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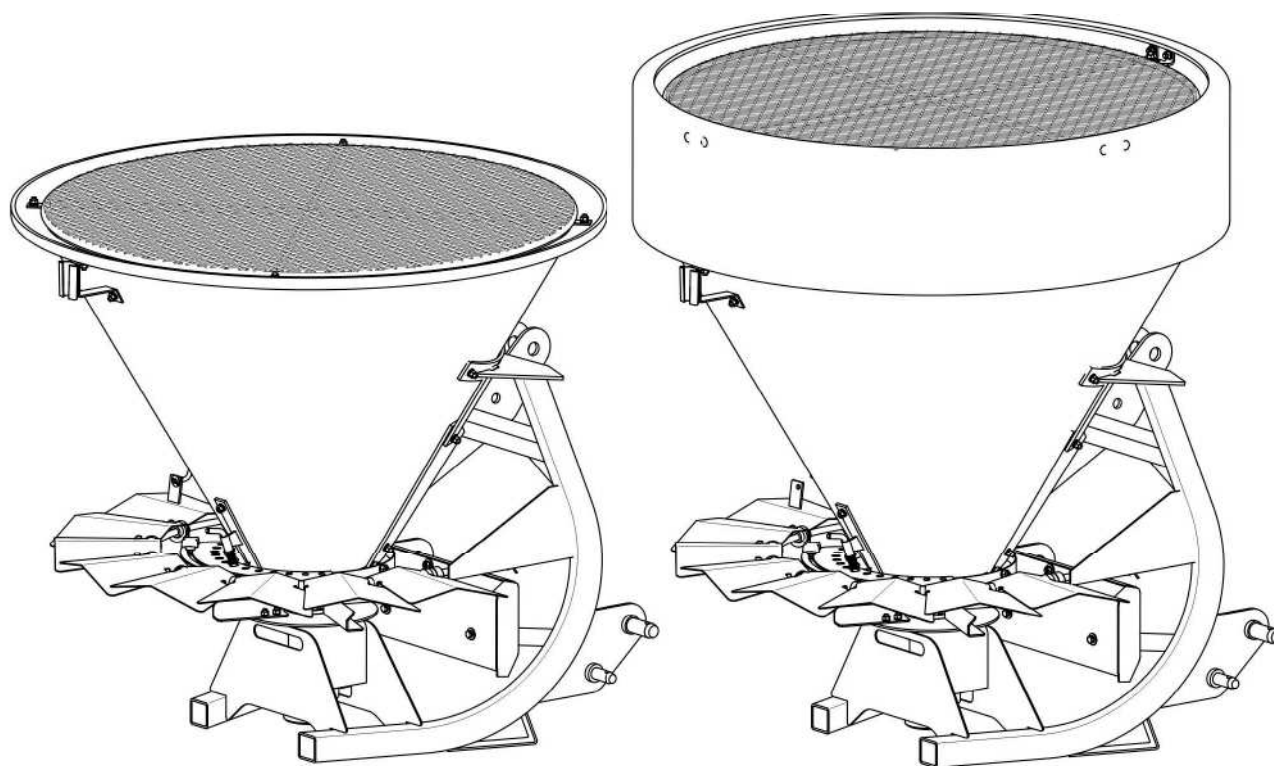
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OPERATOR'S MANUAL

SAND SPREADER

PRONAR PS-250

TRANSLATION OF THE ORIGINAL INSTRUCTIONS



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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 malfunction 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 contained 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:

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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:



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:	Sand spreader
Type:	PS-250
Model:	—
Serial number:	
Commercial name:	Sand spreader PRONAR PS-250

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.

Z-C A D Y B E K T O R A
d/s t e c h n i c z n y c h
c z i n i s z y z a r z ą d u

Roman Omelianiuk

Narew, the 2010 -04- 07

Place and date

*Full name of the empowered person
position, signature*

TABLE OF CONTENTS

1	BASIC INFORMATION	1.1
1.1	IDENTIFICATION	1.2
1.2	PROPER USE	1.3
1.3	OPTIONAL EQUIPMENT	1.5
1.4	WARRANTY TERMS	1.5
1.5	TRANSPORT	1.6
1.6	ENVIRONMENTAL HAZARDS	1.8
1.7	WITHDRAWAL FROM USE	1.9
2	SAFETY ADVICE	2.1
2.1	BASIC SAFETY RULES	2.2
2.1.1	USE OF MACHINE	2.2
2.1.2	LINKING AND DISCONNECTING FROM TRACTOR	2.3
2.1.3	HYDRAULIC SYSTEM	2.3
2.1.4	TRANSPORTING THE MACHINE	2.4
2.1.5	MAINTENANCE	2.5
2.1.6	MACHINE OPERATION	2.6
2.1.7	OPERATION OF PTO SHAFT	2.7
2.2	DESCRIPTION OF MINIMAL RISK	2.8
2.3	INFORMATION AND WARNING DECALS	2.9
3	DESIGN AND OPERATION	3.1
3.1	TECHNICAL SPECIFICATION	3.2
3.2	GENERAL DESIGN	3.4
3.3	HYDRAULIC SYSTEM	3.5
3.4	PTO DRIVE TRANSFER SYSTEM	3.6

4	CORRECT USE	4.1
4.1	PREPARING FOR WORK	4.2
4.2	CHECKING TECHNICAL CONDITION	4.4
4.3	HITCHING TO TRACTOR	4.5
4.3.1	HITCHING TO THE THREE POINT LINKAGE	4.5
4.3.2	CONNECTING HYDRAULIC SYSTEM	4.6
4.3.3	CONNECTING PTO SHAFT	4.8
4.4	SAND SPREADER OPERATION	4.9
4.4.1	LOADING	4.9
4.4.2	LEVELLING THE MACHINE	4.9
4.4.3	ADJUSTMENT OF SPREADING DOSE	4.10
4.4.4	ADJUSTMENT OF SPREADING DIRECTION	4.11
4.4.5	ADJUSTMENT OF SPREADING WIDTH	4.12
4.4.6	STARTING THE MACHINE	4.13
4.5	DRIVING ON PUBLIC ROADS	4.13
4.6	DISCONNECTING FROM TRACTOR	4.15
4.7	INSTALLATION OF ADDITIONAL EQUIPMENT	4.16
5	MAINTENANCE	1
5.1	HYDRAULIC SYSTEM MAINTENANCE	2
5.2	MAINTENANCE OF PTO DRIVE TRANSFER SYSTEM	4
5.3	REPLACING SPREADING DISC BLADES	6
5.4	LUBRICATION	7
5.5	STORAGE	8
5.6	TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS	9
5.7	TROUBLESHOOTING	10

SECTION

1

BASIC INFORMATION

1.1 IDENTIFICATION

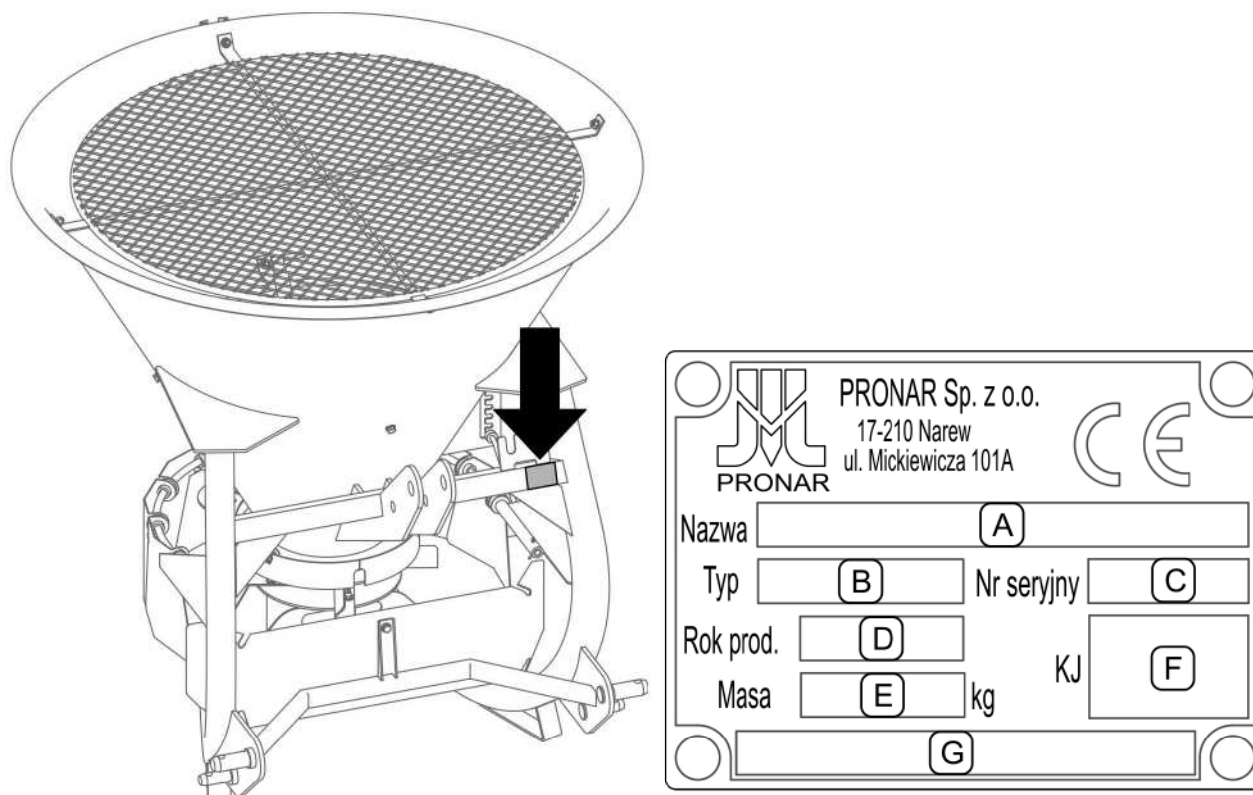


FIG. 1.1 Location of the data plate

Meaning of data plate items (FIG. 1.1):

- A - machine name
- B – type,
- C – serial number
- D – year of manufacture
- E – machine tare weight [kg]
- F – Quality Control stamp
- G – unfilled box or V-500 (*for sand spreader with increased tank*)

Serial number is stamped on the data plate. The data plate is located on the rear of the machine, on the frame next to the central connection bracket (FIG. 1.1). When buying the machine, check that the serial number corresponds with that indicated in the *WARRANTY BOOK*, in the sales documents and in the *OPERATOR'S MANUAL*.

1.2 PROPER USE

PRONAR PS-250 Sand spreader is used for surface spreading of sand, salt and mixtures of sand and salt on streets, alleys and pavements. Use for other purposes is not in accord with design. Sand spreaders may be mounted on agricultural tractors 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 tractor Operator's Manual,
- have been trained in machine operation and safe working conditions,
- have the required authorisation to drive and are familiar with the road traffic regulations and transport regulations.



IMPORTANT!

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

- spreading fertilisers or liquid materials
- transport of people, animals and other items on the machine

TAB. 1.1 Tractor requirements

PS-250 Sand spreader with a hydraulic drive system

	UNIT	REQUIREMENTS
Rear three point linkage	—	I-II (narrow) cat. according to ISO 730-1
Pressure in the hydraulic system: nominal / maximum	MPa	16 / 20
Minimum output of oil pump	l/min	10
Type of oil	—	hydraulic, HL32
Hydraulic sockets	—	2 sockets of one section with lock function in "on" position
Beacon light	—	orange light

PS-250 Sand spreader with mechanical drive transmitted from PTO

	UNIT	REQUIREMENTS
Rear three point linkage	—	I-II (narrow) cat. according to ISO 730-1
PTO speed	RPM	540
PTO rotation direction	—	clockwise (<i>looking at the shaft front</i>)
Beacon light	—	orange light

1.3 OPTIONAL EQUIPMENT

The equipment of PS-250 sand spreader includes:

- Operator's Manual
- Warranty Book

Additional (optional) equipment:

- pins cat. II ISO 730-1 (*extensions installed on the pins of the machine's linkage system in order to extend the spacing to full category II - spacing of axis of the three-point linkage balls - 870 mm*)
- tank cover - catalogue No. 242N-95000000-01

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 Service under warranty. The repair period is specified in the *WARRANTY BOOK*.

The guarantee does not apply to those parts and sub-assemblies of the machine, which are subject to wear in normal usage conditions, regardless of the warranty period.

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, caused by road accidents,
- by 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, improperly carried out repairs,
- 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 guarantee repair coupons. A missing date of purchase or sale point stamp, may make the user ineligible for any warranty repair or refund.

The user is obliged to report immediately on noticing any wear in the paint coating or traces of corrosion, and to have the faults rectified whether they are covered by the guarantee or not. Detailed guarantee regulations are contained in 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

The machine is prepared for sale completely assembled and does not require packing. Packing is only required for the machine's technical documentation.

Delivery is either by transport on a vehicle or independently, after being attached to a tractor. Transport of the machine is permissible connected to a carrying vehicle provided the vehicle's driver familiarises himself with the machine's Operator's Manual and particularly with information concerning safety and principles of connection and transport on public roads.

During road transport the machine should be secured on the carrier platform by certified belts or chains fitted with pulley.

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.

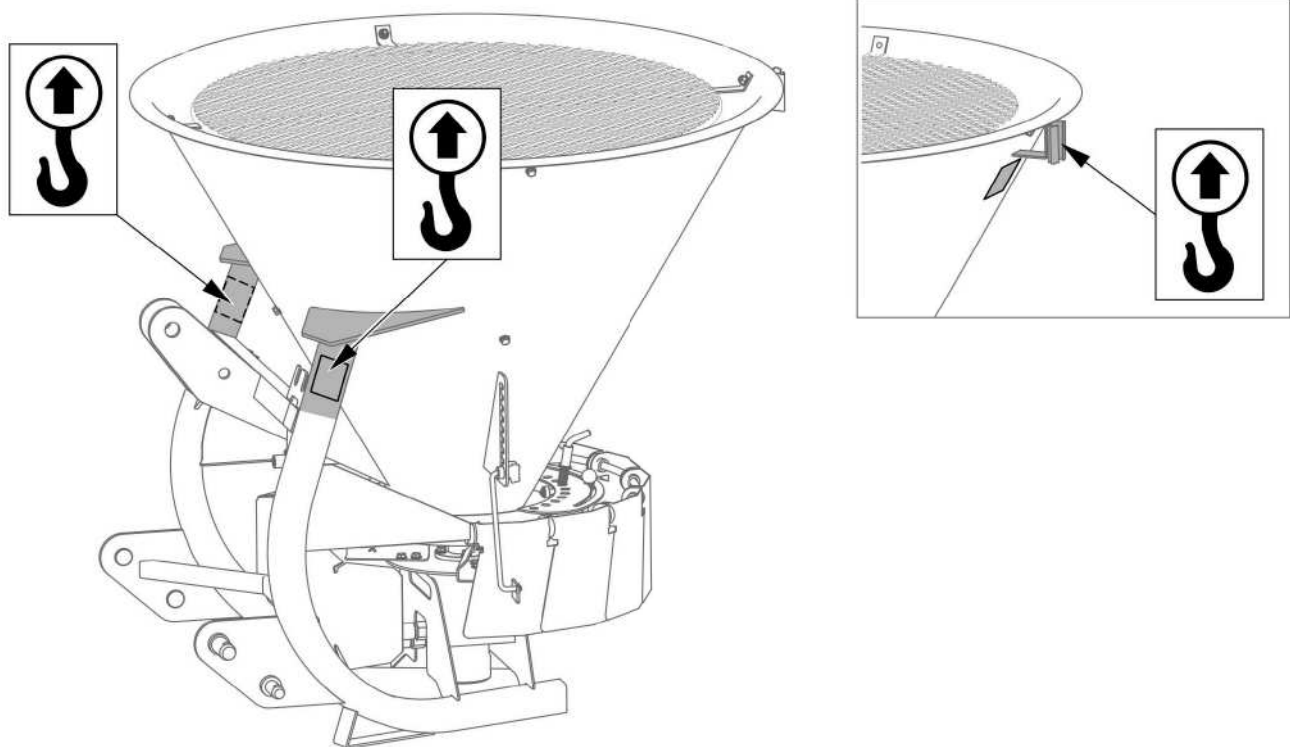


FIG. 1.2 transport lugs

The machine should be attached to lifting equipment in places specially designed for this purpose (FIG. 1.2), i.e. by the tank bracket and the bracket for mounting slow-moving vehicle warning sign.

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.

DANGER



When transporting independently, the user must carefully read this Operator's Manual and observe all recommendations. 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.

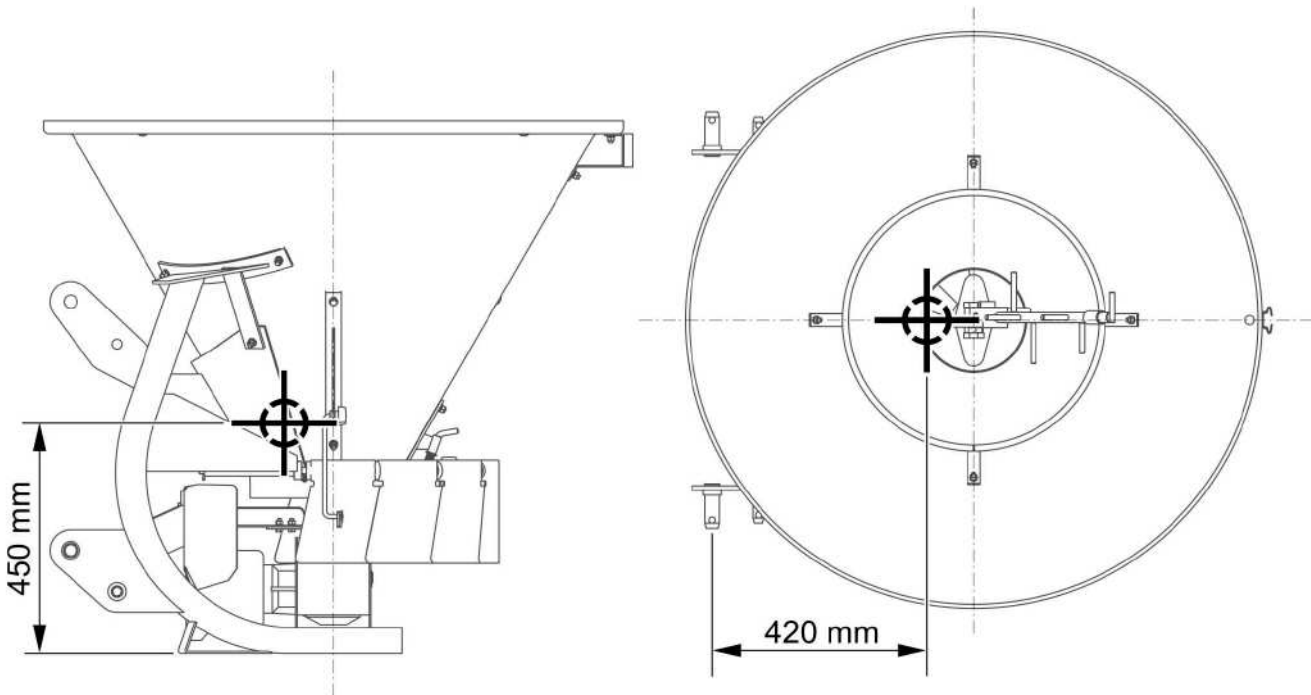



FIG. 1.3 Centre of gravity

	<p>ATTENTION!</p> <p>Depending on the machine version (type of tank, hydraulic or mechanical drive system), centre of gravity varies in the ± 50 mm range</p>
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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 pollution, 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 a 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 the machine, oil should be completely removed from hydraulic system or intersecting axis gear (*depending on type of the machine drive system*)

When spare parts are changed, worn out or damaged parts should be taken to a collection point for recyclable raw materials. Waste oil and also rubber and plastic elements should be taken to establishments undertaking the utilisation of such waste.



IMPORTANT!

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 the recommendations.
- The machine may only be used and operated by persons qualified to drive agricultural tractors and agricultural machines and trained in the use of the machine.
- If the information contained in the Operator's Manual is difficult to understand, contact a seller, who runs an authorised technical service on behalf of the manufacturer, or contact the manufacturer directly.
- Careless and improper use and operation of the machine, and non-compliance with the recommendations given in this operator's manual is dangerous to your health.
- Be aware of the existence of a minimal risk, and for this reason the fundamental basis for using this machine should be the application of safety rules and sensible behaviour.
- 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 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.
- 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 safety guards, they must be replaced with new ones.

- In order to limit occupational risks associated with exposure to noise during machine operation use individual protection (ear protectors). In order to reduce the level of noise during work the tractor cab window and door should be closed.

2.1.2 LINKING AND DISCONNECTING FROM TRACTOR

- Do NOT link the sand spreader to a tractor, if different types of hydraulic oil are used in both machines, or if the three point linkage system of the machine is not compatible with the category of the linkage system of the tractor.
- After completion of coupling the machine, check the safeguards. Carefully read the tractor Operator's Manual.
- To mount machine on tractor use only genuine pins and safeguard linchpins.
- The agricultural tractor to which the machine will be linked and coupled must be technically reliable and must fulfil the requirements of machine Manufacturer.
- Be especially careful when hitching the machine to tractor.
- When hitching, there must be nobody between the machine and the tractor. A person assisting in the hitching of the machine should stand in such a place (beyond the area of danger), in order to be continuously visible to the tractor driver.
- Be especially careful when disconnecting the machine from the tractor.
- Machine disconnected from the tractor must be placed on level, sufficiently hard surface in such a manner as to ensure that it is possible to connect it again.

2.1.3 HYDRAULIC SYSTEM

(refers to the sand spreader with hydraulic drive 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 malfunction of the hydraulic system, the machine shall be disconnected from use until the malfunction is corrected.

- When connecting the hydraulic conduits to the tractor, make sure that the tractor and sand spreader hydraulic system are not under pressure. If necessary reduce residual pressure in the system.
- In the event of injuries being caused by pressurised hydraulic oil, contact a doctor immediately. Hydraulic oil may find its way under the skin and cause infections. 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. 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.

2.1.4 TRANSPORTING THE MACHINE

- When driving on public roads, comply with the road traffic regulations. in force in the country, in which the machine is used.
- Do not exceed the permitted speed arising from road conditions and design limitations. Adjust travel speed to the prevailing road conditions and other limitations arising from road traffic regulations limits.
- Do NOT leave machine raised and unsecured while the tractor is parked. When parked, the machine should be lowered.
- Do NOT ride on the machine or transport any materials on it.
- Before using the machine always check its technical condition, especially in terms of safety. In particular, check the technical condition of the hitch system and elements connecting hydraulic system.

- During transport, the tractor three-point linkage should be locked in the up position to prevent its accidental lowering.
- Reckless driving and excessive speed may cause accidents.

2.1.5 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 whatsoever, do not use the machine until the fault has been corrected.
- During work use the proper, close-fitting protective clothing, gloves and appropriate tools. When working on hydraulic systems it is recommended to use oil resistant gloves and protective goggles.
- Any modification to the machine frees PRONAR from any responsibility for damage or detriment to health which may arise as a result.
- Before undertaking any work on the machine, switch off tractor engine.
- 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 raised and unsupported machine.
- Before beginning work on hydraulic systems, reduce oil pressure.
- 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 switched off and the ignition key removed. Immobilise tractor with parking brake. Ensure that unauthorised persons do not have access to the vehicle.

- 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 guarantee.
- Regularly check technical condition and mounting of all guards and protective elements.
- The paint coating should be cleaned off before beginning welding work. Burning paint fumes are poisonous for people and animals. Welding work should be carried out in a well lit and well ventilated space.
- During welding work pay attention to flammable or fusible elements (parts of the hydraulic systems, plastic parts). If there is a risk that they will catch fire or be damaged, they should be removed or covered with non-flammable material before commencing welding work. Before beginning work prepare a CO₂ or foam extinguisher.
- In the event of work requiring the machine to be raised, use properly certified hydraulic or mechanical lifts. After lifting the machine, stable and durable supports must also be used. Do NOT carry out work under the machine, which has been raised only with the tractor's three point linkage.
- The machine must not be supported using fragile elements (bricks or concrete blocks).
- 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.

2.1.6 MACHINE OPERATION

- Before lifting or lowering the machine mounted on the tractor, make sure there are no bystanders near the machine.
- Before starting the machine make sure that there are no bystanders (especially children) or animals in the danger zone. 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.

- Do NOT stand within the material spreading zone or between the machine and the tractor.
- Do NOT approach the spreading disk guards until the rotating parts come to a complete standstill.
- During sand spreader operation do not use PTO nominal rotation speed greater than 540 rpm (*refers to the sand spreader with PTO drive system*)
- When working on pavements or public roads there is a risk that thrown out particles of sand, salt, stones etc. may pose a threat to bystanders.

2.1.7 OPERATION OF PTO SHAFT

(refers to the sand spreader with PTO drive system)

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

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

- using the mower for purposes other than those for which it is intended,
- being between the tractor and the machine while the engine is working and when the machine is being attached,
- being on the machine while the engine is working,
- 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 tractor is connected and engine is running.

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

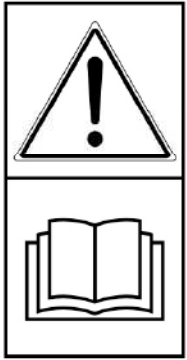
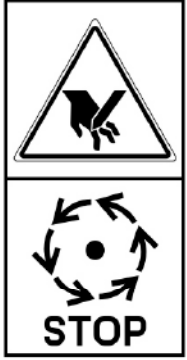
- prudent and unhurried operation of the machine,
- sensible application of the remarks and recommendations contained in the Operator's Manual,
- carrying out repair and maintenance work in line with operating safety rules,
- carrying out repair and maintenance work by persons trained to do so,
- using close fitting protective clothing,
- ensuring unauthorised persons have no access to the machine, especially children,


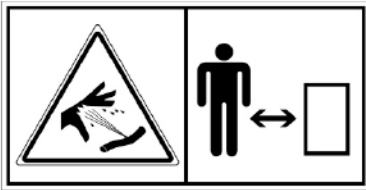

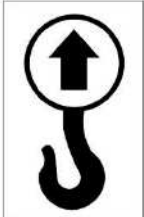

- maintaining safe distance from forbidden or dangerous places
- a ban on being on the machine when it is operating

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 working machine. 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.

TAB. 2.1 Information and warning decals

ITEM	SYMBOL	DESCRIPTION
1		<p>Before starting work, carefully read the Operator's Manual.</p>
2		<p>Danger of severing or cutting fingers or a palm by rotating parts of the machine.</p> <p>Do not touch any rotating elements until they come to a complete standstill.</p>

ITEM	SYMBOL	DESCRIPTION
3		<p>Danger caused by materials thrown out by the machine.</p> <p>Keep a safe distance from the operating machine.</p>
4		<p>Pressurised liquid. Risk of injury.</p> <p>Keep a safe distance.</p> <p><i>(in the sand spreaders with hydraulic drive system)</i></p>
5		<p>Maximum allowable PTO shaft rotation speed is 540 rpm.</p> <p><i>(in the sand spreaders with PTO drive system)</i></p>
6		<p>Lifting equipment attachment points while loading the machine</p>
7		<p>Maximum transport speed</p>
8	<p>PRONAR PS-250</p>	<p>Machine name</p>

Numbers in the item column correspond to decals (FIG. 2.1)

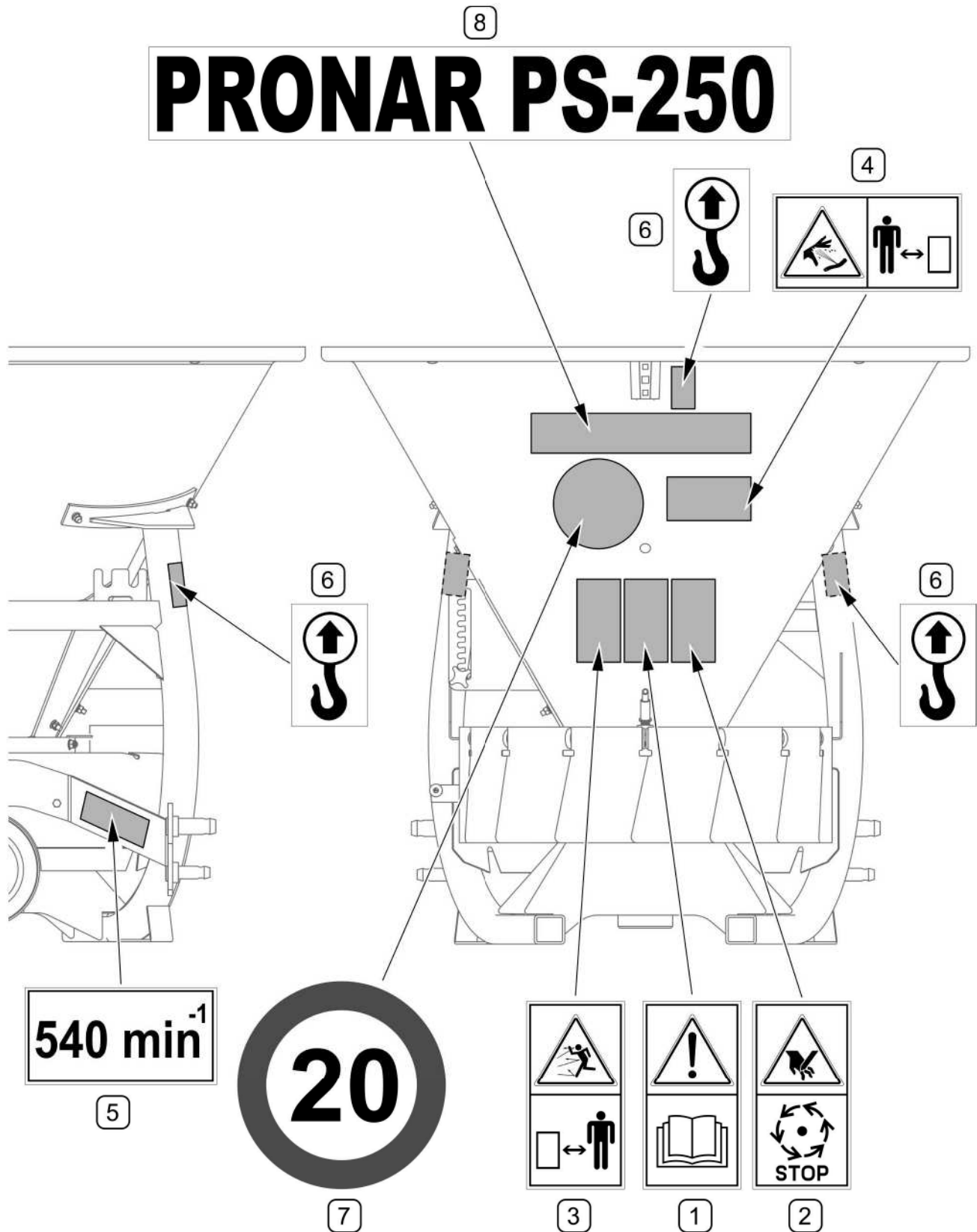


FIG. 2.1 Locations of information and warning decals.

Meaning of symbols (TAB. 2.1)

SECTION

3

**DESIGN AND
OPERATION**

3.1 TECHNICAL SPECIFICATION

TAB. 3.1 BASIC TECHNICAL SPECIFICATION

	Unit	The machine versions		
		A	B	C
Mounting method	–	three point linkage cat. I – II (narrow) acc. to ISO 730-1		
Spread width:				
– minimum	m		1	
– maximum	m		6	
Type of tank	–	metal tank	plastic tank	
Tank capacity	dm ³	250	250 (500*)	
Tank carrying capacity	kg	300		
Power transmission	-	tractor external hydraulics		power take-off shaft
Minimum tractor power demand	hp (kW)	15 (11)		
Maximum working speed	km/h	10		
Maximum transport speed	km/h	20		
Loading height	mm	1 070	1 035	
Number of spreading discs	item	1		
Number of spreading disc blades	item	4		
Nominal rotation speed of spreading disc:	RPM	540		
Rotation direction of spreading disc	–	Counterclockwise (looking from above)		
Length	mm	1 120	1 145	
Width	mm	1 110	1 125	
Height	mm	1 070	1 035 (1 290*)	
Weight of machine ready for operation:	kg	85	100 (110*)	102 (112*)
Acoustic power level L _{WA}	dB(A)	96		
Acoustic pressure level at working position L _{pA}	dB(A)	92		

* – refers only to sand spreader with 500 dm³ tank

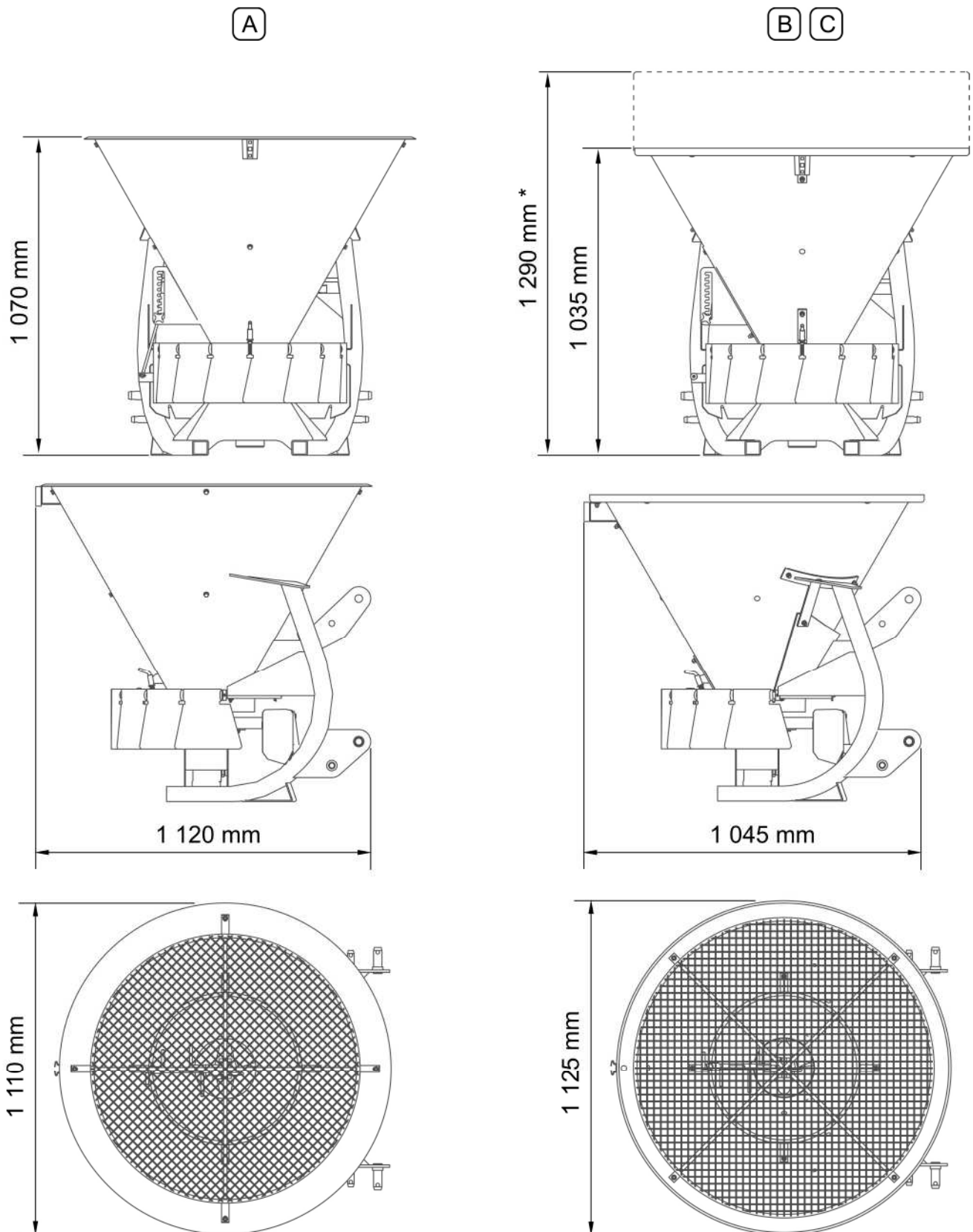


FIG. 3.1 External dimensions

(A), (B), (C) - machine versions (see Table 3.1)

* – refers only to sand spreader with 500 dm³ tank

3.2 GENERAL DESIGN

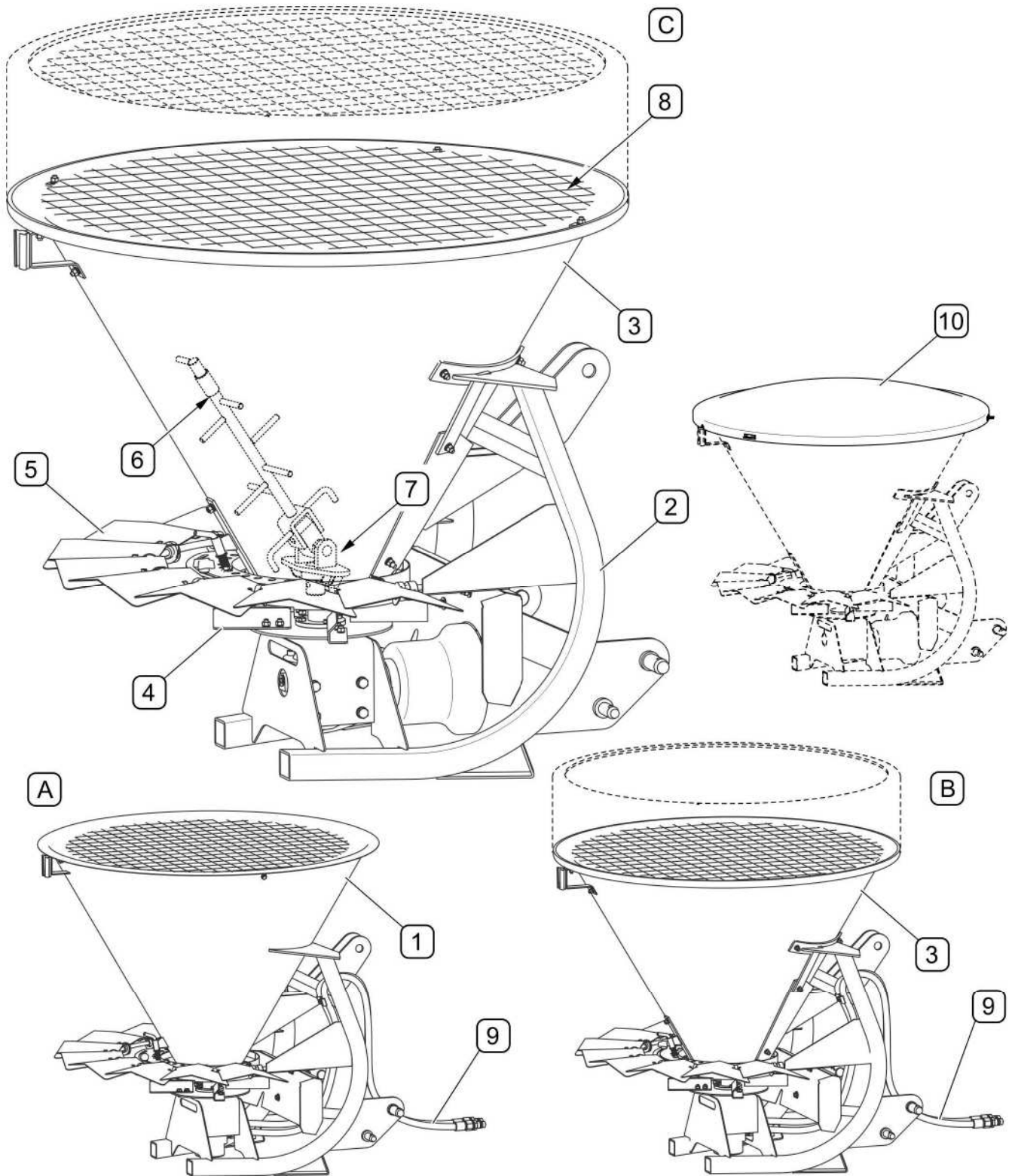


FIG. 3.2 General design

(A), (B), (C) - machine versions (see Table 3.1); (1) - frame with tank; (2) - frame; (3) - tank; (4) - spreading disc; (5) - fan-shaped guard; (6) - mixer; (7) - sweep-off gear; (8) - sieve; (9) - hydraulic system; 10 - cover (option)

Sand spreader consists of a frame (1), to which a metal tank is welded or plastic tank (3) is screwed (depending on machine version). Mixer (6) and sweep-off gear (7) are installed inside the tank. During operation of the spreader, these parts rotate and facilitate smooth feeding of material to spreading disc (4). Sieve (8) located in the upper part of the tank prevents stones and lumps of material from entering the tank. Spreading disc is driven by hydraulic system (9) or the tractor PTO. Sand spreader enables smooth adjustment of spreading dose and steplike adjustment of spreading direction. Spreading width is adjusted with adjustable fan-shaped guard (5). The machine is mounted to the tractor with the three point linkage.

3.3 HYDRAULIC SYSTEM

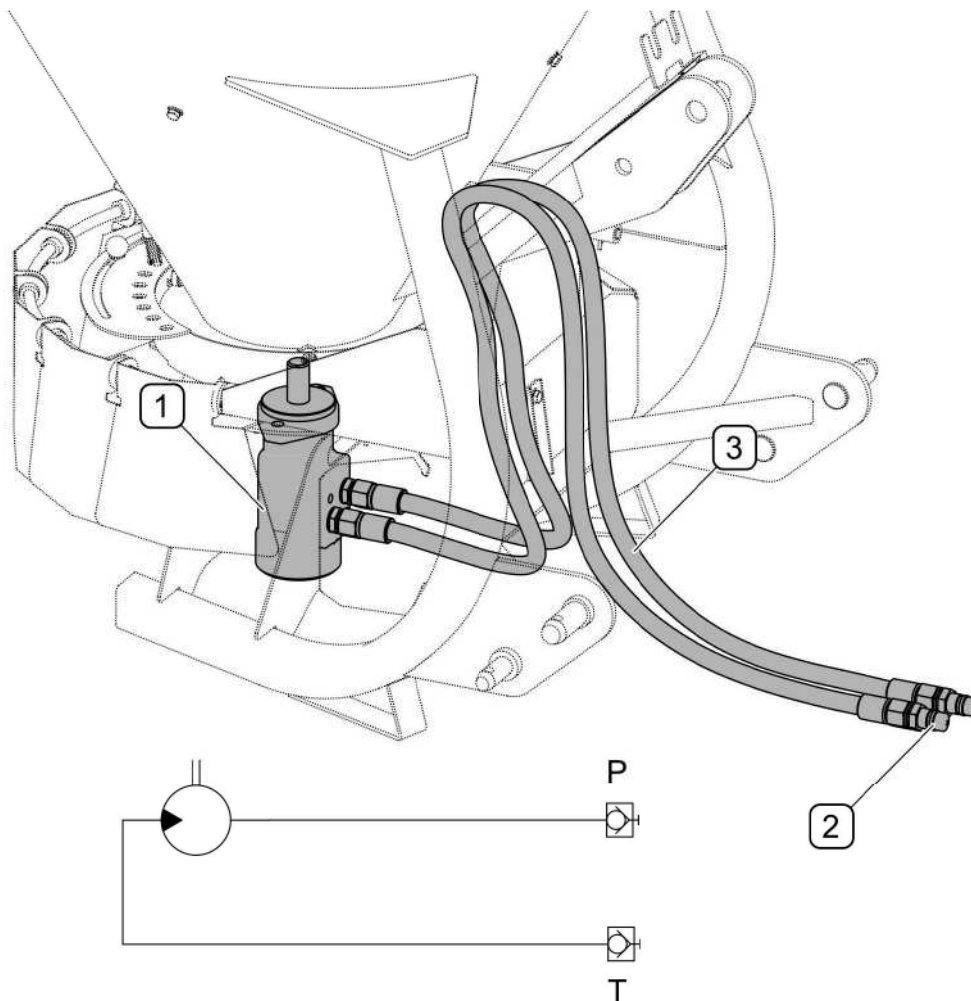


FIG. 3.3 Hydraulic system design

(1) - hydraulic motor; (2) - quick couplers; (3) - conduits

In the sand spreader with hydraulic drive system the spreading disc together with sweep-off gear and mixer are driven by hydraulic motor (1) supplied with oil from the tractor external hydraulic system. Hydraulic conduits terminated with quick couplers (2) are used for connecting the sand spreader's hydraulic system with the tractor's hydraulic system.

3.4 PTO DRIVE TRANSFER SYSTEM

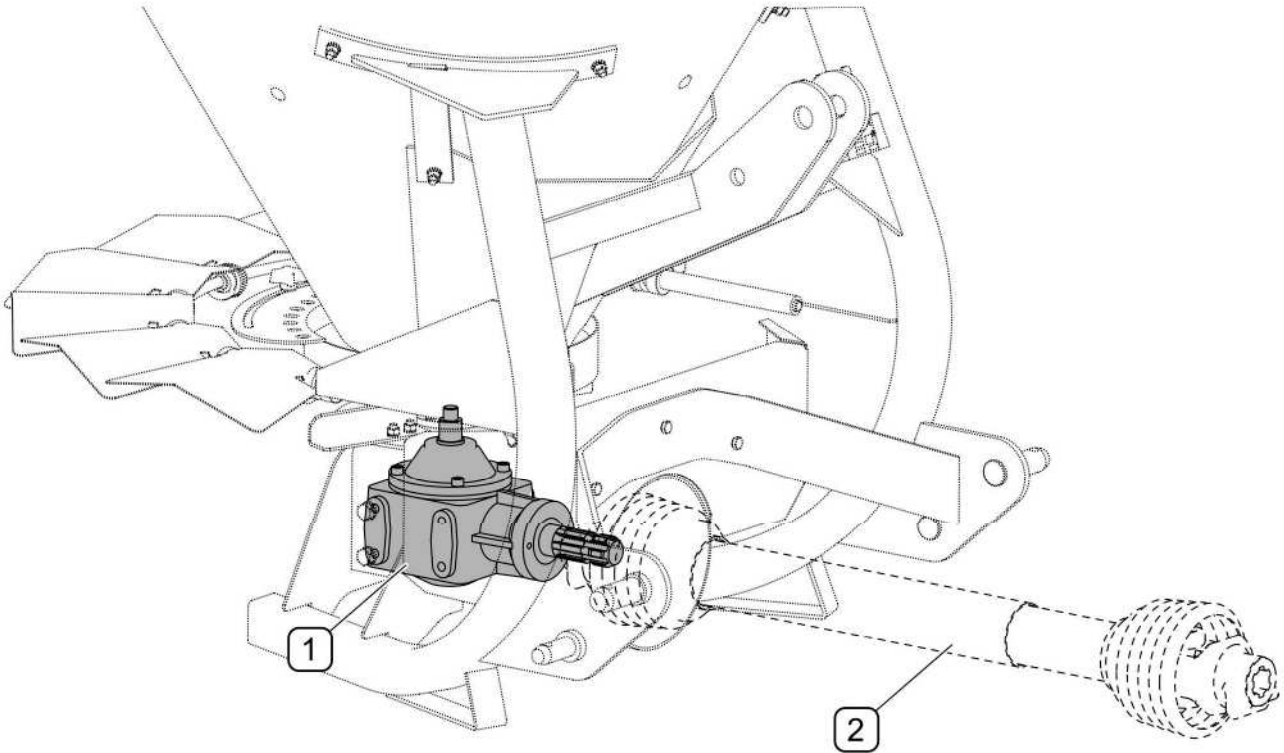


FIG. 3.4 Design of PTO drive transfer system

(1) - intersecting axis gear; (2) - PTO shaft (not included in the machine equipment);

In the sand spreader with mechanical drive system, the spreading disc is driven by intersecting axis gear (1) transmitting drive from the tractor PTO through the PTO shaft (2).

SECTION

4

CORRECT USE

4.1 PREPARING FOR WORK

DANGER



Before using the machine, the user must carefully read this operator's manual.

Careless and improper 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 agricultural tractors (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 normal 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 the tractor, machine operator must verify the machine's technical condition. 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
- check the compatibility of the sand spreader linkage with the tractor's linkage,
- check the compatibility of the hydraulic system sockets (*refers to the sand spreader with hydraulic drive system*)
- check the compatibility of the PTO parameters e.g. type of PTO shaft terminal, rotation speed (*refers to the sand spreader with PTO drive system*)
- check the condition of protective paint coat,
- Inspect machine's individual components for mechanical damage resulting from incorrect transport (dents, piercing, bent or broken components),
- Check all the lubrication points, lubricate the machine as needed according to recommendations provided in section 5,
- check technical condition of the hydraulic system (*refers to the sand spreader with hydraulic drive system*)
- check technical condition of the spreading disc and mixer,

- check technical condition of the linkage components and guards (mesh guard and fan-shaped guard),
- check technical condition of intersecting axis gear (*refers to the sand spreader with PTO drive system*)

**ATTENTION!**

Non-adherence to the recommendations contained in the Operator's Manual or improper use 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:

- hitch the machine to tractor (see "*HITCHING TO TRACTOR*")
- in the sand spreaders with hydraulic drive system, connect hydraulic system conduits, check if spreading disc drive system works correctly and check leaktightness of hydraulic system,
- in the sand spreader with PTO drive system, connect PTO shaft, check operation of spreading disc drive system and check leaktightness of intersecting axis gear,
- check rotation direction of spreading disc.

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

**ATTENTION!**

Before using the machine always check its technical condition. In particular, check the technical condition of the hitch and hydraulic system.

4.2 CHECKING TECHNICAL CONDITION

When preparing the machine for normal use, check individual elements according to guidelines presented in table (4.1)

TAB. 4.1 TECHNICAL INSPECTION SCHEDULE

DESCRIPTION	SERVICE OPERATION	FREQUENCY
Technical condition of safety guards	check the technical condition of safety guards, if complete and correctly mounted.	Before beginning work
Technical condition of spreading disc, mixer and sweep-off gear	check the technical condition, if complete and correctly mounted.	
Technical condition of hydraulic system (if installed)	Visually inspect the technical condition	
Oil level in intersecting axis gear (if installed)	For details please refer to section „MAINTENANCE OF PTO DRIVE TRANSFER SYSTEM”	
Check of all main nut and bolt connections are properly tightened	Torque values should be according to table (5.7)	Once a week
Lubrication	Lubricate elements according to table „LUBRICATION”.	According to table (5.3)



ATTENTION!

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

4.3 HITCHING TO TRACTOR

The PS-250 sand spreader may only be mounted on a tractor fulfilling the requirements contained in Table 1.1 "TRACTOR REQUIREMENTS".



ATTENTION!

Before hitching the sand spreader to tractor, the user must carefully read the tractor operator's manual.



DANGER

When hitching, there must be nobody between the machine and the tractor. A person assisting in the hitching of the machine should stand in such a place (beyond the area of danger), in order to be continuously visible to the tractor driver.

Exercise caution when hitching the machine to tractor.

4.3.1 HITCHING TO THE THREE POINT LINKAGE

Before hitching the sand spreader to tractor's three-point linkage, make sure that the category of the tractor linkage is compatible with that of the machine.

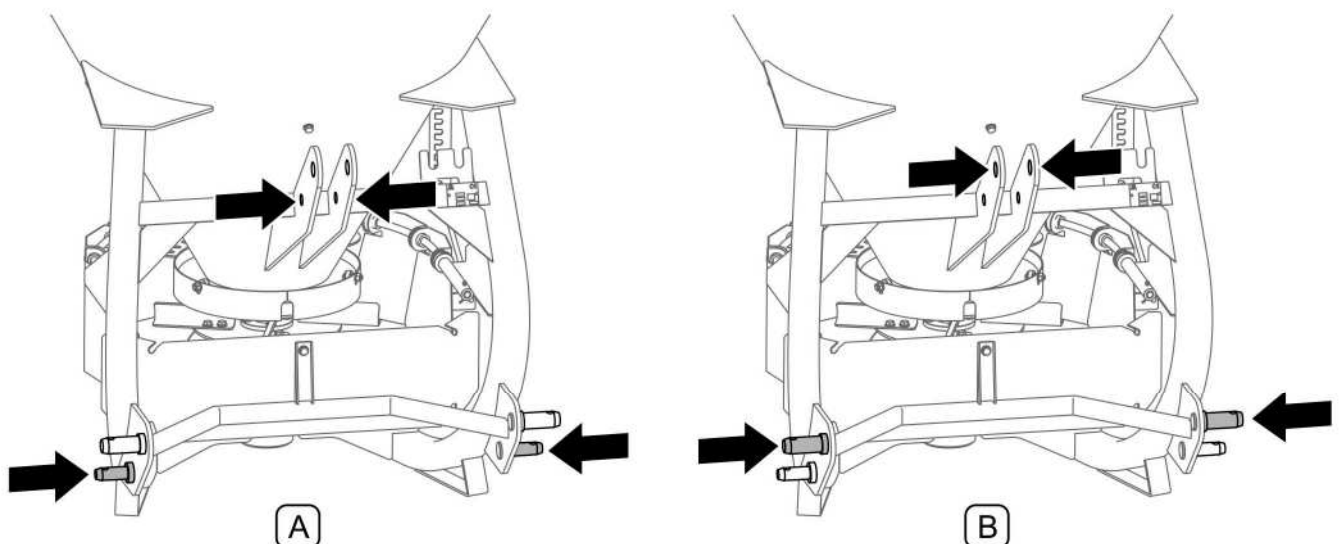


FIG. 4.1 Three-point linkage categories according to ISO 730-1

(A) - linkage of category I ISO 730-1; (B) - linkage of category II (narrow) ISO 730-1;

When hitching the sand spreader to tractor's three-point linkage do the following:

- move the lower rod of tractor's three-point linkage to the lower linking points of the sand spreader; set lower rods at an appropriate height,
- switch off tractor's engine and prevent it from moving,
- connect the lower pins of the sand spreader linkage with tractor's three-point linkage and secure with linchpins,
- in the case of the hook linkage, place balls on sand spreader linkage pins, secure with linchpins and lift the pins until balls lock in hooks,
- connect tractor upper link (central connector) to the upper attachment point of the sand spreader's linkage using a pin and secure with linchpin,
- eliminate lateral movements of sand spreader by appropriate adjustment of the lower arm stabilisers; both lower links of the three-point linkage are recommended to be set at the same height,
- lift sand spreader using tractor three point linkage.



DANGER

To mount machine on tractor use only genuine pins and safeguard linchpins.

4.3.2 CONNECTING HYDRAULIC SYSTEM

In the sand spreaders with hydraulic drive system hydraulic conduit connectors (1) should be connected to the sockets of a single section of the tractor's external hydraulic system (FIG. 4.2). When the drive system is switched on the spreading disc (2) should rotate counterclockwise. If the spreading disc rotates in the wrong direction, swap the hydraulic conduit connectors.

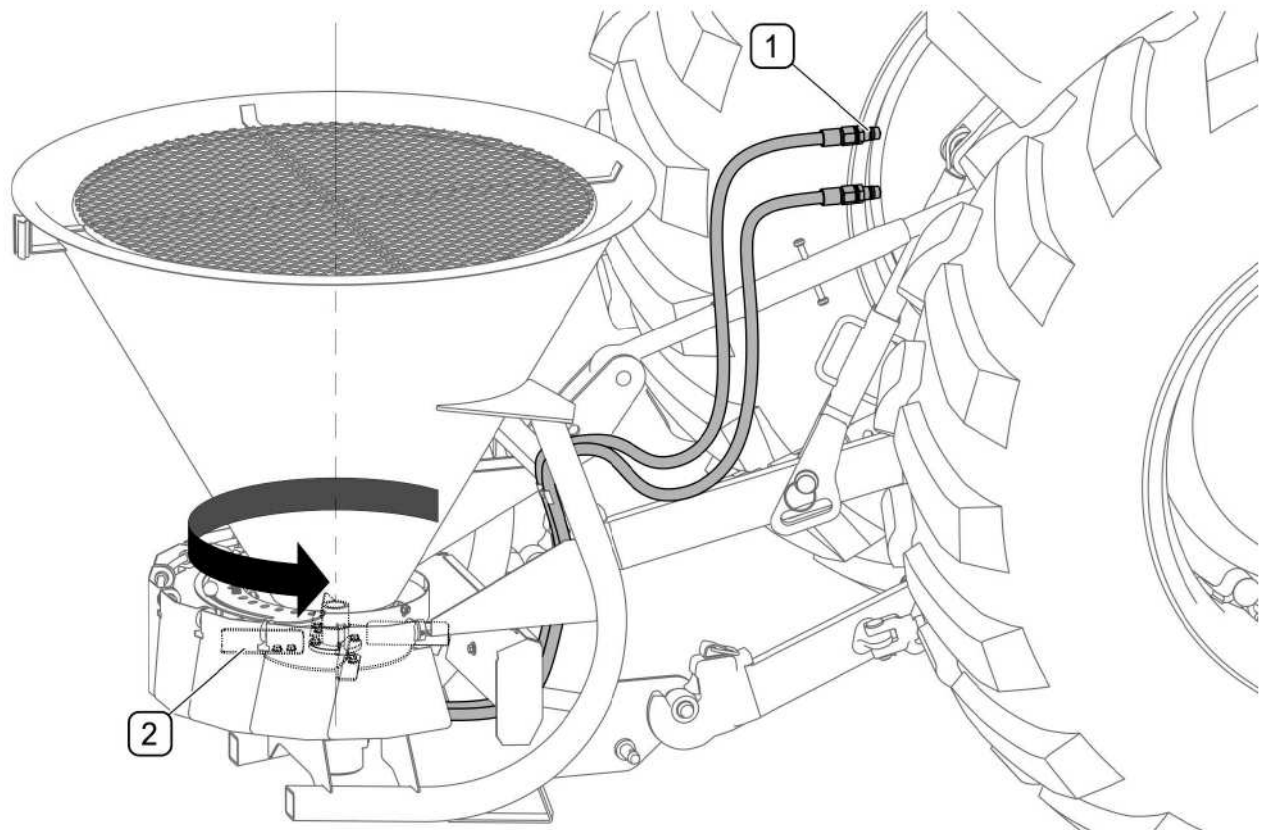


FIG. 4.2 Connecting hydraulic system to tractor

(1) - hydraulic conduit connectors; (2) - spreading disc;



DANGER

Prior to connecting individual system conduits the user must carefully read the tractor operator's manual and observe all Manufacturer's recommendations.



DANGER

When connecting the hydraulic conduits, make sure that the hydraulic system of the tractor is not under pressure.



ATTENTION!

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

4.3.3 CONNECTING PTO SHAFT

DANGER



Before connecting the shaft, turn off the tractor's engine and remove the key from the ignition. Ensure that unauthorised persons do not have access to the tractor.

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

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 connection to the tractor check the technical condition of the shaft guard, the completeness and condition of the protecting chains and the general technical condition of the shaft. The shaft length should be equal to (L) in order to enable its connection to the hitched machine (FIG. 4.3), i.e. it should not be longer than the distance between the front of the machine's PTO shaft and the front of the tractor's PTO shaft. This distance varies depending on tractor models and it may be within the range 690 ÷ 765 mm for category I three point linkage and 820 ÷ 900 mm for category II three point linkage

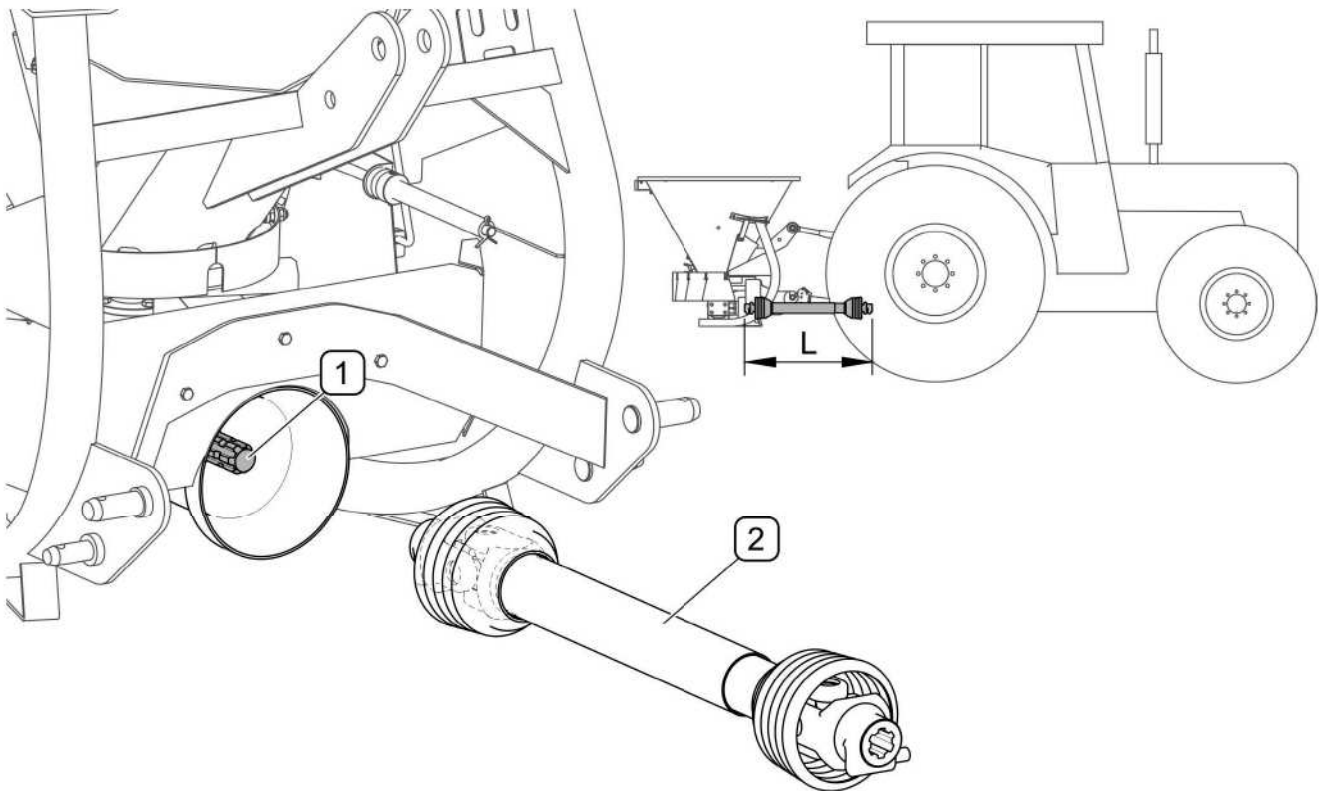


FIG. 4.3 Connecting of PTO shaft

(1) - drive shaft of intersecting axis gear; (2) - PTO shaft (not included in the machine equipment)

**ATTENTION!**

PTO drive may be engaged only if the sand spreader is lifted.

4.4 SAND SPREADER OPERATION

4.4.1 LOADING

**DANGER**

Loading may be performed only if the sand spreader is switched off and mounted on tractor.

**DANGER**

Be especially careful when loading the sand spreader with front loader

The sand spreader's tank is loaded from above through the sieve. Sieve prevents stones and lumps of material from entering the tank. The sand spreader's tank can be filled manually or mechanically e.g. using a front loader. Close the dosing hole before filling the tank. The mixer inside the tank is recommended to be positioned vertically because such a position of the mixer reduces loads during start-up.

4.4.2 LEVELLING THE MACHINE

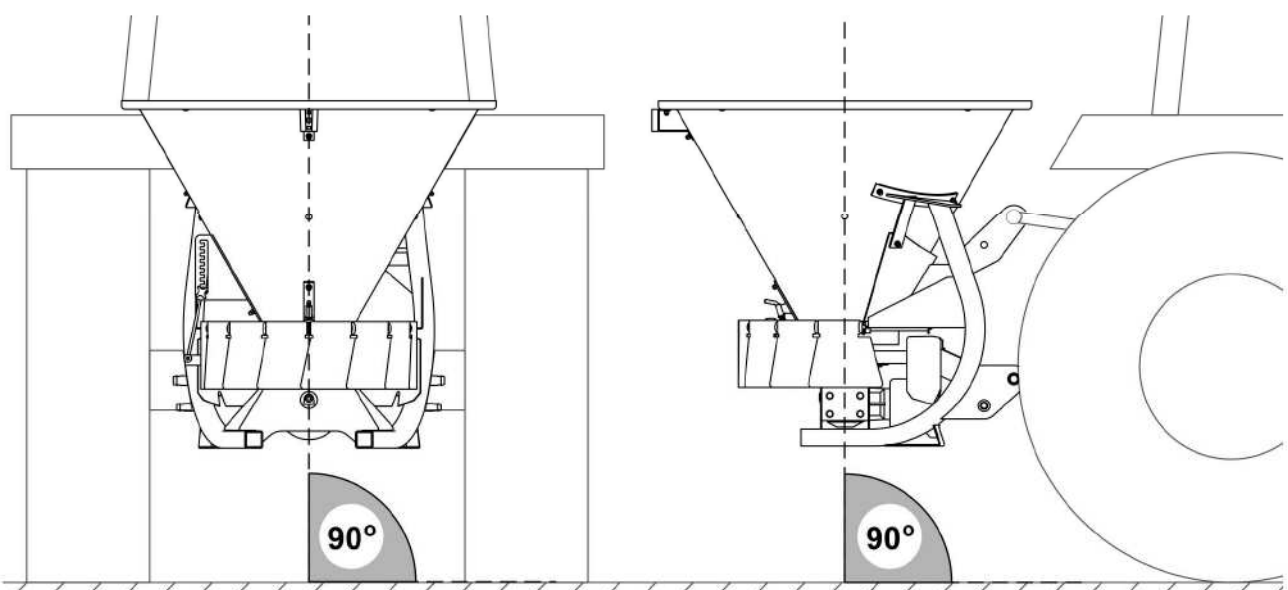


FIG. 4.4 Levelling the sand spreader

For optimum operation, position the sand spreader body (FIG. 4.4) in such a manner as to ensure that the rotation axis of the spreading disc is set at an angle of 90° to ground surface. Longitudinal inclination is set by adjusting the central link length while transverse inclination is set by changing the length of lower arm hanging rod.

4.4.3 ADJUSTMENT OF SPREADING DOSE



DANGER

All adjustments and settings should be made with disengaged drive system of the machine.

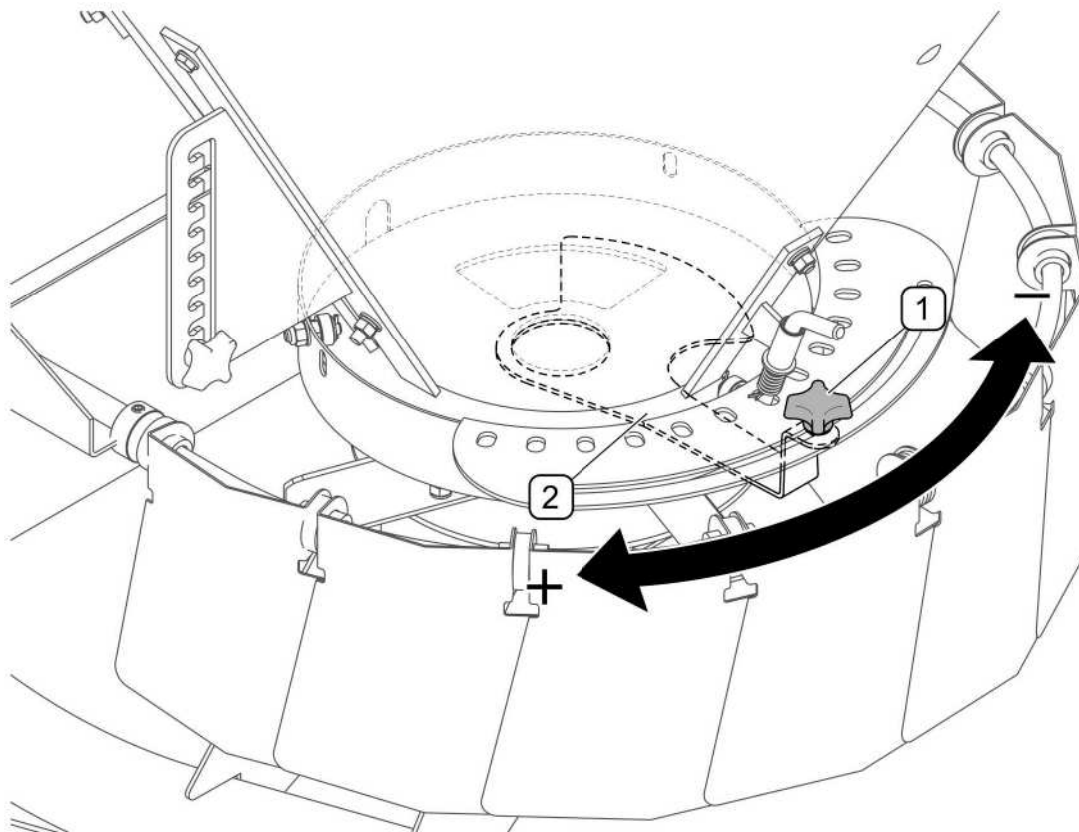


FIG. 4.5 Adjustment of spreading dose

(1) - lock knob; (2) - spreading dose adjusting lever

Spreading dose adjustment can be carried out by loosening knob (1) and proper shifting of lever (2). Shift lever (2) clockwise in order to enlarge the dosing hole in the tank (FIG. 4.5). When the lever is shifted to the right extreme position, the dosing hole is completely closed. When a required spreading dose is set, tighten knob (1) in order to lock the setting.

4.4.4 ADJUSTMENT OF SPREADING DIRECTION

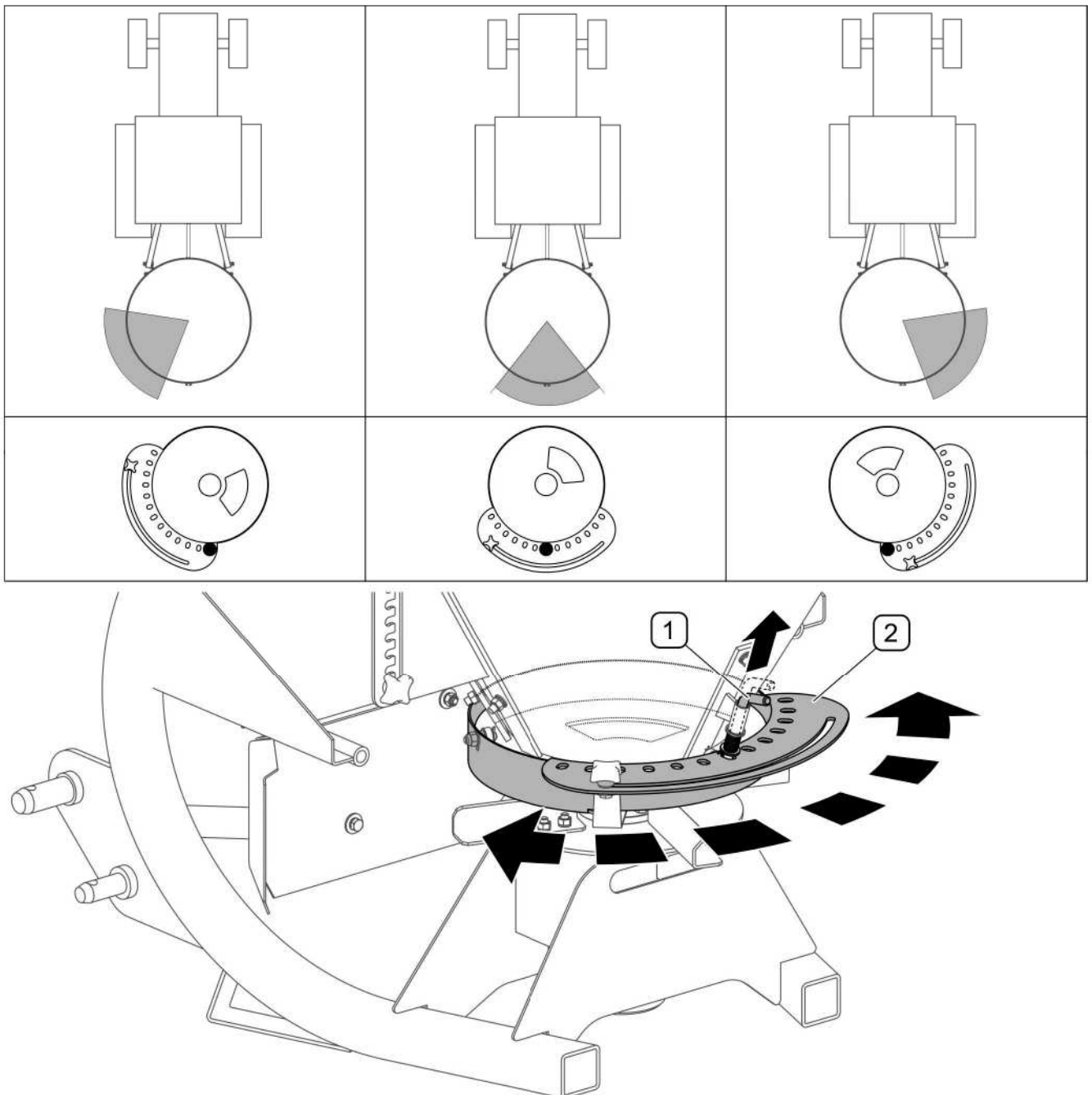


FIG. 4.6 Adjustment of spreading direction

(1)- securing pin; (2)- direction adjusting disc

Adjustment of spreading direction (FIG. 4.6) is performed by pulling out securing pin (1) and turning disc (2) around the vertical axis of the tank. After relocating the disc to a required position, secure the disc against relocation by inserting the securing pin end to a proper hole in the disc. Setting the securing pin (1) in the central hole of the disc (2) enables symmetrical spreading with regard to the tractor driving axis. In order to obtain left-sided asymmetrical spreading (*looking in the direction of tractor travel*), turn the disc clockwise from the central

position. Right-sided asymmetrical spreading is obtained by turning the disc counterclockwise from the central position. Please note that, apart from the above-described positions of dosing hole, the spreading zone is influenced also by the rotation speed of the spreading disc.

4.4.5 ADJUSTMENT OF SPREADING WIDTH

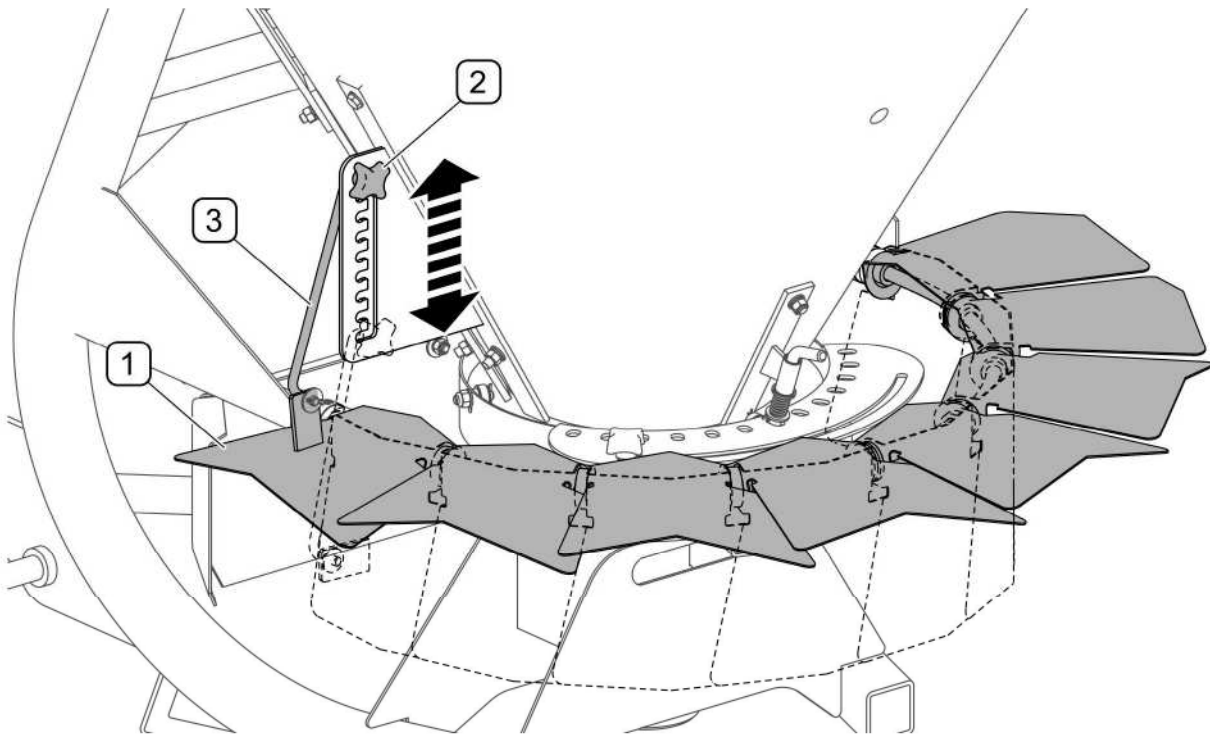


FIG. 4.7 Adjustment of spreading width

(1) - fan-shaped guard; (2) - pressing handle; (3) - guard link

Fan-shaped guard (1) is used for limiting the spreading width. The guard is adjusted by loosening pressing handle (2) and shifting guard lifting link (3) to a proper notch on the strip. After adjustment tighten handle (2). Working spreading width can be adjusted within the range from 1 ÷ 6 m

Varying dampness, granulation and slip parameters of sand, salt or mixture of sand and salt as well as rotation speed of spreading disc determine the spreading parameters. That is why it is impossible to predetermine the settings of the sand spreader's adjusting devices. In order to determine the settings, preset the machine, make a test and correct the settings, if necessary.

4.4.6 STARTING THE MACHINE

Having made sure that all the protective elements and all the connections are properly installed, one may commence working with the machine. Lift the sand spreader using the tractor three point linkage, drive to the place of work and then, engage the spreading disc drive system. In the sand spreaders with hydraulic drive system, switch on a relevant section of tractor external hydraulics. In the sand spreaders with mechanical drive system, engage PTO shaft drive and set a proper engine rotation speed. Do not start working immediately at full power.



DANGER

In order to limit occupational risks associated with exposure to noise during machine operation use individual protection (ear protectors). In order to reduce the level of noise during work the tractor cab window and door should be closed.



DANGER

The sand spreader drive system can be controlled only from the operator cab. There must be no bystanders within the machine working zone.



IMPORTANT!

PTO drive may be engaged only when the sand spreader is lifted.



IMPORTANT!

It is not recommended to operate the sand spreader at a working speed of more than 10 km/h.

4.5 DRIVING ON PUBLIC ROADS

When driving on public roads, respect the road traffic regulations, exercise caution and prudence. If the sand spreader is operated on pavements special attention should be paid to the bystanders likely to be near the working machine. Listed below are the key guidelines.

- Before moving off make sure that there are no bystanders, especially children, near the machine or the tractor. Take care that the driver has sufficient visibility.

- Make sure that the sand spreader is correctly attached to the tractor, and linkage is properly secured.
- Permissible design speed and maximum speed allowed by road traffic law must not be exceeded. Speed of travel should be adjusted to prevailing road conditions, pavement condition and other conditions.
- While operating the machine, turn on the orange beacon light in the tractor.
- While driving on public roads, the machine should be marked with slow-moving vehicle warning sign (2) placed on the rear of the machine (FIG. 4.8)

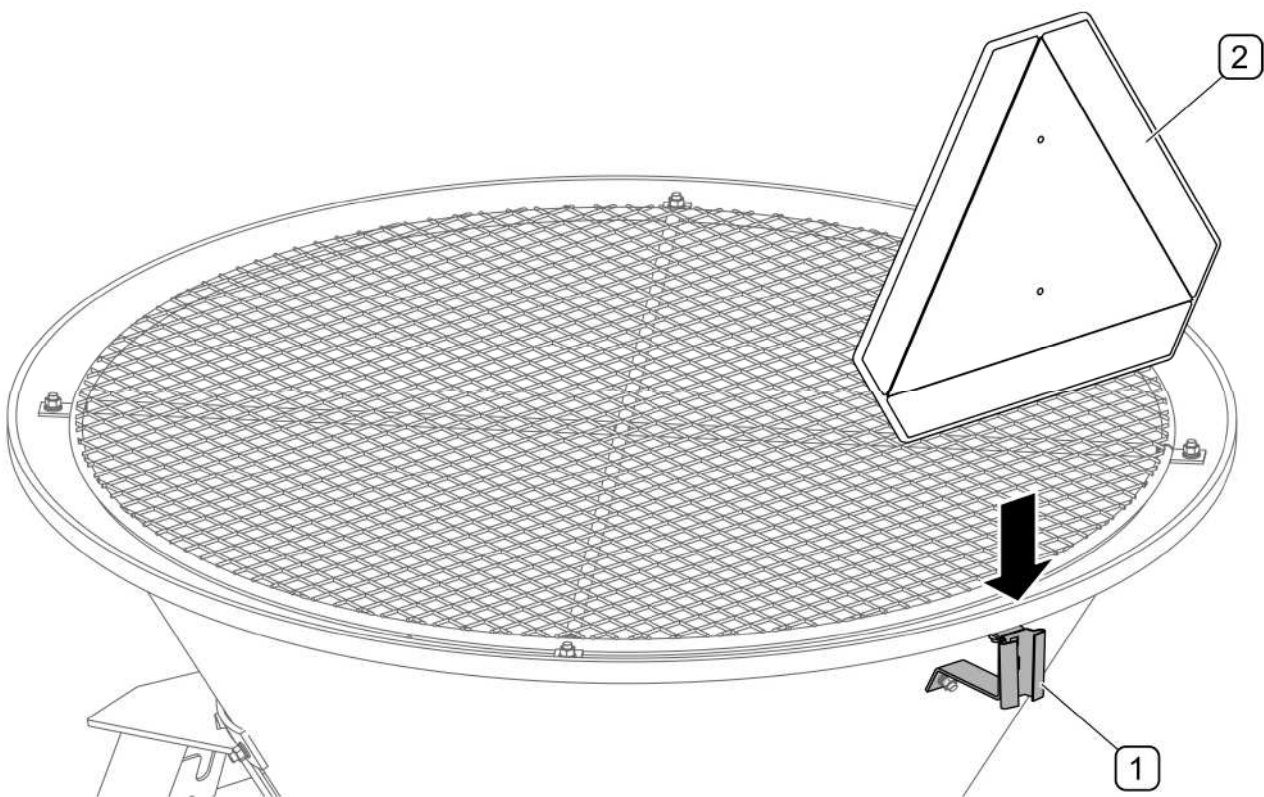


FIG. 4.8 **Warning sign bracket**

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

- Avoid ruts, depressions, ditches or driving on roadside slopes. Driving across such obstacles could cause the trailer or the tractor to suddenly tilt. Driving near ditches or canals is dangerous as there is a risk of the wheels sliding down the slope or the slope collapsing.
- Speed must be sufficiently reduced before making a turn or driving on an uneven road or a slope.

- When driving on uneven terrain with the implement raised reduce speed due to dynamic loads and the risk of damaging the machine or carrying vehicle.
- When driving with raised sand spreader set it so as not to obscure the lights or restrict the visibility from the operator seat.
- When driving with raised implement, secure the tractor (carrying vehicle) linkage against falling or accidental dropping.

4.6 DISCONNECTING FROM TRACTOR



DANGER

Before disconnecting the machine from the tractor, turn off the tractor engine, engage the parking brake and secure cab against access of third persons.



DANGER

Reduce pressure prior to disconnecting the hydraulic system (refers to the sand spreader with hydraulic drive system)

In order to disconnect the sand spreader from the tractor, proceed as follows:

- Lower the sand spreader until it fully rests on the ground.
- Switch off engine, remove key from ignition and engage tractor parking brake.
- Reduce residual pressure in the hydraulic system by movements of appropriate lever controlling the tractor's hydraulic circuit (*refers to the sand spreaders with hydraulic drive system*).
- Disconnect hydraulic conduit plugs from tractor and secure with stoppers and place in special bracket (FIG. 4.9) on the frame (*refers to the sand spreader with hydraulic drive system*).
- Disconnect PTO shaft (*refers to the sand spreader with PTO drive system*)
- Disconnect top link (so-called central connector), dismount lower arms from pins and drive tractor away from the sand spreader.

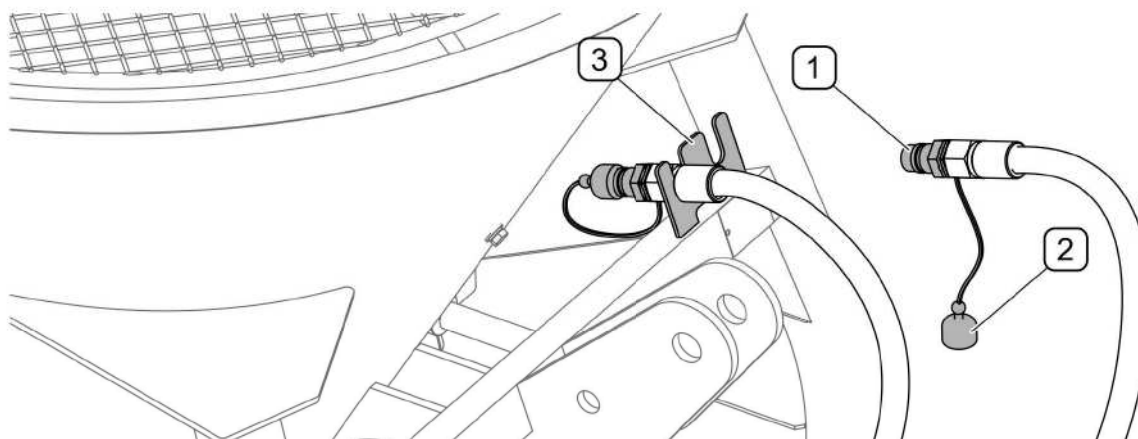


FIG. 4.9 Protection of hydraulic quick coupling plugs

(1) - hydraulic quick coupling plugs; (2) - protective stoppers; (3) - conduit bracket;

4.7 INSTALLATION OF ADDITIONAL EQUIPMENT

Optionally, the machine can be equipped with tank cover (1) with rubber tensioners (2) used for securing to hooks (3) on the sand spreader tank. Installation method, depending on tank type, is shown on FIG. 4.10.

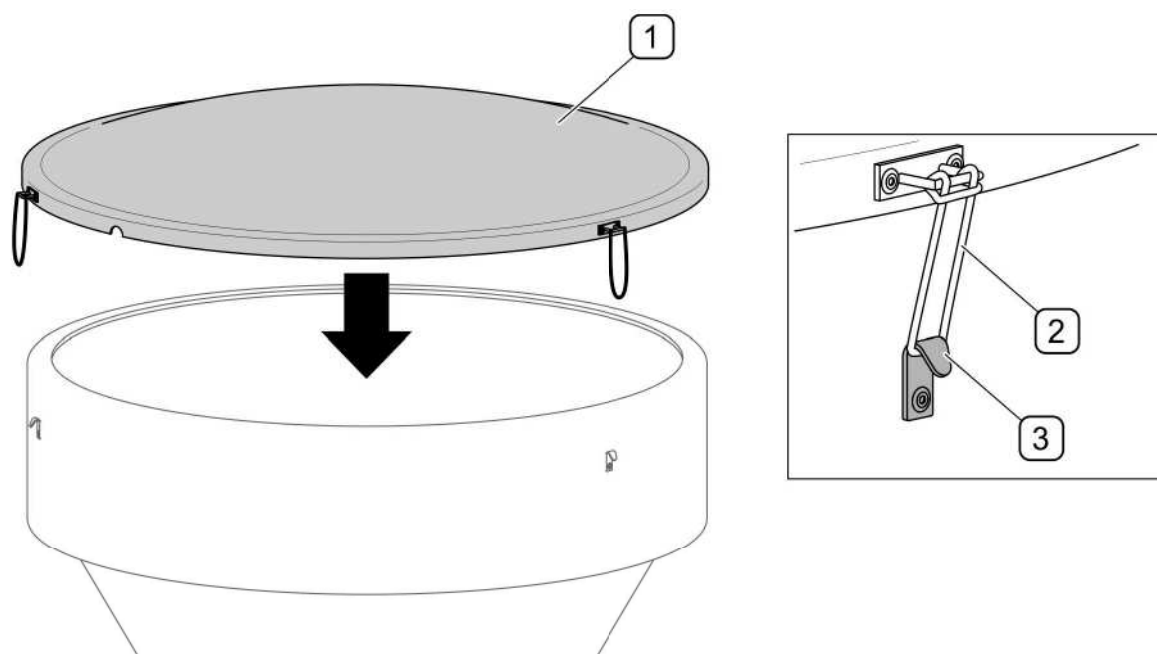


FIG. 4.10 Tank cover (option)

(1) - tank cover; (2) - rubber tensioners; (3) - hooks;

SECTION

5

MAINTENANCE

5.1 HYDRAULIC SYSTEM MAINTENANCE

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

- checking leaktightness of hydraulic connections;
- checking technical condition of hydraulic conduits and quick couplers;



DANGER

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



ATTENTION!

Before you begin, visually inspect the hydraulic system components.

In a new machine, the hydraulic system is filled with HL32 hydraulic oil. The oil is not classified as a dangerous substance because of its composition. However, long-term action on the skin or eyes may cause irritation. 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. Hydraulic oil in normal conditions is not harmful to the respiratory tract. A hazard only occurs when oil is strongly atomised (oil vapour), or in the case of fire during which toxic compounds may be released.



DANGER

Oil fires should be quenched with carbon dioxide (CO₂), foam or extinguisher steam. Do NOT use water for fire extinguishing.

TAB. 5.1 HL32 hydraulic oil characteristics

ITEM	NAME	VALUE
1	ISO 3448VG viscosity classification	32
2	Kinematic viscosity at 40°C	28.8 – 35.2 mm ² /s
3	ISO 6743/99 quality classification	HL
4	DIN 51502 quality classification	HL
5	Flash point, °C	Above 210°C
6	Maximum Operating Temperature, °C	80

Spilt oil should be immediately collected and placed in marked tight container. Used oil should be taken to the appropriate facility dealing with the re-use of this type of waste.

The hydraulic system should be completely tight sealed. Minimum leaks are permissible with symptoms of "sweating", however in the event of noticing leaks in the form of "droplets" stop using the machine until faults are remedied.

The hydraulic system is vented automatically during machine operation.



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



DANGER

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



DANGER

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

5.2 MAINTENANCE OF PTO DRIVE TRANSFER SYSTEM

In a new machine, the intersecting axis gear of the spreading disc drive is filled with gear oil of SAE 90 class.

The system maintenance involves periodical checking of oil level and changing of oil in the intersecting axis gear.

To check the oil level in intersecting axis gear:

- set the machine horizontally,
- unscrew inlet plug (1) (FIG. 5.1),
- oil level (A) should reach the lower edge of the plug opening (1),
- if necessary, supplement oil to the required level (A),

The procedure concerning gear oil is the same as the procedure for hydraulic oil (see 5.1 *Hydraulic system maintenance*)



Check oil level in intersecting axis gear daily before beginning work.

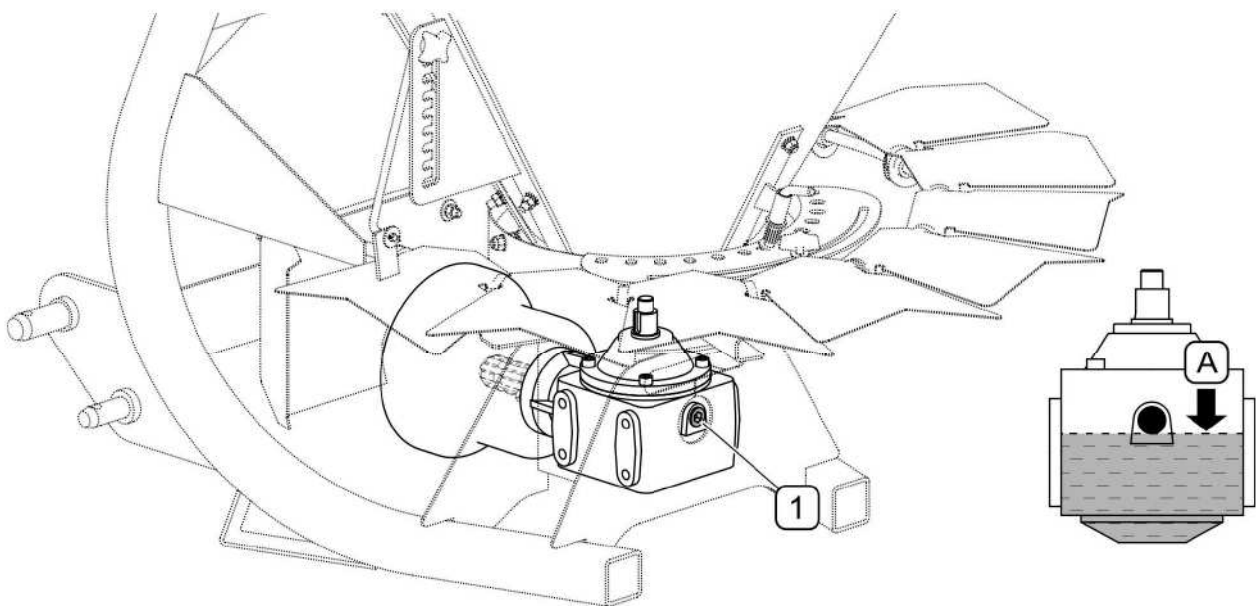


FIG. 5.1 Checking and change of oil in intersecting axis gear

(1) - inspection, inlet, drain plug; (A) - correct oil level

**DANGER**

When checking oil level and changing oil use the appropriate personal protection equipment i.e. protective clothing, footwear, gloves eye protection. Avoid contact of skin with oil.

Before changing oil in the intersecting axis gear:

- unscrew plug (1) (FIG. 5.1)
- tilt machine and drain oil to previously prepared basin,
- if oil Manufacturer recommends flushing transmission, that operation should be performed according to the guidelines of the oil Manufacturer (guidelines may be detailed on packaging),
- set the machine horizontally and supplement oil to the required level (A) ,
- tighten plug (1).



Oil in intersecting axis gear must be changed every 500 hours of work or once a year, whichever occurs first.

**TIP**

To lubricate intersecting axis gear use gear oil of SAE 90 class, in the amount of 0.4 litres.

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

If a leak is noticed, carefully inspect seals and check oil level. Transmission operation with insufficient oil may cause permanent damage of the mechanism.

Repair of transmission during guarantee period may only be performed at authorised mechanical workshops.

5.3 REPLACING SPREADING DISC BLADES

Technical condition of spreading disc blades should be checked periodically paying attention to mechanical damage, excessive wear and completeness of securing elements.



DANGER

Spreading disc blades may be checked and replaced only if the machine is disconnected from the tractor.

In order to replace a spreading disc blade:

- unscrew plugs (3),
- remove bolts (2) and washers (4),
- replace blades (1) with new ones, check condition of bolts and nuts, if necessary replace (see TAB. 5.2)
- install in reverse order

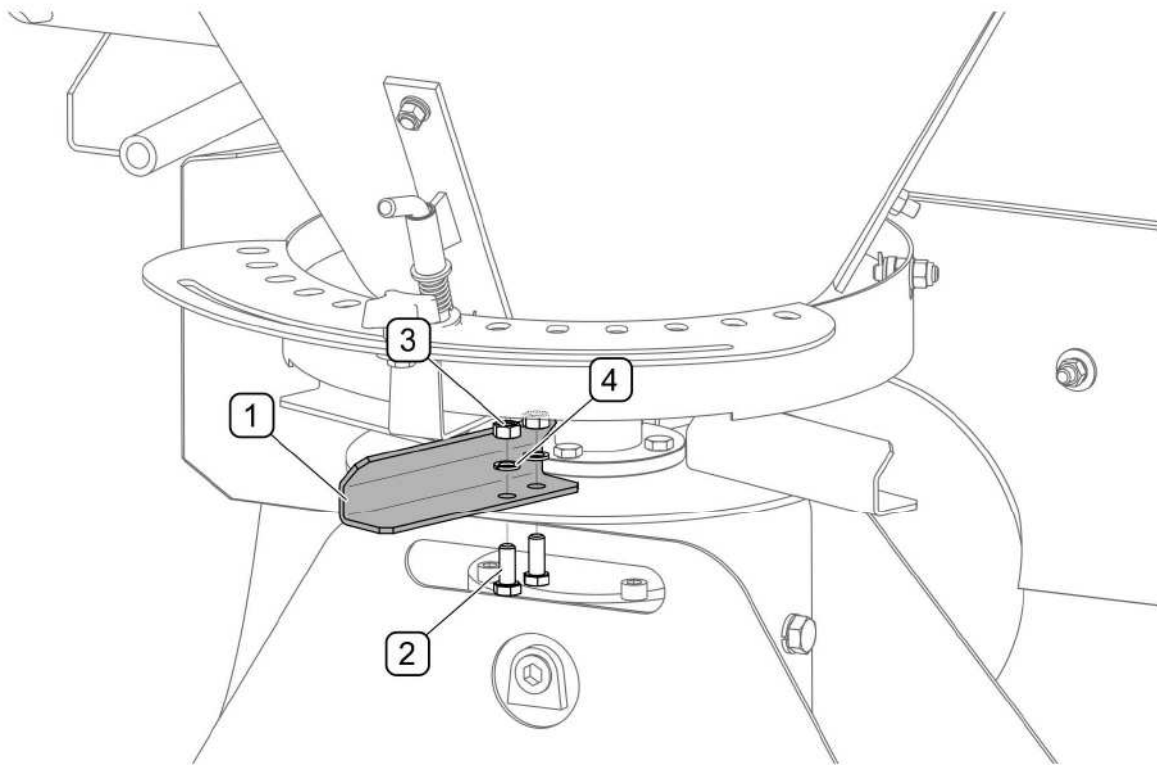


FIG. 5.2 Replacing spreading disc blades

(1) - blade; (2) - bolt; (3) - nut; (4) - washers

TAB. 5.2 THE LIST OF WORKING COMPONENTS OF SPREADING DISC

Marking FIG. 5.2	Name / Catalogue No.	Number of items
1	Blade / 19RPN-03.00.03	4
2	Bolt M8x20 PN-EN ISO 4017	8
3	M8 Nut according to PN-EN ISO 7040	8
4	Spring washer 8.2 PN-77/M-82008	8

5.4 LUBRICATION

Before commencing lubrication insofar as is possible remove old grease and other contamination. Remove and wipe off excess oil or grease. The following permanent grease is recommended for lubrication: ŁT-43-PN/C-96134. The sand spreader with hydraulic drive system does not require lubrication.



DANGER

Lubrication may only be performed when the machine is disconnected from the tractor.



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

TAB. 5.3 LUBRICATION POINTS AND LUBRICATION FREQUENCY (SAND SPREADER WITH PTO DRIVE SYSTEM)

ITEM	NAME	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	LUBRICATION FREQUENCY
A	Surface of multi-splined drive shaft	1	permanent grease	20 hours
B	Intersecting axis gear	1	oil	500 hours
C	PTO shaft *	*	*	*

* – not included in the machine equipment, for detailed information on operation and maintenance please refer to the Operator's Manual of the PTO shaft.

Marking description in Item column (TAB. 5.3) conforms with numbering shown (FIG. 5.3)

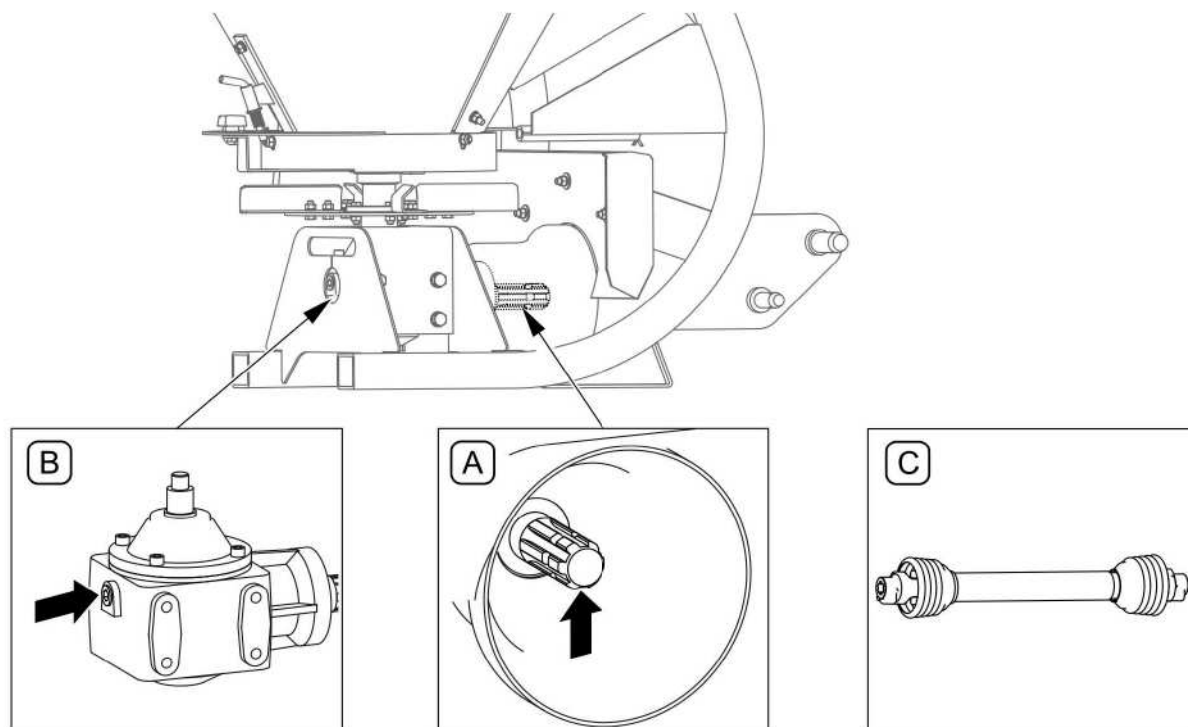


FIG. 5.3 Lubrication points (sand spreader with PTO drive system)

Lubrication points described in table 5.3

5.5 STORAGE

After finishing work, machine should be thoroughly cleaned and washed with water jet. While washing 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 is recommended to be kept in closed or roofed building.

If the machine shall not be used for a long period of time, protect it against adverse weather conditions. Lubricate machine according to the instructions provided. In the event of prolonged work stoppage, it is essential to lubricate all elements regardless of the period of

the last lubrication process. Additionally before the winter period apply grease to hitching system pins.

The sand spreader's tank should be emptied and the spreading dose adjusting lever should be set in maximum open position. Install cover on the tank (*if cover is included*).



ATTENTION!

Remains of material containing salt cause quick corrosion of metal parts.

5.6 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 torque values apply to non-greased steel bolts (TAB. 5.4).



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 damage the machine.

TAB. 5.4 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

5.7 TROUBLESHOOTING

TAB. 5.5 TROUBLESHOOTING

TYPE OF FAULT	CAUSE	REMEDY
Spreading disc does not rotate <i>(sand spreader with hydraulic drive system)</i>	The hydraulic system is not connected	Connect quick couplers to tractor system.
	Damaged hydraulic quick couplers	Check for damage, refer repair to service, if necessary
	Tractor hydraulic system unreliable switched off	Check the tractor hydraulic system
Spreading disc rotates in the wrong direction <i>(sand spreader with hydraulic drive system)</i>	Incorrect oil flow direction	Swap quick coupling plugs or change flow direction using manifold in the tractor
Spreading disc does not rotate <i>(sand spreader with PTO drive system)</i>	PTO shaft is not connected	Connect PTO shaft to sand spreader and tractor
	Tractor PTO drive is disengaged	Engage PTO drive
	Activation of clutch or another element protecting the shaft against overloading (depending on type of shaft)	Check the cause, remove possible jamming
	Damaged intersecting axis gear	Repair at authorised service point
Incorrect spreading	Incorrect machine settings	Preset parameters, conduct a test and correct settings.
	Machine is incorrectly mounted on the tractor	Check and adjust according to operator's manual
	Spreading disc rotation speed is too low	Increase engine RPM
	Contaminated, excessively worn spreading disc blades	Clean, replace if necessary
Sand spreader does not spread material even if settings are correct	Packed material in the tank	Close spreading dose adjusting hole. Start the machine while parking, switch the spreading disc at a low rotation speed and disintegrate packed material in this way using the mixer in the tank.
	Spreading dose adjusting hole is closed	Open

NOTES

A series of horizontal dotted lines for writing notes.

