

# Operating Manual

## **AMAZONE**

**Pantera 4502**  
with **Comfort Package 1**

**Self-propelled field sprayer**

(Euro 3A / Euro 3B Emission Standard)



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BAG0133.5 08.17  
Printed in Germany

**en**

**Please read this operating  
manual before commissioning.  
Keep it in a safe place  
for future use.**



# Reading the instruction

*manual and to adhere to it should not appear to be inconvenient and superfluous as it is not enough to hear from others and to realise that a machine is good, to buy it and to believe that now everything would work by itself. The person concerned would not only harm himself but also make the mistake of blaming the machine for the reason of a possible failure instead of himself. In order to ensure a good success one should go into the mind of a thing or make himself familiar with every part of the machine and to get acquainted with its handling. Only this way, you would be satisfied both with the machine as also with yourself. To achieve this is the purpose of this instruction manual.*

---

*Leipzig-Plagwitz 1872.*

*Rud. Sark.*

---

**Identification data**

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Please insert the identification data of the machine. The identification data are arranged on the type plate.

Machine ID No.:  
(10-digit)

Type:

Pantera 4502

Year of manufacture:

Basic weight (kg):

Permissible total weight (kg):

Maximum load (kg):

Engine number

---

**Manufacturer's address**

---

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H. DREYER GmbH & Co. KG  
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D-49202 Hasbergen, Germany  
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**Spare part orders**

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Spare parts lists are freely accessible in the spare parts portal at [www.amazone.de](http://www.amazone.de).

Please send orders to your AMAZONE dealer.

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**Formalities of the operating manual**

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## Foreword

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## Foreword

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Dear Customer,

You have chosen one of the quality products from the wide product range of AMAZONEN-WERKE, H. DREYER GmbH & Co. KG. We thank you for your confidence in our products.

On receiving the machine, check to see if it has been damaged during transport or if parts are missing. Using the delivery note, check that the machine has been delivered in full, including any special equipment ordered. Damage can only be rectified if problems are signalled immediately.

Before commissioning, read and understand this operating manual, and particularly the safety information. Only after careful reading will you be able to benefit from the full scope of your newly purchased machine.

Please ensure that all the machine operators have read this operating manual before the machine is commissioned.

Should you have any questions or problems, please consult this operating manual or contact your local service partner.

Regular maintenance and timely replacement of worn or damaged parts increases the lifespan of your machine.

## User evaluation

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Dear Reader,

We update our operating manuals regularly. Your suggestions for improvement help us to create ever more user-friendly manuals.

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# **1 User Information**

---

The User Information section provides information on use of the operating manual.

## **1.1 Purpose of the document**

---

This operating manual

- describes the operation and maintenance of the machine.
- provides important information on safe and efficient handling of the machine.
- is a component part of the machine and should always be kept with the machine or the towing vehicle.
- Keep it in a safe place for future use.

## **1.2 Locations in the operating manual**

---

All the directions specified in the operating manual are always seen in the direction of travel.

## **1.3 Diagrams**

---

### **Instructions and responses**

---

Activities to be carried out by the user are given as numbered instructions. Always keep to the order of the instructions. The reaction to instructions is given by an arrow.

Example:

1. Instruction 1
- Machine response to instruction 1
2. Instruction 2

### **Lists**

---

Lists without an essential order are shown as a list with bullets.

Example:

- Point 1
- Point 2

### **Item numbers in diagrams**

---

Numbers in round brackets refer to items in diagrams. The first number refers to the diagram and the second number to the item.

Example: (Fig. 3/6)

- Figure 3
- Item 6

## 2 General Safety Instructions

---

This section contains important information on safe operation of the machine.

### 2.1 Obligations and liability

---

#### Comply with the instructions in the operating manual

---

Knowledge of the basic safety information and safety regulations is a basic requirement for safe handling and fault-free machine operation.

#### Obligations of the operator

---

The operator is obliged only to let those people work with/on the machine who

- are aware of the basic workplace safety information and accident prevention regulations.
- have been instructed in working with/on the machine.
- have read and understood this operating manual.

The operator is obliged

- to keep all the warning symbols on the machine in a legible state.
- to replace damaged warning symbols.

If you still have queries, please contact the manufacturer.

#### Obligations of the user

---

Before starting work, anyone charged with working with/on the machine is obliged

- to comply with the basic workplace safety instructions and accident prevention regulations.
- to read and follow the "General safety information" section of this operating manual.
- to read the section "Warning symbols and other labels on the machine" (page 18) of this operating manual and to follow the safety instructions represented by the warning symbols when operating the machine.
- To get to know the machine.
- To read the sections of this operating manual, important for carrying out your work.

If the user discovers that a function is not working properly, then they must eliminate this fault immediately. If this is not the task of the user or if the user does not possess the appropriate technical knowledge, then they should report this fault to their superior (operator).

### Risks in handling the machine

---

The machine has been constructed to the state-of-the art and the recognised rules of safety. However, operating the machine may cause risks and restrictions to

- the health and safety of the user or third parties,
- the machine,
- other property.

Only use the machine

- for the purpose for which it was intended.
- in a perfect state of repair.

Eliminate any faults immediately which could impair safety.

### Guarantee and liability

---

Our "General conditions of sales and delivery" are always applicable. These shall be available to the operator, at the latest on conclusion of the contract. Guarantee and liability claims for damage to people or property will be excluded if they can be traced back to one or more of the following causes:

- Improper use of the machine.
- Improper installation, commissioning, operation and maintenance of the machine.
- Operation of the machine with defective safety equipment or improperly attached or non-functioning safety equipment.
- Non-compliance with the instructions in the operating manual regarding commissioning, operation and maintenance.
- Unauthorised design changes to the machine.
- Insufficient monitoring of machine parts which are subject to wear.
- Improperly executed repairs.
- Disasters through the impact of foreign bodies and Acts of God.

## 2.2 Representation of safety symbols

Safety instructions are indicated by the triangular safety symbol and the highlighted signal word. The signal word (danger, warning, caution) describes the severity of the risk, and carries the following meaning:



### **DANGER**

**Indicates an immediate high risk which will result in death or serious physical injury (loss of body parts or long term damage) if not avoided.**

**If the instructions are not followed, then this will result in immediate death or serious physical injury.**



### **WARNING**

**Indicates a medium risk, which could result in death or (serious) physical injury if not avoided.**

**If the instructions are not followed, then this may result in death or serious physical injury.**



### **CAUTION**

**Indicates a low risk which could cause minor or medium level physical injury or damage to property if not avoided.**



### **IMPORTANT**

**Indicates an obligation to special behaviour or an activity required for proper machine handling.**

**Non-compliance with these instructions can cause faults on the machine or disturbance to the environment.**



### **NOTE**

**Indicates handling tips and particularly useful information.**

**These instructions will help you to use all the functions of your machine in the best way possible.**

### 2.3 Organisational measures

---

The operator must provide the necessary personal protective equipment as per the information provided by the manufacturer of the crop protection agent to be used, such as:

- Safety glasses;
- Protective shoes
- Chemical-resistant overalls,
- Skin protection agents, etc.



The operating manual

- Must always be kept at the place at which the machine is operated.
- Must always be easily accessible for the user and maintenance personnel.

Check all the available safety equipment regularly.

### 2.4 Safety and protection equipment

---

Before starting up the machine each time, all the safety and protection equipment must be properly attached and fully functional. Check all safety and protection equipment regularly.

#### Faulty safety equipment

---

Faulty or disassembled safety and protection equipment can lead to dangerous situations.

### 2.5 Informal safety measures

---

As well as all the safety information in this operating manual, comply with the general, national regulations pertaining to accident prevention and environmental protection.

When driving on public roads and routes you should comply with the statutory road traffic regulations.

## 2.6 User training

Only those people who have been trained and instructed may work with/on the machine. The operator must clearly specify the responsibilities of the people charged with operation and maintenance work.

People being trained may only work with/on the machine under the supervision of an experienced person.

Activity \ Person	Person specially trained for the activity <sup>1)</sup>	Trained person <sup>2)</sup>	Persons with specialist training (specialist workshop) <sup>3)</sup>
Loading/Transport	X	X	X
Start-up	--	X	--
Set-up, tool installation	--	--	X
Operation	--	X	--
Maintenance	--	--	X
Troubleshooting and fault elimination	--	X	X
Disposal	X	--	--

Legend:

X..permitted

--..not permitted

- <sup>1)</sup> A person who can assume a specific task and who can carry out this task for an appropriately qualified company.
- <sup>2)</sup> Instructed persons are those who have been instructed in their assigned tasks and in the possible risks in the case of improper behaviour, have been trained if necessary, and have been informed about the necessary protective equipment and measures.
- <sup>3)</sup> People with specialist technical training shall be considered as a specialist. Due to their specialist training and their knowledge of the appropriate regulations, they can evaluate the work with which they have been charged and detect possible dangers.

Comment:

A qualification equivalent to specialist training can be obtained from several years' experience in the relevant field.



If maintenance and repair work on the machine is additionally marked "Workshop work", only a specialist workshop may carry out such work. The personnel of a specialist workshop shall possess the appropriate knowledge and suitable aids (tools, lifting and support equipment) for carrying out the maintenance and repair work on the machine in a way which is both appropriate and safe.

## 2.7 Safety measures in normal operation

---

Only operate the machine if all the safety and protection equipment is fully functional.

Check the machine at least once a day for visible damage and check the function of the safety and protection equipment.

## 2.8 Danger from residual energy

---

Note that there may be residual mechanical, hydraulic, pneumatic and electrical/electronic energy on the machine.

Use appropriate measures to inform the operating personnel. You can find detailed information in the relevant sections of this operating manual.

## 2.9 Maintenance and repair work, fault elimination

---

Carry out prescribed setting, maintenance and inspection work in good time.

Secure all media such as compressed air and the hydraulic system against unintentional start-up.

Carefully fix and secure larger assemblies to lifting gear when carrying out replacement work.

Regularly check that bolted connections are firmly secured and tightened if necessary.

When the maintenance work is completed, check the function of the safety devices.

## 2.10 Design changes

---

You may make no changes, expansions or modifications to the machine without the authorisation of AMAZONEN-WERKE. This also applies when welding support parts.

Any expansion or modification work shall require the written approval of AMAZONEN-WERKE. Only use modification and accessory parts approved by AMAZONEN-WERKE so that the type approval, for example, remains valid in accordance with national and international regulations.

Vehicles with an official type approval or with equipment connected to a vehicle with a valid type approval or approval for road transport according to the German road traffic regulations must be in the state specified by the approval.



### **WARNING**

**Risk of crushing, cutting, being trapped or drawn in, or impact through the failure of support parts.**

It is strictly forbidden to

- drill holes in the frame or on the running gear.
- increase the size of existing holes on the frame or the running gear.
- weld support parts.

## **2.10.1 Spare and wear parts and aids**

---

Immediately replace any machine parts which are not in a perfect state.

Only use genuine AMAZONE spare and wear parts, or those approved by AMAZONEN-WERKE, so that the type approval remains valid according to the national and international regulations. If you use wear and spare parts from third parties, there is no guarantee that they have been designed and manufactured in such a way as to meet the requirements placed on them.

AMAZONEN-WERKE shall accept no liability for damage caused by the use of non-approved spare and wear parts or aids.

## **2.11 Cleaning and disposal**

---

Handle and dispose of any materials used carefully, in particular

- when carrying out work on lubrication systems and equipment and
- when cleaning using solvents.

## **2.12 User workstation**

---

The machine may only be operated by one person sitting in the driver's seat of the tractor.

Otherwise no other person must remain in the cabin or on the machine when driving.

The helpers seat must only be used for manoeuvring trips.

Drive the machine only when wearing the seat belt.

## 2.13 Warning symbols and other signs on the machine



Always keep all the warning pictograms of the machine clean and in a legible state. Replace illegible warning pictograms. You can obtain the warning symbols from your dealer using the order number (e.g. MD 078).

### Warning symbols - structure

Warning symbols indicate danger areas on the machine and warn against residual dangers. At these points, there are permanent or unexpected dangers.

A warning symbol consists of two fields:



#### Field 1

is a symbol describing the danger, surrounded by triangular safety symbol.

#### Field 2

is a symbol showing how to avoid the danger.

### Warning symbols - explanation

The column **Order number and explanation** provides an explanation of the neighbouring warning symbol. The description of the warning symbols is always the same and specifies, in the following order:

1. A description of the danger.  
For example: risk of cutting
2. The consequence of non-compliance with the risk avoidance instructions.  
For example: causes serious injuries to fingers or hands.
3. Risk avoidance instructions.  
For example: only touch machine parts when they have come to a complete standstill.

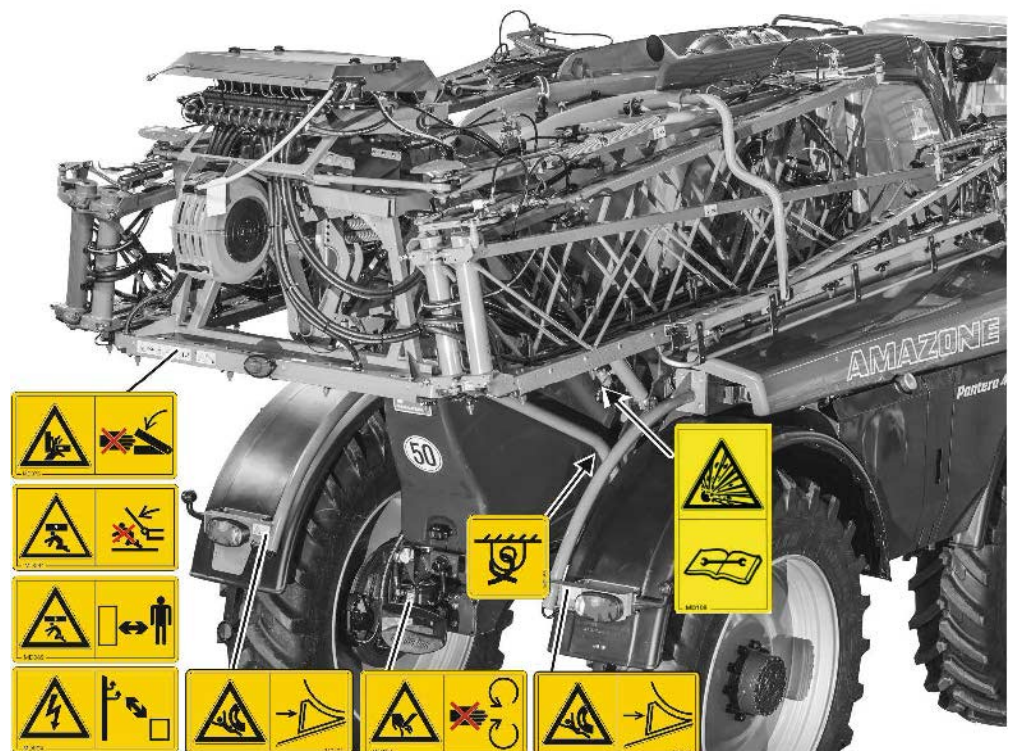
## 2.13.1 Positions of warning symbols and other labels

### Warning symbols

The following diagrams show the arrangement of the warning symbols on the machine.



Fig. 1



**Fig. 2**



**Fig. 3**

## Order No. and explanation

## Warning symbols

## MD 078

**Risk of crushing fingers or hands by accessible moving machine parts.**

This danger causes serious injuries, including loss of body parts such as fingers or hand.

Never reach into the danger area while the tractor engine is running and the PTO shaft / hydraulic system is connected.



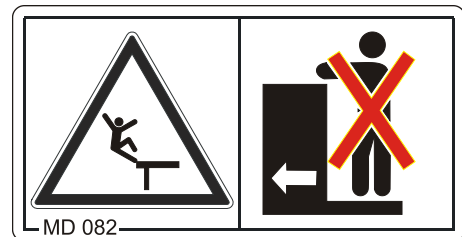
## MD 082

**Danger of falling from treads and platforms when riding on the machine.**

This danger causes serious or potentially fatal injuries anywhere on the body.

It is forbidden to ride on the machine and/or climb the machine while it is running. This also applies to machines with treads or platforms.

Make sure that nobody is riding on the machine.



## MD 084

**Risk of crushing the entire body due to standing in the swivel range when machine parts are being lowered.**

Causes serious, potentially fatal injuries anywhere on the body.

- It is forbidden to stand in the swivel range of the machine when machine parts are being lowered.
- Instruct personnel to leave the swivel range of any machine parts which can be lowered before you lower the parts.



## MD 089

**Risk of crushing the entire body due to standing under suspended loads or raised machine parts.**

Causes serious, potentially fatal injuries anywhere on the body.

- It is forbidden to stand under suspended loads or raised machine parts.
- Maintain an adequate safety distance from any suspended loads or raised machine parts.
- Ensure that all personnel maintain an adequate safety distance from suspended loads or raised machine parts.

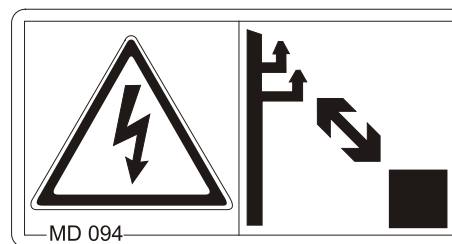


### MD 094

**Risk of electric shock or burns from accidentally touching overhead power lines or by coming within the prohibited distance of high voltage overhead power lines.**

These dangers can cause extremely serious and potentially fatal injuries.

Maintain a sufficient distance from electrical overhead cables when swinging any parts of the machine in and out.



Nominal voltage	Safety distance from transmission lines
-----------------	---

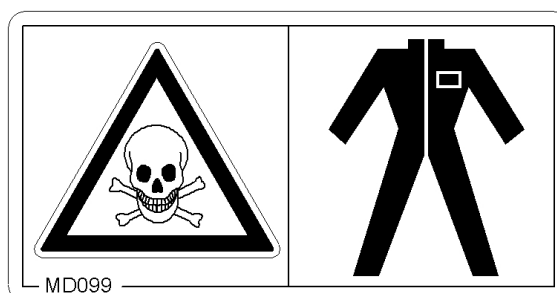
up to 1 kV	1 m
over 1 up to 110 kV	2 m
over 110 up to 220 kV	3 m
over 220 up to 380 kV	4 m

### MD 099

**Risk of contact with hazardous materials due to improper handling.**

Causes serious, potentially fatal injuries anywhere on the body.

Before coming into contact with hazardous materials, put on protective clothing. Follow the manufacturer's safety instructions for the materials to be processed



### MD101

This symbol indicates jacking points for lifting gear (jack).



### MD 108

**Risk of explosion, or danger from hydraulic fluid escaping under high pressure, caused by the pressure accumulator which is under pressure from gas and oil.**

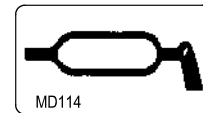
These dangers can cause serious and potentially fatal injuries if highly pressurised, escaping hydraulic fluid penetrates the skin and passes into the body.

- Read and observe the instructions in the operating manual before carrying out any maintenance or repair work.
- If you are injured by hydraulic fluid, contact a doctor immediately.



#### MD 114

This symbol indicates a lubrication point

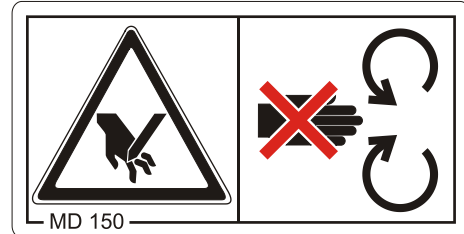


#### MD 150

**Danger of your fingers and hands being cut or cut off by moving parts involved in the working process!**

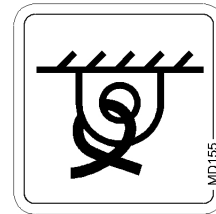
This hazard can cause extremely serious injuries resulting in the loss of limbs.

Never open or remove safety devices of moving parts that take part in the working process when the tractor's engine is running with the hydraulic and electrical system connected.



#### MD 155

This icon designates the restraint points for tying the machine to a transport vehicle allowing the machine to be transported in a safe manner.

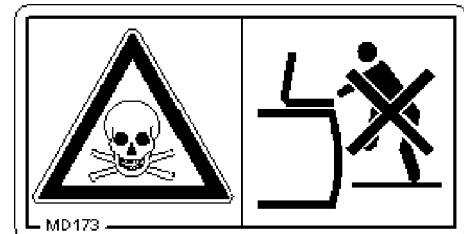


#### MD 173

**Risk of breathing in hazardous materials via poisonous vapours from the spray liquid tank.**

This danger can cause extremely serious and potentially fatal injuries.

Never climb into the spray liquid tank.

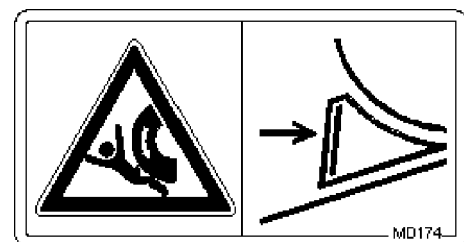


#### MD 174

**Danger from unintended continued movement of the machine.**

Causes serious, potentially fatal injuries anywhere on the body.

Secure the machine against unintentionally rolling away.



#### MD 175

The torque for the bolt connection is 450 Nm.

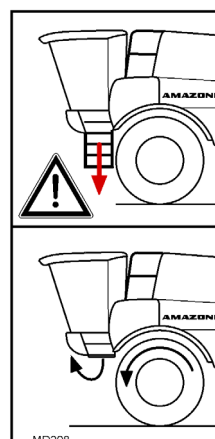


### MD208

**Hazard caused by falling down from the machine when leaving the cabin resulting from the ladder not being slewed down!**

This danger can result in extremely serious injuries.

Slew down the ladder before leaving the cabin.

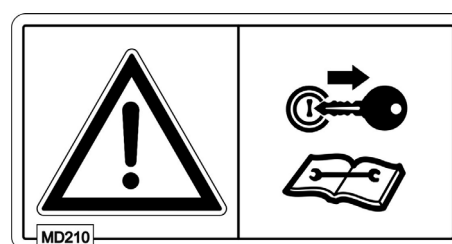


### MD 210

**Danger from intervention in the machine, e.g. installation, adjusting, troubleshooting, cleaning, maintaining and repairing, due to the tractor and the machine being started unintentionally and rolling.**

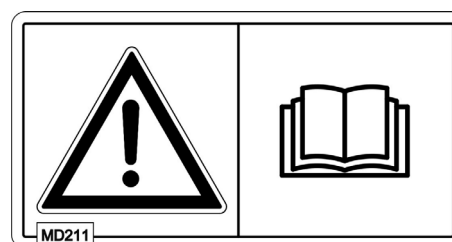
These dangers can cause extremely serious and potentially fatal injuries.

- Secure the tractor and the machine against unintentional start-up and rolling before any intervention in the machine.
- Depending on the type of intervention, read and understand the information in the relevant sections of the operating manual.



### MD 211

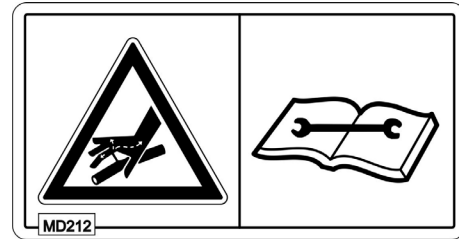
Read and follow the operating manual and safety information before starting up the machine!



**MD 212****Danger from escaping high-pressure hydraulic fluid due to leaking hydraulic hose lines.**

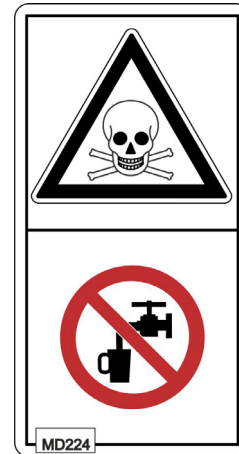
This danger may cause serious injuries, perhaps even resulting in death, if escaping high-pressure hydraulic fluid passes through the skin and into the body.

- Never attempt to plug leaks in hydraulic hose lines with your hand or fingers.
- Read and observe the information in the operating manual before carrying out maintenance work on the hydraulic hose lines.
- If you are injured by hydraulic fluid, contact a doctor immediately.

**MD 224****Risk of contact with hazardous materials due to improper use of clear fresh water from the hand wash tank.**

This danger can cause extremely serious and potentially fatal injuries.

Never use the clear water from the hand wash tank as drinking water.



## 2.14 Potential risks from not observing the safety instructions

---

Non-compliance with the safety information

- can pose both a danger to people and also to the environment and machine.
- can lead to the loss of all warranty claims.

In particular, non-compliance with the safety information could pose the following risks:

- Danger to people through non-secured working areas.
- Failure of important machine functions.
- Failure of prescribed methods of maintenance and repair.
- Danger to people through mechanical and chemical influences.
- Risk to the environment through leakage of hydraulic fluid.

## 2.15 Safety-conscious working

---

Besides the safety information in this operating manual, the generally applicable national workplace safety and accident prevention regulations are binding.

Comply with the accident prevention instructions on the warning pictograms.

When driving on public roads and routes, comply with the appropriate statutory road traffic regulations.

## 2.16 Safety information for users



### WARNING

**Risk of crushing, cutting, being trapped or drawn in, or impact through inadequate roadworthiness and operational safety.**

Before starting up the machine and the tractor, always check their roadworthiness and operational safety.

### 2.16.1 General safety and accident prevention information

- Beside these instructions, comply with the generally applicable national safety and accident prevention regulations.
- The warning symbols and other labels attached to the machine provide important information on safe machine operation. Compliance with this information is in the interests of your safety.
- Before moving off and starting up the machine, check the immediate area of the machine (children). Ensure that you can see clearly.
- Drive in such a way that you always have full control over the tractor with the attached machine.

In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected machine.

### Use of the machine

- Before the engine is started, convince yourself that all drives are switched off.
- Before starting work, ensure that you understand all the equipment and actuation elements of the machine and their function. There is no time for this when the machine is already in operation.
- Do not wear loose-fitting clothing. Loose clothing increases the risk of being caught by the drive shaft.
- Only start-up the machine, when all the safety equipment has been attached and is in the safety position.
- Before starting work on the machine, check for damage or wear as well as leaking coolant or spray fluids. Check nuts and bolts regularly for tightness and re-tighten if necessary
- Comply with the maximum load for the machine. If necessary, drive only with a partially filled tank.
- The driving behaviour of the machine is influenced by the weight in the tank.
- It is forbidden to stand in the working area of the machine.
- It is forbidden to stand in the turning and swivel range of the machine. • There are crushing and cutting points at externally-actuated (e.g. hydraulic) machine points.
- Only actuate externally-actuated machine parts when you are sure that no-one is standing within the prescribed safety distance.
- Take note of the working width when driving the machine, no



## General Safety Instructions

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obstacles should be in the way especially when driving on headlands with the sprayer boom folded out.

- Before leaving the tractor, secure it against unintended starting and rolling.

To do this:

- o apply the parking brake
- o switch off the engine
- o remove the ignition key
- Operation of the machine is carried out only when sitting down.
- Use only those fuels specified according to DIN / EN 590.

## Driving on public roads

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- When using public roads, national road traffic regulations must be observed.
- Adjust your driving speed to the prevailing conditions. • Drive with great care in case of narrow track widths!
- Before starting up the machine each time, always check their traffic and operational safety.

## 2.16.2 Hydraulic system

---

- The hydraulic system is under a high pressure.
- Before working on the hydraulic system,
  - depressurise the hydraulic system
  - shut off the tractor engine
  - apply the parking brake
  - remove the ignition key
- Have the hydraulic hose lines checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is damaged or worn. Only use genuine AMAZONE hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years. This period includes any storage time of a maximum of two years. Even with proper storage and approved use, hoses and hose connections are subject to natural ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Never attempt to plug leaks in hydraulic hose lines with your hand or fingers.

Escaping high pressure fluid (hydraulic fluid) may pass through the skin and ingress into the body, causing serious injuries.  
If you are injured by hydraulic fluid, contact a doctor immediately.  
Risk of infection.
- When searching for leakage points, use suitable aids, to avoid the serious risk of infection.
- The pressure accumulator in the system is always under pressure (gas and oil). Thus, take care that they are not damaged or exposed to temperatures higher than 150° Celsius.
- After connecting the hydraulic hoses, always make a check of the direction of function and therefore, the engine or direction of motion of the cylinder are still correct.

### 2.16.3 Electrical system

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- When working on the electrical system, always disconnect the battery (negative terminal).
- Only use the prescribed fuses. If fuses are used that are too highly rated, the electrical system will be destroyed – risk of fire.
- Risk of explosion. Avoid sparking and naked flames in the area of the battery.
- Ensure that the battery is connected correctly - firstly connect the positive terminal and then connect the negative terminal. When disconnecting the battery, disconnect the negative terminal first, followed by the positive terminal.
- Always place the appropriate cover over the positive battery terminal. If there is accidental earth contact, there is a risk of explosion
- The machine may be equipped with electronic components whose function is influenced by electromagnetic interference from other units. Such interference can pose risks to people, if the following safety information is not followed.
  - If retrofitting electrical units and/or components on the machine with a connection to the on-board power supply, the user is responsible for checking whether the installation might cause faults on the vehicle electronics or other components.
  - Ensure that the retrofitted electrical and electronic components comply with the EMC directive 2014/30/EU in the appropriate version and bear the CE mark.
- The cable clips must be checked for tight fit on a regular basis. Corrosion to cable connections will lead to the loss of tension. Clean and grease with acid-free Vaseline.
- The battery acid is highly corrosive and any contact to skin should therefore be avoided. If however, acid should get into your eyes, immediately rinse under running water for 10 to 15 minutes and seek medical advice immediately.
- Replace damaged cables immediately.
- Old batteries must be disposed of according to regulations.
- Store the batteries in a dry area during the winter periods (corrosion).
- **ATTENTION:** Move the main switch to the zero position after completing the task. Several components consume current in stand-by mode.

#### 2.16.4 Brake system

---

- Only specialist workshops or recognised brake services can carry out adjustment and repair work on the brake system.
- Have the brake system thoroughly checked regularly.
- If there are any malfunctions, stop the tractor immediately using the brake system. Have the malfunction rectified immediately.
- Before working on the brake system, park the machine safely and secure the machine against unintentionally rolling away (wheel chocks)!
- Be particularly careful when carrying out any welding, torch cutting or drilling work in the area of the brake lines.
- Always carry out a braking test after any adjusting or repair work on the braking system.

#### Pneumatic braking system

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- You are only allowed to start to move the vehicle after the hand brake symbol no longer appears in red in AMADRIVE

#### 2.16.5 Tyres

---

- Repair work on tyres and wheels may only be carried out by specialists with suitable installation tools.
- Check the air pressure at regular intervals.
- Inflate tyres to the specified air pressure! If the air pressure in the tyres is too high, then there is a risk of explosions.
- Park the machine in a safe place and secure the machine against unintentionally rolling away (parking brake, wheel chocks), before carrying out work on the tyres!
- Tighten or retighten all the fixing screws and nuts in accordance with the specifications of AMAZONEN-WERKE.

### 2.16.6 Field sprayer operation

- warning information on exposure to crop protection agents
  - Observe the recommendations of the crop protection agent manufacturer in respect of
    - protective clothing
    - regulations on dosing, applications and cleaning
- Pay attention to crop protection legislation regulations!
- Never open lines which are under pressure.
- The nominal volume of the spray liquid tank must not be exceeded during filling.
- Reduce your speed when turning.

The steering wheel must be turned slowly at the start and end of the curve otherwise the boom will be exposed to high loads.

- Switch off the sprayer on headlands.
- Always carry sufficient water with you so that you are able to rinse away the crop protectant in the event of an emergency. If necessary, seek medical advice if your body makes contact with crop protectant! Risk of infection.



- When handling crop protection agents, wear the proper protective clothing, such as gloves, overalls, safety glasses, etc!
- Observe the information on the compatibility of crop protection agents and substances for the field sprayer.
- Do not spray any crop protection agents which have a tendency to stick together or set.
- Do not fill field sprayers with water from bodies of water which are open to the public, for the protection of people, animals and the environment.
- Only fill field sprayers
  - using a free flow from the mains water supply.
  - using genuine AMAZONE filling equipment.

## 2.16.7 Cleaning, maintenance and repair

- Due to toxic vapours in the spray liquid tank, climbing into the spray liquid tank is always forbidden.
- Repair work in the spray liquid tank must only be carried out by a specialist workshop!
- As a general rule, only carry out maintenance or repair work or cleaning when
  - the drive is switched off
  - the ignition key has been removed
- The machine must be positioned in a stable position during repairs. Always use wheel chocks on slopes.
- Secure the raised machine and/or raised machine parts against unintentional lowering before performing any cleaning, maintenance or repair work on the machine.
- Regularly check the nuts and bolts for firm seating and retighten them as necessary.
- When replacing work tools with blades, use suitable tools and gloves.
- Dispose of oils, greases and filters in the appropriate way.
- When changing the oil or dismantling the hydraulic parts, take measures to prevent the risk of burns that can result from hot oil.
- The cooling system of the engine should be cleaned on a regular basis; oil and plant residues are highly inflammable.
- Always wear protective clothing when welding!
- Attention: If the machine had previously been used to spray liquid fertiliser (ammonium nitrate), there is a risk of explosion when carrying out welding work! Clean the respective work area before starting work.
- Spare parts must meet at least the specified technical requirements of AMAZONEN-WERKE.  
This is ensured through the use of genuine AMAZONE spare parts.
- Anti-freeze: The fluid must be drained from all lines, pumps and containers.
- Repair work in the spray liquid tank may only be carried out after thorough cleaning and using breathing apparatus. For safety reasons a second person must monitor the work from outside the spray liquid tank!
- When repairing field sprayers which have been used for liquid fertiliser application with ammonium nitrate / urea solution, observe the following points:  
Residues of ammonium nitrate / urea solutions may form salts by the evaporation of the water on or in the spray liquid tank. This produces pure ammonium nitrate and urea. In its undiluted form, ammonium nitrate is explosive when combined with organic substances, e.g. urea, and subjected to critical temperatures during repair work (e.g. welding, grinding, filing).  
This danger can be eliminated by thoroughly washing out the spray liquid tank or the parts intended for repair with water, because the salt of the ammonium nitrate / urea solution is water-soluble. For this reason, clean the field sprayer thoroughly with water before carrying out repair work.

### 3 Loading



#### DANGER

The three lashing points marked must be used for securing the machine on a transport vehicle.

- 1 Front lashing point (Fig. 4/1)

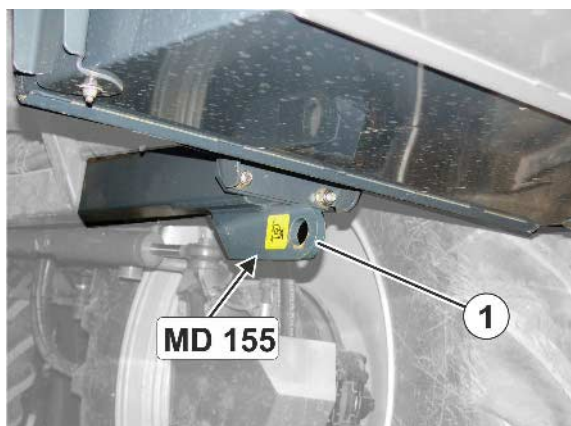


Fig. 4

- 2 Rear lashing points (Fig. 5/1)



When loading, lower the machine using the hydro-pneumatic spring suspension. Reactivate the hydro-pneumatic spring suspension again before use, see page 65.

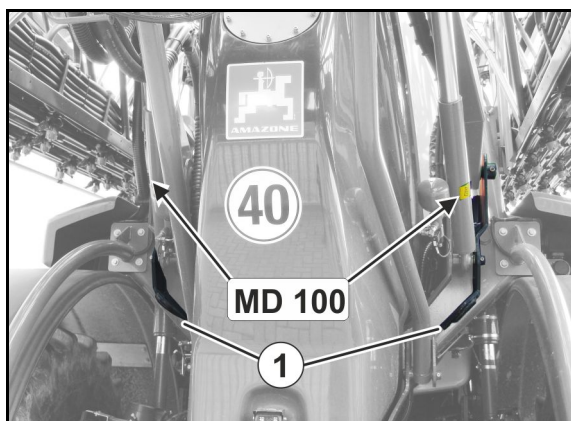


Fig. 5

## 4 Product description

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This section:

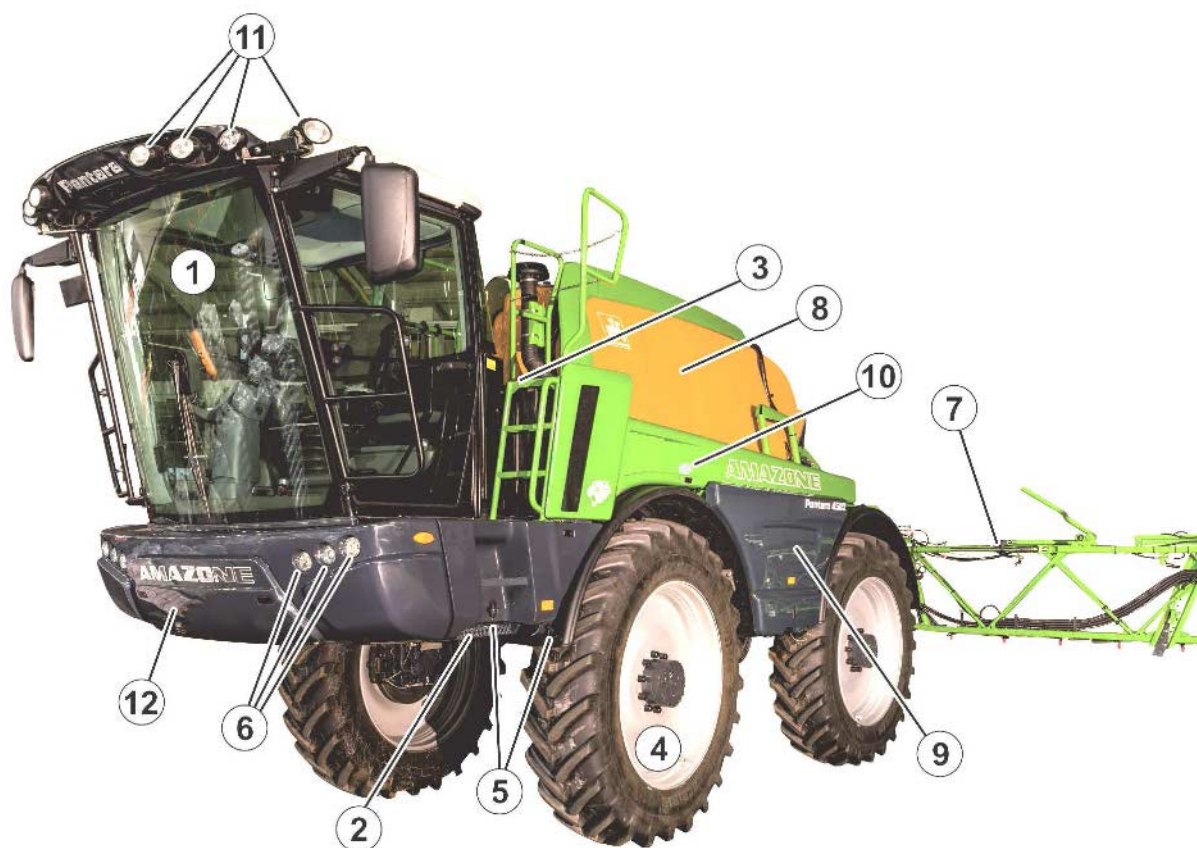
- provides a comprehensive overview of the machine structure.
- provides the names of the individual modules and controls.

If possible, read this section when actually at the machine. This helps you to understand the machine better.

The machine comprises the main assemblies:

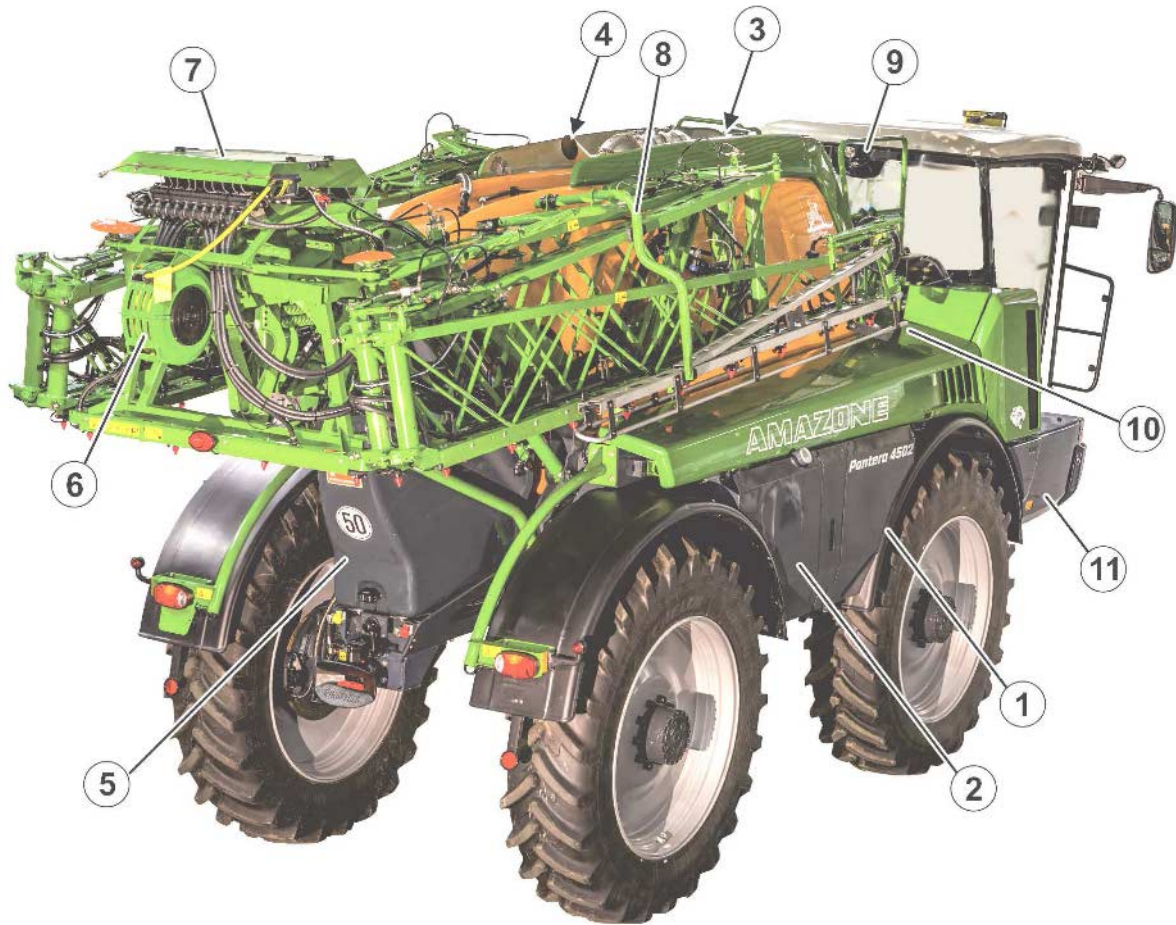
- Tandem chassis with hydro-pneumatic suspension and central track width adjustment.
- Hydraulic front-wheel steering system, all-wheel steering system and crab steering system
- Front-wheel steering system for road transport
- Continuously variable hydrostatic individual wheel drive with disc brakes and pneumatic brake system (travel speed 40 km/h)
- 6 cylinder DEUTZ turbo diesel engine
- Full-comfort CLAAS cab, heater, full-comfort seat with air suspension, adjustable steering column, CD-Radio, air conditioner, clock
- 2 Altek P260 pumps (spraying pump, agitator pump)
- Control terminal for spraying functions
- Super-L boom with field spray line, oscillation compensation, hydraulic slope compensation and Profi folding I (one-sided folding) or Profi folding II (angle-in / angle-out)
- Spray liquid tank with agitator, filling level indicator, flushing water tank
- Induction device, tank cleaning nozzles
- Electrical remote control of the field sprayer, job memory and GPS applications with control terminal and multi-function stick
- Vehicle operation with AMADRIVE control terminal.

## 4.1 Overview of the assemblies



**Fig. 6**

- |   |  |
|---|--|
| (1) Driver's cabin                              | (7) Sprayer boom   |
| (2) Slewable ladder                             | (8) Spray agent tank   |
| (3) Operation platform with maintenance flap    | (9) Folding cover for control terminal, swivelling container and work lights |
| (4) Wheels with hydrostatic drive               | (10) Foldable cover – Spraying technology (left and right)                   |
| (5) Hand wash tank and soap dispenser and drain | (11) Work floodlights  |
| (6) Front lighting                              | (12) Folding cover for the front storage compartment                         |



**Fig. 7**

- |   |  |
|---|--|
| (1) Hydraulic oil tank                      | (7) Boom equipment                                 |
| (2) Diesel fuel tank                        | (8) Boom locking mechanism                         |
| (3) Filling dome of the spray liquid tank   | (9) Maintenance floodlights                        |
| (4) Exhaust gas system with particle filter | (10) Work floodlights                              |
| (5) Flushing water tank                     | (11) Folding cover for the battery and main switch |
| (6) Exterior cleaning                       |  |

## 4.2 Operating instructions and third party documentation

This operating manual of the machine and documentation of third parties are located in the service case.



Please observe the enclosed third-party documentation!

### 4.3 Liquid circuit Comfort package 1

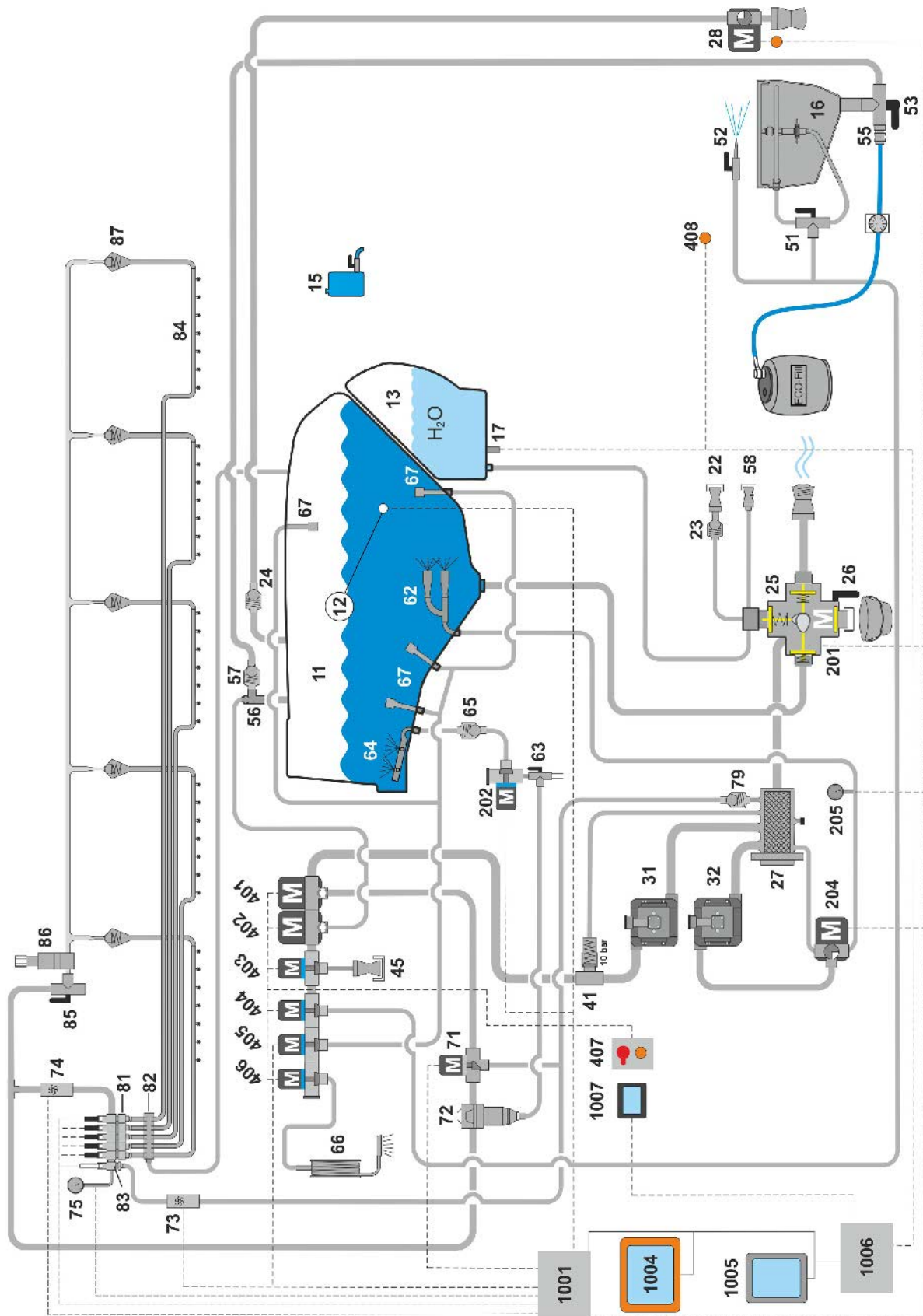


Fig. 8

**(1X) Tank**

- (11) Main tank
- (12) Fill level indicator main tank
- (13) Flushing water tank
- (15) Hand wash tank
- (16) Induction bowl
- (17) Filling level sensor, clear water tank

**(2X) Suction side**

- (21) External suction
- (22) Filling with flushing water
- (23) Non-return valve for flushing water (connection)
- (24) Non-return valve for flushing water main tank
- (25) Suction tap
- (26) Drain main tank
- (27) Suction filter
- (28) Valve, clear water pressure filling, main tank with button (option)

**(3X) Pumps**

- (31) Spraying pump
- (32) Agitator pump

**(4X) Pressure side**

- (41) Pressure relief valve
- (45) Quick emptying connection

**(5X) Induction bowl & injector**

- (51) Switch tap pressure Induction bowl
- (52) Spray gun
- (53) Switch tap Induction bowl
- (55) Ecofill connection
- (56) Injector
- (57) Non-return valve - injector
- (58) Flushing base

**(6X) Cleaning & agitators**

- (62) Main agitators
- (63) Tap for additional agitator
- (64) Additional agitator
- (65) Non-return valve for additional agitator
- (66) External cleaning
- (67) Internal cleaning

**(7X) Spraying operation**

- (71) Pressure control valve
- (72) Pressure filter
- (73) Flow meter 1
- (74) Flow meter 2
- (75) Pressure sensor
- (79) Pressure stage 0.8 bar

**(8X) Booms**

- (81) Boom part width section valves
- (82) Pressure relief channel
- (83) Bypass valve
- (84) Spray line
- (85) Pressure circulation system (DUS) tap
- (86) DUS pressure valve
- (87) DUS non-return valve

**(2XX) Comfort package I**

- (201) Motor, suction tap
- (202) Additional agitator motor valve
- (203) Motor valve internal cleaning only CP1
- (204) Main agitator motor valve
- (205) Pressure sensor - main agitator

**(4XX) Electrical pressure tap**

- (401) Spraying operation motor valve
- (402) Injector motor valve
- (403) Quick emptying motor valve
- (404) Spray gun motor valve
- (405) Motor valve, internal cleaning
- (406) Motor valve, external cleaning
- (407) Pressure tap switch

(

**(10XX) Electronics**

- (1001) Electric sprayer (simplified)
- (1004) Control terminal
- (1005) AMADRIIVE
- (1006) Electric Pantera (simplified)
- (1007) Fill level indicator

## 4.4 Safety and protection equipment

- (1) Transport locking mechanism to prevent the Super-L boom from folding out unintentionally

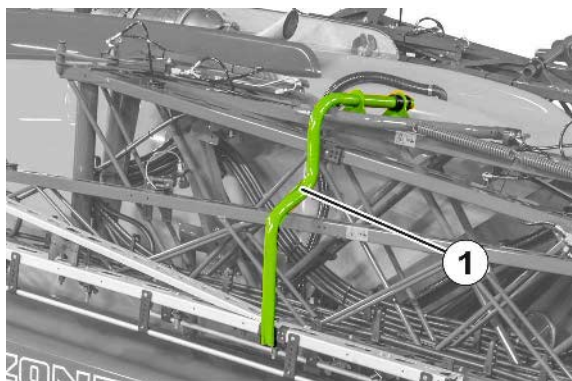


Fig. 9

- (1) Railing to protect against falling
- (2) Fire extinguisher behind the cover

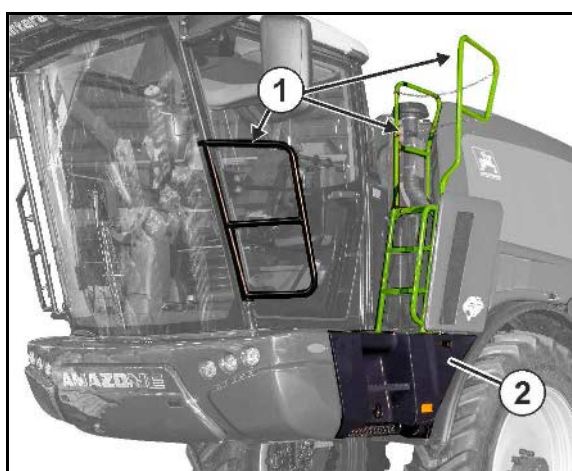


Fig. 10

- (3) Emergency exit on the right side of the cabin



Fig. 11

## 4.5 Transportation equipment

- (1) High beam
- (2) Dipped beam
- (3) Indicators / parking light
- (4) Rear-view mirror

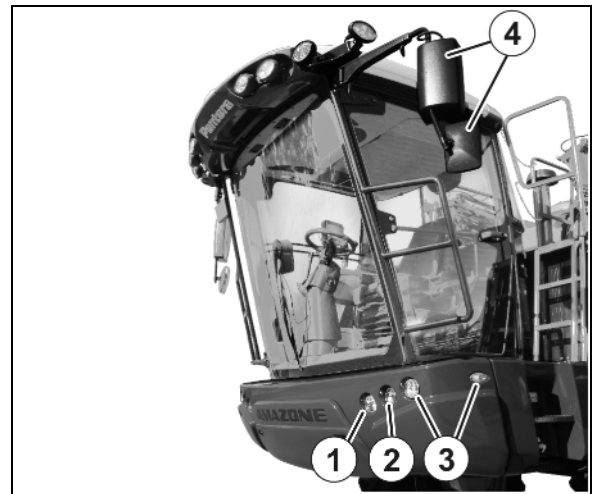


Fig. 12

- (1) Rear lights / brake lights
- (2) Turn indicators
- (3) Marker lights
- (4) Number plate holder



Fig. 13

- (1) 2 x 3 reflectors, yellow  
(lateral view: distance of max. 3m)

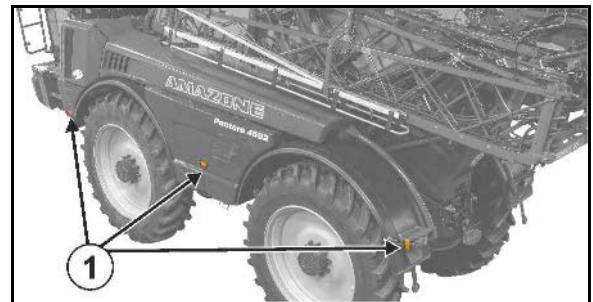


Fig. 14

## 4.6 Intended use

The self-propelled Pantera field sprayer

- is intended for use in field crops and is used for transporting and spreading of crop protectant (insecticides, fungicides, herbicides, amongst others) in the form of suspensions, emulsions and mixtures as well as liquid fertiliser.
- is operated by one person in the cabin.
- a combination with other machines, devices and superstructures is not intended by the manufacturer.

Restrictions for use on slopes

- (1) Driving on slopes with a full spray liquid tank
- (2) Driving on slopes with max. half-filled spray liquid tank
- (3) Application of residual quantities
- (4) Turning
- (5) Folding the sprayer boom

	(1)	(2)	(3)	(4)	(5)
Along the contours	15%	15%	15%	15%	20%
Up/down the slope	15%	20%	15%	15%	20%

"Intended use" also covers:

- Compliance with all the instructions in this operating manual.
- Execution of inspection and maintenance work.
- Exclusive use of genuine AMAZONE spare parts.

Other uses to those specified above are forbidden and shall be considered as improper.

For any damage resulting from improper use:

- the operator bears the sole responsibility,
- AMAZONEN-WERKE accepts no liability.

## 4.7 Regular device inspections

The implement underlies the European Union universally applicable regular device inspections (Crop Protection Directive 2009/128/EC and EN ISO 16122).

Have the device inspected at regular intervals by a recognised and certified inspection workshop.

The date for performing the next device inspection is written on the inspection plate on the implement.

Fig. 15: German inspection plate



Fig. 15

## 4.8 Consequences of using certain crop protection agents

We would like to draw attention to the fact that extended exposure (20 hours) to crop protection agents with which we are familiar, e.g. Lasso, Betanal and Tramat, Stomp, Iloxan, Mudecan, Elancolan and Teridox, can cause damage to the pump diaphragms, hoses, spray lines and tanks. The examples given are in no way intended to represent a comprehensive list.

In particular, we warn against unauthorised mixtures of two or more different crop protection agents.

Substances which have a tendency to stick together or set must not be applied.

When using such aggressive crop protection agents, it is recommended that the spray liquid be applied immediately after preparation and then that the sprayer be thoroughly cleaned afterwards with water.

Viton membranes are available as replacements for pumps. These are resistant to solvent-containing crop protection agents. However their service life is reduced by use at low temperatures (e.g. AUS in frosty conditions).

The materials and components used for AMAZONE field sprayers are safe for liquid fertiliser.

## 4.9 Danger areas and danger points

---

The danger area is the area around the machine in which people can be caught:

- work movements made by the machine and its tools
- materials or foreign bodies thrown out of the machine
- tools rising or falling unintentionally
- unintentional rolling of the tractor and the machine

Within the machine danger area, there are danger points with permanent or unexpected risks. Warning pictograms indicate these danger points and warn against residual dangers, which cannot be eliminated for construction reasons. Here, the special safety regulations of the appropriate section shall be valid.

No-one may stand in the machine danger area:

- if the tractor engine is running with the PTO shaft / hydraulic system connected.
- if the tractor and machine are not protected against unintentional start-up and rolling.

The operating person may only move the machine or switch or drive the tools from the transport position to the working position or vice-versa when there is no-one in the machine danger area.

Danger points exist:

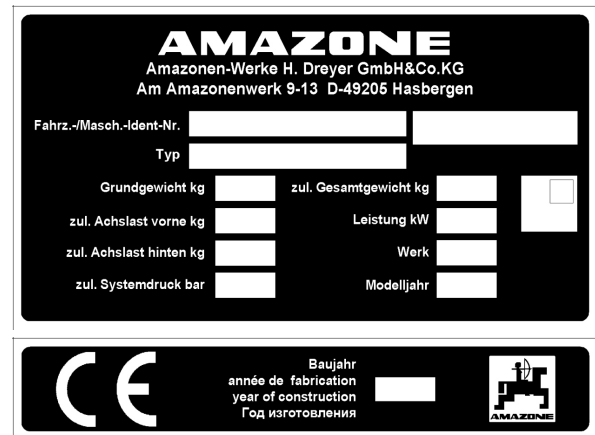
- where there are moving components.
- on the moving machine.
- in the swivel range of the sprayer boom.
- in the spray liquid tank due to poisonous vapours.
- under raised, unsecured machines or machine parts.
- when unfolding/folding the sprayer boom in the vicinity of overhead electricity cables, through contact with the cables.
- near the hot exhaust system on the tractor, in particular with active regeneration of the diesel particle filter

## 4.10 Rating plate and CE mark

The following diagrams show the positions of the rating plate and the CE mark.

The rating plate shows:

- Vehicle / Machinery ID No.
- Type
- Basic weight kg
- Permissible front axle load kg
- Permissible rear axle load kg
- Permitted system pressure
- Permitted total weight kg
- Power output (kW)
- Factory
- Model year



**AMAZONE**  
Amazonen-Werke H. Dreyer GmbH & Co. KG  
Am Amazonenwerk 9-13 D-49205 Hasbergen

Fahrz.-/Masch.-Ident-Nr.

Typ

Grundgewicht kg  zul. Gesamtgewicht kg

zul. Achslast vorne kg  Leistung kW

zul. Achslast hinten kg  Werk

zul. Systemdruck bar  Modelljahr

**CE** Baujahr  
année de fabrication  
year of construction  
Год изготовления

Fig. 16



Machines for France have an additional type plate.

## 4.11 Conformity

### Directives/Standards designation

The implement complies with the

- Implement directive 2006/42/EC
- EMC directive 2014/30/EU

## 4.12 Maximum permissible application rate



The permissible application rate of the implement is limited by:

- the legally required agitator capacity.

The permissible application rate is of particular importance for materials that require a high agitating intensity.

- the technical maximum application rate of 200 l/min (without HighFlow).

### Determining the permissible application rate depending on the agitator capacity

#### Calculation formula for the application rate in l/min:

(The agitator capacity per minute must be 5% of the hopper volume)

Permissible application rate [l/min]	=	Pump capacity [l/min]	-	0.05 x nominal tank volume [l]
		(See page 112)		(See page 53)

#### Conversion of the application rate in l/ha:

- Determine the application rate per nozzle (divide the permissible application rate by the number of nozzles).
- Read the application rate per hectare depending on the speed from the spray table (See page 273).

#### Example:

Pantera 4502, pump 2 x P 260, Super L 36 m, 72 nozzles, 10 km/h

Permissible application rate = 490 l/min - 0,05 x 4500 l = 265 l/min

→ Application rate per nozzle = 3,7 l/min

H <sub>2</sub> O												I/min	bar								AMAZONE
6	6,5	7	7,5	8	8,5	9	10	11	12	14	16		015	02	025	03	04	05	06	08	
680	628	583	544	510	480	453	428	371	340	291	255	3,4									3,6
700	646	600	560	525	494	467	440	382	350	300	263	3,5									3,8
720	665	617	576	540	508	480	452	393	360	309	270	3,6									4,0
740	683	634	592	555	522	493	464	404	370	318	278	3,7									4,3

→ Permissible application rate per hectare = 444 l/ha

## 4.13 Technical data

Total length	[mm]	8700
Overall height	[mm]	3680-3750 (depending on the tyres)
Overall width of the basic machine	[mm]	2550 (standard) 2865 (wide mudguard)
Ground clearance	[mm]	1100 – 1200 (depending on the tyres)

### 4.13.1 Basic weight (empty weight)



The basic weight (empty weight) is calculated from the total individual weights of the modules:

- Basic machine
- Running gear
- Tyres
- Sprayer boom
- Options

Tyres		
Pantera basic machine	KG	5650
Pantera running gear	KG	2300
Pantera W running gear	KG	2650
Pantera H running gear	KG	3200
Tyres, 4 wheels		
300/95 R52	[kg]	1200
320/90 R54	[kg]	1200
340/85 R48	[kg]	1080
380/90 R46	[kg]	1080
380/90 R50	[kg]	1200
480/80 R42	[kg]	1264
480/80 R46	[kg]	1464
520/85 R38	[kg]	1248
520/85 R42	[kg]	1580
620/70 R38	[kg]	1440
650/65 R38	[kg]	1568
710/60 R38	[kg]	1760
Other special equipment	[kg]	Max. 100

## Product description

### Sprayer boom weights

Working width [m]	Weight [kg]
21	750
24	760
27	764
27/15 27/21/15	932
28	765
28/15	936
30/24/15	964
32	1008
33/26/19 33/27/21	1012
36/28/19	1032
36/30/24	1136
39	1136
40	1138

#### 4.13.2 Permissible total weight and payload



#### **DANGER**

**Exceeding the permitted payload is prohibited.**

**Risk of accident because of unstable driving conditions.**

Carefully determine the payload, and therefore the permitted filling amount for your machine. Not all filling media can be used to fill the tank completely.



The value for the permissible total weight can be taken from the table on page 49 or on the following pages.

**Payload = permissible total weight - basic weight**



#### **WARNING**

**Only discs without openings, welded all-round are permitted for the wheels for safety reasons.**

**Permissible loads, track widths and tyre data (Pantera Standard)**

Wheel size	300/95 R52	320/90 R54	340/85 R48	380/90 R46	380/90 R46	380/90 R50	380/90 R50	480/80 R42	480/80 R46	480/80 R46	520/85 R38	520/85 R42	620/70 R38	650/65 R38	710/60 R38
Order no.	LE439 +50	LE470 +75	LE459 +50	LE391 +50	LE471 +50	LE410 +50	LE494 +50	LE412 +50	LE267 +50	LE495 +50	LE413 +25	LE437 +25	LE393 -25	LE368 -25	LE394 -50
Offset [mm]	+50	+75	+50	+50	+50	+50	+50	+50	+50	+50	+25	+25	-25	-25	-50
Cross- sectional width [mm]	310	319	345	383	389	380	385	494	499	480	540	516	608	618	712
External diameter [mm]	1890	1948	1805	1842	1842	1954	1947	1858	1948	1950	1838	1951	1864	1828	1814
Load index (40 km/h)	159 A8	155 A8	159 A8	173 D	168 D	158 A8	175 D	156 A8	158 A8	177 D	155 A8	157 A8	170 A8	157 D	160 D
Load-bearing capacity at 40 km/h [kg]	4380	3875	4380	6500	5600	4250	6900	4000	4250	7300	3875	4125	6000	4330	4500
Load index (50 km/h)	157 B	155 B	156 D	173 D	168 D	158 B	175 D	156 B	158 B	177 D	155 B	157 B	170 B	157 D	160 D
Load-bearing capacity at 50 km/h [kg]	4200	3875	4200	6500	5600	4250	6900	4000	4250	7300	3875	4125	6000	4330	4500
Max. air pressure [bar]	4.8	3.6	4.8	4.4	4.4	4.3	4.4	2.4	2.4	3.6	1.6	1.6	3.2	1.6	1
Min. air pres- sure [bar] at 50 km/h	4.8	3.6	4.4	2.2	2.5	3	2.2	2.4	2.2	1.8	1.6	1.6	1.6	1.4	1
Act. load- bearing ca- pacity at recom. air pressure [kg]	4200	3875	3990	4375	4040	4000	4625	4000	4075	5300	3875	4125	4075	3980	4500
Perm. tot. wheel load capacity	17520	15500	17520	26000	22400	17000	27600	16000	17000	29200	15500	16500	24000	17320	18000
Perm. tot. wheel load capacity	16800	15500	16800	26000	22400	17000	27600	16000	17000	29200	15500	16500	24000	17320	18000
Perm. total weight machine (50 km/h) [kg]	15800	15500	15800	15800	15800	15800	15800	15800	15800	15800	15500	15800	15800	15800	15800
Track width [mm] (from – to)	1800 - 2400	1750 - 2350	1800 - 2400	1800 - 2400	1800 - 2400	1800 - 2400	1800 - 2400	1800 - 2350	1800 - 2400	1800 - 2400	1800 - 2400	1800 - 2400	1900 - 2500	1900 - 2500	2000 - 2600
Ground clear- ance [mm]	1190	1225	1150	1150	1150	190	1210	1140	1190	1200	1130	1180	1150	1100	1090

## Product description

### Permissible loads, track widths and tyre data (Pantera H)

Wheel size	300/95 R52	320/90 R54	380/90 R46	380/90 R46	380/90 R50	380/90 R50	480/80 R46	480/80 R46	520/85 R42
Order no.	LE439 +50	LE470 +75	LE391 +50	LE471 +50	LE410 +50	LE494 +50	LE267 +-0	LE495 +-0	LE437 -25
Offset [mm]	+50	+75	+50	+50	+50	+50	+-0	+-0	-25
Cross-sectional width [mm]	310	319	383	389	380	385	499	480	516
External diameter [mm]	1890	1948	1842	1842	1954	1947	1948	1950	1951
Load index (40 km/h)	159 A8	155 A8	173 D	168 D	158 A8	175 D	158 A8	177 D	157 A8
Load-bearing capacity at 40 km/h [kg]	4380	3875	6500	5600	4250	6900	4250	7300	4125
Load index (50 km/h)	157 B	155 B	173 D	168 D	158 B	175 D	158 B	177 D	157 B
Load-bearing capacity at 50 km/h [kg]	4200	3875	6500	5600	4250	6900	4250	7300	4125
Max. air pressure [bar]	4,8	3,6	4,4	4,4	4,3	4,4	2,4	3,6	1,6
Min. air pressure [bar] at 50 km/h	4,8	3,6	2,2	2,7	3,3	2,2	2,2	1,8	1,6
Act. load-bearing capacity at recom. air pressure [kg]	4200	3875	4375	4200	4240	4625	4250	5300	4125
Perm. tot. wheel load capacity (40 km/h) [kg]	17520	15500	26000	22400	17000	27600	17000	29200	16500
Perm. tot. wheel load capacity (50 km/h) [kg]	16800	15500	26000	22400	17000	27600	17000	29200	16500
Perm. total weight machine (50 km/h) [kg]	16500	15500	16500	16500	16500	16500	16500	16500	16500
Track width [mm] (Running gear down)	1800- 2400	1750- 2350	1800- 2400	1800- 2400	1800- 2400	1800- 2400	1900- 2400	1900- 2400	1950- 2500
Track width [mm] (Running gear up)	2100 - 2600	2100 - 2550	2100 - 2600	2100 - 2600	2100 - 2600	2100 - 2600	2100 - 2600	2100 - 2600	2200 - 2700
Ground clearance [mm] (running gear down)	1180	1250	1180	1180	1250	1250	1230	1230	1220
Ground clearance [mm] (running gear up)	1630	1700	1630	1630	1700	1700	1680	1680	1670

**Permissible loads, track widths and tyre data (Pantera W)**

Wheel size	300/95 R52	340/85 R48	380/90 R46	380/90 R46	380/90 R50	380/90 R50	480/80 R42	480/80 R46	520/85 R38	520/85 R42
Order no.	LE439 +50	LE459 +50	LE391 +50	LE471 +50	LE410 +50	LE494 +50	LE412 +50	LE495 +50	LE413 +50	LE437 +50
Offset [mm]	+50	+50	+50	+50	+50	+50	+50	+50	+50	+50
Cross-sectional width [mm]	310	345	383	389	380	385	494	480	540	516
External diameter [mm]	1890	1805	1842	1842	1954	1947	1858	1950	1838	1951
Load index (40 km/h)	159 A8	159 A8	173 D	168 D	158 A8	175 D	156 A8	177 D	155 A8	157 A8
Load-bearing capacity at 40 km/h [kg]	4380	4380	6500	5600	4250	6900	4000	7300	3875	4125
Load index (50 km/h)	157 B	156 D	173 D	168 D	158 B	175 D	156 B	177 D	155 B	157 B
Load-bearing capacity at 50 km/h [kg]	4200	4200	6500	5600	4250	6900	4000	7300	3875	4125
Max. air pressure [bar]	4,8	4,8	4,4	4,4	4,3	4,4	2,4	3,6	1,6	1,6
Min. air pressure [bar] at 50 km/h	4,8	4,4	2,2	2,5	3	2,2	2,4	1,8	1,6	1,6
Act. load-bearing capacity at recom. air pressure [kg]	4200	3990	4375	4040	4000	4625	4000	5300	3875	4125
Perm. tot. wheel load capacity (40 km/h) [kg]	17520	17520	26000	22400	17000	27600	16000	29200	15500	16500
Perm. tot. wheel load capacity (50 km/h) [kg]	16800	16800	26000	22400	17000	27600	16000	29200	15500	16500
Perm. total weight machine (50 km/h) [kg]	15800	15800	15800	15800	15800	15800	15800	15800	15500	15800
Track width [mm] (from – to)	2250 - 3000	2250 - 3000	2250 - 3000	2250 - 3000	2250 - 3000	2250 - 3000	2250 - 3000	2250 - 3000	2250 - 3000	2250 - 3000
Track width [mm] (from – to)	1110	1070	1060	1070	1105	1130	1060	1120	1050	1100

**4.13.3 Technical data spraying system**

Spray liquid tank		
• Actual volume	[l]	4800
• Nominal volume		4500
Flushing water tank volume	[l]	500
Filling height		
• from the ground	[mm]	ca. 3300 (depending on the tyres)
• of working platform		900
Hand wash tank volume	[l]	18
Permissible system pressure		10
Technical residue incl. pump		
• On the flat		24
• Along the contours		
o Direction of travel 15 % to left	[l]	27
o Direction of travel 15 % to right		21
• Along the gradient		
o 15% up the slope		32
o 15% down the slope		32
Central switching mechanism		Electric, part width section valve coupling
Spray pressure adjustment		Electric
Spray pressure setting range	[bar]	0.8 – 10
Spray pressure display		digital spray pressure display
Suction filter		50 (80) mesh
Main agitator		Fill level dependent control
Additional agitator		Infinitely adjustable
Spray rate control		Ground speed related, via job computer
Nozzle height	[mm]	500 - 2500

#### 4.13.4 Technical data, carrier vehicle

<b>Frame:</b>			
System		Oscillating axle with springs and shock absorbers	
Wheelbase		3100 mm	
Turning radius		4500 mm	
Steering	Front axle	Hydraulic via Orbitrol	
	Rear axle	Electric hydraulic	
<b>Drive:</b>			
Hydraulic all-wheel drive			
Drive pump	Manufacturer, type Maximum operating pressure	LINDE, HPV 210 (210 ccm/revs), 420 bar	
Wheel motor	Manufacturer, type Maximum operating pressure	LINDE, H MV 75 (75 ccm/revs), 420 bar	
Wheel gears	Manufacturer, type	Bonfrigioli 6 06 W 2	
Auxiliary pump	Manufacturer, type Operating pressure (Spraying pump drive, cooler fan)	LINDE, HPR 75 (75 ccm/revs), 210 bar	
Auxiliary pump	Manufacturer, type Operating pressure (Cylinder / steering system)	LINDE, HPR 55 (55 ccm/revs), 200 bar	
Travel speed	o Field work	0 - 20 km/h	
	o Transport	25 / 40 / 50 km/h	
<b>Diesel engine:</b>			
Manufacturer		DEUTZ	
Engine type		TCD 6.1 L6 Four stroke diesel engine with direct injection and exhaust turbocharger with intercooler	
Emission standard	EU USA	Euro 3B Tier 4 interim	Euro 3A
Exhaust after-treatment	• Oxidation catalytic converter • Particle filter	x x	
Number of cylinders		6 in a row	
Cylinder bore / piston stroke		101 x 126 mm	
Engine capacity		6057 ccm	
Maximum power		160 KW	
Coolant quantity	Cooling liquid	38 l	
Lubricant replacement quantity	With filter	15.5 l	
Electrical system		12 Volt	
Battery		12 Volt 180 Ah	
Alternator		12 Volt 200 A	
Fuel tank	Content	230 l	

#### 4.13.5 Emission values according to noise and vibration health & safety regulations

---

The measurements were performed in compliance with the noise and vibration health & safety regulations 2002/44/EC.

**Noise level:**

The workplace-related emission value (noise level) is 75 dB(A), measured in operating condition at the ear of the tractor driver with the tractor cab closed.

Measuring device: OPTAC SLM 5.

**Vibrations:**

The job-related emission value (daily vibration exposure) is 0.44 m/s<sup>2</sup>, measured during operation at the driver's seat

Measuring device: Pietzotronics 356B41

## 5 Structure and function, carrier vehicle

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### 5.1 Drive

---

A Deutz diesel engine serves as the drive.

The diesel engine can be operated in two states:

**Eco mode:**

- Requirement-orientated adoption of the engine speed with regard to an optimum fuel consumption and maximum output.
- Reduced speed level.
- Moderate driving dynamics.
- Idling speed 800 min<sup>-1</sup>.

**Standard mode:**

- Full driving dynamics.
- Maximum engine speed of 2000 min<sup>-1</sup> possible.
- Manual adjustment of the engine speed in field mode.

#### 5.1.1 Driving-in the engine

---

We recommend that you treat the engine with great care during the first 50 operational hours. This means that the engine has to warm-up first during this period before it is sped up to high load and not at full speed straight away.

Following work at maximum load, allow the engine to idle for a while until the temperature of the motor sinks to a normal value to prevent heat accumulation if the engine is stopped immediately.

The oil has to be changed after the first 50 to 150 operational hours (while the engine is still warm!), the oil filter and fuel filters also have to be replaced.

In the event of queries on maintenance, observe the details of the engine manufacturer.

## 5.1.2 Engine fuel system

The fuel tank is located on the right side of the machine.

- (1) Fuel tank
- (2) Swivelling ascent for filling the fuel tank, folded up in transport position
- (3) Handle and access to lock the folded step
- (4) Fill opening with lid

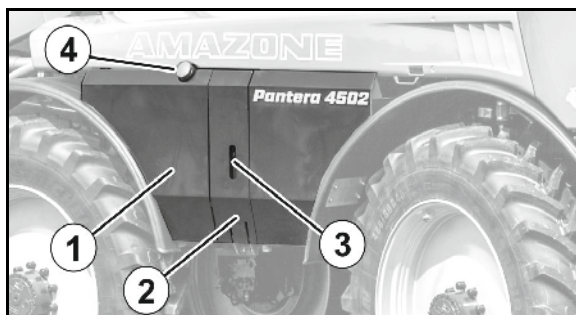


Fig. 17



### CAUTION

- Turn off the engine when filling the fuel tank.
- Never smoke when filling the fuel tank!
- Take care that no oil / petrol penetrates into the ground → Environmental pollution!



- Also make sure that no dirt is able to enter the fuel tank.
- Before you open the tank, you have to clean the cover and the opening thoroughly first.
- Small contaminants may seriously damage the fuel system.
- Preferably, the tank should be filled in the evening immediately after working in order to avoid the accumulation of condensed water in the tank.
- Water can cause damage to the fuel system and leads to the formation of rust.



Avoid driving until the fuel tank is empty.

- Air and impurities in the residual petrol may enter the system and reduce the service life or block the fuel pump.

## Fuel quality



The following fuel specifications are approved:

- Diesel fuels
  - Sulphur  $\leq 10$  mg/kg
    - DIN 51628
    - EN 590
  - Sulphur  $\leq 15$  mg/kg
    - ASTM D 975 Grade 1-D S15 –
    - ASTM D 975 Grade 2-D S15
- Light fuel oil (EN 590 quality)
  - Sulphur  $\leq 10$  mg/kg



Take care that you fill the tank with the fuel for the respective season!

Additives are contained in winter fuel that prevent the formation of paraffin and ice crystals at low temperatures. Otherwise this may lead to blockages in the fuel system.

When using the machine in transitional periods, you should therefore fill the tank with fuels complying with DIN/EN 590.

## 5.2 Exhaust treatment

Only for Euro 3 Emission Standard

The exhaust treatment consists of :

- Oxidation catalyser
- Particle filter with regeneration system

### Regeneration system of the particle filter



#### **WARNING**

##### **Risk of burns from a hot particle filter.**

During regeneration, the diesel particle filter on the machine can get up to 500° hot. While the machine is running, always keep people away from it.

The load condition of the particle filter is shown on the AMADRIVE.

The regeneration of the particle filter can be automatically started while driving once a load condition of 100 % has been reached.

The engine must continue running during the process.

The regeneration takes 30-45 minutes.

It is possible to continue working without restrictions.

If there is a reduction in power when the regeneration is overdue:

- Work can be continued.
- The regeneration should begin soon.
- Check if the regeneration is suppressed in the AMADrive.

### Suppressing regeneration:

An upcoming automatic regeneration can be suppressed through the AMADrive operating data (e.g: just before finishing work, inside closed buildings).

The automatic regeneration may not be permanently switched off.



### WARNING

#### Danger of intoxication from poisonous particles.

Regeneration of the diesel particle filter may not be carried out in buildings. Switch off automatic regeneration.

### Fill level of the particle filter and regeneration:

DPF fill level/display	Prerequisite/cause	Reaction of the machine
0-100 %		No regeneration
100-115 %	Engine is warm (> 70°C) (Regeneration is not suppressed in the AMADrive)	Regeneration of the diesel particle filter starts automatically.
> 115 %	Regeneration suppressed	Reduction of the engine power
> 125 %	Otherwise malfunction	Switching off the spraying pump
> 130 %	→ Contact AMAZONE Service	Restriction of the engine speed
> 140 %		Permanent damage
> 160 %	Regeneration only possible with SerDia	
1xx %	Active regeneration	



The particle filter must be replaced after 8000 operational hours when the message appears on the AMADrive.

An ash load of 100 % is then reached (see AMADrive operating data). Regeneration is no longer possible.

### 5.3 Running gear

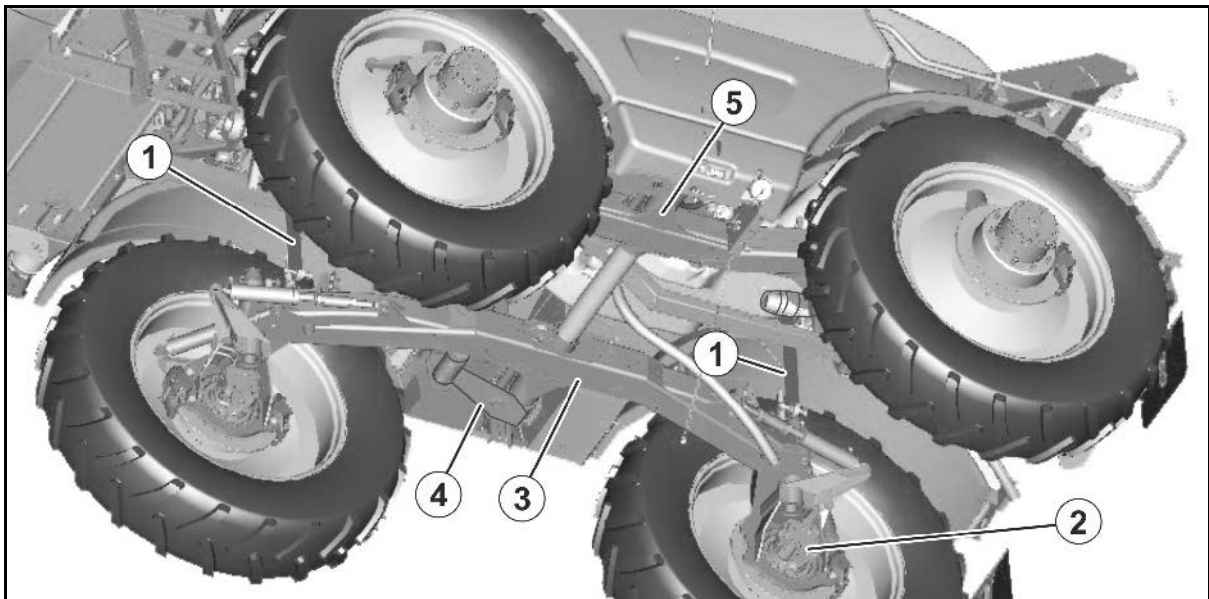


Fig. 18

- (1) Spring suspension
- (2) Wheel motor with disc brake
- (3) Tandem running gear
- (4) Oscillating yoke
- (5) Track width adjustment

#### 5.3.1 Hydraulic track width adjustment

The machine has an infinitely variable track width adjustment.

The track width of the machine can be adjusted between 1800 mm and 2250 mm to 2400 mm depending on the wheels mounted.

On Pantera W, the track width is 2,250 mm to 3,000 mm.

- The track width is adjusted and displayed via the AMADRIVE.
- When driving on public roads, the wheels are not allowed to protrude over the outer dimensions of the machine.



For France only: if the track width is not adjusted small enough for road travel, the AMADRIVE will display a warning message and limit the speed.



The track width is entered via the AMADRIVE and adjusted during an automatic adjustment drive.

## 5.4 Pantera-W with maximum track width of 3 metres



The transport width of the Pantera-W is 2.75 m.

- Observe the country-specific guidelines for the maximum permissible width of the vehicle on public roads..
- When travelling on roads, reduce the track width so that the transport width of 2.75 m is maintained.



The maximum width of the machine is 3.46 m.

Track width for travelling on roads



Track width 3.0 m



Fig. 19

## 5.5 Pantera H with hydraulic height adjustment

The hydraulic height adjustment is used for lifting the machine on the field in order to increase the free passage under the machine.

- The machine height is adjusted and displayed via AMADRIVE.
- Always completely raise / lower the machine.
- Lower the machine again for travelling on the road.



### DANGER

**Risk of accident from the raised machine tipping over as a result of the higher centre of gravity.**

Always drive with great caution on slopy terrain.



If tipping to the side occurs during the height adjustment due to a fault, cancel the procedure and lower the machine.

### Machine lowered (default position)



### Machine raised (only for driving on the field)



Fig. 20

## 5.6 Steering



Depending on the requirements, the steering system is switched via the AMADRIIVE or the multi-function stick, see Page 148.

### Two-wheel steering system (Fig. 21):

possible when in road and field mode!

- The steering system is carried out only using the front wheels with the Orbitrol in the steering column.
- The automatic steering system keeps the rear wheels parallel to the longitudinal axle.

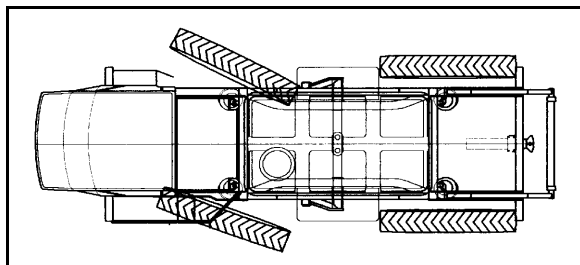


Fig. 21

### Manual rear-wheel steering system (Fig. 22):

Only possible when in field mode!

- For the manual steering system of the rear wheels (e.g. "crab steering system").
- The steering system of the front wheels is carried out using the Orbitrol in the steering column.

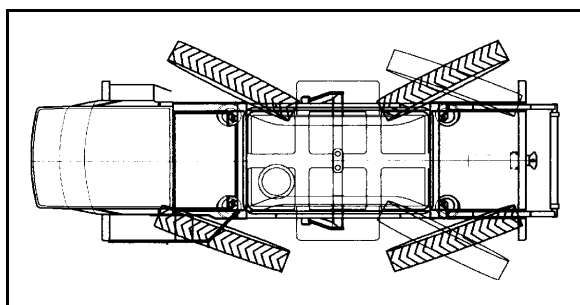


Fig. 22

### Four-wheel steering system (Fig. 23):

Only possible when in field mode!

- Steering of all four wheels is carried out using the steering wheel.
- From a speed of 6 km/h the four-wheel steering is limited.
- From a speed of 12 km/h the four-wheel steering system is deactivated.

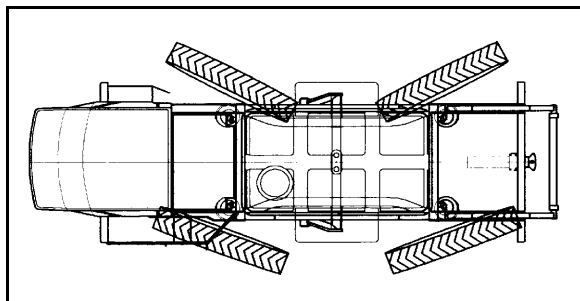


Fig. 23



After starting the engine:

- the two-wheel steering system is activated.
- the rear wheels automatically align to the direction of driving.



Rear wheel steering safety function: The rear wheel steering is deactivated when the driver leaves his seat.

Reactivate the rear wheel steering using the driving lever (see Ama-drive message).

→ The rear wheels can steer immediately!

### 5.6.1 Perform a track correction





#### CAUTION

- Perform the track correction with heightened caution.
- Do not perform track corrections in public areas.







- Perform the track correction every day.
- Perform the track correction with:
  - o low forward speed,
  - o 4-wheel drive switched on.

#### Perform a track correction, front

1. Turn the steering wheel to the left as far as it will go and keep it there.
2.  Keep the button pressed forwards for a minimum of three seconds.
3. Let go of the button and then turn the steering wheel to the right as far as it will go and keep it there.
4.  Keep the button pressed forwards for a minimum of three seconds.
5. Let go of the button and then turn back the steering.

#### Perform a track correction, rear

1.  Turn the manual rear-wheel steering (via the multi-function stick) to the left as far as it will go and keep it there.
2.  Keep the button pressed backwards for a minimum of three seconds.
3.  then turn the manual rear-wheel steering (via the multi-function stick) to the right as far as it will go and keep it there.
4.  Keep the button pressed backwards for a minimum of three seconds.
5. Let go of the button and then turn back the steering.



After correcting the track, drive a short distance straight ahead and check the alignment of all of the wheels. Repeat the track correction if necessary.

## 5.7 Traction control system

The machine is equipped with an automatic traction control system.

The electronic traction control system continues to monitor each wheel and regulates the drive torque of the wheel motors.

## 5.8 Wheel gears

The wheel motor transmits its power to the wheel through the wheel gear.

The wheel gears are available in 2 reduction stages.

- Gear reduction 1:23.5 - Standard
  - Standard
  - Climbing ability (up to 26.5 %)
- Gear reduction 1:30
  - Optional (Pantera<sup>+</sup>)
  - Increased climbing ability (up to 33.5 %)
  - Maximum speed is limited to 40 km/h

## 5.9 Mudguards

### Mudguard width 550 mm

- Standard
- Total width of the machine: 2550 mm

### Mudguard width 700 mm

- Optional
- Total width of the machine: 2865 mm
- Machine is equipped with warning signs



When using the wide mudguards in road traffic, please observe the country-specific specifications for the permissible total width of the machine.

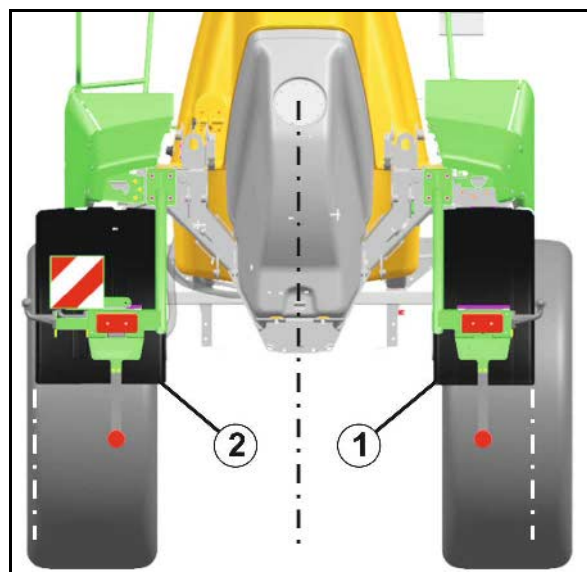


Fig. 24

## 5.10 Hydro-pneumatic spring suspension

The hydro-pneumatic spring suspension contains an automatic level regulation device independent of the load status.

Fig. 25/...

- (1) Hydraulic cylinder
- (2) Pressure accumulator
- (3) Valve unit

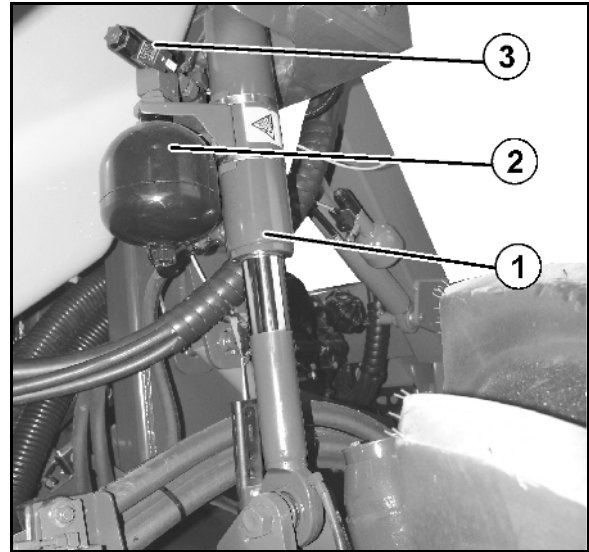


Fig. 25

When loading the machine, the oil can be drained from the spring suspension cylinders.

- This prevents the lashed machine from swivelling up.



### DANGER

**Risk of crushing parts of your body between the running gear and the body when lowering the machine!**

Instruct persons away from the machine before lowering the implement.



### CAUTION

**Risk of colliding machine parts when lowering the machine.**

The track width must be previously set to the minimum value:

Pantera: 1.95 m / Pantera-W: 2.40 m.

- Open the shut-off valves on the hydraulic block (Fig. 26/1).
- The machine is lowered.
- Close the shut-off valve (Fig. 26/2):
- When the engine is running, the machine is raised back to the standard height.

The shut-off valves are located behind the right cover under the cabin.

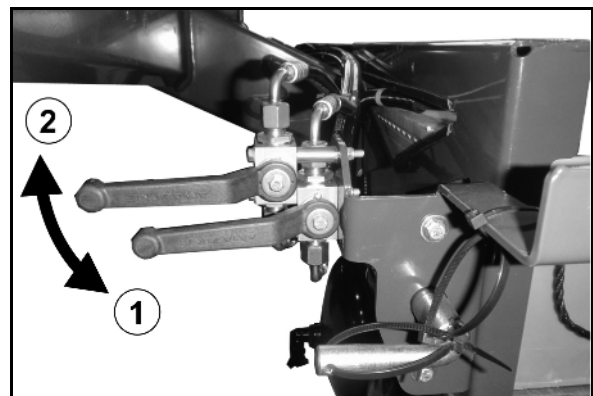


Fig. 26

## 5.11 Brake system

The hydraulic disc brakes are controlled pneumatically via membrane cylinders.

This is activated using the foot pedal in the cabin.

A hydraulic parking brake in the wheel gear is activated using the rocker switch in the cabin.

Both axles are fitted respectively with an automatic load-dependant braking force regulator (ALB).

Setting data dependent on the axle load:

	Front axle Input pressure: 8 bar			Rear axle Input pressure: 3,5 bar		
	Axle load	Bellows pressure	Output pressure	Axle load	Bellows pressure	Output pressure
	[kg]	[bar]	[bar]	[kg]	[bar]	[bar]
Empty	6200	85	4.0	4600	45	1.8
Loaded	8000	120	8.0	7800	115	3.5

## 5.12 Foldable wheel chocks

Each of the wheel chocks is attached with a thumb bolt in the front storage compartment under the tractor cab.

Put the foldable wheel chocks into operating position by pressing the button and apply directly on the wheels before uncoupling.

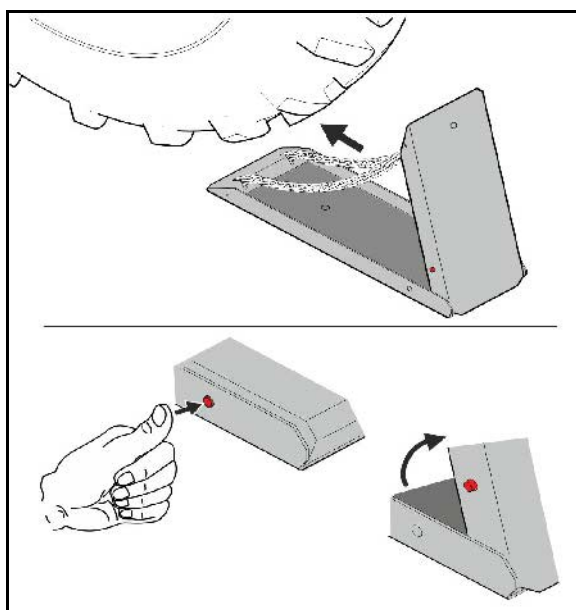


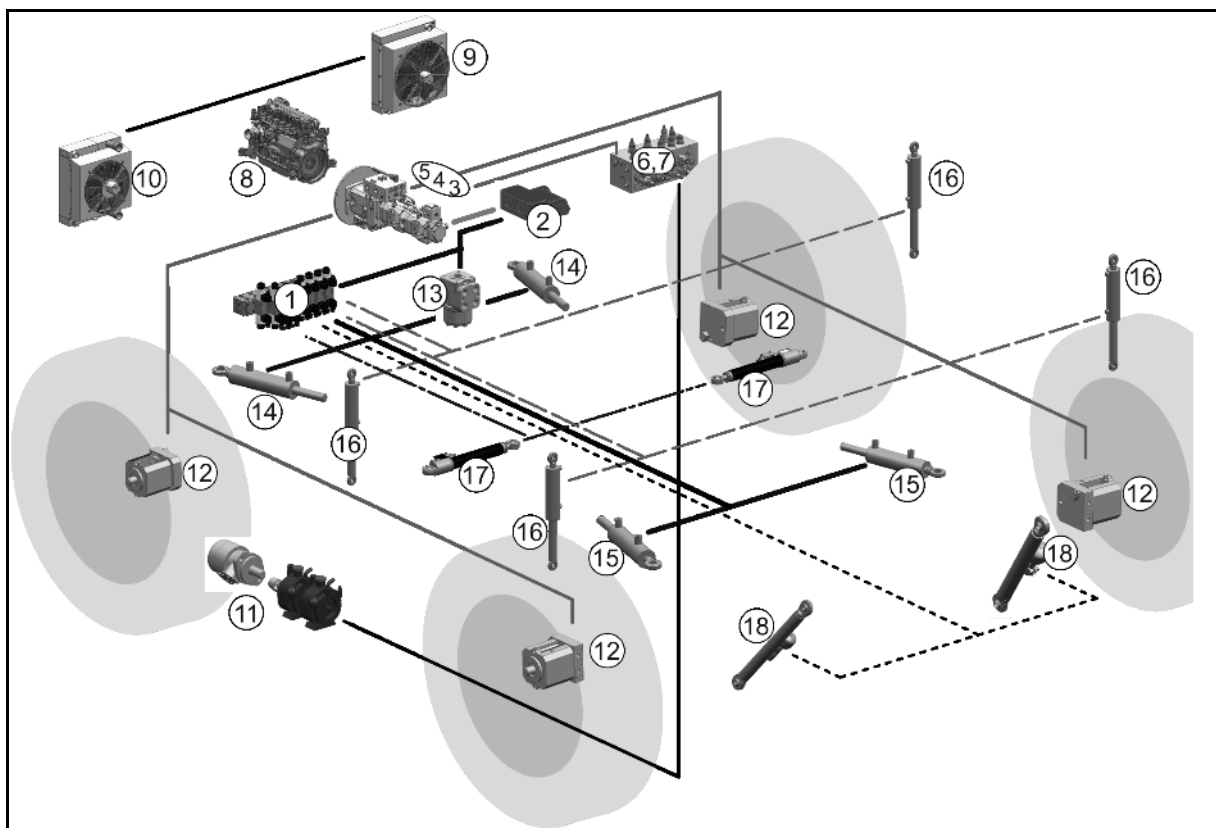
Fig. 27

### 5.13 Hydraulic system

The machine has

- a hydrostatic wheel drive,
- a hydraulic spray pump drive,
- a hydraulic steering system,
- a hydraulic cylinder for the track adjustment, for boom height adjustment and for folding the boom
- a hydro-pneumatic suspension.

The machine has 3 hydraulic pumps that are flanged direct to the diesel engine. The hydraulic components are mounted at different locations on the machine.



**Fig. 28**

- |                            |                              |
|----------------------------|------------------------------|
| (1) Valve block 1          | (11) Sprayer pump drive      |
| (2) Priority valve         | (12) Wheel motor             |
| (3) Constant pressure pump | (13) Orbitol steering system |
| (4) Load sensing pump      | (14) Front steering system   |
| (5) Driving pump           | (15) Rear steering system    |
| (6) Valve block 2          | (16) Spring suspension       |
| (7) Retarder brake         | (17) Track                   |
| (8) Diesel engine          | (18) Boom                    |
| (9) Radiator fan 1         |                              |
| (10) Radiator fan 2        |                              |

### 5.13.1 Hydraulic pumps

- The drive pump drives the 4 parallel switched wheel motors in a closed circuit.
- The feed pump supplies the system with leakage oil and flushing oil.
- The pump for the drive of the spraying pumps and the fan motors is a regulating pump load sensing controller. The operating pressure of the pump is adjusted automatically depending on the output required.
- The regulating pump with constant pressure controller supplies the steering system and hydraulic cylinder with oil.



Adjusting and checking the system is carried out in the factory. Normally, the settings do not need to be corrected.

The operator requires special tools and special knowledge of the system in order to adjust the highest pressure, the operating pressure and the speed. This is why the adjustment work may only be carried out in the factory.

### 5.13.2 Hydraulic wheel motors and gearbox



- The 4 motors and the driving pump must all be precisely adjusted to each other.
- Have all repair work or adjustments carried out by a specialist workshop.

### 5.13.3 Hydraulic oil tank

- (1) Hydraulic oil tank
- (2) Inspection glass
- (3) Fill opening with integrated oil filter
- (4) Electric sensor for measuring the oil level

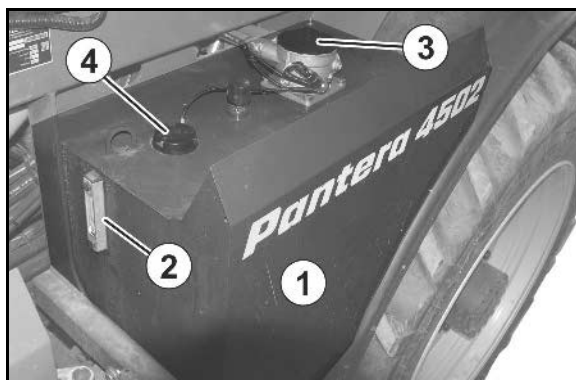


Fig. 29

## 5.14 Radiator

The machine is equipped with a total of four radiators on both sides behind the cabin.

Right side:

- Radiator for the engine cooling water
- Condenser of air conditioner

Left side:

- Radiator for hydraulic oil
- Radiator for charged air of the turbocharger



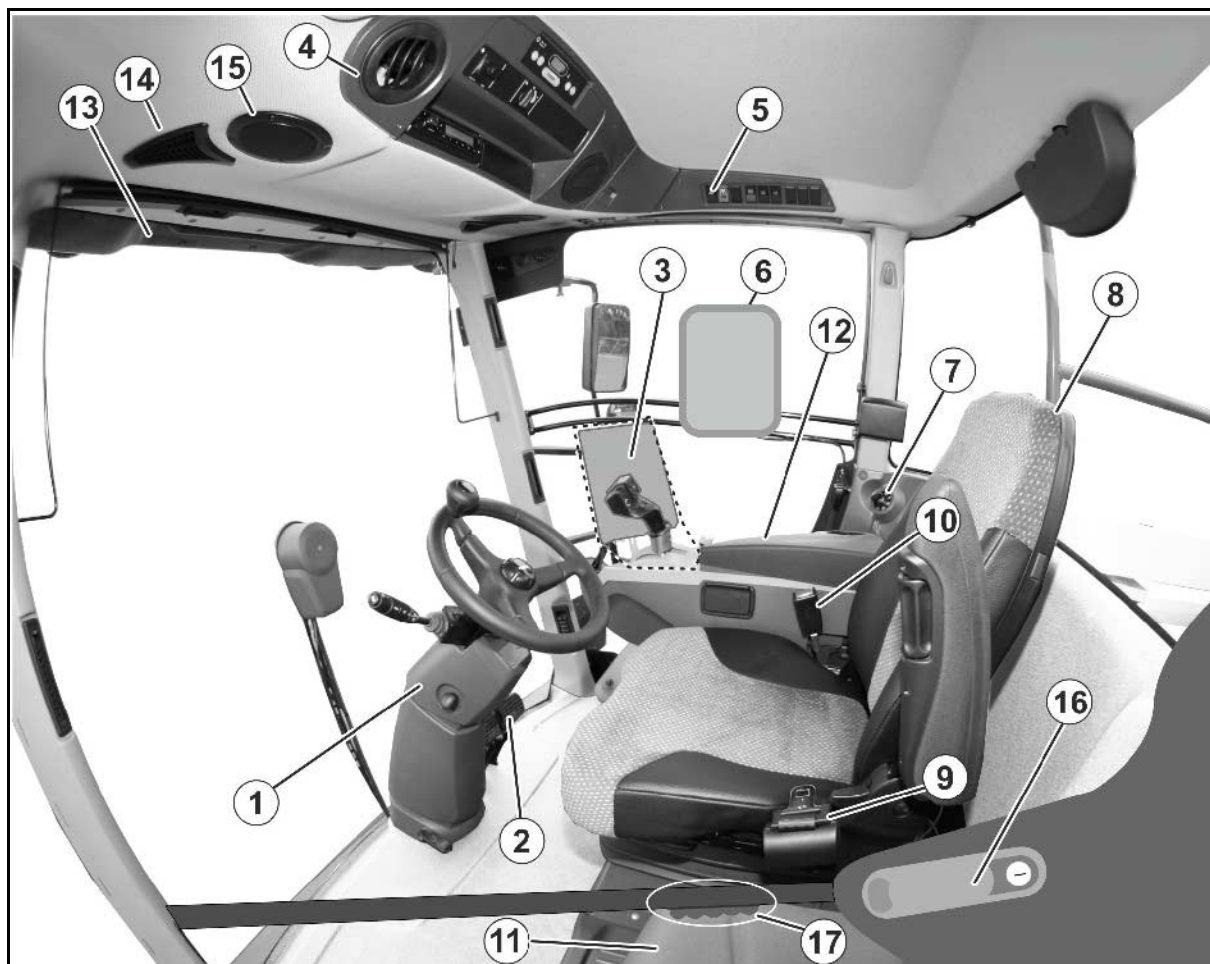
Fig. 30



**The air flow through the radiator may not be obstructed.**

For this reason the radiators have to be checked on a regular basis and cleaned using compressed air.

## 5.15 Driver's cabin



**Fig. 31**

- (1) Steering column with multi-function switch
- (2) Brake pedal
- (3) Field sprayer operation
- (4) Operating elements: Comfort and light
- (5) Operating elements: Safety and maintenance
- (6) Control terminal AMADRIIVE
- (7) Ignition lock
- (8) Driver's seat
- (9) Seat belt for wearing on the drivers seat
- (10) Seat belt buckle
- (11) Folding helper's seat with cooling compartment underneath
- (12) Height-adjustable and folding armrest and operating unit
- (13) Sunblind
- (14) Ventilation nozzles
- (15) Loudspeaker
- (16) Door handle with lock
- (17) Door opening on the inside



- The helpers seat must only be used for manoeuvring trips.
- Drive the machine only when wearing the seat belt.

### 5.15.1 Foldable access ladder

You can access and exit the cabin via the foldable ladder.



- The access ladder is lowered and raised via a switch in the cabin.



- The AMADrive displays the position of the ladder.



The ladder can also be folded down when the diesel engine is turned off.



Fig. 32



#### WARNING

##### Risk of injuries from falling from the cabin.

- When leaving the cabin, make sure that the ladder has been lowered completely.  
You cannot see if the ladder has been lowered from inside the cabin.
- Climb up and down the ladder facing the machine (3 point rule).



An acoustic signal sounds as soon as the driver leaves the drivers seat if the ladder has not been lowered completely.

### 5.15.2 Steering column with multi-function switch and brake pedal

The steering column has the following functions:

- (1) Steering wheel
- (2) Multi-function switch
- (3) Steering column adjustment, forwards / backwards
- (4) Steering wheel adjustment, forwards / backwards
- (5) Steering wheel adjustment, higher / lower
- (6) Brake pedal
- (7) Light module

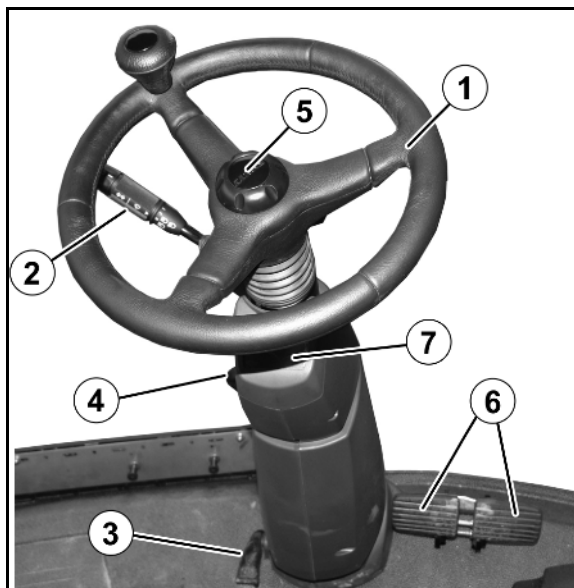









Fig. 33

#### Multi-function switch

- |   |                    |  |
|---|--------------------|--|
|  | Press in:          | Horn   |
|  | Upwards:           | High beam  |
|  | Downwards:         | Dipped beam  |
|  | To the front:      | direction indicator, right side<br>(in field mode: side-view floodlight, right side) |
|  | To the rear:       | direction indicator, left side<br>(in field mode: side-view floodlight, left side)   |
|  | Press in the ring: | → Windscreen washer system   |
|  | Turn the ring:     | → Windscreen wiper, switch on / fast   |

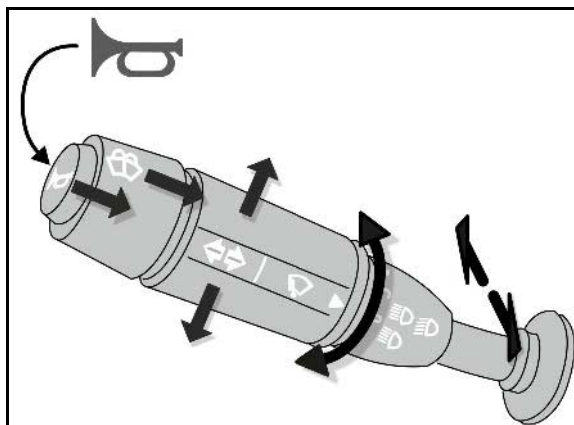


Fig. 34

## Brake pedal



Always use the brake pedal for emergency braking.

- The machine can be slowed down using
  - the brake pedal.
  - the driving lever.
- The delay via the driving lever may be sufficient depending on the driving situation.
- When braking using the brake pedal, the slowing down is carried out by the pneumatic brake system and the hydrostatic drive.



### Braking with the brake pedal

- Until standstill:
  - Before continuing to drive, briefly put the driving lever in the neutral position.
- To reduce the forward speed:
  - After the brakes are released, the machine accelerates to the speed selected using the driving lever.

## Light module

- (1) No function
- (2) Battery charger lamp
- (3) Indicators of the machine
- (4) High beam display
- (5) No function
- (6) No function

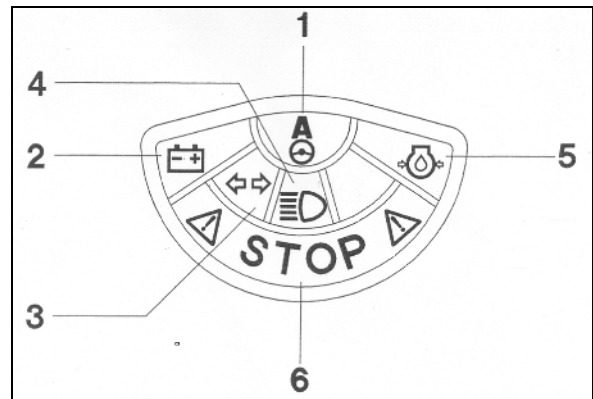


Fig. 35

### 5.15.3 Adjusting the driver's seat

The drivers seat is spring suspended and has various adjustment options.

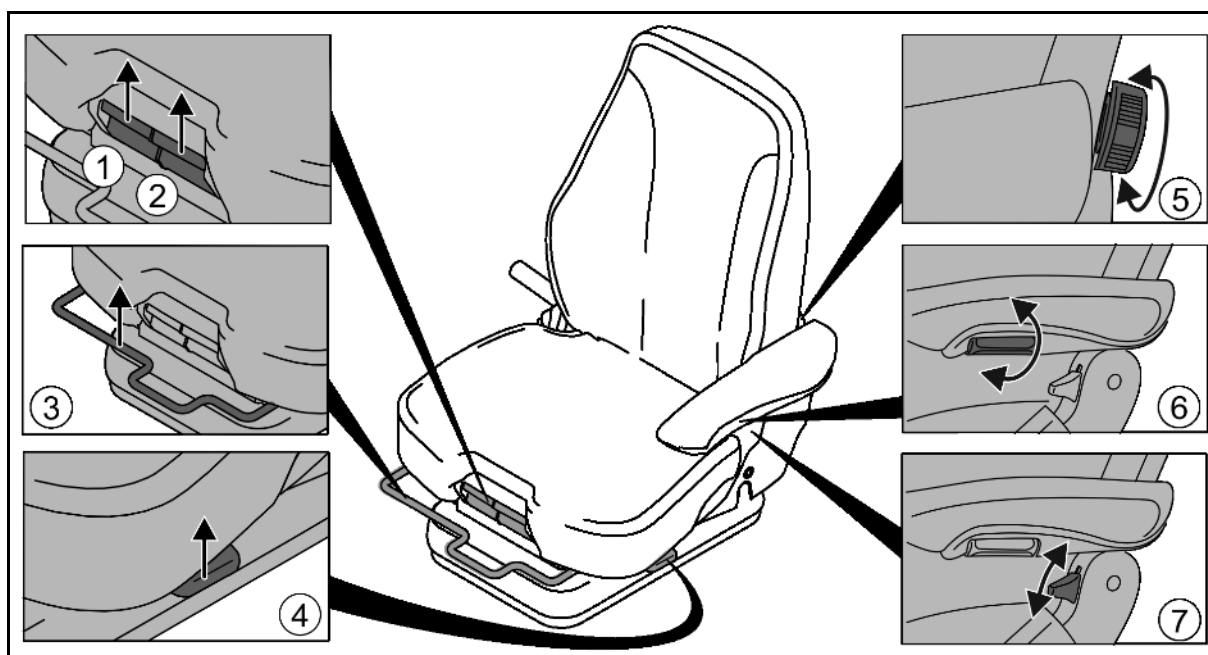


Fig. 36

Adjustments:

- (1) inclination of the seat surface
- (2) move the seating surface to the front / rear
- (3) move the seat to the front / rear
- (4) seat height
- (5) backrest
- (6) inclination of the armrests
- (7) inclination of the backrest

### 5.15.4 Control panel



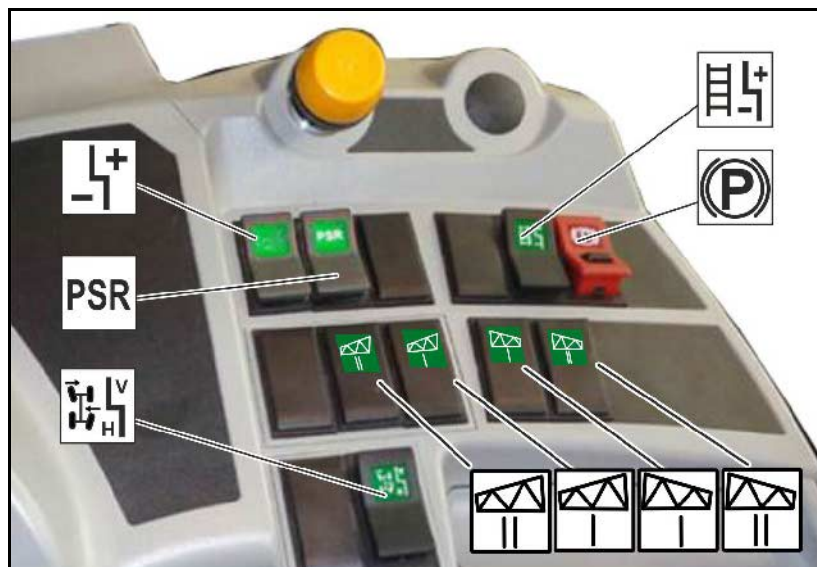
**Fig. 37**










- (1) Driving lever with multi-function stick
- (2) Control terminal ISOBUS
- (3) Control terminal AMADRIVE
- (4) Emergency shutdown
- (5) Sticker with the AMAPILOT functions



When operating the multi-function handle, also observe the operating instructions of the software ISOBUS!

## Switches and buttons on the control panel



- (6)  Button for actuating the ladder on the cabin side
  - o Position +: Lifts the ladder.
  - o Position -: Lowers the ladder
- (7)  Hand brake switch with locking function in parking position.
-  Button for aligning the track
-  Operate the lifting module switch (option)
-  Button for swivelling the row sensors (PSR steering)
-   Switch for electrical boom reduction (left/right) on the outer boom, see page 119
-   Switch for electrical boom reduction (left/right) on the second boom, see page 119.



Hand brake that has not been actuated via the switch:

The hand brake is activated automatically when turning off the ignition and released again when the ignition is switched on.

## 5.15.5 Emergency shutdown

### Performing an emergency shutdown

By pressing the operating button, the traction drive is interrupted, the motor is switched off and the machine is braked until it comes to a standstill.

### Deactivating the emergency shutdown and starting the machine again

1. Activate the parking brake using the switch.
2. Unlock the emergency shutdown by simultaneously pressing on the operating button and pulling on the black plastic ring.
3. Switch off the ignition.
4. Start the motor normally.

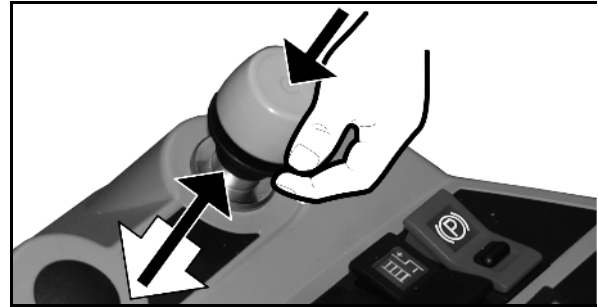


Fig. 38

## 5.15.6 Operating elements, Comfort and Light

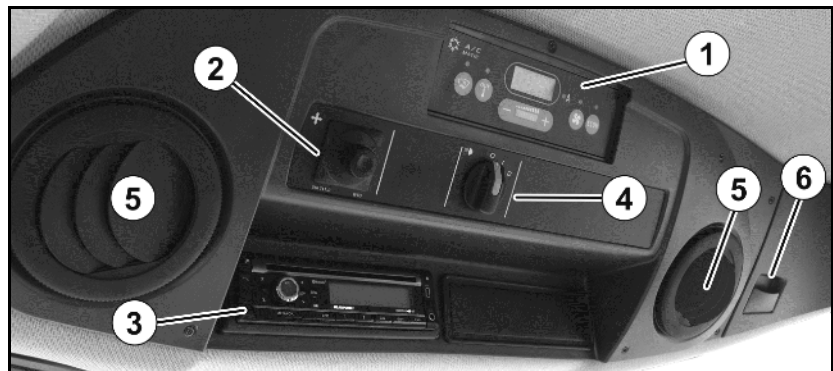


Fig. 39

On the inside of the roof, you will find the switch for the ventilator, the heater, the air conditioner, the travelling lights, the mirror adjustment and the radio.

- (1) Automatic air-conditioning system
- (2) Mirror adjuster switch
- (3) CD radio with Bluetooth hands-free system
- (4) Rotary switch with parking light and driving light
- (5) Ventilation nozzles
- (6) Cooling compartment

## 5.15.7 Operating elements, Safety and Maintenance

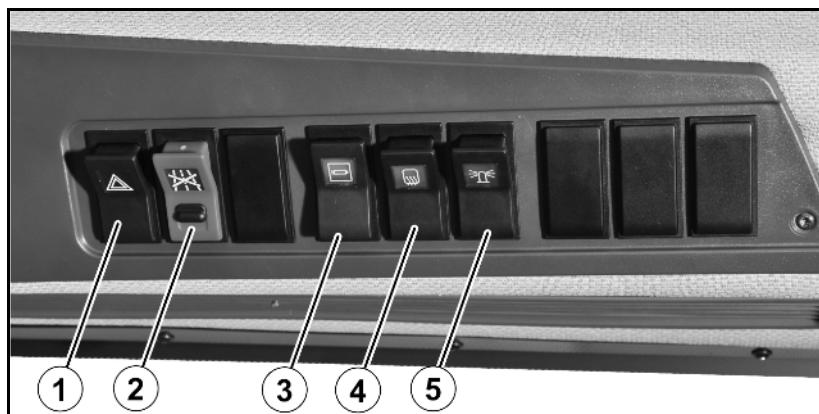








Fig. 40

- |     |   |  |
|-----|---|--|
| (1) |    | Hazard warning light switch  |
| (2) |    | Switch for travelling on the road / driving on fields with locking mechanism in road travel position |
| (3) |    | Button for manual lubrication by the lubricating device (Option)                                     |
| (4) |   | Switch for the mirror heating  |
| (5) |  | Switch for the warning beacon (Option)   |

### 5.15.7.1 Road travelling / field travelling



Road mode: Push rocker switch  downwards.

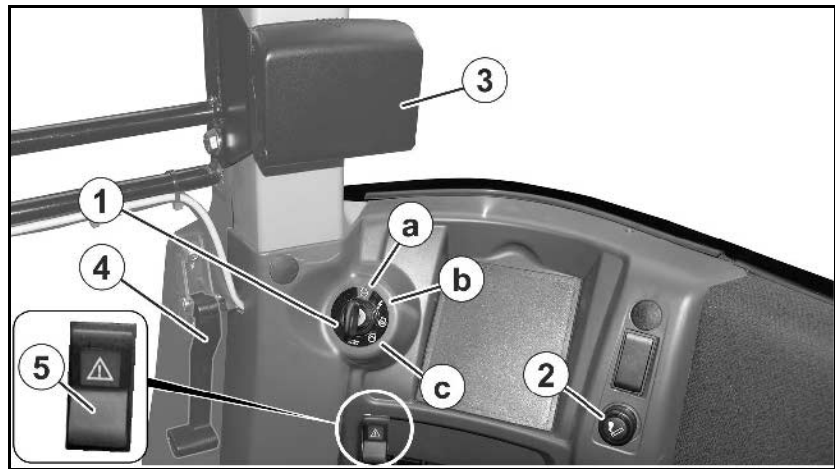
- Only two-wheel steering possible.
- No cruise control function.
- Warning when driving with ladder lowered.
- Warning: Track width set according to the type approval.



Field mode: Unlock rocker switch  and push upwards.

- Speed limited to 20 km/h.
- Warning when driving with ladder lowered.

### 5.15.8 Rear right side in the cabin



**Fig. 41**

- (1) Ignition lock
- (a) Engine off
- (b) Power supply on
- (c) Start the engine
- (2) Cigarette lighter
- (3) Drink holder
- (4) Unlocking device for the emergency exit
- (5) Override button

#### Override button

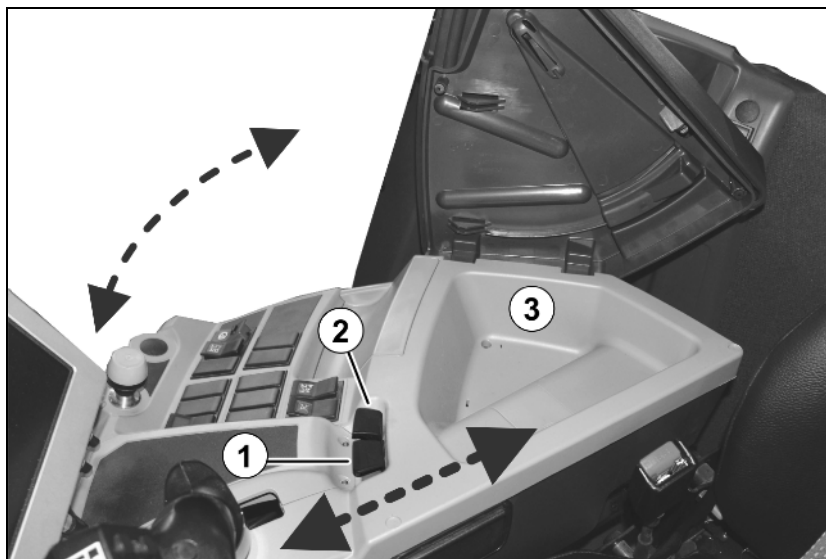
If the cooling water is low, the motor stops automatically.

After pressing the Override button, the motor can be started again and the machine can be run for 30 seconds.

The button can be pressed several times.

If there is an error in the motor control unit, then the Override button will flash, see AMADRIVE.

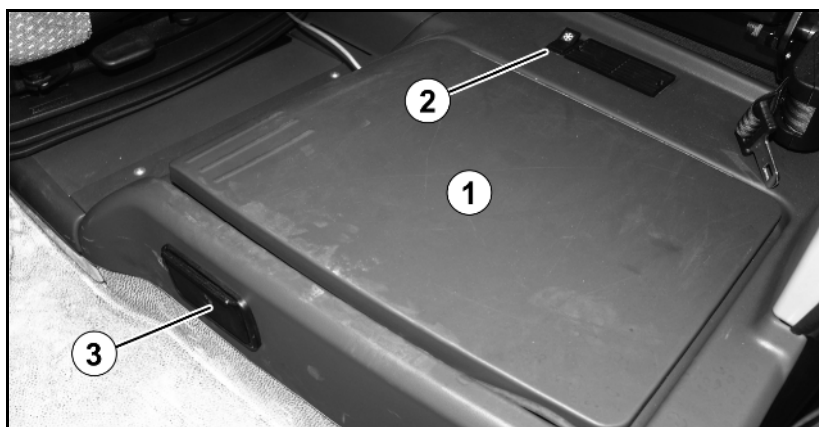
### 5.15.9 Armrest



**Fig. 42**

- (1) Moving the armrest
- (2) Pivoting the armrest
- (3) Storage compartment under the armrest

### 5.15.10 Cooling compartment and ashtray



**Fig. 43**

Under the helpers seat:

- (1) Cooling compartment
- (2) Switch for the cooling compartment
- (3) Ashtray

### 5.15.11 AMATRON 3 / AMAPAD control terminal to control the field sprayer

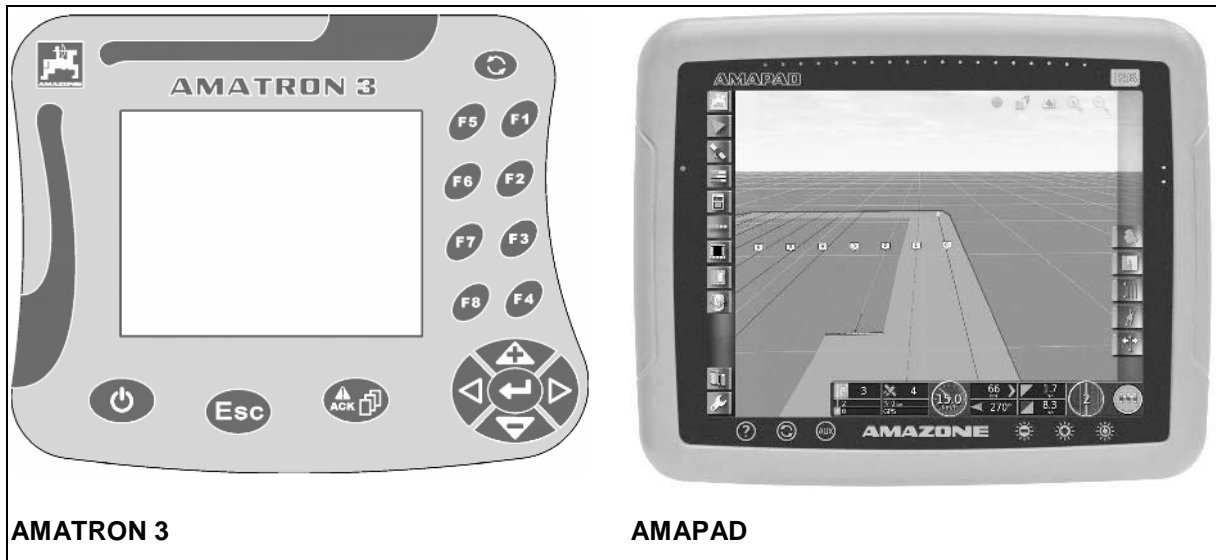


Fig. 44

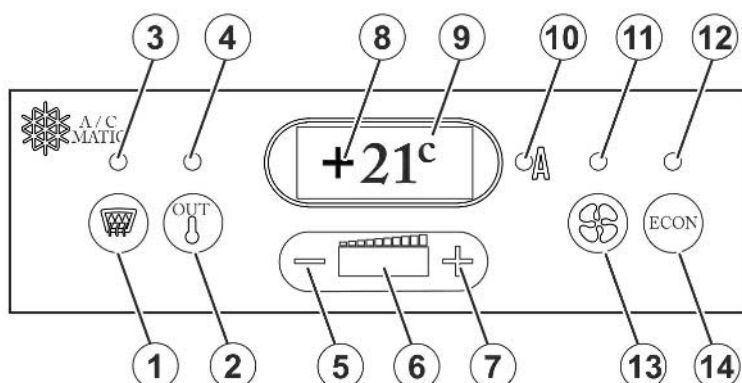
#### Base functions:

- entry of the data in the spraying technology.
- entering the job-related data.
- controlling the field sprayer to change the spray rate used in spraying operation.
- the operation of all functions on the sprayer boom.
- the monitoring of the field sprayer during spraying operation.

#### GPS options

- Fully automatic part width section control
- Parallel driving aid (integrated in the GPS switch application)

### 5.15.12 Air conditioner



**Fig. 45**

- |   |  |
|---|--|
| (1) Switch on and off / REHEAT - Function   | (8) Three-digit seven segment display for showing the desired cabin temperature / outside temperature / error codes in event of malfunction. |
| (2) Toggle set temperature display / outside temperature display.   | (9) Displays the unit in Celsius or Fahrenheit   |
| (3) LED: Lights up when REHEAT is switched on.  | (10) LED: Indicates fully-automated mode.  |
| (4) LED: Lights up when the outside temperature is shown in the display.                                    | (11) LED: Lights up when the evaporator fan speed has been set manually.   |
| (5) Setting the desired cabin temperature down or fan speed.  | (12) LED, lights up when in ECON mode.   |
| (6) LED bar display indicates the evaporator fan speed of 0 - 100%.   | (13) Toggle button evaporator fan speed manual / automatic   |
| (7) Setting the desired cabin temperature upwards or fan speed when the manual fan speed has been selected. | (14) Switch on the ECON mode (Compressor off)  |

#### Put the automatic air conditioning system into operation

When the engine is standing still and the ignition is switched on, the evaporator fan speed reduces to 30 % of the nominal speed after 10 minutes. This takes place to prevent faster discharging of the battery.

The software version is displayed for 3 seconds after switching on the ignition. The controller carries out a self-test. The executing of the self test takes about 20 seconds.

In order to prevent faulty temperature controlling of the automatic system, close the cooling compartment flap immediately after use.

#### Set the cabin temperature

The cabin temperature is displayed in display field 8. The cabin temperature can be adjusted by pressing buttons 5 and 7.

- Reduce temperature:      **-** Pressing once → -1° C
- Increase temperature:    **+** Pressing once → +1° C

---

### Set the evaporator fan speed

---

- **Automatically:** Button 13; LED 10 lights up.
- **Manually:** Press toggle button 13; LED 11 lights up. The manual fan speed is shown. You can set the desired speed using the buttons 5 (-) and 7 (+).

---

### Switch on ECON mode

---

The compressor of the air conditioner is switched off in ECON mode.

- Switch on ECON mode: Press button 14; LED 12 lights up.

The evaporator fan speed currently indicates 40% on the light strip display (6). The evaporator fan and the heater are also controlled automatically in ECON mode.

- Switch on ECON mode: Select button 14.

---

### REHEAT mode

---

(Defog the cabin windows)

- Switch on REHEAT mode: Press button 1; LED 3 lights up. REHEAT mode is activated.

The fan speed is 100% and after switching the button 13, can be controlled manually using button 5 (-) and 7 (+).

The compressor is switched on continuously in REHEAT mode for dehumidifying the room air.

- Switch off REHEAT mode: Press button 1 again

---

### Toggle ° Celsius / °F

---

- Press button 2 and 5 at the same time for approx. 3 seconds.  
Pressing the buttons 2 and 5 again switches the display back to degrees Celsius.

---

### Malfunction / fault (displayed flashing)

---

F0	Room temperature sensor fault
→ Blue	Switching outputs are switched off.
F1	Outlet air temperature sensor malfunction
→ Yellow	Switching outputs are switched off
F2	Outside air temperature sensor fault
→ Red	Switching outputs are still ready for operation

## Important information about the air conditioner



### CAUTION

1. Avoid any contact with the refrigerant. Wear protective gloves and goggles!
2. When sprayed in your eyes, rinse with water immediately. Seek medical advice!
3. Have maintenance and repair work only carried out by a specialist workshop for refrigerant.
4. No welding tasks may be carried out on the refrigerant circuit and in the immediate vicinity - Danger of poisoning!
5. Maximum ambient temperature for refrigerant: 80° C

### 5.15.13 Tractor cab air filtration with Category 4 safety status

Tractor cab air filtration with positive pressure control and activated charcoal filter against dust, aerosols and vapours (gases) according to DIN EN 15695-1.

This is prescribed for the application of several spray agents.

#### 5.15.13.1 Description

##### Function

External air is cleaned through several filter stages and freed from harmful substances before it is conveyed to the cab. A minimum air supply is ensured by operating a separate air blower fan in an external housing. The operation of the air blower fan is independent of the settings of the air conditioning system.

The protective function is also ensured when the air conditioning is switched off. Depending on the equipment options, user protection in compliance with Category 3 or 4 according to DIN EN 15695-1 is achieved.

A pressure monitoring system is installed in the tractor cab.

##### Layout

In the cab roof, right side

- (1) Warning light

If the cab pressure falls below 20 Pascal, the warning light illuminates.

- (2) 3-level switch for setting the blower fan speed.

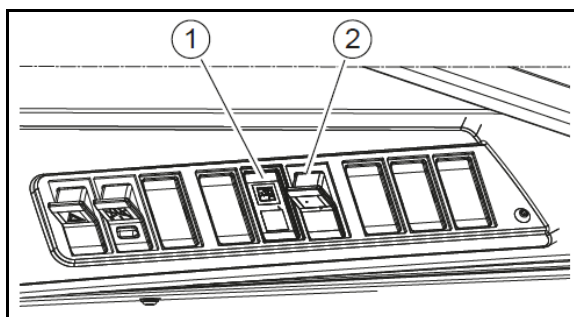
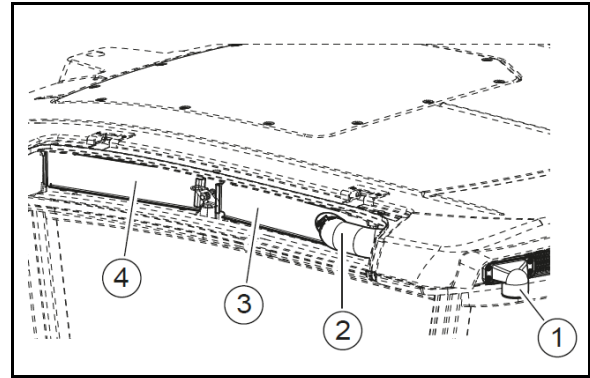


Fig. 46

#### Air ducts in the roof

- (1) Connecting supports
- (2) Air ducts
- (3) Locking plate, rear
- (4) Locking plate, front



**Fig. 47**

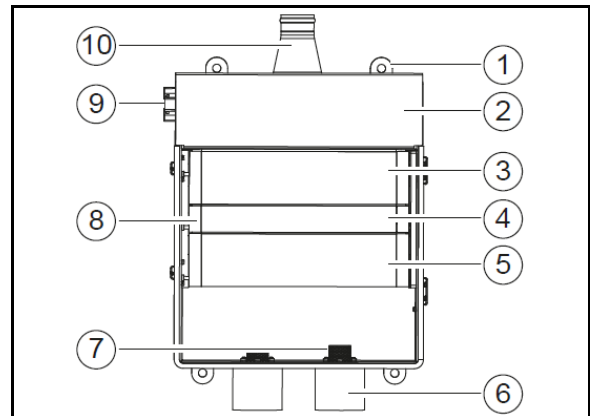
#### Filter housing on the machine



**Fig. 48**

#### Filter housing

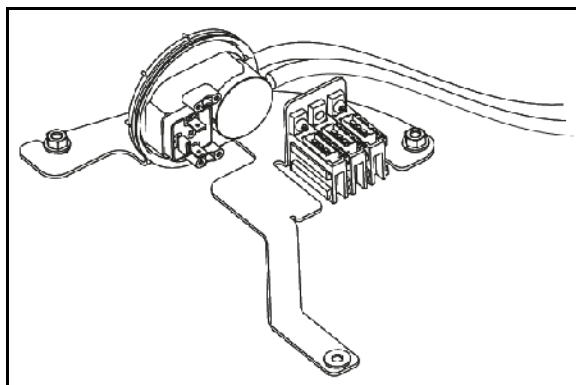
- (1) Attachment point
- (2) Fan compartment with electronics
- (3) Activated carbon filter
- (4) Aerosol filter
- (5) Dust filter
- (6) Air inlet
- (7) Protective screen
- (8) Handle
- (9) Central connector
- (10) Air outlet



**Fig. 49**

### Pressure monitoring

There is a differential pressure switch in the tractor cab that monitors the minimum pressure in the cab interior. The differential pressure switch is installed on the floor at the rear of the right side of the cab.



**Fig. 50**

### 5.15.13.2 Operation

#### Before beginning operation:

- Check the filter screen at the air inlet of the filter box and clean if necessary.
- Perform a visual check of the inlet hose for leaks or damage.
- Check the cable routing for abrasions.

#### During operation:

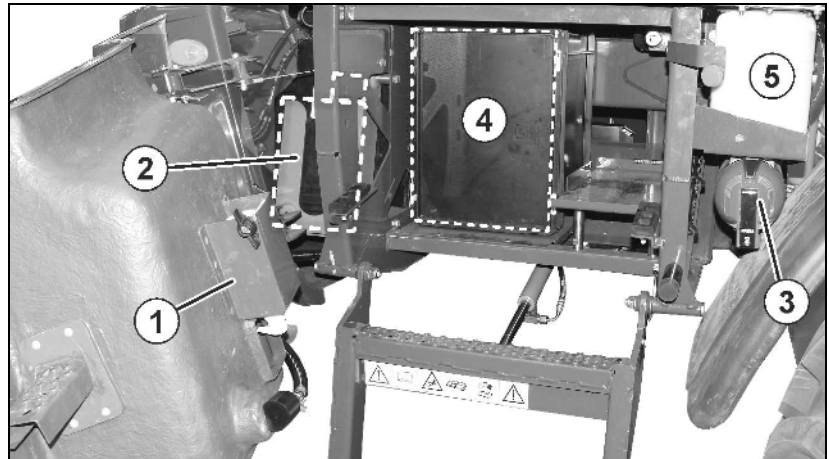
- During operation with a new filter, select the lowest fan level. This ensures operation with a minimised external air volume flow. This has a positive effect on the service life of the filter.
  - With increasing impurities, the air resistance in the filter cassettes increases. The cab pressure drops permanently and the warning light illuminates.
- Increase the fan level manually by one level. The fan level can be increased twice.



The activated carbon filter has to be replaced every three months regardless of the operational hours.

### 5.15.14 Covers and compartments outside the cabin

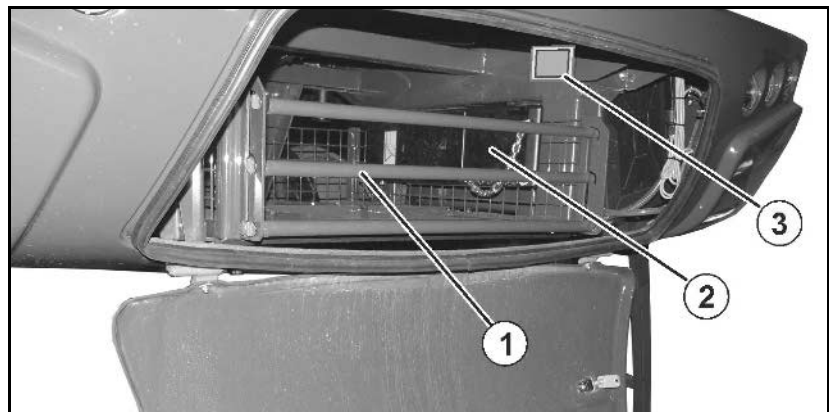
Left side:



**Fig. 51**

- (1) Soap dispenser
- (2) Fresh water tank
- (3) Fire extinguisher
- (4) Storage box
- (5) Windscreen wiper water container

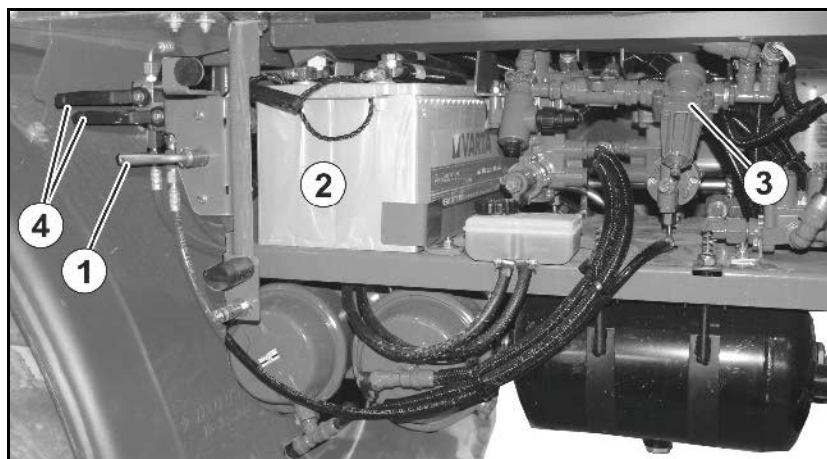
Front:



**Fig. 52**

- (1) Extraction hose storage (maximum payload 100 kg)
- (2) Removable protective brace
- (3) Wheel chock
- (4) Switch for the lighting

Right side:



**Fig. 53**

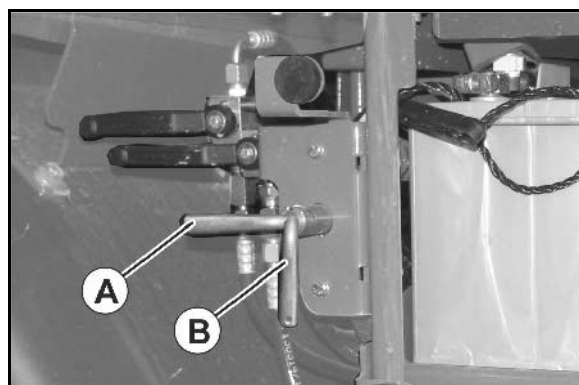
- (1) Main switch
- (2) Battery
- (3) Brake system
- (4) Stop taps sprung suspension

## 5.15.15 Main switch

The main switch (Fig. 54/1) is located under the cover on the right side of the cabin.

- Before commissioning the machine, switch on the main switch, position **A**.
- After parking the machine, switch off the main switch, position **B**.

The lever of the main switch can be removed when in this position.



**Fig. 54**



Switch off the main switch 18 seconds after switching off the engine at the earliest as the operating data still has to be saved.

## 5.16 Driving lever with multi-function stick

### 5.16.1 Driving lever

The driving lever is used for

- o continuously variable accelerating and decelerating of the vehicle,
- o driving forwards and backwards.

- (1) maximum speed driving forwards, accelerations
- (2) neutral, park, braking
- (3) maximum speed driving backwards

→ The speed is dependent on the displacement of the driving lever



A trailer being towed is also braked via the driving lever using the pneumatic brake system.

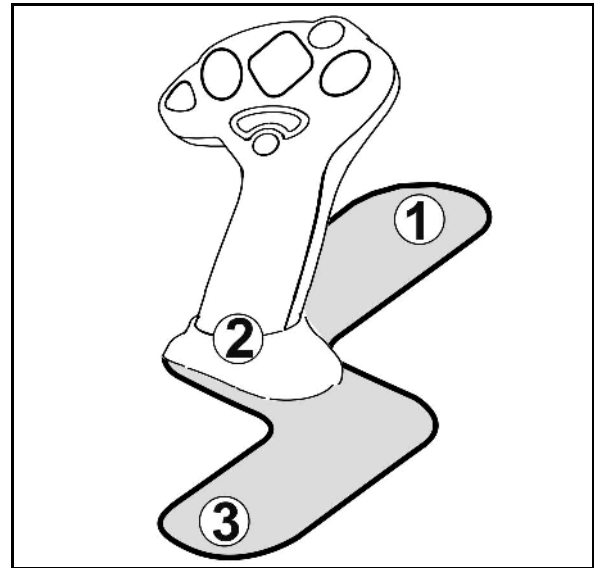


Fig. 55

### 5.16.2 AmaPilot AmaPilot/AmaPilot+ multi-function stick

All of the implement functions can be performed using the AmaPilot and AmaPilot+.

- AmaPilot with fixed key assignment
- AmaPilot+ is an AUX-N control element with freely assignable key assignment (keys pre-assigned like for the AmaPilot)

30 functions can be selected by pressing with your thumb. Two additional levels can also be switched on.



Fig. 56

A sticker with the default assignment can be stuck in the cab. For a freely assigned key assignment, a new sticker can be applied over the default assignment.

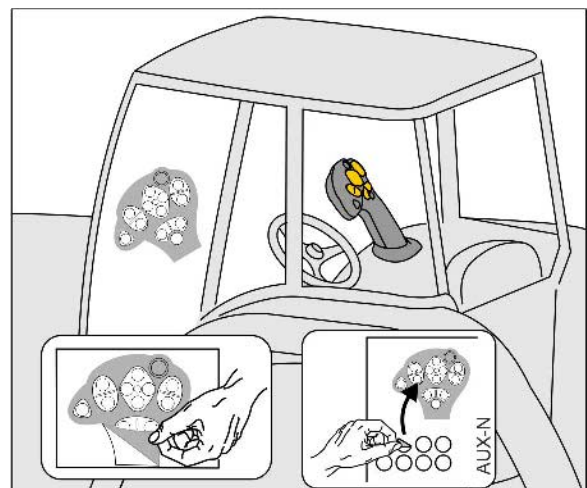


Fig. 57

## Structure and function, carrier vehicle

- Standard level
- Level 2 when trigger on the back is held

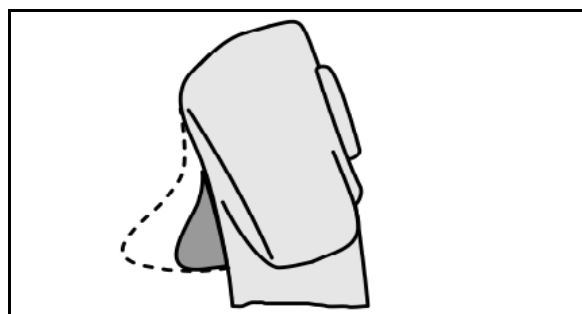


Fig. 58

- Level 3 after switching the lit-up button

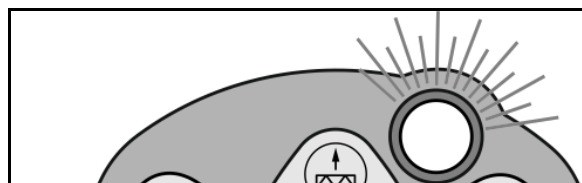
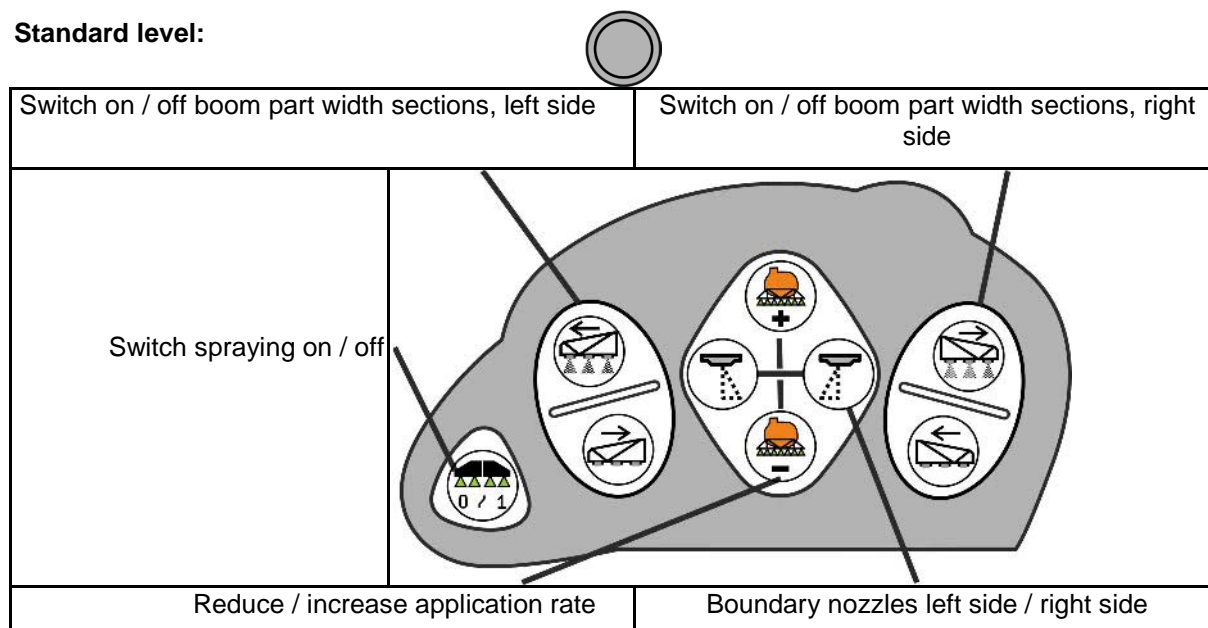


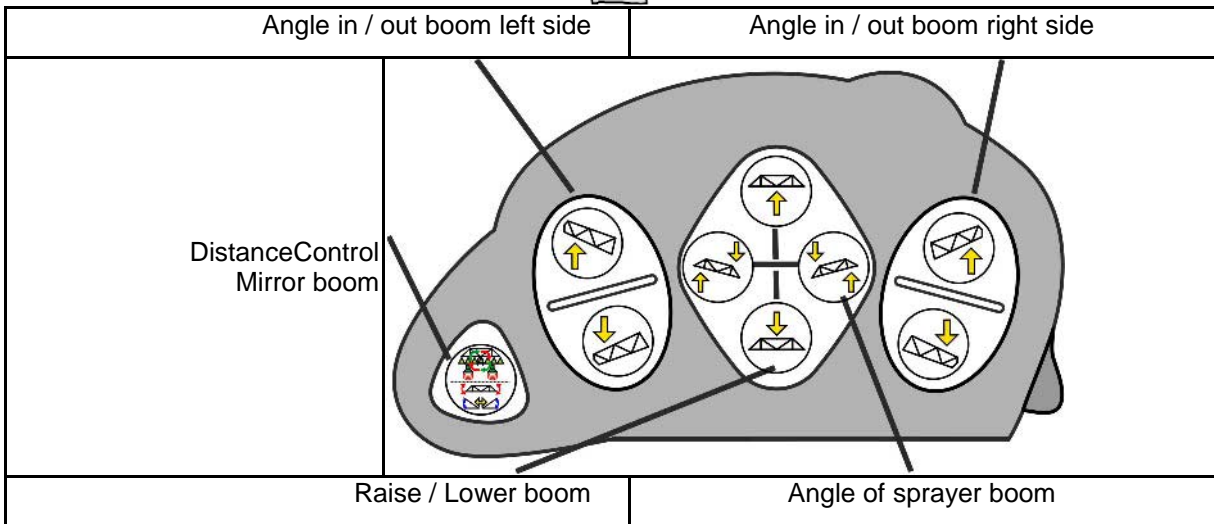
Fig. 59

## AmaPilot assignment

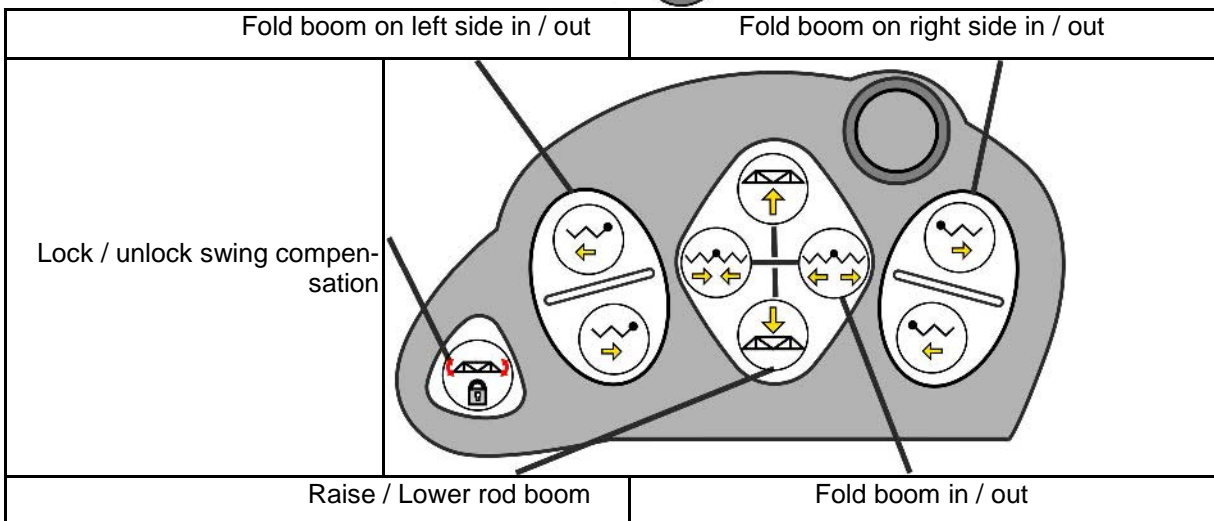
### Standard level:



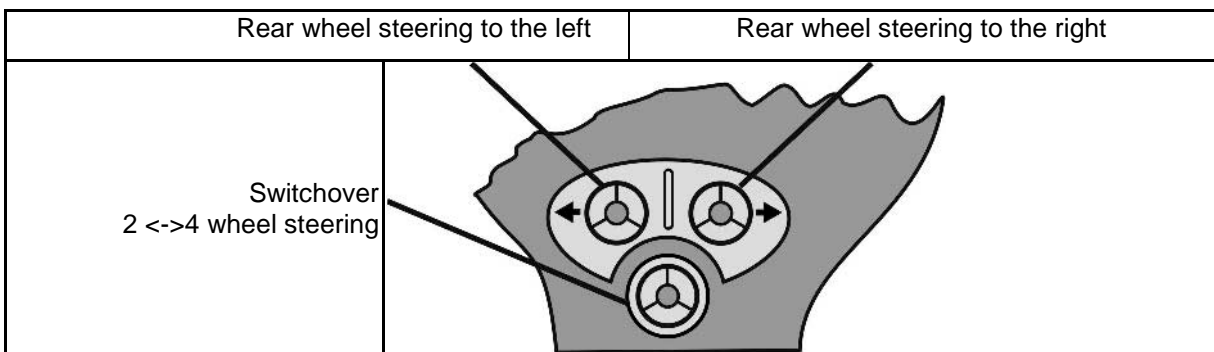
**Level 2:**



**Level 3:**



**Functions on all levels:**



## 5.17 Camera system (option)

The machine can be equipped with two cameras.

- Selective display of the rear-view camera or the camera for the right front wheel.
- The rear-view camera is switched on automatically when reversing

Features:

- Viewing angle of 135°
- Heater and lotus coating
- Infrared night-view technology
- Automatic backlight compensation

- (1) Rear-view camera for reversing safely.
- (2) Camera for the right front wheel for driving through the tramline correctly.

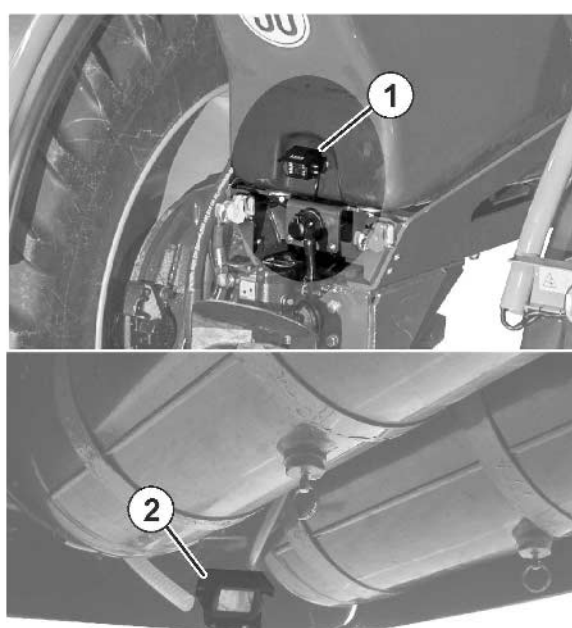


Fig. 60



The camera system does not serve to compensate for blind spots when driving on roads.

## 5.18 Working platform with ladder

Working platform with swivel-down ladder for reaching the drivers cabin and filling dome.

- The ladder is lowered or raised on the dash panel in the drivers cabin.



### **DANGER**

**Risk of accidents resulting from the ladder being pivoted down when driving.**

Raise the ladder to the transport position when driving.



### **DANGER**

**Risk of falling when leaving the cabin.**

Lower the ladder before leaving the cabin.



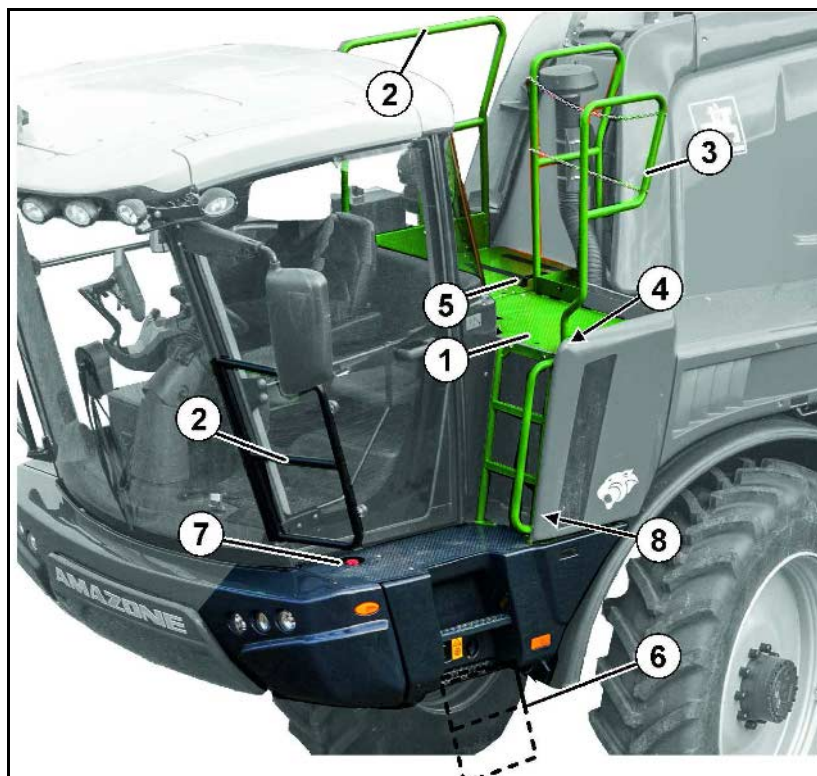
### **DANGER**

**Never climb into the spray liquid tank.**

→ Risk of injury from poisonous vapours!

- **It is strictly forbidden to ride on the field sprayer!**

→ Riding on the machine creates a risk of falling!

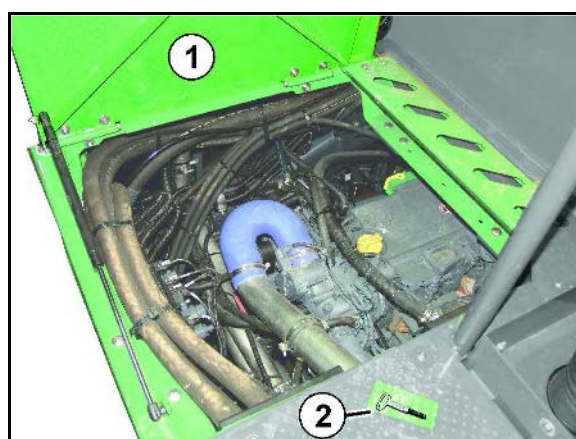


**Fig. 61**

- |  |   |
|--|---|
| (1) Operation platform   | (5) Maintenance flap  |
| (2) Railing to protect against falling   | (6) Hydraulically slewable ladder with switch in the dash panel |
| (3) Pivotal railing to protect against falling   | (7) Refilling opening for the hand wash tank                    |
| The pivotal railing collides with the 40-metre boom.   |   |
| → In doing so, the railing is pivoted outwards only for the purpose of accessing the operation platform. |   |
| (4) Locking mechanism of the pivotal railing   | (8) Refilling opening for the windscreen washer water           |

The maintenance flap (Fig. 62/1) on the operation platform, to be opened using the square spanner (Fig. 62/2).

The square spanner is located in the storage box in the drivers cabin.



**Fig. 62**

## 5.19 Drawbar for trailers

The automatic drawbar is used to pull braked trailers

- with a permissible total weight of 12000 kg and pneumatic brake.
- with a permissible total weight of 8000 kg and overrun brake.
- without drawbar load.
- with towing eye 40 DIN 74054.

- (1) Drawbar
- (2) Connection for lighting of the trailer
- (3) Connection for brake of the trailer

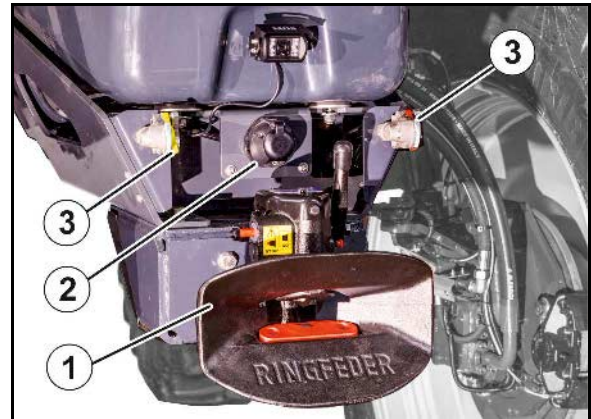


Fig. 63

To unlock the drawbar, pull the rotary knob (Fig. 64/1) and turn until it engages in the upper groove (Fig. 64/2). Then raise the lever (Fig. 64/3) until the pin disengages.

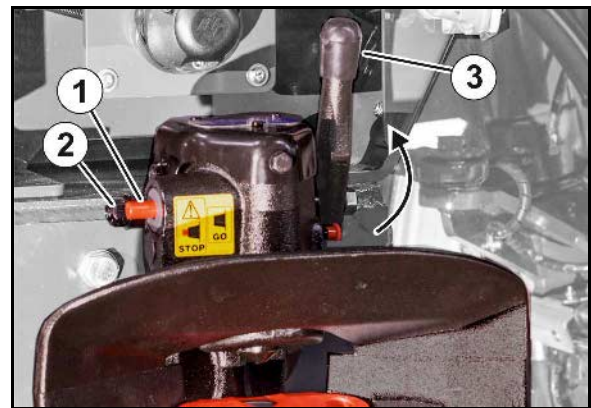


Fig. 64



The drawbar of the trailer must be long enough to prevent collisions with the boom when driving in curves.



Braking of the trailer is achieved by pressing the foot brake pedal as well as by actuating the driving lever.

**WARNING**

**Risk of crushing, cutting, being caught or drawn in, or impact through the accidentally rolling machine, if the service brake is released.**

- Always couple the hose coupling on the brake line (yellow) first and then the hose coupling on the supply line (red).
- The service brake on the machine is immediately released from the brake setting if the red hose coupling is coupled.
- Always uncouple the supply line hose coupling (red) first, and then the brake line hose coupling (yellow).
- The service brake of the machine only moves into the brake position when the red hose coupling has been uncoupled.
- Halten Sie diese Reihenfolge unbedingt ein, da sonst die Betriebs-Bremsanlage löst und sich die ungebremsste Maschine in Bewegung setzen kann.

**WARNING**

**Risk of crushing from unintentional starting and rolling of the machine and trailer when coupling or uncoupling!**

Secure the machine and trailer against unintentional start-up and rolling before entering the danger area between the machine and trailer.

**WARNING**

**Risk of crushing when coupling the machine and standing between the machine and the trailer!**

Instruct people to leave the danger area between the machine and the trailer before you approach the trailer.

Coupling the trailer via the automatic drawbar is a one-man operation. Helpers as guides are not necessary.

### 5.19.1 Coupling the trailer

---

1. Unlock the drawbar.
2. Instruct people to leave the danger area between the machine and the trailer before you approach the trailer.
3. Drive the machine backwards to the trailer so that the connecting device couples automatically.
4. Secure the machine against unintentional start-up and rolling.
5. Couple the supply lines to the trailer.
  - 5.1 Fasten the brake line coupling head (yellow) as directed in the machine coupling with the yellow marking.
  - 5.2 Fasten the supply line coupling head (red) as directed in the machine coupling with the red marking.
  - 5.3 Plug-in the connector of the trailer lighting to the socket of the machine.
6. Move the trailer in the transport position.

### 5.19.2 Uncoupling the trailer

---

1. Place the trailer on a level parking surface on solid ground.
2. Secure the machine against unintentional start-up and rolling.
3. Move the trailer in the parking position.
4. Disconnect the supply lines.
  - 4.1 Release the supply line coupling head (red).
  - 4.2 Release the brake line coupling head (yellow).
  - 4.3 Pull out the connector of the trailer lighting.
5. Decouple the connecting equipment.

## 6 Construction and function of the field sprayer

### 6.1 Functionality of the field sprayer

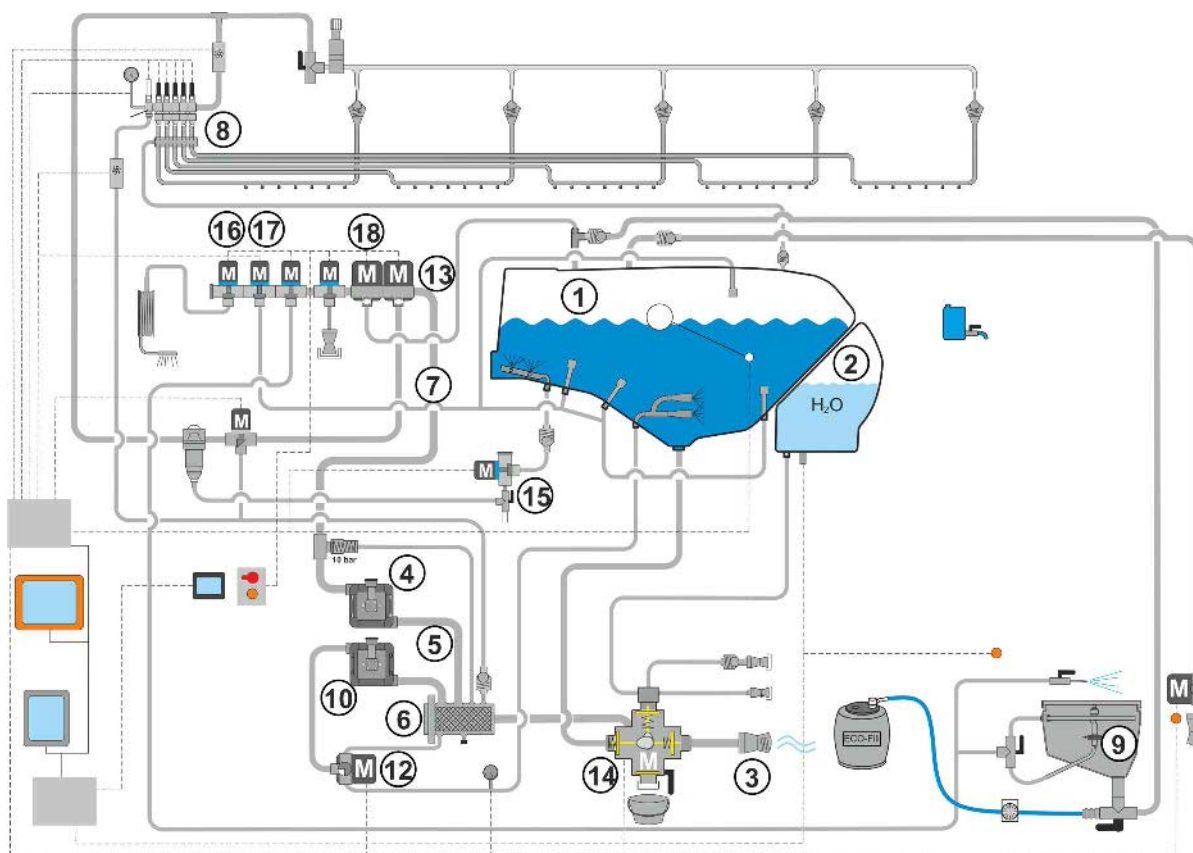


Fig. 65

The spraying pump (4) sucks in via the suction chest (14), suction line (5) and suction filter (6).

- the spray liquid from the spray liquid tank (1).
- Flushing water from the flushing water tank (2).

The flushing water serves to clean the spray system.

- fresh water via the external suction port (3).

The liquid that has been drawn in is fed via the pressure hose (7) to the pressure equipment switch tap (13), and from there is fed

- via the self cleaning pressure filter to the part width section valves (8). The part width section valves then send the liquid to separate spray lines.

The stirring level can be increased when stirring spray liquid by using the additional agitator setting tap (15) on the pressure filter.

- to the injector and the induction bowl (9).

To prepare the spray liquid, pour the relevant quantity of agent required to fill the spray liquid tank into the induction bowl and evacuate into the spray liquid tank.

- directly into the spray liquid tank (18).
- to the internal (17) or external cleaning switch tap (16).

The agitator pump (10) supplies the main agitator (11) in the spray liquid tank.

The automatic filling level dependent regulation (12) of the main agitator ensures for a homogeneous spray liquid in the spray liquid tank

## 6.2 Overview control terminal

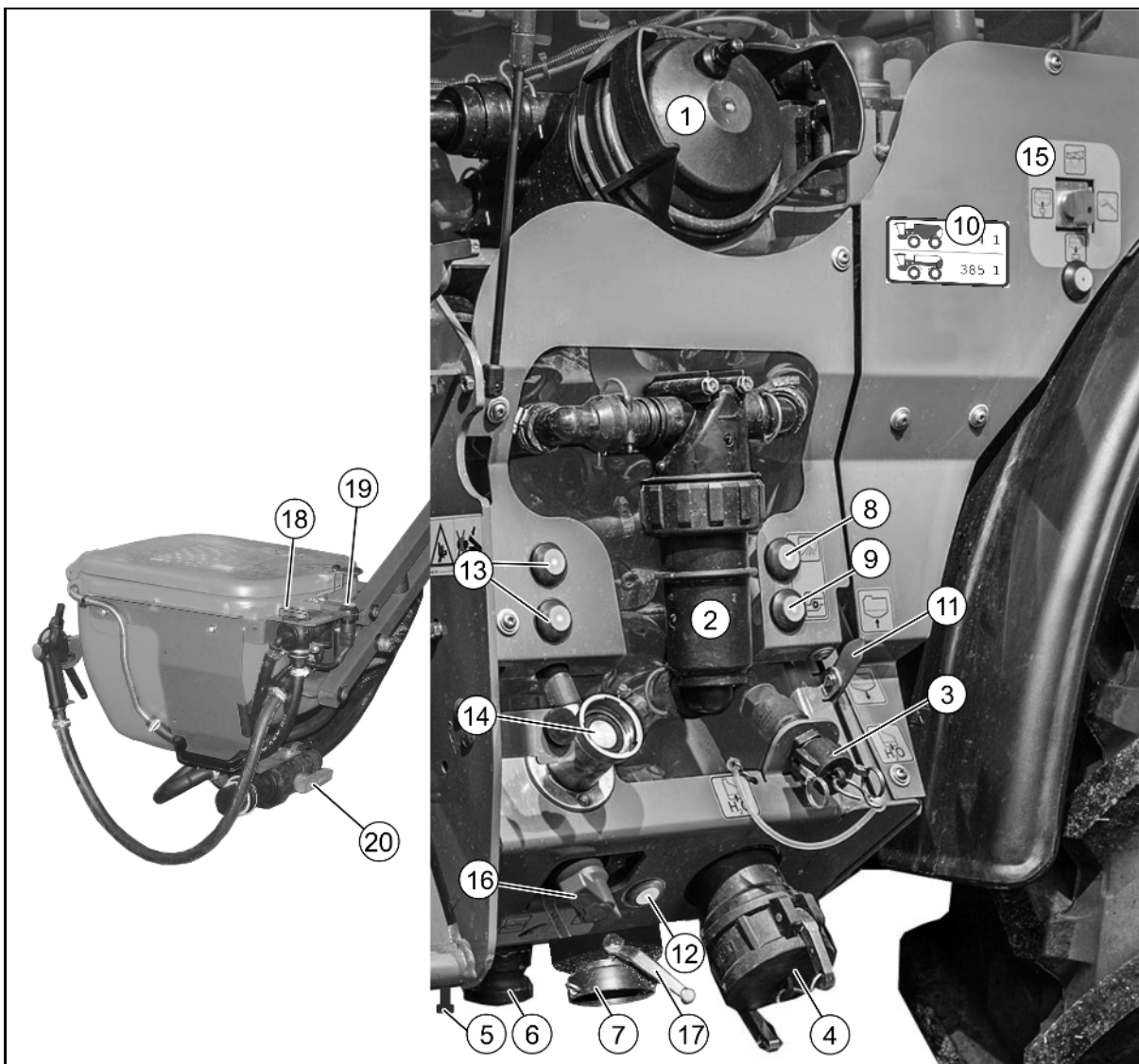












Fig. 66

- |  |  |
|--|--|
| (1) Suction filter   | (11) Display position of the suction chest           |
| (2) Pressure filter  | (12) Suction chest button                            |
| (3) Flushing water tank filling connection                   | (13) Button to lift / lower the induction bowl       |
| (4) Filling connection of the suction chest for suction hose | (14) ECO – fill rinsing base                         |
| (5) Pressure filter outlet                                   | (15) Function selection switch                       |
| (6) Quick emptying via pump                                  | (16) Additional agitator setting tap / drain residue |
| (7) Suction filter / spray liquid outlet                     | (17) Suction chest drainage tap                      |
| (8) Work lights  | (18) Switch tap for ring line / canister flushing    |
| (9) Pump On / Off  | (19) Switch on injection button                      |
| (10) Filling level indicator                                 | (20) Switch tap Evacuate induction bowl / Ecofill    |

### 6.3 Explanation for the valve chest

- **Function selection switch**

-  Spraying function
-  Flushing function  
Empty the induction bowl through suction
-  with the button
-  Function Emptying spray agent tank  
with button  for activation
-  External cleaning on the boom
- Showing position of suction tap:
  - o  Sucking via suction hose
  - o  Sucking from spray tank
  - o  Sucking from flushing water tank
-  Button to control the suction chest

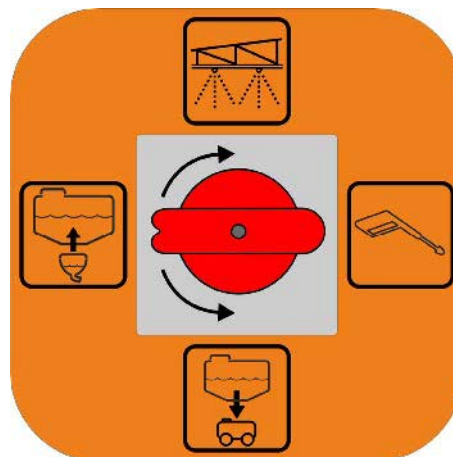


Fig. 67

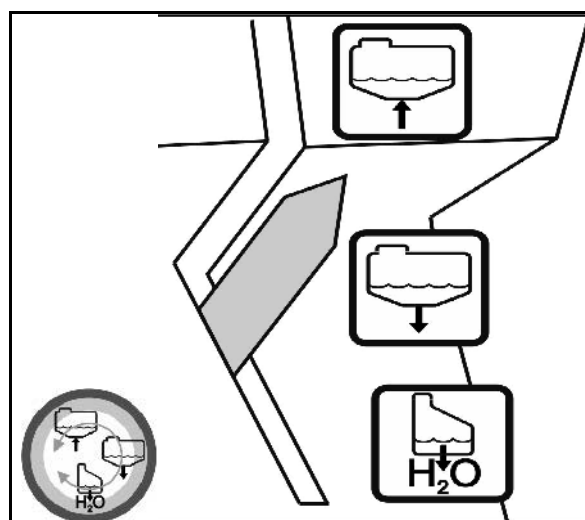




Fig. 68

- **Additional agitator setting tap**

- o  Release residue
- o  Agitator

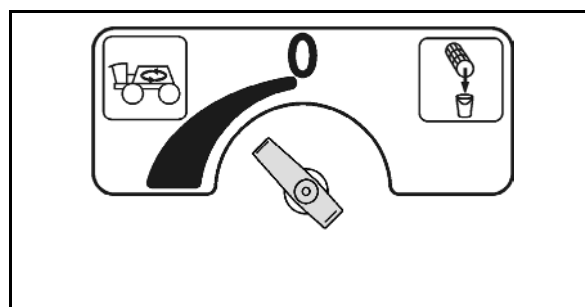


Fig. 69

- **Drain tap suction tap**

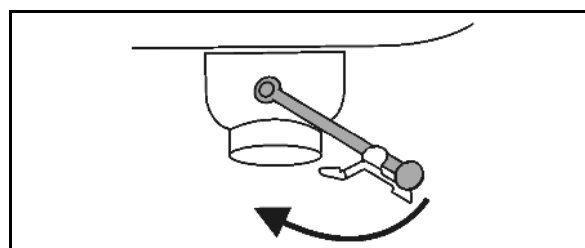


Fig. 70

- **Evacuate switch tap for induction bowl / Ecofill**

- o **0** Zero setting



- o Evacuate induction bowl

- o Ecofill filling connection for the spray liquid tank

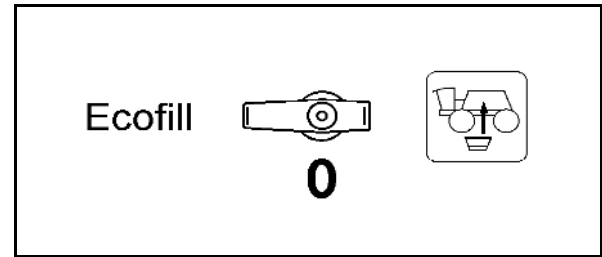


Fig. 71

- **Ring line switch tap – ring line / canister flushing**

- o **0** Zero setting



- o Canister flushing



- o Ring line

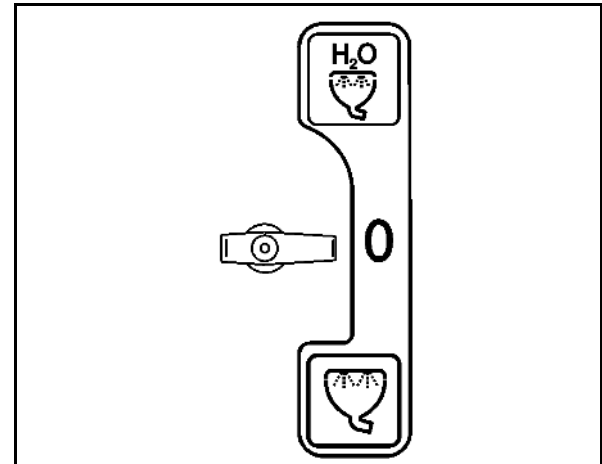


Fig. 72



All stop taps are

- open when lever position is in direction of flow
- closed when lever position is transverse to direction of flow

## 6.4 Agitators

The field sprayer has a main agitator and an additional agitator. Both agitators are designed as hydraulic agitators. The additional agitator is also combined with pressure filter rinsing for the self cleaning pressure filter.

The main agitator has its own agitator pump. The additional agitator is supplied by the operation pump.

When the agitators are switched on, they mix the spray liquid in the spray liquid tank, thereby providing a homogeneous spray liquid.

- The main agitator is controlled automatically depending on the filling level of the spray liquid tank.
- The additional agitator must be set on the setting tap (Fig. 73/1).

The additional agitator is switched off when in setting tap position 0. The fastest stirring performance is available in position (Fig. 73/2).

Safety device for drainage function on the pressure filter (Fig. 73/3).

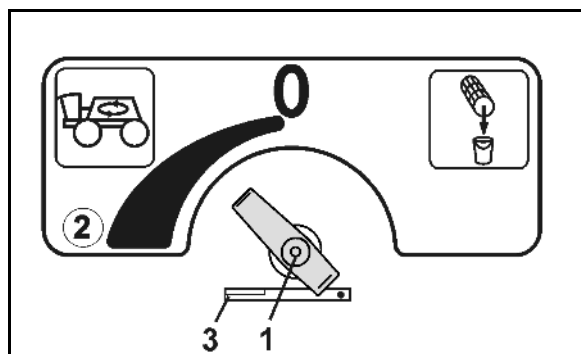


Fig. 73

## 6.5 Suction port for filling the spray liquid tank

(option)

Suction hose 3" (2 x 4 m) in parking position

- Left and right on the mudguard
- Attached on the mount with tensioning belts

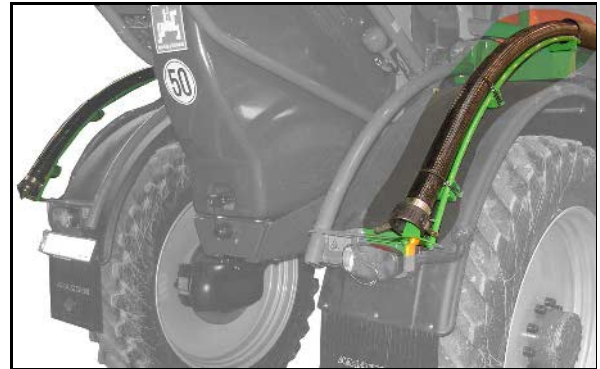


Fig. 74

Suction filter

- With non-return valve to filter the intake water.
- With hand lever to let the residual water flow out of the hose.

Carry the suction filter in the storage compartment under the cab.

Before filling, connect the two suction hoses and the suction filter using the Camlock coupling and couple onto the suction connection.



Fig. 75

## 6.6 Filling connection for pressure filling of the spraying agent tank

(optional)

- Filling with free flow path and swivel spout (Fig. 76).
- Return flow safe direct filling.



Fig. 76

(optional)

Fig. 77/...

- (1) Filling connection with switch tap.
- (2) Filling connection with fill stop.

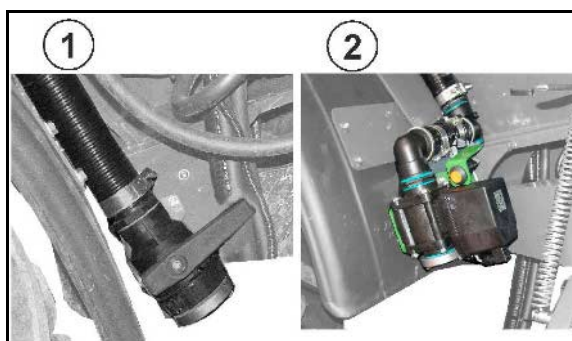


Fig. 77

## 6.7 Filter equipment



- Use all the filters provided with the filter equipment. Clean the filters regularly (refer to the "Cleaning" section, page 188). Fault-free field sprayer operation can only be achieved by correct filtering of the spray liquid. Correct filtering has a significant effect on the success of the crop protection measures.
- Pay attention to the permissible combinations of filters and mesh sizes. The mesh sizes for the self cleaning pressure filter and the nozzle filters must always be smaller than the nozzle opening of the nozzles in question.
- Ensure that the use of pressure filter inserts with 80 or 100 mesh / inch for some crop protection agents can filter out active agents. In individual cases, enquire with crop protection agent manufacturers.

### Filling sieve

The filling sieve (/1) prevents the spray liquid from becoming contaminated while filling the spray liquid tank via the filling dome.

Mesh size: 1.00 mm

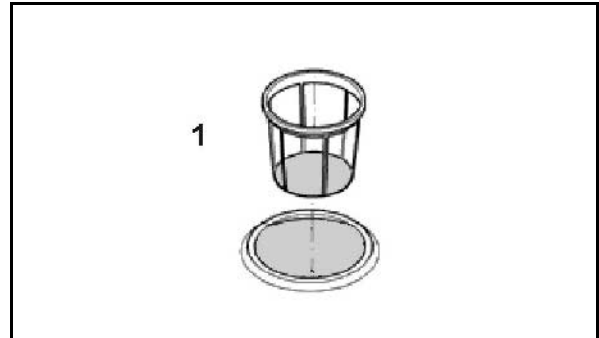


Fig. 78

### Suction filter

The suction filter filters

- the spray liquid during the spraying operation.
- the water when filling the spray liquid tank via the suction hose.

Mesh size: 0.60 mm

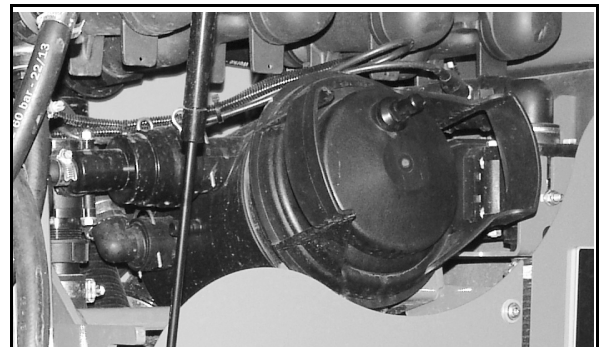


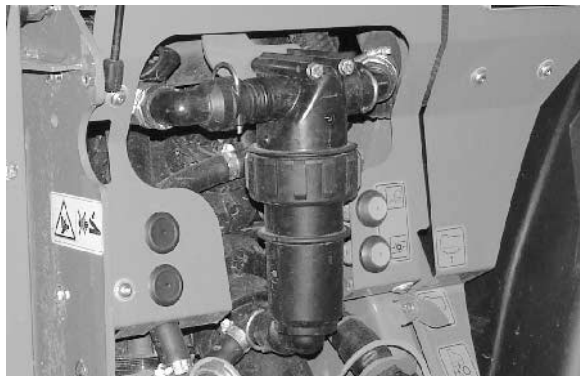
Fig. 79

### Self-cleaning pressure filter

The self cleaning pressure filter

- prevents the nozzle filter upstream of the spraying nozzle from becoming blocked.
- has a greater mesh count/inch than the suction filter.

With the additional agitator switched on, the inside surface of the pressure filter insert is constantly flushed through, and particles of spraying agent which have not dissolved as well as dirt are conveyed back into the spray liquid tank.



**Fig. 80**

### Overview of the pressure filter inserts

- 50 mesh/inch (standard), blue  
for nozzle size '03' and larger  
Filter area: 216 mm<sup>2</sup>  
Mesh size: 0.35 mm  
Orderno.: ZF 150
- 80 mesh/inch, yellow  
for nozzle size '02'  
Filter area: 216 mm<sup>2</sup>  
Mesh size: 0.20 mm  
Orderno.: ZF 151
- 100 mesh/inch, green  
for nozzle size '015' and smaller  
Filter area: 216 mm<sup>2</sup>  
Mesh size: 0.15 mm  
Orderno.: ZF 152

## Nozzle filters

The nozzle filters (Fig. 81/1) prevent the spraying nozzle from becoming blocked.

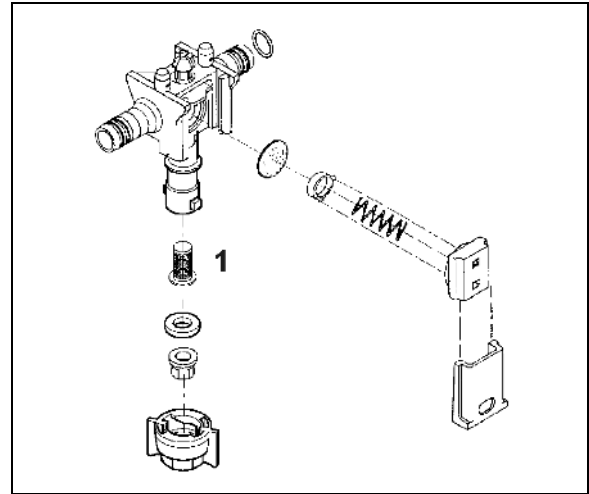


Fig. 81

## Overview of the nozzle filters

- 24 mesh/inch,  
for nozzle size '06' and larger  
Filter area: 5.00 mm<sup>2</sup>  
Mesh size: 0.50 mm  
Orderno.: ZF 091
- 50 mesh/inch (standard),  
for nozzle size '02' to '05'  
Filter area: 5.07 mm<sup>2</sup>  
Mesh size: 0.35 mm  
Orderno.: ZF 091
- 100 mesh/inch,  
for nozzle size '015' and smaller  
Filter area: 5.07 mm<sup>2</sup>  
Mesh size: 0.15 mm  
Orderno.: ZF 169

## Bottom sieve in the induction bowl

The bottom sieve (Fig. 82/1) in the induction bowl prevents lumps and foreign bodies from being drawn in.

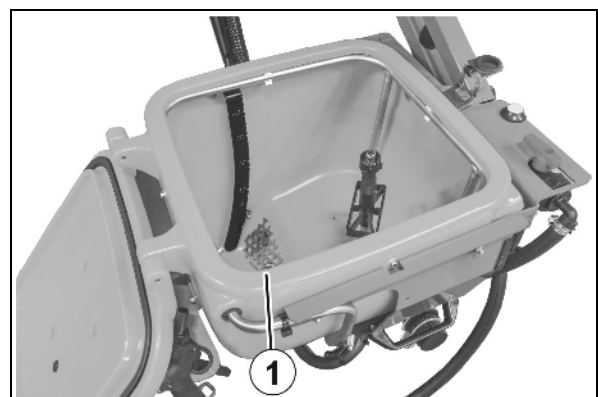


Fig. 82

## 6.8 Flushing water tank

**Clear water is also fed into the flushing water tank. This water is used to**

- thin the residue in the spray liquid tank at the end of spraying operation.
- clean (flush) the whole field sprayer in the field.
- clean the suction chest and the spray lines when the tank is full.



Only fill the flushing water tank with clear fresh water.



Fig. 83

### Filling via the filling connection

1. Connect filling hose.
  2. Fill the flushing water tank via the water network.
- observe fill level display.
3. Fit the stopper cap on the filling connection.



Fig. 84

## 6.9 Induction bowl with filling connection for Ecofill and canister flushing

Fig. 85/...

- (1) Swivel-out induction bowl for receiving, dissolving and drawing in crop protection agents and urea.
- (2) Hinged lid.
- (3) Handle for swivelling the induction bowl.
- (4) Parallelogram arm for swivelling the induction bowl from transport to filling position.
- (5) Switch tap for ring line / canister flushing.
- (6) Locking device for the transport position.
- (7) Button to evacuate the induction bowl

Transport safety catch to hold the folded up induction bowl in transport position and prevent it from swivelling down.

- To swivel the induction bowl in filling position:
  1. Take hold of the handle on the induction bowl.
  2. Unlock safety catch.
  3. Swivel the induction bowl down.

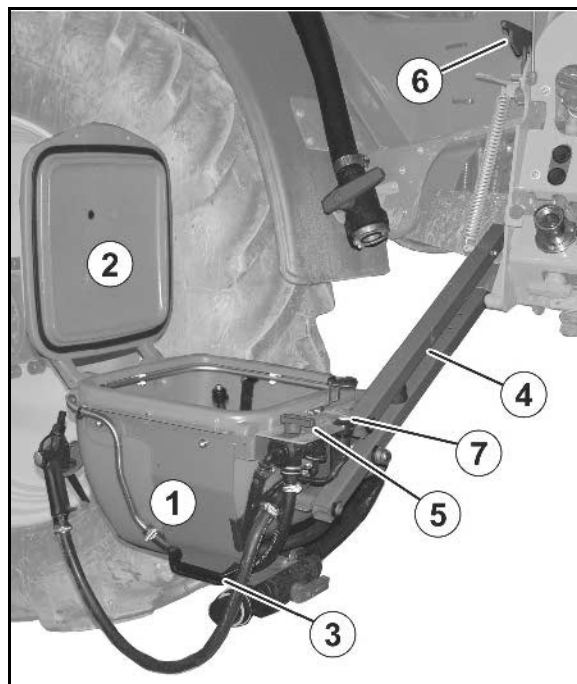


Fig. 85

Fig. 86/...

- (1) The bottom sieve in the induction bowl prevents lumps and foreign objects from being drawn in.
- (2) Rotating canister flushing nozzle for washing out canisters or other containers.
- (3) Pressure plate.
- (4) Ring line to dissolve and induct crop protection agent and urea.
- (5) Scale

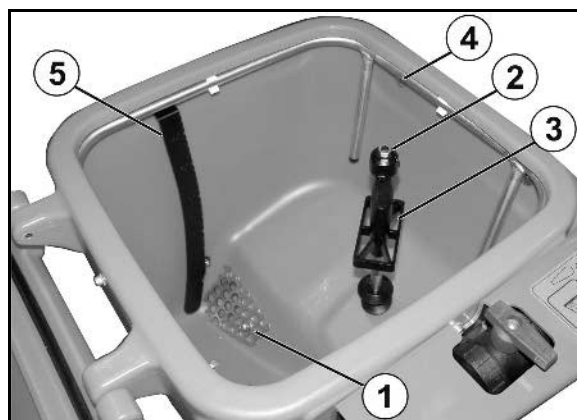


Fig. 86



Water escapes from the canister flushing nozzle if

- the pressure plate is pressed downwards.
- the closed folding cover is pressed downwards.

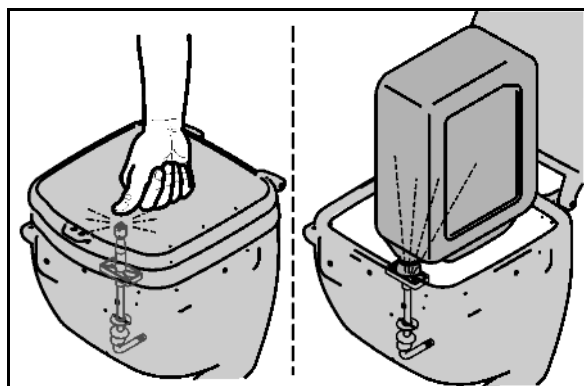


Fig. 87

## Spray gun for flushing the induction bowl

The spray gun is used for flushing the induction bowl with flushing water during or after the flushing process.



Secure the spray gun against unintentional spraying using the locking mechanism (Fig. 88/1)

- before each pause in spraying.
- before depositing the spray gun in its holder after cleaning work is complete.



Fig. 88

## Hydraulically operated induction bowl

(optional)

⬆ Button to lift the induction bowl.

⬇ Button to lower the induction bowl.

Always lift the induction bowl to the end position so that the permissible transport width is not exceeded.

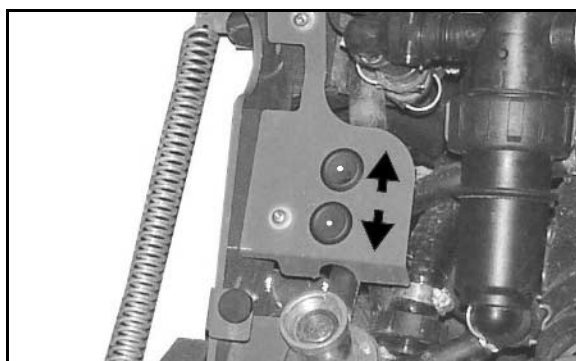


Fig. 89

### Ecofill filling connection (option)

Ecofill connection for evacuating spray agent from Ecofill tanks.

- (1) Ecofill filling connection (Option).
- (2) Flushing port for Ecofill counter.
- (3) Ecofill switch tap

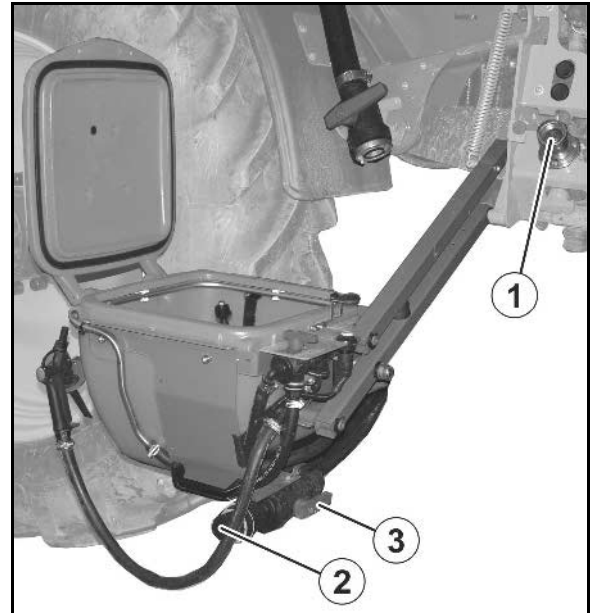


Fig. 90

### 6.10 Hand wash tank

Hand wash tank (20 l) for clear freshwater for cleaning your hands and spray nozzles.

- (1) Hand wash tank behind the cover
- (2) Filling connection
- (3) Stop tap.
- (4) Discharge
- (5) Soap dispenser

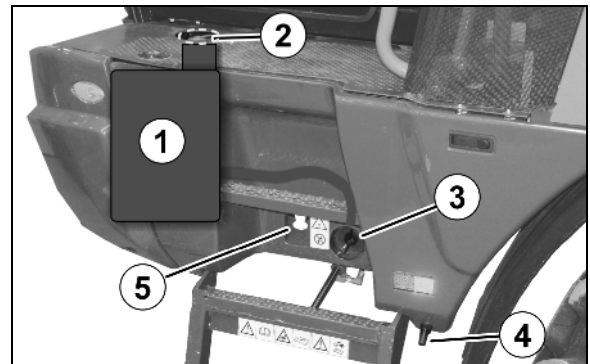


Fig. 91



#### **WARNING**

**Risk of being poisoned by unclean water in the fresh water tank!**

Never use the water from the hand wash tank as drinking water. The materials used to construct the fresh water tank are not food-safe.

## 6.11 Pumps

Fig. 92 – under the side cladding on the left:

- spraying pump
- agitator pump

The spraying pumps are switched on and off via the AMADRIE or via the buttons on the control terminal.

The pump speed can be adjusted on the AMA-DRIVE (operating speed 400 to 540 rpm).



Fig. 92

### Technical data: pump equipment

Pump equipment			<b>2 x P260</b>
Delivery capacity at nominal speed	[l/min]	bei 0 bar	520
		bei 10 bar	490
Power requirement	[kW]		12.6
Construction type			4- cylinder piston diaphragm pump
Pulsation damping			Pressure reservoir

## 6.12 Construction and function of the sprayer boom

The proper condition of the sprayer boom and how it is suspended have considerable influence on the distribution accuracy of the spray liquid. With the spraying height of the sprayer boom to the crop set correctly, a complete overlap is achieved. Nozzles are attached to the boom at intervals of 50 cm.



- Adjust the spraying height (gap between the nozzle and crop) according to the spray table.
- Always align the sprayer boom parallel to the ground; only then can the specified spraying height be achieved on all nozzles.
- Carry out all adjustment work to the sprayer boom carefully.



The boom is controlled via the control terminal or multi-function stick.

### Profi folding

Profi-folding consists of the following functions:

- Folding the sprayer boom in and out,
- Hydraulic height adjustment,
- Hydraulic tilt adjustment,
- Folding in one side of the sprayer boom
- One-sided, independent raising and lowering of the sprayer boom / boom extension (Profi-folding II only).



Refer to the control terminal instruction manual!

### Outer boom locking

The outer boom locking mechanisms protect the boom from damage if the outer boom sections come into contact with solid obstructions. The locking mechanism enables the outer boom section to avoid collision by moving around the articulated axle in and against the direction of travel; it is then automatically returned to its working position.

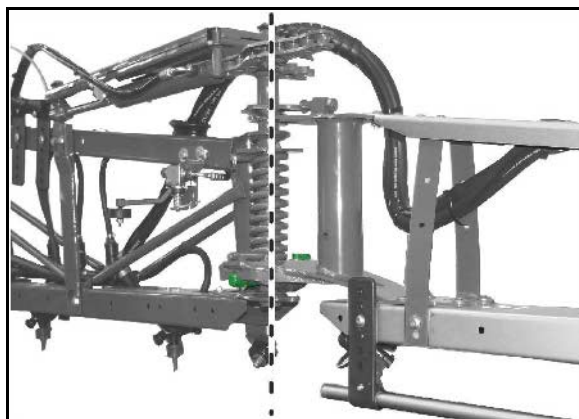


Fig. 93

### Adjust spraying height



#### WARNING

**Risk of crushing and impact for personnel who are caught while the height of the sprayer boom is being raised or lowered.**

Direct people out of the danger area of the machine before raising or lowering the sprayer boom using height adjustment.



Always align the sprayer boom parallel to the ground; only then can the specified spraying height be achieved on all nozzles.

## Folding out and in



### CAUTION

It is prohibited to fold the sprayer boom in and out during travel.



### DANGER

**Always maintain an adequate distance from overhead cables when folding the sprayer boom out and in. Contact with overhead cables may lead to fatal injuries.**



### WARNING

**Risk of crushing the entire body and impact due to personnel becoming trapped by laterally-swivelling machine parts.**

These dangers can cause extremely serious and potentially fatal injuries.

Maintain an adequate safety distance from moving machine parts while the tractor engine is running.

Ensure that all personnel maintain an adequate safety distance from moving machine parts.

Instruct personnel to leave the swivel range of any moving machine parts before swivelling the parts.



### WARNING

**Danger for third parties from crushing, being drawn in and/or caught by the moving parts of the boom or impact if they stand in the swivel range of the boom while it is folding out or in.**

- Instruct personnel to leave the swivel range of the boom before you fold the boom out or in.
- Release the control for folding the boom out and in immediately if someone enters the swivel range.



The hydraulic cylinders for boom folding maintain their respective end positions (transport position and working position) in both the folded-in and folded-out boom state.


## Working with the sprayer boom folded out on one side



Working with the sprayer boom only folded out on one side is only permissible

- with the swing compensation locked.
- briefly for passing obstacles (trees, electricity pylons, etc.).

## Unlocking the swing compensation (Fig. 94/1):

Unlock the swing compensation using the function field .

- The opened lock symbol appears in the menu Work.
- The swing compensation (Fig. 94/1) unlocks and the unfolded sprayer boom can swing free opposite the boom frame. For illustration purposes, in this image the protective device has been removed from the swing compensation.

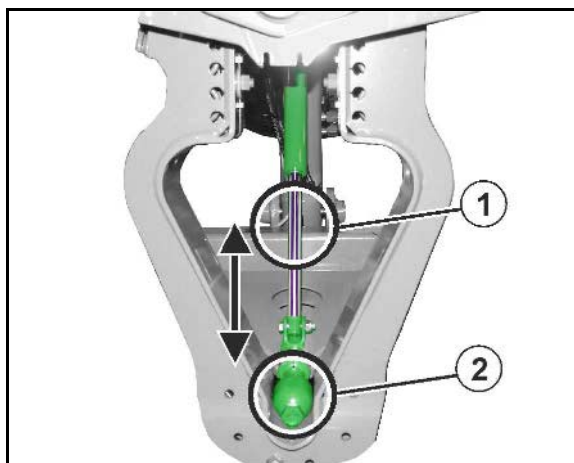


Fig. 94



Even lateral distribution can only be achieved with the swing compensation unlocked.

## Locking the swing compensation (Fig. 94/2):



### CAUTION

- Always lock the swing compensation in the transport position
  - o when driving on public roads!
  - o when folding the boom out and in!

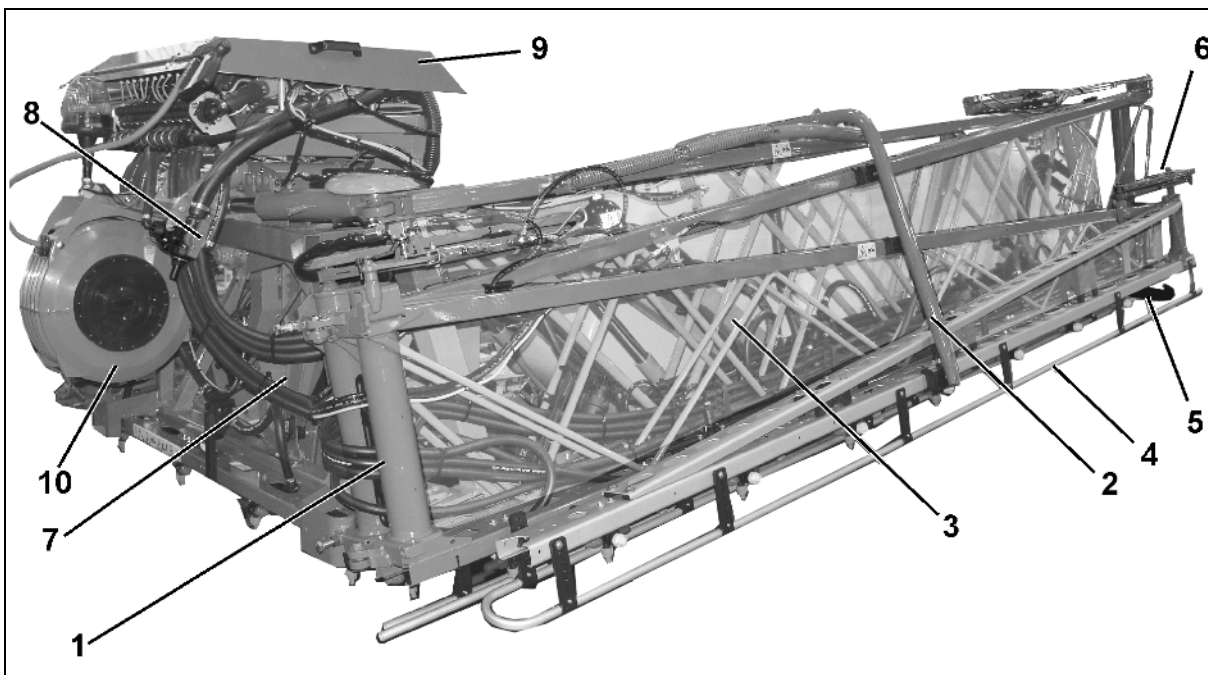
Lock the swing compensation using the function field .

- The closed lock symbol appears in the menu Work.
- If the swing compensation is locked, the sprayer boom cannot pivot freely between the sprayer carrier.



- The swing compensation (Fig. 94/2) is locked when the closed lock symbol appears in the control terminal display.
- To lock the swing compensation, keep the button pressed!

## 6.12.1 Super-L boom

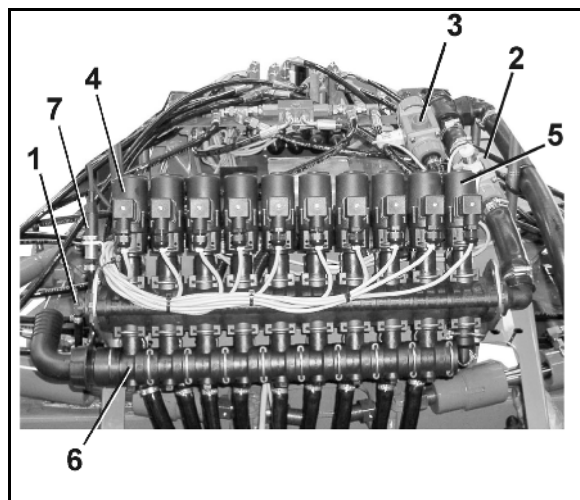


**Fig. 95**

- |   |  |
|---|--|
| (1) Sprayer boom with spray lines   | (4) Nozzle protection tube                 |
| (2) Transport safety bow<br>The transport safety bows are used for securing the folded sprayer boom against accidental unfolding while in transport position. | (5) Spacer                                 |
| (3) Parallelogram frame for adjusting the height of the sprayer boom  | (6) Outer boom locking, see Seite 114      |
|   | (7) Swing compensation, see page Seite 116 |
|   | (8) Valve and switch tap for DUS system    |
|   | (9) Boom equipment, see Fig. 96            |
|   | (10) Outer rinsing unit                    |

### Boom equipment

- |  |
|--|
| (1) Pressure connection for the spraying-pressure pressure gauge   |
| (2) Flow meter for determining the spray rate [l/ha]   |
| (3) Return flow meter for determining the spray liquid that has been fed back into the spray liquid tank |
| (4) Motor valves for switching the boom part width sections on and off                                   |
| (5) Bypass valve   |
| (6) Pressure relief  |
| (7) Pressure sensor  |



**Fig. 96**

## 6.13 Reduction joint on the outer boom (optional)

Using the reduction joint, the outer element of the outer boom can be folded manually to reduce the working width.

Case 1:

Number of nozzles outer part width section	=	Number of nozzles on the foldable outer element
---	---	--

→ When spraying with a reduced working width, keep the outer part width sections switched off.

Case 2:

Number of nozzles outer part width section	≠	Number of nozzles on the foldable outer element
---	---	--

→ Close the outer nozzles manually (triple nozzle head).

→ Perform changes on the control terminal.

- Enter the changed working width.
- Enter the changed number of nozzles on the outer part width sections.

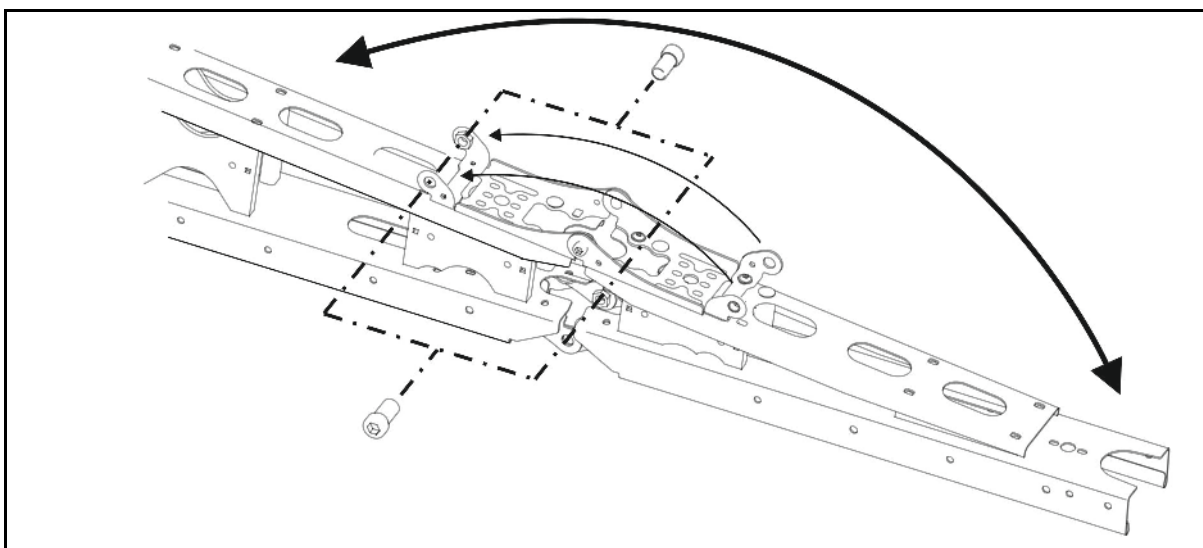


Fig. 97

2 bolts lock the folded and unfolded outer element in its respective end positions.



### CAUTION

Before road transport, unfold the outer elements again so that the transport locking mechanism is active when the boom is folded.

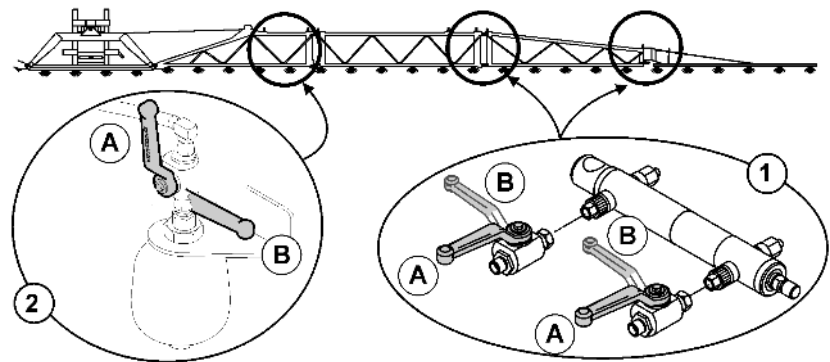
## 6.14 Boom width reduction (option)

With the boom width reduction, one or two booms can remain folded in during operation depending on the version.

In addition, switch on the hydraulic accumulator (optional) as a collision protection.



The respective boom part width sections have to be activated in the on-board computer.



**Fig. 98**

- (1) Boom width reduction
- (2) Boom width damping
- (A) Stop tap opened
- (B) Stop tap closed

### Working with reduced working width

1. Reduce the boom width hydraulically.
2. Close the stop taps for the boom width reduction.
3. Open the stop tap for the boom damping.
4. Deactivate the respective boom part width sections in the on-board computer.
5. Perform work with reduced working width.



Close the stop tap for the boom damping.

- For road transport
- For use with full working width

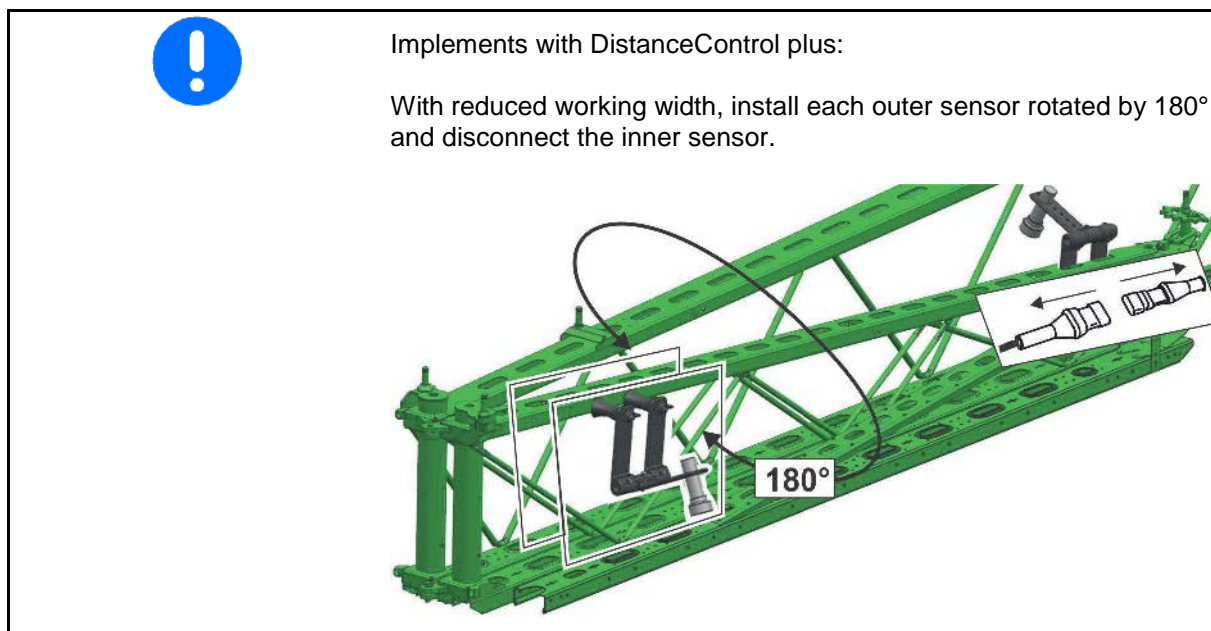


Fig. 99

## 6.15 Boom extension (option)

The boom extension increases the working width infinitely up to 1.20 metres.

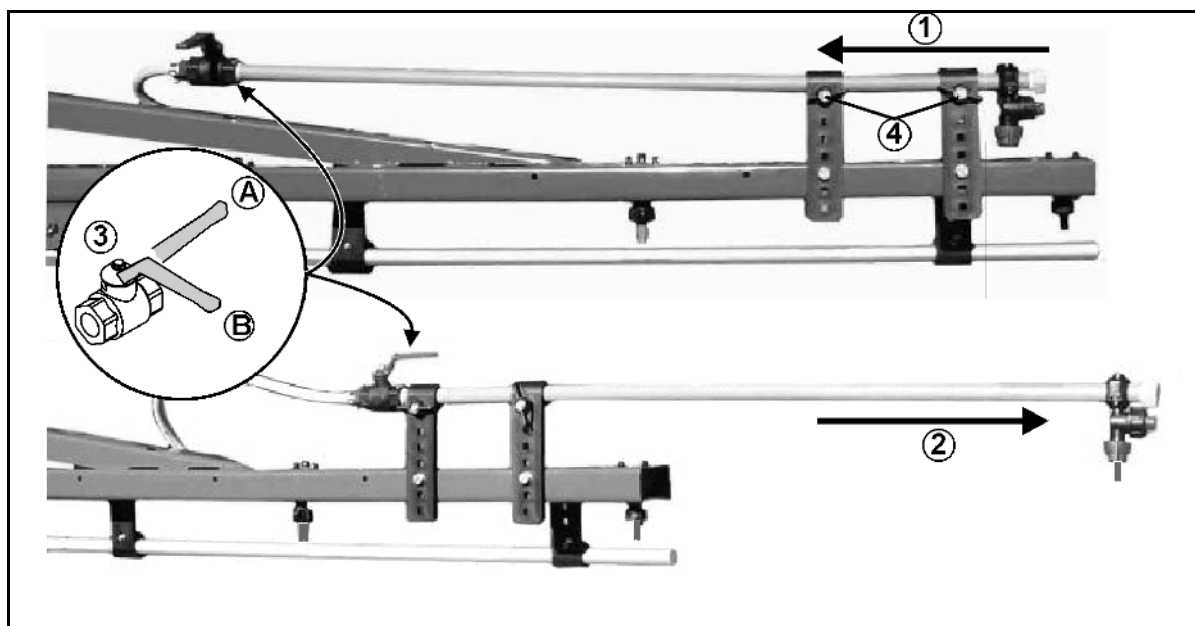


Fig. 100

- (1) Boom extension in transport position
- (2) Boom extension in working position
- (3) Stop tap for the outer nozzle
  - (A) Stop tap opened
  - (B) Stop tap closed
- (4) Wing bolts for securing the boom extension in the transport or working position

## **6.16 Tilt adjustment**

---

In unfavourable ground conditions, e.g. when there are ruts of variable depth or when driving with one side of the vehicle in a furrow, the sprayer boom can be aligned parallel to the ground or to the target surface using hydraulic tilt adjustment.

Adjustment using control terminal.

## 6.17 DistanceControl

(option)

The DistanceControl regulating unit for the sprayer boom automatically holds the sprayer boom parallel at the desired distance from the target surface.

- DistanceControl with 2 sensors
- DistanceControl with 4 sensors

ultrasound sensors (Fig. 101/1) detect the distance to the ground or the crop. If the height deviates from the desired measurement on one side, the distance control regulates the tilt adjustment in order to adjust the height. If the terrain rises on both sides, the height adjustment raises the entire boom.

Switching off the sprayer boom on a headland will automatically raise the sprayer boom by approx. 50 cm. When switched back on again, the sprayer boom is lowered back to the calibrated height.

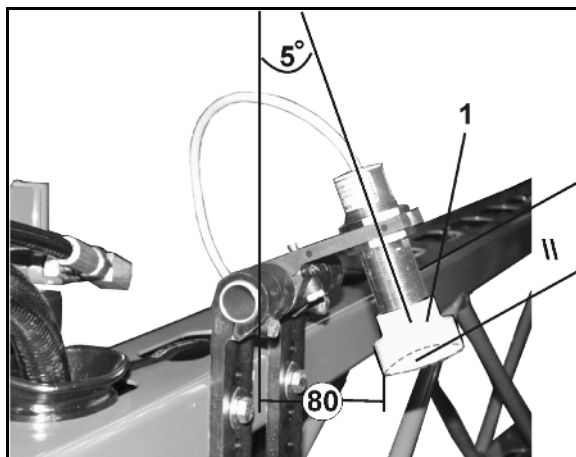


Fig. 101



Refer to control terminal instruction manual.

- Setting the ultrasound sensors:  
→ see Fig. 101

## 6.18 Spray lines and nozzles

The sprayer booms can be fitted with various spray lines. In turn, the spray lines can be fitted with single nozzles or multi nozzles, depending on the predominant conditions of use.

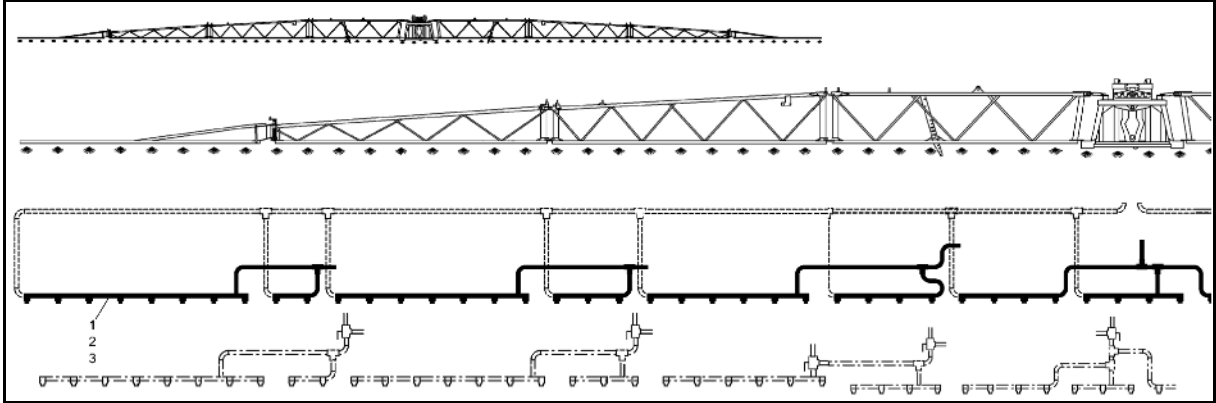


Fig. 102

### 6.18.1 Technical data



Ensure that the residue in the spray line is still being sprayed at an undiluted concentration. Always spray this residue on an untreated area. The residue contained in the spray line is dependent on the sprayer boom working width.

**Formula for calculating the required distance in [m] for spraying out the undiluted residue in the spray line:**

$$\text{Required distance [m]} = \frac{\text{Undiluted residue [l]} \times 10,000 [\text{m}^2/\text{ha}]}{\text{Spray rate [l/ha]} \times \text{working width [m]}}$$

Spray line Super-L sprayer boom with single nozzles or multi-nozzles

Working width	Number of part width sections	Number of nozzles per part width sections	Residue	• dilutable	• not dilutable	• total	Residue in pressure circulating system (DUS)	• dilutable	• not dilutable	• total	Weight
[m]							[l]				[kg]
21	5	8-9-8-9-8		4.5	9.0	13.5		14.5	1.0	15.5	19,0
	7	6-6-7-4-7-6-6		5.0	10.5	15.5		17.0	1.0	18.0	19,0
	9	6-4-5-4-4-4-5-4-6		5.5	16.0	21.5		23.0	1.5	24.5	20,0
	11	3-3-4-5-4-4-4-5-4-3-3		5.5	22.0	27.5		28.5	1.5	30.0	20,0
24	5	9-10-10-10-9		5.0	10.0	15.0		16.0	1.5	17.5	20,0
	7	6-6-8-8-8-6-6		5,0	11,5	16,5		17,5	1,5	19,0	22,0
	9	6-5-5-5-6-5-5-5-6		5.5	17.0	22.5		23.5	2.0	25.5	28,0
	11	5-4-5-4-4-4-4-5-4-5		5.5	22.5	28.0		29.0	2.0	31.0	30,0
	13	3-4-4-3-4-4-4-4-3-4-4-3		6.0	25.0	31.0		33.0	2.0	35.0	32,0
27	7	8-7-8-8-8-7-8		5,0	12,5	17,5		18,5	2,0	20,5	27,0
	9	6-6-6-6-6-6-6-6-6		5,5	17,5	23,0		24,0	2,0	26,0	29,0
	11	4-4-4-5-7-6-7-5-4-4-4		5.5	23.0	28.5		29.0	2.0	31.0	35,0
	13	4-4-4-5-4-4-4-4-5-4-4-4		6.0	25.5	31.5		33.5	2.0	35.5	38,0
28	7	9-7-8-8-8-7-9		5,0	13,0	18,0		19,0	2,0	21,0	28,0
	9	7-6-6-6-6-6-6-6-7		5,5	17,5	23,0		24,0	2,0	26,0	30,0
	11	4-4-5-5-7-6-7-5-5-4-4		5.5	23.0	28.5		29.0	2.0	31.0	36,0
	13	4-4-5-4-4-5-4-5-4-4-5-4-4		6.0	25.5	31.5		33.5	2.5	36.0	28,0
30	9	8-7-6-6-6-6-6-7-8		5,5	18,0	23,5		24,0	2,5	26,5	32,0
	11	5-5-5-6-6-6-6-6-5-5-5		6.0	22.5	28.5		29.0	2.5	31.5	39,0
	13	3-3-4-5-5-7-6-7-5-5-4-3-3		6.0	26.0	32.0		34.0	2.5	36.5	41,0
32	9	8-6-7-7-8-7-7-6-8		5,5	18,5	24,0		24,0	2,5	27,0	34,0
	11	5-6-6-6-6-6-6-6-6-5		6.0	22.5	28.5		28.5	2.5	31.0	41,0
	13	5-5-5-5-5-5-4-5-5-5-5-5-5		6.0	26.5	32.5		34.0	2.5	36.5	43,0
33	9	7-8-7-7-8-7-7-8-7		5,5	19,0	24,5		25,0	2,5	27,5	35,0
	11	6-6-6-6-6-6-6-6-6-6-6		6.0	23.0	29.0		29,5	2,5	32,0	37,0
	13	5-5-5-5-5-5-6-5-5-5-5-5-5		6.0	27.0	33.0		34.0	3.0	37.0	44,0
36	7	10-10-10-12-10-10-10		5,0	16,0	21,0		21,5	3,0	24,5	36,0
	9	9-9-7-7-8-7-7-9-9		5,5	19,5	25,0		25,5	3,0	28,5	38,0
	11	8-7-6-6-6-6-6-6-6-7-8		6.0	23.0	29.0		29,5	3,0	32,5	45,0
	13	6-6-6-5-5-5-5-5-6-6-6-6		6.5	27.0	33.5		34.0	3.0	37.0	47,0
36/24	9	6-7-(9+1)-9-10-9-(9+1)-7-6		5.5	19.5	25.0		25.5	3.0	28.5	43,0
	11	6-7-(5+1)-6-8-8-8-6-(5+1)-7-6		6.0	23.0	29.0		29.5	3.0	32.5	42,0
	13	6-7-6-5-5-5-6-5-5-5-6-7-6		6.5	27.0	33.5		34.0	3.0	37.0	47,0
39	9	7-9-9-9-10-9-9-9-7		5,5	20,5	26,0		26,5	3,0	29,5	41,0
	11	7-6-7-7-8-8-8-7-7-6-7		6.0	24.0	30.0		30,5	3,0	33,5	44,0
	13	6-6-6-6-6-6-6-6-6-6-6-6-6		6,5	28,0	34,5		35,0	3,0	38,0	47,0
40	9	8-9-9-9-10-9-9-9-8		5,5	21,0	26,5		27,0	3,0	30,0	42,0
	11	8-6-7-7-8-8-8-7-7-6-8		6.0	24.0	30.0		30,5	3,0	33,5	45,0
	13	7-6-6-6-6-6-6-6-6-6-6-6-7		6.5	28.0	34.5		35.0	3.0	38.0	48,0

## 6.18.2 Single nozzles

Fig. 103/...

- (1) Nozzle body with bayonet connection (standard).
- (2) Diaphragm. If the pressure in the spray line falls below approx. 0.5 bar, the spring element (3) presses the diaphragm onto the diaphragm seat (4) in the nozzle body. This ensures that when the sprayer boom is switched off, the nozzles are deactivated without subsequent dripping.
- (3) Spring element.
- (4) Diaphragm seat.
- (5) Slider - holds the entire diaphragm valve in the nozzle body.
- (6) Nozzle filter; **fitted as standard with 50 mesh/inch**, is inserted from below into the nozzle body. Refer to the "Nozzle filter" section.
- (7) Rubber seal.
- (8) Nozzle.
- (9) Bayonet connection.
- (10) Coloured bayonet cap.
- (11) Spring element housing.

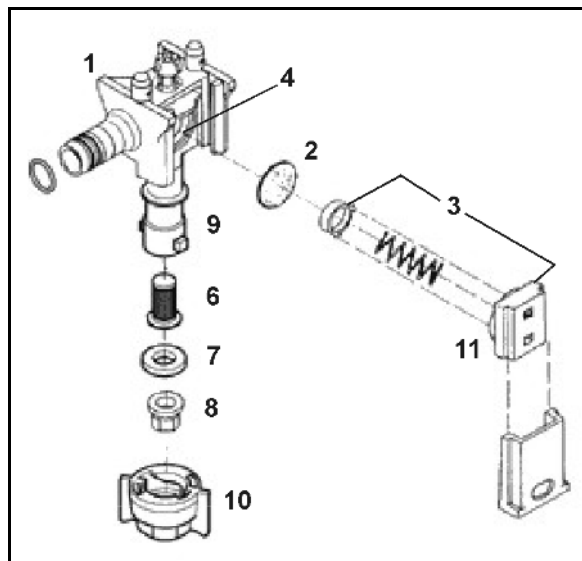


Fig. 103

## 6.18.3 Multi nozzles (optional)

When using multiple nozzle types, it is beneficial to use multi nozzles (Fig. 104). In each case, the nozzle pointing upwards is the one that is supplied.

Turning the multi nozzles head (Fig. 104/1) anti-clockwise brings a different nozzle into play.

The multi nozzles head is switched off in the intermediate positions. This provides the possibility of reducing the working width of the boom.



Flush the spray lines before twisting the multi nozzles head onto another nozzle type.

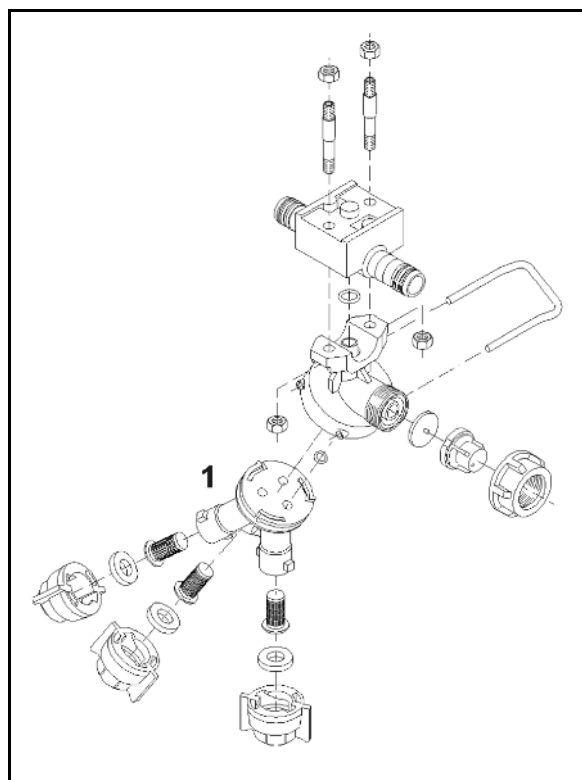


Fig. 104

Fig. 105/...

- (1) Nozzle carrier.
- (2) Triple nozzle head.
- (3) Diaphragm. If the pressure in the nozzle line falls below approx. 0.5 bar, the spring element (4) presses the diaphragm onto the diaphragm seat (5) in the three-way nozzle carrier. This ensures that when the sprayer boom is switched off, the nozzles are deactivated without subsequent dripping.
- (4) Spring element.
- (5) Diaphragm seat.
- (6) Sleeve nut - holds the entire diaphragm valve in the three-way nozzle carrier.
- (7) Nozzle filter; fitted as standard on machines with 50 mesh/inch.
- (8) Rubber seal.
- (9) Bayonet connection.
- (10) Red bayonet cap.
- (11) Green bayonet cap.
- (12) Black bayonet cap.
- (13) Yellow bayonet cap.
- (14) O-ring.
- (15) O-ring.

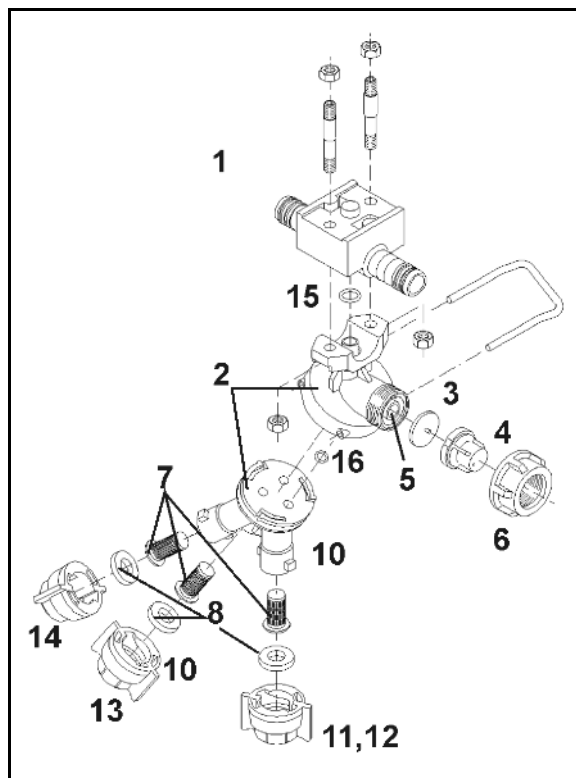


Fig. 105

#### 6.18.4 Electric boundary nozzles (optional)

Using boundary nozzle switching, the last nozzle can be switched off using the control terminal, and a boundary nozzle can be electrically switched on 25 cm further out (right at the edge of the field).

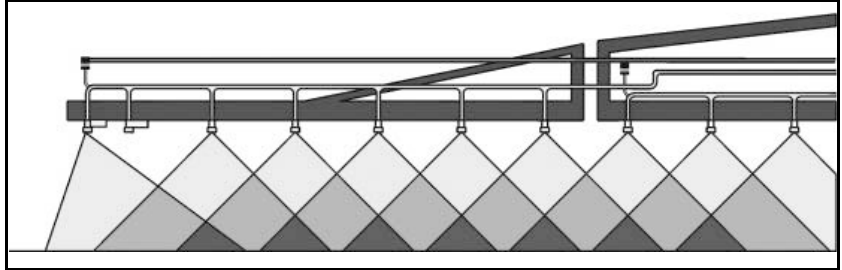


Fig. 106

#### 6.18.5 Electric end nozzle switching (optional)

Using end nozzle switching, up to three of the outer nozzles at the edge of the field close to a water source can be electrically switched off using the control terminal).

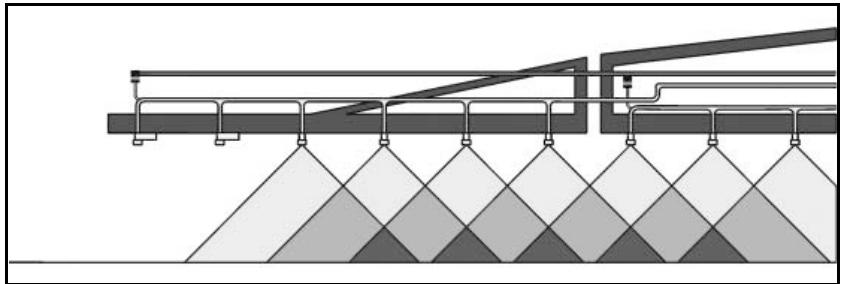


Fig. 107

#### 6.18.6 Electric additional nozzle switching (optional)

With the additional nozzle switching, another exterior nozzle is switched on using the control terminal, increasing the working width by one metre.

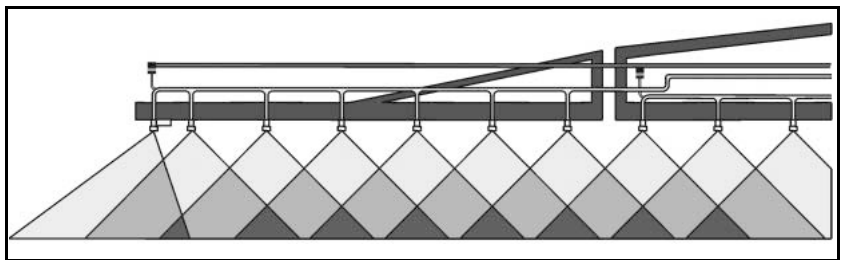


Fig. 108

## **6.19 Automatic single nozzle control (optional)**

---

50 cm part width sections can be controlled separately by the electric single nozzle control. In combination with the automatic part width section control "Section Control", overlapping can be reduced to a minimum area.

### **6.19.1 Single nozzle control AmaSwitch**

---

Each nozzle can be switched on and off separately via Section Control.

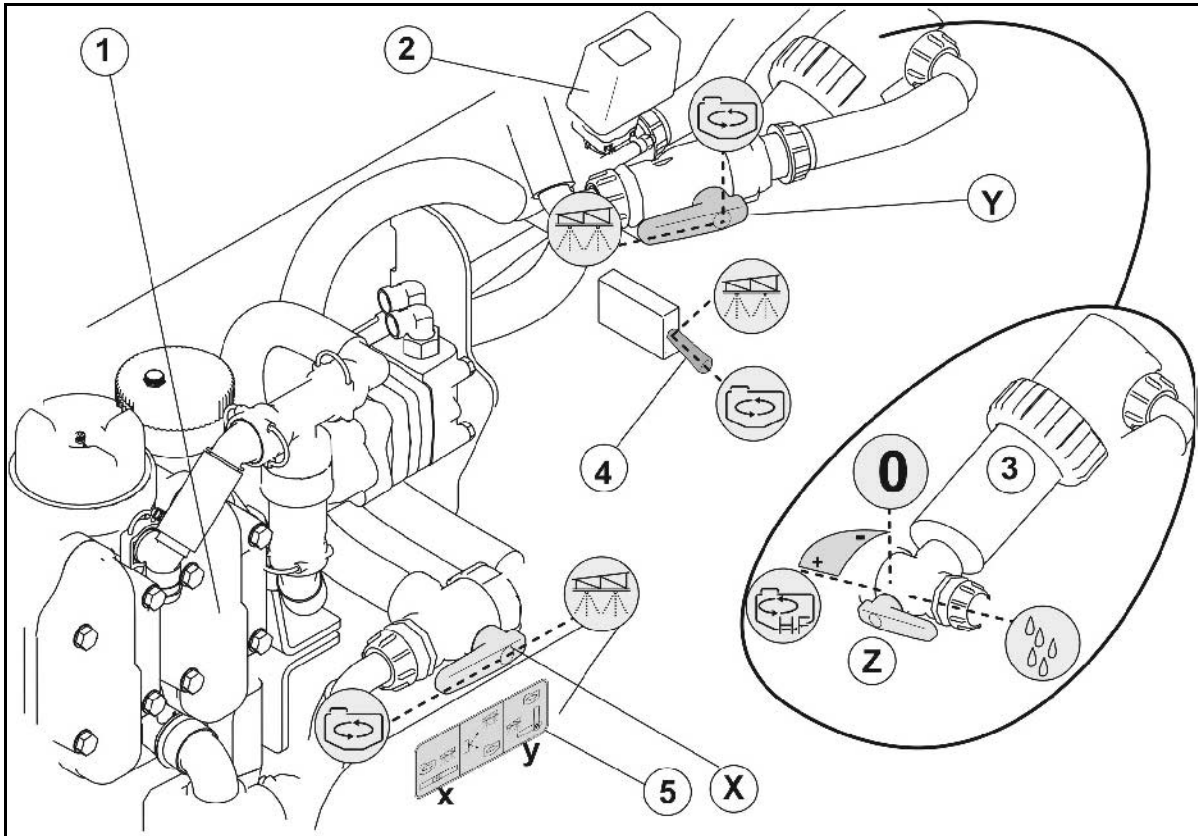
### **6.19.2 4-way AmaSelect single nozzle control**

---





- The sprayer boom is fitted with 4-way nozzle bodies. Each of them is operated by an electric motor.
- The nozzles can be switched on or off as desired (depending on Section Control).
- Due to the 4-way nozzle bodies, several nozzles can be simultaneously active in a nozzle body.
- Alternatively, the nozzles can be manually selected.
- For boundary treatment, an extra nozzle body can be separately configured.
- LED single nozzle illumination integrated in the nozzle body.
- Nozzle distance of 25 cm possible (optional)

## 6.20 Application rate increase with HighFlow

- Optional application rate increase for applying liquid fertiliser. The maximum application rate is increased to up to 400 l/min.
- In doing so, the agitator pump is used to increase the application rate. It is then only partially used as an agitator drive, or not at all.
- The high-performance liquid fertilisation is switched on and off via the control terminal and the HighFlow switch tap.



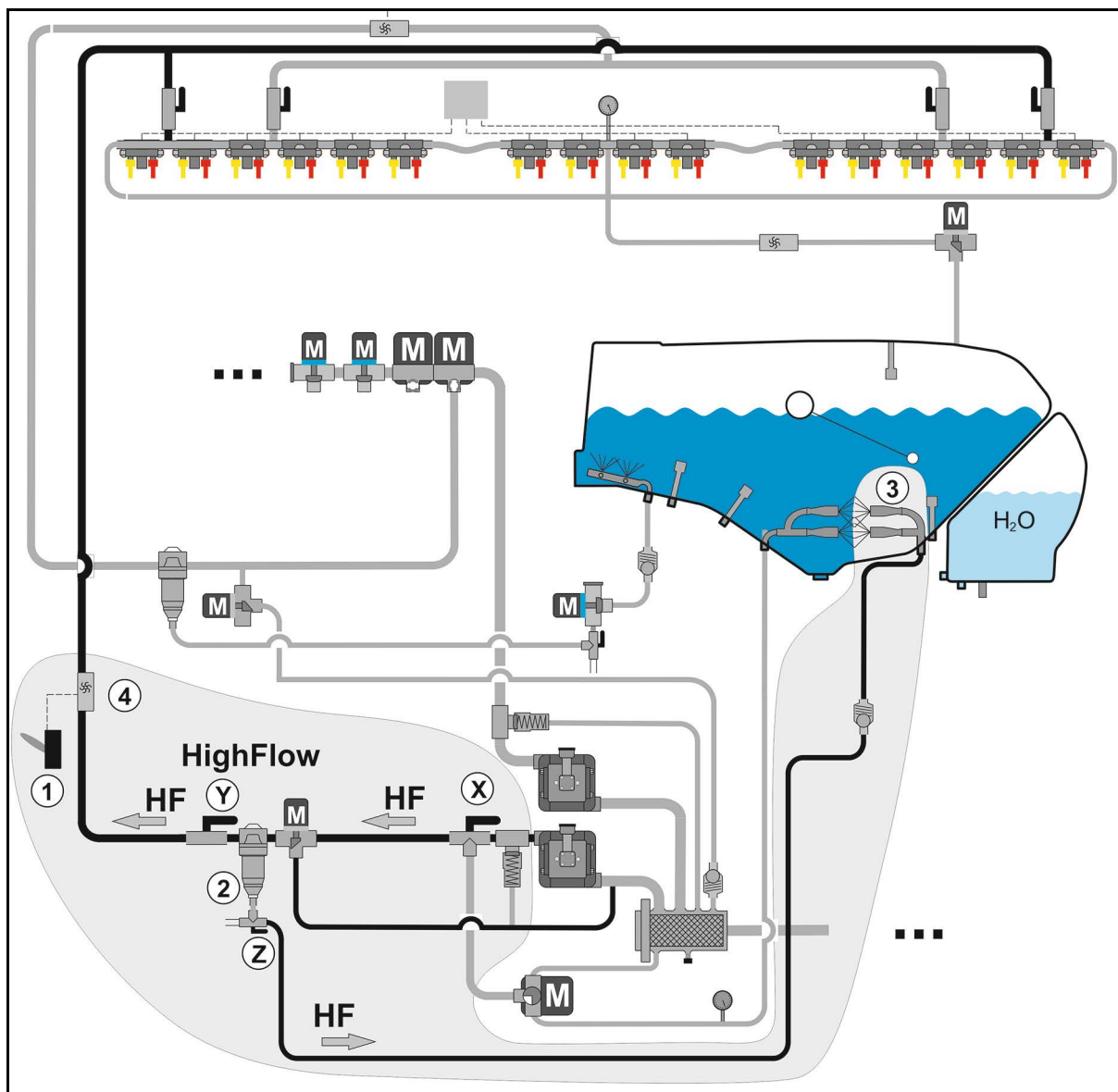
- (1) Agitator pump as HighFlow pump
- (2) Control valve application rate agitator pump
- (3) Additional pressure filter and supply for additional agitator for HighFlow mode and drainage pressure filter
- (4) Switch box for application rate measurement
- (5) Sticker HighFlow / no HighFlow
- X HighFlow switch tap
- Y Return block switch tap
- Z Agitator / drain residual quantity switch tap

-  No HighFlow mode (use agitator pump for stirring)
-  HighFlow mode (use agitator pump for application rate increase)
-  Additional agitator for HighFlow mode
-  Drain HighFlow pressure filter



The switch tap divides the volume flow into the agitator and HighFlow. It can be set as required between Position 0 and the maximum agitating intensity.

## Liquid circuit



- |   |   |
|---|---|
| (X) HighFlow switch tap                           | (1) Switch box for application rate measurement |
| (Y) Return block switch tap                       | (2) Additional pressure filter                  |
| (Z) Agitator / drain residual quantity switch tap | (3) HighFlow additional agitator                |
|   | (4) Flow meter 3                                |

## 6.21 Special optional equipment for liquid fertiliser

At the moment there are essentially two main types of liquid fertiliser available:

- Ammonium nitrate / urea solution (AUS) with 28 kg N per 100 kg AUS.
- An NP solution 10-34-0 with 10 kg N and 34 kg P<sub>2</sub>O<sub>5</sub> per 100 kg NP solution.



If the liquid fertiliser is sprayed using flat-fan nozzles, multiply the corresponding values from the spray table for the spray rate (l/ha) by 0.88 for AUS and by 0.85 for NP solutions, as the spray rates listed (in l/ha) only apply for water.

### As a rule:

Use coarse-dropped application for liquid fertiliser to avoid chemical burns to the plants. Overly large drops roll off the leaf and drops which are too small cause a magnifying glass effect, which burns the leaves. Too much fertiliser may cause burns to appear on the leaves due to the salt concentration in the fertiliser.

As a rule, do not spray more liquid fertiliser than, for example, 40 kg N (see also "Conversion table for spraying liquid fertiliser"). Always discontinue nozzle-based AUS fertilisation at development stage EC-39, because chemical burns on ears have a particularly bad effect.

### 6.21.1 Three-ray nozzles

(option)

The use of three-ray nozzles for applying liquid fertiliser is beneficial if the liquid fertiliser needs to be taken up more by the roots of the plant than through the leaves.

Thanks to its three openings, the dosing aperture, which is integrated into the nozzle, ensures a coarse-dropped, almost depressurised distribution of the liquid fertiliser. This prevents an undesirable spray mist and the formation of smaller drops. The coarse drops produced by the three-ray nozzle hit the plants with little force and roll off their surface. **Although this avoids damage from burns to the greatest extent possible, avoid the use of three-ray nozzles for late top dressing and use drag hoses.**

For all three-ray nozzles listed in the following, only use the black bayonet nut.

#### Different three-ray nozzles and their operational areas (at 8 km/h)

- yellow, 50 - 80 l AHL/ha
- red, 80 - 126 l AHL/ha
- blue, 115 - 180 l AHL/ha
- white, 155 - 267 l AHL/ha

## 6.21.2 7 hole nozzles / FD nozzles (optional)

The same conditions apply for using 7 hole nozzles / FD nozzles as for the three-ray nozzles. In contrast to the three-ray nozzle, in the case of the 7 hole nozzle / FD nozzles, the outlets are not oriented downwards, but instead point to the side. This allows very large drops to be produced on the plants using only slight impact forces.

**Fig. 109:**→ 7 hole nozzle

**Fig. 110:**→ FD nozzle



**Fig. 109**



**Fig. 110**

### The following 7-hole nozzles are available

- |             |                |             |
|-------------|----------------|-------------|
| • SJ7-02-CE | 74 – 120l AHL  | (at 8 km/h) |
| • SJ7-03-CE | 110 – 180l AUS |             |
| • SJ7-04-CE | 148 – 240l AUS |             |
| • SJ7-05-CE | 184 – 300l AUS |             |
| • SJ7-06-CE | 222 – 411l AUS |             |
| • SJ7-08-CE | 295 – 480l AUS |             |

### The following FD nozzles are available

- |         |                     |             |
|---------|---------------------|-------------|
| • FD 04 | 150 - 240 l AHL/ha  | (at 8 km/h) |
| • FD 05 | 190 - 300 l AUS/ha  |             |
| • FD 06 | 230 - 360 l AUS/ha  |             |
| • FD 08 | 300 - 480 l AUS/ha  |             |
| • FD 10 | 370 - 600 l AUS/ha* |             |

## 6.22 Drag hose equipment for Super-L boom (optional)

- with dosing discs for late top dressing with liquid fertiliser

Fig. 111/...

- Drag hoses at 25 cm intervals, after fitting the 2nd spray line.
- Bayonet connection with dosing discs.
- Metal weights - stabilise the position of the hoses during operation.

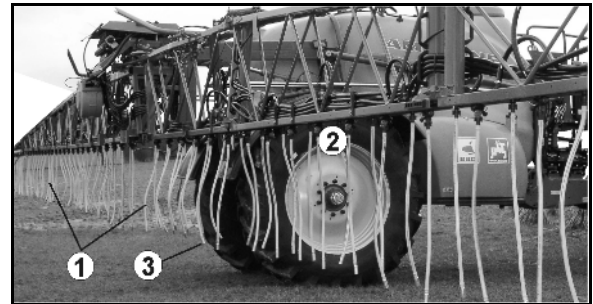


Fig. 111

Fig. 112/...

- Deflector hoop for the transport position.
- Transport position raised by lowering the transport hook
- Spacing runners



Remove both spacing runners (Fig. 112/3) when operating drag hoses.

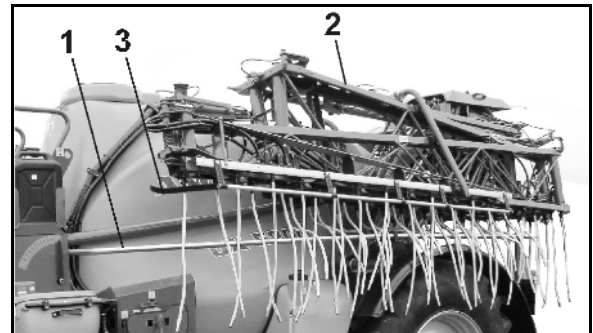


Fig. 112

Fig. 113/...

- one setting tap for every boom part width section:
  - Spraying via both spray lines with drag hoses
  - Spraying via a standard spray line
  - Spraying via the 2nd spray line only



Remove drag hoses for normal spraying operation.

After removing the drag hoses, seal off the nozzle bodies with blanks

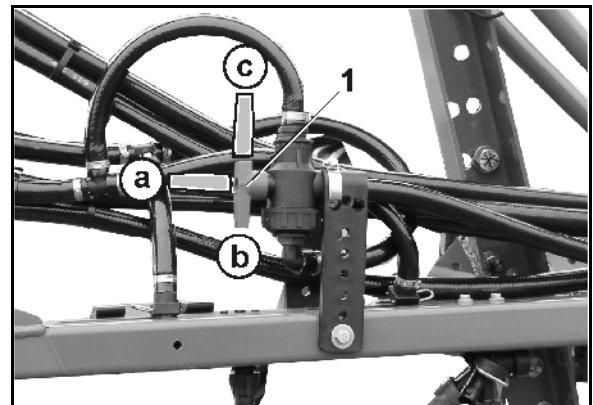


Fig. 113

## 6.23 Spray gun, with 0.9 m long spray tube without pressure hose

(option)



Use the spray gun only for cleaning. An accurate distribution of the crop protectant is not possible due to individual handling

## 6.24 Pressure circulating system (DUS)



- For normal spraying operation, the pressure circulating system should usually be switched on.
- When using drag hoses, the pressure circulating system should usually be switched off.

(optional)

### The pressure circulating system

- enables the constant circulation of liquid in the spray line. For these purposes, a suction port hose (Fig. 117/1) is assigned to each part width section.
- enables operation using spray liquid or flushing water, as desired.
- reduces the undiluted residue for all spray lines to 2 l.

### The constant circulation of liquid

- enables production of an even spray pattern right from the start, because spray liquid is available at every spraying nozzle immediately after the sprayer boom is switched on, with no delay.
- prevents damage to the spray line.

### The principal components of the pressure circulating system are:

- one suction port hose (Fig. 117/1) per part width section.
- the DUS switch tap (Fig. 118/1).
- the DUS pressure relief valve (Fig. 118/2). The DUS pressure relief valve is permanently set at the factory and reduces the pressure in the pressure circulating system to 1 bar.

- If the DUS switch tap is in position (Fig. 118/A), the pressure circulating system is switched ON.
- If the DUS switch tap is in position (Fig. 118/B), the pressure circulating system is switched OFF.
- If the DUS switch tap is in position (Fig. 118/C), liquid can be drained from the field sprayer.

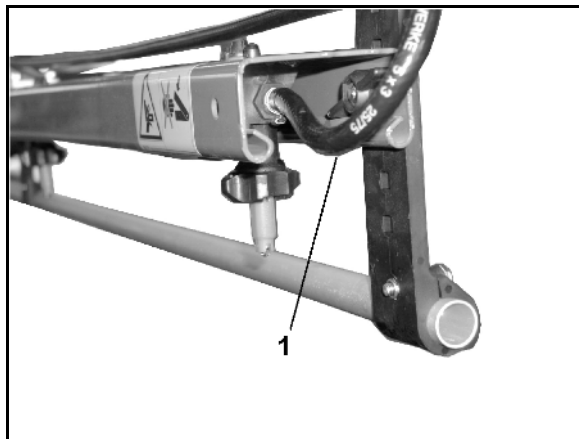


Fig. 114

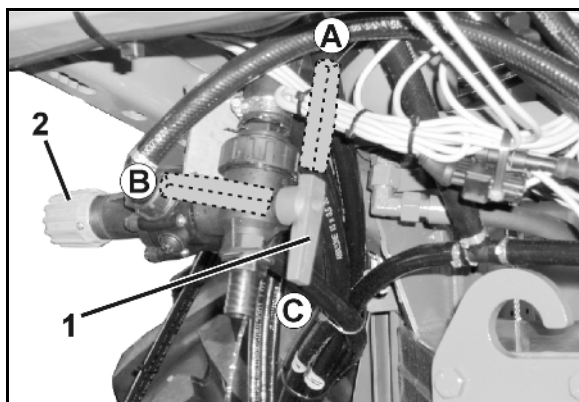
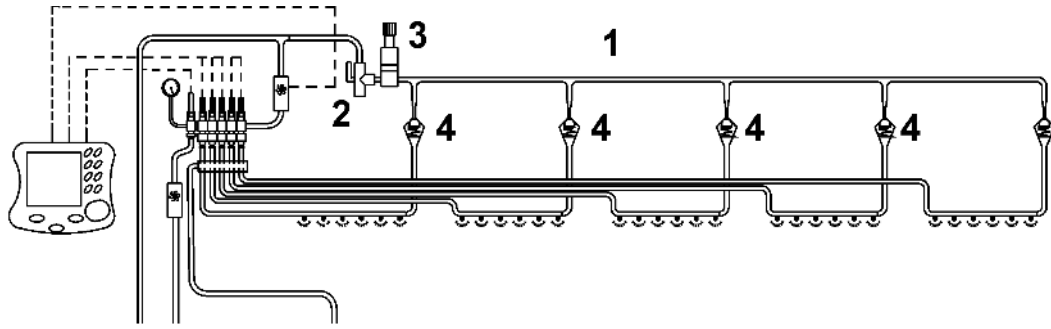


Fig. 115

## Overview – pressure circulating system (DUS)



- (1) Pressure circulating system (DUS)
- (2) DUS switch tap
- (3) DUS pressure limiting valve
- (4) DUS return valve

## 6.25 Line filter for spray lines (optional)

Line filters (Fig. 119/1) are

- fitted in the spray lines in each part width section.
- an additional measure to avoid contamination of the spraying nozzles.

### Overview of the filter inserts

- Filter insert with 50 mesh/inch (blue)
- Filter insert with 80 mesh/inch (grey)
- Filter insert with 100 mesh/inch (red)

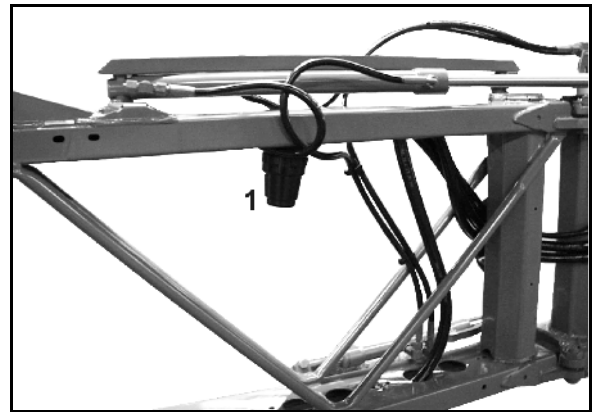


Fig. 116

## 6.26 Exterior wash down kit

Exterior wash down kit for cleaning the field sprayer, includes

- Hose coiler,
- 20 m pressure hose,
- Spray gun

Operating pressure: 10 bar

Water output: 18 l/min

- (1) Button to activate the exterior wash down kit.

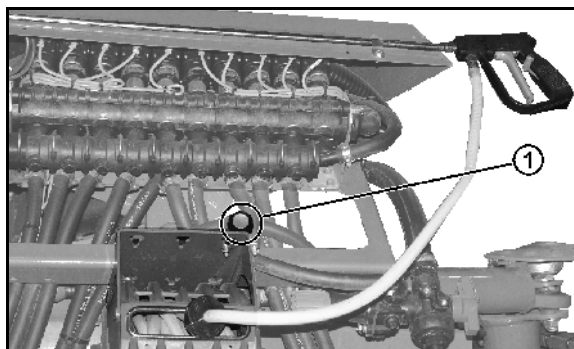


Fig. 117



Secure the spray gun against unintentional spraying using the locking mechanism (Fig. 121/1)

- before each pause in spraying.
- before depositing the spray gun in its holder after cleaning work is complete.



Fig. 118

## 6.27 Lift module

(option)

The lifting module allows the sprayer boom to be raised by an additional 70 cm to a nozzle height of 3.20 m.

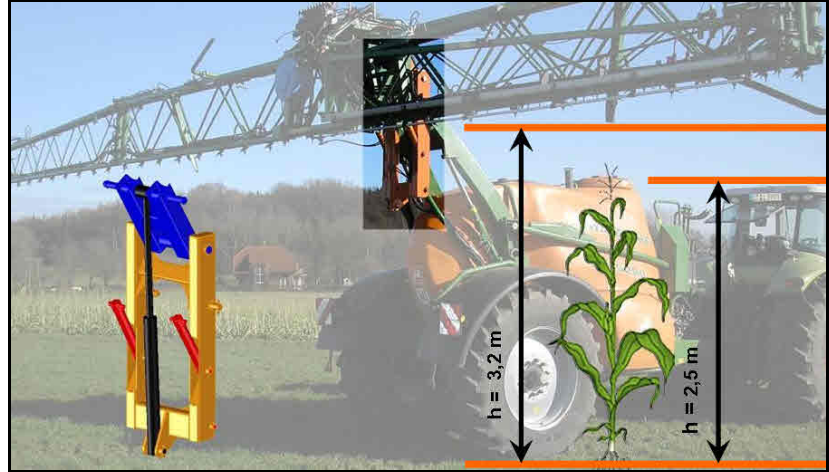


Fig. 119



The lifting module is operated using a switch in the cabin.

- + Lift the sprayer boom additionally using the lifting module.
- + Lower the sprayer boom additionally using the lifting module.



### DANGER

#### Risk of accidents and danger of damaging the machine.

- When driving on the roads, the sprayer boom must not be raised above the lifting module.
- The total height of the machine with lifting module can be considerably higher than 4 m.
- Use the lifting module only when the sprayer boom is folded out.
- Lower the lifting module again before folding in the sprayer boom. The sprayer boom can otherwise not be put into the transport lock.
- Always lift or lower the lifting module to the end position!

## 6.28 Control terminal cover

The cover keeps the control terminal clean.

- (1) Control terminal cover
- (2) Lock
- (3) Handle
- (4) Control terminal illumination
- (5) Switch for the lighting

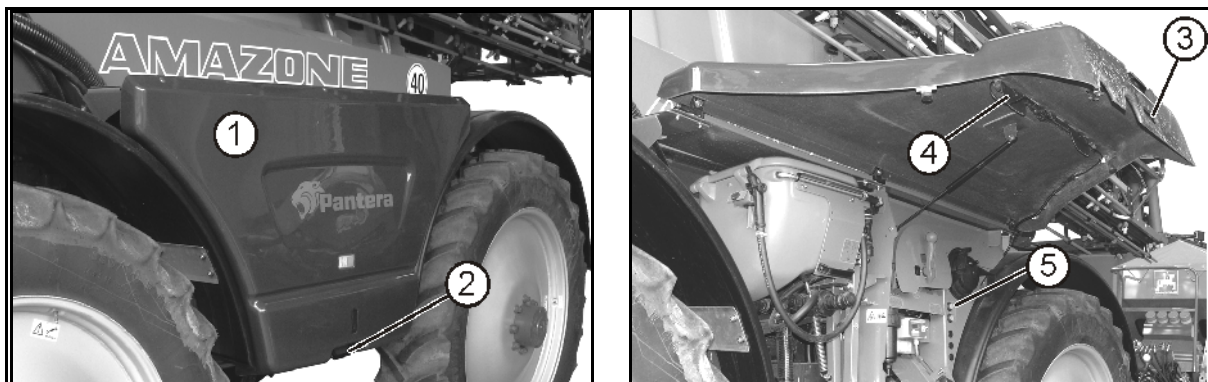


Fig. 120

## 6.29 Attachment kit sensors of the PSR steering system (optional)



With the attachment kit, the machine is prepared for the installation of the Reichardt steering system.

The PSR steering system can be purchased from Reichardt.

The attachment kit comprises one holder with adjustment unit for sensors for detecting rows.

Swivel up the attachment kit for transporting.

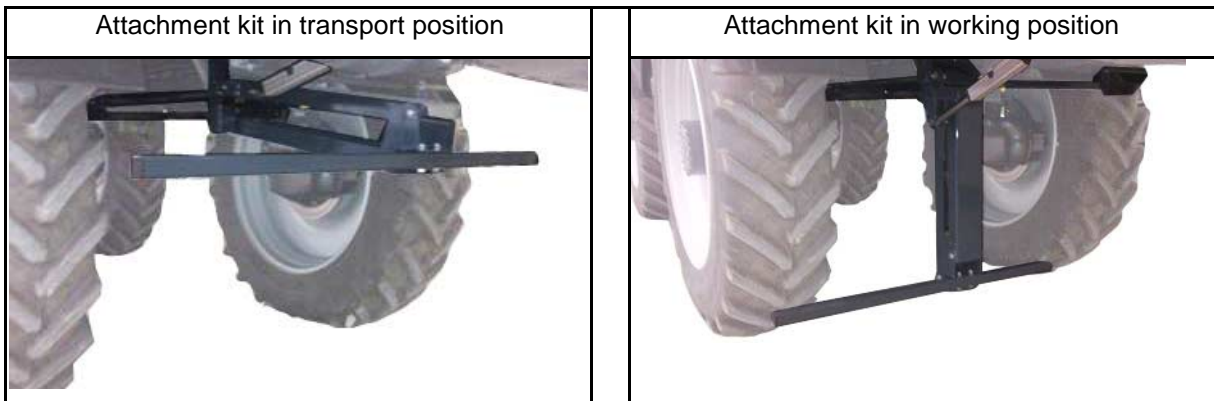


Fig. 121



The attachment kit is operated using a switch in the cab.

The position of the attachment kit is indicated in Amadrive

- PSR 0 - Transport position
- PSR 10 - Working position



Fig. 122

## 6.30 Accessories for protecting the plants

The following accessories serve to protect the plants in tall crops:

- Wheel gear cover (1)  
Recommended if the wheel gear protrudes over the rim.
- Stalk divider (2)
- Flexible underbody cover, 80 cm wide

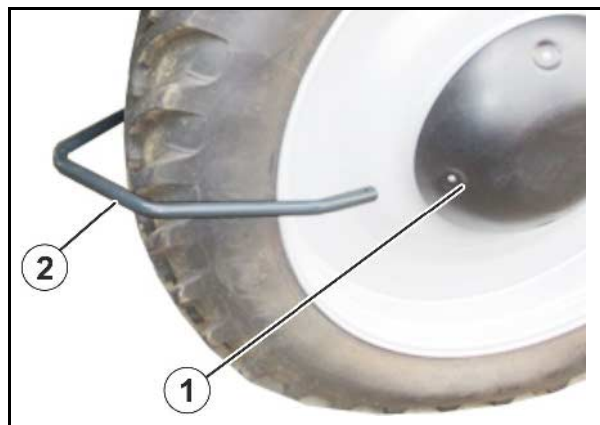


Fig. 123

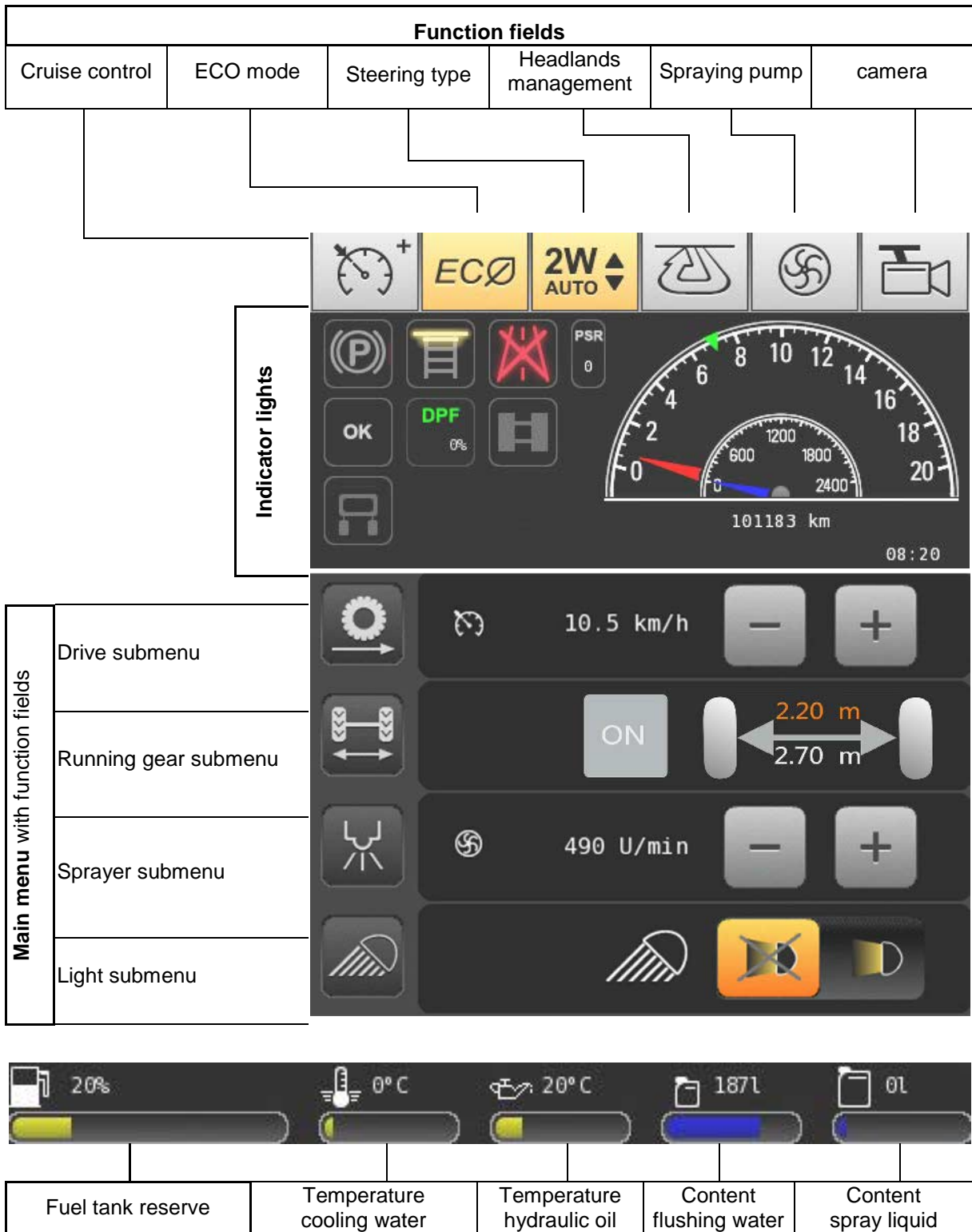
## 7 AMADRIVE control terminal

The **AMADRIVE** is used for adjusting and monitoring almost all functions of the vehicle and several functions of the field sprayer.

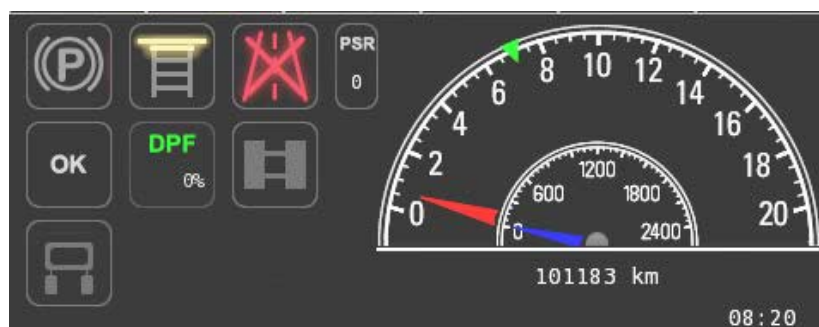
It is operated via the touch-sensitive function fields on the 10.4" touch screen terminal.

















Touch sensitive function fields:

- active → yellow
- not active → grey















## 7.1 Indicator lights

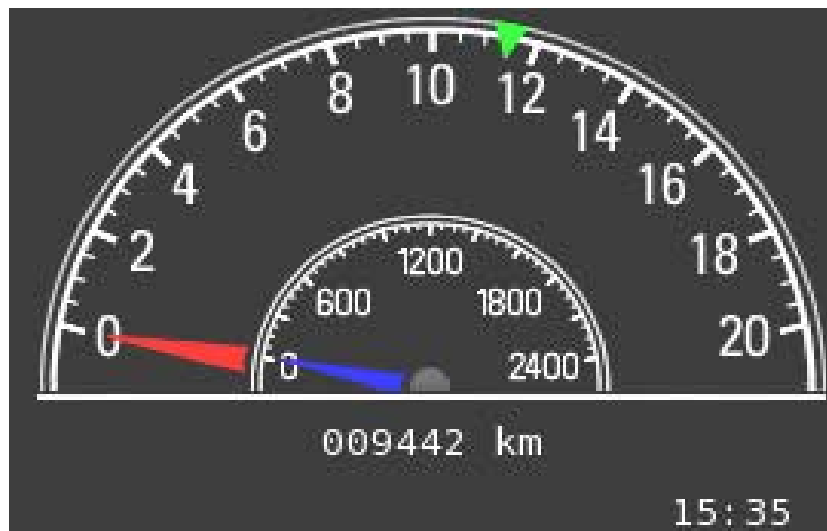



Parking brake	 Released	 Machine is braked (red)
Ladder	 Ladder raised: when driving (grey), when stationary (yellow)  While raising	 Ladder lowered: when driving (red), when stationary (grey)  While lowering
Mode	 Field	 Road
Error messages	 None	 Error messages present
Particle filter (Euro 3B)	 <div> green – Normal state fill level particle filter (0-100%)  blue – During regeneration (100%-120%)  red – System error / temperature of cooling water &lt;70°C / regeneration block active </div>	
Lifting module	 Lowered	 Raised
Height (only Pantera H)	 Lowered	 Raised
PSR mounting set	 <div> PSR 0 - Transport position  PSR 10 - Working position </div>	

## 7.2 Touch sensitive function fields

















	<p>By touching the function fields, the corresponding function is switched on and off and the display of the function changes.</p>
 	<p><b>Cruise control/Switching the cruise control+ on and off</b>  (cruise control+ for higher power requirements)  Press and hold the field for 5 seconds to switch on and off.</p>
	<p><b>Switch the ECO mode on and off</b>  → The ECO mode is active after starting the engine and switching from road to field.</p>
	<p><b>Selecting the type of steering</b>  Two-wheel steering – Yellow display  Automatic four-wheel steering – Yellow display  Manual four-wheel steering (crab steering) – Green display</p>
	<p><b>Headlands management switched on:</b></p> <ul style="list-style-type: none"> <li>• Driving with four-wheel steering system in the headlands.</li> <li>• Driving with two-wheel steering system in the tramline.</li> </ul> <p>→ The headland management can be overridden using the  or the multi-function stick.</p>
	<p><b>Switch the spraying pump on and off</b></p>
	<p><b>Camera system with night-view technology</b></p>
	<p><b>Call up the configuration and diagnosis menu</b></p>
	<p><b>Menu for statistics, particle filters and consumption</b></p>
	<p><b>Error messages present</b>  Press function field for more information!</p>

### 7.3 Instrument panel



- Displays:
- Speed with display range of
    - 0-45 / 60 km/h in road mode
    - 0-20 km/h in field mode
  - Motor speed with display from 0-2400 rpm
  - Total distance driven in km /
  - Time of day
  -  Cruise control settings

## 7.4 Main menu

Function fields	Quick access
Drive sub-menu with display and cruise control adjuster	  10.5 km/h  
Running gear sub-menu with display and setting of the track width..	   2.20 m  2.70 m
Sprayer sub-menu with display and setting of the pump speed	  490 U/min  
Lighting sub-menu with operation of the work lights.	   



Back to the main menu: activate submenu function field




Quick access in the main menu allows the spontaneous switching of several functions without having to call up the respective sub-menu.

### Adjusting the track width in the main menu

- (1) Target track width
- (2) Actual track width

While driving on the field:

1.  Switch on the track width adjustment



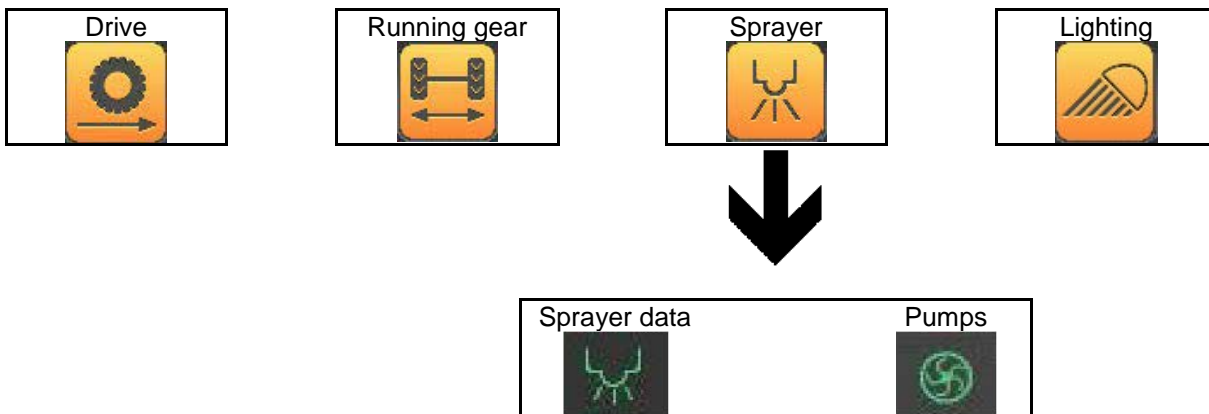
2.   Enter the setpoint track width.



→ The track width will be adjusted while driving.

### 7.4.1 Menu structure overview

---





## 7.5 Drive submenu



### Cruise control function in field mode





First activate the speed control in the menu bar.

- Setting the set speed via  .
- The set speed set is displayed.
- When the driver moves the multi-function stick into the foremost position, the Pantera will accelerate to the set speed.
- The speed can be adapted to the situation at any time - the cruise control remains active.
- The cruise control cannot be activated in road mode.



### Directly select the engine speed

(only if ECO mode is deactivated and the Field mode is activated):

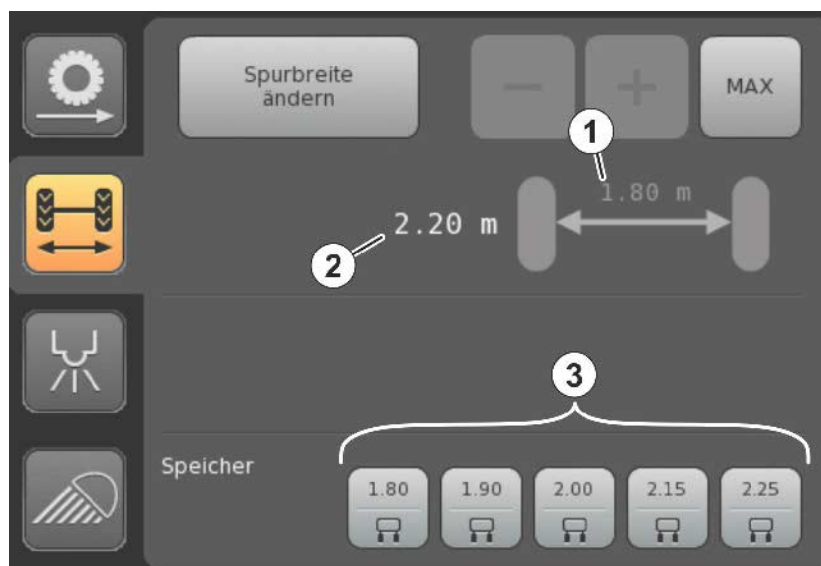
- Direct engine speed selection by pressing one of the four pre-assigned function fields.

- Select the engine speed using  .
- The engine speed set is displayed.
- Maximum engine speed 2000 rpm.

### Assign required engine speed to function fields:

1. Selection of the engine speed  .
  2. To directly select any function field, press it for 3 seconds.
- Function field is saved with the value displayed.

## 7.6 Running gear submenu



It is only possible to adjust the track width to a limited extent when driving across slopes, depending on the load status, the soil properties and the forward speed.

### Change track width

- (1) Set track width display
- (2) Actual track width display
- (3) Saved track widths for direct selection



The setting is carried out during a short adjustment run.

1. Press .
  - Machine changes to the mode for track width.
  - Increase idling speed is set.
2. Entering the setpoint track width.
  - Or direct selection
3. Press the driving lever forwards.
  - The machine runs forwards at 2 km/h until the desired track width is reached and then automatically stands still.
4. Pull the driving lever backwards to the neutral position.
5. Back to the main menu.




The track width can be preset in the following ranges, depending on the tyres:

- Pantera: 1.80 m – 2.40 m
- Pantera W: 2.25 m – 3.00 m

### Adjust the maximum track width


The maximum track width can be set in field mode when driving for travelling over a particularly sloping terrain.



1.  should be pressed when driving.

→ The maximum track width is set.



2.  should be pressed again when driving.

→ The old track width is reset.




If the vehicle is stopped during when the track width is set to the maximum position, the maximum track width will be taken over as the nominal track width.


### Assign function fields for direct selection:

By assigning a function field, the track width (all Pantera's) and heights (Pantera H) can be stored.




1.  Enter the setpoint track width.





2.  Select raised or lowered machine.  
(only Pantera H))



3.  Press any function field for 3 seconds to select it directly.

→ Function field is saved with the value displayed.

	Track width		Track width
	Machine lowered		Machine raised (only Pantera H))








## 7.6.1 Height adjustment Pantera H



- The machine can only be set in the end positions top or bottom.
- The minimum track width in the top position is 2.10 m.



The height adjustment is carried out together with the track width adjustment during a short adjustment run

1. Press .
  - The machine changes to the mode for setting the running gear.
  - Increased idling speed is set.
2.   Enter the setpoint track width.
3.   Select raised or lowered machine.  
 Or  direct selection
4. Press the driving lever forwards.
  - The machine drives forwards at 2 km/h until the desired track width is reached and then automatically stands still.
5. Pull the driving lever backwards to the neutral position.
6.  Back to the main menu.



If the adjustment procedure is interrupted by pulling back the driving lever, the running gear is lowered again when starting.

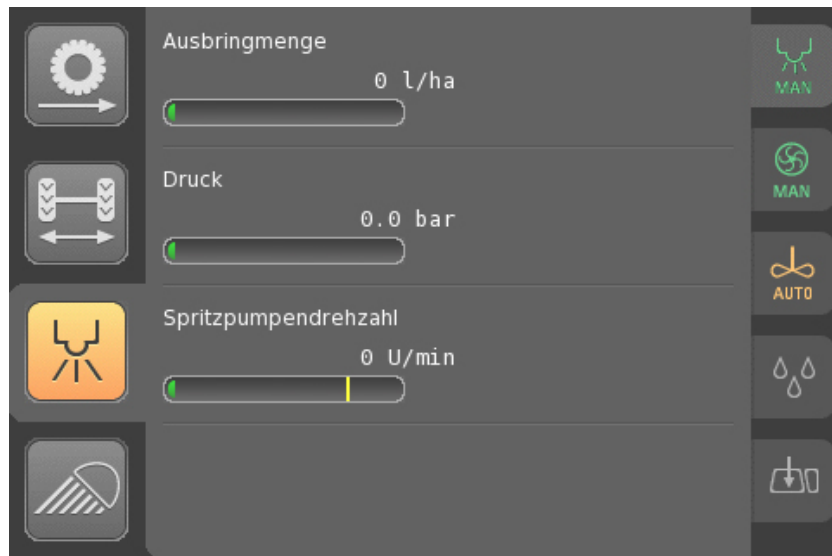
The adjustment procedure has to be restarted.

If the adjustment procedure takes longer than 120 seconds, the running gear is also automatically lowered again.

## 7.7 Sprayer submenu



Sprayer data





### Display the current operating data

- Application rate
- Spraying pressure
- Spraying pump speed



### Setting the spraying pump speed




- Directly select the spray pump speed by pressing one of the 5 pre-assigned function fields.

- Selection of the spray pump speed via  .
- The spray pump speed set is displayed.

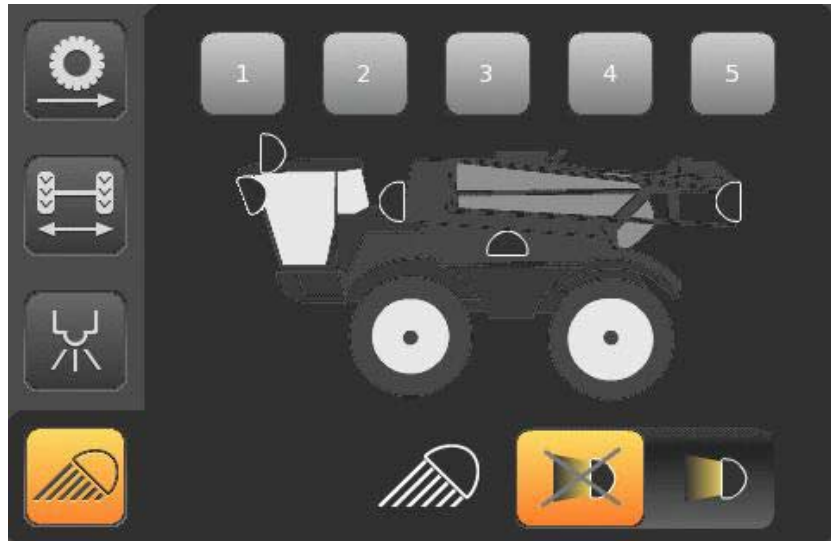
Setting the pump speed between 380 rpm and 580 rpm:

- Fast filling: 580 rpm. (only possible at a standstill)
- For standard applications (~ 200 l/ha and ~ 10 km/h) without granules and fertiliser: 420 - 460 rpm
- In case of high demands on the stirring performance and application rates: 480 - 540 rpm

### Assign function fields for direct selection








1. Selection of number of spray pumps via  .
  2.  Press any function field for 3 seconds to select it directly.
- Function field is saved with the value displayed.

## 7.8 Work lights, submenu



### Adjustment of the vehicle, working and boom illumination

The headlights can be switched separately:

-   Work lights in the cabin roof.
-  Boom illumination from the front.
-  Work lights on flushing dome and control centre.
-  Nozzle illumination from the rear.
-  Switches the work lights (1, 2, 3) together.
-  Switches the work lights off.



The work lights can only be switched on when the dipped beam is switched on.






The side-view floodlights are switched on via the control lever for the indicators when in field mode.

## 7.9 Operating data

Function field

009443 km

(Total distance driven)

-  Scroll to next page
-  Scroll to previous page
-  Leave operating data



Statistik	Gesamt	Straße	Feld
Betriebsstunden	0	0	0 h
Fahrstrecke	1000	0	1000 km
Fläche Gesamt	0	0	0 ha


  

Speicher	Gesamt	Straße	Feld
Betriebsstunden	0	0	0 h
Fahrstrecke	1000.0	0.0	1000.0 km
Fläche Gesamt	0	0	0 ha


-  Delete memory (keep pressed for 3 seconds)



Dieselpartikelfilter	Regeneration
DPF Füllstand	0 %
Letzte Regeneration	0 h
Temp. nach Brenner	0 °C
Aschebeladung	0 %

-  Automatic regeneration of the diesel particle filter  
 REG ON – Automatic regeneration starts at a DPF fill level < 100 %  
 REG OFF – Automatic regeneration suppressed until the engine is started again.



-  Delete memory (keep pressed for 3 seconds)

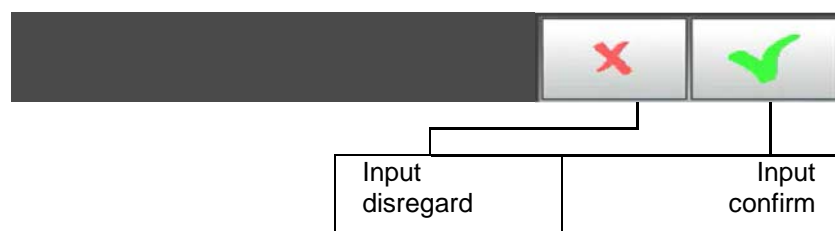
## 7.10 Configuration

10:34  
(Clock)

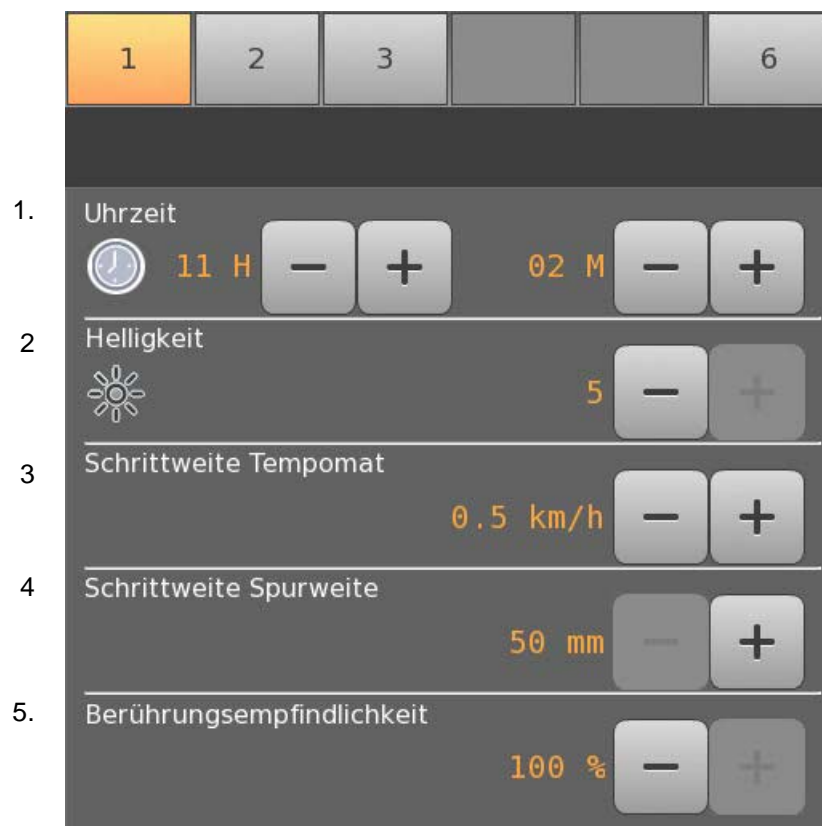
- The configuration menu comprises the sub-menus:










- Lower section in every sub-menu:







1




1. Uhrzeit  11 H   02 M  

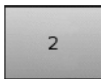
2. Helligkeit  5  

3. Schrittweite Tempomat 0.5 km/h  

4. Schrittweite Spurweite 50 mm  

5. Berührungsempfindlichkeit 100 %  

- (1) Setting the time: Hours Minutes
- (2) Setting the display brightness: Setting range from 1 to 5
- (3) Increment of the speed setting of the cruise control in the drive menu: Setting range from 0.1 km/h to 1 km/h
- (4) Increment when setting the track width in the running gear menu: Setting range from 5 cm to 10 cm
- (5) Touch sensitivity of the touchscreen display. Setting range 0% to 100%



1 Sprache

Index	Name
1	Deutsch
2	Eesti
3	English
4	Français
5	Svenska

2 Reifentyp

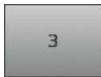
Index	Name
1	300/95 R52 ET165
2	340/85 R48 ET165
3	380/90 R46 ET165
4	420/80 R46 ET165
5	460/85 R38 ET110
6	460/85 R42 ET115

(1) Language selection

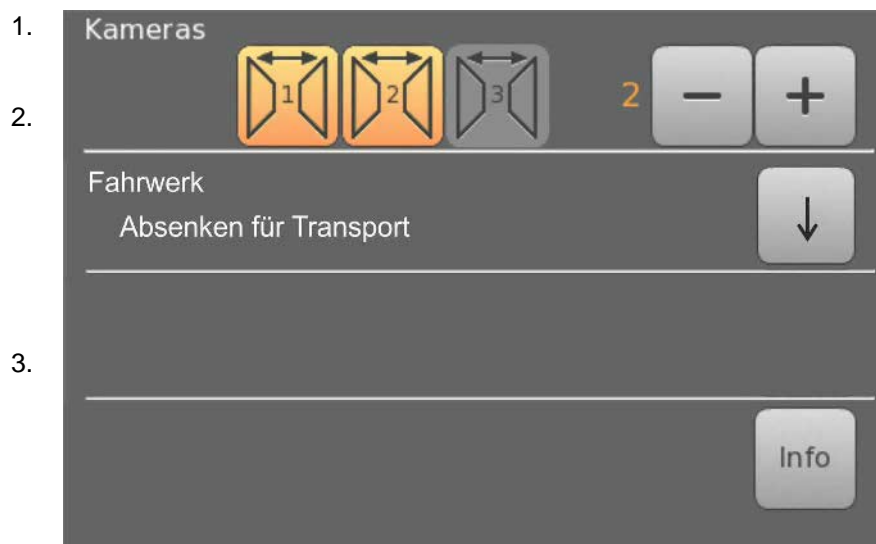
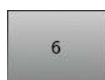
(2) Entering the tyres mounted






The tyre size have to be selected correctly so that the set track width corresponds with the real track width.




Only for customer services, password required



- (1)   Entry of the number of mounted cameras.

-  Show the camera view mirrored (grey)/normal (yellow)

- (2)  Lower the machine for transport on a low-bed trailer / lift machine for driving.

- (3)  Software information



When restarting the lowered machine, the following message is shown: Running gear transport position selected.

→ Lift the machine before starting to drive.

## 7.11 Error messages



All error messages that have been issued can be displayed.



## 8 Start-up



- Before operating the machine for the first time the operator must have read and understood the operating manual.
- The machine must meet the national road traffic regulations.
- The operator and the user shall be responsible for compliance with the statutory road traffic regulations.

### 8.1 Securing machine against accidental starting and rolling



#### WARNING

**Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact when making interventions in the machine, through**

- **unintentional falling of raised, unsecured machine parts.**
- **unintentional start-up and rolling of the tractor-machine combination.**
- Secure the machine against unintentional start-up and rolling before making any intervention in the machine.
- It is forbidden to make any intervention in the machine, such as installation, adjustment, troubleshooting, cleaning, maintenance and repairs
  - o when the machine is running
  - o when the ignition key is inserted in the ignition lock.
  - o when the machine is not secured against unintentional rolling using their parking brakes and/or wheel chocks.

When carrying out such work, there is a high risk of contact with unsecured components.

## 9 Driving on public roads



- During driving on public roads, follow the instructions given in the section "Safety instructions for the operator", page 28.
- Before moving off, check:
  - the lighting system for damage, proper operation and cleanliness,
  - the braking and hydraulic systems for obvious defects.
  - the function of the brake system



### WARNING

**Risk of crushing, cutting, being caught and/or drawn in, or impact from tipping and insufficient stability.**

- Drive in such a way that you always have full control over the tractor with the attached machine.  
In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected machine.



### WARNING

**Risk of falling when riding on the machine, contrary to instructions.**

It is forbidden to ride on the machine and/or climb the machine while it is running.

Instruct people to leave the loading site before approaching the machine.



### WARNING

**Risk of breaking during operation, insufficient stability and insufficient tractor steering and braking power from improper use of the tractor.**

Comply with the maximum load of the connected machine. If necessary, drive only with a partially filled tank.



### DANGER

**Risk of accident from excess machine width!**

The permissible overall width of the machine may not be exceeded when travelling on the roads.

If required, reduce the track width in order to maintain the permissible overall width of 2550 mm.

The wings form the outermost edge of the machine.

The wheels may not stick out any further than them.



**DANGER**

**Risk of accident from excess machine width!**

- Pantera-W:  
The total width of the machine is 2750 mm.
- Machines with wide mudguards (700 mm):  
The total width of the machine is 2865 mm.

Please observe the country-specific specifications for the permissible total width of the machine.

## 9.1 Requirements for driving on public roads



### **DANGER**

**Risk of accident if the following measures are not carried out.**

- Select road mode.
  - Two-wheel steering system is activated..
  - No cruise control function.
- With three-piece booms, check that the additional rear lights and the additional red reflector are ready for operation.
- Move the sprayer boom to the transport position and secure mechanically.
  - If a working width reduction of the outer elements is mounted, unfold it for transporting purposes
- The cabin ladder must be folded up.
- Pantera H: lower the machine again for travelling on the road.
- When filling the spray liquid tank, note the permissible total weight or the permissible wheel and axle loads.
- The induction bowl must be pivoted up to the transport position and secured mechanically.
- The ladder on the fuel tank must be pivoted up to the transport position and secured mechanically.
- If a boom extension (option) is mounted, move it into the transport position.
- Switch the work lights off during transport to avoid blinding other motorists.
- Lower the lifting module (option) when transporting so that the maximum transport height of 4 m is maintained.
- The row sensors of the PSR steering system with the attachment kit (optional) must be raised in the transport position.

## 10 Driving with the Pantera

### 10.1 Starting the engine

1. Switch on the power supply using the main switch.
  2. Check the neutral position of the driving lever.
  3. Turn the ignition key to the start position. When the engine starts and runs, let go of the key.
- After standing for a long while, the **AMADRIVE** needs 90 seconds until the display appears on the screen.
- You are however, already able to start driving.
4. Allow the engine to run warm before you start to drive, do not start with full speed.



The diesel engine does not have a pre-glowing function.



#### CAUTION

It is not possible to start the engine by jump starting (towing). Damage will be caused to the drive when attempting this!

Always use an auxiliary battery when the battery of the machine is empty.

### 10.2 Driving with the machine



#### DANGER

**Risk of accidents when driving on the road in field mode.**

When driving on the road, select the road mode.



#### DANGER


**Risk of an accident due to overtiredness and lack of concentration.**

Make sure enough breaks are taken. Reduced times at the steering wheel are necessary due to the influence of noise and vibrations.

1. Start the engine.

After starting the engine:

2. If necessary, release the parking brake.

3. Push rocker switch  in position **+** and keep pressed.

→ The ladder pivots to the transport position.

→ Observe the **AMADRIIVE** display.

4. Push rocker switch  downwards.

→ Select road mode for driving on roads and field mode for driving on fields.

5. Adjust the track width.

→ When driving on public roads, the wheels are not allowed to protrude over the outer dimensions of the machine.

6. Start to drive using the drive actuator

7. For braking, use the drive actuator or, where necessary, the brake pedal at the same time.



#### CAUTION

##### **Perform a track correction on a daily basis!**

Otherwise there is a risk of causing an accident due to the track being set incorrectly, see page 63.

## 10.3 Stopping the engine



Park the implement on a level parking surface with solid ground.

1. Depending on the previous loading, allow the engine to run idle for a few minutes.
2. Move the driving lever to neutral.
3. Actuate the hand brake via the switch.



4. Push rocker switch in position  and keep pressed.

→ The ladder pivots to the park position.

→ Observe the **AMADRIVE** display.

5. Turn the ignition key back and pull it out of the lock.

→ The motor is stopped.

6. After switching off the engine, wait at least 18 seconds and then switch off the main switch.



Cooling-down when the engine is running is especially important for the turbocharger bearing. The turbocharger is cooled with oil as long as the engine is running.

Stopping the engine immediately after work may lead to very high temperatures in the turbocharger. This will reduce the operating life of the turbocharger considerably.



### WARNING

#### Risk of injuries from falling from the cabin.

- When leaving the cabin, make sure that the ladder has been lowered completely.  
You cannot see if the ladder has been lowered from inside the cabin.
- Climb up and down the ladder facing the machine (3 point rule).

## 11 Using the field sprayer



When using the machine, observe the information in the following sections:

- "Warning symbols and other labels on the machine" starting on page 18 and
- "Safety information for the user", starting on page 27 ff.

Observing this information is important for your safety.



### WARNING

**Risk of contusions, drawing in and catching during machine operation without the intended protective equipment!**

Only ever start up the machine when the protective equipment is fully installed.



Pay attention to the increased risk of tipping over if the track width is small.

### 11.1 Using the machine with comfort package

The comfort package comprises a remote control filling and cleaning. It enables the intake side to be switched using:

- the control terminal,
- the **B** button on the control terminal.

Functions of the comfort package:

Before spraying:

- Fill the spray liquid tank via the suction coupling with automatic filling stop.

While spraying:

- Automatic filling level dependent regulation of the main agitator.

After spraying:

- Remote controllable dilution of the remaining amount.
- Remote controllable cleaning of the machine when the machine is filled or empty.
- Cleaning the filled machine intake filter.



For using the comfort package, see the software AMABUS / ISOBUS operating instructions, chapter Comfort Package.

## 11.2 Preparing for spraying operation



- The field sprayer must be operating properly in order to guarantee correct application of the crop protection agent. Have the field sprayer tested regularly on a test rig. Rectify any deficiencies immediately.
- Make sure of using the correct filter equipment, see page 105
- Clean the field sprayer thoroughly before applying a different crop protection agent.
- Flush the nozzle line before:
  - each time changing a nozzle.
  - before rotating the multiple-nozzle head to another nozzle.

See the section on "Cleaning", page 202
- Fill the flushing water tank and the fresh water tank.

## 11.3 Preparing the spray liquid



### WARNING

#### **Risk of accidental contact with crop protection agent and/or spray liquid.**

- Always induct the crop protection agent into the spray liquid tank using the induction bowl.
- Swivel the induction bowl into the filling position before pouring in crop protection agent.
- Observe the safety regulations on physical protective equipment and breathing apparatus for use when handling crop protection agent and preparing the spray liquid, in the instructions for use of the crop protection agent.
- Do not prepare the spray liquid in the vicinity of wells or surface water.
- Avoid leaks and contamination with crop protection agent and/or spray liquid through appropriate conduct and wearing appropriate physical protection equipment.
- To avert risks to third parties, do not leave the prepared spray liquid, unused crop protection agent or used crop protection agent canisters and the uncleaned field sprayer unattended.
- Protect contaminated crop protection agent canisters and the contaminated field sprayer from precipitation.
- During and after preparing the spray liquid, ensure sufficient cleanliness in order that risks may be kept as low as possible (e.g. thoroughly wash used gloves before removing them and dispose of the washing water and cleaning fluid in the proper manner).



- The prescribed water and agent spray rate can be found in the directions for use of the crop protection agent.
- Please read intently the directions for use of the agent and observe the specified precautions!



#### WARNING

##### **Danger for persons / animals due to accidental contact with spray liquid when filling the spray liquid tank!**

- Wear personal protective equipment when working with crop protection agents / releasing spray liquid from the spray liquid tank. The required personal protective equipment depends on the information provided by the manufacturer, the product information, the instructions for use, the safety data sheet or the instruction manual for the crop protection agent to be used.
- Never leave the field sprayer unattended when filling it.
  - Never fill the spray liquid tank above the nominal volume.
  - Never exceed the permissible payload for the field sprayer when filling the spray liquid tank. Always pay attention to the respective specific weight of the liquid to be filled.
  - When filling, continuously watch the fill level indicator to prevent overfilling the spray liquid tank.
  - When filling the spray liquid tank on a sealed surface, make sure that no spray liquid gets into the waste water system.
- Before filling, check the field sprayer for damage, such as leaky containers and hoses and make sure all the control elements are in the correct position.



While filling, pay attention to the permissible load capacity of your field sprayer. Always take the differing specific weights [kg/l] for the individual liquids into account while filling your field sprayer.

#### Specific weights of different liquids

Liquid	Water	Urea	AUS	NP solution
Density [kg/l]	1	1.11	1.28	1.38

## Using the field sprayer



- As it is difficult to dispose of residues in an environmentally-friendly manner, carefully calculate the required filling quantity or refill quantity to avoid leaving any residue at the end of the spraying operation.
  - To calculate the required refill quantity for final filling of the spray liquid tank, use the "Filling table for remaining spray area". To do this, subtract the technical, undiluted residue in the sprayer boom from the calculated refill quantity!

Refer to the section "Filling table for remaining areas".

## Procedure

1. Determine the required water and agent spray rate by consulting the directions for use of the crop protection agent.
2. Calculate the filling quantity or refill quantity for the area to be treated.
3. Fill the machine and blend in the agent.
4. Agitate the spray liquid before commencing spraying operations in accordance with the instructions of the spraying agent manufacturer.



Fill the machine preferably using a suction hose and blend in the agent while filling.  
The induction area is thereby flushed with water constantly.



- During the filling process, start blending in the agent once the tank filling level has reached more than 20%.
- When using more than one agent:
  - Clean the canister immediately after each induction of an agent.
  - Flush the induction port after each induction of an agent.



- When filling, no foam must escape from the spray agent tank.  
The addition of a froth-inhibiting agent also prevents the spray liquid tank from frothing over.



The agitators normally remain switched on from the initial filling to the end of the spraying operation. On this account, the instructions of the agent manufacturer are decisive.



- With the agitator running, feed the water-soluble plastic bag directly into the spray agent tank.
- Before spraying, fully dissolve the urea by circulating the liquid. When dissolving large quantities of urea, the temperature of the spray liquid falls more sharply; the urea consequently dissolves more slowly. The warmer the water, the faster and more completely the urea can dissolve.



- Carefully wash the empty agent canisters, render them unusable, collect and dispose of them in a proper manner. Do not reuse them for other purposes.
- If only spray liquid is available for washing the agent canisters, first use this to carry out preliminary cleaning. Then wash them meticulously when clear fresh water is available, e.g. before preparing the next load for the spray liquid tank or when diluting the residue from the last load.
- Carefully wash out the empty agent tank (e.g. using canister flushing) and add the flushing water to the spray liquid!



High degrees of water hardness above 15° dH (German degrees of hardness) can lead to lime deposits, which may impede the functioning of the implement and must be removed at regular intervals.

### 11.3.1 Calculating the filling and re-fill quantity



To calculate the required re-fill quantity for final filling of the spray liquid tank use the "Filling table for remaining spray area", page 173.

#### Example 1:

##### The following are given:

Tank nominal volume	1000 l
Residue in the tank	0 l
Water consumption	400 l/ha
Agent required per ha	
Agent A	1.5 kg
Agent B	1.0 l

##### Question:

How many litres of water, how many kg of Agent A and how many litres of Agent B must be used to treat a surface of 2.5 ha in area?

##### Answer:

Water:	400 l/ha	x	2.5 ha	=	1000 l
Agent A	1.5 kg/ha	x	2.5 ha	=	3.75 kg
Agent B	1.0 l/ha	x	2.5 ha	=	2.5 l

#### Example 2:

##### The following are given:

Tank nominal volume	1000 l
Residue in the tank	200 l
Water consumption	500 l/ha
Recommended concentration	0.15 %

##### Question 1:

How many litres or kg of agent are needed to fill the tank?

##### Question 2:

How large is the area to be treated in ha if a residue of 20 l remains in the tank after spraying?

#### Formula and answer to Question 1:

$$\frac{\text{Refill amount of water [l]} \times \text{Concentration [\%]}}{100} = \text{Addition of agent[l or kg]}$$

$$\frac{(1000 - 200) \text{ [l]} \times 0.15 \text{ [\%]}}{100} = 1.2 \text{ [l or kg]}$$

### Formula and answer to Question 2:

$$\frac{\text{Quantity of liquid available [l]} - \text{Residue [l]}}{\text{Water consumption [l/ha]}} = \text{Area to be treated [ha]}$$

$$\frac{1000 \text{ [l]} (\text{tank nominal volume}) - 20 \text{ [l]} (\text{residue})}{500 \text{ [l/ha]} \text{ Water consumption}} = 1.96 \text{ [ha]}$$

### 11.3.2 Filling table for remaining spray area



To calculate the required re-fill quantity for final filling of the spray liquid tank use the "Filling table for remaining spray area". Deduct the residue in the spray line from the calculated re-fill quantity. See "Spray lines" section, page 123.



The specified re-fill quantities apply for a spray rate of 100 l/ha. For other spray rates, the re-fill quantity increases by a multiple.

Distance travelled [m]	Re-fill quantities [l] for sprayer booms with working widths [m] of									
	20m	21m	24 m	27 m	28 m	30 m	32 m	33 m	36 m	40 m
10	2	2	2	3	3	3	3	3	4	4
20	4	4	5	5	6	6	6	7	7	8
30	6	6	7	8	8	9	10	10	11	12
40	8	8	10	11	11	12	13	13	14	16
50	10	11	12	14	14	15	16	17	18	20
60	12	13	14	16	17	18	19	20	22	24
70	14	15	17	19	20	21	22	23	25	28
80	16	17	19	22	22	24	26	26	29	32
90	18	19	22	24	25	27	29	30	32	36
100	20	21	24	27	28	30	32	33	36	40
200	40	42	48	54	56	60	64	66	72	80
300	60	63	72	81	84	90	96	99	108	120
400	80	84	96	108	112	120	128	132	144	160
500	100	105	120	135	140	150	160	165	180	200

Fig. 124

#### Example:

Distance still to travel (travel distance): 100 m

Spray rate: 100 l/ha

Working width: 21 m

Number of part width sections: 5

Spray line residue: 5.2 l

1. Calculate the re-fill quantity using the filling table. For the example, the re-fill quantity is 21 l.
2. Deduct the residue in the spray line from the calculated re-fill quantity.

**Required re-fill quantity: 21 l – 5.2 l = 9.8 l**

### 11.3.3 Filling the spray liquid tank via the suction port and blend in the agent at the same time



Preferably perform the filling from a suitable container and not from an open water access point.



#### **WARNING**

**Damage to the suction valve chest caused by pressure filling via the suction connection!**

The suction connection is not suitable for pressure filling. This also applies for filling from a higher-elevation source.



On the control terminal, call up the Fill menu from the Work menu in order to enter the re-fill quantity and to use the automatic filling stop.







Flush the agents around when filling. If they are flushed in afterwards, this may lead to the spray liquid tank being overfilled.

1. Fill the flushing water tank first.
2. Connect the suction hose to the filling connection and water access point.
3. Start the drive motor on the machine and secure the machine against accidentally driving off.

4.  /  Switch on the pump.



Fig. 125

5.  Suction chest in position .
  6. Lower the induction bowl.
  7.  Set the function selector to flushing.
  8. Open the induction bowl lid.
  9.  Switch on injector operation.
- The tank is automatically filled up the target level specified.
- The filling process can be interrupted at any time.
10. Start blending in the agent when more than 20% of the tank filling level has been reached.

#### Blending in the agent:



#### DANGER

Contact with spray agents and spray liquids.

Wear personal protective equipment.

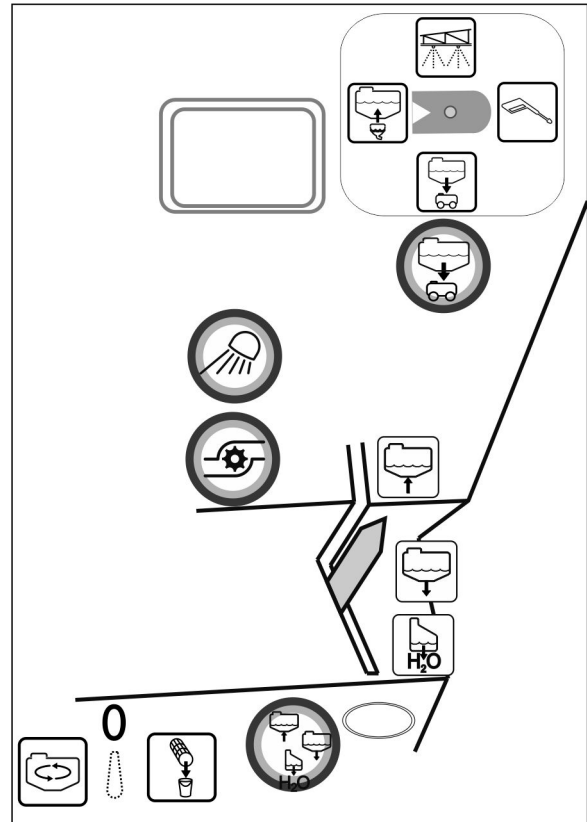


Fig. 126

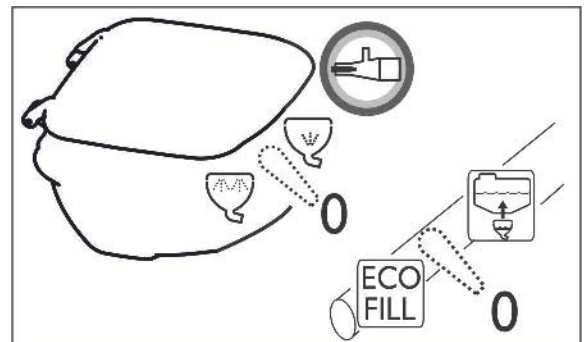







Fig. 127

Blending in the agent via Ecofill, see page 179.


11. Switch tap  in position .
12. Pour the quantity of agent calculated and measured for filling the tank into the induction bowl (max. 60 l).→ The agent is dissolved directly and evacuated.



## Using the field sprayer

### Flush the canister:

13. Switch tap  in position .
  14. Wash the canister or other containers using the canister flushing equipment.
  15. Press the canister down for at least 30 secs.
- Canister is flushed with flushing water.
16. Switch tap  in position **0**.
  17. Flush out the induction bowl with the spray gun.

### Once the tank has reached the set filling level:

- If the filling level entered is reached, then filling is ended automatically.
18. Control terminal:  Apply the value for the current fill level.
- After the filling, the intake side is automatically switched over to spraying.

19.  Switch off injector operation.
- Switch off injector operation.
20.  Set the function selector to Spraying.
  21. Close the cover on the induction bowl.
  22. Raise the induction bowl into transport position and check the mechanical lock.
  23. Decouple the suction hose from the filling connection.
- The suction hose is still filled with water

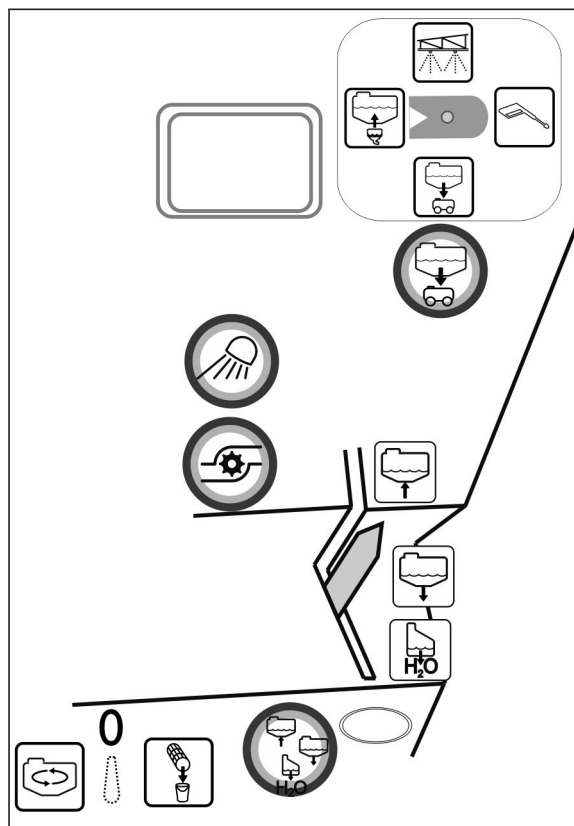


Fig. 128

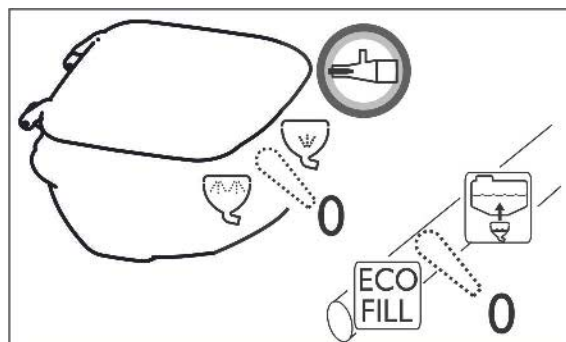


Fig. 129



After the filling process:

- Spray fluid tank: Pumps continue to run (agitator function), however they can also be switched off manually as well.

### Filling from open water access points



Follow regulations closely when filling the spray liquid tank from an open water access point using a suction hose.

### 11.3.4 Filling the spray liquid tank via the pump pressure connection and flushing in the agent

1. Fill the flushing water tank first.
2. Connect the pressure line to the filling connection on the control terminal.
3. Open the stop tap on the filling connection.
4. Start blending in the agent when more than 20% of the tank filling level has been reached.







#### Blending in the agent:






#### **DANGER**

**Contact with spray agents and spray liquids.**

Wear personal protective equipment.

5.  /  Switch on the pumps.
6. Lower the induction bowl.
7.  Set the function selector to Flushing.
8. Open the induction bowl lid.
9.  Switch on injector operation.
10. Switch tap  in position .
11. Pour the quantity of agent calculated and measured for filling the tank into the induction bowl (max. 60 l).→ The agent is dissolved directly and evacuated.

#### Rinsing the canister:

12. Switch tap  in position .
  13. Wash the canister or other containers using the canister flushing equipment.
  14. Press the canister down for at least 30 secs.
- Canister is flushed with flushing water.
15. Switch tap  in position **0**.
  16. Rinse out the induction bowl with the spray gun.

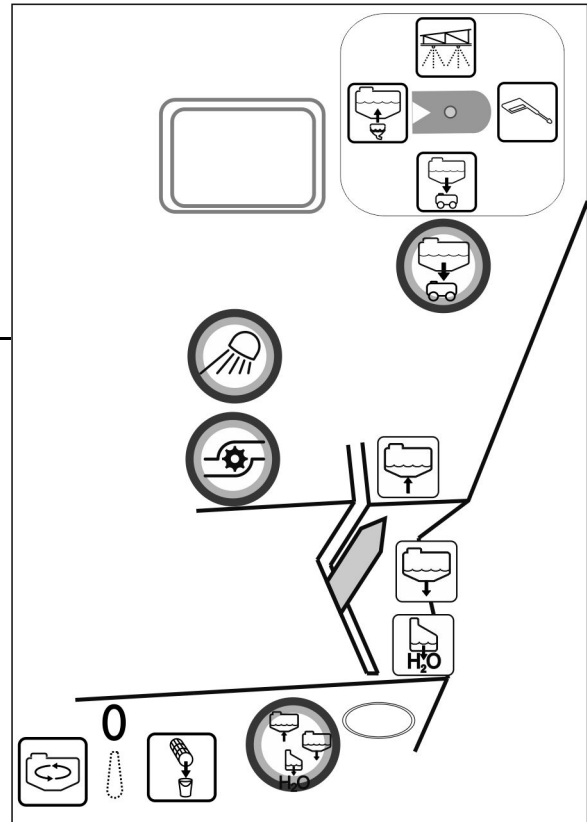


Fig. 130

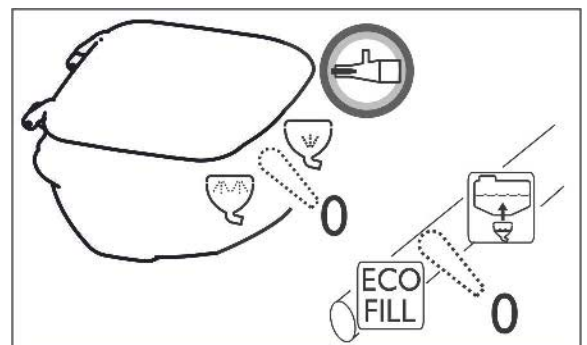


Fig. 131

## Using the field sprayer

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17. Switch off injector operation.



18. Set the function selector to Spraying.

19. Close the induction bowl cover.

20. Raise the induction bowl to transport position and check the mechanical lock.

### Once the tank has reached the set filling level:

21. Close the stop tap on the filling connection.  
22. Decouple the pressure line.



In order to avoid overfilling, close the stop tap on the filling connection when reaching 80 percent of the filling level at the latest.

→ This allows you to clean the canister with no hurry.



## 11.3.5 Filling the flushing water tank


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Before flushing agents in, the flushing water tank needs to be filled so that flushing water is available at the induction bowl


### 11.3.6 Flushing in with Ecofill

1. Start the drive motor on the machine and secure the machine against accidentally driving off.
2.  /  Switch on pumps.
3. Lower the induction bowl.
4. Connect Ecofill tank using Ecofill connector.

5.  Set the function selector to flushing.


6.  Switch on injector operation.

1.  Switch on Ecofill filling.

2.  Switch off Ecofill filling once the required quantity has been evacuated from the Ecofill tank.


#### Rinsing the Ecofill counter:


1. Decouple the hose from the Ecofill container and couple it to the flushing foot.

2.  Switch on Ecofill filling.

→ The counter is flushed.

3.  Switch off Ecofill filling after flushing.

4.  Switch off injector operation.

5.  Set the function selector to Spraying.
6. Disconnect the counter.

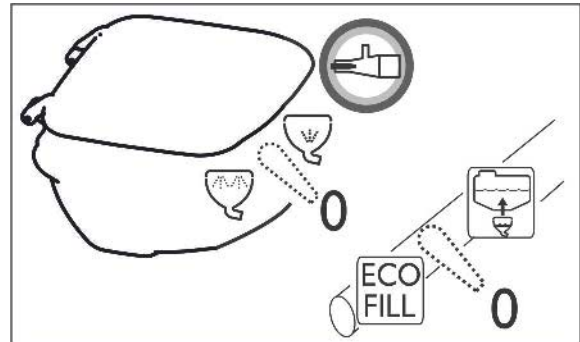


Fig. 132

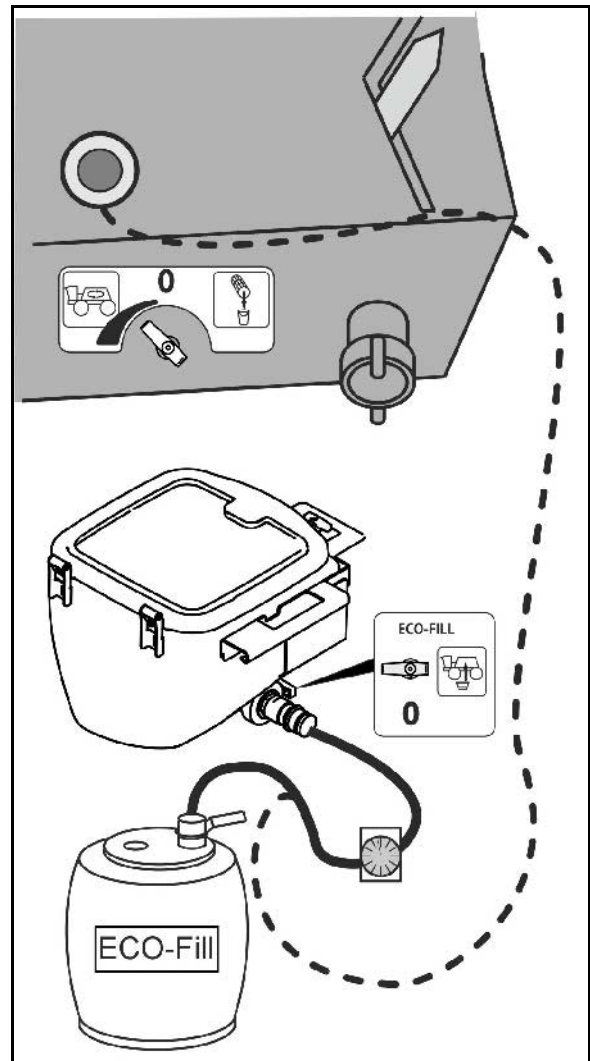


Fig. 133

## 11.4 Spraying operation

### Special instructions for spraying operation



- Test the field sprayer by carrying out calibration
  - before the start of the season.
  - in the case of deviations between the actual indicated spray pressure and the spray pressure prescribed in the spray table.
- Before starting spraying, determine the exact spray rate required, referring to the instructions of the crop protection agent manufacturer.
- Before you start spraying, enter the required spray rate (target rate) in control terminal.
- During spraying operation, precisely adhere to the required spray rate [l/ha]
  - in order to achieve the best possible results from your crop protection measure.
  - to avoid unnecessary pollution of the environment.
- Select the required nozzle type from the spray table before spraying starts, taking account of
  - the intended operational speed,
  - the required spray rate and
  - the required atomisation characteristic (fine, medium or coarse-dropped) of the crop protection agent used for the crop protection measure.
- Refer to the section "Spray tables for flat-fan, anti-drift, injector and airmix nozzles", Seite 272.
- Select the required nozzle size from the spray table before spraying starts, taking account of
  - the intended operational speed,
  - the required spray rate and
  - the target spray pressure.
- Refer to the section "Spray tables for flat-fan, anti-drift, injector and airmix nozzles", Seite 272.
- Select a low operational speed and a low spray pressure to prevent wastage from drifting.
- Refer to the section "Spray tables for flat-fan, anti-drift, injector and airmix nozzles", Seite 272.
- At wind speeds of 3 m/s, take additional drift reduction measures (refer to the section "Measures for drift reduction", page Seite 183.



- Refrain from use if average wind speeds top 5 m/s (leaves and thin twigs move).
- Only switch the sprayer boom on and off during travel to avoid the application of excessive doses.
- Avoid the application of excessive doses through overlapping caused by imprecise bout tracking from one spray path to the next and/or when cornering on the headland with the sprayer boom switched on.
- During spraying operation, constantly check actual spray liquid consumption with reference to the area treated.
- Calibrate the flow meter if there are any differences between the actual and displayed spray rate.
- Calibrate the distance sensor (pulses per 100 m) if there are differences between the actual distance covered, and that displayed.  
See control terminal instruction manual.
- If spraying operation is interrupted due to bad weather, clean the suction filter, the pump, the valve chest and the spray lines. See page 194.



- Spray pressure and nozzle size influence drop size and the volume of liquid sprayed. The higher the spray pressure, the smaller the droplet diameter of the spray liquid. The smaller droplets are subject to increased, undesirable drifting.





- The agitator normally remains switched on from filling to the end of spraying operation. On this account, the instructions of the agent manufacturer are decisive.
- If there is a sudden significant drop-off in spray pressure, the spray liquid tank is empty.
- If the spray pressure drops off while conditions remain otherwise unaltered, the suction or pressure filter are blocked.


## 11.4.1 Applying the spray liquid


### Example:

Required spray rate:	200 l/ha
Intended operational speed:	8 km/h
Nozzle type:	LU/XR
Nozzle size:	'03'
Permissible pressure range for the spraying nozzle when fitted	min. pressure 1 bar max. pressure 5 bar
Target spray pressure:	3.7 bar
Permissible spray pressure:	min. 2.8 bar and max. 4.6 bar

1. Prepare and stir the spray liquid correctly in accordance with the instructions from the crop protection agent manufacturer.

2.  Suction chest in position .

3.  Set the function selector to Spraying.


4.  Adjust the additional agitator. The stirring performance can be infinitely adjusted.



In order to achieve the maximum application rate, switch off the additional agitator, position 0.



The main agitator is automatically controlled depending on the filling level.


5. AMADRIVE:  If necessary, switch on pumps and run them at pump operating speed.

6. Switch on the control terminal.

7. Fold out the sprayer boom.

8. Depending on the nozzles being used, set the working height of the sprayer boom (gap between the nozzles and the crop) according to the spray table.

9. Enter the value for the required spray rate in the control terminal.

10. When setting off, switch on  Spraying on the control terminal.

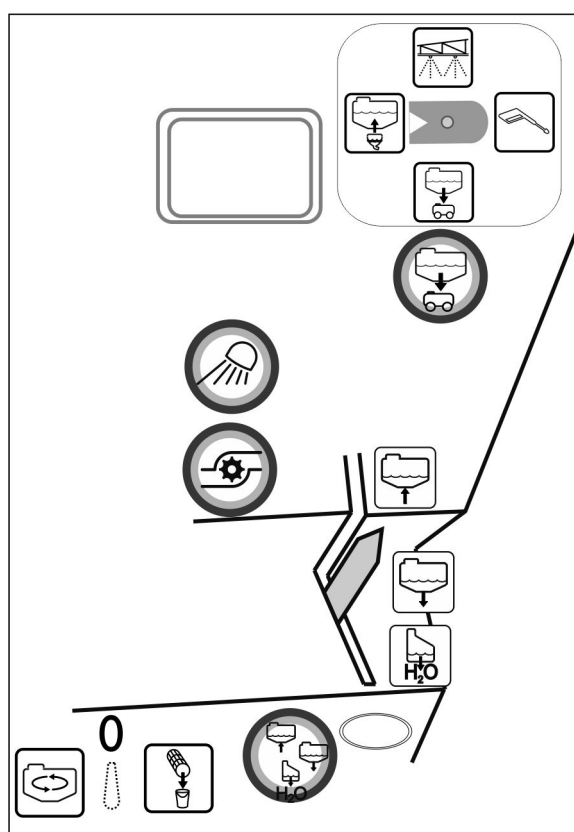


Fig. 134

### Driving to the field with the agitator switched on

---

Switch off control terminal.

→ The agitator operates with a filling level-dependent intensity.

### 11.4.2 Drift reduction measures

---

- Reschedule treatment for the early morning or the evening hours (there is generally less wind).
- Choose larger nozzles and a higher water spray rate.
- Precisely maintain the working height of the boom, because the risk of drifting rises very sharply as the distance between the nozzles increases.
- Reduce forward speed (to less than 8 km/h).
- Use so-called anti-drift (AD) nozzles or injector (ID) nozzles (nozzles which produce a high proportion of coarse drops).
- Observe the distance requirements of the respective crop protection agent

## 11.4.3 Dilute the spray liquid with rinsing water



The spray agent can be diluted for 2 reasons:

- To get rid of excess residual quantities.

Excess residual quantities in the spray liquid tank are initially diluted with 10 times the quantity of flushing water to then spray them over the field which has already been sprayed.

- Increase the stock of spray liquid to treat a remaining area.






When spreading residue, observe the maximum permissible application quantity of the agent on areas already treated.




The spraying agent is diluted with the easy-to-use controls on the control terminal.

The spray line is flushed on machines with nozzle control. When re-starting the spraying, two to five minutes will elapse until the spraying agent can be spread.

1. Control terminal:  Start dilution.  
→ Flushing water is fed to the tank via the additional agitator..
2. Observe the fill level of the tank.
3. Control terminal:  Finish dilution.

4.  Treat the remaining area,  
or respectively

Apply out the excess residues on the surfaces already treated. Keep applying the diluted residues until air escapes from the nozzles.

5. Control terminal:  Switch of spraying.
6. Cleaning the field sprayer.

<b>Zustand:</b>		<b>spülen</b>	
<b>Füllstand:</b>	<b>2300</b>	<b>Liter</b>	
<b>verdünnen:</b>		<b>aus</b>	
<b>Behälterinnen-</b>		<b>aus</b>	
<b>reinigung:</b>			
<b>Rührwerk:</b>		<b>automatisch</b>	
<b>Rührdruck:</b>		<b>3.5 bar</b>	

Fig. 135

## 11.5 Residual amounts

**There are three types of residue:**

- excessive residue remaining in the spray liquid tank when the spraying operation is finished
  - This excessive residue is discharged diluted or pumped-out and disposed of.
- the technical residue that remains in the spray liquid tank, the suction chest and the spray line when the spray pressure drops off by 25%

The suction chest is composed of the suction filter, pump and pressure controller sub-assemblies. Observe the values for the technical residues given on page 123.

  - This technical residue is discharged diluted onto the field while cleaning the field sprayer.
- The final residue that remains in the spray liquid tank, the suction chest and the spray line after being cleaned with air discharge from the nozzles.
  - This final diluted residue is drained off after cleaning.

### 11.5.1 Disposing of the residues





- Make sure that the residue in the spray line continues to be sprayed in an undiluted concentration. Always spray this residue on an untreated area. The distance needed to use up this undiluted residue can be found in the section "Technical Data - spray lines", page 123. The residue contained in the spray line is dependent on the sprayer boom working width.
- Switch on the agitator for spraying the spray liquid tank empty when the residue in the spray liquid tank is only 5% of the nominal volume. With the agitator switched on, the technical residue increases in comparison to the specified values.
- Dispose of the collected spray liquid residue in accordance with the corresponding legal guidelines. Collect the spray liquid residues in suitable containers. Allow the residual quantities of spray liquid to dry on. Dispose of the residual quantities of spray liquid in the correct waste disposal.

## 11.5.2 Draining the spray liquid tank using the pump (Option)

1. Connect the drainage hose to the drainage connection using a two-inch camlock coupling.


2.  Switch on pumps.


3.  Set the function selector to Emptying.

4.  Start emptying (stop until valve has opened).

→ Spray liquid tank is emptied.

After emptying:

5.  Switch off pump.

6.  Set the function selector to Spraying

7. Disconnect the hose.

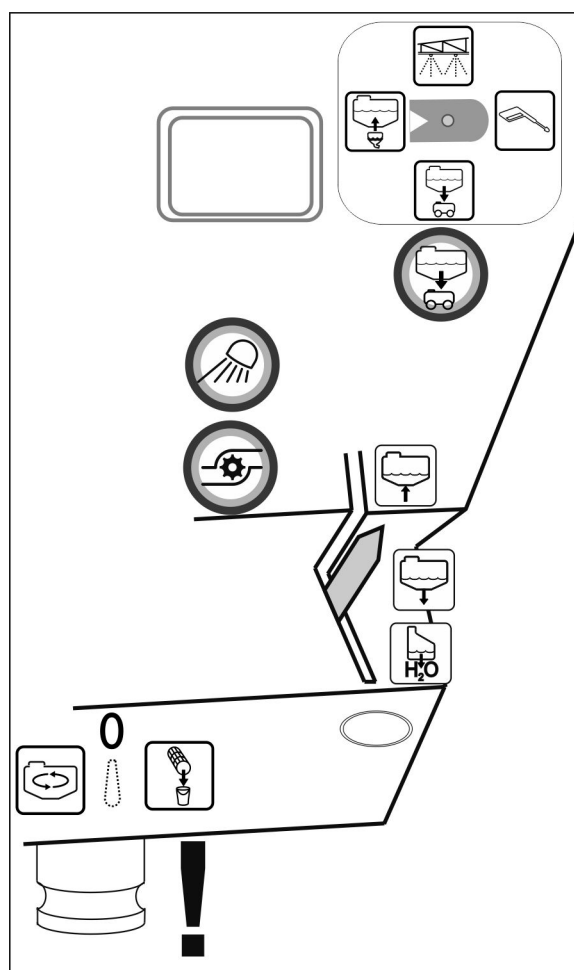


Fig. 136



To interrupt the emptying process:



Set the function selector to Spraying.

## 11.6 Cleaning the field sprayer



- Keep the exposure time as short as possible, for example by daily cleaning of the utensils after the spraying operation is completed. Do not leave the spray liquid in the spray liquid tank for an excessively long period, e.g. overnight.

The service life and reliability of the field sprayer mainly depend on how long the materials of the field sprayer are exposed to the crop protection agent.

- Clean the field sprayer thoroughly before applying a different crop protection agent.
- Carry out the cleaning process on the field where you last carried out the treatment.
- Carry out the cleaning process using water from the flushing water tank.
- You can carry out the cleaning process in the courtyard if you have a collecting facility installed (e.g. a Biobed).

Observe all national regulations involved.

- When spreading residues on areas already treated, observe the maximum permissible spray rate of the agents.

## 11.6.1 Cleaning the sprayer with the tank empty



- Clean the spray liquid tank directly after spraying!
- The flushing water tank must be completely filled.
- The cleaning process should be carried out in a threefold reduction procedure.




Cleaning is carried out with the intuitive controls on the control terminal.

- The flushing water tank must be filled with at least 150 litres of water.

### Cleaning:

Prerequisite: Fill level of the tank < 1 percent (tank empty if possible).


1. Set the pump drive pumping speed to 450 rpm.
  2. Control terminal:  Start cleaning.
- Main and additional agitator are flushed, tank inside cleaning switched on.
- When the fill level of the tank is 4 percent, cleaning is cancelled automatically.
- For machines equipped with nozzle control, the spray line is also cleaned automatically.

<b>Zustand:</b>		<b>spülen</b>	
<b>Füllstand:</b>	<b>2300</b>	<b>Liter</b>	
<b>verdünnen:</b>		<b>aus</b>	
<b>Behälterinnen-</b>		<b>aus</b>	
<b>reinigung:</b>			
<b>Rührwerk:</b>		<b>automatisch</b>	
<b>Rührdruck:</b>	<b>3.5 bar</b>		

Fig. 137

### Empty tank:



3. Control terminal:  Switch on spraying.
4. Spreads residues already diluted on the treated area when driving.


Switch the sprayer on and off at least ten times whilst travelling.



The valves and return lines are flushed by switching on and off.

- Keep flushing the diluted residues until air escapes from the nozzles.




5. Control terminal:  Switch off spraying.
6. Repeat steps 1 to 3 once or twice..
7. Drain the final residue, see page 189.
8. Cleaning the suction filter and pressure filter, see page 190, 192.


## 11.6.2 Draining the final residue



- On the field: Spread the final residues over the field.
- In the courtyard:
  - Place a suitable collecting container under the drain opening of the suction chest and the drain hose for the pressure filter and collect the final residues.
  - Dispose of the collected spray liquid residue in accordance with the corresponding legal guidelines.
  - Collect the spray liquid residues in suitable containers.

1. Switch off the pump.

2. Control terminal:  Suction chest to Spraying /

Suction chest button in position 

3. Additional agitator in position 

4. Open the stop tap.

→ Evacuate the final residues.

5. Close the stop tap again

and additional agitator in position **0**.

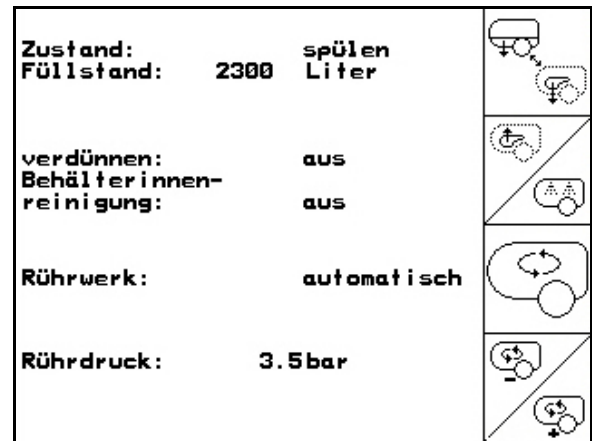


Fig. 138

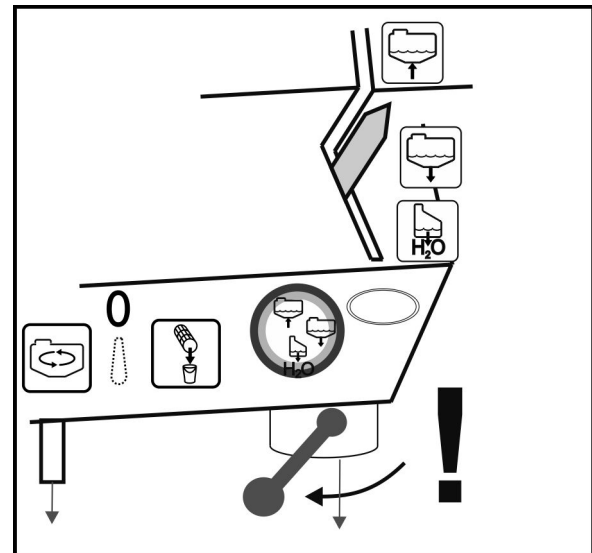


Fig. 139

## 11.6.3 Cleaning the suction filter when tank is empty



- Clean the suction filter (Fig. 143) on a daily basis after cleaning the field sprayer.
- Grease the O-ring seal at the bottom of the suction filter (Fig. 143/4).  
Make sure that the O-ring seals are correctly fitted.

1. Unscrew the cover of the suction filter (Fig. 143/2).
2. Remove the cover with suction filter (Fig. 143/3) and clean with water.
3. Reassemble the suction filter in the reverse sequence.
4. Check the filter housing for leaks.

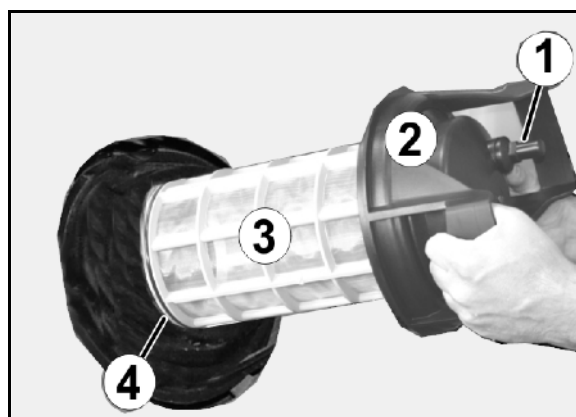







Fig. 140

## Cleaning the suction filter when tank is full

To clean the suction filter when the tank is full, the filling menu must be called up.

1. Control terminal:  Call up Fill menu.
1. AMADRIE:  If applicable, switch on pumps and run them at pump operating speed.
2. Attach the sealing cap to the suction coupling.
3.  Set function selector to Flushing.
4.  Suction test in position .

→The contents of the filter cup are sucked out.

5. Unscrew the cover of the suction filter (Fig. 143/2).
6. Activate the relief valve on the suction filter (Fig. 143/1).
7. Remove the cover with suction filter (Fig. 143/3) and clean with water.

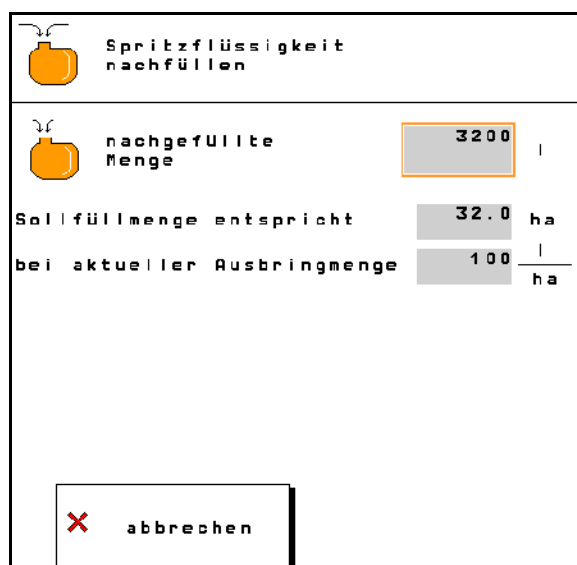





Fig. 141

8. Reassemble the suction filter in the reverse sequence.

9. Check the filter cover for leaks.

10.  Suction chest in position .

11.  Set the function selector to Spraying

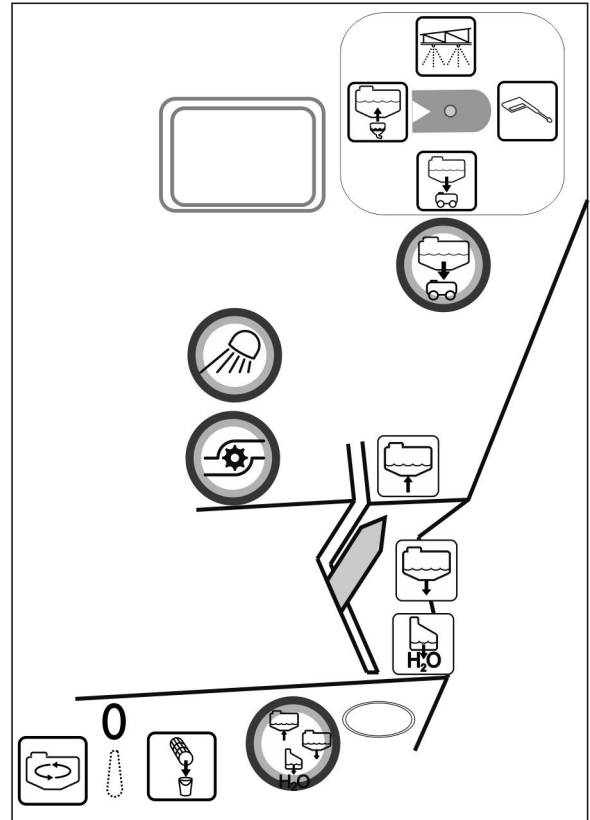


Fig. 142

## 11.6.4 Cleaning the pressure filter

### Cleaning the pressure filter when the tank is empty

1. Undo the sleeve nuts.
2. Remove the pressure filter (Fig. 146/1) and clean with water.
3. Refill the pressure filter.
4. Check the screw connection for leaks.

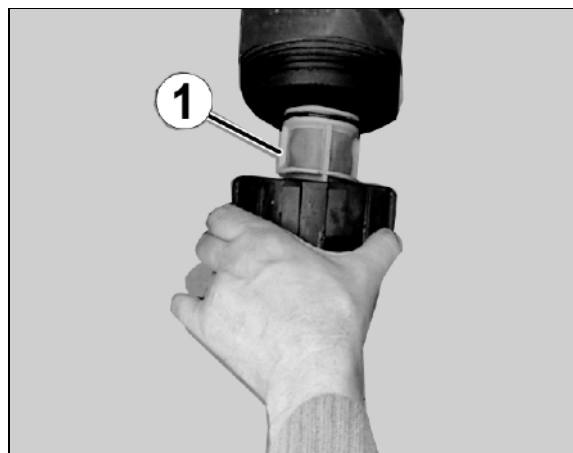








Fig. 143

### Cleaning the pressure filter when the tank is full

1.  Suction chest in position .
  2.  Set the function selector to Flushing.
  3. Additional agitator in position .
- Drain the residue into the pressure filter.
4. Undo the sleeve nuts.
  5. Remove the pressure filter (Fig. 146/1) and clean with water.
  6. Refill the pressure filter.
  7. Check the screw connection for leaks.
  8. Additional agitator in position .

### 11.6.5 Exterior cleaning

1. AMADRIVE:  Switch on pump if necessary.

2.  Set the function selector to External cleaning.

3. Clean the field sprayer and the sprayer boom with the spray gun.

4.  Set the function selector to Spraying.

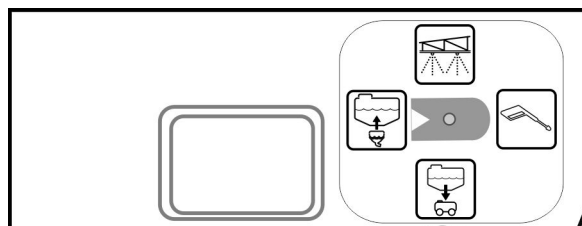


Fig. 144

### 11.6.6 Cleaning the sprayer during a critical agent change

1. Clean the sprayer in three runs as always, see page 188
2. Fill up flushing water tank.
3. Clean the sprayer, two runs, see page 188.
4. If the sprayer has been previously filled via the pressure connector:  
Clean the induction bowl with the spray gun and evacuate the contents of the induction bowl.
5. Drain the final residue, see page 189.
6. By all means, clean the suction filter and pressure filter, see page 190, 192.
7. Clean the sprayer, one run, see page 188.
8. Drain the final residue, see page 189.

### 11.6.7 Contact of the implement with liquid fertiliser



Liquid fertiliser that spills or escapes causes corrosion damage to the implement, in particular to the engine and surrounding assemblies.


Clean points thoroughly with clear fresh water!

## 11.6.8 Flushing the sprayer with the tank filled (work interruption)



- If spraying operations must be interrupted because of bad weather, it is important to clean the suction chest (suction filter, pumps, pressure controller) and the spray line.
- Flushing is controlled using the intuitive controls on the control terminal.

1. AMADRIVE:  if necessary, switch on pumps and run at pump operating speed.

2. Control terminal:  set suction chest to suction rinsing water.

→ Flushing water is sucked in, close agitators.

**Without nozzle control:**

3. Control terminal:  switch on spraying.


Spread at least 50 litres of flushing water to an untreated area when driving.

→ The sprays are cleaned with flushing water.

- **Hopper, agitators are not clean!**
- **The spray agent concentration in the tank is unchanged.**

**With nozzle control:**

→ The sprays are cleaned with flushing water. For this purpose, use two litres of flushing water for each working width meter (observe the filling level).

4. Control terminal:  briefly switch on Spraying.

→ The nozzles are flushed.

5. Switch the pump off immediately as the agent concentration reduces.

- **Hopper, agitators are not clean!**
- **The spray liquid concentration in the tank has changed.**

<b>Zustand:</b>		<b>spülen</b>	
<b>Füllstand:</b>	<b>2300</b>	<b>Liter</b>	
<b>verdünnen:</b>		<b>aus</b>	
<b>Behälterinnen-</b>		<b>aus</b>	
<b>reinigung:</b>			
<b>Rührwerk:</b>		<b>automatisch</b>	
<b>Rührdruck:</b>		<b>3.5 bar</b>	

Fig. 145

### Continuing the spraying operation



Before continuing with the spraying operation, activate the pump for five minutes at 540 min<sup>-1</sup> and switch on the agitators completely.

## 12 Faults



### WARNING

**Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through**

- **unintentional falling of raised, unsecured machine parts.**
- **unintentional start-up and rolling.**

Secure the machine against unintentional start-up and rolling before eliminating faults on the machine. See page 160.

Wait for the machine to stop before entering the machine danger area.

### 12.1 Towing, salvaging, evacuating the machine



### DANGER

**Risk of accident when towing the machine when the machine cannot be controlled.**

Towing the implement on public roads is forbidden.



### WARNING

**Damage to the machine caused by pulling out the machine when it is stuck on the field.**

It is forbidden to pull out the machine using the emergency drawbar when it is stuck

The user is responsible for any resulting damage!

### Preparing the machine for salvaging and evacuation



### DANGER

**Risk of injury or even death due to unintentional movement of the machine.**

The machine may only be prepared for towing when on level ground as the wheels can turn freely and the brake is not working.

1. Install the emergency drawbar.
2. Remove the reduction shafts on the wheels.



The emergency drawbar (optional) only serves to

- evacuate the defective machine from road traffic.
- load the machine on a low-bed trailer.

## Installing the emergency drawbar (optional):

Install the emergency drawbar at the front under the machine.

- (1) Emergency drawbar
- (2) Pins for mounting the emergency drawbar, secured using 2 bolts.
- (3) Pins for attaching the towing bar, or pull rope secured with bolts.

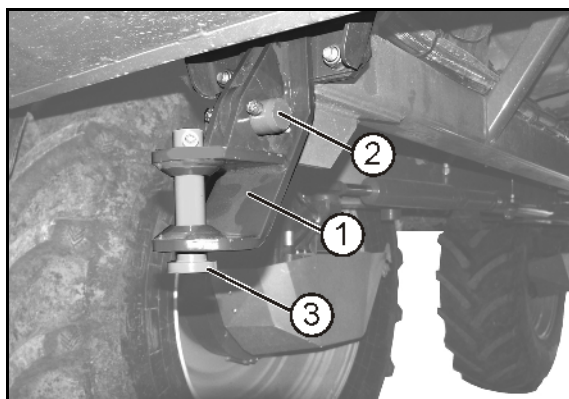


Fig. 146

## Removing the reduction shaft on all wheels:

1. Remove the central screw connection.
2. Use an M6 bolt to pull the reduction shaft out of the wheel gear.
3. Tighten the screw connection again to 90 Nm.
4. After towing, fit the reduction shaft again.



Fig. 147



- Mount the towing device (option).
- In event of engine failure and / or hydraulic malfunction, there will be no oil pressure for steering system. Thus, steering will be very difficult.
- Maximum speed when towing: 5 km/h.
- Empty the spray liquid tank before towing.
- If the engine has stopped, the machine must be towed away using a drawbar in all cases.

## 12.2 AMADRIE faults and warning messages

Designation	Sensor type	Control device	Warning message! Fault entry PIN
ESB above	Switch	MMC1	! - Induction bowl is not above
Automatic steering	Switch	MMC2	
Brake circuit air pressure 1	Switch	MMC2	Supply pressure too low
Brake circuit air pressure 2	Switch	MMC2	Supply pressure too low
Hydraulic oil filter	Switch	MMC2	! - Hydraulic oil filter polluted
Hydraulic oil temperature	Switch	MMC2	! - Hydraulic oil temp high
Low hydraulic oil level	Switch	MMC2	! - Hydraulic oil level low
Central lubrication fault	Switch	MMC2	! - Central lube system error
Handbrake switch	Switch	MMC2	! - Parking brake
Driving lever	potentiometer	MMC1	AE Pin 38
Lift module	potentiometer	MMC1	AE Pin 40
Front steering system	potentiometer	MMC2	AE Pin 38
Rear steering system	potentiometer	MMC2	AE Pin 39
Level at the front	potentiometer	MMC2	AE Pin 42
Level at the rear	potentiometer	MMC2	AE Pin 43
Track, left side	potentiometer	MMC2	AE Pin 40
Track, right side	potentiometer	MMC2	AE Pin 41
Stairs	potentiometer	MMC2	AE Pin 5
Diesel	potentiometer	MMC2	AE Pin 4
Hydraulic system temperature	Temperature sensor	MMC2	AE Pin 45
Water temperature	Temperature sensor	MMC2	AE Pin 44
Drive control, forwards	Pressure sensor	MMC1	AE Pin 44
Drive control, backwards	Pressure sensor	MMC1	AE Pin 45
Speed, front left	Speed sensor	MMC1	FQ Pin 62
Speed, front right	Speed sensor	MMC1	FQ Pin 63
Speed, rear right	Speed sensor	MMC1	FQ Pin 64
Speed, rear left	Speed sensor	MMC1	FQ Pin 65

## Faults

Designation	Valve type	SG	Fault entry PIN
Pump forwards	Proportional valve	MMC1	PV Pin 6
Pump, backwards	Proportional valve	MMC1	PV Pin 7
Motor, front left	Proportional valve	MMC1	PV Pin 8
Motor, front right	Proportional valve	MMC1	PV Pin 9
Motor, rear left	Proportional valve	MMC1	PV Pin 11
Motor, rear right	Proportional valve	MMC1	PV Pin 10
Spraying pump motor	Proportional valve	MMC1	PV Pin 12
Retarder brake	Proportional valve	MMC1	PV Pin 13
El. ABV	Proportional valve	MMC2	PV Pin 10
Steering, left side	Proportional valve	MMC2	PV Pin 6
Steering, right side	Proportional valve	MMC2	PV Pin 7
Fan motor, water	Proportional valve	MMC2	PV Pin 8
Fan motor, oil / air	Proportional valve	MMC2	PV Pin 9
Increase left track width	Switching valve	MMC2	SA Pin 14
Reduce left track width	Switching valve	MMC2	SA Pin 15
Increase right track width	Switching valve	MMC2	SA Pin 16
Reduce right track width	Switching valve	MMC2	SA Pin 17
Lift level, front	Switching valve	MMC2	SA Pin 18
Lower level, front	Switching valve	MMC2	SA Pin 19
Lift level, rear	Switching valve	MMC2	SA Pin 20
Lower level, rear	Switching valve	MMC2	SA Pin 21

### 12.3 Malfunctions during spraying operation

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
<b>There is no suction from the pump</b>	Blockage on the suction side (suction filter, filter insert, suction hose).	Remove the blockage.
	Pump is sucking in air.	Check the hose connection of the suction hose (optional) on the suction port for leak tightness.
<b>The pump does not have any power</b>	Suction filter and filter insert dirty.	Clean suction filter and filter insert.
	The valves are jammed or damaged.	Change the valves.
	Pump is sucking in air, recognisable from the air bubbles in the spray liquid tank.	Check the hose connections on the suction hose for leak tightness.
<b>The spray cone vibrates</b>	Irregular delivery flow from the pump.	Check, and if necessary replace, the suction and pressure-side valves (see Seite 253).
<b>Oil/spray liquid mixture in the oil filler neck or clearly visible consumption of the oil</b>	Pump diaphragm defective.	Change all six piston diaphragms (see 254).
<b>Control terminal: The required spray rate entered is not achieved</b>	High operational speed; low pump drive speed;	Reduce the operational speed and increase the pump drive speed until the fault message disappears and the audible alarm signal stops
<b>Control terminal : There has been a deviation from the permissible spray pressure range for the nozzle fitted to the sprayer boom</b>	Deviation from the prescribed operational speed, which has an effect on the spray pressure	Alter your operational speed to return to the prescribed operational speed range set for spraying operation

## 13 Cleaning, maintenance and repair



### WARNING

**Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through**

- **unintentional falling of raised, unsecured machine parts.**
- **unintentional start-up and rolling of the tractor-machine combination.**

Secure the tractor and machine against unintentional start-up and rolling, before carrying out cleaning, maintenance or repair work on the machine; see page 160.



### WARNING

**Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through unprotected danger points.**

- Mount protective equipment removed when cleaning, maintaining and repairing the machine.
- Replace defective protective equipment with new equipment.



### DANGER

- **When carrying out maintenance and repair, observe the safety instructions, particularly "Field sprayer operation" section, Seite 32.**
- **You may only carry out maintenance or repair work under moving machine parts that are in a raised position if such parts are secured with suitable, positive-fit locking devices against accidental lowering.**



- Regular and proper maintenance will keep your trailed sprayer in good condition for a long time, and will prevent early signs of wear. Regular and proper maintenance is a requirement of our warranty conditions.
- Use only genuine AMAZONE spare parts (see "Spare and wear parts and aids" section, page 17).
- Use only genuine AMAZONE replacement hoses, and hose clamps made of V2A for assembly.
- Specialist knowledge is the requirement for carrying out testing and maintenance operations. This specialist knowledge is not given here in this operating manual.
- Observe environmental protection measures when carrying out cleaning and maintenance work.
- Observe legal requirements when disposing of lubricants, e.g. oils and grease. Also affected by these legal requirements are parts that come into contact with these lubricants.
- Do not exceed a greasing pressure of 400 bar when greasing with high pressure grease guns.
- The following are prohibited:
  - drilling the running gear.
  - drilling through pre-existing holes on the transport frame.
  - welding load-bearing components.
- Protective measures are necessary, such as covering lines or extending lines in particularly critical locations
  - during welding, drilling and grinding work.
  - when working with cut-off wheels near plastic wires and electric wires.
- Clean the field sprayer thoroughly with water before carrying out repair work.
- Carry out repair work on the field sprayer with the pump switched off.
- Thorough cleaning must be carried out before repair work can be carried out inside the spray liquid tank. Keep out of the spray liquid tank.



During welding work on the machine.

- Always separate the power supply to the on-board computer.
- Turn off the main switch.
- Disconnect the battery cable.
- Disconnect the EMR plug (Fig. 151/1) from the controller in the central electrics in the cabin on the right side under the armrest next to the cabin.

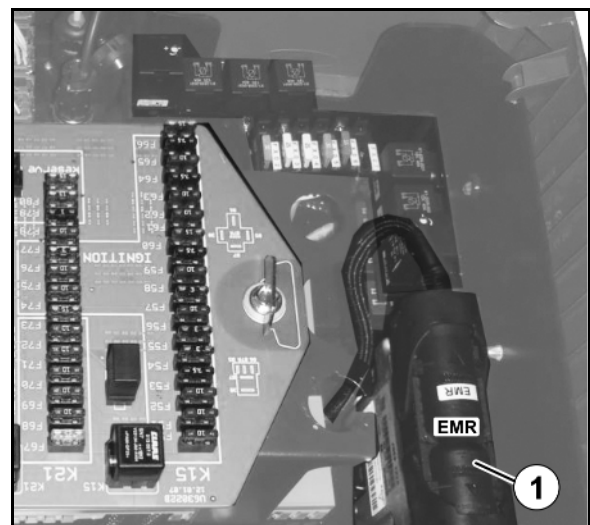


Fig. 148

## 13.1 Cleaning



- Monitor brake, air and hydraulic hose lines particularly carefully
- Never treat brake, air and hydraulic hoses with petrol, benzene, petroleum or mineral oils.
- After cleaning, grease the machine, in particular after cleaning with a high pressure cleaner/steam jet or liposoluble agents.
- Observe the statutory requirements for the handling and removal of cleaning agents.

### Cleaning with a pressure washer / steam jet



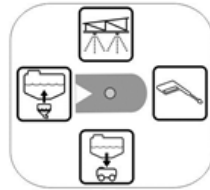
- Always observe the following points when using a pressure washer / steam jet for cleaning:
  - Do not clean any electrical components.
  - Do not clean any chrome-plated components.
  - ◦ Never aim the cleaning jet of the cleaning nozzle of the high pressure cleaner/steam jet directly at lubrication points, bearings, rating plates, warning signs, and stickers.
  - Always maintain a minimum jet distance of 300 mm between the high pressure or steam jet cleaning nozzle and the machine
  - The set pressure of the high-pressure cleaner / steam jet must not exceed 120 bar.
  - Comply with the safety regulations when working with high pressure cleaners.

## 13.2 Winter storage and long periods out of operation

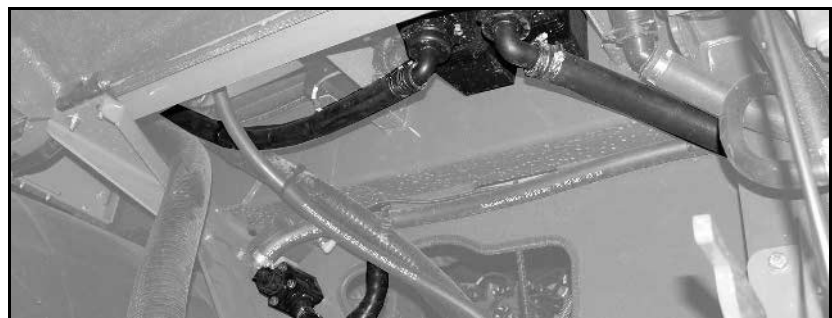
1. Thoroughly clean the machine prior to overwinter breaks.
  - o Cleaning the sprayer with the tank empty, see Page 188.
  - o Draining the final residual amount.
2. Drive the spray pump at low speed and allow the "air to be pumped" once the flushing process has been completed and liquids no longer run out of the spray nozzles.



3. Change the positions on the suction tap with the drain tap open.
4. Change the function selector switch several times between all of the positions.



5. Switch off the sprayer pump drive when liquid no longer runs out of any section of the nozzle line after changing the positions of the suction chest and the pressure gauge several times.
6. Lower the sprayer boom and switch off the diesel engine.
7. For each sprayer boom part width section, remove a diaphragm valve from a nozzle body in order to allow the nozzle line to run empty.
8. Dismantle and clean the suction filter and the pressure filter.
9. Dismantle the pressure hose of the pumps so that the remaining water can flow out of the pressure hose and pressure gauge.
10. Remove the hoses on the valves and on the additional agitator under the left side cover.



**Fig. 149**

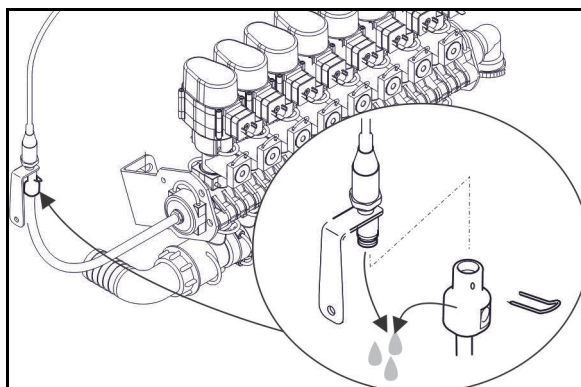
11. Change into all positions on the function selector again.
12. Actuate the sprayer pump for approx. ½ minute until fluid no longer runs out of the connection on the pressure side of the pump.



Residual amounts can be sprayed out of the pressure connection with high pressure.

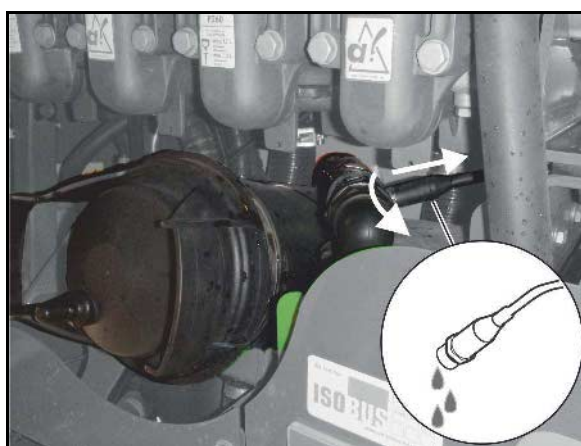
13. Switch off the diesel engine.
14. Cover the pump pressure connection to protect it from dirt.

15. Empty the flushing water tank by undoing the sleeve nuts on the outlet.
16. Drain the pressure sensor of the boom fitting with the boom lowered by removing the hose from the pressure sensor.



**Fig. 150**

17. Drain the pressure sensor on the main agitator by screwing off the pressure sensor.



**Fig. 151**



Before starting up again:

- Install all of the dismantled parts.
- Close the suction port drainage tap.
- At temperatures below freezing, the piston diaphragm pumps must be completely free of ice before starting in order to prevent residual ice from damaging the piston and piston diaphragm.

### 13.3 Maintenance schedule



- Carry out maintenance work when the first interval is reached.
- The times, continuous services or maintenance intervals of any third party documentation shall have priority.
- Also note the maintenance sheet.

#### After the first working run

Component	Servicing work	see page	Work-shop work
Wheels	<ul style="list-style-type: none"> <li>• Tighten wheel bolts</li> </ul>	228	
Hydraulics	<ul style="list-style-type: none"> <li>• Visual inspection of the hose lines for defects</li> <li>• Check leak tightness</li> </ul>	237	
Whole machine	<ul style="list-style-type: none"> <li>• Perform lubrication</li> </ul>	182	

#### After the first 50 hours of operation:

Order the initial maintenance kit where necessary.

Component	Servicing work	see page	Work-shop work
Wheel gears	<ul style="list-style-type: none"> <li>• Oil change</li> </ul>	227	X
Control	<ul style="list-style-type: none"> <li>• Check the front and rear shock absorber bearings and, where necessary, tighten the bolts.</li> </ul>	246	X
Hydraulics	<ul style="list-style-type: none"> <li>• Replace the hydraulic return filter</li> </ul>	241	X
	<ul style="list-style-type: none"> <li>• Replace the hydraulic pressure filter</li> </ul>	241	X
Deutz engine	<ul style="list-style-type: none"> <li>• Oil change</li> </ul>	219	X
	<ul style="list-style-type: none"> <li>• Replace the engine oil filter</li> </ul>	219	X

Daily

Component	Servicing work	see page	Workshop work
Deutz engine	• Check engine oil level	219	
	• Euro3A Emission Standard: check the fuel pre-filter on the water separator, drain if necessary	217	
Hydraulics	• Check the oil level	241	
	• Visual inspection of the hose lines for defects	237	
	• Check leak tightness		
Lighting	• Check function	-	
Brakes	• Check function	-	
Steering system	• Track correction	63	
Spraying pumps	• Check the oil level	252	
Spray liquid tank	• Clean or flush	187	
Suction filter		190	
Self-cleaning pressure filter		106	
Nozzles		256	
Machine	• Check for leaks	-	
Air intake system of the engine	• Check the maintenance indicator on the air filter	221	

Every three months / Every 100 operating hours

Component	Servicing work	See Page	Workshop work
Air intake system of the engine	• Clean	221	
Spraying nozzles	• Check	256	
Compressed air system	• Draining the air reservoir	231	
Whole machine	• Perform lubrication	182	
Brake	• Check brake fluid level	230	
Cab Category 4	• Filter change for activated carbon filter	244	X
Booms	• Checking the boom for cracks / beginning of crack formation		

**Every six months / Every 250 operating hours**

Component	Servicing work	see page	Workshop work
<b>Sprayer boom</b>	<ul style="list-style-type: none"> <li>Clean the line filters</li> <li>Replace damaged filter inserts</li> </ul>	<b>257</b>	
<b>Deutz engine</b>	<ul style="list-style-type: none"> <li>Check cooling agent and antifreeze levels</li> </ul>	<b>223</b>	
	<ul style="list-style-type: none"> <li>Euro 3B Emission Standard: Drain the fuel pre-filter</li> </ul>	<b>216</b>	<b>X</b>
<b>Cab Category 4</b>	<ul style="list-style-type: none"> <li>Filter change for dust and aerosol</li> </ul>	<b>244</b>	<b>X</b>

**Annually / 500 operational hours (Scope of maintenance A)**

→ Order the maintenance kit A where necessary

Component	Servicing work	see page	Workshop work
<b>Deutz engine</b>	<ul style="list-style-type: none"> <li>Oil change</li> </ul>	<b>219</b>	<b>X</b>
	<ul style="list-style-type: none"> <li>Replace the engine oil filter</li> </ul>	<b>219</b>	<b>X</b>
<b>Wheel gears</b>	<ul style="list-style-type: none"> <li>Check the oil level</li> </ul>	<b>227</b>	
<b>Hydraulics cooler, engine radiator, air conditioner</b>	<ul style="list-style-type: none"> <li>Clean with compressed air</li> </ul>	<b>194</b>	
<b>Air conditioner</b>	<ul style="list-style-type: none"> <li>Check the V-belt compressor</li> </ul>	<b>226</b>	<b>X</b>
<b>Hydraulics</b>	<ul style="list-style-type: none"> <li>Replace the hydraulic return filter</li> </ul>	<b>241</b>	<b>X</b>
<b>Spraying pumps</b>	<ul style="list-style-type: none"> <li>Oil change</li> </ul>	<b>252</b>	<b>X</b>

**Annually / 1000 operational hours (Scope of maintenance B)**

→ Order the maintenance kit B where necessary (contents maintenance kit A)

Component	Servicing work	see page	Workshop work
	<ul style="list-style-type: none"> <li><b>Carry out scope of maintenance A</b></li> </ul>		
<b>Cab</b>	<ul style="list-style-type: none"> <li>Replace the outer air filter</li> </ul>	<b>243</b>	<b>X</b>
	<ul style="list-style-type: none"> <li>Clean the circulation filter</li> </ul>		
<b>Deutz engine</b>	<ul style="list-style-type: none"> <li>Main fuel filter, replace insert</li> </ul>	<b>215</b>	<b>X</b>
	<ul style="list-style-type: none"> <li>Replace the fuel pre-filter</li> </ul>	<b>216</b>	<b>X</b>
	<ul style="list-style-type: none"> <li>Check the ribbed V-belt and tensioning roller, replace as required</li> </ul>	<b>225</b>	<b>X</b>
	<ul style="list-style-type: none"> <li>Re-tighten the motor bearing, replace if necessary</li> </ul>		
	<ul style="list-style-type: none"> <li>Check battery and cable connections</li> </ul>		
	<ul style="list-style-type: none"> <li>Check fastenings, jubilee clips, replace if necessary.</li> </ul>		
	<ul style="list-style-type: none"> <li>Intercooler entry surface (lubricating oil, drain condensation)</li> </ul>		<b>X</b>

## Cleaning, maintenance and repair

	• Clean air filter		
<b>Hydraulic system</b>	• Hydraulic oil change	<b>241</b>	<b>X</b>
<b>Hydraulics</b>	• Replace the hydraulic pressure filter	<b>241</b>	<b>X</b>
<b>Wheel gears</b>	• Oil change	<b>227</b>	<b>X</b>
<b>Spraying pumps</b>	• Oil change	<b>252</b>	<b>X</b>
	• Check the valves, replace if required	<b>253</b>	<b>X</b>
	• Check piston diaphragm, replace if required	<b>254</b>	<b>X</b>
<b>Brakes</b>	• Check the brake linings / brake drums	<b>230</b>	<b>X</b>
<b>Sprayer boom</b>	• Determine the volume of the field sprayer and check the lateral distribution, replace worn nozzles	<b>256</b>	
<b>Flow meter / return flow meter</b>	• Calibrate	<b>256</b>	
<b>Air intake system of the engine</b>	• Replace the inner and outer air filters	<b>221</b>	<b>X</b>
<b>Flushing water</b>	• Clean the flushing water suction filter		

Every 2 years / 2000 operational hours (Scope of maintenance C)

→ Order the maintenance kit C where necessary (contents maintenance kit B)

Component	Servicing work	see page	Workshop work
<b>Deutz engine</b>	• Check the valve clearance and adjust, if necessary	<b>225</b>	<b>X</b>
	• Replace the coolant	<b>223</b>	<b>X</b>
	• Check and clean the loading pressure sensor		<b>X</b>
	• Check and clean the Venturi sensor and the underlying adapter plate for the exhaust gas recirculation		<b>X</b>
	• Check and clean the differential pressure sensor of the diesel particle filter		<b>X</b>
<b>Air conditioner</b>	• Air conditioner compressor, replace the V-belt	<b>226</b>	<b>X</b>
	• Clean the evaporator and warm water radiator	<b>249</b>	<b>X</b>
	• Replacing the filter drier	<b>248</b>	<b>X</b>
<b>Brake</b>	• Replacing brake fluid	<b>233</b>	<b>X</b>
	• Replacing the air drier cartridge	<b>230</b>	
<b>Fire extinguisher</b>	• Inspection by Gloria customer services	-	

**Every 5 years / 4500 operational hours**

<b>Deutz engine</b>	<ul style="list-style-type: none"> <li>Replace the ribbed V-belt</li> <li>Replace the tensioning roller</li> </ul>	<b>225</b>	<b>X</b>
	<ul style="list-style-type: none"> <li>Spark plug of particle filter</li> </ul>		<b>X</b>
	<ul style="list-style-type: none"> <li>Replace shutter valve</li> </ul>		<b>X</b>

**As required**

Component	Servicing work	see page	Workshop work
<b>Hydraulic sprayer boom</b>	<ul style="list-style-type: none"> <li>Adjust the throttle valve</li> </ul>	<b>250</b>	
<b>Wheels</b>	<ul style="list-style-type: none"> <li>Tighten the wheel bolts (after the first trip after changing the wheels)</li> </ul>	<b>228</b>	
	<ul style="list-style-type: none"> <li>Check tyre pressure</li> </ul>	<b>228</b>	
<b>Brakes</b>	<ul style="list-style-type: none"> <li>Replace brake shoes</li> </ul>	<b>230</b>	<b>X</b>
<b>Air intake system of the engine</b>	<ul style="list-style-type: none"> <li>Clean the outer air filter</li> </ul>	<b>221</b>	<b>X</b>
<b>Fuel system</b>	<ul style="list-style-type: none"> <li>Bleed</li> </ul>	<b>218</b>	<b>X</b>
<b>Air conditioner</b>	<ul style="list-style-type: none"> <li>Commissioning following longer standing times</li> </ul>	<b>247</b>	
<b>Battery</b>	<ul style="list-style-type: none"> <li>Replace</li> </ul>	<b>226</b>	
<b>Hydraulics cooler, engine radiator, air conditioner</b>	<ul style="list-style-type: none"> <li>Clean with compressed air</li> </ul>	<b>194</b>	

**13.4 Maintenance work with the engine running**

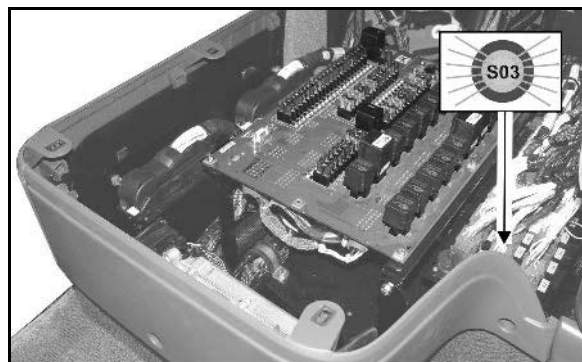
**DANGER**

**Risk of accident during maintenance work due to the machine starting up unintentionally.**

Press the S03 switch before starting maintenance.

The S003 switch

- Prevents movement when the engine is running.
- Under the foldable arm rest
- Is illuminated after being pressed.



**Fig. 152**

## 13.5 Lubrication specifications

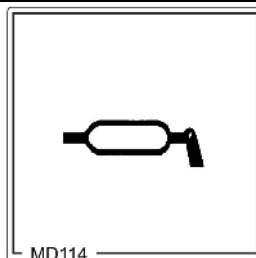


- After 10 operational hours, lubricate all lubrication points for the first time!
- Lubricate all grease nipples (keep gaskets clean).
- Regularly oil and lubricate all moving parts such as screws, bolts and bearings.

Lubricate / grease the machine at the specified intervals.

Lubrication points on the machine are indicated with the foil (Fig. 156).

Carefully clean the lubrication points and grease gun before lubrication so that no dirt is pressed into the bearings. Press the dirty grease out of the bearings completely and replace it with new grease.



**Fig. 153**

### Lubricating grease

Lithium soaped with EP additive, NLGI Class 2 (also suitable for the central lubricating system)	Brand	Designation
	Agip	GR MU EP 2
	Aral	Aralub HLP 2
	Avia	Avialith 2 EP
	BP	Energrease LS 2 - EP 2
	Castrol	Spheerol AP 2
	Esso	Beacon EP 2
	Fina	Marson EPL2A
	Fuchs	Renolit FLM 2
	Shell	Alvania EP 2
	Mobil	Mobilux EP 2

### Lubrication point overview

Fig. 157/...	Lubrication point	Interval [h]	Number of lubrication points	Type of lubrication
(1)	Steering cylinder	100	4 x 2	Lubricating nipple
(2)	Oscillating yoke	100	2 x 2	Lubricating nipple
(3)	Track width cylinder	100	2 x 2	Lubricating nipple
(4)	Oscillating axle	100	2 x 2	Lubricating nipple
(5)	Stub axle	100	4 x 4	Lubricating nipple
(6)	Hydropneumatic sprung suspension	100	4 x 2	Lubricating nipple
(no fig.)	Sprayer boom mount	100	4	Lubricating nipple

(7)	Track width adjustment main shaft grease with a brush corrosion protection (every 100 h and for longer standstill periods)
-----	---

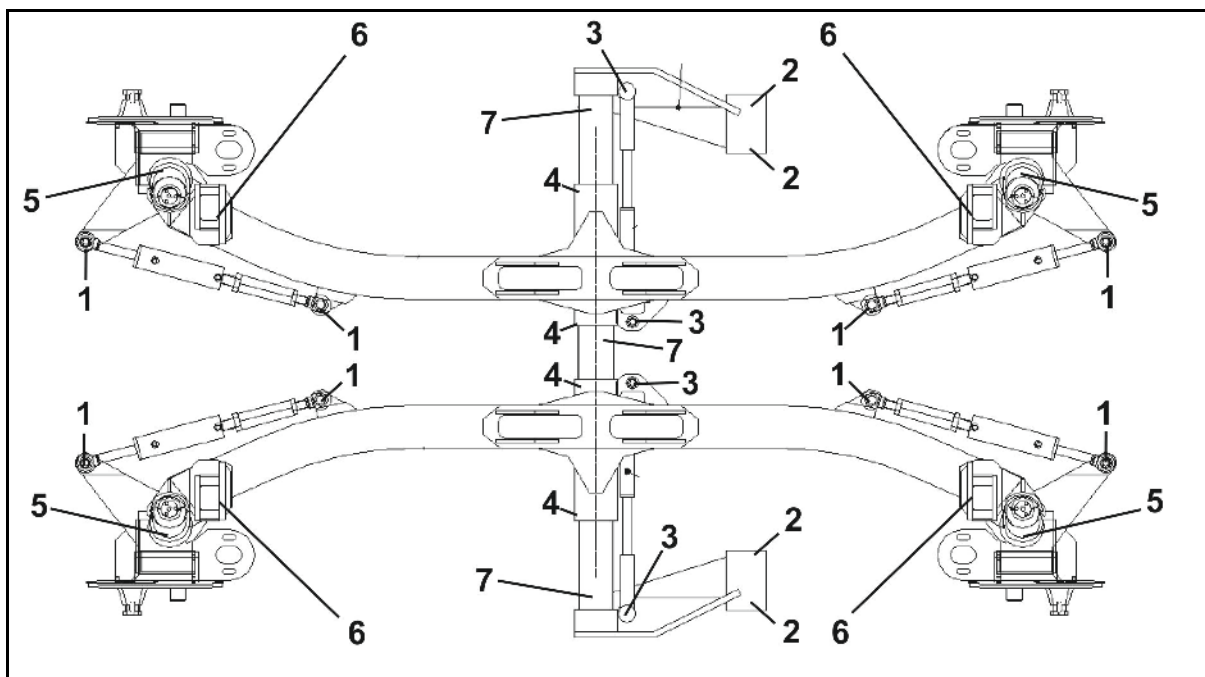


Fig. 154



As an additional corrosion protection, run the track width to the minimum and maximum value every 20 operational hours.

### 13.5.1 Central lubrication

(option)

Function of the central lubrication:

- Includes all the lubrication points on the machine (56 points)
- Automatic dosage
- Additional manual dosing using a button in the cabin, where required

Fig. 158/...

- (1) Lubricant tank
- (2) Connection for refilling
- (3) Maximum filling level
- (4) Operating unit



Fill the tank of the central lubricating unit in due time.

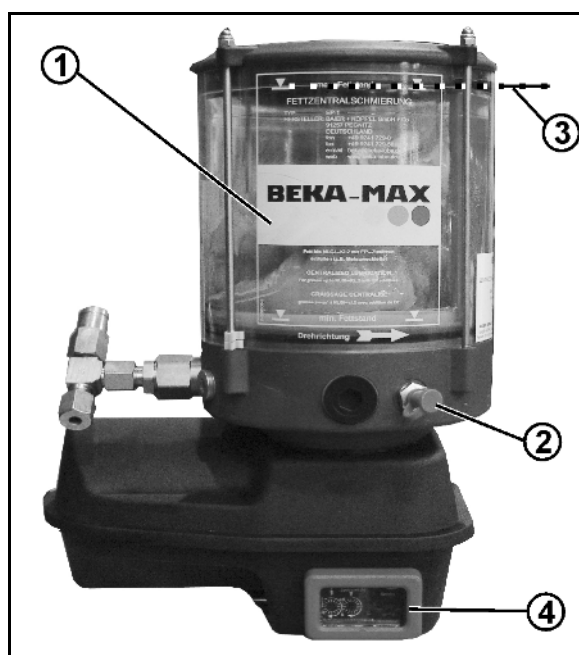


Fig. 155

#### Operating unit

- (1) Set the period for one lubricating sequence (One notch = one minute, standard setting, 6 minutes)
- (2) Setting the time interval between the lubricating sequences (One notch = 0.5 hours, standard setting, 2.0 hours)
- (3) Fault display - red
- (4) Lubrication sequence active display - green
- (5) Socket, service connection

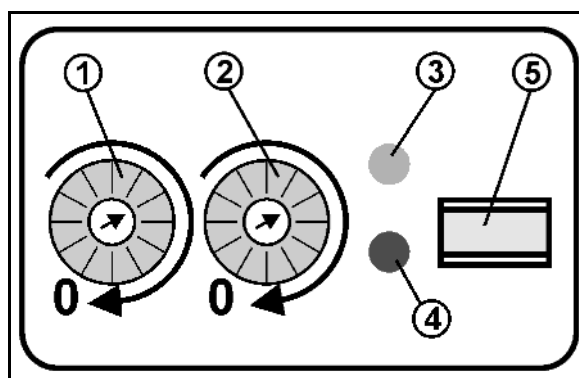


Fig. 156

## 13.6 Maintenance of the carrier vehicle



- Self-adhesive maintenance images for the diesel engine are supplied with each machine. Stick these on the machine at locations that are well visible.
- Please also observe the instruction manual for the Deutz engine Type TCD6.1 L6.
- Have all maintenance work carried out on the engine by Deutz authorised dealers.

### 13.6.1 Oils and operating fluids



Mix other brands only upon request. A written confirmation of the supplier when using other oils is required in order to guarantee that no malfunctions occur.

**The guarantee of the machine voids immediately when using other oils that specified!**

#### Filling quantities of the operating fluids

Component	Designation		Fill-in quantity
Deutz engine	Engine oil		approx. 15.5 l
	Cooling agent		approx. 38 l
Hydraulic system	Hydraulic oil	Hopper	approx 120 l
		Overall system	approx. 180 l
Wheel gears	Wheel transmission oil		approx. 1.2 l
Air conditioner	Coolant		1900 g
	Contrast medium		10 g
	Compressor oil		5 g
Spraying pumps	Engine oil 15W40		each 2.5 l

#### Admissible hydraulic oils



Fill only cleaned hydraulic oil. Required purity class:

- Purity class 9 according to NAS 1638
- Purity class 18 /16/ 13 according to ISO 4406/1999

	Brand	Designation
	BP	Batran HV 68 (HPVL oil in keeping with DIN 51524)
	Castrol	Hyspin AWH 68
	ELF	Hydrelf 68
	ESSO	Univis N+ ISO VG68
	FINA	Hydran HV 68
	Mobil	DTE 10M / DTE 30
	OK	Hovis 68
	Q8	Handel 68
	Shell	Tellus T68
	Texaco	Rando HD-Z 68
	Total	Equivis ZS 68
	Valvoline	Ultramax HVLP 68

## Admissible engine oils



### Deutz quality class:

Engine oils of the following quality classes are permitted:

- DQC III LA
- DQC IV LA

(LA = Low Ash)

### Viscosity class:

Select the viscosity class depending on the ambient temperature.

Standard:SAE 10W/40 (ambient temperature of -20°C to 40 °C)

## Admissible oils for the wheel transmission



Ambient temperature

- from -20°C to 30 °C: SAE 80 W/90
- from 10°C to 45 °C: SAE 85 W/140

Shell Spirax HD  
Agip Rotra MP  
Aral gear oil HYP  
BP-Mach Hydrogear EP  
Castrol Hypoy  
Elf Tranself B  
Mobil Mobilupe HD  
Total Transmission TM

## Admissible protective agent for cooling systems

	Brand	Designation
	Deutz AG	TN 0101 1490 (5 litres, litres, litres) TN 0101 1490 (20 litres, litres, litres)
	ARAL	Antifreeze Extra
	AVIA	Antifreeze APN
	BASF	Glysantin G48 Protect Plus
	BP	BP anti-frost Code No. X 2270 A
	ESSO	ESSO Antifreeze Extra
	Mobil	Mobil Antifreez Extra
	Shell	GlycoShell
	Castrol	Castrol Antifreeze NF
	TOTAL	Glacelf MDX

### 13.6.2 Fuel filter

The engine has a fuel filter (Fig. 160/1). The fuel filter is equipped with a replaceable filter insert.

#### Changing the filter

1. Loosen the fuel filter cartridge using standard commercial tools and unscrew it.
2. Collect escaping fuel.
3. Clean the sealing surface of the filter support from any dirt.
4. Slightly oil or wet the rubber seal of the fuel filter with diesel fuel.
5. Screw in the cartridge by hand until the seal rests.
6. Tighten the fuel filter cartridge by another half a turn.
7. Check for leaks.

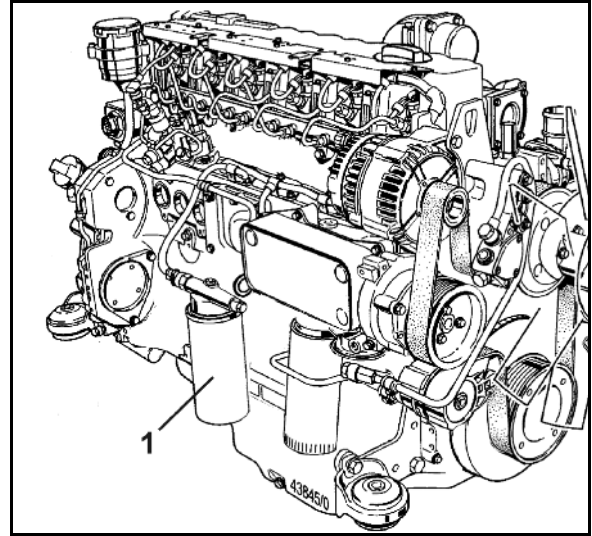


Fig. 157



#### **DANGER**

**No naked flames when working on the fuel system!**

**Do not smoke!**



- Check the seal of the lubricating oil filter cartridge again for leaks after 30 minutes of operation.
- Filter cartridges are disposable articles and are chemical waste!
- The fuel filter must be replaced after the first 50 to 150 hours and then once each year.

### 13.6.3 Fuel pre-filter (Euro 3B Emission Standard)

- (1) Fuel supply to the pump.
- (2) Fuel return from the FCU control block.
- (3) Manual fuel pump with bayonet connection for locking and unlocking.
- (4) Thermostat valve with stop lever (optional).
- (5) Filter insert.
- (6) Electric water level sensor.
- (7) Drain cock.
- (8) Water collection tank (bowl).
- (9) Fuel entry from the fuel tank.
- (10) Fuel return to the fuel tank.
- (11) Connector for the water level sensor.

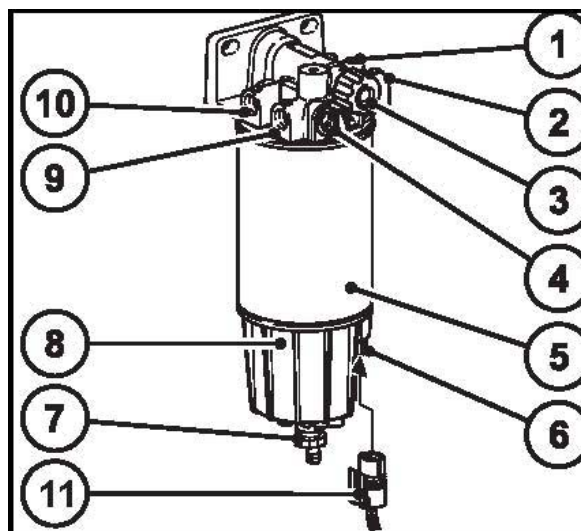


Fig. 158

#### Draining

1. Keep the drain cock under the filter open until clean fuel runs out.
2. Collect all drained fuel / water mixture and dispose of environment friendly.



Drain the fuel pre-filter at the latest when the AMADRIVE issues the corresponding message.

#### Changing the filter

1. Place a fuel collecting tank under the fuel pre-filter.
2. Loosen the draining cock and drain the water and fuel completely.
3. Screw the filter insert together with the water collecting tank out anti-clockwise and remove.
4. Close the fuel stop tap (with tanks positioned higher).
5. Undo the water collecting tank from the old filter insert anti-clockwise and remove.
6. Drain the remaining fuel in the fuel collecting tank and remove the water collecting tank.
7. Screw the water collecting tank clockwise onto the new filter insert.
8. Clean the sealing surface of the new filter insert and the counter side of the filter head from any possible soiling.
9. Wet the sealing surface of the filter insert slightly with fuel and screw clockwise back onto the filter head (17-18 Nm).
10. Bleed the system, see bleeding the fuel system.
11. Dispose of the fuel collected and old filter inserts in a correct manner.

### 13.6.4 Fuel pre-filter (Euro 3A Emission Standard)

- (1) Screw lid
- (2) Water drainage bolt
- (3) Transparent water collection tank

#### Draining

1. Loosen the water drainage bolt until clean fuel flows out.
2. Collect all drained fuel/water mixture and dispose of environment friendly.

#### Changing the filter

1. Loosen the screw lid.
2. Remove the lid with the filter element.
3. Pull the filter element out of the lid.
4. Replace the O-ring on the screw lid.
5. Wet all of the O-rings lightly with fuel.
6. Press the new filter element into the lid until it locks in.
7. Screw in the screw lid with the filter element (tightening torque 50 Nm).
8. Bleed the system, see bleeding the fuel system.
9. Dispose of the fuel collected and old filter inserts in a correct manner.



Fig. 159

### 13.6.5 Bleeding the fuel system

1. Unlock the bayonet connection of the manual fuel pump by pressing and turning anti-clockwise at the same time. The piston of the pump is now pressed through the spring.
2. Keep pumping until a high resistance can be noticed and the pump still runs only very slowly.
3. Now continue to pump a few times. (The return line must be filled).
4. Lock the bayonet connection of the manual fuel pump by pressing and turning clockwise at the same time.
5. Start the engine and allow to run idle for approx. 5 minutes or at low load. Check the pre-filter for leaks in the process.

**DANGER****No naked flames when working on the fuel system!****Do not smoke!**

Dispose of old fuel environmentally friendly!

### 13.6.6 Diesel engine oil level check and oil change

The oil level must be checked using the dipstick every day. The dipstick is located on the right side of the engine. We recommend that the oil level is checked in the morning before the engine has started.

1. The machine must be standing on a level surface.
  2. Pull out the dipstick (Fig. 163/1) and clean it using a clean cloth.
  3. Insert the dipstick into the opening again and pull it back out.
- The correct oil level lies between the markings.
4. When required, the oil level must be topped-up through the filling opening (Fig. 163/2,3) using the specified oil.
- Clean the filling opening thoroughly first.
5. Check the oil level and then close the cover.

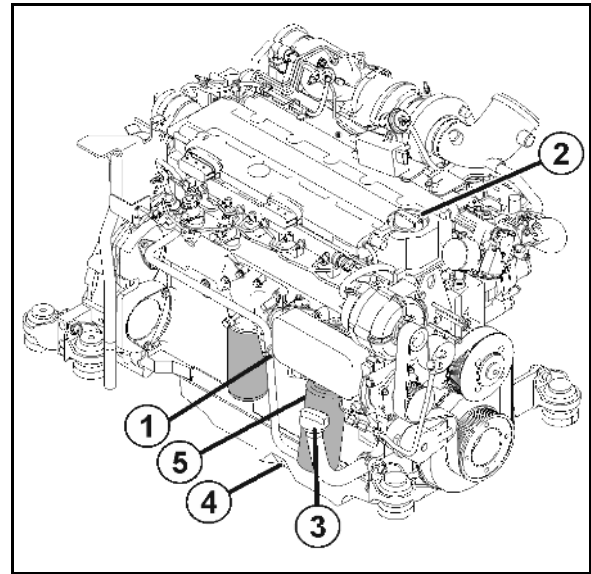


Fig. 160



**Never fill oil when the engine is running!**

#### Changing the oil

1. Run the engine warm.
2. Park the vehicle horizontally. Lubricating oil temperature approx. 80° Celsius.
3. Turn off the engine.
4. Place an oil drip pan under the engine.
5. Unscrew the oil drain plug (Fig. 163/4).
6. Drain the oil and, where applicable, drain the oil cooler content.
7. Screw in the oil drain plug with a new seal and tighten.
8. Fill with lubrication oil.
  - o Details for quality / viscosity, see Seite 214.
  - o Initial filling quantity 26.5 litres.
  - o The maximum marking on the dipstick is decisive for the filling quantity.
9. Check the oil level.



#### CAUTION

**Risk of scalding when draining due to hot oil!**



- Always park the machine so that all oil can drain.
- Always store your old oil at a special location, it is chemical waste!
- Dispose of the oil according to national guidelines.
- The oil filter is a disposable article. Please note that oil filters are chemical waste! Please also observe the official regulations.
- Check the seal of the lubricating oil filter cartridge again for leaks after 30 minutes of operation.

### Oil filter change

1. Turn off the engine.
2. Undo the lubricating oil filter cartridge (Fig. 164/5) using standard commercial tools and unscrew it.
3. Collect any possible escaping oil.
4. Clean the sealing surface of the filter support from any dirt.
5. Slightly oil the rubber seal of the new lubricating oil filter cartridge.
6. Screw in the cartridge by hand until the seal rests.
7. Tighten the lubricating oil filter cartridge by another half a turn.
8. Check the oil level and oil pressure.
9. Check the seal of the lubricating oil filter again for leaks.

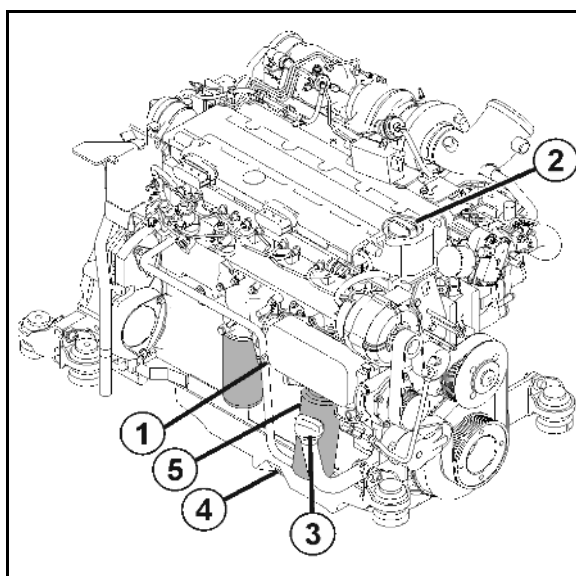


Fig. 161



### CAUTION

Caution with hot oil: Risk of scalding!

### 13.6.7 Air intake system of the engine

The air filter must be cleaned on a regular basis. The period between the cleaning depends on the operating conditions.

- (1) Dry air filter
  - (2) Dust discharge valve
- Empty the dust discharge valve by pressing the discharge slots together.
  - Clean the discharge slots every now and then.

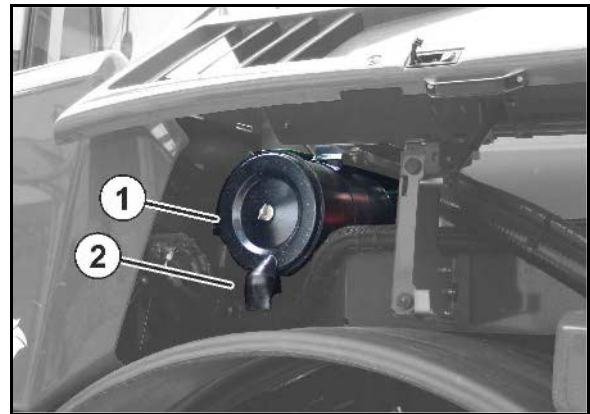


Fig. 162

### Air filter with maintenance indicator

The air filter is equipped with a maintenance indicator.

Check the air filter.

1. Start the diesel engine.
  2. Secure the machine against unintentional movement.
  3. Check the maintenance indicator.
- If the red mark appears in the maintenance indicator, change/clean the air filter.



Fig. 163

### Filter cartridge

1. Undo the wing nut of the filter hood (Fig. 167/1).
2. Remove the filter hood and pull out the outer filter element (Fig. 167/2).
3. Clean the outer filter element, renew after one year at the latest.
4. Clean the outer filter element:
  - o Blow-out with dry compressed air (max. 5 bar) from the inside to the outside.
  - o Knock-out (**only in emergencies**). Do not damage the cartridge in the process, or
  - o replace according to manufacturer instructions.
5. Check the outer filter element for damage to the filter paper (shine through it) and check the seals. If necessary, replace.
6. annually, renew the inner filter element (Fig. 167/3) (never clean it).
 

For this:

  - o Loosen the hex. nut (Fig. 167/4) and pull out the inner filter element.
  - o Insert a new inner filter element.
  - o Remount the hex. nut and tighten.
7. Insert the outer filter element, close the filter hood and secure with the wing nut.

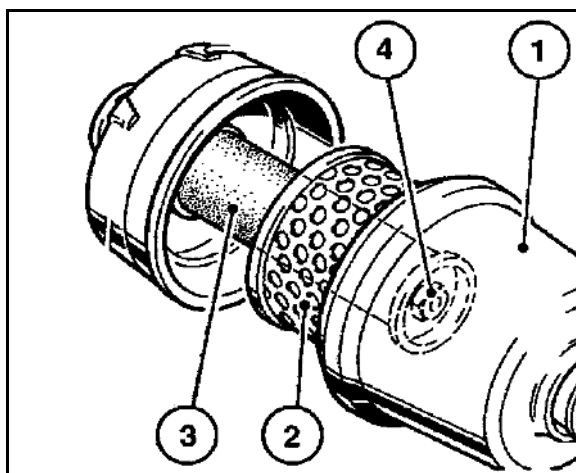


Fig. 164



#### CAUTION

**Never clean the inner filter element with petrol or hot liquids!**

### 13.6.8 Cooling system of the engine

- (1) Compensating reservoir for coolant

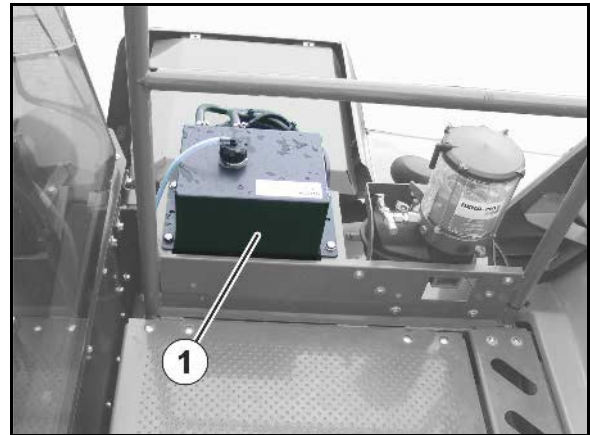


Fig. 165

#### Draining the diesel engine cooling system:

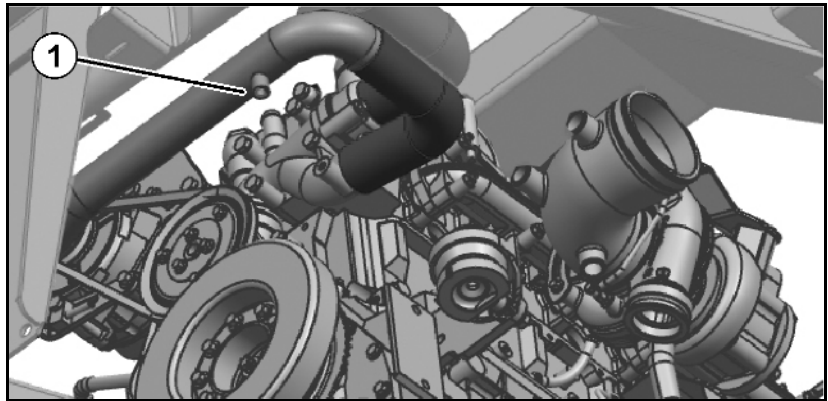


Fig. 166

1. Setup a collecting tray under the sealing bolt (Fig. 169/1).
2. Remove the filling plug.
3. Drain the coolant.
4. Retighten the filling plug.
5. Filling / bleeding the cooling system.



#### CAUTION

**When draining hot coolant: Risk of scalding! Collect the coolant when draining!**

**Dispose of in the correct way!**

## Filling / bleeding the diesel engine cooling system

Check the coolant level when the engine is cold. And refill if required.

1. Open the cover for the compensating reservoir.
2. Fill coolant to the maximum marking via the compensating reservoir.
3. Seal the cover for the compensating reservoir.
4. For bleeding, allow the engine to run until the thermostat opens.
5. If necessary, top up with water when cold.

## Coolant



With liquid-cooled engines, take special care with the processing and checking of the coolant otherwise corrosion, cavitation and damage caused by freezing may be caused to the engine.

Preparing the coolant is carried out by admixing cooling agent to the cooling water.

Thus, the coolant level as well as the concentration of the cooling system agent must be checked on a regular basis.



- Cooling system protection agent must be disposed of environmentally friendly.
- Only use approved coolants otherwise damage will be caused and claims for guarantee are voided.
- Never mix coolants with each other.

### 13.6.9 Radiator

Clean the radiator and the condenser to the left and right side of the cabin using compressed air.

1. Remove the side cover.
2. Pull the grille outwards.
3. Clean the radiator and the condenser to the left and right side of the cabin using compressed air.
4. If necessary, clean the grille separately.

**Compressed air, maximum 5 bar!**

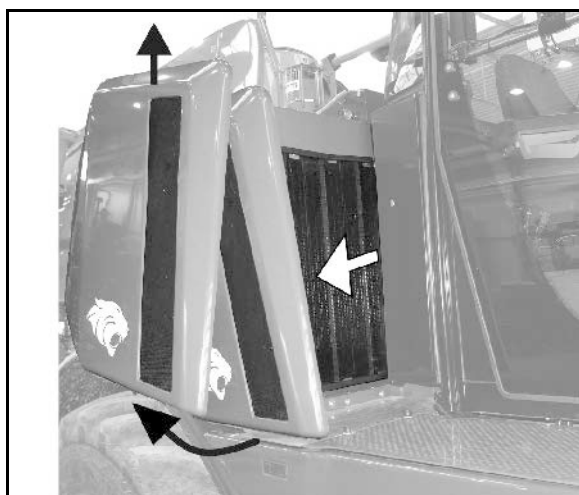


Fig. 167

### 13.6.10 Valve play



Have the valve play adjustment only carried out by an authorised Deutz workshop.

### 13.6.11 Belt drive

#### 13.6.11.1 Replace the flat belt and tensioning roller

1. Press the tensioning roller (Fig. 171/1) using a socket (Fig. 171/3) in the direction of the arrow until a Ø6 mm retention pin (Fig. 171/4) can be fixed in the assembly bore.  
Now the ribbed V-belt (Fig. 171/2) is free of tension.
2. First remove the ribbed V-belt (Fig. 171/2) from the smallest roller or from the tensioning roller.
3. Mount a new tensioning roller.
4. Apply a new ribbed V-belt (Fig. 171/2).
5. Counterhold the tensioning roller using a socket and remove the retaining pin.
6. Retension the ribbed V-belt using the tensioning rollers and socket (Fig. 171/3). Check if the ribbed V-belt is fitted correctly in its guide.

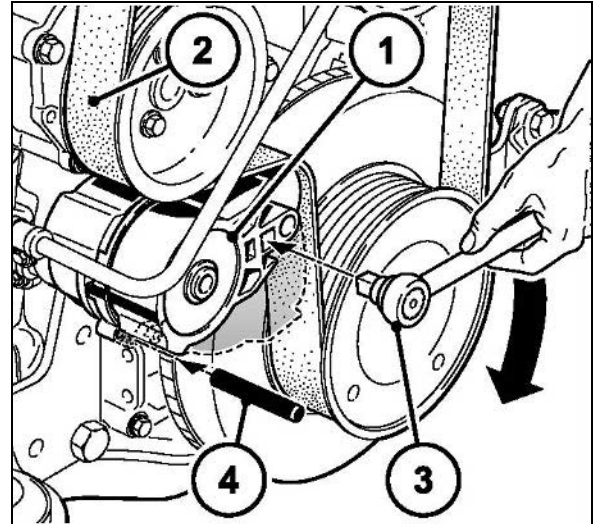


Fig. 168



Always replace the flat belt and tensioning roller together.

#### Check the belt length

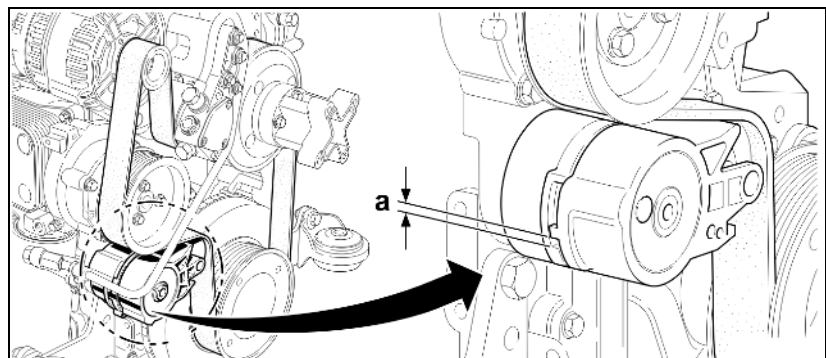


Fig. 169

Measure the distance between the notch of the movable tensioning arm and the stop of the fixed tightening housing. If distance "a" is smaller than 3 mm, the belt must be replaced.

### 13.6.11.2 V-belt air conditioner compressor

When required or following replacement, tension the V-belt via the nut (Fig. 175/1) of the tensioning device.

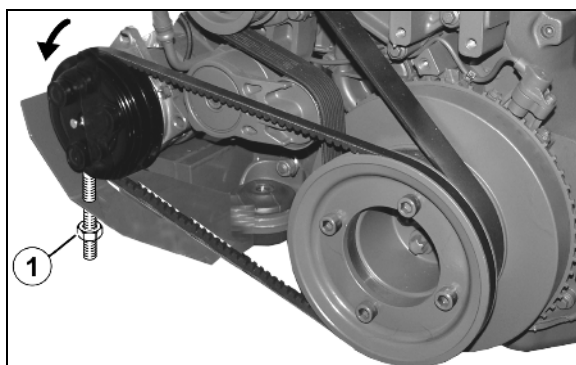


Fig. 170



Only carry out work / functional checks on the belt drive when the engine is stopped!

### 13.6.12 Electrical system of the engine

A well conducting connection must always be at hand between the engine and the ground connection of the battery. All parts of the system such as the cable, connector, etc. must be connected correctly. The cable insulation must not be damaged.



#### CAUTION

Repair damaged cables immediately!

### Battery

The battery is located under the cabin behind the right-hand maintenance flap.

- The battery is maintenance free.
- If the battery has to be charged using a quick charger, first remove the pole terminals.

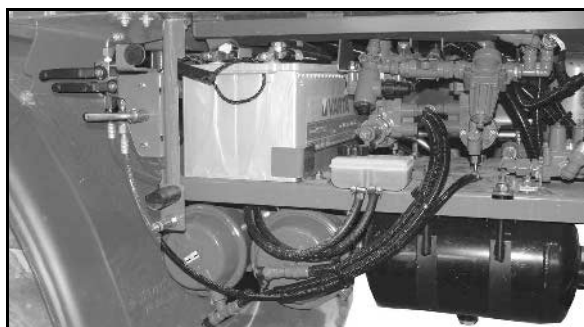


Fig. 171

### 13.6.13 Wheel gears

The reduction gear unit that is a planetary gear is coupled via a coupling part on the wheel motors.

The maintenance is limited to an initial oil change after 100 operational hours and then every 1000 operational hours!

- (1) Filling opening
- (2) Oil level monitoring opening
- (3) Drain opening

#### Oil level check:

1. Position the machine so that **the drain plug is at the bottom**.
  2. Remove the oil level plug.
- The oil level should be up to the oil level monitoring opening.

#### Oil change:

- Required amount of oil: ~ 1.2 l
  - Change the oil using warm oil!
1. Park the machine so that the drain plug is at the bottom.
  2. Remove filler plug, oil level plug and drain plug.
- Collect the oil draining out.
3. Refit the drain plug.
  4. Fill in oil through the filling opening until it reached the oil level monitoring opening.
  5. Screw the bolts back in.
  6. Carry out several rotations of the gearbox and check the filling level again.

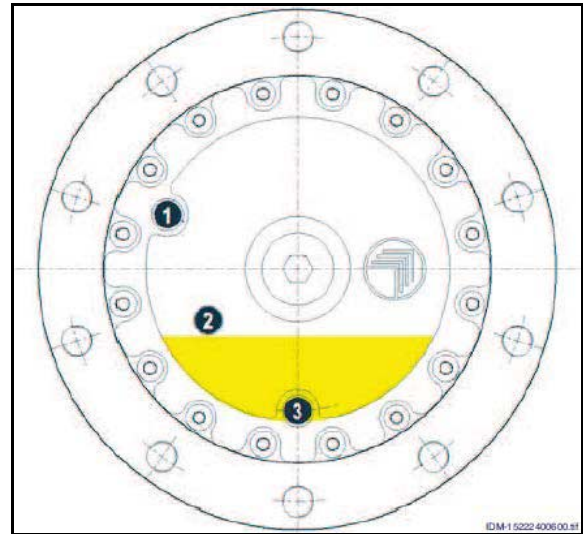


Fig. 172



Always consult your technical professional in the event of malfunctions in the wheel drives.

### 13.6.14 Tyres / wheels



- Required tightening torque for wheel nuts or bolts: 510 Nm
- Tyre pressure, see Seite 48.



After tightening the wheel nuts, re-mount the protective caps.

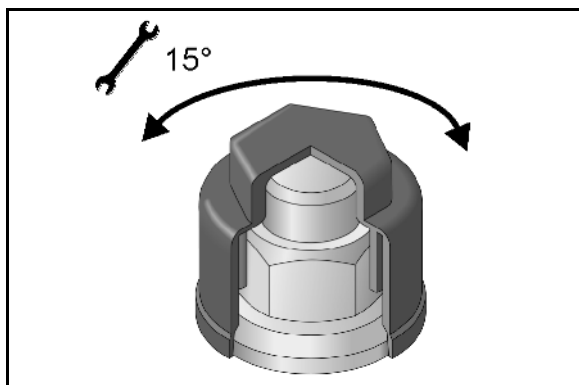


Fig. 173



- Regularly check the
  - Wheel nuts for firm seating.
  - Tyre pressure.
- Only use the tyres and wheels which we have specified (see page Seite 48).
- Repair work on tyres must only be carried out by specialists using suitable assembly tools.
- Tyre fitting requires sufficient skills and proper assembly tools.



- When working on the running gear, the jack may only be positioned under the marked lifting points (MD101).
- The minimum load bearing capacity must be 5 tons.
- Take care that the jack is positioned correctly in the sleeve (Fig. 177/1).

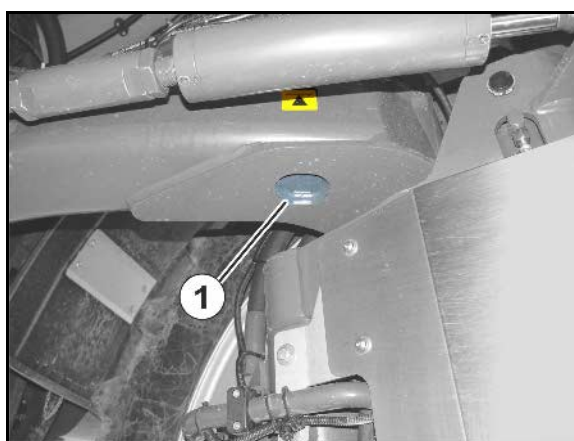


Fig. 174

## Replacing the wheels with another offset depth



The offset depth influences the track width of the machine.

The wheels used must be entered for the correct display of the track width on the AMADRIIVE.

- The minimum track width must be no less than 1800 mm. Otherwise, the wheels will collide with the running gear and there is a risk of tipping.

## Tyre pressures



- The required tyre pressure is dependent on
  - tyre size.
  - tyre loading capacity.
  - speed.
- The operational performance of the tyres is reduced
  - by overloading.
  - if tyre pressure is too low.
  - if tyre pressure is too high.



- Check tyre pressures regularly when the tyres are cold, i.e. before starting a run (see page ).
- The difference in pressure between the tyres on one axle must be no greater than 0.1 bar.
- Tyre pressure can be raised by up to 1 bar after a fast run or in warm weather. Tyre pressure should on no account be reduced as it is then too low when the tyres cool down.

## Fitting tyres



- Remove any instances of corrosion from the wheel rim seating surfaces before fitting a new / another tyre. Corrosion can cause damage to the wheel rims when the vehicle is in operation.
- When fitting new tyres, always use new valves for tubeless tyres or new inner tubes.
- Always fit the valves with valve caps which have a gasket insert.

### 13.6.15 Brakes



#### WARNING

- Repair and adjustment work on the service braking system should only be carried out by trained specialist personnel.
- Special care is required for welding, torch cutting and drilling work in the vicinity of brake lines.
- Always perform a braking test after any adjusting or repair work on the braking system.



#### WARNING

- The air reservoir must not
  - move around in the tensioning belts.
  - be damaged.
  - show any outward signs of corrosion damage.

### Air drier cartridge

The air drier cartridge is located under the cabin behind the right-hand maintenance flap.

Before replacing the air drier cartridge, depressurize all air pressure vessels via the condensation drain.

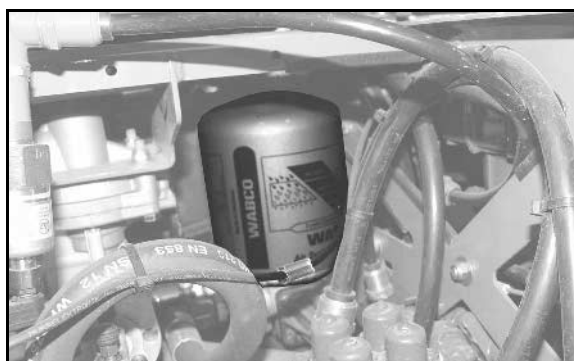


Fig. 175

## Draining the air reservoir

The air reservoirs are located under the cabin behind the right-hand maintenance flap.

- (1) Air reservoirs air drier
- (2) 2 air reservoirs brake system
- (3) Drainage valve

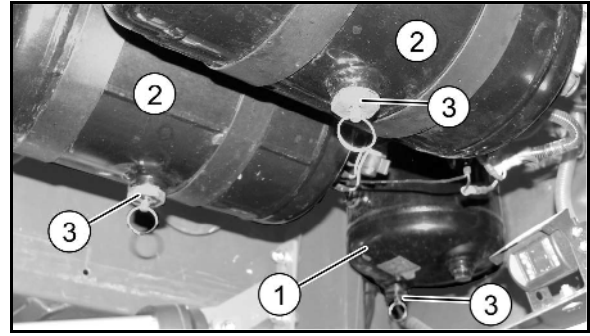


Fig. 176

1. Pull the drainage valve in a sideways direction using the ring until no more water escapes from the air reservoir.
- Water flows out of the drainage valve.
2. Unscrew the drainage valve from the air reservoir and clean the air reservoir if there are signs of dirt.

## Test instructions for dual circuit service brake system (workshop work)

### 1. Leak tightness check

1. Check all connections, pipe lines, hose lines and screw connections are tight.
2. Remedy any leaks.
3. Repair any areas of chafing on pipes and hoses.
4. Replace porous and defective hoses.
5. The dual-circuit service brake system may be considered tight if within 10 minutes the pressure does not drop any more than 0.15 bar.
6. Seal any leaking areas or replace leaking valves.

### 2. Check pressure in the air reservoir

1. Connect a pressure gauge to the test connection on the air reservoir.
- Set value 8.0 to 9,5 + 0.2 bar

## Checking the brake cylinder pressure

1. Connect a pressure gauge to the test connection on the brake cylinder.
- Set value: with brake not applied 0.0 bar

### 4. Visual inspection of the brake cylinder

1. Check the dust sleeves or gaiters for damage.
2. Replace damaged parts.

### 5. Joints on brake valves, brake cylinders and brake linkages

Joints on brake valves, brake cylinders and brake linkages must move freely. Grease or lightly oil, if necessary.

## 13.6.16 Hydraulic part of brake system

### Check brake fluid level

Check brake fluid level:

The equalising tank is filled with brake fluid up to the "max." marker in accordance with DOT 4.

The brake fluid must be between the marks "max." and "min.".



**If any brake fluid is lost, visit a specialist workshop!**



Fig. 177

### Brake fluid

When handling brake fluid observe the following:

- Brake fluid is corrosive and must therefore not come into contact with the paint on the machine. If necessary, wipe it off immediately and wash it off with plenty of water.
- Brake fluid is hygroscopic, i.e. it absorbs moisture from the air. Therefore only store the brake fluid in closed containers.
- Brake fluid that has already been used in the braking system must not be reused.  
Even when bleeding the brake system, only use new brake fluid..
- The high requirements made of brake fluid are subject to the standard SAE J 1703 or the American safety statutes DOT 3 and DOT 4.  
Only use brake fluid which complies with DOT 4.

Brake fluid must never come into contact with mineral oil. Even small traces of mineral oil will render brake fluid unusable or cause a failure of the brake system. Plugs and collars on the brake system will be damaged, if they come into contact with agents that contain mineral oil. For cleaning purposes, do not use any cloths that contain mineral oils.



#### **WARNING**

**Under no circumstances may drained brake fluid be reused.**

**Under no circumstances may drained brake fluid be poured away or put in the household waste, but must be collected separately from used oil and disposed of via authorised waste disposal companies.**

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**Brake check on hydraulic component of brake system (workshop work)**

---

Brake check on the hydraulic part of the braking system:

- check all flexible brake hoses for wear
- check all brake lines for damage
- check all screw unions for seal tightness
- renew any worn or damaged parts.

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**Replacing brake fluid (workshop work)**

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If possible, change the brake fluid after the winter.

---

**Changing the brake pads**

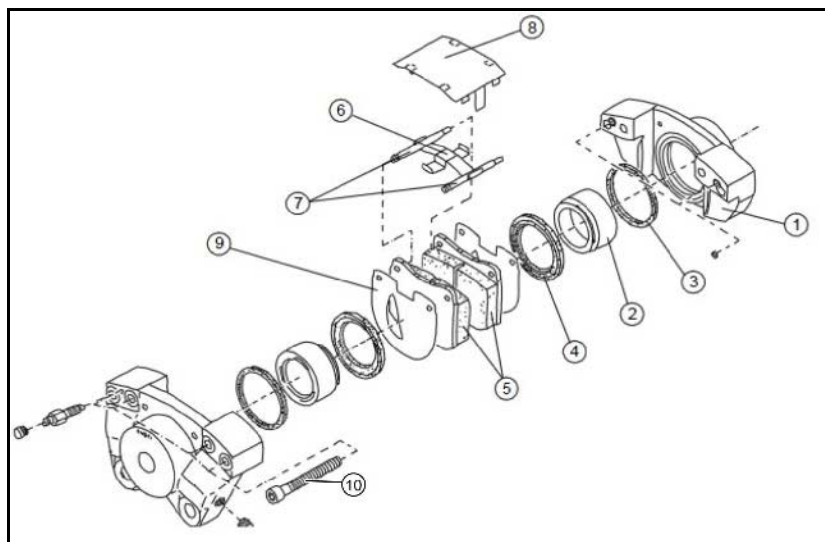
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Changing the brake pads should only be performed by an authorized repair shop!

Perform a brake test following all work on the brakes.

- The braking distance from a speed of 40 km/h should be between 18 m and 24 m.
- The machine must not pull to one side when braking.
- Minimum thickness of brake pads: 3 mm.
- Change all the brake pads on one axle respectively.
- When changing the brake pads, check the brake discs for grooves and disc thickness.



**Fig. 178**

- (1) Brake disc half
- (2) Piston
- (3) Sealing ring
- (4) Dust cap
- (5) Brake pad
- (6) Cross spring
- (7) Lock pin with split pin
- (8) Cover sheet
- (9) Insulation sheet



**WARNING**

**The calliper screw joint must not be loosened under any circumstances!**

1. Undo the lock pins.
2. If available: Drive out the split pins.
3. Remove the safety clips.
- Caution: The sprung plate can jump out.
4. Remove the brake pads and shims.
5. Clean the brake caliper with white spirit (oily cleaning agents prohibited).
6. Press the brake piston back into the housing.
7. Carry out installation in the reverse order.
- Caution:
  - Recesses on the shims must be on the entry side of the disc.
  - Install the split pins on the lock pins with the slit pointing downwards.
8. Carry out a braking test, beforehand press the brake pedal several times while stationary.

- (1) Direction of rotation
- (2) Recess

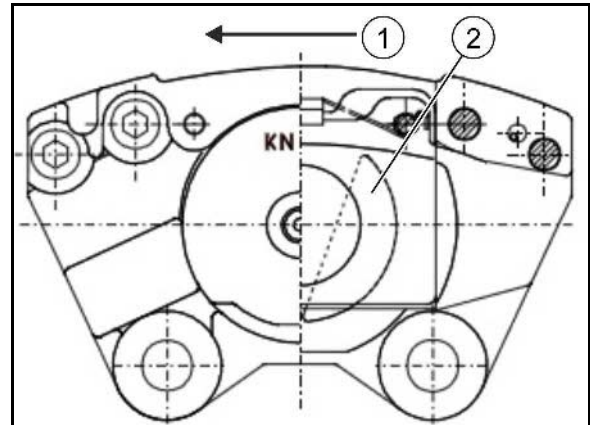


Fig. 179

### Seal replacement



If there are any leaks, use complete seal sets / repair sets.  
If necessary also replace the dust caps.

### Bleeding the brake system (workshop work)

After each brake repair, for which the system has been opened, bleed the brake system, because air may have entered the pressure hoses.

The brake system is bled in the specialist workshop using a brake filling and bleeding device as follows:

1. Remove the equalising tank screw union
  2. Fill the equalising tank up to the top edge.
  3. Fit the bleeder muff to the equalising tank.
  4. Connect the filling hose
  5. Open the stop tap of the filling union piece.
  6. Bleed the main cylinder.
  7. Remove brake fluid from the system's bleeder screws until it flows out clear and bubble-free. To do so, the transparent bleeder hose, which leads to a collecting cylinder one-third filled with brake fluid, is pushed onto the bleeder valve to be bled.
- Bleed using the upper venting screws one-after another starting at the rear and then on the front axle
8. After bleeding the complete brake system, close the stop tap on the filling screw.
  9. Relieve the residual pressure coming from the filling device.
  10. Close the last bleeder valve once the residual pressure coming from the filling device has dropped and the brake fluid level in the equalising tank has reached the "MAX" mark.
  11. Remove the filling screw.
  12. Close the equalising tank.

## Cleaning, maintenance and repair

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Carefully open the bleeder valves so that they are removed completely. Spraying the valves with a rust releasing agent approx. 2 hours before bleeding is recommended.



Perform a safety check:

- Have the venting screws been tightened?
- Is there enough brake fluid?
- Check that all connections are tight.



Following any repair work to the brake system, check that it is working properly by braking several times on a road with little traffic. When you do this, you must perform at least one emergency stop.

**Caution:** Pay attention to any traffic behind you when testing the brake system!

### 13.6.17 Hydraulic system



#### WARNING

**Risk of infection through the high pressure hydraulic fluid of the hydraulic system entering the body.**

- Only a specialist workshop may carry out work on the hydraulic system.
- Depressurise the hydraulic system before carrying out work on the hydraulic system.
- When searching for leak points, always use suitable aids.
- Never attempt to plug leaks in hydraulic hose lines with your hand or fingers.

Escaping high pressure fluid (hydraulic fluid) may pass through the skin and ingress into the body, causing serious injuries.

If you are injured by hydraulic fluid, contact a doctor immediately. Risk of infection



- When connecting the hydraulic hose lines to the hydraulic system of connected machines, ensure that the hydraulic system is depressurised on both the drawing vehicle and the trailer.
- Ensure that the hydraulic hose lines are connected correctly.
- Regularly check all the hydraulic hose lines and couplings for damage and impurities.
- Have the hydraulic hose lines checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is damaged or worn. Only use genuine AMAZONE hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years. This period includes any storage time of a maximum of two years. Even with proper storage and approved use, hoses and hose connections are subject to natural ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Dispose of old oil in the correct way. If you have problems with disposal, contact your oil supplier.
- Keep hydraulic fluid out of the reach of children!
- Ensure that no hydraulic fluid enters the soil or waterways.

## Labelling hydraulic hose lines

Valve chest identification provides the following information:

Fig. 183/...

- (1) Manufacturer's marking on the hydraulic hose line (A1HF)
- (2) Date of manufacture of the hydraulic hose lines (02 04 = February 2004)
- (3) Maximum approved operating pressure (210 BAR).

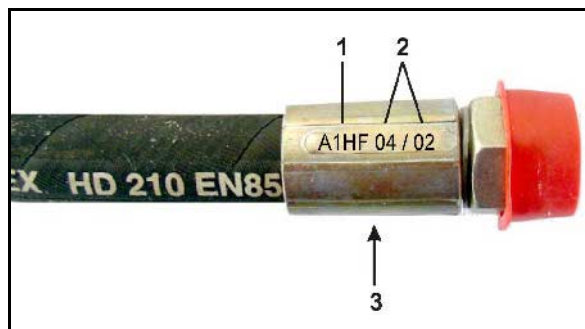


Fig. 180

## Maintenance intervals

**After the first 10 operating hours, and then every 50 operating hours**

1. Check all the components of the hydraulic system for tightness.
2. If necessary, tighten screw unions.

**Before each start-up:**

1. Check the hydraulic hose lines for visible damage.
2. Repair any areas of chafing on hydraulic hose lines and pipes.
3. Replace any worn or damaged hydraulic hose lines immediately.

## Inspection criteria for hydraulic hose lines



For your own safety and in order to reduce pollution, ensure the following inspection criteria.

**Replace hoses if the respective hose fulfils at least one of the following criteria:**

- Damage to the outer layer up to the ply (e.g. scouring points, cuts, cracks).
- Brittleness of the outer layer (crack formation of the hose material).
- Deformations which do not match the natural shape of the hose. Both in a depressurised and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Leak points.
- Damage or deformation of the hose assembly (sealing function restricted); minor surface damage is not a reason for replacement.
- Movement of the hose out of the assembly.
- Corrosion of assembly, reducing the function and tightness.
- Installation requirements not complied with.
- Life span of 6 years has been exceeded.

The date of manufacture of the hydraulic hose line on the assembly is decisive for determining these six years. If the date of manufacture on the assembly is "2004", then the hose should not be used beyond February 2010. See also "Labelling of hydraulic hose lines".

## Installation and removal of hydraulic hose lines



When installing and removing hydraulic hose lines, always observe the following information:

- Use only genuine AMAZONE replacement hoses.
- Ensure cleanliness.
- You must always install the hydraulic lines so that, in all states of operation:
  - There is no tension, apart from the hose's own weight.
  - There is no possibility of jolting on short lengths.
  - Outer mechanical influences on the hydraulic hose lines are avoided.

Use appropriate arrangements and fixing to prevent any scouring of the hoses on components or on each other. If necessary, secure hydraulic hose lines using protective covers. Cover sharp-edged components.
  - The approved bending radii may not be exceeded.
- When connecting a hydraulic hose line to moving parts, the hose length must be appropriate so that the smallest approved bending radius is not undershot over the whole area of movement and/or the hydraulic hose line is not over tensioned.
- Fix the hydraulic hose lines at the specified fixing points. There, avoid hose clips, which impair the natural movement and length changes of the hose.
- The coating of hydraulic hose lines is not permitted.

### 13.6.18 Hydraulic oil

Correct oil level at oil temperature

- 60° Celsius – Centre inspection glass
- 20° Celsius – lower third of inspection glass

The oil quantity is correct when the oil level is located

- at the lower third (cold oil),
- up to the middle

of the inspection glass.

Where required, oil can be refilled through a filling opening on the top side of the tank.

If the oil level falls below the minimum measurement or the oil temperature increases too high, a warning signal is output in the cabin.

#### Oil change:

1. Stop the engine, allow the hydraulic oil to cool sufficiently so that there is no risk of burns.
2. Place an oil drip pan under the hydraulic tank.
3. Unscrew the oil drain screw on the bottom side of the tank.
4. Drain the oil.
5. Screw in the oil drain plug with a new seal and tighten.
6. Fill with lubrication oil.
  - o Details for quality / viscosity, see Seite 214.
  - o Filling quantity 120 litres.
  - o The inspection glass is decisive for the filling quantity.
7. Check the oil level.



Fig. 181



#### CAUTION

Risk of scalding when draining due to hot oil!

### Hydraulic oil filter



- Changing the hydraulic oil filter can be carried out when the hydraulic oil tank is filled.
- Collect any possible escaping oil.
- Risk of scalding when draining due to hot oil!

### Return filter in the oil tank

The return filter is located in the filling opening of the hydraulic oil tank.

#### Changing the filter:

1. Remove the cover (Fig. 185/1) from the housing (Fig. 185/3).
2. Replace the return filter (Fig. 185/2).
3. Refit the cover.

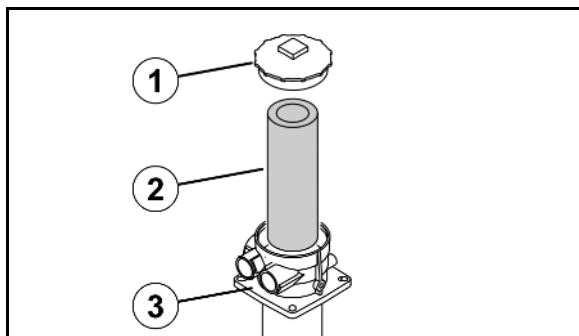


Fig. 182

### Hydraulic pump pressure filter

The pressure filter is located at the right on the hydraulic pump (Fig. 186/1).

#### Changing the filter:

1. Turn off the engine.
2. Undo the lubricating oil filter cartridge using standard commercial tools and unscrew it.
3. Collect any possible escaping oil.
4. Clean the sealing surface of the filter support from any dirt.
5. Screw in the cartridge by hand until the seal rests.
6. Tighten the lubricating oil filter cartridge by another half a turn.
7. Check the seal of the lubricating oil filter again for leaks.

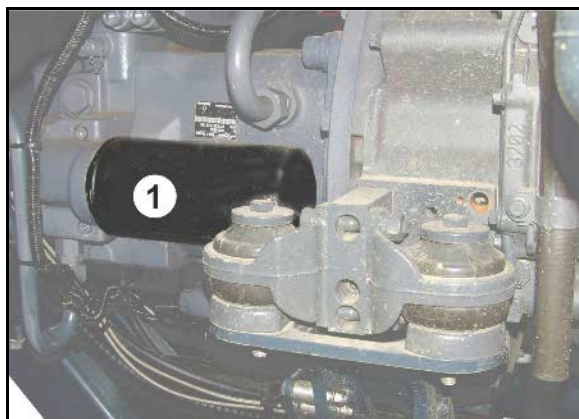


Fig. 183

### 13.6.19 Control



#### WARNING

Air filter installed incorrectly or a defective filter. Dust enters the cabin. Dust is inhaled and causes health problems.

- Make sure the filter has a tight fit.
- Replace defective air filters immediately.

#### 13.6.19.1 Clean / change the cabin air filter

1. Open the cover (Fig. 187/1) on the cabin roof, left side.
2. Unlock the filter (Fig. 187/2), take out and replace.
3. Replace damaged filters and sealing profiles in all cases.

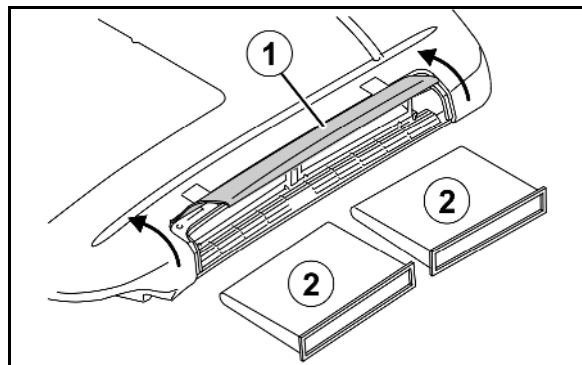


Fig. 184

#### 13.6.19.2 Clean the cabin circulation filter

1. Remove the circulating air grille (Fig. 188/1).
2. Vacuum clean, knock or blow-out filters with soiling on the surface with compressed air.
3. Renew damaged filters.
4. Install the circulating air grille.

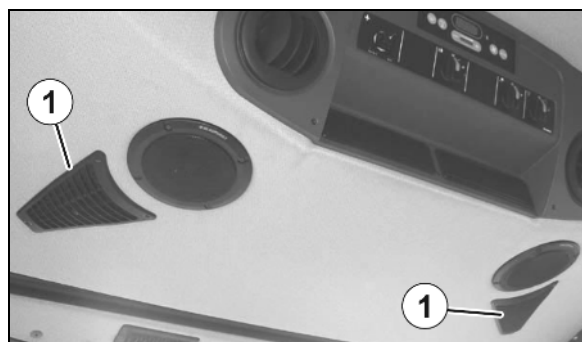


Fig. 185

1. Remove the circulating air grille (Fig. 189/1).
2. Vacuum clean, knock or blow-out filters with soiling on the surface with compressed air.
3. Renew damaged filters.
4. Install the circulating air grille.

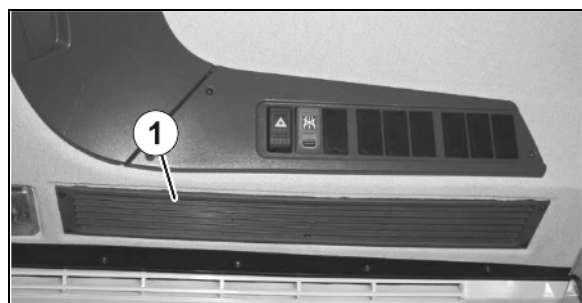


Fig. 186

### 13.6.19.3 Cab air filtration of the Category 4 safety status



#### WARNING

**Health risk from breathing in the filtered particles or skin contact!**

When working on the opened filter housing, wear respiratory protection, protective gloves and suitable protective clothing.

- Clean the inside of the filter housing before installing a new filter!
- Do not use a high-pressure cleaner to clean the filter housing!
- Do not install damaged filters!
- Install the filter in the direction of flow!

The arrow indicated the direction of flow. Only works properly when the shown sequence is observed!



Fig. 187



- For operation according to Category 4, it is necessary to replace the frame by the activated carbon filter 00 0536 555 0, which is supplied separately wrapped in an air-tight package in the initial delivery.
- Only open the packaging of the activated carbon filter when it going to be used.
- Do not used an activated carbon filter if the packaging is damaged or the date of opening is not known.

- (1) Activated carbon filter
- (2) Aerosol filter
- (3) Dust filter

Arrow = Direction of flow

Insert the activated carbon filter at the last position in front of the fan compartment.

The delivery includes a packaged filter set, consisting of the housing with the inserted filters as well as a sealed activated carbon filter according to DIN EN 15695-2 for Category 4 operation.

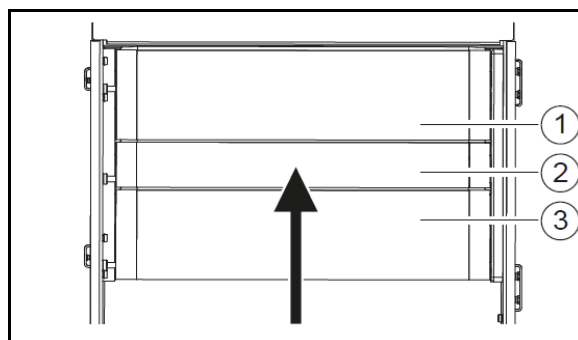


Fig. 188

- If the warning light is illuminated at the maximum fan level, the external air filters are fully loaded.
- If the pressure display still signals insufficient positive pressure in the cab, install new filter elements.
- If the warning light is illuminated permanently despite installing new filter elements, check the cab and the air ducts for leaks.

### Changing the filter



#### **WARNING**

**Health risk from breathing in the filtered particles or skin contact!**

When working on the opened filter housing, wear respiratory protection, protective gloves and suitable protective clothing.

Regardless of the machine's operational hours, the following service intervals apply:

- Filter change for activated carbon filter every 3 months (Category 4 operation)
- Filter change for dust aerosol every 6 months

Only perform checks and filter changes outside of the contaminated area and when the ignition is deactivated. Wear protective gloves.

1. Disconnect the central connector on the housing to interrupt the power supply.
2. Clean the filter inlet housing with a moist cloth after removing the used filter.
3. Check the housing and seals for damage.
4. Insert a new filter.
5. Ensure that the filter is properly inserted to ensure a complete seal.
6. Ensure that the housing lid is properly positioned.
7. Ensure that the sequence of the filter elements is observed.
8. After changing the filter, run the cab air filtering at the lowest level.

### 13.6.19.4 Check the damping bearings of the cabin for their correct fit

- (1) Four damping bearings
- (2) Damping bearing screw connection

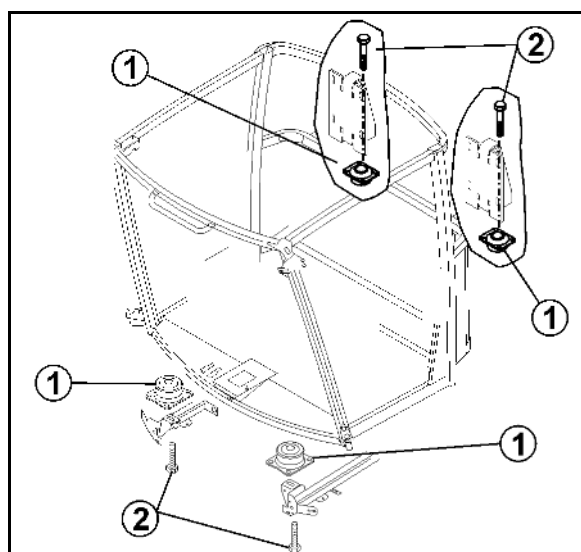


Fig. 189

### 13.6.20 Air conditioner

#### 13.6.20.1 Put the air conditioning system into operation

In order to prevent damage to the compressor with machines fitted with air conditioner, the air conditioner should be put back into operation after longer standing times.

The commissioning makes sure that the oil is distributed in the air conditioner.

1. Switch on the diesel engine and run in idle speed.
2. Open all fan jets completely.
3. Open both doors.
4. Switch on the air conditioner.
5. Set the temperature controller (/1) to the lowest temperature.
6. Blower to level 3 or automatic mode.
7. Allow the machine to run for minimum 5 minutes at idle speed.

The air conditioning system can now be operated as normal.

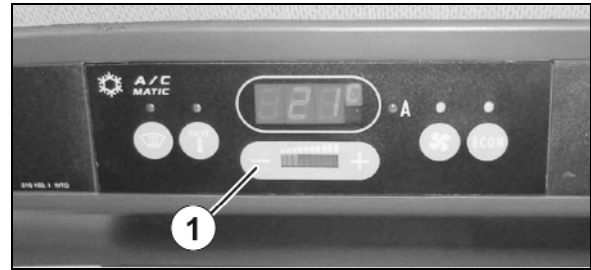


Fig. 190

#### 13.6.20.2 Working with refrigerant



##### **DANGER**

**Death or severe injuries resulting from refrigerant.**

**Work on the air conditioning system may only be carried by an authorised workshop.**

- Avoid any contact with the refrigerant.
- Wear protective gloves and protective goggles.
- No welding tasks may be carried out on the refrigerant circuit and in their immediate vicinity.
- Maximum ambient temperature for refrigerant: 80° Celsius

### 13.6.20.3 Replace the filter drier

- The filter drier is located between the front wheels.
- When installing a new filter drier, refill with 10 cm<sup>3</sup> refrigerant oil.
- Renew the seal with each assembly.

#### Removing

1. Drain the refrigerant.
2. Unlock and remove the connector from the switch.
3. Unscrew the hose line.  
Seal the opening tight.
4. Remove the filter drier.



Fig. 191

#### Installation

1. Mount the filter drier.
2. Screw on the hose line.
3. Plug the connector onto the switch.
4. Fill with refrigerant.
5. Perform functional check.
6. Perform leak test.

### 13.6.20.4 Air conditioning system filling quantity

- Coolant: 1900 g
- Contrast agent: 10 g
- Compressor oil: 5 g



Dispose of all replaced components of the air conditioning system correctly.

### 13.6.20.5 Air conditioning unit in the cabin roof



Soiled units lead to reduced heating and cooling performance. Uneconomical use of the machine.

- Observe prescribed maintenance intervals.
- With extensive dust accumulation, clean the unit more frequently.



#### CAUTION

**Clean sensitive components with stronger compressed air or other cleaning devices. Components will be damaged.**

- **Do not hold the compressed air jet close to sensitive components, such as cooling ribs or filter inserts.**
- **Never use a steam-jet cleaning device for cleaning.**

1. Unscrew the hood (Fig. 195/1) from the cabin roof.
2. Blow out the evaporator (Fig. 196/2) and warm water radiator (Fig. 196/3) with compressed air (maximum 5 bar).
3. Renew damaged seals (Fig. 196/1) under the cover.
4. Remount and screw on the hood.

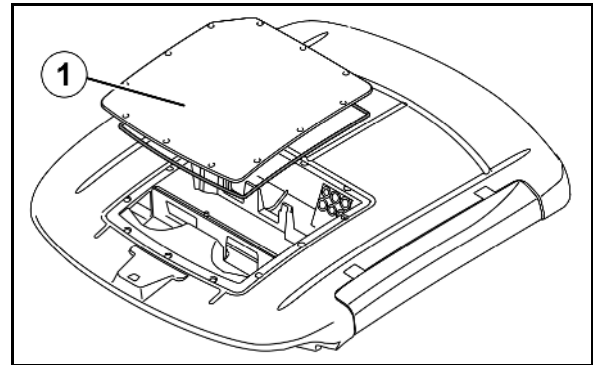


Fig. 192

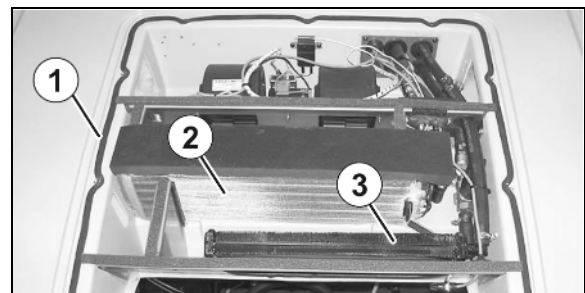


Fig. 193

## 13.7 Field sprayer maintenance

### 13.7.1 Adjusting the hydraulic throttle valve

The operating speeds for the individual hydraulic functions are set at the factory from the valve block using the respective hydraulic throttle valves (fold/unfold sprayer boom, lock/unlock the swing compensation, etc.). However, depending on the type of tractor, it may be necessary to correct these speed settings.

The operating speed for a hydraulic function associated with a particular throttle pair can be adjusted by screwing the hexagon socket head screw on the corresponding throttle in or out.

- Reduce operating speed = screw in hexagon socket head screw.
- Increase operating speed = screw out hexagon socket head screw.



Always adjust the two throttles in a throttle pair equally when correcting the operating speed of a hydraulic function.

### Profi-folding I

Fig. 197/...

- (1) Throttle - fold in the right-hand boom.
- (2) Throttle - fold out the right-hand boom.
- (3) Throttle - lock the swing compensation.
- (4) Throttle transport safety catch.
- (5) Hydraulic joints – tilt adjustment (the throttles are located on the hydraulic cylinder for tilt adjustment).
- (6) Throttle - fold in the left-hand boom.
- (7) Throttle - fold-out the left-hand boom.

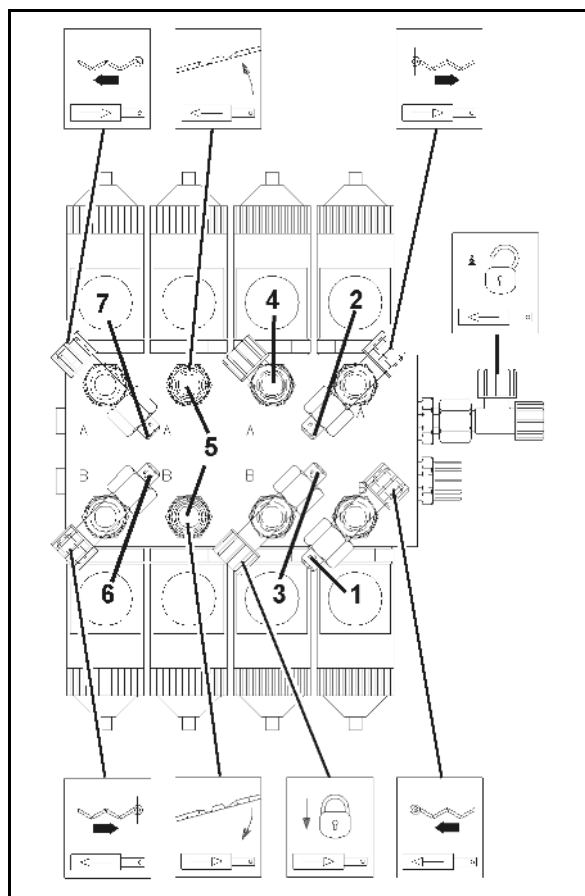
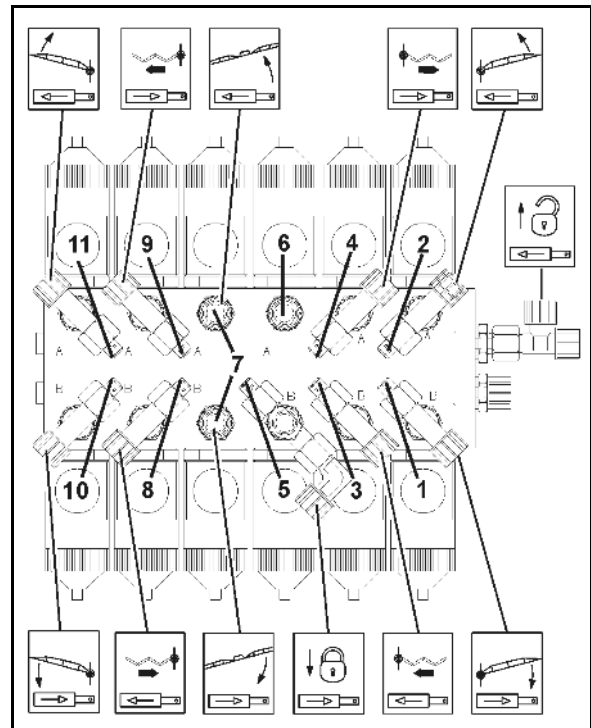


Fig. 194

## Profi-folding II

**Fig. 198/...**

- (1) Throttle - lower the right-hand boom.
- (2) Throttle - raise the right-hand boom.
- (3) Throttle - fold in the right-hand boom.
- (4) Throttle - fold out the right-hand boom.
- (5) Throttle - lock the swing compensation.
- (6) Throttle transport safety catch.
- (7) Hydraulic joints – tilt adjustment (the throttles are located on the hydraulic cylinder for tilt adjustment).
- (8) Throttle - fold in the left-hand boom.
- (9) Throttle - fold-out the left-hand boom.
- (10) Throttle - lower the left-hand boom.
- (11) Throttle - raise the left-hand boom.



**Fig. 195**

## 13.7.2 Pumps

### 13.7.2.1 Check the oil level



- Only use branded oil 20W30 or multi-purpose oil 15W40!
- Check that the oil level is correct! Damage may be caused both by the oil level being too low or too high.
- Foam generation and cloudy oil are signs of a faulty pump membrane.

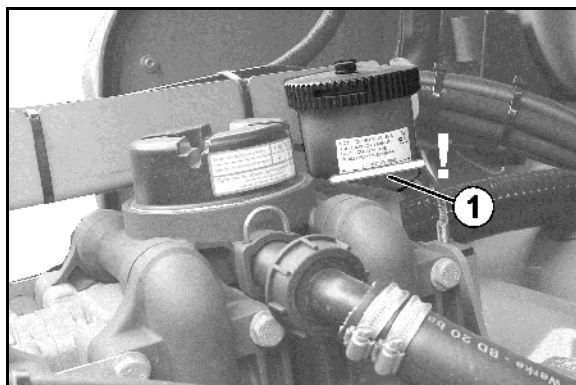


Fig. 196

1. Check whether the oil level in the inspection window is visible when the pump is running
2. If necessary, refill oil when the pump is not running (maximum up to the marker (Fig. 199/1).

### 13.7.2.2 Changing the oil



- After a few operating hours, check the oil level; top up if necessary.

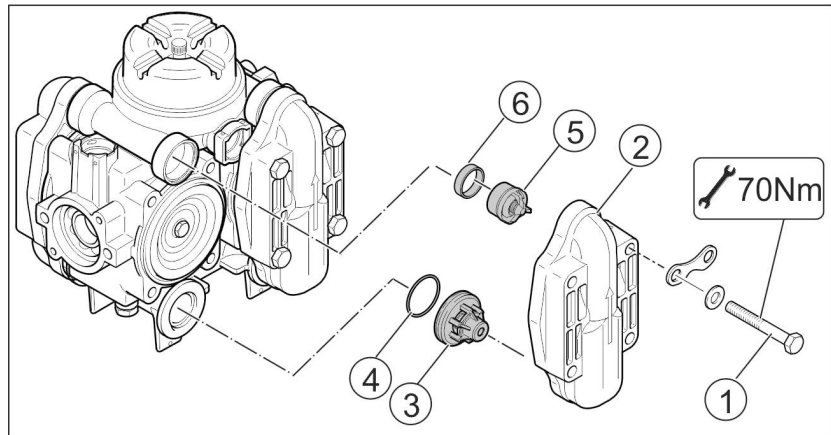
1. Remove the pump.
2. Remove the cover.
3. Drain the oil.
  - 3.1 Turn the pump on its head.
  - 3.2 Rotate the drive shaft by hand until the used oil has all run out.  

The option also exists to drain the oil from the drain plug. However, with this procedure a slight oil residue remains in the pump; we therefore recommend the first approach.
4. Place the pump on an even surface.
5. Turn the drive shaft left and right alternately and slowly fill with new oil. The right quantity of oil has been reached when the oil is visible at the mark (Fig. 199/1).

### 13.7.3 Checking and replacing the suction and pressure-side valves (workshop work)



- Pay attention to the respective installation position of the valves on the suction and pressure sides before removing the valve groups.
- When reassembling, ensure that the valve guide is not damaged. Damage may cause the valves to jam.



**Fig. 197**

1. If necessary, remove the pump.
2. Remove (Fig. 200/1) bolts.
3. Remove the valve cover (Fig. 200/2).
4. Remove the valve groups (Fig. 200/3).
5. Remove valve sealing ring (Fig. 200/4) and o-ring (Fig. 200/5).
6. Check the valve seat, valve spring and valve guide for damage or wear.
7. Replace defective parts.
8. Fit the valve groups after testing and cleaning.
9. Insert new O-rings.
10. Re-fit the valve cover, tighten the bolts to a torque of 70 Nm.

### 13.7.4 Checking and replacing the piston diaphragm (workshop work)



- At least once a year, check that the piston diaphragm is in perfect condition by removing it.
- Pay attention to the respective installation position of the valves on the suction and pressure sides before removing the valve group.
- Check and replace the piston diaphragm for each piston individually. Only remove the next piston in sequence after the currently removed piston has been completely checked and refitted.
- Always swivel the piston to be checked upwards so that the oil in the pump housing does not run out.
- As a rule, replace all piston diaphragms even if only one piston diaphragm distorted, punctured or porous.

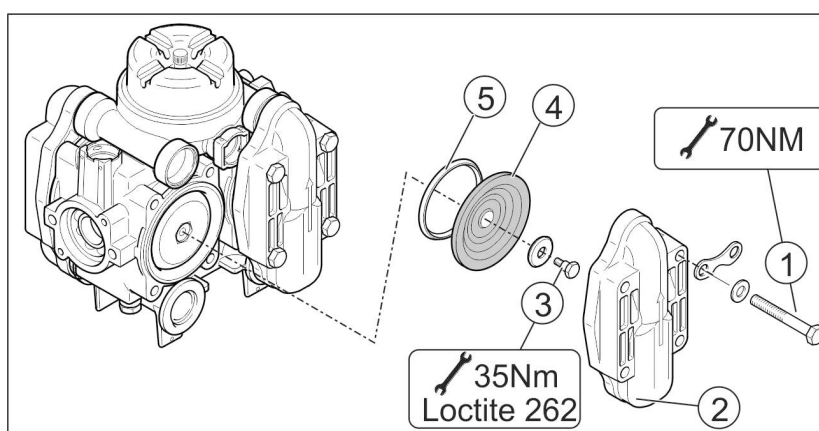


Fig. 198

#### Checking the piston diaphragm

1. If necessary, remove the pump.
2. Slacken the screws (Fig. 201/1).
3. Remove the valve cover (Fig. 201/2).
4. Check the piston diaphragm (Fig. 201/4) and the wedge ring (Fig. 201/5).
5. Replace any damaged parts.

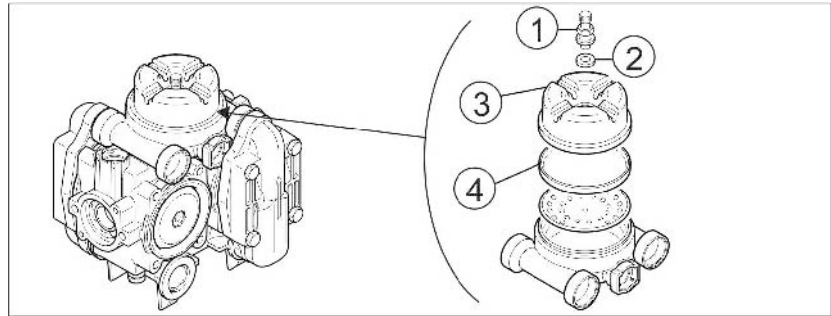
#### Replacing the piston diaphragm

1. Loosen bolt (Fig. 201/3) and remove the piston diaphragm (Fig. 201/4) together with the holding washer from the piston.
2. If the piston diaphragm has been punctured, drain the oil/spray liquid mixture from the pump housing.
3. Clean the pump housing by flushing it thoroughly with diesel oil or paraffin.
4. Clean all sealing faces.
5. Correctly insert the piston diaphragm and wedge ring and fit them.  
Use thread lock for medium-fixed connections!
6. Re-fit the valve cover, tighten the bolts to a torque of 70 Nm.

### 13.8 Checking and exchanging the pressure reservoir diaphragm (workshop task)



Check that the diaphragm in the pressure reservoir is in perfect condition at least once a year by disassembling it.



**Fig. 199**

1. Remove the valve (Fig. 202/1) and washer (Fig. 202/2).
- Air pressure bleeds off.
2. Place a suitable tool in the groove of the cover and unscrew the cover (Fig. 202/3).
3. Check the diaphragm (Fig. 202/4) and exchange the diaphragm if it is defective.
4. If required, clean the cover.
5. Re-fit the cover, washer and valve.
6. Recharge the pressure reservoir to 3 bar of air pressure.



If the pump does not run smoothly, the air pressure in the pressure reservoir can vary. The air pressure should be in the range of the spray pressure.

### 13.8.1 Calibrate the flow meter



- Calibrate the flow meter at least once a year.
- Calibrate the flow meter:
  - after removing the flow meter.
  - After long periods of operation, because spray residue deposits can form in the flow meter.
  - If differences occur between the required spray rate and the actual spray rate.
- Note the displayed "Impulse" value when you drive the field sprayer away from your location for determining the amount of water applied. The impulse value displayed lapses when transporting the field sprayer.
- Compare the flow meter with the flow meter at least once a year.
- Calibrate the flow meter with the return flow meter at the following times:
  - after calibrating the flow meter.
  - After removing the return flow meter.
- Move-out in work menu "Sprayer". The comparison can only be carried out when no fluid is used via the boom.



Pay attention to the operating instructions for the control terminal; Chapter Pulses per litre.

### 13.8.2 Nozzles

From time to time, check the seating of the slider (Fig. 203/7).

- To do this, insert the slider into the nozzle body (Fig. 203/2) as far as possible using moderate thumb pressure.

Do not insert the slider up to the stop when in a new condition under any circumstances.

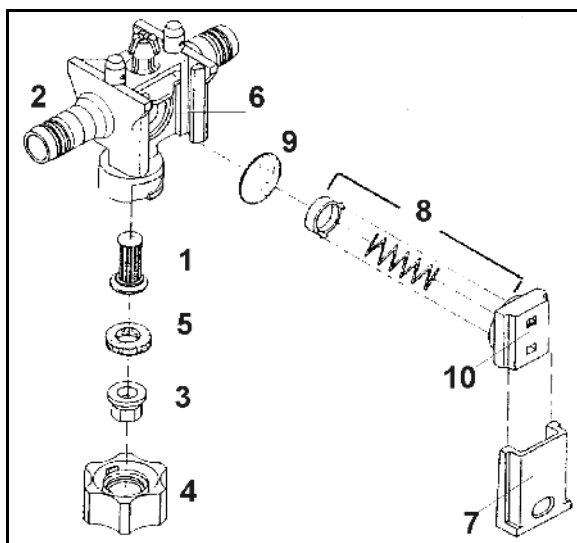


Fig. 200

### 13.8.2.1 Fitting the nozzle

1. Insert the nozzle filter (Fig. 203/1) into the nozzle body (Fig. 203/2) from below.
2. Insert the nozzle (Fig. 203/3) into the bayonet nut (Fig. 203/4)



**Different coloured bayonet nuts are available for the different nozzles.**

3. Insert the rubber seal (Fig. 203/5) above the nozzle.
4. Press a rubber seal into the seat for the bayonet nut.
5. Position a bayonet nut on the bayonet connection.
6. Screw on the bayonet nut up to the stop.

### 13.8.3 Removing the diaphragm valve if the nozzle is dripping

Deposits on the diaphragm seat (Fig. 203/6) can cause the nozzles to drip after the boom is shut-off. If this occurs, clean the diaphragm in question as follows:

1. Pull the slider (Fig. 203/7) out of the nozzle body (Fig. 203/2) towards the bayonet nut.
2. Remove the spring element (Fig. 203/8) and the diaphragm (Fig. 203/9).
3. Clean the diaphragm seat (Fig. 203/6).
4. Reassembly occurs in the reverse sequence.



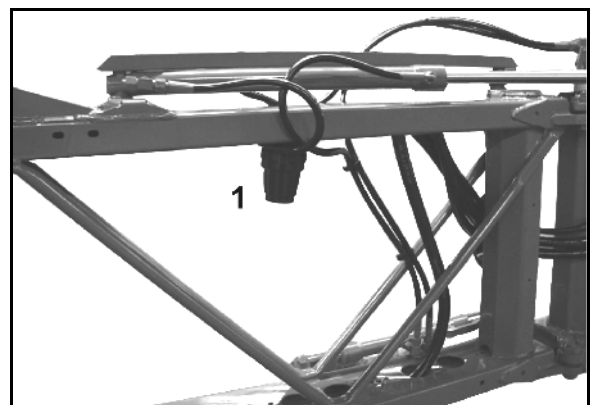
Note the correct orientation for installing the spring element. For installation, the stepped, upwards-sloping edges on the left and right of the housing of the spring element (Fig. 203/10) must slope up in the direction of the boom profile.

### 13.8.4 Line filter

- Clean the line filters (Fig. 204/1) 3 - 4 months depending on operating conditions).
- Change damaged filter inserts.



1. Press the locking piece together on the two lugs.
2. Remove the locking piece with O-ring seal, pressure spring and filter insert.
3. Clean (rinse out) the filter insert with petrol or thinner and then blow it dry with compressed air.
4. To reassemble, reverse the procedure and make sure that the O-ring seal is not twisted in the guide slot.



**Fig. 201**

### 13.8.5 Instructions on testing the field sprayer

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- Only authorised centres are permitted to carry out spray tests.
- According to law, a spray test must be carried out:
  - o 6 months after commissioning (if not performed at time of purchase) at the latest, then
  - o every two years thereafter.

#### Pump test - testing pump performance (delivery capacity, pressure)

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Connect the test kit to the pump pressure connection.

#### Flow meter test

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1. Remove all spray lines from the part width section valves.
2. Connect the flow meter connection to a part width section valve and connect to the tester.
3. Block the connections for the remaining part width section valves using blanks.
4. Switch on spraying.

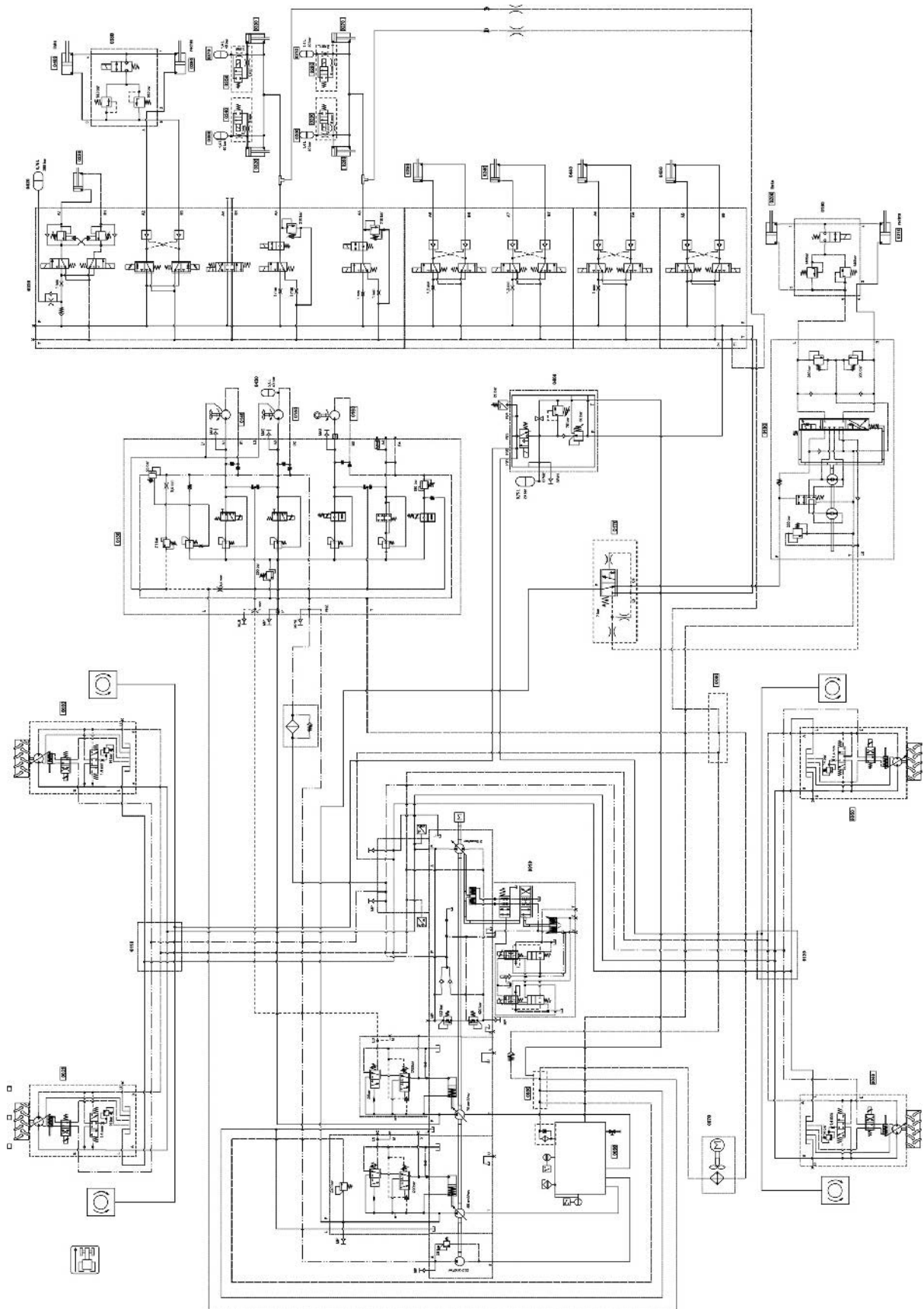
#### Pressure gauge test

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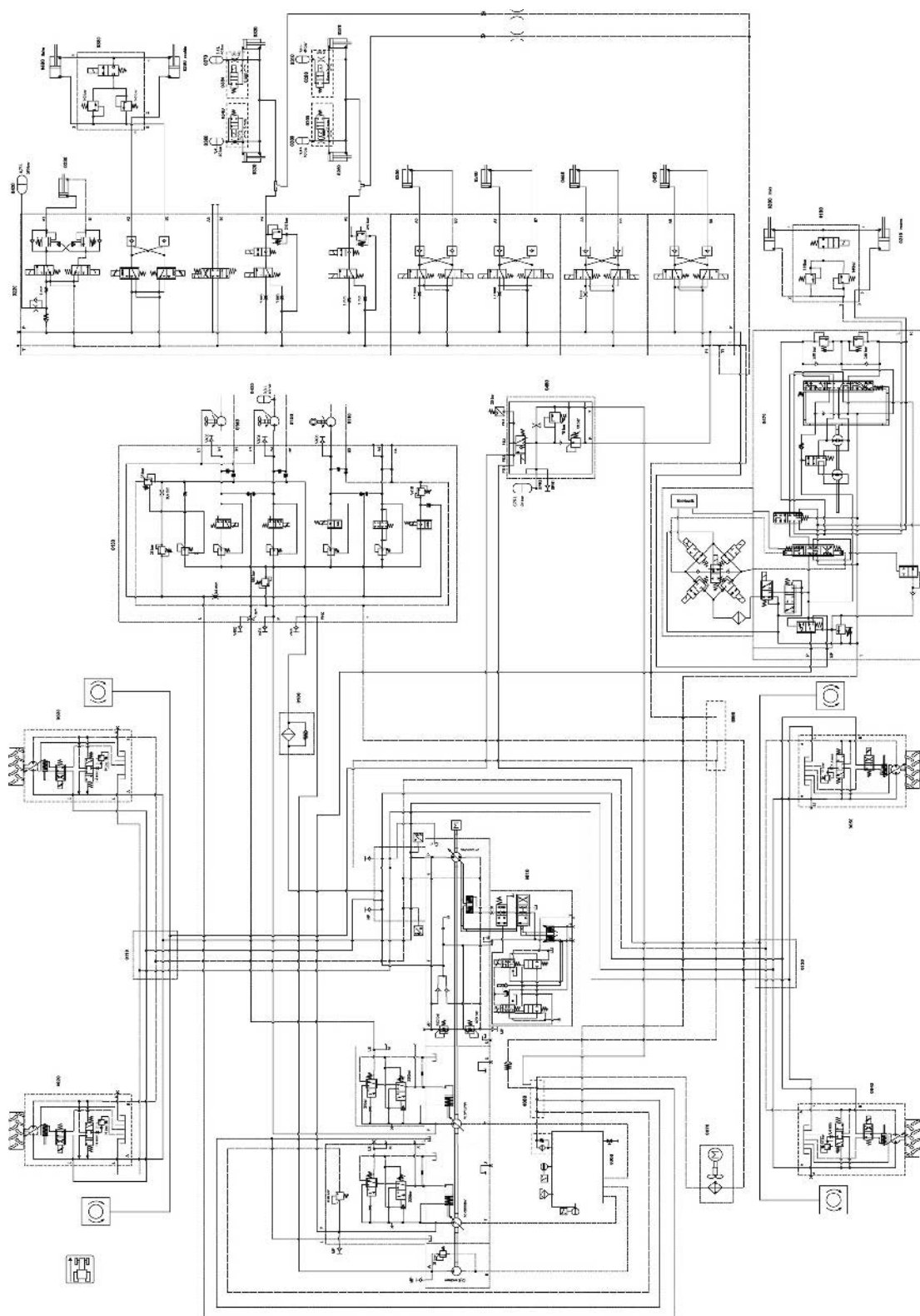
1. Remove a spray line from a part width section valve.
2. Connect the pressure gauge connection to a part width section valve with the help of the turned socket.
3. Screw the check gauge 1/4 of an inch into the inside thread.

## 13.9 Hydraulic diagrams

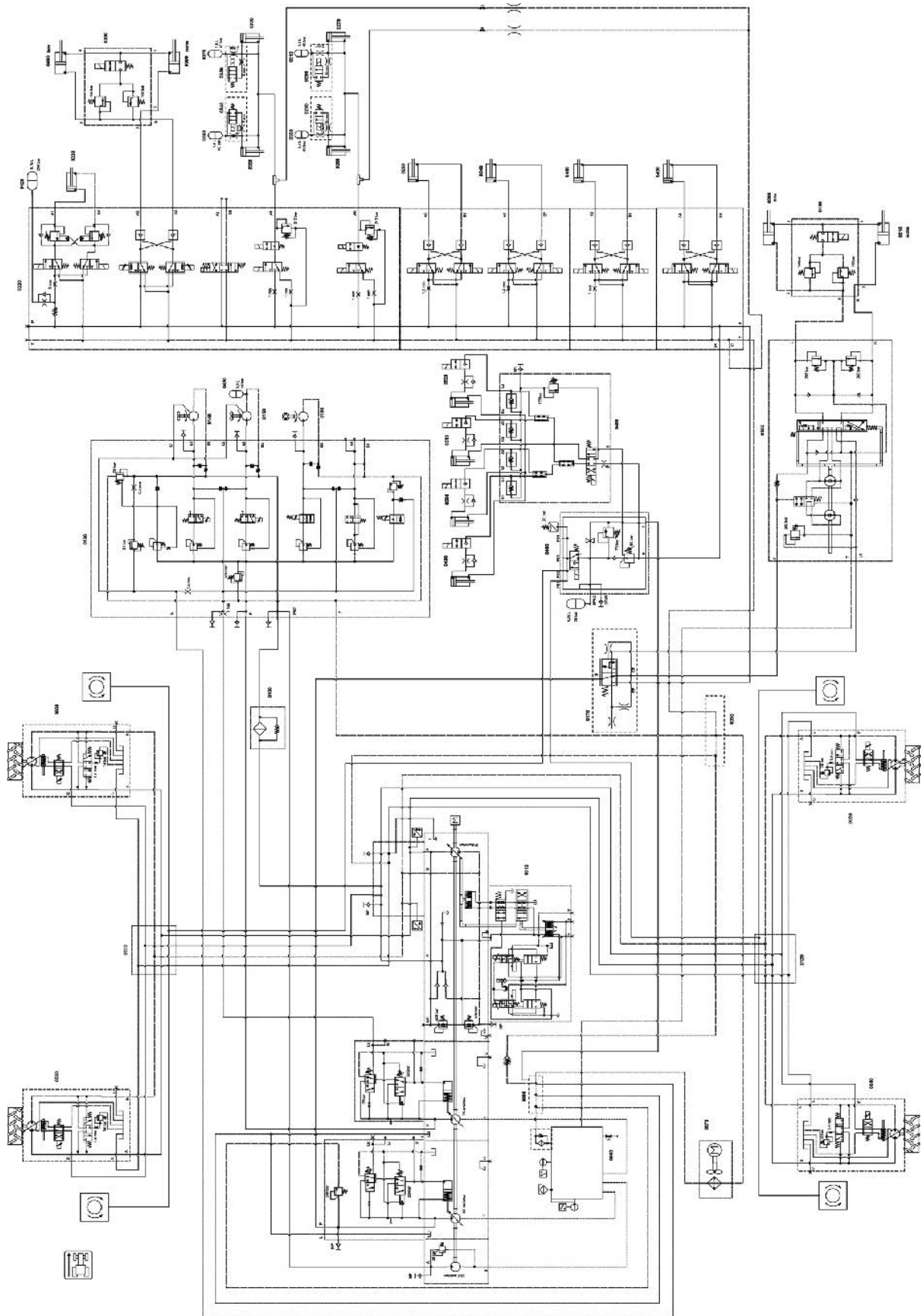
### Hydraulic diagram 1



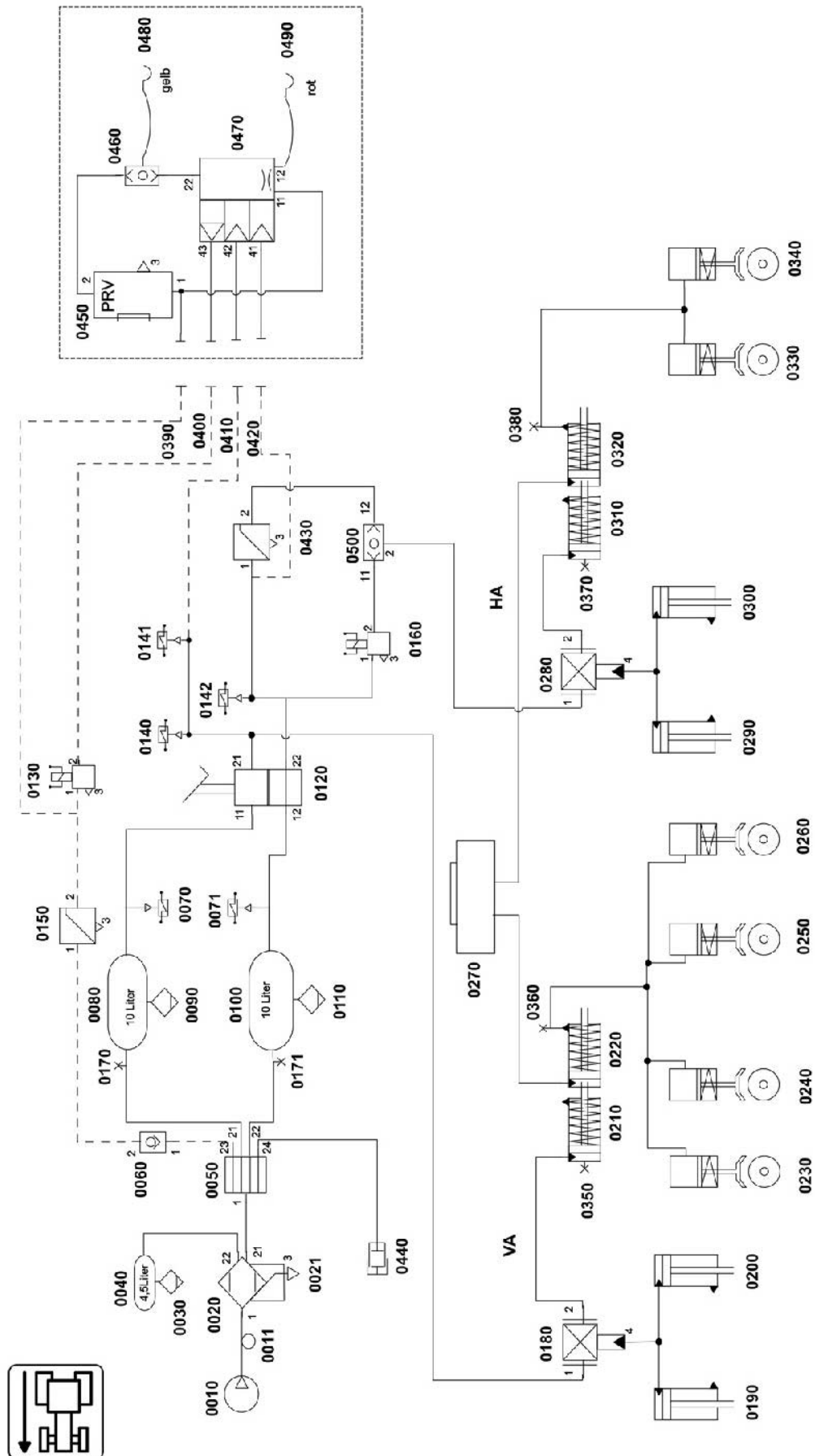
## Hydraulic diagram 2



### Hydraulic diagram 3



## 13.10 Pneumatic diagram



### 13.11 Overview of fuses and relay



The fuses and relays are located in the cabin

- top left in the cabin roof,
- under the folding arm rest

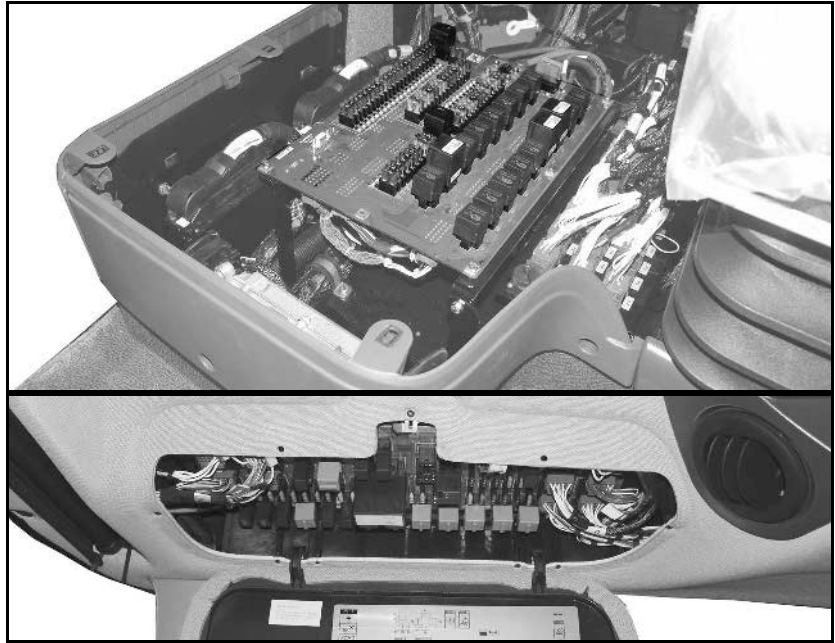


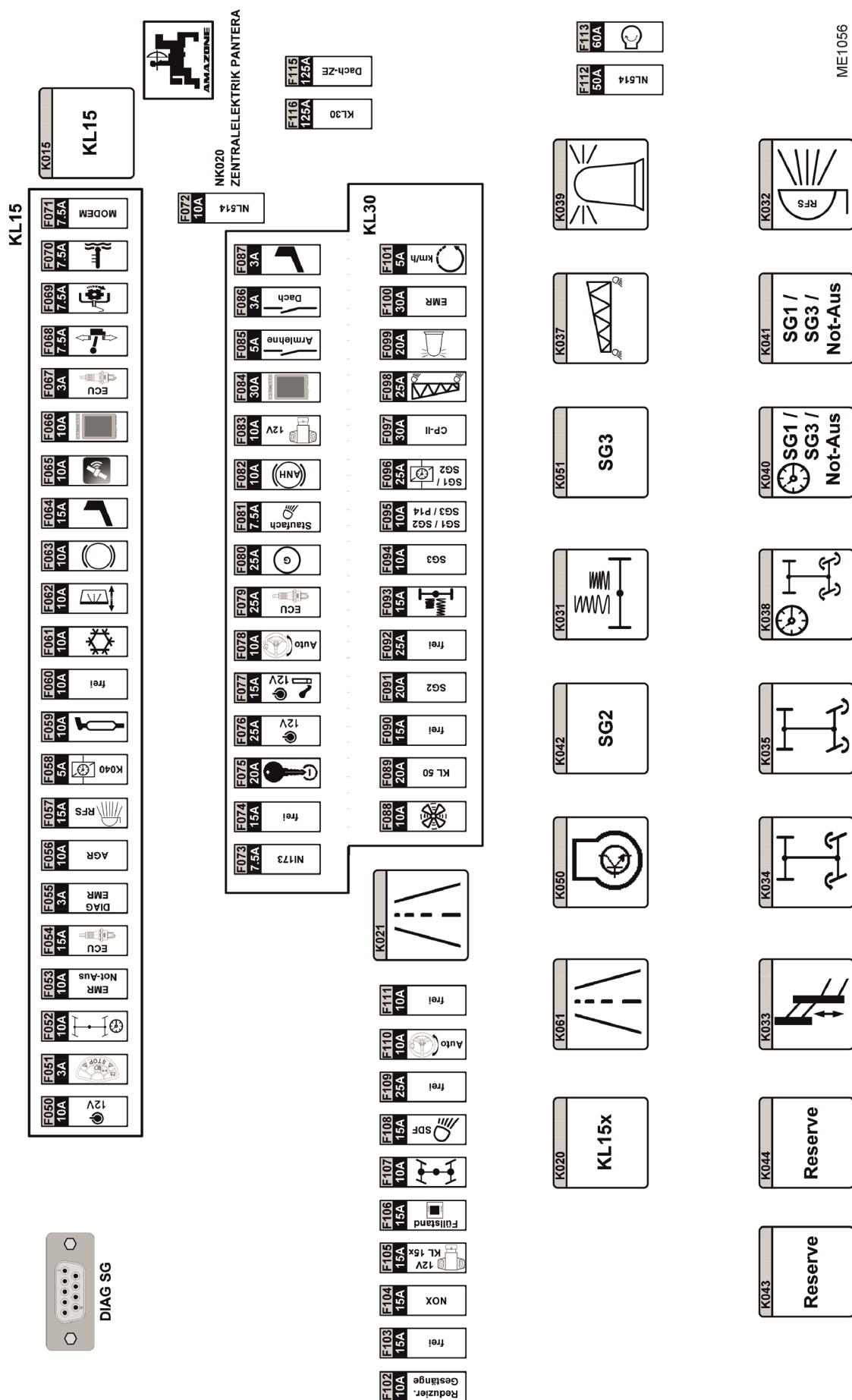
Fig. 202

- Fuses on the vehicle battery



Fig. 203

### 13.11.1 Fuses on the central electrics under the arm rest



## List of fuses on the central electrics under the arm rest

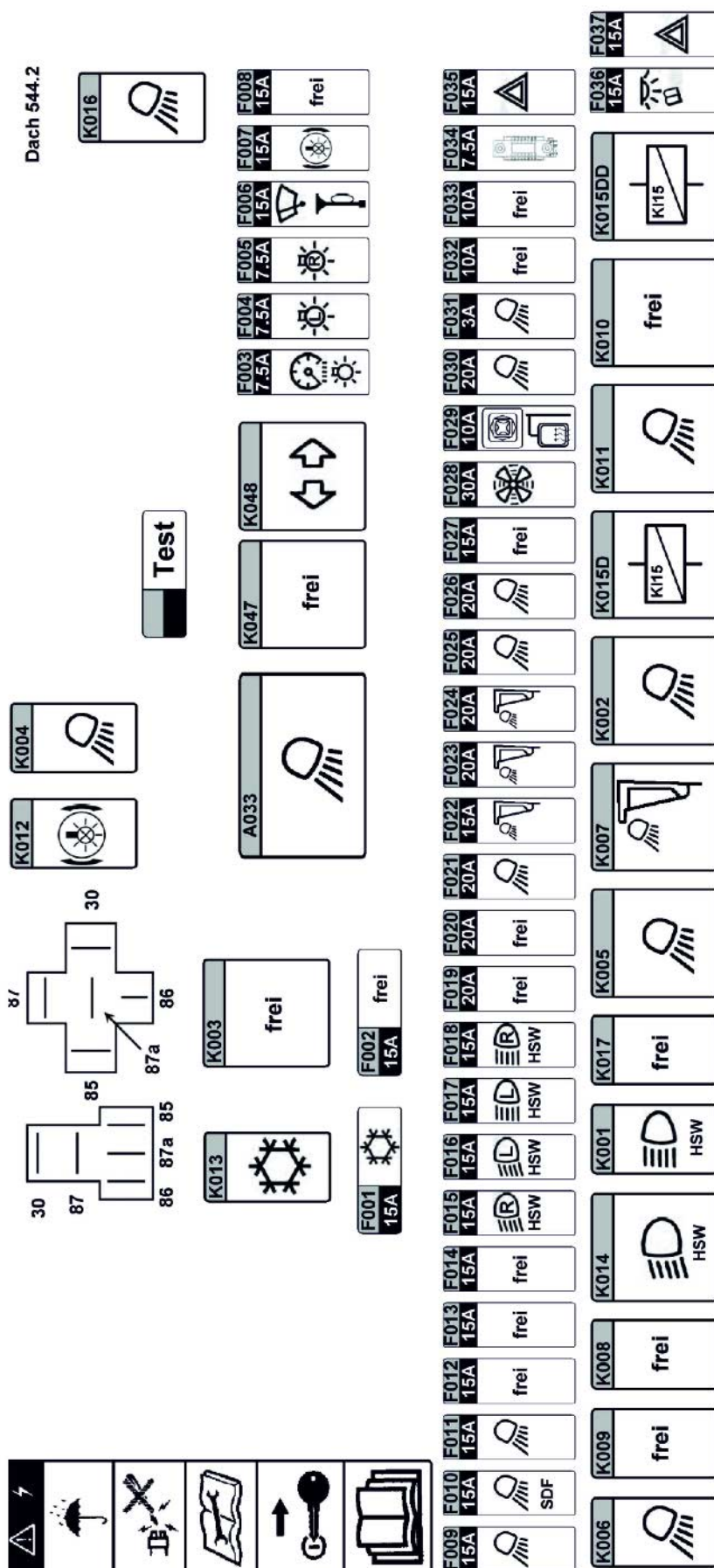
Number	Amperage	Function
F050	10 A	12 V electrical socket
F051	3 A	Warning light module
F052	10 A	Steering, rear axle
F053	10 A	EMERGENCY STOP EMR,
F054	15 A	Ignition control unit class 4
F055	3 A	EMR diagnosis (X.DIA.2)
F056	10 A	AGR/Waste Gate CL.1
F057	15 A	Reversing headlight right / left side, reversing warning signal X3
F058	5 A	KL15 30 s extended (SG1, SG2, SG3, Emergency shutdown, modem (Patch_14) )
F059	10 A	Air drier, central lubrication system
F060	10 A	Potentiometer row sensor adjustment
F061	10 A	Coolbox
F062	10 A	Hydr. ESB
F063	10 A	Brake pressure sensors, diesel fill level, hydraulic oil fill level, high pressure sensors A/B, sensor tank ladder, contamination sensor hydraulic oil tank, temp. sensor hydraulic oil tank
F064	15 A	Seat adjustment
F065	10 A	12VDC-Vers.-GPS antenna, steering system plug L1
F066	10 A	Switch on signal AMADRIVE,
F067	3 A	ECU Burner ignition KL.2
F068	7.5 A	Driving lever operation
F069	7.5 A	Sensor hand brake pressure
F070	7.5 A	Spraying pump switch "on" (spray agent fitting), work light switch ESB "on" (spray agent fitting)
F071	7.5 A	KL15 Modem (Patch_14)
F072	10 A	Basic equipment
F073	7,5 A	Electric actuation of the spray agent fitting
F074	15 A	spare
F075	20 A	Ignition lock (KL15, KL50)
F076	25 A	12 V electrical socket
F077	15 A	Cigarette lighter
F078	10 A	Steering system connector L1
F079	25 A	Spark plug
F080	25 A	Generator S/B+
F081	7.5 A	Storage compartment light
F082	10 A	electrical trailer brake valve (PRV)
F083	10 A	Stair sensor, suction cock potentiometer, agitator pressure sensor, filling level H2O
F084	30 A	12V supply AMADRIVE
F085	5 A	Foot button, steps, lifting module, track correction vf./hi., S025
F086	3 A	Revolving beacon, central lubrication
F087	3 A	Seat occupation contact
F088	10 A	Load control signal
F089	20 A	KL50
F090	15 A	K043

Number	Amperage	Function
F091	20 A	12V-Vers. SG2
F092	25 A	Motor row sensor adjustment
F093	15 A	Sprung suspension hard / soft
F094	10 A	12V-Vers. SG3
F095	10 A	KL15 30 s extended (SG1, SG2, SG3, MODEM (Patch_14)
F096	25 A	12V-Vers. SG1, K038, K040, Emergency stop
F097	20 A	Motor suction tap, main agitator
F098	25 A	Boom illumination
F099	20 A	Revolving beacons
F100	30 A	EMR
F101	5 A	Wheel sensor 1, Wheel sensor 2, Wheel sensor 3, Wheel sensor 4
F102	10 A	Boom width reduction
F103	15 A	spare
F104	15 A	NOX, ECU air pump
F105	15 A	Potentiometer steering front/rear, Pot. level f/r, Pot. track width R/L, Pot. lifting module
F106	15 A	External cleaning button, spray agent fitting display sensors height adjustment
F107	10 A	Steering, rear axle (control K038)
F108	15 A	Signal "FIELD active" for coming home
F109	25 A	spare
F110	10 A	spare
F111	10 A	spare
F112	50 A	Basic equipment
F113	60 A	Secondary air pump
F115	125 A	12V-Vers. Roof ZE 544.2
F116	125 A	12V Vers. Central electrical system PANTERA NK020

## New relay under the arm rest

Number	Function
K015	KL15
K020	KL15x (KL15 switched off at start)
K021	"FIELD active"
K031	Sprung suspension hard / soft
K032	Reversing signal
K033	Lifting module enable
K034	Steering, HA left side
K035	Steering HA right side
K037	Boom illumination
K038	Time relay steering HA ( Signal "FIELD active" extended by 30 s )
K039	Revolving beacons (battery)
K040	Time relay KL15 ( KL15 extended by 30 s )
K041	SG1, SG3, EMERGENCY STOP
K042	SG 2
K043	spare
K044	spare (KL15)
K050	Start KL50
K051	SG 3
K061	Time relay signal "Loading monitor" delayed by 1.6 s

### 13.11.2 Fuses and relay in the cabin roof



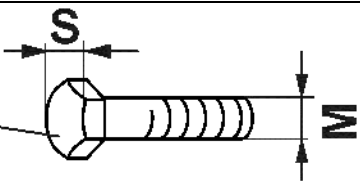
## List of the fuses Roof

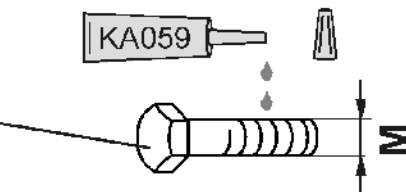
Number	Amperage	Function
F001	15 A	Air conditioner compressor
F002	15 A	spare
F003	7.5 A	Signal "DIPPED BEAM on" for coming home
F004	7.5 A	Side/rear light left side
F005	7.5 A	Side/rear light right side, 3rd rear light
F006	15 A	Windscreen washer system
F007	15 A	Brake light right/left, 3rd brake light,
F008	10 A	spare
F009	15 A	Dipped beam right / left side, high beam right / left side, dashboard / switch lighting
F010	15 A	Sidelfinder right / left side
F011	15 A	Work lights platform right side (LIGHT 3 right side)
F012	15 A	spare
F013	15 A	spare
F014	15 A	Signal "DIPPED BEAM on" for SG1
F015	15 A	Dipped beam, right side
F016	15 A	Dipped beam, left side
F017	15 A	High beam, left side
F018	15 A	High beam, right side
F019	20 A	spare
F020	20 A	spare
F021	20 A	Work lights platform left side (LIGHT 3 left side)
F022	15 A	Cabin roof work lights, outside right / left side
F023	20 A	Work lights cabin roof left side middle (Xenon lighting left side)
F024	20 A	Work lights cabin roof right side middle (Xenon lighting right side)
F025	20 A	Work lights railing left
F026	20 A	Work lights railing right
F027	10 A	spare
F028	30 A	Air conditioning, fan
F029	10 A	Rear view mirror heating on right / left side, rear view mirror adjustment on right / left side
F030	20 A	Work lights ESB, work lights hydraulic tank, work lights cabin roof rear
F031	3 A	Signal "FIELD active" for coming home
F032	10 A	spare
F033	10 A	spare
F034	7.5 A	Radio
F035	15 A	Hazard warning lights, indicators
F036	15 A	Reading lamp, Radio
F037	15 A	Hazard warning flashers

New roof relay

Number	Amperage	Function
K001	10 / 20 A	High beam, left / right side
K002	20 / 40 A	Work lights, railing left / right side
K003	20 / 40 A	Reserve (KL58)
K004	10 / 20 A	Work lights Coming home function
K005	20 / 40 A	Work lights, platform left side
K006	10 / 20 A	Work lights, platform right side
K007	20 / 40 A	Work lights cabin roof front
K008	10 / 20 A	spare
K009	10 / 20 A	spare
K010	20 / 40 A	spare
K011	20 / 40 A	Work lights cabin roof rear, ESB, hydraulic tank
K012	10 / 20 A	Brake light signal
K013	20 / 40 A	Air conditioner compressor
K014	20 / 40 A	Dipped beam, left / right side
K015D	20 / 40 A	KI 15D (KL15 for roof ZE 544.2)
K015DD	20 / 40 A	KI 15DD (KL15 for roof ZE)
K016	10 / 20 A	Work lights, railing left / right side
K017	10 / 20 A	spare
K047		free (indicator relay USA)
K048		free (indicator relay USA)

## 13.12 Screw tightening torques

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> <b>8.8</b>  <b>10.9</b>  <b>12.9</b> </div>  </div>				
M	S	Nm		
		8.8	10.9	12.9
M 8	13	25	35	41
M 8x1		27	38	41
M 10	16 (17)	49	69	83
M 10x1		52	73	88
M 12	18 (19)	86	120	145
M 12x1.5		90	125	150
M 14	22	135	190	230
M 14x1.5		150	210	250
M 16	24	210	300	355
M 16x1.5		225	315	380
M 18	27	290	405	485
M 18x1.5		325	460	550
M 20	30	410	580	690
M 20x1.5		460	640	770
M 22	32	550	780	930
M 22x1.5		610	860	1050
M 24	36	710	1000	1200
M 24x2		780	1100	1300
M 27	41	1050	1500	1800
M 27x2		1150	1600	1950
M 30	46	1450	2000	2400
M 30x2		1600	2250	2700

<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> <b>A2-70</b>  <b>A4-70</b> </div>  </div>												
M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
Nm	2,4	4,9	8,4	20,6	40,7	70,5	112	174	242	342	470	589



Coated bolts have different tightening torques.

Observe the specific data for tightening torques in the maintenance section.

## 14 Spray table

### 14.1 Spray tables for flat-fan, anti-drift, injector and airmix nozzles, spraying height 50 cm



- The spray rates [l/ha] listed in the spray tables are only valid for water. To convert the spray rates given into AUS, multiply these by 0.88 and, for NP solutions, by 0.85.
- Fig. 207 helps with the selection of the right nozzle type. The nozzle type is determined by
  - the intended forward speed,
  - the required spray rate and
  - the required atomisation characteristic (fine, medium or coarse-dropped) of the crop protection agent used for the crop protection measure.
- Fig. 208 is used to
  - determine the nozzle size.
  - determine the required spray pressure.
  - determine the required individual nozzle output for calibrating the field sprayer.

#### Permissible pressure ranges for different nozzle types and sizes

Nozzle type	Manufacturer	Permissible pressure range [bar]	
		min. pressure	max. pressure
XRC	TeeJet	1	5
AD	Lechler	1,5	5
Air Mix	agrotop	1	6
IDK / IDKN	Lechler	1	6
IDKT		1,5	6
ID3 01 - 015		3	8
ID3 02 - 08		2	8
IDTA 120		1	8
AI	TeeJet	2	8
TTI		1	7
AVI Twin	agrotop	2	8
TD Hi Speed		2	10



For further information about the nozzle characteristics, see the nozzle manufacturer's website.

[www.agrotop.com](http://www.agrotop.com) / [www.lechler-agri.de](http://www.lechler-agri.de) / [www.teejet.com](http://www.teejet.com)

## Selecting the nozzle type

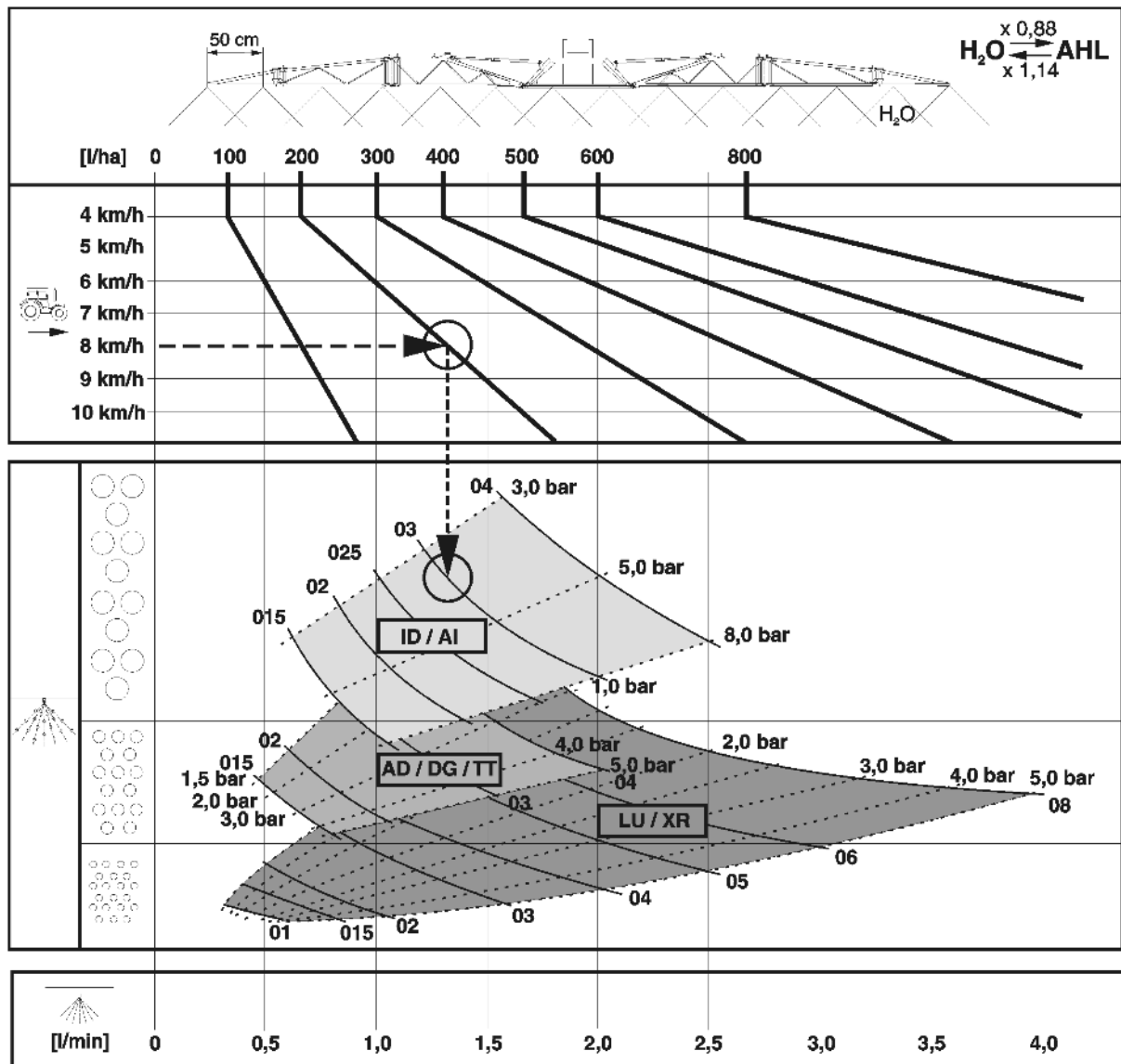


Fig. 204

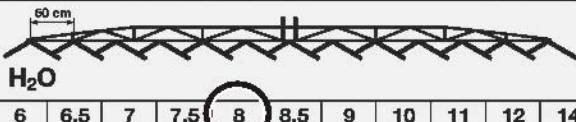




### Example:

Required spray rate:	200 l/ha
Intended operational speed:	8 km/h
Required atomisation characteristic for the crop protection measure:	<b>coarse-dropped</b> (fine drifting)
Required nozzle type:	?
Required nozzle size:	?
Required spray pressure:	? bar
Required individual nozzle output for calibrating the field sprayer:	? l/min

## Determining the nozzle type, nozzle size, spray pressure and individual nozzle output

1. Determine the working point for the required spray rate (**200 l/ha**) and the intended operational speed (**8 km/h**).
  2. At the working point, trace a line down the table. Depending on the position of the working point, this line will run through the cells for various nozzle types.
  3. Select the best nozzle type for the crop protection measure in question, with reference to the required atomisation characteristic (fine, medium or coarse-dropped).
- Nozzle choice for the example given above:
- Nozzle type: **AI or ID**
4. Go to the spray table (Fig. 208).
  5. In the column with the intended operational speed (**8 km/h**), find the required spray rate (**200 l/ha**) or a figure which is as close as possible to the required spray rate (in this case, for example, **195 l/ha**).
  6. In the line with the required spray rate (**195 l/ha**),
    - o read the nozzle sizes in question. Select a suitable nozzle size (e.g. **'03'**).
    - o where the nozzle size column intersects with the selected nozzle size, read the required spray pressure (e.g. **3.7 bar**).
    - o read the required individual nozzle output (**1.3 l/min**) for calibrating the field sprayer.

Required nozzle type:	<b>AI / ID</b>
Required nozzle size:	<b>'03'</b>
Required spray pressure:	<b>3.7 bar</b>
Required individual nozzle output for calibrating the field sprayer:	<b>1.3 l/min</b>

 H <sub>2</sub> O l/ha														 bar		 AMAZONIA						
6	6,5	7	7,5	8	8,5	9	10	11	12	14	16	l/min		015	02	025	03	04	05	06	08	
 km/h																						
80	74	69	64	60	56	53						0,4	1,4									
100	92	86	80	75	71	67	60	55				0,5	2,2	1,2								
120	111	103	96	90	85	80	72	65	60	51		0,6	3,1	1,8	1,1							
140	129	120	112	105	99	93	84	76	70	60	53	0,7	4,2	2,4	1,5	1,1						
160	148	137	128	120	113	107	96	87	80	69	60	0,8	5,5	3,1	2,0	1,4						
180	166	154	144	135	127	120	108	98	90	77	68	0,9	7,0	4,0	2,5	1,8	1,0					
200	185	171	160	150	141	133	120	109	100	86	75	1,0		4,9	3,1	2,2	1,2					
220	203	189	176	165	155	147	132	120	110	94	83	1,1		5,9	3,7	2,7	1,5	1,0				
240	222	206	192	180	169	160	144	131	120	103	90	1,2		7,0	4,4	3,2	1,8	1,1				
260	240	223	208	195	184	173	156	142	130	111	98	1,3			5,2	3,7	2,1	1,3	1,0			
280	259	240	224	210	198	187	168	153	140	120	105	1,4			6,0	4,3	2,4	1,6	1,1			
300	277	257	240	225	212	200	180	164	150	129	113	1,5			6,9	5,0	2,8	1,8	1,2			
320	295	274	256	240	226	213	192	175	160	137	120	1,6				5,7	3,2	2,0	1,4			
340	314	291	272	255	240	227	204	185	170	146	128	1,7				6,4	3,6	2,3	1,6			
360	332	309	288	270	254	240	216	196	180	154	135	1,8				7,2	4,0	2,6	1,8	1,0		
380	351	326	304	285	268	253	228	207	190	163	143	1,9					4,5	2,9	2,0	1,1		
400	369	343	320	300	282	267	240	218	200	171	150	2,0					4,9	3,2	2,2	1,2		
420	388	360	336	315	297	280	252	229	210	180	158	2,1					5,4	3,5	2,4	1,4		
440	406	377	352	330	311	293	264	240	220	189	165	2,2					6,0	3,8	2,7	1,5		
460	425	394	368	345	325	307	276	251	230	197	173	2,3					6,5	4,2	2,9	1,6		
480	443	411	384	360	339	320	288	262	240	206	180	2,4					7,1	4,6	3,2	1,8		
500	462	429	400	375	353	333	300	273	250	214	188	2,5						5,0	3,4	1,9		
520	480	446	416	390	367	347	312	284	260	223	195	2,6						5,4	3,7	2,1		
540	499	463	432	405	381	360	324	295	270	231	203	2,7						5,8	4,0	2,3		
560	517	480	448	420	395	373	336	305	280	240	210	2,8						6,2	4,3	2,4		
580	535	497	464	435	409	387	348	316	290	249	218	2,9						6,7	4,6	2,6		
600	554	514	480	450	424	400	360	327	300	257	225	3,0						7,1	5,0	2,8		
620	572	531	496	465	438	413	372	338	310	266	233	3,1								3,0		
640	591	549	512	480	452	427	384	349	320	274	240	3,2								3,2		
660	609	566	528	495	466	440	396	360	330	283	248	3,3								3,4		
680	628	583	544	510	480	453	408	371	340	291	255	3,4								3,6		
700	646	600	560	525	494	467	420	382	350	300	263	3,5								3,8		
720	665	617	576	540	508	480	432	393	360	309	270	3,6								4,0		
740	683	634	592	555	522	493	444	404	370	318	278	3,7								4,3		
x 0,88				608	570	537	507	456	415	380	326	285	3,8								4,5	
H <sub>2</sub> O → AHL				624	585	551	520	468	425	390	335	293	3,9								4,7	
x 1,14				640	600	565	533	480	436	400	343	300	4,0								5,0	

LU / XR: 1 – 5 bar  
AD: 1,5 – 6 bar  
ID / AI: 2 – 8 bar  
IDK / Air Mix: 1 – 6 bar  
TTI: 1 – 7 bar

ME 735

ME 735

Fig. 205

## 14.2 Spraying nozzles for liquid manure

Nozzle type	Manufacturer	Permissible pressure range [bar]	
		min. pressure	max. pressure
3- jet	agrotop	2	8
7- hole	TeeJet	1.5	4
FD	Lechler	1.5	4
Drag hose	AMAZONE	1	4

### 14.2.1 Spray table for three-ray nozzle, spraying height 120 cm

#### AMAZONE - spray table for three-ray nozzles (yellow)

Pressure (bar)	Nozzle output		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.0	0.36	0.32	64	55	48	43	39	35	32	28	24
1.2	0.39	0.35	69	60	52	47	42	38	35	30	26
1.5	0.44	0.39	78	67	59	53	47	43	39	34	30
1.8	0.48	0.42	85	73	64	57	51	47	43	37	32
2.0	0.50	0.44	88	75	66	59	53	48	44	38	33
2.2	0.52	0.46	92	78	69	62	55	50	46	39	35
2.5	0.55	0.49	98	84	74	66	57	54	49	52	37
2.8	0.58	0.52	103	88	77	69	62	56	52	44	39
3.0	0.60	0.53	106	91	80	71	64	58	53	46	40

#### AMAZONE - spray table for three-ray nozzles (red)

Pressure (bar)	Nozzle output		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.0	0.61	0.54	108	93	81	72	65	59	54	47	41
1.2	0.67	0.59	118	101	88	78	70	64	59	51	44
1.5	0.75	0.66	132	114	99	88	79	72	66	57	50
1.8	0.79	0.69	138	119	104	92	83	76	69	60	52
2.0	0.81	0.71	142	122	107	95	85	78	71	61	54
2.2	0.84	0.74	147	126	111	98	88	80	74	63	56
2.5	0.89	0.78	155	133	117	104	93	84	78	67	59
2.8	0.93	0.82	163	140	122	109	98	87	82	70	61
3.0	0.96	0.84	168	144	126	112	101	92	84	72	63

**AMAZONE - spray table for three-ray nozzles (blue)**

Pres- sure  (bar)	Nozzle output		AUS spray rate (l/ha) / km/h								
	Water (l/min)	AUS	6	7	8	9	10	11	12	14	16
1.0	0.86	0.76	152	130	114	101	91	83	76	65	57
1.2	0.94	0.83	166	142	124	110	99	91	83	71	62
1.5	1.05	0.93	186	159	140	124	112	102	93	80	70
1.8	1.11	0.98	196	167	147	131	117	107	98	84	74
2.0	1.15	1.01	202	173	152	135	121	110	101	87	76
2.2	1.20	1.06	212	182	159	141	127	116	106	91	80
2.5	1.26	1.12	224	192	168	149	135	122	112	96	84
2.8	1.32	1.17	234	201	176	156	141	128	117	101	88
3.0	1.36	1.20	240	206	180	160	144	131	120	103	90

**AMAZONE - spray table for three-ray nozzles (white)**

Pres- sure  (bar)	Nozzle output		AUS spray rate (l/ha) / km/h								
	Water (l/min)	AUS	6	7	8	9	10	11	12	14	16
1.0	1.16	1.03	206	177	155	137	124	213	103	89	78
1.2	1.27	1.12	224	192	168	149	134	222	112	96	84
1.5	1.42	1.26	252	217	190	168	151	138	126	109	95
1.8	1.56	1.38	277	237	207	184	166	151	139	119	104
2.0	1.64	1.45	290	249	217	193	174	158	145	125	109
2.2	1.73	1.54	307	263	230	204	185	168	154	132	115
2.5	1.84	1.62	325	279	244	216	195	178	163	140	122
2.8	1.93	1.71	342	293	256	228	205	187	171	147	128
3.0	2.01	1.78	356	305	267	237	214	194	178	153	134

## Spray table

### 14.2.2 Spray table for 7-hole nozzles

#### AMAZONE spray table for 7-hole nozzle SJ7-02VP (yellow)

Pressure (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	0.55	0.49	98	84	74	65	59	53	49	42	37
2.0	0.64	0.57	114	98	86	76	68	62	57	49	43
2.5	0.72	0.64	128	110	96	85	77	70	64	55	48
3.0	0.80	0.71	142	122	107	95	85	77	71	61	53
3.5	0.85	0.75	150	129	113	100	90	82	75	64	56
4.0	0.93	0.82	164	141	123	109	98	89	82	70	62

#### AMAZONE spray table for 7-hole nozzle SJ7-03VP (blue)

Pressure (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	0.87	0.77	154	132	116	103	92	84	77	66	58
2.0	1.00	0.88	176	151	132	117	106	96	88	75	66
2.5	1.10	0.97	194	166	146	129	116	106	97	83	73
3.0	1.18	1.04	208	178	156	139	125	113	104	89	78
3.5	1.27	1.12	224	192	168	149	134	122	112	96	84
4.0	1.31	1.16	232	199	174	155	139	127	116	99	87

#### AMAZONE spray table for 7-hole nozzle SJ7-04VP (red)

Pressure (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	1.17	1.04	208	178	156	139	125	113	104	89	78
2.0	1.33	1.18	236	202	177	157	142	129	118	101	89
2.5	1.45	1.28	256	219	192	171	154	140	128	110	96
3.0	1.55	1.37	274	235	206	183	164	149	137	117	103
3.5	1.66	1.47	295	253	221	196	177	161	147	126	110
4.0	1.72	1.52	304	261	228	203	182	166	152	130	114

#### AMAZONE spray table for 7-hole nozzle SJ7-05VP (brown)

Pressure (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	1.49	1.32	264	226	198	176	158	144	132	113	99
2.0	1.68	1.49	298	255	224	199	179	163	149	128	112
2.5	1.83	1.62	324	278	243	216	194	177	162	139	122
3.0	1.95	1.73	346	297	260	231	208	189	173	148	130
3.5	2.11	1.87	374	321	281	249	224	204	187	160	140
4.0	2.16	1.91	382	327	287	255	229	208	191	164	143

**AMAZONE spray table for 7-hole nozzle SJ7-06VP (grey)**

Pres- sure  (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	1.77	1.57	314	269	236	209	188	171	157	135	118
2.0	2.01	1.78	356	305	267	237	214	194	178	153	134
2.5	2.19	1.94	388	333	291	259	233	212	194	166	146
3.0	2.35	2.08	416	357	312	277	250	227	208	178	156
4.0	2.61	2.31	562	396	347	308	277	252	231	198	173

**AMAZONE spray table for 7-hole nozzle SJ7-08VP (white)**

Pres- sure  (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	2.28	2.02	404	346	303	269	242	220	202	173	152
2.0	2.66	2.35	470	403	353	313	282	256	235	201	176
2.5	2.94	2.60	520	446	390	347	312	284	260	223	195
3.0	3.15	2.79	558	478	419	372	335	304	279	239	209
4.0	3.46	3.06	612	525	459	408	367	334	306	262	230

**14.2.3 Spray table for FD nozzles**
**AMAZONE Spray table for FD-04- nozzle**

Pres- sure  (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	1.13	1.00	200	171	150	133	120	109	100	86	75
2.0	1.31	1.15	230	197	173	153	138	125	115	99	86
2.5	1.46	1.29	258	221	194	172	155	141	129	111	97
3.0	1.60	1.41	282	241	211	188	169	154	141	121	106
4.0	1.85	1.63	326	279	245	217	196	178	163	140	122

**AMAZONE spray table for FD-05 nozzle**

Pres- sure  (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	1.41	1.24	248	213	186	165	149	135	124	106	93
2.0	1.63	1.44	288	247	216	192	173	157	144	123	108
2.5	1.83	1.61	322	276	242	215	193	176	161	138	121
3.0	2.00	1.76	352	302	264	235	211	192	176	151	132
4.0	2.31	2.03	406	348	305	271	244	221	203	174	152

## Spray table

### AMAZONE spray table for FD-06 nozzle

Pressure (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	1.70	1.49	298	255	224	199	179	163	149	128	112
2.0	1.96	1.72	344	295	258	229	206	188	172	147	129
2.5	2.19	1.93	386	331	290	257	232	211	193	165	145
3.0	2.40	2.11	422	362	317	282	253	230	211	181	158
4.0	2.77	2.44	488	418	366	325	293	266	244	209	183

### AMAZONE spray table for FD-08 nozzle

Pressure (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	2.26	1.99	398	341	299	265	239	217	199	171	149
2.0	2.61	2.30	460	394	345	307	276	251	230	197	173
2.5	2.92	2.57	514	441	386	343	308	280	257	220	193
3.0	3.20	2.82	563	483	422	375	338	307	282	241	211
4.0	3.70	3.25	650	557	488	433	390	355	325	279	244

### AMAZONE spray table for FD-10 nozzle

Pressure (bar)	Nozzle output per nozzle		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.5	2.83	2.49	498	427	374	332	299	272	249	214	187
2.0	3.27	2.88	576	494	432	384	345	314	288	246	216
2.5	3.65	3.21	642	551	482	429	385	350	321	275	241
3.0	4.00	3.52	704	604	528	469	422	384	352	302	264
4.0	4.62	4.07	813	697	610	542	488	444	407	348	305

## 14.2.4 Spray table for drag hose unit

### AMAZONE Spray table with dosing disc 4916-26, (dia. 0.65 mm)

Pressure (bar)	Nozzle output per dosing disc		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.0	0.20	0.18	71	61	53	47	43	37	36	31	27
1.2	0.22	0.19	78	67	58	52	47	43	39	34	29
1.5	0.24	0.21	85	73	64	57	51	47	43	37	32
1.8	0.26	0.23	92	79	69	61	55	50	46	40	35
2.0	0.28	0.25	99	85	74	66	60	54	50	43	37
2.2	0.29	0.26	103	88	77	68	62	56	52	44	39
2.5	0.31	0.27	110	94	82	73	66	60	55	47	41
2.8	0.32	0.28	113	97	85	76	68	62	57	49	43
3.0	0.34	0.30	120	103	90	80	72	66	60	52	45
3.5	0.36	0.32	127	109	96	85	77	70	64	55	48
4.0	0.39	0.35	138	118	104	92	83	76	69	59	52

**AMAZONE Spray table with dosing disc 4916-32, (dia. 0.8 mm)**

Pres- sure  (bar)	Nozzle output per dosing disc		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.0	0.31	0.27	110	94	82	73	66	60	55	47	41
1.2	0.34	0.30	120	103	90	80	72	66	60	52	45
1.5	0.38	0.34	135	115	101	90	81	74	68	58	51
1.8	0.41	0.36	145	124	109	97	87	79	73	62	55
2.0	0.43	0.38	152	130	114	101	92	83	76	65	57
2.2	0.45	0.40	159	137	119	106	96	87	80	69	60
2.5	0.48	0.42	170	146	127	113	102	93	85	73	64
2.8	0.51	0.45	181	155	135	120	109	98	91	78	68
3.0	0.53	0.47	188	161	141	125	113	103	94	81	71
3.5	0.57	0.50	202	173	151	135	121	110	101	87	76
4.0	0.61	0.54	216	185	162	144	130	118	108	93	81

**AMAZONE Spray table for dosing disc 4916-39, (dia. 1.0 mm) (standard)**

Pres- sure  (bar)	Nozzle output per dosing disc		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.0	0.43	0.38	153	131	114	101	92	84	77	66	57
1.2	0.47	0.41	167	143	124	110	100	91	84	72	62
1.5	0.53	0.47	187	160	141	126	112	102	94	80	71
1.8	0.58	0.51	204	175	154	137	122	112	102	88	77
2.0	0.61	0.53	216	185	162	144	130	118	108	93	81
2.2	0.64	0.56	227	194	170	151	136	124	114	97	85
2.5	0.68	0.59	240	206	180	160	142	132	120	103	90
2.8	0.71	0.62	251	215	189	168	151	137	126	108	95
3.0	0.74	0.64	262	224	197	175	158	143	131	112	99
3.5	0.79	0.69	280	236	210	186	168	153	140	118	105
4.0	0.85	0.74	302	259	226	201	181	165	151	130	113

**AMAZONE Spray table for dosing disc 4916-45, (dia. 1.2 mm)**

Pres- sure  (bar)	Nozzle output per dosing disc		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.0	0.57	0.50	202	173	151	135	121	110	101	87	76
1.2	0.62	0.55	219	188	165	146	132	120	110	94	83
1.5	0.70	0.62	248	212	186	165	149	135	124	106	93
1.8	0.77	0.68	273	234	204	182	164	148	137	117	102
2.0	0.81	0.72	287	246	215	192	172	157	144	123	108
2.2	0.86	0.76	304	261	228	203	183	166	152	131	114
2.5	0.92	0.81	326	279	244	217	196	178	163	140	122
2.8	0.96	0.85	340	291	255	227	204	186	170	146	128
3.0	1.00	0.89	354	303	266	236	213	193	177	152	133
3.5	1.10	0.97	389	334	292	260	234	213	195	167	146
4.0	1.16	1.03	411	352	308	274	246	224	206	176	154

## Spray table

### AMAZONE Spray table for dosing disc 4916-55, (dia. 1.4 mm)

Pres- sure  (bar)	Nozzle output per dosing disc		AUS spray rate (l/ha) / km/h								
	Water	AUS	6	7	8	9	10	11	12	14	16
	(l/min)										
1.0	0.86	0.76	304	261	228	203	183	166	152	131	114
1.2	0.93	0.82	329	282	247	219	198	180	165	141	124
1.5	1.05	0.93	372	319	278	248	223	203	186	160	139
1.8	1.15	1.02	407	349	305	271	245	222	204	175	153
2.0	1.22	1.08	432	370	324	288	259	236	216	185	162
2.2	1.27	1.12	450	385	337	300	270	245	225	163	168
2.5	1.35	1.19	478	410	358	319	287	261	239	205	179
2.8	1.43	1.27	506	434	380	337	304	276	253	217	190
3.0	1.47	1.30	520	446	390	347	312	284	260	223	195
3.5	1.59	1.41	563	482	422	375	338	307	282	241	211
4.0	1.69	1.50	598	513	449	399	359	327	299	257	225

### 14.3 Conversion table for spraying ammonium nitrate / urea solution (AUS) liquid fertiliser

(Density 1.28 kg/l, i.e. approx. 28 kg N for 100 kg of liquid fertiliser or 36 kg N for 100 litres of liquid fertiliser at 5 - 10 °C)

N kg	Sol. N l	Sol. N kg	N kg	Sol. N l	Sol. N kg	N kg	Sol. N l	Sol. N kg	N kg	Sol. N l	Sol. N kg	N kg	Sol. N l	Sol. N kg
10	27.8	35.8	52	144.6	186.0	94	261.2	335.8	136	378.0	485.0			
12	33.3	42.9	54	150.0	193.0	96	266.7	342.7	138	384.0	493.0			
14	38.9	50.0	56	155.7	200.0	98	272.0	350.0	140	389.0	500.0			
16	44.5	57.1	58	161.1	207.3	100	278.0	357.4	142	394.0	507.0			
18	50.0	64.3	60	166.7	214.2	102	283.7	364.2	144	400.0	515.0			
20	55.5	71.5	62	172.3	221.7	104	285.5	371.8	146	406.0	521.0			
22	61.6	78.5	64	177.9	228.3	106	294.2	378.3	148	411.0	529.0			
24	66.7	85.6	66	183.4	235.9	108	300.0	386.0	150	417.0	535.0			
26	75.0	92.9	68	188.9	243.0	110	305.6	393.0	155	431.0	554.0			
28	77.8	100.0	70	194.5	250.0	112	311.1	400.0	160	445.0	572.0			
30	83.4	107.1	72	200.0	257.2	114	316.5	407.5	165	458.0	589.0			
32	89.0	114.2	74	204.9	264.2	116	322.1	414.3	170	472.0	607.0			
34	94.5	121.4	76	211.6	271.8	118	328.0	421.0	175	486.0	625.0			
36	100.0	128.7	78	216.5	278.3	120	333.0	428.0	180	500.0	643.0			
38	105.6	135.9	80	222.1	285.8	122	339.0	436.0	185	514.0	660.0			
40	111.0	143.0	82	227.9	292.8	124	344.0	443.0	190	527.0	679.0			
42	116.8	150.0	84	233.3	300.0	126	350.0	450.0	195	541.0	696.0			
44	122.2	157.1	86	238.6	307.5	128	356.0	457.0	200	556.0	714.0			
46	127.9	164.3	88	242.2	314.1	130	361.0	465.0						
48	133.3	171.5	90	250.0	321.7	132	367.0	471.0						
50	139.0	178.6	92	255.7	328.3	134	372.0	478.0						



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