Operating Instructions

C-Trac

C 9700
C 9700 H
C 9800 H
C 9.72
C 9.72 H
C 9.83 H
C 9.78 H
C 9.88 H
Foreword

We congratulate you for having chosen 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 provides you with the required information.

Development

Due to the continuous improvements made in the design and equipment of our tractors, deviations between this operating manual and your tractor may be possible. Despite taking all care possible in the creation of this manual, we cannot 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.

This operating and maintenance manual is supplied with each tractor. Keep this in a safe place where it is available for the driver and owner at any time. If 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

Detach the warranty card, have it filled in by your dealer and send the signed card to us.

Have the scheduled services carried out at the proper intervals and have it confirmed with the dealer's stamp and signature in this manual. Please note that warranty can only be claimed if the regular services have been carried out as scheduled. Descriptions and illustrations can be related to special equipment not installed in your tractor.
Foreword

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

Tractor Model ................................................ eg C 9800 H
Engine Serial Number ................................. eg 00542087
Chassis Serial Number ................................. eg 52410101
Date of Sale, or Date of Complaint ............ eg 02.01.2003
Operating Hours ............................. eg 2860 service hours

Date of Issue and Manual Version

November 2002

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

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72555 Metzingen

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www.holder-gmbh.com

Explanations of Terminology:

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

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

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

NOTE
Indicates technical requirements requiring special attention.
## Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>1</td>
</tr>
<tr>
<td>Instructions for the Tractor</td>
<td>5</td>
</tr>
<tr>
<td>Instructions for Operation</td>
<td>7</td>
</tr>
<tr>
<td>Technical Data</td>
<td>15</td>
</tr>
<tr>
<td>Description</td>
<td>28</td>
</tr>
<tr>
<td>Taking into Service</td>
<td>49</td>
</tr>
<tr>
<td>Operation</td>
<td>63</td>
</tr>
<tr>
<td>Operating Implements</td>
<td>85</td>
</tr>
<tr>
<td>Other Activities</td>
<td>119</td>
</tr>
<tr>
<td>Taking out of Operation</td>
<td>133</td>
</tr>
<tr>
<td>Trailers, Towing</td>
<td>135</td>
</tr>
<tr>
<td>Transport, Loading, Towing</td>
<td>139</td>
</tr>
<tr>
<td>Indicators, Adjustments</td>
<td>141</td>
</tr>
<tr>
<td>Problems, Causes, Remedy</td>
<td>143</td>
</tr>
<tr>
<td>General Notes on Maintenance</td>
<td>149</td>
</tr>
<tr>
<td>Maintenance Schedule</td>
<td>157</td>
</tr>
<tr>
<td>Maintenance during the First Period of Operation</td>
<td>161</td>
</tr>
<tr>
<td>Maintenance as Required</td>
<td>163</td>
</tr>
<tr>
<td>Maintenance According to Intervals</td>
<td>169</td>
</tr>
<tr>
<td>Maintenance Every 125 Service Hours</td>
<td>169</td>
</tr>
<tr>
<td>Maintenance Every 500 Service Hours</td>
<td>177</td>
</tr>
<tr>
<td>Maintenance Every 1000 Service Hours</td>
<td>183</td>
</tr>
<tr>
<td>Maintenance Every 1500 Service Hours</td>
<td>187</td>
</tr>
<tr>
<td>Maintenance Every 3000 Service Hours</td>
<td>197</td>
</tr>
<tr>
<td>Maintenance Annually</td>
<td>199</td>
</tr>
<tr>
<td>Maintenance Every 2 Years</td>
<td>199</td>
</tr>
<tr>
<td>Laying Up</td>
<td>201</td>
</tr>
<tr>
<td>Recommended Oils and Fuels</td>
<td>203</td>
</tr>
<tr>
<td>Alphabetical Index</td>
<td>213</td>
</tr>
</tbody>
</table>
Instructions for the Tractor

After the safety test, this tractor has received the operating permit acc. to 74/150/EEC. The tractor conforms to the EMC (Electromagnetic Compatibility) requirements of directive 89/336/EEC. The regulations for exhaust gas identification and the noise emissions are observed. The tractor must be registered and the license plate must be attached at the front and/or rear if applicable.

Approved Applications

The tractor can be used for towing trailers and for mounting various attachments. The maximum trailer load, which must not be exceeded, is stated on the identification plate. The transport of persons is only allowed on the passenger seat. 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. The intended use also includes the use following 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 must be strictly observed, along with all other recognized rules regarding industrial health, safety at work and the highway traffic code.

Site of Operation

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

Unintended Applications

Any use not intended as described as above is not authorized. The Supplier HOLDER will not be responsible for any hazard resulting from unintended applications. The Supplier will also not be responsible for any resulting damages, they shall be solely borne by the user. The tractor may not be used for any other purposes than those described in this manual. Do not carry persons on the loading area or on attachments.
Instructions for the Tractor

Residual Hazards and Risks

Despite all care being taken and in conformance with standards and regulations, it is not possible to exclude all risks in the handling of the tractor. The tractor and all other system components conform to currently applicable safety regulations. Nevertheless, a residual risk cannot be excluded even by authorized use of the tractor and observation of all the safety notices given. For this reason, persons standing in the area of the tractor and attachments must exercise particular caution in order to be able to be able to react directly in case of a malfunction, an incident, a 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 tractor.
- Escape of fuel and lubricants due to leaks, broken lines and reservoirs, 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 when it is wet.
- Fire and explosion hazards due to the battery and electric currents.
- Danger of poisoning through Diesel exhaust gases
- Danger of fire through Diesel fuel and oils
- Human errors due to non-observance of the 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.
Instructions for Operation

Driver's license

For the operation of this vehicle you need a **driver's license** dependent of the maximum speed and the permissible total weight of the vehicle or the combination. See the tables below. Please observe your national laws.

Driver's license classes (Germany only)

Tractors for farming and forestry (also with implements)

<table>
<thead>
<tr>
<th>Maximum Speed (dependent on type)</th>
<th>Maximum Total Weight</th>
<th>Driver's License Class (Minimum Requirements)</th>
<th>Former Driver's License Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 32 km/h</td>
<td>no limitation</td>
<td>B, L, T</td>
<td>1, 1a, 1b, 2, 3, 4, 5</td>
</tr>
<tr>
<td>over 32 km/h</td>
<td>up to 3.5 tons</td>
<td>B T: 60 km/h, under 18 years only 40 km/h</td>
<td>2, 3</td>
</tr>
<tr>
<td></td>
<td>over 3.5 tons to 7.5 tons</td>
<td>C1 T: 60 km/h, under 18 years only 40 km/h</td>
<td>2, 3</td>
</tr>
</tbody>
</table>
## Instructions for Operation

**Single-axle Trailers or Two-axle Trailers with an Axle Base of up to max. 1 m**

<table>
<thead>
<tr>
<th>Maximum Total Weight</th>
<th>Driver's License Class (Minimum Requirements)</th>
<th>Former Driver's License Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 750 kg trailer weight</td>
<td>B, C1, C, T</td>
<td>1, 1a, 1b, 2, 3, 4, 5</td>
</tr>
<tr>
<td></td>
<td>L: (25) only with additional sign and maximum tractor speed of 25 km/h (depending on type)</td>
<td></td>
</tr>
<tr>
<td>over 750 kg trailer weight</td>
<td>BE, C1E, CE, T</td>
<td>1, 1a, 1b, 2, 3, 4, 5</td>
</tr>
<tr>
<td></td>
<td>B, C1, C: only up to 3.5 tons adm. total weight of the combination and adm. total weight of trailers (\leq) dead weight of tractor; otherwise: (26)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C1E: only up to 12 tons adm. total weight of combination and adm. total weight of trailer (\leq) dead weight of tractor; otherwise: (26)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L: (25)</td>
<td></td>
</tr>
</tbody>
</table>
## Multiple-axle Trailers and Two-axle Trailers with an Axle Base over 1 m

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

General Notes on Safety

- Observe the VSG 3.1 (German 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 caustic.
- 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, e.g. rings, when working with the tractor.

Safety Notes for Later Installations

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

- Have your equipment installed only by an authorized workshop.
- 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.
Instructions for Operation

- The installed equipment must conform to the applicable EMC directive 89/336/EU and carry the CE symbol.
- If you must install a mobile communications system (or have it installed) (eg radio, mobile telephone), the following requirements must be met:
  - Only approved equipment (eg BTZ approval in Germany) 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 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 working with the product. Prolonged intensive contact may cause degreasing and irritation of the skin. Wash skin with soap and water, use skin care products. If required, 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, especially in connection with water. Oils can contaminate water. Always keep them in approved containers. Avoid spilling oils. Remove spilled fluids at once with an oil binding agent and dispose of in accordance with laws and regulations. Discard drained fluids as specified. Observe all 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 under pressure and a health hazard. Do not spill these fluids! Remove any spilled fluid at once with an oil binding agent and discard as specified. Dispose of old fluids as specified and follow the applicable laws and regulations. Do not allow them to come in contact with hot engine parts as fire can result. Danger of fire!

Avoid contact with the skin. Avoid the inhalation of spray fog. The penetration of the fluids into the skin is especially dangerous if the 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 cannot be excluded, use suitable protectors (for example, protective gloves, glasses and skin protection and 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 clothing, skin or eyes. In case of contact, wash directly with ample clean water. If personal injuries exist, seek medical aid at once. Neutralize spilled battery acid immediately.

Discard the old battery fluid as specified. Observe laws and regulations.

Emissions

Exhaust Gases

During operation, the engine emits exhaust gases 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; particularly the
Particles in the exhaust gases can cause cancer. For this reason the engine may 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.
## Technical Data

### Model Variants

<table>
<thead>
<tr>
<th>Model</th>
<th>Transmission</th>
<th>Type of Drive</th>
<th>Type of Engine</th>
<th>Engine Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 9700</td>
<td>Mechanical Reversing Gearbox</td>
<td>Mechanical</td>
<td>BF4M1011</td>
<td>53.5 kW ▲ 72 HP (DIN)</td>
</tr>
<tr>
<td>C 9700 H</td>
<td>Hydrostatic transmission</td>
<td>Hydrostatic</td>
<td>BF4M1011</td>
<td>53.5 kW ▲ 72 HP (DIN)</td>
</tr>
<tr>
<td>C 9800 H</td>
<td>Hydrostatic transmission</td>
<td>DUAL DRIVE*</td>
<td>BF4M1011F</td>
<td>61 kW ▲ 83 HP (DIN)</td>
</tr>
<tr>
<td>C 9.72</td>
<td>Mechanical Reversing Gearbox</td>
<td>Mechanical</td>
<td>BF4M1011</td>
<td>53.5 kW ▲ 72 HP (DIN)</td>
</tr>
<tr>
<td>C 9.72 H</td>
<td>Hydrostatic transmission</td>
<td>Hydrostatic</td>
<td>BF4M1011</td>
<td>53.5 kW ▲ 72 HP (DIN)</td>
</tr>
<tr>
<td>C 9.83 H</td>
<td>Hydrostatic transmission</td>
<td>DUAL DRIVE*</td>
<td>BF4M1011F</td>
<td>61 kW ▲ 83 HP (DIN)</td>
</tr>
<tr>
<td>C 9.78 H</td>
<td>Hydrostatic transmission</td>
<td>Hydrostatic</td>
<td>BF4M2011</td>
<td>57 kW ▲ 78 HP (DIN)</td>
</tr>
<tr>
<td>C 9.88 H</td>
<td>Hydrostatic transmission</td>
<td>DUAL DRIVE*</td>
<td>BF4M2011F</td>
<td>65 kW ▲ 88 HP (DIN)</td>
</tr>
</tbody>
</table>

* mechanical + hydrostatic
Technical data

Tractor Dimensions

Sketch

Data in brackets are American dimensions
<table>
<thead>
<tr>
<th>Tires</th>
<th>Type</th>
<th>Overall Height</th>
<th>Avg. Height of Seat</th>
<th>Ground Clearance</th>
<th>Trailer Coupling</th>
<th>Height of Body</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>a mm (Inches)</td>
<td>b mm (Inches)</td>
<td>c mm (Inches)</td>
<td>d mm (Inches)</td>
<td>g mm (Inches)</td>
</tr>
<tr>
<td>10.5-18 MPT S</td>
<td>524-31-6</td>
<td>2130 (83.8)</td>
<td>1050 (41.3)</td>
<td>230 (9)</td>
<td>575 (22.4)</td>
<td>1130 (44.5)</td>
</tr>
<tr>
<td>10.5-18 MPT</td>
<td>524-31-1</td>
<td>2130 (83.8)</td>
<td>1050 (41.3)</td>
<td>230 (9)</td>
<td>575 (22.4)</td>
<td>1130 (44.5)</td>
</tr>
<tr>
<td>36x13.50-15</td>
<td>524-31-8</td>
<td>2100 (82.5)</td>
<td>1020 (40.1)</td>
<td>200 (7.9)</td>
<td>545 (21.3)</td>
<td>1095 (43.1)</td>
</tr>
<tr>
<td>400/60-15.5</td>
<td>524-31-5</td>
<td>2095 (82.3)</td>
<td>1030 (40.5)</td>
<td>195 (7.5)</td>
<td>540 (21.2)</td>
<td>1095 (43.1)</td>
</tr>
<tr>
<td>33x12.50-R15</td>
<td>524-31-7</td>
<td>2090 (82.2)</td>
<td>1020 (40.1)</td>
<td>190 (7.3)</td>
<td>535 (21.0)</td>
<td>1090 (42.9)</td>
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<tr>
<td>33/18LL-16.1</td>
<td>524-31-9</td>
<td>2090 (82.2)</td>
<td>1020 (40.1)</td>
<td>190 (7.3)</td>
<td>535 (21.0)</td>
<td>1090 (42.9)</td>
</tr>
<tr>
<td>33x12.50-15</td>
<td>524-31-4</td>
<td>2075 (81.4)</td>
<td>1010 (39.7)</td>
<td>180 (7)</td>
<td>525 (20.6)</td>
<td>1075 (42.3)</td>
</tr>
<tr>
<td>33x15.50-15</td>
<td>524-31-3</td>
<td>2075 (81.4)</td>
<td>1010 (39.7)</td>
<td>180 (7)</td>
<td>525 (20.6)</td>
<td>1075 (42.3)</td>
</tr>
<tr>
<td>31x15.50-15</td>
<td>524-31-2</td>
<td>2065 (81.1)</td>
<td>980 (38.6)</td>
<td>165 (6.4)</td>
<td>510 (20)</td>
<td>1060 (41.7)</td>
</tr>
</tbody>
</table>
### Technical data

#### Track Widths

<table>
<thead>
<tr>
<th>Tires</th>
<th>Min. Turning Radius to DIN 7020 (measured at outermost point of vehicle)</th>
<th>Normal Track Width (Flange size 1034)</th>
<th>With Hub Spacers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Track Width e</td>
<td>Overall Width f</td>
</tr>
<tr>
<td></td>
<td></td>
<td>min.-mm</td>
<td>max.-mm</td>
</tr>
<tr>
<td>36x13.50-15</td>
<td>7.28 m f. track w. 1084</td>
<td>-</td>
<td>1084</td>
</tr>
<tr>
<td>10.5-18 MPT S</td>
<td>7.10 m f. track w. 960</td>
<td>960</td>
<td>1124</td>
</tr>
<tr>
<td>10.5-18 MPT</td>
<td>7.14 m f. track w. 1034</td>
<td>1034</td>
<td>1050</td>
</tr>
<tr>
<td>400/60-15.5</td>
<td>7.30 m f. track w. 1070</td>
<td>-</td>
<td>1070</td>
</tr>
<tr>
<td>33x12.50 R15</td>
<td>7.15 m f. track w. 1000</td>
<td>1000</td>
<td>1084</td>
</tr>
<tr>
<td>33x12.50-15</td>
<td>7.15 m f. track w. 1000</td>
<td>1000</td>
<td>1084</td>
</tr>
<tr>
<td>33x15.50-15</td>
<td>7.24 m f. track w. 1124</td>
<td>*992</td>
<td>1124</td>
</tr>
<tr>
<td>33/18LL-16.1</td>
<td>7.45 m f. track w. 1164</td>
<td>-</td>
<td>1164</td>
</tr>
<tr>
<td>31x15.50-15</td>
<td>7.30 m f. track w. 1124</td>
<td>*962</td>
<td>1124</td>
</tr>
</tbody>
</table>

*Snow chains not possible

* With track spacer type 526-34-75 (15 mm per wheel)
### Technical data

#### All Tractors

<table>
<thead>
<tr>
<th>Weight in kg</th>
<th>Permissible total weight 4500 kg (9920.6 LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permissible load on front axle *2660 kg - 2700 kg (5864 LBS - 5952 LBS)</td>
<td></td>
</tr>
<tr>
<td>Permissible load on rear axle *2660 kg - 2700 kg (5864 LBS - 5952 LBS)</td>
<td></td>
</tr>
<tr>
<td>Permissible supporting load on trailer hitch 800 kg (1764 LBS)</td>
<td></td>
</tr>
</tbody>
</table>

* With 33x12.50 R15 tires

#### Accessories

<table>
<thead>
<tr>
<th>Total</th>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creep speed gear 13 kg (28.6 LBS) 10 kg (22 LBS) 3 kg (6.6 LBS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear lift 77 kg (169.7 LBS) -25 kg (-55 LBS) 102 kg (224.8 LBS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loading platform 75 kg (165.3 LBS) 0 kg (0 LBS) 75 kg (165.3 LBS)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Weights w/o loading platform and rear lift

<table>
<thead>
<tr>
<th>Tires</th>
<th>36x13.5-15</th>
<th>400/60-15.5</th>
<th>33x12.50 R15</th>
<th>33x12.50-15</th>
<th>31x15.50-15</th>
<th>33/18LL-16.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total: kg 2430 (5351) 2620 (5776) 2440 (5319) 2630 (5198) 2390 (5269) 2580 (5687.8) 2380 (5246.9) 2570 (5665.8) 2410 (5313.1) 2600 (5732) 2470 (5445.4) 2660 (5864.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front: kg 1275 (2810.8) 1390 (3064.4) 1280 (2821.8) 1395 (3015) 1255 (2766.7) 1370 (3020.3) 1250 (2755.7) 1365 (3009.3) 1265 (2788.8) 1380 (3042.3) 1295 (2855) 1410 (3108.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear: kg 1155 (2546.3) 1230 (2711.6) 1160 (2551.3) 1235 (2122.6) 1135 (2502) 1210 (2667.5) 1130 (2491.2) 1205 (2656.5) 1145 (2524.3) 1220 (2689.6) 1175 (2590.4) 1250 (2755.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Technical data

### Tires

<table>
<thead>
<tr>
<th>Type of Tire</th>
<th>Ply</th>
<th>Profile</th>
<th>Tube</th>
<th>Inflation Pressure</th>
<th>Wheel Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.5-18 MPT S</td>
<td>6</td>
<td>Cleat profile</td>
<td>yes</td>
<td>1.5 bar (22 PSI)</td>
<td>524-34-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.5 bar (22 PSI)</td>
<td>approx. 45 kg (100 LBS)</td>
</tr>
<tr>
<td>10.5-18 MPT</td>
<td>6</td>
<td>Cleat profile</td>
<td>yes</td>
<td>1.5 bar (22 PSI)</td>
<td>524-34-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.5 bar (22 PSI)</td>
<td>approx. 45 kg (100 LBS)</td>
</tr>
<tr>
<td>31x15.50-15</td>
<td>8</td>
<td>Profile</td>
<td>no</td>
<td>2.0 bar (14-29 PSI)</td>
<td>524-34-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.0 bar (14-29 PSI)</td>
<td>approx. 45 kg (100 LBS)</td>
</tr>
<tr>
<td>33x15.50-15</td>
<td>4</td>
<td>Profile</td>
<td>no</td>
<td>1.0 bar (14.7 PSI)</td>
<td>524-34-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0 bar (14.7 PSI)</td>
<td>approx. 45 kg (100 LBS)</td>
</tr>
<tr>
<td>33x12.50-15</td>
<td>6/8</td>
<td>(M+S)/Profile</td>
<td>no</td>
<td>1.4 bar (20 PSI)</td>
<td>524-34-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.4 bar (20 PSI)</td>
<td>approx. 45 kg (100 LBS)</td>
</tr>
<tr>
<td>33x12.50-R15</td>
<td>6</td>
<td>M + S</td>
<td>no</td>
<td>1.6 bar (23 PSI)</td>
<td>524-34-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.6 bar (23 PSI)</td>
<td>approx. 45 kg (100 LBS)</td>
</tr>
<tr>
<td>36x13.50-15</td>
<td>4</td>
<td>Lawn</td>
<td>no</td>
<td>1.0 bar (14.7 PSI)</td>
<td>524-34-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0 bar (14.7 PSI)</td>
<td>approx. 45 kg (100 LBS)</td>
</tr>
<tr>
<td>400/60-15.5</td>
<td>6</td>
<td>Profile</td>
<td>yes</td>
<td>1.8 bar (26 PSI)</td>
<td>524-34-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.8 bar (26 PSI)</td>
<td>approx. 45 kg (100 LBS)</td>
</tr>
<tr>
<td>33/18LL-16.1</td>
<td>10</td>
<td>Lawn</td>
<td>no</td>
<td>1.2 bar (17 PSI)</td>
<td>524-34-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.2 bar (17 PSI)</td>
<td>approx. 45 kg (100 LBS)</td>
</tr>
</tbody>
</table>

NOTE: Observe prescribed inflation pressure with maximum axle load and when driving on roads.
<table>
<thead>
<tr>
<th>Engine Specifications</th>
<th>C 9700/9.72</th>
<th>C 9800/9.73H</th>
<th>C 9.78H</th>
<th>C 9.88H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>Deutz AG</td>
<td>Deutz AG</td>
<td>Deutz AG</td>
<td>Deutz AG</td>
</tr>
<tr>
<td>Type</td>
<td>BF4M1011</td>
<td>BF4M1011F</td>
<td>BF4M2011</td>
<td>BF4M2011</td>
</tr>
<tr>
<td>Mode of operation</td>
<td>Four-stroke Diesel</td>
<td>Four-stroke Diesel</td>
<td>Four-stroke Diesel</td>
<td>Four-stroke Diesel</td>
</tr>
<tr>
<td>Number of cylinders</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Cubic capacity</td>
<td>2914</td>
<td>2914</td>
<td>3108</td>
<td>3108</td>
</tr>
<tr>
<td>Fuel consumption</td>
<td>223g/KW-h at 1500-1750 rpm</td>
<td>222g/KW-h at 1750-1850 rpm</td>
<td>216g/KW-h at 1750-1850 rpm</td>
<td>216g/KW-h at 1550-1650 rpm</td>
</tr>
<tr>
<td>Rated speed</td>
<td>2500 rpm</td>
<td>2600 rpm</td>
<td>2500 rpm</td>
<td>2800 rpm</td>
</tr>
<tr>
<td>Maximum idling speed</td>
<td>2600 rpm</td>
<td>2750 rpm</td>
<td>2750 rpm</td>
<td>3050 rpm</td>
</tr>
<tr>
<td>Minimum idling speed</td>
<td>900 rpm</td>
<td>900 rpm</td>
<td>900 rpm</td>
<td>900 rpm</td>
</tr>
<tr>
<td>Power at n=2800 rpm</td>
<td>53.5 KW (72 HP)</td>
<td>61 KW (83 HP)</td>
<td>57 KW (78 HP)</td>
<td>65 KW (88 HP)</td>
</tr>
</tbody>
</table>
## Technical data

### Theoretical Driving Speeds

<table>
<thead>
<tr>
<th>Transmission</th>
<th>Unit</th>
<th>Gearbox</th>
<th>Hydrostatic Drive</th>
<th>Hydrostatic Drive</th>
<th>Hydrostatic Drive</th>
<th>Dual Drive</th>
<th>Dual Drive</th>
<th>Dual Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine Output</strong></td>
<td>kW</td>
<td>53.5</td>
<td>53.5/57</td>
<td>61</td>
<td>65</td>
<td>53.5/57</td>
<td>61</td>
<td>65</td>
</tr>
<tr>
<td><strong>Engine speed</strong></td>
<td>rpm</td>
<td>2500</td>
<td>2500</td>
<td>2600</td>
<td>2800</td>
<td>2500</td>
<td>2600</td>
<td>2800</td>
</tr>
<tr>
<td><strong>Tires</strong></td>
<td>Type</td>
<td>36x13.50-15</td>
<td>524-31-8</td>
<td>km/h</td>
<td>36.8</td>
<td>30.8</td>
<td>32.0</td>
<td>34.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.5-18 MPT</td>
<td>524-31-1/-6</td>
<td>km/h</td>
<td>35.9</td>
<td>30.1</td>
<td>31.3</td>
<td>33.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400/60-15.5</td>
<td>524-31-5</td>
<td>km/h</td>
<td>34.1</td>
<td>28.6</td>
<td>29.7</td>
<td>32.0</td>
</tr>
<tr>
<td><strong>33x12.50 R15</strong></td>
<td>km/h</td>
<td>524-31-7</td>
<td>33.3</td>
<td>27.9</td>
<td>29.0</td>
<td>31.2</td>
<td>34.8</td>
<td>36.2</td>
</tr>
<tr>
<td><strong>33x12.50-15</strong></td>
<td>km/h</td>
<td>524-31-4</td>
<td>32.4</td>
<td>27.2</td>
<td>28.3</td>
<td>30.4</td>
<td>33.9</td>
<td>35.3</td>
</tr>
<tr>
<td><strong>33x15.50-15</strong></td>
<td>km/h</td>
<td>524-31-3</td>
<td>32.4</td>
<td>27.2</td>
<td>28.3</td>
<td>30.4</td>
<td>33.9</td>
<td>35.3</td>
</tr>
<tr>
<td><strong>33/18LL-16.1</strong></td>
<td>km/h</td>
<td>524-31-9</td>
<td>31.8</td>
<td>26.7</td>
<td>27.8</td>
<td>29.9</td>
<td>33.3</td>
<td>34.7</td>
</tr>
<tr>
<td><strong>31x15.50-15</strong></td>
<td>km/h</td>
<td>524-31-2</td>
<td>30.5</td>
<td>25.1</td>
<td>26.1</td>
<td>28.1</td>
<td>31.3</td>
<td>32.6</td>
</tr>
</tbody>
</table>
## Technical Data/Filling Quantities

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Suppl. Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical gearbox</td>
<td></td>
<td>16 forward gears/16 reverse gears with planetary axles</td>
</tr>
<tr>
<td>Hydrostatic drive</td>
<td></td>
<td>Infinitely variable driving speed, 2 mechanical speed ranges</td>
</tr>
<tr>
<td>Power take-offs</td>
<td></td>
<td>2 PTOs (front and rear) Rotating Direction: clockwise when looking at end of shaft</td>
</tr>
<tr>
<td>- RPM, front</td>
<td></td>
<td>540 rpm at 2200 engine rpm, 1000 rpm at 2390 engine rpm</td>
</tr>
<tr>
<td>- RPM, rear</td>
<td></td>
<td>1000 rpm at 2360 engine rpm</td>
</tr>
<tr>
<td>- Wedge shaft profile</td>
<td></td>
<td>1 3/8 &quot; (6) DIN 9611</td>
</tr>
<tr>
<td>PTO clutch</td>
<td></td>
<td>Multiple disk wet clutch</td>
</tr>
<tr>
<td>Differential lock</td>
<td></td>
<td>Acts simultaneously on front and rear axles</td>
</tr>
</tbody>
</table>

### Fuel system

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Suppl. Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel tank</td>
<td>Diesel fuel</td>
<td>86 l (22.7 USGAL.)</td>
</tr>
</tbody>
</table>
## Technical data

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Suppl. Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Type</td>
<td>Hydrostatic with 2 double-acting steering rams</td>
<td></td>
</tr>
<tr>
<td>- Steering valve</td>
<td>Orbitrol OSPC 125 LS</td>
<td></td>
</tr>
<tr>
<td><strong>Brakes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Service brake</td>
<td>Multiple-disk brakes, wet, acting on all 4 wheels</td>
<td></td>
</tr>
<tr>
<td>- Activation</td>
<td>Hydraulic</td>
<td></td>
</tr>
<tr>
<td>- Parking brake</td>
<td>Multiple-disk brakes, wet, acting on all 4 wheels</td>
<td></td>
</tr>
<tr>
<td>- Activation</td>
<td>Mechanical</td>
<td></td>
</tr>
<tr>
<td><strong>Trailer hitch</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Make</td>
<td>Cramer, height-adjustable</td>
<td></td>
</tr>
<tr>
<td><strong>Front lift</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Make</td>
<td>3-point, upper link adjustable</td>
<td></td>
</tr>
<tr>
<td>- Mounting</td>
<td>Category I and II</td>
<td></td>
</tr>
<tr>
<td>- Lifting power</td>
<td>270000 N (measured at installation points)</td>
<td></td>
</tr>
<tr>
<td>- Cylinders</td>
<td>2 double-acting cylinders</td>
<td></td>
</tr>
</tbody>
</table>
## Technical data

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Suppl. Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear lift</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Model</td>
<td>HOLDER 3-point standard</td>
<td></td>
</tr>
<tr>
<td>- Mounting</td>
<td>Category I and II</td>
<td></td>
</tr>
<tr>
<td>- Lifting power</td>
<td>15700 N (at installation points)</td>
<td></td>
</tr>
<tr>
<td>- Cylinders</td>
<td>2 double-acting cylinders</td>
<td></td>
</tr>
</tbody>
</table>

### Drive Hydraulics

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable pump</td>
<td>Hydromatik</td>
<td></td>
</tr>
<tr>
<td>- Model</td>
<td>A11 VG 50 EP / A4 VG 40 EP</td>
<td></td>
</tr>
<tr>
<td>- Flow rate</td>
<td>160 l/min (42 GAL/MIN)</td>
<td></td>
</tr>
<tr>
<td>- Operating pressure</td>
<td>300 bar (4410) (max. 350 bar (5145)) / 380 bar (5586) (max. 430 bar (6320))</td>
<td></td>
</tr>
<tr>
<td>Variable motor</td>
<td>Hydromatik</td>
<td></td>
</tr>
<tr>
<td>- Model</td>
<td>A6 VM 55 EP</td>
<td></td>
</tr>
<tr>
<td>- Displacement</td>
<td>26.1 - 55 cm³/rev</td>
<td></td>
</tr>
<tr>
<td>Hydraulic oil tank</td>
<td>19 l (5.02 GAL.)</td>
<td></td>
</tr>
</tbody>
</table>
## Technical data

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Suppl. Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulics for implements (with steering)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump</td>
<td></td>
<td>Sundstrand</td>
</tr>
<tr>
<td>- Make</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>- Flow rate</td>
<td></td>
<td>17 cm³/rev (42.5 l/min at 2500 engine rpm)</td>
</tr>
<tr>
<td>- Operating pressure</td>
<td></td>
<td>180 -190 bar</td>
</tr>
<tr>
<td>Hydraulic oil tank</td>
<td></td>
<td>22 l (5.8 GAL.)</td>
</tr>
</tbody>
</table>

### Electrical System

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Operating voltage</td>
<td>12 VDC</td>
</tr>
<tr>
<td>- Battery</td>
<td>12 V / 88 Ah</td>
</tr>
<tr>
<td>- A/C alternator</td>
<td>14 V / 60 A</td>
</tr>
<tr>
<td>- Starter</td>
<td>12 V / 2.4 kW</td>
</tr>
</tbody>
</table>

### Whole Vehicle

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Ambient temperature range</td>
<td>- 30° to + 50°C</td>
</tr>
</tbody>
</table>
Noise Level

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

Table of Noise Levels and Absorption Rating

<table>
<thead>
<tr>
<th>Model</th>
<th>Engine Type</th>
<th>Engine Output</th>
<th>Noise Level dB(A)</th>
<th>Absorption rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cabin open*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 9700</td>
<td>BF4M1011</td>
<td>53.5 kW (72 HP)</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>C 9700 H</td>
<td>BF4M1011</td>
<td>53.5 kW (72 HP)</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>C 9800 H</td>
<td>BF4M1011F</td>
<td>61 kW (83 HP)</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>C 9.72</td>
<td>BF4M1011</td>
<td>53.5 kW (72 HP)</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>C 9.72 H</td>
<td>BF4M1011</td>
<td>53.5 kW (72 HP)</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>C 9.83 H</td>
<td>BF4M1011F</td>
<td>61 kW (83 HP)</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>C 9.78 H</td>
<td>BF4M2011</td>
<td>57 kW (78 HP)</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>C 9.88 H</td>
<td>BF4M2011F</td>
<td>65 kW (88 HP)</td>
<td>79</td>
<td>79</td>
</tr>
</tbody>
</table>

*Roof vent and side window open

Exhaust Gas Identification

The absorption rating is stated on the identification plate.
Description

Views of Tractor

Front Left View
1. Turn signal, position light
2. Headlight, top
3. Driver’s cab
4. Dump body (dump)
5. Rear of vehicle
6. Engine oil dipstick
7. Battery isolating switch
8. Rear axle
9. Hydraulic oil tank and filler neck (drive hydraulics)
10. Front axle
11. Hydraulic couplings for implements*
12. Front lift - lower link support
13. Upper link support
14. Headlight
15. Windshieldwiper / washer

* Option
Tractor

Rear Right View

1 Dump Body
2 Fuel filler neck
3 Oil filler neck for implement hydraulics
4 Intake screen for fresh air blower
5 Support for rotating beacon
6 Flood light*
7 Driver's cab
8 Front part of tractor
9 Front axle
10 Intake screen for drive oil cooler
11 Air vent for drive oil cooler
12 Oil level gauge for implement hydraulics and steering
13 Rear axle
14 Hydraulic couplings for implements*
15 Trailer hitch
16 Socket for trailer lighting
17 Tail light, LH/RH

* Option
Description

Driver's Station

Operating controls

1. Light switch
2. Differential lock switch
3. Pressure gauge for hydraulic carrier*
4. Steering wheel
5. Brake fluid reservoir
6. Control lever for dump support*
7. Implement* control lever
8. Multi-function display
9. Multi-function lever* (front lift and direction of travel)
10. Digital instrument switch (ground speed in km/h or PTO rpm)
11. Hazard warning flasher switch
12. Heater fan switch
13. Power Socket
14. Implement lock switch*

15. Tilt lock switch*
16. Preheat/starter switch
17. Hydraulic carrier* control
18. Passenger seat (water reservoir for windshield washer system is located under the seat)
19. Parking brake lever
20. Driver's seat (warning triangle is mounted behind the seat)
21. Accelerator pedal
22. Steering wheel tilt adjustment knob
23. Driving program switch
24. Inch knob for ground speed
25. Turn signal lever

* Option
**Description**

**Implement* and Engine Controls (Details)**

1. Control lever for dump/rear lift*
2. Control lever functions plate
3. Multi-function lever functions plate
4. Multi-function lever* (front lift and travel direction)
5. Hand throttle
   - Outer ring for fine adjustment:
     - Turn clockwise to decrease rpm
     - Turn counter-clockwise to increase rpm
   - Inner knob for coarse adjustment:
     - Pull out to increase rpm
     - Push in to decrease rpm
     - Push in fast for emergency reset to idling rpm
6. Preheat/starter switch
7. Lock knob for longitudinal motion of multi-function lever:
   - Depressed - locked
   - Centre position - free movement
   - Pulled out - float position
8. Lock knob for lateral motion of multi-function lever
9. Lock knob for longitudinal motion of control lever
10. Lock knob functions plate

* Option
Multi-function Lever

**NOTE**
Various types of multi-function levers can be installed.

**Multi-function Lever (Variant 1)**

1. Multi-function lever without forward reverse selector lever (Forward-reverse selector installed on instrument board)

2. Forward/reverse selector lever

3. Note plate

Driving direction
**Description**

Multi-function Lever* (Variant 2)

*NOTE*

*The coloured buttons control the function of the implements attached to the related hydraulic couplings*

1. Multi-function lever
2. Blue hydraulic couplings on
3. Blue hydraulic couplings off - float position
4. LED indicator, red or green
5. Functions off
6. LED indicator, red
7. Functions on
8. LED indicator, red
9. LED indicator, red or green
10. Yellow hydraulic couplings, off
11. Green hydraulic couplings off - float position
12. Green hydraulic couplings on
13. Yellow hydraulic couplings on

* Option
Multi-function Lever* (Variant 3)

1. Forward direction arrow (illuminated if selected)
2. Reverse direction arrow (illuminated if selected)
3. Forward/reverse selector switch (left for forward - right for reverse)
4. Multi-function lever

Multi-function Lever* (Variant 4)

1. Forward direction arrow (illuminated if selected)
2. Reverse direction arrow (illuminated if selected)
3. Forward/reverse selector switch (left forward - right reverse)
4. Front lift float position pushbutton
5. Multi-function lever
6. Front lift pushbutton
7. Yellow pushbutton, left (front when looking forward)
   (movements at yellow hydraulic couplings on)
8. Yellow pushbutton, right (front when looking forward)
   (movements at green hydraulic couplings on)

* Option
Description

Foot Pedals
1  Inch pedal (clutch pedal if gearbox is fitted)
2  Brake pedal
3  Accelerator pedal

Hydraulic Carrier* Control (Power Lifter)
1  Pressure adjuster
2  ON-OFF label
3  Star knob for turning on/off

* Option
Operating Controls Behind the Seat

1. PTO clutch lever, ON-OFF
2. Device selector lever:
   - Position for dump on
3. - Position for rear lift on
4. Emergency start
   (Hydrostatic Drive with Dual-Drive only)

Drive Range Pre-selection Lever between Seats

1. Drive range pre-selection lever
2. Drive range label
   - Position S - Fast Driving range
     (low tractive force)
   - Centre position 0 - Drive off - Towing
   - Position L - Slow Working range
     (high tractive force)
Taking into Service

Front PTO Selector
1  PTO rpm label
   - Top position (up) - 540 rpm
   - Centre position - Neutral
   - Lower position (down) - 1000 rpm
2  PTO selector lever

Heater
1  Heater temperature control
2  Heating temperature label
   - lever up - warmer
   - lever down - cooler
Legend for Multi-function Display

1 Display for
   - Ground speed in km/h or
   - PTO rpm x10
2 Position light indicator
3 High beam indicator
4 Turn signal indicator
5 Turn signal indicator for trailer 1
6 Turn signal indicator for trailer 2
7 Preheating indicator
8 Fuel gauge
9 Hour meter
10 Tachometer
11 Engine temperature gauge
12 Spare
13 Differential lock engaged indicator
14 Parking brake engaged indicator
15 Engine oil temperature indicator
16 Engine oil pressure indicator
17 Battery charge indicator
18 Hydraulic oil temperature gauge
Description

Controls for Mechanical Gearbox

1. Gearshift lever (left looking forward) with 4 synchronized gears 1-2-3-4
2. Range selector lever (right looking forward) with 4 speed ranges:
   - S - Highway driving
   - M - Medium speed
   - L - Slow speed
   - LL - Very slow speed
3. Gearshift label
Controls on Cabin Console at Front Left

1. Front wiper/washer switch
2. Rear wiper/washer switch
3. Sun blind
4. Air vent nozzle

Controls on Cabin Console at Front Right

1. Rotating beacon switch
2. Fresh air blower switch, top
3. Headlight switch, top
4. Rear floodlight switch
5. Air vent nozzle
Description

Controls in Cabin at Rear

1  Interior light
2  Sun visor
3  Roof hatch handle
4  Roof hatch
Location of Plates and Labels

Identification Plates
1. Variable motor type plate
2. Engine type plate
3. Variable pump type plate
4. Machine type plate
5. Chassis Serial Number (on front RH support looking forward)
6. Cabin type plate
Description

Mounting Instructions for License Plate

- Install the front license plate (1) above the upper link support at the front cabin wall.

- Install the rear license plate (2) at the rear below the left tail light.
## Overview of Options and Variants

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Suppl. Information</th>
<th>Dimension /Order No./Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charcoal filter</td>
<td>For cabin ventilation</td>
<td>131667</td>
</tr>
<tr>
<td>Pneumatic braking system</td>
<td>For trailer operation</td>
<td>526-34-60, 524-34-63</td>
</tr>
<tr>
<td>Rear lift</td>
<td></td>
<td>524-51-4</td>
</tr>
<tr>
<td>Oil heating element</td>
<td>From - 20°C</td>
<td>230 VAC</td>
</tr>
<tr>
<td>Hydraulic carrying equipment (power lifter)</td>
<td></td>
<td>524-80-19</td>
</tr>
<tr>
<td>Creep speed gearbox with hand lever</td>
<td>Super</td>
<td>5262-11, 524-62-70</td>
</tr>
<tr>
<td>Variable pump for implements</td>
<td>0-100 l/min adjustable</td>
<td>524-80-34</td>
</tr>
<tr>
<td>- Pump</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Delivery capacity</td>
<td>0-40 cm³/rev</td>
<td></td>
</tr>
<tr>
<td>- Flow rate</td>
<td>0-100 l/min</td>
<td></td>
</tr>
<tr>
<td>- Maximum pressure</td>
<td>280 bar</td>
<td></td>
</tr>
</tbody>
</table>
# Description

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Suppl. Information</th>
<th>Dimension /Order No./Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power hydraulics</td>
<td>75 l/min fixed displacement</td>
<td>524-80-35</td>
</tr>
<tr>
<td>- Pump</td>
<td>Mounted on drive pump</td>
<td>Gear pump</td>
</tr>
<tr>
<td>- Delivery capacity</td>
<td></td>
<td>22 cm³/rev</td>
</tr>
<tr>
<td>- Flow rate</td>
<td></td>
<td>75 l/min</td>
</tr>
<tr>
<td>- Maximum pressure</td>
<td></td>
<td>210 bar</td>
</tr>
<tr>
<td>Flow divider I. Circuit</td>
<td></td>
<td>524-80-25</td>
</tr>
<tr>
<td>- Pump</td>
<td>Standard pump</td>
<td></td>
</tr>
<tr>
<td>- Delivery capacity</td>
<td></td>
<td>17 cm³/rev</td>
</tr>
<tr>
<td>- Flow rate</td>
<td></td>
<td>0-25 l/min</td>
</tr>
<tr>
<td>- Maximum pressure</td>
<td></td>
<td>200 bar</td>
</tr>
<tr>
<td>Flow divider II. Circuit</td>
<td></td>
<td>524-80-47</td>
</tr>
<tr>
<td>- Pump</td>
<td>Tandem pump</td>
<td></td>
</tr>
<tr>
<td>- Delivery capacity</td>
<td></td>
<td>14 cm³/rev</td>
</tr>
<tr>
<td>- Flow rate</td>
<td></td>
<td>0-25 l/min</td>
</tr>
<tr>
<td>- Maximum pressure</td>
<td></td>
<td>200 bar</td>
</tr>
</tbody>
</table>
### Description

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Suppl. Information</th>
<th>Dimension /Order No./Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circulating oil device</td>
<td>rear, uncontrolled</td>
<td>524-80-45</td>
</tr>
<tr>
<td>- Pump</td>
<td>Tandem pump</td>
<td></td>
</tr>
<tr>
<td>- Delivery capacity</td>
<td></td>
<td>14 cm³/rev</td>
</tr>
<tr>
<td>- Flow rate</td>
<td></td>
<td>35 l/min</td>
</tr>
<tr>
<td>- Maximum pressure</td>
<td></td>
<td>200 bar</td>
</tr>
<tr>
<td>Reduction gearbox</td>
<td>Reduction of rear PTO rpm to 540 rpm</td>
<td>526-62-1</td>
</tr>
</tbody>
</table>
Description

Accessories

The tractor is delivered with the following accessories:

1. Operating Instructions
2. Bio-Pass for certification of filling with environment-friendly hydraulic oil
3. Key holder
4. 2 ignition keys
5. 4 door keys
6. Upper link
7. 2 reducers for category II implements
Taking into Service

Daily Checks and Activities before Taking into Service

If damages 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 and Cleaning the Cooler and Radiator Screen Guards

**NOTE**
- Check if the mud guards (2, 3, 4, 5 and 6) are clean.
- Clean the mud guards if necessary. The guard (6) can be pulled out laterally to the left after releasing the bayonet screw (7) and then cleaned easily.
- The air intake of the air filter (1) must be clean.
Taking into Service

Turning on the Battery Isolating Switch

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

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

Checking Engine Oil Level

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

- Let the engine run approx. 2 minutes with the heat shut-off valve open.
- Stop the engine and pull the oil dipstick (1) out after approx. 1 minute.
- The oil level should be between the Min (2) and Max marking (3).
- If necessary, fill oil according to the maintenance manual.

ATTENTION
Do not fill too much oil.
Taking into Service

Checking the Trailer Hitch (Optional), if required
- Check the trailer hitch for proper condition and working. Carry out the check according to the instructions in the section "Operating the Trailer Hitch".

Checking Tire Inflation Pressure

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

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

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

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

Checking the Drive Hydraulics Oil Level
- Withdraw the oil dipstick (1).
- The oil level must be at the marking (2).
- Top up oil as specified in the maintenance manual.

Checking the Implement Hydraulics Oil Level
- Retract all hydraulic cylinders.
- Check the oil level at the sight glass (2). The oil level must be at the centre (1) of the sight glass.
- Top up oil as specified in the maintenance manual.
Filling Fuel

- If necessary, read the fuel level (1) on the multifunction 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 quantities .......... approx. 86 litres (22.7 USGAL.)

- Refit the filler cap (2).
Taking into Service

Checking the Brake Fluid Level
- Check the brake fluid level at the brake fluid reservoir (2).
- The brake fluid level must be between the Min and Max marking at the reservoir.
- Top up the 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 star knob (3).
- Pull the slider (4) to the right.
- Adjust the tilt of the steering wheel (1) and release the slider again.
- Retighten the star knob.
Taking into Service

Adjusting the Driver's Seat

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

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

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

**NOTE**
*Observe the operating manual for the seat supplied with your tractor.*

Adjusting the Lumbar Padding

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

Adjusting the Backrest

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

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

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

- Release the lever.

Adjusting the Horizontal Suspension
- Push the horizontal suspension lever (5) back: the seat suspension is unlocked in horizontal direction.
- Move the horizontal suspension lever (4) forward: the seat suspension is locked in the horizontal direction.

Adjusting the Seat Horizontally
- Pull the horizontal adjustment lever (6) up.
- Slide the seat horizontally forward or rear to the suitable seat position.
- Release the horizontal adjustment lever.
Taking into Service

Adjusting the Passenger Seat

1. Backrest
2. Weight adjustment
3. Horizontal adjustment lever
4. Backrest tilt adjustment

Adjusting the Weight
- Sit down on the seat.
- Press the weight adjustment knob (2) from the top down until the weight is reached on the scale; The weight can be adjusted in 9 stages of 50 to 130 kg.
- Release the knob when your weight is indicated.

**NOTE**

*Only push the knob from the top down.*
- At the bottom press the knob against the stop - the weigh adjuster automatically resets the seat to 50 kg.
- Release the knob.

Adjusting the Seat Horizontally
- Pull the horizontal adjustment lever (3) up.
- Slide the seat horizontally forward or rear to the suitable seat position.
- Release the horizontal adjustment lever.

Adjusting the Backrest Horizontally
- Pull the tilt lever (4) up.
- Adjust the inclination of the backrest with your back.
- Release the tilt lever.
Taking into Service

Filling Washing Water

NOTE

The washing water reservoir for the windshield washer is located beneath the passenger seat.

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

Filling capacity ............ approx. 2.5 litres (0.66 USGAL.)

Checking the Lights and Rear View Mirror

- Check that the lighting is functioning properly. 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.
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 before Starting

**CAUTION**
Before starting, check to ensure no one is in the vicinity of the tractor.

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

**CAUTION**
Start the engine only from the driver's station.
Starting the Engine

- Shift the gearshift lever (gearbox) to neutral.
- Set the forward/reverse selector lever (1) to the neutral position (centre).
- Depress the clutch pedal (gearbox) or inch pedal (hydrostatic drive).

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

- Set the hand throttle (2) to idle (push in fully).
- Insert the ignition key and turn the preheat/starter switch (3) to position 1.
NOTE
The battery charge indicator (8), engine oil pressure indicator (7), parking brake indicator (6) (if parking brake is engaged) and the red indicator for km/h or x10 (3) in the multifunction display come on.

- Turn the ignition key to position 2 to preheat the engine. The preheating indicator (4) comes on.

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

- When the preheating indicator goes out, 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".
Taking into Service

- Release the ignition key as soon as the engine turns over. The battery charge indicator (8) and the engine oil pressure indicator (7) will go out.
- Set the engine speed with the hand throttle (1) or accelerator pedal to the desired RPM (5).

Checking the Brakes and Steering for Proper Operation

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

**DANGER**

*Do not drive a tractor with a defective steering and/or braking system.*
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, don't forget to take the added length and drag into consideration.

DANGER
Parts of implements posing a danger to traffic 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

Driving with Hydrostatic Drive and Digital Electronics
- Start the engine.
- Select the direction of travel with the forward/reverse selector lever (3) (forward left or reverse right).
- The direction arrow for forward (1) or reverse (2) travel comes on.

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

NOTE
You can also select the new direction while travelling at reduced speed.

CAUTION
The tractor will brake strongly and accelerate in the opposite direction.

- Set the drive range pre-selection lever (4) (between the seats) to the desired driving range:

ATTENTION
This must only be done when the tractor is stationary.
## Table of Driving Ranges

<table>
<thead>
<tr>
<th>Position</th>
<th>Symbol</th>
<th>Function</th>
<th>Travel Speed*</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top position</td>
<td>S</td>
<td>Fast speed</td>
<td>0 - 30 / 36 km/h</td>
<td>Low tractive force, eg for highway driving</td>
</tr>
<tr>
<td>Centre position</td>
<td>0</td>
<td>Drive off</td>
<td></td>
<td>Towing</td>
</tr>
<tr>
<td>Bottom position</td>
<td>L</td>
<td>Slow speed</td>
<td>0 - 11.5 km/h</td>
<td>High tractive force, eg for working operation or pulling trailers on gradients</td>
</tr>
</tbody>
</table>

- Select the desired driving program at the driving program switch (6). The selected position is illuminated:

You can select 4 programs:

<table>
<thead>
<tr>
<th>Stage 1 and 2 programs</th>
<th>eg road travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 3 and 4 programs</td>
<td>eg working operation</td>
</tr>
</tbody>
</table>

* Depending upon the model
## Operation

### Table of Driving Programs*

<table>
<thead>
<tr>
<th>Position</th>
<th>Symbol</th>
<th>Function</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range 0</td>
<td>STOP</td>
<td>Drive off</td>
<td></td>
</tr>
<tr>
<td>Range 1</td>
<td>Rabbit symbol</td>
<td>Maximum speed</td>
<td>eg for highway driving</td>
</tr>
<tr>
<td>Range 2</td>
<td>Turtle symbol</td>
<td>Maximum speed</td>
<td>eg for highway driving</td>
</tr>
<tr>
<td>Range 3</td>
<td>PTO symbol</td>
<td>Travel speed adjustable with fine adjustment knob, is controlled automatically in case of high power demand of implement</td>
<td>eg for mowing</td>
</tr>
<tr>
<td>Range 4</td>
<td>Snow blower symbol</td>
<td>Travel speed adjustable with fine adjustment knob, is controlled automatically in case of high power demand of implement</td>
<td>eg special setting for snow blower</td>
</tr>
</tbody>
</table>

* The driving programs can be optimised for special operations by your Service, eg controlled constant driving speed
Selecting Road Speed (Transport Speed)

The tractor is stationary.
- Set the program switch (6) to range 1 or 2.

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

- Disengage the parking brake.
- Depress the accelerator pedal for the desired ground speed.

The tractor starts driving and can be driven up to maximum ground speed of the selected range.

- You can read the engine speed (8) and ground speed (7) on the multi-function display.

Setting the Working Speed of Programs 3 and 4

NOTE
With programs 3 and 4 you can select the ground speed independent of the PTO rpm.
Operation

The tractor is stationary.
- Set the inch knob (5) to 0.
- Set the program switch (6) to range 3 or 4.
- Adjust the PTO rpm with the hand throttle.

**NOTE**
The engine speed must reach at least 1500 rpm as the control is only effective beginning at this speed. You can read the speed on the multifunction display.

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

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

- Set the PTO clutch lever (7) fast to the vertical position to engage the PTO.
- Disengage the parking brake.
Adjusting the Inch Knob

**NOTE**
While driving you can adjust the inch knob (5) at any time for fine and infinitely variable control of the ground speed.

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

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

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

Operating the Inch Pedal

7 Inch pedal
8 Accelerator pedal

This function is active for all driving programs.

**NOTE**
The inch pedal allows driving speed to be reduced temporarily.

- Depress the inch pedal (7) to reduce driving speed and to stop completely.
- Release the inch pedal again behind the obstacle. The tractor will resume the previously selected driving speed.

Changing the Direction of Travel

- Preselect the new direction with the forward/reverse selector lever (9).
- The tractor will come to a standstill and accelerate again in the opposite direction.
Driving with Hydrostatic Drive, Digital Electronics and Dual Drive

- Set the drive range pre-selection lever (1) to "S". The DUAL Drive will work only in this driving range.

Table of Driving Ranges with Dual Drive

<table>
<thead>
<tr>
<th>Position</th>
<th>Symbol</th>
<th>Function</th>
<th>Hydrostatic Speed*</th>
<th>DUAL Drive Speed*</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top position</td>
<td>S</td>
<td>Fast range</td>
<td>0 - 30 / 36 km/h</td>
<td>0 - 30 / 42 km/h</td>
<td>Low tractive force, eg for road travel</td>
</tr>
<tr>
<td>Centre position</td>
<td>0</td>
<td>Drive off</td>
<td></td>
<td></td>
<td>For towing</td>
</tr>
<tr>
<td>Bottom position</td>
<td>L</td>
<td>Slow range</td>
<td>0 - 11.5 km/h / 14.5 km/h</td>
<td>-</td>
<td>High tractive force, eg for working or pulling trailers on gradients</td>
</tr>
</tbody>
</table>

* Depending on the version
Operation

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

**ATTENTION**
*Drive the tractor warm for approx. 10-12 min. at driving range 2.*

- Set the program switch to driving range 1.

**NOTE**
The functions of the drive are same except for the overdrive:
*When the driving speed*°* exceeds 25 km/h, the transmission automatically shifts from the hydrostatic drive to the mechanical gear. If the driving speed drops again, the transmission shifts back to the hydrostatic drive.*

* Depending on the version
Driving with the Mechanical Gearbox

- Set the gearshift lever to the neutral position.
- Start the engine.
- Select the direction of travel with the forward/reverse selector lever (1) (forward or reverse). The indicator will flash green (forward or reverse).
- Fully depress the clutch pedal (2) (buzzer sounds until shifting is completed). The indicator is now illuminated green.
- Shift the gearshift lever (4) left (looking forward) into the desired gear.

4 gears 1-2-3-4 are available.
- Shift the range selector lever (5) right (looking forward) in the desired speed range.

4 speed ranges are available:
  - S - Fast
  - M - Medium
  - L - Slow
  - LL - Very slow
**Operation**

**NOTE**
The label (4) shows the possible shift combinations. You have a total of 16 gears available, both for forward and for reverse travel.

- Release the clutch pedal (5) to start driving.

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

- Control the driving speed with the accelerator pedal (6) or the hand throttle.

**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 and lie in the area of the low speed range. As the transmission is synchronized, you do not have to give gas when downshifting.
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 lever (1) must be pulled back.
- The indicator (3) flashes green 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 indicator (3) is steadily illuminated green.
- Release the clutch pedal to drive 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.

- Toggle the differential lock switch (1) down and hold it. The indicator (2) in the multi-function display comes on 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.
- Toggle the differential lock switch (1) up. The switch remains on until you return it to the middle position again.

Disengaging the Differential Lock

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

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

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

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

Braking

The service brake is a wet disc brake mounted in the front axle. It is operated hydraulically and acts on all four wheels. The parking brake is mechanical and operated 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 (2).

⚠️ **NOTE**
*If the mechanical gearbox is fitted, the clutch pedal must also be operated.*
Operation

Engaging the Parking Brake

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

- Pull the parking brake lever (2) up.
The parking brake is engaged, the parking brake indicator (3) in the multi-function display comes on red.

Disengaging the Parking Brake

- Pull on the parking brake lever (2) slightly. While depressing the release button (1) in the lever, push the lever downwards.
The parking brake is disengaged, the parking brake indicator goes out.

ATTENTION
An alert is sounded when driving with the parking brake applied.
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 tire inflation pressure

**NOTE**

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

- large track width
- level, non-bumpy terrain

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

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.*

- Attach the stationary equipment to the PTO shaft (1).
- Set the gearshift lever (with a mechanical gearbox the gearshift and range selector lever) to the zero position.
- With a hydrostatic drive, set the program switch to 0.
- 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 pump.

Max. oil quantity available .......... 22 litres (5.8 USGAL.)

**ATTENTION**  
*Before starting to drive after stationary operation, first check the hydrostatic steering. 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.
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 same spacers must be installed on all four wheels.*

**NOTE**

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

- Tighten the wheel nuts to the specified torque.

**Torque to** ................................................................. 340 Nm
Operating the Emergency Start (Hydrostatic Drive with Dual-Drive Only)

**NOTE**
In case the engine was stalled and can not be started again, the emergency start must be operated before a renewed starting attempt.

- Fully depress the inch pedal.
- Briefly operate the starter.
- Pull the handle for the emergency start (1) up.
- Start the engine again.

Operating the Emergency Shift (Mechanical Gearbox Only)

**NOTE**
In the event of a failure of the electrical installation, 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 wire safety (3).
- Carefully press the ball socket of the servo motor (2) down until it is disconnected.
- Move the operating lever (1) to the desired position. V = forwards or R = reverse.
- 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 (U.S.: 120 V) source.
Follow the Operating Instructions of the 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 by operating it without a load.

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

<table>
<thead>
<tr>
<th>Tires</th>
<th>Snow chain type (RUD Order No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.5-18 MPT</td>
<td>24 553 and 22 553</td>
</tr>
<tr>
<td>400/60-15.5</td>
<td>22 177</td>
</tr>
<tr>
<td>33x12.50 R 15/33x12.5-15</td>
<td>22 167</td>
</tr>
<tr>
<td>33x15.50-15</td>
<td>22 174</td>
</tr>
<tr>
<td>31x15.50-15 Terra</td>
<td>22 548</td>
</tr>
<tr>
<td>36x13.5-15</td>
<td>24 178</td>
</tr>
</tbody>
</table>

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.

* Option
Operating the Implements

We have tested and approved a large number of possible implements for use with this tractor. We recommend contacting our customer service before installing special equipment.

Possible Implements

Rotary mower with different widths
Reel mower
Flail-type mower
Hedge cutters
Leaf blower and grass collector
Weed brushes and -burners
Weed killers
Casting fixtures
Distributors for service in winter
Conveyor feed distributors for different distribution widths
Snow blowers
Snow plow
Sweepers
Spray and high-pressure cleaners
Oil removal device

Safety Instructions for Handling Implements

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

DANGER
Be careful to avoid injury from being crushed or cut when implements are being attached.

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 attachments on the front and rear 3-point lift, do not exceed the permissible total weight, the permissible axle loads and tire carrying capacities of the tractor. The front axle of the tractor must always be loaded with at least 20% of the tractor’s empty 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 Tire Carrying Capacity including the Minimum Ballasting

For the 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 rear implement/rear ballast \(^2\)
- \( G_V \) (kg) Total weight Front implement/front ballast \(^2\)
- \( a \) (m) Distance 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 $G_{V\ min}$

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

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

Front Implement

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

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

the calculated minimum ballasting required for the rear of the tractor in the table.

(Value X is 0.25 for Holder tractor 4-wheel)

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

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

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

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 $G_{tat}$

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

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

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

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

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

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

6) Tire carrying capacity

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

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

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

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

DANGER
Use only the following specified devices for attaching your implement.
Secure the implement against shifting or rolling off.

* Option
Operating the Implements

Adjusting Catch Hook and Catch Hook Bar

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

Adjusting the Length of the Catch Hook Bar

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

DANGER

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

- Drive the tractor to the implement to be picked up.

<table>
<thead>
<tr>
<th>Hole</th>
<th>Position</th>
<th>Used for</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st hole</td>
<td>Front</td>
<td>Category I and II</td>
</tr>
<tr>
<td>2nd hole</td>
<td>Centre</td>
<td>Category I</td>
</tr>
<tr>
<td>3rd hole</td>
<td>Rear</td>
<td>Optional attachments</td>
</tr>
</tbody>
</table>

- Steer the catch hooks (5) below the attaching pin of the implement.
- Raise the front lift until the quick attach (4) closes and engages.
Adjusting the Upper Link Mount

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

1. Upper link support
2. Retaining spring
3. Top link pin
4. Height adjustment lever
5. Upper link mount

- Raise the height adjustment lever (4).
- Slide the upper link mount (5) to one of the 4 possible positions.
- Release the height adjustment lever; the upper link support engages.
- Pull the retaining spring (2) off the pin (3) and pull the pin to the side.
- Adjust the upper link (8) to the proper length (screw in or out by rotating the sleeve); secure the upper link with the locking lever (7).
- Insert the pin through eyelet on the upper link and secure the pin again with the retaining spring.
Operating the Implements

Coupling Hydraulic Lines

**ATTENTION**
The hydraulic couplings on the tractor must be without hydraulic pressure before the connection. The couplings on the tractor and the hydraulic hoses must be clean.

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

- Open the protective caps of the hydraulic couplings (6).
- Attach the colour coded hydraulic hoses (9) 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.

With the connection you therefore 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 with trials at a safe place.
Installing the Cardan Shafts

Only use the shafts suited and intended for the implement. The 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**

*Turn off the engine before the installation. After the installation, fit the protective devices as specified. After the removal, cover the PTO shaft (1) with the protective cap again.*

Removing Implements

- Drive the implement to its storage place and lower it with the front lift.
- Stop the engine, but do not turn off the ignition.
- Operate all control levers for the front lift several times in all directions. This relieves the pressure in the hydraulic system.
- Slide the outer ring of the hydraulic couplings (1) back and disconnect the hydraulic hoses (2).
- Close the protective caps of the hydraulic couplings (as for item 4).
- 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 front lift and back off.
Operating the Implements

Operating Implements

Operating the Hydraulic Control Levers

1 Control lever for dump or rear lift*
2 Control lever functions plate
3 Multi-function lever functions plate
4 Multi-function lever*
   (front lift and driving direction)
5 Lock knob for longitudinal motion of the multi-function lever
6 Lock knob for laterally movement of the multi-function lever
7 Lock knob for longitudinal motion of the control lever
8 Lock knob functions plate

**NOTE**

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

* Option
**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 (4).

**Control Lever Functions**
You can recognize the functions on the notice plate (2).

**NOTE:** At the base of the control lever (1) is a lock knob (7) with which the motions of the lever can be locked or released.

The following movements are possible:
- Set the lock knob (7) to the middle position (lever free to move).
- Push the control lever (1) forward:
  - The implement is lifted.
- To lower the implement, pull the control lever (1) back:
- Pull the control lever (1) fully back:
  - The float position of the implement is turned on, ie the implement can be moved with external use of force. The function is on until the control lever is disengaged again. It always returns to the neutral position.

**Functions of Lock-out Knob**
With the lock knob (7) lever movements can be controlled as follows:

The functions are shown on the plate (8).
- Knob depressed - lever movement locked
- Knob in middle - lever movement released
- Knob pulled out - float position released

**NOTE:**
If the lever movement is locked, you can prevent any unintended movement of the implement.
*Transport lock for road travel.*
Operating the Implements

Multi-function Lever Functions

Note

Different versions of the multi-function lever can be installed.

Multi-function Lever (Variant 1)

Multi-function lever (4) (without forward/reverse selector switch)

The multi-function lever can be operated forward and back as well as to the right and left: The functions are shown on the plate (3).

The following movements are possible:

- Fully pull out the lock knobs (5 and 6) (lever movement).
- Push the multi-function lever (4) forward:
  - The implement is lowered.
- For lifting, pull the multi-function lever (4) back:
  - The implement is lifted.

You can stop the motion by releasing the lever.
- Push the multi-function lever (4) fully forward:
  • The float position of the implement is turned on, i.e., the implement can be moved with external use of force. The function is on until the multi-function lever is pressed out of the detent again. It always returns to the neutral position.
- Push the multi-function lever (4) to the right:
  • The implement is swung to the right*.
- Push the multi-function lever (4) to the left:
  • The implement is swung to the left*.
* For example, when a snow plough is attached.

**NOTE**

Lock knob (5) controls the longitudinal motion, lock knob (6) the lateral movement of the multi-function lever.
There is no float position for the lateral movement of the multi-function lever.
Operating the Implements

Multi-function Lever (Variant 2)

1. Blue hydraulic couplings on
2. Blue hydraulic couplings off - float position
3. LED indicator, red or green
4. Functions off
5. LED indicator, red
6. Functions on
7. LED indicator, red or green
8. Yellow hydraulic couplings off
9. Green hydraulic couplings off - float position
10. Green hydraulic couplings on
11. Yellow hydraulic couplings on

**NOTE**

With this multi-function lever it is possible to control 3 different functions:
The functions are selected as follows:

**Front Lift 1 - Lifting/Lowering**
- Push button I (6). The red LED indicator (5) comes on.
- Press pushbutton 1 (1).

**NOTE**
You can also operate the function only temporarily by pressing lightly.

- The red LED indicator (3) comes on.
- Push the multi-function lever forward.
  - The front lift is lowered.
- Pull the multi-function lever back.
  - The front lift is lifted.

**NOTE**
In addition you can also select the float position*:

- Press the pushbutton (2) blue hydraulic couplings off - float position.
- LED indicator (3) is illuminated green.
  To turn it off, press the pushbutton (1) lightly.
- LED indicator (3) goes off.
- To turn the function off, press pushbutton 0 (4). The red LED indicator (5) extinguishes.

* Option
Operating the Implements

Front Lift 2 - Shifting Left/Right

- Push button 1 (6). The red LED indicator (5) comes on.
- Press pushbutton 2 (12).

**NOTE**

You can also select the function only temporarily by pressing lightly.

- LED indicator (7) is illuminated red.
- Push the multi-function lever forward
  - to move the front lift to the left.
- Pull the multi-function lever back
  - to move the front lift to the right.

You can also select the float position:

- Push the multi-function lever fully forward.
- To deselect the float position, pull the lever back.
  - To turn off, press pushbutton (9) lightly.
- The LED indicator (7) extinguishes.
- To deselect the function, press pushbutton 0 (4).
  - The red LED indicator (5) extinguishes.
Front Lift 3 - Lateral Tilt

- Push button 1 (6). The red LED indicator (5) comes on.
- Press pushbutton 3 (11).

**NOTE**

You can also select the function only temporarily by pressing the button lightly.

- LED indicator (8) is illuminated red.
- Push the multi-function lever forward
  - The front lift is tilted to the left.
- Pull the multi-function lever back.
  - The front lift is tilted to the right.

In addition you can also select the float position*:

- Push the pushbutton (10) green hydraulic couplings off - float position.
- LED indicator (8) is illuminated green.
  - To turn it off, press the pushbutton (11) lightly.
- The LED indicator (8) extinguishes.
- To deselect the function, press pushbutton 0 (4). The red LED indicator (5) extinguishes.

* Option
Operating the Implements

Multi-function Lever (Variant 4)

1. Forward direction arrow (illuminated if selected)
2. Reverse direction arrow (illuminated if selected)
3. Forward/reverse selector switch (left forward - right reverse)
4. Front lift float position pushbutton
5. Multi-function lever
6. Front lift pushbutton
7. Yellow pushbutton, left (front when looking forward) (movements at yellow hydraulic couplings activated)
8. Yellow pushbutton, right (front when looking forward) (movement at green hydraulic couplings activated)

Activating Functions (Operation)

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

DANGER
The PTO clutch lever (3) must be turned off. To turn it off, it must be put in the horizontal position.

- Start the engine.
- Select the required PTO rpm with the PTO selector lever (2).
- To do so, pull the lever to the front and operate it upwards or downwards.

The possible positions are shown on the plate (1).
- Up position - 540 rpm
- Middle position - OFF
- Down position - 1000 rpm
Operating the Implements

Engaging the Front PTO

**ATTENTION**

Never engage the PTO with the engine off.

**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) quickly to the vertical position. The pressure point must be passed very noticeably. The front PTO is turned on.
- To disengage it, return the PTO clutch lever to the horizontal position.
- Return lever (2) to position 0 (neutral).

**DANGER**

After being disengaged, the installed equipment can continue to run. Wait until the equipment is stationary before working on it again.
Engaging the Rear PTO

**NOTE**
The rear PTO can be engaged with PTO selector lever (4) located at the articulated joint. The lever positions are shown on the plate (5).

- PTO selector lever (3) must be turned off.
- Move PTO selector lever (4) up to engage the rear 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) up quickly to the vertical position. The rear PTO is engaged.
- To disengage it, return the PTO clutch lever to the horizontal position.
- Push the PTO selector lever (4) down again.

**DANGER**
After the equipment is turned off, it can still continue to run. Wait until the equipment is stationary before working on it again.
Operating the Implements

Operating the Hydraulic Carrier* (Power Lifter)

1 Pressure adjuster
2 ON-OFF plate
3 Star knob for turning on/off

The hydraulic carrier allows for a weight compensation between implement and tractor. This increases the axle load and the climbing ability is improved. During road travel with a lifted implement, the hydraulic system absorbs shocks due to bumps in the road.

- Turn the star knob (3) to the left (ON position).
- Screw in the pressure adjuster (1) as far as possible.
- Raise the implement with the front lift.
- Read the pressure at the pressure gauge (4) at the driver's station (e.g., 100 bar) and select the float position.
- Screw out the pressure adjuster (1) until the pressure gauge indicates, for example, 50 bar (implement resting on ground). The selected pressure corresponds to the carried weight.
- Lower and raise the implement with the front lift.

* Option
Operating Instructions

C 9700 ... C 9.88 H

Operating the Implements

Road Travel with Carrier

NOTE
Do not raise the implement completely to allow the shock absorption to be effective.

Operation with Carrier

NOTE
If the implement adapts to uneven ground with delay, turn the pressure adjuster (1) back until the pressure is reduced.

ATTENTION
On very rough terrain the pressure gauge (4) may not indicate any pressure at all.

- Raise the implement again with the front lift by operating it briefly.
- In the case of light implements (eg rotary mower) turn the carrier off.
- Turn the star knob (3) to the right (OFF position).
Operating the Implements

Operating Variable Pump* for Implements (setting from 0 to 100 litres)

The variable pump for the implements is a device for driving attachments with a high hydraulic power demand such as a spiral-bladed lawn mower. It draws its oil from the working hydraulics tank with a filling quantity of approx. 45 litres and is controlled from the driver's station.

- Connect the hydraulic hoses of the implements to the screw couplings (1) and (2) and the leakage oil coupling (3).
- Set the switch for the driving program (4) to one of the required driving programs.

**NOTE**
The variable pump can not be turned on without a driving program being selected.

**ATTENTION**
Turn on the starting safety switch (7) only at low engine speed.

- Set the rotary knob (5) to 0.
- Release the lock at the starting safety switch (7) and depress the switch. The indicator in the switch comes on.

* Option
ATTENTION

Increase the engine speed, but then increase the oil flow only slowly.

- Turn the rotary knob (5) to adjust the oil flow from 0 to 100 litres/min until the desired flow rate for the implement is reached. The figure on the ring x10 corresponds roughly to the oil flow in litres per minutes at full throttle.

NOTE

With the setscrew at the stop ring (6) it is possible to set a stop so that a certain flow rate for an implement is not exceeded.

ATTENTION

If the implement is no longer used, turn the variable pump for implements off with the starting safety switch to prevent any unnecessary overheating of the hydraulic oil.

Turning Off the Variable Pump for Implements

- Turn off the starting safety switch (7). The indicator in the switch extinguishes.

NOTE: If the variable pump for the implements is not first switched off when you:
- turn off the engine,
- set the drive program switch to 0,
- started with the forward/reverse selector lever in the forward or reverse position
you can not, for safety reasons, immediately restart the variable pump for implements.

Before a renewed start you must either first:
- set the rotary knob to 0, or
- turn the starting safety switch off and on again once, or
- operate the forward/reverse selector lever once through neutral.
Operating the Implements

Operating the Power Hydraulics* (75 L Fixed Flow)

The power hydraulic system is used for driving attachments with a fixed hydraulic power demand. It draws the oil from the working hydraulics tank and is controlled from the driver's station.

- Connect the hydraulic hoses of the implement to the screw couplings (1) and (2) and the leakage oil coupling (3).

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

- Release the lock at the starting safety switch (4) and depress the switch. The indicator in the switch comes on.

**ATTENTION**
*Increase the speed of the engine slowly.*

- The implement is supplied with an oil flow of approx. 75 l/min.
ATTENTION
If the implement is no longer used, turn off the power hydraulics starting safety switch to prevent any unnecessary overheating of the hydraulic oil.

Never leave the power hydraulic system on:
- when the engine is running without a load connected to the couplings
- or not in operation,
- when driving without needing oil.

The overheating can damage the hydraulic system.

Turning Off the Power Hydraulics
- Turn off the starting safety switch (4). The indicator in the switch extinguishes.
Operating the Implements

Operating the Hydraulic Dumper

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

- Start the engine.

Device selector lever:
- Selector lever (1) behind the seat in "dumper" position.

**DANGER**
*Make sure no-one standing behind the truck can get hurt.*

- Move the implement control lever (2) to the "lift" position.
  - The dumper is lifted. To stop the movement, release the control lever.
- To lower the dumper, move the implement control lever (2) to the "lowering" position.

**DANGER**
*Make sure no-one standing behind the truck can get hurt - danger of being crushed.*

The dumper is lowered.

* Option
Operating the Oil Circulating Device* (Rear, Unregulated)

The oil circulating device drives the hydraulic motor of an implement with a fixed hydraulic power demand, for example a mounted road spreader in winter. It is supplied with oil from the working hydraulics tank by a tandem pump and operated from the driver's station. The implement must be equipped with its own flow regulator.

- 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**
* 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**
* Increase the speed of the engine slowly.*

* Option
Operating the Implements

- The servo motor in the implement is supplied with an oil flow of max. 35 litres/min at a speed of 2500 rpm.

**ATTENTION**

*If the implement is no longer used, turn the oil circulating device off with the starting safety switch to prevent any unnecessary overheating of the hydraulic oil.*

Do not leave oil circulating device on:
- when the engine is running without a load connected to the couplings
- or not in operation,
- when driving without needing oil.

The overheating can damage the hydraulic system.

**Turning off the Oil Circulating Device**

- Turn off the starting safety switch (3).
Operating Priority Flow Valve I*

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

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

**ATTENTION**

* Turn on the starting safety switch only at a 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**

* Increase the speed of the engine slowly.*

* Option
Operating the Implements

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

**ATTENTION**
*If the implement is no longer used, turn 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:
- when the engine is running without a load connected to the couplings
- or not in operation,
- when driving without using oil

The overheating can damage the hydraulic system.

Turning Off the Priority Flow Valve

- Turn off the starting safety switch (3). The indicator in the switch extinguishes.
Operating priority flow valve II*

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

**ATTENTION**
* Turn on the starting safety switch only at a 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**
* Increase the speed of the engine slowly.

* Option
Operating the Implements

- Adjust the desired speed of the engine with the hand throttle.
- Go to the rear of the tractor and adjust the hand wheel (4) of the priority flow valve to the working speed required for the implement. Turning counterclockwise increases, turning clockwise lowers the RPM.
- The servo motor in the implement 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:
- when the engine is running without a load connected to the couplings
- or not in operation
- when driving without oil being required

The overheating can damage the hydraulic system.

**Turning Off the Priority Flow Valve**

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

Operating the Driver's Cab

Operating the roof hatch

Opening the roof hatch
- Press the buttons (1 and 2) on the sides of the handle together.
- Push the handle (3) 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 the inner plastic clips (1) in and out.
- Press the outer plastic clips (2) in.
- Swing the roof hatch up with the handle (3) and open to the front.
Other activities

Turning on the Windshield Wiper/Washer

NOTE
The tractor is provided with a front and rear wiper. A washer system is also installed. The washer system is supplied with water from the washing water reservoir below the passenger seat.

Front Windshield Wiper/Washer
- Set the front windshield washer switch (1) to the 1st stage.
  The front wiper is in operation.
- Set the switch to the 2nd stage:
  The front windshield washer is on and only sprays as long as the switch is actuated.

Rear Wiper/Washer
- Set the rear windshield washer switch (2) to the 1st stage.
  The rear wiper/washer is in operation.
- Set the switch to the 2nd stage:
  The rear windshield washer is on and sprays only as long as the switch is actuated.
Lights

Turning On and Operating the Lights

NOTE

Turn the preheat/starter switch to position 1.

- Set the light switch (1) to the 1st position.
  The front clearance lights (2, 7) and rear tail lights (9, 14) (sidemarker light) are on.
- The position light indicator (2) in the multi-function display comes on.
- Set the light switch (1) to the 2nd position
  The front headlights (1, 8) (dip beam) are on.

Turning On High Beam

- Set the light switch (1) to the 2nd position.
- Move the turn signal lever (4) down. The headlights (1, 8) are set to high beam.
- The high beam indicator (3) in the multi-function display comes on.

NOTE

To use the headlight flasher, operate the signal lever up.
Other activities

1. Head light
2. Clearance light, RH
3. Turn signal light, RH
4. Head light, up
5. Head light, up
6. Turn signal light, LH
7. Clearance light, front
8. Headlight, front
9. Stop light
10. Tail light, turn signal light, LH
11. Reversing light
12. Rotating beacon mount
13. Flood light*
14. Stop light
15. Tail light, turn signal light, RH
16. Reversing light
17. License plate light
Turning on the Upper Lights

**NOTE**
If front implements are installed and the bottom headlights are hidden, it is possible to turn on the upper lights. If these headlights are on, drive only at a maximum speed of 25 km/h.

- Operate the upper headlights switch (1).
- The upper headlights (4, 5) are on.

**NOTE**
The functions high beam and headlight flasher are only available in the lower headlights.

Right and Left Turn Signal

- Set the turn signal lever (2) back. The left turn signal lights (6, 9) are on.
- The turn signal indicator in the multi-function display flashes.
- Move the turn signal lever (2) forward. The right turn signal lights (3, 14) are on.

Operating the Horn

- Push in the turn signal lever (2) to sound the horn.
Other activities

Turning on the Hazard Warning Flasher System
- Operate the hazard warning flasher switch (2) to turn on the hazard warning lights.

Turning on the Rotating Beacon*

* Option

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

- Operate the rotating beacon switch (1).
The rotating beacon (12) is on.
Turning on the Flood Light*

* Option

**NOTE**

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

- Operate the flood light switch (4).
  The flood light (13) is on.

Interior Light

Turning on the Interior Light

**NOTE**

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

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

Radio* and Loudspeaker*

Operating the Radio

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

Please observe the instructions in this manual for operation of the radio.

The loudspeakers (3) are installed at the rear in the roof of the cabin.

Power Socket

Connecting Equipment to Power Socket

- You can connect 12 VDC equipment with maximum power rating of 15 A to the power socket (2) with a commercial automotive plug.

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

* Option
Heating

Heating and Ventilation

Turning on the Heating

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

- To heat the cabin, turn the heat shut-off valve (1) up. Any intermediate position is also possible. Lever up increases the heating effect, lever down reduces it. Observe the plate (2) beside the heat shut-off valve.
- To shut the heating off, move heat shut-off valve lever fully down.
Other activities

- To heat the cabin, toggle the heater blower switch (2).

**NOTE**
The heater blower has two speeds.

- Position 1 Slow (only air circulation in the cabin)
- Position 2 Fast (heater blower at high speed, roof blower at slow speed)

There are several air vent nozzles fitted in the cabin:
- 2 in the cab roof at the front
- 1 behind the driver's seat
- 4 at the instrument panel for the front and side windows
- 2 low down at the front in the foot area
- Set the air vent nozzles to the desired direction and desired air flow.

Turning on the Ventilation System

- To ventilate the cabin, operate the fresh air blower switch (1).

**NOTE**
The fresh air blower (top) has 2 speeds.

- Position 1 Slow
- Position 2 Fast (for summer)
Air Conditioner

Operating the Air Conditioner*

![Diagram of air conditioning controls]

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

* Option

1 Switch for 4-speed blower
2 On/Off switch
3 Temperature control
4 Air vent nozzle, adjustable

**NOTE**
A separate operating manual is supplied for the air conditioning. Please observe the instructions in this manual for operation of the air conditioning. The air conditioner is protected with its own 25 A fuse located in the compartment at the left behind the cabin.
Fuses

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

**Fuses for the Tractor**

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

1. Hazard warning flasher system
   Cab interior light /radio 30/cigarette lighter
2. Sidemarker light 58R/multi-function display light
3. Sidemarker light 58L, auxiliary lighting
4. Dip beam
5. High beam/high beam indicator
6. Stop light
7. Optional light switch/pressurizing valve
diff. lock/headlight flasher
8. Heater blower motor
9. Digital display for driving speed/PTO
10. Solenoid valve for circulating oil/multi-function display 15
11. Horn/engine shutdown solenoid via relay 72
12. 2-pole socket/radio/cigarette lighter/electric seat adjuster
13. Turn signal lights
14. Electronics box 15 Hydrostatic
drive forward/reverse switch
Fuses for the Cabin

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

Fuses for the Cabin

1. Right and left interior light, 15 A
2. Rear wiper/washer system 15 A
3. Front wiper/washer system 15 A
4. Flood light 15 A
5. Fresh air blower 15 A
6. Rotating beacon 25 A

Fuse for Air Conditioning*

**NOTE**
In the compartment at the left behind the cabin. To gain access to the fuses, screw off the cover on the left behind 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 (1) fully (idle position).
- Set the forward/reverse selector lever to 0.
- Set the drive program switch to 0.

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

Parking

ATTENTION
If the tractor is parked on slopes, it must be secured against rolling with chocks.
- Put the tractor in a low gear (only if equipped with a gearbox).
- If equipped with a hydrostatic drive, also secure the tractor with chocks.
- Turn the ignition key (2) to the left to 0 to turn the engine off.
- Remove the ignition key and take it along.

CAUTION
Do not leave the cabin without taking the ignition key.
- Turn off the battery isolating switch (3) and take the key with you.

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

Your tractor can tow the following trailers:

Table of Trailers

<table>
<thead>
<tr>
<th>Type of Trailer</th>
<th>Permissible Total Weight</th>
<th>Braking System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single axle trailer</td>
<td>2.5 t</td>
<td>No braking system</td>
</tr>
<tr>
<td>Single and multiple axle trailer</td>
<td>Up to 4 tons</td>
<td>With own braking system if the trailer brake lever can be mounted easily accessible beside the driver's seat</td>
</tr>
<tr>
<td>Single axle trailer</td>
<td>Up to 4.5 tons</td>
<td>With overrunning brake</td>
</tr>
<tr>
<td>Multiple axle trailer</td>
<td>Up to 4.5 tons</td>
<td>With service brake system and parking and rapid-emergency brake</td>
</tr>
<tr>
<td>Trailer</td>
<td>Up to 12 tons</td>
<td>With hydraulic or pneumatic braking system</td>
</tr>
</tbody>
</table>

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

The following trailer combinations are allowed:

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

**NOTE:** The total length of the tractor-trailer train should not exceed 18 m.
**Trailers, Towing**

**Operating the Trailer Hitch, Attaching Trailers**

- Adjust the height of the trailer hitch (2) at the adjustment rail (1) so that the trailer tiller can be attached horizontally.
- To adjust the height, pull the lever (6) up.

**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 800 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 lever (4) up until the tow pin (3) is clear of the hitch.

**DANGER**

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

- Drive the tractor with the hitch in the trailer tiller. Upon contact, the hitch closes, the towing pin (3) goes through the eye of the tiller.

**DANGER**

The trailer hitch must be completely closed.

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

- Set the driving range pre-selection lever (1) to position S or L. The tractive force is greater in position L.
- Drive the tractor as described in the section on driving.

**DANGER**

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

Instructions for Transport
- Drive the tractor on the means of transport.
- Park the tractor as described in the section on leaving the tractor.
- Secure the tractor against rolling with chocks at the wheels and, if needed, with wood blocks at the side to prevent it from sliding to the side.
- 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 hoisting weight should not exceed the permissible total weight:

The hoisting weight is given on the tractor identification plates or in the tables of weights in the Technical Data.

- Hoist the tractor only with the lifting equipment attached to all 4 wheels.
Transport, hoisting, towing

Instructions for Towing

If your tractor can not drive on its own power because it is damaged, it can be towed. Use the upper link support at the front at the driver's cab for towing.

DANGER: The towing tractor 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 or 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 upper link support (1).
- Set the forward/reverse selector lever to the centre position (no direction of travel selected).
- Shift the gear and range selector lever to neutral (gearbox).
- Set the driving range pre-selection lever to position 0 (hydrostatic drive).
- Let the engine run so that the power steering is operational.

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 at a maximum 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 small tires and vice versa.

Please refer to the maintenance manual for the adjustment of the speedometer.
Problems, Cause, Remedy

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

Problems in Engine and Exhaust Gas Turbocharger

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

Problems in Electronic and Hydraulic Drive System

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractive force too low</td>
<td>Feed pressure too low</td>
<td>Check valve!</td>
</tr>
<tr>
<td></td>
<td>High pressure too low</td>
<td>Check high pressure valves</td>
</tr>
<tr>
<td></td>
<td>Variable pump or variable motor leakage too large</td>
<td>Repair variable pump or variable motor</td>
</tr>
<tr>
<td>No forward or reverse travel possible</td>
<td>Drive or power take-off defective</td>
<td>Repair</td>
</tr>
<tr>
<td></td>
<td>No feed pressure</td>
<td>Check feed pump</td>
</tr>
<tr>
<td></td>
<td>Control cylinder in variable pump stuck</td>
<td>Replace variable pump</td>
</tr>
</tbody>
</table>
## Malfunctions, cause, remedy

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No forward and reverse travel.</td>
<td>Range selector lever in neutral</td>
<td>Select working or transport range</td>
</tr>
<tr>
<td></td>
<td>Forward/reverse selector switch in neutral</td>
<td>Put forward/reverse selector switch in desired direction of travel</td>
</tr>
<tr>
<td></td>
<td>No power supplied to the electronics</td>
<td>Check fuses</td>
</tr>
<tr>
<td></td>
<td>Electrical connections to variable pump interrupted</td>
<td>Check electrical connection</td>
</tr>
<tr>
<td></td>
<td>Electrical connection of Diesel engine - speed sensor interrupted, possibly oxidized</td>
<td>Make connection</td>
</tr>
<tr>
<td></td>
<td>Accelerator potentiometer defective</td>
<td>Renew accelerator potentiometer and adjust with BB3</td>
</tr>
<tr>
<td></td>
<td>Diesel engine speed sensor defective</td>
<td>Replace sensor</td>
</tr>
<tr>
<td></td>
<td>Forward/reverse selector switch defective</td>
<td>Replace Forward/reverse selector switch</td>
</tr>
<tr>
<td></td>
<td>Drive program switch at 0</td>
<td>Select desired driving program</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Tractor drives only in one direction</td>
<td>Forward/reverse selector switch defective</td>
<td>Replace forward/reverse selector switch</td>
</tr>
<tr>
<td></td>
<td>Electrical connection to the variable pump</td>
<td>Make connection</td>
</tr>
<tr>
<td></td>
<td>interrupted</td>
<td></td>
</tr>
<tr>
<td>No maximum speed</td>
<td>Diesel engine does not attain maximum RPM</td>
<td>Check accelerator linkage</td>
</tr>
<tr>
<td></td>
<td>Inch pedal not at maximum speed</td>
<td>Check Diesel engine</td>
</tr>
<tr>
<td></td>
<td>Variable pump not at full delivery</td>
<td>Adjust inch pedal and/or inch pot, calibrate</td>
</tr>
<tr>
<td></td>
<td>Sensor for ground speed defective,</td>
<td>Check maximal current</td>
</tr>
<tr>
<td></td>
<td>adjust electrical connection if required</td>
<td>Check proportional solenoid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check or replace sensor, check electrical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>connection</td>
</tr>
<tr>
<td>Does not remain stationary when inch pedal is</td>
<td>Inch pedal at wrong position, maybe foreign</td>
<td>Adjust properly, remove any foreign objects</td>
</tr>
<tr>
<td>fully depressed</td>
<td>objects in actuator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inch pot not adjusted properly</td>
<td>Adjust inch pot, calibrate</td>
</tr>
</tbody>
</table>
## Malfunctions, cause, remedy

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inch pedal not functioning</td>
<td>Inch pot defective</td>
<td>Replace inch pot, calibrate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Repair cable connection</td>
</tr>
<tr>
<td>Tractor does not remain stationary in driving program 1 or 2 without</td>
<td>Idling speed of the engine too high.</td>
<td>Adjust idling speed, check actuator</td>
</tr>
<tr>
<td>operation of accelerator</td>
<td>(reaches starting RPM)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incorrect calibration</td>
<td>Carry out calibration</td>
</tr>
</tbody>
</table>
### Problems in the Hydraulic System and Steering

**NOTE**

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

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifter or hydraulic cylinders not lifting, although control valve can be moved normally. No build-up of pressure (steering working normally)</td>
<td>Pressure relief valve jammed due to foreign objects</td>
<td>Remove and clean pressure limitation valve LU 08 SCS-OM2, but do not change the pressure setting!</td>
</tr>
<tr>
<td>Loss of lifting power</td>
<td>Pressure setting too low</td>
<td>Reset pressure with pressure gauge (190 bar)</td>
</tr>
<tr>
<td></td>
<td>Oil level too low</td>
<td>Fill up specified type of oil</td>
</tr>
<tr>
<td>Operating pressure is only reached with high RPM</td>
<td>Pump defective</td>
<td>Replace pump</td>
</tr>
<tr>
<td>Manual control valve jammed</td>
<td>Radial torsion</td>
<td>Tension screws too tight or not all tightened to the same torque</td>
</tr>
<tr>
<td></td>
<td>Dirt</td>
<td>Maximum torque 25 Nm (2.5 mkp)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remove and clean valve</td>
</tr>
</tbody>
</table>
## Malfunctions, cause, remedy

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

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 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:

<table>
<thead>
<tr>
<th>Service Hours</th>
<th>Kilometers Driven</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>500</td>
</tr>
<tr>
<td>150</td>
<td>7500</td>
</tr>
<tr>
<td>300</td>
<td>15000</td>
</tr>
<tr>
<td>600</td>
<td>30000</td>
</tr>
<tr>
<td>1500</td>
<td>75000</td>
</tr>
</tbody>
</table>
General Remarks on Maintenance

Service

The following services were carried out:

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

<table>
<thead>
<tr>
<th>Service Interval</th>
<th>Hours of Operation</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>375</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>625</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>750</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>875</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1125</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1250</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1375</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service Interval</th>
<th>Hours of Operation</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1625</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1750</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1875</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2125</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2250</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2375</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2625</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2750</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2875</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
General Remarks on Maintenance

- 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.

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 run the engine in 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.
- Oils, fuels, batteries, brake fluid and filters must be disposed of separately and as specified by regulations.
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 as long as the engine is still running.
- If external current consumers are connected, e.g., 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 cardan 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 cardan shaft.
- The guards for the cardan shaft and the PTO shaft must be installed as specified.
- When the cardan 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 tires 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 roadworthiness and operating safety.
General Remarks on Maintenance

Work on the Electrical Equipment

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

- The switch must be horizontal, the toggle removed.

**CAUTION**
Disconnect the battery ground lead (2).

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

Jack Lifting 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.
Securing the Frame (Loading Platform*)
For all services requiring the dump body (loading platform*) to be raised, secure it against accidental lowering.

- Place a U-channel on the cylinder and secure it with locking pins (1).

* Option
### Maintenance Schedule

#### Maintenance during the First Period of Operation

<table>
<thead>
<tr>
<th>Interval</th>
<th>Service and Inspection</th>
<th>See page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maintenance after the first 50 service hours</strong></td>
<td>Check engine for leaks</td>
<td>161</td>
</tr>
<tr>
<td></td>
<td>Check hydraulic oil level</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Renew hydraulic oil filter (pressure filter for implement hydraulics)</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Renew hydraulic oil filter (pressure filter for drive hydraulics)</td>
<td>179</td>
</tr>
<tr>
<td></td>
<td>Check clutch</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>Check brake system</td>
<td>172</td>
</tr>
<tr>
<td></td>
<td>Lubricate tractor</td>
<td>173, 185</td>
</tr>
<tr>
<td></td>
<td>Retighten screws and studs</td>
<td>174</td>
</tr>
<tr>
<td></td>
<td>Retighten wheel nuts</td>
<td>174</td>
</tr>
<tr>
<td><strong>Maintenance after the first 150 service hours</strong></td>
<td>Change gear oil of front gearbox</td>
<td>187</td>
</tr>
<tr>
<td></td>
<td>Change gear oil of rear gearbox</td>
<td>189</td>
</tr>
<tr>
<td><strong>Maintenance after the first 500 service hours</strong></td>
<td>Change hydraulic oil for drive hydraulics</td>
<td>191</td>
</tr>
<tr>
<td></td>
<td>Change hydraulic oil for implement hydraulics</td>
<td>193</td>
</tr>
<tr>
<td></td>
<td>Check or clean hydraulic oil suction filter of implement hydraulics</td>
<td>191</td>
</tr>
<tr>
<td></td>
<td>Check or clean hydraulic oil suction filter of drive hydraulics</td>
<td>194</td>
</tr>
<tr>
<td></td>
<td>Change hydraulic oil return filter for variable pump</td>
<td>166</td>
</tr>
<tr>
<td></td>
<td>Change hydraulic oil return filter for power hydraulics</td>
<td>167</td>
</tr>
</tbody>
</table>

The services and inspections specified below must be carried out after 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

<table>
<thead>
<tr>
<th>Regular Maintenance</th>
<th>Service and Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance as required</td>
<td>Adjust speedometer</td>
</tr>
<tr>
<td></td>
<td>Check air cleaner system</td>
</tr>
<tr>
<td></td>
<td>Change hydraulic oil return filter for variable pump</td>
</tr>
<tr>
<td></td>
<td>Change hydraulic oil return filter for power hydraulics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Periodic Maintenance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance every 125 service hours</td>
<td>Check cooling system</td>
</tr>
<tr>
<td></td>
<td>Clean cooling system</td>
</tr>
<tr>
<td></td>
<td>Check battery and cable connections</td>
</tr>
<tr>
<td></td>
<td>Check hydraulic oil level, see page 52</td>
</tr>
<tr>
<td></td>
<td>Check high pressure hoses</td>
</tr>
<tr>
<td></td>
<td>Check steering cylinder and orbitrol</td>
</tr>
<tr>
<td></td>
<td>Check brake fluid level for the foot brake</td>
</tr>
<tr>
<td></td>
<td>Check clutch brake fluid level</td>
</tr>
<tr>
<td></td>
<td>Check clutch</td>
</tr>
<tr>
<td></td>
<td>Check PTO clutch</td>
</tr>
<tr>
<td></td>
<td>Check brake system</td>
</tr>
<tr>
<td></td>
<td>Lubricate tractor</td>
</tr>
<tr>
<td></td>
<td>Retighten screws and studs</td>
</tr>
<tr>
<td></td>
<td>Retighten wheel nuts</td>
</tr>
<tr>
<td></td>
<td>Check electrical system</td>
</tr>
<tr>
<td></td>
<td>Clean fresh air filter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintenance every 500 service hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change engine oil</td>
</tr>
<tr>
<td></td>
<td>Change engine oil filter</td>
</tr>
<tr>
<td></td>
<td>Check hose couplers for leaks</td>
</tr>
<tr>
<td></td>
<td>Change hydraulic oil pressure filter (drive hydraulics)</td>
</tr>
<tr>
<td></td>
<td>Change hydraulic oil pressure filter (implement hydraulics)</td>
</tr>
<tr>
<td></td>
<td>Check heater</td>
</tr>
</tbody>
</table>
## Maintenance Schedule

<table>
<thead>
<tr>
<th>Periodic Maintenance</th>
<th>Service and Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance every 1000 service hours</td>
<td>Check valve play&lt;br&gt;Check battery&lt;br&gt;Check V-belt tension and condition&lt;br&gt;Change fuel filter&lt;br&gt;Clean or change star filter of fuel feed pump&lt;br&gt;Lubricate cardan shaft nipples</td>
</tr>
<tr>
<td>Maintenance every 1500 service hours</td>
<td>Change gear oil of front gearbox (including axles)&lt;br&gt;Change gear oil of the rear transmission (including axles)&lt;br&gt;Change hydraulic oil for drive hydraulics&lt;br&gt;Change hydraulic oil for implement hydraulics&lt;br&gt;Check or clean hydraulic oil suction filter of implement hydraulics&lt;br&gt;Check or clean hydraulic oil suction filter of drive hydraulics&lt;br&gt;Change hydraulic oil return filter for variable pump, see page 160&lt;br&gt;Change hydraulic oil return filter for power hydraulics, see page 161</td>
</tr>
<tr>
<td>Maintenance every 3000 service hours</td>
<td>Check injection nozzles&lt;br&gt;Change toothed belt</td>
</tr>
<tr>
<td>Annual Maintenance</td>
<td>Examine hydraulic oil samples of implement hydraulics&lt;br&gt;Change hydraulic oil for drive hydraulics</td>
</tr>
<tr>
<td>Maintenance every 2 years</td>
<td>Change hydraulic oil for implement hydraulics</td>
</tr>
</tbody>
</table>
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 Operating Hours
Maintenance after the First 150 Operating Hours
Maintenance after the First 500 Operating Hours

**Maintenance after the First 50 Operating Hours**

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

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

* Option
Maintenance as Required

Adjusting the Speedometer

The adjustment of the speedometer in the multi-function display is required when changing from large to smaller tires and vice versa.
- Remove the sun protection frame (1).
- Disengage the lock on the left (2) and right (3) side of the frame with a screwdriver.
- Pull the multi-function display (4) out and turn it around.
- Remove the cover from the combination switch (5) on the back.
- Set the 6 DIP switches to the positions shown in the table as required for the size of your tires.
- Note the combinations column applicable for your display.

NOTE

There are 2 different columns for the possible combinations. The first column applies for the tractor with gearbox, the second one for the Hydrostatic Drive and Dual Drive.
### Maintenance as required

- The switches 1 to 6 are set to the positions
  1 - up, or
  0 - down.
- Refit the multi-function display.

<table>
<thead>
<tr>
<th>Tire Size</th>
<th>Type</th>
<th>Gearbox Combination</th>
<th>Hydrostatic Dual Drive Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>36x13,5-15</td>
<td>524-31-8</td>
<td>0 1 0 1 1 0</td>
<td>1 0 0 0 0 0</td>
</tr>
<tr>
<td>10.5-18 MPT</td>
<td>524-31-1/-6</td>
<td>1 1 0 1 1 0</td>
<td>1 1 0 0 0 0</td>
</tr>
<tr>
<td>400/60-15,5</td>
<td>524-31-5</td>
<td>1 0 1 1 1 0</td>
<td>0 1 1 0 0 0</td>
</tr>
<tr>
<td>33x12,5 R15</td>
<td>524-31-7</td>
<td>0 0 0 0 0 1</td>
<td>1 0 0 1 0 0</td>
</tr>
<tr>
<td>33x12,5-15</td>
<td>524-31-4</td>
<td>1 1 1 1 1 0</td>
<td>1 1 0 1 0 0</td>
</tr>
<tr>
<td>33x15,5-15</td>
<td>524-31-3</td>
<td>1 1 1 1 1 0</td>
<td>1 1 0 1 0 0</td>
</tr>
<tr>
<td>33/18 LL-16.1</td>
<td>524-31-9</td>
<td>1 1 1 1 1 0</td>
<td>1 1 1 1 1 0</td>
</tr>
<tr>
<td>31x15,5-15</td>
<td>524-31-2</td>
<td>1 0 0 0 0 1</td>
<td>0 0 1 1 0 0</td>
</tr>
</tbody>
</table>
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 a horn.
- Stop the engine.
- Raise the dump body (loading platform*) and secure it against accidental lowering.
- Loosen the hose clamp (1).
- Remove the air filter housing clamping band (2) and turn the air filter housing up.
- Open the air filter cover clips.
- Pull of the housing cover and clean the dust ejection valve (3).
- Pull the air filter cartridge (4) out of the housing by rotating it slightly.

Cleaning:
- Blow out the air filter cartridge with compressed air (max. 5 bar) from the inside out.

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 in the reverse order of removal.

* Option
Maintenance as required

Changing the Hydraulic Oil Return Filter for the Variable Pump*

The hydraulic oil return filter with service indicator is located at the rear right hand side of the tractor below the cabin.

**ATTENTION**
The hydraulic oil return filter must be replaced if the pressure at the service indicator (1) rises to 3 bar pressure when the engine is at idling speed and the implement variable pump is running when equipment (for example spiral-bladed lawn mower) is installed.

- Relieve any pressure in the hydraulic system by turning the implement off.
- Loosen the hydraulic oil return filter (2) with a filter wrench.

**ATTENTION**
Observe the instructions for handling fuels and lubricants.

- Clean the mating surface of the filter mount.
- Coat the new seal with oil.

- Install and hand tighten the new oil filter cartridge with a new seal in the filter mount.
- Make a trial run and check for leaks.
- Check the hydraulic oil level.

* Option
Changing the Hydraulic Oil Return Filter for Power Hydraulics*

The hydraulic oil return filter with service indicator is located at the rear right hand side of the tractor below the cabin.

**ATTENTION**

The hydraulic oil return filter must be replaced if the pressure at the service indicator (1) rises to 3 bar with the installed equipment (e.g., spiral-bladed lawn mower) at engine idling speed and the power hydraulics on.

- Relieve any pressure in the hydraulic system by turning the implement off.
- Loosen the hydraulic oil return filter (2) with a filter wrench.

**ATTENTION**

Observe the instructions for handling fuels and lubricants.

- Clean the mating surface of the filter mount.
- Coat the new seal with oil.

* Option

- Install and hand tighten the new oil filter cartridge with a new seal in the filter mount.
- Make a trial run and check for leaks.
- Check the hydraulic oil level.
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
- Raise the dump body (loading platform*) and secure it against accidental lowering.
- Blow compressed air through from the engine side to remove any dirt and debris.

Cleaning with Cold Cleaner or Water Jet

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

* Option

- Raise the dump body (loading platform*) and secure it against accidental lowering.
- 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 delicate 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 Cylinders and Orbitrol
- Check the steering cylinders and orbitrol for damage and leaks.
- Have damaged or leaky parts replaced by an authorized workshop.

Checking the Brake Fluid Level for the Foot Brake
- Check the brake fluid level in the reservoir for the foot brake (2). The brake fluid level should be between the markings.
- To fill brake fluid, unscrew the reservoir cap (2) and fill recommended brake fluid as far as the marking.

Filling quantity ........ approx. 0.4 litres (0.105 USGAL.)

ATTENTION
Do not mix different kinds of brake fluids.

Checking the Clutch* Brake Fluid Level
- Check the brake fluid level in reservoir for the clutch (1). The brake fluid level should be between the markings.

Filling quantity ........ approx. 0.25 litres (0.066USGAL.)

ATTENTION
Do not mix different kinds of brake fluids.

* mechanical gearbox only
Maintenance Every 125 Service Hours

Checking the Clutch (if mechanical gearbox is fitted)
- Have the clutch pedal play (1) checked by an authorized workshop.

Checking the PTO clutch
Have this work carried out by an authorized workshop.
- Check the linkage rod for slight play. The clevises should not be too tight or have too much play.

Checking the Braking 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.

**CAUTION**
When the foot brake pedal (2) is depressed, the tractor is braked strongly.

- Depress the foot brake pedal (2) 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.
Maintenance Every 125 Service Hours

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

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

Torque ................................................................. 340 Nm

Checking the Electrical System

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

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

* Option
Cleaning the Upper Fresh Air Filter
- Remove the fastening screws (1).
- Remove the filter cover (2) and filter element.
- Clean the filter element or replace it.

**NOTE**
_A charcoal filter* is available for such applications as spraying insecticides, etc._

- Refit the filter cover and filter element.

Cleaning the Lower Fresh Air Filter
- Remove the fastening screws (3).
- Remove the rear panel (4) and take out the filter element upwards.
- Clean the filter element or replace it.
- Re-install the filter element and rear panel.

**ATTENTION**
_When a charcoal filter (in item 2) is installed, the lower fresh air filter must be closed airtight._

* Option
Maintenance Every 500 Service Hours

Changing the Engine Oil

- Run the engine warm to operating temperature.
- Set the heating control 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.
- Allow the oil to run out completely.

**ATTENTION**
_Observethe instructions for handling fuels and lubricants._

- Screw the oil drain plug in again with a new seal and tighten to a torque of 55 Nm.
- Fill new engine oil at the filler neck (1). Only use recommended engine oil.

**Filling quantity ....................... 8.75 litres (2.31 USGAL.)**

- 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 on handling fuels and lubricants.*

- Clean the mating surface of the filter mount.
- Screw a new air filter cartridge with a new seal 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 Hose Couplings for Leaks
- Check all hose couplings for leaks; use leakage spray, if necessary. Eliminate any leaks immediately.
Changing the Hydraulic Oil Pressure Filter (Drive Hydraulics)

- Remove the air filter housing (1) with a 24mm wrench.

**ATTENTION**
*Observe the instructions on 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 seal with oil.
- Insert the new pressure filter in the air filter housing.
- Screw the air filter housing with a new seal in the filter mount.
- Make a trial run and check for leaks.
- Check the hydraulic oil level.
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 seal with oil.
- Insert the new pressure filter in the air filter housing.
- Screw the air filter housing with a new seal in the filter mount.
- Make a trial run and check for leaks.
- Check the hydraulic oil level.
Checking the Heating System

- Set the heat shut-off valve lever (1) down to the "OFF" position.
- Run the engine warm.
- Set the heat shut-off valve lever (1) up to the "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 Valve Clearance
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. Neutralize spilled battery acid immediately.

CAUTION
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 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 seal with oil.
- Install and hand tighten the new filter cartridge with a 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

- 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 centre cardan shaft.
- Adjust the lower cardan shaft (3) by moving the tractor forward or back until grease the nipples are easily accessible.
- Grease the lower cardan shaft.
- Refit the rubber protector at the articulated joint.
Maintenance Every 1500 Service Hours

Change the Front Gearbox Oil (Including Axles)

**NOTE**
*Change the gear oil while still warm.*

- Place the tractor on level ground.
- Unscrew the filler plug (1) at the front gearbox and clean it 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 (2) at the front gearbox and wash it with Diesel fuel.
- Allow the oil to drain completely.
- Refit the oil drain plug with a new seal, ensuring it is properly seated.
Maintenance Every 1500 Service Hours

Filling Oil (Hydrostatic Drive Only)
- Unscrew the oil level plug (3).
- Fill recommended gear oil through the filler plug hole until it runs out at the level plug hole.

Filling quantity .......... approx. 10.9 litres (2.88 USGAL.)
- Refit the oil level plug with a new seal, ensuring it is properly seated.

Filling Oil (Gearbox Only)
- Fill recommended gear oil through the filler plug hole.

Filling quantity .......... approx. 10.9 litres (2.88 USGAL.)
- Check the oil level at the sight glass (4). The oil level should be visible through the sight glass.
Changing the Rear Gearbox Oil (Including Offset Axles)

**NOTE**
*Change the gear oil only when still warm.*

- Place the tractor on level ground.
- Unscrew the filler plug (1) at the rear gearbox and wash it with Diesel fuel.
- Place a suitable catch pan beneath the gearbox.

**CAUTION**
*Danger of scalding when draining hot gear oil.*

- Unscrew the oil drain plug (2) at the rear gearbox and wash it with Diesel fuel.
- Allow the oil to drain completely.
Maintenance Every 1500 Service Hours

- Refit the oil drain plug with a new seal, ensuring it is properly seated.
- Fill recommended gear oil through the filler plug hole.

Filling quantity ....... approx. 17.75 litres (4.69 USGAL.)

- Check the oil level at the sight glass (3).
- The oil level should be visible through the sight glass.
- Then fill another 3 litres (0.79 USGAL.) of gear oil.
Changing the Drive Hydraulics Oil

**NOTE**
*Change the hydraulic oil while still warm.*

- Place the tractor on level ground.
- Place a suitable oil container beneath the hydraulic oil tank.

**CAUTION**
*Danger of scalding when draining hot hydraulic oil.*

- Unscrew the oil drain plug (3).

Drain the oil.

- If required, flush the hydraulic oil tank with clean hydraulic oil.

Checking or Cleaning the Hydraulic Oil Suction Filter of Drive Hydraulics

- Unscrew the banjo screw (4) and move the hose to the side.
- Remove the filter cover fastening screws (5).
- Withdraw the filter housing with the sieve-star filter.
Maintenance Every 1500 Service Hours

**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 24mm open-ended wrench.
- Fit a new toroidal sealing ring on the new filter and screw it on to the filter housing.

The installation of the suction filter is carried out in the reverse order of removal.
- Refit the oil drain plug (3) with new sealing ring, ensuring it is properly seated.
- Fill recommended hydraulic oil through the filler neck (1).

**Filling quantity ............... approx. 19 litres (5.02 USGAL.)**
- Check the oil level with the oil dipstick (2).
- Refit the filler neck cap.

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

- Shut off the engine.
- Check for leaks.
- Recheck the oil level with the oil dipstick (2) and top up hydraulic oil, if necessary.
Changing the Implement Hydraulics Oil

**NOTE**
Change the hydraulic oil while still warm.

- Place the tractor on level ground. Raise the loading platform.

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

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

**CAUTION**
Danger of scalding when draining hot hydraulic oil.

- Un螺丝 the oil drain plug (1).
- Drain the oil.

Please ensure the oil is disposed of properly.

- If required, flush the hydraulic oil tank with clean hydraulic oil.
Checking or Cleaning the Implement Hydraulics
Suction Filter

- Remove the mounting pin (4) of the hydraulic cylinder (5).
- Remove the banjo screw (3).
- Remove the filter cover fastening screws (2).
- Withdraw the filter housing with the sieve-star filter.

**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 24mm open-ended wrench.
- Screw the new filter with a new toroidal sealing ring on to the filter housing.

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

If an implement variable pump* or power hydraulic system* is installed, an additional sieve-star filter is installed in the flange (1). If so, it must also be cleaned or changed as described above.

* Option
- Refit the oil drain plug with a new seal, ensuring it is properly seated.
- Fill recommended hydraulic oil through the filler neck (6).

**Filling quantity .......... approx. 45 litres (11.89 USGAL.)**

- Check the oil level at the sight glass (7).
- Refit the filler neck cap.
- Start the engine. Operate the implement hydraulics and steering.

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

- Shut off the engine and relieve any pressure in the hydraulic system.
- Check for leaks.
- Check the oil level at the sight glass (7), adding hydraulic oil if required.
Maintenance Every 1500 Service Hours

Changing the Hydraulic Oil Return Filter for the Implement Variable Pump*

Carry out the services and inspections as described in the section "Maintenance as Required".

Changing the Hydraulic Oil Return Filter for Power Hydraulics*

Carry out the services and inspections as described in the section "Maintenance as Required".

* Option
## 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.

### Changing the Toothed Belt

See the workshop 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.

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

Examination of Implement Hydraulics Oil Samples

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 contaminated, 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 some fuel and refill the fuel tank with a mix of 90% Diesel fuel and 10% anti-corrosion oil.
- Run the engine for 10 minutes.
- Switch off the engine.

Putting the Tractor Back in Service after a 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 points of the tractor.

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

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

NOTE
Do not use plastic foil to cover the tractor as this enhances the formation and collection of condensate water.
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 condensate water, changing the oil if necessary.
- Perform the services and inspections as for before taking into service.
- Refill the fuel tank.
- Change the brake fluid.
- Take the tractor in operation.

When taking into the tractor into service, particularly check:
- Gearboxes and axles for leaks.
- Drive hydraulics, gearshift, steering.
- Brake (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 Fuels and Lubricants

Recommended Hydraulic and Gear Oils

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Recommended Hydraulic Oil HE Oils (Hydr. Ester)</th>
<th>Recommended Gear Oil for Gearbox und Hydrostatic Transmission Utto / Stou</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO Viscosity Class HLP (HM) HV</td>
<td>VG 46</td>
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</tr>
<tr>
<td>AGIP</td>
<td>Agip Arnica S 46</td>
<td>Agip Rotra JDF</td>
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<td>Vitam EHF 46</td>
<td>Aral Fluid HGS 10W30</td>
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<td>Syntofluid 46</td>
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<td>Biohyd SE 46 – S</td>
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<td>VALVOLINE</td>
<td>Valvoline Ultraplant</td>
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</table>
Recommended Fuels and Lubricants

**Recommended Engine Oils and Lubricants**

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

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Recommended Lubricating Oil</th>
<th>SAE Class</th>
<th>Recommended Lubricant Penetration Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGIP</td>
<td>Agip Sigma Ultra TFE</td>
<td>10W-40</td>
<td>Agip GR MU 2</td>
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<td>Autol Valve Ultra FE</td>
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<td>ARAL GmbH</td>
<td>Aral Mega Turboral</td>
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<td>Multi-purpose grease</td>
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</table>
## Recommended Engine Oils and Lubricants continued

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<thead>
<tr>
<th>Manufacturer</th>
<th>Recommended Oil</th>
<th>SAE Class</th>
<th>Lubricants Penetration Ratio 260 - 290</th>
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<td>BP OIL International</td>
<td>BP Vanellus HT Extra</td>
<td>10W-40</td>
<td>BP Energrease LS 2</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>BP multi-purpose grease L2</td>
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<tr>
<td>Shell International</td>
<td>Shell Myrina TX/</td>
<td>5W-40</td>
<td>Retinax EP2</td>
</tr>
<tr>
<td></td>
<td>Shell Rimula Ultra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell International</td>
<td>Shell Myria TX/</td>
<td>10W-30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shell Rimula Ultra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>Total Rubia TIR 8600</td>
<td>10W-40</td>
<td></td>
</tr>
<tr>
<td>Wintershall</td>
<td>TFG</td>
<td>10W-40</td>
<td></td>
</tr>
</tbody>
</table>

### Brake Fluid

**DANGER**

Do not use mineral oil.

### Fuels

Observe the specifications of the engine manufacturer.

**NOTE**

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine oil</td>
<td>12.5 litres (3.3 USGAL.)</td>
<td>12.5 litres (3.3 USGAL.)</td>
<td></td>
</tr>
<tr>
<td>Including filter 0.5 litres (0.132 USGAL.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Including heating system 1.5 litres (0.396 USGAL.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front gearbox with axles, gear oil</td>
<td>10.9 litres (2.88 USGAL.)</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Front hydrostatic drive with axles, gear oil Initial filling</td>
<td>---</td>
<td>10.9 litres (2.88 USGAL.)</td>
<td>12.7 litres (3.35 USGAL.)</td>
</tr>
<tr>
<td>Rear gearbox with axles, gear oil</td>
<td>17.75 litres (4.69 USGAL.)</td>
<td>17.75 litres (4.69 USGAL.)</td>
<td></td>
</tr>
<tr>
<td>Implement hydraulics, hydraulic oil*</td>
<td>approx. 45 - 50 litres (11.89 - 13.21 USGAL.)</td>
<td>approx. 45 - 50 litres (11.89 - 13.21 USGAL.)</td>
<td></td>
</tr>
<tr>
<td>Hydraulic oil tank for drive, hydraulic oil* Initial filling</td>
<td>---</td>
<td>19 litres (5.02 USGAL.)</td>
<td>22 litres (5.81 USGAL.)</td>
</tr>
<tr>
<td>Brake fluid for hydr. clutch</td>
<td>0.25 litres (0.066 USGAL.)</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Brake fluid for hydr. foot brake</td>
<td>0.4 litres (0.105 USGAL.)</td>
<td>0.4 litres (0.105 USGAL.)</td>
<td></td>
</tr>
<tr>
<td>Fuel tank, Diesel fuel</td>
<td>86 litres (22.7 USGAL.)</td>
<td>86 litres (22.7 USGAL.)</td>
<td></td>
</tr>
</tbody>
</table>

*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 oil. Residual quantities of mineral oils reduce the biological degradability. They do not influence operation.*
## Tightening Torques

### Hexagon Screws and Studs

<table>
<thead>
<tr>
<th>Hexagon Screws and Studs</th>
<th>M 8</th>
<th>M 10</th>
<th>M 12</th>
<th>M 14</th>
<th>M 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw quality 8.8</td>
<td>25 Nm</td>
<td>49 Nm</td>
<td>86 Nm</td>
<td>135 Nm</td>
<td>210 Nm</td>
</tr>
<tr>
<td>Screw quality 10.9</td>
<td>35 Nm</td>
<td>69 Nm</td>
<td>120 Nm</td>
<td>190 Nm</td>
<td>295 Nm</td>
</tr>
</tbody>
</table>

### Gearbox, Axles, Wheels

<table>
<thead>
<tr>
<th>Gearbox, Axles, Wheels</th>
<th>Tightening Torque</th>
<th>Engine</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexagon screws M 10 (servostat to steering support)</td>
<td>40 Nm</td>
<td>Idler/drive belt</td>
<td>45 Nm</td>
</tr>
<tr>
<td>Tension screws for hydraulic control valves</td>
<td>25 Nm</td>
<td>Cylinder head cover</td>
<td>9 ± 1 Nm</td>
</tr>
<tr>
<td>Axle housing to gearbox</td>
<td>86 Nm</td>
<td>Rocking lever adjustment screw</td>
<td>20 ± 2 Nm</td>
</tr>
<tr>
<td>Axle housing cover M 10 (planetary gears)</td>
<td>69 Nm</td>
<td>Suction pipe (TORX)</td>
<td>21 Nm</td>
</tr>
<tr>
<td>Pendulum bearing M 12</td>
<td>86 Nm</td>
<td>Exhaust pipe (TORX)</td>
<td>40 Nm</td>
</tr>
<tr>
<td>Pendulum limit stop M 16</td>
<td></td>
<td>Oil drain plug</td>
<td>55 ± 5 Nm</td>
</tr>
<tr>
<td>Hitch bar for hitch coupling M 14</td>
<td>135 Nm</td>
<td>Injection valve clamp (TORX)</td>
<td>21 Nm</td>
</tr>
<tr>
<td>Wheel nuts (incl. wheel hub spacers)</td>
<td>340 Nm</td>
<td>Plugs and union nuts for heating hoses</td>
<td>65 ± 5 Nm</td>
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</table>
## Maintenance data

### List of Replacement Parts

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
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</thead>
<tbody>
<tr>
<td>Sealing ring for oil drain plug</td>
<td>010 395</td>
</tr>
<tr>
<td>Engine oil filter</td>
<td>797 135</td>
</tr>
<tr>
<td>Valve cover seal</td>
<td>787 357</td>
</tr>
<tr>
<td>Air filter cartridge</td>
<td>029 760</td>
</tr>
<tr>
<td>KHD fan V-belt</td>
<td>784 992</td>
</tr>
<tr>
<td>Fuel filter</td>
<td>782 971</td>
</tr>
<tr>
<td>Hydraulic suction filter (implement hydraulic system)</td>
<td>029 541</td>
</tr>
<tr>
<td>O-ring 64x3</td>
<td>014 696 (2 items)</td>
</tr>
<tr>
<td>Hydraulic suction filter (drive hydraulic system)</td>
<td>029 540</td>
</tr>
<tr>
<td>O-ring 64x3</td>
<td>014 696 (2 items)</td>
</tr>
<tr>
<td>Hydraulic pressure filter (implement and drive hydraulic system)</td>
<td>132 897 (1 item each)</td>
</tr>
<tr>
<td>O-ring for hydraulic pressure filter</td>
<td>028 109</td>
</tr>
<tr>
<td>Toothed belt repair kit</td>
<td>786 262</td>
</tr>
<tr>
<td>Replacement cartridge for service hydraulics return line filter</td>
<td>029 088</td>
</tr>
<tr>
<td>Replacement cartridge for implement variable pump return line filter</td>
<td>143 991</td>
</tr>
</tbody>
</table>
## Bulbs 12 V

<table>
<thead>
<tr>
<th>Lights</th>
<th>Rating</th>
<th>Lights</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headlights H4</td>
<td>60/55 W</td>
<td>Hazard warning light switch</td>
<td>2 W</td>
</tr>
<tr>
<td>Turn signal light. front</td>
<td>21 W</td>
<td>Engine temperature gauge light</td>
<td>1.2 W</td>
</tr>
<tr>
<td>Turn signal light. rear</td>
<td>21 W</td>
<td>Fuel gauge light</td>
<td>1.2 W</td>
</tr>
<tr>
<td>Tail light</td>
<td>10 W</td>
<td>Indicator lights</td>
<td>1.2 W</td>
</tr>
<tr>
<td>License plate light</td>
<td>5 W</td>
<td>Clearance lights</td>
<td>5 W</td>
</tr>
<tr>
<td>Stop light</td>
<td>21 W</td>
<td>Interior light</td>
<td>5 W</td>
</tr>
<tr>
<td>Back-up light</td>
<td>21 W</td>
<td>Rotating beacon</td>
<td>45 W</td>
</tr>
<tr>
<td>Tachometer for engine and PTO rpm</td>
<td>1.2 W</td>
<td>Multi-function instrument light DIN 72601/W5/12 V</td>
<td>1.2 / 2.0 / 3.0 W</td>
</tr>
<tr>
<td>Speed and PTO shaft indicator</td>
<td>1.2 W</td>
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## Technical Data of Engine

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Deutz AG</th>
<th>Deutz AG</th>
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<tbody>
<tr>
<td>Type</td>
<td>BF4M1011 53.5 KW</td>
<td>BF4M1011F 61 KW</td>
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<tr>
<td>Design</td>
<td>In-line vertical engine</td>
<td>In-line vertical engine</td>
</tr>
<tr>
<td>Mode of operation</td>
<td>4-stroke Diesel</td>
<td>4-stroke Diesel</td>
</tr>
<tr>
<td>Cooling</td>
<td>Oil cooling</td>
<td>Oil cooling</td>
</tr>
<tr>
<td>Injection system</td>
<td>Direct fuel injection</td>
<td>Direct fuel injection</td>
</tr>
<tr>
<td>Number of cylinders</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Cylinder bore</td>
<td>Ø 91</td>
<td>Ø 91</td>
</tr>
<tr>
<td>Stroke</td>
<td>112</td>
<td>112</td>
</tr>
<tr>
<td>Cylinder capacity</td>
<td>2914</td>
<td>2914</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Compression pressure</td>
<td>22-27 bar</td>
<td>22-27 bar</td>
</tr>
<tr>
<td>Charging pressure</td>
<td>1.25bar</td>
<td>1.25bar</td>
</tr>
<tr>
<td>Valve tolerance (cold engine)</td>
<td>Intake valve 0.3 mm</td>
<td>Intake valve 0.3 mm</td>
</tr>
<tr>
<td></td>
<td>Exhaust valve 0.5 mm</td>
<td>Exhaust valve 0.5 mm</td>
</tr>
<tr>
<td>Fuel consumption</td>
<td>223g/KW-h at 1500-1750 rpm</td>
<td>222g/KW-h at 1750-1850 rpm</td>
</tr>
<tr>
<td>Air filter</td>
<td>Mann and Hummel dry air filter with acoustic alert</td>
<td>Mann and Hummel dry air filter with acoustic alert</td>
</tr>
<tr>
<td>Lubrication system</td>
<td>Forced-feed lubrication</td>
<td>Forced-feed lubrication</td>
</tr>
<tr>
<td>Lubrication oil consumption</td>
<td>Maximum 0.5% of fuel consumption</td>
<td>Maximum 0.5% of fuel consumption</td>
</tr>
<tr>
<td>Oil filter</td>
<td>Changeable cartridge in main flow</td>
<td>Changeable cartridge in main flow</td>
</tr>
<tr>
<td>Oil pressure at n=900 rpm</td>
<td>2.0 bar</td>
<td>2.0 bar</td>
</tr>
<tr>
<td>Rated speed</td>
<td>2500 rpm</td>
<td>2600 rpm</td>
</tr>
<tr>
<td>Maximum idling speed</td>
<td>2600 rpm</td>
<td>2750 rpm</td>
</tr>
<tr>
<td>Minimum idling speed</td>
<td>900 rpm</td>
<td>900 rpm</td>
</tr>
<tr>
<td>Maximum torque</td>
<td>235 Nm at 1750 - 1850 rpm</td>
<td>255 Nm at 1750 - 1850 rpm</td>
</tr>
<tr>
<td>Power acc. to ICE.24/89/491/EWG at n=2800 rpm</td>
<td>53.5 KW (72 HP (DIN))</td>
<td>61 KW (83 HP (DIN))</td>
</tr>
</tbody>
</table>
### Engine Specifications

<table>
<thead>
<tr>
<th></th>
<th>C 9.78H</th>
<th>C 9.88H</th>
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<tbody>
<tr>
<td><strong>Manufacturer</strong></td>
<td>Deutz AG</td>
<td>Deutz AG</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>BF4M2011 57 KW</td>
<td>BF4M2011 65 KW</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td>In-line vertical engine</td>
<td>In-line vertical engine</td>
</tr>
<tr>
<td><strong>Mode of operation</strong></td>
<td>4-stroke Diesel</td>
<td>4-stroke Diesel</td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td>Oil cooling</td>
<td>Oil cooling</td>
</tr>
<tr>
<td><strong>Injection system</strong></td>
<td>Direct fuel injection</td>
<td>Direct fuel injection</td>
</tr>
<tr>
<td><strong>Number of cylinders</strong></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Cylinder bore</strong></td>
<td>Ø 94</td>
<td>Ø 94</td>
</tr>
<tr>
<td><strong>Stroke</strong></td>
<td>112</td>
<td>112</td>
</tr>
<tr>
<td><strong>Cylinder capacity</strong></td>
<td>3108</td>
<td>3108</td>
</tr>
<tr>
<td><strong>Compression ratio</strong></td>
<td>17.5</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>Compression pressure</strong></td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Charging pressure</strong></td>
<td>0.9 bar</td>
<td>1.15 bar</td>
</tr>
<tr>
<td><strong>Valve tolerance (cold engine)</strong></td>
<td>Intake valve 0.3 mm Exhaust valve 0.5 mm</td>
<td>Intake valve 0.3 mm Exhaust valve 0.5 mm</td>
</tr>
<tr>
<td><strong>Fuel consumption</strong></td>
<td>216 g/KW-h at 1750-1850 rpm</td>
<td>216 g/KW-h at 1550-1650 rpm</td>
</tr>
<tr>
<td><strong>Air filter</strong></td>
<td>Mann and Hummel dry air filter with acoustic alert</td>
<td>Mann and Hummel dry air filter with acoustic alert</td>
</tr>
<tr>
<td><strong>Lubrication system</strong></td>
<td>Forced-feed lubrication</td>
<td>Forced-feed lubrication</td>
</tr>
<tr>
<td><strong>Lubrication oil consumption</strong></td>
<td>Maximum 0.5% of fuel consumption</td>
<td>Maximum 0.5% of fuel consumption</td>
</tr>
<tr>
<td><strong>Oil filter</strong></td>
<td>Changeable cartridge in main flow</td>
<td>Changeable cartridge in main flow</td>
</tr>
<tr>
<td><strong>Oil pressure at n=900 rpm</strong></td>
<td>2.0 – 2.5 bar</td>
<td>2.0 – 2.5 bar</td>
</tr>
<tr>
<td><strong>Rated speed</strong></td>
<td>2500 rpm</td>
<td>2800 rpm</td>
</tr>
<tr>
<td><strong>Maximum idling speed</strong></td>
<td>2750 rpm</td>
<td>3050 rpm</td>
</tr>
<tr>
<td><strong>Minimum idling speed</strong></td>
<td>900 rpm</td>
<td>900 rpm</td>
</tr>
<tr>
<td><strong>Maximum torque</strong></td>
<td>246 Nm at 1550 - 1650 rpm</td>
<td>266 Nm at 1550 - 1650 rpm</td>
</tr>
<tr>
<td><strong>Power acc. to ICE.24/89/491/EWG at n=2800 rpm</strong></td>
<td>57 KW (78 HP (DIN))</td>
<td>65 KW (88 HP (DIN))</td>
</tr>
</tbody>
</table>
## Fuel System

<table>
<thead>
<tr>
<th>Maintenance data</th>
<th>all vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fuel injection pump</strong></td>
<td>BOSCH individual withdrawable element-type calibrated pump</td>
</tr>
<tr>
<td><strong>Governor</strong></td>
<td>Governor integrated in front cover</td>
</tr>
<tr>
<td><strong>Injection nozzle</strong></td>
<td>5-hole nozzle</td>
</tr>
<tr>
<td><strong>Injection pressure</strong></td>
<td>210 bar + 8 bar</td>
</tr>
</tbody>
</table>
| **Start of fuel injection** | 4°+/-1° BTDC for 1011  
6°+/-1° BTDC for 2011 |

### Drive pump

Hydrostatic drive
Axial piston pump, Type 11 VG50 EP
Rated pressure 300 bar,  
Maximum pressure 350 bar
A4 VG40 EP
Rated pressure 380 bar  
Maximum pressure 430 bar

### Drive motor

Axial piston motor /Type AG KM 55
## Alphabetical Index

<table>
<thead>
<tr>
<th>A</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories .................................................................</td>
<td>48</td>
</tr>
<tr>
<td>Activating Functions (Operation) ................................</td>
<td>102</td>
</tr>
<tr>
<td>Additional Information for Implements ......................</td>
<td>86</td>
</tr>
<tr>
<td>Adjusting Catch Hook and Catch Hook Bar ..................</td>
<td>90</td>
</tr>
<tr>
<td>Adjusting the Backrest ...............................................</td>
<td>55</td>
</tr>
<tr>
<td>Adjusting the Backrest Tilt ..........................................</td>
<td>57</td>
</tr>
<tr>
<td>Adjusting the Driver's Seat .........................................</td>
<td>55</td>
</tr>
<tr>
<td>Adjusting the Driver's Weight .....................................</td>
<td>56</td>
</tr>
<tr>
<td>Adjusting the Horizontal Suspension ...........................</td>
<td>56</td>
</tr>
<tr>
<td>Adjusting the Inch Knob ...............................................</td>
<td>69</td>
</tr>
<tr>
<td>Adjusting the Length of the Catch Hook Bar ...............</td>
<td>90</td>
</tr>
<tr>
<td>Adjusting the Lumbar Padding ......................................</td>
<td>55</td>
</tr>
<tr>
<td>Adjusting the Passenger Seat .......................................</td>
<td>57</td>
</tr>
<tr>
<td>Adjusting the Seat Horizontally .................................</td>
<td>56, 57</td>
</tr>
<tr>
<td>Adjusting the Speedometer .........................................</td>
<td>141, 163</td>
</tr>
<tr>
<td>Adjusting the Steering Wheel ......................................</td>
<td>54</td>
</tr>
<tr>
<td>Adjusting the Track Width ..........................................</td>
<td>82</td>
</tr>
<tr>
<td>Adjusting the Upper Link Mount ....................................</td>
<td>91</td>
</tr>
<tr>
<td>Adjusting the Weight ..................................................</td>
<td>57</td>
</tr>
<tr>
<td>Air Conditioner .........................................................</td>
<td>129</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballast Weights .........................................................</td>
<td>84</td>
</tr>
<tr>
<td>Battery .......................................................................</td>
<td>14</td>
</tr>
<tr>
<td>Battery Acid .............................................................</td>
<td>13</td>
</tr>
<tr>
<td>Bearing Load ............................................................</td>
<td>136</td>
</tr>
<tr>
<td>Before Starting to Drive ............................................</td>
<td>63</td>
</tr>
<tr>
<td>Brake Fluid ...............................................................</td>
<td>205</td>
</tr>
<tr>
<td>Braking .......................................................................</td>
<td>77</td>
</tr>
<tr>
<td>Bulbs 12 V ..................................................................</td>
<td>209</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change the Front Gearbox Oil (Including Axles) ..........</td>
<td>187</td>
</tr>
<tr>
<td>Changing the Direction of Travel ..............................</td>
<td>70, 75</td>
</tr>
<tr>
<td>Changing the Drive Hydraulics Oil ............................</td>
<td>191</td>
</tr>
<tr>
<td>Changing the Engine Oil ............................................</td>
<td>177</td>
</tr>
<tr>
<td>Task</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Changing the Engine Oil Filter</td>
<td>178</td>
</tr>
<tr>
<td>Changing the Fuel Filter</td>
<td>184</td>
</tr>
<tr>
<td>Changing the Hydraulic Oil Pressure Filter (Drive Hydraulics)</td>
<td>179</td>
</tr>
<tr>
<td>Changing the Hydraulic Oil Pressure Filter (Implement Hydraulics)</td>
<td>180</td>
</tr>
<tr>
<td>Changing the Hydraulic Oil Return Filter</td>
<td></td>
</tr>
<tr>
<td>for Power Hydraulics</td>
<td>167, 196</td>
</tr>
<tr>
<td>Changing the Hydraulic Oil Return Filter for the</td>
<td></td>
</tr>
<tr>
<td>Implement Variable Pump</td>
<td>196</td>
</tr>
<tr>
<td>Changing the Hydraulic Oil Return Filter for the</td>
<td></td>
</tr>
<tr>
<td>Variable Pump</td>
<td>166</td>
</tr>
<tr>
<td>Changing the Implement Hydraulics Oil</td>
<td>193, 199</td>
</tr>
<tr>
<td>Changing the Rear Gearbox Oil (Including Offset Axles)</td>
<td>189</td>
</tr>
<tr>
<td>Changing the Toothed Belt</td>
<td>197</td>
</tr>
<tr>
<td>Check the Engine for Leaks</td>
<td>161</td>
</tr>
<tr>
<td>Checking Engine Oil Level</td>
<td>50</td>
</tr>
<tr>
<td>Checking Hose Couplings for Leaks</td>
<td>178</td>
</tr>
<tr>
<td>Checking or Cleaning the Hydraulic Oil</td>
<td></td>
</tr>
<tr>
<td>Suction Filter of Drive Hydraulics</td>
<td>191</td>
</tr>
<tr>
<td>Checking or Cleaning the Implement Hydraulics</td>
<td></td>
</tr>
<tr>
<td>Suction Filter</td>
<td>194</td>
</tr>
<tr>
<td>Checking the Air Cleaner System</td>
<td>165</td>
</tr>
<tr>
<td>Checking the Battery</td>
<td>183</td>
</tr>
<tr>
<td>Checking the Battery and Cable Connections</td>
<td>170</td>
</tr>
<tr>
<td>Checking the Brake Fluid Level</td>
<td>54</td>
</tr>
<tr>
<td>Checking the Brake Fluid Level for the Foot Brake</td>
<td>171</td>
</tr>
<tr>
<td>Checking the Braking System</td>
<td>172</td>
</tr>
<tr>
<td>Checking the Clutch</td>
<td></td>
</tr>
<tr>
<td>(if mechanical gearbox is fitted)</td>
<td>172</td>
</tr>
<tr>
<td>Checking the Clutch Brake Fluid Level</td>
<td>171</td>
</tr>
<tr>
<td>Checking the Cooling System</td>
<td>169</td>
</tr>
<tr>
<td>Checking the Drive Hydraulics Oil Level</td>
<td>52</td>
</tr>
<tr>
<td>Checking the Electrical System</td>
<td>174</td>
</tr>
<tr>
<td>Checking the Heating System</td>
<td>181</td>
</tr>
<tr>
<td>Checking the High Pressure Hoses</td>
<td>170</td>
</tr>
<tr>
<td>Checking the Implement Hydraulics Oil Level</td>
<td>52</td>
</tr>
<tr>
<td>Checking the Injection Nozzles</td>
<td>197</td>
</tr>
<tr>
<td>Checking the Lights and Rear View Mirror</td>
<td>58</td>
</tr>
<tr>
<td>Checking the PTO clutch</td>
<td>172</td>
</tr>
<tr>
<td>Checking the Steering Cylinders and Orbitrol</td>
<td>171</td>
</tr>
<tr>
<td>Checking the Trailer Hitch (Optional), if required</td>
<td>51</td>
</tr>
<tr>
<td>Checking Tire Inflation Pressure</td>
<td>51</td>
</tr>
</tbody>
</table>

214
<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking V-belt Tension and Condition</td>
<td>184</td>
</tr>
<tr>
<td>Checking Valve Clearance</td>
<td>183</td>
</tr>
<tr>
<td>Cleaning the Cooling System</td>
<td>169</td>
</tr>
<tr>
<td>Cleaning the Lower Fresh Air Filter</td>
<td>175</td>
</tr>
<tr>
<td>Cleaning the Upper Fresh Air Filter</td>
<td>175</td>
</tr>
<tr>
<td>Cleaning with Cold Cleaner or Water Jet</td>
<td>169</td>
</tr>
<tr>
<td>Cleaning with Compressed Air</td>
<td>169</td>
</tr>
<tr>
<td>Cleaning/Replacing the Fuel Pump Strainer</td>
<td>184</td>
</tr>
<tr>
<td>Connecting Equipment to Power Socket</td>
<td>126</td>
</tr>
<tr>
<td>Control Lever Functions</td>
<td>95</td>
</tr>
<tr>
<td>Controls for Mechanical Gearbox</td>
<td>40</td>
</tr>
<tr>
<td>Controls in Cabin at Rear</td>
<td>42</td>
</tr>
<tr>
<td>Controls on Cabin Console at Front Left</td>
<td>41</td>
</tr>
<tr>
<td>Controls on Cabin Console at Front Right</td>
<td>41</td>
</tr>
<tr>
<td>Coupling Hydraulic Lines</td>
<td>92</td>
</tr>
<tr>
<td>Drive Range Pre-selection Lever between Seats</td>
<td>37</td>
</tr>
<tr>
<td>Driver's license</td>
<td>7</td>
</tr>
<tr>
<td>Driver's license classes (Germany only)</td>
<td>7</td>
</tr>
<tr>
<td>Driver's Station</td>
<td>30</td>
</tr>
<tr>
<td>Driving</td>
<td>64</td>
</tr>
<tr>
<td>Driving on Slopes</td>
<td>79</td>
</tr>
<tr>
<td>Driving Safety Rules</td>
<td>63</td>
</tr>
<tr>
<td>Driving with Hydrostatic Drive, Digital Electronics and Dual Drive</td>
<td>71</td>
</tr>
<tr>
<td>Driving with the Mechanical Gearbox</td>
<td>73</td>
</tr>
<tr>
<td>Driving with Trailers</td>
<td>137</td>
</tr>
<tr>
<td>Emissions</td>
<td>13</td>
</tr>
<tr>
<td>Engaging the Differential Lock</td>
<td>76</td>
</tr>
<tr>
<td>Engaging the Front PTO</td>
<td>104</td>
</tr>
<tr>
<td>Engaging the Parking Brake</td>
<td>78</td>
</tr>
<tr>
<td>Engaging the Rear PTO</td>
<td>105</td>
</tr>
<tr>
<td>Engine Oil for Winter Operation</td>
<td>84</td>
</tr>
<tr>
<td>Engine Preservation</td>
<td>201</td>
</tr>
<tr>
<td>Engine Specifications</td>
<td>21, 211</td>
</tr>
<tr>
<td>Examination of Implement Hydraulics Oil Samples</td>
<td>199</td>
</tr>
</tbody>
</table>
# Index

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhaust Gas Identification</td>
<td>27</td>
</tr>
<tr>
<td>Exhaust Gases</td>
<td>13</td>
</tr>
<tr>
<td>Explanations of Terminology</td>
<td>2</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td></td>
</tr>
<tr>
<td>Filling Fuel</td>
<td>53</td>
</tr>
<tr>
<td>Filling Oil (Gearbox Only)</td>
<td>188</td>
</tr>
<tr>
<td>Filling Oil (Hydrostatic Drive Only)</td>
<td>188</td>
</tr>
<tr>
<td>Filling Quantities</td>
<td>206</td>
</tr>
<tr>
<td>Filling Washing Water</td>
<td>58</td>
</tr>
<tr>
<td>Foot Pedals</td>
<td>36</td>
</tr>
<tr>
<td>Foreword</td>
<td>1</td>
</tr>
<tr>
<td>Front Implement</td>
<td>87</td>
</tr>
<tr>
<td>Front Left View</td>
<td>28</td>
</tr>
<tr>
<td>Front Lift 1 - Lifting/Lowering</td>
<td>99</td>
</tr>
<tr>
<td>Front Lift 2 - Shifting Left/Right</td>
<td>100</td>
</tr>
<tr>
<td>Front Lift 3 - Lateral Tilt</td>
<td>101</td>
</tr>
<tr>
<td>Front PTO Selector</td>
<td>38</td>
</tr>
<tr>
<td>Front Windshield Wiper/Washer</td>
<td>120</td>
</tr>
<tr>
<td>Fuel System</td>
<td>212</td>
</tr>
<tr>
<td>Fuels</td>
<td>205</td>
</tr>
<tr>
<td>Functions of Lock-out Knob</td>
<td>95</td>
</tr>
<tr>
<td><strong>G</strong></td>
<td></td>
</tr>
<tr>
<td>Gear Oil, Engine Oil, Diesel Fuel</td>
<td>12</td>
</tr>
<tr>
<td>General Notes on Safety</td>
<td>11</td>
</tr>
<tr>
<td>General Notes on Service</td>
<td>1</td>
</tr>
<tr>
<td>General Remarks on Maintenance</td>
<td>149</td>
</tr>
<tr>
<td><strong>H</strong></td>
<td></td>
</tr>
<tr>
<td>Handling fuels and lubricants</td>
<td>151</td>
</tr>
<tr>
<td>Heat</td>
<td>14</td>
</tr>
<tr>
<td>Heater</td>
<td>38</td>
</tr>
<tr>
<td>Heater and ventilation</td>
<td>127</td>
</tr>
<tr>
<td>Heating</td>
<td>127</td>
</tr>
<tr>
<td>How to Value the Tractor?</td>
<td>149</td>
</tr>
<tr>
<td>Hydraulic Carrier Control (Power Lifter)</td>
<td>36</td>
</tr>
<tr>
<td>Hydraulic Oil, Brake Fluid</td>
<td>13</td>
</tr>
<tr>
<td>Hydraulic Oil Flow for Stationary Operation</td>
<td>81</td>
</tr>
<tr>
<td>Hydraulic System</td>
<td>84</td>
</tr>
</tbody>
</table>
Operating Instructions

Index

I
Identification Plates ...................................................... 43
Implement and Engine Controls (Details) .......................... 32
Indicators, Adjustments .............................................. 141
Installing the Cardan Shafts ........................................ 93
Instructions before Starting ........................................ 59
Instructions before Starting the Engine .......................... 59
Instructions for Loading ............................................. 139
Instructions for Operation ......................................... 7
Instructions for the Tractor ......................................... 5
Instructions for Towing ............................................ 140
Instructions for Transport ........................................ 139
Interior Light ....................................................... 125

J
Jack Lifting Points .................................................... 154
Jacking Up .................................................................. 154

L
Laying Up ................................................................. 201
Leaving the Tractor ................................................... 133, 134
Legend for Multi-function Display ................................. 39
Lights .................................................................... 121
List of Replacement Parts ......................................... 208
Location of Plates and Labels .......................................... 43
Lubricating the Cardan Shaft ....................................... 185

M
Maintenance According to Intervals ......................... 169
Maintenance after the First 50 Operating Hours .......... 161
Maintenance as Required ......................................... 163
Maintenance during the First Period of Operation .......... 157, 161
Maintenance Every 1000 Service Hours .................. 183
Maintenance Every 125 Service Hours ....................... 169
Maintenance Every 1500 Service Hours .................. 187
Maintenance Every 2 Years ...................................... 199
Maintenance Every 3000 Service Hours .................. 197
Maintenance Every 500 Service Hours .................. 177
Maintenance Schedule ........................................... 157
Model Variants .......................................................... 15
Mounting Instructions for License Plate ..................... 44
Multi-function Lever ............................................... 33
Multi-function Lever (Variant 1) ................................. 33, 96
Multi-function Lever (Variant 2) ................................. 34, 98
## Index

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-function Lever (Variant 3)</td>
<td>35</td>
</tr>
<tr>
<td>Multi-function Lever (Variant 4)</td>
<td>102</td>
</tr>
<tr>
<td>Multi-function Lever (Variant 4)</td>
<td>35</td>
</tr>
<tr>
<td>Multi-function Lever Functions</td>
<td>96</td>
</tr>
<tr>
<td>Noise Level</td>
<td>27</td>
</tr>
<tr>
<td>Note on Disposal of Tractor</td>
<td>6</td>
</tr>
<tr>
<td>Opening the roof hatch</td>
<td>119</td>
</tr>
<tr>
<td>Operating controls</td>
<td>30</td>
</tr>
<tr>
<td>Operating Controls Behind the Seat</td>
<td>37</td>
</tr>
<tr>
<td>Operating Implements</td>
<td>94</td>
</tr>
<tr>
<td>Operating priority flow valve II</td>
<td>117</td>
</tr>
<tr>
<td>Operating the Air Conditioner</td>
<td>129</td>
</tr>
<tr>
<td>Operating the Driver's Cab</td>
<td>119</td>
</tr>
<tr>
<td>Operating the Horn</td>
<td>123</td>
</tr>
<tr>
<td>Operating the Hydraulic Carrier (Power Lifter)</td>
<td>106</td>
</tr>
<tr>
<td>Operating the Hydraulic Control Levers</td>
<td>94</td>
</tr>
<tr>
<td>Operating the Hydraulic Dumper</td>
<td>112</td>
</tr>
<tr>
<td>Operating the Implements</td>
<td>85</td>
</tr>
<tr>
<td>Operating the Inch Pedal</td>
<td>70</td>
</tr>
<tr>
<td>Operating the Power Hydraulics (75 L Fixed Flow)</td>
<td>110</td>
</tr>
<tr>
<td>Operating the Priority Flow Valve I</td>
<td>115</td>
</tr>
<tr>
<td>Operating the PTO</td>
<td>103</td>
</tr>
<tr>
<td>Operating the Radio</td>
<td>126</td>
</tr>
<tr>
<td>Operating the roof hatch</td>
<td>119</td>
</tr>
<tr>
<td>Operating the Service Brake</td>
<td>77</td>
</tr>
<tr>
<td>Operating the Trailer Coupling, Attaching Trailers</td>
<td>136</td>
</tr>
<tr>
<td>Operation</td>
<td>63</td>
</tr>
<tr>
<td>Operation in Winter</td>
<td>84</td>
</tr>
<tr>
<td>Operation with Carrier</td>
<td>107</td>
</tr>
<tr>
<td>Other Activities</td>
<td>119</td>
</tr>
<tr>
<td>Overview of Options and Variants</td>
<td>45</td>
</tr>
<tr>
<td>Parking</td>
<td>134</td>
</tr>
<tr>
<td>Possible Implements</td>
<td>85</td>
</tr>
<tr>
<td>Power Socket</td>
<td>126</td>
</tr>
<tr>
<td>Preheating of Oil</td>
<td>84</td>
</tr>
<tr>
<td>Problems, Cause, Remedy</td>
<td>143</td>
</tr>
<tr>
<td>Problems in Electronic and Hydraulic Drive System</td>
<td>143</td>
</tr>
<tr>
<td>Problems in Engine and Exhaust Gas Turbocharger</td>
<td>143</td>
</tr>
<tr>
<td>Problems in the Hydraulic System and Steering</td>
<td>147</td>
</tr>
<tr>
<td>Putting on Snow Chains</td>
<td>84</td>
</tr>
</tbody>
</table>
Putting the Tractor Back in Service after a Lay-up ........201

Qualification of the Service Personnel .........................149

Radio and Loudspeaker ............................................... 126
Rear Implement or Front/Rear Combinations ............... 87
Rear Right View ............................................................ 29
Rear Wiper/Washer ...................................................... 120
Recommended Engine Oils and Lubricants ..................204
Recommended Engine Oils and Lubricants continued ........205
Recommended Fuels and Lubricants ..............................203
Recommended Hydraulic and Gear Oils ....................... 203
Regular Maintenance .................................................. 158
Removing Engine Preservation ................................... 202
Removing Implements .................................................. 93
Removing the roof hatch ............................................. 119
Residual Hazards and Risks ........................................... 6
Right and Left Turn Signal .......................................... 123
Road Travel with Carrier ............................................. 107
Safety ...........................................................................11
Safety Instructions for Handling Fuels and Oils ..........12
Safety Instructions for Handling Implements .............. 85
Safety Notes for Later Installations ......................... 151
Securing the Frame (Loading Platform) .................. 155
Selecting Road Speed (Transport Speed) ................. 67
Setting the Working Speed of Programs 3 and 4 ......... 67
Site of Operation ............................................................ 5
Starting the Engine ...................................................... 59, 60
Stationary Operation ..................................................... 81
Steering ........................................................................ 77
Stopping the Tractor .................................................... 133
Table of Contents ........................................................... 3
Table of Dimensions ..................................................... 17
Table of Driving Programs ......................................... 66
Table of Driving Ranges .............................................. 65
Table of Driving Ranges with Dual Drive ................. 71
### Index

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Multi-function Lever Functions (Variant 2)</td>
<td>99</td>
</tr>
<tr>
<td>Table of Noise Levels and Absorption Rating</td>
<td>27</td>
</tr>
<tr>
<td>Table of Trailers</td>
<td>135</td>
</tr>
<tr>
<td>Taking into Service</td>
<td>49</td>
</tr>
<tr>
<td>Taking out of Operation</td>
<td>133</td>
</tr>
<tr>
<td>Technical Data</td>
<td>15</td>
</tr>
<tr>
<td>Technical Data of Engine</td>
<td>210</td>
</tr>
<tr>
<td>Technical Data/Filling Quantities</td>
<td>23</td>
</tr>
<tr>
<td>Tightening Nuts and Bolts</td>
<td>174</td>
</tr>
<tr>
<td>Tightening the Wheel Nuts</td>
<td>174</td>
</tr>
<tr>
<td>Tightening Torques</td>
<td>207</td>
</tr>
<tr>
<td>Tires</td>
<td>20</td>
</tr>
<tr>
<td>Track Widths</td>
<td>18</td>
</tr>
<tr>
<td>Tractor</td>
<td>29</td>
</tr>
<tr>
<td>Tractor Dimensions</td>
<td>16</td>
</tr>
<tr>
<td>Tractor Lubrication</td>
<td>173</td>
</tr>
<tr>
<td>Tractors for farming and forestry (also with implements)</td>
<td>7</td>
</tr>
<tr>
<td>Trailers, Towing</td>
<td>135</td>
</tr>
<tr>
<td>Transport, Loading, Towing</td>
<td>139</td>
</tr>
<tr>
<td>Turning off the Oil Circulating Device</td>
<td>114</td>
</tr>
<tr>
<td>Turning Off the Power Hydraulics</td>
<td>111</td>
</tr>
<tr>
<td>Turning Off the Priority Flow Valve</td>
<td>116, 118</td>
</tr>
<tr>
<td>Turning Off the Variable Pump for Implements</td>
<td>109</td>
</tr>
<tr>
<td>Turning On and Operating the Lights</td>
<td>121</td>
</tr>
<tr>
<td>Turning On High Beam</td>
<td>121</td>
</tr>
<tr>
<td>Turning on the Battery Isolating Switch</td>
<td>50</td>
</tr>
<tr>
<td>Turning on the Flood Light</td>
<td>125</td>
</tr>
<tr>
<td>Turning on the Hazard Warning Flasher System</td>
<td>124</td>
</tr>
<tr>
<td>Turning on the Heating</td>
<td>127</td>
</tr>
<tr>
<td>Turning on the Interior Light</td>
<td>125</td>
</tr>
<tr>
<td>Turning on the Rotating Beacon</td>
<td>124</td>
</tr>
<tr>
<td>Turning on the Upper Lights</td>
<td>123</td>
</tr>
<tr>
<td>Turning on the Ventilation System</td>
<td>128</td>
</tr>
<tr>
<td>Turning on the Windshield Wiper/Washer</td>
<td>120</td>
</tr>
<tr>
<td>U</td>
<td></td>
</tr>
<tr>
<td>Unintended Applications</td>
<td>5</td>
</tr>
<tr>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Views of Tractor</td>
<td>28</td>
</tr>
<tr>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Weights</td>
<td>19</td>
</tr>
<tr>
<td>Winter Diesel Fuel</td>
<td>84</td>
</tr>
<tr>
<td>Work on the Electrical Equipment</td>
<td>153</td>
</tr>
<tr>
<td>Working Clothes</td>
<td>11</td>
</tr>
</tbody>
</table>