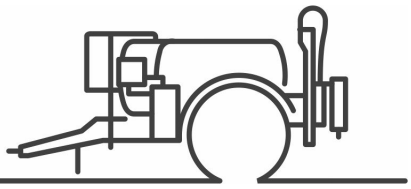
Operating Manual

AMAZONE

UG 2200 Super
UG 3000 Super

UG 2200 Special
UG 3000 Special

Trailed Field Sprayer



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SmartLearning

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

en_US

Reading the instruction

Manual and following it should seem to be inconvenient and superfluous as it is not enough to hear from others and to realize that a machine is good, to buy it and to believe that now everything should work by itself. The person in question would not only harm himself but also make the mistake of blaming the machine for possible failures instead of himself. In order to ensure success one should enter the mind of a thing, make himself familiar with every part of the machine and get acquainted with how it's handled. Only in this way could you be satisfied both with the machine and with yourself. This goal is the purpose of this instruction manual.

Leipzig-Plagwitz 1872. Rud. Sark.

Identification data

Manufacturer:	AMAZONEN-WERKE H. DREYER SE & Co. KG
Machine ID no.:	
Type:	UG 2200, UG 3000
Permissible system pressure	
Year of manufacture:	
Factory:	
Basic weight	
Permissible total weight:	
Maximum load	

Manufacturer's address

AMAZONEN-WERKE
H. DREYER SE & Co. KG
Postfach 51
D-49202 Hasbergen, Germany
Tel.: + 49 (0)5405 501-0
E-mail: amazone@amazone.de

Spare part orders

Spare parts lists are freely accessible in the spare parts portal at www.amazone.de.

Please send orders to your AMAZONE dealer.

Formalities of the operating manual

Document number:	MG7559
Compilation date:	07.24

Foreword

Dear Customer,

You have chosen one of the quality products from the wide product range of AMAZONEN-WERKE, H. DREYER SE & 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

Dear Reader,

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

AMAZONEN-WERKE

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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 response to an instruction 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.

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.
- If you still have queries, please contact the manufacturer.

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 gravity of the risk and has the following significance:

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:

- Chemical-resistant gloves,
- Chemical-resistant overalls,
- Water-resistant footwear,
- A face mask,
- Breathing protection,
- Safety glasses;
- 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 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, maintenance and repair 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 [1]	Trained person[2]	Person with specialist training (specialist workshop) [3]
Loading/Transport	X	X	X
Commissioning	--	X	--
Set-up, tool installation	--	--	X
Operation	--	X	--
Maintenance	--	--	X
Troubleshooting and fault elimination	--	X	X
Disposal	X	--	--

Legend: X..permitted --..not permitted

1) A person who can assume a specific task and who can carry out this task for an appropriately qualified company.

2) 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.

3) 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 tighten 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. The use of spare and wear parts from third parties does not guarantee that they have been constructed in 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.

2.13 Warning symbols and other signs on the machine

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

Warning symbols - structure

Warning pictograms indicate dangers 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

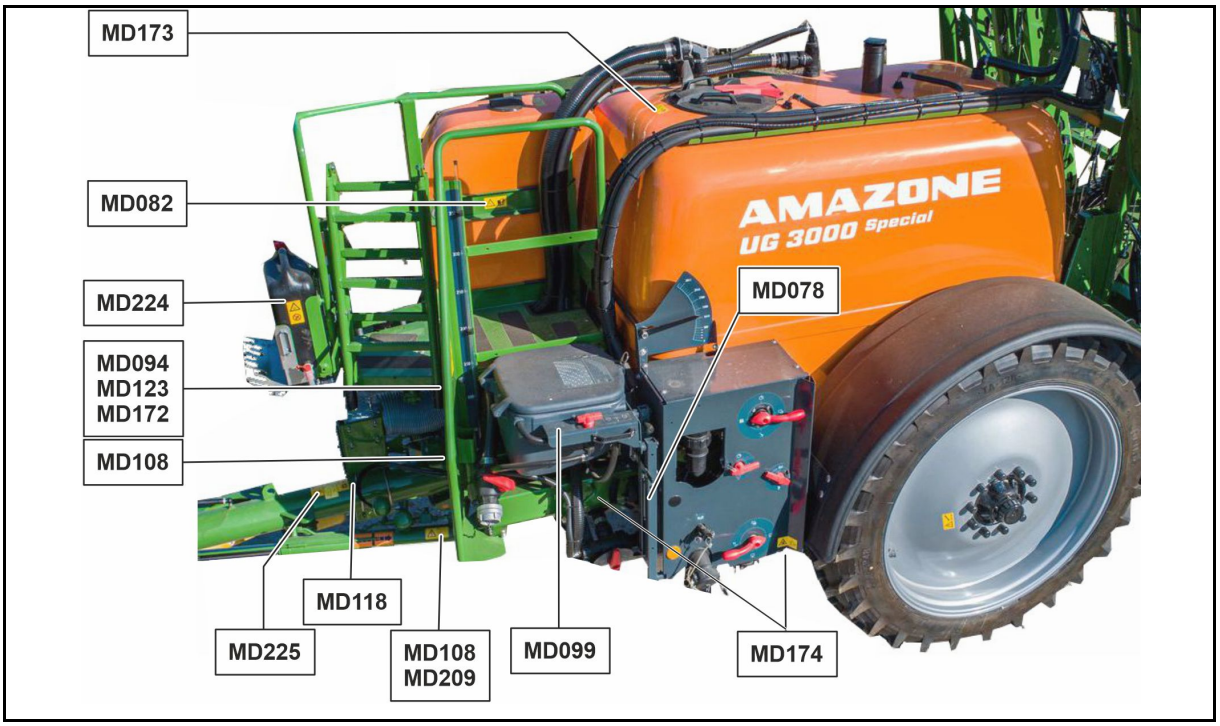
The column **Order number and explanation** provides an explanation of the neighbouring warning symbol. The description of the warning symbols is always the same and specifies, in the following order:

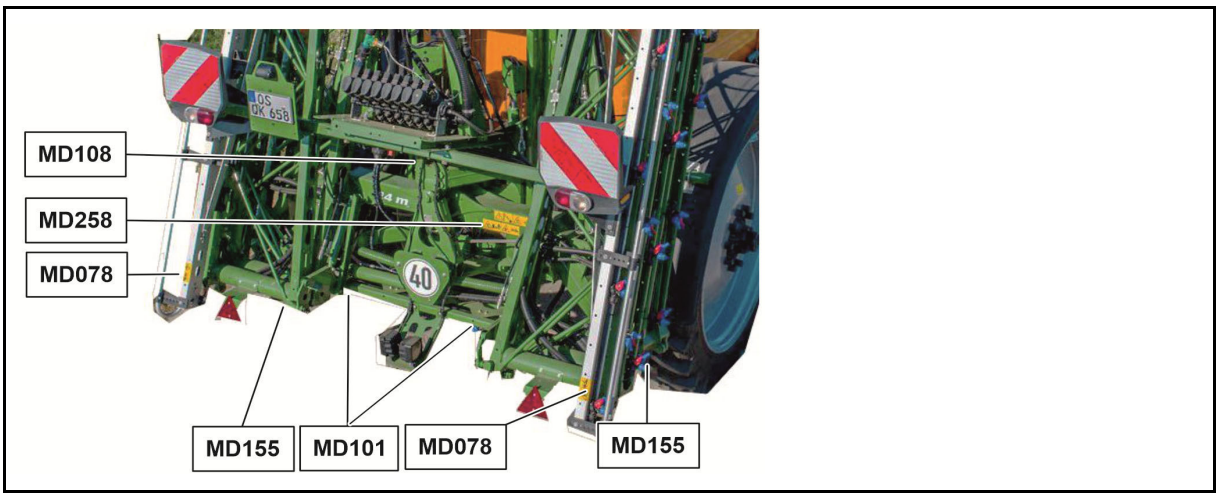
1. A description of the danger.
   For example: risk of cutting
2. The consequence of non-compliance with the risk avoidance instructions.
   For example: causes serious injuries to fingers or hands.
3. Risk avoidance instructions.
   For example: only touch machine parts when they have come to a complete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





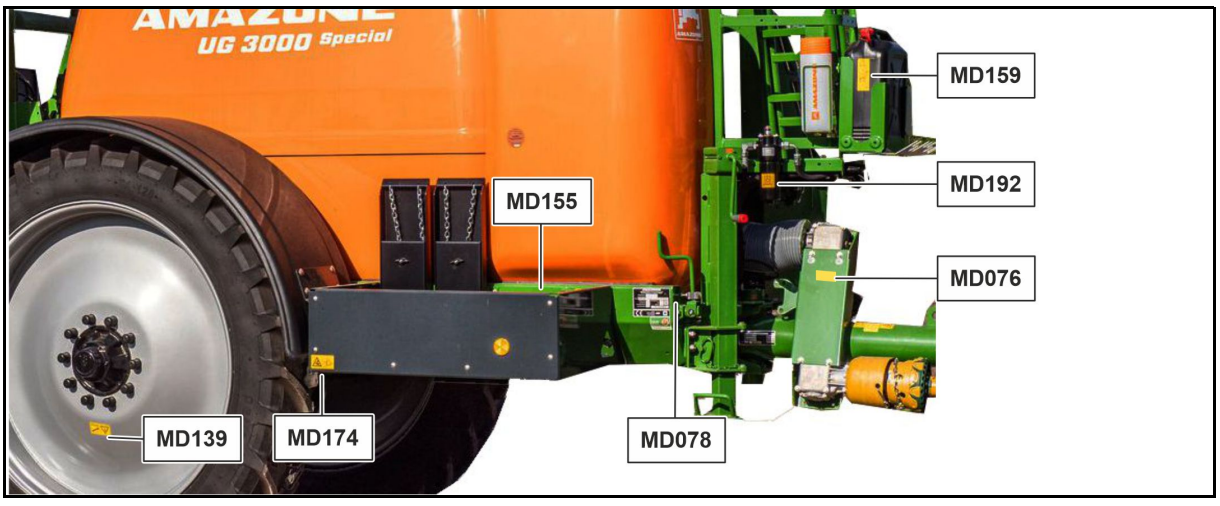
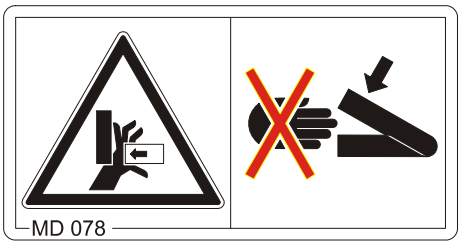
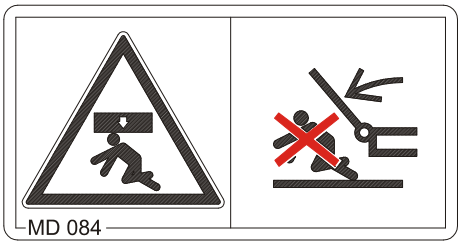
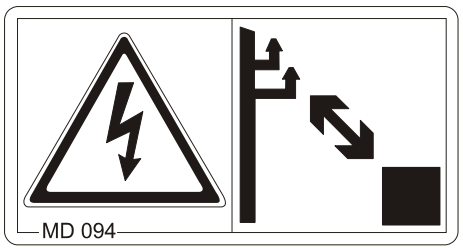


Fig. 1

Order number and explanation	Warning symbols
MD 076 **Risk of hands or arms being drawn in or entrapped by driven, unprotected chain drives or belt drives!** This hazard can cause serious injuries, including loss of body parts such as hand or arm. Never open or remove protective devices (guards) of chain drives or belt drives • while the tractor engine is running and the universal joint shaft is connected / hydraulic drive is engaged • or if the ground wheel drive is moving	
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.** This danger can cause extremely serious and potentially fatal injuries. • 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 094



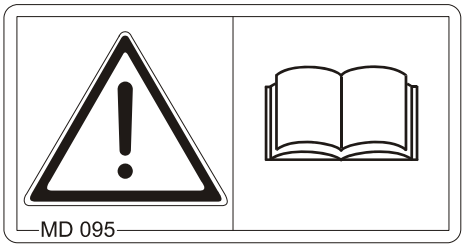
Danger from electric shock or burns due to unintentional contact with electric transmission lines or from approaching high-voltage transmission lines without authorisation.

These dangers can cause extremely serious and potentially fatal injuries.

Maintain an adequate safety distance from transmission lines carrying high voltage.

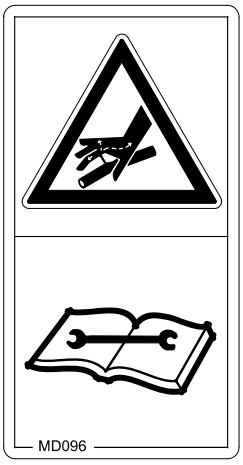
Nominal voltage	Safety distance from transmission lines
up to 1 kV	1 m
over 1 up to 110 kV	2 m
over 110 up to 220 kV	3 m
over 220 up to 380 kV	4 m

MD 095



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

MD 096



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.

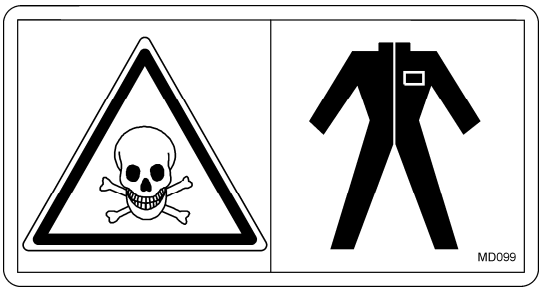
MD 099

Risk of contact with hazardous materials due to improper handling.

Causes serious, potentially fatal injuries anywhere on the body.

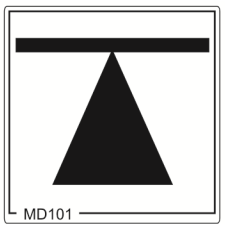
Put on the personal protective equipment.

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).

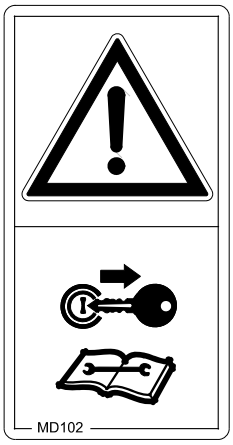


MD 102

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 observe the instructions in the appropriate sections of the operating manual.

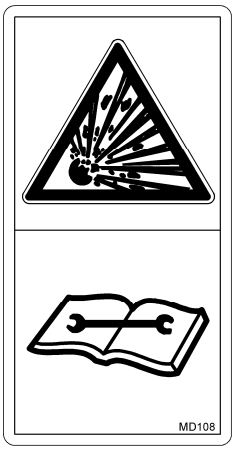


MD 108

Risk of explosion, or risk of hydraulic fluid escaping under high pressure, caused by the pressure accumulator, which is pressurized with gas and oil!

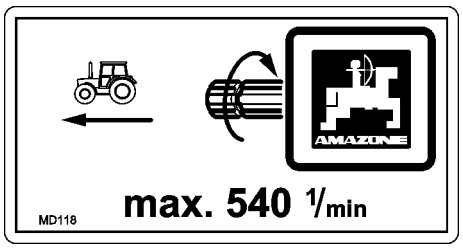
There is a risk of serious and potentially fatal injuries if hydraulic fluid escaping at high pressure penetrates the skin and enters the body.

- Read and comply with the instructions in the operating manual before performing service and maintenance tasks.
- Seek medical attention immediately for all injuries involving hydraulic fluid.



MD 118

This symbol indicates the maximum drive speed (540 rpm) and direction of rotation of the drive shaft on the machine side.

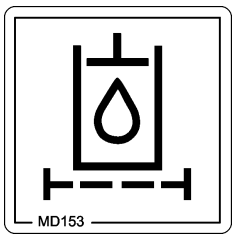


MD 139

The torque of the screw connection is 450 Nm.

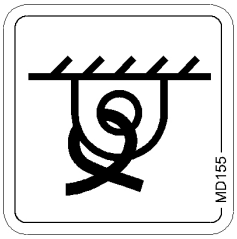
MD 153

This pictogram indicates a hydraulic oil filter.



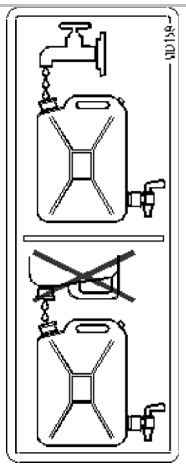
MD 155

This pictogram designates lashing points for lashing the machine to a transport vehicle for safe transport of the machine.



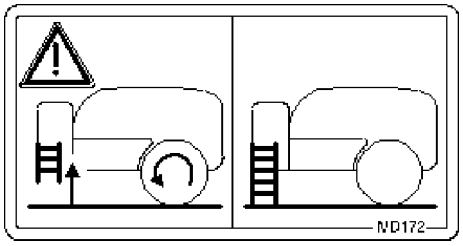
MD 159

Only fill the hand wash tank with clear fresh water, and never with crop protection agent.



MD 172

It is essential to ensure that the ladder is locked in the transport position.

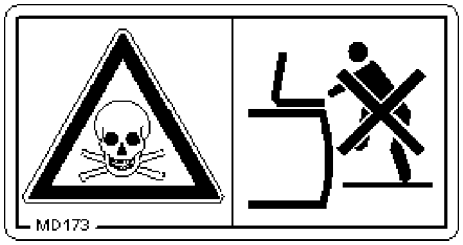


MD 173

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.

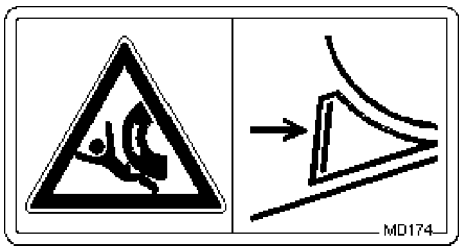


MD 174

Danger from unintended continued movement of the machine.

Causes serious, potentially fatal injuries anywhere on the body.

Secure the machine against unintended continued movement before uncoupling the machine from the tractor. To do this, use the parking brake and/or the wheel chock(s).

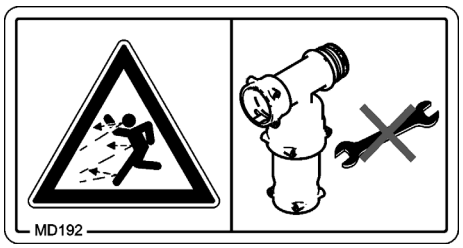


MD 192

Danger of fluids escaping under high pressure while working on hoses and connections under pressure!

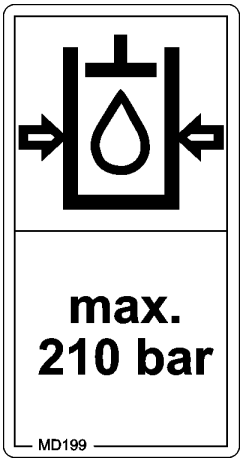
This can result in extremely serious injuries on all parts of the body.

It is not allowed to work on this component.



MD 199

The maximum operating pressure of the hydraulic system is 210 bar!

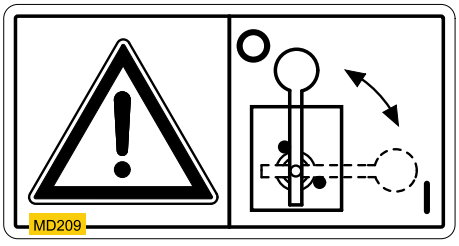


MD 209

Danger during transportation from unintended swivelling of the implement or from moving parts of the implement.

This hazard can result in extremely serious and potentially fatal injuries.

Close the stop tap for transporting.



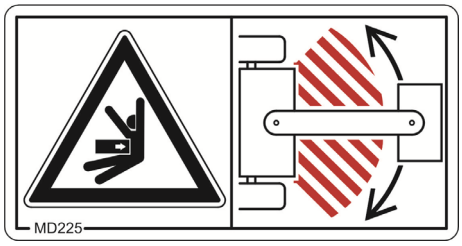
MD 224

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 fresh water from the hand wash tank as drinking water.

MD 225

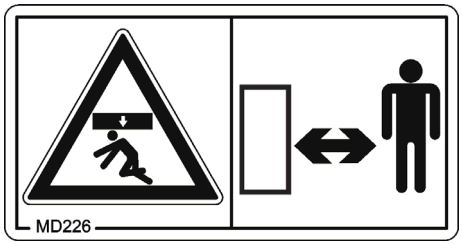


Danger of crushing the entire body, caused by remaining in the swivel range of the draw-bar between tractor and attached machine.

This danger can cause extremely serious and potentially fatal injuries.

- Do not remain in the danger area between tractor and machine while the tractor engine is running and the tractor is not secured against unintentional rolling.
- Instruct anyone in the danger area between tractor and machine to leave the danger area while the tractor engine is running and the tractor is not secured against unintentional rolling.

MD 226



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

This danger can cause extremely serious and potentially fatal injuries.

- 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.

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 symbols.

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.
- It is forbidden to ride on the machine or use it as a means of transport.
- 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.

Coupling and uncoupling the machine

- Only connect and transport the machine with tractors suitable for the task.
- When coupling machines to the tractor's three-point linkage, the linkages of the tractor and the machine must always be the same.
- Connect the machine to the prescribed equipment in accordance with the specifications.
- When coupling machines to the front or the rear of the tractor, the following may not be exceeded:
  - The approved total tractor weight
  - The approved tractor axle loads
  - The approved load capacities of the tractor tyres
- Secure the tractor and the machine against rolling unintentionally before coupling or uncoupling the machine.
- It is forbidden for people to stand between the machine to be coupled and the tractor whilst the tractor is moving towards the machine.

  Any helpers may only act as guides standing next to the vehicles, and may only move between the vehicles when both are at a standstill.
- Before connecting the machine to or disconnecting the machine from the tractor's three-point linkage, secure the operating lever of the tractor hydraulic system so that unintentional raising or lowering is prevented.

- When coupling and uncoupling machines, move the support equipment (if available) to the appropriate position (stability).
- When actuating the support equipment, there is a risk of injury from crushing and cutting points.
- Be particularly careful when coupling the machine to the tractor or uncoupling it from the tractor. There are crushing and cutting points in the area of the coupling point between the tractor and the machine.
- It is forbidden to stand between the tractor and the machine when actuating the three-point linkage.
- Coupled supply lines
  - must give slightly to all movements while cornering without tensioning, kinking or rubbing.
  - must not chafe against other parts.
- The release ropes for quick couplings must hang loosely and must not release themselves when lowered.
- Also ensure that uncoupled machines are stable.

Use of the machine

- 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.
- Comply with the maximum load for the connected machine and the permissible axle and drawbar loads for the tractor. If necessary, drive only with a partially filled 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.
- Before leaving the tractor, secure it against unintended starting and rolling.

  To do this:
  - lower the machine onto the ground
  - apply the parking brake
  - switch off the tractor engine
  - remove the ignition key

Machine transportation

- When using public highways, national road traffic regulations must be observed.
- Before moving off, check:
  - the correct connection of the supply lines
  - the lighting system for damage, function and cleanliness
  - the brake and hydraulic system for visible damage
  - that the parking brake is completely disengaged
  - the function of the brake system
- Ensure that the tractor has sufficient steering and braking power.

  Any machines and front/rear weights connected to the tractor influence the driving behaviour and the steering and braking power of the tractor.
- If necessary, use front weights.

  The front tractor axle must always be loaded with at least 20% of the tractor empty weight, in order to ensure sufficient steering power.
- Always fix the front or rear weights to the intended fixing points according to regulations.
- Comply with the maximum load for the connected machine and the approved axle and drawbar loads for the tractor.
- The tractor must guarantee the prescribed brake delay for the loaded vehicle combination (tractor plus connected machine).
- Check the brake power before moving off.
- When turning corners with the machine connected, take the broad load and balance weight of the machine into account.
- If the machine is fixed to the tractor's three-point linkage or lower links, before moving off, ensure sufficient side locking of the tractor lower links.
- Before moving off, move all the swivellable machine parts to the transport position.
- Before moving off, secure all swivellable machine parts in the transport position against dangerous position changes. Use the transport safety catches intended for this.
- Before transportation, secure the operating lever of the three-point hydraulic system against unintentional raising or lowering of the connected or coupled machine.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly mounted on the machine.
- Before transportation, carry out a visual check that the upper and lower link pins are firmly fixed with the linchpin against unintentional release.
- Adjust your driving speed to the prevailing conditions.
- Before driving downhill, switch to a low gear.
- Before moving off, always switch off independent wheel braking (lock the pedals).

2.16.2 Hydraulic system

- The hydraulic system is under a high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the machine and tractor sides.
- It is forbidden to lock the operator controls on the tractor used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:
  - are continuous
  - are automatically controlled
  - require a floating position or pressed position to function
- Before working on the hydraulic system,
  - lower the machine
  - 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 lines if they are damaged or worn. Only use AMAZONE original 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 the 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. Danger of infection.
- When searching for leakage points, use suitable aids, to avoid the serious risk of infection.

2.16.3 Electrical system

- When working on the electrical system, always disconnect the battery (negative terminal).
- Only use the prescribed fuses. If fuses are used with too high a rating, the electrical system will be destroyed – danger of fire.
- 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. Contact with earth may cause an explosion
- Risk of explosion: avoid the production of sparks or the presence of naked flames in the vicinity of the battery.
- 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.

2.16.4 Universal joint shaft operation

- Use only the PTO shafts prescribed by the AMAZONEN-WERKE factories, equipped with the proper safety devices.
- Also read and follow the operating manual from the PTO shaft manufacturer.
- The protective tube and PTO shaft guard must be undamaged, and the shield of the tractor and machine universal joint shaft must be attached and be in proper working condition.
- Work is prohibited while the safety devices are damaged.
- You may install or remove the PTO shaft only after you have done all of the following:
  - Switched off the universal joint shaft
  - Switched off the tractor engine
  - Applied the parking brake
  - the ignition key has been removed
- Always ensure that the PTO shaft is installed and secured correctly.
- When using wide-angle PTO shafts, always install the wide angle joint at the pivot point between the tractor and machine.
- Secure the PTO shaft guard by attaching the chain(s) to prevent movement.
- Observe the prescribed pipe overlaps in transport and operational positions. (Read and follow the operating manual from the PTO shaft manufacturer.)
- When turning corners, observe the permitted bending and displacement of the PTO shaft.
- Before switching on the universal joint shaft, check that the selected universal joint shaft speed of the tractor matches the permitted drive speed of the machine.
- Instruct people to leave the danger area of the machine before you switch on the universal joint shaft.
- While work is being carried out with the universal joint shaft, there must be no one in the area of the universal joint or PTO shaft while it is turning.
- Never switch on the universal joint shaft while the tractor engine is shut off.
- Always switch off the universal joint shaft whenever excessive bending occurs or it is not needed.
- WARNING! After the universal joint shaft is switched off, there is a danger of injury from the continued rotation of freewheeling machine parts.

  Do not approach the machine too closely during this time. You may work on the machine only after all machine parts have come to a complete stop.
- Secure the tractor and machine against unintentional starting and unintentional rolling before you perform any cleaning, servicing or maintenance work on universal joint shaft-driven machines or PTO shafts.
- After decoupling the PTO shaft, place it on the holder provided.

- After removing the PTO shaft, attach the protective sleeve to the universal joint shaft stub.
- When using the travel-dependent universal joint shaft, note that the universal joint shaft speed depends on the drive speed, and that the direction of rotation reverses when you drive in reverse.

2.16.5 Coupled machines

- Observe the permitted combination options of the attachment equipment on the tractor and the machine drawbar.

  Only couple permitted combinations of vehicles (tractor and attached machine).
- On single axle machines, observe the maximum permitted drawbar load of the tractor on the attachment equipment.
- Ensure that the tractor has sufficient steering and braking power.

  Machines attached or coupled to a tractor influence the driving behaviour and steering and braking power of the tractor, and in particular single axle machines with drawbar loads on the tractor.
- Only one specialist workshop can adjust the height of the drawbar if it is a straight drawbar with drawbar load.
- Implements without brake system:

  Observe the national regulations for implements without brake system.

2.16.6 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 performing any work on the braking system, park the machine safely and secure the machine against unintentional lowering or 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

- Before coupling the machine, clean the sealing rings on the hose couplings of the supply and brake line.
- Only move off with the machine connected when the pressure gauge on the tractor shows 73 psi / 5.0 bar.
- Drain the air reservoir every day.
- Before driving without the machine, lock the hose couplings on the tractor.
- Hang the hose couplings of the machine supply and brake lines in the appropriate empty couplings.
- When filling up or replacing the brake fluid, use the prescribed fluid. When replacing the brake fluid, comply with the appropriate regulations.
- Do not make any changes to the specified settings on the brake valves.
- Replace the air reservoir if:
  - the air reservoir can be moved in the tensioning belts
  - the air reservoir is damaged
  - the rating plate on the air reservoir is rusty, loose or missing.

Hydraulic brake system for export machines

- Hydraulic brake systems are prohibited in Germany.
- When filling up or replacing the brake fluid, use the prescribed hydraulic fluids. When replacing the hydraulic fluids, comply with the appropriate regulations.

2.16.7 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 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 lock the machine against unintentional lowering and rolling (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.

2.16.8 Field sprayer operation

- Comply with the recommendations provided by the manufacturer of the crop protection product with regard to
  - personal protective equipment
  - warnings concerning the handling of crop protection products
  - regulations on dosing, applications and cleaning
- Pay attention to crop protection legislation regulations!
- It is forbidden to store contaminated protective equipment, spray agent canisters and used filters in the tractor cab.
- Take off protective equipment before entering the tractor cab.
- Never open lines which are under pressure.
- The nominal volume of the spray liquid tank may never be exceeded when filling!

- When handling crop protection products, observe the requirements of the safety data sheet for the substances used as well as the guidelines for personal protective equipment. Depending on the requirement of the safety data sheet of the active substances used, the following components belong to your personal protective equipment:
  - protective clothing according to DIN 32781
  - rubber apron according to EN 14605
  - eye protection according to EN 166
  - breathing mask according to DIN EN 143/149/405/14387, at least a half-mask with combined particle filter and gas filter A1-P2 (colour code: brown-white)
  - protective gloves with cuffs according to DIN 347/388/420
  - foot protection

  Use personal protective equipment if you could come into contact with crop protection products or fertiliser during one of the following activities:
  - filling of the spray liquid tank and addition of chemicals
  - spraying
  - settings on the implement
  - emptying and cleaning the tank
  - using different chemicals
  - maintenance
- Depending on the requirements of the safety data sheet of the active substances used, wear personal protective equipment in the tractor cab.
- Tractors with Category 4 cabs are prescribed when applying certain spray agents.
- 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.
  - Fill the field sprayer only using original AMAZONE filling devices!

2.16.9 Cleaning, maintenance and repairs

- 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!
- Only carry out cleaning, maintenance and repair work on the machine when
  - the drive is switched off
  - the tractor engine has come to a complete stop
  - the ignition key has been removed
  - the machine connector has been removed from the on-board computer
- Check tightness of nuts and bolts after the first 20 operating hours and at regular intervals, and retighten as necessary.
- If the machine or parts of the machine are raised, secure them against unintentional lowering before cleaning, maintaining or repairing the machine.
- When replacing work tools with blades, use suitable tools and gloves.
- Dispose of oils, greases and filters in the appropriate way.
- Disconnect the cable to the tractor generator and battery before carrying out electrical welding work on the tractor and on attached machines.
- Spare parts must meet at least the specified technical requirements of AMAZONEN-WERKE. This is ensured through the use of AMAZONE original spare parts.
- 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 the implement

3.1 Lashing the implement

The implement has 4 lashing points for lashing straps.

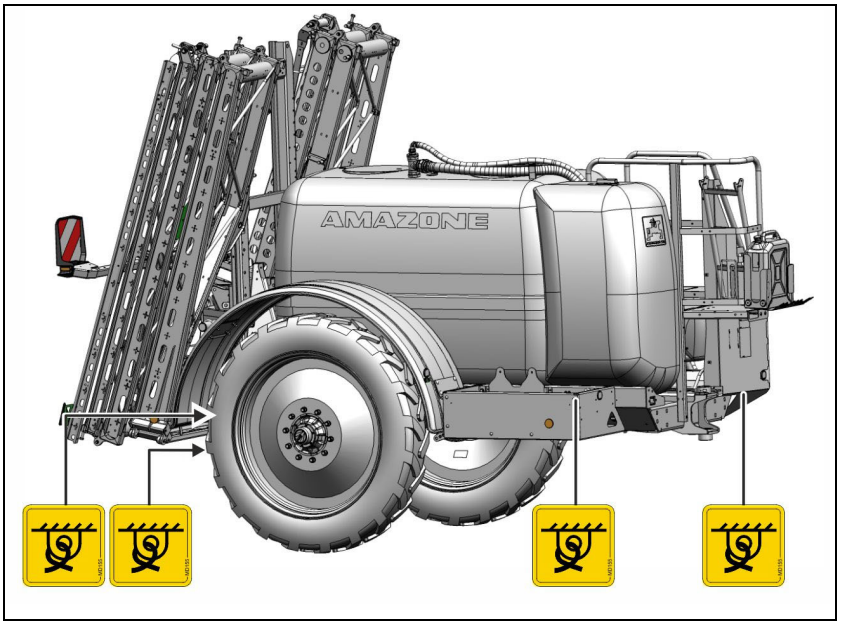


Fig. 2

WARNING

Risk of accident due to improperly attached lashing straps
If lashing straps are not attached at the marked lashing points, the implement can be damaged when lashing, and this may compromise safety.

- Attach the lashing straps only at the marked lashing points.

1. Place the implement on the transport vehicle.
2. Attach the lashing straps at the marked lashing points.
3. Lash the implement in compliance with the national regulations for securing loads.

4 Product description

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.

4.1 Overview of the assemblies

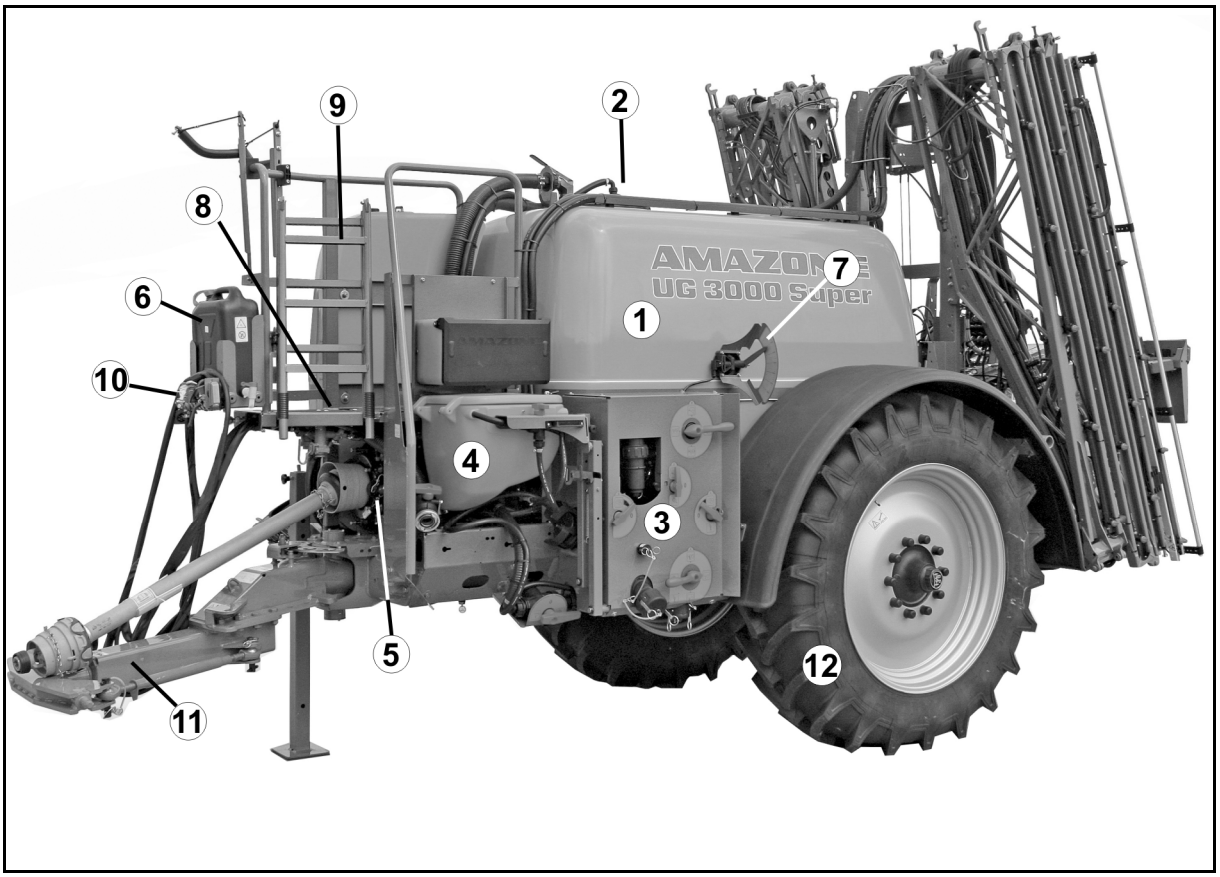


Fig. 3

Fig. 3/...

(1) Spray liquid tank

(2) Inspection hatch of the spray liquid tank for visual inspection

(3) Control terminal

(4) Swivelable induction bowl

(5) Spraying pump

(6) Fresh water tank

(7) Fill level indicator spray liquid tank

(8) Maintenance platform

(9) Foldable ladder

(10) Hose cabinet

(11) Drawbar

(12) Tyres

(9) Transport box for separate storage of contaminated and non-contaminated protective equipment

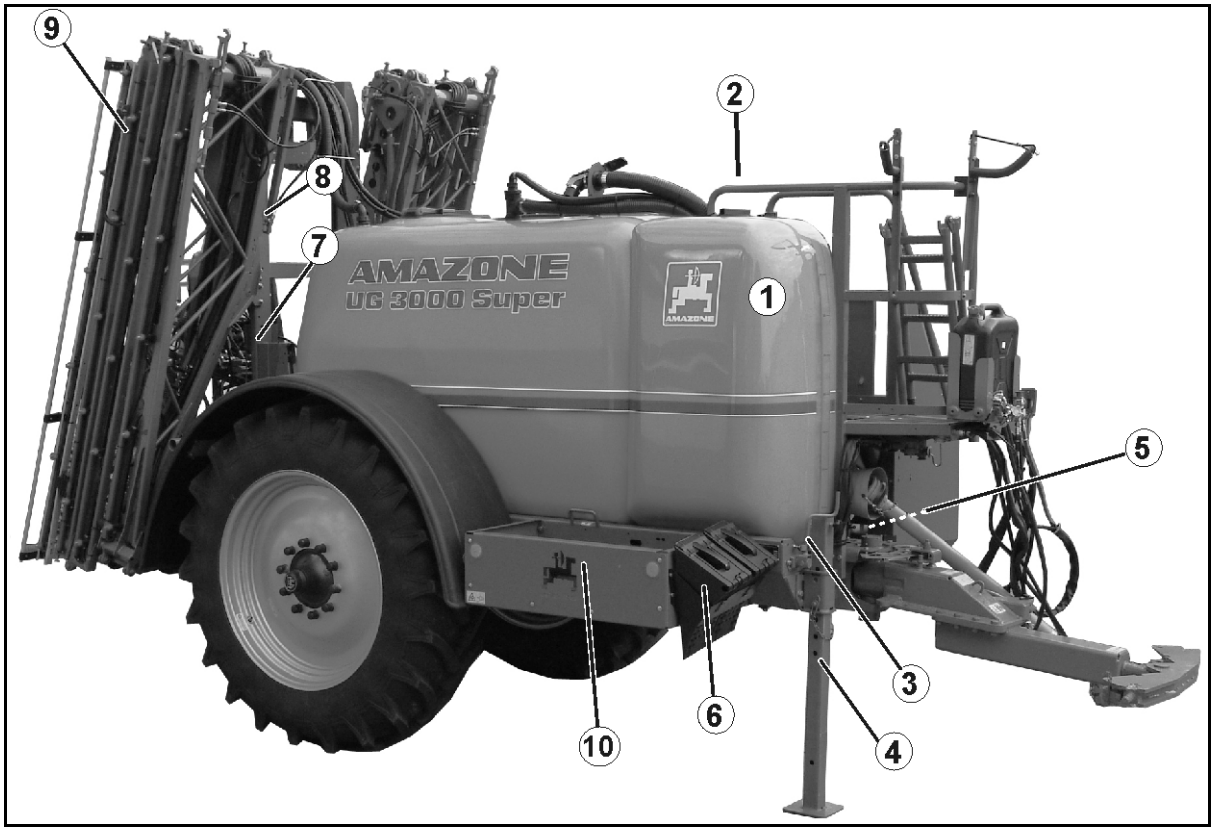


Fig. 4

(1) Flushing water tank

(2) Flushing water tank, filling opening

(3) Parking brake

(4) Stand

(5) Pump equipment

(6) Wheel chocks

(7) Hydraulic block with system setting screw, job computer (optional)

(8) Hydraulic fluid filter with contamination indicator

(9) Super S sprayer boom

(10) Storage for extraction hose, spraying agent canisters and used filters

4.2 Safety and protection equipment

- Transport locking mechanism to prevent the Super- S boom from folding out unintentionally

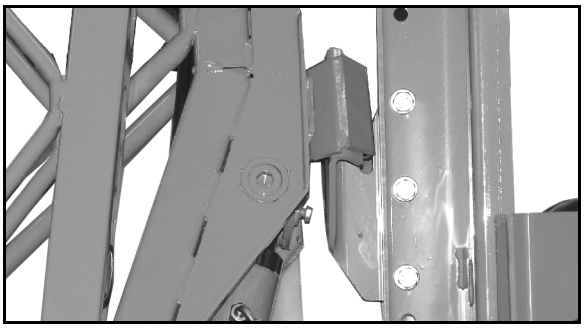


Fig. 5

- Handrail on the maintenance platform

Fig. 6

- PTO shaft guard
- Machine PTO shaft guard

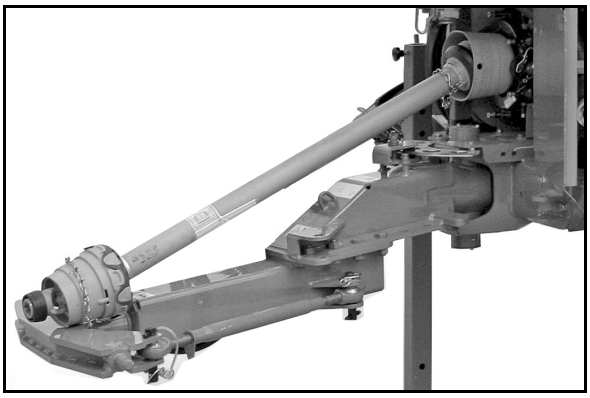


Fig. 7

- Stop tap on AutoTrail drawbar against unintentional activation of the track follow steering.

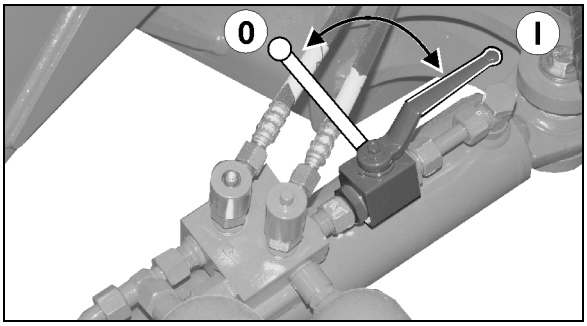


Fig. 8

4.3 Supply hoses between the tractor and the machine

Supply hoses in parking position:

Fig. 9/...

(1) Hydraulic hose lines (depending on equipment)

(2) Electric cable for lighting

(3) Machine cable with machine connector for operating terminal

(4) Brake line with coupling head for air brake
Alternatively:
Brake line with connection to hydraulic brake

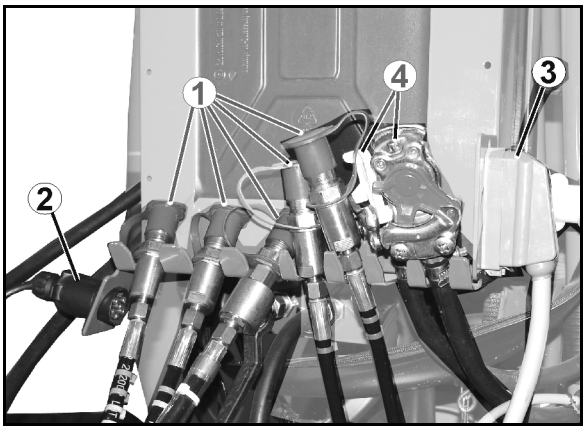


Fig. 9

4.4 Transportation equipment

Fig. 10/...

(1) rear lights, brake lights, turn

(2) 2 warning signs (square)

(3) 2 red reflectors (triangular)

(4) 1 registration plate holder with lighting

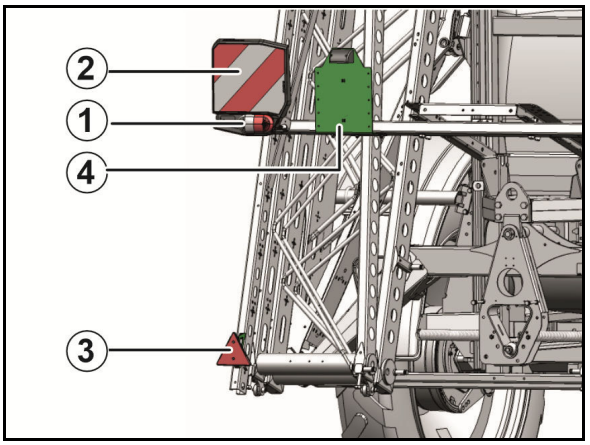


Fig. 10

Fig. 11/...

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

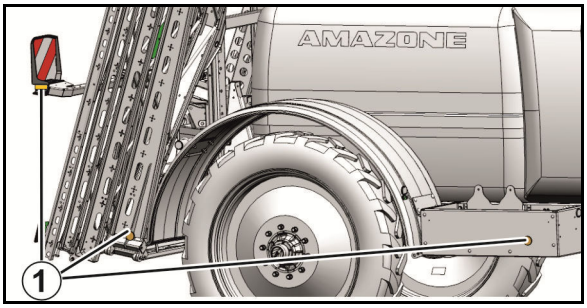


Fig. 11

Connect the lighting system via the connector to the 7-pin tractor socket.

For France, additional lateral danger signs and warning beacon on the sprayer boom are required.

4.5 Intended use

The field sprayer

- is intended for the transportation and application of crop protection agents (insecticides, fungicides, herbicides, etc.) in the form of suspensions, emulsions and mixtures, as well as of liquid fertilisers.
- uses state-of-the-art technology to ensure organic success, provided that all the correct adjustments are made and correct doses applied. Economical use of spraying agents and low rates of pollution are achieved.
- is intended exclusively for agricultural use, for treating field crops

Using the steering drawbar with AutoTrail control for precise tracking is prohibited if on sloping terrain. See page 72.

The pH value of the spray liquid to be applied (particularly liquid fertiliser) must be greater than 1.5.

Restrictions for use on slopes

(1) Driving on slopes with a full spray liquid tank

(2) Driving on slopes with a partially full spray liquid tank

(3) Application of residual quantities

(4) Turning

(5) Folding the sprayer boom

	(1)	(2)	(3)	(4)	(5)
Across a slope	15%	15%	15%	15%	20%
Up/down the slope	15%	30%	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.

4.6 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. 12: German inspection plate

Fig. 12

4.7 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 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 in the construction of AMAZONE field sprayers are safe for liquid fertiliser.

4.8 Danger areas and danger points

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

- 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 symbols indicate these danger points and warn against residual dangers, which cannot be eliminated for practical reasons. In such cases, the special safety regulations in the appropriate section are 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.

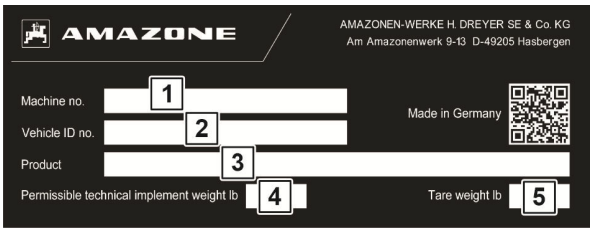
Danger points exist:

- between the tractor and field sprayer, particularly when coupling and uncoupling.
- 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.

4.9 Rating plate

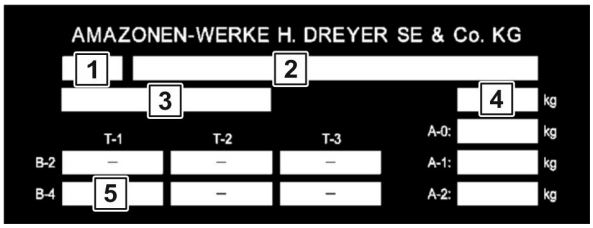
Machine rating plate

(1) Implement number
(2) Vehicle identification number
(3) Product
(4) Permissible technical implement weight
(5) Tare weight kg



Additional rating plate

(1) Note for type approval
(2) Note for type approval
(3) Vehicle identification number
(4) Technically permissible total weight
(5) Permissible technical trailer load for a drawbar trailer vehicle with pneumatic brake
(A0) Permissible technical drawbar load A-0
(A1) Permissible technical axle load, axle 1
(A2) Permissible technical axle load, axle 2



4.10 Conformity

	Directives/Standards designation	
The implement complies with the	• Implement directive	2006/42/EC
	• EMC directive	2014/30/EU

4.11 Technically possible maximum application rate

The application rate of the implement is limited by the following factors:

- Maximum flow to the sprayer boom of 52 gpm or 200 l/min (HighFlow 105 gpm or 400 l/min).
- Maximum flow per part-width section of 7 gpm or 25 l/min (with 2 spray lines: 10,5 gpm or 40 l/min per part-width section).
- Maximum flow per nozzle body of 1 gpm or 4 l/min.

4.12 Maximum permissible application rate

The permissible application rate of the implement is limited by the minimum required agitator capacity.

The agitator capacity per minute should be 5% of the hopper volume.

This is particularly applicable for active substances that are hard to keep in suspension.

With active substances that are dissolved, the agitator capacity can be reduced.

Determining the permissible application rate depending on the agitator capacity

Calculation formula for the application rate in l/min:

(Agitator capacity per minute = 5% of the tank volume)

Permissible application rate	=	Pump capacity	- 0.05 x nominal tank volume
[gpm] [l/min]		[gpm] [l/min]	[gal] [l]
		(see technical data)	

Conversion of the application rate in l/ha:

1. Determine the application rate per nozzle (divide the permissible application rate by the number of nozzles).
2. Read the application rate per hectare depending on the speed from the spray table (See page 246).

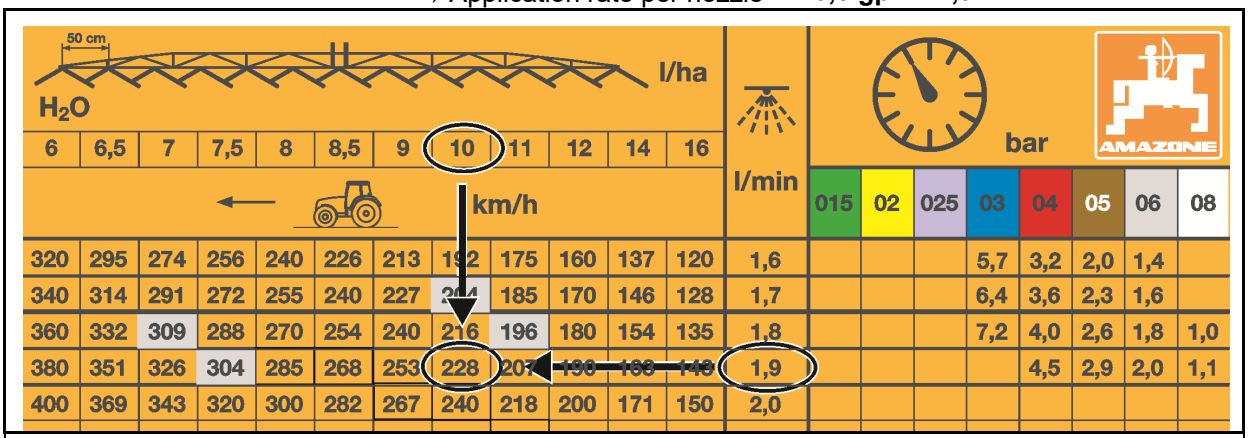
Example: UG 3000, pump BP 280, Super S 79 ft / 24 m, 48 nozzles,

6 mph / **10** km/h

Permissible application rate = 63 gpm – 0,05 x 793 gal = 24 gpm

240 l/min - 0,05 x 3000 l = 90 l/min

→ Application rate per nozzle = **0,5 gpm / 1,9 l/min**



→ **Permissible application rate per hectare = 24 gal/ac**

= 228 l/ha

4.13 Technical data

4.13.1 Basic implement

The basic weight consists of the sum of the weights of the basic implement, optional equipment, and special equipment.

Typ UG	2200	3000
Spray liquid tank		
• Actual volume	634 gal / 2400 l	845 gal / 3200 l
• Nominal volume	581 gal / 2200 l	792 gal / 3000 l
Filling height from the maintenance platform	26 in / 650 mm	39 in / 1000 mm
Permissible system pressure	145 psi / 10 bar	
Length	205 – 232 in / 5200 mm – 5900 mm	
Width	89 – 118 in / 2250 - 3000 mm	
Height	122 – 157 in / 3100 - 4000 mm	
Central switching mechanism	Electric, part width section valve coupling	
Spray pressure adjustment	Electric	
Spray pressure setting range	0,8 – 10	
Spray pressure display	digital spray pressure display	
Pressure filter	50 (80,100) Maschen	
Agitator	Infinitely adjustable	
Nozzle height	20 – 98 in / 500 mm – 2500 mm	

4.13.2 Spraying technology

Part-width sections depending on the working width

Working width	Number	Number of nozzles per part width sections
49 ft / 15 m	5	6-6-6-6-6
	7	3-5-5-4-5-5-3
52 ft / 16 m	5	7-6-6-6-7
59 ft / 18 m	5	6-8-8-8-6
	7	5-6-5-4-5-6-5
	9	2-3-6-5-4-5-6-3-2
66 ft / 20 m	5	8-8-8-8-8
	7	5-5-6-8-6-5-55
	9	3-4-6-5-4-5-6-4-3
69 ft / 21 m	5	9-8-8-8-9
	7	6-6-6-6-6-6-6
	9	4-4-6-5-4-5-6-4-4
	11	4-4-3-3-5-4-5-3-3-4-4
69 / 49 // 21/15 m	7	6-6-6-6-6-6-6
	9	6-4-4-5-4-5-4-4-6
	11	3-3-4-4-5-4-5-4-4-3-3
79 ft / 24 m	5	9-10-10-10-9
	7	6-6-8-8-8-6-6
	9	6-5-6-5-4-5-6-5-6
	11	4-4-5-4-5-4-5-4-5-4-4
89 ft / 27 m	7	9-6-8-8-8-6-9
	9	6-6-6-6-6-6-6-6-6
	11	6-6-4-4-5-4-5-4-4-6-6
92 ft / 28 m	7	8-8-8-8-8-8-8
	9	7-6-6-6-6-6-6-6-7
	11	5-5-5-6-5-4-5-6-5-5-5

Pump equipment technical data

Pump type		BP280	BP235	BP171
		66 gpm	98 gpm [55 l/min + 42 l/min]	
		250 l/min	370 l/min [210 l/min + 160 l/min]	
Delivery capacity at nominal speed	at 29 psi bei 2 bar	66 gpm 250 l/min	55 gpm 208 l/min	42 gpm 160 l/min
	at 290 psi bei 20 bar	63 gpm 239 l/min	56 gpm 213 l/min	41 gpm 154 l/min
Power requirement		13,1 hp 9.8 kW	9,2 hp 6.9 kW	17,1 hp 12.8 kW
Design		6-cylinder Piston diaphragm pump		4-cylinder
Pulsation damping		Accumulator		

4.13.3 Residual amounts

Technical residue incl. pump

Type UG		2000	3000
On the level		5 gal / 19 l	6 gal / 23 l
	15% direction of travel to the left	4 gal / 15l	7 gal / 26 l
	15% direction of travel to the right	4 gal / 15 l	7 gal / 26 l
Along the gradient			
	15% up the slope	12 gal / 45 l	15 gal / 56 l
	15% down the slope	12,5 gal / 47 l	15,5 gal / 58 l

Pump equipment technical residue

Pump type	BP280	BP235	BP171
Pump	0,5 gal / 1.9 l	0,5 gal / 1.7 l	0,4 gal / 1.6 l
Suction hose	0,4 gal / 1.5 l	0,2 gal / 0.9	0,2 gal / 0.9 l
Pressure hose	0,2 gal / 0.8 l	0,2 gal / 0.8	0,2 gal / 0.8 l
Overall pump equipment	1,1 gal / 4.2 l	0,9 gal / 3.4	0,9 gal / 3.3 l

Technical boom residues

Working width	Number of part-width sections	Part-width section control					
		Without DUS			**With** DUS		
		A	**B**	**C**	**A**	**B**	**C**
49 ft / 15 m	5	1,2 gal	1,8 gal	3,0 gal	3,3 gal	0,3 gal	3,5 gal
		4,5 l	7,0 l	11,5 l	12,5 l	1,0 l	13,5 l
	7	1,2 gal	2,0 gal	3,2 gal	3,4 gal	0,3 gal	3,7 gal
		4,5 l	7,5 l	12,0 l	13,0 l	1,0 l	14,0 l
52 ft / 16 m	5	1,2 gal	2,0 gal	3,2 gal	3,4 gal	0,3 gal	3,7 gal
		4,5 l	7,5 l	12,0 l	13,0 l	1,0 l	14,0 l
59 ft / 18 m	5	1,2 gal	2,1 gal	3,3 gal	3,6 gal	0,3 gal	3,8 gal
		4,5 l	8,0 l	12,5 l	13,5 l	1,0 l	14,5 l
	7	1,2 gal	2,2 gal	3,4 gal	3,7 gal	0,3 gal	4,0 gal
		4,5 l	8,5 l	13,0 l	14,0 l	1,0 l	15,0 l
66 ft / 20 m	5	1,2 gal	2,2 gal	3,4 gal	3,7 gal	0,3 gal	4,1 gal
		4,5 l	8,5 l	13,0 l	14,0 l	1,0 l	15,5 l
	7	1,2 gal	2,5 gal	3,7 gal	4,0 gal	0,3 gal	4,2 gal
		4,5 l	9,5 l	14,0 l	15,0 l	1,0 l	16,0 l
69 ft / 21 m	5	1,2 gal	2,4 gal	3,6 gal	3,8 gal	0,3 gal	4,1 gal
		4,5 l	9,0 l	13,5 l	14,5 l	1,0 l	15,5 l
	7	1,3 gal	2,8 gal	4,1 gal	4,5 gal	0,3 gal	4,8 gal
		5,0 l	10,5 l	15,5 l	17,0 l	1,0 l	18,0 l
	9	1,5 gal	4,2 gal	5,7 gal	6,0 gal	0,4 gal	6,5 gal
		5,5 l	16,0 l	21,5 l	23,0 l	1,5 l	24,5 l
79 ft / 24 m	5	1,3 gal	2,6 gal	4 gal	4,2 gal	0,4 gal	4,6 gal
		5,0 l	10,0 l	15,0 l	16,0 l	1,5 l	17,5 l
	7	1,3 gal	3,0 gal	4,4 gal	4,6 gal	0,4 gal	5,0 gal
		5,0 l	11,5 l	16,5 l	17,5 l	1,5 l	19,0 l
	9	1,5 gal	4,5 gal	6,0 gal	6,2 gal	0,5 gal	6,7 gal
		5,5 l	17,0 l	22,5 l	23,5 l	2,0 l	25,5 l
89 ft / 27 m	7	1,3 gal	3,3 gal	4,6 gal	4,9 gal	0,5 gal	5,4 gal
		5,0 l	12,5 l	17,5 l	18,5 l	2,0 l	20,5 l
	9	1,5 gal	4,6 gal	6,0 gal	6,3 gal	0,5 gal	6,9 gal
		5,5 l	17,5 l	23,0 l	24,0 l	2,0 l	26,0 l
92 ft / 28 m	7	1,3 gal	3,4 gal	4,8 gal	5,0 gal	0,5 gal	5,5 gal
		5,0 l	13,0 l	18,0 l	19,0 l	2,0 l	21,0 l
	9	1,5 gal	4,6 gal	6,0 gal	6,3 gal	0,5 gal	6,9 gal
		5,5 l	17,5 l	23,0 l	24,0 l	2,0 l	26,0 l
98 ft / 30 m	9	1,5 gal	4,8 gal	6,2 gal	6,3 gal	0,7 gal	7,0 gal
		5,5 l	18,0 l	23,5 l	24,0 l	2,5 l	26,5 l
105 ft / 32 m	9	1,5 gal	4,9 gal	6,3 gal	6,3 gal	0,7 gal	7,1 gal
		5,5 l	18,5 l	24,0 l	24,0 l	2,5 l	27,0 l

Working width	Number of part-width sections	Part-width section control					
		Without DUS			**With** DUS		
		A	**B**	**C**	**A**	**B**	**C**
108 ft / 33 m	9	1,5 gal	5,0 gal	6,5 gal	6,6 gal	0,7 gal	7,3 gal
		5,5 l	19,0 l	24,5 l	25,0 l	2,5 l	27,5 l
	11	1,6 gal	6,0 gal	7,7 gal	7,8 gal	0,7 gal	8,5 gal
		6,0 l	23,0 l	29,0 l	29,5 l	2,5 l	32,0 l
118 ft / 36 m	7	1,3 gal	4,2 gal	5,5 gal	5,7 gal	0,8 gal	6,5 gal
		5,0 l	16,0 l	21,0 l	21,5 l	3,0 l	24,5 l
	9	1,5 gal	5,2 gal	6,6 gal	6,7 gal	0,8 gal	7,5 gal
		5,5 l	19,5 l	25,0 l	25,5 l	3,0 l	28,5 l
128 ft / 39 m	9	1,5 gal	5,4 gal	6,9 gal	7,0 gal	0,8 gal	7,8 gal
		5,5 l	20,5 l	26,0 l	26,5 l	3,0 l	29,5 l
	13	1,7 gal	7,4 gal	9,1 gal	9,3 gal	0,8 gal	10 gal
		6,5 l	28,0 l	34,5 l	35,0 l	3,0 l	38,0 l

DUS: Pressure circulating system
A: Dilutable
B: Not dilutable
C: Total

4.13.4 Payload

Maximum payload	**=**	**Permissible technical implement weight**	**-**	**Tare weight**

DANGER

Exceeding the maximum permissible payload is prohibited.

Risk of accident due to 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 permissible technical implement weight and the tare weight are specified on the implement rating plate.

Depending on the tyres, the tyre load capacity of both tyres can be lower than the permissible axle load.

In this case, the tyre load capacity limits the permissible axle load.

Tyre load capacity per wheel

- The load index on the tyre indicates the load capacity of the tyre.
- The speed index on the tyre indicates the maximum speed at which the tyre has the tyre load capacity according to the load index.
- The tyre load capacity is only achieved when the tyre inflation pressure matches the nominal pressure.

Load index		**140**	**141**	**142**	**143**	**144**	**145**	**146**	**147**
Tire load capacity	(lb)	5512	5657	5842	6008	6173	6393	6614	6779
	(kg)	2500	2575	2650	2725	2800	2900	3000	3075
Load index		**148**	**149**	**150**	**151**	**152**	**153**	**154**	**155**
Tire load capacity	(lb)	6945	7165	7385	7606	7826	8047	8267	8488
	(kg)	3150	3250	3350	3450	3550	3650	3750	3850
Load index		**156**	**157**	**158**	**159**	**160**	**161**	**162**	**163**
Tire load capacity	(lb)	8819	9094	9370	9645	9921	10196	10472	11023
	(kg)	4000	4125	4250	4375	4500	4625	4750	5000
Load index		**164**	**165**	**166**	**167**	**168**	**169**	**170**	**171**
Tire load capacity	(lb)	11023	11354	11685	12016	12346	12787	13228	13558
	(kg)	5000	5150	5300	5450	5600	5800	6000	6150
Load index		**172**	**173**	**174**	**175**	**176**	**177**	**178**	**179**
Tire load capacity	(lb)	13889	14330	14771	15212	15653	16094	16535	17086
	(kg)	6300	6500	6700	6900	7100	7300	7500	7750

Speed index	A5	A6	A7	A8	B	C	D	E
Permissible maximum speed (mph)	16	19	22	25	31	37	40	44
Permissible maximum speed (kpm)	25	30	35	40	50	60	65	70

Driving with reduced inflation pressure

- When the inflation pressure is lower than the nominal pressure, the tyre load capacity is reduced!

  In that case, observe the reduced payload of the implement.
- Please also follow the specifications of the tyre manufacturer!

WARNING

Danger of accident!

In event of too low inflation pressure, the stability of the vehicle is no longer guaranteed.

4.14 Noise emissions data

The workplace-related emissions value (acoustic pressure level) is 74 dB(A), measured during operation at the ear of the tractor driver with the cab closed.

Measuring unit: OPTAC SLM 5.

The noise level is primarily dependent on the vehicle used.

4.15 Required tractor equipment

For the machine to be operated as intended, the tractor must fulfil the following requirements:

Tractor engine power

UG 2200	from 65 kW (90 hp) upwards
UG 3000	from 75 kW (100 hp) upwards

Electrical system

Battery voltage:	• 12 V (volts)
Lighting socket:	• 7 pin

Hydraulic system

Maximum operating pressure:	• 3045 psi / 210 bar
Tractor pump capacity:	• At least 6,6 gmp / 25 l/min at 150 bar for the hydraulic block (with Profi-folding, optional)
Machine hydraulic fluid:	• HLP68 DIN 51524 The implement hydraulic fluid is suitable for the combined hydraulic fluid circuits of all standard tractor brands
Control units	• Depending on the equipment, see on page 66.

Service brake system (depending on equipment)

Dual circuit service brake system: or	• 1 hose coupling (red) for the supply line • 1 hose coupling (yellow) for the brake line
Single circuit service brake system:	• 1 service line hose coupling for the brake line
or	
Hydraulic brake system:	• 1 hydraulic coupling, conforms to ISO 5676

The hydraulic brake system is prohibited in Germany and several other EU countries.

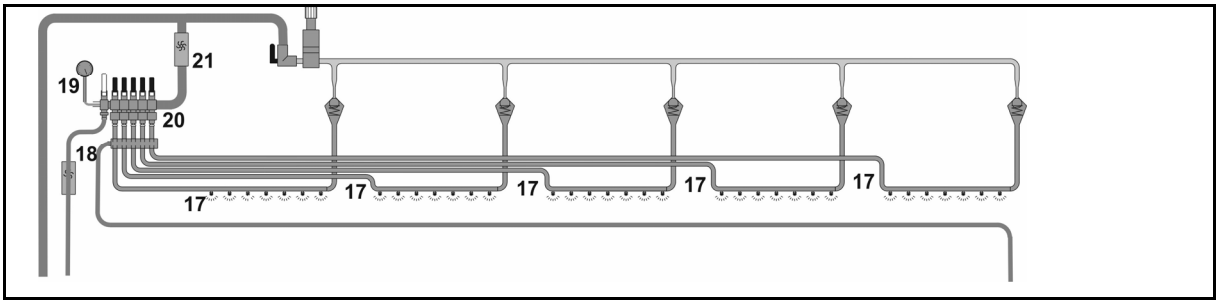
Universal joint shaft (depending on equipment)

Required speed:	• 540 rpm
Direction of rotation:	• Clockwise, viewed from rear toward the tractor.

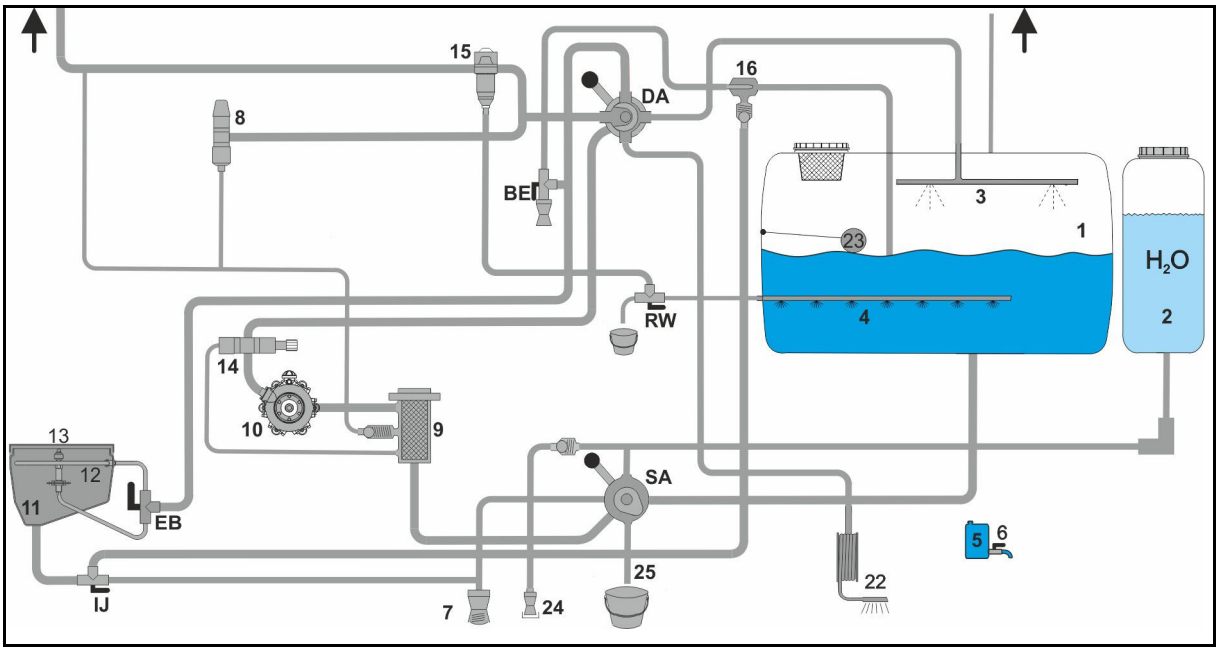
5 Structure and function

The following section provides information on the machine structure and the functions of the individual components.

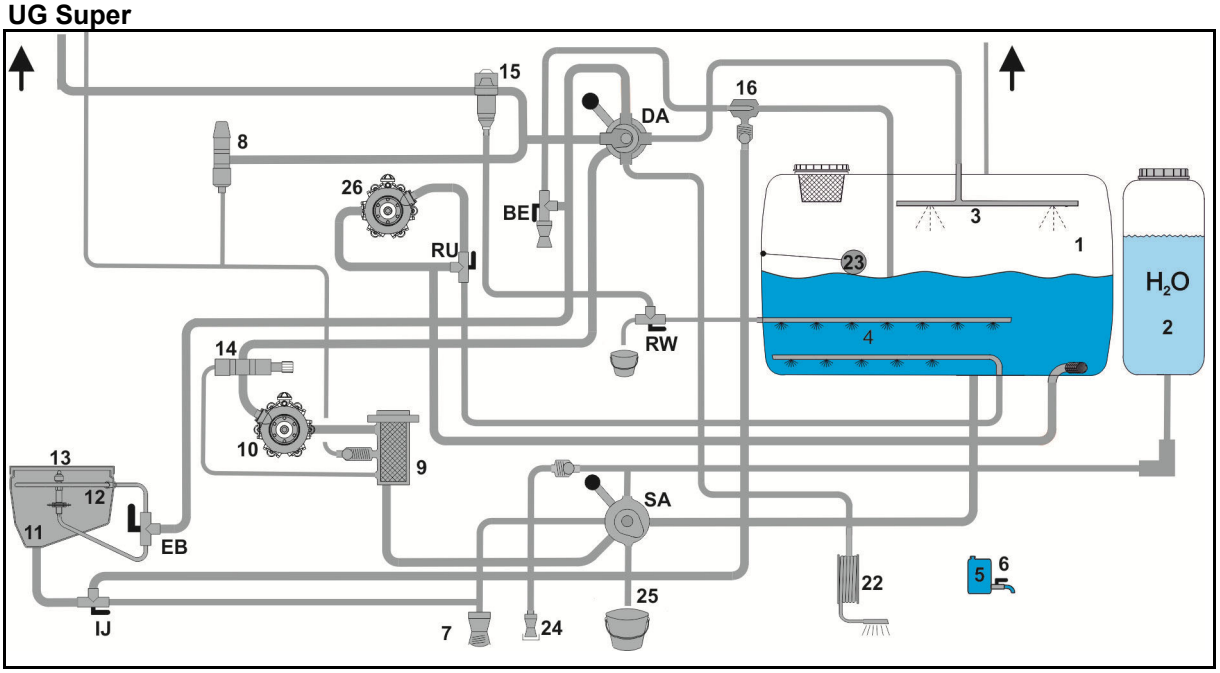
5.1 Functionality



UG Special



UG Super



The piston diaphragm pump (2) draws the spray liquid from the spray liquid tank (1) through the suction side switch tap (SA), the suction line (3) and the suction filter (4). The drawn spray liquid reaches the pressure side switch tap (DA) through the pressure line (5) . The spray liquid reaches the pressure valve chest through the pressure side switch tap (DA). The pressure valve chest consists of the spray liquid regulation (6) and the self-cleaning pressure filter (7).

From the pressure valve chest, the spray liquid is conveyed through the flow meter (8) to the part-width section valves (9). The part-width section valves are responsible for the distribution to the individual spray lines (10). The return flow meter (11) (only control terminal) measures the quantity of spray liquid that is conveyed back to the spray liquid tank at low application rates.

When it is switched on, the agitator (12) ensures homogeneous spray liquid in the spray liquid tank. The agitator capacity of the agitator can be adjusted on the setting tap (RW - secondary agitator, RU - main agitator; only with UG Super).

The field sprayer is operated from the tractor using

- the control terminal (13) or
- the AMASPRAY+ control terminal.

To prepare the spray liquid, fill the required agent quantity in the induction bowl and suction it into the spray liquid tank.
The fresh water from the flushing water tank (15) is used to clean the spraying system.

5.2 Control terminal

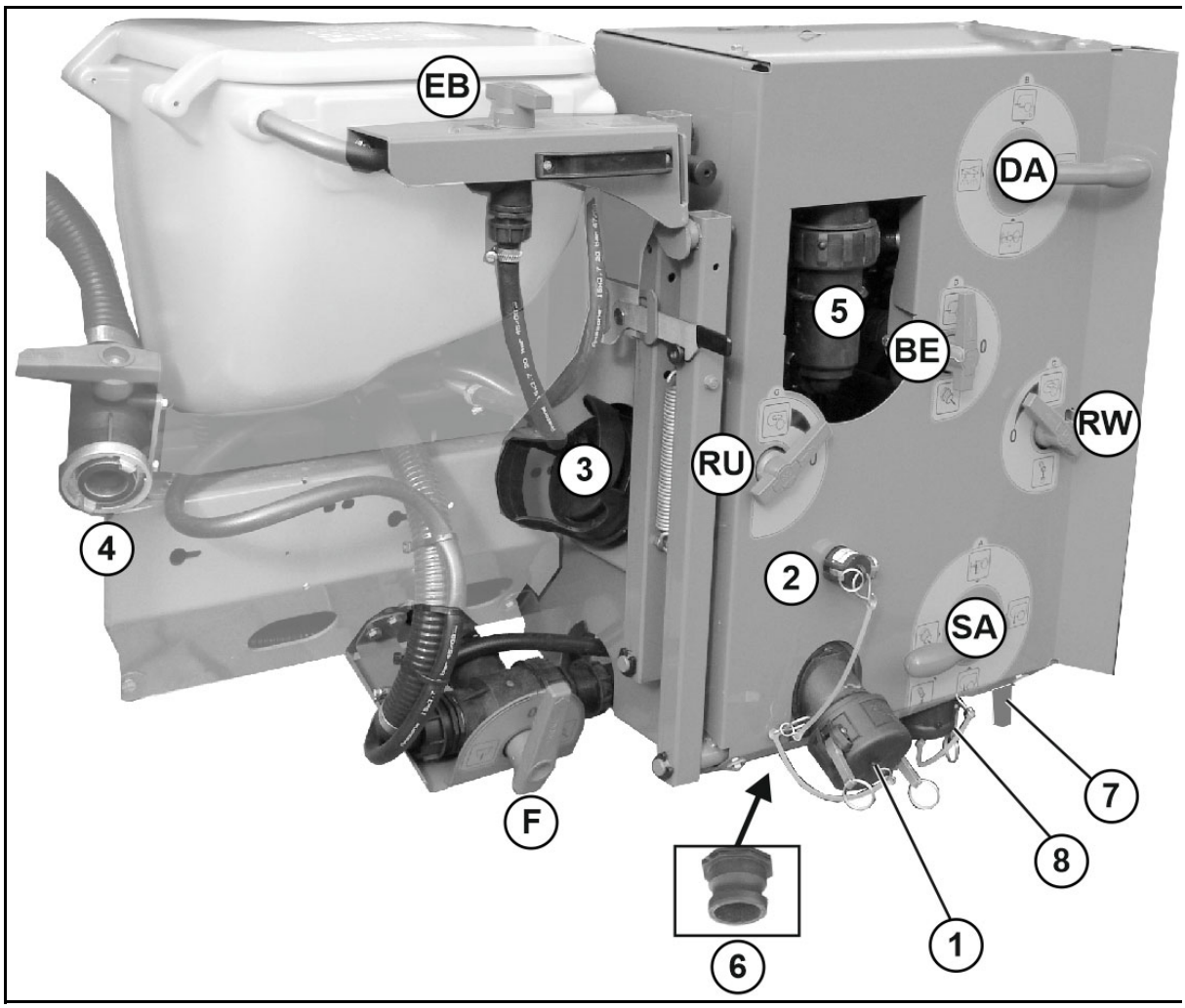


Fig. 13

(1) Spray liquid tank via suction hose filling connection

(2) Flushing water tank filling connection

(3) Suction filter

(4) Spray liquid tank filling connection (optional)

(5) Self-cleaning pressure filter

(6) Quick emptying via pump

(7) Pressure filter draining hose

(8) Spray liquid drain

(**SA**) Suction side switch tap

(**DA**) Pressure side switch tap

(**RW**) Setting tap for the agitator / draining the pressure filter

(**BE**) Filling / quick emptying switch tap

(**EB**) Induction bowl ring line / canister flushing switch tap

(**IJ**) Suction / induction switch tap

(**RU**) Setting tap for main agitator (UG Super)

- **SA – Suction side switch tap**
  - o External suction
  - o Suction from the flushing water tank
  - o Suction from the spray liquid tank
  - o Drain technical residue from the spray liquid tank
  - o Drain technical residue from the suction valve chest and suction filter

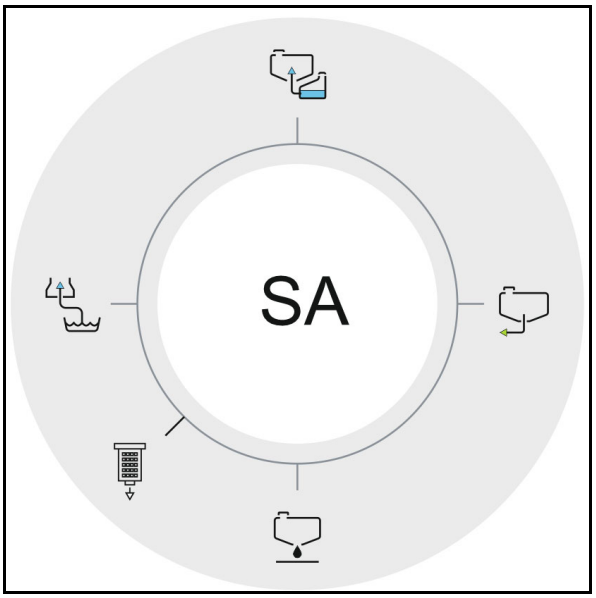


Fig. 14

- **DA – Pressure side switch tap**
  - o Spraying operation
  - o Filling / quick emptying (optional)
  - o Internal tank cleaning with flushing water
  - o External cleaning with flushing water

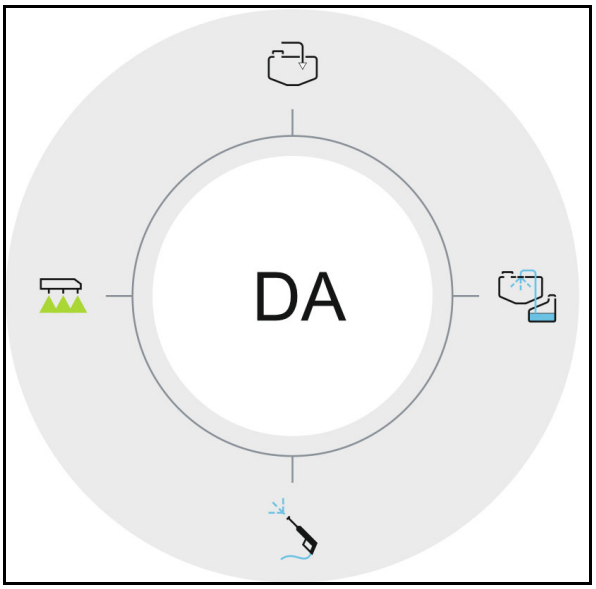
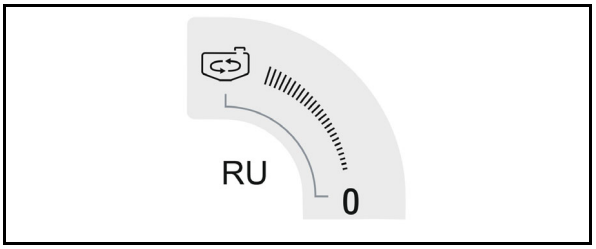
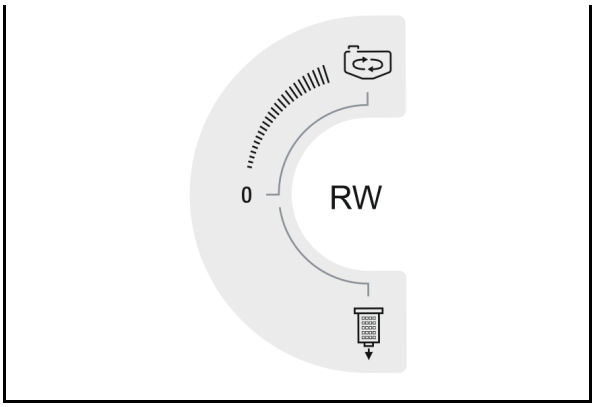


Fig. 15

- **RU – Setting tap for main agitator**
  - o Agitator maximum
  - o **0** Zero setting



- **RW – Setting tap for the secondary agitator / draining the pressure filter**
  - o Agitator maximum
  - o **0** Zero setting
  - o Drain technical residue from the pressure filter



- **BE – Filling / quick emptying switch tap (optional)**
  - o Filling
  - o **0** Zero setting
  - o Quick emptying

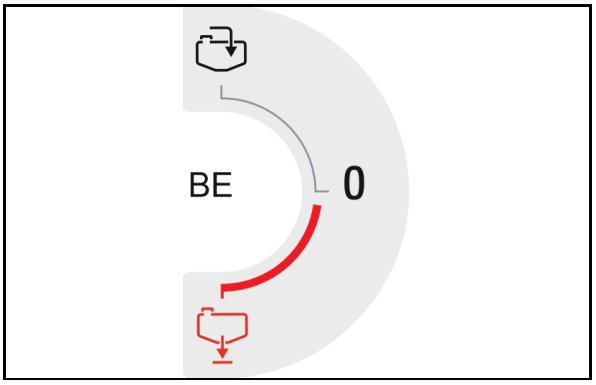


Fig. 16

- **EB – Induction bowl / ring line / canister flushing switch tap**
  - o Ring line
  - o **0** Zero setting
  - o Canister flushing

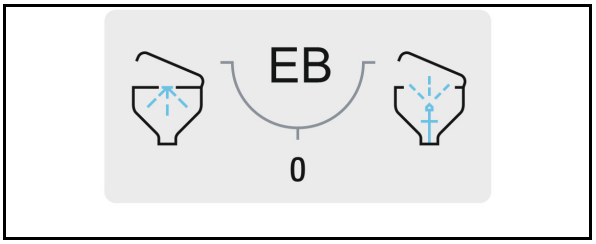


Fig. 17

- **IJ – Suction / induction switch tap**
  - o Suction from induction bowl
  - o **0** Zero setting
  - o Additional external suction via injector

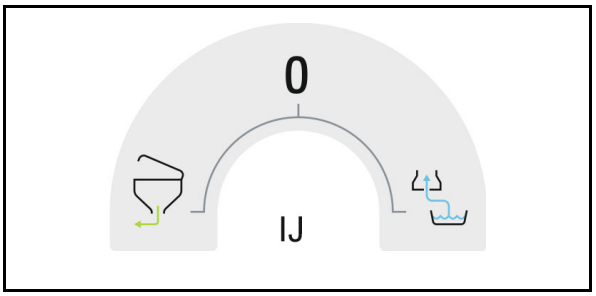


Fig. 18

All stop taps are

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

5.3 PTO shaft

The wide angle PTO shaft takes on the power transmission between tractor and machine.

- Wide angle PTO shaft WWE 2280-1400 mounted at tractor
- Russia only:
  Wide angle PTO shaft WWE 2280-SD15-1800 mounted on machine side

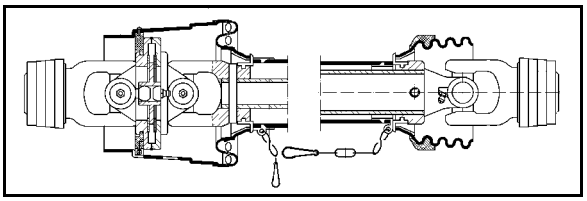


Fig. 19

WARNING

Risk of crushing from the tractor and machine unintentionally starting up or rolling.

Only couple/uncouple the wide angle PTO shaft from the tractor, if the tractor and machine are secured against unintentional starting and rolling.

WARNING

Risk of being caught and drawn in by the unguarded PTO shaft or due to damaged safety devices.

- Never use the PTO shaft if the safety device is missing or damaged, or without correctly using the supporting chain.
- Before each use, check that
  - all PTO shaft protective devices are installed and fully functional.
  - the clearance around the PTO shaft is sufficient in all operating positions. Insufficient clearance will result in damage to the PTO shaft.
- Attach the supporting chains in a way that ensures a sufficient swivel range of the PTO shaft in all operating positions. Supporting chains must not become caught on machine or tractor parts.
- Have any damaged or missing parts of the PTO shaft replaced immediately with genuine parts from the PTO shaft manufacturer.
  Note that only a specialist workshop may repair a PTO shaft.
- With the machine uncoupled, place the PTO shaft in the holder provided. This protects the PTO shaft from damage and dirt.
  - Never use the supporting chain of the PTO shaft to suspend the uncoupled PTO shaft.

WARNING

Risk of being caught and drawn in by unguarded PTO shaft parts in the power transmission area between the tractor and driven machine.

Work only when the drive between the tractor and driven machine is fully guarded.

- The unguarded parts of the PTO shaft must always be guarded by a shield on the tractor and a PTO shaft guard on the machine.
- Check that the shield on the tractor or the PTO shaft guard on the machine and the safety devices and guards of the extended PTO shaft overlap by at least 50 mm. If they do not, you must not power the machine via the PTO shaft.

- Use only the PTO shaft provided or one of the same type.
- Read and follow the operating manual provided for the PTO shaft. Correct use and maintenance of the PTO shaft prevents serious accidents.
- When coupling the PTO shaft
  - refer to the operating manual provided for the PTO shaft.
  - observe the permissible drive speed of the machine.
  - observe the correct installation length of the PTO shaft. Refer to the section "Adjusting the length of the PTO shaft to the tractor", page 131.
  - observe the correct installation position of the PTO shaft. The tractor symbol on the protective tube of the PTO shaft identifies the tractor-side connection of the PTO shaft.
- Always mount the overload or freewheel clutch on the machine if the PTO shaft has an overload or freewheel clutch.
- Before activating the universal joint shaft, refer to the safety instructions for the universal joint shaft, page 32.

5.3.1 Coupling the PTO shaft

WARNING

Risk of crushing or impact if there is insufficient clearance when coupling the PTO shaft.

Couple the PTO shaft with the tractor before coupling the machine with the tractor. This will ensure the necessary clearance for safe coupling of the PTO shaft.

1. Drive the tractor up to the machine, leaving a clearance (approx. 10 in / 25 cm) between the tractor and the machine.
2. Secure the tractor against unintentional starting and unintentional rolling away, see page 137.
3. Check whether the tractor universal joint shaft is switched off.
4. Clean and grease the tractor universal joint shaft.
5. Fit the latch of the PTO shaft over the universal joint shaft of the tractor until the latch is heard to engage. When coupling the PTO shaft, refer to the operating manual provided for the PTO shaft and observe the permissible universal joint shaft speed of the machine.

The tractor symbol on the protective tube of the PTO shaft identifies the tractor-side connection of the PTO shaft.

6. Secure the PTO shaft guard using the supporting chain(s) to prevent movement.
   - 6.1 Fasten the supporting chain(s) so that it as perpendicular to the PTO shaft as possible.
   - 6.2 Attach the supporting chain(s) in a way that ensures sufficient swivel range of the PTO shaft in all operating positions.

CAUTION

Supporting chains must not become caught on machine or tractor parts.

7. Check that there is sufficient clearance around the PTO shaft in all operating conditions. Insufficient clearance will result in damage to the PTO shaft.
8. Provide the necessary clearance (if required).

5.3.2 Uncoupling the PTO shaft

WARNING

Risk of crushing or impact if there is insufficient clearance when uncoupling the PTO shaft.

First uncouple the machine from the tractor before uncoupling the PTO shaft from the tractor. This will ensure the necessary clearance for safe uncoupling of the PTO shaft.

CAUTION

Risk of burning on hot components of the PTO shaft.

This danger can cause minor to serious injuries to the hands.

Do not touch components of the PTO shaft that have become hot (particularly clutches).

- Store the uncoupled PTO shaft in the holder provided. This protects the PTO shaft from damage and dirt.

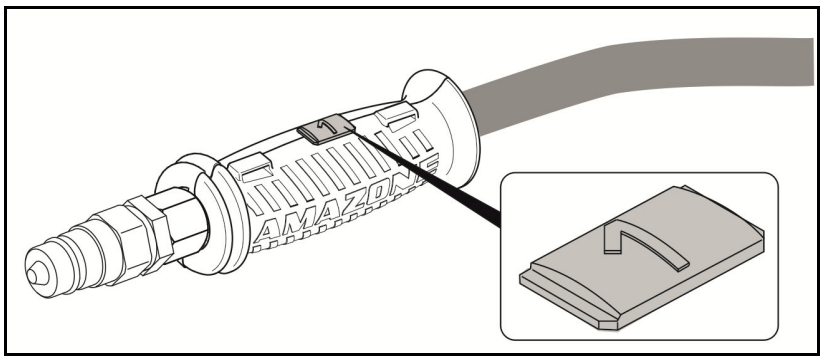
  Never use the supporting chain on the PTO shaft to hang up the uncoupled PTO shaft.
- Clean and lubricate the PTO shaft if it is going to be out of use for a long time.

1. Uncouple the machine from the tractor. See page 146.
2. Drive the tractor up to the machine, leaving a clearance of approximately 10 in / 25 cm between the tractor and the machine.
3. Secure the tractor and machine against unintentional starting and rolling away, see page 137.
4. Withdraw the PTO shaft from the universal joint shaft of the tractor.
5. Place the PTO shaft in the holder provided.
6. Clean and lubricate the PTO shaft if it is not going to be used for a longer period of time

5.4 Hydraulic connections

- All hydraulic hose lines are equipped with grips.

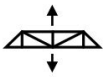
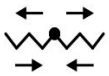
  Coloured markings with a code number or code letter have been applied to the gripping sections in order to assign the respective hydraulic function to the pressure line of a tractor control unit!



  Films are stuck on the implement for the markings that illustrate the respective hydraulic function.

- The tractor control unit must be used in different types of activation, depending on the hydraulic function.

Latched, for a permanent oil circulation	
Tentative, activate until the action is executed	
Float position, free oil flow in the control unit	

Marking		Function			Tractor control unit	
yellow	1		**height adjustment**	raise	Double acting	
	2			lower		
green	1		**fold boom**	fold out	Double acting	
	2			fold in		
beige	1		**tilt adjustment (optional)**	raise left boom	Double acting	
	2			raise right boom		
blue	1		**steering drawbar (optional)**	extend hydraulic cylinder (machine left)	Double acting	
	2			retract hydraulic cylinder (machine right)		

Profi-folding

Marking		Function	Tractor control unit	
red	P	Permanent oil circulation	Single-acting	∞
red	T	Pressure-free return flow		

WARNING

Risk of infection from hydraulic fluid escaping at high pressure.

When coupling/uncoupling the hydraulic hose line, ensure that the hydraulic system is not under pressure on the tractor or machine side.

If you are injured by hydraulic fluid, contact a doctor immediately.

Oil return flow

Profi-folding:

Maximum permissible pressure in oil return: 5 bar

Therefore do not connect the oil return to the tractor control unit, but to a pressure-free oil return flow with a large plug coupling.

WARNING

For the oil return, use only DN16 lines and select short return paths.

Pressurise the hydraulic system only when the free return has been correctly coupled.

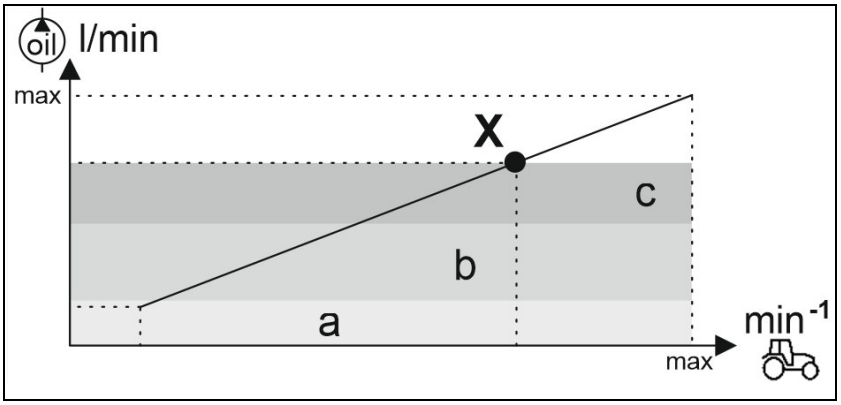
Install the coupling union (supplied) on the pressure-free oil return flow.

Oil volume flow

Depending on the implement equipment (equipment a, b, c), the implement requires a specific oil volume flow that must be provided by the tractor.

Select the tractor such that it provides the required oil volume flow at operating point X on the field and also on the headlands with a moderate engine speed. You must also consider the tractor's own requirements.

An oil shortage impairs the functioning of the implement and can cause damage to the implement.



Load sensing operation

For load sensing operation, move the switch tap on the hydraulic block to the corresponding position.

5.4.1 Coupling hydraulic hose lines

WARNING

Risk of crushing, cutting, being trapped or drawn in, or impact through faulty hydraulic functions when hydraulic hose lines are incorrectly connected.

When coupling the hydraulic hose lines, please note the coloured markings on the hydraulic plugs.

- Check the compatibility of the hydraulic fluids before connecting the machine to the tractor hydraulic system.
  Do not mix any mineral oils with biological oils.
- Observe the maximum permissible hydraulic fluid pressure of 210 bars.
- Only couple clean hydraulic connectors.
- Slide the hydraulic connector(s) into the hydraulic sockets until they are heard to engage.
- Check the coupling points on the hydraulic hose lines, to see if they are sitting correctly and are sealed.

1. Swivel the actuation lever on the control valve on the tractor to float position (neutral position).
2. Clean the hydraulic plugs on the hydraulic hose lines before coupling the hydraulic hose lines with the tractor.
3. Connect the hydraulic hose line(s) to the tractor control unit(s).

5.4.2 Disconnecting hydraulic hose lines

1. Swivel the actuation lever on the control unit on the tractor to float position (neutral position).
2. Unlock the hydraulic connectors from the hydraulic sockets.
3. Protect the hydraulic plug and hydraulic socket against soiling using the dust protection caps.
4. Store the hydraulic hose lines in the hose cabinet.

5.5 Air pressure brake system

Keeping to the service interval is essential for proper functioning of the dual circuit service brake system.

Fig. 20/...

The access of the dual circuit air brake system requires a dual circuit air brake system on the tractor as well.

- Brake valve of the trailing vehicle with manually adjustable brake pressure regulator.
- Brake pressure regulator (Fig. 20/1) for manual adjustment of brake pressure. The setting of the braking power is done in 4 steps, depending on the load of the machine
  - o Sprayer filled = 1/1
  - o Sprayer partly filled = 1/2
  - o Sprayer empty = 0
  - o Towing operation =

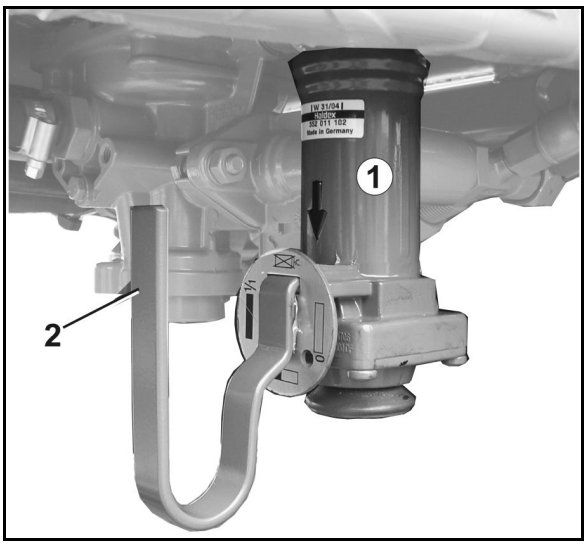


Fig. 20

Fig. 22/...

(1) Hose coupling on brake line (yellow)

(2) Hose coupling on supply line (red)

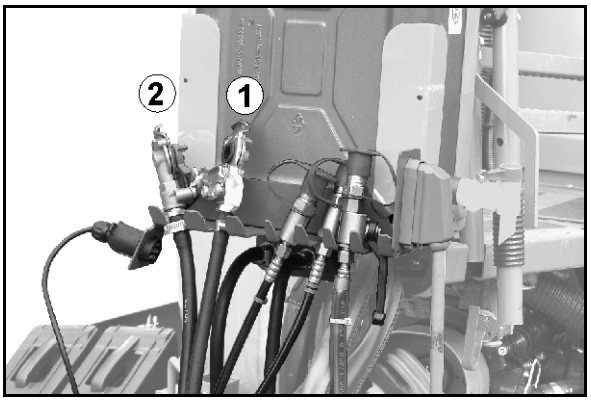


Fig. 21

Fig. 22/...

(1) Air reservoir

(2) Drainage valve for condensate.

(3) Test connection

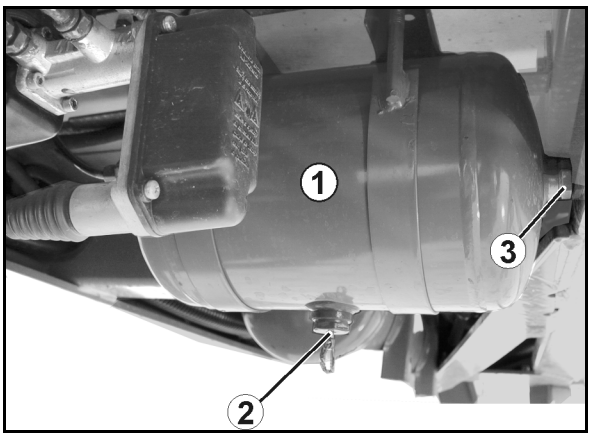


Fig. 22

5.5.1 Coupling the brake system

WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through incorrectly functioning brake system.

- When coupling the brake and supply line, ensure that
  - the sealing rings on the hose couplings are clean.
  - the sealing rings on the hose couplings seal properly.
- Replace damaged sealing rings immediately.
- Drain the air reservoir before the first transport of the day.
- Only start up with the machine coupled if the pressure gauge on the tractor shows 73 psi / 5.0 bar.

WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through from the accidentally rolling machine caused by unintentionally releasing the service brake.

Dual-circuit pneumatic braking system:

- 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.

1. Open the cover on the hose coupling on the tractor.
2. **Dual circuit** pneumatic braking system:
   2.1 Fasten the brake line hose coupling (yellow) in the yellow coupling on the tractor, as specified.
   2.3 Fasten the supply line hose coupling (red) in the red coupling on the tractor, as specified.
   → When coupling the supply line (red), the supply pressure coming from the tractor automatically presses out the actuator button for the release valve on the trailer brake valve
3. Loosen the parking brake and/or remove the wheel chocks.

5.5.2 Uncoupling the brake system

WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through from the accidentally rolling machine caused by unintentionally releasing the service brake.

Dual-circuit pneumatic braking system:

- 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.
- Always keep to this order, otherwise the service brake system will trip and may set the unbraked machine moving.

When the machine is uncoupled or pulled away from the trailer, air is vented from the trailer brake valve supply line. The trailer brake valve is automatically switched and operates the service braking system independently of the automatic, load-dependent braking force regulator.

1. Secure the machine against unintentionally rolling. To do this, use the parking brake and/or wheel chocks.
2. Pneumatic braking system

- **Dual circuit** pneumatic braking system:

  2.1 Release the supply line hose coupling (red).

  2.2 Release the brake line hose coupling (yellow).

3. Close the hose coupling covers on the tractor.

5.6 Hydraulic service brake system

To control the hydraulic service brake system, the tractor requires hydraulic braking equipment.

5.6.1 Coupling the hydraulic service brake system

Only couple clean hydraulic couplings.

1. Remove the protective caps.
2. Clean the hydraulic plug and hydraulic socket if necessary.
3. Insert the tractor's hydraulic plug into the machine's hydraulic socket.
4. Tighten the hydraulic screw union (if present) hand-tight.

5.6.2 Uncoupling the hydraulic service brake system

1. Loosen the hydraulic screw union (if present).
2. Protect the hydraulic plug and hydraulic socket against soiling using the dust protection caps.
3. Store the hydraulic hose line in the hose cabinet.

5.6.3 Emergency brake

In event of the machine being released from the tractor during travel, the emergency brake will brake the machine.

Fig. 23/…

(1) Pulling cable

(2) Brake valve with pressure accumulator

(3) Hand pump to relieve the brake

(A) Brake released

(B) Brake applied

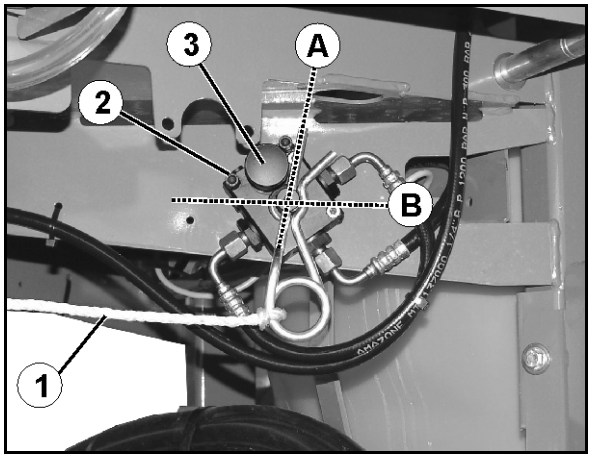


Fig. 23

DANGER

Before travel, set the brake to the application position.

For this purpose:

1. Secure the pulling cable to a fixed point on the tractor.
2. Apply the tractor brake with the tractor engine running and hydraulic brake connected.

→ Pressure accumulator of the emergency brake is being charged.

DANGER

Risk of accident through brake malfunction!
After withdrawing the safety splint (e.g. when activating the emergency brake), it is essential to insert the safety splint into the brake valve from the same side (Fig. 23). Otherwise the brake will not function.

After reinserting the safety splint, carry out a brake test for the service brake and the emergency brake.

When the implement is uncoupled, the pressure accumulator presses hydraulic oil:

- into the brake and decelerates the implement,

or

- into the hose line to the tractor and impedes the coupling of the brake line to the tractor.

In these cases, relieve pressure using the hand pump on the brake valve.

5.7 Parking brake

When the parking brake is on, it secures the uncoupled machine against unintentional rolling. The parking brake is operated by turning the crank, which in turn operates the spindle and bowden cable.

- Crank; locked in idle position

Fig. 24

- Crank position for releasing / applying in the end area.

  (the parking brake requires approx. 44 lb / 20 kg manual force to be applied).

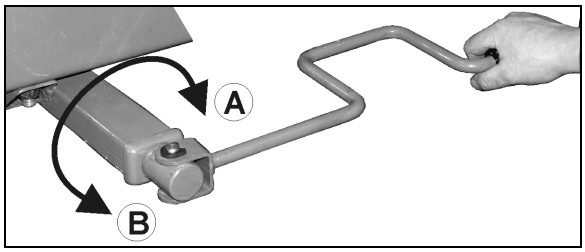


Fig. 25

- Crank position for quick releasing / applying.

  (A) Apply the tractor parking brake.

  (B) Release parking brake.

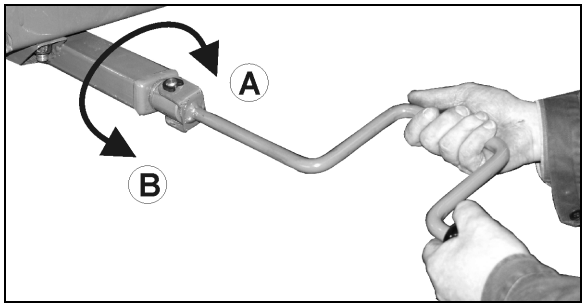


Fig. 26

- Correct the setting of the parking brake if the spindle's tension is no longer sufficient.
- Ensure that the bowden cable is not lying or rubbing against other vehicle parts.
- When the parking brake is off, the bowden cable must be slightly slack.

5.8 Foldable wheel chocks

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

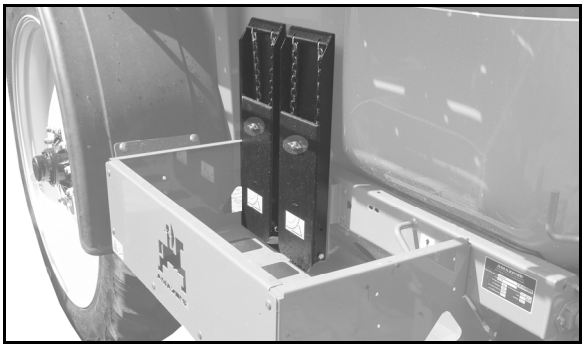


Fig. 27

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

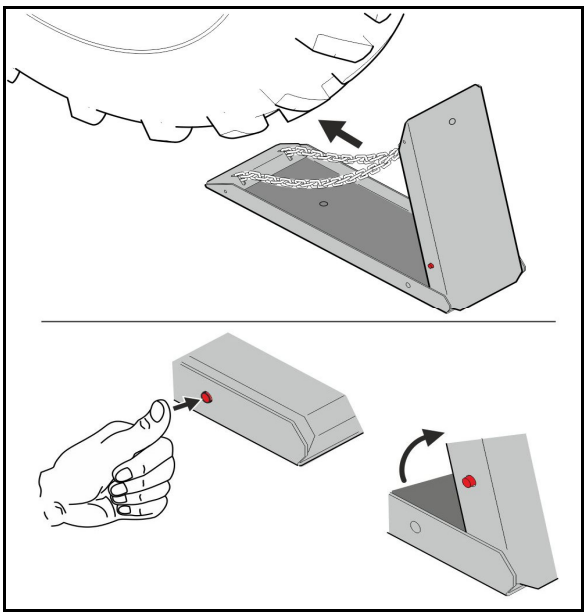


Fig. 28

5.9 Safety chain between tractor and implements

Depending on country-specific regulations, implements are equipped with a safety chain.

The safety chain must be mounted at a suitable point on the tractor as prescribed before travelling.

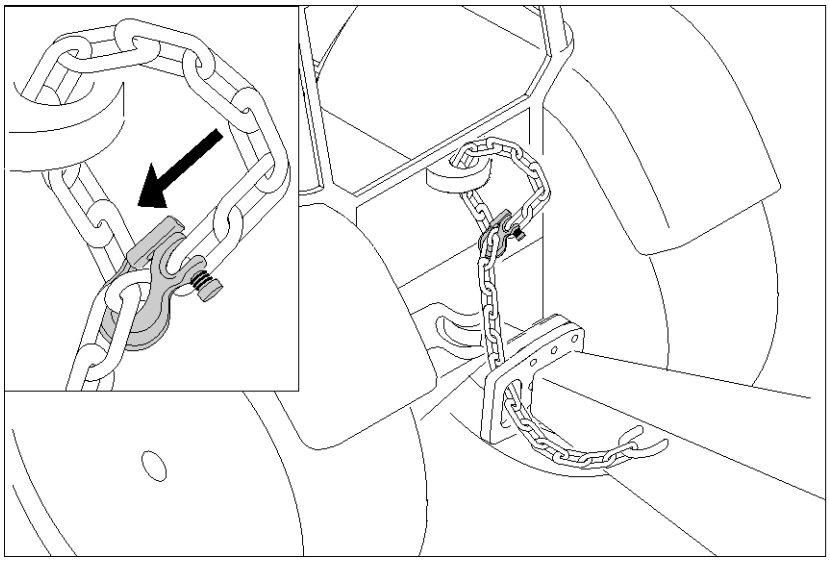


Fig. 29

5.10 Drawbars

DANGER

Risk of accident from the machine tipping over.

- For transportation, move the steering drawbar/steering axle to the transport position.
- Transportation while AutoTrail is switched on is prohibited.

For the track follow drawbar and universal drawbar, on first use and, if applicable, in event of a change of tractor type, adjust the steering geometry of the drawbar to the tractor.

If using automatic trailer couplings, check that the connection is secure after coupling. If using non-automatic trailer couplings, secure the coupling pin positively after inserting it.

5.10.1 Track follow drawbar SelfTrail

The track follow drawbar is secured to the lower Category II coupling points of the tractor's hydraulic system.

The **track follow drawbar** (Fig. 30/1) ensures the exact track follow-up of the sprayer behind the tractor.

The steering geometry is adjusted to the tractor via the longitudinal adjustment of the drawbar. see page 144.

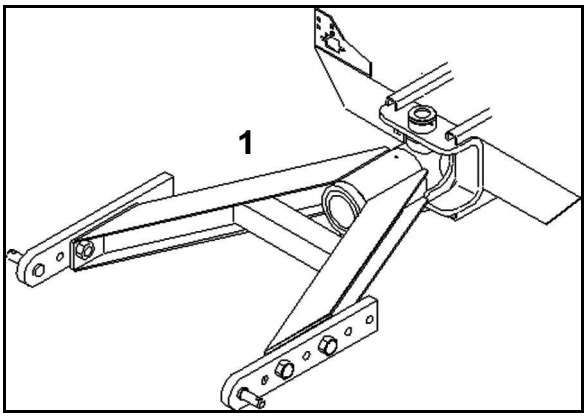


Fig. 30

5.10.2 Universal drawbar UniTrail

The universal drawbar is secured to the lower Category II coupling points of the tractor's hydraulic system.

Fig. 31/…

(1) Universal drawbar

(2) Fixing bar (standard equipment)

alternatively

(3) Hydraulic cylinder for hydraulic drawbar control via tractor control unit (optional)

(4) Brake to prevent increased shaking of the machine.

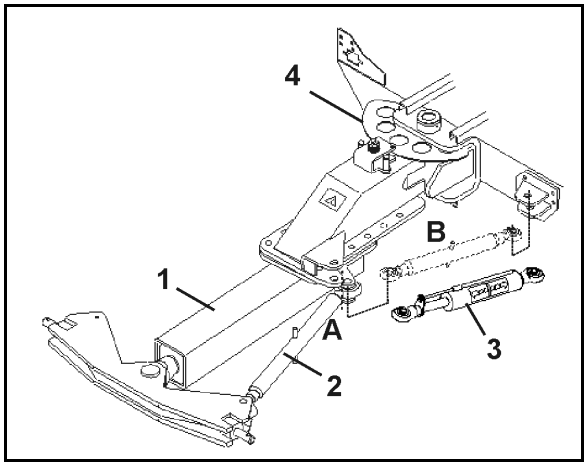


Fig. 31

The universal drawbar ensures precise tracking of the machine behind the tractor.

Preparing the universal drawbar with track-following effect for field work

1. Mount fixing rod or hydraulic cylinder in position **A**.
2. Fixing rod: Mount a counterweight on the lower link crossmember.

   Hydraulic cylinder: Mount two counterweights on the lower link crossmember.

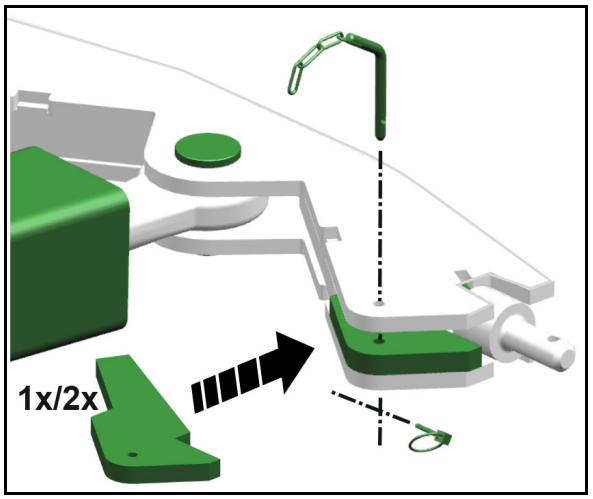


Fig. 32

Preparing the universal drawbar without track-following effect for road travel

1. Mount fixing rod or hydraulic cylinder in position **B,**
2. Remove counterweight of the lower link crossmember,

   Hydraulic cylinder: Dismount two counterweights.

WARNING

Risk of accident from unstable driving behaviour!

Secure the fixing bar / hydraulic cylinder in the transport position before transportation.

The steering geometry is adapted to the tractor by adjusting the drawbar length - see page 144.

5.10.3 Straight and hitch drawbars

Fig. 32: Hitch drawbar

The hitch drawbar is fastened in the tractor hitch hook.

Fig. 33: Straight drawbar

The straight drawbar is fastened in the tractor pin coupling.

Fig. 32, Fig. 33/…

(1) Fixing bar

(2) Hydraulic cylinder (optional)

The straight and hitch drawbars can be used as

- fixed drawbar with fixing bar
- steering drawbar
  - o with AutoTrail control for precise tracking with hydraulic cylinder.
  - o with control via the tractor control unit for travel on gradients.

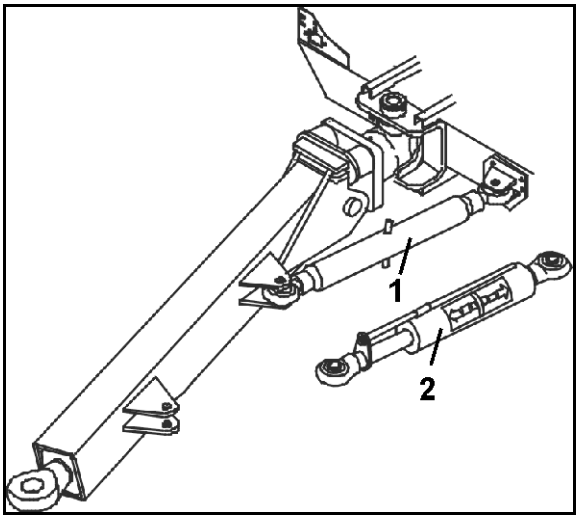


Fig. 33

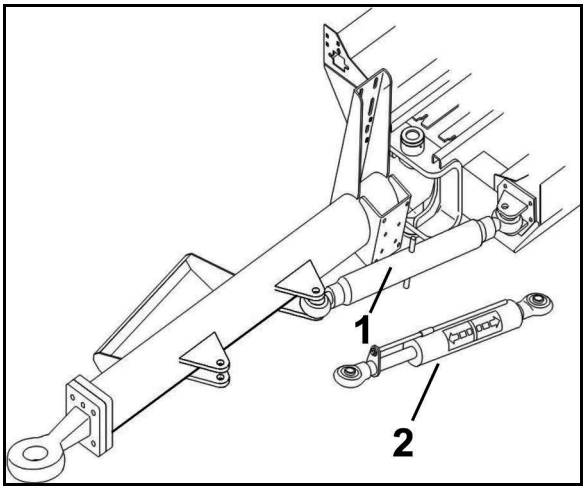


Fig. 34

5.11 Lower link safety chain

The safety chain prevents unintentional raising of the lower link if there is a negative drawbar load.

This can prevent damage to the universal joint shaft.

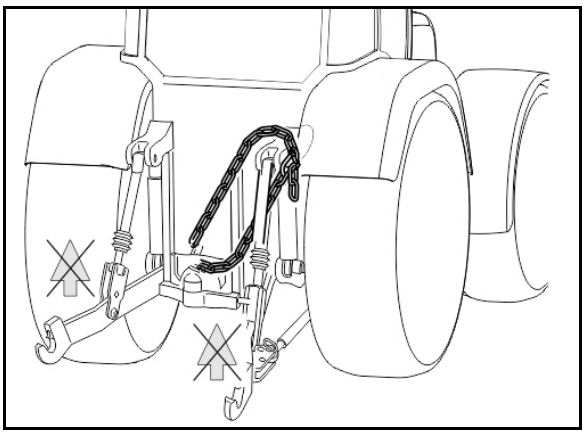


Fig. 35

5.12 AutoTrail tracking control

AutoTrail tracking control for automatic, virtually 100% precise tracking captures the position of the angle of the drawbar (Fig. 35/1) to determine the direction of travel of the tractor.

If the position of the drawbar deviates from the tractor's central position (drawbar lined up with tractor's direction of travel), AutoTrail realignsthe tracking steering drawbar until the central position is reached again.

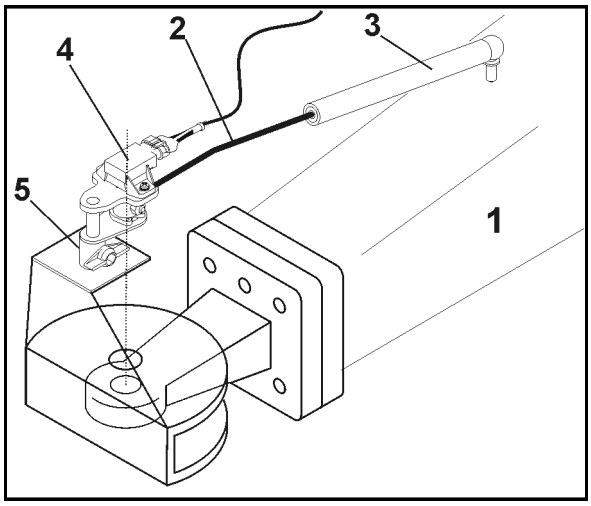


Fig. 36

Connecting the AutoTrail position encoder

1. Insert the rod (Fig. 35/2) into the plastic bush (Fig. 35/3) stecken.
2. Insert the position encoder (Fig. 35/4) into the holder (Fig. 35/5).
3. Align the potentiometer in direction of travel (cable to rear) and secure with a locking screw against rotation.

See operating manual for software ISOBUS.

A precondition for the perfect functioning of the hydraulically operated following steering axle/drawbar is a correctly performed AutoTrail calibration

Perform a AutoTrail calibration

- before initial operation.
- if there are any deviations between the following steering axle control shown on the display and the actual following steering axle control.

Safety functions for preventing the machine from tipping over when the AutoTrail is switched on.

Safety functions.

- If the sprayer boom is raised higher than 4,9 ft / 1.5 m:
- If the boom is folded in transport position:

→ AutoTrail is switched off (once the drawbar is in its central position).

- If an operational speed greater than 20 km/h is reached::

→ AutoTrail axle / drawbar moves automatically to the central position and remains in on-road mode.

DANGER

The use of the AutoTrail steering drawbar

- **for precise tracking on sloping terrain is prohibited.**

  Only use the AutoTrail steering drawbar on level ground. Unevenness of a maximum 5° (due to furrows) is permitted.
- **for manoeuvring while reversing is prohibited.**

Risk of the machine tipping over.

- **When using the tracking steering drawbar, there is a risk of tipping over when performing a turning manoeuvre on a headland, and on tight bends at high speeds, due to the shifting of the centre of gravity when the steering drawbar is pushed in.**
- **The risk of tipping over is especially great when travelling downhill on uneven ground.**
- **Adapt your driving accordingly and reduce speed when performing a turning manoeuvre on a headland, so that you are in complete control of the tractor and trailed sprayer.**

To prevent the sprayer from tipping over, observe the following general principles:

- Avoid sudden, sharp turns.
- Reduce speed before turning.
- While turning, do not brake suddenly if still steering.
- Exercise extreme caution when steering in furrows.

5.12.1 AutoTrail steering drawbar

Fig. 36/...

(1) Steering drawbar

(2) Control cylinder

(3) Stop tap for locking the hydraulic cylinder during transportation

(0) → operation locked

(I) → operation unlocked

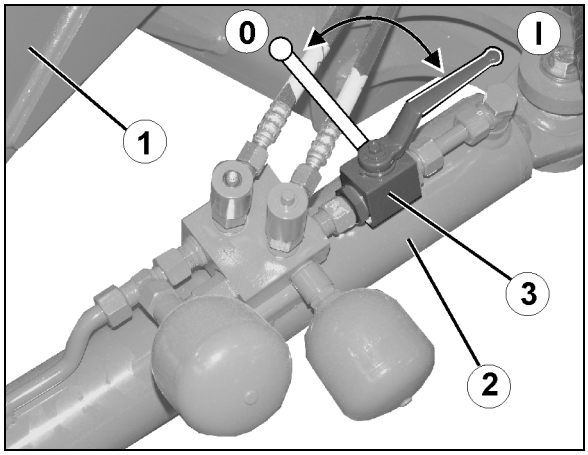


Fig. 37

Transportation

DANGER

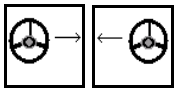
Risk of accident from the machine tipping over.

- For transportation, move the steering drawbar to the transport position.
- Transportation while AutoTrail is switched on is prohibited.

On the control terminal, for this purpose:

1. Set the steering drawbar to central position (drawbar flush with machine).
   On the control terminal, for this purpose

   1.1  Put AutoTrail into manual mode.

   1.2  Align steering drawbar / steering axle manually.

→ AutoTrail stops automatically once the central position has been reached.

2. Switch off control terminal.
3. Actuate tractor control unit *red* betätigen.

→ Switch off oil circulation.

4. Secure steering drawbar by closing the stop tap in position **0**.

5.13 Tracking control via tractor control unit

When working on sloping terrain (sprayer slips off),

- the **tractor control unit** *blue*

can be used from the comfort of the tractor seat to manually steer the steering drawbar so that it is tracking precisely.

When steering manually, hydraulic control reduces damage to the crop, particularly with regard to drill crops (e.g. potatoes or vegetables) when driving or manoeuvring in and out of the drills.

Turning circle d_{wk} > 59 ft / 18 m.

Transportation

DANGER

Risk of accident from the machine tipping over.

Move the steering drawbar to the transport position for transportation.

1. Actuate tractor control unit *blue* until the drawbar is at the zero setting (Fig. 37/1).

Pay attention to the pointer and scale on the hydraulic cylinder.

2. Universal drawbar: Secure the hydraulic cylinder in position B, see page 79.

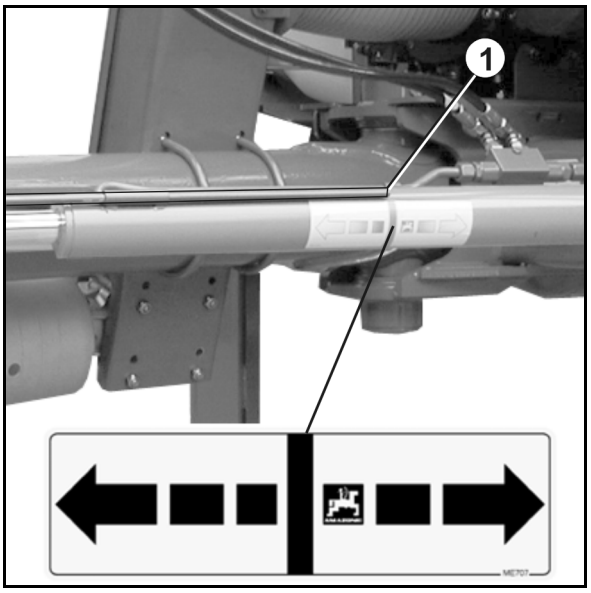


Fig. 38

5.14 Stand

- Raise the stand after coupling to the tractor.
- Before uncoupling the machine from the tractor, lower the stand.

Stand with crank (Fig. 39/1):

1. Loosen linchpin (Fig. 38/2).
2. Pull out pin (Fig. 38/3).
3. Raise/lower stand using handle (Fig. 38/4).
4. Reinsert the pin into the stand and secure with the linchpin.
5. Using the manual crank (Fig. 39/5)
   - o continue to lower the stand until the coupling point is relieved
   - o completely raise the stand.

Stand adjustable (Fig. 38 /1) :

1. Loosen linchpin (Fig. 39/2) lösen.
2. Pull out pin (Fig. 39/3) herausziehen.
3. Raise/lower stand using handle (Fig. 39/4).
4. Reinsert the pin into the stand and secure with the linchpin.

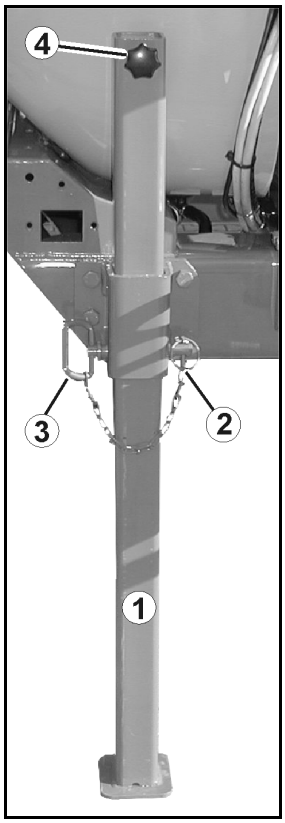


Fig. 39

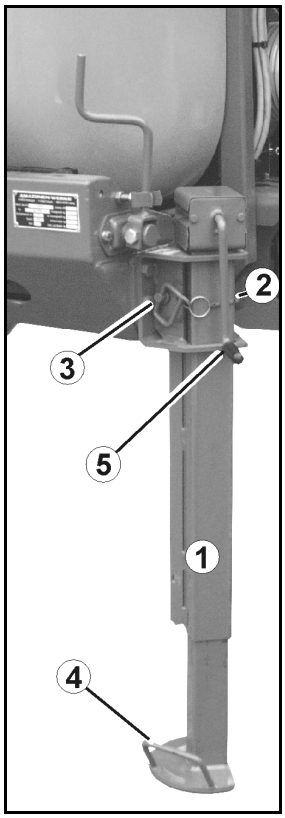


Fig. 40

5.15 Spray liquid tank

The spray liquid tank is filled via

- the filling opening,
- the suction hose (optional) on the suction port,
- the pressure filling connection (optional)

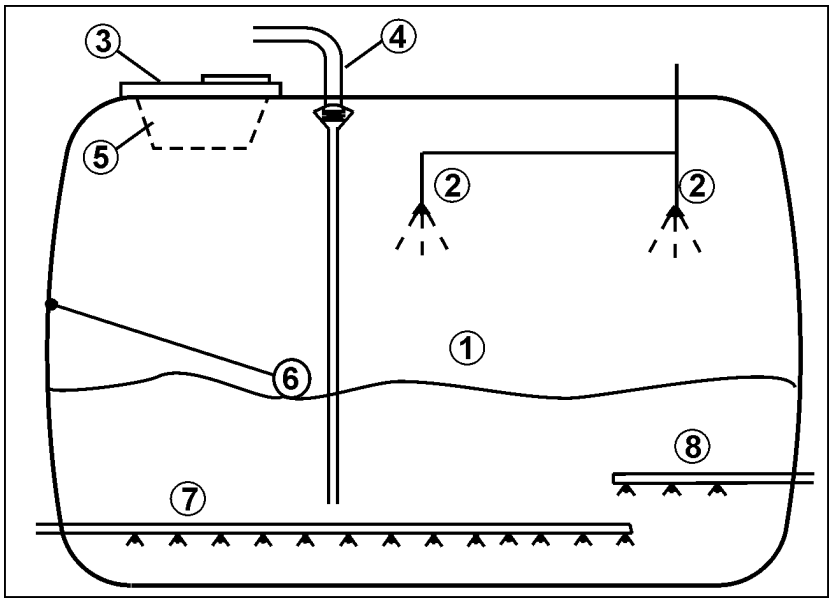


Fig. 41

(1) Spray liquid tank
(2) Internal cleaning
(3) Hinged/screw lid for filling opening
(4) External filling connection
(5) Filling sieve
(6) Float for determining the fill level
(7) Agitator (only UG Super)
(8) Additional agitator

WARNING

Damage to the lid and escaping spray agent when driving.

The filling sieve made of stainless steel as a surge protection must always be mounted.

Hinged/screw lid for the filling opening

- To open the lid, rotate to the left and swing open.
- To close the lid, fold down and rotate to the right until tight.

5.15.1 Fill level indicator on the machine

The fill level indicator shows the tank capacity [l] in the spray liquid tank

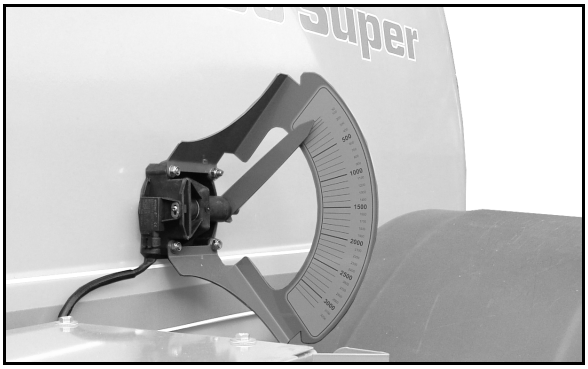


Fig. 42

5.15.2 Agitator

UG Super:

UG Super has a main agitator and an additional agitator.

The main agitator has its own agitator pump.

UG Super /Special:

The additional agitator is supplied by the operation pump.

Both agitators are designed as hydraulic agitators. The additional agitator is also combined with pressure filter rinsing for the self cleaning pressure filter.

When the agitators are switched on, they mix the spray liquid in the spray liquid tank, thereby providing a homogeneous spray liquid. The stirring performance can be infinitely adjusted.

The stirring performance is adjusted

- using switch tap **RU** for the main agitator on the setting tap.
- using switch tap **RW** for the additional agitator on the setting tap.

To switch off the relevant agitator, turn the setting tap to position **0**.

The fastest stirring performance is available in position  .

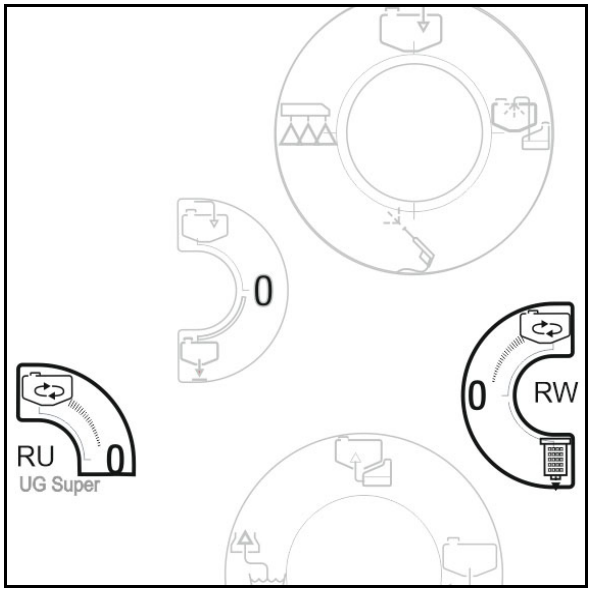


Fig. 43

When stirring the spray liquid, follow the instructions of the spraying agent manufacturer!

5.15.3 Maintenance platform with ladder

Maintenance platform with ladder to reach the inspection hatch.

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.

It is essential to ensure that the ladder is locked in the transport position.

Fig. 43/...

(1) Folded up ladder secured in transport position.

(2) Automatic catch

→ To unlock, turn the lever up

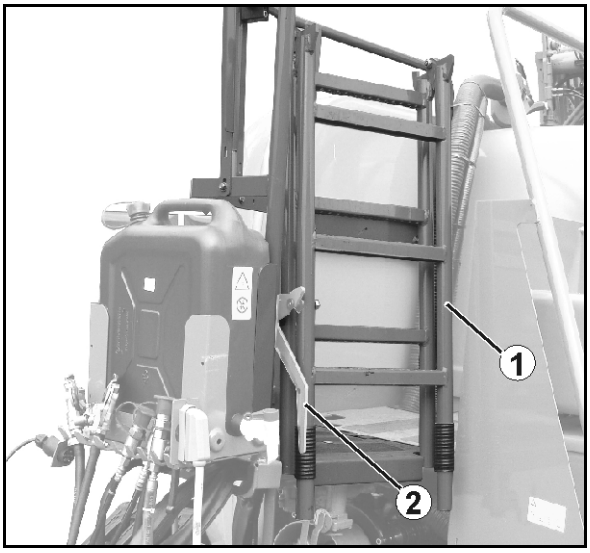


Fig. 44

5.15.4 Suction port for filling the spray liquid tank (optional)

Please observe the relevant instructions when filling the spray liquid tank via the suction hose from public water points (please page 158).

Fig. 44/...

(1) Suction hose (8 m, 3“) in transport position.

(2) Quick coupling.

(3) Suction filter for filtering the intake water.

(4) Non-return valve. Prevents liquid already in the spray liquid tank from running out if the vacuum suddenly collapses during the filling process.

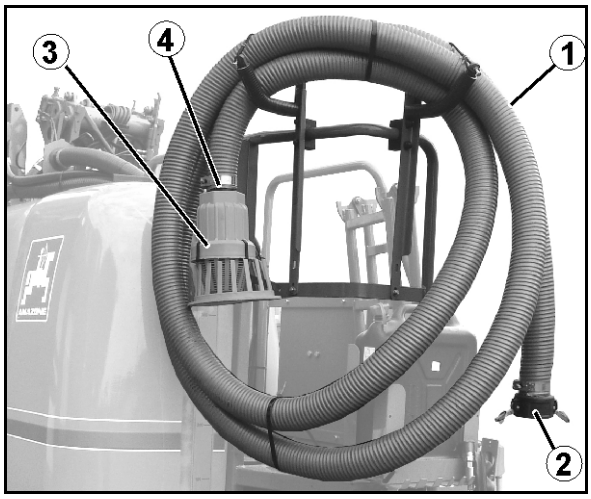


Fig. 45

5.15.5 Filling connection for filling the spray liquid tank with pressure (option)

- Filling connection with free flow path and swivel spout (Fig. 45).
- Return flow safe direct filling.

Fig. 46

- Filling connection switch tap (Fig. 46).

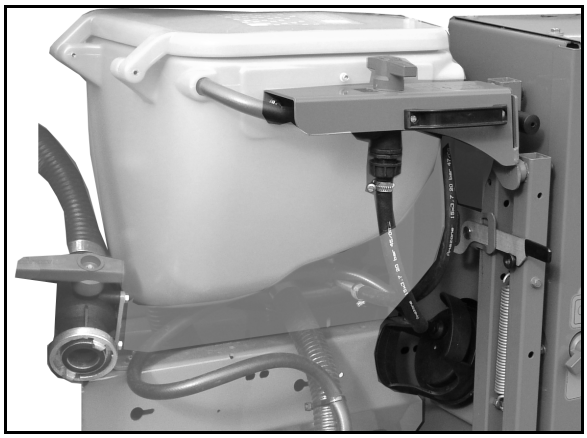


Fig. 47

5.16 Flushing water tank

Clear water is carried In the flushing water tank. The water serves 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**.
  - o UG 2200
    Tank volume: 74 gal / 280 litres.
  - o UG 3000
    Tank volume: 106 gal / 400 litres.

Fig. 47/...

(1) Flushing water tank

(2) Filling opening with screw lid and venting valve

Fig. 48/…

(1) Fill level indicator in litres

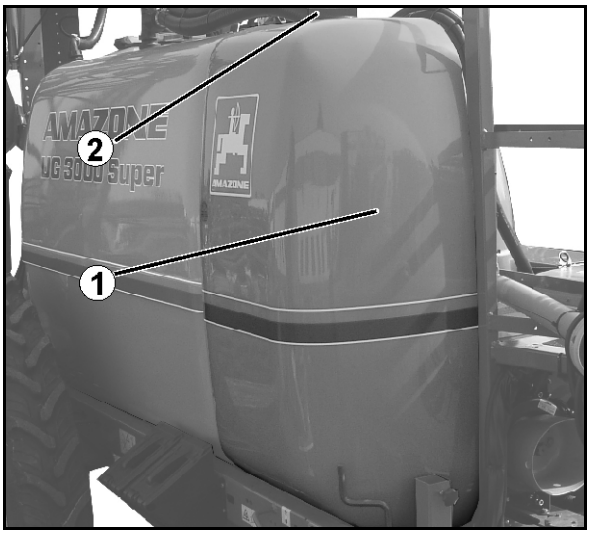


Fig. 48

Filling the flushing water tanks

1. Remove the cover from the flushing water tank.
2. Fill the flushing water tank via
   - o the filling connection.
   - o the tank opening
3. Screw on the lid.

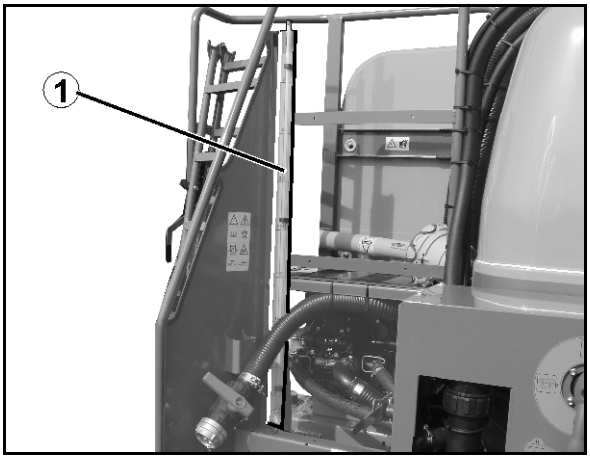


Fig. 49

5.17 Induction bowl with canister flushing

Fig. 49/...

(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) Spray gun

(5) Hinged lid catch.

(EB) Switch tap for ring line / canister flushing.

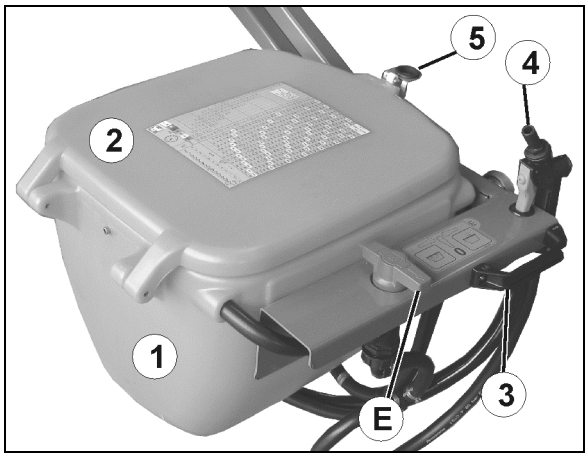


Fig. 50

Fig. 50/…

Induction bowl with transport safety catch for preventing the induction bowl from being swivelled down while in transport position

To swivel the induction bowl in filling position:

1. Take hold of the handle on the induction bowl.
2. Unlock transport safety catch (Fig. 50/1) entriegeln.
3. Swivel the induction bowl down.

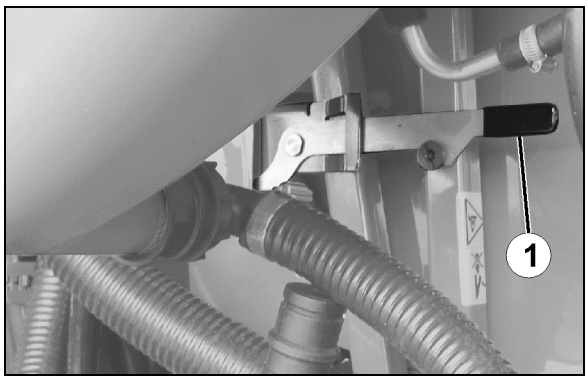


Fig. 51

Fig. 51/...

(1) Rotating canister flushing nozzle for washing out canisters or other containers.

(2) Pressure plate.

(3) Ring line to dissolve and induct crop protection agent and urea.

Water escapes from the canister flushing nozzle if

- the pressure plate is pressed downwards
- the closed folding cover is pressed downwards (Fig. 52).

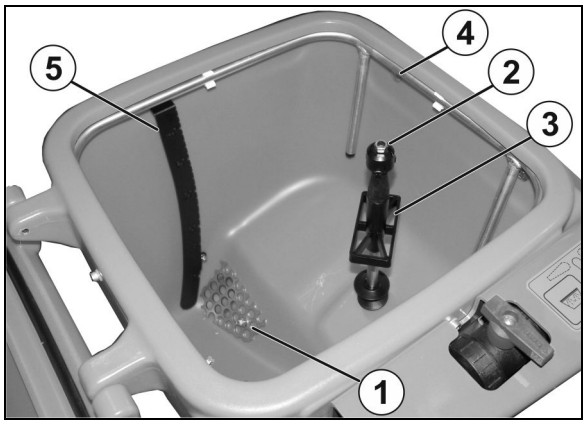


Fig. 52

WARNING

Close the induction bowl before rinsing out.

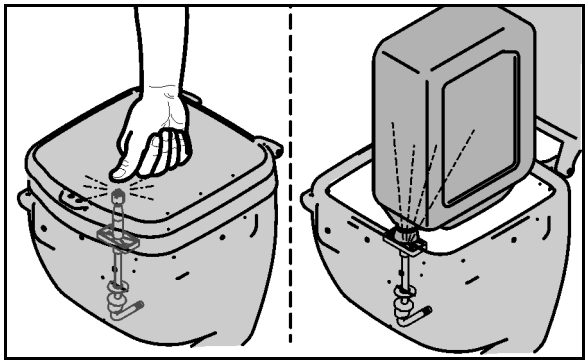


Fig. 53

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. 53**/1)

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

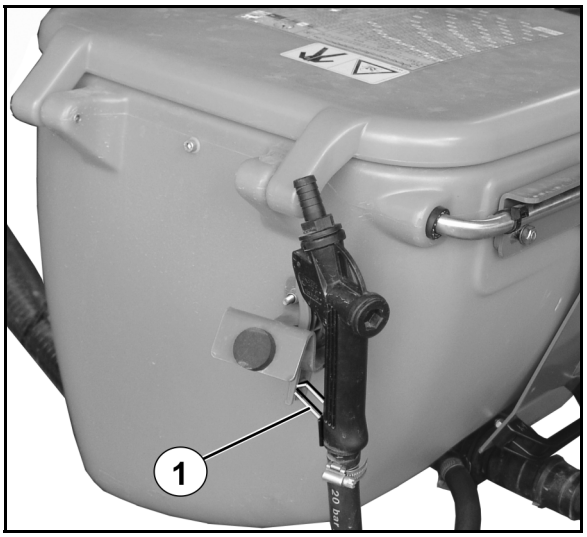


Fig. 54

5.18 Spray agent addition Ecofill (option)

Ecofill-connection for extracting spraying agent from Ecofill-tanks.

Fig. 54/…

(1) Ecofill filling connection (optional).

(2) Flushing port for Ecofill-counter.

(3) Ecofill switch tap.

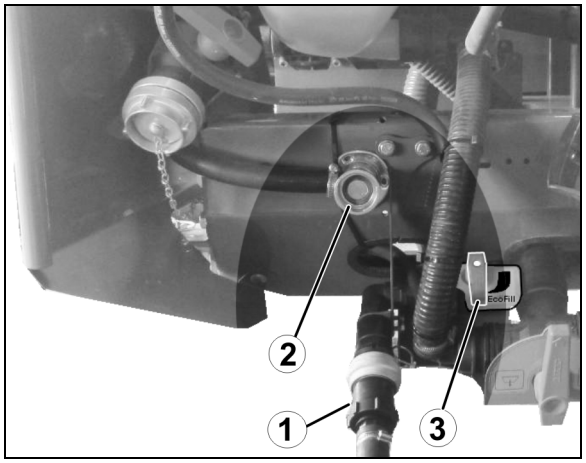


Fig. 55

5.19 Fresh water tank

Fig. 55/…

(1) Fresh water tank capacity: 20l)

(2) Drain tap for clear fresh water

- o for cleaning hands
- o for cleaning the spraying nozzles.

Only fill the fresh water tank with clear fresh water.

WARNING

Danger of poisoning from using unclean water in the fresh water tank.

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

Fig. 56

5.20 Pump equipment

Pump equipment 66 gal // 250 l/min

- Single pump as operation pump and agitator pump.

Pump equipment 98 gal // 370 l/min

- Operation pump with 55 gal // 210 l/min
- Agitator pump with 42 gal // 160 l/min

Never exceed the maximum permissible pump drive speed.

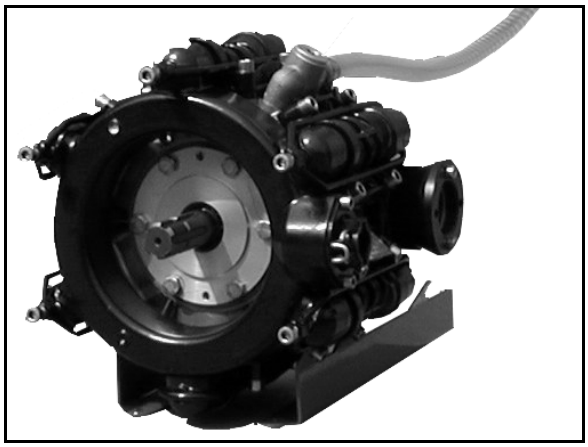


Fig. 57

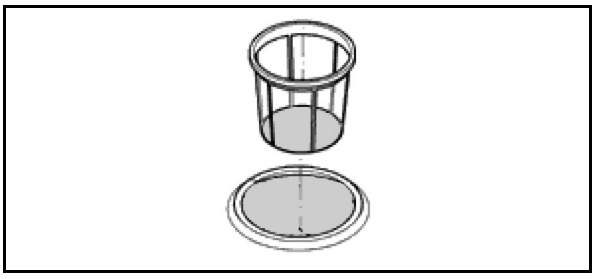
5.21 Filter equipment

- 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.

Sieve against foreign objects

The sieve against foreign objects (1) prevents contamination of the spray liquid tank through the inspection hatch.

Mesh size: 1.00 mm



5.21.1 Suction filter

The suction filter (Fig. 58/1) filters

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

Mesh size: 0,02 in / 0.60 mm

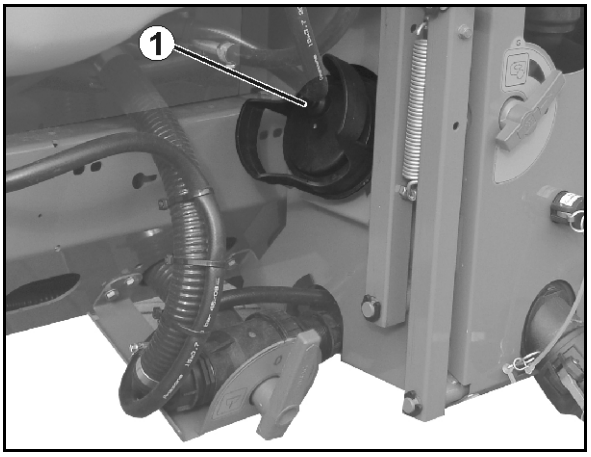


Fig. 58

5.21.2 Self cleaning pressure filter

The self cleaning pressure filter (Fig. 59/1)

- 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 rinsed through, and undissolved particles of spraying agent and dirt are conveyed back into the spray liquid tank.

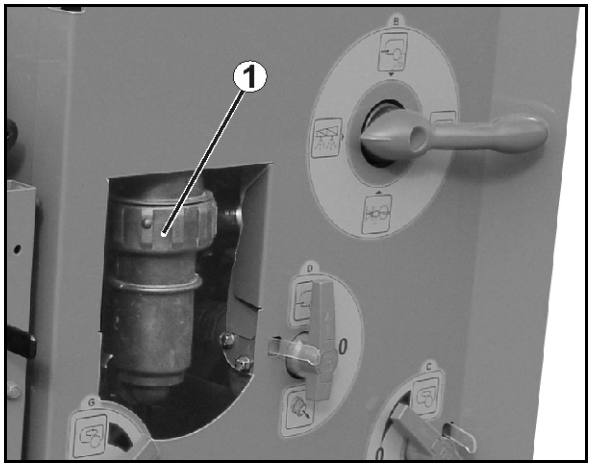


Fig. 59

Overview of the pressure filter inserts

- 50 mesh/inch (standard), blue
  for nozzle size '03' and larger
  Filter area: 0,33 in ^{2} / 216 mm²
  Mesh size: 0,01 in / 0.35 mm
- 80 mesh/inch, yellow
  for nozzle size '02'
  Filter area: 0,33 in ^{2} / 216 mm²
  Mesh size: 0,007 / 0.20 mm
- 100 mesh/inch, green
  for nozzle size '015' and smaller
  Filter area: 0,33 in ^{2} / 216 mm²
  Mesh size: 0,006 in / 0.15 mm

5.21.3 Nozzle filters

The nozzle filters (Fig. 60/1) prevent the spraying nozzle from becoming blocked.

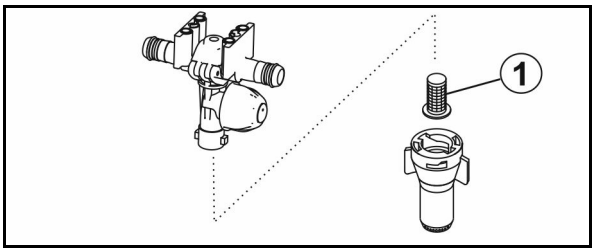


Fig. 60

Overview of the nozzle filters

- 24 mesh/inch,
  for nozzle size '06' and larger
  Filter area: 0,33 in ^{2} / 5.00 mm²
  Mesh size: 0,02 in / 0.50 mm
- 50 mesh/inch (standard),
  for nozzle size '02' to '05'
  Filter area: 0,33 in ^{2} / 5.07 mm²
  Mesh size: 0,01 in / 0.35 mm
- 100 mesh/inch,
  for nozzle size '015' and smaller
  Filter area: 0,33 in ^{2} / 5.07 mm²
  Mesh size: 0,006 in / 0.15 mm

5.21.4 Bottom sieve in the induction bowl

The bottom sieve (Fig. 61/1) in the induction bowl prevents lumps and foreign bodies from being drawn in.

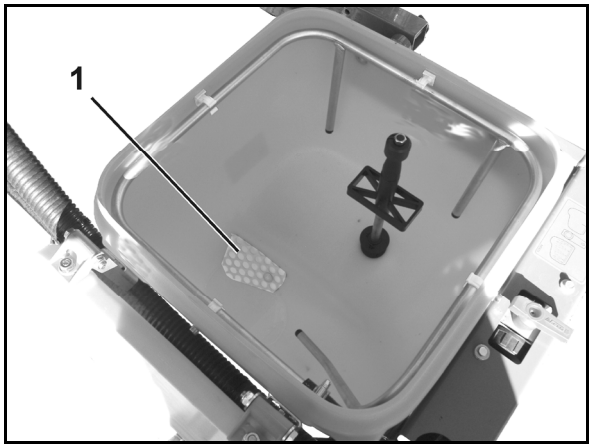


Fig. 61

5.22 Safety device against unauthorised use

Lockable device for the drawbar eye, ball bracket, or lower link crosspiece, prevents unauthorised use of the machine.

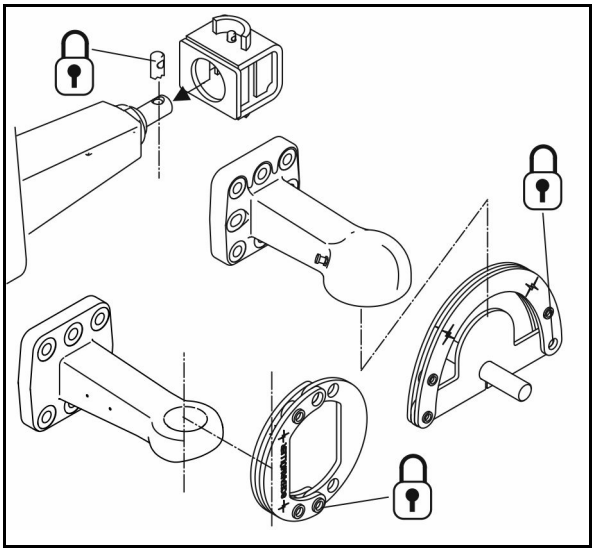


Fig. 62

5.23 Camera system

WARNING

Risk of injury or even death.

If the camera display alone is used for manoeuvring, persons or objects can be overlooked. The camera system is an aid. It does not replace the operator's awareness of the immediate surroundings.

- **Before manoeuvring, ensure that there are no people or objects in the manoeuvring area by taking a direct look**

The implement can be equipped with (Fig. 64/1) a camera.

Features:

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

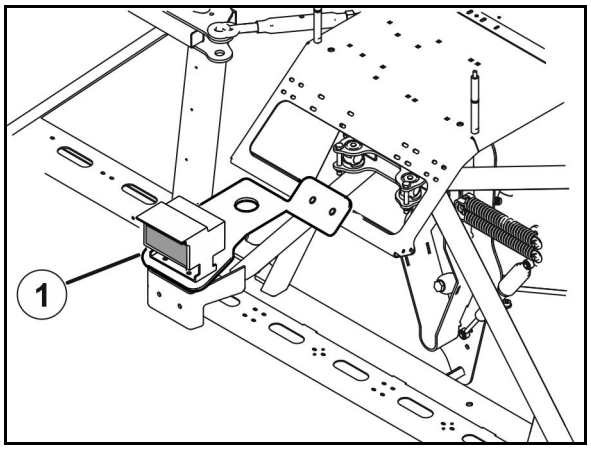


Fig. 63

5.24 Exterior wash down kit (optional)

Exterior wash down kit for cleaning the field sprayer, includes

(1) Hose coiler,
(2) 66 ft / 20 m pressure hose,
(3) Spray gun

Operating pressure: 3045 psi / 10 bar

Water output: 4,76 gpm / 18 l/min

WARNING

Danger from liquids escaping under pressure and contamination with spray liquid if the spray gun is activated accidentally.

Secure the spray gun against unintentional spraying using the locking mechanism (Fig. 66/1)

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

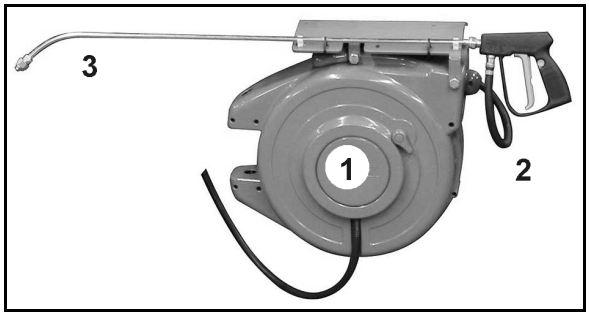


Fig. 64

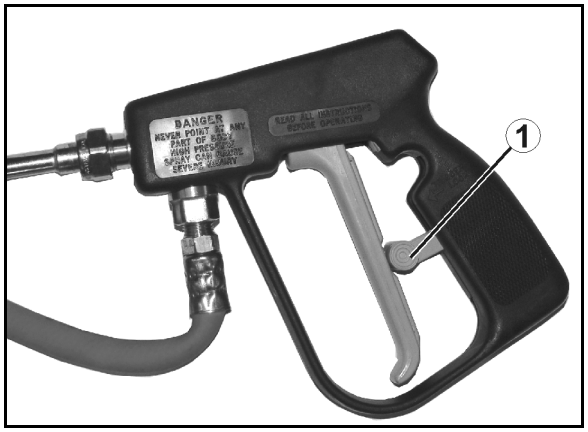


Fig. 65

5.25 Work lights

2 work floodlights on the sprayer boom and 2 work floodlights on the platform.

Fig. 66

LED individual nozzle illumination:

Fig. 67

2 variants:

- Separate power supply from the tractor is required, operation via the dashboard.
- Power supply and operation via ISOBUS.

5.26 Operating terminal

UG field sprayers with AMATRON or AMASPRAY+ have quantity regulation.

- The spread rate is set on the operating terminal.

5.26.1 Control terminal

The following are performed via the control ter-minal:

- input of implement-specific data.
- input of job-related data.
- control of the field sprayer to change the spray rate used in spraying operation.
- the operation of all functions on the sprayer boom.
- the operation of special functions.
- the monitoring of the field sprayer during spraying operation.

The control terminal controls a job computer. Here, the job computer receives all necessary information and manages the area-based regula-tion of the spray rate [l/ha] depending on the quantity (target quantity) entered and the current operational speed [km/h].

See operating manual for software ISOBUS.

AmaTron 4

AmaPad 2

Fig. 68

5.26.2 AMASPRAY+

The AMASPRAY+ can be used on the field sprayer as a fully automatic control device. The device carries out area-based regulation of the spread rate, depending on the current speed and working width.

Current spread rate, speed, worked area, total area, quantity applied and overall spread rate, working time and distance travelled are continuously detected.

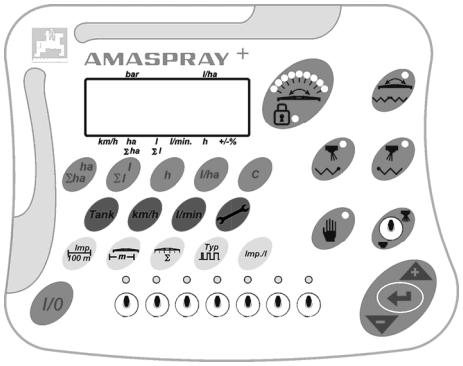


Fig. 69

See also the AMASPRAY+ operating manual.

5.27 Comfort equipment (optional)

Comfort equipment for implements with control terminal.

Comfort equipment functions:

- **Cleaning – remote-controlled residue dilution and internal cleaning**
  - o Remote-controlled switching of the intake cock from spraying to flushing .
  - o Automatic agitator cutout during flushing.
  - o Remote-controlled switching on and off of internal cleaning.
- **Filling stop when filling via suction port**
  - o Filling stopped automatically when the desired fill level is reached (signal limit).
  - o Filling stopped manually.

  →Remote-controlled switching of intake cock from filling to spraying .

The intake cock is operated:

- by remote control via the control terminal and electric motor.

  For remote control, the hand lever must be engaged with the cylinder screw (2) in the hole of the slewing ring (3).
- manually at the control terminal.

  For manual operation
  - o swivel the hand lever (1) to guide the cylinder screw (2) out of the slewing ring
  - o turn the hand lever to the desired position.

- **Remote-controlled**
  - o Spraying
  - o Filling
  - o Flushing
- **Manually operated**
  - o Drain spray liquid tank
  - o Drain suction chest

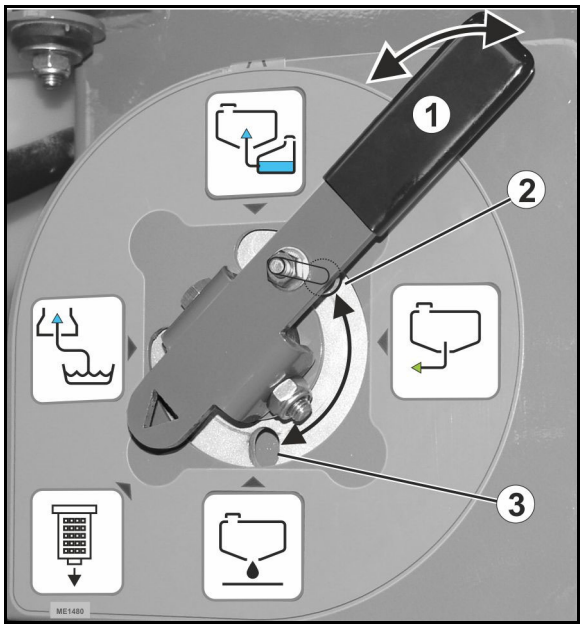


Fig. 70

5.28 Personal protective equipment safety kit

The safety kit is the personal protective equipment for handling crop protection products as a handy safety kit case from AMAZONE.

6 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.

Profi-folding:

The boom is operated via the operating terminal.

→ During use, locate tractor control unit *red*.

See operating manual for software ISOBUS!

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).

Folding via the tractor control unit

The boom is operated via tractor control units.

- Depending on equipment, sprayer boom folding must be selected using the operating terminal and carried out using tractor control unit *green* (preselected folding).

  See operating manual for software ISOBUS
- Height adjustment is controlled via tractor control unit *yellow*.

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.

WARNING

Risk of crushing and impact for other road users if the boom accidentally unfolds from the transport position during road transport.

Lock the folded boom package in the transport position using the transport safety catch before undertaking road transport.

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.

6.1 Super-S boom

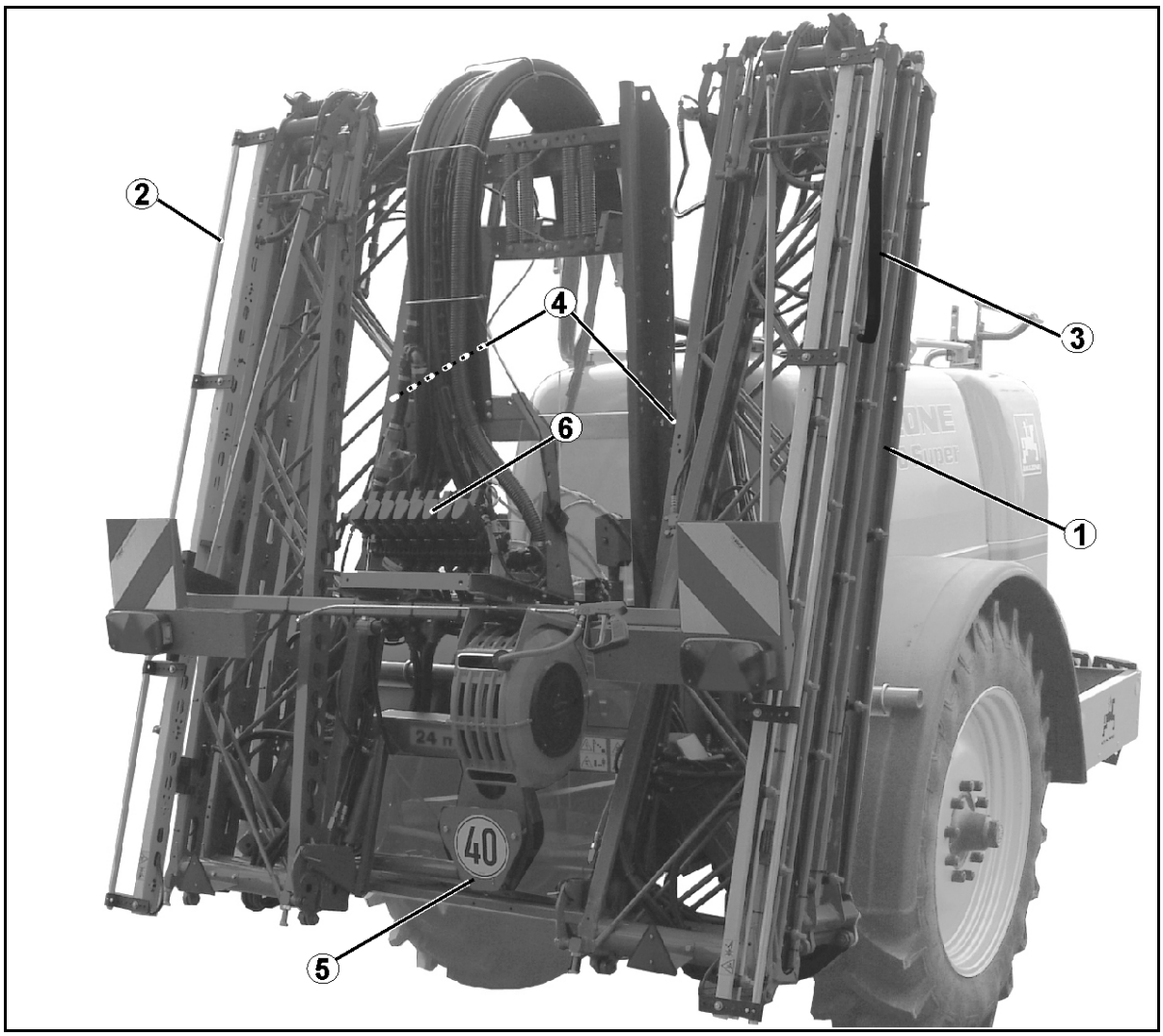


Fig. 71

(1) Sprayer boom with spray lines (here: folded boom package).
(2) Nozzle protection tube
(3) Spacer
(4) Outer boom locking, see on page 107
(5) Swing compensation, see on page 109.
(6) Part width section valve

Unlocking and locking the transport safety catch

Unlocking the transport safety catch

Raise the sprayer boom using height adjustment until the catching lugs (**Fig. 74** /1) are released from the catching sockets (**Fig. 74** /2).

→ The transport safety catch unlocks the sprayer boom from the transport position.

Fig. 74 shows the unlocked sprayer boom.

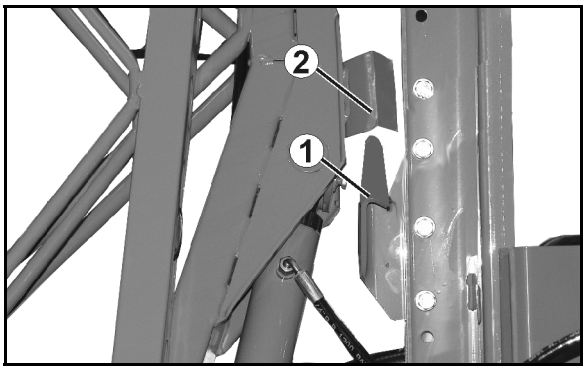


Fig. 72

Locking the transport safety catch

Lower the sprayer boom fully using height adjustment, until the catching lugs (Fig. 75/1) grasp the catching sockets (Fig. 75/2) aufnehmen.

→ The transport safety catch locks the sprayer boom in the transport position.

Fig. 75 shows the locked sprayer boom.

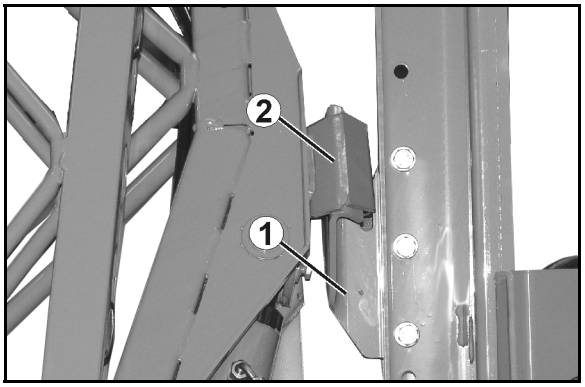


Fig. 73

Visually check the locking mechanism for the Super-S boom.

If the catching lugs do not grasp the catching sockets, align the sprayer boom using tilt adjustment.

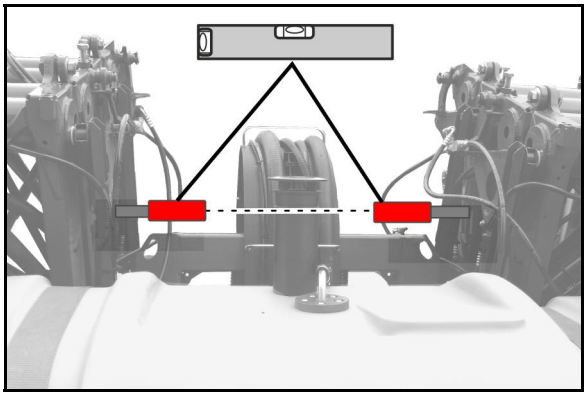


Fig. 74

6.2 Part width section valve TG

Fig. 76 – Super-S

(1) Bypass valve

(2) Pressure connection for the spraying-pressure pressure gauge (with drain cock and test connection)

(3) Flow meter for determining the spray rate [l/ha]

Flow meter only with control terminal

(4) Motor valves for switching the boom part width sections on and off

(5) Boom part width section return flow. Serves for pressure relief; with the sprayer boom switched off, the residual pressure of the spray liquid in the sprayer boom decreases via this return flow, thus ensuring drip-free switching off of the nozzles in conjunction with the diaphragm valves in the nozzles

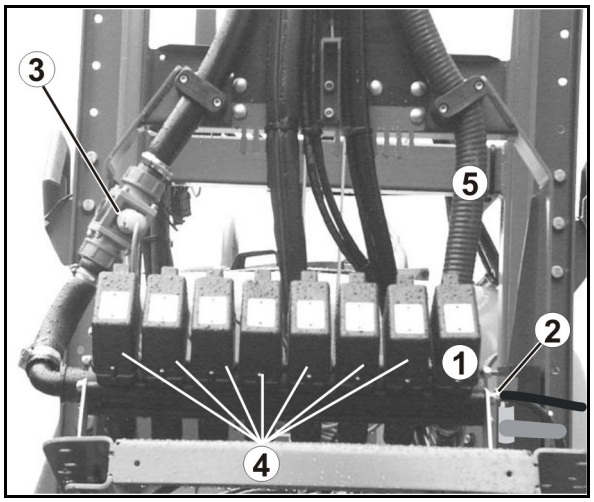


Fig. 75

6.3 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.

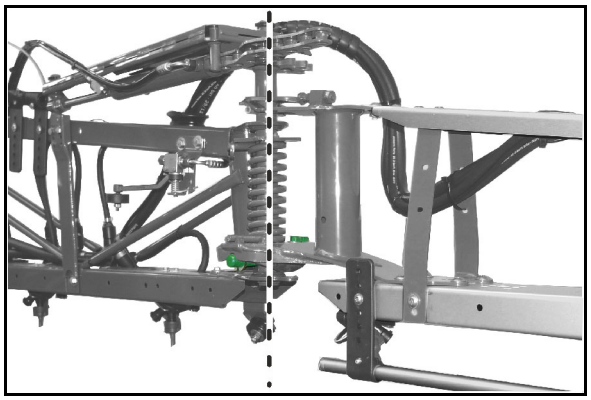


Fig. 76

6.4 Spacer

The spacer prevents collisions of the boom with the ground.

Fig. 77

When using certain nozzles, the spacers are within the spray cone.

In this case, attach the spacers horizontally on the carrier.

Use thumb bolts.

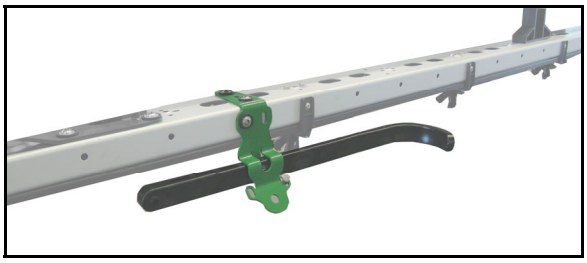


Fig. 78

6.5 Swing compensation

The operating terminal shows when swing compensation (Fig. 80/1) is locked.

Fig. 80/…

(1) Swing compensation unlocked.

(2) Swing compensation locked.

For illustration purposes, in this image the protective device has been removed from the swing compensation.

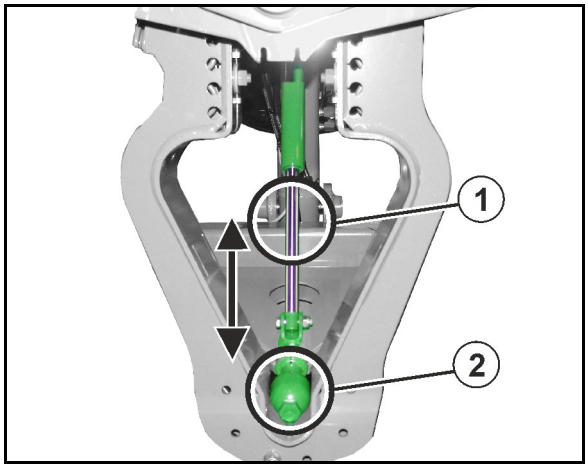


Fig. 79

Unlocking the swing compensation:

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

After the sprayer boom is fully folded out, actuate the operating lever for another 5 seconds.

→ The swing compensation (Fig. 80/1) unlocks and the unfolded sprayer boom can swing free opposite the boom frame.

Locking the swing compensation:

- **For road transport**
- **When folding the boom out and in.**

Folding via the tractor control unit:
The swing compensation automatically locks before the booms fold in.

6.6 Folding via the tractor control unit

Preselected folding: depending on the equipment, you must press the "fold sprayer boom" preselection button on the operating terminal before activating tractor control unit *green*, in order to fold out the sprayer boom.

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.

1. Direct people out of the danger area of the machine.
2. Set spraying height as per spray table via

- Actuate tractor control unit *yellow*.
- Operating terminal (with Profi-folding).

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

Folding out the sprayer boom

1. Actuate tractor control unit *yellow*.

→ Raise the boom to unlock it from its transport position.

2. Activate tractor control unit *green* until

→ Super-S: both boom packages are folded down

→ the individual segments are fully folded out

→ and the swing compensation is unlocked.

- The appropriate hydraulic cylinders lock the boom in its working position.
- Folding out does not always happen symmetrically.

3. Actuate tractor control unit *green*

→ Set the spraying height for the sprayer boom.

Folding in the sprayer boom

1. Actuate the *green* **tractor control unit**.

→ Raise the sprayer boom to a medium height position.

2. Tilt adjustment to "0" (if equipped).
3. Actuate the *green* **tractor control unit** until

→ the individual segments of the two boom sections are completely folded together,

→ the two section packages are folded up.

4. Actuate the *green* **tractor control unit**.

→ Lower the boom and then lock it in transport position.

CAUTION

Only drive in locked transport position.

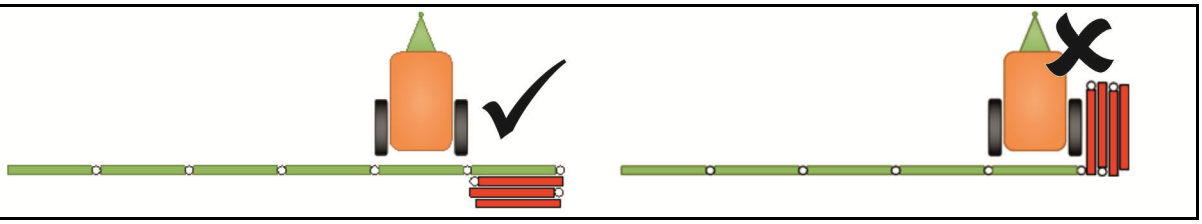
The swing compensation locks automatically before the boom folds in.

6.6.1 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.
- only if the other boom is folded down as a package from the transport position (Super-S boom).
- briefly for passing obstacles (trees, electricity pylons, etc.).

It is forbidden to work with the boom folded into the transport position on one side.



- Lock the swing compensation before folding/unfolding the sprayer boom on one side.

  If the swing compensation is not locked, the sprayer boom may swing off to one side. If the unfolded boom extension strikes the ground, this can cause damage to the sprayer boom.
- Use a significantly reduced speed for spraying operation to avoid the sprayer boom swinging out and coming into contact with the ground with the swing compensation locked. Unless the sprayer boom is guided smoothly, even lateral distribution cannot be guaranteed.

The sprayer boom is fully unfolded.

1. Lock the swing compensation.
2. Using the height adjustment, lift the sprayer boom to a medium height.
3. Fold up the desired boom extension.

WARNING

Super-S- boom:

Folded-in boom must remain in horizontal position!

After folding in, the boom lifts into the transport position.

→ Interrupt the folding process in good time for one-sided spraying.

4. Align the sprayer boom using tilt adjustment so it is parallel to the target surface.
5. Set the spraying height for the sprayer boom such that the sprayer boom is a minimum of 3,3 ft / 1 m off the ground.
6. Switch off the part width sections of the folded-in boom.
7. During spraying operation, drive at a significantly reduced speed.

6.7 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.

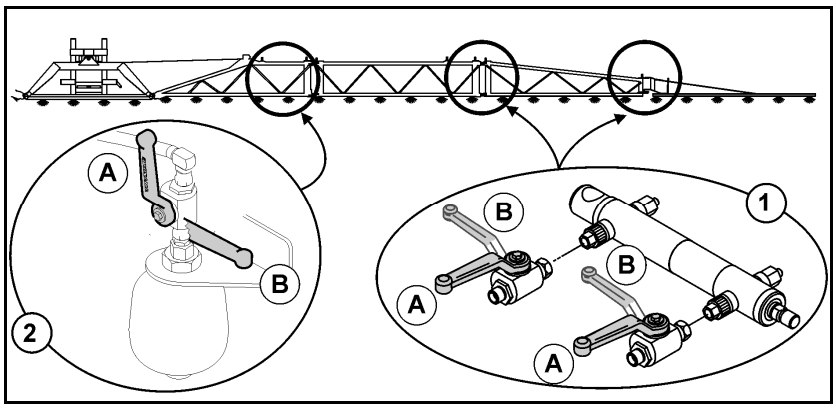


Fig. 80

(1) Boom width reduction

(2) Boom width damping (Option)

(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

Implements with DistanceControl plus:

With reduced working width, install each outer sensor rotated by 180° and disconnect the inner sensor.

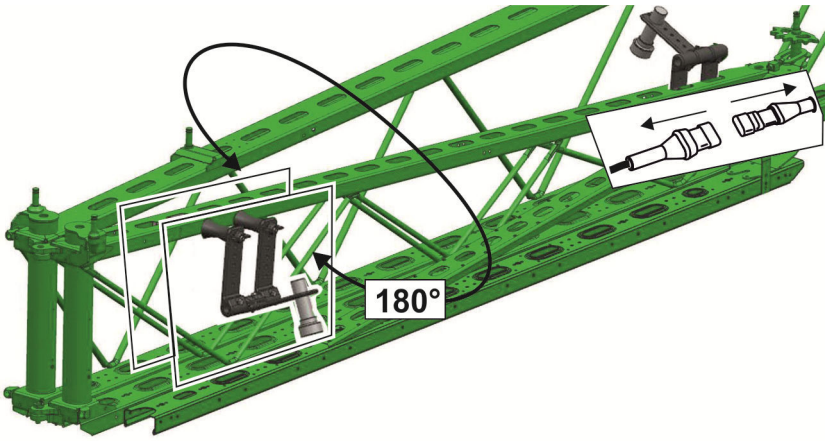


Fig. 81

6.8 Boom extension (option)

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

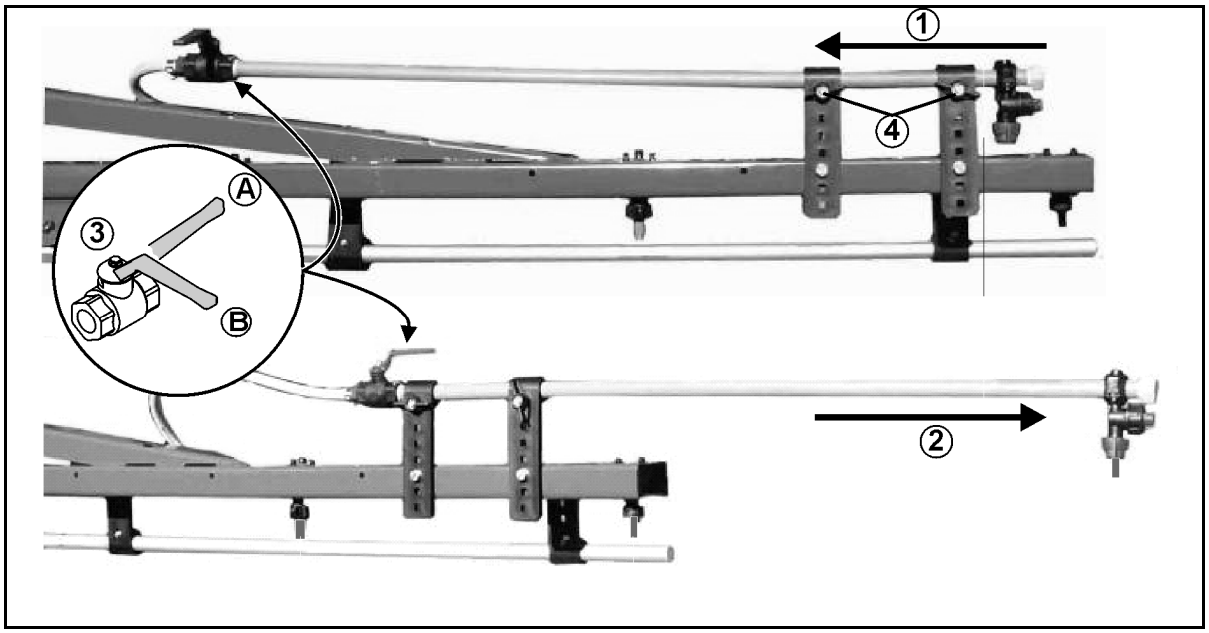


Fig. 82

(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

6.9 Hydraulic tilt adjustment (optional)

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.

Adjust using:

- AMATRON
- AMASPRAY+
- tractor control unit *beige*.

See the operating manual for the operating terminal.

6.10 DistanceControl (optional)

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. 84/1) detect the distance to the ground or the crop. If the height deviates from the desired measurement on one side, the DistanceControl 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.

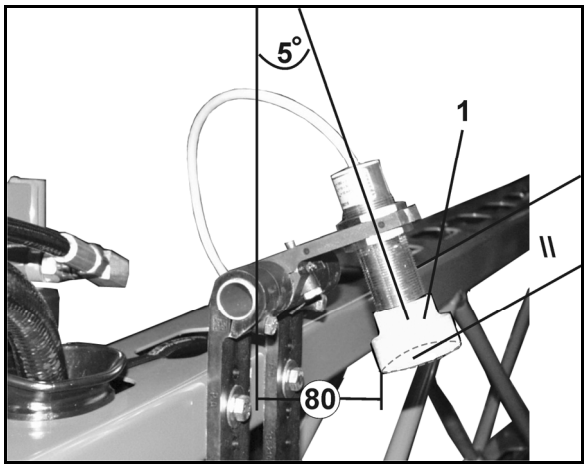


Fig. 83

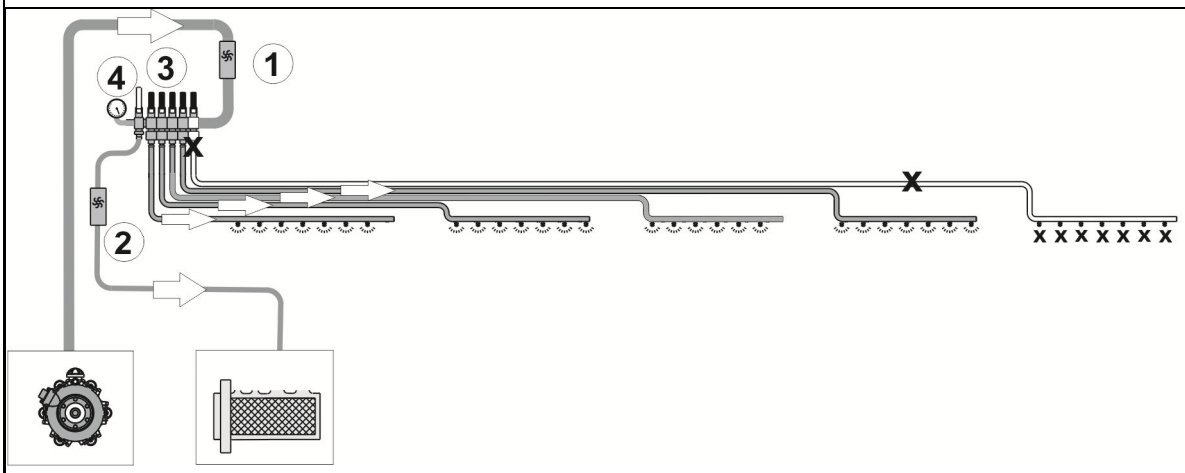
See operating manual for software ISOBUS.

- Setting the ultrasound sensors:

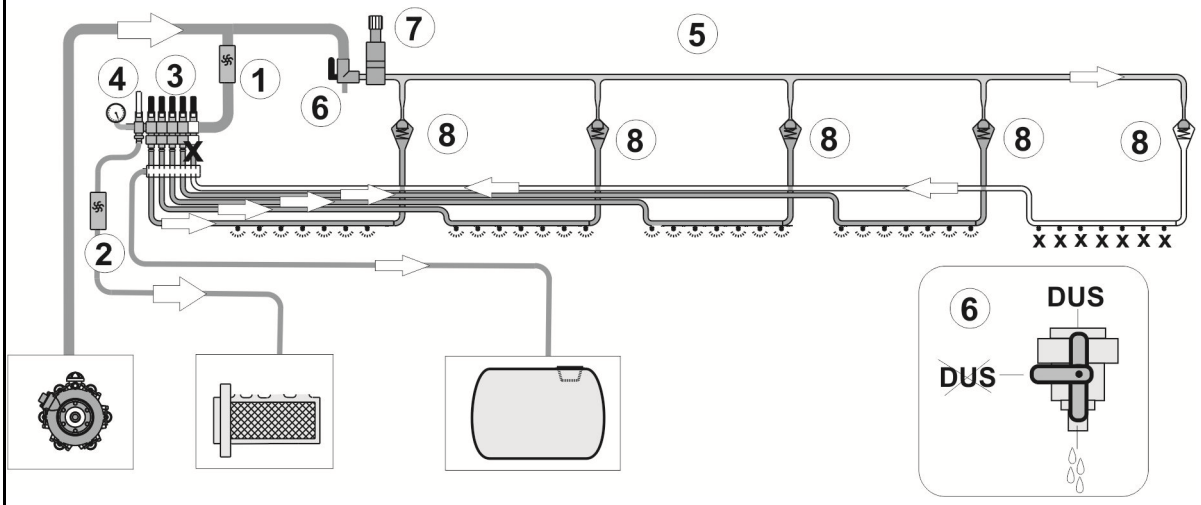
→ see Fig. 84.

6.11 Spray lines

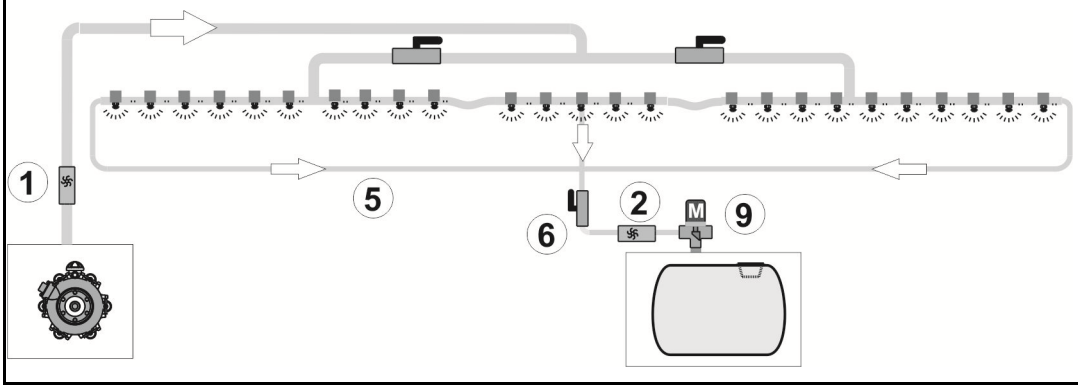
Spray lines with part-width section valves



Spray lines with part-width section valves and DUS pressure circulation system



Spray lines with single nozzle control and DUS Pro pressure circulation system



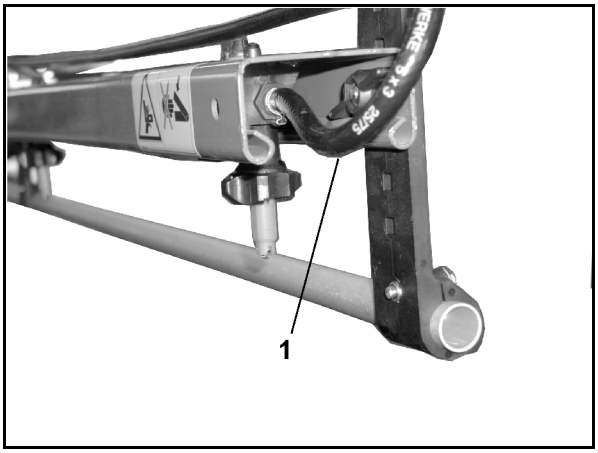
(1) Flow meter
(2) Flow meter
(3) Boom part width section valves
(4) Bypass valve for low application rates
(5) Pressure circulation line
(6) DUS stop tap
(7) Pressure control valve
(8) Check valve
(9) Pressure control valve

DUS pressure circulating system (optional)

Part-width section control: When using drag hoses, the pressure circulating system should usually be switched off.

The pressure circulating system

- enables the constant circulation of liquid in the spray line when the pressure circulating system is switched on. To do so, a suction port hose (1) is assigned to each part-width section.
- can be operated using spray liquid or flushing water, as desired.
- reduces the undiluted residue for all spray lines to 2 l.



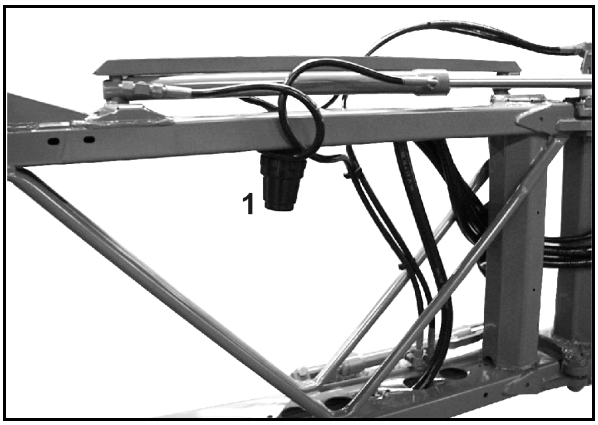
The constant circulation of liquid

- enables production of a uniform spray pattern right from the start, because spray liquid is available at every spray nozzle immediately after the sprayer boom is switched on, with no delay.
- prevents clogging of the spray line.

Line filter for spray lines (optional)

The line filter (1) is

- installed in the spray lines in each part-width section (part-width section control).
- installed in the spray lines on the left and right (single nozzle control)
- an additional measure to prevent 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)

6.12 Nozzles

(1) Nozzle body with bayonet connection

- o Spring element version with shutter
- o Spring element version, bolted

(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) Shutter; holds the entire diaphragm valve in the nozzle body

(5) Nozzle filter; fitted as standard on machines with 50 mesh/inch, is inserted from below into the nozzle body.

(6) Rubber seal

(7) Nozzle with bayonet cap

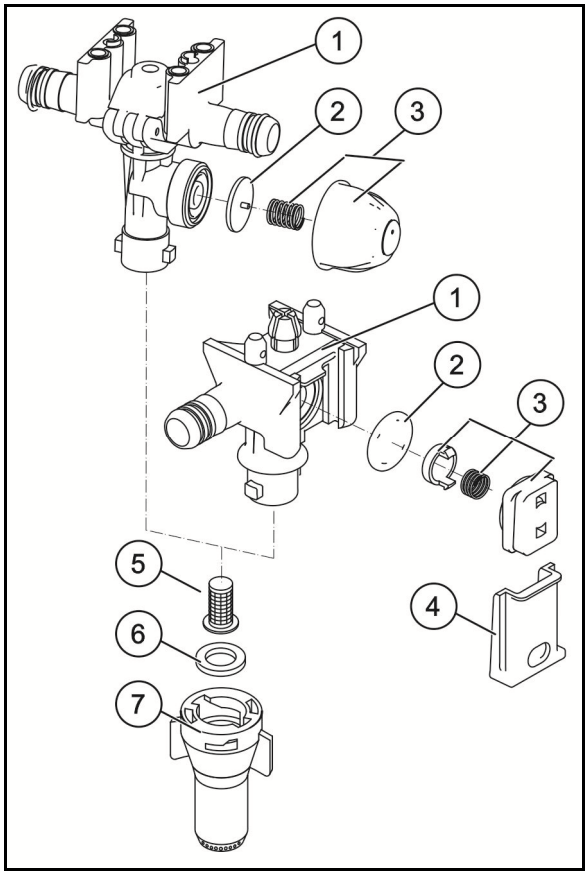


Fig. 84

6.12.1 Multiple nozzles

It is advantageous to use multiple nozzle heads when using different nozzle types.

Turning the multiple nozzle head counterclockwise brings a different nozzle into play.

The multiple nozzle 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 multiple nozzle head to another nozzle type.

Triple nozzles (optional)

The vertically positioned nozzle is supplied.

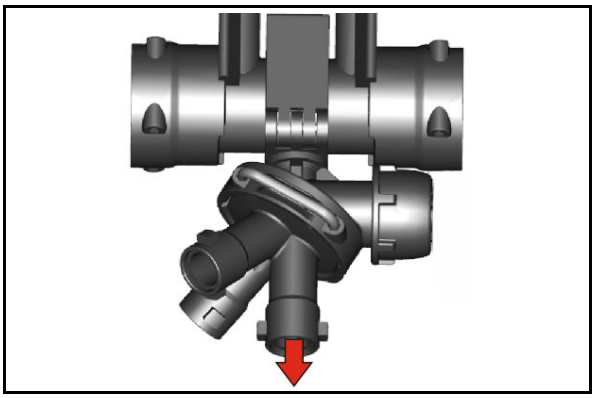
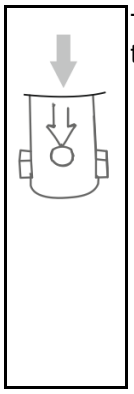


Fig. 85

Quadruple nozzles (optional)



The arrow indicates the vertical nozzle that is being supplied.

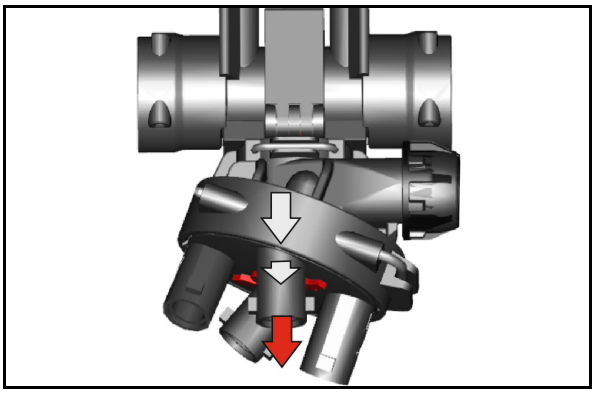


Fig. 86

The quadruple nozzle body can be equipped with a 25-cm nozzle holder. This results in a nozzle spacing of 25 cm.

The arrow indicates the label 10 in / 25 cm when the nozzle spacing is set at 10 in / 25 cm.

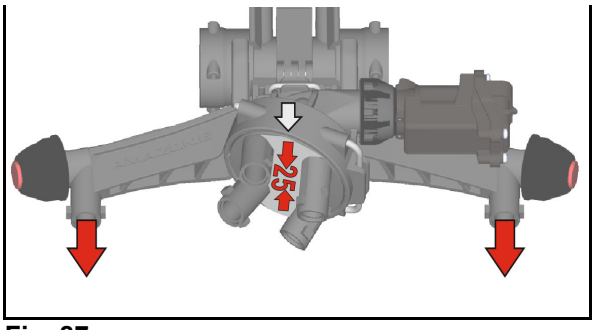


Fig. 87

Install the 10 in / 25 cm nozzle holder.

If the 10 in / 25 cm nozzle holder is not used, close the supply with plugs.

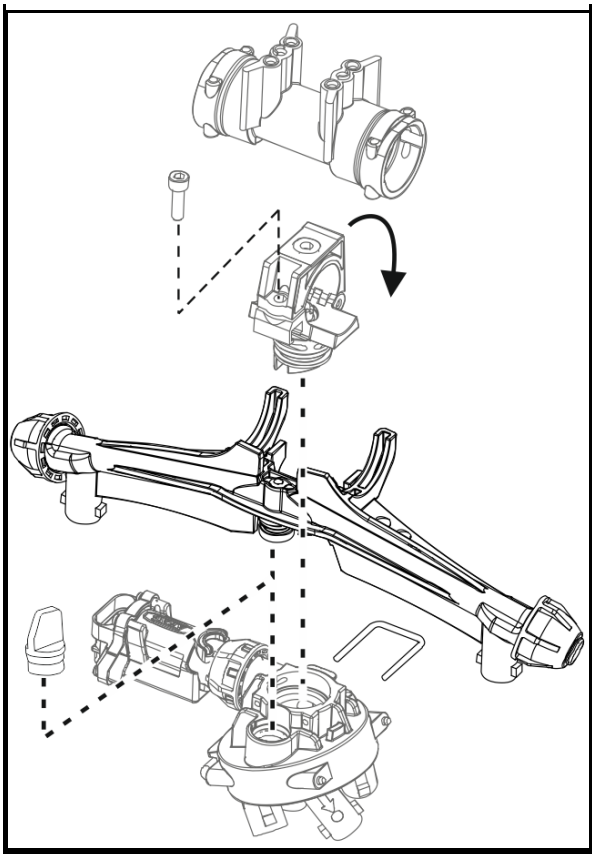


Fig. 88

6.12.2 Edge nozzles

Boundary nozzles, electric or manual

Using boundary nozzle switching, the last nozzle can be switched off from the tractor and a boundary nozzle can be electrically switched on 10 in / 25 cm further out (right at the edge of the field).

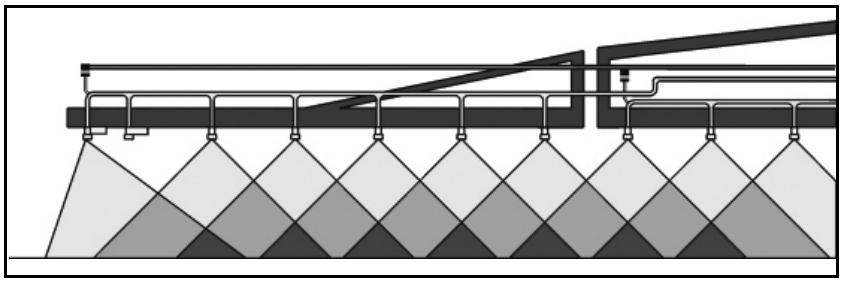


Fig. 89

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 from the tractor).

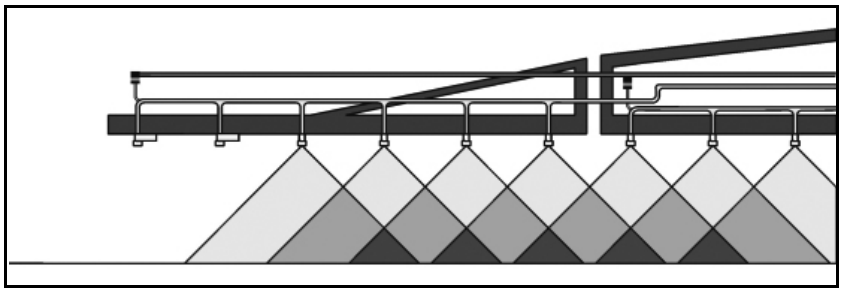


Fig. 90

Electric additional nozzle switching (optional)

With the additional nozzle switching, another exterior nozzle is cut in, increasing the working width by one metre.

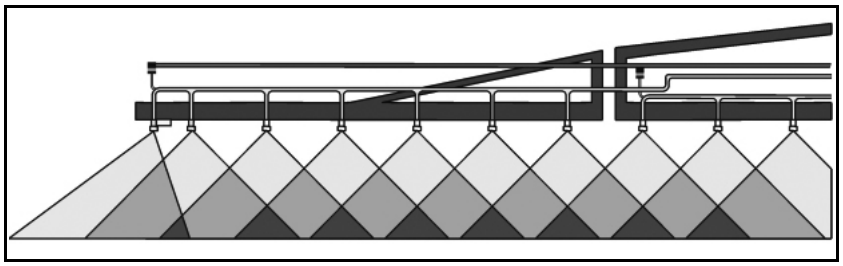


Fig. 91

6.13 Special optional equipment for liquid fertiliser

There are currently 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_2O_5 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 to on ears have a particularly bad effect.

6.13.1 Three-ray nozzles (optional)

(Optional)

The use of three-ray nozzles for applying liquid fertilizer is beneficial if the liquid fertilizer 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-droplet, almost depressurized distribution of the liquid fertilizer. This prevents an undesirable spray mist and formation of smaller drops. The coarse droplets produced by the three-ray nozzle hit the plants with minimal force and roll off the surface of the plants. **Although this prevents 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 3-ray nozzles listed below, only use the black bayonet nuts.

Different three-ray nozzles and their implementation areas (at 5 mph / 8 km/h)

- Yellow, 5,3 – 8,5 gal/ac / 50 - 80 l AUS/ha
- Red, 8,5 – 13,5 gal/ac / 80 - 126 l AUS/ha
- Blue, 12,3 – 19 gal/ac / 115 - 180 l AUS/ha
- White, 16,5 – 7,6 gal/ac / 155 - 267 l AUS/ha

6.13.2 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. 95: → 7 hole nozzle

Fig. 96: → FD nozzle

Fig. 92

Fig. 93

The following 7-hole nozzles are available

• SJ7-02-CE	74 – 120l AUS	(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 AUS /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*	

6.13.3 Drag hose equipment for Super-S boom (optional)

Drag hose unit with dosing discs (no. 4916-39) for late top dressing with liquid fertiliser

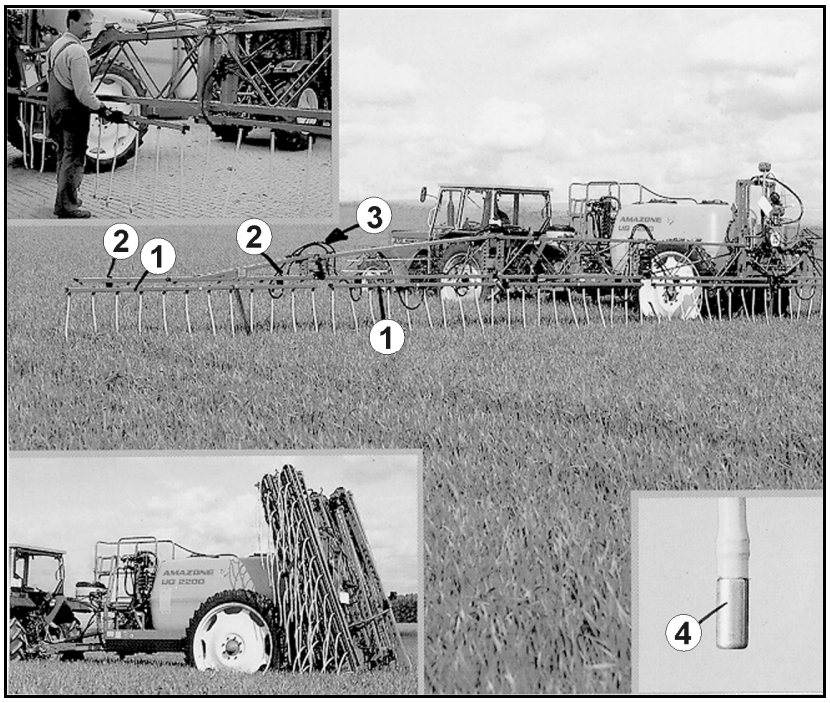


Fig. 94

(1) Numbered, separate drag hose part width sections with 10 in / 25 cm nozzle distance and hose distance. No. 1 on the left-hand side is fitted on the outside (looking in the direction of travel), no. 2 next to it and so on.

(2) Thumb nuts for securing the drag hose unit.

(3) Turned plug connection for connecting the hoses.

(4) Metal weights - stabilise the position of the hoses during operation.

The dosing discs determine the spray rate [l/ha].

The following dosing discs are available

- 4916-26 dia. 0.65 50 - 104 l AUS/ha (at 8 km/h)
- 4916-32 dia. 0.8 80 - 162 l AUS/ha
- 4916-39 dia. 1.0 115 - 226 l AUS/ha (standard)
- 4916-45 dia. 1.2 150 - 308 l AUS/ha
- 4916-55 dia. 1.4 225 - 450 l AUS/ha

Refer to the section "Spray table for the drag hose unit", **on page** 251.

7 Commissioning

This section contains information

- on commissioning your machine.
- on checking if it is possible to connect the machine to your tractor.

- Before operating the machine for the first time the operator must have read and understood the operating manual.
- Comply with the section "Safety information for the user", starting on page 27 when
  - coupling and uncoupling the machine
  - transporting the machine
  - using the machine
- Only couple and transport the machine to a tractor which is suitable for the task.
- The tractor and machine must meet the national road traffic regulations.
- The operator and the user shall be responsible for compliance with the statutory road traffic regulations.

WARNING

Risk of crushing, shearing, cutting, and being drawn in or trapped in the vicinity of hydraulically or electrically actuated components.

Do not block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:

- are continuous or
- are automatically locked or
- due to their function require a float position or pressure position.

7.1 Checking the suitability of the tractor

WARNING

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

- Check the suitability of your tractor, before connecting the machine to the tractor.

  You may only connect the machine to tractors suitable for the purpose.

- Carry out a brake test to check whether the tractor achieves the required braking rate with the machine connected.

Requirements for the suitability of a tractor are, in particular:

- Permissible total weight
- Permissible approved axle loads
- Permissible drawbar load at the tractor coupling point
- Load capacity of the tyres fitted
- The approved trailer load must be sufficient

  You can find this data on the rating plate or in the vehicle documentation and in the tractor operating manual.

The front axle of the tractor must always be subjected to at least 20% of the dead-weight of the tractor.

The tractor must achieve the brake rate specified by the tractor manufacturer, even with the machine connected.

7.1.1 Calculating the actual values for the total tractor weight, tractor axle loads and tyre load capacities, as well as the minimum ballast

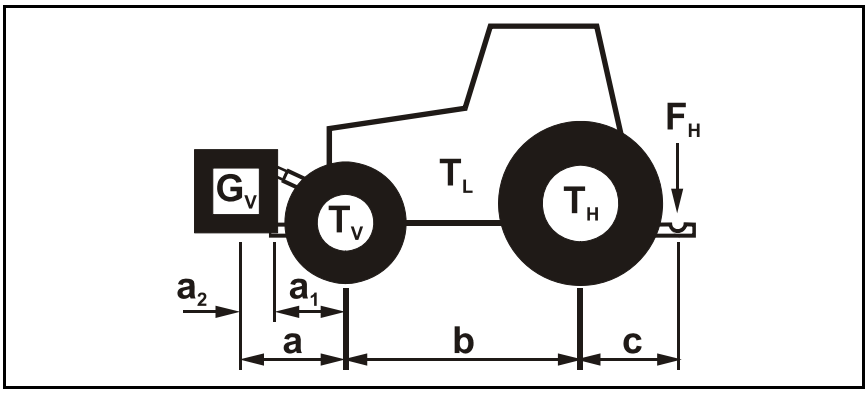
The permissible total tractor weight, specified in the vehicle documentation, must be greater than the sum of the

- Tractor empty weight,
- Ballast weight and
- Total weight of the connected machine or drawbar load of the connected machine

This information is only valid for the Federal Republic of Germany:

If, having tried all possible alternatives, it is not possible to comply with the axle loads and / or the permissible total weight, then a survey by an officially-recognised motor vehicle traffic expert can, with the approval of the tractor manufacturer, be used as a basis for the authority responsible to issue an exceptional approval according to § 70 of the German Regulations Authorising the Use of Vehicles for Road Traffic and the required approval according to § 29, paragraph 3 of the German Road Traffic Regulations.

7.1.1.1 Data required for calculation



T_L	lb [kg]	Base (empty) tractor weight	See tractor operator's manual or vehicle documentation
T_V	lb [kg]	Front axle load of the base tractor	
T_H	lb [kg]	Rear axle load of the base tractor	
G_V	lb [kg]	Front weight (if available)	See front weight in technical data, or weigh
F_H	lb [kg]	Maximum drawbar load	See technical data of implement
a	ft [m]	Distance between the center of gravity of the front implement mounting or the front weight and the center of the front axle (total $a_1 + a_2$)	See technical data of tractor and front implement mounting or front weight or measure
a_1	ft [m]	Distance from the center of the front axle to the center of the lower link connection	See tractor operator's manual or measure
a_2	ft [m]	Distance between the center of the lower link connection point and the center of gravity of the front implement mount or front weight (center of gravity distance)	See technical data of front implement mounting or front weight or measurement
b	ft [m]	Tractor wheel base	See tractor operator's manual or vehicle documents or measure
c	ft [m]	Distance between the center of the rear axle and the center of the lower link connection	See tractor operator's manual or vehicle documents or measure

7.1.1.2 Calculation of the required minimum ballasting at the front $G_{V\,min}$ of the tractor for assurance of the steering capability

$$G_{V\ \min} = \frac{F_H \bullet c - T_V \bullet b + 0{,}2 \bullet T_L \bullet b}{a + b}$$

Enter the numeric value for the calculated minimum ballast $G_{V\,min}$, required on the front side of the tractor in the table (Section 7.1.1.7).

7.1.1.3 Calculation of the actual front axle load of the tractor $T_{V\,tat}$

$$T_{V\ tat} = \frac{G_V \bullet (a + b) + T_V \bullet b - F_H \bullet c}{b}$$

Enter the numeric value for the calculated actual front axle load and the approved tractor front axle load specified in the tractor operator's manual in the table (Section 7.1.1.7).

7.1.1.4 Calculation of the actual total weight of the combined tractor and implement

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

Enter the numeric value for the calculated actual total weight and the approved total tractor weight specified in the tractor operator's manual in the table (Section 7.1.1.7).

7.1.1.5 Calculation of the actual rear axle load of the tractor $T_{H\,tat}$

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

Enter the numeric value for the calculated actual rear axle load and the approved tractor rear axle load specified in the tractor operator's manual in the table (Section 7.1.1.7).

7.1.1.6 Tire load capacity

Enter the double value (two tires) of the approved load capacity (see, for example, tire manufacturer's documentation) in the table (Section 7.1.1.7).

7.1.1.7 Table

	Actual value according to calculation		Approved value according to tractor operator's manual		Double approved load capacity (two tires)
Minimum ballast front / rear	/ lb [kg]		--		--
Total weight	lb [kg]	≤	lb [kg]		--
Front axle load	lb [kg]	≤	lb [kg]	≤	ln [kg]
Rear axle load	lb [kg]	≤	lb [kg]	≤	lb [kg]

- You can find the approved values for the total tractor weight, axle loads and load capacities in the tractor registration papers.
- The actual calculated values must be less than or equal to (≤) the permitted values!

WARNING

Risk of contusions, cutting, catching, drawing in and being knocked down through insufficient stability and insufficient tractor steering and/or brake power.

It is prohibited to connect the implement to the tractor used as the basis for calculation if:

- one of the actual, calculated values is greater than the approved value
- there is no front weight (if required) attached to the tractor for the minimum front ballast ($G_{V\,min}$).

You must use a front weight, which is equal to at least the required minimum front ballast ($G_{V\,min}$).

7.1.2 Requirements for tractor operation with attached machines

WARNING

Risk of breakage during operation of components through unapproved combinations of connecting equipment.

- Ensure:
  - that the connection fitting on the tractor possesses a permissible drawbar load sufficient for the actual drawbar load.
  - that the axle loads and weights of the tractor altered by the drawbar load are within the approved limits. If necessary, weigh them.
  - that the tractor's actual static rear axle weight does not exceed the permissible rear axle weight.
  - that the permissible total weight of the tractor is observed
  - that the approved load capacities of the tractor tyres are not exceeded.

WARNING

Risk of damage during operation of components through unapproved combinations of equipment!

Ensure that the:

- connection fittings on the tractor possess sufficient support capability for the actual drawbar load present.
- axle loads and weights of the tractor altered by the drawbar load are within the approved limits. If necessary, weigh them.
- tractor's actual static rear axle load does not exceed the approved rear axle load.
- approved total weight of the tractor is observed.
  - approved load capacities of the tractor tires are not exceeded.

7.1.2.1 Combination options of coupling devices

The table shows the permitted combination options of coupling devices for the tractor and implement.

Coupling device				
Tractor		**AMAZONE implement**		
Upper hitch				
Pin coupling, form A, B, C A not automatically B automatic smooth pin C automatic curved pin	(ISO 6489-2)	Drawbar eye	Socket ⌀ 1,57 in / 40 mm	(ISO 5692-2)
		Drawbar eye	⌀ 1,57 in / 40 mm	(ISO 8755)
		Drawbar eye	⌀ 1,97 in / 50 mm, only compatible with form A	(ISO 1102)
Upper / lower hitch				
Ball head coupling Ø 80 mm	(ISO 24347)	Ball coupling	∅ 3,15 in / 80 mm	(ISO 24347)
Lower hitch				
Towing hooks / hitch hooks	(ISO 6489-19)	Drawbar eye	Centre bore ∅ 1,97 in / 50 mm Eyelet ∅ 1,18 in / 30 mm	(ISO 5692-1)
		Swivel drawbar eye	compatible only with form Y, hole ⌀ 1,97 in / 50 mm	(ISO 5692-3)
		Drawbar eye	Centre bore ∅ 1,97 in / 50 mm Eyelet ∅ 1,18-1,6 in / 30 - 41 mm	(ISO 20019)
Drawbar - Category 2	(ISO 6489-3)	Drawbar eye	Centre bore ∅ 1,97 in / 50 mm Eyelet ∅ 1,18 in / 30 mm	(ISO 5692-1)
			Socket ⌀ 1,57 in / 40 mm	(ISO 5692-2)
			⌀ 1,57 in / 40 mm	(ISO 8755)
			⌀ 1,97 in / 50 mm	(ISO 1102)
Drawbar	(ISO 6489-3)	Drawbar eye		(ISO 21244)
Drawbar / Piton-fix	(ISO 6489-4)	Drawbar eye	Centre bore ∅ 1,97 in / 50 mm Eyelet ∅ 1,18 in 30 mm	(ISO 5692-1)
		Swivel drawbar eye	compatible only with form Y, hole ⌀ 1,97 in / 50 mm	(ISO 5692-3)
Yoke that cannot be rotated	(ISO 6489-5)	Swivel drawbar eye		(ISO 5692-3)
Lower link hitch	(ISO 730)	Lower link traverse		(ISO 730)

7.1.2.2 Compare the permissible D_C value with actual D_C value

WARNING

Danger from breaking the coupling devices between the tractor and the implement when the tractor is not used for its intended purpose!

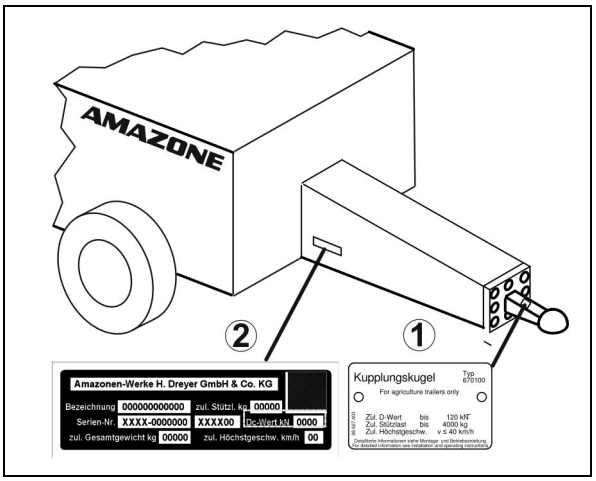
1. Calculate the actual D_C value of your combination, comprising tractor and implement.
2. Compare the actual D_C value with the following permissible D_C values:

- Coupling device of the implement
- Drawbar of the implement
- Coupling device of the tractor

The actual D_C value calculated for the combination must be less than or equal (≤) to the D_C values specified.

The permissible D_C values of the implement can be found on the rating plate of the coupling device (1) and the drawbar (2).

The permissible D_C value of the tractor coupling device can be found directly on the coupling device / in the operating manual of your tractor.



actually calculated D_C value for the combination		**specified D_C value**
kN	≤	Coupling device on the tractor: kN
	≤	Coupling device of the implement: kN
	≤	Drawbar of the implement: kN

Calculate the actual D_C value for the combination to be coupled

The actual D_C value of a combination to be coupled is calculated as follows:

$$D_C = g \times \frac{T \times C}{T + C}$$

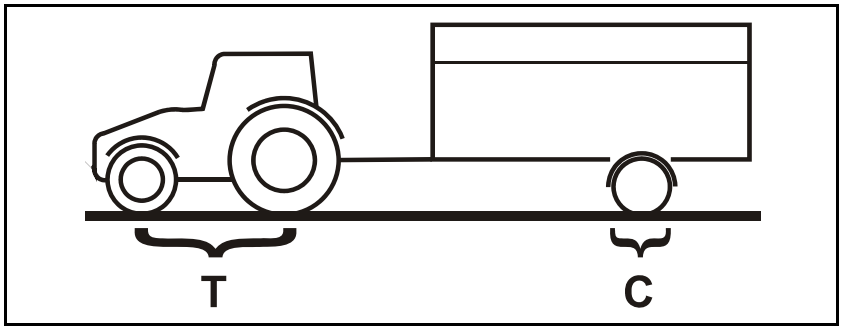


Fig. 95

T: permissible total weight of your tractor in [t] (See tractor operating manual or vehicle documentation)

C: axle load of the implement [t] loaded with the permissible mass without drawbar load (working load).

g: Gravity (9.81 m/s²)

7.2 Adjusting the length of the PTO shaft to the tractor

WARNING

Danger from

- **damaged and/or destroyed, flying parts for the operator / third party if the PTO shaft is compressed or pulls apart while the machine coupled to the tractor is being raised/lowered, because the length of the PTO shaft has not been adjusted properly.**
- **being caught and drawn in if the PTO shaft is installed incorrectly or if unauthorised design changes are made.**

Have the length of the PTO shaft checked in all operating positions by a specialist workshop and, if necessary, adjusted before coupling the PTO shaft to your tractor for the first time.

Always observe the operating manual supplied with the PTO shaft when adjusting the PTO shaft.

This adjustment of the PTO shaft applies only for the current tractor type. You may need to readjust the PTO shaft if you couple the machine to another tractor.

WARNING

Risk of being caught and drawn in if the PTO shaft is installed incorrectly or if unauthorised design changes are made.

Only a specialist workshop may make design changes to the PTO shaft. When doing so, read and follow the operating manual from the manufacturer.

Adjusting the length of the PTO shaft is permitted with consideration of the minimum profile overlap.

Design changes to the PTO shaft that are not described in the operating manual from the PTO shaft manufacturer are not permitted.

WARNING

Risk of crushing between the rear of the tractor and the machine when raising and lowering the machine to determine the shortest and longest operating position of the PTO shaft.

Only actuate the operator controls for the tractor's three-point linkage

- from the intended workstation.
- if you are outside of the danger area between the tractor and the machine.

WARNING

Risk of crushing from unintentional:

- **rolling of the tractor and the connected machine.**
- **lowering of the raised machine.**

Secure the tractor and machine from unintentionally starting or rolling and secure the raised machine against unintentional lowering before entering the danger zone between the tractor and raised machine in order to adjust the PTO shaft.

The PTO shaft is at its shortest when it is horizontal. The PTO shaft is at its longest when the machine is fully lifted.

1. Couple the tractor to the machine (do not connect the PTO shaft).
2. Apply the tractor's parking brake.
3. Determine the clearance height of the machine with the shortest and longest operating position for the PTO shaft.
   3.1 To do so, raise and lower the machine via the tractor's three-point hydraulic system.
   While doing so, actuate the manual controls for the tractor's three-point hydraulic system on the rear of the tractor, from the provided workstation.
4. Secure the machine, lifted in the measured clearance height, against unintentional lowering (for example, by supporting it or hooking it to a crane).
5. Secure the tractor from unintentional starting before entering the danger area between the tractor and machine.
6. When measuring the length and shortening the PTO shaft, read and follow the operating manual from the PTO shaft manufacturer.
7. Put the shortened halves of the PTO shaft back together.
8. Grease the universal joint shaft of the tractor and the gearbox input shaft before connecting the PTO shaft.
   The tractor symbol on the protective tube of the PTO shaft identifies the tractor-side connection of the PTO shaft.

7.3 Securing tractor / 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 the unsecured machine raised using the tractor's three-point linkage.**
- **unintentional falling of raised, unsecured machine parts.**
- **unintentional start-up and rolling of the tractor-machine combination.**
- Secure the tractor and 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
  - when the machine is running
  - for as long as the tractor engine is running with a connected PTO shaft / hydraulic system.
  - when the ignition key is inserted in the tractor and the tractor engine with the connected PTO shaft / hydraulic system could be started unintentionally.
  - when the tractor and machine are not secured against unintentional rolling using their parking brakes and/or wheel chocks.
  - when moving parts are not locked against unintentional movement.

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

1. Lower the raised, unsecured machine / raised, unsecured parts of the machine.

→ This is how to prevent unintentional falling:

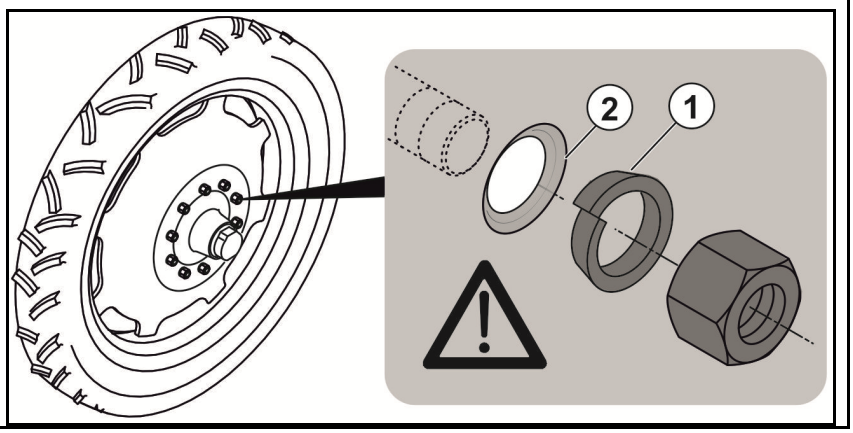
2. Shut down the tractor engine.
3. Remove the ignition key.
4. Apply the tractor's parking brake.
5. Secure the machine against unintentional rolling (only attached machine)
   - On flat ground using the parking brake (if present) or wheel chocks.
   - On uneven ground or slopes using the parking brake and wheel chocks.

7.4 Fitting wheels (Specialist workshop)

To assemble the wheels, use:

(1) conical rings in front of the wheel nuts.

(2) only rims with a fitting countersink for the conical ring.



If the machine is fitted with inflatable spare tyres, running wheels must be fitted before putting into operation.

WARNING

Wheel rims that are suitable for the tyres used must have a rim that has been fully welded all the way round.

1. Lift machine slightly using lifting crane.

DANGER

Use the attachment points marked for lifting belts.

See also "Loading" section, page 38.

2. Loosen wheel nuts on the inflatable spare tyres.
3. Remove inflatable spare tyres.

CAUTION

Take care when removing the inflatable spare tyres and putting the running wheels in place.

4. Place the running wheels on threaded bolts.
5. Tighten wheel nuts.

Required tightening torque for wheel nuts: 376 ft-lb / 510 Nm.

6. Lower machine and remove lifting belts.
7. After 10 operating hours, tighten wheel nuts.

7.5 Initial operation of service brake system

Perform a brake test while the trailed sprayer is empty, and again when it is loaded to test the braking behaviour of the tractor with coupled trailed sprayer.

We recommend that you have a specialist workshop coordinate the brakes on the tractor and trailed sprayer in order to attain optimum braking and minimum wear to brake linings (see "Maintenance" section, page 205).

7.6 Adjusting the hydraulic system with the system setting screw

Only with Profi folding:

- Be sure to match the hydraulic systems of the tractor and the implement.
- The implement hydraulic system is adjusted using the system setting screw on the hydraulic block of the implement.
- Elevated hydraulic oil temperatures are the result of incorrect adjustment of the system setting screw, caused by persistent strain on the pressure relief valve of the tractor hydraulic system.
- Adjustments may only be made in a pressureless state!
- If there are hydraulic malfunctions between the tractor and the implement during start-up, please contact your service partner.

(1) System setting screw can be adjusted in position A and B
(2) LS connection for the load sensing control line

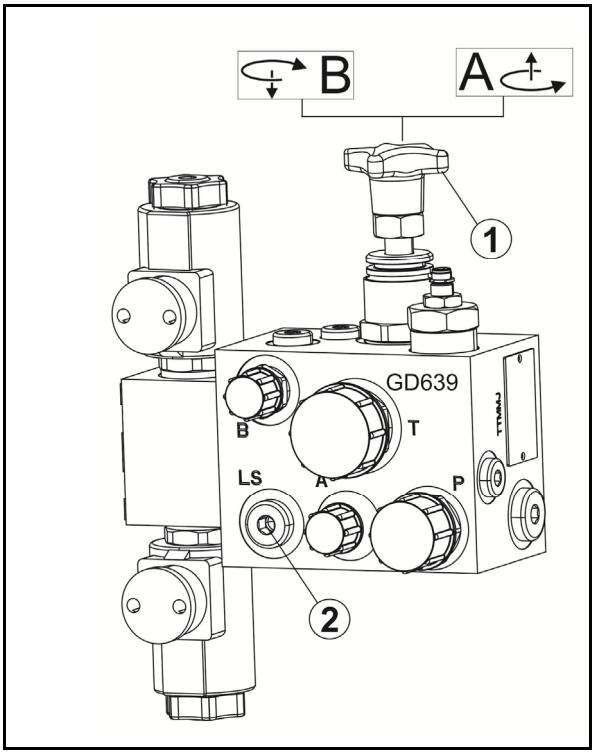


Fig. 96

Implement-side connections in compliance with ISO15657:

(1) P – feed line, pressure line, plug standard width 20
(2) LS – control line, plug standard width 10
(3) T - return line, socket standard width 20

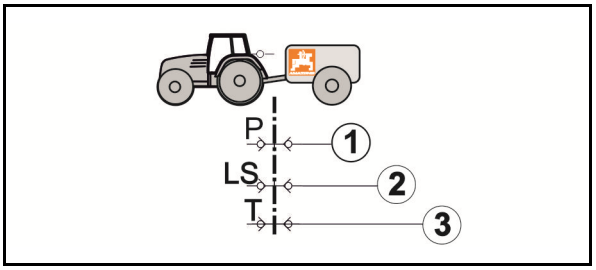


Fig. 97

(1) Open-Center hydraulic system with constant flow pump (gear pump) or setting pump.

→ Put the system setting screw in position A.

Setting pump: Set the maximum required oil quantity on the tractor control unit. If the oil quantity is insufficient, correct functioning of the implement cannot be ensured.

(2) Load-Sensing hydraulic system (pressure- and flow-regulated setting pump) with direct load sensing pump connection and LS setting pump.

→ Put the system setting screw in position B.

(3) Load-Sensing hydraulic system with constant flow pump (gear pump).

→ Put the system setting screw in position B.

(4) Closed-Center hydraulic system with pressure-regulated setting pump.

→ Put the system setting screw in position B.

Risk of overheating of the hydraulic system: the Closed-Center hydraulic system is less suitable for the operation of hydraulic motors.

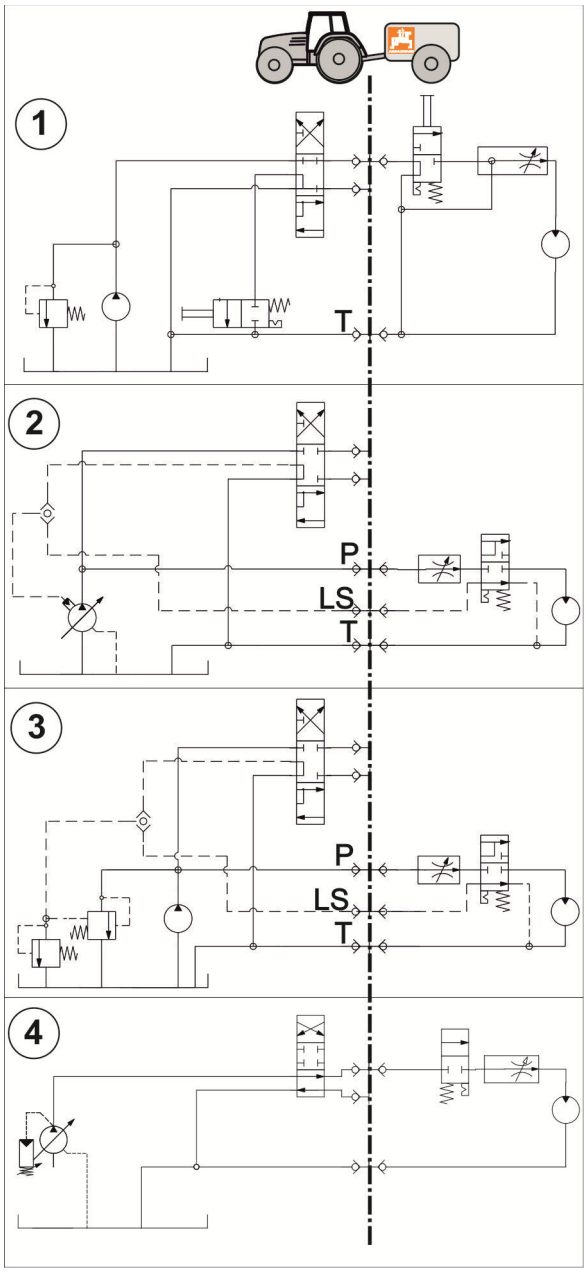


Fig. 98

7.7 AutoTrail position encoder

If using AutoTrail drawbar, a holder for the position encoder (Fig. 103/1) must be fitted to the tractor.

The holder must be made according to the actual circumstances of the tractor with the sleeve with locking screw (Fig. 103/2) and metal plate (Fig. 103/3) provided.

When installed, the position encoder must be directly above the pivot point of the tractor pin coupling (Fig. 103/4).

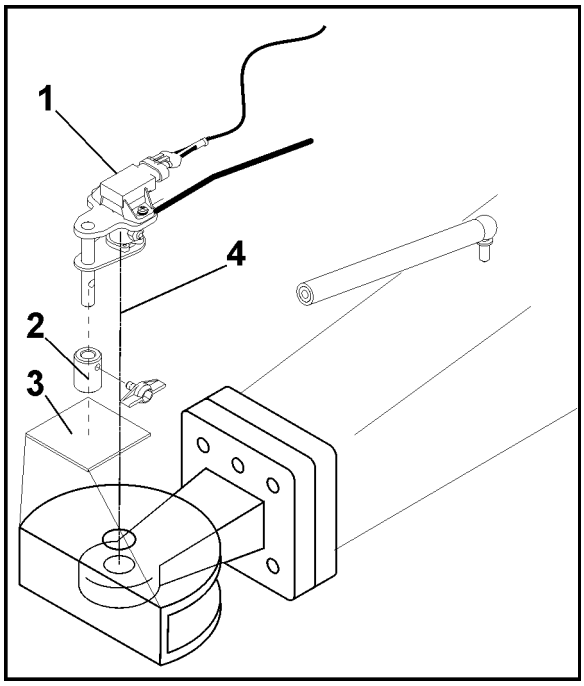


Fig. 99

- Keep the distance between the coupling point and position encoder (Fig. 104/ X) as small as possible (particularly with the hitch drawbar).
- In neutral position with the machine coupled, the rod of the position encoder must be pulled approximately 4 in / 100 mm out of the holder.

  If necessary, fasten the holder in an alternative position.

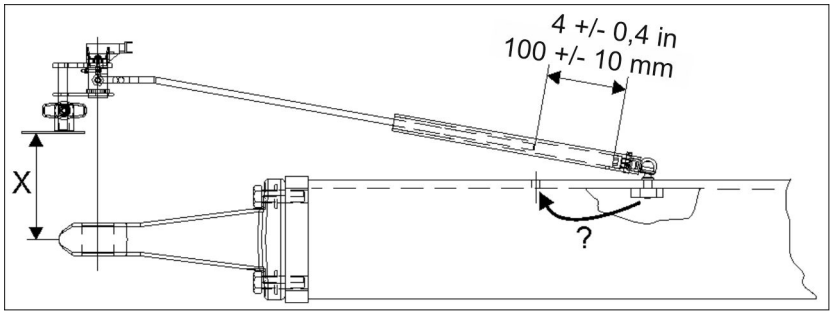


Fig. 100

7.8 Track setting (Specialist workshop)

Axle			braked				unbraked			
Impression depth of wheels		[in]	+ 4	-4	+ 5	-5	+ 4	-4	+ 5	-5
		[mm]	+100	-100	+130	-130	+100	-100	+130	-130
Track width [mm]	Min.	[in]	**61**	**77**	**58**	**79**	**58**	**69**	**60**	**71**
		[mm]	1540	1950	1480	2000	1470	1750	1530	1800
	Max	[in]	**81**	**96**	**78**	**99**	**77**	**93**	**75**	**95**
		[mm]	2050	2450	1990	2510	1960	2360	1900	2420

Set the wheelmark spacing of the machine so that the wheels of the sprayer run in the middle of the **tractor** wheel tracks.

The track width can be infinitely variably adjusted.

The adjustable track widths depend on the impression depth and the wheel assembly:

Tighten the wheel bolts to tightening torque 332 ft-lb / 450 Nm.

Carry out wheelmark spacing adjustment as follows:

1. Attach the sprayer to the **tractor**.
2. Apply the **tractor's** parking brake.
3. Secure the sprayer against rolling away with chocks.
4. Raise the sprayer on one side with a jack until the respective wheel is raised from the ground.

Warning!

Position the jack on the sprayer frame, not on the axle!

5. Release the clamping screws (Fig. 106/1).
6. Extend or retract the axle half to the desired position. For this purpose, determine dimension "x" from the outer edge of the base frame (Fig. 105/1) to the centre of the sprayer wheel and extend or retract the axle half accordingly..

$$X = \frac{\text{Desired wheelmark spacing [mm]} - 47 \text{ in [1.200 mm]}}{2}$$

7. Tighten the clamping screws to tightening torque **302 ft-lb / 410 Nm** for M 20 screws.
8. Extend or retract the axle half on the opposite side in the same way.

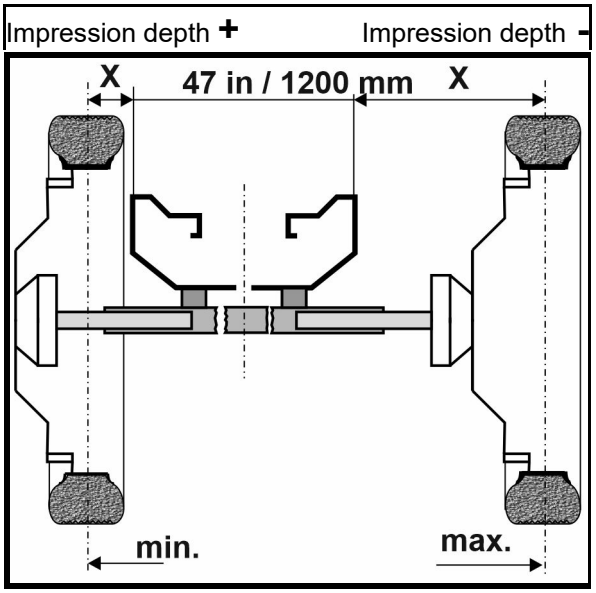


Fig. 101

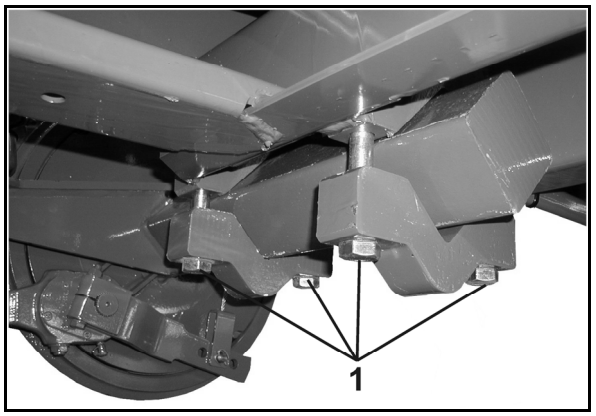


Fig. 102

7.9 Adjusting the steering geometry for track follow drawbar or universal drawbar to the tractor (Specialist workshop)

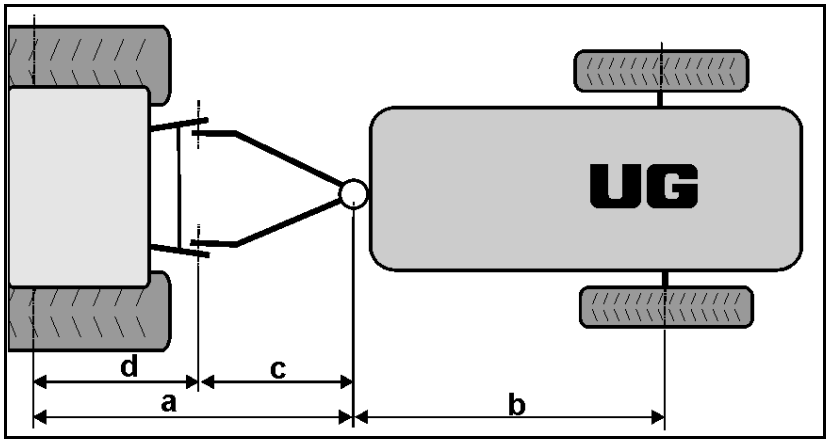


Fig. 103

(a) Distance between the tractor's rear axle and the pivot point of the drawbar:

(b) Distance between the machine's axle and the pivot point of the drawbar.

(c) Distance between the pivot point and lower link connection of the drawbar.

(d) Distance between the centre of the tractor's rear axle and the tractor's lower link connection.

Exact as possible track follow-up of the sprayer behind the tractor is achieved if the pivot point of the drawbar is exactly in the centre between the tractor's rear axle (Fig. 107/2) and the machine's axle.

→ a = b

For this purpose, the distance **"c"** between the pivot point and the lower link connections is adjustable as follows:

- with the track follow drawbar from 40 – 50 in / 1020 - 1260 mm (4 x in steps of 3,2 in / 80 mm).
- with the universal drawbar from 43 – 50 in / 1100 to 1260 mm (3 x in steps of 3,2 in / 80 mm).

Adjust the steering geometry of a non-installed machine placed on the stand as follows:

1. Determine the dimension **"c"** to be set between the pivot point and the lower link connection of the drawbar:

→ c = a - d

2. Release and remove the securing screws.
3. Screw on the lower link arms or drawbar as per distance **c**.
4. Tighten the securing screws to tightening torque:

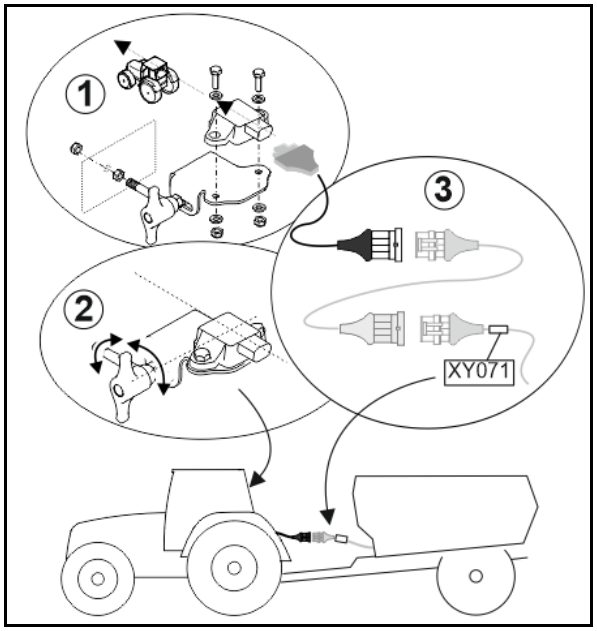
- 266 ft-lb / 360 Nm with M 20 **screws**,
- 332 ft-lb/ 450 Nm with M 22 **screws**.

7.10 Installing the sensor for the steering axle

1 To install the sensor in the cab or external area, use a rigid and vibration-free mechanical connection of the sensor to the basic frame or a bearing element in the cabin.

2. Mount the sensor horizontally.
3. Connect the sensor to the implement's wiring harness.

- Protect the sensor against dirt deposits.
- The sensor must not be painted.
- Do not use a power wrench for the installation.
- Maintain a minimum distance of 20 cm from mobile radio devices.



8 Coupling and uncoupling the machine

When coupling and decoupling the machine, comply with the section "Safety information for the user", page 27.

WARNING

Risk of crushing from unintentional starting and rolling of the tractor and machine when coupling or uncoupling the machine.

When coupling or decoupling the machine, secure the tractor and machine against unintentional start-up and rolling before entering the danger area between the tractor and machine; refer to page 137.

WARNING

Risk of crushing between the rear of the tractor and the machine when coupling and uncoupling the machine.

Only actuate the operator controls for the tractor's three-point linkage

- from the intended workstation.
- if you are outside of the danger area between the tractor and the machine.

8.1 Coupling the machine

WARNING

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

You may only connect the machine to tractors suitable for this purpose. Refer to the section "Checking the suitability of the tractor", page 127.

WARNING

Risk of crushing when coupling the machine and standing between the tractor and the machine.

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

Any helpers may only act as guides standing next to the tractor and the machine, and may only move between the vehicles when both are at a standstill.

WARNING

Risk of contusions, cutting, catching, drawing in and knocks when the machine unexpectedly releases from the tractor!

- Use the intended equipment to connect the tractor and the machine in the proper way.
- When coupling the machine to the tractor's three-point hydraulic system, ensure that the attachment categories of the tractor and the machine are the same.
  You must upgrade the machine's cat. II upper and lower links to cat. III with the aid of adapter sleeves if your tractor has a cat. III three-point hydraulic system.
- Only use the upper and lower link pins provided for coupling the machine.
- Check the upper and lower link pins for visible defects whenever the machine is coupled. Replace the upper and lower link pins in the event of clearly visible wear.
- Secure the upper link pin and lower link pin in the attachment points of the three-point attachment frame against unintentional detachment using a linchpin.
- Perform a visual inspection to ensure that the upper and lower link hooks are correctly locked before reversing the tractor.

WARNING

Risk of energy supply failure between the tractor and the machine due to damaged power supply lines.

During coupling, check the course of the power supply lines. The power supply lines

- must give slightly to all movement of the connected machine without tensioning, kinking or rubbing.
- must not chafe against other parts.

CAUTION

Lower link hitch:
Damage to the PTO shaft when braking suddenly after driving in reverse because the machine bangs up.

Secure the lower link connection upwards to prevent a release.

1. Direct people away from the danger area between the tractor and machine before you approach the machine with the tractor.
2. Couple the supply lines first before coupling the machine with the tractor.
   - 2.1 Drive the tractor up to the machine, leaving a clearance of approximately 10 in / 25 cm between tractor and machine.
   - 2.2 Secure the tractor against unintentional starting and unintentional rolling.
   - 2.3 Check whether the universal joint shaft of the tractor is switched off.
   - 2.4 Couple the PTO shaft and supply lines with the tractor.
   - 2.5 Hydraulic brake: fasten the parking brake pulling cable to the tractor.
3. Now reverse the tractor towards the machine so that the connection fitting can be coupled.
4. Couple the connection fitting.
5. Lift the stand into transport position.
6. Remove wheel chocks, release parking brake.

When driving the tractor with the machine coupled round a curve for the first time, make sure that no tractor attachments collide with the machine:

8.2 Uncoupling the machine

WARNING

Risk of crushing, cutting, being caught or drawn in, or impact through inadequate stability and tipping over of the uncoupled machine.

Park the empty machine on a horizontal space with a hard surface.

When uncoupling the machine, there must always be enough space in front of the machine so that you can align the tractor with the machine if necessary.

1. Park the empty machine on a horizontal space with a hard surface.
2. Uncouple the machine from the tractor.
   - 2.1 Secure the machine against unintentionally rolling. See page 137.
   - 2.1 Lower the stand to the parking position.
   - 2.2 **Un**couple the connection fitting.
   - 2.3 Draw the tractor forwards by approximately 10 in / 25 cm.
   - → The space created between the tractor and the machine allows better access for decoupling the PTO shaft and the power supply lines.
   - 2.4 Secure the tractor and machine against unintentional starting and unintentional rolling.
   - 2.5 Decouple the PTO shaft.
   - 2.6 Place the PTO shaft in the holder.
   - 2.7 Uncouple the supply lines and protect them against soiling with protective caps.
   - 2.8 Fasten the supply lines in the corresponding parking sockets.
   - 2.9 Hydraulic brake: detach parking brake pulling cable from tractor.

8.2.1 Manoeuvring the uncoupled machine

DANGER

You must be particularly careful when shunting the machine with the service brake system released, since only the manoeuvring vehicle is now braking the trailed sprayer.

The machine must be connected to the manoeuvring vehicle before you actuate the release valve on the trailer brake valve.

The manoeuvring vehicle must be braked.

The service brake system cannot be released using the release valve if the air pressure in the air reservoir drops below 3 bar (e.g. if the release valve has been actuated multiple times or if there are leaks in the brake system).

To release the service brake

- fill the air reservoir.
- Remove all air from the braking system at the drain valve on the air reservoir.

1. Connect the machine to the manoeuvring vehicle.
2. Brake the manoeuvring vehicle.
3. Remove the wheel chocks and release the parking brake.
4. **pneumatic braking system** only:

   4.1 Press the actuator button on the release valve as far as it will go (see page 70).

→ The service brake system is released and the machine can be manoeuvred.

   4.2 Once the manoeuvring procedure is finished, pull out the actuator button on the release valve as far as it will go.

→ The pressure from the air reservoir brakes the trailed sprayer again.

5. Actuate the brakes on the manoeuvring vehicle again once you have finished manoeuvring the machine.
6. Tighten the parking brake again and secure the machine against rolling with wheel chocks.
7. Uncouple the machine and manoeuvring vehicle.

9 Transportation

- During transportation, follow the instructions given in the section "Safety instructions for the operator", page 29.
- Before moving off, check:
  - that the supply lines are connected correctly.
  - the lighting system for damage, proper operation and cleanliness,
  - the braking and hydraulic systems for obvious defects.
  - that the parking brake is completely released
  - the function of the brake system

WARNING

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

- On foldable machines, check that the transport locks are correctly locked.
- Secure the machine against unintentional movements before starting transportation.

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.
- Before transportation, fasten the side locking device of the tractor lower link, so that the connected or coupled machine cannot swing back and forth.

WARNING

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

These risks pose serious injuries or death.

Comply with the maximum load of the connected machine and the permissible axle and drawbar loads of the tractor. If necessary, drive only with a partially filled tank.

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.

CAUTION

- During transportation, follow the instructions given in the section "Safety instructions for the operator", page 29.
- Transportation while AutoTrail is switched on is prohibited.
- Transportation is prohibited with a locked control unit. As a general rule, put the control unit on the tractor into neutral for transportation.
- **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.**

- Use the transport safety catch to secure the induction bowl when it has been swivelled up into its transport position to prevent it from swivelling down again accidentally.
- Securing elements engage in the catching hooks and secure the ladder in the transport position against unintentional lowering.
- 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.

WARNING

Risk of accident from the machine tipping over or unstable machine driving behaviour!

- Set the steering drawbar to central position (drawbar flush with machine longitudinal axis).
- Secure steering drawbar by closing the stop tap in position **0**.
- Attach the universal drawbar by securing the fixing bar / the hydraulic cylinder between the machine and drawbar.

Otherwise there is the risk of the machine tipping over!

10 Using the machine

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.

Observe the separate operating manual for the control terminal and the implement control software.

WARNING

DistanceControl, ContourControl

Risk of injury due to accidental movement of the sprayer boom in automatic mode when entering the radiation area of the ultrasound sensor.

 Lock the sprayer boom

- Before leaving the tractor.
- If unauthorised persons are standing in the area of the sprayer boom.

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 and the permissible axle and drawbar loads of the tractor. If necessary, drive only with a partially filled tank.

WARNING

Risk of crushing, cutting, being caught and/or drawn in, or impact through insufficient stability and tipping of the tractor and/or the attached machine.

Drive in such a way that you always have full control over the tractor, whether the machine is attached or unattached.

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 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 the machine against unintentional start-up and rolling before eliminating faults on the machine. See page 137.

Wait for the machine to stop before entering the machine danger area.

WARNING

Danger for the operator or third parties from damaged components being ejected due to impermissibly high drive speeds of the tractor universal joint shaft.

Observe the permissible machine drive speed before switching on the tractor universal joint shaft.

WARNING

Risk of being caught and drawn in and danger from foreign objects being caught and thrown out in the danger area of the driven PTO shaft.

- Whenever the machine is used, first check to ensure that the safety devices and guards of the PTO shaft are fully intact and functional.

  Have damaged safety devices and guards of the PTO shaft replaced immediately by a specialist workshop.
- Check that the PTO shaft guard is secured against rotation by the supporting chain.
- Maintain a sufficient safety clearance between you and the driven PTO shaft.
- Direct people out of the danger area of the driven PTO shaft.
- Shut down the tractor engine immediately in case of danger.

WARNING

Risk of accidental contact with crop protection agents / spray liquid.

- Wear personal protective equipment
  - o when preparing the spray liquid.
  - o when cleaning / replacing the spraying nozzles during spraying operation.
  - o for all cleaning work carried out on the field sprayer after spraying operation.
- When wearing the required protective clothing, always observe the manufacturer's instructions, the product information, the user manual, the safety datasheet or the operating manual for the crop protection agent to be used. For example, use:
  - o Chemical-resistant gloves
  - o Chemical-resistant overalls
  - o Water-resistant footwear
  - o A face mask
  - o Breathing apparatus
  - o Safety glasses
  - o Skin protection agents, etc.

WARNING

Risk to health from accidental contact with crop protection agents or spray liquid.

- Put on protective gloves before
  - o using crop protection agent,
  - o carrying out work on a contaminated field sprayer or
  - o cleaning the field sprayer.
- Wash the gloves with clear fresh water from the fresh water tank
  - o immediately after contact with crop protection agent.
  - o before removing the gloves.

- To use AutoTrail, open the stop tap on the hydraulic cylinder.

10.1 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 **94**
- Clean the field sprayer thoroughly before spreading 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 196
- Fill the flushing water tank and the clear water tank.

Ensure that you always carry enough clear fresh water when operating the field sprayer. Check and fill the fresh water tank when you fill the spray liquid tank.

10.2 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 for the crop protection agent.
- Read the directions for use for the agents and observe the specified precautions.

WARNING

Danger for people and animals from accidental contact with spray liquid while filling of the spray liquid tank is underway.

- Wear personal protective equipment when handling crop protection agent / dumping spray liquid from the spray liquid tank. The type of personal protective equipment required depends on the manufacturer's instructions, the product information, the directions for use, the safety datasheet or the user manual for the crop protection agent in question.
- Never leave the field sprayer unattended during filling.
  - Never fill the spray liquid tank beyond the nominal volume.
  - When filling the spray liquid tank, never exceed the permissible load of the field sprayer. Pay attention to the respective specific weight of the liquid in question.
  - During filling, always watch the fill level indicator to avoid overfilling the spray liquid tank.
  - Pay particular attention while filling the spray liquid tank to sealed surfaces; no spray liquid may be allowed to get into the sewerage system.
- Before each filling, check the field sprayer for damage, e.g. for leaking tanks and hoses, as well as for the correct positioning of all control elements.

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

Specific weights of different liquids

Liquid	Water		Urea		UAN		NP solution	
Density	0,03 lb/in^3	1 kg	0,04 lb/in^3	1.11 kg	0,05 lb/in^3	1.28 kg	0,05 lb/in^3	1.38 kg

Control terminal:

In the **control terminal**, call up the filling display from the Job menu.

- As it is difficult to dispose of residues in an environmentally-friendly manner, carefully calculate the required filling quantity or re-fill quantity to avoid leaving any residue at the end of spraying operation.
  - To calculate the required re-fill quantity for topping up 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 re-fill quantity.

    Refer to the section "Filling table for remaining areas" page163.

Method

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 liquid 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. The instructions of the agent manufacturer, however, have priority.

- With the agitator running, feed the water-soluble plastic film bag directly into the spray liquid 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.

10.2.1 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 163.

Example 1:

The following are given:

Tank nominal volume	793 gal / 3000 l
Residue in the tank	0 gal / 0 l
Water consumption	43 gal/ac / 400 l/ha
Agent required per ha	
Agent A	3,3 gal / 1.5 kg
Agent B	0,26 gal / 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:	**43 gal/ac**		**6,1 ac**		**264 gal**
	400 l/ha	x	2.5 ha	=	1000 l
Agent A	**1,3 lb/ac**		**6,1 ac**		**8,27 lb**
	1.5 kg/ha	x	2.5 ha	=	3.75 kg
Agent B	**0,1 gal/ac**		**6,1 ac**		**0,7 gal**
	1.0 l/ha	x	2.5 ha	=	2.5 l

Example 2:

The following are given:

Tank nominal volume	793 gal / 3000 l
Residue in the tank	53 gal / 200 l
Water consumption	53 gal/ac / 500 l/ha
Recommended concentration	0.15 %

Question 1:

How many gal / litres or lb/ 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 5,3 gal / 20 l remains in the tank after spraying?

Formula and answer to Question 1:

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

$$\frac{\text{(793 gal – 53)[gal] x 0,15 [15]}}{\text{(3000 – 200) [l] x 0.15 [\%]}} = \text{1,1 gal or 2,2 lb}$$

$$\frac{\text{(3000 – 200) [l] x 0.15 [\%]}}{100} = \text{4.2 [l or kg]}$$

Formula and answer to Question 2:

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

$$\frac{\text{793 gal / 3000 [l] (tank nominal volume) – 5 gal / 20 [l] (residue)}}{\text{53 gal/ac / 500 [l/ha] Water consumption}} = \text{14,7 ac}$$

$$= \text{5,96 [ha]}$$

10.2.2 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.

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 traveled [ft]	Refill quantities [gal] for sprayer booms									
	With a working width of [ft]									
	66	69	79	89	92	98	105	108	118	131
33	1	1	1	1	1	1	1	1	1	1
66	1	1	1	1	2	2	2	2	2	2
98	2	2	2	2	2	2	3	3	3	3
131	2	2	3	3	3	3	3	3	4	4
164	3	3	3	4	4	4	4	4	5	5
197	3	3	4	4	4	5	5	5	6	6
230	4	4	4	5	5	6	6	6	7	7
262	4	4	5	6	6	6	7	7	8	8
295	5	5	6	6	7	7	8	8	8	10
328	5	6	6	7	7	8	8	9	10	11
656	11	11	13	14	15	16	17	17	19	21
984	16	17	19	21	22	24	25	26	29	32
1312	21	22	25	29	30	32	34	35	38	42
1640	26	28	32	36	37	40	42	44	48	53

Distance traveled [m]	Refill quantities [l] for sprayer booms									
	With a working width of [m]									
	20	21	24	27	28	30	32	33	36	40
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. 104

10.3 Filling with water

WARNING

Danger for people and animals from accidental contact with spray liquid while filling of the spray liquid tank is underway.

- When filling the spray liquid tank using a mains water supply, never allow the filling hose and the contents of the spray liquid tank to come into direct contact. This is the only way to prevent spray liquid from being sucked or pushed into the mains supply.

→ Secure the end of the filling hose at least 4 in / 10 cm above the filling opening on the spray liquid tank. The free flow which this creates offers the absolute maximum levels of safety against the backflow of spray liquid into the mains water supply.

- Avoid the formation of froth. No froth should escape from the spray liquid tank during filling. A large-cross-section funnel extending down the base of the spray liquid tank is an effective obstacle to the formation of froth.
- Only fill the spray liquid tank using a used filling sieve.

The least dangerous way is to carry out filling at the side of the field from the water tank (where possible making use of the natural lie of the land). Depending on the type of spraying agent used, this type of filling is not permitted in water protection zones. Always enquire with the "low water authority".

10.3.1 Filling the spray liquid tank via the filling opening

1. Determine the precise water filling quantity (refer to the section "Calculating the filling quantity or re-fill quantity", page 161).
2. Open the hinged/screw lid on the filling opening.
3. Fill the spray liquid tank via the filling opening with a "free flow" from the mains water supply.
4. Always pay attention to the fill level indicator during filling.
5. At the latest, you should stop filling the spray liquid tank
   - when the pointer on the fill level indicator reaches the fill limit mark.
   - before the field sprayer's authorised load is exceeded by the quantity of liquid poured in.
6. Close the filling opening properly using the hinged/screw lid.

10.3.2 Filling the spray liquid tank via the suction port on the control terminal

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.

To prevent pump damage during suction filling:

Ensure a continuous minimum diameter of the suction hoses / taps of 2 inches.

Please observe the relevant instructions when filling the spray liquid tank via the suction hose from public water points (please also see the section "Use of the machine", page 158).

- When filling, keep the cover open to allow the pressure to equalise!
- Always pay attention to the fill level indicator during filling.
- At the latest, you should stop filling the spray liquid tank
  - o when the pointer on the fill level indicator reaches the fill limit mark.
  - o before the field sprayer's authorised load is exceeded by the quantity of liquid poured in.

1. Determine the precise water filling quantity.
2. Couple the suction hose to the filling connection.
3. Put the suction hose into the water source.

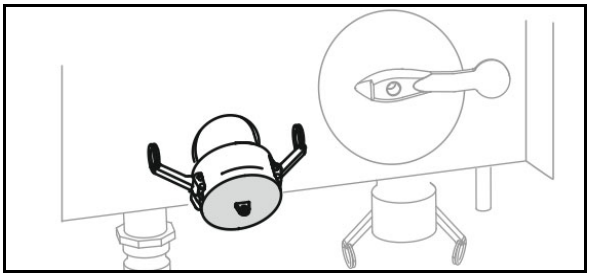


Fig. 105

4. Switch tap **BE** (optional) in position  .
5. Switch tap **DA** in position  .
6. Switch tap **SA** in position  .
7. Run the pump at approx. 540 rpm.
8. Flush in the agent while filling.
9. When the tank is full,
   - 9.1 Take the suction hose out of the water source so that the pump does not completely empty the suction hose.
   - 9.2 Switch tap **SA** in position 
10. Close the filling opening properly with the folding/screw cover.

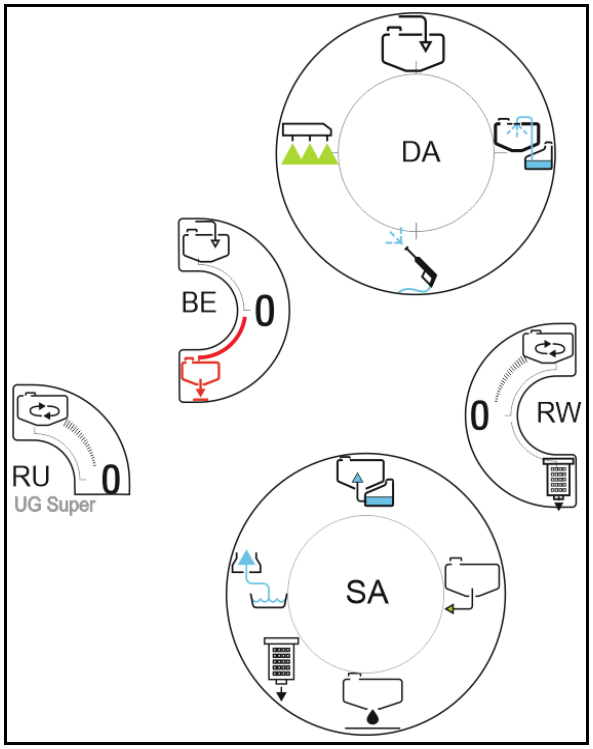


Fig. 106

Increasing the suction capacity by switching on the injector:

Switch tap **IJ** in position  .

Only switch the injector on as well once the pump has drawn in the water.

- The water being sucked via the injector does not flow through the suction filter.
- Comfort equipment with filling stop: The additional injector may not be switched on; otherwise, the automatic filling stop does not work.

If the suction hose is not taken out the water source, first put the suction valve chest lever **SA** in position  and then uncouple the suction hose from the intake fitting.

The total suction power is 500 l/min. (Pump 250l/min., injector 66 gpm / 250 l/min.).

10.4 Filling the flushing water tank through the pressure connection

Fill the flushing water tank through the pressure connection on the control panel.

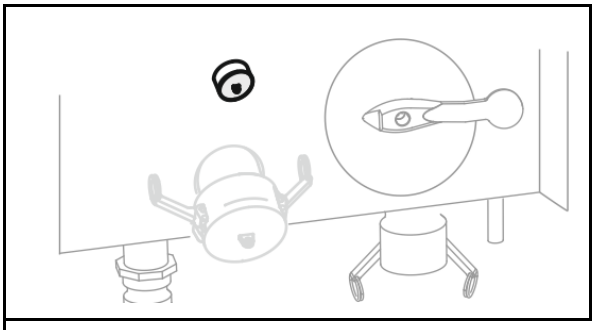


Fig. 107

WARNING

Forbidden contamination of the flushing water tank with crop protection agents or spray liquid!

Fill the flushing water tank only with clear fresh water, and never with crop protection product or spray liquid.

Ensure that you always carry enough clear fresh water when operating the field sprayer. Also check and fill the flushing water tank when you fill the spray liquid tank.

10.5 Filling the fresh water tank

WARNING

Forbidden contamination of the fresh water tank with crop protection products or spray liquid!

Only fill the fresh water tank with clear fresh water, and never with crop protection product or spray liquid.

10.6 Inducting agents

DANGER

While inducting agents, wear appropriate protective clothing as prescribed by the crop protection agent manufacturer.

Induct the respective **agent via the induction bowl** (Fig. 112/1) into the water of the spray liquid tank. A distinction is drawn here between the induction of agents in liquid and powder form and of urea.

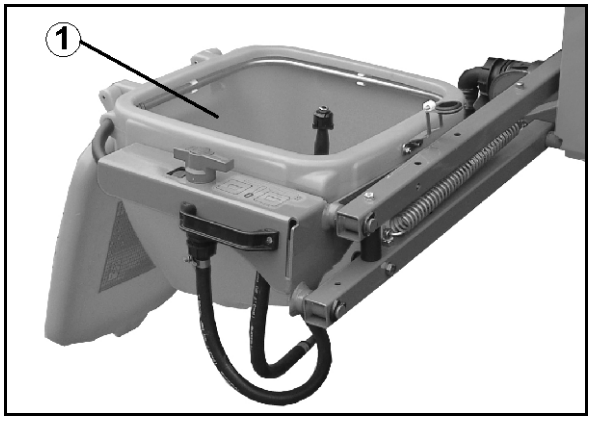


Fig. 108

10.6.1 Inducting liquid agents

11. Fill the spray liquid tank halfway with water.
12. Move switch tap **IJ** to the  position.
13. Move switch tap **EB** to the  position.
14. Move switch tap **BE** (optional) to the  position.
15. Move switch tap **DA** to the  position.
16. Move switch tap **SA** to the  position.

When inducting during suction filling, leave switch tap **SA** in position  .

17. Switch on agitator **RU**(only for UG Super)
18. Open the induction bowl lid.
19. Pour the quantity of agent calculated and measured for filling the tank into the induction bowl (max. 16 gal / 60 l).
20. Run the pump at approx. 400 rpm.

→ Fully evacuate the contents from the induction bowl.

21. Move switch tap **EB** to position **0**.
22. Move switch tap **IJ** to position **0**.
23. Close the induction bowl lid.
24. Clean the spray agent canister and induction bowl.
25. Top up with water.

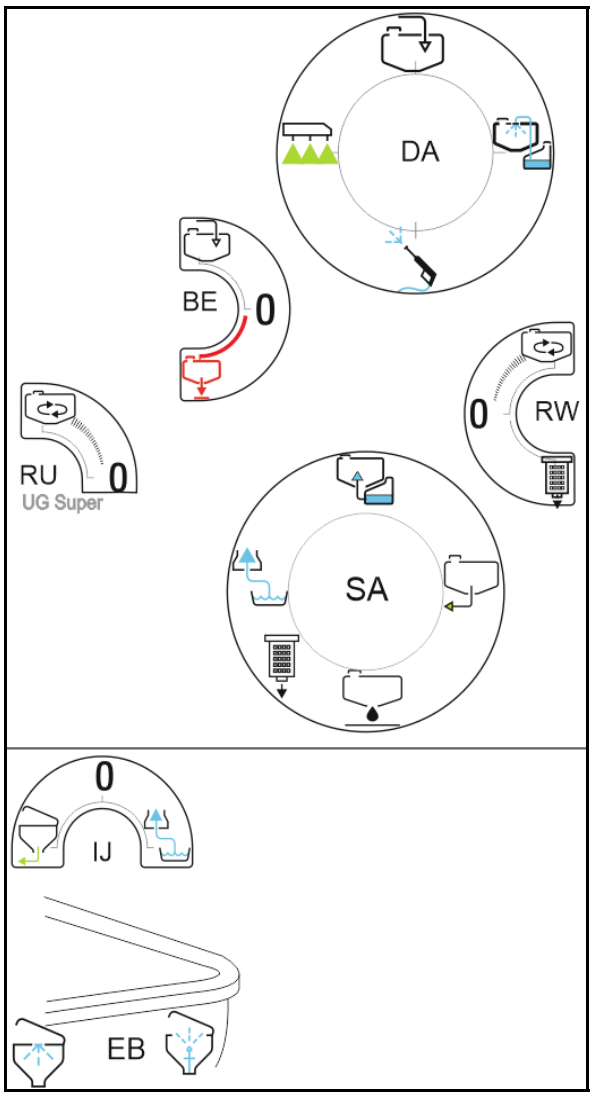


Fig. 109

10.6.2 Clean the spray agent canister and induction bow

It is preferable to clean the spray agent canister and induction bowl with drawn water during the suction filling.

Pre-clean the canister with spray liquid:

1. Open the induction bowl cover.
2. Switch tap **BE** (optional) in position  .
3. Switch tap **IJ** in position  .
4. Switch tap **EB** in position  .
5. Put the canister over the canister flushing device and press down and rinse for at least 30 sec.

Then clean the canister with flushing water:

6. Switch tap **SA** in position  .
7. Put the canister over the canister flushing device and press down and rinse for at least 30 sec.

Cleaning the induction bowl:

Switch tap **EB** in position  and actuate the push button with the induction bowl closed.

→ Internal cleaning with pressure nozzle.

8. Switch tap **EB, IJ** in position **0**.
9. Move switch tap **SA** to position  .

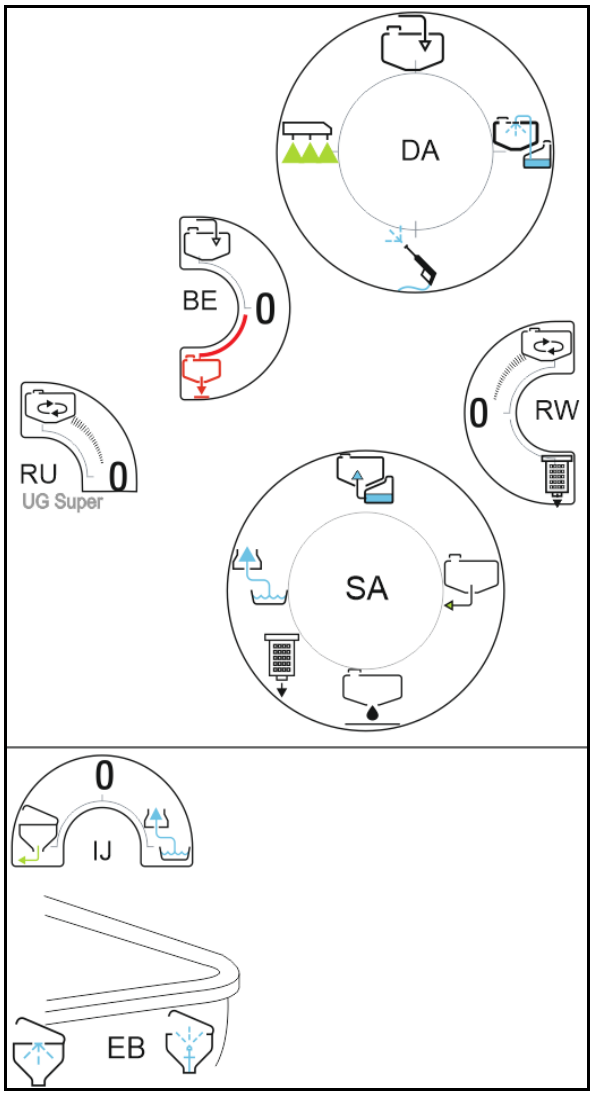


Fig. 110

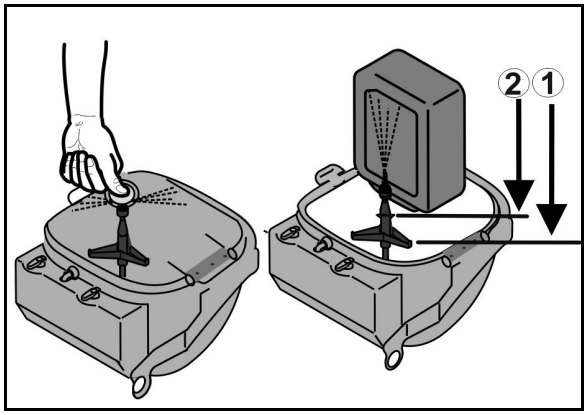


Fig. 111

10.7 Ecofill

1. Fill the spray liquid tank halfway with water.
2. Switch tap **IJ** in position **0**.
3. Switch tap **ED** in position **0**.
4. Switch tap **BE** (optional) in position  .
5. Switch tap **DA** in position  .
6. Switch tap **SA** in position  .
7. Run the pump at approx. 400 rpm.
8. Open the switch tap on the Ecofill connection.

→ Close the switch tap on the Ecofill connection when the desired quantity has been drawn from the Ecofill container.

9. Switch tap **IJ** in position **0**.
10. Fill up the missing water quantity.

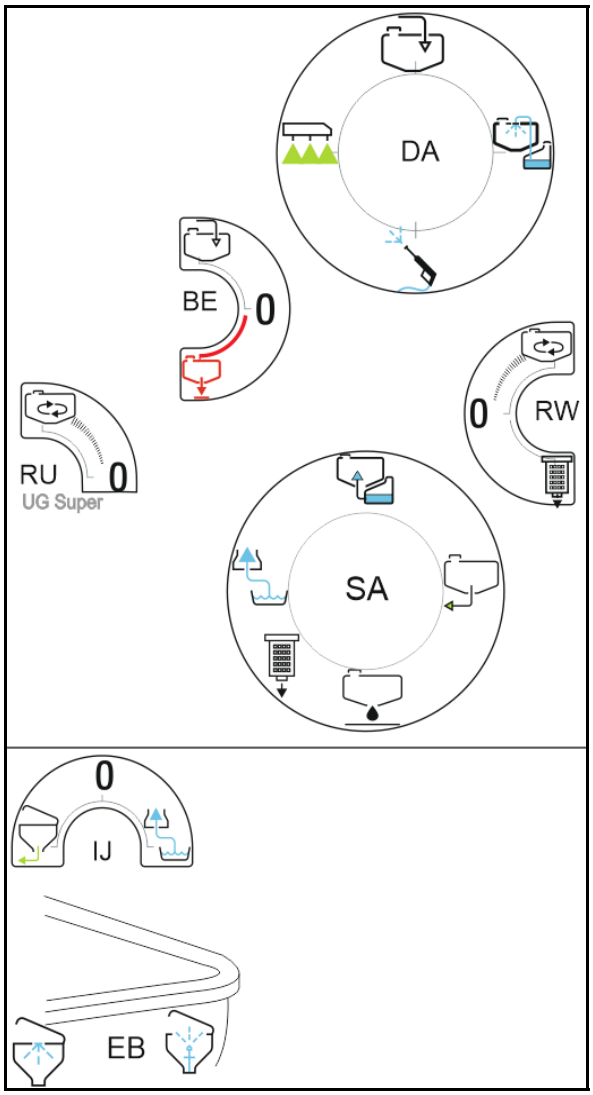


Fig. 112

After the Ecofill filling, flush the dial gauge with flushing water.

1. Switch tap **BE** in position  .
2. Couple the dial gauge to the flushing pedestal.
3. Connect the Ecofill connection to the Ecofill coupling.
4. Open the Ecofill switch tap.

→ When the pump is running, the dial gauge will be flushed.

5. Ecofill switch tap and **BE** back to 0 and uncouple the dial gauge.

10.8 The way to the field

The agitators normally remain switched on from the initial filling to the end of the spraying operation. The agent manufacturer specifications are decisive here.

1. Run the pump.
2. Switch tap **DA** in position  .
3. Set switch tap **RW** to the maximum desired agitation level.
4. On the field, adjust the agitation level to the agent manufacturer specifications.

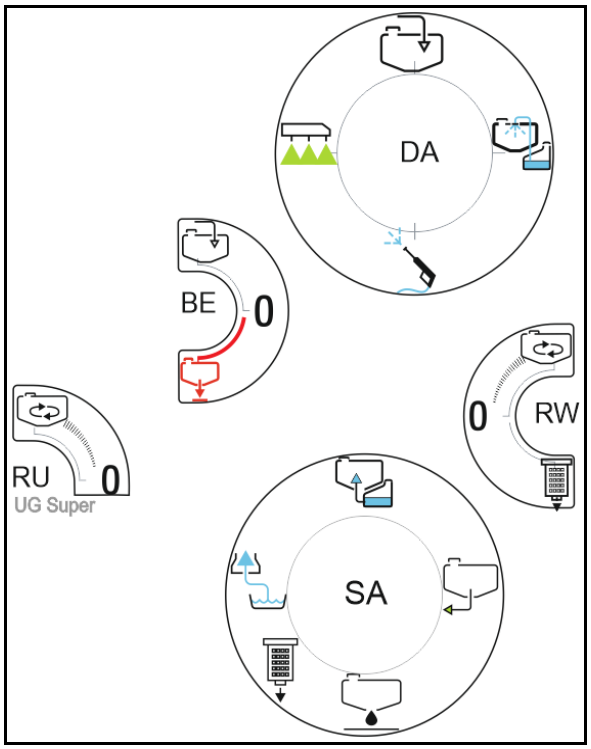


Fig. 113

10.9 Spraying operation

Observe the separate operating manual for the operating terminal.

Special instructions for spraying operation

- Test the field sprayer by carrying out calibration
  - o before the start of the season.
  - o 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 starting spraying, enter the required spray rate (target rate) in control terminal/ AMASPRAY+.

- During spraying operation, precisely adhere to the required spray rate [l/ha]
  - o in order to achieve the best possible results from your crop protection measure.
  - o to avoid unnecessary pollution of the environment.
- Select the required nozzle type from the spray table before spraying starts, taking account of
  - o the intended operational speed,
  - o the required spray rate and
  - o 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", on page 243.

- Select the required nozzle size from the spray table before spraying starts, taking account of
  - o the intended operational speed,
  - o the required spray rate and
  - o the target spray pressure.

→ Refer to the section "Spray tables for flat-fan, anti-drift, injector and airmix nozzles", on page 243.

- 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", on page 243.

- At wind speeds of 3 m/s, take additional drift reduction measures (refer to the section "Measures for drift reduction", on page 178.

- 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.
- When increasing operational speed, make sure that the maximum permissible pump drive speed of 550 rpm is not exceeded.
- 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 (impulses per 100 m) if there are differences between the actual distance covered, and that displayed. See operating manual for software ISOBUS / AMASPRAY+.
- If spraying operation is interrupted due to bad weather, clean the suction filter, the pump, the valve chest and the spray lines. See page 189.

- 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.
- If the spray pressure is increased, the spray rate also increases.
- If the spray pressure is decreased, the spray rate also decreases.
- If the operational speed is increased while the nozzle size and spray pressure remain constant, the spray rate decreases.
- If the operational speed is decreased while the nozzle size and spray pressure remain constant, the spray rate increases.
- Operational speed and pump drive speed can be selected within broad limits, owing to the automatic, area-based spray rate control via the control terminal / AMASPRAY+.

- The pump delivery capacity is dependent on the pump drive speed. Select the pump speed (between 400 and 550 rpm.) so that there is always an adequate flow rate to the sprayer boom and for the agitator. When making this choice, always take account of the fact that more spray liquid needs to be conveyed at higher operational speeds and higher spray rates.
- If there is a sudden significant drop-off in spray pressure, the spray liquid tank is empty.
- Residues in the spray liquid tank can be applied correctly up to a pressure drop of 25%.
- If the spray pressure drops off while conditions remain otherwise unaltered, the suction or pressure filter is blocked.

Special instructions for boom load

The permitted boom load may not be exceeded, as it can cause damage to the boom.

For low-stress driving, please observe the following instructions:

- Reduce the forward speed significantly before the headlands and drive in the curve at a constant speed.
- Drive tight curves at slow speeds (below 6 km/h).
- Avoid jerky steering or changes in directions when steering (e.g. track correction).
- Do not fold the boom while driving.
- Always put the individual boom elements in the completely folded end position (folded or unfolded). Do not drive with a partially folded boom.
- Avoid rapid and abrupt changes in direction.

10.9.1 Applying the spray liquid

1. Prepare and stir the spray liquid correctly in accordance with the instructions from the crop protection product manufacturer. For this, refer to the section "Preparing the spray liquid", see page 157.
2. Switch tap **IJ** in position **0**.
3. Switch tap **ED** in position **0**.
4. Switch tap **BE** (optional) in position **0**.
5. Switch tap **DA** in position  .
6. Switch tap **SA** in position  .
7. Switch tap **RW; RU**: Set the desired agitation level. For this, refer to the section "Agitator", see page 87.
8. Shift to a suitable tractor gear and start driving.
9. Switch on the control terminal.
10. Enter the target rate on the control terminal.
11. Unfold the sprayer boom.
12. 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.
13. Switch on spraying on the control terminal.
14. Run the pump at pump operating speed.

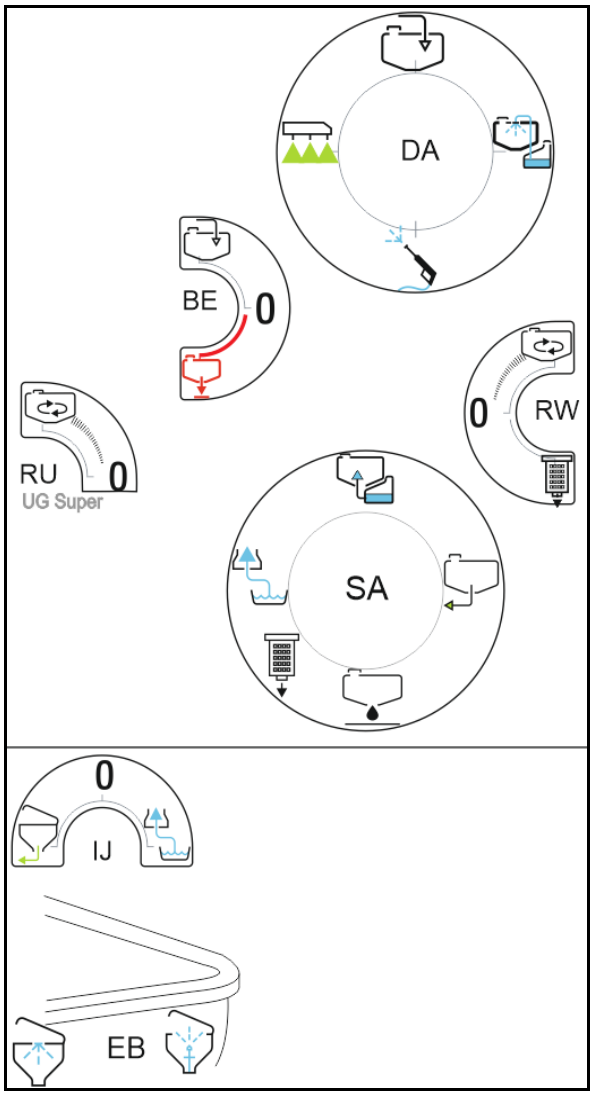


Fig. 114

At low application rates, the pump speed can be reduced to save energy.

10.9.2 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.
- Reduce spray pressure.
- Precisely maintain the working height of the boom, because the risk of drifting rises very sharply as the distance between the nozzles increases.
- Reduce operational speed (to below 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

10.9.3 Diluting the spray liquid with flushing water

1. Run the pump, set the pump speed to 450 rpm.
2. Switch tap **SA** in position  .
3. Switch tap **DA** in position  .
4. Control the flushing water supply with the agitator **RW**.

When the desired quantity of flushing water has been supplied:

5. Switch tap **SA** in position  .

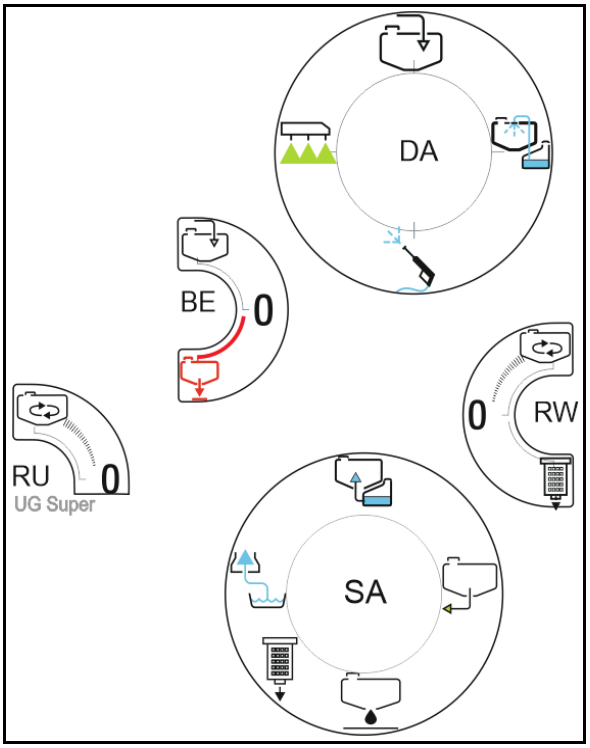


Fig. 115

10.10 Residues

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 **52**.

→ 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.

Removal of 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 52. The residue contained in the spray line is dependent on the sprayer boom working width.
- To spray out the spray liquid tank until it is empty, switch off the agitator when the residue in the spray liquid tank is only 5% of the nominal volume. When the agitator is switched on, the technical residue is higher than the specified values.
- **Measures intended for the user's protection apply when emptying residues. Observe the instructions of the crop protection product manufacturer and wear suitable personal protective equipment.**

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

$$\text{Required distance [ft/ m]} = \frac{\text{Undilutable residue [gal]/[l] x 10,000 [m2/ha]}}{\text{Application rate [gal/ac]/[l/ha] x working width [ft] / [m]}}$$

10.10.1 Diluting the residue in the spray liquid tank and spraying the diluted residue at the end of spraying operation

For machines with comfort equipment, see operating manual for software ISOBUS.

1. Switch off spraying.
2. Switch tap **BE** in position  .
3. Switch tap **DA** in position  .
4. Switch tap **SA** in position  .
5. Run the pump at approx. 400 rpm.
6. Dilute the residue in the spray liquid tank with approx. 16 gal / 60 litres from the flushing water tank.
7. Switch tap **SA** in position  .
8. Switch tap **DA** in position  .
9. Switch tap **BE** in position  .
10. Spray out the diluted residue on an **untreated remaining area**.
11. Switch the agitator **RW, RU** to **0** if the residue in the spray liquid tank is only 13 gal / 50 litres.
12. Flush the bypass line and the pressure relief by switching the sprayer on and off five times.

- Leave the sprayer switched off for at least 10 seconds each time.
- The spray pressure should be at least 73 psi / 5 bar.

13. Repeat steps 3 to 14 a second time.

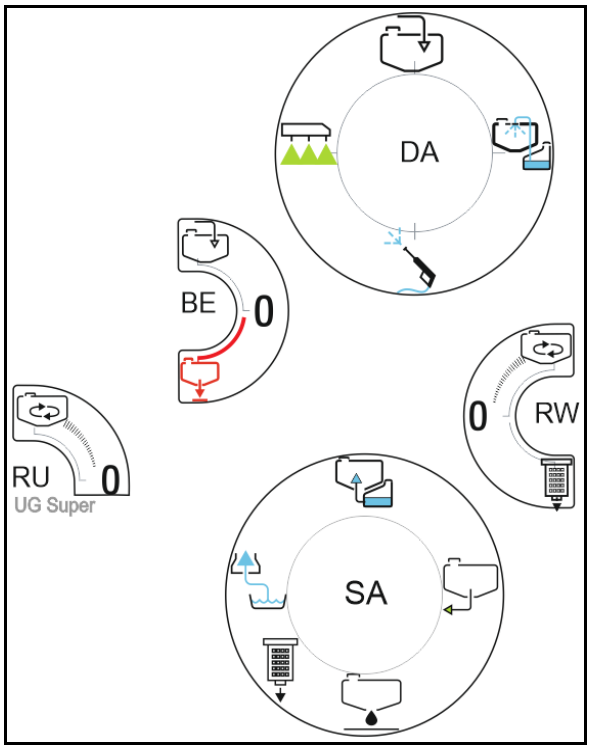
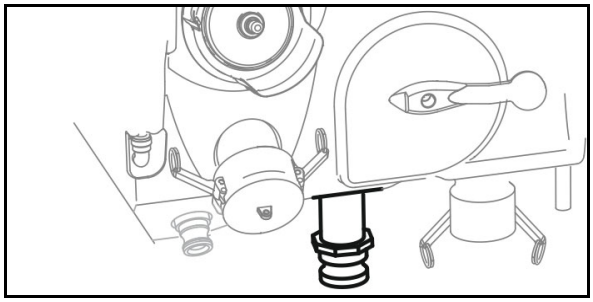


Fig. 116

When spreading residue quantities, observe the maximum permissible application rate of the agent on areas already treated.

10.10.2 Emptying the spray liquid tank using the pump

1. Couple an emptying hose with a 2-inch cam-lock coupling to the implement-side male part.



2. Press the locking plate to the side and switch tap **BE** in position  .
3. Switch tap **DA** in position  .
4. Switch tap **SA** in position  .
5. Run the pump at the pump's operating speed (540 rpm).
6. After emptying, switch tap **BE** in position **0**

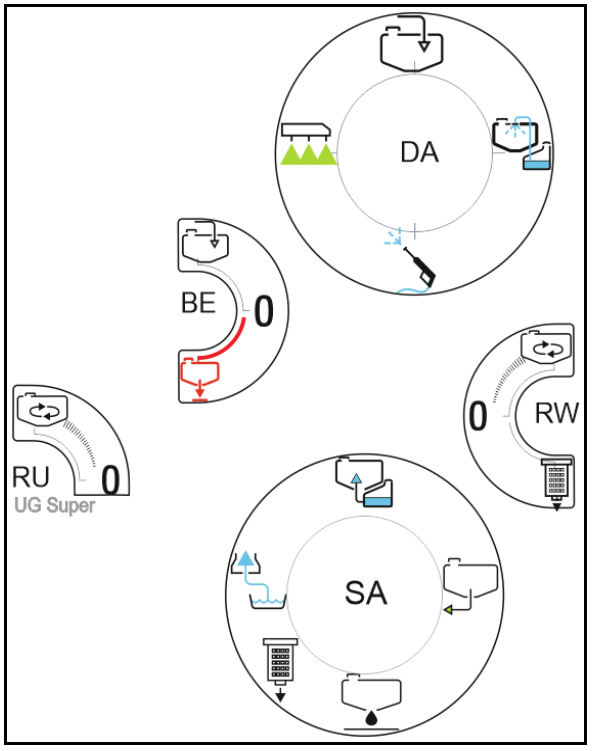


Fig. 117

10.11 Cleaning the field sprayer

- Keep the exposure time as short as possible, for example by daily cleaning after the spraying operation is complete. Do not leave the spray liquid in the spray liquid tank for an excessively long period, i.e. overnight.

  The service life and reliability of the field sprayer mainly depend on the exposure time of the crop protection agent on the materials of the field sprayer.
- 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.

For machines with comfort equipment, see operating manual for software ISOBUS.

10.11.1 Cleaning the sprayer with the tank empty

- Clean the spray liquid tank on a daily basis!
- The flushing water tank must be filled completely.
- The cleaning process should be carried out in a threefold reduction procedure.

1. Run the pump at 500 rpm.
2. Switch tap **SA** in position  .

No DUS pressure circulation system: → Step 6

Pressure circulation system (DUS):

3. DUS: Switch tap **DA** in position  .
4. DUS: Agitator **RW, RU** completely opened to remove deposits in the hose.

→ Flush the agitators with 10% of the flushing water supply.

5. DUS: Switch off the agitator(s).

DUS: Spray lines are automatically rinsed.

6. Switch tap **DA** in position 

→ Perform internal cleaning with 10 % of the flushing water supply.

7. Switch tap **DA** in position  .
8. Switch tap **SA** in position  .
9. Apply already diluted residues on the treated area when driving.
10. Switch spraying on and off ten times.

The valves and return lines are flushed by switching on and off.

→ Keep flushing the diluted residues until air escapes from the nozzles.

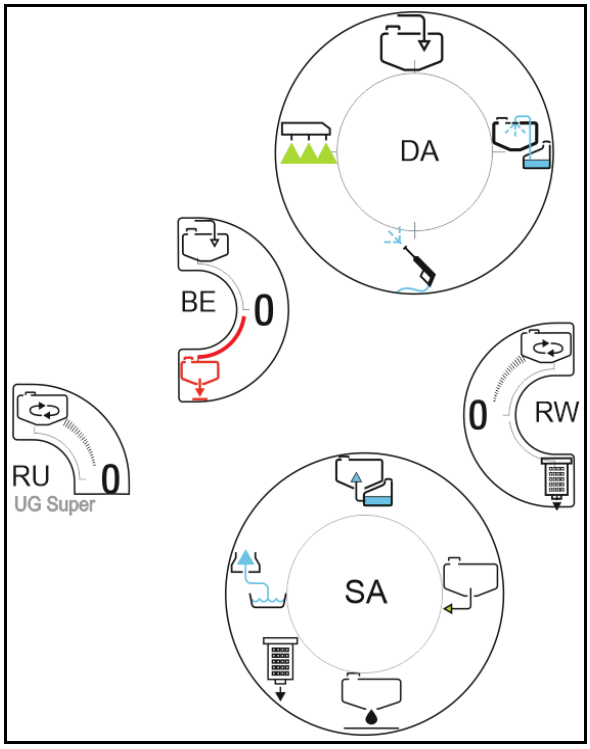


Fig. 118

Repeat this procedure three times.

Third pass:

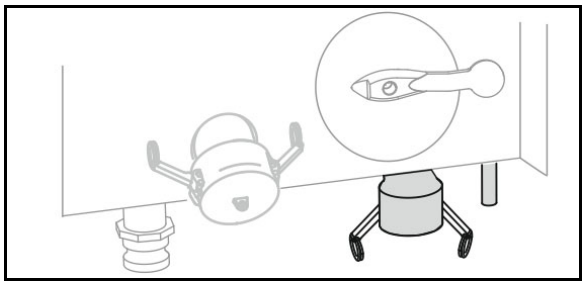
- rinsing of the DUS and agitators is not necessary during the third pass.
- use the rest of the flushing water supply for the internal cleaning.

11. Drain the final residue, see page **185**.
12. Cleaning the suction filter and pressure filter, see page **186**, **187**.

10.11.2 Draining the final residues

- On the field: Spread the final residues over the field.
- In the courtyard:
  - o 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.
  - o Dispose of the collected spray liquid residue in accordance with the corresponding legal guidelines.
  - o Collect the spray liquid residues in suitable containers.

1. Put a suitable collection bucket under the outlet opening of the VARIO gear suction side.



2. Switch tap **SA** in position  and drain the final residue from the spray liquid tank into a suitable collection bucket.
3. Switch tap **SA** in position  and drain the final residue from the suction valve chest into a suitable collection bucket.
4. Put a suitable collection bucket under the outlet opening of the pressure filter.
5. Press back the locking plate; setting tap **RW** in position  and drain the final residue from the pressure filter.

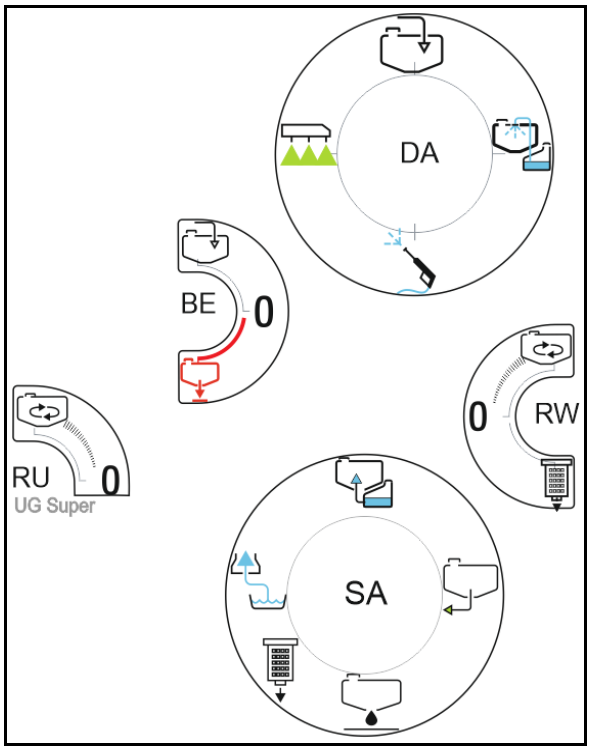


Fig. 119

10.11.3 Cleaning the suction filter when tank is empty

Clean the suction filter (Fig. 124) on a daily basis after cleaning the field sprayer.

1. Unscrew the cover of the suction filter (Fig. 124/2).
2. Remove the cover with suction filter (Fig. 124/3) and clean with water.
3. Reassemble the suction filter in the reverse sequence.
4. Check the filter housing for leaks.

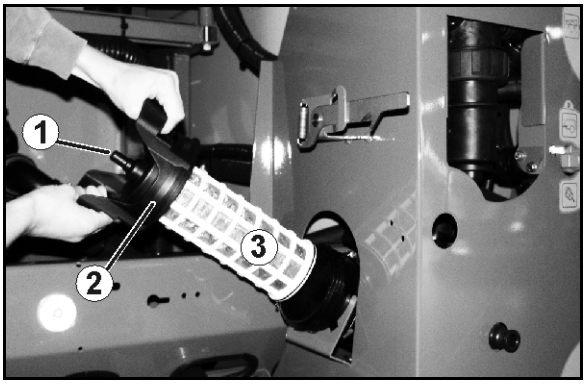


Fig. 120

10.11.4 Cleaning the suction filter when the tank is filled

1. Run the pump, set the pump speed to 300 rpm.
2. Switch tap **BE** in position  .
3. Switch tap **DA** in position  .
4. Switch tap **SA** in position  .
5. Unscrew the cover of the suction filter (2).
6. Activate the relief valve on the suction filter (1).
7. Remove the cover with suction filter (3) and clean with water.
8. Reassemble the suction filter in the reverse sequence.
9. Switch tap **SA** in position  .
10. Check the suction filter for leaks.

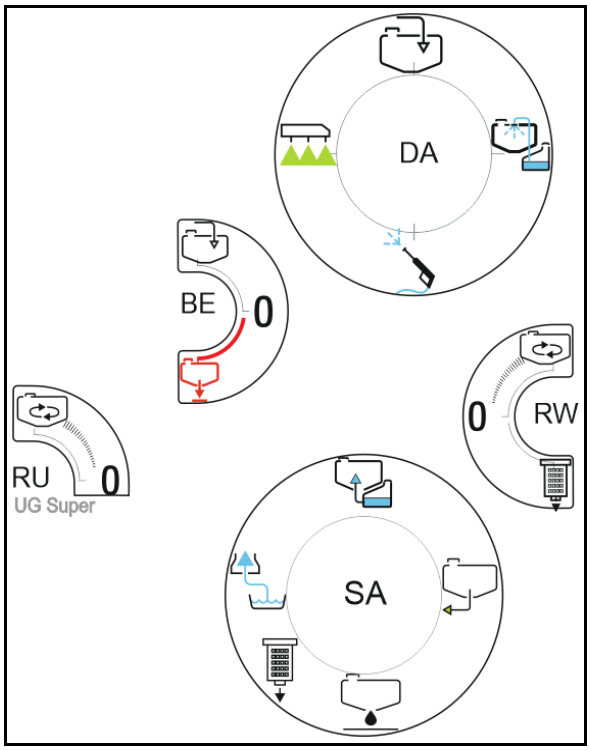


Fig. 121

10.11.5 Cleaning the pressure filter when the tank is empty

1. Undo the sleeve nuts.
2. Remove the pressure filter (Fig. 126/1) and clean with water.
3. Refill the pressure filter.
4. Check the screw connection for leaks.

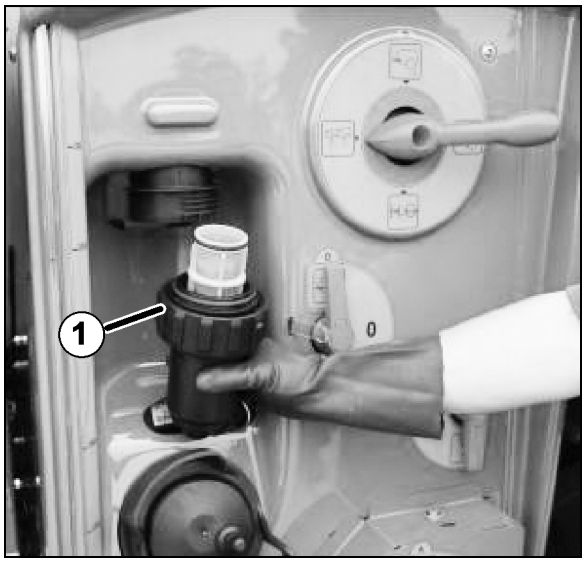


Fig. 122

10.11.6 Cleaning the pressure filter when the tank is full

1. Manual actuation pressure valve chest **DA** in position  .
2. Switch tap **RW** in position  .

→ Drain the residue into the pressure filter.

1. Undo the union nut.
2. Remove the pressure filter (1) and clean with water.
3. Refill the pressure filter.
4. Check the screw connection for leaks.
5. Switch tap **RW** in position **0**.

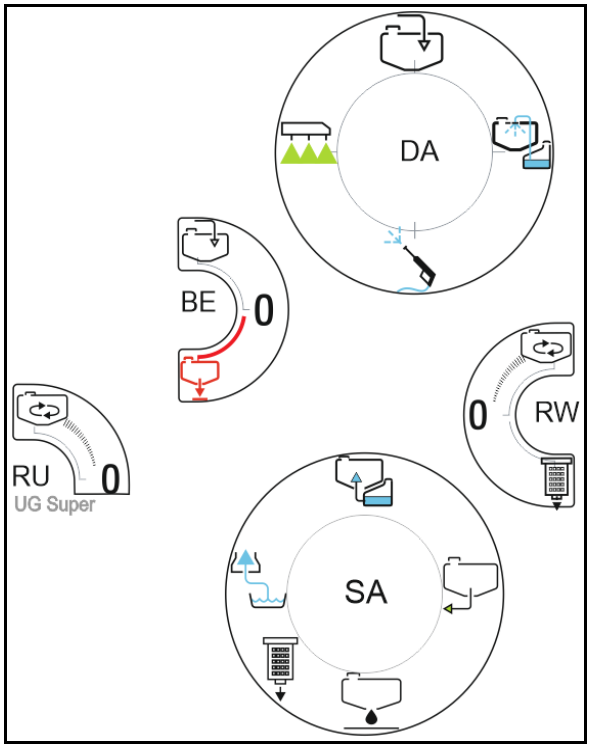


Fig. 123

10.11.7 External cleaning

1. Switch tap **DA** in position  .
2. Switch tap **SA** in position  .
3. Run the pump at the pump's operating speed (min. 400 rpm).
4. Clean the field sprayer and the sprayer boom with the spray gun.

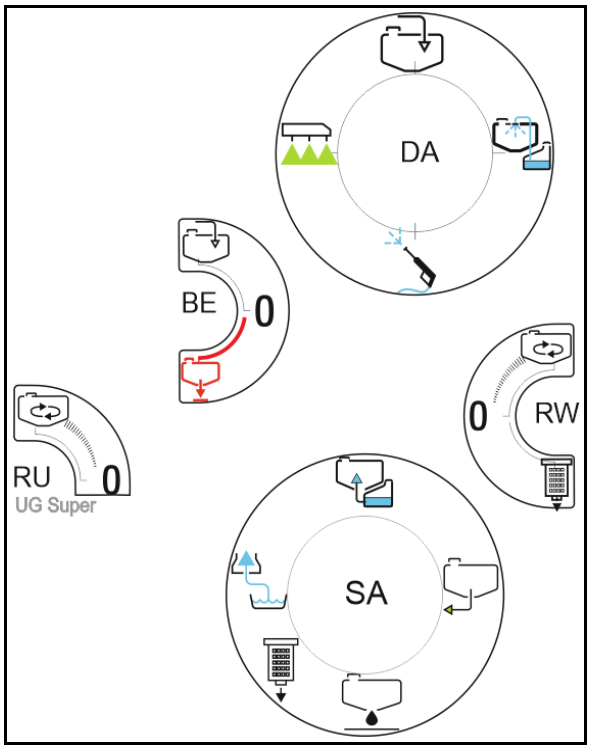


Fig. 124

10.11.8 Cleaning the sprayer during a critical agent change

1. Clean the sprayer in three runs as always, see page 183
2. Fill up the flushing water tank.
3. Clean the sprayer, two runs, see page 183.
4. If the sprayer has been previously filled via the pressure connector:

   Clean the induction bowl using the spray pistol and extract the content of the induction bowl.
5. Drain the final residue, see page 185.
6. By all means, clean the suction filter and pressure filter, see page 186.
7. Clean the sprayer, one run, see page 183.
8. Drain the final residue, see page 185

10.11.9 Flushing the sprayer boom when the spray liquid tank is full

(Work interruption)

If spraying is interrupted due to bad weather, clean the suction chest (suction filter, pumps, pressure controller) and spray line.

Fig. 129/...

1. Switch off spraying at operator control terminal.
2. Switch off agitator **RW, RU**.
3. Move switch tap **DA** to the  position.
4. Move switch tap **SA** to the  position.
5. Run the pump at pump operating speed (at least 400 rpm).
6. Approx. 20 seconds after switching on the pump, close the DUS tap (DUS option) to avoid separation of the spray liquid.
7. Then spray the undiluted residue out of the sprayer boom onto an **untreated** area.
8. Then spray the residue - which has been diluted with water from the flushing water tank - out of the suction filter, pump, valve chest and spray line on to an **untreated** area.
9. Drain the technical residue from the valve chest into a suitable collection bucket. See page 185.
10. Clean the suction filter. See page 186.
11. Switch off pump drive.
12. Reopen the DUS tap.

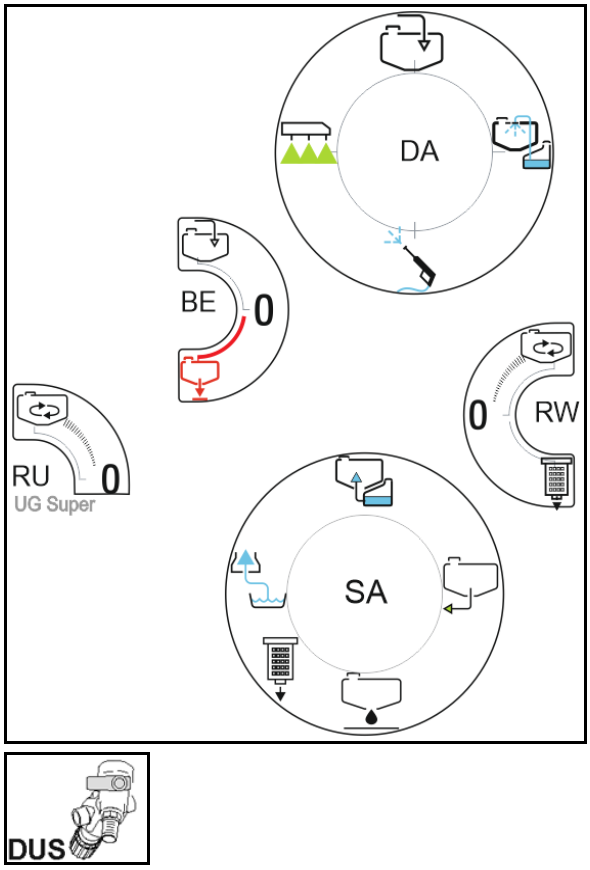


Fig. 125

Continuing the spraying operation

Before continuing with the spraying operation, activate the pump for five minutes at 540 min^{-1} and switch on the agitators completely.

11 Faults

WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through

- **unintentional falling of the machine raised using the tractor's three-point linkage.**
- **unintentional falling of raised, unsecured machine parts.**
- **unintentional start-up and rolling of the tractor-machine combination.**

Secure the tractor and the machine against unintentional start-up and rolling before eliminating faults on the machine. See page 137.

Wait for the machine to stop before entering the machine danger area.

Fault	Cause	Remedy
Liquid does not emerge from the nozzles.	The nozzles are clogged.	Eliminate the blockage, see page 193.
Spray liquid emerges	Leak in the liquid circuit	Select  for the suction valve chest.
Spraying nozzles drip	The spraying nozzles are contaminated or damaged.	Eliminate the drip, see page **193**.
There is no suction from the pump	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.
The pump does not have any power	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.
The spray cone vibrates	Irregular delivery flow from the pump.	Check, and if necessary replace, the suction and pressure-side valves (see on page 227).
Oil/spray liquid mixture in the oil filler neck or clearly visible consumption of the oil	Pump diaphragm defective.	Change all six piston diaphragms (see 229).
The required spray rate entered is not achieved	High operational speed; low pump drive speed;	Reduce travel speed and increase the pump drive speed until the fault message goes off.
There has been a deviation from the permissible spray pressure range for the nozzle fitted to the sprayer boom	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
In some cases, liquid does not come out of the nozzles when spraying out during the cleaning procedure.	The spray liquid tank was emptied too much the last time it was sprayed out, so that it now contains no or too little cleaning water.	Reduce the forward speed and/or the target application rate to ensure controlled spraying out during the cleaning procedure.
Flushing water supply is inadequate	Sieve in the flushing water hose is clogged.	Take flushing water hose off of the suction valve chest, dismount plug-in socket, and clean sieve.

11.1 Eliminate the blockages in the nozzles and nozzle filters

WARNING

Hazards due to accidental contact with spray liquid!

First, flush the nozzles with flushing water.

- Wear personal protective equipment for tasks on the sprayer boom.

1. 

Switch off spraying.
2. Flush boom and spray out flushing water.
3. Stop the implement.
4.  Lift the boom to a nozzle height of 1.50 meters.
5.  Secure boom guidance.
6. Switch off the engine.
7. Secure the implement.
8. Put on personal protective equipment.
9. Unscrew the bayonet nut with nozzle.
10. Take out the rubber seal and nozzle filter.
11. Use a replacement nozzle and replacement filter,

    or

    Clean the nozzle and filter with compressed air.
12. Mount the replacement nozzle and replacement filter with a bayonet nut and rubber seal.

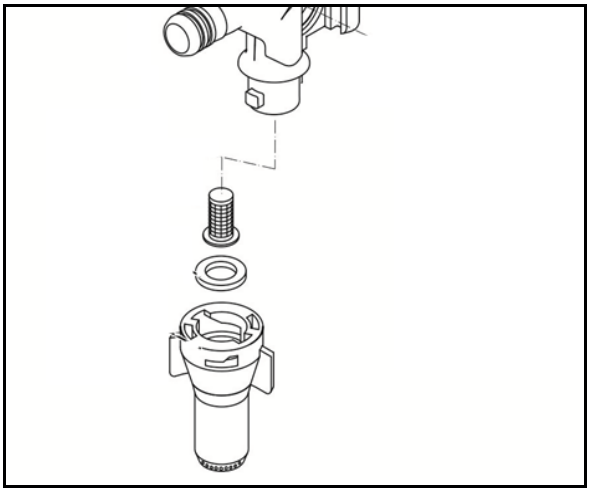


Fig. 126

11.2 Eliminating nozzle drip

WARNING

Hazards due to accidental contact with spray liquid.

- Flush the nozzles with flushing water before performing tasks on the nozzle bodies.

1. Dismount the spring element (2).
2. Remove the diaphragm (1).
3. Clean the diaphragm seat.
4. Check the diaphragm for cracks.
5. Mount diaphragm and spring element.
6. Slide on the nozzle shutter (3) with moderate thumb force.

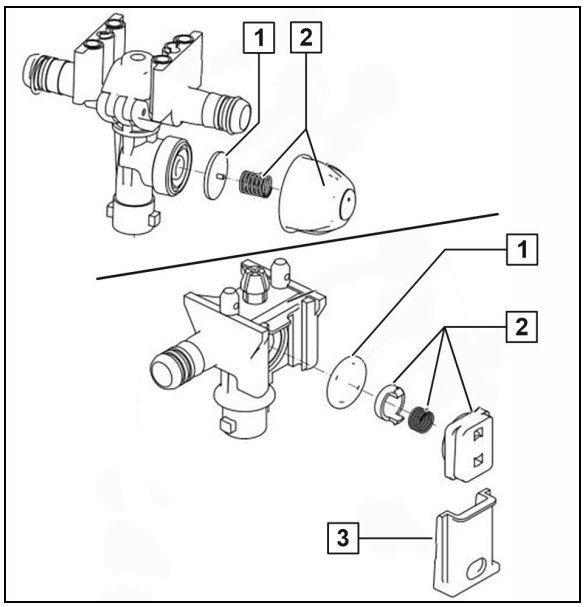


Fig. 127

12 Cleaning, maintenance and repair

WARNING

Risk of crushing, shearing, cutting, being caught and/or drawn in, or impact through

- **unintentional falling of the machine raised using the tractor's three-point linkage.**
- **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 137.

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, on page 35.**
- **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.**

Before each start-up

1. Check hoses/tubes and connection pieces for any visually obvious defects/leaking connections.
2. Repair any areas of chafing on hoses and pipes.
3. Immediately replace worn or damaged hoses and pipes.
4. Immediately repair leaking connections.

- 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 lines 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.
- Disconnect the machine cable and power supply from the on-board computer when carrying out any cleaning or maintenance work. This applies especially to welding on the machine.

12.1 Cleaning

- Pay particular attention to the brake, air and hydraulic hose lines.
- Never treat brake, air or hydraulic hose lines with benzin, benzene, petroleum or mineral oils.
- After cleaning, grease the machine, in particular after cleaning with a pressure washer / 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 chromed 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 pressure washer 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 safety regulations when working with pressure washers.

12.2 Overwintering

For winter storage, the remaining water and spray liquid are diluted in the entire liquid circuit with a sufficient amount of antifreeze to prevent damage due to freezing.

60 l of antifreeze are required.

AMAZONE recommends winterizing with a propylene glycol-based antifreeze (e.g. Glysofor L).

Liquid fertilizer is not suitable as antifreeze and can damage the implement.

1. Clean the implement and empty it completely.
2. Fill antifreeze into the flushing water tank.
3. Start the spraying pump.
4. Suction valve chest **SA** in position  ,
5. set the pressure valve chest **DA** alternating in all positions.

→ Distribute the antifreeze.

6. Pressure valve chest **DA** in position 

→ Pump the antifreeze through the entire liquid circuit.

7. Switch tap **IJ** in position  .
8. Shift the switch tap **EB** briefly in both positions.
9. Pressure valve chest **DA** in position 

   Spray the external cleaning for 60 seconds into the induction bowl.

- Pressure valve chest **DA** in position  and switch agitator **RW** on and off at maximum capacity.

Unfold the boom.

→ DUS: Allow the antifreeze to circulate for 5 minutes.

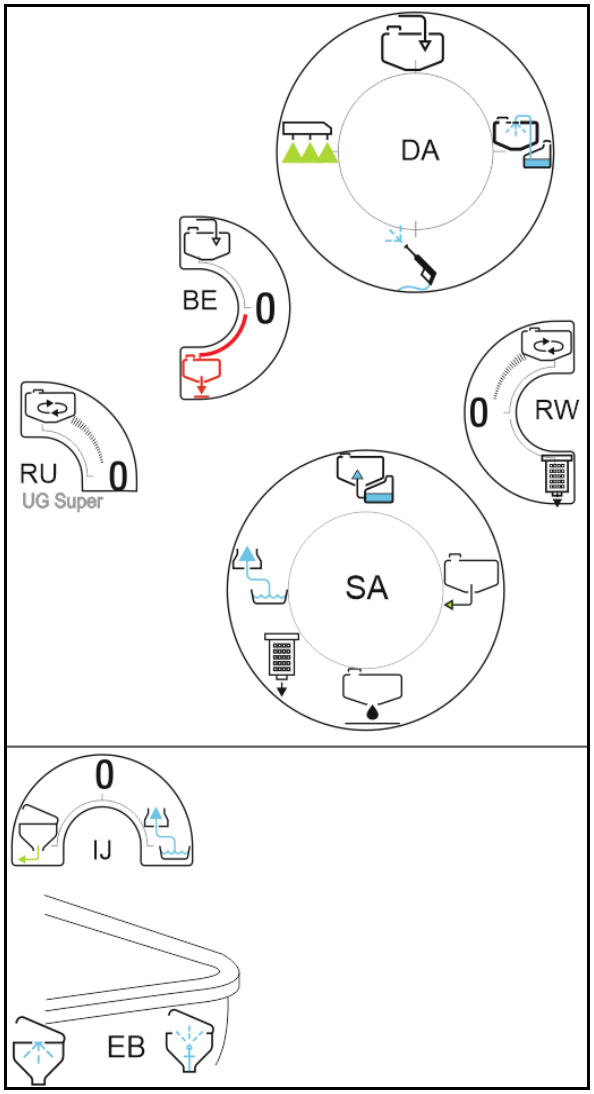


Fig. 128

10. Switch on spraying until the antifreeze emerges from the nozzles.

⚠ Collect the sprayed liquid!

⚠ Check the sprayed liquid for sufficient frost protection! If necessary, add more anti-freeze and repeat the procedure.

11. Empty the spray liquid tank using the pump,

→ Pump the antifreeze and spray liquid mixture into a suitable tank, re-use or dispose of properly.

12. Drain the suction filter insert and pressure filter insert.

13. Remove the hose from the pressure sensor (1) to drain the pressure sensor.

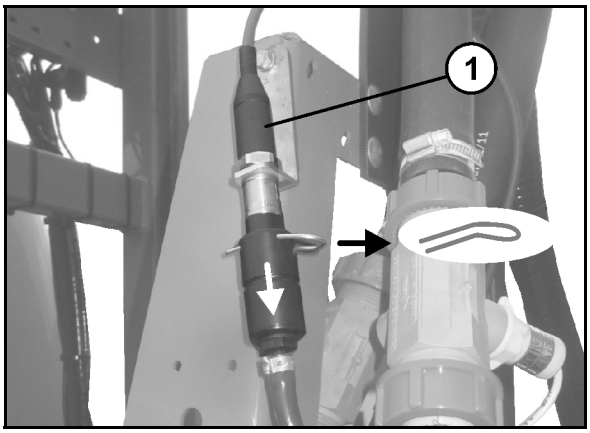


Fig. 129

14. Drain the hand wash facility.

15. Lubricate the cardan joints of the universal joint shaft and grease the profile tubes for longer periods out of operation.

16. Perform an oil change on the pumps.

17. Store the pressure gauge and any other electronic accessories in a place where they are safe from frost!

18. Drain the flushing water tank, by removing the hose from the des flushing water tank.

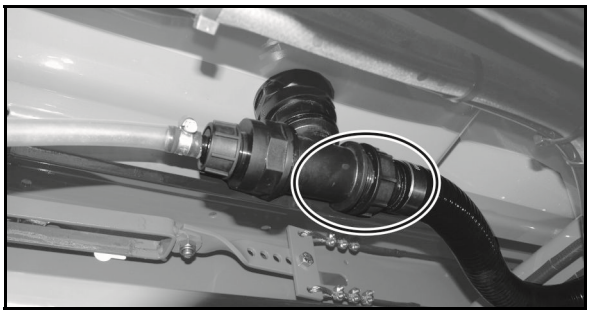


Fig. 130

19. Use the drain tap to drain the remaining water in the line filter drain.

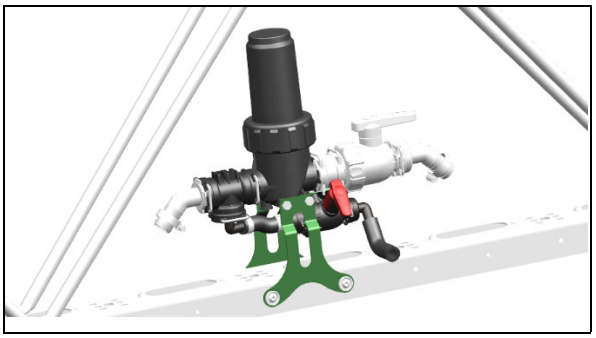


Fig. 131

Before starting up again:

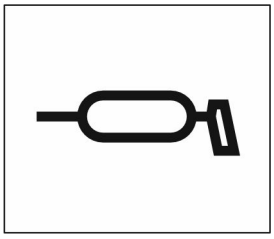
- Install all of the dismantled parts.
- Close the suction port drainage tap.
- Store the pressure gauge and any other electronic accessories in a place where they are safe from frost!

12.3 Lubrication instructions

Lubricate all grease nipples (keep gaskets clean).

Lubricate / grease the machine at the specified intervals.

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.



Lubricants

For lubrication, use a lithium saponified, multipurpose grease with EP additives:

Company	Lubricant designation
ARAL	Aralub HL 2
FINA	Marson L2
ESSO	Beacon 2
SHELL	Retinax A

Lubrication point overview

Fig. 134	Lubrication point	Interval [h]	Number of lubrication points	Type of lubrication
1	Towing eye	50	1	Grease
2	Drawbar bearing	50	2	Grease
3	Parking brake	100	1	Grease the cables and guide rollers. Grease the spindle using the grease nipple.
Fig. 135	PTO shaft	see below	5	
Fig. 136	Axle			
1	Brake shaft bearing, outer and inner	200		
2	Linkage adjuster	1000		
3	Renew wheel hub bearing grease, check taper roller bearings for wear	1000		

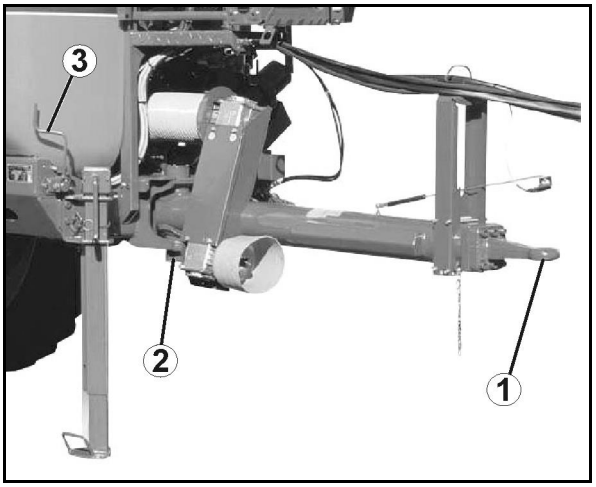


Fig. 132

PTO shaft

For winter operation, grease the protective tubes to prevent them from freezing.

Also observe the installation and service instructions from the PTO shaft manufacturer, which are fastened to the PTO shaft.

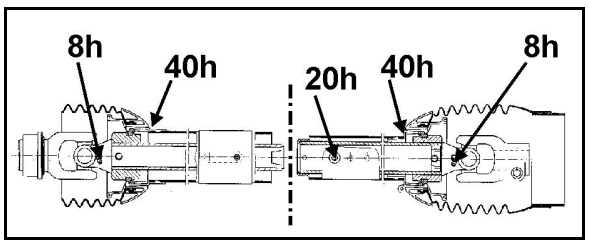


Fig. 133

Axle

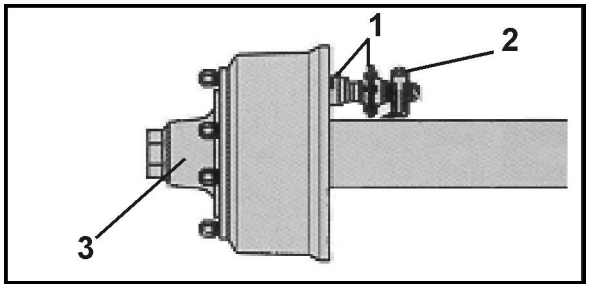


Fig. 134

Brake shaft bearing, outer and inner

Caution: no grease or oil should be allowed to get into the brakes. Depending on the model series, the cam bearing for the brakes may not be sealed.

Only use lithium saponified grease with a dropping point greater than 190 °C.

Renewing the wheel hub bearing grease

1. Jack up the vehicle securely and release the brakes.
2. Remove the wheels and dust caps.
3. Remove the lynch pin and unscrew the axle nut.
4. Use a suitable extraction device to remove the wheel hub and brake drum, taper roller bearing and sealing elements from the axle stub.
5. Label the removed wheel hubs and bearing cages so that you do not confuse them when refitting.
6. Clean the brakes, check for wear, sound condition and function and replace worn parts.

   The interior of the brake must be kept free from lubricants and dirt.
7. Thoroughly clean the interior and exterior of the wheel hubs. Remove all traces of old grease. Thoroughly clean the bearings and seals (diesel oil) and check for reusability.

   Before refitting the bearings, lightly grease the bearing carrier and then refit all parts in the reverse order. Carefully fit parts with press fits and pipe bushings so that they are not twisted or damaged.

   The bearings, the wheel hub cavity between the bearings and the dust cap must be smeared with grease before fitting. The grease should fill approximately a quarter to a third of the space in the fitted hub.
8. Fit the axle nut and adjust the bearing and brake. Finally, carry out a function check and an appropriate test run and rectify any detected faults.

12.4 Service plan – overview

- 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.

After the first working run

Component	Maintenance work	see page	Workshop work
Wheels	• Wheel nut check	213	
Hydraulic system	• Check for leak tightness	216	
Spraying pump	• Check the oil level	225	

On a daily basis

Component	Maintenance work	see page	Workshop work
Whole machine	• Visual check for faults		
Fluid filter (Profi-folding)	• Check the clogging indicator	219	
	If necessary, replace		**X**
Spraying pump	• Cleaning, flushing	225	
Spray liquid tank		182	
Line filter in the nozzle lines (if present)		234	
Spraying nozzle		182	
Brake	• Drain air reservoir	208	
Spraying pump	• Check the oil level • Check the oil (the oil must not be cloudy)	225	

Weekly / every 50 working hours

Component	Maintenance work	see page	Workshop work
Hydraulic system	• Check for leak tightness	216	**X**
Wheels	• Check the air pressure.	213	
Coupling device	• Check for damage, deformation and cracks	215	

Every three months / 200 operating hours

Component	Maintenance work	see page	Workshop work
Brake	• Check for leak tightness • Check pressure in the air reservoir • Check brake cylinder pressure • Visual inspection of brake cylinder • Joints on brake valves, brake cylinders and brake linkages	209	**X**
	• Linkage adjuster brake settings	207	**X**
	• Brake pad check		
Wheels	• Check play on wheel hub bearings	206	**X**
Line filter	• Clean • Replace damaged filter inserts	234	
Parking brake	• Check the braking effect with the brake on	212	
Booms	• Checking the boom for cracks / beginning of crack formation		
Coupling device	• Check the fastening bolts for wear and tight fit	215	

Annually / 1000 operating hours

Component	Maintenance work	see page	Workshop work
Spraying pump	• Changing the oil	226	**X**
	• Check valves, replace as necessary	227	**X**
	• Check the piston diaphragm and, if necessary replace	228	**X**
Flow meter and return flow meter	• Calibrate the flow meter • Align the return flow meter	229	
Nozzles	• Calibrate the field sprayer and check the lateral distribution; if necessary, replace worn nozzles	231	
Brake drum	• Check for dirt	206	**X**
Wheels	• Wheel nut check	213	
Brake	Automatic linkage adjuster • Check function • Brake settings	207	**X**
Pneumatic brake	• Clean the compressed air line filter on the coupling head	**211**	**X**
	• Clean the compressed air line filter in the brake line	**211**	**X**
Hydraulic system	• Check the pressure reservoir	216	**X**

As necessary

Component	Maintenance work	see page	Workshop work
Super-S boom	• Correct the settings	222	
Electric lighting	• Replace defective bulbs	237	
Solenoid valves	• Clean	220	**X**
Hydraulic throttle valve	• Adjusting the operating speed	222	
Hydraulic plug	• Rinse / exchange the filter in the hydraulic plug	220	
Spray liquid circuit and nozzles	• Eliminate calcification	230	

12.5 Axle and brake

For optimum brake performance with a minimum of wear, we recommend that the brakes on the tractor are balanced with those on the trailed sprayer. After the service braking system has been run in for a suitable period, arrange for the brakes to be balanced by a specialist workshop.

Have the balancing process carried out before these empirical values are reached if you discover excessive wear on the brake pads.

To avoid problems with the brakes, adjust all vehicles in accordance with EC Directive 71/320 EEC.

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.**

General visual inspection

WARNING

Carry out a general visual inspection of the brake system. Observe and check the following criteria:

- **Pipe lines, hose lines and coupler heads must not be externally damaged or corroded.**
- **Hinges, e.g. on fork heads, must be properly secured, easy to move, and not worn out.**
- **Ropes and cables**
  - **must be properly run.**
  - **may not have any visible cracks.**
  - **may not be knotted.**
- **Check the piston stroke on the brake cylinders, and adjust as necessary.**
- **The air reservoir must not**
  - **move around in the tensioning belts.**
  - **be damaged.**
  - **show any outward signs of corrosion damage.**

Checking the brake drum for dirt (workshop work)

1. Unscrew the two cover plates (Fig. 137/1) on the inside of the brake drum.
2. Remove any dirt and plant debris which may have entered the drum.
3. Refit the cover plates.

CAUTION

Dirt entering the drums may be deposited on the brake pads (Fig. 137/2) and thus die appreciably reduce brake performance.

Risk of accident.

If dirt is discovered in the brake drum, the brake pads must be inspected by a specialist workshop.

For this to happen, the wheel and brake drum must be removed.

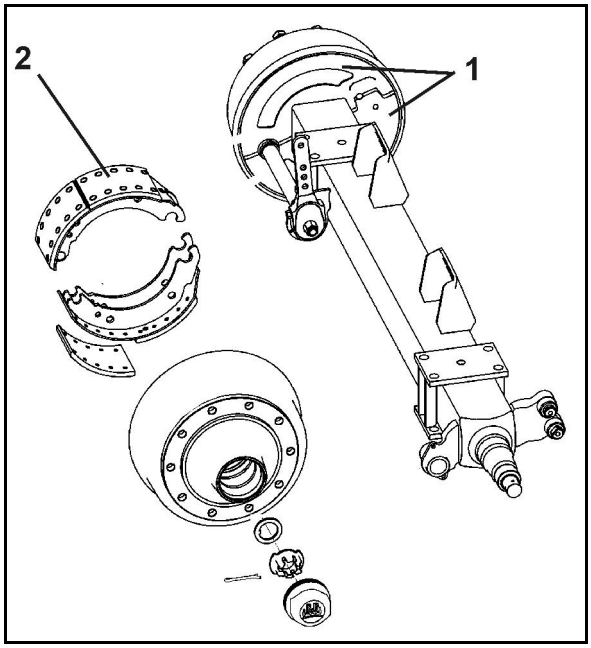


Fig. 135

Checking wheel hub bearing clearance (workshop work)

To check the play on wheel hub bearings, raise the axle until the wheels turn freely. Release the brake. Place a lever between the tyre and the ground and check the play.

If bearing play can be detected:

Adjust the bearing play

- Remove the dust cup or hub cap.
- Remove the split pin from the axle nut.
- Tighten the wheel nut while turning the wheel at the same time until the wheel hub is lightly braked as it turns.
- Turn axle nut back to the next available split pin hole. To the next matching hole (max. 30°).
- Fit split pin and bend slightly open.
- Top up the dust cap with high melting point grease and drive it into, or screw it onto the wheel hub.

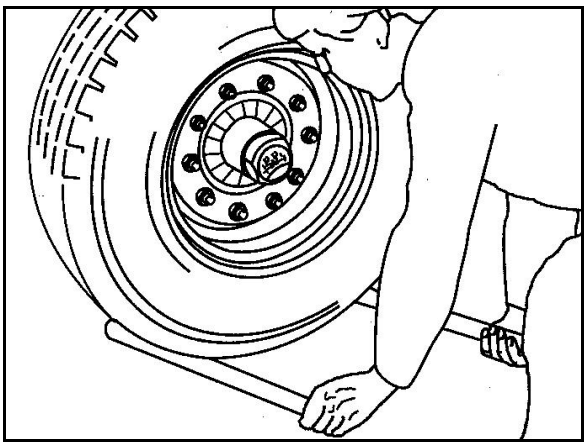


Fig. 136

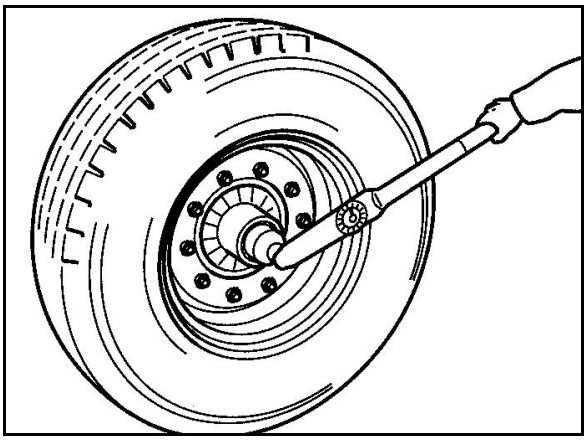


Fig. 137

Brake pad check

To check the brake pad thickness, open the inspection hole (1) by opening the rubber tab.

Changing the brake pads → Workshop work

Criterion for changing the brake pads:

- Minimum pad thickness of 5 mm was reached.
- Wear edge (2) was reached.

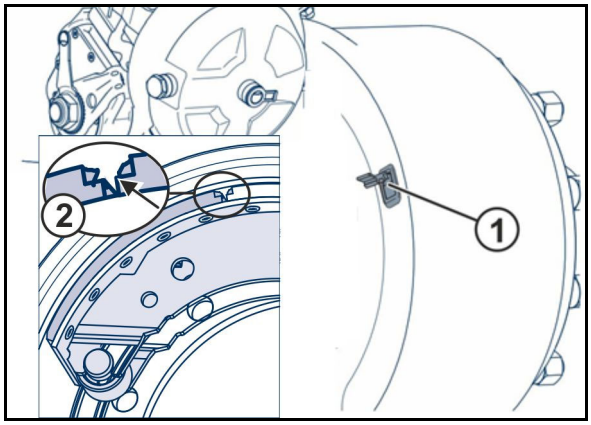


Fig. 138

Adjustment on linkage adjuster (workshop work)

Move the linkage adjuster by hand in the pressure direction. If the free travel of the long-stroke diaphragm cylinder pressure rod is max. 1,4 in / 35 mm, the wheel brake must be readjusted.

Adjustments are made using the readjustment hexagon bolt on the linkage adjuster. Set the free travel "a" to 10-12 % of the connected brake lever length "B",
e.g. lever length 6 in / 150 mm =
free travel 0,6- 0,7 in / 15 - 18 mm.

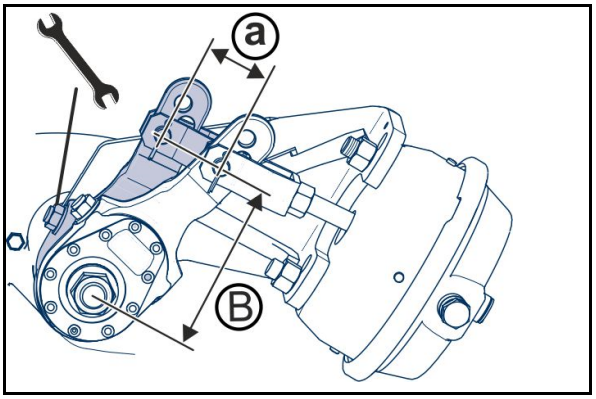


Fig. 139

Checking the function of the automatic slack adjuster

1. Secure the machine against rolling away and release the service brake and parking brake.
2. Manually actuate the slack adjuster.

The free travel (a) may be a maximum of 10-15% of the connected brake lever length (B) (e.g. brake lever length 6 in / 150 mm = free travel 0,6- 0,9 in / 15 – 22 mm).

Readjust the slack adjuster if the free travel is outside of the tolerance. → Workshop work

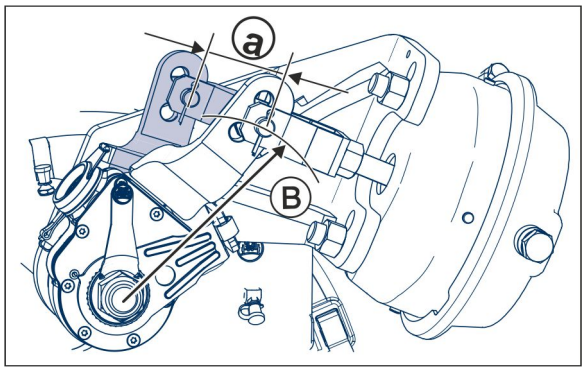


Fig. 140

Air reservoir

Drain the air reservoir every day.

Fig. 142/...

(1) Air reservoir

(2) Tensioning belts

(3) Drainage valve

(4) Test connection for pressure gauge.

1. Pull the drain valve (3) in a sideways direction using the ring until no more water escapes from the air reservoir (1).

→ Water flows out of the drain valve (3).

2. Unscrew the drain valve (3) from the air reservoir and clean the reservoir if there are signs of dirt.

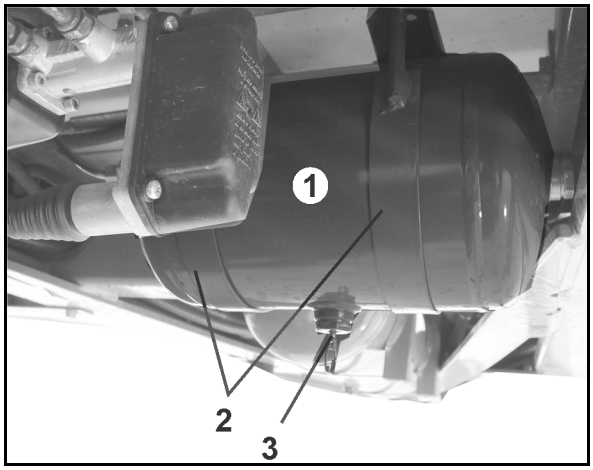


Fig. 141

Line filter

- **Change damaged filter inserts.**

1. Press together the locking piece on the two lugs.
2. Remove the locking piece with O-ring, pressure spring and filter insert.
3. Clean (rinse out) the filter insert with petrol or thinner and blow dry with compressed air.
4. To reassemble, reverse the procedure and make sure that the O-ring is not twisted in the guide slot.
5. Insert the locking piece with O-ring, pressure spring and filter insert.

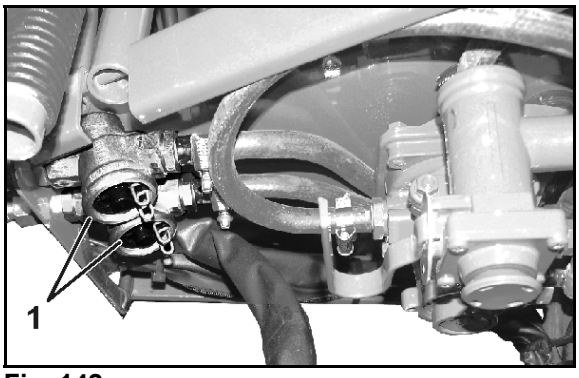


Fig. 142

When inserting the locking piece, make sure that the O-ring is not twisted in the guide slot.

12.5.1 Inspection instructions for dual-line service brake system (workshop work)

1. Leak tightness check

1. Check all connections, pipe lines, hose lines and screw connections for leak tightness.
2. Remedy leakages.
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 leakproof if the drop in pressure is no more than 2.18 psi / 0.15 bar after 10 minutes.
6. Seal any leaking areas or replace leaking valves.

2. Checking the pressure in the air reservoir

1. Connect a pressure gauge to the test connection on the air reservoir.

   Set value 6.0 to 8.1 $^{+0.2}$ bar

3. 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.

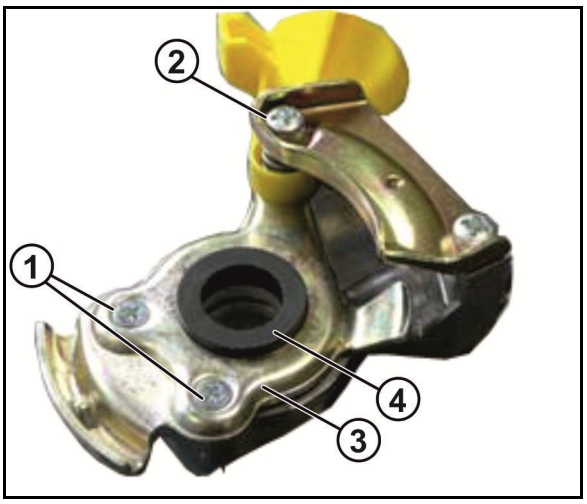
5. Joints on brake valves, brake cylinders and brake linkages

Joints on brake valves, brake cylinders and brake linkages must move freely. Grease or lightly oil, if necessary.

12.5.2 leaning the compressed air line filter on the coupling head

Perform work in unpressurized status. Prevent the implement from rolling.

1. Remove the bolt locking compound by hammering and remove the bolts (1).
2. Unscrew the bolts (2) a few turns.
3. Lift the sheet-metal plate (3) over the rubber seal (4) and turn it to the side.

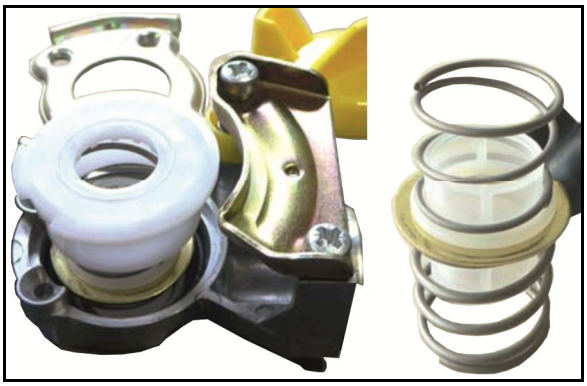


The unit is under spring tension.

4. Remove the rubber seal.

5.Clean and grease the sealing surfaces, O-ring, and compressed air line filter.

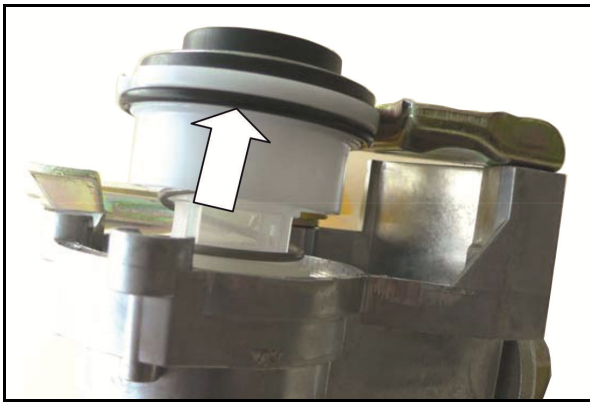
→ Replace the rubber seal if necessary.



Correctly position the O-ring on the plastic ring.

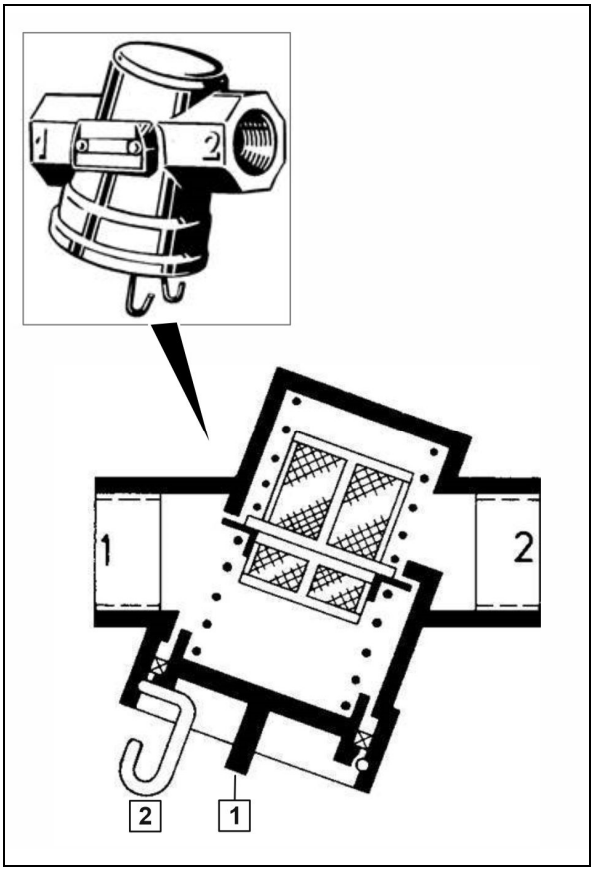
6. Mount in the reverse sequence.

- Bolt tightening torque (1): 2.5 Nm
- Bolt tightening torque (2): 7 Nm



12.5.3 Cleaning the compressed air line filter in the brake line

1. Press in the cap (1).
2. Take out the circlip (2).
3. Take out cap and compressed air line filter with 2 springs.
4. Clean or replace the compressed air line filter.
5. Grease the sealing ring.
6. Mount in the reverse sequence.



12.6 Parking brake

On new machines, the brake cables of the parking brake may stretch.

Readjust the parking brake,

- if three quarters of the spindle tensioning distance is required to firmly apply the parking brake.
- if you have just fitted new brake pads.

Adjusting the parking brake

When the parking brake is off, the brake cable must be slightly slack. However, the brake cable must not rest or chafe against other parts of the vehicle.

1. Release the cable clamps.
2. Shorten the brake cable as appropriate and retighten the cable clamps.
3. Check for the correct braking effect from the parking brake when applied.

12.7 Hydraulic brakes

Check of the hydraulic brake

- Check all brake hoses for wear
- Check all bolted connections for tightness
- Replace any worn or damaged parts.

Venting the hydraulic 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.

1. Slightly loosen the vent valve.
2. Actuate the tractor brake.
3. Close the vent valve as soon as oil escapes.

→ Collect the escaping oil.

4. Perform a brake check.

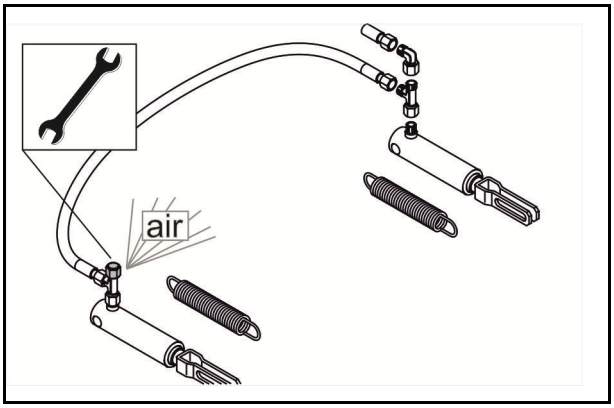


Fig. 143

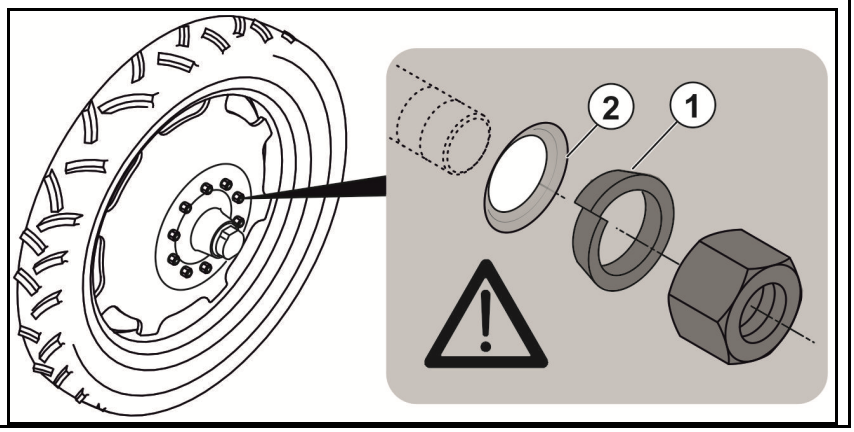
12.8 Tyres / wheels

- **Required tightening torque for wheel nuts or bolts:**
  332 ft-lb / 450 Nm

To assemble the wheels, use:

(1) conical rings in front of the wheel nuts.

(2) only rims with a fitting countersink for the conical ring.



- Regularly check the
  - wheel nuts for firm seating.
  - tyre pressure.
- Only use the tyres and wheels which we have specified.
- Repair work on tyres must only be carried out by specialists using suitable assembly tools.
- Tyre fitting requires sufficient skills and proper assembly tools.
- Use the jack only at the jacking points indicated.

12.8.1 Fitting tyres (workshop work)

- 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.

Fitting tyres:

To jack up the machine for tyre changes, place the jack at the jacking point indicated (Fig. 145/1).

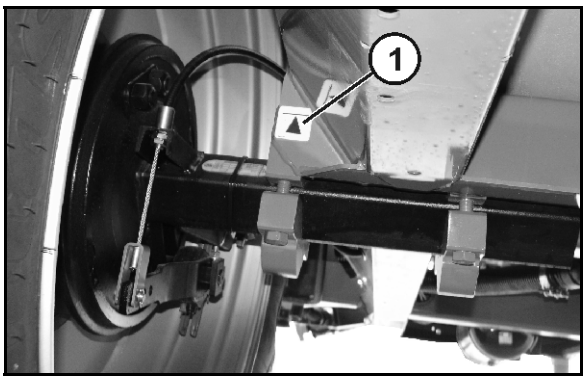


Fig. 144

12.9 Check the coupling device

DANGER!

- **Replace a damaged drawbar with a new one immediately - for road traffic safety reasons.**
- **Repairs may only be carried out by the manufacturer factory.**
- **For safety reasons, it is forbidden to weld on and drill holes in the drawbar.**

Check the coupling device (drawbar, lower link traverse, ball coupling, drawbar eye) for the following:

- damage, deformation, cracks
- wear
- tight fit of the fastening bolts

Coupling device		Wear dimension		Fixing bolts	Number	Tightening torque	
Lower link traverse	Cat. 3	1,36 in	34.5 mm	M20 8.8	8	302 ft-lb	410 Nm
	Cat. 4:	1,89 in	48.0 mm				
	Cat. 5:	2,20 in	56.0 mm				
Ball coupling							
K80 (LI009)		3,23 in	82 mm	M16 10.9	8	221 ft-lb	300 Nm
K80 (LI040)		3,23 in	82 mm	M20 10.9	8	302 ft-lb	560 Nm
K80 (LI015)		3,23 in	82 mm	M20 10.9	12	413 ft-lb	560 Nm
Drawbar eye							
D35 (LI038)		1,65 in	42 mm	M16 12.9	6	251 ft-lb	340 Nm
D40 (LI017)		1,63 in	41.5 mm	M16 10.9	6	221 ft-lb	300 Nm
D40 (LI006)		1,67 in	42.5 mm	M20 8.8	8	291 ft-lb	395 Nm
D46(LI034)		1,89 in	48 mm	M20 10.9	12	406 ft-lb	550 Nm
D50 (LI037)		2,36 in	60 mm	M16 12.9	4	251 ft-lb	340 Nm
D50 (LI010)		2,02 in	51.5 mm	M16 10.9	8	221 ft-lb	300 Nm
D50 (LI059)		2,02 in	51.5 mm	M20 10.9	4	413 ft-lb	560 Nm
D50 (LI011)		2,02 in	51.5 mm	M20 8.8	8	302 ft-lb	410 Nm
D50 LI060)		2,07 in	52.5 mm	M20 10.9	8	413 ft-lb	560 Nm
D51 (LI039)		2,09 in	53 mm	M20 10.9	12	443 ft-lb	600 Nm
D51 (LI069)		2,09 in	53 mm	M16 10.9	6	214 ft-lb	290 Nm
D58 (LI031)		2,36 in	60 mm	M20 10.9	12	406 ft-lb	550 Nm
D62 (LI007)		2,50 in	63.5 mm	M20 10.9	8	435 ft-lb	590 Nm
D79 (LI021)		3,19 in	81 mm	M20 10.9	12	406 ft-lb	550 Nm

12.10 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 the 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 lines if they are damaged or worn. Only use AMAZONE original 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.

12.10.1 Labelling hydraulic hose lines

Valve chest identification provides the following information:

Fig. 147/...

(1) Manufacturer's marking on the hydraulic hose line (A1HF)

(2) Date of manufacture of hydraulic hose line (04 / 02 = year / month = February 2004)

(3) Maximum approved operating pressure (3045 psi / 210 bar).

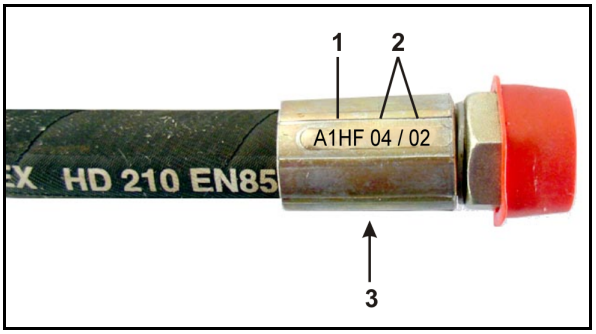


Fig. 145

12.10.2 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.

12.10.3 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.
- 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".

Common causes for leaking hoses / pipes and connection pieces include:

- missing O-rings or seals
- damaged or badly fitting O-rings
- brittle or deformed O-rings or seals
- foreign bodies
- badly fitting hose clips

12.10.4 Installation and removal of hydraulic hose lines

Use

- only genuine AMAZONE replacement hoses. These hoses stand up to chemical, mechanical and thermal loads.
- hose clips made from V2A for fitting hoses, as a rule.

When installing and removing hydraulic hose lines, always observe the following information:

- Ensure cleanliness.• Always install the hydraulic hose lines to ensure the following in all operating positions
  - o There is no tension, apart from the hose's own weight.
  - o There is no possibility of jolting on short lengths.
  - o External 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.
  - o 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 overtensioned.
- 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.

12.10.5 Fluid filter

- Oil filter for Profi-folding

Hydraulic fluid filter (Fig. 148/1) with contamination indicator (Fig. 148/2).

- Green Filter is working
- Red Replace filter

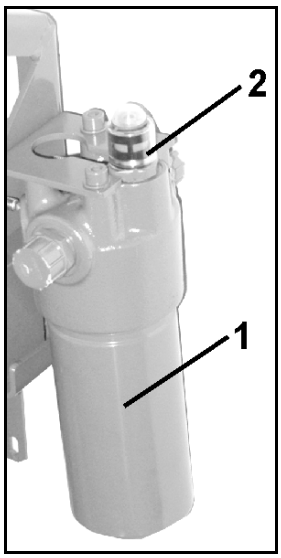


Fig. 146

Checking the oil filter for contamination

The hydraulic oil must have reached operating temperature.

1. Press in the contamination indicator.
2. Continue working with the implement.
3. Observe the contamination indicator.

Replacing the oil filter

To remove the filter, twist off the filter cover and remove the filter.

CAUTION

Beforehand, depressurise the hydraulic system.

Otherwise there is a risk of injury from hydraulic fluid escaping at high pressure.

After replacing the filter, press the contamination indicator back into place.

→ Green ring again visible.

12.10.6 Cleaning the solenoid valves

- hydraulic block for Profi-folding

To eliminate impurities from the solenoid valves, they must be flushed through. This may be necessary if deposit prevent the slider fully opening or closing.

1. Unscrew the magnetic cap (Fig. 149/1) abschrauben.
2. Remove the solenoid (Fig. 149/2) abnehmen.
3. Unscrew the valve rod (Fig. 149/3) with valve seats and clean with compressed air or hydraulic fluid

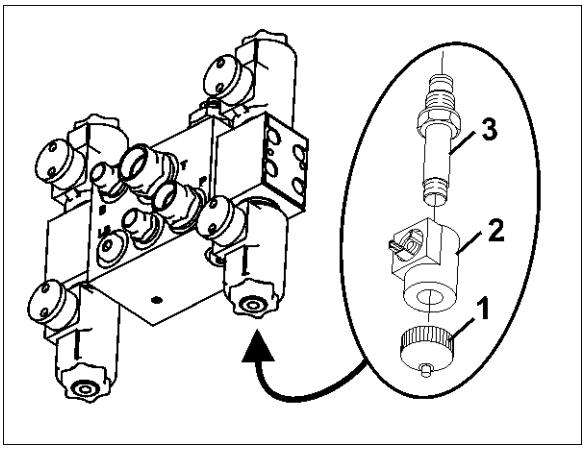


Fig. 147

CAUTION

Beforehand, depressurise the hydraulic system.

Otherwise there is a risk of injury from hydraulic fluid escaping at high pressure.

12.10.7 Clean / exchange the filter in the hydraulic plug

Not with Profi-folding.

The hydraulic plugs are equipped with a filter (Fig. 147/1) that may block and then have to be cleaned / exchanged.

This is the case when the hydraulic functions run slower.

1. Unscrew the hydraulic plug from the filter housing.
2. Remove the filter with compression spring.
3. Clean / exchange the filter.
4. Re-fit the filter and compression spring correctly.
5. Screw back on the hydraulic plug. In doing so, observe the correct seating of the O-ring seal.

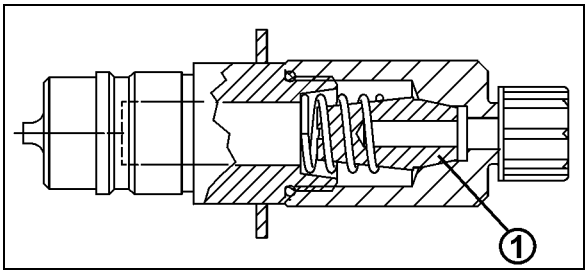


Fig. 148

CAUTION

Danger of injuries from escaping hydraulic oil at high pressure!

Work on the hydraulic system only in a depressurized state.

12.10.8 Hydro-pneumatic pressure reservoir

WARNING
Risk of injury when working on the hydraulic system with pressure reservoir.

Work on the hydraulic block and hydraulic hoses with the pressure reservoir connected may only be performed by specialist personnel.

12.10.9 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.

Folding via the tractor control unit

Fig. 151/…

(1) Hydraulic throttle valve - Height adjustment.

(2) Hydraulic throttle valve - Fold in the left boom extension.

(3) Hydraulic throttle valve - Fold in the right boom extension.

(4) Hydraulic throttle valve - Lock and unlock the swing compensation.

Fig. 152/…

(5) Hydraulic throttle valve - Fold out the boom extension.

(6) Hydraulic throttle valve - Fold in the boom extension.

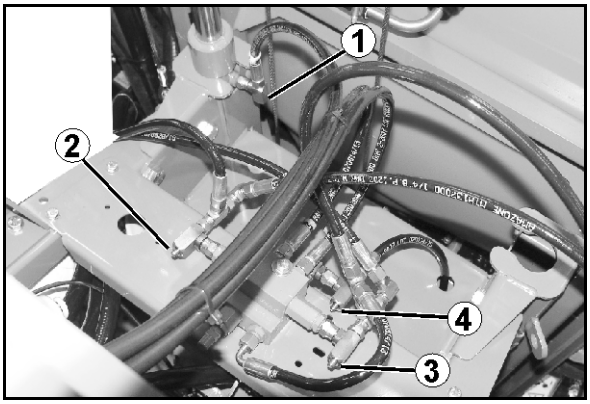


Fig. 149

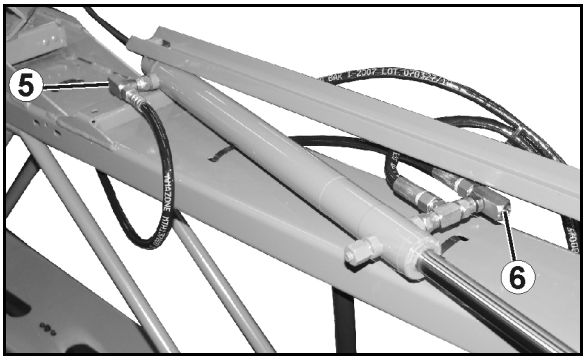


Fig. 150

Profi-folding I

Fig. 153/...

(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.

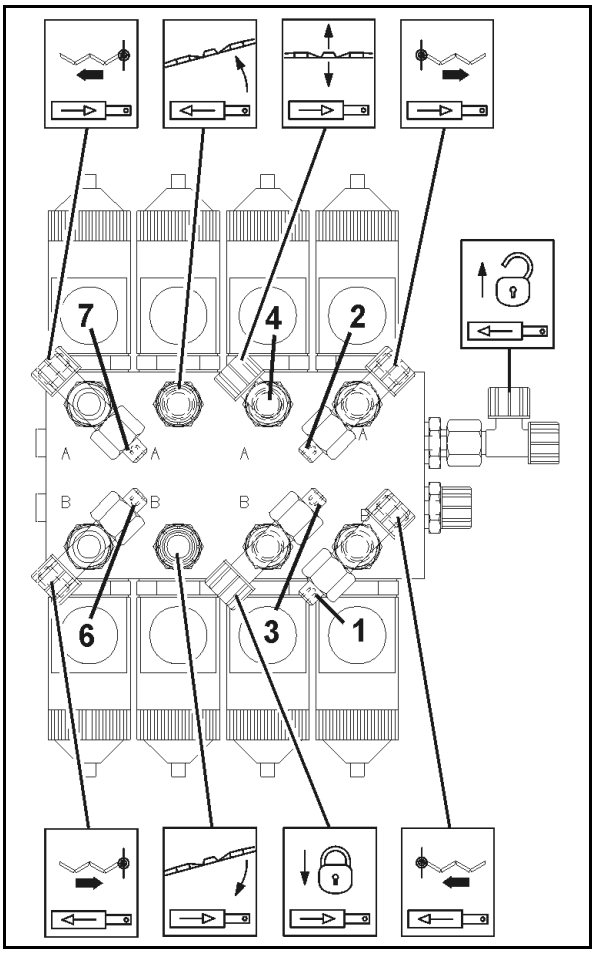


Fig. 151

Profi-folding II

Fig. 154/...

(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.

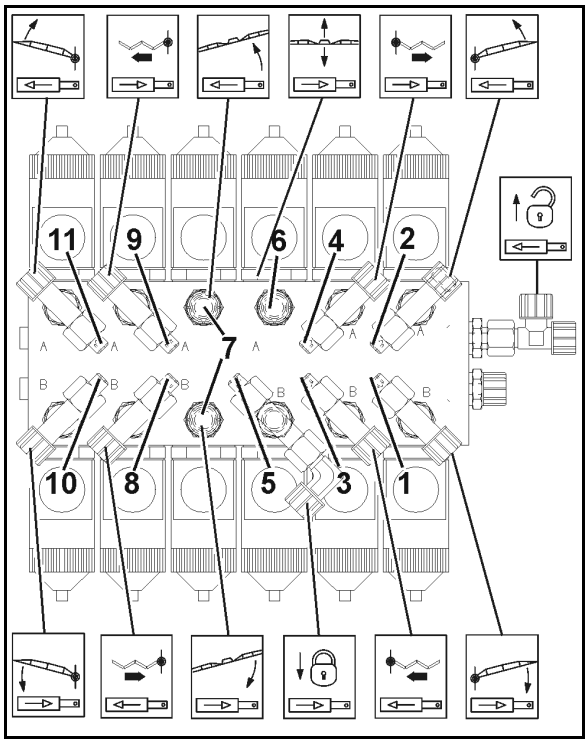


Fig. 152

12.11 Adjustments on the folded-out sprayer boom

Alignment parallel to the ground

With the sprayer boom folded out and correctly set, all the spraying nozzles must be of the same parallel distance to the ground.

If this is not the case, with the swing compensation **unlocked** align the folded-out sprayer boom by means of counterweights (Fig. 155/1). Secure the counterweights to the boom extension accordingly.

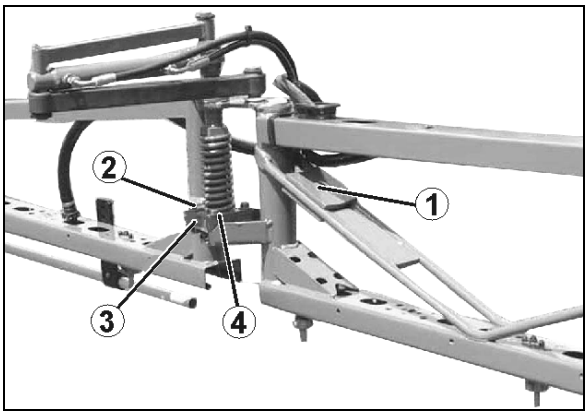


Fig. 153

Horizontal alignment

Viewed in the direction of travel, all boom sections of the sprayer boom must be flush in line. Horizontal alignment may be necessary

- after a long period of use
- or in the event of rough contact between the ground and the sprayer boom.

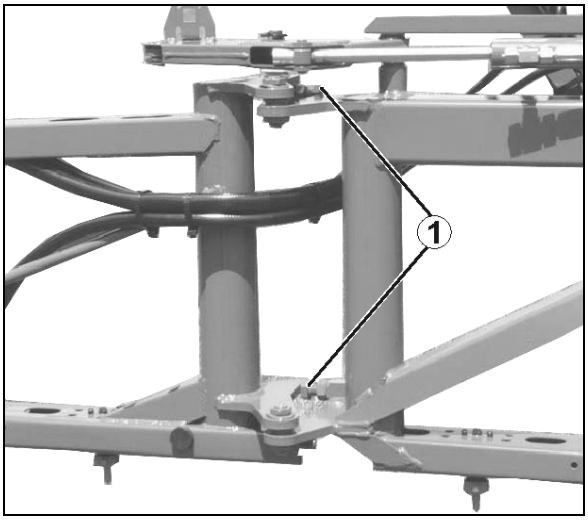


Fig. 154

Inner boom section

1. Release the lock nut of the adjusting screw (Fig. 156/1).
2. Turn the adjusting screw against the stops until the inner boom is flush with the sprayer boom middle section.
3. Tighten the lock nut.

Outer boom section

1. Release the screws (Fig. 155/2) of the securing link (Fig. 155/3). The boom is aligned directly at the plastic catch (Fig. 155/4) through the slotted holes of the securing link.
2. Align the boom section.
3. Tighten the screws (Fig. 155/2).

12.12 Pump

WARNING

Risks due to accidental contact with spray liquid!

Clean the implement with flushing water before you remove the spraying pump or other components that come into contact with spray agent or spray liquid.

12.12.1 Check the oil level

- Only use 20W30 branded oil or 15W40 multi purpose oil.
- Ensure the correct oil level. Damage may be caused both by the oil level being too low or too high.
- The read-off oil level can be averaged from the non-horizontal orientation of the pump in the hitch drawbar.
- Foam generation and cloudy oil are signs of a faulty pump membrane.

  Do not run a defective pump.

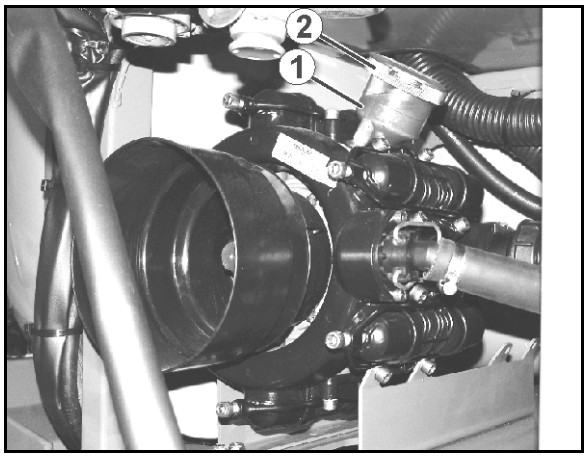


Fig. 155

1. Check whether the oil level is visible at the mark (Fig. 157/1) with the pump not running and standing on a flat surface.
2. Check whether the oil is clear.
3. If the oil level is not visible at the mark (Fig. 157/1), remove the lid (Fig. 157/2) and top up with oil.

12.12.2 Changing the oil

1. Remove the pump.
2. Take off the cover.
3. Drain the oil.
   - 3.1 Turn the pump upside down.
   - 3.2 Turn the drive shaft by hand until the spent oil has completely flowed out.

     The option also exists to drain the oil via the drain plug. However, with this procedure, a slight oil residue remains in the pump; we therefore recommend the first procedure.
4. Place the pump on a level surface.
5. Turn the drive shaft alternately right and left and slowly fill with new oil.
6. Mount the pump.
7. Briefly drive the pump.
8. Pour in the remaining quantity of oil for the sight glass, until oil is visible at the mark.

12.12.3 Check and replace suction and pressure valves (workshop work)

- Pay attention to the respective installation positions of the valves on the suction and pressure sides before removing the valve groups (Fig. 158/5).
- When reassembling, ensure that the valve guide (Fig. 158/9) is not damaged. Damage may cause the valves to jam.
- Always tighten the nuts (Fig. 158/1,2) in a crosswise fashion using the specified torque. Improper tightening of the screws causes warping, which results in leaks.

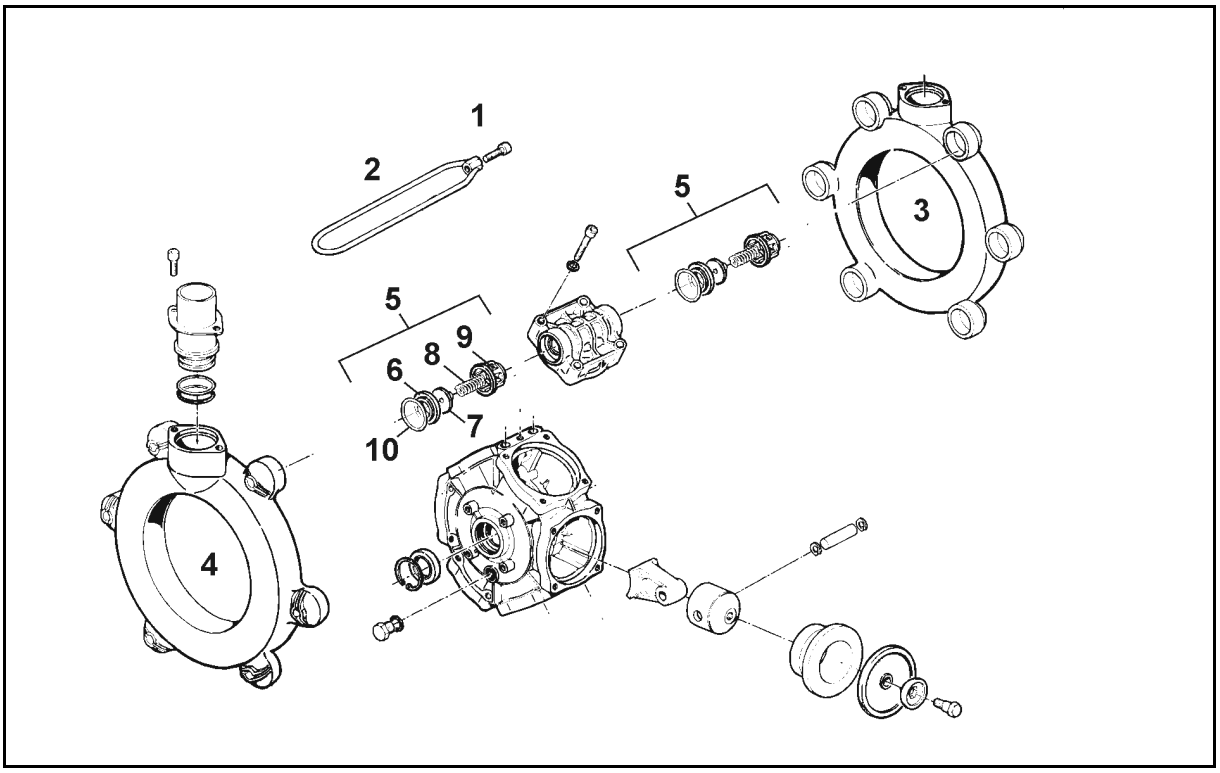


Fig. 156

1. Remove the pump.
2. Release the screws (Fig. 158/1) and remove the tensioning clamp (Fig. 158/2).
3. Remove the suction and pressure ports (Fig. 158/3 and Fig. 158/4).
4. Remove the valve groups (Fig. 158/5).
5. Check the valve seat (Fig. 158/6), valve (Fig. 158/7), valve spring (Fig. 158/8) and valve guide (Fig. 158/9) for damage or wear.
6. Remove the O-ring (Fig. 158/10).
7. Replace defective parts.
8. After testing and cleaning, fit the valve groups (Fig. 158/5).
9. Fit new O-rings (Fig. 158/10).
10. Mount the suction (Fig. 158/3) and pressure ports (Fig. 158/4) on the pump housing and fit the tensioning clamp (Fig. 158/2).
11. Tighten the screws (Fig. 158/1) crosswise to **11 Nm** torque

12.12.4 Checking and replacing piston diaphragms (workshop work)

- At least once a year, check that the piston diaphragm (Fig. 159/8) is in perfect condition by removing it.
- Pay attention to the respective installation positions of the valves on the suction and pressure sides before removing the valve groups (Fig. 159/5).
- 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 (Fig. 159/8), even if only one piston diaphragm distorted, punctured or porous.

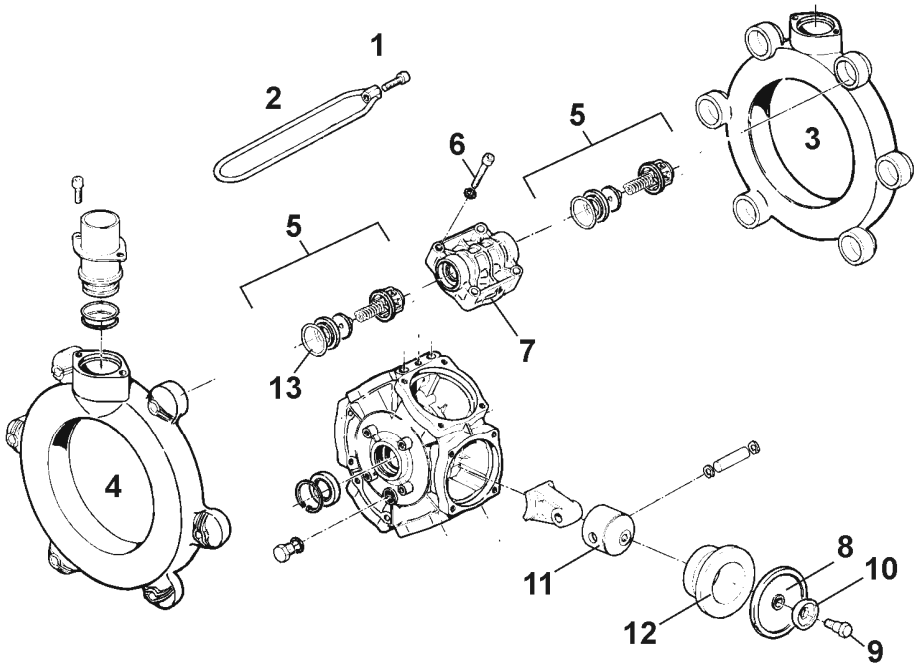


Fig. 157

Checking the piston diaphragm

1. Remove the pump.
2. Release the screws (Fig. 159/1) and remove the tensioning clamp (Fig. 159/2).
3. Remove the suction and pressure ports (Fig. 159/3, Fig. 159/4) including the valve groups (Fig. 159/5).

Pay attention to the installation position of the valves on the suction and pressure sides!

4. After removing the screws (Fig. 159/6), remove the cylinder head (Fig. 159/7).
5. Check the piston diaphragm (Fig. 159/8).

Replacing the piston diaphragm

- Ensure the correct position for the recesses and/or holes on the hydraulic cylinders.
- Secure the piston diaphragm (Fig. 159/8) with a washer disc and a screw (Fig. 159/11) on the piston (Fig. 159/9), so that the rim shows on the cylinder head side (Fig. 159/7).
- Always tighten the nuts (Fig. 159/1,2) in a crosswise fashion using the specified torque. Improper tightening of the screws causes warping, which results in leaks.

1. Undo the screw (Fig. 159/11) and remove the piston diaphragm (Fig. 159/8) and the washer disc from the piston (Fig. 159/9).
2. If the piston diaphragm has been punctured, drain the oil/spray liquid mixture from the pump housing.
3. Remove the hydraulic cylinder (Fig. 159/10) from the pump housing.
4. Clean the pump housing by flushing it thoroughly with diesel oil or paraffin.
5. Clean all sealing faces.
6. Insert the cylinder (Fig. 159/10) back into the pump housing.
7. Fit the piston diaphragm (Fig. 159/8).
8. Mount the cylinder head (Fig. 159/7) on the pump housing and tighten the screws (Fig. 159/6) an equal amount in a crosswise fashion.

   Use adhesive for medium tight screw connections for the screw connection!
9. After testing and cleaning, fit the valve groups (Fig. 159/5).
10. Insert new O-rings.
11. Mount the suction (Fig. 159/3) and pressure port (Fig. 159/4) on the pump housing.
12. Tighten the nuts (Fig. 159/1,2) in a crosswise fashion using a torque of **11 Nm**.

12.13 Calibrate the flow meter

For this purpose, observe the operating manual Software ISOBUS chapter "Pulses per litre".

12.14 Eliminating limescale in the system

Indications that there may be lime deposits:

- The nozzle body does not open or close.
- Error messages on the control terminal

To eliminate limescale, use special acidification agents (e.g. PH FIX 5 from Sudau Agro).

DANGER
Health risk due to contact with acidification agents.

Observe the instructions for use on the packaging!

1. Completely clean the empty sprayer.
2. Fill 20 to 50 litres of flushing water into the spray liquid tank.
3. Start the spraying pump.
4. Pour the acidification agent (3 l) into the spray liquid tank through the inspection hatch.
5. Allow the mixture to circulate in the spray line for 10-15 minutes.
6. Stop the pump drive and then allow the mixture to rest for 5 minutes.
7. Dilute the mixture with fresh water until the colour changes to yellow.

→ (pH 7 – yellow, pH 6 – orange, < pH 5 – pink)

8. AmaSelect:  Without pump drive, use the manual nozzle selection to switch through all nozzle positions.

→ The diluted mixture is harmless and can be used to prepare the spray liquid.

Basic information about water hardness and pH-value

Especially for treatments with trace elements and fertiliser additions, attention must be paid to the water hardness and the pH-value to ensure clean surfaces and smooth functioning of all valves.

At a water hardness greater than 15° dH (German water hardness), we recommend the use of polyphosphate-based hardness stabilisers. When complying with the manufacturer specifications, the products are safe for health and the environment.

Product example: Folmar P30 from Aquakorin.

Particularly with crop protection product mixtures with trace elements such as boron, which increase the pH-value, the pH-value of the ready-to-use spray liquid should be kept below </= 7.

Product example:

- Citric acid
- Acidifying agents, such as:
  - pH-Fix from Sudau
  - Spray Plus from Belchim Crop Protection
  - X-Change from De Sangosse

Commercial sprayer cleaning agents are strongly alkaline and therefore neutralise crop protection product residues such as sulphonylurea in the sprayer. In case of limescale in the implement, however, they increase the pH-value and are therefore counterproductive for descaling.

12.15 Field sprayer calibration

Test the field sprayer by carrying out calibration

- **before the start of the season.**
- **each time a nozzle is changed.**
- **to check the setting information in the spray tables.**
- **in the case of deviations between the actual and required spray rate [l/ha].**

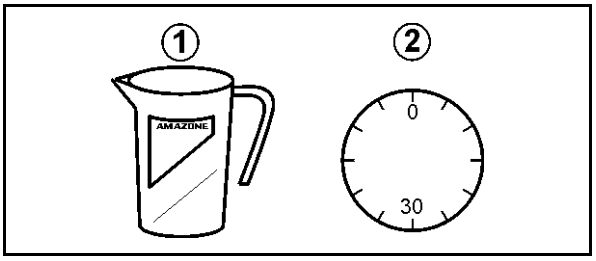
Any deviations between the actual and required spray rate [l/ha] may be caused by:

- the difference between the actual operational speed and that indicated on the tractor meter and/or
- natural wear to the spraying nozzles.

Calibration equipment:

(1) Quick-check beaker

(2) Stopwatch



Determining the actual spray rate while stationary via the individual nozzle output

Determine the nozzle output from at least 3 different nozzles. To do this, check one nozzle on the left boom, one on the right boom and one in the middle of the sprayer boom as described below.

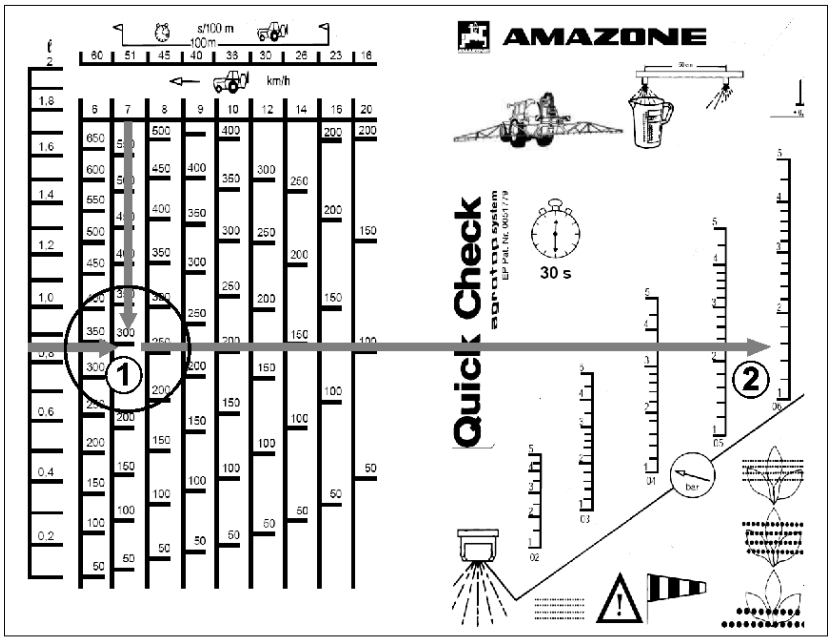
1. Determine the precise spray rate [l/ha] required for the crop protection measure.
2. Determine the required spray pressure.
3. Control terminal / AMASPRAY+:
   - 3.1 Enter the required spray rate into the operating terminal.
   - 3.2 Enter the permissible spray pressure range for the spraying nozzles fitted to the sprayer boom on the operating terminal.
   - 3.3 Switch the operating terminal from AUTOMATIC mode over to the MANUAL mode.
4. Fill the spray liquid tank with water.
5. Switch on the agitator.
6. Manually set the required spray pressure.
7. Switch on spraying and check that all nozzles are functioning perfectly.
8. Calculate the individual nozzle output [l/min] at several nozzles.
   To do so, hold the quick-check beaker under a nozzle for precisely 30 seconds.
9. Switch off spraying.
10. Calculate the average individual nozzle output [l/ha].

- Using the table on the quick-check beaker.
- By calculation.
- Using the spray table.

Example:

Nozzle size	'06'
Intended operational speed	7 km/h
Nozzle output on the left boom:	0.85 l/30s
Nozzle output in the centre	0.84 l/30s
Nozzle output on the right boom:	0.86 l/30s
Calculated average value:	**0.85 l/30s → 1.7 l/min**

1. Calculate the individual nozzle output [l/ha] using the quick-check beaker



(1) →calculated spread rate 290 l/ha
(2) →calculated spray pressure 1.6 bar

2. Calculate individual nozzle output [l/ha]

$$\frac{\text{d [l/min]} \times 1200}{\text{e [km/h]}} = \text{Spread rate[l/ha]}$$

- d: Nozzle output (calculated average value) [l/min]
- e: Operational speed [km/h]

$$\frac{1.7 \text{ [l/min]} \times 1200}{7 \text{ [km/h]}} = 291 \text{ [l/ha]}$$

3. Read the individual nozzle output [l/ha] from the spray table

From the spray table (see page 246**):**

→ Spread rate 291 l/ha
→ Spray pressure 1.6 bar

If the calculated values for spread rate/spray pressure do not agree with the set values:

- Calibrate the flow meter (see the operating manual for the operator control terminal)
- Check all nozzles for wear and blockages.

12.16 Hose filters

- Clean the line filter (Fig. 161/1).
- Replace defective filter inserts.

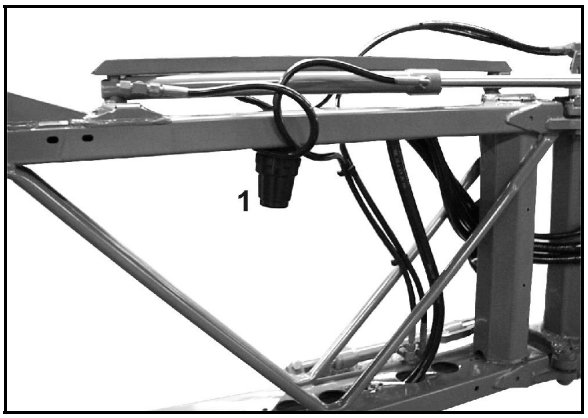


Fig. 158

12.17 Instructions on testing the field sprayer

- Only authorised centres are permitted to carry out spray tests.
- According to law, a spray test must be carried out:
  - 6 months after commissioning (if not performed at time of purchase) at the latest, then
  - every two years thereafter.

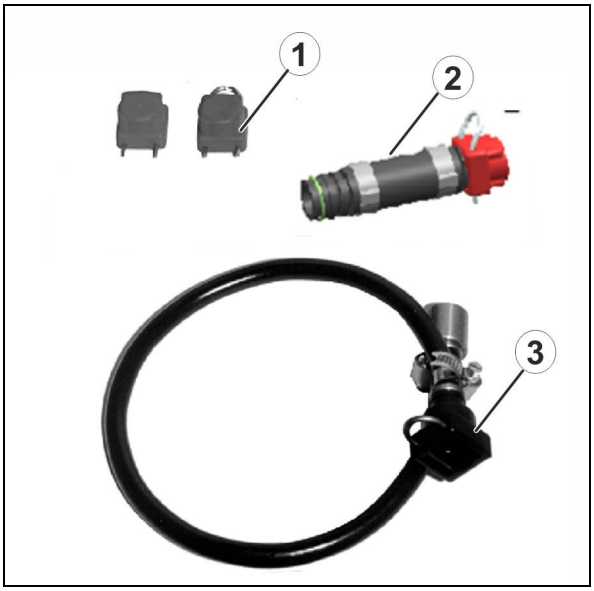
Field sprayer test set (optional), order no.: 114586

Pressure gauge test

(1) Push-on cap (order no.: 913954) and connector (order no.: ZF195)

(2) Blind hose (order no.: 116059)

(3) Pressure gauge connection (order no.: 7107000)

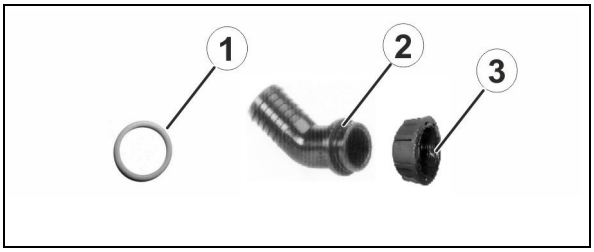


Flow meter test

(1) O-ring (order no.: FC122)

(2) Hose connection (order no.: GE095)

(3) Union nut (order no.: GE021)



Pump test

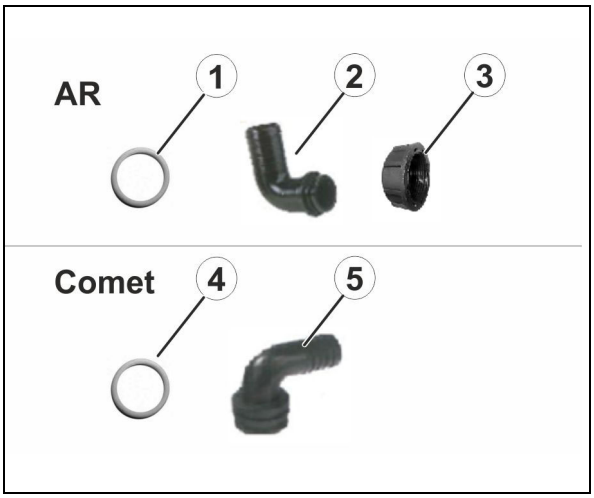
(1) O-ring (order no.: FC149)

(2) Hose connection (order no.: GE052)

(3) Union nut (order no.:GE022)

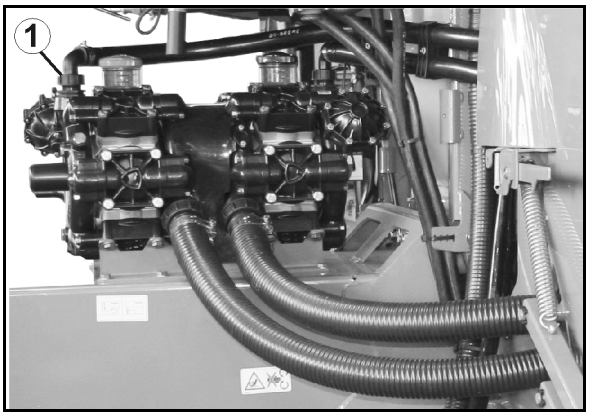
(4) O-ring (order no.: FC468)

(5) Hose connection (order no.: ZF1395)



Pump test - testing pump performance (delivery capacity, pressure)

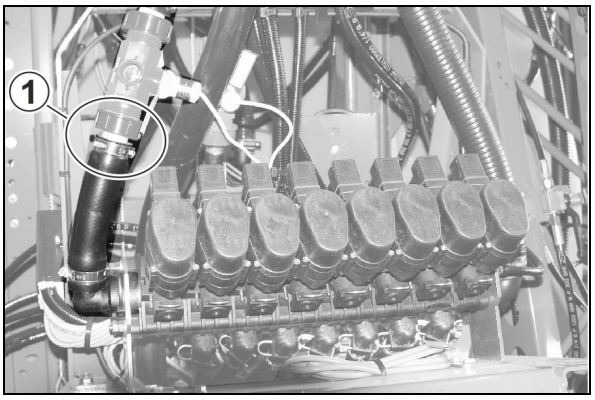
1. Loosen the union nut (1).
2. Put on the hose connection.
3. Tighten the union nut.



Flow meter test

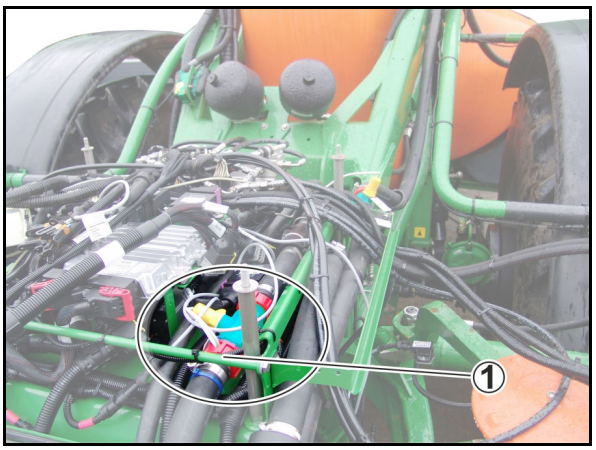
and boom part width section chest

1. Loosen the union nut (1) behind the flow meter.
2. Fasten the plug-in socket (order no. 919345) with the union nut and connect it to the testing device.
3. Switch on spraying.



DUS pro single nozzle control

1. Loosen the union nut (1) behind the flow meter.
2. Fasten the plug-in socket (order no. 919345) with the union nut and connect it to the testing device.
3. Switch on spraying.



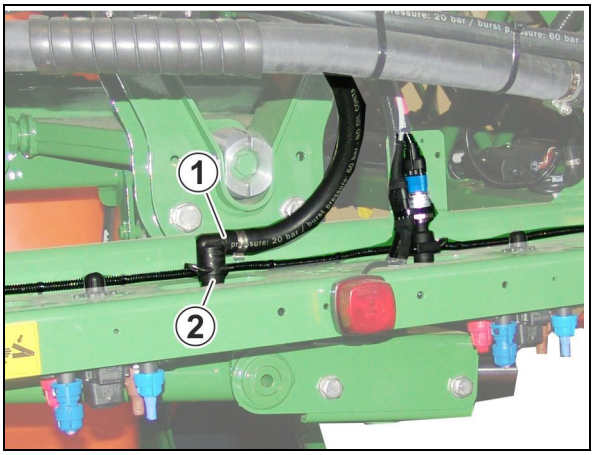
Pressure gauge test

and boom part width section chest

1. Remove one spray line from a part-width section valve and seal it with the blind hose (order no. 1166060).
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.
4. Switch on spraying

DUS pro single nozzle control

1. Disconnect the return line (1) beside the pressure sensor and seal it with the blind hose (order no. 1166060).
2. Connect the pressure gauge connection (order no. 7107000) to the spray line (2).
3. Screw the check gauge 1/4 of an inch into the inside thread.
4. Switch on spraying.

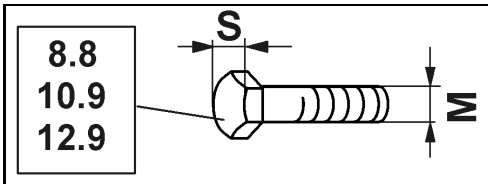


12.18 Electric lighting system

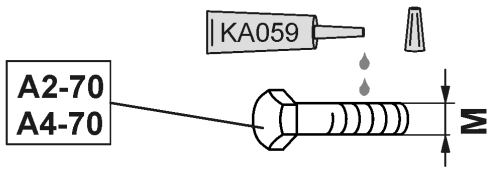
Replacement of light bulbs:

1. Unscrew the safety glass.
2. Remove the defective bulb.
3. Insert the replacement bulb (note the correct voltage and wattage).
4. Insert and screw on the sight glass.

12.19 Screw tightening torques



M	S	8.8		10.9		12.9	
		Ft-lb	Nm	Ft-lb	Nm	Ft-lb	Nm
M 8	13	18.5	25	25.8	35	30.2	41
M 8x1		19.9	27	28	38	30.2	41
M 10	16 (17)	36	49	51	69	61	61
M 10x1		38	52	54	73	65	65
M 12	18 (19)	63	86	89	120	107	107
M 12x1.5		66	90	92	125	111	111
M 14	22	100	135	140	190	170	170
M 14x1.5		111	150	155	210	184	184
M 16	24	155	210	221	300	262	262
M 16x1.5		166	225	232	315	280	280
M 18	27	214	290	299	405	358	358
M 18x1.5		240	325	339	460	406	406
M 20	30	302	410	428	580	509	509
M 20x1.5		339	460	472	640	568	568
M 22	32	406	550	575	780	686	686
M 22x1.5		450	610	634	860	774	774
M 24	36	524	710	738	1000	885	885
M 24x2		575	780	811	1100	959	959
M 27	41	774	1050	1106	1500	1328	1328
M 27x2		848	1150	1180	1600	1438	1438
M 30	46	1070	1450	1475	200	1770	1770
M 30x2		1180	1600	1660	2250	1991	1991



M		M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
	Ft-lb	1.8	3.6	6.2	15.2	30	52	82.6	128.3	178.5	252.2	346.7	434.4
	Nm	2.4	4.9	8.4	20.6	40.7	70.5	112	174	242	342	470	589

Coated screws have different tightening torques.Note special information for tightening torques in chapter Maintenance.

12.20 Disposing of the field sprayer

Carefully clean the whole field sprayer (inside and out) before disposing of the field sprayer.

The following components are eligible for energy recovery*: spray liquid tank, induction bowl, flushing water tank, fresh water tank, hoses and plastic fittings.

Metal parts can be scrapped.

Follow the statutory requirements for each individual material.

* Energy recovery

is the process of reclaiming the energy contained in plastics by burning them and using the energy released to generate electricity and/or steam or to supply process heat. Energy recovery is suitable for mixed and contaminated plastics, in particular for any plastics which have come into contact with pollutants.

13 Liquid circuit

(**SA**) Suction side switch tap

(**DA**) Pressure side switch tap

(**RW**) Setting tap for the agitator / draining the pressure filter

(**BE**) Filling / quick emptying switch tap

(**EB**) Induction bowl ring line / canister flushing switch tap

(**IJ**) Suction / induction switch tap

(**RU**) Setting tap for main agitator (UG Super)

(1) Spray liquid tank

(2) Flushing water tank

(3) Internal tank cleaning

(4) Agitator

(5) Hand-washing tank

(6) Tap for hand-washing tank

(7) Filling connection for suction hose

(8) Spray pressure control

(9) Suction filter

(10) Piston diaphragm pump

(11) Induction bowl

(12) Ring line

(13) Canister flushing

(14) Spray pressure limiting valve

(15) Self cleaning pressure filter

(16) Injector for extracting liquid from induction bowl

(17) Spray lines

(18) Return flow meter (for control terminal)

(19) Spray pressure sensor

(20) Part width section valves

(21) Flow meter

(22) External washing system

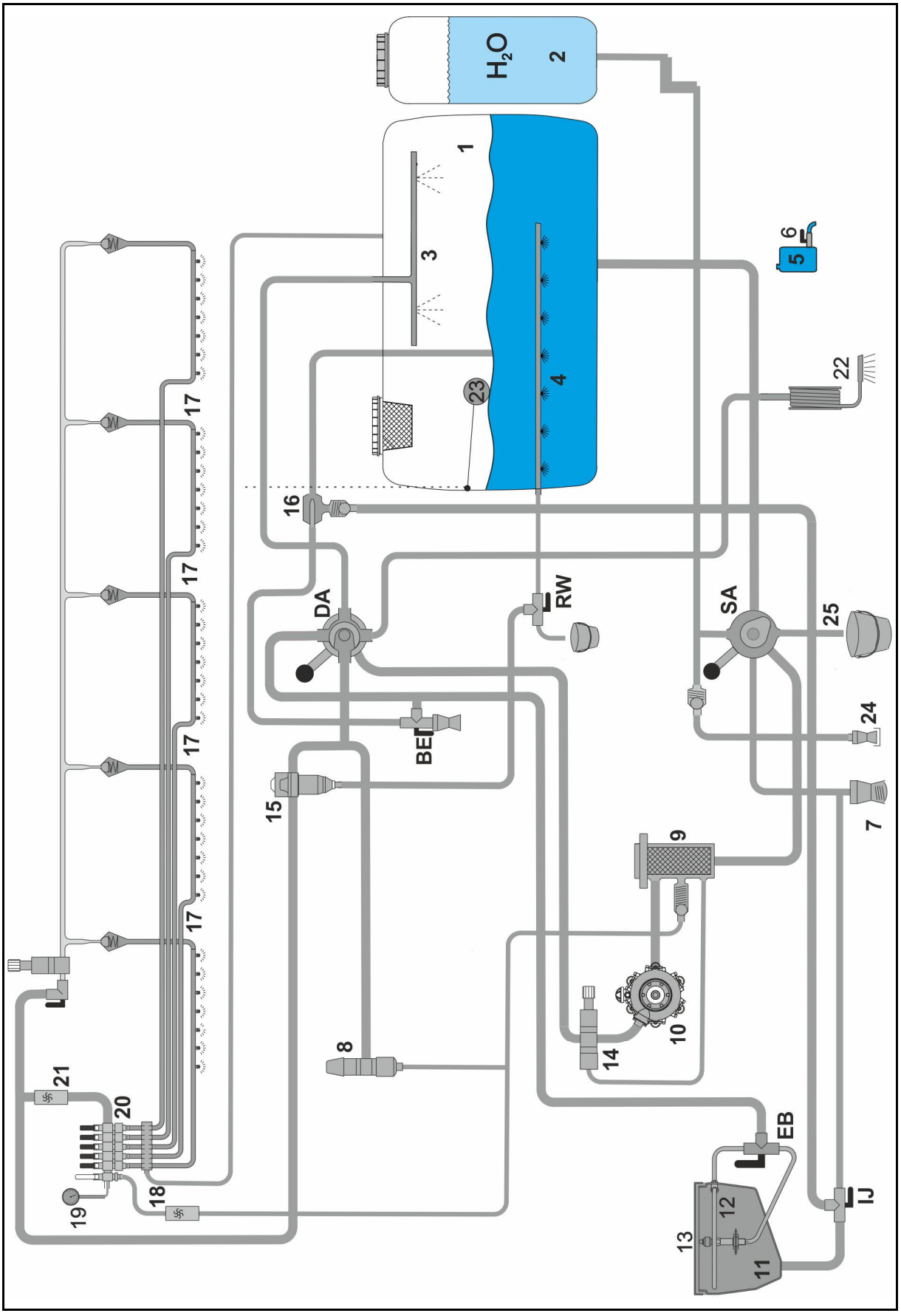
(23) Fill level gauge

(24) Flushing water filling coupling

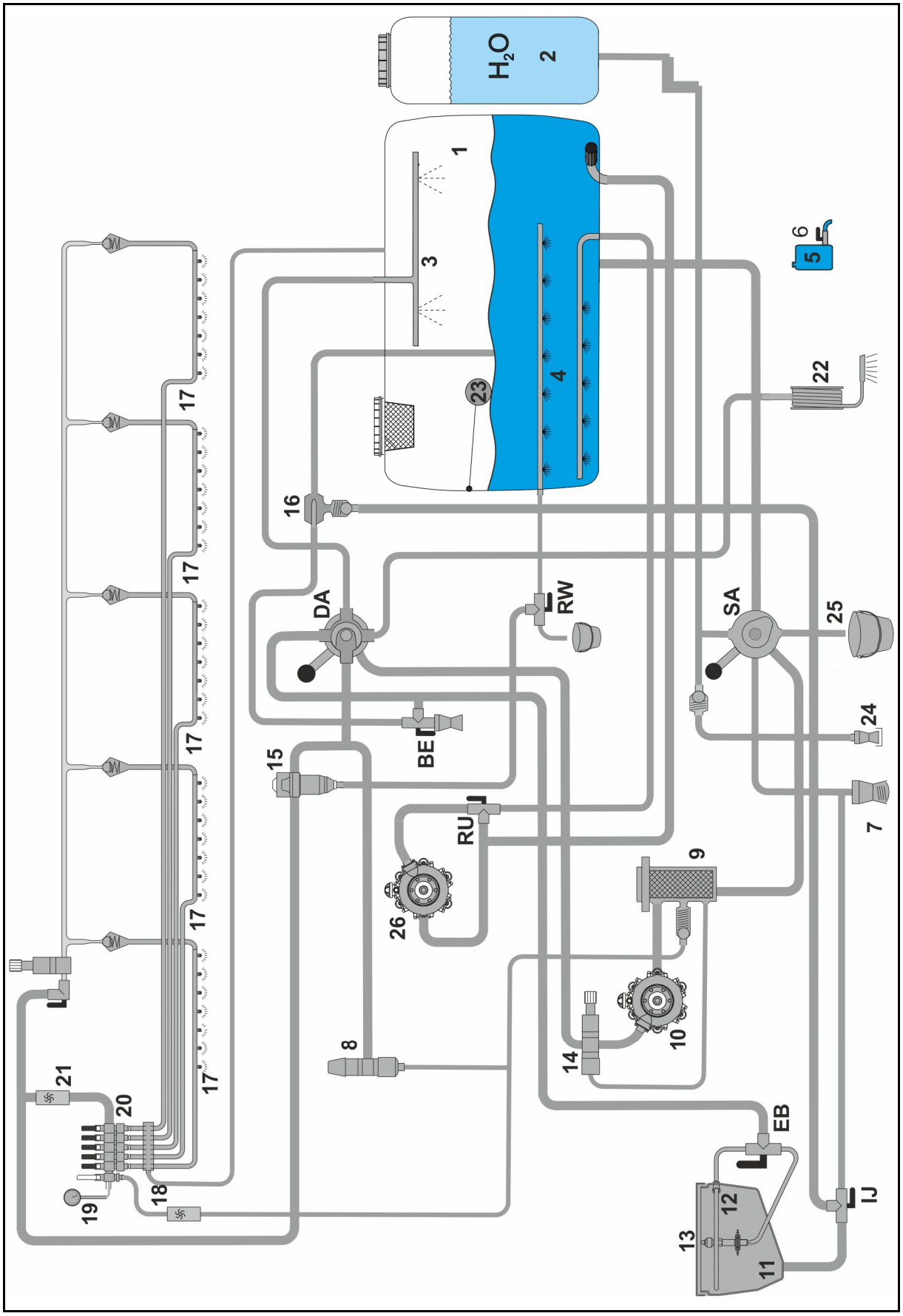
(25) Complete discharging

(26) Agitator pump (only UG Super)

13.1 UG Special



13.2 UG Super


H2O
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14 Spray table

14.1 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. 165 helps with the selection of the right nozzle type. The nozzle type is determined by
  - 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.
- Fig. 166 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			
		min. pressure		max. pressure	
		psi	bar	psi	bar
XRC	TeeJet	14,5	1	72,5	5
AD	Lechler	22	1,5	72,5	5
Air Mix	agrotop	14,5	1	87	6
IDK / IDKN	Lechler	14,5	1	87	6
IDKT		22	1,5	87	6
ID3 01 - 015		44	3	116	8
ID3 02 - 08		29	2	116	8
IDTA 120		14,5	1	116	8
AI	TeeJet	29	2	116	8
TTI		14,5	1	101,5	7
AVI Twin	agrotop	29	2	116	8
TD Hi Speed		29	2	145	10

For further information about the nozzle characteristics, see the nozzle manufacturer's website.

www.agrotop.com / www.lechler-agri.de / www.teejet.com

Selecting the nozzle type

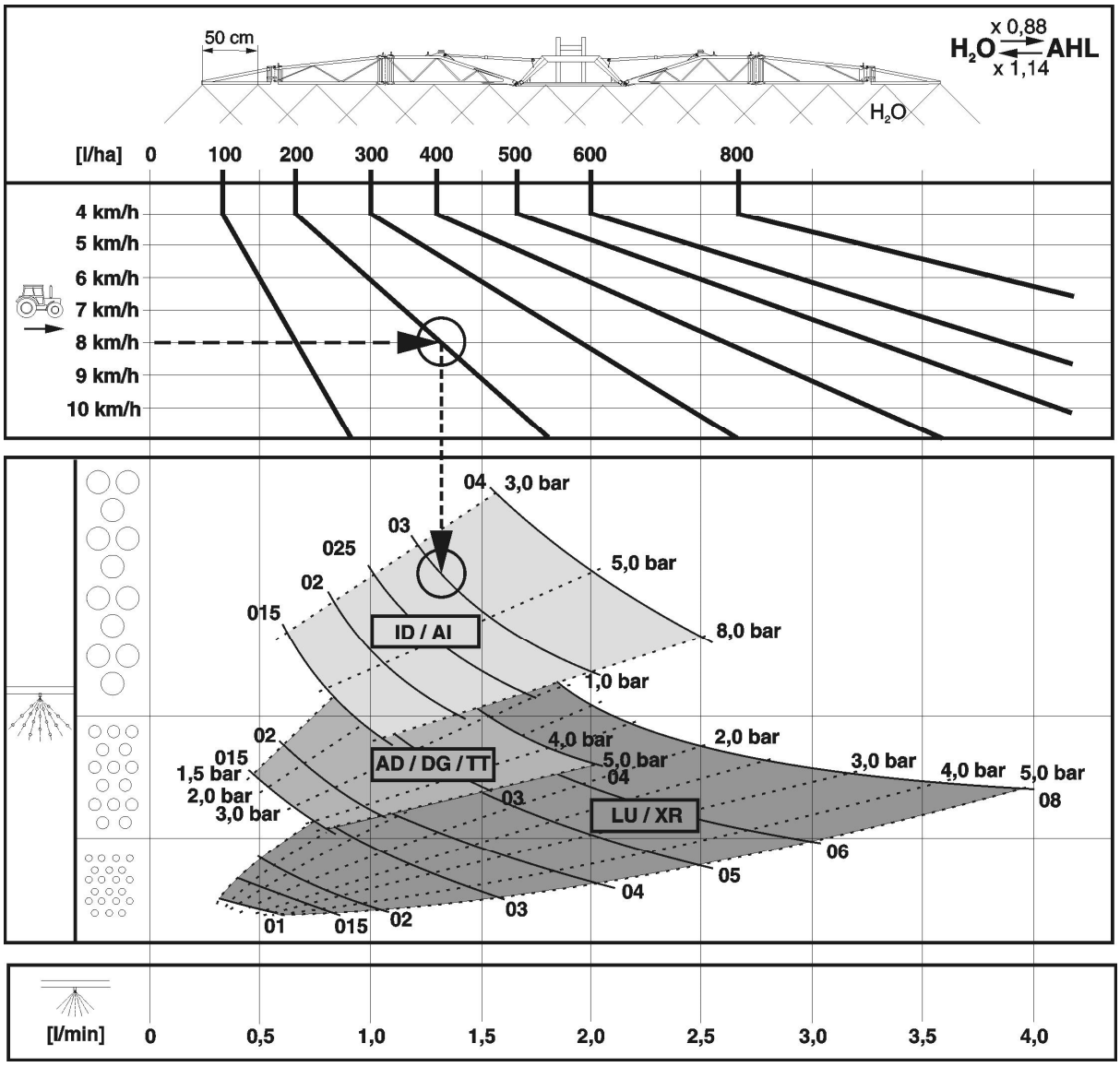

Fig. 159

Example:

Required spray rate:	**21 gal/ac**	**200 l/ha**
Intended operational speed:	**5 mph**	**8 km/h**
Required atomisation characteristic for the crop protection measure:	**coarse-dropped** (fine drifting)	
Required nozzle type:	?	
Required nozzle size:	?	
Required spray pressure:	? psi	? bar
Required individual nozzle output for calibrating the field sprayer:	? gal/ac	? 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 (**5 mph / 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. 166**).
5. In the column with the intended operational speed (**5 mph / 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, **20,8 gal/ac** / **195 l/ha**).
6. In the line with the required spray rate (**20,8 gal/ac / 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. **54 psi / 3.7 bar**).
   - o read the required individual nozzle output (**0,34 gpm/ 1.3 l/min**) for calibrating the field sprayer.

Required nozzle type:	**AI / ID**
Required nozzle size:	**'03'**
Required spray pressure:	**54 psi / 3.7 bar**
Required individual nozzle output for calibrating the field sprayer:	**0,34 gpm/ 1.3 l/min**

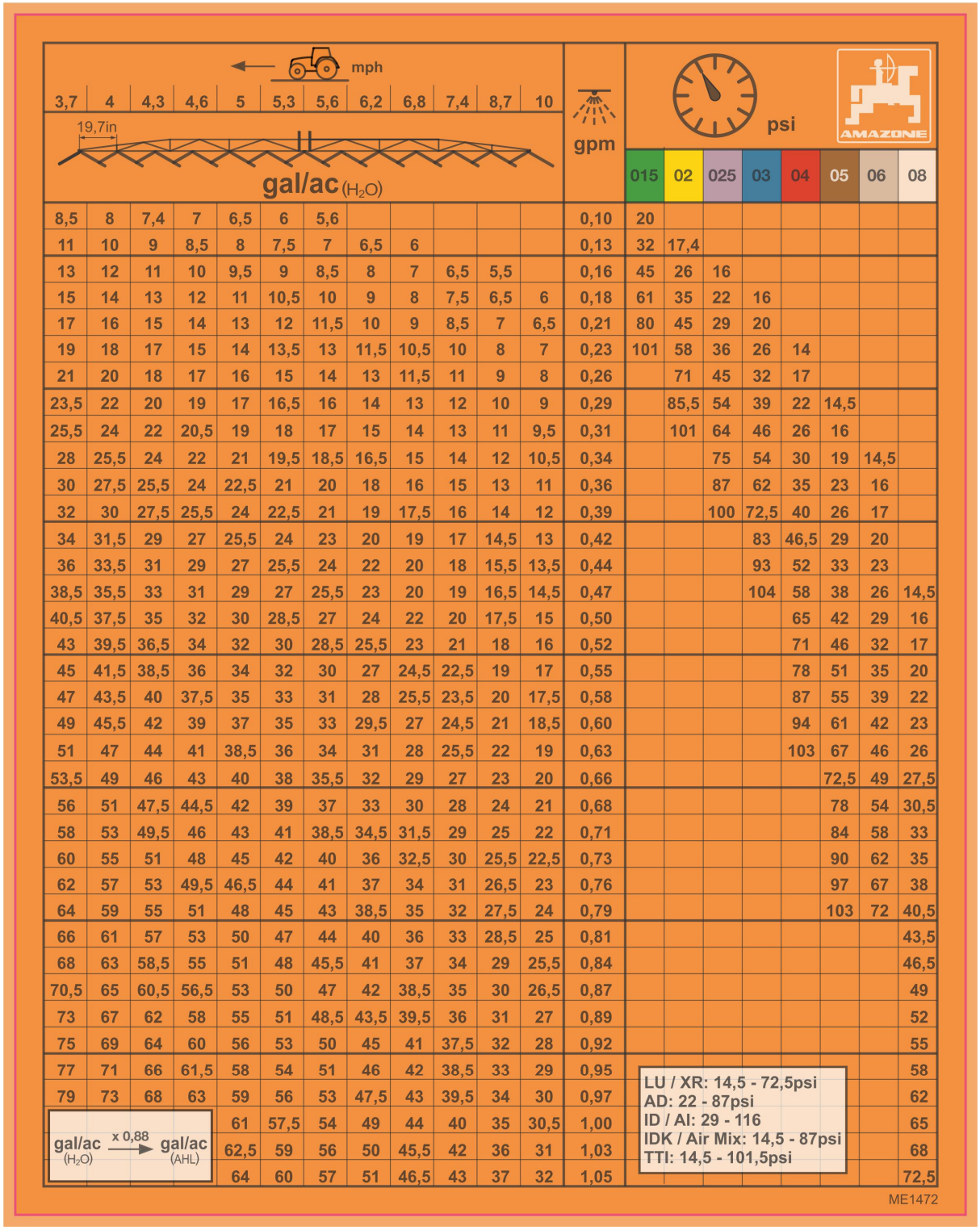
mph
3,7 4 4,3 4,6 5 5,3 5,6 6,2 6,8 7,4 8,7 10
19,7in
gal/ac (H2O)
gpm
psi
AMAZONE
015 02 025 03 04 05 06 08
8,5 8 7,4 7 6,5 6 5,6 0,10 20
11 10 9 8,5 8 7,5 7 6,5 6 0,13 32 17,4
13 12 11 10 9,5 9 8,5 8 7 6,5 5,5 0,16 45 26 16
15 14 13 12 11 10,5 10 9 8 7,5 6,5 6 0,18 61 35 22 16
17 16 15 14 13 12 11,5 10 9 8,5 7 6,5 0,21 80 45 29 20
19 18 17 15 14 13,5 13 11,5 10,5 10 8 7 0,23 101 58 36 26 14
21 20 18 17 16 15 14 13 11,5 11 9 8 0,26 71 45 32 17
23,5 22 20 19 17 16,5 16 14 13 12 10 9 0,29 85,5 54 39 22 14,5
25,5 24 22 20,5 19 18 17 15 14 13 11 9,5 0,31 101 64 46 26 16
28 25,5 24 22 21 19,5 18,5 16,5 15 14 12 10,5 0,34 75 54 30 19 14,5
30 27,5 25,5 24 22,5 21 20 18 16 15 13 11 0,36 87 62 35 23 16
32 30 27,5 25,5 24 22,5 21 19 17,5 16 14 12 0,39 100 72,5 40 26 17
34 31,5 29 27 25,5 24 23 20 19 17 14,5 13 0,42 83 46,5 29 20
36 33,5 31 29 27 25,5 24 22 20 18 15,5 13,5 0,44 93 52 33 23
38,5 35,5 33 31 29 27 25,5 23 20 19 16,5 14,5 0,47 104 58 38 26 14,5
40,5 37,5 35 32 30 28,5 27 24 22 20 17,5 15 0,50 65 42 29 16
43 39,5 36,5 34 32 30 28,5 25,5 23 21 18 16 0,52 71 46 32 17
45 41,5 38,5 36 34 32 30 27 24,5 22,5 19 17 0,55 78 51 35 20
47 43,5 40 37,5 35 33 31 28 25,5 23,5 20 17,5 0,58 87 55 39 22
49 45,5 42 39 37 35 33 29,5 27 24,5 21 18,5 0,60 94 61 42 23
51 47 44 41 38,5 36 34 31 28 25,5 22 19 0,63 103 67 46 26
53,5 49 46 43 40 38 35,5 32 29 27 23 20 0,66 72,5 49 27,5
56 51 47,5 44,5 42 39 37 33 30 28 24 21 0,68 78 54 30,5
58 53 49,5 46 43 41 38,5 34,5 31,5 29 25 22 0,71 84 58 33
60 55 51 48 45 42 40 36 32,5 30 25,5 22,5 0,73 90 62 35
62 57 53 49,5 46,5 44 41 37 34 31 26,5 23 0,76 97 67 38
64 59 55 51 48 45 43 38,5 35 32 27,5 24 0,79 103 72 40,5
66 61 57 53 50 47 44 40 36 33 28,5 25 0,81 43,5
68 63 58,5 55 51 48 45,5 41 37 34 29 25,5 0,84 46,5
70,5 65 60,5 56,5 53 50 47 42 38,5 35 30 26,5 0,87 49
73 67 62 58 55 51 48,5 43,5 39,5 36 31 27 0,89 52
75 69 64 60 56 53 50 45 41 37,5 32 28 0,92 55
77 71 66 61,5 58 54 51 46 42 38,5 33 29 0,95 58
79 73 68 63 59 56 53 47,5 43 39,5 34 30 0,97 62
61 57,5 54 49 44 40 35 30,5 1,00 65
62,5 59 56 50 45,5 42 36 31 1,03 68
64 60 57 51 46,5 43 37 32 1,05 72,5
LU / XR: 14,5 - 72,5psi
AD: 22 - 87psi
ID / AI: 29 - 116
IDK / Air Mix: 14,5 - 87psi
TTI: 14,5 - 101,5psi
gal/ac (H2O) x 0,88 gal/ac (AHL)
ME1472

Fig. 160

14.2 Spraying nozzles for liquid manure

Nozzle type	Manufacturer	Permissible pressure range			
		Min. pressure		Max. pressure	
		psi	bar	psi	bar
3- jet	agrotop	29	2	116	8
7- hole	TeeJet	21.75	1.5	58	4
FD	Lechler	21.75	1.5	58	4
Drag hose	AMAZONE	14.5	1	58	4

14.2.1 Spray table for three-ray nozzles, spraying height 120 cm

AMAZONE - spray table for three-ray nozzles (yellow)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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 3-ray nozzles (white)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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**

14.2.2 Spray table for 7-hole nozzles

AMAZONE spray table for 7-hole nozzle SJ7-02VP (yellow)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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 (gray)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	km/h								
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

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
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

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
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**

AMAZONE spray table for FD-06 nozzle

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
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	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
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	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
1,5	2,83	2,49	**498**	**427**	**374**	**332**	**299**	**272**	**249**	**249**	**187**
2,0	3,27	2,88	**576**	**494**	**432**	**384**	**345**	**314**	**288**	**288**	**216**
2,5	3,65	3,21	**642**	**551**	**482**	**429**	**385**	**350**	**321**	**321**	**241**
3,0	4,00	3,52	**704**	**604**	**528**	**469**	**422**	**384**	**352**	**352**	**264**
4,0	4,62	4,07	**813**	**697**	**610**	**542**	**488**	**444**	**407**	**407**	**305**

14.2.4 Spray table for drag hose unit

AMAZONE spray table with metering disk 4916-26, (dia. 0.65 mm)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
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 metering disk 4916-32, (dia. 0.8 mm)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
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 metering disk 4916-39, (dia. 1.0 mm) (factory-standard)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
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 metering disk 4916-45, (dia. 1.2 mm)

Pressure	Nozzle output per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
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**

AMAZONE spray table for metering disk 4916-55, (dia. 1.4 mm)

Pressure	Nozzle output per metering disk		AUS application rate [lb/ac]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[bar]	[l/min]	[l/min]	[km/h]								
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 fertilizer

(Density 1.28 kg/l, i.e. approx. 28 kg N for 100 kg of liquid fertilizer or 36 kg N for 100 liters of liquid fertilizer 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]
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	345,7	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	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	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	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	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	285,2	122	339,0	436,0	185	514,0	660,0
40	111	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			

14.4 AMAZONE spray tables - imperial system in accordance with ANSI standard

The tables below must be used for countries with the imperial system!

14.4.1 Spray table for 3-ray nozzles, spraying height 120 cm

AMAZONE - spray table for 3-ray nozzles (yellow)

Pressure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3.73	4.35	4.97	5.59	6.21	6.84	7.46	8.7	9.94
[psi]	[gal/ac]	[gal/ac]	mph								
14.5	0.10	0.08	**6.8**	**5.9**	**5.1**	**4.6**	**4.2**	**3.7**	**3.4**	**3.0**	**2.6**
17.4	0.10	0.09	**7.4**	**6.4**	**5.6**	**5.0**	**4.5**	**4.1**	**3.7**	**3.2**	**2.8**
21.8	0.12	0.10	**8.3**	**7.2**	**6.3**	**5.7**	**5.0**	**4.6**	**4.2**	**3.6**	**3.2**
26.1	0.13	0.11	**9.1**	**7.8**	**6.8**	**6.1**	**5.5**	**5.0**	**4.6**	**4.0**	**3.4**
29.0	0.13	0.12	**9.4**	**8.0**	**7.1**	**6.3**	**5.7**	**5.1**	**4.7**	**4.1**	**3.5**
31.9	0.14	0.12	**9.8**	**8.3**	**7.4**	**6.6**	**5.9**	**5.3**	**4.9**	**4.2**	**3.7**
36.3	0.15	0.13	**10.5**	**9.0**	**7.9**	**7.1**	**6.1**	**5.8**	**5.2**	**5.6**	**4.0**
40.6	0.15	0.14	**11.0**	**9.4**	**8.2**	**7.4**	**6.6**	**6.0**	**5.6**	**4.7**	**4.2**
43.5	0.16	0.14	**11.3**	**9.7**	**8.6**	**7.6**	**6.8**	**6.2**	**5.7**	**4.9**	**4.3**

AMAZONE - Spray table for 3-ray nozzles (red)

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]	mph								
14,5	0,16	0,14	**11,5**	**9,9**	**8,7**	**7,7**	**6,9**	**6,3**	**5,8**	**5,0**	**4,4**
17,4	0,18	0,16	**12,6**	**10,8**	**9,4**	**8,3**	**7,5**	**6,8**	**6,3**	**5,5**	**4,7**
21,8	0,20	0,17	**14,1**	**12,2**	**10,6**	**9,4**	**8,4**	**7,7**	**7,1**	**6,1**	**5,3**
26,1	0,21	0,18	**14,8**	**12,7**	**11,1**	**9,8**	**8,9**	**8,1**	**7,4**	**6,4**	**5,6**
29,0	0,21	0,19	**15,2**	**13,0**	**11,4**	**10,2**	**9,1**	**8,3**	**7,6**	**6,5**	**5,8**
31,9	0,22	0,20	**15,7**	**13,5**	**11,9**	**10,5**	**9,4**	**8,6**	**7,9**	**6,7**	**6,0**
36,3	0,24	0,21	**16,6**	**14,2**	**12,5**	**11,1**	**9,9**	**9,0**	**8,3**	**7,2**	**6,3**
40,6	0,25	0,22	**17,4**	**15,0**	**13,0**	**11,7**	**10,5**	**9,3**	**8,8**	**7,5**	**6,5**
43,5	0,25	0,22	**18,0**	**15,4**	**13,5**	**12,0**	**10,8**	**9,8**	**9,0**	**7,7**	**6,7**

AMAZONE - Spray table for 3-ray nozzles (blue)

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					mph				
14,5	0,23	0,20	**16,3**	**13,9**	**12,2**	**10,8**	**9,7**	**8,9**	**8,1**	**6,9**	**6,1**
17,4	0,25	0,22	**17,7**	**15,2**	**13,3**	**11,8**	**10,6**	**9,7**	**8,9**	**7,6**	**6,6**
21,8	0,28	0,25	**19,9**	**17,0**	**15,0**	**13,3**	**12,0**	**10,9**	**9,9**	**8,6**	**7,5**
26,1	0,29	0,26	**21,0**	**17,9**	**15,7**	**14,0**	**12,5**	**11,4**	**10,5**	**9,0**	**7,9**
29,0	0,30	0,27	**21,6**	**18,5**	**16,3**	**14,4**	**12,9**	**11,8**	**10,8**	**9,3**	**8,1**
31,9	0,32	0,28	**22,7**	**19,5**	**17,0**	**15,1**	**13,6**	**12,4**	**11,3**	**9,7**	**8,6**
36,3	0,33	0,30	**23,9**	**20,5**	**18,0**	**15,9**	**14,4**	**13,0**	**12,0**	**10,3**	**9,0**
40,6	0,35	0,31	**25,0**	**21,5**	**18,8**	**16,7**	**15,1**	**13,7**	**12,5**	**10,8**	**9,4**
43,5	0,36	0,32	**25,7**	**22,0**	**19,2**	**17,1**	**15,4**	**14,0**	**12,8**	**11,0**	**9,6**

AMAZONE - Spray table for 3-ray nozzles (white)

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					mph				
14,5	0,31	0,27	**22,0**	**18,9**	**16,6**	**14,6**	**13,3**	**22,8**	**11,0**	**9,5**	**8,3**
17,4	0,34	0,30	**23,9**	**20,5**	**18,0**	**15,9**	**14,3**	**23,7**	**12,0**	**10,3**	**9,0**
21,8	0,38	0,33	**26,9**	**23,2**	**20,3**	**18,0**	**16,1**	**14,8**	**13,5**	**11,7**	**10,2**
26,1	0,41	0,36	**29,6**	**25,3**	**22,1**	**19,7**	**17,7**	**16,1**	**14,9**	**12,7**	**11,1**
29,0	0,43	0,38	**31,0**	**26,6**	**23,2**	**20,6**	**18,6**	**16,9**	**15,5**	**13,4**	**11,7**
31,9	0,46	0,41	**32,8**	**28,1**	**24,6**	**21,8**	**19,8**	**18,0**	**16,5**	**14,1**	**12,3**
36,3	0,49	0,43	**34,7**	**29,8**	**26,1**	**23,1**	**20,8**	**19,0**	**17,4**	**15,0**	**13,0**
40,6	0,51	0,45	**36,6**	**31,3**	**27,4**	**24,4**	**21,9**	**20,0**	**18,3**	**15,7**	**13,7**
43,5	0,53	0,47	**38,1**	**32,6**	**28,5**	**25,3**	**22,9**	**20,7**	**19,0**	**16,4**	**14,3**

14.4.2 Spray table for 7-hole nozzle

AMAZONE Spray table for 7- hole nozzle SJ7-02VP (yellow)

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					mph				
21,8	0,15	0,13	**10,5**	**9,0**	**7,9**	**6,9**	**6,3**	**5,7**	**5,2**	**4,5**	**4,0**
29,0	0,17	0,15	**12,2**	**10,5**	**9,2**	**8,1**	**7,3**	**6,6**	**6,1**	**5,2**	**4,6**
36,3	0,19	0,17	**13,7**	**11,8**	**10,3**	**9,1**	**8,2**	**7,5**	**6,8**	**5,9**	**5,1**
43,5	0,21	0,19	**15,2**	**13,0**	**11,4**	**10,2**	**9,1**	**8,2**	**7,6**	**6,5**	**5,7**
50,8	0,22	0,20	**16,0**	**13,8**	**12,1**	**10,7**	**9,6**	**8,8**	**8,0**	**6,8**	**6,0**
58,0	0,25	0,22	**17,5**	**15,1**	**13,1**	**11,7**	**10,5**	**9,5**	**8,8**	**7,5**	**6,6**

AMAZONE Spray table for 7- hole nozzle SJ7-02VP (blue)

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					mph				
21,8	0,23	0,20	**16,5**	**14,1**	**12,4**	**11,0**	**9,8**	**9,0**	**8,2**	**7,1**	**6,2**
29,0	0,26	0,23	**18,8**	**16,1**	**14,1**	**12,5**	**11,3**	**10,3**	**9,4**	**8,0**	**7,1**
36,3	0,29	0,26	**20,7**	**17,7**	**15,6**	**13,8**	**12,4**	**11,3**	**10,4**	**8,9**	**7,8**
43,5	0,31	0,27	**22,2**	**19,0**	**16,7**	**14,9**	**13,4**	**12,1**	**11,1**	**9,5**	**8,3**
50,8	0,34	0,30	**23,9**	**20,5**	**18,0**	**15,9**	**14,3**	**13,0**	**12,0**	**10,3**	**9,0**
58,0	0,35	0,31	**24,8**	**21,3**	**18,6**	**16,6**	**14,9**	**13,6**	**12,4**	**10,6**	**9,3**

AMAZONE Spray table for 7-hole nozzle SJ7-04VP (red)

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					mph				
21,8	0,31	0,27	**22,2**	**19,0**	**16,7**	**14,9**	**13,4**	**12,1**	**11,1**	**9,5**	**8,3**
29,0	0,35	0,31	**25,2**	**21,6**	**18,9**	**16,8**	**15,2**	**13,8**	**12,6**	**10,8**	**9,5**
36,3	0,38	0,34	**27,4**	**23,4**	**20,5**	**18,3**	**16,5**	**15,0**	**13,7**	**11,8**	**10,3**
43,5	0,41	0,36	**29,3**	**25,1**	**22,0**	**19,6**	**17,5**	**15,9**	**14,6**	**12,5**	**11,0**
50,8	0,44	0,39	**31,5**	**27,0**	**23,6**	**21,0**	**18,9**	**17,2**	**15,7**	**13,5**	**11,8**
58,0	0,45	0,40	**32,5**	**27,9**	**24,4**	**21,7**	**19,5**	**17,7**	**16,3**	**13,9**	**12,2**

AMAZONE Spray table for 7- hole nozzle SJ7-04VP (brown)

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					mph				
21,8	0,39	0,35	**28,2**	**24,2**	**21,2**	**18,8**	**16,9**	**15,4**	**14,1**	**12,1**	**10,6**
29,0	0,44	0,39	**31,9**	**27,3**	**23,9**	**21,3**	**19,1**	**17,4**	**15,9**	**13,7**	**12,0**
36,3	0,48	0,43	**34,6**	**29,7**	**26,0**	**23,1**	**20,7**	**18,9**	**17,3**	**14,9**	**13,0**
43,5	0,52	0,46	**37,0**	**31,8**	**27,8**	**24,7**	**22,2**	**20,2**	**18,5**	**15,8**	**13,9**
50,8	0,56	0,49	**40,0**	**34,3**	**30,0**	**26,6**	**23,9**	**21,8**	**20,0**	**17,1**	**15,0**
58,0	0,57	0,50	**40,8**	**35,0**	**30,7**	**27,3**	**24,5**	**22,2**	**20,4**	**17,5**	**15,3**

AMAZONE Spray table for 7- hole nozzle SJ7-04VP (gray)

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					mph				
21,8	0,47	0,41	**33,6**	**28,8**	**25,2**	**22,3**	**20,1**	**18,3**	**16,8**	**14,4**	**12,6**
29,0	0,53	0,47	**38,1**	**32,6**	**28,5**	**25,3**	**22,9**	**20,7**	**19,0**	**16,4**	**14,3**
36,3	0,58	0,51	**41,5**	**35,6**	**31,1**	**27,7**	**24,9**	**22,7**	**20,7**	**17,7**	**15,6**
43,5	0,62	0,55	**44,5**	**38,2**	**33,4**	**29,6**	**26,7**	**24,3**	**22,2**	**19,0**	**16,7**
58,0	0,69	0,61	**60,1**	**42,3**	**37,1**	**32,9**	**29,6**	**26,9**	**24,7**	**21,2**	**18,5**

AMAZONE Spray table for 7- hole nozzle SJ7-04VP (white)

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					mph				
21,8	0,60	0,53	**43,2**	**37,0**	**32,4**	**28,8**	**25,9**	**23,5**	**21,6**	**18,5**	**16,3**
29,0	0,70	0,62	**50,2**	**43,1**	**37,7**	**33,5**	**30,1**	**27,4**	**25,1**	**21,5**	**18,8**
36,3	0,78	0,69	**55,6**	**47,7**	**41,7**	**37,1**	**33,4**	**30,4**	**27,8**	**23,8**	**20,8**
43,5	0,83	0,74	**59,7**	**51,1**	**44,8**	**39,8**	**35,8**	**32,5**	**29,8**	**25,6**	**22,3**
58,0	0,91	0,81	**65,4**	**56,1**	**49,1**	**43,6**	**39,2**	**35,7**	**32,7**	**28,0**	**24,6**

14.4.3 Spray table for FD nozzles

AMAZONE spray table for FD-04 nozzle

Pres-sure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					[mph]				
21,8	0,30	0,26	**21,4**	**18,3**	**16,0**	**14,2**	**12,8**	**11,7**	**10,7**	**9,2**	**8,0**
29,0	0,35	0,30	**24,6**	**21,1**	**18,5**	**16,4**	**14,8**	**13,4**	**12,3**	**10,6**	**9,2**
36,3	0,39	0,34	**27,6**	**23,6**	**20,7**	**18,4**	**16,6**	**15,1**	**13,8**	**11,9**	**10,4**
43,5	0,42	0,37	**30,1**	**25,8**	**22,6**	**20,1**	**18,1**	**16,5**	**15,1**	**12,9**	**11,3**
58,0	0,49	0,43	**34,9**	**29,8**	**26,2**	**23,2**	**21,0**	**19,0**	**17,4**	**15,0**	**13,0**

AMAZONE Spray table for FD-05- nozzle

Pressure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					[mph]				
21,8	0,37	0,33	**26,5**	**22,8**	**19,9**	**17,6**	**15,9**	**14,4**	**13,3**	**11,3**	**9,9**
29,0	0,43	0,38	**30,8**	**26,4**	**23,1**	**20,5**	**18,5**	**16,8**	**15,4**	**13,1**	**11,5**
36,3	0,48	0,43	**34,4**	**29,5**	**25,9**	**23,0**	**20,6**	**18,8**	**17,2**	**14,8**	**12,9**
43,5	0,53	0,46	**37,6**	**32,3**	**28,2**	**25,1**	**22,6**	**20,5**	**18,8**	**16,1**	**14,1**
58,0	0,61	0,54	**43,4**	**37,2**	**32,6**	**29,0**	**26,1**	**23,6**	**21,7**	**18,6**	**16,3**

AMAZONE Spray table for FD-06- nozzle

Pressure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]					[mph]				
21,8	0,45	0,39	**31,9**	**27,3**	**23,9**	**21,3**	**19,1**	**17,4**	**15,9**	**13,7**	**12,0**
29,0	0,52	0,45	**36,8**	**31,5**	**27,6**	**24,5**	**22,0**	**20,1**	**18,4**	**15,7**	**13,8**
36,3	0,58	0,51	**41,3**	**35,4**	**31,0**	**27,5**	**24,8**	**22,6**	**20,6**	**17,6**	**15,5**
43,5	0,63	0,56	**45,1**	**38,7**	**33,9**	**30,1**	**27,0**	**24,6**	**22,6**	**19,4**	**16,9**
58,0	0,73	0,64	**52,2**	**44,7**	**39,1**	**34,7**	**31,3**	**28,4**	**26,1**	**22,3**	**19,6**

AMAZONE Spray table for FD-08- nozzle

Pressure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]	[mph]								
21,8	0,60	0,53	**42,5**	**36,5**	**32,0**	**28,3**	**25,6**	**23,2**	**21,3**	**18,3**	**15,9**
29,0	0,69	0,61	**49,2**	**42,1**	**36,9**	**32,8**	**29,5**	**26,8**	**24,6**	**21,1**	**18,5**
36,3	0,77	0,68	**55,0**	**47,1**	**41,3**	**36,7**	**32,9**	**29,9**	**27,5**	**23,5**	**20,6**
43,5	0,85	0,74	**60,2**	**51,6**	**45,1**	**40,1**	**36,1**	**32,8**	**30,1**	**25,8**	**22,6**
58,0	0,98	0,86	**69,5**	**59,5**	**52,2**	**46,3**	**41,7**	**38,0**	**34,7**	**29,8**	**26,1**

AMAZONE Spray table for FD-10- nozzle

Pressure	Nozzle output Per metering disk		Spray rate AUS [l/ha]								
	Water	AUS	6	7	8	9	10	11	12	14	16
[psi]	[gal/ac]	[gal/ac]	[lb/ac]								
1,5	2,83	2,49	**498**	**427**	**374**	**332**	**299**	**272**	**249**	**249**	**187**
2,0	3,27	2,88	**576**	**494**	**432**	**384**	**345**	**314**	**288**	**288**	**216**
2,5	3,65	3,21	**642**	**551**	**482**	**429**	**385**	**350**	**321**	**321**	**241**
3,0	4,00	3,52	**704**	**604**	**528**	**469**	**422**	**384**	**352**	**352**	**264**
4,0	4,62	4,07	**813**	**697**	**610**	**542**	**488**	**444**	**407**	**407**	**305**

14.4.4 Spray table for drag hose unit

AMAZONE spray table with metering disk 4916-26, (dia. 0,65 mm)

Pressure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]	[mph]								
14,5	0,05	0,05	**7,6**	**6,5**	**5,7**	**5,0**	**4,6**	**4,0**	**3,8**	**3,3**	**2,9**
17,4	0,06	0,05	**8,3**	**7,2**	**6,2**	**5,6**	**5,0**	**4,6**	**4,2**	**3,6**	**3,1**
21,8	0,06	0,06	**9,1**	**7,8**	**6,8**	**6,1**	**5,5**	**5,0**	**4,6**	**4,0**	**3,4**
26,1	0,07	0,06	**9,8**	**8,4**	**7,4**	**6,5**	**5,9**	**5,3**	**4,9**	**4,3**	**3,7**
29,0	0,07	0,07	**10,6**	**9,1**	**7,9**	**7,1**	**6,4**	**5,8**	**5,3**	**4,6**	**4,0**
31,9	0,08	0,07	**11,0**	**9,4**	**8,2**	**7,3**	**6,6**	**6,0**	**5,6**	**4,7**	**4,2**
36,3	0,08	0,07	**11,8**	**10,0**	**8,8**	**7,8**	**7,1**	**6,4**	**5,9**	**5,0**	**4,4**
40,6	0,08	0,07	**12,1**	**10,4**	**9,1**	**8,1**	**7,3**	**6,6**	**6,1**	**5,2**	**4,6**
43,5	0,09	0,08	**12,8**	**11,0**	**9,6**	**8,6**	**7,7**	**7,1**	**6,4**	**5,6**	**4,8**
50,8	0,10	0,08	**13,6**	**11,7**	**10,3**	**9,1**	**8,2**	**7,5**	**6,8**	**5,9**	**5,1**
58,0	0,10	0,09	**14,8**	**12,6**	**11,1**	**9,8**	**8,9**	**8,1**	**7,4**	**6,3**	**5,6**

AMAZONE spray table with metering disk 4916-32, (dia. 0,8 mm)

Pressure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,7	9,94
[psi]	[gal/ac]	[gal/ac]	[mph]								
14,5	0,08	0,07	**11,8**	**10,0**	**8,8**	**7,8**	**7,1**	**6,4**	**5,9**	**5,0**	**4,4**
17,4	0,09	0,08	**12,8**	**11,0**	**9,6**	**8,6**	**7,7**	**7,1**	**6,4**	**5,6**	**4,8**
21,8	0,10	0,09	**14,4**	**12,3**	**10,8**	**9,6**	**8,7**	**7,9**	**7,3**	**6,2**	**5,5**
26,1	0,11	0,10	**15,5**	**13,3**	**11,7**	**10,4**	**9,3**	**8,4**	**7,8**	**6,6**	**5,9**
29,0	0,11	0,10	**16,3**	**13,9**	**12,2**	**10,8**	**9,8**	**8,9**	**8,1**	**6,9**	**6,1**
31,9	0,12	0,11	**17,0**	**14,6**	**12,7**	**11,3**	**10,3**	**9,3**	**8,6**	**7,4**	**6,4**
36,3	0,13	0,11	**18,2**	**15,6**	**13,6**	**12,1**	**10,9**	**9,9**	**9,1**	**7,8**	**6,8**
40,6	0,13	0,12	**19,4**	**16,6**	**14,4**	**12,8**	**11,7**	**10,5**	**9,7**	**8,3**	**7,3**
43,5	0,14	0,12	**20,1**	**17,2**	**15,1**	**13,4**	**12,1**	**11,0**	**10,0**	**8,7**	**7,6**
50,8	0,15	0,13	**21,6**	**18,5**	**16,1**	**14,4**	**12,9**	**11,8**	**10,8**	**9,3**	**8,1**
58,0	0,16	0,14	**23,1**	**19,8**	**17,3**	**15,4**	**13,9**	**12,6**	**11,5**	**9,9**	**8,7**

AMAZONE spray table with metering disk 4916-39, (dia. 1,0 mm) (factory-standard)

Pressure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,70	9,94
[psi]	[gal/ac]	[gal/ac]					[mph]				
14,5	0,11	0,10	**16,4**	**14,0**	**12,2**	**10,8**	**9,8**	**9,0**	**8,2**	**7,1**	**6,1**
17,4	0,12	0,11	**17,9**	**15,3**	**13,3**	**11,8**	**10,7**	**9,7**	**9,0**	**7,7**	**6,6**
21,8	0,14	0,12	**20,0**	**17,1**	**15,1**	**13,5**	**12,0**	**10,9**	**10,0**	**8,6**	**7,6**
26,1	0,15	0,13	**21,8**	**18,7**	**16,5**	**14,6**	**13,0**	**12,0**	**10,9**	**9,4**	**8,2**
29,0	0,16	0,14	**23,1**	**19,8**	**17,3**	**15,4**	**13,9**	**12,6**	**11,5**	**9,9**	**8,7**
31,9	0,17	0,15	**24,3**	**20,7**	**18,2**	**16,1**	**14,5**	**13,3**	**12,2**	**10,4**	**9,1**
36,3	0,18	0,16	**25,7**	**22,0**	**19,2**	**17,1**	**15,2**	**14,1**	**12,8**	**11,0**	**9,6**
40,6	0,19	0,16	**26,8**	**23,0**	**20,2**	**18,0**	**16,1**	**14,6**	**13,5**	**11,5**	**10,2**
43,5	0,20	0,17	**28,0**	**23,9**	**21,1**	**18,7**	**16,9**	**15,3**	**14,0**	**12,0**	**10,6**
50,8	0,21	0,18	**29,9**	**25,2**	**22,5**	**19,9**	**18,0**	**16,4**	**15,0**	**12,6**	**11,2**
58,0	0,22	0,20	**32,3**	**27,7**	**24,2**	**21,5**	**19,4**	**17,6**	**16,1**	**13,9**	**12,1**

AMAZONE spray table with metering disk 4916-45, (dia. 1,2 mm)

Pressure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,70	9,94
[psi]	[gal/ac]	[gal/ac]					[mph]				
14,5	0,23	0,20	**21,6**	**18,5**	**16,1**	**14,4**	**12,9**	**11,8**	**10,8**	**9,3**	**8,1**
17,4	0,25	0,22	**23,4**	**20,1**	**17,6**	**15,6**	**14,1**	**12,8**	**11,8**	**10,0**	**8,9**
21,8	0,28	0,25	**26,5**	**22,7**	**19,9**	**17,6**	**15,9**	**14,4**	**13,3**	**11,3**	**9,9**
26,1	0,30	0,27	**29,2**	**25,0**	**21,8**	**19,5**	**17,5**	**15,8**	**14,6**	**12,5**	**10,9**
29,0	0,32	0,29	**30,7**	**26,3**	**23,0**	**20,5**	**18,4**	**16,8**	**15,4**	**13,1**	**11,5**
31,9	0,34	0,30	**32,5**	**27,9**	**24,4**	**21,7**	**19,6**	**17,7**	**16,3**	**14,0**	**12,2**
36,3	0,36	0,31	**34,9**	**29,8**	**26,1**	**23,2**	**21,0**	**19,0**	**17,4**	**15,0**	**13,0**
40,6	0,38	0,34	**36,3**	**31,1**	**27,3**	**24,3**	**21,8**	**19,9**	**18,2**	**15,6**	**13,7**
43,5	0,39	0,34	**37,8**	**32,4**	**28,4**	**25,2**	**22,8**	**20,6**	**18,9**	**16,3**	**14,2**
50,8	0,42	0,37	**41,6**	**35,7**	**31,2**	**27,8**	**25,0**	**22,8**	**20,8**	**17,9**	**15,6**
58,0	0,45	0,40	**43,9**	**37,6**	**32,9**	**29,3**	**26,3**	**23,9**	**22,0**	**18,8**	**16,5**

AMAZONE spray table with metering disk 4916-55, (dia.1,4 mm)

Pressure	Nozzle output Per metering disk		Spray rate AUS [lb/ac]								
	Water	AUS	3,73	4,35	4,97	5,59	6,21	6,84	7,46	8,70	9,94
[psi]	[gal/ac]	[gal/ac]	[mph]								
14,5	0,23	0,20	**32,5**	**27,9**	**24,4**	**21,7**	**19,6**	**17,7**	**16,3**	**14,0**	**12,2**
17,4	0,25	0,22	**35,2**	**30,1**	**26,4**	**23,4**	**21,2**	**19,2**	**17,6**	**15,1**	**13,3**
21,8	0,28	0,25	**39,8**	**34,1**	**29,7**	**26,5**	**23,8**	**21,7**	**19,9**	**17,1**	**14,9**
26,1	0,30	0,27	**43,5**	**37,3**	**32,6**	**29,0**	**26,2**	**23,7**	**21,8**	**18,7**	**16,4**
29,0	0,32	0,29	**46,2**	**39,6**	**34,6**	**30,8**	**27,7**	**25,2**	**23,1**	**19,8**	**17,3**
31,9	0,34	0,30	**48,1**	**41,2**	**36,0**	**32,1**	**28,9**	**26,2**	**24,1**	**17,4**	**18,0**
36,3	0,36	0,31	**51,1**	**43,8**	**38,3**	**34,1**	**30,7**	**27,9**	**25,6**	**21,9**	**19,1**
40,6	0,38	0,34	**54,1**	**46,4**	**40,6**	**36,0**	**32,5**	**29,5**	**27,0**	**23,2**	**20,3**
43,5	0,39	0,34	**55,6**	**47,7**	**41,7**	**37,1**	**33,4**	**30,4**	**27,8**	**23,8**	**20,8**
50,8	0,42	0,37	**60,2**	**51,5**	**45,1**	**40,1**	**36,1**	**32,8**	**30,1**	**25,8**	**22,6**
58,0	0,45	0,40	**63,9**	**54,8**	**48,0**	**42,7**	**38,4**	**35,0**	**32,0**	**27,5**	**24,1**

14.4.5 Conversion table for spraying ammonium nitrate / urea solution (AUS) liquid fertilizer

(Density 0.05 lb/in [1.28 kg/l], i.e. approx. 62 lb [28 kg] N for 220 lb [100 kg] liquid fertilizer or 79 lb [36 kg] N for 26 gal [100 l] liquid fertilizer at 41 - 50°F [5 - 10°C])											
N [lb]	Sol. N [gal]	Sol. N [lb]	N [lb]	Sol. N [gal]	Sol. N [lb]	N [lb]	Sol. N [gal]	Sol. N [lb]	N [lb]	Sol. N [gal]	Sol. N [lb]
22	7.3	78.9	115	38.2	410.1	207	69.0	740.3	22	99.9	1069.2
26	8.8	94.6	119	39.6	425.5	212	70.5	762.1	26	101.4	1086.9
31	10.3	110.2	123	41.1	440.9	216	71.9	771.6	31	102.8	1102.3
35	11.8	125.9	128	42.6	457.0	220	73.4	787.9	35	104.1	1117.7
40	13.2	141.8	132	44.0	472.2	225	74.9	802.9	40	105.7	1135.4
44	14.7	157.6	137	45.5	488.8	229	75.4	819.7	44	107.3	1148.6
49	16.3	173.1	141	47.0	503.3	234	77.7	834.0	49	108.6	1166.2
53	17.6	188.7	146	48.4	520.1	238	79.3	851.0	53	110.2	1179.5
57	19.8	204.8	150	49.9	535.7	243	80.7	866.4	57	113.9	1221.4
62	20.6	220.5	154	51.4	551.2	247	82.2	881.8	62	117.6	1261.0
66	22.0	236.1	159	52.8	567.0	251	83.6	898.4	66	121.0	1298.5
71	23.5	251.8	163	54.1	582.5	256	85.1	913.4	71	124.7	1338.2
75	25.0	267.6	168	55.9	599.2	260	86.6	928.1	75	128.4	1377.9
79	26.4	283.7	172	57.2	613.5	265	88.0	943.6	79	132.1	1417.6
84	27.9	299.6	176	58.7	628.8	269	89.6	961.2	84	135.8	1455.1
88	29.3	315.3	181	60.2	645.5	273	90.9	976.6	88	139.2	1496.9
93	30.9	330.7	185	61.6	661.4	278	92.5	992.1	93	142.9	1534.4
97	32.3	346.3	190	63.0	677.9	282	94.0	1007.5	97	146.9	1574.1
101	33.8	362.2	194	64.0	692.5	287	95.4	1025.1			
106	35.2	378.1	198	66.0	709.2	291	97.0	1038.4			
110	36.7	393.7	203	67.5	723.8	295	98.3	1053.8			

14.5 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
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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