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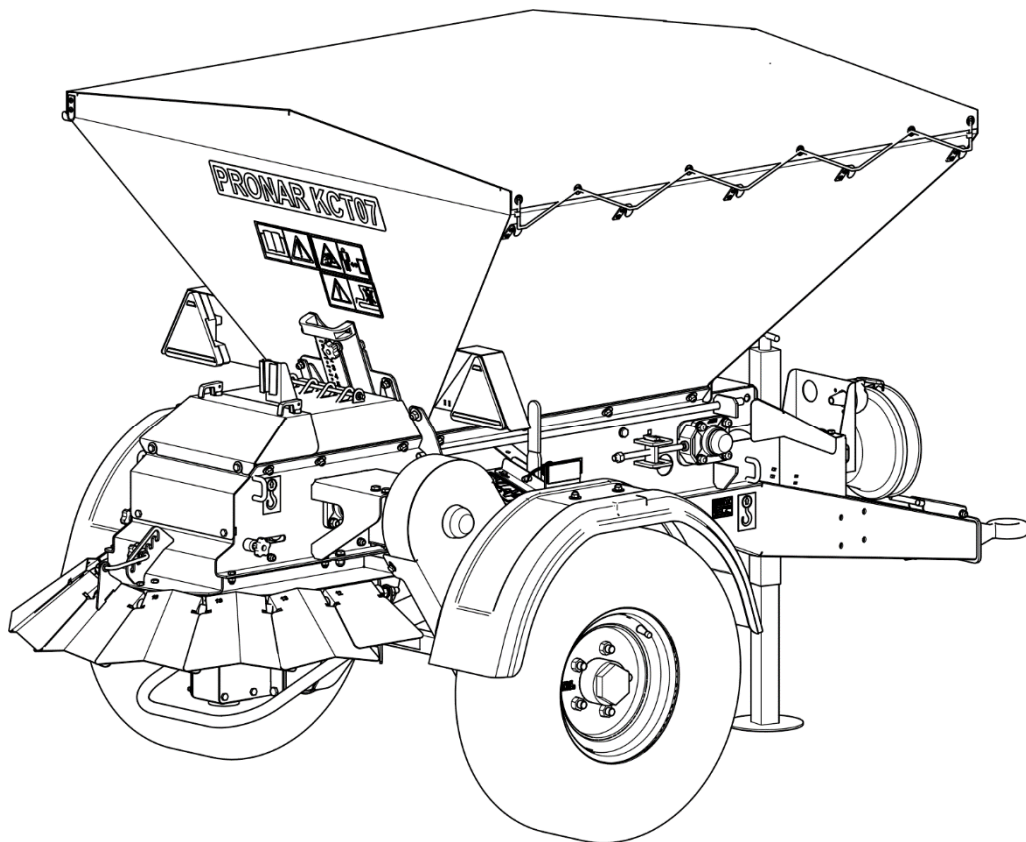
[www.pronar.pl](http://www.pronar.pl)

# OPERATOR`S MANUAL

## SAND SPREADER

### PRONAR KCT07

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



EDITION 1A-09-2017

PUBLICATION NO 530N-00000000-UM





# SAND SPREADER

## PRONAR KCT07

### MACHINE IDENTIFICATION

TYPE:

*KCT07*

SERIAL NUMBER:

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# INTRODUCTION

Information contained herein is current at date of publication. As a result of improvements, some numerical values and illustrations contained in this publication may not correspond to the factual specification of the machine supplied to the user. The manufacturer reserves the right to introduce design changes in machines produced that facilitate operation and improve the quality of their work, without making minor amendments to this Operator's Manual.

This Operator's Manual is an integral part of the machine's documentation. Before using the machine, the user must carefully read this Operator's Manual and observe all recommendations. This guarantees safe operation and ensures failure-free work of the machine. The machine is designed to meet obligatory standards, documents and legal regulations currently in force.

The manual describes the basic safety rules and operation of the sand spreader. If the information stated in the Operator's Manual needs clarification then the user should refer for assistance to the sale point where the machine was purchased or to the Manufacturer.

## MANUFACTURER'S ADDRESS:

*PRONAR Sp. z o.o.  
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17-210 Narew*

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## SYMBOLS APPEARING IN THIS OPERATOR'S MANUAL

Information, descriptions of danger and precautions and also recommendations and prohibitions associated with user safety instructions are marked:



and also preceded by the word "**DANGER**". Failure to observe the instructions may endanger the machine operator's or other person's health or life.

Particularly important information and instructions, the observance of which is essential, are distinguished in the text by the sign:



and also preceded by the word "**ATTENTION**". Failure to observe the instructions may lead to damage to the machine as a result of improper operation, adjustment or use.

In order to focus the user's attention on the need to perform maintenance, the relevant section of the Operator's Manual is marked with the pictogram:



Additional tips and advice for machine operation are marked with the sign:



and also preceded by the word "**TIP**".

## DIRECTIONS USED IN THIS OPERATOR'S MANUAL

Left side – side to the left hand of the operator facing in the direction of machine's forward travel.

Right side – side to the right hand of the operator facing in the direction of machine's forward travel.



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## EC DECLARATION OF CONFORMITY OF THE MACHINERY

PRONAR Sp. z o.o. declares with full responsibility, that the machine:

Description and identification of the machinery	
Generic denomination and function:	<b>Spreader</b>
Type:	<b>KCT07</b>
Model:	–
Serial number:	
Commercial name:	<b>Spreader PRONAR KCT07</b>

to which this declaration relates, fulfills all the relevant provisions of the Directive **2006/42/EC** of The European Parliament and of The Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (Official Journal of the EU, L 157/24 of 09.06.2006).

The person authorized to compile the technical file is the Head of Research and Development Department at PRONAR Sp. z o.o., 17-210 Narew, ul. Mickiewicza 101A, Poland.

This declaration relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

Narew, the 2017-02-01

*Place and date*

Z-CIA DYREKTORA  
d/s technicznych  
członek zarządu

*Roman Orzechowski*

*Full name of the empowered person  
position, signature*

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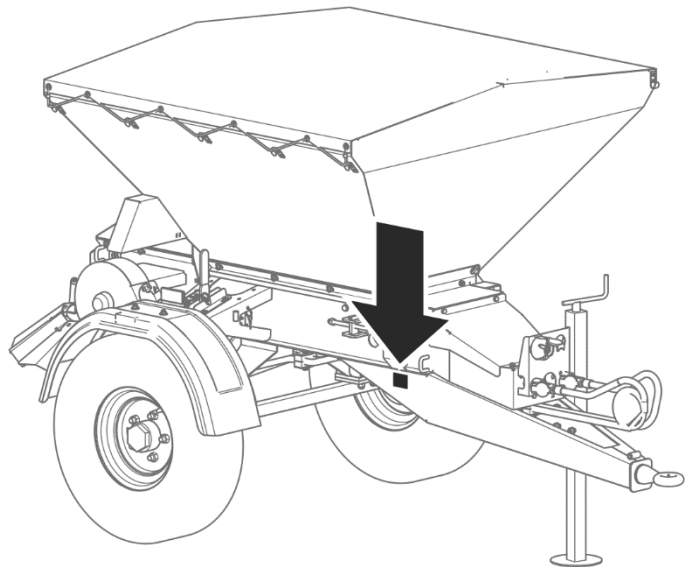
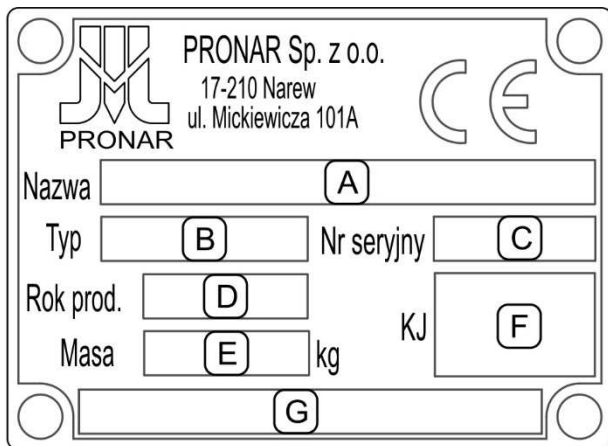


***SECTION***

**1**

**BASIC INFORMATION**

## 1.1 IDENTIFICATION



**FIGURE 1.1** Location of the data plate

Meaning of data plate items (FIGURE 1.1):

- A - machine name
- B – type
- C – serial number
- D – year of manufacture
- E – machine tare weight [kg]
- F – Quality Control stamp
- G – additional information

The factory number is stamped into the data plate and on mounting base beside the data plate. The data plate is located on the right side, in the front of the machine (FIGURE 1.1). When buying the machine, confirm that the serial number on the machine corresponds to the number indicated in the *WARRANTY BOOK*, in the sales documents and in the *OPERATOR'S MANUAL*.

## 1.2 PROPER USE

PRONAR KCT07 sand spreader is used for surface spreading of coarse materials and chemical agents for winter road maintenance. The use of the machine for other purposes should be regarded as improper. The sand spreader can be hitched to the vehicles that are equipped with a lower agricultural hitch and that meet the requirements set out in Table 1.1

Using it as intended also involves all actions connected with the safe and proper operation and maintenance of the machine. Due to the above, the user is obliged to:

- carefully read the OPERATOR'S MANUAL and comply with its recommendations,
- understand the machine's operating principle and how to operate it safely and correctly,
- comply with general safety regulations while working,
- prevent accidents,
- comply with road traffic regulations.

The machine may only be used by persons, who:

- are familiar with the contents of this publication and with the contents of the vehicle Operator's Manual
- have been trained in machine operation and safe working conditions,
- have the required authorisation to drive the vehicle and are familiar with the road traffic regulations and transport regulations.

### ATTENTION



The machine must not be used for purposes other than those for which it is intended, in particular for:

- for transporting people, animals
- for transporting whatever materials
- spreading other materials than those specified in the Operator's Manual
- spreading fertilizers

TABLE 1.1 Requirements for carrying vehicle

CONTENTS	UNIT	REQUIREMENTS
<b>Mounting method</b>	-	non-rotating lower fork-type agricultural hitch with pin diameter of $\varnothing 30\text{mm}$
<b>Tractor hitch</b>	-	
Minimum vertical load capacity of hitch	kg	250
Height of hitch	mm	250÷350
<b>Electrical system</b>		
Electrical system voltage	V	12
Connection socket	-	7-pole socket compliant with ISO 1724
<b>Power take-off shaft (PTO)</b> <i>(for sand spreader with mechanical drive)</i>		
Rotation speed (nominal)	rpm	540
Rotation direction	-	right <i>(looking at the PTO shaft front)</i>
Shaft profile <i>(for recommended PTO shafts)</i>	-	type 1 according to ISO 500 <i>(<math>\varnothing 35\text{ mm}</math>, 6 splines)</i>
<b>Hydraulic system</b> <i>(for sand spreader with hydraulic drive system)</i>		
Type and number of hydraulic connectors	-	2 sockets of one hydraulic section with constant supply position, size: $\frac{1}{2}$ " ISO7241-1, series A (mushroom sockets)
Maximum system pressure	MPa	20
Hydraulic pump capacity	l/min	16-50
Type of oil	-	hydraulic, L-HL-32
<b>Other requirements</b>		
Minimum PTO power demand	kW / Hp	14,7 / 20

## 1.3 EQUIPMENT

The sand spreader equipment includes:

- Operator's Manual,
- Warranty Book,

Additional (optional) equipment:

- PTO shaft, part number 303-850-000002 (*distance between crosses 510-810 mm*)
- PTO shaft, part number 303-850-000009 (*distance between crosses 460-710 mm*)

Safety components:

- disc guards,
- PTO cover,
- decals,
- wheel chocks

## 1.4 WARRANTY TERMS

PRONAR Sp. z o.o. Narew guarantees the reliable operation of the machine when it is used according to its intended purpose as described in the *OPERATOR'S MANUAL*. Defects discovered during the warranty period will be removed by the Warranty Service. The repair period is specified in the *WARRANTY BOOK*.

The warranty does not cover those parts and sub-assemblies of the machine which are subject to wear in normal usage conditions, regardless of the warranty period i.e. conveyor belt, rubber seals, bearings, tyres, blades, spreading shields.

The warranty service only applies to such cases as: mechanical damage which is not the user's fault, factory defects of parts, etc.

In the event of damage arising from:

- mechanical damage which is the user's fault, road accidents,
- inappropriate use, adjustment or maintenance, use of the machine for purposes other than those for which it is intended,

- use of damaged or malfunctioning machine,
- repairs carried out by unauthorised persons, repairs carried out improperly,
- making unauthorised alterations to machine design,

the user will lose the right to warranty service.



### TIP

**Demand that the seller carefully and precisely fills out the *WARRANTY BOOK* and warranty repair coupons. A missing date of purchase or sale point stamp may make the user ineligible for any warranty repair or refund.**

For detailed Terms & Conditions of Warranty, please refer to the *WARRANTY BOOK* attached to each machine.

Modification of the machine without the written consent of the Manufacturer is forbidden. In particular, do NOT weld, drill holes in, cut or heat the main structural elements, which have a direct impact on the machine operation safety.

## 1.5 TRANSPORT



### DANGER

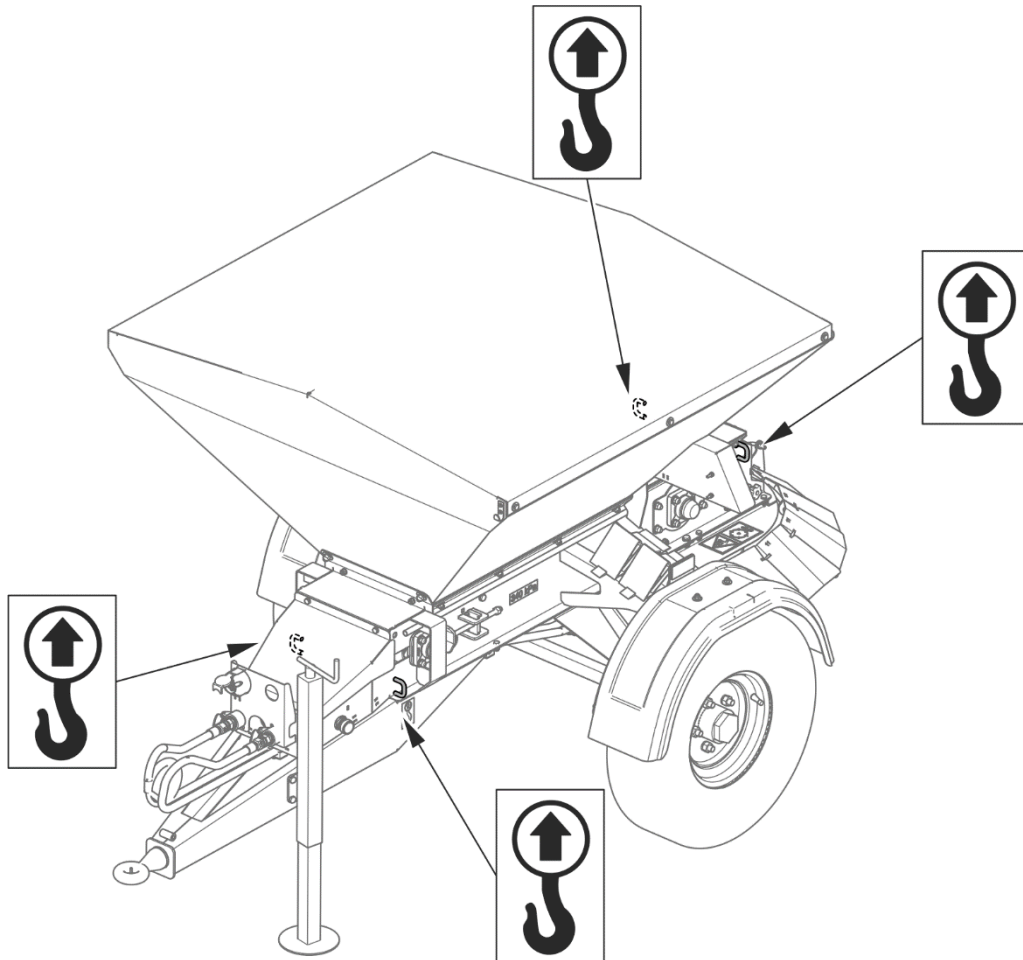
**When being transported on a motor vehicle the machine must be mounted on the vehicle's platform in accordance with the transport safety requirements. The driver of the vehicle should take particular care while transporting the machine. This is due to the vehicle's centre of gravity shifting upwards when loaded with the machine.**

The machine is prepared for sale completely assembled and does not require packing. Packing is only required for the machine Operator's Manual and the lighting system connection lead.

The machine can be delivered to the user on a transport vehicle after being attached to the load platform by the transport lugs (FIGURE 1.2). The machine should be firmly secured by means of certified fastening straps fitted with a tightening mechanism.

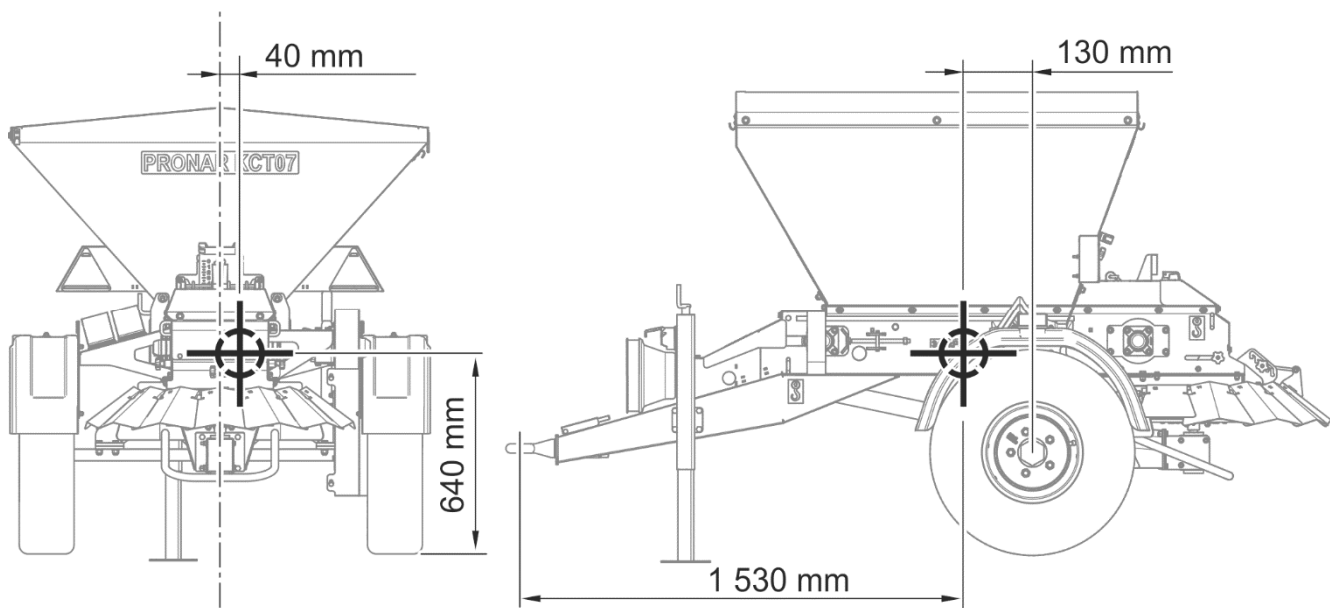
When loading and unloading the machine, comply with the general principles of workplace health and safety for reloading work. Persons operating reloading equipment must have the qualifications required to operate these machines.





**FIGURE 1.2** Transport lugs

The machine should be attached to lifting equipment in places specially designed for this purpose (FIGURE 1.2), i.e. by the lugs on the frame sides (4 points). Suspension points are identified with information decals. When lifting the machine, take particular care due to the possibility of tipping over the machine and the risk of injuries from protruding parts. To keep lifted machine in the correct direction it is recommended to apply additional guy cables. During the loading work particular care should be taken not to damage paint coating.



**FIGURE 1.3** Location of centre of gravity (empty tank)



### ATTENTION

Depending on the machine version, location of centre of gravity varies in the range of  $\pm 50$  mm

## 1.6 ENVIRONMENTAL HAZARDS

A hydraulic oil leak constitutes a direct threat to the natural environment owing to its limited biodegradability. Maintenance and repair work which involves the risk of an oil leak should be performed in the rooms with oil resistant surface. In the event of oil leaking into the environment, first of all contain the source of the leak, and then collect the leaked oil using available means. Remaining oil should be collected using sorbents, or by mixing the oil with sand, sawdust or other absorbent materials. The oil contaminations, once gathered up, should be kept in a sealed, marked, hydrocarbon resistant container, and then passed on to the appropriate oil waste recycling centre. The container should be kept away from heat sources, flammable materials and food.

Oil, which has been used up or is unsuitable for further use owing to loss of its properties should be stored in its original packaging in the conditions described above.

## 1.7 WITHDRAWAL FROM USE

In the event of decision by the user to withdraw the machine from use, comply with the regulations in force in the given country concerning withdrawal from use and recycling of machines withdrawn from use.

Before proceeding to dismantle equipment, oil shall be completely removed from hydraulic system and transmission.

When spare parts are changed, worn out or damaged parts should be taken to a collection point for recyclable raw materials. Used oil and also rubber and plastic elements should be taken to the appropriate facilities dealing with the recycling of this type of waste.



### **ATTENTION**

**During dismantling personal protection equipment shall be used i.e. protective clothing, boots, gloves and protective goggles etc.**

**Avoid contact of skin with oil. Do not allow used oil to spill.**



**SECTION**

**2**

---

**SAFETY ADVICE**

## 2.1 BASIC SAFETY RULES

### 2.1.1 USE OF MACHINE

- Before using the machine, the user must carefully read this Operator's Manual and the *WARRANTY BOOK*. When operating the machine, the operator must comply with all recommendations contained in the Operator's Manual.
- The machine may only be used and operated by persons qualified to drive carrying vehicles and trained in the use of the machine.
- If the information in this Operator's Manual is difficult to understand, contact the dealer, who runs an manufacturer authorised service, or contact the manufacturer directly.
- Be aware of the residual risk. Use caution when operating this machine and apply all relevant safety principles.
- The machine must never be used by persons who are not authorised to drive agricultural tractors, including children and people under the influence of alcohol, drugs or other abusive substances.
- Non-compliance with the safety rules of this Operator's Manual can be dangerous to the health and life of the operator and others.
- The machine must not be used for purposes other than those for which it is intended. Anyone who uses the machine other than the way intended takes full responsibility for himself for any consequences of this use. Use of the machine for purposes other than those for which it is intended by the Manufacturer may invalidate the guarantee.
- The machine may only be used when all the protective elements (i.e. safety guards) are technically sound and correctly positioned. In the event of loss or destruction of the protective elements, they must be replaced with new ones.
- Before using the machine always check its technical condition, especially in terms of safety. In particular, check technical condition of hitch system and drive transmission components.

### 2.1.2 HITCHING AND UNHITCHING THE MACHINE

- Carefully read the Operator's Manual of the sand spreader's carrying vehicle.
- To hitch the machine to carrying vehicle use only genuine pins and safeguards.
- The carrying vehicle to which the machine will be hitched must be technically reliable and must fulfil the requirements specified by the machine Manufacturer.
- Be especially careful when hitching and unhitching the machine.
- After completed hitching of the machine, check the safeguards.
- Do not unhitch the sand spreader from the carrying vehicle when the tank is full.
- Before unhitching from the carrying vehicle, protect the machine against moving by placing chocks under its wheels (included in the machine equipment).

### 2.1.3 MACHINE OPERATION

- The machine must not be used when not in working order.
- Before using the sand spreader always check its technical condition. In particular, check the technical condition of electrical system, spreading mechanism, feeding mechanism and protective shields.
- Before starting the carrying vehicle with the connected machine make sure the machine drive is not engaged, otherwise it can lead to uncontrolled operation of the machine.
- The sand spreader drive may be started only when there are no bystanders or animals within the radius of approximately 4 metres from the machine. The machine operator is obliged to ensure proper visibility of the machine and the working area.
- During machine operation do not occupy a different position than that of the operator in the vehicle's cab. Do NOT leave the cab, when the machine is in operation.
- There must be no bystanders within the machine spreading zone.
- Do not approach the machine until the rotating parts come to a complete standstill.

- When working near pavements or on public roads there is a risk that thrown out particles of sand, salt, stones etc. may pose a threat to bystanders.
- Before loading sand spreader make certain that there are no stones, tools or other objects in the load box and on the spreading disc.
- During machine operation do not use PTO nominal rotation speed greater than 540 rpm
- Do NOT throw material onto the tank grid from a great height.
- Spreading agents must be prepared in accordance with the regulations concerning winter road maintenance in force in the country in which the sand spreader is used. Spreading agents other than those recommended by the Manufacturer must not be used.
- While working with the sand spreader, turn on the beacon light in the carrying vehicle.
- Exercise particular caution while reversing.
- When spreading is completed, disengage the machine drive.
- When driving on public roads, comply with the road traffic regulations in force in the country, in which the machine is used.
- Adjust travel speed to the existing road conditions and other limitations arising from road traffic regulations.
- Do not carry people or animals on the machine.
- Reckless driving and excessive speed may cause accidents.
- Use personal protective equipment (ear protectors) in order to limit occupational risks associated with exposure to noise during machine operation. In order to reduce the level of noise during work the operator cab window and door should be closed.

#### **2.1.4 MAINTENANCE**

- During the warranty period, any repairs may only be carried out by warranty service authorised by the Manufacturer. It is recommended that necessary repairs to machine should be undertaken by specialised workshops.



- In the event of any fault or damage, do not use the machine until the fault has been corrected.
- During work, use the proper, close-fitting protective clothing, gloves and appropriate tools.
- Any modification to the machine frees PRONAR from any responsibility for damage or detriment to health which may arise as a result.
- Regularly check the technical condition of the safety devices and correct tightening of bolt connections.
- Regularly perform service inspections of machine as recommended by the Manufacturer.
- Do NOT perform service or repair work under unsecured machine.
- Servicing and repair work should be carried out in line with the general principles of workplace health and safety. In the event of injury, the wound must be immediately cleaned and disinfected. In the event of more serious injuries, seek a doctor's advice.
- Repair, maintenance and cleaning work should be carried out with the tractor's engine turned off and the ignition key removed. Immobilise tractor with parking brake. Ensure that unauthorised persons do not have access to the vehicle cab.
- Should it be necessary to change individual parts, use only original parts. Non-adherence to these requirements may put the user and other people's health and life at risk, and also damage the machine and invalidate the warranty.
- Do NOT weld, drill holes in, cut or heat the main structural elements, which have a direct impact on the machine operation safety.
- In the event of work requiring the machine to be raised, use properly certified hydraulic or mechanical lifts for this purpose. After lifting the machine, stable and durable supports must also be used. The machine must not be supported using fragile elements (bricks or concrete blocks).
- Repair work on the wheels or tyres should be carried out by persons trained and entitled to do so. This work should be carried out using appropriate tools.
- After completing work associated with lubrication, remove excess oil or grease.

- In order to reduce the danger of fire the machine must be kept in a clean condition.

### **2.1.5 HYDRAULIC SYSTEM**

- The hydraulic system is under high pressure when operating.
- Regularly check the technical condition of the connections and the hydraulic conduits. There must be no oil leaks.
- In the event of the hydraulic system malfunction, discontinue using the machine until the malfunction is corrected.
- In the event of injuries being caused by pressurised hydraulic oil, contact a doctor immediately. Hydraulic oil may penetrate the skin and cause infections. In the event of contact of oil with eyes, rinse eyes with a large quantity of water and in the event of the occurrence of irritation consult a doctor. In the event of contact of oil with skin wash the area of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene).
- Use the oil recommended by the Manufacturer. Never mix two types of oil.
- Used oil or oil which has lost its properties should be stored in original containers or replacement containers resistant to action of hydrocarbons. Replacement containers must be clearly marked and appropriately stored.
- Do not store hydraulic oil in packaging designed for storing food or foodstuffs.
- Rubber hydraulic conduits must be replaced every 4 years regardless of their technical condition.
- Repair and replacement of hydraulic system elements should be entrusted to the appropriately qualified persons.

### **2.1.6 OPERATION OF PTO SHAFT**

- The machine may only be connected to the tractor by appropriately selected PTO shaft.
- Never use a damaged PTO drive shaft, it may cause an accident. A damaged shaft must be repaired or replaced.

- Disconnect the PTO shaft drive each time when it is not necessary to drive the machine.
- The chains preventing the shaft cover from turning while the shaft is working, shall be secured to a fixed element of machine structure.
- Do NOT use the securing chains to support the shaft while machine is parked or when transporting the machine.
- Before using the machine, the user should thoroughly acquaint himself with the PTO shaft Operator's Manual and adhere to the recommendations contained in it.
- Do not exceed the working angle recommended by the shaft manufacturer.
- The shaft must be equipped with guards. Do NOT use the shaft with damaged or missing guards.
- After connecting shaft ensure that it is correctly and safely connected to the tractor and to the machine.
- Before starting PTO shaft make certain that the PTO rotation direction is correct.
- Before disconnecting the shaft, turn off the tractor engine and remove the key from the ignition.
- Do NOT wear loose clothing, straps or whatever that may become wrapped round the rotating drive shaft. Contact with rotating PTO shaft may cause severe injuries.
- Do NOT go over and under the shaft or stand on it equally during work as also when the machine is parked.

## 2.2 RESIDUAL RISK

Pronar Sp. z o.o. in Narew has made every effort to eliminate the risk of accidents. There is, however, a certain residual risk, which could lead to an accident, and this is connected mainly with the actions described below:

- using the machine for purposes other than those for which it is intended,
- being between the tractor and the machine while the engine is running and when the machine is being hitched,
- being on the machine while the engine is running,
- operating the machine with removed or faulty safety guards,
- not maintaining safe distance from the danger zone or being within the zones while the machine is operating,
- operation of the machine by persons under the influence of alcohol,
- cleaning, maintenance and technical checks when carrying vehicle is connected and engine is running.

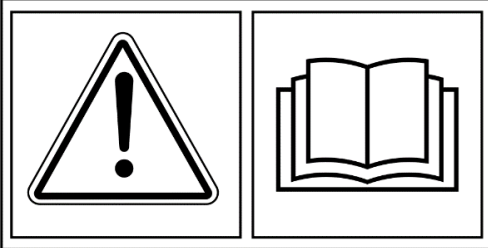
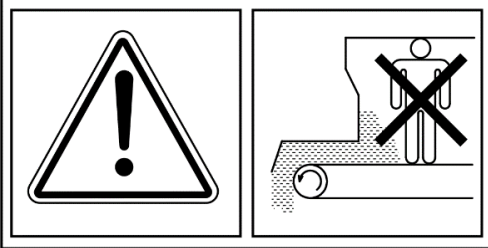

The residual risk may be kept to a minimum by following the recommendations below:



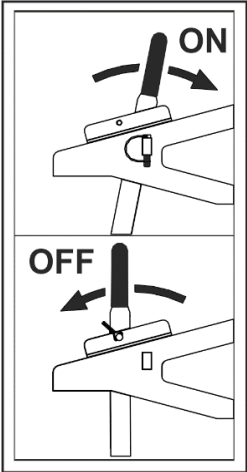

- operate the machine in prudent and unhurried manner,
- reasonably apply all the remarks and recommendations stated in the Operator's Manual,
- carry out repairs and maintenance work in line with operating safety rules,
- repair and maintenance work should be carried out by persons trained to do so,
- use close fitting protective clothing,
- ensure unauthorised persons have no access to the machine, especially children,
- maintain a safe distance from forbidden or dangerous places
- do not climb on the machine when it is operating


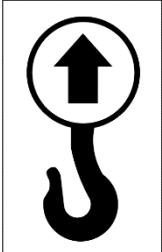


## 2.3 INFORMATION AND WARNING DECALS

All signs should always be legible and clean, visible to the operator and also to persons possibly being in the vicinity of the machine in operation. If any safety sign is lost or illegible, it should be replaced with a new one. All elements having safety signs replaced during repairs should be affixed with these signs. Safety signs and decals may be purchased from the Manufacturer or the Seller.

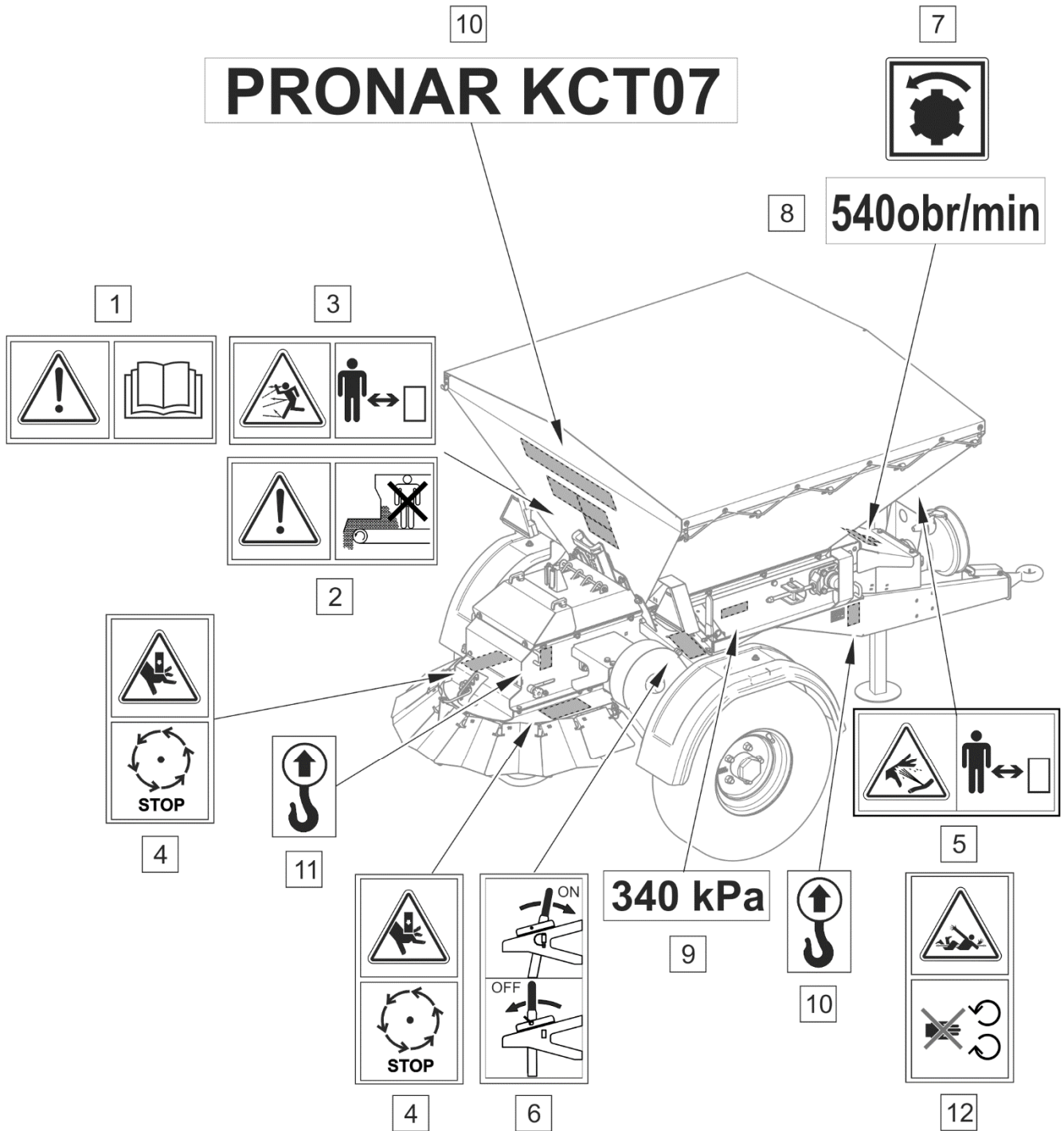
**TABLE 2.1** Information and warning decals

ITEM	SYMBOL	DESCRIPTION
1		<p>Before starting work, carefully read the Operator's Manual.</p>
2		<p>Do not enter the tank; do not stand on the feeding mechanism if the machine drive is engaged</p>
3		<p>Danger caused by materials thrown out by the machine. Keep a safe distance from the operating machine.</p>

ITEM	SYMBOL	DESCRIPTION
4		<p>Do not reach into the compression area. Danger of crushing hands or fingers.</p> <p>Do not touch any rotating elements until they come to a complete standstill.</p>
5		<p>Hydraulic system under high pressure. Keep a safe distance from the operating machine. <i>(refers to the machine with hydraulic drive system)</i></p>
6		<p>Controlling the conveyor drive mechanism lever</p>
7		<p>PTO shaft rotation direction <i>(refers to the machine with PTO drive system)</i></p>
8	<p><b>540obr/min</b></p>	<p>PTO speed <i>(refers to the machine with PTO drive system)</i></p>

ITEM	SYMBOL	DESCRIPTION
9		Tyre pressure
10		Lifting equipment attachment points while loading the machine
11		Machine model
12		<p>Risk of injury by PTO shaft. Do not place hands near rotating elements. <i>(refers to the machine with PTO drive system)</i></p>

Numbers in the Item column correspond to decals (FIGURE 2.1)



**FIGURE 2.1** Locations of information and warning decals

Meaning of symbols TABLE 2.1



*SECTION*

**3**

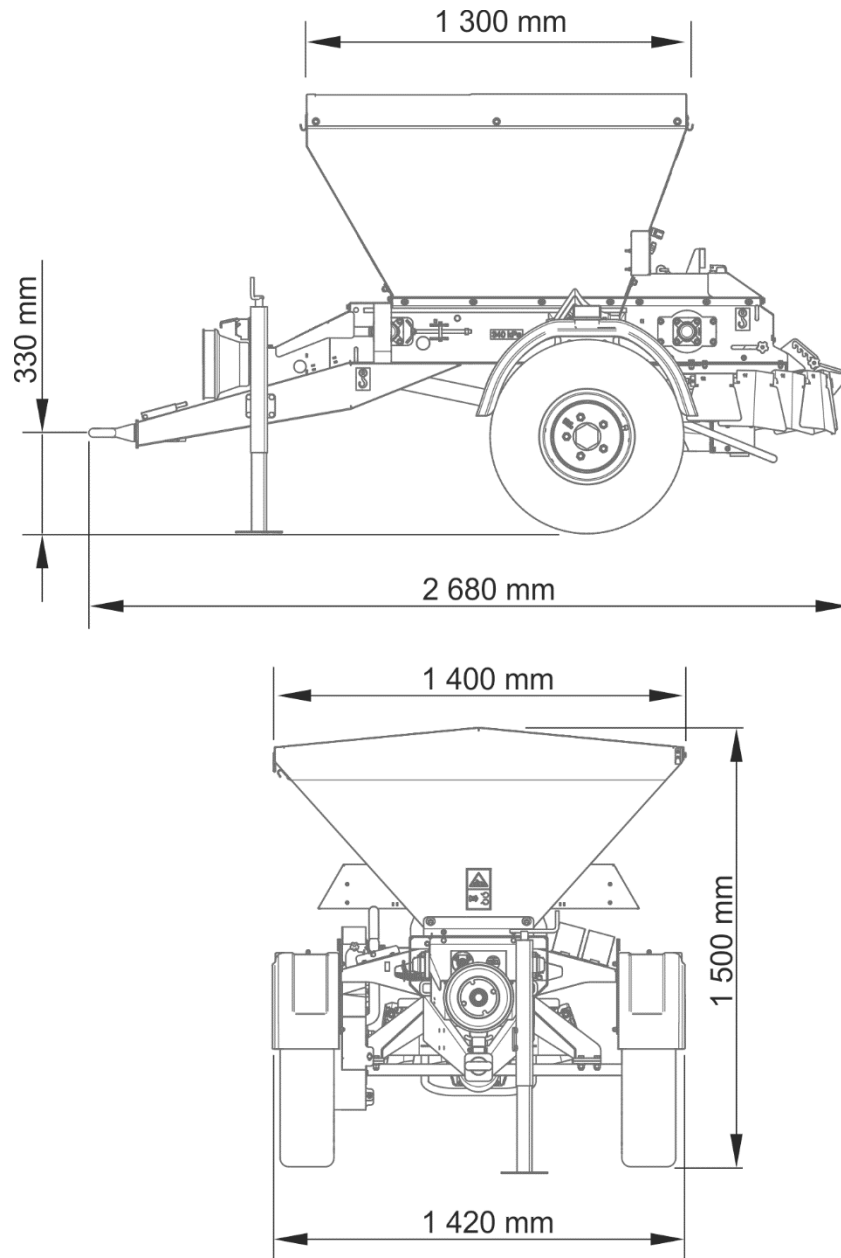
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**DESIGN AND  
OPERATION**

### 3.1 TECHNICAL SPECIFICATION

**TABLE 3.1 BASIC TECHNICAL DATA**

	Unit	
Mounting method:	–	lower agricultural hitch
– drawbar eye diameter	mm	ø35
– drawbar height	mm	330
Spreading width:		
– minimum	m	1.5
– maximum	m	4
Theoretical sand spreading density	g/m <sup>2</sup>	25÷265
Theoretical salt spreading density	g/m <sup>2</sup>	20÷215
Tank capacity	m <sup>3</sup>	0.7
Number of spreading discs	pc.	1
Number of spreading disc blades	pc.	6
Conveyor belt drive	–	mechanically driven by the machine wheels
Spreading disc drive	–	PTO shaft or external hydraulic system - depending on the machine version
Electric power supply	V	12V
Working speed (maximum)	km/h	15
Transport speed	km/h	25
Tare weight (without load)	kg	345
Gross weight (with load)	kg	1,480
Tyres:		
- tyres	–	7.00-12 AW702 6PR
- Wheels	–	4.25x12
Acoustic power level L <sub>WA</sub>	dB(A)	82.3

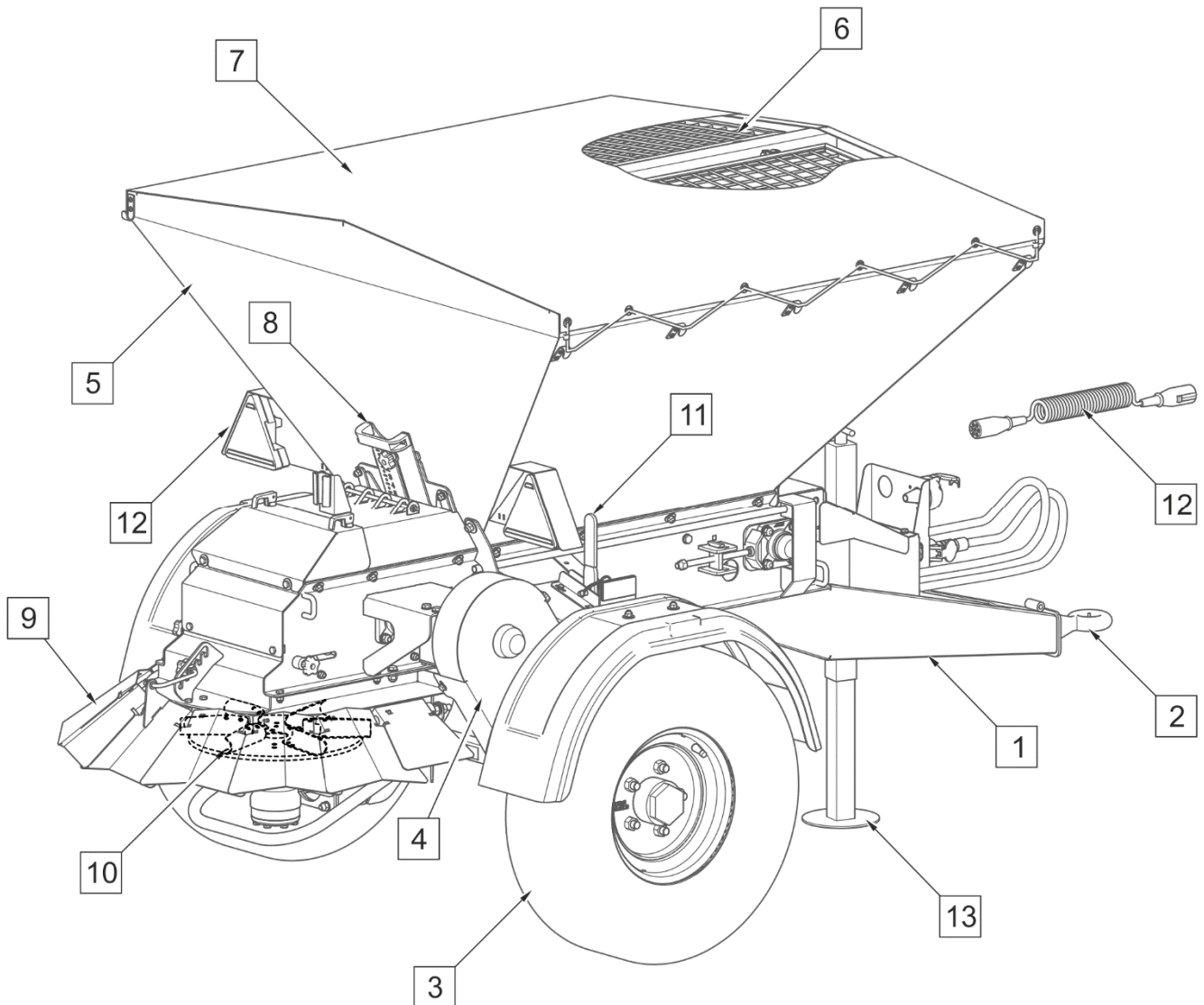


**FIGURE 3.1 External dimensions of KCT07 sand spreader**

## 3.2 GENERAL DESIGN

Sand spreader consists of a frame (1) with a drawbar (2) seated on axle with wheels (3). Tank (5) equipped with screens (6) and tarpaulin cover (7) is mounted on the frame. Belt conveyor at the bottom of the tank (5) is driven by wheel (3) through chain transmission (4) activated with lever (11). Material is transported from the conveyor to the spreading disc (10) driven by PTO shaft or the carrying vehicle's hydraulic system (depending on the sand spreader version). The amount of fed material is adjusted using the barrier (8) on the conveyor. Spreading width can be adjusted using guard (9) and by adjusting the spreading

disc rotation speed. The machine unhitched from the carrying vehicle is supported on an adjustable parking stand (13).

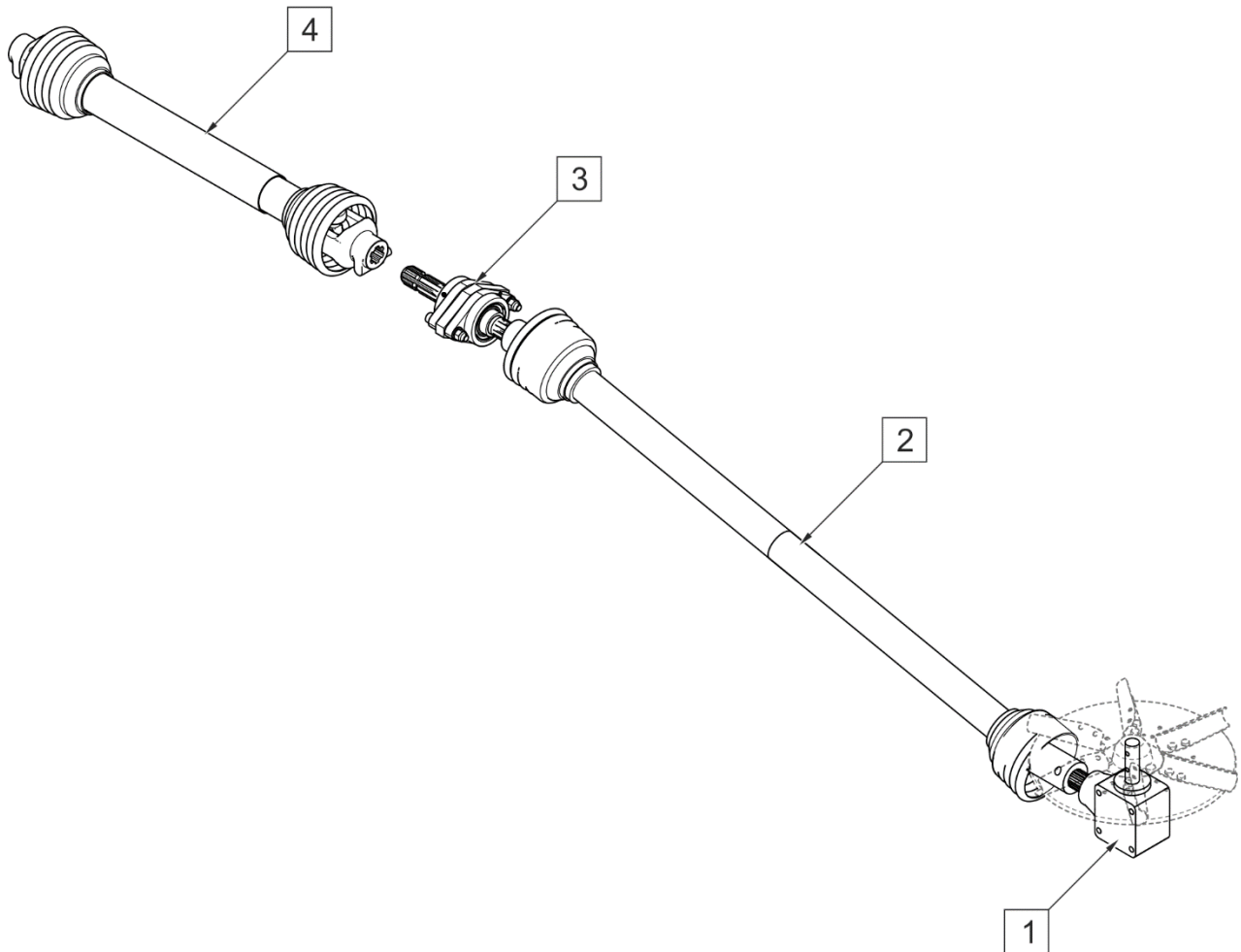


**FIGURE 3.2 General design**

(1) - frame; (2) - drawbar; (3) - wheel; (4) - chain transmission; (5) - tank; (6) - screen; (7) - tarpaulin cover; (8) - barrier; (9) - guard; (10) - spreading disc; (11) - conveyor drive lever; (12) - electrical system; (13) - parking stand

## 3.3 SPREADING DISC DRIVE SYSTEM

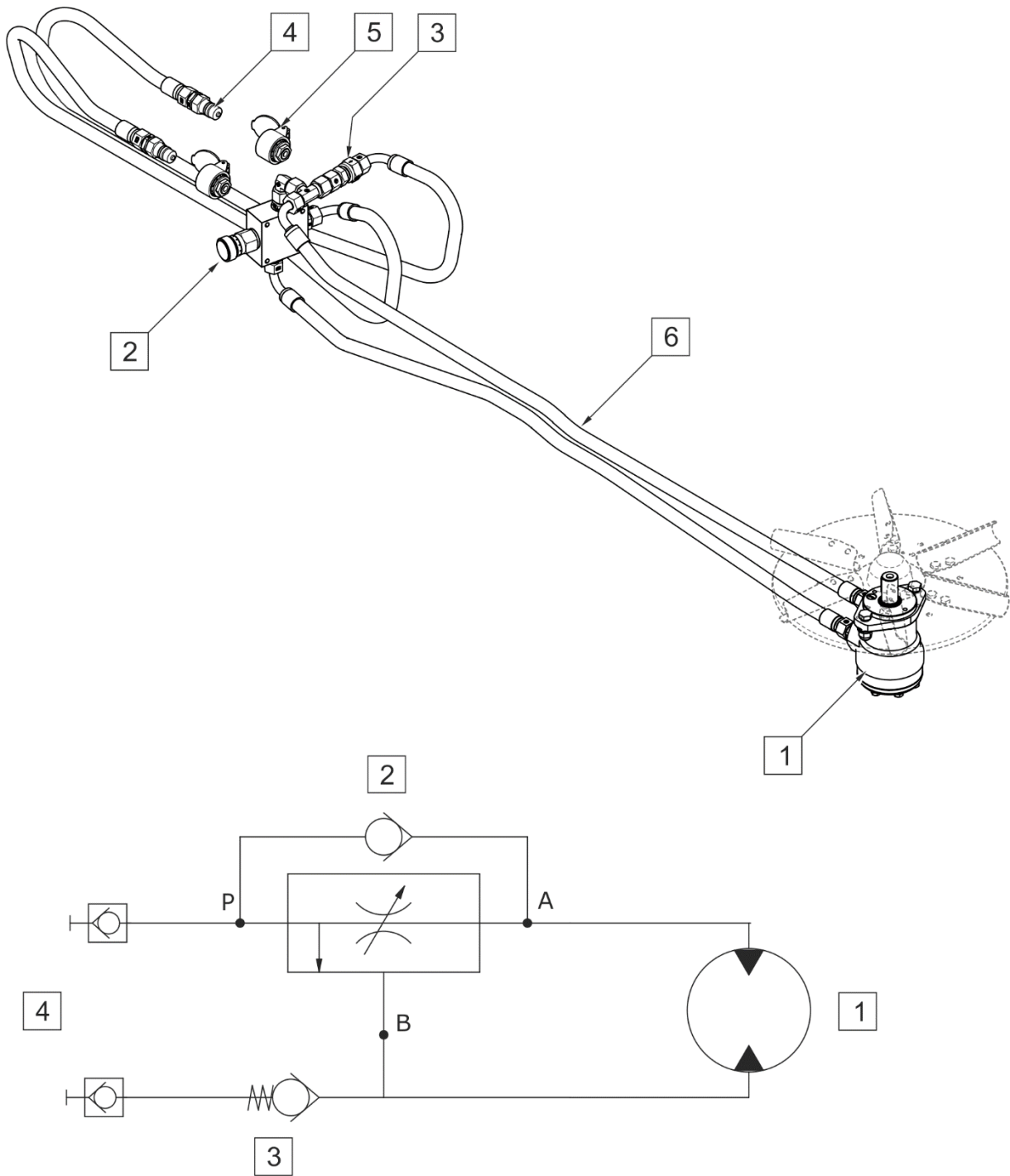
### 3.3.1 MECHANICAL DRIVE OF SPREADING DISC



**FIGURE 3.3 Mechanical drive of spreading disc**

(1) - intersecting axis gear (2) - intermediate PTO shaft; (3) - shaft with bearing assembly;  
(4) - connecting PTO shaft (additional equipment)

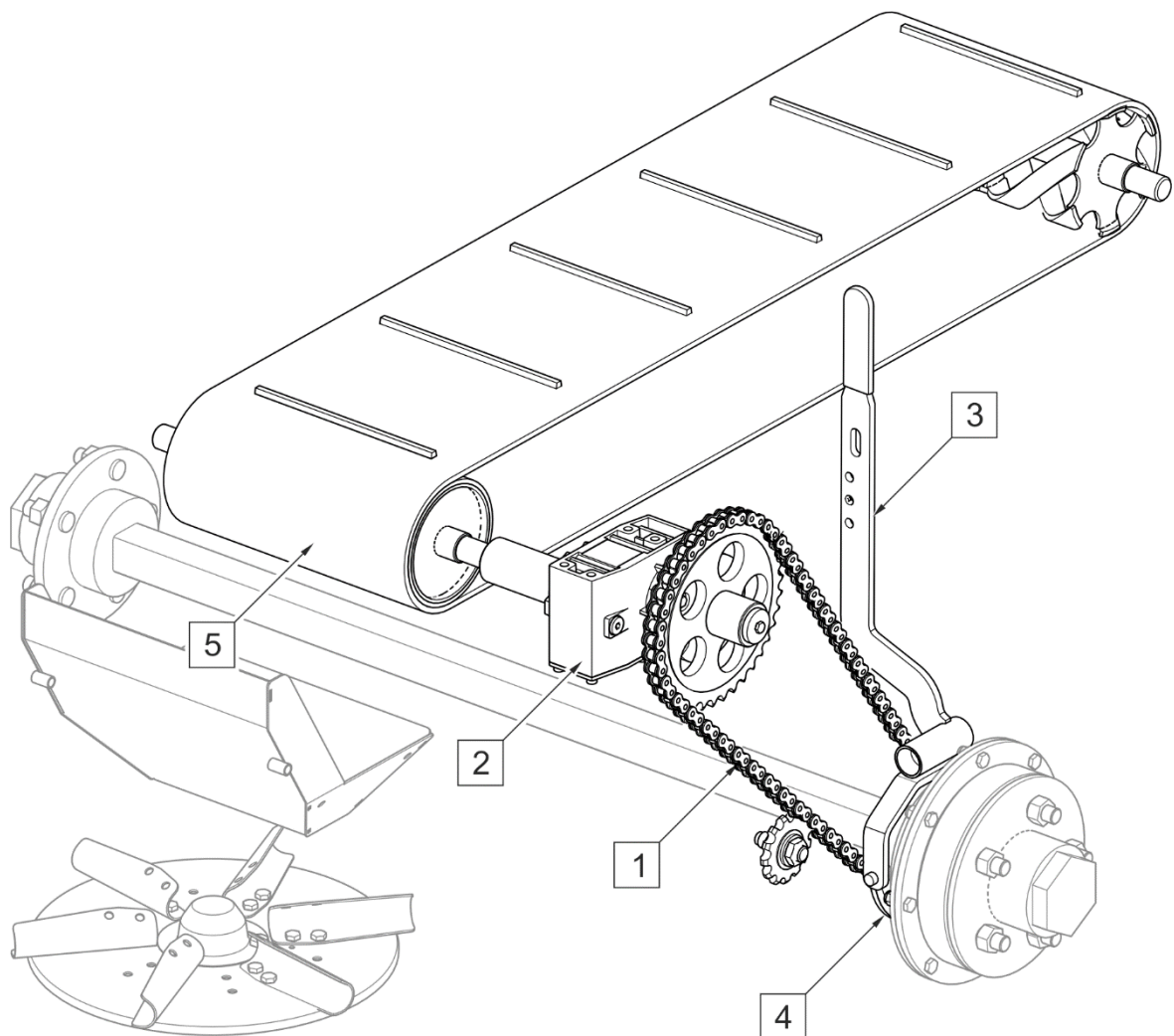
### 3.3.2 HYDRAULIC DRIVE OF SPREADING DISC



**FIGURE 3.4** Hydraulic drive of spreading disc

(1) - hydraulic motor of spreading disc; (2) - oil flow regulator; (3) - check valve; (4) - hydraulic quick coupler; (5) - protecting socket

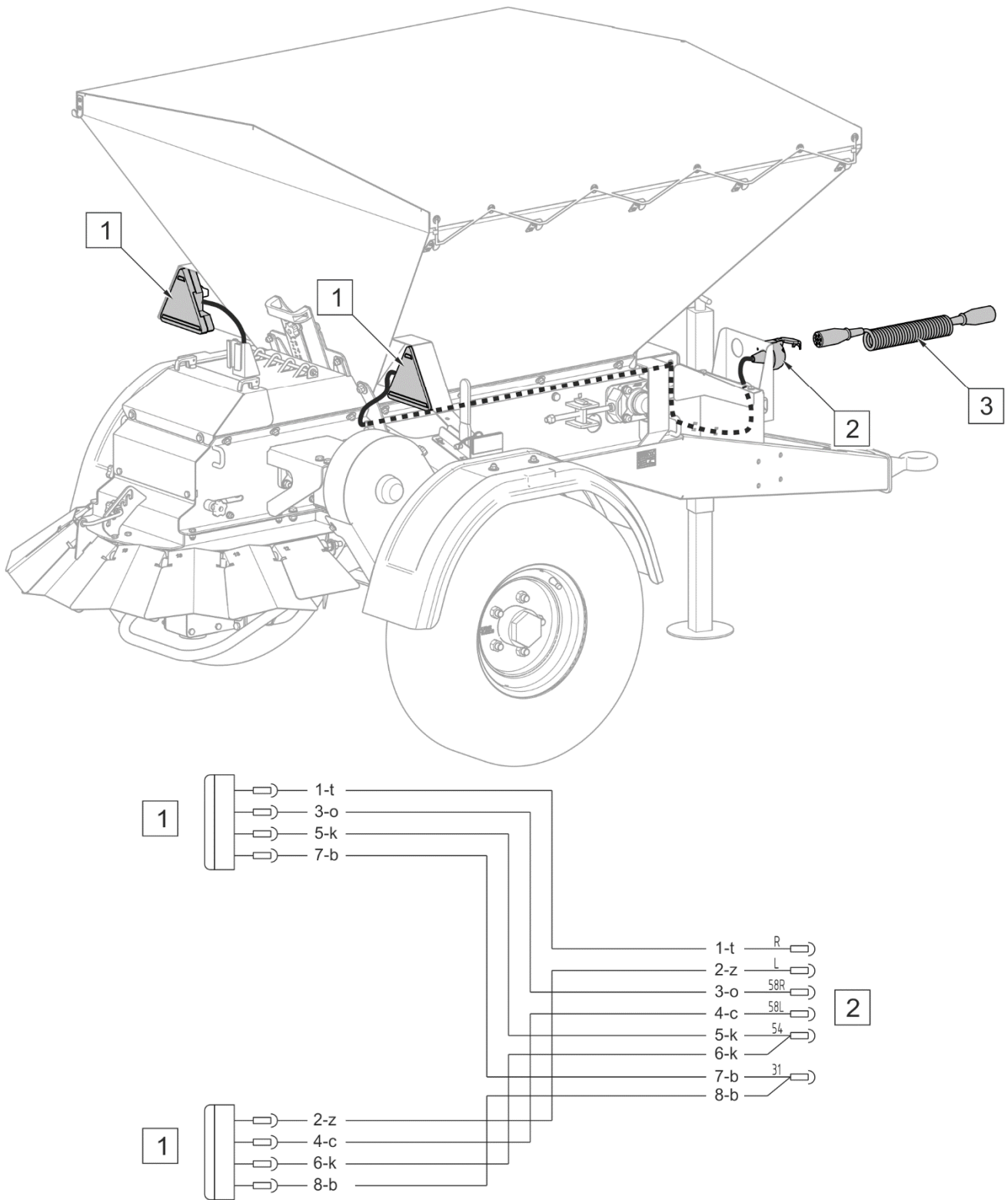
### 3.4 CONVEYOR DRIVE SYSTEM



**FIGURE 3.5** Conveyor drive

(1) - chain transmission; (2) - gear transmission; (3) - drive engaging lever; (4) - clutch;  
(5) - belt conveyor

### 3.5 ELECTRICAL SYSTEM



**FIGURE 3.6 Electrical system design**

(1) - rear lamp; (2) - 7-pole socket; (3) - connection lead



***SECTION***

**4**

---

**CORRECT USE**

## 4.1 PREPARING FOR WORK BEFORE FIRST USE

### **DANGER**



**Before using the machine, the user must carefully read this Operator's Manual.**

**Careless and incorrect use and operation of the machine, and non-compliance with the recommendations given in this Operator's Manual is dangerous to your health.**

**The machine must never be used by persons who are not authorised to drive carrying vehicles, including children and people under the influence of alcohol or other drugs.**

**Non-compliance with the safety rules of this Operator's Manual can be dangerous to the health and life of the operator and others.**

**Before starting the machine, make sure that there are no bystanders in the danger zone.**

The manufacturer guarantees that the machine is fully operational and has been checked according to quality control procedures and is ready for use. This does not release the user from an obligation to check the machine's condition after delivery and before first use. The machine is delivered to the user completely assembled.

Prior to connecting to carrying vehicle, machine operator must verify the sand spreader's technical condition, prepare it for first use and configure as needed. In order to do this:

- the user must carefully read this Operator's Manual and observe all recommendations, understand the design and the principle of machine operation
- Inspect sand spreader's individual components for mechanical damage resulting from incorrect transport (dents, piercing, bent or broken components),
- check the condition of protective paint coat,
- check all the lubrication points, lubricate the machine as needed according to recommendations provided in section 5,
- check all nut and bolt connections,
- check if spreading discs and blades are correctly installed,
- check tension of conveyor belt,
- tyre pressure.

**ATTENTION**

**Non-adherence to the recommendations contained in the Operator's Manual or incorrect start may cause damage to the machine.**

**The technical condition before starting the machine must be no cause for concern.**

If all the above checks have been performed and there is no doubt as to the machine's good technical condition, it can be connected to carrying vehicle, started and all its individual systems checked. In order to do this:

- connect the machine to carrying vehicle (see „4.3 HITCHING THE MACHINE”),
- check correct operation of electrical system,
- check tightness and operation of hydraulic system,
- check operation of hopper system, spreading system and starting mechanism

In the event of a disruption in the operation of the machine immediately discontinue its use, find and remove the fault. If a fault cannot be rectified or the repair could void the warranty, please contact the Manufacturer for additional clarifications.

**ATTENTION**

**Before using the machine always check its technical condition.**

**The machine must not be used when not in working order.**

## 4.2 CHECKING TECHNICAL CONDITION

When preparing the machine for use, check individual elements according to the schedule (TABLE 4.1)

**TABLE 4.1 TECHNICAL INSPECTION SCHEDULE**

DESCRIPTION	MAINTENANCE ACTIVITIES	FREQUENCY
Technical condition of safety guards	Check the technical condition of safety guards, if complete and correctly mounted.	Before starting work
Technical condition of belt conveyor and spreading disc	Check the technical condition, if elements are complete and correctly mounted	
Technical condition of hydraulic system or PTO shaft ( <i>depending on the machine version</i> )	Visually inspect the technical condition	
Technical condition and operation of lighting system components.	Visually inspect the technical condition, check operation after connecting to the carrying vehicle.	
Starting mechanism	According to point 4.5	
Removing material accumulated under conveyor belt	Check and possibly remove material accumulated near tightening roller and on the internal surface of conveyor belt.	Daily, after finishing work
Inspection of conveyor belt	Checking whether the conveyor belt is positioned in the middle of the conveyor's drive roller and tightening roller.	Daily
	Check conveyor belt tension.	Once a month
Check if all main nut and bolt connections are properly tightened	Torque values should be according to table (5.7)	Once a week
Wheel nuts	According to point 4.8	According to point 4.8
Lubrication	Lubricate elements according to section 5.7 <i>LUBRICATION</i> .	According to table (5.4)

## 4.3 HITCHING THE MACHINE

### 4.3.1 HITCHING TO CARRYING VEHICLE



#### DANGER

When hitching, there must be nobody under and between the machine and the carrying vehicle.

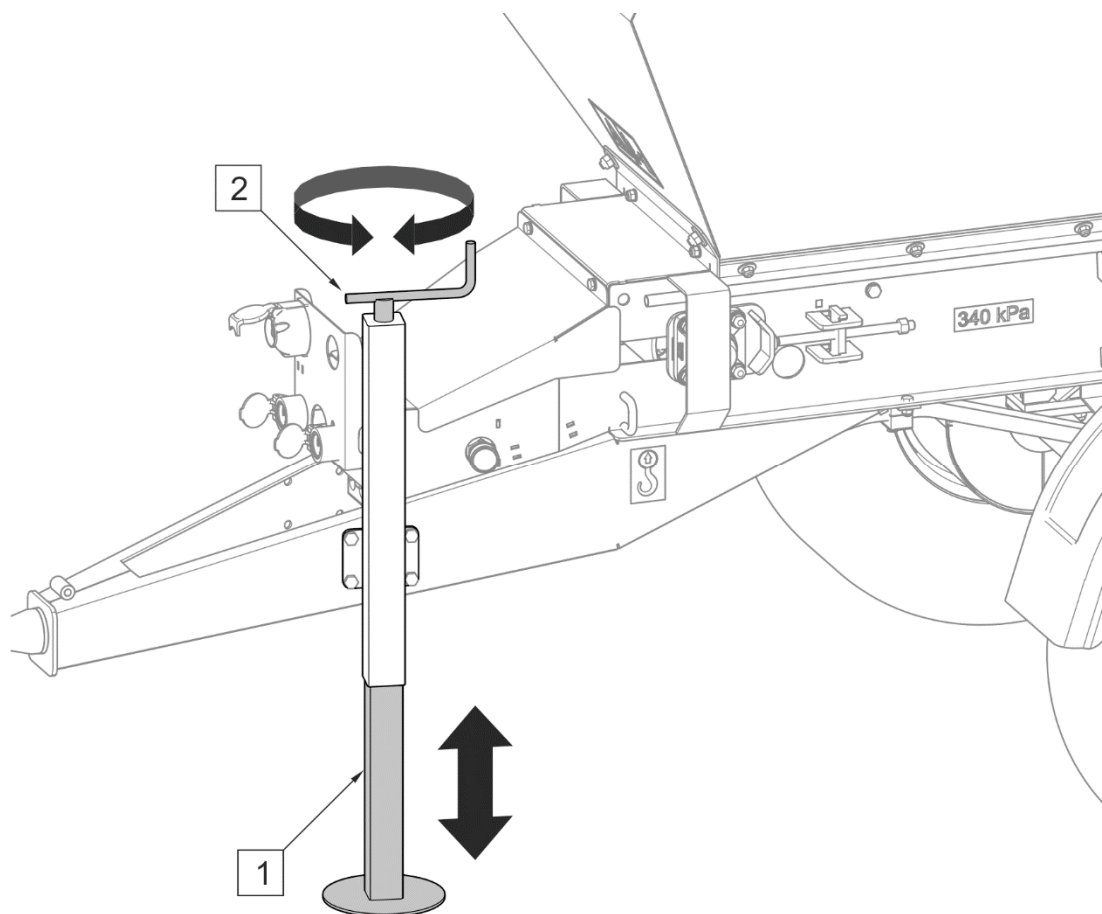
Exercise caution when hitching the machine to carrying vehicle.

The sand spreader can be hitched to a carrying vehicle that meets the requirements contained in Table 1.1 *REQUIREMENTS FOR CARRYING VEHICLE*.



#### ATTENTION

Before hitching the sand spreader to carrying vehicle, read the carrying vehicle operator's manual.



**FIGURE 4.1** Parking stand

(1) - support; (2) - handwheel

In order to hitch the sand spreader to carrying vehicle, proceed as follows:

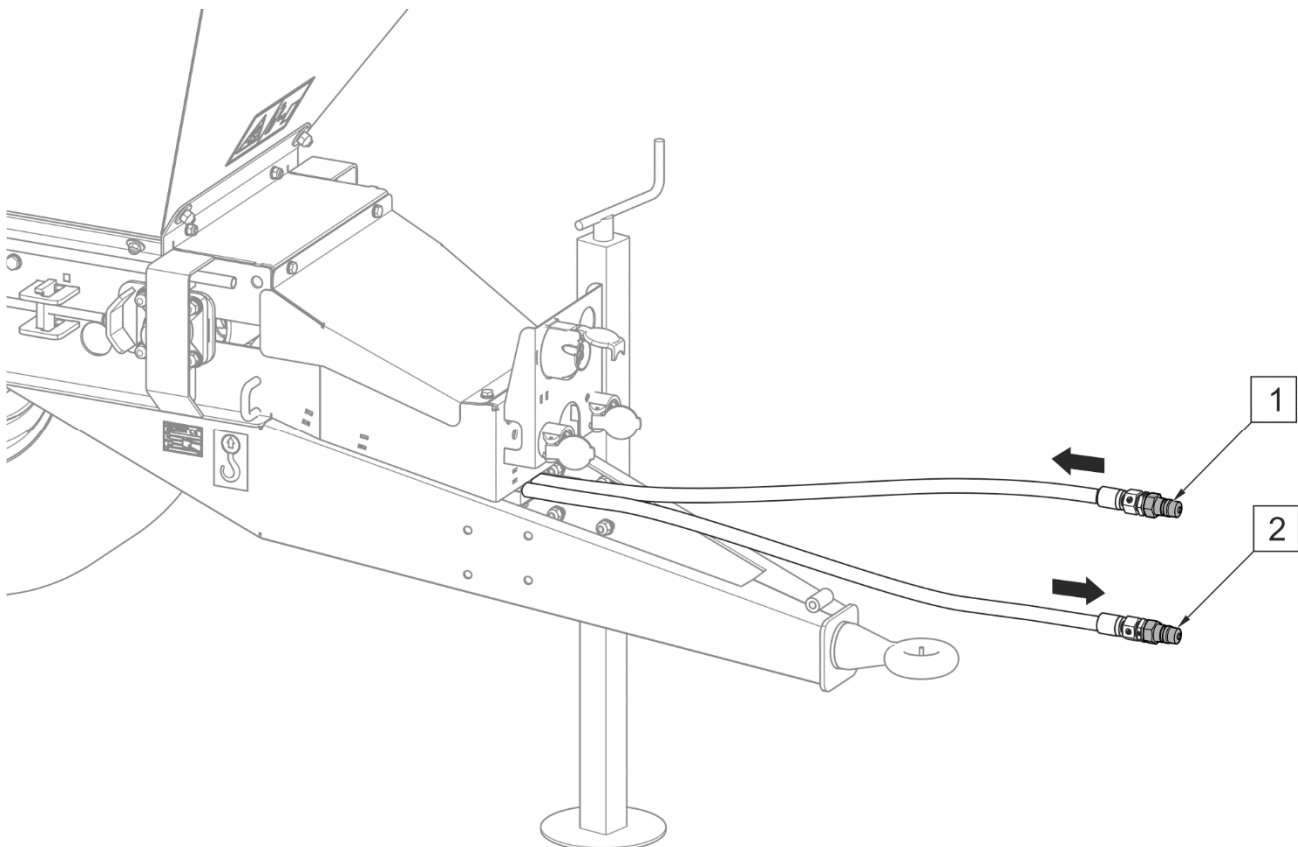
- Turn the support handwheel (1) in order to set the drawbar eye at the correct height (FIGURE 4.1).
- Reversing the carrying vehicle, connect the drawbar eye to the hitch and secure it.
- Raise the parking stand to the maximum height (FIGURE 4.1)
- Connect the electrical system lead (FIGURE 4.4)
- Connect the hydraulic system connectors (FIGURE 4.2) or PTO shaft (FIGURE 4.3) - depending on the machine version

#### 4.3.2 CONNECTING THE HYDRAULIC SYSTEM (SAND SPREADER WITH HYDRAULIC DRIVE SYSTEM)



#### **DANGER**

Reduce residual pressure in the system prior to connecting the machine to the carrying vehicle's hydraulic system.



**FIGURE 4.2** Connecting the hydraulic system

(1) - oil supply hydraulic quick coupler; (2) - oil return hydraulic quick coupler

Depending on the machine version, the sand spreader can be designed for connecting to the external hydraulic system of the carrying vehicle. Connect hydraulic conduit connectors to sockets of one section of the carrying vehicle's external hydraulic system with the constant oil supply function. Oil in the machine's hydraulic system can flow only in one direction (FIGURE 4.2)



### ATTENTION

During operation, the connecting cables should be routed so that they do not get entangled in the machine and carrying vehicle parts.

#### 4.3.3 CONNECTING THE PTO SHAFT (SAND SPREADER WITH PTO DRIVE)



### DANGER

Before connecting the PTO shaft, hitch the machine to the carrying vehicle, turn off the carrying vehicle's engine and remove the key from the ignition. Ensure that unauthorised persons do not have access to the carrying vehicle cab.

The use of PTO shaft and its technical condition must be in accord with the Operator's Manual of PTO shaft.

Depending on the machine version, the sand spreader can be designed for connecting to the power take-off shaft (PTO) of the carrying vehicle. Before connecting the PTO shaft it is absolutely necessary to carefully read the Operator's Manual attached by the Manufacturer of the shaft and observe the instructions contained in it. Before connecting to the carrying vehicle, check technical condition of shaft guards, completeness and condition of protecting chains and general technical condition of the shaft.

Connect the PTO shaft (2) to the shaft (1) (FIGURE 4.3). Rotation direction and rotation speed are shown on the pictogram.

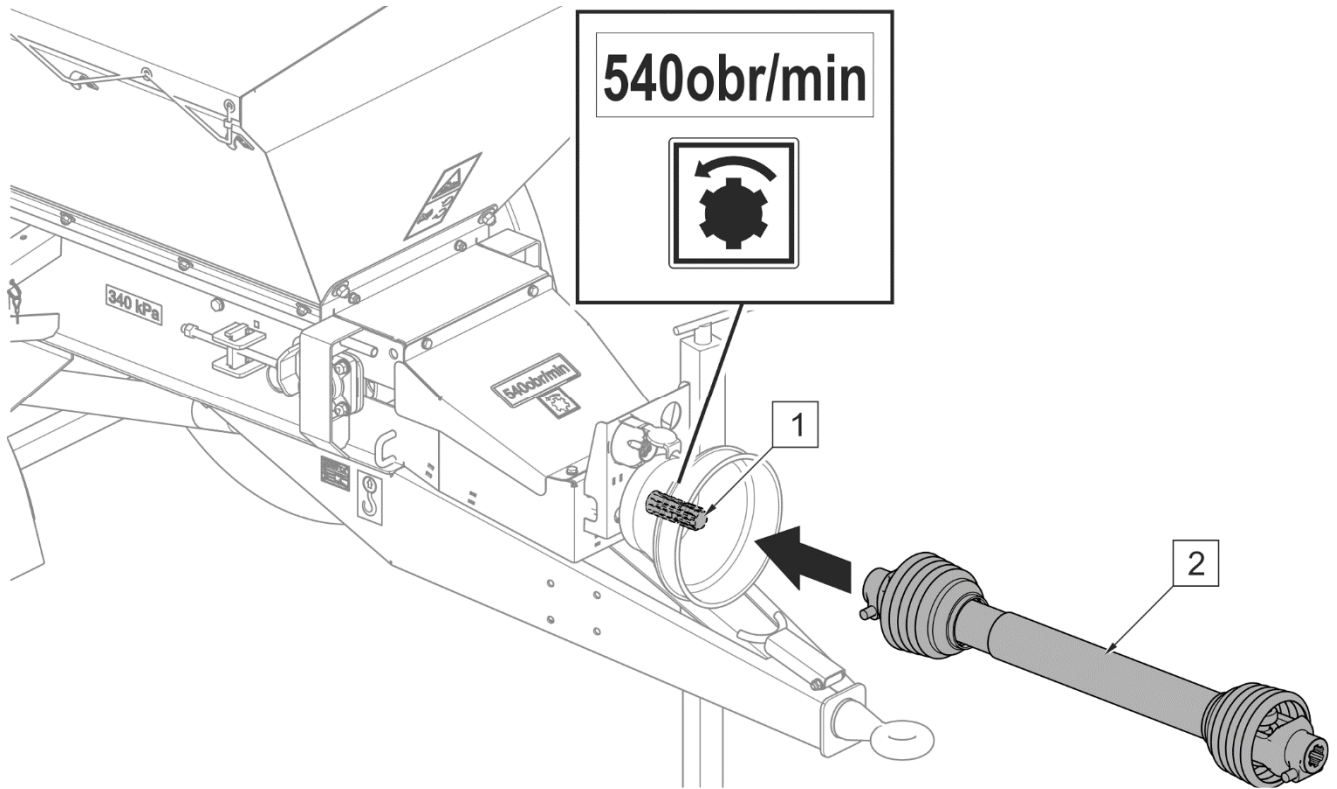
Shaft end terminated with a protective element (e.g. a clutch) should be connected to the machine.



### TIP

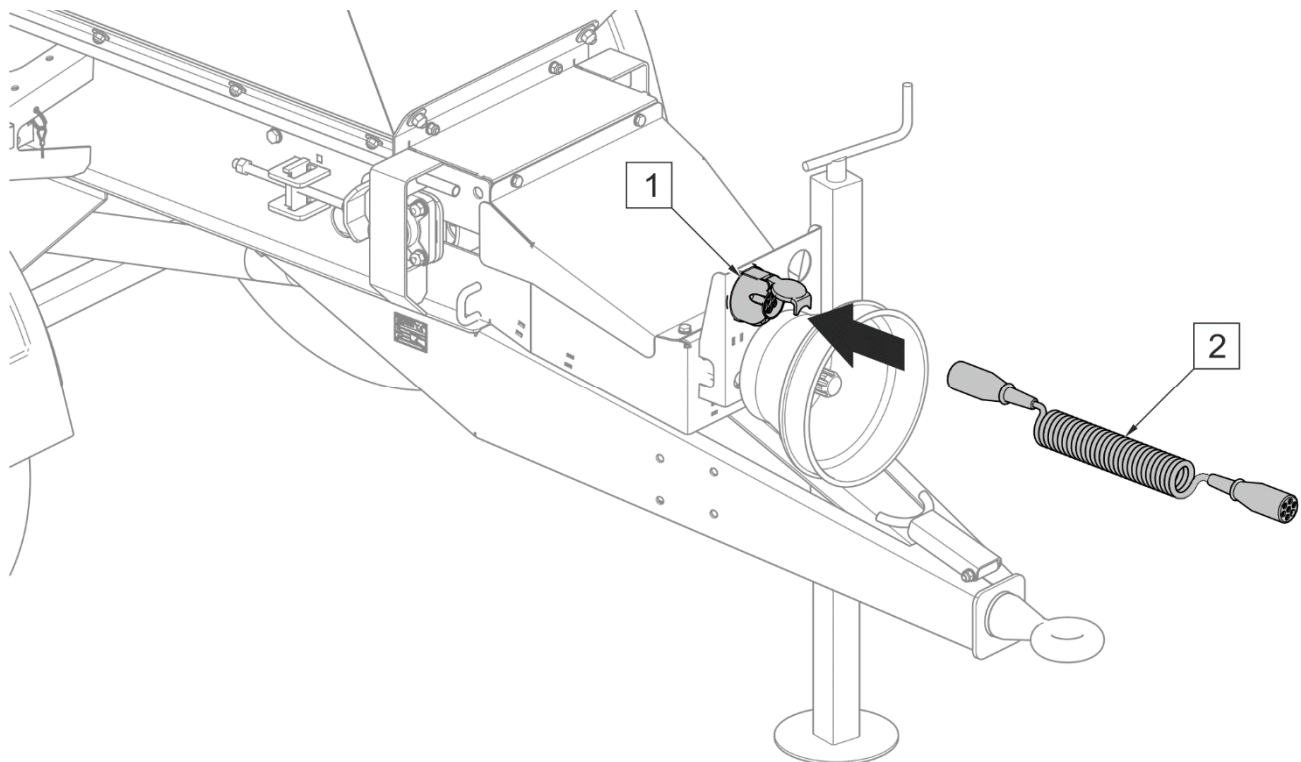
The following PTO shafts (optional equipment of the machine) are recommended for driving the machine:

- shaft, part number: 303-850-000002 (distance between crosses: 510mm-810mm)
- shaft, part number: 303-850-000009 (distance between crosses: 640mm-710mm)



**FIGURE 4.3 Connecting the PTO shaft**  
(1) - shaft; (2) - PTO shaft (additional equipment)

**4.3.4 CONNECTING THE ELECTRICAL SYSTEM**



**FIGURE 4.4 Connecting the electrical system**  
(1) - 12V 7-pole socket compliant with ISO 1724; (2) - connection lead (included in the machine equipment)



Connect electrical system connection lead (2) to the sand spreader's socket (1) and to 7-pole socket on the carrying vehicle. After connecting, check operation of the electrical system.



### ATTENTION

During operation, the connecting cables should be routed so that they do not get entangled in the machine and carrying vehicle parts.

## 4.4 LOADING OF MATERIAL



### DANGER

The user **MUST NOT**:

- load spreading material to the spreader unhitched from the carrying vehicle,
- exceed the sand spreader's tank capacity,
- carry people or animals on the machine.

The sand spreader can be loaded only when it is hitched to the tractor and positioned horizontally. Remove the protective tarpaulin cover before loading the spreader.

The tank should be loaded from above through the screen that prevents lumps of material from entering the tank. Loading of agents other than those recommended by the Manufacturer is prohibited. Loaded tank should be protected with the tarpaulin cover.

**TABLE 4.2 Spreading materials**

Material name	Grain size [mm]	Specific weight [kg/dm <sup>3</sup> ]	Weight per m <sup>3</sup> [kg]
Sand	1 ÷ 4	1.60	1,600
Fine salt (NaCl)	< 1	1.20	1,200
Coarse salt (NaCl)	approx. 3	1.32	1,320



### ATTENTION

Spreading agents must be prepared in accordance with the regulations concerning winter road maintenance in force in the country in which the sand spreader is used. In Poland, THE GUIDELINES FOR WINTER ROAD MAINTENANCE (Attachment to Ordinance No. 18 of General Director of Domestic Roads and Motorways of 30 June 2006) must be followed.



### ATTENTION

The use of other spreading materials than those recommended may lead to wrong operation of the machine (sticking of the material, intermittent spreading) or damage to the machine.

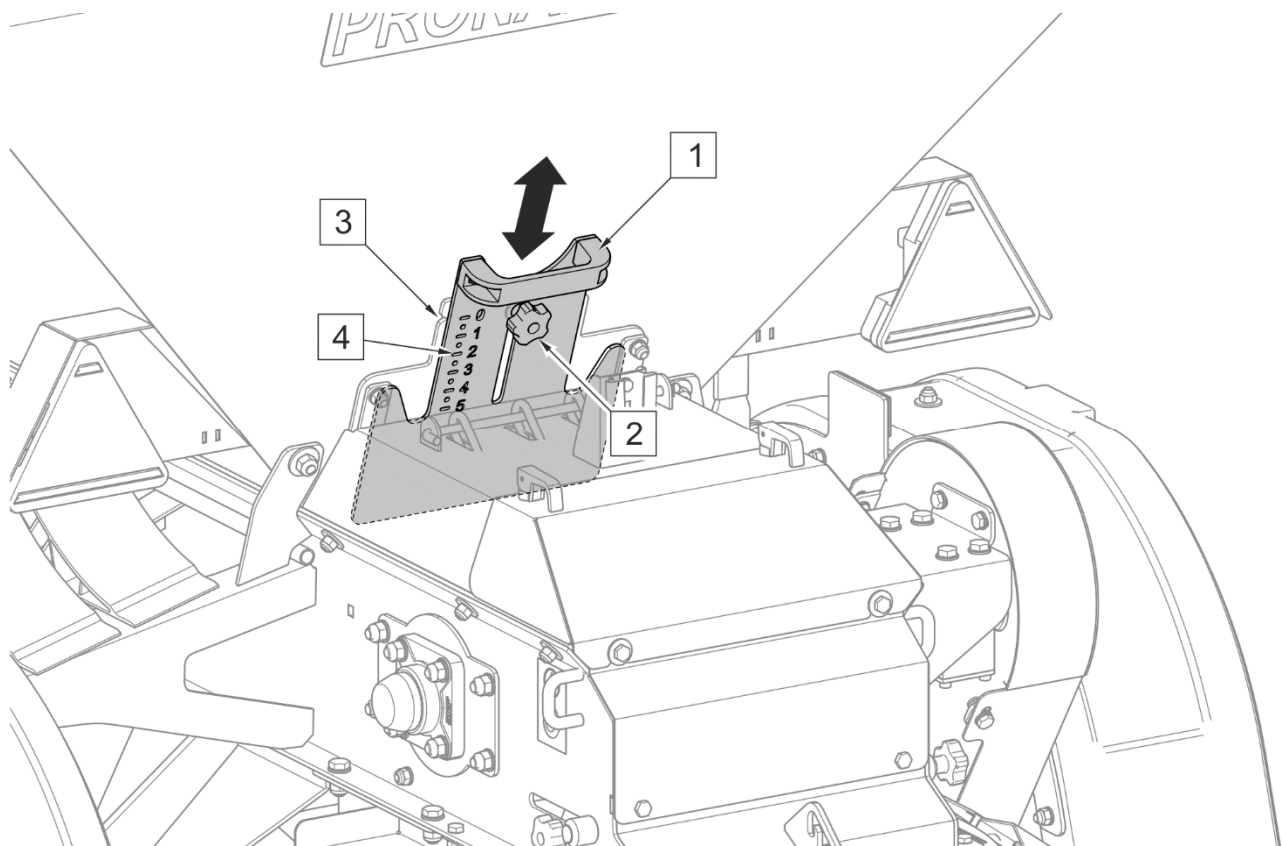
## 4.5 MACHINE OPERATION



### ATTENTION

Do NOT exceed the maximum working speed of 15km/h.

The amount of spread material depends on the belt conveyor barrier setting. The barrier can be set within the range from „0” to „5”. If the barrier is set in position „0”, the minimum amount of material is spread. Position „5” is the maximum setting. The amount of spread material depends also on type of material and its humidity. The speed of the conveyor belt movement depends on the machine travelling speed.



**FIGURE 4.5** Setting the belt conveyor barrier

(1) - barrier; (2) - set screw; (3) - marker on the housing; (4) - scale (0-5)

In order to change the amount of spread material (FIGURE 4.5), loosen the set screw (2) and shift the barrier (1) to the required position. There is a scale (4) on the barrier showing current setting. Tighten the set screw (2) after completed adjustment.

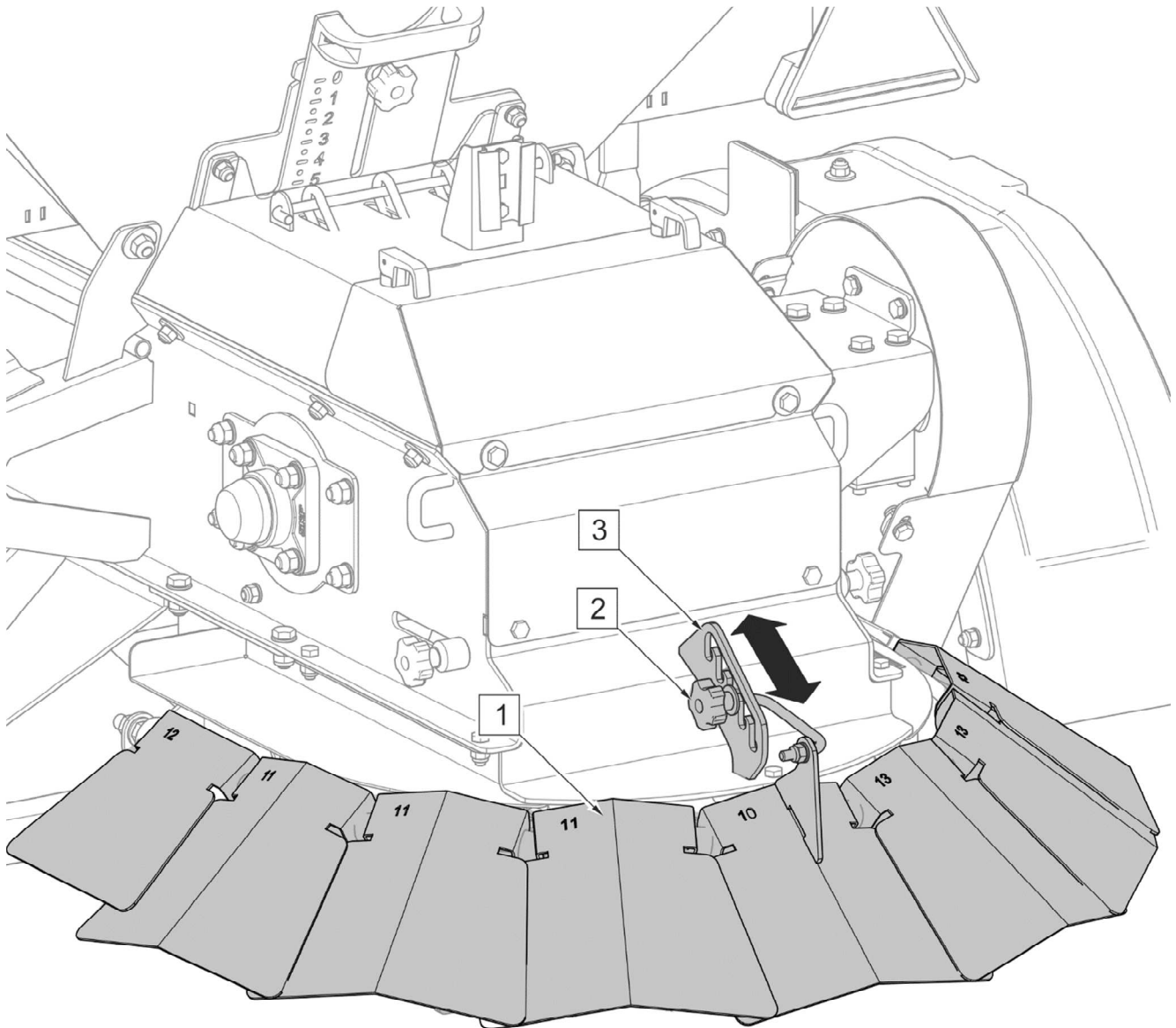
The amount of spread material depends also on type of material and its humidity. For this reason, set the barrier preliminarily, conduct a test (see 4.6 CALIBRATION) and correct the setting, if necessary.

**TABLE 4.3 Theoretical sand spreading intensity [g/m]**

Barrier setting (FIGURE 4.5)	Sand spreading width (m)			
	1.5	2	3	4
0	63	47	31	24
1	129	97	65	48
2	195	146	98	73
3	261	196	131	98
4	327	246	164	123
5	362	272	181	136

**TABLE 4.4 Theoretical salt spreading intensity [g/m]**

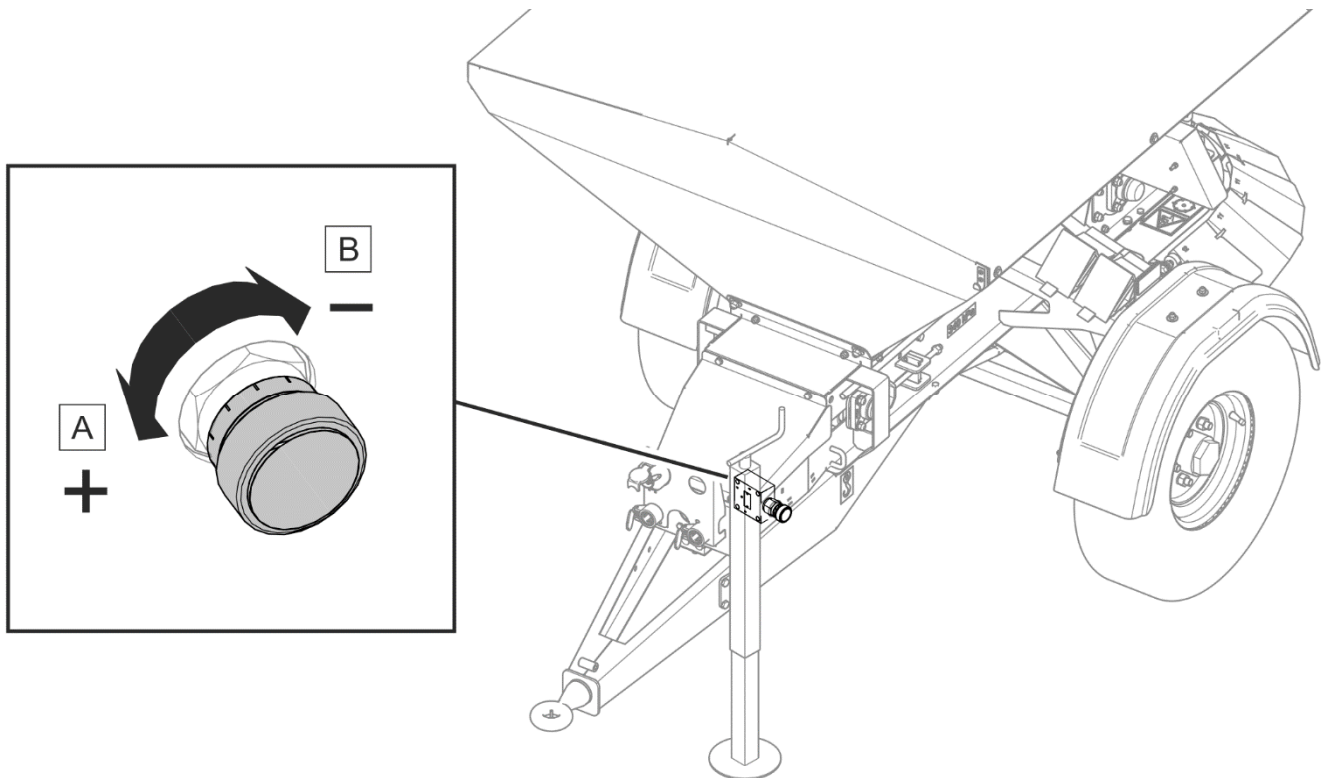
Barrier setting (FIGURE 4.5)	Salt spreading width (m)			
	1.5	2	3	4
0	51	38	26	19
1	105	79	52	39
2	159	119	79	59
3	212	159	106	80
4	266	200	133	100
5	294	221	147	110



**FIGURE 4.6 Spreading width limitation**

(1) - fan-shaped guard; (2) - set screw; (3) - strip

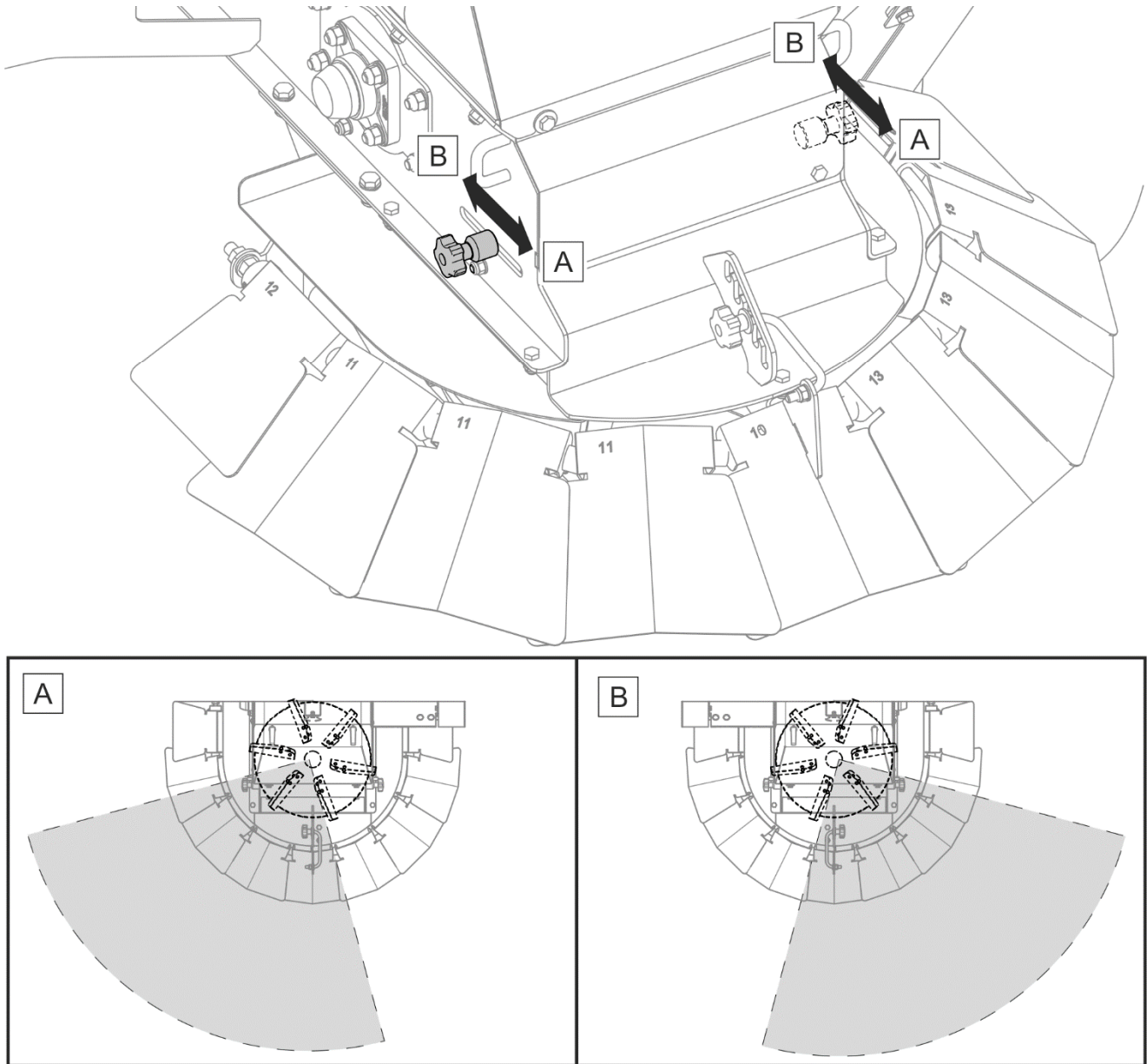
Fan-shaped guard (1) is used for limiting the spreading width (FIGURE 4.6). The guard is adjusted by loosening the set screw (2) and shifting the guard lifting link to a proper notch on the strip (3). The higher the guard position, the larger the spreading range. After adjustment, tighten the screw (2). In the sand spreader with mechanical drive of the spreading disc, the spreading range can be adjusted by changing the PTO speed in the carrying vehicle only when the guard is maximally opened.



**FIGURE 4.7** Adjustment of spreading disc rotation speed (sand spreader with hydraulic drive)

*(A) - increase the disc rotation speed; (B) - decrease the disc rotation speed*

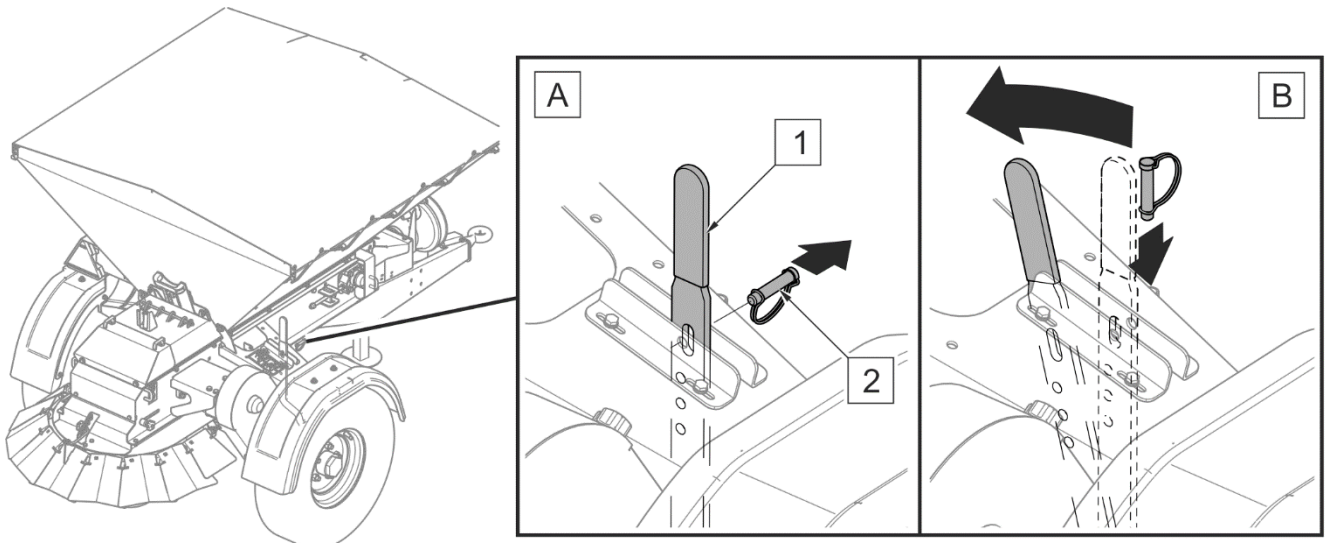
In the sand spreader with hydraulic drive of the spreading disc, the disc rotation speed can be changed using the regulator (FIGURE 4.7). Turn the regulator knob in direction (A) to increase the spreading disc rotation speed, turn the regulator knob in direction (B) to reduce the rotation speed.



**FIGURE 4.8 Adjustment of asymmetry**

*(A) - spreading shifted to the left; (B) - spreading shifted to the right*

Spreading asymmetry (FIGURE 4.8) is adjusted after loosening the set screws located on both sides of the machine. In order to shift spreading to the left, loosen the set screws on both sides of the machine and move them in direction (A). Move the set screws in direction (B) to shift spreading to the right. After the adjustment, tighten the set screws, start the machine and conduct a test.



**FIGURE 4.9 Starting the conveyor belt drive**

(A) - drive OFF; (B) - drive ON; (1) - lever; (2) - securing cotter pin

The conveyor belt is driven by the sand spreader's wheel through the chain transmission with the clutch. To engage the conveyor belt drive, take out the securing cotter pin (2). The spring will automatically shift the lever (1) to position (B) when the clutch is engaged. Place the cotter pin (2) on the bracket next to the lever.



### ATTENTION

The conveyor belt drive clutch (B, FIGURE 4.9) engages when the machine moves off.

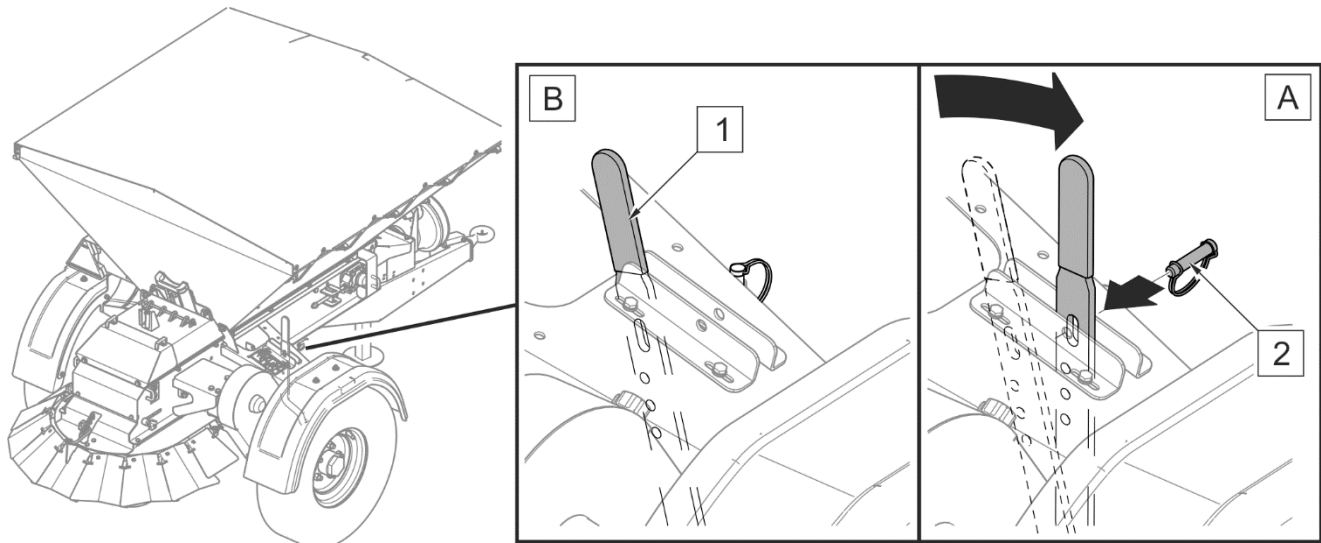
The spreading disc drive engages when the PTO drive or a proper section of the carrying vehicle's hydraulic system is started - depending on the sand spreader version.



### TIP

The spreading disc drive should be engaged before moving off in order to prevent accumulation of material on the disc.

To switch off material spreading, stop the machine, switch off the disc drive (PTO drive or external hydraulic system of the carrying vehicle) and switch off the conveyor belt drive (FIGURE 4.10)



**FIGURE 4.10 Switching off the conveyor belt drive**

(A) - drive OFF; (B) - drive ON; (1) - lever; (2) - securing cotter pin

In order to switch off the conveyor belt drive (FIGURE 4.10) , shift the lever (1) to position (A) and secure it with the cotter pin (2).

## 4.6 CALIBRATION

Calibration is performed in order to determine the actual amount of spread material for a given machine setting. To perform the calibration:

- Set the barrier (FIGURE 4.5) at a required height and travel at a constant speed.
- Measure the length of travelled measuring distance (L) and the spreading width (S).
- Collect the spread material (M) from the measuring surface and weigh it. Calculate the spreading intensity  $X$  [ $\text{g}/\text{m}^2$ ] using the formula (FIGURE 4.11)

The tests using other machine settings and other materials can be performed in the same manner.



### TIP

Calibration should be performed after each change of spreading material type.





$$X = \frac{M}{S \cdot L}$$

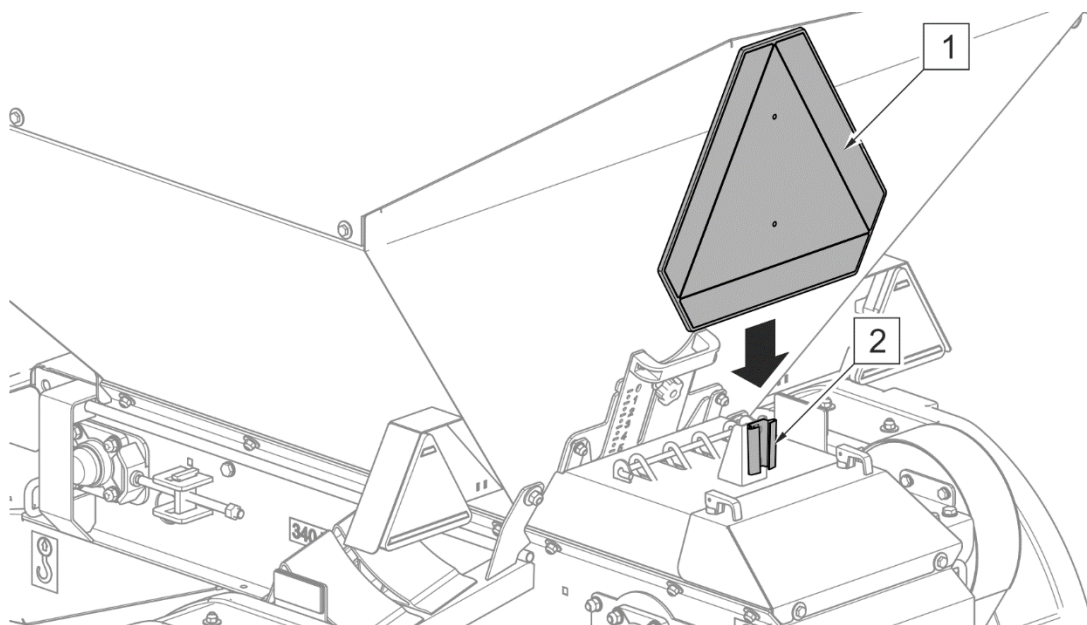
**FIGURE 4.11 Calibration**

*L – length of measuring distance [m]; (S) - spreading width [m]; (M) - weight of material collected during the test [g]; (X) - spreading intensity [g/m<sup>2</sup>]*

## 4.7 DRIVING ON PUBLIC ROADS

Before driving off make certain that the machine is correctly hitched to the carrying vehicle.

While driving on public roads, the machine should be marked with slow-moving vehicle warning sign (2) placed on the rear of the machine (FIGURE 4.12)



**FIGURE 4.12 Warning sign bracket**

*(1) slow-moving vehicle warning sign (not included in the machine equipment); (2) - bracket;*

During operation, ensure proper visibility and turn on the orange beacon light in the carrying vehicle. Check operation of the lighting system. If the machine is operated on pavements, special attention should be paid to the bystanders likely to be near the working machine.

When driving on public roads, respect the road traffic regulations, exercise caution and prudence. Avoid ruts, depressions, ditches or driving on roadside slopes. Driving across such obstacles could cause the carrying vehicle and the machine to suddenly tilt. Driving near ditches or canals is dangerous as there is a risk of the slope collapsing. Speed must be sufficiently reduced before making a turn or driving on an uneven road or a slope. If the machine will not be used for spreading during travel, disengage the conveyor belt drive and the disc drive.

**ATTENTION**

Do NOT exceed the maximum transport speed of 25km/h.

## 4.8 UNHITCHING THE MACHINE FROM THE CARRYING VEHICLE

**DANGER**

Before unhitching the machine from the carrying vehicle, turn off the carrying vehicle's engine, engage parking brake and secure the vehicle against access of third persons.

Be especially careful when unhitching the machine from the carrying vehicle.

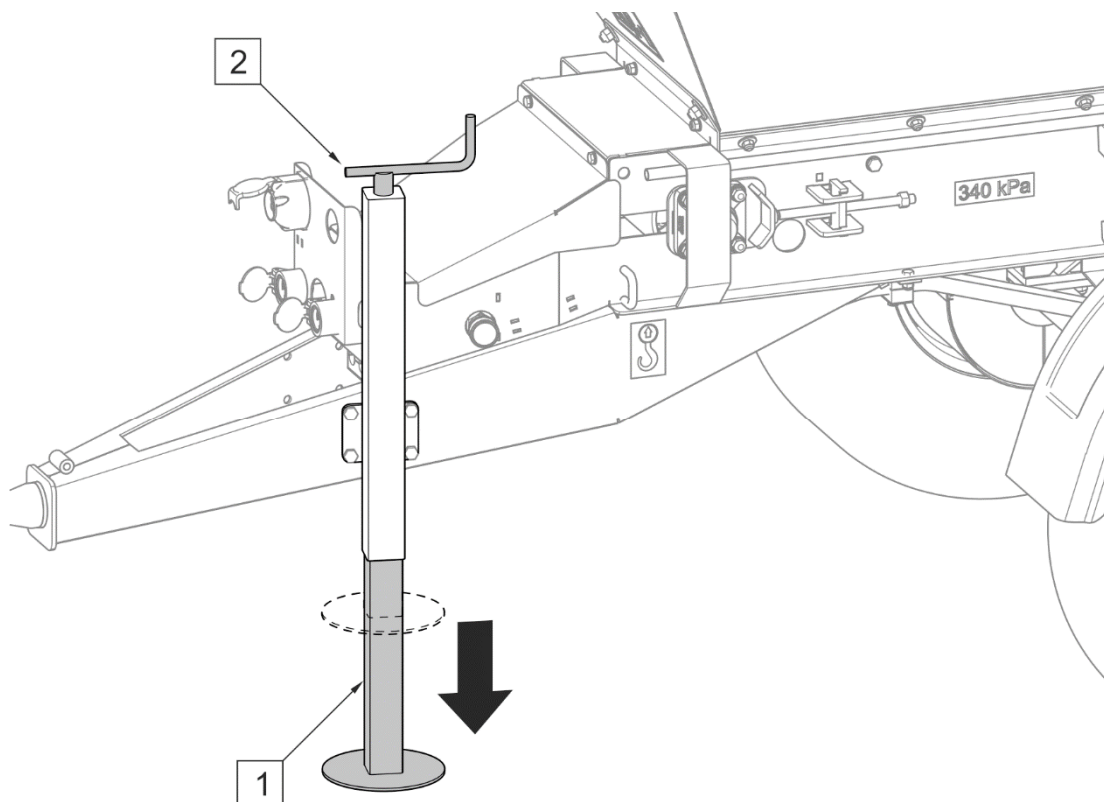
**DANGER**

Reduce pressure in the system before disconnecting the machine from the carrying vehicle's hydraulic system (refers to the sand spreader with hydraulic drive system)

In order to unhitch the machine from the carrying vehicle, proceed as follows:

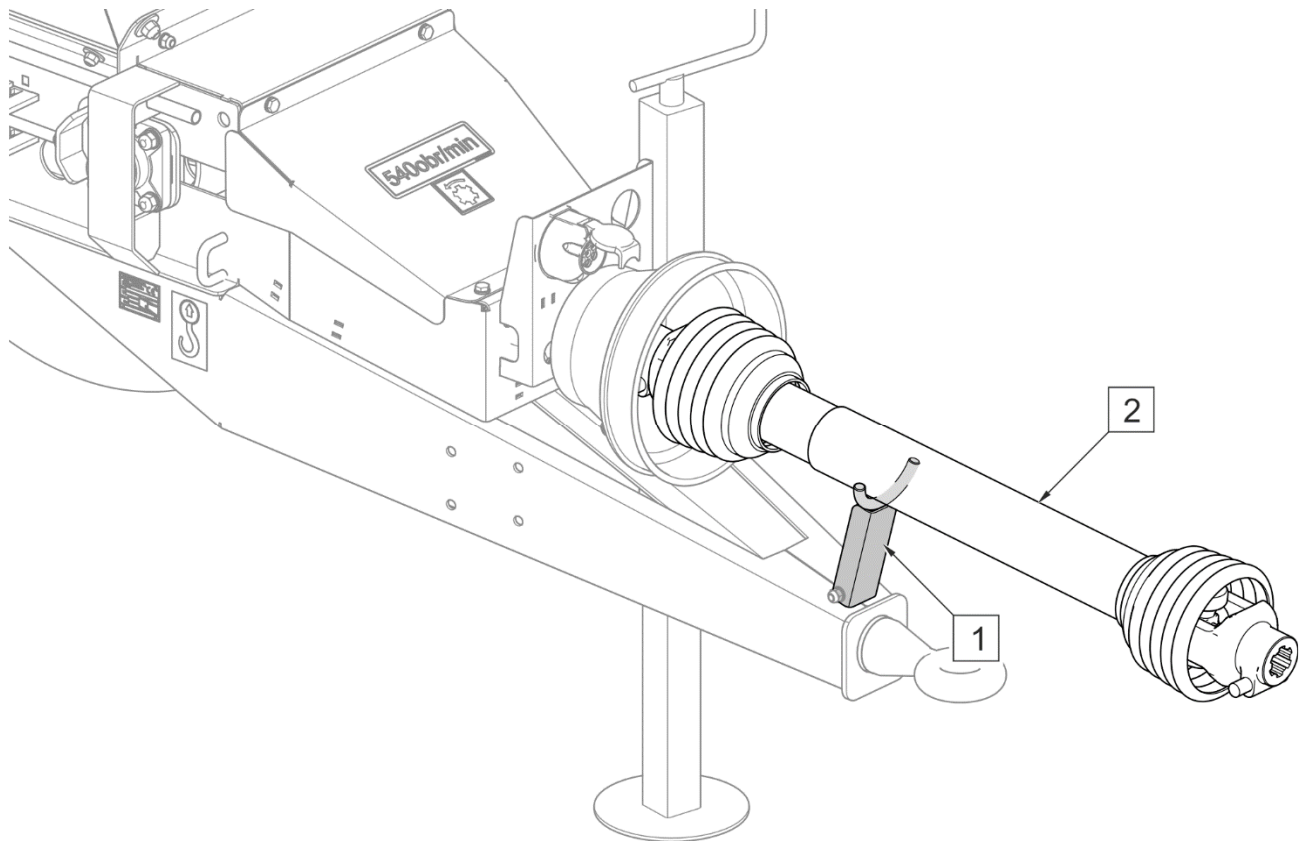
- Switch off engine, remove key from ignition and engage parking brake.
- Disengage the machine drive.
- Using the handwheel (2) extend the support (1) until the drawbar hitching eye does not rest on the lower elements of the carrying vehicle's hitch (FIGURE 4.13)

- Disconnect the electrical system lead.
- Disconnect the PTO shaft from the carrying vehicle, fold it and place it on the bracket (FIGURE 4.14) - refers to the sand spreader with PTO drive system.
- Disconnect hydraulic system conduits from the carrying vehicle (FIGURE 4.15). Insert hydraulic conduit connectors into the sockets on the sand spreader's drawbar – refers to the sand spreader with hydraulic drive system.
- Place chocks under the wheels (chocks are included in the machine equipment).
- Disconnect the sand spreader's drawbar hitching eye from the hitch and drive the carrying vehicle away from the machine.



**FIGURE 4.13** Parking stand

(1) - support; (2) - handwheel



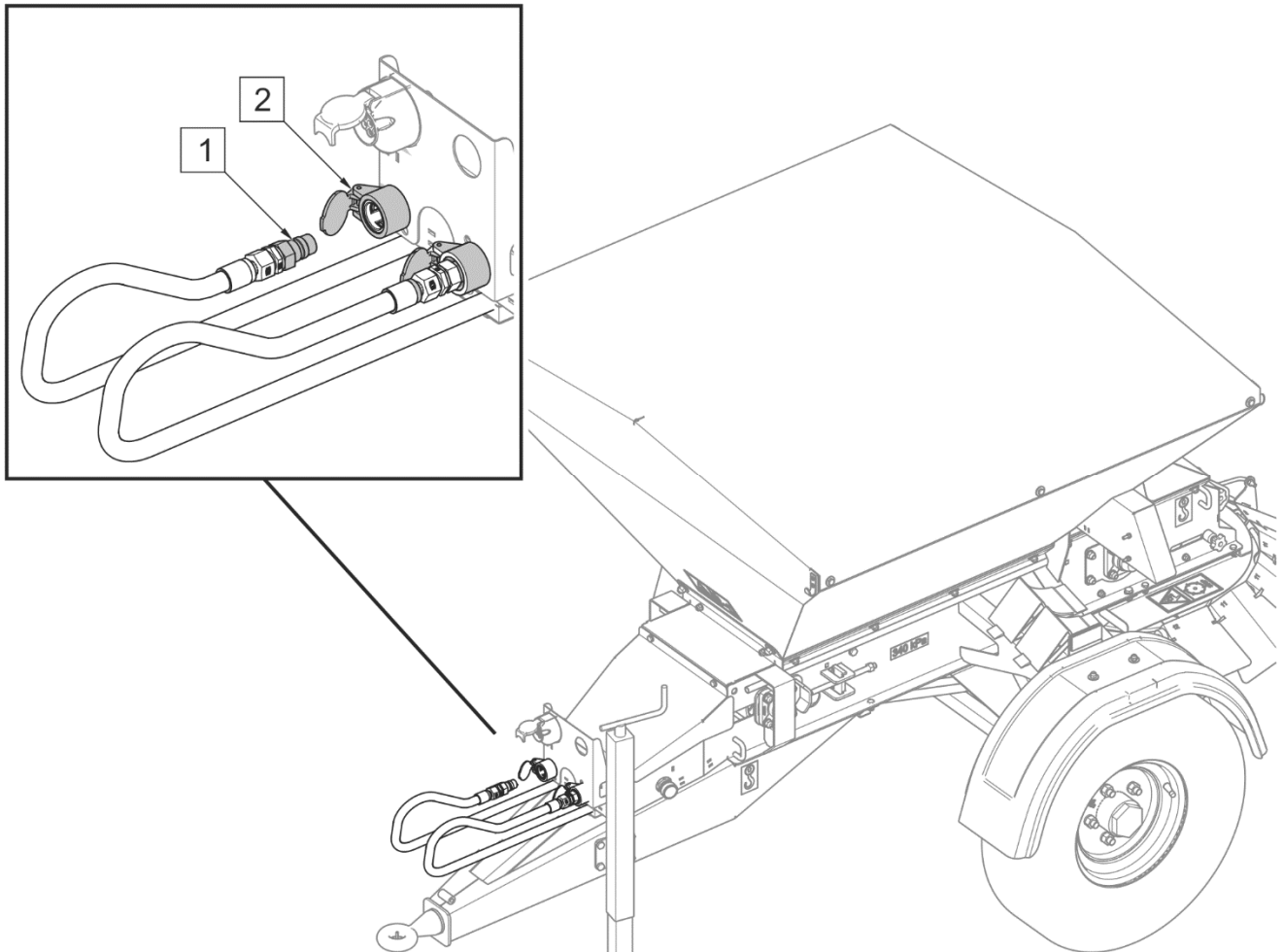
**FIGURE 4.14 PTO shaft bracket**

(1) - PTO shaft bracket; (2) - PTO shaft



### ATTENTION

Do NOT use the securing chains to support the PTO shaft while the machine is parked or when transporting the machine.



**FIGURE 4.15** Protection of hydraulic quick coupler plugs

*(1)- hydraulic quick coupler plugs; (2)- protecting sockets*



**TIP**

If the machine will not be used for a long time, disconnect PTO shaft completely from the machine (refers to the sand spreader with PTO drive system).

Machine unhitched from the tractor must be placed on a level, sufficiently hard surface in such a manner as to ensure that it is possible to hitch it again and that its support does not sink into the ground.

## 4.9 PROPER USE AND MAINTENANCE OF TYRES

- Regularly check pressure in tyres (especially if machine is not used for a longer period).
- Tyres pressure should be also checked after the whole day of intensive work.
- Protect tyre valves using suitable caps to avoid soiling.
- Do NOT exceed the maximum transport speed of 25km/h
- Avoid potholes, sudden manoeuvres or high speeds when turning.
- When working with tyres, the machine should be secured against rolling by placing chocks under the wheels. Wheel can be taken off the sand spreader's axle only when the sand spreader's tank is empty.
- Repair work on the wheels or tyres should be carried out by persons trained and entitled to do so. This work should be carried out using appropriate tools.
- Each time a wheel is fitted, always check how firmly the nuts are tightened. Individual checks should be made after the first use, after the first journey with a load and then before the working season. In the event of intensive work, check the wheel nut tightening at least every 100 km. The above actions should be repeated individually if a wheel has been removed from the wheel axle.

**TIP**

Wheel nuts should be tightened using the torque of 230 Nm.

***SECTION***


**5**

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**MAINTENANCE**

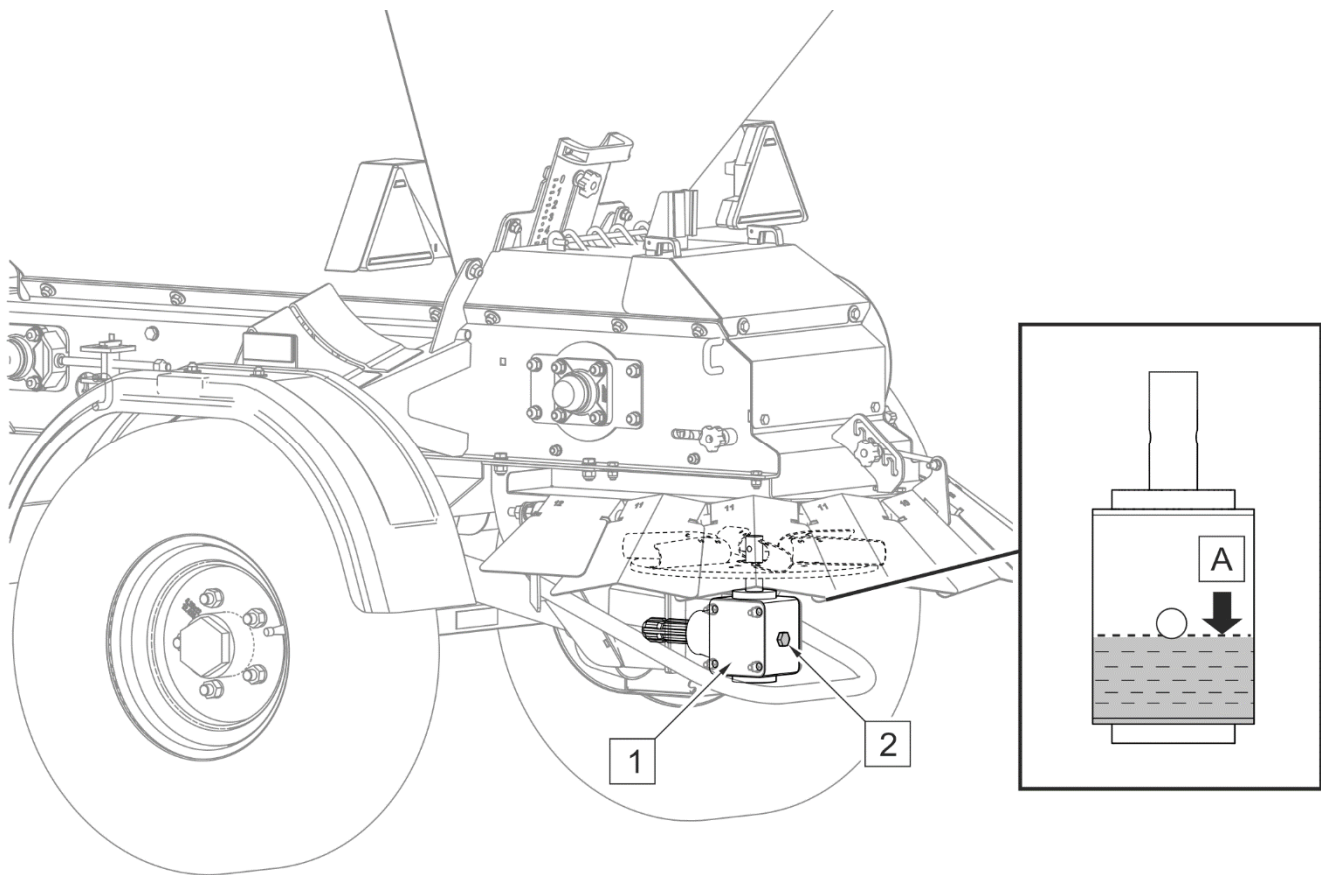
## 5.1 MAINTENANCE OF PTO DRIVE TRANSFER SYSTEM

The information specified in point 5.1 MAINTENANCE OF PTO DRIVE TRANSFER SYSTEM applies only to the sand spreader with mechanical drive of the spreading disc.



**DANGER**

When checking oil and grease level and changing oil and grease, use appropriate personal protection equipment i.e. protective clothing, safety shoes, gloves, safety goggles. Avoid contact of skin with oil and grease.



**FIGURE 5.1** Checking lubricant level in intersecting axis gear

(1) - intersecting axis gear; (2) - inspection and filling plug; (A) - correct lubricant level

If a leak is noticed, check lubricant level. Operation of the gear with insufficient lubricant level or without lubricant may cause permanent damage to the gear mechanisms. In order to check level of lubricant in intersecting axis gear, set the machine horizontally and unscrew plug (1). Proper grease level should reach the lower edge of the plug opening (1). If necessary, supplement grease to the required level (FIGURE 5.1).





It is recommended that grease level in the gear should be checked once a year. If necessary, add grease.

Change of intersecting axis gear lubricant is not required. Possible lubricant change is carried out in case of gear repairs.



### TIP

To lubricate intersecting axis gear, use EPX-00 semi-fluid grease in the amount of 0.2 kg. The grease becomes fluid only when heated (in normal working conditions)

Because of its composition the lubricant applied is not classified as a dangerous substance, however long-term action on the skin or eyes may cause irritation. In the event of contact of grease with skin wash the place of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene). Contaminated clothing should be changed to prevent contact of grease with skin. In the event of contact of grease with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor. Grease in normal conditions is not harmful to the respiratory tract. A hazard only occurs when grease is atomised or in the case of fire during which toxic compounds may be released.



### DANGER

Grease fires should be quenched with carbon dioxide (CO<sub>2</sub>), foam or extinguisher steam. Do NOT use water for fire extinguishing!

Used grease should be taken to the appropriate facility dealing with the re-use of this type of waste.

Repair of the gear during warranty period may only be performed at authorised mechanical workshops.

## 5.2 HYDRAULIC SYSTEM MAINTENANCE

The information specified in point 5.2 *HYDRAULIC SYSTEM MAINTENANCE* applies only to the sand spreader with hydraulic drive of the spreading disc.



### **DANGER**

**During work on hydraulic system, use the appropriate personal protection equipment i.e. protective clothing, footwear, gloves and eye protection. Avoid contact of skin with oil.**

The duties of the operator connected with the hydraulic system maintenance include:

- visual inspection of tightness of hydraulic motor and hydraulic connections,
- inspection of technical condition of conduits,
- visual inspection of hydraulic connections,



### **DANGER**

**Do not repair hydraulic system on your own. All hydraulic system repairs must be performed only by suitably qualified personnel.**

The hydraulic system should be completely tight sealed. In the event of noticing leaks stop using the machine until faults are remedied.

Inspection of the hydraulic system tightness involves connecting the machine with the carrying vehicle and starting the spreading disc drive. In the event of confirmation of an oil leak on hydraulic conduit connections, tighten connections, and if this does not remedy faults then change conduit or connection elements. If oil leak occurs beyond connection, the leaking conduit of the system should be changed. Always exchange each mechanically damaged component. In case of hydraulic motor damage, replace the motor with a new one or repair the motor. All hydraulic system repairs must be performed only by suitably qualified personnel.

**ATTENTION**

The hydraulic system is under high pressure when operating.

Before commencing any work on the hydraulic system, reduce the residual pressure in the system.

Spilt oil should be immediately collected and placed in a marked tight container. Used oil should be taken to the appropriate facility dealing with recycling or regeneration of oils.

In the event of contact of oil with skin wash the place of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene). Contaminated clothing should be changed to prevent access of oil to skin. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor.

**DANGER**

Oil fires should be quenched with carbon dioxide (CO<sub>2</sub>), foam or extinguisher steam. Do NOT use water for fire extinguishing!




The condition of hydraulic system should be inspected regularly while using the machine.

Rubber hydraulic conduits must be changed every 4 years regardless of their technical condition.

## 5.3 MAINTENANCE OF BELT CONVEYOR DRIVE

### 5.3.1 GEAR TRANSMISSION OF CONVEYOR DRIVE

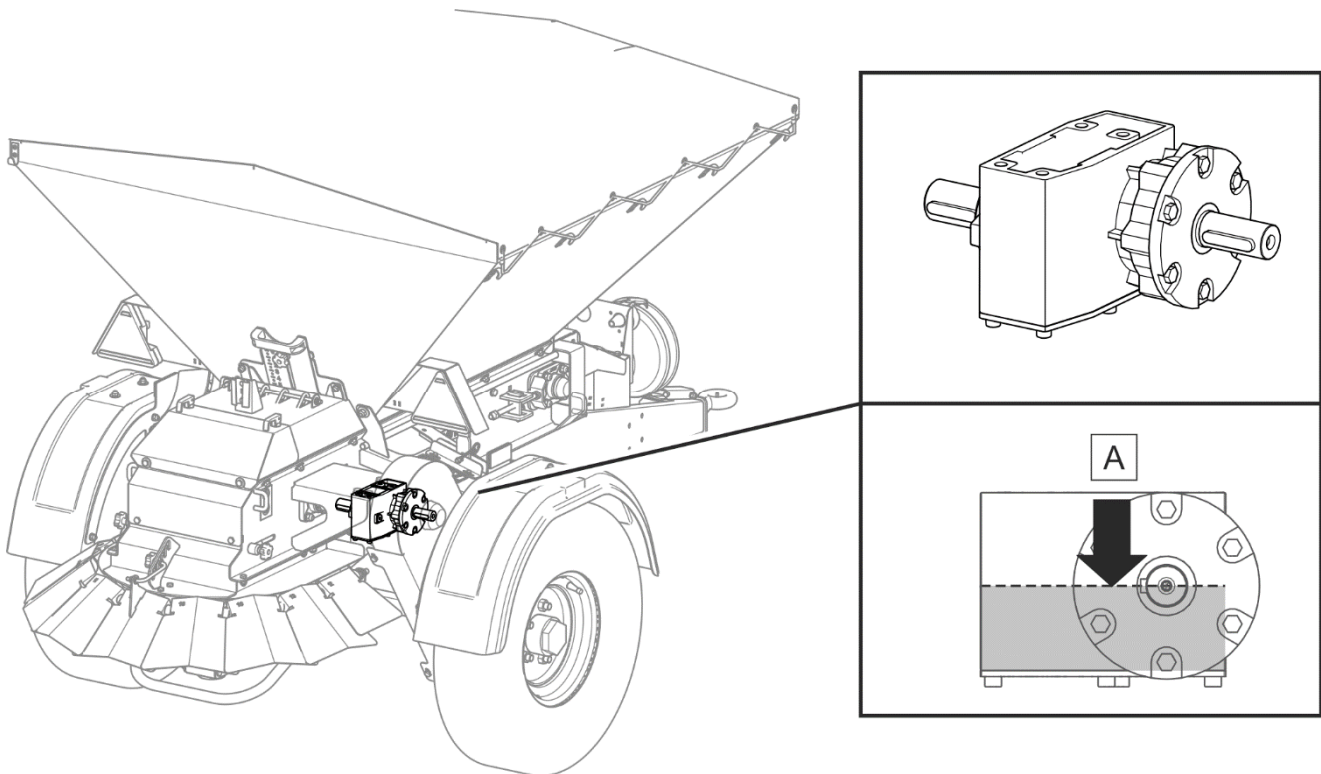


**DANGER**

When checking oil and grease level and changing oil and grease, use appropriate personal protection equipment i.e. protective clothing, safety shoes, gloves, safety goggles. Avoid contact of skin with oil and grease.



Change of oil in gear transmission of belt conveyor drive is not required. Possible oil change is carried out during transmission repair.



**FIGURE 5.2 Gear transmission of conveyor drive**

*(A) - correct oil level in gear transmission*

Change of oil in gear transmission of conveyor drive (FIGURE 5.2) is not required. Possible oil change is carried out during transmission repair. Proper oil level should reach the lower edge of the shaft. If necessary, supplement oil to the required level (FIGURE 5.2)

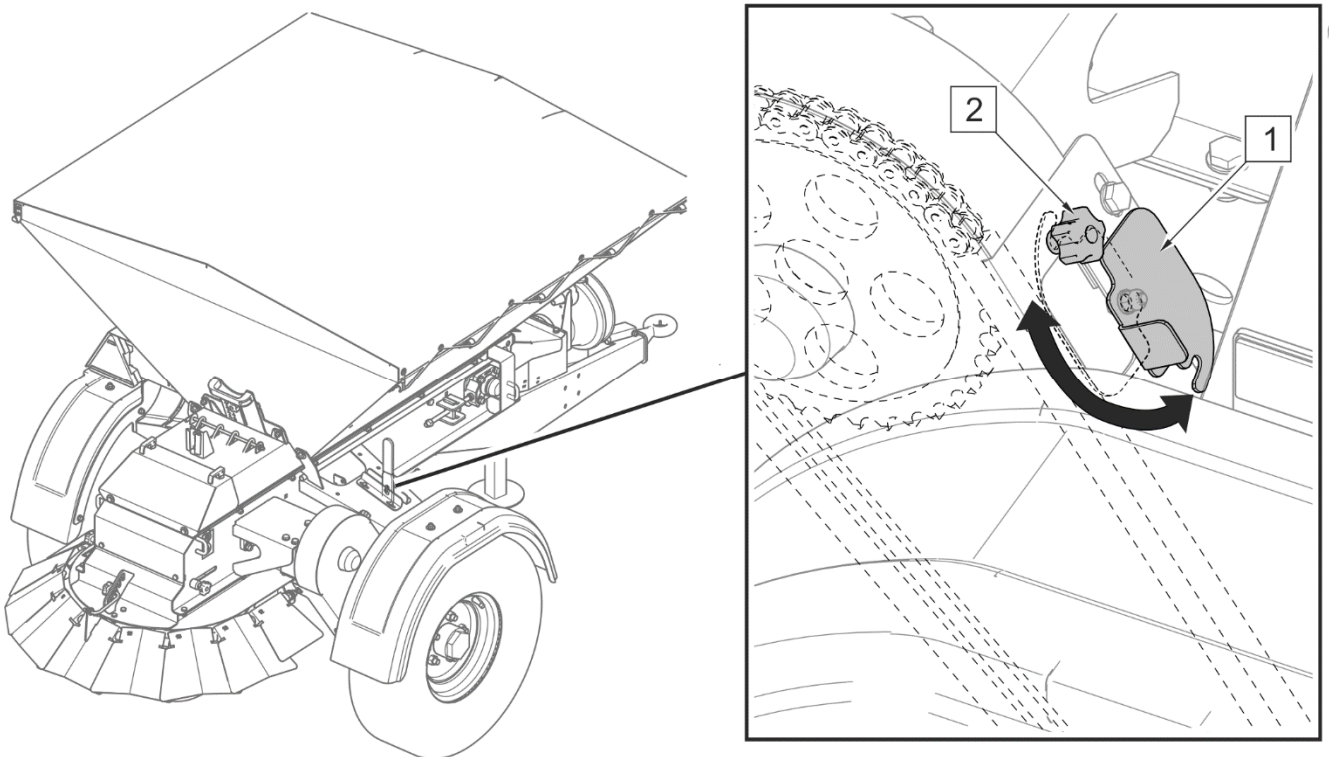
**TIP**

Gear transmission of (FIGURE 5.2) belt conveyor drive is lubricated with Mereta 320 synthetic gear oil in the amount of 0.3 l (litre).

If a leak is noticed on the transmission, repair the transmission. Operation of the transmission with insufficient oil level or without oil may cause permanent damage to the transmission mechanisms. Repair of transmission during warranty period may only be performed at authorised mechanical workshops.

**5.3.2 CHAIN TRANSMISSION OF CONVEYOR DRIVE**

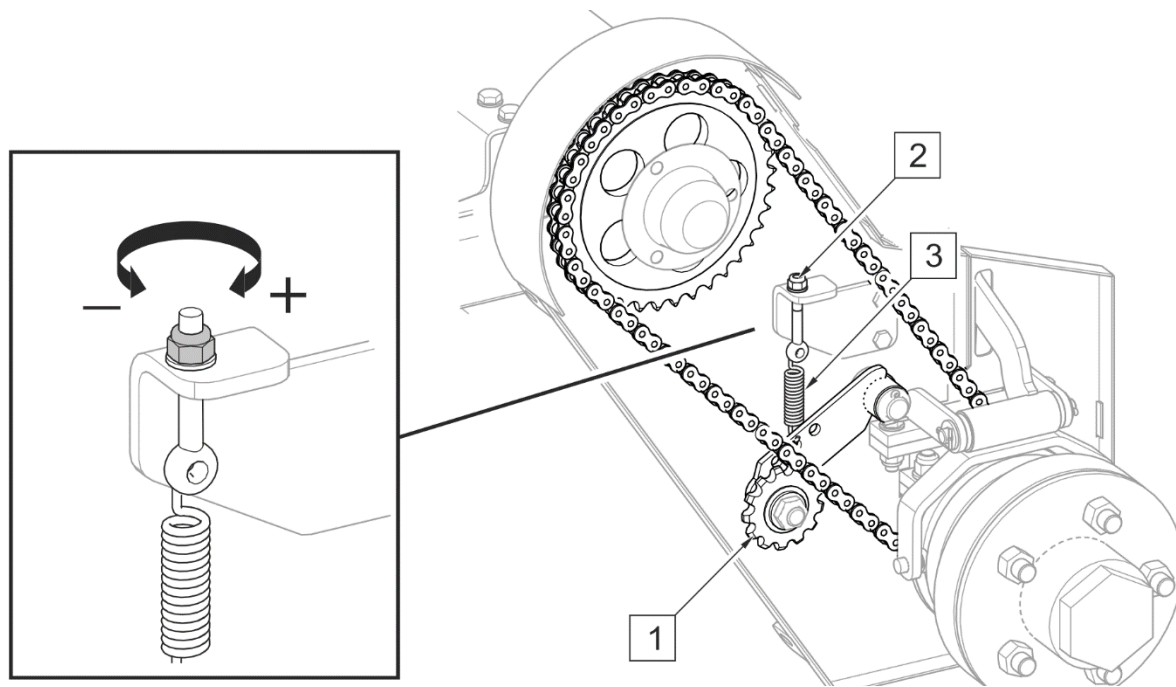
Lubricate the chain every 40 working hours. Lubricate the chain with ŁT-43 grease.



**FIGURE 5.3** Chain shield cover

(1) - cover; (2) - clamp bolt

Loosen the clamp bolt (2) and open the cover (1) in the transmission shield (FIGURE 5.3) to gain access to transmission chain.



**FIGURE 5.4 Chain tensioner**

(1) - tensioner sprocket; (2) - adjustment nut; (3) - spring

The chain transmission is equipped with a spring tensioner. Tension of spring (3) is adjusted with nut (2). Turn the nut (2) clockwise (+) to increase the tensioner spring tension.

### 5.3.3 ADJUSTMENT OF CONVEYOR BELT



**Check daily whether moving conveyor belt is positioned in the middle of the tightening roller and drive roller of the belt conveyor. Make adjustments if the conveyor belt is shifted sideways to the edge of the conveyor roller.**

**Tension of conveyor belt should be checked at least once a month during the working season.**

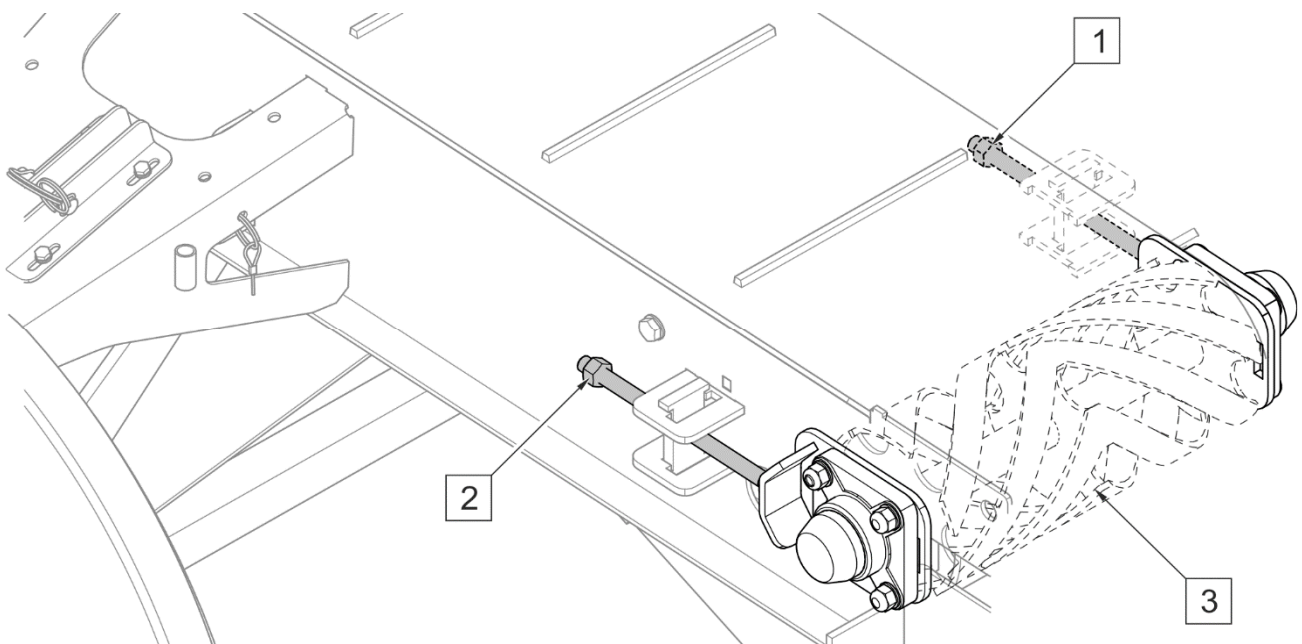
The conveyor belt can be inspected and adjusted while parking. Raise and turn the spreader's right wheel to perform the inspection and adjustment. Before rising the drive wheel, place chocks under the trailer's left wheel in order to prevent the machine from moving. Engage the conveyor belt drive using the clutch lever. Conveyor belt is tightened by means of bolts (1) and (2) located on the frame sides (FIGURE 5.5). Turn both bolts (1) and (2) clockwise using the maximum force of 5 Nm. To avoid shifting the belt sideways to the edge of the roller, turn both bolts by the same number of rotations.

Moving conveyor belt should be positioned in the middle of the conveyor roller. Make adjustments if the conveyor belt is shifted sideways to the edge of the conveyor roller. Depending on the conveyor belt shifting direction, make the adjustment using only one of the

bolts (1) or (2). Turn proper bolt by one rotation and check the result during conveyor operation. Repeat the activity until moving conveyor belt is positioned in the middle of the conveyor roller.

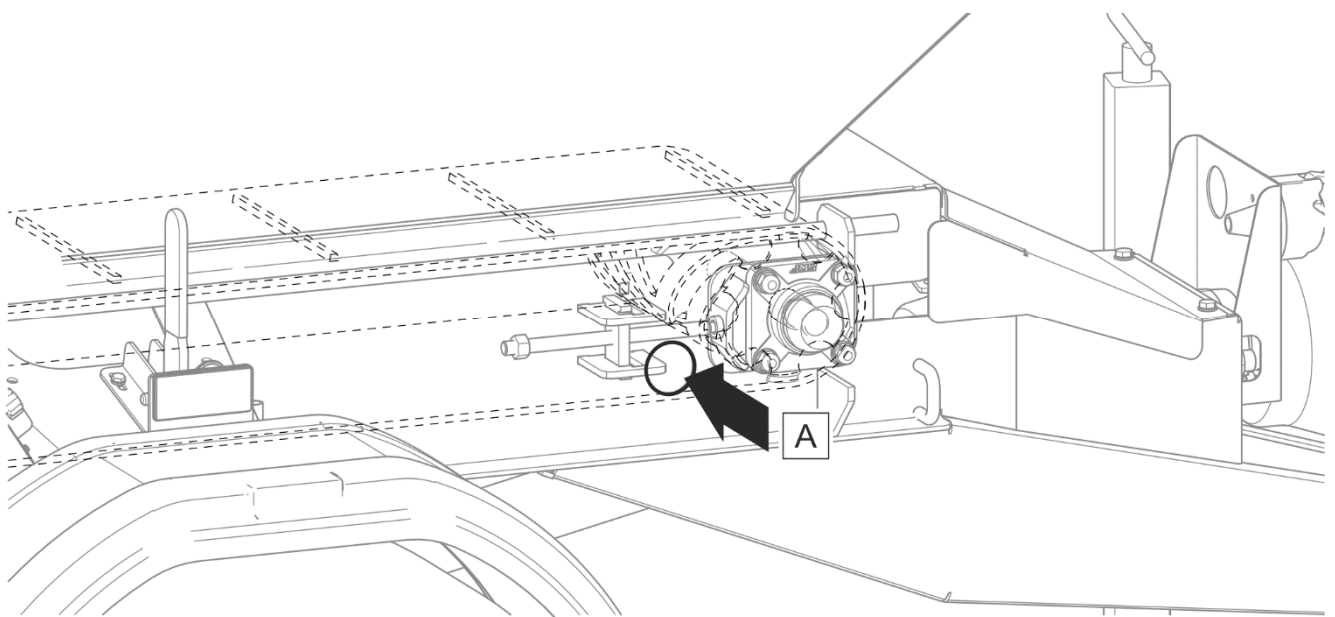
**TIP**

During normal operation of the machine, adjust the conveyor belt tension using the torque of 5 Nm.



**FIGURE 5.5** Adjustment of tightening roller

(1), (2) - adjustment bolts; (3) - tightening roller




**FIGURE 5.6** Checking cleanliness of the internal side of the conveyor belt

(A) - inspection opening in the frame

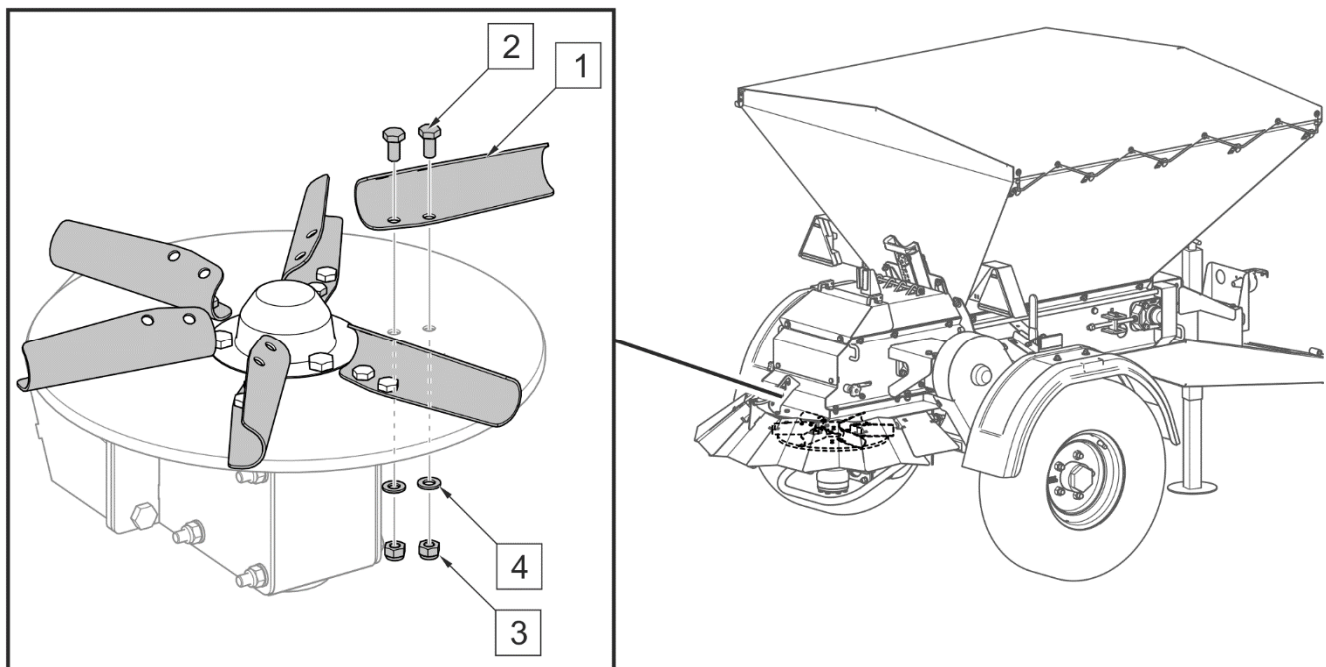
The inspection opening (A) is used for checking the cleanliness of the area near the tightening roller. During inspection of the conveyor belt, remove possible accumulations of material on the internal side of the conveyor belt near the tightening roller (FIGURE 5.6).

## 5.4 REPLACEMENT OF SPREADING DISC BLADES



**DANGER**

Spreading disc blades may be checked and replaced only if the machine and the carrying vehicle are switched off and secured.



**FIGURE 5.7 Replacement of spreading mechanism disc blades**

(1) - blade (part number 242N-00000006); (2) - M8x16 bolt; (3) - M8 nut; (4) - washer 8

Technical condition of spreading mechanism disc blades should be checked periodically paying attention to mechanical damage, degree of wear and completeness of securing elements. In order to replace a spreading disc blade (FIGURE 5.7):

- undo nuts (3), remove bolts (2) and washers (4),
- replace blades (1) with new ones, check condition of bolts and nuts, if necessary replace.
- install in reverse order



**DANGER**

Pay attention to position of blades with regard to rotation direction of spreading disc.

## 5.5 LUBRICATION

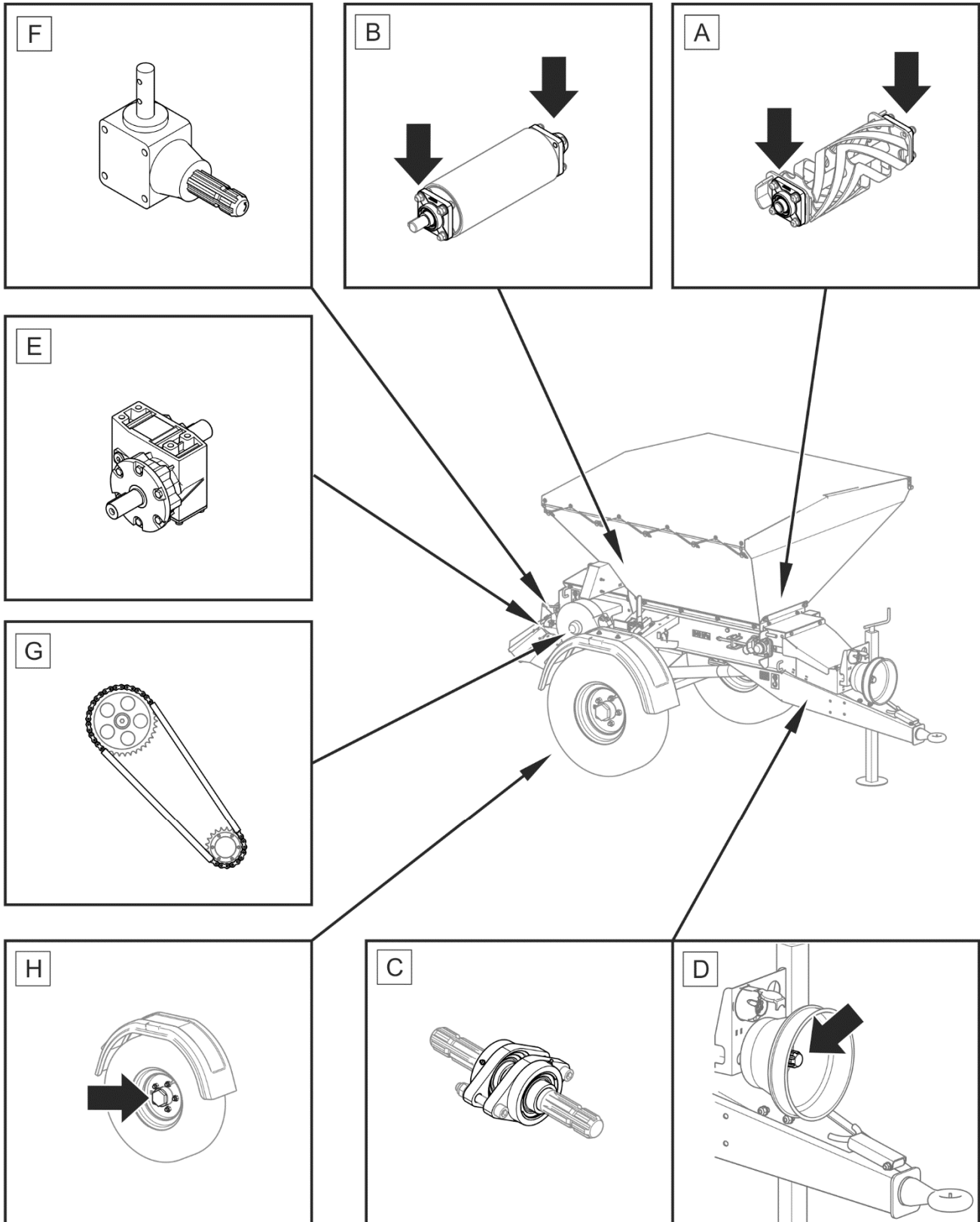
**TABLE 5.1 LUBRICATION POINTS AND LUBRICATION FREQUENCY**

ITEM	NAME	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	LUBRICATION FREQUENCY
A	Tightening roller bearing	2	grease	20 working hours
B	Drive roller bearing	2	grease	20 working hours
C D	Splined surface	3	grease	20 working hours
E	Gear transmission of conveyor drive	1	oil	inspect during repair
F	Intersecting axis gear of disc drive	1	semi-fluid grease	inspect once a year
G	Transmission chain	1	grease	40 working hours
H	Wheel bearings	2	grease	24 months
I	PTO shaft (intermediate)	*	*	*
J	PTO shaft - additional equipment	*	*	*

\*- detailed information on operation and maintenance is given in the shaft operator's manual or on the shaft housing.

Marking description in Item column (TABLE 5.1) conforms with numbering shown (FIGURE 5.8)

Before commencing lubrication insofar as is possible remove old grease and other contamination. Remove and wipe off excess oil or grease The following grease is recommended for lubrication: ŁT-43-PN/C-96134.



**FIGURE 5.8** Lubrication points

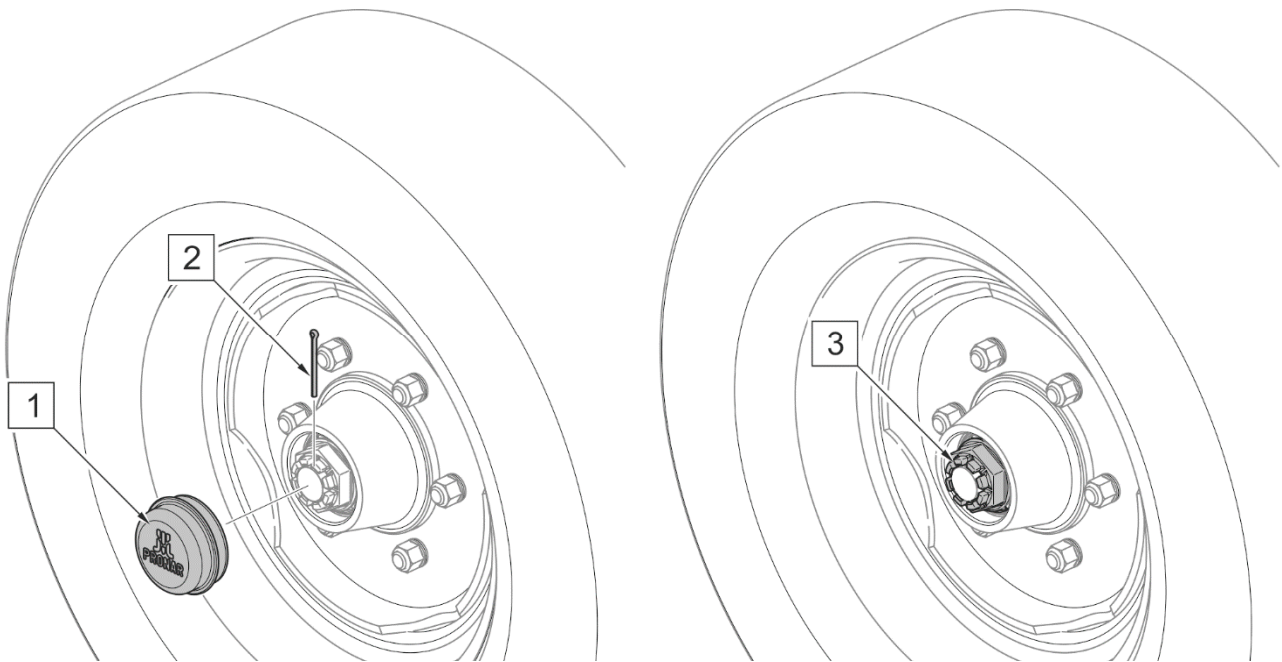
*Lubrication points are described in Table 5.2*



When using the machine the user is obliged to observe lubrication instructions according to attached schedule. Excess lubricant causes depositing of additional contaminants in places requiring lubrication, therefore it is essential to keep individual machine components clean.

## 5.6 INSPECTION AND ADJUSTMENT OF WHEEL AXLE BEARINGS

Check and, if necessary, adjust the wheel bearing slackness in a newly purchased machine, after covering the first 100 km and every 6 months during further machine use. Worn or damaged bearing should be replaced. Inspection of these elements should be conducted according to instructions below.



**FIGURE 5.9** Adjustment of wheel axle bearings

(1)- hub cover; (2)- cotter pin; (3)- castellated nut

Hitch the machine to the carrying vehicle and immobilise. Place securing chocks under the machine wheels, raise wheels in succession using the appropriate lifting jack. The lifting jack should be placed under the axle on one side of the machine, alternately for each wheel. Place the mechanical support under the raised axle. Check bearing slackness. Adjustment of wheel axle bearings (FIGURE 5.9) is conducted as follows:

- In the event of excessive wheel bearing slackness, remove the hub cap (1), and take out the cotter pin (2).
- Remove grease.

- Turning the wheel simultaneously tighten castellated nut (3) until the wheel comes to a stop. Unscrew nut by 1/3 rotation until the nearest cotter pin groove (2) aligns with the opening in the wheel stub axle.
- Check slackness, repeat the activities if needed
- Secure castellated nut (3) with cotter pin (2) grease and mount hub cap (1). The wheel should turn smoothly without jamming and detectable resistance.

Bearing replacement, lubrication and repairs of the axle system should be performed by specialized service points.



**Inspection of slackness and technical condition of wheel axle bearings must be performed after the first 100km of travel, and then every 6 months of machine use.**

## 5.7 STORAGE

After finishing work, the machine should be thoroughly cleaned and washed with a water jet. When cleaning, pay particular attention to accumulations of material on the internal side of the conveyor belt near the tightening roller. While cleaning, do not direct a strong water or steam jet at information and warning decals or hydraulic conduits. Nozzle of pressure or steam washer should be kept at a distance of not less than 30 cm from cleaned surface.

After cleaning, inspect the whole machine, inspect technical condition of individual elements. Used or damaged elements should be repaired or replaced.

In the event of damage to the paint coat, clean rust and dust from damaged area, degrease and then paint with undercoat and after it is dry paint with surface coat paint retaining colour uniformity and even thickness of protective coating. Until the time of touch-up painting, the damaged place may be covered with a thin layer of grease or anticorrosion preparation. Machine should be kept in a closed or roofed building.

If the machine shall not be used for a long period of time, protect it against adverse weather conditions. Disconnect the lighting system connection lead from the machine.

Lubricate machine according to the instructions provided. In the event of a prolonged idle period, it is essential to lubricate all elements regardless of the date of the latest lubrication (according to 5.5 LUBRICATION).

The sand spreader's tank should be emptied and covered with tarpaulin cover.



### ATTENTION

Remains of material containing salt cause quick corrosion of metal parts and loss of protective coatings.

## 5.8 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

During maintenance and repairs use appropriate torque for bolt connections (unless other is specified for a particular connection). Recommended tightening torque values apply to non-greased steel bolts (TABLE 5.2)

**TABLE 5.2 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS**

THREAD DIAMETER [mm]	5.8	8.8	10.9
	TIGHTENING TORQUE [Nm]		
M6	8	10	15
M8	18	25	36
M10	37	49	72
M12	64	85	125
M14	100	135	200
M16	160	210	310
M20	300	425	610
M24	530	730	1 050



### ATTENTION

Should it be necessary to change individual parts, use only original parts or those indicated by the Manufacturer. Non-adherence to these requirements may put the user and other people's health and life at risk, and also cause damage to the machine.

## 5.9 TROUBLESHOOTING

**TABLE 5.3 TROUBLESHOOTING**

<b>TYPE OF FAULT</b>	<b>CAUSE</b>	<b>REMEDY</b>
Conveyor does not work	Conveyor drive lever is not engaged	Turn on the drive
	Machine standstill	The drive works only during travel
	Too slack belt is slipping on drive roller	Adjust according to the operator's manual
	Damaged chain transmission	Check chain and sprockets, replace if necessary
	Damaged gear transmission	Repair at an authorised service point
Spreading disc does not rotate	PTO drive in the carrying vehicle is not engaged - applies to the sand spreader with mechanical drive	Engage the PTO drive in the carrying vehicle
	The external hydraulic system of the carrying vehicle is not switched on - applies to the sand spreader with hydraulic drive	Activate correct hydraulic circuit in the carrying vehicle
	Damaged PTO shaft	Check and replace if necessary
	Damaged intersecting axis gear - applies to the sand spreader with mechanical drive	Repair at an authorised service point
	Damaged hydraulic motor - applies to the sand spreader with hydraulic drive	Repair at an authorised service point
	Flow regulator is not set	Set the flow using the knob on the regulator
	Hydraulic supply is fed from the other side	Swap the hydraulic conduits. The machine can be supplied only in one direction.
Incorrect spreading of material	Incorrect machine settings	Set the conveyor barrier and spreading direction
	Damaged spreading disc blades	Replace

# NOTES

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