HOLDER

Operating Instructions

A-Trac 5.58
A-Trac 5.58 P

Order No.: 153 148

Date of Issue: 17.11.2010

Foreword

We congratulate you on having bought a product from HOLDER. We would like you to be able to work safely with your tractor and without malfunctions, and therefore we recommend you follow the instructions in this operating manual. You also ensure getting full value from your tractor, save yourself trouble and maintain your warranty. The operating manual provide you with the required information.

Continued Development

Due to the continuous development of our tractor in design and equipment, deviations between this operating manual and your tractor may possibly exist.
Despite taking all care possible in the creation of this manual, we can not fully exclude mistakes. Please note that the technical data, illustrations and descriptions contained in this manual are not binding and no legal claims can be made on the basis hereof.
These operating and maintenance instructions are supplied with each tractor. Keep these in a safe place where they are available for the driver and owner at any time. It they should get lost, the owner must get a replacement from the manufacturer.

The personnel concerned with the operation and maintenance of the tractors must be made acquainted with the operating and maintenance manual. 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 them 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.

Foreword

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

Tractor Model ..... eg A 5.58
Engine Serial Number ..... eg 00584185
Chassis Serial Number ..... eg 42100105
Date of sale, or Date
of complaint ..... eg 2 January 2003
Operating Hours ..... eg 500 service hours

Date of Issue and Version of Manual

March 2006

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

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Explanation of the Cautions used:

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
For technical exigencies requiring particular attention.

Table of Contents

Information on the Tractor

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

Approved Applications

The tractor is suitable for towing trailers and the operation of various implements. The maximum trailer load, which must not be exceeded, is stated on the identification plate. The transport of persons is not allowed.
The tractor is designed solely for the customary type of operation in farming and forestry, the upkeep of municipal facilities, including operation in winter. The tractor may only be used as intended and described in this operating manual. Included in the intended use is also the performance of the specified maintenance and repair recommendations. The tractor, together with its attachments, may only be used, serviced and repaired by persons familiar with this equipment and have been warned of possible risks. The applicable safety regulations and any other applicable safety, industrial medicine and trafficrules must be observed.

Site of Operation

The tractor must be used in the open. Its operation on public roads is allowed. When using the public highway, respect the highway code in your country.

Unintended Applications

Any use, which is not approved as described above, is not allowed. The supplier HOLDER will not be responsible for any hazard which may result from any unintended use. The supplier will also not be responsible for any damage which may result; they shall be solely borne by the user. The tractor may not be used for any other purposes than those described in this manual. The transport of persons on attachments is not allowed.

Information on the Tractor

Residual Hazards and Risks

Despite careful working and conformance with standards and regulations, risks arising from handling the tractor can not be excluded.
The tractor and all other system components conform to currently applicable safety regulations. A residual risk can not be excluded even with approved use of the tractor and with observation of all the safety notices given.
For this reason, persons standing in the vicinity of the tractor and attachments must exercise particular caution in order to be able to react directly in case of a malfunction, incident, failure, etc.

CAUTION
All persons standing in the area of the tractor 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 this operating manual.

The risks can include:
- Unexpected movements of the implements and the tractor.
- 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 tractor, 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.

Note on Disposal of Tractor

Your tractor 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.

Operating Instructions

Driver's Licence

For the driving of this vehicle you require a **driver's license** 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

Information on Operation

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 (Germany)
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 permissible total weight of the combination and permissible total weight of trailer ≤ dead weight of tractor; otherwise: (25)	1, 1a, 1b, 2, 3, 4, 5

Multiple-axle Trailers and Two-axle Trailers with an Axle Base over 1 metre

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

Information on Operation

Two Trailers behind Tractors for Farming and Forestry

Maximum Total Weight	Driver's License Class (Minimum Requirements)	Former Driver's License Class (Germany)
	BE, C1E, CE, T	2, 3
up to 3.5 tons perm. total weight	B, C1, C: only up to 3.5 tons permissible total weight of the combination and permissible total weight of trailer ≤ dead weight of tractor; otherwise: (25)	1, 1a, 1b, 4, 5, (25)

Safety

General Notes on Safety

- Observe your national regulations for safety and health protection.
- Do not allow children under 16 to use the tractor.
- 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 extreme caution when handling fuels and oils; these can be poisonous and corrosive.
- To prevent the danger of fire, keep the tractor and implements clean.
- Observe the warning notices and symbols on your tractor.

Working Clothes

- Only wear snugly fitting clothing when working with the tractor.
- 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 tractor.

Safety Notes for Later Installations

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

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

Information on Operation

- The installed equipment must conform to the applicable EMC directive 89/336/EC and carry the CE symbol.
- If you must install a mobile communications system (or have it installed) (eg radio, mobile telephone), the following requirements must be met:

- Only approved equipment (eg with type approval) may be installed.
- The equipment must be installed permanently,
- 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 tractor'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.

Safety Instructions 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 soap and water, use skin care products. If necessary, wear 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.

Hydraulic Oil, Brake Fluid

During tractor operation, these fluids are pressurised and pose a health hazard. Do not spill these fluids. Remove any spilled fluids immediately with oil binding agent and discard them as specified. Discard old 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 pressurised 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. Neutralise spilled battery acid immediately.
Discard old 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 a carcinogenic material.

Information on Operation

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 material.

Battery

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

Technical Data

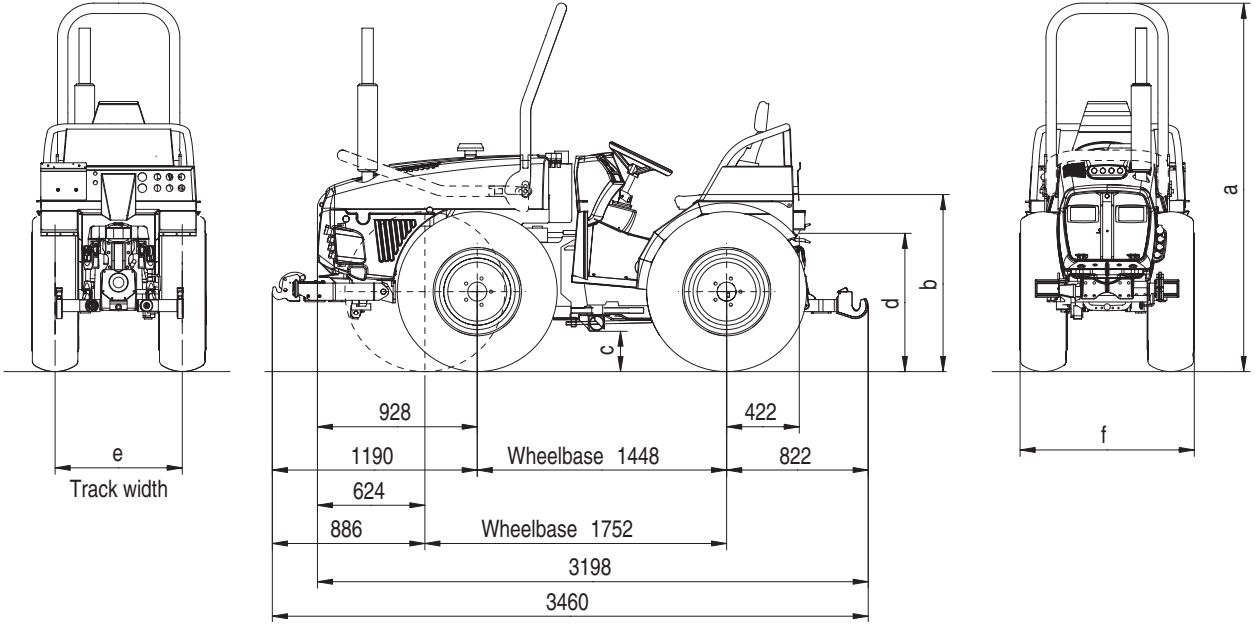
Model Variants

Model	Transmission	Type of axle	Type of Engine	Engine Output
A-Trac 5.58	Mechanical reversing gearbox	Standard axle	BF3L 1011F	40 kW (54.4 HP)
A-Trac 5.58	Mechanical reversing gearbox	Standard axle	BF3L 2011F	43 kW (58 HP)
A-Trac 5.58 P	Mechanical reversing gearbox	Offset axle	BF3L 1011F	40 kW (54.4 HP)
A-Trac 5.58 P	Mechanical reversing gearbox	Offset axle	BF3L 2011F	43 kW (58 HP)

Technical Data

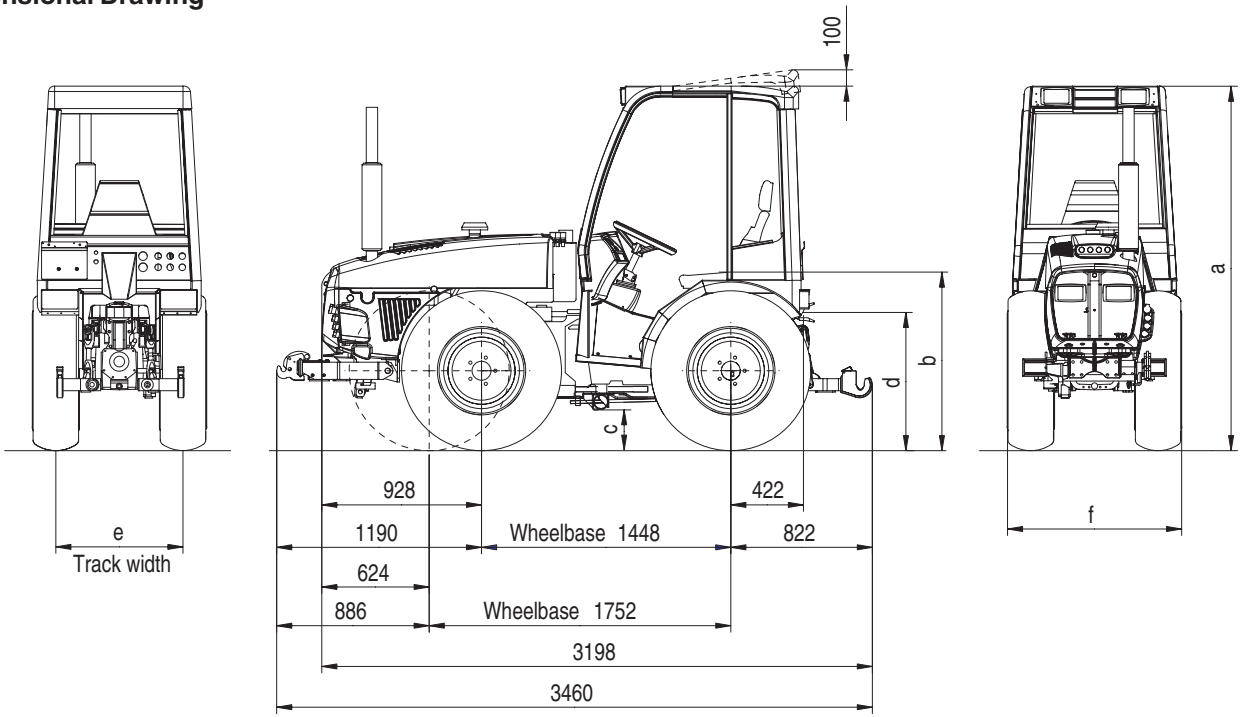
Tractor Dimensions with Safety Loops

Dimensional Drawing



Tractor Dimensions with Cabin

Dimensional Drawing



Technical Data

Table of Dimensions

Tyres	Type	Overall Height Rollover Protection a mm	Overall Height of Cabin a mm	Avg. Height of Seat b mm	Ground Clearance c mm	Trailer Hitch Lowest Position d mm	Trailer Hitch Highest Position d mm
10.5-18 MPT	4131-22 422-31-3	2108	2065	974	223	613	733
275/80 R18	4131-14 422-31-2	2116	2073	982	231	621	741
7.50-18 MPT	4131-17	2093	2050	959	208	598	718
280/70 R18	422-31-1	2091	2048	957	206	596	716
320/65 R18	422-31-4	2102	2059	968	217	607	727
400/60-15.5		2094	2051	960	209	599	719
350/60-17.5	4131-11	2091	2048	957	206	596	716
31x11.50 R15	203-31-1	2062	2019	928	177	567	687
31x15.50-15	4131-8	2049	2006	915	164	554	674
33x12.50-15	4131-19	2089	2046	955	204	594	714
33x15.50-15	4131-18	2081	2038	947	196	586	706

With A/C the overall height of cabin increases 120 mm.

Track Widths A-Trac 5.58

Tyres	Min. Turning Radius with smallest Track Width	Normal Track Width (Flange Size 814)				With Hub Spacers							
						Type 572= 55 mm				Type 5092-3 = 100 mm			
		Track Width e		Overall Width f		Track Width e		Overall Width f		Track Width e		Overall Width f	
		min. mm	max. mm	min. mm	max. mm	min. mm	max. mm	min. mm	max. mm	min. mm	max. mm	min. mm	max. mm
7.50-18 MPT 7.50 R18	5.67 m	* 701	941	* 901	1141	811	1051	1011	1251	901	1141	1101	1341
250/80-18	5.76 m	740	908	990	1158	850	1018	1100	1268	940	1108	1190	1358
• 10.5-18 MPT S • 10.5/18 R18 S	5.81 m	764	884	1038	1158	874	994	1148	1268	964	1084	1238	1358
• 275/80 R18 S	5.86 m	764	884	1044	1164	874	994	1154	1274	964	1084	1244	1364
280/70 R18	5.81 m	764	884	1046	1166	874	994	1156	1276	964	1084	1246	1366
10.5-18 MPT 10.5/80 R18	5.86 m	814	834	1088	1108	924	944	1198	1218	1014	1034	1288	1308
275/80 R18	5.87 m	814	934	1094	1114	924	944	1204	1224	1014	1034	1294	1314
320/65 R18	5.90 m	814	834	1125	1145	924	944	1235	1255	1014	1034	1325	1345
33x12.50-15	5.89 m	814	830	1124	1140	924	940	1234	1250	1014	1030	1324	1340
350/60-17.5	5.97 m	-	844	-	1194	-	954	-	1304	-	1044	-	1394
400/55-17.5	5.99 m	-	-	-	-	-	954	-	1334	-	1044	-	1424
33x12.50 R15	5.97 m	-	864	-	1207	890	974	1233	1317	980	1064	1323	1407
31x11.50-15 31x11.50 R15	5.94 m	-	870	-	1188	884	980	1202	1298	974	1070	1292	1388
31x15.50-15 33x15.50-15	6.06 m	-	904	-	1299	-	1014	-	1409	942	1104	1337	1499
400/60-15,5	6.07 m	-	904	-	1304	-	1014	-	1414	944	1104	1344	1504
33/16LLx16.1	6.12 m	-	927	-	1354	-	1037	-	1464	-	1127	-	1554

• With max. steering lock and oscillation these tyres can contact hull lightly.

* Not possible with partial and fully enclosed cabine.

Technical Data

Track Widths A-Trac 5.58 P

Tyres	Min. Turning Radius to DIN 7020 (measured at outermost point of vehicle)	Normal Track Width (flange size 924) (55 mm hub at rear std.)				With Hub Spacers Type 5092-3 = 100 mm at Rear Type 572-3 = 55 mm at Front			
		Track Width e		Overall Width f		Track Width e		Overall Width f	
	m	min. mm	max. mm	min. mm	max. mm	min. mm	max. mm	min. mm	max. mm
7.50-18 MPT 7.50 R18	6.64 m f. track width 811	811	1051	1011	1251	921	1161	1121	1361
250/80-18	6.73 m f. track width 850	850	1018	1100	1268	960	1128	1210	1378
10.5-18 MPT S 10.5/18 R18 S	6.78 m f. track width 874	874	994	1148	1268	984	1104	1258	1378
275/80 R18 S	6.79 m f. track width 874	874	994	1154	1274	984	1104	1264	1384
280/70 R18	6.78 m f. track width 874	874	994	1156	1276	984	1104	1266	1386
10.5-18 MPT 10.5/80 R18	6.78 m f. track width 924	924	944	1198	1218	1034	1054	1308	1328
275/80 R18	6.84 m f. track width 924	924	944	1204	1224	1034	1054	1314	1334
320/65 R18	6.87 m f. track width 924	924	944	1235	1255	1034	1054	1345	1365
33x12.50-15	6.86 m f. track width 924	924	940	1234	1250	1034	1050	1344	1360
350/60-17.5	6.93 m f. track width 954	-	954	-	1304	-	1064	-	1414
400/55-17.5	6.96 m f. track width 954	-	954	-	1334	-	1064	-	1444
33x12.50 R15	6.94 m f. track width 974	-	974	-	1317	1000	1084	1343	1427
31x11.50-15 31x11.50 R15	6.91 m f. track width 980	-	980	-	1298	994	1090	1312	1408
31x15.50-15 33x15.50-15	7.03 m f. track width 1014	-	1014	-	1409	-	1124	-	1519
400/60-15.5	7.04 m f. track width 1014	-	1014	-	1414	-	1124	-	1524
33/16LLx16.1	7.09 m f. track width 1037	-	1037	-	1464	-	1147	-	1574

Weights

All Tractors	Weight in kg
Permissible total weight	2800 kg
Permissible load on front axle	1700 kg
Permissible load on rear axle	1700 kg
Permissible supporting load on trailer hitch	600 kg

Auxiliary/Assemblies	Total	Front	Rear
Creep speed gear	13 kg	3 kg	10 kg
Front lift	67 kg	92 kg	-25 kg
Slope emergency brake	67 kg	52 kg	15 kg
Partially encl. cabin	110 kg		
Fully encl. cabin	160 kg		

Tyres		10,5-18 MPT 350/60-17.5		275/80 R18		280/70 R18		320/65 R18		33/16LLx16.1 400/55-17,5 400/60-15,5		31x15,50-15 33x15,50-15		7.50-18 33x12,50-15	
Empty weight A-Trac 5.58, wheelbase 1448 mm (incl. driver 75 kg)		With rollover protection	With 6-point safety frame (partial cab)	With rollover protection	With 6-point safety frame (partial cab)	With rollover protection	With 6-point safety frame (partial cab)	With rollover protection	With 6-point safety frame (partial cab)	With rollover protection	With 6-point safety frame (partial cab)	With rollover protection	With 6-point safety frame (partial cab)	With rollover protection	With 6-point safety frame (partial cab)
Total:	kg	1810	1840	1830	1856	1850	1876	1866	1892	1825	1852	1775	1804	1750	1776
Front:	kg	1085	1050	1095	1058	1105	1068	1113	1076	1092	1056	1067	1032	1055	1018
Rear:	kg	725	790	735	798	745	808	753	816	733	796	708	772	695	758

On A-Trac 5.58 the empty weights are increased by 140 kg, at the rear increased by 195 kg and at front reduced by 55 kg

Technical Data

Tyres

Type of Tyre	Load Capacity	Profile	Tube	Air Pressure (in bar)		Wheel Weights	
				Empty Weight	Max. Load	Type	Weight
7.50 R18	102 A8	Cleat profile	yes	1.0	3.0	4134-1	approx. 42 kg
250/80-18	8 PR	Cleat profile	yes	1.1	2.2	4134-1	approx. 42 kg
10.5/80-18 MPT	138 A6 / 131 A8	Cleat profile	yes	1.0	2.0	4134-1	approx. 42 kg
275/80 R18	142 A2 / 130 B	Cleat profile	yes	1.0	1.0	4134-1	approx. 42 kg
280/70 R18	114 A8 / 111 B	Cleat profile	no	0.6	1.2	4134-1	approx. 42 kg
320/65 R18	109 A8 / 106 B	Cleat profile	no	0.5	1.1	4134-1	approx. 42 kg
350/60-17.5	105 A5	Cleat profile	yes	0.4	1.1	4134-2	approx. 43 kg
400/60-15.5	8 PR	Lawn	no	0.5	1.0	4134-2	approx. 43 kg
31x11.50 R15	110 Q	Off-road	no	0.7	1.9	4134-2	approx. 43 kg
31x15.50-15	109 A3	Lawn	no	0.7	1.7	4134-2	approx. 43 kg
33x15.50-15	6 PR	Terra	no	0.4	1.0	4134-2	approx. 43 kg
33x12.50-15	6 PR	Lawn	no	0.5	1.5	4134-2	approx. 43 kg

Engine Specifications

	A 5.58 A 5.58 P	A 5.58 A 5.58 P
Manufacturer	Deutz AG	Deutz AG
Type	BF3L 1011F Turbo	BF3L 2011 Turbo
Mode of operation	Four-stroke Diesel	Four-stroke Diesel
Number of cylinders	3	3
Cubic capacity	2185 cc	2332 cc
Fuel consumption	223g/kW-h at 2040 rpm	216g/KW-h at 2040 rpm
Rated speed	2650 rpm	2600 rpm
Maximum idling speed	2750 rpm	2750 rpm
Minimum idling speed	900 rpm	900 rpm
Power at n=2650 rpm	40 kW (54.4 HP)	43 kW (58 HP)

Technical Data

Theoretical Driving Speeds (km/h)

RPM			2650												Type 421 422
Max. Speed	Group	Gear	Total Ratio Forwards	275/80 R18	10.5-18 MPT	320/65 R18	250/80-18	400/60-15.5	7.50-18 MPT	350/60-17.5	280/70 R18	33x12.50-15	33x15.50-15	31x11.50 R15	31x15.50-15	
				0.431	0.423	0.417	0.414	0.409	0.408	0.406	0.406	0.404	0.396	0.377	0.364	m
	F	4	13.2	32.6	32.0	31.5	31.3	30.9	30.9	30.7	30.7	30.6	30.0	28.5	27.5	km/h
	F	3	20.4	21.1	20.7	20.4	20.3	20.0	20.0	19.9	19.9	19.8	19.4	18.5	17.8	km/h
	F	2	33.9	12.7	12.5	12.3	12.2	12.0	12.0	12.0	12.0	11.9	11.7	11.1	10.7	km/h
	F	1	61.5	7.0	6.9	6.8	6.7	6.6	6.6	6.6	6.6	6.6	6.4	6.1	5.9	km/h
	M	4	15.8	27.2	26.7	26.4	26.2	25.8	25.8	25.7	25.7	25.5	25.0	23.8	23.0	km/h
	M	3	24.4	17.6	17.3	17.1	16.9	16.7	16.7	16.6	16.6	16.5	16.2	15.4	14.9	km/h
	M	2	40.6	10.6	10.4	10.3	10.2	10.1	10.0	10.0	10.0	9.9	9.7	9.3	9.0	km/h
	M	1	73.8	5.8	5.7	5.6	5.6	5.5	5.5	5.5	5.5	5.5	5.4	5.1	4.9	km/h
	S	4	55.6	7.7	7.6	7.5	7.4	7.3	7.3	7.3	7.3	7.3	7.1	6.8	6.5	km/h
	S	3	86	5.0	4.9	4.8	4.8	4.7	4.7	4.7	4.7	4.7	4.6	4.4	4.2	km/h
	S	2	143.1	3.0	3.0	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.6	2.5	km/h
	S	1	259.6	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.4	km/h

Technical Data /Filling Quantities

Assembly	Suppl. Information	Description
Getriebe	Mechanical reversing gearbox	12 forward gears/12 reverse gears with planetary axles
Power take-offs		2 PTOs (front and rear) rotating direction: clockwise when looking at end of shaft
- RPM, front		1000 rpm at 2360 engine rpm
- RPM, rear		540 rpm at 2450 engine rpm &750 rpm at 2520 engine rpm
- Wedge shaft profile		1 3/8 "" (6) DIN 9611
PTO clutch		Wet multiple-disk-clutch
Differential lock		Front and rear can be engaged simultaniously

Fuel system		
Fuel tank	Diesel fuel	51 litres

Technical Data

Assembly	Suppl. Information	Description
Steering		
- Make		Hydrostatic with 2 double-acting steering rams
- Steering valve		Orbitrol OSPC 125 LS
Brakes		
- Service brake		Simplex drum brakes at rear, acting on all 4 wheels
- Activation		Mechanical
- Parking brake		Simplex drum brakes at rear, acting on all 4 wheels
- Activation		Mechanical
Trailer hitch		
- Make		Scharmüller, height-adjustable and rotating
Rear lift		
- Type		HOLDER 3-point standard, upper link adjustable
- Mounting		Category I
- Lifting power		18000 N (measured at installation points))
- Jacks		2 single-acting jacks

Assembly	Suppl. Information	Description
Front lift		
- Make		HOLDER 3-point standard, upper link adjustable
- Mounting		Category I
- Lifting power		7000 N
- Jack		1 double-acting jack
Service hydraulics		
Pump		Sundstrand
- Delivery capacity		14 cc (35 L/min at 250 rpm engine speed)
- Operating pressure		180 - 190 bar
Hydraulic oil tank		18 L
Electrical system		
- Operating voltage		12 VDC
- Battery		12 V / 88 Ah
- Alternator		12 V / 60 A
- Starter		12 V / 2,2 kW

Technical Data

Noise Level

The tractor 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 rate
			Safety Frame	Cabin partially enclosed		Cabin fully enclosed		
			2 and 6 points	open*	closed	open*	closed	
A 5.58	BF3L1011F	40 kW (54.4HP)	88	88	87	80	80	2.2
A 5.58 P	BF3L1011F	40 kW (54.4HP)	88	88	87	80	80	2.2
A 5.58	BF3L2011	43 kW (58 HP)	89	89	87	83	80	1.7
A 5.58 P	BF3L2011	43 kW (58 HP)	89	89	87	83	80	1.7

*Front windscreen and roof vent open

Exhaust Gas Identification

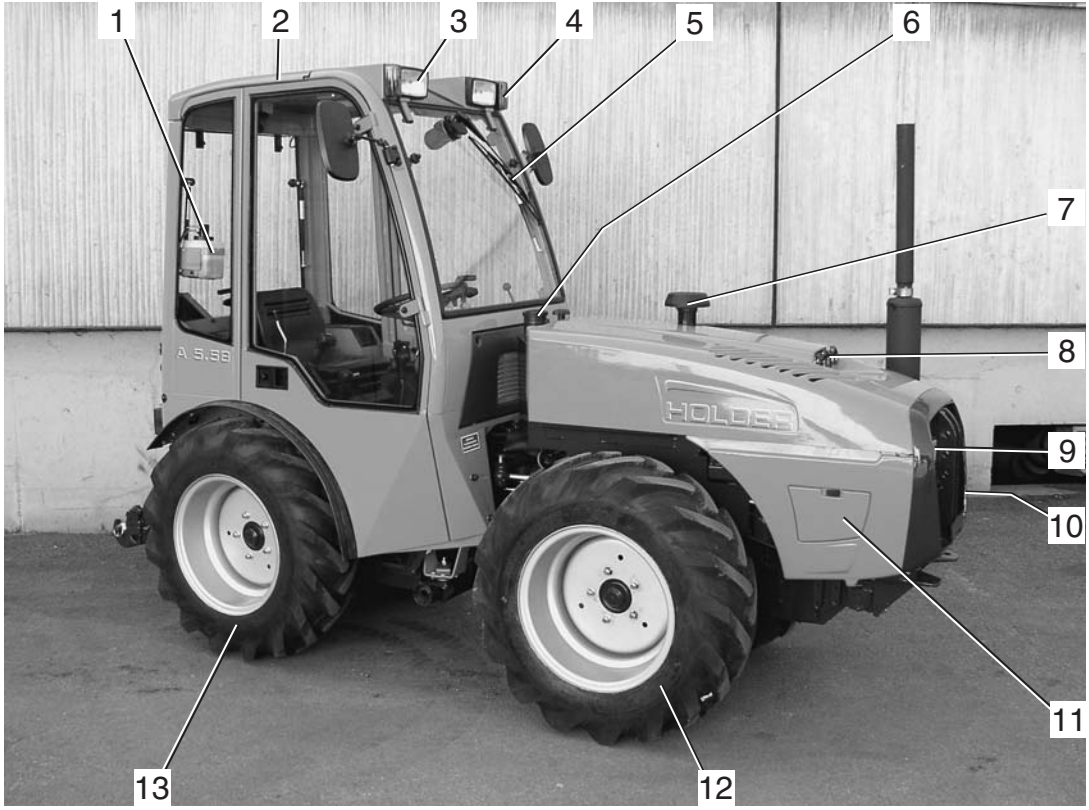
The absorption rating is stated on the identification plate.

Description

Views of Tractor

Front Right View

1 Windshield wiper reservoir
2 Driver's cab
3 Headlight, top
4 Turn signal, clearance light
5 Wiper/washer
6 Fuel tank filler neck
7 Intake for air filter
8 Hydraulic coupling for implement
9 Headlight, bottom
10 Hydraulic coupling for implement
11 Access cover for engine oil check
12 Front axle
13 Rear axle



Description

Tractor

Rear Right View

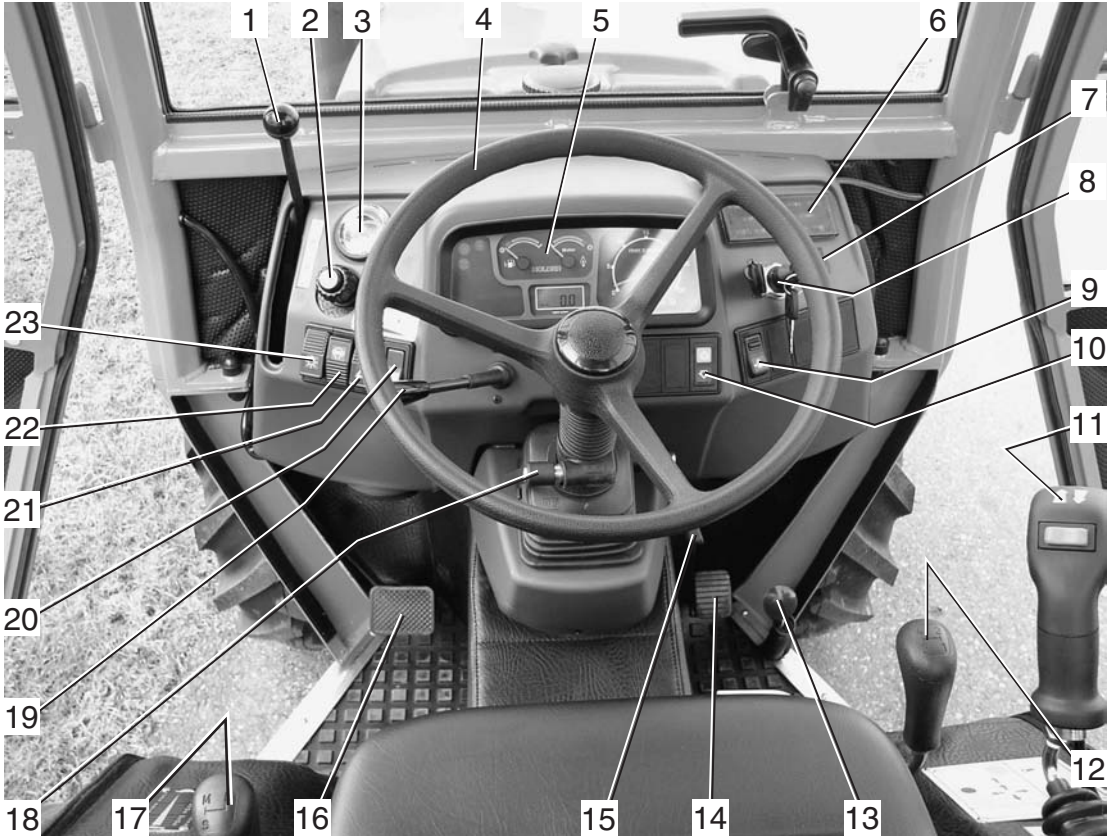
1 Front axle
2 Rear axle
3 Hydraulic coupling for implement
4 Rope release for rear lift
5 Rear lift - lower link support
6 Upper link
7 Back-up light
8 Stop and turn signal light
9 Socket for trailer lighting
10 Hydraulic coupling for implement
11 License plate light
12 Support for rotating beacon

Driver's Station

Operating Controls

1 Control lever for powershift multiple-disk clutch
2 Engine speed adjustment knob
3 Hydraulic oil temperature gauge
4 Steering wheel
5 Multi-function display
6 Vehicle fuses
7 Power socket
8 Preheat/starter switch
9 Circulating oil switch 2nd flow regulator
10 Directional indicator
11 Multi-function lever with forward/reverse selector lever
12 Gearshift lever
13 Accelerator pedal
14 Brake pedal
15 Steering column height adjuster
16 Clutch pedal
17 Range selector lever
18 Steering column tilt adjuster
19 Turn signal lever
20 Fan switch
21 Hazard warning flasher switch
22 Differential lock switch
23 Light switch

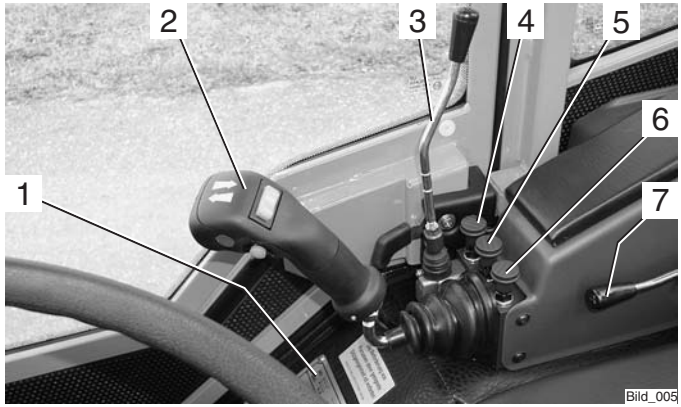
Description

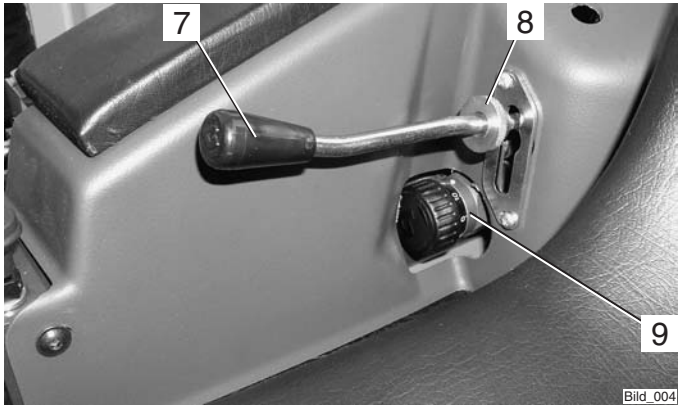


Description

Operating Controls for Attachments*

1 Multi-function lever functions plate
2 Multi-function lever
3 Rear lift control lever
4 Rear lift lock knob
5 Lock knob for multi-function lever right/left
6 Lock knob for multi-function lever forward/backward
7 Control lever for flow regulator 1st circuit*
8 Sliding sleeve for locking flow regulator 1st circuit*
9 Adjustment knob for flow regulator 1st circuit*



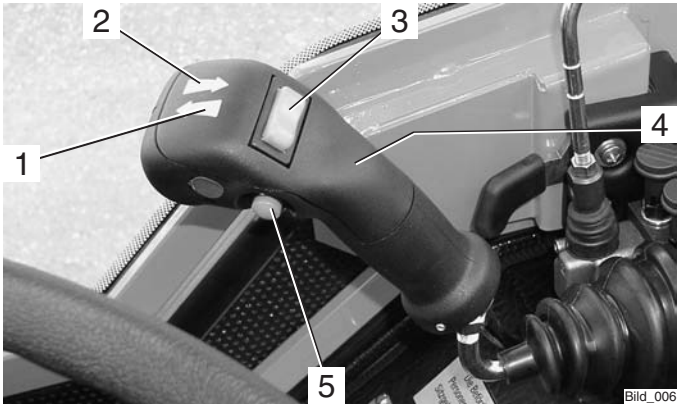


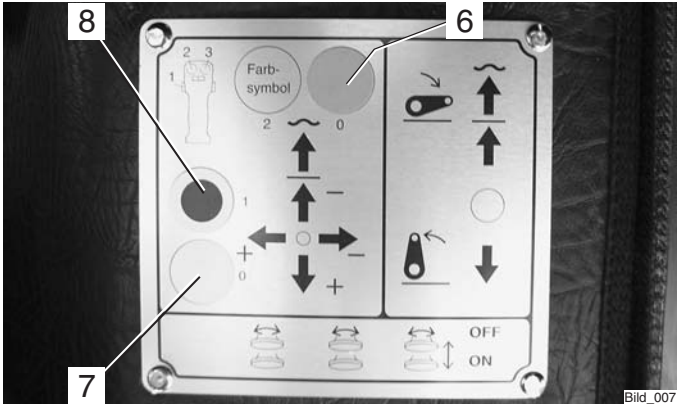
* Option

Description

Multi-function lever

1 Forward direction arrow (illuminated if selected)
2 Reverse direction arrow (illuminated if selected)
3 Forward/reverse selector lever
(left forward – right reverse)
4 Multi-function lever
5 Function button*
6 Hydraulic control**
Multi-function lever forward/back
7 Hydraulic control**
Multi-function lever left/right
8 Hydraulic control**
Multi-function lever left/right
together with function button (5)





* Option
** Observe the colour symbols

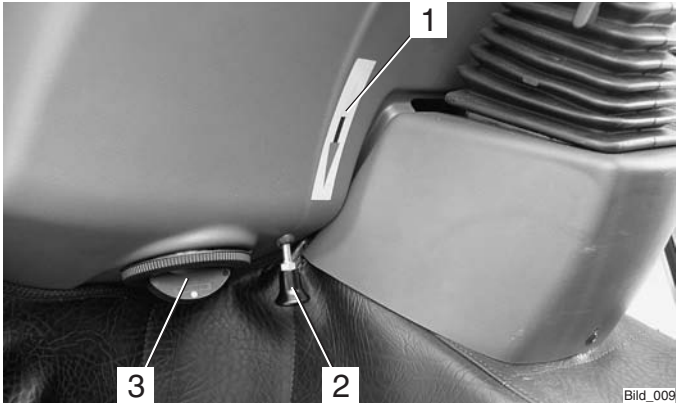
Pedals

1 Brake pedal
2 Accelerator pedal
3 Clutch pedal

Heating*

1 Notice label
- down = warmer
- up = cooler

2 Heating slide valve
3 Air outlet



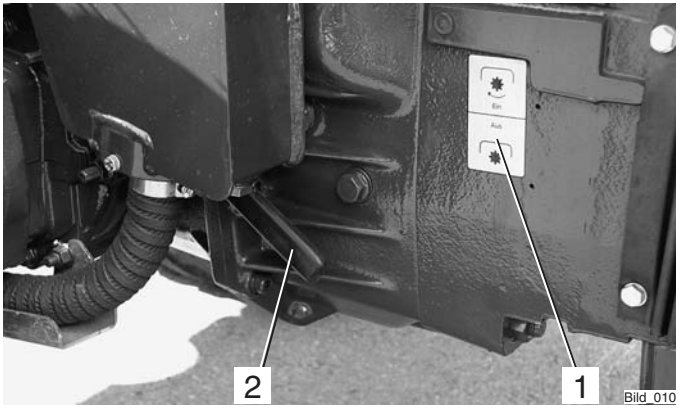
* Option

Description

Front PTO Selector

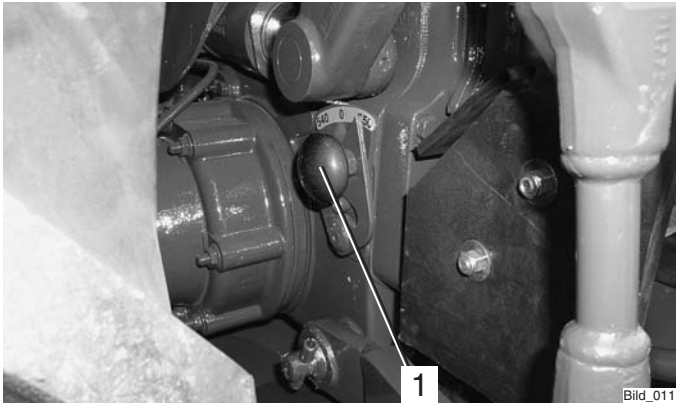
1 Label for PTO rpm
- Top position (ON) 1000 rpm
- lower position (OFF)

2 PTO selector lever



Rear PTO Selector

1 PTO selector knob
- Front position (IN) 540 rpm
- Centre position (OUT)
- rear position (IN) 750 rpm



Multi-function Display, Legend

1 Fuel gauge
2 Engine oil temperature gauge
3 Tachometer with markings for PTO rpm
4 Hour meter
5 Digital speedometer
6 Turn signal indicator
7 Turn signal indicator 2nd trailer
8 Turn signal indicator 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

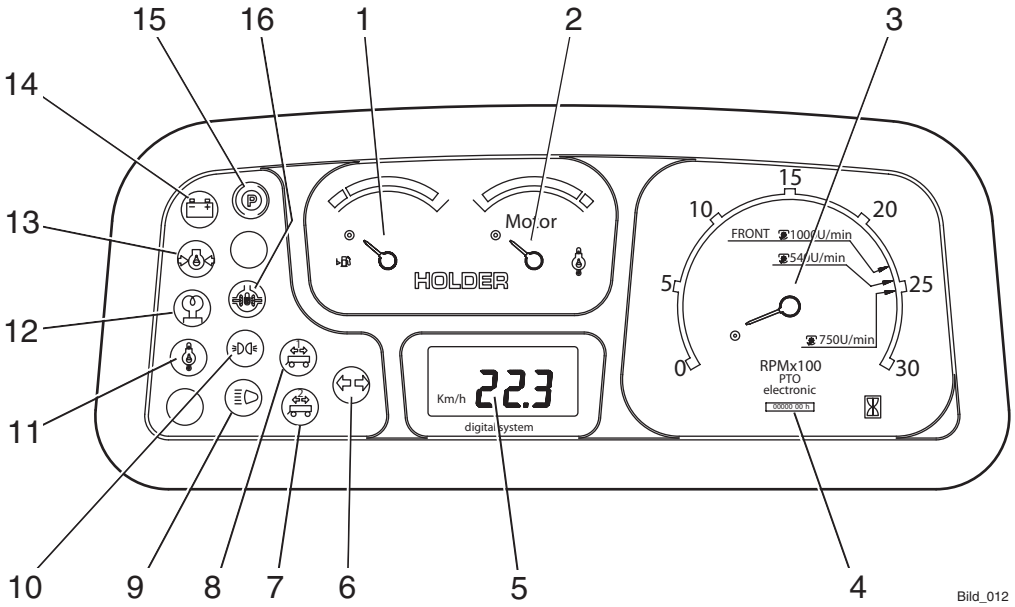


Bild_012

Description

Controls for Mechanical Gearbox

1 Gearshift lever (right looking forward) with 4 synchronised gears 1-2-3-4
2 Range selector lever (left looking forward) with 3 speed ranges:
S – Highway driving
M – Medium speed
L - Slow speed
3 Gearshift label

Bild_013

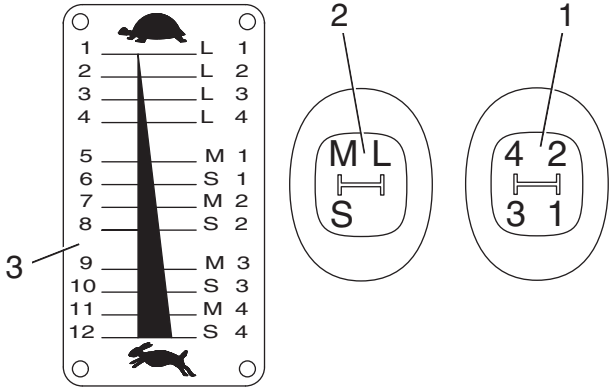
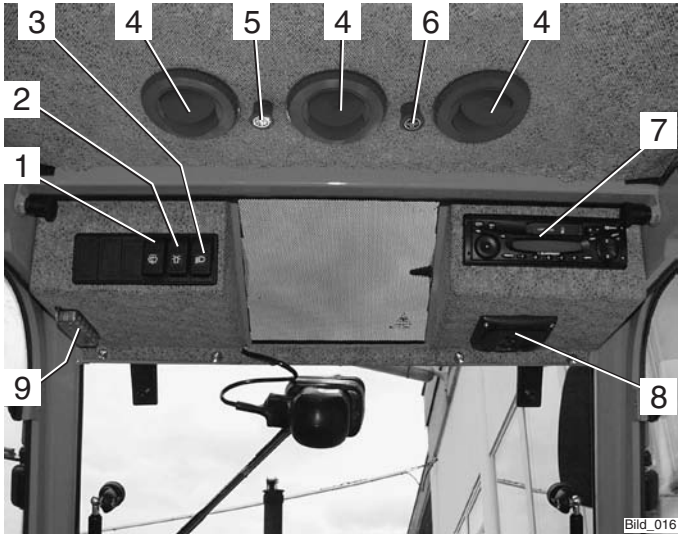


Bild_014

Controls on Top Cabin

1 Front wiper/washer switch
2 Rotating beacon switch
3 Top headlights
4 Air vent nozzle* for air conditioner
5 Cold air rotary switch* for air conditioner
6 Blower range rotary switch* for air conditioner
7 Radio*
8 Loudspeaker*
9 Cab fuses

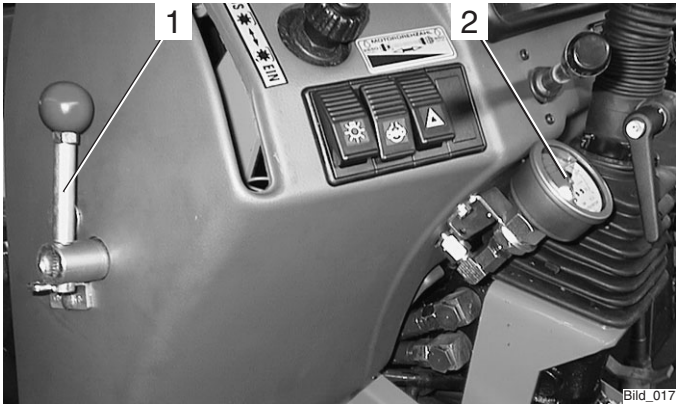


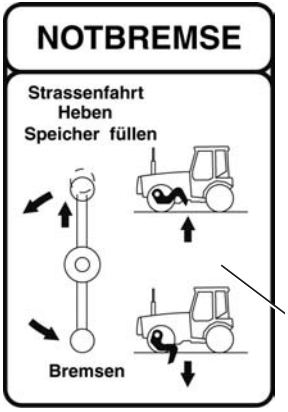
* Option

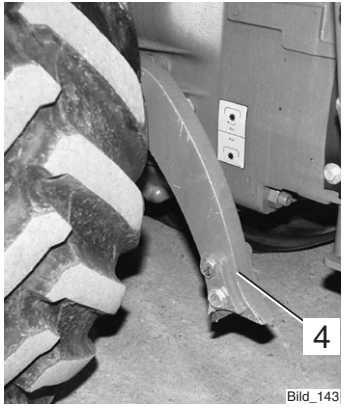
Description

Slope Emergency Brake Lever*

1 Emergency brake lever
2 Pressure gauge
3 Notice label
4 Brake ram





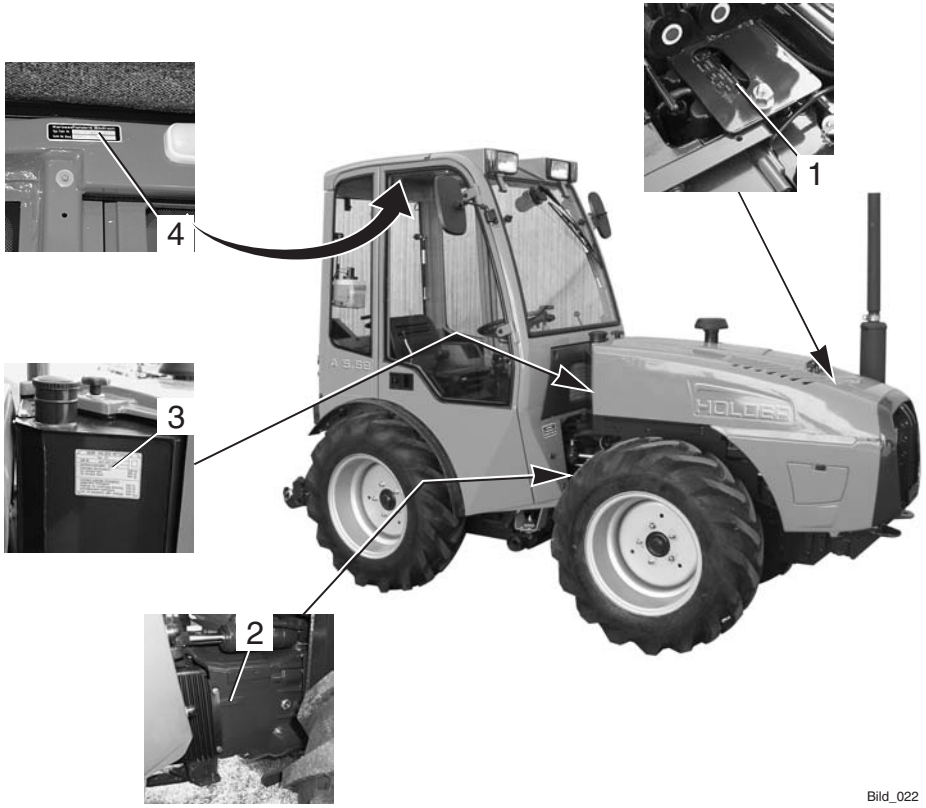


* Option

Location of Plates and Labels

Identification Plates

1 Engine type plate
2 Chassis serial number
3 Machine type plate
4 Cabin type plate



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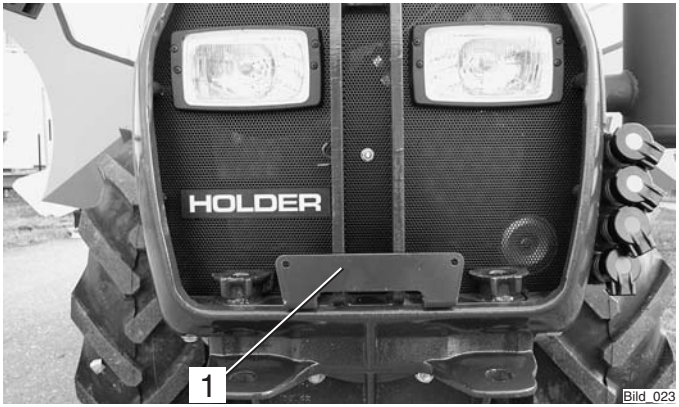
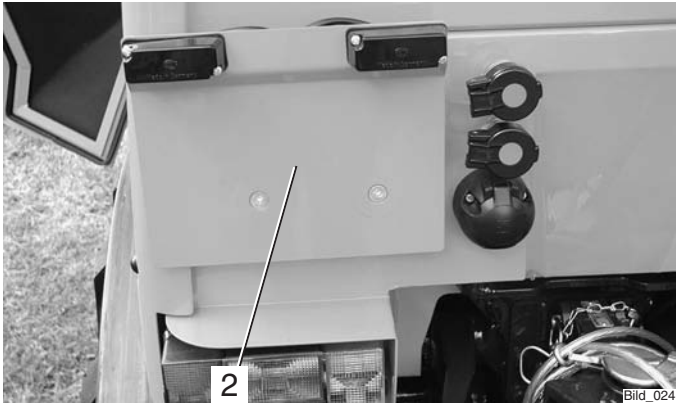
Description

Mounting Instructions for License Plate

- Attach the front license plate on the mounting plate (1).



- Attach the rear license plate at the rear (2) above the left tail light.



Overview of Options and Variants

Assembly	Suppl. Information	Dimension / Order No./Type
Charcoal filter	For cabin ventilation	422-34-74
Rear working light		5234-88
Front lift	For A 5.58	421-51-1
Front lift	For A 5.58 offset axles	422-51-1
Oil heating element	from - 20°C (230 VAC)	5234-69
Integrated A/C		422-34-79
Creep speed gearbox with hand lever		5262-11
PTO extension		422-62-1
Flow divider 1st circuit		422-80-5
- Pump	Standard pump	
- Delivery capacity		14 cc/rev.
- Flow rate		0-25 L/min
- Maximum pressure		200 bar

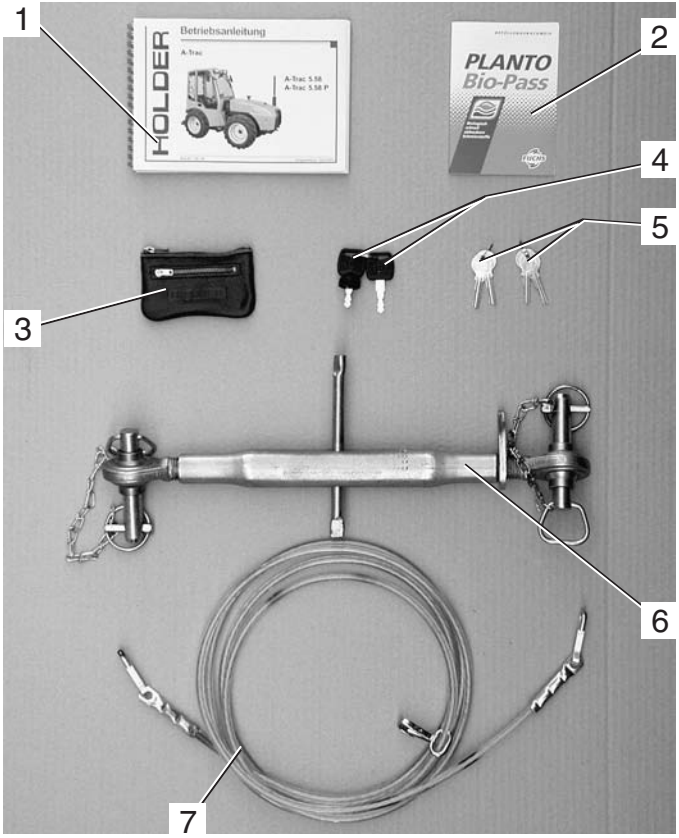
Description

Assembly	Suppl. Information	Dimension / Order No./Type
Flow divider 1st circuit		421-80-15 or 422-80-15
- Pump	Tandem pump	
- Delivery capacity		11 cc/rev.
- Flow rate		0-25 L/min
- Maximum pressure		200 bar
Electr. distribution block 6/2 rear		422-80-10
Electr. distribution block 6/2 front		422-80-11
Electr. distribution block 8/3 front		422-80-12

Accessories

The tractor is delivered with the following accessories:

1 Operating manual
2 Bio-pass for certification of filling environment-friendly hydraulic oil
3 Key holder
4 2 ignition keys
5 4 door keys
6 Upper link with retaining pins
7 Bowden cable for catch hook



Taking into Service

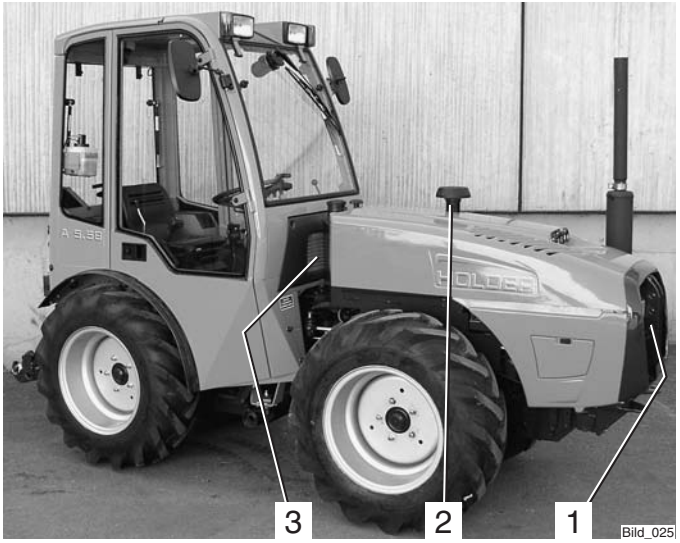
Daily Checks and Activities prior to Taking into Service

If damage or defects are found during the following checks, they must be eliminated before taking the vehicle into service. Do not operate the tractor 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 tractor.

Checking or Cleaning the Cooler and Radiator Protection Screen

NOTE

- *Check if the mud guards (1 and 3) are clean.*
- *Clean the mud guards if necessary.*
- *The air intake of the air filter (2) must be clean.*



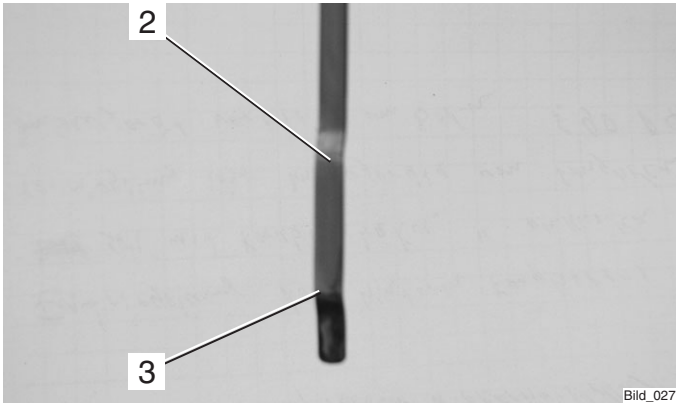
Taking into Service

Checking the Engine Oil Level

NOTE
Check the engine oil level only when the tractor is on level ground.

- Let the engine approx. 2 minutes with the heat shut-off valve open:
- Turn off the engine and open the access cover on the right-hand side of the tractor. Pull the oil dipstick (1) out after approx. 1 minute.
- The oil level must be between the Min (3) and Max (2) marking.
- Top up oil as specified in the maintenance manual.

ATTENTION
Do not fill too much oil.



Checking the Trailer Hitch (optional), 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".

Checking Tyre Inflation Pressure

NOTE
Your tractor can be equipped with different types of tyres. The specified inflation pressure for your tyres is given in the table entitled "Tyres" in the technical data section.

- Check the inflation pressure on all four tyres. All tyres must have the same pressure. If the pressure is too low, the rolling resistance increases. This causes an increase in fuel consumption and tyre wear, the driving characteristics become poorer.

DANGER
If the inflation pressure is too high, the tyres can explode.

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

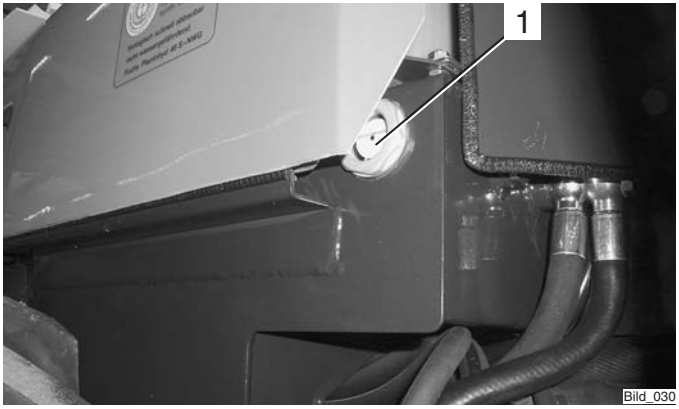
Bild_028


Bild_029

Taking into Service

Checking the Implement Hydraulics Oil Level

- 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 manual.



Filling Fuel

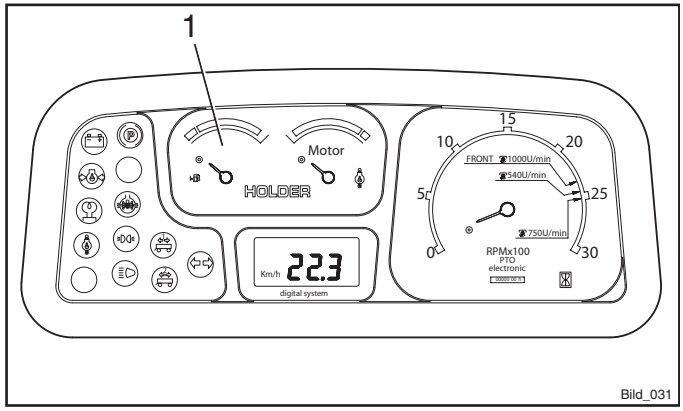
- If necessary, read the fuel level (1) on the multi-function display.

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 during refuelling.

- Remove the fuel tank filler cap (2).
- Top up Diesel fuel as specified in the maintenance manual.

Filling quantity ..... approx. 51 L

- Refit the filler cap (2).



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Taking into Service

Checking the Clutch Fluid Level

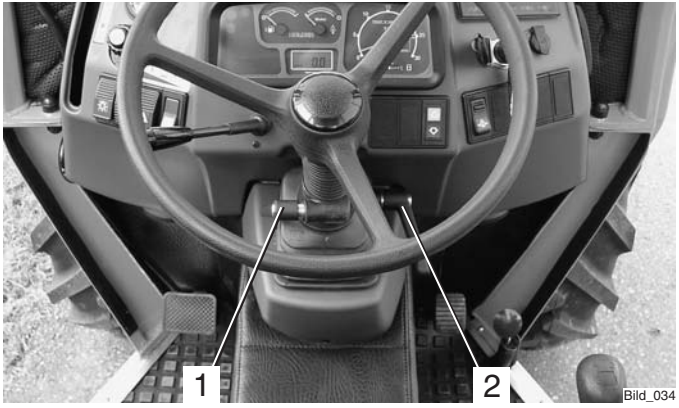
- Check the level at the clutch fluid reservoir (1).
- The fluid level must between the Min and Max marking at the reservoir.
- Top up brake fluid as specified in the maintenance manual.

Adjusting the Steering Wheel

NOTE
The tilt 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 tilt of the steering wheel.
- Retighten the lever (2).
- Loosen the lever (1).
- Adjust the height of the steering wheel.
- Retighten the lever (1).



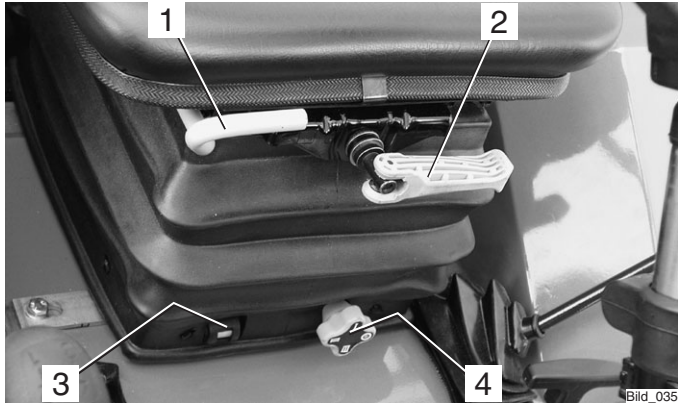
Adjusting the Driver's Seat with Mechanical Suspension

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 star knob (4).
- The weight should be adjusted after each height adjustment.



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

Taking into Service

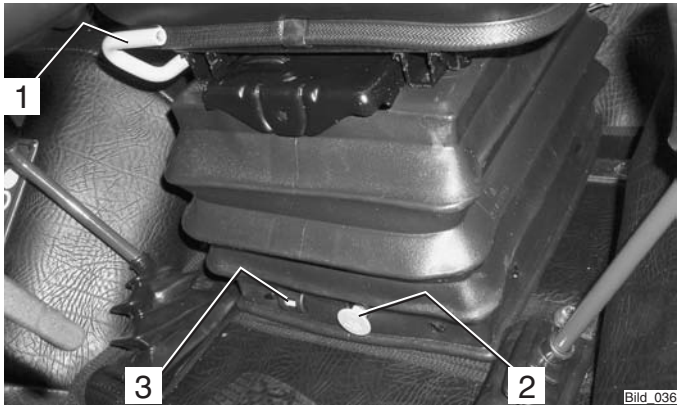
Adjusting the Driver's Seat with Pneumatic Suspension*

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
- Select the desired driver's weight by pushing or pulling the adjustment knob (2).
- A green field appears in the window (3) if the setting is correct.

3 Height adjustment
- Put the seat to the desired height by pushing or pulling the adjustment knob (2).
- The marking in the window (3) must be green.



DANGER
To prevent damage, operate the compressor for 1 minute maximum.

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

* Option

Filling Washing Water

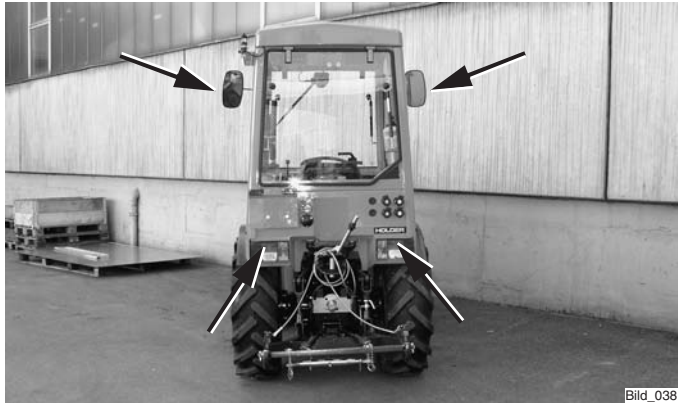
NOTE
The washing water reservoir for the windshield washer is located behind the driver's seat.

- Open the filler cap (1) and top up washing water in the reservoir.

Filling capacity ..... approx. 1.3 L

Checking the Lights and Rear View Mirror

- Check the lighting 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 tractor and the working area are easily seen.



Taking into Service

Starting the Engine

Instructions before Starting the Engine

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

Instructions for Starting

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

ATTENTION
Do not use a starting aid such as Startpilot or similar means. Turn off the drive or driven implements.

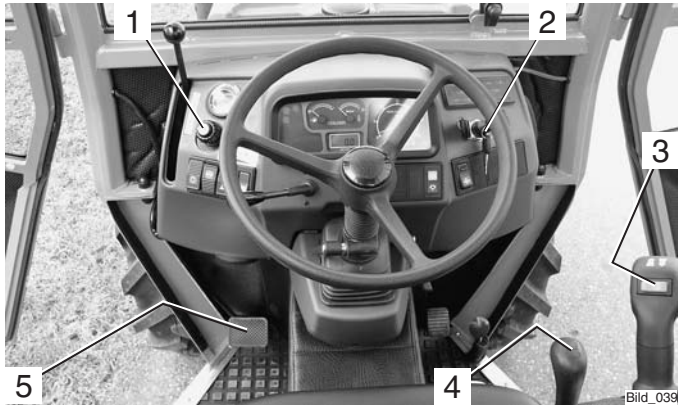
CAUTION
Start the engine only from the driver's station.

Starting the Engine

- Shift the gearshift lever (4) to neutral.
- Set the forward/reverse selector switch (3) to the neutral position (centre).
- Fully depress the clutch pedal (5).

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

- Set the hand throttle (1) to idle (push in fully).
- Insert the ignition key and turn the preheat/starter switch (2) to position 1.



Taking into Service

NOTE

The battery charging indicator (8), the engine oil pressure indicator (7) and parking brake indicator (9) (if parking brake is engaged) come on.

- Turn the ignition key to position 2.
  The engine is being preheated. The preheating indicator (6) comes on.

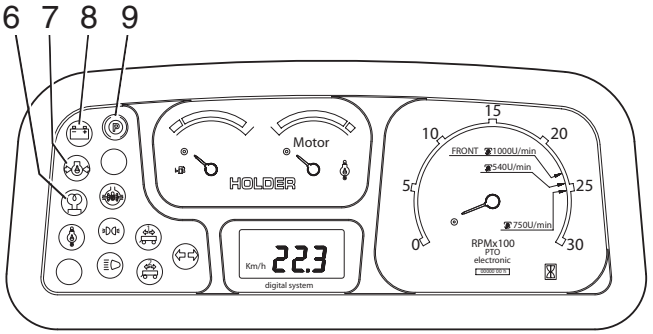
NOTE

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.

ATTENTION

Operate the starter for a maximum of 20 seconds. Wait one minute, then repeat 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 "Problems, Causes, Remedy".



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NOTE

The ignition lock has a starter safeguard lock. The ignition key must be switched back to position 0 before it can be turned from position 1 to position 2 or 3 again.

- Release the ignition key after the start.
  The battery charging indicator (2) and the engine oil pressure indicator (1) extinguish.
- Set the engine speed with the hand throttle (5) or accelerator pedal (6) to the desired RPM (3).
- The hour meter (4) is activated.

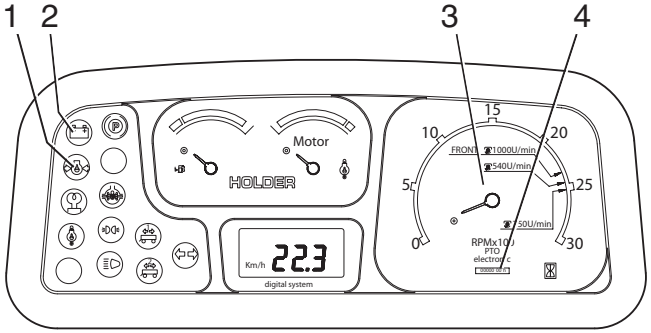


Bild_041

Checking Brakes and Steering for Proper Function

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

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

Bild_042

Operation

Before Starting to Drive

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

Driving Safety Rules

- Drive the tractor 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.
- Never drive downhill without having the tractor in gear or with the engine stopped.
- Before driving, check that no one is standing in the immediate vicinity of the vehicle.
- The driving behaviour of the tractor 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 attachments, 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 when travelling along a curve.
- When driving on slopes, drive downhill if possible; if you have to turn, turn only when driving 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.

Operation

Driving with Mechanical Gearbox

- Set the gearshift lever (2) to 0.

- Start the engine.

- Select the direction of travel with the forward/reverse selector switch (1) (forward or reverse). The indicator (3) is on green and flashing (forward or reverse).

- Fully depress the clutch pedal (4) (buzzer sounds until shifting is completed). The indicator (3) is now illuminated green continuously.

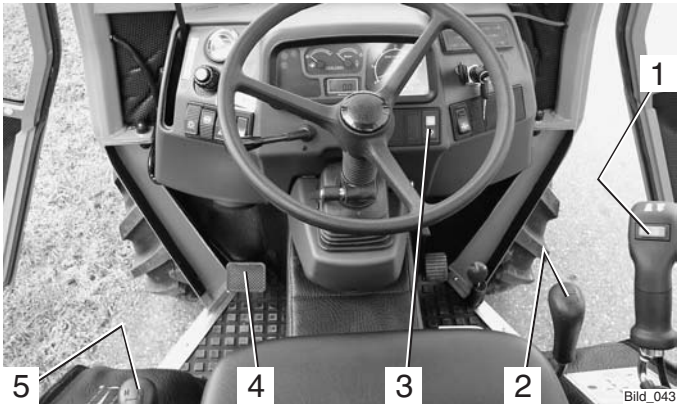
- Shift the gearshift lever (2) to the right (looking forward) into the desired gear.

Four gears 1-2-3-4 are available (2).

- Shift the range selector lever (5) to the left (looking forward) to the desired speed range.

Three speed ranges are available (5):

S - Fast
M - Medium
L - Slow



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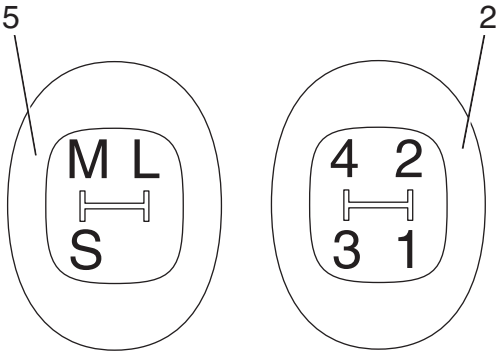


Bild_144

NOTE
The label (1) shows the possible shift combinations. You have a total of 12 gears available, both for forward and for reverse travel.

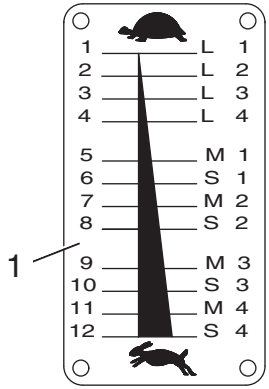
- Release the clutch pedal (3) to start driving.

ATTENTION
Do not keep the foot on the clutch pedal when driving.

- Control the driving speed with the accelerator pedal (2) or the hand throttle (4).

NOTE
The attainable driving speeds can be read in the table in the technical data section.

ATTENTION
When downshifting, the driving speed must be reduced to the low speed range. As the transmission is synchronized, you do not have to give gas when downshifting.



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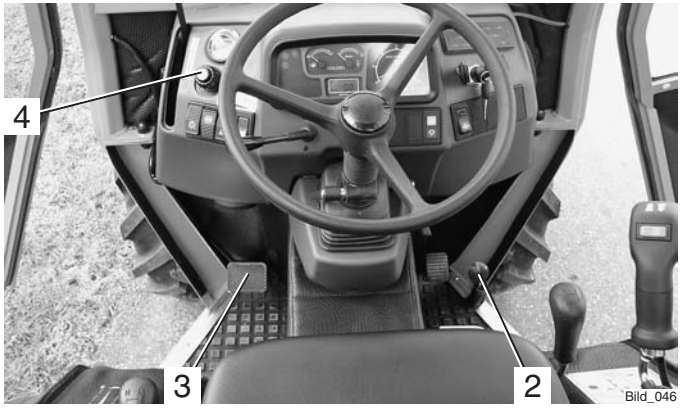


Bild_046

Operation

Changing the Direction of Travel

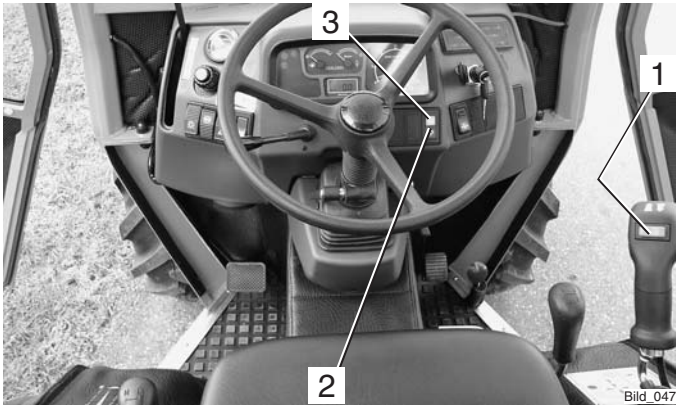
ATTENTION
The direction of travel can be changed when driving slowly.

- To change the driving direction from forward to reverse, the forward/reverse selector switch (1) must be pushed to the right.
- The green indicator (2) is flashing and shows the selected direction of travel.
- As soon as the clutch pedal is fully depressed, a buzzer sounds until shifting is completed. Then the green indicator (2) is on steadily.
- Release the clutch pedal to drive the tractor in reverse.

NOTE
When working, we recommend preselection of the direction of travel while driving.

ATTENTION
If the clutch pedal is released before the shifting is completed, the mechanical gear shifts into neutral (0). Both arrows are flashing (2 and 3).

- Depress the clutch pedal again.
  The green indicator is on steadily, shifting is completed.



Engaging the Differential Lock

NOTE
With the differential lock you can improve traction on soft, slippery ground. The lock is engaged when the engine speed is over 1000 rpm. You can keep the differential lock engaged steadily and also only briefly by toggling the switch momentarily.

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

Bild_048

Engaging the Differential Lock briefly

- Depress the differential lock switch (1) at the top and hold it. The indicator (2) in the multi-function display lights up red. An intermittent alert sounds at the same time. The differentials of both axles are locked and power is transferred to all 4 wheels equally.

Engaging the Differential Lock steadily

- Toggle the differential lock switch (1) down. The differential lock remains engaged until the switch is turned off again.

Disengaging the Differential Lock

- Release the differential lock switch (1) or switch it to the middle position. The differentials are in operation again. The indicator (2) in the multi-function display goes out and the alert ceases.

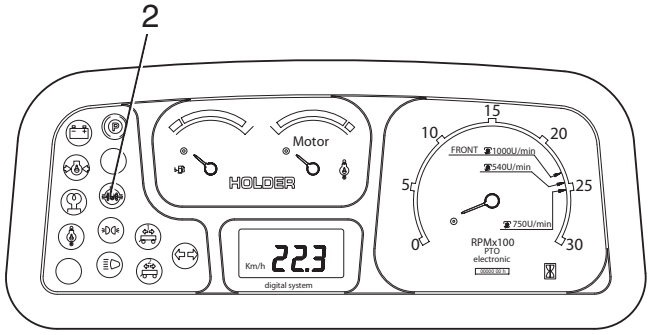


Bild_049

Operation

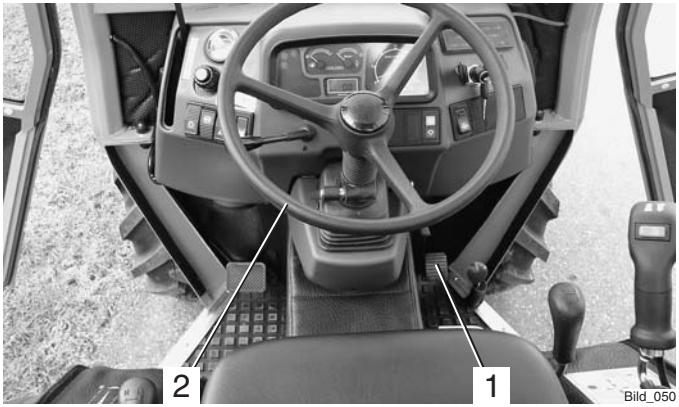
Steering

The articulated steering is operated hydraulically. The wheels also stay in track in curves, so that implements are guided without any lateral offset.

Steering

- Turn the steering wheel (2) in the desired direction.

The possible turning radii depend on the tyres and track widths of your tractor. For exact information refer to the track width table in the section "Technical Data".



Brakes

The service brake is a drum brake in the rear axle. It is actuated mechanically and acts on all four wheels. The parking brake is engaged mechanically with the parking brake lever.

Operating the Service Brake

ATTENTION
The engine can stall if you brake too hard in the mechanical gear.

- Depress the brake pedal (1).

If the mechanical gearbox is fitted, the clutch pedal must also be operated.

Engaging the Parking Brake

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

- Pull the parking brake lever (1) up.
  The parking brake is engaged, the red parking brake indicator (2) in the multi-function display comes on.

Bild_051

Disengaging the Parking Brake

- Pull the parking brake lever (1) up slightly, turn it and then press it down.
  The parking brake is released, the parking brake indicator extinguishes.

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

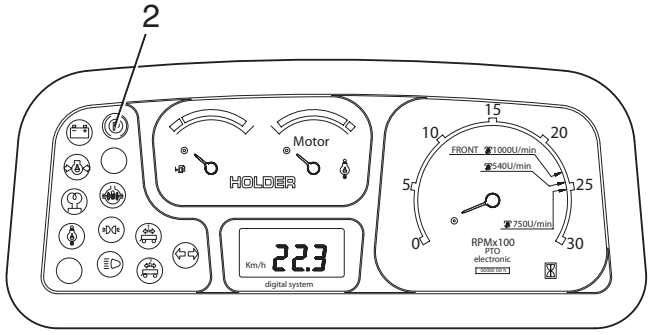


Bild_052

Operation

Driving on Slopes

DANGER
Driving on slopes is dangerous as the tractor 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 ground speed
- low gradient
- low tyre inflation pressure

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

- large track widths
- level, non-bumpy terrain

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

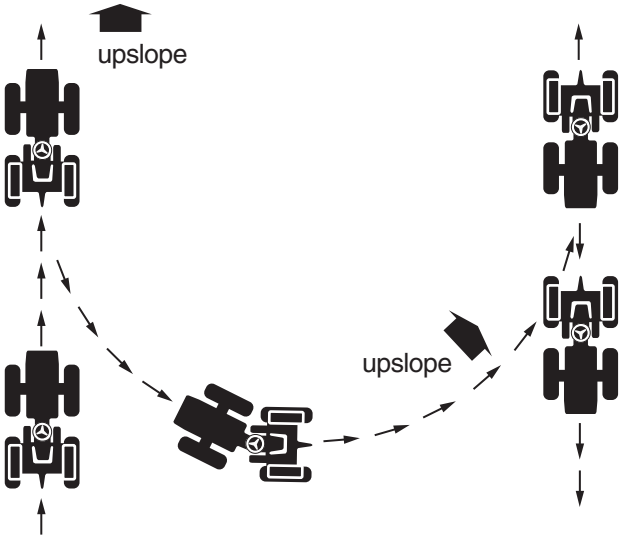


Bild_053

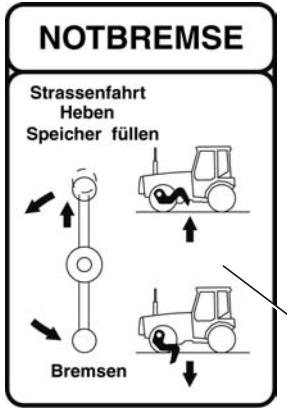
Special Operating Instructions

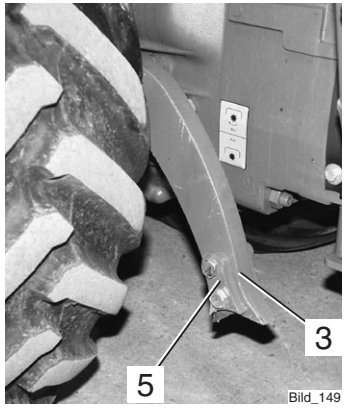
Operating the Precipice Emergency Brake

ATTENTION
After the installation of the precipice emergency brake, a safety inspection is required.

CAUTION
Before the first operation, familiarize yourself with the use of the precipice emergency brake. Carry out trial brakings on different types of ground. On hard ground the extension foot (5) must be removed.

- Start the engine.
- Operate a hydraulic valve until the pressure at the pressure gauge (2) rises and is in the green range (160-190 bar).
- Now raise the emergency brake lever (1) to release the lock.





Special Operating Instructions

ATTENTION

On roads drive only with the emergency brake lever locked. Do not allow anyone to stand around where they might get hurt.

- Pull the emergency brake lever (1) down.
  The brake tines (3) are lowered.
  The service brake should be operated at the same time.

ATTENTION

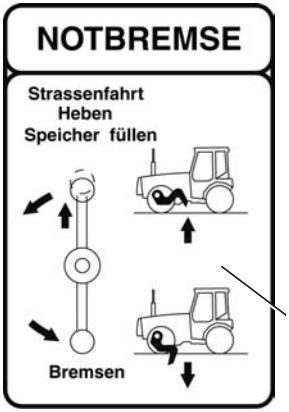
Due to the strong braking of the tractor, the operator can slide from the seat.

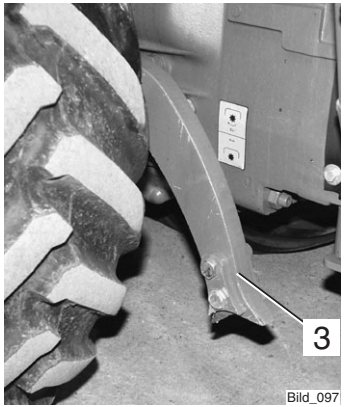
NOTE

After the actuation of the precipice emergency brake in the area of use, a hydraulic valve must be operated so that the full accumulator pressure is available for raising the tool (emergency brake).

- To raise the brake tines, set the emergency brake lever (1) up and lock it.

Observe the notice label (4).





Stationary Operation

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

ATTENTION
Place the tractor on level ground in both directions.

- Remove the protective sleeve from the PTO shaft.
- Attach the stationary equipment to PTO shaft (2).
- Shift the gear and range selector lever in to the neutral position.
- Apply the parking brake.

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

Hydraulic Oil Flow for Stationary Operation

When the tractor is stationary, hydraulic oil is available, for example, for the operation of a hydraulic dump (1).

Max. oil quantity available ..... 14 L

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

Special Operating Instructions

Adjusting the Track Width

You can widen the track width of the tractor by adding spacers (1).
You have a choice of 3 different spacers.

DANGER
Observe the safety notes on safe parking and jacking up for the wheel change in the maintenance manual.

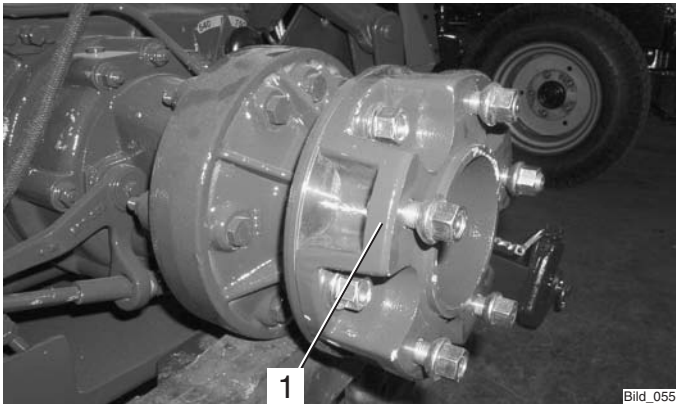
- Remove the wheels. Turn the wheels inside out or install the selected spacers.

ATTENTION
The spacers must be mounted on the front and rear axle so that the same track width is obtained.

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

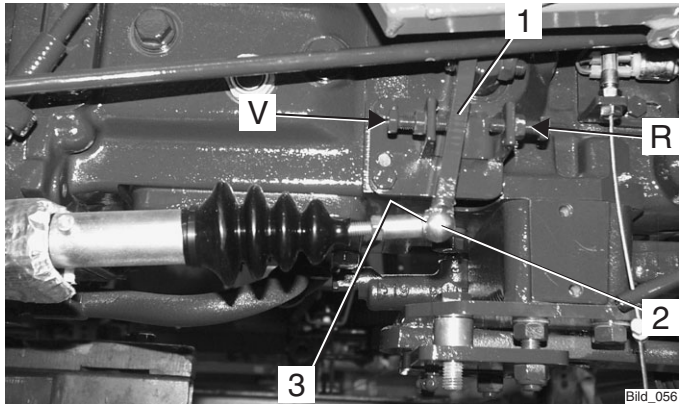
- Re tighten the wheel nuts to the specified torque.

Torque to ..... 215 Nm



Operating the Emergency Shift

NOTE
In the event of a failure of the servomotor or the electronic control, it is possible to drive to an authorized workshop with the emergency shift.



- Turn off the engine.
- Apply the parking brake.
- Put the range selector lever and the gearshift lever in neutral.
- Remove the right rear wheel.
- Remove the cover.
- Remove the safety wire (3).
- Carefully press the ball socket of the servomotor (2) down until it is disconnected.
- Move the operating lever (1) to the desired position. V = forwards or R = reverse.
- Refit the cover.
- Refit the wheel.
- Tighten the wheel nuts to a torque of 215 Nm.
- Start the engine and drive to the workshop.

Special Operating Instructions

Operation in Winter

Preheating of Oil*

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

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

Observe the information 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 manual.

Engine Oil for Winter Operation

Fill engine oil with a suitable SAE class as recommended in the maintenance manual.
The cold start capability of the engine can be reduced if the temperature limits are underrun occasionally, but this does 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 tyres to improve grip. In the following table you will find the order numbers for RUD chains which fit on the listed tyres. You can also fit snow chains from other manufacturers, if these have the proper dimensions. Make sure that there is enough clearance to the fenders.

ATTENTION
Do not install snow chains on a narrow track model.

Type of Tyre	Snow Chain Type (RUD Order No.)
7.50-18 MPT	24 537
7.50 R18	24 545
10.5-18 MPT / 10.5/80-18	22 553 and 24 553
275/70 R18 / 320/65 R18	24 553
280/70 R18 / 250/80-18	22 161 and 24 161
400/60-15.5 / 400/55-17.5	22 177
31x11.50-15	22 539
31x15.50-15 Terra	24 548
33x12,50 R15 / 33x12.5-15	22 167 and 24 167
33x15.50-15 / 350/60-17.5	22 174
36x13.5-15	24 178

Ballast Weights

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

Examples for Ballast Weights: Tractor version	Front axle, wheel balast weights (two per axle)	Rear axle Wheel balast weights (two per axle)
With vineyard cultivator	•	-
With saddle mounted irrigator	•	-
With plough	•	•
With front loader and approx. 600 kg tail weight at the three-point linkage	-	•
With front implementation such as rotary grass cutter, composter, or snow remover	-	•

Special Operating Instructions

Safety Loop

The A-Trac model without a cabin is equipped with a rigid roll bar for your safety. A hinged roll bar is available as option.

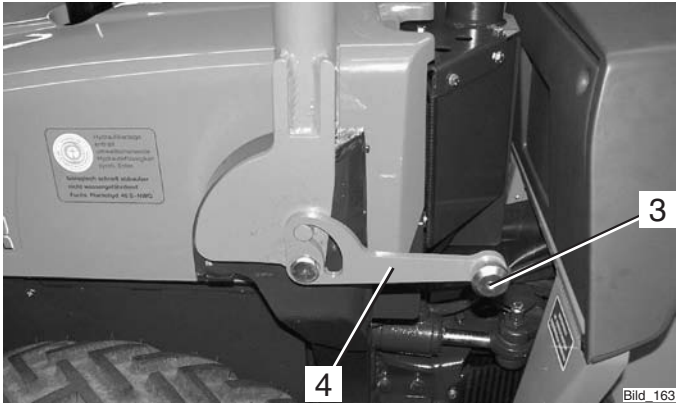
DANGER
Always drive with the roll bar up and engaged. In exceptional cases and only with the approval of the employer's liability association the roll bar can be lowered to the front.

ATTENTION
Driving on public roads without the roll bar up is prohibited.

Lowering the Roll Bar

CAUTION
Danger of burning when removing the exhaust muffler. Loosen the fastening screw (2) and remove the exhaust muffler upwards.

- Pull the sleeve (3) and push the lever (4) down.
- Carry out the same procedure on the other side.
- Lower the roll bar to the front.
- Press the lever (4) forward and lock the sleeve (3).
- Refit the exhaust muffler.



Operating the Implements

We have tested and approved a large number of possible implements for use with this tractor. Please contact our field service or customer service for information on working widths and manufacturer.

Possible Implements

For example for:
vineyards and orchards
agriculture
mowers
Snow removal
and other street cleaning equipment.

Safety Instructions for Handling Implements

The tractor 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 to avoid injuries due to crushing and cutting when attaching implements.

DANGER
No one must come between the tractor and implement unless the tractor is secured against rolling.
For highway driving purposes, the implements 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.

Operating the Implements

Additional Information for Implements

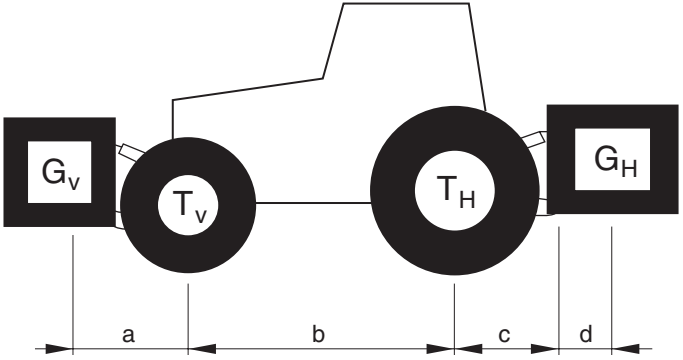
When installing implements on the front and rear 3-point lift, do not exceed the permissible total weight, the permissible axle loads and tyre carrying capacities of the tractor. The front axle of the tractor must always be loaded with at least 20 % of the tractor's dead weight.
Before the purchase of equipment, make sure these conditions are met by performing the following calculations or by weighing the tractor/equipment combinations.

Determining the Total Weight, Axle Loads and Tyre Carrying Capacity including the Minimum Ballasting

For their calculation you need the following data:

T_L	(kg)	Empty weight of the tractor [1]
T_V	(kg)	Front axle load of the empty tractor [1]
T_H	(kg)	Rear axle load of the empty tractor [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)	Tractor wheelbase [1] [3]
c	(m)	Distance between centre of rear axle and centre of lower link ball [1] [3]
d	(m)	Distance between centre lower link ball and centre of gravity of rear implement/rear ballast [2]

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



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 tractor 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 tractor in the table.
(Value X for Holder tractor 0.25 4-wheel)

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

(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.)

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

Enter the calculated actual and the permissible front axle load specified in the operating manual of the tractor in the table.

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

(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.)

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

Enter the calculated actual and the permissible total weight specified in the operating manual of the tractor in the table.

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

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

Enter the calculated actual and the permissible rear axle load specified in the tractor operating manual in the table.

Operating the Implements

6) Tyre carrying capacity

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

	Calculated value		Maximum permissible value (acc. to operating manual)		Double permissable tyre capacity (two tyres)
Minimum ballast front/rear	/ kg		-		-
Total weight	kg	≤	kg		-
Front axle	kg	≤	kg	≤	kg
Rear axle	kg	≤	kg	≤	kg

The minimum ballast must be applied as implemented device or ballast-weight at the tractor!
The calculated values must be less than or equal to (≤) the max. permissable values!

Attaching Implements

The various implements are attached to the front lift* or rear lift.
The tractor is trimmed to category I = nominal width 718 mm.

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

* Option

Operating the Implements

Rear Lift

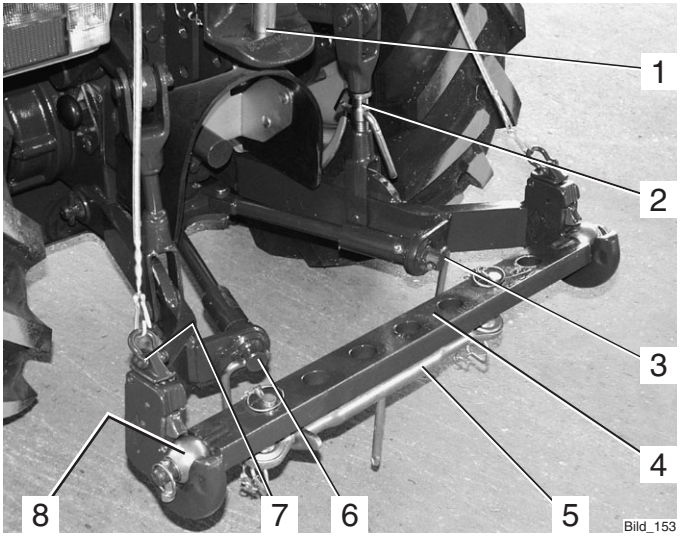
The lower link can be adjusted laterally.

- Measure the stand-off of the pins on your implement.
- Disengage the lock (7) of the drawbar (4) manually or with the remote control and remove it.
- Put the ball sleeves (8) on the implement connecting stub and secure it with the linch pin; if necessary, use reducing sleeves.
- Adjust the clearance between the lower supports and the spindles (6) and (3).
- Remove the trailer hitch (1) and use the upper link (5) instead.
- With the spindle (2) it is possible to set the lower link to different heights.

DANGER

Make sure no one is standing between the tractor and implement.

- Drive the tractor to the implement to be attached.
- Steer the catch hooks under the attaching pin of the implement.
- Raise the rear lift until the lock (7) closes and engages.



Adjusting the Front Lift*, Catch Hook

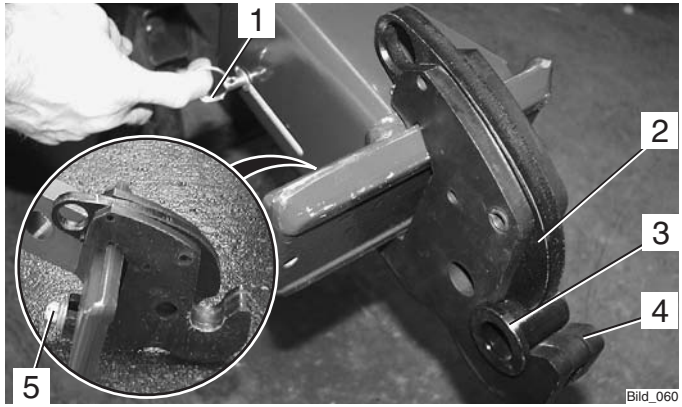
The catch hooks can be adjusted laterally.

- Measure the stand-off of the pins on your implement.
- Disengage the clamping screws (5) on both sides.
- Slide the catch hook laterally until the required distance is reached.
- Retighten the clamping screws.
- For equipment of category I with a pin diameter of 22 mm install the reducing sleeves (3) on the left and right.

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

- Drive the tractor to the implement to be attached.
- Steer the catch hooks (4) under the attaching pin of the implement.
- Raise the front lift until the quick attach (2) closes and engages.

* Sonderausstattung



1 Retaining pin for oscillation lock
2 Quick attach
3 Reducing sleeve
4 Catch hook
5 Clamping screw

Front Lift, Oscillation Lock

The oscillation lock can be released with attachments which must follow the ground contour.

- Pull out the retaining pin (1) and shift forward.

The oscillation lock can be locked with attachments whose centre of gravity is not centred.

- Pull out the retaining pin (1) and shift forward.

Operating the Implements

Adjusting the Upper Link

The height of the upper link can be adjusted. The required height depends on your implement.

1 Linch pin
2 Support
3 Top link pin
4 Adjustment lever
5 Locking lever

- Install the upper link in one of the 4 possible positions of the support (2).
- Secure the top link pin (3) with the linch pin (1).
- Loosen the locking lever (5).
- Attach the upper link to the implement.
- Adjust the length of the upper link with the adjustment lever (4) on and secure this adjustment with the locking lever (5).

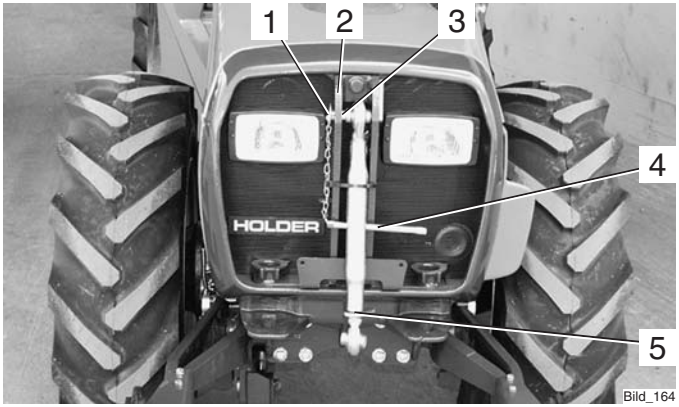


Bild_164

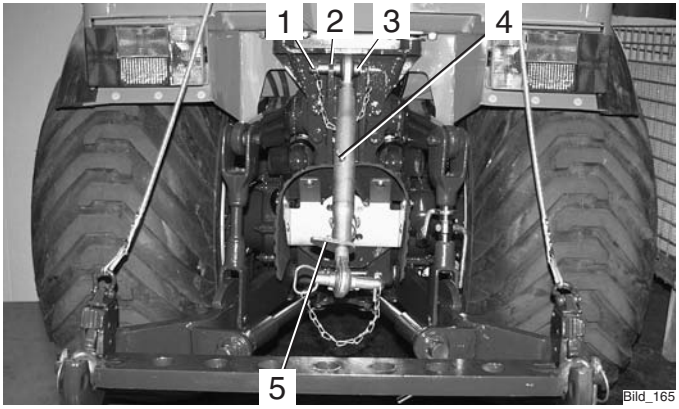


Bild_165

Coupling Hydraulic Lines

ATTENTION
The hydraulic couplings on the tractor must be pressureless before being connected. The couplings on the tractor and the hydraulic hoses must be clean.

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

- Open the protective caps on the hydraulic couplings.
- Attach the colour-coded hydraulic hoses of the implement to the hydraulic couplings of the same colour on the tractor.

ATTENTION
The hydraulic male couplings fit on each coupling and can therefore be connected incorrectly.

Bild_063

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.

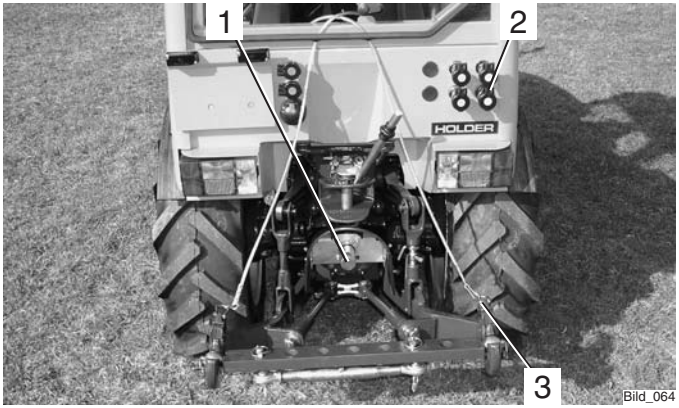
Operating the Implements

Installing the Cardan Shafts

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

DANGER

Shut off the engine before the installation. Fit the protective devices as specified after installation. After the removal, cover the PTO shaft (1) again with the protective cap.

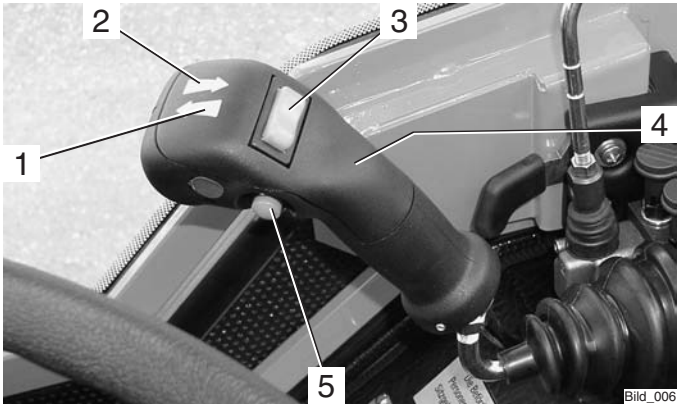


Removing Implements

- Drive the implement to its storage place and lower it with the lift.
- Stop the engine, but do not turn off the ignition.
- Operate all control levers for the 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.
- Close the protective caps on the hydraulic couplings.
- Remove the upper link from the pin of the upper link support.
- Pull the quick attaches (3) up to release the implement pins.
- Lower the lift and drive forward carefully.

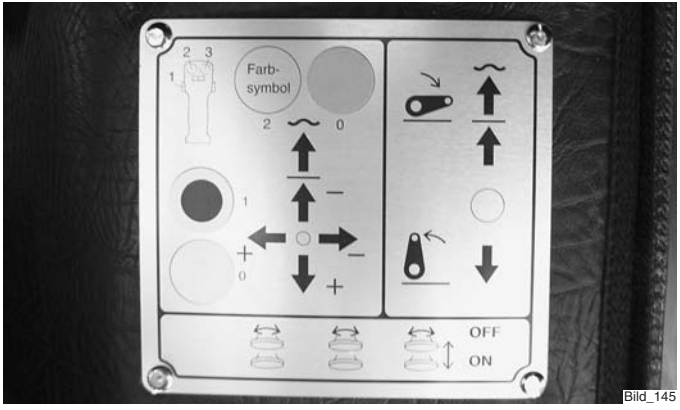
Multi-function Lever

1 Forward direction arrow (illuminated if selected)
2 Reverse direction arrow (illuminated if selected)
3 Forward/reverse selector lever
(left forward – right reverse)
4 Multi-function lever
5 Function button* (changes the hydraulic control, observe the label before the multi-function lever)



Activating (Operating) Functions*

Press the desired pushbutton and move the multi-function lever either forward/back or across, depending upon the required function.

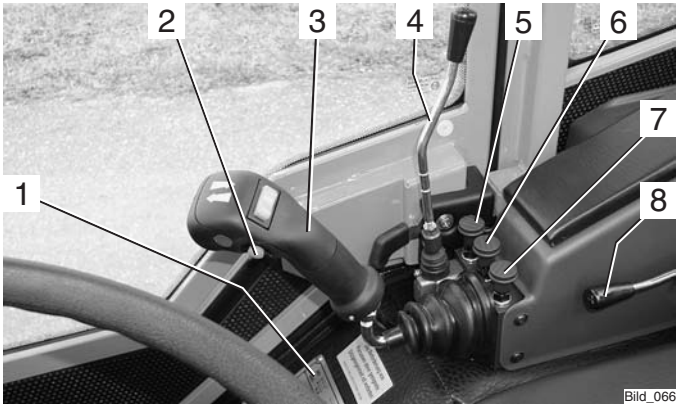


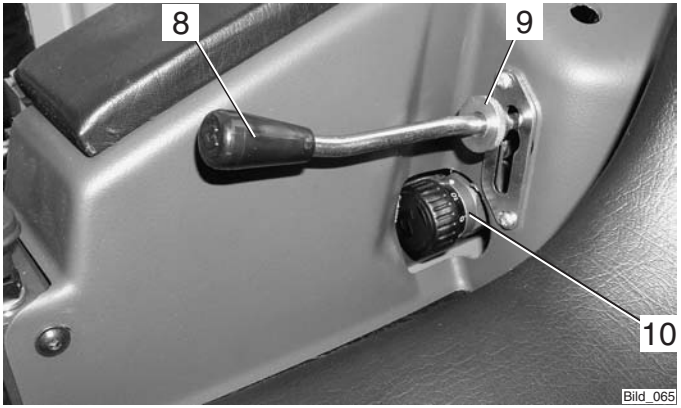
* Option

Operating the Implements

Operating the Hydraulic Control Levers

1 Multi-function lever functions plate
2 Function button*
3 Multi-function lever (implements and direction of travel)
4 Control lever for rear lift
5 Lock knob for control lever (4)
6 Lock knob for longitudinal motion of the multi-function lever
7 Lock knob for lateral movement of the multi-function lever
8 Control lever for priority flow valve I
9 Sliding sleeve for locking
10 Oil quantity adjustment knob





NOTE

The control levers control those functions of the implements which are connected to the front or rear hydraulic couplings. The couplings and notice plates for the control levers are colour coded, eg the colours match to the function.

* Option

Operating the Implements

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.

Two types of control levers can be installed: control levers (1) and multi-function levers (3).

Control Lever Functions

The functions are shown on the notice plate (1).

NOTE
Behind the control lever (4) there is a lock knob (5) for locking or releasing the motions of the lever.

The following movements are possible:

- Lock knob (5) lifted and turned (lever free to move).
- Push the control lever (4) forward:
  - The implement is lowered.

  You can stop the movement by releasing the lever.
- Pull the control lever (4) back:
  - The implement is lifted.

Functions of Lock Knob

If the lock knob (5) is lowered, the levers can not be operated.

NOTE
If the lever movement is locked, you can prevent any unintended movement of the implement through accidental contact with the lever.
Transport lock for road travel.

Operating the Implements

Engaging the Rear PTO

DANGER
The clutch lever (1) must be turned off. For this it must be placed in the forward position.

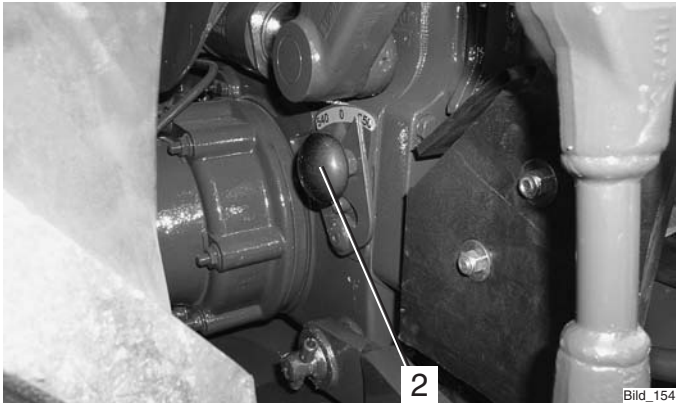
- Start the engine.
- Select the required PTO rpm with the PTO selector lever (2).

NOTE
The PTO clutch lever (2) is located at the rear left side of the gearbox.

DANGER
Before engaging the PTO, make sure no one is standing close enough to the tractor and the driven implement to be hurt.

The PTO selector has 3 speed ranges.

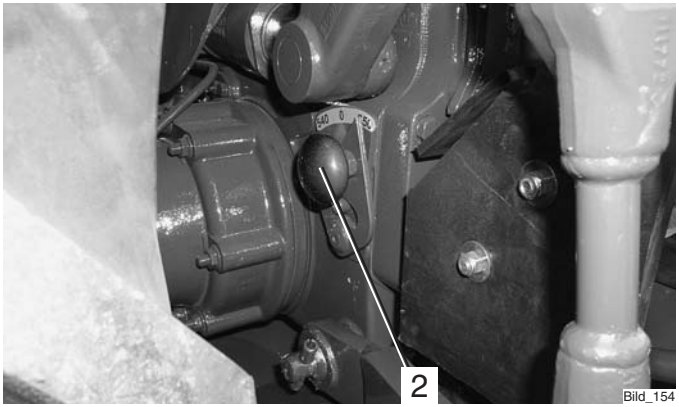
- Set the control lever to the centre position.
  The PTO selector is switched off.
- Push the control lever forward in the direction of travel.
  The PTO speed is 540 rpm with an engine speed of 2450 rpm.
- Pull the control lever back opposite to the direction of travel.
  The PTO speed is 750 rpm with an engine speed of 2520 rpm.



Engaging the Rear PTO

ATTENTION
Never engage the PTO with the engine off.

- Increase the engine speed to 1500-1800 rpm.
- Pull the clutch lever (1) down fast. The pressure point must be passed noticeably. The rear PTO is engaged.
- To disengage it, return the PTO clutch lever (1) to the vertical position.
- If the PTO is no longer required, return the lever (2) to position "0".



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

Operating the Implements

Engaging the Front PTO

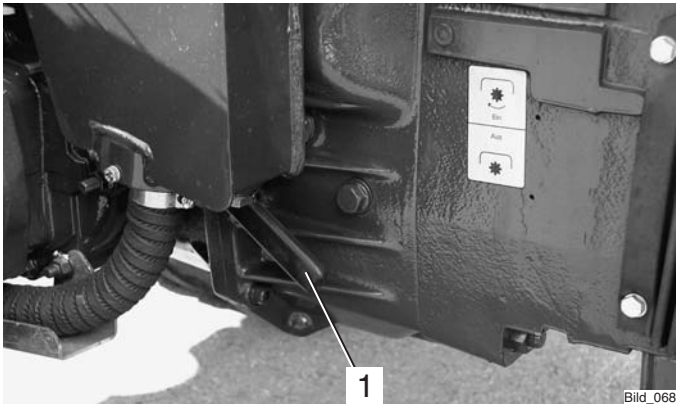
☞ ***NOTE***
The front PTO can be turned on with the PTO selector lever (1) at the front left of the gearbox. The lever positions are shown on the plate.

- The PTO clutch lever (3) must be turned off.
- Move the PTO selector lever (4) up to engage the front PTO.

DANGER
Before engaging the PTO, make sure no one is standing close enough to the tractor and the driven implement to be hurt.

- Pull the PTO clutch lever (3) down fast. The front PTO is turned on.
- To disengage the PTO, return the PTO clutch lever (3) to the vertical position.
- Push the PTO selector lever (1) down again.

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



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Operating Priority Flow Valve I*

Priority flow valve I is used to drive the servomotor 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 tractor engine speed. The priority flow valve is fed by the (standard) working pump and operated from the driver's station.

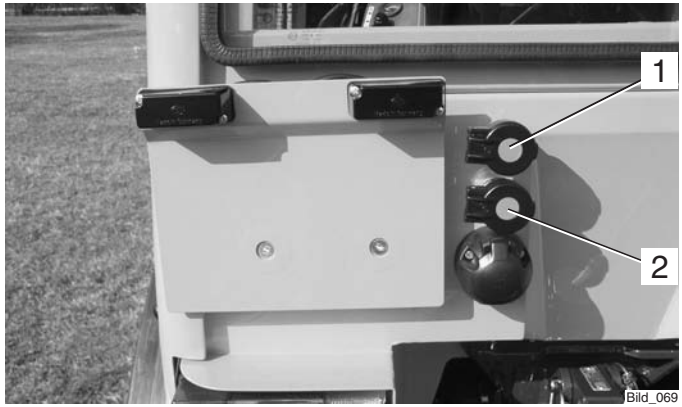
- Connect the hydraulic hoses of the implement to the red hydraulic couplings for the drive (1) and return line (2) at the rear of the tractor.

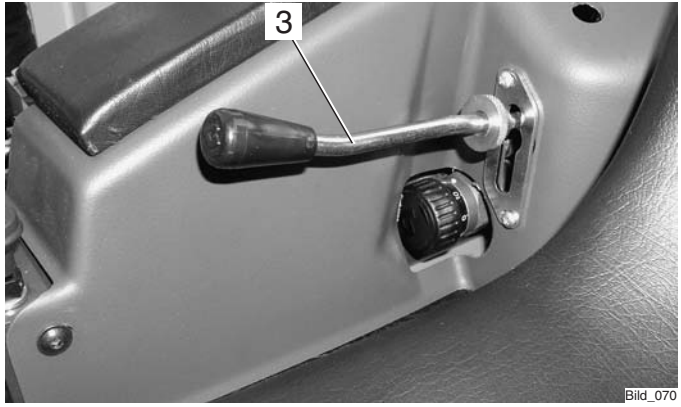
ATTENTION
Operate the control lever only at low engine speed.

- Push the lever (3) down for momentary operation.
- Pull the lever (3) up for continuous operation.

ATTENTION
Slowly increase the engine speed.

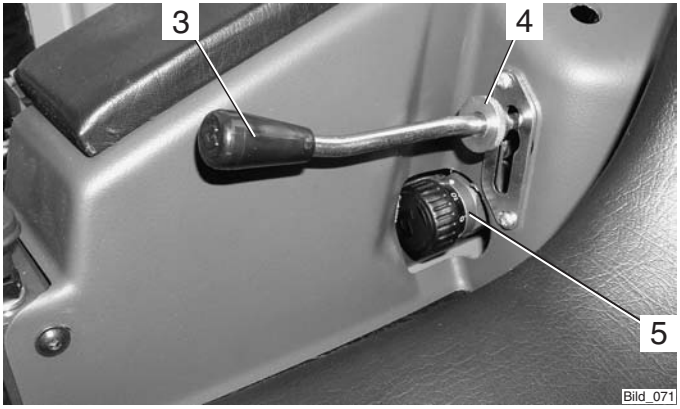
* Option





Operating the Implements

- Select the desired engine speed with the hand throttle.
- Go to the rear of the tractor 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 RPM.
- The servomotor in the implement is is fed with an oil flow of 0 to 25 litres/min.



ATTENTION
If the implement is no longer used, always turn the priority flow valve off with the lever (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.

Turning Off the Priority Flow Valve

- Set the lever (3) to the centre position and lock it with the knurled nut (4).

Operating Priority Flow Valve II*

Priority flow valve II is used to drive the servomotor 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 tractor engine speed. The priority flow valve is fed by the tandem working pump and it is set at the front of the tractor.

- Connect the hydraulic hoses of the implement to the red hydraulic couplings for the drive (1) and return line (2) at the front of the tractor.

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

- Release the lock at the starting safety switch (3) and depress the switch. The switch engages and the indicator in the switch comes on.

ATTENTION
Slowly increase the engine speed.

* Option

Operating the Implements

- Select the desired engine speed with the hand throttle.
- Go to the front of the tractor and adjust the hand wheel (4) of the priority flow valve to the working speed required for the implement.
  Turning clockwise increases, turning counterclockwise lowers the RPM.
- The servomotor in the implement is is fed with an oil flow of 0 to 25 litres/min.

ATTENTION

If the implement is no longer used, switch the priority flow valve off with the starting safety switch to prevent any unnecessary overheating of the hydraulic oil.

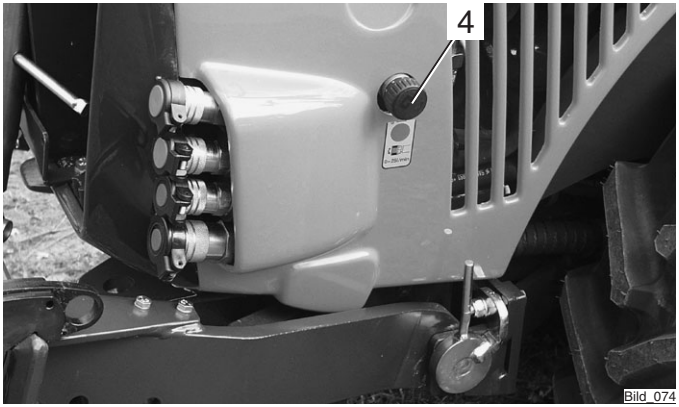
Do not leave the priority flow valve on:

- 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.

Turning Off the Priority Flow Valve

- Turn the safety switch (3) off. The indicator in the switch extinguishes.



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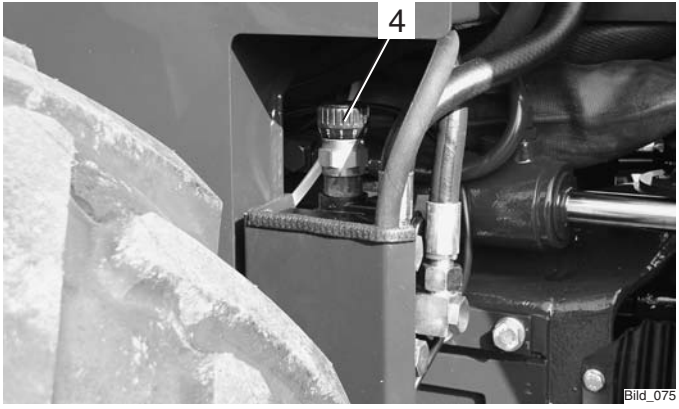

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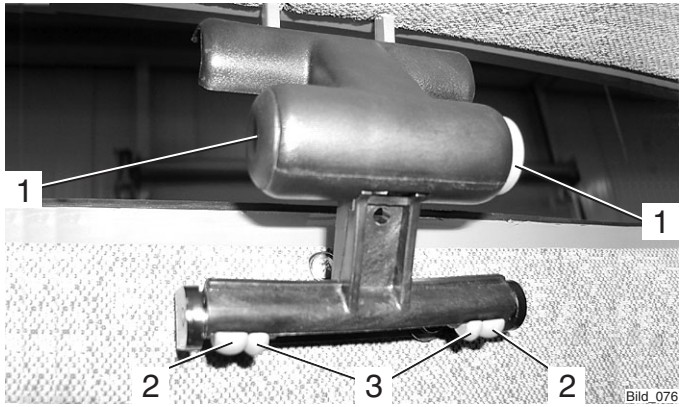
Other Activities

Operating Driver's Cab

Operating Roof Hatch

Opening Roof Hatch

- Press lateral buttons (1) at the handle.
- Push the handle up. The roof hatch opens at the rear.



Removing the Roof Hatch

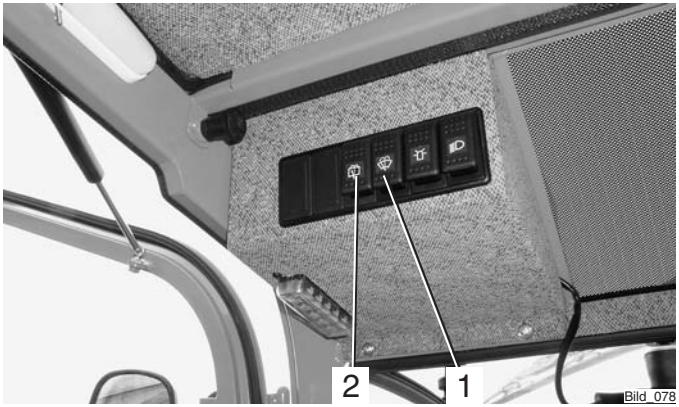
☞ ***NOTE***
The roof hatch can be used as an emergency exit in case of danger.

- Open the roof hatch.
- Press out the inner plastic clips (3) to the back.
- Press the outer plastic clips (2) inward.
- Pull locks (4) and press roof up.

Other Activities

Operate Windshield Wiper/Washer

NOTE
The tractor is provided with a front and rear wiper. A washer system is also installed. The washer system draws its water from the washing water reservoir behind the seat.



Front Windshield Wiper/Washer

- Switch for front windshield washer (1) in 1st switch range.
  The front wiper is in operation.
- Switch to 2nd switch range position:
  The front windshield washer is on and sprays only as long as the switch is actuated.

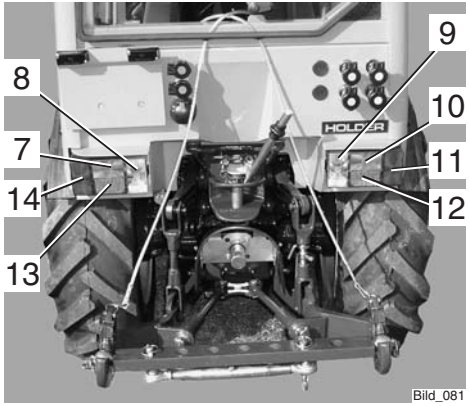
Rear Wiper/Washer*

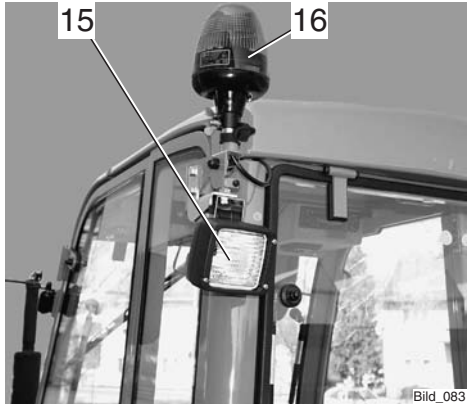
- Switch for rear windshield washer (2) in 1st switch range.
  The rear wiper is in operation.
- Switch to 2nd switch range position:
  The rear windshield washer is on and sprays as long as the switch is actuated.

* Option

1 Turn signal light, right
2 Top headlight
3 Top headlight
4 Turn signal light, left
5 Headlight, left
6 Headlight, right
7 Turn signal light, left
8 Back-up light
9 Back-up light
10 Turn signal light, right
11 Stop light
12 Tail light
13 Tail light
14 Stop light
15 flood light*
16 Rotating beacon*

* Option





Other Activities

Lights

Turning on and Operating Lights

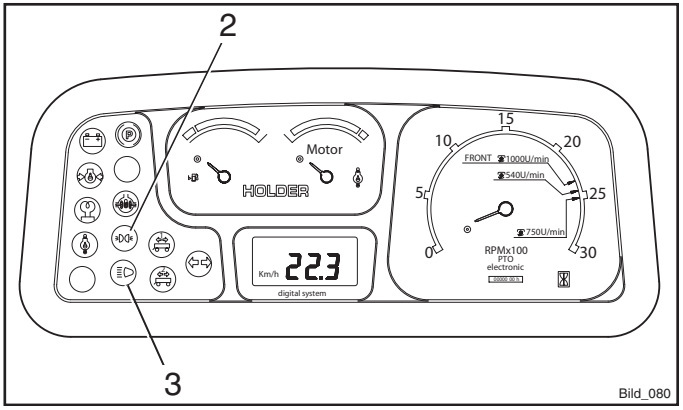
NOTE
Preheat/starter switch to position 1.

- Switch the light switch (1) to position 1.
  The top clearance lights and the tail lights (courtesy lights) are switched on.
- The position light indicator (2) in the multi-function display comes on.
- Switch the light switch (1) to the second position.
  The front headlights (dip beam) are on.

Turning on High Beam

- Switch the light switch (1) to position 2.
- Move the turn signal lever (4) to the front. The headlights are set to high beam.
- The high beam indicator (3) in the multi-function display comes on.

NOTE
To flash the high beam lights, pull the signal lever backward.



Turning on Upper Lights

NOTE
If front implements are installed and the bottom headlights are hidden, you may turn on the upper head lights. If these headlights are on, drive only at a maximum speed of 25 km/h.

- Switch the switch for upper head lights (1) on.
- The upper head lights (dip beam) are on.

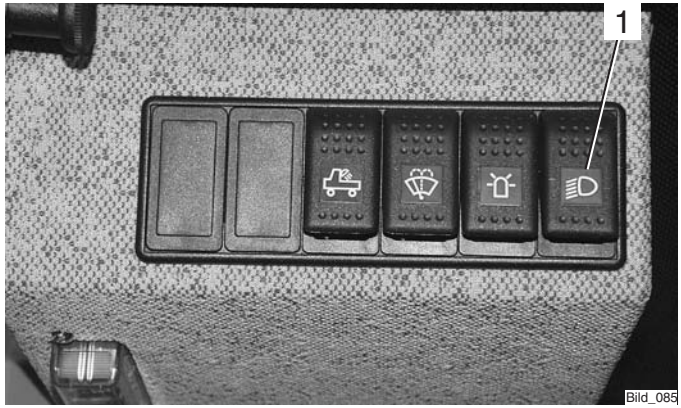
NOTE
The functions high beam and flash lights are only available in the lower head lights.

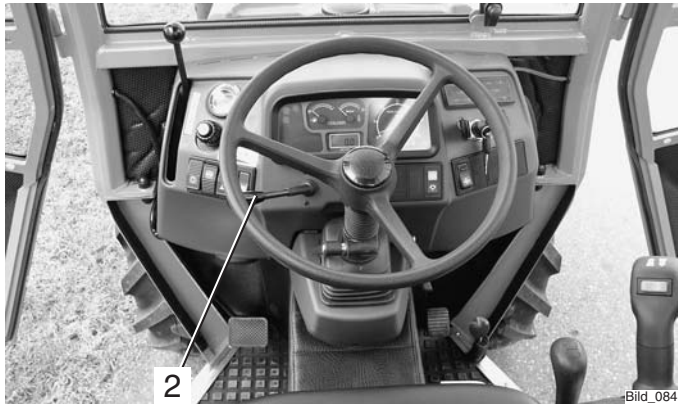
Turn Signal to the Left, to the Right

- Move the turn signal lever (2) downward. The left turn signal lights are on.
- The turn signal indicator in the multi-function display comes on.
- Move the turn signal lever (2) upward. The right turn signal lights are on.

Operating the Horn

- Press turn signal lever (2) sideward to sound the horn.

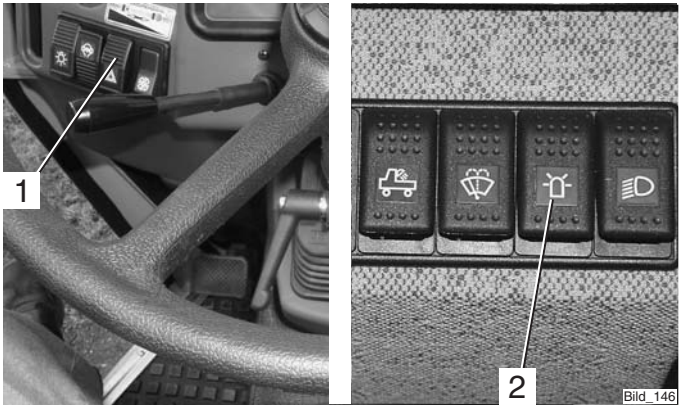




Other Activities

Operating the Hazard Warning Flasher System

- Switch on the hazard warning flasher switch (1), all turn signal lights will blink.



Turning on Rotating Beacon*

☞ ***NOTE***
The rotating beacon may only be turned on if the tractor is used for applications on public roads.

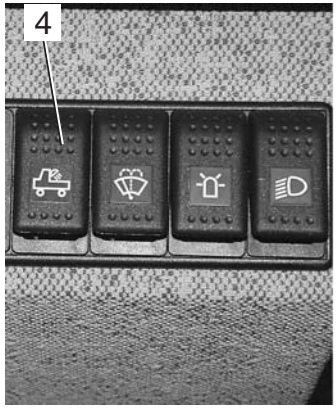
- Switch the rotating beacon switch (2) on.
  The rotating beacon (16) is engaged.

* Option

Turning on the Flood Lights*

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

- Switch the flood light switch (4) on.
  The flood light (15) is turned on.

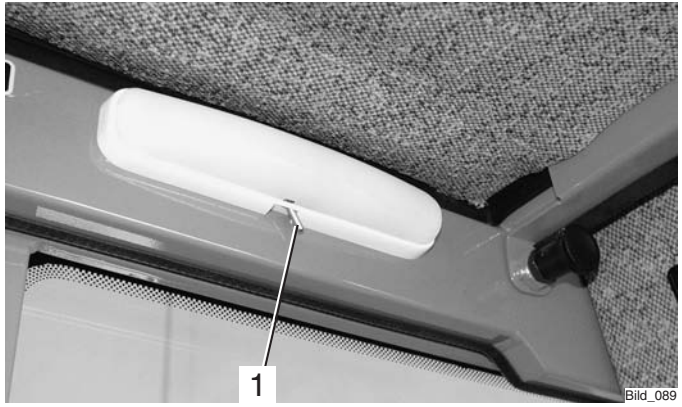


Interior Light

Turning on the Interior Light

NOTE
The interior light is located top left in the cabin roof.

- To turn on the interior lights, move the switch (1) forward.



* Option

Other Activities

Radio* and Loudspeaker*

Operating the Radio

NOTE
There is a separate operating manual for the radio (1).

Please observe this when operating.
The loudspeaker (2) is integrated in the front of cab roof.

Power Socket

Connecting Equipment to the Power Socket

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

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

* Option

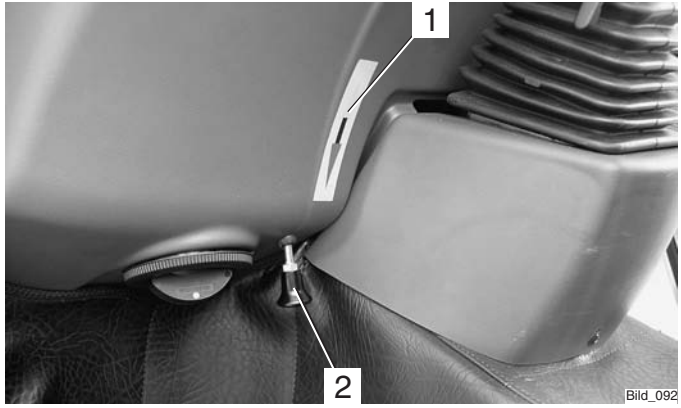
Heater

Heating and Ventilating

Turning on the Heater

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

- To heat the cabin, pull the heater slide valve (2). You may select any intermediate position. Observe the plate (1) above the heating slide valve.
- To shut the heating off, fully press the heating slide valve.



Other Activities

Turning on the Vent System

- To ventilate the cabin, switch on the fresh air blower switch.

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

- Range 1 slow
- Range 2 fast (for summer)

☞ ***NOTE***
There are 2 air nozzles (2, 3) under the dashboard.

Air Conditioner

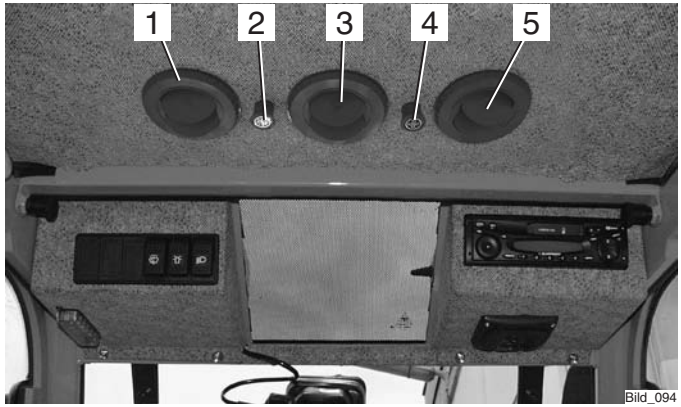
Operation the Air Conditioner*

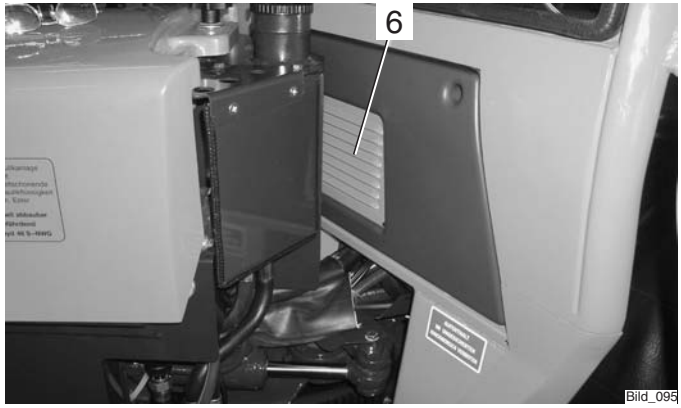
NOTE
A separate operating manual is supplied for the air conditioner.
Please observe this when operating.
The air conditioner is protected with an own 25 A fuse located behind the access hatch (6) of the cabin.

Air Conditioner*

1 Adjustable air vent nozzle
2 Temperature control with On/Off switch
3 Adjustable air vent nozzle
4 Switch for 4-speed blower
5 Adjustable air vent nozzle

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





* Option

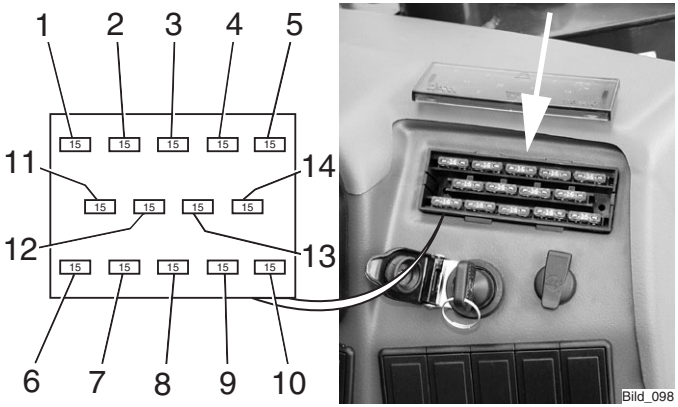
Other Activities

Fuses

CAUTION
Before any work on the electrical equipment disconnect the battery.

Fuses for the Tractor

NOTE
The fuses for the tractor are installed at the instrument panel at the right-hand side. To gain access, remove the cover.



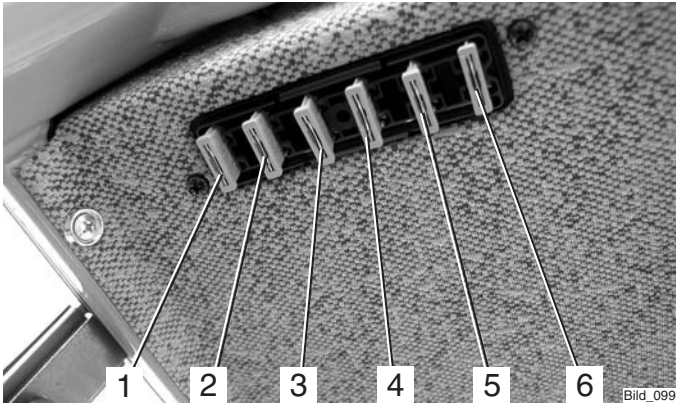
1 hazard warning flasher system / windshield washer pump
2 Sidemarker light 58R/multi-function display light/ auxiliary lighting 58R
3 Sidemarker light 58L, auxiliary lighting 58L
4 Dip beam
5 High beam/high beam indicator
6 Stop light/elect. seat adjustment/pressurizing valve differential lock
7 Radio
8 Heater blower motor/multi-function display
9 Digital display for driving speed/PTO
10 Magnet. hydraulic valve for circulating oil; multi-function lever
11 Horn/engine shutdown
12 2-pole socket/headlight flasher
13 Turn signal indicator
14 Complete supply directional gearbox

Fuses for the Cabin

NOTE
The fuses for the cabin are located on the console at the top left.
To gain access, remove the cover.

Cab Fuses

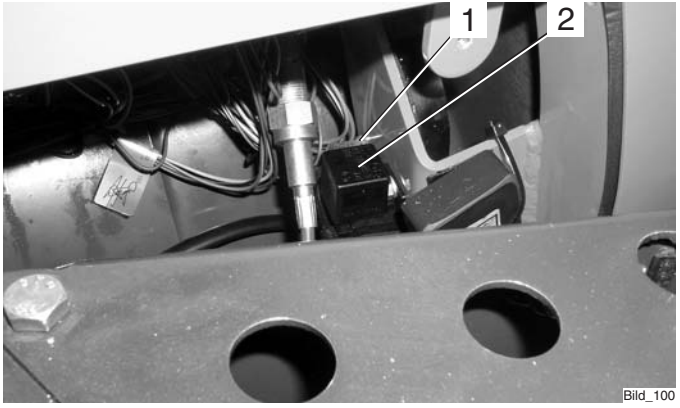
1 Front wiper/washer system 10 A
2 Rear wiper/washer system 10 A
3 Interior light 10 A
4 Cigarette lighter/Radio 10 A
5 Spare 10 A
6 Rotating beacon/flood light rear 10 A



Fuse for Air Conditioner*

NOTE
The fuse for the air conditioner is located in the compartment at the left in front of the cabin.
To gain access, screw off the front cover of the cabin.

1 Fuse 25 A
2 Air conditioner relay



* Option

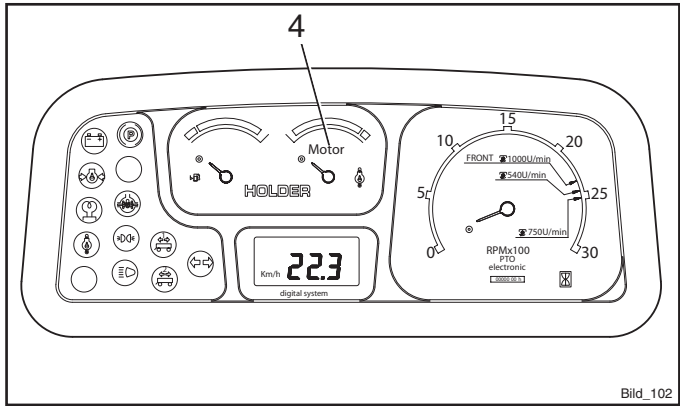
Taking out of Operation

Leaving the Tractor

Stopping the Tractor

- Lower the implement completely.
- Engage the parking brake.
- Push in the hand throttle (3) fully (idle position).
- Set the gearshift lever (1) to 0.
- Range selector lever (2) to 0.

ATTENTION
If the engine is overheated (engine temperature gauge (4) 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!



Taking out of Operation

Parking

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

- Engage the parking brake.
- Select low gear.
- Turn the ignition key (1) to the left to 0. The engine is shut down.
- Remove the ignition key and take it along.

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

Leaving the Tractor

- Lock cab door(s) with key.
- If necessary, secure the tractor against rolling with chocks.

Trailers, Towing

Your tractor can tow the following trailers:

Table of Trailers

Type of Trailer	Maximum Total Weight	Braking System
Single axle trailer	1.6 t	without braking system
Single and multiple axle trailer	up to 2.5 t	with own brake system, if the trailer brake lever can be mounted close to the drivers seat and easily accessible
Single axle trailer	up to 3 t	with overrunning brake
Multiple axle trailer	up to 3 t	with brake system plus parking brake and rapid emergency brake
Trailer	up to 3 t	with hydraulic or pneumatic brake system

☞ ***NOTE**: A pneumatic braking system is available as option.*

The following trailer combinations are allowed:

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

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

Trailers, Towing

Operating the Trailer Hitch, Attaching Trailers

- Adjust the height of the trailer hitch (2) at the adjustment rail (3) so that the trailer tiller can be attached horizontally.
- To adjust, pull fastening bolt (4) and reposition hitch, insert fastening bolt and secure with linch pin.

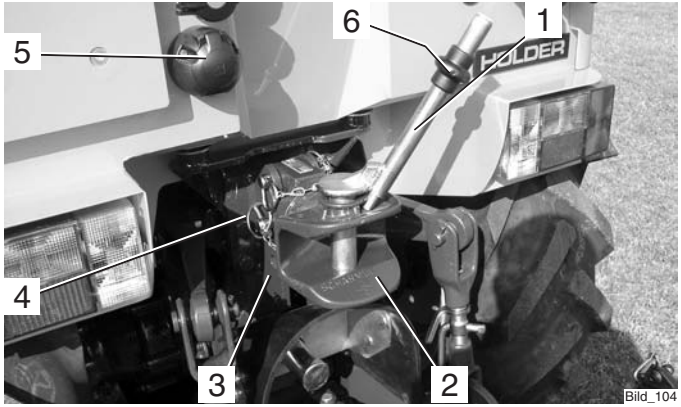
Bearing Load

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 tractor in front of the trailer to be attached.

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

- Pull the release ring (6) up and pull the hitch-bolt (1) out off the hitch (2).



DANGER
Be sure no one is standing between the tractor and trailer.

- Drive the tractor with the hitch to the trailer tiller.
- Insert the hitch-bolt and lock it.
- Connect the trailer lighting to the socket (5).
- Remove the wheel chocks from the trailers.

Driving with Trailers

- Switch the range selector lever in position S, M or L. The tractive force is the greatest in position L.
- Drive the tractor as described in section "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.

Transport, Loading, Towing

Instructions for Transport

- Drive the tractor on the means of transport.
- Park the tractor as described in section "Leaving the Tractor".
- Secure the tractor against rolling with chocks at the wheels and, if needed, with wood blocks at the sides to prevent it from sliding.
- Lash the tractor at the front to the upper link support (1), at the rear to the towing device (2).

Instructions for Loading

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

- The towed load must not exceed the permissible total weight.

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

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

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

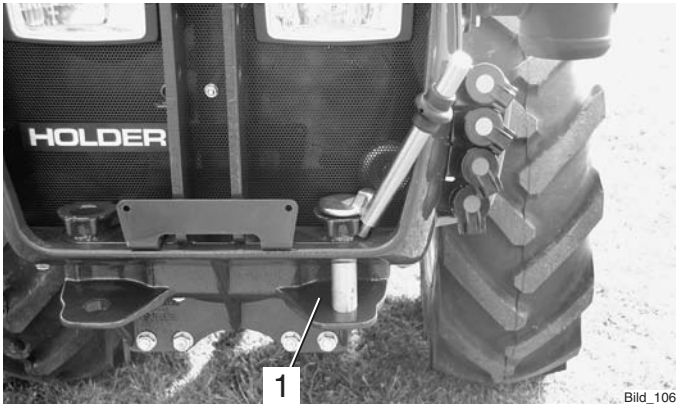
Transport, Loading, Towing

Instructions for Towing

If your tractor can not drive on its own power because it is damaged, it can be towed. Use the front hitch left or right of the engine 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 (in case of failure of the brake only a rigid tow bar) to the trailer hitch (1) and lock it.
- Set the forward/reverse selector lever to the centre position (no direction of travel selected).
- Shift the gear and range selector lever to neutral.
- Let the engine run so that the power steering is in operation.



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.

- Tow the tractor with a maximum speed of 10 km/h to the nearest authorized workshop.
- Park the tractor secured against rolling.

Indicators, Adjustments

Adjusting the Speedometer

The adjustment of the speedometer in the multi-function display is required when changing from large to smaller tyres and vice versa.

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

Indication of Special Operating Conditions

The built-in horn indicates the following condition:

- dirty air filter.

The built-in buzzer indicates the following condition: (only when engine is running)

- Turn signal indicator
- Hazard warning light
- Differential lock
- Oil temperature of engine from 130°C on
- Oil pressure of the engine
- Engaged parking brake (only when driving)

Problems, Cause, Remedy

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.

Problems in Engine and Exhaust Gas Turbocharger

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

Problems, Cause, Remedy

Problems in the Hydraulic System and Steering

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

Problem	Cause	Remedy
Lifter or hydraulic cylinders not lifting, although control valve can be moved normally. No build-up of pressure (steering working normally).	Pressure relief valve jammed due to foreign objects.	Remove and clean slide valve plate HDS 11T15, but do not change the pressure setting!
Loss of lifting power.	Pressure setting too low. Oil level too low.	Reset pressure with pressure gage (190 bar)! Fill up specified type of oil!
Operating pressure is only reached with high RPM.	Pump defective.	Replace pump!
Manual control valve jammed.	Radial torosion. Dirt	Tension screws too tight or not all tightened to the same torque. Maximum torque 25 Nm (2,5 mkp). Remove and clean valve!

Problems, Cause, Remedy

Problem	Cause	Remedy
Hydraulic oil heats too quickly, system works against excess pressure. (engine unter load).	Control valve jammed. Control lever does not automatically return to neutral position. (Does not automatically return to neutral position.) Cylinder at limit stop. No implement attached, but control lever operated (coupling).	Adjust as above! Put valve in neutral position (free circulation)! Put valve in neutral position (free circulation)!
Hydraulic oil foams.	Leaks in the suction range.	Check all pipe connections and tighten, if required!
Hydraulic system working too slowly, accompanied by whistling noise.	Hydraulic oil level too low. Temperatures too low.	Fill up as specified! Replace with proper type of oil as specified in maintenance manual!
Steering not working.	Priority flow valve dirty. Relief valve in hydraulic steering not closing.	Remove the priority flow valve at the steering and clean it! Remove and clean (authorized workshop)!
Lost steering motion when steering direction is changed rapidly.	Leaks in steering return line.	Tighten return flow hose!

General Remarks on Maintenance

To keep your tractor always in peak condition, we would ask you to study the information in this maintenance manual very carefully. These chapters contain all the information you need for a conscientious treatment and care of the tractor. Take care to have your tractor serviced at the proper intervals.

Service

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

Gebrüder Holder GmbH
P. O. Box 15 55
D-72545 Metzingen/Württ.

Warranty and product liability can only be claimed if the maintenance services and inspections have been carried out punctually and regularly.

Qualification of Service Personnel

The tractor, 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 Tractor?

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

Service Hours	Kilometers Driven
1	50
10	500
150	7500
300	15000
600	30000
1500	75000

General Remarks on Maintenance

Services and Inspections

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
125			
250			
375			
500			
625			
750			
875			
1000			
1125			
1250			
1375			
1500			

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

Handling Fuels and Lubricants

- Fuels and lubricants must always be handled properly and as specified by the manufacturer.
- Fuels and lubricants 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 fuels and lubricants.
- When using fuels, lubricants 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.

General Remarks on Maintenance

- 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 instructions in this maintenance manual 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.

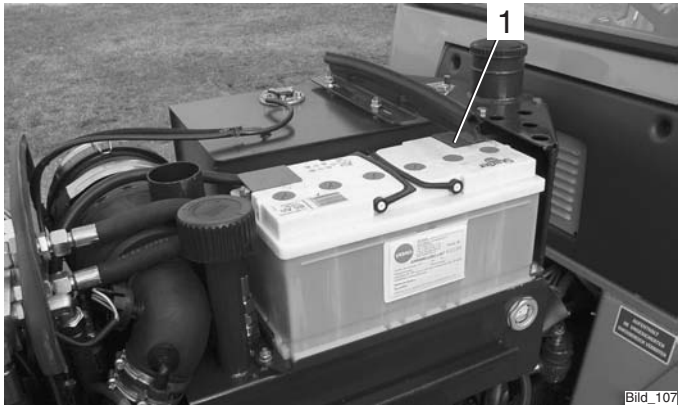
General Remarks on Maintenance

- Do not run engine in enclosed spaces! Danger of poisoning!
- To prevent the danger of fire, keep the tractor and implements clean!
- When leaving the tractor, secure it against rolling and unauthorized use (parking brake, chocks), stop the engine, remove the ignition key and, if required, lock the cabin.
- Do not leave the tractor unattended on roads as long as the engine is still running.
- If external current consumers 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 tractor frame, axles, trailer hitch, etc.
- The mounting of tyres requires sufficient knowledge and special mounting tools.
- Only use genuine spare parts or qualitatively equivalent, commercially-available parts. Use the parts in the list of maintenance parts in the chapter entitled „Maintenance Data“.
- Before taking into service and after servicing or repair, the tractor and the implement must be checked for road worthiness and operating safety.
- Brakes may be readjusted, but have the brake lines replaced by your authorized workshop.

Work on the Electrical Equipment

CAUTION
Disconnect the battery ground lead (1).

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



General Remarks on Maintenance

Jack lift points

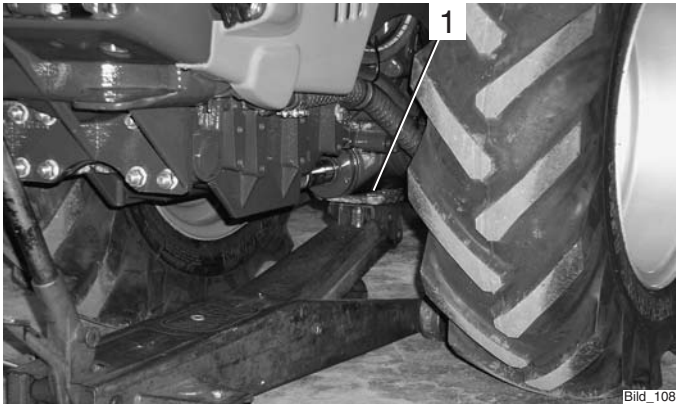
Jacking up

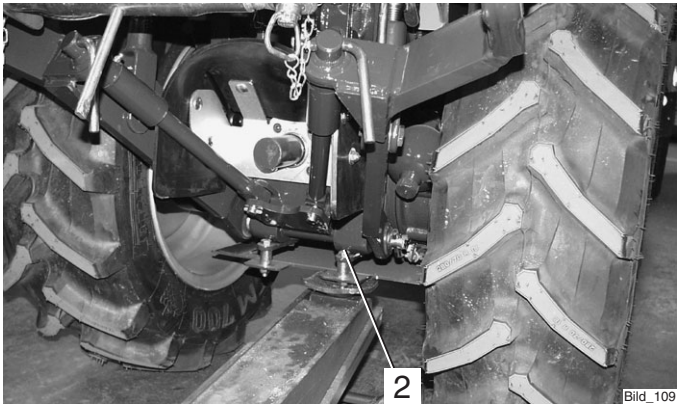
DANGER
When using the jack, be sure the tractor is shut down and secured against rolling (chocks)!

The tractor 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 tractor must also be secured against lowering with supports. Place the supports under the axles on both sides.





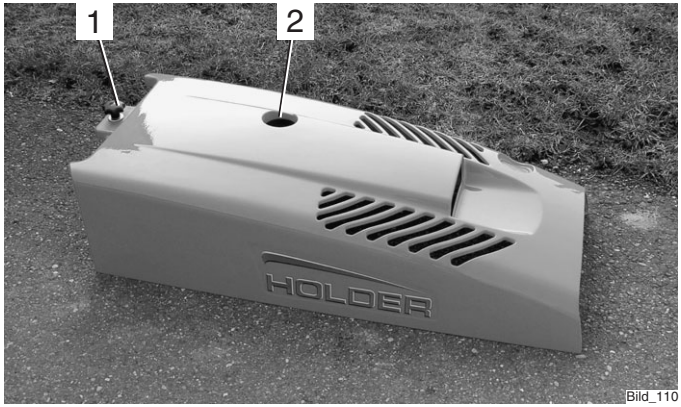
Removing the Hood

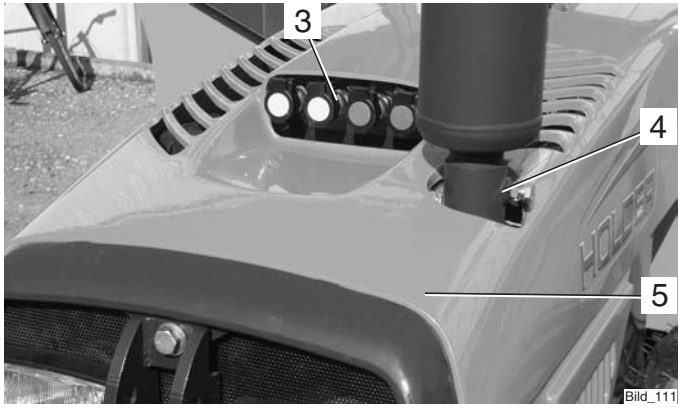
Before working in the engine compartment the hood has to be removed.

- Remove air intake nozzle (2).
- Depending on the model you may have to remove also the exhaust muffler (4).

CAUTION
Do not touch hot exhaust muffler with hands unprotected.

- Untie knurled nut (1).
- Pull hood backward until the edge of the hood (5) comes out of it's guide.
- Lift hood slightly and slide to the front. Do not damage the hydraulic couplings (3).
- Remove the hood.





Maintenance Schedule

Maintenance during the first period of operation

Interval	Service and Inspection	See Page
Maintenance after the first 50 service hours	Check engine for leaks	137
	Check hydraulic oil level	50
	Renew hydraulic oil filter (pressure filter for implement hydraulics)	153
	Check clutch	146
	Check brake system	146
	Lubricate tractor	147, 157
	Retighten screws and studs	148
	Retighten wheel nuts	148
Maintenance after the first 150 service hours	Change gear oil of front gearbox	159
	Change gear oil of rear gearbox	161
Maintenance after the first 500 service hours	Change hydraulic oil for implement hydraulics	163
	Clean hydraulic oil suction filter of implement hydraulics, change if necessary	164

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

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

Maintenance Schedule

Regular Maintenance

	Service and Inspection
Maintenance as required	Adjust speedometer Check air cleaner system Adjust parking brake Adjust operating brake
Periodic maintenance	
Maintenance every 125 service hours	Check cooling system Clean cooling system Check battery and cable connections Check hydraulic oil level, see page 50 Check high pressure hoses Check steering cylinder and orbitrol Check clutch fluid level Check air hoses for leaks Check clutch Check PTO clutch Check brake system Lubricate tractor Retighten screws and studs Retighten wheel nuts Check electrical system Clean fresh air filter
Maintenance every 500 service hours	Change engine oil Change engine oil filter Check hose couplers for leaks Change hydraulic oil pressure filter (implement hydraulics) Check heater

Maintenance Schedule

Periodic Maintenance	Service and Inspection
Maintenance every 1000 service hours	Check valve play Check battery Check V-belt tension and condition Change fuel filter Clean or replace the fuel pump strainer Lubricate cardan shaft nipples
Maintenance every 1500 service hours	Change gear oil of front gearbox (including offset axles) Change gear oil of the rear gearbox (including epicycloidal gear of the axles) Change hydraulic oil for implement hydraulics Clean hydraulic oil suction filter of implement hydraulics, change if necessary
Maintenance every 3000 service hours	Check injection nozzles Change toothed belt
Annual maintenance	Examine hydraulic oil samples of implement hydraulics
Maintenance every 2 years	Change hydraulic oil for implement hydraulics

Maintenance during the First Period of Operation

During the first period of operation the following services and inspections are due:

Maintenance after the first 50 service hours
Maintenance after the first 150 service hours
Maintenance after the first 500 service hours

Maintenance after the First 50 Service hours

Checking the Engine for Leaks

- Remove the hood.
- Check the engine and implements for leaks.

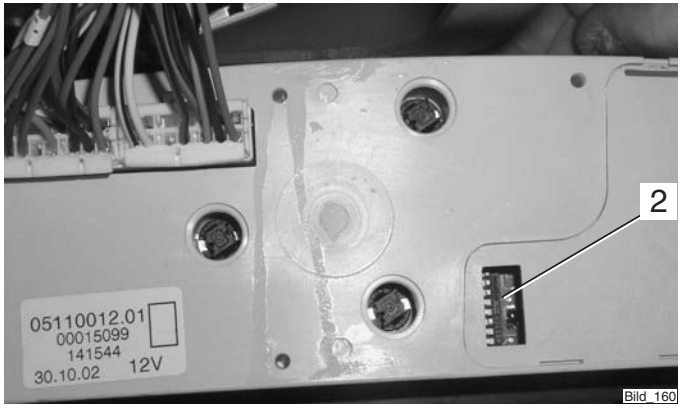
Carry out the further services in accordance with the maintenance schedule. You can find the description of the services in the maintenance schedule page reference or in the alphabetical index.

Maintenance as Required

Adjusting the Speedometer

The adjustment of the speedometer in the multi-function display is required when changing from large to smaller tyres and vice versa.

- Pull the multi-function display (1) out and rotate it.
- Remove the cover from the combination switch (2) on the back.
- Set the 6 of 8 toggle switches to the positions shown in the table as required for the size of your tyres.



Maintenance as Required

Tyre Size	Type	Switch Arrangement Combination 1	2	3	4	5	6	7	8
275/80 R18	4131-14 u. 422-31-2	0	1	0	0	0	1	-	-
10.5-18 MPT	4131-22 u. 422-31-3	0	1	0	0	0	1	-	-
320/65 R18	422-31-4	0	1	0	0	0	1	-	-
250/80-18		0	1	0	0	0	1	-	-
400/55-17.5		0	1	0	0	0	1	-	-
400/60-15.5		0	1	0	0	0	1	-	-
7.50 R18	4131-17	0	1	0	0	0	1	-	-
280/70 R18	422-31-1	0	1	0	0	0	1	-	-
350/60-17.5	4131-11	0	1	0	0	0	1	-	-
33x12.5-15	4131-19	0	1	0	0	0	1	-	-
33x15.5-15	4131-18	0	1	0	0	0	1	-	-
33/16LLx16		1	0	1	0	0	1	-	-
31x11.50 R15	203-31-1	1	0	1	0	0	1	-	-
31x15.5-15	4131-8	1	0	1	0	0	1	-	-

Switch positions 7 and 8 have no functions.

Checking the Air Cleaner System

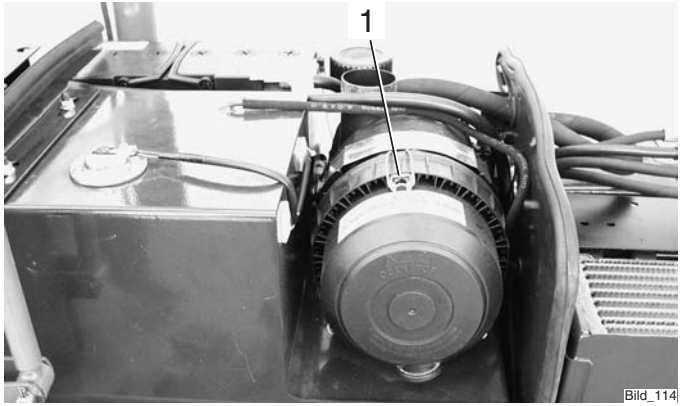
The filter cartridge must be serviced when the flow resistance of the filter is highest due to the restriction of the element.
This is indicated by the sounding of the horn.

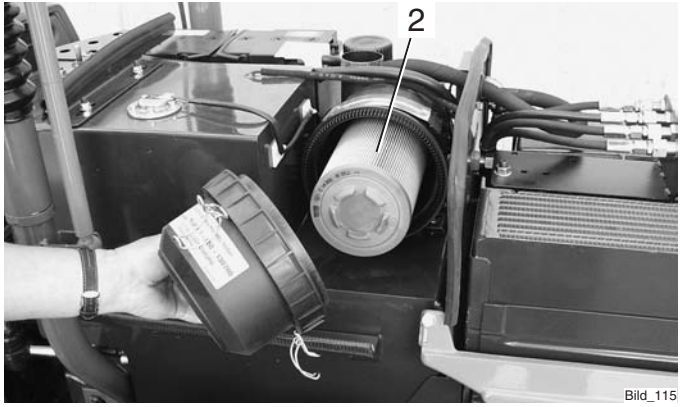
- Switch off the engine.
- Remove the hood.
- Open the three air filter cover clips (1).
- Pull down housing cover.
- Pull the air filter cartridge (2) out of the housing by rotating it slightly.

Cleaning:
- Blow out air filter cartridge from the inside with maximum 5 bar air pressure.

Replacement:
- Install a new air filter cartridge.

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



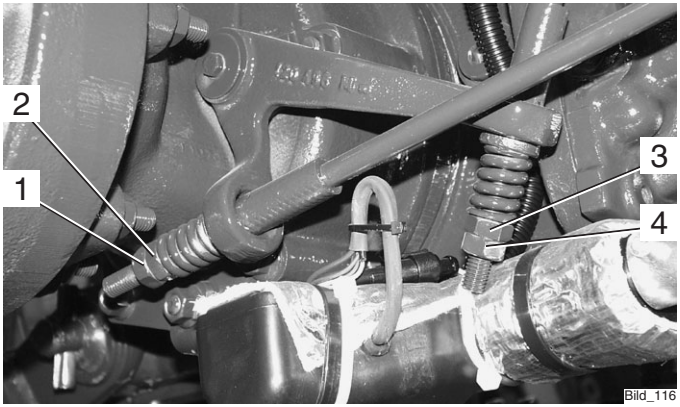


Maintenance as Required

Readjusting the Brakes

ATTENTION
Readjusting the brakes may only be done by qualified personnel.

ATTENTION
Readjusting the brakes must be performed on both sides.



- Untie the locknut (1) of the service brake.
- Readjust the brake by turning the readjustment nut (2).
- Tighten the locknut (1) firmly.
- Untie the locknut (4) of the parking brake.
- Readjust the brake by turning the readjustment nut (3).
- Tighten the locknut (4) firmly.

Maintenance According to Intervals

Maintenance every 125 Service hours

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

Checking the cooling system

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

Cleaning the Cooling System

Cleaning with Compressed Air

- Remove the hood.
- Remove the cover at the right-hand side of the engine.
- Blow out dirt from the engine compartment outward, with special care on the radiator and radiator fins (start from the front side). Remove dirt from the engine compartment.

Cleaning with Cold Cleaner or Water Jet

ATTENTION
Maximum spray pressure 60 bar, maximum steam temperature 60 °C


Bild_117

- Remove the hood.
- 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.

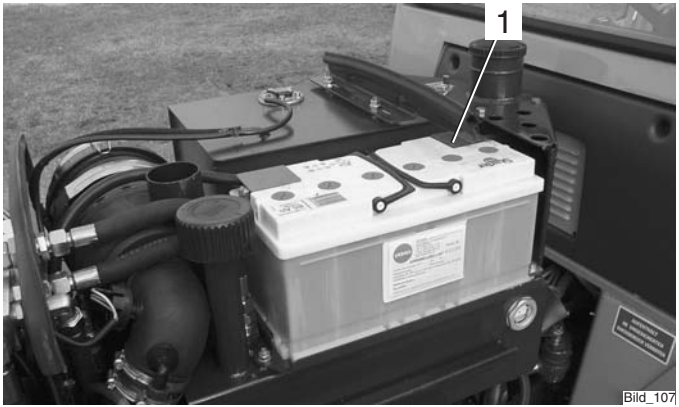
ATTENTION
Do not aim the water jet directly at sensitive parts such as the alternator, cover them if necessary.

- Run the engine warm to prevent the formation of rust.

Maintenance every 125 Service hours

Checking the Battery and Cable Connections

CAUTION
When working on the electrical equipment, always disconnect the ground lead (1) of 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 terminals.
- Grease the battery terminals with non-acidic battery grease.
- Check cables and cable connections for secure connection and damage.
- Replace any damaged cables and cable connections.

Checking 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.

Maintenance every 125 Service hours

Checking 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.

Checking the Clutch Fluid Level

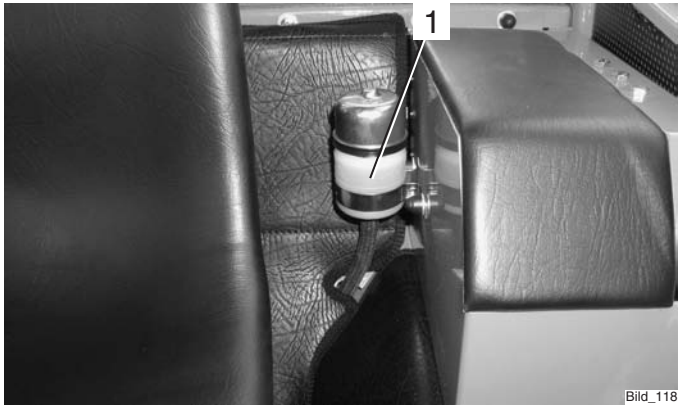
- Check the brake fluid reservoir for the clutch (1). The brake fluid level must be between the markings.
- To fill brake fluid, unscrew the reservoir cap (1) and fill recommended brake fluid as far as the marking.

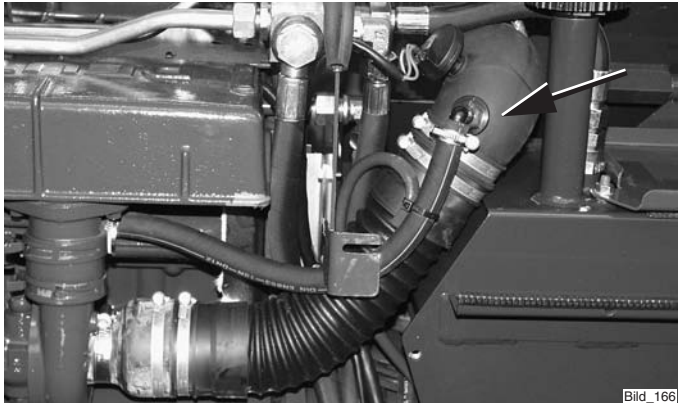
Filling quantity .....approx. 0.25 l

ATTENTION
Do not mix different kinds of brake fluids.

Checking the Air Hoses for Leaks

- Check air hoses for cracks, chafing, and porous surfaces. Replace damaged air hoses immediately.





Maintenance every 125 Service hours

Checking the clutch

- Have the clutch pedal play (2) checked by an authorized workshop.

Checking the PTO Clutch

Have this work carried out by an authorized workshop.

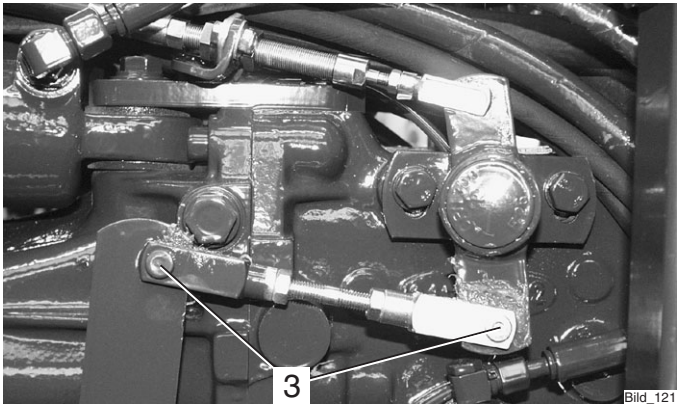
- Check the linkage rod (3) for easy movement. The clevises should not be too tight or have too much play.

Checking the Brake System

DANGER
Do not operate the tractor with a defective braking system!

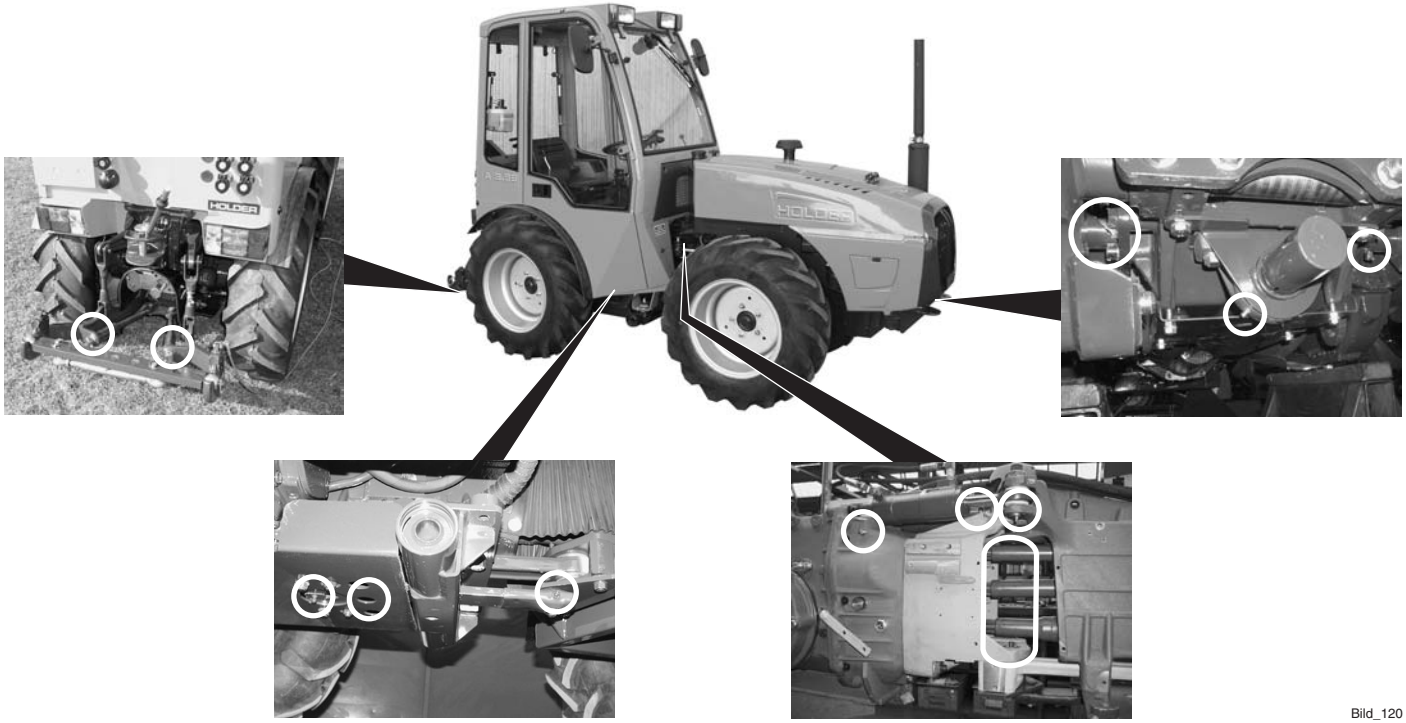
- Carefully apply the parking brake while driving. The tractor should be braked noticeably.
- Depress the foot brake pedal (1) while driving slowly. The tractor should brake strongly.

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



Tractor Lubrication

- Lubricate the grease nipples according to the lubrication chart. Only use recommended grease.



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Maintenance every 125 Service hours

Retightening the Nuts and Bolts

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

Retightening the Wheel Nuts

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

Torque ..... 215 Nm

Checking the Electrical System

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

- Remove the hood.
- Check cables, plugs and cable ducts for damage and security.
- Have any damaged parts replaced by an authorized workshop.

Maintenance every 125 Service hours

Cleaning the Fresh Air Filter

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

Maintenance every 500 Service hours

Changing the Engine Oil

- Run engine warm to operating temperature.
- Set the heating control (if available) to high.
- Place the tractor 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.

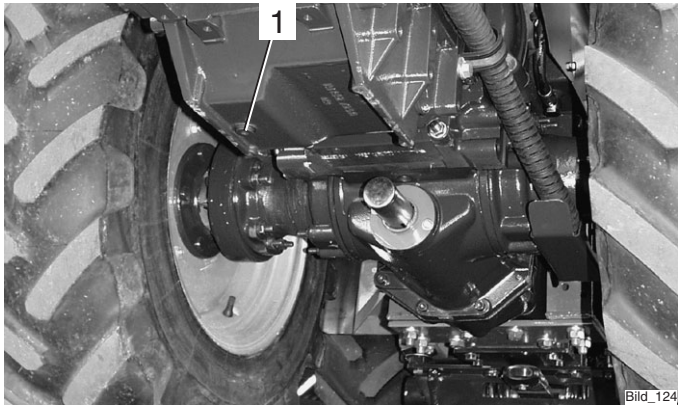
- Unscrew the oil drain plug (1).
- Allow the oil to drain completely.

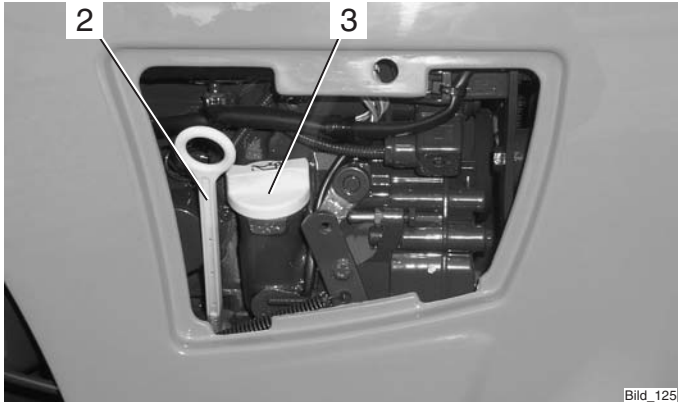
ATTENTION
Observe the instructions for handling fuels and lubricants.

- Screw the oil drain plug in again with a new gasket and tighten to a torque of 55 Nm.
- Fill new engine oil at the filler neck (3). Only use recommended engine oil.

Filling quantity with heating ..... 8.25 L
Filling quantity without heating ..... 7.50 L

- Let the engine idle shortly.
- After approx. 1 minute, check the oil level with the dipstick (2).



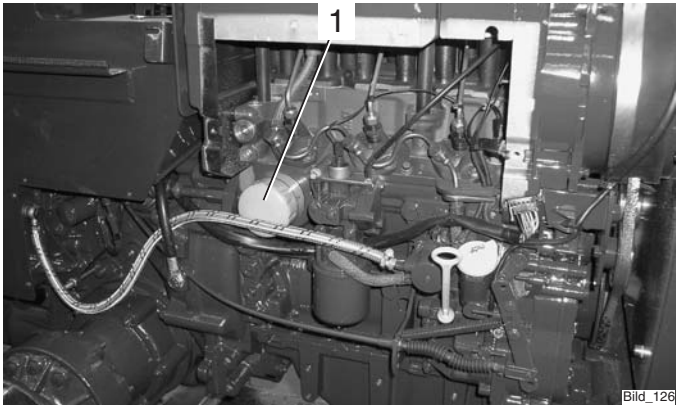


Maintenance every 500 Service hours

Changing the Engine Oil Filter

See the operating manual of the engine manufacturer.

- Drain the engine oil.
- Unscrew the air filter cartridge (1) with a filter wrench.



ATTENTION
Observe the instructions for handling fuels and lubricants.

- Clean the mating surface of the filter mount.
- Screw a new air filter cartridge with a new gasket in the filter mount until the seal makes contact.
- Tighten the air filter cartridge half a turn.
- Top up engine oil. Check the oil level.

Checking the Hose Couplers for Leaks

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

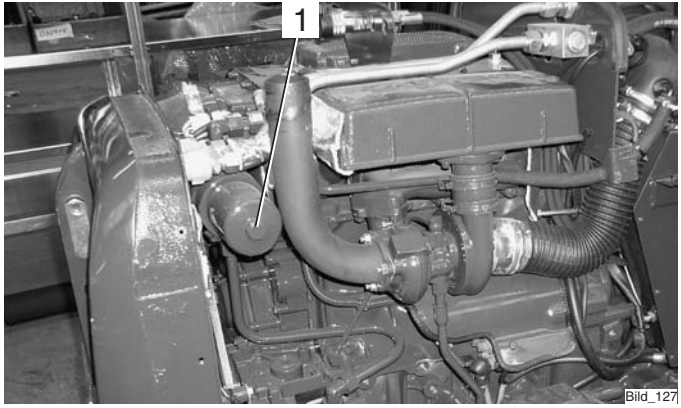
Maintenance every 500 Service hours

Changing the Hydraulic Oil Pressure Filter (Implement Hydraulics)

- Relieve any pressure in the hydraulic system by operating the control levers.
- Remove the air filter housing (1) with a 24mm wrench.

ATTENTION
Observe the instructions for handling fuels and lubricants.

- Clean the mating surface of the filter mount.
- Withdraw the pressure filter from the housing.
- Clean the housing.
- Coat the new gasket with oil.
- Insert the new pressure filter in the air filter housing.
- Screw the air filter housing with a new gasket in the filter mount.
- Make a trial run and check for leaks.
- Check the hydraulic oil level.



Maintenance every 500 Service hours

Checking the Heater

- Push heating slide valve (1) fully in "off"-position.
- Run the engine warm.
- Pull heating slide valve (1) fully in "on"-position.

- Set the heating blower switch (2) to stage 2. Warm air should flow out of the legroom heating nozzles.

Maintenance every 1000 Service hours

Checking the Valve Play

See the operating manual of the engine manufacturer.

Checking 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.

Maintenance every 1000 Service hours

Checking the V-belt Tension and Condition

See the operating manual of the engine manufacturer.

CAUTION
Adjust V-belt tension only when the engine is shut off.

- Inspect V-belts for cracks and tears over their 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 the V-belt: 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.

Changing the Fuel Filter

See the operating manual of the engine manufacturer.

- Remove the fuel filter cartridge with a filter wrench.

ATTENTION
Observe the instructions for handling fuels and lubricants.

- Clean the mating surface of the filter mount.
- Coat the new gasket with oil.
- Install and hand tighten the new filter cartridge with the new seal in the filter mount.

NOTE
The fuel system bleeding takes place automatically.

Cleaning/Replacing the Fuel Pump Strainer

See the operating manual of the engine manufacturer.

Lubricating the Cardan Shaft Nipples

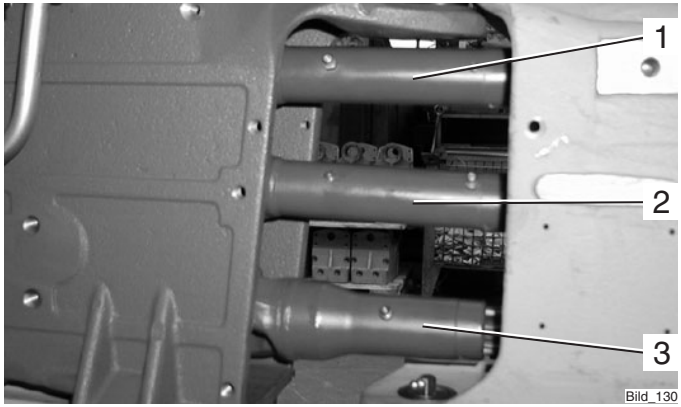
- Turn the steering wheel right or left until the steering stop is met.

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

- Remove the rubber protector.
- Adjust the top cardan shaft (1) by hand until the grease nipples are easily accessible.
- Grease the top cardan shaft.
- Move centre cardan shaft (2) 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 middle cardan shaft.
- Adjust the lower cardan shaft (3) by moving the tractor forward or back until the grease nipples are easily accessible.
- Grease the lower cardan shaft.
- Refit the rubber protector at the articulated joint.



Maintenance every 1500 Service hours

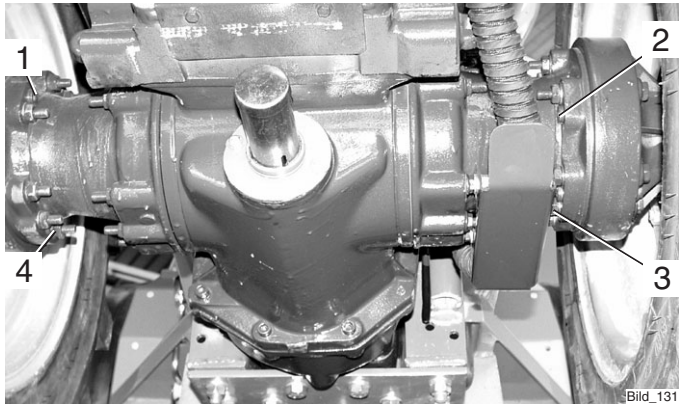
Changing the Front Gearbox Oil (including Axles)

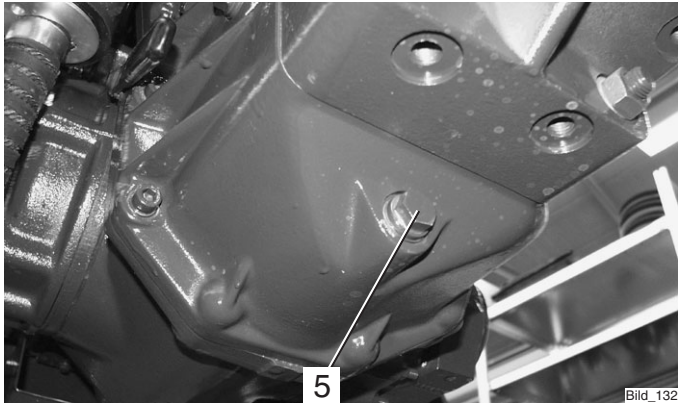
NOTE
Change the gear oil while still warm.

- Place the tractor on level ground.
- Unscrew the vent screws (1) and (2) at the front gearbox and clean them with Diesel fuel.
- Place a suitable catch pan beneath the gearbox.

CAUTION
Danger of scalding when draining of hot gear oil.

- Unscrew the oil drain plug (5) at the front gearbox and wash it with Diesel fuel.
- Unscrew the oil drain plugs (3 and 4) an the axles and clean them with Diesel fuel.
- Allow the oil to drain completely.
- Refit the oil drain plugs with new gaskets. Check for leakages.





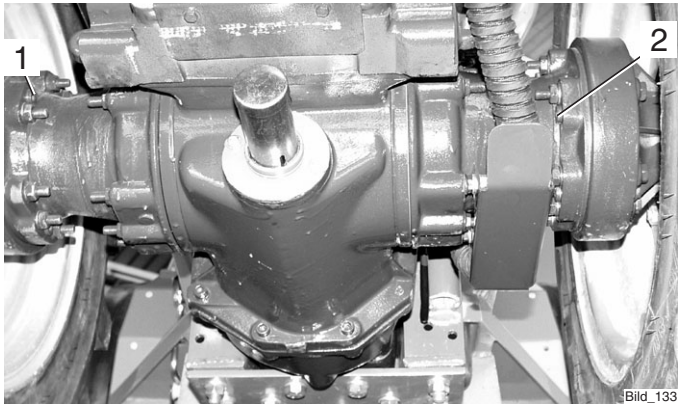
Maintenance every 1500 Service hours

Filling Oil

- Insert and tighten the vent screw (2) of the left axle with a new gasket. Check for leakages.
- Lift up the right side of the tractor. (at offset axles lift up rear)
- Unscrew sight glass (6).
- Fill recommended gear oil through the filler plug hole.

Filling quantity with offset axles ..... approx. 12.5 L
Filling quantity without offset axles ..... approx. 10,5 L

- Refit sight glass the with a new gasket and tighten it. Check for leakages.
- Place the tractor on level ground.
- Insert and tighten vent screw (1) of the right axle with a new gasket. Check for leakages.
- Check oil level at the sight glass (6).
  The oil level must be visible in the middle of the sight glass.



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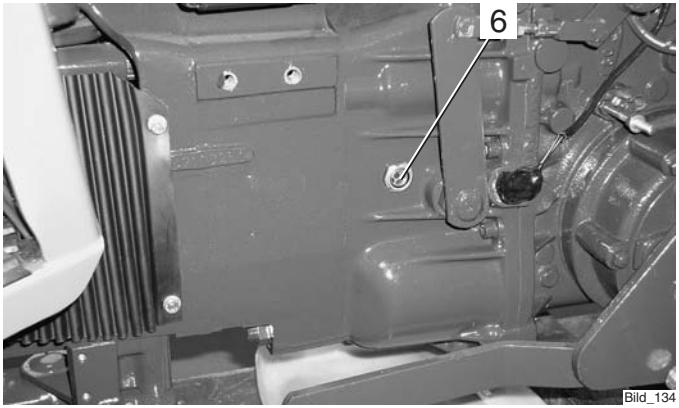

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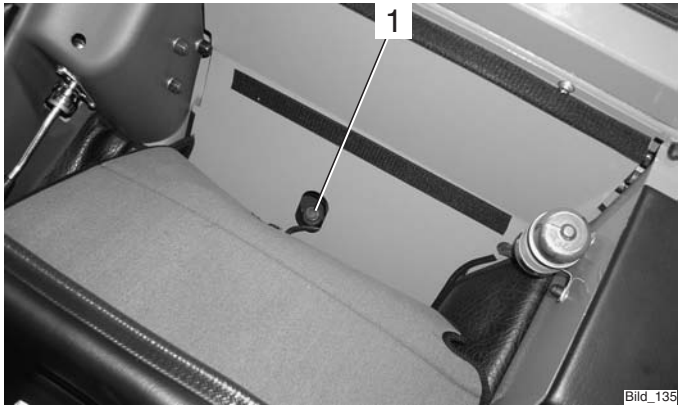
Changing the Gear Oil of Rear Gearbox (incl. Epicycloidal Gear of the Axles)

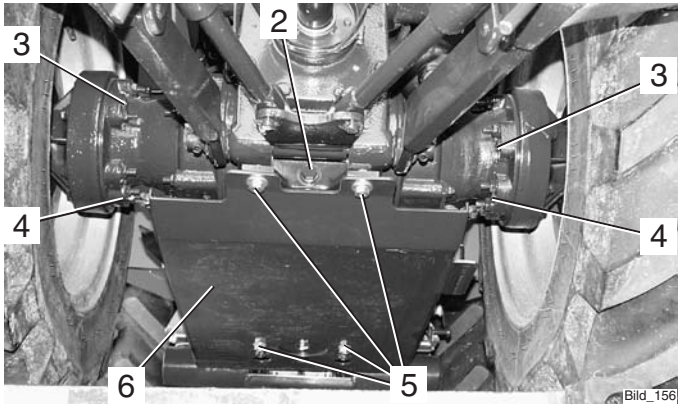
NOTE
Change the gear oil only when still warm.

- Place the tractor on level ground.
- Move driver's seat to the front.
- Unscrew the filler plug (1) at the rear gearbox and wash it with Diesel fuel.
- Loosen the nuts (5) and let down trough (6).
- Place a suitable catch pan beneath the gearbox.

CAUTION
Danger of scalding when draining of hot gear oil.

- Unscrew the oil drain plug (2) at the rear gearbox and wash it with Diesel fuel.
- Unscrew the oil vent screw (3) and drain plug (4) and clean them with Diesel fuel.
- Allow the oil to drain completely.



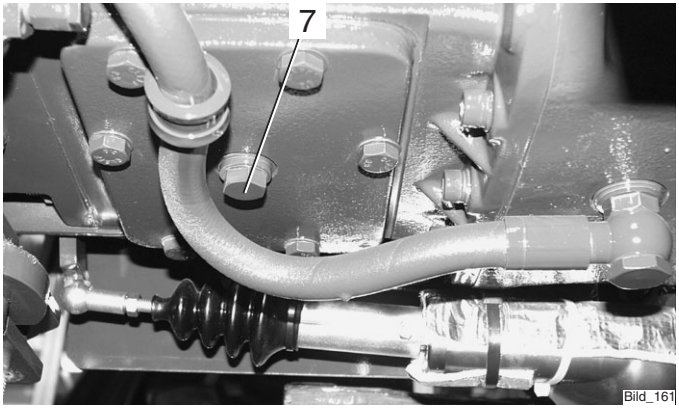


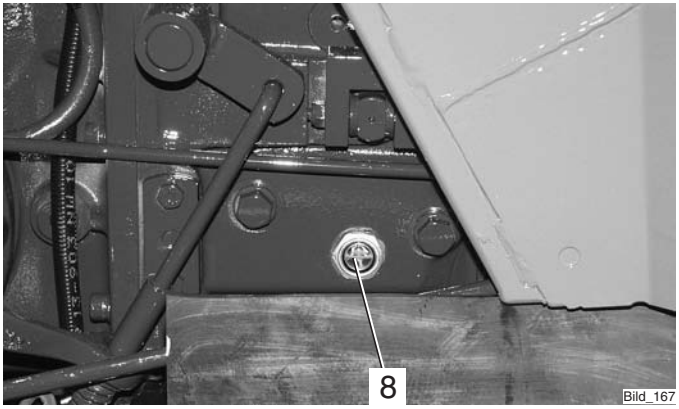
Maintenance every 1500 Service hours

- Unscrew the oil drain plug (7) of the epicycloidal gear and wash it with Diesel fuel.
- Allow the oil to drain completely.
- Refit the oil drain plugs with new gaskets. Check for leakages.
- Fill recommended gear oil through the filler plug hole.

Filling quantity ..... approx. 7,5 L

- Start the engine and let idle until oil bleeds from the vent hole (3).
- Shut off the engine and insert vent screws (3) with new gaskets.
- Check the oil level at the sight glass (8). Therefore remove rear right side cover. The oil level may only be at the middle of the sight glass when the truck is leveled horizontally.





Changing the Implement Hydraulics Oil

NOTE
Change the hydraulic oil while still warm.

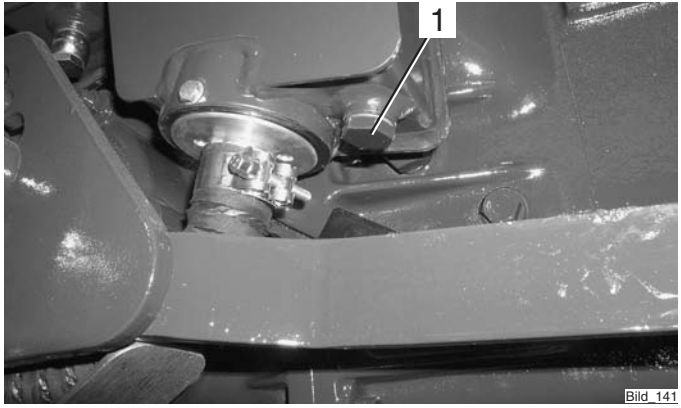
- Place the tractor on level ground.
- Remove the hood.
- Place a suitable oil container beneath the hydraulic oil tank.
- Relieve any pressure in the hydraulic system by operating the control levers.
- Move piston rods the hydraulic cylinders inward.

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.

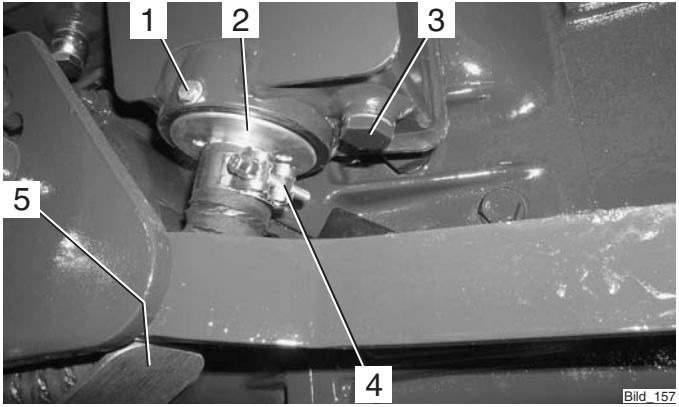
- Flush the hydraulic oil tank with clean hydraulic oil if necessary.



Maintenance every 1500 Service hours

Checking or Cleaning the Implement Hydraulics Oil Suction Filter

- Remove cover (5).
- Remove hose clamp (4) and pull down hose.
- Unscrew fastening screws (1) and pull out filter housing (2).



ATTENTION
Observe the instructions for handling fuels and lubricants.

Cleaning:

- Wash the sieve-star filter with clean Diesel fuel.

Replacement:

- Unscrew the sieve-star filter from the filter housing with a 50mm open-ended wrench.
- Screw the new filter with a new toroidal sealing ring onto the filter housing.
- Refit oil drain plug (3) with new gasket.

The installation of the suction filter is carried out in the reverse order of removal.

Maintenance every 1500 Service hours

- Fill recommended hydraulic oil through the filler neck (5).

Filling quantity ..... approx. 18 L

- Check the oil level at the sight glass (6).
- Refit the filler neck cap.
- Start the engine. Operate the implement hydraulics and steering.

☞ ***NOTE***
The hydraulic system is vented automatically.

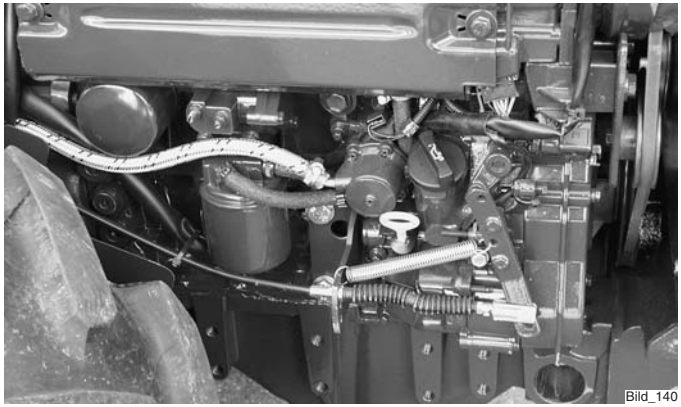
- Shut off the engine and relieve any pressure in the hydraulic system.
- Check for leaks.
- Check the oil level at the sight glass (6). Add hydraulic oil if necessary.

Maintenance every 3000 Service hours

Checking the Injection Nozzles

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

- Clean the fuel injector nozzles.
- Check the fuel injector nozzles with a test pressure of 210 +8 bar.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Changing the toothed belt

See maintenance manual 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.

Annual Maintenance

Examination of Hydraulic Oil Samples of Implement Hydraulics

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

- Drain a small quantity of hydraulic oil from the hydraulic oil tank for the implement hydraulics.
- Have the oil tested by an authorized workshop/test lab for wear, abrasion chips and contamination.
- If the oil is contamined, it must be changed. If not, the oil can be used until the maximum of 1500 service hours is reached or for another year, whichever comes first.

Maintenance every 2 Years

Changing the Implement Hydraulics Oil

See "Maintenance every 1500 Service hours".
The hydraulic oil must be changed at least every 2 years, even if 1500 service hours were not reached.

Laying Up

If the tractor 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 tractor 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 tractor.
- 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. relation of Diesel fuel 90 %, anti-corrosion oil 10 %.
- Run the engine for 10 minutes.
- Switch off the engine.
- Turn the engine over a few times by hand.
- Block up the intake opening and exhaust outlet.

ATTENTION
The tractor must be blocked up so that all the wheels are off the ground to prevent a permanent deformation of the tyres.

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

Putting the Tractor back in Service after Lay-up

If the tractor 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 tractor.

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

Laying Up

Removing Engine Preservation

- Unblock the intake opening and exhaust outlet.
- 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 "Changing the Engine Oil" on how to proceed further.

- Check the hydraulic oil for condensation water, change the oil if necessary.
- Perform the services and inspections as for before taking into service.
- Refill the fuel tank.
- Replace the brake fluid for the clutch.
- Take the tractor in operation.

When taking the tractor into service, particularly check:
- Gearboxes and axles for leaks.
- Gearbox and steering.
- Brakes (service brake, parking brake).
- Implement hydraulics, functions and work movements.

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

Recommended Oils and Fuels

Recommended Hydraulic and Gear Oils

Manufacturer	Hydraulic-Oil HE Oils (Hydr. Ester)	Gear Oils for Directional Gearbox 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 46	-----
BECHEM	Hydrostar HEP 46	-----
BP	Biohyd SE 46 – S	BP Hydraulic TF - JD
BAYWA	Plantosyn 3268 ECO	-----
BUCHER	Motorex Biosynt 3268	Farmer 304 JD-M20C
DEA	Econa E 46	-----
ESSO	Univis HE – ES 46	Unifarm 15W - 40
ELF	Hydrelf Bio 46	-----
Total	Total Biohydran TMP	Total Multiagri Super 10W-30
FUCHS	Plantohyd 46 S-NWG	-----
OEST	Bio Synthetik HYD 46	-----
SHELL	Naturelle HF – E 46	Shell Harvella T 10W-30
VALVOLINE	Valvoline Ultraplant	------

Recommended Oils and Fuels

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	Recommended Lubricating Oil	SAE Class	Greases, Penetration Ratio 260 - 290
AGIP	Agip Sigma Ultra TFE	10W-40	Agip GR MU 2
AGIP	Autol Valve Ultra FE	10W-40	
ARAL GmbH	Aral Mega Turboral	10W-40	Multi-purpose grease
ARAL GmbH	Aral Super Turboral	5W-30	Long service grease H
BAYWA	BayWa Super Truck 1040 MC	10W-40	Baywa multi-purpose grease 2
BAYWA	BayWa Turbo 4000	10W-40	Special grease FLM
CASTROL GmbH	Castrol SYNTRUCK	5W-40	Castrol LM
CASTROL GmbH	Castrol DYNAMAX	7,5W-40	
CHEVRON	Chevron Delo 400 Synthic	5W-40	
ESSO	Essolube XTS 501	10W-40	Esso Beacon 2 multi-purpose grease
FINA	Fina Kappa First	5W-30	Fina Marson L2
FINA	Fina Kappa Ultra	10W-40	Fina Marson EPL 2
FUCHS DEA	Dea Cronos Synth	5W-40	Glissando 20
FUCHS DEA	Dea Cronos Premium LD	10W-40	Glissando 283 EP 2
FUCHS DEA	Fuchs Titan Cargo MC	10W-40	Renolit LZR 2
FUCHS DEA	Deutz Oel TLL 10W- 40MB	10W-40	
FUCHS DEA	Dea Cronos Premium FX	10W-40	
FUCHS DEA	Fuchs Titan Unic Plus MC	10W-40	

Recommended Engine Oils and Lubricants, continued

Manufacturer	Recommended Oil	SAE Class	Greases, Penetration Ratio 260 - 290
MOBIL OEL MOBIL OEL MOBIL OEL	Mobil Delvac 1 SHC Mobil Delvac 1 Mobil Delvac XHP Extra	5W-40 5W-40 10W-40	Mobilgrease MB 2
BP OIL International	BP Vanellus HT Extra	10W-40	BP Energrease LS 2 BP Multi-purpose grease L2
Shell International	Shell Myrina TX/ Shell Rimula Ultra	5W-40	Retinax EP2
Shell International	Shell Myria TX/ Shell Rimula Ultra	10W-30	
TOTAL	Total Rubia TIR 8600	10W-40	
Wintershall	TFG	10W-40	

Brake Fluid

ATE Brake Fluid SL / DOT 4

DANGER
Do not use any 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.

Maintenance Data

Filling Quantities	A 5.58	A 5.58 P
Engine oil including filter cardridge without heater Engine oil including filter cardridge with heater	7.75 L 8.5 L	7.75 L 8.5 L
Front gearbox with axles, gear oil Initial filling	10.5 L 14.5 L	12.5 L 18.5 L
Rear directional gearbox with axles, gear oil Initial filling	7.5 L 8.5 L	7.5 L 8.5 L
Creep gear, gear oil	1.3 L	1.3 L
Implement hydraulics, hydraulic oil*	approx. 18 L	approx. 18 L
Breake fluid for hydraulic clutch	0.25 L	0.25 L
Fuel tank, Diesel fuel	51 L	51 L

☞ **** NOTE***

In order to ensure the biological degradability of the hydraulic oil, all implements connected to the tractor hydraulic system must also be operated with HE oils. Residual quantities of mineral oils reduce the biological degradability, but do not influence operation.

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

Gearbox, Axles, Wheels	Tightening Torque
Hexagon screws M 10 (orbitrol to steering support)	40 Nm
Tension screws for hydraulic control valves	25 Nm
Axle housing to gearbox	49 Nm
Axle housing cover M 10 (planetary gears)	69 Nm
Pendelum bearing M 12	86 Nm
Pendelum limit stop M 16	210 Nm
Hitch bar for hitch coupling M 14	135 Nm
Wheel nuts (incl. wheel hub spacers)	215 Nm

Engine	Tightening Torque
Idler/drive belt	45 Nm
Cylinder head cover	9 ± 1 Nm
Rocking lever adjustment screw	20 ± 2 Nm
Suction pipe (TORX)	21 Nm
Exaust pipe (TORX)	40 Nm
Oil drain plug	55 ± 5 Nm
Injection valve clamp (TORX)	21 Nm
Plugs and union nuts for heating hoses	65 ± 5 Nm

Maintenance Data

List of Replacement Parts

Description	Order No.	
	BF3L1011F	BF3L2011
Gasket for oil drain plug	010 395	010 395
Engine oil filter 9 4	797 494	797 494
Valve cover gasket	796 329	796 329
Air filter cartridge	141 652	141 652
KHD fan V-belt	796 808 (10x1175 lg.)	797 154 (10x1150 lg.)
Fuel filter	782 971	782 971
Suction filter element (implement hydraulics)	029 541	029 541
O-ring 64 x 3	014 696 (2 items)	014 696 (2 items)
Filter element (pressure filter for implement hydraulics)	132 897	132 897
O-ring for hydraulic pressure filter	028 109	028 109
Replacement set: toothed belt	797 192	293 14 80

Bulbs 12 V

Lights	Rating	Lights	Rating
Headlights H4	60/55 W	Hazard warning light switch	2 W
Front turn signal light	21 W	Engine temperature gauge light	1.2 W
Rear turn signal light	21 W	Fuel gauge light	1.2 W
Tail light	10 W	Indicator lights	1.2 W
License plate light	5 W	Clearance lights	5 W
Stop light	21 W	Interior light	5 W
Back-up light	21 W	Rotating beacon	45 W
Tachometer for engine and PTO rpm	1.2 W	Multi-function instument light DIN 72601/W5/12 V	1.2 / 3.0 W
Speed and PTO shaft indicator	1.2 W	Top clearance lights	5 W

Maintenance Data

Technical Data of the Engine

Engine Specifications	A 5.58 / A 5.58P	A 5.58 / A 5.58P
Manufacturer	Deutz AG	Deutz AG
Type designation	BF3L1011F 40 KW	BF3L2011 43 KW
Design	In-line vertical engine	In-line vertical engine
Mode of opereation	4 stroke Diesel	4 stroke Diesel
Cooling	Integrated oil/air cooling	Integrated oil/air cooling
Injection system	Direct fuel injection	Direct fuel injection
Number of cylinders	3	3
Cylinder bore	Ø 91	Ø 94
Stroke	112	112
Cylinder capacity	2185 cc	2331 cc
Compression ratio	1:17.5	1:17.5
Compression	22-27 bar	--------
Charging pressure	0.86 bar	0.75 bar
Valve tolerance (cold engine)	Intake valve 0.3 mm Exhaust valve 0.5 mm	Intake valve 0.3 mm Exhaust valve 0.5 mm
Fuel consumption	223 g/KW-h at 2040 rev./min	
Air filter	Mann and Hummel dry air filter with acoustic alert	Mann and Hummel dry air filter with acoustic alert
Lubrication system	Forced-feed lubrication	Forced-feed lubrication
Lubrication oil consumption	Max. 0,5% of fuel consumption	Max. 0.5% of fuel consumption
Oil filter	Changeable cardridge in main flow	Changeable cardridge in main flow
Oil pressure at n=900 rpm	2.0 – 2.5 bar	2.0 – 2.5 bar
Rated speed	2650 rpm	2600 rpm
Maximum idling speed	2750 rpm	2750 rpm
Minimum idling speed	900 rpm	900 rpm
Maximum torque	171 Nm at 1800 rpm	180.2 Nm at 1600 rpm
Power acc. to ICE.24/89/ 491/EC at n=2650 rpm	40 KW (54.4 HP)	43 KW (58 HP)

Fuel System

	A 5.58 / A 5.58 P
Fuel injection pump	BOSCH individual withdrawable element-type calibrated pump
Governor	Governor integrated in front cover
Injection nozzle	5-hole-nozzle
Injection pressure	210 bar + 8 bar
Start of injection	5°+/-1° before TDC

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