

Axx1

One-chamber truck-mounted spreader



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We are constantly developing our products to offer our customers maximum convenience. Therefore, we ask for your understanding that the manual can deviate from the product in some regards.

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3 General information

This chapter gives you information on the following:

- Chapter 3.1 *"Spreader identification", page 6*
- Chapter 3.2 *"Service information", page 7*
- Chapter 3.3 *"EC Declaration of Conformity in terms of the EC Machinery Directive 2006/42/EC", page 8*

3.1 Spreader identification

Nr.:DO1043 


GS Typ: DB H L H A -

UB Typ:

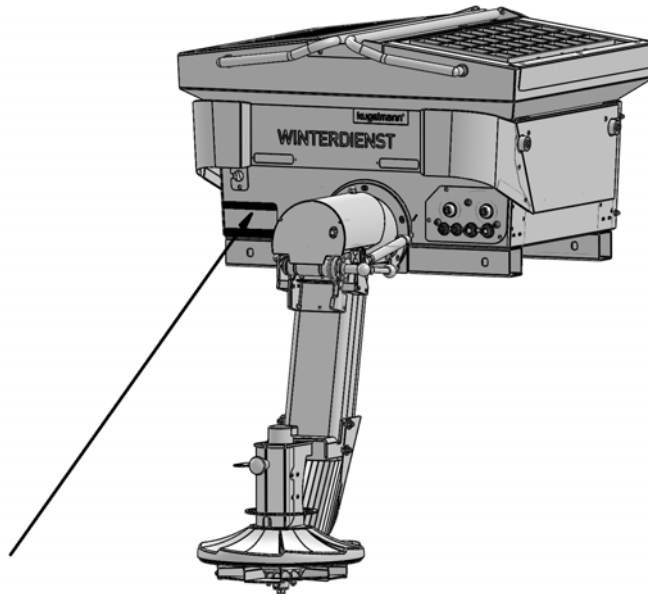
Sole Typ:

Baujahr: Volumen: l Gewicht: kg

Fabr. Nr.:

www.kugelmann.com
D-87675 Rettenbach a. A. Made in Germany 

The type plate refers to device type, dimensions, serial number, year of construction and manufacturer.



You will find the type plate here.

3.2 Service information

Customer service:

Tel.: +49 (0) 8860 / 9190-90

Fax: +49 (0) 8860 / 9190-49

E-Mail: service@kugelmann.com

3.3 EC Declaration of Conformity in terms of the EC Machinery Directive 2006/42/EC



We herewith declare that the machine designated below complies with the relevant essential health and safety requirements of the respective EC Directives due to its design and construction, and in the version supplied by us.

If the machine is modified without our consent, this declaration shall cease to apply.

Designation: One-chamber truck-mounted spreader

Machine type: Axx1

Relevant EC machinery directives:

91/368/EEC

98/37/EC

93/68/EEC

DIN EN 292-1/292-2/294/349/1050/1553

Rettenbach a.A., February 2016

Josef Kugelmann

4 Operating instructions

This chapter gives you information on the following:

- Chapter 4.1 *"Target group"*, page 10
- Chapter 4.2 *"Application"*, page 10
- Chapter 4.3 *"Conventions used"*, page 11
- Chapter 4.4 *"Change history"*, page 11

4.1 Target group

These operating instructions are intended for skilled persons who are responsible for the following work at the spreader:

- Commissioning
- Control
- Operation
- Use
- Maintenance

At least once a year, all personnel must be trained in the operation of the spreader in accordance with the guidelines of the business liability insurance. The use of the spreader by untrained or unauthorized persons is prohibited.

4.2 Application

These operating instructions contain all necessary data and information for a safe control, operation and maintenance of the spreader.





Make sure that all persons responsible for operation or maintenance of the spreader or persons working in the immediate environment of the machine are familiar with the operating and maintenance instructions as well as the safety information in this manual.

These operating instructions are part of the product and have to be kept in a safe place. In case of resale or transfer of the machine to third parties, these operating instructions have to be included.

All information, illustrations and technical data correspond to the technical state at the time of printing. Subject to technical modifications.

4.3 Conventions used

This manual uses the following typographic conventions:

Icon	Signal word	Meaning
	Danger	Indicates an imminent dangerous situation, which - in case of non-observance of the safety instructions - will entail death or grievous bodily harm.
	Warning	Indicates a possibly dangerous situation, which - in case of non-observance of the safety instructions - may cause death or grievous bodily harm.
	Caution	Indicates a possibly dangerous situation, which - in case of non-observance of the safety instructions - may result in minor injuries or damage to property.
	Notice	Contains useful information with respect to proper handling of the machine.

4.4 Change history

Date	Version	Change
11-02-2016	1.1	First edition

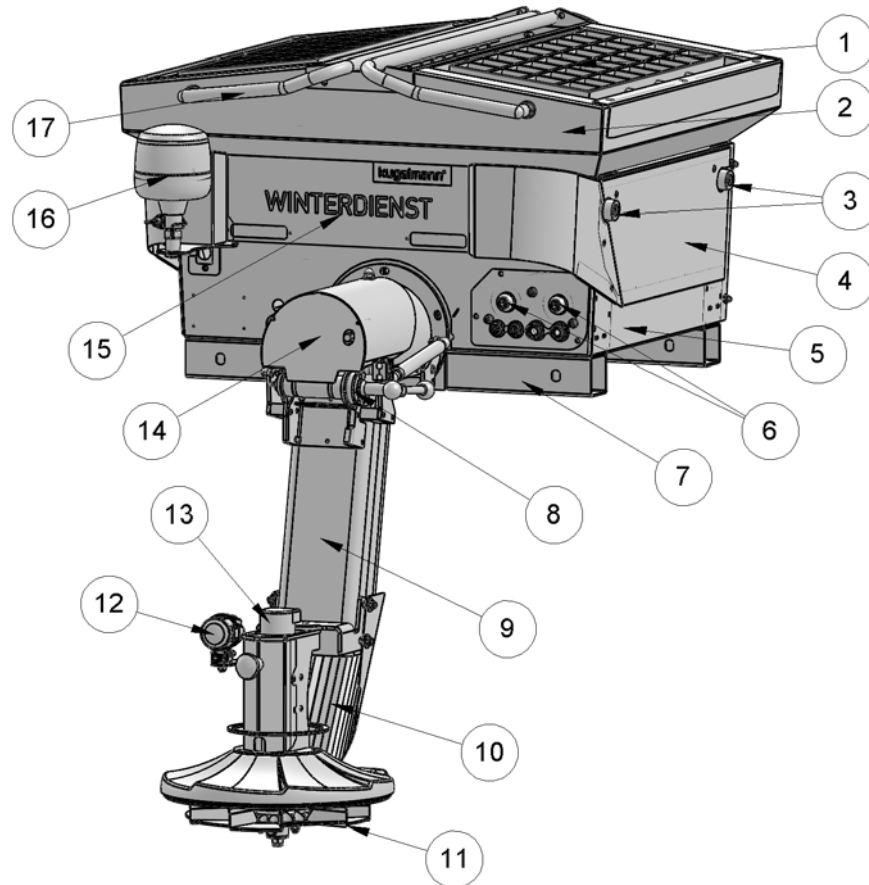
5 General description

This chapter gives you information on the following:

- Chapter 5.1 "*Parts*", page 13
- Chapter 5.2 "*Designated use*", page 14
- Chapter 5.3 "*Obvious misuse*", page 14

5.1 Parts

Please see the following illustration for parts of the spreader:



Pos.	Part
1	Grid
2	Spreading material container
3	Seating for load stand
4	Lateral cover plate
5	Basic framework
6	Setting screws for valve regulation
7	Subframe
8	Locking of outlet and spreading unit
9	Outlet pipe
10	Chute
11	Spreading disc
12	Working headlight (optional)
13	Spreading disc motor
14	Internal metering screw
15	Flasher (optional)
16	Rotating beacon (optional)
17	Tarpaulin bow

5.2 Designated use

Please use the spreader exclusively for spreading of salt and/or grit.

Fix the spreader only at the attachment and lashing points provided for this purpose (see Chapter 5.1 "*Parts*", page 13) and/or at the vehicle specific base frames.

Any kind of fixing that deviates from the procedure set forth herein is considered contrary to its designated use. The operator of the spreader is liable for any damages arising from such action.

Use, maintenance and reconditioning of the spreader may only be carried out by trained and competent personnel.

To operate the equipment within the limits of its designated use, please note the following:

- These operating instructions as well as all enclosed documentation.
- Road traffic regulations.
- The relevant accident prevention regulations.
- The generally recognised rules relating to technical safety requirements and occupational health.
- The operating instructions of the carrier vehicle.

5.3 Obvious misuse

The spreader may not be used to carry persons or goods.

The spreader and its attached parts may not be used as climbing aid.

The spreader may not spread fertiliser, sand, soil or other organic materials.

6 Safety instructions

This chapter gives you information on the following:

- Chapter 6.1 "General safety instructions", page 15
- Chapter 6.2 "Commissioning", page 17
- Chapter 6.3 "Use", page 20
- Chapter 6.4 "Maintenance", page 23
- Chapter 6.5 "Designations", page 27

6.1 General safety instructions



warning

Use or maintenance of the spreader by untrained persons.

Risk of serious injury.

- Make sure that all persons responsible for operation or maintenance of the spreader are trained in the operation of the spreader and are familiar with the operating and maintenance instructions as well as the safety information in this manual!
 - Insist on compliance with the applicable safety regulations!
-



warning

Loose-fitting garments.

Risk of serious injury.

- Always wear tight-fitting clothes during the operation of the spreader!
-

**warning**

Disregarding guidelines.

Risk of serious injury or death.

- Please observe the regulations relating to accident prevention!
 - Please observe the generally applicable safety regulations, industrial standards and medical guidelines!
 - Please observe the road transport guidelines!
 - Please pay attention to the general advice in these operating instructions!
-

**caution**

Accidental ignition of residual dirt.

Risk of injury or property damage.

- Please make sure that the spreader is always kept in a clean condition!
-

**caution**

Changes at the spreader.

Damage to functionality and danger of property damage.

- Do not make any changes at the spreader!
-

**caution**

Danger of slipping during filling or during work at the spreader.

Risk of injury.

- Provide a slip-resistant climbing possibility!
 - Ensure secure hold by means of a stable railing!
-

6.2 Commissioning



danger

Carrier vehicle rolls away during the attachment of the spreader.

Risk of serious injury or death.

- Before attaching the spreader to the carrier vehicle, apply the parking brake, stop the engine and remove the ignition key!
 - Never stand between carrier vehicle and spreader while the spreader is attached!
 - Apply all locking bolts and screws at the carrier vehicle and secure them!
-



warning

Overload or possible tilting of the carrier vehicle.

Risk of injury, death or damage to property.

- Please observe axle load limits and admissible overall weight!
-



warning

Mounting of spreader at a malfunctioning carrier vehicle.

Risk of serious injury or death.

- Please make sure that the carrier vehicle is in a safe and correct condition!
 - Please make sure that the carrier vehicle is provided with an appropriate braking system!
 - Please make sure that the carrier vehicle may transport the spreader and the spreader may be attached!
 - Before every journey, make sure that the spreader is securely attached to the carrier vehicle!
-



warning

Starting movement of the spreading disc or conveyor screw when connecting the hydraulic lines.

Risk of serious injury.

- Connection of hydraulic lines only if the hydraulic cycles of carrier vehicle and spreader are depressurised.
-

**warning**

Damaged hydraulic lines.

Risk of serious injury.

- Damaged hydraulic lines must be replaced immediately!
 - After 6 years at the latest, replace hydraulic lines even if they are not damaged!
-

**warning**

Flying salt or grit.

Risk of serious injury.

- Never stay in the working range of the spreader!
-

**caution**

First commissioning without instruction.

Risk of injury or property damage.

- First commissioning of the spreader must be accomplished by employees of the dealer, the manufacturer or a representative of our works!
-

**caution**

Spreader is not jacked up high enough.

Danger of property damage.

- When mounting or removing the spreader, please make sure that the spreader is jacked up high enough!
-

**caution**

Wrong position of centre of gravity.

Danger of property damage.

- When mounting the spreader, please make sure that the centre of gravity is correctly placed on the carrier vehicle!
-

**caution**

Commissioning without making sure that the machine is in perfect technical condition.

Risk of injury or property damage.

- Check all important parts before commissioning!
 - Check all safety-related protection devices before commissioning!
 - If applicable, please change damaged parts!
-

**caution**

Tightening torque at screws too high.

Danger of property damage.

- Please use the table for tightening torques when tightening the screws (see Chapter 15. "Tightening torques ", page 84)!
-

**caution**

Max. PTO speed exceeded.

Risk of injury or damage to property.

- The PTO speed must not exceed 540 rpm!
-

6.3 Use



danger

Carriage of persons on the spreader.

Risk of serious injury or death.

- Do not carry persons on the spreading machine!
-



warning

Persons present in working range of spreader.

Risk of serious injury or death.

- Never stay in the working range of the spreader!
-



warning

Careless start-up.

Risk of serious injury or death.

- Before starting up of spreader or during operation, check the area near the spreader!
 - Ensure sufficient visibility!
 - Start the vehicle only with no person or good in the surroundings of the vehicle!
 - Before starting the vehicle, make sure that the spreader is correctly attached and secured!
-



warning

Changed handling and braking behaviour.

Risk of serious injury or death.

- Please adjust your driving behaviour to the dimensions and the additional weight of the spreader!
 - Adjust the driving speed to the snow conditions as well as to road and traffic environment!
-

**warning**

Rotating parts.

Risk of serious injury or death.

- During operation, never put your hand into spreading disc, conveyor screw or the optional agitator shaft!
 - During the whole operation at the spreader, all lids must remain attached!
 - During the whole operation at the spreader, the grid must remain mounted!
 - During works at rotating parts, switch off the hydraulic system and the motor of the carrier vehicle, disconnect the vehicle and remove the ignition key!
-

**caution**

Limbs are getting caught.

Risk of injury.

- Never put your hands between moving parts!
-

**caution**

Parts continue to run.

Risk of injury.

- Please wait until all parts stand still and disconnect hydraulic lines before performing any work at the spreader!
-

**caution**

The hydraulic system is under high pressure.

Risk of injury or damage to property.

- If any hydraulic fluid that leaks out passes through the skin, seek medical advice immediately!
-

**caution**

Heat at parts which use circulating oil as a coolant or at rotating parts.

Risk of injury or damage to property.

- Please do not touch any hot components!
 - Please do not touch any rotating components!
-

**caution**

Carriage of goods on the spreader.

Danger of property damage.

- Do not carry any goods on the spreader!
-

**caution**

Non-observance of regulations for operating attachments on public roads.

Risk of injury or damage to property.

- Follow the pertinent rules and regulations of the information sheet for attachments (Gazette of the Federal Ministry of Transport 1990, page 562)!
 - Take measures to compensate limitations of the field of vision!
-

**caution**

Non-observance of regulations concerning road safety.

Risk of injury or damage to property.

- Please make sure that the spreader complies with the regulations concerning road safety!
 - Apply the prescribed lighting applications, warning and protection devices!
 - Comply with the existing guidelines concerning dimensions and weight, the maximum permissible axle load, the tyre carrying capacity, the overall weight and the speed limit valid in the respective country!
-

**caution**

Operating the spreader in the event of malfunctions.

Risk of injury or damage to property.

- In the event of malfunction, please stop the spreader immediately!
 - Resolve the error immediately or ask at a workshop!
-

**caution**

Placing the spreader in an unprotected area.

Risk of injury or damage to property.

- Never place the spreader in a highly frequented area or an area accessible to children!
-

**caution**

Placing the spreader on uneven or soft ground.

Risk of injury or property damage.

- Make sure the spreader is placed on even, solid and stable ground!
-

6.4 Maintenance

**warning**

Non-observance of safety regulations.

Risk of serious injury or death.

- Comply with the safety regulations during all maintenance work!
-

**warning**

Electric shocks during maintenance work.

Risk of serious injury or death.

- Interrupt power supply before executing work at an electrical device!
-

**warning**

Draining oil during maintenance work.

Risk of serious injury or death.

- Interrupt the hydraulic supply to carrier vehicle and make sure that the hydraulic cycle is depressurised before working at a hydraulic device!
-

**caution**

Non-observance of maintenance intervals.

Risk of injury or property damage.

- Please pay attention to the prescribed maintenance intervals!
-

**caution**

Use of wrong spare parts.

Risk of injury or property damage.

- Do only use original parts for repair work!
-

**caution**

Maintenance work without necessary technical knowledge or appropriate tooling.

Risk of injury or property damage.

- Carry out maintenance work only if you have the necessary expertise as well as suitable tools!
-

**caution**

Carelessness when handling oil or lubricants.

Risk of injury.

- Avoid skin contact with oil and lubricants!
 - Protect your skin with skin-protection lotion or oil-resistant gloves!
 - Never use oil or lubricants to clean your hands!
 - Change dirty or oily clothes as soon as possible!
 - Wear protective goggles. If oil gets into your eyes, immediately consult a physician.
-

**caution**

Oil leakage at hydraulic system.

Risk of injury or property damage.

- Periodically check all tubes, lines, couplings and connecting elements concerning leaks and external damage!
 - Only use appropriate tooling during the check!
 - Occurring damages have to be removed immediately!
 - Replace hydraulic lines after 6 years at the latest!
-

**caution**

Cleaning with high-pressure cleaner.

Danger of property damage.

- Cleaning of bearings, plastic parts, electronic parts and hydraulic lines only with low pressure!
-

**caution**

Cleaning of metallic surfaces.

Risk of material damage due to detergents.

- Do not use aggressive detergents!
-

**caution**

Welding operations at the electric cable system.

Danger of property damage.

- Separate the battery connection to the carrier vehicle before executing welding operations at the connected spreader!
-

**caution**

Loose bolted/screw connections.

Danger of property damage.

- Retighten loose bolted connections after repair and maintenance work!
-

**caution**

Tightening of screw connections.

Danger of property damage.

- When tightening screw connections, always use the prescribed tightening torque (see Chapter 15. "*Tightening torques* ", page 84)!
-

6.5 Designations

Marking	Explanation
	<p>Prior to commissioning, read and observe operating and safety instructions!</p>
	<p>Do not enter the danger zone of the machine!</p>
	<p>Risk of injury from rotating parts! Only work at machine in switched off mode!</p>
	<p>Never use the spreader or the attachments as climbing aid! Do not stand on spreader!</p>
	<p>Basis for declaration of conformity</p>

7 Commissioning

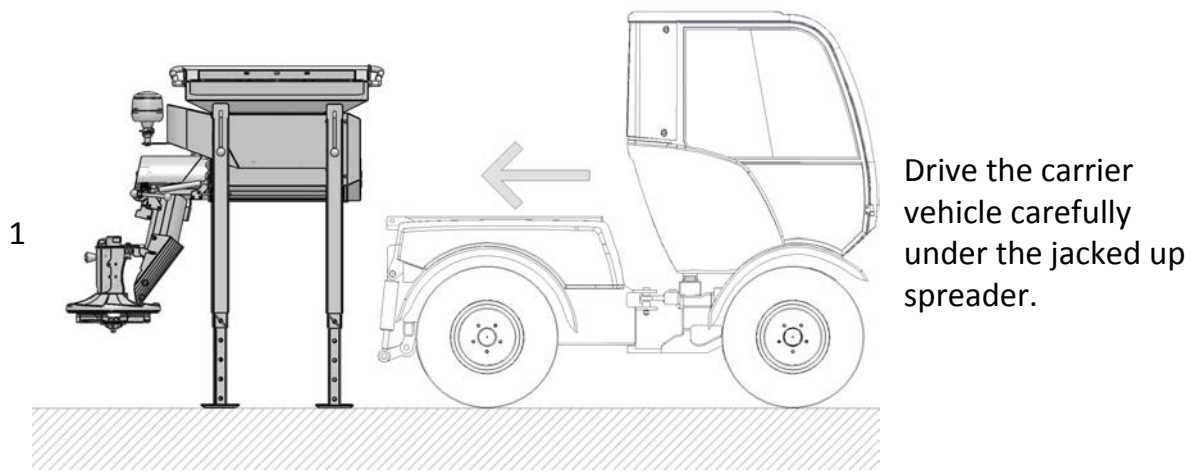
This chapter gives you information on the following:

- Chapter 7.1 *"Assembly of spreader"*, page 29
- Chapter 7.2 *"Wiring diagram"*, page 36
- Chapter 7.3 *"Positions of outlet and spreading unit"*, page 38
- Chapter 7.4 *"Working height"*, page 40
- Chapter 7.5 *"Location of spreading pattern"*, page 42
- Chapter 7.6 *"Open tarpaulin cover."*, page 43

7.1 Assembly of spreader

The exact procedure for the assembly of the spreader depends on the carrier vehicle. Comply with the operating instructions of the carrier vehicle. The spreader may only be fixed and clamped at the at the load stands provided.

- To mount the spreader onto a narrow track vehicle, proceed as follows:



caution

Spreader is not jacked up high enough.

Danger of property damage.

- When mounting the spreader, please make sure that the spreader is jacked up high enough!

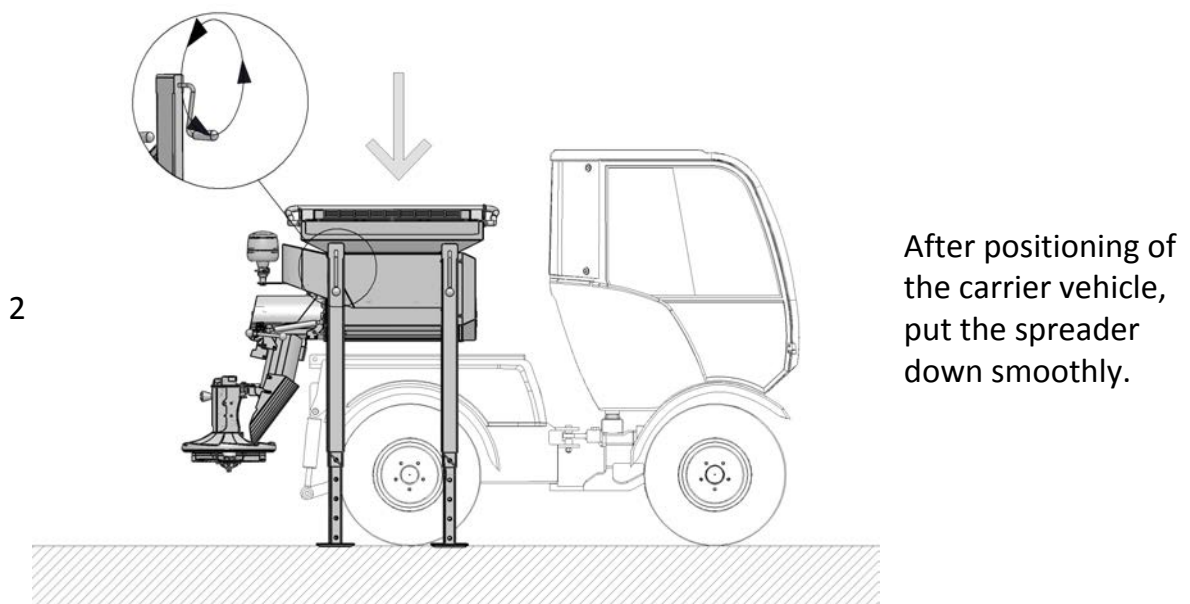


caution

Spreader stands on uneven or soft ground.

Risk of injury or property damage.

- Make sure that the spreader is placed on even, solid and stable ground!





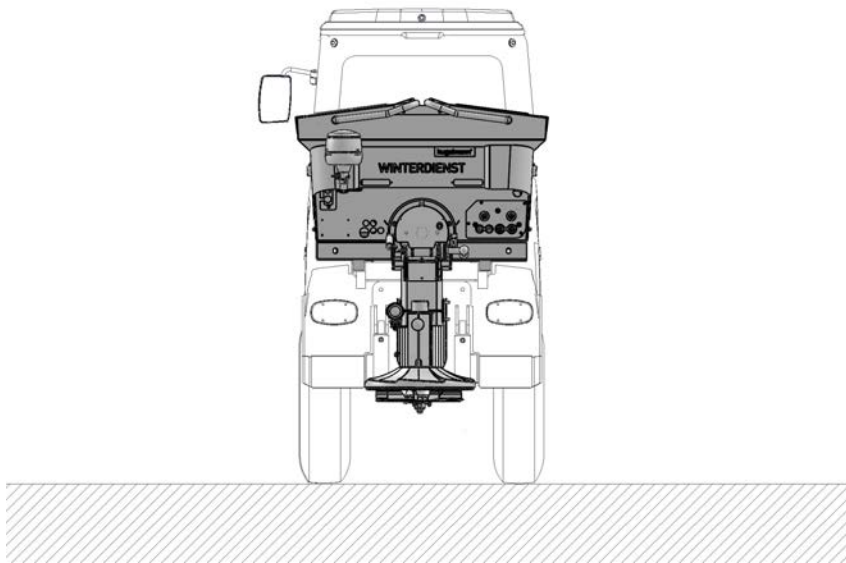
caution

Wrong position of centre of gravity.

Danger of property damage.

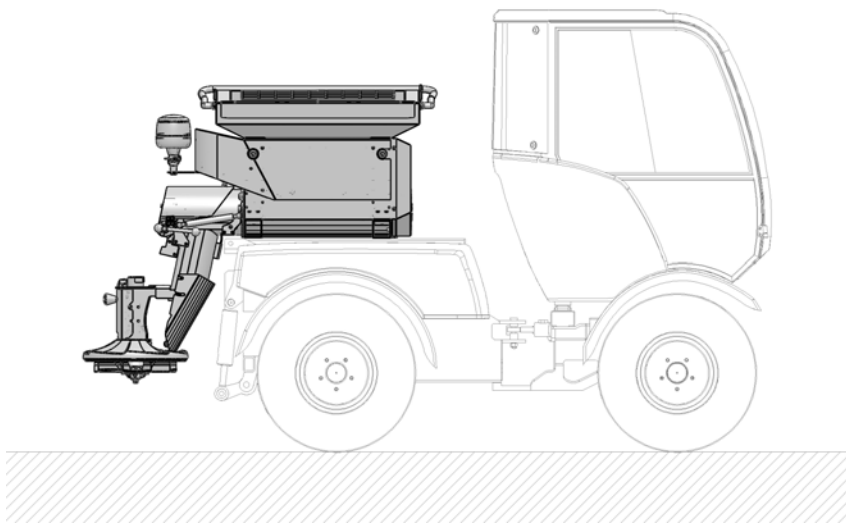
- When mounting the spreader, please make sure that the centre of gravity is correctly placed on the carrier vehicle!

3



Secure spreader. Comply with the operating instructions and pay attention to the regulations concerning mounting at the carrier vehicle.

4



After the spreader has been mounted and fixed at the carrier vehicle, remove the tripods.



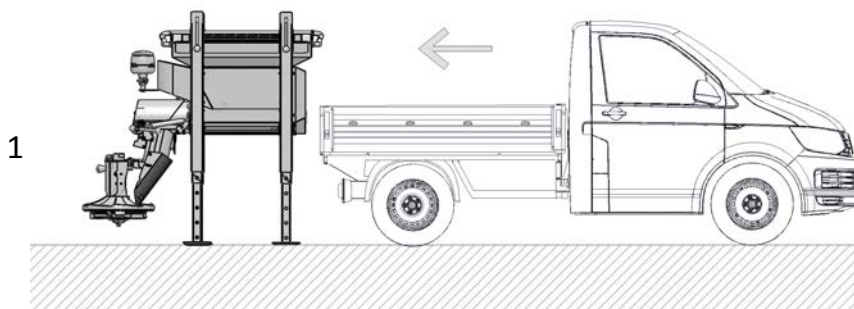
warning

Loose screwed or bolted connections.

Risk of injury or property damage.

- After having mounted the spreader, please make sure that all screwed and bolted connections are always in place and secure!

- To mount the spreader onto a flatbed vehicle, proceed as follows:



Drive the carrier vehicle carefully under the jacked up spreader.

caution

Spreader is not jacked up high enough.



Danger of property damage.

- When mounting the spreader, please make sure that the spreader is jacked up high enough!

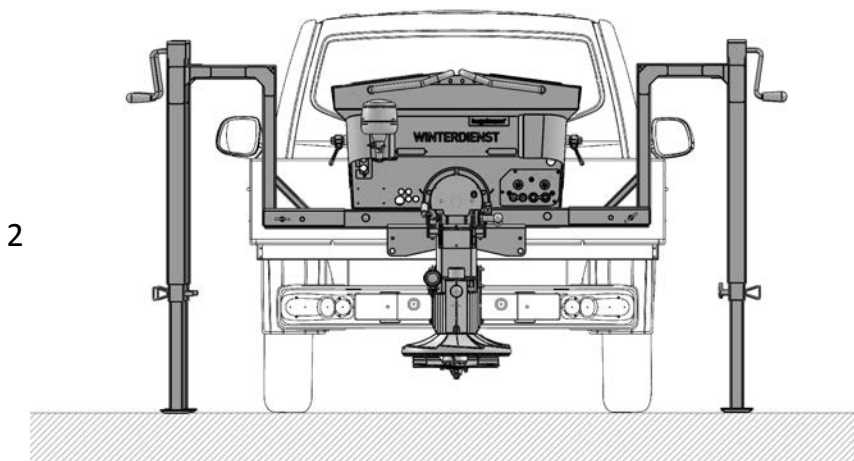


caution

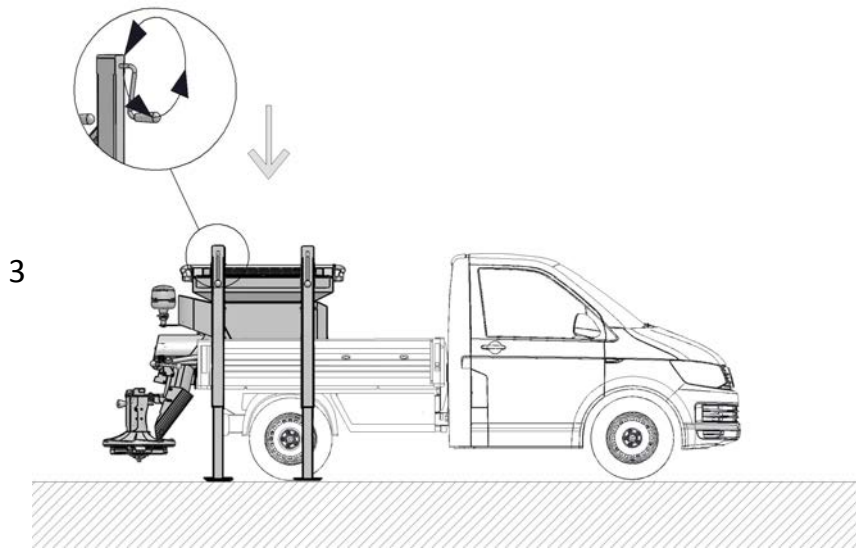
Spreader stands on uneven or soft ground.

Risk of injury or property damage.

- Make sure that the spreader is placed on even, solid and stable ground!



Please make sure that the carrier vehicle is located in the centre between the tripod mounts.



After positioning of the carrier vehicle, put the spreader down smoothly.

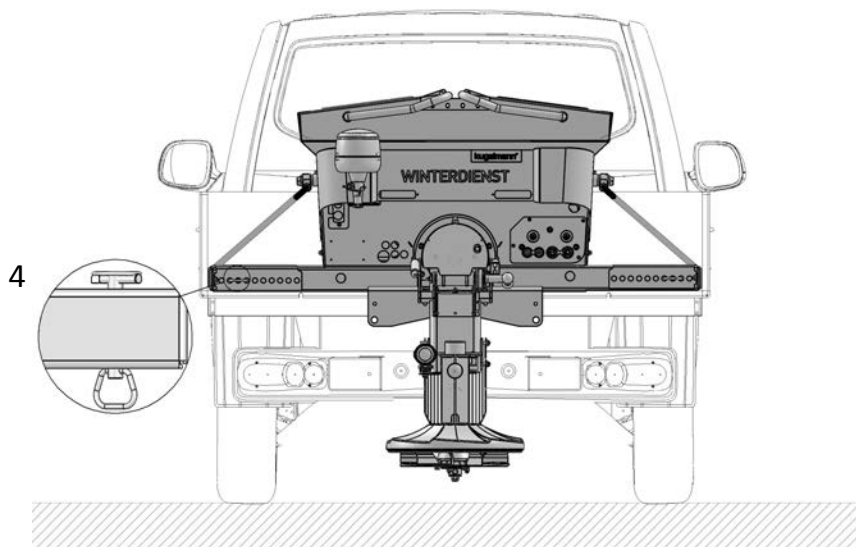
caution



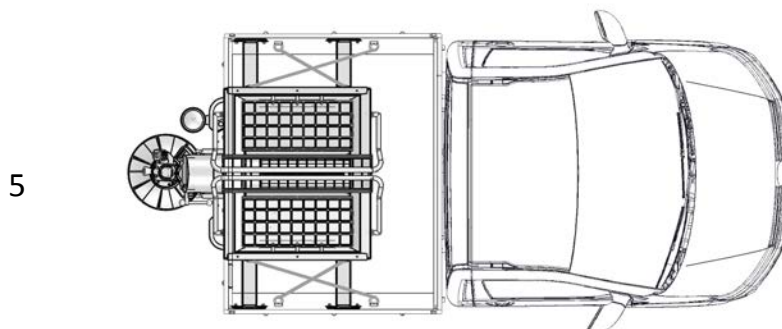
Wrong position of centre of gravity.

Danger of property damage.

- When mounting the spreader, please make sure that the centre of gravity is correctly placed on the carrier vehicle!



Secure lateral limit stops with socket pins.



Example

Secure and clamp spreader. Please refer to the operating instructions and pay attention to the regulations concerning mounting at the carrier vehicle. Remove tripod mounts.

**warning**

Loose lashing straps, screwed or bolted connections.

Risk of injury or property damage.

- After having mounted the spreader, please make sure that all lashing straps, screwed and bolted connections are in place and secure!
-

**danger**

Carrier vehicle rolls away during the attachment of the spreader.

Risk of serious injury or death.

- Before attaching the spreader to the carrier vehicle, apply the parking brake, stop the engine and remove the ignition key!
 - Never stand between carrier vehicle and spreader while the spreader is attached!
 - As described above, use the correct attachment and lashing points!
 - Apply all locking bolts and secure them!
-

**warning**

Overload or possible tilting of the carrier vehicle.

Risk of injury, death or damage to property.

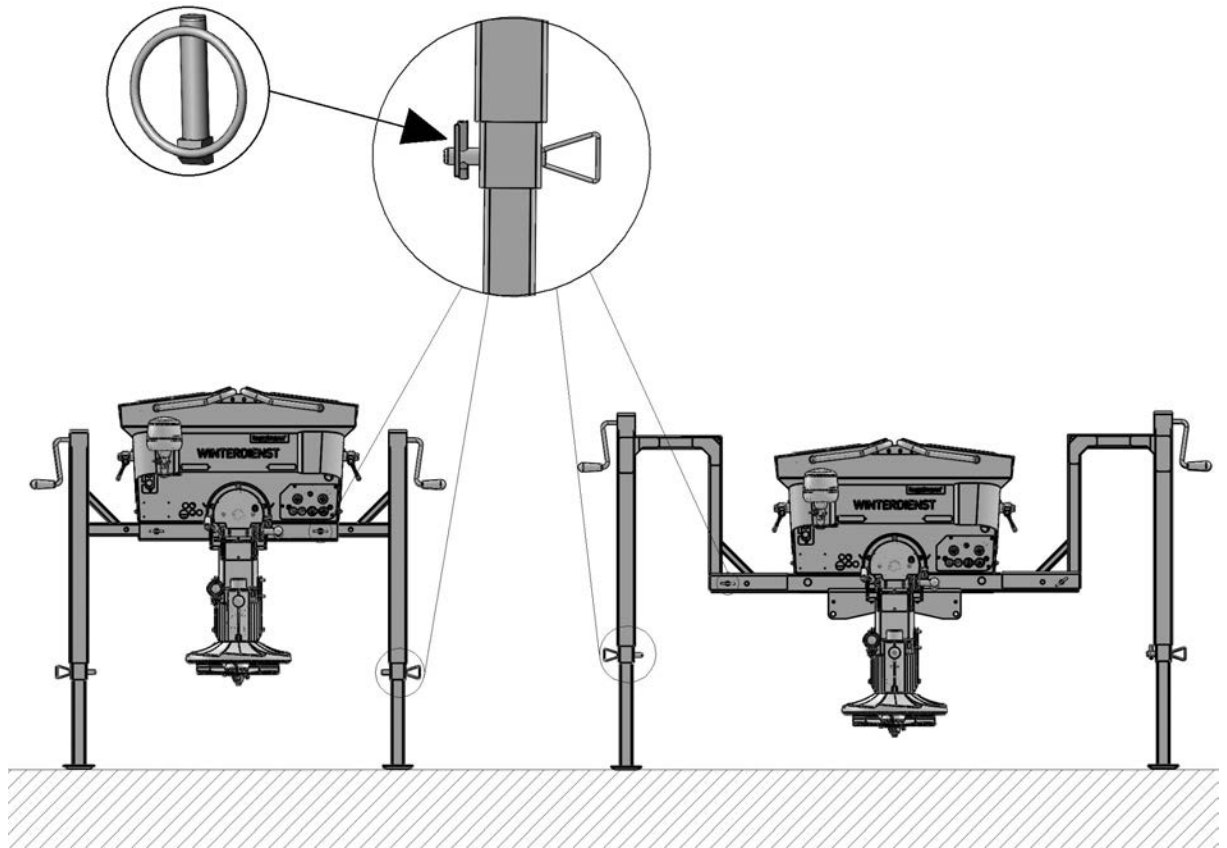
- Please observe axle load limits and admissible overall weight!
-

**warning**

Attachment of spreader at a malfunctioning carrier vehicle.

Risk of serious injury or death.

- Please make sure that the carrier vehicle is in a safe and correct condition!
 - Please make sure that the carrier vehicle is provided with a braking system appropriate for the spreader.
 - Please make sure that the carrier vehicle may transport the spreader and that the spreader may be attached.
-



caution

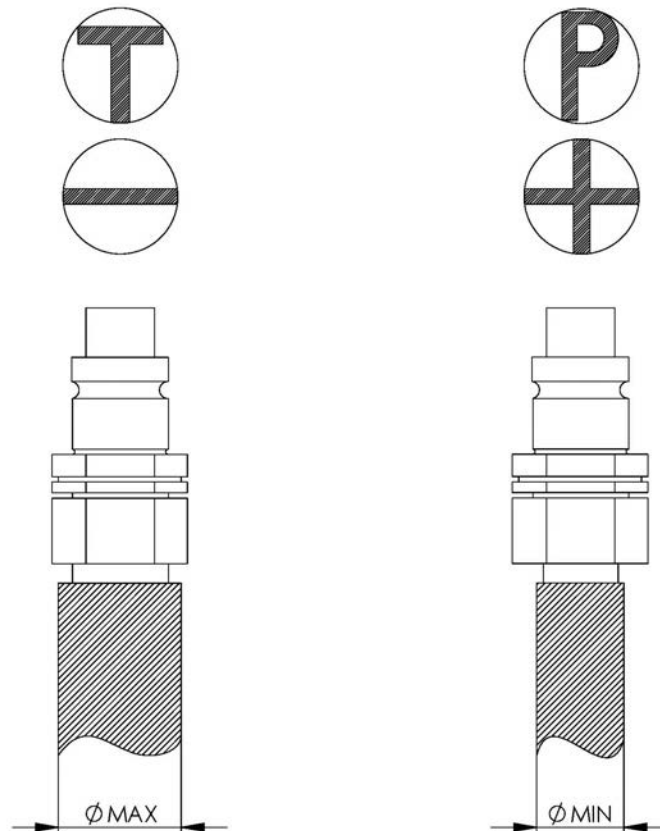
Loose bolted connections.

Danger of property damage.

- When mounting or demounting the spreader, please make sure that all bolted connections are in place and secure!

7.2 Wiring diagram

The hydraulic lines must be connected with the hydraulic system of the carrier vehicle as follows:



notice

If possible, use the pressure-free return flow at the carrier vehicle. If no pressure-free return flow is available, use the marked return flow.



notice

The hydraulic performance of the carrier vehicle should not exceed 40 l/min.

A lower production volume means a lower performance of the spreader.

A higher production volume would result in an increase of the temperature in the hydraulic system.

**notice**

Make sure that the hydraulic lines are properly installed.

- Consider the laying radii appropriate for the hydraulic lines. Please refer to the assembly instructions of the line manufacturer.
 - The hydraulic lines must not be crushed.
 - The hydraulic lines must not touch moving parts as chafe marks could result.
-

**warning**

Starting movement of the spreading disc or conveyor screw when connecting the hydraulic lines.

Risk of serious injury.

- Connection of hydraulic lines only if the hydraulic cycles of carrier vehicle and spreader are depressurised!
-

**warning**

Damaged hydraulic lines.

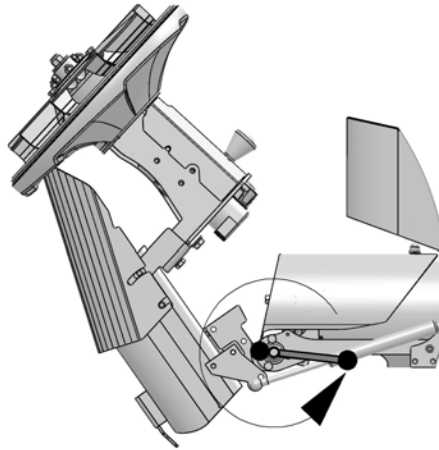
Risk of serious injury.

- Damaged hydraulic lines must be replaced immediately!
 - After 6 years at the latest, replace hydraulic lines even if they are not damaged!
-

7.3 Positions of outlet and spreading unit

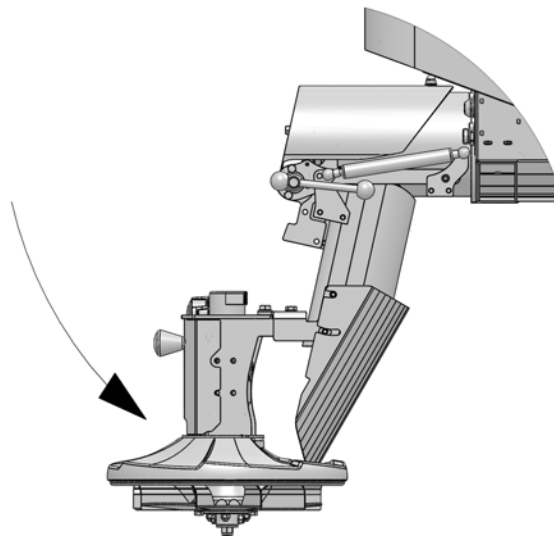
Change the position of the outlet and spreading unit as follows:

1 Transport position



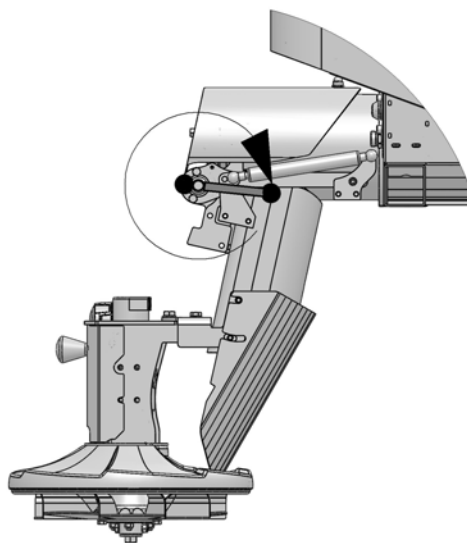
Slacken tooting by turning clamping lever to the left.

2



Lever outlet and spreading unit downwards/upwards until it abuts.

3 Working position



Tighten tooting by turning clamping lever to the right.

**warning**

Rotating parts.

Risk of serious injury or death.

- During operation, never put your hands into spreading disc, conveyor screw or the optional agitator shaft!
 - During the whole operation at the spreader, all lids must remain attached!
 - During the whole operation at the spreader, the grid must remain mounted!
 - During works at rotating parts, switch off the hydraulic system and the motor of the carrier vehicle, disconnect the vehicle and remove the ignition key!
-

**caution**

Limbs getting caught.

Risk of injury.

- During adjustment of the outlet, never put your hands between moving components.
-

**caution**

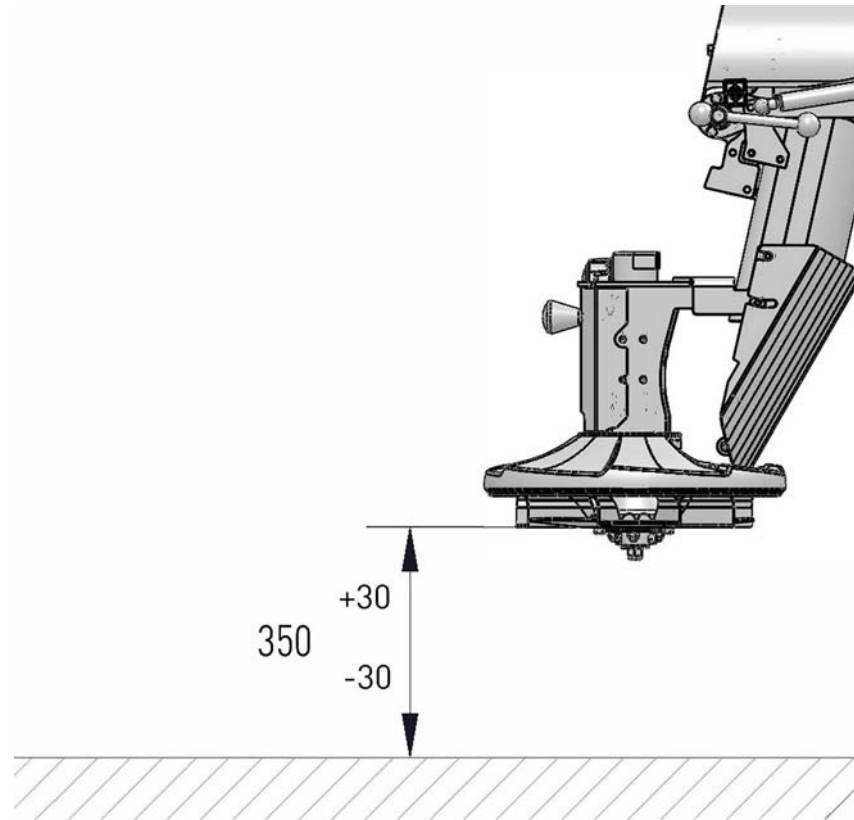
Heat at parts which use circulating oil as a coolant or at rotating parts.

Risk of injury or property damage.

- Do not touch any hot components!
 - Do not touch any rotating parts!
-

7.4 Working height

In working position, the lower border of the spreading disc should be situated approx. 350 mm above the ground.



warning

Rotating parts.

Risk of serious injury or death.

- During operation, never put your hands into spreading disc, conveyor screw or the optional agitator shaft!
- During the whole operation at the spreader, all lids must remain attached!
- During the whole operation at the spreader, the grid must remain mounted!
- During works at rotating parts, switch off the hydraulic system and the motor of the carrier vehicle, disconnect the vehicle and remove the ignition key!



warning

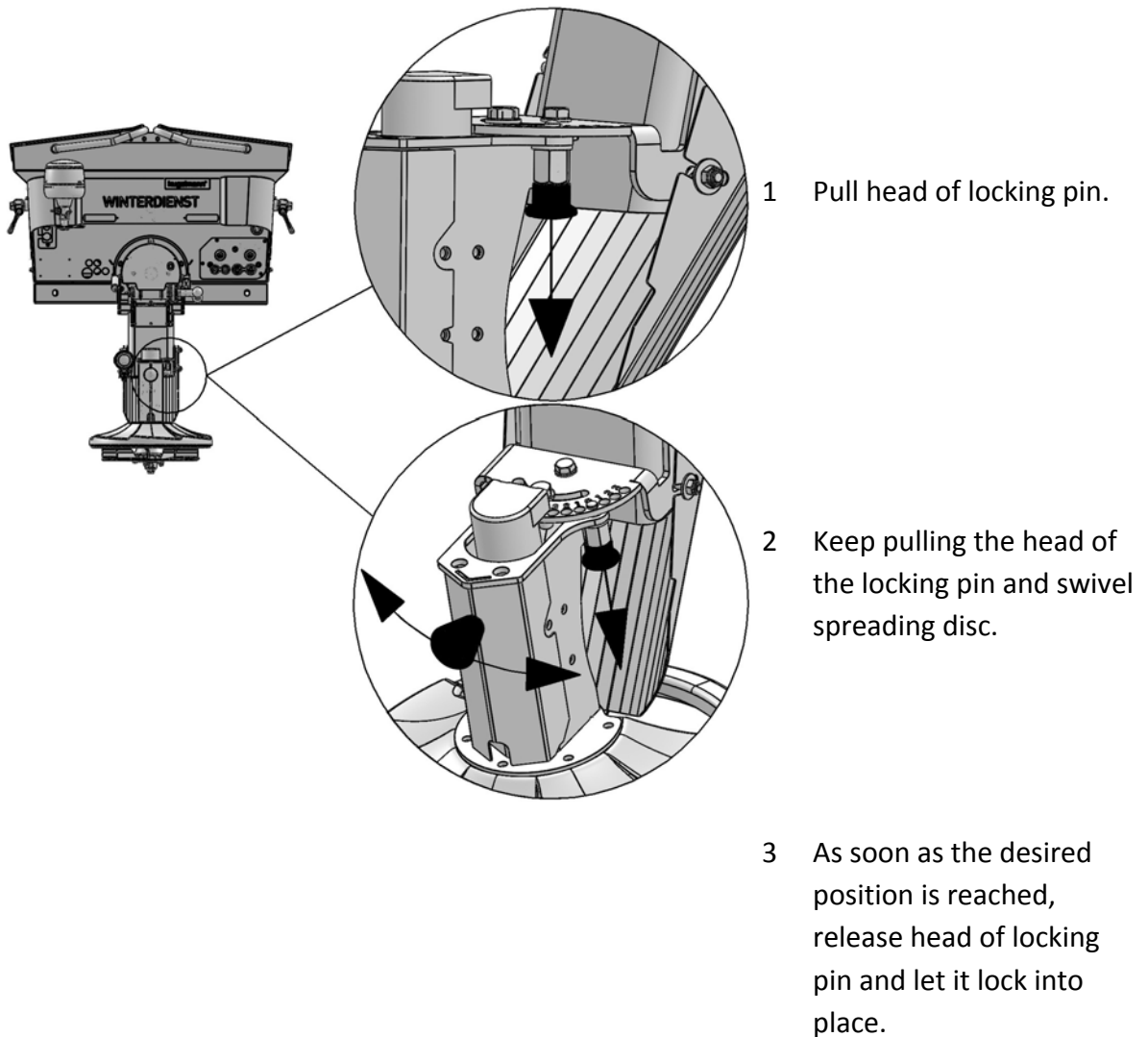
Flying salt or grit.

Risk of serious injury.

- Never stay in the working range of the spreader!

7.5 Location of spreading pattern

The location of the spreading pattern can be set as follows:



warning

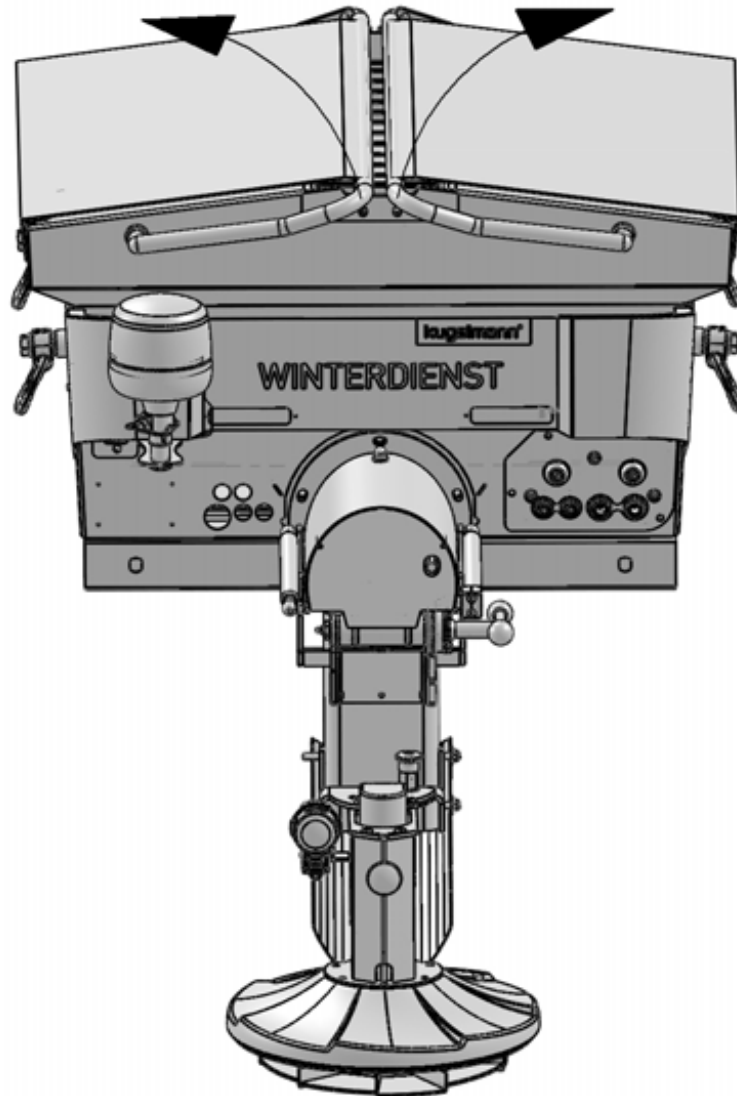
Rotating parts.

Risk of serious injury or death.

- Never put your hands into the spreading disc during operation.
- During the whole operation at the spreader, all lids must remain attached!
- During works at rotating parts, switch off the hydraulic system and the motor of the carrier vehicle, disconnect the vehicle and remove the ignition key!

7.6 Open tarpaulin cover.

To open the tarpaulin cover, proceed as follows:



Pull clamp with tarpaulin cover upwards from its anchor.



caution

Limbs getting caught.

Risk of injury.

- Never put your hands into moving components when opening the tarpaulin cover.

8 Operating instructions

This chapter gives you information on the following:

- Chapter 8.1 "Checks before operation", page 44
- Chapter 8.2 "Functional diagram", page 44
- Chapter 8.3 "Switch off spreader", page 46
- Chapter 8.4 "Working speed and safety", page 47

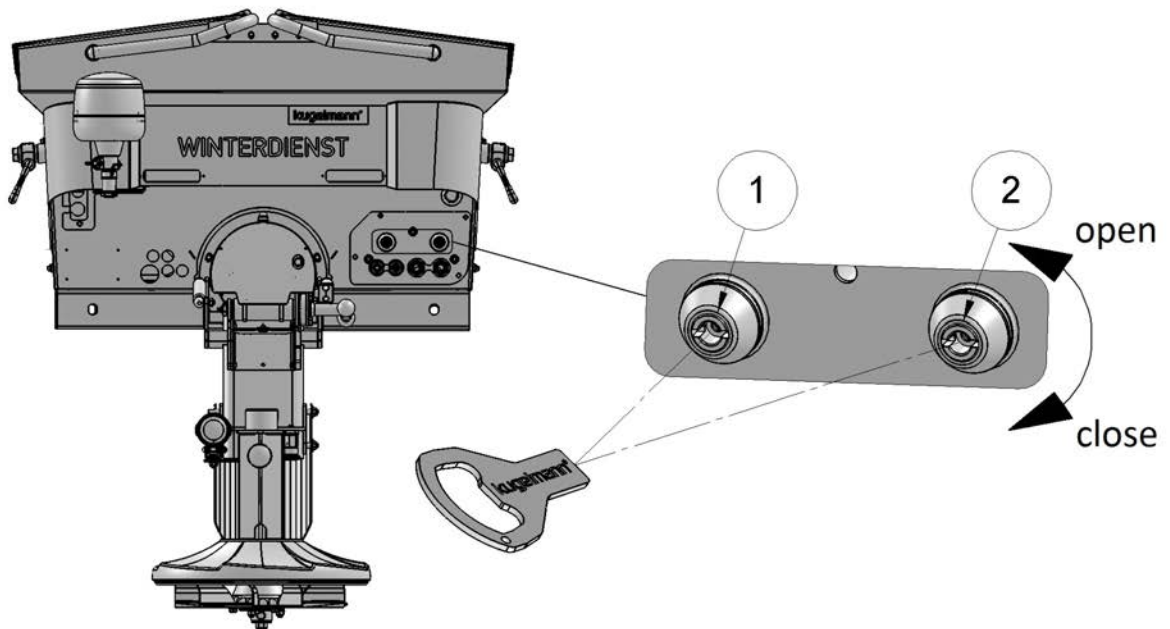
8.1 Checks before operation

Before every operation of the spreader, check whether the hydraulic lines are tight and undamaged. Replace damaged hydraulic lines immediately.

Before every operation of the spreader, check the lighting.

8.2 Functional diagram

The functions of the spreader can be regulated by two setting screws:



Pos.	Position	Function
1	left	Setting of spreading width
2	right	Setting quantity of spreading material

**notice**

These settings function only if no control system is installed at the spreader.
If a control system is installed, the setting screws must be closed ("Closed").

**warning**

Rotating parts.

Risk of serious injury or death.

- During setting, never put your hand into spreading disc, conveyor screw or the optional agitator shaft!
 - During the whole setting operation at the spreader, all lids must remain attached!
 - During the whole setting operation at the spreader, the grid must remain mounted!
 - During works at rotating parts, switch off the hydraulic system and the motor of the carrier vehicle, disconnect the vehicle and remove the ignition key!
-

**caution**

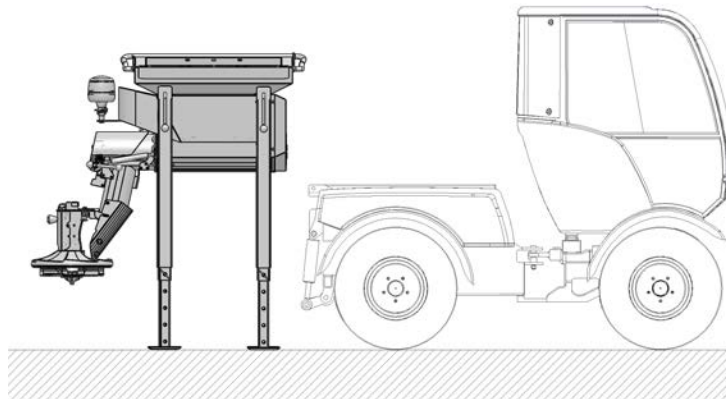
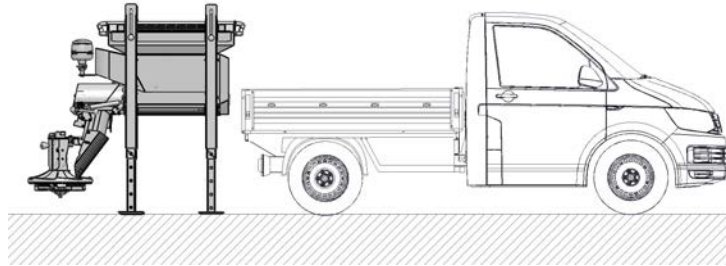
Heat at parts which use circulating oil as a coolant or at rotating parts.

Risk of injury or property damage.

- Do not touch any hot components!
 - Do not touch any rotating parts!
-

8.3 Switch off spreader

When switching off the spreader, please proceed inversely to the description in *Assembly of spreader* (see Chapter 7.1 "Assembly of spreader", page 29).



notice

Please pay attention to the following when switching off the spreader:

- Clean the spreader thoroughly and remove any salt residues.
- Use rust inhibitor to protect all bright parts against corrosion.
- Before removing the carrier vehicle from the spreader, make sure that all hydraulic and power lines have been separated from the carrier vehicle.
- When switching off the spreader, make sure that all socket pins in the tripods are secured with locking pins.

**caution**

Placing the spreader in an unprotected area.

Risk of injury or property damage.

- Never place the spreader in a highly frequented area or an area accessible to children!
-

**caution**

Placing the spreader on uneven or soft ground.

Risk of injury or property damage.

- Place the spreader only on even, solid and stable ground!
-

**caution**

Spreader is not jacked up high enough.

Danger of property damage.

- When removing the spreader, please make sure that the spreader is jacked up high enough!
-

8.4 Working speed and safety

When using the spreader, please pay attention to the safety instructions for operation (see Chapter 6.3 "Use", page 20)

9 Maintenance

This chapter gives you information on the following:

- Chapter 9.1 *"Maintenance intervals", page 49*
- Chapter 9.2 *"Wear parts", page 51*
- Chapter 9.3 *"Lubrication schedule", page 52*
- Chapter 9.4 *"Tighten drive chain.", page 55*
- Chapter 9.5 *"Setting of chute", page 56*
- Chapter 9.6 *"Setting of notch at tarpaulin bow", page 58*
- Chapter 9.7 *"Setting of friction lining at tarpaulin bow", page 60*
- Chapter 9.8 *"Changing hydraulic oil and hydraulic filter", page 63*
- Chapter 9.9 *"Safety", page 65*

9.1 Maintenance intervals

In order to ensure proper operation, please carry out the following maintenance work in the indicated time intervals:

Interval	Work
Before each use	<ul style="list-style-type: none"> • Visual inspection of the whole spreader. • Oil level check at hydraulic tank (optional). • Check torque support at additional PTO pump (optional). • Check hydraulic lines. • Check lighting. • Check connection to carrier vehicle.
Monthly	<ul style="list-style-type: none"> • Check chain tension at conveyor screw. • Lubrication (see Chapter 9.3 "<i>Lubrication schedule</i>", page 52). • Check wear parts (see Chapter 9.2 "<i>Wear parts</i>", page 51).
Yearly	<ul style="list-style-type: none"> • Check by an expert. • Removal of damage to the paintwork.
After 500 operating hours	<ul style="list-style-type: none"> • Change hydraulic oil (optional hydraulic tank). • Change hydraulic oil filter (optional hydraulic tank).



notice

Observe operating instructions of optional additional devices (e.g. hydraulic unit).

**warning**

Electric shocks during maintenance work.

Risk of serious injury or death.

- Interrupt power supply before executing work at an electrical device!
-

**warning**

Draining oil during maintenance work.

Risk of serious injury or death.

- Interrupt the hydraulic supply to carrier vehicle and make sure that the hydraulic cycle is depressurised before working at a hydraulic device!
-

**caution**

Non-observance of maintenance intervals.

Risk of injury or property damage.

- Please pay attention to the prescribed maintenance intervals!
-

**caution**

Maintenance work without necessary technical knowledge or appropriate tooling.

Risk of injury or property damage.

- Carry out maintenance work only if you have the necessary expertise as well as suitable tools!
-

**caution**

Tightening of screw connections.

Danger of property damage.

- When tightening screw connections, always use the prescribed tightening torque (see Chapter 15. "Tightening torques ", page 84)!
-

9.2 Wear parts



notice

Wear parts are:

- Spreading disc
 - Conveyor screw
 - Chain and chain wheels
 - Position of spreading disc and conveyor screw
 - Illuminants
 - Hydraulic lines (replace every 6 years!)
 - Hoses and collars
 - Tarpaulin cover
 - Splash guard
 - Hydraulic motors
 - Pneumatic springs
 - Mechanics to set the outlet
 - Notch at tarpaulin bow
 - Friction lining notch at tarpaulin bow
 - PTO hydraulic pump (optional)
 - Hydraulic oil filter (optional)
 - Agitator shaft and agitator elements (optional)
 - Bearing freewheel agitator shaft (optional)
-



caution

Use of wrong spare parts.

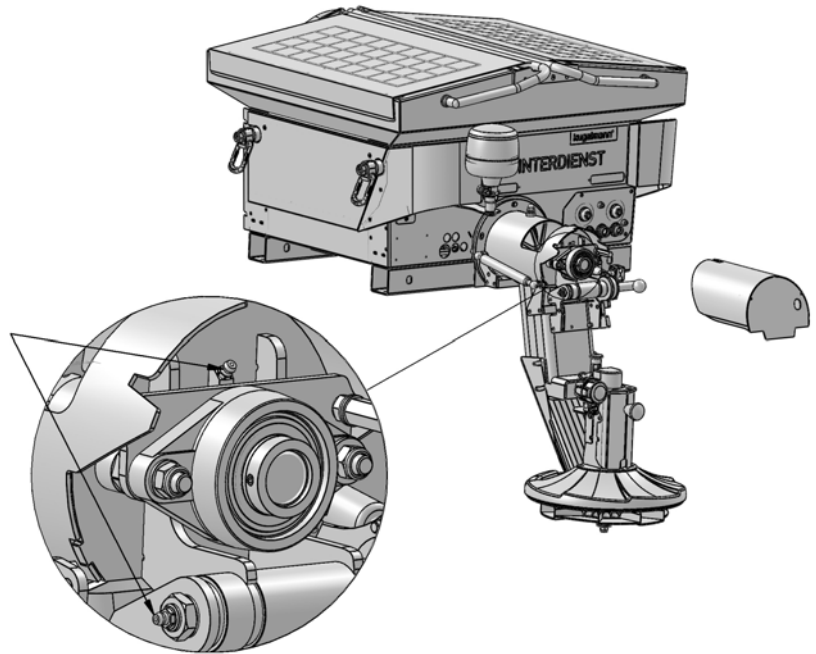
Risk of injury or property damage.

- Do only use original parts for repair work!
-

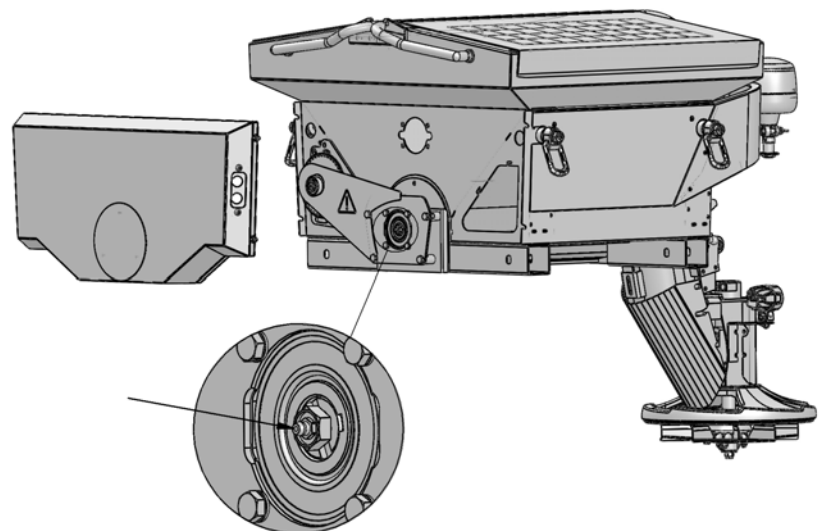
9.3 Lubrication schedule

The lubricating nipples at the spreader have to be lubricated according to the maintenance schedule (see Chapter 9.1 "Maintenance intervals", page 49)

- Remove pipe covering
- Lubricate at lubricating nipple (roller bearing grease)
- Mount pipe covering

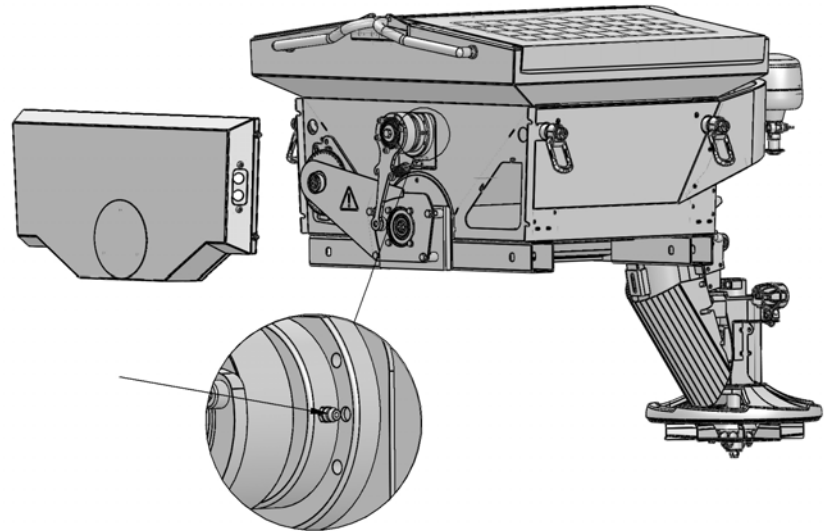


- Remove drive cover
- Lubricate at lubricating nipple (roller bearing grease)
- Lubricate chain (adhesive chain grease)
- Mount drive cover



Optional:

- Lubricate lubricating nipples at agitator shaft (roller bearing grease)



caution

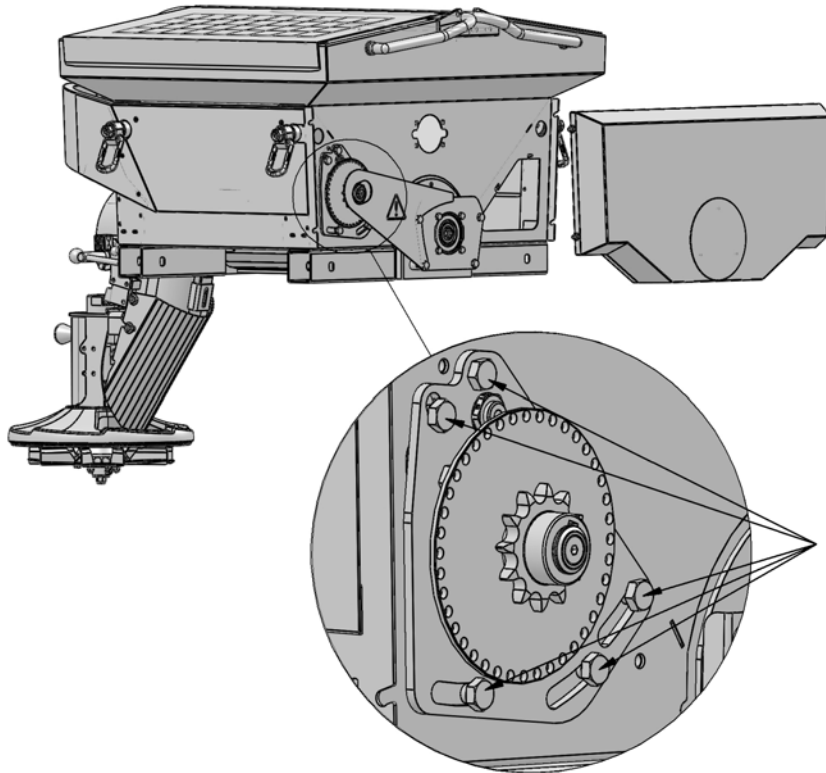
Carelessness when handling oil or lubricants.

Risk of injury.

- Avoid skin contact with oil and lubricants!
- Protect your skin with skin-protection lotion or oil-resistant gloves!
- Never use oil or lubricants to clean your hands!
- Change dirty or oily clothes as soon as possible!
- Wear protective goggles. If oil gets into your eyes, immediately consult a physician.

9.4 Tighten drive chain.

You will find the drive chain of the conveyor screw under the drive cover:



- 1 Slacken screws.
- 2 Tighten chain.
- 3 Tighten screws
(see Chapter 15.
"Tightening torques", page 84)



caution

Maintenance work without necessary technical knowledge or appropriate tooling.
Risk of injury or property damage.

- Carry out maintenance work only if you have the necessary expertise as well as suitable tools!



caution

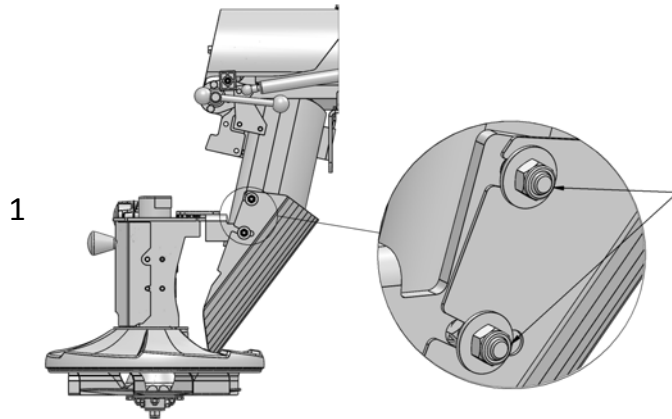
Parts continue to run.

Risk of injury.

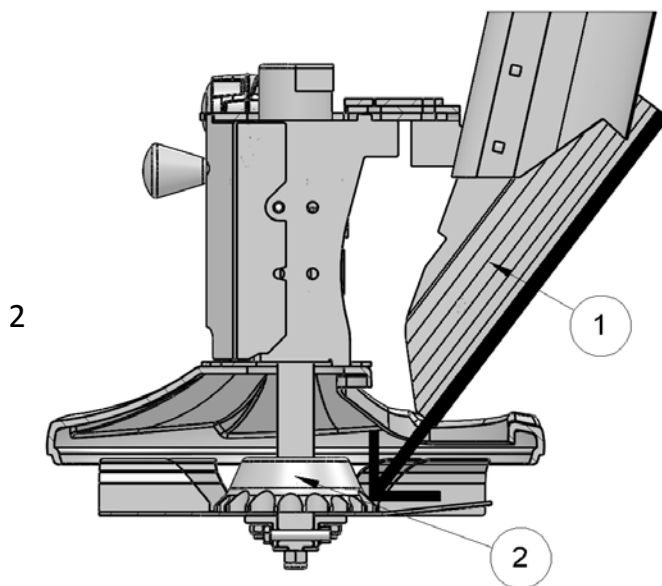
- Please wait until all parts stand still and disconnect hydraulic lines before performing any work at the spreader!

9.5 Setting of chute

The chute is preset at the factory. If this position should be changed, change it as follows:



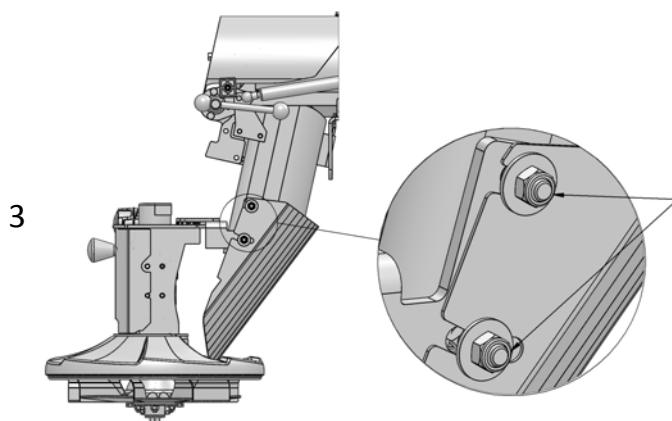
Slacken clamping nuts at both sides.



Pos.	Designation
1	Chute
2	Spreading disc cone

The chute inclination should be set so that an extension of the chute would end up in the tothing of the spreading disc cone.

Sectional view



Retighten clamping nuts at both sides (see Chapter 15. "Tightening torques", page 84).

**warning**

Rotating parts.

Risk of serious injury or death.

- During operation, never put your hands into spreading disc, conveyor screw or the optional agitator shaft!
 - During the whole operation at the spreader, all lids must remain attached!
 - During the whole operation at the spreader, the grid must remain mounted!
 - During works at rotating parts, switch off the hydraulic system of the carrier vehicle and disconnect the vehicle!
-

**caution**

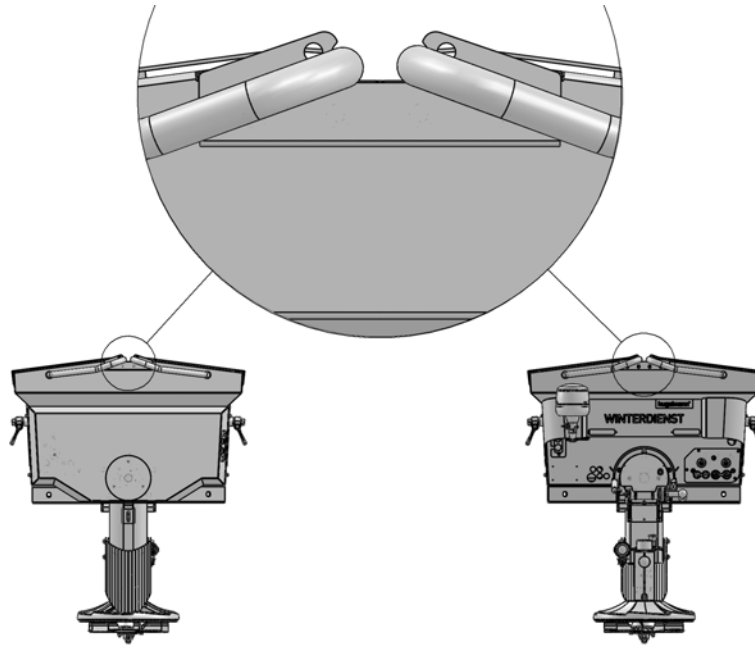
Parts continue to run.

Risk of injury.

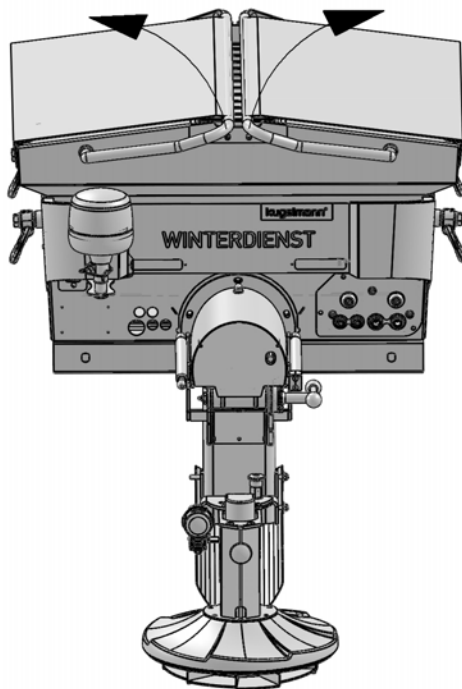
- Always wait until all parts stand still before performing any work at the spreader.
-

9.6 Setting of notch at tarpaulin bow

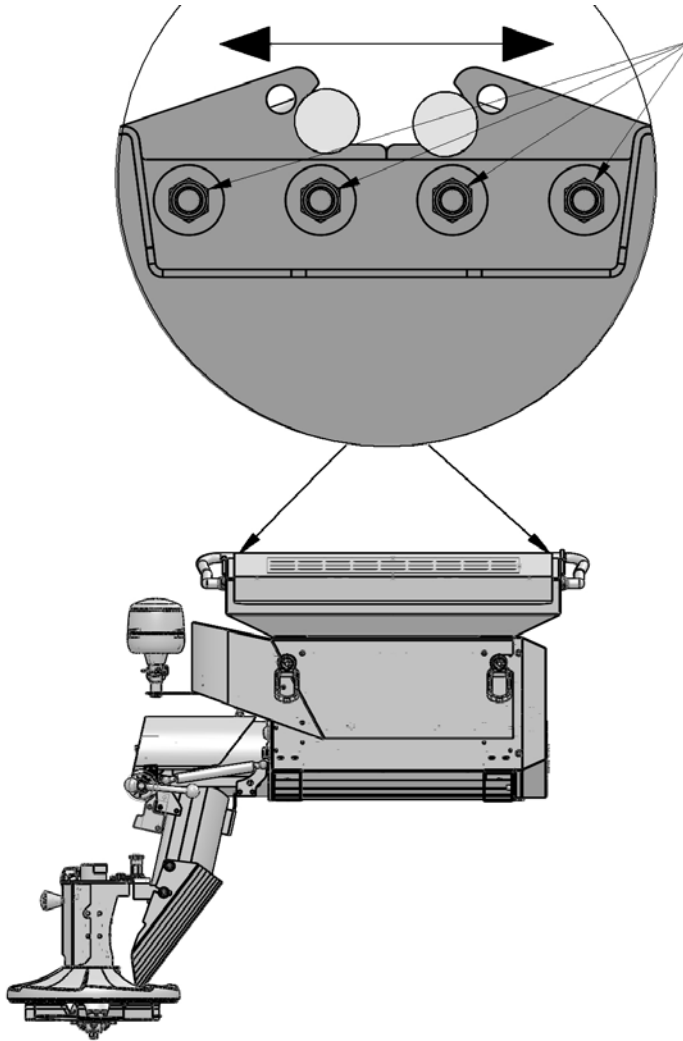
The notch is preset at the factory. Depending on the spreader version, it is located either at the rear or at the front:



If the position is changed or the tarpaulin bow does not remain adequately in the notch, set the notch as follows:



- 1 Open tarpaulin cover.



- 2 Slacken hexagon nuts.
- 3 Both notches can be adjusted.
- 4 Move notches into desired position.
- 5 Fasten hexagon nuts (Respect Chapter 15. "Tightening torques", page 84 !)



caution

Limbs getting caught.

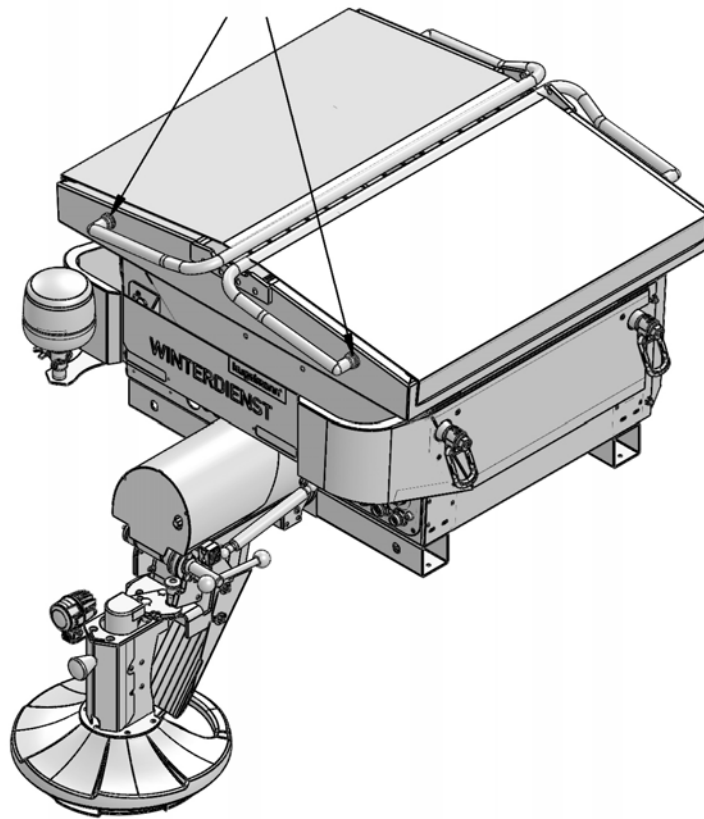
Risk of injury.

- Never put your hands between moving parts!

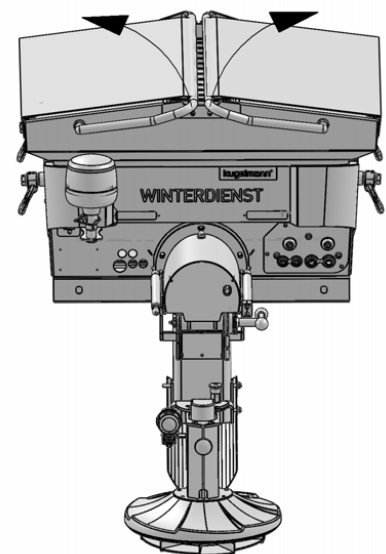
9.7 Setting of friction lining at tarpaulin bow

If the resistance at the bows is too high or too low during opening or closing or if the bows can be moved too easily or too hard, set the bows as follows:

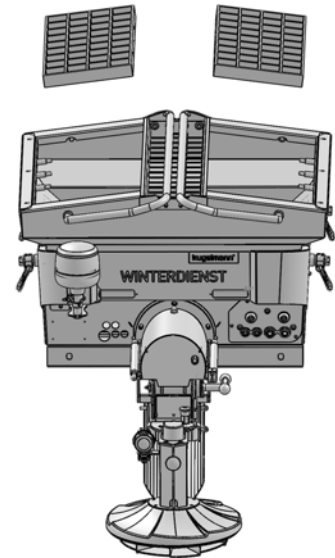
Position of friction linings:



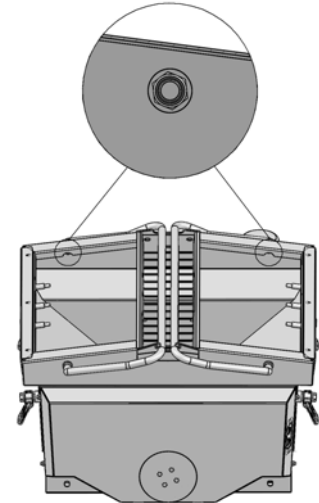
- 1 Open tarpaulin cover.



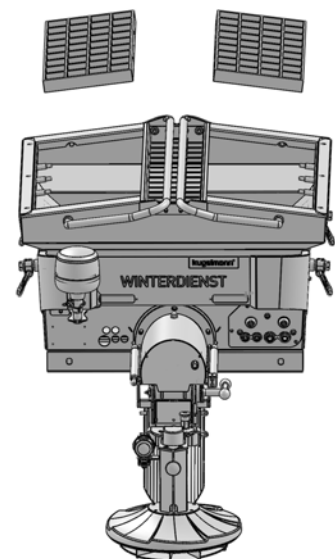
- 2 Remove grids (remove hexagon nuts).



- 3 Setting of bow resistance by fastening or slackening the hexagon nuts.



- 4 Check resistance of clamps by opening and closing.



- 5 Insert grids and fasten them.

**caution**

Limbs getting caught.

Risk of injury.

- Never put your hands between moving parts!
-

**caution**

Maintenance work without necessary technical knowledge or appropriate tooling.

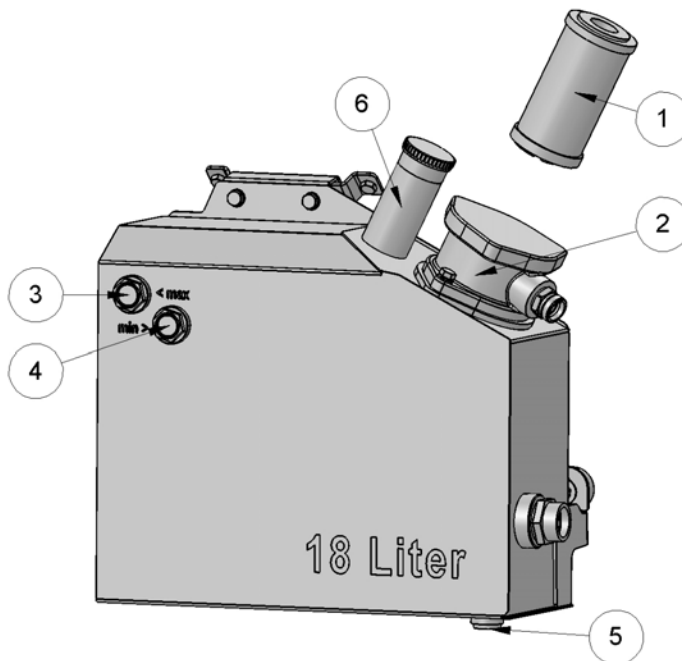
Risk of injury or property damage.

- Carry out maintenance work only if you have the necessary expertise as well as suitable tools!
-

9.8 Changing hydraulic oil and hydraulic filter

Only with optional PTO hydraulic pump/unit with hydraulic oil tank!

Change of hydraulic oil and hydraulic oil filter as follows:



Pos.	Function
1	Oil filter
2	Oil filter housing
3	Max. oil filling level
4	Min. oil filling level
5	Oil draining screw
6	Filler neck

- 1 Open oil draining screw (Pos. 5)
- 2 Collect the oil in an appropriate vessel.
- 3 Slacken three screws at the lid of the oil filter housing (Pos. 2)
- 4 Remove the old oil filter (Pos. 1) and dispose of properly.
- 5 Insert the new oil filter and screw the lid of the oil filter housing (Pos. 2) onto it.
- 6 Screw the oil draining screw (Pos. 5) into the tank and tighten it.
- 7 Fill hydraulic oil (HLP 46) into the tank via filler neck (Pos. 6) (oil level should be between min. (Pos. 4) and max. (Pos. 3)).
- 8 Filling quantity: 18 l

**caution**

Carelessness when handling oil or lubricants.

Risk of injury.

- Avoid skin contact with oil and lubricants!
 - Protect your skin with skin-protection lotion or oil-resistant gloves!
 - Never use oil or lubricants to clean your hands!
 - Change dirty or oily clothes as soon as possible!
 - Wear protective goggles. If oil gets into your eyes, consult a physician immediately.
-

**caution**

Use of wrong spare parts.

Risk of injury or property damage.

- Do only use original parts for repair work!
-

**caution**

Maintenance work without necessary technical knowledge or appropriate tooling.

Risk of injury or property damage.

- Carry out maintenance work only if you have the necessary expertise as well as suitable tools!
-

9.9 Safety

During cleaning and maintenance work, please pay attention to the following:

- Make sure that all hydraulic lines are depressurised.
- Switch off the motor of the carrier vehicle and remove the ignition key.
- Disconnect the hydraulic and electrical connection to the carrier vehicle.
- Make sure that the spreader as well as the carrier vehicle are placed on even, solid and stable ground!
- Never use components of the spreader as climbing aid.
- When tightening screw connections, always use the prescribed tightening torques (see Chapter 15. "*Tightening torques*", page 84).
- Please observe the safety instructions for maintenance (see Chapter 6.4 "*Maintenance*", page 23).

10 Transport

This chapter informs you on necessary precautions that have to be taken when transporting the spreader.



warning

Improper transport of spreader.

Risk of injury or property damage.

- For transport, use only the correct attachment and lashing points provided at the spreader.
 - Make sure that the spreader does not slip or fall over during transport!
 - Make sure that all socket pins are secured!
-

11 Storage

This chapter informs you on necessary precautions that have to be taken when putting the spreader into stock.



notice

- Always store the spreader on secured tripods.
 - Always store the spreader empty.
 - Always store the spreader covered or with closed tarpaulin cover.
 - Protect the spreader against direct sunlight.
 - If you disconnect the hydraulic connectors, close the ends of the hydraulic connections with sealing plugs.
 - Clean the interior of the spreader.
 - Repaint damages to the paintwork.
 - After cleaning and repainting, seal the spreader inside and outside with a suitable protective agent, e.g. protective wax or anti-rust spray.
-

12 Disconnecting the system

The spreader must be disposed of in accordance with local or state regulations. Depending on material, dispose of parts with residual waste or hazardous waste or recycle. Kugelmann takes no responsibility for disposal.

13 Technical Data

This chapter gives you information on the following:

- Chapter 13.1 "Requirements for carrier vehicle", page 69
- Chapter 13.2 "Technical data of spreader", page 70

13.1 Requirements for carrier vehicle

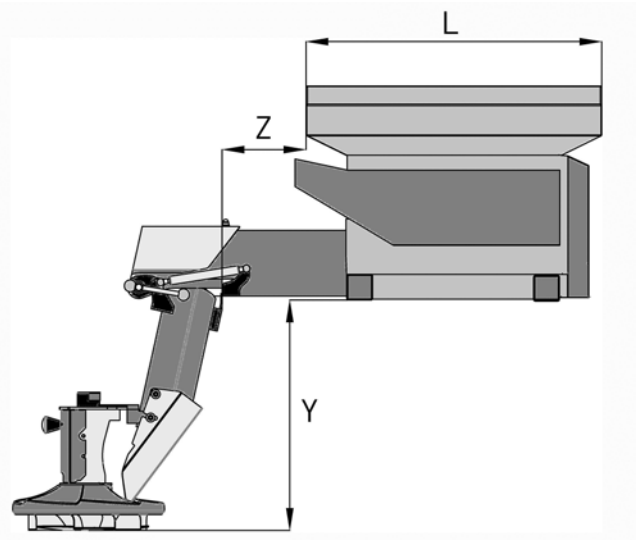
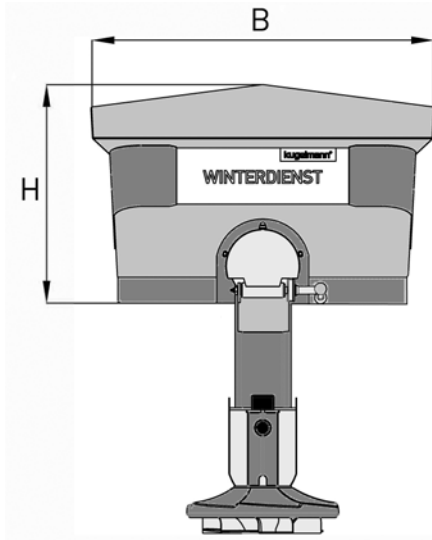
The following requirements must be fulfilled at the carrier vehicle for faultless function of the spreader:

- Delivery volume of hydraulic system: 40 l/min: max. performance of hydraulic drives.

lower delivery volume: reduced performance of hydraulic drives.

higher delivery volume: possible overheating of hydraulic drives.
- Hydraulic pressure: max. 210 bar
- Ensure that the maximum permissible axle load and overall weight is not exceeded at carrier vehicle with mounted spreader.

13.2 Technical data of spreader



- ⇒ L = length [mm]
- ⇒ W = width [mm]
- ⇒ H = height [mm]
- ⇒ Z = rear end length [mm]
- ⇒ Y = length of outlet [mm]

Designation	Rear end length Z [mm]
Z0	0
Z1	250
Z2	500
Z3	750
Z4	1000
Z5	1250
Designation	Length of conveyor arm Y [mm]
Y1	410
Y2	460
Y3	510
Y4	560
Y5	610
Y6	660
Y7	710
Y8	760
Y9	810
Y10	860
Y11	910

Example of type designation:

A341 / B1050 H700 L930 / Z1

A = Truck-mounted spreader
 34 = 0.34 m³ volume
 1 = 1 metering screw

1050 = width [mm]

700 = height [mm]

930 = length [mm]

Z1 = rear end length 250 mm

Pan width W [mm]	Pan height H [mm]	Pan length L [mm]	Volume [m³]
930	600	800	0.21
		930	0.25
		1050	0.28
		1300	0.36
		1550	0.44
		1800	0.52
		2050	0.59
		2300	0.67
	650	800	0.24
		930	0.29
		1050	0.33
		1300	0.42
		1550	0.51
		1800	0.60
		2050	0.69
		2300	0.78
	700	800	0.28
		930	0.33
		1050	0.38
		1300	0.48
		1550	0.58
		1800	0.68
		2050	0.78
		2300	0.88
	750	800	0.32
		930	0.38
		1050	0.43
		1300	0.54
		1550	0.65
		1800	0.76
		2050	0.87
		2300	0.98
800	800	0.35	
	930	0.42	
	1050	0.48	
	1300	0.60	
	1550	0.72	
	1800	0.84	
	2050	0.97	
	2300	1.10	

Pan width W [mm]	Pan height H [mm]	Pan length L [mm]	Volume [m³]
1050	650	800	0.25
		930	0.29
		1050	0.34
		1300	0.43
		1550	0.52
		1800	0.62
		2050	0.71
		2300	0.80
	700	800	0.29
		930	0.34
		1050	0.40
		1300	0.50
		1550	0.60
		1800	0.71
		2050	0.81
		2300	0.92
	750	800	0.33
		930	0.39
		1050	0.45
		1300	0.57
		1550	0.68
		1800	0.80
		2050	0.92
		2300	1.00
	800	800	0.37
		930	0.44
		1050	0.50
		1300	0.63
		1550	0.76
		1800	0.89
		2050	1.00
		2300	1.20
850	800	0.41	
	930	0.48	
	1050	0.57	
	1300	0.70	
	1550	0.84	
	1800	0.99	
	2050	1.10	
	2300	1.30	

Pan width W [mm]	Pan height H [mm]	Pan length L [mm]	Volume [m ³]
	900	800	0.45
		930	0.53
		1050	0.61
		1300	0.77
		1550	0.92
		1800	1.10
		2050	1.20
		2300	1.40
	950	800	0.50
		930	0.58
		1050	0.66
		1300	0.83
		1550	1.00
		1800	1.20
		2050	1.30
		2300	1.50

14 Additional equipment

The spreader can be expanded with optional components.

This chapter gives you information on the following:

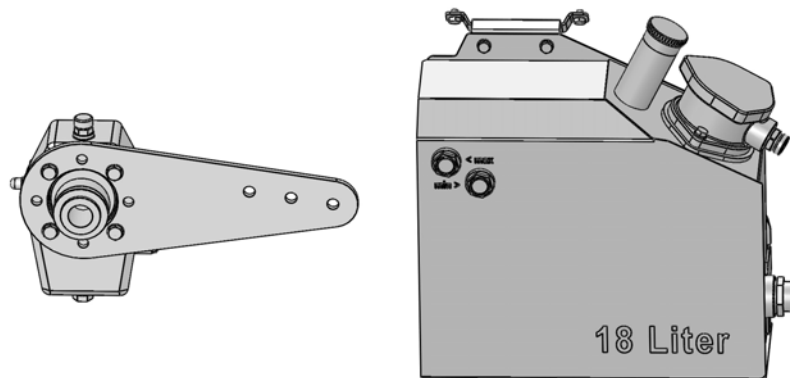
- Chapter 14.1 *"PTO hydraulic pump with hydraulic tank"*, page 76
- Chapter 14.2 *"Hydraulic unit"*, page 78
- Chapter 14.3 *"Agitator shaft"*, page 80
- Chapter 14.4 *"Reversal of screw movement"*, page 81
- Chapter 14.5 *"Lighting"*, page 82
- Chapter 14.6 *"Splash guard"*, page 83

14.1 PTO hydraulic pump with hydraulic tank

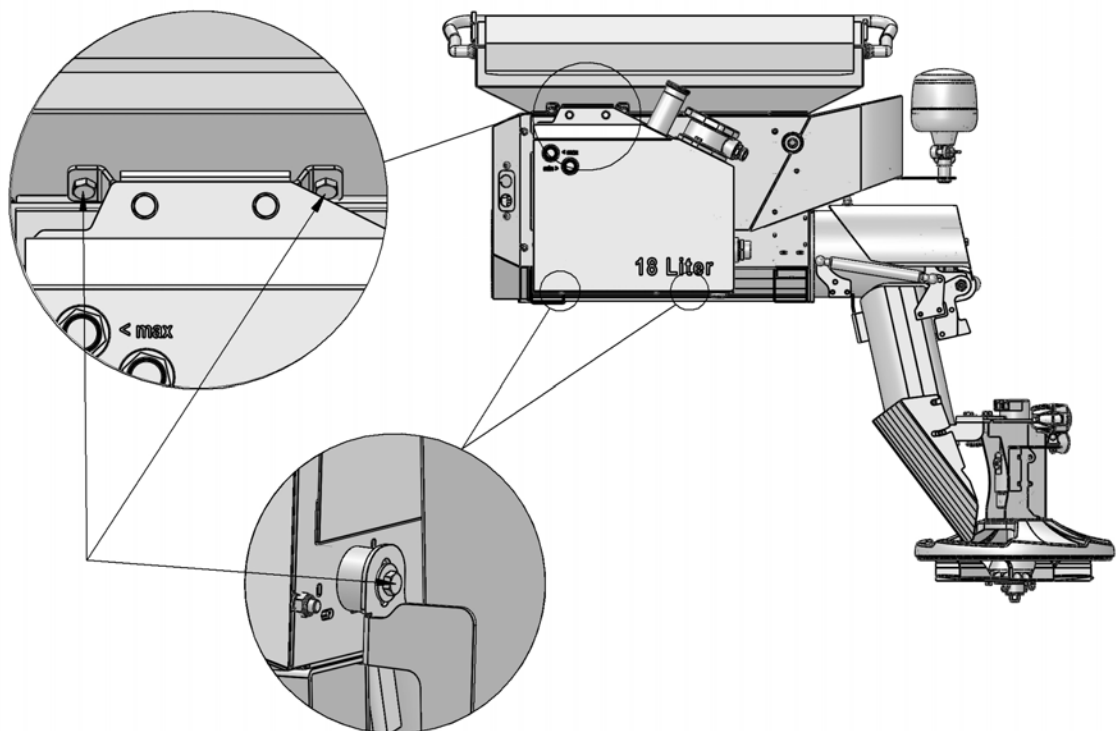
By means of the additional option “PTO pump with hydraulic tank”, a carrier vehicle not disposing of an appropriate hydraulic unit, may be equipped with a spreader.

The torque support attached counteracts the torque of the PTO hydraulic pump of the carrier vehicle. Please attach at appropriate place.

Filling volume (HLP 46): 18 l



Mount the hydraulic tank at an appropriate place at the spreader, on the left in the direction of travel.



**warning**

Damaged hydraulic lines.

Risk of serious injury.

- Damaged hydraulic lines must be replaced immediately!
 - After 6 years at the latest, replace hydraulic lines even if they are not damaged!
-

**caution**

First commissioning without instruction.

Risk of injury or property damage.

- First commissioning of the spreader and the PTO hydraulic pump must be accomplished by employees of the dealer, the manufacturer or a representative of our works!
-

**caution**

Max. PTO speed exceeded.

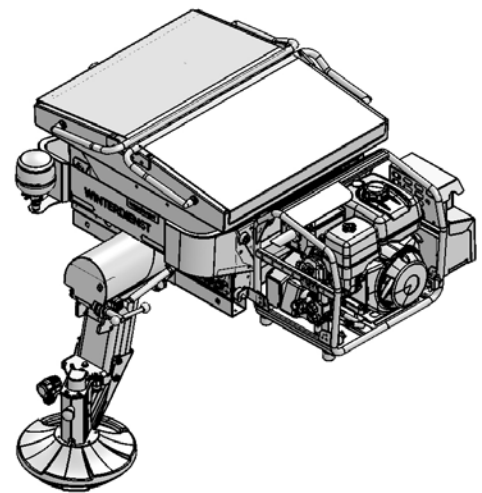
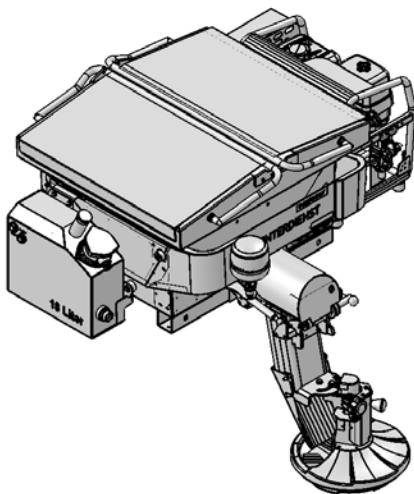
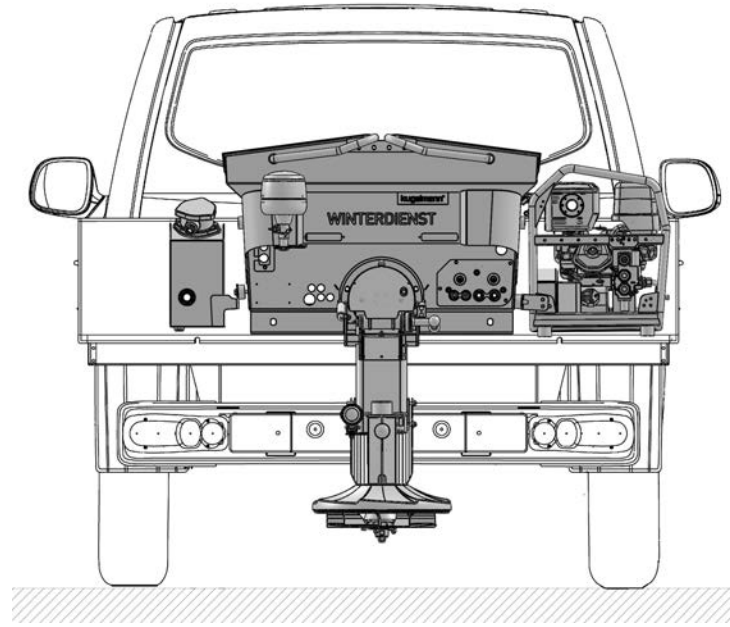
Risk of injury or property damage.

- The PTO speed must not exceed 540 rpm!
-

14.2 Hydraulic unit

By means of the additional option “Hydraulic unit”, a carrier vehicle not disposing of an appropriate hydraulic unit, may be equipped with a spreader.

Filling volume hydraulic tank (HLP 46): 18 l



Fitting:

- Mount the hydraulic tank at an appropriate place at the spreader, on the left in the direction of travel.
- Mount the hydraulic unit at an appropriate place at the spreader, on the right in the direction of travel.

**warning**

Overload or possible tilting of the carrier vehicle.

Risk of injury, death or damage to property.

- Please observe axle load limits and admissible overall weight!
-

**warning**

Damaged hydraulic lines.

Risk of serious injury.

- Damaged hydraulic lines must be replaced immediately!
 - After 6 years at the latest, replace hydraulic lines even if they are not damaged!
-

**caution**

First commissioning without instruction.

Risk of injury or property damage.

- First commissioning of the spreader must be accomplished by employees of the dealer, the manufacturer or a representative of our works!
-

**caution**

Wrong position of centre of gravity.

Danger of property damage.

- When mounting the spreader, please make sure that the centre of gravity is correctly placed on the carrier vehicle!
-

**caution**

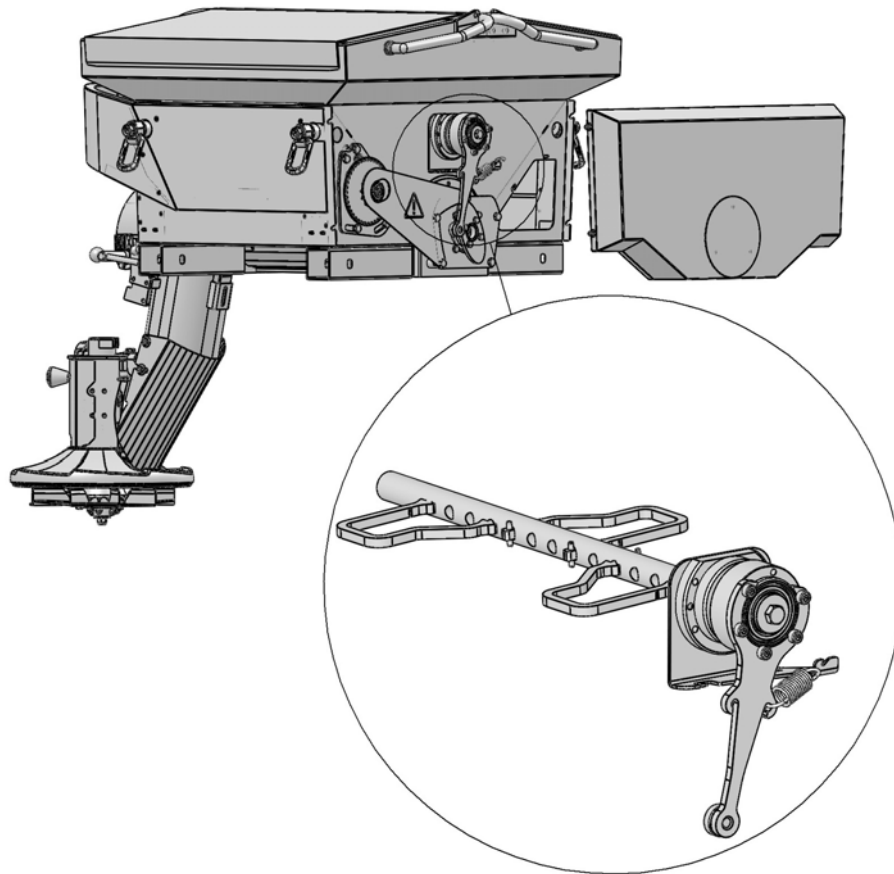
Heat at parts which use circulating oil as a coolant or at rotating parts.

Risk of injury or property damage.

- After operation, never touch any parts which use circulating oil as a coolant!
 - After operation, never touch any parts which rotate during operation!
-

14.3 Agitator shaft

An agitator shaft allows for bulking of the spreading agent and as a result provides a homogeneous spreading pattern.



warning

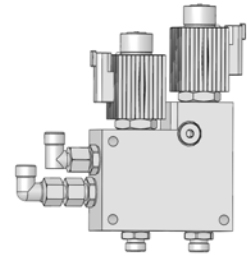
Rotating parts.

Risk of serious injury or death.

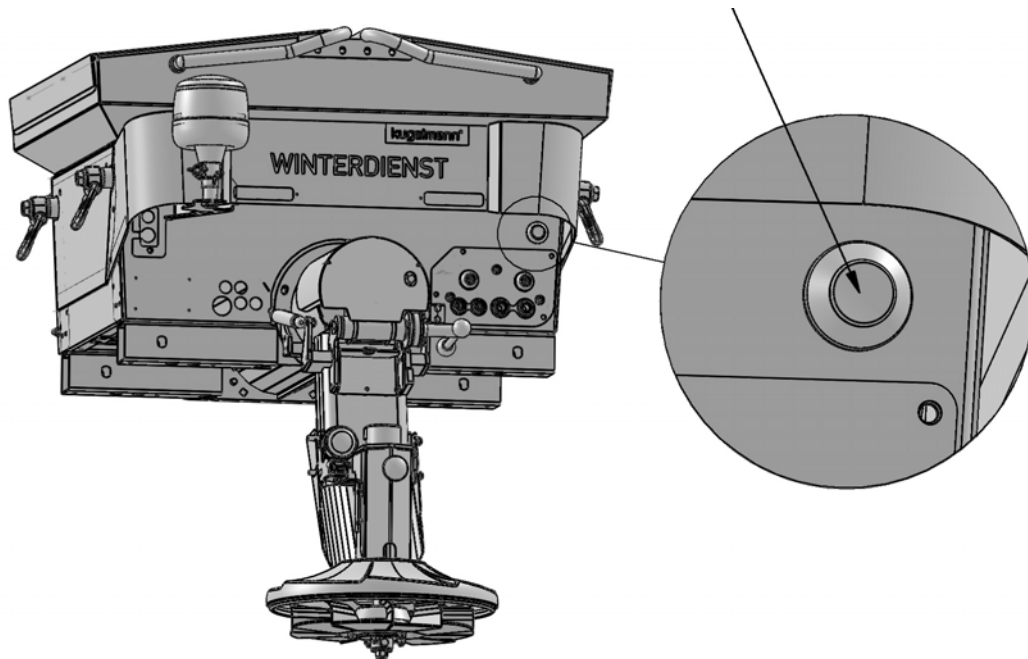
- During operation, never put your hands into spreading disc, conveyor screw or the optional agitator shaft!
- During the whole operation at the spreader, all lids must remain attached!
- During the whole operation at the spreader, the grid must remain mounted!
- During work at rotating parts, switch off the hydraulic system of the carrier vehicle and disconnect the vehicle!

14.4 Reversal of screw movement

The opposite rotation of the screw conveyor provides for bulking of the spreading agent. Through the reversal of the screw movement, a conveyor screw blocked by spreading material can run smoothly again.



The actuation switch is located here:



warning

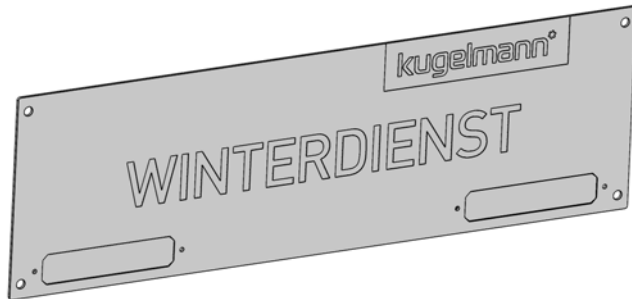
Rotating parts.

Risk of serious injury or death.

- During operation, never put your hands into spreading disc, conveyor screw or the optional agitator shaft!
- During the whole operation at the spreader, all lids must remain attached!
- During the whole operation at the spreader, the grid must remain mounted!
- During work at rotating parts, switch off the hydraulic system of the carrier vehicle and disconnect the vehicle!

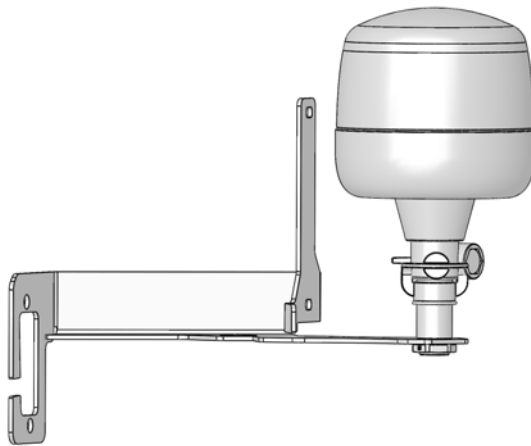
14.5 Lighting

The following optional lighting can be mounted at the spreader:

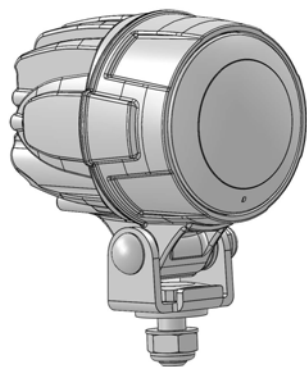


Flasher

or



Rotating beacon



Working headlight



caution

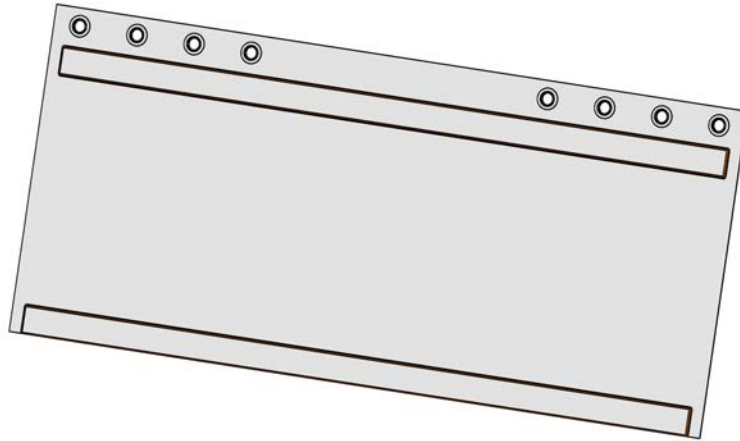
Assembly work without necessary technical knowledge or appropriate tooling.

Risk of injury or property damage.

- Only carry out assembly work if you have the necessary expertise as well as suitable tools!

14.6 Splash guard

The splash guard protects the carrier vehicle from flying spreading material.



caution

Assembly work without necessary technical knowledge or appropriate tooling.

Risk of injury or property damage.

- Only carry out assembly work if you have the necessary expertise as well as suitable tools!

15 Tightening torques

Shaft screws stainless steel

- Metric standard thread
- Property class 70
- $\mu = 0.12$ (Anti-seize paste)

Thread	M5	M6	M8	M10	M12	M14	M16
Tightening torque [Nm]	4	7	16	33	56	93	136

Shaft screws steel

- metric standard thread
- zinc-plated
- property class 8.8 and 10.9
- $\mu = 0.14$ (unlubricated)

Thread	M5	M6	M8	M10	M12	M14	M16
Tightening torque [Nm] 8.8	6	10	25	50	85	140	210
Tightening torque [Nm] 10.9	9	15	35	75	130	200	310

Shaft screws steel

- metric standard thread
- zinc-flake coated
- property class 8.8 and 10.9
- $\mu = 0.12$ (unlubricated)

Thread	M5	M6	M8	M10	M12	M14	M16
Tightening torque [Nm] 8.8	6	9	24	48	84	133	205
Tightening torque [Nm] 10.9	8	14	34	70	120	180	280

Warranty

Kugelmann Maschinenbau e.K., 87675 Rettenbach a.A., warrants its machines to be free from defects in material and workmanship and undertakes to replace free of charge all parts ex works which have been purchased by relevant Kugelmann dealers and have been acknowledged as defective after having been checked by Kugelmann. The warranty expressly given shall be limited to a period of 12 months from the date of delivery of the machine to purchaser. All further claims by the customer shall be excluded.

Wear parts are excluded from warranty.

The manufacturer takes no responsibility for third-party products not produced at the works of Kugelmann. Our liability shall be limited to the assignment of claims that we are entitled against the supplier. No warranty will be given for machines purchased second-hand or used and modified or converted machines.



notice

Please make sure that you fill in your warranty card and send it back to the manufacturer immediately. Claims have to be notified with a warranty claim in writing after their occurrence without undue delay (after 30 days at the latest).



<i>Company</i> <i>Kugelmann Maschinenbau e.K.</i> <i>Gewerbepark 1-5</i> <i>87675 Rettenbach a.A.</i> <i>Germany</i>	Device type:
	Serial number:
	Vehicle identification number:
	Year of construction:
	Address of dealer:
	Address of user/owner:

I have read the operating instructions.

Signature of user:

The warranty card has to be sent directly to the manufacturer.

ATTENTION: Warranty claims are only accepted with the warranty card of Kugelmann Maschinenbau e.K.

