



## EL44

### Liquid Manure Spreader

Instruction Manual / Installation Instructions  
(Original instructions)

2018-9015-003  
03-2015

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## 1 Preface

This is a GEA product. GEA is the manufacturer of the Houle product line. This product was formerly known under HOULE trademark.



### 1.1 About this manual

The manufacturer reserves the right to make changes due to technical developments in the data and images given in this manual.

Reproductions, translations and copies of any kind, even of extracts, require written authorization from the manufacturer.

Abbreviations, units, specialist terms, special names or terminology are explained in detail in section Appendix.

This manual is supplied with the product.

- This manual should be kept close at hand and remain with the equipment even if the equipment is sold.
- This manual is not subject to an amendment service. The most recent version can be obtained through the dealer or directly from the manufacturer.

### Pictograms used



This pictogram indicates information that will be helpful toward a better understanding of the working processes.



This symbol indicates another document or section to refer to.

All manuals have a reference number. The 4 middle digits specify the language of the instruction manual:

	language		language		language
-9000-	German	-9013-	Dutch	-9032-	Serbian
-9001-	English (United Kingdom)	-9015-	English (North American)	-9034-	Slovak
-9002-	French (France)	-9016-	Polish	-9035-	Chinese
-9003-	Italian	-9018-	Japanese	-9036-	Lithuanian
-9004-	Romanian	-9021-	Danish	-9038-	Portuguese (Brazil)
-9005-	Spanish (Spain)	-9022-	Hungarian	-9039-	French (Canada)
-9007-	Swedish	-9023-	Czech	-9040-	Latvian
-9008-	Norwegian	-9024-	Finnish	-9041-	Estonian
-9009-	Russian	-9025-	Croatian	-9043-	Spanish (Central America)
-9010-	Greek	-9027-	Bulgarian		
-9012-	Turkish	-9029-	Slovenian		

**The instruction manuals may not be available in all the listed languages.**

## 1.2 Manufacturer's address

**GEA Farm Technologies Canada Inc. / Division GEA Houle**  
**4591 boul. St-Joseph**  
**Drummondville, Qc, J2A 0C6**

 +1 819 477 - 7444  
 +1 819 477 - 5565  
 [geahoule@gea.com](mailto:geahoule@gea.com)  
 [www.gea-farmtechnologies.com](http://www.gea-farmtechnologies.com)

## 1.3 Customer service

### Dealer

If necessary, please contact your nearest dealer.

There is a comprehensive dealer Internet search function on our website at the following address:

[www.gea-farmtechnologies.com](http://www.gea-farmtechnologies.com)

### European contact information:

**GEA Farm Technologies GmbH**  
**Siemensstraße 25-27**  
**D-59199 Bönen**

 +49 (0) 2383 / 93-70  
 +49 (0) 2383 / 93-80  
 [contact@gea.com](mailto:contact@gea.com)  
 [www.gea-farmtechnologies.com](http://www.gea-farmtechnologies.com)

### US contact information:

**GEA Farm Technologies, Inc.**  
**1880 Country Farm Dr.**  
**Naperville, IL 60563**

 +1 630 369 - 8100  
 +1 630 369 - 9875  
 [contact\\_us@gea.com](mailto:contact_us@gea.com)  
 [www.gea-farmtechnologies.com](http://www.gea-farmtechnologies.com)

**1.4 Declaration of conformity**

Manufacturer:	<b>GEA Farm Technologies Canada Inc. / Division GEA Houle 4591 boul. St-Joseph Drummondville, Qc, J2A 0C6</b>
Product category:	<b>Liquid Manure Spreader</b>
Name / Model:	<b>EL44</b>
The named product is in conformity with the requirements of the following European directives:	
2006/42/EC	Machinery Directive
70/221/EEC	Rear Underrun Protection
70/222/EEC	Rear Licence Plate
Conformity with the requirements of these directives is testified by complete adherence to the following standards:	
<ul style="list-style-type: none"> <li>● Harmonized European standards <ul style="list-style-type: none"> <li>EN 707+A1 (2009-09)      Agricultural machinery - Slurry tankers Safety</li> <li>EN 953+A1 (2009-05)      Safety of machinery Guards</li> <li>EN 4254-1 (2013-07)      Agricultural Machinery - safety General requirements</li> <li>EN 4413 (2011-03)      Hydraulic fluid power General rules relating to systems</li> <li>EN 12100 (2010-12)      Safety of machinery - General principles for design - Risk assessment and risk reduction</li> <li>EN ISO 14121-2 (2008-02)      Safety of machinery - Risk assessment - Part 2: Practical guidance and examples of methods</li> <li>NF X 08-003-1 (2006-07)      Graphic and pictographic symbols - colors and safety signs</li> </ul> </li> <li>● German National requirements <ul style="list-style-type: none"> <li>StVZO      German National Law</li> </ul> </li> </ul>	
Person responsible for compiling the relevant technical documents:	Josef Schröer GEA Farm Technologies GmbH Siemensstraße 25-27 D-59199 Bönen ☎ +49 (0) 2383 / 93-70
Drummondville, 01.05.2011	 Yann Desrochers (Head of Research and Development)
The undersigned is acting by virtue of power of attorney from the management of: GEA Farm Technologies Canada Inc. / Division GEA Houle, 4591 boul. St-Joseph, Drummondville, Qc, J2A 0C6	
This declaration certifies compliance with the guidelines indicated, but does not establish any guarantee in the sense of paragraphs 443, 444 of the BGB. This declaration of conformity becomes invalid if design changes are made which affect the technical data given in the instructions and the correct use of the product, thereby significantly altering the machine!	

## **1.5 GEA Farm Technologies Canada Inc. / Division GEA Houle - general equipment warranty**



### **Important notice!**

**THIS GENERAL WARRANTY APPLIES TO ALL EQUIPMENT SOLD UNDER THE GEA HOULE TRADEMARK.**

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### **1.5.1 Limited warranty**

GEA Farm Technologies Canada Inc. / Division GEA Houle (hereinafter referred to as "the Company") warrants to the original buyer and end user (hereinafter referred to as the "Purchaser") that the parts of all equipment sold under the Company trademark are free from defects in material or workmanship for a period of twelve (12) months from the date of delivery of the equipment to the Purchaser. This written warranty takes precedence over any other written warranty included in previous versions of the Company's manuals. Any equipment used for commercial usage, commercial lease on one or more farms is warranted for a reduced period of thirty (30) days only.

Components from third-party manufacturers that are not built by the Company, and which are accessory to the equipment sold under the Company trademark (including, without limitation, the motors and tires), are subject to such third-party manufacturers' specific warranty coverage.

**THIS WARRANTY EXTENDS ONLY TO THE PURCHASER AND DOES NOT APPLY IN THE EVENT THAT THE EQUIPMENT IS SOLD OR OTHERWISE TRANSFERRED.**

### **1.5.2 Condition of the limited warranty**

The Company, through its GEA authorized dealers only (hereinafter referred to as "Dealer", reserves the right to either repair or replace all parts deemed defective under the following conditions:

1. That the equipment is installed, operated and maintained in accordance with the Company directives;
2. That the Purchaser uses the equipment in accordance with specific instructions, under normal conditions, for the sole purpose for which the equipment was designed;
3. That the Purchaser notifies in writing his Dealer or the Company (whichever the case may be) of any defect of the equipment. In either case the notification must be made within the twelve (12) months following the date of the delivery to the Purchaser;
4. The Purchaser or the Dealer must keep the defective parts or equipment for inspection by the Company and return such defective parts or equipment prepaid to the Company, if requested;
5. That the Purchaser does not modify the equipment, nor attempts to repair any equipment or parts without proper authorization from the Company;
6. Depending on the nature of the equipment involved and whether it is fixed or transportable, the Company will repair or replace the defective parts of the equipment free of charge where installed, or at the business place of the Dealer or the Company, at its sole discretion.

### 1.5.3 Extent of limited warranty

This limited warranty DOES NOT cover:

- Defects caused by negligence of the Purchaser in the maintenance of the equipment, improper use resulting from failure to adhere strictly to the Company's manuals or non-compliance with prescribed maintenance instructions provided by the Company (including, without limitation, lack of lubrication of the equipment), as well as damages arising from non-conforming installation of the equipment, or ambient temperature or conditions of storage of the equipment that do not comply with the Company's recommendations (including, without limitation, any damages resulting from storage or operation of the equipment at a temperature equal or below (5°C/41°F));
- Damages to equipment due to normal wear and tear or to external causes, including issues of power or inadequate electrical conditions (including, without limitation, inadequate tension (neutral/ground), abnormal mechanical or environmental conditions (including, without limitation, damages caused by fire, lightning, flood or other natural disaster), damages caused by the use of sand litter or other abrasive or inadequate material (including, without limitation, damages caused by solids in the manure, such as stone, wood, iron, concrete, and strings), as well as damages caused by ice or frozen manure blocking the evacuation line of the equipment or the introduction of such solids in the equipment;
- Freight and shipping associated with repair or replacement of equipment under this limited warranty, as well as all costs relating to removal or replacement of any equipment that is welded or affixed permanently to the ground or a building (including, without limitation, labor costs, and costs related to concrete or excavation);
- Claims arising from repairs or replacements made by the Purchaser without the prior written consent of the Company. The Purchaser shall not remove or alter any safety device, guard, or warning sign.

If the Purchaser fails to comply with any of its obligations referred to in this paragraph, the Purchaser agrees to save the Company and the Dealer harmless in respect of any liability or obligation incurred by the Company or the Dealer resulting from such failure of the Purchaser.

#### **1.5.4 Warranty limitations and exclusion**

NO WARRANTY, ORAL OR WRITTEN, EXPRESS OR IMPLIED, OTHER THAN THE ABOVE WARRANTY IS PROVIDED IN RESPECT OF THE EQUIPMENT SOLD.

Some states (or jurisdictions) do not allow the exclusion of implied warranties so it is possible that this limitation may not apply.

THE COMPANY DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY, ADAPTABILITY OR OF PERFORMANCE, PROVIDED THAT SUCH EXCLUSION OF LIABILITY COMPLIES WITH THE LAWS HAVING APPLICABLE REGULATORY JURISDICTION.

THE LIABILITY OF THE COMPANY AND ITS DEALERS UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF DEFECTIVE PARTS UP TO THE CONTRACT VALUE FOR THE PURCHASED EQUIPMENT. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR EXEMPLARY DAMAGES IN ANY KIND OR CHARACTER, INCLUDING INDIRECT COSTS, LOSS OF PRODUCTION, LOSS OF REVENUES OR PROFITS, AND OTHER DISBURSEMENTS WHICH MAY OCCUR.

Some states (or jurisdictions) do not allow the exclusion or limitation of incidental or consequential damages and so it is possible that these limitations or exclusions may not apply.

#### **1.5.5 General statements**

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY BY JURISDICTION.

THE DEALER IS NOT AUTHORIZED TO MAKE ANY ADDITIONAL REPRESENTATIONS OR PROMISES THAT DIFFER IN ANY WAY FROM THE TERM OF THIS LIMITED WARRANTY, OR MODIFY THE PROVISIONS, DURATION AND CONDITIONS OF THIS LIMITED WARRANTY. NO WAIVER OR MODIFICATION OF THIS LIMITED WARRANTY IS VALID UNLESS AGREED TO IN WRITING AND SIGNED BY THE AUTHORIZED REPRESENTATIVES OF THE COMPANY.

IN THE EVENT OF ANY CONFLICT BETWEEN THE ENGLISH LANGUAGE VERSION AND ANY OTHER TRANSLATED VERSION OF THIS LIMITED WARRANTY (WITH THE EXCEPTION OF THE FRENCH LANGUAGE VERSION) THE ENGLISH VERSION SHALL PREVAIL.

**1.6 SPECIFIC LIMITED WARRANTY APPLICABLE TO LIQUID MANURE SPREADERS (ALL MODELS)**

This specific limited warranty benefits to the Purchaser and applies to all models of liquid manure spreaders sold by the Company. This limited warranty applies only to following specific parts: the power take off ("PTO"), axles and wheel hubs, as well as the reservoir. The warranty on these parts is subject to the conditions mentioned below. All conditions stated in this specific limited warranty are in addition to the General Equipment warranty that applies to all equipment sold by the Company (see section 1.5). In the event of any conflict between the conditions stated in this specific limited warranty and those specified in the General equipment warranty, the conditions of this specific limited warranty shall prevail.

**1.6.1 Extent of specific limited warranty**

This specific limited warranty DOES NOT cover damages caused to the spreader when it is attached behind a tractor excessively powerful or when the power take off is used at excessive revolutions per minute (RPM), or if it is misaligned, defective or modified (including, without limitation, damages resulting from the modification of shear bolts).

**Power take off**

In the case of a spreader used under normal conditions, the warranty period of the PTO is twelve (12) months from the date of delivery of the equipment to the Purchaser.

In the case of a spreader used for commercial usage, commercial lease on one or more farms, the PTO warranty period is reduced to three (3) months only.

**Wheel axles and hubs**

In the case of a spreader used under normal conditions, the warranty period of wheel axles and hubs is five (5) years from the date of delivery of the equipment to the Purchaser.

In the case of a spreader used for commercial usage, commercial lease on one or more farms, the warranty period of the wheel axles and hubs is reduced to one (1) year only.

**Reservoir**

With the exception of the model EL66, the warranty period for the reservoir of the spreader is as set forth below and applies from the date of delivery of the equipment to the Purchaser, against perforation due to corrosion. The extended warranty applies to the reservoir only and does not cover parts, whether removable or attached to the reservoir. This warranty is valid, subject to the following conditions:

1. The reservoir is completely emptied by the Purchaser after each use;
2. The inside of the reservoir is cleaned and sprayed with oil as directed by the Company;
3. The spreader is stored inside a building and protected from the weather, in accordance with the recommendations prescribed by the Company.

**¼" thick steel reservoir**

The warranty period for the ¼" thick steel reservoir is ten (10) years from the date of delivery of the equipment to the Purchaser. All claims must be submitted before the expiry date of the warranty. In the event of a claim for perforations caused by corrosion, the Company will reimburse the Purchaser the equivalent of ten percent (10%) of the cost of the new reservoir for each full year remaining before the expiry of the extended warranty. The refund will be calculated given the current selling price of the replacement tank at the time of claim by the Purchaser, divided by the number of total years of warranty (ten (10) years), and then multiplied by the number of full years remaining before the expiry of the warranty period.

With respect to the reservoir model EL66, the guarantee mentioned above will apply only in the event that the Purchaser has opted for the extended warranty ("Steel Plus" option – ¼" thick steel reservoir). The "Stainless Steel" option is also available to the Purchaser of the reservoir model EL66, subject to the additional warranty conditions provided below.

**Optional stainless steel reservoir**

The warranty period for the stainless steel reservoir of the spreader is fifteen (15) years from the date of delivery of the equipment to the Purchaser. All claims must be submitted before the expiry date of the warranty. In the event of a claim for perforations caused by corrosion, the Company will reimburse the Purchaser the equivalent of six point six percent (6.6%) of the cost of the new reservoir for each full year remaining before the expiry of the extended warranty. The refund will be calculated given the current selling price of the replacement tank at the time of claim by the Purchaser, divided by the number of total years of warranty (fifteen (15) years), and then multiplied by the number of full years remaining before the expiry of the warranty period.

**2 Safety****2.1 Owner's obligation of care**

This product is designed and constructed while taking into account a potential risk analysis, a selection of harmonized standards and other technical specifications to be complied with in order to guarantee a maximum level of safety.

This product is designed for agricultural purposes only and is not intended for use on public roads.

Safety is achieved when the safety instructions are followed. It is part of the owner's obligation of care to implement these safety measures and make sure they are carried out at all times.

**In particular, the owner must make sure that:**

- everyone working with or performing activities in connection with this product, including himself, read the instructions contained in this instruction manual and follow those instructions;
- everyone is regularly instructed on relevant matters.

**The owner must ensure a safe environment by providing:**

- this instruction manual with this product;
- adequate lighting in all areas where activities in connection with this product are performed. A minimum of 200 lux is required to ensure visibility of the equipment, the controls and the safety labels;
- all required personal safety gear such as hearing, eye, feet protection, etc. in all areas where activities in connection with this product are performed;
- supervision for inexperienced personnel working or performing activities in connection with this product;
- the tools listed in this manual to perform activities in connection with this product;
- an adequate installation of the product in order to use it only for the sole purpose for which it was designed;
- new parts to replace any defective, worn or damaged parts on this product;
- appropriate devices such as motor, engine, hydraulic unit, etc. to safely operate this product. To meet the technical requirements, refer to section Technical data;
- a product meeting the local rules and regulations.

## 2.2 Explanation of safety symbols

Safety symbols draw attention to the importance of the adjacent text.

The design of the warnings is based on ISO 3864-2 and ANSI535.6.

### Safety symbols and key words

**Danger!**

The indication "Danger" signals immediate danger to life or health of personnel.

Death or serious injury will result if the danger is not avoided.

---

**Warning!**

The indication "Warning" signals potential danger to life or health of personnel.

Death or serious injury may result if the danger is not avoided.

---

**Caution!**

The indication "Caution" signals dangerous situations.

Minor or moderate injury may result if the danger is not avoided.

---

**Attention!**

The indication "Attention" signals important information on risks for the product or the environment.

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## 2.3 Basic safety instructions

### 2.3.1 Safety procedures in confined spaces



**Danger!**



Manure produces toxic gases that can lead to death in seconds. When agitated, manure produces heavy toxic gases such as hydrogen sulphide (H<sub>2</sub>S), carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and ammonia (NH<sub>3</sub>). Before performing work in confined spaces, it is MANDATORY to read and follow the Safety Procedures concerning Confined Spaces available in the websites listed below. These safety procedures explain the risks related to manure and how to safely access confined spaces such as a manure pit, a reservoir, etc.

Location	Administrated by	Web Site
In Canada	Canadian Centre for Occupational Health and Safety	<a href="http://www.ccohs.ca">www.ccohs.ca</a>
In USA	Occupational Safety and Health Administration	<a href="http://www.osha.gov">www.osha.gov</a>
In European Union	European Agency for Safety and Health at Work	<a href="http://www.europe.osha.eu.int">www.europe.osha.eu.int</a>

### 2.3.2 Safety instructions

- Read and follow the instructions of this instruction manual before performing activities in connection with this product. Keep the instruction manual with this product allowing anyone to refer to it at any time.
- Only trained personnel can operate this product to ensure safe operating methods. Make sure the personnel performing activities in connection with this product have the skills when special qualifications are required. Read the section Safety - Personnel qualifications.
- Always wear personal safety gear such as hearing, eye, feet protection, etc. when performing activities in connection with this product. Inspect the personal gear and replace if worn and/or defective.
- Make sure the environment is safe through all steps listed in this manual. Always be familiar with the environment surrounding the working area. Locate the elements that can be dangerous in order to avoid them. Beware of leaks and spills such as grease, oil, water, etc. which can make a surface slippery causing injuries.
- No one stands near this product unless they are performing instructions included in this manual. When near this product, keep body parts such as hands, feet, hair as well as clothing away from dangerous parts such as rotating parts, articulated parts, sharp edges, etc.
- Use this product only when in perfect working condition and for the sole purpose for which it was designed. Do not use damaged, worn or defective parts on this product, replace immediately to avoid serious damages and injuries.
- Use only the tools listed in this manual to perform activities in connection with this product in order to avoid injuries.
- Do not stand underneath suspended loads when handling this product or parts: there is a potential risk of fall, damage and/or loss of stability. Handling can only be performed by a qualified forklift operator.
- Never remove the safety devices such as guards, covers, chains, labels, etc. from this product to ensure safety unless otherwise indicated in this instruction manual. Refer to section Safety - Protective devices. Read and follow the instructions of the safety labels affixed on this product and make sure the safety labels are legible.
- The devices supplied by the owner to operate this product such as a motor, an engine, a hydraulic unit, etc. must meet the technical requirements indicated in section Description - Technical data.

## **2.4 Personnel qualifications**

The manufacturer intends to determine the difference between trained personnel and qualified personnel.

### **Trained personnel**

The operator was trained by the manufacturer or its legal representative to follow all safety rules, cleaning method, general maintenance as well as the operating methods.

It is the operator's responsibility to inform the farm workers of those rules, maintenance and methods.

### **Qualified personnel**

Qualified personnel refers to those having obtained the academic knowledge of a specific field of work.

This personnel has followed a training and subsequently obtained a certification, diploma or any other official document provided by a recognized academic facility in the country of study.

An equivalence may be required when operating in other countries.

The special qualifications required in the following activities will be specified in each section when applicable:

- Handling
- Assembly
- Initial commissioning
- Operating
- Troubleshooting
- Maintenance
- Advanced maintenance
- Decommissioning

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## 2.5 Protective devices

### 2.5.1 Protective safety parts

This product is equipped with safety parts protecting the user against dangerous elements.

Those parts must be in perfect working condition and remain in place at all times.

Replace if damaged, worn and/or defective. Refer to the part number.



**Protective guard for the PTO driveline**  
(part no. 2018-4704-070)



**Safety grid on fill opening**  
(part no. 2018-7627-500) 41 cm  
(part no. 2018-7627-510) 65 cm

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## 2.5.2 Safety labels

The labels affixed on this product inform the user of the potential dangers, the prohibited manoeuvres, the proper procedures and applications when performing activities in connection with this product.

The labels must remain in place and legible at all times.

Replace when damaged. Refer to the part number for the appropriate label.



Refer to section Appendix - Label position.



**Danger! - Electrocution hazard**

Overhead electrocution hazard. Do not allow the equipment to touch overhead electrical lines.  
(part no 2099-4725-260)



**Danger! - Toxic gases**

Manure produces toxic gases that can lead to unconsciousness, asphyxia or death in seconds.  
(part no 2099-4725-210)



**Danger! - Fall hazard**

(part no 2099-4725-270)



**Danger! - Do not enter the spreader**

(part no 2099-4725-180)



**Danger! - Do not stand on the spreader when operating**

(part no 2099-4725-170)



Read the instruction manual for safety information.

(part no 2099-4725-100)



Read the instruction manual for safety information before servicing.

(part no 2099-4725-130)



40 km/h speed limit.

(part no 2099-4725-520)



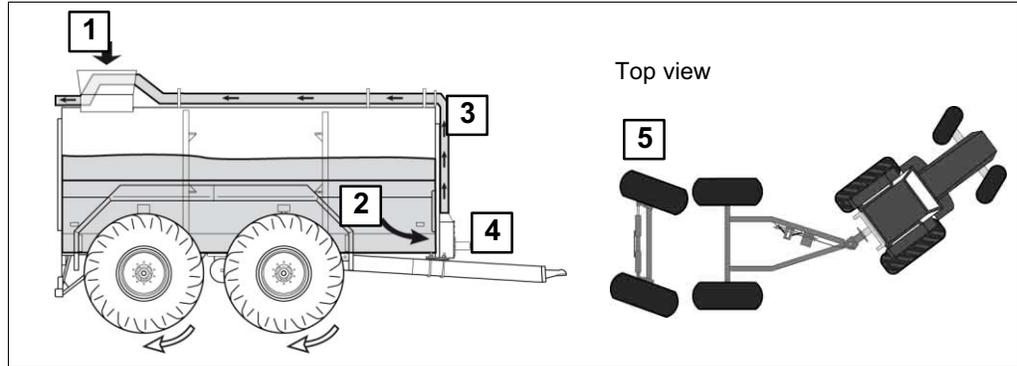
Spreader width marker (left or right).

(part no 2099-4725-540)

### 3 Description

#### 3.1 Product applications

The EL44 liquid manure spreader with power steering is designed to be towed by a farm tractor in order to carry and spread all types of liquid manure or water of a maximum consistency of 2 ½" [65 mm].



**Legend:**

1	Fill opening	2	Liquid propelled by the impeller
3	Liquid transferred to tool bar	4	Transfer pump activated by PTO
5	Steerable axle responding to the command of the tractor		



**Note!**

This product and its equipment are designed for agricultural purposes only. Any applications not listed above are considered as improper use and will void the warranty!

The manufacturer is not liable for any resulting damages due to improper use of this product. The user carries the risk. Proper use also includes reading and following the instructions of this instruction manual.

- Original GEA Houle parts and accessories are specially designed for GEA Houle products and equipment.
- The manufacturer expressly points out that only original parts and original accessories supplied by GEA Houle are adapted, tested and authorized to be used with this product or equipment. Do not use other suppliers parts or equipment with GEA Houle product unless otherwise approved in writing by GEA Houle.
- The manufacturer does not accept any liability toward injured people or animals or damaged products and equipment caused by the use of other manufacturers products.

**Description**

Modification made to this product

---

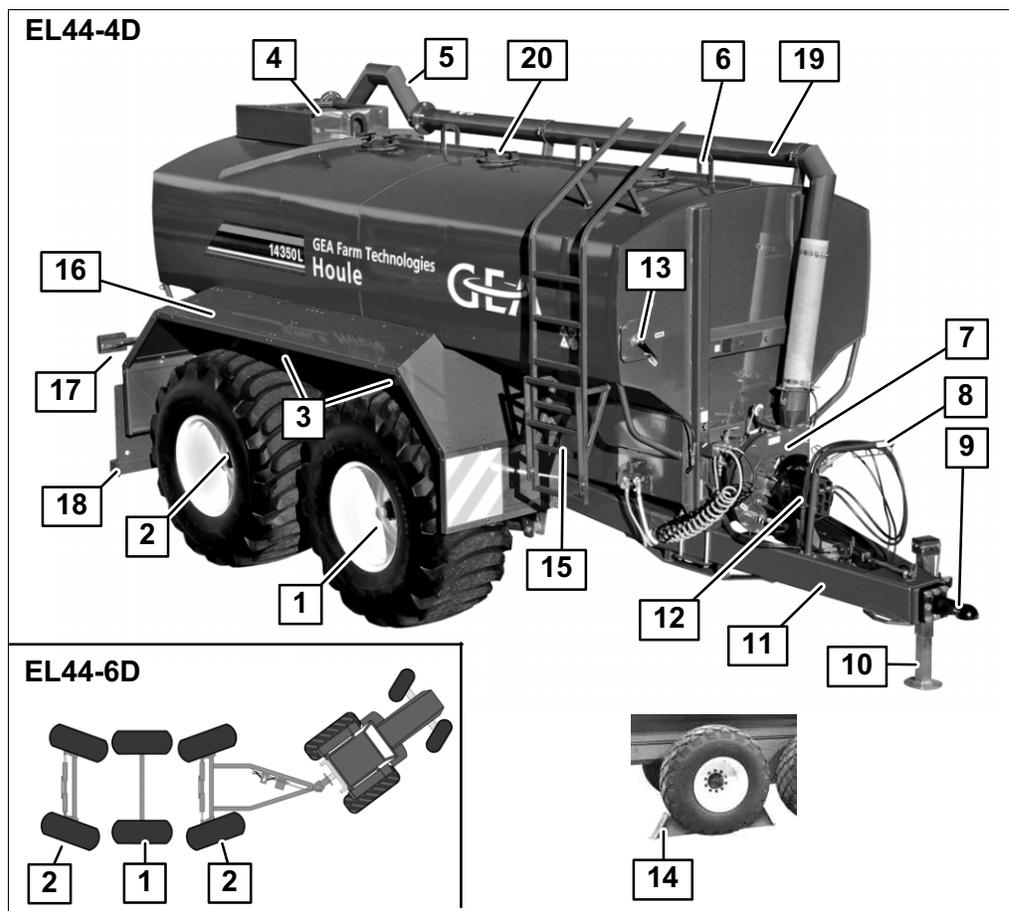
**3.2 Modification made to this product**

For safety reasons, do not carry out any unauthorized modification to this product!

Any modification must be approved by the manufacturer in writing prior to the change otherwise the warranty will be voided.

3.3 Main view

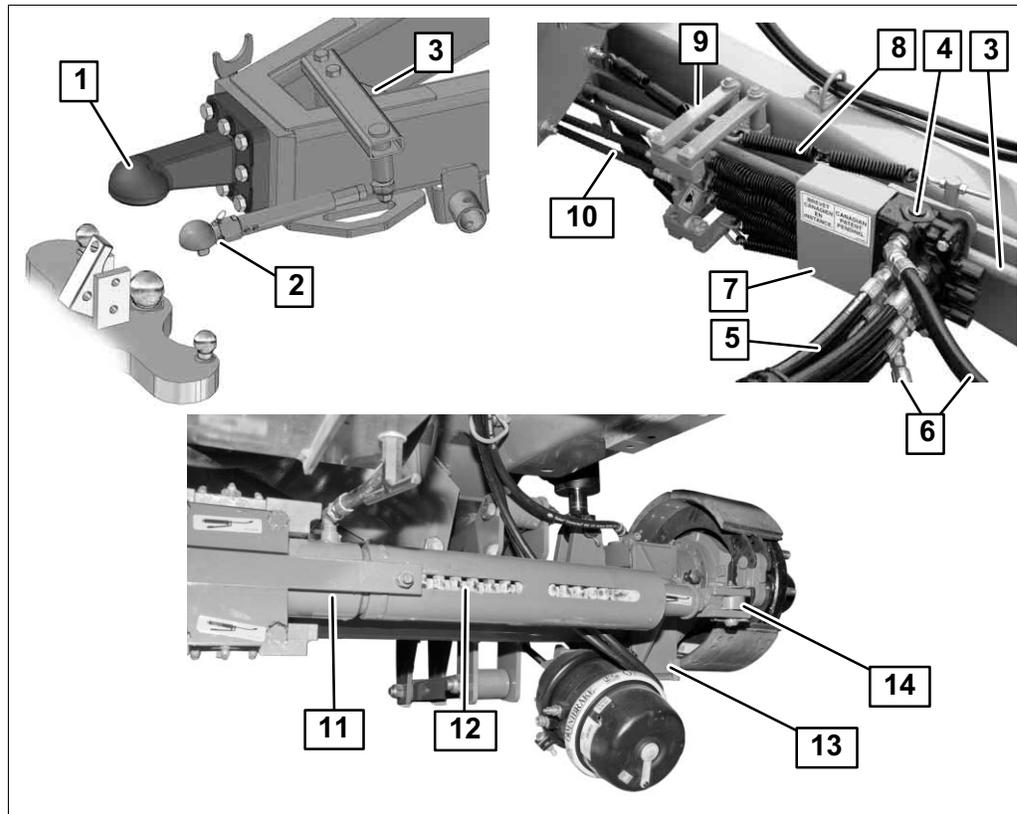
3.3.1 EL44 manure spreader



Legend:

1	Axle (non-steerable)	2	Axle (steerable)
3	Suspension cylinder	4	Fill opening with protective grid
5	Anti-siphon	6	Lifting ring
7	Impeller housing (impeller for 540 RPM or 1000 RPM)	8	Hoses and wires support
9	Coupling hand	10	Jack
11	Draw bar	12	Power take off (PTO) guard
13	Level indicator	14	2 wheel chocks (hooked on mudguard for transportation)
15	Ladder	16	Mudguard
17	Rear lights	18	Rear underrun protection
19	Discharge pipe	20	Access door

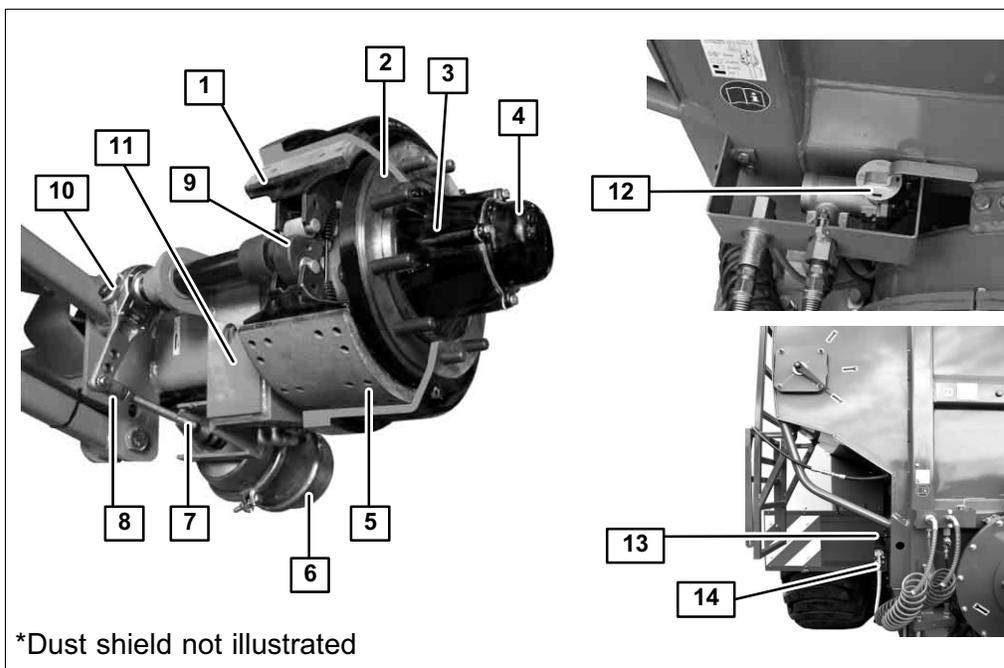
### 3.3.2 Power steering system



**Legend:**

<b>1</b>	Coupling hand	<b>2</b>	Monitoring mechanism
<b>3</b>	Control rod	<b>4</b>	Steering control valve
<b>5</b>	Axle hydraulic hoses	<b>6</b>	Tractor hydraulic hoses
<b>7</b>	Control valve guard	<b>8</b>	Safety mechanism spring
<b>9</b>	Safety mechanism	<b>10</b>	Power steering cable
<b>11</b>	Power steering cylinder (axle)	<b>12</b>	Compression spring
<b>13</b>	Steering knuckle	<b>14</b>	Steering knuckle link

### 3.3.3 Air brake system

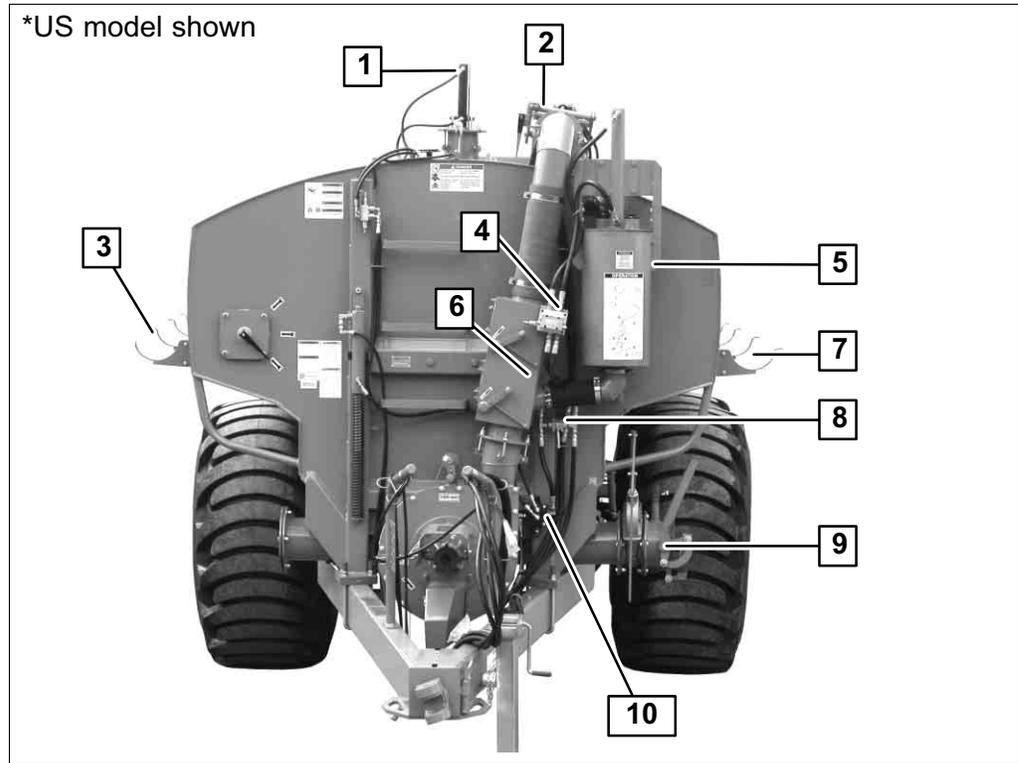


Legend:			
1	Upper brake lining	2	Drum spacer
3	Hub	4	Hub cap
5	Lower brake lining	6	Air chamber (booster)
7	Push rod	8	Slack adjuster
9	"S" camshaft	10	Adjustment nut
11	Steering knuckle	12	Wabco valve
13	Gladhands support	14	Gladhands

**3.4 Options**

**3.4.1 Self-loading**

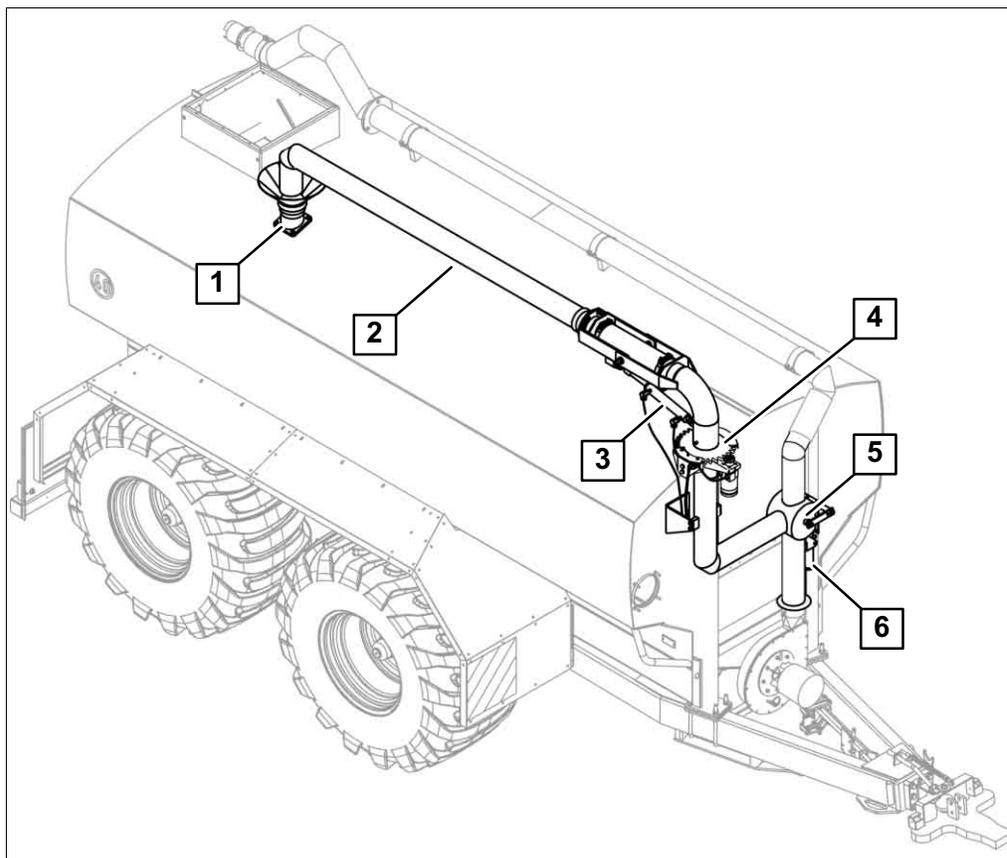
The self-loading system allows the operator to fill the spreader at anytime on its own.



Legend:			
1	Tank bottom valve cylinder	6	Check valve
2	Directional valve (loading or spreading mode)	7	Aluminum pipe transportation support
3	Suction hose transportation support	8	Primer pump ball valve
4	Hydraulic reversing valve and relief valve	9	Intake valve with suction hose adaptor
5	Hydraulic primer pump	10	Control lever of the tank bottom valve

### 3.4.2 Nursing kit

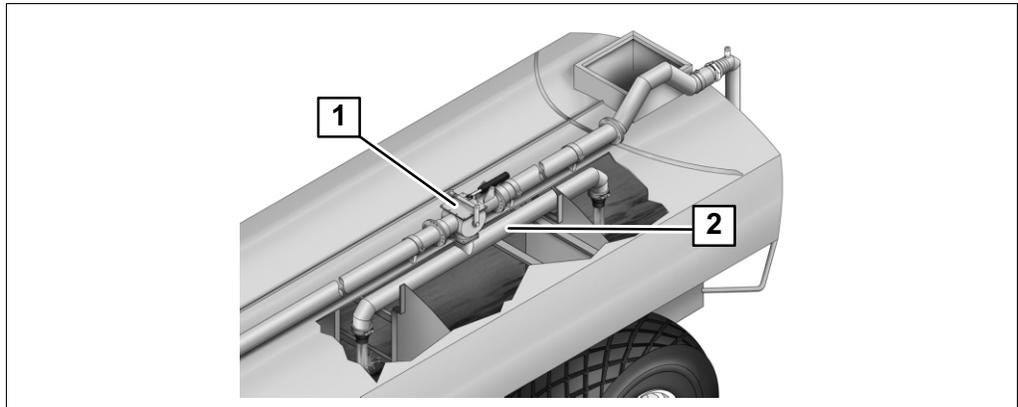
Transfers liquid from a spreader to another.



Legend:	
1	Transfer pipe receptacle (in transport position)
2	Articulated transfer pipe
3	Hydraulic cylinder to raise/lower transfer pipe
4	Hydraulic motor to rotate transfer pipe
5	Directional valve
6	Hydraulic cylinder for directional valve

### 3.4.3 In-tank recirculating kit

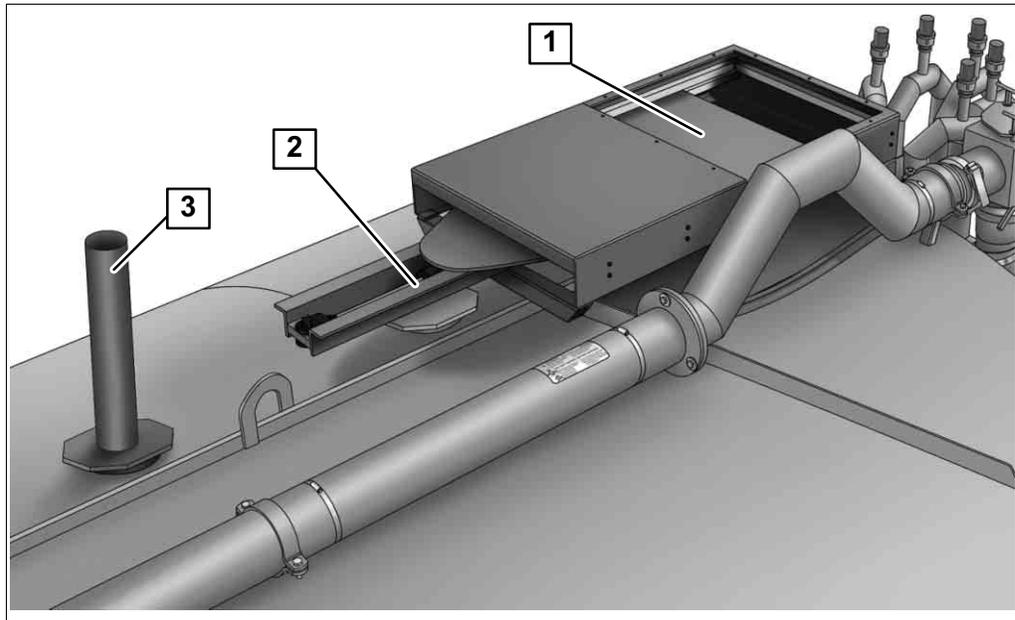
The in-tank recirculating kit allows agitating the liquid manure to keep it homogenized during transport.



**Legend:**

1	Directional valve
2	Recirculation pipe

### 3.4.4 Hydraulic sliding door



**Legend:**

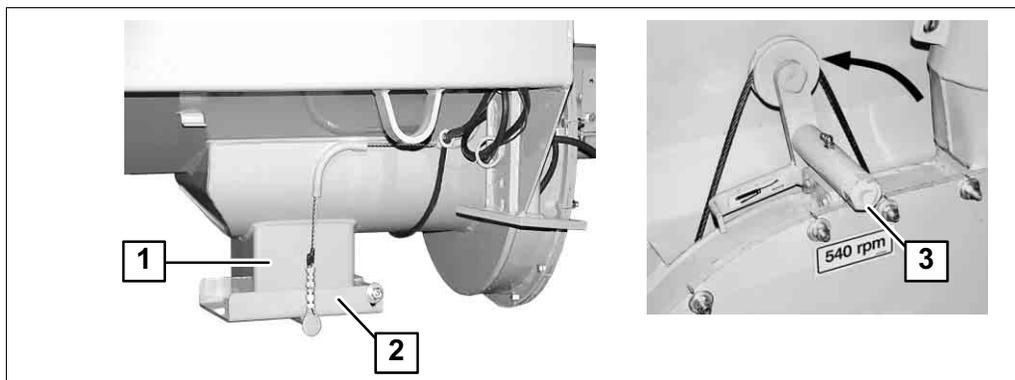
1	Sliding door
2	Hydraulic cylinder
3	Air vent*

\* Included with hydraulic sliding door in order to allow air exchange.

### 3.4.5 Powerful halogen rear lights

Broad coverage beam providing sufficient lumens to work in the dark.

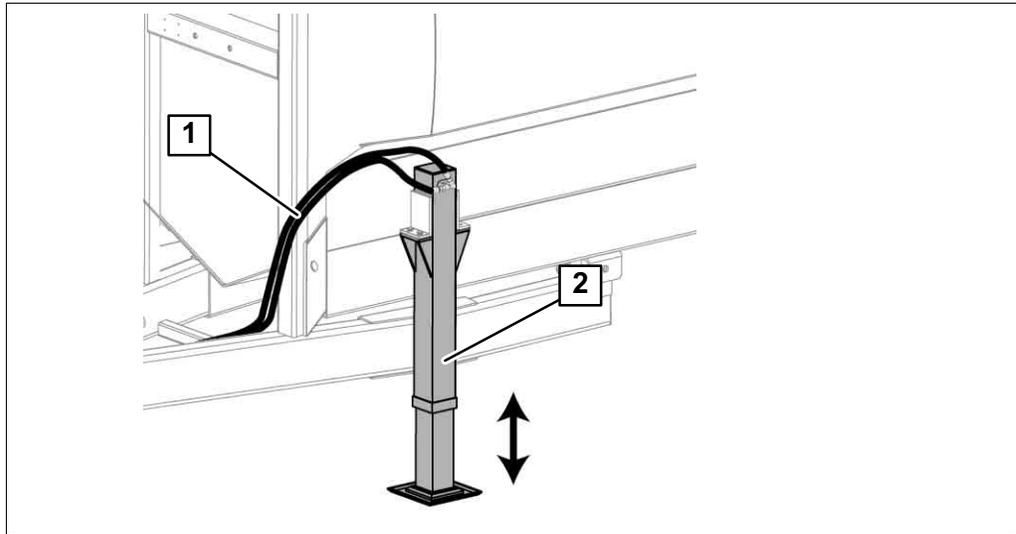
### 3.4.6 Front drain with stone collector



**Legend:**

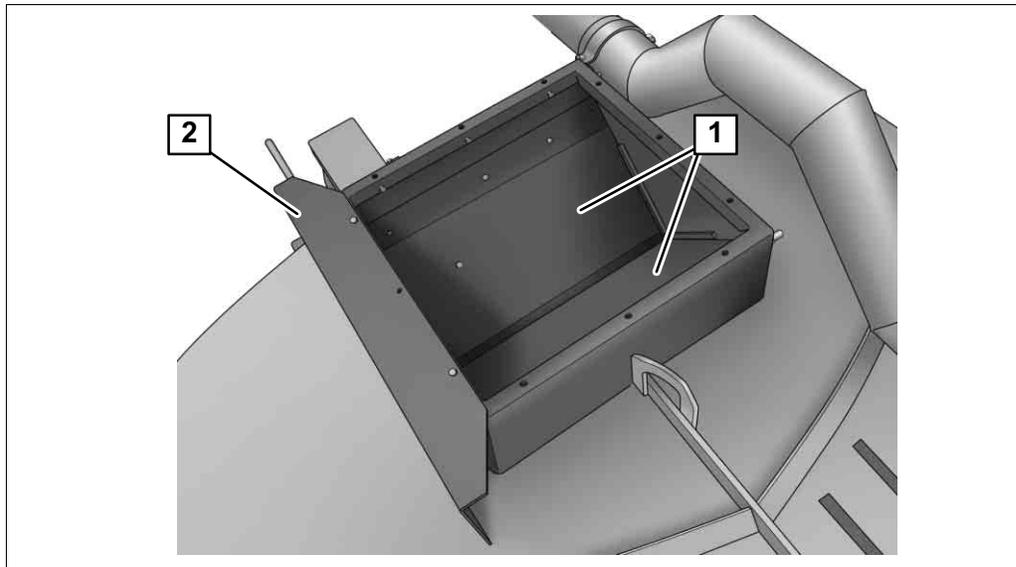
1	Stone collector
2	Drain door
3	Pivot bolt

### 3.4.7 Hydraulic jack



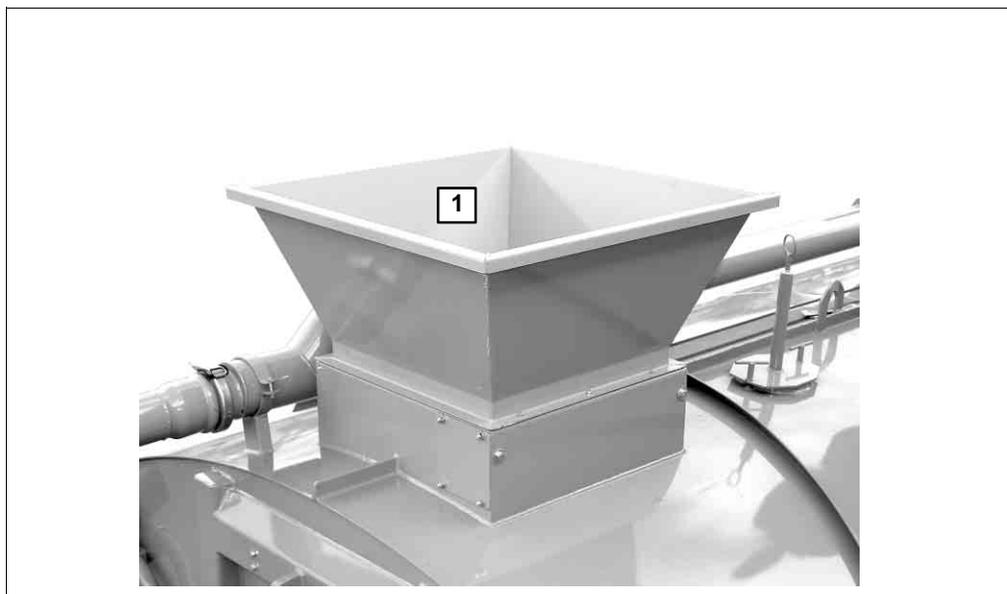
Legend:	
1	Hydraulic hoses
2	Hydraulic jack

### 3.4.8 Flapper doors on fill opening



Legend:	
1	Flapper doors
2	Guard over springs

### 3.4.9 Hopper over fill opening

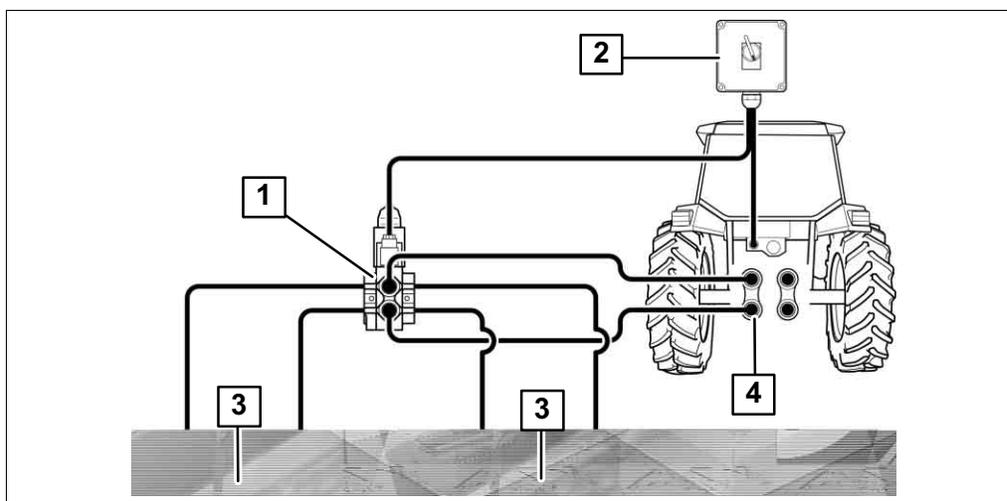


**Legend:**

1	Hopper (46 cm high, extension also available)
---	---

### 3.4.10 Solenoid valve

The solenoid valve allows adding more hydraulic options. Each solenoid can control two different hydraulic functions by switching the selector.



**Legend:**

1	Solenoid valve	2	Selector switch
3	Hydraulic component	4	Tractor hydraulic output

## 4 Technical data

### 4.1 Geometric data

Spreader model		EL44-4D 14350	EL44-4D 16150	EL44-6D 19750	EL44-6D 21500	EL44-6D 23300	EL44-6D 25100
Axles		2	2	3	3	3	3
<b>Spreader Overall Dimensions</b>							
A	Tank length (meters)	4,877	5,486	6,706	7,315	7,925	8,534
B	Spreader length (meters)	6,674	7,283	8,502	9,112	9,722	10,331
C	Spreader width (meters)	2,972	2,972	2,972	2,972	2,972	2,972
D	Spreader height (meters)	3,140	3,140	3,170	3,170	3,170	3,170
<b>Capacity</b>							
Capacity (Liters)		14346	16140	19726	21519	23313	25106
Capacity (UK gallons)		3156	3550	4339	4734	5128	5523
<b>Spreader Weight (without tool bar)</b>							
Spreader Empty* (kg)		6346	6556	8766	8976	9185	9394
Spreader Full* (kg)		20693	22695	28493	30495	32497	34500
<b>Spreader load point (without tool bar)</b>							
Tongue load* (kg)		2000	2220	3000	3000	3000	3100
Rated axle load** (kg)		9346	10238	8498	9165	9832	10467

\* Approximate values. Weight will differ depending on equipment and tool bar installed.

\*\* Refer to your local road regulations regarding maximum load per axle allowed. Depending on the equipment installed on the spreader, the weight will increase. It is your responsibility to check the spreader weight and to adjust the spreader liquid level in order to never exceed the maximum load per axle.



#### Note!

Weight measurements were taken using water. The weight will vary considerably depending on the type and the consistency of the liquid manure.

## 4.2 Tire specifications

### Galaxy 725/65 X 26

	<b>Ply</b>	<b>Dimensions (cm)</b>		<b>Weight (rim included)</b>
		Diameter	Width	kg
	20	155	74	324

<b>Speed (km/h)</b>	<b>Pressure (bar)</b>							
	1.65	1.86	2.07	2.28	2.48	2.69	2.90	3.10
	<b>Carrying capacity (kg)</b>							
16	5443	5851	6214	6577	6894	7257	7575	7893
24	4627	4990	5307	5579	5897	6169	6441	6713
32	4218	4536	4808	5080	5352	5624	5851	6078
40	3810	4082	4309	4581	4808	5035	5262	5488

## 4.3 Tractor specifications

<b>Spreader model</b>		<b>PTO RPM</b>	<b>Minimum HP</b>		
			When spreading manure at ground level	When injecting or burying manure into soil	When spreading manure on hilly land
<b>EL44-4D</b>	<b>14350</b>	540 - 1000	130	155	205
	<b>16150</b>		145	175	220
<b>EL44-6D</b>	<b>19750</b>	540 - 1000	175	210	265
	<b>21500</b>		190	230	285
	<b>23300</b>		210	255	315
	<b>25100</b>		225	270	340

**4.4 Performance data**

**Spreader**

Maximum speed	40 km/h	
Maximum speed using power steering system	12 km/h	
PTO RPM	<b>540 RPM</b>	<b>1000 RPM</b>
Maximum manure consistency for spreading *	65 mm	
Maximum spreading flow rate (without tool bar)**	6416 LPM 1411 Imp GPM	8725 LPM 1919 Imp GPM
Operating temperature	5°C minimum	

- \* Maximum manure consistency to spread using this product without tool bar. When using a tool bar, refer to the instruction manual supplied with the tool bar to determine the permissible consistency.
- \*\* Transfer rate at the pump output without tool bar. Performance will differ depending on the tool bar model and manure consistency.

**Spreader draw bar inclination**

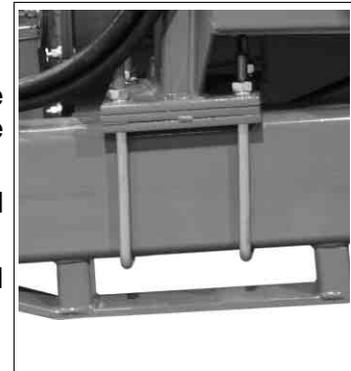
The spreader draw bar is adjusted on the spreader frame according to the tractor draw bar height.

Spacers are placed between the spreader draw bar and the spreader tank in order to obtain a 3 degree angle towards the front of the tank.

This allows complete drainage of the liquid inside the tank and it ensures that the PTO shaft operates at a proper angle.

By removing or adding spacers, the draw bar can be adapted for another tractor draw bar.

For more information, contact your dealer.



**4.5 Hydraulic hose specifications**

I.D.	6 mm	13 mm	19 mm
O.D.	15 mm	22 mm	28 mm
Number of braids	2	2	2
Service pressure	400 bar	276 bar	207 bar

## 4.6 Bolt torque chart



**Note!**

Refer to the bolt torque chart below unless otherwise specified in the manual.

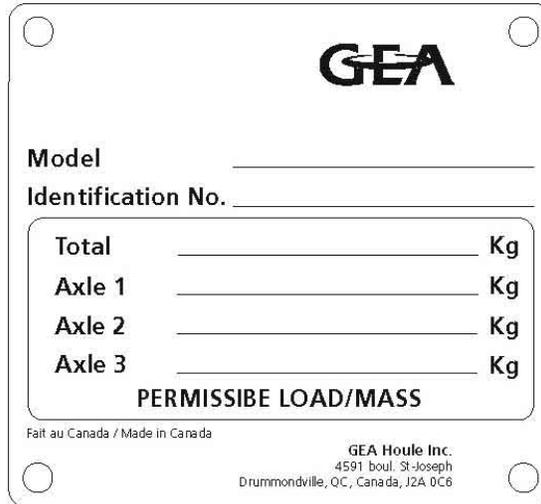
Bolt	Mat.	Bolt diameter									
		1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"	7/8"	1"
<b>SAE 2</b> 	LCS	8NM 6 ft-lbs	16NM 12ft-lbs	27NM 20ft-lbs	44NM 32ft-lbs	64NM 47ft-lbs	94NM 69ft-lbs	130NM 96ft-lbs	210NM 155ft-lbs	279NM 206ft-lbs	420NM 310ft-lbs
<b>SAE 5</b> 	MCS HT	14NM 10ft-lbs	26NM 19ft-lbs	45NM 33ft-lbs	73NM 54ft-lbs	106NM 78ft-lbs	155NM 114ft-lbs	209NM 154ft-lbs	349NM 257ft-lbs	518NM 382ft-lbs	796NM 587ft-lbs
<b>SAE 8</b> 	MCAS	19NM 14ft-lbs	39NM 29ft-lbs	64NM 47ft-lbs	106NM 78ft-lbs	161NM 119ft-lbs	229NM 169ft-lbs	312NM 230ft-lbs	515NM 380ft-lbs	814NM 600ft-lbs	949NM 700ft-lbs
Socket Head Cap Screw	AS HT	22NM 16ft-lbs	45NM 33ft-lbs	73NM 54ft-lbs	114NM 84ft-lbs	170NM 125ft-lbs	244NM 180ft-lbs	339NM 250ft-lbs	542NM 400ft-lbs	868NM 640ft-lbs	1315NM 970ft-lbs

## 4.7 Lubricant specifications

Lubricant type	Grades / Specifications	Purpose
All-purpose grease	Use this grade (or equivalent): <ul style="list-style-type: none"> <li>EP2 mineral grease</li> </ul>	<ul style="list-style-type: none"> <li>To lubricate the equipment.</li> <li>To grease the power steering mechanism.</li> <li>To lubricate the slack adjuster.</li> </ul>
Gearbox oil	<ul style="list-style-type: none"> <li>80W90</li> </ul>	<ul style="list-style-type: none"> <li>To fill the bearing housing.</li> </ul>
Synthetic grease for bearing intensive use	Use this brand (or equivalent): <ul style="list-style-type: none"> <li>Texas 880 crown and chassis grease</li> </ul>	<ul style="list-style-type: none"> <li>To grease wheel hub bearings.</li> </ul>
Anti-Seize high temperature extreme pressure lubricant containing graphite	Use this brand (or equivalent): <ul style="list-style-type: none"> <li>Wurth Sig 3000 grease</li> </ul>	<ul style="list-style-type: none"> <li>To grease the coupling hand.</li> </ul>
Hydraulic oil	Use these brands (or equivalent): <ul style="list-style-type: none"> <li>Petro-Canada MV22</li> <li>Shell Tellus 32</li> <li>Exxon Nuto H32</li> <li>Mobil AW Hydraulic Oil 32</li> </ul>	<ul style="list-style-type: none"> <li>To fill suspension cylinders bottom translucent hose.</li> </ul>
Biodegradable oil	Use this brand (or equivalent): <ul style="list-style-type: none"> <li>PPG Chemfil Chemlube Agri-eco 1000</li> </ul>	<ul style="list-style-type: none"> <li>To lubricate the primer pump piston.</li> <li>To spray over the spreader before storing.</li> </ul>

**4.8 Manufacturer nameplate**

The manufacturer's plate is mounted on the product. The serial number is indicated on the plate and also carved on the spreader frame.



## 5 Handling

### 5.1 Special qualifications required for handling

Handling must be performed by a qualified forklift operator and/or qualified overhead crane or hoist operator.



Refer to section Safety - Personnel qualifications.

### 5.2 Safety instructions for handling



**Warning!**

Do not stand under suspended loads. Falling loads can cause fatal injuries!



**Warning!**

Do not use a forklift truck to lift the spreader. The uneven surface under the product could unbalance the load resulting in injuries and/or damages.



**Warning!**

Wear protective boots, eye gear and gloves for all steps included in this section.



**Attention!**

Always keep this product on a flat and level surface. An uneven surface could unbalance the product resulting in injuries and/or damages.



**Attention!**

To lift this product use a lifting device with a minimum lifting capacity of 15 000 kg. The lifting capacity only includes the weight of the product.



**Attention!**

Ensure each lifting rings of this product is in reliable condition to avoid an accidental fall causing injuries and/or damages.



Read the section Safety.

**5.3 Handling the product and accessories**

**5.3.1 Special tools**

	Description	Purpose
	Forklift truck	To slide out the spreader from the container To lift accessories (tires, parts)
	Overhead hoist or crane	To lift the spreader
	Chain	To pull the spreader out of the container

**5.3.2 Lifting spreader components**



**Warning!**

Do not use a forklift truck to lift the spreader. Uneven surfaces under the product can cause unbalanced load and result in damages or injuries to the product and to the personnel.



**Attention!**

Lift the wheels using a lifting device with a minimum capacity of 500 kg.

- Move tires and boxes using a forklift truck up to the assembly area.
- Handle components carefully to avoid damages and injuries.
- Remove all chains from the spreader.

### 5.3.3 Sliding the spreader


**Attention!**

Handle the spreader with care when sliding out of the container. The brake boosters are near the ground and could be damaged.

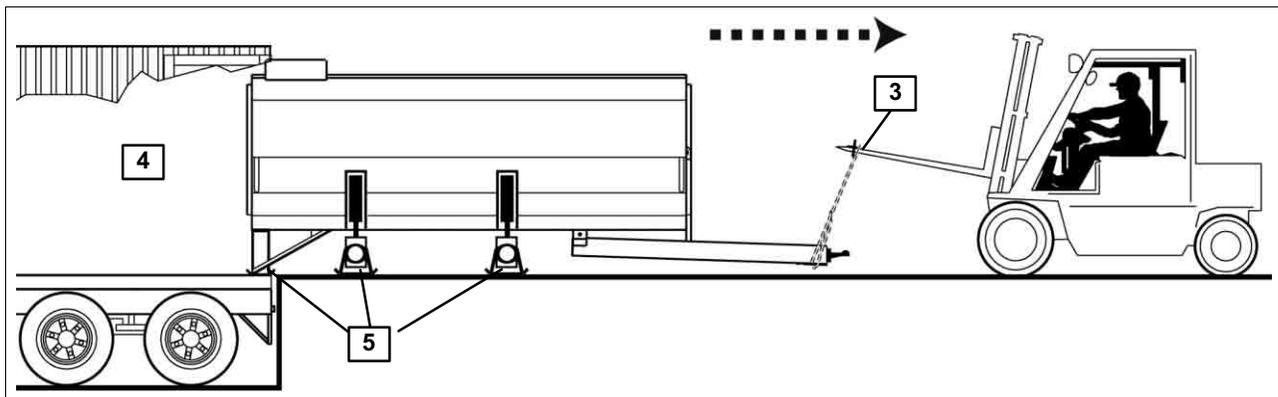
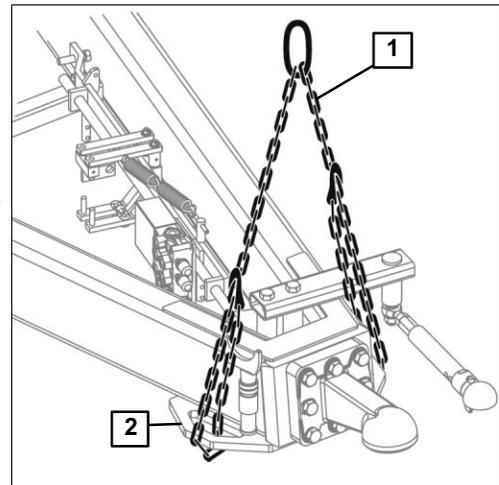

**Attention!**

The spreader is not designed to be lifted because of the uneven surfaces under the tank.


**Note!**

Park the spreader on a level and firm surface.

- Place the forklift truck in front of the spreader draw bar.
- Attach safety chains (1) to pulling rings (2).
- Fasten safety chains to forklift truck (3).
- Carefully pull the spreader out of the container (4) and make sure the supports (5) slide easily.
- Move the spreader up to the lifting area or to the temporary storage area.



### 5.3.4 Lifting the spreader



**Warning!**

Do not use a forklift truck to lift the spreader. The uneven surface under the product can lead to unbalance load resulting in damages and/or injuries.

---



**Attention!**

To lift this product, use a lifting device with a minimum lifting capacity of 10 000 kg.

---



**Attention!**

Ensure lifting rings are in reliable condition to support the spreader weight.

---



**Attention!**

Do not remove the transport stands until all wheels are installed properly.

---



**Note!**

Park the spreader on a level and firm surface.

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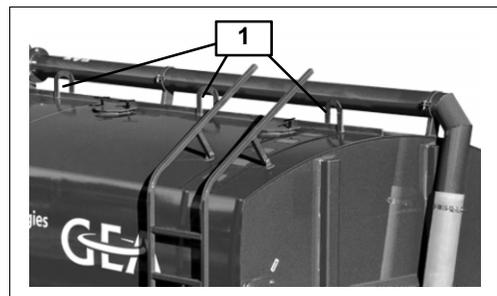


**Note!**

When wheels are installed on the spreader, position two wheel chocks, one at the front and one behind a wheel, to secure the load until the air brake system is calibrated.

---

- Lift the spreader using an overhead hoist or crane. Attach the cable hoist to the lifting rings (1).
- Ensure load balance while lifting.
- Lift the spreader.
- Move the spreader toward the assembly area.



### 5.3.5 Moving the spreader

To move the spreader, refer to section Operating. Make sure the air brake system is well calibrated before attempting to move the spreader with a tractor.

## 6 Assembly

### 6.1 Special qualifications required for assembly

Assembly must be performed by a qualified forklift operator.



Refer to section Safety - Personnel qualifications.

### 6.2 Safety instructions for assembly

To prevent damages to property and/or life-threatening injuries to personnel always carry out the following:

- Before assembling this product, look for any damages caused during shipping and handling. Do not use damaged components!
- Use the special tools indicated for installation.



Also read the section Safety.

### 6.3 Assembly preparations



#### Attention!

Keep all hose couplings clear of dirt and sand when disconnected from the tractor to avoid damaging the hydraulic and air brake systems. Always hook them on their supports at all times.



#### Attention!

Use only tools and accessories in good working condition and follow the instructions in the manual.



#### Note!

Park the spreader on a level and firm surface.

### Special Tools

	Description	Purpose
	Fork lift truck	To lift accessories (tires, parts)
	Chain hoist with safety chains	To lift the accessories
	Crane	To lift the spreader
	Wrench set	To tighten bolts and anchor bolts
	Ratchet tool set	To tighten bolts
	Heavy-duty torque wrench	To tighten bolts
	Air impact	To tighten wheel nuts
	Brake spring pliers	To install the springs
	Screw driver set	To install bottom valve
	Cutters	To remove tie wrap

	Red Loctite 242	To secure the hydraulic cylinder bolts
	Anti-Seize high temperature extreme pressure lubricant containing graphite (Wurth Sig 3000)	To lubricate the ball hitch block and the coupling hand

### Items purchased locally

Provided by the owner:

- A PTO driveline meeting local requirements. Applicable only when this item is not supplied by the manufacturer.
- A tractor of an appropriate tractor size.

## 6.4 Information on disposing of the packing material

Handle the packing material properly and dispose according to your valid local regulations and rules on waste disposal. Please refer to your local resources for any questions.

## 6.5 Wheel and brake parts installation

### 6.5.1 Preparing the spreader



**Warning!**

Do not stand under suspended loads. Falling loads can cause fatal injuries!



**Warning!**

Wear protective boots, eye gear and gloves for all steps included in this section.



**Note!**

If the spreader is assembled inside a building, make sure the doorway is large enough to accommodate the spreader once assembled.



**Note!**

Park the spreader on a level and firm surface.



**Note!**

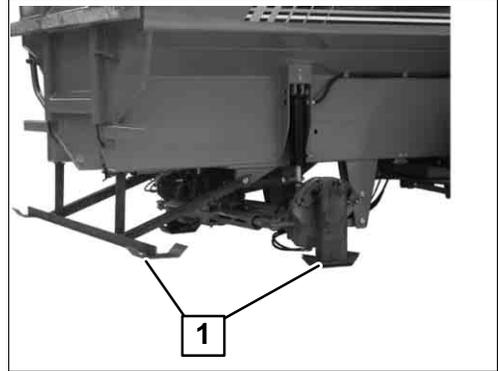
The hub, wheel and brake units are removed for shipping.

## Assembly

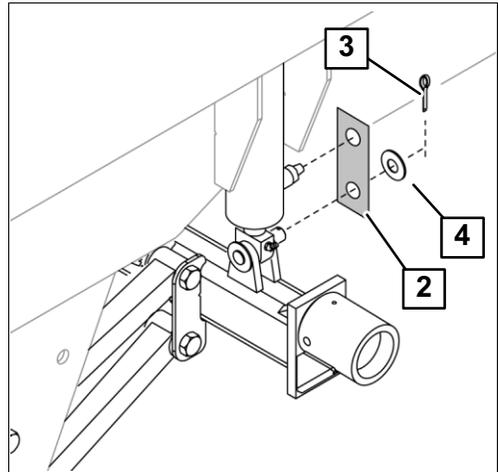
### Wheel and brake parts installation

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- Lift the spreader, refer to section Handling - Lifting the spreader.
- Remove the transport stands (1).



- Remove the lock plate (2) from each cylinder, if applicable.
- Remove the cotter pin (3) and the washer (4).
- Discard the plate (2).
- Reinstall the cotter pin and washer.



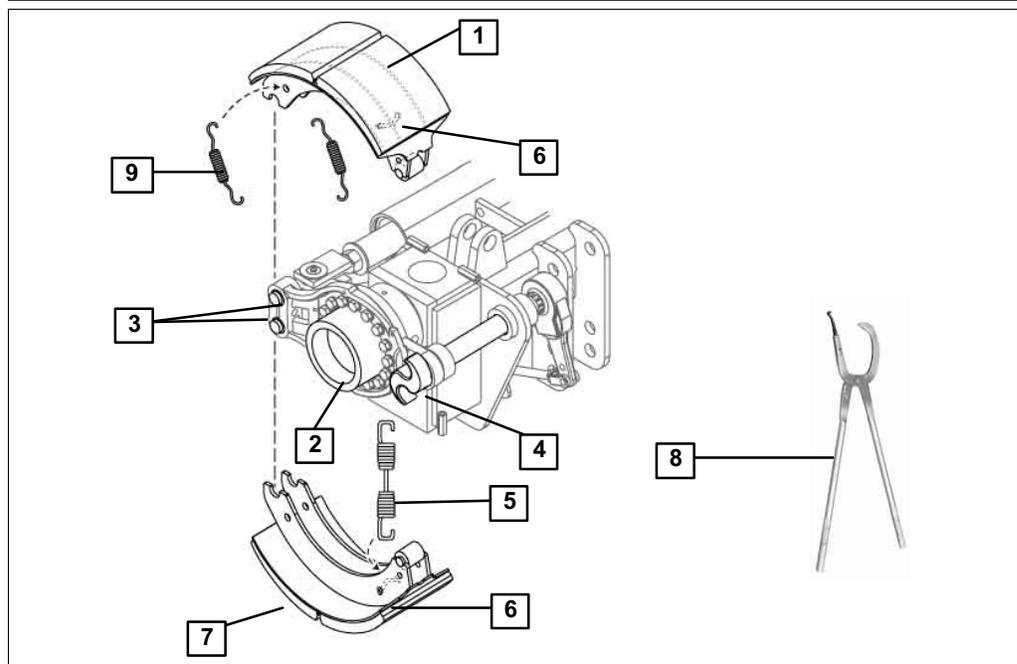
## 6.5.2 Air brake assembly

### Step 1: Brake parts assembly



#### Attention!

Do not exceed 8.27 bar when connecting the air supply to the brake system.



- Build air pressure in the brake system to rotate the "S" camshaft (4):
  - Connect the air brake outlets of a tractor to the spreader air brake emergency line (red hose) and service line (yellow/blue hose). Make sure the pressure is maintained between 4.82 to 6.90 bar. NEVER EXCEED 8.27 bar.

OR

- Connect a compressor to the emergency line (red hose). Make sure compressed air is filtered and regulated between 4.82 to 6.90 bar.



#### Attention!

Never exceed 8.27 bar.

- Install the upper brake lining (1) over the hub receptacle (2). Make sure the brake lining is well seated on the anchor pins (3) and the "S" camshaft (4).
- Hook the blue spring (5) on the return spring pin (6) located inside the frame lining.
- Position the lower brake lining (7) near the hub assembly in order to hook the other end of the blue spring (5) on the return spring pin (6).
- Position the lower brake lining (7) under the hub receptacle (2). Make sure the brake lining is well seated on the anchor pins (3) and the "S" camshaft (4).
- Using the brake spring pliers (8), install the two retaining springs (9) between the upper and the lower brake lining frame. Repeat these steps for each wheel.

## Step 2: Wheel hub assembly

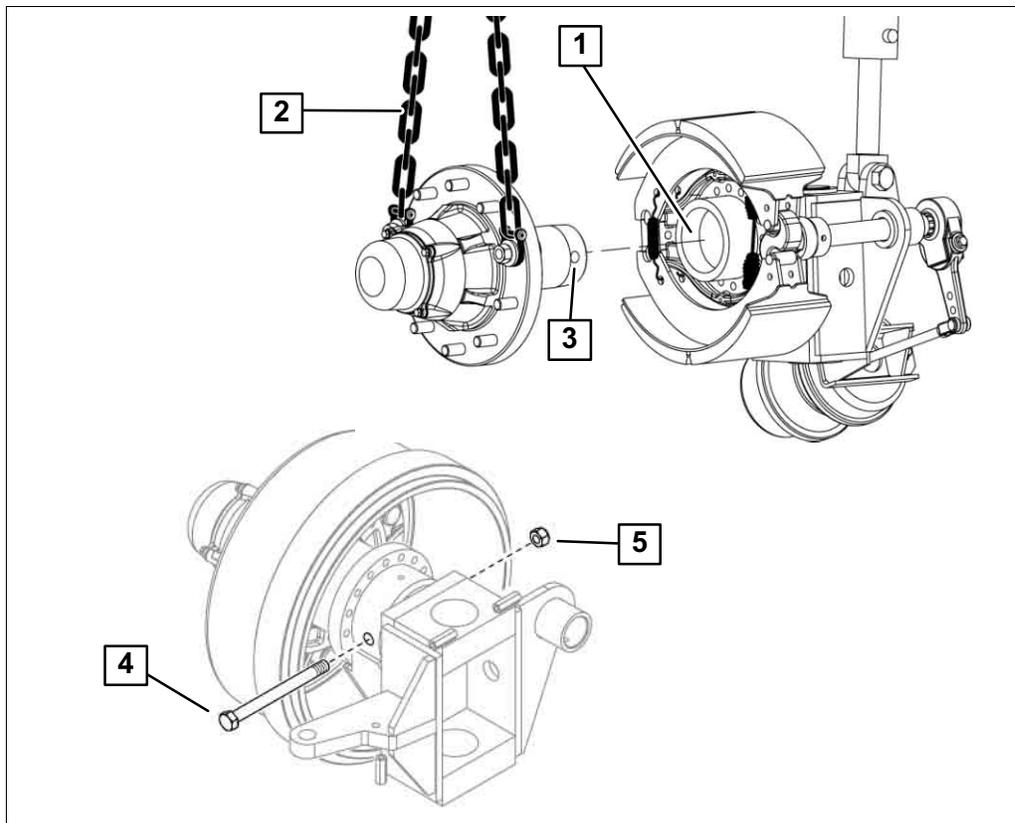


### Attention!

To lift wheel hub, use of lifting device with a minimum lifting capacity of 68 kg.



Refer to section Technical data - Lubricant specifications.



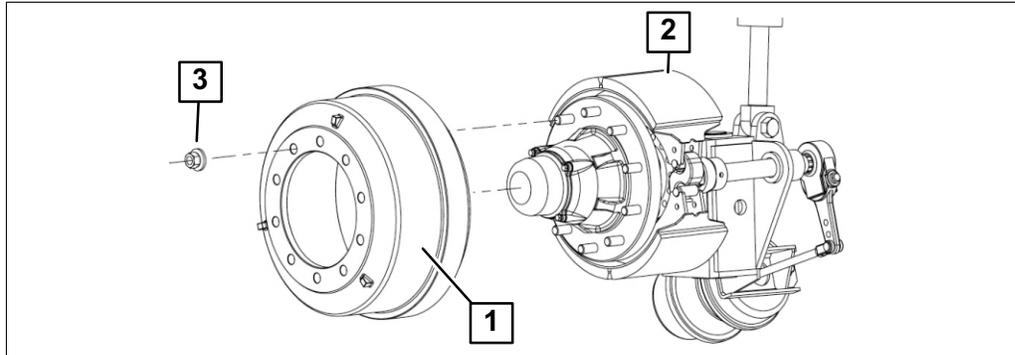
- Apply a very thin layer of synthetic grease inside the receptacle (1) using a brush.
- Lift the wheel hub using the lifting chains (2). Secure the lifting chains with two wheel nuts, as illustrated.
- Rotate the hub shaft to position the hub hole (3) horizontally.
- Insert the hub shaft into the receptacle (1) making sure the hub holes (3) are aligned with the holes of the receptacle.
- Insert the cam bolt (4) through the receptacle (1) and the hub shaft (3) and secure with the locknut (5).
- Grease the hub shaft behind the brake lining assembly through the grease fitting.
- Repeat these steps for each wheel.

### Step 3: Drum assembly



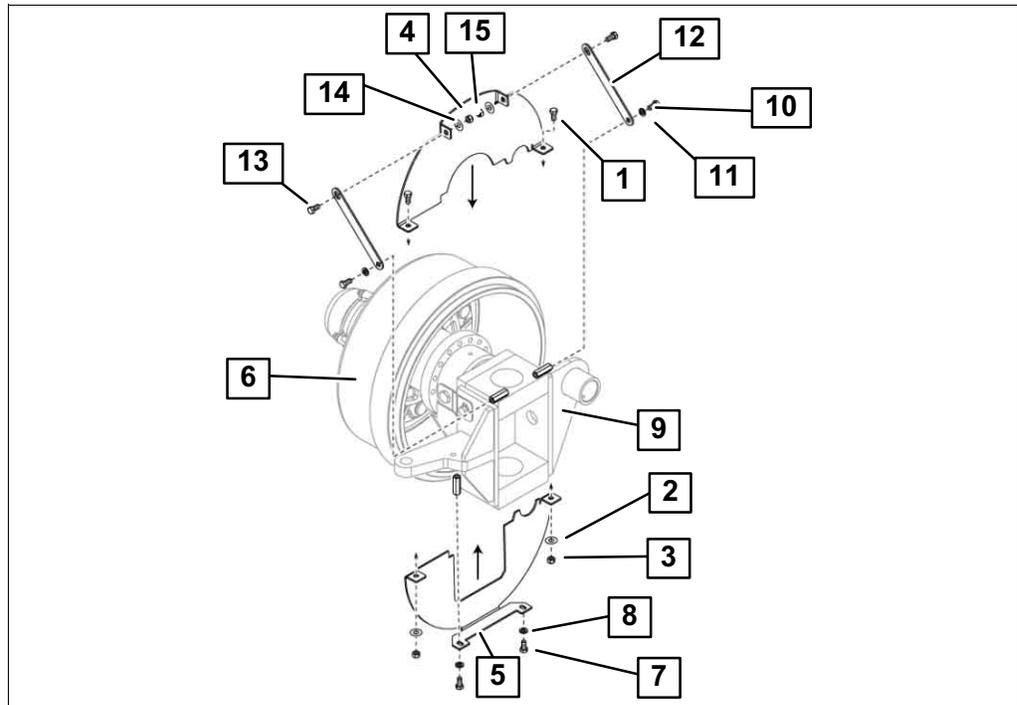
**Note!**

Make sure the air pressure in the emergency line (red hose) is maintained during the installation of the drum. The air pressure will keep brake linings close to the drum which makes installation easier.



- Lift the drum (1) and install it over the brake lining (2).
- Screw three nuts (3) on the hub to secure the drum (1), temporarily.
- Repeat these steps for each drum.
- Release air pressure and unscrew the nuts (3) on each wheel.

### Step 4: Dust shield assembly



- Assemble the upper and the lower dust shields (4, 5) behind the drum (6) using bolts (1), flat washers (2) and locknuts (3).
- Fix the lower dust shield (5) on the steering knuckle (9) using bolts (7) and lock washers (8).
- Fix the links (12) on the steering knuckle (9) using bolts (10) and lock washers (11).
- Fix the links (12) on the upper dust shield (4) using bolts (13), flat washers (14) and locknuts (15).
- Repeat these steps for each wheel.

### Step 5: Air brake system calibration



**Note!**

Calibrate the air brake system by following the instructions in section Advanced maintenance - Air brake.

## 6.6 Wheel assembly



### Attention!

Lift the spreader before installing the wheel. Refer to the section Handling - Lifting the spreader.



### Attention!

To lift the wheels, use a lifting device with a minimum lifting capacity of 500 kg.



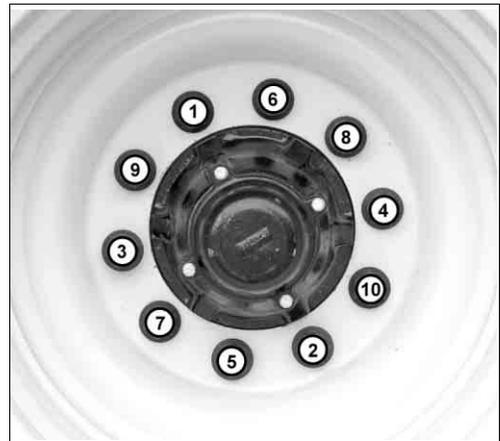
### Attention!

Torque wheel nuts to 508 NM.



Refer to section Technical data - Tire specifications.

- Check the air pressure inside the tire.
- Lift the tire and position it on the wheel hub.
- Install ten wheel nuts and tighten to 508 NM following the sequence illustrated.
- After tightening all nuts, double check the torque for safety.
- Repeat these steps for each wheel.



- Lower the spreader on the ground.
- Place wheel chocks on a wheel, one at the front and the other at the back of the wheel, to secure the spreader.
- Proceed with the remaining assembly steps.

## 6.7 Hydraulic suspension adjustments

The hydraulic suspension is lowered for transport purposes, it therefore requires adjustment.



### Note!

Refer to section Advanced maintenance - Hydraulic suspension.

## 6.8 Power steering - Control valve plug

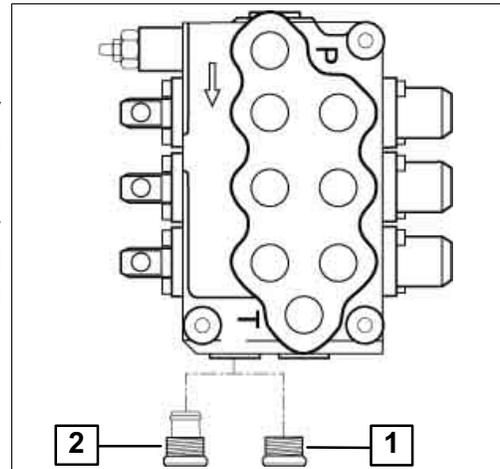


### Attention!

Since tractors can be equipped with an open or a closed hydraulic system, the control valve must be set with the appropriate plug to avoid overheating/damaging hydraulic components. Contact your tractor dealer.

Use the appropriate plug in order to match the tractor hydraulic system:

- The standard plug (1) is required for tractor equipped with an open hydraulic system.
- The beyond plug (2) is required for tractor equipped with a closed hydraulic system also called load sensing in some cases.



### Note!

A new equipment always comes with two plugs, a standard plug installed on the valve and a beyond plug supplied separately. Make sure to install the appropriate plug.

## Plug change



### Attention!

Oil leak will occur when changing the plug.



### Note!

Make sure the spreader and the tractor wheels are perfectly aligned before adjusting the control valve.

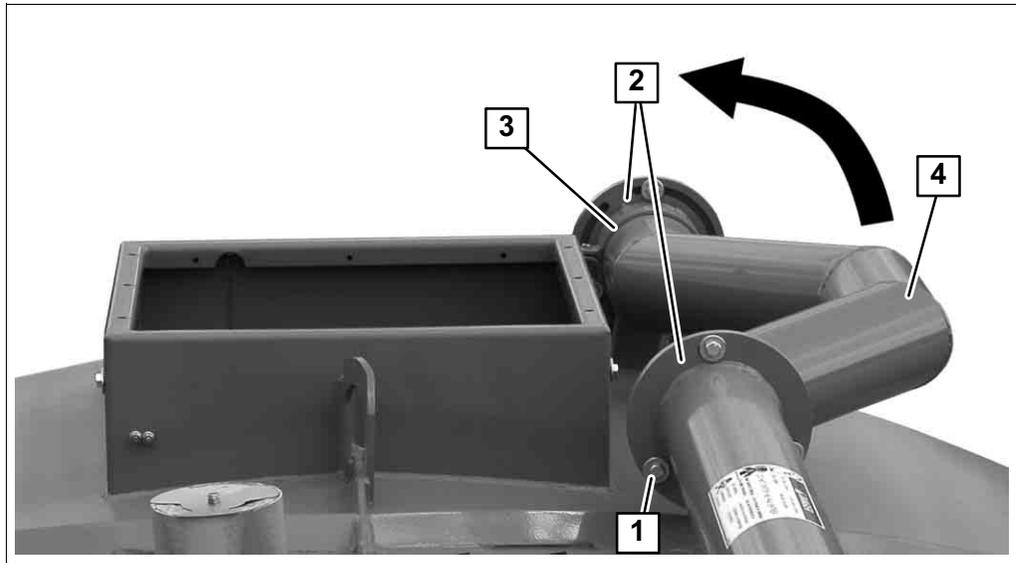
- Apply Teflon tape on the threads of the beyond plug (2). Do not apply Teflon tape on the tip of the plug.
- Unscrew the standard plug (1) and replace immediately by the beyond plug (2).

## 6.9 Anti-siphon assembly



### Warning!

Beware of potential falls: always walk on the nonslip band installed on the product.



- Loosen bolts (1) holding the disc flanges (2) and the collar (3).
- Turn the anti-siphon (4) upward.
- Tighten bolts (1) holding the disc flanges (2) and the collar (3).
- Make sure the anti-siphon is installed at its maximum height.

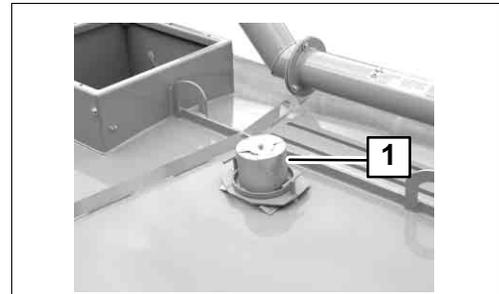
## 6.10 Top fill indicator assembly



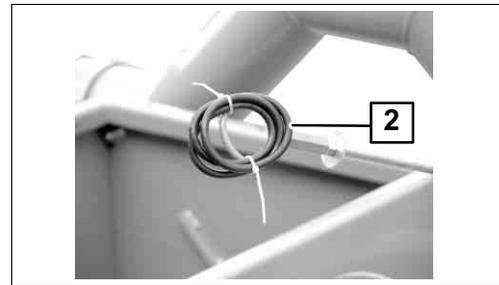
### Warning!

Beware of potential falls: always walk on the nonslip band installed on the product.

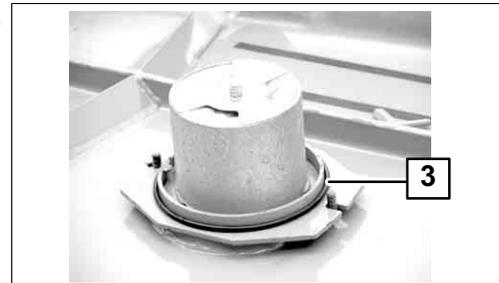
- Unscrew both handles.
- Remove the top fill indicator (1) from the opening.



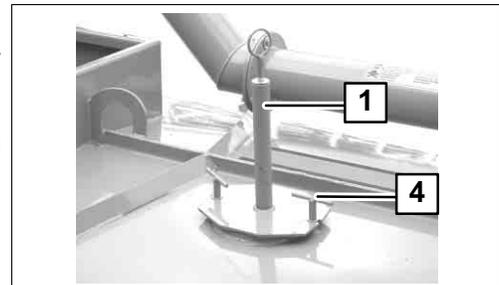
- Remove the O-ring (2) fastened to the top fill indicator.



- Place the O-ring over the lid (3) of the top fill indicator.



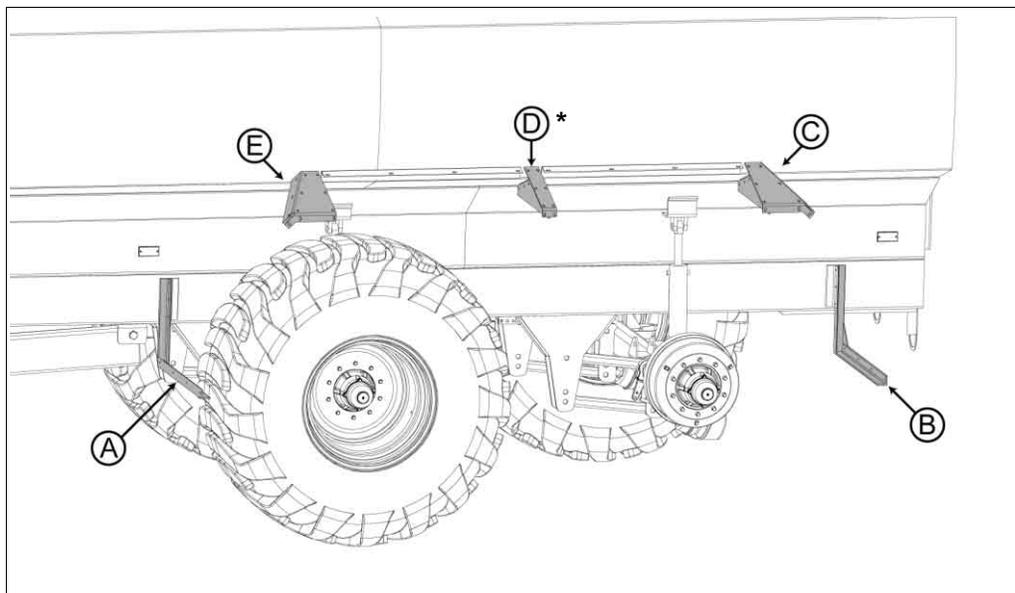
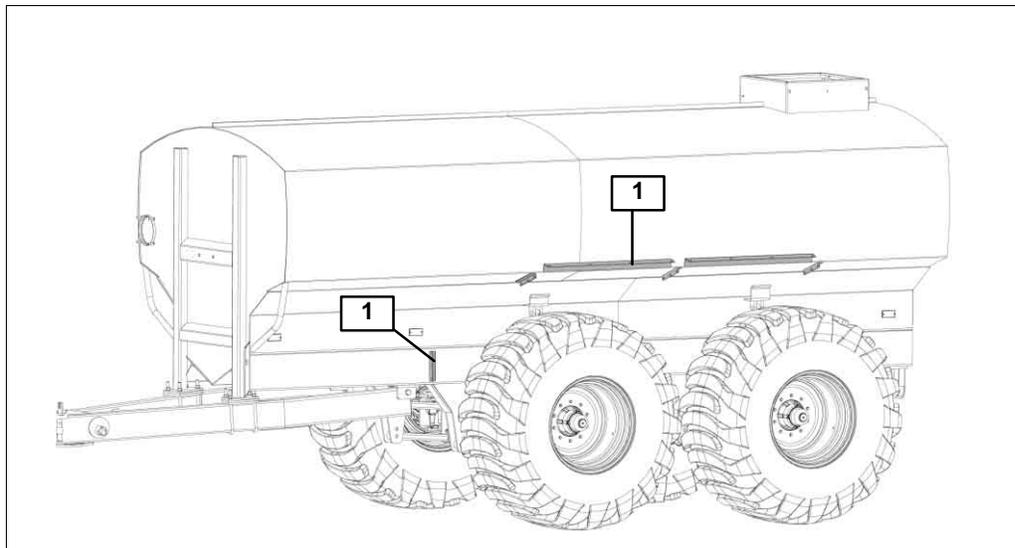
- Turn the top fill indicator (1) upside down and insert it into the spreader tank.
- Screw both handles (4) to maintain the assembly.



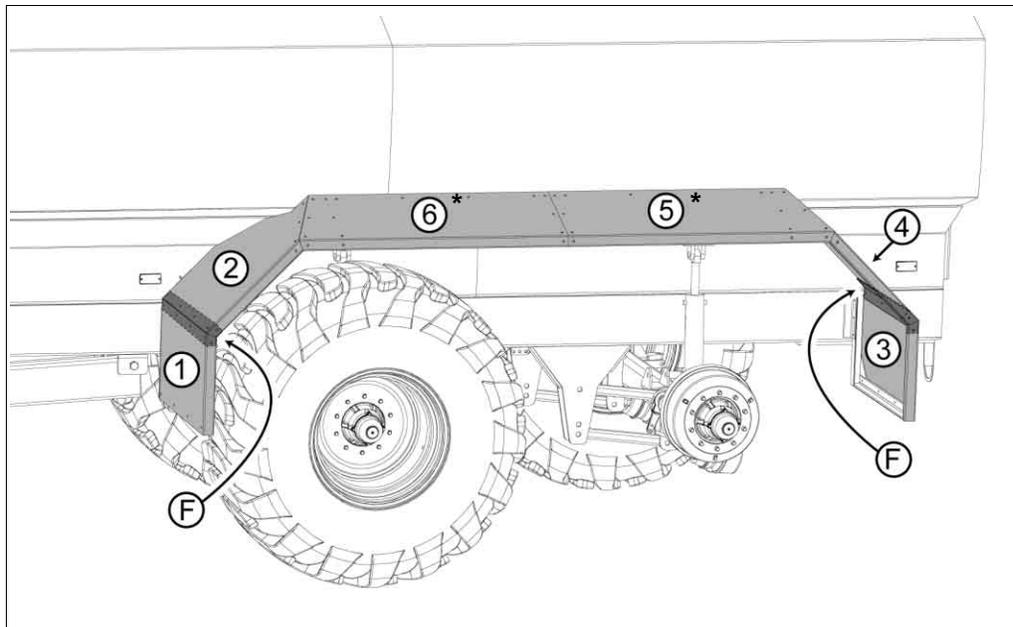
## 6.11 Mudguards assembly



Refer to section Technical data - Bolt torque chart.



- Install the mudguard supports (A, B, C, D, E) on the brackets (1) welded on the side of the spreader using carriage bolts, flat washers and locknuts.
- Tighten all nuts.
- \* On a EL44-6D spreader, one additional support (D) is required.



**Note!**

Apply silicone on the brackets, on the supports and on mudguard sections to avoid rattling noise caused by vibration. Regular silicone is recommended.

Install mudguard sections using carriage bolts, flat washers and locknuts in the following order:

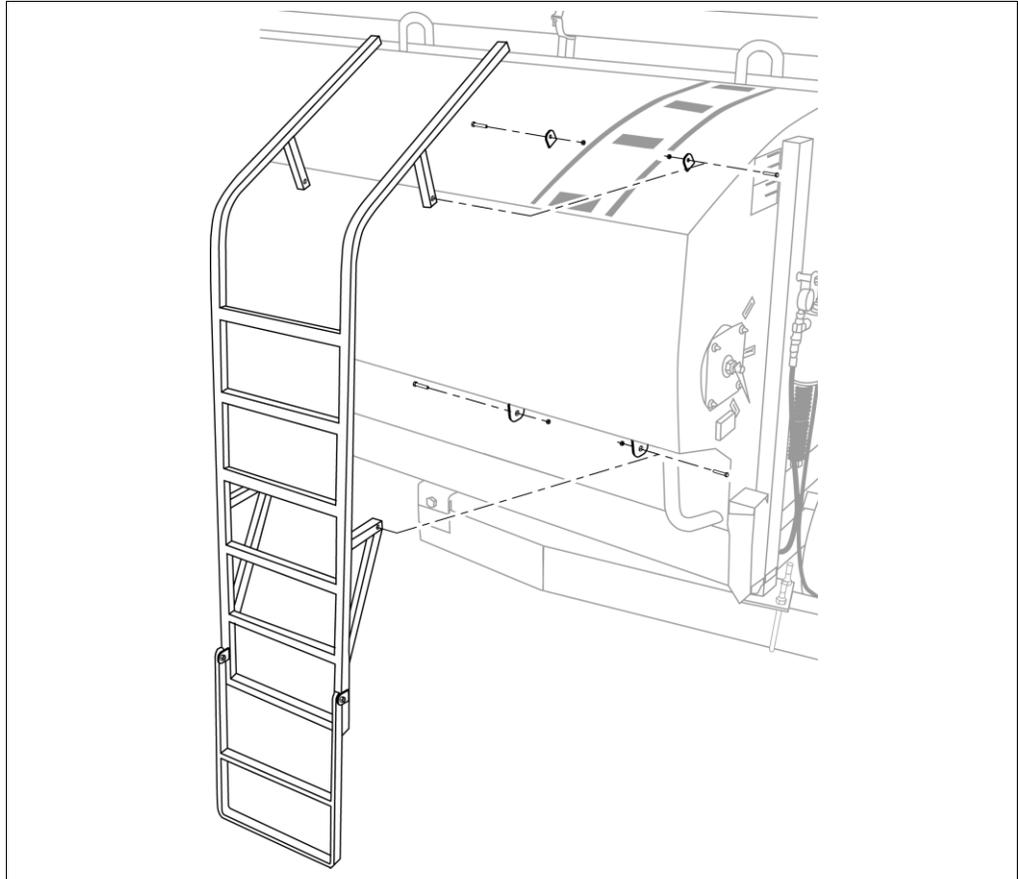
- Fasten sections #5 and #6 on supports;
  - Fasten bottom part of section #1 on support;
  - Fasten bracket 'F' on upper part of section #1;
  - Fasten section #2 between sections #1 and #6;
  - Fasten bottom part of section #3 on support;
  - Fasten bracket 'F' on upper part of section #3;
  - Fasten section #4 between sections #3 and #5;
  - Tighten all nuts;
  - Allow the silicone to dry before moving the spreader;
  - Repeat these steps to install the mudguards on the other side of the spreader.
- \* On a EL44-6D spreader, one additional straight section is required between sections #5 and #6.

6.12 Ladder assembly



**Warning!**

Beware of potential falls: always walk on the nonslip band installed on the product.



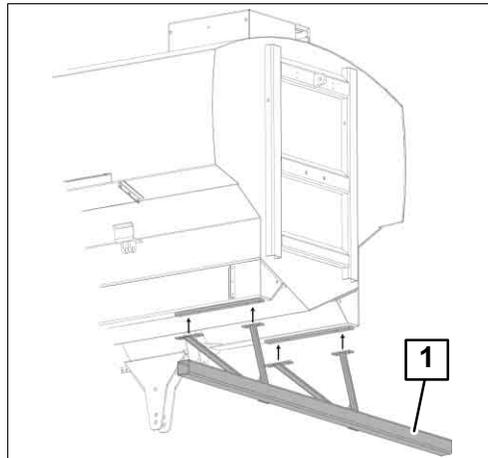
- Install the ladder on the spreader using four bolts and locknuts.

## 6.13 Rear underrun protection assembly

 **Note!**

The rear underrun protection must be mounted underneath the rear end of the spreader. It might not be compatible with some tool bar models. Consult your local rules and regulations to check if the underrun protection can be removed.

- Fasten the rear underrun protection (1) using the bolts provided.



6.14 Self-loading assembly (optional)



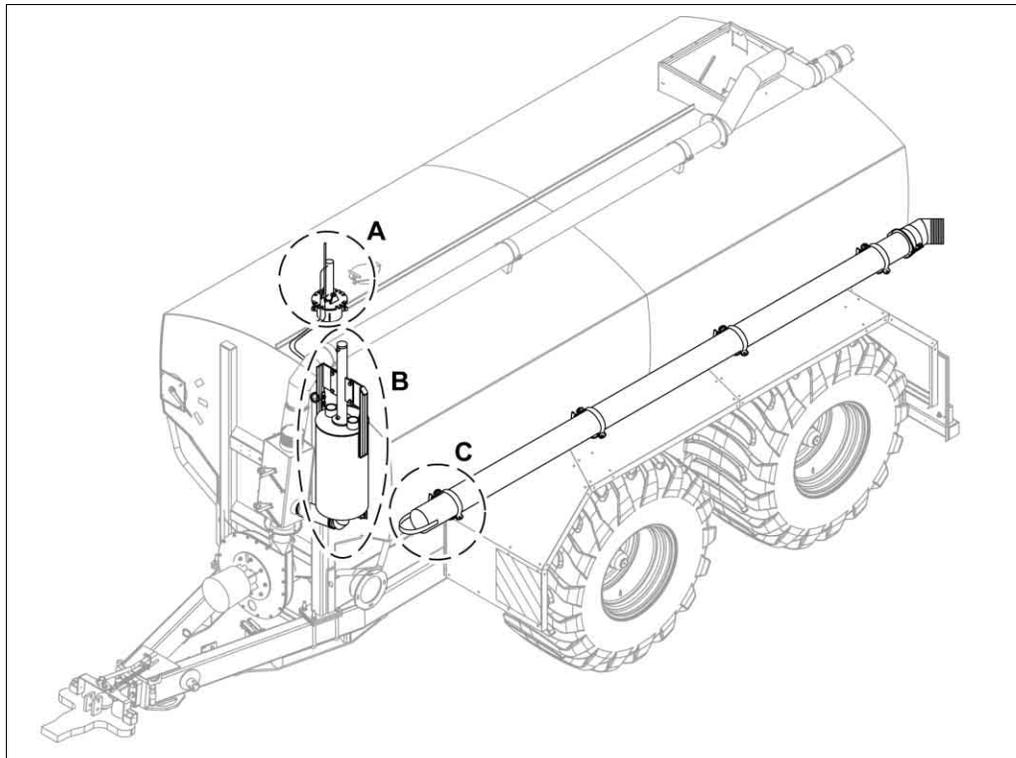
**Warning!**

Beware of potential falls: always walk on the nonslip band installed on the product.



**Note!**

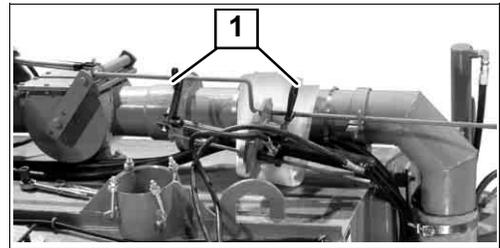
The flexible suction hose is not shown in the illustration below. It is installed on the opposite side of the spreader.



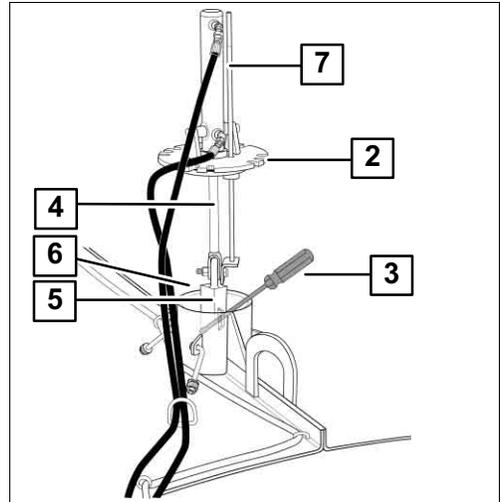
A	Tank bottom valve cylinder
B	Primer pump
C	Hose supports

### Step 1: Cylinder assembly

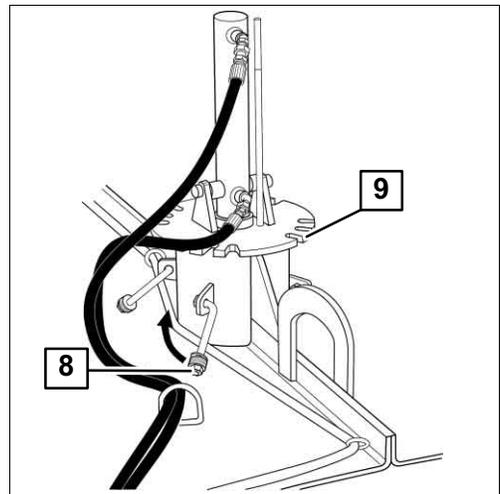
- Cut tie wraps (1) to remove the tank bottom valve cylinder (2) from the spreader.



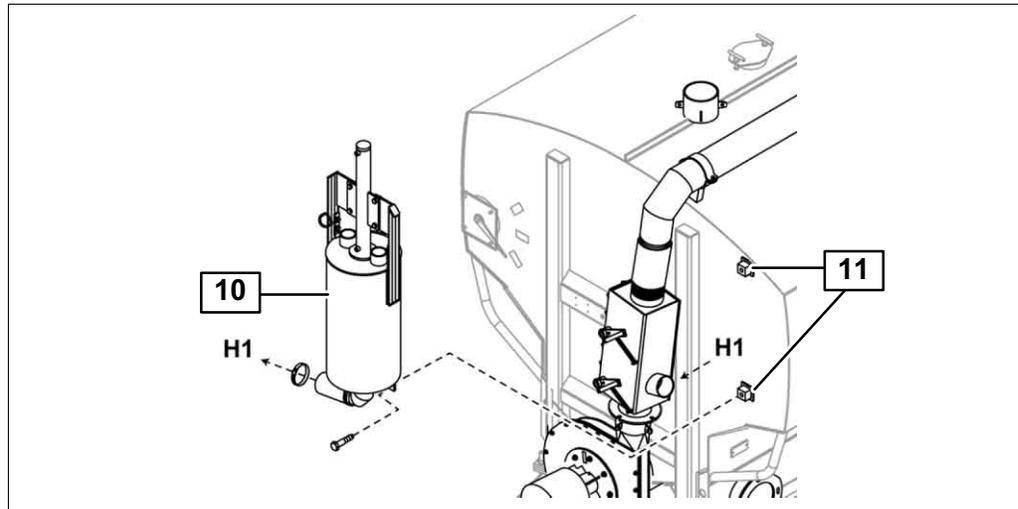
- Raise the extension of the tank bottom valve cylinder (2) located inside the tank. Insert a screwdriver (3) through the extension bracket to maintain it at its maximum height.
- Fix the cylinder rod (4) to the extension (5) using a bolt (6). Make sure the indicator rod (7) points toward the front of the spreader.
- Remove the screwdriver (3).



- Position the retaining bolts (8) in the disc notches (9) to maintain the cylinder in the receptacle. Tighten all nuts.

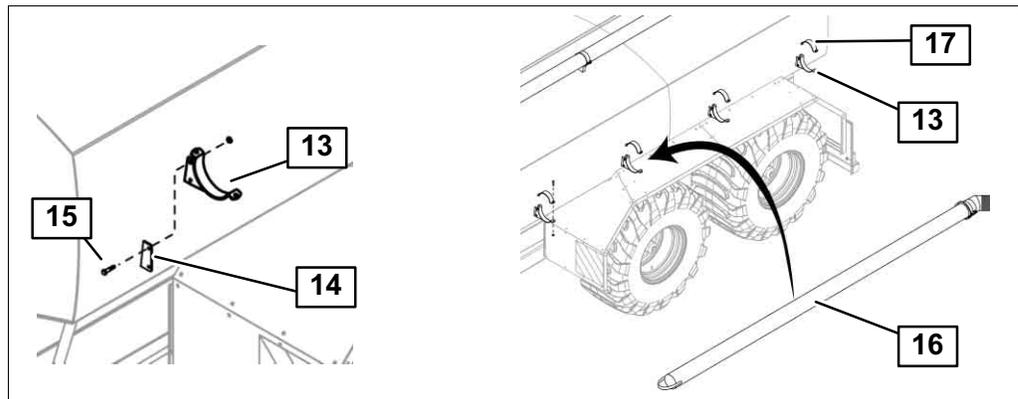


## Step 2: Primer pump installation



- Using provided hardware, bolt the primer pump (10) on the supports (11). Tighten bolts.
- Connect the hose H1 to the valve H1 and secure it with the collar provided.

## Step 3: Hose support installation



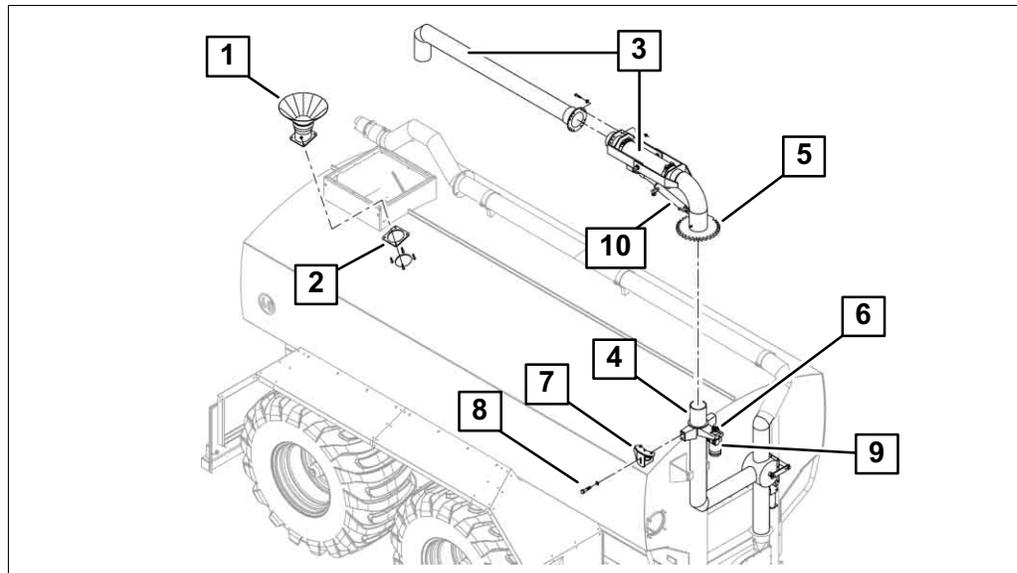
- Install the supports (13) on the welded brackets (14) using two bolts (15) for each support.
- Install the aluminum pipe (16) on the supports (13). Install the suction pipe on the supports located on the other side of the spreader.
- Install the half collars (17) over the pipe supports to maintain the pipes during transport. Use two nylon spacers and two bolts to tighten the collars. Hold the pipes firmly without compressing them.

## 6.15 Nursing kit assembly (optional)



### Warning!

Beware of potential falls: always walk on the nonslip band installed on the product.



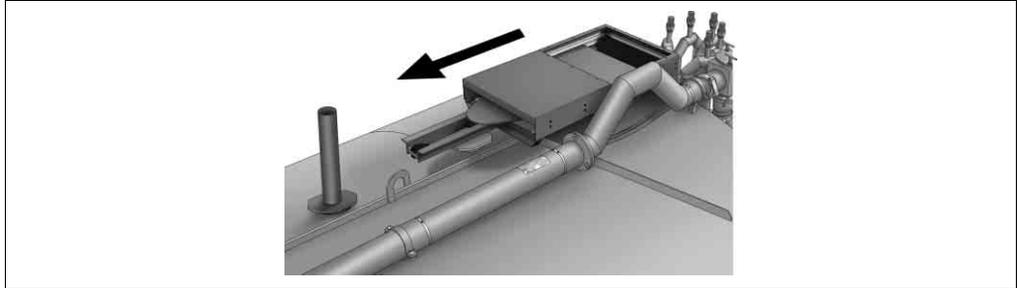
- Install the transfer pipe receptacle (1) on top of the spreader using four locknuts, flat washers and a rubber gasket (2).
- Assemble the transfer pipe (3) using bolts, flat washers and locknuts. Tighten all nuts.
- Apply grease on the pipe end (4) to facilitate the transfer pipe assembly (3).
- Lift the transfer pipe assembly (3) using an appropriate lifting device. Position it over the pipe end (4). Slowly lower the transfer pipe assembly (3) to lean over the pipe end (4) so that the pipe gear (5) fits into the motor gear (6).
- Assemble two retaining brackets (7) on the vertical pipe using bolts (8) and lock washers.
- Connect the hydraulic hoses to the hydraulic motor (9) and to the hydraulic cylinder (10).

### 6.16 Hydraulic sliding door assembly (optional)



**Warning!**

Beware of potential falls: always walk on the nonslip band installed on the product.



- There are two hydraulic hoses installed on top of the tank. Connect one of the hydraulic hoses to the ball valve located on the door frame. Connect the second hose to the cylinder.
- Bolt the door using provided hardware.
- Open the ball valve located on the door frame.

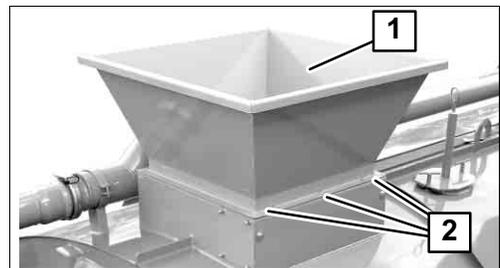
### 6.17 Hopper assembly (optional)



**Warning!**

Beware of potential falls: always walk on the nonslip band installed on the product.

- Lift the hopper (1) and position it on the spreader fill opening.
- Tighten the bolts (2) with locknuts to secure the hopper.



### 6.18 Halogen rear lights assembly (optional)

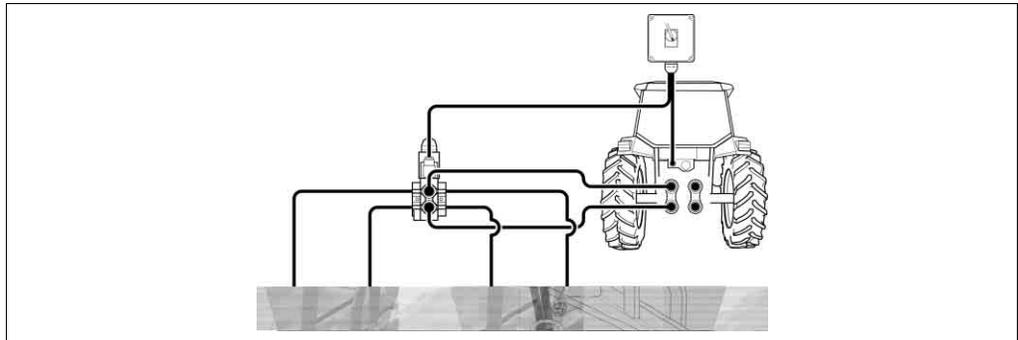
- Connect the electrical connectors to the tractor.



See section for wiring diagram to connect the wires for the lights according to the connections of the tractor.

### 6.19 Solenoid valve assembly (optional)

- This option is installed on the spreader. Hose connection must be done.
- Selector switch must be connected to the tractor 12 VDC outlet.



Refer to section Appendix - Hydraulic diagrams - Solenoid valve control option.

## 7 Initial commissioning

### 7.1 Special personnel qualification required for initial commissioning

Initial commissioning must be performed by trained personnel in accordance with the safety instructions.



Read the section Safety - Personnel qualifications.

### 7.2 Safety instructions for initial commissioning



**Warning!**

Do not start this product until the initial commissioning checklist is completed.

The first start steps intend to test the product in order to validate its functionality and efficiency before handing it over to the customer. Therefore, the dealer along with the customer must operate the product as well as the operating elements.

### 7.3 Initial commissioning checklist

This checklist must be completed by the dealer and the customer to validate that the product is assembled and/or installed according to the manufacturer's instructions and is safe for use.



**Note!**

Additional information necessary to complete the checklist can be found in this instruction manual specially in the Advanced maintenance section.



<b>General</b>	<b>DONE</b>	<b>N/A</b>
The owner received the instruction manual from the dealer and commits to read it.		
The owner is instructed by the dealer on how to operate and maintain the product.		
The spreader is connected to the tractor and secured with safety chains.		
The safety guards and safety labels are installed.		
The signal indicators and signal lights are operational.		
The lubrication points are lubricated.		
The oil levels are adequate.		
All bolts are torqued.		
All drains are closed.		
All connections are secured.		
A visual inspection is performed to ensure there are no leaks, signs of distortion or defective parts.		
The wheels nuts are tightened to correct torque.		
The tires are inflated to appropriate pressure.		
The owner is instructed on the turning radius of this product.		
The tractor draw bar is adjusted to minimum length while respecting the PTO limitations.		
The spreader impeller matches the tractor RPM.		
The PTO shaft is installed.		
The owner is instructed on the PTO driveline instructions.		
The spare safety shear bolts are removed from the PTO guards.		
The anti-siphon is in the upright position.		



<b>Power steering</b>	<b>DONE</b>	<b>N/A</b>
The guiding mechanism of the power steering is adjusted to the tractor draw bar.		
The safety mechanism springs are adjusted to appropriate tension.		
The power steering is operational, the wheels respond to the tractor command.		
The tractor oil flow is adjusted for the power steering.		
The owner is instructed on how to operate the power steering system.		

<b>Air brakes</b>	<b>DONE</b>	<b>N/A</b>
The air brakes are operational.		
The owner is instructed on how to operate the air brake adjustment lever (Wabco valve).		
The owner is instructed on how to operate the air brake system.		

<b>Hydraulic suspension</b>	<b>DONE</b>	<b>N/A</b>
The hydraulic suspension is adjusted and the spreader inclination is adequate when connected to the tractor.		

<b>Options</b>	<b>DONE</b>	<b>N/A</b>
The owner is instructed on how to operate the self-loading system.		
The owner is instructed on how to operate the nursing kit.		
The owner is instructed on how to operate the in-tank recirculation kit.		
The owner is instructed on how to operate the hydraulic sliding door.		



**Note!**

The dealer and the owner must fill the warranty registration form when the checklist is completed.

**Dealer's signature:** \_\_\_\_\_

**Owner's signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

## 7.4 Checks after initial commissioning



### Note!

The initial commissioning of this product can reduce the tractor hydraulic oil level. Follow the recommendations of the tractor manufacturer to ensure proper hydraulic oil level.

---

The owner must make sure that:

- there are no damaged, worn, defective parts or signs of distortion;
- the safety devices such as guards, covers, chains, etc. are in perfect working condition and remain in place to ensure safety;
- the lubricants such as grease, oil, etc. are at an appropriate level;
- there are no leaks;
- all bolts are tight. Refer to section Technical data - Bolt torque chart;
- the product works perfectly;
- tires are inflated to appropriate pressure.

## 7.5 Handing over to the customer

### Hand over warranty registration form

The warranty registration form must be completed and signed by the customer and the dealer. The warranty registration form must be returned to GEA Farm Technologies Canada Inc. / Division GEA Houle to validate the warranty.

## 8 Operating

### 8.1 Special personnel qualification required for operation

Operating must be performed by trained personnel in accordance with the safety instructions.



Read the section Safety - Personnel qualifications.

### 8.2 Safety instructions for operation



**Warning!**

Never travel on hillside with this product.



**Warning!**

Do not tow this product at speed exceeding 12 km/h when the power steering system is engaged.



**Warning!**

Do not tow this product at speed exceeding 40 km/h.



**Warning!**

Keep body parts and clothing away from moving parts.



**Warning!**

Keep safety devices in place.



**Warning!**

Do not operate this product if a person is on top.



**Warning!**

Wear protective boots, eye gear and gloves for all steps included in this section.



Read the section Safety.

### 8.3 Checks before operation

- The safety devices such as guards, covers, chains, labels, etc. remain in place to ensure safety;
- Lubricants such as grease, oil, etc. are at appropriate level. To locate the grease points, refer to section Appendix - Label position;
- The product is in perfect condition. There is no visible damage;
- Only authorized personnel are in the working area of the equipment;
- No unnecessary object or material is located in the working area of the equipment;

- The PTO driveline meets local requirements;

## 8.4 Connecting the spreader

### Step 1: Hitching the spreader



#### Warning!

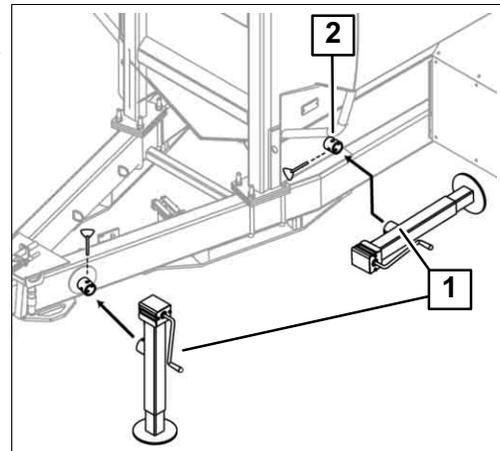
Connect the hydraulic hoses properly to ensure safe operation. Refer to section Appendix - Hydraulic diagram.



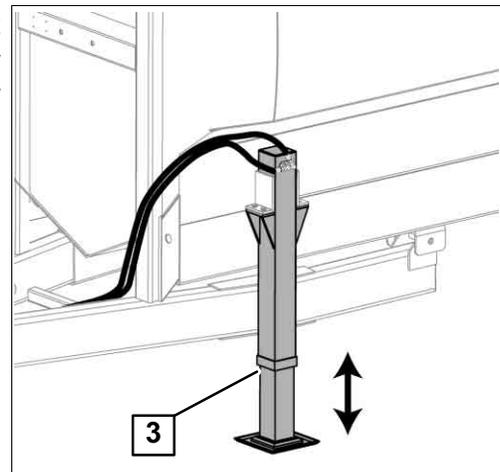
#### Attention!

The spreader must be towed by the tractor for which it was designed. When changing tractor, the spreader draw bar must be adjusted. Refer to your authorized dealer for more information.

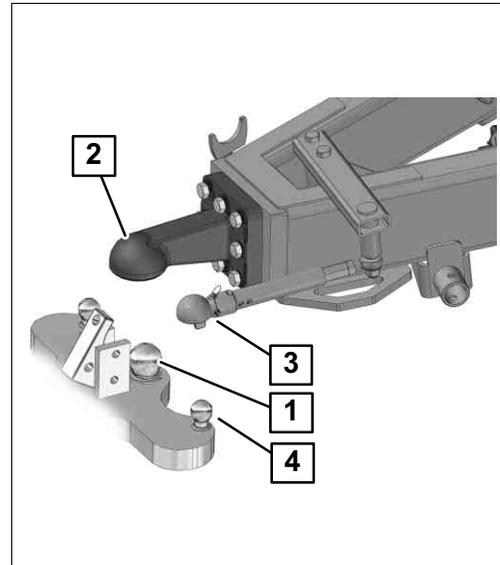
- Using the jack (1), position the spreader draw bar to allow connecting the tractor.
- When the spreader is connected, the jack must be placed on the transport support (2).



- If using a hydraulic jack (3), connect the hydraulic hoses to the tractor and adjust the spreader draw bar height.



- Move the tractor backward in order to align the hitch ball (1) with the coupling hand (2).
- Once the hitch ball (1) is aligned with the spreader coupling hand, immobilize the tractor using the parking brake.
- Sit spreader coupling hand on the tractor hitch by lowering the jack.
- Lock the coupling hand to the tractor locking mechanism.
- Lock the guiding mechanism (3) to the side ball (4) by pressing on the coupling hand.



- Remove wheel chocks. Hook them on the support located on the mudguard.
- Remove the jack from the draw bar and place it on its transportation support located on spreader frame. If using optional hydraulic jack, remove it completely.
- Double check all connections.

## Step 2: PTO driveline connection



### Warning!

ROTATING DRIVELINE! KEEP AWAY!



Turn off the tractor and apply the hand brake before connecting or disconnecting the PTO driveline.



### Note!

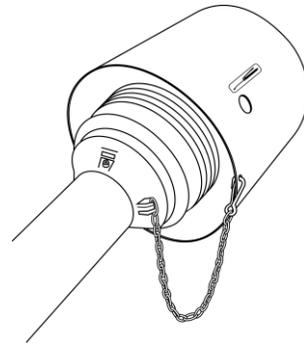
Refer to the PTO driveline instruction manual and follow the manufacturer's recommendations.



Refer to the following instructions when the PTO driveline is supplied by GEA Farm Technologies Canada Inc. / Division GEA Houle.

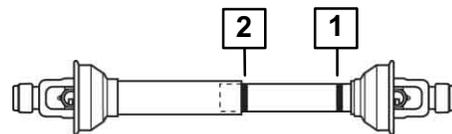
### Safety chains

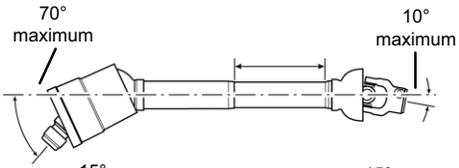
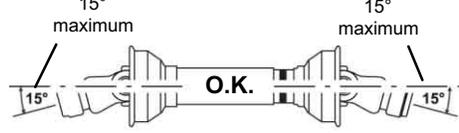
- Safety chains must be in place at all times to prevent the driveline guards from rotating. Replace if damaged.
- Make sure the safety chains do not restrict the driveline movement when operating or transporting the spreader.
- Never use the safety chains to secure the PTO when disconnected from the tractor.



### Maximum extension and retraction

- Always keep the edge of the female guard between the indicators while operating.
- The minimum retraction indicator (1) must never disappear underneath the female guard.
- The maximum extension indicator (2) must never be completely visible.



<b>Maximum angle of PTO joints</b>	
<b>Constant velocity PTO driveline</b> <ul style="list-style-type: none"><li>• One PTO joint must be set at a maximum of 70° angle. The other PTO joint must be set at a maximum of 10° angle .</li></ul>	
<b>Standard PTO driveline</b> <ul style="list-style-type: none"><li>• Both PTO joints must be set at the same angle (maximum 15° angle).</li></ul>	
<ul style="list-style-type: none"><li>• Joints must always be directed toward the same side of the driveline.</li></ul>	
<b>Lubrication</b>	
<ul style="list-style-type: none"><li>• For universal joints, use a high quality grease formulated for intensive use. Follow the instructions of the PTO manufacturer for proper lubrication.</li></ul>	

### Step 3: Component connection



#### Warning!

Connect the hydraulic and pneumatic hoses properly to ensure safe operation. Refer to section Appendix.

- Connect the spreader hydraulic hoses and/or pneumatic hoses to the tractor. Double check all connections for safety purpose.
- Connect the electrical outlet of the spreader to the tractor.

## 8.5 Testing safety components

### Step 1: Lights

- Check the left and right signal lights by activating the lever and visually confirm their functionality at the rear of the spreader.
- Activate the brake and visually confirm that the brake indicators work properly.

### Step 2: Air brake system



#### **Attention!**

The air brake system is equipped with a Wabco valve allowing to set the braking power manually. Set the Wabco valve according to the actual load inside the tank before testing the air brake system. Refer to section Operating - Moving the spreader - Adjusting Wabco valve.

---

Test the service brakes:

- Apply and release the tractor brake pedal a few times before moving the spreader.
- Move the spreader to a wide and safe area. Apply the service brakes a few times to ensure that the brakes can stop the spreader properly.

Test the emergency brakes:

- Activate the tractor parking brake. Try to move the spreader by pressing on the gas pedal. The emergency brake must keep the spreader immobilized.

## 8.6 Moving the spreader



### Danger!

Before moving the spreader on public roads, make sure that:

- all local rules and regulations are followed;
- the tool bar is correctly positioned for safe transportation (Set to the smallest position in width, completely raised and locked with safety chain).



### Warning!

Do not tow this product at a speed exceeding 25 mph [40 km/h].



### Warning!

Do not tow this product at a speed exceeding 8 mph [12 km/h] when the power steering system is engaged.

- Before moving the spreader, make sure all connections are secured. Refer to section Operating - Connecting the spreader;
- Remove safety brakes and move the spreader;
- Set the hydraulic flow rate of the output connected to the power steering valve as per the spreader model:

Spreader model	Hydraulic flow rate adjustment
EL44-4D	11 - 15 LPM
EL44-6D	23 - 30 LPM

- Engage the power steering system only when the spreader is towed at a speed below 12 km/h;
- Disengage the power steering system when the spreader is towed at a speed ranging from 12 to 40 km/h;
- Before turning with the spreader, reduce the speed below 12 km/h then activate the power steering system;
- Maintain the speed below 12 km/h when turning;
- Once the turn is completed, deactivate the power steering system as soon as the spreader speed exceeds 12 km/h.



### Note!

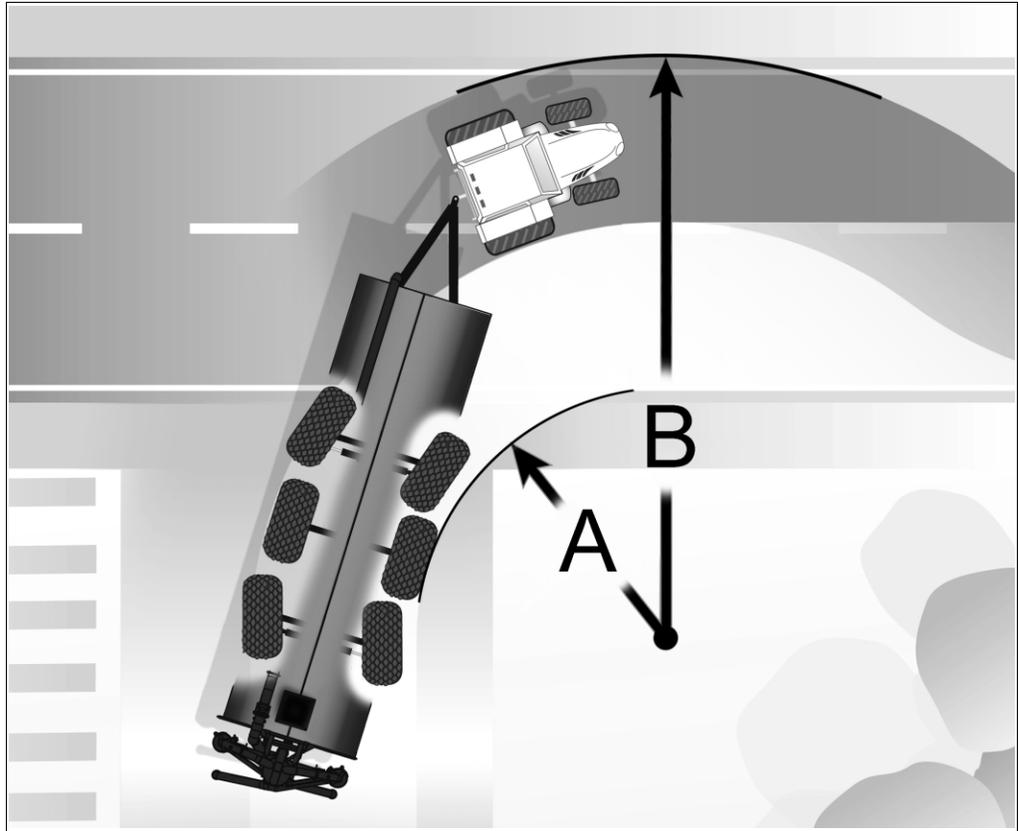
Follow the turning radius according to the spreader model, as indicated in the next section.

### 8.6.1 Turning radius



**Attention!**

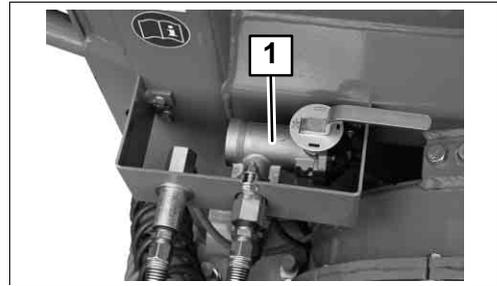
Follow the turning radius to prevent premature wear of the tires and to avoid damaging mechanical parts of the spreader.



Spreader model	Inside radius <b>A</b>	Outside radius <b>B</b>
EL44-4D	4,58 m	9,16 m
EL44-6D	4,58 m	10,67 m

### 8.6.2 Adjusting Wabco valve

- Stop the tractor engine and apply hand brakes prior to adjust brakes.
- Check manure level indicator (3) and adjust the Wabco valve (1) located at the front of the spreader. Rotate the handle (2) to the corresponding manure level indicator (3).



	Empty load	Half load	Full load
2			
3			

## 8.7 Loading the spreader



**Attention!**

Make sure all drains and cleaning openings are closed before loading.



**Attention!**

Always keep this product on a flat and level surface.



**Attention!**

Do not use the jack when the spreader tank contains liquid.



**Note!**

Park the spreader on a level and firm surface.



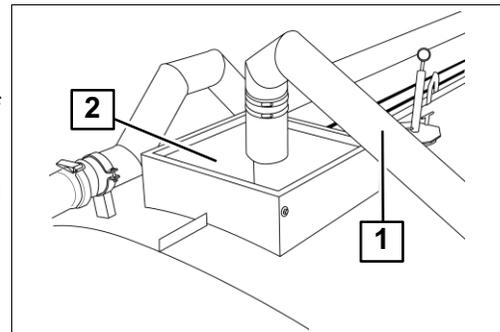
**Note!**

Before loading the spreader, make sure that manure is homogenized and that the consistency matches the tool bar capacity. Refer to section Appendix - Consistency test.

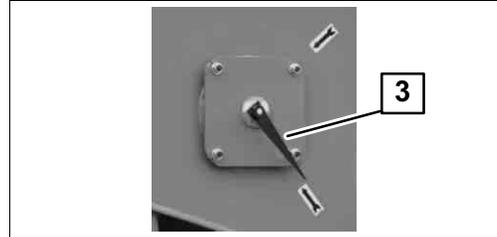


To load the spreader with the self-loading option, refer to section Operating - Operating spreader options - Self-loading.

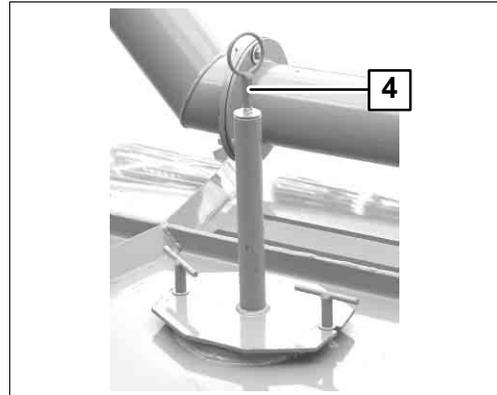
- Position the spreader to center the loading pipe (1) in the fill opening (2).
- Open the hydraulic sliding door, if applicable.
- Start filling the spreader with liquid manure.



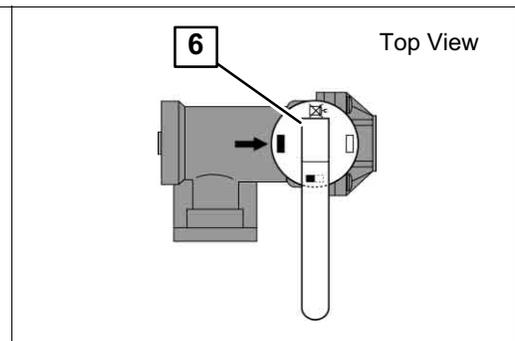
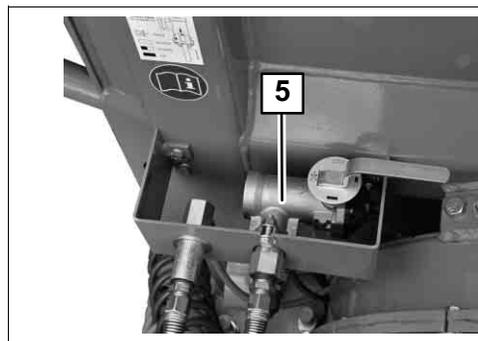
- Watch the level indicator (3) at the front or at the rear (optional) of the spreader while loading.



- Reduce filling rate when the spreader tank is  $\frac{3}{4}$  full.
- Stop filling when the top level rod indicator (4) starts to raise.



- Rotate the handle of the Wabco valve (5) located at the front of the spreader to the correct position (6) to adjust braking efficiency.



## 8.8 Spreading



**Warning!**

Do not tow this product at a speed exceeding 12 km/h when the power steering system is engaged.



**Warning!**

Do not tow this product at a speed exceeding 40 km/h.



**Warning!**

Do not move the spreader if a person is on top.



**Attention!**

Do not keep the power steering engaged needlessly to prevent overheating the hydraulic system of the tractor.



**Attention!**

Disengage the PTO before turning with this product.



**Attention!**

Shift the tractor to a lower gear when travelling down a steep hill.



**Attention!**

Never open cleaning openings and drains when the spreader tank contains liquid.



**Note!**

Familiarize yourself with the hydraulic functions and spreading tools before spreading.



**Note!**

The air brake system is equipped with a Wabco valve which allows to set the braking power manually according to the load. Make sure the Wabco valve is set according to the actual load before testing. Refer to section Operating - Adjusting Wabco valve.

- Position the tool bar in spreading position.
- Set the spreader directional valve in spreading mode, if applicable.
- Adjust the tractor speed according to the desired spreading rate. Refer to section Appendix - Spreading rate calculation.
- Engage PTO to start spreading.
- Set the spreader directional valve in recirculating mode, if applicable.
- Regularly check manure level and adjust the Wabco valve accordingly.
- Disengage PTO when the spreader is empty.

## 8.9 Operating spreader options

### 8.9.1 Self-loading



**Attention!**

Never open cleaning openings and drains when the spreader tank contains liquid.



**Attention!**

Always keep this product on a flat and level surface.



**Note!**

Make sure the loading pipe is properly aligned with the fill opening.



**Note!**

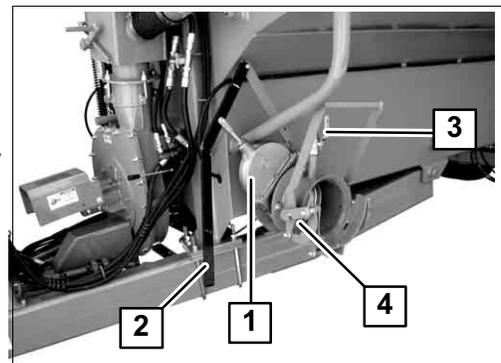
Before loading the spreader, make sure that manure is homogenized and that the consistency matches the tool bar capacity. Refer to section Appendix - Consistency test.



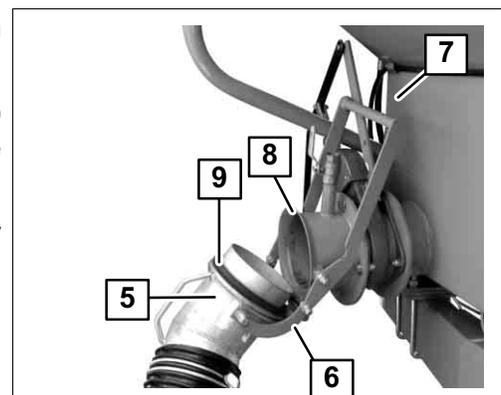
**Note!**

Refer to the PTO driveline instruction manual and follow manufacturer's recommendations.

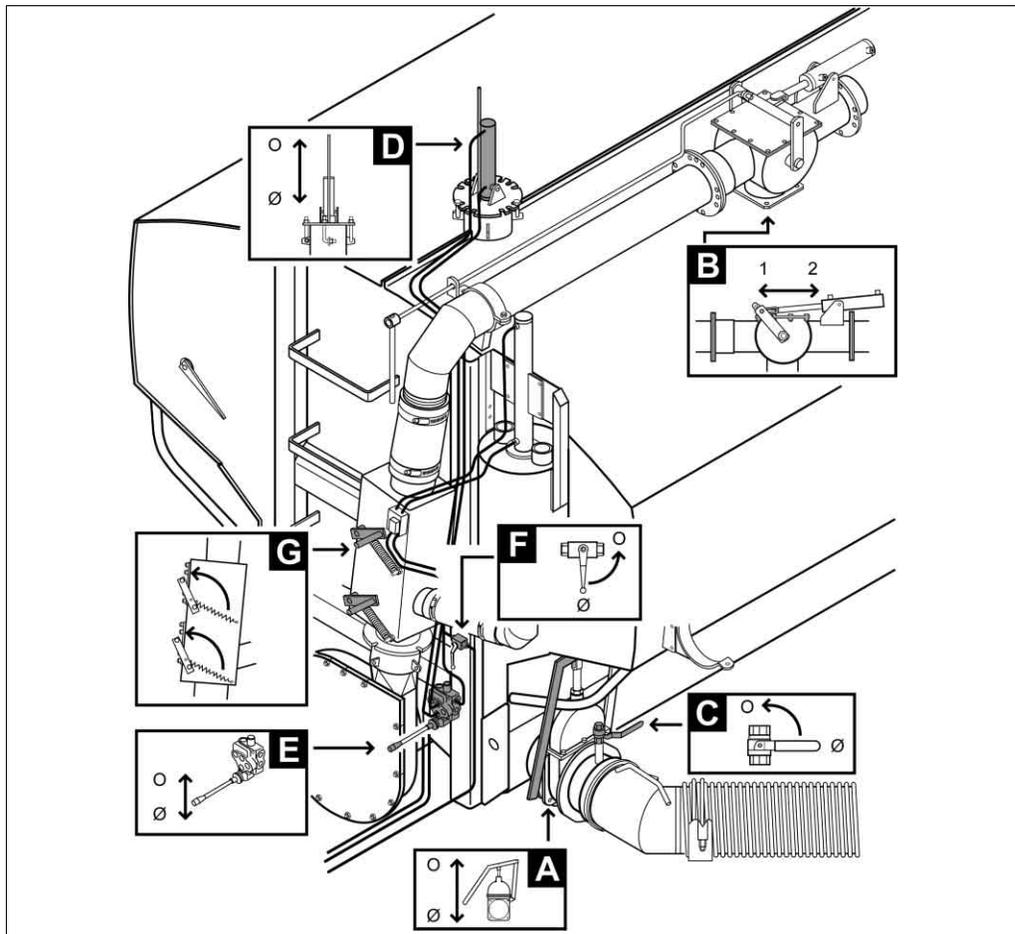
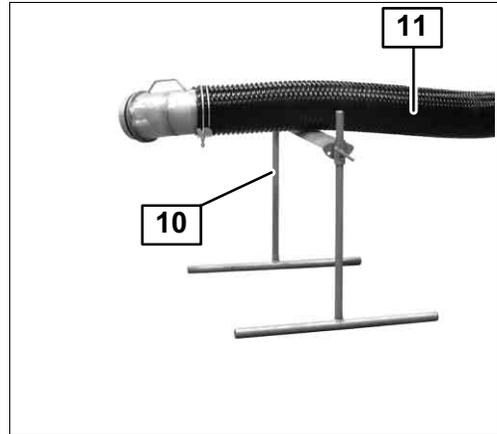
- Apply the tractor parking brake and turn off the engine.
- Remove suction hose and pipe from supports located on each side of the spreader.
- Assemble the hoses and pipes together.
- Close the gate valve (1) by pushing the gate valve lever (2) downward.
- Open ball valve (3).
- Unlock the latch mechanism by flipping the locking flat bar (4).



- Insert the suction hose adaptor (5) in the U-shape support (6).
- Pull the receptacle lever (7) to connect the hose adaptor (5) to the receptacle (8).
- Make sure the O-ring (9) properly seals the connection.



- Assemble the suction hose support supplied with the self-loading option.
- Install the suction hose support (10) two meters away from the spreader.
- Set the height of the support (10) so that the end of the hose (11) lays horizontally.
- Make sure the other end of the hose is well inserted in the manure.

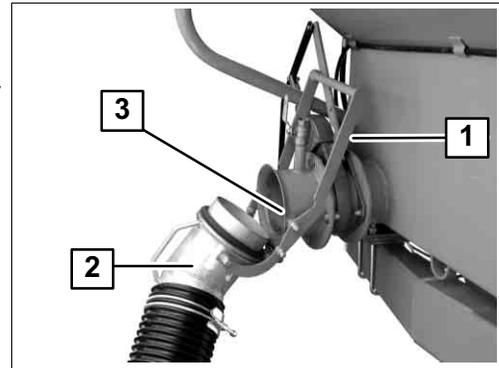


**Legend:**

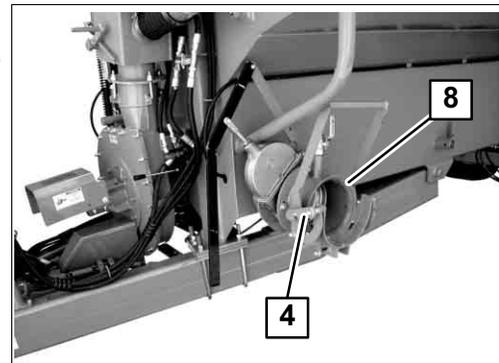
○	Open position	∅	Closed position
---	---------------	---	-----------------

- Set the directional valve (B) to loading position (1).
- Engage the PTO.
- Turn on the tractor hydraulic outlet to feed the primer pump.
- Close the ball valve (C).
- Open the gate valve (A).

- Close the tank bottom valve (D) by pushing down the lever (E).
- Close the bypass valve (F) to start the primer pump.
- Check the handles of the check valve (G). When the handles remain in up position, the centrifugal pump is primed properly.
- Open the bypass valve (F) to stop the primer pump and let the centrifugal pump fill the tank. Monitor the level of liquid inside the tank.
- When the tank is full, open the ball valve (C).
- Close gate valve (A).
- Open tank bottom valve (D).
- Remove suction hose by pushing the receptacle lever (1) to disconnect the suction hose adaptor (2) from the receptacle (3).
- Disengage the PTO.



- Lock mechanism in place by flipping the locking flat bar (4) located on one side of the receptacle (8). Make sure it is hooked properly.
- Place the hoses on the supports and secure it using the half collars, bolts and nuts provided.
- Move to spreading area.



Refer to section Operating - Moving the spreader.

### Recirculating mode (if applicable)



**Attention!**

Use the recirculating mode only when travelling in a straight line.

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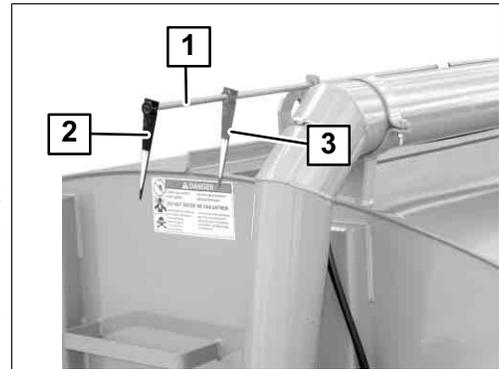


**Attention!**

Disengage the PTO before turning with this product.

---

- Position the directional valve indicator (1) in recirculating mode (2).
- Engage the PTO in low revolution.
- Disengage the PTO to interrupt recirculating mode (example: when turning).
- Position the directional valve in spreading mode (3).



## 8.9.2 Nursing kit



### **Danger!**

**BEWARE OF ELECTRICAL POWER LINES!**



Operating this product near electrical power lines can result in fatal injuries. Make sure this product is operated in a secure environment. Consult your local electrical supplier regarding electrical safety.



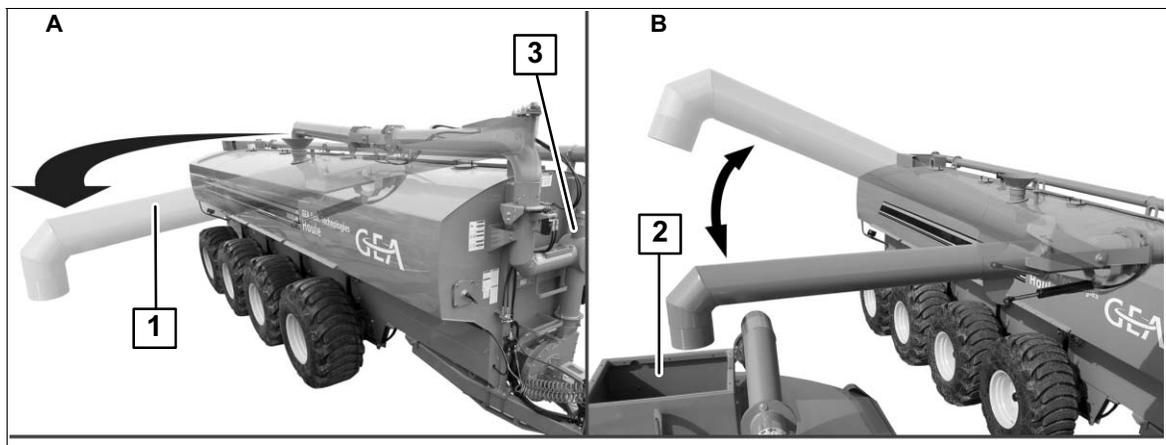
### **Attention!**

Never open cleaning openings and drains when the spreader tank contains liquid.



### **Attention!**

Always keep this product on a flat and level surface.



- Use the hydraulics to lift and rotate the articulated transfer pipe (1) over the fill opening (2) of the other spreader.
- Set the directional valve (3) in transfer mode.
- Engage the PTO to start to transfer.
- Monitor the level indicator of the spreader being filled.
- Reduce the PTO when the spreader tank is  $\frac{3}{4}$  full.
- Disengage the PTO when spreader is full.
- Use the hydraulics to return the transfer pipe to transport position.

### 8.9.3 Hydraulic sliding door



**Warning!**

Do not operate the hydraulic sliding door while a person stands on the spreader.



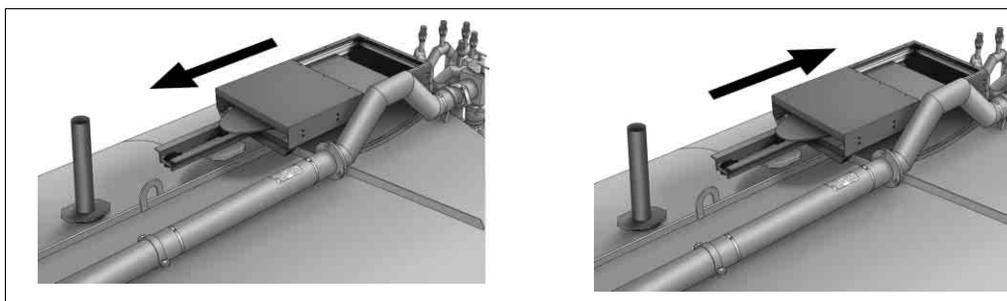
**Attention!**

Make sure the opening is not obstructed.



**Note!**

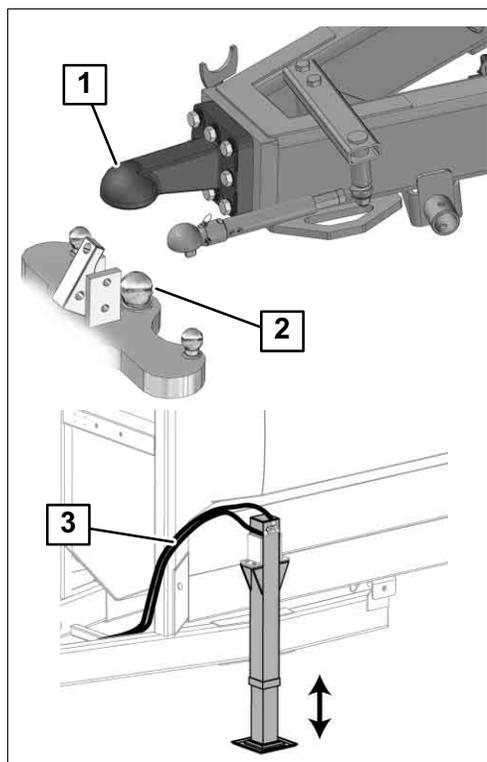
Make sure the ball valve is opened before operating the hydraulic sliding door. The ball valve is located on the door frame.



- Open or close the hydraulic sliding door using the hydraulic control.

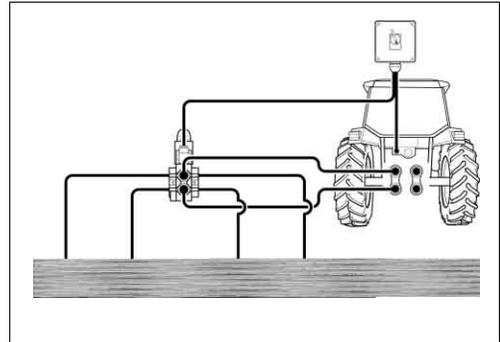
### 8.9.4 Optional hydraulic jack

- Align the tractor hitch ball (2) under the spreader coupling hand (1).
- Connect hydraulic (3) hoses to the tractor.
- Lift the spreader coupling hand by activating the tractor hydraulic controls, if necessary.
- Lower the jack once the tractor hitch (2) is aligned under the spreader coupling hand (1).
- Remove the jack and install it on the transportation support.



### 8.9.5 Solenoid valve (1, 2 or 3 solenoids)

- Connect the solenoid valve kit to the tractor 12 VDC electrical output.
- Connect hydraulic hoses to the tractor.
- Turn the selector switch to proper position to control a specific option.
- Activate the lever to control the hydraulic option.



Refer to section Appendix - Hydraulic diagrams - Solenoid valves control option.

## 8.10 Disconnecting

### Step 1: Unhitching the spreader



**Attention!**

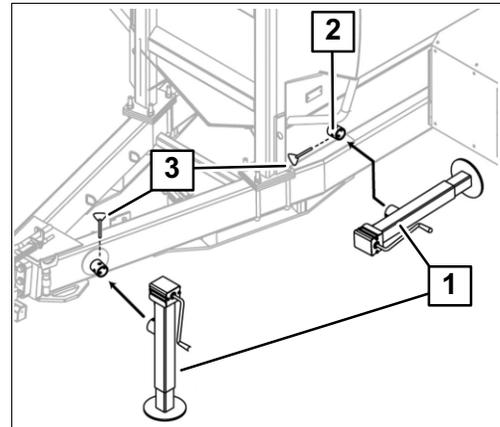
Always disconnect the PTO driveline before disconnecting the spreader.



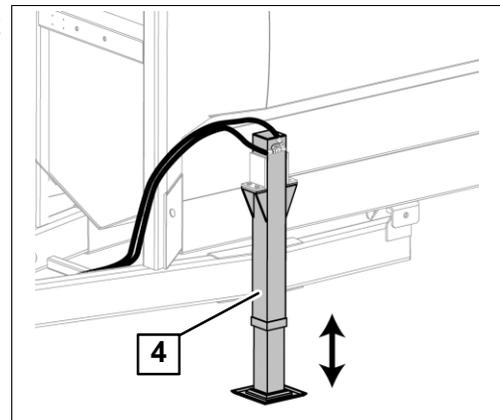
**Attention!**

Keep all hose couplings clear of dirt and sand when disconnected. Always hook them on their supports.

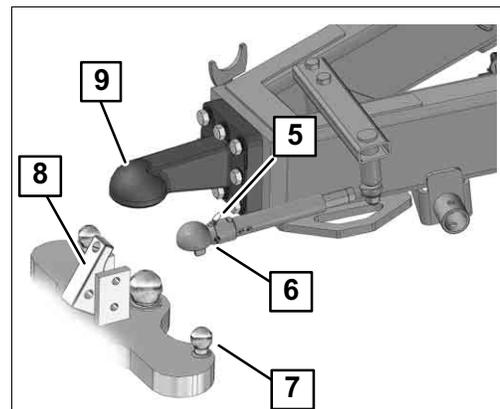
- Remove the manual jack (1) from the transportation support (2).
- Place the jack on the draw bar, secure with a safety pin (3).
- Adjust the spreader height.



- If using a hydraulic jack (4), connect the hydraulic hoses to the tractor to extend the jack.



- Pull the pin (5) to disconnect the guiding mechanism (6) from the side ball (7).
- Unlock the tractor locking mechanism (8) to free the coupling hand (9).
- Raise the spreader coupling hand using the jack.



## Step 2: PTO driveline disconnection



### Warning!

ROTATING DRIVELINE! KEEP AWAY!



Turn off the tractor and apply the hand brake before connecting or disconnecting the PTO driveline.



### Warning!

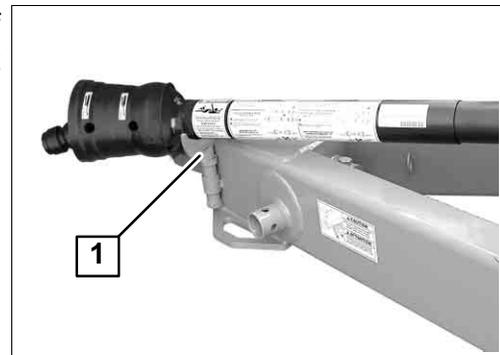
Keep body parts and clothing away from moving parts.



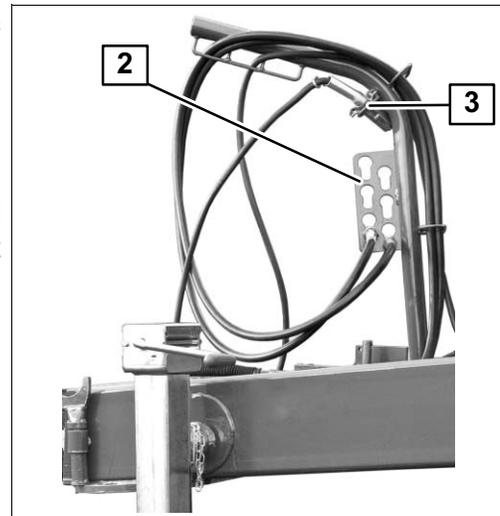
### Note!

Refer to the PTO driveline instruction manual and follow the manufacturer's recommendations.

- Remove the safety chain, if applicable. (European model not illustrated).
- Disconnect the PTO from the tractor.
- Place the PTO driveline end on the draw bar support (1).



- Disconnect the spreader hydraulic hoses and pneumatic hoses from the tractor, if applicable. Place the connectors in the corresponding support (2).
- Disconnect the electrical outlet and place it in the corresponding support (3).
- Move the tractor.



## 9 Troubleshooting

### 9.1 Special personnel qualification required for troubleshooting

Troubleshooting must be performed by trained personnel in accordance with the safety instructions.



Read the section Safety - Personnel qualifications.

### 9.2 Safety instructions for troubleshooting



**Warning!**

ROTATING DRIVELINE! KEEP AWAY!



Turn off the tractor and apply the hand brake before connecting or disconnecting the PTO driveline.



**Warning!**

HYDRAULIC LINE UNDER PRESSURE!

Do not use your fingers to check for leaks. Fluids can penetrate skin and cause serious or fatal injuries. Hold a piece of cardboard to check for leaks.



**Warning!**

Keep safety devices in place.



**Warning!**

No one stands near this product unless they are performing instructions included in this section.



**Warning!**

Keep body parts and clothing away from moving parts.



**Warning!**

Wear protective boots, eye gear and gloves for all steps included in this section.



**Warning!**

Beware of potential falls: always walk on the nonslip band installed on the product.



Read the section Safety.

**9.3 Troubleshooting possible faults**

<b>Spreading</b>		
<b>Symptom</b>	<b>Possible cause</b>	<b>Solution</b>
The spreader does not spread properly or not at all.	The liquid manure is too thick.	Check consistency. Refer to section Appendix - Consistency test.
	The directional valve is not in the proper position.	Set the directional valve in spreading position.
	Foreign material in the directional valve.	Unbolt the valve cover and remove the foreign material.
	Obstruction in the discharge pipe.	Remove the obstruction from the pipe.
	Obstruction in the impeller output.	Disconnect the PTO to access the impeller opening. Remove the obstruction.
	The PTO is defective.	Refer to the recommendations of the manufacturer.
	Worn out impeller or housing.	Contact your dealer.
Liquid manure keeps discharging from the tool bar while the PTO is stopped.	Anti-siphon is not positioned properly.	The anti-siphon must be positioned upward, adjust if necessary. Refer to section Handling and assembly - Anti-siphon assembly.

## Troubleshooting

### Troubleshooting possible faults

<b>Brakes</b>		
<b>Symptom</b>	<b>Possible cause</b>	<b>Solution</b>
The spreader partially brakes or does not brake at all.	The air brake hoses (red and yellow/blue) are not connected to the tractor outlet.	Connect hoses.
	The air brake hose (yellow/blue) is not well connected.	Connect the hose.
	No air pressure in the braking system or the air pressure is below 4.83 bar.	Find air leaks and repair. Check hoses, air tank and hose fittings.
	Air leaks from the hoses.	Find damaged, pinched or defective hoses and repair.
	The brake linings are worn out.	Refer to section Advanced maintenance - Changing air brake parts.
	A slack adjuster is not properly adjusted.	Refer to section Advanced maintenance - Calibration.
	Oil and water in the braking system.	Purge air tank 3-4 seconds by pulling on the steel wire located under the spreader.
The spreader brakes do not release.	The emergency brake (red) hose is not connected.	Connect the red hose on the proper outlet of the tractor.
The spreader does not brake evenly.	A slack adjuster is not properly adjusted.	Refer to section Advanced maintenance - Calibration.
	A brake lining is worn out.	Change brake lining. Refer to section Maintenance - Air brake - Changing air brake parts.

<b>Power steering system</b>		
<b>Symptom</b>	<b>Possible cause</b>	<b>Solution</b>
Unusual wear of the spreader tires.	The minimum turning radius is not followed when turning with the spreader.	Follow the minimum turning radius indicated in section Operating - Moving the spreader - Turning radius.
Wheels turn jerkily.	The power steering control valve is not properly adjusted.	Refer to section Advanced maintenance - Power steering - Adjustments.
Wheels change direction with a delay.		
Wheels are not aligned properly.	Power steering cable misadjusted.	Refer to section Advanced maintenance - Power steering.
	The springs of the power steering safety mechanism are loose.	
Vibration in the steering and wheels.	Power steering spring cylinder does not work properly.	Contact your dealer.
Wheels do not align in a straight position after a turn or do not turn well.	Restrictor clogged or unscrewed.	Remove and unclog the restrictor. Add Teflon tape on the fitting and reinstall.  Refer to section Advanced maintenance - Power steering.
Wheels turn too promptly or too slowly.	Hydraulic flow rate is too high or too low.	Refer to section Advanced maintenance - Power steering.
The tractor hydraulic lever returns to neutral position automatically.	Control valve pressure is too high.	
The power steering system overheats.	Misadjustment of the hydraulic flow rate.	
	Misadjustment of the control valve.	

## Troubleshooting

### Troubleshooting possible faults

<b>Electrical</b>		
<b>Symptom</b>	<b>Possible cause</b>	<b>Solution</b>
Signal light / Halogen light does not turn on.	Electrical plug is not connected to the tractor.	Connect electrical plug to the tractor.
	Light bulb burned out.	Replace light bulb.
	Electrical wires cut.	Repair the electrical problem.
	Short circuit.	
<b>Options</b>		
<b>Symptom</b>	<b>Possible cause</b>	<b>Solution</b>
Recirculating system does not recirculate.	Fibrous material can be stuck in the recirculating pipe.	Open the top cover and clean the pipe.
Anti-splash flapper door stays open.	Dried manure located on the door flap and/or on the sides of the opening.	Clean door and/or sides with water.
The suspension is not efficient.	Defective hydraulic cylinder.	Contact your dealer.
	Not enough or too much hydraulic oil in the cylinder.	Refer to section Advanced maintenance - Hydraulic suspension.
The solenoid valve does not work.	Electric wires are defective or not connected.	Contact your dealer.
<b>Self-loading option</b>		
<b>Symptom</b>	<b>Possible cause</b>	<b>Solution</b>
Hydraulic primer pump of the self-loading kit does not prime.	Suction hose is not well positioned on the hose support or is not air tight.	Reposition the suction hose. Find air leak and repair.
	Foreign object in the check valve or directional valve.	Remove foreign object inside the directional valve.
	Rubber seals are worn out.	Change rubber seals.
	Hydraulic reversing valve pressure is not calibrated.	Refer to section Advanced maintenance - Primer pump reversing valve.
	The self-loading bottom valve is not in proper position.	Refer to section Operating - Operating spreader options - Self-loading.
	The gate valve beside the latch mechanism is closed.	
	The ball valve on the latch mechanism is open.	



#### **Note!**

For any other faults, please contact your dealer.

## 10 Maintenance

### 10.1 Special personnel qualification required for maintenance work

Maintenance work must be performed by trained personnel in accordance with the safety instructions.



Read the section Safety - Personnel qualifications.

### 10.2 Safety instructions for maintenance



**Warning!**

**HYDRAULIC LINE UNDER PRESSURE!**

Do not use your fingers to check for leaks. Fluids can penetrate skin and cause serious or fatal injuries. Hold a piece of cardboard to check for leaks.



**Warning!**

No one stands near this product unless they are performing instructions included in this section.



**Warning!**

Beware of potential falls: always walk on the nonslip band installed on the product.



**Warning!**

Beware of leaks and spills such as grease, oil, water, etc. They can make a surface slippery causing injuries.



**Warning!**

Keep body parts and clothing away from moving parts.



**Warning!**

Wear protective boots, eye gear and gloves for all steps included in this section.



**Attention!**

Tractor PTO must be disconnected from the spreader unless otherwise specified in the maintenance instructions.



**Attention!**

Always keep this product on a flat and level surface. An uneven surface could unbalance the product resulting in injuries and/or damages.



**Attention!**

When wheels are installed on the spreader, position two wheel chocks, one at the front and one behind a wheel, to secure the load until the air brake system is calibrated.



**Attention!**

Do not operate the hydraulic sliding door while a person stands on the spreader.

---



**Attention!**

Keep air brake gladhands clear of dirt and sand when disconnected from the tractor to avoid damaging the air brake system. Always hook them on their supports at all times.

---



**Note!**

Have within reach containers to collect all substances potentially harmful such as oils, coolants, cleaning and disinfecting agents, etc.

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Read the section Safety.

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**10.3 Schedule maintenance responsibilities****10.3.1 Other manufacturers maintenance schedule****Tractor**

The spreader is towed by a tractor. Neglecting the tractor maintenance schedule may lead to damages to the spreader. For example, the tractor compressor must filter the air blown in the braking system. It must be free of dust, oil and water.

**PTO**

PTO maintenance must be made according to the manufacturer's recommendations.

10.3.2 GEA Farm Technologies Canada Inc. / Division GEA Houle Maintenance schedule

Task	Before each use or every 10 hours, whichever comes first	After each use	Every 100 hours of use	Every 200 hours of use	Once a year	Action by
Test safety components	X					Trained personnel
Visual inspection	X					
Lubricate power steering mechanism	X					
Grease the equipment	X					
Fill the grease chamber of the bearing housing	X					
Grease the steering knuckles	X					
Check oil level over primer pump piston	X					
Check hydraulic suspension	X					
Check bottom translucent hose of suspension cylinders	X					
Torque wheel nuts	X					
Purge air tank	X					
Adjust the springs of the parallel bars			X			
Grease wheel hub bearings				X		
Torque bolts				X		
Change the oil of bearing housing				X		
Open drains		X				
Open cleaning openings		X				
Grease slack adjuster					X	
Clean the product		X			X	



**Attention!**

When operating this GEA Houle product using other manufacturers components and/or products such as a PTO, a tractor, a motor, a pump, etc., ALWAYS perform maintenance of the component and/or product as recommended by its manufacturer.

## 10.4 Test safety components

Before each use or every 10 hours, whichever comes first

### 10.4.1 Lights

- Check the functionality of the left and right signal light.
- Check the functionality of the brakes, confirm the brake lights work properly.

### 10.4.2 Air brake system



#### **Attention!**

Set the Wabco valve according to the actual load inside the tank before testing the air brake system. Refer to section Operating - Moving the spreader - Adjusting Wabco valve.

Test the service brakes:

- Apply and release the tractor brake pedal a few times before moving the spreader.
- Move the spreader to a wide and safe area. Apply the service brakes a few times to ensure that the brakes can stop the spreader properly.

Test the emergency brakes:

- Activate the tractor parking brake. Try to move the spreader by pressing on the gas pedal. The emergency brakes must keep the spreader immobilized.



#### **Note!**

Refer to section Advanced maintenance - Air brake.

## 10.5 Visual inspection of the product

### Before each use or every 10 hours, whichever comes first

Inspect the spreader to find any defective part or signs of abnormal wear:

- Tires, and wheel nuts;
- Tire pressure (refer to section Technical data - Tire specifications);
- Draw bar;
- Suspension cylinders;
- Power steering components;
- Pneumatic hoses and hydraulic hoses;
- Bolts, screws, nuts, etc.

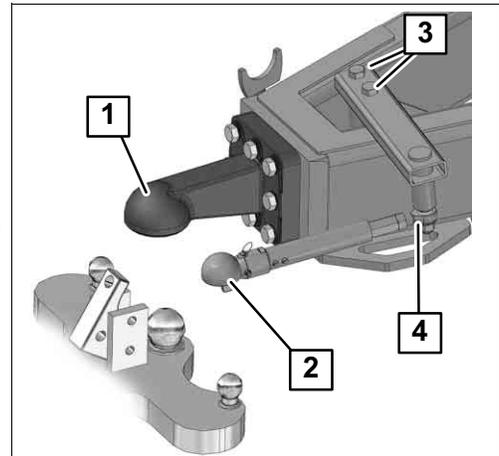
## 10.6 Lubricate power steering mechanism

**Before each use or every 10 hours, whichever comes first**

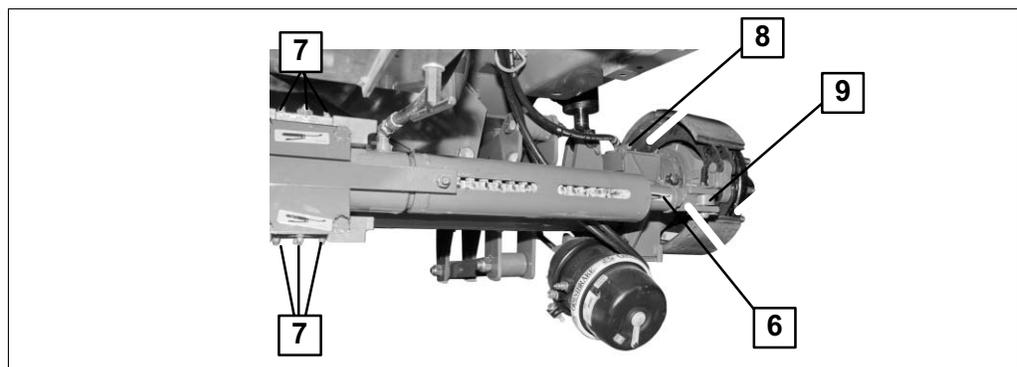
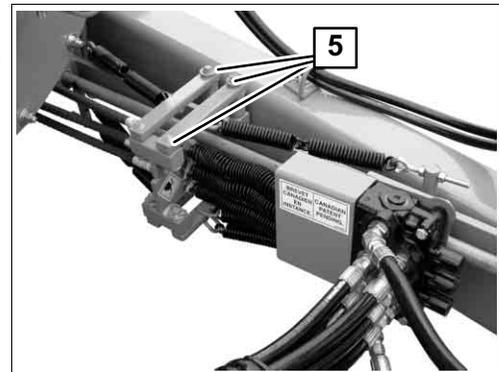


Refer to section Technical data - Lubricant specifications.

- Remove dirt and sand from the power steering.
- Lubricate the coupling hands (1, 2) with Anti-Seize lubricant using the grease fittings.
- Lubricate the pivot points (3) with all-purpose grease.
- Lubricate the joint (4) using fine oil.



- Lubricate the pivot points of the power steering mechanism (5) with all-purpose grease.



- Lubricate the rods of the steering cylinders (6) with all-purpose grease.
- Lubricate the pivot point of the steering cylinders (7) with all-purpose grease.
- Lubricate the steering knuckles (8) with all-purpose grease. Use the remote lines.
- Lubricate the steering knuckle links (9) with all-purpose grease.

### 10.7 Grease the equipment

**Before each use or every 10 hours, whichever comes first**

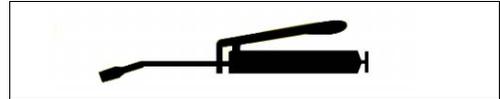


Use all-purpose grease. Refer to section Technical data - Lubricant specifications.



Refer to section Appendix - Label position.

- Grease all parts labelled with:



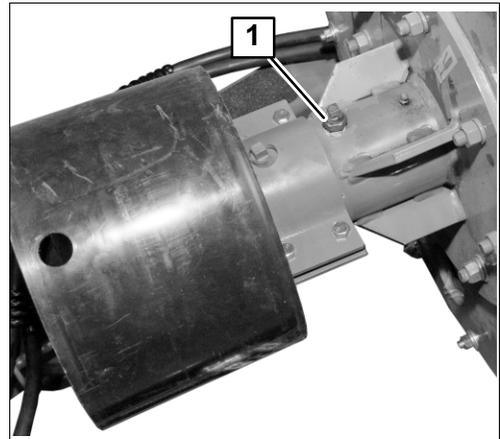
### 10.8 Check oil level of bearing housing

**Before each use or every 10 hours, whichever comes first**



Use gearbox oil. Refer to section Technical data - Lubricant specifications.

- Unscrew the filling plug (1).
- Oil level must be even with the top of the shaft.
- Fill to the proper level.
- Screw the filling plug back in place.



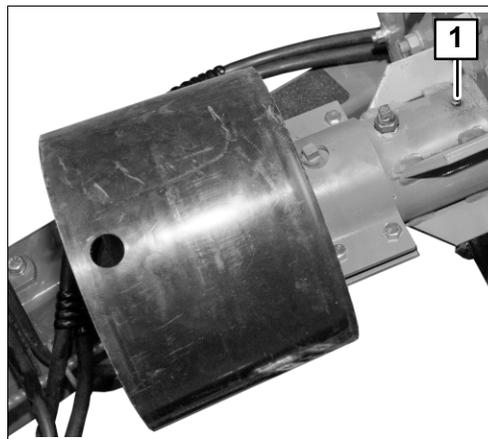
**10.9 Fill the grease chamber of the bearing housing**

**Before each use or every 10 hours, whichever comes first**



Use all-purpose grease. Refer to section Technical data - Lubricant specifications.

- Add grease in the grease chamber of the bearing housing through the fitting (1).



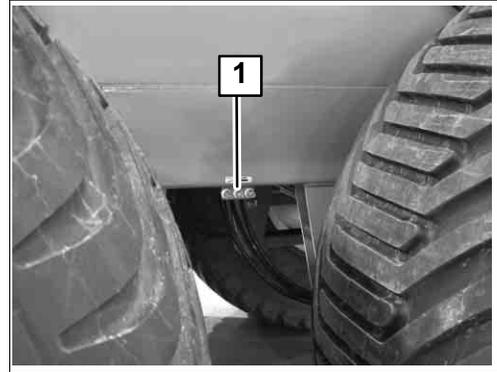
## 10.10 Grease the steering knuckles

**Before each use or every 10 hours, whichever comes first**



Use all-purpose grease. Refer to section Technical data - Lubricant specifications.

- Add grease in the steering knuckles through the fittings located behind the spreader wheels.
- If equipped with remote grease lines, lubricate through the grease lines (1).



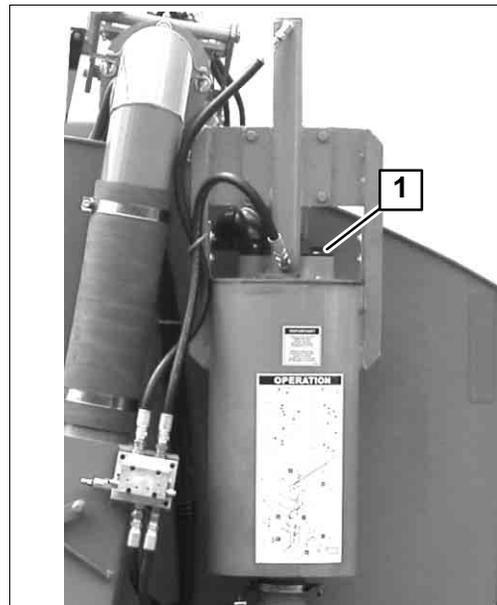
## 10.11 Check oil level over primer pump piston

**Before each use or every 10 hours, whichever comes first**



Use biodegradable oil. Refer to section Technical data - Lubricant specifications.

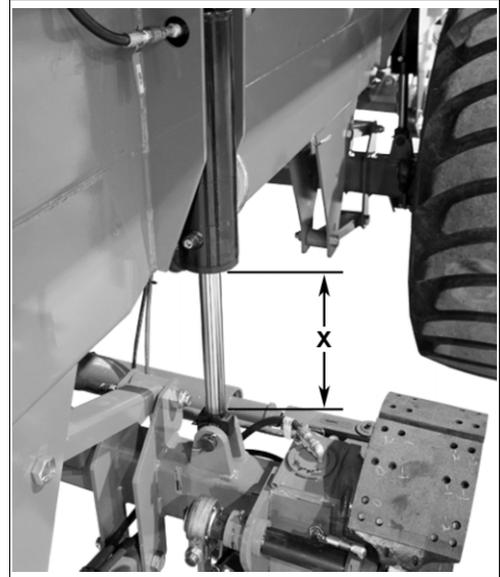
- Remove access cap (1) of the primer pump.
- Insert a 60 cm rod inside the primer pump opening until it reaches the piston.
- Remove rod from the opening.
- Measure the oil level on the rod. Ensure there is a minimum of 15 mm of biodegradable oil on top of the primer pump piston.
- Do not add too much oil. The oil excess will evacuate through the primer pump air intake and be wasted.



## 10.12 Check hydraulic suspension

Before each use or every 10 hours, whichever comes first

- Park the spreader on a flat and level surface;
- Measure the length of the suspension rod (X), the dimension must be 15 cm;
- If length is not appropriate, refer to section Advanced maintenance - Hydraulic suspension.



### Note!

The tire is removed for better understanding.

## 10.13 Check bottom translucent hose of suspension cylinders

Before each use or every 10 hours, whichever comes first



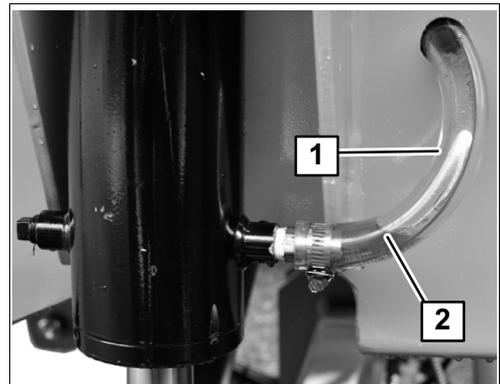
### Note!

This section concerns a standard suspension with oil on the upper side of pistons. It is not applicable for the optional suspension cylinder with oil on both sides of piston.



Use hydraulic oil. Refer to section Technical data - Lubricant specifications.

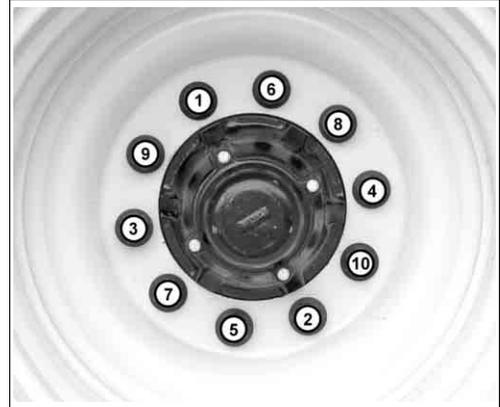
- Remove the hose (1) from the frame.
- Add hydraulic oil in the hose until it is covered with oil (2), as indicated.
- Insert the hose in the frame.
- Repeat all these steps for each suspension cylinder.



### 10.14 Torque wheel nuts

Before each use or every 10 hours, whichever comes first

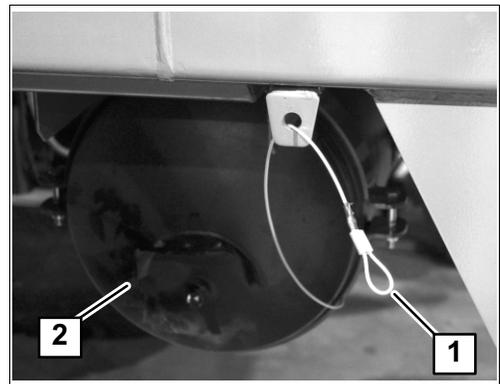
- Ensure wheel nuts are torqued to 508 NM.
- To torque wheel nuts, follow the sequence illustrated.



### 10.15 Purge air tank

Before each use or every 10 hours, whichever comes first

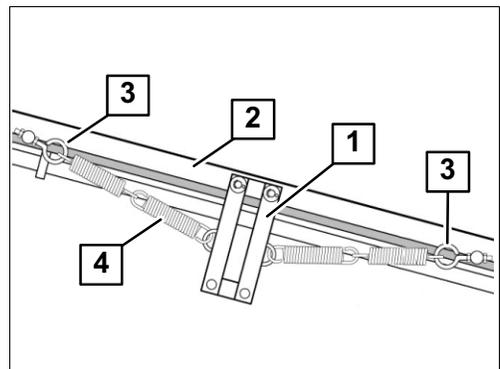
- Find the steel cable (1) located on the side of the spreader.
- Pull cable for 3 seconds to purge oil, water and dust from the air tank (2).



### 10.16 Adjust the springs of the parallel bars

Every 100 hours

- Pull the spreader in a straight line to align the spreader and the tractor wheels.
- Position the parallel bars (1) perpendicular to the flat bar support (2) by adjusting the eye bolts (3). The springs (4) must be straight, not hanging nor stretched. Make sure the parallel bars remain perpendicular.



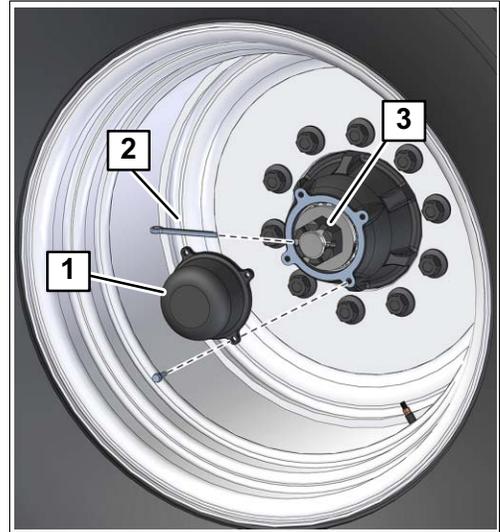
## 10.17 Grease wheel hub bearings

Every 200 hours



Use synthetic grease for ball bearing. Refer to section Technical data - Lubricant specifications.

- Using a jack, lift the axle until the tire no longer touches the ground.
- Unscrew the hub dust cap (1).
- Remove the grease by cleaning the cap and the bearing.
- Remove the cotter pin (2).



- Check the torque of the wheel hub assembly as follows:
  - Torque the castle nut (3) to 258 NM to ensure seating of the bearing assembly.
  - Unscrew the castle nut to the next slot to allow the cotter pin installation. This step releases pressure on bearings in order to prevent overheating.
  - Check the assembly. Make sure there is no gap in the bearing assembly by moving the tire. Make sure the wheel can be easily rotated by hand. If checks fail, redo the steps.
- Reinstall the cotter pin (2).
- Cover the bearing with synthetic grease for ball bearing. Completely fill the gap with grease between the bearing and the hub.
- Fill the cap with grease and reinstall it.

## 10.18 Torque bolts

Every 200 hours

Check torque of :

- mudguard bolts;
- dust shield bolts;
- transportation support bolts;
- components fastened on the spreader.



Refer to section Technical data - Bolt torque chart.

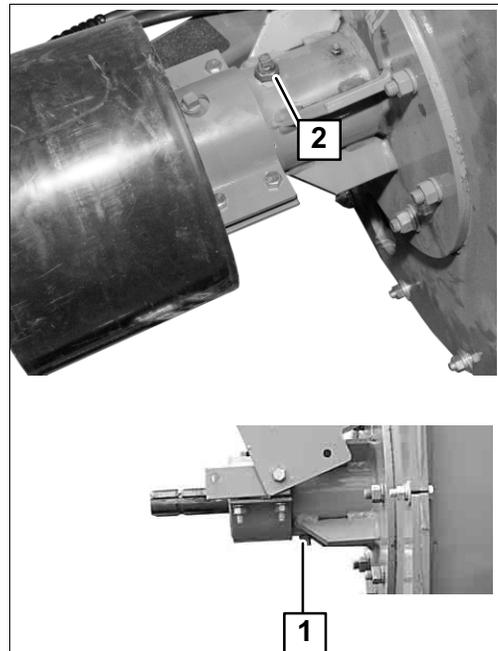
## 10.19 Change the oil of the bearing housing

Every 200 hours



Refer to section Technical data - Lubricant specifications.

- Place a container under the drain plug (1) to collect the oil.
- Remove the filling plug (2) located between the grease fitting and the air vent.
- Unbolt the drain plug (1).
- Reinstall the drain plug (1) when the housing is drained.
- Add SAE 80W90 bearing oil until the level is even with the top of the shaft.
- Clean the filling plug (2) and bolt it back on.



## 10.20 Open drains

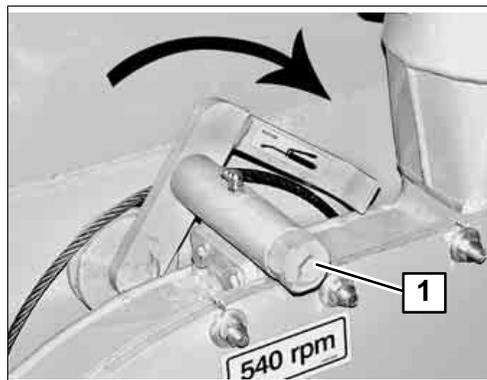
### After each use



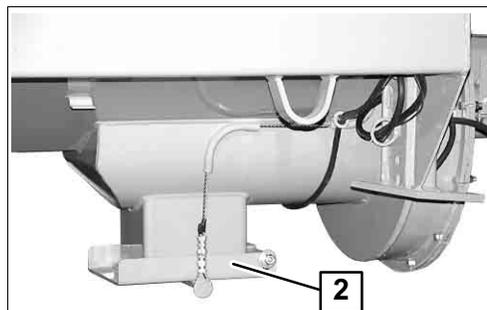
#### Attention!

Make sure the spreader is empty before opening the drains.

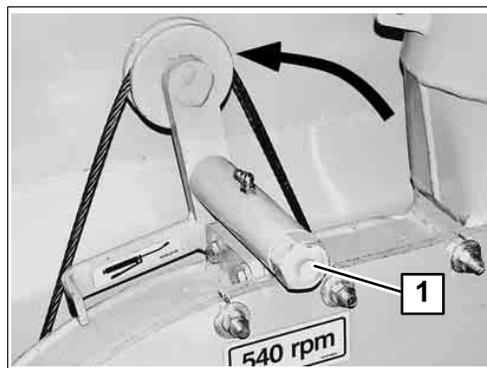
- Turn the pivot bolt (1) clockwise to open the drain (2). Use the wheel nut wrench.



- Clean the drain (2).

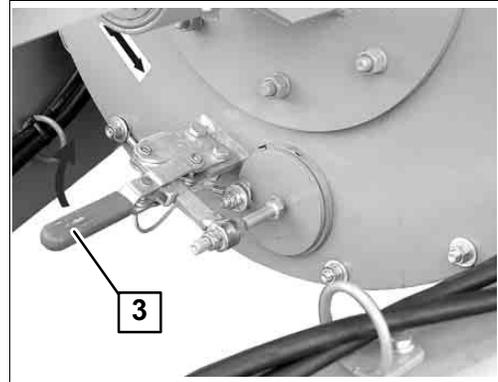


- To close the drain, turn the pivot bolt (1) counterclockwise.



### Impeller housing drain

- To open the drain, unlock the toggle clamp (3). The cap will open to drain the impeller housing.
- To close the drain, place the cap over the impeller housing opening and lock the toggle clamp (3).



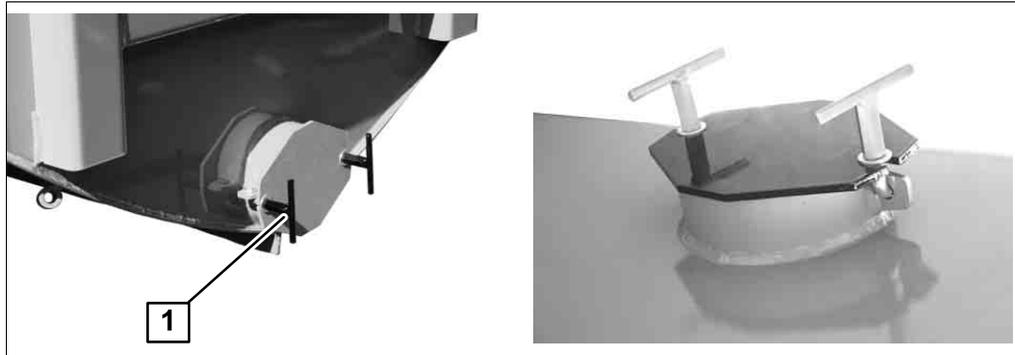
## 10.21 Open cleaning openings

After each use



### Attention!

Make sure the spreader is empty before opening cleaning openings.



- Unscrew the handles (1);
- Remove the cover.

## 10.22 Grease slack adjuster

Once a year



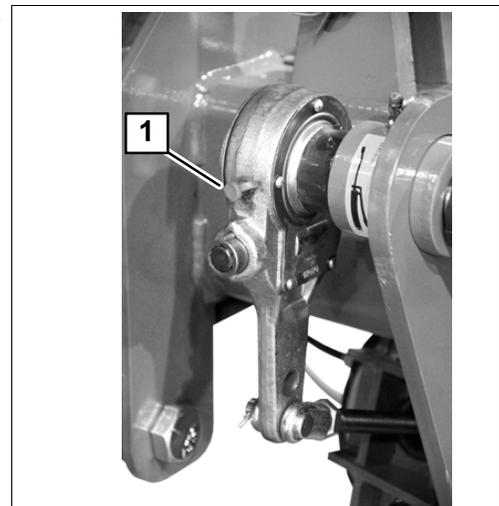
### Attention!

Do not over grease the slack adjusters, it will damage the seal.



Use all-purpose grease. Refer to section Technical data - Lubricant specifications.

- Remove plastic cap (1) and slightly grease.



## 10.23 Clean the product

### After each use and once a year



#### Warning!

Beware of potential falls: always walk on the nonslip band installed on the product.



#### Attention!

Use tap water to clean this product. Do not exceed 105 bar when using a pressure washer and keep the nozzle at a distance of 30 cm from the surface to be cleaned.

- Make sure all drains and cleaning openings are closed.
- Fill 1/3 of the spreader tank with water.
- Move the tractor back and forth to stir the water inside the tank.
- Move it to a spreading area and spread the wasted water to clean the discharge pipe and hoses.
- When empty, open the drains and cleaning openings. Keep them open to allow ventilation.
- Pressure wash the entire product and equipment:
  - inside the tank
  - the float
  - the door flaps
  - sides.
- Remove the directional valve cover to clean the housing. Clean any accumulation.



## 11 Advanced maintenance

### 11.1 Special personnel qualification required for advanced maintenance

Advanced maintenance work must be performed by qualified personnel in accordance with the safety instructions.



Read the section Safety - Personnel qualifications.

### 11.2 Safety instructions for advanced maintenance



**Warning!**

**HYDRAULIC LINE UNDER PRESSURE!**

Do not use your fingers to check for leaks. Fluids can penetrate skin and cause serious or fatal injuries. Hold a piece of cardboard to check for leaks.



**Warning!**

Wear protective boots, eye gear and gloves for all steps included in this section.



**Attention!**

Always keep this product on a flat and level surface. An uneven surface could unbalance the product resulting in injuries and/or damages.



**Note!**

Have within reach containers to collect all substances potentially harmful such as oils, coolants, cleaning and disinfecting agents, etc.



Read the section Safety.

### 11.3 Air brake

#### 11.3.1 Change air brake parts

##### Step 1: Remove wheels

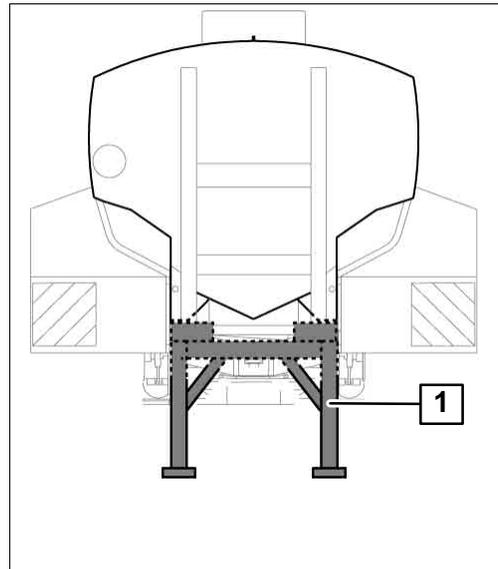
**Attention!**

To lift this product, use a lifting device with a minimum lifting capacity of 15 000 kg. The lifting capacity only includes the weight of the product.

**Attention!**

To lift the wheels, use a lifting device with a minimum lifting capacity of 500 kg.

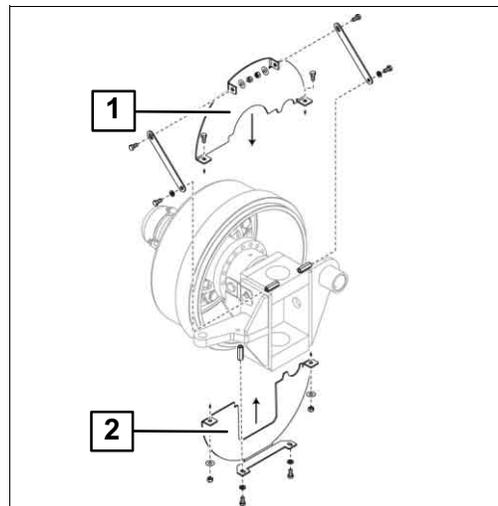
- Connect the emergency line (red hose). Do not apply air pressure in the line.
- Attach safety chains to the spreader lifting rings.
- Slowly lift the spreader to get enough clearance to install support stands (1) under the spreader.
- Remove wheel nuts with an air impact gun.
- Remove the wheels and store it in a safe area using a forklift truck.
- Do not lower the spreader to avoid damaging the brake boosters.



Refer to section Handling and assembly - Safety instructions for handling.

##### Step 2: Remove dust shield

- Unscrew all nuts and locknuts of the upper (1) and lower (2) dust shields.
- Remove flat washers, lock washers, upper and lower dust shields.
- Reinstall parts.

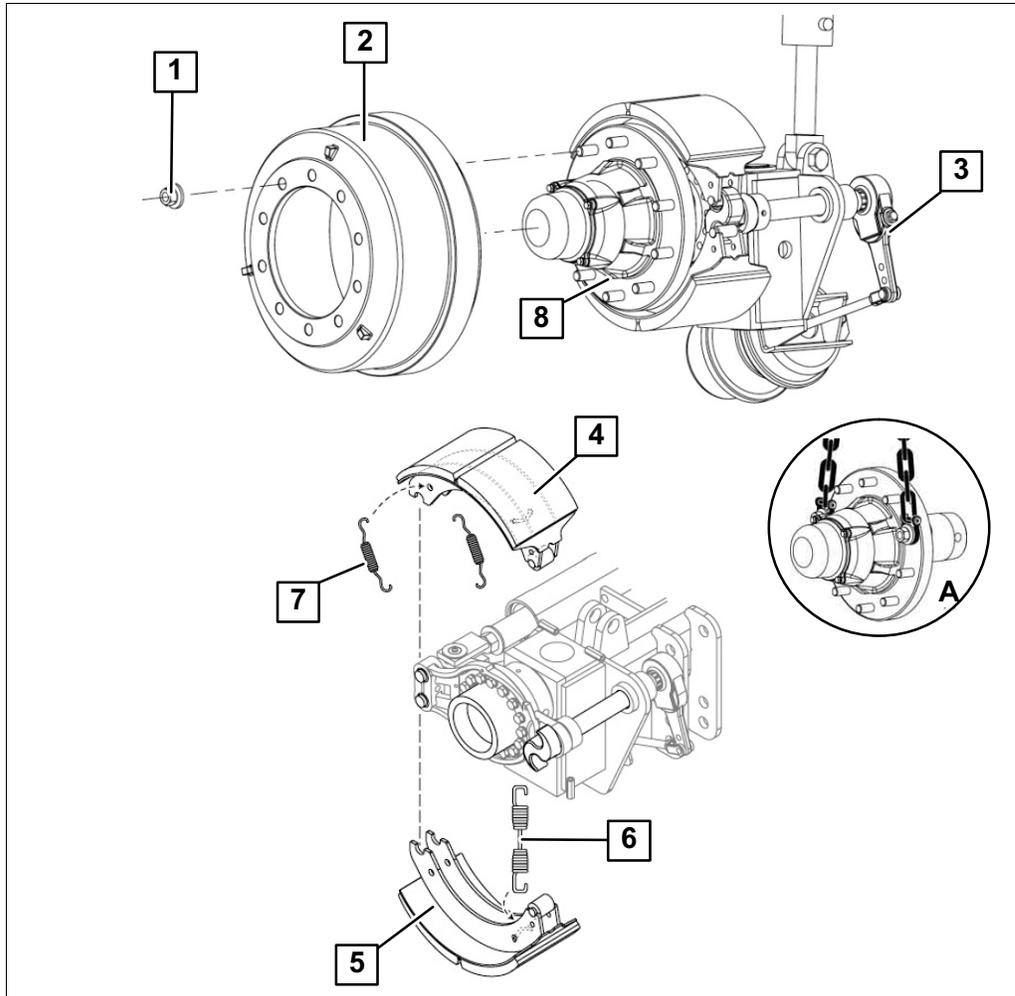


**Step 3: Remove drum, hub and brake linings**



**Note!**

It is strongly recommended to change the wheel drum and retaining springs each time the lining is replaced.



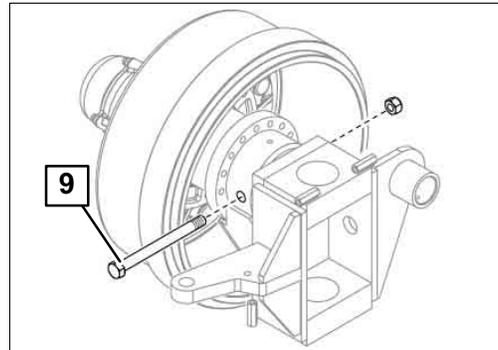
Pos	Part No	Description
1	2018-2400-090	Wheel nut
2	2018-4710-180	Brake drum
3	2018-4710-640	Slack adjuster
4	2018-4701-560 (kit)	Upper brake lining
5		Lower brake lining
6		Blue spring
7		Retaining springs (2)

**Remove brake drum (2)**

- Apply and maintain air pressure in the emergency line (red hose) to release the braking mechanism.
- Remove drum. Use a fiber hammer to loosen up if difficult to remove.
- Replace the defective part(s).

### Remove hub (8)

- Remove the air pressure from the emergency line (red hose).
- Secure the wheel hub with two wheel nuts and lifting chains as illustrated in Detail A.
- Unscrew the bolt (9) and the locknut from the steering knuckle.
- Remove hub.



### Remove brake linings (4, 5)

- Maintain air pressure in the emergency line (red hose) to keep the brake linings close to the hub.
- Remove the two retaining springs (7) hooked between the upper and the lower brake linings using spring pliers.
- Remove the blue springs (6) to clear brake linings.
- Remove the upper and the lower brake linings (4, 5).
- Replace parts.



Refer to section Assembly - Wheel and brake parts installation.

---

### Step 4: Install new air brake parts



Refer to section Assembly - Wheel and brake parts installation.

---

### 11.3.2 Calibration

**Attention!**

Do not exceed 8.27 bar when connecting the air supply to the brake system.

**Note!**

The parking brake system is designed to immobilize the spreader mechanically when air pressure in the emergency line (red hose) is low. To release the parking brakes, build up air pressure in the emergency line (red hose).

**Step 1: Build up air pressure in the brake system**

- Connect the tractor air brake outlets to the spreader emergency line (red hose) and service line (yellow/blue hoses). Make sure the pressure is maintained between 4.83 to 6.90 bar.  
NEVER EXCEED 8.27 bar.

OR

- Connect a compressor to the spreader emergency line (red hose). Make sure the compressed air is filtered and regulated between 4.83 to 6.90 bar.  
NEVER EXCEED 8.27 bar.

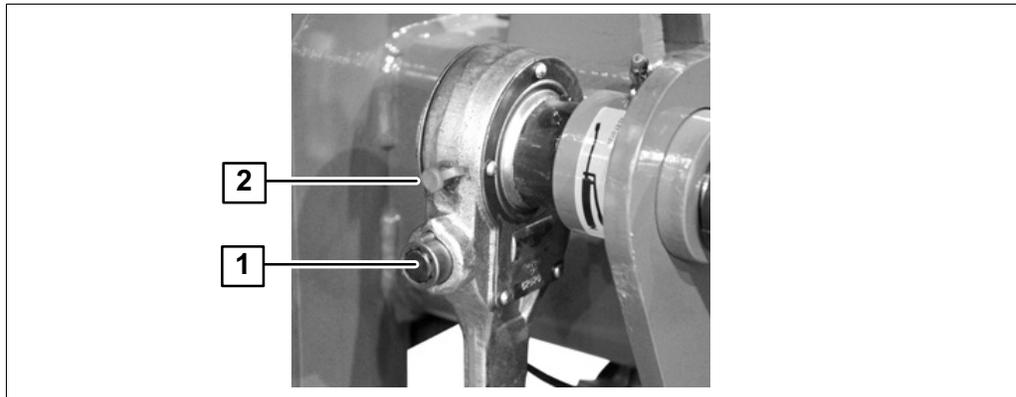
**Step 2: Release parking brakes**

- Connect the spreader emergency line (red hose) to the tractor then release the emergency brake.

OR

- Connect a compressor to apply compressed air in the spreader emergency line (red hose).

### Step 3: Adjust the slack adjuster



- Using a ratchet with a 9/16" socket, turn the adjustment bolt (1) clockwise until the brake linings touch the drum. Then, loosen 1/2 turn counterclockwise to set clearance. Repeat for each slack adjuster.

### Step 4: Test the service brakes

- Fully apply and release the service brakes five times using the tractor brake pedal.

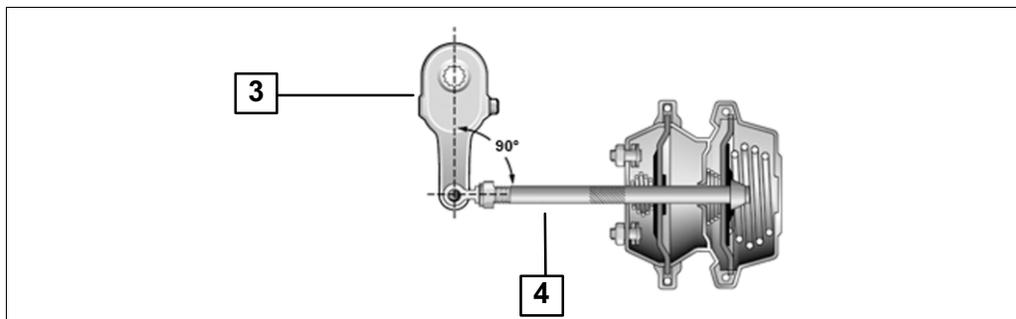
### Step 5: Check the slack adjuster angle



#### Note!

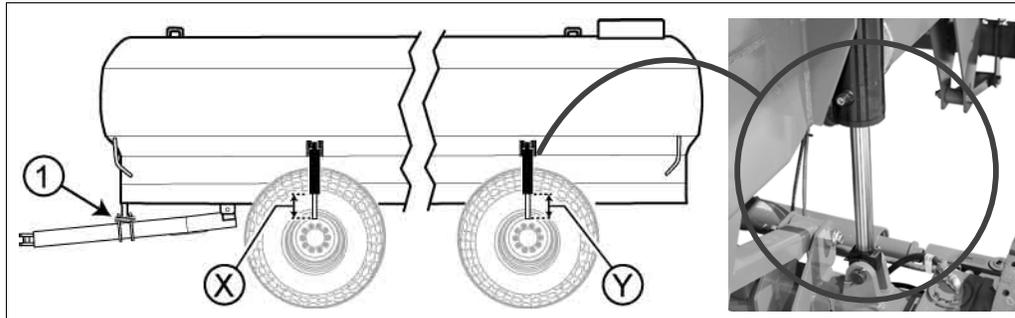
Slack adjusters must be adjusted manually. They require periodic adjustments to ensure optimal braking performance. Lubricate slack adjusters with all-purpose grease after the first three months of use, then every six months. Using a grease gun, add a small quantity of grease in the grease fitting (2). DO NOT overfill the grease chamber to avoid damaging the seals.

- Apply parking brakes of the spreader and check the adjustment of each slack adjuster.
- When the brakes are fully applied, the slack adjuster (3) must be perpendicular (at 90°) with the booster rod (4), as illustrated below.
- If it is not perpendicular, repeat all air brake calibration steps.



**11.4 Hydraulic suspension**

**11.4.1 Verification**



- Measure the suspension rod length of the first axle (X) and of the last axle (Y) on one side of the spreader.
- Add the measures (X+Y) to obtain the total length.
- The total length must be equal to 300 mm and each rod must measure 150 mm.

Length (X)	Length (Y)	Total length	Action required
150 mm	150 mm	=300 mm	The hydraulic suspension is perfectly adjusted and the spreader inclination is adequate.
More than 150 mm	Less than 150 mm		Adjust the inclination of the spreader tank by removing shims (1) between the draw bar and the tank.
Less than 150 mm	More than 150 mm		Adjust the inclination of the spreader tank by adding shims (1) between the draw bar and the tank.
X	Y	≠300 mm	When the total length is higher than 150 mm, reduce the volume of oil inside the cylinders, when it is lower than 150 mm, increase the volume of oil. Refer to section Advanced maintenance - Hydraulic suspension.

### 11.4.2 Adjustment for suspension with oil on top of piston



#### Attention!

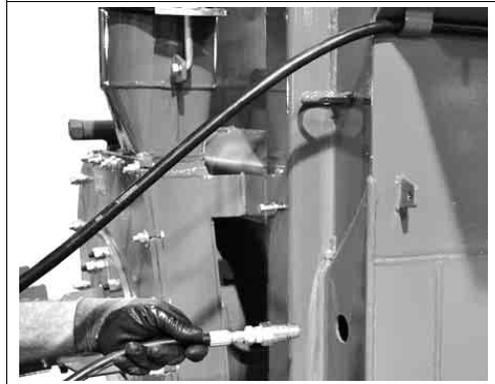
Position this product and the tractor on a flat and level surface to proceed with the suspension adjustment.



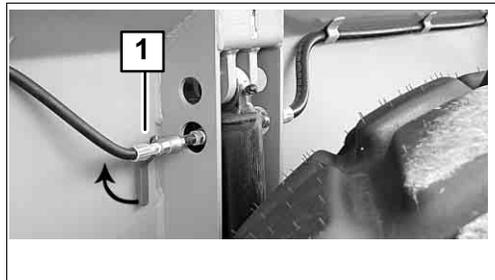
#### Note!

The adjustment must be done on one side of the spreader at a time. Make sure the oil level in the tractor or hydraulic power unit is sufficient.

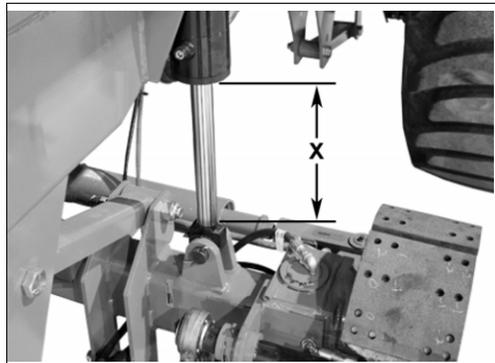
- Remove the suspension hydraulic hose from the frame. The hose is located at the front of the spreader.



- Connect the suspension hydraulic hose to the tractor;
- Open the ball valve (1) of the suspension hydraulic hose;
- Engage the hydraulics to add or to remove oil in the suspension cylinders.

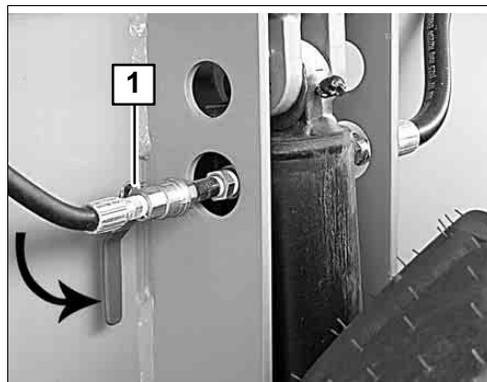


- To add oil in the cylinders, the cylinders must be filled and fully extended. Engage the hydraulics to remove a small amount of oil in order to remove air inside the cylinders;
- Add oil until the length of the suspension rod (X) reaches 150 mm. Refer to the following table.



Suspension rod length (X)	Spreader model
150 mm	EL44-4D
	EL44-6D

- Disengage the hydraulics;
- Close the ball valve (1) of the suspension hydraulic hose;
- Disconnect the suspension hydraulic hose and place it inside the spreader frame;
- Repeat all steps to adjust the suspension cylinders on the other side of the spreader.



### 11.4.3 Adjustment for suspension with oil on each side of piston



**Attention!**

Position the spreader and the tractor on a flat and level surface to proceed with the suspension adjustment.



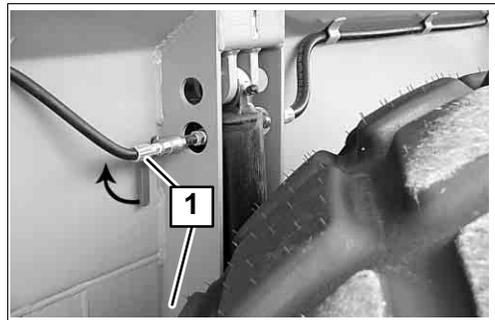
**Note!**

The adjustment must be done on one side at a time. Make sure the oil level in the tractor or hydraulic power unit is sufficient.

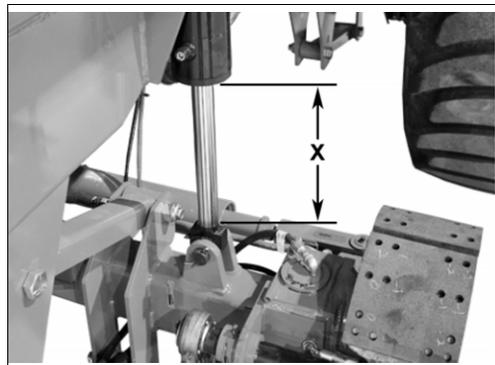
- Remove both suspension hydraulic hoses from the frame. The hoses are located at the front of the spreader.



- Connect both suspension hydraulic hoses to the tractor;
- Open the ball valves (1) of the suspension hydraulic hoses;
- Engage the hydraulics to add or to remove oil in the suspension cylinders. Repeat this step twice.

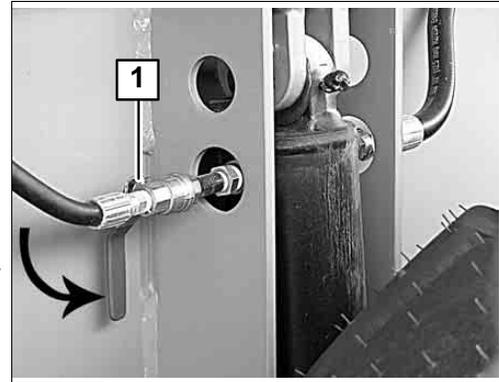


- To add oil in the cylinders, the cylinders must be filled and fully extended. Engage the hydraulics to remove a small amount of oil in order to remove air inside the cylinders;
- Add oil until the length of the suspension rod (X) reaches 150 mm. Refer to the following table.



Suspension rod length (X)	Spreader model
150 mm	EL44-4D
	EL44-6D

- Disengage the hydraulics;
- Close both ball valves (1);
- Disconnect and place the suspension hydraulic hoses inside the spreader frame;
- Repeat all steps to adjust the suspension cylinders on the other side of the spreader.



## 11.5 Primer pump reversing valve

### 11.5.1 Calibration

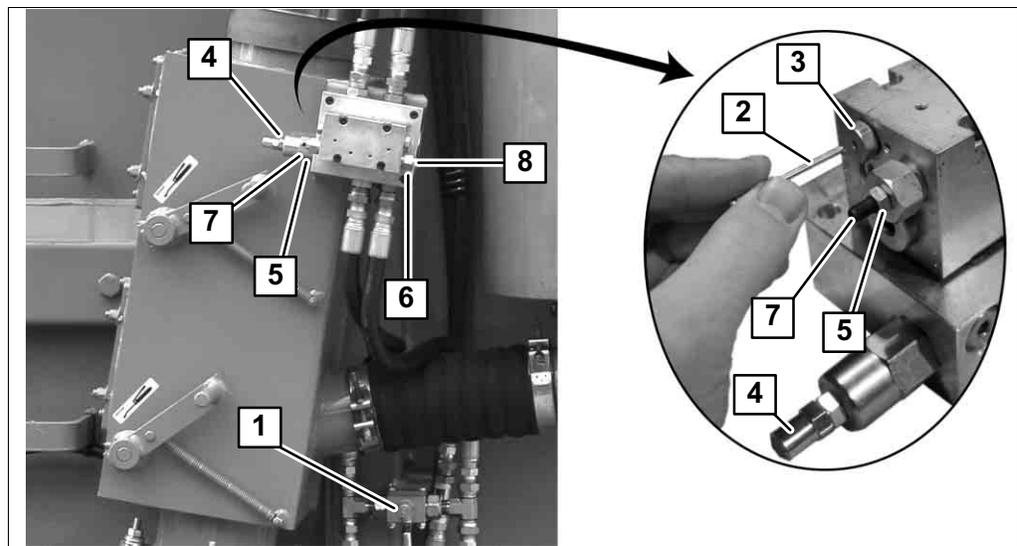


#### Note!

Before attempting to calibrate the reversing valve, manually slide the valve spool in order to remove any particle that could be stuck inside. Refer to the following steps.

#### Step 1: Valve spool

- Connect the hydraulic circuit of the primer pump to the tractor outlets;
- Activate the tractor hydraulic control;
- Close the ball valve (1) to activate the primer pump;
- Push the valve spool firmly by inserting a nail (2) in the opening (3) of the reversing valve. Repeat this step on the opposite side of the valve. Push the valve spool several times on both sides;
- Open ball valve (1) and deactivate tractor hydraulic control.



**Step 2: Adjustment****Note!**

Check the valve spool before calibrating the reversing valve. In many cases, calibration is not necessary.

---

- Connect the hydraulic circuit of the primer pump to the tractor outlets;
- Activate the tractor hydraulic control;
- Close the ball valve (1) to activate the primer pump;
- Remove the cap over the relief valve adjustment (4) and loosen three turns;
- Unscrew the adjustment nuts (5 and 6) to unlock the reversing valve adjustments;
- Screw completely the reversing valve adjustment screws (7 and 8). Do not tighten;
- Let the hydraulic oil run inside the valve for at least 30 seconds;
- Screw the relief valve adjustment (4) four turns. The primer pump piston cylinder will reach the end of stroke and stop;
- Gradually unscrew the adjustment screw (7) until the piston cylinder moves toward the opposite end of stroke. Tighten the adjustment nut (5). If the piston cylinder does not move, screw completely the adjustment screw (7) and redo the steps using the adjustment screw (8) and nut (6);
- Gradually unscrew the reversing valve adjustment (8) until the piston cylinder moves toward the opposite end of stroke. Tighten the adjustment nut (6);
- If the reversing valve adjustment (7) is not adjusted, proceed with previous step for the adjustment screw (7) and nut (5);
- When the reversing valves are adjusted, the piston will stroke continuously;
- Finally, slowly unscrew the relief valve adjustment (4) until the primer pump stops, then screw 1/2 a turn to set the valve pressure;
- Open the ball valve (1) and deactivate the tractor hydraulic control.

**11.6 Power steering**

**11.6.1 Adjustments**



**Attention!**

Always engage the power steering system when turning with a loaded spreader. Do not disengage until the spreader has turned completely.



**Attention!**

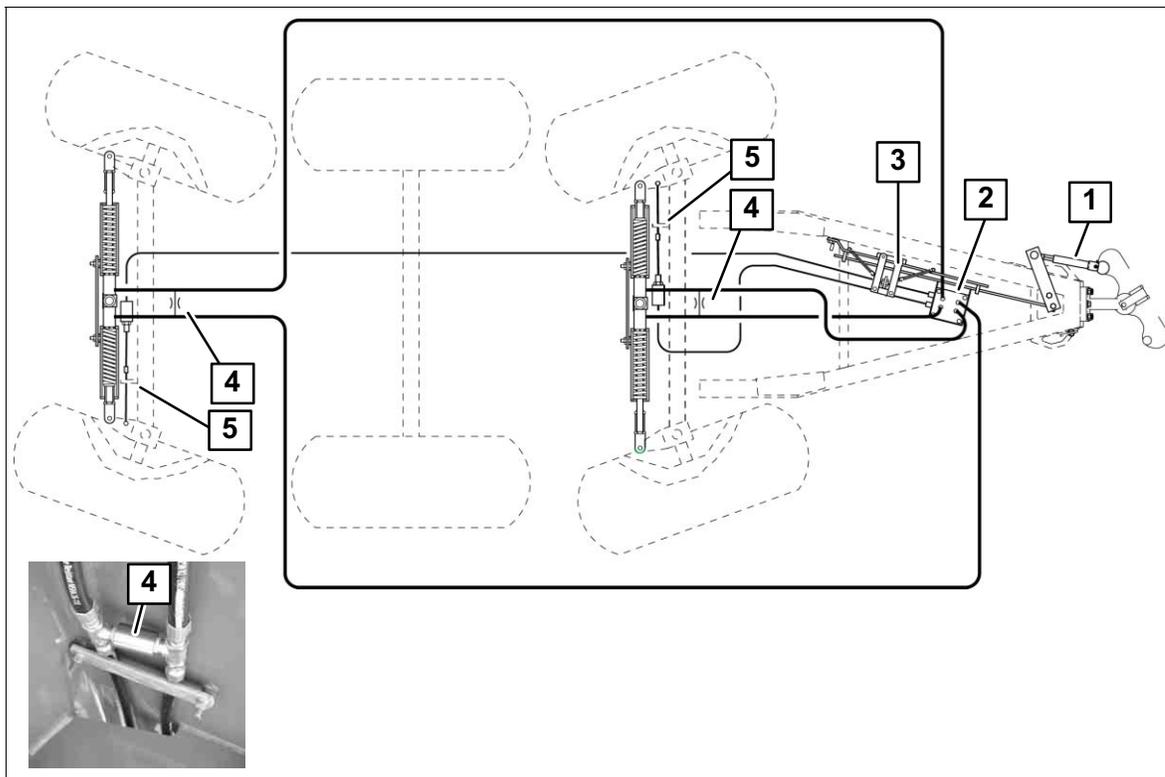
Do not keep the power steering engaged needlessly to prevent the tractor hydraulic system from overheating.



**Attention!**

Do not tow the spreader at a speed exceeding 12 km/h when the power steering is engaged.

It is important to follow the steps as listed and it is essential to ensure that the wheels of the spreader are perfectly aligned before proceeding with the following adjustments.

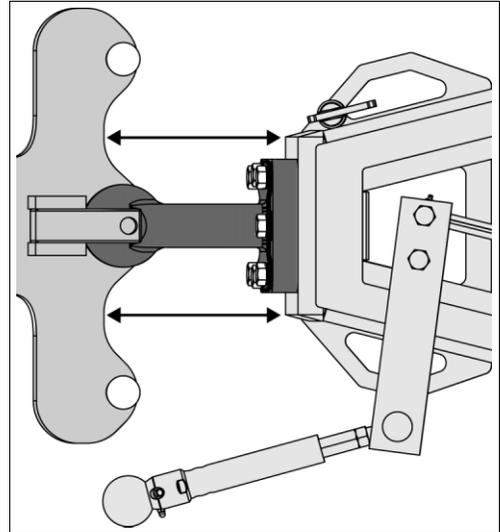


Legend:			
1	Guiding mechanism	2	Power steering control valve
3	Safety mechanism	4	Restrictor
5	End axles cables		

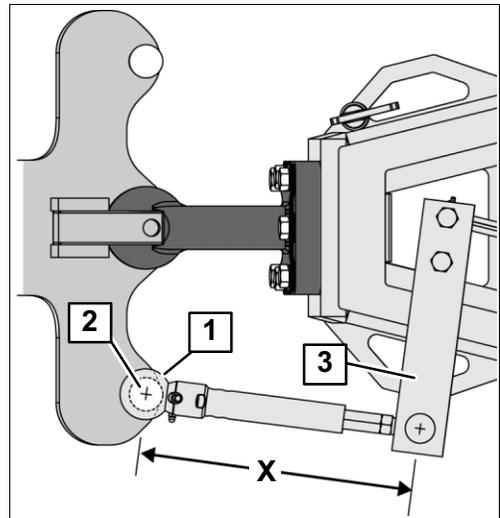
**Step 1: Wheels alignment****Note!**

Always perform the wheel alignment before proceeding with any adjustment listed in section Advanced maintenance - Power steering.

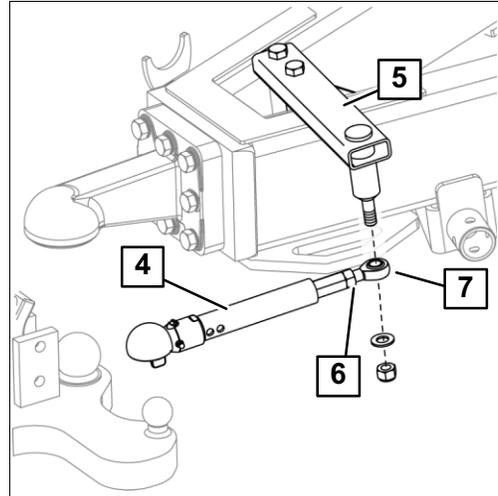
- Connect the coupling hand to the tractor. Do not connect the guiding mechanism;
- Move the spreader in a straight line in order to align the spreader and the tractor by pulling the spreader in a straight line;
- Keep them aligned and park them on a flat surface;
- Check the alignment by measuring on each side of the coupling hand;
- Both measures must be identical, if not, repeat all steps.

**Step 2: Guiding mechanism adjustment**

- Check if the coupling hand (1) easily connect to the ball (2) without moving the lever (3);
- If the lever (3) moves when connecting, proceed with the following steps to adjust length (X);



- Remove the guiding arm (4) from the lever (5);
- Unlock the nut (6) and adjust the ball joint (7);
- When adjusted to the proper length for connection, apply locktite on the ball joint threads and lock the assembly with the nut (6).

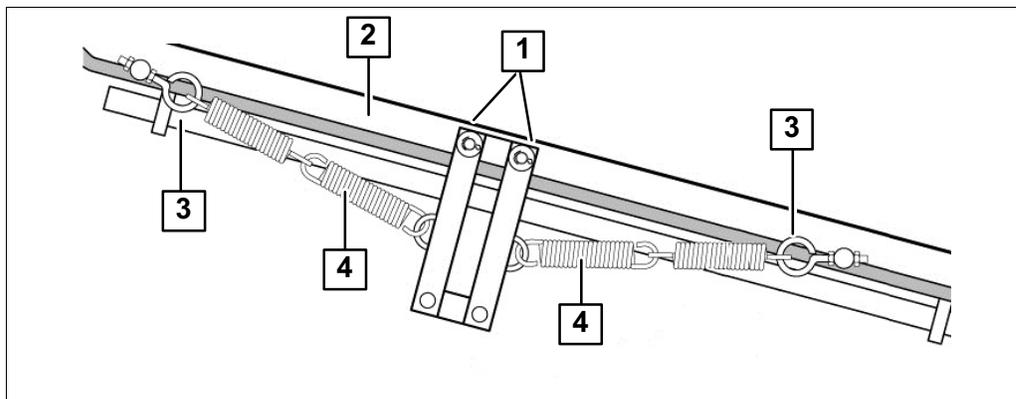


### Step 3: Safety mechanism adjustment



**Note!**

Make sure the spreader and the tractor wheels are perfectly aligned before adjusting the safety mechanism.



- Position the parallel bars (1) perpendicular with the flat bar support (2) by adjusting the eye bolts (3). The springs (4) must be straight, not hanging nor stretched. Make sure the parallel bars remain perpendicular.

### Step 4: Hydraulic flow rate adjustment



**Note!**

Refer to the instruction manual of the tractor to adjust the hydraulic flow rate.

#### Adjustment

The tractor supplies the hydraulic flow rate to the spreader power steering system. Depending on the spreader and tractor model, the flow rate must be adjusted as indicated in the following chart.

Hydraulic flow	Spreader model
11 LPM - 15 LPM	EL44-4D
23 LPM - 30 LPM	EL44-6D

### Fine tuning

A final adjustment is necessary to ensure proper functioning of the hydraulic system and power steering efficiency.

- Slowly move the spreader;
- Engage the power steering;
- While respecting the minimum turning radius, turn left and right with the spreader;
- If the wheels turn too promptly, lower the hydraulic flow rate. If they turn too slowly, increase the hydraulic flow rate;
- Test drive the power steering again until the wheels turn smoothly.

### Step 5: Cables adjustment



#### Note!

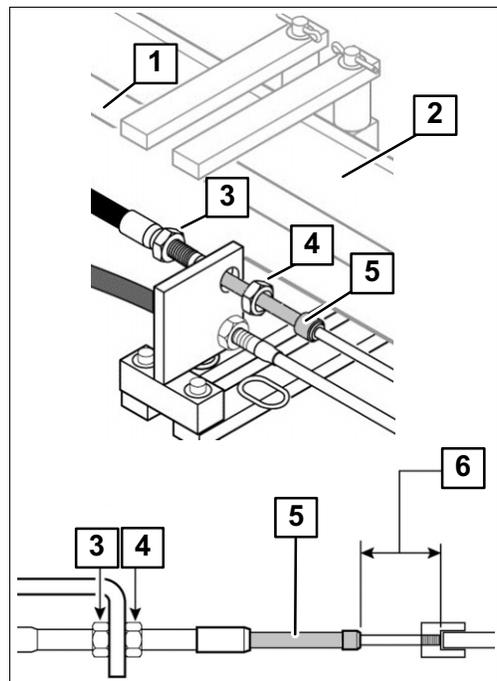
Make sure the spreader and the tractor wheels are perfectly aligned before adjusting the cables.



#### Note!

The power steering rubber seals are not shown in the following illustrations.

- All previous adjustments must be performed before proceeding with the cables adjustment;
- Use a vise grip to lock the power steering rod (1) on the flat bar support (2) to hold the power steering in neutral position;
- Adjust one cable at a time;
- Unscrew the adjustment nut (3) and the cable nut (4) located within the parallel bars for the corresponding axle end;
- Move the protective envelope (5) to obtain the same cable length (6) at both ends of the cable;
- Secure both adjustment nuts (3).



- Tighten the cable nuts (4) to keep the protective envelope in place;
- Remove the vise grip;
- Test the adjustment. Move slowly the spreader and engage the hydraulics of the power steering. Turn left and right to determine if the axles respond to the command. When an axle responds too quickly while turning left, readjust to extend the cable length at the axle end. If the axle responds too quickly while turning right, readjust to shorten the cable length at the axle end.

#### Step 6: Relief valve adjustment

The control valve is equipped with a relief valve to release the excess pressure inside the power steering hydraulic system.



**Note!**

Do not unscrew the relief valve needlessly to ensure maximum efficiency of the power steering.



**Note!**

Adjust the control valve only when all the previous steps have been performed.



**Note!**

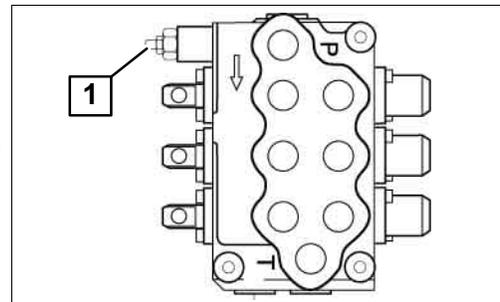
Adjust the release point of the tractor hydraulic lever prior to adjust the control valve.



**Note!**

The tractor hydraulic lever will return to neutral position when the relief valve is set too high.

- Set the tractor oil flow to minimum;
- Slowly unscrew the relief valve (1) until the lever of the tractor stops returning to neutral position automatically.



## 12 Decommissioning

### 12.1 Special personnel qualification required for decommissioning

Decommissioning may only be performed by specially qualified personnel in accordance with the safety instructions.



Read the section Safety - Personnel qualifications.

### 12.2 Safety instructions for decommissioning



**Warning!**

Wear protective boots, eye gear and gloves for all steps included in this section.



**Attention!**

Always keep this product on a flat and level surface. An uneven surface could unbalance the product resulting in damages and/or injuries.



**Attention!**

Keep all hose couplings clear of dirt and sand when disconnected from the tractor. Always hook them on their supports.



**Note!**

Use biodegradable oil.



Read the section Safety.

### 12.3 Temporary decommissioning

#### Step 1: Cleaning



**Warning!**

Beware of potential falls: always walk on the nonslip band installed on the product.



**Attention!**

Use tap water to clean this product. Do not exceed 105 bar when using a pressure washer and keep the nozzle at a distance of 30 cm from the surface to be cleaned.



**Note!**

Refer to section Technical data - Lubricant specifications.

- Make sure the spreader is empty;
- Activate parking brake and turn off the engine;
- Secure the spreader using wheel chocks;

## Decommissioning

### Temporary decommissioning

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- Leave the spreader connected to the tractor;
- Make sure all drains are closed;
- Make sure all cleaning openings are closed;

- Pressure wash the entire product and equipment. Open the cleaning openings on top of the tank to clean inside;
- Clean float inside the tank;
- Clean fill opening door flap and sides to release the springs completely;
- Remove the directional valve cover and clean the housing. Clean any accumulation of dry manure;



- Fill 1/3 of the tank with water;
- Remove wheel chocks and release the parking brake;
- Move tractor back and forth to stir water inside the tank;
- Move to a spreading area and spread the wasted water to clean the discharge pipe and hoses;
- Move to a storage area;
- Open drains of the impeller and spreader tank. Open the cleaning opening of the distributor and spreader tank. Keep them open to allow ventilation.

## Step 2: Lubricate



### Note!

Refer to section Technical data - Lubricant specifications.



Refer to section Appendix - Label position.

- Grease parts labelled with:
- Spray the entire product with a thin layer of biodegradable lubricant to protect from corrosion.



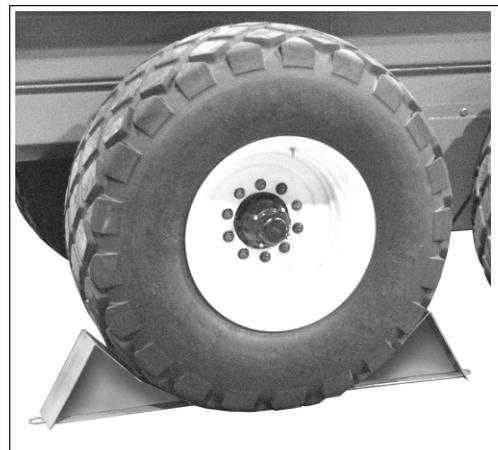
## Step 3: Store



### Note!

Refer to the PTO driveline instruction manual and follow the manufacturer's recommendations.

- Place the product in a storehouse after cleaning to protect it against the elements and prevent premature corrosion;
- Turn off the tractor engine;
- Place wheel chocks, one at the front and one behind a wheel of the spreader;
- Raise the spreader draw bar using a jack;
- Disconnect the PTO driveline;
- Disconnect all hydraulic and pneumatic hoses and hook them on the support;
- Disconnect the spreader from the tractor draw bar.



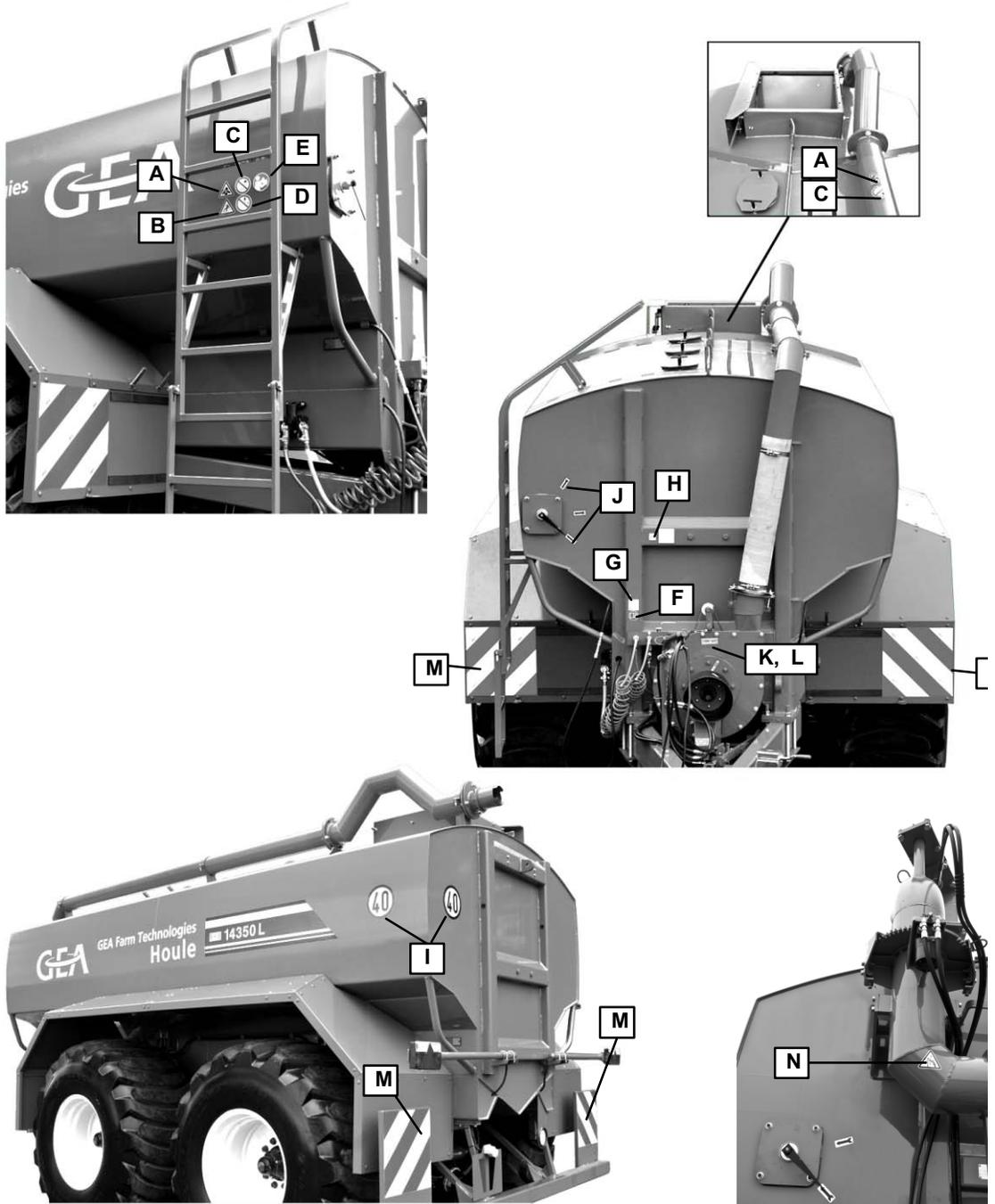
## 12.4 Final decommissioning/disposal

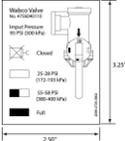
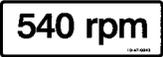
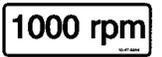
After final decommissioning, handle all components properly and dispose of them in accordance with your valid local rules and regulations on waste disposal. Recycle if possible.

**13 Appendix**

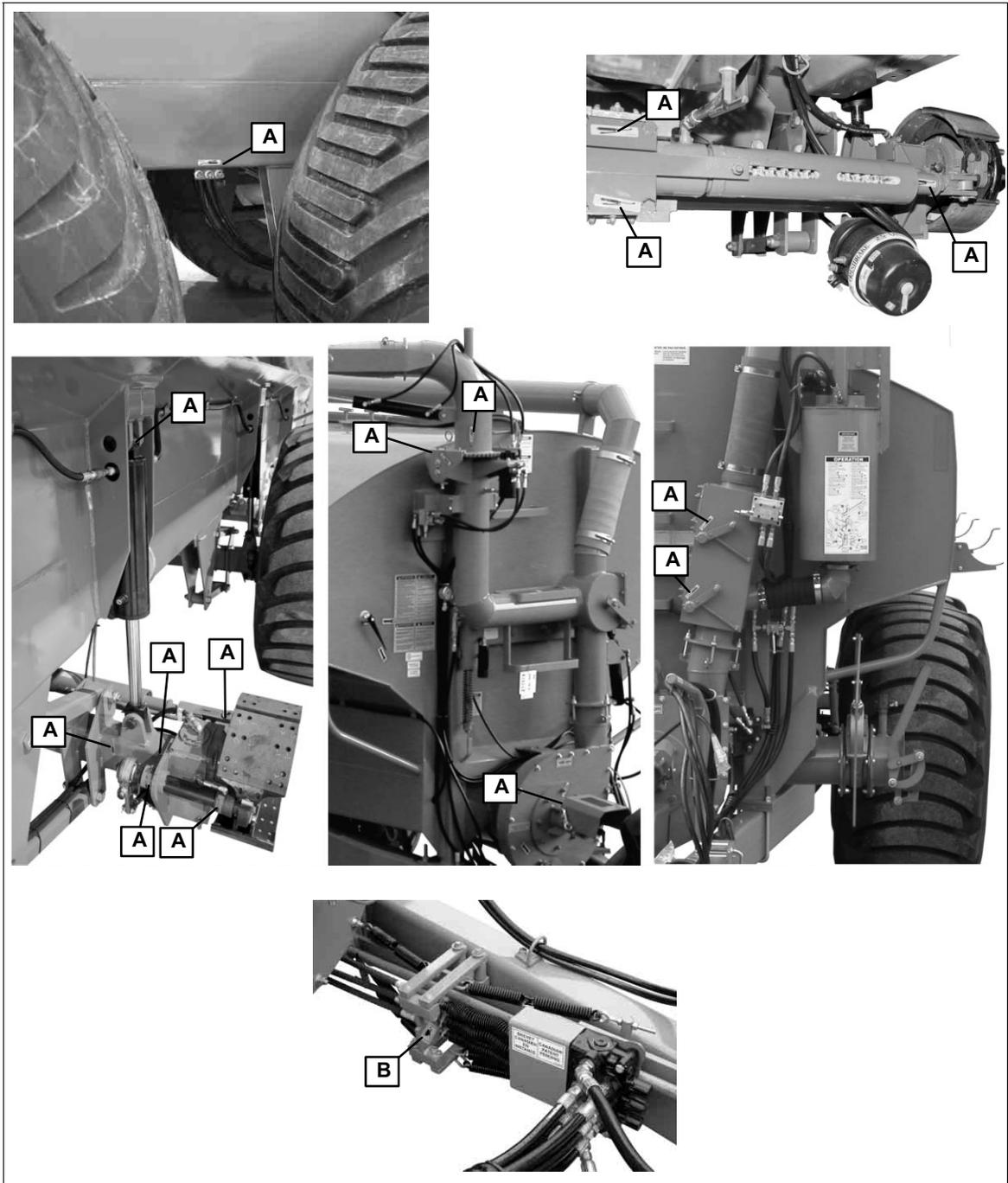
**13.1 Label position**

**13.1.1 Safety labels**



<p>A</p>  <p>2099-4725-210</p>	<p>B</p>  <p>2099-4725-270</p>	<p>C</p>  <p>2099-4725-180</p>
<p>D</p>  <p>2099-4725-170</p>	<p>E</p>  <p>2099-4725-130</p>	<p>F</p>  <p>2099-4725-100</p>
<p>G</p>  <p>2099-4725-390</p>	<p>H</p>  <p>2099-4725-120</p>	<p>I</p>  <p>2099-4725-520</p>
<p>J</p>  <p>2007-4700-390</p>	<p>K</p>  <p>2010-4703-430</p>	<p>L</p>  <p>2010-4703-440</p>
<p>M</p>  <p>2099-4725-540</p>	<p>N</p>  <p>2099-4725-260</p>	

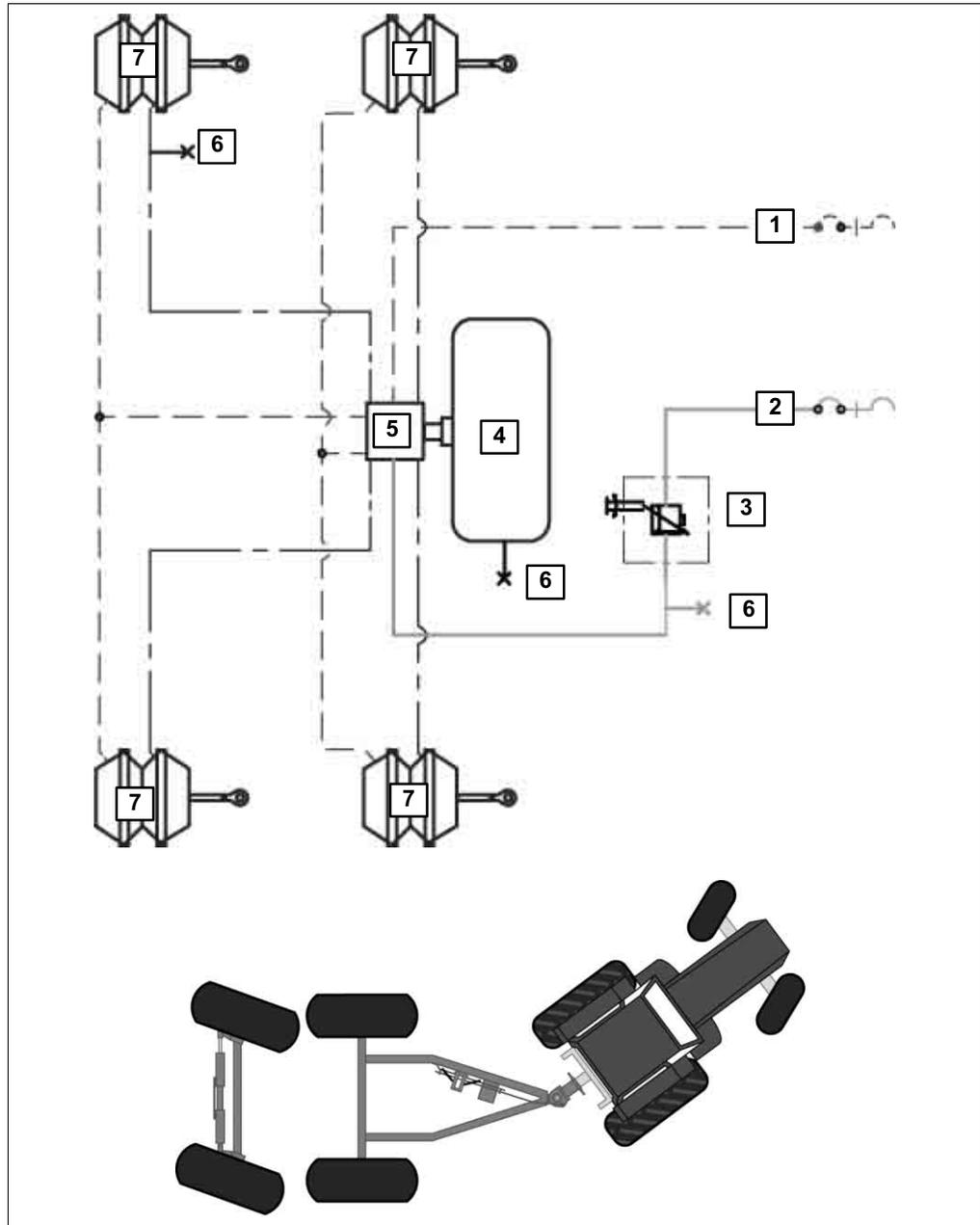
13.1.2 Lubrication labels



<p><b>A</b></p>	<p></p> <p>2099-4701-240</p>	<p><b>B</b></p>	<p></p> <p>2099-4701-250</p>
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**13.2 Pneumatic diagrams**

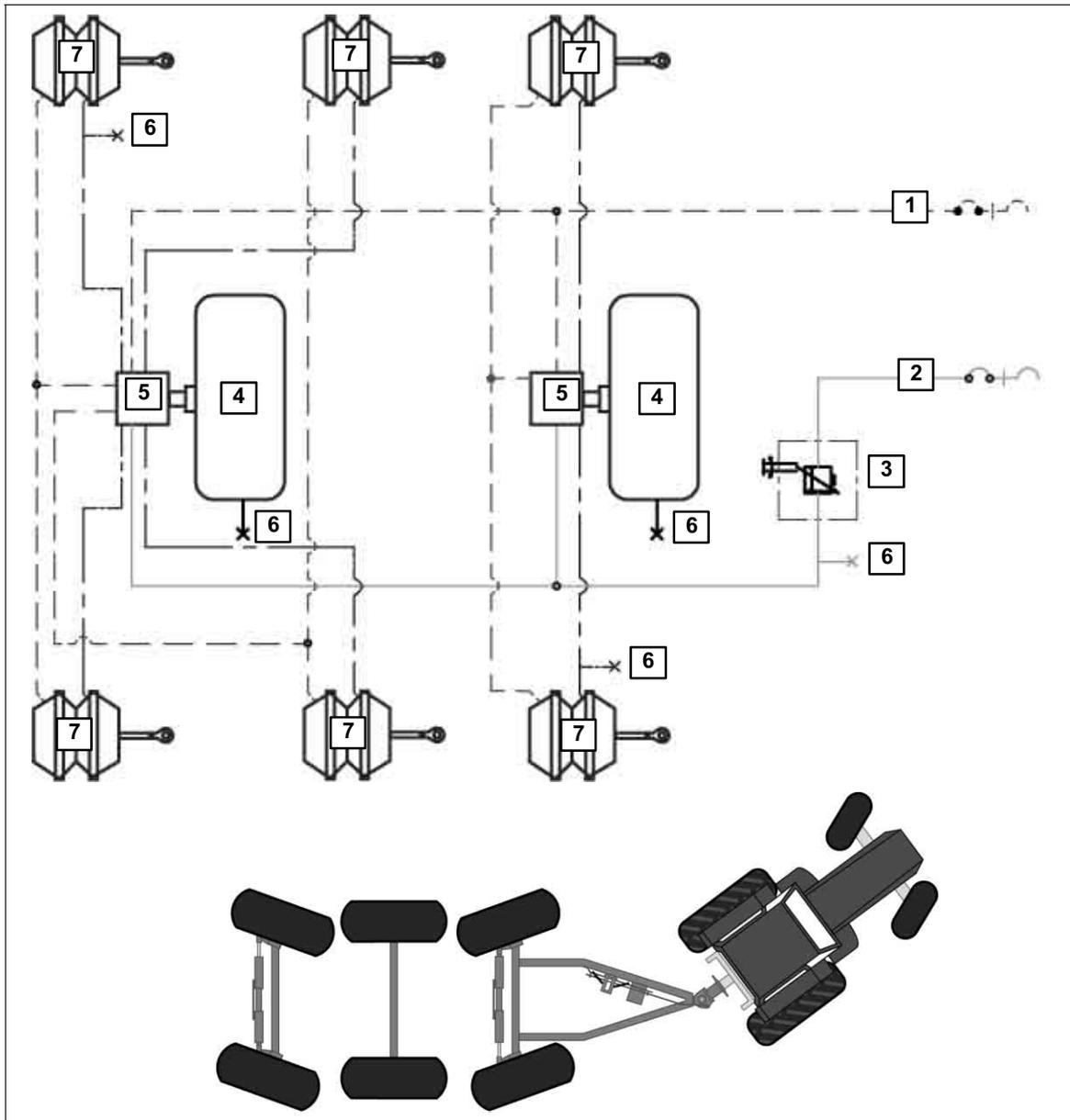
**13.2.1 EL44-4D air brake**



**Legend:**

1	Emergency line	2	Service line
3	Wabco valve	4	Air tank
5	Control valve	6	Test connection
7	Air chamber (booster)		

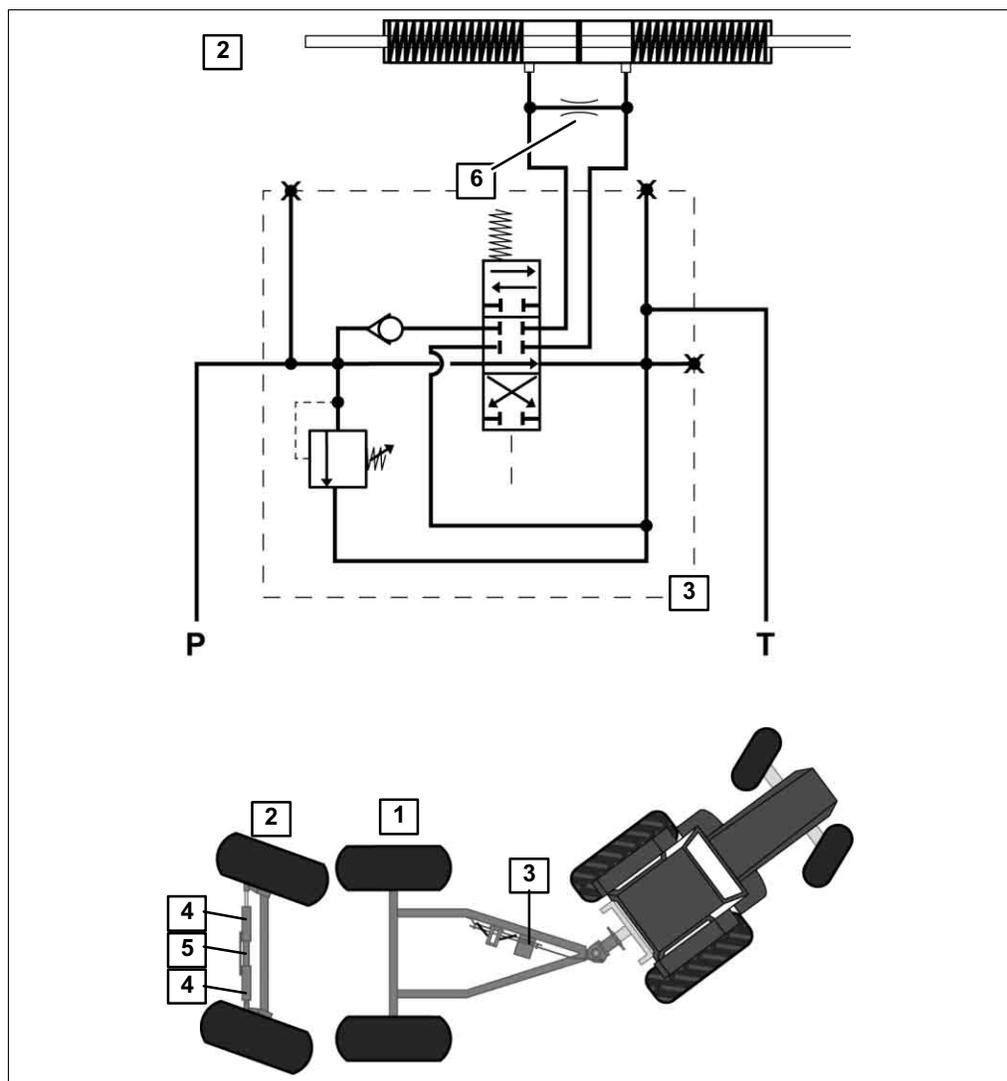
13.2.2 EL44-6D air brake



Legend:			
1	Emergency line	2	Service line
3	Wabco valve	4	Air tank
5	Control valve	6	Test connection
7	Air chamber (booster)		

### 13.3 Hydraulic diagrams

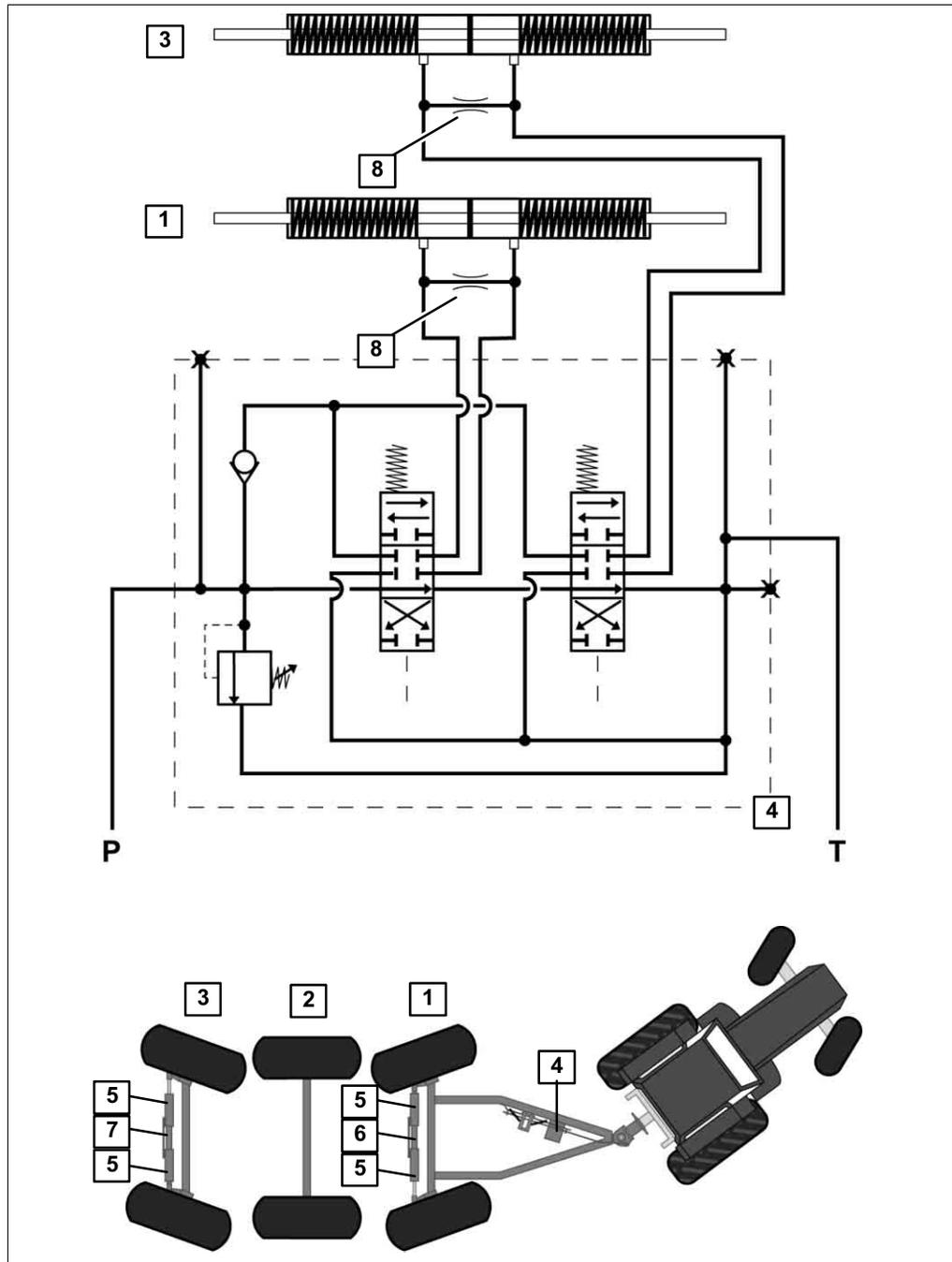
#### 13.3.1 EL44-4D hydraulic power steering



**Legend:**

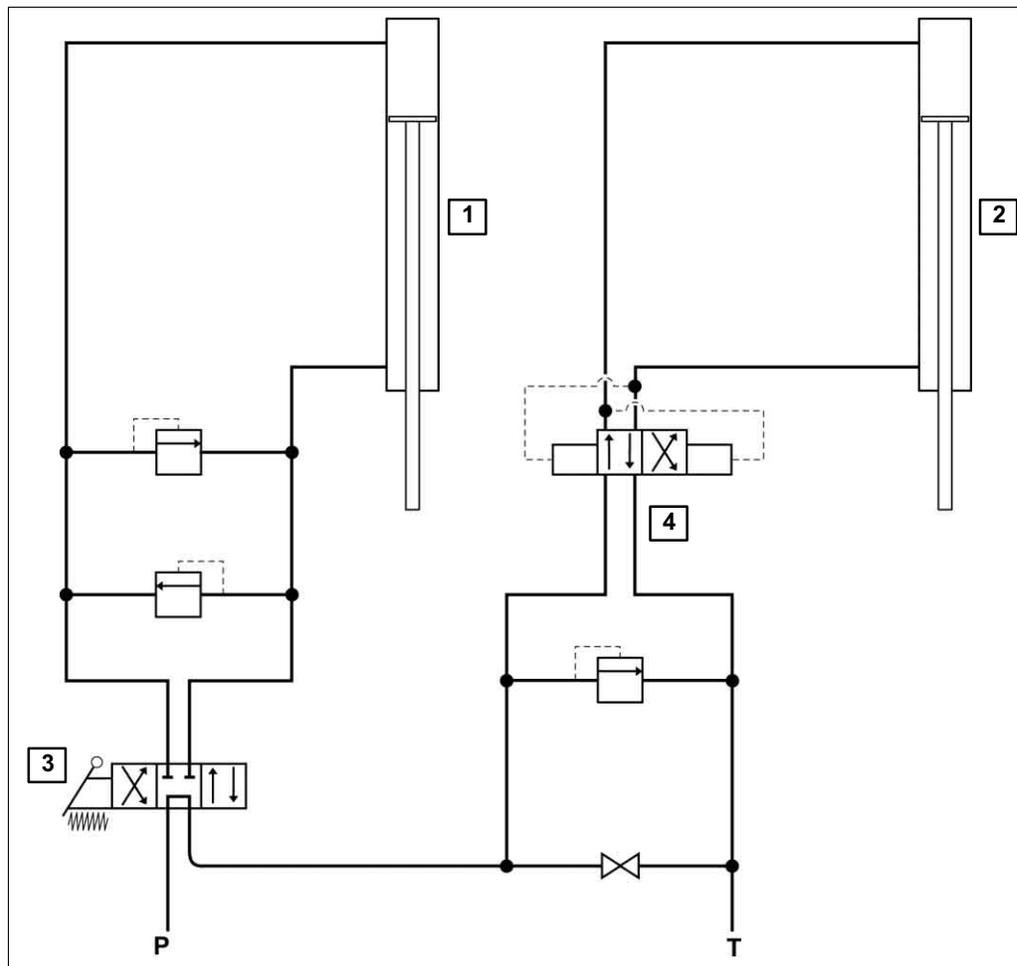
1	Axle #1 (non-steerable)	2	Axle #2 (steerable)
3	Power steering control valve	4	Compression spring
5	Power steering cylinder	6	Restrictor

### 13.3.2 EL44-6D hydraulic power steering



Legend:			
1	Axle #1 (steerable)	2	Axle #2 (non-steerable)
3	Axle #3 (steerable)	4	Power steering control valve
5	Compression spring	6	Power steering cylinder (Axle #1)
7	Power steering cylinder (Axle #3)	8	Restrictor

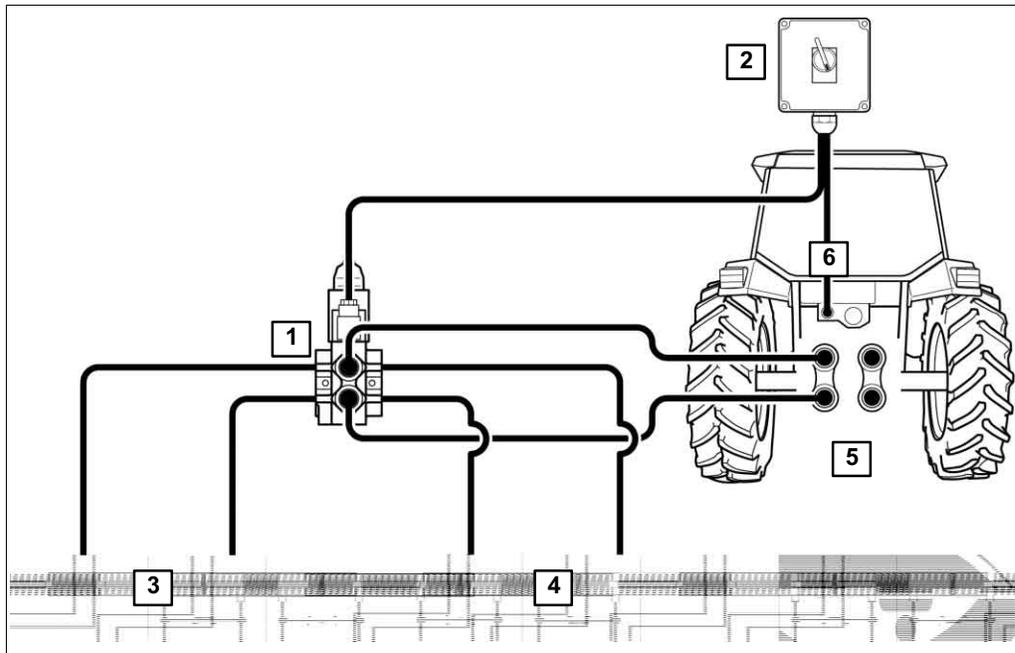
### 13.3.3 Self-loading option



**Legend:**

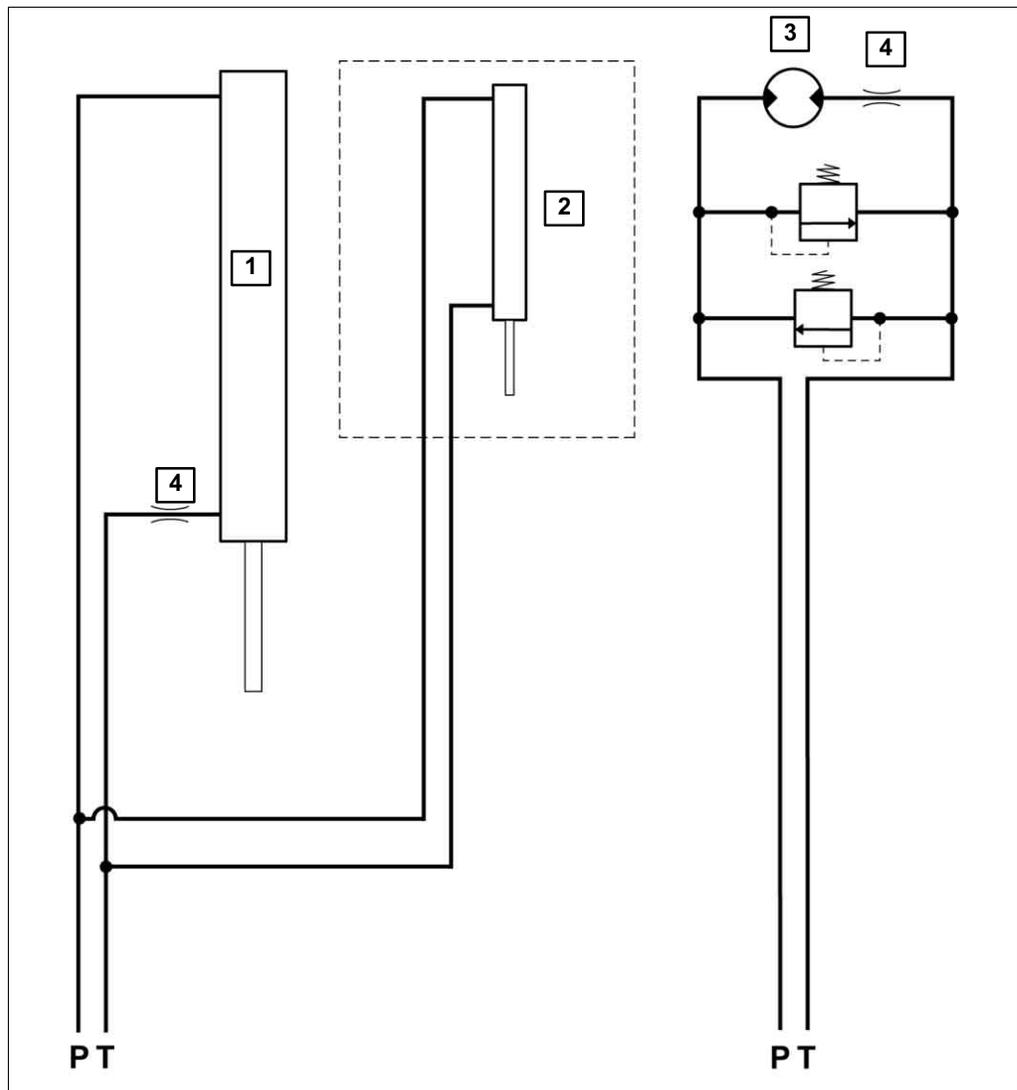
<b>1</b>	Tank bottom valve cylinder	<b>2</b>	Primer pump cylinder
<b>3</b>	Tank bottom valve control lever	<b>4</b>	Reversing valve

### 13.3.4 Solenoid valves control option



Legend:			
1	Solenoid valve	2	Selector switch
3	Hydraulic component #1	4	Hydraulic component #2
5	Tractor hydraulic outlets	6	Tractor electric connection (12VDC)

### 13.3.5 Nursing kit option

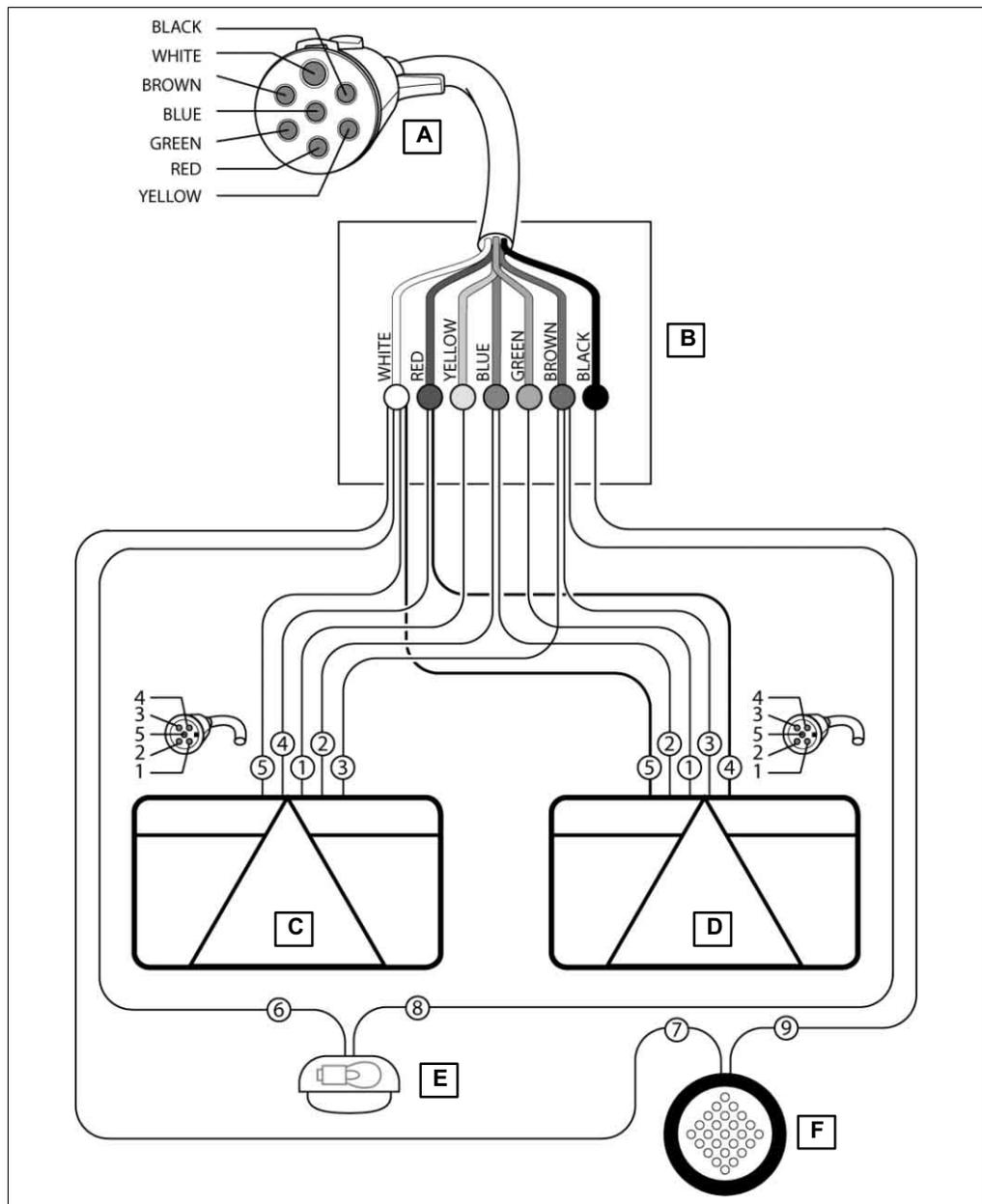


**Legend:**

<b>1</b>	Hydraulic cylinder	<b>2</b>	Optional hydraulic cylinder
<b>3</b>	Hydraulic motor	<b>4</b>	Restrictor

**13.4 Electrical diagrams**

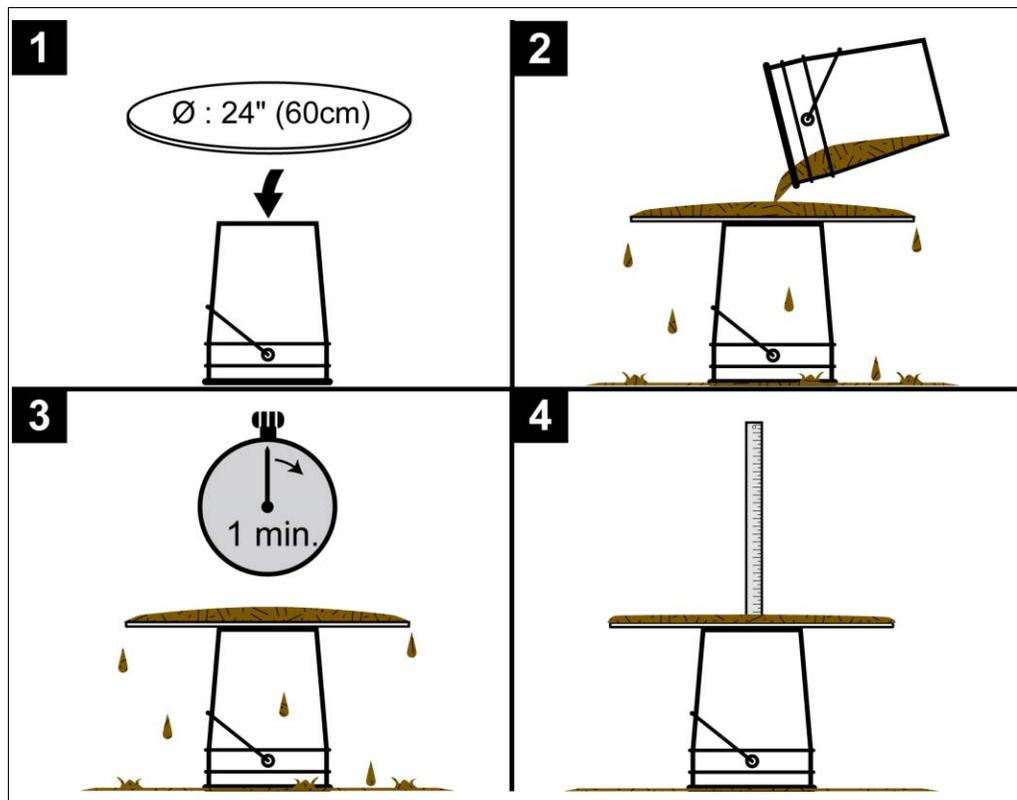
**13.4.1 Signal lights**



Legend:					
<b>WHITE</b>	White	<b>1</b>	Yellow (left turn)	<b>1</b>	Green (right turn)
<b>RED</b>	Red	<b>2</b>	Blue (auxiliary)	<b>3</b>	Brown (tail light)
<b>YELLOW</b>	Yellow	<b>4</b>	Red (stop)	<b>5</b>	White (ground)
<b>BLUE</b>	Blue	<b>6</b>	White	<b>7</b>	White
<b>GREEN</b>	Green	<b>8</b>	Brown	<b>9</b>	Black
<b>BROWN</b>	Brown	<b>A</b>	Outlet to tractor	<b>B</b>	Junction box
<b>BLACK</b>	Black	<b>C</b>	Left light	<b>D</b>	Right light
		<b>E</b>	Licence plate light	<b>F</b>	Rear fog light

### 13.5 Consistency test

GEA Houle determined the following method to verify if the viscosity of the liquid manure is suitable for this product.



1. Set a pail on a level surface and install a 60 cm round plate at the center of the pail.
2. Fill a second pail with homogenized liquid manure and slowly pour it in the center of the plate until it overflows all around the plate. Remain close to the plate when pouring the liquid manure.
3. Wait for one minute.
4. Measure the thickness of the liquid manure at the center of the plate.

### 13.6 Spreading rate calculation

Four parameters are needed to determine a spreading rate: the volume of manure, the time needed to spread the manure, the tractor speed and the spreading width.

Determine which type of measurement unit (imperial or metric) you prefer and follow the instructions.



**Warning!**

Do not tow this product at a speed exceeding 40 km/h.

Before calculating the spreading rate, test the product and note the parameters described below:

- Fill the spreader tank with liquid manure.
- Note the volume of manure inside the spreader tank.
- Move to a spreading area.
- Position the tool bar to spread.
- Move the spreader at a constant speed.
- Spread the manure and monitor the time it takes for the spreader to be empty.
- Note time and speed.
- Measure and note the width of the spreading pattern.

	<p><b>Spreader volume</b></p>	<p>Result: _____ liters</p>
	<p><b>Spreading time</b></p>	<p>Result: _____ minutes</p>
	<p><b>Tractor speed</b></p>	<p>Result: _____ km/h</p>
	<p><b>Spreading width</b></p>	<p>Result: _____ meters</p>

Apply results previously obtained to the following formulas. Calculate the flow rate then the spreading rate.

**Flow rate formula:**

<b>Spreader volume ÷ spreading time = liters/minute</b>
Example: 14550 liters ÷ 3 minutes = 4850 litres/minute

**Spreading rate formula:**

<b>Flow rate x 600 ÷ spreading width ÷ tractor speed = liters/hectare</b>
Example: 4850 liters/minute x 600 ÷ 11.5 meters ÷ 9.6 km/h = 26359 liters/hectare

**Spreading rate versus spreading speed:**

- Determine the proper spreading rate according to your application in order to define the tractor speed.
- Apply the rule of three as follows.

<b>Tractor speed x required spreading rate ÷ monitored spreading rate = new speed</b>
Example: 9.6 km/h x 20000 liters/hectare ÷ 26359 liters/hectare = 7.28 km/h

To spread 20 000 liters/hectare of manure, the driver must maintain the tractor speed to 7.28 km/h.

**13.7 Abbreviations**

<b>Terms</b>	<b>Explanation</b>	<b>Terms</b>	<b>Explanation</b>
@	at	∅	diameter
EC	European Community	CW	clockwise
CCW	counterclockwise	fax	facsimile
I.D.	inside diameter	Inc.	Incorporated
NC	national coarse	O.D.	outside diameter
PTO	power take off	PVC	polyvinyl chloride
QC	Quebec	SAE	Society of Automotive Engineers
USA	United States of America	WWW	World Wide Web
<b>Units</b>	<b>Explanation</b>	<b>Units</b>	<b>Explanation</b>
A	ampere	kg	kilogram
AC	alternative current	kPa	kilopascal
cm	centimeter	kW	kilowatt
°	degree	km/h	kilometers per hour
°C	degree Celsius	lpm	liter per minute
°F	degree Fahrenheit	lb	pound
DC	direct current	m	meter
ft	foot	min	minute
ft-lb	foot-pound	mph	miles per hour
gal	gallon	mm	millimeter
gpm	gallons per minute	NM	newton meter
HP	horsepower	psi	pounds per square inch
hr	hour	RPM	revolutions per minute
Hz	hertz	s	second
in.	inch	v	volt





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