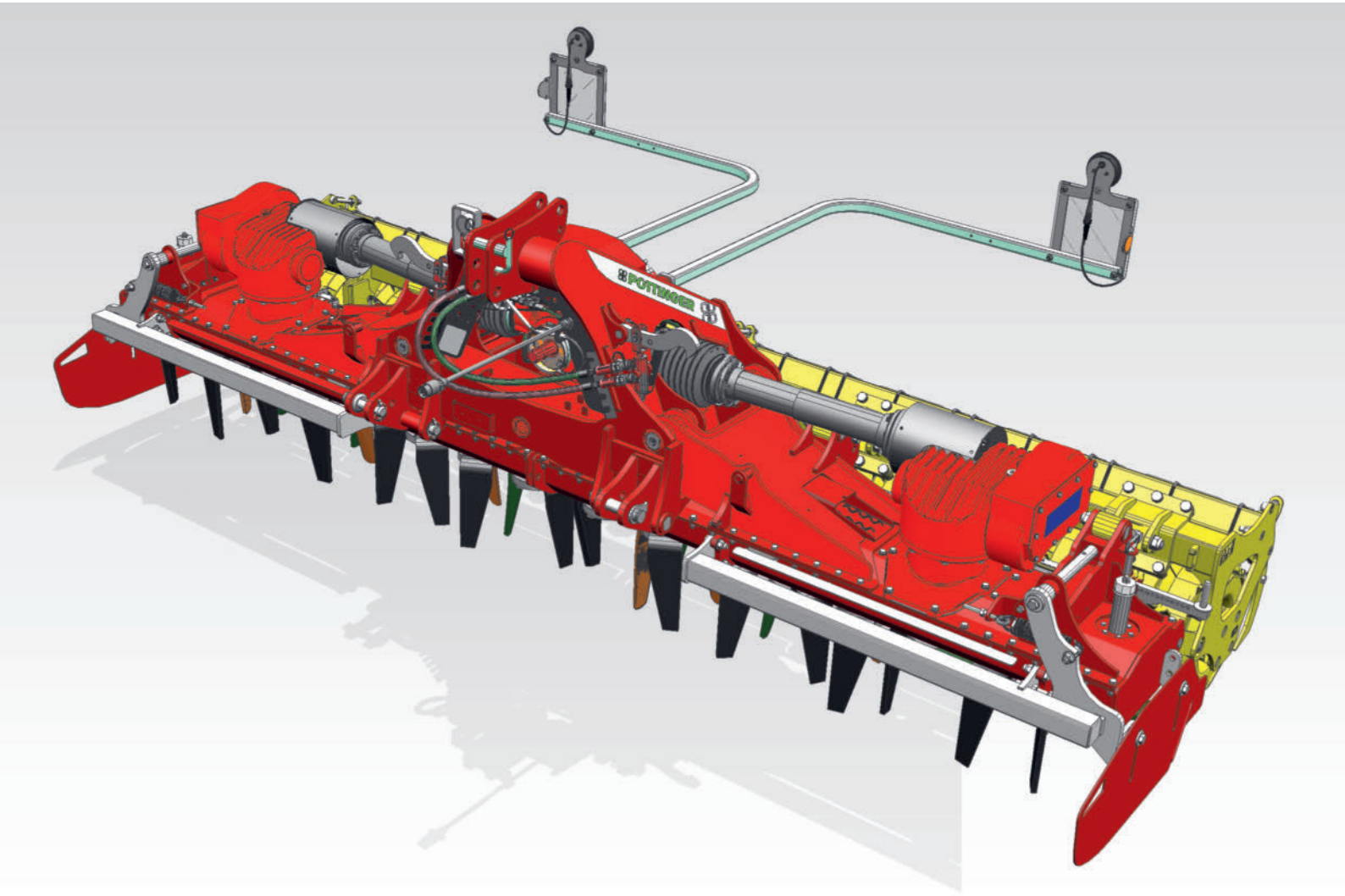
Original operating instructions

PÖTTINGER

Rotary harrow
LION V 4040

8884

Chassis No. +..00001



Technical alterations

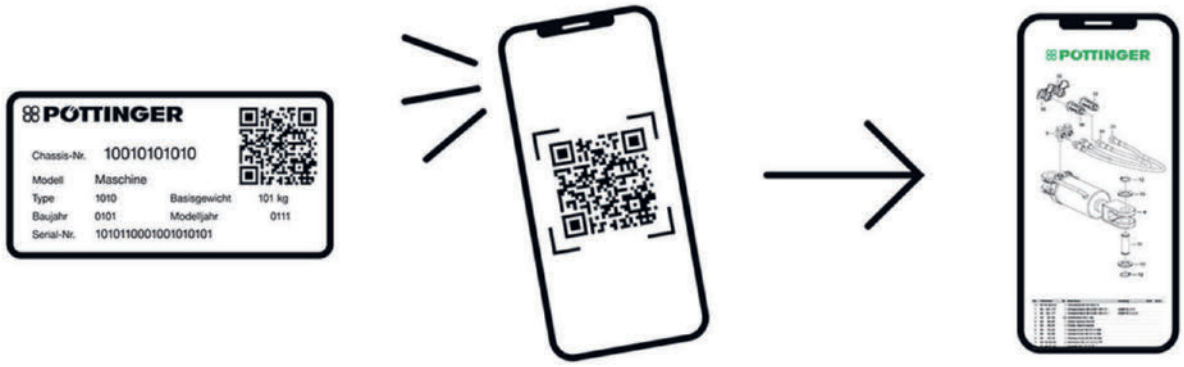
As we are constantly developing our products, there may be deviations between these documents and the implement. Therefore no claims may be derived from the data, illustrations and descriptions. Please contact your Specialist Service Centre for any binding information about specific features of your machine.

Legal notes

Please note that only the operating instructions written in German constitute the original operating instructions regarding EU Machinery Regulation 2006/42/EC. Operating instructions in all other languages are translations of the original operating instructions written in German.

We would ask you to please understand that changes to the scope of supply with regard to form, equipment and technical specifications are possible at any time.

Any form of reprint, translation or reproduction, including excerpts, requires the written approval of PÖTTINGER Landtechnik GmbH.



MyPÖTTINGER – Simple. Anytime. Anywhere.

- Scan QR code on identification plate with Smartphone / tablet or type in www.mypoettinger.com on the Internet.
- Spare parts lists can be obtained exclusively via MyPÖTTINGER.
- Individual information, such as operating instructions and maintenance information for your machines, is available on MyPÖTTINGER in "My Machines" at any time after registration.

Dear Customer,

"Quality pays for itself." That is why we apply the highest quality standards to our products, which are permanently monitored by our in-house quality management team and our management board. Because the safety, trouble-free functionality, highest quality and absolute reliability of our machines in operation are the core competencies for which we stand.

These Operating Instructions are intended to make it easier for you to familiarise yourself with your machine and to clearly advise you on the safe and correct handling of the machine, as well as its care and maintenance. So, please take some time to read these instructions.

These Operating Instructions are a part of the machine. They are to be kept in a suitable place and be accessible to personnel at any time throughout the entire service life of the machine. Instructions based on existing national regulations on accident prevention, road traffic regulations and environmental protection are to be supplemented.

Any persons commissioned with the operation, maintenance or transport of the machine must read and understand these instructions prior to starting work, particularly the safety information. If these instructions are not observed, the warranty claim will be forfeited.

If there are any questions regarding the contents of these Operating Instructions or further questions regarding the machine, contact your PÖTTINGER service partner.

Ensure correct machine operational and road safety, and reliability through timely and meticulous care and maintenance, according to the specified maintenance intervals.

Use only original spare parts or spare parts and accessories that are approved by PÖTTINGER Landtechnik GmbH. Only the original spare parts approved by us have been tested by us and therefore have the appropriate prerequisites for use in your machine. The use of any unapproved parts forfeits any warranty claim. Even after the warranty period has expired we recommend the use of genuine replacement parts in order to ensure the continuous performance of the machine.

Product liability legislation obliges the manufacturer and the authorised dealer to issue Instructions when selling implements and to instruct customers in the use with reference to the safety, operating and maintenance regulations. Confirmation in the form of a Declaration of Transfer is required to verify that the implement and Instructions have been transferred correctly. The handover declaration is completed electronically by the dealer.

For the purposes of the Product Liability Act, every self-employed person and farmer is an entrepreneur. Entrepreneurial property damage under the terms of the Product Liability Act is therefore excluded from liability by PÖTTINGER. Property damage under the terms of the Product Liability Act is damage caused by a machine, but not to it.

The operating instructions are part of the machine, therefore pass them on to any new owner when transferring the machine. Instruct the new owner and make them aware of the regulations mentioned.

Your PÖTTINGER service team wishes you every success.

Representation conventions

This section contains explanations for a better understanding of the illustrations, safety and warning notes and textual descriptions used in these operating instructions.

Safety instructions / warnings

Safety instructions of a general nature are always placed at the beginning of a section. They warn of dangers that may occur during machine operation or when preparing to work on the machine. Warnings alert to hazards that may occur directly during an operation or work step on the machine. Warnings are listed together with the relevant procedures / work steps in the written instructions.

Safety instructions and warnings are presented as follows:

DANGER

If you do not follow the instructions in a text section with this marking, there is a *risk of fatal or life-threatening injury.*

► All instructions in such text sections must be followed!

WARNING

If you do not follow the instructions in a text section with this marking, there is a *risk of severe injury.*

► All instructions in such text sections must be followed!

CAUTION

If you do not follow the instructions in a text section with this marking, there is a *risk of injury.*

► All instructions in such text sections must be followed!

NOTICE

If you do not follow the instructions in a text section with this marking, there is a *risk of damage to property.*

► All instructions in such text sections must be followed!

TIP

Text sections marked in this way contain recommendations and advice for handling the machine.

ENVIRONMENT

Text sections marked in this way contain advice on the subject of environmental protection.

Directions

Directions (such as left, right, front, rear) are given based on the normal "working travel direction" of the machine.

Orientation information for an illustration of a machine detail refers to this illustration only, and is only to be understood as relative to the direction of travel in certain cases. The meaning of the orientation information (if required) is clearly evident from the accompanying text.

Designations

These operating instructions designate the interchangeable equipment for agricultural vehicles (in line with the EU Machinery Directive) as **machine**.

Vehicles intended to drive the existing machine are designated as **tractor**.

Equipment designated as **optional** is available only for certain machine models or only in certain countries.

Protective goggles, work gloves, safety shoes, tight fitting, long work clothing, hair nets in the case of long hair, hearing protection as well as suitable equipment to protect against seed treatment dusts (such as dust masks etc.) are designated as **personal protective equipment**. The complete selection of suitable personal protective equipment for the respective purpose remains the responsibility of the machine operator.

Cross-references

Cross-references to another location in the operating instructions or another document are provided in the text, specifying the chapter and subchapter, or section. The naming of subchapters or sections is in inverted commas. (Example: Check all screws on the machine for tightness. See "Tightening torques" on page xxx). A subchapter and/or section can be found in the document via an entry in the table of contents.

Action steps

An arrow  or sequential numbering indicates action steps you should take.

A black bordered, indented arrow  or sequential, indented numbering indicates intermediate results or intermediate steps that should be performed.

Illustrations

Illustrations may differ in detail to your machine and should only be considered as a principle diagram/symbol illustration.

Use of colours

Illustrations in the printed document provided by PÖTTINGER Landtechnik GmbH are shown only in grey scale or black and white.

Illustrations in electronically distributable documents (PDF) are displayed in colour also and can be printed out in colour if required.

Use of symbols

Illustrations may contain additional symbols, arrows and other lines that serve to improve the comprehensibility of the image content or are intended to draw attention to a specific area of the image.

Instructions for product handover

Please verify the listed items in accordance with the product liability obligation

☒	Please place a cross where appropriate.
☐	Machine checked according to delivery note. All packaged parts removed, all safety equipment, cardan shaft and operating equipment is present.
☐	Machine operation, commissioning and maintenance discussed with and explained to the clients using the operational instructions.
☐	Tyre air pressure verified.
☐	Tightness of wheel nuts verified.
☐	The correct p.t.o. speed and direction of rotation pointed out.
☐	Adaptation to tractor completed; three point adjustment, drawbar height, handbrake lever installed in tractor cab, forced steering linkage adjusted, compatibility of all necessary electrical, hydraulic and pneumatic connectors to tractor checked and established.
☐	Cardan shaft correctly cut to length.
☐	Test run of all machine functions in addition to parking brake and operating brake completed and no defects noted.
☐	Function explanation during test run.
☐	Pivoting to transport and working position explained.
☐	Information regarding optional equipment provided.
☐	The importance of reading the operating instructions has been pointed out.

Confirmation is required to prove that the machine and the operating instructions have been properly handed over. For this purpose you have received a confirmation e-mail from PÖTTINGER. If you have not received this mail, please contact your local dealer. Your dealer can fill in the handover declaration online.

Austria

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Factory standard

This factory standard applies to all metric bolts for which no special tightening torque is specified in the drawing/manual. The relevant grade is visible on the bolt head.

- The values given are nominal and are valid for a head friction rate of IJ=0.14 and a thread friction of IJ=0.125 Slight tensioning force differences can exist due to differing friction rates. The values given are to be kept to a tolerance of ± 10%.
- By using the given tightening torque and the existing friction rate used, then up to 90% of the minimum yield strength of the bolt material is used in accordance with DIN ISO 898 .
- If a specific tightening torque is given for a bolt connection, then all these bolt connections are to be tightened to the specified tightening torque using a torque wrench.

Metric thread	Grade 8.8		Grade 10.9	
	Tightening torque	Tensioning force	Tightening torque	Tensioning force
M 4	3.1 Nm	4000 N	4.4 Nm	5700 N
M 5	6.2 Nm	6600 N	8.7 Nm	9300 N
M 6	10.5 Nm	9300 N	15 Nm	13000 N
M 8	25 Nm	17000 N	36 Nm	24000 N
M 10	50 Nm	27000 N	70 Nm	38000 N
M 12	86 Nm	39500 N	121 Nm	56000 N
M 14	135 Nm	54000 N	195 Nm	76000 N
M 16	215 Nm	75000 N	300 Nm	105000 N
M 20	410 Nm	117000 N	580 Nm	164000 N
M 24	710 Nm	168000 N	1000 Nm	237000 N
M 30	1400 Nm	270000 N	2000 Nm	380000 N
M 8 x 1	27 Nm	18700 N	38 Nm	26500 N
M 10 x 1.25	53 Nm	29000 N	74 Nm	41000 N
M 12 x 1.25	95 Nm	44500 N	130 Nm	63000 N
M 14 x 1.5	150 Nm	60000 N	210 Nm	85000 N
M 16 x 1.5	230 Nm	81000 N	320 Nm	115000 N
M 20 x 1.5	460 Nm	134000 N	650 Nm	189000 N
M 24 x 2	780 Nm	188000 N	1090 Nm	265000 N

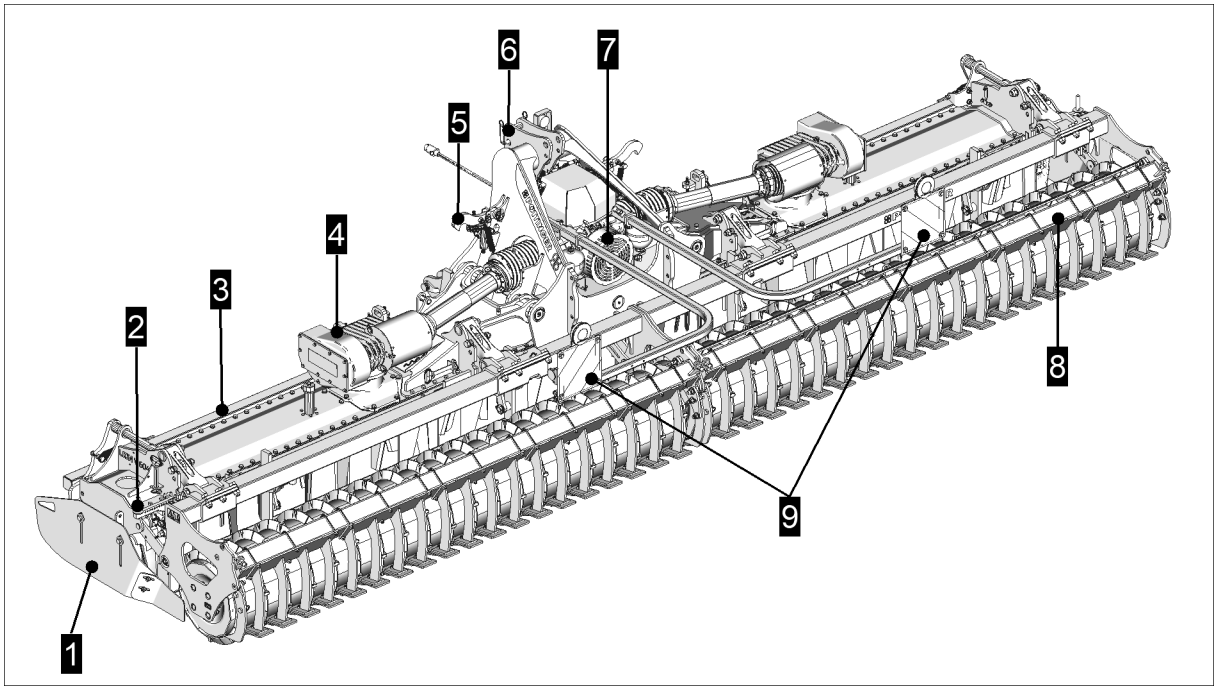
Functional elements

TIP

Elements marked as "left" or "right" are present on both sides of the machine.

Designation and function

Pos.	Element	Function
1	Left side guard	Prevents soil from being thrown laterally out of the seedbed.
2	Left depth adjustment	Working depth adjustment on the left side of the machine.
3	Left front guard	Protection when approaching the working area of the tines.
4	Left side gear	Drive for left bar with selectable transmission.
5	Transport guard	Protects the machine against unintentional folding during road transport.
6	Hitch-on frame	Hitch-on frame for the 3-point Cat. III attachment to a suitable tractor.
7	Input gearbox	Transfer gearbox with speed-dependent oil cooling via fan wheel.
8	Right follow-on device	Re-compacting the arable land topsoil and levelling the seedbed.
9	Lighting and warning signs	According to country of destination.
Without illustration	Mounting hooks (attached to follow-on device)	Mounting unit for the attachment of a PÖTTINGER seeder when used as machine combination



Accessories included in the scope of delivery

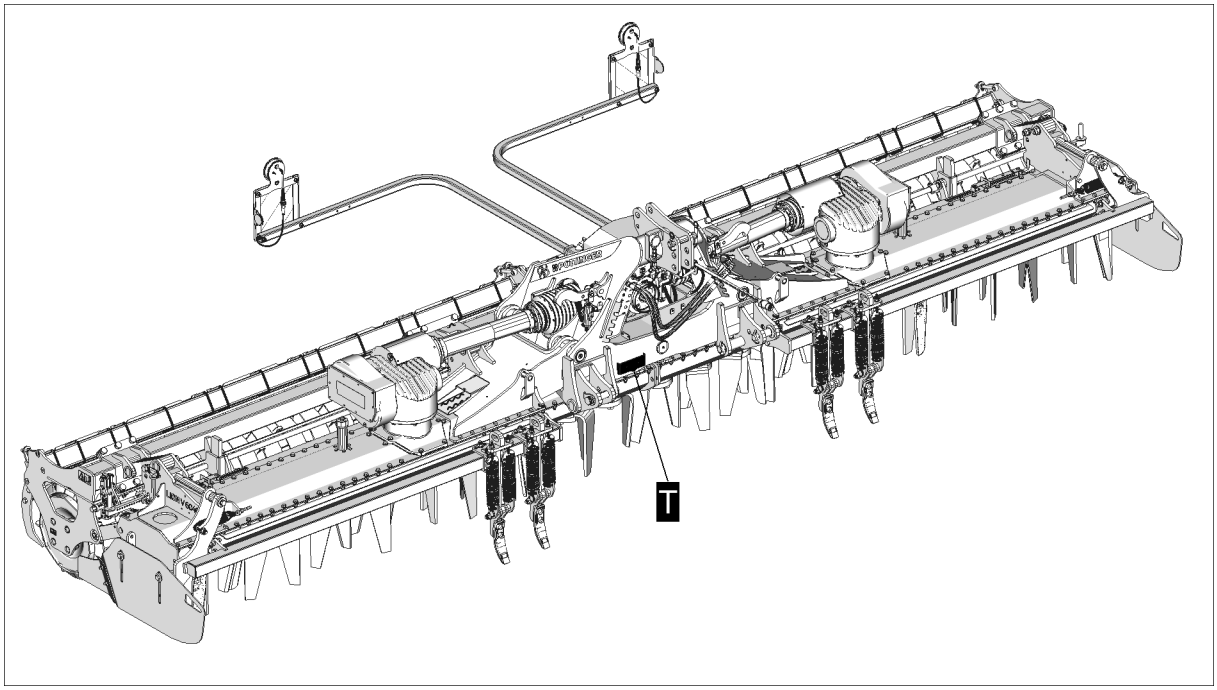
- Operating instructions
- Various tools

Upgrade program

The PÖTTINGER Landtechnik GmbH upgrade program offers many upgrade possibilities. You can receive additional information from your service dealer.

Identification

Nameplate



T = nameplate position

Type plate

Before making any enquiries about the machine or technical details, note down the model and type **from the type plate** and keep them handy. Chassis no. and/or serial no. are required for ordering spare parts.

Upon receipt of the machine, note the complete chassis no. and / or serial no. on the title page of these operating instructions so that these instructions can be assigned correctly to the appropriate machine.

CE marking

The CE marking on the type plate confirms the conformity of the machine with the provisions of Directive 2006/42/EC and Regulation (EU) 2023/1230 (version valid at the time the machine was placed on the market).

Included data

The following data can be read on the nameplate, depending on the machine type and version.

Data	Data
Chassis number	Year of mfr.
Model	Model year
Vehicle ID number	Axle load per axle
Type	Bearing load

Data	Data
Serial number	Permissible total weight
Basic weight	

Certificate of conformity

The EC norm is not valid in the United States and Canada.

EU declaration of conformity

Name and address of the manufacturer:

PÖTTINGER Landtechnik GmbH
Industriegelände 1
AT - 4710 Grieskirchen

Machine (interchangeable equipment):

rotary harrow	**LION V 4040**
Type	**8884**
Serial no.	

The manufacturer bears sole responsibility for issuing this declaration of conformity.

The subject of the declaration described above complies with the relevant harmonization legislation of the Union:

machinery 2006/42/EG
Electromagnetic compatibility 2014/30/EU

Source of applied, harmonised norms:

EN ISO 12100:2010	EN ISO 4254-1:2015
EN ISO 14982:2009	EN ISO 4254-5:2018

Source of applied miscellaneous technical norms and / or specifications:

Person authorised to compile the technical file:
Wilhelm Meindlhumer
Industriegelände 1
AT - 4710 Grieskirchen

Markus Baldinger	Jörg Lechner
CTO R&D	CTO Production

Grieskirchen, 27.02.2024

Intended use

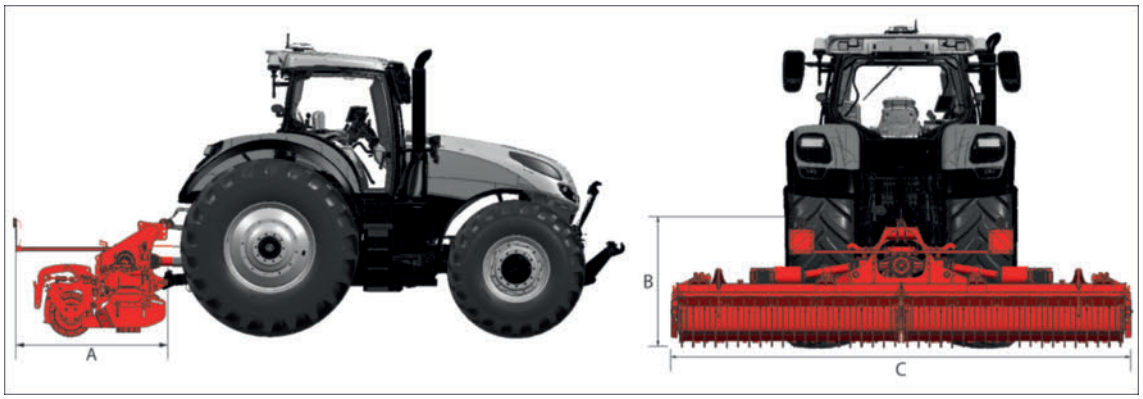
- The machine is designed for operation as a stand-alone machine and for operation in combination with Aerosem mounted seed drills.
- The machine must only be used to prepare the top layer of the soil for subsequent sowing.
- Intended use also includes compliance with all the contents of these instructions and observance of the warning signs (pictograms) on the machine.

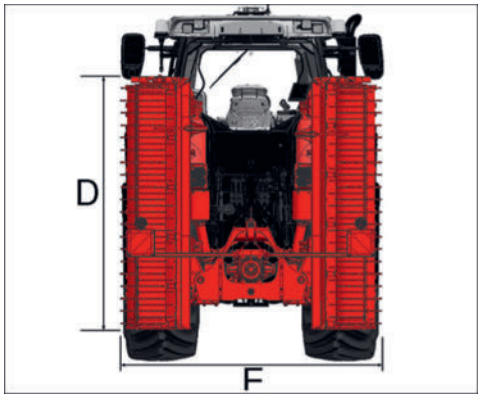
Non-intended useage

The following uses of the machine may void the warranty

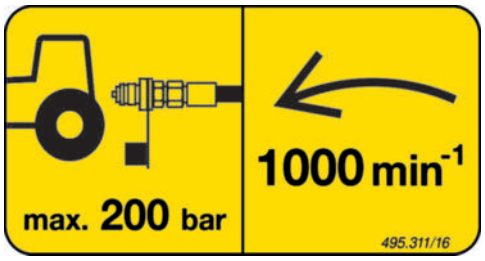
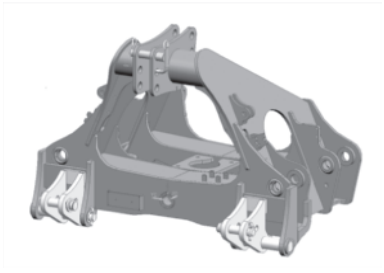
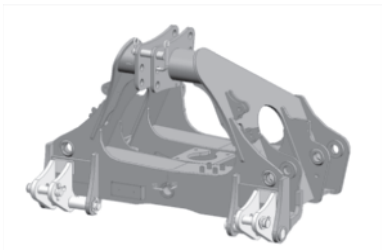
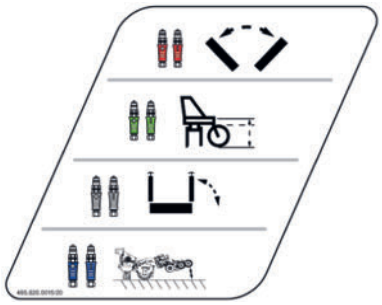
- Storage and transport of seed/fertiliser or other materials/substances on the machine.
- Keeping animals on the machine.
- Working on roads and paths with the machine.
- Immersion in liquids during transport, operation or storage of the machine.
- Use of the machine as a play object / climbing frame.

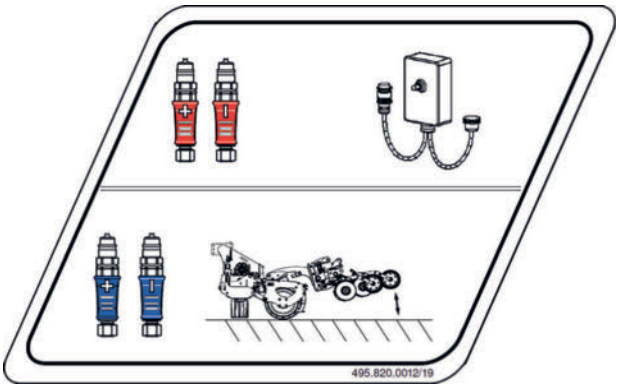
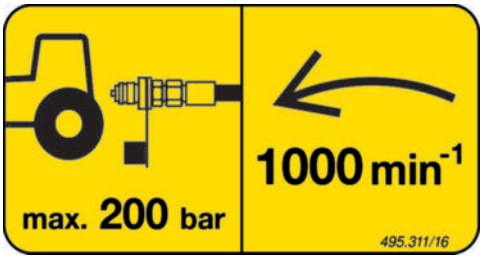
Technical data





	LION V 4040 8884
Length A	1830 mm
Height B	1360 mm
Total width C	4165 mm
Height D transport position	2500 mm
Width F "standard" transport position	2650 mm
Width F "compact" transport position	2550 mm
Tine length	330 mm
Working depth	230 mm
Number of rotors	16
Power requirements	130 kW - 270 kW

	LION V 4040 8884
PTO speed / direction of rotation	max. 1000 rpm  **Sticker in vicinity of input gearbox**
Noise emissions	
Continuous noise level	< 70 dB (A)
Coupling / lower link	
Category according to standard ISO 730	
Cat. 3 N Ø 3 / width 2	
Cat. 3 Ø 3 / width 3	
Hydraulics	
Sticker on drawbar. STANDARD hydraulic connections	

	LION V 4040 8884
Connections for dual-action STANDARD hydraulic control valves.	2x plugs size 3 red marking - bar flaps (standard) 2x plugs size 3 green marking - working depth adjustment (optional) 2x plugs size 3 green marking - track marker (optional) 2x plugs size 3 blue marking - coulter lift (optional with attached seeder)
Sticker on drawbar. BASICLINE preset operation hydraulic connections.	
Connections for BASICLINE preset operation dual-action control valves	2x plugs size 3 red marking - track marker / bar flap / working depth adjustment, coulter rail pressure (only with attached seeder). 2x plugs size 3 blue marking - coulter lift (optional with attached seeder)
Hydraulic oil specification	DIN 51524 part 1 and 2
Oil temperature	max. +80 °C
Operating pressure	140 bar up to max. 200 bar  **Sticker in vicinity of input gearbox**
Electrics	
Voltage	12 VDC
Connections	1x 7-pin plug - according to DIN-ISO 1724 1x 3-pin plug - according to DIN-ISO 9680 (optional)
Weights	
Centre-of-gravity distance (from centre of lower link bolt to center of gravity)	700 mm

	LION V 4040 8884
Basic unit	2500 kg
per toothed packer roller 500 mm	389.5 kg
per toothed packer roller 550 mm	432 kg
per pack ring roller 550 mm	472.5 kg
per prism packer roller 500	479 kg
per prism packer roller 500/15.7	-
per prism packer roller 600	590 kg
per crumbling packer roller 525	-
per crumbling packer roller 600	-
Centre of gravity	
Centre-of-gravity distance (from centre of lower link bolt to center of gravity)	700 mm

TIP

If the machine is fitted with additional component parts, the weight and dimension details may differ from the actual condition!

NOTICE

Damage to hydraulics due to incompatible hydraulic oils!

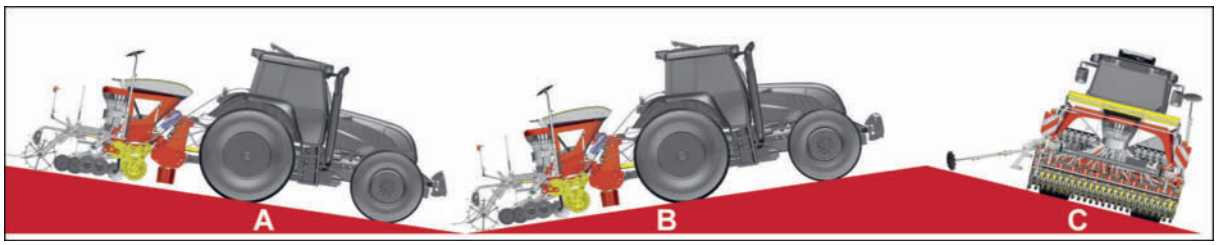
- ► Do no mix mineral oils with organic oils!
- ► Check hydraulic oil compatibility before connecting the machine to the tractor.

TIP

The actual noise level in the workplace may differ from the measured continuous sound level depending on the different tractor designs.

We recommend keeping the tractor cab completely closed and wearing hearing protection when working!

Application limits when used as a machine combination



TIP

Together with PÖTTINGER Vitasem / Aerosem / Tegosem seeders.

Terrain gradient A	max. 15 %
Terrain incline B	max. 15 %
Terrain slope C	max. 25 %

Application limits when used as a stand-alone machine

No information available at present.

BASIC CONTROL Terminal

Operating voltage range	11 VDC - 16 VDC
Nominal voltage	12 VDC
Type of protection	IP65
Supply line protection	FK1 mini blade fuse 5 A (fitted in plug)
Connection cable	1 x 3-pin connector for voltage supply 1 x 7-pin connector for cable harness

Safety advice

The safety instructions warn against health hazards, damage to property and hazards due to improper operation of the machine. Read these instructions carefully before putting machine into operation and/or before working with or on the machine, and observe the safety information given in the operating instructions as well as the warnings displayed on the machine. If the warnings on the machine are not observed, the machine operator is then fully responsible for any resulting injuries and damage!

Personnel qualification

- The only persons permitted to work with the machine are those who have reached the legal minimum age, are physically and mentally competent and have been appropriately trained and/or instructed. Personnel who still need to be trained, are partly trained or under instruction, may only work on/with the machine under the constant supervision of an experienced person.
- Testing and adjustment work may only be performed by authorised specialists. Authorised specialists are people who have been trained by PÖTTINGER Landtechnik GmbH or a PÖTTINGER Service Specialist.
- Assembly, repair and modification work can only be carried out by specialists. A specialist is a person who, on the basis of their professional training, knowledge and experience, can assess and properly perform the tasks assigned to them. The specialist has an understanding of all relevant standards and risks associated with their activity.

Performing maintenance work

- This manual describes only the cleaning, maintaining and repair works that the operators can carry out themselves. All other work must be carried out in a specialist workshop.
- Repairs to the electrical or hydraulic system, to preloaded springs, to pressure tanks, etc. require sufficient knowledge and proper fitting tools, and may therefore only be carried out in a specialist workshop.
- Use appropriate tools and personal protection equipment.

Organisational measures

- Always keep these instructions handy.
- Familiarise yourself with the functions of all the operating devices prior to starting work.
- In addition to the information in these instructions, also observe the relevant country-specific regulations on occupational health as well as the generally applicable, statutory or other binding regulations on accident prevention. Such obligations may pertain to the wearing of personal protective equipment or to road traffic regulations, for example.
- Appropriate workshop equipment is required to perform testing, adjustment and repair work.

Maintaining operational safety

- Only use the machine when it is in faultless technical condition, in accordance with its intended use, and in a safety-conscious and hazard-conscious manner.
- Immediately repair any defects that could impair safety or have them repaired by a workshop.
- Observe the warning signs on the machine.
- The operator must ensure that all warning signs are present and legible throughout the entire operating life of the machine.
- Do not undertake any unauthorized machine modifications. This also applies to the installation and adjusting of safety devices as well as welding or drilling in stress-bearing parts.
- Use only spare parts and accessories that are genuine parts or that are specifically approved by PÖTTINGER Landtechnik GmbH. For these parts, reliability, safety and suitability have been proven specifically for PÖTTINGER machines. We cannot evaluate other products and therefore cannot vouch for them.
- Maintenance work, as described in these instructions, must be fully carried out at the given time intervals or have them completed in a specialist workshop.
- Do not make any software alterations to the programmable control system.

Particular hazards

DANGER

Body parts can become crushed or caught by powered machine components!

- ► No long, loose hair or loose clothing is permitted. Use personal protective equipment if necessary or as required by regulation.
- ► Only operate the machine when all safeguards are properly fitted, undamaged and in the protective position.
- ► No-one is permitted to reach into the area of moving machine parts during operation!
- ► Do not approach the switched-off machine before all moving machine parts have stopped.
- ► Only perform cleaning, maintenance and repair work when the drive is stationary. Always secure the machine against accidental switching on, rolling and/or tipping over.

WARNING

Damage to health due to noise!

- ► If the noise level exceeds 80 dB(A) hearing protection is highly recommended.
- ► If the noise level exceeds 85 dB(A) hearing protection is compulsory.

WARNING

Fire or explosion!

Dirt created by combustible materials in the vicinity of grinding and welding work may catch fire due to flying sparks.

- ► Before any welding or grinding work, clean dust and flammable substances from the machine and the surroundings, and ensure that there is sufficient ventilation.
- ► Do not carry out grinding and welding work over combustible surfaces.

WARNING

Skin, eye or respiratory tract irritation!

Oils, fats, solvents and cleaning agents may present a health risk.

- ► Observe the safety regulations applicable to the respective product.
- ► Provide sufficient ventilation.
- ► Use personal protective equipment such as protective clothing, gloves /safety goggles.

⚠ WARNING

Infections due to leaking hydraulic oil!

Hydraulic oil that is discharged under pressure may penetrate the skin, enter bodily orifices and cause severe infection.

- ► Depressurize the hydraulic system before carrying out maintenance work.
- ► Wear personal protective equipment such as goggles and gloves when working on the hydraulic system.
- ► Before starting operation, always check the hydraulic system for wear and damage.
- ► Only search for leaks with suitable aids (e.g. special spray for leak detection). Have any defects dealt with immediately in a specialist workshop.
- ► Do not seal off leaks using your hands or other body parts.
- ► Seek medical advice immediately in case of injury caused by hydraulic oil.

⚠ WARNING

Ejection of stones and soil by driven machine components.

When operating machines with cardan shaft drives, foreign objects can fly past the machine's protective devices at high speed and hit distant areas.

- ► During operation, take special care near buildings, grazing animals and areas of pedestrian traffic.
- ► Brake, reduce p.t.o. speed and continue at reduced speed until the danger zone can be exited.
- ► If in doubt, stop and switch off the p.t.o. until the possibility of danger can be eliminated.

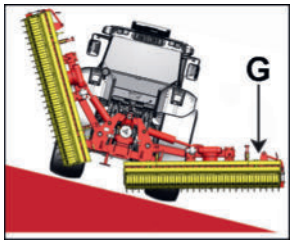
Application limits

⚠ CAUTION

Danger of tipping!

Danger of tipping when folding in transport position when standing along a slope!

- ► Reduce speed accordingly when cornering.
- ► Do not fold the machine into transport position when standing along a slope.
- ► Do not use the machine in transport position when standing along a slope.
- ► It is better to reverse on a slope instead of performing risky turning manoeuvres.



G = Gravity direction of effect

Operational danger area

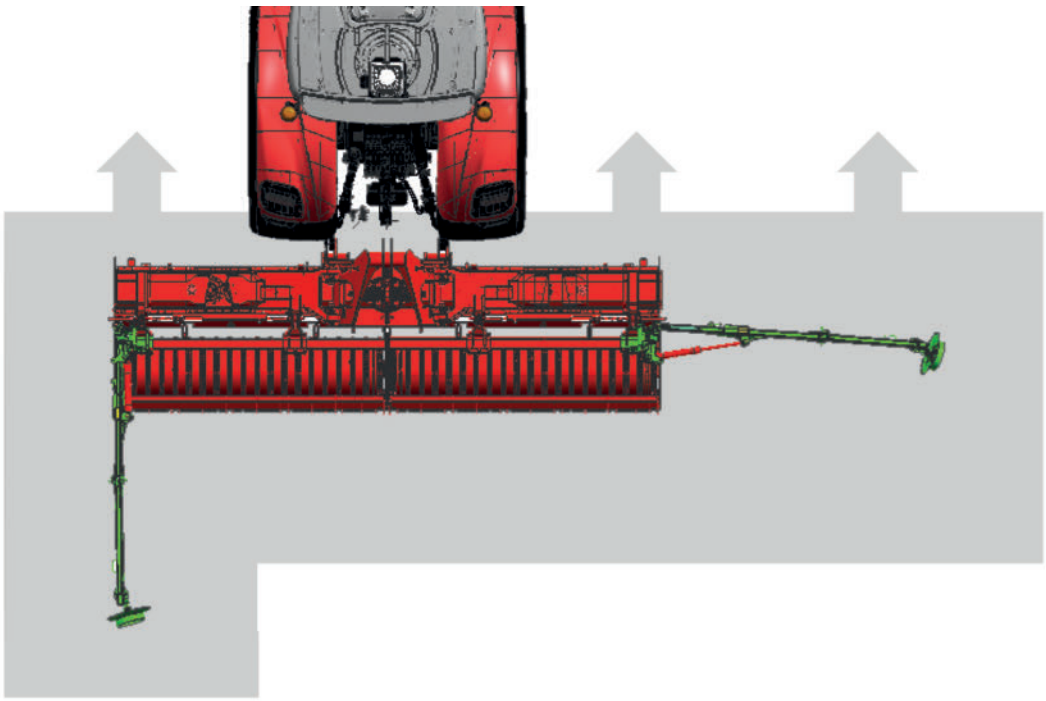
Entering the danger area whilst the machine is in operation and / or the tractor motor is running is prohibited!

⚠ DANGER

Crushing, pulling in and severing of body parts!

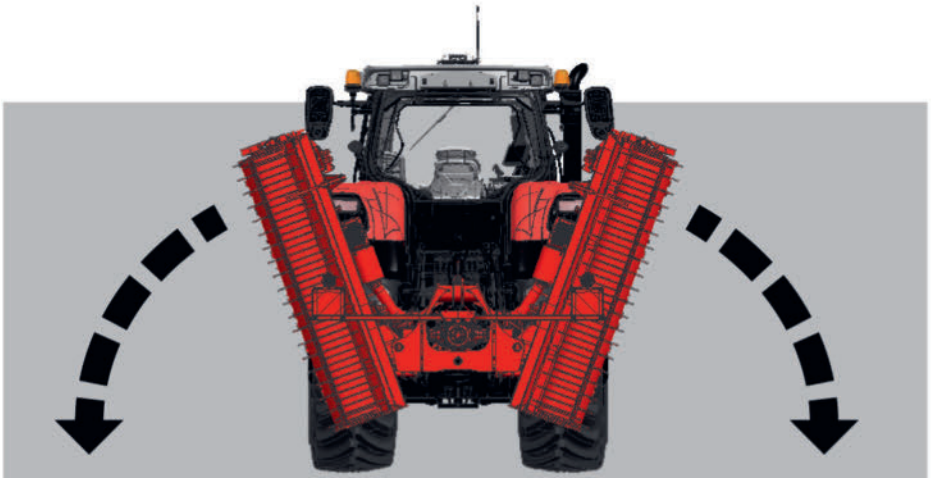
When approaching moving machine parts, clothing, hair and body parts can become caught, which means an escape is not possible without sustaining serious to fatal injuries.

- ► Do not access the machine's danger area as long as machine parts can move there.
- ► Check that protective devices are complete and ready for operation before start-up.
- ► Before start-up and during operation, direct individuals away from the danger zone in and around the machine.



Marking = danger area of machine when folding track markers. Here with right track marker folded out

The danger area moves with the current position of the track marker (swung out or swung in).



Marking = danger area of machine when folding arms.

Warning signs

Listed below are the positions and meanings of all warning signs used.

TIP

Warning signs (symbols) point to residual risks and how to avoid them.

Damaged or lost warning signs must be replaced.

If machine parts with warning stickers are replaced, the relevant warning stickers must be stuck onto the new components.

TIP

USA / CANADA

For machines to be operated in the USA / CANADA, a conversion kit with warning stickers (to adapt to local applicable regulations) is available from PÖTTINGER in English or French! See also "Supplement to the Operating Instructions USA / CANADA".

Warning signs

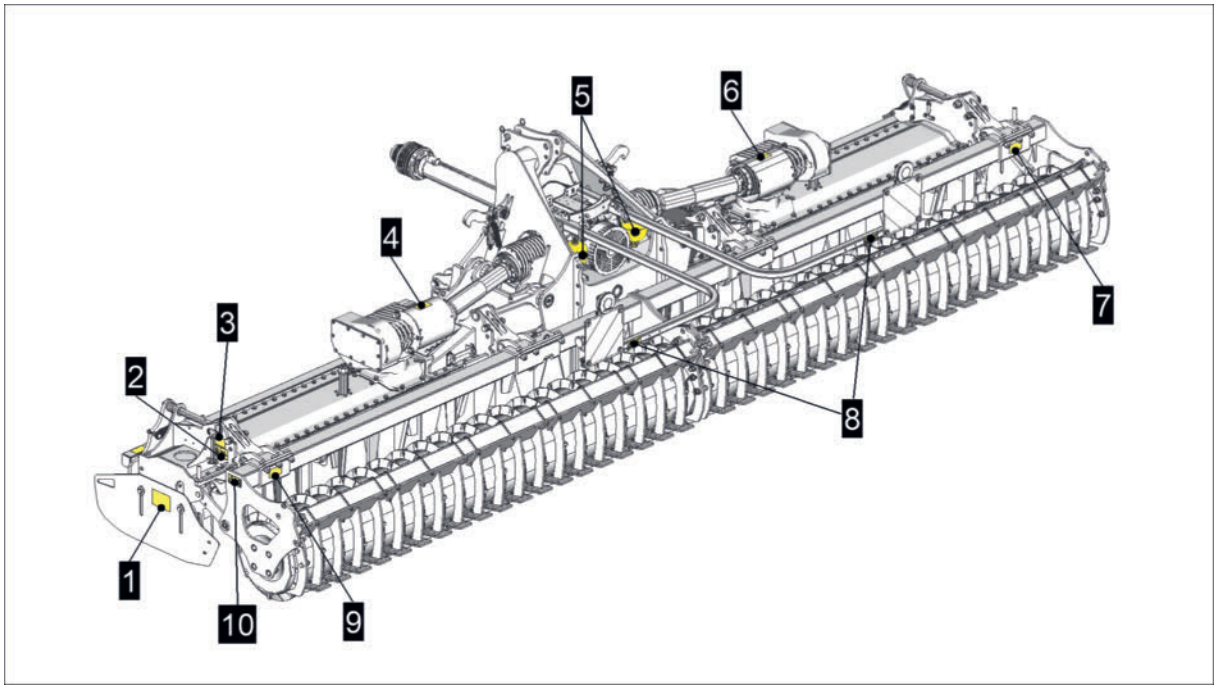
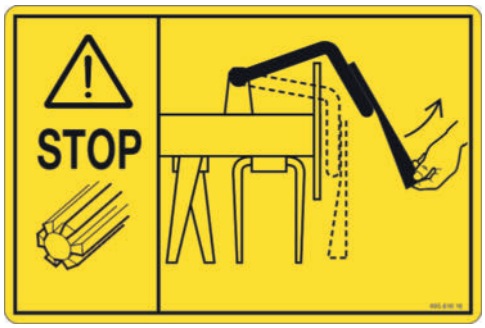
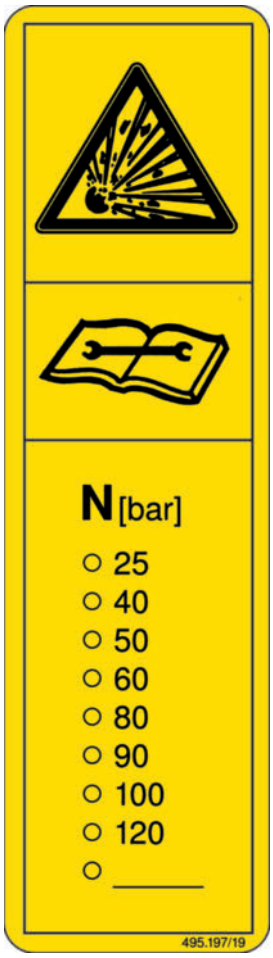


Fig. - rear left view

Explanation

Pos.	Warning signs	Meaning
1		Danger of being pulled in and danger of parts being ejected when the PTO shaft is engaged. Only raise side guard if PTO is stationary.
2		Never reach into the crushing danger area as long as parts are able to move there.
3 / 4		Risk of severing fingers Never reach into the danger area as long as parts can move there.

Pos.	Warning signs	Meaning
5		Pressure reservoir is under gas and oil pressure. Only perform removal and repair work according to the technical handbook instructions.
6		Risk of severing fingers Never reach into the danger area as long as parts can move there.
7		Do not climb onto the machine.

Pos.	Warning signs	Meaning
8		Do not stand in the swivel range of any machines.
9		Do not climb onto the machine.
10		Keep a safe distance as danger exists through parts being ejected while motor is running.

Warning signs

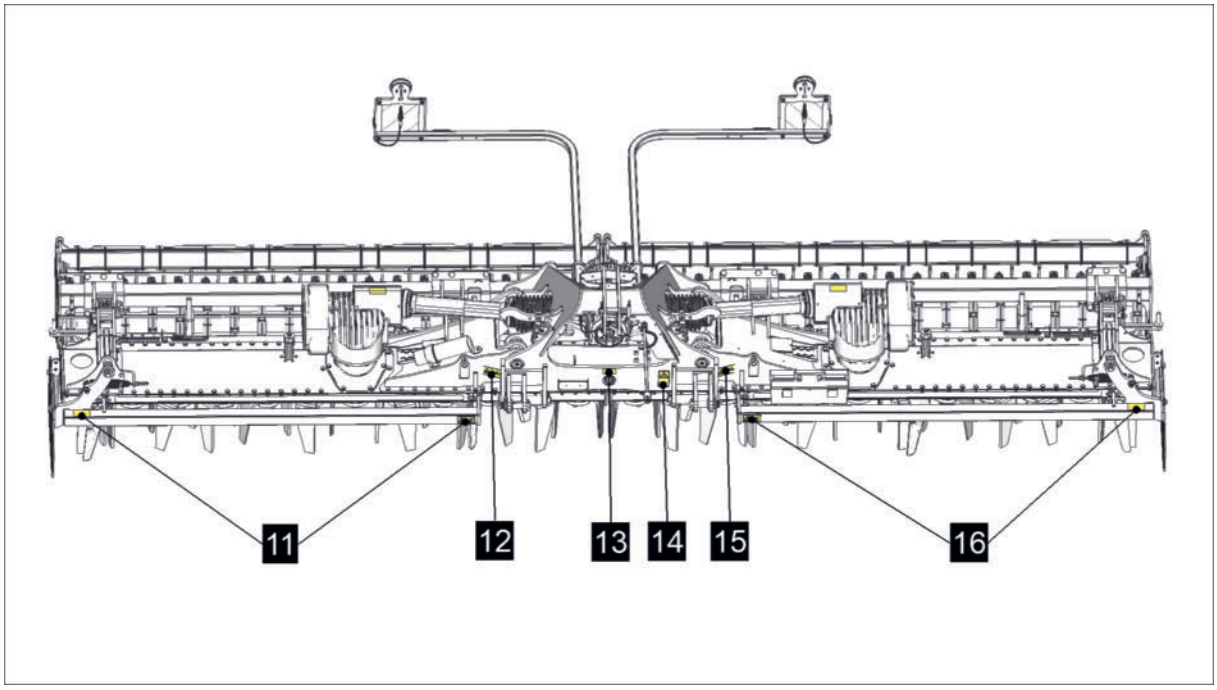
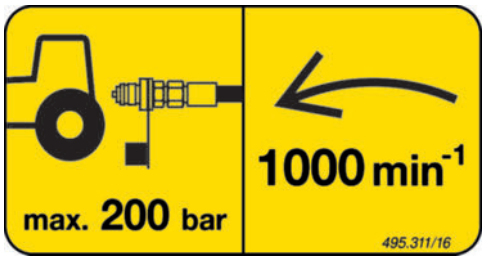


Fig.: Front view

Explanation

Pos.	Warning signs	Meaning
11		Do not climb onto the machine.
12		Never reach into the crushing danger area as long as parts are able to move there.

Pos.	Warning signs	Meaning
13		Maximum permitted hydraulic pressure, direction of rotation and speed of input shaft in direction of travel.
14		Read the operating manual thoroughly before putting the machine into operation.
15		Never reach into the crushing danger area as long as parts are able to move there.
16		Do not climb onto the machine.

Warning signs

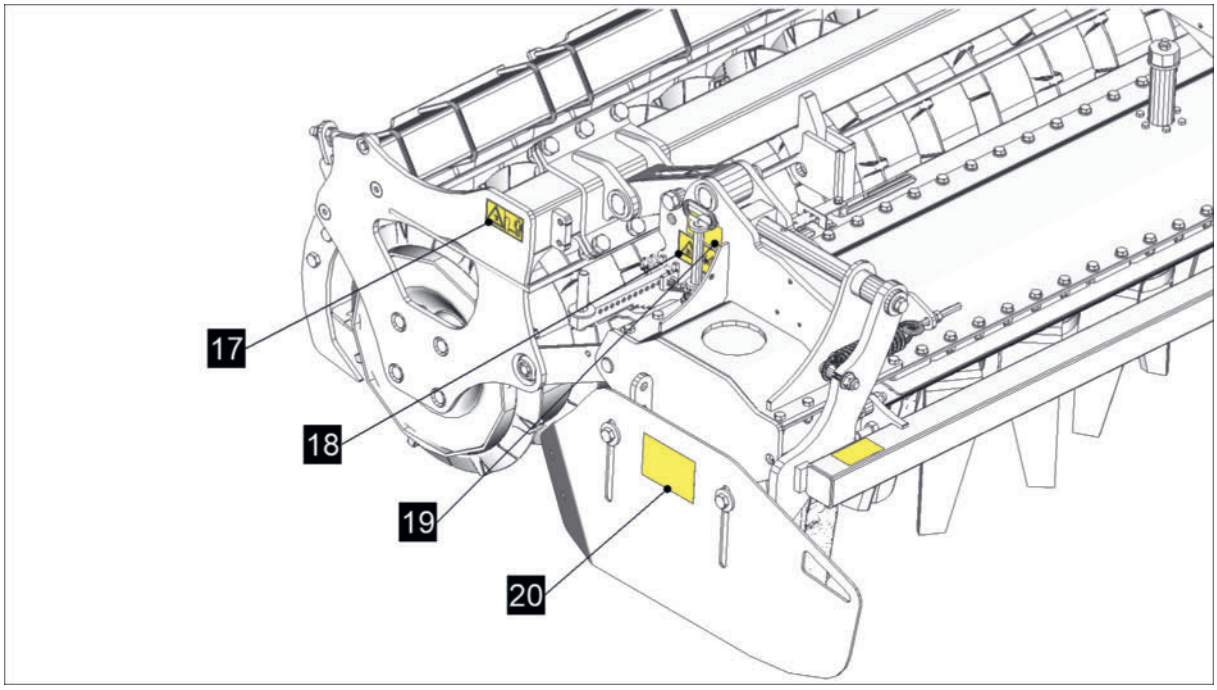
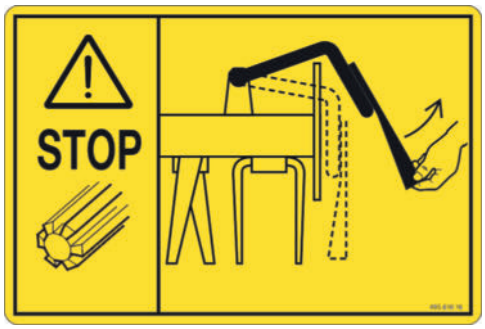


Fig.: Front right view

Explanation

Pos.	Warning signs	Meaning
17		Keep a safe distance as danger exists through parts being ejected while motor is running.
18		Never reach into the crushing danger area as long as parts are able to move there.
19		Risk of severing fingers Never reach into the danger area as long as parts can move there.

Pos.	Warning signs	Meaning
20		Danger of being pulled in and danger of parts being ejected when the PTO shaft is engaged. Only raise side guard if PTO is stationary.

Traffic safety equipment

Traffic safety equipment is required when travelling on public roads. The equipment may vary depending on the country of destination.

TIP

USA / CANADA

For machines which are operated in the USA / CANADA, a "Flasher Control Module" (to adapt the direction indicator blinking frequency to the current applicable regulations) is available!

Warning signs / lighting

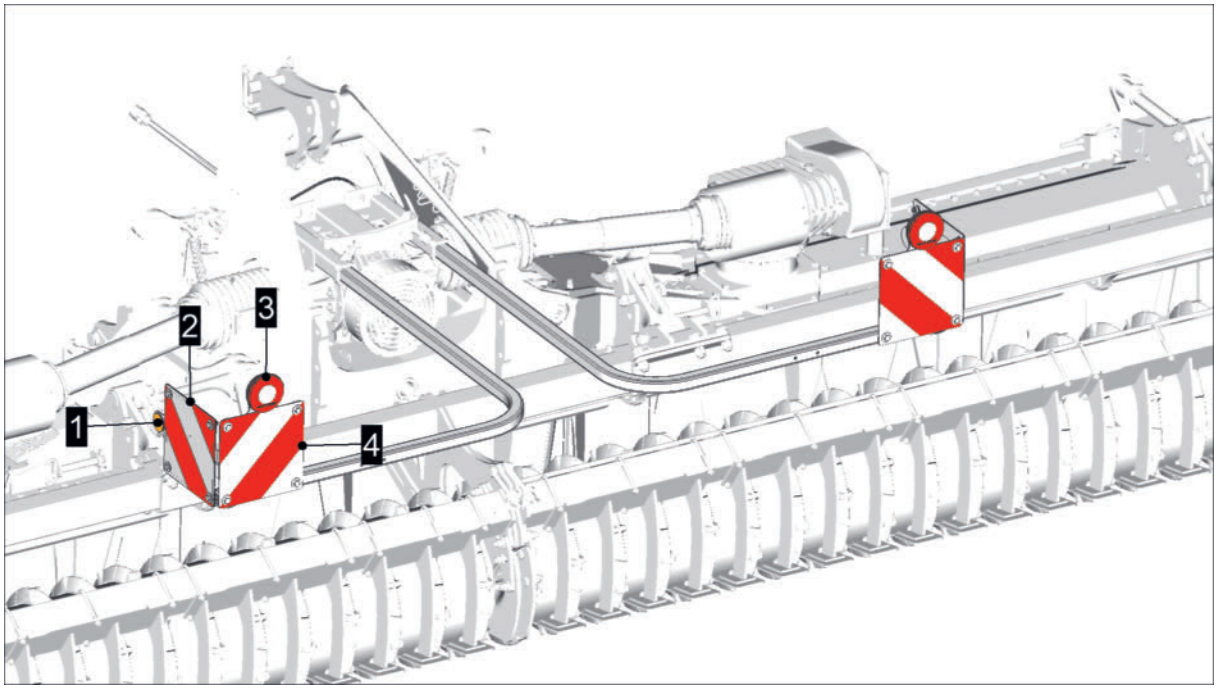
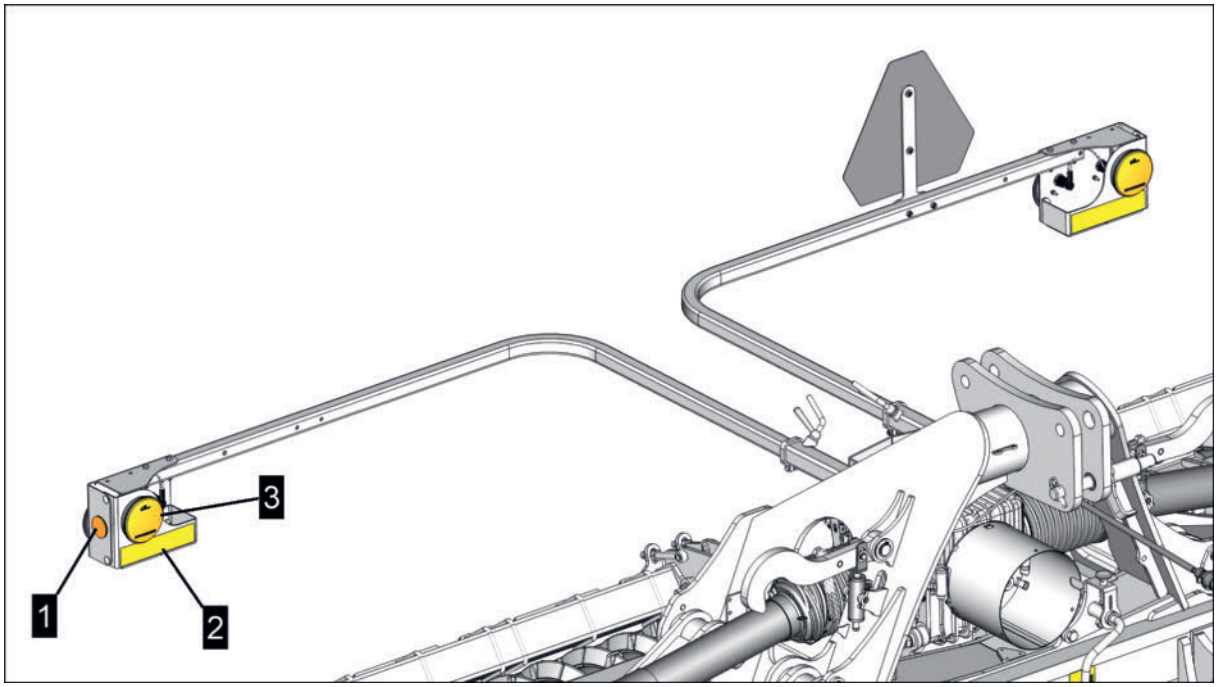


Fig.: Rear left view

Pos.	Equipment
1	Orange reflectors on both sides of the machine

Pos.	Equipment
2	Additional warning signs (depending on country of destination) on both sides of the machine
3	Rear lights / brake lights / indicator lights on both sides of the machine
4	Warning sign on both sides of the machine

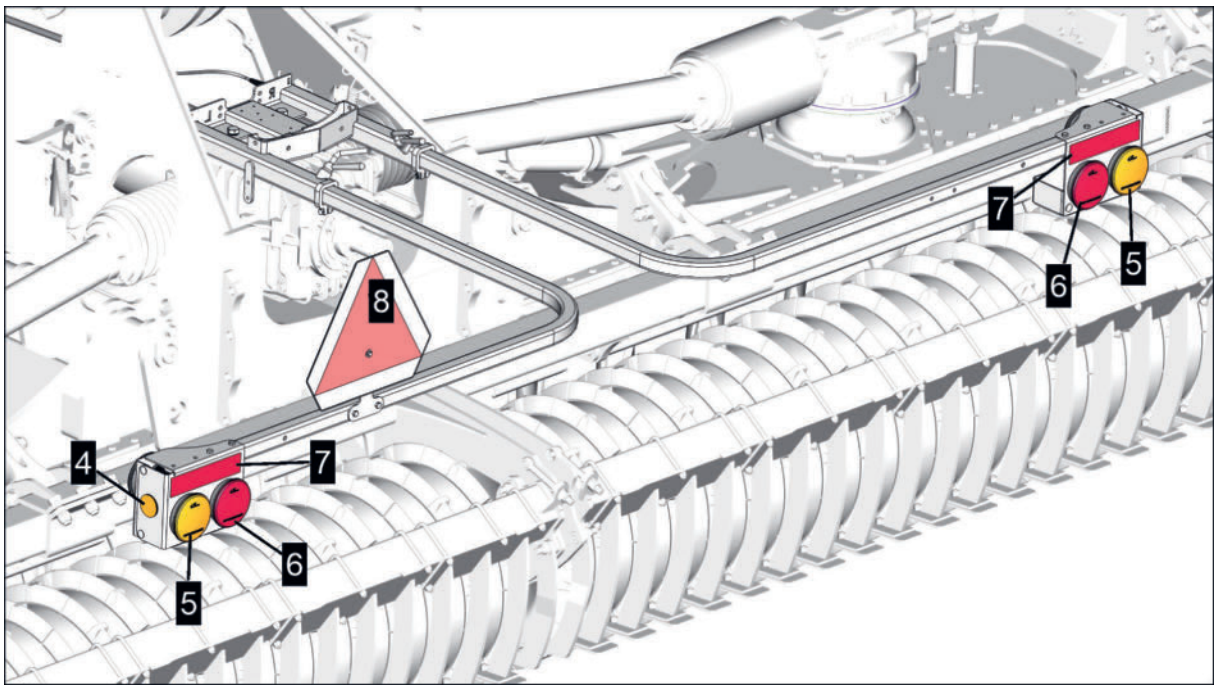
USA / CANADA



Front view

Pos.	Equipment
1	Orange reflectors on both sides of the machine
2	Yellow reflective film on both sides of the machine
3	Yellow indicator lights on both sides of the machine

USA / CANADA



Rear view

Pos.	Equipment
4	Orange reflectors on both sides of the machine
5	Yellow indicator lights
6	Red rear lights
7	Red reflective film
8	SMV emblem

Handling hazardous substances

In addition to the information in these Instructions, the generally applicable, statutory or otherwise binding regulations on environmental protection are to be observed.

Disposal of the machine

ENVIRONMENT

At the end of its service life, the machine should be taken to a legally regulated waste material recycling centre.

Pressure tanks, shock absorbers, gas springs, etc.

- Depending on the machine, there are built-in hydraulic pressure tanks under high gas pressure (nitrogen) which must be discharged via a special device before the machine is scrapped.
- Depressurise airbrake compressed air tanks via the condensate drain before disposing of them.
- Gas pressure springs, gas pressure dampers or oil pressure dampers are under high pressure and must be removed before scrapping the machine and, if necessary, disposed of separately from metal scrap.

Dispose of lubricants and operating materials

- Drain, collect and dispose of gear lubricants and hydraulic oils appropriately.
- Empty lubricant containers of central lubrication systems and dispose of the lubricant appropriately.

Dispose of electrical and electronic components

- Remove lighting equipment, control computer, sensors and cables and take them to the recycling facility separately.

Dispose of plastic parts

- Plastic parts are supplied with a label which provides information on the material composition. Plastic parts can therefore be correctly sorted before being taken to the recycling centre.

Disposal of metal parts

- All metal parts must be brought to the relevant recycling plant, sorted as purely as possible.
- Remove lubricants such as gear oil, hydraulic oil, etc. from components before they are scrapped.

Disposal of rubber parts / tyres

- Take tyres with and without rims, and other rubber components to the relevant recycling point.

Disassembly of heavy parts of the machine

- Lift parts of the machine whose weight exceeds 25 kg only by crane or forklift.

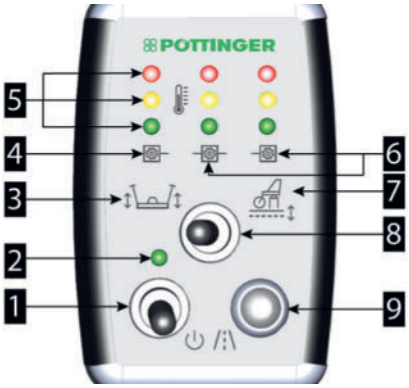
WARNING

Health hazard due to heavy, manual lifting!

- ► Do not manually lift parts of the machine whose weight exceeds 25 kg.
- ► Use a crane, forklift or similar to remove or dismantle these parts.

BASIC CONTROL terminal overview

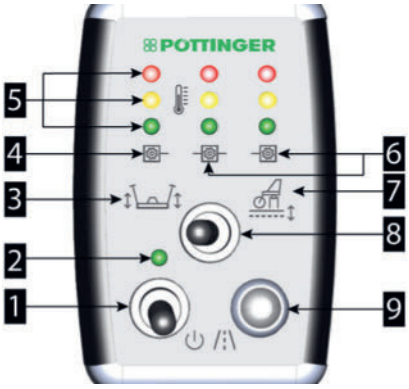
Pos.	Designation / function
1	Toggle switch: ON / OFF
2	Status LED The LED is green if the power supply and terminal are switched on.
3	Symbol for folding track markers (optional).
4	Left gearbox
5	LED status of gear oil temperature sensors (B30/B31/B32) for input gearbox and left / right gearbox. The green LED lights up when the gear oil temperature is in the range of </= +80 °C. The yellow LED lights up when the gear oil temperature is in the range of > +81 °C - +100 °C. The red LED lights up when the gear oil temperature is in the range of > +101 °C.
6	Input gearbox and right gearbox.
7	Working depth adjustment symbol.
8	Changeover switch between "track marker folding" and "working depth adjustment" preselection.
9	Button for arm folding.



BASIC CONTROL terminal temperature monitoring

The gear oil temperature monitoring display may require the operator to adapt operations / machine settings depending on which LED lights up.

Pos.	Designation / function
5	LED status of gear oil temperature sensors (B30/B31/B32) for input gearbox and left / right gearbox. The green LED lights up when the gear oil temperature is in the range of </= +80 °C. The yellow LED lights up when the gear oil temperature is in the range of > +81 °C - +100 °C. The red LED lights up when the gear oil temperature is in the range of > +101 °C.



Green LED lights up

This indicates a normal gear oil temperature.

► Work can continue with the current machine setting and the selected driving speed.

Yellow LED lights up

This indicates an increased gear oil temperature.

► Work can continue with the machine.

► Reduce driving speed and check oil temperature display more frequently.

Red LED lights up

This indicates an excessive gear oil temperature.

NOTICE

Damage to gearbox!

Bearings and seals on the gearboxes concerned may be damaged if work continues on the machine even though a red LED lights up.

► Allow the gear oil to cool until the yellow or green LED lights up.

► Stop the tractor and raise the machine to headland position.

CAUTION

Danger of injury due to foreign bodies ejected at high speed!

Stones and lumps of earth may be ejected if the machine is raised to headland position while the PTO drive is running.

► Direct people out of danger area.

► Do not switch off the PTO, but allow the machine to continue to run at the adjusted or reduced speed. The gear oil is cooled quickly by the cooler on the input gearbox and the cooling fins on the change gearboxes.

▷ Work can continue on the machine if only the yellow or green LED lights up.

▷ Adjust the driving speed or machine settings accordingly to prevent further overheating.

BASIC CONTROL terminal operation

The BASIC CONTROL terminal together with the BASICLINE preset operation allows the machine to be controlled with only 2 dual-action hydraulic connections.

The corresponding machine functions are preselected on the BASIC CONTROL terminal if necessary and executed using the associated tractor control device.

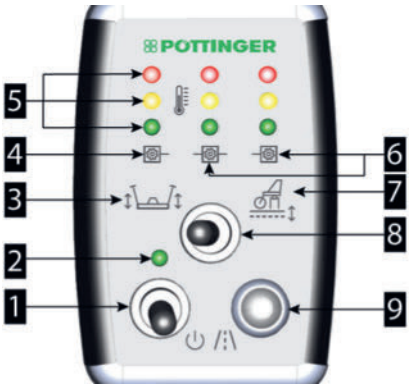
Put arm in working position / road transport position.

Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position or road transport position and secure against rolling.
- Track marker moved to road transport position and secured. See "Track marker operation (optional)" on page 60.See "Track marker transport lock" on page 55.
- BASIC CONTROL terminal switched on.

Implementation

► Press button ((9) and keep it held down.



▷ Set tractor control device with the hydraulic connections marked in red to "raise" or "lower" to open the transport safety hooks and raise or lower the arms as far as they will go.

Ensure that transport safety hooks have engaged correctly. See "Bar / arm transport lock" on page 45.

► Release button (9).

Move the track marker to working position / road transport position

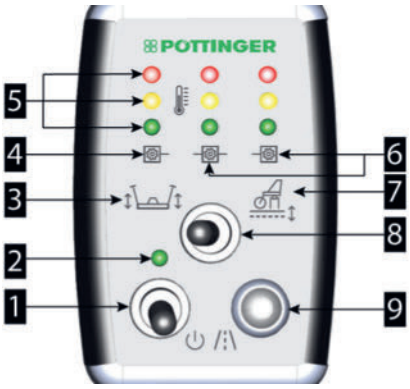
Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Track marker transport lock deactivated. See "Deactivate transport lock" on page 57.

- BASIC CONTROL terminal switched on.
- Tractor motor turned off, PTO switched off, parking brake applied, ignition key removed and stored during all work.

Implementation

► Move switch (8) to the left to activate the track marker preselection.



▷ Set tractor control device with the hydraulic connections marked in red to "raise" or "lower" and raise or lower the arms as far as they will go.

Adjusting the working depth

Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level, stable ground in working position.
- BASIC CONTROL terminal switched on.

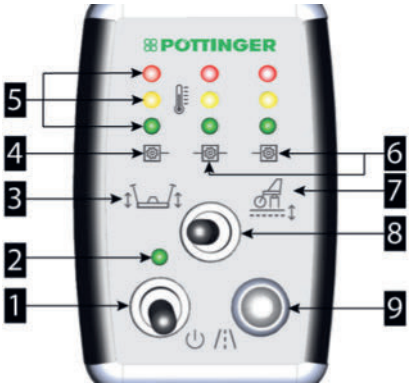
Implementation

► Switch PTO on and set to working speed.

▷ Drive up with the machine, activate the rear power lift and lower the machine completely.

▷ Accelerate quickly to the required working speed.

► Move switch (8) to the right to activate the working depth adjustment preselection.



▷ Set the tractor control device with the hydraulic connections marked in red to "raise" or "lower" to raise or lower the follow-on device and set the required working depth.

Transport locks ensure that machine functions cannot be activated inadvertently while travelling on public roads.

⚠ WARNING

Unintentional operation of machine functions!

If the transport safeguards are not fully closed / not fully activated, unintentional operation of the machine functions and unforeseen movements of machine parts could occur.

► Before any road transport journeys, attach / close all transport safeguards as specified.

► Before any road transport journeys, put the machine in the road transport position.

Bar / arm transport lock

The bars / arms are secured to the lifting cylinders by an automatically closing transport lock which prevents accidental lowering of the bars when hydraulic pressure is lost.

Follow-on device transport lock with manual working depth adjustment

The follow-on device transport lock is used to secure the follow-on device in its road transport position to prevent the follow-on device from swaying during transportation. The transport lock can be activated in 2 different transport widths (2.65 m, 2.55 m), depending on local requirements.

⚠ CAUTION

Tractor tipping over!

If the follow-on devices are not secured in road transport position, the follow-on devices may have a negative impact on the centre of gravity of the tractor / trailer combination by swaying / jolting.

► Activate the transport lock on the follow-on devices before transportation.

Activate transport lock, transport width 2,55 m

Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Heavy soiling removed from working depth adjusting equipment. This makes adjustment easier.
- Tractor motor turned off, PTO switched off, parking brake applied, ignition key removed and stored during all work.

TIP

The adjustment is shown below using the example of the left follow-on device.

Implementation

1 Only raise the machine with the rear power lift until the screws (2) in the roller carrier (1) are firmly seated in the recess below as shown.

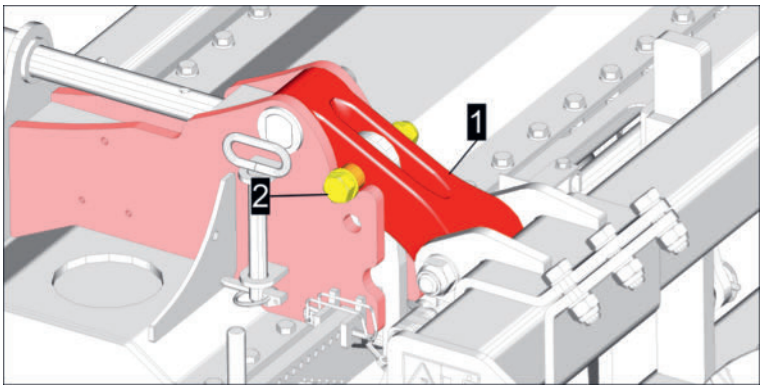


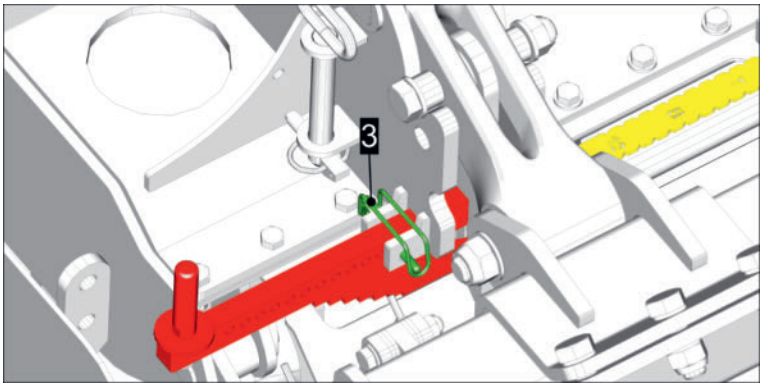
Fig.: Example of outer left roller carrier on left follow-on device

2 If necessary, secure the machine against unintentional lowering in the area of the rear power lift using suitable support blocks.

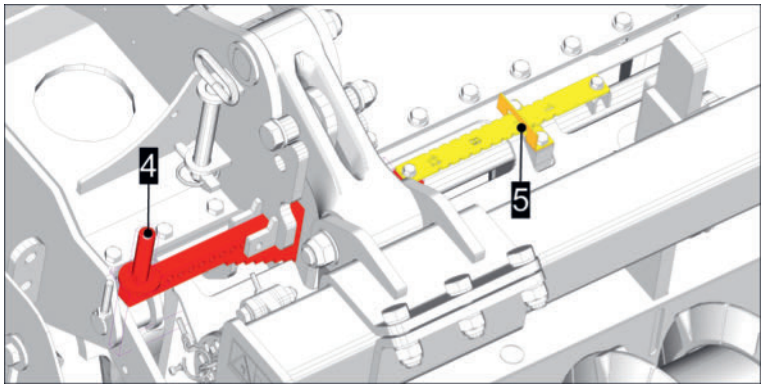
▷ The lower the rotary power harrow and allow it to rest on the supports.

▷ Switch off the tractor, remove and store the ignition key, apply the parking brake and secure the tractor against rolling using wheel chocks.

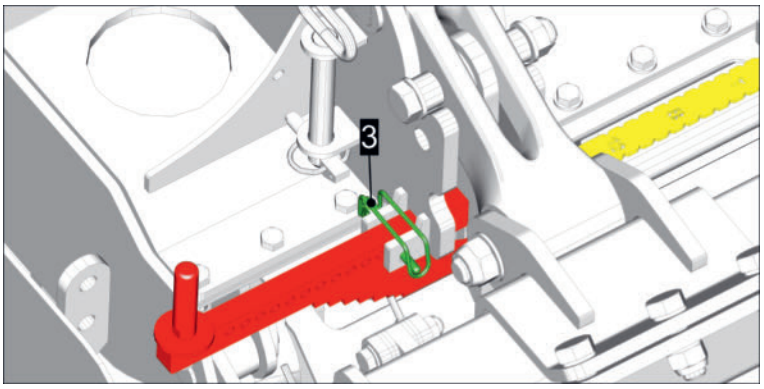
3 Remove linchpin (3) on working depth adjusting equipment.



▷ Set the depth adjustment with the handle (4) according to the scale (5) precisely to level (T) as shown.



4 Replace the linchpin (3).



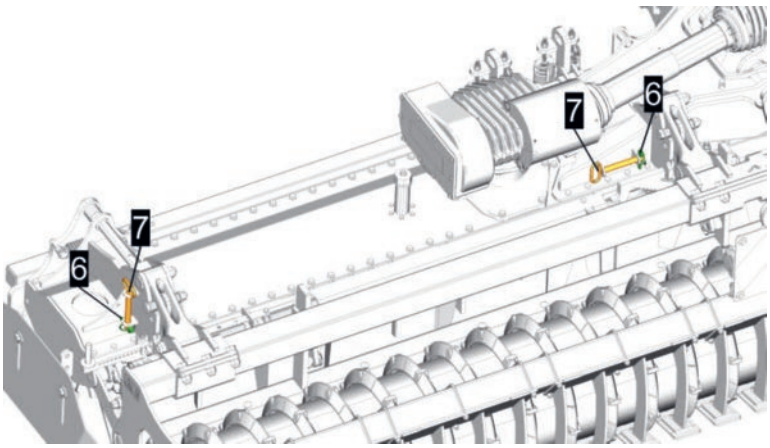
5 Carry out the procedure in the same way on both sides of the machine

▷ Now remove the support blocks by activating the rear power lift, raise the machine slightly and remove the support blocks.

6 Lower the machine into working position using the rear power lift.

▷ Switch off the tractor, remove and store the ignition key, apply the parking brake and secure the tractor against rolling using wheel chocks.

7 Remove the linchpin (6) and release the locking pins (7) from the park position.



8 Insert the locking pins (7) in the hole (8) on both sides of the follow-on device as shown.

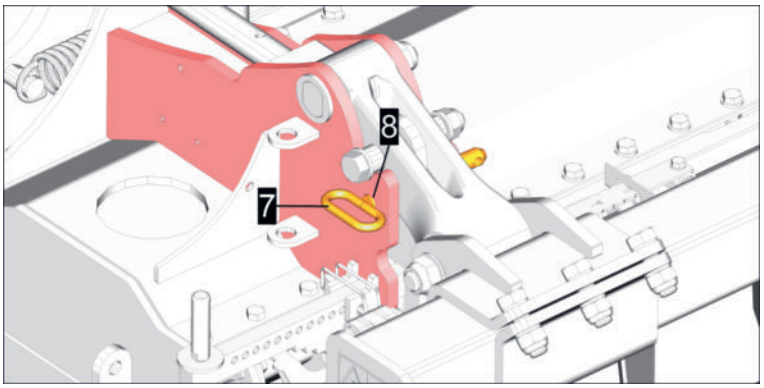


Fig.: Example of outer left roller carrier on left follow-on device

▷ Attach linchpin (6) on both sides of the follow-on device to secure the locking pins.

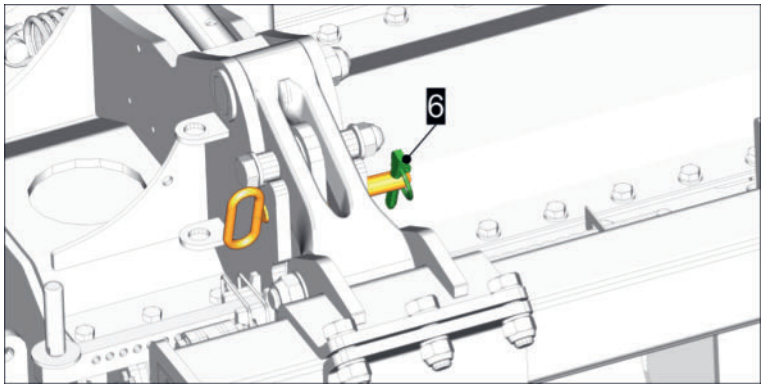


Fig.: Example of outer left roller carrier on left follow-on device

9 Carry out the procedure in the same way on both sides of the machine.

Deactivate transport lock, transport width 2,55 m

TIP

The adjustment is shown below using the example of the left follow-on device.

Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Heavy soiling removed from working depth adjusting equipment. This makes adjustment easier.
- Before working on the machine, switch off the tractor engine, remove and store the ignition key.

TIP

The adjustment is shown below using the example of the left follow-on device.

Implementation

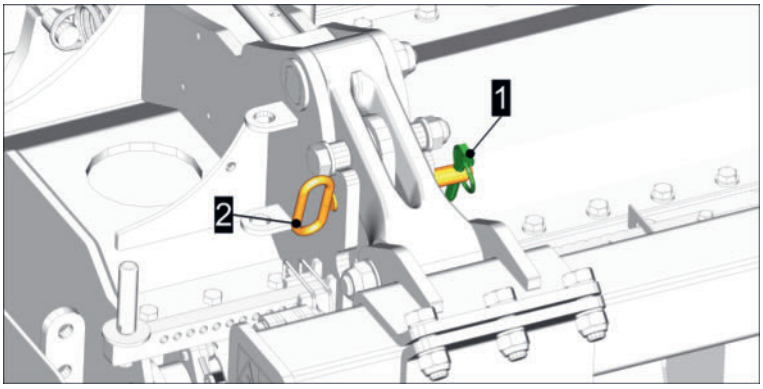
► If necessary, use the rear power lift to raise the machine until the follow-on devices are not touching the ground.

► If necessary, secure the machine against unintentional lowering in the area of the rear power lift using suitable support blocks.

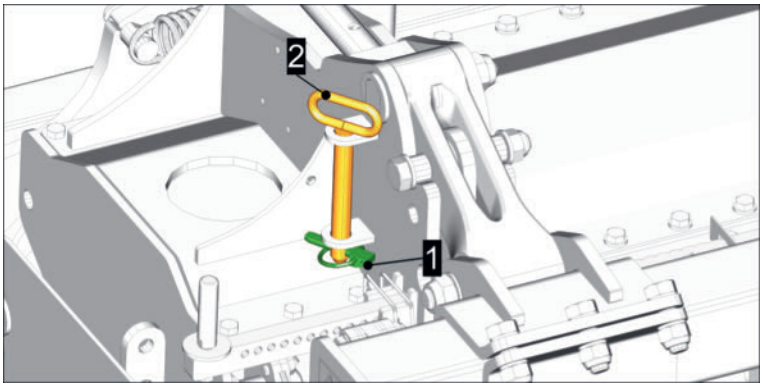
▷ The lower the rotary power harrow and allow it to rest on the supports.

▷ Switch off the tractor, remove and store the ignition key, apply the parking brake and secure the tractor against rolling using wheel chocks.

► Remove the linchpins (1) and locking bolts (2).



► Move locking pins (2) to park position and secure with linchpin (1).



▷ Carry out the procedure in the same way on both sides of the left follow-on device.

► Remove transport lock in the same way on the right follow-on device, unplug in park position and secure with linchpin.

Activate transport lock, transport width 2,65 m

TIP

The transport lock is activated in the same way as the working depth adjustment. No locking pins are used to secure the equipment further.

It is not necessary to deactivate the transport lock.

Prerequisite

- Tractor ballast completely affixed.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Heavy soiling removed from working depth adjusting equipment. This makes adjustment easier.
- Tractor motor turned off, PTO switched off, parking brake applied, ignition key removed and stored during all work.

TIP

The adjustment is shown below using the example of the left follow-on device.

Implementation

1 Only raise the machine with the rear power lift until the screws (2) in the roller carrier (1) are firmly seated in the recess below as shown.

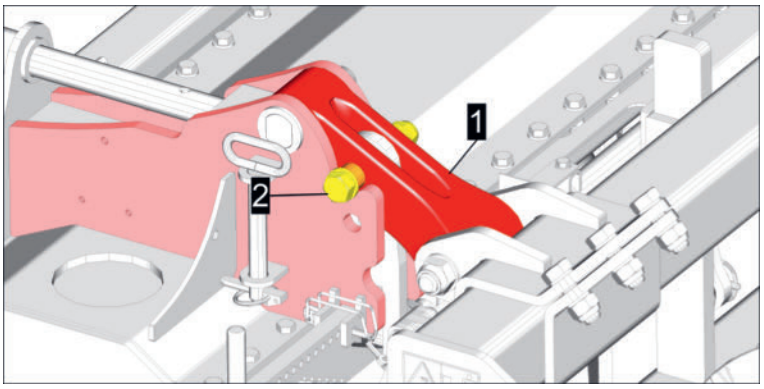


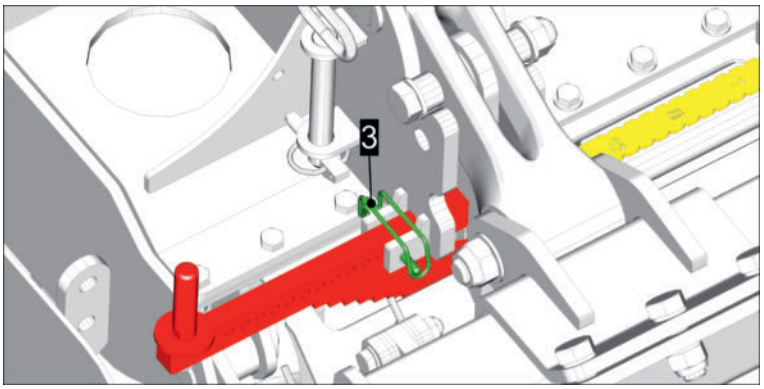
Fig.: Example of outer left roller carrier on left follow-on device

2 If necessary, secure the machine against unintentional lowering in the area of the rear power lift using suitable support blocks.

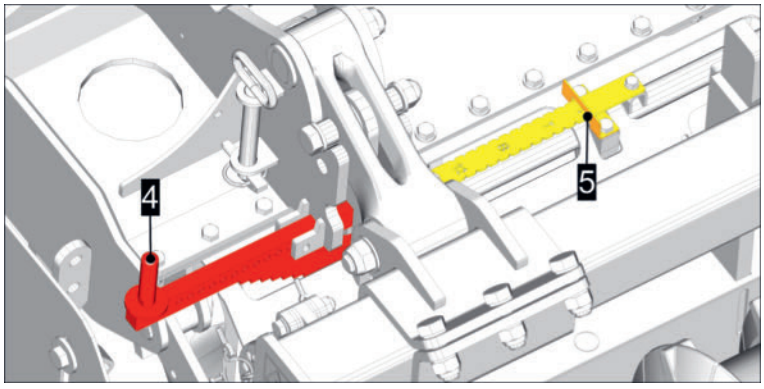
▷ Then lower the rotary power harrow and allow it to rest on the supports.

▷ Switch off the tractor, remove and store the ignition key, apply the parking brake and secure the tractor against rolling using wheel chocks.

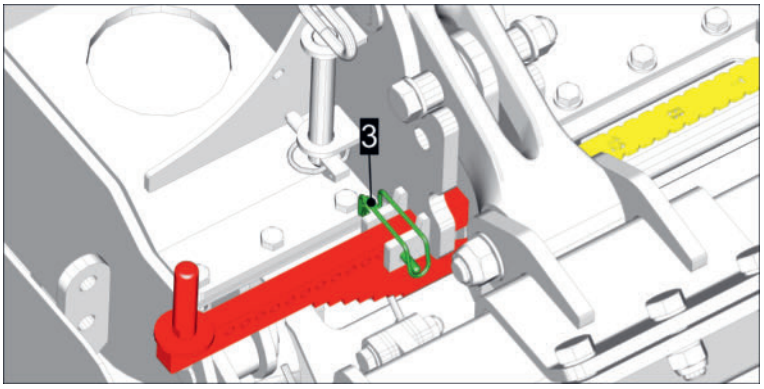
3 Remove linchpin (3) on working depth adjusting equipment.



▷ Set the depth adjustment with the handle (4) according to the scale (5) precisely to level (1) as shown.



4 Replace the linchpin (3).



5 Carry out the procedure in the same way on both sides of the machine

▷ Now remove the support blocks by activating the rear power lift, raise the machine slightly and remove the support blocks.

6 Lower the machine into working position using the rear power lift.

Follow-on device transport lock with hydr. working depth adjustment

The follow-on device transport lock is used to secure the follow-on device in its road transport position to prevent the follow-on device from swaying during transportation. The transport lock can be activated in 2 different transport widths (2.65 m, 2.55 m), depending on local requirements.

CAUTION

Tractor tipping over!

If the follow-on devices are not secured in road transport position, the follow-on devices may have a negative impact on the centre of gravity of the tractor / trailer combination by swaying / jolting.

► Activate the transport lock on the follow-on devices before transportation.

Activate transport lock, transport width 2,55 m

Prerequisite

- Tractor ballast completely affixed.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Tractor engine turned off, PTO switched off, parking brake applied, ignition key removed and stored before all work.

TIP

The adjustment is shown below using the example of the left follow-on device.

Implementation

1 Only raise the machine with the rear power lift until the screws (2) in the roller carrier (1) are firmly seated in the recess below as shown.

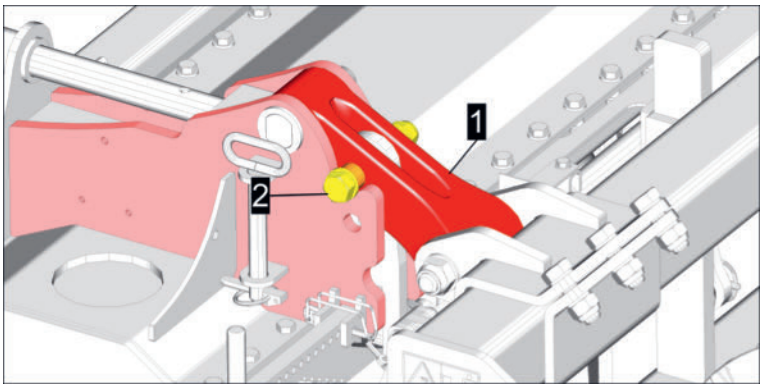


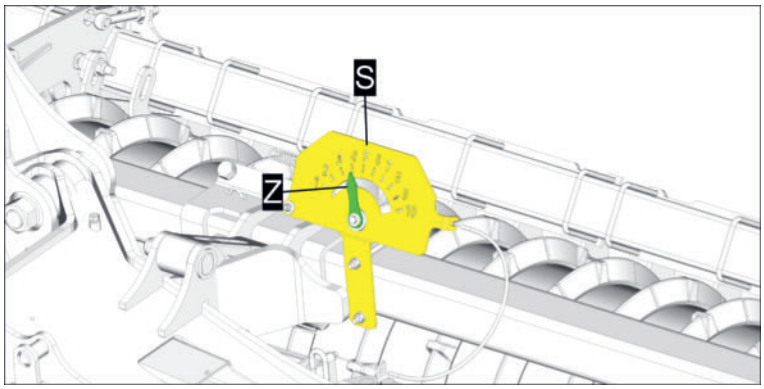
Fig.: Example of outer left roller carrier on left follow-on device

2 Switch on BASIC CONTROL terminal if available.

▷ Preselect working depth adjustment in BASIC CONTROL terminal.

3 Activate tractor control device (hydraulic connections marked red with BASIC CONTROL; hydraulic connections marked green with STANDARD hydraulics).

▷ Set working depth adjustment so that the pointer (Z) is exactly at level 4 on the scale (S) as shown below.



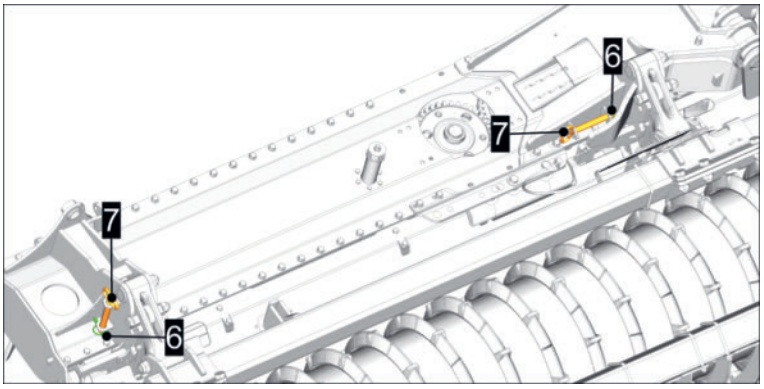
4 If necessary, secure the machine against unintentional lowering in the area of the rear power lift using suitable support blocks.

▷ Then lower the rear power lift without pressure and allow it to rest on the support blocks.

5 Switch off BASIC CONTROL terminal.

6 Switch off the tractor engine, remove and store the ignition key, apply the parking brake and secure the tractor against rolling using wheel chocks.

7 Remove the linchpin (6) and release the locking pins (7) from the park position.



8 Insert the locking pins (7) in the hole (8) on both sides of the follow-on device as shown.

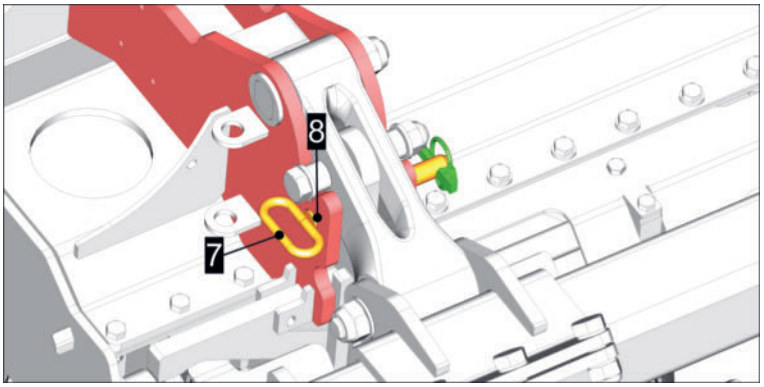


Fig.: Example of outer left roller carrier on left follow-on device

▷ Attach linchpin (6) on both sides of the follow-on device to secure the locking pins.

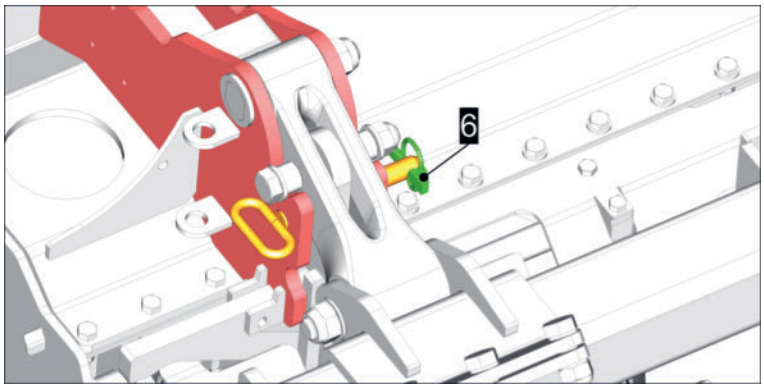


Fig.: Example of outer left roller carrier on left follow-on device

9 Carry out the procedure in the same way on both sides of the machine

10 Set tractor control device to "neutral" for the working depth adjustment.

11 **Remove the support blocks:**

▷ Activate the rear power lift, raise the machine slightly and remove the support blocks.

Deactivate transport lock, transport width 2,55 m

TIP

The adjustment is shown below using the example of the left follow-on device.

Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Tractor engine turned off, PTO switched off, parking brake applied, ignition key removed and stored before all work.

Implementation

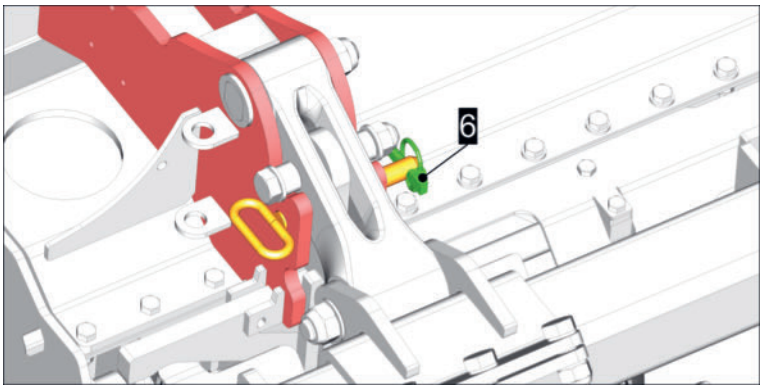
► If necessary, use the rear power lift to raise the machine until the follow-on devices are not touching the ground.

► If necessary, secure the machine against unintentional lowering in the area of the rear power lift using suitable support blocks.

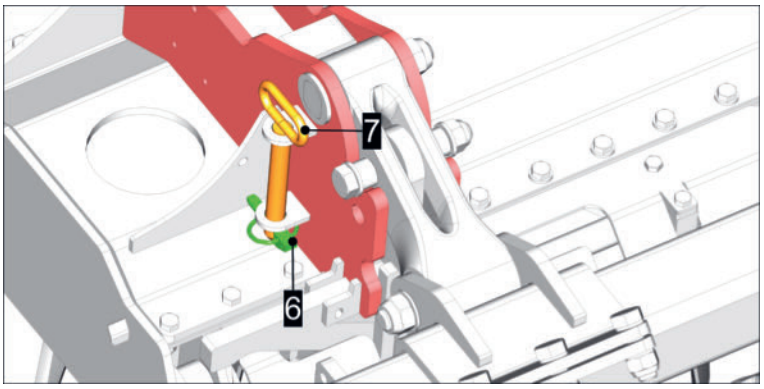
▷ Then lower the rear power lift without pressure and allow it to rest on the support blocks.

▷ Switch off the tractor, remove and store the ignition key, apply the parking brake and secure the tractor against rolling using wheel chocks.

► Remove linchpin (6) on locking pin and pull locking pin out.



► Move locking pins (7) to park position and secure with linchpin (6) as shown below.



▷ Carry out the procedure in the same way on both sides of the left follow-on device.

► Remove transport lock in the same way on the right follow-on device, unplug in park position and secure with linchpin.

Activate transport lock, transport width 2,65 m

TIP

The transport lock is activated in the same way as the working depth adjustment. No locking pins are used to secure the equipment further.

It is not necessary to deactivate the transport lock.

Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Tractor engine turned off, PTO switched off, parking brake applied, ignition key removed and stored before all work.

TIP

The adjustment is shown below using the example of the left follow-on device.

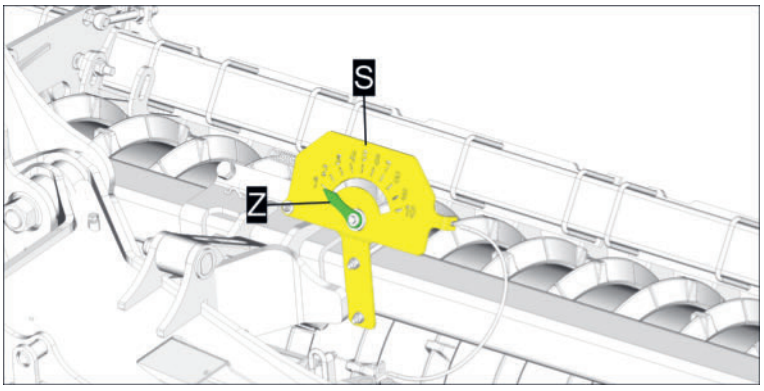
Implementation

1 Switch on BASIC CONTROL terminal if available.

▷ Preselect working depth adjustment in BASIC CONTROL terminal.

2 Activate tractor control device (hydraulic connections marked red with BASIC CONTROL; hydraulic connections marked green with STANDARD hydraulics).

3 Set working depth adjustment so that the pointer (Z) is exactly at level 1 on the scale (S) as shown below.



4 Set tractor control device to "neutral" for the working depth adjustment.

Track marker transport lock

The transport lock prevents the track marker from swinging out in an uncontrolled manner in the event of a fault in the hydraulic system.

The track markers must be locked in the road transport position on both sides of the machine before driving on public roads and when not in use.

Activate transport lock

Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Track marker moved to road transport position. See "Track marker operation (optional)" on page 60.
- Tractor engine turned off, PTO switched off, parking brake applied, ignition key removed and stored during all work.

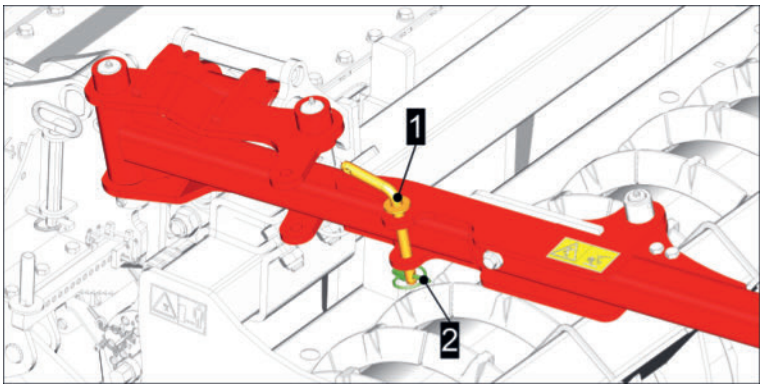
TIP

The adjustment is shown below using the example of the left track marker.

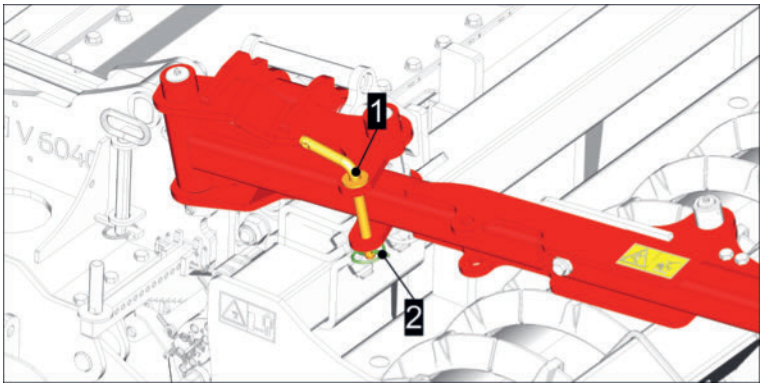
Implementation

1 Move track marker to road transport position if not already done. See "Track marker operation (optional)" on page 60.

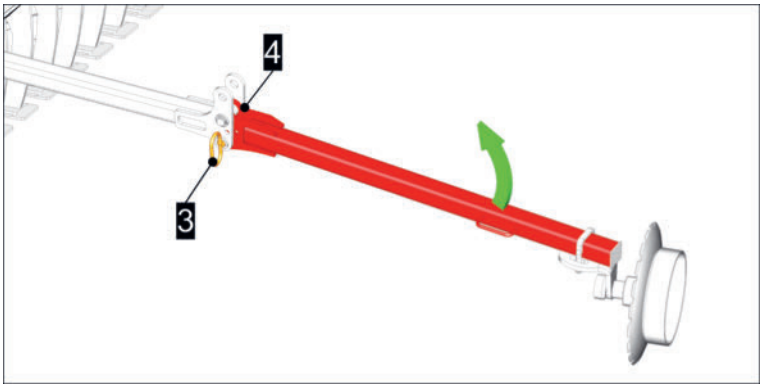
2 Secure track marker with locking pin: Remove the linchpin (2) and the locking pin (1) from the park position.



3 Fit locking pin (1) and linchpin (2) as shown.



4 Remove linchpin (4) and locking pin (3) on track marker extension.



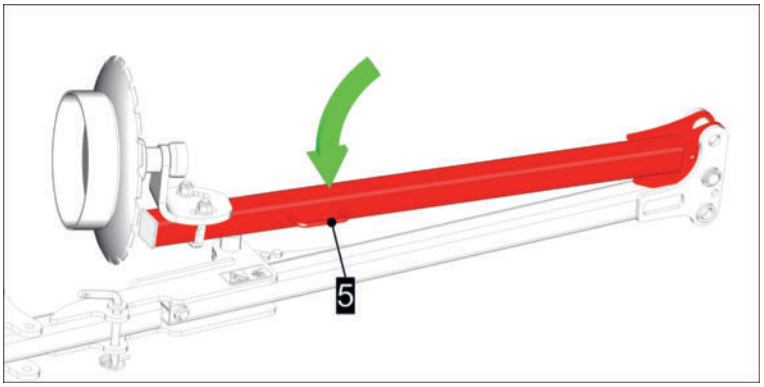
NOTICE

Collision with mounted seeder!

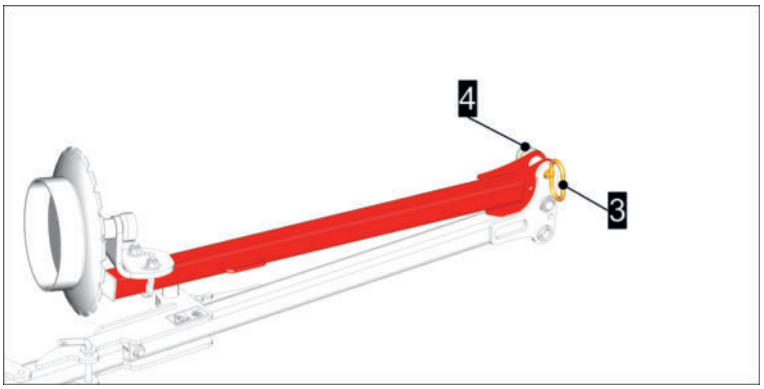
The seeder may be damaged when folding in the track marker extension if the machine is operated together with a PÖTTINGER AEROSEM F.

► Do not fold the track marker at this joint if the machine is used together with the PÖTTINGER AEROSEM F.

5 Hold the track marker extension with the handle (5) and fold in as far as it will go as shown.



6 Fit locking bolt (3) and linchpin (4) to secure the track marker extension.



7 Carry out the same procedure on both track markers.

Deactivate transport lock

Prerequisite

- Park machine on level and stable ground in working position and secure against rolling.

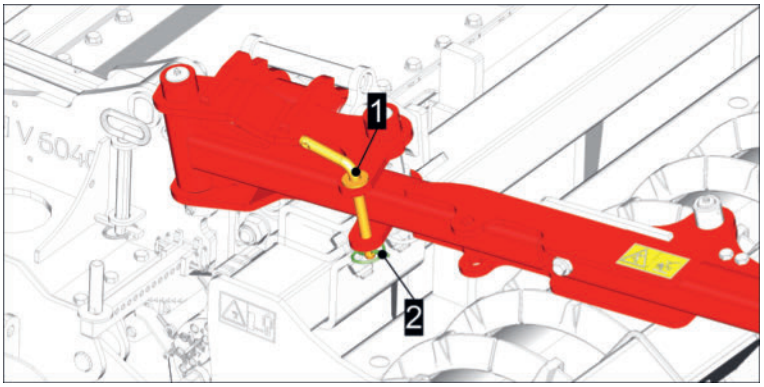
- Tractor motor turned off, PTO switched off, parking brake applied, ignition key removed and stored during all work.

TIP

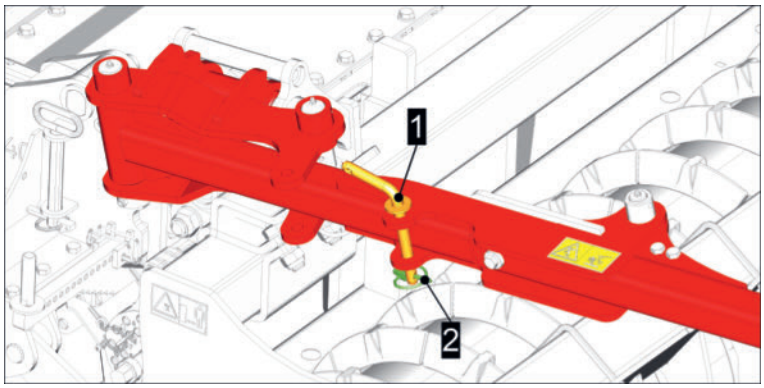
The adjustment is shown below using the example of the left track marker.

Implementation

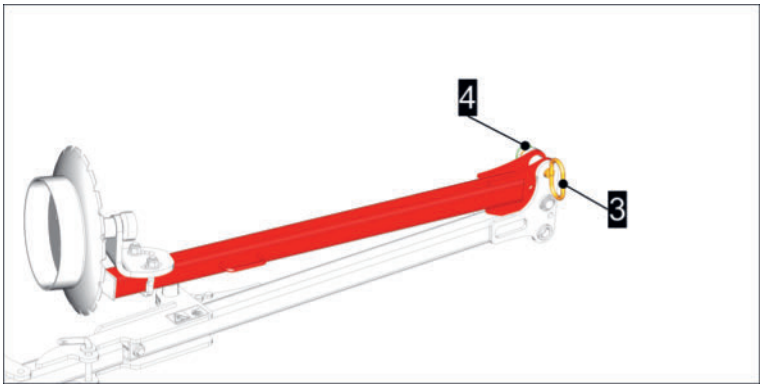
1 Remove the linchpins (2) and locking bolts (1).



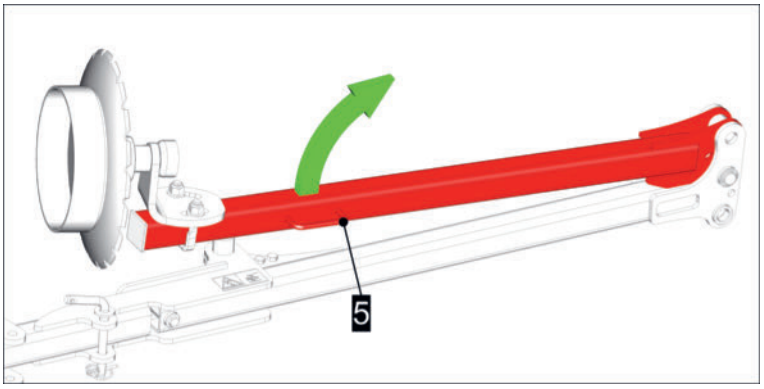
▷ Move locking pins (1) to park position as shown and secure with linchpin (2).



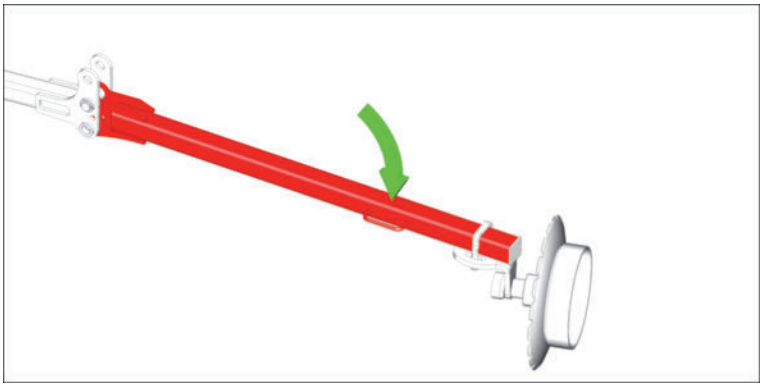
2 Remove the linchpins (4) and locking bolts (3).



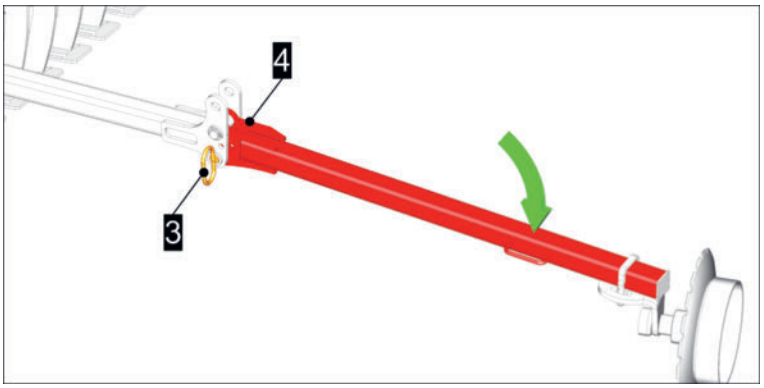
3 Hold the extension with the handle (5) and swing upwards.



4 Fold the extension out as far as it will go.



5 Fit locking pins (3) as shown and secure with linchpin (4).



6 Carry out procedure in the same way on the opposite track marker.

⚠ WARNING

Unclear work distribution!

If more than one person is working with and on the machine, the different areas of responsibility may become unclear, which can create risks for everyone involved.

► Clearly define the areas of responsibility of the helpers present and coordinate all work procedures before carrying out any work on or with seeders.

► If helpers are called in or withdrawn during the work, the areas of responsibility of the helpers present must be clearly redefined and all planned work procedures must be discussed.

⚠ WARNING

Not wearing personal protective equipment!

► Use personal protective equipment (protective clothing, work gl

Lift or lower the machine / machine combination

Function control through the Rear Power Lift control valve.

Prerequisites

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Direct persons away from the danger area around the machine.

Implementation

► **Raise the machine / machine combination to road transport / headland position:**

▷ Move rear power lift to "Raise" position.

► **Lower the machine / machine combination to working position:**

▷ Switch the rear power lift to "Lower" and slowly and gently place the machine combination on the ground.

Track marker operation (optional)

The track markers can be operated together with the BASIC CONTROL terminal either manually with standard hydraulics or with BASICLINE preselection.

Establish working position with standard hydraulics

Prerequisites

- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling.

- Swivel range of track marker taken into account on both sides of the machine in the parking space.
- Track marker connected to a single-action tractor control unit.
- Operational readiness of track marker established. See "Establish operational readiness" on page 111.
- Direct persons away from the danger area around the machine.

Implementation

► Turn on hydraulic pressure supply.

► Set tractor control device of track marker to "Lower".

▷ One of the track markers is lowered as far as it will go independently from the temporary setting of the shuttle valve.

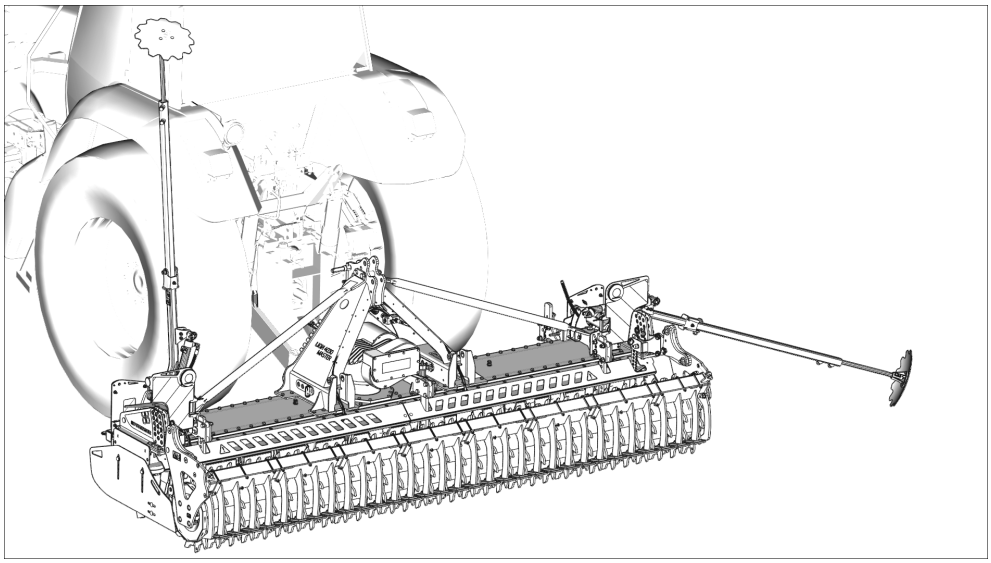


Fig.: Symbol illustration

TIP

If the opposite track marker is required first: Set the tractor control device to "Lift" to lift the corresponding track marker as far as it will go. Then set the tractor control device back to "Lower" to lower the required track marker as far as it will go.

► Then set the tractor control device to "float position".

Establish road transport position with standard hydraulics

Prerequisites

- Tractor ballast completely affixed.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level, stable ground and secure against rolling.
- Machine lowered to working position.
- Tractor engine turned off, parking brake applied, ignition key removed and stored while working.

TIP

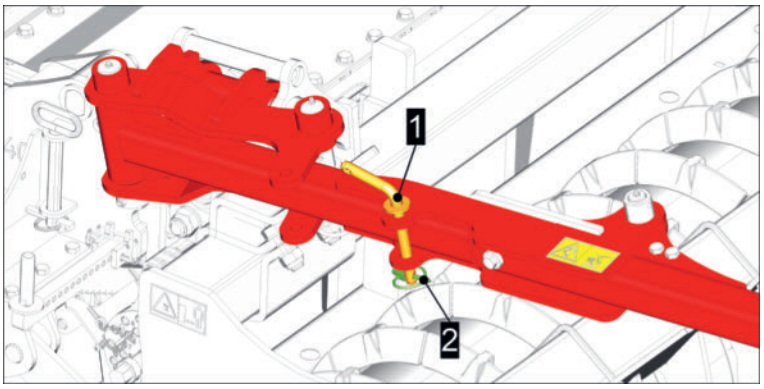
The procedure is shown below using the example of the left track marker.

Implementation

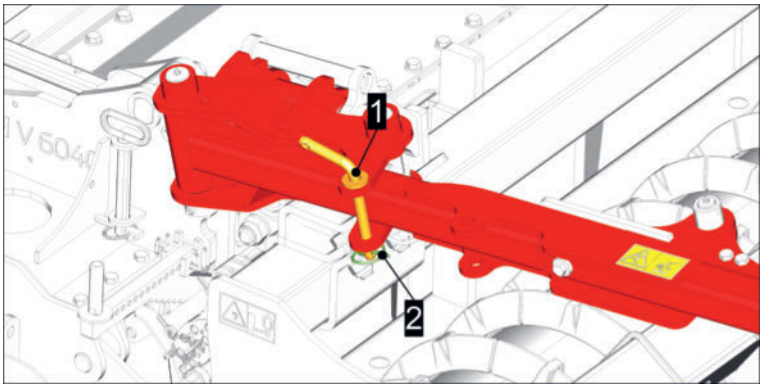
1 Set the tractor control device to "Lift" and swing the unfolded track marker in completely.

▷ Turn tractor engine off, apply parking brake, remove ignition key and keep safe.

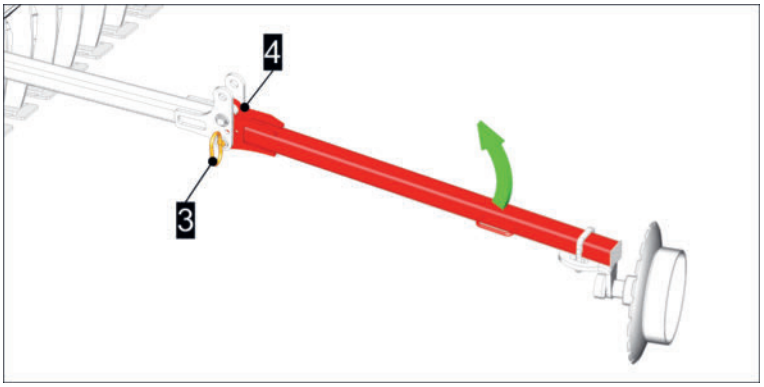
2 Secure track marker with locking pin: Remove the linchpin (2) and the locking pin (1) from the park position.



3 Fit locking pin (1) and linchpin (2) as shown.



4 Remove linchpin (4) and locking pin (3) on track marker extension.



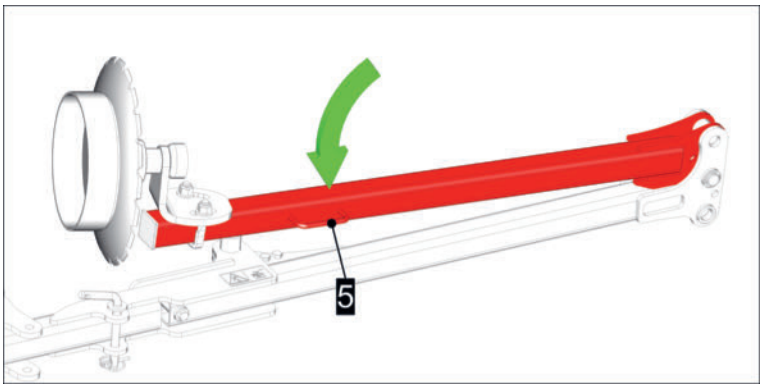
NOTICE

Collision with mounted seeder!

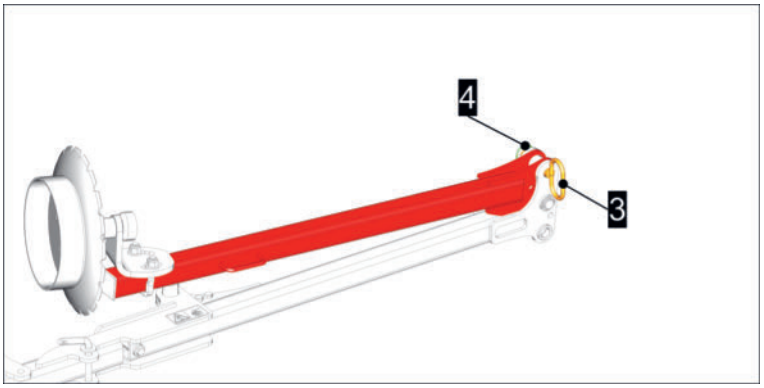
The seeder may be damaged when folding in the track marker extension if the machine is operated together with a PÖTTINGER AEROSEM F.

► Do not fold the track marker at this joint if the machine is used together with the PÖTTINGER AEROSEM F.

5 Hold the track marker extension with the handle (5) and fold in as far as it will go as shown.



6 Fit locking bolt (3) and linchpin (4) to secure the track marker extension.



7 Carry out the same procedure on both track markers.

Establish working position with BASICLINE preset operation

Prerequisites

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level, stable ground and secure against rolling.
- Machine lowered to working position.
- Transport lock deactivated on track marker. See "Track marker transport lock" on page 55.
- BASIC CONTROL terminal switched on.
- Tractor engine turned off, parking brake applied, ignition key removed and stored during the work on the machine.

TIP

The procedure is shown below using the example of the left track marker.

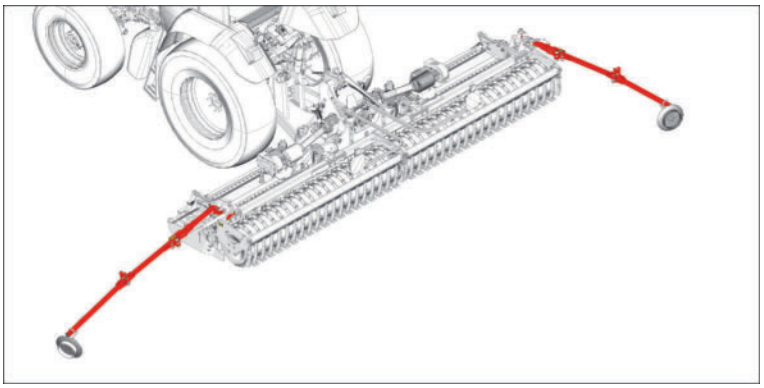
Implementation

► Switch to track marker on BASIC CONTROL terminal. See "BASICLINE preset operation / BASIC CONTROL terminal operation" on page 41.

► Set the tractor control device with the hydraulic connections marked red to "Lower" and swing one of the track markers out fully.

TIP

If the opposite track marker is required first: Set the tractor control device to "Lift" to lift the corresponding track marker as far as it will go. Then set the tractor control device back to "Lower" to lower the required track marker as far as it will go.



Establish road transport position with BASICLINE preset operation

Prerequisites

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level, stable ground and secure against rolling.
- Machine lowered to working position.
- BASIC CONTROL terminal switched on.
- Tractor engine turned off, parking brake applied, ignition key removed and stored during the work on the machine.

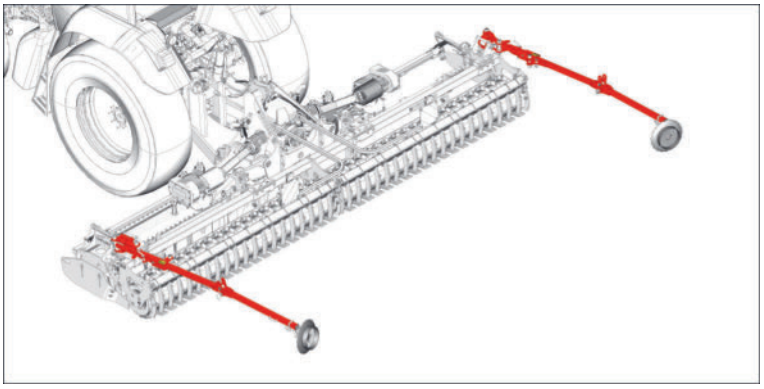
TIP

The procedure is shown below using the example of the left track marker.

Implementation

► Switch to track marker on BASIC CONTROL terminal. See "BASICLINE preset operation / BASIC CONTROL terminal operation" on page 41.

► Set the tractor control device with the hydraulic connections marked red to "Lift" and swing the track marker that is unfolded in working position out fully.



▷ Activate transport lock if necessary.

Operation

DANGER

Catching, being drawn in, severing of limbs, as well as crushing and running over for the entire body!

The danger area in which machine components can move and the danger area around the tractor must be entered when working on the machine.

- ► Before working on the machine, switch off the tractor engine, switch off the PTO, remove and store the ignition key!
- ► Wait until all machine components have stopped moving before entering the danger area around the tractor / machine.
- ► Use support stands when working underneath the machine of if the machine is raised to prevent accidental lowering of the machine / machine components.

WARNING

Rotating parts behind protective covers!

Rotating parts behind protective covers can continue to run unnoticed for a long time!

- ► Wait for all rotating parts to come to a standstill.
- ► Make sure that third parties cannot inadvertently activate the machine.
- ► Make sure that third parties cannot inadvertently activate the tractor.

WARNING

Not wearing personal protective equipment!

- ► Use personal protective equipment (protective clothing, work gl

NOTICE

Damage to the drive train on machines with PTO drives

With active PTO brake on the tractor, tension can build up in the drive train, which can cause damage to the machine components concerned.

- ► Switch off the tractor’s PTO brake before folding processes!

Initial operation

- Before intial operation, make sure the tractor is suitable for use with the machine. Compare the machine data with the corresponding data in the tractor's operating instructions.
- Ensure that any transport locks have been removed.
- Ensure that the (supplied) cardan shaft has been adapted to the tractor before start-up.
- **Only with mounted seed drill:**
  - Check that the mounted seeder (with track markers in transport position) does not touch either the tractor or the soil cultivator during lifting.

- Check that the tractor is sufficiently ballasted. See "Tractor ballast" on page 68.

Tractor ballast

CAUTION

Danger of accident due to ballasting errors!

With ballasting errors, the steering and braking ability of the tractor is impaired.

- ► Machines that are operated in various coupling modes, as a solo machine or as a machine combination, must be weighed in the respective mode.
- ► For weighing, establish the position of the machine / machine combination that extends furthest to the rear / to the front.
- ► After ballasting, carry out a brake test.

At least 20% of the tractor's net weight must be used as front axle load to ensure that the tractor can be steered and braked. Axle loads, total weight and tyre load capacity must not be exceeded.

For correct tractor ballasting, refer also to the tractor operating manual.

Two different methods can be used to determine the necessary ballasting.

Methods to determine tractor ballast weights

- *Weighing method*

  The most accurate result is achieved through the weighing method. Possible deviations from specified weights are also taken into account.
- *Calculation method*

  The calculation method only provides the calculated results from the weights in the technical data of the machine and tractor, at the time of delivery. These figures may differ from the actual weight due to subsequent technical changes.

TIP

Always use the weighing method if possible!

The correct ballasting must be re-determined each time the tractor and machine are changed.

Table of values to be filled out

	Actual value	Permissible value	Permissible tyre load capacity
Minimum front ballast	kg (lbs) ($G_{V\ min}$)	-	-
Total weight	kg (lbs) (G_{act})	≤ kg (lbs) (G_{perm})	-
Front axle load	kg (lbs) ($T_{V\ act}$)	kg (lbs) ($T_{V\ perm}$)	≤ kg (lbs)
Rear axle load	kg (lbs) ($T_{H\ act}$)	≤ kg (lbs) ($T_{H\ perm}$)	≤ kg (lbs)

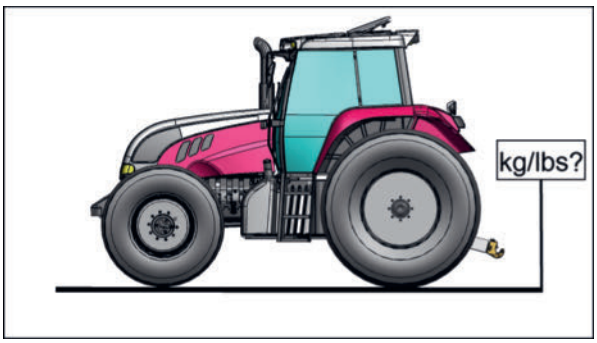
Determine the required tractor ballast weights using the weighing method

These methods (preferable) can be used to control the tractor ballast determined purely by mathematical calculations. See "Determine the required tractor ballast weights using calculation" on page 71.

Implementation

Weigh the tractor

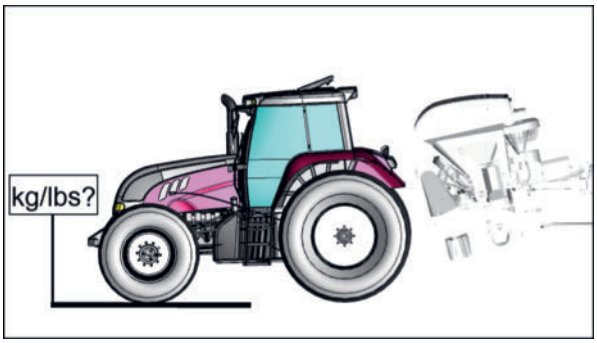
- ► Remove mounted machines and ballast weights from the tractor, if any.
- ► Drive the tractor onto the scales with the front and rear axle on the scales.



- ► Note weight as tractor tare weight (T_L) and enter in the table of figures.

Weigh the front axle load

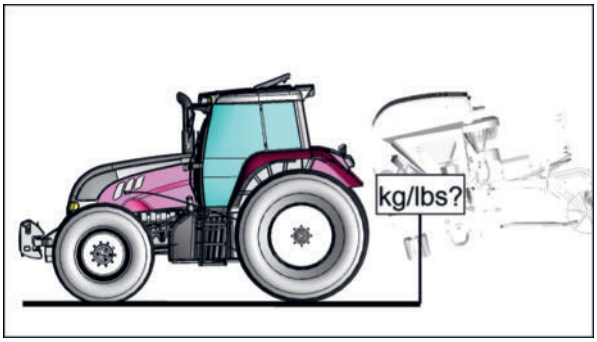
- ► Attach the machine to the tractor and put in transport position.
- ► Drive the tractor onto the scales with the front axle on the scales.



- ► Write down weight as actual front axle load ($T_{V\ act}$) and enter in the value table.
- ► Calculate whether the actual front axle load ($T_{V\ act}$) still corresponds to at least 20% of the tractor tare weight (T_L). If the front axle load is insufficient, add ballast until the actual front axle load ($T_{V\ act}$) corresponds to at least 20% of the tractor tare weight (T_L).
- ► Check that the maximum permissible front axle load ($T_{V\ perm}$) is not exceeded, taking into account the tyre load capacity. See the tractor operational instructions.

Weigh the total weight

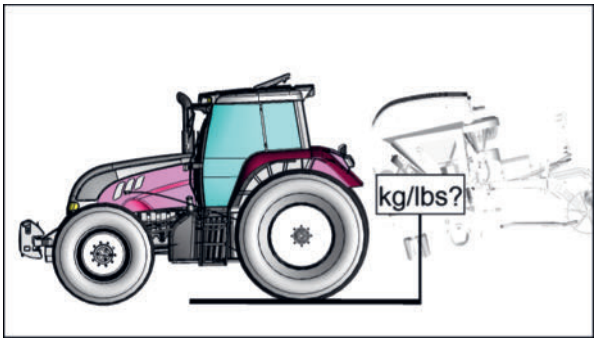
- ► Drive the tractor onto the scales together with the machine in transport position and the ballast weights, with the front and rear axle on the scales.



- ► Write down weight as total weight (G_{act}) and enter in the value table.
- ► Check to determine whether the measured value exceeds the maximal permissible total weight (G_{perm}) of the tractor. See the tractor operational instructions.

Weigh the rear axle load

- ► Drive the tractor onto the scales together with the machine and the ballast weights with the rear axle on the scales.



- ► Enter weight as actual rear axle load T_H in the value table.
- ► Check to determine whether the measured value exceeds the maximum authorized rear axle load ($T_{H\ perm}$) taking the tyre bearing capacity into account. See the tractor operational instructions.
- ► Verify if the technical data for the tyres and rims corresponds to the tractor manufacturer requirements. See the tractor operational instructions.

Determine the required tractor ballast weights using calculation

Implementation

- ► Distance (a) from centre of gravity of front ballast (G_V) to centre of front axis:
  a = ... mm (inch) (see tractor operational instructions or measure)
- ► Tractor centre distance (b):
  b = ... mm (inch) (see tractor operational instructions or measure)
- ► Distance (c) from centre of rear axle to the coupling point:
  c = ... mm (inch) (see tractor operational instructions or measure)
- ► Distance (d) from the rear coupling point to the centre of gravity (G_H) of the machine combination:
  d = ... mm (inch) (measure)
- ► Front axle load of unloaded tractor (TV):
  TV = ... kg (lbs) (see tractor operational instructions)
- ► Rear axle load of unloaded tractor (TH):
  TH = ... kg (lbs) (see tractor operational instructions)
- ► Tare weight of the tractor (TL):
  TL = ... kg (lbs) (see tractor operational instructions)
- ► Calculate minimum front ballast ($G_{V\ min}$) and enter it in the table of values above.
  $G_{V\ min} = (G_H * (c + d) - T_V * b + 0.2 * T_L * b) / (a + b)$
  .....
- ► Calculate the actual front axle load ($T_{V\ act}$) and enter it in the table of values.
  $T_{V\ act} = G_V * (a + b) + T_V * b - G_H * (c + d) / b$
  .....
- ► Enter the value for the permissible front axle load ($T_{V\ perm}$) according to the tractor operating instructions in the table of values.
- ► Calculate the actual total weight (G_{act}) and enter it in the table of values.
  $G_{act} = G_V + T_L + G_H$
  .....
- ► Enter the value for the permissible total weight (G_{perm}) according to the tractor operating instructions in the table of values.
- ► Calculate the actual rear axle load ($T_{H\ act}$) and enter it in the table of values.
  $T_{H\ act} = G_{act} - T_{V\ act}$
  .....
- ► Enter the value for the permissible rear axle load ($T_{H\ perm}$) according to the tractor operating instructions in the table of values.
- ► Double the permissible tyre load capacity according to the tractor operating manual or from the tyre manufacturer's documentation (two tyres per axle) and enter in the table of figures.

Adjustment / conversion

Before starting work, carry out the adjustment and conversion work described below and/or check the machine for correct adjustment and equipment.

TIP

Careful adjustment of the machine preserves machine / soil and saves fuel!

DANGER

Catching and drawing in of the entire body can occur through moving machine parts when working on the machine.

- ► All work must be carried out only when the drive is at a complete standstill.
- ► Before performing any work on the machine, secure against switching back on.
- ► Long, loose hair or loose clothing is not permitted while working.
- ► Direct people out of the danger area.
- ► Only operate the machine when all safeguards are properly fitted, undamaged and in the protective position.
- ► During operation, never allow anyone to enter the danger zone of the moving machine parts.

WARNING

Crushing, cutting, getting caught and knocks possible over the whole body!

Danger exists during all adjustment work due to heavy machine components, some of which are under spring pressure, as well as sharp-edged components.

- ► Adjustment work must only be carried out by suitably qualified staff.
- ► Wear the appropriate personal protective equipment (such as work gloves, protective goggles, etc.) when working.
- ► Observe operating safety and accident prevention regulations.
- ► Direct people out of the danger area.

WARNING

Danger of burns!

During operation, machine parts (such as the gearbox, bearings, etc.) can become very hot and remain hot for a long time!

- ► During operation and directly after operation, do not touch the gearbox and bearings etc. without personal protective equipment (such as gloves, long work clothes, etc.).

Side shield settings

The side shields protect access to the outer rotor units and support seedbed preparation.

TIP

Adjustments must be made in the field in order to adapt the working depth of the side guards to the actual working depth of the soil cultivator.

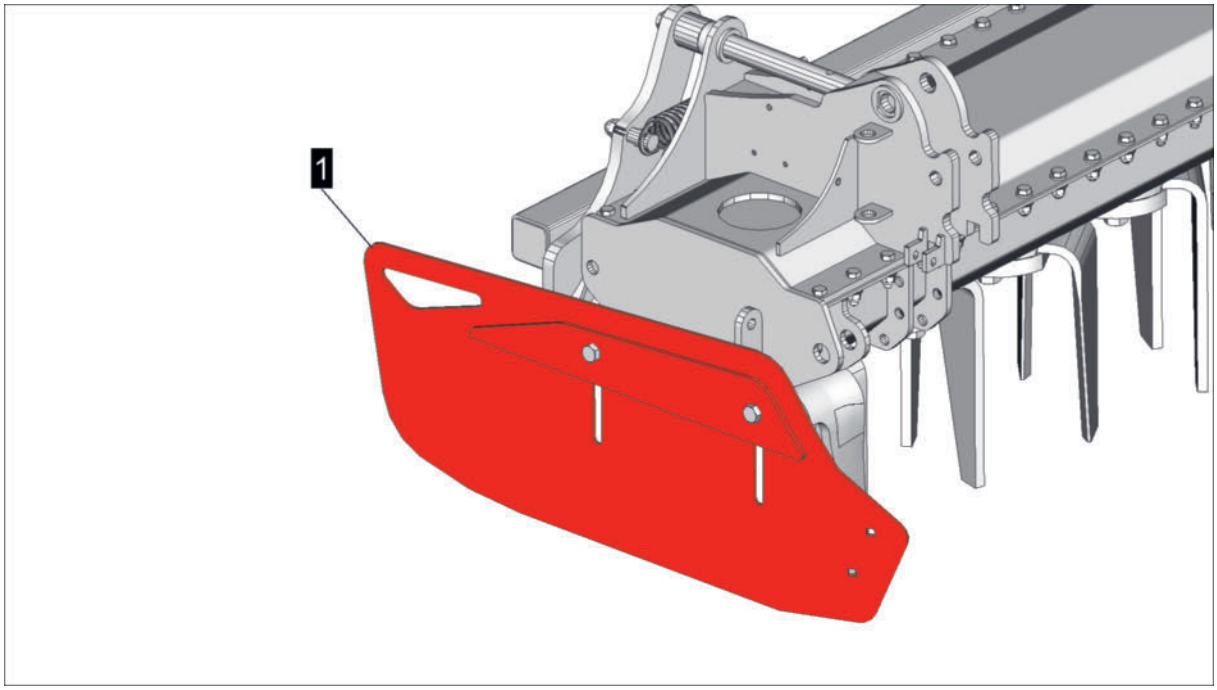


Fig.: 1 = left side shield

Prerequisite

- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level, stable ground and secure against rolling.
- The machine must be in the field and already operating in the working position at the desired working depth. See "Rotary harrow working depth" on page 88.

  TIP

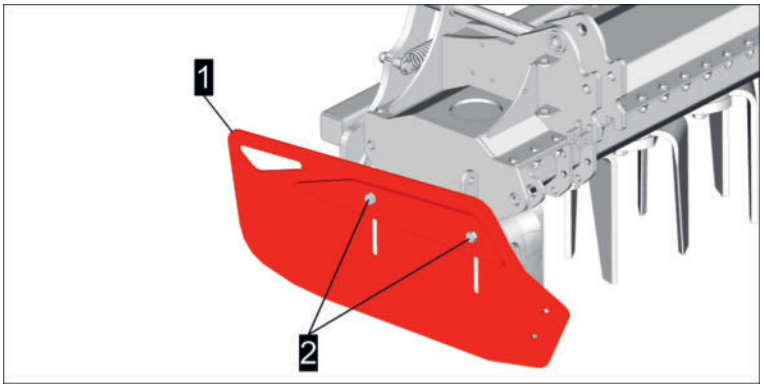
  Carry out the adjustment on as level a piece of land as possible.

- Tractor motor turned off, PTO switched off, parking brake applied, ignition key removed and stored during all work.

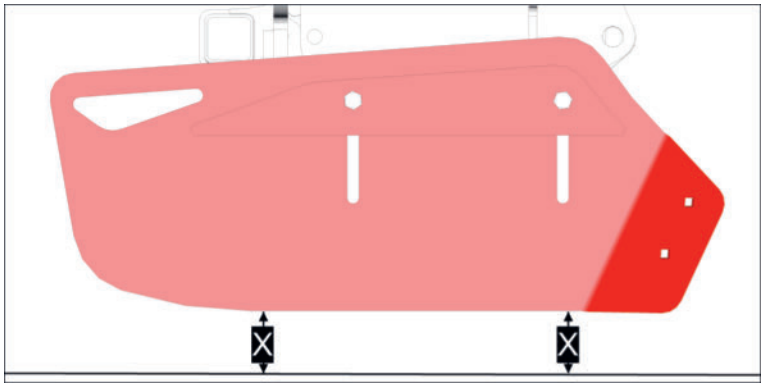
Set the working depth

Implementation

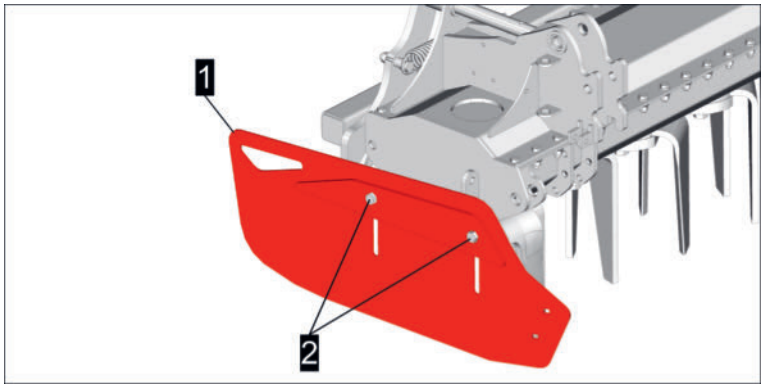
► Loosen the screws (2) on the side plate with the key provided and adjust the plate (1) vertically as required.



▷ Adjust the side plate so that the lower edge runs around 20 mm (measurement X) above and parallel to the ground.



▷ Retighten screws (2).



► Carry out the adjustment in the same way on both sides of the machine.

► Check the setting after the first few metres of field work and repeat the setting procedure if necessary.

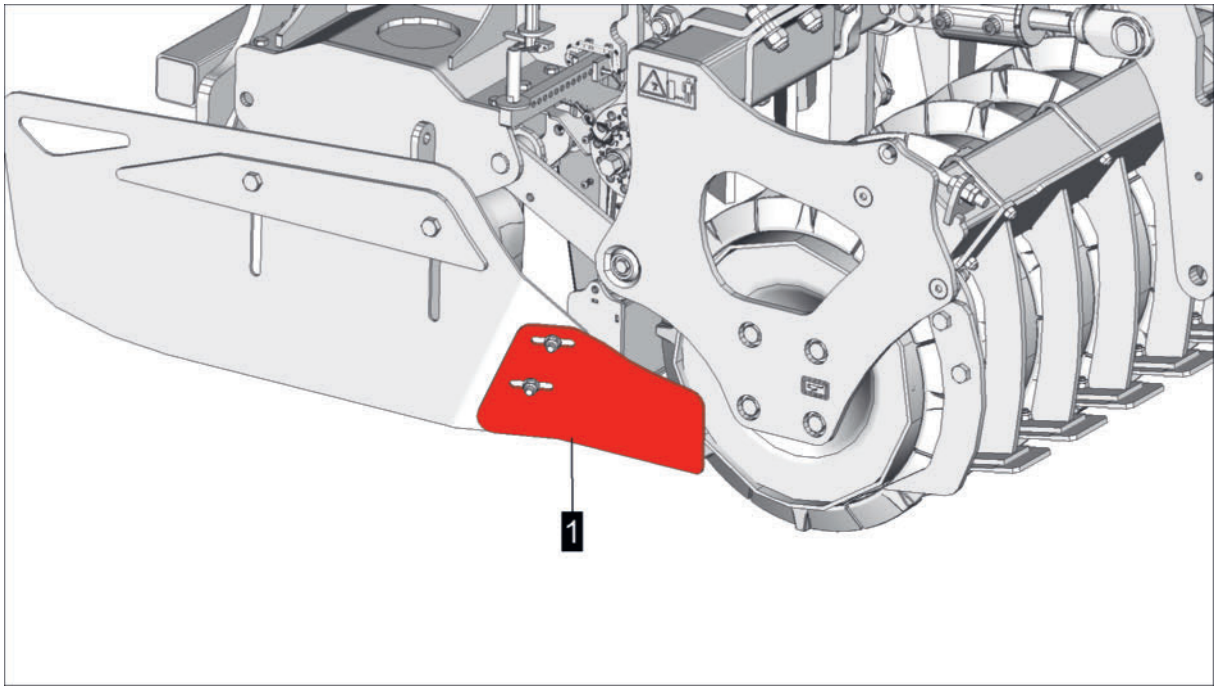
Set the guide plate

The guide plate (1) prevents ridging in the edge area of the trailer, can be adjusted horizontally on the side shields and must be adapted to the trailer when the latter is changed.

NOTICE

Damage to guide plates, side shields and trailers!

► Adjust the distance between the guide plates and the trailer so that the guide plates cannot collide with the trailer.

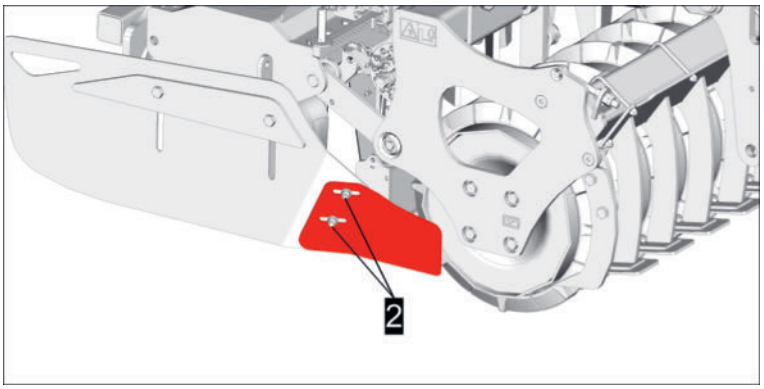


TIP

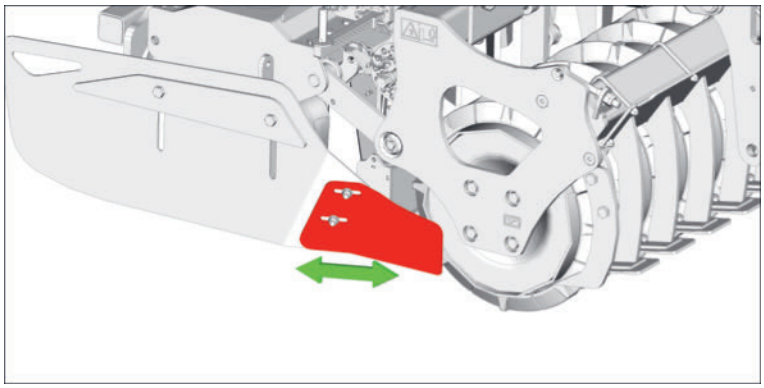
The guide plate setting is presented below as an example on the left side of the machine based on a trailer with a prism packer roller.

Implementation

► Loosen screws (2).

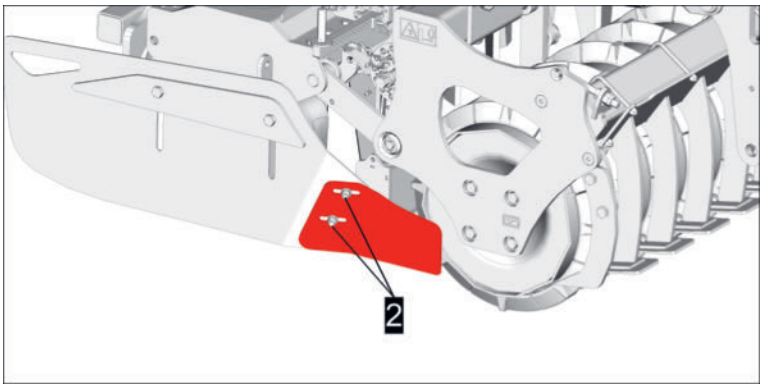


▷ Shift guide plate horizontally if required.



Shift the guide plate so that it does not touch the follow-on device in operation and ridges are smoothed out!

► Retighten screws 2.



► Carry out the procedure in the same way on both sides of the machine

Levelling board

The rotary harrow is factory fitted with a rear levelling board. The levelling boards can be adjusted 15 times on each side of the machine.

TIP

The most appropriate setting is determined during operation.

DANGER

Danger of body parts being drawn in!

Body parts may be drawn in by rotating machine parts, making it impossible to escape without serious or fatal injuries.

► Before working on the machine, switch off the tractor motor, remove and keep the ignition key!

► Wait until all rotating parts on the machine have stopped before working on the machine.

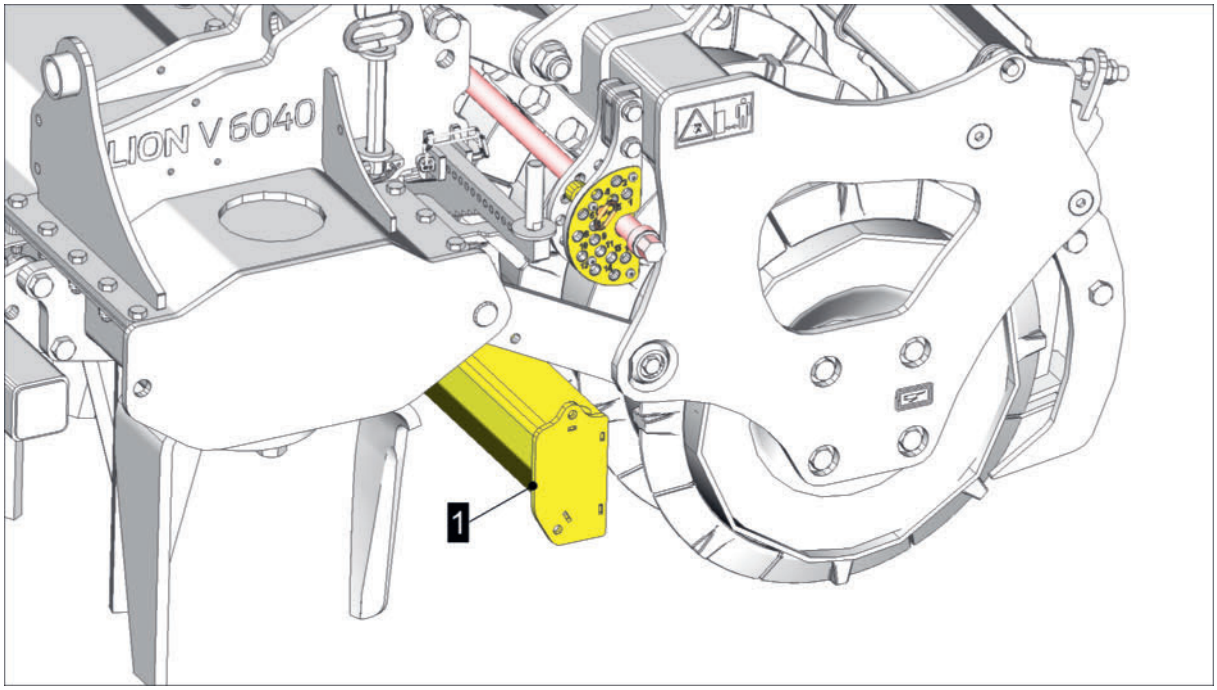
TIP

The rear levelling bar serves to keep coarse lumps of soil (clods) in the area of the rotors until they have been sufficiently crushed.

The working depth of the rear levelling board must be set so that the desired degree of crumbling is achieved, and soil levelling keeps the drive torque on the trailing implement as low as possible.

Adjust rear levelling board

The setting is shown below based on the example of the rear levelling board.



1 = rear levelling board on left arm

TIP

If the working depth of the machine is adjusted, the working depth of the levelling board is adjusted at the same time.

The working depth of the levelling board should be checked and corrected if necessary every time the working depth of the machine is adjusted.

Prerequisite

- Machine is attached correctly to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- PTO and tractor engine turned off, parking brake applied, ignition key removed and stored.

Preparation

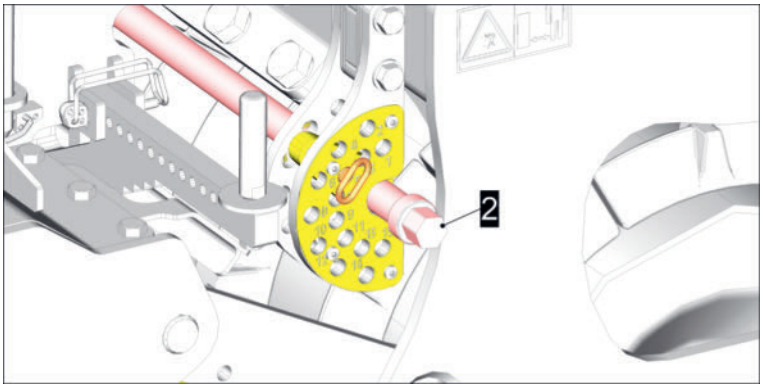
- Ratchet wrench SW 24

TIP

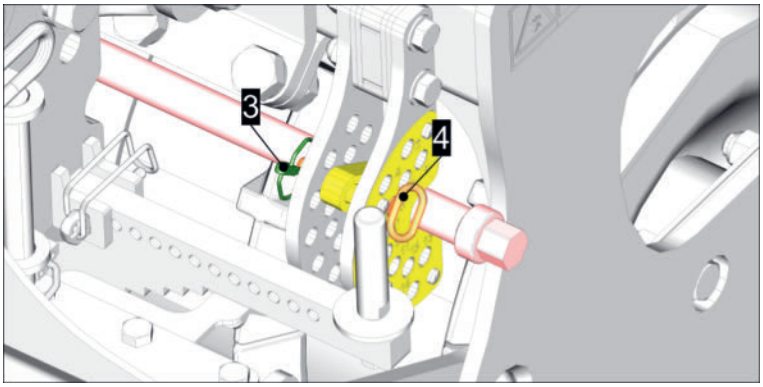
The right settings can be achieved more easily if the adjuster is cleaned.

Implementation

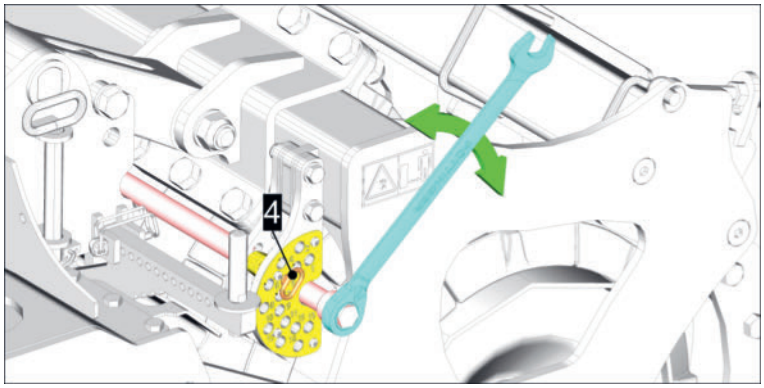
1 Position the ratchet wrench on the hexagonal nut (2).



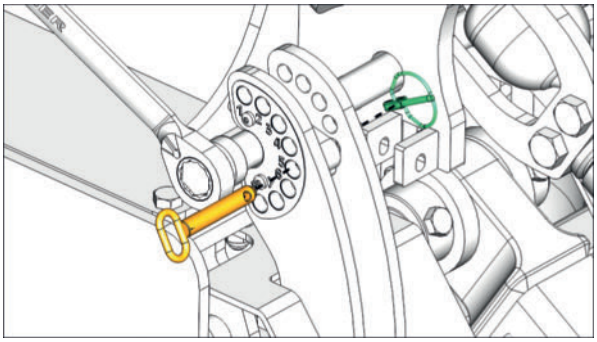
2 Remove the linchpins (3) and locking bolts (4).



▷ If necessary, use the ratchet wrench to release the locking pin (4) so that it can be removed.

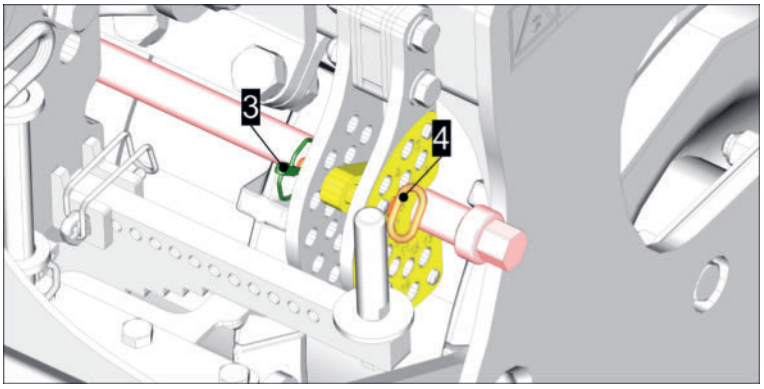


3 Remove the locking pin (4) keeping hold of the ratchet wrench.



4 Adjust the levelling board (1) with the ratchet wrench to the required working depth (pos. 1 - 15 according to scale).

5 Attach the locking pin (4) again and secure with the linchpin (3).



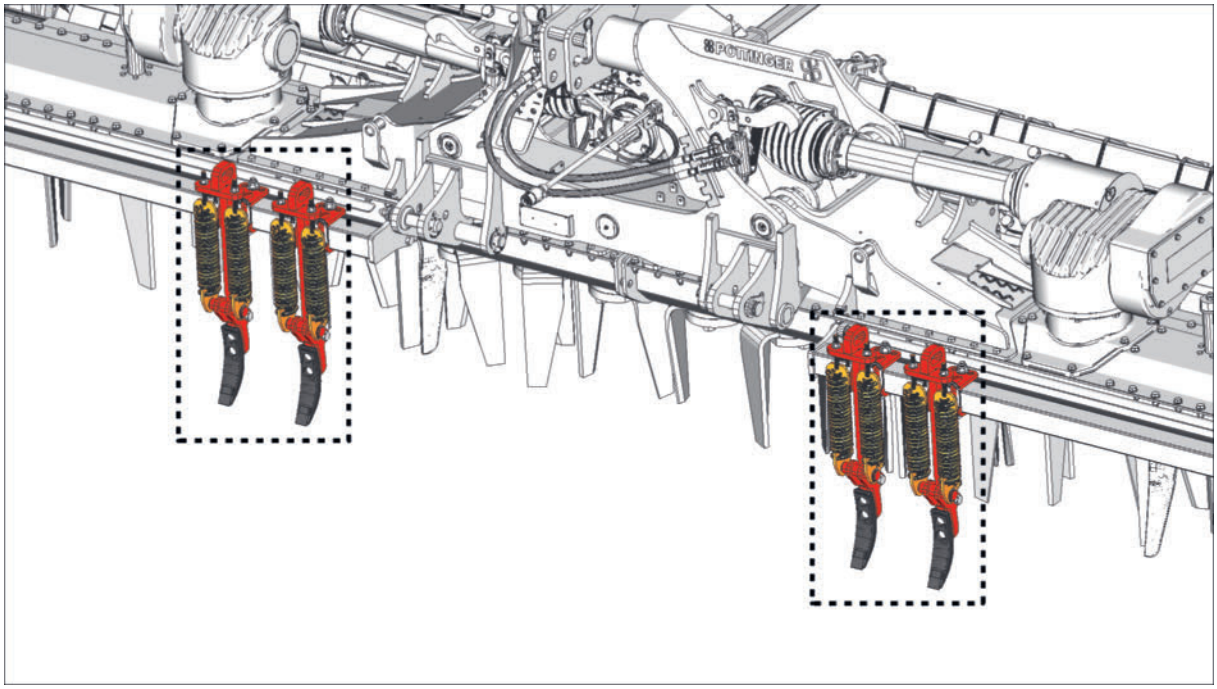
▷ Remove and store the ratchet wrench.

6 Carry out the adjustment in the same way on both sides of the machine.

7 Check the adjustment again in operation and readjust if necessary.

Wheel track eradicator (optional)

The wheel track eradicators are used to loosen the compacted tractor track. The wheel track eradicators can be adjusted horizontally to algin precisely with the tractor track.



TIP

Wheel track eradicator road transport and park position

Raise the wheel track eradicators to the highest possible position, disconnect and secure before parking the machine and before travelling on the road. See "Wheel track eradicator road transport position" on page 105.

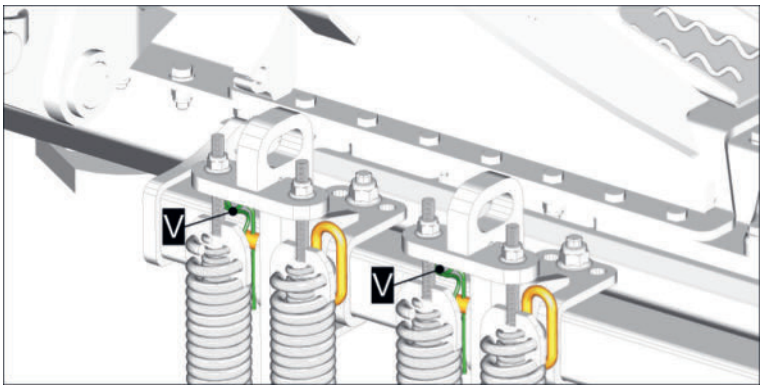
Set the working depth

Prerequisite

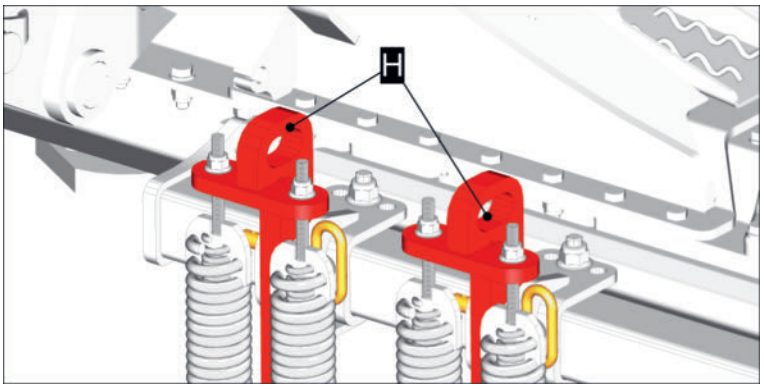
- Machine is correctly and fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in the field and secure against rolling away.
- Machine or arm slightly raised so that the wheel track eradicator can be adjusted.
- Tractor engine turned off, parking brake applied, ignition key removed and stored while working.

Implementation

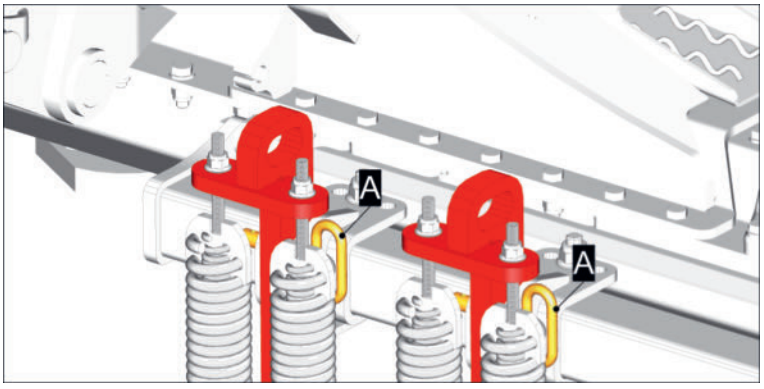
► Remove the linchpin (V).



► Hold the wheel track eradicator to be adjusted by the handle (H).



► Remove the locking pin (A) from the wheel track eradicator to be adjusted.



► Lower the wheel track eradicator concerned and set it slightly lower than the compacted base of the tractor track.

TIP

Standard working position

Adjust the wheel track eradicator so that the share point runs approximately 50 mm - 100 mm below the tractor track.

TIP

The most appropriate setting is determined during operation.

► Reinsert the locking pin and linchpin.

► Make the same adjustments on all wheel track eradicators.

Adapt the assembly position to the tractor track.

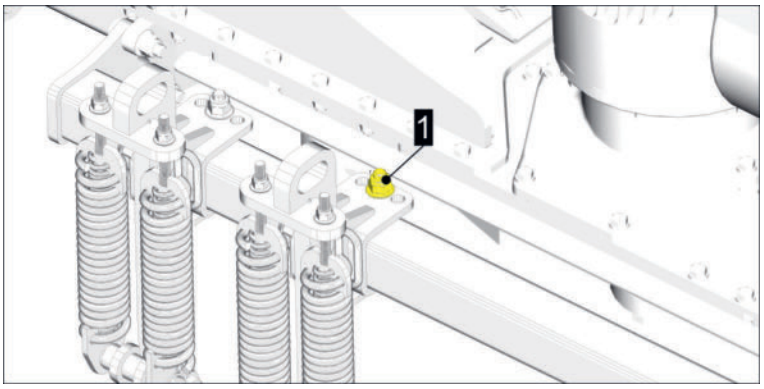
The track eradicators on the protective tube can be moved sideways individually as required to adjust the track eradicator position.

TIP

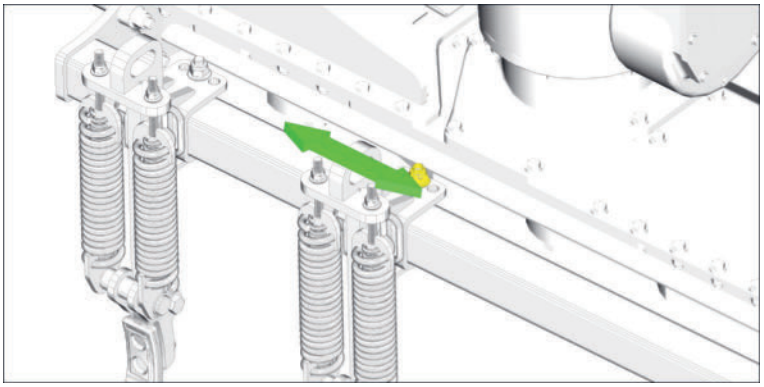
The most appropriate setting is determined during operation.

Implementation

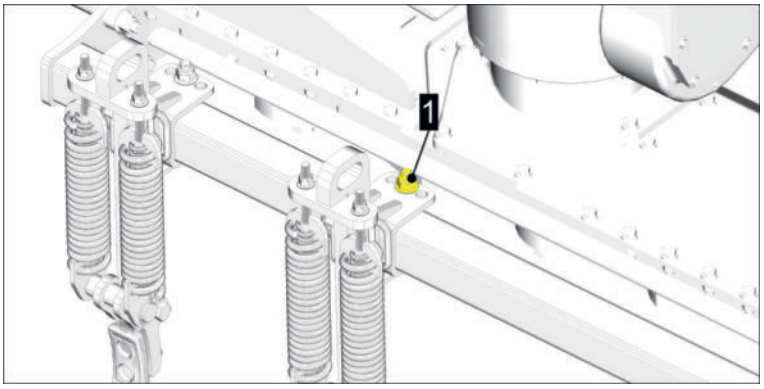
► Loosen the screws (1).



► Move the track eradicator sideways as required to align the assembly position with the tractor track.



► Retighten the screws (1).

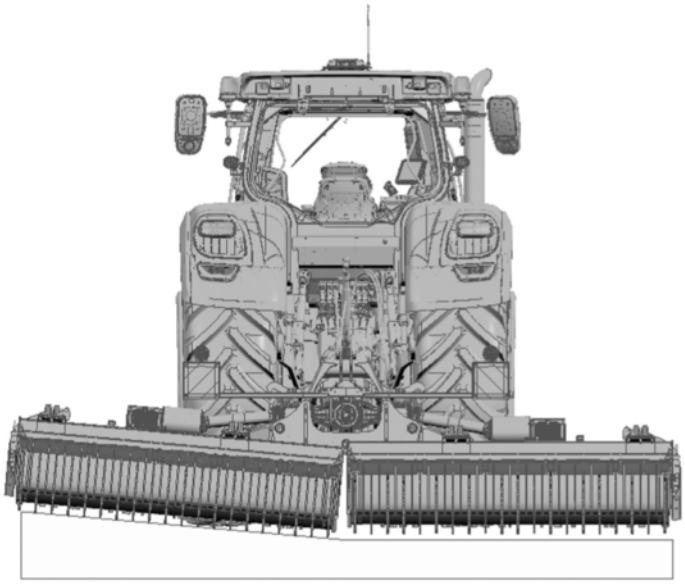


► Repeat the same procedure on all track eradicators as required depending on the tractor's tyre width / track width.

Checking / setting ground adjustment

Ground adjustment allows the machine to automatically adapt to uneven ground levels at an angle of between 0° and + 5°.

Soil build-up on the machine can have a negative influence on the effectiveness of ground adaptation.



Basic hydraulics, check / restore standard factory settings

For machines without BASIC CONTROL terminal

The ground adjustment system pressure should be set to the preset factory pressure of 40 bar.

TIP

The most appropriate setting is determined during operation.

Prerequisite

- Machine is fully attached and secured to a suitable tractor.

- Tractor ballast fully attached.
- Park tractor and machine on level and stable ground in working position and secure against rolling.
- Before working on the machine, switch off the tractor engine, remove and store the ignition key!

Preparation

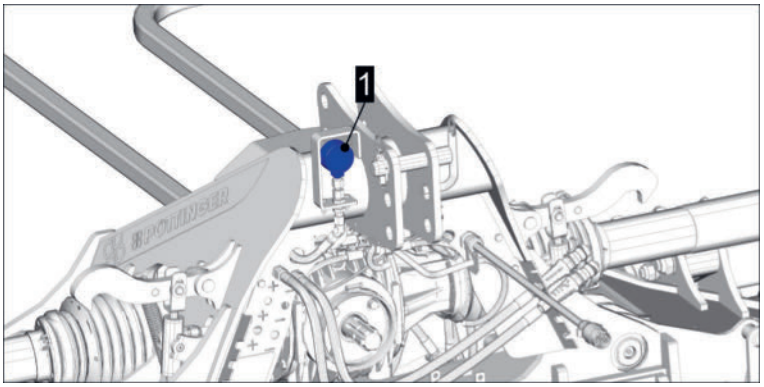
- 1 set of Allen keys
- 1 open-end spanner set / ring spanner set

Implementation

1 Establish / switch on hydraulic pressure supply.

2 Set the tractor control device to the folded down position and maintain the position until the displayed value stabilises at the current value. It takes a few seconds for the pressure to stabilise in both arms so that the current set pressure can be read on the manometer.

3 Read and note the value on the manometer (1). (Target: 40 bar)

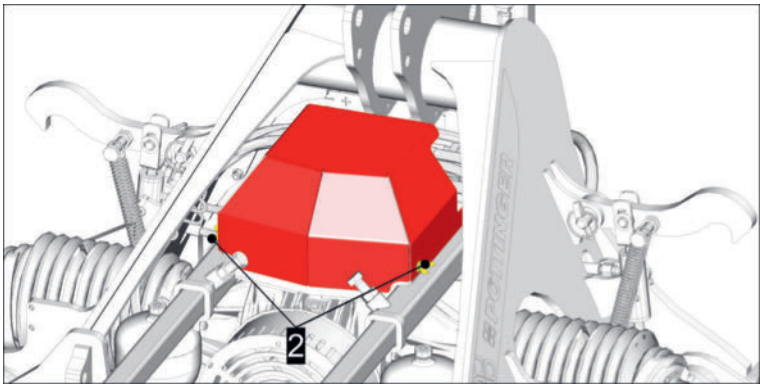


▷ If the value read is 40 bar, no further action is necessary.

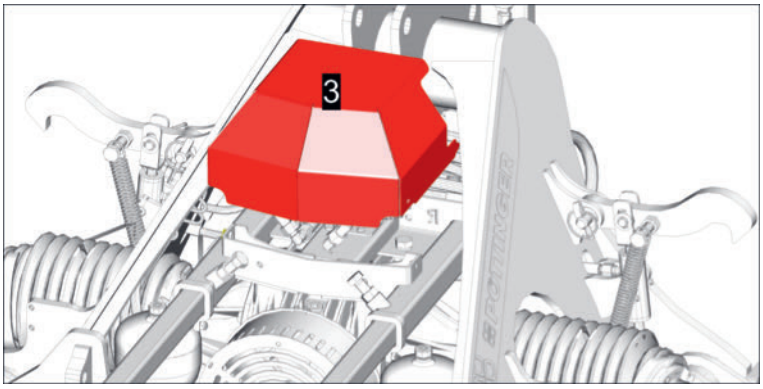
▷ If the value read is higher or lower than 40 bar, the basic setting must be established as described below.

4 Set tractor control device to float position and switch off the hydraulic pressure supply.

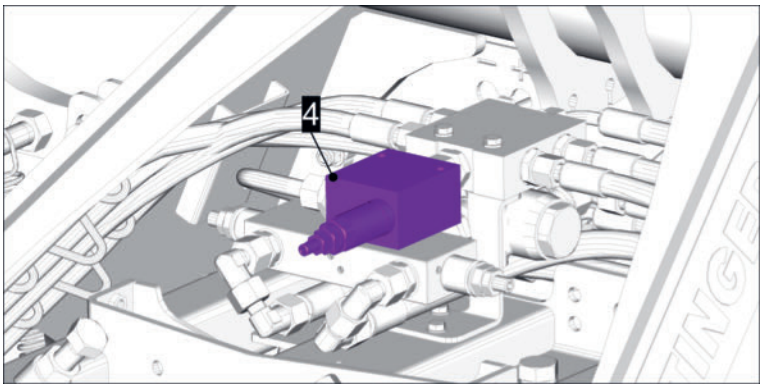
5 Remove 2x wing screws and washers.



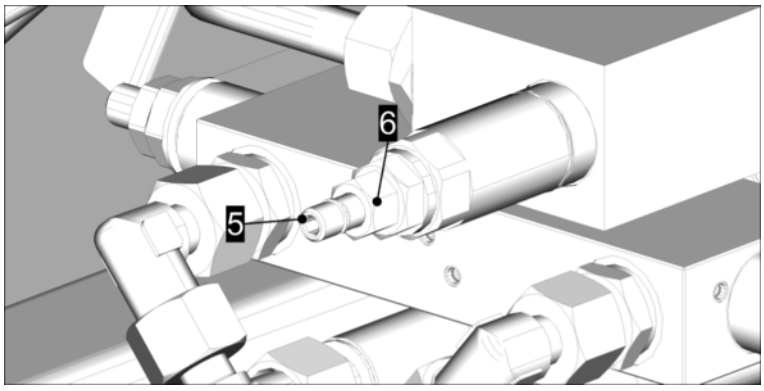
6 Push the cover (3) horizontally backwards as far as it will go to pull it out of the holder and then lift the cover upwards.



7 Set the value on the pressure reducing valve (4) using the adjusting screw to target = 40 bar.



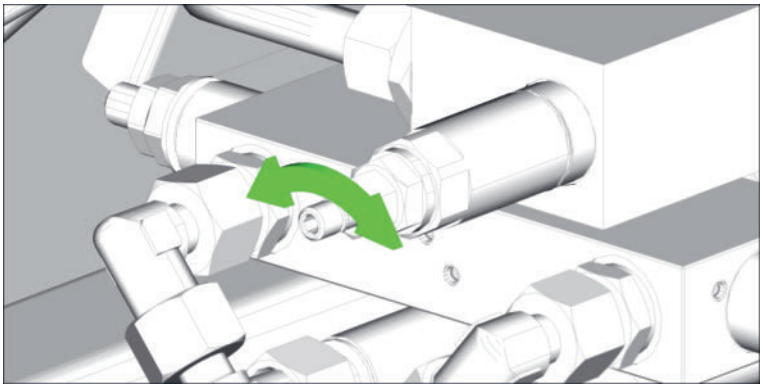
▷ Place the Allen key on the screw (5), hold firmly and loosen the locking nut (6) without turning the Allen key.



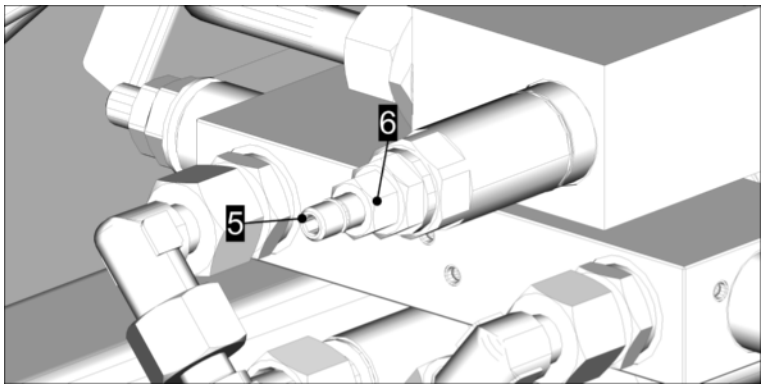
▷ Use the Allen key to adjust the adjusting screw (5) as required.

▷ Adjust the adjusting screw gradually in small steps (1/4 rotation) and check the setting.

▷ Tighten the adjusting screw (5) to increase the pressure.
Loosen the adjusting screw (5) to reduce the pressure.



▷ Tighten the locking nut (6) manually without turning the adjusting screw (5) any further.

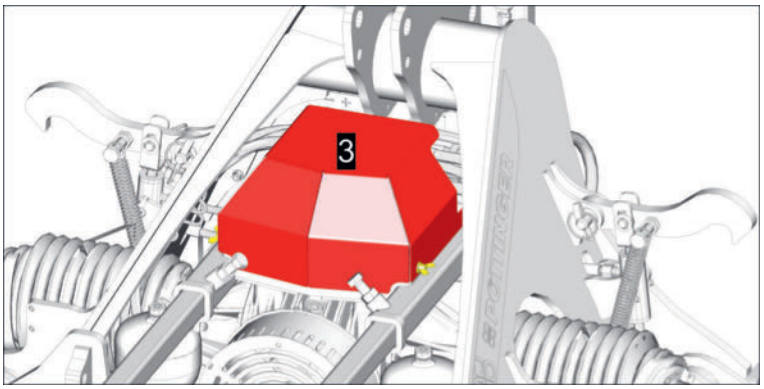


8 Repeat the checking of the set pressure from step 1. .

▷ If the setting is correct, no further action is necessary.

▷ If the read value is higher or lower than 40 bar, repeat the adjustment from step 1.

9 Position the cover (3) as far back as possible.

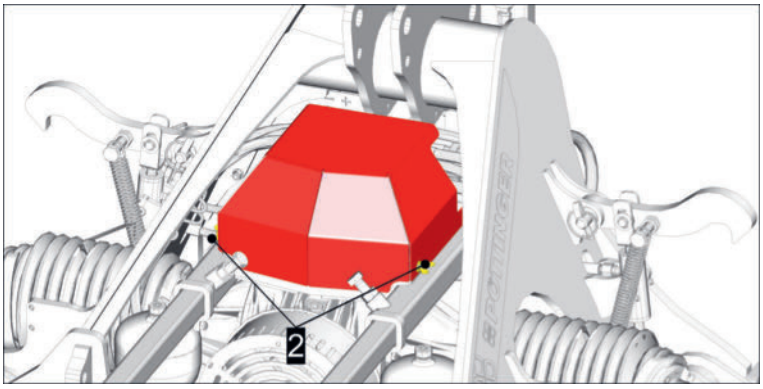


10 Push the cover (3) to the front until the clamping lugs of the cover engage in the holder.

11 Position and tighten 2x washers and wing screws.

TIP

The screws can only be put in place when the cover has been correctly positioned.



Basic hydraulics, check / restore select factory settings

In machines with BASIC CONTROL terminal

The ground adjustment system pressure should be set to the preset factory pressure of 40 bar.

TIP

The most appropriate setting is determined during operation.

Prerequisite

- Machine is fully attached and secured to a suitable tractor.
- Tractor ballast fully attached.
- Park tractor and machine on level and stable ground in working position and secure against rolling.
- Before working on the machine, switch off the tractor engine, remove and store the ignition key!

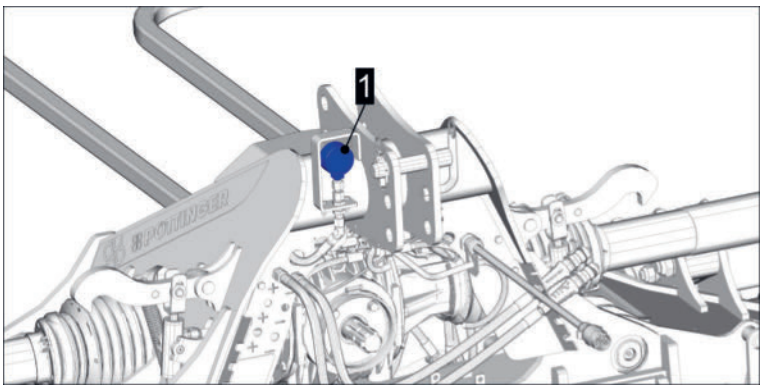
Preparation

- 1 set of Allen keys
- 1 open-end spanner set / ring spanner set

1 Establish / switch on hydraulic pressure supply.

2 Set the tractor control device to the folded down position and maintain the position until the displayed value stabilises at the current value. It takes a few seconds for the pressure to stabilise in both arms so that the current set pressure can be read on the manometer.

3 Read and note the value on the manometer (1). (Target: 40 bar)



▷ If the value read is 40 bar, no further action is necessary.

▷ If the value read is higher or lower than 40 bar, the basic setting must be established as described below.

4 Set tractor control device to float position and switch off the hydraulic pressure supply.

5 Set the value on the pressure reducing valve (4) using the adjusting screw to target = 40 bar.

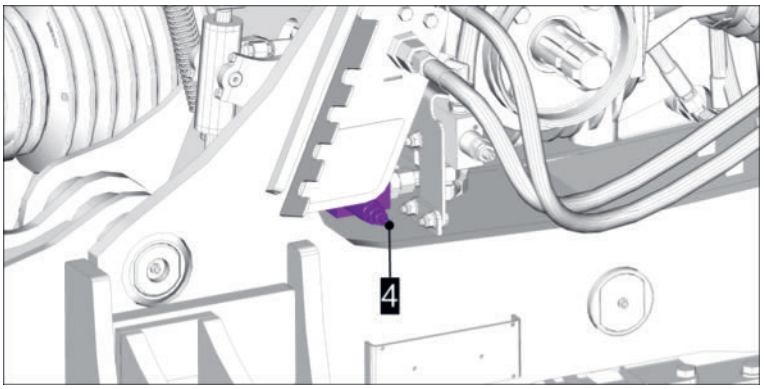
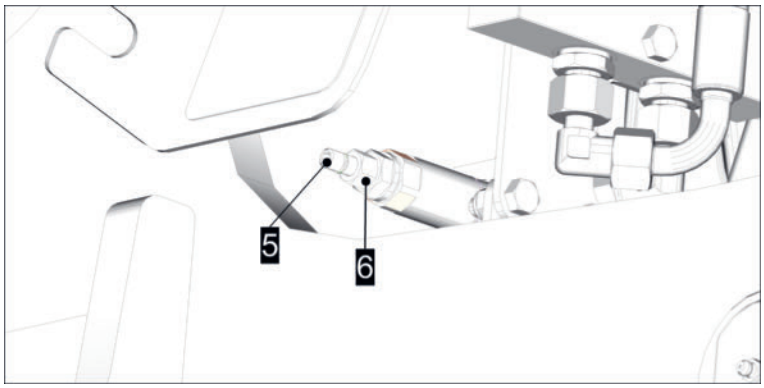


Fig.: Front right view of hitching frame

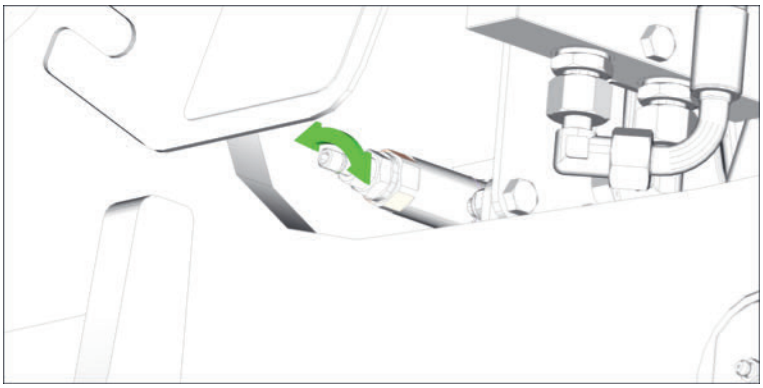
▷ Place the Allen key on the screw (5), hold firmly and loosen the locking nut (6) without turning the Allen key.



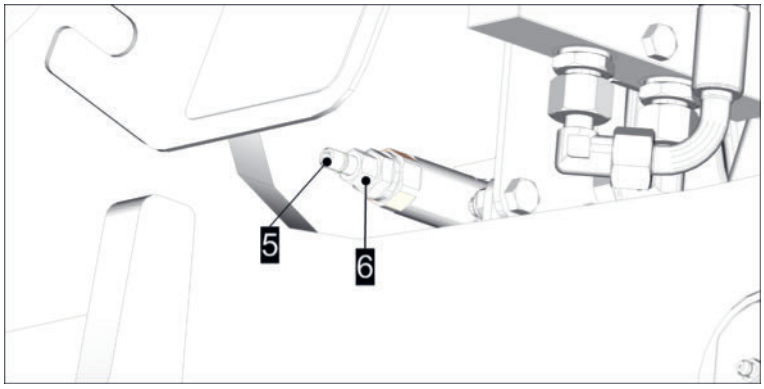
▷ Use the Allen key to adjust the adjusting screw (5) as required.

▷ Adjust the adjusting screw gradually in small steps (1/4 rotation) and check the setting.

▷ Tighten the adjusting screw (5) to increase the pressure.
Loosen the adjusting screw (5) to reduce the pressure.



▷ Tighten the locking nut (6) manually without turning the adjusting screw (5) any further.



6 Repeat the checking of the set pressure from step 1. .

▷ If the setting is correct, no further action is necessary.

▷ If the read value is higher or lower than 40 bar, repeat the adjustment from step 1.

Rotary harrow working depth

The working depth can be adjusted manually or hydraulically via the follow-on device.

Adjusting the working depth also influences the position of the rear levelling boards.

In order to optimise the results, the levelling board setting should be checked when changing the working depth. See "Levelling board" on page 76.

TIP

The most appropriate setting is determined during operation.

TIP

Cleaning the adjusting equipment before changing the settings makes it easier to carry out the necessary manual adjustment work.

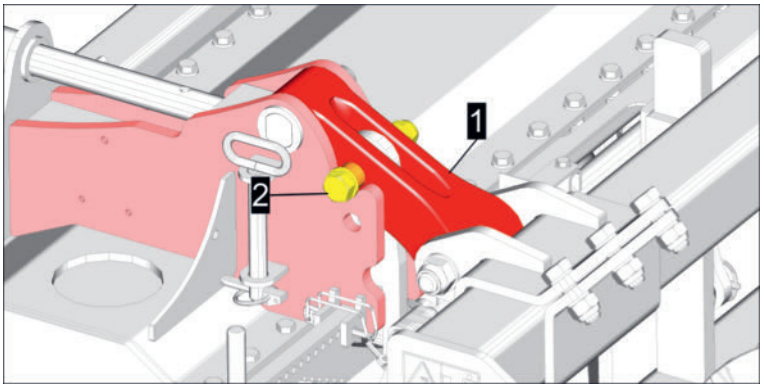
Manually adjust the working depth

Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Transport lock deactivated on the follow-on devices. See "Follow-on device transport lock with manual working depth adjustment" on page 45.
- Tractor motor turned off, PTO switched off, parking brake applied, ignition key removed and stored before all work.

Implementation

1 Activate rear power lift and only raise the machine until the screws (2) in the follow-on device carrier are firmly seated in the recess underneath.

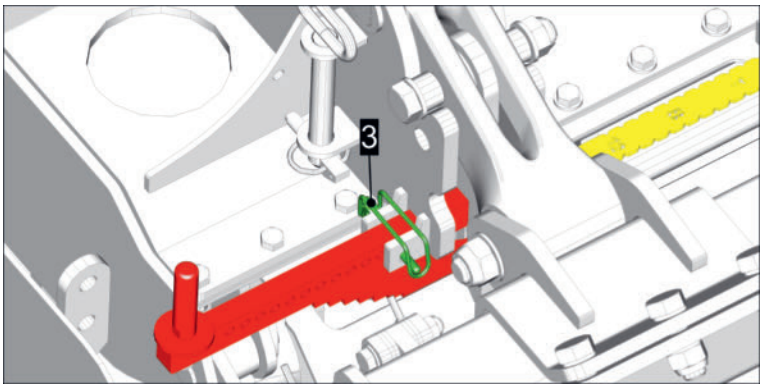


2 If necessary, secure the machine against unintentional lowering in the area of the rear power lift using suitable support blocks.

▷ Then lower the rotary power harrow and allow it to rest on the supports.

▷ Switch off the tractor, remove and store the ignition key, apply the parking brake and secure the tractor against rolling using wheel chocks.

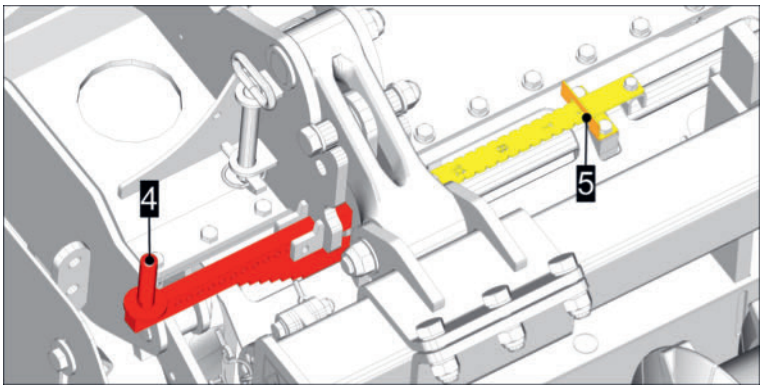
3 Remove linch pin (3).



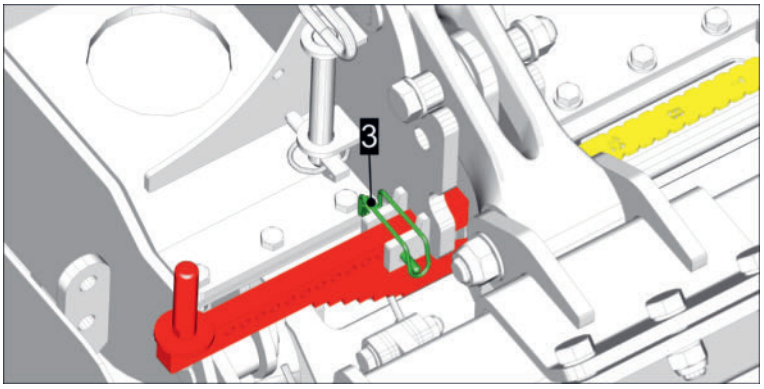
4 Use the handle (4) to adjust the depth setting to the required working depth (12 possible levels) according to the scale (5).

TIP

The values on the scale are approximations for the adjusted working depth and simply make it easier to restore a specific setting.



5 Replace the linchpin (3).



6 Adjust the working depth in the same way on both sides of the machine.

Hydraulically adjust the working depth

The hydraulic setting of the working depth is infinitely adjustable using the Basic Control Terminal.

TIP

The most appropriate setting is determined during operation.

Prerequisite

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Transport lock deactivated on the follow-on devices. See "Follow-on device transport lock with manual working depth adjustment" on page 45.
- Tractor motor turned off, PTO switched off, parking brake applied, ignition key removed and stored before all work.

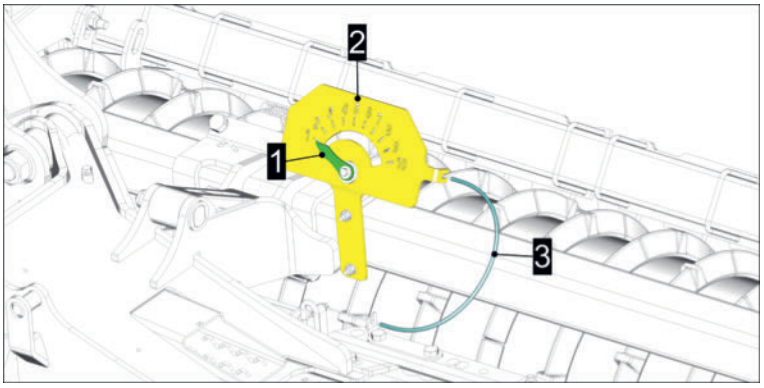
Implementation

1 Switch PTO on and set to operating speed.

2 Activate the rear power lift and lower the machine to working position without pressure.

▷ Drive up with the tractor and quickly accelerate to working speed.

3 Adjust the working depth setting as required using the terminal and memorise / note the value indicated on the scale (2) by the pointer (1).



▷ The adjusted working depth is indicated on the scale (2) by the pointer (1).
The indicated working depth does not correspond to the actual working depth.

TIP

The values on the scale are approximations for the adjusted working depth and simply make it easier to restore a specific setting.

The bowden cable (3) controls the pointer (1).

4 Stop the tractor after a few minutes and check the result.

▷ If the result is satisfactory. no further action is needed.

▷ If the result is not satisfactory, correct the working depth setting as follows.

5 Switch PTO on and set to operating speed.

▷ Activate the rear power lift and lower the machine to working position without pressure.

▷ Drive up with the tractor and quickly accelerate to working speed.

6 Switch BASIC CONTROL terminal to working depth adjustment.

7 Activate the tractor control device and correct the working depth as required according to the scale.

▷ Check the result again as required and repeat the adjustment if necessary.

Rotor speed setting

The correct rotor speed for the ground and the tractor output is not selected via the PTO speed but via the transmission on the change gearboxes of the arms. See "Rotor speed adjustment" on page 91.

TIP

Recommended PTO speed 1000 rpm The lowest torque occurs at this speed and this protects the drive components.

Rotor speed adjustment

The rotor speed is adjusted by replacing the gearwheel set on both side gearboxes / change gearboxes to personal requirements as described below.

NOTICE

Damage due to overload!

The drive may be overloaded if 2 different transmissions are installed for the rotor speed on the machine.

► Install the same transmission ratio on both external gearboxes.

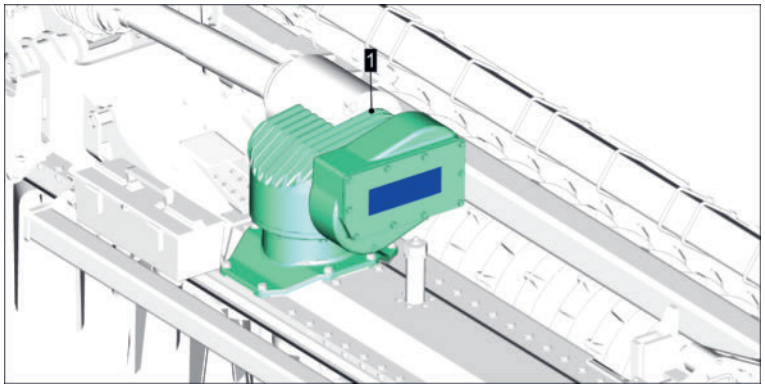


Fig.: Example of left side gearbox

Change rotor speed

Preparation

- 2x the same gearwheel set for the required rotor speed (1x per side gearbox)
- Cleaning paper or similar
- Waste oil collecting pan
- Possible new gearbox cover seal

Requirements

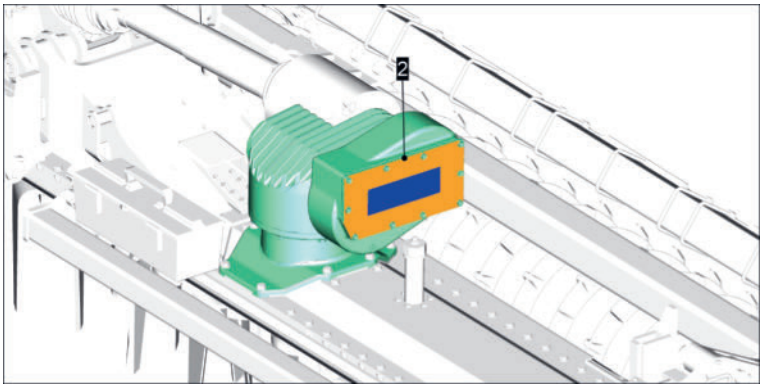
- Machine is fully attached and secured to a suitable tractor.
- Park machine on level and stable ground in working position and secure against rolling.
- Tractor engine turned off, parking brake applied, ignition key removed and stored.
- Drive shaft uncoupled from tractor.

TIP

The assembly is presented below using the example of the left external gearbox.

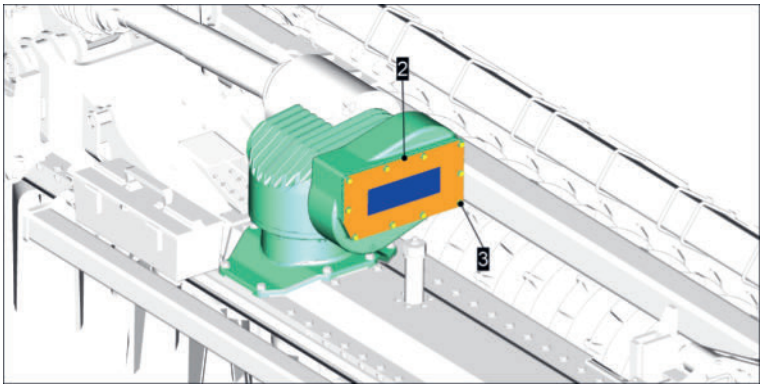
Implementation

► Remove dirt from around the gearbox cover (2).

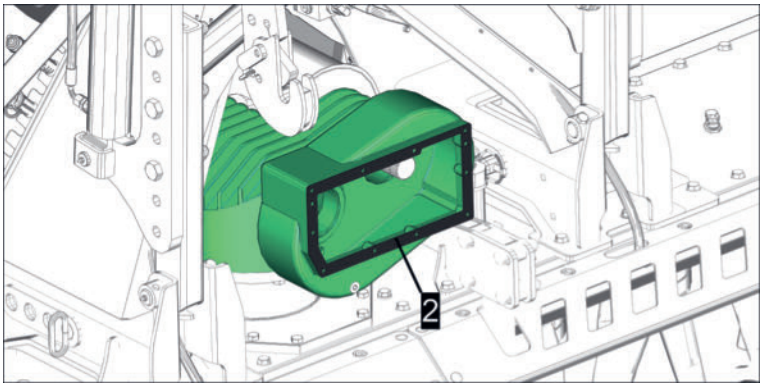


► Place waste oil collecting pan underneath the gearbox cover.

► Remove 10 screws (3) on the gearbox cover (2) and remove the cover.



► Carry out a visual inspection on the gearbox cover (2).



Symbol illustration

▷ Replace the seal with a new part if necessary. See the spare parts list.

► Remove gearwheels as required and replace with appropriate gearwheels from the gear set. See sticker on gearbox cover.

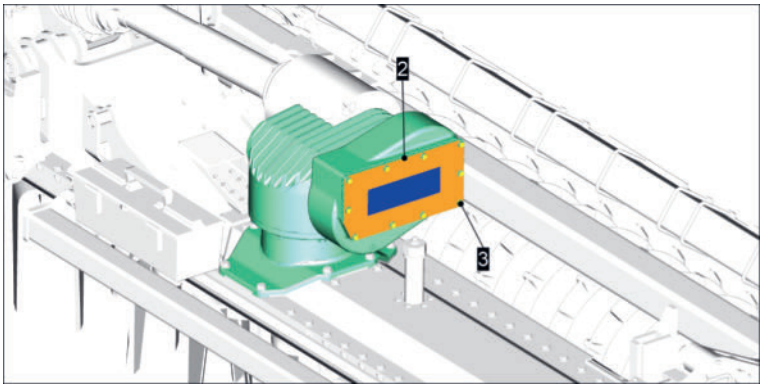
Fig.: Sticker on gearbox cover

Z1 / Z2 = gearwheel1 / 2

The numbers in the gearwheel symbols indicate the number of gear teeth.

► Replace gearbox cover paying attention to the cover seal (new if required).

► Tighten 10x screws (3) on gearbox cover (2).



► Carry out the procedure on both sides of the machine using the same gearwheel set.

ENVIRONMENT

Remove old oil / oily impurities, etc. and dispose of them correctly.

Track market adjustment

The track marker (option) alternately marks the next lane during the sowing operation.

TIP

Track markers mounted on the cultivator serve as a replacement for any missing track markers on the seeder.

When the cultivator is used alone, the track markers are normally not required / used.

Calculate marking distance

To adjust the track marker, first calculate the marking distance (A) according to the table and then adjust the track marker to the calculated dimension.

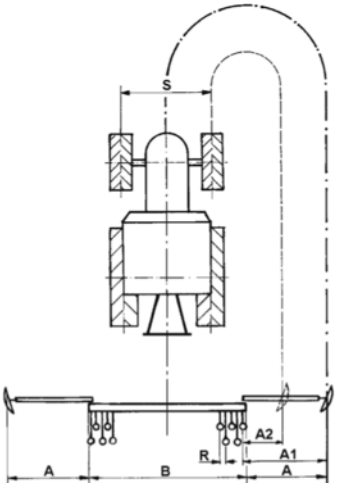
Implementation

► **Calculate the individual distance (A):**

▷ The individual distance with lowered track marker is measured from the outermost share on the coulter rail to the marker disc ground contact point.

Track marker- marking distance calculation

Marker distance to "Tractor middle"	Marker distance to "Tractor track"



Calculation example:	*Calculation example:*
Distance setting A = (B + R) / 2	Distance setting A = (B + R - S) / 2
Working width B = 300 cm	Working width B = 300 cm
Row distance R = 12.5 cm	Row distance R = 12.5 cm
A = (300 cm	Track width S = 180 cm
+ 12.5 cm) / 2 = 156.25 cm	A = (300 cm + 12.5 cm
Distance setting is approx. 156 cm	- 180 cm) / 2A = 66.25 cm
	Distance setting is approx. 66 cm

Adjusting the track marker marking distance

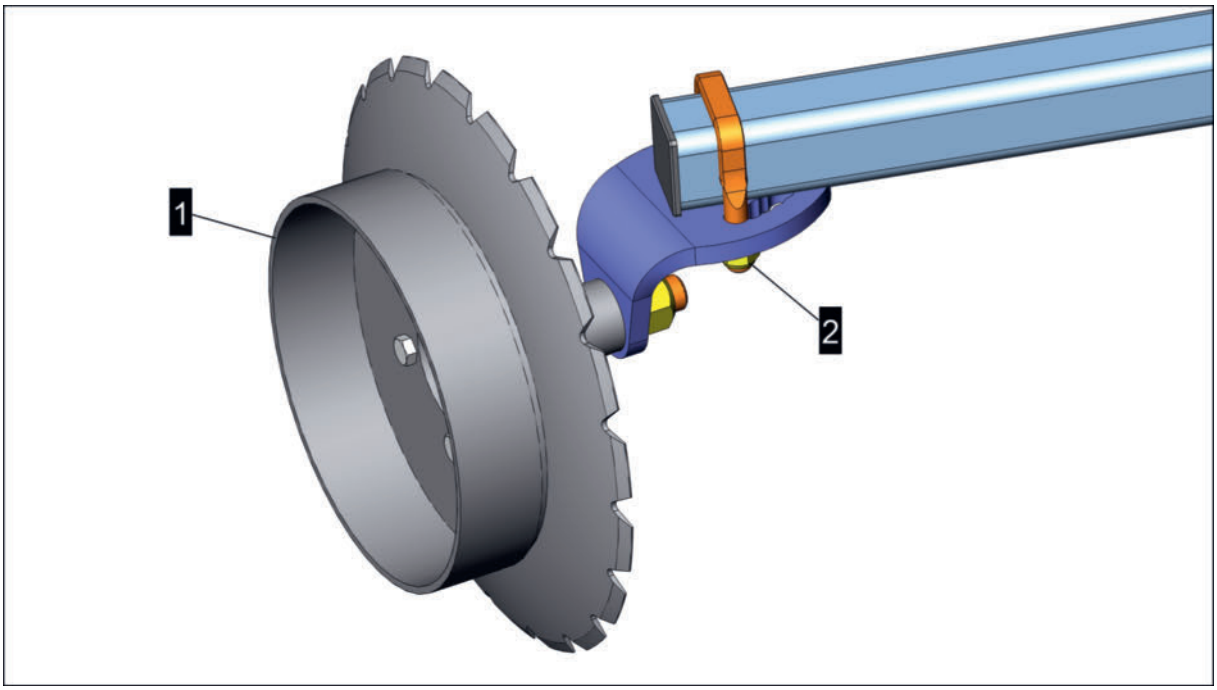
Prerequisites

- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling.
- One of the track markers is lowered in working position.
- Transport lock deactivated on both track markers.
- Tractor engine turned off, PTO switched off, parking brake applied, ignition key removed and stored before all work.

Implementation

1 Remove transport lock from both track markers.

2 Loosen the fastening nuts (2) of the marker disc (1).



1 = Marker disc

2 = Flat U-bolt and hexagonal nuts

3 Adjust the marker disc (1) to the calculated marking distance for these machine sides.

4 Re-tighten the previously loosened nuts (2).

5 Carry out similar adjustments with the opposite track marker.

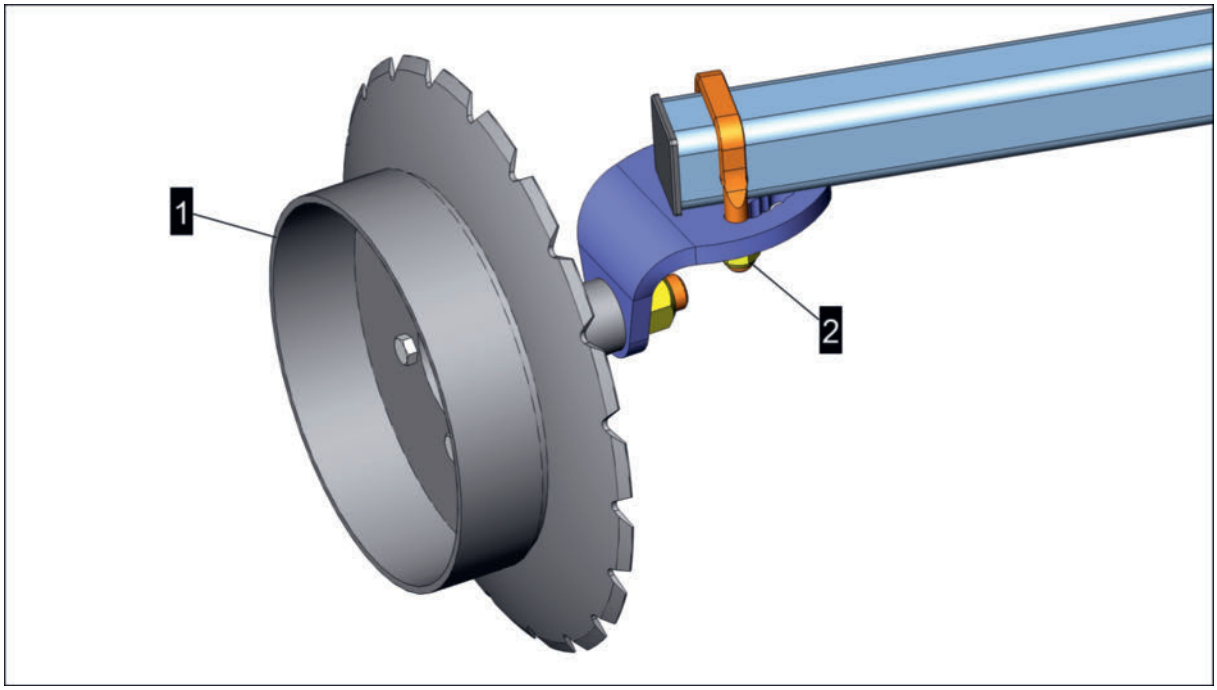
▷ The shearing action of the marker disc can then be adapted to the soil conditions.

Adjusting the track marker shearing action

If the marked track is poorly visible, then adjust the marker disc in a deeper position.

TIP

By adjusting the marker disc, the marked track width is also changed. Measure the marking distance and correct if necessary.

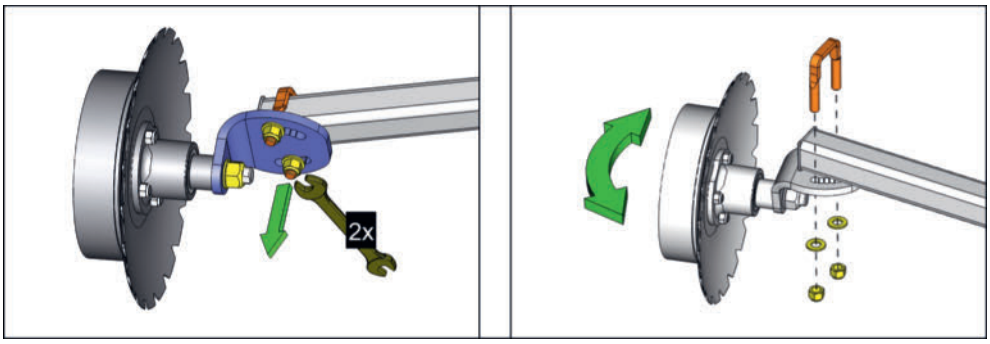


1 = Marker disc

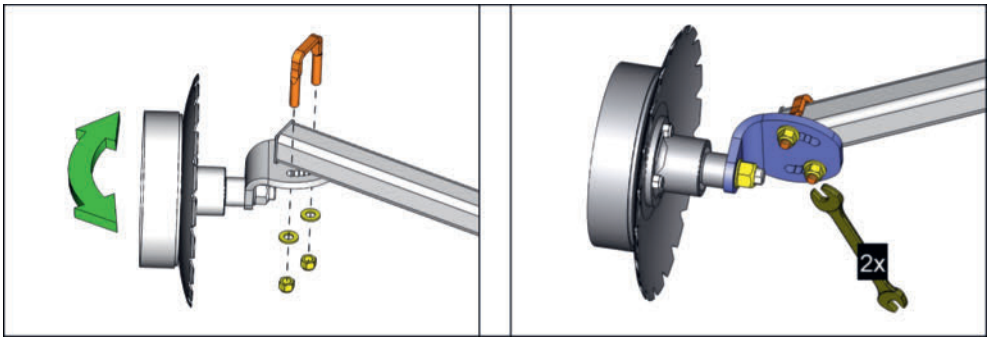
2 = Flat U-bolt and hexagonal nuts

Implementation

► Loosen the hexagonal nuts on one of the two track markers. Remove flat U-bolt.



► Adjust marker disc as required. Refit the flat U-bolt, discs and hexagonal nuts, and tighten them.



► Carry out similar adjustments with the other track marker.

Coupling

NOTICE

Collisions with other road users!

Collisions may occur with other road users when travelling with machines whose components are not secured in road transport position.

► Move all machine components to road transport position before transportation on public roads and secure as stipulated.

DANGER

Pulling in and severing of body parts!

► Secure the PTO drive against unintentional starting.

WARNING

Crush hazard over the entire body!

Do not remain in the danger area around the tractor and the machine unless the mower combination has been secured against rolling and accidental operation.

1 Instruct bystanders to leave the danger area around the tractor and the machine.

2 Make sure that bystanders do not enter the danger area.

3 Park the machine on flat, firm ground.

4 Apply the emergency brake.

5 Turn off tractor engine, remove ignition key and keep safe.

6 Insert wheel chocks on the tractor and on the machine.

WARNING

Danger of whole body being crushed when activating the power lift!

► Direct people away from the danger area around the power lift.

► Do not stand between the tractor and the power lift when operating the power lift via external buttons.

Attachment

NOTICE

Gearbox and bearing damage!

If the machine is in transport position for too long (> hours), the lubricant in the bar moves downwards to the inner rotors. If the machine is then moved to working position and operated immediately, there may be insufficient lubricant in the outer rotors for the first 10 minutes.

► Move machine to working position and wait for 10 minutes before operating the machine.

Prerequisite

- Tractor ballast fully attached.
- Three-point attachment on tractor
- Park tractor and machine on level, stable ground.
- Top link balls, lower link balls and spacer sleeves are fitted to the coupling points is required, and locking pins are secured with linchpins.

Attaching the machine

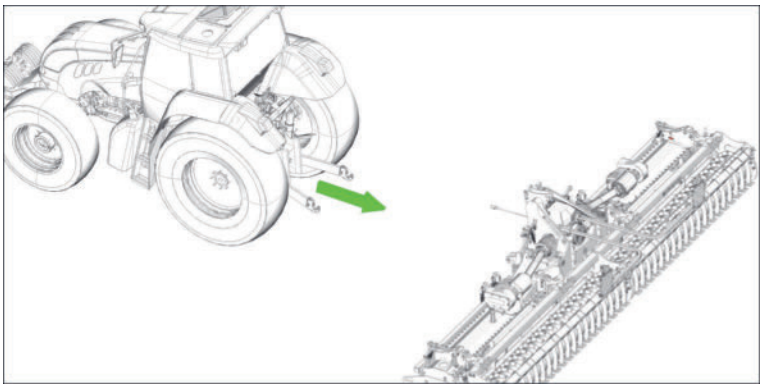
Implementation

CAUTION

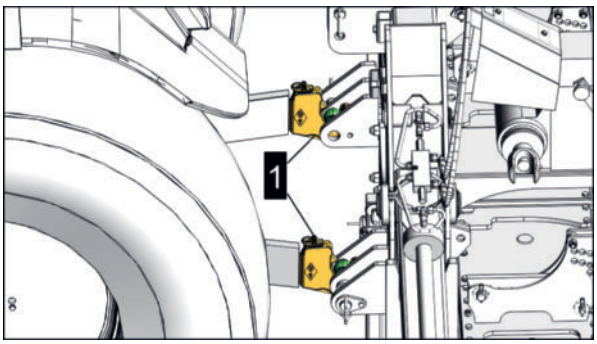
Crushing and rolling over!

► Before entering the danger area of the machine, ensure that the machine or tractor is not unexpectedly operated by another person.

1 Drive the tractor up to the machine.



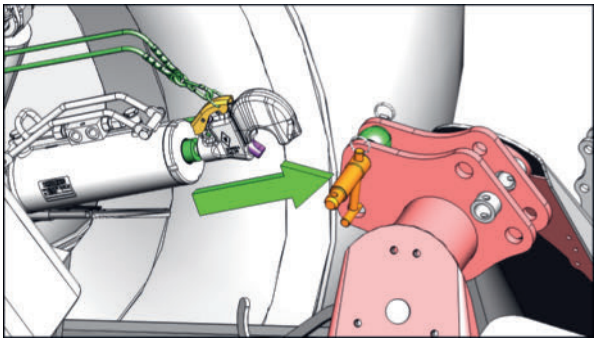
2 Connect lower link (1) on both sides and secure as stipulated.



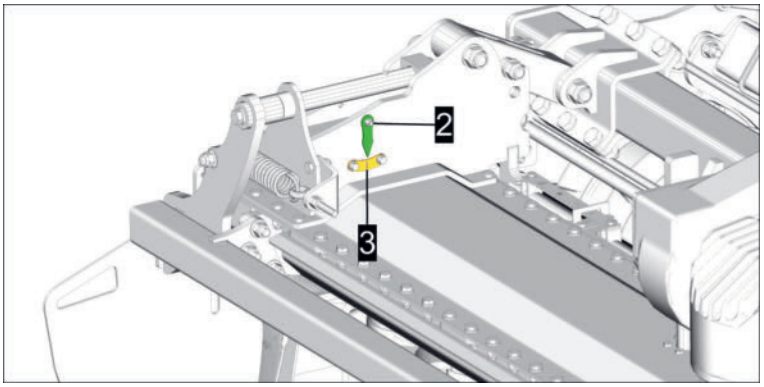
3 Connect top link and secure as stipulated.

TIP

The upper link attachment point on the machine should be slightly higher than the attachment point of the tractor.



4 Set the rear power lift to "Lift" then adjust the machine using the top link until it is horizontal to the ground. Pay attention to the plumb line (2) attached to the right side plate bracket.



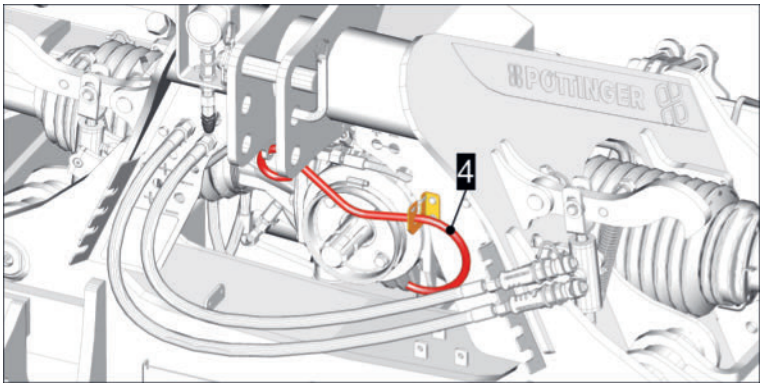
▷ If the tip of the plumb line (2) is exactly above the marking (3) on the scale, the machine is correctly aligned.

5 Move the rear power lift to "Lower" and place the machine or machine combination (with attached seeder) on the ground.

6 Turn tractor engine off, apply parking brake, remove ignition key and keep safe.

▷ If necessary, secure the tractor against rolling using wheel chocks.

7 Attach cardan shaft holder (4) in park position as shown.



Connect cable

Implementation

1 Take the cable out of the hose closet.

2 Remove the protective cap.

3 Connect the cable for each function.

Connect hydraulic hoses

WARNING

Hydraulic oil that is discharged under pressure may pierce the skin and cause severe infection!

► The hydraulic system must be de-pressurised on the tractor as well as on the machine.

► The hydraulic hoses connected to the machine must give slightly with all movements between the machine and the tractor without stretching, kinking or chafing.

► Should injuries occur, contact a doctor immediately.

WARNING

Crushing and severing of body parts when hydraulic function is reversed!

► Hydraulic connections are marked in colour and must be allocated correctly when the connecting is made.

ENVIRONMENT

Collect and correctly dispose of oils and oil mixtures.

Implementation

1 Select a dual-action control valve for each function and set the control valve to the float position.
   - Hydraulic lifting of arms
   - Hydraulic top link (optional)
   - Track marker (optional)
   - Share lift (optional with attached seeder)

2 **Connect hydraulic hoses:**
   1 First remove the hydraulic hose on the return line (if present) from the hose holder, remove the protective cap, clean the plug and socket with a lint-free cloth and connect to the tractor.
   2 Open the protective caps on the hydraulic hose plugs and on the sockets o the selected control valves on the tractor.
   3 Clean the plug and socket with a lint-free cloth.

   ENVIRONMENT

   Remove old oil / oily impurities, etc. and dispose of them correctly.

   4 Press plugs into the sockets until they are completely engaged.

Coupling the cardan shaft

CAUTION

Risk of injury due to ejected cardan shaft parts.

If the cardan shaft has not been adapted to the tractor, it could be destroyed and parts of the cardan shaft could be ejected during operation.

► Before initial operation, have the cardan shaft adapted to the prospective tractor by an authorised service dealer.

► When there is a change of tractor, the suitability of the cardan shaft must be checked and the cardan shaft adjusted if necessary.

NOTICE

Danger of equipment damage!

Incorrect attachment of the cardan shaft can seriously damage tractor, machine and the cardan shaft itself.

► Before installing the cardan shaft, carefully read the accompanying cardan shaft manufacturer's operating instructions.

Prerequisite

- Ensure that the cardan shaft has been adapted to the tractor before initial operation.

Implementation

► Connect the cardan shaft to the machine and fit and tighten the safety screw or allow the lock to engage fully if it has not already done so (depending on the cardan shaft version). Also see the cardan shaft manufacturer's operating instructions.

▷ Ensure that the gearbox-PTO stub connection to the cardan shaft is tight.

▷ Put cardan shaft holder in working position.

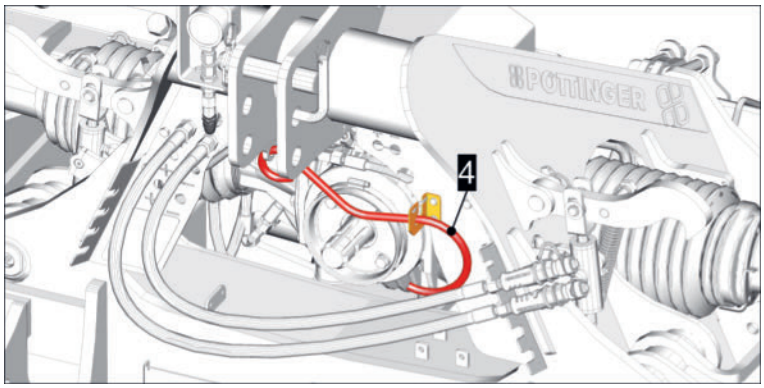


Fig.: Cardan shaft holder (4) attached in road transport position.

► Hang the protective retraining chain in the appropriate position and taking into account the maximum swivel angle on the machine.

▷ Cut the protective re chain to length, taking into account the maximum possible swivel angle.

NOTICE

Material damage due to incorrectly positioned protective retaining chain!

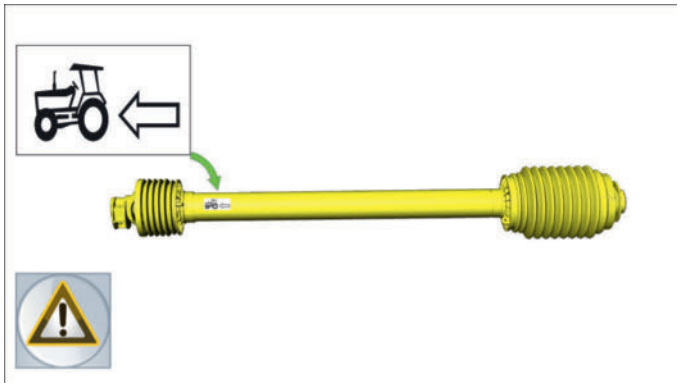
If protective retaining chains are attached to the safety cover of the machine or tractor, the cardan shaft and the safety cover can be damaged by the torque applied.

► Do not attach protective retaining chains to safety covers.

► The protective retaining chain must not wrap around the guard, therefore cut the length of the chain if necessary, taking into account the possible maximum swivel angle.

► Connect the cardan shaft to the tractor and fit and tighten the safety screw or allow the lock to engage fully if it has not already done so (depending on the cardan shaft version).

▷ Connect the cardan shaft to the side of the tractor with the corresponding tractor symbol. Also see the cardan shaft manufacturer's operating instructions.



▷ Ensure that the gearbox-PTO stub connection to the cardan shaft is tight.

▷ Hang the protective retaining chain in the appropriate position and taking into account the maximum swivel angle on the tractor.

▷ Cut the protective re chain to length, taking into account the maximum possible swivel angle.

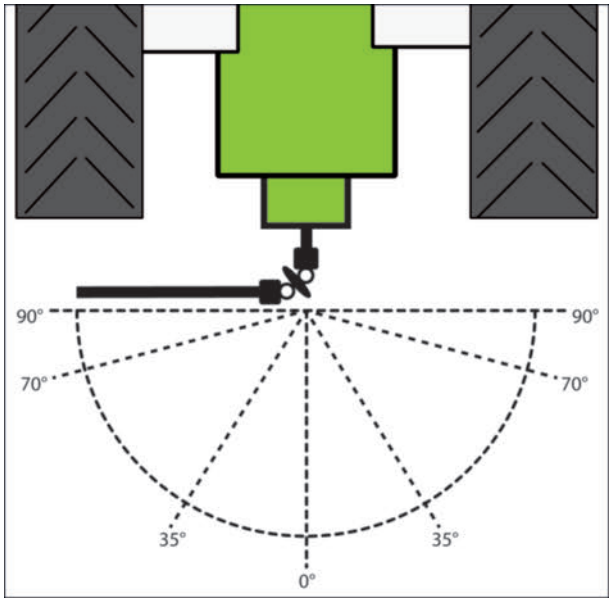
Cardan shaft operating limits

When in operation, the permissible p.t.o. speed and the maximum permissible angle per joint fitting must not be exceeded.

When the p.t.o. is at a standstill, the permissible maximum angle for each joint fitting must likewise not be exceeded!

Max. permissible angle

Joint fitting	Maximum angle during operation	Maximum angle when at standstill
Normal joint	35°	90°



Mounting the BASIC CONTROL terminal

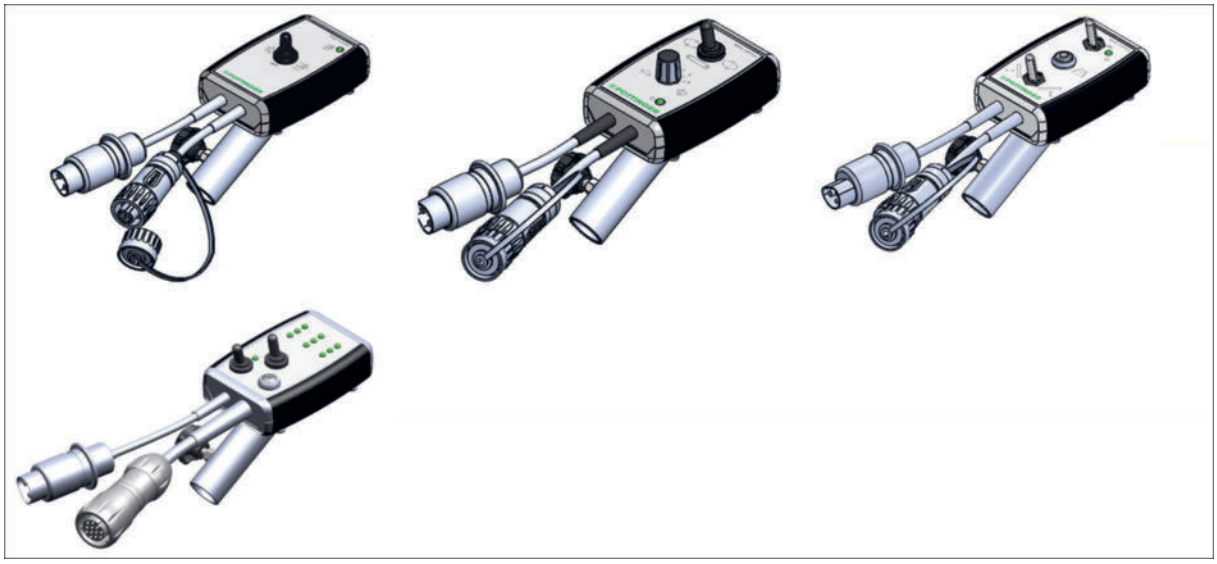


Fig.: Shorter cable shown!

Implementation

► Place the terminal in the cabin in viewing area and within reach of the driver. This must not impair view towards outside and view of the tractor control elements. There is a bracket designated for fastening the cable on the back of the terminal.

  ▷ Position and connect cable to control the machine (if not already done). Ensure proper cable layout. Cables must not be pulled, squashed or bent during operation.

► Plug the power supply plug into the power socket (12 V) on the tractor.

Work assignment

⚠ WARNING

Danger of injury!

- ► Check the machine for traffic and operational safety before starting work. Operate the machine only when all safety devices are properly installed and in working order.
- ► Couple the machine to the tractor. correctly and completely, before starting work.
- ► Before driving the machine, make sure that nobody is located in the danger area or behind the machine. If necessary, have a second person who is outside the danger area instruct you.
- ► Direct people out of the danger area.
- ► The driving performance is significantly impacted by ballast weights and the size of the attached/mounted machines. Avoid fast or sudden cornering, in particular when driving uphill or downhill or when driving transversely to the slope, because of the danger of tipping.
- ► Before leaving the tractor, apply the parking brake, turn motor off, remove ignition key and keep safe. If necessary, use wheel chocks.

⚠ WARNING

Damage to health due to noise!

The effect of noise on the body can cause various types of damage, e.g. hearing loss, tinnitus, etc.

- ► If the noise level exceeds 80 dB(A) hearing protection is strongly recommended.
- ► If the noise level exceeds 85 dB(A) hearing protection is compulsory.
- ► Close the tractor cab to reduce the noise level further.

⚠ WARNING

Ejected material (e.g. stones, lumps of earth, etc.) can hit and injure people!

- ► Particular caution should be taken in stony fields, and near roads and paths.
- ► Place the protective covers in their operating positions.
- ► Keep a safe distance while engine is running!

  No-one is permitted in the danger area during operation. Direct people out of the danger area.

  People must not ride on the machine during operation.
- ► Turn PTO off and wait for the drive to come to a standstill before raising the machine.

WARNING

Health hazard due to dust.

Depending on the machine type, dry soil conditions can cause large amounts of dust to be stirred up.

► Close the tractor cab before starting work.

► Use personal protective equipment such as a dust mask and fully enclosed protective goggles.

NOTICE

Damage due to driving over obstacles!

► Drive carefully.

► Remove known obstacles if possible before starting work.

ENVIRONMENT

Avoid unnecessary change procedures. Before starting work, consider how the area could be optimally processed.

Wheel track eradicator road transport position

The wheel track eradicators must not be in working position during transportation on public roads. The maximum authorised machine width for transportation could be exceeded.

TIP

Wheel track eradicator road transport and park position

Raise the wheel track eradicators to the highest possible position, disconnect and secure before parking the machine and before travelling on the road. See "Wheel track eradicator road transport position" on page 105.

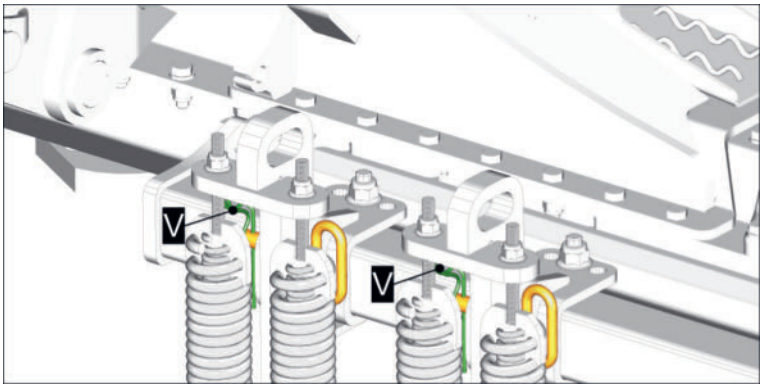
Establish road transport position

Requirements

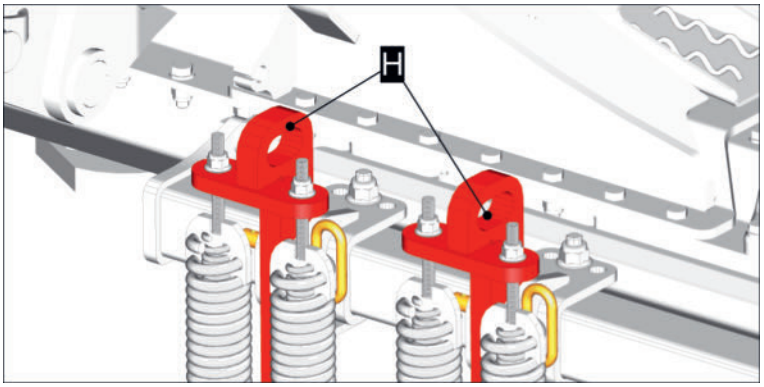
- Park tractor and machine on level and stable ground in working position and secure against rolling away.
- Tractor engine turned off, parking brake applied, ignition key removed and stored.

Implementation

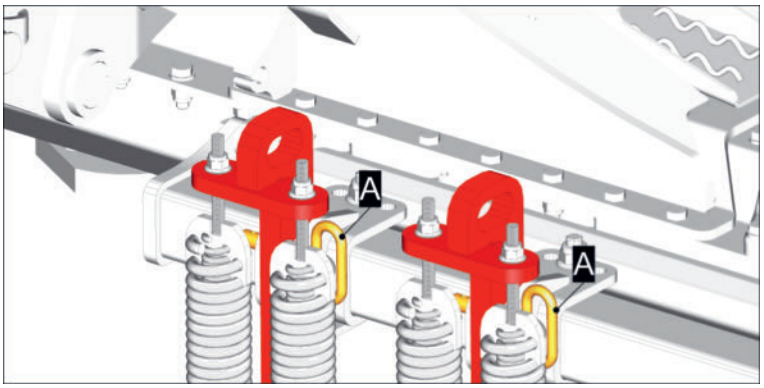
1 Remove the linchpin (V).



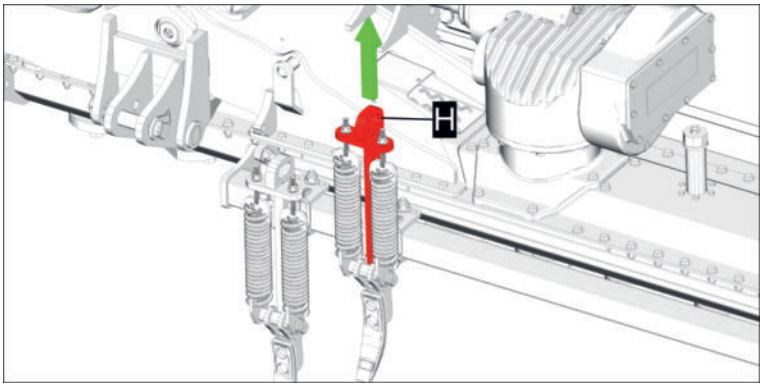
2 Hold the track eradicator by the handle (H).



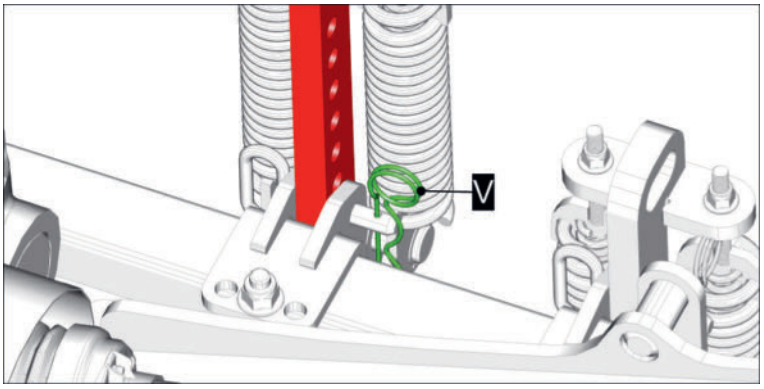
3 Remove the locking pin (A).



4 Pull the track eradicator upwards with the handle (H) and attach in the highest possible position with the locking pin.



5 Replace linchpin (V).



6 Carry out procedure in the same way on all track eradicators.

Transport run

Transport runs are short trips on public roads, to and from the work site. Height, width and weight must not exceed the legally permitted values in the country where the machine is operated. Lighting must be clean and working during transport runs, and set vertically to the road.

DANGER

Danger to life

People riding on the machine fall off during the run.

► Do not allow anyone to ride on the machine. Riding on the machine is prohibited!

DANGER

Danger to life

People are located in the swivel range of the folding sections

► Guide people out of the swivel range of the folding sections.

Ensure that no-one is standing in the swivel range of the folding sections.

CAUTION

Danger of injury or death

In oncoming traffic, narrow places and near people:

► When entering curves, take into account the wide overhang and the inertia of the machine.

CAUTION

Danger due to unsecured swivelling machine components!

Machine components which have not been secured as stipulated prior to transport may swing out unexpectedly.

► Secure all swivelling machine components according to the instructions.

NOTICE

Danger of machine damage!

Machine components can suddenly and unexpectedly swing backwards, sideways and downwards if they are not secured as stipulated before a transport run.

► Secure all swivelling machine components according to the instructions.

Carry out transport run

Prerequisite

- Ballast fully attached to the tractor.
- Machine is fully attached and secured to a suitable tractor.
- PTO drive switched off.
- Park tractor and machine on level, stable ground in headland position.
- Wheel track eradicator locked and secured in road transport position. See "Wheel track eradicator road transport position" on page 105.
- Follow-on device transport lock activated. See "Follow-on device transport lock with manual working depth adjustment" on page 45.
- Track marker (optional) moved to road transport position and secured.
- Heavy soil build-up removed from the machine and all attachments.

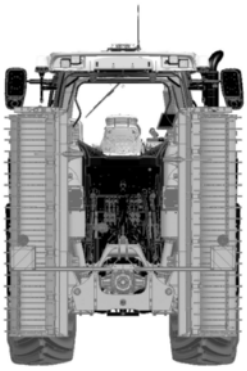
Implementation

1 Check the lateral swivel range of the tractor's lower link. Make any necessary correction so that the machine cannot swing when raised.

2 Raise machine with rear power lift to H1 approx. 600 mm.

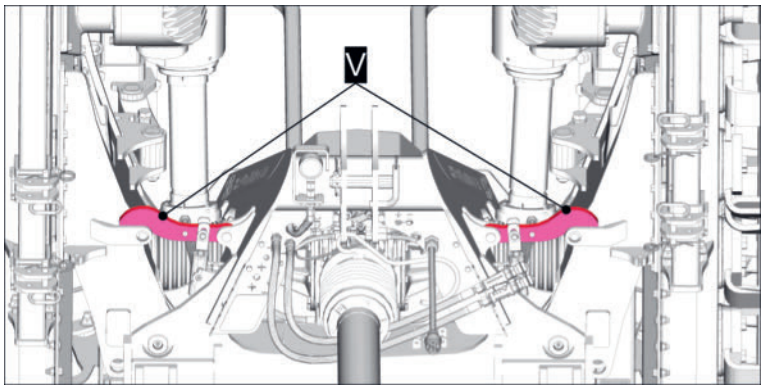
3 **Move folding sections to road transport position:**

1 Activate tractor control device and fold the arm up as far as it will go.



▷ Make sure that there is no risk of collision with tractor components (open rear window, etc.).

2 Visual inspection to check whether the locking hooks (V) on both sides of the machine are fully engaged.



4 Turn lighting on.

5 Carry out transport run taking into account the weight and centre of gravity of the machine.

Move machine from road transport position to working position.

NOTICE

Machine and tractor tipping over!

The weight and center of gravity of the machine significantly influence the driving characteristics of the tractor. This can cause the machines to tip over, especially on slopes.

► First turn the machine along the slope before carrying out any folding processes in a laterally inclined position.

► Travel through curves on slopes in all transport or operating positions at a significantly reduced speed.

► Reverse instead of performing risky turning manoeuvres on slopes.

CAUTION

Danger of serious injuries through moving machine parts!

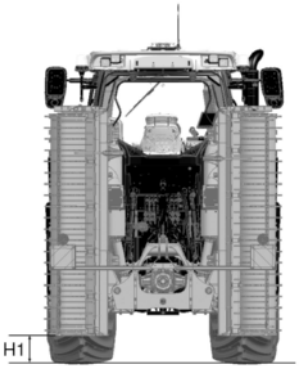
► Direct people out of danger area.

Prerequisite

- Ballast fully attached to the tractor.
- Machine is fully attached and secured to a suitable tractor.
- Seeder assembled as required.
- Park tractor and machine on level, stable ground in road transport position.

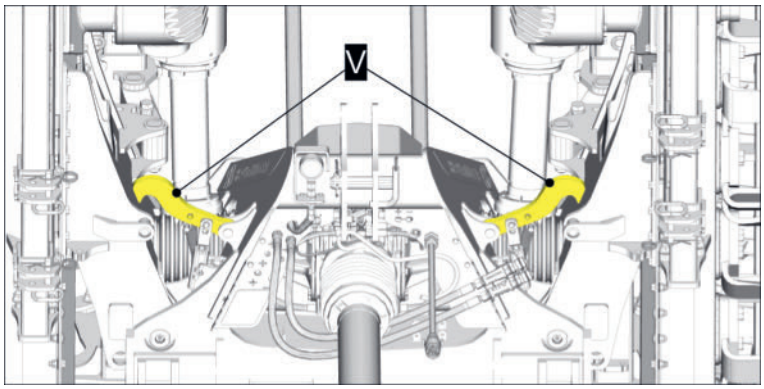
Implementation

1 Lift machine with rear power lift to H1 (= 300mm).

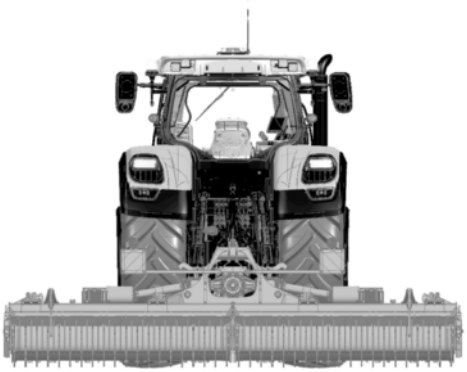


2 **Lower arm to working position**

▷ Set the tractor control device to "Lift" until the hooks on the transport lock (V) are fully open. Visual control!



▷ Then set the tractor control device to "Lower" and fold the arms down as far as they will go.



3 Activate the rear power lift and lower the machine / machine combination to working position without pressure.

▷ If necessary, carry out the required steps to move the attached seeder into working position. See seed drill operating manual.

▷ If necessary, carry out the required steps to prepare the machine for field work. See "Track marker (optional) operational" on page 111.See "Ground adjustment operational readiness" on page 111.

Track marker (optional) operational

In order to be able to use the track marker, the transport locks must first be disengaged and the track marker folded into working position.

The track markers must be locked in the road transport position on both sides of the machine before driving on public roads and when not in use.

Establish operational readiness

Requirements

- Tractor ballast fully attached.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level and stable ground in working position and secure against rolling.
- Tractor control device set to "neutral" for the track marker.
- Refer people out of the danger area of the machine.
- Tractor engine turned off, parking brake applied, ignition key removed and stored during the work on the machine.

Implementation

1 Deactivate track marker transport lock. See "Track marker transport lock" on page 55.

2 Move the track marker to working position. See "Track marker operation (optional)" on page 60.

Ground adjustment operational readiness

The ground adjustment hydraulic system must be "pumped up" to working pressure before starting work with the machine to ensure that it is fully functional.

Establish operational readiness

The ground adjustment system pressure must be set to the factory preset pressure of 40 bar before operation.

Prerequisite

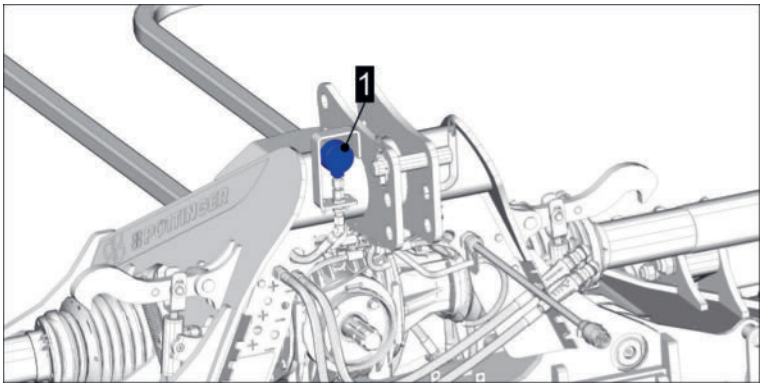
- Machine is fully attached and secured to a suitable tractor.
- Tractor ballast fully attached.
- Park tractor and machine on level and stable ground in working position and secure against rolling.

Implementation

► Move machine to working position if not already done.

► Keep the tractor control device in the folded out position until the pressure has reached 40 bar according to the manometer (1).

The machine is ready for operation when the target pressure is kept stable.



► Then set the tractor control device to float position to ensure that the ground adjustment functions properly in operation.

Operation

DANGER

Danger of life-threatening injuries!

Moving machine components can cause body parts to be crushed, drawn-in and severed.

► Check that safety equipment is complete and ready for operation.

► Before start-up, direct people away from the danger area around the machine.

► Do not enter the machine's danger area as long as machine parts can move there.

► Do not operate the machine if safety equipment or follow-on devices have been dismantled or the side plates are not in working position.

Field work

Prerequisites

- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level, stable ground in headland position.
- Transport locks removed from track markers.
- Transport lock deactivated on the follow-on devices.
- Required working depth set on follow-on devices.
- Remove any existing transport locks on attached seeder.

Implementation

1 Carry out all necessary work steps for the operation of any attached seeder (e.g. switch on the control, switch on the blower fan, etc.)

2 Lower the machine / machine combination to the ground.

3 Turn on PTO and bring it up to the intended operating speed.

4 Drive the tractor slowly and lower the machine / machine combination to the set working depth (follow-on device rests on the ground).

5 For any adjustment work, stop the tractor, apply the parking brake, switch tractor engine off, store ignition key and secure tractor against rolling.

   ▷ Carry out all necessary work steps for the operation of any attached seeder (e.g. switch off the control, switch on the blower fan, etc.)

6 Adjust the side plates to the working depth as required.

7 Adjust the rear levelling bars to the working depth as required.

8 Adjust the wheel track eradicator to the depth of the wheel track.

9 Adjust the settings of the attached seeder (optional) as required.

   ▷ Put tractor back into operation.

   ▷ Carry out all necessary work steps for the operation of any attached seeder (e.g. switch on the control, switch on the blower fan, etc.)

10 Turn on PTO and bring it up to the intended operating speed.

11 Drive off slowly and accelerate to operating speed.

Turn in the field

Implementation

► Reduce tractor speed and stop.

► Turn PTO drive off.

TIP

If the machine / machine combination is only raised until the tines have been lifted completely out of the ground, the PTO may remain switched on.

As a rule, if vibrations or noises occur on the cardan shaft when it is raised, switch the PTO off before any turning manoeuvres.

   ▷ Lift the machine / machine combination to the headland position using the rear power lift.

► Carry out the turning operation.

► Lower the machine / machine combination to the ground.

   ▷ If the PTO shaft has been switched off, switch it on and bring it to the intended operating speed.

► Drive the tractor off slowly and lower the rotary harrow to the set working depth (follow-on device rests on the ground).

► Accelerate tractor quickly to operating speed and continue to work the soil.

Move machine from working position to road transport position

Function performed using the rear power lift control valve and the dual-action tractor control valve for the arms.

Requirements

- Park tractor and machine on level, stable ground in working position.
- All the necessary steps have been carried out to bring an attached seeder into road transport position.
- Have soil deposits removed from the machine.
- Tractor engine turned off, parking brake applied, ignition key removed and stored during the work on the machine.

Implementation

1 Only raise the machine with the rear power lift until the screws (2) in the roller carrier (1) are firmly seated in the recess below as shown.

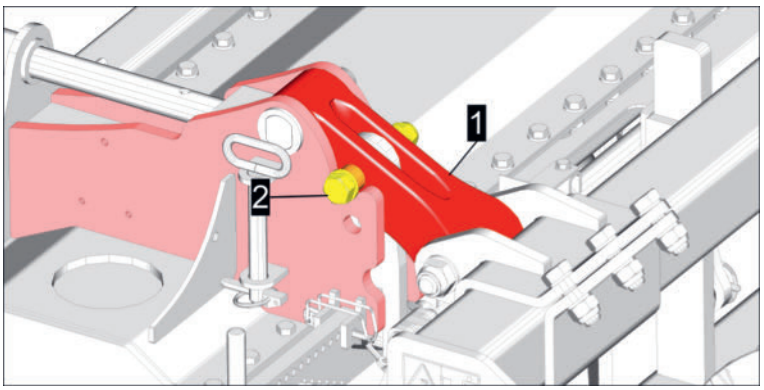


Fig.: Example of outer left roller carrier on left follow-on device

2 Move the working depth of the machine to the setting intended for road transport. 88

3 Activate transport lock for follow-on device. See "Activate transport lock, transport width 2,65 m" on page 49.

4 Move track marker to road transport position. See "Track marker operation (optional)" on page 60.

   ▷ Activate track marker transport lock if required. See "Track marker transport lock" on page 55.

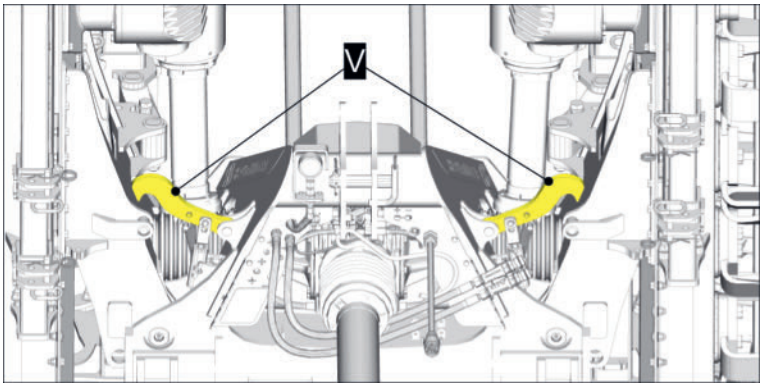
5 Move wheel track eradicator to road transport position See "Wheel track eradicator road transport position" on page 105.

6 Set the rear power lift control valve to "Lift" and raise the machine to H1 (=300 mm ground clearance).

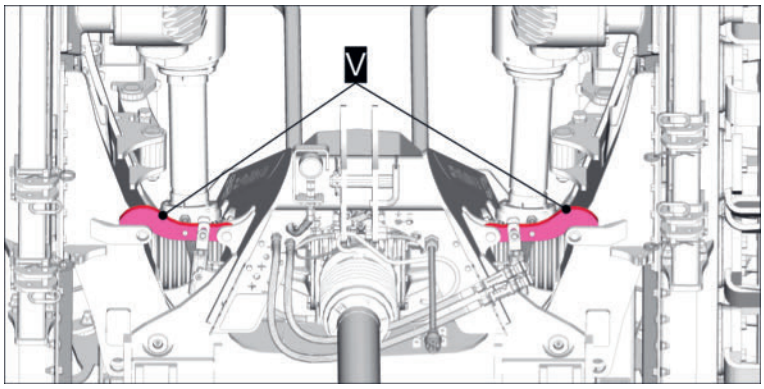
   ▷ Observe the lifting procedure and check for potential collisions with tractor components (such as rear windows, etc.).

7 Fold arm up to road transport position:

Set the tractor control valve to "Lift" and maintain the position until the machine has been completely folded up. The transport safety hooks (V) remain open in the process.



▷ Set the tractor control valve to "neutral". The transport safety hooks close automatically.



Carry out a visual inspection to check that the transport safety hooks are properly closed.

▷ If necessary, set the rear power lift control valve to "Lift" and raise the machine further until the ground clearance is sufficient e.g. for a transport run.

Uncoupling

DANGER

Danger of tipping due to incorrect operation of support devices!

If existing support devices such as support stands or parking supports are not used or not secured, the machine may tip over.

- ► Park the machine on flat, firm ground.
- ► Use support stands or parking supports when parking the machine.
- ► Secure support stands or parking supports as stipulated.

DANGER

Pulling in and severing of body parts!

- ► Secure the PTO drive against unintentional starting.

WARNING

Danger of whole body being crushed when activating the power lift!

- ► Direct people away from the danger area around the power lift.
- ► Do not stand between the tractor and the power lift when operating the power lift via external buttons.

WARNING

Crush hazard over the entire body!

Do not remain in the danger area around the tractor and the machine unless the mower combination has been secured against rolling and accidental operation.

1. Instruct bystanders to leave the danger area around the tractor and the machine.
2. Make sure that bystanders do not enter the danger area.
3. Park the machine on flat, firm ground.
4. Apply the emergency brake.
5. Turn off tractor engine, remove ignition key and keep safe.
6. Insert wheel chocks on the tractor and on the machine.

WARNING

Falling due to slipping / tripping!

Stepping on the parked machine can cause serious injuries.

- ► Do not step on the parked machine.
- ► Prevent children from stepping on the machine using suitable measures.

Remove the BASIC CONTROL terminal

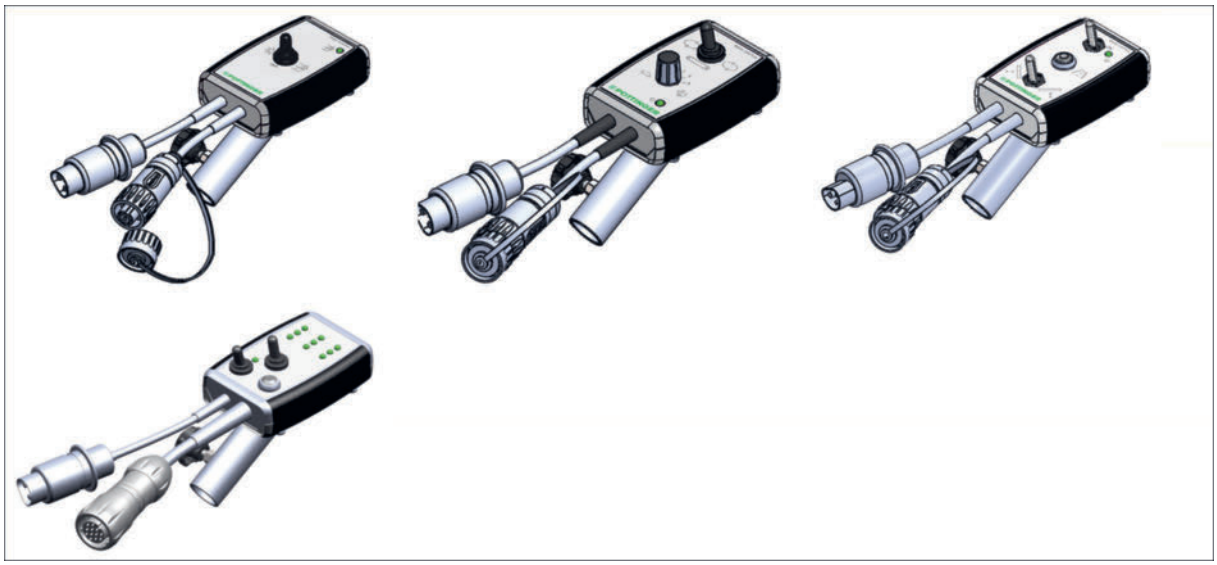


Fig.: Shorter cable shown!

Implementation

- ► Remove the power supply plug from the power socket (12 V) on the tractor.
- ► Disconnect the machine control cable.
- ► Install the covering caps.
- ► Remove the terminal from the bracket, take it out of the tractor cab and keep it safe.

Disconnect the hydraulic hoses

⚠ WARNING

Hydraulic oil discharged under high pressure!

Hydraulic oil that is discharged under pressure may penetrate the skin and cause severe infection.

- ► Depressurise the hydraulic system before connecting or disconnecting the hydraulic hoses.
- ► Depressurise the hydraulic system before disconnecting the hydraulic hoses, or carrying out maintenance or repair work.
- ► Should injuries occur, contact a doctor immediately.

ENVIRONMENT

Collect and correctly dispose of oils and oil mixtures.

Implementation

1 Select a dual-action control valve for each function and set the control valve to the float position.

- Hydraulic lifting of arms

- Hydraulic top link (optional)
- Track marker (optional)
- Share lift (optional with attached seeder)

2 **Uncouple hydraulic hoses:**

1 Reduce the residual pressure of the single-action hydraulic connections (if present) before uncoupling by setting the tractor control device alternately to "Lift" and "Lower" several times with the hydraulic pressure supply switched off.

2 Disconnect the plugs on the hydraulic hoses for the individual functions and load sensing (if present).

3 Clean the plug and socket with a lint-free cloth.

ENVIRONMENT

Remove old oil / oily impurities, etc. and dispose of them correctly.

4 Attach the protective caps on the hydraulic hose plugs and on the sockets of the tractor control valves.

5 Finally, uncouple the hydraulic hose on the return line (if present), clean the plug and socket with a lint-free cloth and fit the protective cap.

6 Place / hang the hydraulic hoses on the hose holder.

Unplug cable

Implementation

► Remove cable on tractor and machine / machine combination (= soil tillage machine and attached additional machine) for each function.

- Lighting plug on soil cultivator.
- Lighting plug on soil tillage machine for the attached additional machine.

► Install the covering caps.

► Roll up the cable and place in the tool box if possible, otherwise place it in the hose holder.

Uncouple the cardan shaft

NOTICE

Deformation of cardan shaft!

If the cardan shaft is left in the cardan shaft holder for long periods (> 1 week), the cardan shaft and cardan shaft guard may become deformed due to their own weight.

► If the machine is not going to be used for long periods, completely uncouple the cardan shaft from the machine, push it together and store horizontally protected against weather and dust.

Prerequisite

- Tractor motor turned off, parking brake applied, ignition key removed and stored.

- Machine is parked on level and stable ground and secured against rolling away.

Implementation

► Move the cardan shaft holder to the stop / park position.

► Depending on the cardan shaft version, unhook the protective retaining chain on the tractor side.

► Depending on the cardan shaft version, remove the clamping screw at the tractor end or loosen the spring-loaded coupling device at the tractor end and pull the cardan shaft off the PTO shaft.

► Place the cardan shaft with the front third in the cardan shaft holder. Ensure that the protective cover is not deformed by storage.

► Make sure that cardan shaft is protected from the weather during storage!

Uncouple tillage machine

The tillage machine can be attached to a tractor as a stand-alone machine or together with suitable seeders in a machine combination. The uncoupling of the seeder from the tillage machine is described in the seeder's operating instructions.

NOTICE

Deformation of cardan shaft!

If the cardan shaft is left in the cardan shaft holder for long periods (> 1 week), the cardan shaft and cardan shaft guard may become deformed due to their own weight.

► If the machine is not going to be used for long periods, completely uncouple the cardan shaft from the machine, push it together and store horizontally protected against weather and dust.

Uncouple the machine from the tractor

Prerequisites

- Park tractor and machine on level and stable ground in working position and secure against rolling away. See "Move machine from road transport position to working position." on page 109.
- PTO drive switched off
- PTO uncoupled from the tractor and placed on the machine's cardan shaft holder.

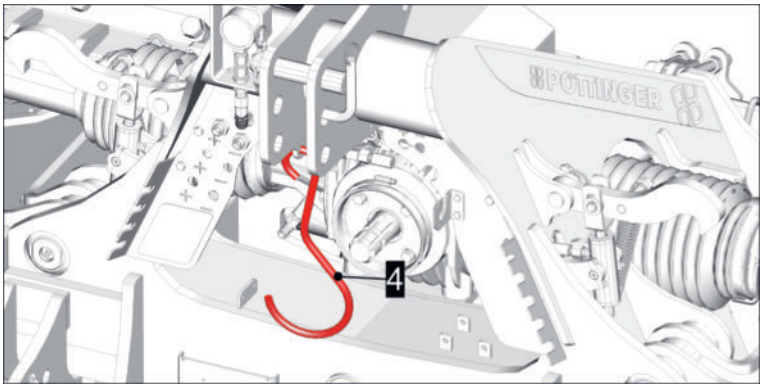


Fig.: Cardan shaft holder (4) in parking position

- All hydraulic connections separated from the tractor.
- All electrical connections separated from the tractor.
- Before working on the machine, switch off the tractor engine, switch off the PTO, remove and store the ignition key!

Implementation

1 Switch off the tractor, remove and store the ignition key, apply the parking brake and secure the tractor against rolling.

2 Unhook top link and position it so that it cannot be damaged when driving away from the machine or remove top link completely.

3 Deactivate / release lower link lock.

4 Activate rear power lift and lower to unhook the lower link.

5 Make sure that there are no remaining connecting lines connected to the tractor and drive away from the machine constantly observing the coupling point.

   ▷ Remove locking pins and remove top / lower link balls and spacer sleeves as required.

   ▷ Attach the locking pin again and secure with the linchpin against loss.

Put machine out of operation at end of season

NOTICE

Damage due to unsuitable storage conditions!

► Store the machine in a clean, dry weather-protected area and not near artificial fertilizer or stabling.

► Apply rust protection to bare machine parts, e.g. hydraulic cylinder piston rods or similar.

► Disconnect drive shafts from the machine, push together fully lengthwise and store in dry weather-protected area

WARNING

Falling due to slipping / tripping!

Stepping on the parked machine can cause serious injuries.

► Do not step on the parked machine.

► Prevent children from stepping on the machine using suitable measures.

⚠ DANGER

Catching, being drawn in, severing of limbs, as well as crushing and running over for the entire body!

The danger area in which machine components can move and the danger area around the tractor must be entered when working on the machine.

- ► Before working on the machine, switch off the tractor engine, switch off the PTO, remove and store the ignition key!
- ► Wait until all machine components have stopped moving before entering the danger area around the tractor / machine.
- ► Use support stands when working underneath the machine of if the machine is raised to prevent accidental lowering of the machine / machine components.

⚠ WARNING

Rotating parts behind protective covers!

Rotating parts behind protective covers can continue to run unnoticed for a long time!

- ► Wait for all rotating parts to come to a standstill.
- ► Make sure that third parties cannot inadvertently activate the machine.
- ► Make sure that third parties cannot inadvertently activate the tractor.

⚠ WARNING

Not wearing personal protective equipment!

- ► Use personal protective equipment (protective clothing, work gl

⚠ CAUTION

Hydraulic fluid escaping under high pressure.

Hydraulic fluids escaping at high pressure can penetrate the skin and muscle tissue and cause serious injuries and infections.

- ► Troubleshooting should only be carried out on the tractor and machine side of the hydraulic system when it is not under pressure.
- ► If troubleshooting is absolutely necessary when the system is under pressure, it must be done with extreme caution.
- ► Parts may only be replaced when the tractor is switched off and not under pressure.
- ► When replacing parts, make sure that they are installed correctly, using the installation situation of the identical used part as a reference.
- ► Special care must be taken when checking for leaks after replacing parts.
- ► Always consult a doctor in case of injuries involving hydraulic fluid.

NOTICE

Damage to the drive train on machines with PTO drives

With active PTO brake on the tractor, tension can build up in the drive train, which can cause damage to the machine components concerned.

► Switch off the tractor's PTO brake before folding processes!

Maintain operational readiness

Regular care and maintenance is a basic requirement for the machine to remain functional and safe to operate.

WARNING

Risk of injury when working on the machine!

► Use personal safety equipment such as protective glasses, gloves, etc.

► Observe the fertilizer manufacturer's instructions regarding the use of personal protective equipment before working with fertilizers.

► Park machine on firm, level ground and secure against rolling.

► Tractor engine turned off, parking brake applied, ignition key removed and stored.

► Secure the work area so that bystanders / unauthorized persons cannot enter it.

► All work must be carried out only when the drive is at a complete standstill.

► Close stop valve on all hydraulic lines before working in danger area or on hydraulically controlled machine parts.

► Remove all electrical plug connections between tractor and machine before working on electrically driven machine parts.

► Use suitable supports to prevent accidental lowering / swinging of hydraulically controlled machine parts.

► On completion of the work, check tightness of loosened screw connections and check that safety / protective equipment function correctly.

General tips

Re-tighten all screws after the first hours of operation!

Spare parts

PÖTTINGER original parts and accessories are specially designed for the respective machines.

Please be advised that spare parts and accessories not supplied by PÖTTINGER are not approved for use on PÖTTINGER machines.

The installation and use of such products may affect the given characteristics of your machine. The manufacturer accepts no responsibility for damages caused through the use of non-genuine parts and accessories.

The manufacturer accepts no liability for unauthorised modifications to the machine or the use of components and attachments that are not part of the machine ex works.

Control terminals

Before wintering the machine, unplug the control terminals and store them in a dry, frost-proof area which is protected from direct sunlight. Fully charge battery-operated terminals before winter storage and then check the battery status regularly to prevent its destruction through deep discharge.

Cardan shaft maintenance

In principle, the instructions in this manual apply for the maintenance of cardan shafts

If there are no special instructions in this manual, then the instructions in the manual supplied by the relevant cardan shaft manufacturer apply.

Adapt or halve lubrication intervals in dusty conditions or if the cardan shaft has sharp angles.

Fig.: Sticker on PTO shaft.

Cardan shaft assembly / disassembly

Special procedures may be required when installing cardan shafts on machines to ensure that the machine is not damaged during commissioning. The instructions in this manual always apply for the assembly/disassembly of cardan shafts, e.g. during assembly after maintenance work.

If there are no special assembly/disassembly instructions in this manual, then the instructions in the manual supplied by the relevant cardan shaft manufacturer apply.

Repair welding

Prior to any welding work on the tractor while the machine is attached, unplug the connectors on the machine's control computer. Prior to any welding work directly on the machine, the control computer plug connections must also be disconnected.

Battery charging and jump-start procedures

If the tractor battery is charged by means of a charger with the machine attached, all electrical plug connections to the machine must be disconnected beforehand.

If the tractor has to be started by means of a starting aid with the machine attached, all electrical plug connections to the machine must be disconnected beforehand.

Cardan shaft

TIP

The lubrication intervals for the cardan shaft are to be adjusted or halved in the case of dusty conditions or sharp operational angles.

TIP

For full cardan shaft cleaning and maintenance information, observe its manufacturer's operating manual which is enclosed with this cardan shaft!

Winter operation

If the cardan shaft is used in winter, the protection tubes must be greased with universal grease with lubricant code (IV) according to the equipment specification to prevent them from freezing. See page 153.

Implementation

► Extend the cardan shaft without protective tube lubrication to the maximum possible length and apply a thin layer of universal grease to the inner protective tube.

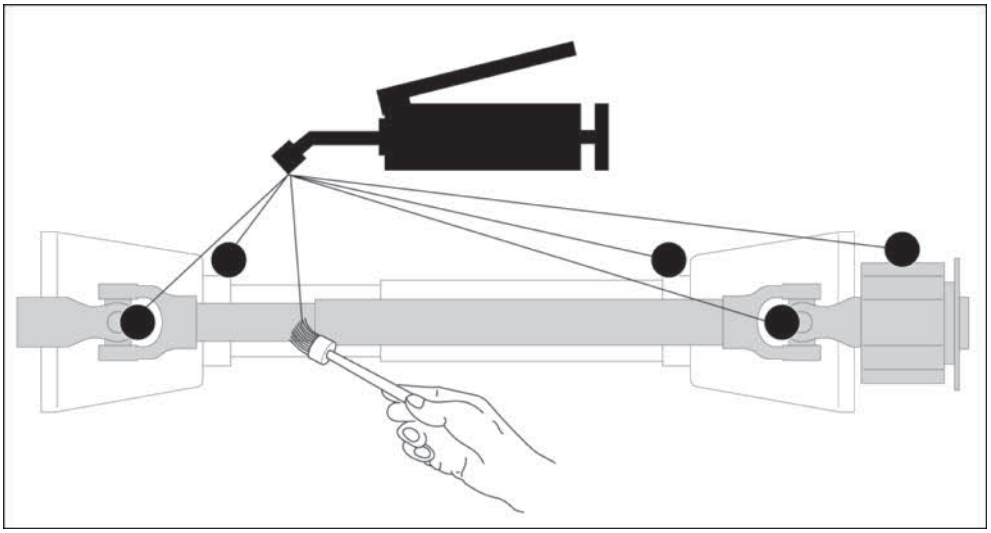
▷ Push the cardan shaft back together.

► Lubricate the cardan shaft with integrated protective tube lubrication at the lubricating points according to the cardan shaft manufacturer's operating instructions.

Clean and grease cardan shaft

Implementation

► Brand-new cardan shafts or ones that have been stationary for a long time before commissioning should be cleaned and greased with universal grease with lubricant code (IV) until grease flows from the bearings. See "Equipment specification" on page 153.



Symbol illustration of possible lubrication points

▷ Dispose of escaping lubricant correctly.

► Cardan shafts should then be greased regularly according to the manufacturer's instructions / lubrication plan.

Attaching cardan shafts

When attaching cardan shafts to the input/distribution gearbox of folding machines, ensure that they are rotated 15° to the rear on both sides after installation, as shown below, to prevent damage due to tension in the drive train.

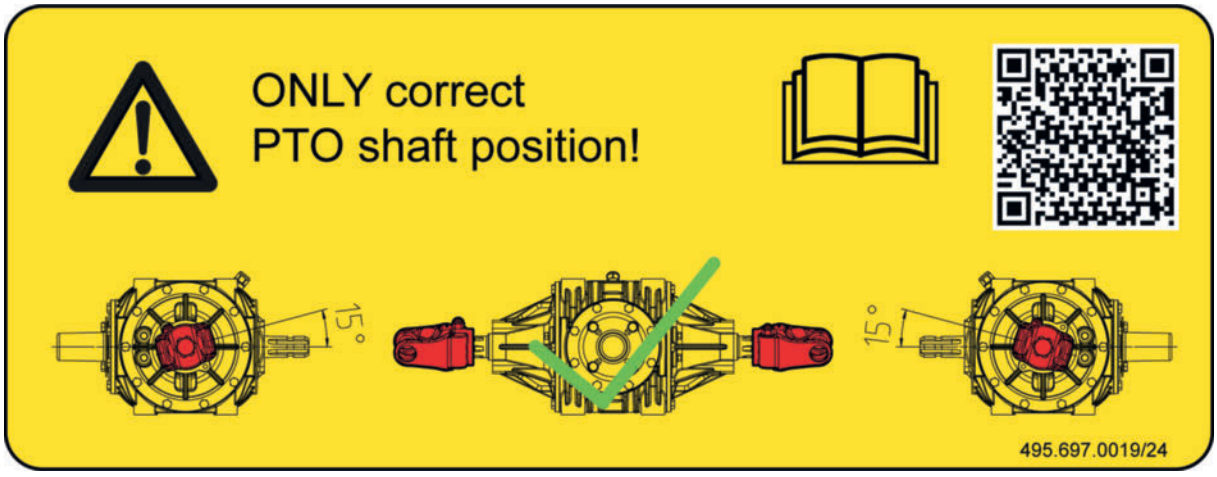


Fig.: Stickers on the attachment frame, in the area of the left and right-hand side recess, for the drive shafts.

NOTICE

Damage to drive train!

If the drive shafts are not mounted at the gearbox with a 15° turn to the rear, damage may occur due to machine components becoming misaligned.

► Insert the drive shafts on both sides of the input gearbox with a 15° turn to the rear.

The activities described below are carried out after checking and evaluating the condition of certain machine areas / machine parts.

Mechanical anti-collision safety

When working with the harrow, the device may still collide with obstacles despite driving in a slow, cautious manner. The track loosener is fitted with an anti-collision safety device in order to prevent major damage.

If the strength of the bolt at the specified breaking point is exceeded in a collision with an obstacle, the bolt will break off.

NOTICE

Material damage due to collision

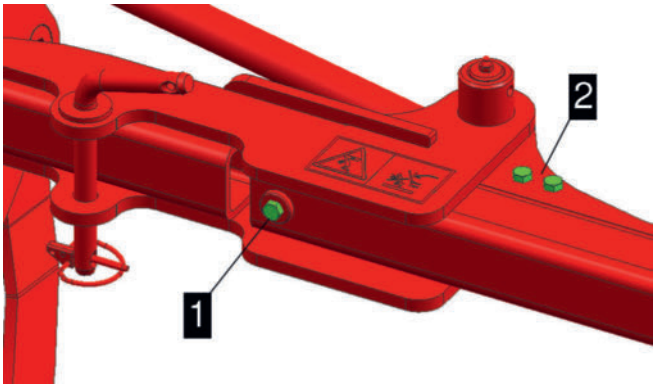
► It is not the purpose of a collision safety device to prevent damage to the machine when it is moving at full speed.

Drive at an appropriate speed! Drive within the line of Vision!

Continue driving after a collision

► Reverse a little.

► Replace the bolt in the anti-collision safety device (1) with a spare one (2).

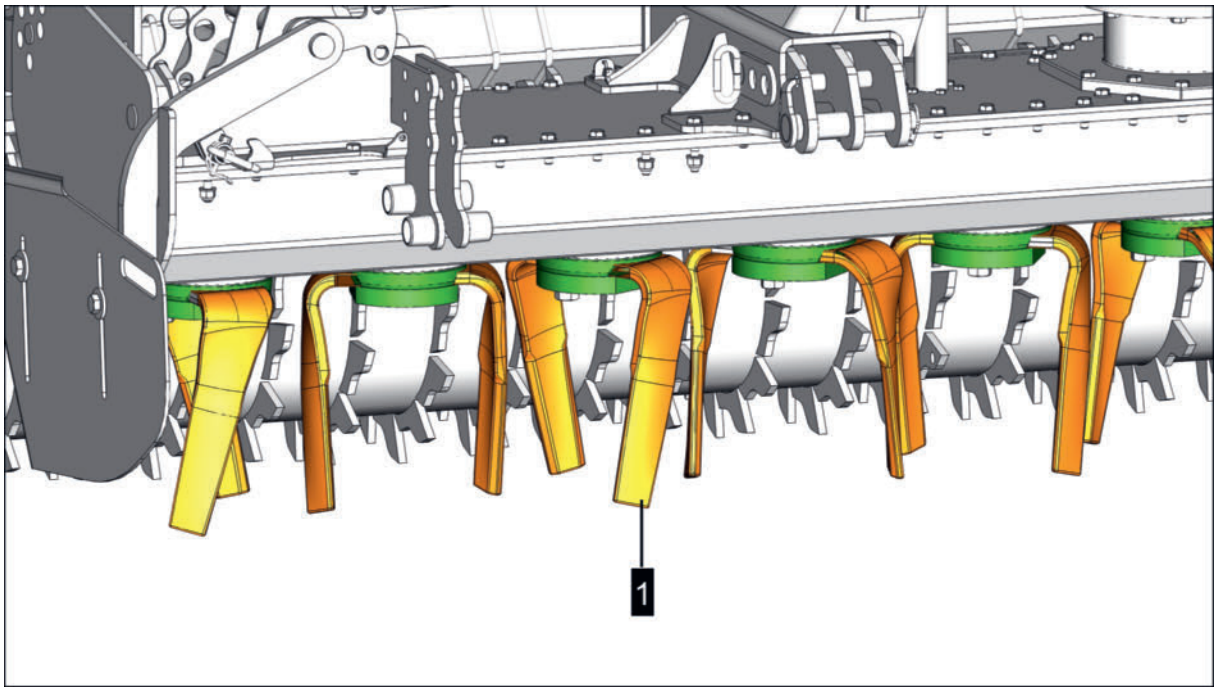


► Reassemble the track loosener arm.

TIP

Only use original Pöttinger spare parts! Only these parts guarantee adequate strength and have been tested on the machine. This is how the track loosener is protected!

Replace tines



1 = Tines

- In case of damage
- When the wear limit is reached

Tine replacement with standard plate (series)

DANGER

Danger of catching and pulling in a person's clothing or long hair.

► Any mounted seeders have been removed from the tillage machine.

► Tillage machine attached to a suitable tractor.

► Tillage machine raised slightly, parked on level and load-bearing ground and secured against accidental lowering with suitable supports.

► Tractor engine turned off, ignition key removed and stored.

Preparation

- Medium-strength thread lock (e.g. Loctite 243)

Implementation

► Remove the screws, take off the plate and mark the mounting position of the plate.

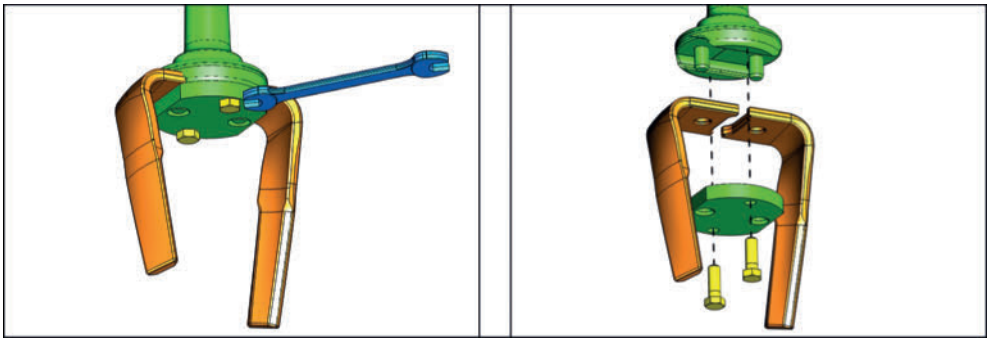
WARNING

Danger of machine parts falling!

When removing the plate, the tines could drop.

► Loosen the plate gradually.

► Be aware that both tines release simultaneously with the plate and can be removed together with the screws or bolts.



► Clean tine carrier, plate and holder area (around the hole) of the tines.

► Apply thread lock to the screw threads (use new screws if necessary - see spare parts list).

► Fit the tines and plate, taking into account the mounting position of the plate (as removed).

► Replace screws and tighten to a torque of 350 Nm.

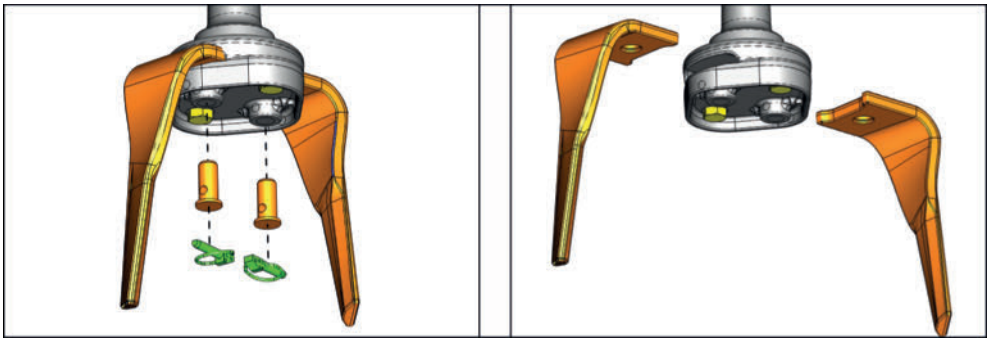
Tine replacement with quick-release plate (optional)

Prerequisite

- Any mounted seed drills have been removed from the soil cultivator.
- Soil cultivator attached to a suitable tractor.
- Soil cultivator raised slightly, parked on level and load-bearing ground, secured against accidental lowering with suitable supports.
- Tractor motor turned off, ignition key removed and stored.

Implementation

► Remove linch pins and bolts, then pull out the tines laterally.

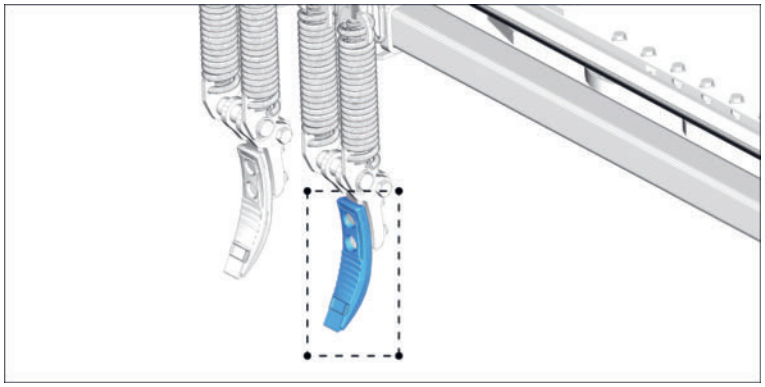


► Clean (brush out, blow out) the spaces between the tine holders as required.

► Refit tines in reverse order and secure with linch pin.

Tractor track eradicator chisel blade

The chisel blade must be replaced if the performance decreases significantly or the chisel blade is damaged in spite of adjusting the working depth.



Replace the track eradicator chisel blade

Prerequisite

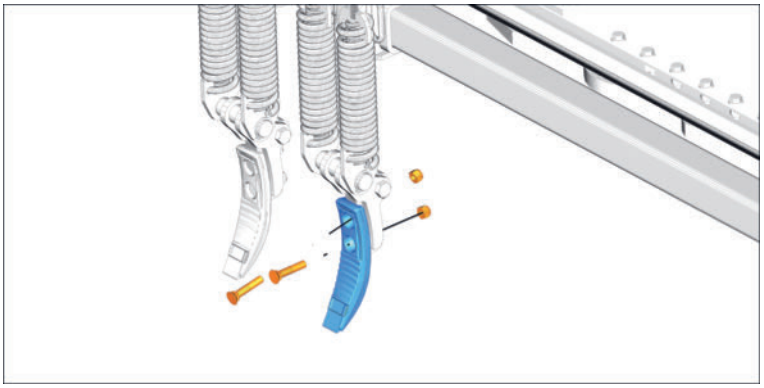
- Park machine on level and stable ground in working position and secure against rolling.

Preparation

- New chisel blade (see spare parts list)
- New screws / nuts if required (see spare parts list)

Implementation

► Remove screws and chisel blade.



▷ Clean assembly surfaces.

► Refit new chisel blade (with new screws / nuts if necessary).

► Repeat the procedure similarly with all track eradicator chisel blades.

Readjust the scraper plates on the follow-on device

Scraper plates prevent soil from sticking in the roller gaps. Readjust scraper plates if the cleaning effect is visible decreasing.

The scraper plates can all be adjusted simultaneously via the adjustment mechanism on the scraper crossmember (1) or individually on each scraper holder (2).

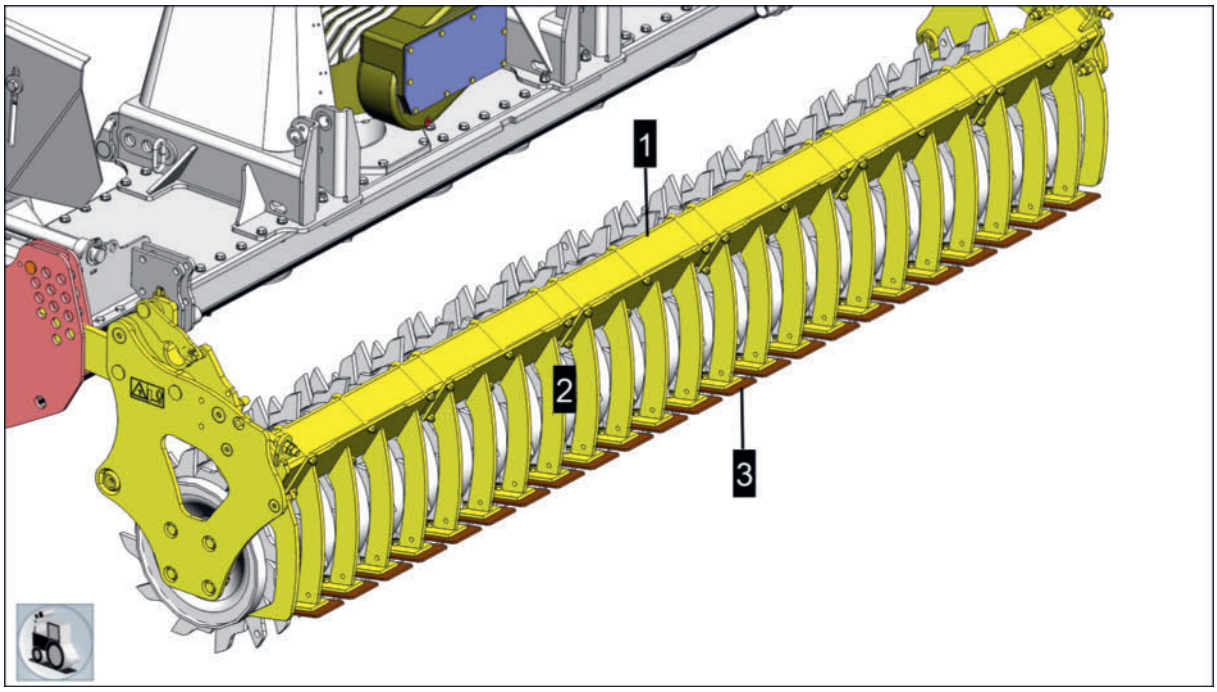


Fig.: Example of toothed packer roller

1 = Scraper crossmember

2 = Scraper holder

3 = Scraper plate

TIP

Adjustment is recommended when the cleaning effect of the scrapers visibly decreases.

The individual adjustment of scraper plates is normally only carried out if individual scraper plates have to be replaced.

Adjust scraper crossmembers (variant 1)

Prerequisite

- Machine is attached correctly to a suitable tractor and properly secured.
- Any attached seed drill is raised and secured in transport position via Hydrolift or hydraulic top link.
- Any attached seed drill with manual top link has been removed from the cultivator.
- Park the machine on level and load-bearing ground in the working position, and secure it against rolling.

Implementation

► Raise the machine using rear power lift.

▷ This relieves the load on the trailing implement and it lowers.

► Raise the machine so far until the trailing implement is freely suspended and no longer rests on the ground.

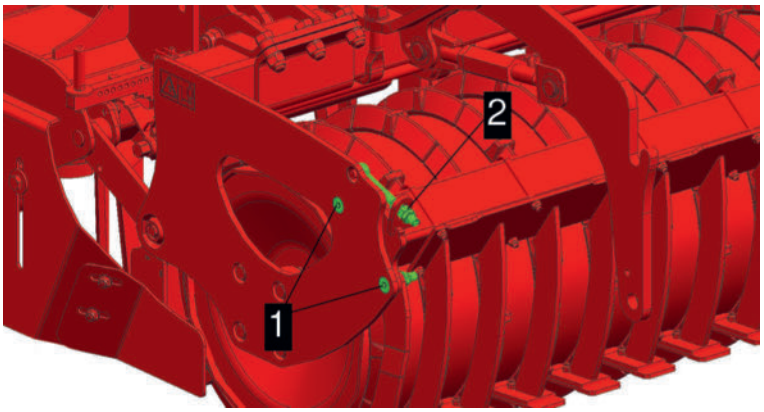
► Secure the machine with suitable supports against unforeseen lowering and let it rest on the supports.

TIP

Support the machine and not the trailing implement, otherwise in some circumstances the trailing implement may not be able to be turned to check the setting.

► Turn tractor off, apply park brake, remove ignition key and keep safe.

► Loosen bolts (1) on both sides of the machine.
Loosen lock nuts (2) on both sides of the trailing roller.



► Turn the adjusting nuts on both sides of the machine and set the desired (smallest possible) distance between the scraper plates and the roller.

► Rotate the roller to check. The scraper plate must not touch the roller.

► If necessary, reset and recheck.

► If the setting is correct, then retighten the lock nuts (2) and the loosened bolts (1).

Adjust scraper crossmembers (variant 2)

Prerequisite

- Machine is attached correctly to a suitable tractor and properly secured.
- Any attached seed drill is raised and secured in transport position via Hydrolift or hydraulic top link.
- Any attached seed drill with manual top link has been removed from the cultivator.
- Park the machine on level and load-bearing ground in the working position, and secure it against rolling.

Implementation

► Raise the machine using rear power lift.

▷ This relieves the load on the trailing implement and it lowers.

► Raise the machine so far until the trailing implement is freely suspended and no longer rests on the ground.

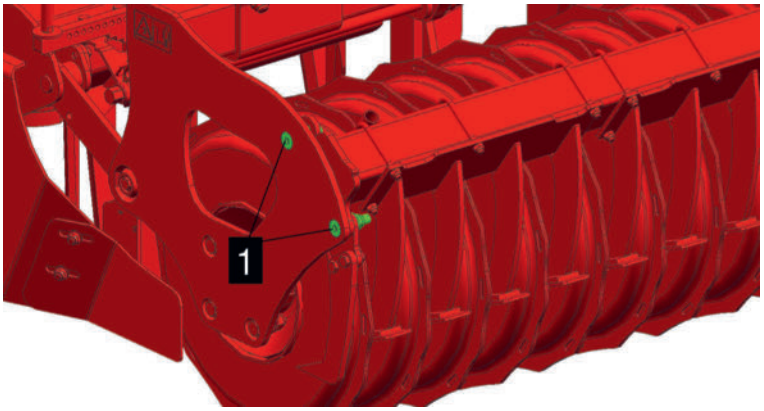
► Secure the machine with suitable supports against unforeseen lowering and let it rest on the supports.

TIP

Support the machine and not the trailing implement, otherwise in some circumstances the trailing implement may not be able to be turned to check the setting.

► Turn tractor off, apply park brake, remove ignition key and keep safe.

► Loosen bolts (1) on both sides of the machine.



► Turn the adjusting nuts on both sides of the machine and set the desired (smallest possible) distance between the scraper plates and the roller.

► Rotate the roller to check. The scraper plate must not touch the roller.

► If necessary, reset and recheck.

► If the setting is correct, then retighten the lock nuts (2) and the loosened bolts (1).

Adjust scraper plates individually

Implementation

1 Raise the machine and release the trailing implement until it is no longer resting on the ground.

2 Secure the machine with suitable supports against unforeseen lowering and let it rest on the supports.

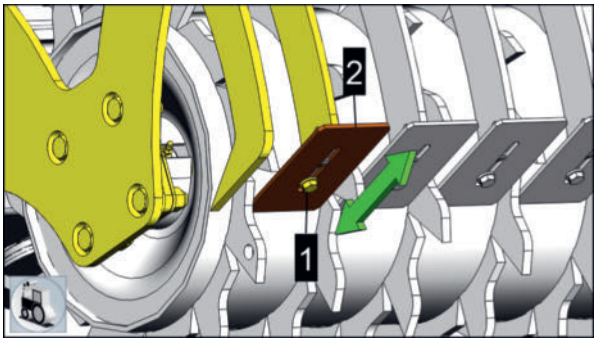
TIP

Support the machine and not the trailing implement, otherwise in some circumstances the trailing implement may not be able to be turned to check the setting.

3 Turn tractor off, apply park brake, remove ignition key and keep safe.

4 Loosen the bolts (1) on the scraper plate.

Set the scraper plates (2) to the closest possible distance from the roller without touching the roller.



Symbol illustration

5 Turn the rollers manually several times to check. The scraper plate must not touch the roller.

6 If necessary, reset and recheck.

7 Correct setting: Tighten bolts (1).

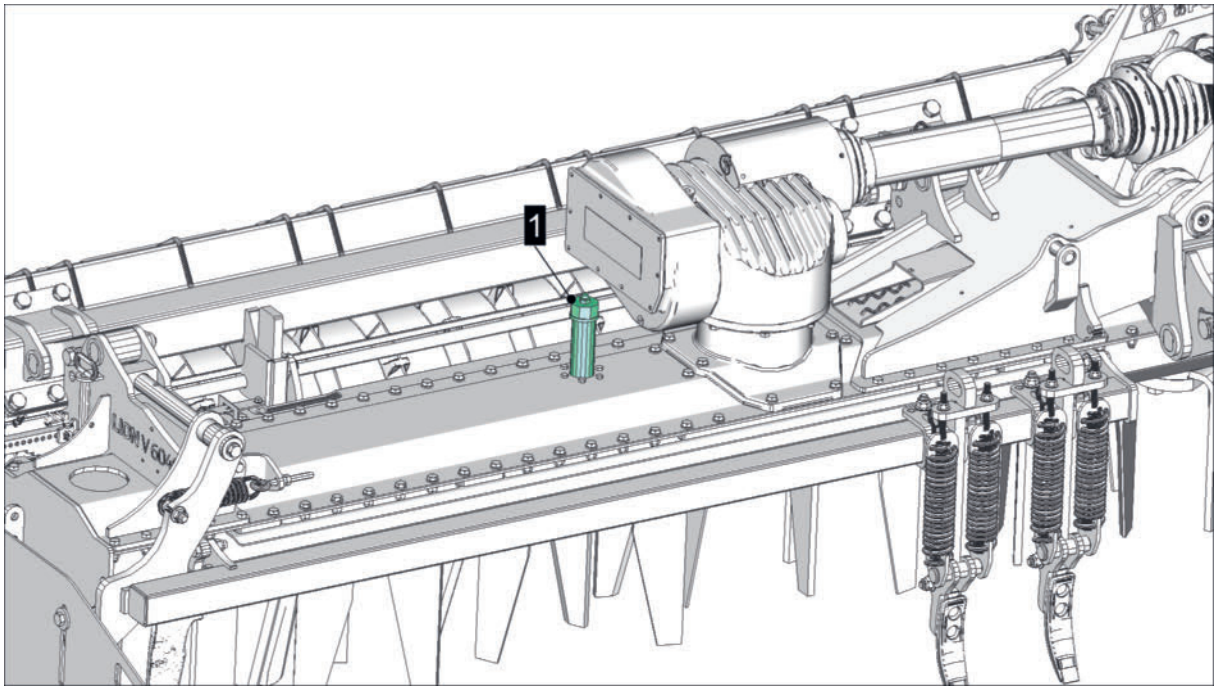
8 Carry out the same procedure on every scraper plate.

The activities described below are carried out at a specific time or at specific intervals.

Before every season

Bar lubrication

In normal operation it is not necessary to replace the lubricant during the service life of the machine.



Example of right machine arm.

Fig.: 1 = filler neck

Check lubricant level

TIP

If there is no obvious grease loss from the bar, then checking the level once per season is sufficient.

TIP

If the machine was previously in road transport position, allow it to stand for at least 5 minutes in working position so that the grease can spread.

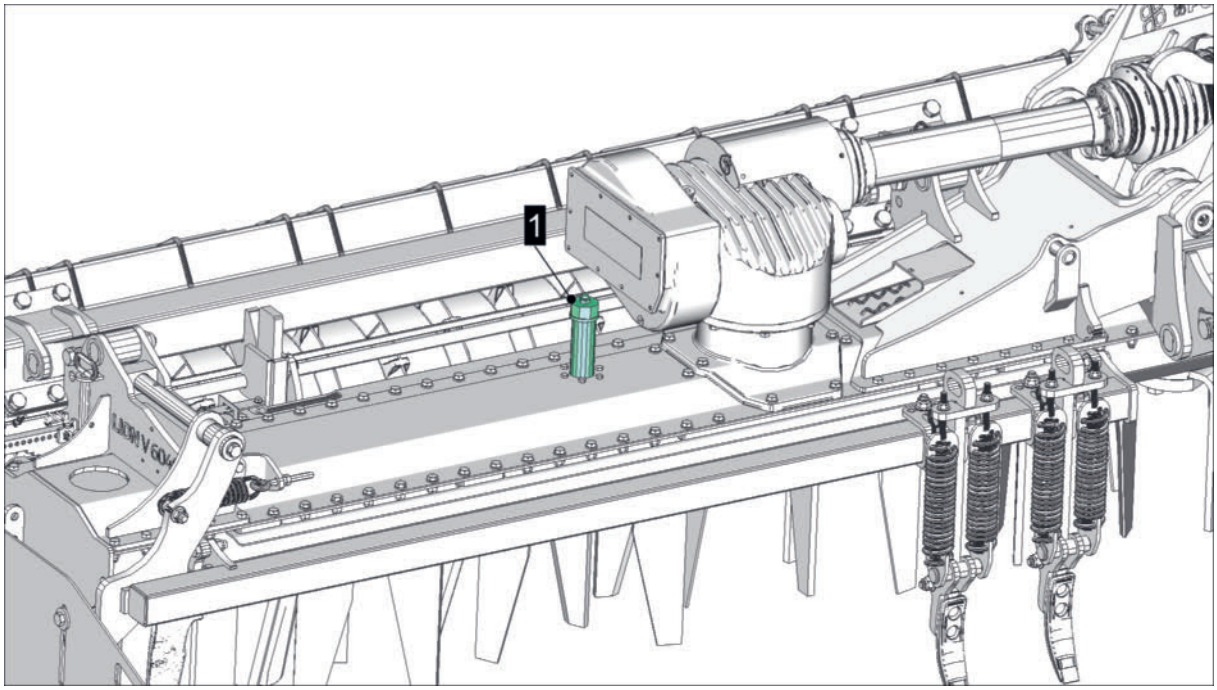


Fig.: 1 = filler neck on right arm / bar

Prerequisite

- Park machine on level and stable ground in working position.
- Allow very hot machine parts, such as gearboxes, to cool down so that they can be handled.
- Use personal protective equipment such as gloves and protective goggles.

Preparation

- Lubricant according to lubricant specification / lubrication plan

Implementation

1 Clean dirt away from the area around the sealing cap (2).

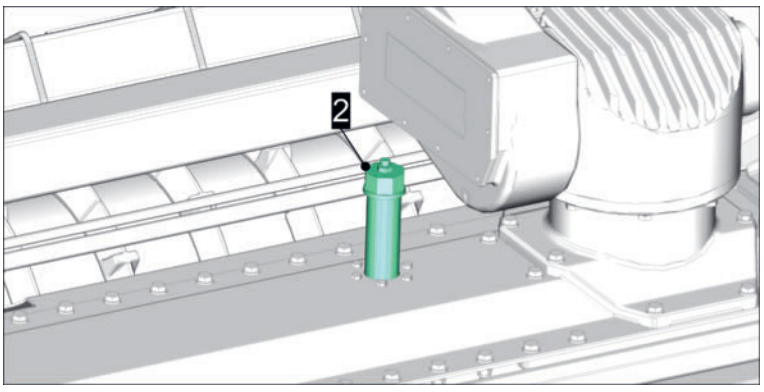


Fig.: Example of right arm

2 Tighten the sealing cap (2) and carry out a visual inspection to check the grease level.

▷ If the lubricant level reaches the centre or upper edge of the internal gearwheels, no further action is necessary.

▷ If the grease level no longer reaches the centre of the gearwheels, refill with lubricant as described below.

3 Heat the lubricant according to the manufacturer's instructions and gradually fill in small increments until the level reaches the centre or at the most the upper edge of the internal gearwheels. Never overfill!

NOTICE

Damage to bearings and seals!

If excess lubricant is added, the cooling performance of the gearbox case will be reduced, which can lead to overheating of bearings and seals.

► Only fill lubricant up to the upper edge of the internal gearbox.

4 Remove any excess lubricant from the filler neck and bar.

5 Fit the sealing cap (2) and tighten manually.

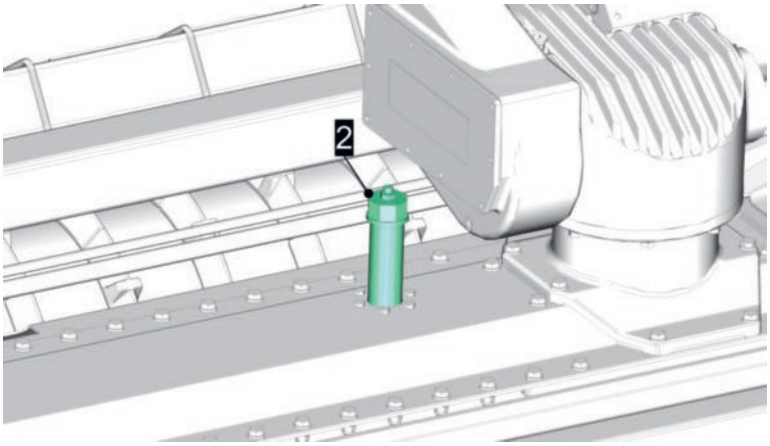


Fig.: Example of right arm

▷ Dispose of lubricant contaminated cleaning paper and other lubricant residues properly.

6 Carry out the same procedure on both bars.

Wheel track eradicator shock absorber factory setting

If the factory setting has changed due to vibrations in operation, it can be restored as follows.

Restore factory setting

Prerequisites

- Track eradicator raised and secured in park position.

Implementation

► Measure distance (X)

▷ If the distance (X) at all track eradicators is 55 mm, no further action is required.

▷ If the distance is greater or smaller than 55 mm, restore the factory settings as follows.

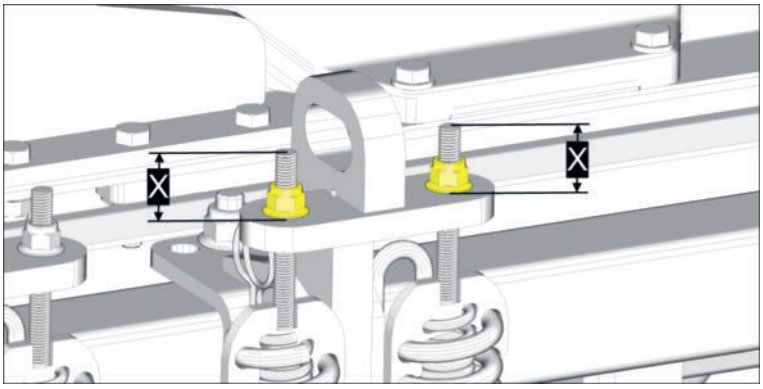


Fig.: Value (X) = factory setting from lower edge of collar nut to upper end of threaded rod = 55 mm

► Turn the collar nut as required to adjust the distance (X).

► Make the same adjustment on all track eradicators.

Check the cardan shaft cam clutch

The cardan shaft cam clutch should be checked (pulled off) once a year. This inspection is important, especially if it never responds during normal operation.

NOTICE

Overload in powertrain!

If the cam clutch coupling never releases during operation, the release torque may increase sharply by itself or the cam clutch coupling may get stuck.

► Have the cardan shaft made part by an authorized service specialist annually!

A tolerance of ±10% release torque is permitted.

If the limit value is exceeded or not reached, the cardan shaft must be replaced.

TIP

For full cardan shaft cleaning and maintenance information, observe its manufacturer's operating manual which is enclosed with this cardan shaft!

Daily maintenance

Maintenance is to be carried out at the beginning of each working day before using the machine.

Check hydraulic system

WARNING

Infections due to leaking hydraulic oil!

Hydraulic oil that is discharged under pressure may penetrate the skin, enter bodily orifices and cause severe infection.

- ► Depressurize the hydraulic system before carrying out maintenance work.
- ► Wear personal protective equipment such as goggles and gloves when working on the hydraulic system.
- ► Before starting operation, always check the hydraulic system for wear and damage.
- ► Only search for leaks with suitable aids (e.g. special spray for leak detection). Have any defects dealt with immediately in a specialist workshop.
- ► Do not seal off leaks using your hands or other body parts.
- ► Seek medical advice immediately in case of injury caused by hydraulic oil.

Check for damage and leaks

NOTICE

Rupturing of old hydraulic hoses

- ► Hydraulic hoses that are older than 6 years should be replaced. Use only replacement hoses with the same specifications. See the spare parts list.

Prerequisite

- Machine is parked on level, stable ground and secured against rolling away.
- Tractor motor turned off, ignition key removed and stored.

Implementation

- ► Check the hydraulic system (e.g. hydraulic hoses, pressure accumulator, etc.) for damage and leaks and replace components, if necessary (see spare pats list).

TIP

Possible damage to hydraulic hoses

- Kinks
- Blistering
- Porous or cracked hose surface
- Abrasion points and exposed mesh on the hose sheathing

  - ▷ If a leak exists in the screw connection, then retighten each screw connection if possible. If this does not stop the leak, the hydraulic component concerned must be replaced immediately.
  - ▷ Depressurize the hydraulic system before carrying out any maintenance and repair work on the hydraulics.

To do so, move the tractor control device several times between "Raise" and "Lower" with the hydraulic pressure supply turned off.

Check bars and gearbox for leaking grease

NOTICE

Material damage due to loss of grease from rotating parts.

► Check bars and gearbox for lubricant leakage before use.

Check / change lighting / illuminants

TIP

Faulty lights or illuminants must be replaced before driving in public traffic areas (this does not apply to work lights)

TIP

LED light maintenance

Illuminants cannot be replaced with LED lights!

Change the LED lights when faulty.

Check / replace warning signs, warning triangles, warning sheets

TIP

Warning signs, triangles and sheets consist of a slide (different materials) with a layer of light-reflecting material applied on top.

The design and assembly positions may differ depending on the machine and country of destination.

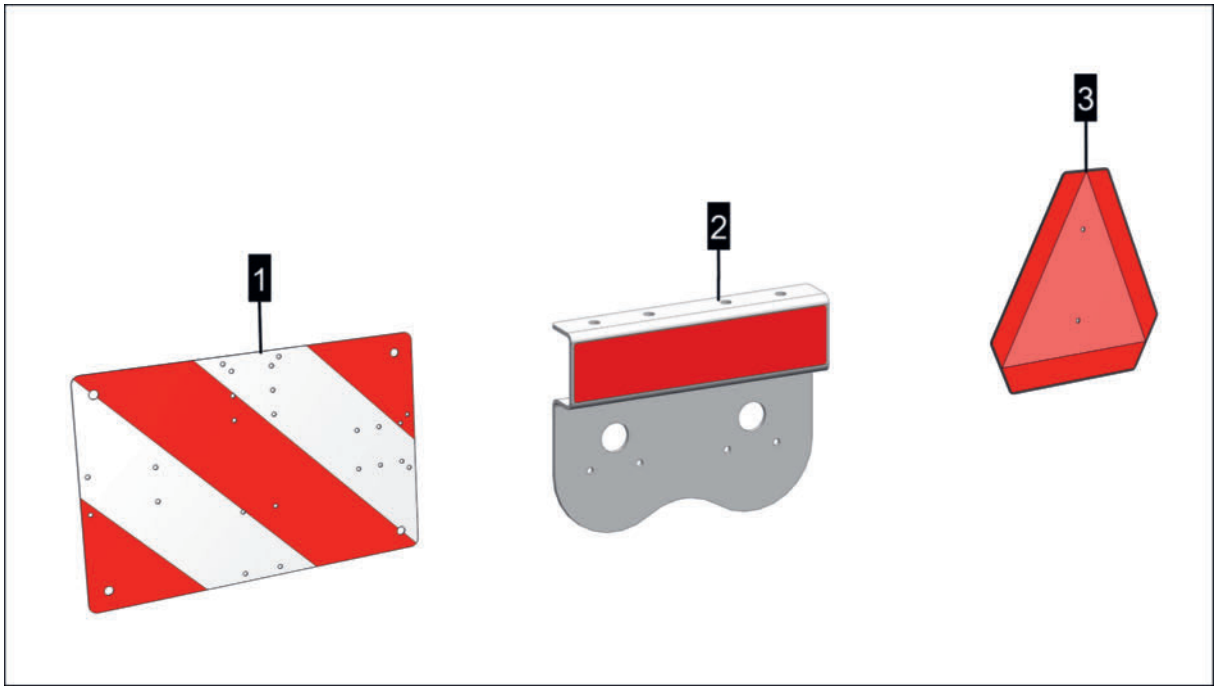


Fig.: Symbol illustration

1 = Warning sign

2 = Warning sheets (red and yellow)

3 = Warning triangle (SMVI emblem)

CAUTION

Danger of accident due to poor visibility of warning equipment.

- ► Clean soiled warning signs, warning triangles, warning foils before travelling in public traffic areas with the machine.
- ► Replace damaged warning signs, warning triangles, warning foils before travelling on public roads with the machine.

Implementation

- ► Check that warning signs, triangles and sheets are clean.
  - ▷ Remove all dirt using an acid and alcohol-free cleaner, a smooth cloth or sponge and if possible a little warm water.
- ► Check warning signs, triangles and sheets for damage.
  - ▷ Replace all warning signs, triangles and sheets that have been damaged by adverse weather or mechanical influences (see spare parts list).

TIP

When replacing the warning signs, observe the mounting direction of the warning sign strips!

Every 50 hours

Lubrication points with lubrication nipples

Lubricate all lubrication points with lubrication nipple according to plan. See "Lubrication chart" on page 150.

NOTICE

Damage to bearings due to contamination entering through the lubrication nipple!

- ► Clean lubrication nipple before the lubrication process.
- ► Clean lubricant nozzle before the lubrication process.
- ► Contaminated lubricant should not be used and should be disposed of correctly.

Every 100 hours

Input gearing

Change oil

WARNING

Burns to hands and arms!

Gearbox housing and gear oil may become hot due to the operation of the machine and can cause burns if they come into contact with the body.

- ► Allow the gearbox to cool down so that it can be touched safely.
- ► Use oil-proof gloves and safety goggles.

TIP

Cold gear oil is thicker than warm oil.

It is best to change the oil immediately after operation, as long as the gear oil is still relatively thin.

Prerequisite

- Any attached seeder has been removed.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level, stable ground in road transport position and secure against rolling away using wheel chocks.
- Before working on the machine, switch off the tractor engine, remove and store the ignition key.

Preparation

- Waste oil collecting pan with min. capacity of 5 l.

- Oil fill funnel
- Cleaning paper or similar.
- Gear oil according to operational materials list / lubrication plan. See "Lubrication chart" on page 150.
- New sealing ring for the oil drain plug, level plug, oil filler plug (see spare parts list).
- Support blocks or similar items with sufficient load bearing capacity for the weight of the machine.

Implementation

1 Place support blocks on the lower links or hitching frame on both sides of the machine to prevent it from lowering unintentionally.

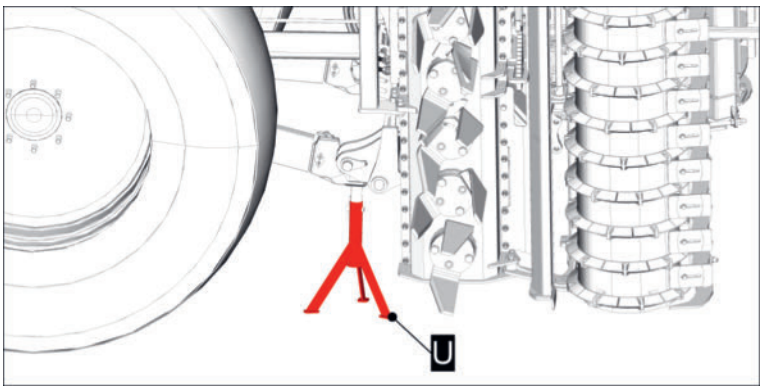


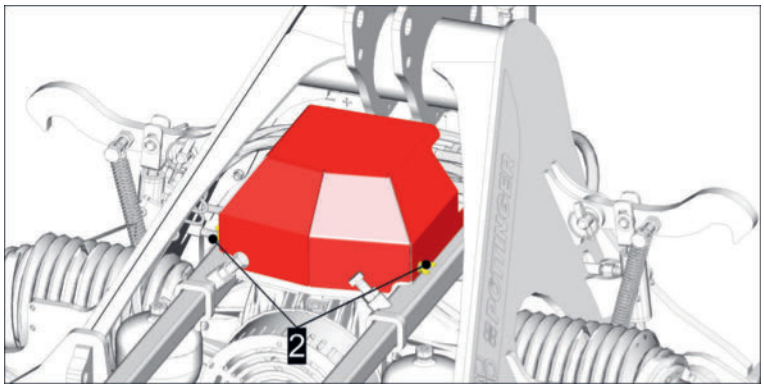
Fig.: Example of support block (U) positioned in the area of the left lower link.

2 Activate the rear power lift and lower the machine until it rests on the support blocks.

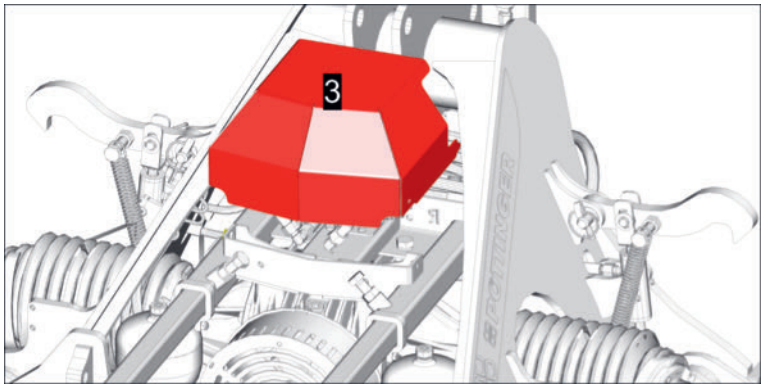
▷ Turn the tractor engine off, apply hand brake, remove ignition key and keep safe if not already done.

3 **Remove covering:**

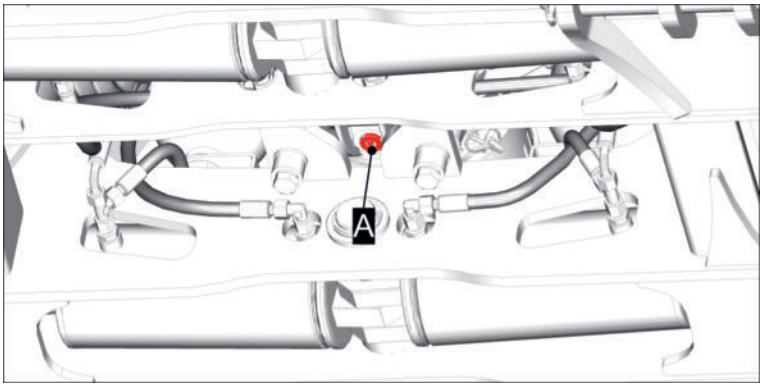
▷ Remove 2x wing screws and washers.



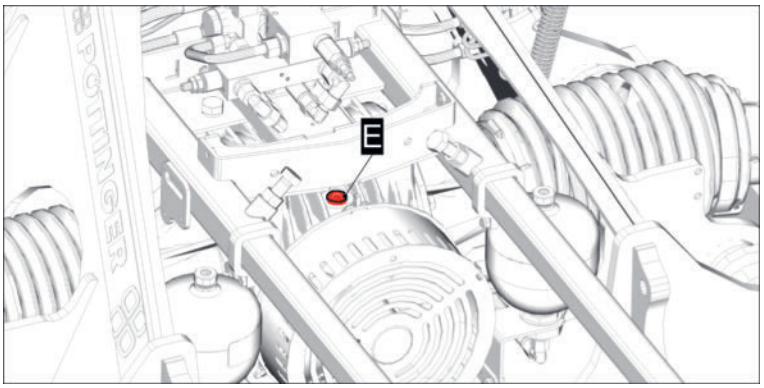
▷ Push the cover (3) horizontally backwards as far as it will go to pull it out of the holder and then lift the cover upwards.



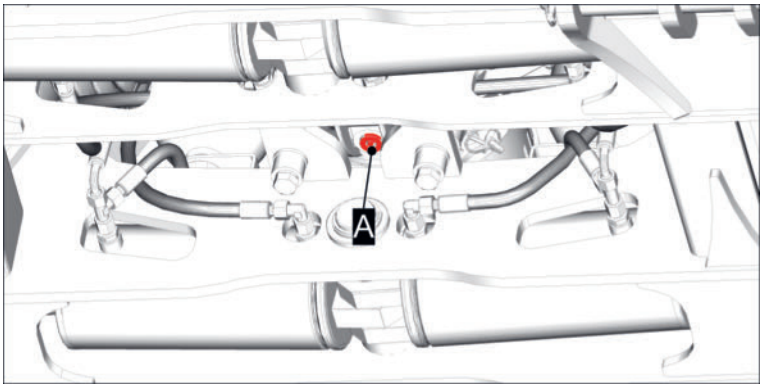
4 Place the oil pan under the oil drain plug (A).



5 Unscrew and wipe the oil filler plug (E).

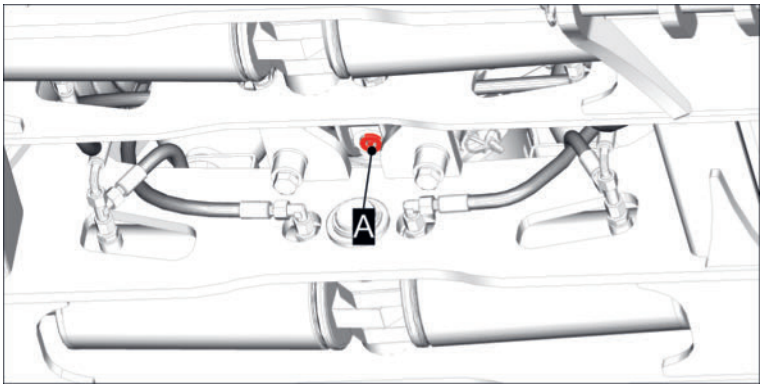


6 Unscrew the oil drain plug (A).

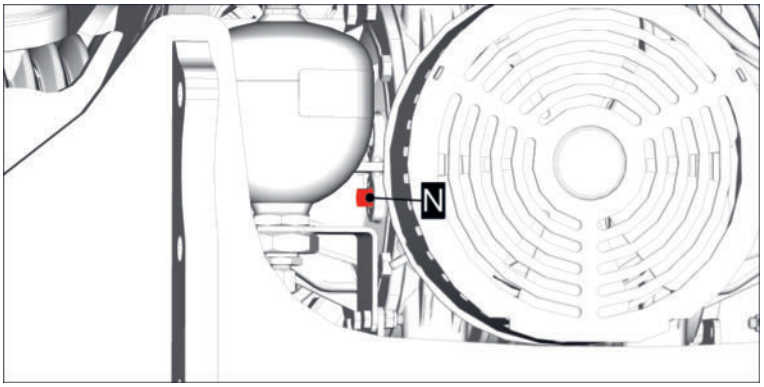


▷ Drain gear oil completely.

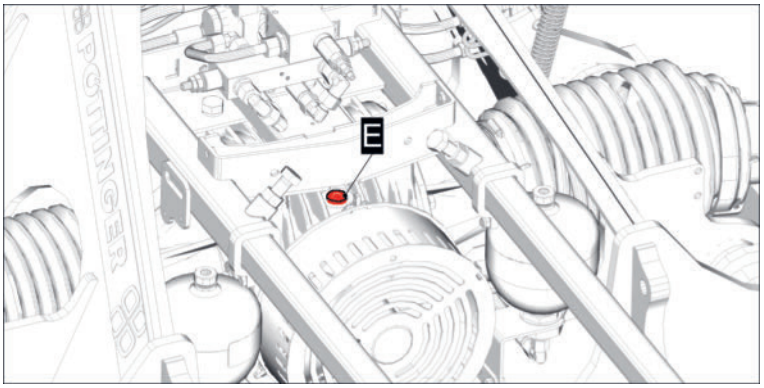
7 Replace and tighten the oil drain plug (A) with a new sealing ring.



8 Unscrew the oil level plug (N).

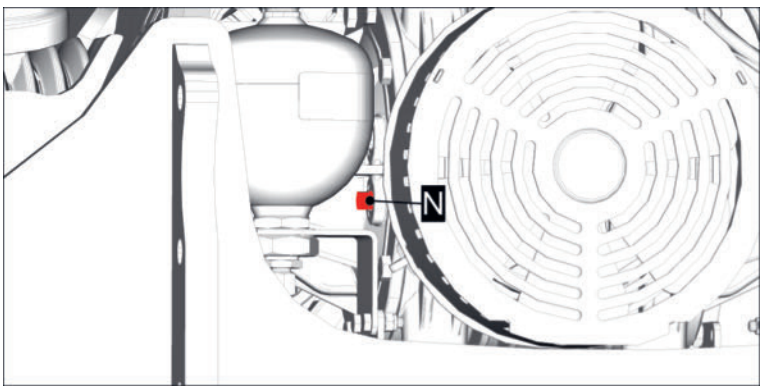


9 Top up the gear oil at the filler plug (E) until it flows out of the opening in the oil level plug.



▷ Allow the oil to flow out until the flow stops.

10 Position the oil level plug with the new sealing ring and tighten.



11 Replace the oil filler plug (E) with the new sealing ring and tighten.

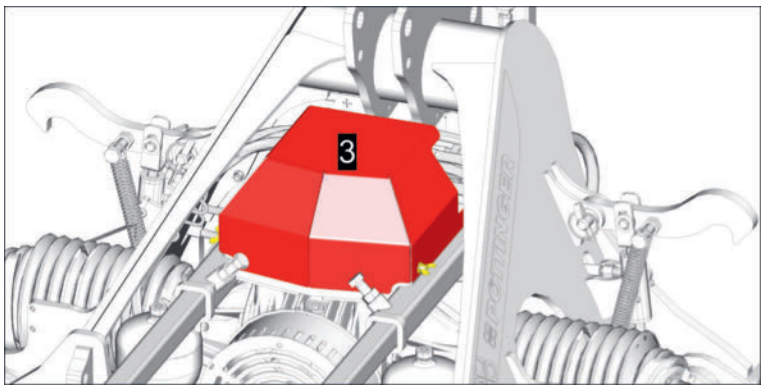
12 Clean the area around the filler / drain and level plugs to remove any residual lubricant.

ENVIRONMENT

Collect and correctly dispose of oils and oil mixtures.

13 **Replace cover.**

▷ Position the cover (3) as far back as possible.

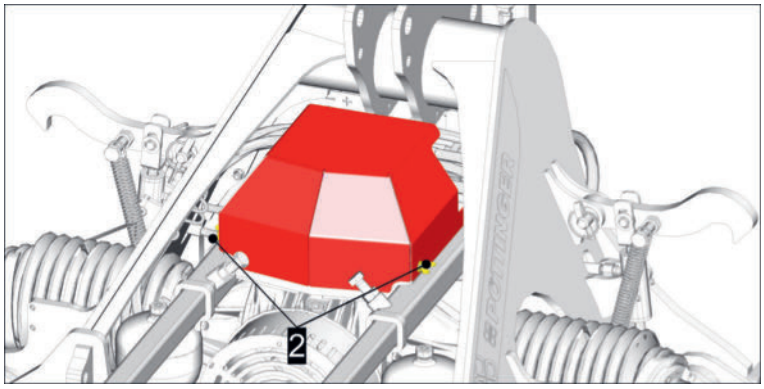


▷ Push the cover (3) to the front until the clamping lugs of the cover engage in the holder.

▷ Position and tighten 2x washers and wing screws.

TIP

The screws can only be put in place when the cover has been correctly positioned.



Side gearbox

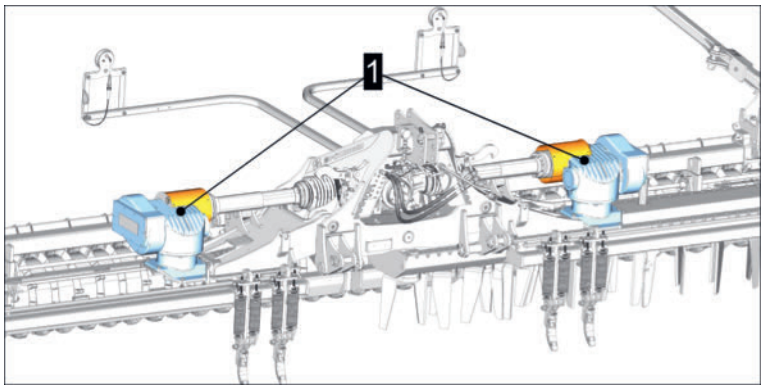


Fig.: 1 = side gearbox

Change oil

WARNING

Burns to hands and arms!

Gearbox housing and gear oil may become hot due to the operation of the machine and can cause burns if they come into contact with the body.

► Allow the gearbox to cool down so that it can be touched safely.

► Use oil-proof gloves and safety goggles.

TIP

Cold gear oil is thicker than warm oil.

It is best to change the oil immediately after operation, as long as the gear oil is still relatively thin.

Prerequisite

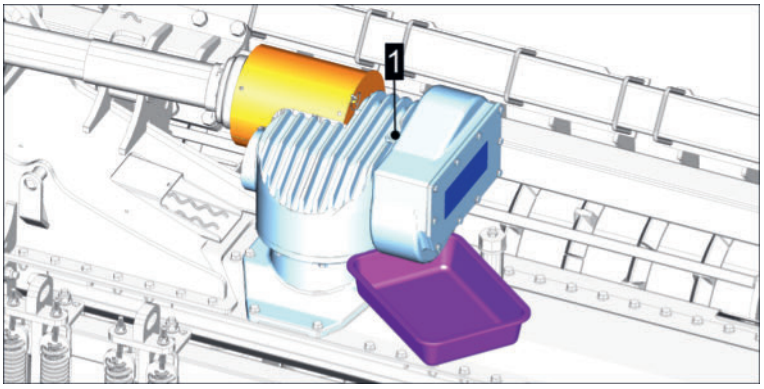
- Any attached seeder has been removed.
- Park and secure machine on level, stable ground in working position.
- Before working on the machine, switch off the tractor engine, remove and store the ignition key.

Preparation

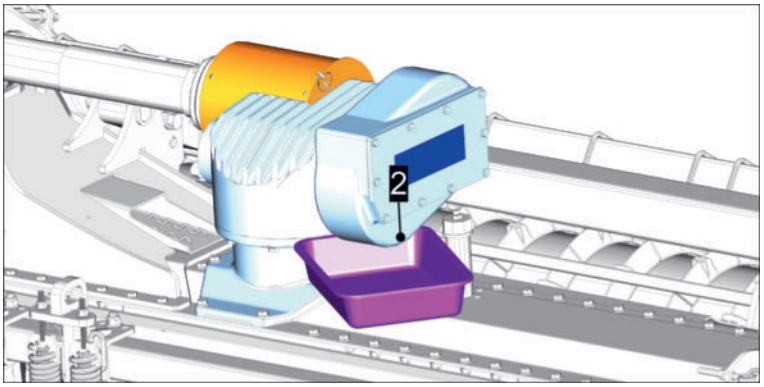
- Waste oil collecting pan with min. capacity of 5 l.
- Oil fill funnel
- Cleaning paper or similar.
- Gear oil according to operational materials list / lubrication plan. See "Lubrication chart" on page 150.
- New sealing ring for the oil drain plug and oil filler plug (see spare parts list).

Implementation

► Unscrew and wipe oil filler plug (1) with dipstick.



► Place the oil pan under the oil drain plug (2) and unscrew the oil drain plug.



▷ Drain old oil completely.

► Screw in and tighten the oil drain plug (2) with a new sealing ring (see spare parts list).

ENVIRONMENT

Collect and correctly dispose of oils and oil mixtures.

► Gradually fill with fresh gear oil according to "lubricants and fill quantities" / lubrication plan (with small quantities in increments. See "Operating materials" on page 153.

▷ Screw in the refill screw completely after each filling step but do not tighten it and unscrew it again to read the fill level on the dipstick.

Then wipe the dipstick to take a new measurement.

▷ Do not overfill the transmission! Fill gear oil up to the upper marking on the dipstick.

► Screw in and tighten the oil drain plug (1) with a new sealing ring (as required).

► Dispose of used oil and oil-contaminated waste paper responsibly.

After every season (winter storage)

Machines that are stored without appropriate rust protection may sustain damage when they are put back into operation at the beginning of the season. Therefore, the machine must be protected from dust deposits (especially from fertiliser and seed dressing), not be parked near stables and be protected from the weather.

NOTICE

Rust damage on uncoated machine parts without rust protection!

If uncoated machine parts are not protected, rust damage may appear when the machine is restarted after a long period of inactivity (e.g. after winter storage).

► Clean bare hydraulic cylinder piston rods before storing the machine for the winter and protect with universal grease.

► Clean shaft stubs on gearboxes and cardan shaft profiles before wintering the machine, and protect them with universal grease.

► Lubricate all greasing points according to the maintenance instructions before winter storage.

Clean and protect the machine

Prerequisite

- Machine is parked on level and stable ground and secured against rolling away.
- Tractor motor turned off, ignition key removed and stored.

Preparation

- High-pressure cleaner
- Preserving oil

Implementation

1 Thoroughly clean with a high-pressure cleaner.

CAUTION

Danger to eyes from using high-pressure cleaners!

► Wear safety goggles when carrying out cleaning activities with high-pressure cleaners or compressed air.

NOTICE

High-pressure cleaners can damage machine components.

► Maximum water temperature +80 °C

► Do not use round jet nozzles, dirt blasters or power cleaner nozzles.

► Ensure a minimum distance of approx. 30 cm between the high-pressure nozzle and the surface.

► Always keep the water jet moving during cleaning.

► Do not direct water jet directly at electrical or hydraulic components, bearings, suction openings, cardan shafts, stickers and tyres.

2 After wet cleaning let the machine dry.

3 Touch-up any possible coating damage.

4 Lubricate / spray bare machine components with preservative oil.

5 Check that warning symbols are complete and replace if necessary.

Every 4 years

Check and adjust hydraulic pressure accumulator

TIP

The nitrogen pressure drop in hydraulic accumulators is approximately 8% to 12% after 4 years.

DANGER

Danger of serious injuries!

If the hydraulic pressure tank is filled with a gas that is not nitrogen, the hydraulic pressure tank may explode.

► Only nitrogen may be used to fill the hydraulic pressure accumulators.

► The hydraulic pressure accumulator must be depressurized during filling on the liquid side.

DANGER

Danger of serious injuries!

Damage to the gas pressure tank may cause the hydraulic pressure tank to explode.

► Welding, soldering or mechanical work are not permitted on the hydraulic accumulator.

Prerequisite

- Machine is parked on level, stable ground and secured against rolling away.
- Tractor engine turned off, ignition key removed and stored.
- Hydraulic system depressurized
- Work is carried out by an authorized service dealer.

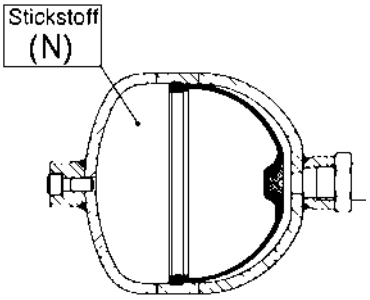
Preparation

- High-pressure nitrogen filling system

Implementation

► Check filling pressure at least every 4 years in a specialist workshop, and correct if necessary.

The required filling pressure can be read from a sticker on the pressure accumulator or can be taken from the accompanying hydraulic diagram.



N = nitrogen

Every 6 years

Replace hydraulic hoses

WARNING

Hydraulic oil discharged under high pressure!

Hydraulic oil that is discharged under pressure may penetrate the skin and cause severe infection.

- ► Depressurise the hydraulic system before connecting or disconnecting the hydraulic hoses.
- ► Depressurise the hydraulic system before disconnecting the hydraulic hoses, or carrying out maintenance or repair work.
- ► Should injuries occur, contact a doctor immediately.

Hydraulic hoses that are older than 6 years should be replaced. Only use replacement hoses of the same specification and use the attachment points and attachment method of the "old" hoses, or transfer them to the new hoses. See also spare parts list.

Lubrication chart

NOTICE

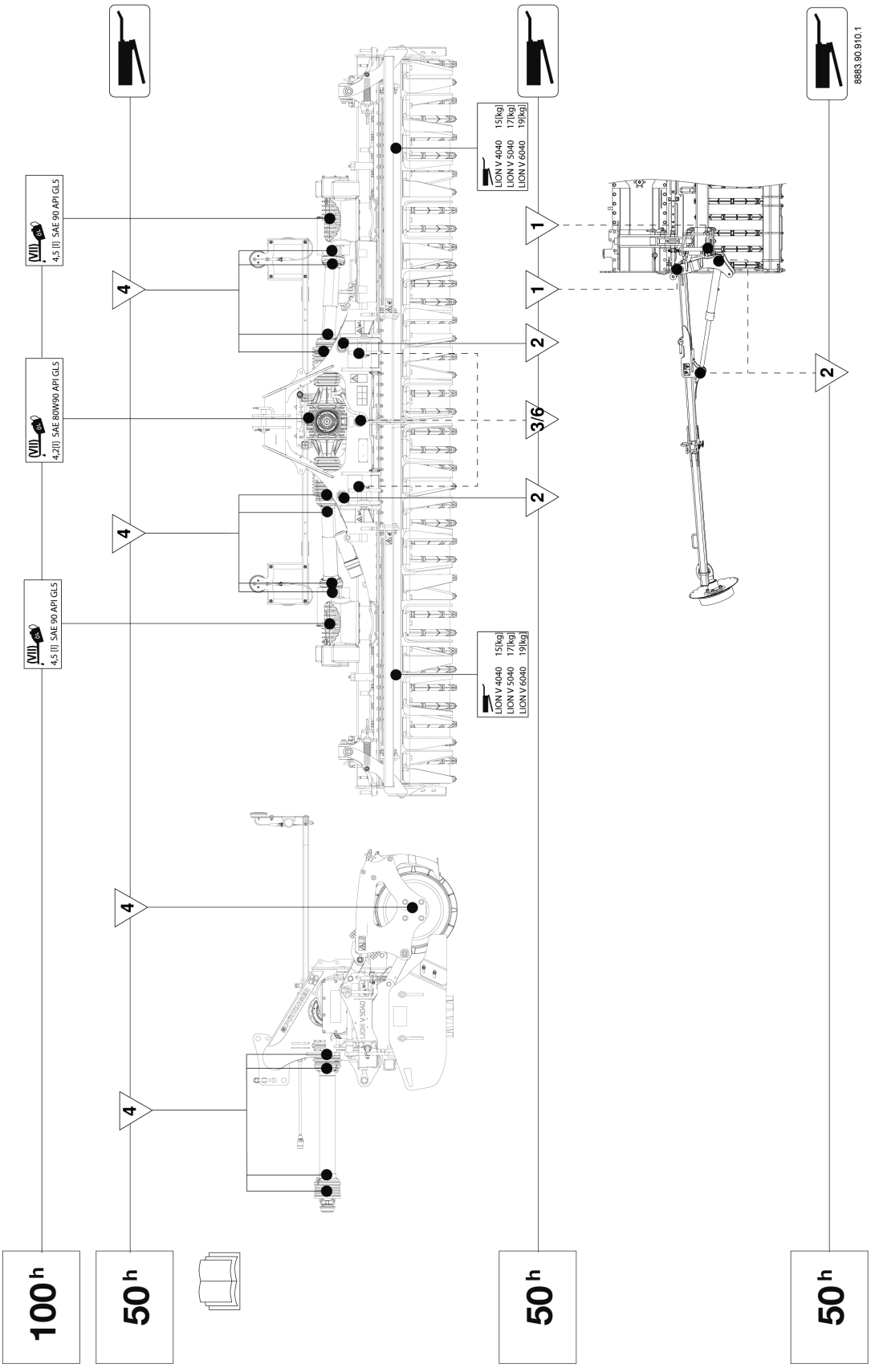
Damage to bearings due to contamination entering through the lubrication nipple!

- ► Clean lubrication nipple before the lubrication process.
- ► Clean lubricant nozzle before the lubrication process.
- ► Contaminated lubricant should not be used and should be disposed of correctly.

Lubrication plan symbol explanation

Symbol	Explanation
	Grease

Symbol	Explanation
	Oil
	The number and position of the grease nipple
Roman numerals in curved brackets e.g. (III), (IV), etc.	See "operating material specification" section for the operating material code; see "lubricants and fill quantities" section for fill quantities
	Observe the manufacturer's safety instructions!
X ^{h}	Lubricate every "X" operating hours
_____	Solid connecting lines - standard part
- - - -	Dotted connecting lines - optional part


8883.90.910.1
4,5 l SAE 90 API GL5
4,2 l SAE 80W90 API GL5
4,5 l SAE 90 API GL5
LION V 4040 15[kg]
LION V 5040 17[kg]
LION V 6040 19[kg]
4
2
3/6
1
100 h
50 h
50 h
50 h

Equipment specification

TIP

Specifications given by PÖTTINGER Landtechnik G.m.b.H. for equipment used on PÖTTINGER machines.

NOTICE

Danger of machinery damage!

► If operating materials with lower quality standards than those specified are used, the machine may become damaged.

Equipment reference number According to lubrication plan	Designation	Specification
I	Hydraulic oil	HLP 46 DIN 51524 Section 2
II	Motor oil	SAE 30 according to API CD/SF
III	Gear oil	SAE 90 or SAE 85W-140 according to API GL-4 or API GL-5
IV	Lithium grease	DIN 51 502, KP 2K
V	Liquid grease for gears	DIN 51 502:GOH
VI	Complex grease	DIN 51 502:KP 1R
VII	Gear oil	SAE 90 or SAE 85W-140 according to API GL-5
VIII	Gear oil	SAE 75W-90 according to API GL-5
IX	Gear oil	SAE 80W-90 according to API GL-5
X	Biological lubrication oil	SAE 15W-40
XI	Liquid grease for gears	DIN 51 825:KP2k-20
XII	Gear oil	SAE 90 or SAE 85W-90 according to API GL-5
XIII	Gear oil	ISO VG 320 according to ISO 12925-1:2024

Operating materials and filling quantities

Where	Operating material code According to lubrication plan	Designation	Specification	Quantity
Lubrication points (also with lubrication nipples)	(IV)	Lithium universal grease	DIN 51 502, KP 2K	If required

Where	Operating material code According to lubrication plan	Designation	Specification	Quantity
Bar	(V)	Liquid grease	DIN 51 502:GOH	2x 19 kg
Input gearing	(IX)	Gear oil	SAE 80W-90 according to API GL-5	4.2 l
Side gearbox / change gearbox	(VII)	Gear oil	SAE 90 or SAE 85W-140 according to API GL-5	2x 4.5 l

BASICLINE preselection switch emergency actuation

Emergency actuation may only be used when a defect occurs during field work and it is therefore no longer possible to control the machine from the control terminal. Emergency actuation may only be used until the current field work has been completed. Emergency actuation should not be used as a long-term replacement for defective electrical control.

NOTICE

Danger of machine parts colliding!

Operating errors may occur if several functions are carried out during emergency operation.

- ► Always operation only one function per emergency actuation.
- ► If several emergency actuation steps are required, they are to be processed according to the operating logic.

TIP

The following examples do not represent a complete list of all emergency actuation procedures.

The other emergency actuation procedures are to be carried out in a similar way. See sticker for emergency actuation above.

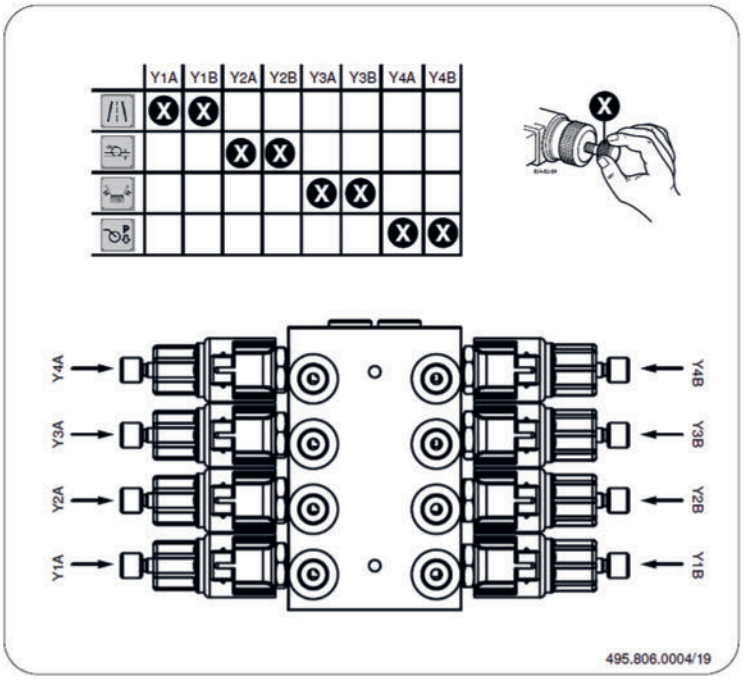


Fig.: Sticker for emergency actuation.

Example of track marker emergency actuation

In this example it is assumed that the electricity has failed and one of the track markers has swung out in working position.

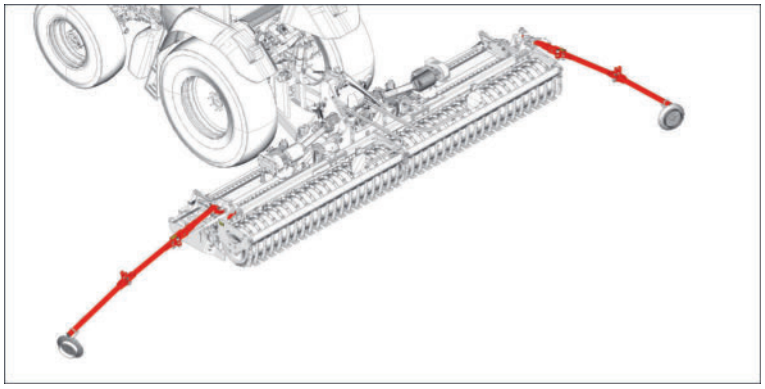


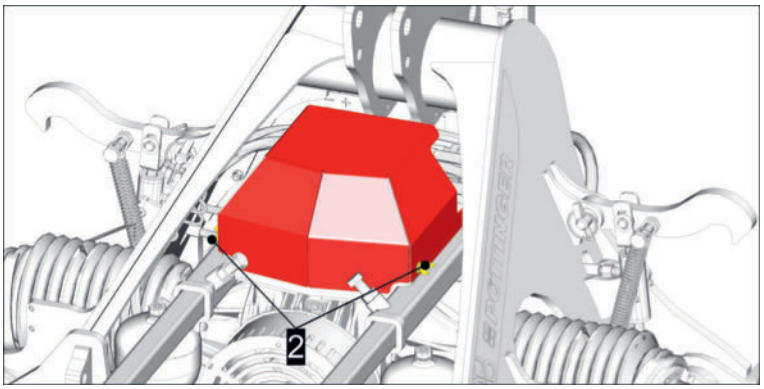
Fig.: left track marker swung out in working position

Prerequisite

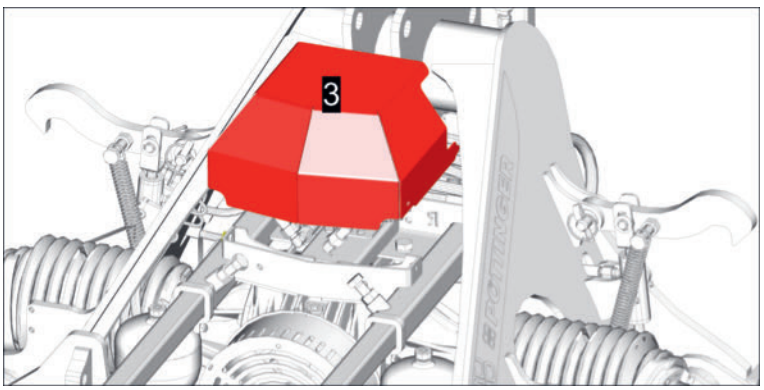
- The tractor's hydraulic pressure supply is fully operational.
- There are no additional faults in the machine hydraulics (e.g. broken hose) that would hinder or prevent emergency actuation.
- Machine is fully attached and secured to a suitable tractor.
- Park tractor and machine on level, stable ground and secure against rolling.
- Tractor engine turned off, PTO switched off, parking brake applied, ignition key removed and stored during all work.

Implementation

► Remove 2x wing screws and washers.

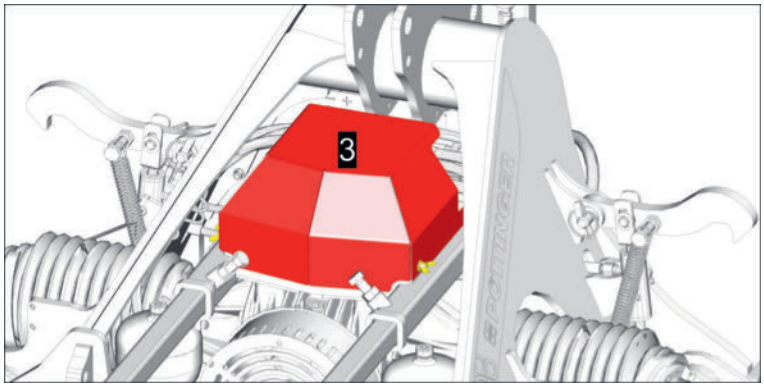


► Push the cover (3) horizontally backwards as far as it will go to pull it out of the holder and then lift the cover upwards.



► Turn the knurled screws on the valves Y 3 A and Y3B clockwise as far as they will go.

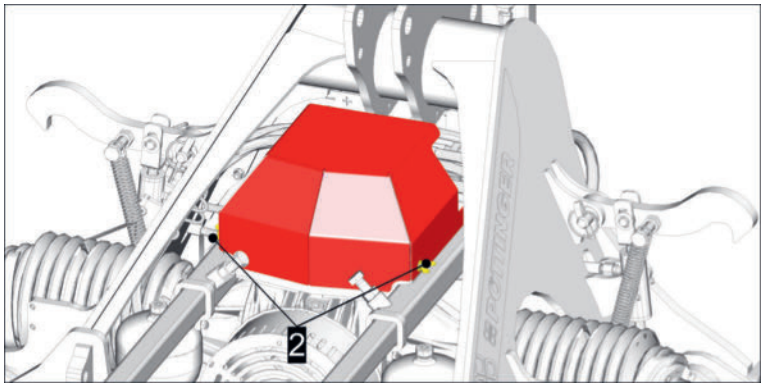
- ► Direct persons away from the danger area around the machine.
- ► Turn on the hydraulic pressure supply at the tractor.
- ► Set the tractor control device with the hydraulic connections marked red to "Lift" and slowly swing the corresponding track marker into road transport position.
- ► Unscrew the knurled screws on the valves Y 3 A and Y3B anticlockwise as far as they will go.
- ► Turn off the hydraulic pressure supply at the tractor.
- ► Activate track marker transport lock. See "Track marker transport lock" on page 55.
- ► **When the emergency operation is complete, replace and tighten the hydraulic block cover.**
  - ▷ Position the cover (3) as far back as possible.



  - ▷ Push the cover (3) to the front until the clamping lugs of the cover engage in the holder.
  - ▷ Position and tighten 2x washers and wing screws.

TIP

The screws can only be put in place when the cover has been correctly positioned.



Blockages

The machine can be blocked by large rocks or wood. The blockage is generally noticed when the PTO overload protection responds and does not re-engage (even when the PTO speed

is reduced). In this case, the PTO drive must be switched off completely and the blockage removed.

Blockage removal

Implementation

1 Stop tractor and turn p.t.o. off.

2 Activate rear power lift and raise machine / machine combination completely to headland position.

▷ Continue with the next step if the blockage cannot be removed by raising to headland position.

3 Relocate the tractor and machine / machine combination to even, load-bearing ground.

4 Place the machine / machine combination onto suitable support stands using the rear power lift.

CAUTION

Crush hazard over the entire body!

Unexpected moving machines / machine components can cause serious injury.

► Place suitable parking supports under the rear power lift before working on the raised machine / machine combination.

▷ Turn tractor motor off, switch PTO drive off, apply park brake, remove ignition key and keep safe.

▷ Secure tractor and machine / machine combination against rolling.

5 Remove blockage and check the machine for any visual damage by carrying out a visual inspection.

▷ Remove support stands.

6 Put machine / machine combination back into operation: Carry out process in the reverse order.

▷ Monitor the "behaviour" of the machine acoustically and optically to check for any unusual sounds, vibrations, leaks, smoke formation, etc.

▷ If unusual sounds, vibrations, leaks, smoke formation, etc. occur, stop the machine immediately and check independently or via a third party that all machine parts are operating correctly.

▷ If **no** unusual sounds, vibrations, leaks, smoke formation, etc. occur, the field work can continue.

TIP

For information on the overload protection function for cardan shafts, see the following sections.

Lighting

Lighting complete without function

Causes and remedies

► Defective fuse.
  ▷ Replace with fuse of identical specification.

► Present contact error of the cable.
  ▷ Turn lighting off and on again.
  ▷ Verify correct connection of all cable connectors.
  ▷ Defective cable. Have it replaced or repaired by the service workshop.

Lighting partly without function

► Defective lamp.
  ▷ Replace with lamps of identical specification.
  ▷ With LED lighting the lamps may be impossible to exchange (for example, side marking lamps). In that case the lamps must be replaced in a service workshop.

► Present contact error of the cable.
  ▷ Turn lighting off and on again.
  ▷ Verify correct connection of all cable connectors.
  ▷ Defective cable. Have it replaced or repaired by the service workshop.

► Defective fuse.
  ▷ Replace with fuse of identical specification.

► Defective relay. Have it replaced by the service workshop.

Cardan shaft cam clutch coupling operation

The cam clutch is an overload clutch that completely disengages the torque in the event of an overload. Therefore, no torque is transmitted at the moment of overload. The prerequisite for the intended function is that the cardan shaft with the overload clutch is run in the prescribed direction of rotation and in the prescribed installation position.

The disengaged clutch automatically re-engages when the PTO speed drops to around 200 rpm without the cardan shaft coming to a complete stop.

TIP

Frequent cam clutch engagements reduce the service life due to increased wear.

Do not allow the cam clutch to rotate for more than 10 s seconds.

Cardan shaft friction clutch

Operation of the friction clutch

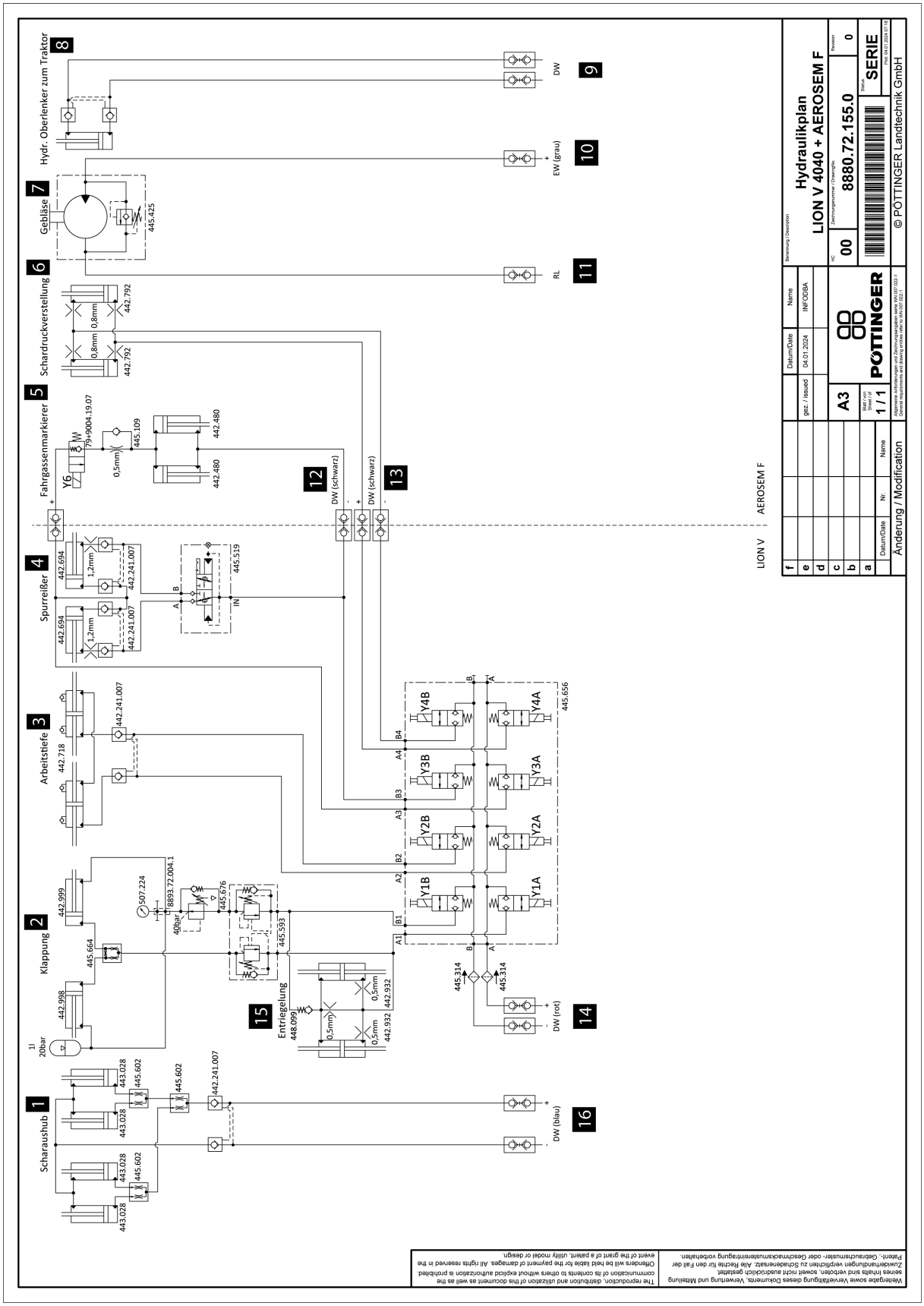
The friction clutch prevents the cardan shaft (and attachments) from being overloaded by the slip of the clutch in the event of overload and short-term torque peaks. The maximum possible torque is still transmitted evenly during slipping.

TIP

Frequent engagement of the friction clutch increases wear due to thermal load and therefore reduces service life.

Hydraulic plans

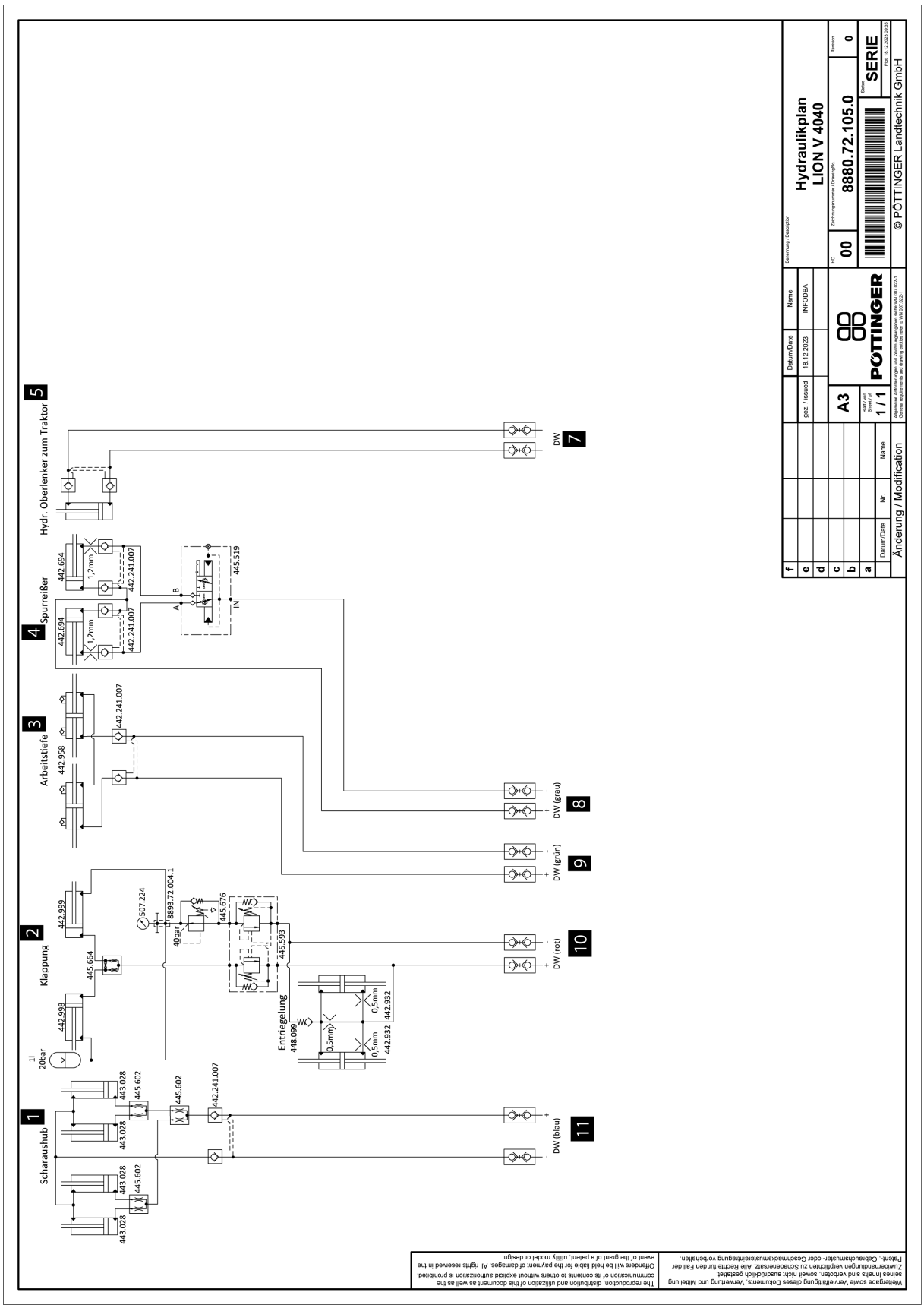
BASICLINE hydraulic plan preset operation LION V 4040 / AEROSEM F



Legend

Pos.	Function / connection
1	Coulter lift
2	Folding system
3	Working depth
4	Row markers
5	Tramline markers
6	Coulter pressure adjustment
7	Blower
8	Hydraulic upper link to tractor
9	Dual-action hydraulic connection
10	Single-action hydraulic connection (grey marking)
11	Return
12	Dual-action hydraulic connection (black marking)
13	Dual-action hydraulic connection (black marking)
14	Dual-action hydraulic connection (red marking)

Standard hydraulic plan LION V 4040



Legend

Pos.	Function / connection
1	Coulter lift
2	Folding system
3	Working depth
4	Row markers
5	Hydraulic upper link to tractor
6	Release
7	Dual-action hydraulic connection
8	Dual-action hydraulic connection (grey marking)
9	Dual-action hydraulic connection (green marking)
10	Dual-action hydraulic connection (red marking)
11	Dual-action hydraulic connection (blue marking)

Warning signs, GB / USA / CANADA

Listed below are the positions and meanings of all warning signs used.

TIP

Warning signs (symbols) point to residual risks and how to avoid them.

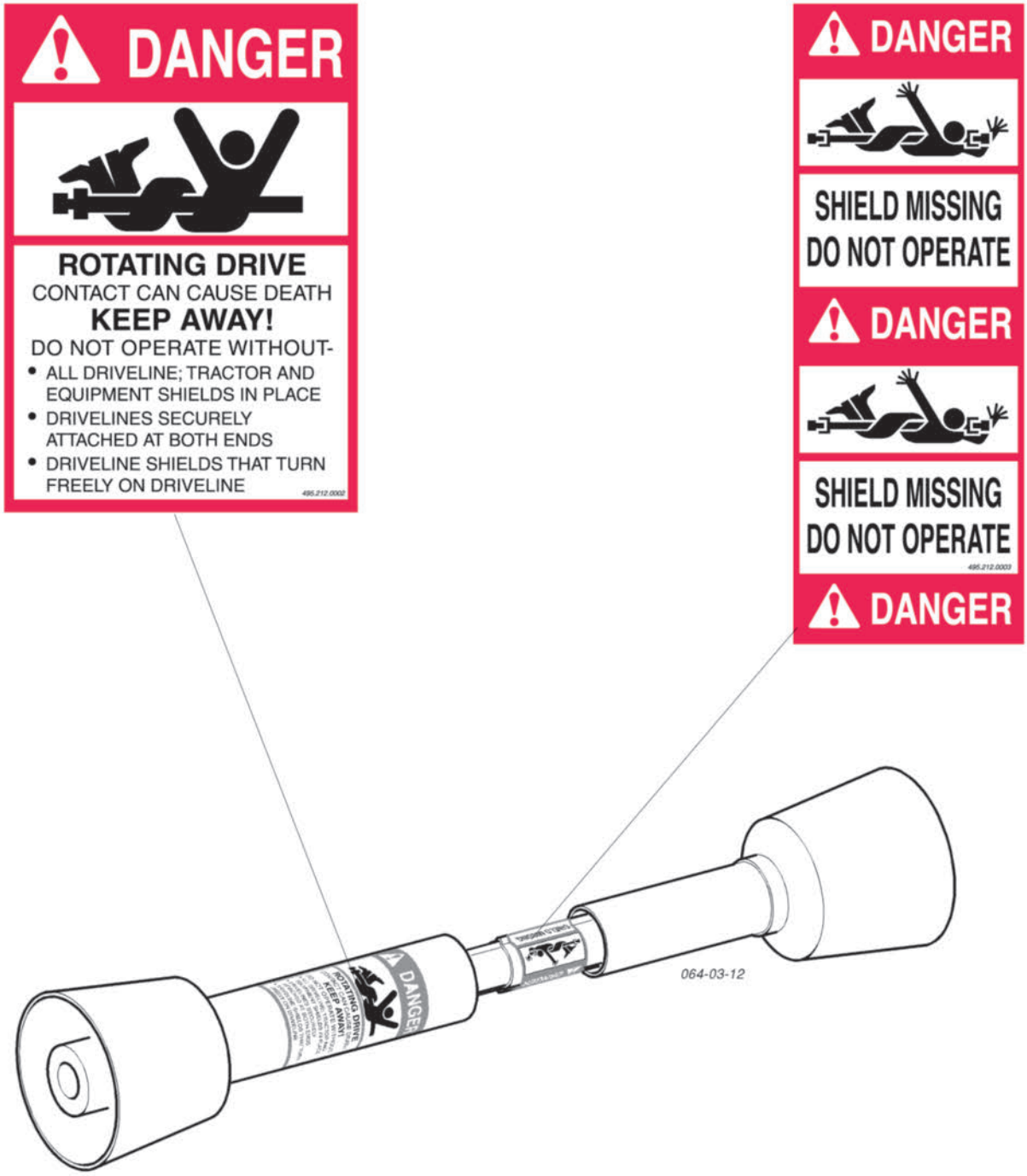
Damaged or lost warning signs must be replaced.

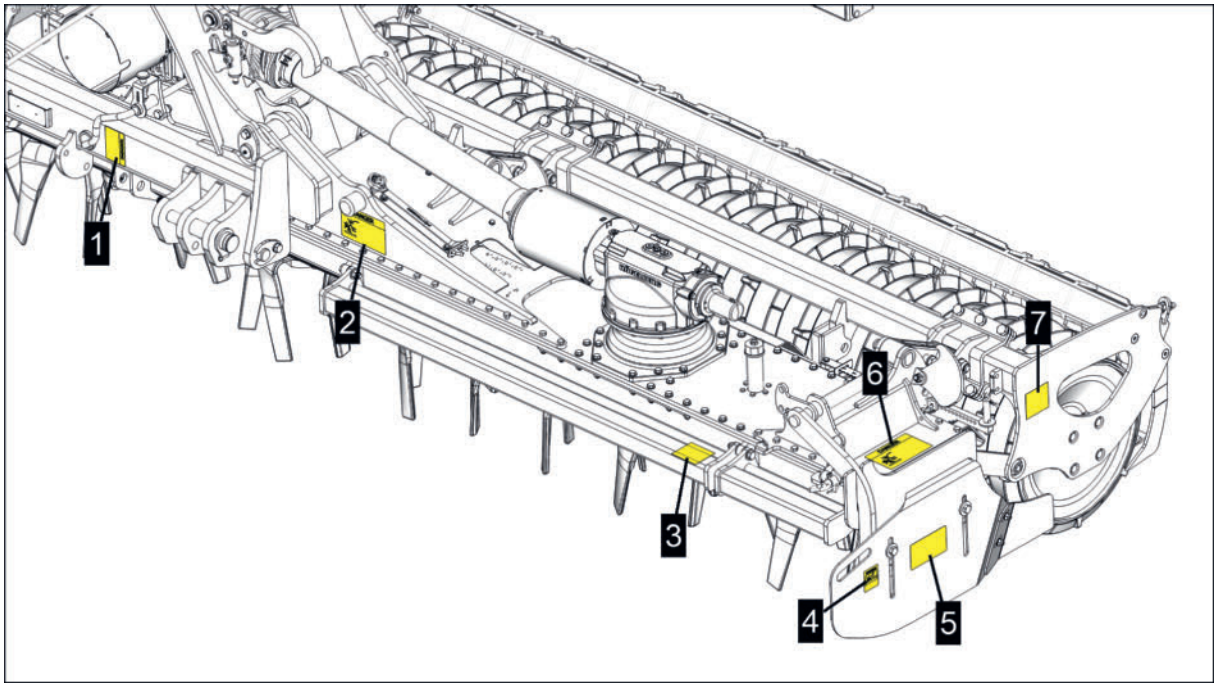
If machine parts with warning stickers are replaced, the relevant warning stickers must be stuck onto the new components.

TIP

USA / CANADA

For machines to be operated in the USA / CANADA, a conversion kit with warning stickers (to adapt to local applicable regulations) is available from PÖTTINGER in English or French! See also "Supplement to the Operating Instructions USA / CANADA".


DANGER
ROTATING DRIVE
CONTACT CAN CAUSE DEATH
KEEP AWAY!
DO NOT OPERATE WITHOUT-
• ALL DRIVELINE; TRACTOR AND EQUIPMENT SHIELDS IN PLACE
• DRIVELINES SECURELY ATTACHED AT BOTH ENDS
• DRIVELINE SHIELDS THAT TURN FREELY ON DRIVELINE
495.212.0002
DANGER
SHIELD MISSING
DO NOT OPERATE
DANGER
SHIELD MISSING
DO NOT OPERATE
495.212.0003
DANGER
064-03-12



Front view

Pos.	Warning signs	Pos.	Warning signs
1		2	 On both sides of the machine
3	 On both sides of the machine	3	 On both sides of the machine

Pos.	Warning signs	Pos.	Warning signs
5	 On both sides of the machine	6	 On both sides of the machine
7	 On both sides of the machine		

Warning signs, GB / USA / CANADA

Listed below are the positions and meanings of all warning signs used.

TIP

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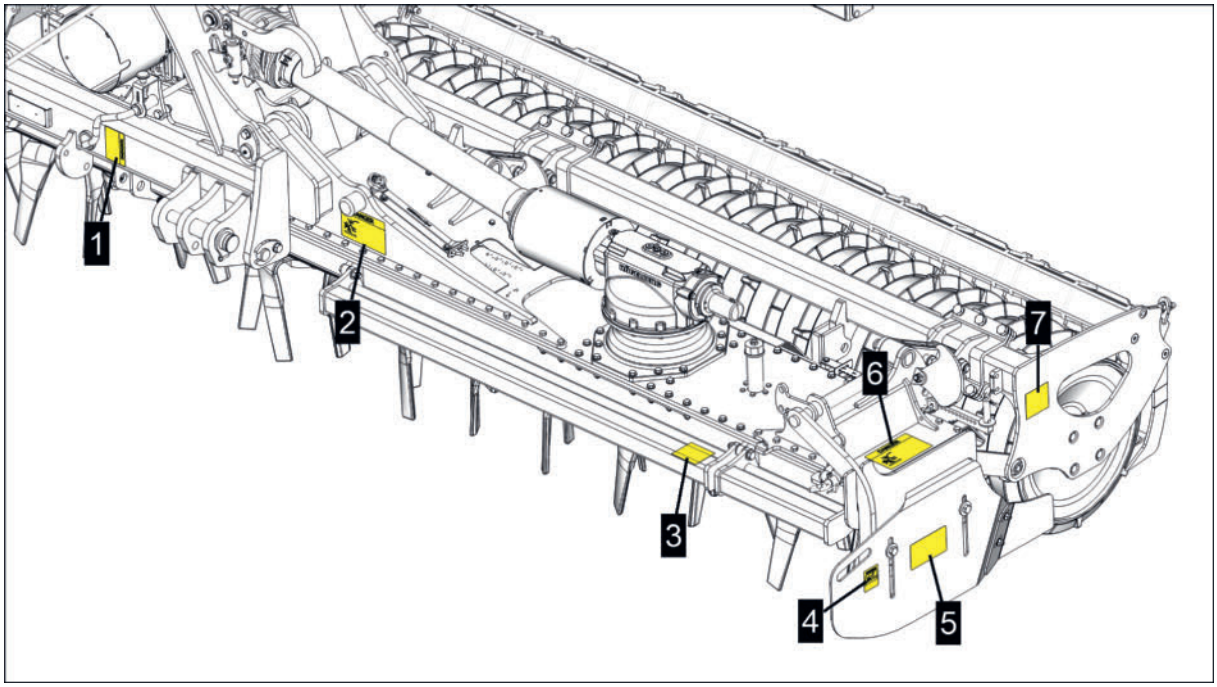
DANGER
ENTRAÎNEMENT ROTATIF
TOUT CONTACT PEUT ENTRAÎNER LA MORT
• LIRE LE MANUEL DE L'OPÉRATEUR
• NE PAS UTILISER D'ADAPTATEURS PTO
SE TENIR À DISTANCE !
NE PAS FAIRE FONCTIONNER SANS QUE LES CONDITIONS SUIVANTES SOIENT REMPLIES –
• TOUTES LES TRANSMISSIONS, TOUS LES DISPOSITIFS DE TRACTION ET PROTECTIONS D'ÉQUIPEMENTS SONT EN PLACE
• LES TRANSMISSIONS SONT FIXÉES SOLIDEMENT AUX DEUX EXTRÉMITÉS
• LES PROTECTIONS POUR TRANSMISSIONS TOURNENT LIBREMENT SUR LA TRANSMISSION
DANGER
PROTECTION MANQUANTE : NE PAS FAIRE FONCTIONNER
DANGER
PROTECTION MANQUANTE : NE PAS FAIRE FONCTIONNER
DANGER
064-03-12



Front view

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Pos.	Warning signs	Pos.	Warning signs
5	 On both sides of the machine	6	 On both sides of the machine
7	 On both sides of the machine		

Secure load towing

Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads, braked or unbraked, that are too heavy for the tractor or are towed too fast can lead to loss of control. Consider the total weight of the equipment and its load. Observe these recommended maximum road speeds, or local speed limits which may be lower. Also reduce your speed with poor road conditions or bad weather.

- If the towed implement does not have brakes, do not travel faster than 32 km/h and do not pull loads exceeding 1.5 times the tractor weight.
- If the towed implement has a brake system with a control line and an auxiliary line, do not travel faster than 40 km/h and do not pull loads exceeding 4.5 times the tractor weight.
- If the towed implement has a brake system with a control line only, do not travel more than 40 km/h and do not pull loads exceeding 1.5 times the tractor weight.

If you do not know which brake system your implement has, consult the manual, ask the owner or your dealer. While uncertain about the type of brake system, do not allow the tow load to exceed 1.5 times the tractor weight.

Ensure the load does not exceed the recommended weight ratio. Add ballast up to the maximum recommended for the tractor, reduce the load or get a heavier towing vehicle. The tractor must be heavy and powerful enough with adequate braking power for the towed load. Be especially careful when towing loads on unfavourable ground conditions, when turning and on slopes.

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A worldwide network of well established Service Specialist Centres is at your disposal. This regional proximity guarantees the prompt supply of spare parts, enables optimum product delivery and machine configuration by expert personnel.

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- Long-term availability of replacement parts.
- And much more…

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