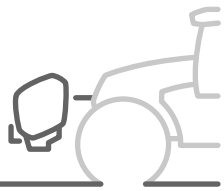
Original operating manual

Front-mounted tank

FT-P 1502



SmartLearning

www.amazone.de

Please enter the identification data of the implement. The identification data can be found on the rating plate.

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About this operating manual

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CMS-T-00000081-I.1

1.1 Copyright

CMS-T-00012308-A.1

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1.2 Diagrams

CMS-T-005676-F.1

1.2.1 Warnings and signal words

CMS-T-00002415-A.1

Warnings are marked with a vertical bar with a triangular safety symbol and the signal word. The signal words *"DANGER"*, *"WARNING"* or *"CAUTION"* describe the severity of the potential danger and have the following meanings:

DANGER

- Indicates a direct threat with high risk for severe physical injury, such as loss of limbs or death.

WARNING

- Indicates a possible threat with moderate risk for severe physical injury or death.

CAUTION

- Indicates a threat with low risk for light or moderately severe physical injuries.

1.2.2 Further instructions

CMS-T-00002416-A.1

IMPORTANT

- Indicates a risk for damage to the implement.

ENVIRONMENTAL INFORMATION

- Indicates a risk for environmental damage.

NOTE

Indicates application tips and instructions for optimal use.

1.2.3 Instructions

CMS-T-00000473-D.1

1.2.3.1 Numbered instructions

CMS-T-005217-B.1

Actions that have to be performed in a specific sequence are represented as numbered instructions. The specified sequence of the actions must be observed.

Example:

1. Instruction 1
2. Instruction 2

1.2.3.2 Instructions and responses

CMS-T-005678-B.1

Reactions to instructions are marked with an arrow.

Example:

1. Instruction 1

➡ Reaction to instruction 1

2. Instruction 2

1.2.3.3 Alternative instructions

CMS-T-00000110-B.1

Alternative instructions are introduced with the word *"or"*.

Example:

1. Instruction 1

   or

   Alternative instruction

2. Instruction 2

1.2.3.4 Instructions with only one action

CMS-T-005211-C.1

Instructions with only one action are not numbered, but rather shown with a arrow.

Example:

▶ Instruction

1.2.3.5 Instructions without sequence

CMS-T-005214-C.1

Instructions that do not require a specific sequence are shown as a list with arrows.

Example:

▶ Instruction

▶ Instruction

▶ Instruction

1.2.3.6 Workshop work

CMS-T-00013932-B.1

WORKSHOP WORK

▶ Identifies maintenance work that must be performed at a workshop that is adequately equipped in terms of agricultural technology, safety and environmental technology by specialist personnel with appropriate training.

1.2.4 Lists

CMS-T-000024-A.1

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

Example:

- Point 1
- Point 2

1.2.5 Item numbers in figures

CMS-T-000023-B.1

A framed number in the text, e.g. a **1**, indicates an item number in an adjacent figure.

1.2.6 Direction information

CMS-T-00012309-A.1

Unless otherwise specified, all directions are always seen in the direction of travel.

1.3 Other applicable documents

CMS-T-00000616-B.1

A list of other applicable documents can be found in the Appendix.

1.4 Digital operating manual

CMS-T-00002024-B.1

The digital operating manual and e-learning can be downloaded from the Info Portal on the AMAZONE website.

1.5 Your opinion is important

CMS-T-000059-D.1

Dear reader, our documents are updated on a regular basis. Your suggestions for improvement help us to create ever more user-friendly documents. Please send us your suggestions by post, fax or email.

AMAZONEN-WERKE H. Dreyer SE & Co. KG
Technische Redaktion
Postfach 51
D-49202 Hasbergen

Fax: +49 (0) 5405 501-234
E-Mail: tr.feedback@amazone.de

CMS-I-00000638

Safety and responsibility 2

CMS-T-00012026-B.1

2.1 Basic safety instructions

CMS-T-00012027-B.1

2.1.1 Meaning of the operating manual

CMS-T-00006180-A.1

Observe the operating manual

The operating manual is an important document and a part of the implement. It is intended for the user and contains safety-related information. Only the instructions provided in the operating manual are reliable. If the operating manual is not observed, it can result in serious injury or death.

- ► The safety section must be completely read and observed before initial operation of the implement.
- ► Before starting work, also read and observe each section of the operating manual.
- ► Keep the operating manual in a safe place.
- ► Keep the operating manual available.
- ► Hand over the operating manual to the subsequent user.

2.1.2 Safe operating organisation

CMS-T-00002302-D.1

2.1.2.1 Personnel qualification

CMS-T-00002306-B.1

2.1.2.1.1 Requirements for persons working with the implement

CMS-T-00002310-B.1

If the implement is used improperly, people can be injured or killed: To prevent accidents due to improper use, every person who works with

the implement must meet the following minimum requirements:

- The person is physically and mentally capable of checking the implement.
- The person can safely perform work with the machine within the scope of this operating manual.
- The person understands the functioning of the machine within the scope of their work and can recognise and prevent dangers arising during operation.
- The person head understood the operating manual and can implement the information that is conveyed in the operating manual.
- The person must be familiar with safe driving of vehicles.
- For road travel, the person knows the relevant road traffic regulations and has the prescribed driving permit.

2.1.2.1.2 Qualification levels

CMS-T-00002311-A.1

For working with the machine, the following qualification levels are provided:

- Farmer
- Agricultural helper

As a matter of principle, the activities described in this operating manual can be performed by persons with the qualification level "Agricultural helper".

2.1.2.1.3 Farmer

CMS-T-00002312-A.1

Farmers use agricultural implement to cultivate fields. They decide on the use of an implement for a specific purpose.

Farmers are basically familiar with working with agricultural implements and can instruct agricultural helpers in how to use the implements if necessary. They can perform odd tasks and simple maintenance and repair work on agricultural implements themselves.

Farmers can be e.g.:

- Farmers with higher education or training from a technical college
- Farmers by experience (e.g. inherited farm, comprehensive practical knowledge)
- Contractors who work by order of farmers

Activity example:

- Safety training for agricultural helpers

2.1.2.1.4 Agricultural helpers

CMS-T-00002313-A.1

Agricultural helpers use agricultural implements by order of the farmer. They are instructed on the use of the implement by the farmer, and work independently according to the work assignment from the farmer.

Agricultural helpers can be e.g.:

- Seasonal workers and labourers
- Prospective farmers in training
- Employees of the farmer (e.g. tractor driver)
- Family members of the farmer

Activity examples:

- Driving the machine
- Adjusting the working depth

2.1.2.2 Workplaces and passengers

CMS-T-00002307-B.1

Passengers

Passengers can fall, be run over and severely injured or killed due to machine movements. Ejected objects can hit and injure passengers.

► Do not let anybody ride on the machine.

► Do not let anybody climb onto the driving machine.

2.1.2.3 Danger for children

CMS-T-00002308-A.1

Danger for children

Children cannot assess dangerous situations and can behave unpredictably. As a result, children are at a higher risk.

- Keep children away.
- *When you drive out or actuate machine movements,*
  make sure that there are no children in the danger area.

2.1.2.4 Operational safety

CMS-T-00002309-D.1

2.1.2.4.1 Perfect technical condition

CMS-T-00002314-D.1

Only use properly prepared machines

Without correct preparation according to this operating manual, operational safety of the machine is not ensured. This can result in accidents and serious personal injury or even death.

- Prepare the machine according to this operating manual.

Danger due to damage to the machine

Damage to the machine can impede the operational safety of the machine and cause accidents. This can result in serious injury or death.

- *If you suspect or observe damage:*
  Secure the tractor and machine.
- Repair safety-relevant damage immediately.
- Fix the damage according to this operating manual.
- *If you are not able to fix the damage according to this operating manual yourself:*
  Have the damage repaired by a qualified specialist workshop.

Observe the technical limit values

Non-observance of the technical limits values of the machine can result in accidents and serious personal injury or even death. Moreover, the machine can be damaged. The technical limit values can be found in the Technical Data.

- Comply with the technical limit values.

2.1.2.4.2 Personal protective equipment

CMS-T-00002316-B.1

Personal protective equipment

Wearing personal protective equipment is an important safety element. Missing or unsuitable personal protective equipment increases the risk of damage to health and personal injury. Personal protective equipment includes: work gloves, safety shoes, protective clothing, breathing protection, hearing protection, face protection, and eye protection

- ▶ Determine the personal protective equipment required for each job and have it ready.
- ▶ Use only protective equipment that is in proper condition and offers effective protection.
- ▶ Adjust the personal protective equipment to the person, e.g. the size.
- ▶ Observe the manufacturer's instructions regarding operating materials, seed, fertiliser, crop protection products, and cleaning agents.

Wear suitable clothing

Loosely worn clothing increases the risk of getting caught or entangled on rotating parts and getting stuck on protruding parts. This can result in serious injury or death.

- ▶ Wear close-fitting, snag-free clothes.
- ▶ Never wear rings, necklaces and other jewellery.
- ▶ *If you have long hair,*
  wear a hairnet.

2.1.2.4.3 Warning symbols

CMS-T-00002317-B.1

Keep warning symbols legible

Warning symbols on the machine warn you of risks in danger areas and are an important element of the machine's safety equipment. Missing warning symbols increase the risk of serious and lethal personal injury.

- ▶ Clean dirty warning symbols.
- ▶ Immediately replace any damaged and illegible warning symbols.
- ▶ Put the intended warning symbols on spare parts.

2.1.3 Knowing and preventing dangers

CMS-T-00012134-A.1

2.1.3.1 Safety hazards on the machine

CMS-T-00005137-B.1

Liquids under pressure

Escaping high pressure hydraulic fluid can penetrate into the body through the skin and cause serious personal injuries. A hole the size of a needle can already result in serious personal injuries.

- *Before you uncouple the hydraulic hose lines or check for damage,*
  depressurise the hydraulic system.
- *If you suspect damage on a pressure system,*
  have the pressure system checked by a qualified specialist workshop.
- Never look for leaks with your bare hands.
- Keep your body and face away from leaks.
- *If liquids penetrate the body,*
  consult a doctor immediately.

Danger due to machine parts still running

When the drives are switched off, machine parts can continue running and cause serious personal injury or death.

- Before approaching the machine, wait until any machine parts that are still running have come to a stop.
- Only touch machine parts that are standing still.

2.1.3.2 Danger areas

CMS-T-00012135-A.1

Dangers areas on the implement

The following basic dangers are encountered in the danger areas:

The implement and its work tools move during operation.

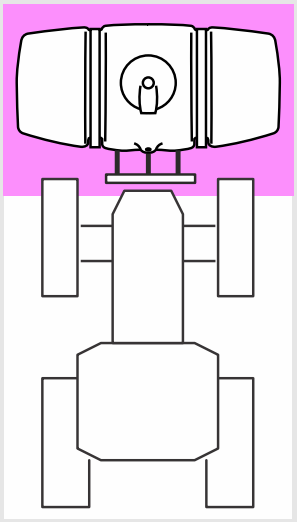
Hydraulically raised implement parts can descend unnoticed and slowly.

The tractor and implement can roll away unintentionally.

Materials or foreign objects can be ejected out of or away from the implement.

If the danger area is not observed, it can result in serious personal injury or death.

- Keep people out of the danger area of the implement.
- *If people enter the danger area,* immediately switch off the engines and drives.
- *Before you work in the danger area of the implement,* secure the tractor and implement. This also applies for quick checking work.



CMS-I-00007771

2.1.4 Safe operation and handling of the machine

CMS-T-00002304-I.1

2.1.4.1 Coupling implements

CMS-T-00002320-D.1

Coupling the implement on the tractor

Incorrectly coupling of the implement to the tractor results in hazards that can cause serious accidents.

There are crushing and shear points in the area of the coupling points between the tractor and the implement.

- *If you couple or uncouple the implement to or from the tractor,*
  be very careful.
- Use only suitable tractors for coupling and transporting the implement.
- *When the implement is coupled onto the tractor,*
  make sure that the tractor's connecting device meets the implement requirements.
- Couple the implement properly to the tractor.

2.1.4.2 Driving safety

CMS-T-00002321-E.1

Risk when driving on roads and fields

Any mounted or towed implement as well as front or rear ballast weights on the tractor influence the driving behaviour and the steering and braking power of the tractor. The driving characteristics also depend on the operating condition, the fill level of the load, and on the ground. If the driver does not take account of changing driving characteristics, he can cause accidents.

- Always ensure that the tractor's steering and braking systems are operating correctly.
- *The tractor must provide the required brake lag for the tractor and mounted implement.*
  Check the function of the brakes before moving off.
- *The tractor front axle must always be loaded with at least 20 % of the empty tractor weight to ensure sufficient steering power.*
  Use front ballast weights if necessary.
- Always attach the front or rear ballast weights properly on the specified fixing points.
- Calculate and observe the permitted payload for the mounted or towed implement.
- Observe the permissible axle loads and drawbar loads of the tractor.
- Observe the permissible drawbar load of the hitch device and drawbar.
- Drive in such a way that you always have full control over the tractor with the mounted or towed implement. 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 influence of the mounted implement.

When driving on roads, risk of accident caused by uncontrolled lateral motions of the implement

- Lock the tractor lower links for road travel.

Preparing the machine for road travel

If the machine is not properly prepared for road travel, it can result in serious traffic accidents.

- Check the lighting and identification for road travel for proper function.
- Remove coarse dirt from the implement.
- Follow the instructions in the section "Preparing the implement for road travel".

Parking the implement

The parked machine can tip over. People can be crushed and killed.

- Only park the machine on stable and even ground.
- *Before you perform setting or maintenance work,*
  make sure that the implement is in a stable position. In case of doubt, support the implement.
- Follow the instructions in the section *"Parking the implement"*.

Unsupervised parking

Parked tractors with coupled implements that are insufficiently secured and unsupervised represent danger for people and playing children.

- *Before you leave the machine,*
  shutdown the tractor and the implement.
- Secure the tractor and machine.

2.1.5 Safe maintenance and modification

CMS-T-00002305-J.1

2.1.5.1 Changes on the implement

CMS-T-00002322-B.1

Only authorised design changes

Design changes and extensions can impede the functioning and operational safety of the machine. This can result in serious injury or death.

- Have any design changes and extensions performed only by a qualified specialist workshop.
- *To ensure that the operating permit remains valid in accordance with national and international regulations,*
  ensure that the specialist workshop only uses conversion parts, spare parts and special equipment approved by AMAZONE.

2.1.5.2 Work on the machine

CMS-T-00002323-I.1

Only work on the machine when it is at a standstill

If the machine is not standing still, part can move unintentionally or the machine can be set in motion. This can result in serious injury or death.

- *If you have to work on or under raised loads:*
  Lower the loads or secure the loads with a hydraulic or mechanical locking device.
- Switch off all drives.
- Actuate the parking brake.
- Particularly on slopes, additionally secure the machine against rolling away with wheel chocks.
- Remove the ignition key and carry it with you.
- Wait until all parts that are still running come to a stop and that hot parts cool down.

Maintenance work

Improper maintenance work, particularly on safety-related components, endangers operational safety. This can result in accidents and serious personal injury or even death. Safety-related components include, for example, hydraulic components, electronic components, frames, springs, trailer coupling, axles and axle suspensions, lines and tanks containing flammable substances.

- *Before you adjust, maintain or clean the machine,*
  secure the machine.
- Repair the machine according to this operating manual.
- Only perform the work that is described in this operating manual.
- Have maintenance work that is labelled as *"WORKSHOP WORK"* performed at a workshop that is adequately equipped in terms of agricultural technology, safety and environmental technology by specialist personnel with appropriate training.
- Never perform welding, drilling, sawing, grinding, and cutting work on the frame, running gear or coupling devices of the implement.
- Never modify safety-related components.
- Never drill out existing holes.
- Perform all maintenance work at the prescribed maintenance intervals.

Raised implement parts

Raised implement parts can descend unintentionally and crush or kill people.

- Never linger under raised implement parts.
- *If you have to work on or under raised machine parts,*
  lower the implement parts or secure the raised implement parts with a mechanical support or hydraulic locking device.

Danger due to welding work

Improper welding work, particularly on or close to safety-related components, endangers the operational safety of the implement. This can result in accidents and serious personal injury or even death. Safety-related components include, for example, hydraulic components and electronic components, frames, springs, coupling devices to the tractor such as the three-point mounting frame, drawbar, trailer support, trailer coupling or tensioned crosspiece as well as axles and axle suspensions, lines and tanks containing flammable substances.

- Allow only qualified specialist workshops with suitably approved personnel to perform welding work on safety-related components.
- Only allow qualified personnel to perform welding work on all other components.
- *If you have doubts as to whether a component can be welded:*
  Ask a qualified specialist workshop.
- *Before welding on the implement:*
  Uncouple the implement from the tractor.
- Do not weld close to a crop protection sprayer that was previously used to spread liquid fertiliser.

2.1.5.3 Operating materials

CMS-T-00002324-C.1

Unsuitable operating materials

Operating materials that do not meet AMAZONE requirements can cause implement damage and accidents.

- Only use operating material that meet the requirements in the Technical Data.

2.1.5.4 Special equipment and spare parts

CMS-T-00002325-B.1

Special equipment, accessories, and spare parts

Special equipment, accessories, and spare parts that do not meet AMAZONE requirements can impede the operational safety of the implement and cause accidents.

- Only use original parts or parts that meet AMAZONE requirements.
- *If you have any questions regarding special equipment, accessories or spare parts,*
  contact your dealer or AMAZONE.

2.2 Safe working with crop protection products

CMS-T-00012385-B.1

Safe working with crop protection products

Crop protection products that are not used properly can cause accidents, environmental damage and machine damage. Observe the national regulations for health and occupational safety. Be sure to

especially observe the first aid measures in the safety data sheets regarding body contact with crop protection products.

- Follow the country-specific regulations for handling and applying crop protection products.
- Observe the warning instructions and regulations from the crop protection product manufacturer regarding the handling of crop protection products for dosing, application and cleaning.
- Wear the personal protective equipment required by the safety data sheets for the crop protection product and on the crop protection product containers or the Safety Kit from AMAZONE.
- Wear suitable robust clothing, such as safety shoes, long trousers and a long-sleeved top.
- Follow the instructions from the manufacturer of the personal protective equipment.
- Take off contaminated protective equipment, clothing, shoes and gloves before entering the cab.
- Do not bring any used personal protective equipment, crop protection product containers, used filters, contaminated gloves, shoes or pieces of clothing into the driver's cab.
- Depending on the requirements in the safety data sheets for the utiliser crop protection product, wear the personal protective equipment in the driver's cab.
- Use personal protective equipment for all activities during which you could come into contact with crop protection products.
- *To prevent damage to components and materials of the machine:*
  Use only approved crop protection products. In case of doubt, contact AMAZONE Customer Service.
- *To be able to rinse away crop protection product in the event of an emergency:*
  Always carry sufficient water in the hand wash tank.
- Do not mix different crop protection products.
- Do not fill the machine from open waters.
- *If you must fill the machine from open waters:*
  Observe the country-specific regulations.
- Fill the machine only using AMAZONE original filling equipment or using filling equipment that meets AMAZONE requirements.
- Do not exceed the nominal volume of the spray liquid tank.
- *To avoid exceeding the payload of the machine:*
  Observe the specific weight of the spray liquid when filling the machine.
- Reduce your speed when turning, otherwise the boom can be overly strained and can break.
- Switch the sprayer off when turning on the headlands.
- Never open spray liquid lines that are under pressure.

- ► Follow the instructions from the manufacturer of the system for the outside air supply / filtering.
- ► The doors and windows of Category 4 cabs must be tight enough to prevent infiltration of dusts, aerosols and vapours into the cab. Make sure that the cable grommets and grommets for other supply lines are impermeable. See section "Maintaining the machine".

2.3 Safety routines

CMS-T-00002300-D.1

Securing the tractor and implement

If the tractor and implement are not secured against unintentional starting and rolling away, the tractor and implement can be set in motion in an uncontrolled manner, and can run over, crush and kill people.

- ► Lower the raised implement or raised implement parts.
- ► Relieve pressure in the hydraulic hose lines by actuating the operating devices.
- ► *If you have to stand under the raised implement or components,*
  secure the raised implement and components against lowering with a mechanical safety support or hydraulic locking device.
- ► Switch off the tractor.
- ► Apply the tractor's parking brake.
- ► Remove the ignition key.

Securing the machine

After uncoupling, the implement has to be secured. If the implement and implement parts are not secured, there is a risk of personal injury due to crushing and cutting.

- ► Only park the implement on stable and level ground.
- ► *Before you depressurise the hydraulic hose lines and disconnect them from the tractor,*
  move the implement into working position.
- ► Protect people against direct contact with sharp-edged or protruding implement parts.

Make sure that the protective equipment is functional

If protective equipment is missing, damaged or removed, implement parts can cause serious personal injury or even death.

- Check the implement at least once a day for damage, proper installation, and functioning of the protective equipment.
- *If you are not sure if the protective equipment is properly installed and functional,* have the protective equipment checked by a qualified specialist workshop.
- Make sure that the protective devices are properly installed and functional before any work on the implement.
- Replace damaged protective equipment.

Climbing on and off

Negligent behaviour while climbing on and off can cause people to fall off the ladder. People who climb onto the implement without using the intended access steps can slip, fall, and suffer severe injury. Dirt and operating materials can impair stepping and standing safety. Accidental actuation of control elements can unintentionally activate potentially dangerous functions.

- Use only the intended access steps.
- *To ensure safe stepping and standing:* Always keep steps and platforms clean and in proper condition.
- *When the implement is moving:* Never climb onto or off of the implement.
- Climb up and down facing the implement.
- When climbing up and down, maintain contact with at least 3 points on the steps and handrails: always keep 2 hands and one foot or 2 feet and one hand on the implement.
- When climbing up and down, never hold onto the control elements.
- When climbing down, never jump off of the implement.

Intended use

3

CMS-T-00011731-A.1

- The implement is designed solely for professional use according to Good Agricultural Practices for precise metering and transport of spray liquid, liquid fertiliser and water.
- The implement is an agricultural implement to be front-mounted on the 3-point power lift of a tractor that meets the technical requirements.
- The implement can be driven on public roads provided that the field of view is not impeded.
- When driving on public roads, depending on the provisions of the applicable road traffic regulations, the implement can be mounted and transported at the front of a tractor that meets the technical requirements.
- Front mounting of the implement is only permitted in combination with an implement mounted at the rear.
- The implement may only be used and maintained by persons who fulfil the requirements. The personnel requirements are described in the section *"Personnel qualification"*.
- The operating manual is part of the implement. The implement is solely intended for use in compliance with this operating manual. Uses of the implement that are not described in this operating manual can lead to serious personal injuries or even death and to implement and material damage.
- The applicable accident prevention regulations as well as generally accepted safety-related, occupational health and road traffic regulations must also be observed by the users and the owner.
- Further instructions for intended use in special cases can be requested from AMAZONE.
- Uses other than those specified under the intended use are considered as improper. The manufacturer is not liable for any damage resulting from improper use, solely the operator is responsible.

Product description

4

CMS-T-00011732-A.1

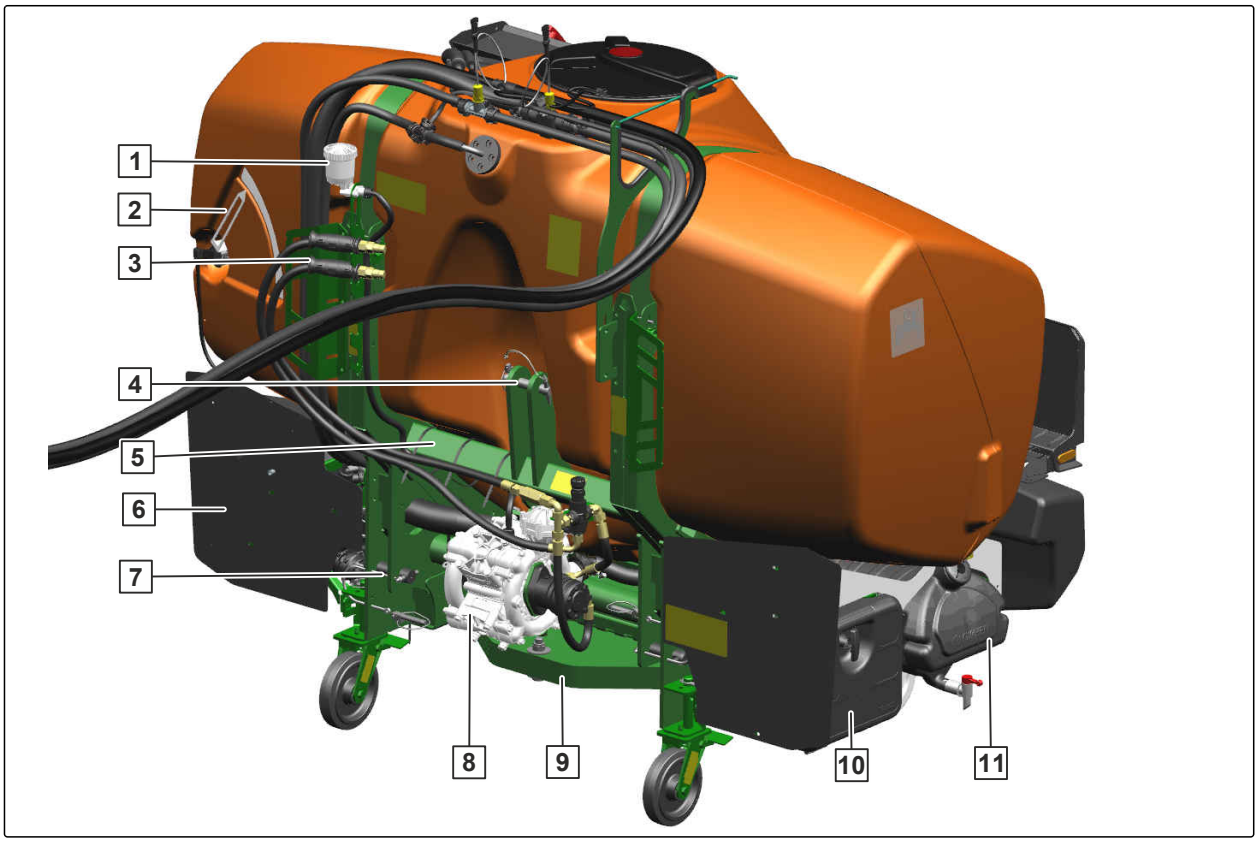
4.1 Implement overview

CMS-T-00011737-A.1

CMS-I-00007604

1	Spray liquid tank	2	Filling opening for spray agent, access to canister cleaning
3	Flushing water control panel	4	Threaded cartridge
5	Flushing water fill level indicator	6	Control panel
7	Transport device	8	Folding platform

9 Flushing water tank with filling opening and screw lid



CMS-I-00007603

1 Compensation tank for pump oil
2 Spray liquid fill level indicator
3 Hydraulic hoses for pump drive in the hose cabinet
4 Mounting point for top link
5 Rating plate
6 Spray protection
7 Mounting point for lower link
8 Spray liquid pump, hydraulically driven
9 Ballast weights
10 Transport box for personal protective equipment, contaminated and not contaminated
11 Hand wash tank

4.2 Special equipment

CMS-T-00011733-A.1

Special equipment is equipment that is not fitted on the implement or is only available in certain markets. The sales documents provide information on the equipment of your implement, or consult your dealer for more detailed information.

The following equipment is special equipment:

- LED work lights
- Ballast weights

- Removable transport device with parking brake
- TG part-width section valve chest for 2-6 part-width sections
- 3-inch suction hose, 8 m
- Coupling adapter, 3 inch to 2 inch
- Camera system
- Implement inspection for combination of FT-P 1502 with SCHMOTZER hoeing technology implements
- Personal protective equipment safety kit

4.3 Function of the implement

CMS-T-00011734-A.1

The liquid fertiliser is pumped into the spray liquid tank via the suction connection.

The water is pumped via the suction connection into the flushing water tank or into the spray liquid tank for the preparation of spray liquid.

The spray liquid pump conveys the liquid from the spray liquid tank to the part-width section valves.

The part-width sections valves distribute the liquid to the spreading elements of the implement mounted or trailed at the rear of the tractor.

The flushing water is used to clean the spray liquid tank, supply the spray gun and clean the spray agent canisters.

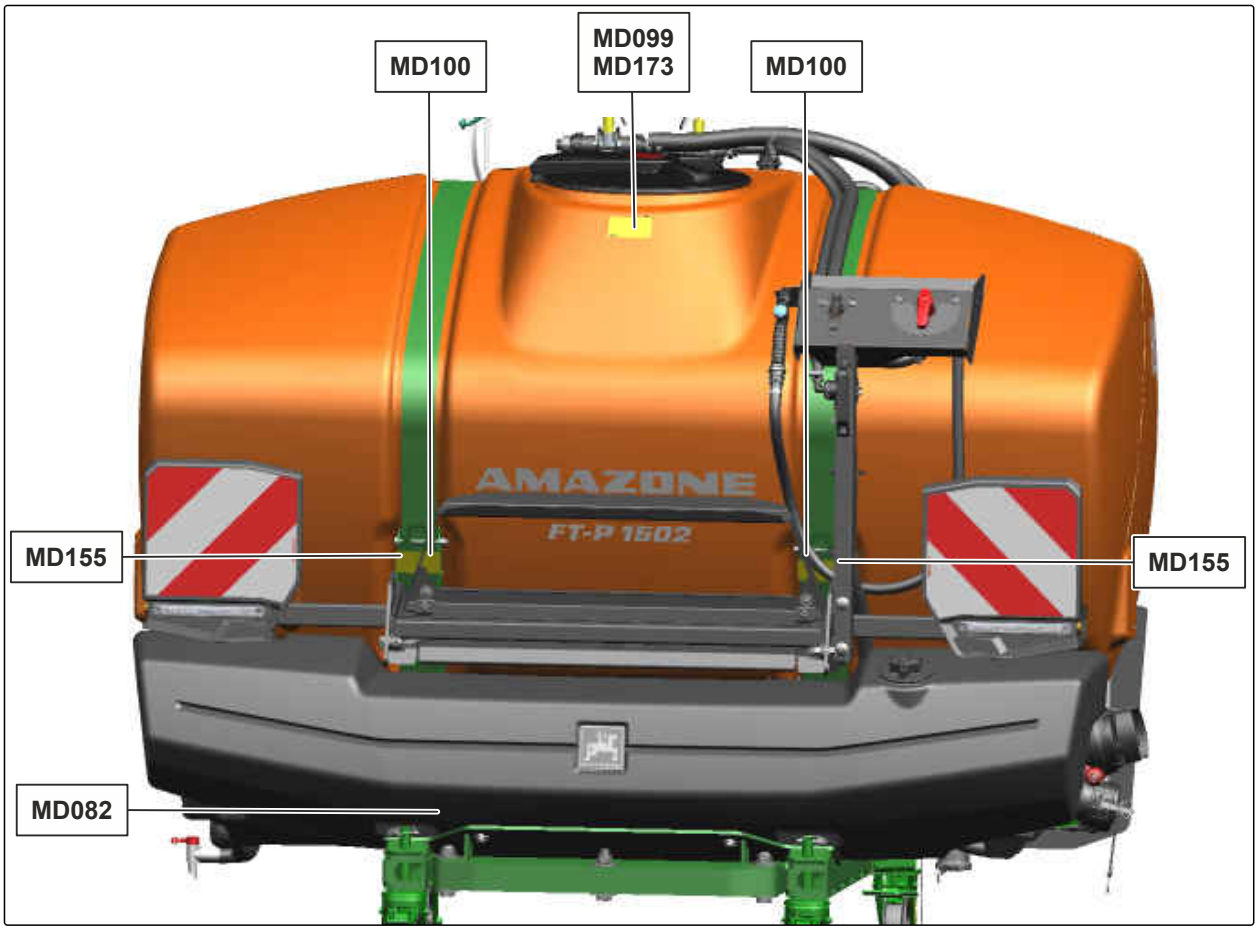
All functions are controlled via the control terminal using switch taps and stop taps.

4.4 Warning symbols

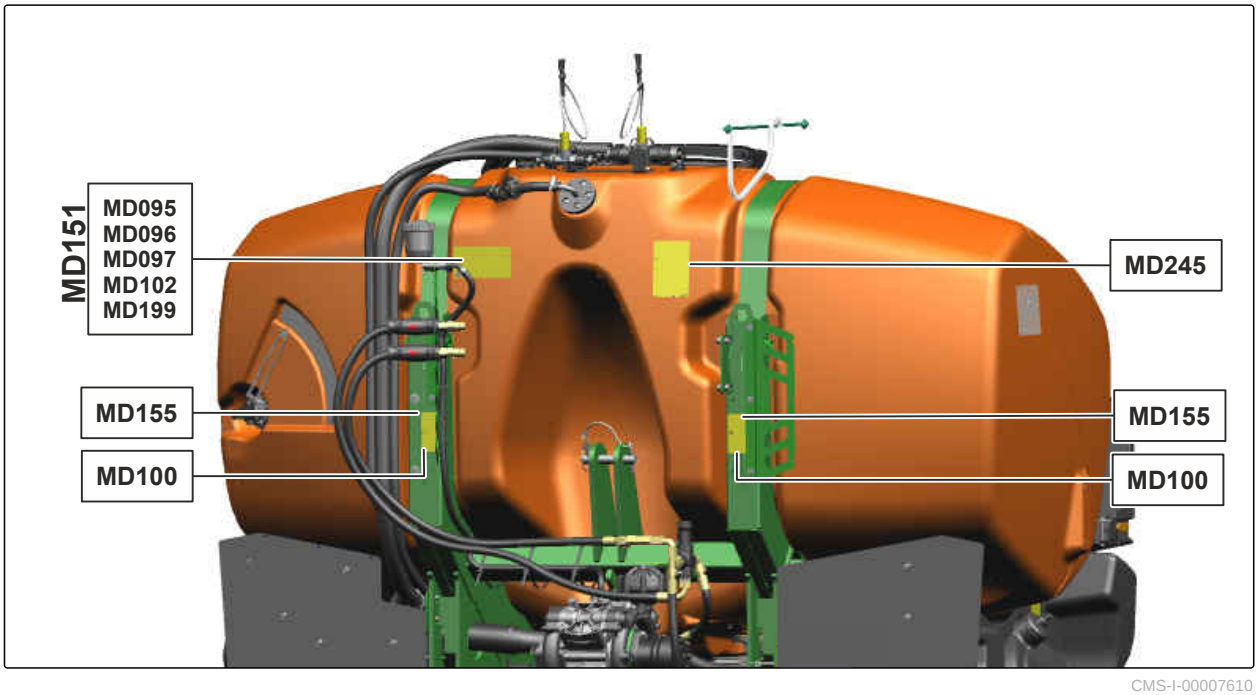
CMS-T-00011736-A.1

4.4.1 Positions of the warning symbols

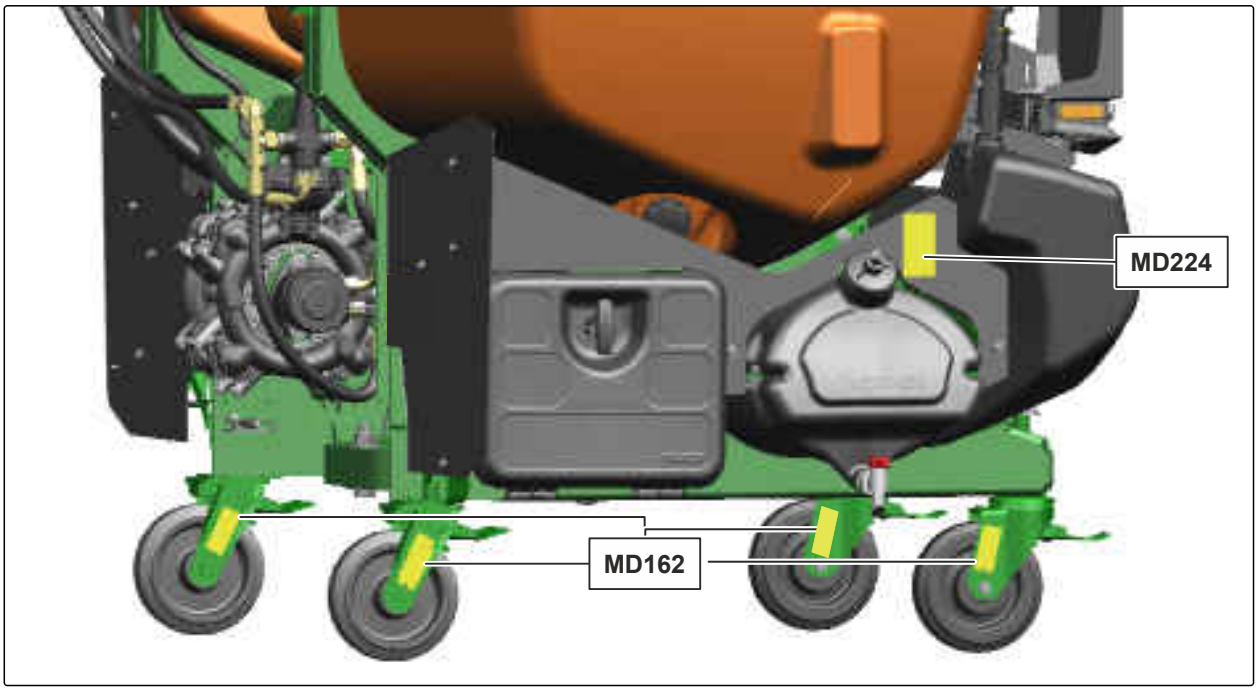
CMS-T-00011753-A.1



CMS-I-00007608



CMS-I-00007610



CMS-I-00007609

CMS-I-00007607

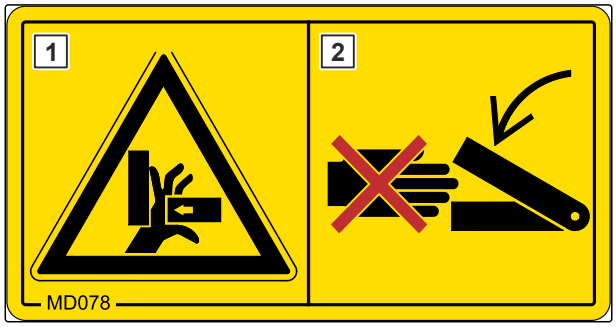
4.4.2 Layout of the warning symbols

CMS-T-000141-D.1

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

A warning symbol consists of two fields:

- Field 1 shows the following:
  - A pictogram depicting the danger area, surrounded by triangular safety symbol
  - The order number
- Field 2 shows a pictogram depicting how to avoid the danger.



CMS-I-00000416

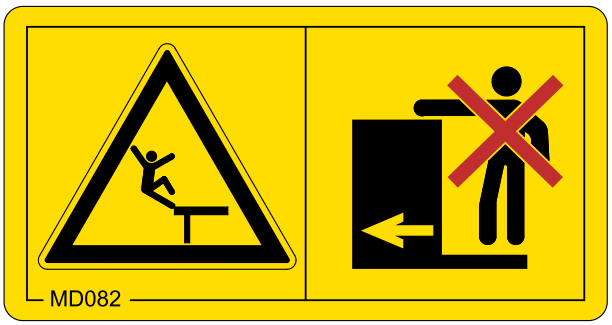
4.4.3 Description of the warning symbols

CMS-T-00011754-A.1

MD 082

Risk of falling from tread surfaces and platforms

- Do not let anybody ride on the implement.
- Do not let anybody climb onto the driving implement.



CMS-I-000081

MD095

Risk of accident due to non-compliance with the instructions in this operating manual

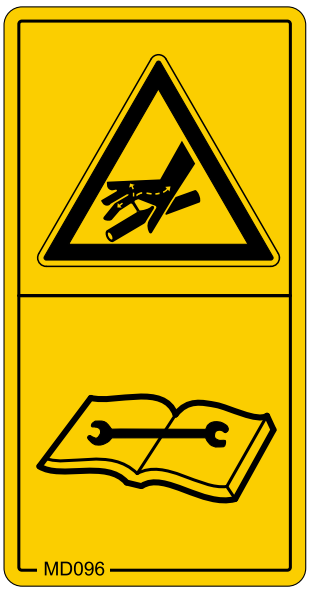
- Before your work on or with the implement, read and understand the operating manual.

CMS-I-000138

MD 096

Risk of infection from escaping hydraulic fluid under high pressure

- Never look for leaks in hydraulic hose lines using your hand or fingers.
- Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.
- *If you are injured by hydraulic oil,* consult a doctor immediately.

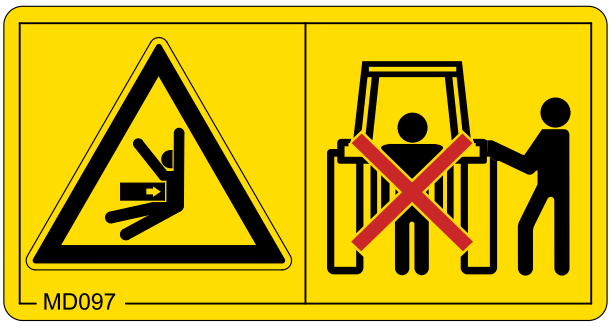


CMS-I-000216

MD 097

Risk of crushing between the tractor and the implement

- *Before you actuate the tractor hydraulic system,* instruct persons away from the area between the tractor and the implement.
- Actuate the tractor hydraulic system only from the designated work station.



CMS-I-000139

MG099

Lethal danger due to harmful substances

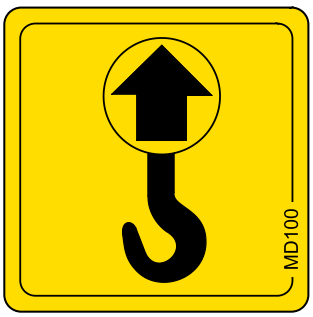
- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.
- Follow the manufacturer's safety instructions for handling harmful substances.

CMS-I-00007611

MD 100

Risk of accidents due to improperly attached lifting gear

- Only attach the lifting gear at the marked positions.

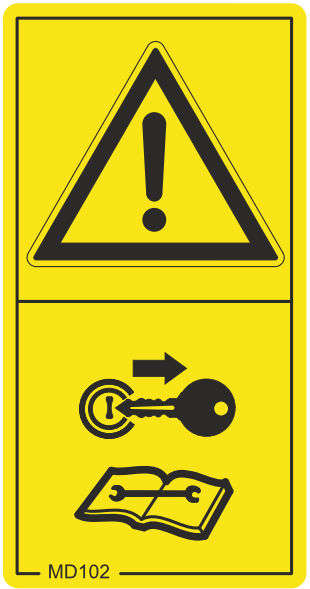


CMS-I-000089

MD 102

Risk due to unintentional starting and rolling away of the machine

- Before performing any work, secure the implement against unintentional starting and rolling away.

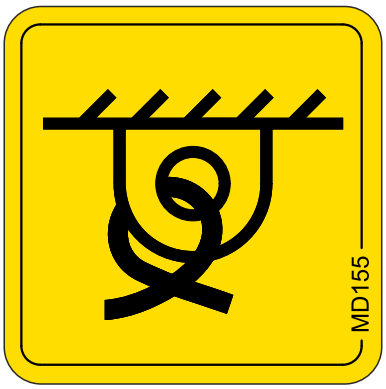


CMS-I-00002253

MD 155

Risk of accident and machine damage during transport due to improperly secured machine

- Only attach the lashing belts at the marked lashing positions for transporting the machine.



CMS-I-00000450

MD162

Danger due to overload on the transport roller

- Never exceed the maximum load capacity.

CMS-I-00003490

MD 173

Mortal danger due to vapours in the spray liquid tank

- Never climb into the spray liquid tank.

CMS-I-00007613

MD 192

Severe injuries due to incorrect handling of the pressure relief valve

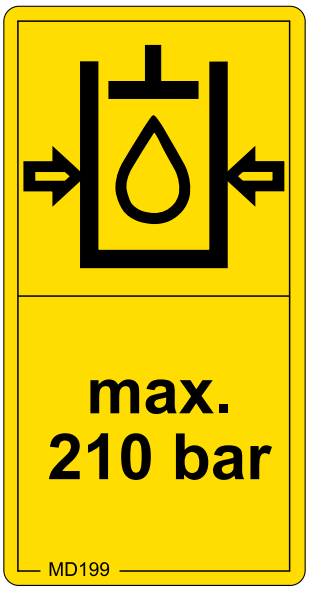
- Have the pressure relief valve checked, adjusted, and repaired by a qualified specialist workshop only.

CMS-I-00007612

MD 199

Risk of accident if the hydraulic system pressure is too high

- Only couple the implement to tractors with a maximum tractor hydraulic pressure of 210 bar.



CMS-I-00000486

MD 224

Health hazard due to water from the hand wash tank

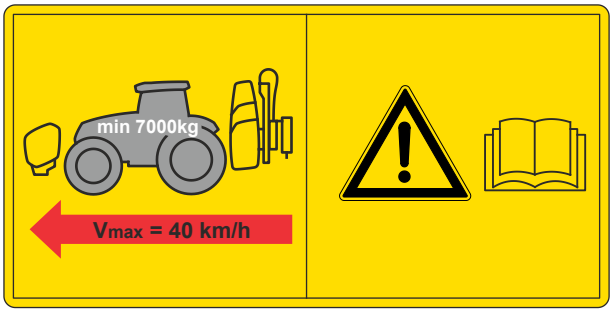
- Never use the water from the hand wash tank as drinking water.

CMS-I-00005073

MD 245

Risk of accidents due to unsuitable tractor

- Couple the front tank only onto tractors whose tare weight is at least 7 kg.
- Do not drive faster than 40 km/h with the front tank.



CMS-I-00007615

4.5 Front lighting and identification

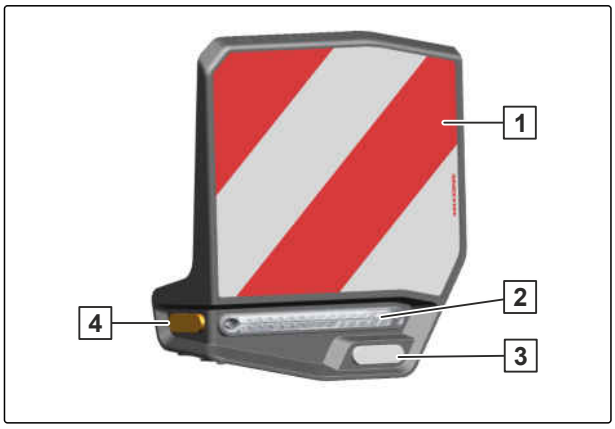
CMS-T-00011735-A.1

1 Warning boards

2 Side marker lights

3 White reflector

4 Yellow reflector



CMS-I-00007605

NOTE

The lighting and identification for road travel can vary depending on the national regulations.

4.6 Threaded cartridge

CMS-T-00001776-E.1

The threaded cartridge contains the following items:

- Documents
- Aids

CMS-I-00002306

4.7 Rating plate on the implement

CMS-T-00014674-A.1

CMS-I-00009315

1 Implement number

2 Vehicle ID number

3 Product

4 Permissible technical implement weight

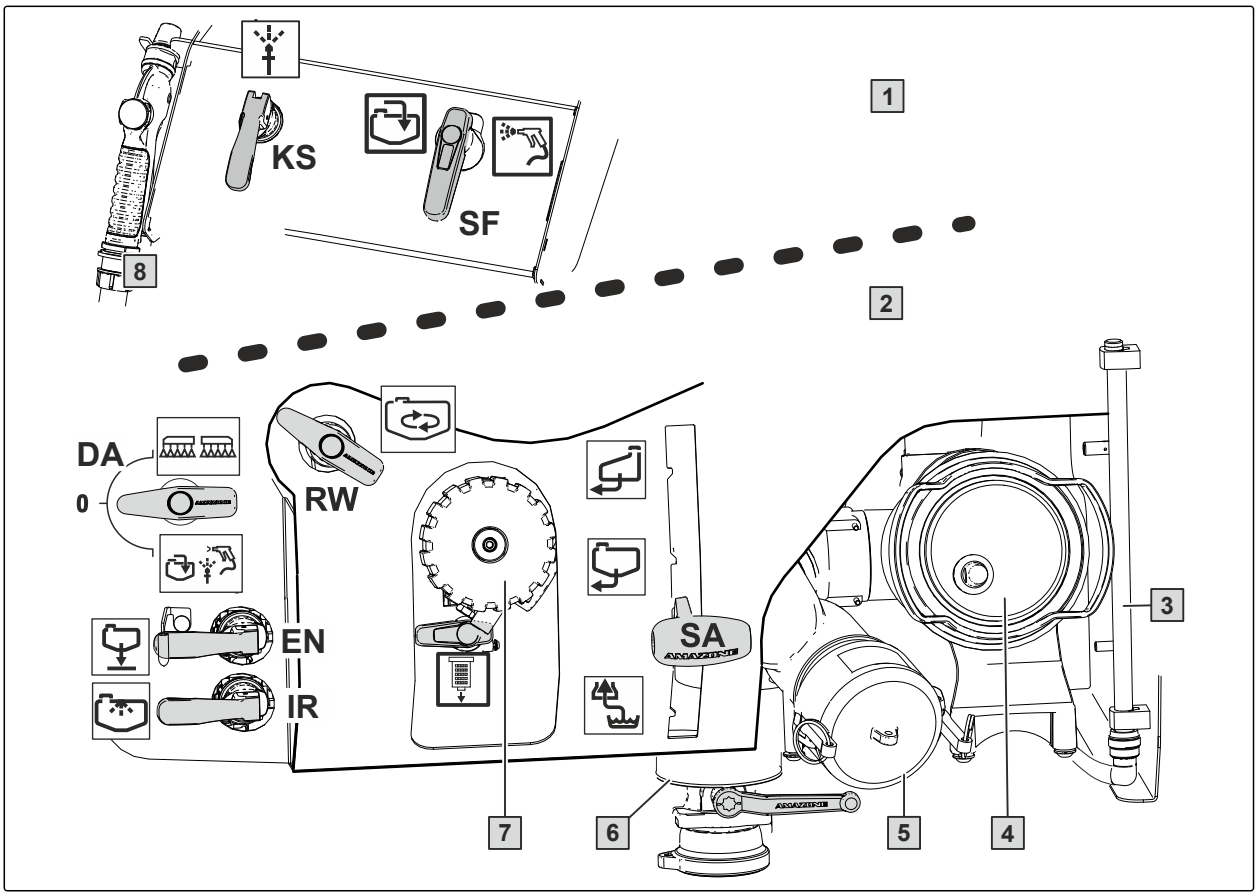
5 Tare weight

6 Model year

7 Year of manufacture

4.8 Control panel

CMS-T-00011755-A.1



CMS-I-00007614

1 Control panel at the front on the spray liquid tank

2 Control panel at the bottom left

3 Flushing water tank fill level indicator

4 Suction filter

5 Connection for water suction

6 Spray liquid tank emptying with stop tap

7 Pressure filter with drain tap

8 Spray gun

Control panel at the front on the spray liquid tank

KS - Spray agent canister flushing stop tap:

-  Flush the spray agent canister on the filling opening.

SF - Flushing water switch tap:

-  Fill the spray liquid tank with flushing water or drawn water.
-  Clean with the spray gun.

Control panel, bottom left

SA - Suction valve chest hand lever:

-  Suction from spray liquid tank for applying spray liquid
-  Suction from flushing water tank for dilution or cleaning
-  Suction via suction hose for filling the spray liquid tank with water

DA - Pressure valve chest:

-  Flushing water supply for:
  - Spray gun
  - Cleaning the spray agent canister.
  - Diluting the spray liquid.
-  Applying spray liquid.

EN - Pressure valve chest stop tap:

-  Quick emptying via the spray liquid pump

IR - Internal cleaning stop tap:

-  Internal cleaning with simultaneous flushing of the return flow line

RW - Agitator switch tap:

- Adjust the agitator intensity

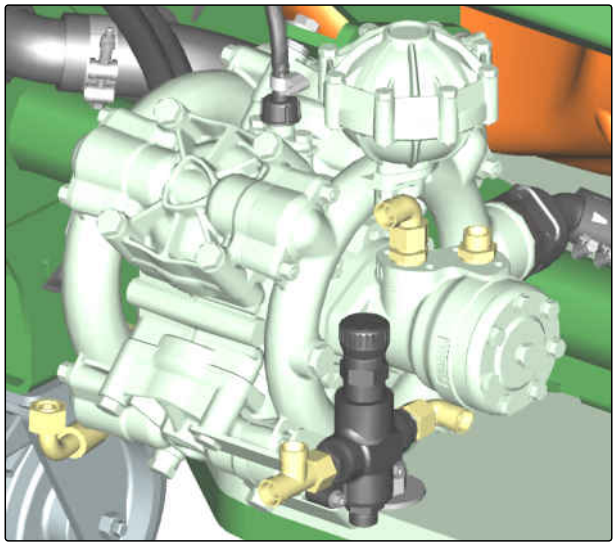
4.9 Spray liquid pump

CMS-T-00011756-A.1

The spray liquid pump is driven by the tractor hydraulic system.

The pump speed can be read on the control terminal.

The pump speed can be adjusted via the tractor.



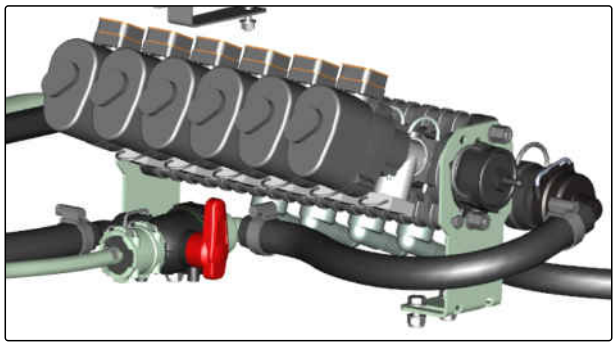
CMS-I-00007628

4.10 Part-width section valves

CMS-T-00011757-A.1

The part-width section valves distribute the spray liquid to the spreading elements of the implement coupled at the rear of the tractor.

2 to 6 part-width section valves are available.



CMS-I-00007631

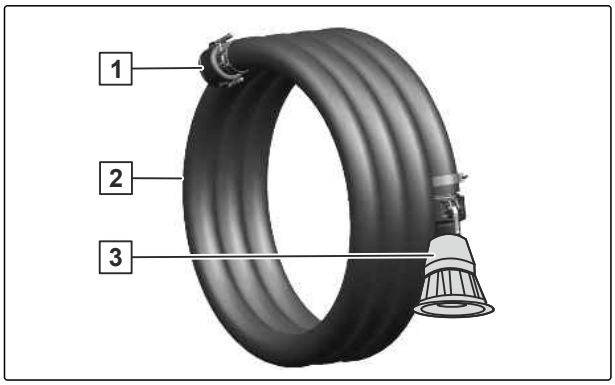
4.11 Suction hose for filling the spray liquid tank

CMS-T-00011758-A.1

1 Quick coupling

2 Suction hose with non-return valve

3 Filter for drawn water



CMS-I-00007630

4.12 Filter equipment

CMS-T-00011770-A.1

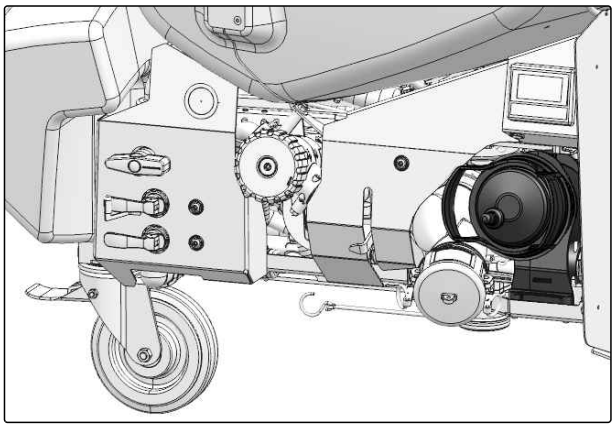
4.12.1 Suction filter

CMS-T-00011759-A.1

The suction filter filters the spray liquid during spraying operation.

The suction filter filters the water when filling via the suction hose and when flushing.

- Filter area: 660 mm²
- Mesh size: 0.6 mm



CMS-I-00007633

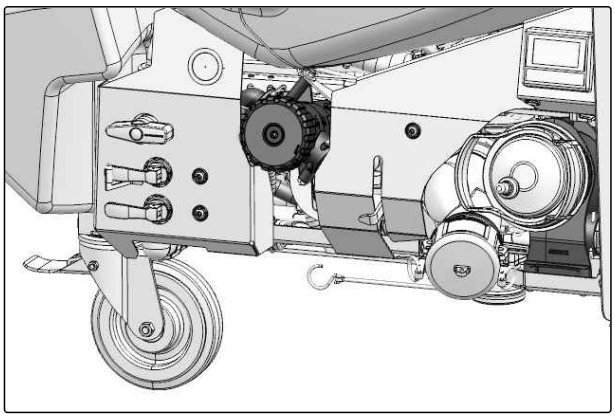
4.12.2 Self-cleaning pressure filter

CMS-T-00011771-A.1

The self-cleaning pressure filter prevents the nozzle filters upstream of the spraying nozzles from becoming blocked.

The mesh size must be smaller than the mesh size of the suction filter and the nozzle filter.

When the agitator is switched on, the inside surface of the pressure filter insert is constantly flushed through, and undissolved particles of spray agent as well as dirt are conveyed back to the spray liquid tank.



CMS-I-00007632

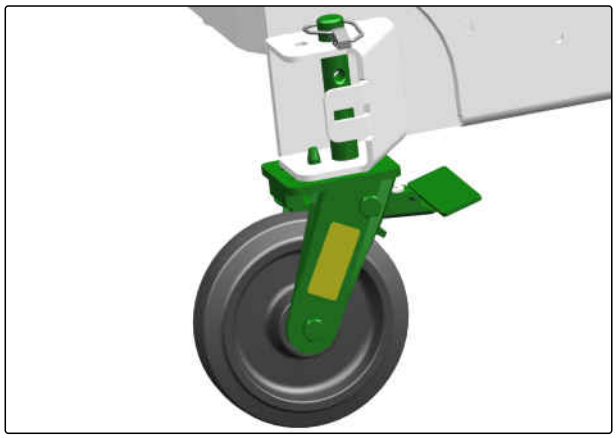
Overview of the pressure filter inserts				
Mesh per inch	**Colour**	**Nozzle size**	**Filter area**	**Mesh size**
Standard: 50	Blue	03 and larger	216 mm²	0.35 mm
80	Yellow	02	216 mm²	0.2 mm
100	Green	015 and smaller	216 mm²	0.15 mm

4.13 Removable transport device

CMS-T-00011760-A.1

With the removable transport device, the implement can be coupled to the tractor's three-point hydraulic system and the empty implement can be manoeuvred.

To prevent the implement from rolling away, the transport rollers are equipped with a parking brake.



CMS-I-00007634

4.14 Camera system

CMS-T-00011761-A.1

4.14.1 Certified camera system

CMS-T-00011762-B.1

The certified camera system is used for cross-traffic monitoring. It does not replace the requirements for the field of vision.

The certified camera system can replace a banksman at intersections and junctions.

The certified camera system includes one camera on the left and right side of the implement respectively. The position and orientation of the cameras may not be changed.

4.14.2 Non-certified camera system

CMS-T-00011763-C.1

NOTE

Equipment with a non-certified camera system does not replace the marshalling person in road traffic.

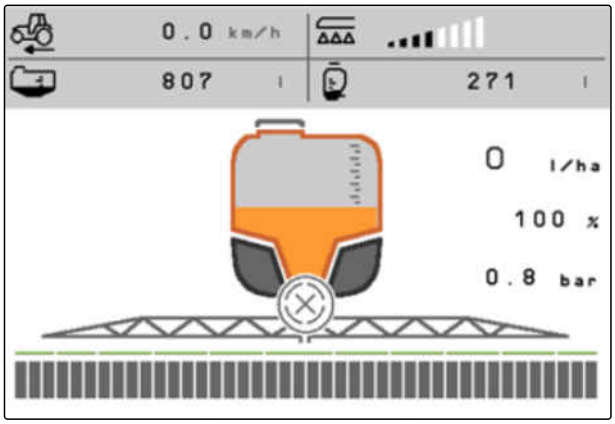
The non-certified camera system consists of one or several cameras on the implement.

The camera system is used for monitoring the surroundings and as a manoeuvring aid. With front-mounted implements, the camera system is used for cross-traffic monitoring.

4.15 ISOBUS software

CMS-T-00011764-A.1

The machine is operated with the ISOBUS software and an ISOBUS control terminal.



CMS-I-00007636

4.16 Personal protective equipment safety kit

CMS-T-00011765-A.1

The safety kit is in the case for personal protective equipment for handling crop protection products.

CMS-I-00007635

Technical data

5

CMS-T-00014868-A.1

5.1 Dimensions

CMS-T-00011773-A.1

Nominal volume of the spray liquid tank	1,500 l
Tank volume of the spray liquid tank	1,600 l
Volume of the flushing water tank	180 l
Volume of the hand wash tank	20 l
Number of part-width sections	2 to 6
Filling height from the platform	1 m
Total height with transport device	1.95 m
Total width	2.22 m
Total length	1.35 m
Centre of gravity distance	19 cm

5.2 Permitted mounting categories

CMS-T-00011772-A.1

3-point mounting frame	
Top link	Category 2
Lower link	Category 3

5.3 Spray liquid pump

CMS-T-00011774-A.1

Spray liquid pump	**AR185 bp**
Maximum permissible pump speed	540 1/min
Operating speed	400 1/min to 540 1/min
Required oil volume flow at maximum pump speed	28 l/min
Delivery capacity at maximum pump speed	180 l/min

5.4 Ballast weights

CMS-T-00011775-A.1

85 kg to 340 kg

5.5 Maximum transport speed

CMS-T-00011777-A.1

40 km/h

5.6 Maximum application rate

CMS-T-00011778-A.1

Technically possible maximum application rate	Maximum total flow	200 l/min
	Maximum flow per part-width section	25 l/min
	Maximum flow per nozzle body	4 l/min
Maximum permissible application rate	105 l/min This corresponds to 630 l/ha at 10 km/h with 10 mworking width	

5.7 Technical residues

CMS-T-00014869-A.1

Technical residues in the spray line	
12 rows	18 rows
3 l	4.5 l

Technical residues in the control panel and spray liquid pump	
On level ground	8 l
Across the slope	
20 % on the left in direction of travel	10 l
20 % on the right in direction of travel	10 l
Up the slope and down the slope	
20 % up the slope	9 l
20 % down the slope	9 l

5.8 Performance characteristics of the tractor

CMS-T-00011776-A.1

Engine rating	Starting at 88 kW / 120 hp

Electrical system	
Battery voltage	12 V
Lighting socket	7-pin

Hydraulic system	
Maximum operating pressure	210 bar
Tractor pump output	At least 35 l/min at 150 bar
Implement hydraulic oil	HLP68 DIN51524 The hydraulic fluid is suitable for the combined hydraulic fluid circuits of all standard tractor brands.
Control units	One single-acting tractor control unit and one pressureless return flow

Tare weight	At least 7,000 kg

5.9 Permissible payload

CMS-T-00011018-E.1

Permissible payload for operation
Permissible payload = G_Z - G_L = _____ kg

- G_Z: Permissible technical implement weight according to the rating plate [kg]
- G_L: Determined tare weight [kg]

5.10 Noise development data

CMS-T-00002296-D.1

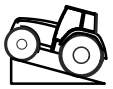
The workplace-related emission sound pressure level is lower than 70 dB(A), measured in operating condition at the ear of the tractor driver with the cab closed.

The emission sound pressure level mainly depends on the vehicle used.

5.11 Drivable slope inclination

CMS-T-00002297-E.1

Across the slope		
On left in direction of travel	15 %	
On right in direction of travel	15 %	

Up the slope and down the slope		
Up the slope	15 %	
Down the slope	15 %	

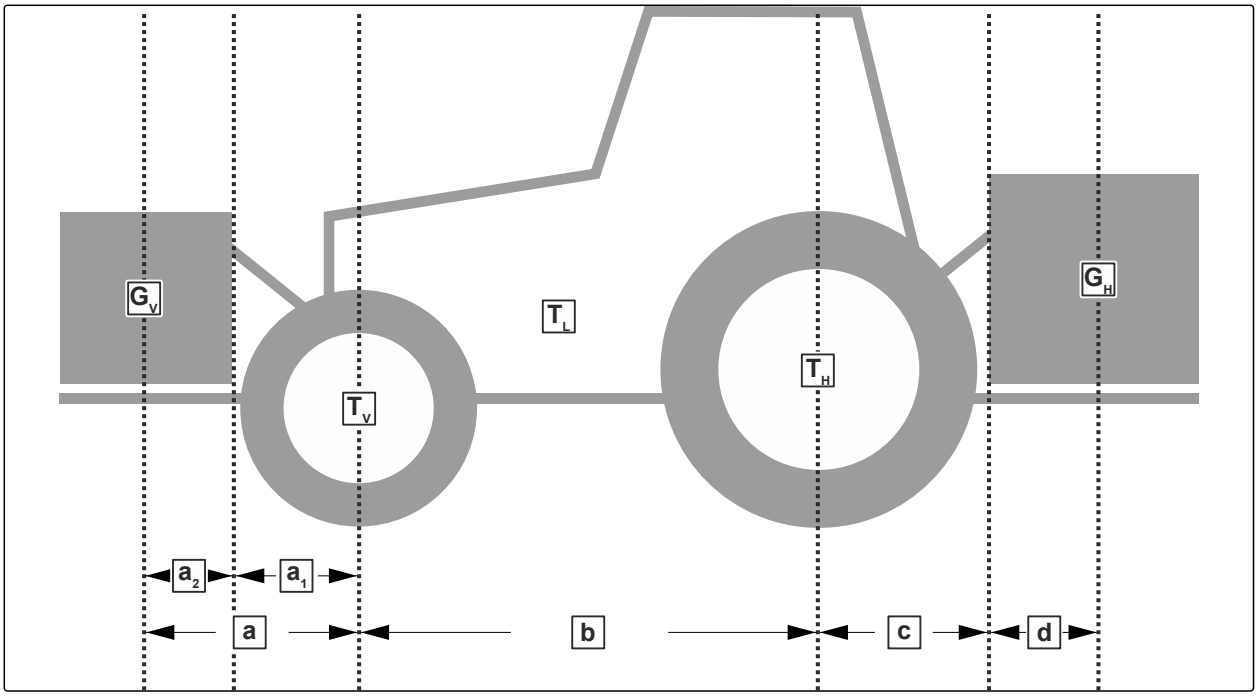
Preparing the machine

6

CMS-T-00011727-A.1

6.1 Calculating the required tractor characteristics

CMS-T-00000063-F.1



CMS-I-00000581

Designation	Unit	Description	Calculated values
T_L	kg	Tractor empty weight	
T_V	kg	Front axle load of the operational tractor without mounted implement or ballast weights	
T_H	kg	Rear axle load of the operational tractor without mounted implement or ballast weights	
G_V	kg	Total weight of front-mounted implement or front ballast	
G_H	kg	Permissible total weight of rear-mounted implement or rear ballast	
a	m	Distance between the centre of gravity of the front-mounted implement or the front ballast and the centre of the front axle	

Designation	Unit	Description	Calculated values
a_1	m	Distance between the centre of the front axle and the centre of the lower link connection	
a_2	m	Centre of gravity distance: Distance between the centre of gravity of the front-mounted implement or the front ballast and the centre of the lower link connection	
b	m	Wheelbase	
c	m	Distance between the centre of the rear axle and the centre of the lower link connection	
d	m	Centre of gravity distance: Distance between the centre of the lower link coupling point and centre of gravity of the rear-mounted implement or rear ballast.	

1. Calculate the minimum front ballasting.

$$G_{Vmin} = \frac{G_H \cdot (c + d) - T_V \cdot b + 0{,}2 \cdot T_L \cdot b}{a + b}$$

G_{Vmin} = _____

G_{Vmin} =

CMS-I-00000513

2. Calculate the actual front axle load.

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

T_{Vtat} = _____

T_{Vtat} =

CMS-I-00000516

3. Calculate the actual total weight of the tractor-implement combination.

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

$$G_{tat} =$$

$$G_{tat} =$$

CMS-I-00000515

4. Calculate the actual rear axle load.

$$T_{Htat} = G_{tat} - T_{Vtat}$$

$$T_{Htat} =$$

$$T_{Htat} =$$

CMS-I-00000514

5. Determine the tyre load capacity for two tractor tyres in the manufacturer specifications.

6. Write down the determined values in the following table.

IMPORTANT

Danger of accident due to implement damage caused by excessive loads

▶ Make sure that the calculated loads are smaller or equal to the permissible loads.

	Actual value according to calculation			Permitted value according to tractor operating manual			Tyre load capacity for two tractor tyres	
Minimum front ballasting		kg	≤		kg		-	-
Total weight		kg	≤		kg		-	-
Front axle load		kg	≤		kg	≤		kg
Rear axle load		kg	≤		kg	≤		kg

6.2 Equipping the implement with ballast weights

CMS-T-00012382-A.1

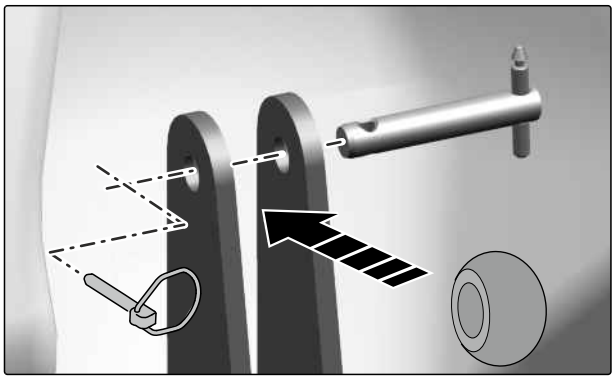
The implement can be equipped with a maximum of 4 ballast weights. One ballast weight weighs 85 kg.

► Have ballast weights installed or removed at a specialist workshop.

6.3 Adjusting the 3-point mounting frame

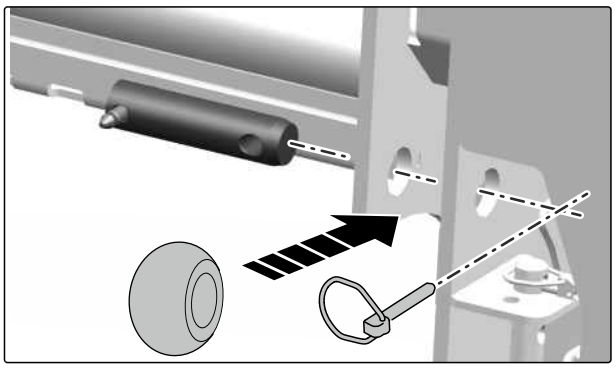
CMS-T-00011780-A.1

1. Install the Category 2 ball sleeve with the top link pin.
2. Secure the top link pin with a linch pin.



CMS-I-00007640

3. Install one Category 3 ball sleeve with lower link pin from the inside respectively.
4. Secure the lower link pins with linch pins.



CMS-I-00007639

6.4 Coupling the implement

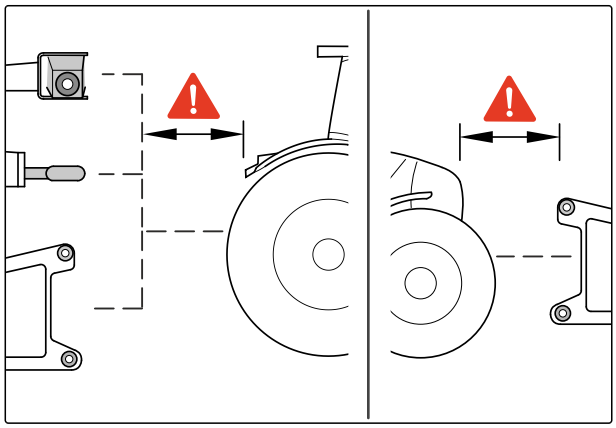
CMS-T-00011730-B.1

6.4.1 Driving the tractor towards the implement

CMS-T-00005794-D.1

Enough space must remain between the tractor and implement so that the supply lines can be coupled without obstructions.

- ▶ Drive the tractor towards the implement, leaving a sufficient distance.



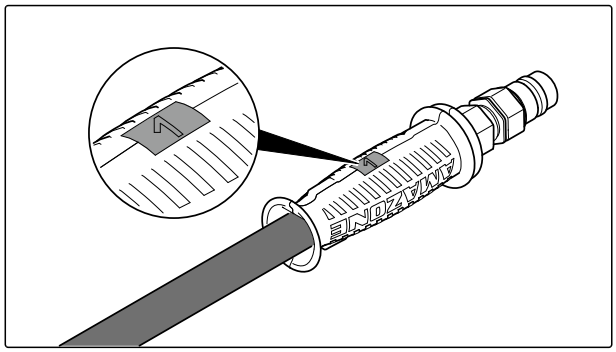
CMS-I-00004045

6.4.2 Coupling the hydraulic hose lines

CMS-T-00011849-B.1

All hydraulic hoses are equipped with handles. The handles have colour labels with a code number or a code letter. The labels are assigned to the respective hydraulic functions of the pressure line of a tractor control unit. Stickers are applied on the implement for the labels, which illustrate the respective hydraulic functions.

The tractor control unit is used with different types of actuation, depending on the hydraulic function:



CMS-I-00000121

Type of actuation	Hydraulic function	Symbol
Latching	Permanent hydraulic oil circulation	
Momentary	Hydraulic oil flow until action is executed	
Floating	Free hydraulic oil flow in the tractor control unit	

Designation		Function	Tractor control unit	
Red		Pump drive	Single-acting	
Red		Pressure-free return flow		

WARNING

Risk of injury or even death

If the hydraulic hose lines are incorrectly connected, the hydraulic functions may be faulty.

- When coupling the hydraulic hose lines, observe the coloured markings on the hydraulic plugs.

IMPORTANT

Implement damage due to insufficient hydraulic oil return flow

- Only use lines of size DN16 or larger for the pressureless hydraulic oil return flow.
- Select short return paths.
- Connect the pressureless hydraulic return flow to the intended coupling.
- *Depending on the implement equipment:* couple the leakage oil line in the intended coupling.
- Install the supplied coupling sleeve on the pressureless hydraulic oil return.

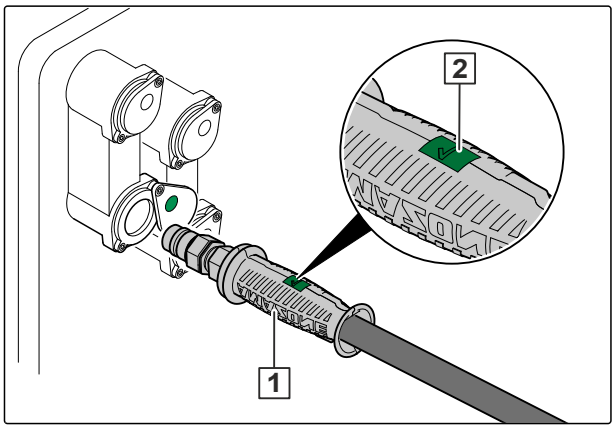
1. Depressurise the hydraulic system between the tractor and the implement using the tractor control unit.

2. Clean the hydraulic plugs.

3. Couple the hydraulic hose lines 1 to the hydraulic sockets of the tractor according to the marking 2.

➡ The hydraulic plugs lock perceptibly.

4. Route the hydraulic hose lines with sufficient freedom of movement and without chafing points.

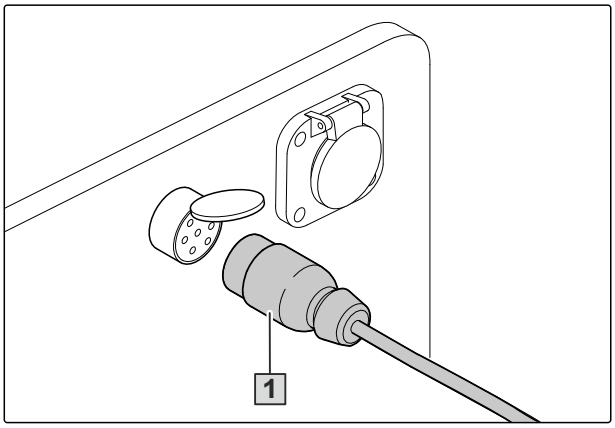


CMS-I-00001045

6.4.3 Coupling the power supply

CMS-T-00001399-G.1

1. Insert the plug **1** for the power supply.
2. Route the power supply cable with sufficient freedom of movement and without chafing or pinching points.
3. Check the lighting on the implement for proper function.

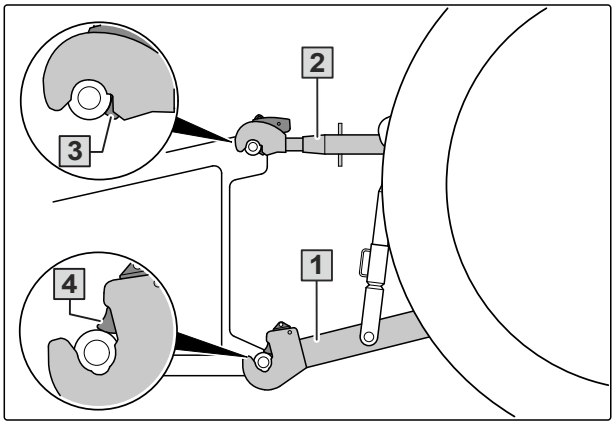


CMS-I-00001048

6.4.4 Coupling the three-point mounting frame

CMS-T-00001400-H.1

1. Set the lower link **1** at the same height.
2. Couple the lower links from the tractor seat.
3. Couple the top link **2**.
4. Check whether the top link catch hooks **3** and lower link catch hooks **4** are correctly locked.

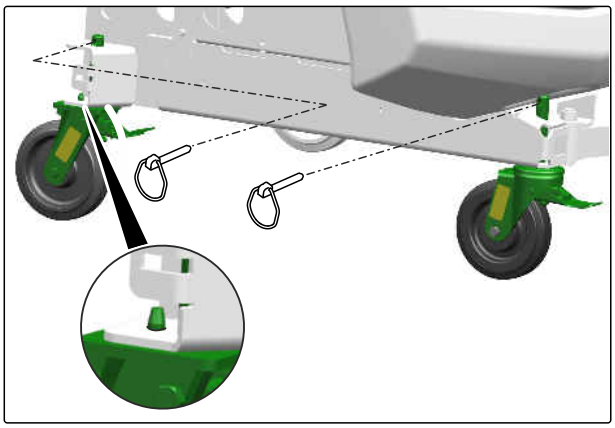


CMS-I-00001225

6.4.5 Removing the transport device

CMS-T-00011781-A.1

1. Slightly raise the implement.
2. Hold the transport roller and pull out the linch pin.
3. Remove the transport roller downwards.
4. Remove all 4 transport rollers.



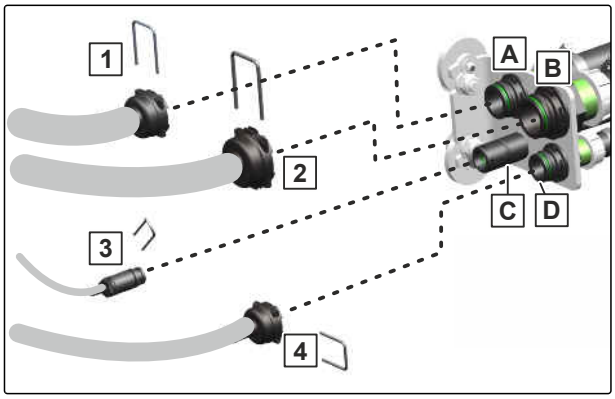
CMS-I-00007641

6.4.6 Coupling the spray liquid hose lines

CMS-T-00011782-A.1

The bracket for the liquid flow path is located at the rear of the implement.

1. Couple supply line **1** onto connection **A** of the liquid flow path.
2. Couple the pressure relief **2** onto connection **B** of the liquid flow path.
3. Couple flushing line **3** onto connection **C** of the liquid flow path.
4. Couple return flow **4** onto connection **D** of the liquid flow path.



CMS-I-00007643

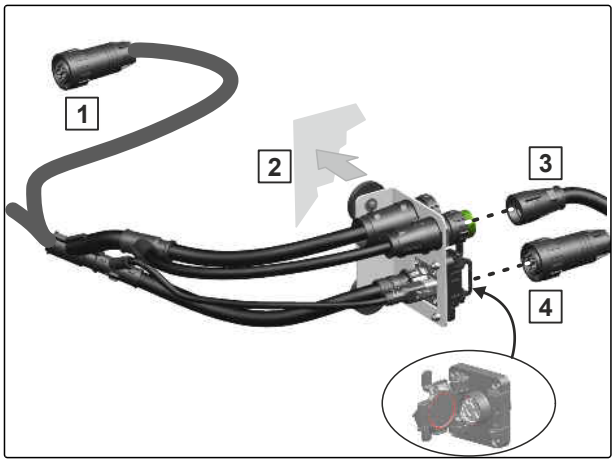
NOTE

Route the hose lines such that the hoses do not kink and chafe on components.

6.4.7 Coupling the electronic lines

CMS-T-00011783-A.1

1. Attach the magnetic bracket **2** for the electronics onto the rear implement.
2. Couple the ISOBUS plug of the rear implement **4** onto the magnetic bracket.
3. Couple the plug for the part-width section valve chest **3** onto the magnetic bracket.
4. Couple the ISOBUS plug **1** onto the tractor.



CMS-I-00007642

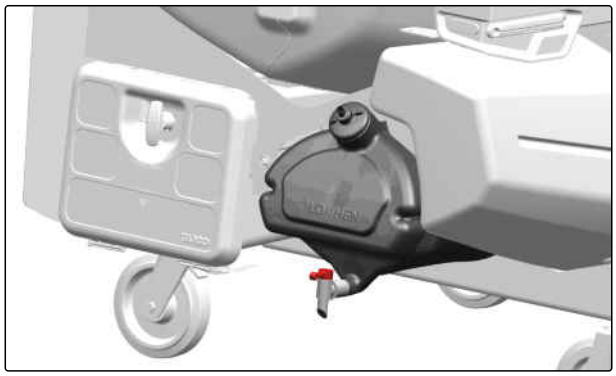
6.5 Preparing the implement for operation

CMS-T-00011728-A.1

6.5.1 Filling the hand wash tank

CMS-T-00011787-A.1

▶ Fill the hand wash tank via the filling opening.



CMS-I-00007646

6.5.2 Filling the flushing water tank

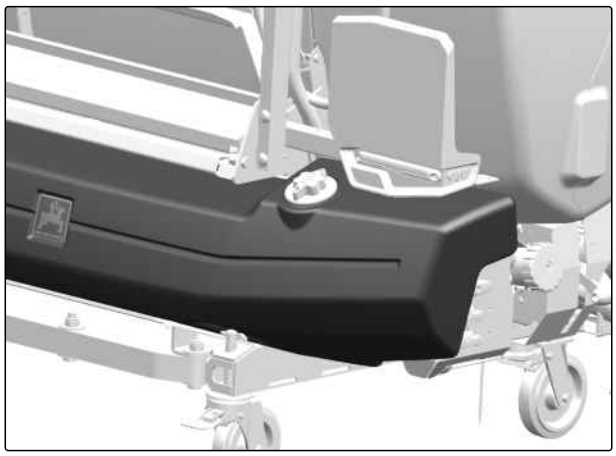
CMS-T-00011786-A.1

WARNING

Contamination of the flushing water tank with crop protection agents or spray liquid

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

▶ Fill the flushing water tank via the filling opening.

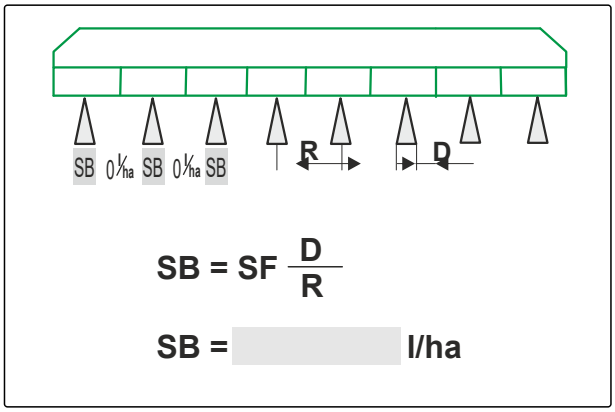


CMS-I-00007647

6.5.3 Calculating the target rate for band spraying

CMS-T-00012585-A.1

- Calculate the desired target rate for band spraying SB from the target rate for full-area spraying SF.



CMS-I-00008043

6.5.4 Filling the spray liquid tank via the suction hose

CMS-T-00011784-A.1

IMPORTANT

Damage on the spray liquid pump

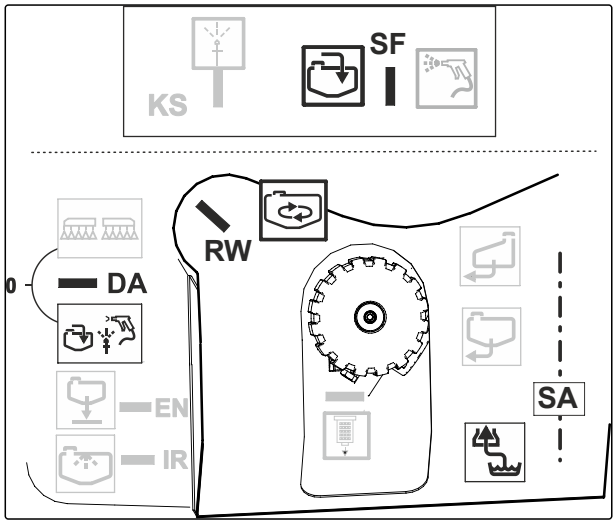
- Do not use the suction connection for pressure filling.
- Do not fill from a higher-elevation source.
- Use a continuous minimum diameter of the suction hoses and switch taps of 2 inches.

NOTE

To avoid exceeding the permitted payload, take the differing specific weights [kg/l] for the individual liquids into account while filling the field sprayer.

Specific weights of different liquids				
Liquid	Water	Urea	UAN	NP solution
Density	1 kg/l	1.11 kg/l	1.28 kg/l	1.38 kg/l

1. Couple the suction hose onto the suction connection and the extraction point.
2. Run the spray liquid pump.
3. Select  for suction valve chest *"SA"*.
4. Select  for pressure valve chest *"DA"*.
5. Adjust the agitator *"RW"*.
6. Select  for switch tap *"SF"*.
7. Add the spray agent while filling.



CMS-I-00009562

After filling:

8. *When the target quantity has been reached:*
   Select Position 0 for switch tap *"SF"*.
9. Select Position 0 for pressure valve chest *"DA"*.

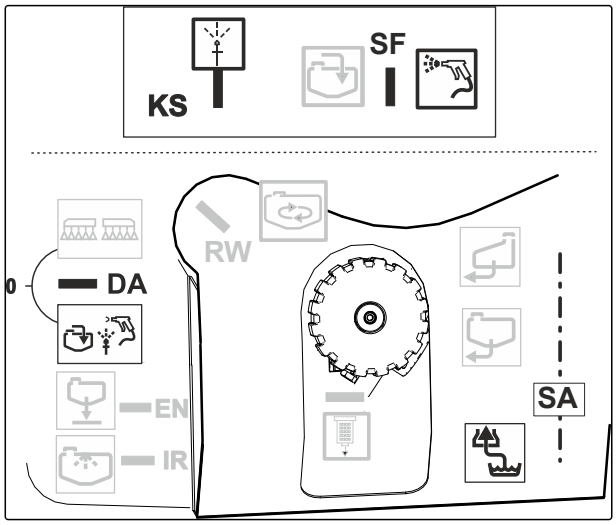
6.5.5 Adding crop protection product and cleaning spray agent canisters

CMS-T-00011785-A.1

1. Open the cover of the spray liquid tank.
2. Carefully add the crop protection product while filling.
3. *When filling of the spray liquid tank is complete:*
   Select  on the suction valve chest for flushing water.
4. Open and hold stop tap *"KS"*.
5. Put the spray agent canister over the nozzle and press it down.

➡ The spray agent canister will be cleaned on the inside.

6. Select  for switch tap *"SF"*.



CMS-I-00007645

7. Clean the flushing area with the spray gun.
8. Select Position 0 for switch tap *"SF"*.
9. Close the cover of the spray liquid tank.

6.5.6 Replacing spraying nozzles

CMS-T-00012656-A.1

WARNING

Risks due to accidental contact with spray liquid

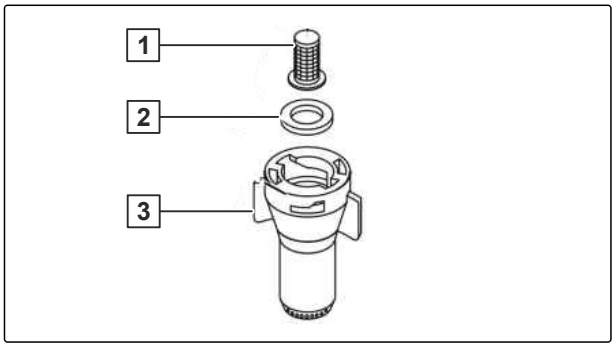
- ▶ Before working on the nozzle bodies, flush the nozzles with flushing water.

Different nozzle sizes are marked with bayonet caps of different colours.

1. Unscrew the bayonet cap **3**.
2. Take out the nozzle filter **1**.
3. Clean the nozzle filter.
4. Insert the nozzle filter.
5. Use a new bayonet nozzle unit.

   or

   Insert a new nozzle in the bayonet cap.
6. Press in the rubber seal **2**.
7. Screw the bayonet cap onto the nozzle body.



CMS-I-00008060

6.6 Preparing the machine for road travel

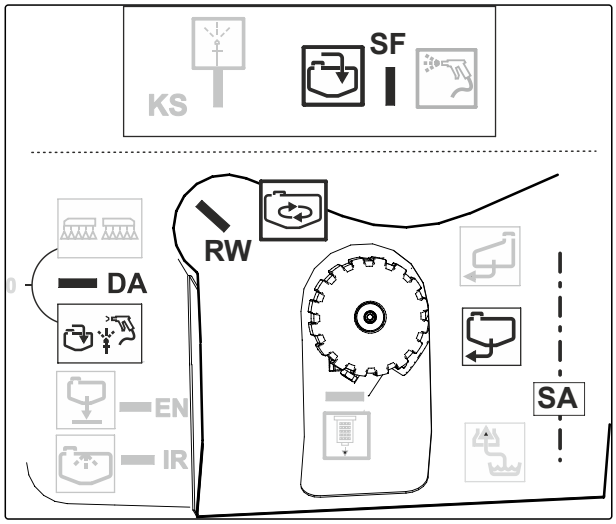
CMS-T-00011729-A.1

6.6.1 Switching on the agitator

CMS-T-00011788-A.1

To prevent segregation, switch on the agitator during road travel with a filled spray liquid tank.

1. Run the spray liquid pump.
2. Select  for suction valve chest *"SA"*.
3. Select  for pressure valve chest *"DA"*.
4. Select  for switch tap *"SF"*.
5. Adjust the agitator *"RW"*.



CMS-I-00007648

6.6.2 Checking the camera system

CMS-T-00012480-A.1

- Check the plug-in connection of the locking mechanism.

6.6.3 Monitoring cross-traffic

CMS-T-00011789-A.1

WARNING

Risk of injury or even death when driving without a certified camera system

If a non-certified camera system is used to monitor cross-traffic, persons or vehicles can be overseen. The camera system is an aid. The camera system does not replace the banksman

- Rely on the banksman when driving into intersections or junctions.

- Monitoring cross-traffic using a certified camera system

  or

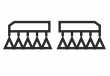
  Use a banksman when driving into intersections or junctions.

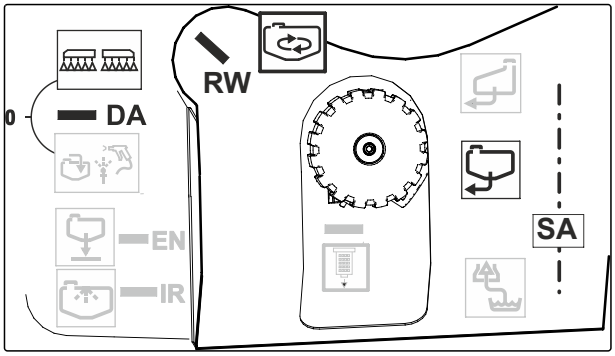
Using the machine 7

CMS-T-00011744-A.1

7.1 Spraying

CMS-T-00011791-A.1

1. Adjust the agitator *"RW"*.
2. Select  for pressure valve chest *"DA"*.
3. Select  for suction valve chest *"SA"*.
4. Switch on the control terminal.
5. Enter the rate in the Field menu on the control terminal.
6. Run the spray liquid pump at operating speed.
7.  ON/OFF Switch on spraying operation in the Work menu on the control terminal.



CMS-I-00009556

CMS-I-00008033

7.2 Observing the drift reduction measures

CMS-T-00011792-A.1

- ▶ Choose larger nozzles and higher water application rates.
- ▶ Reduce the spray pressure.
- ▶ Reduce the forward speed.
- ▶ Use nozzles with a high proportion of coarse droplets.

7.3 Briefly interrupting work

CMS-T-00014863-A.1

Before briefly interrupting work, the boom must be flushed and the suction filter and pressure filter must be cleaned.

REQUIREMENTS

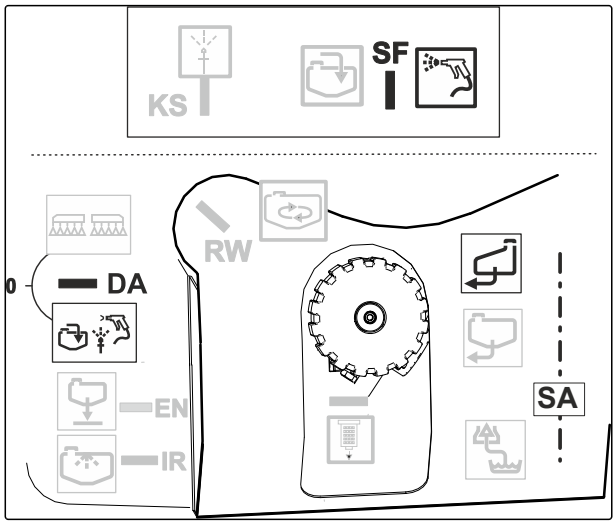
✓ The flushing water tank is sufficiently filled.

Clean the suction filter as follows:

1. Run the spray liquid pump.
2. Put the sealing cap on the suction coupling.
3. Select  for pressure valve chest *"DA"*.
4. Select  for suction valve chest *"SA"*.
5. Select  for flushing water switch tap *"SF"*.
6. Vent the suction filter via the vent valve on the filter cover for 20 seconds.

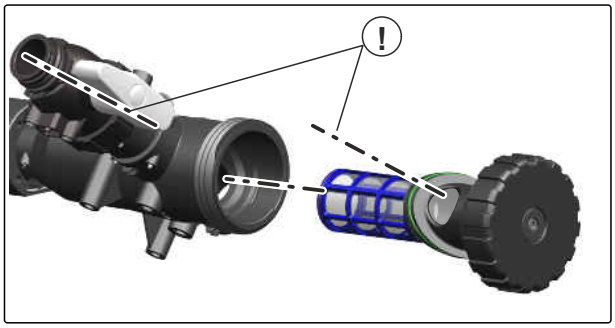
➡ The contents of the filter cup are sucked out.

7. Take out the suction filter.
8. Clean the suction filter with water.
9. Reinsert the suction filter.



CMS-I-00009596

Clean the pressure filter as follows:



CMS-I-00007730

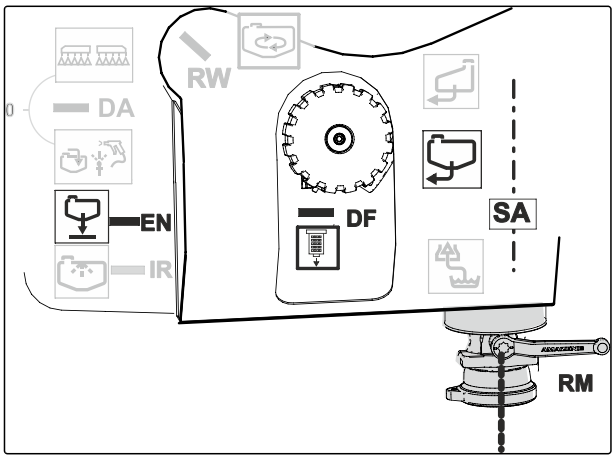
10. Switch off the spray liquid pump.
11. Select Position 0 for pressure valve chest *"DA"*.

➡ Lock the liquid circuit.

12. Take out the pressure filter.
13. Clean the pressure filter with water.
14. Grease the O-rings.
15. *To ensure that the opening of the filter mount is flush with the connection fitting:*
    Insert the pressure filter properly.
16. Screw the pressure filter back in.

7.4 Emptying excess spray liquid via the spray liquid pump

CMS-T-00011802-A.1



CMS-I-00007650

1. Install the hose on the drain valve.
2. Insert the hose in a suitable tank and secure it.
3. Open stop tap *"RM"*.
4. Run the pump.
5. Select  for suction valve chest *"SA"*.
6. Open stop tap *"EN"*.

➡ Excess spray liquid will be pumped out.

7. Close both stop taps again.
8. Remove the hose.

NOTE

The hose is contaminated!

9. Clean the implement.

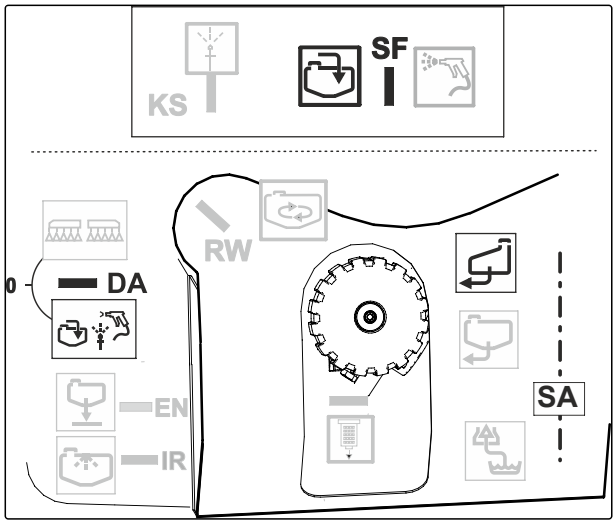
7.5 Diluting spray liquid with flushing water

CMS-T-00011793-A.1

Reasons for diluting the spray liquid:

- Eliminating excess residual quantities
- Increasing the spray liquid supply for treating a residual area

1. Run the spray liquid pump.
2. *When the required quantity of flushing water has been filled:*
   Set the switch taps back again.
3. Select  for the suction valve chest *"SA"*.
4. Select  for the pressure valve chest *"DA"*.
5. Select  for the switch tap *"SF"*.



CMS-I-00009554

7.6 Spraying out the diluted residual quantity

CMS-T-00011794-A.1

ENVIRONMENTAL INFORMATION

Environmental damage due to overdosing of spray liquid

► *To avoid overdosing due to undiluted residues:*
Spray the undiluted residues on an untreated area.

1. ON/OFF Switch off spraying operation on the control terminal.
2. Read the technical residue in the spray line from the technical data.

3. Calculate the distance travelled.

Designation	Unit	Description
F	m	Required travelled distance
M	l/ha	Application rate
B	m	Working width
R	l	Undilutable residual quantity

$$F = \frac{10.000 \cdot R}{M \cdot B}$$

$$F = \frac{\qquad}{\qquad}$$

F = m

CMS-I-00007752

4. Switch off the agitator.

5. ON/OFF Switch on spraying operation on the control terminal.

6. Spray out the undiluted spray liquid from the spray line on an untreated remaining area.

7. Spray diluted spray liquid onto the treated area.

8. ON/OFF Switch off spraying operation on the control terminal.

9. Clean the implement.

7.7 Cleaning the field sprayer on the field

CMS-T-00011797-A.1

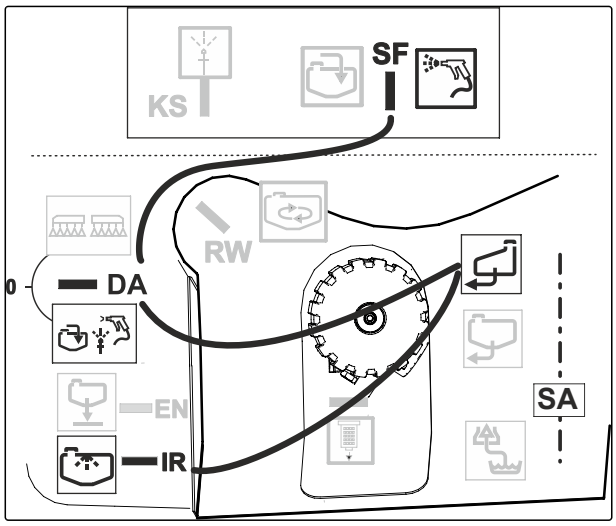
Perform the cleaning of the spray liquid circuit, the spray lines and the nozzles while driving on the field, since cleaning water is applied intermittently. You can clean the machine in the courtyard if you have a collecting facility, e.g. a Biobed.

A distinction is made between quick cleaning and intensive cleaning:

- Quick cleaning must be performed daily.
- Intensive cleaning must be performed before critical agent changes or before the machine is out of operation for a longer period of time.

REQUIREMENTS

- ⊘ Spray liquid tank fill level < 1 %
- ⊘ The flushing water tank is sufficiently filled



CMS-I-00007654

1. Run the spray liquid pump.
2. Select for pressure valve chest *"DA"*.
3. Select for suction valve chest *"SA"*.
4. Open the tank lid.
5. Select for switch tap *"SF"*.
6. Clean the spray liquid tank with the spray gun.
7. Close the tank lid.
8. Open the stop tap *"KS"*.
9. Select for switch tap *"SF"*.
10. Open the stop tap *"IR"* and close it again.

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

11. Set for pressure valve chest *"DA"* in position.
12. Completely open agitator *"RW"*.

➡ Flush the agitator with 10 % of the flushing water supply.

13. Select for suction valve chest *"SA"*.
14. Start driving on the field.

15. ON/OFF Switch on spraying operation via the control terminal.

➡ Spray out the cleaning water.

16. *To flush the valves and return flow lines:*
ON/OFF Switch spraying operation on and off several times.

17. *Spread diluted residual quantity until:*
Air emerges from the nozzles.

18. For intensive cleaning, repeat the cleaning procedure three times.

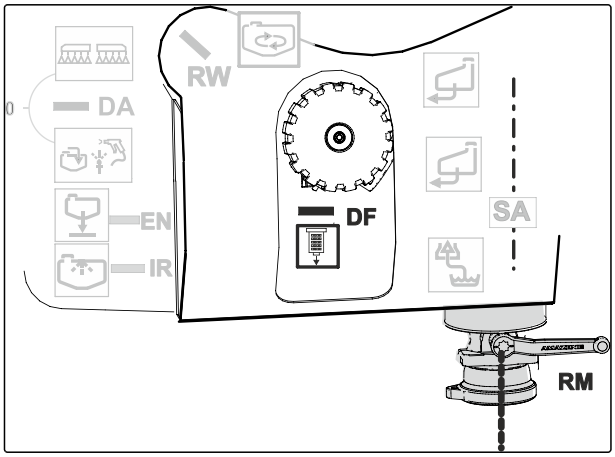
19. Drain the final residual quantity.

20. Place a collection bucket under the drain valve.

21. Open stop tap *"DF"*.

22. Open stop tap *"RM"*.

23. Drain the residual quantity. Close the drain taps again.



CMS-I-00007653

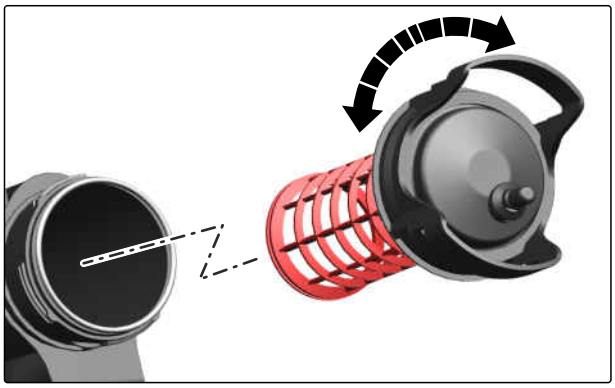
Clean the suction filter as follows:

24. Remove the suction filter when the spray liquid tank is empty.

25. Clean the suction filter with water.

26. Grease the O-rings.

27. Reinsert the suction filter.


CMS-I-00007731

Clean the pressure filter as follows:

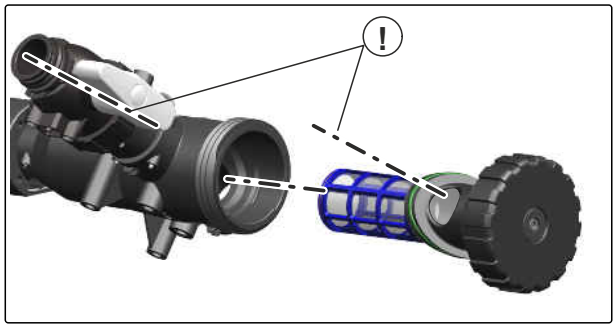
28. Unscrew the pressure filter when the spray liquid tank is empty.

29. Clean the pressure filter with water.

30. Grease the O-rings.

31. *To ensure that the opening of the filter mount is flush with the connection fitting:*
Insert the pressure filter properly.

32. Screw the pressure filter back in.



CMS-I-00007730

7.8 Cleaning the field sprayer with cleaning additives

CMS-T-00014864-A.1

If there is doubt regarding the cleanliness of the liquid circuit, the machine can be cleaned with cleaning additives. To do so, the following cleaning additives can be used.

Product	Manufacturer
Agro-Quick	Adama
JET CLEAR	Sudau agro
Proagro Spritzenreiniger	proagro SE

1. Perform an intensive cleaning.

2. Fill the spray liquid tank with 100 l of water. Add the cleaning additive.

3. Run the spray liquid pump.

4. Open stop tap *"IR"*.

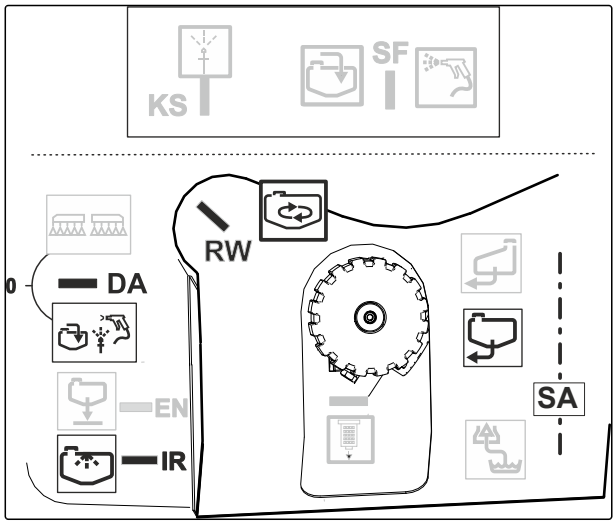
5. Select for suction valve chest *"SA"*.

6. Start the circulation cleaning.

NOTE

Duration of the circulation cleaning according to the manufacturer's specifications, however, let it run for at least 10 minutes.

7. Select for switch tap *"RW"*. Run at maximum intensity for one minute.



CMS-I-00009604

8. Stop the circulation cleaning.

9. Apply the mixture.

Eliminating faults

8

CMS-T-00011823-B.1

Errors	Cause	Solution
Liquid does not emerge from the nozzles	The nozzles are clogged.	► Eliminate blockages. ► Eliminate the limescale in the system.
Switch off nozzles that drip while spraying	Deposits on the diaphragm seat of the nozzle body, defective diaphragm	► see page 64
The spray liquid pump is not suctioning	Blockage on the suction side with suction filter, filter insert, and suction hose.	► Eliminate blockages.
	The spray liquid pump is suctioning air.	► Check the suction hose for leaks at the suction connection.
The spray liquid pump has no output	The suction filter with filter insert is soiled.	► Clean the suction filter with filter insert.
	The valves are jammed or damaged.	► Replace the valves.
	The spray liquid pump draws air, can be seen by air bubbles in the spray liquid tank.	► Check the hose connections on the suction hose for leaks.
The spray cone flutters	Spray liquid pump is conveying unevenly.	► Check or replace the valves on the suction and pressure sides.
The spray liquid pump is not conveying	The piston diaphragms of the spray liquid pump are defective.	► Replace all 6 piston diaphragms.
The application rate is not being reached	High forward speed, low pump speed	► Reduce the forward speed and increase the spray liquid pump speed until the error message disappears.
The set and the actual application rate are not identical	Wear on the spraying nozzles, difference between the desired and actual forward speed	► Check the application rate, see see page 75.
Hydraulic functions run slower	Filter in the hydraulic plug is soilted.	► Clean or exchange the filter in the hydraulic plug.

Switch off nozzles that drip while spraying

CMS-T-00012657-A.1

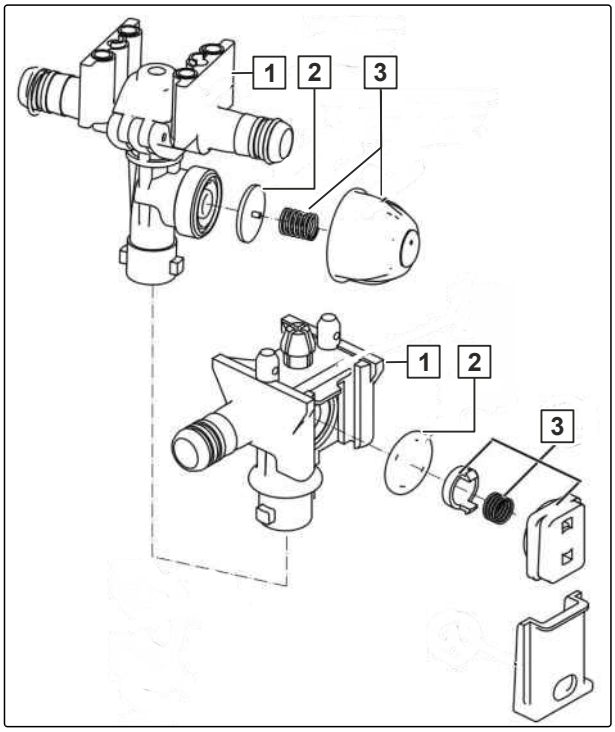
WARNING

Risks due to accidental contact with spray liquid

- ► Before working on the nozzle bodies, flush the nozzles with flushing water.

Deposits on the diaphragm seat of the nozzle body **1** can cause dripping.

1. Remove the spring element **3**.
2. Take out the diaphragm **2**.
3. Clean the diaphragm seat.
4. Check the diaphragm for cracks.
5. Reinstall the diaphragm and spring element.



CMS-I-00008061

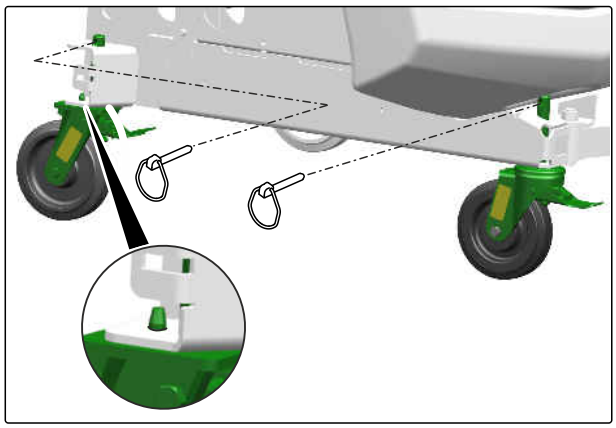
Parking the machine 9

CMS-T-00011739-A.1

9.1 Installing the transport device

CMS-T-00011838-A.1

1. Install both castors at the front of the implement and secure with a linch pin.
2. Install both rigid rollers at the rear of the implement, insert the pin through the hole and secure with a linch pin.



CMS-I-00007641

9.2 Uncoupling the 3-point mounting frame

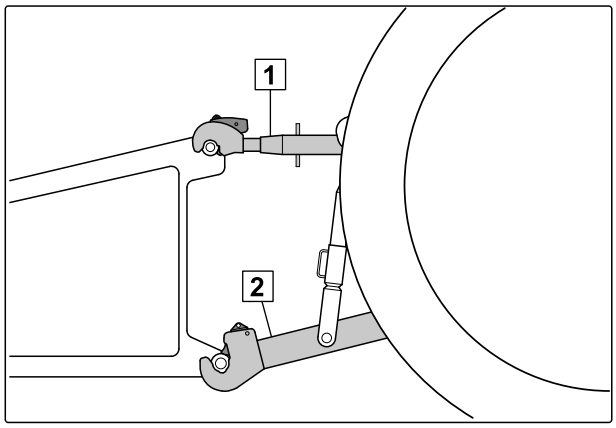
CMS-T-00011842-A.1

WARNING

Risk of tipping of the uncoupled machine

- ▶ Empty the implement before you uncouple the implement.

1. Park the implement on a level surface with solid ground.
2. Release the top link **1**.
3. Uncouple the top link **1** from the implement.
4. Release the lower links **2**.
5. Uncouple the lower links **2** from the implement from the tractor seat.



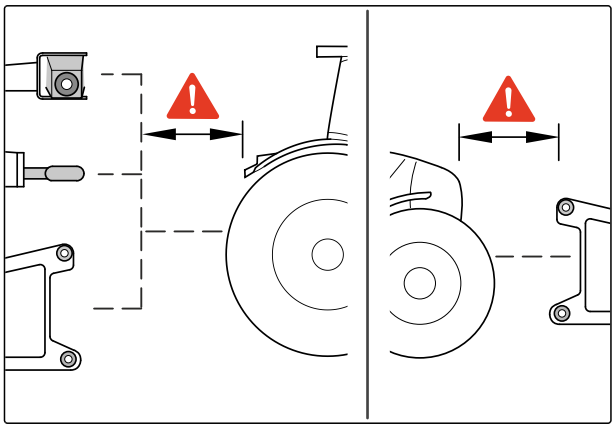
CMS-I-00001249

9.3 Driving the tractor away from the implement

CMS-T-00005795-D.1

There must be enough space between the tractor and implement so that the supply lines can be uncoupled without obstructions.

► Drive the tractor away from the implement, leaving a sufficient distance.

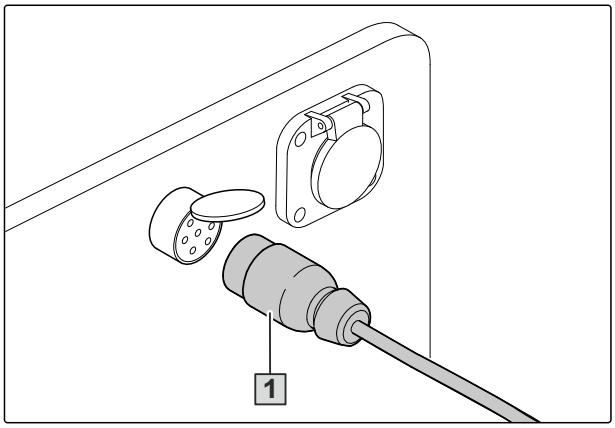


CMS-I-00004045

9.4 Uncoupling the power supply

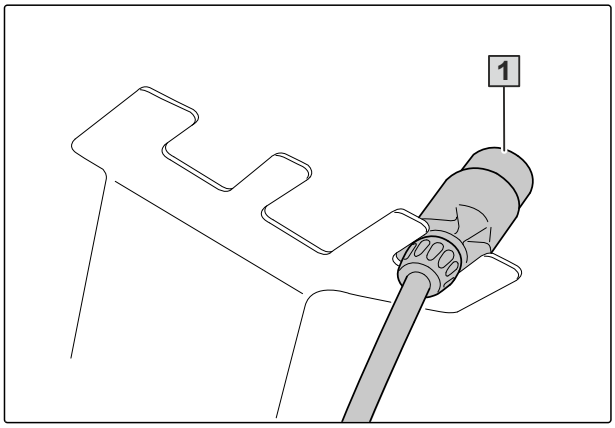
CMS-T-00001402-H.1

1. Pull out the plug 1 for the power supply.



CMS-I-00001048

2. Hang the plugs 1 in the hose cabinet.

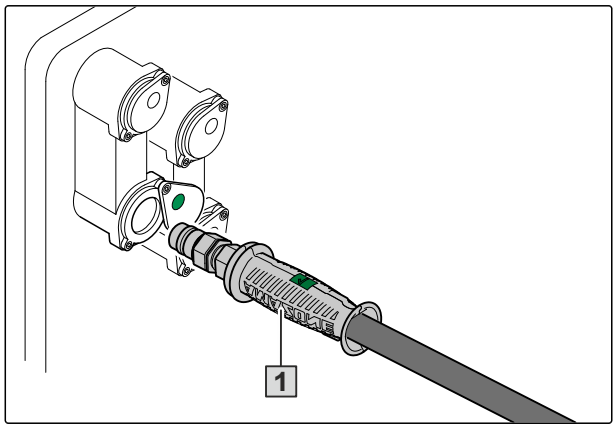


CMS-I-00001248

9.5 Disconnecting the hydraulic hose lines

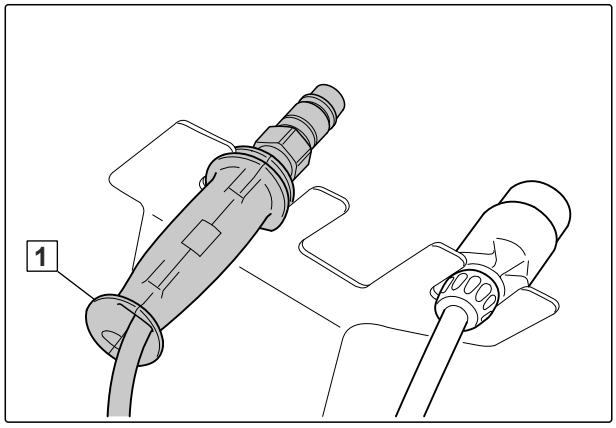
CMS-T-00000277-F.1

1. Secure the tractor and implement.
2. Put the control lever on the tractor control unit in float position.
3. Disconnect the hydraulic hose lines **1**.
4. Put the dust caps on the hydraulic sockets.



CMS-I-00001065

5. Hang the hydraulic hose lines **1** in the hose cabinet.

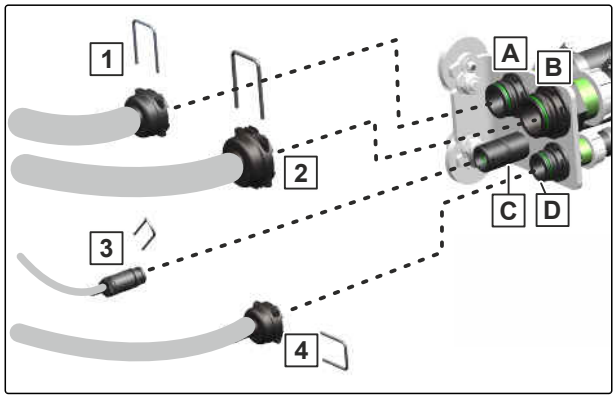


CMS-I-00001250

9.6 Uncoupling the spray liquid hose lines

CMS-T-00011839-A.1

1. Uncouple the supply line **1** from the bracket of the liquid flow path **A**.
2. Uncouple the pressure relief **2** from the bracket of the liquid flow path **B**.
3. Uncouple the flushing line **3** from the bracket of the liquid flow path **C**.
4. Uncouple the return flow line **4** from the bracket of the liquid flow path **D**.

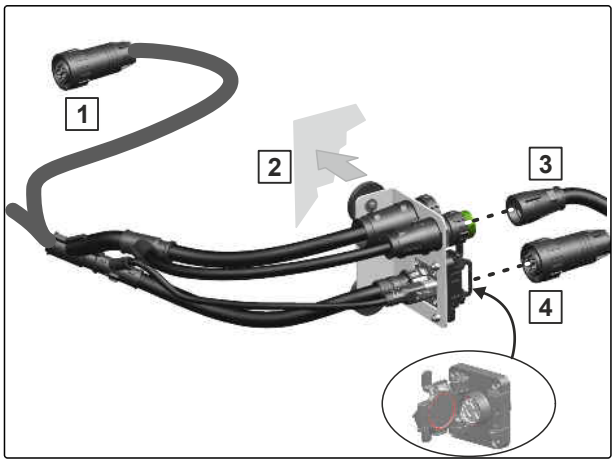


CMS-I-00007643

9.7 Uncoupling the electronic lines

CMS-T-00011840-A.1

1. Uncouple the ISOBUS plug of the rear implement **4** from the magnetic bracket.
2. Uncouple the part-width section valve chest connection **3** from the magnetic bracket.
3. Uncouple the ISOBUS plug **1** from the tractor.
4. Remove the magnetic bracket **2** for the electronics from the rear implement.



CMS-I-00007642

Repairing the implement 10

CMS-T-00011741-A.1

10.1 Protecting the machine against frost

CMS-T-00011843-A.1

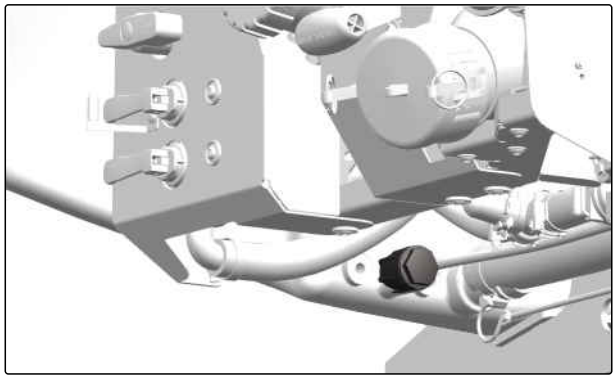
WARNING

Risk of machine damage due to frost

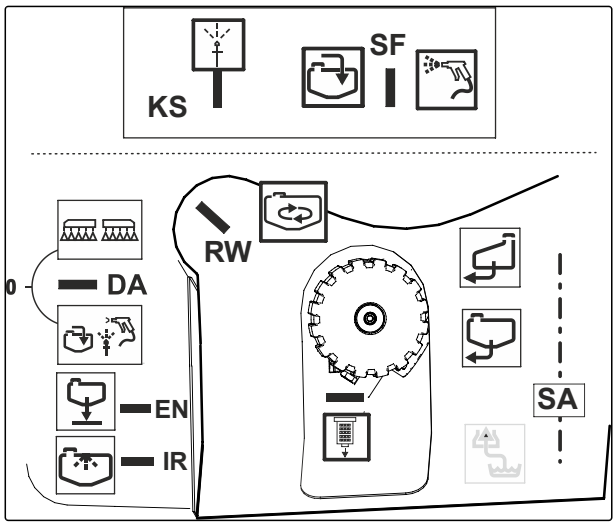
▶ Observe the following instructions.

1. Clean the machine intensively.
2. Drain the flushing water tank via the hose connection at the bottom of the tank.
3. Reinstall the hose connection.
4. Run the spray liquid pump.
5. 20 l Fill in antifreeze containing propylene glycol through the flushing water tank opening.
6. *To pump the antifreeze into the spray liquid tank, select the following on the control panel:*

   Select  for suction valve chest *"SA"*.
7. Select  for pressure valve chest *"DA"*.
8. Select  for switch tap *"SF"*.



CMS-I-00007668



CMS-I-00009560

Distribute the antifreeze.

9. *To distribute the antifreeze:*
   Select  for suction valve chest *"SA"*.

10. *To recirculate antifreeze in entire liquid circuit:*
    Open the stop tap *"IR"* and close it again.

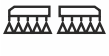
➡ The internal cleaning starts for 30 seconds.

11. Open stop tap *"KS"* for 10 seconds.

12. Select  for switch tap *"SF"*.

➡ Spray into the spray liquid tank with the spray lance for 10 seconds.

Apply the antifreeze through the nozzles.

13. Select  for pressure valve chest *"DA"*.

14. *Until antifreeze emerges from the nozzles:*
    

    Switch on spraying operation via the control terminal.

WARNING

Risk of implement damage due to insufficient antifreeze

- *To check the quantity of antifreeze:*
  Collect the sprayed liquid.
- *If there is not enough antifreeze in the implement:*
  Add more antifreeze and repeat the procedure.

Pump out the antifreeze.

15. Empty the spray liquid tank using the pump.

ENVIRONMENTAL INFORMATION

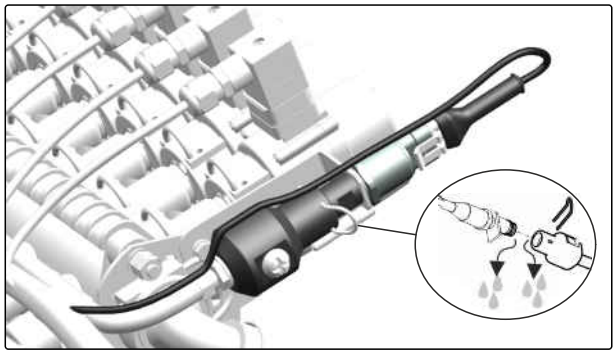
Risk of environmental contamination

- *To reuse the antifreeze and spray liquid mixture or to dispose of it properly:*
  Pump the mixture into a suitable tank.

General tasks for winterising:

16. *To drain the pressure sensor:*
    Remove the hose from the pressure sensor.

17. Drain the hand wash facility.



CMS-I-00007669

10.2 Having the field sprayer inspected

CMS-T-00011852-B.1

10.2 Inspecting the field sprayer

CMS-T-00015229-A.1

WORKSHOP WORK

The machine is subject to the European Union universally applicable regular field sprayer inspections (Crop Protection Directive 2009/128/EC and EN ISO 16122).

The date for performing the next inspection is written on the test badge on the machine.

The field sprayer inspection must be performed at the latest 6 months after initial operation and must be repeated every 2 years.

CMS-I-00007676

▶ Have the field sprayer inspected at regular intervals by a recognised and certified inspection workshop.

10.2 Checking the spray liquid pump

CMS-T-00015230-A.1

WORKSHOP WORK

Test kit for the spray liquid pump:

1 O-ring, order number: FC149

2 Hose connection, order number: GE042

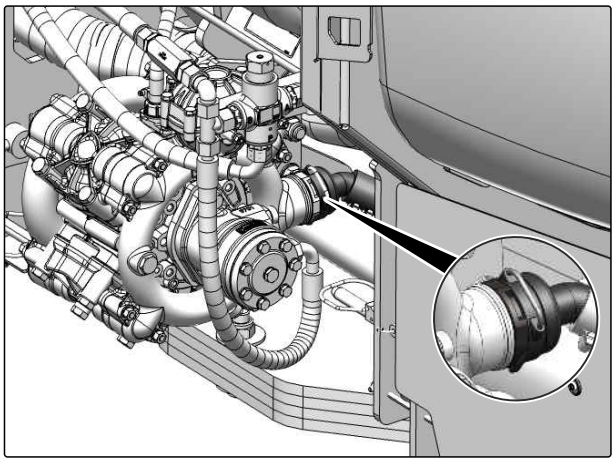
3 Union nut, order number: GE022

4 O-ring, order number: FC468

5 Hose connection, order number: ZF1395

CMS-I-00007674

1. Loosen the union nut.
2. Put on the hose connection.
3. Run the spray liquid pump.



CMS-I-00007672

10.2 Checking the flow meter

CMS-T-00015231-A.1

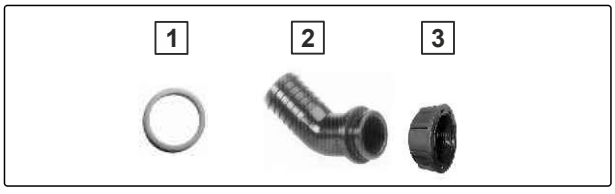
WORKSHOP WORK

Test kit for the flow meter:

1 O-ring, order number: FC122

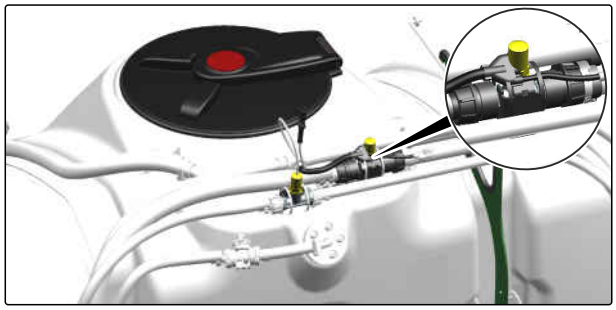
2 Hose connection, order number: GE095

3 Union nut, order number: GE021



CMS-I-00007675

1. Loosen the union nut behind the flow meter.
2. Fasten the plug-in socket with order number: 919345 with the union nut.
3. Connect the testing device.
4. Switch on spraying.



CMS-I-00007671

10.2 Checking the pressure gauge

CMS-T-00015232-A.1

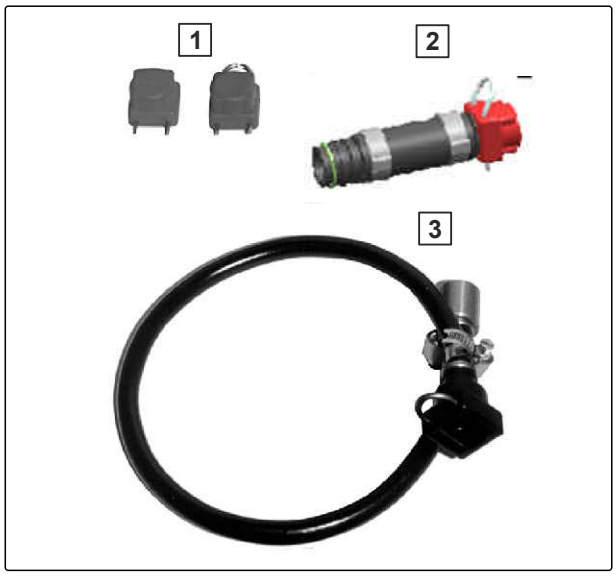
WORKSHOP WORK

Testing kit for the pressure gauge:

1 Slip-on cap, order number: 913954 and plug, order number: ZF195

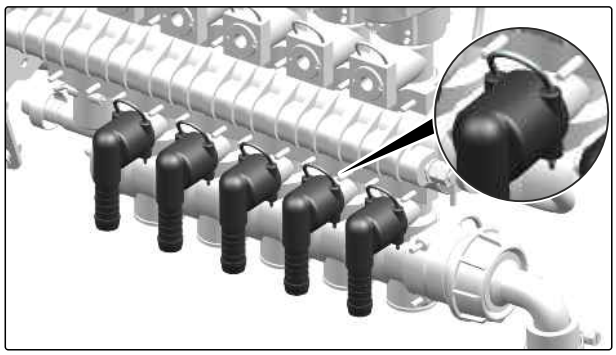
2 Blind hose, order number: 116059

3 Pressure gauge connection, order number: 7107000



CMS-I-00007673

1. Remove one spray line from a part-width section valve and seal it with the blind hose.
2. Connect the pressure gauge connection to a part-width section valve with the hose tail.
3. Screw the check gauge 1/4 of an inch into the inside thread.
4. Switch on spraying.



CMS-I-00007670

10.3 Eliminating limescale in the system

CMS-T-00011845-A.1

Indications of limescale in the system:

- The nozzle body does not open or close
- Error messages on the control terminal

Eliminate limescale with a special acidification product, e.g. PH FIX 5 from Sudau Agro.

WARNING

Health risk due to contact with acidification agents

▶ When using acidification agents, observe the instructions provided by the manufacturer.

1. Clean the empty field sprayer.
2. Fill 20 l of water into the spray liquid tank.
3. Run the spray liquid pump.
4. Pour 3 l of acidification agent into the spray liquid tank through the filling opening.
5. Circulate the mixture in the spray liquid circuit for 10-15 minutes.
6. Interrupt the pump drive.
7. Allow the mixture to rest for 5 minutes.
8. Dilute the mixture with flushing water until the colour changes to yellow.

➡ The diluted mixture is harmless.

10.4 Maintaining the implement

CMS-T-00011743-B.1

10.4.1 Maintenance schedule

After initial operation		
Checking the hydraulic hose lines	see page 78	

Daily		
Checking the lower link pins and top link pins	see page 78	
Checking the oil of the spray liquid pump	see page 79	

Every 50 operating hours / Weekly		
Checking the hydraulic hose lines	see page 78	
Checking the ballast weights	see page 81	

Every 1000 operating hours / Every 12 months		
Checking the application rate	see page 75	
Cleaning the filters in the hydraulic plugs	see page 79	
Changing the oil in the spray liquid pump	see page 80	**WORKSHOP WORK**
Adjusting the air pressure in the hydraulic accumulator	see page 81	

10.4.2 Checking the application rate

CMS-T-00012624-A.1

INTERVAL

- Every 1000 operating hours

  or

  Every 12 months

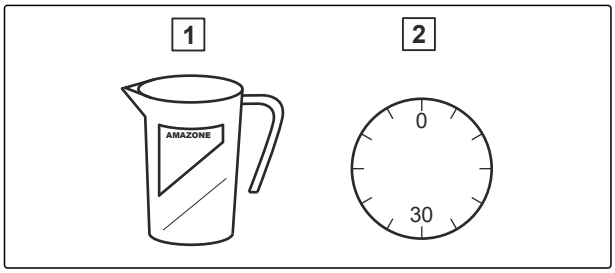
The actual application rate is checked at a standstill through the individual nozzle output.

To do so, use at least one nozzle on the left and right boom section, and one in the middle of the sprayer boom.

Equipment for checking:

1 Quick-check cup

2 Stopwatch



CMS-I-00007677

1. Enter the application rate in the Main menu on the control terminal.
2. Enter the simulated speed in the Setting menu on the control terminal.
3. Fill the spray liquid tank with 1,000 l of water.
4. Switch on the agitator.
5. ON/OFF Switch on spraying operation via the control terminal.
6. Check all of the nozzles for proper flow.
7. *To determine the individual nozzle output on multiple nozzles:*
   Hold the quick-check cup for exactly 30 seconds under each nozzle.
8. ON/OFF Switch off spraying operation via the control terminal.
9. In the Setting menu on the control terminal, set the simulated speed to 0.
10. Convert the average individual nozzle output to one minute l/min.

11. *To determine the application rate in l/ha:*
Read the value from the table on the quick-check cup

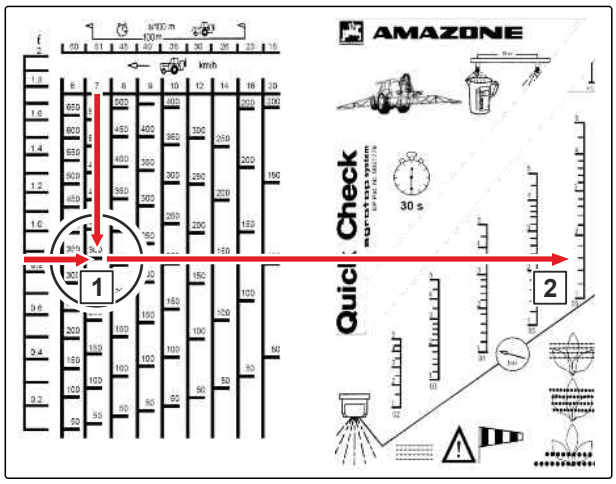
or

Calculate the value.

Table on the quick-check cup

1 Determined application rate: 290 l/ha

2 Determined spray pressure: 1.6 bar



CMS-I-00007678

Formula for calculating the application rate

A Application rate in l/ha.

D Average value for nozzle output in l/min

F Forward speed in km/h

$$A = \frac{D \cdot 1200}{F}$$

$$A = \quad \text{l/ha}$$

CMS-I-00007753

12. *If the values determined for the application rate do not match the set values:*
Calibrate the flow meter, see ISOBUS software operating manual

or

Check all nozzles for wear and blockage.

10.4.3 Checking the lower link pins and top link pins

CMS-T-00002330-J.1

INTERVAL

- Daily

Criteria for visual inspection of lower link pins and top link pins:

- Cracks
- Fractures
- Permanent deformations
- Permissible wear: 2 mm

1. Check the lower link pins and top link pins for the listed criteria.

2. Replace worn pins.

10.4.4 Checking the hydraulic hose lines

CMS-T-00002331-F.1

INTERVAL

- After initial operation
- Every 50 operating hours

  or

  Weekly

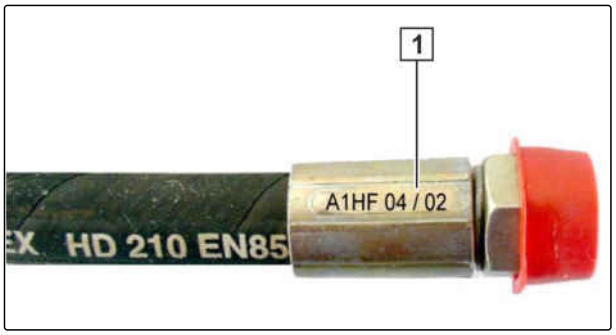
1. Check the hydraulic hose lines for damage, such as chafing point, cuts, tears and deformation.

2. Check the hydraulic hose lines for leaks.

3. Retighten loose bolted connections.

Hydraulic hose lines must not be more than 6 years old.

4. Check the manufacturing date **1**.



CMS-I-00000532

WORKSHOP WORK

5. Replace worn, damaged or aged hydraulic hose lines.

10.4.5 Cleaning the filters in the hydraulic plugs

CMS-T-00011832-A.1

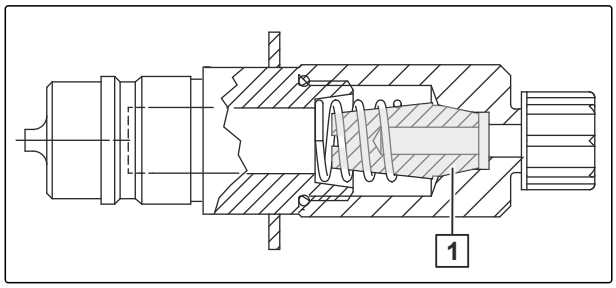
INTERVAL

- Every 1000 operating hours

  or

  Every 12 months

The hydraulic plugs are equipped with a filter **1**. The filters can get clogged and must be cleaned.



CMS-I-00007692

1. Unscrew the hydraulic plug from the filter housing.
2. Remove the filter with compression spring.
3. Clean the filter.
4. Re-fit the filter and compression spring correctly.
5. Screw the hydraulic plug back on.
6. Check the fit of the O-ring.

10.4.6 Checking the oil of the spray liquid pump

CMS-T-00011847-A.1

INTERVAL

- Daily

1. Check the oil for clarity.

NOTE

Foam formation and cloudy oil are signs of a defective diaphragm in the spray liquid pump.

CMS-I-00007694

2. Read the oil level on the mark when the implement is aligned horizontally.
3. *If the oil level is below the mark:*
   Take of the cover and refill oil.
4. Put the cover back on.

10.4.7 Changing the oil in the spray liquid pump

CMS-T-00015233-A.1

WORKSHOP WORK

- Every 1000 operating hours

  or

  Every 12 months

WARNING

Health hazard due to contact with spray liquid

▶ Clean all components before removal.

1. Clean the spray liquid circuit of the machine with flushing water.
2. Remove the spray liquid pump.
3. Remove the cover.
4. *To drain the oil:*
   Place a suitable collecting vessel underneath. Turn the spray liquid pump upside down. Turn the drive shaft by hand until the oil has drained out.

NOTE

This procedure is recommended because the oil cannot be completely drained through the drain plug.

5. Set the spray liquid pump on a level surface.
6. Turn the drive shaft left and right alternately. While doing so, slowly fill multi-purpose oil 15W40 up to the mark.
7. Install the cover.
8. Install the spray liquid pump.
9. Check the oil level after one hour of operation.

10.4.8 Adjusting the air pressure in the hydraulic accumulator

CMS-T-00012010-A.1

INTERVAL

- Every 1000 operating hours

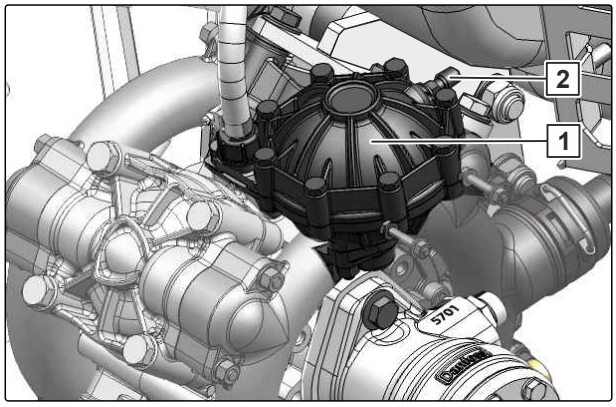
  or

  Every 12 months

Required air pressure in hydraulic accumulator AR 160/185: 1-2 bar

The hydraulic accumulator **1** dampens pressure peaks.

▶ Check and correct the air pressure on the air valve **2**.



CMS-I-00007696

10.4.9 Checking the ballast weights

CMS-T-00011848-A.1

INTERVAL

- Every 50 operating hours

  or

  Weekly

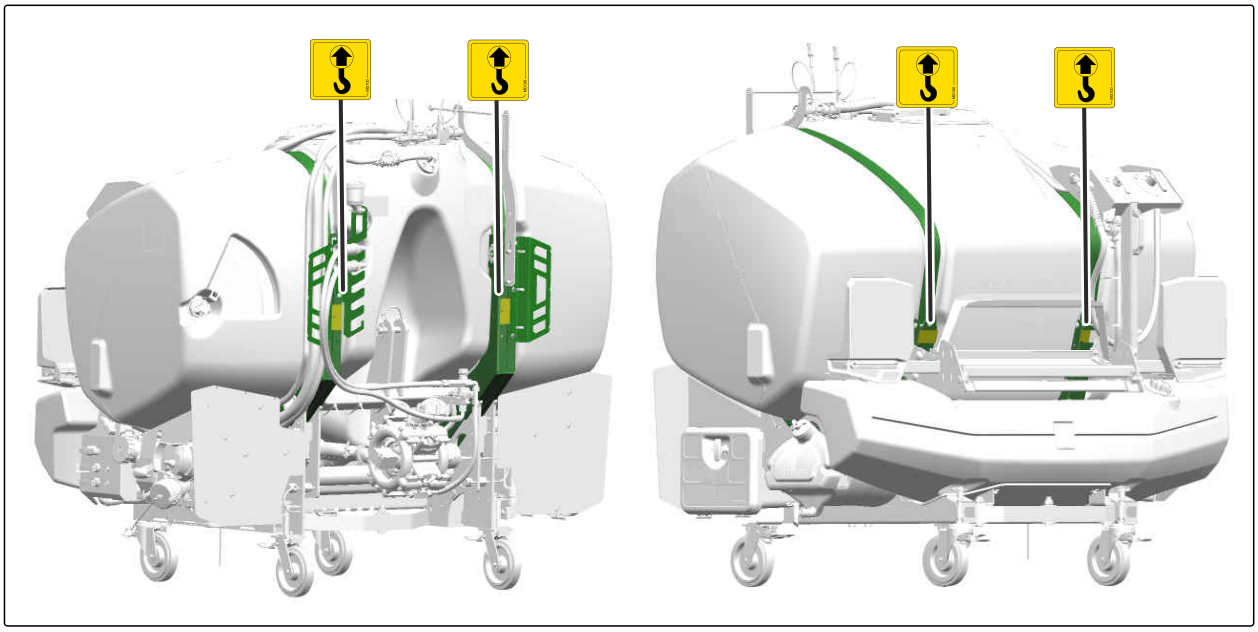
▶ Check the fastening material for the ballast weights.

Loading the implement 11

CMS-T-00011745-A.1

11.1 Loading the implement with a crane

CMS-T-00012011-A.1



CMS-I-00007698

The implement has 4 lashing points for slings for lifting.

WARNING

Risk of accidents due to improperly attached slings for lifting

If the slings are not attached at the marked lashing points, the implement can be damaged during lifting and endanger safety.

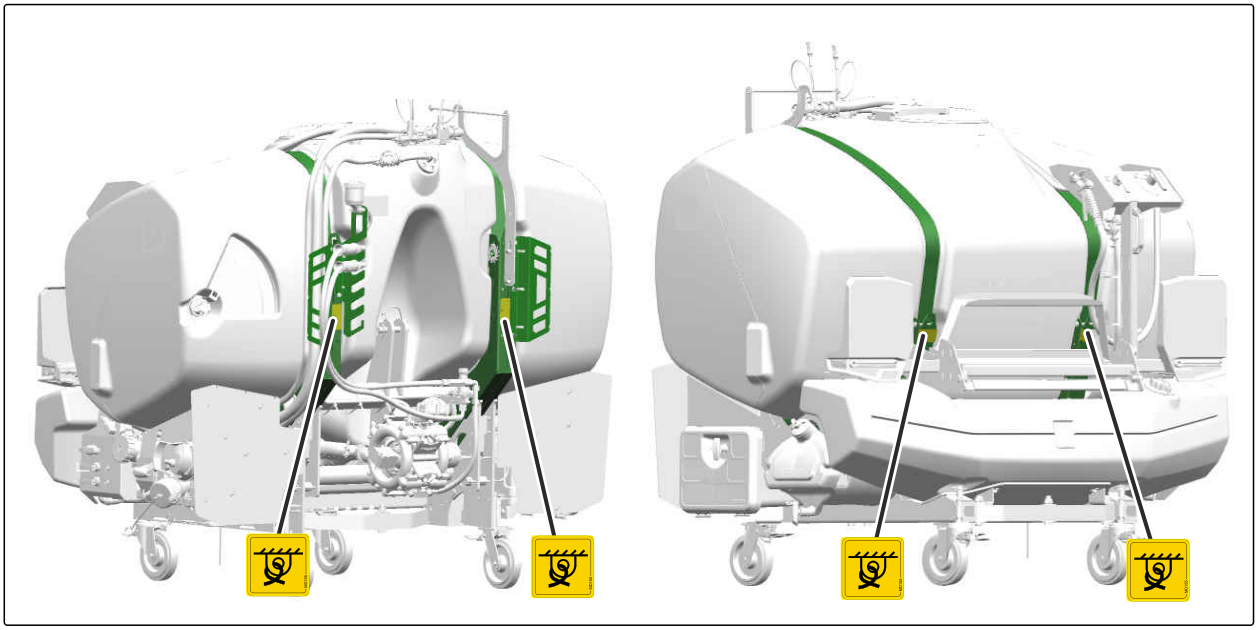
- ▶ Only attach the slings for lifting at the marked lashing points.

1. Attach the slings for lifting on the intended lashing points.

2. Slowly lift the implement.

11.2 Lashing the implement

CMS-T-00012012-A.1



CMS-I-00007697

The implement has 4 lashing points for lashing straps.

WARNING

Risk of accidents due to improperly attached lashing straps

If the lashing straps are not attached at the marked lashing points, the implement can be damaged during lashing and endanger safety.

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

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

Disposing of the implement 12

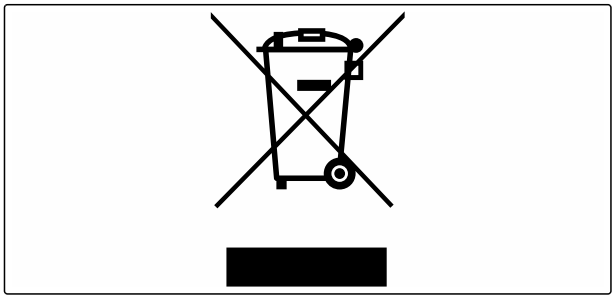
CMS-T-00010906-B.1

ENVIRONMENTAL INFORMATION

Environmental damage due to improper disposal

- Observe the regulations of the local authorities.
- Observe the symbols on the implement regarding disposal.
- Observe the following instructions.

1. Components with this symbol should not be disposed of with household waste.



CMS-I-00007999

2. Return batteries to the distributor

   or

   Dispose of batteries at a collection point.

3. Put recyclable materials in the recycling.

4. Treat operating materials like hazardous waste.

WORKSHOP WORK

5. Dispose of the coolant.

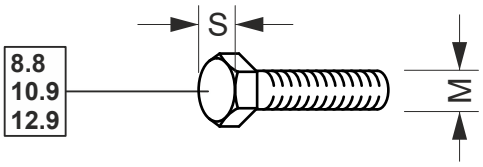
Appendix

13

CMS-T-00011747-A.1

13.1 Bolt tightening torques

CMS-T-00000373-E.1



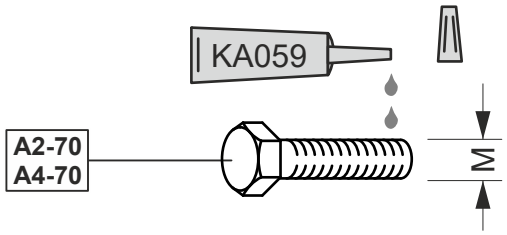
CMS-I-000260

NOTE

Unless specified otherwise, the bolt tightening torques listed in the table apply.

M	S	Strength classes		
		8.8	10.9	12.9
M8	13 mm	25 Nm	35 Nm	41 Nm
M8x1		27 Nm	38 Nm	41 Nm
M10	16(17) mm	49 Nm	69 Nm	83 Nm
M10x1		52 Nm	73 Nm	88 Nm
M12	18(19) mm	86 Nm	120 Nm	145 Nm
M12x1.5		90 Nm	125 Nm	150 Nm
M14	22 mm	135 Nm	190 Nm	230 Nm
M 14x1.5		150 Nm	210 Nm	250 Nm
M16	24 mm	210 Nm	300 Nm	355 Nm
M16x1.5		225 Nm	315 Nm	380 Nm
M18	27 mm	290 Nm	405 Nm	485 Nm
M18x1.5		325 Nm	460 Nm	550 Nm
M20	30 mm	410 Nm	580 Nm	690 Nm
M20x1.5		460 Nm	640 Nm	770 Nm

M	S	Strength classes		
		8.8	10.9	12.9
M22	32 mm	550 Nm	780 Nm	930 Nm
M22x1.5		610 Nm	860 Nm	1,050 Nm
M24	36 mm	710 Nm	1,000 Nm	1,200 Nm
M24x2		780 Nm	1,100 Nm	1,300 Nm
M27	41 mm	1,050 Nm	1,500 Nm	1,800 Nm
M27x2		1,150 Nm	1,600 Nm	1,950 Nm
M30	46 mm	1,450 Nm	2,000 Nm	2,400 Nm
M30x2		1,600 Nm	2,250 Nm	2,700 Nm



CMS-I-00000065

M	Tightening torque	M	Tightening torque
M4	2.4 Nm	M14	112 Nm
M5	4.9 Nm	M16	174 Nm
M6	8.4 Nm	M18	242 Nm
M8	20.4 Nm	M20	342 Nm
M10	40.7 Nm	M22	470 Nm
M12	70.5 Nm	M24	589 Nm

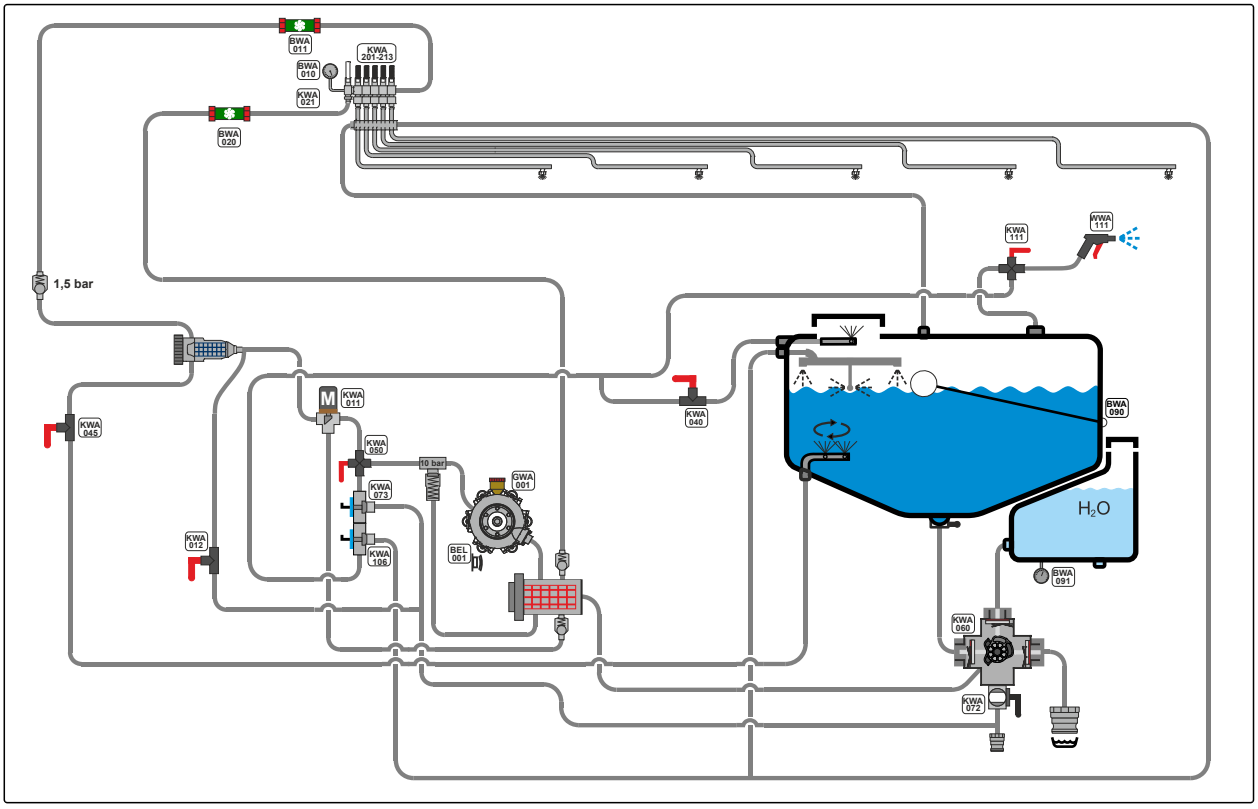
13.2 Other applicable documents

CMS-T-00000615-A.1

- Tractor operating manual
- Operating manual for the GreenDrill 200-E

13.3 Liquid circuit FT-P 1502

CMS-T-00014849-A.1



CMS-I-00007699

Designation	Description		Designation	Description
KWA011	Application rate control valve		BEL001	Spray liquid pump speed
KWA012	Pressure filter emptying		BWA010	Spray liquid tank fill level
KWA021	Bypass valve		BWA011	Spray line flow sensor
KWA040	Secondary agitator valve		BWA020	Return flow sensor
KWA045	Main agitator valve		BWA090	Spray liquid tank fill level
KWA050	Pressure tap		BWA091	Flushing water tank fill level
KWA060	Suction tap valve		GWA001	Spray liquid pump
KWA072	Drain tap valve		KWA111	Spray gun / jet nozzle tap
KWA073	Quick emptying valve		KWA201-213	Part-width section valves 1-13
KWA106	Valve for internal cleaning of spray liquid pump		WWA111	Spray gun

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14.1 Glossary

CMS-T-00011740-A.1

M

Machine

Mounted implements are accessory parts of the tractor. However, mounted implements are always referred to as the implement in this operating manual.

O

Operating materials

Operating materials serve to ensure operational readiness. Operating materials include e.g. cleaning agents and lubricants such as lubricating oil, greases or cleaners.

T

Tractor

In this operating manual, the designation tractor is always used, even for other agricultural tractor units. Implements are mounted on the tractor or towed by the tractor.

14.2 Index

Q

R

S

T

U

W

AMAZONEN-WERKE
H. DREYER SE & Co. KG
Postfach 51
49202 Hasbergen-Gaste
Germany

+49 (0) 5405 501-0
amazone@amazone.de
www.amazone.de