DAMMANN®

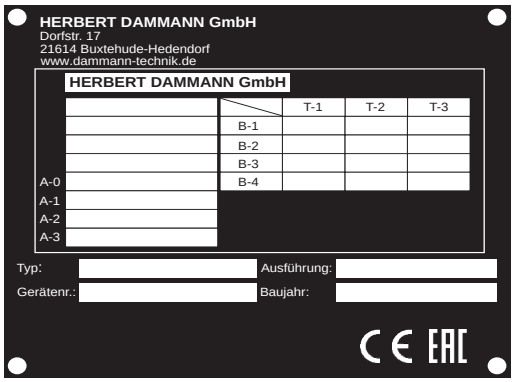
Pflanzenschutztechnik
Fahrzeugtechnik
Airporttechnik

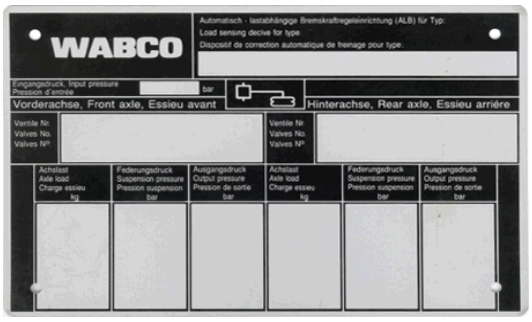
Original Operating manual DAMMANN Land-Cruiser Trailed sprayer

Read and follow these operating instructions.
Keep these operating instructions for future reference.

Important data:

If the data of the device / vehicle have not yet been entered, enter them here.





Date:				
Working width:				
Impulses / Liter:				
Impulses / 100 m:				
Control constant:				
Max. pressure:				
Min. pressure:				
Min. Working speed:				
Min. Automatic speed:				
Max. Wind speed:				
Tank size:				
Tank alarm rest:				
Impulse main flow meter:				
Impulse filling:				
Impulses reflux:				
Section control:				
Filling mode:				
Joystick type (option):				
Fitting type:				

The data can change in the event of tire changes or repairs.

Impress

This document belongs to the Profi-Class Tandem trailed sprayer.

Manufacturer:

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Mercedes-Benz
UNIMOG Service-Partner

DAMMANN®

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Fahrzeugtechnik
Airporttechnik

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EC DECLARATION OF CONFORMITY
according to EC Directive 2006/42/EC (Appendix II Part 1 A)

We

Company HERBERT DAMMANN GMBH
Technische Systeme für den Pflanzenschutz

Dorfstraße 17
21614 Buxtehude-Hedendorf

declare under our sole responsibility that the product

Description: Trailed sprayer
Type: Sprayer ANP Land-Cruiser

to which this declaration relates, comply with the relevant basic safety and health requirements of the EC Machinery Directive 2006/42/EC, as well as the Pressure Equipment Directive 2014/68/EC have been taken into account.

Applied standards and technical specifications:

EN ISO 12100
EN ISO 4254-1
EN ISO 4254-6
EN ISO 25119-1

Authorized person to compile the technical documentation:
Nadine Dammann, Herbert Dammann GmbH, Dorfstr. 17, 21614 Buxtehude-Hedendorf

Buxtehude-Hedendorf, den 12.05.2021
(Place and date of issue)

Nadine Dammann, Geschäftsführerin
(Name, position and signature of the authorized person)

Preface

The HERBERT DAMMANN GmbH was first established as a mechanical engineering company on 15 March 1979 by Herbert Dammann. After 1968 in his contracting business, the first sprayer with 15 meter self-folding boom was built. Proud of more than four decades of company tradition, the company presents itself today young, dynamic and forward-looking. The new production facility was built in 2006 now houses the entire production and final inspection. Management and employees still live on today the attitude of the founder: The family business continues to convince with future-oriented product range.

In addition to ease of use, the machines are tailored to the costumer and user requirements. Therefore, in addition to the production of the machines and equipment, their technical development is a constant part of our work.

Through years of cooperation with our suppliers and partners, such as Mercedes Benz (UNIMOG) and Müller-Elektronik (termianls and controllers), it is possible for us to develop many innovations for the distribution of fluids and to bring it to the market. The technical know-how that goes into Dammann products is confirmed not only by practitioners, but can also be demonstrated on the basis of various tests, test results and awards.

Every machine that leaves our factory is finally tested by us in a strict and demanding process.

With the purchase of your Dammann product you now own a part of our company tradition. This also means that we continue to provide you with competent advice and support.

Abb. 1. Production

Table of content

1. Use of these operating instructions

1. 1 Use of the operating instructions

These operating instructions help you to become familiar with the device and to avoid improper use. The device is operated safely if the operating instructions are used as a reference work, instructions and source of information. The safety and warning information in the operating instructions must be understood by the user and must be observed at all times. As part of the device, the operating instructions must always be available when commissioning.

1. 1. 1 Object

The operating instructions for the device contain information on how to transport, operate, clean, rectify faults and maintain the device.

Machine designation	Trailed sprayer Land-Cruiser (ANP LC)
Manufacturer	HERBERT DAMMANN GmbH
Address	Dorfstraße 17 21614 Buxtehude Deutschland +49 4163 8163 0 +49 4163 8163 71 info@dammann-technik.de www.dammann-technik.de

1. 1. 2 Information to the users

These operating instructions are generally aimed at the operator of the device, who must use all the information in the operating manual in order to meet his operator obligations.

At the same time, the operating instructions with the corresponding chapters are aimed at the operator‘s personnel or authorized personnel from other companies who transport, operate, clean, maintain and rectify the machine.

The “Safety” chapter in particular is aimed at all persons who are on the device or in the immediate vicinity of the device.

The operating instructions are written and structured in such a way that trained, qualified personnel can understand them.

Operator

The operator is responsible for the operation and the safety precautions.

He bears special responsibility for

» appropriate instruction and training of staff,
» the safe organization of operations,
» the perfect condition of the device.

Specialist staff

Qualified personnel (e.g. agricultural machinery mechanics) can carry out the assigned tasks due to their technical training and recognize possible dangers. They must also know the accident prevention regulations.

Operating personnel

Operating personnel have been trained to operate the device and are familiar with the possible dangers that may arise from improper behavior. It knows the necessary protective devices, protective measures, accident prevention regulations and operating conditions.

1. 1. 3 Co-Applicable Documents

The instructions from the manufacturer that are current at the time of delivery are included in the delivery. Deviations due to special orders are possible.

The following documents are part of the operating instructions:

Operating instructions for the liquid pump

Manual	Manufacturer address
» AR 500 bp » AR 135 bp (CID)	Annovi Reverberi S.p.A. Via M.L. King, 3 41122 Modena, Italia Tel.: +39 059 414411 Telefax: +39 059 253505

Installation and operating instructions for application

Manual	Manufacturer address
» Spraydos » Job computer 3 (JRIII) » ISOBUS Control panel BASIC » ISOBUS Control panel MC-1 (Option) » ISOBUS Control panel HD 8 pad (Option) » ISOBUS Control panel HD 12 pad (Option) » ISOBUS Joystick » GPS-receiver » TRACK-Leader (option)	Müller-Elektronik GmbH & Co. KG Franz-Kleine-Straße 18 D-33154 Salzkotten Tel: +49 5258 / 9834 - 0 Telefax: +49 5258 / 9834 - 90 E-Mail: info@mueller-elektronik.de Internetseite: http://www.mueller-elektronik.de

Parts of the operating instructions for the device were taken from the enclosed operating instructions from Müller-Elektronik.

Installation and operating instructions (only for DTP)

Manual	Manufacturer address
» Operating manual *DAMMANN-trac*	HERBERT DAMMANN GmbH Dorfstraße 17 D-21614 Buxtehude-Hedendorf

1. 2 Structure of the operating instructions

Running title

The chapter overview is located next to the logo in the header.

Footer

The page number and date of creation are in the footer.

Text

Normal texts contain all information such as descriptions, explanations or conditions. These texts look like this paragraph.

Enumerations

Bullets contain lists.

Instructions for action

Instructions indicate a specific sequence that must be adhered to. They also make it easier to read so that you can find the last place more quickly.

Example:

1. Loosen the screw counterclockwise.
2. Take off the cover.

Item numbers

Item numbers in illustrations are bracketed in the text.

Example: (2).

Abbreviations are explained when they appear in the text for the first time.

1. 3 Warning notices

References to residual risks that could not be resolved constructively are structured as follows. This is based on the security standard ANSI Z535.6. Warning notices are designed in accordance with ISO 11684.

Classification of the hazard	
Symbols	***Nature and source of danger*** *Damage caused by the hazard* » Do‘s and don‘ts to avoid the occurrence of damage **Rescue after the occurrence of damage**

Four graphic elements are used as flags to classify the hazard.

⚠ **DANGER**	The dangers identified in this way will definitely lead to irreversible physical damage, mutilation or death if damage occurs.
⚠ **WARNING**	The dangers identified in this way can lead to irreversible physical damage, mutilation or death if damage occurs.
⚠ **ATTENTION**	The dangers identified in this way can lead to reversible physical damage if damage occurs.
NOTE	The instructions marked in this way can lead to material damage to the machine if damage occurs.
INFO	The notes marked in this way contain further information about the vehicle.

Symbols are used in combination with these signal word fields.

The safety instructions contain:

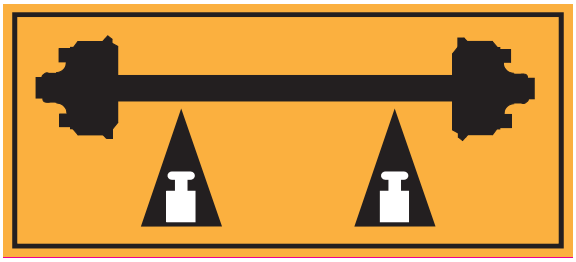
» the respective pictogram above or on the left,

» below or on the right, what to watch out for.

Symbol	Meaning	Symbol	Meaning
	Read, observe and understand the operating instructions and safety instructions before commissioning!		Riding while working and transporting it on the machine is prohibited.
	Do not stand in the area of a raised unsecured load!		Keep a sufficient distance from electrical high-voltage lines.
	Do not stand in the articulation area of the drawbar during operation!		Risk of poisoning - do not climb into containers!
	Do not reach into moving parts as long as they are moving and it is not certain that they are secured against unintentional start-up.		Do not stand in the swivel range of the sprayer boom! Direct people out of the danger area!
	Do not open or remove protective devices during operation! Risk of body parts being drawn in.		Before uncoupling or parking the machine, secure it with wheel chocks to prevent it from rolling away unintentionally!

Symbol	Meaning	Symbol	Meaning
	Protect the machine from frost in winter or store it with anti-freeze.		Before working on electrical components, switch off the power supply or disconnect the battery.
	Do not reach into rotating machine parts before they have come to a standstill.		Remove the ignition key before maintenance and repairs.
	Warning of poisoning as there is no drinking water.		

1. 4 Additional pictograms on the device

Type	
Jack attachment point (on the spring assembly of the axle)	
Sign for jacking point (on the barrel above each wheel)	

2. Safety

2. 1 Intended Use

The trailed sprayers from HERBERT DAMMANN GmbH are spraying devices for area crops. They are used to apply crop protection and fertilizers up to a wind speed of max. 5 m/s. Users need a certificate of competence according to EU regulation 2009/128 EG in plant protection.

2. 2 Improper use

HERBERT DAMMANN GmbH prohibits any other type of use.

The use by:

» Users without proof of competence,
» the application of liquids that do not correspond to the purpose of the machine (risk of explosion),
» Working without PPE,
» Failure to follow the operating instructions
» Ride on the trailed sprayer,
» Use as a transport trolley is prohibited.

Maintenance and repair of the device may only be carried out by the in-house customer service or by a recognized specialist workshop. The specialist workshops must have been trained and trained on the device at HERBERT DAMMANN GmbH.

Repair work on the construction of the device is only carried out by HERBERT DAMMANN GmbH due to product liability. If significant changes are carried out or initiated on the machine itself, the operator becomes the manufacturer.

The operator alone is liable for any resulting damage.

2. 3 General safety information

The following safety instructions are of fundamental importance for handling the device:

The device may only be used if it is in perfect condition, as intended and carefully, in accordance with the operating instructions. In particular, faults that impair safety must be eliminated before use.

Changes to the device and its accessories within the limits of the intended use may only be carried out by trained and authorized specialist personnel. Planned changes must be reported to HERBERT DAMMANN GmbH.

In order to avoid accidents and malfunctions, all persons and personnel who work on and with the device must have extensive knowledge of occupational safety regulations.

These operating instructions contain specific warning notices that must be observed and adhered to. Warning notices are binding for the personnel and other persons who are in the area of the device.

Warning notices attached to the device must also be observed and adhered to. Comply with the permissible limits during operation. Observe the information in the safety data sheets on the pesticides used.

The personnel must be able to apply knowledge of first aid.

2. 4 Special safety information

The safety instructions listed below relate to specific properties and operating conditions of the machine. Essentially, these instructions result from the relevant statutory safety regulations and the residual dangers identified.

» Always wear the recommended personal protective equipment.
» Before working on the device for cleaning, maintenance or assembly work: Switch off the machine and secure it against being switched on again.
» Do not make any changes during repair work that could lead to safety restrictions.
» Use only original fuses with the specified ratings.
» Use only original spare parts.
» Use only tested equipment.

2. 5 Obligations of the operator

All work on the device may only be carried out by persons who are authorized by the operator and have been trained for their respective tasks. Comply with the national and local rules / regulations applicable in the country of operation.

The operator of the device continues to have safety-related obligations. The operator must ensure that the following rules are observed:

» Provide the necessary personal protective equipment (PPE) for the operating and specialist personnel.
» Personal protective equipment may have to be cleaned, serviced, cared for and replaced in accordance with the manufacturer‘s instructions.
» The personnel responsible for operation, cleaning, maintenance and troubleshooting must have read and understood the operating instructions.
» Use the device only as intended, comply with safety regulations.
» The personnel deployed must have the appropriate qualifications for the respective work. Instructing the staff in local laws and regulations. Point out the safety instructions in the operating instructions. If there is a change in staff, new staff must be instructed.
» Regularly instruct staff on accident prevention and the dangers involved in working at heights.
» Regularly instruct staff on the cleanliness and tidiness of the device.
» Create operating instructions.
» Draw up an emergency plan for the rescue from the barrel.
» Have the device checked regularly by a device inspection.
» Regularly carry out maintenance work according to the maintenance plan.
» All safety devices of the device must be available and functional.

2. 6 Personal protective equipment

When certain work is carried out on the device, personal protective equipment (PPE) must be worn. Observe the instructions for use and safety data sheets of the respective plant protection product manufacturers and adapt PPE!

» Certified work clothing according to EN ISO 27065 or non-certified long work clothing (mixed fabric cotton / polyester (at least 65% polyester and grammage of at least 245 g / m²)
» Protective suits according to EN ISO 27065, DIN 32781 or EN 14605
» Protective gloves according to DIN EN 388 (mechanical risks)
» Protective gloves according to DIN EN 374 (chemical risks)
» Safety shoes, at least level S2, according to DIN EN ISO 20345
» Wellington boots according to DIN EN ISO 20345 (shoe shape class II)
» Safety glasses with tightly fitting side edges according to DIN EN 166
» Respiratory protection
» Sleeve apron according to EN ISO 27065 or EN 14605
» Safety vest according to DIN EN ISO 20471

2. 7 Protection and safety devices

Protective and safety equipment must always be in perfect condition. If protective or safety devices fail during operation, the device must be repaired. Do not start up again until the protective and safety devices are working properly.

Only remove protective and safety devices if this is absolutely necessary, example: maintenance work. Put the safety devices back into operation immediately after the maintenance work has been completed.

It is forbidden to manipulate, dismantle or put safety devices out of operation.

2. 8 Behavior in case of emergency

If there was an accident, do the following:

» Keep Calm.
» Pay attention to your own safety.
» Switch off the device (if necessary, press the emergency stop switch) and secure it against being switched on again and rolling away.
» Provide first aid immediately in the event of an accident.
» Prevent other people from being injured.
» Take measures to cordon off the scene of the accident in traffic.
» Call the emergency.

2. 9 Qualification of the personnel employed

The personnel employed must have been instructed in the handling and use of the device in accordance with the activities to be carried out.

Activities)	Qualification(s)	Instruction(s)
Transport by tractor / carrier vehicle	Driving license for train/carrier vehicle	» Instruction in the type of towing vehicle/carrier vehicle » Instruction in the trailed sprayer (chapter „Storage“ and „Transport“)
Transport by truck	» Valid driving license for trucks (C/CE)	» Instruction in the type of truck and trailer/semitrailer » Instruction in the trailer/ surface-mounted sprayer (chapter „Transport“) » Knowledge of load securing » Instruction in the attachment points of the load securing device » Approval for the transport of oversized cargo (if necessary)
Transport by ship	» Driving license or operating license for the towing vehicle during shunting work	» Instruction in the type of towing vehicle » Instruction in the trailer / surface-mounted sprayer (chapter „Transport“) » Knowledge of load securing » Instruction in the attachment points of the load securing device, if necessary
Operation of the device	» Semi-skilled employees » Training to become a farmer » Required driving license (T) for the towing vehicle / carrier vehicle » Proof of competence is a prerequisite for working with pesticides	» Instruction in the trailer device / built-on sprayer
Malfunction / maintenance	» Semi-skilled employees » Training to become a farmer » Apprenticeship as an agricultural machinery mechanic with a journeyman‘s / skilled worker certificate or comparable training* » required driving license for towing/carrier vehicle	» Instruction in the trailer device / built-on sprayer

* In the event of malfunctions / maintenance that require a certain qualification

2. 10 General safety information

⚠ WARNING

Movable parts

Risk of crushing the body

» Do not reach into the linkage during operation.

» When the engine is running, do not reach into the PTO shaft.

» Before switching on the PTO, make sure that nobody is in the danger area.

» Only work on it when the PTO has stopped.

» Only operate power take-off shafts with suitable and faultless power take-off shaft protection.

» Secure the PTO stub with covers when not in use.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ WARNING

Loads while driving

Risk of the machine tipping over

» When driving with a full barrel, pay attention to the shifted center of gravity of the tractor to the rear. Deviations in steering and braking behavior.

» Pay attention to the overhang and the flywheel mass in the barrel when cornering or driving on slopes.

» The external dimensions such as height, width and length must be observed and adhered to during transfer trips.

» Make sure that you have sufficient steering and braking ability, attaching/ saddling up plant protection equipment changes the vehicle‘s center of gravity.

» Ensure compliance with the required front axle load (20% of the unladen weight of the tractor)

In the event of injuries, immediately give first aid and consult a doctor.

⚠ WARNING

Reduced stability when cornering with the boom raised

Risk of the machine tipping over

» Adjust the speed when driving with the boom raised (e.g. headland).

In the event of injuries, immediately give first aid and consult a doctor.

⚠ WARNING

Keeping a distance from high voltage lines

Internal burns

» Keep your distance from power poles and sagging power lines.

» Take particular care when folding.

» Do not step into the porch or barrel during thunderstorms.

» Only stay in the tractor during thunderstorms.

» Do not step into the drum when the machine is under a power line.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ WARNING

Tire handling during use and repair

Injuries to the body.

» Replace damaged tires.

» Do not exceed the machine‘s payload.

» Do not fall below the load capacity of the tires.

» Have wheel changes and repairs / tire changes carried out by qualified persons only.

» Check tire pressure regularly.

» Too little air pressure reduces the load capacity of the tire and increases the instability of the device.

» If the pressure is too high, there is a risk of explosion due to the tire bursting.

» Clean the dirt trap regularly.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ ATTENTION

Read and understand the operating instructions

Physical and material damage

» The operating instructions must be read and understood, including those of the suppliers and accessories.

» Statutory regulations must be complied with.

» Regulations and instructions of the employers‘ liability insurance association must be observed.

» Compliance with maintenance.

Consult a doctor in the event of physical injuries; in the event of material damage, have this repaired by a specialist workshop.

⚠ ATTENTION

Swiveling sprayer boom

Injury to the upper body and head

» Fold the boom out and in only when the towing vehicle is at a standstill.

» The booms must not be extended while at the suction fitting.

» Use the transport locks to ensure that nobody can unintentionally extend the boom. Direct people out of the swivel area.

» During transfer journeys, check that all safety devices are locked for transport.

Immediately stop the movements of the sprayer boom, in the event of injuries immediately provide first aid and consult a doctor.

⚠ ATTENTION

The machine rolls away

Bruising of the body

» Only park with the boom folded in and secured.

» Pay attention to stability and do not park on loose ground.

» The wheel chocks must always be used when parking the device.

» To set down the device, push the support foot completely into the push tube and position it at the level where it is placed.

» When coupling and uncoupling, nobody is allowed to stand between the tractor and the spraying machine if it is not secured against rolling away.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ ATTENTION

Stay in the swivel range of the swiveling trailer drawbar

Bruising of the body

» It is forbidden to stand between the tractor unit and the trailer during operation.

» Particular care must be taken when coupling to the tractor.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ ATTENTION

Stay close to the sprayer boom

Injuries to the body and head

» When folding in and out the sprayer boom, make sure that nobody is in the area.

» Only park the device with the sprayer boom folded in and secured for transport.

» Always ensure that there is sufficient visibility.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ ATTENTION

Riding on the machine

Physical injuries

» Riding on the device is prohibited.

» The stem can only be entered when the device is at a standstill.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ ATTENTION

Handling of supplies

Risk of injury and poisoning

» Observe the applicable regulations when handling operating materials and when storing and disposing of them.

» Always wear suitable protective clothing and respiratory protection when handling operating materials. Avoid breathing vapors if possible.

» Do not bring operating materials into contact with skin, eyes or clothing.

» Do not use fuel as a cleaning agent.

» Keep operating materials away from children.

First aid: If touched, rinse off and consult a doctor, if swallowed, call a doctor immediately.

⚠ ATTENTION

Safety devices

Injury to the body

» Do not remove protective devices.

» Always bring protective devices into protective settings.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ ATTENTION

Hydraulic system

Personal injury and damage to equipment from escaping hydraulic fluid

» Search for leaks only with suitable tools.

» Only couple or uncouple when the implements and the tractor are depressurized.

» Before working on the hydraulic system, depressurise the device.

» Hydraulic hoses must be replaced after six years.

» When changing the hose, include the storage time in the service life, on average up to two years.

» Replacement lines must meet the technical requirements of DAMMANN.

» Pay attention to the correct sequence when connecting.

» Absorb escaping hydraulic fluid with suitable means.

» Wear protective gloves when handling hydraulic oil.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ ATTENTION

Working on the trailed sprayer

Physical damage from falling objects

» Stow/secure objects firmly.

» Remove loose items after finishing work.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ ATTENTION

Working with pesticides

Poisoning of the body when working with pesticides

» Plant protection products may only be processed by competent persons.

» Read the instructions for use and the safety data sheet for the preparation and observe and adhere to the protective measures listed.

» For safe operation, observe the operating instructions for the device.

» The device must be adapted to the conditions: population, weather and preparation.

» Wear PPE in accordance with the instructions for use and the safety data sheet for the preparation.

» Only funds approved by the JKI may be used.

» Use only approved containers.

» Getting into the barrel is prohibited.

» Do not exceed the nominal volume when filling the container.

» Only cabin tugs may be used to tow the machine during spreading.

» Cabin tugs must be equipped with an activated carbon filter for the interior.

» Nobody is allowed to be outside the machine during application.

» Always switch off the application of the PSM before leaving the tractor. Put on your PPE again.

» Take off protective clothing in the tractor and clean your hands before entering the driver‘s cab.

» In the case of gassing preparations, wear respiratory protection in the tractor as well.

» When servicing the air filter and the cabin filter, observe the operating instructions for the towing / carrier vehicle and the safety data sheet for the product.

» Select the cabin filter of the tractor based on the safety data sheet for all preparations to be used.

» Rinse emptied preparation containers carefully and add the rinsing water to the contents of the barrel (canister rinsing in the induction center).

» If the driver‘s cab of the tractor is contaminated, clean the interior.

In the event of symptoms of poisoning, immediately provide first aid and consult a doctor. Have the safety data sheet ready

NOTE

Daily maintenance and checks

Machine damage

» Check the brake system.

» Check the lighting system.

» Check the oil level.

» Lubricate the grease nipple daily.

» Clean the underbody.

» Check the tire pressure.

» Check and tighten screw connections.

» Check transport locks.

» Check function of warning lights.

» Check protective devices.

» Clean the dirt trap.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

NOTE

Frost protection

Machine damage

» Drain all taps and fittings.

» Do not store liquids in the barrel that are not frost-proof.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

NOTE

Electronic short circuit

Machine damage

» Disconnect the battery from the tractor when welding.

» Use only the prescribed fuses.

» Pay attention to the tension of the machine.

» Due to a voltage drop, start the engine first and then the control unit or the computer.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

NOTE

Braking system

Machine damage

» The braking system must be checked before every journey.

» The braking system must be checked more closely at regular intervals.

» The tractor‘s individual wheel brake must not be active on public roads. Couple the brake pedals.

» If the brake system is damaged, stop immediately and have the damage repaired.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

NOTE

Important when repairing the wheels

Machine damage due to wheel loss

» When working on the wheels, make sure that the machine is safely parked and secured against tipping over and rolling away.

» Repair work on wheels may only be carried out by specialists.

» Fastening screws and nuts must be checked and tightened according to the manufacturer‘s specifications with a torque wrench.

» Make sure the air pressure is correct to avoid further damage.

» Note the jack support points on the axles.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

NOTE

Fire hazard

Machine damage due to friction from inflammable grasses and stalks

» Clean the axle daily.

» Clean the brake daily (cleaning only takes place when it is cold!).

» Clean the subfloor daily.

» Clean the PTO shaft daily.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

NOTE

Adhere to the prescribed loads and couplings

Risk of tipping over and loss of the spray material

» The maximum tank volume must not be exceeded.

» The maximum permissible vertical load must not be exceeded.

» The maximum permissible axle load must not be exceeded.

» Height, width and length must not be exceeded during transfers.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

NOTE

PTO

Machine damage

» Only the PTO shafts specified in the instructions for the device may be used.

» Place the uncoupled PTO shaft on the bracket provided.

» Rectify damage to the PTO shaft and the PTO shaft protection immediately.

» After removing the PTO, put the protective cover on the PTO stub.

» Secure the PTO protection against running by hanging the chain.

» Before switching on, make sure that the PTO shaft speed required by the device is set.

» Only switch on the PTO at a low engine speed.

» If the PTO is not required, always switch off.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

NOTE

Loads while driving

Risk of the machine tipping over

» When driving, pay attention to the shifted center of gravity of the tractor to the rear. Deviations in steering and braking behavior. This generally applies to every level of the keg.

» Pay attention to the overhang and the flywheel mass in the barrel when cornering or driving on slopes.

» Observe and adhere to the external dimensions such as height, width and length when making transfers.

» Make sure that you have sufficient steering and braking ability, attaching/ saddling up plant protection equipment changes the vehicle‘s center of gravity.

» Tractor choice! Ensure compliance with the required front axle load (20% of the unladen weight of the tractor).

» Pay attention to load capacities and tires.

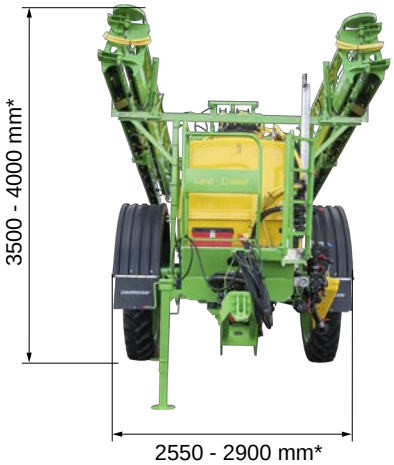
» On slopes, choose tires that absorb high lateral forces.

» Change to a lower gear before going downhill.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

3. Technical Data

3. 1 General technical data



* Deviation depending on the type of tire

Tank volume	3000 - 4000 Liter
Empty weight	2800 - 3800 kg
Permissible total weight (without vertical load)	max. 8000 kg*
Vertical load	1500 kg
Maximum axle load	max. 8000 kg* 10000 kg (Wheels 520/85 R42)
Fresh water tank volume	300 - 400 l
Working width	15 - 28 m
Sections	5 - 9
Operating voltage	12 V
Maximum speed	25 km/h (40 km/h option)
Pump	250 - 320 l/min
Drawbar type	Rigid attachment above Steering drawbar (option) Bottom attachment (option)
Pump drive	N10 (driven by the tractor‘s PTO shaft)
Hydraulikanschlüsse	1 EW (single acting) 1 DW (double acting)
Maximum pneumatic pressure	8 Bar
Maximum hydraulic pressure	200 Bar
Maximum working pressure pump	20 Bar
Operating temperature range	5 - 25° C
Sound emission	>70 dBA
Vibration	>2,5m/s²

INFO
Device dimensions vary depending on the equipment. The exact dimensions of the device can be found in the applicable COC certificate/vehicle registration document.

3. 2 Tire tables

⚠ WARNING

Tire handling during use and repair

Injuries to the body.

» Do not exceed the machine‘s payload.

» Do not fall below the load capacity of the tires.

In the event of injuries, immediately give first aid and consult a doctor.

INFO

Values for empty weight and permissible technical machine weight can be found on the nameplate.

ANP LC	3000	4000
Wheel size	270/95 R48* 300/95 R46 340/85 R48 460/85 R48	340/85 R48 380/90 R46 460/85 R38* 520/85 R42
Minimum load capacity per tire	<145 A8	<152 A8

*Standard tires

Tire load index table								
Index	156	157	158	159	160	161	162	163
Tire load capacity [kg]	4000	4125	4250	4375	4500	4625	4750	5000
Index	164	165	166	167	168	169	170	171
Tire load capacity [kg]	5000	5150	5300	5450	5600	5800	6000	6150

Speed index								
Index	A5	A6	A7	A8	B	C	D	E
Top speed [km/h]	25	30	35	40	50	60	65	70

3. 3 Filter

3. 3. 1 Suction filter

Filter connection	2“		2 1/2“		3“	
Sieve insert	Ø 107 x 200 mm		Ø 107 x 286 mm		Ø 145 x 320 mm	
Mesh count	50	32	50	32	50	32
Mesh size	0,594 mm	0,365 mm	0,594 mm	0,365 mm	0,594 mm	0,365 mm
Filter area	222 cm²	242 cm²	265 cm²	289 cm²	464 cm²	505 cm²
Color coding	blue	red	blue	red	blue	red

3. 3. 2 Pressure filter

Sieve insert	1 1/4“ (Ø 57 x 201 mm)		2“ (Ø 80 x 247 mm)	
Mesh count	50	80	50	80
Mesh size	0,28 mm	0,18 mm	0,28 mm	0,18 mm
Filter area	80 cm²	83 cm²		
Color coding	red	blue	red	blue

3. 4 PTO shafts

Type	Standard	Option	
W/P	1000 U/min	750 U/min or 540 U/min	
WWE/PWE/WWZ/ PWZ	1000 U/min	750 U/min or 540 U/min	

4. Machine description

4. 1. Scope of delivery

1. Trailed sprayer Land-Cruiser (ANP LC)
2. Control panel
3. Operating Instructions Land-Cruiser (ANP LC)
4. Mounting and operating instructions for the control unit
5. Operating instructions piston diaphragm pump
6. Operating instructions for optional equipment
7. Spare parts package

4. 2. Machine description

Individual components may differ depending on the version.

4. 2. 1. Machine overview

Abb. 2. Machine overview

Pos.	Description	Pos.	Description
1	Drawbar with liquid pump	2	Jackfoot
3	Front section with foldable ladder	4	Valves (pressure area)
5	Tank level indicator	6	Valves (suction area)
7	Fresh water tank level indicator	8	Induction hopper
9	Hand washing container	10	Linkage » I. Boom and II. boom
11	Wheel chock	12	Mast
13	Middle frame, Slide, Pendelum und Intermediate bearing		

4. 2. 2. Front section Land-Cruiser

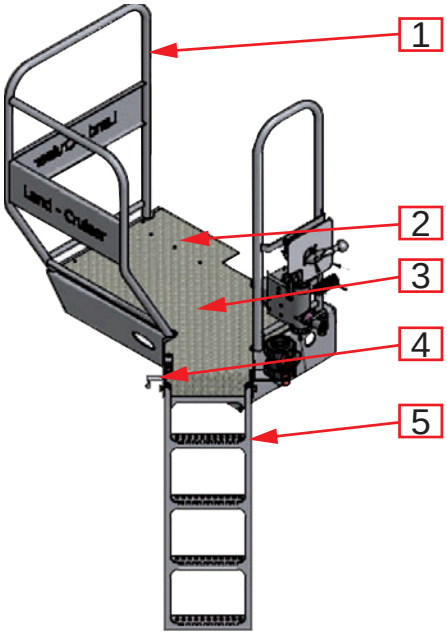


Abb. 3. Front section

Pos.	Description	Pos.	Description
1	Railing	2	Tool box assembly area
3	Front section with Plattform	4	Locking ladder
5	Ladder		

4. 2. 3. Tray

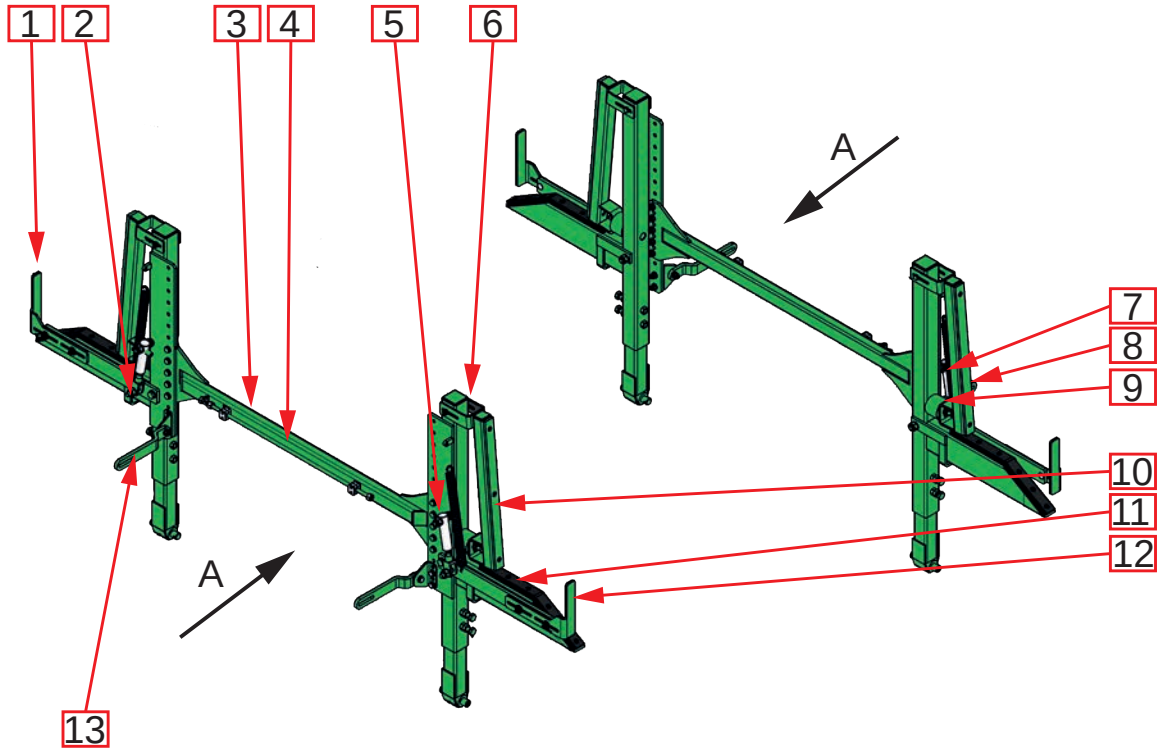


Abb. 4. Tray

Pos.	Description	Pos.	Description
1	Tray trap on the right	2	Flat steel for support struts
3	Tray cross brace	4	Hydraulic line tray
5	Hydraulic cylinder	6	Tray stop
7	Hydraulic cylinder	8	Plastic runner stop
9	Rubber buffer	10	Plastic runner stop
11	Plastic runner	12	Tray trap on the left
13	Tray strut	A	Direction of travel

4. 2. 4. Rigid drawbar

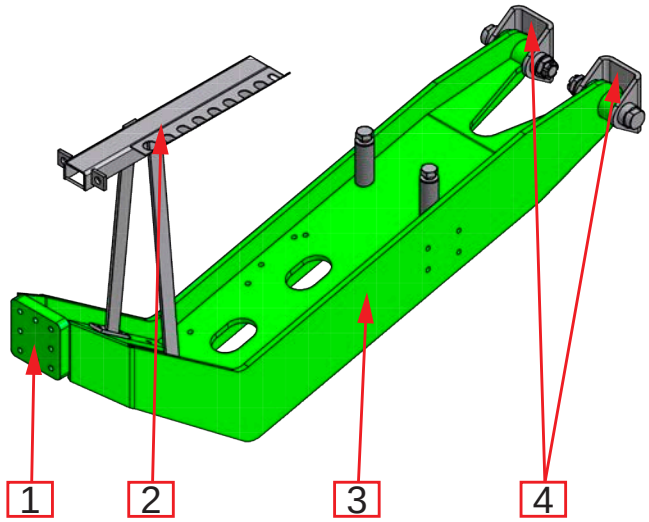


Abb. 5. Rigid drawbar Land-Cruiser

Pos.	Description	Pos.	Description
1	Assembly point towing coupling	2	Hose and cable holder
3	Drawbar	4	Drawbar connection

4. 2. 5. Steering drawbar (option)

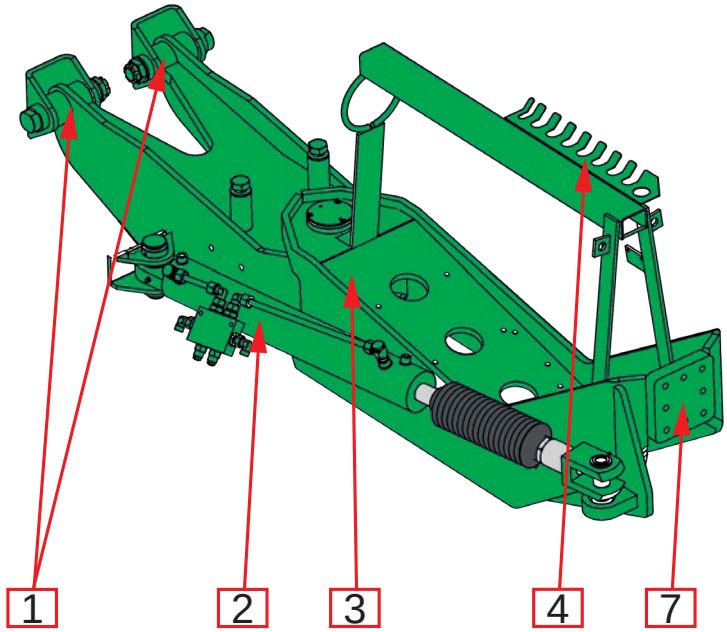


Abb. 6. Steering drawbar Land-Cruiser

Pos.	Description	Pos.	Description
1	Drawbar connection	2	Steering cylinder
3	Drawbar	4	Hose and cable holder
5	Assembly point towing coupling		

4. 2. 6. Jackfoot

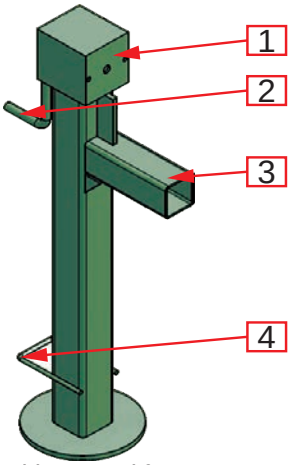


Abb. 7. Jackfoot

Pos.	Description	Pos.	Description
1	Grease nipple with gear and two gear ratios	2	Crank
3	Insert square		

4. 2. 7. Mast

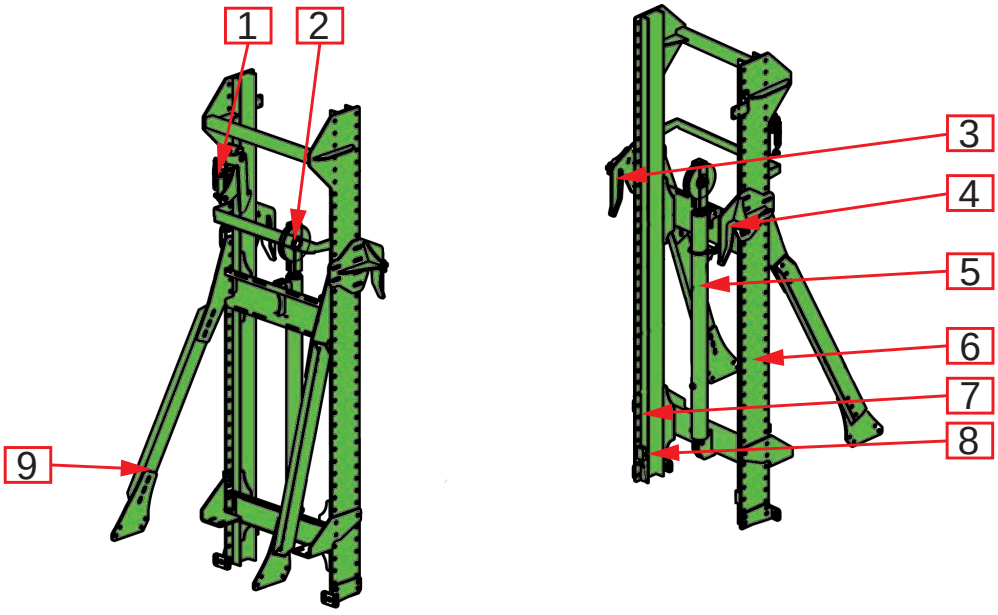


Abb. 8. Mast

Pos.	Description	Pos.	Description
1	Locking hook	2	Pulley with bearing
3	Stop hook on the left	4	Stop hook on the right
5	Hydraulic cylinder	6	Mast
7	Runner (U-profile slide guide)	8	Failover
9	Lift mast strut on the right		

4. 2. 8. Slide

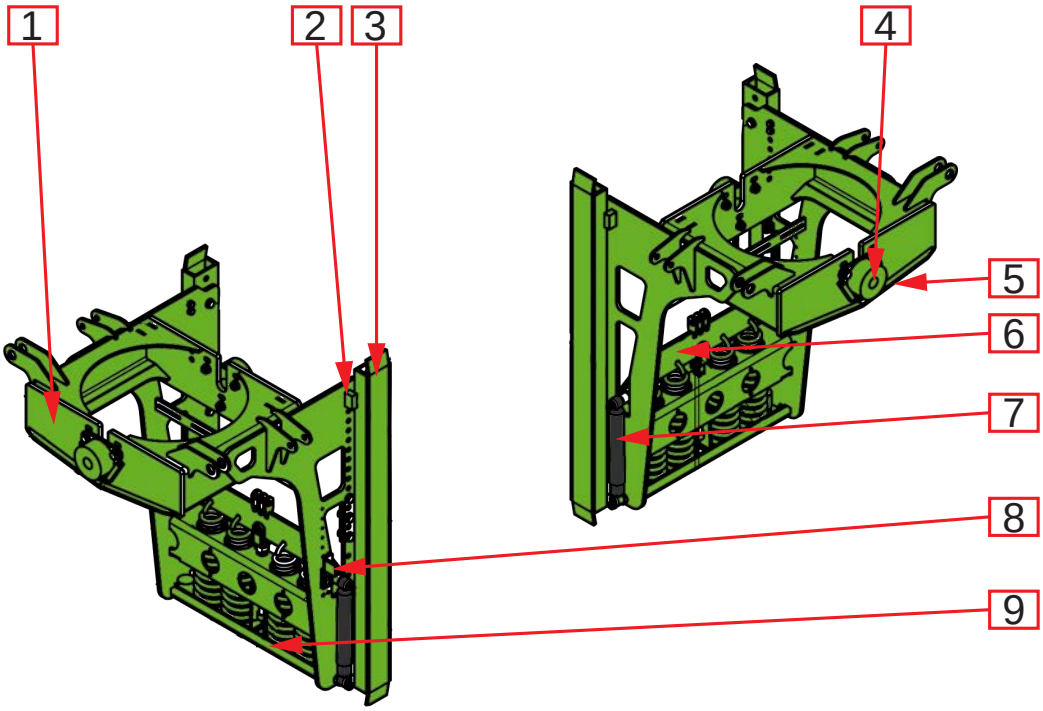


Abb. 9. Slide

Pos.	Description	Pos.	Description
1	Slide without runners	2	Failsafe slide
3	Runner	4	Flange bearing
5	Self alignment bearing	6	Cable and spring mount
7	Reinforced shock absorbers for pendulum compensation	8	Fold-out protection on the slide
9	Traverse below		

4. 2. 9. Pendulum

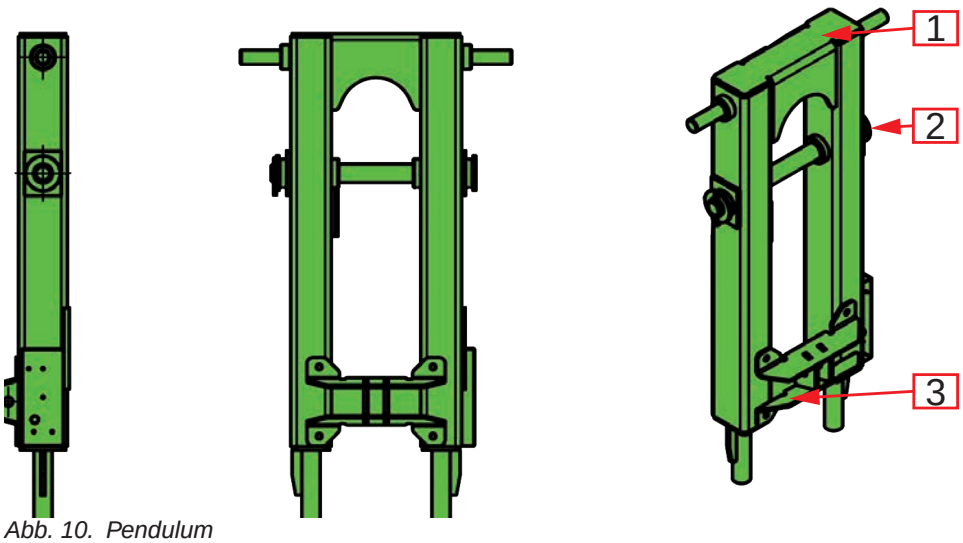


Abb. 10. Pendulum

Pos.	Description	Pos.	Description
1	Pendulum	2	Intermediate bearing Bolt
3	Cylinder console pendulum		

4. 2. 10. Intermediate bearing

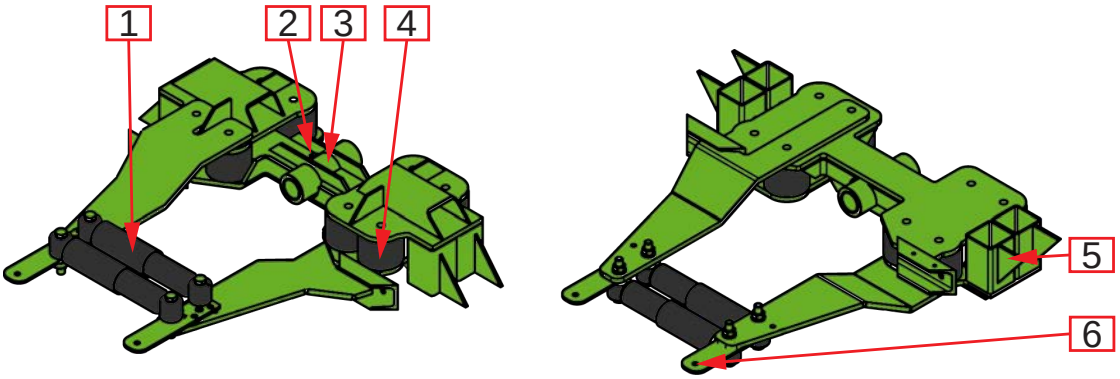


Abb. 11. Intermediate bearing

Pos.	Description	Pos.	Description
1	Shock absorbers	2	Grease nipple straight
3	Upper connection intermediate bearing	4	Rubber buffers
5	Bock intermediate bearing	6	Pole lighting adapter

4. 2. 11. Middle frame

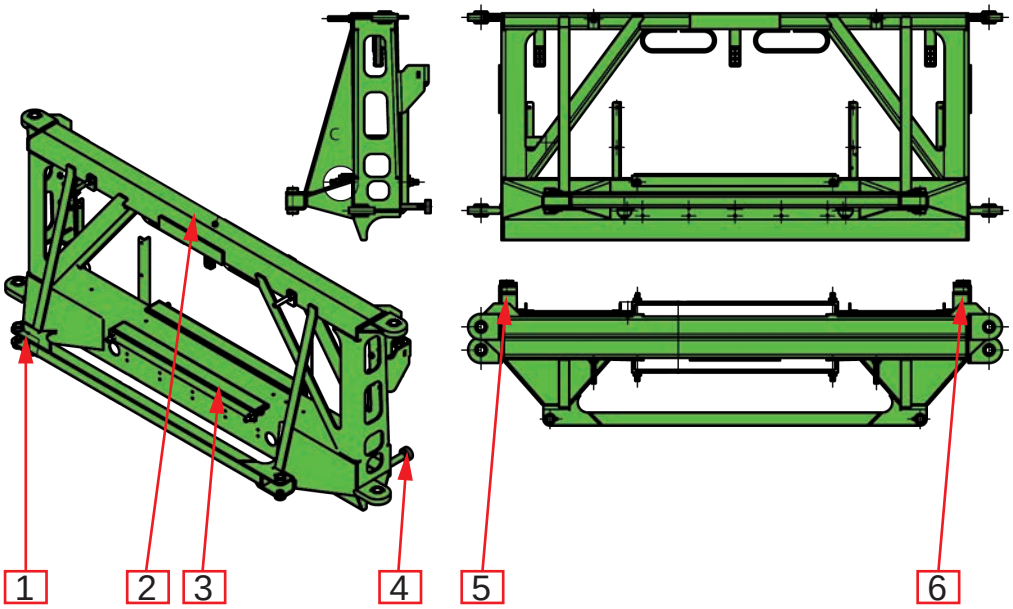


Abb. 12. Middle frame

Pos.	Description	Pos.	Description
1	Grease nipple	2	Middle frame
3	Rubbing strake	4	Rubber buffers
5	Cylinder holder on the right for pneumatic cylinder	6	Cylinder holder on the left for pneumatic cylinders

First boom

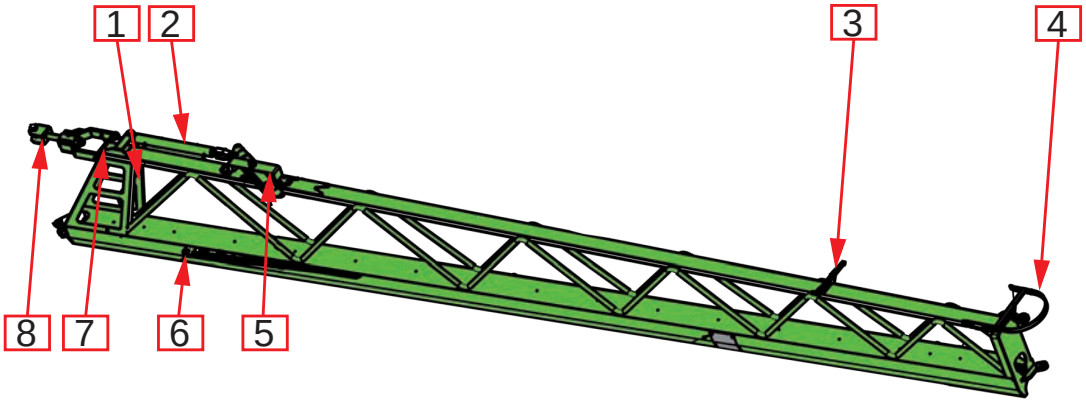


Abb. 13. I. Boom

Pos.	Description	Pos.	Description
1	Boom trap on the first boom	2	Hydraulic cylinder end position damper
3	Tie rod guide	4	Sprocket protection
5	Bracket reversing lever reinforced	6	Grease nipple
7	Grease nipple	8	Upper hinge point (Sliding piece)

4. 2. 12. Second boom

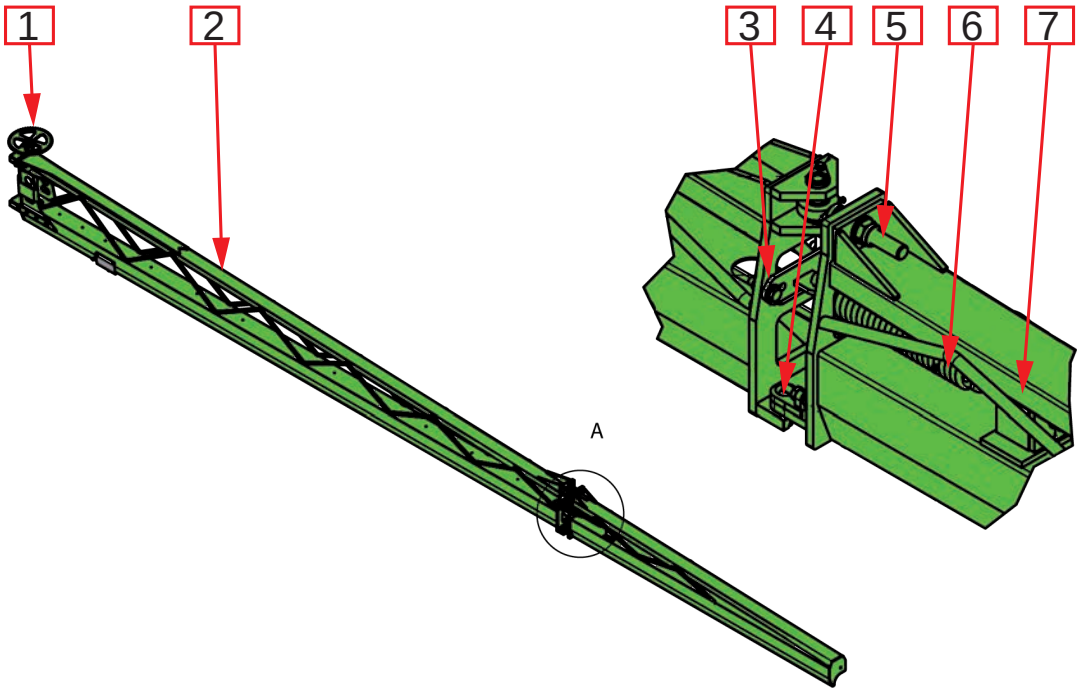


Abb. 14. II. boom

Pos.	Description	Pos.	Description
1	Sprocket	2	II. Boom left
3	Spring retainer collision protection	4	Double joint lower pivot point
5	Joint screw head plate	6	Tension spring
7	Eyebolt		

4. 2. 13. Spacers

Abb. 15. Spacers

4. 2. 14. Single nozzle holder with electro-pneumatic nozzle shut-off (option)

Abb. 16. Single nozzle holder

4. 2. 15. Triple nozzle holder with electro-pneumatic nozzle shut-off (option)

Abb. 17. Triple nozzle carrier

4. 2. 16. Tank

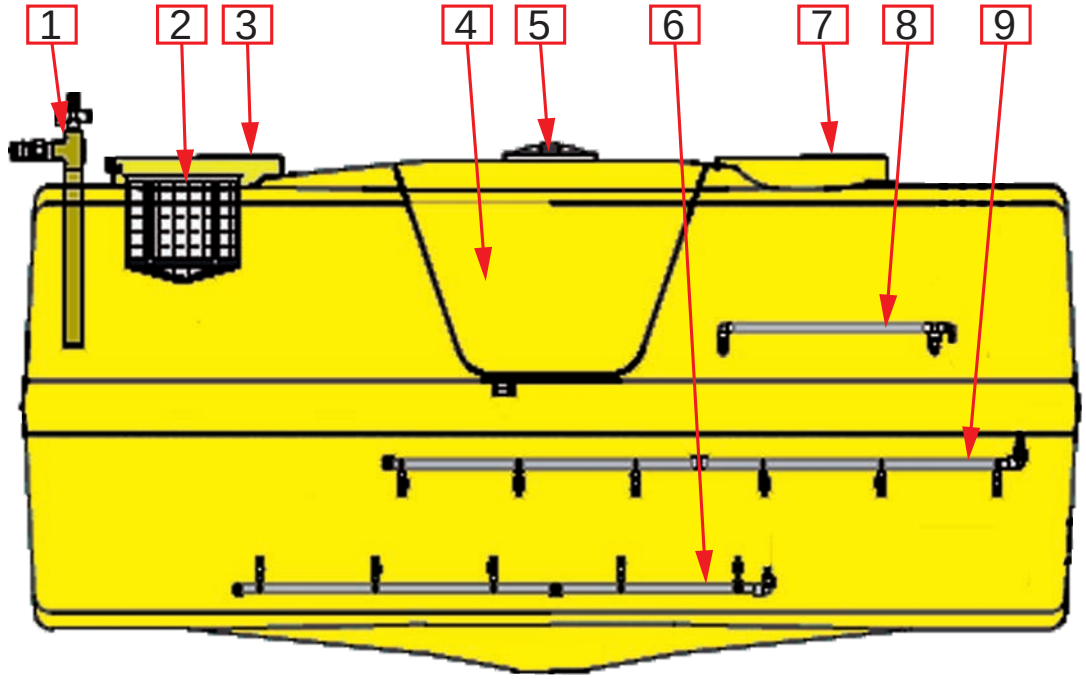


Abb. 18. Tank

Pos.	Description	Pos.	Description
1	Injector	2	Dome sieve
3	Filling dome	4	Fresh water tank
5	Fresh water tank filling dome	6	Agitator
7	Second filling dome without sieve	8	Tank cleaning
9	Powerful agitator		

4. 2. 17. Filling dome

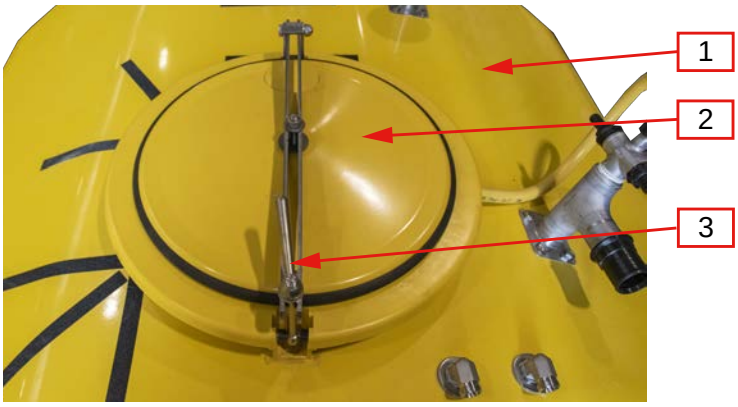


Abb. 19. Filling dome

Pos.	Description	Pos.	Description
1	Tank	2	Hinged lid
3	Toggle		

4. 2. 18. Fresh water level indicator

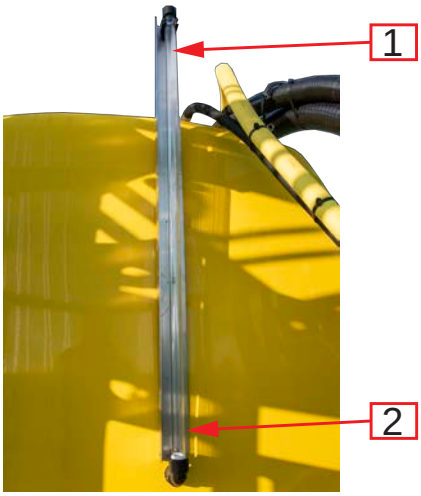


Abb. 20. Fresh water level indicator

Pos.	Description	Pos.	Description
1	Maximum fill level	2	Minimum fill level

The level indicator is located on the front face or on the left front side of the barrel, depending on the barrel size.

4. 2. 19. Valves und taps

All valves and taps are centrally located on the left-hand side in front of the induction center.

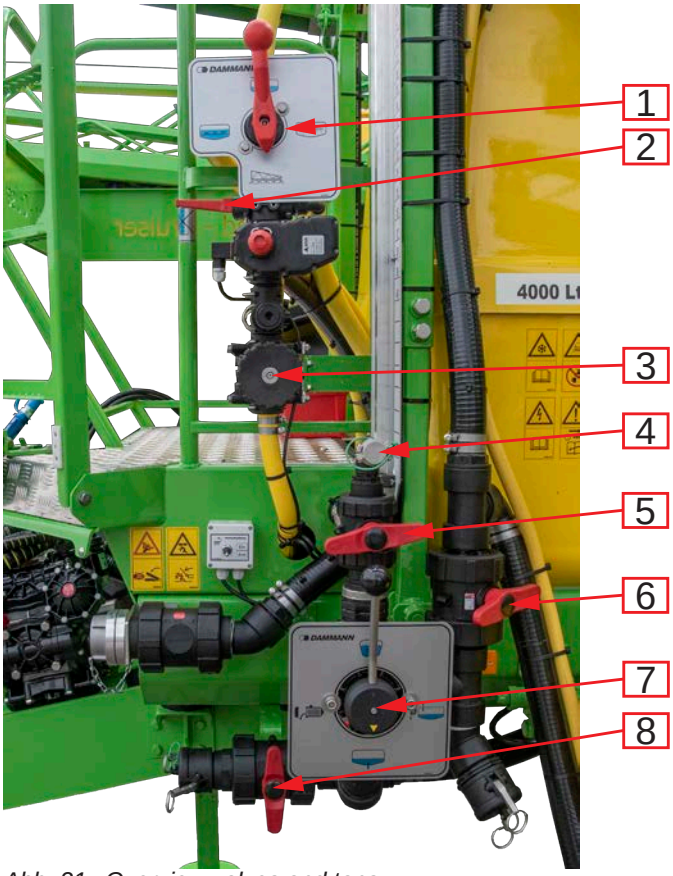


Abb. 21. Overview valves and taps

Pos.	Description	Pos.	Description
1	Five-way valve program selector valve	2	Stopcock agitator
3	Pressure filter	4	Geka® connection for fresh water filling fresh water tank
5	Three-way tap fresh water tank	6	Two-way valve for suction pipe / injector
7	Five-way valve suction valve (S2)	8	Stopcock drain connection

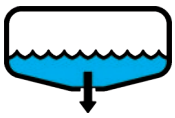
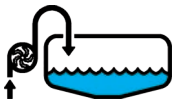
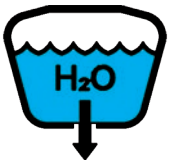
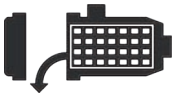
Mode	Description
„Operation“ (S2.0)	
„Filling“ (S2.1)	
„Machine cleaning“ (S2.2)	
„Filter cleaning“ (S2.3)	

Abb. 22. Suction valve (S2)

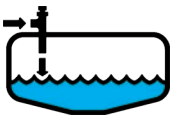
Mode	Description
„Splash with stirring“ (S1.0)	
„Suck injector“ (S1.1)	
„Stir vigorously“ (S1.2)	
„Clean the tank“ (S1.3)	

Abb. 23. Pressure valve (S1)

4. 2. 20. Induction hopper 30 l

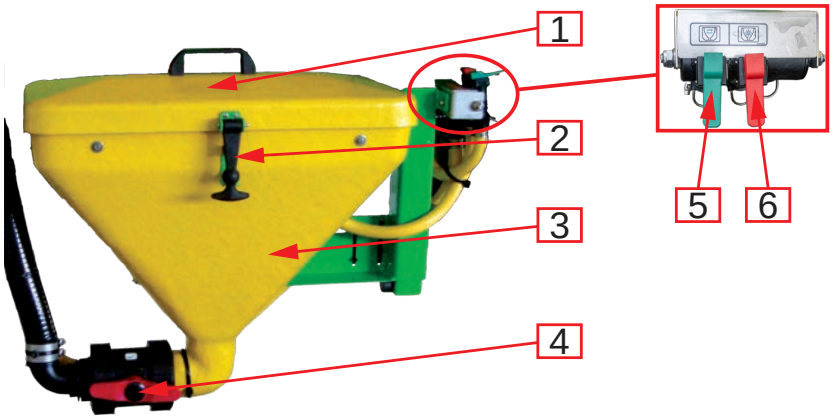


Abb. 24. Induction hopper 30 Liter

Pos.	Description	Pos.	Description
1	Cover with handle	2	Lock
3	Induction hopper	4	Stopcock for induction hopper to the tank
5	Ring flush	6	Canister flush

4. 2. 21. Induction hopper 60 l

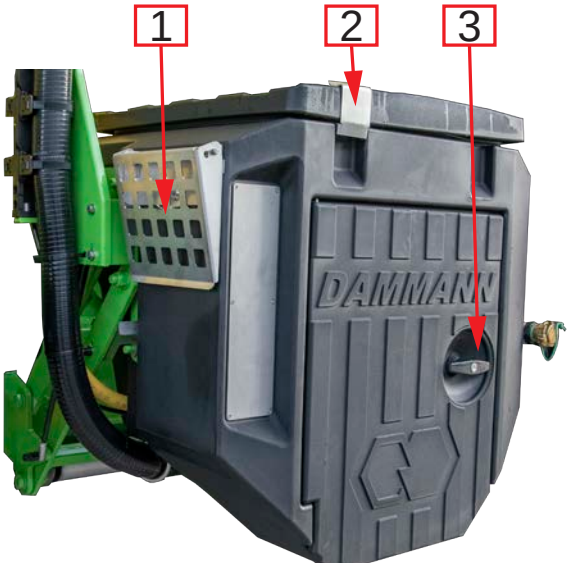


Abb. 25. Induction hopper 60 l

Pos.	Description	Pos.	Description
1	Canister/ Measuring cup rack	2	Lid with lock
3	Lockable door		

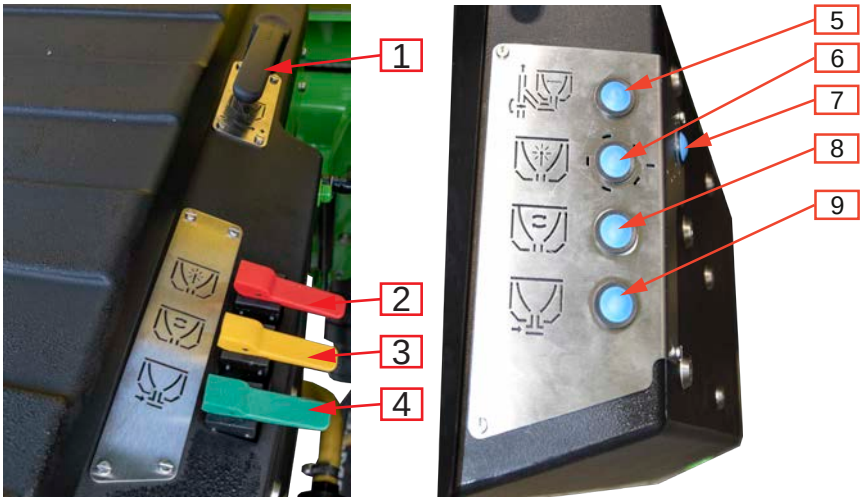


Abb. 26. Keypad operation of the induction hopper (depending on the version)

Pos.	Description	Pos.	Description
1	Stopcock for the induction hopper to the tank	2	Stopcock canister flushing
3	Stopcock ring flushing	4	Stopcock push nozzle
5	Injector suction	6	Canister flush
7	Canister flush release button	8	Flushing the ring main
9	Suction induction hopper		

4. 2. 22. Hand washing container

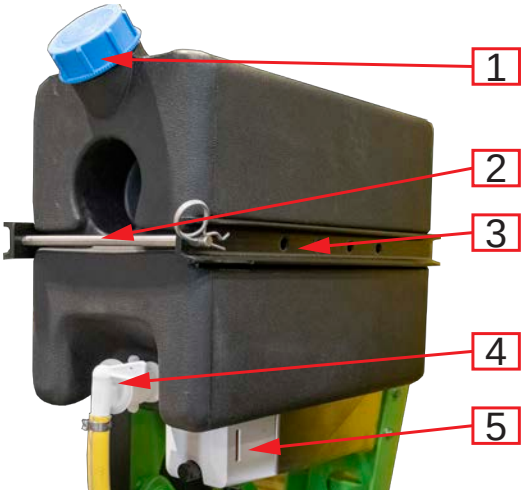


Abb. 27. Hand washing container

Pos.	Description	Pos.	Description
1	Screw cap	2	Locking
3	Holder	4	Outlet tap
5	Hand washing container		

4. 2. 23. Liquid pump AR 250

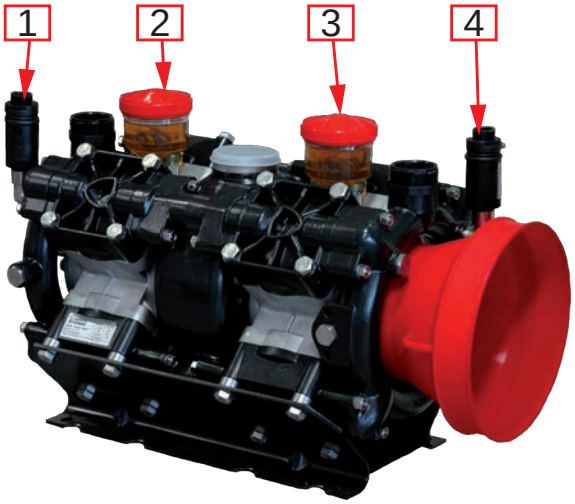


Abb. 28. Liquid pump AR 250

Pos.	Description	Pos.	Description
1	Pressure relief valve	2	Oil sight glass
3	Oil sight glass	4	Pressure relief valve

4. 2. 24. Liquid pump AR 320 (Option)

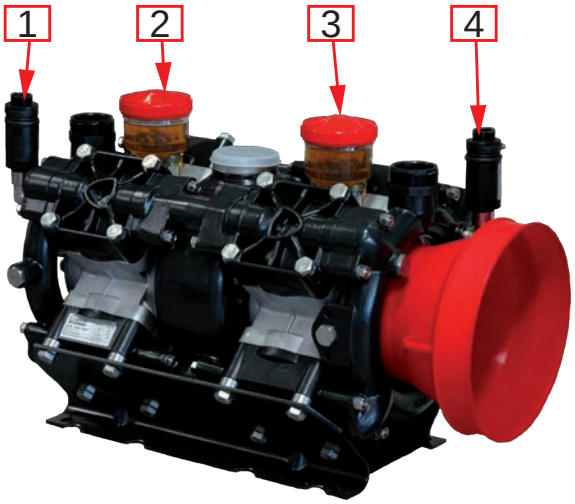


Abb. 29. Liquid pump AR 320

Pos.	Description	Pos.	Description
1	Pressure relief valve	2	Pressure relief valve
3	Oil sight glass	4	Oil sight glass

4. 2. 25. Vario spray lance, hose and holder for device cleaning (option)

INFO
Aussehen kann je nach Modelljahr variieren.

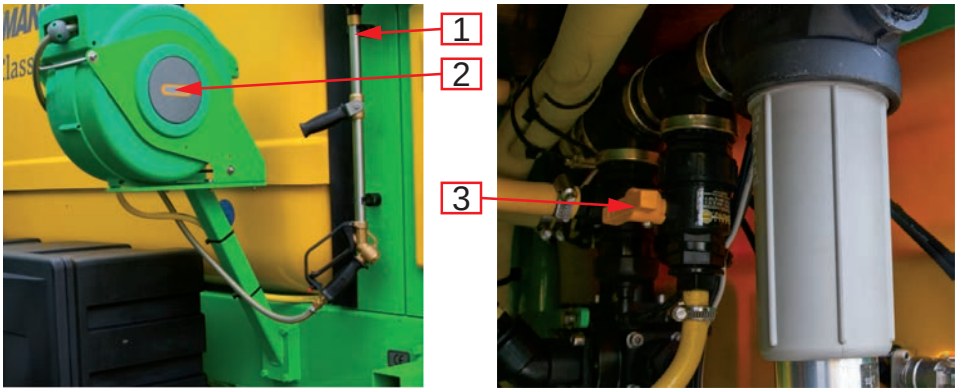


Abb. 30. Vario spray tube

Pos.	Description	Pos.	Description
1	Vario spray tube	2	Hose reel with hose
3	Stopcock for Vario spray lance		

4. 2. 26. Washing brush hose and holder for cleaning equipment (option)

INFO
Appearance may vary depending on the model year.

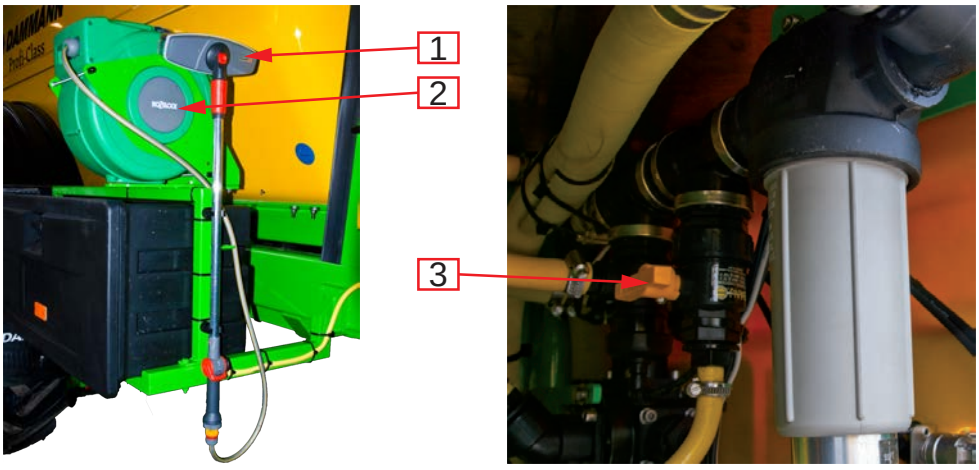


Abb. 31. Washing brush

Pos.	Description	Pos.	Description
1	Washing brush	2	Hose reel with hose
3	Stopcock for washing brush		

4. 3. Parking brake

INFO
The parking brake is on the right side of the device.

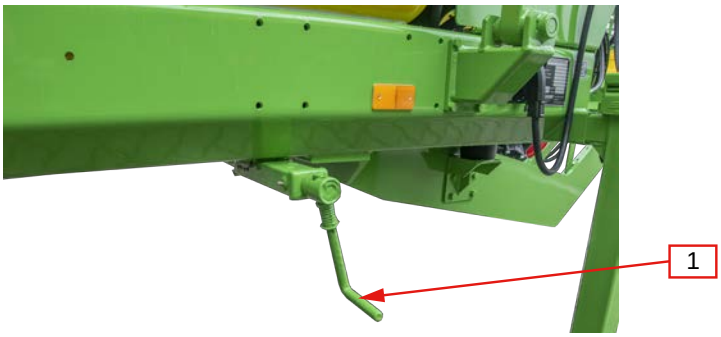


Abb. 32. Parking brake

Pos.	Description	Pos.	Description
1	Parking brake		

4. 4. Hydraulic couplings

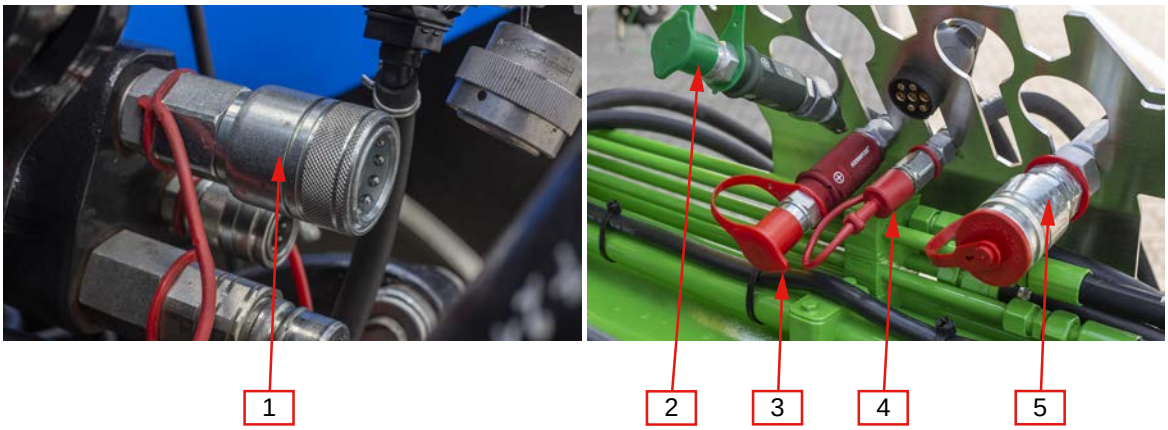


Abb. 33. Hydraulic couplings

Pos.	Description	Pos.	Description
1	Hydraulic plug-in coupling tractor	2	Hydraulic plug-in coupling fluid pump
3	Hydraulic plug-in coupling control block	4	Hydraulic plug-in coupling Load Sensing (LS)
5	Collected return		

4. 5. Pneumatic couplings

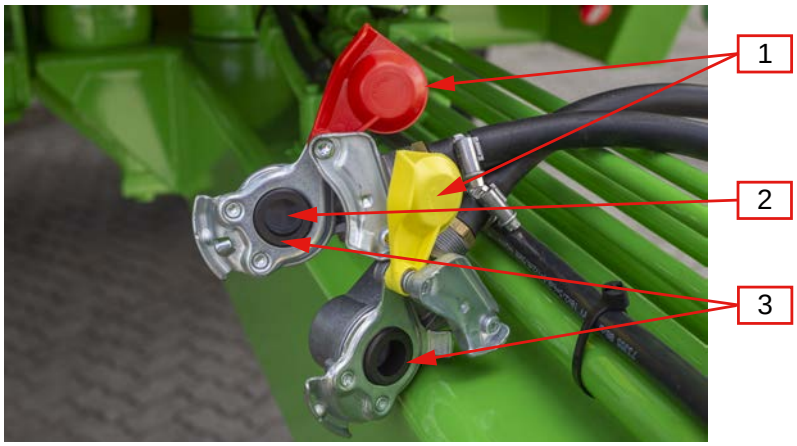


Abb. 34. Pneumatic couplings

Pos.	Description	Pos.	Description
1	Protective caps	2	Line filter
3	Seals		

Coupling head red	Compressed air supply to the trailed sprayer
Coupling head yellow	Trailer brake valve control line

4. 6. Tools provided

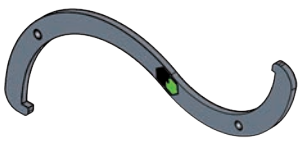
Tool	Suction filter wrench	Pressure filter wrench	Switching lever KH „emergency actuation electric suction tap 3“
Article number	80005126	1 1/4“ = 80010270 2“ = 80010141	AL81922
Illustration			
Tool	Nozzle wrench	BPW axle group key	„Emergency operation of the electrical program tap“
Article number	80009719	80030763	ZG0301260H1B28
Illustration			

Abb. 35. Tools

4. 6. 1. Spaydos

As a standard control unit, the spray dose is used for fully automatic dosing of the spray quantity.

4. 6. 2. Control panel SPRAYDOS

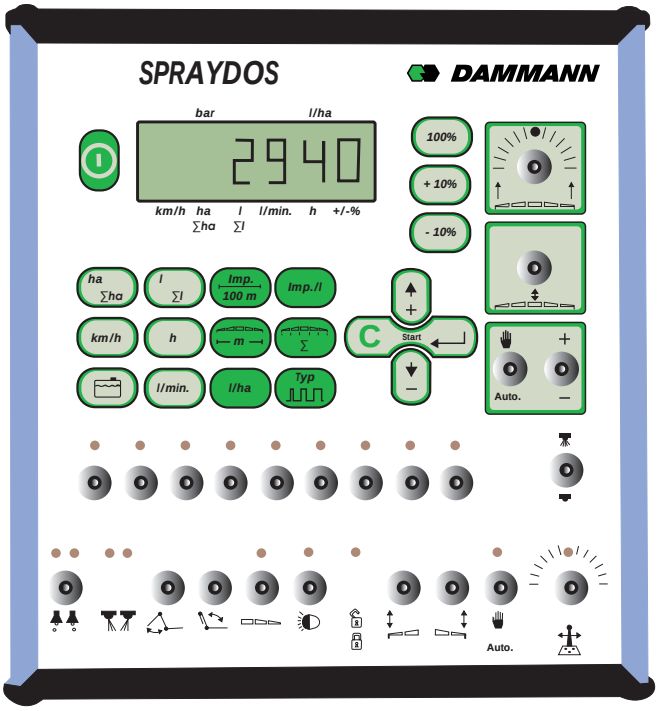
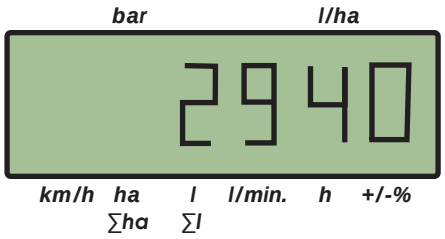
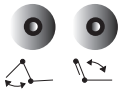
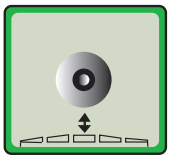
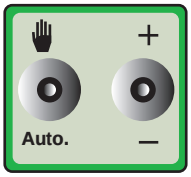
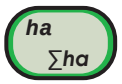
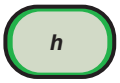
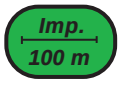
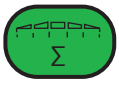
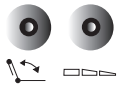
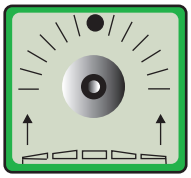
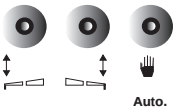
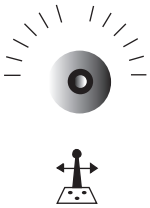


Abb. 36. SPRAYDOS

	Display

Button	Function	Button	Function
	Main switch for the on/off switch of the SPRAYDOS		100% of the set application rate is switched
	Increase of the application rate by 10%		Reduction of the application rate by 10%

Button	Function	Button	Function
	Folding and unfolding the boom.		Raising/lowering the boom if there is a control block
	Selector switch » Automatic mode » Manual operation		Dual function button » When the button is pressed, the area is displayed for 10 seconds. » If you press the button twice within 10 seconds, the total counter of the area is displayed » Is not deleted with the start function
	Dual function button » When the button is pressed, the amount that was applied after the start function was activated is displayed for 10 seconds » If you press the button twice within 10 seconds, the total liters will be displayed		When the sprayer is switched off, the current driving speed is displayed by pressing the button.
	Button to display the working time		TankControl button (option) Shows the current tank content (only if installed)
	Display of liters per minute by the flow meter.		Key for entering the number of pulses for the speed sensor
	key for direct entry of the pulses per liter or a calibration of the flow meter		Key for entering the working width
	Key for entering the number of sections (max. 9) and the number of nozzles for the respective section		Key for entering the application rate
	Dual function button » The number in front of the comma determines the type of valve. » Numbers after the comma determine the control constant.		Used to enter and change machine data.

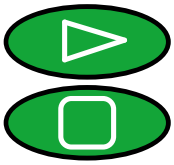
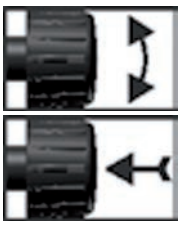
Button	Function	Button	Function
	Machine data up		Machine data down
			Selection and deselection of the individual sections. » If a switch is switched off, the associated section is switched off and is not switched on via the main section switch.
	Section main switch		Foam marker (option)
	Auxiliary nozzle switch (option)		Special folding (option)
	Slope compensation		Switch automatic slope compensation to manual mode (option).
	Steering drawbar control (option)		Work lights (option)

All switches marked with an option are only used for devices with additional equipment.

4. 6. 3. ISOBUS control unit BASIC (option)

The ISOBUS BASIC control unit with button operation serves as the standard control unit.

Abb. 37. BASIC control unit (option)

Button	Function	Button	Function
	On/off switch		Without Function. Screenshot
	Leave mask. Cancel input. Hide warning messages and alarms.		Call up the „Selection menu“ application Exit the „Selection menu“ application
	Function key A: Change views of the applications in the header.		Function key B: Change. Swap applications main screen and application header.
	Function key 1-10: Calling up the functions displayed on the main screen.		Turn the rotary knob: » Move cursor up and down. » Change the value of a parameter Press the rotary knob: » Click on the marked line. » Activate parameters. » confirm input.

4. 6. 4. ISOBUS-Control panel *HD 8 pad* (option)

Abb. 38. Control panel Basic & HD 12 pad (option)

Button	Function	Button	Function
	On/Off switch		Without function Screenshot
	Without function		

4. 6. 5. ISOBUS job computer JR III (option)

Abb. 39. ISOBUS job computer JR III

4. 6. 6. Multi-function handle (option)

Many functions of an ISO-compatible control unit can be switched directly using the multi-function stick.

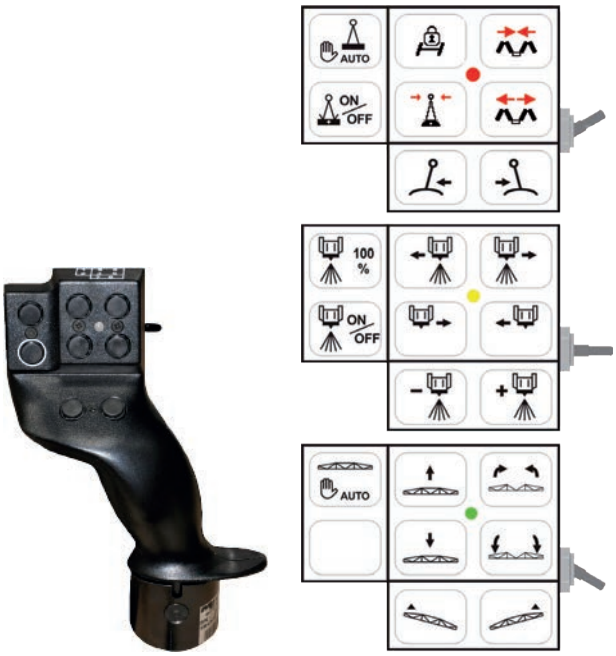


Abb. 40. Multi-function handle

4. 6. 7. TANK-Control (option)

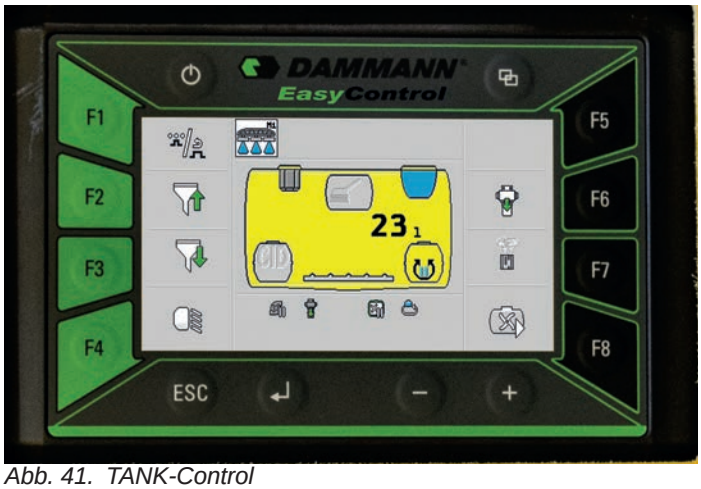


Abb. 41. TANK-Control

5. Transport

5. 1 Transport information

» Comply with the locally applicable regulations for transport and load securing.
» Observe the tractor operating manual for the coupling and uncoupling process of implements.
» Observe the operating instructions for all means of transport for transport by road, ship or plane.
» Secure the machine and all objects against unintentional movement, slipping or tipping.
» Use a suitable transport vehicle.
» Use only flawless lashing devices to secure the load.
» In order to avoid personal injury or damage to property, coordinate with marshallers or other personnel who are also performing activities.
» If paths and surfaces on the machine / means of transport are icy or snow-covered, there is a risk of falling or falling. Clear ice and snow in the affected areas before starting work. There is also a risk of slipping when there is moisture on steel parts. Wear slip-resistant safety shoes!
» Only connecting devices with component type approval may be used.
» Improper changes or repairs as well as damage are not permitted.
» The machine may only be carried behind suitable towing vehicles.
» Requirements for suitability are in particular:
  » The permissible total weight, the permissible rear axle load, the permissible trailer load and the permissible support load at the coupling point of the towing vehicle must be sufficient to be able to carry the trailed sprayer (see information in the vehicle registration document or registration certificate Part II and in the operating instructions).
  » The towing hitch of the towing vehicle must be suitable for the towing load and vertical load to be carried as well as for accepting a corresponding towing eye on the trailer.
  » The vehicle combination must achieve the prescribed braking deceleration.

5. 2 Transport the machine

⚠ WARNING

Risk of accident

Injuries to the body

» Follow the instructions for coupling and uncoupling exactly.

» Nobody is allowed to be in the danger area while the power lift / draw hook is being operated.

» Nobody is allowed to be in the danger area during the coupling process.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ WARNING

Movable parts

Risk of crushing the body

» Do not reach into the PTO shaft when the engine is running.

» Before switching on the PTO, make sure that nobody is in the danger area.

» Only work on it when the PTO has stopped.

» Only operate power take-off shafts with suitable and faultless power take-off shaft protection.

» Secure the PTO stub with covers when not in use.

In the event of injuries, immediately give first aid and consult a doctor.

⚠ WARNING

Risk of accident

Injuries to the body

» Replace a damaged connector immediately.

» Repair or replace damaged components of a connection device immediately.

» Repairs are only permitted by the manufacturer or authorized specialist companies.

» Welding or drilling on connecting devices is prohibited.

In the event of injuries, immediately give first aid and consult a doctor.

NOTE

Note the transport dimensions in road traffic

Machine damage

» Do not exceed the maximum level of the national and local laws applicable in the country of use!

» Do not exceed the maximum width of the national and local laws applicable in the country of use!

» Note the transport dimensions for cross-border transport.

Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.

INFO

In order to better relieve the support leg, the barrel should be empty during the coupling process. Pay attention to the prescribed values for the drawbar coupling.

5. 2. 1 Transport with tractor on its own axle

Connect and establish operational readiness

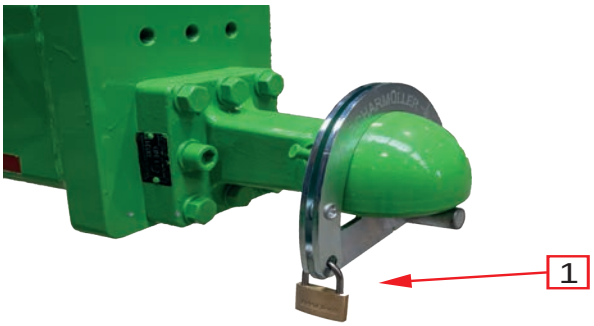


Abb. 42. Protection against unauthorized use (1)

Procedure
1. Position the tractor in front of the machine.
2. Remove the protection against unauthorized use (1).
3. Before the coupling process, check the drawbar, towing ball or towing eye for: » Damage, deformation or cracks » Wear » tight fit of the fastening screws.
4. If necessary, adjust the height of the hitch.
5. Open the hitch.
6. If necessary, adjust the height of the towing eye on the tractor. To do this, lower or lift the support leg.
7. Couple the machine.
8. Secure the bolt of the drawbar coupling.
9. Stop the engine.
10. Support foot (note chapter 5.2.2 for hydraulic support foot). 10. 1 Turn the support foot to the smallest position. 10. 2 Loosen the jackfoot. 10. 3 Take the jackfoot out of the mount 10. 4 Turn the jackfoot horizontally backwards into the transport position. 10. 5 Insert the jackfoot into the receptacle. 10. 6 Fasten the jackfoot in the transport bracket.
11. Connect the air pressure hose with the yellow coupling to the dual-line brake system.
12. Connect the air pressure hose with the red coupling to the dual-line brake system.

Procedure
13. Attach the hydraulic pump to the PTO shaft end of the tractor and secure it. Observe the „Technical data“ chapter.
14. If necessary, connect the power take-off shaft with a permanently installed hydraulic pump.
15. Connect hydraulic connections depending on the device.
16. Connect the seven-pin / 13-pin connector for the lighting.
17. Connect the control unit to the 64-pin plug (option, connect ISOBUS plug).
18. Insert the gyroscope of the TRAIL-Control into its holder and fasten (option).
19. Connect the control terminal to the 12 V power supply of the tractor.
20. Remove the wheel chocks from under the wheels and stow them in the brackets.
21. Release the parking brake.

Uncoupling

Procedure
1. Turn off the tractor.
2. Apply the parking brake on the machine.
3. Place wheel chocks under the wheels.
4. Remove the 64-pin plug from the control unit (option, disconnect the ISOBUS plug).
5. Remove the seven-pin/13-pin plug from the tractor.
6. Loosen the hydraulic pump on the PTO stub.
7. Disconnect hydraulic connections.
8. Disconnect the air pressure hose with the red coupling for the dual-line brake system and close the dust cover.
9. Disconnect the air pressure hose with the yellow coupling for the dual-line brake system and close the dust cover.
10. Bring the support foot into the support position. 10. 1 Loosen the support foot and take it out of the mount. 10. 2 Turn the support leg vertically down into the standing position. 10. 3 Insert the support foot into the mount and fasten it. 10. 4 Crank the support foot out to the ground until the pulling hitch is relieved.
11. Open the lock of the hitch bolt.
12. Remove the hitch bolt.

Procedure
13. Start and remove the tractor.
14. Attach protection against unauthorized use.

5. 2. 2 Operating the hydraulic support foot (option)

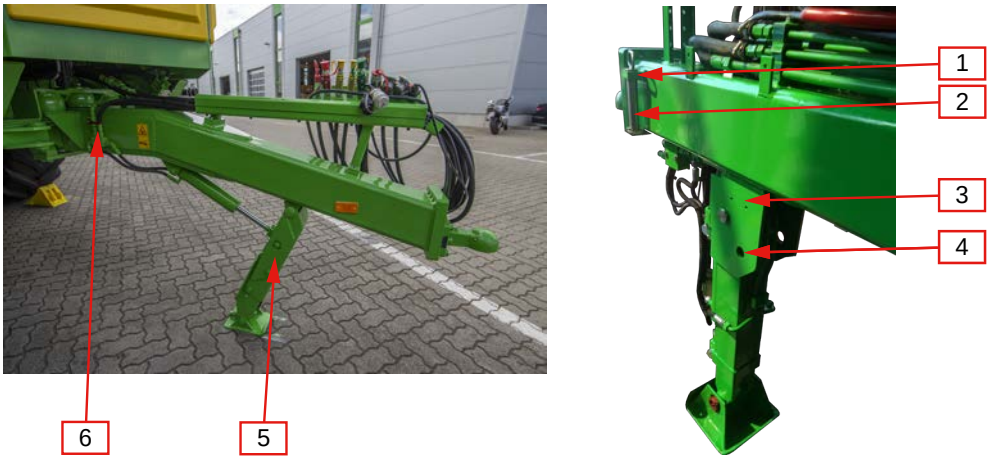


Abb. 43. Hydraulic support foot, left lower attachment, right upper attachment

Pos.	Description	Pos.	Description
1	Safety bolt storage	2	Safety bolt
3	Upper drawbar jackfoot	4	Drilling console
5	Lower drawbar jackfoot	6	stopcock

Coupling

Procedure
1. Position the tractor backwards and straight in front of the unloaded trailed sprayer.
2. Check whether the parking brake of the trailed sprayer is activated (the black button must be pressed in and the red button on the quick release valve must be pulled out).
3. Connect the hydraulic / electrical connections of the trailed sprayer to the tractor. If necessary, correct the height of the coupling point to the towing device of the tractor with the hydraulics of the support foot (attention: the shut-off valve (6) must be open).
4. Pull the safety bolt (2) out of the hole in the console (4) and hang it in the shelf (1).
5. Secure the safety bolt against loss.
6. Position the towing device of the tractor under the coupling point of the trailed sprayer (ensure that the coupling point / hydraulic connections are free).

7. Apply the parking brake on the tractor.
8. Retract the hydraulic jack until the coupling point rests completely on the towing hitch of the tractor.
9. Only then retract and fold the support leg completely.
10. To avoid unintentional lowering of the support stand while driving, close the trailer coupling and shut-off valve for the hydraulic support stand.
11. Establish a pneumatic connection between the trailed sprayer and the tractor (first yellow, then red).
12. Release the parking brake on the trailed sprayer (the black button must be pulled out and the red button on the quick release valve must be pushed in).
13. Remove wheel chocks.

Uncoupling

Procedure
1. Position the train unloaded on level, straight and firm ground. Apply the parking brake on the tractor.
2. Disconnect the pneumatic connection between the trailed sprayer and the tractor (first red, then yellow).
3. Apply the parking brake on the trailed sprayer (black button must be pressed in and red button on the quick release valve must be pulled out) and set wheel chocks.
4. Open the shut-off valve of the hydraulic support foot and the towing device of the tractor.
5. Fold out the hydraulic support foot and extend it until the coupling point of the trailed sprayer is free.
6. Disconnect the hydraulic / electrical connections of the trailed sprayer from the tractor.
7. Pull the safety bolt (2) out of the holder (1) and insert it into the hole in the console (4).
8. Secure against loss.
9. Slowly drive the tractor forward and ensure that the coupling point is free.
10. Close the towing hitch of the tractor.

5. 2. 3 Transport on a means of transport without a coupling

Abb. 44. Lashing on a low loader with a coupling (example ANPT)

Pos.	Description	Pos.	Description
1	Lashing points in front	2	Axle lined
4	Lashing points at the rear		

Load up

Procedure
1. Drive the machine onto the low-loader with a suitable towing vehicle. Alternatively, lift onto a transport vehicle with suitable lifting equipment (picture).
In order not to exceed the maximum height in road traffic, the following points can be carried out: » If necessary, lower the air pressure of the tires. » If necessary, dismantle the wheels. Only line the axles (3) with suitable material, not the brake drums! » Use suitable lifting equipment to lower the drawbar towards the floor of the low-loader. » Line the drawbar with suitable material (e.g. wooden beams). » Lash the machine with chain hoists (2) at the front and rear. » If necessary, with air-sprung trailed sprayer (only ANPT), unhook the linkage of the air-suspension control and lower the machine (located behind the second axle). 
2. Lash the front and rear of the machine with chain hoists (1 and 3).

Abladen

Procedure
1. Loosen all chain hoists on the machine. 2. In the case of an air-sprung trailed sprayer (only ANPT), attach the linkage of the air-suspension control (located behind the second axle). 
3. If necessary, inflate all tires with the correct air pressure.
4. If necessary, mount wheels.
5. Drive the machine off the low-loader with a suitable towing vehicle. If necessary, connect pneumatics to the towing vehicle. Alternatively, lift from the transport vehicle with suitable lifting equipment.

5. 2. 4 Transport on a means of transport with a coupling

Abb. 45. Lashing on a low loader with a coupling (example ANPT)

Pos.	Description	Pos.	Description
1	Lashing points in front	2	Trailer coupling or ball head
3	Lashing points at the rear		

Procedure
1. Connect the train connection of the trailed sprayer to the trailer coupling (2) of the low bed loader, see figure above (observe the operating instructions of the trailer).
2. Drive the machine onto the low-loader.
3. Activate the parking brake of the trailed sprayer (see chapter „Double release valve brake“).
In order not to exceed the maximum height in road traffic, the following points can be carried out: » If necessary, lower the air pressure of the tires.
» If necessary, with air-sprung trailed sprayer (only ANPT), unhook the linkage of the air-suspension control and lower the machine (located behind the second axle). 
4. Lash the machine with chain hoists (2) at the front and rear.

Unloading

Procedure
1. Loosen all chain hoists on the machine. 2. In the case of an air-sprung trailed sprayer (only ANPT), attach the Boom of the air-suspension control (located behind the second axle). 
3. If necessary, inflate all tires with the correct air pressure.
4. Release the parking brake of the trailed sprayer (see chapter „Double release valve brake“).
5. Drive the machine from the low loader.

5. 2. 5 Fit and remove drive shaft

INFO
Only for devices with special features.

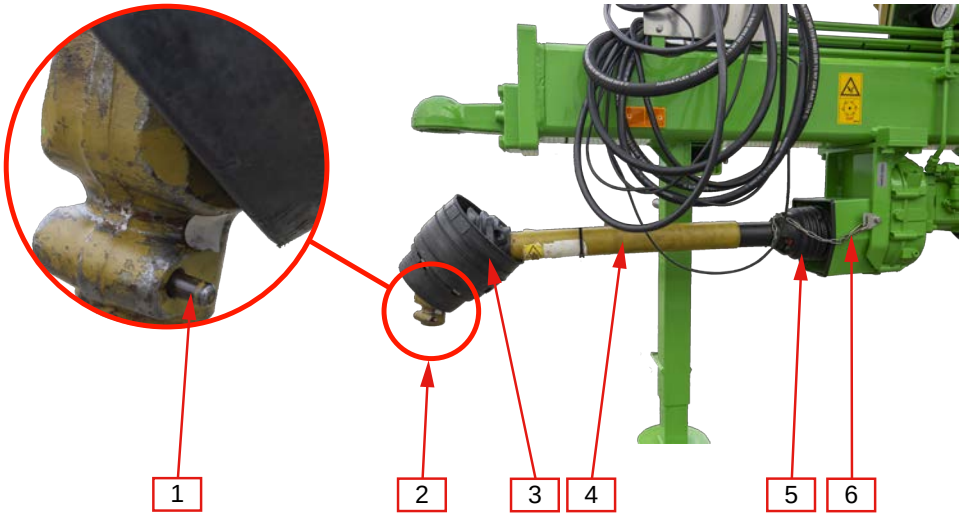


Abb. 46. Mount the cardan shaft (example on a slip-on pump)

Pos.	Description	Pos.	Description
1	Sliding pin	2	Front joint of the PTO shaft
3	Protective cover	4	cardan shaft
5	Rear joint of the cardan shaft	6	Rear holding chain

Coupling

Procedure
1. Grease the cardan shaft (4) before assembly.
2. Connect the rear joint of the cardan shaft (5) to the PTO shaft of the hydraulic pump (6). » Check whether the sliding pin (1) is engaged. » Check that the protective cover (3) is not damaged.
3. Attach the rear retaining chain (6).
4. Couple the front joint of the cardan shaft (2) to the PTO shaft of the towing vehicle. » Check whether the sliding pin (1) is engaged. » Check that the protective cover is not damaged.
5. Attach the front retaining chain.

Uncoupling

Procedure
1. Unhook the front retaining chain.
2. Uncouple the front joint of the cardan shaft (2) from the PTO shaft of the towing vehicle. » To do this, press in the sliding pin and pull off the joint.
3. Unhook the rear retaining chain.
4. Uncouple the rear joint of the PTO shaft (2) from the PTO shaft of the hydraulic pump. » To do this, press in the sliding pin and pull off the joint.

5. 2. 6 Protection against unauthorized use

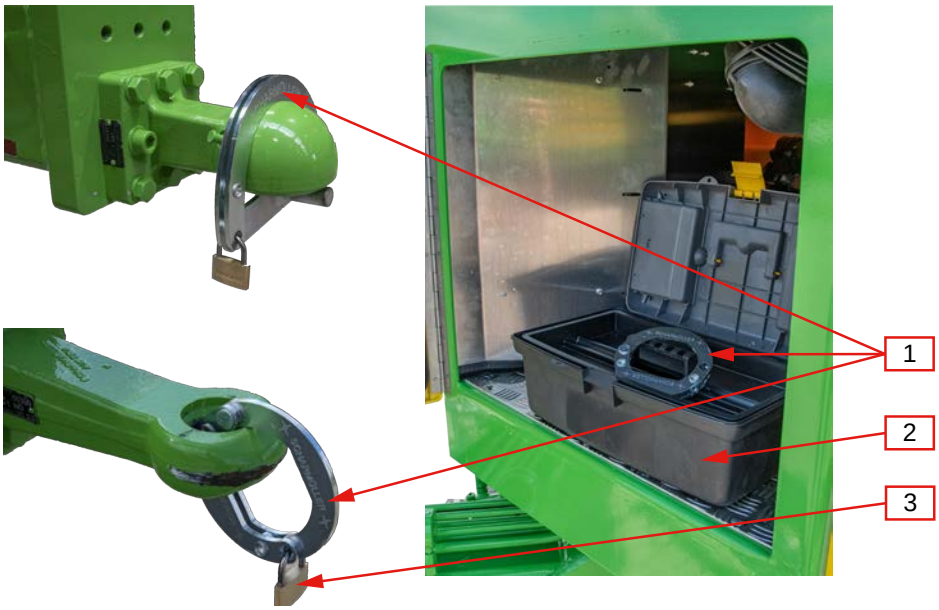


Abb. 47. Protection against unauthorized use

Pos.	Description	Pos.	Description
1	Protection against unauthorized use	2	Storage box in the front section
3	Padlock		

Remove fuse

Procedure
1. Open the padlock (3) on the safety device (1).
2. Remove the protection device from the drawbar.
3. During operation, keep the padlock and ptrotection device in the storage box in the front section or in a storage box on the device.

Mount the protection device

Procedure
1. Take the protection device out of the storage box.
2. Open the padlock on the protection device.
3. Attach protection device.
4. Close padlock.

6. Commissioning

⚠ WARNING	
	***Failed maintenance work and disregarded maintenance intervals.*** *Risk of accident with serious personal injury.* » Observe the instructions for maintaining the components. » Read and understand technical documentation. » Observe work safety and accident prevention regulations. » Observe legal requirements. » Have maintenance work carried out only by qualified specialists and qualified workshops. **Consult first aid and doctor.**

6. 1. Departure control

Before starting the journey, check the vehicle for roadworthiness and operational safety.

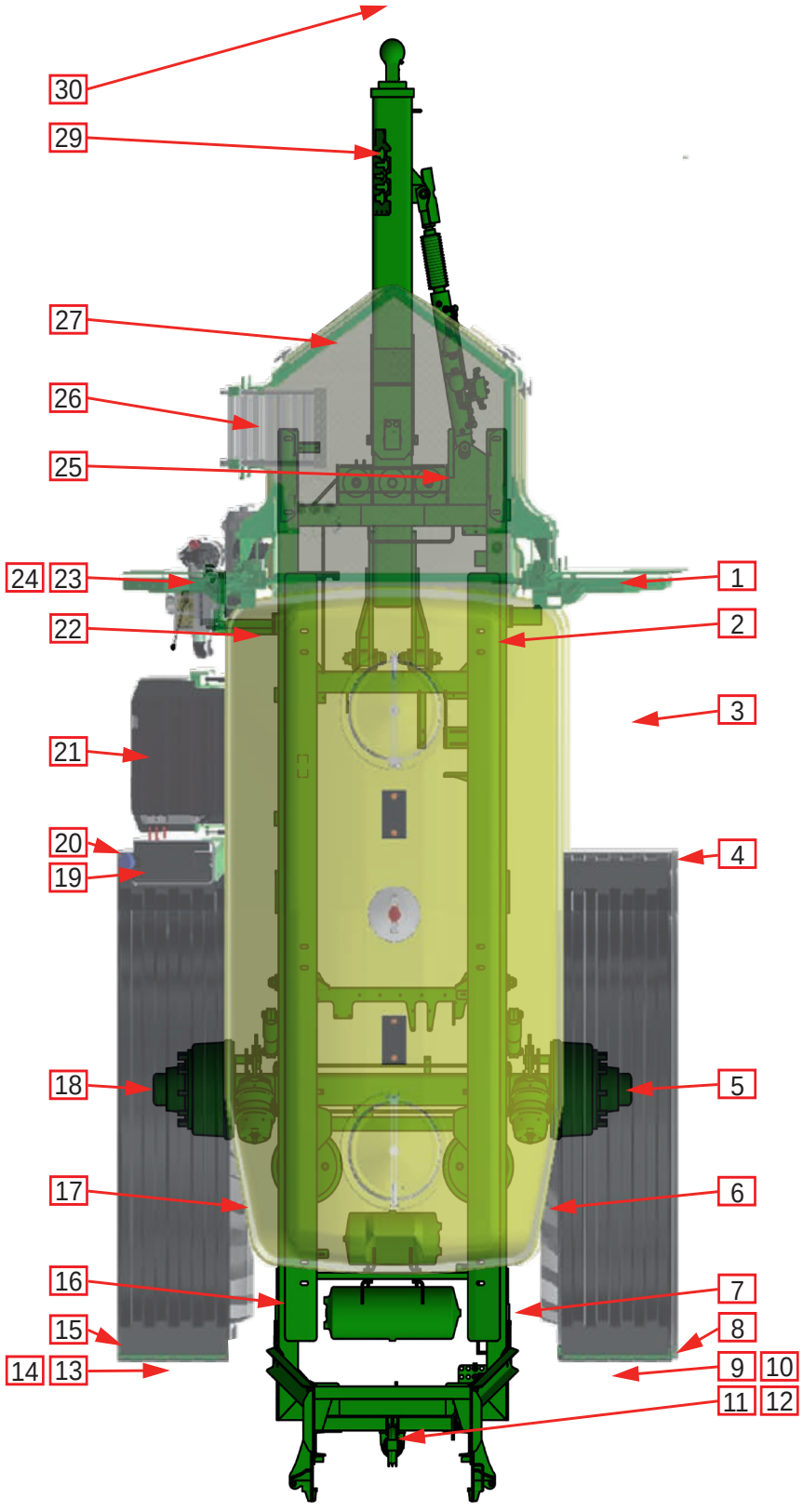


Abb. 48. Departure control ANP Land-Cruiser

Pos.	Test to be carried out	Pos.	Test to be carried out
1	Check the locking of the boom safety device	2	Visual inspection of the fastening points, check that the right-hand assembly is secure
3	Release the parking brake	4	Check side emitters for damage
5	Wheels + tires Visual inspection of air pressure/damage/tread depth/tight fit	6	Check function of work lights on the boom (if available)
7	Check wheel chocks for tight fit	8	Check side emitters for damage
9	Check function of lighting	10	Check that warning signs are securely in place
11	Check function of lighting	12	Check function of work lights on the boom (if available)
13	Check function of lighting	14	Check that warning signs are securely in place
15	Check side emitters for damage	16	Check wheel chocks for tight fit
17	Check function of work lights on the boom (if available)	18	Wheels + tires Visual inspection of air pressure/damage/tread depth/tight fit
19	Check side emitters for damage	20	Fill up the hand washing container and soap dispenser
21	The induction center must be upstairs and secured	22	Visual inspection of the fastening points: Check the structure on the right for tight fit
23	Valves: » All taps must be closed » All blind caps must be fitted	24	Check the locking of the boom safety device
25	Check the oil level of the liquid pump	26	The ladder must be pushed up and secured.
27	» Braking system: » Adapt to the load (does not apply to tandem devices) » Only drive with the trailer sprayer connected when the brake system shows at least 5.0 bar	28	» Check hydraulic hoses and couplings for damage » Check pneumatic hoses and couplings for damage
29	Control unit/user interfaces must be switched off.		

6. 2. Commissioning and start of the season

Materials can change as a result of downtimes, changes in temperature and transport. Before the first start-up, the following things must be checked and checked:

Procedure
1. Read and understand operating instructions/instructions.
2. Pump oil levels: » The oil level must be within the markings on the oil sight glass. » If the oil level is too low, top up oil according to the fuel table.
3. Pneumatics » Check the oiler and, if necessary, top up with non-mineral pneumatic oil in the case of EPDM seals up to the maximum mark on the sight glass. » Drain and empty the compressed air filter.
4. Check link chain on lift mast and induction center.
5. Check the plug-on pump for damage.
6. Hydraulic oil level.
7. Grease the running rail in the lift mast.
8. Grease the rub strips on the center frame.
9. Grease the joints of the rods.
10. Grease the reversing lever and chain.
11. Check all screw connections.
12. Grease all grease nipples. » *On the boom (tip: all grease nipples are easily accessible when the boom is folded out)* » Axes » Suction fitting » Program selection tap » Mechanical parking brake (if present)/service brake. » Drawbar » Ball head trailer coupling » Support stand
13. Check hydraulic hoses for: » Hydraulic oil leaks » All connections are firmly in place » Cracks and chafe marks on the hoses and lines

Procedure
14. Steel wire ropes of the lift mast, the axis control on: » Breakage of a strand » Kinks and bruises » Conings » Kinking » Rust damage, e.g. B. Corrosion scars » Overheat » Heavy wear on the rope end connection, e.g. the compression sleeve, the splice » Number of visible wire breaks (maximum 10% of the rope diameter)
15. Functions of the signal and lighting system » Tail and brake lights. » Indicator lights. » Side reflectors. » Boom lighting (option) » Side marker lights (option) » Pre-fitting rotating beacon (option)
16. Test run with clear water.
17. Check the filter, repeat the test run if it is dirty. » Pressure filter » Suction filter » Nozzle filter
18. Check the stirring and cleaning nozzles for blockages.

7. Operation (Mechanic)

⚠ WARNING	
	***Height workplace*** *Risk of falling* » Carefully enter the porch and the barrel. » The upper barrel may only be cleaned with a work platform. » Wear anti-slip safety shoes. » Do not step onto the porch during a thunderstorm. » Do not step on the barrel when the machine is under a power line. **In the event of injuries, immediately give first aid and consult a doctor.**

⚠ ATTENTION	
	***Filling the tank*** *Body poisoning and environmental damage* » Check the machine for damage before each filling. » Pay attention to the instructions of the plant protection product manufacturer. » Never leave the machine unattended when filling. » Wear PPE. » Avoid foaming. » Use only suction hoses with a non-return valve. » **No foam may be pressed out of the barrel when filling.** **In the event of contamination, read the safety data sheet or consult a doctor immediately.**

⚠ ATTENTION

Working with pesticides

Poisoning of the body when working with pesticides

» Plant protection products may only be processed by competent persons.

» Read the instructions for use and the safety data sheet for the preparation and observe and adhere to the protective measures listed.

» For safe operation, observe the operating instructions for the device.

» The device must be adapted to the conditions: population, weather and preparation.

» Wear PPE in accordance with the instructions for use and the safety data sheet for the preparation.

» Only funds approved by the JKI may be used.

» Use only approved containers.

» Getting into the barrel is prohibited.

» Do not exceed the nominal volume when filling the container.

» Only cabin tugs may be used to tow the machine during spreading.

» Cabin tugs must be equipped with an activated carbon filter for the interior.

» Nobody is allowed to be outside the machine during application.

» Always switch off the application of the PSM before leaving the tractor. Put on your PPE again.

» Take off protective clothing in the tractor and clean your hands before entering the driver‘s cab.

» In the case of gassing preparations, wear respiratory protection in the tractor as well.

» When servicing the air filter and the cabin filter, observe the operating instructions for the towing / carrier vehicle and the safety data sheet for the product.

» Select the cabin filter of the tractor based on the safety data sheet for all preparations to be used.

» Rinse emptied preparation containers carefully and add the rinsing water to the contents of the barrel (canister rinsing in the induction center).

» If the driver‘s cab of the tractor is contaminated, clean the interior.

In the event of symptoms of poisoning, immediately provide first aid and consult a doctor. Have the safety data sheet ready

NOTE

Filling the tank

Damage to the tank

» During the filling process, no air may be forced into the barrel via the suction hose or the induction center.

» Do not exceed the maximum filling quantity of 1000 l/min.

Apply the measures of the plant protection product manufacturer.

INFO

» Never leave the machine unattended when filling.

» Avoid foaming. Switch off the RRW when filling (automatically with TANK-Control below 400 l, otherwise manually) When filling, no foam must be pressed out of the barrel - environmental pollution. If necessary, use foam stop, see instructions from the plant protection product manufacturer.

» Use only suction hoses with a non-return valve.

7. 1 Parking brake

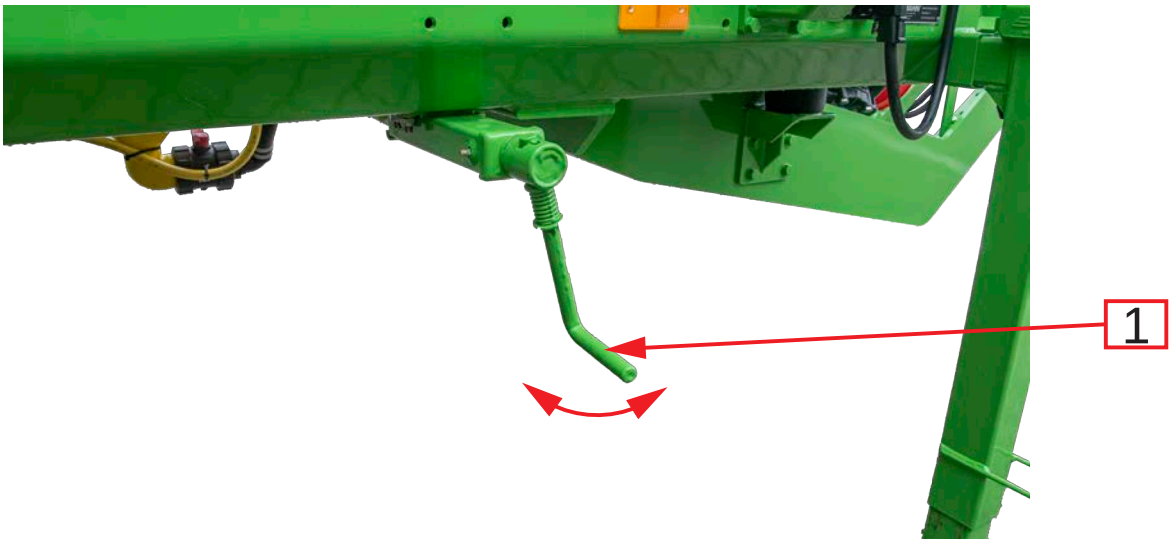


Abb. 49. Parking brake

Pos.	Description	Pos.	Description
1	Parking brake		

Procedure
1. To operate the parking brake, turn the crank clockwise.
2. To release the parking brake, turn the crank counterclockwise.

7. 2 Adjust the brake system to the load

⚠ WARNING

Maneuvering the trailed sprayer

Risk of crushing the body

» Only use the „maneuvering“ position for maneuvering work!

» After the maneuvering work, set the lever to another of the three positions!

In the event of injuries, immediately give first aid and consult a doctor.

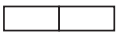
INFO

Does not apply to tandem units, as an LSV controller takes over the control.

Brake system must be adapted to the load condition of the trailed sprayer. The brake force regulator is attached below the stem.

Abb. 50. Brake force regulator

Choose one of the following three levels:

Pos.	Condition	Pos.	Condition
	Empty		Maneuvering (the parking brake‘s spring accumulators are released in this position).
	Half full		
	Fully loaded		

7. 3 Use the ladder of the trailed sprayer

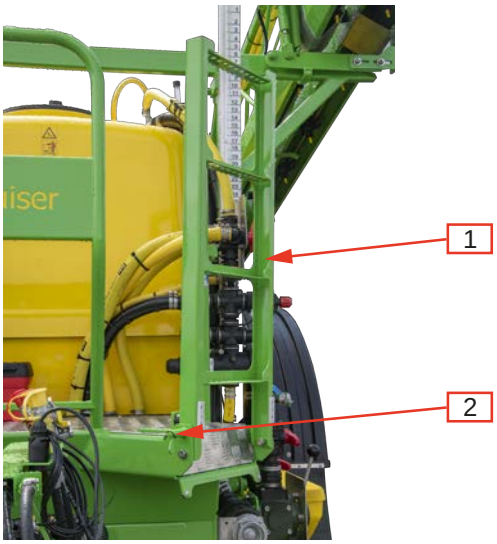


Abb. 51. Aufstieg

Pos.	Description	Pos.	Description
1	Lock	2	Ladder

7. 3. 1 Fold down the ladder

Procedure
1. Open the safety devices on the left on the ascent.
2. Fold down the ladder.

7. 3. 2 Fold up the ladder

Procedure
1. Fold up the ladder.
2. Close the safety devices on the left of the ladder.

7. 4 Wheel chocks

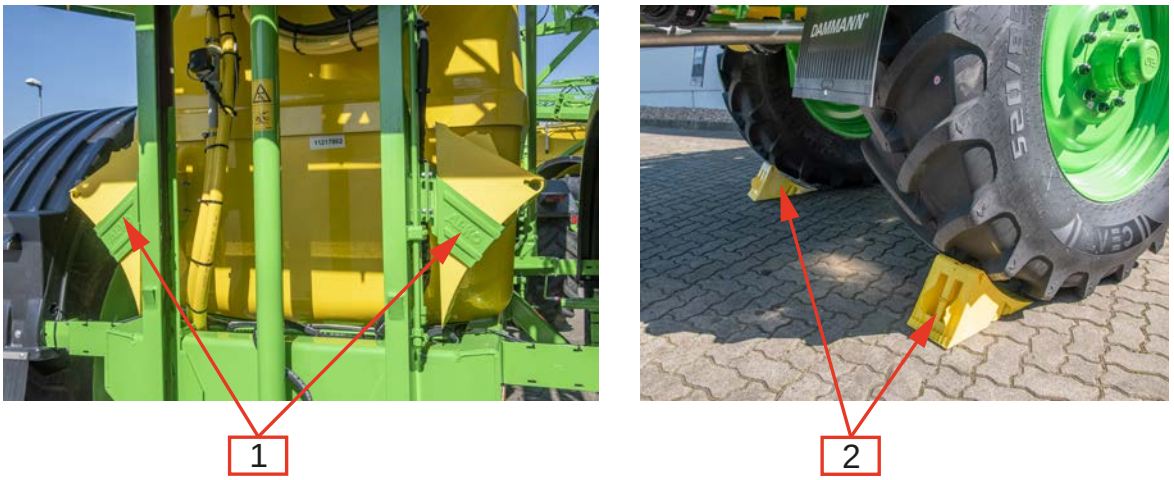


Abb. 52. Unterlegkeile

Pos.	Description	Pos.	Description
1	Holder	2	Wheel chocks

Procedure
1. Take wheel chocks out of the brackets (1).
2. Place wheel chocks (2) in front of the wheel.

7. 5 Filling the tank

7. 5. 1 Level indicators

Various level indicators are available:

» **Fill level via acrylic glass tube** – Always keep an eye on each filling. The level indicator shows the height of the float: the fuller the barrel, the further down the indicator in the acrylic glass tube.

» **Tank-Control** – Indicates filling on a display device and in the control unit. Observe the fill level when filling.

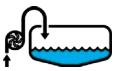
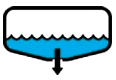
» **proControl** – Displays the filling on the proControl as well as in the control unit. Observe the fill level when filling.

» **EasyControl** – Shows the filling on the EasyControl as well as in the control unit. Observe the fill level when filling.

INFO

In the case of devices with a filling stop, the filling process is automatically ended when the maximum filling level is reached.

7. 5. 2 Filling with the pump

Procedure	Keys/Lever
1. Remove the blind cap from the suction opening.	
2. Connect the suction hose to the suction connection.	
3. Close the two-way valve for the injector.	
4. Set the suction fitting to the „Filling“ position (S2.1).	
5. Increase pump speed - up to maximum nominal speed (idle gas increase).	
6. Pay attention to the filling level until the desired amount is reached.	
7. Set the suction fitting to the „Operation“ position (S2.0).	
8. Lower the pump speed.	
9. Uncouple the suction hose.	
10. Close the suction opening with the blind cap.	

7. 5. 3 Filling via the filling dome in free fall

Filling the tank from a high tank, water pipe or via an external pump. Make sure that the hose is fixed 20 cm above the filling opening - prevents backflow into the water system.

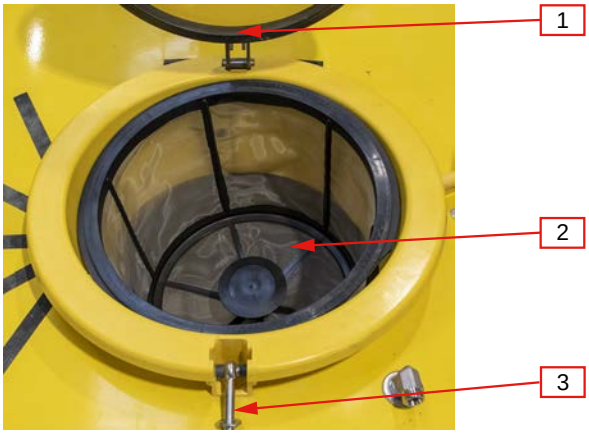


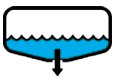
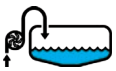
Abb. 53. Filling via filling dome

Pos.	Description	Pos.	Description
1	Cover	2	Dome sieve
3	Locking		

Procedure
1. Open the cover (1) on the front filling dome.
2. Check whether the dome screen (2) is correctly inserted.
3. Pay attention to the filling level until the desired amount is reached.
4. Close the filling dome again, making sure that the seal is correctly positioned.

7. 5. 4 Filling with an injector

Use the filling type only when the container is partially full.

Procedure	Keys/Lever
1. Remove the blind cap from the suction opening.	
2. Connect the suction hose to the suction connection.	
3. Set the suction fitting to the „Filling“ position (S2.1).	
4. Set the program selection tap to the „Injector suction“ position (S1.1).	
5. Increase the pump speed - up to the maximum nominal speed (idle gas increase).	
6. Open the two-way cock in the injector suction pipe.	
7. Pay attention to the filling level until the desired amount is reached.	
8. Close the two-way cock in the injector suction pipe.	
9. Lower the pump speed.	
10. Close sections on the control terminal.	
11. Set the program selection tap to „Spraying with stirring“ (S1.0).	
12. Uncouple the suction hose.	
13. Close the suction opening with the blind cap.	

7. 5. 5 Combined filling with pump and injector

For faster filling of the barrel, first let the agent suck in via the pump and then turn the program tap to the injector.

7. 5. 6 Filling via external filling connection into the tank (option)

The tank is filled via a direct pipe. A separate pump or high tank is required for this.

Procedure
1. Remove the blind cap from the external filling connection.
2. Connect the filling hose to the coupling piece of the external filling connection.
3. Open the two-way valve in the external filling connection.
4. Pay attention to the filling level until the desired amount is reached.
5. Close the two-way cock on the external filling connection.
6. Uncouple the filling hose.
7. Close external filling connection.

7. 5. 7 Filling via the hydrant filling connection into the tank (option)

The tank is filled via a direct pipe. This type of filling requires a hydrant.

Procedure
1. Remove the blind cap from the hydrant filling connection.
2. Connect the filling hose to the coupling piece of the hydrant filling connection.
3. Pay attention to the filling level until the desired amount is reached.
4. Uncouple the filling hose.
5. Close the filling pipe.

7. 6 Filling the fresh water tank

Use clean fresh water to clean the tank and the spray system. The level indicator shows the direct height of the water level.

7. 6. 1 Fresh water tank filling at the three-way cock of the suction fitting

Procedure
1. Remove the Geka® blind coupling for the fresh water supply line.
2. Connect the hose to the Geka® coupling.
3. Turn on the water.
4. Open the ball valve to fill the fresh water tank.
5. Pay attention to the display of the fresh water tank.
6. When the fresh water tank is full, close the ball valve to fill the fresh water tank.
7. Shut-off water.
8. Disconnect the hose from the Geka® coupling.
9. Close the filling connection with the Geka® blind coupling.

7. 6. 2 Fresh water tank filling via filling dome

⚠ WARNING

Height workplace
Risk of falling and head injuries
» Carefully enter the porch and the barrel.
» Only enter non-slip areas on the barrel.
» Wear anti-slip safety shoes.
» Do not enter the tank during a thunderstorm.
» Do not step on the barrel when the machine is under a power line.
In the event of injuries, immediately give first aid and consult a doctor.

The fresh water tank can also be filled via the filling dome. Make sure that no dirt gets into the tank.

Procedure
1. Close the three-way valve for the fresh water tank.
2. Open the screw connection of the filling dome for the fresh water tank.
3. Fill the fresh water tank.
4. Close the filler dome for the fresh water tank again.

7. 7 Mixing the crop protection agent

⚠ ATTENTION

Working with pesticides
Poisoning of the body
» Plant protection products may only be processed by trained people.
» Pay attention to the instructions of the plant protection product manufacturer.
» Wear PPE.
» Only funds approved by the JKI may be used.
» Use only approved containers.
» Getting into the tank is prohibited.
Consult a doctor immediately in the event of symptoms of poisoning

INFO
There are several options for introducing pesticides.

7. 7. 1 Introduction of pesticides via the filling dome

⚠ WARNING	
	***Height workplace*** *Risk of falling* » Carefully enter the porch and the barrel. » The upper barrel may only be cleaned with a work platform. » Wear anti-slip safety shoes. » Do not step onto the porch during a thunderstorm. » Do not step on the barrel when the machine is under a power line. **In the event of injuries, immediately give first aid and consult a doctor.**

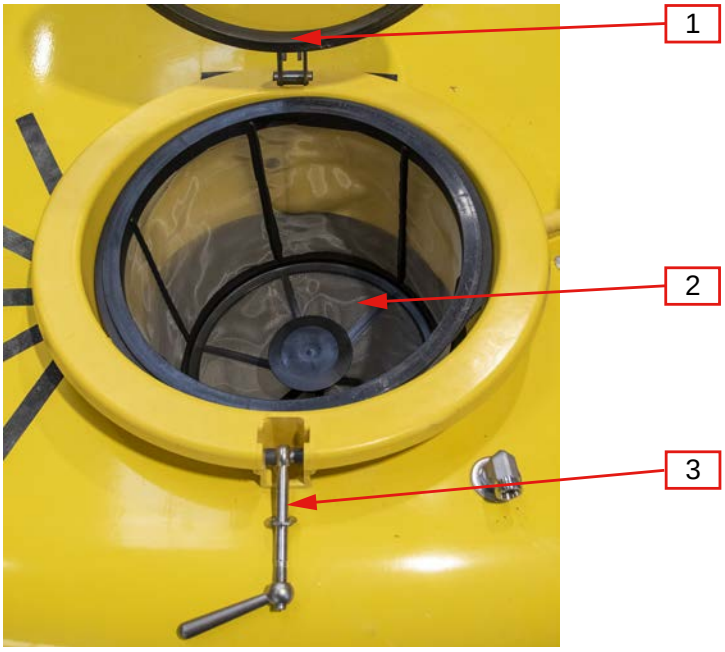


Abb. 54. Introduction via the filling dome

Pos.	Description	Pos.	Description
1	Tank	2	Dome sieve
3	Locking		

Procedure
1. Open the screw connection on the front filling dome.
2. Check whether the dome screen is correctly inserted.
3. Fill in measured crop protection agent.
4. Close the filling dome again and make sure that the seal is correctly positioned.

7. 7. 2 Introduction of pesticides via the 30 L induction center

Operation

Use the induction hopper (ESZ) during filling if possible so that fresh water is available at the ESZ.

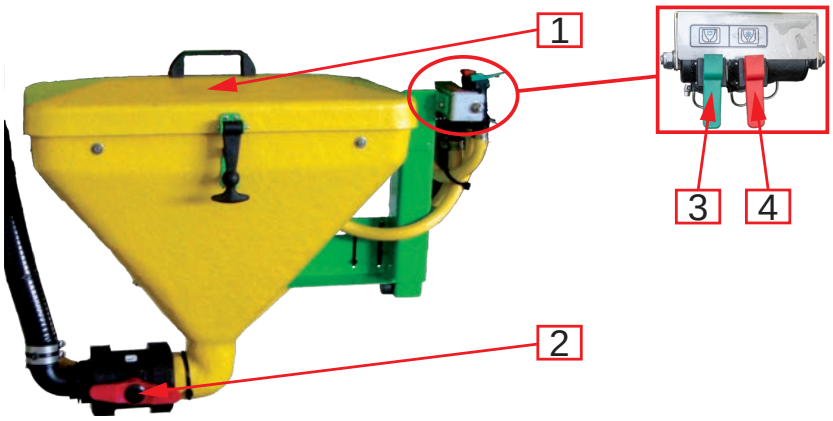
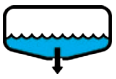
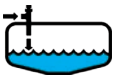


Abb. 55. Induction hopper 30 liters (key assignment depending on version)

Pos.	Description	Pos.	Description
1	Lid	2	Stopcock for induction hopper to the tank
3	Ring flush	4	Canister flush

Procedure	
1. Close the shut-off valve (2).	
2. Close the two-way cock on the injector suction connection.	
3. Set the suction tap to the „Operation“ position (S2.0).	
4. Set the program tap to the „injector suction“ position (S1.1).	
5. Open the cover (1).	
6. Pour in the pesticide in measured quantities.	
7. Open the shut-off valve (2). The pesticide is sucked into the barrel.	
8. Operate the ring flush line (3). Supports the suction of the pesticide into the barrel.	
9. Set the program tap to „stir vigorously“ (S1.2).	

The induction hopper attached to the side serves as an intermediate container for pesticides.

The desired means can be placed in the induction hopper

- »measured
- »dissolved and

can then be sucked into the tank.

Suction takes place via an injector. Liquids, granulates and powders can be extracted.

If granules and powder are used, an additional water rinse must be carried out.

After completion, rinse the induction center with clear water. This also includes the suction hose up to the injector.

Make sure that the stopcock of the induction center is closed.

Introduction of pesticides via the dispensing center 60 L

Use the induction center (ESZ) during filling if possible so that fresh water is available at the ESZ.

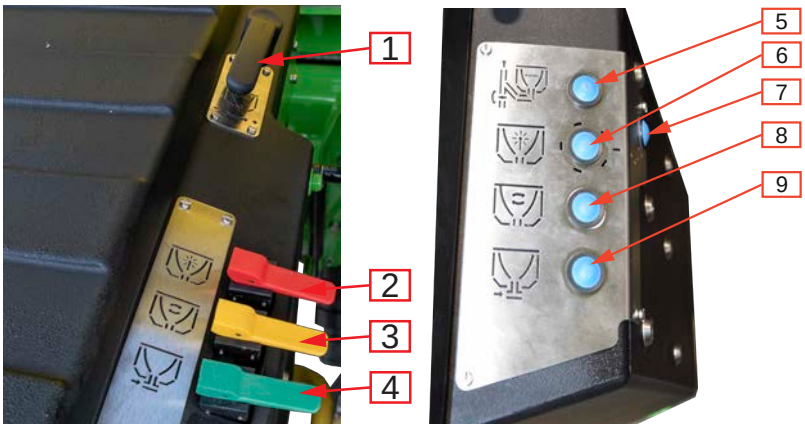


Abb. 56. Dispenser center 60 liters (key assignment depending on version)

Pos.	Description	Pos.	Description
1	Stopcock for the induction center in the tank	2	Stopcock canister flushing
3	Flushing the ring main	4	Push nozzle
5	Injector suction	6	Canister flush
7	Canister flush release button	8	Flushing the ring main
9	Suction induction hopper		

Procedure
1. Operate the lever (1) in the direction of the arrow. Pour the liquid into the drum.
2. Operate the red lever (2) to rinse the canister.
3. Operate the yellow lever (3) to rinse the ring main.
4. Operate the green lever (4) for the push nozzle.

The induction hopper attached to the side serves as an intermediate container for pesticides.

The desired means can be placed in the induction hopper

» measured

» dissolved and

can then be sucked into the tank.

Suction takes place via an injector. Liquids, granulates and powders can be extracted.

If granules and powder are used, an additional water rinse must be carried out.

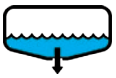
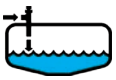
After completion, rinse the induction center with clear water. This also includes the suction hose up to the injector.

Make sure that the stopcock of the induction center is closed.

7. 7. 3 Sucking in solids into the tank

⚠ ATTENTION	
	***Working with pesticides*** *Poisoning of the body through foaming of the pesticide* » Avoid foam formation by regulating the stopcock. » Avoid sucking in air. **Consult a doctor immediately in the event of symptoms of poisoning**

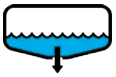
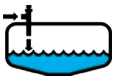
By sucking in the injector, granules and powder can also be sucked into the barrel.

Procedure	Keys/Lever
1. Make sure that the stopcock of the induction center is closed.	
2. Open the lock of the induction center and fold down the induction hopper.	
3. Close the two-way cock on the injector suction connection.	
4. If there is currently no filling, set the suction fitting to the „Operation“ position (S2.0).	
5. Set the program selection tap to the „Injector suction“ position (S1.1).	
6. Pour in the pesticide in measured quantities.	
7. Open the shut-off valve of the induction center so that no air is sucked in. Pesticides are sucked into the barrel.	
8. Operate the folding lever next to the induction center for the circular flush line. This supports the suction of pesticides into the barrel.	

Procedure	Keys/Lever
9. In the event of blockages, close the shut-off valve and actuate the folding lever for the push nozzle. Water is fed into the induction center from below and blockages are loosened.	
10. Open the shut-off valve again, continue the suction process. Perform more often if necessary.	
11. Set the program selector tap to „stir vigorously“ (S1.2).	
12. Fold the induction center up again and let the safety catch engage.	

7. 7. 4 Canister flush

Canister flushing cleans canisters of pesticides.

Procedure	Keys/Lever
Put the canister over the canister flushing nozzle.	
Make sure that the stopcock of the induction center is closed.	
Close the two-way cock on the injector suction connection.	
Set the suction fitting to the „Operation“ position (S2.0) when it is not being filled.	
Set the program selection tap to the „Injector suction“ position (S1.1).	
Fix or hold the canister.	
Operate the folding lever next to the induction center for the canister flush line (2) until the canister is clean.	
Remove the canister from the nozzle.	
Open the shut-off valve below the induction center so that no air is sucked in.	
Allow the induction center and suction hose to vacuum clean.	
Close the stopcock below the induction center.	

7. 8 Washing device for hands

⚠ ATTENTION	
	***No drinking water*** *Risk of infection to the body* » The water from the hand washing facility‘s container is not drinking water. **Call a doctor immediately**

The hand washing device is used exclusively for cleaning hands.

7. 8. 1 Filling the hand washing container

Only take fresh water from the water supply line.

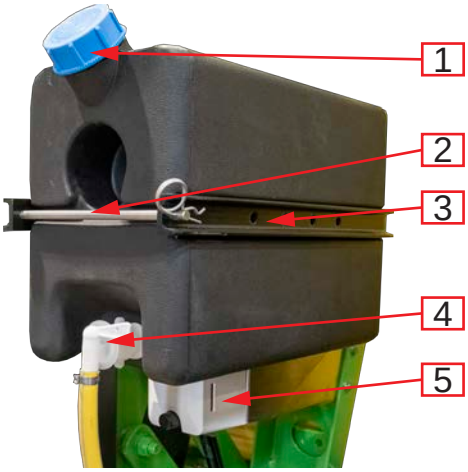


Abb. 57. Hand washing container

Pos.	Description	Pos.	Description
1	Screw cap	2	Locking
3	Holder	4	Outlet tap
5	Soap dispenser		

If necessary, take the hand washing container out of the holder (3) to fill it up.

Procedure
1. Unscrew the lid (1) of the hand washing container.
2. Fill in clear fresh water.
3. Screw the cover back on.

7. 8. 2 Using the hand washing container

Water in the hand washing container is intended for cleaning hands after mixing pesticides.

Procedure
1. Open the drain cock (3).
2. Wash hands with soap.
3. Close the tap.

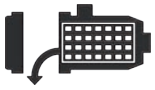
7. 9 Drain the remaining amount from the machine

Drain residual amounts of the pesticide from the barrel at the end of the use. Otherwise the machine can be damaged by pesticides.

Procedure	Keys/Lever
1. Remove the Kamlock blind cap from the drain cock.	
2. Connect the hose.	
3. Set the suction fitting to „Filter cleaning/blocking“ (S2.3).	
4. Only pour pesticides into a suitable container.	
5. Open the shut-off valve on the Kamlock coupling.	
6. Drain and check the contents of the keg until the keg is empty.	
7. Close the shut-off valve again.	
8. Remove the hose.	
9. Close the Kamlock coupling again with the Kamlock blind cap.	
10. Clean the machine.	

7. 10 Transfer to other machines

A separate pump is required to transfer the contents of the keg to other machines.

Procedure	Keys/Lever
1. Remove the Kamlock blind cap from the drain port.	
2. Open the filling dome of the keg so that no negative pressure can develop.	
3. Connect the hose.	
4. Set the suction fitting to „Filter cleaning / blocking“ (S2.3).	

5. Make sure that the contents of the keg are directed into a suitable container.
6. Open the shut-off valve on the Kamlock coupling.
7. Check the delivery rate.
8. Close the shut-off valve again.
9. Remove the hose.
10. Close the Kamlock coupling again with the Kamlock blind cap.
11. Clean the machine.

7. 11 Rotating agitator (RRW)

7. 11. 1 Manual operation of the rotating agitator

RRW is operated via a program valve.

Stir the tank contents vigorously

Procedure	Keys/Lever
1. Set the program tap to „stir vigorously“.	

» Full pump capacity is fed to the agitator, the pump speed is reduced.
» The agitator shaft swivels depending on the filling level in the lower drum area.

Stir the tank contents gently

Procedure	Keys/Lever
1. Set the program tap to „spraying with stirring“.	

» Part of the pumping power is fed to the agitator during spraying.
» When the level is low, the agitator switches off.
» Depending on the fill level, the agitator shaft swivels in the lower area of the tank.

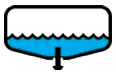
7. 12 Nozzle change on the nozzle holder

Change of nozzles on the nozzle carrier:

Procedure
1. Press the nozzle lightly against the nozzle holder.
2. Turn the nozzle counter-clockwise.
3. Pull the nozzle off the nozzle holder.
4. Put the new nozzle on the nozzle holder.
5. Turn the nozzle clockwise as far as it will go.
Note the nozzle tables from various manufacturers in the appendix.

7. 13 Settings of the taps for the application

Perform the following for application:

Procedure	Keys/Lever
1. Switch on the control terminal.	
2. Switch off the main section switch.	
3. Switch the suction tap to „Operation“ (S2.0).	
4. Switch the program selection tap to „spraying with stirring“ (S1.0).	
5. Start the pump.	
6. Select sections.	
7. Switch on the main section switch.	
The application itself is controlled via the operator terminal.	

7. 14 Folding out/in and raising/lowering the boom without a control block

NOTE	
	***Folding process*** *Machine damage* » Always fold the boom in or out completely. **Repair by HERBERT DAMMANN GmbH or an authorized specialist workshop.**

INFO
Observe the tractor operating instructions.

The boom can only be unfolded when the lift mast is raised all the way up. The transport lock is then also opened.

It is controlled via the tractor‘s double-acting hydraulics. The boom then folds out by itself.

The tractor‘s EW hydraulics are used to adjust the spray height, but also to fold the boom in and out.

Procedure
1. Fold out the boom using the tractor hydraulics.
2. Lower the boom to the spraying height.

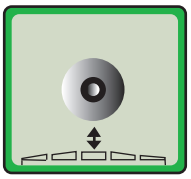
8. Sprayer operation with SPRAYDOS

8. 1. Using the SPRAYDOS operator terminal

The SPRAYDOS is set by HERBERT DAMMANN GmbH at the factory to the nozzles and sections supplied. For further settings, refer to the manufacturer‘s installation and operating instructions supplied.

8. 1. 1. Raising and lowering the boom with SPRAYDOS

If the machine has a hydraulic control block, the boom is raised and lowered using the SPRAYDOS. This is an optional extra.

Procedure	Switch
1. Raise or lower the boom with the switch. » Up = lift » Down = lower	

8. 1. 2. Folding the boom out and in with SPRAYDOS

If the machine has a hydraulic control block, the folding and unfolding of the boom is carried out via the SPRAYDOS.

Procedure	Switch
1. Raise or lower the boom with the switch. » Up = fold out » Down = scalp in	

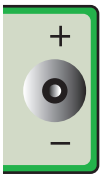
8. 1. 3. Part-width main switch and part-width sections via the SPRAYDOS

There is a main switch and a separate switch for each section.

Procedure	Switch
1. Preselect the desired sections with the switches.	
2. Switch the sections on / off with the switch. » Sections are arranged from left to right in the direction of travel.	
The number depends on the equipment and can vary.	

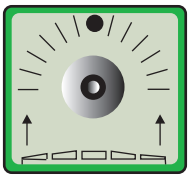
8. 1. 4. Manual operation of spraying

The SPRAYDOS can also be switched to manual mode.

Procedure	Switch
1. Use the switch to choose between manual/automatic.	
2. Use the switch to increase / decrease spray pressure.	

8. 1. 5. Operating the slope compensation

The slope compensation of the boom is controlled via the SPRAYDOS rotary switch. The switch is on the top left and the steps vary depending on the boom width.

Procedure	Switch
1. Use the rotary switch to control the slope compensation. » Middle position = boom horizontal » To the left = linkage goes lower on the left » To the right = linkage goes deeper on the right	

8. 1. 6. Switching on the work lights on the sprayer boom (option)

Procedure	Switch
1. Use the switch to switch the work lights on / off.	

8. 1. 7. Switching on the foam marking with the spray can (option)

Procedure	Switch
1. Use the switch to switch the work lights on/off.	

8. 1. 8. Switching on the edge / additional nozzles with the spray cans (option)

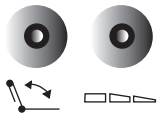
Additional edge nozzles can be controlled via the SPRAYDOS if they are not controlled with the section control.

Procedure	Switch
1. Use the switch to switch the additional nozzles on / off.	

8. 1. 9. Special folding with the SPRAYDOS (option)

With the SPRAYDOS, special folding can be controlled via the following switches.

Procedure	Switch
1. Use the switch to switch the additional nozzles on / off.	

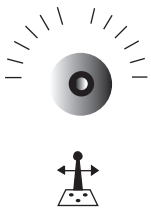


Depending on the version, the linkage is controlled.

8. 1. 10. Control of the steering drawbar with the SPRAYDOS

The steering drawbar can be controlled manually via the SPRAYDOS if it is not controlled via a separate terminal.

The road traffic regulations must be observed. When driving on the road, the drawbar must be in the middle position.



A rotary switch is used to determine the direction of the tiller.

8. 2. *Pressure circulation flushing (option)*

The Land-Cruiser trailed sprayer can also be equipped with a pressurized circulation flushing system in order to have the pressure on the nozzles faster. In the variant with the piston diaphragm pump AR 250 bp, an additional switch is attached to switch the pressure circulation purging on and off, otherwise the pump will draw air.

⚠ ATTENTION

Working with pesticides

Poisoning of the body through foaming of the pesticide.

» Avoid foam formation by switching off the pressure circulation flush when filling the keg.

» Avoid sucking in air.

Call a doctor immediately

The following matrix shows at which position of the program tap and suction tap the pressure circulation flushing may be switched on.

		Program tap (S 1)			
		Splash with stirring (S 1.0)	Injector suction (S 1.1)	Vigorous stirring (S 1.2)	Barrel cleaning (S 1.3)
Suction tap (S 2)	Operation (S 2.0)	ON	OFF	OFF	OFF
	Fill (S 2.1)	OFF	OFF	OFF	OFF
	Fresh water (S 2.2)	OFF	OFF	OFF	OFF
	Filter cleaning / locking (S 2.3)	OFF	OFF	OFF	OFF

When cleaning the machine, it does not have to be switched off immediately, but there is a loss of pressure at the cleaning nozzles of the drum.

8. 3. Manual adjustment of the triple nozzle holder

The machine is equipped with a triple nozzle holder, which allows you to quickly switch between different nozzles without having to convert all nozzles. Nozzles are usually color-coded, see also the colors in the spray tables.

Turn the nozzle holder until the desired nozzle is down and clicked into place.

8. 4. Changing the nozzles on the triple nozzle holder

To change nozzles on the triple nozzle holder, do the following.

1. Turn the nozzle holder so that the nozzle to be exchanged is at the bottom.
2. Press the nozzle lightly against the nozzle holder.
3. Turn the nozzle counterclockwise.
4. Pull the nozzle off the nozzle holder.
5. Place the new nozzle on the nozzle holder.
6. Turn the nozzle clockwise until it stops.

Nozzle tables from various manufacturers can be found in the appendix.

8. 5. Equipping the triple nozzle holder with nozzles

The machine is shipped from the factory with only one type of nozzle. To mount more nozzles, do the following.

1. Turn the triple nozzle holder so that a free nozzle holder is at the bottom.
2. Place the nozzle on the nozzle holder.
3. Turn the nozzle clockwise until it stops.

In the appendix there are nozzle tables from various manufacturers.

8. 6. Control of the pump with the PTO shaft

The machine‘s pump is controlled by the PTO shaft.

1. Connect the PTO shaft to the tractor and the pump.
2. Start the tractor and select the required PTO speed.
3. Switch on the PTO in idle.

The pump output depends on the speed of the PTO shaft.

9. Sprayer operation with JRIII/JR MIDI

The following chapter explains the steps for setting, calibrating and switching the functions. The starting mask is the starting point. The illustrations and arrangement of the softkeys may vary depending on the control unit and equipment. Return to the start screen as follows:

Procedure	Softkey/Lever
1. Return to the start screen by pressing and holding the Softkeys.	

9. 1 Control the boom

⚠ WARNING

Reduced stability when cornering with the boom raised

Risk of the machine tipping over

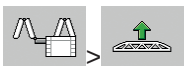
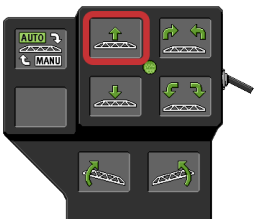
» Adjust the speed when driving with the boom raised (e.g. headland).

In the event of injuries, immediately provide first aid and consult a doctor.

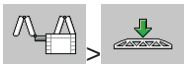
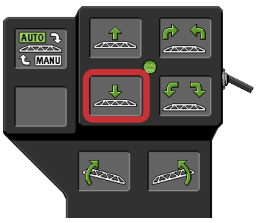
INFO

It is operated via a joystick, but can also be carried out via the fold-out mask.

9. 1. 1 Raise the boom

Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey. 2. Softkey „Gestänge heben“ drücken und halten.	
3. Press the side lever on the joystick down and hold it. 4. Press the „Raise boom“ button on the joystick and hold.	

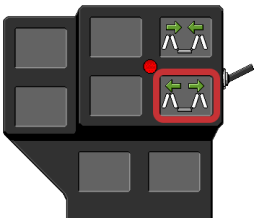
9. 1. 2 Lower the boom

Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey. 2. Press and hold the „Lower boom“ softkey.	
3. Press the side lever on the joystick down and hold it. 4. Press and hold the „Lower boom“ button on the joystick.	

9. 1. 3 Unfold the boom

INFO

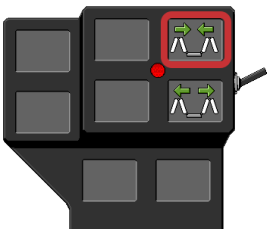
Folding is only possible if there is a linkage in the catch hook. Always fold completely without stopping.

Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey. 2. Press and hold the „Unfold boom“ softkey.	
3. Push the side lever on the joystick up and hold it. 4. Press and hold the „Fold out boom“ button on the joystick.	

9. 1. 4 Fold in the boom

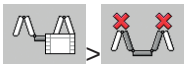
INFO

Folding is only possible; if there is a linkage in the catch hook. Always fold completely without stopping.

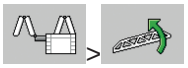
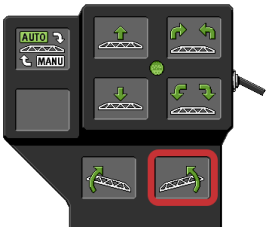
Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey. 2. Press and hold the „Fold in boom“ softkey.	
3. Push the side lever on the joystick up and hold it. 4. Press and hold the „Fold in boom“ button on the joystick.	

9. 1. 5 Boom with special folding

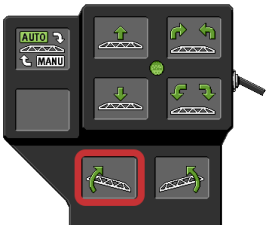
With the special folding the boom parts are not unfolded.

Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey. 2. Press the „Special folding on“ softkey and turn on.	
3. Press the „Folding mask“ softkey. 4. Press the „Special folding off“ softkey and turn off.	

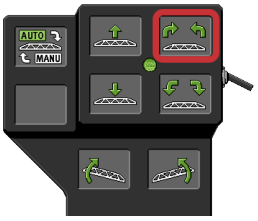
9. 1. 6 Tilt the boom to the right

Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey. 2. Press and hold the „Tilt boom left“ softkey.	
3. Press the side lever on the joystick down and hold it. 4. Press the „Tilt boom left“ button on the joystick and hold.	

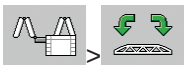
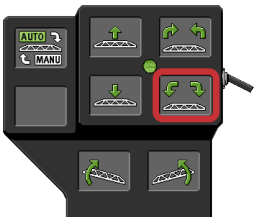
9. 1. 7 Tilt the boom to the left

Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey. 2. Press and hold the „Tilt boom to the right“ softkey.	
3. Press the side lever on the joystick down and hold it. 4. Press and hold the joystick button „Tilt boom to the right“.	

9. 1. 8 Angle the boom symmetrically

Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey. 2. Press and hold the „Angle boom“ softkey.	
3. Press the side lever on the joystick down and hold it. 4. Press the „Angle boom“ button on the joystick and hold.	

9. 1. 9 Bend the boom symmetrically

Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey. 2. Press and hold the „Bend boom“ softkey.	
3. Press the side lever on the joystick down and hold it. 4. Press the „Bend boom“ button on the joystick and hold.	

9. 2 Start application

Procedure	Softkey/Lever
1. Unfold the boom.	
2. Start application with the softkey.	

9. 2. 1 Select the application method Auto / Manual

Procedure	Softkey/Lever
1. Select the application method with the „AUTO / MANU application“ softkey. => Automatically or manually	

 = Manual application display

 = Display of automatic application with display of the target value

 = No regulation

 = Display of automatic application (standby). Example: the device is stationary.

 = Display of automatic application. Example: the device is stationary.

9. 2. 2 Change application in manual mode

Procedure	Softkey/Lever
1. Use the softkey to increase or decrease the output by 10%.	

9. 2. 3 Change application in automatic mode

Procedure	Softkey/Lever
1. Increase output by 10% with the softkey or reduce.	
2. Use the softkey to restore the application to 100%.	

9. 3 Calling up the results

Procedure	Softkey/Lever
1. Press the „Results“ softkey.	

9. 3. 1 Stop the result counter

Procedure	Softkey/Lever
1. Press the „Results“ softkey.	

INFO

Result counter can also be deactivated. If the day counter is deactivated, the symbol appears flashing on the start screen  .

9. 3. 2 Clear results

Procedure	Softkey/Lever
1. Press the „Results“ softkey.	
2. Delete entries with the following softkeys: » Delete with the „Quantity“/„Area“/„Distance“/„Working time“ or „Total day counter“ softkey.	

9. 3. 3 Call up total counter

Procedure	Softkey/Lever
1. Press the „Results“ softkey. Use the „Next“ softkey to switch to the totalizer.	

INFO
Total counter cannot be cleared or deactivated.

9. 4 Use the Joystick

9. 4. 1 Operate the joystick

Functions of the device can be activated and deactivated with the joystick.

For example:

» Open the main valve

» Switch off sections from left to right

» Manually raise and lower the boom.

Each key has three functions. The function that is performed when a button is pressed depends on the position of the switch on the side.

Position of the switch	LED color
	Red
	Yellow
	Green

The key assignment depends on the configuration of the device.

This is how the joystick is operated:

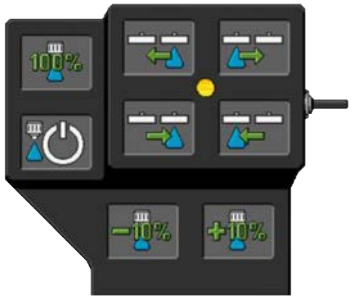
☐ The work screen is called up.

1. Move the side switch to the desired position and hold it there. The LED on the joystick lights up in the corresponding color.

Press the key with the desired function. Function is carried out.

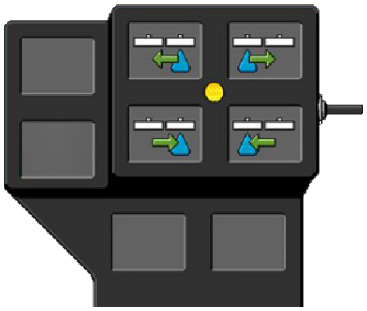
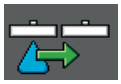
9. 4. 2 Application with joystick (option)

Use and assignment of the joystick for spreading

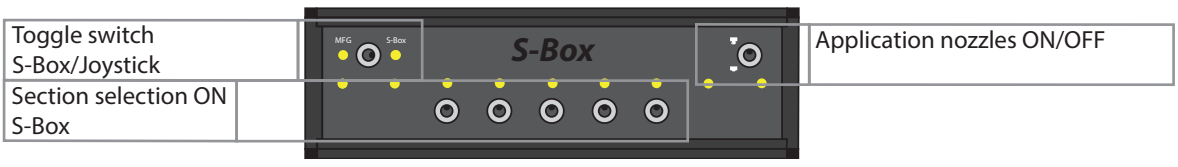
	Symbol	Function
		Opens all active sections.
		Increases the target value by 1 g/m².
		Reduces the target value by 1g/m².
		Restores the setpoint from 100%.

9. 4. 3 Operate sections with the joystick

The joystick is primarily used to operate this function. To operate the respective function, use the following buttons:

	Symbol	Function
		Open section from right to left **Or:** When all sections are closed, the first section from the right opens.
		Open section from left to right **Or:** When all sections are closed, the first section from the left opens.
		Close section to the right.
		Close section to the left

9. 5 Use S-Box (option)



9. 6 Additional functions

9. 6. 1 Show extended spray data

Procedure	Softkey/Lever
1. Press the „Extended spray data“ softkey.	

The tank next to the barrel content also shows how many hectares / kilometer can still be achieved with the set target value.

 = Display in the „liters per minute“ sub-area

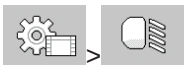
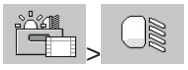
 = Display in the sub-area „hectares per hour“

Procedure	Softkey/Lever
2. Hide with the „Extended spray data“ softkey.	

9. 6. 2 Switch work lights ON / OFF

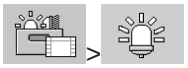
INFO

Depending on the configuration of the JRIII, the work lighting can be switched in different masks and have different symbols.

Procedure	Softkey/Lever
1. Press the „Work lighting“ softkey directly on the work screen and switch it on / off **Or:**	
2. Switch to the second mask with the „Next“ softkey. 3. Switch on / off with the „Work lighting“ softkey on the work screen. **Or:**	
4. Use the „Machine data“ softkey to go to the first mask (1/5) switch. 5. Press the „Work lighting“ softkey and switch on/off. **Or:**	
6. Press the „Additional equipment“ softkey. 7. Press the „Work lighting“ softkey and switch on/turn off.	

9. 6. 3 Switch rotating beacon ON/OFF

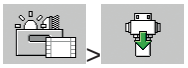
INFO
Just a preparation: Note that use may be prohibited on public roads and in the country of use!

Procedure	Softkey/Lever
1. Press the „Additional equipment“ softkey. 2. Press the „rotating beacon“ softkey and switch it on/off.	

9. 6. 4 Pressure filter flushing

The pressure filter rinsing always starts in manual mode and should remain activated permanently.

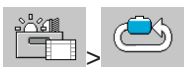
Manual mode	=	Permanent flushing of the pressure filter
Automatic mode	=	Rinsing only when the nozzles are closed
Automatic mode under 50 l tank content	=	No pressure filter flushing

Procedure	Softkey/Lever
1. Press the „Additional equipment“ softkey. 2. Press the „Pressure filter flushing“ softkey and choose between automatic and manual.	

 = Automatic mode display. Activation automatically upon application

 = Manual mode display. Deactivation of flushing with open nozzles.

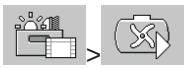
9. 6. 5 Ring line

Procedure	Softkey/Lever
1. Press the „Additional equipment“ softkey. 2. Press the „Ring line“ softkey and choose between automatic or manual.	

 = Display ring line active.

9. 6. 6 Agitator

INFO
The agitator can be deactivated when large amounts are applied. The agitator switches off when the drum content is less than 400 l.

Procedure	Softkey/Lever
1. Press the „Additional equipment“ softkey. 2. Press the „Agitator“ softkey and activate/deactivate.	

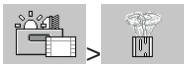
 = Agitator activated

 = Flashing display: fill level too low, agitator automatically deactivated

 = Agitator display deactivated

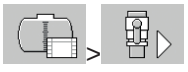
9. 6. 7 Pneumatic discharge line drainage

The pneumatic pressure line emptying empties the pressure line with compressed air. The agitator, ring line and filter flushing are closed / switched off. The constant pressure membrane body closes the return line in order to transport the full pneumatic pressure through the nozzle line.

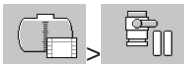
Procedure	Softkey/Lever
1. Press the „Additional equipment“ softkey. 2. Press the „Agitator“ softkey and activate/deactivate.	
3. Open the safety tap.	
4. Empty the line.	
5. Close the safety tap.	

9. 6. 8 Automatic filling stop

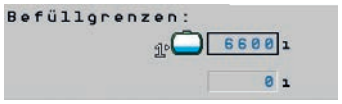
9. 6. 8. 1. Activate filling stop

Procedure	Softkey/Lever
1. Press the „Filling stop“ softkey. 2. Press the „Start filling stop“ softkey and activate it.	

9. 6. 8. 2. Deactivate filling stop

Procedure	Softkey/Lever
1. Press the „Filling stop“ softkey. 2. Press the „Start filling stop“ softkey and deactivate it.	

9. 6. 8. 3. Befüllgrenze eingeben

Procedure	Softkey/Lever
1. Press the „Filling stop“ softkey.	
2. Enter filling limits with the rotary knob/by tapping choose.	
3. Enter filling limits and confirm.	

9. 6. 9 Raise/lower the induction center (ESZ)

Procedure	Softkey/Lever
1. Press the „Additional equipment“ softkey.	
2. Press the „Raise ESZ“ or „Lower ESZ“ softkey and raise or lower the induction center.	

 = Display: The induction center is up

 = Display: The induction center is down

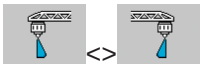
9. 7 Choose drop size

Procedure	Softkey/Lever
1. Switch to the second mask with the „Next“ softkey.	
2. Select the drop size with the „Smaller drop“ or „Larger drop“ softkey.	

 = Display of the current drop size in the start mask

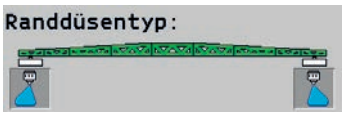
In addition, the droplet size can be controlled in the mask „Section target value 100% reference“.

9. 8 Switch border nozzles

Procedure	Softkey/Lever
1. Switch with the softkeys „Edge nozzles left“ and „Edge nozzles right“.	

9. 8. 1 Set up edge nozzles

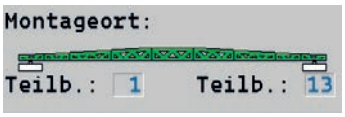
Edge nozzles can be set up as a separate section at any position on the boom. This function must have been activated.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey.	
2. Press the „Page change“ softkey until the input mask for the edge nozzle appears.	
3. Select the edge nozzle set with the rotary knob/by tapping (up to four edge nozzle sets possible).	
4. Select the edge nozzle type with the rotary knob/by tapping.	

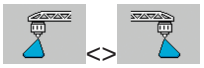
 = No edge nozzle

 = Edge nozzle

 = Jet nozzle

Procedure	Softkey/Lever
5. Select the installation location with the rotary knob / by tapping.	
6. Specify the part width of the right and left edge nozzle.	

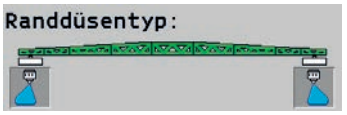
9. 8. 2 Weitwurfdüsen schalten

Procedure	Softkey/Lever
1. With the softkey „Jet nozzle left“ and „Jet nozzle“ switch.	

The nozzle appears on the start screen in the boom at the set position.

9. 8. 2. 1. Set up jet nozzles

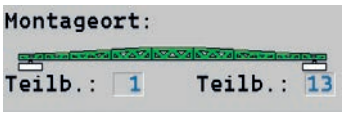
Long throw nozzles can be set up as a separate section at any position on the boom. This function must have been activated.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey.	
2. Press the „Page change“ softkey until the input mask appears.	
3. Select the edge nozzle set with the rotary knob / by tapping. (Up to four edge nozzle sets are possible.)	
4. Select the edge nozzle type with the rotary knob/by tapping.	

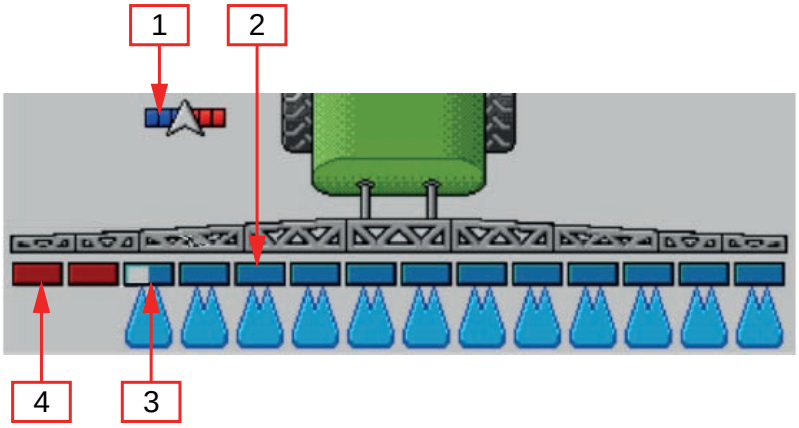
 = No edge nozzle

 = Edge nozzle

 = Jet nozzle

Procedure	Softkey/Lever
5. Select the installation location with the rotary knob/by tapping.	
6. Specify the part width of the right and left edge nozzle.	

9. 9 Operate the individual nozzle control (EDS)



Pos.	Description	Pos.	Description
1	Activated SECTION-Control	2	Activated nozzles (bring out)
3	Switched off nozzles (do not apply)	4	Switched-on sections and sections in which at least one nozzle is switched on.

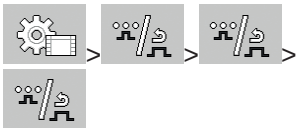
INFO

For further information on the EDS, see the „EDS“ service manual.

9. 10 Enter parameters

9. 10. 1 Enter user password

Entering the user password is necessary for further settings.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. Mark „User password“ with the rotary knob/by tapping. 4. Enter user password: 0010000100	
Mask 5 of the machine data opens.	

Another level is the service area. This area is protected by the service password and can only be accessed by trained service personnel.

9. 10. 2 Set the setpoint

The setpoint for automatic control is set in the machine data page 1.

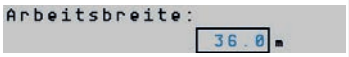
Procedure	Softkey/Lever
1. Press the „Machine data“ softkey.	
2. Enter target value with rotary knob / select by tapping. 3. Enter target value.	
The setpoint is displayed on the home page in automatic mode.	

9. 10. 3 Enter the working width

The working width can be independent of the boom width by means of jet nozzles. When changing the working width, the geometry of the sprayer may also have to be changed, see “8. 9. 30 Sprayer Geometry ”on page 141.

INFO

Do not change the working width of flange plates or hinged joints. Only deactivate/activate sections here, see „8. 9. Permanently activate/deactivate 19 sections ”on page 130.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey.	
2. Enter the working width with the rotary knob/select by tapping. 3. Enter the working width.	

9. 10. 4 Impulse wheel sensor

Pulses from the wheel sensor are required to calculate the speed. The value is determined using a 100 m calibration and should not be changed. When changing tires, the value must be adjusted.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select wheel pulses with the softkey input mask.	
3. Mark „Impulse wheel sensor“ with the rotary knob / by tapping. 4. Enter the value and confirm.	

9. 10. 4. 1. 100 m calibration

The 100 m calibration is used to determine the „impulses wheel sensor“. After successful calibration, the value is automatically adopted.

Procedure	Softkey/Lever
1. Stake out 100 m and position the machine at the beginning.	
2. Press the „Machine data“ softkey. 3. Use the softkey to select „Wheel sensor calibration mask“.	
4. Start calibration with the softkey.	
5. Drive 100 m.	
6. Confirm execution with the softkey.	
The calibration can be canceled at any time with the softkey.	

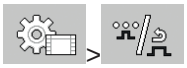
9. 10. 5 Adjust spray pressure

The minimum and maximum spray pressure can be set.

9. 10. 5. 1. Maximum spray pressure

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey.	
3. Mark „Maximum pressure“ with the rotary knob / by tapping. 4. Enter the value and confirm.	

9. 10. 5. 2. Minimal spray pressure

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey.	
3. Mark „Minimum pressure“ with the rotary knob / by tapping. 4. Enter the value and confirm.	

9. 10. 6 Spray from below xx km/h

The minimum working speed is entered here. The nozzles are only opened from this speed.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey.	
3. „Spray from below“ with the rotary knob/by tapping to mark. 4. Enter the value and confirm.	

9. 10. 7 Regulation off below xx km/h

The value of the minimum speed from which the automatic control of the injection pressure takes place is entered here. The last regulation is automatically retained below the minimum.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey.	
3. Mark „Control off below“ with the rotary knob / by tapping. 4. Enter the value and confirm.	

9. 10. 8 Control constant

The control constant determines the inertia with which the syringe reacts to changes in measured values.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Mark „Advance curves“ with the rotary knob/by tapping.	
3. Enter the value and confirm.	

9. 10. 9 Enter tank size

The actual barrel volume is entered here. It usually corresponds to the nominal volume + 10%. An exact value must be gauged.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. Mark „Tank size“ with the rotary knob / by tapping. 4. Enter the value and confirm.	

9. 10. 10 Alarm level

The „Alarm level“ value defines the level at which the control panel issues an alarm message. This function is deactivated at zero liters.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. Mark „Alarm level“ with the rotary knob/by tapping. 4. Enter the value and confirm.	

9. 10. 11 Impulse main flow meter

Here you enter the value of how many pulses the flow meter sends per liter of liquid. This value may only be changed after a calibration.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. „Mark impulses main flow „with the rotary knob / by tapping. 4. Enter the value and confirm.	

There are two methods to calibrate the flow meter:

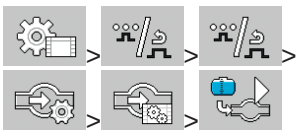
» The tank method - it is time consuming, but accurate.

» The nozzle method - it is less time consuming but less accurate.

More information on both calibration methods on the following pages.

9. 10. 11. 1. Calibration of the main flow meter using the tank method

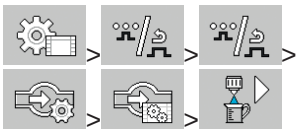
With the tank method, a larger amount of water is discharged from the tank over a certain period of time.

Procedure	Softkey/Lever
1. Fill several 100 liters of clear water into the barrel.	
2. Weigh the device (not applicable if the TankControl is calibrated). Fill quantity (L), note and omit weighing).	
3. Use the softkey to switch the application mode to „Manual“  .	
4. Use the softkeys to switch to the „Calibration of the main flow meter“ start screen.	
5. Start calibration with the softkey. Spread several 100 liters.	
6. Stop calibration with the softkey.	

Procedure	Softkey/Lever
7. Enter the value and confirm.	
8. Weigh the device (not applicable with calibrated TankControl. Leave out filling quantity (L), note and weigh).	
9. Enter the filling quantity or the difference between the first and second weighing.	
10. Exit mask with the softkey.	
The calculated value was automatically adopted.	

9. 10. 11. 2. Calibration of the main flow meter using the nozzle method

The nozzle method is used to determine the average amount of liquid dispensed through a nozzle over a certain period of time.

Procedure	Softkey/Lever
1. Fill several 100 liters of clear water into the barrel.	
2. Weigh the device (if the TankControl is calibrated, the filling quantity (L) is omitted, noting and weighing are omitted).	
3. Use the softkey to switch the application mode to „Manual“  .	
4. Use the softkeys to switch to the main flow meter calibration start screen.	
5. Start application.	
6. Collect the water dispensed at a nozzle with a prepared measuring cup for exactly 60 seconds.	
7. Note the amount of water dispensed.	
8. Repeat the last two steps on several nozzles.	
9. Stop application.	
10. Enter the exact amount per nozzle in the input field and confirm.	
11. Exit mask with the softkey.	
The calculated value was automatically adopted.	

9. 10. 12 Agitator from below xx liters

With pneumatic agitator shutdown, the value of a liter quantity can be entered from which the agitator should be automatically switched off / on.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. Mark „Transitional flow“ with the rotary knob / by tapping. 4. Enter and confirm the percentage value.	

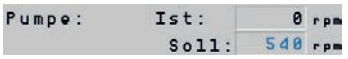
9. 10. 13 Set the fluid pump speed

If the pump speed deviates too far from the set speed during application with this setting, the control panel issues an alarm. If the target speed is set to 0, the alarm is deactivated.

Method 1

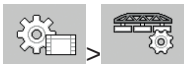
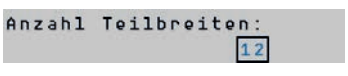
Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. Bring the liquid pump to the desired speed.	
4. Use the softkey to save the actual value as the target value.	

Method 2

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. Mark „Should“ with the rotary knob/by tapping. 4. Enter the target value and confirm.	

9. 10. 14 Number of sections

When entering the number of part-width sections, it must be taken into account that edge and jet nozzles can also be switched as part-width sections.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Call up the „Boom mask“ softkey.	
3. Select the number of sections with the rotary knob/by tapping. 4. Enter the number of sections.	

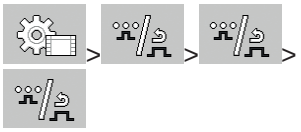
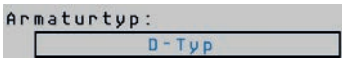
9. 10. 15 Set the filling mode

Activate the connected tank control as follows:

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. Mark „Filling mode“ with the rotary knob / by tapping. 4. Select and confirm filling mode » manually » TANK-Control 5. Enter the target value and confirm.	

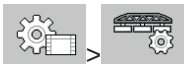
9. 10. 16 Select fitting type

So that the job computer recognizes how it can control the pressure, the type must be entered as follows:

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. Mark „User password“ with the rotary knob / by tapping. 4. Enter user password: 0010000100	
Mask 5 of the machine data opens.	
5. Mark the fitting type with the rotary knob / by tapping. 6. Mark the type in the selection and confirm: » Without equal pressure » Equal pressure » D-type (DAMMANN pneumatic equal pressure fitting „Nocton“)	

9. 10. 17 Number of nozzles/nozzle holders

Enter the total number of nozzles / nozzle holders. A multiple nozzle carrier counts as one nozzle. Also consider edge nozzles.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Call up the „Boom mask“ softkey.	
3. Select the number of nozzles with the rotary knob / by tapping. 4. Enter the number of nozzles/nozzle holders.	

9. 10. 18 Number of nozzles per section

The sections are always named in ascending order from the left in the direction of travel. Section 1 is always outside on the left. Depending on the number of sections, the “Number of nozzles” screen opens.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Call up the „Boom mask“ with the softkey. 3. Call up „Section settings“ with the softkey.	
4. Select the section with the rotary knob/by tapping. 5. Enter the number of nozzles and confirm.	
6. Press the „Next“ softkey to go to the next section.	

9. 10. 19 Activate/deactivate sections permanently

Sections can be deactivated, which is necessary for folding hand joints or flange plates in the boom, for example.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Call up the „Boom mask“ with the softkey. 3. Call up „Block sections“ with the softkey.	
4. Select the section with the rotary knob/by tapping. 5. Enter the number of nozzles and confirm.	
6. Press the „Next“ softkey to go to the next section.	
7. Activate/deactivate sections	

 = Section activated

 = Section deactivated

9. 10. 20 Activate/deactivate sensor-nozzle control

Requirements are the DAMMANN S-D-S and at least part-width EDS.

9. 10. 21 Assign sensors to sections

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey. 3. Call up „Section setpoint“ with the softkey.	
4. Select „Nozzle control by sensors“ with the rotary knob / by tapping.	
5. Press the „Next“ softkey to go to the next section.	
6. Activate/deactivate sections.	

 = S-D-S activated

 = S-D-S deactivated

Active sensor control is displayed in the start mask: 

9. 10. 22 Nozzle assistant on the single nozzle holder

The nozzle wizard is used to select the appropriate nozzle(s) and to calibrate the nozzles:

» which speed is possible with a given target value, selected spray pressure range and selected nozzle.

» which application rate is possible at a given speed, selected spray pressure range and selected nozzle.

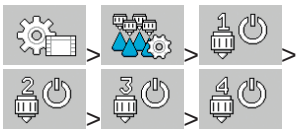
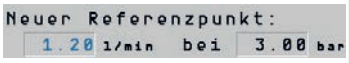
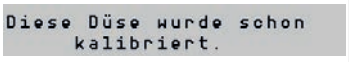
Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Call up „Nozzle assistant“ with the softkey.	
3. Use the softkey to switch between preset speed and application rate.	

9. 10. 23 Set up nozzles on the nozzle holder

Standardized nozzles are selected based on their ISO color. Non-standardized nozzles are given the designation nozzle A, B, C - depending on the nozzle holder and the position on the nozzle holder. Each nozzle must then be calibrated.

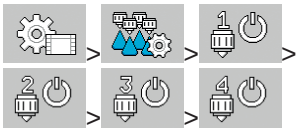
9. 10. 23. 1. Calibrate standardized nozzle

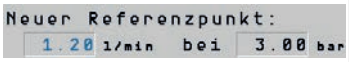
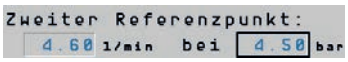
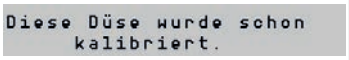
Since there is also a tolerance in the standard, standardized nozzles must also be calibrated in order to be able to set a reference point. The calibration is carried out with clear water.

Procedure	Softkey/Lever
1. Use the softkey to switch the application mode to „Manual“.	
2. Press the „Machine data“ softkey. 3. Select „Nozzle holder“ with the softkey. 4. Activate the nozzle with the softkey for the multiple nozzle holder.	
5. Start application with the „Main section switch On / Off“ softkey.	
6. Use the softkeys to set the spray pressure to 3 bar.	
7. Use a measuring beaker to collect water from several nozzles for one minute each and measure it.	
8. Calculate the average application rate in l/min.	
9. Stop spreading with the „Main section switch „On/Off“ softkey.	
10. Use the application mode softkey to switch to „Automatic“.	
11. Press the „Machine data“ softkey. 12. Use the softkey to switch to the „Nozzle calibration“ mask.	
13. Select nozzle (ISO nozzles are identified by color).	
14. Enter the average value of the nozzles under „New reference point“.	
15. The nozzle is now calibrated.	
The reference point is deleted with the softkey.	

9. 10. 23. 2. Calibrate non-standardized nozzle

Calibration is carried out with clear water.

Procedure	Softkey/Lever
1. Use the softkey to switch the application mode to „Manual“.	
2. Press the „Machine data“ softkey. 3. Select „Nozzle holder“ with the softkey. 4. Activate the nozzle with the softkey for the multiple nozzle holder.	

Procedure	Softkey/Lever
5. Start application with the „Main section switch „On/Off“ softkey.	
6. Use the softkeys to set the spray pressure to 3 bar.	
7. Use a measuring beaker to collect water from several nozzles for one minute each and measure it.	
8. Calculate the average application rate in l/min.	
9. Use the softkeys to set the spray pressure to 4.5 - 6 bar.	
10. Use a measuring beaker to collect water from several nozzles for one minute each and measure it.	
11. Calculate the average application rate in l/min.	
12. Stop spreading with the „Main section switch „On/Off“ softkey.	
13. Use the application mode softkey to switch to „Automatic“.	
14. Press the „Machine data“ softkey. 15. Use the softkey to switch to the „Nozzle calibration“ mask.	
16. Select nozzle (up to four non-standardized nozzles can be saved).	
17. Enter the average value of the nozzles under „New reference point“.	
18. Enter the average value and spray pressure of the nozzles under „Second reference point“.	
19. The nozzle is now calibrated.	
The reference point is deleted with the softkey.	

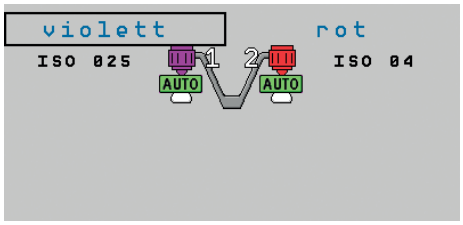
9. 10. 24 Multiple nozzle carrier

INFO

Multiple nozzle carriers are equipped with two or four nozzles, which can be switched via the control unit and do not have to be changed manually.

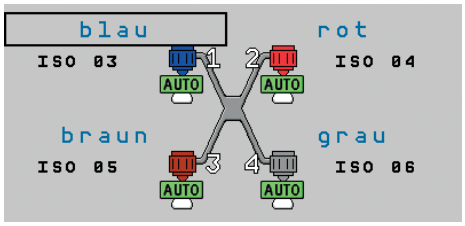
Note special shapes!

Tandem nozzle carrier



Nozzle one at the front in the direction of travel
Nozzle two at the rear in the direction of travel

Quattro nozzle carrier

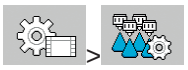


Nozzle one in the front left in the direction of travel
Nozzle two in the direction of travel front right
Nozzle three at the rear left in the direction of travel
Nozzle four at the rear right in the direction of travel

9. 10. 24. 1. Configure multiple nozzle holders

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Multiple nozzle holder“ with the softkey.	
3. Select nozzle (ISO nozzles are identified by their color. There are also four freely configurable nozzles to choose from).	
4. Confirm selection.	

9. 10. 24. 2. Activate Vario-Select

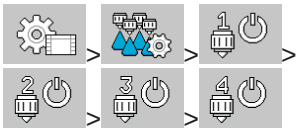
Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Multiple nozzle holder“ with the softkey.	
3. Select „Vario-Select“ with the softkey.	

9. 10. 24. 3. Activate / deactivate nozzles for Vario-Select

Method 1: Remove the nozzle in the multiple nozzle carrier configuration.

Method 2: Set the nozzle to „Manual“.

INFO
With a tandem nozzle holder, two nozzles must always be configured to be available. Here only the change to „manual“ is possible.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Nozzle holder“ with the softkey. 3. Deactivate the nozzle with the softkey for the multiple nozzle holder. The nozzle is excluded from Vario-Select.	

The status is displayed with the following symbols in the „Multiple nozzle carrier“ screen:

= Nozzle in Vario Select mode. Nozzles are changed by the control.

= Nozzle in select mode. Nozzles are changed by the operator.


= No nozzle.

In the start mask:


= The nozzle in the Vario-Select applies.


= The nozzle in the Vario-Select does not apply.


= Nozzle not in the Vario-Select.


= No nozzle

9. 10. 24. 4. Activate Vario-Select

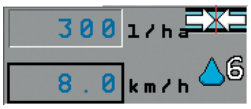
When purchasing a crop protection sprayer with Vario-Select, the license is already activated. In the case of a subsequent purchase, proceed as follows:

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey several times until the „Licenses“ menu appears. 3. Select the „Licenses“ softkey.	
4. Select the app with the rotary knob / by tapping. » Multiple nozzle holder (Vario-Select) » Weather station	
5. Make a note of the ME code for the order.	
6. Order Vario-Select from HERBERT DAMMANN GmbH by specifying the ME code.	
7. Select password with the rotary knob/by tapping.	
8. Enter password.	

9. 10. 25 Section setpoint

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Section setpoint“ with the softkey. » C ~ C ~ A and sensor nozzle control can be activated here.	

9. 10. 25. 1. Section setpoint 100% reference

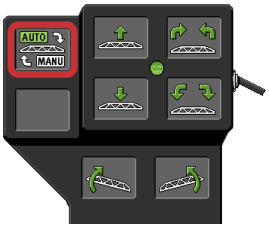
Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Section setpoint“ with the softkey. 3. Select „Section setpoint 100%“ with the softkey.	
4. Use the softkey to switch the view between percentage display and nozzle combination selection.	
5. Use the softkey to call up further setting options.	
6. The softkeys and the setting window appear.	
The following values can be changed here: » Working speed » Setpoint	
7. The 100% mark is shifted by changing the drop size using the softkeys.	

9. 10. 26 Automatic boom control

The boom can be controlled in different ways, depending on the equipment:

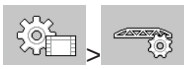
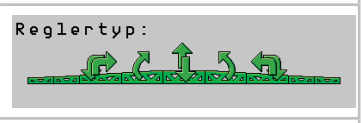
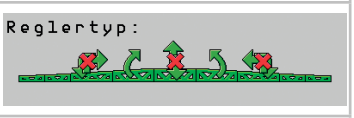
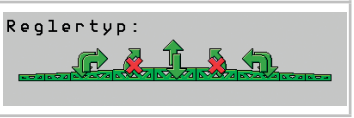
- » Raise/lower
- » Tilt left or right
- » Angled upwards

9. 10. 26. 1. Activate/deactivate automatic boom control

Procedure	Softkey/Lever
1. Use the softkey to switch the application mode to „Manual“.	
2. Press the side lever on the joystick down and hold it. 3. Press the „Activate / deactivate boom control“ button on the joystick.	
When the automatic boom control is deactivated, the display shows:	
When the boom control is activated, the respective active control is displayed.	

9. 10. 26. 2. Distance Control: Selection of the type of rule

Depending on the equipment, different rule types are available:

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Boom parameters“ with the softkey.	
3. Select the control type with the softkey.	
Only with Distance Control Dammann: The boom is raised / lowered, tilted to the side and angled controlled.	
The boom is controlled by angling.	
The type of control is displayed in the start screen when the boom control is active.	

9. 10. 26. 3. Distance Control: calibration

Distance Control is calibrated in three steps on level ground:

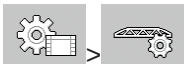
Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Calibration mask“ with the softkey.	
3. Start calibration with the softkey.	
4. Raise the boom horizontally to two meters.	
5. Confirm with the softkey. Mask jumps to step 2 for manual calibration.	
6. Press the linkage on the left to the ground for five seconds.	
7. Let the boom swing back in a horizontal position.	
8. Confirm execution with the softkey.	
The boom is automatically tilted to the right and brought back horizontally.	
9. Confirm execution with the softkey.	
The calibration can be canceled at any time with the softkey.	

9. 10. 26. 4. Adjusting the working height

Method 1: Save current height as working height

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Boom working height“ with the softkey.	

Method 2 (only at DCD): Enter the working height to the centimeter

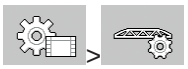
Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select the input mask with the softkey.	
3. Select the working height with the rotary knob/by tapping.	
4. Select the working height with the rotary knob/by tapping. 5. Enter and confirm the working height.	

9. 10. 26. 5. Adjusting the excavation height

Method 1: Save the current height as the excavation height

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Boom working height“ with the softkey.	

Method 2 (only at DCD): Enter the excavation height to the centimeter

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Boom parameters“ with the softkey.	
3. Select the lifting height with the rotary knob / by tapping. 4. Enter and confirm the excavation height.	

9. 10. 26. 6. Setting the control constant for Distance Control

The inertia of the control is determined with the control constant.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Boom parameters“ with the softkey.	
3. Mark the control constant with the rotary knob/by tapping. 4. Enter the control constant and confirm.	

9. 10. 26. 7. Setting the safety height Distance Control DAMMANN

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Boom parameters“ with the softkey.	
3. Mark the safety height with the rotary knob/by tapping. 4. Enter and confirm the safety height.	

9. 10. 26. 8. Set „anticipate curves“ Distance Control DAMMANN

The value is used to control the boom in the curve.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Boom parameters“ with the softkey.	
3. Mark „Advance curves“ with the rotary knob/by tapping. 4. Enter the value „anticipate curves“ and confirm.	

9. 10. 27 Switching to pressure control

The switchover is based on two manipulated variables:

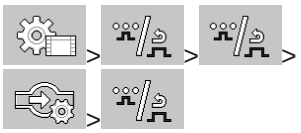
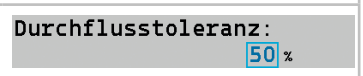
Transitional flow:

» With small flow rates (for example only 1 TB active), flow meters are very inaccurate. The imp/l fluctuate strongly and with it the regulation. If the switch to pressure control is active, from a volume flow to be set, the application is controlled based on nozzle size and pressure.

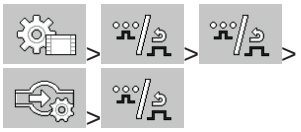
Flow tolerance (current flow to target flow)

» The flow tolerance is given in% and is adjustable. The nozzle size must therefore be entered correctly, even for individual nozzle carriers. Non-ISO nozzles can be used but must be correctly referenced, e.g. liquid fertilizer nozzles or drag hoses.

9. 10. 27. 1. Flow tolerance

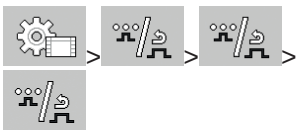
Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice. 3. Press the „Calibrate flow meter“ softkey. 4. Press the „Next“ softkey.	
5. Mark „Flow tolerance“ with the rotary knob / by tapping. 6. Enter and confirm the percentage value.	

9. 10. 27. 2. Transitional flow

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice. 3. Press the „Calibrate flow meter“ softkey. 4. Press the „Next“ softkey.	
5. Mark „Transitional flow“ with the rotary knob / by tapping. 6. Enter and confirm the percentage value.	

9. 10. 28 Call up software version

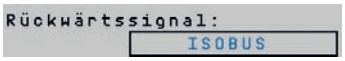
If there are problems with the control unit, customer service can identify possible errors using the software version.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey twice.	
3. Mark „User password“ with the rotary knob / by tapping. 4. Enter user password: 0010000100	
Mask 5 of the machine data opens with the software version.	

9. 10. 29 Speed settings

9. 10. 29. 1. Reverse signal

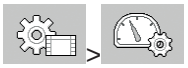
If the trailer device or tractor sends a reverse signal via the ISOBUS, the job computer (JR) can use this signal to adjust its control behavior for reverse travel.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Speed“ softkey.	
3. Mark „Reverse signal“ with the rotary knob / by tapping. 4. Select a signal source from the selection: » „None“ - JR does not expect a reverse signal. If a reverse signal is transmitted, the signal is ignored. » „ISOBUS“ - reverse signal is sent from the tractor or another JR via the ISOBUS. » „Sensor“ - A reverse sensor is connected to the JR. 5. Select and confirm the signal source.	
6. Exit mask with the softkey.	

9. 10. 29. 2. Simulated speed

The „Simulated speed“ function is only used for test and service. It simulates a drive of the machine with the device stationary. The function can also be used with the field sprayer TÜV.

INFO
By default, the value is preset to 0 km / h and the function is switched off. After restarting the job computer, the function is always deactivated.

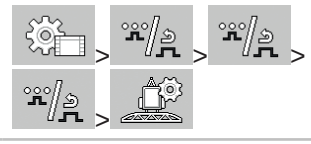
Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Speed“ softkey.	
3. Start with the „Simulated speed“ softkey.	
4. Mark „Simulated speed“ with the rotary knob / by tapping. 5. Enter speed.	
6. Exit mask with the softkey.	

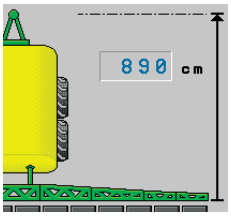
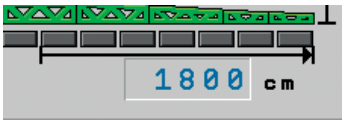
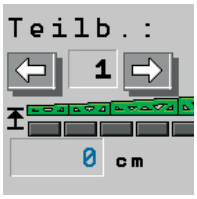
 = Simulated speed activated

9. 10. 30 Sprayer geometry

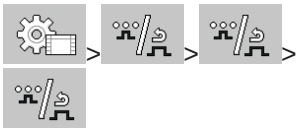
Syringe geometry is a set of parameters that describe the dimensions of the machine. By setting the sprayer geometry, the software recognizes how long and wide the field sprayer is and where the individual sections are.

Type of sprayer	CRP_X	DRP_Y	ERP_X
Trailed sprayer	Distance between working point and attachment point	Half of the current working width	Only if there are sections on the sprayer that are closer or further away from the GPS receiver than the working point: - Determine the distance between the working point and the respective section.
Mounted sprayer	Distance between working point and attachment point	Half of the current working width	
Self-propelled sprayer with rear linkage	Distance between the working point and the GPS receiver	Half of the current working width	
Self-propelled sprayer with a boom at the front	Distance between the working point and the GPS receiver	Half of the current working width	

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey three times.	

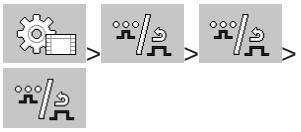
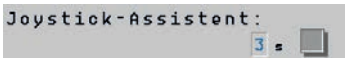
Procedure	Softkey/Lever
3. Mark „Type of syringe“ with the rotary knob/by tapping. 4. Mark the type of syringe in the selection and confirm. » Trailed sprayer » Mounted sprayer » Self-propelled sprayer, with rear linkage » Self-propelled sprayer, with front linkage The illustration adapts to the type of device.	
5. Mark the CRP_X value with the rotary knob / by tapping.	
6. Enter the value in centimeters and confirm.	
Mark the DRP_Y value with the rotary knob / by tapping.	
7. Enter the value in centimeters and confirm.	
8. Possibly. Mark the ERP_X value section with the rotary knob/ by tapping.	
9. Select section.	
10. Mark the value ERP_X with the rotary knob/by tapping. 11. Enter the value in centimeters.	

9. 10. 31 Configure joystick

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey three times.	
3. Mark the joystick with the rotary knob / by tapping. 4. Select and confirm the function: » without a joystick » Joystick » Reject joystick » Joystick only on/off	

9. 10. 31. 1. Preview mode for the joystick

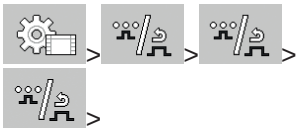
The preview mode serves as an aid for new users and shows the key assignment when the key is pressed for the first time. By default, the preview mode is deactivated for new job computers.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey three times.	
3. Mark „Joystick Assistant“ with the rotary knob/by tapping. 4. Enter the display time in seconds and confirm. 5. Mark the check box and confirm.	

 = Joystick assistant activated

 = Joystick assistant deactivated

9. 10. 32 Configure the S-Box

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Press the „Next“ softkey three times.	
3. Mark „ME-S-Box“ with the rotary knob/by tapping. 4. Select and confirm the function. » without S-Box » S-Box » Reject S-Box » S-Box without on/off	

9. 10. 33 Settings for D-A-S

Plant protection sprayers with D-A-S and a boom width of 24 to 28 meters are listed as loss-reducing devices in the JKI list with 75%.

Example for standard nozzle Lechler nozzle ID 120 03

» Sprayer pressure 3 bar

» Full air output (170 to 180 bar)

» Stand height at least 50 cm

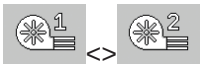
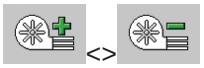
» Distance from the target area at least 50 cm

Further nozzles can be found in the official directory of loss-reducing devices from the JKI.

The amount of air for the dual air system is regulated by the speed of the fan motor. There are two adjustable levels for the D-A-S.

The speed and level of the fan motor are shown in the display:

9. 10. 33. 1. D-A-S ON/OFF

Procedure	Softkey/Lever
1. Press the „Next“ softkey until the D-A-S softkeys appear.	
2. Select the softkeys „D-A-S level 1“ or „D-A-S level 2“.	
3. Switch D-A-S on or off with softkeys.	

The following symbols are shown in the display:

	D-A-S ON	D-A-S OFF
Level 1		
Level 2		

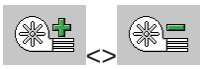
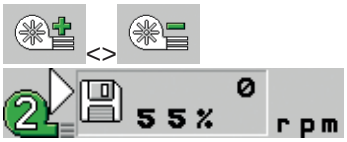
9. 10. 33. 2. Save air volume level 1

The air volume is set as a percentage of the maximum speed of the fan.

Procedure	Softkey/Lever
1. Press the „Next“ softkey until the D-A-S softkeys appear.	
2. Select „D-A-S level 1“ with the softkey.	
3. Press and hold the „Switch D-A-S on“ or „Switch D-A-S off“ softkeys and call up the memory function.	
Appears in the display: 	
4. Set the required air volume with the softkeys.	 
5. Press and hold the softkey and save the setting.	

9. 10. 33. 3. Save air volume level 2

The air volume is set as a percentage of the maximum speed of the fan.

Procedure	Softkey/Lever
1. Press the „Next“ softkey until the D-A-S softkeys appear.	
2. Select „D-A-S level 2“ with the softkey.	
3. Press and hold the „Switch D-A-S on“ or „Switch D-A-S off“ softkeys and call up the memory function.	
Appears in the display: 	
4. Set the required air volume with the softkeys.	
5. Press and hold the softkey and save the setting.	

9. 10. 34 C~C~A

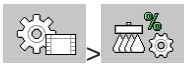
The DAMMANN control for spreading in curves.

9. 10. 34. 1. Settings for C ~ C ~ A

For C ~ C ~ A, Vario-Select must be activated and all nozzles must have been calibrated.

9. 10. 34. 2. Activate/deactivate C ~ C ~ A

C ~ C ~ A is activated/deactivated in the section setpoint mask.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Section setpoint“ with the softkey. 3. Mark „C ~ C ~ A“ with the rotary knob/by tapping and activate/deactivate.	

 = C~C~A activated

 = C~C~A deactivated

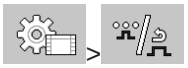
The following symbols appear on the start page:

 = Left turn

 = Straight

 = Right turn

9. 10. 35 Activate / deactivate sensor nozzle control S-D-S

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Select „Section setpoint“ with the softkey.	
3. Mark „Nozzle control by sensors“ with the rotary knob / by tapping and activate / deactivate.	
When the S-D-S is active, the following symbol is displayed for the setpoint:	

 = Sensor control activated

 = Sensor control deactivated

9. 10. 35. 1. Assign sensors to sections

Procedure	Softkey/Lever
1. Use the softkeys to switch to the nozzle control sensors.	
2. Press „Part width nozzle control“.	
3. Mark „Section“ with the rotary knob / by tapping. 4. Enter the sensor number.	

9. 10. 36 Show partial widths setpoint deviation

If C ~ C ~ A, sensor nozzle control or application maps regulate the setpoint deviation with EDS, deviations from the setpoint for individual sections can be displayed in this mask.

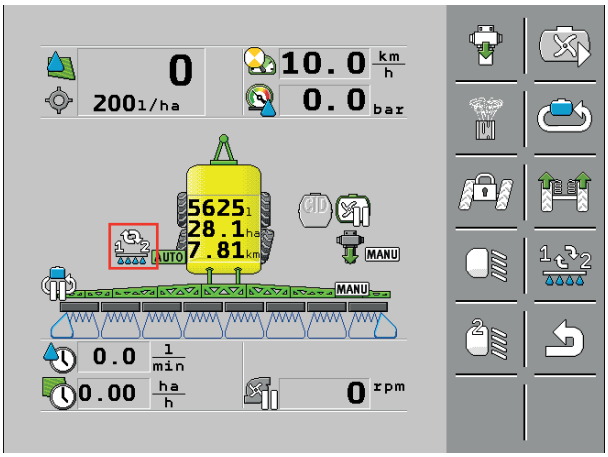
Procedure	Softkey/Lever
1. Use the softkeys to switch to the nozzle control sensors. Percentage deviations of the sections are displayed.	

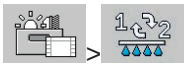
9. 10. 37 Pulse width modulation (PWM)

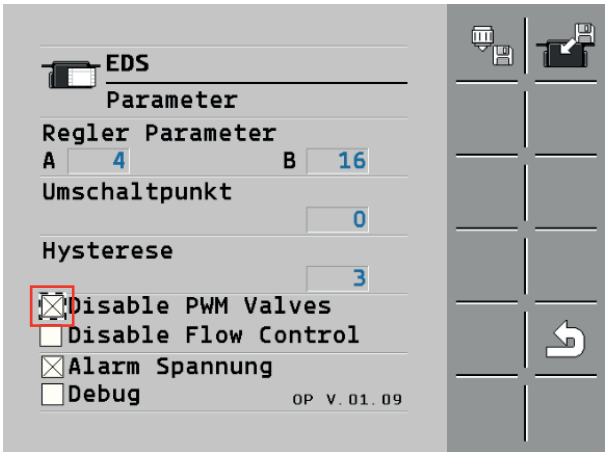
9. 10. 37. 1. Switching from nozzle line B to nozzle line A

Nozzle line B = PWM controlled

Nozzle line A = classic control

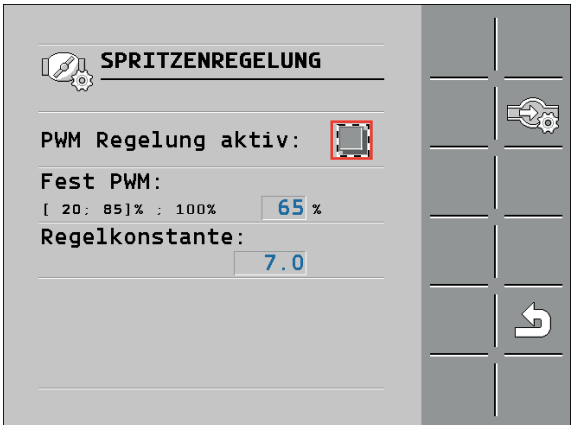


Procedure	Softkey/Lever
1. Activate nozzle line A with the softkeys. The display (box) appears next to the barrel.	
2. Use the softkey to switch back to the work screen.	
3. Use the softkey to switch to the machine data mask.	



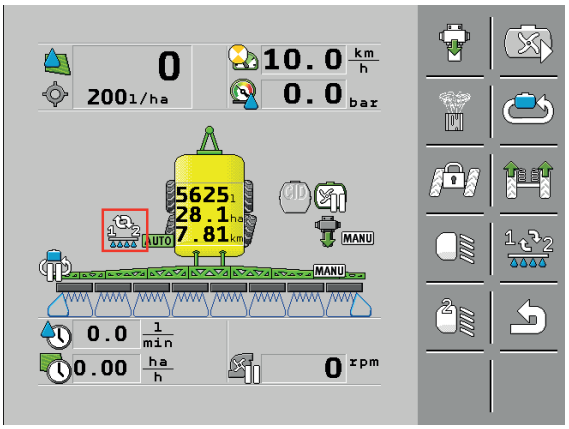
Procedure	Softkey/Lever
4. Use the softkeys to switch to the „EDS parameters“ mask.	
5. Put a cross next to „Disable PWM Valves“. This deactivates nozzle line B.	

Procedure	Softkey/Lever
6. Use the softkey to switch back to the machine data mask.	
Observe chapter „Important PWM settings“ on page 150.	
7. Press the softkey several times to access machine data mask 2.	



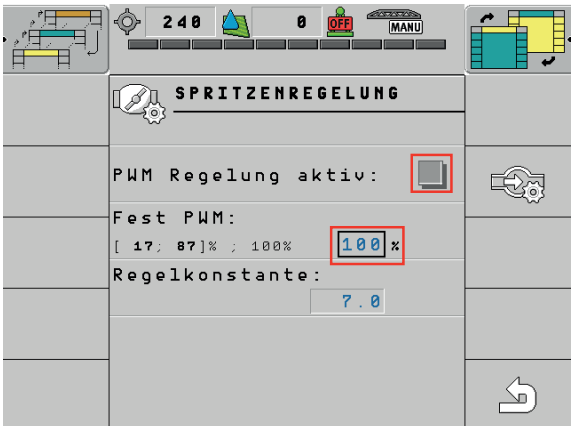
Procedure	Softkey/Lever
8. Use the softkey to switch to the spray control.	
9. Remove the cross next to the item „PWM control active“.	
10. Use the softkey to switch back to the machine data mask.	
11. Hold down the softkey and return to the work screen.	

When using both nozzle lines A and B at the same time

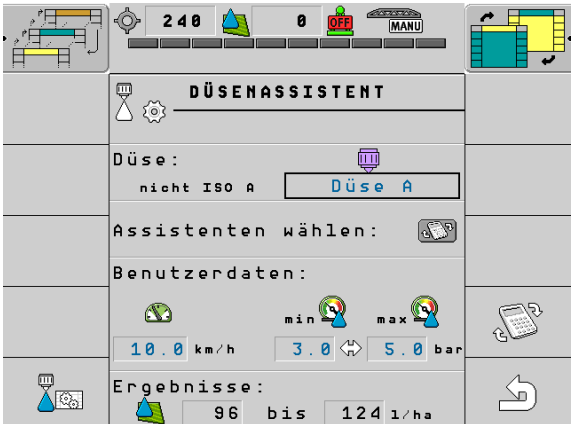


Procedure
1. Switch to nozzle line B (chapter 8. 9. 37. 1 on page 147, observe points 1, 5 and 11).

Procedure
2. PWM nozzle line remains active (remove the check mark under „Disable PWM Valves“, chapter „8. 9. 37. 1. Switching from nozzle line B to nozzle line A“ on page 134).



Procedure
3. Remove the check mark under “PWM control active” (chapter “8. 9. 37. 1. Switching from nozzle line B to nozzle line A”, point 9).
4. Change the „Fixed PWM“ value to 100%.

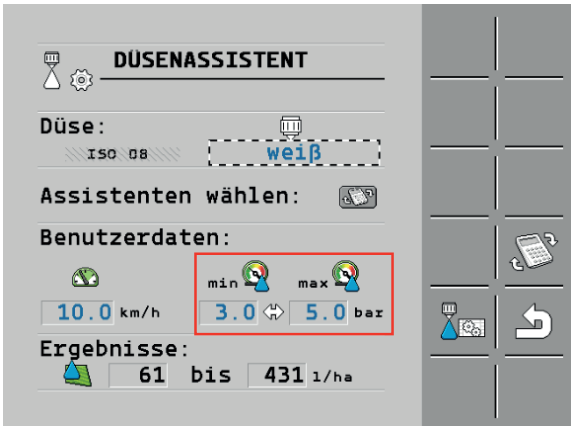


Procedure	
5. Enter the sum of the nozzle size A + B as a non-ISO nozzle in the nozzle wizard. Example:	
Nozzle A	0,3 +
Nozzle B	0,4
Nozzle A+B	0,7

INFO
Note: » Regulation CCA is not effective » Control takes place conventionally via pressure adjustment » SectionControl ⇨ Switching of the nozzle line A takes place in the specified sections ⇨ The PWM nozzle line is switched as an individual nozzle circuit

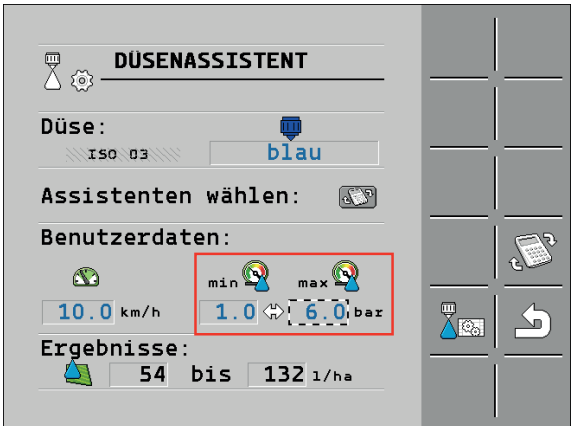
9. 10. 37. 2. Important settings PWM

When using nozzle line B (PWM)



Procedure	Softkey/Lever
1. Switch to nozzle line A (chapter 8. 10. 37. 1 auf Seite 152, observe points 1, 5 und 11).	
2. Use the softkey to switch to the machine data mask page 1.	
3. Use the softkey to switch to the „Nozzle assistant“ mask.	
4. Enter the target pressure range with +/- 1 bar. » Example: 4.0 bar -> min. 3.0 bar, max. 5.0 bar	
Data of the nozzle size used (here „white“). Control range for the constant pressure according to the nozzle table.	

When using nozzle line A (classic control)



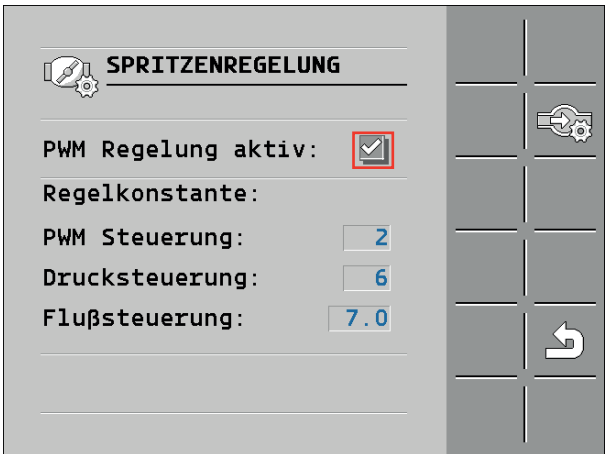
Procedure	Softkey/Lever
1. Switch to nozzle line A (chapter 8. 10. 37. 1 auf Seite 152, observe points 1, 5 und 11).	
2. Use the softkey to switch to the machine data mask page 1.	
3. Use the softkey to switch to the „Nozzle assistant“ mask.	
Data of the nozzle size used (here „blue“) of the nozzle‘s pressure range are displayed as information.	

INFO

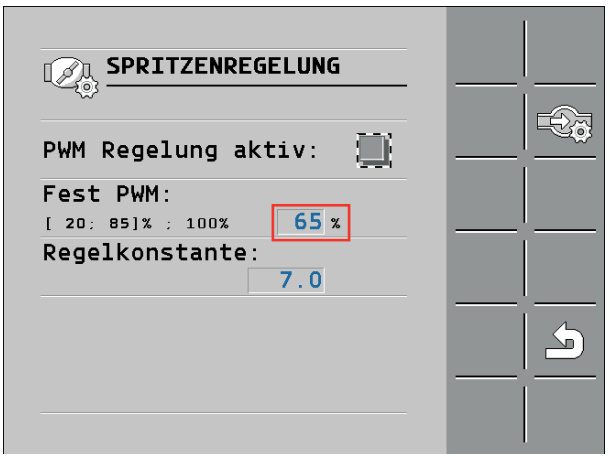
The nozzles used in these instructions may vary depending on the equipment and are only used as an example.

If other nozzles are used, the data of the nozzles used must be entered for smooth functioning!

9. 10. 37. 3. Manual operation PWM



Procedure	Softkey/Lever
1. Use the softkey to switch to the machine data mask.	
2. To get to machine data mask 2, press the softkey several times.	
3. Use the softkey to switch to the spray control.	
4. Remove the check mark under „PWM control active“. Mask changes to manual mode.	



Procedure	Softkey/Lever
5. Entering the fixed PWM data: Example 65% (red) of the possible nozzle output quantity.	
The setting 100% corresponds to the ON/OFF switching of a conventional system with individual nozzle switching (EDS). For this purpose, nozzles suitable for the operation must be installed.	
6. Use the softkey to switch back to the machine data mask.	
Observe the „Important settings“ chapter. The sprayer works with a constant PWM setting. Adjustments to the rules are made by „flow control“ ==> pressure adjustment.	

9. 10. 38 Replacement of components

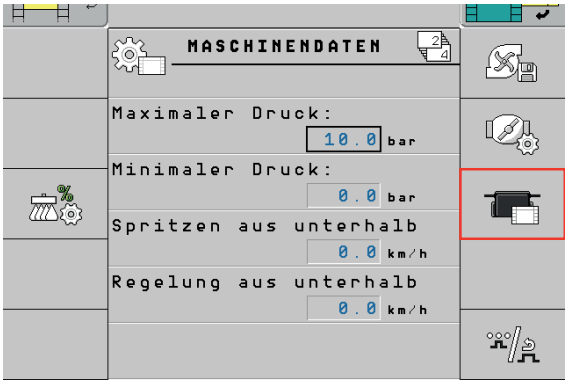
9. 10. 38. 1. Replacement of valve inserts

Pos.	Description	Pos.	Description
1	Silicone oil	2	Valve insert
3	Valve unit		

Procedure
1. Clean new valve inserts (2) and valve housing (3).
2. Put two drops of silicone oil (1) on the back of the valve.
3. Mount valve inserts.

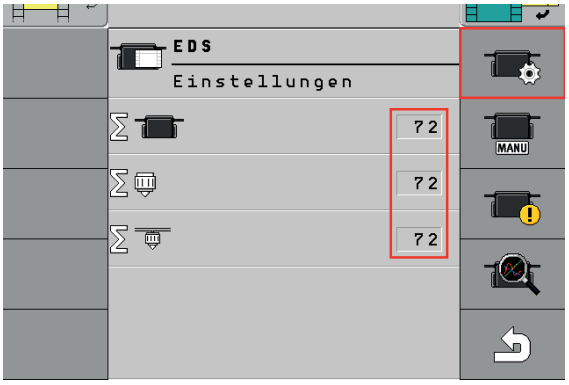
9. 10. 38. 2. Replacement of valve units

A software update is required when replacing complete valve units.

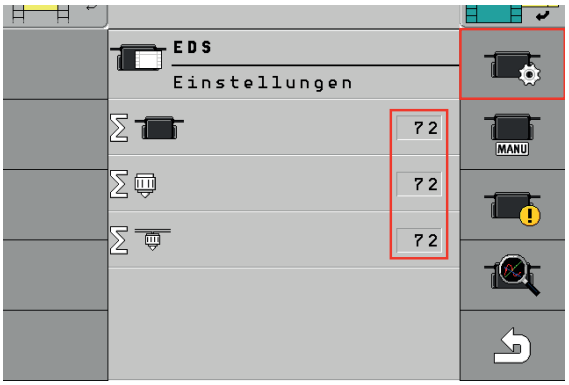


Procedure	Softkey/Lever
1. Use the softkey to switch to the machine data mask.	

Procedure	Softkey/Lever
2. Use the softkey to switch to the „EDS parameters“ mask.	



Procedure	Softkey/Lever
3. Open the „EDS settings“ mask with the softkey.	
Important! All modules must be registered (see picture with 72 modules).	
4. Use the softkey to switch to the „Firmware update“ mask.	



Procedure	Softkey/Lever
5. Start with the „Firmware update“ softkey. Follow the instructions.	
The update can be canceled with the softkey.	

9. 10. 39 CID (Continuous Insidecleaning DAMMANN)

9. 10. 39. 1. Adjust pressure regulator

The working pressure of the pump is set via the pressure regulator while the pump is running. The pump pressure should be 5 bar.

Procedure	Softkey/Lever
1. Set working pressure. » Maximum pressure: 7 bar » Minimum pressure: 4 bar The pressure regulator tap must be set to spray.	

9. 10. 39. 2. Activate/deactivate CID

NOTE

Fresh water loss

VLoss of fresh water for cleaning

» If CID is active, do not switch off the operating terminal.

» If there is fresh water in the tank, do not open the suction filter housing from the CID system.

Fill up the fresh water tank

CID is activated/deactivated via the ISOBUS terminal.

Procedure	Softkey/Lever
1. Use the softkey to switch to the additional function.	
2. Activate / deactivate with the CID softkey.	
When CID is activated, the symbol is shown in the display:	
CID starts automatically when the minimum filling level (switching point) in the drum is reached.	
3. Stop the CID two minutes after the start of cleaning and switch off sections with the main section switch for 15 seconds. By switching off the sections, the ring flush line and the filter flush (only in automatic mode) are cleaned.	
4. Switch sections on again and continue application.	

Ongoing cleaning can be recognized by the fact that the pump pressure is displayed on the pressure gauge on the CID system.

INFO

If the application allows it, the speed or the target value l/ha can be adjusted to achieve the optimal cleaning result so that the output in l/min is in the ideal range of 80 - 110 l/min.

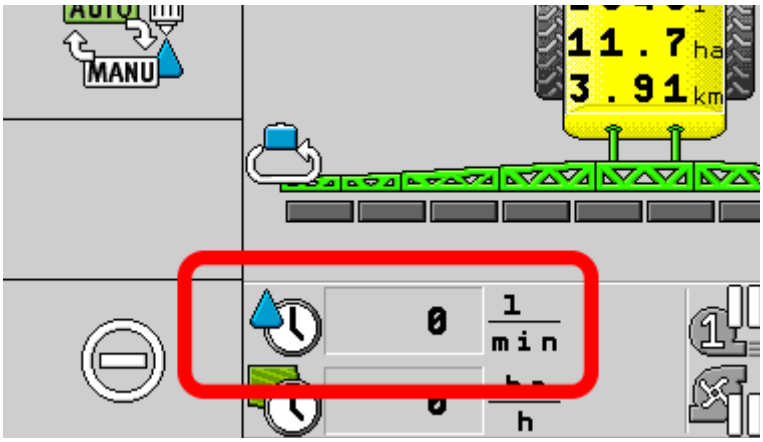


Abb. 58. Work mask with display l/min

Procedure	Softkey/Lever
5. With softkey if necessary. Change display.	

9. 10. 39. 3. Setpoint/speed matrix

Working width 18 m

		Setpoint l/ha									
Working width 18 m	Speed	120	140	160	180	200	220	240	260	280	300
	km/h	l/min - which are measured by the central flow meter									
	4	14,40	16,80	19,20	21,60	24,00	26,40	28,80	31,20	33,60	36,00
	6	21,60	25,20	28,80	32,40	36,00	39,60	43,20	46,80	50,40	54,00
	8	28,80	33,60	38,40	43,20	48,00	52,80	57,60	62,40	67,20	72,00
	10	36,00	42,00	48,00	54,00	60,00	66,00	72,00	78,00	84,00	90,00
	12	43,20	50,40	57,60	64,80	72,00	79,20	86,40	93,60	100,80	108,00
	14	50,40	58,80	67,20	75,60	84,00	92,40	100,80	109,20	117,60	

Working width 27 m

		Setpoint l/ha									
Working width 27 m	Speed	120	140	160	180	200	220	240	260	280	300
	km/h	l/min - which are measured by the central flow meter									
	4	21,60	25,20	28,80	32,40	36,00	39,60	43,20	46,80	50,40	54,00
	6	32,40	37,80	43,20	48,60	54,00	59,40	64,80	70,20	75,60	81,00
	8	43,20	50,40	57,60	64,80	72,00	79,20	86,40	93,60	100,80	108,00
	10	54,00	63,00	72,00	81,00	90,00	99,00	108,00	117,00		
	12	64,80	75,60	86,40	97,20	108,00	118,80				
	14	75,60	88,20	100,80	113,40						

Working width 30 m

		Setpoint l/ha									
Working width 30 m	Speed	120	140	160	180	200	220	240	260	280	300
	km/h	l/min - which are measured by the central flow meter									
	4	24,00	28,00	32,00	36,00	40,00	44,00	48,00	52,00	56,00	60,00
	6	36,00	42,00	48,00	54,00	60,00	66,00	72,00	78,00	84,00	90,00
	8	48,00	56,00	64,00	72,00	80,00	88,00	96,00	104,00	112,00	120,00
	10	60,00	70,00	80,00	90,00	100,00	110,00	120,00			
	12	72,00	84,00	96,00	108,00	120,00					
	14	84,00	98,00	112,00							

Working width 36 m

		Setpoint l/ha									
Working width 36 m	Speed	120	140	160	180	200	220	240	260	280	300
	km/h	l/min - which are measured by the central flow meter									
	4	28,80	33,60	38,40	43,20	48,00	52,80	57,60	62,40	67,20	72,00
	6	43,20	50,40	57,60	64,80	72,00	79,20	86,40	93,60	100,80	108,00
	8	57,60	67,20	76,80	86,40	96,00	105,60	115,20			
	10	72,00	84,00	96,00	108,00	120,00					
	12	86,40	100,80	115,20							
	14	100,80	117,60								

10. TRAIL-Control (option)

The TRAIL-Control system steers the trailed sprayer so that its tires precisely follow the tractor‘s lane. In order for TRAIL-Control to work, the following requirements must be met:

- Minimum speed = 3 km / h. Steering is not possible at lower speeds.
- Maximum speed = 15 km / h. If you drive faster than 15 km / h, TRAIL-Control switches off automatically.
- Minimum oil throughput on the tractor‘s hydraulic system = 25 l / min. The minimum oil throughput can be higher for large field sprayers.

10. 1. TRAIL-Control control

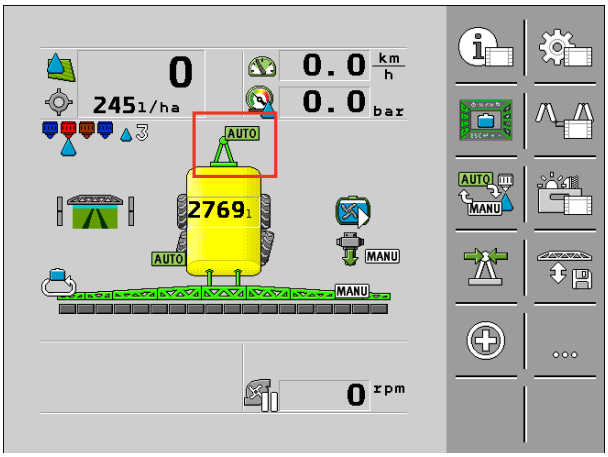


Abb. 59. TrailControl

10. 1. 1. TRAIL-Control ON/OFF

Procedure	Softkey/Lever
1. Press the „Folding mask“ softkey.	
2. Activate / deactivate the „TRAIL-Control“ softkey or with the joystick „.	

= TRAIL-Control off

= TRAIL-Control manual steering

= TRAIL-Control automatic steering

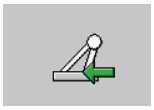
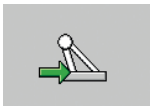
10. 1. 2. TRAIL-Control-Automatik ON/OFF

Procedure	Softkey/Lever
1. Activate „TRAIL-Control automatic“. » With the „TRAIL-Control-Automatic“ softkey on the operator panel or » With the „TRAIL-Control-Automatic“ button on the joystick.	 

 = Trail-Control manual steering

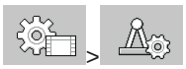
 = Trail-Control automatic steering

10. 1. 3. TRAIL-Control in manual mode

	To the left	Middle position	To the right
Softkey			
Joystick			

10. 1. 4. Activate/deactivate steering against a slope

„Steer against a slope“ is only active in automatic mode.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Call up „Tiller parameters“ with the softkey.	
3. Activate / deactivate with the „Steer against the slope“ softkey.	

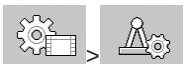
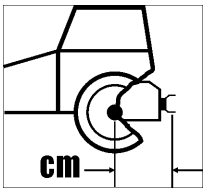
10. 1. 5. Prepare TRAIL-Control for road travel

Before the field sprayer can be driven on public roads, TRAIL-Control must be switched off.

10. 2. Configure TRAIL-Control

10. 2. 1. Adapt the configuration to the tractor

The user has the possibility to change some parameters: to slightly influence the behavior of the system or to enable connection to another tractor.

Procedure	Softkey/Lever
4. Press the „Machine data“ softkey. 5. Call up „Tiller parameters“ with the softkey.	
6. Select input „Trakt.Achse <-> Coupling“ with the rotary knob / by tapping.	
7. Enter the distance between the “center of the rear axle” and the “center of the trailer coupling” in centimeters and confirm.	
8. Mark „Hydraulic speed.“ With the rotary knob / by tapping. Only enter for trailer devices with a proportional valve. “Hydraulic speed” is a value for setting the steering speed. 9. Enter „XX% / °“ and confirm.	
10. „Deviation tolerance“ with rotary knob / by tapping to mark. 11. Enter value and confirm. The deviation tolerance influences the behavior of the steering in the area of the central position. The smaller the tolerance is set, the more sensitive the control reacts to small changes	
TRAIL-Control has now been adapted to the tractor. If the tractor is changed, the configuration must be done again.	

10. 2. 2. Calibrate TRAIL-Control

TRAIL-Control must be recalibrated:

- » before first use
- » at the beginning of each season
- » when inaccuracies occur

TRAIL-Control includes manual and automatic steps for calibration.

The prerequisites for the calibration are a level surface and a distance that can be driven in a straight line for 30 seconds.

Procedure	Softkey/Lever
1. Switch TRAIL-Control to manual mode with the joystick. This symbol must appear in the display  .	
2. Press the „Machine data“ softkey. 3. Call up „Tiller parameters“ with the softkey.	
4. Drawbar with joystick left and right in central position bring.	
5. Start calibration with the softkey.	
6. Press „Continue calibration“ within 3 seconds and wait until the calibration is complete. Progress is displayed.	
7. Use the joystick to steer the tiller as far to the left as possible.	
8. Start calibration with the softkey.	
9. Press „Continue calibration“ within 3 seconds and wait until the calibration is complete. Progress is displayed.	

Procedure	Softkey/Lever
10. Use the joystick to steer the tiller as far to the right as possible.	
11. Start calibration with the softkey.	
12. Press „Continue calibration“ within 3 seconds and wait until the calibration is complete. Progress is displayed.	
13. Drawbar with joystick left and right in central position bring.	
14. Drive straight ahead at 4-5 km / h.	
15. Press „Continue calibration“ within 3 seconds and wait until the calibration is complete. » The trailer device (or the drawbar) now moves slowly to the left and then slowly to the right. » This process can take up to 20 seconds. » Calibration is complete when the message „Hydraulic Performance: Calibration in progress ”is hidden.	

10. 2. 3. Configure automatic centering

The system is able to automatically center the trailer device in certain situations.

Procedure	Softkey/Lever
1. Press the „Machine data“ softkey. 2. Call up „Tiller parameters“ with the softkey.	
3. Select centering types:	
» The drawbar is automatically centered when the maximum speed is exceeded. TRAIL-Control is switched off.	
» The drawbar is automatically centered when switching to manual mode.	
» The drawbar is automatically centered when centering manually with the joystick.	

10. 3. Centering for the reverse signal

As soon as the vehicle stops (= 0 km / h), the symbol appears on the screen (with stub axle steering): 

- » Reversing within ten seconds = the trailer device is centered.
- » Reversing after ten seconds = trailer device is not centered.

This prevents the trailer device from being centered by reversing when the vehicle is parked.

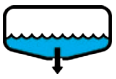
11. Cleaning

11. 1. Inside cleaning tank and spray system

The tank and the spraying system should be cleaned after each work in the field has been completed.

11. 1. 1. Rinsing the system with clear water from the fresh water tank

Thorough cleaning of the inside of the machine ensures a longer service life.

Procedure	Softkey/Lever
1. Open all sections.	
2. Operate the machine up to the minimum remaining quantity.	
3. Close sections of the nozzles.	
4. Drive the pump at minimum speed.	
5. Set the suction tap to „Device cleaning“.	
6. Open the ball valve for the supply from the fresh water tank.	
7. Close the ball valve after 100 liters.	
8. Set the suction tap to „Operation“.	
9. Open the agitator rocker arm.	
10. Operate the pump at operating speed.	
11. Activate all switching options of the program tap several times.	
12. Operate the canister flush rocker arm at the induction center.	
13. Run points one to twelve at least three times.	
14. Open all sections.	
15. Empty the machine by pouring out the rinsing water.	
16. Clean the suction filter.	
17. Clean the pressure filter.	

11. 1. 2. Cleaning when the barrel is full

This type of cleaning is only permitted in the event of a weather-related interruption.

Procedure	Softkey/Lever
1. Switch off the liquid pump.	
2. Close the control valve for the agitator.	
3. Open all sections.	
4. Set the suction tap to „Device cleaning“.	
5. Set the program tap to „spraying with stirring“.	
6. Open the ball valve for the supply from the fresh water tank.	
7. Open all sections.	
8. Operate the liquid pump in idle gas until only fresh water emerges from the nozzles.	
9. Turn off the liquid pump.	
10. Clean the suction filter.	
11. Clean the pressure filter.	

11. 2. Cleaning filter

⚠ ATTENTION	
	***Working with pesticides*** *Poisoning of the body* » Plant protection products may only be processed by competent personnel. » Wear PPE. » Catch residual amounts. **Call for a doctor immediately**

11. 2. 1. Suction filter

The particles sucked into the suction filter can clog or damage the suction filter.

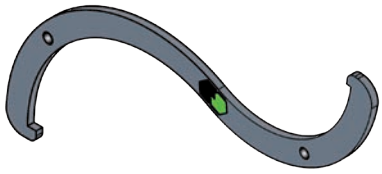


Abb. 60. Suction filter

Procedure	Softkey/Lever
1. Switch off the liquid pump.	
2. Set the suction tap to „Filter cleaning / blocking“.	
3. Open the cover of the suction filter housing with the suction filter wrench.	
4. Remove the suction filter insert.	
5. Rinse the suction filter element and the housing with clear water.	
6. Reinsert the suction filter insert.	
7. Close the cover of the suction filter housing.	

11. 2. 2. Cleaning the pressure filter

The pressure filter filters solids from the crop protection agent that can clog the nozzles. When changing the plant protection product, it is necessary to clean this filter.

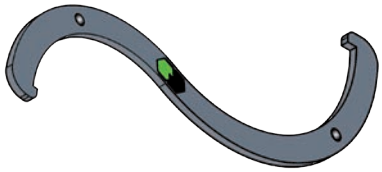


Abb. 61. Clean the pressure filter

Procedure	Softkey/Lever
1. Switch off the liquid pump.	
2. Set the suction tap to „Filter cleaning / blocking“.	
3. Loosen the screw connection on the pressure filter.	
4. Unscrew the cover of the pressure filter housing.	
5. Remove the pressure filter insert.	
6. Rinse the pressure filter element with clear water.	
7. Reinsert the pressure filter element.	
8. Close the cover of the pressure filter housing.	

11. 3. Exterior cleaning

11. 3. 1. With high pressure cleaner (option)

⚠ ATTENTION	
	***Working with a pressure washer*** *Risk of injury to the body from liquids with strong pressure* » Never point the cleaning gun at people or animals. » Make sure that no other people are in the work area. » Pay attention to the resulting recoil. » If the device is damaged, do not use it and have it repaired. » Do not spray on lines and devices that are under voltage. » Wear suitable work clothes and sturdy shoes. **Provide first aid immediately and consult a doctor.**

Procedure
1. Clean the machine, including the underbody and axles.

12. Maintenance

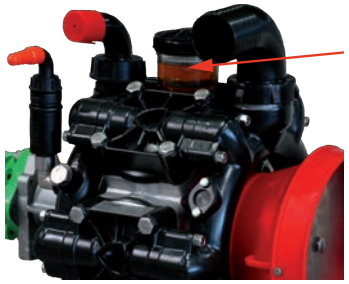
12. 1. Spare parts

When ordering spare parts, contact your local dealer.

Customer service	
	HERBERT DAMMANN GmbH
Contact	+49 4163 8163 60 +49 4163 8163 71
	Kundendienst@dammann-technik.de
Spare parts service	
	HERBERT DAMMANN GmbH
Contact	+49 4163 8163 51 +49 4163 8163 71
	ET_Lager@dammann-technik.de

12. 2. Daily maintenance

Before each use of the trailed sprayer, the following must be ensured and checked:

Procedure	
1. Check the oil level of the liquid pump » during operation. » The oil level must be between minimum and maximum. Note: Pump AR320 (option) = is equipped with two sight glasses	
2. Tire pressure and nuts of the wheel bolts.	
3. All grease nipples are to be greased according to the lubrication plan. *Tip: All grease nipples can be reached more easily when the boom is folded out.*	
4. The functions of the signal and lighting system must be tested.	
5. Pneumatic: » Check the oiler and if necessary with acid-free pneumatic oil up to fill up the max. Mark on the sight glass. » Drain and empty the compressed air filter. » Drain the compressed air reservoir through the drain valve and, if necessary, unscrew and clean.	

Procedure
6. Check all hoses for leaks.
7. Check all oilers and maintenance units.
8. Check the steel wire ropes of the mast and the axle: » Breakage of a strand » Kinks and bruises » Bird-caging » Kink » Rust damage, e.g. B. Corrosion scars » Strong overheating » Heavy wear on the rope end connection, e.g. the compression sleeve, the splice » Number of visible wire breaks (maximum 10% of the rope diameter)
9. Coupling heads of the brake lines. When coupling, make sure that the sealing surfaces that come into contact with one another are not dirty or damaged. » Replace damaged seals. » Replace damaged dust cover.

12. 3. Quarterly maintenance work on the braking system

INFO
Locating position: The pipe filter is located on the 20 liter compressed air storage tank. All other pipe filters are integrated into the coupling heads of the pneumatics.

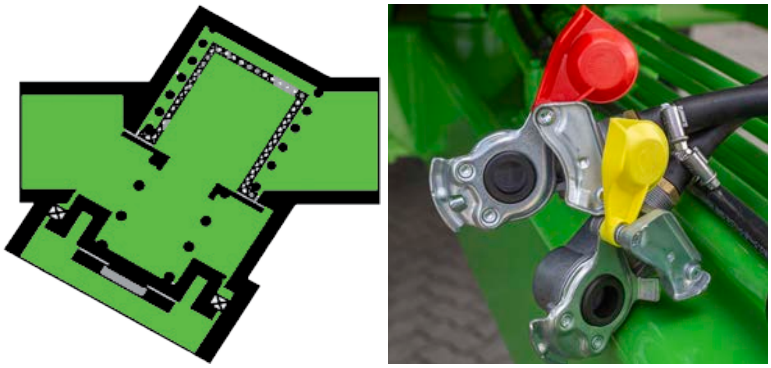


Abb. 62. Inline filter

Procedure
1. Clean or replace the pipe filter. 1. 1. Depressurise the trailer. 1. 2. Carefully pull out the locking pin.

Procedure
1. 3. Remove cover. 1. 4. Remove the filter. 1. 5. Clean the filter with compressed air (replace if necessary). 1. 6. Put the filter back into the filter housing and adjust with the spring. 1. 7. Put the cover back on and secure it with a split pin.
2. Check the lever travel of the brake cylinders » If the stroke of the brake cylinder on the trailer reaches 2/3 of the total stroke, the brake must be readjusted. » Brake lever and linkage must slide smoothly, lubricate if necessary.
3. Check that the bellows and protective bellows are in perfect condition.
4. Check pipe and hose routing for leaks and possible damage.

12. 4. Semi-annual maintenance work

12. 4. 1. Maintenance tank bolts

Control tightening torques:

M12 50 Nm when the tank is full

M16 80 Nm when the tank is full

If the values are not reached, tighten the nuts until the values are reached. The exact torque can be found on the stickers on the barrel screws.

Procedure
1. Check after a week in operation.
2. Check after one month in operation.
Then check every six months.

12. 5. Every three years

12. 5. 1. Device control

In accordance with the Plant Protection Directive 2009/128 / EC, the plant protection device must be checked regularly by a notified body with certification.

Condition	Interval
New machine	Carry out a device check over a period of five years
Used machine	Every three years thereafter

Tip: The test sticker indicates the next test date.

12. 6. Maintenance after hours of operation

12. 6. 1. Maintenance of the liquid pump

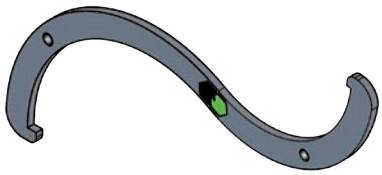
See separate instructions from the pump manufacturer. The pump manufacturer only provides a guarantee if the prescribed maintenance intervals are adhered to.

12. 7. Filter change

⚠ ATTENTION	
	***Working with pesticides*** *Poisoning of the body* » Plant protection products may only be processed by trained people. » Clean the inside and outside of the machine. » Wear PPE. **Call for a doctor immediately.**

12. 8. Suction filter

Change only after cleaning the inside.



Procedure	
1. Switch off the liquid pump.	
2. Set the suction tap to „Filter cleaning / blocking“ (S2.3).	
3. Open the cover of the suction filter housing with the suction filter wrench.	
4. Remove the suction filter insert.	
5. Rinse the suction filter housing with clear water.	
6. Insert a new suction filter insert.	
7. Close the cover of the suction filter housing. Hand-tight the screw connection of the suction filter housing.	

12. 9. Pressure filter

Change only after cleaning the inside.

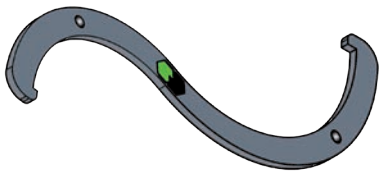
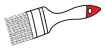
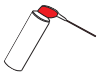
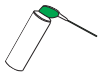


Abb. 63. Pressure filter change

Procedure
1. Switch off the liquid pump.
2. Set the suction tap to „Filter cleaning / blocking“ (S2.3). 
3. Loosen the screw connection on the pressure filter.
4. Unscrew the cover of the pressure filter housing.
5. Remove the pressure filter insert.
6. Rinse the pressure filter housing with clear water.
7. Insert a new pressure filter element.
8. Close the cover of the pressure filter housing.

12. 10. Lubricating the trailed sprayer

Legend:

	Lubricate/fill (Multigrade grease)		Lubricate / fill (commercially available grease up to NLGI class 2)		Greasing (Multigrade grease)
	Special grease (Art.-Nr. 11049198)		Spray grease / WD40		Never rust-Spray

12. 10. 1. Overview of lubrication points

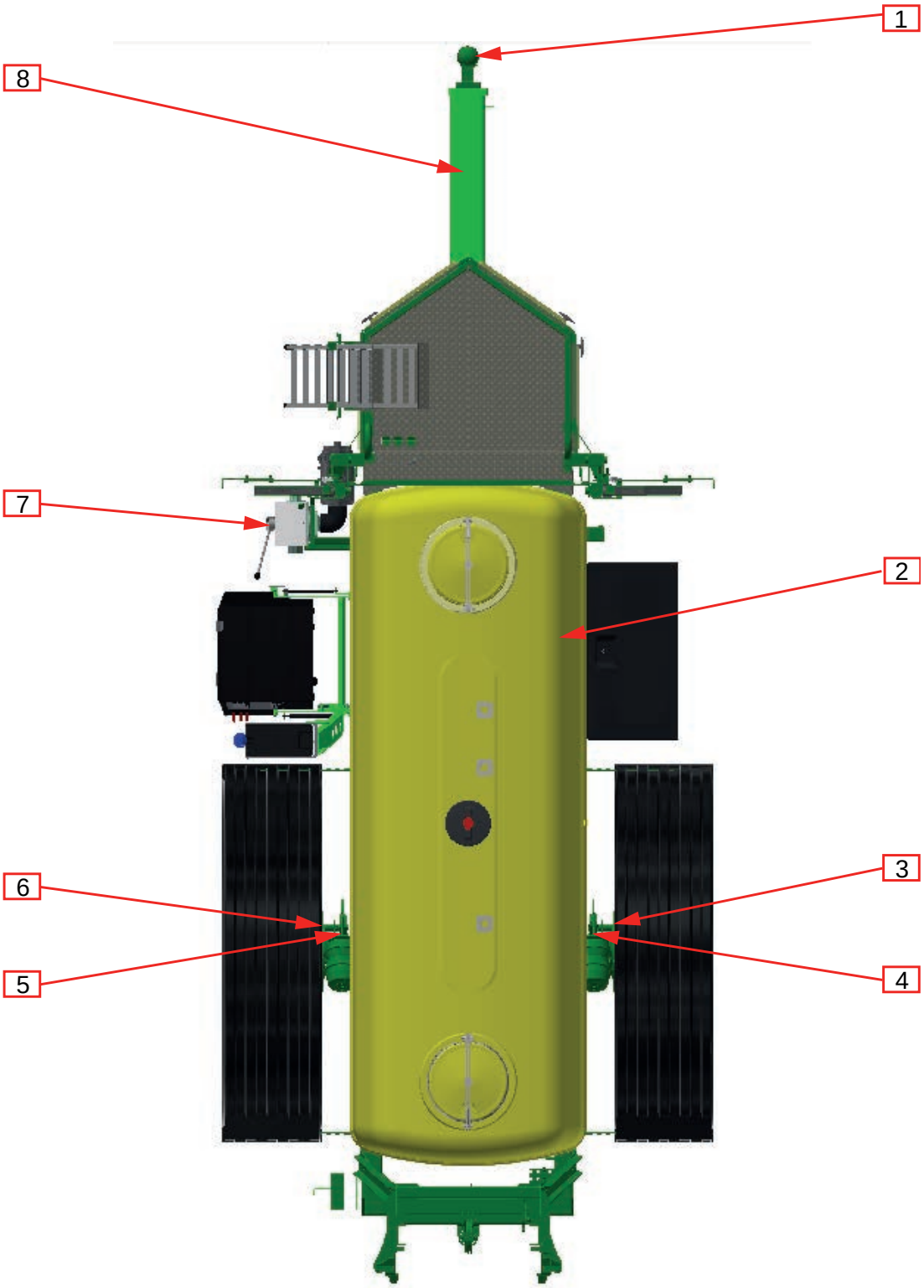
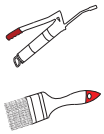


Abb. 64. Land-Cruiser chassis lubrication plan

Pos.	Description		Pos.	Description	
1	Ball head/hitch		2	Parking brake	
3	Brake shaft on the right		4	Brake lever on the right	
5	Brake lever on the left		6	Brake shaft on the left	
7	Suction tap shaft (option)		8	Steering drawbar (see steering drawbar ANP Land cruiser)	

12. 10. 2. Overview of the Land-Cruiser steering drawbar

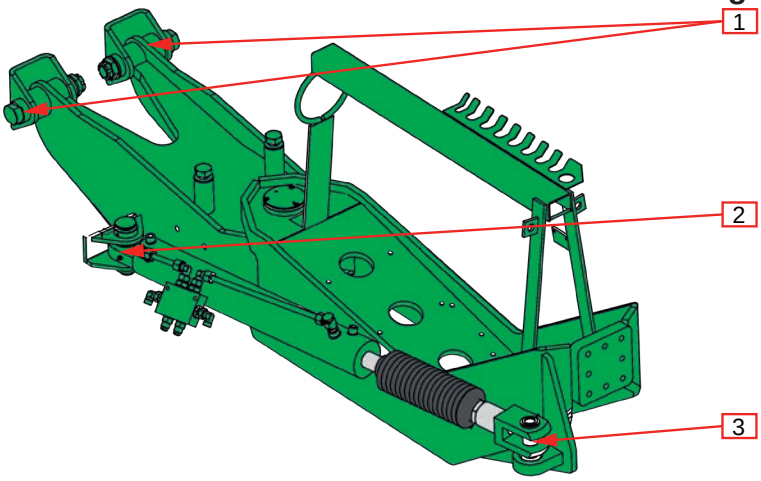
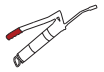


Abb. 65. Lenkdeichsel Land-Cruiser

Pos.	Description			Pos.	Description		
1	Drawbar connection Left Right		2x	2	Rear steering cylinder		3x
3	Steering cylinder in front		1x				

12. 10. 3. Mechanical suction tap

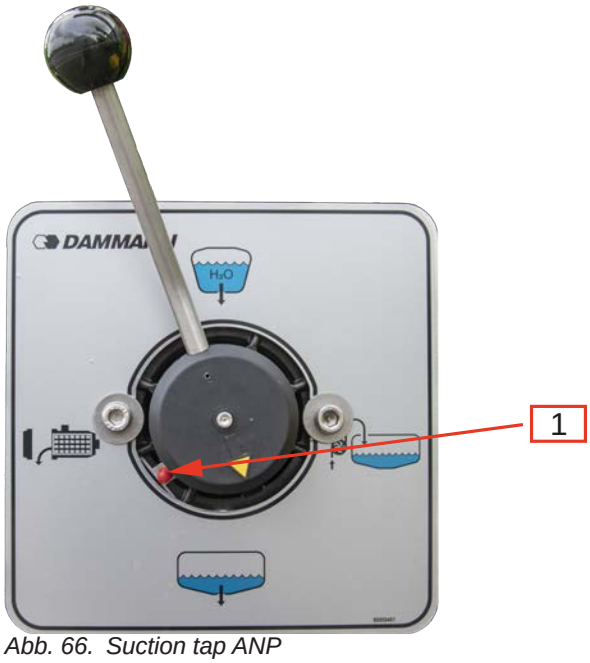


Abb. 66. Suction tap ANP

Pos.	Description	Pos.	Description
1	Grease nipple		

12. 10. 4. Mechanical program tap

Abb. 67. Program tap example

Pos.	Description	Pos.	Description
1	Grease nipple		

Info
Grease leakage from the pressure relief valve indicates one or more blocked lubrication lines or a malfunction on the progressive feeder. The cause must always be determined and remedied! Under certain circumstances, otherwise important lubrication points cannot be supplied with grease.

12. 10. 5. Induction hopper

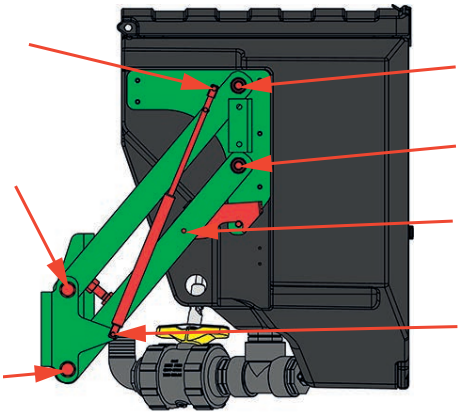
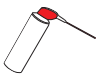


Abb. 68. Lubricate the induction center

Pos.	Description		Pos.	Description	
1	Articulation points of both lifting arms				

12. 10. 6. Parking brake

Abb. 69. Grease the parking brake

Pos.	Description		Pos.	Description	
1	Schmiernippel				

12. 10. 7. Mast

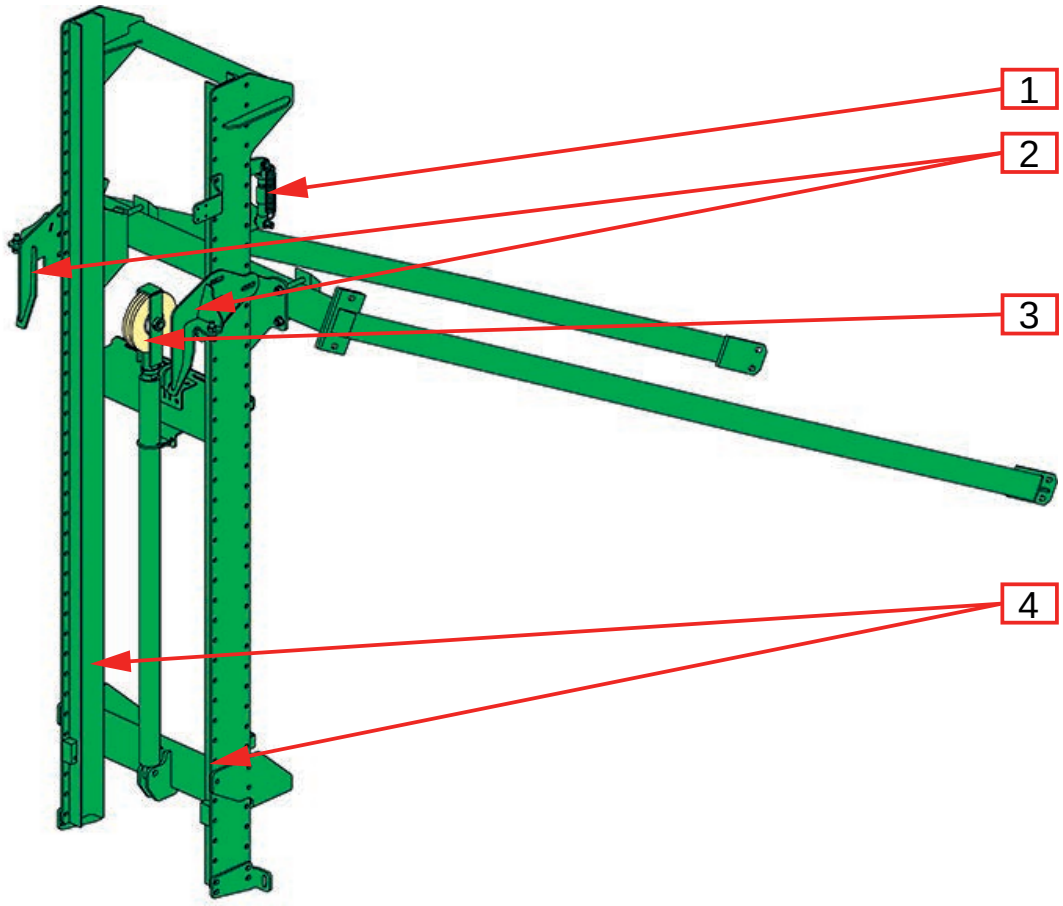
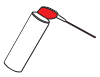
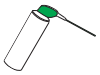


Abb. 70. Lift mast lubrication plan overview

Pos.	Description		Pos.	Description	
1	Locking mechanism		2	Catch hook	
3	Hoist rope		4	Skid	

12. 10. 8. Midframe

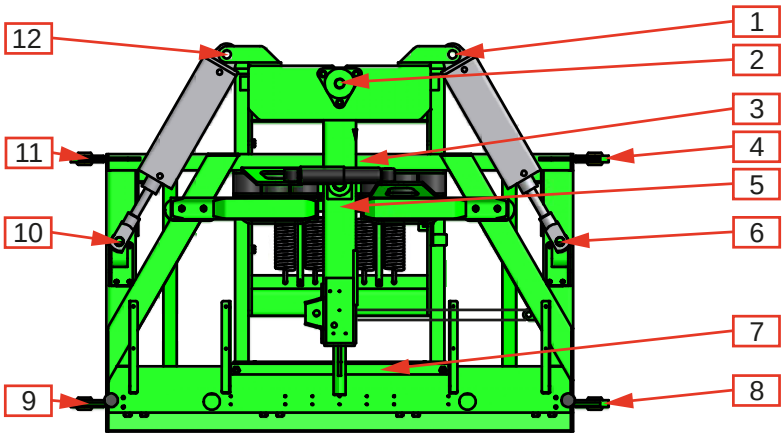
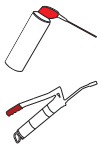
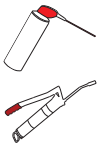
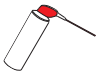
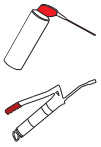
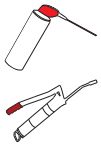
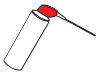
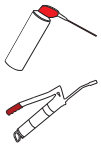
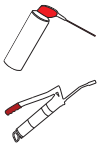


Abb. 71. Lubrication plan overview of the middle frame

Pos.	Description		Pos.	Description	
1	Swivel bearing (depending on the version either with or without grease nipple)		2	Self-aligning bearings	
3	Slide rail (inside)		4	Boom suspension (depending on the version either with or without grease nipple)	
5	Interim bearing		6	Swivel bearing	
7	Pendulum rail front + back		8	Rod suspension (depending on the version either with or without grease nipple)	
9	Rod suspension (depending on the version either with or without grease nipple)		10	Swivel bearing	
11	Rod suspension (depending on the version either with or without grease nipple)		12	Swivel bearing (depending on the version either with or without grease nipple)	

12. 10. 9. Stacker

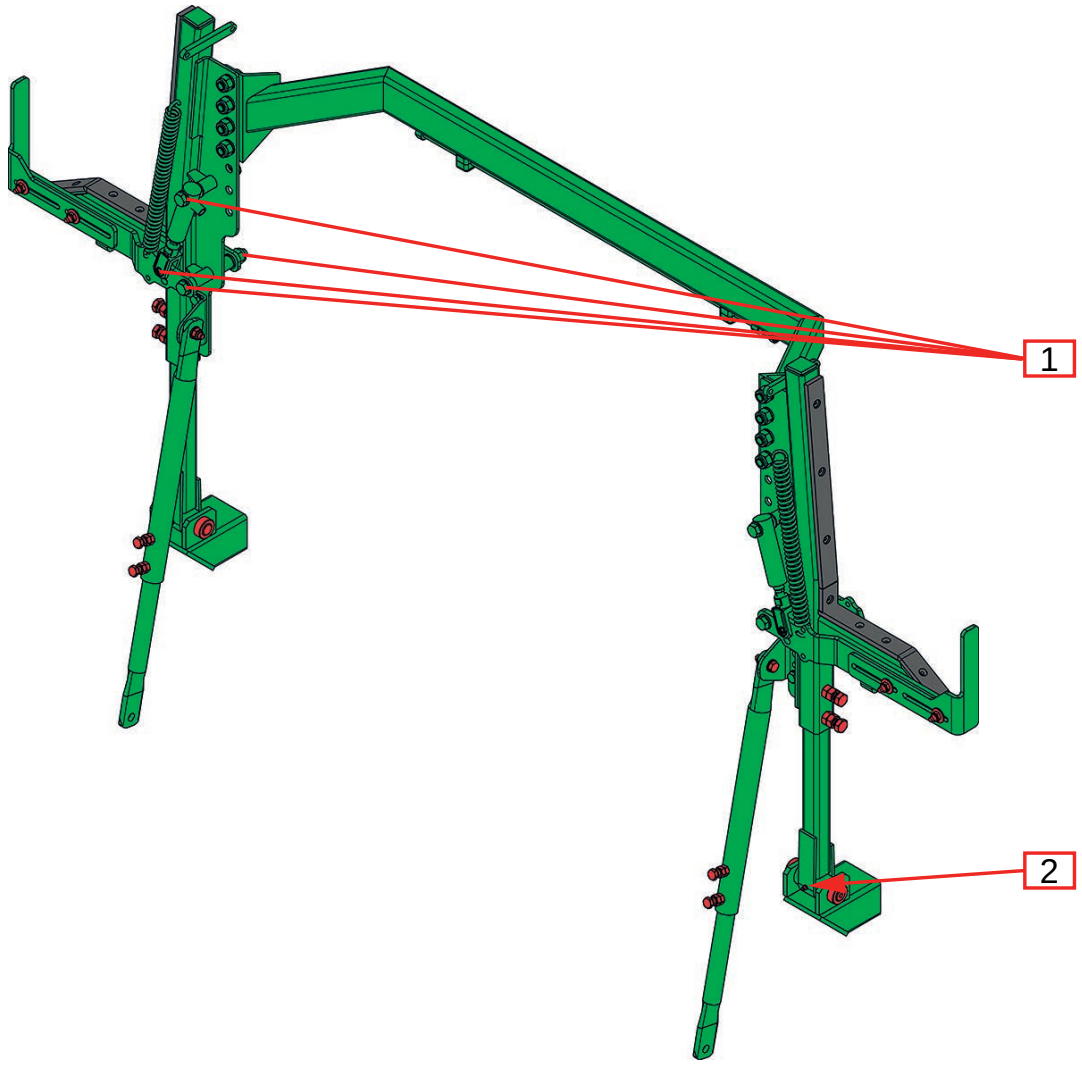
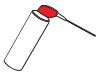


Abb. 72. Lubrication plan overview storage

Pos.	Description		Pos.	Description	
1	Securing		2	Bearing stacker (only once a year)	

12. 10. 10. Boom lubrication plan

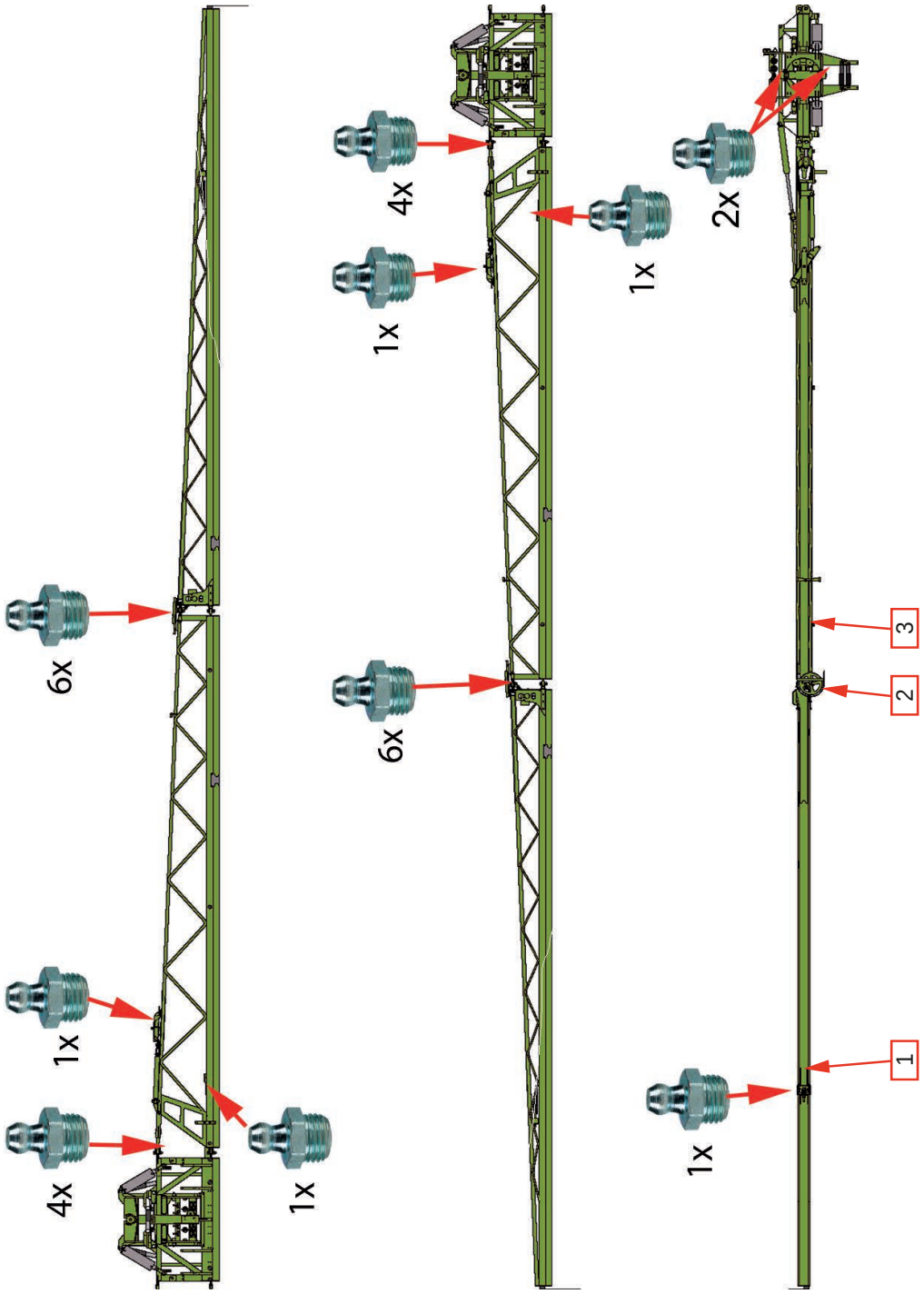


Abb. 73. Lubrication plan overview for the boom

Pos.	Description			Pos.	Description		
1	Pivot bearing and pivot point capping (option)			2	Chain		
3	Tie rods						

12. 11. Pneumatic system oiler

Various oilers are mounted on the devices. Two oilers are described as examples in this section.

12. 11. 1. Mist lubricator function test and adjustment

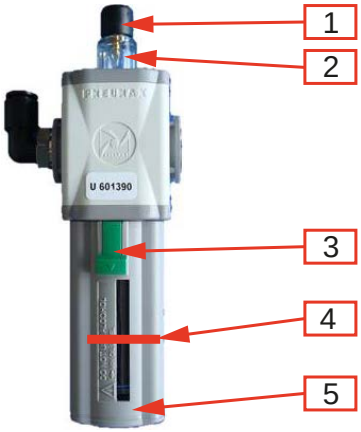


Abb. 74. Mist lubricator

Pos.	Description	Pos.	Description
1	Plastic cap	2	Sight glass
3	Locking	4	Recommended fill level
5	Reservoir	6	

Functional test:

Procedure
1. When activating the nozzles, you should see a drop of oil falling down in the sight glass (2).
2. Two drops of oil should fall down per switching pulse (nozzle on/off).

Adjust the mist lubricator:

Procedure
1. Remove the plastic cap (1).
2. Use an Allen key to adjust the opening on the sight glass (2) so that a drop of oil falls down.

Fill up with oil:

Procedure
1. Release compressed air.
2. Press the lock (3) down.
3. Turn the container (5) to the left and remove.
4. Fill in oil.
5. Position the container and screw it tight clockwise.

12. 11. 2. EDS-oiler

Abb. 75. EDS-oiler

Pos.	Description	Pos.	Description
1	Valve	2	Reservoir burst protection with viewing windows

12. 11. 3. Maintenance unit

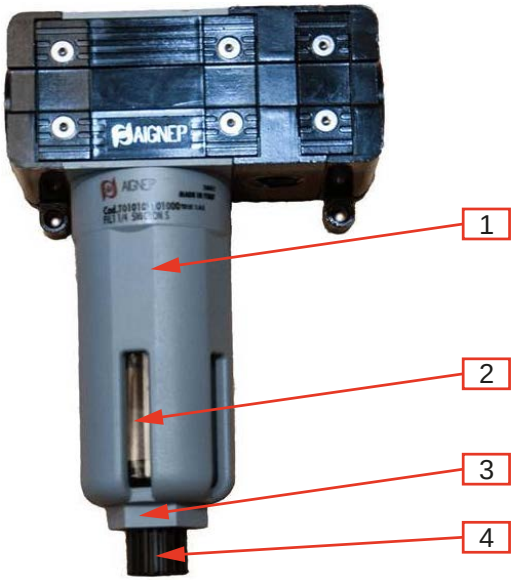


Abb. 76. Maintenance unit

Pos.	Description	Pos.	Description
1	Reservoir burst protection with viewing windows	2	Sight glass
3	Hexagon	4	Drain valve

12. 12. Lubricants and supplies

12. 12. 1. Hydraulic oils and pneumatic oils HLP 32 according to DIN 51524 (part 2)

Manufacturer	Description	Pourpoint in °C	Flash point in °C	Focus in °C	Class
Aral	Vitam GX 32	-24	262		HLP
BP	Energol HLP-HM 32	-30	216		HLP
Agip	Agip Oso 32	-30	204		HLP
	Agip Blasia 32	-29	215		CLP
Aral	Degol BG 32	-27	200	250	CLP
Avia	Avia Fluid RSL 32	-27	214	237	HLP
	Gear RSX 32 S	-33	210	231	CLP
Castrol	Hyspin SP32	-28	200		HLP
	Hyspin AWS 32	-27	200		HLP
ExxonMobil	Nuto H32	-24	212		HLP
	DTE 24	-27	220		HLP
	Mobil SHC 524	-54	234	234	HLP
Ravenol	Hydr.- Öl TS32	-24	220		HLP
Shell	Tegula Oel 32	-33	210		HLP
	Tegula V32	-33	211		HLP
Texaco	Rando HD 32	-30	196	246	HLP
Total	Azolla ZS 32	-27	210	220	HLP

12. 13. Motor oils for the liquid pump

Manufacturer	Description	10W-30	10W-40	5W-30	5W-40
Aral Aktiengesellschaft, Hamburg/Deutschland	ARAL MegaTurboral		x		
	AVIA TURBOSYNTH HT-E 10W-40		x		
BP p.l.c. LONDON/UNITED KINGDOM	bp Energol IC MT		x		
	bp Vanellus Max Drain		x		
Castrol Limited SWINDON/UNITED KINGDOM	Castrol Enduron		x		
Total Lubrifiants PARIS la Defense Ce-dex/FRANCE	elf PERFORM. GALAXY FE 10W-30	x			
	Elf Performance Experty 10W-40		x		
Liqui Moly GmbH Ulm/Deutschland	LIQUI MOLY LKW-LANGZEIT-MO-TORÖL		x		

Manufacturer	Description	10W-30	10W-40	5W-30	5W-40
Exxon Mobil Corporation, FAIRFAX, Virginia/ USA	Mobil Delvac XHP Extra 10W-40		x		
	Mobil Delvac XHP LE 10W-40		x		
Shell International Petroleum Company LONDON/UNITED KINGDOM	Shell Rimula R5 M		x		
	Shell Rimula R6 M		x		
	Shell Rimula Signia		x		
	Shell Rimula Ultra		x		
	Shell SL 0807		x		
Svenska Statoil AB STOCKHOLM/SWEDEN	Statoil TruckWay E4 S 10W-40		x		

12. 14. Multipurpose grease for the lubrication points

Multigrade grease	Commercial lubricating grease according to DIN 51825 with code letter K
Central lubrication system	Commercially available grease up to NLGI class. 2
Suction / program tap	Special grease (Art.-Nr. 11049198)

13. To Store

13. 1. Turn off the machine

If possible, store the machine in a dry place out of season.

Precedure
1. Empty the tank.
2. Thoroughly clean the device inside and out.
3. Lubricate the device according to the lubrication plan in the „Maintenance“ chapter.
4. Winterize the machine over the winter months. See chapter „Winterizing the machine“.

13. 2. Winterizing the machine

13. 2. 1. Winter storage standard devices

⚠ ATTENTION

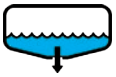
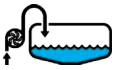
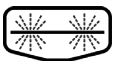
Environmental pollution

Environmental pollution from leaking liquids.

- » Do not let antifreeze get into the environment.
- » Collect antifreeze in suitable containers for reuse or disposal.
- » Dispose of antifreeze in accordance with the currently applicable disposal regulations.

Repair by HERBERT DAMMANN GmbH

Procedure	Softkey/Lever
1. Thoroughly clean the outside of the device.	
2. Clean the device with clear water. Pneumatic (option).	
3. Drain external filling connection.	
4. Pour antifreeze into the device (at least 150 l). The bigger the barrel, the more antifreeze is needed.	
5. Pour antifreeze into the fresh water tank (approx. 20 l).	
6. Remove the cap on the display from the fresh water tank and pour antifreeze into the pipe (approx. 2 l).	
7. Start the CID system (option). See chapter “Winter storage CID devices ”on page 194.	
8. Induction Hopper, operate all functions.	
9. Vacuum the induction center.	
10. Close all taps on the induction hopper.	

Procedure	Softkey/Lever
11. Set the suction tap to „Device cleaning“ (S2.2) and empty the fresh water tank.	
12. Set the suction tap to „Operation“ (S2.0).	
13. Set the program tap to „injector suction“ (S2.1).	
14. Set the program tap to „spraying with stirring“ (S1.0).	
15. Open the agitator.	
16. Open the filter rinse.	
17. Switch on pressure circulation flushing.	
18. Regulate the equal pressure valve to 6 bar.	
19. Regulate the equal pressure valve to 0 bar.	
20. Set the program tap to „Stir vigorously“ (S1.2).	
21. Open all nozzle holders/nozzles until antifreeze comes out (approx. Three seconds).	
22. Loosen the hose line on the pressure gauge (pump pressure 0 - 25 bar). Let the liquid run out until the antifreeze comes out. Then close the line again.	
23. Set the program tap to „Clean barrel“ (S1.2).	
24. Set the program tap to „spraying with stirring“ (S1.0). With the wash brush or vario spray tube option, open the shut-off valve and pump the anti-freeze solution into the hose until the anti-freeze solution emerges.	
25. Activate the pneumatic flush to direct the remaining antifreeze into the main drum.	
26. Clean the suction and pressure filters.	
27. Clean the filter of the high-pressure cleaner (option).	
28. Open the compressed air flushing safety valve.	
29. Blow out the device completely with compressed air.	
30. Blow out the nozzle line and nozzles with compressed air.	
31. Activate the pneumatic flush to direct the remaining antifreeze into the main drum.	
32. Drain the antifreeze through the drain valve on the sump of the main drum.	
33. Drain the antifreeze through the suction and filling connection.	

Procedure	Softkey/Lever
34. Completely grease the device (observe lubrication plans). » Grease the boom » Grease the mast » Grease the hoist ropes	
35. Fill up the central lubrication system and trigger it manually. (Option)	
36. Check/correct oil levels: » Hydraulic oil » Piston diaphragm pump » Mist lubricator » CID-pump » High pressure cleaner	
37. Drain the compressed air system	
38. Switch off the machine.	

13. 2. 2. Winter storage of DIS-PSM devices

Procedure	Softkey/Lever
1. Carry out all steps for wintering standard devices.	
2. Clean the inside of the direct feed tank.	
3. Fill the container with antifreeze.	
4. Switch through all functions of the DIS-PSM system and flush the system through.	

13. 2. 3. Winterization of CID devices

When the CID fluid system is winterized, the level switch in the fresh water tank must be bridged.

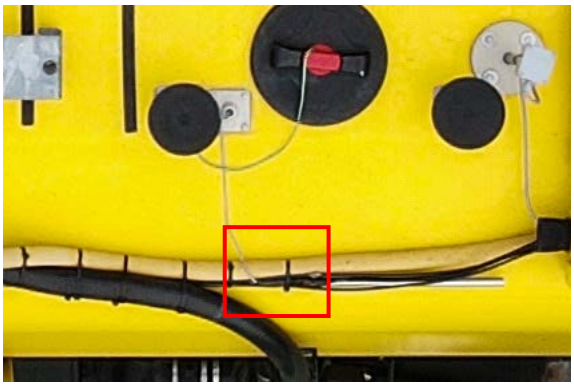


Abb. 77. DTP connection fresh water level sensor

Procedure	Softkey/Lever
1. Place the jumper plug (included in the scope of delivery).	
2. Fill approx. 20 liters of antifreeze into the fresh water tank.	
3. Activate CID.	
4. Pump the entire contents of the antifreeze from the fresh water tank into the barrel. Tip: The pump can run dry and therefore run longer.	
5. Remove the jumper plug. Reconnect the plug connection to the level sensor.	
6. Continue with normal winter storage.	

14. Troubleshooting

⚠ WARNING	
	***Unsafe machine*** *Injury to the body* » First rectify the fault before continuing to use the device. **In the event of injuries, immediately give first aid and consult a doctor.**

14. 1. Spare parts

When ordering spare parts, contact your local dealer.

Customer service

HERBERT DAMMANN GmbH

Address
+49 4163 8163 60
+49 4163 8163 71
Kundendienst@dammann-technik.de

Spare parts service

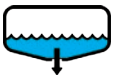
HERBERT DAMMANN GmbH

Contact
+49 4163 8163 52
+49 4163 8163 71
ET_Lager@dammann-technik.de

14. 2. Fault overview

14. 2. 1. Error messages crop protection device

Malfunction/Message	Cause	Elimination	Softkey/Lever
Pressure too low	Pressure too low	Increase pressure using the syringe control	
Pressure too high	Pressure too high	Use the syringe control to reduce the pressure	
Flow meter l/min above the measuring range	Too high flow on the flow meter. No reliable measurement possible		
Flow meter l/min below the Measuring range	Too low flow on the flow meter. No reliable measurement possible		
To be able to continue, enter the user password	Setting is password protected	Enter password	
Um fortsetzen zu können, Benutzer-Passwort eingeben	Setting is password protected	Enter password	

Malfunction/Message	Cause	Elimination	Softkey/Lever
BOOM From the transport position	Display via graphics in the boom and alarm message	Check the boom position in the transport position	
BOOM no locking	Alarm appears if there is no signal from the boom locking sensor	Check lock/repair	
		Check/replace locking sensor	
No folding, speed too high	The device is moved during folding	Only fold the boom when standing	
No overlap in Vario mode: change nozzles or set a larger pressure range	It is not possible for the nozzles to achieve all setpoints in the selected range	Mount other nozzles	
		Set a larger print area	
Pump oil level (only for devices with fill level monitoring)	The oil level in the liquid pump is too low	Check/top up oil level	
Pump speed too low	Liquid pump does not reach the setpoint	Switch on the pump	
		Increase pump speed	
		Check pump speed	
Pump speed too high	Liquid pump exceeds the setpoint	Pump speed reduce	
		Check pump speed	
Suction tap not in Working position	Suction tap is not in the „working position“ position	Set the suction tap to the „working position“	
Target value cannot be maintained	The system cannot adjust the application rate to the target value	Check settings	
Remaining tank volume	Remaining tank quantity too low	Fill up the barrel	
Vario mode requires at least two nozzles	Only one nozzle fitted	At least two nozzles must be mounted on the nozzle holder	
	Only one nozzle activated in the system	Nozzles in the system activate	
Angle sensor inclination defective	Height control configured, but the inclination angle sensor is detected as defective	Angle sensor check / replace	
To change the Parameter, the password must first be entered	The desired function is only available after entering the password	Enter password	

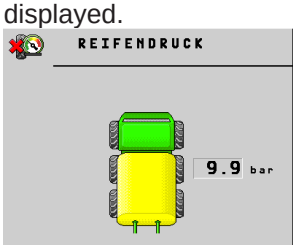
14. 2. 2. Plant protection device

Malfunction/Message	Cause	Elimination	Softkey/Lever
Application does not start / no speed	Control unit switched off	Switch on the control unit	
	Vehicle is stationary or speed is too low	Start/drive faster with the device	
	Speed sensor defective	Simulation speed activate and drive at constant speed	
		Replace speed sensor	
Failure of the nozzle circuit/ Pressure adjustment	Compressed air supply disturbed	Check/repair	
Little to no output	Suction filter contaminated	Clean the suction filter	
	Pressure filter contaminated	Clean the pressure filter	
	Hydraulics switched off	Switch on hydraulics	
The boom does not fold evenly or only on one side	Hydraulic connections have come loose	Hydraulikanschlüsse korrekt anschließen	
	Wear in the Bezels	Clean or replace panels	
Boom only works at a certain point	Dirt in the bezels	Clean the bezels	
The boom does not lift	Hydraulic connections not connected correctly	Hydraulic connections connect correctly	
	Stop hook bent	Align/exchange stop	
	Hydraulic cylinder for height locking is locked in position (Leakage oil loss)	Lower the boom, fold it out and raise it again Locking cylinder check / replace	
Boom: lowering not possible	The boom position is incorrect	Fold in or out completely	
Slope compensation without function	Voltage/compressed air supply failed	Check voltage/compressed air supply/repair	
	Control panel not switched on	Switch on the control unit	
Slope compensation too fast / too slow	Incorrect throttle setting	Adjust the throttle	
No AUTO regulation of the application rate	Defective flow meter	Switching to MAN mode - pressure setting to emergency operation 5 bar Flow meter to deceive	
No function on the joystick	Defective joystick	Multi-function handle in Deactivate machine data (0) Operation via softkeys on the terminal after restart Swap joystick	

Malfunction/Message	Cause	Elimination	Softkey/Lever
No boom folding	Position not correct	Raise the boom	
	Safety tap is not switched	Check setting	
	Power supply interrupted	Check power supply	
	Control unit not switched on	Switch on the control unit	
	Switch for special folding not activated	Operate the switch	
	Hydraulics switched off	Switch on hydraulics	
	Hydraulic connections not connected correctly	Hydraulic connections connect correctly	
No boom actuation	Electrical control defective Hydraulic pump defective Hydraulic control block defective	Repair	
No pressure display	Defective pressure sensor	Nothing - auto mode is working Replace pressure sensor	

14. 2. 3. (ATC) Adaptive Tire Control (option)

Malfunction/Message	Cause	Elimination	Softkey/Lever
Low air pressure (indicated by the tire pressure control system) 	If one or more pressure measurements are outside the set range, an alarm is triggered.	Check tire pressures and inflate / deflate wheel (s) to correct air pressure	
	Defective pressure sensor	Replace pressure sensor	
	Damaged tires	Repair or replace tires	
	Seals in the tire pressure regulation system defective	Replace seals	

Malfunction/Message	Cause	Elimination	Softkey/Lever
No connection to the tire pressure regulation system No softkeys can be operated. If a pressure measurement was received, a value of 9.9 bar is displayed. 	Cable connections interrupted	Check cable connections	

14. 2. 4. TankControl

Malfunction/Message	Cause	Elimination	Softkey/Lever
TankControl: display 9999	Maximum filling exceeded	Drain the excess amount into suitable containers. If the error persists, consult the operating instructions or contact customer service.	

14. 2. 5. Fluid Indicator (option)

If the Fluid Indicator malfunctions, refer to the manufacturer‘s operating instructions.

14. 2. 6. Liquid pump

Malfunction/Message	Cause	Elimination
Pump does not suck	One or more valves are leaking	Check and clean valve seats
The manometer makes big leaps. The water jet is irregular	Pump is sucking air or has not been primed	Hairline cracks in the suction hose - replace the suction hose. Check connections, tighten or re-seal
Pump runs very loud (no mechanical noise)		Let the pump run with the taps and control valve open.
The delivery rate drops, the pump is noisy	Oil level is too low	Refill oil
The oil level in the sight glass increases and turns milky in color	One or more membranes are damaged	Drain the oil, remove the cylinder heads and replace the diaphragms

14. 3. Wheel change

⚠ WARNING	
	***The machine overturns when changing tires*** *Injury to the body* » Have wheel changes and repairs / tire changes carried out by qualified persons only. » Empty the barrel. » Use a jack with a lifting capacity of at least 10 t. » Observe the operating instructions for the jack. » Tighten the parking brake against rolling away. » Secure wheels with wheel chocks against rolling away. » Use the jack only at the marked locations. » Secure the jack with a jack. » Use the specified tightening torque. » Only one person is allowed to stand under the machine. **In the event of injuries, immediately give first aid and consult a doctor.**

14. 3. 1. Loosen the wheel

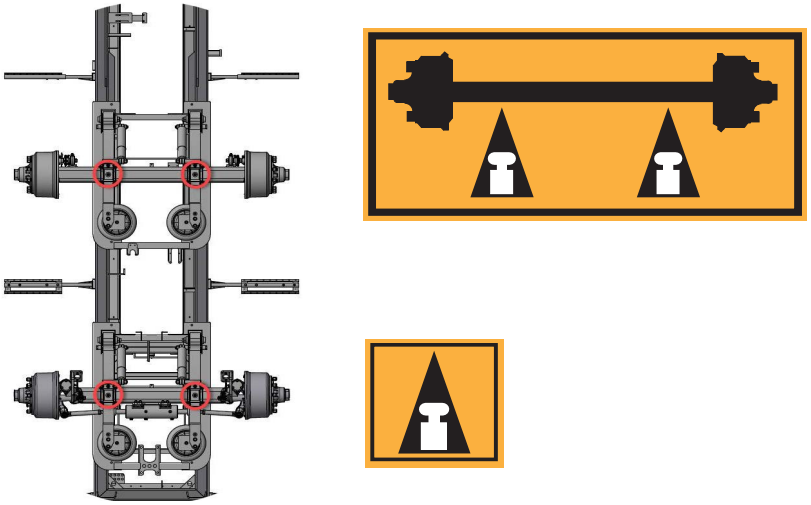


Abb. 78. Apply the jack

Procedure
1. If necessary, cordon off the work area (e.g. in the case of a busy road)
2. Transfer the contents of the barrel into a suitable container.
3. Apply the parking brake.
4. Use wheel chocks.
5. Dissolve the affected bike.
6. Position the jack at the marked positions (illustration) under the axle. » Depending on the surface, line the jack with wood to ensure a secure stand.

7. Pump up the axle until the wheel floats freely in the air.
8. Place a suitable jack under the axle and lower the jack.
9. Loosen the wheel completely.
10. Pull the wheel off the wheel hub.

14. 3. 2. Mount the wheel

Abb. 79. Order of tightening wheels

Procedure
1. Place the wheel on the wheel hub. Use aids if necessary.
2. Tighten the nuts hand-tight.
3. Remove the jack stand.
4. Use the jack to lower the axle so that the wheel is in contact with the ground.
5. Tighten nuts according to the tightening sequence. » Torque 650 - 700 Nm (M 24 (Key-width 36) » Retighten all wheel nuts after 50, 100 and 200 hours of operation.
6. Slowly lower the jack completely.
7. Check air pressure if necessary.

15. Disposal

After its use, dispose of the device according to the national and local laws applicable in the country of use. Observe the disposal regulations of all supplier manufacturers!

Commission certified dismantling companies with the disposal.

Observe the packaging and transport instructions from the supplier parts manufacturer.

15. 1. Dismantling

Make sure that all national and local safety requirements are observed. The dismantling may only be carried out by qualified personnel. Proceed as follows for dismantling:

1. Thoroughly clean the device inside and out.
2. Device cleaned and handed over to the specialist company with operating instructions.

15. 2. Disposal

After the machine has been taken out of service, it must be disposed of according to type.

» Disconnect in accordance with applicable regulations:
  - » Ferrous metals
  - » Non-ferrous metals
  - » Cable scrap
  - » Plastics
  - » GRP barrel (hazardous waste)
  - » Tires
  - » Liquids

» Take the components and operating materials of the device to a certified dismantling company, who will dispose of them according to type.

16. Spray tables

We recommend using recognized nozzles from the JKI and complying with the relevant information such as pressure range, droplet spectrum and application tables.

The nozzles are attached to the nozzle holder at the factory, some with a prefilter.

Consult HERBERT DAMMANN GmbH when using special nozzles!

The mesh size of any nozzle pre-filters used must be matched to the nozzle size. Sieve filters are available in different sizes.

25 M ¸ 0,65 mm MW 60 M ¸ 0,25 mm MW 80 M ¸ 0,18 mm MW

MW = Mesh size M = Stitches per inch

16. 1. Notes on using the nozzle tables

1. Determination of the driving speed of the carrier vehicle on a measured distance (100 m), desired working speed (ideally approx. 6 km / h) with a nominal tractor speed, if applicable, PTO speed of 540 rpm.
2. Determination of the amount of liquid applied in l / ha, e.g. B. 270 l / ha.
3. Specifying the nozzle type and size, e.g. B. AD POM 04 according to the application rate and driving speed.
4. Pressure setting on the pressure control valve to the associated spray pressure with water with the sections open and the tractor‘s nominal speed (PTO speed - pump speed when spraying). Dosing or pressure setting is also possible with the main switch open and the section valves closed (when changing nozzles with a filled liquid container).
5. The spray pressure may only be set in a pressure range of 1 - 6 bar. The recommended nozzle types relate to this pressure range. We only recommend JKI-approved nozzles.

16. 2. Checking the dosing and distribution accuracy

In principle, the plant protection equipment must be checked for metering and distribution accuracy after six months, and then every two years at the latest. These tests are carried out by officially recognized workshops.

Connection options for the pressure gauge test are available with appropriate adapters on the bayonet locks on the pressure sensor.

In the case of devices with computer control, the intermediate checks include recalibrating the measured values „impulses per liter“ and „impulses per 100 m driving distance“. This recalibration is further explained in the operating instructions for the operator terminal.

In addition, a random dosing control of individual nozzles is part of it. These random checks are to be carried out by the user himself as follows.

» Adjust spray pressure

» Catch the output volume of a nozzle over a precisely measured time (e.g. two minutes)

» Conversion of the output volume in liters / minute

» Comparison of the measured output quantity with the target quantity according to the nozzle table

If all nozzles have the same deviation, they are all worn evenly or the pressure gauge shows the wrong pressure. A manometer check can be used to determine whether the manometer is defective or whether the pressure difference determined between the nozzle and the manometer table should generally be taken into account.

The test connection for the manometer test is located in the plastic tub on the fitting: with an analog display directly on the fitting, with a digital display on the transition piece to the sensor.

To check the pump performance, the pressure hose is attached to the pump with a Magnum quick-release coupling. A flow meter can easily be installed between the pump and the program selector tap.

16. 3. Useful formulas

Liters/min./Nozzle =

$$\frac{\text{measured amount of water l}}{\text{measured time minutes}} = \frac{\text{measured amount of water 1 x 60}}{\text{measured time seconds}}$$

Liters/min./Nozzle =

$$\frac{\text{l / ha x km / h x nozzle spacing cm}}{60000}$$

Liters/ha =

$$\frac{\text{60.000 x l/min. / nozzle}}{\text{km/h x Düsenabstand cm}}$$

General tip

In the low pressure range of 1 - 2 bar, large droplets with little tendency to drift occur. In the pressure range of 2 - 5 bar, smaller droplets generally occur, which are very prone to drift.

Particular caution is required when using herbicides to avoid damage to neighboring crops. Adjust the working speed to the nozzle table, guidelines of the plant protection authorities and the Federal Biological Institute.

Note:

When selecting the nozzles, make sure that the permissible pump performance range is adhered to. Critical areas are marked in the tables for 3,000 l tanks, 230 l / min pump output and 28 m boom.

Control of the maximum possible flow rate per nozzle in l / min.

The maximum flow rate is the amount that the pump can deliver via the nozzles after the agitator volume has been subtracted. If a separate agitator pump is installed, the full pump output is available.

16. 4. Spray tables

16. 4. 1. Lechler spray table for air injector nozzles ID

	[bar]	l/min	l/ha								
			5,0 km/h	6,0 km/h	7,0 km/h	8,0 km/h	10,0 km/h	12,0 km/h	14,0 km/h	16,0 km/h	18,0 km/h
ID 90-01 120-01 (80/60 M)	3,0	0,39	94	78	67	59	47	39	33	29	27
	4,0	0,45	108	90	77	68	54	45	39	34	30
	5,0	0,51	121	102	87	77	61	51	44	38	34
	6,0	0,57	137	114	98	86	68	57	49	43	38
	7,0	0,61	146	122	105	92	73	61	52	46	41
	8,0	0,65	156	130	111	98	78	65	56	49	43
ID 90-015 120-015 (60M)	3,0	0,59	141	118	101	89	71	59	51	44	39
	4,0	0,68	163	136	117	102	82	68	58	51	45
	5,0	0,76	182	152	130	114	91	76	65	57	51
	6,0	0,84	199	168	144	126	101	84	72	63	56
	7,0	0,90	216	180	154	135	108	90	77	68	60
	8,0	0,96	231	192	165	144	115	96	82	72	64
ID 90-02 120-02 (60 M)	3,0	0,78	188	156	134	117	94	78	67	59	52
	4,0	0,90	217	180	154	135	108	90	77	68	60
	5,0	1,01	243	202	173	152	121	101	87	76	67
	6,0	1,11	266	222	190	1 67	133	111	95	83	74
	7,0	1,19	286	238	204	179	143	119	102	89	79
	8,0	1,27	306	254	218	191	152	127	109	95	85
ID 90-025 120-025 (60M)	3,0	0,99	238	198	170	149	119	99	85	74	66
	4,0	1,15	276	230	197	173	138	115	99	86	77
	5,0	1,28	307	256	219	192	154	128	110	96	85
	6,0	1,40	336	280	240	210	168	140	120	105	93
	7,0	1,52	365	304	261	228	182	152	130	114	101
	8,0	1,62	389	324	278	243	194	162	139	122	108
ID 90-03 120-03 (60M)	3,0	1,17	280	234	201	176	140	117	100	88	78
	4,0	1,35	325	270	231	203	162	135	116	101	90
	5,0	1,52	364	304	261	228	182	152	130	114	101
	6,0	1,64	395	328	281	246	197	164	141	123	102
	7,0	1,79	430	358	307	269	215	179	153	134	119
	8,0	1,91	460	383	328	288	230	191	164	143	127
ID 90-04 120-04 (60M)	3,0	1,55	373	310	266	233	186	155	133	116	103
	4,0	1,80	432	360	309	270	216	180	154	135	120
	5,0	2,02	484	404	346	303	242	202	173	152	135
	6,0	2,21	530	442	379	332	265	221	189	166	147
	7,0	2,37	569	474	406	356	284	237	203	178	158
	8,0	2,53	608	507	434	381	304	253	217	190	169
ID 90-05 120-05 (60/25M)	2,0	1,57	378	315	270	236	188	158	135	118	105
	3,0	1,94	466	388	333	291	233	194	166	146	129
	4,0	2,25	539	450	386	338	270	225	193	169	150
	5,0	2,50	595	496	425	372	298	248	213	186	165
	6,0	2,74	660	550	471	413	330	275	236	206	183
	7,0	2,96	710	592	507	444	355	296	254	222	197
	8,0	3,17	761	634	543	476	380	317	272	238	211
ID 90-06 120-06 (60/25 M)	2,0	1,88	452	377	323	283	225	189	161	141	125
	3,0	2,32	557	464	398	348	278	232	199	174	155
	4,0	2,69	646	538	461	404	323	269	231	202	179
	5,0	3,01	723	602	516	452	361	301	258	226	201
	6,0	3,28	787	656	562	492	394	328	281	246	219
	7,0	3,54	850	708	607	531	425	354	303	266	236
	8,0	3,79	910	758	650	569	455	379	325	284	253
ID 90-08 120-08 (60/25 M)	2,0	2,50	600	500	428	375	300	250	214	188	167
	3,0	3,08	739	616	528	462	361	308	264	231	205
	4,0	3,57	857	714	612	535	428	353	306	268	238
	5,0	4,00	960	800	685	600	480	400	343	300	267
	6,0	4,34	1042	868	744	651	521	434	372	326	289
	7,0	4,68	1122	935	802	702	561	468	401	351	312
	8,0	5,00	1200	1000	857	750	600	500	429	375	333

16. 4. 2. Agrotop spray table

Type ISO	Pressure bar	l/ min	Application rate l/ha at km/h										
			6	7	8	9	10	12	14	16	18	20	22
–015 green	1,0	0,35	69	59	52	46	42	35	30	26	23	21	9
	1,5	0,42	85	73	64	57	51	42	36	32	28	25	23
	2,0	0,49	98	84	74	65	59	49	42	37	33	29	27
	2,5	0,55	110	94	82	73	66	55	47	41	37	33	30
	3,0	0,60	120	103	90	80	72	60	51	45	40	36	33
	4,0	0,69	139	119	104	92	83	69	59	52	46	42	38
	5,0	0,78	155	133	116	103	93	78	66	58	52	47	42
	6,0	0,85	170	146	127	113	102	85	73	64	57	51	46
	7,0	0,92	183	157	138	122	110	92	79	69	61	55	50
	8,0	0,98	196	168	147	131	118	98	84	74	65	59	53
–02 yellow	1,0	0,46	92	79	69	62	55	46	40	35	31	28	25
	1,5	0,57	113	97	85	75	68	57	49	42	38	34	31
	2,0	0,65	131	112	98	87	78	65	56	49	44	39	36
	2,5	0,73	146	125	110	97	88	73	63	55	49	44	40
	3,0	0,80	160	137	120	107	96	80	69	60	53	48	44
	4,0	0,92	185	158	139	123	111	92	79	69	62	55	50
	5,0	1,03	207	177	155	138	124	103	89	77	69	62	56
	6,0	1,13	226	194	170	151	136	113	97	85	75	68	62
	7,0	1,22	244	209	183	163	147	122	105	92	81	73	67
	8,0	1,31	261	224	196	174	157	131	112	98	87	78	71
–025 violet	1,0	0,58	115	99	87	77	69	58	49	43	38	35	31
	1,5	0,71	141	121	106	94	85	71	61	53	47	42	39
	2,0	0,82	163	140	122	109	98	82	70	61	54	49	45
	2,5	0,91	183	157	137	122	110	91	78	68	61	55	50
	3,0	1,00	200	171	150	133	120	100	86	75	67	60	55
	4,0	1,15	231	198	173	154	138	115	99	87	77	69	63
	5,0	1,29	258	221	194	172	155	129	111	97	86	77	70
	6,0	1,41	283	242	212	189	170	141	121	106	94	85	77
	7,0	1,53	306	262	229	204	183	153	131	115	102	92	83
	8,0	1,63	326	280	245	218	196	163	140	122	109	98	89
–03 blue	1,0	0,69	139	119	104	92	83	69	59	52	46	42	38
	1,5	0,85	170	146	127	113	102	85	73	64	57	51	46
	2,0	0,98	196	168	147	131	118	98	84	74	65	59	53
	2,5	1,10	219	188	164	146	131	110	94	82	73	66	60
	3,0	1,20	240	206	180	160	144	120	103	90	80	72	65
	4,0	1,39	277	237	208	185	166	139	119	104	92	83	76
	5,0	1,55	310	266	232	207	186	155	133	116	103	93	84
	6,0	1,70	339	291	255	226	204	170	145	127	113	102	93
	7,0	1,83	367	314	275	244	220	183	157	137	122	110	100
	8,0	1,96	392	336	294	261	235	196	168	147	131	118	107
–04 red	1,0	0,92	185	158	139	123	111	92	79	69	62	55	50
	1,5	1,13	226	194	170	151	136	113	97	85	75	68	62
	2,0	1,31	261	224	196	174	157	131	112	98	87	78	71
	2,5	1,46	292	250	219	195	175	146	125	110	97	88	80
	3,0	1,60	320	274	240	213	192	160	137	120	107	96	87
	4,0	1,85	370	317	277	246	222	185	158	139	123	111	101
	5,0	2,07	413	354	310	275	248	207	177	155	138	124	113
	6,0	2,26	453	388	339	302	272	226	194	170	151	136	123
	7,0	2,44	489	419	367	326	293	244	209	183	163	147	133
	8,0	2,61	522	448	392	348	313	261	224	196	174	157	142
–05 brown	1,0	1,16	231	198	173	154	139	116	99	87	77	69	63
	1,5	1,41	283	242	212	189	170	141	121	106	94	85	77
	2,0	1,63	327	280	245	218	196	163	140	122	109	98	89
	2,5	1,83	365	313	274	243	219	183	157	137	122	110	100
	3,0	2,00	400	343	300	267	240	200	171	150	133	120	109
	4,0	2,31	462	396	346	308	277	231	198	173	154	139	126
	5,0	2,58	516	443	387	344	310	258	221	194	172	155	141
	6,0	2,83	566	485	424	377	339	283	242	212	189	170	154
	7,0	3,06	611	524	458	407	367	306	262	229	204	183	167
	8,0	3,26	653	560	490	435	392	326	280	245	218	196	178

17. Circuit diagrams

17. 1. Hydraulic circuit diagrams

17. 1. 1. Hydraulic plan Land-Cruiser without control block

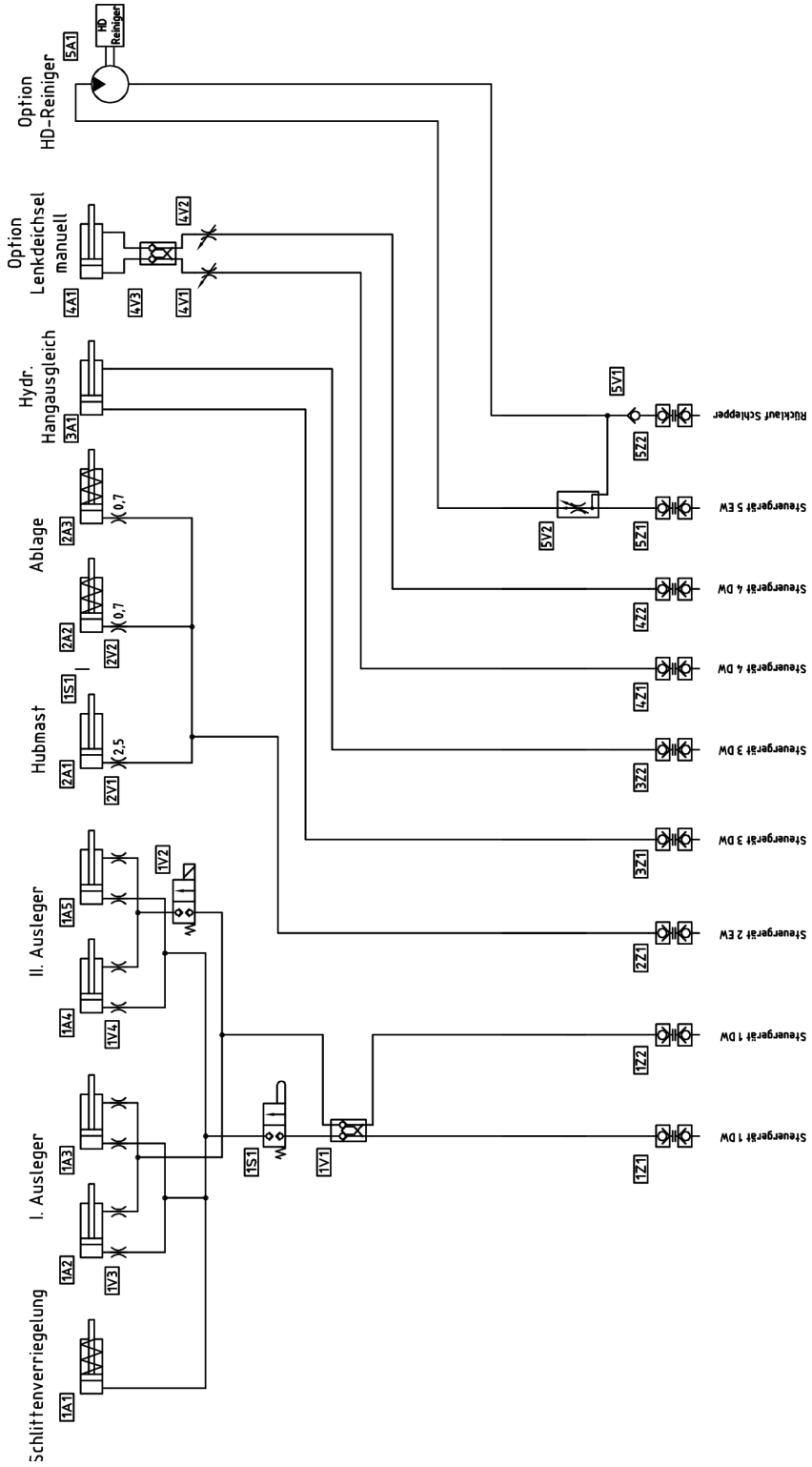


Abb. 80. Hydraulic plan Land-Cruiser with control block

Pos.	Designation	Pos.	Designation
1Z1	Coupling plug	1Z2	Coupling plug
1S1	2/2 way valve	1V1	Locking block
1V2	2/2-way valve closed when de-energized	1V3	Orifice (Size see list)
1V4	Orifice (Size see list)	1A1	Single acting cylinder slide lock
1A2	Double acting cylinder 1st boom	1A3	Double acting cylinder 1st boom
1A4	Double acting cylinder 2nd boom	1A5	Double acting cylinder 2nd boom
2Z1	Coupling plug	2V1	Orifice 2,5
2V2	Orifice 0,7	2A1	Single-acting cylinder mast
2A2	Double acting cylinder tray	2A3	Single-acting cylinder tray
3Z1	Coupling plug	3Z2	Coupling plug
3A1	Double-acting cylinder slope compensation	4Z1	Coupling plug
4Z2	Coupling plug	4V1	Throttle valve
4V2	Coupling plug	4V1	Locking block
4A1	Single-acting cylinder steering drawbar	5Z1	Coupling plug
5V1	Check valve	5V2	Flow control valve
5A1	Hydraulic motor pressure washer		

17. 1. 2. Hydraulic plan Land-Cruiser with control block

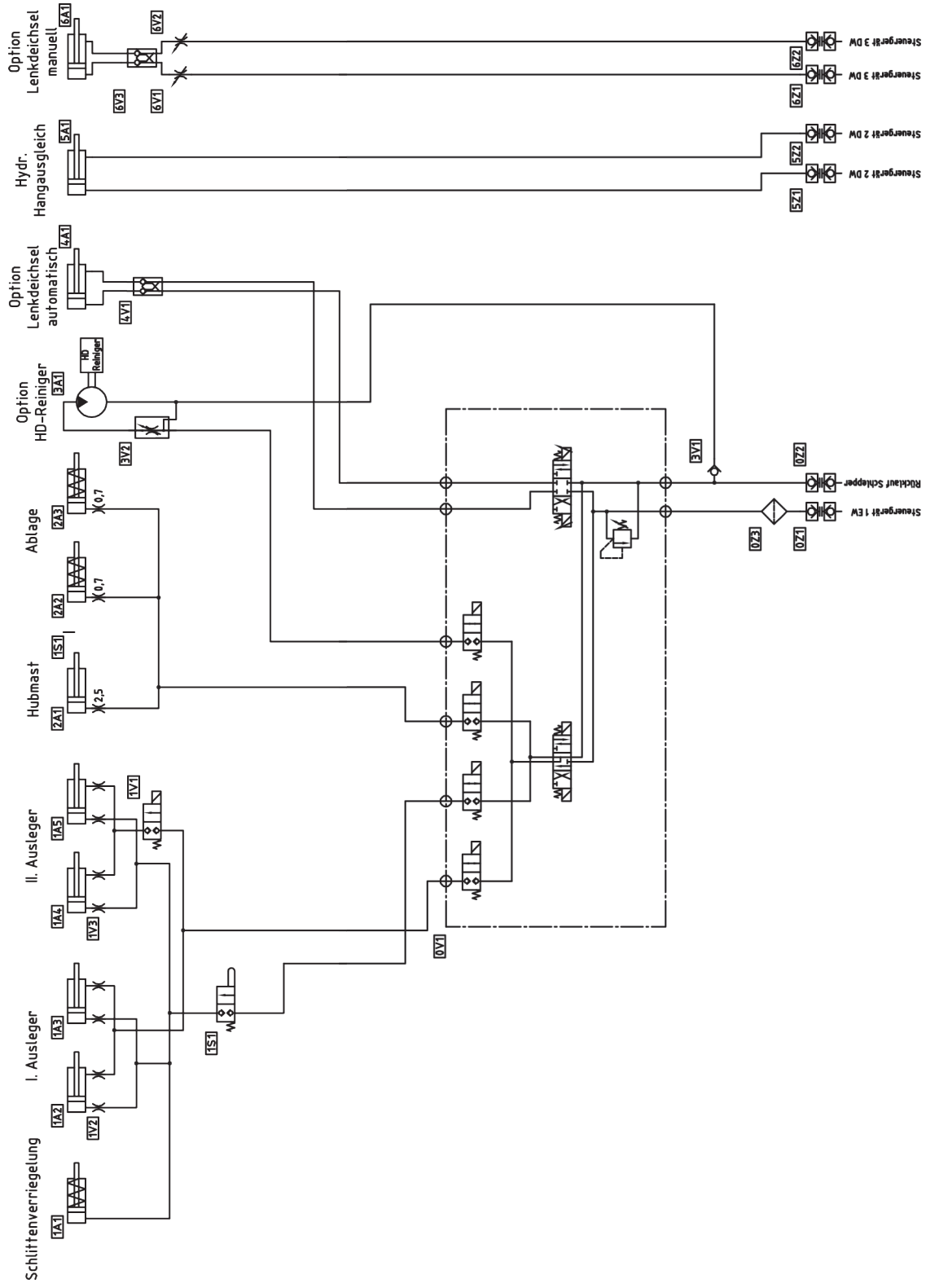


Abb. 81. Hydraulic plan Land-Cruiser with control block

Pos.	Designation	Pos.	Designation
0Z1	Coupling plug	0Z2	Coupling plug
0Z3	High pressure filter	0V1	Control block
1S1	2/2 Waycock	1V1	2/2-way valve closed when de-energized
1V2	Orifice (Size see list)	1V3	Orifice (Size see list)
1A1	Single acting cylinder slide lock	1A2	Double acting cylinder 1st boom
1A3	Double acting cylinder 1st boom	1A4	Double acting cylinder 2nd boom
1A5	Double acting cylinder 1st boom	2V1	Orifice 2,5
2V2	Orifice 0,7	2A1	Single-acting cylinder mast
2A2	Single-acting cylinder shelf	2A3	Single-acting cylinder tray
3V1	Check valve	3V2	Flow control valve
4V1	Locking block	4A1	Double-acting cylinder steering drawbar
5Z1	Coupling plug	5Z2	Coupling plug
5A1	Double-acting cylinder slope compensation	6Z1	Coupling plug
6Z2	Coupling plug	6V1	Throttle valve
6V2	Throttle valve	6V3	Locking block
4A1	Double-acting cylinder steering drawbar		

17. 2. Land Cruiser pneumatic circuit diagram

17. 2. 1. Brake system Land Cruiser 10t axle

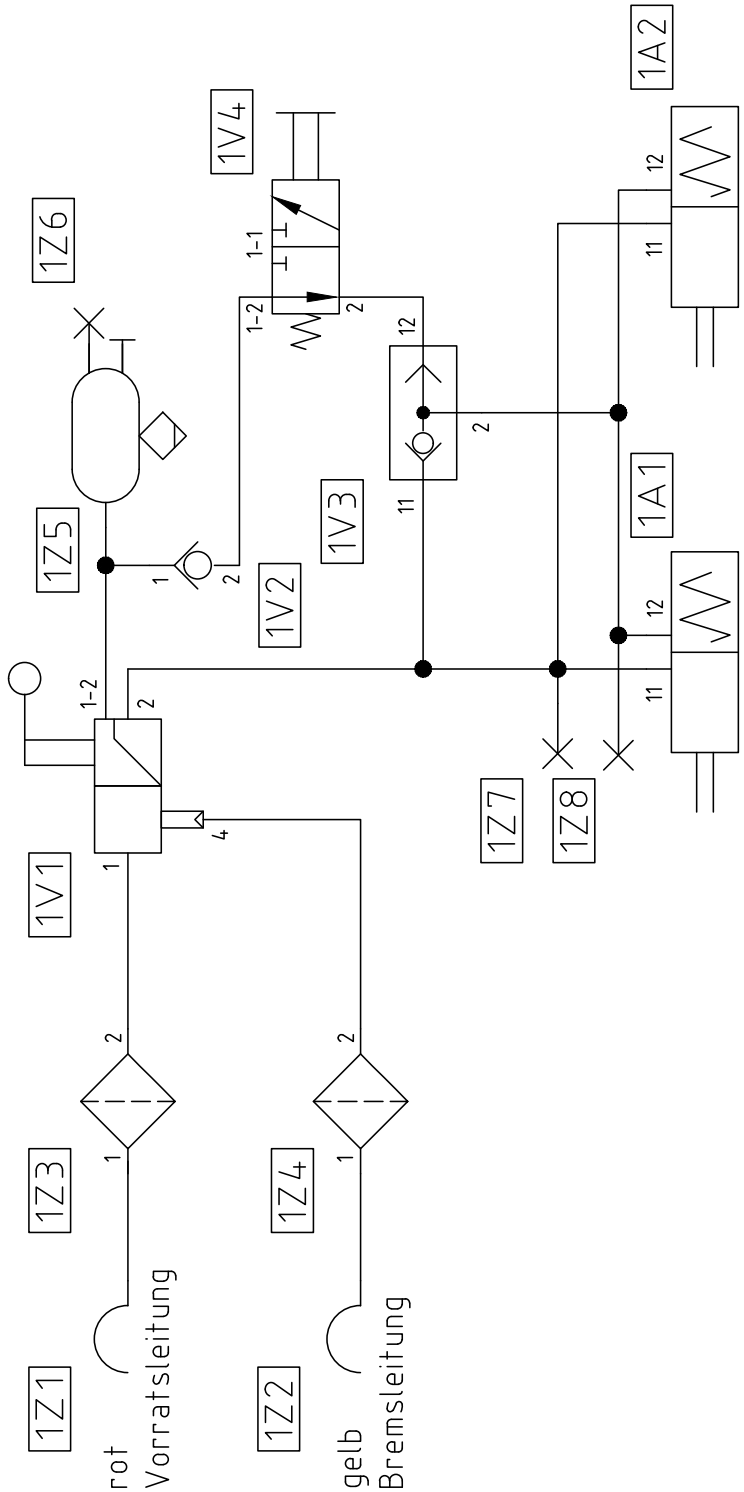


Abb. 82. Brake system ANP Land-Cruiser with 10 t axle

Pos.	Designation	Pos.	Designation
1Z1	Coupling head red	1Z2	Coupling head yellow
1Z3	Line filter M22x1.5	1Z4	Line filter M22x1.5
1Z5	Air reservoir 660 x 206 20 l	1Z6	Test connection M22x1.5
1Z7	Test connection M22x1.5	1V1	Trailer brake valve with force regulator
1A1	Diaphragm cylinder 36“ at 40 km / h	1A1	Diaphragm cylinder 30“ at 25 km/h
1A2	Membrane cylinder 20“		

17. 2. 2. Land Cruiser braking system

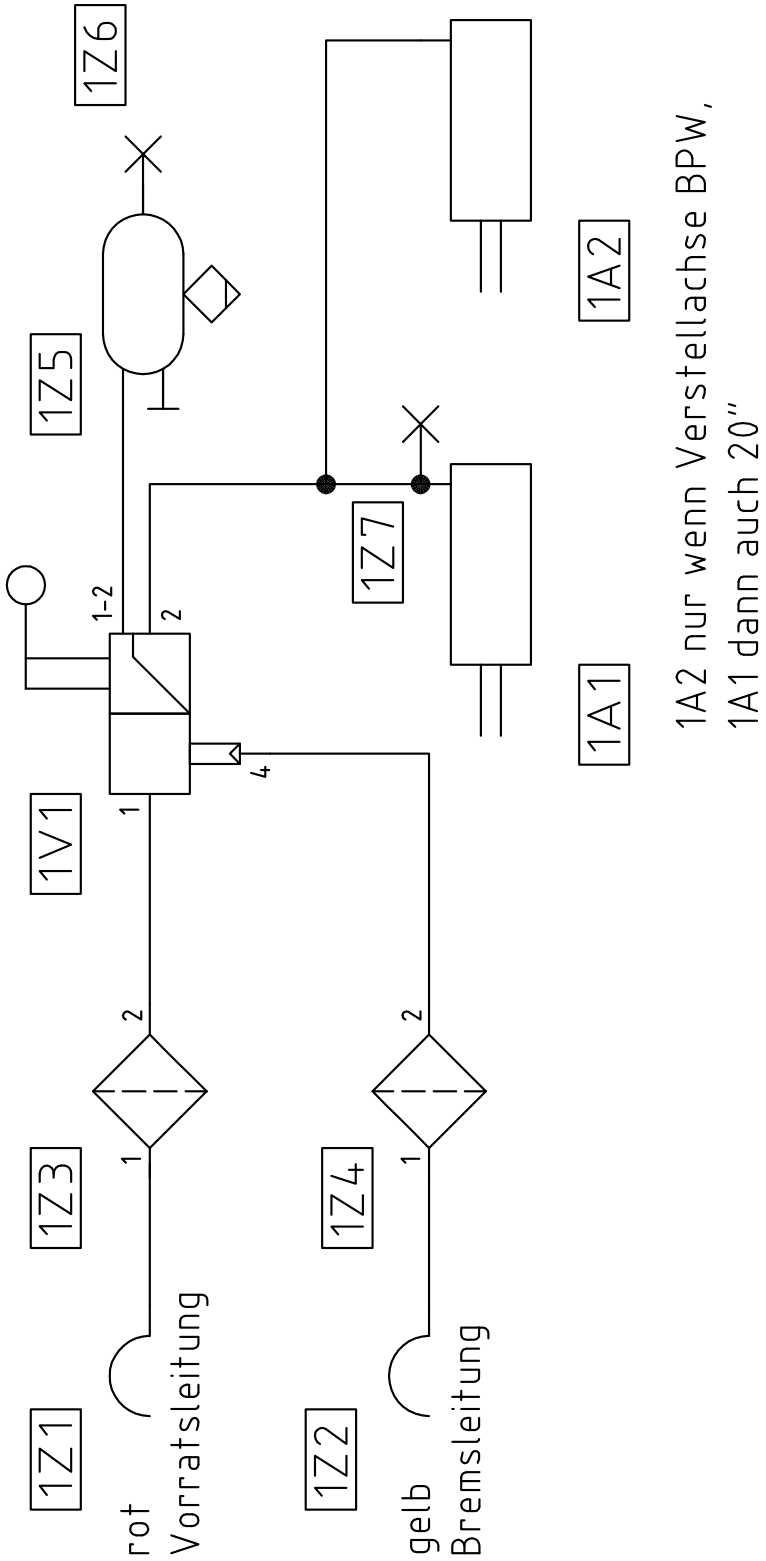


Abb. 83. Brake system ANP Land-Cruiser with 10 t axle

Pos.	Designation	Pos.	Designation
1Z1	Coupling head red	1Z2	Coupling head yellow
1Z3	Line filter M22x1.5	1Z4	Line filter M22x1.5
1Z5	Air reservoir 660 x 206 20 l	1Z6	Test connection M22x1.5
1Z7	Test connection M22x1.5	1V1	Trailer brake valve with force regulator
1A1	Diaphragm cylinder 36“ at 40 km / h	1A1	Diaphragm cylinder 30“ at 25 km / h
1A2	Membrane cylinder 20“		

Info

1A2 only if the adjustable axle is equipped by BPW. Then 1A1 is also 20 “.

18. Guarantee conditions

State of affairs 20. Mai 2021

18. 1. Warranty period for DAMMANN devices

For defects in the delivery, we shall make the following claims, excluding further claims:

1. All those parts are to be repaired free of charge or replaced free of charge at our discretion, which turn out to be unusable or not insignificantly impaired in their usability as a result of a circumstance prior to the transfer of risk, in particular due to a faulty design, faulty material or poor workmanship. The discovery of such defects must be reported to us immediately in writing. Replaced parts become our property.
2. The warranty ends twelve months after delivery of the delivery item to the customer.
3. HERBERT DAMMANN GmbH grants a warranty of 24 months after delivery of the delivery item to the customer on the frame and boom.
4. The warranty for used devices is six months from the date of delivery to the customer.
5. No liability is accepted for damage caused by the following reasons: unsuitable or improper use, improper handling due to incorrect operation and care of the device in accordance with the instructions for use and instruction, non-compliance with customer service appointments on the vehicle and device (subject to a charge), incorrect assembly or commissioning by the purchaser or third parties, natural wear and tear, incorrect or negligent treatment, excessive use, use of unsuitable operating resources or replacement materials or improper storage (frost-free storage), unless these are due to our fault.
6. No guarantee is given in the event of non-compliance with safety instructions or exceeding the permissible load values.
7. No guarantee is given for the processing of inadmissible agents or their mixtures.
8. To carry out all repairs and replacement deliveries that we consider necessary, the customer must give us the necessary time and opportunity after we have agreed with us, otherwise we are exempt from liability for defects. Only in urgent cases of endangering operational safety or to prevent disproportionately large damage, whereby we are to be informed immediately, does the customer have the right to remedy the defect himself or to have it remedied by a third party and to demand compensation from us for the necessary costs.
9. If the customer or a third party improperly and without our prior consent undertakes changes (to construction, lines, electrical controls) or repairs to the delivery item, our liability for the resulting consequences is canceled.

10. The repair work covered by the guarantee also includes testing, measuring and adjustment work (in accordance with the manufacturer‘s working time guidelines) if they are necessary in connection with the repair of a warranty damage, but not maintenance, inspection or cleaning work prescribed or recommended by the manufacturer - or maintenance work. The warranty does not include the assumption of costs for direct or indirect consequential damage (e.g. towing costs, parking fees, freight costs, disposal costs, compensation for lost use, consequential damage to non-guaranteed components).

11. There is no reimbursement of material and labor costs for wearing parts such as:
    - » Pump diaphragm
    - » Seals
    - » Safety springs
    - » Filter screens
    - » Tires
    - » Nozzle mouthpieces
    - » V-belt
    - » Oils, greases and other lubricants
    - » Parts that are regularly replaced during maintenance or servicing work
    - » Tighten screws and nuts on the entire vehicle / device
    - » Hoses (pressure, suction, air pressure and hydraulic hoses)

12. During the warranty period, HERBERT DAMMANN GmbH undertakes to replace or repair defective components against the return of defective components; only original Dammann parts are used. The reimbursement of assembly costs is based on the relative labor values determined by HERBERT DAMMANN GmbH. Installation may only be carried out by authorized specialists after prior consultation with HERBER DAMMANN GmbH. The elimination of a defect in the construction of the device is carried out exclusively due to product liability by HERBERT DAMMANN GmbH. At the authorized workshops of HERBERT DAMMANN GmbH, the assembly and travel allowance does not apply, since a workshop and customer service discount is paid when the spray device is purchased.

18. 2. Service work on DAMMANN devices and vehicles

18. 2. 1. DAMMANN devices

Service work on DAMMANN devices may only be carried out by specialist personnel who have been trained by HERBERT DAMMANN GmbH. Workshops and service personnel who do not meet these requirements must contact our customer service department before starting the service work. After describing the damage (error - cause), a decision is made as to whether work can be carried out on the DAMMANN device. Furthermore, the question of costs must be clarified in advance. A guarantee is generally rejected in the case of unauthorized external work. HERBERT DAMMANN GmbH offers an independent in-house service. In order to offer our customers cost-effective services, this service is carried out in the form of collective trips.

Spare parts / ordering and shipping

In most cases, spare and wear parts are in stock at our authorized dealers or, in exceptional cases, can also be delivered from the factory. The dispatch is usually carried out by post, on request, the dispatch is also possible by night express. Shipping costs must be borne by the customer. Defective components from complaints must be returned to HERBERT DAMMANN GmbH free of charge within 14 days. After the components have been checked by our sub-suppliers, a credit will be issued if the complaint is recognized. Freight and transport costs for sending and returning the components must be borne by the customer / buyer.

19. Glossary

Here you will find explanations and useful information on technical terms and abbreviations.

Technical term	Meaning
Adaptive Tire Control (ATC)	ISOBUS-capable tire pressure control system that automatically adjusts the tire pressure for road travel and field work, controlled by the drum level.
Discharge line emptying	Technology for optimal cleaning of the lines in the device (pneumatic line cleaning).
EasyControl	Digital fill level indicator integrated in the ISOBUS system, which can control the switching functions of the ISOBUS system on the device.
Flat jet nozzle	Long throw nozzle with fan-like spray behavior.
Fluid Indicator	Measuring instrument for determining the pH value and the temperature of a liquid.
Liquid pump (piston diaphragm pump)	Was designed and built for installation in machines and systems. It pumps de-icing or pesticides through the ring main.
Distance-Control Dammann (DCD)	A system that automatically adjusts the height of the boom above the crop using sensors.
Boom	All rods connected to one another at the stern by joints, on which the nozzles for dispensing liquids are located.
GPS receiver	Receiver that can determine its position from signals from navigation satellites. Here it is used to determine the exact position of the vehicle.
Limit switch (GWG)	A safety device (device) that prevents overfilling when the keg is filled.
ISOBUS control unit	Using the ISOBUS control unit, all functions (e.g. sections, spray volume, etc.) relating to the application of liquids can be controlled and monitored from the driver‘s cab.
Job computer	Computer in the interior of the engine room, which is responsible, among other things, for the function of the control unit, the joystick, the fill level (TankControl), the GPS receiver and the processing of the data entered.
Joystick	Additional control unit in the driver‘s cab that enables the liquids to be dispensed directly over a short distance.
Load Sensing (LS)	Load-dependent control of the hydraulics
MultiSelect	ISOBUS-compatible system for managing two nozzle sets. Allows you to quickly switch between nozzles.
proSpray	ISOBUS-compatible system that can keep the droplet size constant under pulse control and also extends the working range of a nozzle by regulating the volume flow.
Point jet nozzle	Long throw nozzle with point-like spray behavior.
Control constant	A fictitious value with which the application rate is controlled. The value is set at the factory and then no longer changed.
Ring line / ring line function	All pipes / lines are connected to one another in a circuit. This ensures an even pressure on the liquid.

Technical term	Meaning
S-Box	Device in the cab from which the sections (sprayer) can be switched on and off manually.
Section-Control	GPS-controlled sections / nozzles are switched off when liquids are applied that are located over areas that have already been treated.
Softkey	Key with which a function or another symbol is called up.
Special folding	Second boom (boom) does not fold out - only half of the boom is used.
TankControl	Device that measures and displays the volume in the barrel. The display is located outside the vehicle, but can also be displayed via the control panel.
Sections	The area on the boom that is switched via the control unit when selecting the sections is referred to as the section.
Section main switch	Switch on the control unit from which the sections are activated or deactivated.
TRACK-Leader	Enables precise driving in conjunction with a GPS receiver.
Vario-Select	System that keeps a constant drop size at different speeds. Enables automatic change between nozzles on nozzle holders with multi-function switching.
Preselection selection	Selection of the number of sections (working width) on the control unit.
Weather station	ISOBUS-compatible system. Is a compilation of various measuring devices that are used to measure meteorological parameters and thus to observe the weather at a specific location.

Abbreviation	Meaning
CID	Continuous Insidecleaning Dammann
D-A-S	Dual-Air-System
E-D-S	Single nozzle circuit
GPS	Global Positioning System
GWG	Limit switch
HA	Rear axle
JR	Job computer
LS	Load Sensing
MA	Central axis
ME	Müller Electronic
PSA	Personal protective equipment
PWM	Pulse-Width-Modulation (pulse width modulation)
VA	Front axle
VAE	Front axle load reduction