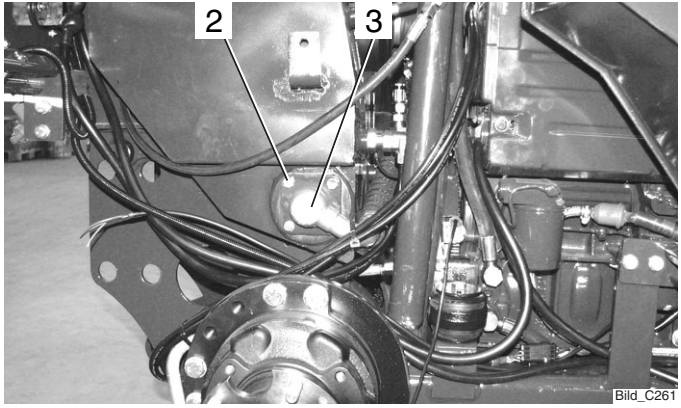
Check/clean the suction filter for working hydraulic system

- Remove the banjo bolt (3) and move the line to the side.
- Remove the filter cover fastening screws (2).
- Pull the filter housing out with the straining star filter.

ATTENTION
Observe the instructions for handling fuels and lubricants.



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Maintenance every 1500 hours

Clean:

- Wash the straining star filter with clean diesel fuel.

Change:

- Remove the straining star filter from the filter housing with a 24mm open-ended wrench.
- Fit a new toroidal sealing ring on the new filter and screw it on to the filter housing.

Refitting is the reverse of removal.

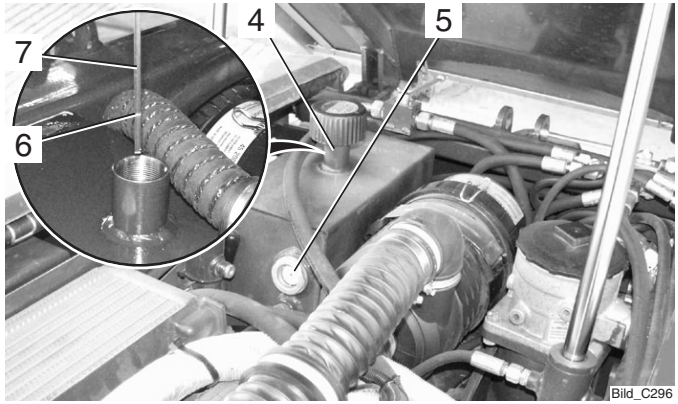
- Refit the oil drain plug with a new seal. Check for oil leaks.
- Fill recommended hydraulic oil through the filler neck (4).

Filling capacity ..... approx. 42 litres

- Check the oil level at the sight glass (5).

☞ ***NOTE***
The first 30 machines have an oil dipstick (7) installed. If this is the case, the oil level must reach the mark (6).

- Refit the filler neck cap.
- Start the engine. Operate the implements and steering.
- Drive the vehicle briefly back and forth.



☞ ***NOTE***
The air in the hydraulic system is bled automatically.

- Shut off the engine and relieve any pressure in the hydraulic system.
- Check for leaks.
- Check the oil level at the sight glass (5). Add hydraulic oil, if necessary.

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Maintenance every 3000 hours

Check the injection nozzles

ATTENTION
This work may only be carried out by an authorized workshop.

- Clean the injection nozzles.
- Check the injection nozzles with a test pressure of 250 +8 bar.

Change the toothed belt

Change every 3000 hours or 5 years maximum.
See maintenance instructions of the engine manufacturer.

ATTENTION
This work may only be carried out by an authorized workshop.

- Remove the left-hand cover of the toothed belt drive.
- Check the toothed belt for cracks over its entire length.
- Replace damaged toothed belts.

NOTE
When replacing the toothed belt, also replace the idler pulley.

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Annual maintenance

Change the brake fluid of the foot brake

ATTENTION
This work may only be carried out by an authorized workshop.

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Laying up

If the vehicle is not going to be in service for over 2 months, for example for operational reasons, it must be placed in a well-ventilated, clean and dry room and the following measures must be carried out.

- Clean the vehicle thoroughly.
- Check the hydraulic oil levels, topping up oil if necessary
- Cover all blank mechanical components with a thin film of oil or grease.
- Grease the vehicle.
- Check the condition and acid density of the battery; cover the battery terminals with non-acidic grease. (Observe the instructions of the battery manufacturer.)
- Remove the battery and store in a frost-free, dry room.

Engine preservation

- Clean the engine.
- Run the engine warm.
- Drain the engine oil and refill with anti-corrosion oil.
- Drain the fuel and fill up the fuel tank with a mixture of 90 % diesel fuel and 10 % anti-corrosion oil. Mixing ratio of diesel fuel 90 %, anti-corrosion oil 10 %.
- Run the engine for 10 minutes.
- Shut off the engine.
- Crank the engine a few times by hand.
- Seal the intake and exhaust openings.

ATTENTION
The vehicle must be blocked up so that all the wheels are off the ground. This will prevent a permanent deformation of the tires.

NOTE
Do not use plastic foil to cover the vehicle as this enhances the formation and collection of condensate water.

Putting the vehicle back in service after lay-up

If the vehicle was taken out of service for over six months, it must be inspected carefully before being put back in service. The inspection should, similar to the safety inspection, also cover all safety relevant components of the vehicle.

- Clean the vehicle thoroughly.
- Grease the vehicle.
- Check the condition and acid density of the battery, recharge it if necessary.

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Laying up

Remove engine preservation

- Unblock the intake and exhaust openings.
- Drain the anti-corrosion oil and rinse the oil sump with engine oil.

ATTENTION
Observe the instructions for handling fuels and lubricants.

See the section „Change the engine oil“ on how to proceed further.

- Check the hydraulic oil for condensed water, change the oil if necessary.
- Perform the checks and services as for before taking into service.
- Fill the fuel tank.
- Change the brake fluid.
- Take the vehicle into operation.

When taking into the vehicle into service, particularly check:
- Variable-displacement pumps and wheel motors for leaks.
- Drive hydraulics, gearshift, steering.
- Brake (service brake, parking brake)
- Working hydraulics, functions and work movements.

If the vehicle is to be laid up for a longer period, please contact your HOLDER Service for further measures.

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Fuel and lubricant recommendations

Recommended hydraulic and gear oils

Manufacturer	Hydraulic oils HE oils (hydr. ester)	Gear oils Utto / Stou
ISO viscosity class HLP (HM) HV	 VG 46	
AGIP	Agip Arnica S 46	Agip Rotra JDF
ARAL	Vitam EHF 46	Aral Fluid HGS 10W30
AVIA	Syntofluid N46	-----
BECHEM	Hydrostar HEP 46	-----
BP	Biohyd SE 46 – S	BP Hydraulic TF - JD
BAYWA	Plantosyn 3268 ECO	-----
BUCHER & CIE	Motorex Biosynt 3268	Farmer 304 JD-M20C
DEA	Econa E 46	-----
ESSO	Univis HE ES 46	Unifarm 15W - 40
TOTAL TOTAL TOTAL	Total Biohydran SE 46 Total Biohydran TMP 46	Tractorelf ST3 15W-30 Total Multagri Super 10W-30 Total Multi TP Max 10W-40
FUCHS FUCHS	Plantohyd 46 S-NWG Plantosyn 3268	----- -----
OEST	Bio Synthetic HYD 46	-----
SHELL	Naturelle HF – E 46	Shell Harvella T 10W-30
VALVOLINE	Valvoline Ultraplant	------

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Fuel and lubricant recommendations

Recommended engine oils and greases

The following oil brands conform to US Military Specification MIL-L-2104C or to API quality CD/SF and ACEA.

Manufacturer	Lubricating oil type	SAE Class	Greases Penetration ratio 260 - 290
AGIP AGIP	AGIP Sigma Ultra TFE Autol Valve Ultra FE	10W-40 10W-40	AGIP GR MU 2
ARAL ARAL	ARAL Mega Turboral ARAL Super Turboral	10W-40 5W-30	Multipurpose grease Long-duty grease H
BAYWA BAYWA	BayWa Super Truck 1040 MC BAYWA Turbo 4000	10W-40 10W-40	BAYWA Multigrease 2 Special Grease FLM
BP OIL International	BP Vanellus HT Extra	10W-40	BP Energrease LS 2 BP Multipurpose Grease L2
CASTROL GmbH CASTROL GmbH	Castrol SYNTRUCK Castrol DYNAMAX	5W-40 7.5W-40	Castrol LM
CHEVRON	Chevron Delo 400 Synthic	5W-40	
DEA DEA DEA	DEA Cronos Synth DEA Cronos Premium LD DEA Cronos Premium FX	5W-30 10W-40 10W-40	Glissando 20 Glissando 283 EP 2
ESSO	Essolube XTS 501	10W-40	ESSO Multipurpose Grease Beacon 2
FUCHS FUCHS	FUCHS Titan Cargo MC FUCHS Titan Unic Plus MC	10W-40 10W-40	Renolit LZR 2

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Fuel and lubricant recommendations

Recommended engine oils and lubricants, continued

Manufacturer	Lubricating oil type	SAE Class	Greases Penetration ratio 260 - 290
MOBIL OEL MOBIL OEL MOBIL OEL	Mobil Delvac 1 SHC Mobil Delvac 1 Mobil Delvac XHP Ultra	5W-40 5W-40 10W-40	Mobilgrease MB 2
SHELL International	SHELL Myrina TX/ SHELL Rimula Ultra	5W-30	Retinax EP2
SHELL International	SHELL Myrina TX/ SHELL Rimula Ultra	10W-40	
Schmierölraffinerie Salzbergen	Wintershall TFG	10W-40	
TOTAL	TOTAL Rubia TIR 8600	10W-40	Total Multis EP2 Total Lical EP2

Brake fluid

ATE brake fluid SL / DOT 4

DANGER
Do not use mineral oil.

Fuels

Observe the specifications of the engine manufacturer.

NOTE
The use of bio diesel fuel is only allowed after a conversion of the engine by an authorized workshop.

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Maintenance data

Filling quantities	C 4.74
Engine oil Incl. filter 0.5 litres Incl. heater 0.75 litres	10.5 litres
Hydraulic oil tank for traction and working hydraulics, hydraulic oil* Initial filling (depending on equipment)	approx. 42 litres approx. 58 litres
Front PTO gear	1.25 litres permanent filling
Rear PTO gear	1.25 litres permanent filling
Brake fluid for footbrake	0.4 litre
Fuel tank, diesel fuel	60 litres
Washer reservoir	approx. 1.3 litres

☞ **** NOTE***
In order to ensure the biological degradability of the hydraulic oil, all implements connected to the vehicle hydraulic system must also be operated with HE oils.

Residual quantities of mineral oils reduce the biological degradability. They do not influence operation.

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Maintenance data

Tightening torques

Hexagon screws and studs	M 8	M 10	M 12	M 14	M 16
Screw quality 8.8	25 Nm	49 Nm	86 Nm	135 Nm	210 Nm
Screw quality 10.9	35 Nm	69 Nm	120 Nm	190 Nm	295 Nm

Hydraulic system, wheels	Torque
M10 hex head screws (orbitrol to steering supports)	40 Nm
Clamping screws for hydraulic control valves	16 Nm
Wheel fasteners	215 Nm

Engine	Torque
Cylinder head cover	8.5 Nm
Rocker arm setscrew	21 Nm
Intake manifold	8.5 Nm
Intake tube (TORX)	21 Nm
Exhaust manifold (TORX)	22 Nm
Oil drain plug	55 Nm
Oil sump	21 Nm
Injection line fastener	30 Nm
Injection valve fasterner (TORX)	21 Nm
Plugs and connecting screws for heating hoses	65 ± 5 Nm

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List of replacement parts

Description	Order No.
Drain plug seal	010 395
Engine oil filter	797 135
Fuel filter	782 971
Fuel prefilter	797 709
Cylinder head cover gasket	797 586
Air cleaner element	141 652
V-belt for KHD fan	796 808
Toothed belt repair kit	797 587
Return line filter (working and traction hydraulics)	030 610
Suction filter (working hydraulics)	029 540
Toroidal sealing ring 64x3	014 696 (2 items)
Filter element (fresh air filter for cabin)	131 666
Ventilation filter with active charcoal (fresh air filter for cabin)	131 667
Can of spray paint, black grey RAL 7021	029 000
Can of spray paint, orange RAL 2004	020 656
Can of spray paint, silver RAL 9006	031 053

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Maintenance data

Bulbs 12 V

Lights	Rating	Lights	Rating
Headlight, dip beam H7	55 W	Flood light, front top H7	55 W
Headlight, high beam H7	55 W	Flood light, rear H3	55 W
Turn signal light, front	21 W	Indicator lights in switch	1.2 W
Turn signal light, rear	21 W	Indicator light, yellow	2 W
Tail light	10 W	Clearance lights	5 W
Licence plate light	5 W	Interior light	5 W
Stop light	21 W	Rotating beacon H1	55 W
Back-up light	21 W	Multifunctional display bulbs DIN 72601/W5/12 V	1.2 / 3.0 W

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Engine specifications

	C 4.74
Manufacturer	Deutz AG
Model	BF4L 2011 COM II
Type	Vertical in line
Mode of operation	4-cycle diesel
Cooling	Integrated oil/air cooling
Injection mode	Direct fuel injection
Number of cylinders	4
Cylinder bore	Ø 94
Stroke	112
Cubic capacity	3108 cm³
Compression ratio	1:17.5
Compression	--------
Charging pressure	1.25 bar
Valve clearances with engine cold	Inlet 0.3 mm Exhaust 0.5 mm
Fuel consumption	229g/kWh at 1700-1850 rpm
Air filter	Mann and Hummel dry filter with acoustic alarm
Lubrication system	Forced-feed lubrication
Lubricating oil consumption	0.5% of fuel consumption maximum
Oil filter	Change filter cartridge in main stream
Oil pressure at 900 rpm	2.0 – 2.5 bar
Rated speed	2500 rpm
Upper idle speed	2500 rpm + 350 rpm
Lower idle speed	900-980 rpm
Max. torque	241 Nm at 1500 - 1700 rpm
Rated power acc. to 97/68 EC at n = 2500 rpm	54.6 kW (74 HP)

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Maintenance data

Fuel system

	C 4.74
Injection pump	Motorpal individual withdrawable element-type calibrated pump
Governor	Governor integrated in the front cover
Injection nozzle	5-hole nozzle
Injection pressure	850 bar
Start of fuel injection	0°+/-0.5° BTDC
Drive pump	Hydrostatic drive Axial piston pump Type A4 VG40 EP1D1 / A4 VG40 EP1D1 Operating pressure 420 bar
Wheel motor	Radial piston motor Type MCR 05 Operating pressure 420 bar

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