

# RUMEX



## Operating Instructions

### RXF 900

Mounted sprayer for spot weed control

[www.RUMEX-GmbH.de](http://www.RUMEX-GmbH.de)

## Identification details

Identification details can be found on the machine's type plate.

|                              |                                                                                                                            |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Model:</b>                | RUMEX RXF900                                                                                                               |
| <b>Document number:</b>      | RXF900_R07_EN_rev01                                                                                                        |
| <b>Year of issue:</b>        | 2026                                                                                                                       |
| <b>Manufacturer details:</b> | RUMEX GmbH<br>Gewerbepark 25<br>D-87675 Rettenbach a.A<br><a href="mailto:support@rumex-gmbh.de">support@rumex-gmbh.de</a> |

# Table of contents

|                                                                              |    |
|------------------------------------------------------------------------------|----|
| Identification details.....                                                  | 2  |
| Table of contents .....                                                      | 3  |
| 1 Basic information .....                                                    | 5  |
| 1.1 Introduction.....                                                        | 5  |
| 1.2 Obligations .....                                                        | 7  |
| 1.3 Qualification .....                                                      | 8  |
| 1.4 Presentation conventions .....                                           | 8  |
| 2 Basic safety instructions.....                                             | 10 |
| 2.1 Safety and protective devices.....                                       | 10 |
| 2.2 Personal protective equipment .....                                      | 10 |
| 2.3 Danger zone and hazard areas.....                                        | 10 |
| 2.4 Electrical hazards .....                                                 | 11 |
| 2.5 Hazards from hydraulics.....                                             | 11 |
| 2.6 Hazards due to residual energy.....                                      | 12 |
| 2.7 Maintenance .....                                                        | 12 |
| 2.8 Structural modifications.....                                            | 12 |
| 2.9 Spare and wear parts .....                                               | 12 |
| 2.10 Disposal.....                                                           | 12 |
| 2.11 Warning symbols on the machine.....                                     | 13 |
| 2.12 Dangers resulting from failure to observe the safety instructions ..... | 15 |
| 3 Technical description .....                                                | 16 |
| 3.1 Brief description of the machine .....                                   | 16 |
| 3.2 Design.....                                                              | 16 |
| 3.3 Technical data.....                                                      | 29 |
| 3.4 Type plate.....                                                          | 30 |
| 4 Commissioning.....                                                         | 31 |
| 4.1 Connecting tablet to Wi-Fi.....                                          | 31 |
| 4.2 Create a user profile .....                                              | 31 |
| 4.3 Adjusting the track width .....                                          | 31 |
| 5 Operation.....                                                             | 34 |
| 5.1 Hitch the machine .....                                                  | 34 |
| 5.2 Unhitch the machine .....                                                | 36 |
| 5.3 Connect the PTO shaft.....                                               | 38 |
| 5.4 Disconnect the PTO shaft.....                                            | 39 |
| 5.5 Swivel the side arms downwards.....                                      | 40 |
| 5.6 Swivel the side arms upwards.....                                        | 41 |

|      |                                                |    |
|------|------------------------------------------------|----|
| 5.7  | Transport.....                                 | 42 |
| 5.8  | Operation via tablet .....                     | 43 |
| 5.9  | Filling with water.....                        | 47 |
| 5.10 | Prepare for plant treatment .....              | 48 |
| 5.11 | Plant treatment .....                          | 50 |
| 5.12 | Cleaning the valve system .....                | 52 |
| 5.13 | Cleaning the entire system .....               | 54 |
| 5.14 | Exceptional operating conditions .....         | 55 |
| 6    | Measures in the event of a fault.....          | 57 |
| 6.1  | Calibrate the camera .....                     | 57 |
| 7    | Storage .....                                  | 58 |
| 8    | Maintenance .....                              | 59 |
| 8.1  | Inspection and maintenance schedule .....      | 59 |
| 8.2  | Actions .....                                  | 60 |
| 8.3  | Screw tightening torques .....                 | 67 |
| 8.4  | Control and communication .....                | 68 |
| 9    | Appendix .....                                 | 70 |
| 9.1  | Declaration of Conformity.....                 | 70 |
| 9.2  | Original instructions for supplier parts ..... | 70 |
| 9.3  | Spare parts, parts lists, drawings .....       | 70 |
| 9.4  | List of figures .....                          | 70 |

# 1 Basic information

## 1.1 Introduction

### 1.1.1 Foreword

We are delighted that you have chosen a mounted sprayer from RUMEX GmbH and thank you for your trust. Please familiarise yourself with your new machine to ensure safe and efficient operation.

Please read this operating manual before putting your new mounted sprayer into operation. It contains important information that will enable you to operate the machine safely and make full use of all the technical advantages of the RXF900.

You will also find information here on maintenance, which helps to ensure operational safety. Furthermore, this will increase the machine's reliability and service life, whilst minimising repair costs and downtime.

The operating manual must always be kept in a suitable place near the machine. Ensure that everyone working with or on the machine has access to the operating manual at all times.

Should you ever decide to sell your RUMEX RXF900 mounted sprayer, remember to hand over this operating manual as well. It is an important part of the machine.

The latest version of the operating manual and all associated documents can be accessed online at any time. To do this, simply scan the "Machine Info" QR code on the spray tank.

### 1.1.2 Copyright

This document is the copyright property of RUMEX GmbH, all rights reserved. In accordance with copyright law, this operating manual may not be reproduced, published, edited, translated or distributed in any form without the prior express permission of RUMEX GmbH. Any infringement will result in liability for damages.

### 1.1.3 Target audience

These operating instructions are intended for qualified and trained specialist personnel responsible for operating and maintaining the machine; see [Qualifications](#).

### 1.1.4 Intended use

The machine is state-of-the-art. It has been designed and built in accordance with current and recognised safety regulations, rules and standards. Despite the measures taken, the machine may pose a risk to persons. There is also a risk of damage to property and the environment.

The machine is intended exclusively for use in accordance with the specifications described in this operating manual. Any other or additional use is considered improper. The manufacturer is not liable for any resulting damage; the risk is borne by the operator.

Intended use also includes compliance with the prescribed inspection and maintenance intervals. The machine must only be operated when it is in a technically sound condition with regard to safety.

### 1.1.5 Foreseeable non-intended use

The machine must not be operated

- on land not used for agricultural purposes.
- on sealed surfaces.
- for dispensing liquids that tend to stick or congeal.
- for transporting people or objects.
- with faulty or dismantled safety and protective devices.

Do not make any modifications, additions or alterations to the machine!

Non-intended use of the machine may result in personal injury, damage to property or environmental damage.

If the machine is used outside Germany, the applicable national laws and regulations must be observed.

### 1.1.6 Warranty

The General Terms and Conditions of Sale and Delivery of RUMEX GmbH apply in all cases; these are made available to the operator at the latest upon conclusion of the contract.

Should the machine fail to function properly despite RUMEX GmbH's strict quality controls, the sales partner must be contacted. The sales partner's terms and conditions regarding the handling of the warranty shall apply.

Claims under the statutory warranty must be made immediately upon discovery of the defect within the warranty period. The warranty begins upon handover of the machine to the customer and ends after the statutory period of twelve months.

During the warranty period, machines that are defective due to material or manufacturing faults will be repaired or replaced at the discretion of RUMEX GmbH. Replaced parts or machines become the property of the manufacturer. The assertion of a claim does not extend the warranty period.

Further details regarding the warranty are set out in the sales contract.

### 1.1.7 Exclusions from the warranty

The following cases are generally excluded from the warranty:

- Defects and damage resulting from non-intended use
- Defects and damage resulting from improper maintenance
- Modifications, additions or alterations to the machine without the manufacturer's prior consent
- Use of non-recommended spare parts or accessories
- Defects and damage resulting from failure to follow the operating instructions
- Defects and damage resulting from inadequate or incorrect care and cleaning
- Defects and damage caused by the operator
- Any form of normal and customary wear and tear on the machine, in particular wear parts such as nozzles and the battery
- Minor deviations from the intended condition that do not affect the machine's utility
- Defects and damage caused by aggressive environmental influences, chemicals or cleaning agents

- Spraying and field results achieved. These are influenced by factors beyond the control of RUMEX GmbH, such as vegetation and soil conditions, mowing times, machine settings and agricultural practices, and are therefore not covered by warranty claims

## 1.2 Obligations

### 1.2.1 Obligations of the operator

The machine is approved exclusively for commercial use; the operator is therefore subject to the statutory obligations regarding occupational safety.

In addition to the safety instructions in this operating manual, the safety, accident prevention and environmental regulations applicable to the machine's area of use must be observed.

The operator must provide the necessary personal protective equipment for the personnel.

To ensure safe operation, the operator must ensure that

- the operating and maintenance personnel have the necessary qualifications and receive the necessary training and instruction.
- the operating and maintenance personnel have read and understood the machine's operating instructions.
- the operating and maintenance personnel are familiar with and follow the safety data sheets for the media and substances being handled.
- staff are instructed in the use of the required tractor.
- operating and maintenance personnel always have access to the operating instructions. The operating instructions must always be kept near the machine.
- the operating and maintenance personnel adjust, operate, inspect and maintain the machine in such a way that it poses no danger to people, the environment or property.
- Maintenance intervals are adhered to.
- the accountabilities of the persons responsible for operation and maintenance are clearly defined.
- A trainee only works with or on the machine under the supervision of an experienced, trained person.
- Unauthorised persons are kept away from the machine.
- The machine is operated exclusively in a safe and serviceable condition.
- Damage to the machine is repaired immediately or the damaged machine is taken out of service straight away.

### 1.2.2 Obligations of the machine operator

All persons assigned to work with or on the machine are obliged

- hold the certificate of competence for the use of plant protection products required under the Plant Protection Act.
- to observe the basic regulations for occupational safety and accident prevention.
- read and observe the chapter on [Basic Safety Instructions](#) in this operating manual.
- familiarise themselves with the machine.
- read the sections of this operating manual that are relevant to the tasks assigned to them.
- Wear the personal protective equipment required for the tasks assigned to them.

## 1.3 Qualification

The machine must only be operated under the supervision of trained and qualified or authorised specialist personnel. Authorisation is granted by the operator.

Inspection, maintenance and repair of the machine must be carried out exclusively by competent personnel. A competent person is someone who, on the basis of several years of specialist training, practical knowledge and experience, as well as knowledge of the relevant laws, guidelines, standards and other regulations, is able to assess and carry out the tasks assigned to them and recognise potential hazards.

Work on the electrical system must be carried out exclusively by qualified electricians.

Initial commissioning must only be carried out following a machine induction by the manufacturer or their sales partner.

The machine must only be transported by experienced specialists who possess the necessary qualifications to operate the required tractor.

## 1.4 Presentation conventions

### 1.4.1 Instructions

1. Instructions are presented in numbered order; follow the sequence! Any reactions of the machine are described in the relevant step where applicable.
- 1.1 If a step consists of several sub-steps, these are shown with second-level numbering. Follow this order as well.

### 1.4.2 Lists

- Bulleted lists are not to be regarded as having a specific order.

### 1.4.3 Reference numbers in figures

- 1 If the text refers to a figure number in an illustration, this is indicated by a number in **bold**.

### 1.4.4 Safety instructions and hazard symbols

|                                                                                     |                                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
|  | <b>DANGER</b>                                                                                                           |
|                                                                                     | <p><b>Danger</b></p> <p>Indicates a high-risk hazard which, if not avoided, will result in death or serious injury.</p> |

|                                                                                     |                                                                                                                                             |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                              |
|                                                                                     | <p><b>Warning</b></p> <p>Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.</p> |

|                                                                                     |                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <b>CAUTION</b><br><b>Caution</b><br>Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.                                                                                           |
|    | <b>ATTENTION</b><br><b>Attention</b><br>Indicates a potentially dangerous situation which, if not avoided, may result in damage to property or the environment.                                                                            |
|    | <b>NOTE</b><br><b>Note</b><br>Indicates application tips and other useful information. Note is not a signal word for a dangerous or harmful situation.                                                                                     |
|  | <b>ENVIRONMENTAL NOTE</b><br><b>Environmental Note</b><br>Refers to application tips and other useful information regarding environmentally sound practices. Environmental note is not a signal word for a dangerous or harmful situation. |

## 2 Basic safety instructions

The machine has been designed in accordance with the latest technical standards and applicable safety regulations. Nevertheless, the use of the machine may pose a risk to the life and limb of persons, to the machine itself, to other property or to the environment.

Familiarity with the basic safety instructions is a prerequisite for the safe handling and trouble-free operation of the machine.

Safe operation requires that the machine is operated by suitably trained personnel and used for its intended purpose. To ensure that the machine is operated only in a condition that is technically sound in terms of safety, it must be cleaned and maintained in accordance with the regulations. Any changes or faults that affect safety must be rectified immediately.

Specific safety instructions for working with or on the machine can be found in the operating instructions in the chapters on [Commissioning](#), [Operation](#), [Exceptional Operating Conditions](#), [Measures in the Event of a Fault](#) and [Maintenance](#).

### 2.1 Safety and protective devices

When operating the machine, all safety and protective devices must be correctly fitted and in working order. Check all safety and protective devices regularly, at least before each use. Keep all warning signs on the machine legible and do not remove them.

Faulty or removed safety and protective devices can lead to dangerous situations.

### 2.2 Personal protective equipment

To prevent accidents, wear close-fitting clothing. Do not wear ties, scarves, rings or necklaces. If you have long hair, wear suitable headgear or a hairnet.

For the European Economic Area, observe the PPE Directive (EU) 2016/425.

In the USA, follow the guidelines of the Occupational Safety and Health Administration (OSHA).

When handling plant protection products, wear the personal protective equipment specified in the product's safety data sheet.

### 2.3 Danger zone and hazard areas

The danger zone is the area around the machine where people may be struck by

- work-related movements of the machine.
- pesticides discharged from the machine.
- Materials or foreign objects ejected from the machine.
- Machine parts that lower unintentionally.
- Unintended movement of the tractor or the machine.

No persons are permitted to remain in the machine's danger zone whilst

- the tractor engine is running with the PTO shaft connected.
- the tractor and machine are not secured against unintentional starting and unintentional rolling.
- The raised side arms are not mechanically secured against lowering.

Machine operators must only move the machine or switch it from transport to working position and from working to transport position when no persons are present in the danger zone.

The danger zone contains hazard areas with hazards that are either constantly present or may occur unexpectedly. Warning symbols indicate hazard areas and warn of residual hazards that cannot be eliminated by design; see [warning symbols on the machine](#).

Hazard areas exist

- between the tractor and the machine, particularly during coupling and uncoupling.
- in the area of moving components.
- on the machine whilst it is in motion.
- in the swivelling range of the side arms.
- under raised, unsecured machinery and machine parts.
- in the spray tank due to toxic vapours.
- when raising and lowering the side arms in the vicinity of overhead power lines due to contact with overhead power lines.

## 2.4 Electrical hazards

Electrical voltage poses a risk of death if handled incorrectly.

- Only qualified personnel may work on electrical equipment.
- Do not operate the machine with the fuse box open.
- Check the machine's electrical equipment regularly. Rectify any faults, such as loose connections or burnt cables, immediately.
- Observe the regulations applicable at the machine's site of use regarding the operation of electrical equipment.
- To prevent accidents involving electrical voltage, the following five safety rules apply in all cases:
  1. Switch off/disconnect
  2. Secure against re-energisation
  3. Check that there is no voltage
  4. Earth and short-circuit
  5. Cover or cordon off adjacent live parts

## 2.5 Hazards from hydraulics

### 2.5.1 Hazards due to pressure

There is a risk of injury from escaping high-pressure hydraulic oil.

- If pressure hoses, pipes or fittings are damaged (e.g. chafing or leaks), take the machine out of service immediately.
- Even in the case of minor faults, the machine must not be put back into operation until the faults have been fully rectified.

### 2.5.2 Hazards posed by hydraulic oil

There is a risk of injury from high-pressure hydraulic oil escaping. Under no circumstances should hydraulic oil come into contact with the human body, as there is a risk of infection. If this does happen, seek medical attention immediately.

Hydraulic oil is highly flammable at high temperatures. If hydraulic oil leaks and comes into contact with hot surfaces (e.g. a running engine), there is a risk of fire.

Hydraulic oil is harmful to the environment; observe national regulations.

## 2.6 Hazards due to residual energy

Residual mechanical, hydraulic and electrical energy is present on the machine. This means that even after the machine has been switched off, operating and maintenance personnel, as well as bystanders and property, may be at risk.

## 2.7 Maintenance

Carry out prescribed adjustments, maintenance and inspection work on time! To carry out the work, the hydraulic system must be secured against unintentional start-up. Once the work has been completed, check that any loosened screw connections are tight (see required tightening torques under [Screw tightening torques](#)).

After completion of the work, check the function of safety and protective devices.

## 2.8 Structural modifications

No modifications, additions or alterations may be made to the machine without the approval of RUMEX GmbH. Use only conversion parts and accessories approved by RUMEX GmbH; these have been tested for safety, suitability and function.

Observe the legal regulations of the country of use for all modifications.

## 2.9 Spare and wear parts

Replace machine parts that are not in perfect condition immediately. Only original RUMEX spare and wear parts or parts approved by RUMEX GmbH may be used. RUMEX GmbH accepts no liability for damage resulting from the use of non-approved spare and wear parts.

## 2.10 Disposal

Used substances and materials must be handled and disposed of properly; observe national legal regulations regarding disposal! This applies in particular to work on lubrication systems and equipment, when cleaning with solvents, and when disposing of plant protection products and hydraulic fluid.

The machine's battery must be disposed of in accordance with national regulations.

When disposing of the machine at the end of its life cycle, national legal requirements must be observed.



## 2.11 Warning symbols on the machine

|                                                                                   |                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>NOTE</b></p> <p>Keep all warning symbols on the machine in a legible condition and do not remove them.</p> <p>Illegible safety signs must be replaced and can be requested from the manufacturer using the order number.</p> |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Warning symbols indicate hazard areas on the machine and warn of residual hazards. The following hazards, which may be permanently present or occur unexpectedly, exist in hazard areas:



**Unsafe use of the machine due to a lack of knowledge of the operating instructions**

May result in serious injury or even death.

- Read and observe the operating instructions and safety instructions before commissioning the machine.



**Risk of crushing fingers or hands due to moving, accessible machine parts**

Causes severe injuries with loss of body parts to fingers or hands.

- Never reach into the hazard area whilst the tractor engine is running with the PTO shaft / hydraulic system connected.



**Risk of crushing the torso in the articulation area of the drawbar due to sudden steering movements**

Causes severe injuries to the torso, potentially leading to death.

- Do not remain in the hazard area between the tractor and the machine whilst the tractor engine is running and the tractor is not secured against unintentional movement.



### **Risk of falling from the machine**

Causes severe injuries to the entire body, or even death.



- It is prohibited for people to ride on the machine or to climb onto a machine that is in operation.



### **Risk of crushing to the whole body from machine parts swivelling down from above**

Causes severe injuries to the entire body, or even death.



- It is prohibited to remain within the swivelling range of moving machine parts.
- Direct people to leave the area before the machine swivels down.



### **Risk of crushing the entire body under suspended loads / machine parts**

Causes severe injuries to the whole body, or even death.



- Do not stand beneath suspended loads / machine parts.
- Maintain a sufficient safety distance from suspended loads / machine parts.
- Direct people out of the danger zone beneath suspended loads / machine parts.



### **Risk of poisoning from toxic vapours in the spray tank**

Causes very serious injuries or even death.



- Do not climb into the spray tank.



### **Risk of poisoning from toxic liquids**

Causes severe injury or even death.



- Never use the tank contents as drinking water.



**Risk of crushing due to the uncoupled, unsecured machine rolling away unintentionally**

Causes severe injuries to the whole body, or even death.



- Secure the machine to prevent it from rolling away accidentally before uncoupling it.
- Use a wheel chock.



**Danger due to the tractor and the machine starting and rolling away unintentionally during work on the machine**

Causes severe injuries to the whole body, or even death.



- Secure the tractor and machine against unintentional starting and rolling away before carrying out any work.
- Read and observe the relevant section on maintenance in the operating instructions.



**Danger from rotating parts: PTO, PTO shaft and belt drive**

Causes severe injuries to the whole body, or even death.



- Never touch rotating parts during operation.
- The PTO shaft may only be connected or disconnected when the PTO is switched off.
- Clothing can become caught in rotating parts.
- Read and observe the relevant sections in the operating instructions before carrying out any work.



**Risk of infection from hydraulic oil escaping under high pressure**

Hydraulic oil escaping under high pressure can penetrate the skin and thus enter the body, causing serious infections and severe injuries.



- Never seal leaks in the hydraulic system with your hand or finger.
- Before carrying out maintenance work, read and follow the instructions in the operating manual.
- In the event of injuries caused by hydraulic oil, seek medical attention immediately.

## 2.12 Dangers resulting from failure to observe the safety instructions

Failure to observe the safety instructions can result in danger to persons as well as to the environment, the machine and other property. Furthermore, it may lead to the loss of any claims for damages.

## 3 Technical description

### 3.1 Brief description of the machine

The RXF900 is a mounted sprayer designed for targeted crop protection in specialist crops and arable farming. It is mounted on the tractor's front linkage. Six horizontally aligned cameras monitor the crop stand whilst the machine is in motion. This data is processed by intelligent algorithms to enable the precise identification of weeds. When a weed is detected, the required spray nozzles open automatically as the spray bar reaches the target, allowing the weed to be precisely and selectively treated with plant protection products. This works even when cornering and at varying speeds. It is also possible to distinguish between specific weeds to achieve the best possible treatment.

### 3.2 Design

This chapter provides a comprehensive overview of the machine's design and its components.

#### 3.2.1 General overview

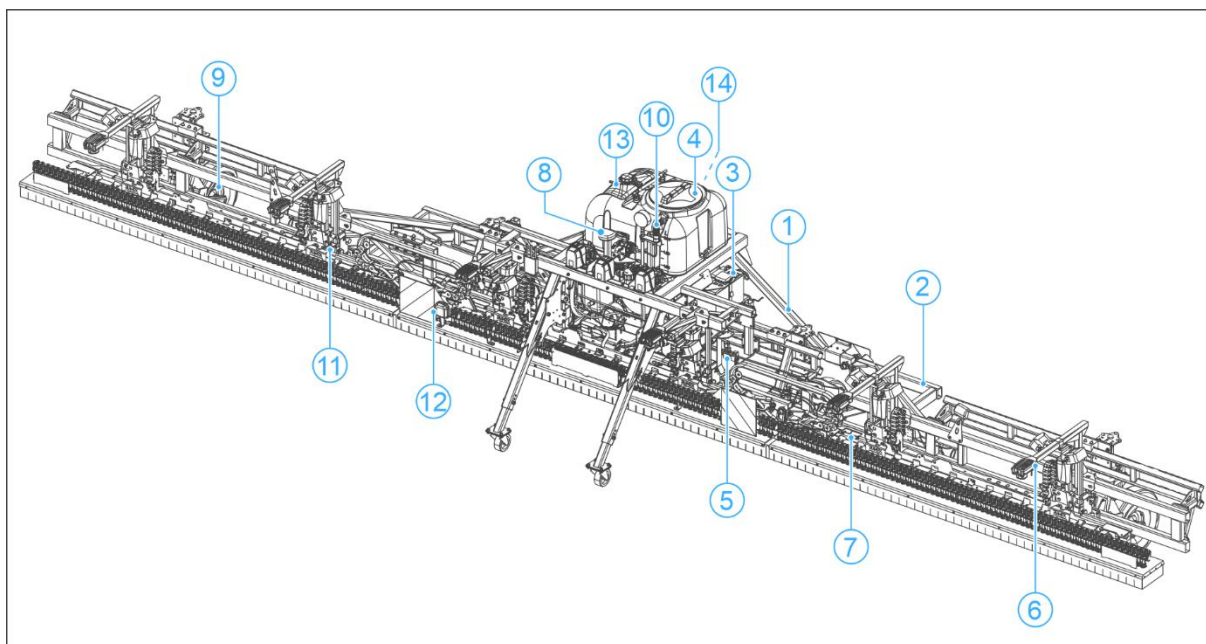


Figure1 : Complete machine

- |   |                                                       |    |                                                    |
|---|-------------------------------------------------------|----|----------------------------------------------------|
| 1 | <a href="#"><u>Main frame</u></a>                     | 8  | <a href="#"><u>Communication</u></a>               |
| 2 | <a href="#"><u>Side arm</u></a>                       | 9  | <a href="#"><u>Undercarriage</u></a>               |
| 3 | <a href="#"><u>Electrics</u></a>                      | 10 | <a href="#"><u>Indicator light</u></a>             |
| 4 | <a href="#"><u>Fluid circuit</u></a>                  | 11 | <a href="#"><u>Spray bar height adjustment</u></a> |
| 5 | <a href="#"><u>Hydraulic swivelling mechanism</u></a> | 12 | <a href="#"><u>Equipment for road use</u></a>      |
| 6 | <a href="#"><u>Image processing</u></a>               | 13 | <a href="#"><u>Hand wash tank</u></a>              |
| 7 | <a href="#"><u>Control circuit</u></a>                | 14 | Warning symbols                                    |

### 3.2.2 Main frame

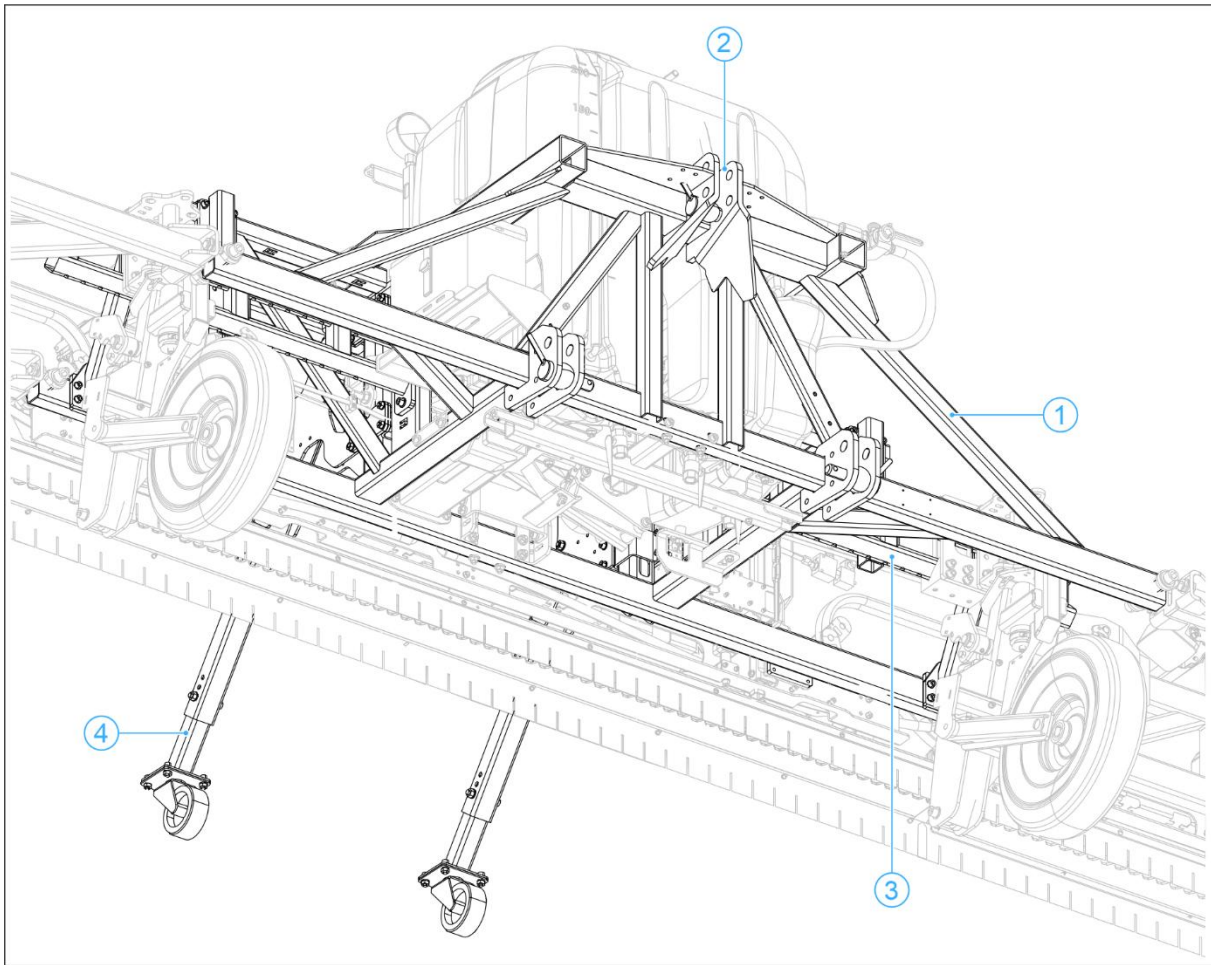


Figure2 : Main frame

The main frame 1 is the central supporting structure of the machine. It is connected to the tractor's front linkage via the three-point hitch 2. The track width of the two main frame undercarriages is adjusted using the adjustment frame 3. Two support legs with support wheels 4 prevent the machine from tipping over when it is not attached to the tractor. Other components attached to the main frame are described in other sections.

### 3.2.3 Side arms

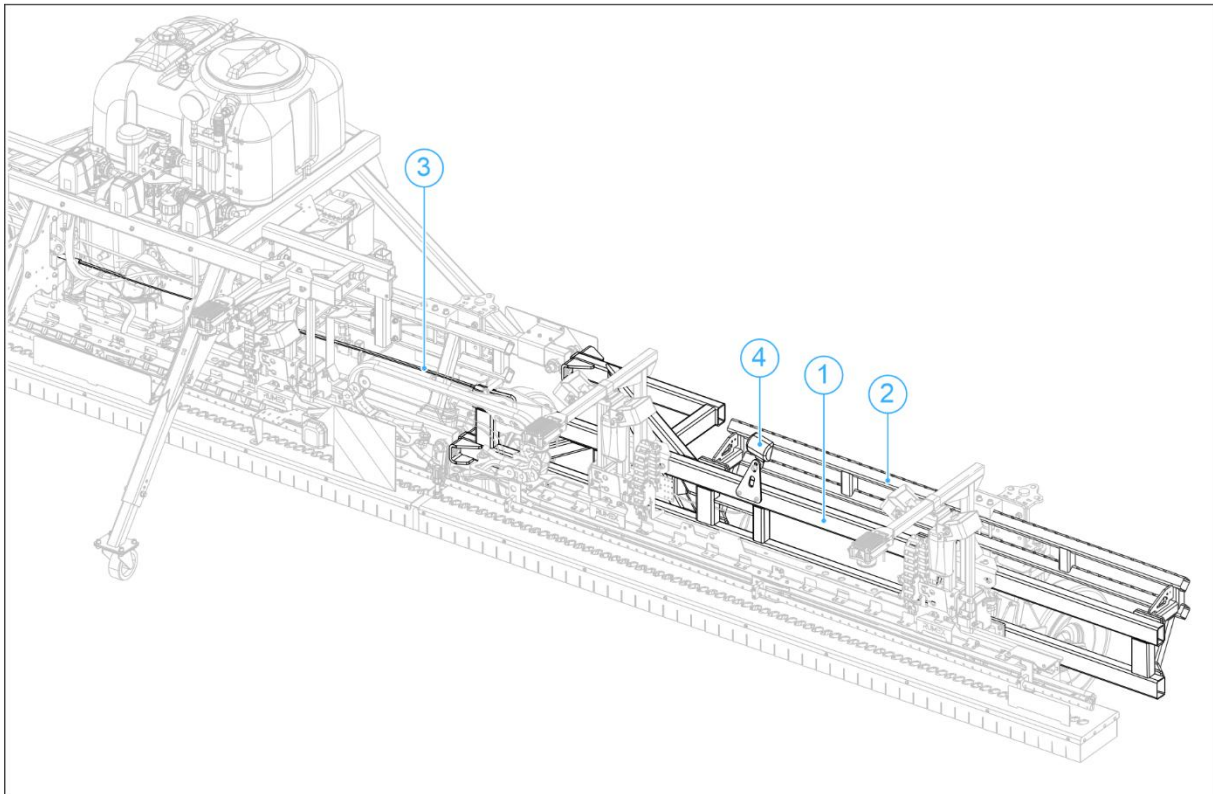


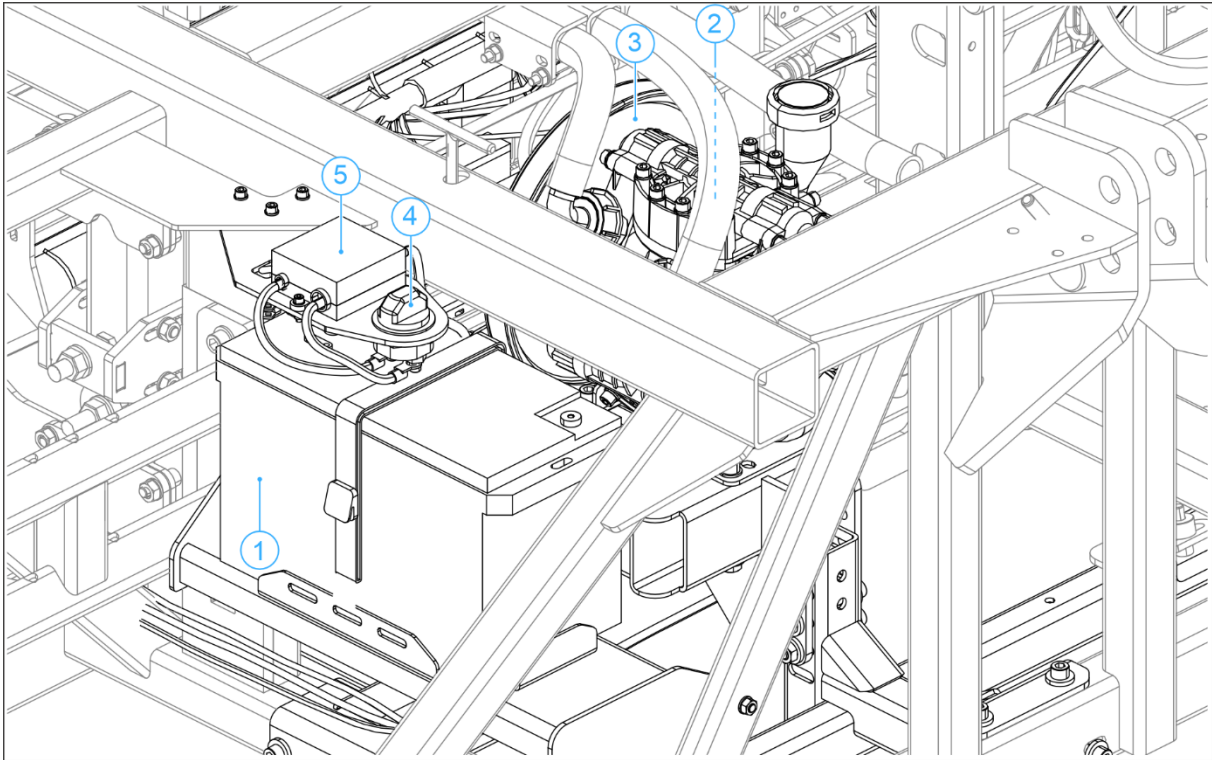
Figure3 : Side arm

The side arms **1** are the laterally swivelling support frames, designed to ensure a spray width of 9 m and a machine width of < 3 m for road transport. The track width of each undercarriage per side arm is adjusted using the adjustment frame **2**.

When swivelled down, the side arms are secured against sinking too low by a steel safety cable **3**. This safety measure is necessary when the height of the spray bar is adjusted to different crop heights. It is possible [to unhook](#) the steel safety cable to ensure greater freedom of movement for the swivel mechanism on uneven terrain.

When raised, the side arms are secured against unintentional lowering by a mechanical lock **4** (mandatory to use when driving on public roads).

### 3.2.4 Electric system



*Figure4 : Electrical system*

The machine is equipped with both a battery **1** and an alternator **2** for the power supply. The alternator is driven by a belt from a pulley **3** on the pump. The main switch **4** is used to switch on the electrical system. The overcurrent protection devices are located in the fuse box **5**.

### 3.2.5 Fluid circuit

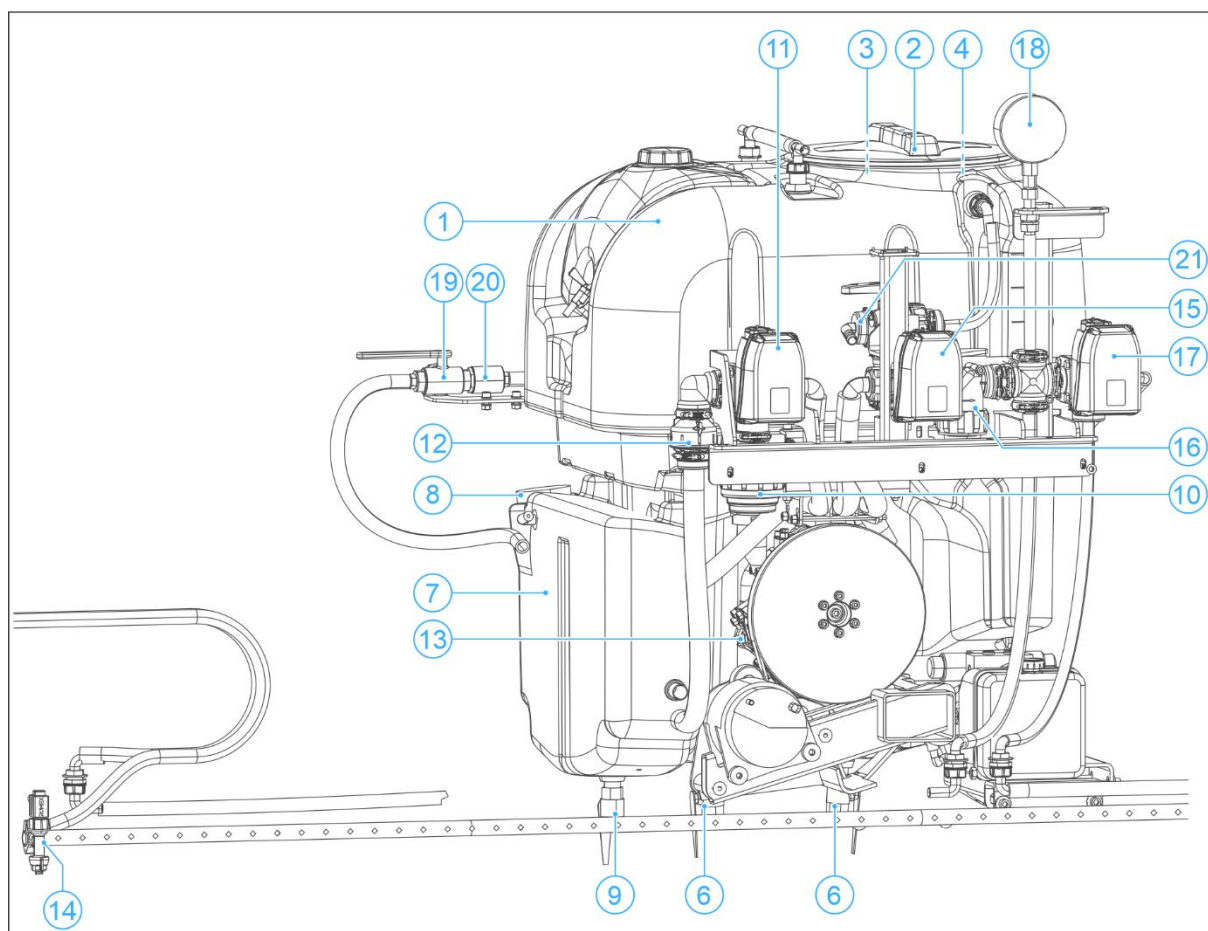


Figure5 : Fluid circuit

The spray tank 1 for mixing the spray mixture is fitted with a lid 2 and a tank strainer 3 to prevent the accidental ingress of contaminants. The spray mixture level can be read on the gauge 4. The tank is cleaned internally via the cleaning nozzle 5. The outlet 6 is used to drain off residual quantities.

The fresh water tank 7 with lid 8 is filled with fresh water to dilute residual quantities at the end of spraying operations and to flush the system after use. The outlet 9 is used to empty the fresh water tank.

The suction filter 10 prevents contaminants from entering the piping system. The changeover valve 11 switches between the spray tank (spraying, default position) and the fresh water tank (cleaning the valve system). A non-return valve 12 is located between the changeover valve and the fresh water tank to prevent spray mixture from entering the fresh water tank.

The piston-diaphragm pump 13 pumps the liquid from the spray tank to the spray nozzles 14 (see [spray nozzle](#)) on the three spray bars. The pressure built up is adjusted via the pressure regulator 15.

The pressure filter 16 prevents contaminants from entering the nozzles. The changeover valve 17 switches between 'Operating position / Pressure' (default position) and 'Flush line'.

The operator can read the pressure at any time on the pressure gauge 18.

To fill the tank, a hose fitted with a GEKA coupling can be connected to the three-way valve **19**; the three-way valve allows you to switch manually between filling the spray tank and the fresh water tank. A non-return valve **20** is located between the three-way valve and the spray tank to prevent spray mixture from entering the water supply system or the fresh water tank.

The three-way valve **21** allows manual switching between circulation and draining the contents of the spray tank via the drain hose.

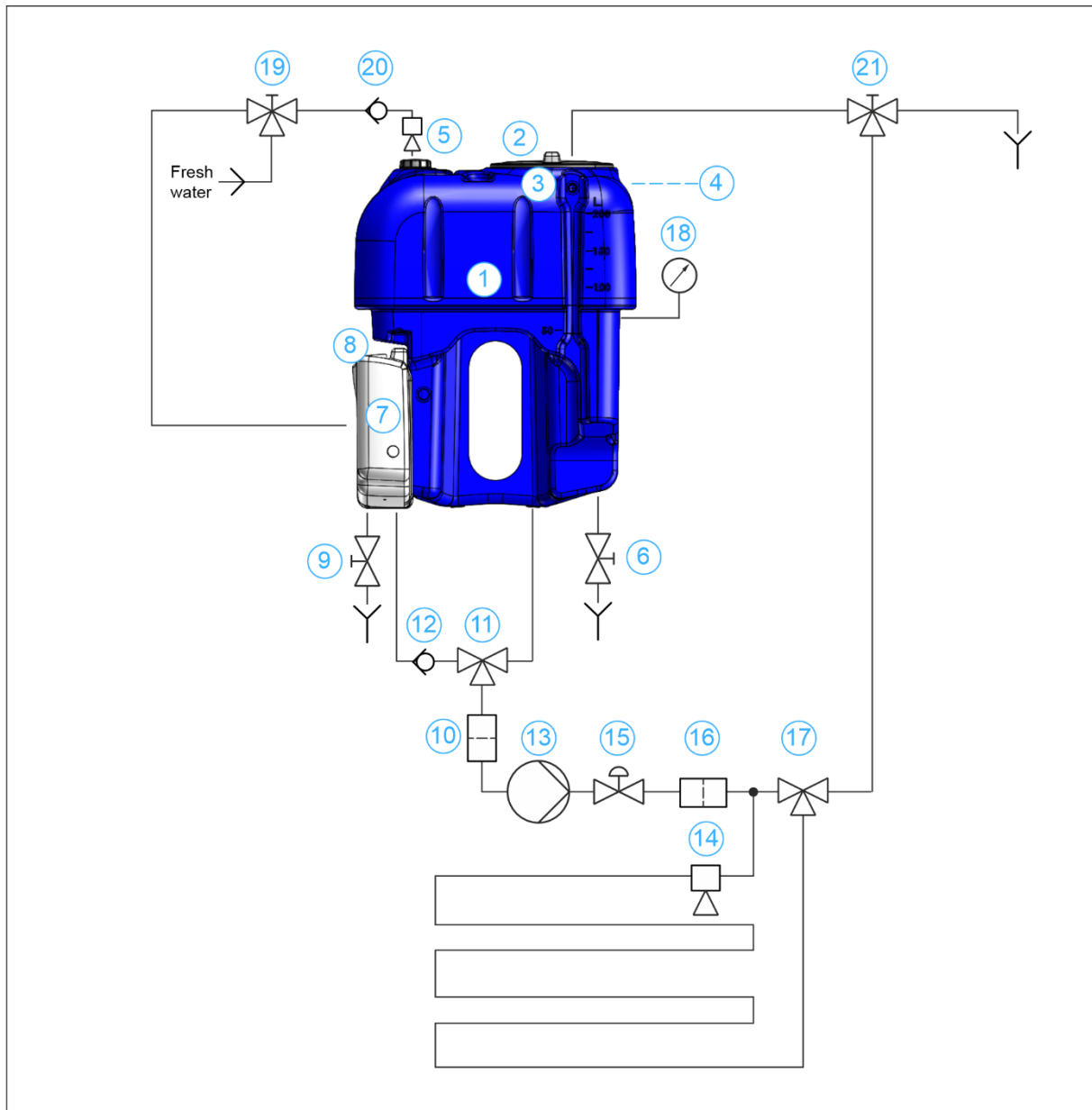


Figure6 : Liquid circuit, schematic

### 3.2.6 Spray nozzle

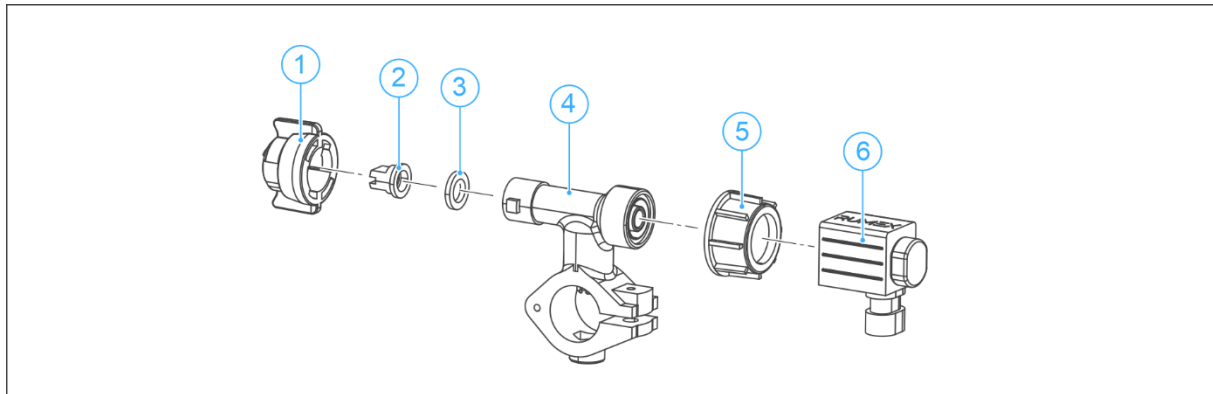


Figure7 : Spray nozzle, exploded view

- |                |                  |
|----------------|------------------|
| 1 Bayonet lock | 4 Pipe connector |
| 2 Nozzle       | 5 Union nut      |
| 3 Flat gasket  | 6 Solenoid valve |

### 3.2.7 Hydraulic swivel mechanism for side arms

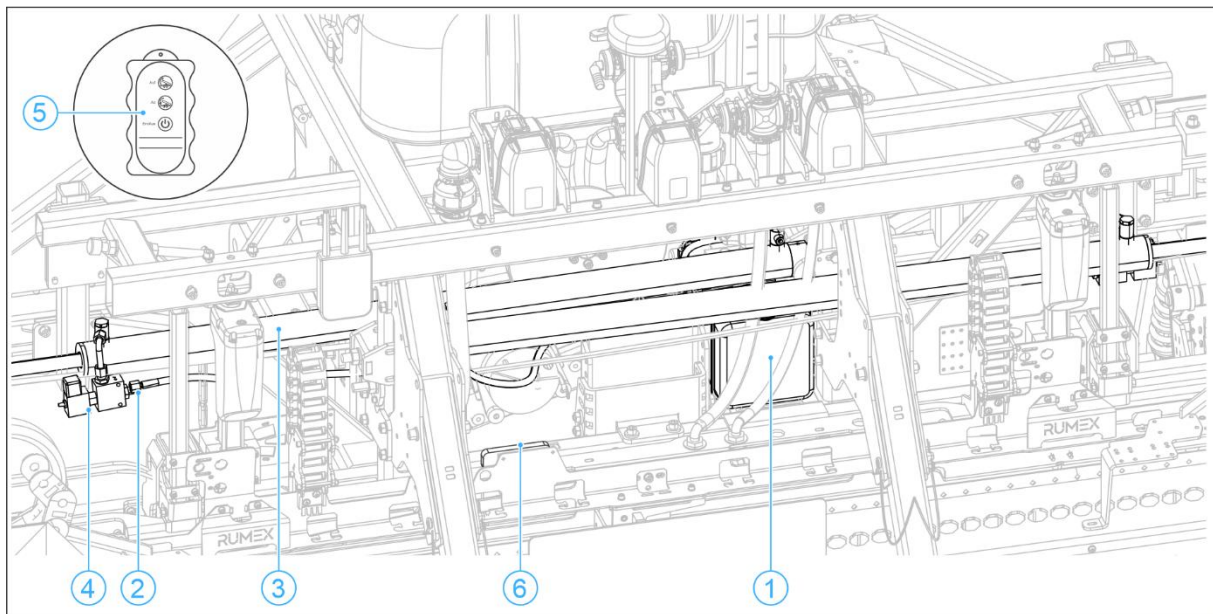


Figure8 : Hydraulic swivel mechanism for side arms

The electric hydraulic power unit **1** generates pressure, which is transmitted via the hydraulic lines **2** to the hydraulic cylinder **3**. The yellow LED on the seat valve **4** indicates that the hydraulic system is in float mode. The seat valves are normally closed to prevent unintentional lowering when the machine is switched off. The signal to swivel the side arms is sent from the radio remote control **5** to the radio receiver **6**.

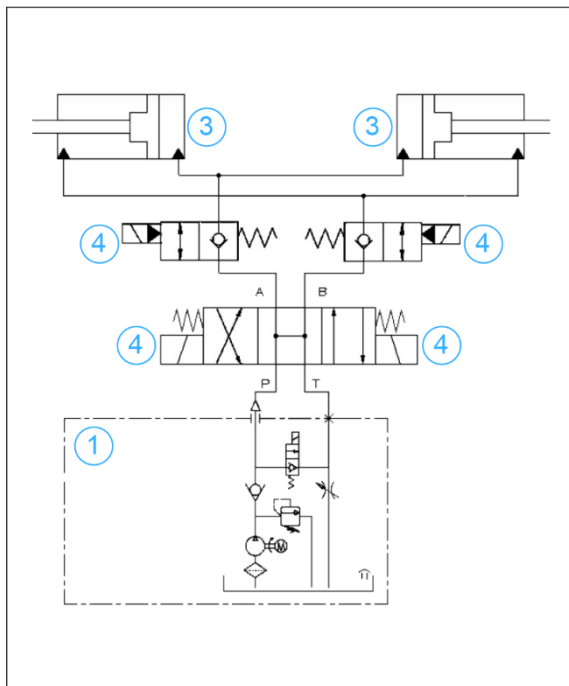


Figure9 : Hydraulic swivel mechanism for side arms, schematic

### 3.2.8 Image processing

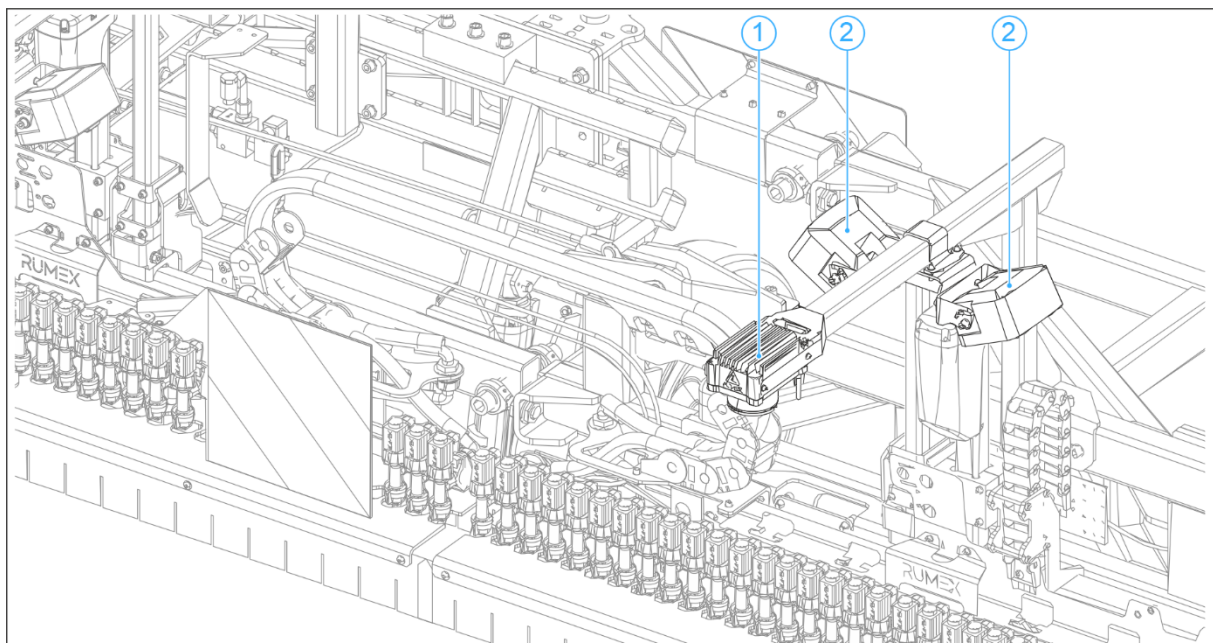


Figure10 : Image processing

Image processing is enabled by six cameras **1**, two per section. Two LED lights **2** per camera illuminate the entire field of view when necessary. To meet the increased power demand when the headlights are in use, the machine is fitted with a cable for an auxiliary power supply from the tractor.

### 3.2.9 Control circuit

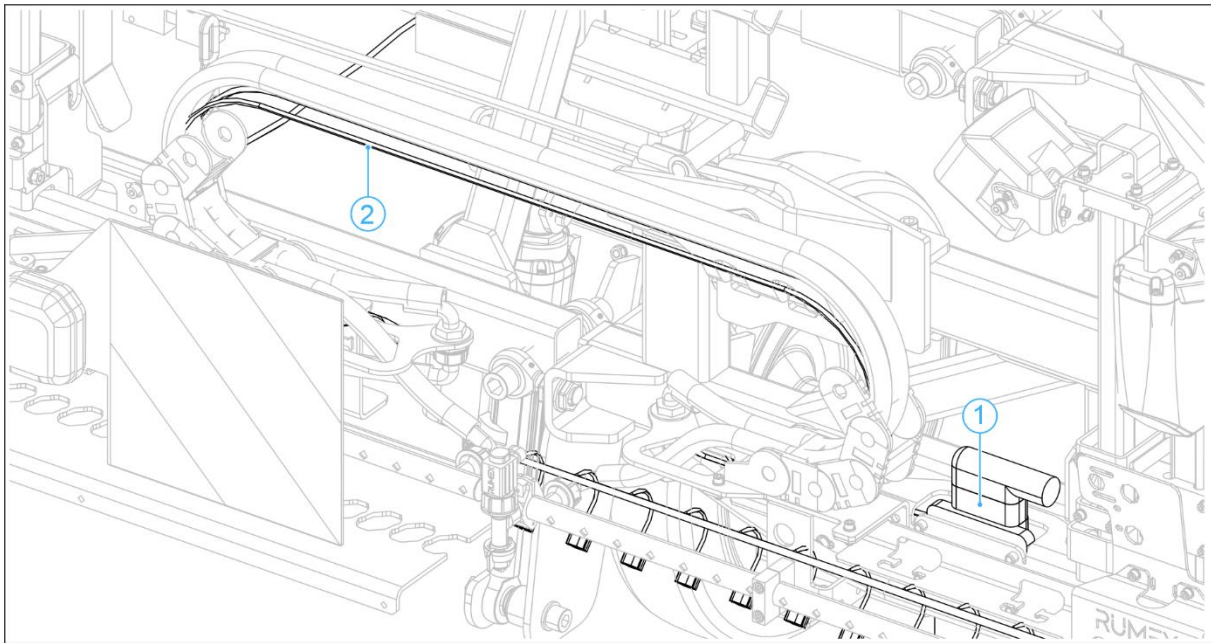


Figure11 : Control circuit

The machine and its components are controlled by six control units **1**, two per section, which are connected to each other and to the components via CAN-Bus system **2**.

### 3.2.10 Communication

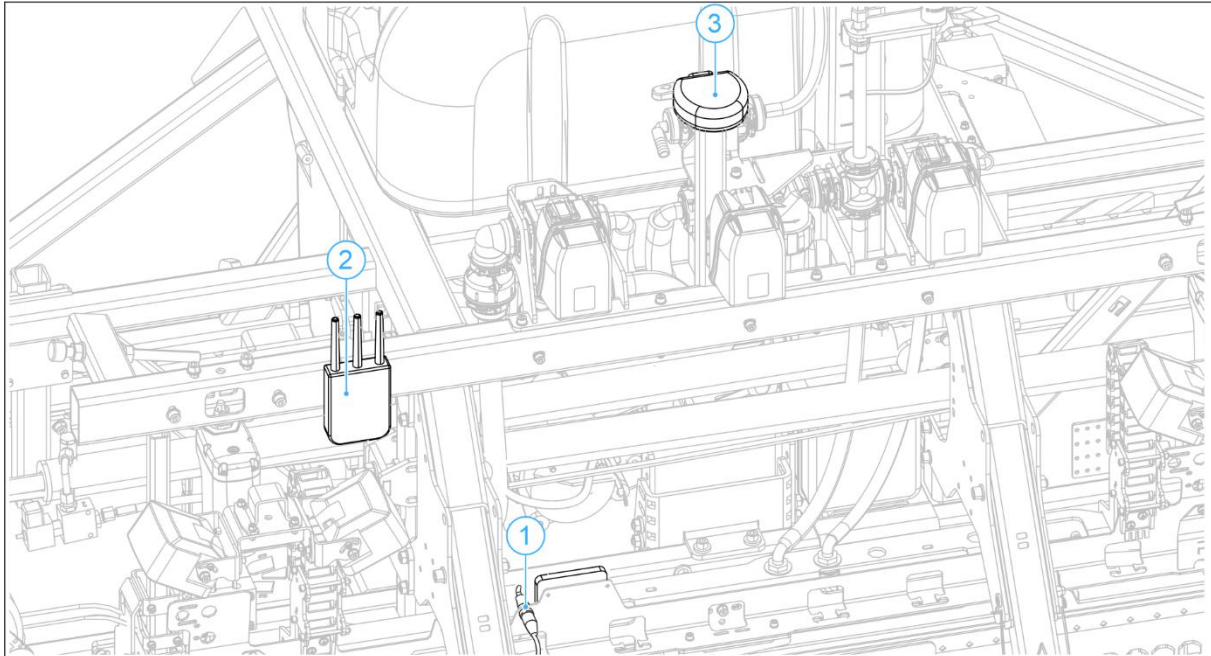


Figure12 : Communication

An Ethernet connection **1** and a mobile internet module **2** are available for connecting to the internet. The machine also features a GPS sensor **3**.

### 3.2.11 Undercarriages

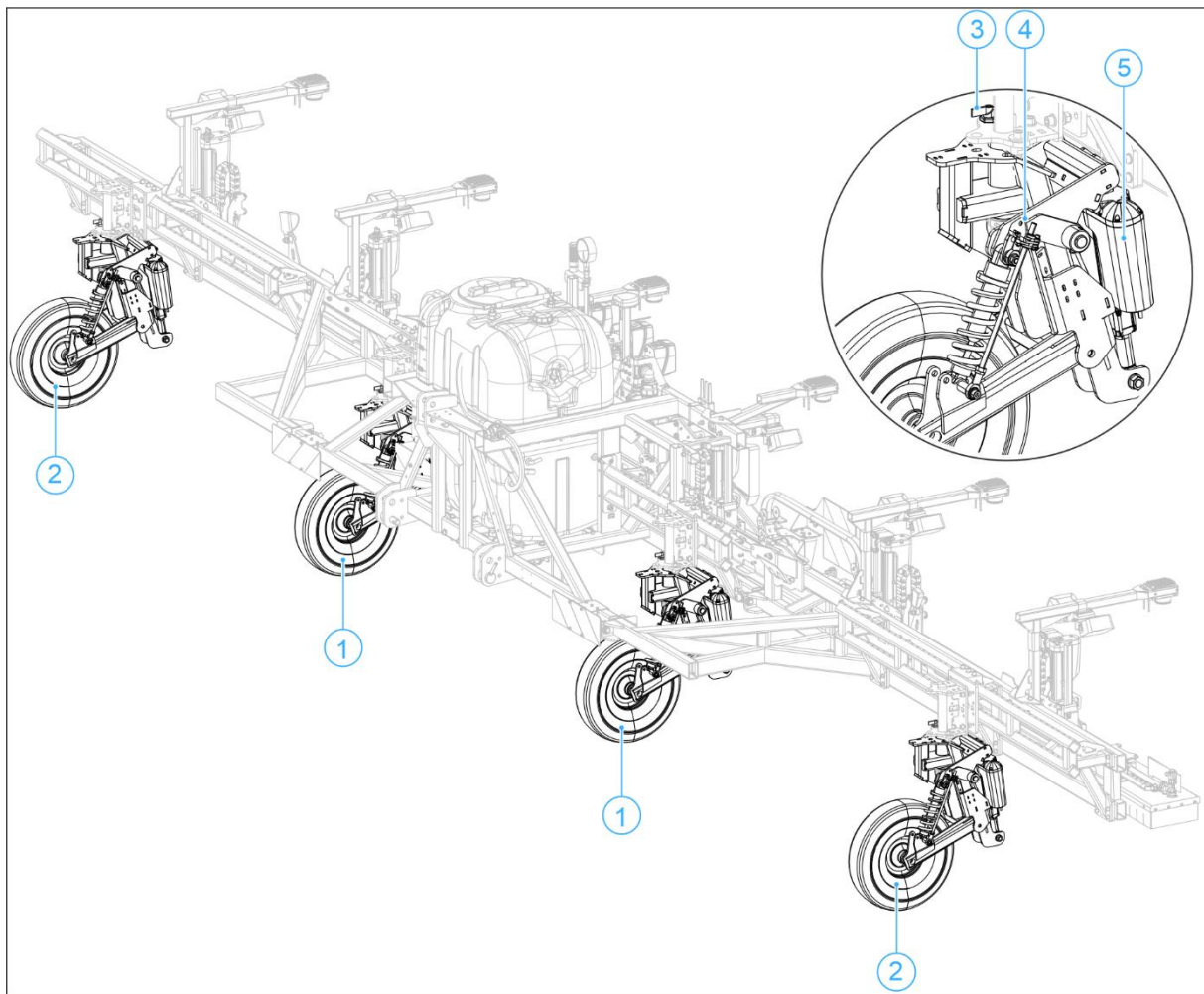


Figure13 : Undercarriages

Two undercarriages **1** are located on the main frame and one undercarriage **2** on each side arm. The undercarriages on the main frame are equipped with locking bolts **3** for securing them during transport. Both undercarriages on the side arms and one undercarriage on the main frame are fitted with a proximity switch **4** to check ground contact for the control circuit. The side arms can only switch to float mode when both undercarriages are in contact with the ground. The undercarriages on the main frame have electric motors **5** for height adjustment; these are connected to the control circuit via CAN-Bus system.

### 3.2.12 Indicator light

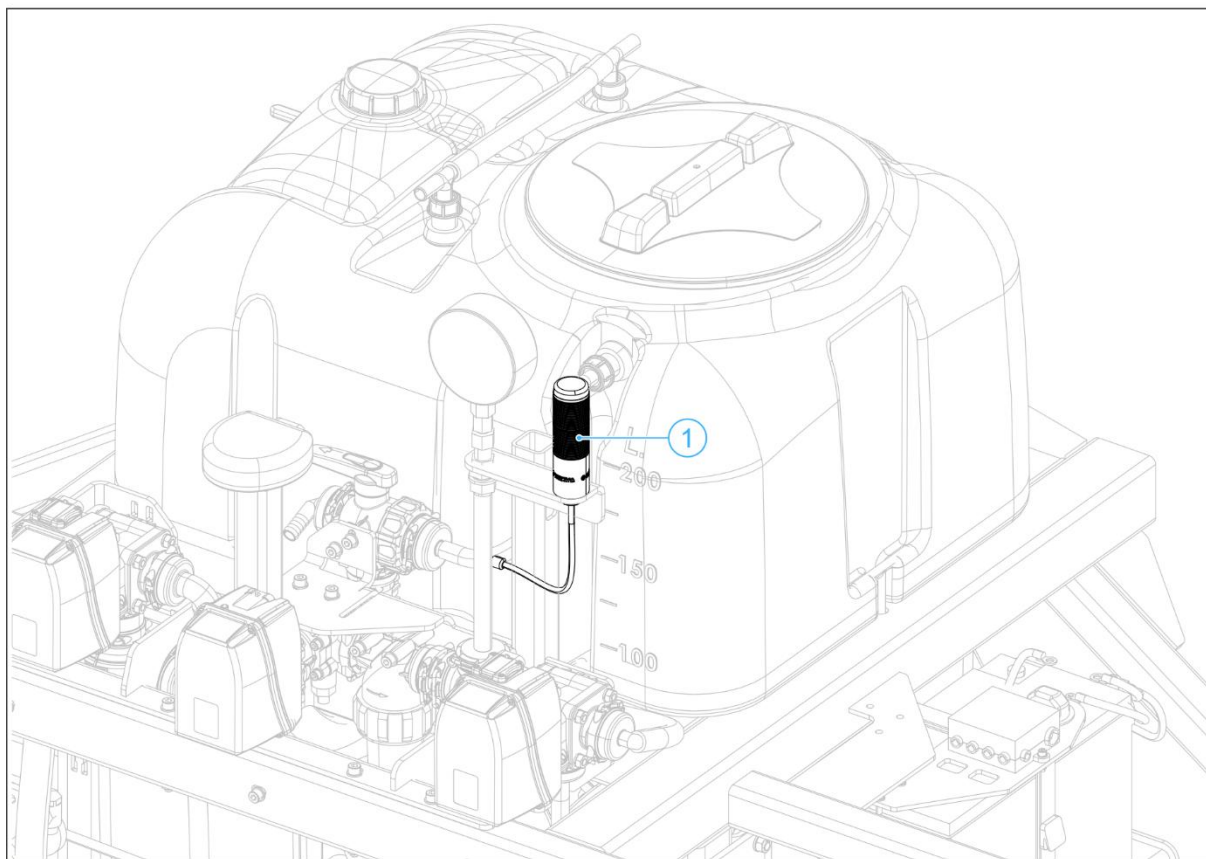


Figure14 : Indicator light

The indicator light **1** provides information about the machine's status.

| Signal         | Machine status                                                       |
|----------------|----------------------------------------------------------------------|
| Flashing red   | Machine is starting up or there is an error in machine communication |
| Solid red      | Machine fully started up                                             |
| Solid green    | Image processing in progress, ready for use                          |
| Flashing green | Image processing rate on camera too low                              |

### 3.2.13 Spray bar height adjustment

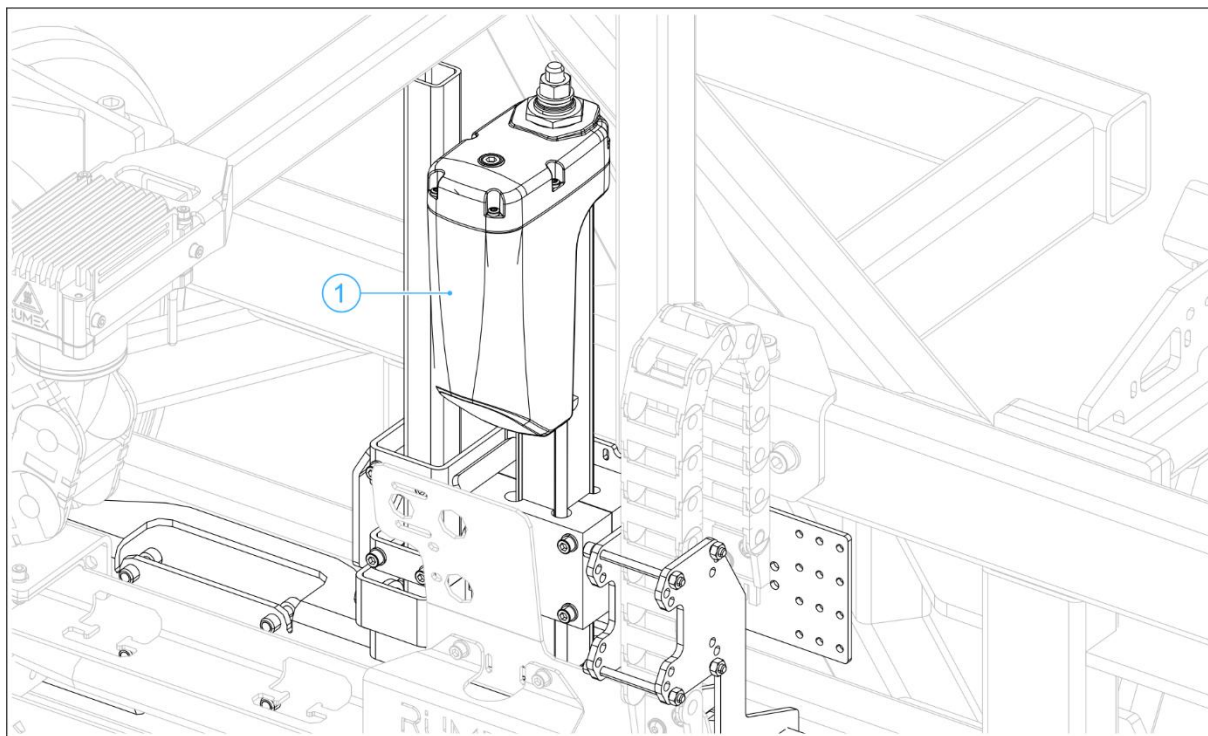


Figure15 : Spray bar height adjustment

Two electric motors 1 per spray bar move the bar vertically.

### 3.2.14 Road traffic equipment

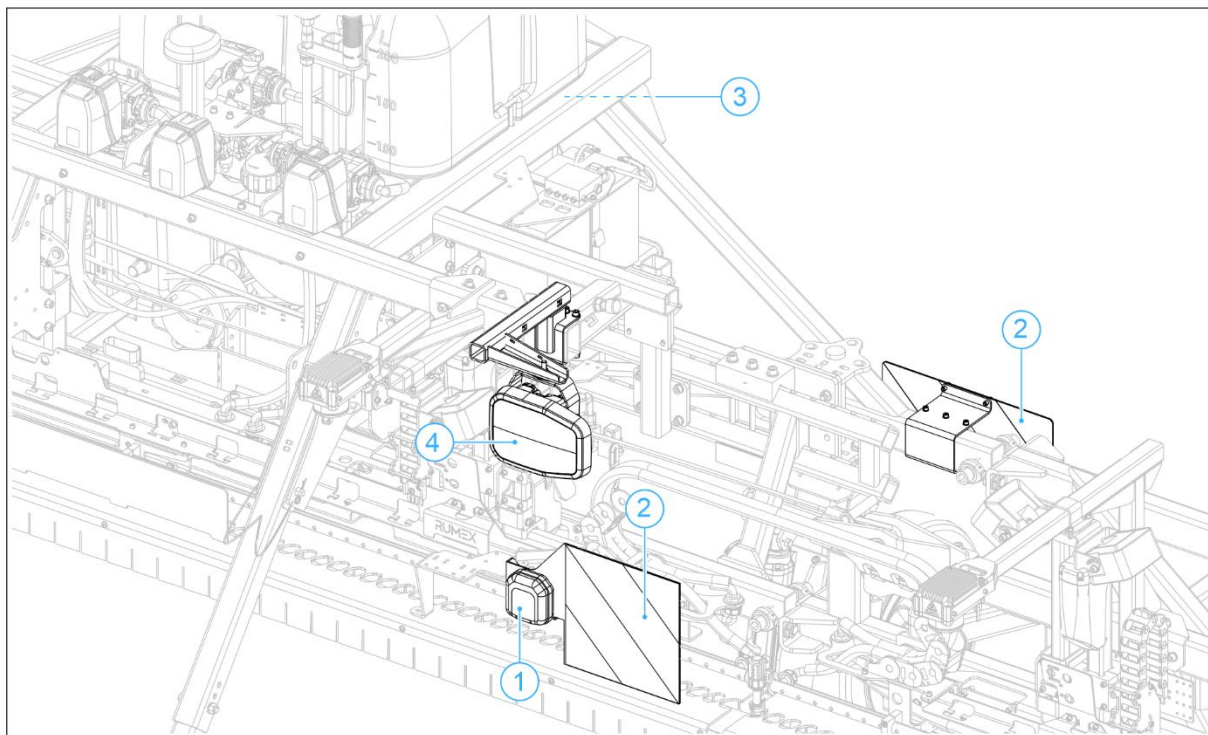
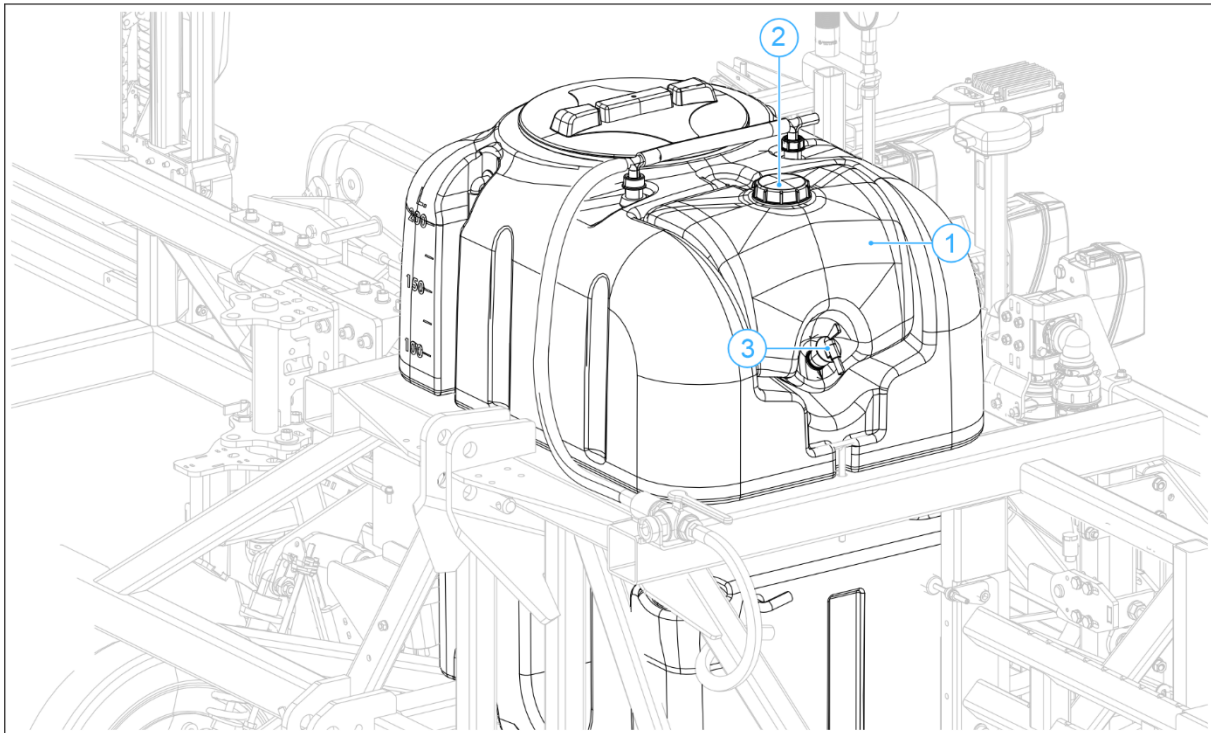


Figure16 : Road traffic equipment

For transportation on roads, the machine is equipped with direction indicators with a parking light function 1 and two warning signs at the front 2 as well as two warning signs at the

rear **2**. The road traffic equipment is connected to the tractor via the connection cable **3**. Optionally, the machine can be fitted with driving lights **4**.

### 3.2.15 Hand wash tank



*Figure17 : Hand wash tank*

The hand wash tank **1** can be filled with fresh water via the lid **2**. The outlet **3** can be used for washing hands at the site of operation.

### 3.2.16 Operator terminal

The machine is operated via a tablet. The tablet is connected to the machine via Wi-Fi.

### 3.3 Technical data

#### General

|                                                                                                                                 |                                                          |
|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Unladen weight                                                                                                                  | 1500 kg                                                  |
| Overall depth                                                                                                                   | 175 cm                                                   |
| Overall width (side arms swivelled up)                                                                                          | 300 cm (undercarriages in correct road-driving position) |
| Overall height (side arms swivelled up)                                                                                         | 385 cm                                                   |
| Working width                                                                                                                   | 900 cm                                                   |
| Capacities <ul style="list-style-type: none"> <li>• Spray tank</li> <li>• Fresh water tank</li> <li>• Hand wash tank</li> </ul> | 200 l<br>30 l<br>10 l                                    |
| Tyre pressure                                                                                                                   | 4.8 bar                                                  |

#### Fluid circuit

|                              |                                     |
|------------------------------|-------------------------------------|
| Maximum pressure             | 10 bar                              |
| Working pressure             | Depends on the set application rate |
| Pressure control             | CAN-Bus pressure regulator          |
| Pressure control range       | 0.5–10 bar                          |
| Mesh size of pressure filter | 100 mesh                            |
| Residual volume              | 3 l                                 |

#### Spray capacity

|                               |    |
|-------------------------------|----|
| Number of sections            | 3  |
| Number of nozzles per section | 74 |

#### Pump configuration

|                      |               |
|----------------------|---------------|
| Pump type            | Comet BP75K   |
| Flow rate at 540 rpm | max. 75 l/min |

#### Required tractor specifications

|                                   |                                                                                                               |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------|
| Engine power                      | min. 80 kW                                                                                                    |
| Battery voltage                   | 12 V                                                                                                          |
| Lifting capacity of front linkage | min. 2 t                                                                                                      |
| Front PTO                         | <ul style="list-style-type: none"> <li>• clockwise</li> <li>• min. 500 rpm</li> <li>• max. 550 rpm</li> </ul> |

### 3.4 Type plate



Figure18 : Type plate

- |   |                     |   |                       |
|---|---------------------|---|-----------------------|
| 1 | Type                | 6 | Operating pressure    |
| 2 | Year of manufacture | 7 | Maximum pump pressure |
| 3 | Serial number       | 8 | Minimum PTO speed     |
| 4 | Net weight in kg    | 9 | Maximum PTO speed     |
| 5 | Operating voltage   |   |                       |

## 4 Commissioning

Initial commissioning must only be carried out under the supervision of the manufacturer or by qualified personnel authorised by the manufacturer.

### 4.1 Connecting tablet to Wi-Fi

1. Switch on the machine and wait until the indicator light is lit solid in red. The system has started up and the Wi-Fi network has been established.
2. Switch on the tablet.
3. Open the Wi-Fi settings on the tablet and search for available networks.
4. Connect to the RFX900 Wi-Fi network.
5. A message stating 'Connected without internet' appears.
6. Open the user interface by tapping the RUMEX app icon.
7. A green dot below the user profile indicates that the tablet is connected to the machine.

### 4.2 Create a user profile

|                                                                                    |                                                                                   |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  | <b>NOTE</b>                                                                       |
|                                                                                    | <b>Before the default user profile can be deleted, a new one must be created.</b> |

1. Tap the three dots to the right of the user profile.
2. Tap **Log out**.
3. Follow the instructions for creating a new user profile.

### 4.3 Adjusting the track width

The machine's track width can be adjusted to bed widths of 1.5 m to 3.0 m using the 5 cm hole pattern.

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                     | <p><b>Maximum width for agricultural machinery on public roads</b></p> <p>Exceeding the maximum width on public roads can result in serious injury or even death to other road users.</p> <ul style="list-style-type: none"> <li>• Observe the applicable maximum width.</li> <li>• If the maximum width is exceeded by undercarriages on the main frame, adjust these to a narrower track width. Undercarriages on the main frame exceed a width of 3 m with a track width of 3 m.</li> <li>• If the maximum width is exceeded by undercarriages on side arms, adjust them to a wider track width. Undercarriages on the side arms exceed the width of 3 m at track widths of 2 m and 2.25 m.</li> </ul> |

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of crushing due to the unsecured tractor rolling away.</b></p> <p>Causes severe injuries to the entire body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Secure the tractor against unintentional rolling with the parking brake or a wheel chock.</li> <li>• Keep unauthorised persons away from the work area.</li> </ul> |

|  | ATTENTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Maximum width for agricultural machinery on public roads</b></p> <p>Exceeding the maximum width on public roads can result in damage to the machine and other objects.</p> <ul style="list-style-type: none"> <li>• Observe the applicable maximum width.</li> <li>• If the maximum width is exceeded by the undercarriages on the main frame, adjust them to a narrower track width. Undercarriages on the main frame exceed a width of 3 m with a track width of 3 m.</li> <li>• If the maximum width is exceeded by undercarriages on side arms, adjust them to a wider track width. Undercarriages on the side arms exceed the width of 3 m at track widths of 2 m and 2.25 m.</li> </ul> |

1. Park the tractor with the machine attached (see [Hitch the machine](#)) on a suitable, level surface and secure it to prevent it from rolling away. The side arms are lowered (see [Swivel the side arms downwards](#)).
2. Raise the machine using the front linkage until the undercarriages are clear.
3. Carry out the following steps on all undercarriages to be adjusted:
  - 3.1 Loosen the three upper horizontal bolts **1** at the rear of the undercarriage.
  - 3.2 Unscrew the three vertical bolts **2** at the top of the undercarriage and set them aside.

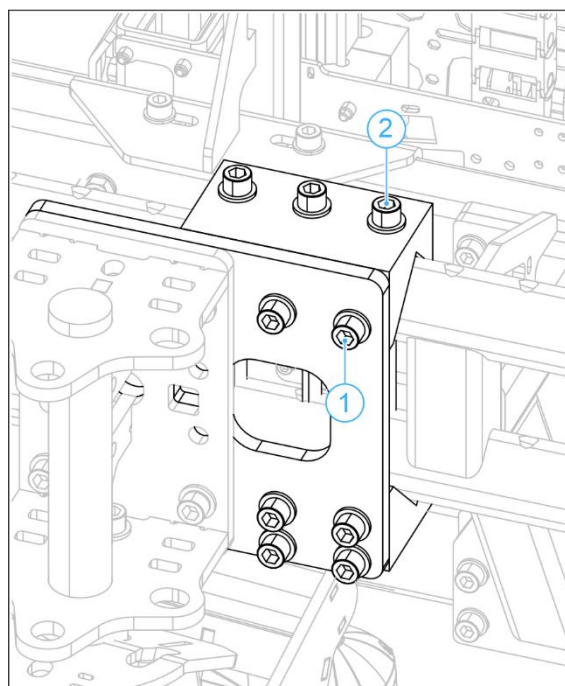


Figure 19 : Undercarriage / offset frame bolts

|                                                                                   |                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>ATTENTION</b></p> <p>The proximity switch cable on the undercarriage may become caught on other components.</p> <p>This may damage the cable or the sensor.</p> <ul style="list-style-type: none"><li>• When moving the undercarriage, ensure that the cable does not get pinched, caught or torn off.</li></ul> |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- 3.3 Move the undercarriage sideways on the adjustment frame to the desired position. The arrow on the undercarriage and the arrow on the adjustment frame indicate the track width when they point towards each other.
- 3.4 Screw the three screws **2** set aside at the top of the chassis in vertically and tighten to the specified torque, see [Screw tightening torques](#).
- 3.5 At the rear of the undercarriage, tighten the three upper horizontal bolts **1** to the specified torque; see [bolt tightening torques](#).
4. Set the machine down.

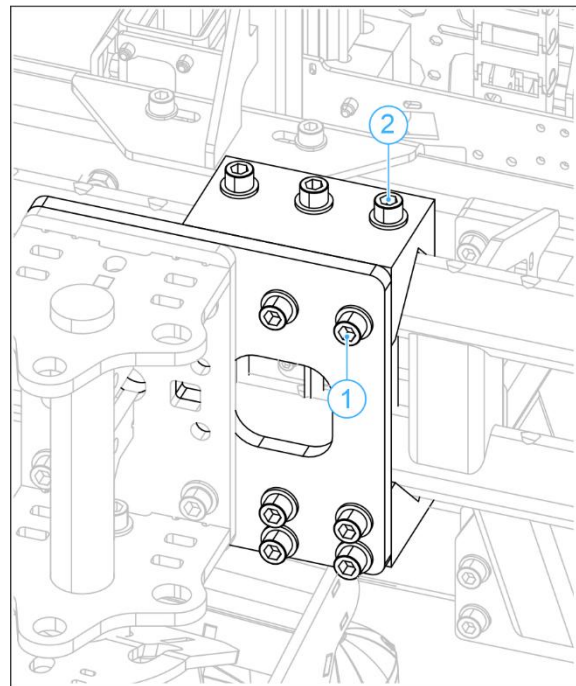


Figure20 : Screws, chassis / sliding frame

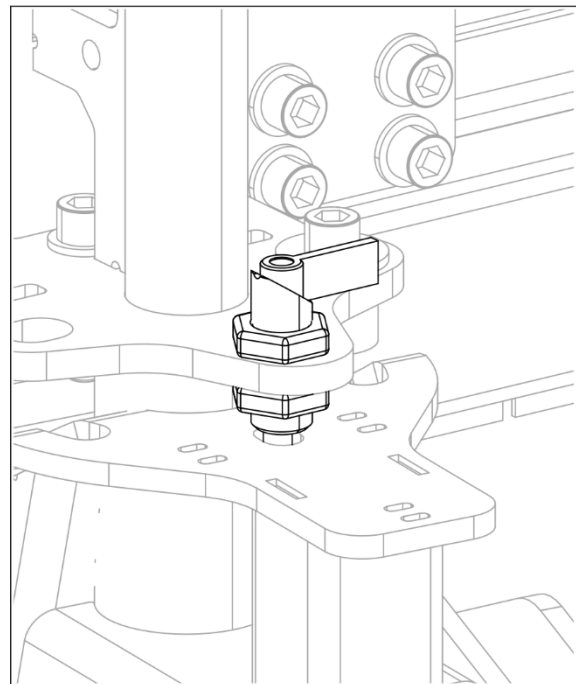
## 5 Operation

### 5.1 Hitch the machine

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                   | <p><b>Risk of crushing due to the uncoupled, unsecured machine rolling away or tipping over</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"><li>• Only carry out on level, firm ground.</li><li>• Never move the unhitched machine on your own.</li><li>• Secure the machine with a wheel chock to prevent it from rolling away unintentionally.</li><li>• The machine must be secured against tipping by folding down the support legs.</li><li>• Keep unauthorised persons away from the work area.</li></ul> |

**Prerequisites:**

- The locking bolts on the undercarriages must be locked, see figure 21.
- The machine must be parked on level ground and secured against rolling away and tipping over. Ensure that the support wheels are on the ground.



*Figure 21 : Locking bolt, locked*

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of crushing between the tractor and the machine when hitching the machine.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Direct people away from the danger zone.</li> <li>• Any assistants present must act as instructors only next to the tractor and machine.</li> <li>• Only enter the area between the tractor and the machine once it has come to a complete stop and has been secured to prevent it from rolling away.</li> </ul> |

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of crushing due to the unsecured tractor rolling away.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Secure the tractor against unintentional rolling with the parking brake or a wheel chock.</li> <li>• Clear the work area of any unauthorised persons.</li> </ul> |

1. Move the tractor into a suitable position to connect the three-point hitch to the machine and secure it against rolling away.
2. Attach the machine to the three-point hitch (see [main frame](#)) and secure it (see operating instructions for the tractor's front linkage).

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Danger from rotating parts: PTO and PTO shaft</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Never touch the PTO, PTO shaft or PTO stub during operation.</li> <li>• The PTO shaft must only be connected and disconnected when the PTO is switched off.</li> <li>• Only use an approved PTO shaft with a guard.</li> </ul> |

3. Connect the PTO shaft to the tractor and machine; see [Connect the PTO shaft](#).
4. Connect the cables for the lighting system and the auxiliary power supply to the tractor.
5. Raise the machine until the support wheels are off the ground; see the tractor's front linkage operating instructions.

6. To move the support wheels to the transport position, carry out the following steps on both support wheels:
  - 6.1 Pull split pin 2 out of locking pin 1.
  - 6.2 Pull the locking pin 1 out of the support leg.
  - 6.3 Swivel the support leg with the support wheel all the way up by hand.
  - 6.4 Insert locking pin 1 through the support leg.
  - 6.5 Insert split pin 2 through the locking pin.
7. Use the upper link of the three-point hitch to bring the machine into a horizontal position; see the operating instructions for the tractor's front power linkage.

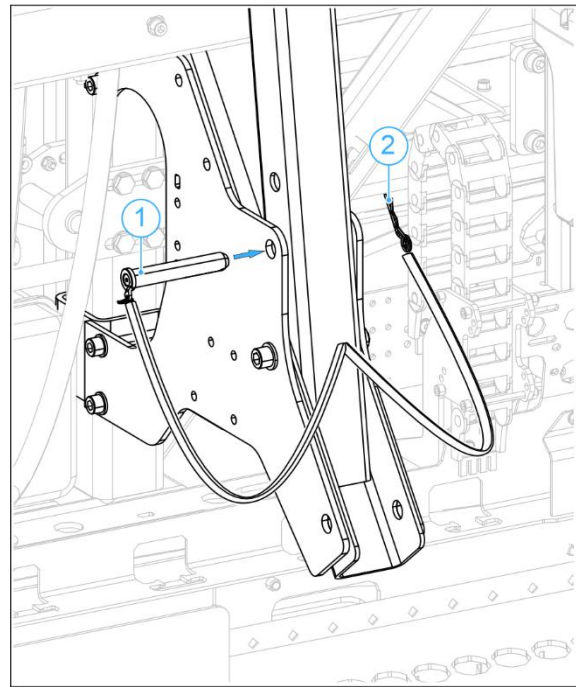


Figure22 : Locking pin for support leg, upper mounting

## 5.2 Unhitch the machine

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Risk of crushing due to the unsecured tractor rolling away.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Secure the tractor against unintentional rolling with the parking brake or a wheel chock.</li> <li>• Clear the work area of any unauthorised persons.</li> </ul> |

1. Park the tractor with the machine attached on a suitable, level surface and secure it to prevent it from rolling away.

2. The length of the support wheels must be selected so that the machine is level when parked, depending on the undercarriages' height.
3. Carry out the following steps on both support wheels:
  - 3.1 Remove split pin 2 from locking pin 1.
  - 3.2 Remove the locking pin 1 from the support leg.
  - 3.3 Swivel the support leg with the support wheel all the way down by hand.
  - 3.4 Insert locking pin 1 through the support leg.
  - 3.5 Insert split pin 2 through the locking pin.
4. Lower the machine until it is fully on the floor.
5. Secure the machine to prevent it from rolling or tipping over.

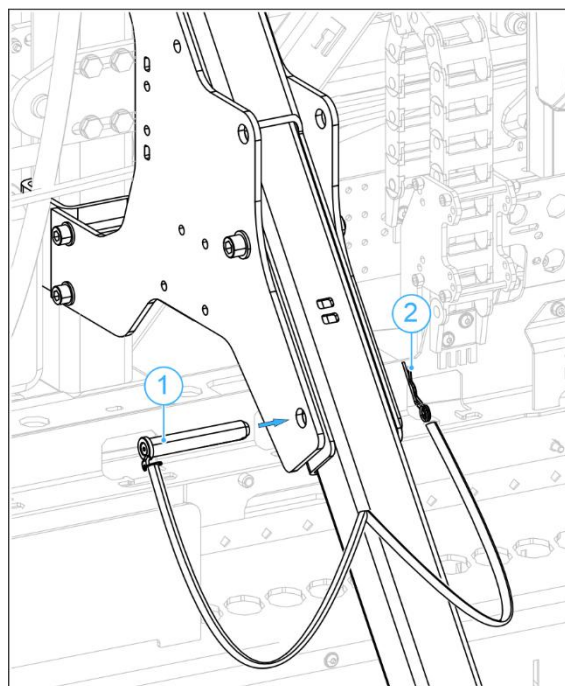


Figure23 : Support leg locking pin, lower mounting

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Danger from rotating parts: PTO and PTO shaft</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Never touch the PTO, PTO shaft or PTO stub during operation.</li> <li>• The PTO shaft must only be connected and disconnected when the PTO is switched off.</li> <li>• Only use an approved PTO shaft with a guard.</li> </ul> |

6. Disconnect the PTO shaft from the PTO; see [Disconnect the PTO shaft](#).
7. Disconnect the cables for the lighting system and the auxiliary power supply from the tractor.

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of crushing due to the disconnected, unsecured machine rolling or tipping over</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out this operation on level, firm ground.</li> <li>• Never move the unhitched machine on your own.</li> <li>• Secure the machine with a wheel chock to prevent it from rolling away unintentionally.</li> <li>• The machine must be secured against tipping by swivelling down the support legs.</li> <li>• Keep unauthorised persons away from the work area.</li> </ul> |

8. Disconnect the three-point hitch from the machine; see the operating instructions for the tractor's front power linkage.

### 5.3 Connect the PTO shaft

1. Clean and grease the tractor's PTO and the machine's input shaft.
2. Hitch the machine, see [Hitch the machine](#).

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Risk of crushing due to the unsecured tractor rolling away.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Secure the tractor against unintentional rolling with the parking brake or a wheel chock.</li> <li>• Clear the work area of unauthorised persons.</li> </ul> |

3. Secure the tractor to prevent it from starting or rolling away unintentionally.
4. Ensure that the PTO is switched off.

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Danger from rotating parts: PTO and PTO shaft</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Never touch the PTO, PTO shaft or PTO stub during operation.</li> <li>• The PTO shaft must only be connected and disconnected when the PTO is switched off.</li> <li>• Only use an approved PTO shaft with a guard.</li> </ul> |

5. Connect the PTO shaft to the tractor. Observe the PTO shaft manufacturer's instructions and the permissible drive speed of the machine.
6. Secure the PTO shaft guard with retaining chains to prevent it from rotating. Attach the retaining chains as perpendicular as possible to the PTO shaft. Ensure sufficient

swivel range of the PTO shaft in all operating conditions; retaining chains must not become caught on components of the tractor or the machine.

## 5.4 Disconnect the PTO shaft

1. Lower the machine completely onto a suitable surface.
2. Switch off the PTO; see the tractor operating manual.

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                   | <p><b>Risk of crushing due to the unsecured tractor rolling away.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Secure the tractor with the parking brake or a wheel chock to prevent it from rolling away unintentionally.</li> <li>• Clear the work area of unauthorised persons.</li> </ul> |

3. Secure the tractor against unintentional rolling and starting.

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                     | <p><b>Danger from rotating parts: PTO and PTO shaft</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Never touch the PTO, PTO shaft or PTO stub during operation.</li> <li>• The PTO shaft must only be connected and disconnected when the PTO is switched off.</li> <li>• Only use an approved PTO shaft with a guard.</li> </ul> |

|                                                                                     |                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>CAUTION</b>                                                                                                                                                                                                                              |
|                                                                                     | <p><b>The PTO shaft can become hot during operation.</b></p> <p>Touching the hot drive shaft can cause burns.</p> <ul style="list-style-type: none"> <li>• Never touch hot parts.</li> <li>• Wear personal protective equipment.</li> </ul> |

4. Remove the PTO shaft from the tractor's PTO stub and the machine's input shaft.

|                                                                                     |                                                                               |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
|  | <b>NOTE</b>                                                                   |
|                                                                                     | <p><b>Follow the drive shaft manufacturer's instructions for storage.</b></p> |

## 5.5 Swivel the side arms downwards

|                                                                                   |                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                           |
|                                                                                   | <p><b>Risk of crushing due to the unhitched machine tipping over</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only swivel down the side arms when the machine is hitched.</li> </ul> |

1. Park the machine in a suitable location with sufficient space to lower the side arms onto a level surface in the floating mode.
2. Press the red button on the belt buckle to release the mechanical lock between the side arms.
3. Switch on the machine at the main switch. When the indicator light is lit solid red, the machine is ready.
4. Press the "On/Off" button to switch on the radio remote control. If the red light on the remote control is lit, it is switched on.

|                                                                                    |                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                          |
|                                                                                    | <p><b>Risk of crushing the entire body by machine parts swinging down from above.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Do not stand within the swivelling range of moving machine parts.</li> <li>• Direct people to leave the area before the arms swivel down.</li> </ul> |

|                                                                                     |                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                        |
|                                                                                     | <p><b>Risk of crushing fingers or hands due to moving, accessible machine parts</b></p> <p>Causes very serious injuries with loss of body parts to fingers or hands.</p> <ul style="list-style-type: none"> <li>• Never reach into the hazard area whilst the hydraulic system is running.</li> </ul> |

5. Press the "Down" button on the radio remote control to swivel down the side arms. Hold the "Down" button until the side arms are fully swivelled down. When both side arm undercarriages are in contact with the ground, the hydraulic seat valves are switched to the "open" position and the machine is in float mode.
6. Press the "On/Off" button to switch off the radio remote control. When the red light on the remote control goes out, it is switched off.
7. Unlock the locking bolts on the undercarriages, see figure 24.

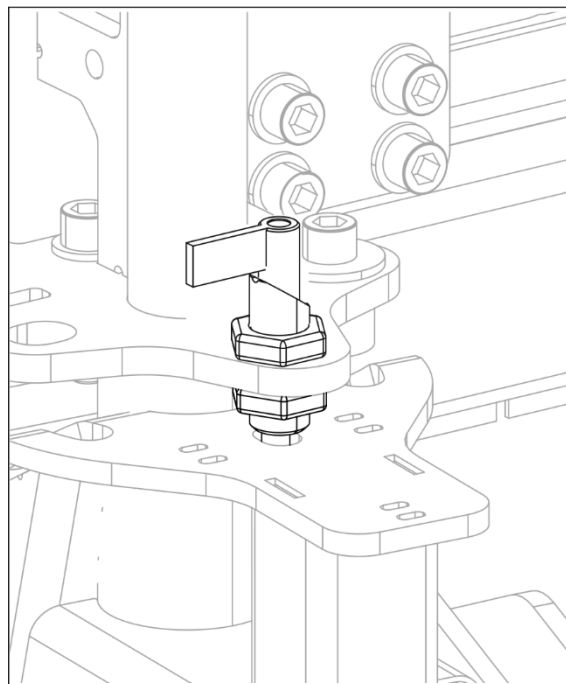


Figure24 : Locking bolt, unlocked

## 5.6 Swivel the side arms upwards

|  | WARNING                                                                                                                                                                                                                                            |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Risk of crushing due to the uncoupled machine tipping over</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only raise the side arms when the machine is hitched.</li> </ul> |

1. Raise the spray bar all the way up; see [Adjusting the spray bar height](#).
2. If necessary (e.g. for transport on public roads), adjust the track width of the chassis, see [Adjusting the track width](#).
3. Lock the locking bolts on the undercarriages, see figure 25.
4. Press the "On/Off" button to switch on the radio remote control. If the red light on the remote control is lit, it is switched on.

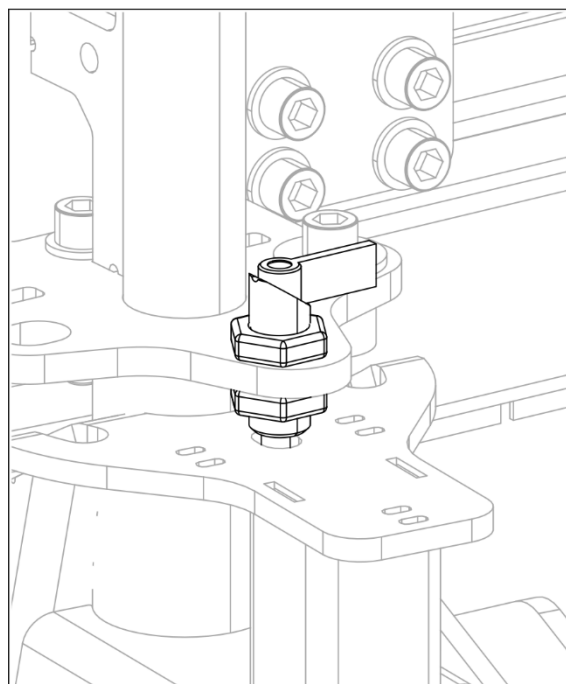


Figure25 : Locking bolt, locked

|  | WARNING                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of crushing fingers or hands due to moving, accessible machine parts</b></p> <p>Causes very serious injuries with loss of body parts to fingers or hands.</p> <ul style="list-style-type: none"> <li>• Never reach into the hazard area whilst the hydraulic system is running.</li> </ul> |

5. Press the “Up” button on the radio remote control to swivel up the side arms. Hold the “Up” button until the side arms are fully swivelled up.
6. Insert the locking tongue into the belt buckle to engage the mechanical lock between the side arms.
7. Switch off the machine at the main switch. The indicator light goes out.
8. Press the “On/Off” button to switch off the radio remote control. When the red light on the remote control goes out, it is switched off.

## 5.7 Transport

|  | NOTE                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>When transporting the machine on public roads, observe the applicable laws and regulations for road use.</b></p> <p>Obtain information on national laws and regulations before driving on public roads.</p> |

1. Adjust the track width so that the maximum width for road traffic is not exceeded; see [Adjusting the track width](#).
2. Check tyre pressure, pump oil level and hydraulic oil level.
3. Disengage the PTO.
4. Raise the machine.
5. Ensure that
  - 5.1 the spray bar has been raised fully, see [Adjusting the spray bar height](#).
  - 5.2 The support wheels are in the transport position, see [Hitching the machine](#).
  - 5.3 The side arms are swivelled up and mechanically secured, see [Swivel the side arms upwards](#).
  - 5.4 The locking bolts on the undercarriages are locked.
  - 5.5 Check that the lighting system is connected to the tractor and in working order; see [Hitching the machine](#).
  - 5.6 The fluid circuit is depressurised.
  - 5.7 The undercarriages have no contact with the ground.

|  | WARNING                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of falling if persons illegally ride on the machine.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>Do not transport any persons or objects on the machine.</li> </ul> |

6. Start transport.

## 5.8 Operation via tablet

The user interface is opened on the tablet by tapping the RUMEX app icon.

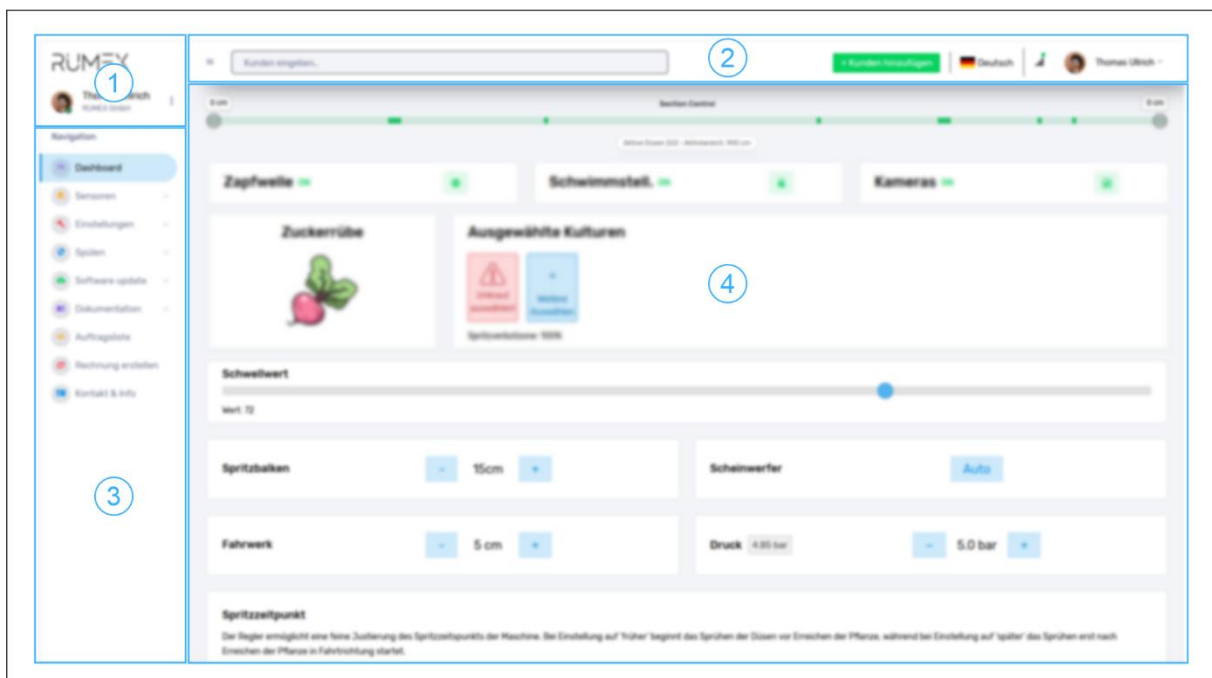


Figure26 : Tablet user interface

The logged-in user 1 is displayed in the top left-hand corner of the user interface. A green dot beneath the user profile indicates that the tablet is connected to the machine.

The language of the user interface can be selected in the title bar 2 at the top.

The menu 3 is located on the left-hand side below the user icon.

The control panel 4 is located on the right-hand side.

### 5.8.1 PTO, float mode, cameras

To start image processing, the machine must be in float mode, see [Swivel the side arms doenwards](#), and the system must be up and running (the signal lamp is lit in solid red). Once these two conditions are met, the PTO shaft is started (see tractor operating instructions) to drive the pump and alternator. A signal is picked up from the alternator, which automatically starts image processing.

The status of the PTO, the float position and the cameras can be checked in the Dashboard menu at the top.

### 5.8.2 Start the filling process for the piping system

During the filling process of the piping system, water that has been in the pipes since the last cleaning is displaced and replaced by the contents of the spray tank. This ensures that the desired spray mixture is applied from the start.

Prerequisites:

- The spray tank is full.
- Mixing is complete.

In the `Dashboard` menu, under 'Filling', tap 'Start filling'.

### 5.8.3 Start plant treatment

Prerequisites:

- The filling process for the piping system is complete.
- The PTO is connected and running, the machine is in float mode and the machine's operating system has started up. These three requirements are displayed under `Dashboard`.

In the `Dashboard` menu, tap the left-hand field for the crops. A view opens in which the crop can be selected by tapping.

After selection, a screen opens where the following settings can be configured:

- `Weeds`: Tap to select which weeds are to be sprayed automatically by the machine.
- `Safety zone`: Swipe the slider to the left (smaller safety zone) or right (larger safety zone).

The safety zone determines how close to the crop the spray is applied. At 100%, the spray is applied as close as possible to the edge of the crop. A larger safety zone means that a greater distance is maintained from the crop during spraying. A smaller safety zone means that the crop may also be hit during spraying.

- `Weed size`: Swipe the slider to the left (smaller size) or right (larger size).

The weed size determines how widely the selected weeds are sprayed. At 100%, spraying is directed as precisely as possible right up to the edge of the weeds. If a larger size is set, spraying covers a wider area, extending beyond the edge of the weeds. If a smaller size is set, spraying does not reach the edge of the weeds, but sprays in the centre of the weeds.

In addition, the following functions can be selected and thus activated by tapping:

- `Spray all but crop`: All plants are sprayed, with the exception of the crop.
- `Spray only weed center`: Spraying takes place only at the centre of the weeds as detected by the software.

Tapping the function again removes the selection and deactivates the function.

Tap '`Confirm selection`' to save the settings.

### 5.8.4 Adjusting the undercarriages' height

To adjust the machine to the depth of the tracks and ensure uniform horizontal alignment of all spray bars, the height of the undercarriages can be adjusted.

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of crushing if the machine tips over whilst adjusting the height on a machine that is not hitched.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only adjust the height of the undercarriage when the machine is hitched to the tractor.</li> <li>• Adjust the height of the undercarriage only when the side arms are swivelled down.</li> </ul> |

In the **Dashboard** menu under **Suspension**, lower the undercarriages by tapping the – button or raise it by tapping the + button. The change to the original height is displayed.

### 5.8.5 Adjusting the spray bar height

The closer the spray nozzles are to the planting, the more precisely it can be sprayed. The height of the spray bar can be adjusted to adapt the machine to the height of the planting and achieve the best possible spraying result.

|  | ATTENTION                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                    | <p><b>If the spray bar is set too low, collisions may occur.</b></p> <p>This can cause damage to the spray bar and the nozzles.</p> <ul style="list-style-type: none"> <li>• Do not set the spray bar too low.</li> <li>• Carry out regular visual checks.</li> </ul> |

In the **Dashboard** menu under **Spray bar**, lower the spray bar by tapping the – button or raise it by tapping the + button. The display shows how far the spray bar has been lowered from its highest position.

### 5.8.6 Set the injection timing

In the **Dashboard** menu under **Injection Timing**, move the slider by swiping left (later) or right (earlier).

### 5.8.7 Set threshold

In the **Dashboard** menu, under **Threshold**, move the slider by swiping left (fewer plants will be detected than the selected number) or right (more plants will be detected than the selected number).

### 5.8.8 Adjust pressure

In the **Dashboard** menu under **Pressure**, tap the – button to lower the target pressure or the + button to raise it. The actual measured pressure is displayed.

### 5.8.9 Switch lighting on/off

|                                                                                   |                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>NOTE</b>                                                                                                                                                                                               |
|                                                                                   | <b>Higher power consumption and increased wear when using the lighting</b> <ul style="list-style-type: none"> <li>The lighting should only be switched on when lighting conditions require it.</li> </ul> |

In the `Dashboard` menu, under `Headlight`, tap `Off` or `Auto`.

### 5.8.10 Start cleaning

In the `Dashboard` menu, under `Cleaning`, tap `Start Cleaning` and follow the further instructions on the user interface.

### 5.8.11 Perform a software update

The software is continuously being improved; to benefit from these improvements, updates should be carried out regularly. To do this, the machine must be connected to the internet. This can be achieved either via a SIM card inserted into the mobile internet module or via a LAN cable connected to the Ethernet port.

In the menu `Software update > Update`, tap `Check for updates` and follow the further instructions on the user interface.

### 5.8.12 Report a problem with weed detection

The ongoing improvement of the software is also based on user feedback. If the software fails to detect a weed, a video of it can be recorded and uploaded to help improve the algorithm.

In the menu `Software update > Recording`, tap `Enter video name` and use the tablet's keyboard to enter the name of the crop being grown.

Tap `Record Video`. A video will be recorded for 20 seconds; during this time, drive over the problematic weeds at approximately 5 km/h.

Recorded videos are saved automatically. To upload the recorded video to RUMEX GmbH, connect the machine to the internet and tap `Upload Videos` under `Software update > Recording`.

### 5.8.13 Testing nozzles

In the menu `Flush > Service` menu, a single spray bar can be selected by choosing the `Rail Left`, `Rail Centre` or `Rail Right` buttons. Within the spray bar, the number of nozzles to be tested can be reduced to as few as one by shortening the blue bar at the top of the user interface.

Under `On-time (sec.)`, you can set the duration of the nozzle test. Additionally, under `Nozzle Pulsing`, you can specify whether the nozzles spray continuously (`Disabled`) or in pulses (`Activated`).

## 5.9 Filling with water

|  | ATTENTION                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Danger due to exceeding the permissible payload of the machine or tractor.</b></p> <p>This can lead to damage to the machine, the front linkage or the tractor.</p> <ul style="list-style-type: none"> <li>• When determining the filling quantities and during filling, observe the permissible payload of the machine.</li> <li>• Take into account the different specific weights of the liquids.</li> </ul> |

|  | NOTE                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p>The prescribed application rates for plant protection products and water, which are used to determine the required tank volumes, can be found in the plant protection product's instructions for use.</p> |

|  | ENVIRONMENTAL NOTICE                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Careful calculation of the required application rates helps to avoid residual quantities at the end of spraying operations.</b></p> <p>Environmentally sound disposal of residual quantities is often difficult.</p> |

1. Determine the required filling quantities for the application.

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Risk of crushing due to the unsecured tractor rolling away.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Secure the tractor with the parking brake or a wheel chock to prevent it from rolling away unintentionally.</li> <li>• Clear the work area of any unauthorised persons.</li> </ul> |

2. Park the tractor with the machine hitched (see [Hitch the machine](#)) on a suitable, level surface and secure it to prevent it from rolling away.
3. Close the drain valves on the spray tank to remove any residual liquid.
4. Connect the fresh water hose to the GEKA coupling.
5. Switch the three-way valve to the spray tank, see figure 27.
6. Open the fresh water supply. Monitor the level indicator and close the fresh water supply when the desired level is reached.

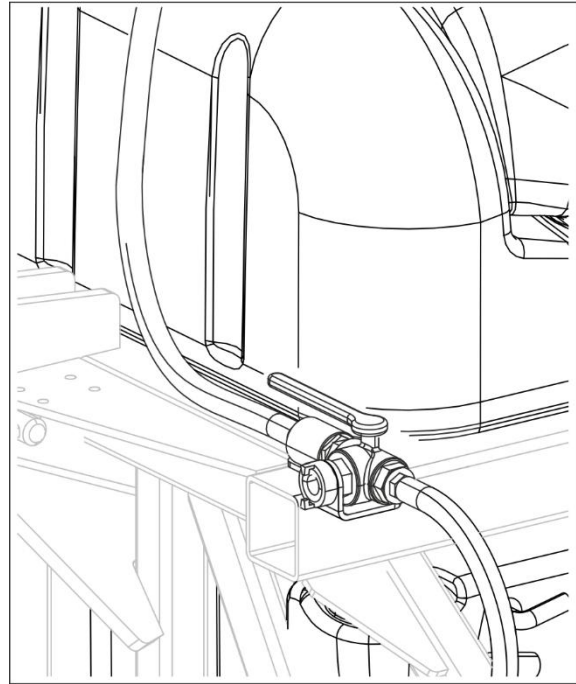


Figure27 : Three-way valve to the spray tank

7. Switch the three-way valve to the fresh water tank, see figure 28.
8. Fill the fresh water tank.
9. Disconnect the fresh water hose from the GEKA coupling.
10. Fill the hand wash tank with fresh water via the lid.
11. Drive to the site of operation; see [Transport](#).

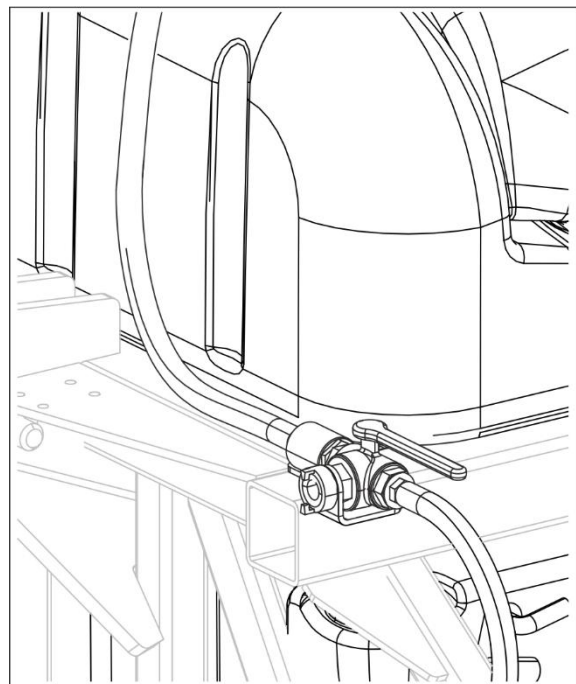


Figure28 : Three-way valve to the fresh water tank

## 5.10 Prepare for plant treatment

1. At the site of operation, switch on the machine at the main switch. If the signal lamp is lit solid red, the machine is ready.
2. Lower the side arms; see [Swivel the side arms downwards](#).
3. Check that the machine is in float mode.
4. Switch on the PTO. If the indicator light is lit solid green, the machine is ready.

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Danger from plant protection products in the event of skin contact, ingestion or inhalation of vapours.</b></p> <p>Serious health risks, including death.</p> <ul style="list-style-type: none"> <li>• Follow the safety instructions provided by the plant protection product manufacturer.</li> <li>• Avoid direct contact with plant protection products or the vapours they produce.</li> <li>• Wear personal protective equipment.</li> </ul> |

|  | ENVIRONMENTAL NOTICE                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Avoid spilling, leaking or overflowing of plant protection products/spray mixture:</b></p> <ul style="list-style-type: none"> <li>• Handle plant protection products with care.</li> <li>• Calculate filling quantities in advance and do not exceed them.</li> <li>• Avoid foaming; if necessary, use a funnel with a large cross-section.</li> </ul> |

|  | NOTE                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>In addition to the information provided here, also follow the instructions for use of the plant protection product:</b></p> <ul style="list-style-type: none"> <li>• Warnings and precautions</li> <li>• Any necessary product-specific procedures</li> </ul> |

5. Pour the calculated amount of spray mixture into the spray tank via the top opening, using the tank strainer.
6. Circulate the spray mixture for five minutes or until it is thoroughly mixed.

|  | ENVIRONMENTAL NOTICE                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Do not start the filling process on a sealed surface.</b></p> <p>To fill the nozzles with plant protection product, they are activated in sequence. A small amount of plant protection product may be sprayed out during this process.</p> |

7. Start the filling process on the tablet; see [Start the filling process for the pipe system](#).
8. All nozzles are pulsed briefly one after the other, starting on the right-hand side in the direction of travel. Visually check whether a spray cone is formed at each nozzle. If this is not the case, see [Check spray cone and flow rate of the nozzles, replace nozzles](#).
9. Check the spray pressure on the pressure gauge. [Adjust pressure](#) if necessary.

## 5.11 Plant treatment

Prerequisites:

- The machine is switched on.
- All four undercarriages are in contact with the ground.
- The machine is aligned horizontally in the direction of travel. If this is not the case, adjust via the top link of the three-point hitch.
- The side arms are aligned horizontally in the lateral direction. If this is not the case, see [Adjusting the undercarriages' height](#).

1. Switch on the PTO, see the tractor's operating instructions. Image processing is activated; the signal lamp lights up solid green.

|                                                                                   |                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>ATTENTION</b>                                                                                                                                                                                                                                         |
|                                                                                   | <p><b>If the spray bar is set too low, collisions may occur.</b></p> <p>This can cause damage to the bar and the nozzles.</p> <ul style="list-style-type: none"> <li>• Do not set the bar too low</li> <li>• Carry out regular visual checks.</li> </ul> |

2. On the tablet, lower the spray bar as far as possible depending on the conditions at the site; see [Adjusting the spray bar height](#).
3. Set the machine function on the tablet; see [Start plant treatment](#).

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>NOTE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                                     | <p><b>The machine automatically adjusts to the driving speed.</b></p> <p>For the best possible results, the machine operator must carry out constant visual checks. If the results are unsatisfactory, the following options are available:</p> <ul style="list-style-type: none"> <li>• Adjust the driving speed</li> <li>• Adjust the spraying time; see <a href="#">Set the injection timing</a></li> <li>• Adjust the threshold, see <a href="#">Set the threshold</a></li> <li>• Switch on the headlights, see <a href="#">Switch lighting on/off</a></li> </ul> |

4. The working speed is approximately 5 km/h. Always check the spray pressure by visually inspecting the pressure gauge.
5. Always lift the machine when turning at the end of the track. After lowering it again, always check on the tablet that all four wheels are back in contact with the ground and that the machine is in float mode. If there is not enough space at the headland to turn with the side arms lowered:
  - 5.1 Press the "On/Off" button to switch on the radio remote control. If the red light on the remote control is lit, it is switched on.

|  | WARNING                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of crushing fingers or hands due to moving, accessible machine parts</b></p> <p>Causes severe injuries with loss of body parts to fingers or hands.</p> <ul style="list-style-type: none"> <li>• Never reach into the hazard area whilst the hydraulic system is running.</li> </ul> |

5.2 Press the "Up" button on the radio remote control to swivel the side arms upwards. Hold the "Up" button until the side arms are fully swivelled up.

5.3 Turn round.

|  | WARNING                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of crushing the entire body by machine parts swinging down from above.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Do not stand within the swivelling range of moving machine parts.</li> <li>• Direct people to leave the area before the arms swivel down.</li> </ul> |

5.4 Press the "Down" button on the radio remote control to swivel the side arms downwards. Hold the "Down" button until the side arms have swivelled down completely.

5.5 Press the "On/Off" button to switch off the radio remote control. When the red light on the remote control goes out, it is switched off.

6. A drop in pressure on the pressure gauge indicates that the spray tank is running empty.

7. After applying the spray mixture, always clean the valve system with fresh water; see [Cleaning the valve system](#).

## 5.12 Cleaning the valve system

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>ATTENTION</b>                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                   | <p><b>Residues of the plant protection product used can stick to pipes, valves, filters, nozzles and other components or form deposits.</b></p> <p>This can lead to damage, meaning that the affected components no longer function reliably and must be replaced.</p> <ul style="list-style-type: none"> <li>• Clean the machine's valve system with fresh water immediately after each use.</li> </ul> |

|                                                                                   |                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>ENVIRONMENTAL NOTICE</b>                                                                                                                                                      |
|                                                                                   | <p><b>Do not clean the valve system on a sealed surface.</b></p> <p>There are residues of the plant protection product in the nozzles, which are sprayed out during rinsing.</p> |

### Prerequisites:

- The fresh water tank is full.
- 1. If the spray tank has not emptied during application:
  - 1.1 Insert the drain hose into a suitable container (e.g. a canister) to collect the remaining liquid.
  - 1.2 Switch the three-way valve to the drain hose, see figure 29; the residual quantity is drained into the container.
  - 1.3 A drop in pressure on the pressure gauge indicates that the spray tank is emptying.

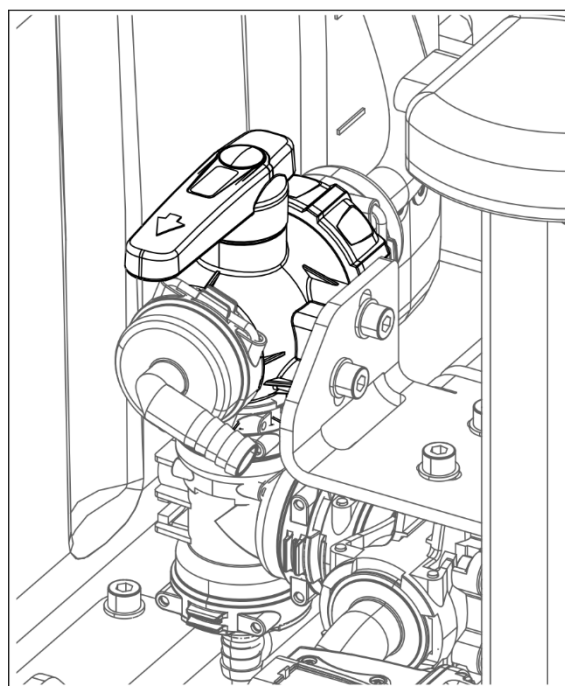


Figure29 : Three-way valve to the drain hose

- 1.4 Switch the three-way valve to circulation, see figure 30.
2. Position a container for the residual quantity under the drain valves of the spray liquid tank and open the drain valves.
3. Once the spray liquid tank is completely empty, close the drain valves.
4. Start **Quick Cleaning** on the tablet, see [Start cleaning](#). The cleaning programme runs automatically. The machine is rinsed with water from the fresh water tank. All nozzles are activated briefly one after the other (starting on the right-hand side in the direction of travel).
5. Switch off the PTO; see the tractor operating manual.
6. Place a suitable container to collect the rinse water under the drain valves of the spray tank.

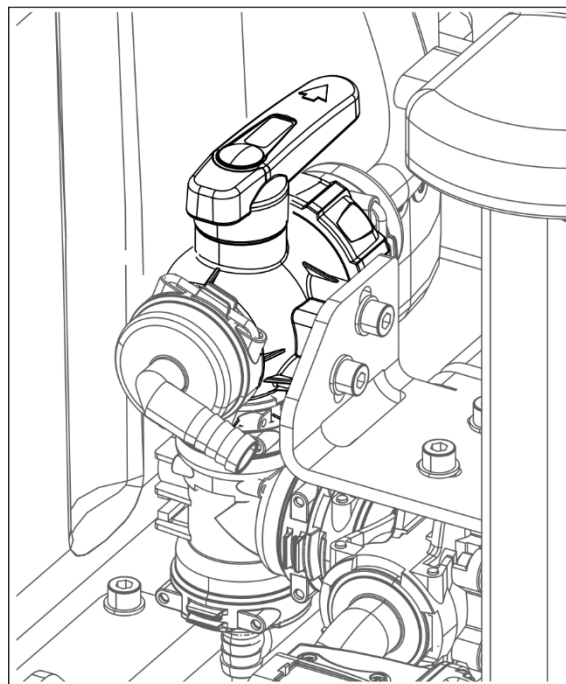


Figure30 : Three-way valve circulation

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                        |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Rinsing water contains residues of the spray mixture</b></p> <p>Depending on the plant protection product used, skin contact may cause irritation or chemical burns. Ingestion of the rinse water can lead to serious physical injury or even death.</p> <ul style="list-style-type: none"> <li>• Wear personal protective equipment!</li> <li>• Avoid skin contact!</li> <li>• Do not drink!</li> </ul> |

7. Open the drain valves and drain the rinse water into a container.
8. Dispose of any remaining product and the rinse water properly.

## 5.13 Cleaning the entire system

Requirements:

- A water connection with a hose and GEKA coupling is available.

1. Set the three-way valve to circulation, see figure 31.
2. Connect the water supply to the GEKA coupling and open it.
3. Start **Full cleaning** on the tablet; see [Start cleaning](#). The cleaning programme runs automatically.
4. Follow the instructions on the user interface.
5. Switch off the PTO; see the tractor's operating instructions.
6. Place a suitable container under the drain valves of the spray tank to collect the rinse water.

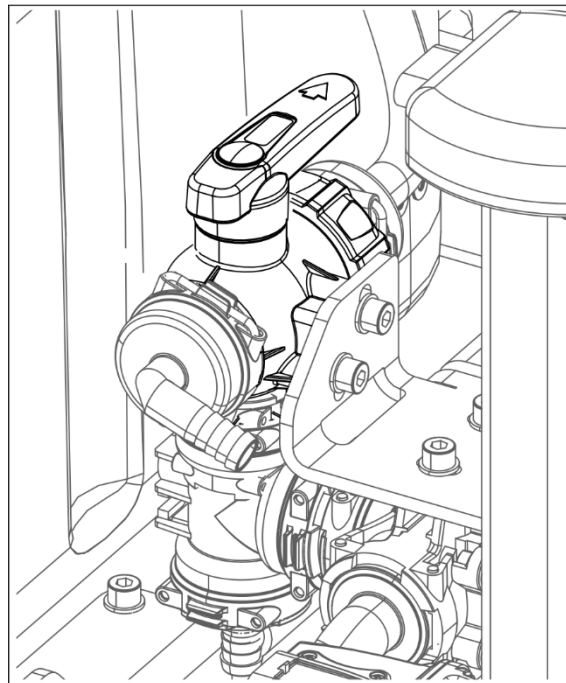


Figure31 : Three-way valve circulation

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Rinsing water contains residues of the spray mixture</b></p> <p>Depending on the plant protection product used, skin contact may cause irritation or chemical burns. Ingestion of the rinse water can lead to serious physical injury or even death.</p> <ul style="list-style-type: none"> <li>• Wear personal protective equipment!</li> <li>• Avoid skin contact!</li> <li>• Do not drink!</li> </ul> |

7. Open the drain valves and drain the rinse water into a container.
8. Dispose of any remaining product and rinse water properly.

### 5.13.1 External cleaning

|  | WARNING                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Risk of crushing fingers or hands due to moving, accessible machine parts</b></p> <p>Causes very serious injuries with loss of body parts to fingers or hands.</p> <ul style="list-style-type: none"> <li>• Only carry out when the machine is disconnected and switched off.</li> </ul> |

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <div><b>WARNING</b></div> <p><b>Risk of crushing due to the disconnected, unsecured machine rolling or tipping over</b></p> <p>Causes severe injuries to the entire body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Never move the uncoupled machine on your own.</li> <li>• Secure the machine with a wheel chock to prevent it from rolling away unintentionally.</li> <li>• The machine must be secured against tipping by swivelling down the support legs.</li> <li>• Keep unauthorised persons away from the work area.</li> </ul> |
|    | <div><b>ATTENTION</b></div> <p><b>Danger due to water ingress into electronic components.</b></p> <p>This can cause damage to electronic components, resulting in them no longer functioning and requiring replacement.</p> <ul style="list-style-type: none"> <li>• Never clean the machine with a high-pressure cleaner or steam jet.</li> <li>• Ensure that no water enters the electrical and hydraulic components during cleaning.</li> </ul>                                                                                                                                                          |
|  | <div><b>ATTENTION</b></div> <p><b>Danger from aggressive cleaning agents such as petrol, benzene, petroleum or mineral oil-based cleaning agents.</b></p> <p>These cleaning agents can damage the hydraulic hoses.</p> <ul style="list-style-type: none"> <li>• Do not use aggressive cleaning agents to clean the machine.</li> </ul>                                                                                                                                                                                                                                                                      |
|  | <div><b>NOTE</b></div> <p><b>The lubrication points must be lubricated after every external cleaning.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 5.14 Exceptional operating conditions

### 5.14.1 Driving with headlights

If it is too dark, the software cannot identify the different crops from the images generated by the cameras. In this case, the headlights must be switched on to continue working with lighting; see [Switch lighting on/off](#).

### 5.14.2 Unhooking the safety steel cables of the side arms

The safety steel cables serve as a safety measure in case one of the seat valves of the hydraulic swivel mechanism fails to close. In this case, the safety steel cable of the side arm prevents a collision during lifting.

|  | NOTE                                                                                                                        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | The safety steel cables on the side arms can only be unhooked when the spray bars are <u>set</u> to their highest position. |

|  | NOTE                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p>The safety steel cables on the side arms can only be unhooked if "Pasture" has been selected as the crop on the control panel.</p> <p>With this setting, lowering the spray bars is disabled.</p> |

They can be unhooked to allow the side arms greater freedom of movement on uneven terrain in pastureland. In this case, it is not possible to lower the spray bars. Before treating another crop, the safety steel cables must be re-hooked.

## 6 Measures in the event of a fault

### 6.1 Calibrate the camera

1. Unscrew the outermost nozzles visible to the camera on the left and right, see [Check spray cones and flow rate of nozzles, replace nozzles](#).
2. Screw on the calibration rods in place of the nozzles.
3. Lower the spray bar until the calibration rods are just above the ground, see [Adjusting the spray bar height](#).
4. Place plates with the cross under the calibration rod on the ground.
5. Raise the spray bar all the way up.
6. Switch the machine off at the main switch and then on again. Wait for the machine to start up.
7. On the tablet, go to `Settings > Calibration` and enter the password "Admin".
8. Select the camera to be calibrated on the tablet.
9. On the tablet, swipe to place the red cursors on the plates with crosses, then confirm.
10. Switch the machine off at the main switch and then on again. Wait for the machine to start up.
11. On the tablet, go to `Settings > Calibration` and check that the red cursors are positioned on the tiles with crosses. If not, repeat the calibration.

## 7 Storage

To store the machine, place it on the undercarriages on the main frame and the swivelled-down support wheels on a suitable, level surface and secure it to prevent it from rolling away.

To maintain the machine's functionality, it must be stored in a clean condition (see [Cleaning the entire system](#)) and protected from the weather.

The machine must be completely emptied for storage. Empty the tanks via the drain valves! Drain any residual liquid from the pressure filter!

|  | ATTENTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>The machine must be stored in a frost-free environment.</b></p> <p>If this is not possible, the machine may suffer frost damage.</p> <ul style="list-style-type: none"><li>• In this case, the machine must be stored with plant protection sprayer antifreeze.</li><li>• To ensure that antifreeze is present throughout the machine, a complete filling procedure (see '<a href="#">Start the filling of the piping system</a>') must be carried out using antifreeze.</li></ul> |

## 8 Maintenance

### 8.1 Inspection and maintenance schedule

If different deadlines are specified for maintenance intervals (e.g. quarterly / 200 operating hours), always carry out the procedure when the first deadline is reached.

If the information provided differs from that in any original manufacturer's documentation supplied, the original manufacturer's documentation takes precedence.

If defects are found in a component during an inspection, the machine must not be operated until the defects have been rectified.

| Component                                                                | Action                                                               | Specialist workshop required |
|--------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------|
| <b>Before each use of the machine</b>                                    |                                                                      |                              |
| Camera                                                                   | Clean the glass pane                                                 | No                           |
| Camera                                                                   | Check silicate bags                                                  | No                           |
| Pump                                                                     | Check oil level                                                      | No                           |
| Wheels                                                                   | Check that the undercarriages' screws are tight                      | No                           |
|                                                                          | Check tyre pressure                                                  | No                           |
| Hydraulic lines                                                          | Check for defects and replace if necessary                           | For replacement              |
| Fuel filter                                                              | Check for dirt and clean if necessary                                | No                           |
| Suction filter                                                           | Check for dirt and clean if necessary                                | No                           |
| Pressure filter                                                          | Check for dirt and clean if necessary                                | No                           |
| Electric lighting                                                        | Check and, if necessary, replace faulty bulbs                        | No                           |
| <b>After the first 10 operating hours, then every 50 operating hours</b> |                                                                      |                              |
| Hydraulic system connections                                             | Check for leaky fittings and, if necessary, retighten leaky fittings | No                           |
| <b>Every 30 operating hours</b>                                          |                                                                      |                              |
| Grease nipples on side arm bearings                                      | Lubricate (8 lubrication points)                                     | No                           |
| <b>Every 50 operating hours</b>                                          |                                                                      |                              |
| Grease nipples on hydraulic cylinder pins                                | Lubrication (4 lubrication points)                                   | No                           |
| Brass and Teflon bushings on undercarriages                              | Grease (16 lubrication points)                                       | No                           |

|                                               |                                                                      |     |
|-----------------------------------------------|----------------------------------------------------------------------|-----|
| <b>Every 100 operating hours</b>              |                                                                      |     |
| Support legs                                  | Greasing (2 lubrication points)                                      | No  |
| <b>Quarterly / every 200 operating hours</b>  |                                                                      |     |
| Wheels                                        | Check wheel hub bearing play                                         | Yes |
| <b>Annually / every 1,000 operating hours</b> |                                                                      |     |
| Pump                                          | Oil change                                                           | No  |
|                                               | Check valves and replace if necessary                                | No  |
|                                               | Check piston diaphragm and replace if necessary                      | Yes |
| Nozzles                                       | Check spray pattern and flow rate; replace worn nozzles if necessary | No  |

## 8.2 Actions

### 8.2.1 Clean the camera's glass pane

|                                                                                     |                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>CAUTION</b>                                                                                                                                                                                                                              |
|                                                                                     | <p><b>The cameras and housing become hot during operation.</b></p> <p>Touching the hot parts can cause burns.</p> <ul style="list-style-type: none"> <li>• Never touch hot parts.</li> <li>• Wear personal protective equipment.</li> </ul> |

1. Use a lens cleaning cloth, microfibre cloth or similar.

### 8.2.2 Check silicate bags in the camera

Silicate pouches absorb moisture and prevent the glass pane from fogging up.

|                                                                                     |                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>CAUTION</b>                                                                                                                                                                                                                               |
|                                                                                     | <p><b>The cameras and housings become hot during operation.</b></p> <p>Touching the hot parts can cause burns.</p> <ul style="list-style-type: none"> <li>• Never touch hot parts.</li> <li>• Wear personal protective equipment.</li> </ul> |

1. Unscrew the four screws on the housing and keep them safe.
2. Remove the housing cover and keep it safe.
3. Visual inspection of the silicate bag:
  - Orange: The silicate bag can still be used.
  - Dark green / black: Moisture saturation has been reached; the silicate bag must be replaced. To do this, unscrew the two screws on the cover over the silicate bag.
4. Replace the housing cover.

5. Insert the four screws and tighten them according to [the screw tightening torque table](#).

### 8.2.3 Check the oil level in the pump

The pump operating instructions can be accessed via the "Machine Info" QR code on the spray tank.

### 8.2.4 Check that the undercarriages' screws are tight

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                   | <p><b>Risk of crushing due to the uncoupled, unsecured machine rolling or tipping over</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Never move the uncoupled machine on your own.</li> <li>• Secure the machine with a wheel chock to prevent it from rolling away unintentionally.</li> <li>• The machine must be secured against tipping by swivelling down the support legs.</li> <li>• Keep unauthorised persons away from the work area.</li> </ul> |

1. Ensure that the undercarriages' screws are tightened to the correct torque; see [screw tightening torques](#)

### 8.2.5 Check tyre pressure

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                     | <p><b>Risk of crushing due to the uncoupled, unsecured machine rolling or tipping over</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Never move the uncoupled machine on your own.</li> <li>• Secure the machine with a wheel chock to prevent it from rolling away unintentionally.</li> <li>• The machine must be secured against tipping by swivelling down the support legs.</li> <li>• Keep unauthorised persons away from the work area.</li> </ul> |

1. Before setting off with cold tyres, ensure that the tyre pressure is 4.8 bar. The difference in tyre pressure between the different undercarriages must not exceed 0.1 bar.

Tyre pressure can increase by up to 1 bar after fast driving or in warm weather. Under no circumstances should you reduce the tyre pressure, as it will otherwise be too low once the tyres have cooled down.

## 8.2.6 Check the hydraulic lines for defects

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                     |
|                                                                                   | <p><b>Danger from hydraulic oil escaping under high pressure.</b></p> <p>Can cause serious injury and, if it enters the body, serious health problems.</p> <ul style="list-style-type: none"> <li>• Wear personal protective equipment.</li> <li>• Seek medical attention immediately in the event of injuries caused by hydraulic oil.</li> </ul> |

1. Carry out a visual inspection of the hydraulic lines. If any of the following defects are found, the line must be replaced:
  - Damage to the outer layer down to the reinforcement (e.g. chafing, cuts, tears)
  - Embrittlement of the outer layer
  - Deformations that do not correspond to the natural shape of the hose or hose assembly, both when unpressurised and under pressure or when bent (e.g. delamination, blistering, kinks, creases)
  - Leaks
  - Damage or deformation of the hose fittings that impairs their sealing function
  - The hose slipping out of the fitting
  - Corrosion of the fitting, which reduces its function and strength

## 8.2.7 Check and clean the tank strainer

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                     | <p><b>Risk of crushing due to the uncoupled, unsecured machine rolling or tipping over</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Never move the uncoupled machine on your own.</li> <li>• Secure the machine with a wheel chock to prevent it from rolling away unintentionally.</li> <li>• The machine must be secured against tipping by folding down the support legs.</li> <li>• Keep unauthorised persons away from the work area.</li> </ul> |

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Danger from plant protection products in the event of skin contact, ingestion or inhalation of vapours.</b></p> <p>Serious health risks, including death.</p> <ul style="list-style-type: none"> <li>• Ensure that the machine is clean and that there are no plant protection product residues in the spray tank or the pipes.</li> <li>• Follow the safety instructions provided by the plant protection product manufacturer.</li> <li>• Avoid direct contact with plant protection products or the vapours they produce.</li> <li>• Wear personal protective equipment.</li> </ul> |

1. Open the spray tank lid.
2. Remove the tank strainer and, if dirty, clean it under running clean water.
3. Insert the cleaned tank strainer.
4. Close the spray tank lid.

### 8.2.8 Check and clean the suction filter

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Risk of crushing if the uncoupled, unsecured machine rolls away or tips over</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Never move the uncoupled machine on your own.</li> <li>• Secure the machine with a wheel chock to prevent it from rolling away unintentionally.</li> <li>• The machine must be secured against tipping by folding down the support legs.</li> <li>• Keep unauthorised persons away from the work area.</li> </ul> |

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Danger from plant protection products in the event of skin contact, ingestion or inhalation of vapours.</b></p> <p>Serious health risks, including death.</p> <ul style="list-style-type: none"> <li>• Ensure that the machine is clean and that there are no plant protection product residues in the spray tank or the pipes.</li> <li>• Follow the safety instructions provided by the plant protection product manufacturer.</li> <li>• Avoid direct contact with plant protection products or the vapours they produce.</li> <li>• Wear personal protective equipment.</li> </ul> |

## Prerequisites:

- The spray tank and fresh water tank must be empty.
1. In the **Settings > General** menu, tap **Lock valve** under **Replace filter**.
  2. Remove the filter housing.
  3. Remove the filter element and, if dirty, clean it under running clean water.
  4. Insert the filter element.
  5. Check that the seals are correctly seated.
  6. Refit the filter housing.

## 8.2.9 Check and clean the pressure filter

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p><b>Risk of crushing if the uncoupled, unsecured machine rolls away or tips over</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Never move the uncoupled machine on your own.</li> <li>• Secure the machine with a wheel chock to prevent it from rolling away unintentionally.</li> <li>• The machine must be secured against tipping by folding down the support legs.</li> <li>• Keep unauthorised persons away from the work area.</li> </ul> |

|  | WARNING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p><b>Danger from plant protection products in the event of skin contact, ingestion or inhalation of vapours.</b></p> <p>Serious health risks, including death.</p> <ul style="list-style-type: none"> <li>• Ensure that the machine is clean and that there are no plant protection product residues in the spray tank or the pipes.</li> <li>• Follow the safety instructions provided by the plant protection product manufacturer.</li> <li>• Avoid direct contact with plant protection products or the vapours they produce.</li> <li>• Wear personal protective equipment.</li> </ul> |

## Prerequisites:

- The spray tank and fresh water tank must be empty.
1. In the **Settings > General** menu, tap **Lock valve** under **Replace filter**.
  2. Remove the filter housing.
  3. Remove the filter element and, if dirty, clean it under running clean water.
  4. Insert the filter element.
  5. Check that the seals are correctly seated.
  6. Refit the filter housing.

### 8.2.10 Check the lighting system for road traffic and replace any faulty bulbs

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                   | <p><b>Risk of crushing if the unsecured tractor rolls away.</b></p> <p>Causes severe injuries to the whole body, or even death.</p> <ul style="list-style-type: none"> <li>• Only carry out on level, firm ground.</li> <li>• Secure the tractor against unintentional rolling with the parking brake or a wheel chock.</li> <li>• Clear the work area of unauthorised persons.</li> </ul> |

1. Carry out a visual inspection to check that all lights are working.
2. Replace any non-functioning lights.

### 8.2.11 Check the hydraulic system connections for leaks and tighten them

|                                                                                    |                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                     |
|                                                                                    | <p><b>Danger from hydraulic oil escaping under high pressure.</b></p> <p>Can cause serious injury and, if it enters the body, serious health problems.</p> <ul style="list-style-type: none"> <li>• Wear personal protective equipment.</li> <li>• Seek medical attention immediately in the event of injuries caused by hydraulic oil.</li> </ul> |

1. Visually inspect the screw connections of the hydraulic system for leaks.
2. If a leak is detected, retighten the leaking screw connection with a spanner and, if necessary, replace leaking components.

### 8.2.12 Pump oil change

The pump operating instructions can be accessed via the "Machine Info" QR code on the spray tank.

### 8.2.13 Check and replace pump valves

The pump operating instructions can be accessed via the "Machine Info" QR code on the spray tank.

### 8.2.14 Check spray cones and flow rate of nozzles, replace nozzles

Prerequisites:

- The spray tank must contain sufficient water for the test.
1. Make the necessary settings in the `Flushing > Service` menu; see [Testing nozzles](#)
  2. Carry out a visual inspection to check the spray cone.

3. To check the flow rate, place a container under the nozzle(s) to be tested and collect the sprayed liquid. The flow rate is calculated using the following formula:

$$\frac{\text{Volume of the sprayed liquid [l]}}{\text{Nozzle activation time [min]}}$$

4. If the spray cone or flow rate is unsatisfactory, dismantle the nozzle following the steps below and then clean the individual parts thoroughly:
  - 4.1. Open the bayonet lock **1** and remove it together with the nozzle **2** and flat seal **3**.
  - 4.2. Hold the solenoid valve **6** in place whilst loosening the union nut **5**.
  - 4.3. Unscrew the screw on the clamp of the pipe connector **4** and remove the pipe connector.
5. Reassemble the nozzle in reverse order and repeat the test.
6. If the spray pattern or flow rate is still unsatisfactory after cleaning, remove the nozzle and replace it with a new one.

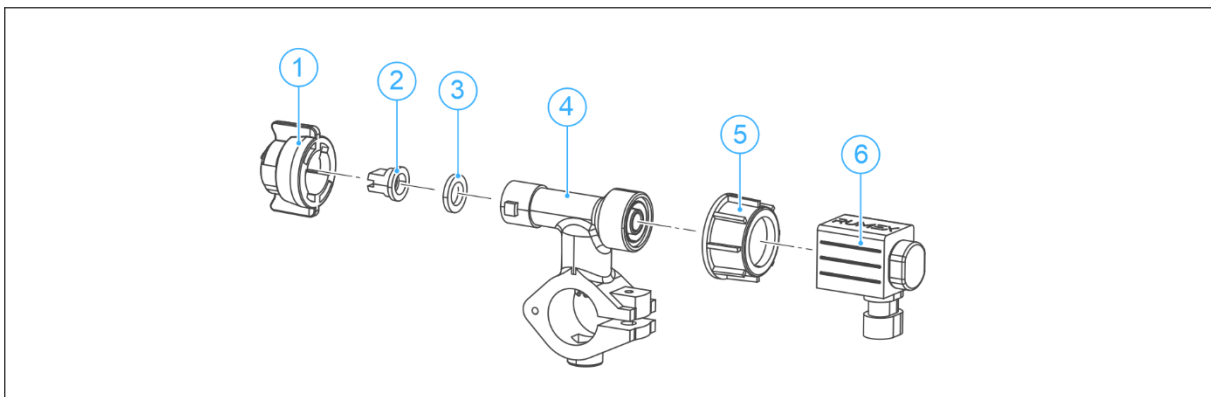


Figure32 : Spray nozzle, exploded view

### 8.3 Screw tightening torques

| Screw/nut grade |                   | 8.8                     | 10.9 | 12.9 |
|-----------------|-------------------|-------------------------|------|------|
| Thread          | Spanner size [mm] | Tightening torques [Nm] |      |      |
| M 8             | 13                | 25                      | 35   | 41   |
| M 8x1           |                   | 27                      | 38   | 41   |
| M 10            | 16 (17)           | 49                      | 69   | 83   |
| M 10x1          |                   | 52                      | 73   | 88   |
| M 12            | 18 (19)           | 86                      | 120  | 145  |
| M 12x1.5        |                   | 90                      | 125  | 150  |
| M 14            | 22                | 135                     | 190  | 230  |
| M 14x1.5        |                   | 150                     | 210  | 250  |
| M 16            | 24                | 210                     | 300  | 355  |
| M 16x1.5        |                   | 225                     | 315  | 380  |
| M 18            | 27                | 290                     | 405  | 485  |
| M 18x1.5        |                   | 325                     | 460  | 550  |
| M 20            | 30                | 410                     | 580  | 690  |
| M 20x1.5        |                   | 460                     | 640  | 770  |
| M 22            | 32                | 550                     | 780  | 930  |
| M 22x1.5        |                   | 610                     | 860  | 1050 |
| M 24            | 36                | 710                     | 1000 | 1200 |
| M 24x2          |                   | 780                     | 1100 | 1300 |
| M 27            | 41                | 1050                    | 1500 | 1800 |
| M 27x2          |                   | 1150                    | 1600 | 1950 |
| M 30            | 46                | 1450                    | 2000 | 2400 |
| M 30x2          |                   | 1600                    | 2250 | 2700 |

## 8.4 Control and communication

### 8.4.1 Schematic diagram of control and communication

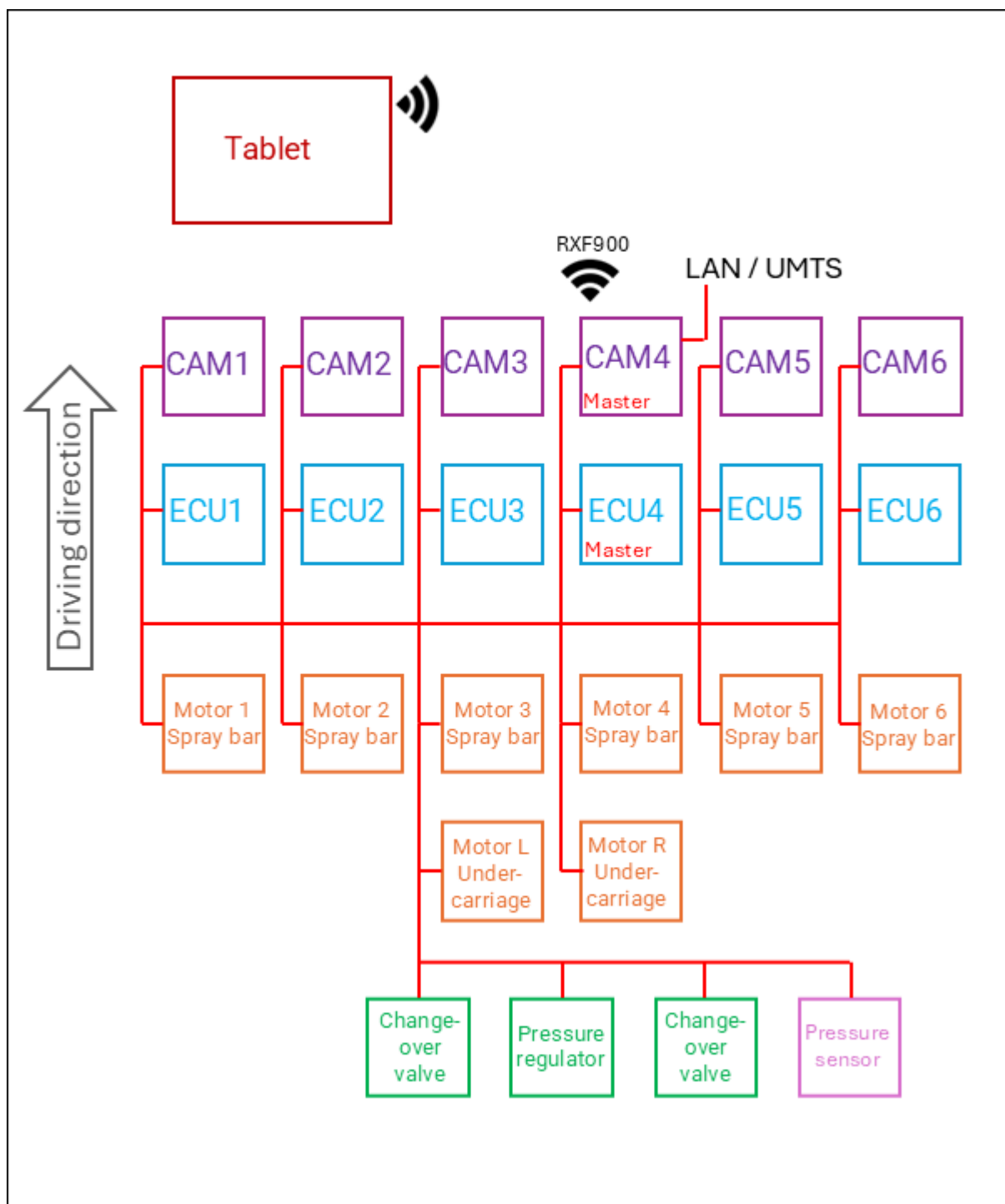


Figure33 : Control and communication, schematic

### 8.4.2 List of camera selector switch positions

|   |                                                                                        |   |                          |
|---|----------------------------------------------------------------------------------------|---|--------------------------|
| 0 | Calibration (focusing the lens):<br>Camera generates its own Wi-Fi ("RXF Calibration") | 8 | RXF900 Cam3              |
| 1 | RXF300 Right                                                                           | 9 | RXF900 Cam4              |
| 2 | -                                                                                      | A | RXF900 Cam5              |
| 3 | RXF600                                                                                 | B | RXF900 Cam6              |
| 4 | RXF600                                                                                 | C | RXF600 Performance left  |
| 5 | RXF600                                                                                 | D | RXF600performance centre |
| 6 | RXF900 Cam1                                                                            | E | RXF600performance right  |
| 7 | RXF900 Cam2                                                                            | F | RXF300 left              |

## 9 Appendix

### 9.1 Declaration of Conformity

The Declaration of Conformity can be accessed via the 'Machine Info' QR code on the spray tank.

### 9.2 Original instructions for supplier parts

Original instructions for supplier parts can be accessed via the "Machine-Info" QR code on the spray tank.

### 9.3 Spare parts, parts lists, drawings

All documents can be accessed via the "Machine-Info" QR code on the spray tank.

### 9.4 List of figures

|                                                                     |    |
|---------------------------------------------------------------------|----|
| Figure1 : Complete machine.....                                     | 16 |
| Figure2 : Main frame .....                                          | 17 |
| Figure3 : Side arm .....                                            | 18 |
| Figure4 : Electrical system.....                                    | 19 |
| Figure5 : Fluid circuit.....                                        | 20 |
| Figure6 : Liquid circuit, schematic .....                           | 21 |
| Figure7 : Spray nozzle, exploded view .....                         | 22 |
| Figure8 : Hydraulic swivel mechanism for side arms.....             | 22 |
| Figure9 : Hydraulic swivel mechanism for side arms, schematic ..... | 23 |
| Figure10 : Image processing .....                                   | 23 |
| Figure11 : Control circuit .....                                    | 24 |
| Figure12 : Communication .....                                      | 24 |
| Figure13 : Undercarriages .....                                     | 25 |
| Figure14 : Indicator light .....                                    | 26 |
| Figure15 : Spray bar height adjustment.....                         | 27 |
| Figure16 : Road traffic equipment.....                              | 27 |
| Figure17 : Hand wash tank.....                                      | 28 |
| Figure18 : Type plate.....                                          | 30 |
| Figure19 : Undercarriage / offset frame bolts.....                  | 32 |
| Figure20 : Screws, chassis / sliding frame.....                     | 33 |
| Figure21 : Locking bolt, locked.....                                | 34 |
| Figure22 : Locking pin for support leg, upper mounting .....        | 36 |
| Figure23 : Support leg locking pin, lower mounting .....            | 37 |
| Figure24 : Locking bolt, unlocked .....                             | 41 |
| Figure25 : Locking bolt, locked.....                                | 41 |
| Figure26 : Tablet user interface .....                              | 43 |
| Figure27 : Three-way valve to the spray tank .....                  | 48 |
| Figure28 : Three-way valve to the fresh water tank .....            | 48 |
| Figure29 : Three-way valve to the drain hose .....                  | 52 |
| Figure30 : Three-way valve circulation.....                         | 53 |
| Figure31 : Three-way valve circulation.....                         | 54 |
| Figure32 : Spray nozzle, exploded view .....                        | 66 |
| Figure33 : Control and communication, schematic.....                | 68 |