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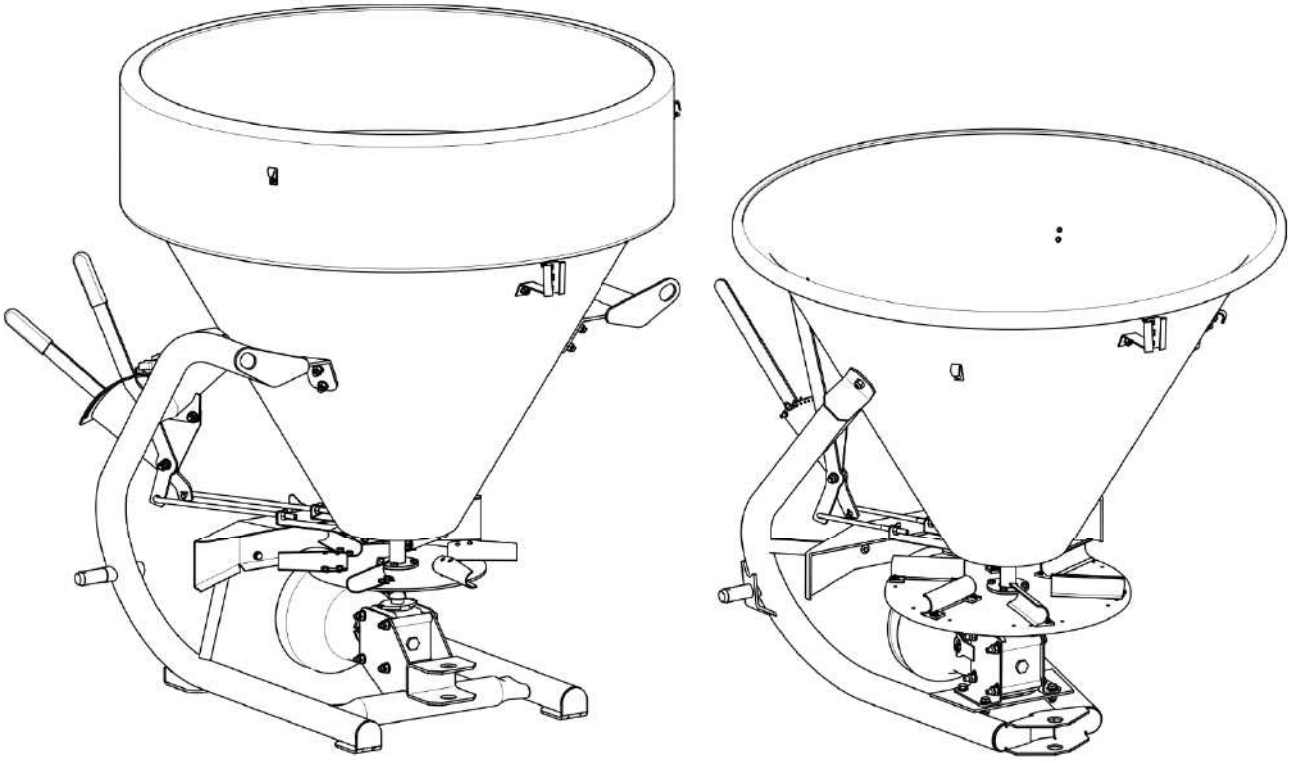
OPERATOR'S MANUAL

FERTILIZER SPREADER

PRONAR FD1-M03 / M03L
PRONAR FD1-M05 / M05L

TRANSLATION OF THE ORIGINAL INSTRUCTION



ISSUE 2B-03-2012

PUBLICATION NO 242N-00000000-UM

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FERTILIZER SPREADER

PRONAR FD1-M03 / M03L

PRONAR FD1-M05 / M05L

MACHINE IDENTIFICATION

TYPE: .....

SERIAL NUMBER: | | | | | | |

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 FD1-M03 / M03L and FD1-M05 / M05L fertilizer 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:

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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:	**Fertilizer spreader**			
Type:	**FD1-M03**	**FD1-M05**	**FD1-M03L**	**FD1-M05L**
Model:	–	–	–	–
Serial number:				
Commercial name:	**Fertilizer spreader PRONAR FD1-M03** **Fertilizer spreader PRONAR FD1-M05** **Fertilizer spreader PRONAR FD1-M03L** **Fertilizer spreader PRONAR FD1-M05L**			

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-CA DYREKTORA
d/s technicznych
członek zarządu
Roman Omelianiuk

Narew, the 2011 -10- 06

Place and date

Full name of the empowered person position, signature

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1

BASIC INFORMATION

1.1 IDENTIFICATION

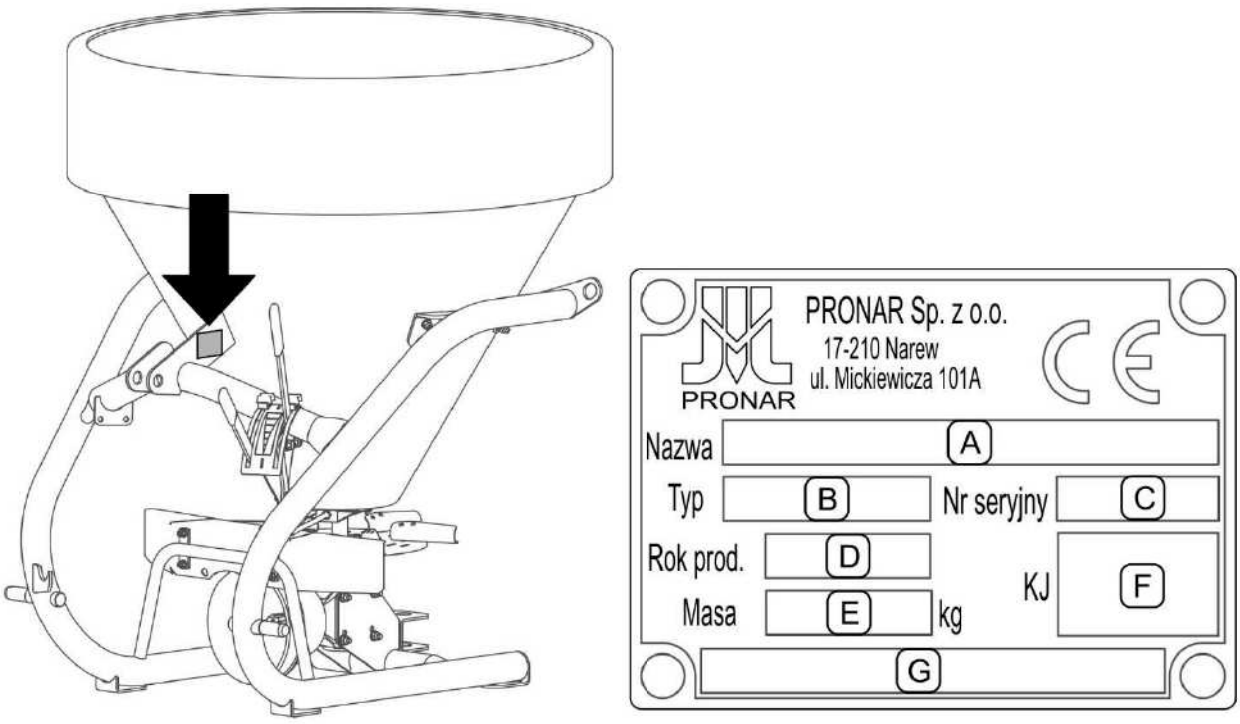


FIG. 1.1 Location of the data plate

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 – maximum carrying capacity [kg]

Serial number is stamped on the data plate. The data plate is located on the central link bracket (FIG. 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 FD1-M03 / M03L and FD1-M05 / M05L fertilizer spreaders are designed for surface spreading of dry, granular or crystalline fertilizers. Use for other purposes should be regarded as improper. Fertilizer spreader 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 the vehicle and are familiar with the road traffic regulations and transport regulations.

IMPORTANT

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

- **spreading materials other than fertilisers,**
- **transport of people, animals and other items on the machine**

TABELA 1.1 Agricultural tractor's requirements

	UNIT	REQUIREMENTS
Rear three point linkage	–	II (narrow) cat. according to ISO 730-1
PTO speed	RPM	540
PTO rotation direction	–	clockwise *(looking at the shaft front in the tractor)*
PTO shaft profile	–	type 1 according to ISO 500 *(Ø 35 mm, 6 splines)*
Minimum power on PTO shaft	hp (kW)	15 (11)

1.3 EQUIPMENT

The equipment of the fertilizer 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-95000000-02
- bracket of slow-moving vehicle warning sign - catalogue No. 19N-15000000 *(refers to FD1-M03L / M05L model);*

1.4 TERMS & CONDITIONS OF WARRANTY

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 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 factory defects and mechanical damage that is not due to the user's fault.

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 warranty repair coupons. A missing date of purchase or sale point stamp, may make the user ineligible for any warranty repair or refund.

During warranty period 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 warranty or not. 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

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 connected to tractor is permissible provided that the driver

familiarises himself with the Operator's Manual and particularly with safety information 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.

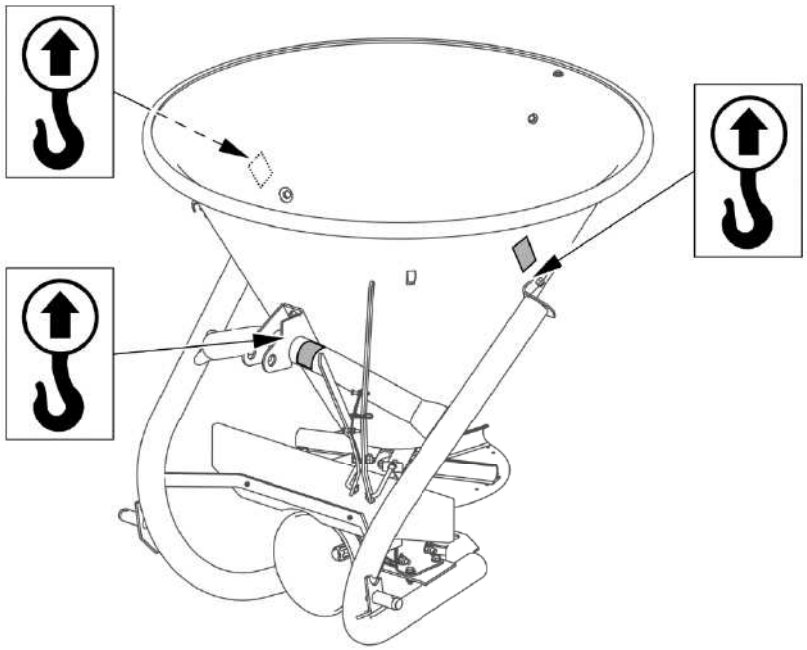


FIG. 1.2 Transport suspension points

The machine should be attached to lifting equipment in places specially designed for this purpose (FIG. 1.2), i.e. by central link bracket and brackets for fixing tank to frame.

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.

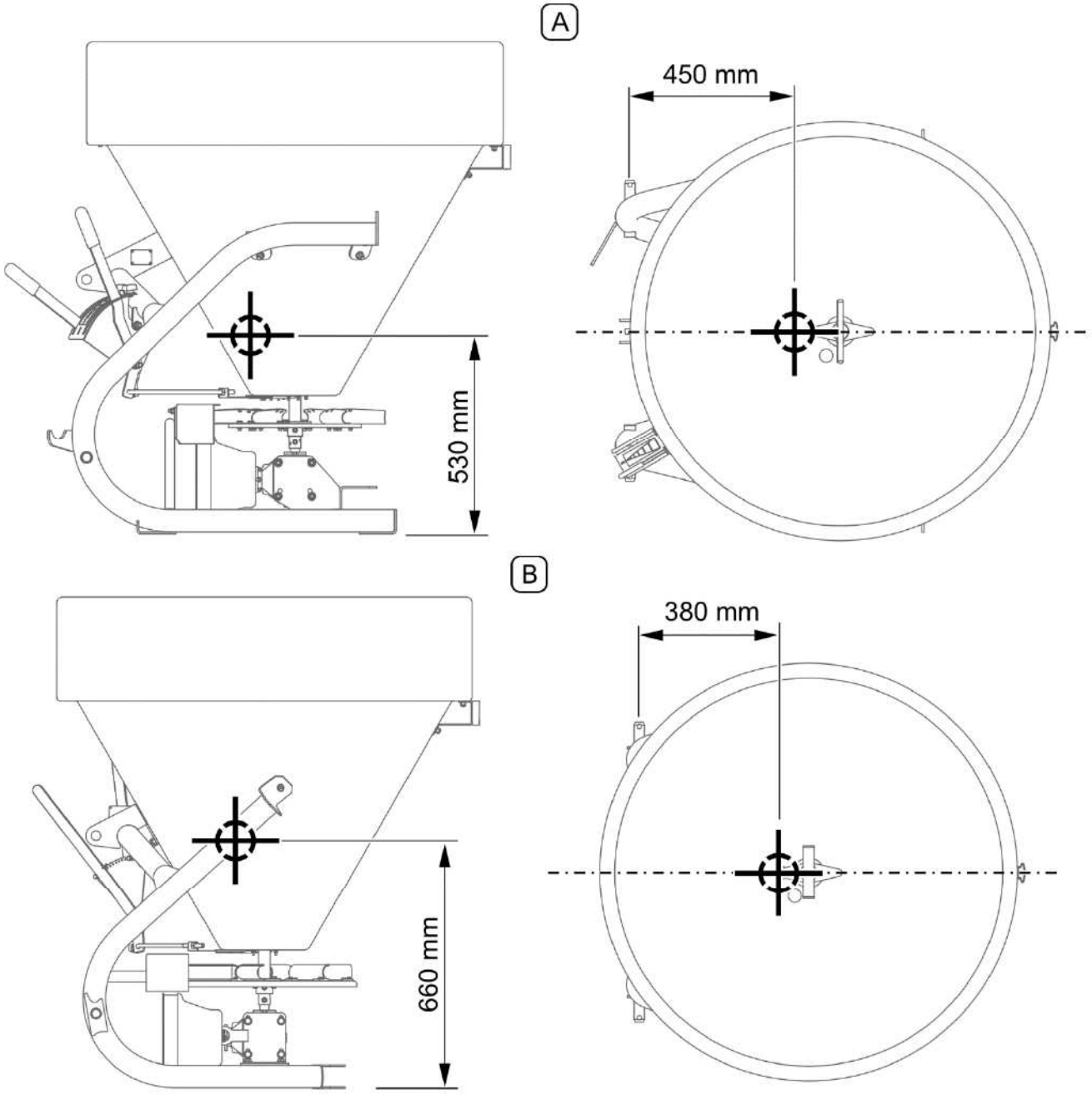


FIG. 1.3 Location of centre of gravity (empty tank)

(A) - FD1-M03 / M05 fertilizer spreader; (B) - FD1-M03L / M05L fertilizer spreader

ATTENTION

Centre of gravity, depending on the machine version varies in the ±50 mm range.

1.6 ENVIRONMENTAL HAZARDS

A lubricant leak constitutes a direct threat to the natural environment owing to its limited biodegradability. Maintenance and repair work which involves the risk of a leak should be performed in the rooms with oil resistant surface. In the event of lubricant leaking into the environment, first of all contain the source of the leak, and then collect the leaked lubricant using available means. Remaining lubricant should be collected using sorbents, or by mixing the oil with sand, sawdust or other absorbent materials. The lubricant 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.

Lubricant, 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

IMPORTANT

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

Avoid contact of skin with lubricant. Do not allow used lubricants to spill.

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 dismantling, remove lubricant from transmission. When spare parts are changed, worn out or damaged parts should be taken to a collection point for recyclable raw materials. Waste lubricant and plastic elements should be taken to the appropriate facility dealing with the recycling of this type of waste.

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 stated 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.
- Be aware of the existence of a residual 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 warranty.
- 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.
- 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 FROM CARRYING VEHICLE

- Carefully read the tractor Operator's Manual.
- Do not hitch the machine to the tractor when the linkage systems of machine and tractor are not compatible.
- After completed hitching of the machine, check the safeguards.
- To hitch the machine to tractor use only genuine pins and safeguards.
- The agricultural tractor to which the machine will be hitched must be technically reliable and must fulfil the requirements of machine Manufacturer.
- Be especially careful when hitching the machine to tractor.
- Be especially careful when unhitching 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 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 to the ground.
- Do NOT ride on the machine or transport any materials on it.
- 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.

2.1.4 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 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.
- 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 raised and unsupported 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 tractor 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. 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.

2.1.5 MACHINE OPERATION

- Before starting the tractor with the connected machine make sure the PTO drive is not engaged, otherwise it can lead to uncontrolled operation of the machine.
- 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 tractor's cab. Do NOT leave the cab, when the machine is in operation.
- Do NOT stand within the material spreading zone and also between the tractor and the machine when the tractor engine is working.
- Do not approach the machine until the rotating parts come to a complete standstill.
- During machine operation do not use PTO nominal rotation speed greater than 540 rpm
- When filling the tank, the machine should be mounted on the tractor and lowered to the ground and the tractor engine should be switched off.
- All instructions of the fertilizer producer should be adhered to. If necessary, use personal protection equipment, i.e. protective overalls, gloves, safety shoes, safety goggles, mask etc.

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 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.
- Do not exceed recommended by the manufacturer shaft working angle.
- 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 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 snow plough 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 attached,

- 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 tractor is connected and engine is running;

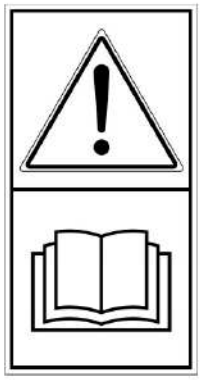
The residual risk may be kept to a minimum by following the recommendations below:

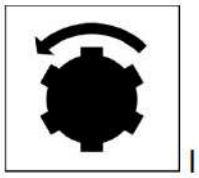
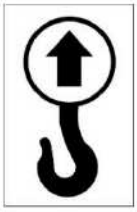
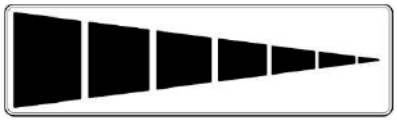
- prudent and unhurried operation of the machine,
- reasonably apply all the remarks and recommendations stated in the Operator's Manual,
- carry out repairs and maintenance work in line with operating safety rules,
- carrying out repair and maintenance work by persons trained to do so,
- use close fitting protective clothing,
- ensure unauthorised persons have no access to the machine, especially children,
- maintain safe distance from prohibited 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.

TAB. 2.1 Information and warning decals

ITEM	SYMBOL	DESCRIPTION
1		Before starting work, carefully read the Operator's Manual.
2		Danger of severing or cutting fingers or a palm by rotating parts of the machine. Do not touch any rotating elements until they come to a complete standstill.
3		Danger caused by materials thrown out by the machine. Keep a safe distance from the operating machine.

ITEM	SYMBOL	DESCRIPTION
4		Nominal PTO shaft rotation speed is 540 rpm.
5		Required rotation direction of PTO shaft in the machine
6		Lifting equipment attachment points while loading the machine
7		Maximum transport speed
8		Machine model
9		Adjust fertilizer dose *(only FD1-M03 / M05)*

Numbers in the item column correspond to marking (FIG. 2.1 and FIG. 2.2)

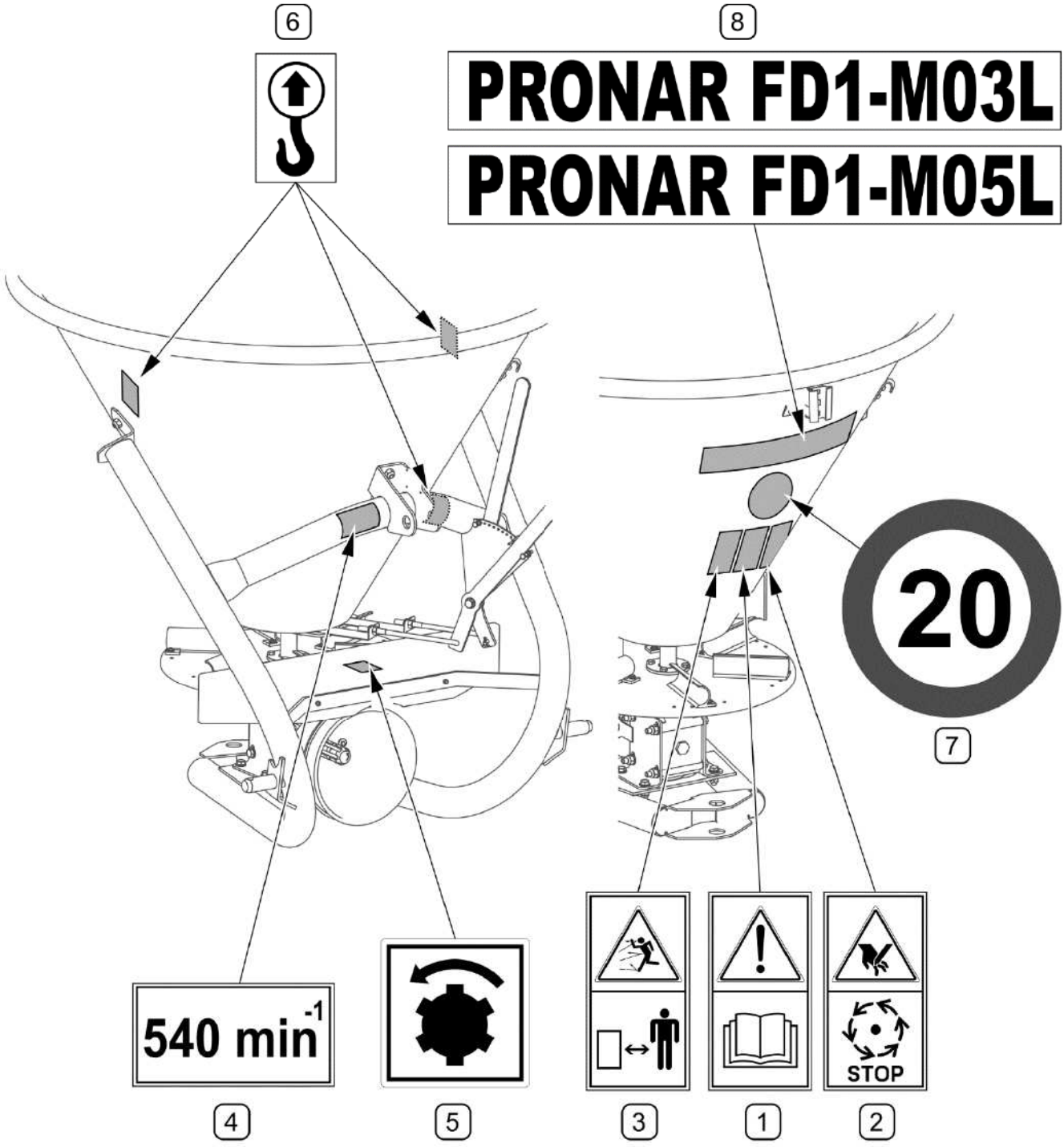


FIG. 2.1 Locations of information and warning decals on FD1-M03L / M05L fertilizer spreaders

Meaning of symbols (TAB. 2.1)

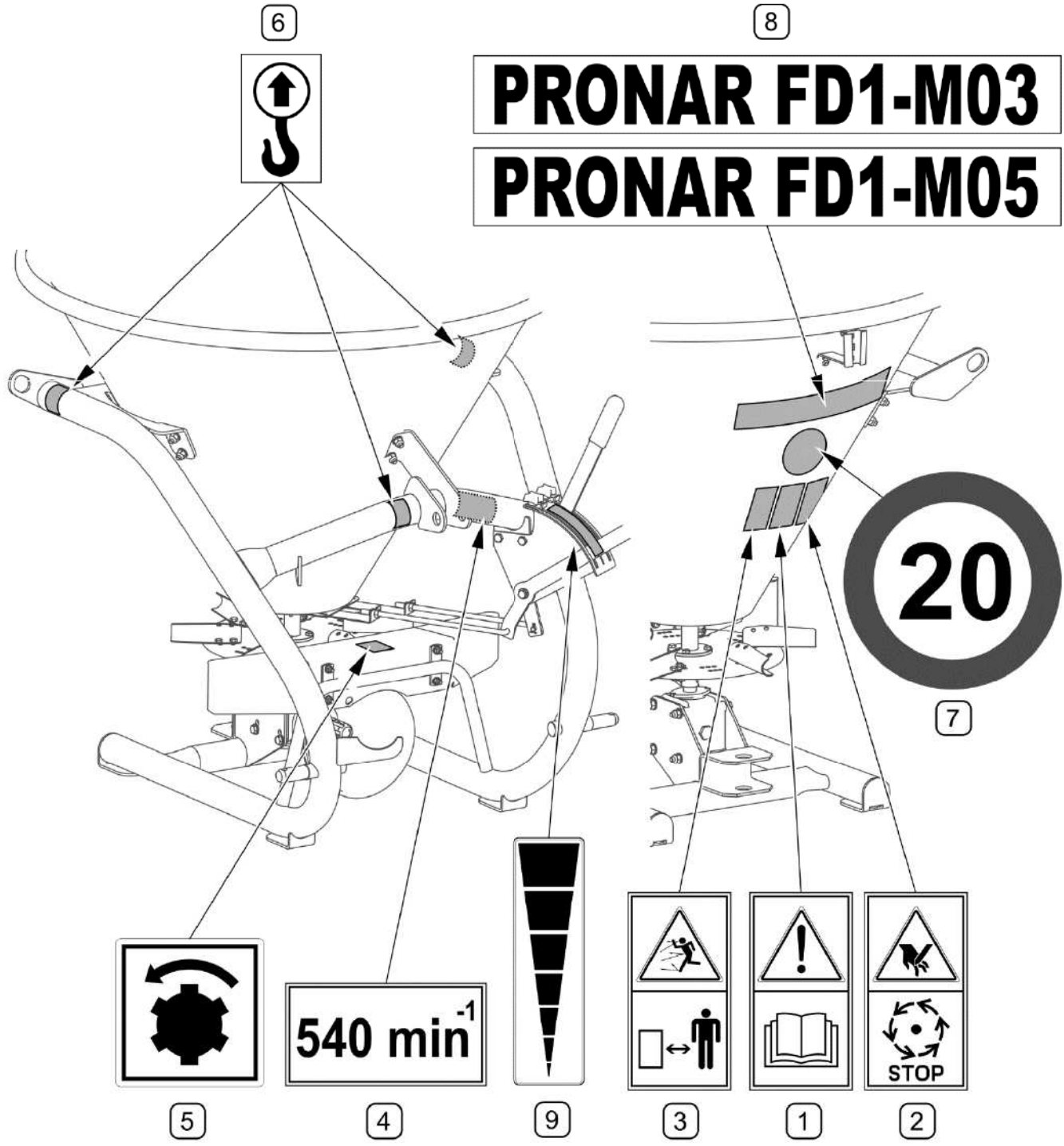


FIG. 2.2 Locations of information and warning decals on FD1-M03 / M05 fertilizer spreaders

Meaning of symbols (TAB. 2.1)

SECTION

3

DESIGN AND OPERATION

3.1 TECHNICAL SPECIFICATION

TAB. 3.1 BASIC TECHNICAL DATA OF FERTILIZER SPREADER

	Unit				
Model		FD1-M03	FD1-M03L	FD1-M05	FD1-M05L
Mounting method	–	three point linkage cat. II (narrow) acc. to ISO 730-1			
Power transmission	–	mechanical, from the tractor's PTO shaft through a PTO shaft			
Spread width	m	4 - 14			
Tank capacity	dm^3	250		500	
Tank carrying capacity	kg	325		650	
Amount of spread fertilizer	kg/ha	10 – 2 000			
Minimum power demand	hp (kW)	15 (11)			
Maximum working speed	km/h	10			
Maximum transport speed	km/h	20			
Number of spreading discs	pc.	1			
Number of spreading disc blades	pc.	6			
Nominal rotation speed of spreading disc	RPM	540			
Weight of machine ready for operation:	kg	80	52	90	42
Other information	–	one person operation			

Level of noise emitted by machine does not exceed 70 dB(A)

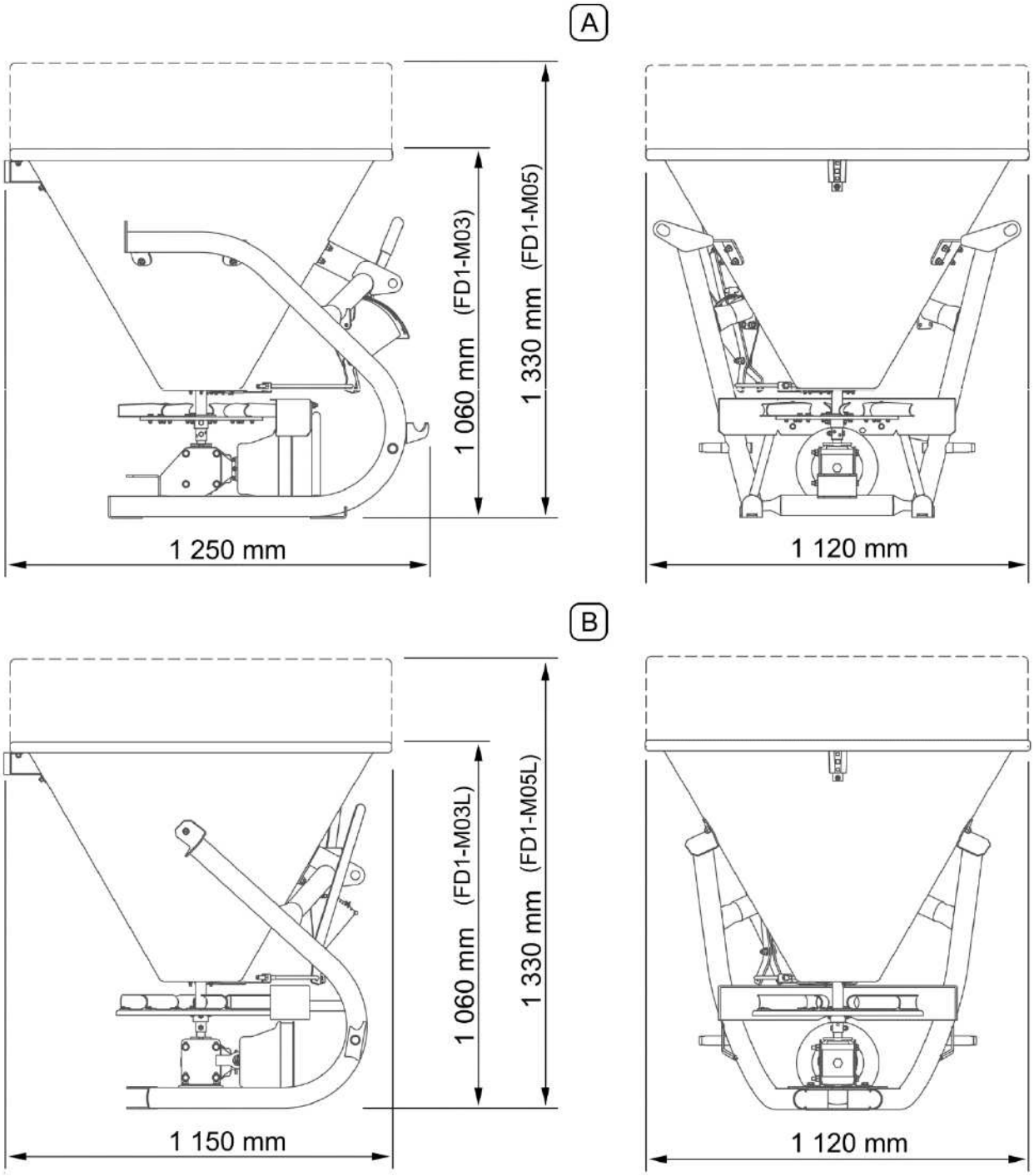


FIG. 3.1 External dimensions

(A) - FD1-M03 / M05 fertilizer spreader; (B) - FD1-M03L / M05L fertilizer spreader

3.2 GENERAL DESIGN

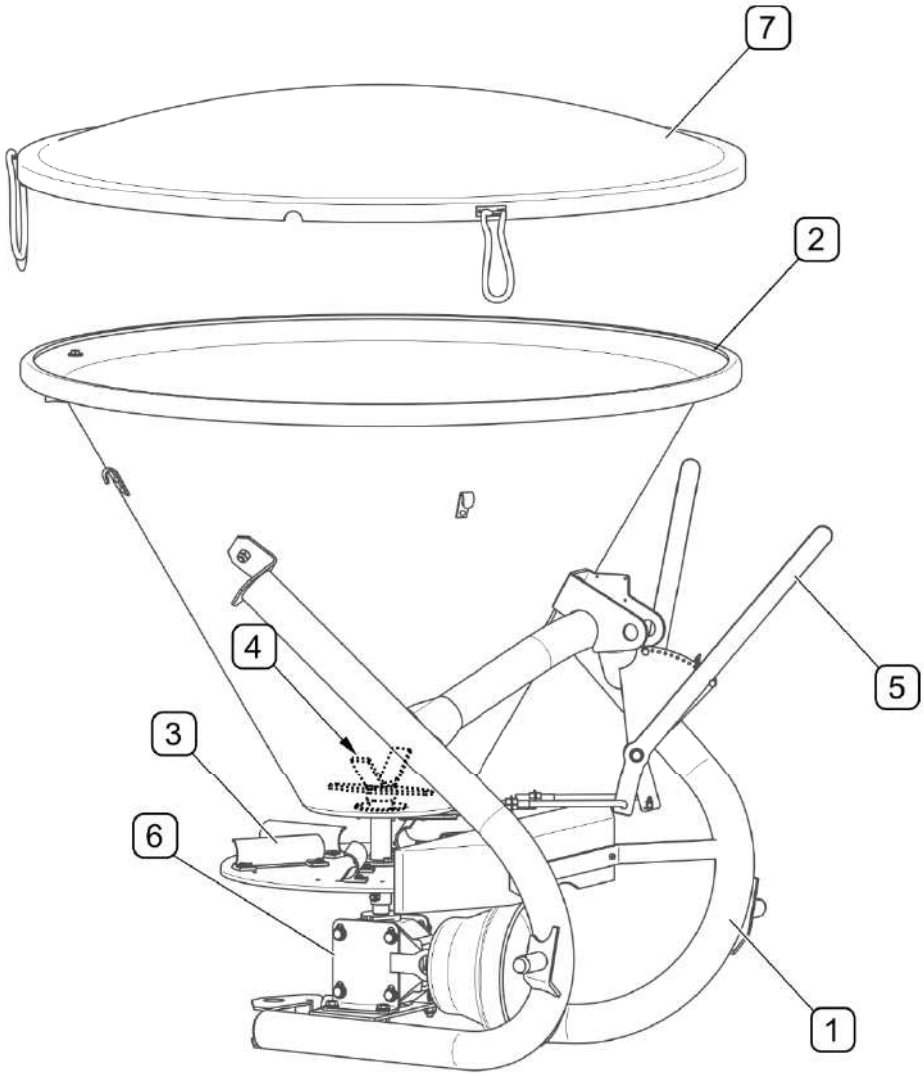


FIG. 3.2 General design

(1) - frame; (2) - tank; (3) - spreading disc; (4) - sweep-off gear; (5) - fertilizer dose and spreading direction adjusting mechanism; (6) - drive transmission; (7) - tank cover (optional equipment)

The fertilizer spreader consists of a frame (1) to which a plastic tank (2) is screwed. Sweep-off gear (4) are installed inside the tank. During operation of the spreader, the part rotates facilitating smooth feeding of material to spreading disc (3). Sweep-off gear (4) and spreading disc (3) are installed on the intersecting axis gear's shaft (6). Mechanism (5) makes it possible to smoothly adjust fertilizer dose and spreading direction as well as to stop fertilizer spreading while parking or making turns. The machine is hitched to the tractor with the three point linkage. Optionally, the fertilizer spreader can be equipped with tank cover (7).

3.3 FERTILIZER DOSE AND SPREADING DIRECTION ADJUSTING MECHANISM

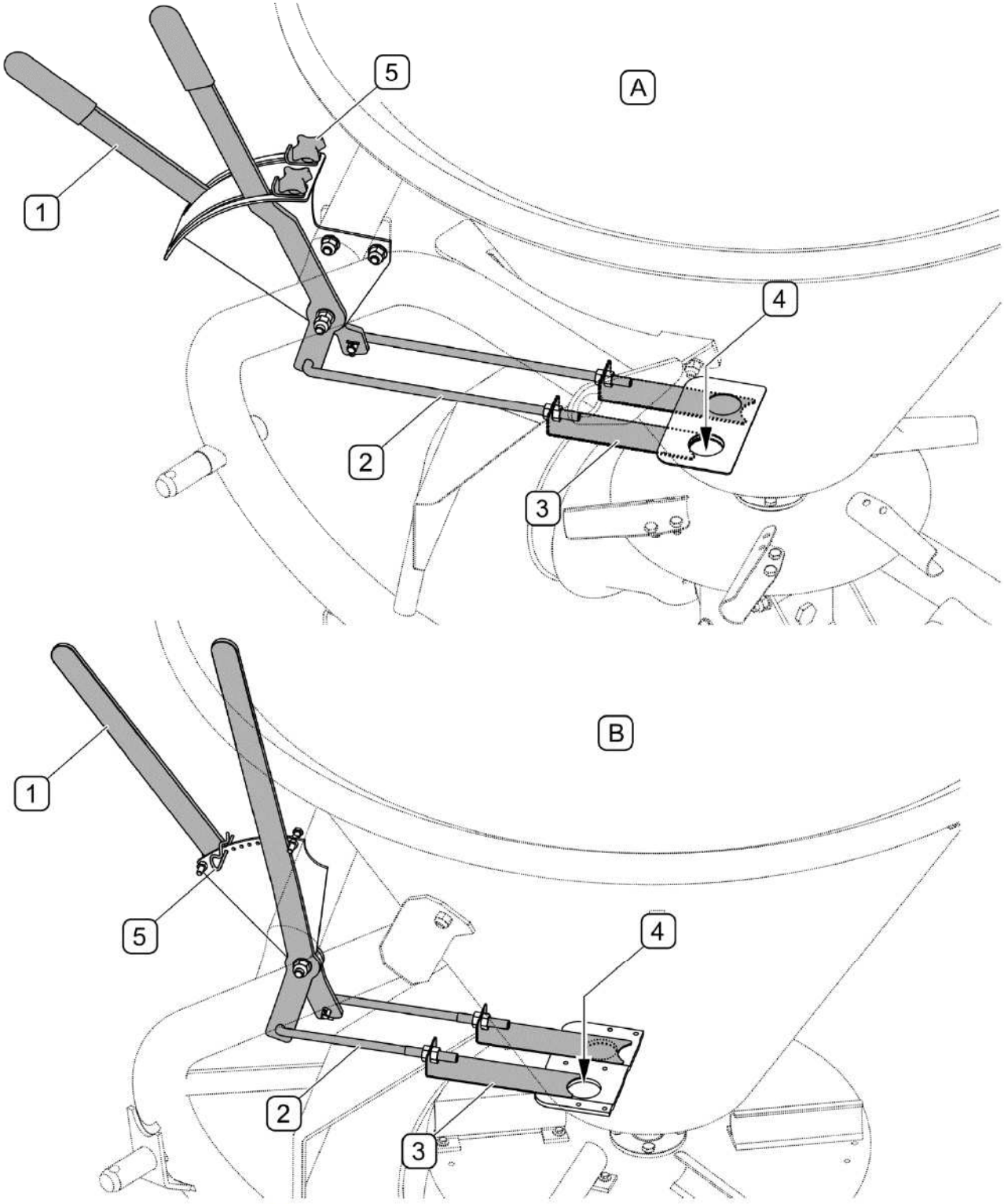


FIG. 3.3 Design of fertilizer dose and spreading direction adjusting mechanism

(1) - control levers; (2) - link; (3) - damper; (4) - dosing hole; (5) - limiter; (A) - FD1-M03 / M05 fertilizer spreader; (B) - FD1-M03L / M05L fertilizer spreader

Fertilizer dose is changed by means of two levers (1), which control dampers (3) through links (2). Fertilizer dose and spreading direction are controlled by properly positioned dampers of dosing holes (4). Limiter (5) is used for restoring previous settings, for example, after complete closing of dosing holes. Adjustment method is described in point 4.4.3 FERTILIZER DOSE AND SPREADING DIRECTION ADJUSTMENT.

3.4 DRIVE TRANSMISSION

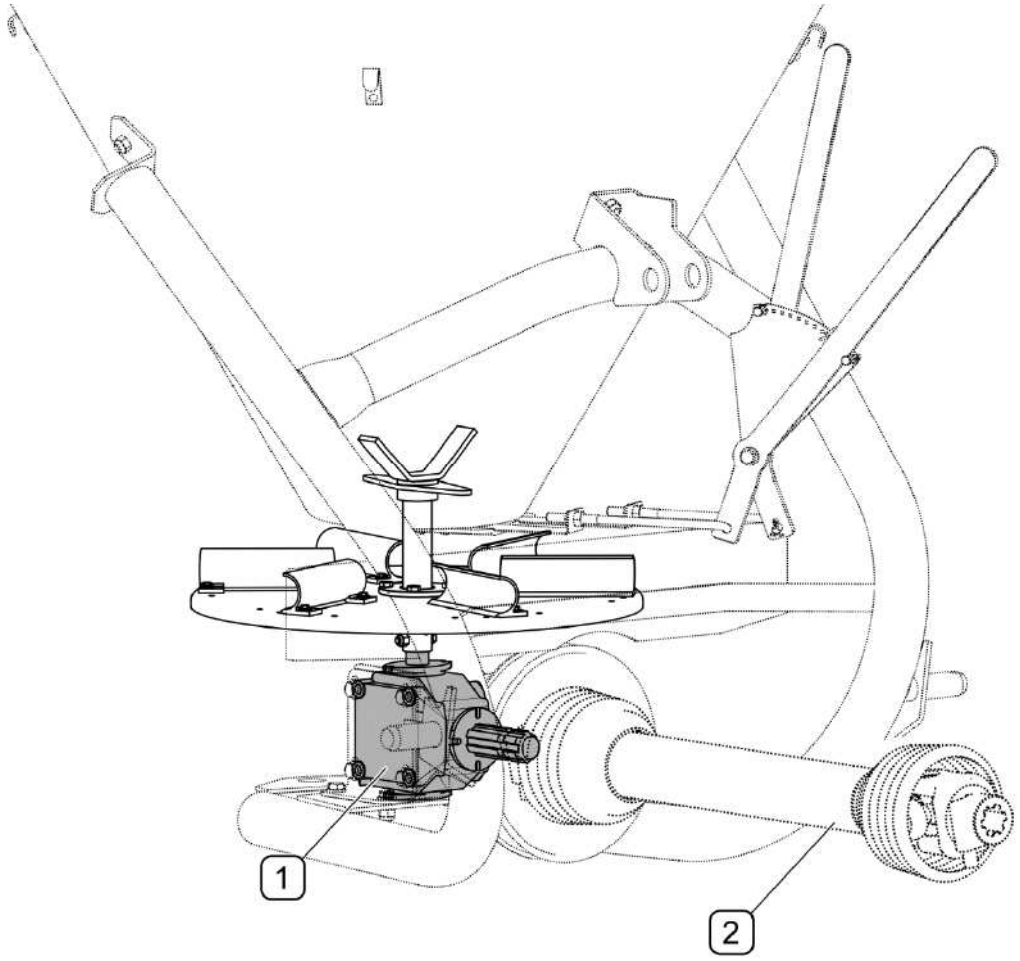


FIG. 3.4 Drive transmission

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

Spreading disc together with sweep-off gear are driven by intersecting axis gear (1) from the tractor's PTO shaft through PTO shaft (2) *(not included in the standard equipment of the machine)*

SECTION

4

CORRECT USE

4.1 PREPARE 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 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 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 MAINTENANCE*,
- check the compatibility of the machine linkage with the tractor's linkage,
- check the compliance of PTO parameters, termination type, speed.
- check technical condition of the spreading disc and dose adjustment elements,
- check technical condition of protective guards and check if they are correctly installed,
- check technical condition of intersecting axis gear,

DANGER

Before starting the tractor with the connected machine make sure the PTO drive is not engaged, otherwise it can lead to uncontrolled operation of the machine.

ATTENTION

Non-adherence to the recommendations stated 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 tractor, started and all its individual components checked. In order to do this:

- connect the machine to the tractor (see *4.3 HITCHING TO TRACTOR*)
- connect PTO shaft, check operation of spreading disc drive and check transmission for tightness,
- 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 warranty, please contact the Manufacturer for additional clarifications.

ATTENTION

Before using the machine always check its technical condition.

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 OF INSPECTIONS
Technical condition of safety guards	Check technical condition of safety guards, if complete and correctly mounted.	Before beginning work
Technical condition of spreading disc, sweep-off gear and fertilizer dose adjustment elements	Check the technical condition, if complete and correctly mounted. Check operation of dose adjustment elements.	
Technical condition of tank	Check for damage	
Level of lubricant in intersecting axis gear	For details please refer to section *MAINTENANCE OF PTO DRIVE TRANSFER SYSTEM*	
Tightening of all main nut and bolt connections	Torque values should be according to table (*5.5*)	Once a week
Lubrication	Lubricate elements according to table *LUBRICATION*	According to table *5.4*

ATTENTION

Do NOT use a malfunctioning or incomplete machine.

4.3 HITCHING TO TRACTOR

Fertilizer spreader can be attached to tractor that meets the requirements contained in Table 1.1 *REQUIREMENTS FOR A TRACTOR*.

DANGER

Exercise caution when hitching the machine to tractor.

Do NOT hitch the machine to the tractor when the tractor engine is running.

ATTENTION

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

4.3.1 HITCHING TO THE THREE POINT LINKAGE

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

The spacing of the spreader's mounting points (1) for the lower links of the tractor's three point linkage (FIG. 4.1) is 718 mm *(measured from the axis of the balls of the tractor's links)*. In order to extend the spacing to full category II acc. to ISO 730-1 *(870 mm measured from the axis of the balls of the tractor's links),* two additional pins (see 1.3 EQUIPMENT) installed on the existing pins (1) of the machine must be used.

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

- Reverse the tractor so as to move the lower links of the tractor three-point linkage to the pins of the spreader linkage (FIG. 4.1).
- Set lower links of the tractor three-point linkage at appropriate height.
- Turn off tractor engine and prevent it from moving.
- Connect lower pins (A) of the machine linkage with lower links of the tractor's three-point linkage and secure.
- Using a pin, connect top link of the tractor linkage with the top attachment point of the machine linkage and secure. Adjust stabilizers (tensioners) of the tractor linkage lower links so as to reduce lateral movement of the machine.

- Lift the machine using tractor three point linkage.

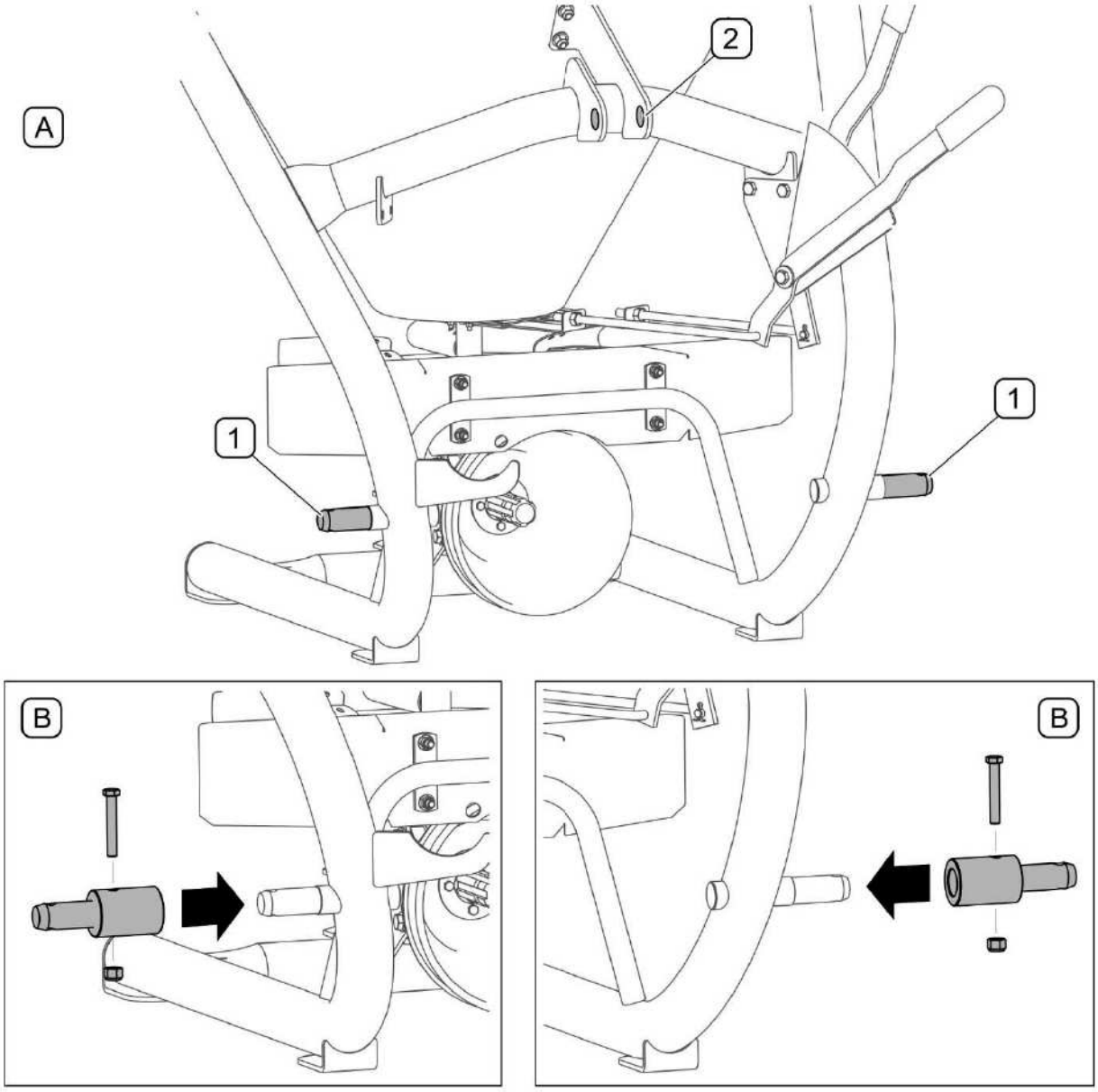


FIG. 4.1 Attachment points of three-point linkage Cat II according to ISO 730-1

(A) - attachment points of cat. II (narrow) acc. to ISO 730-1; (B) - additional pins extending the spacing to full category II according to ISO 730-1; (1) - mounting points for the lower links of the tractor's three point linkage; (2) - mounting point for the top link (central link)

DANGER

To hitch the machine to tractor use only genuine pins and safeguards.

4.3.2 CONNECTING PTO SHAFT

DANGER

Before connecting the shaft, turn off the tractor 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 technical condition of shaft guards, completeness and condition of protecting chains and general technical condition of PTO shaft. The shaft length should be equal to (L) in order to enable its connection to the hitched machine (FIG. 4.2), 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 820 ÷ 900 mm for category II three point linkage. While working, the PTO shaft should rotate to the left *(looking at the shaft front in the machine)* (FIG. 4.2)

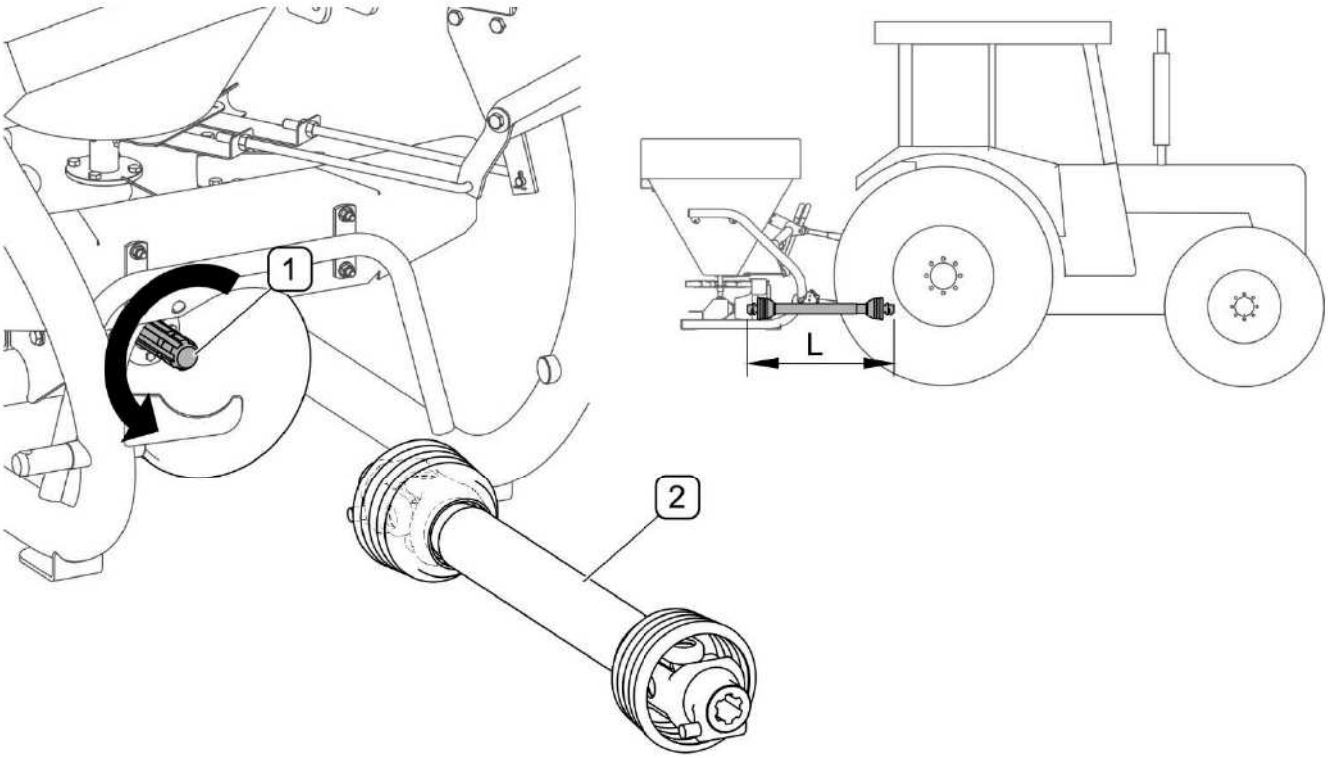


FIG. 4.2 Connecting of PTO shaft

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

CAUTION

The tractor PTO drive may be engaged only when the fertilizer spreader is lifted to working position

4.4 OPERATING THE FERTILIZER SPREADER

4.4.1 LOADING THE TANK

DANGER

Loading may be performed only if the fertilizer spreader is switched off, hitched to tractor and lowered to the ground.

Be especially careful when loading the fertilizer spreader with front loader.

Before loading, take the tank cover off (if any). Before loading the tank, close both dosing holes at the tank bottom and make certain that there are no remains of fertilizer or other objects in the tank. The sand spreader's tank can be filled manually or mechanically e.g. using a front loader. Pay attention to prevent lumpy or contaminated fertilizer from entering the tank. Before loading, fertilizers should be sieved and their humidity should not exceed 12%. Spreading of powdery fertilizers or mixtures based on powdery fertilizers is not recommended.

DANGER

Use proper protective clothing while handling fertilizers i.e. protective overalls, gloves, safety shoes, safety goggles, mask.

All instructions of the fertilizer producer should be adhered to.

During transport, fertilizers in the tank may get compacted, which may hinder their spreading. It is recommended that fertilizers are delivered to the place of spreading with the use of other means of transport e.g. a trailer.

If it is necessary to load the fertilizer spreader's tank earlier and deliver fertilizers in the tank to the field, the tank should be filled only up to 2/3 of its total capacity.

IMPORTANT

Do not exceed permissible load capacity of the fertilizer spreader (see technical data)

4.4.2 LEVELLING THE MACHINE

For optimum operation, position the fertilizer spreader body (FIG. 4.3) 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 changing the central link length while transverse inclination is set by changing the length of tractor lower arm hanging rod.

Working height (A) should be set in such a manner as to ensure that the distance between the spreading disc and the ground does not exceed 850 mm (FIG. 4.3).

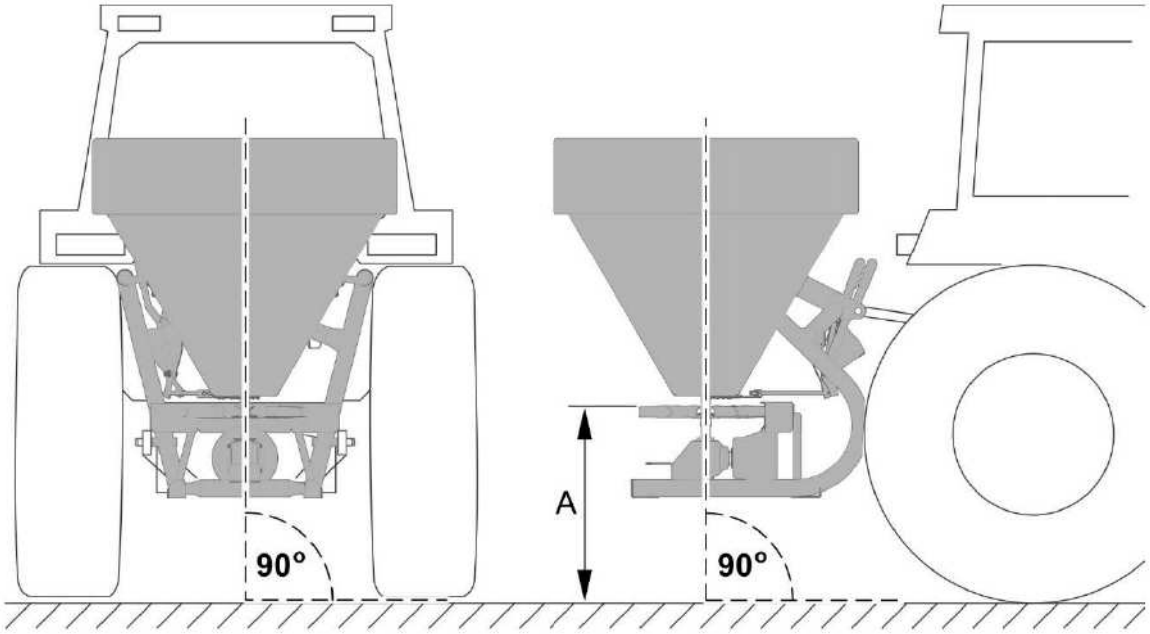


FIG. 4.3 Levelling the machine

A - maximum working height (distance between the spreading disc blades and the ground) should not exceed 850 mm

4.4.3 CHANGING OF FERTILIZER DOSE AND SPREADING DIRECTION

TIP

Various characteristics of fertilizers (e.g. dampness, granulation, specific weight), influence of wind and rotation speed of the spreading disc determine the spreading parameters. That is why it is impossible to predetermine the settings of the fertilizer spreader's adjusting devices. In order to determine the settings, preset the machine, make a test and correct the settings, if necessary.

Fertilizer dose is changed by means of levers (1) and (2), which change the position of dampers, via links, with regard to dosing holes (A) and (B). Dosing hole (A) is adjusted by means of lever (1), while dosing hole (B) is adjusted by means of lever (2). When lever (1) or (2) is shifted in „+" direction *(towards the tank)* (FIG. 4.4), the dampers are open and fertilizer dose is increased. When the adjustment levers are shifted to the extreme position „–", the dampers of dosing holes are completely closed. Depending on intersecting axis gear, spreading disc can rotate to the right (FIG. 4.4) or to the left (FIG. 4.5). Rotation direction of spreading disc should be determined earlier.

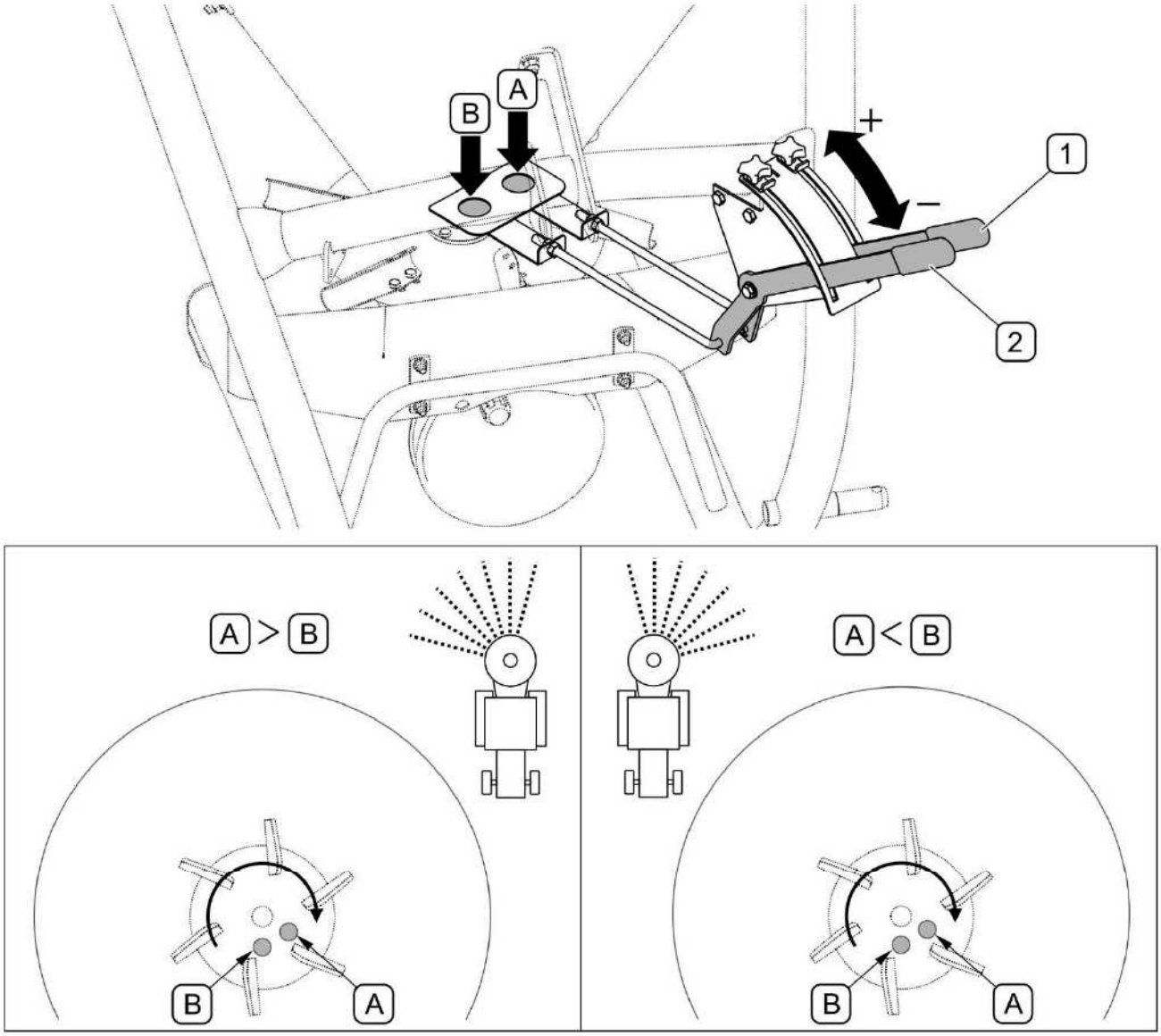


FIG. 4.4 Changing fertilizer dose and spreading direction in fertilizer spreaders with spreading disc rotating to the right

(A), (B) - dosing holes; (1) - adjustment lever of A dosing hole; (2) - adjustment lever of B dosing hole;

In the fertilizer spreaders with spreading disc rotating to the right, larger right-sided spreading *(looking in the direction of tractor travel)* is achieved by increasing dosing hole (A) and decreasing dosing hole (B). Left-sided spreading is achieved by larger opening of hole (B) with regard to hole (A) (FIG. 4.4)

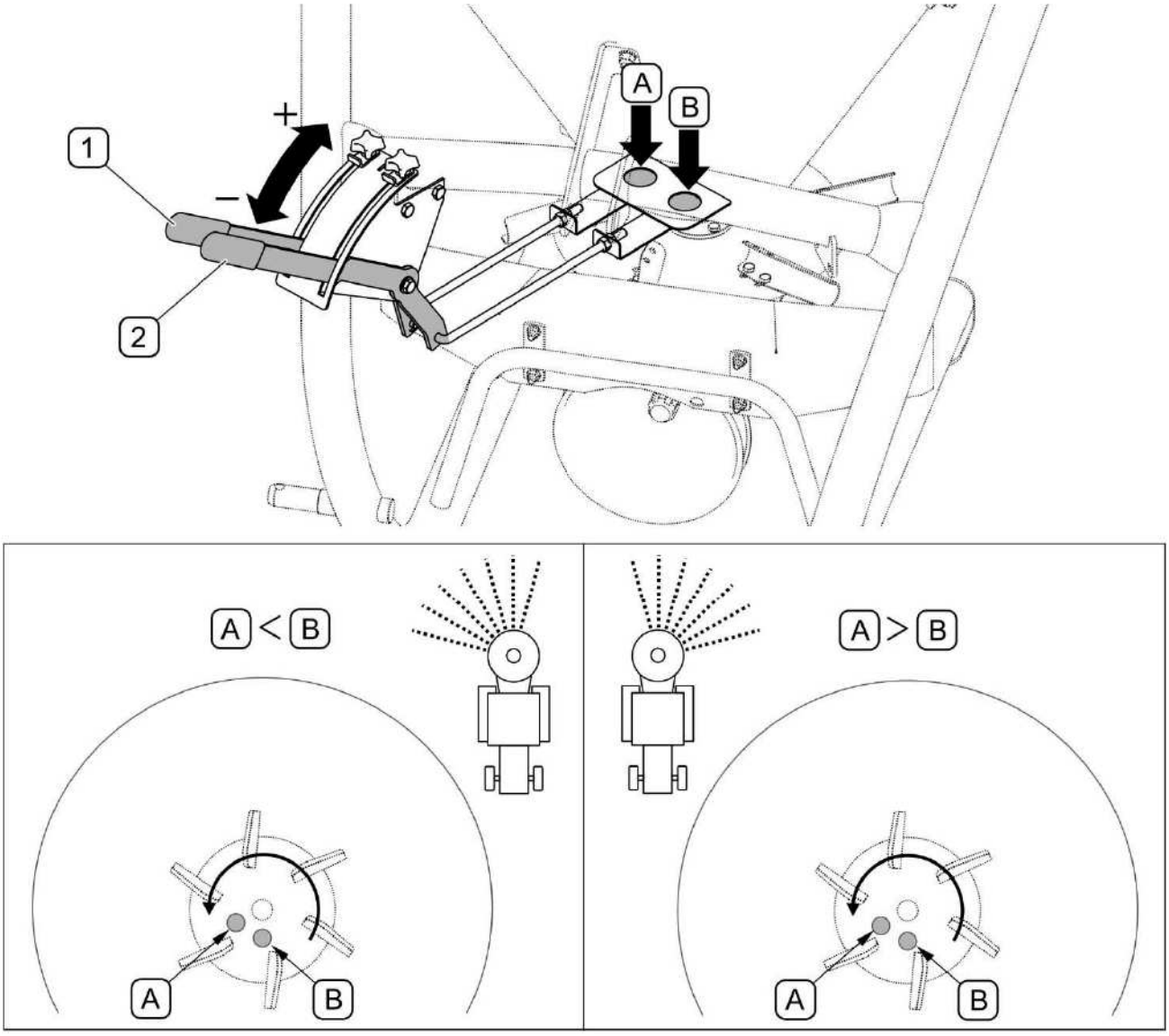


FIG. 4.5 Changing fertilizer dose and spreading direction in fertilizer spreaders with spreading disc rotating to the left

(A), (B) - dosing holes; (1) - adjustment lever of A dosing hole; (2) - adjustment lever of B dosing hole;

In the fertilizer spreaders with spreading disc rotating to the left (FIG. 4.5), larger right-sided spreading *(looking in the direction of tractor travel)* is achieved by increasing dosing hole (B) and decreasing dosing hole (A). Left-sided spreading is achieved by larger opening of hole (A) with regard to hole (B) (FIG. 4.5)

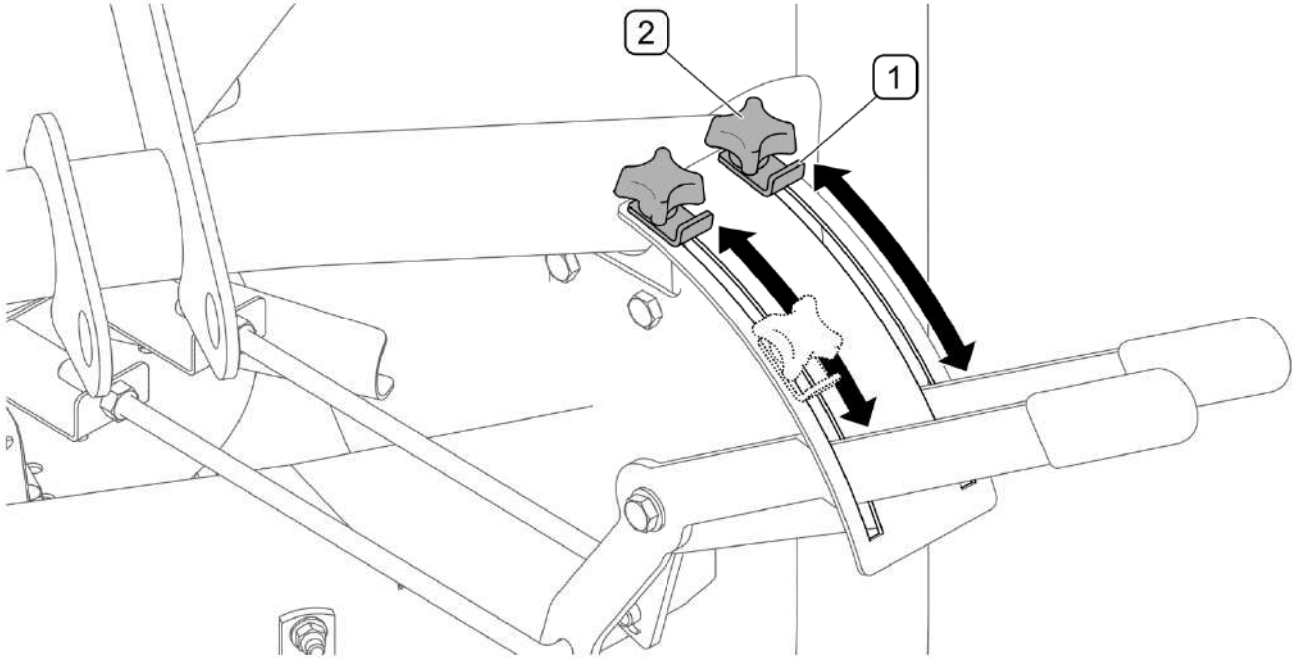


FIG. 4.6 Lever limiters (FD1-M03 / M05)

(1) - buffer; (2) - knob

Lever limiters in FD1-M03 / M05 fertilizer spreaders consist of buffer (1) and knob (2) and are used for setting the maximum position of the spreading dose adjusting levers. They also facilitate restoring previously set position of the levers. To shift the limiter, loosen knob (2), shift it to a required position and tighten the knob (FIG. 4.6)

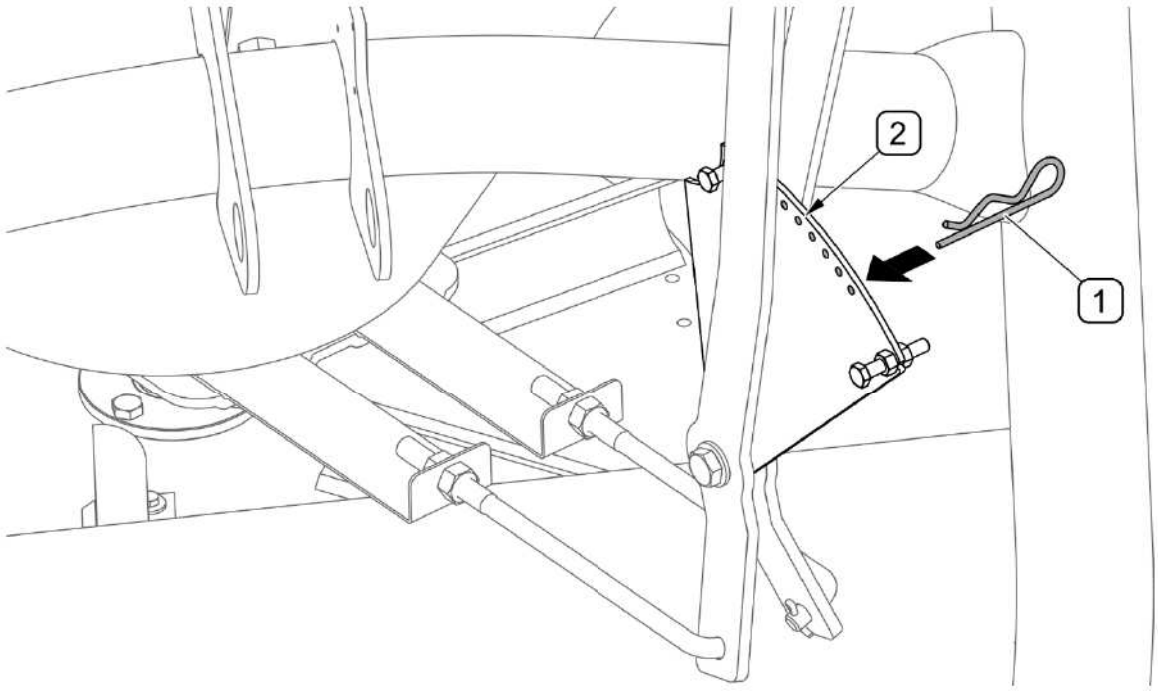


FIG. 4.7 Lever limiter (in FD1-M03L / M05L fertilizer spreaders)

(1) - cotter pin; (2) - disc with fixing holes

In FD1-M03L / 05L fertilizer spreaders (FIG. 4.7), the lever is limited by spring cotter pin (1), which is inserted into appropriate fixing holes on disc (2).

4.4.4 CHANGING WIDTH AND UNIFORMITY OF SPREADING

Spreading width is influence mainly by rotation speed of spreading disc, height of spreading disc above ground surface and type of fertilizers.

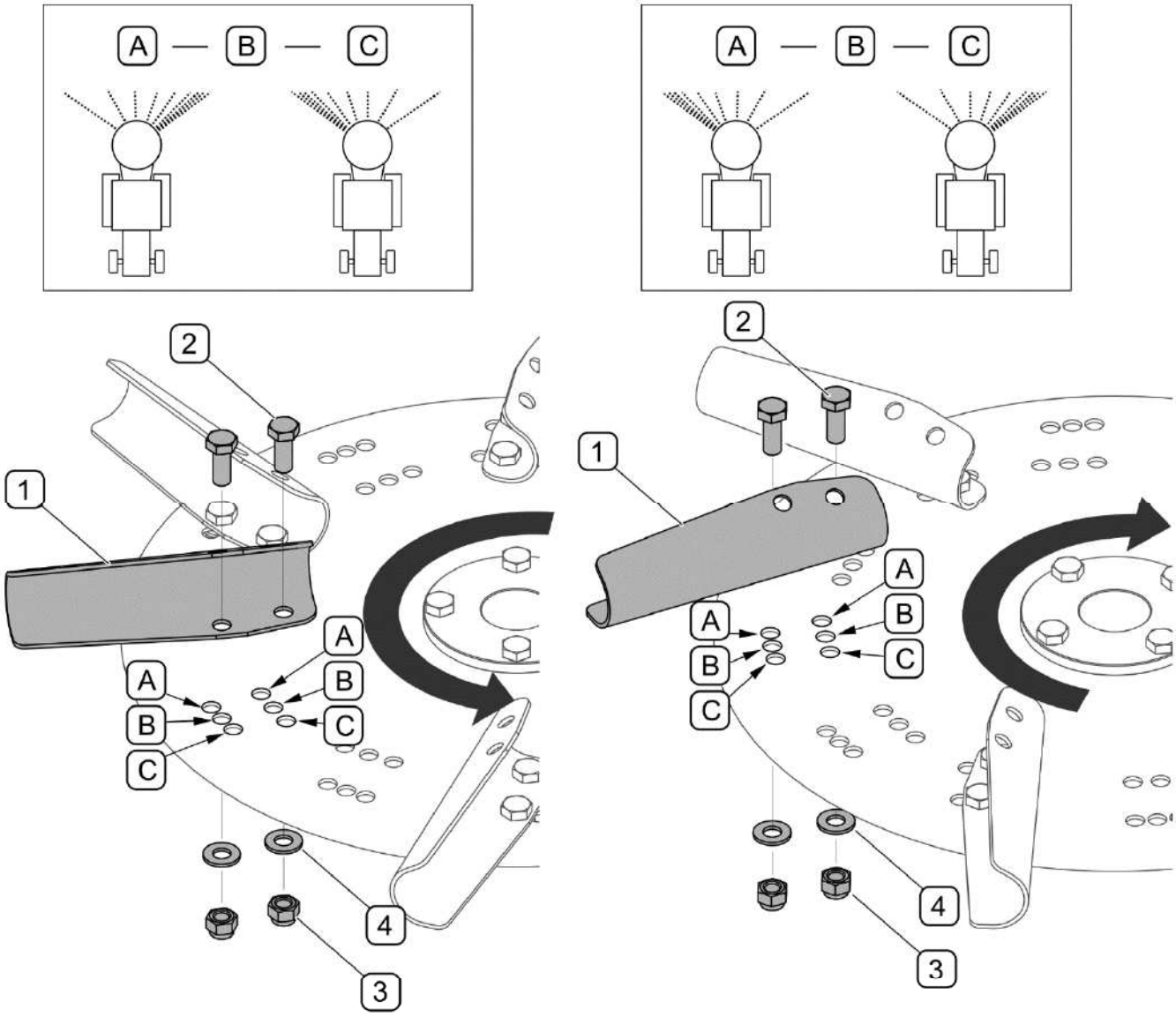


FIG. 4.8 Adjusting uniformity of spreading (FD1-M03 / M05)

(A),(B),(C) - group of blade fixing holes for adjusting uniformity of spreading. (1) - spreading blade; (2) - M8x20 bolt; (3) - M8 nut; (4) - 8-200HV washer

Uniformity of spreading is adjusted (FIG. 4.8 or FIG. 4.9) by changing the position of blades on spreading disc in the following manner:

- In FD1-M03 / M05 fertilizer spreaders, undo nuts (3), remove washers (4) and take out both bolts (2) fixing a blade (FIG. 4.8)
- In FD1-M03L / M05L fertilizer spreaders, undo nut (3), remove washer (4) and take out bolt (2) (FIG. 4.9)
- Shift blade (1) in such a manner as to install bolts (2) in proper holes on the disc.
- Install washers (4) and tighten nuts (3).

Each of the six blades should be installed in the same position.

In case of FD1-M03 / M05 fertilizer spreaders with spreading disc rotating to the left, if blades are moved from holes (A) to (C), the amount of fertilizer spread is increased in the left zone of the spreading area and simultaneously decreased in the right zone (FIG. 4.8).

In case of FD1-M03 / M05 fertilizer spreaders with spreading disc rotating to the right, if blades are moved from holes (A) to (C), the amount of fertilizer spread is increased in the right zone of the spreading area and decreased in the left zone (FIG. 4.8).

In case of FD1-M03L / M05L fertilizer spreaders with spreading disc rotating to the left, if blades are moved from holes (A) to (D), the amount of fertilizer spread is increased in the left zone of the spreading area and decreased in the right zone (FIG. 4.9).

In case of FD1-M03L / M05L fertilizer spreaders with spreading disc rotating to the right, if blades are moved from holes (A) to (D), the amount of fertilizer spread is increased in the right zone of the spreading area and decreased in the left zone (FIG. 4.9).

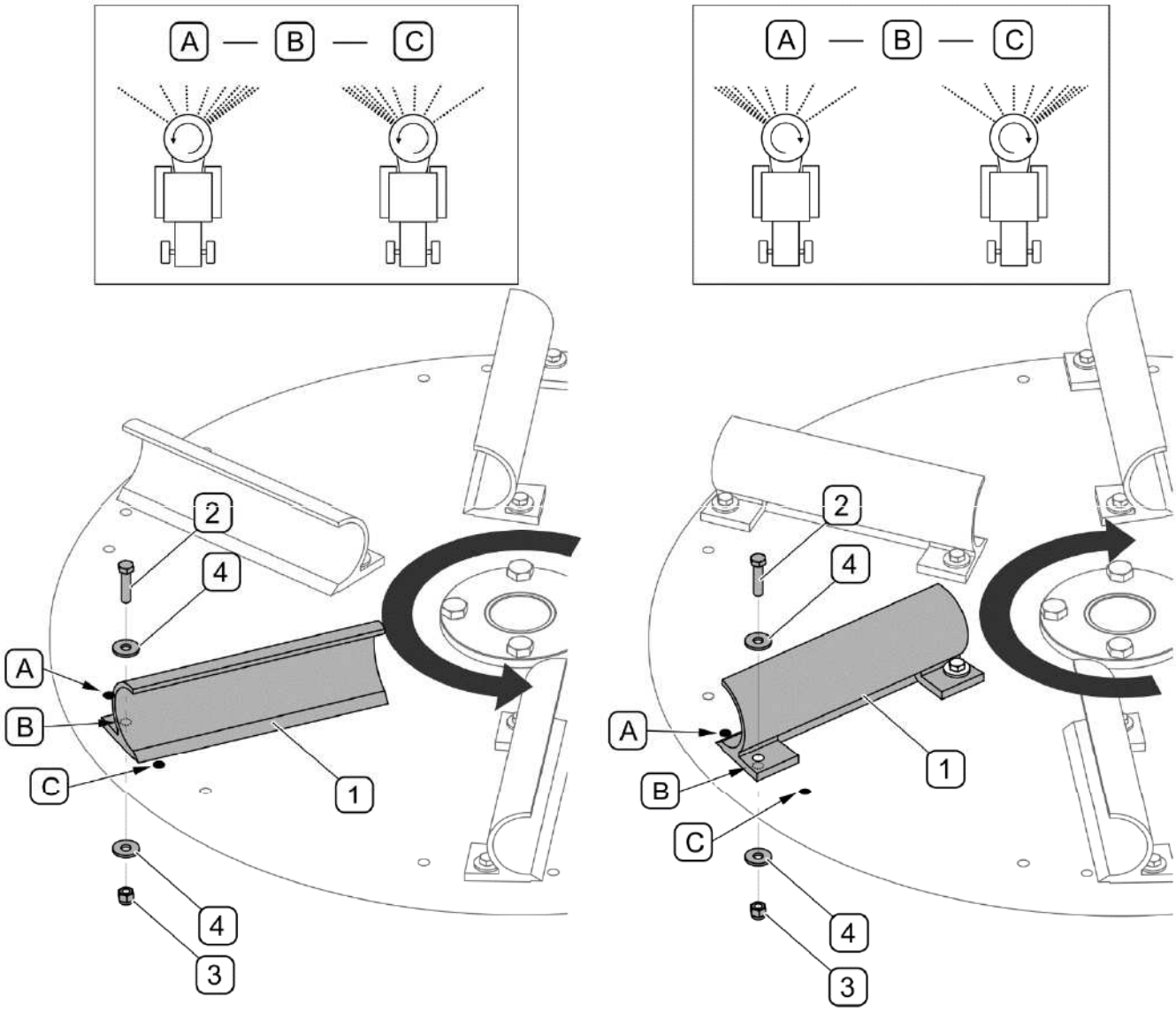


FIG. 4.9 Adjusting uniformity of spreading (FD1-M03L / M05L)

(A),(B),(C),(D) - blade fixing holes for adjusting uniformity of spreading; (1) - spreading blade; (2) - M5x20 bolt; (3) - M5 nut; (4) - 5-100HV washer

4.4.5 FERTILIZER SPREADING

DANGER

The machine drive system can be controlled only from the tractor cab.

There must be no bystanders within the machine working zone.

Having made sure that all the protective elements and all the connections are properly installed, one may commence working with the machine. Lift the fertilizer spreader using the tractor three point linkage, drive to the place of work and then, engage PTO shaft drive and set a proper engine rotational speed.

IMPORTANT

PTO drive may be engaged only when the fertilizer spreader is lifted to a required height.

IMPORTANT

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

Do not start working immediately at full power. The dampers of dosing holes should be opened only after PTO shaft has reached the required rotational speed. Maintain constant PTO shaft speed when spreading. When turning or stopping the tractor, the dampers of dosing holes should be closed. When spreading fertilizers near the field boundaries, asymmetrical, right-sided or left-sided spreading can be used. After completed fertilizer spreading, close both dampers of dosing holes, reduce engine RPM and disengage PTO drive.

In order to prevent clogging of fertilizer spreader's tank:

- Before loading the tank, make certain that there are no remains of fertilizer or other objects in the tank.
- Use sieved fertilizers whose humidity does not exceed 12%.
- Transport of fertilizers in the tank is not recommended because they may get compacted. Fertilizers should be delivered to the place of spreading with the use of other means of transport.

- Do not leave fertilizers in the fertilizer spreader's tank.

4.5 TRANSPORTING THE MACHINE

When driving on public or private roads, respect the road traffic regulations, exercise caution and prudence. Listed below are the key guidelines.

- Make sure that the machine is correctly attached to the tractor, and linkage is properly secured.
- Permissible working speed, transport 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 driving on public roads, the machine should be marked with slow-moving vehicle warning sign placed on the rear of the machine (FIG. 4.10)

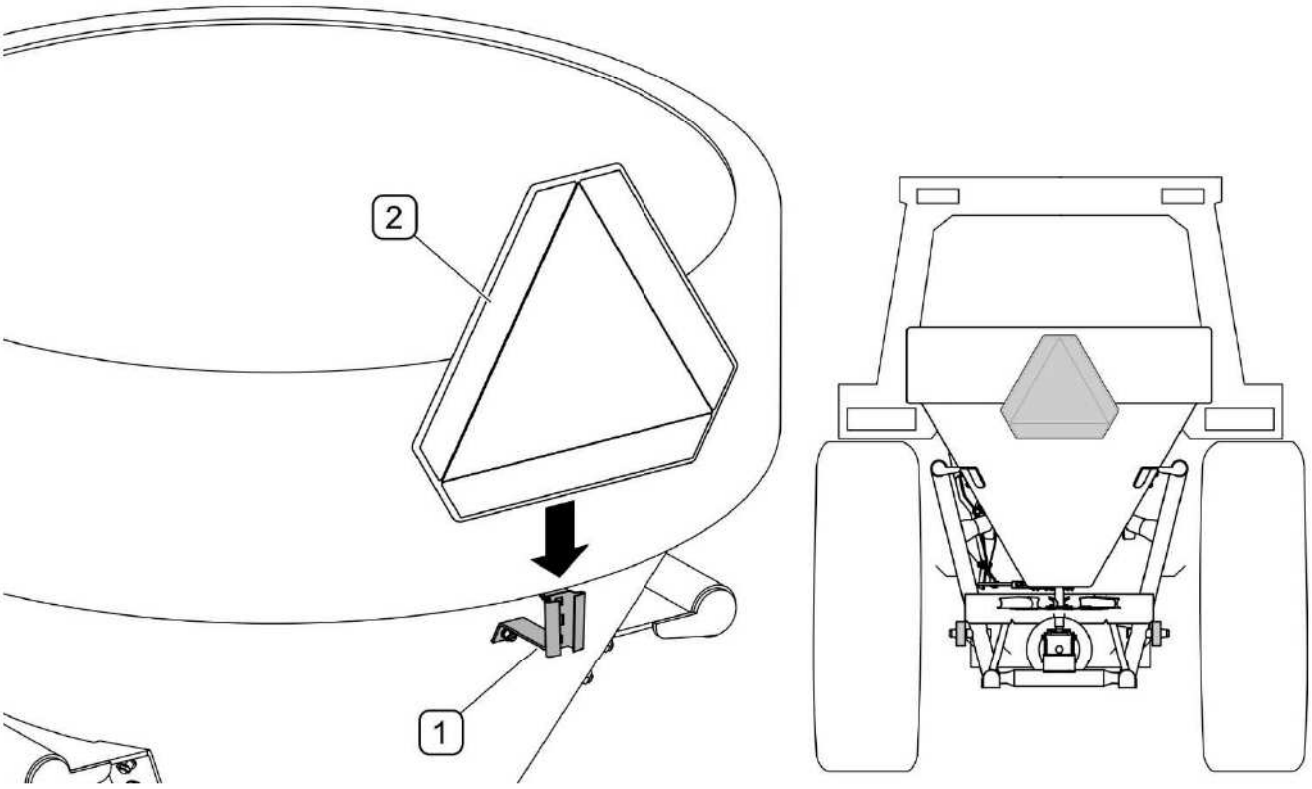


FIG. 4.10 Bracket of slow-moving vehicle warning sign (optional in FD1-M03L / M05L model)

(1) - bracket (optional in FD1-M03L /M05L model); (2) - slow-moving vehicle warning sign (not included in the machine equipment)

- When driving with raised machine set it so as not to obscure the lights or restrict the visibility of the operator.
- Avoid ruts, depressions, ditches or driving on roadside slopes. Driving across such obstacles could cause the machine or the tractor 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.
- When driving on uneven terrain with the machine raised reduce speed due to dynamic loads and the risk of damaging the machine or carrying vehicle.
- When driving with raised implement, secure the tractor linkage against falling or accidental dropping.
- In order to maintain full steering ability of the tractor during travel with filled fertilizer spreader, the front axle of the tractor must be loaded with 20% of the tractor weight. If necessary, use additional tractor front axle weights or fill the fertilizer spreader tank only partially.
- The rear hitch of the fertilizer spreader is used only for hitching the double axle trailers with gross weight that does not exceed 1,25 of the allowable gross weight of the tractor and is not higher than 5 000 kg and the maximum travel speed of 20 km/h (not on the public roads).

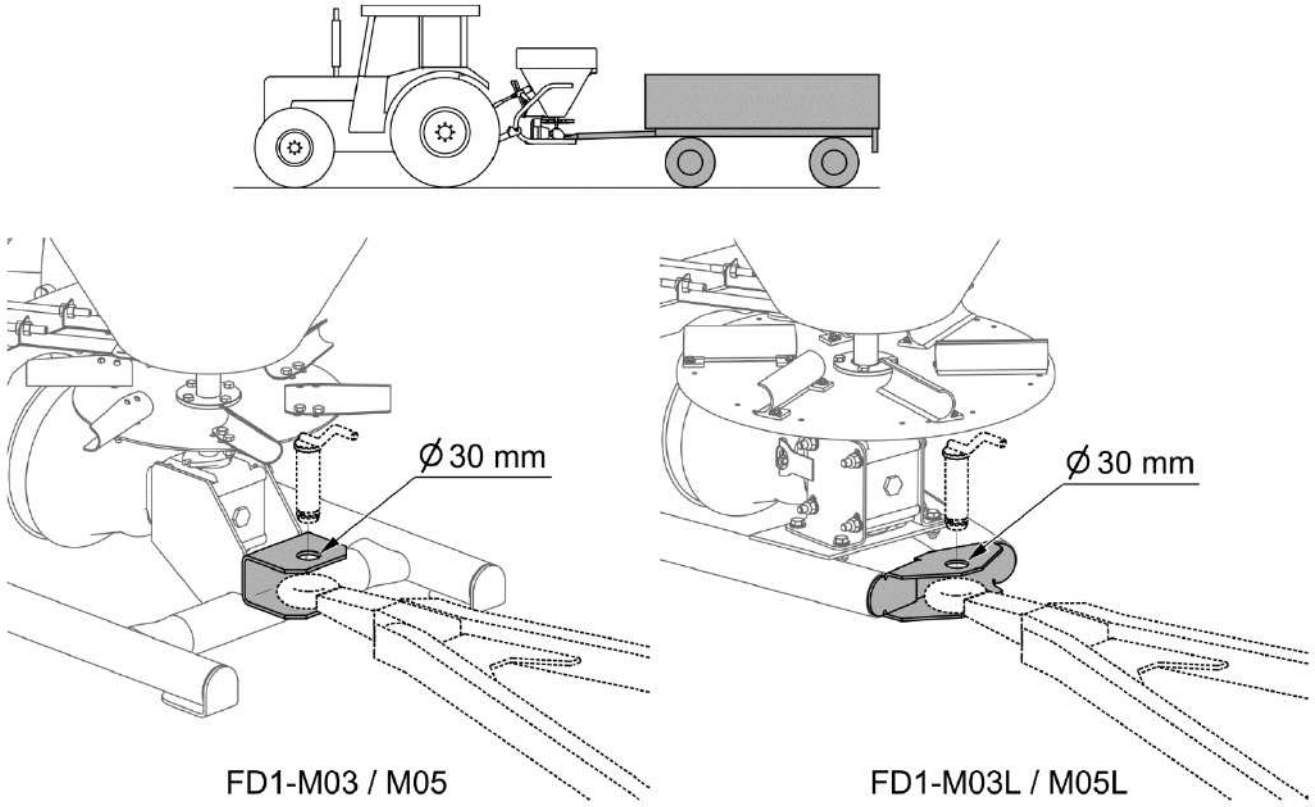


FIG. 4.11 Hitch for double axle trailer

DANGER

Do NOT drive on public roads with a trailer hitched to the rear hitch of the fertilizer spreader.

IMPORTANT

Do NOT hitch single axle trailers to the rear hitch of the fertilizer spreader.

The rear hitch of the fertilizer spreader is used only for hitching the double axle trailers with gross weight that does not exceed 1,25 of the allowable gross weight of the tractor and is not higher than 5 000 kg and the maximum travel speed of 20 km/h.

4.6 UNHITCHING FROM TRACTOR

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

- Disengage PTO drive, lower the fertilizer spreader until it fully rests on the ground.
- Turn off engine, remove key from ignition and engage parking brake.
- Disconnect PTO shaft from tractor.
- In case of FD1-M03 / M05 fertilizer spreaders, place PTO shaft on bracket (1) (FIG. 4.12)
- Disconnect top link, dismount lower links from pins and drive tractor away from the machine

DANGER

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

Be especially careful when unhitching the machine from the tractor.

ATTENTION

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

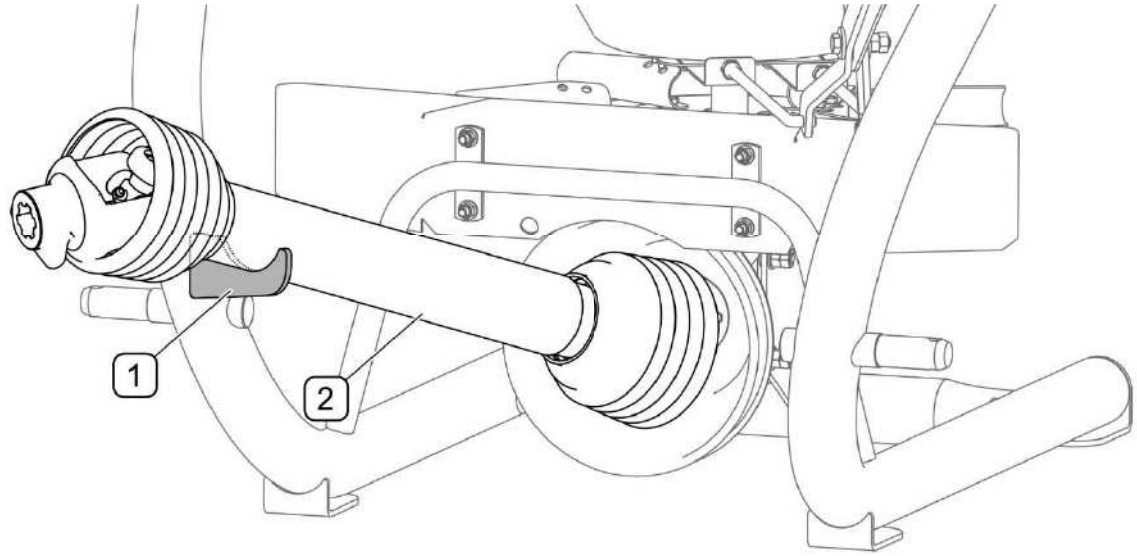


FIG. 4.12 PTO shaft bracket (this applies to FD1-M03 / M05 fertilizer spreaders)

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

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.

TIP

If the machine will not be used for a long time, disconnect PTO shaft completely from the machine.

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 machine tank (FIG. 4.13).

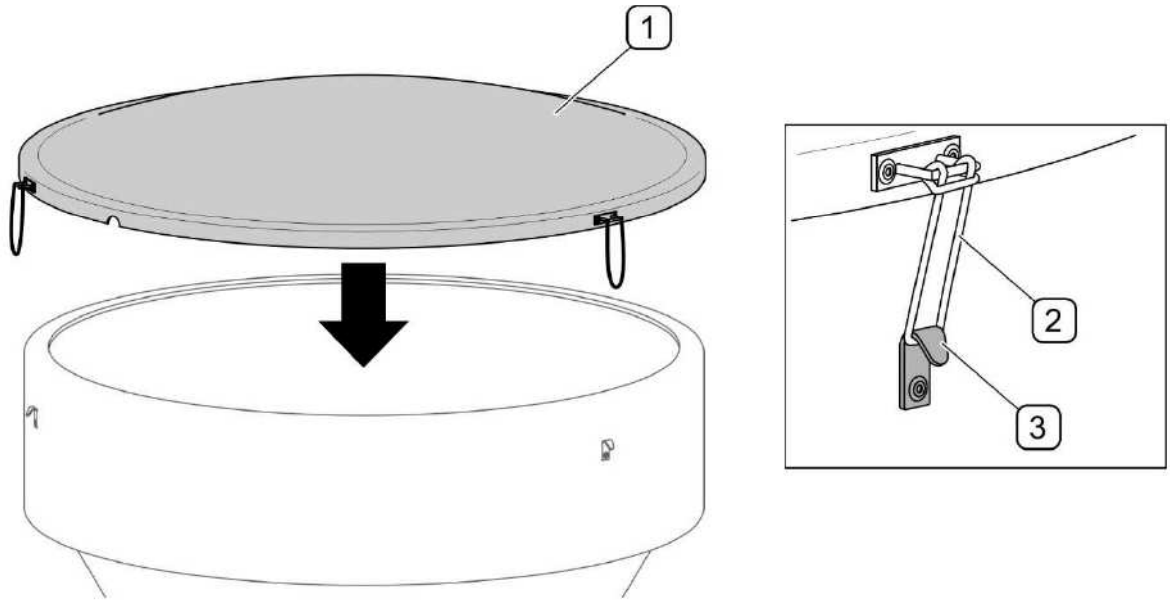


FIG. 4.13 Tank cover (optional equipment)

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

SECTION

5

MAINTENANCE

5.1 MAINTENANCE OF PTO DRIVE TRANSFER SYSTEM

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.

It is recommended that grease level in the gear be checked once a year. If necessary, add grease. Amount and type of lubricant are given in TAB. 5.1

Replacement of gear lubricant is not required. Possible grease change is carried out during gear repairs.

Such symptoms as fresh stains of grease and increased noise level of the gear may indicate that lubricant level is too low.

TAB. 5.1 AMOUNT OF LUBRICANT DEPENDING ON TYPE OF TRANSMISSION

CATALOGUE NO. OF TRANSMISSION	ROTATION DIRECTION OF SPREADING DISC	TYPE OF GREASE	NUMBER OF ITEMS
005-01.TOD.R	left	Semi-fluid grease EPX -00 type	0.18 kg
KMAL31.00xd25WB1	right		0.20 kg
9.150.874.00	right		0.20 kg
9.124.800.30	right		0.35 kg

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 (FIG. 5.1).

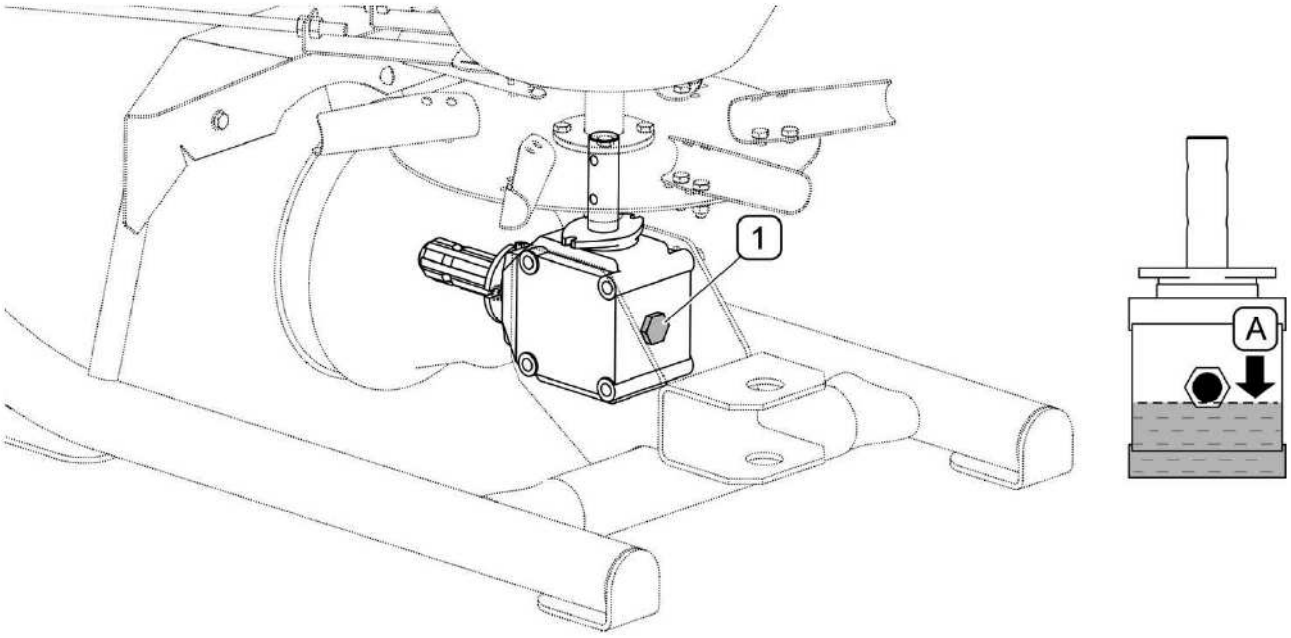


FIG. 5.1 Checking grease level in intersecting axis gear

(1) - inspection and filling plug; (A) - correct lubricant level

TIP

To lubricate intersecting axis gear, use EPX-00 semi-fluid grease. Amount of grease depends on type of transmission (see TAB. 5.1)

Because of its composition the grease 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□), 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.

If a leak is noticed, carefully inspect seals and check lubricant level. Operation of transmission with insufficient lubricant may cause permanent damage of the mechanism.

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

5.2 REPLACING SPREADING DISC BLADES

DANGER

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

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

The method of replacement of spreading disc blades in FD1-M03 / M05 fertilizer spreaders is shown in (FIG. 5.2) while the method of replacement of spreading disc blades in FD1-M03L / M05L fertilizer spreaders is shown in (FIG. 5.3).

In order to replace a spreading disc blade:

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

The list of working components of the spreading disc in FD1-M03 / M05 fertilizer spreaders is given in TAB. 5.2 while the list of working components of the spreading disc in FD1-M03L / M05L fertilizer spreaders is given in TAB. 5.3

When installing a blade, pay attention to rotation direction of spreading disc and mounting in proper holes.

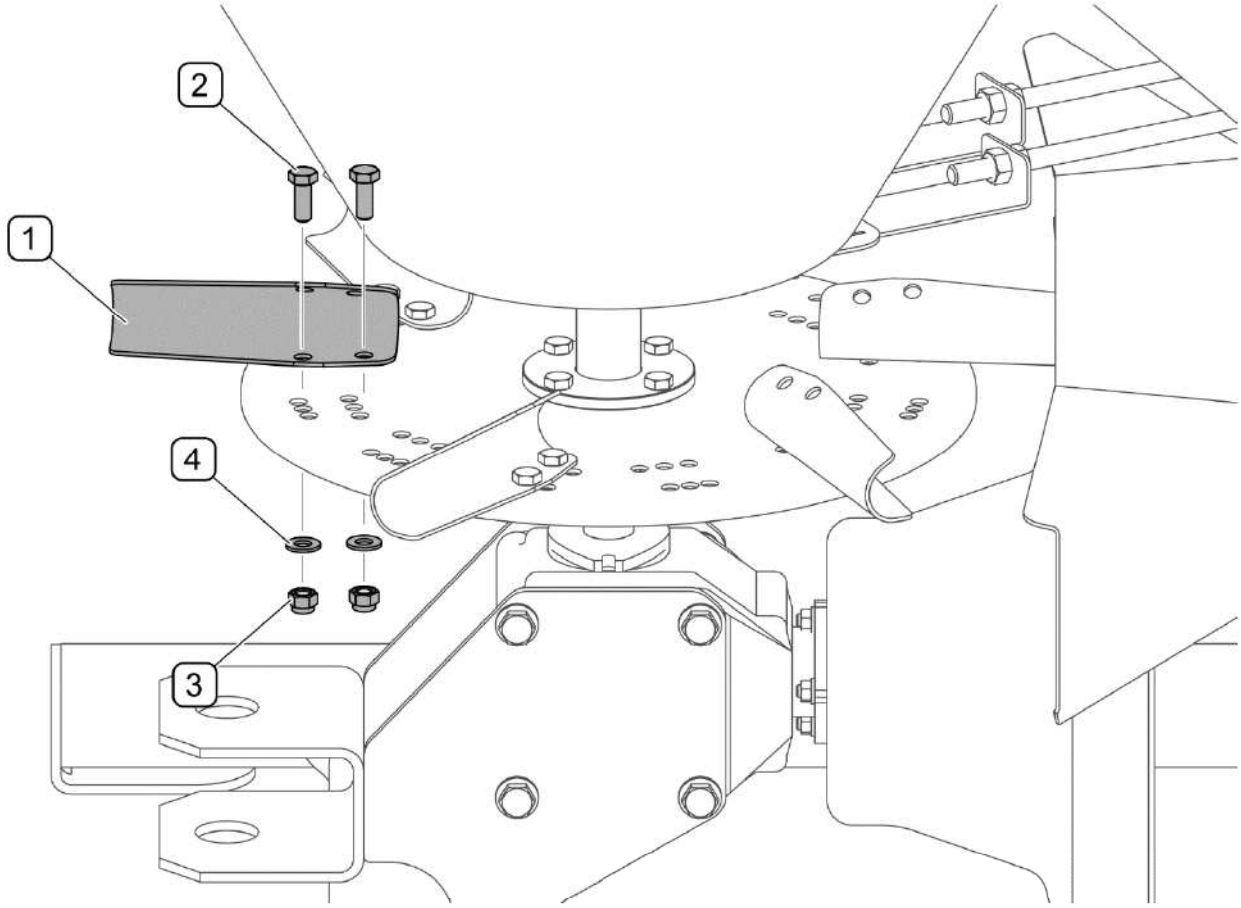


FIG. 5.2 Replacing spreading disc blades (FD1-M03 / M05)

(1) - blade; (2) - bolt M8x20; (3) - nut M8; (4) - washer 8

TAB. 5.2 THE LIST OF WORKING COMPONENTS OF THE SPREADING DISC IN PRONAR FD1-M03 / M05 FERTILIZER SPREADER

Marking FIG. 5.2	**Name / Catalogue No.**	**Number** of items
1	Blade / 242N-00000006	6
2	Bolt M8x20-A4-70 PN-EN ISO 4017	12
3	Self locking nut M8-A4-70 PN-EN ISO 7040	12
4	Washer 8-200HV-A2 PN-EN ISO 7089	12

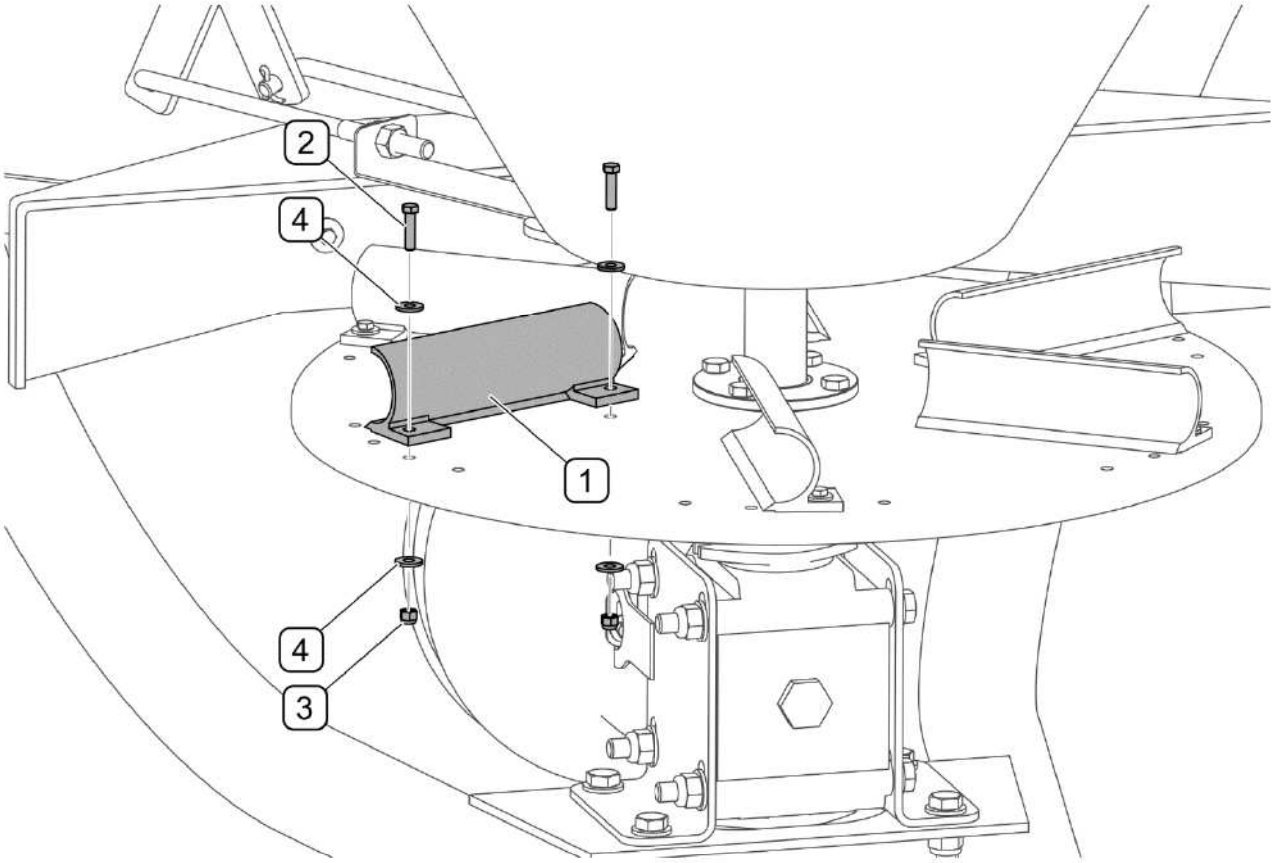


FIG. 5.3 Replacing spreading disc blades (FD1-M03L / M05L)

(1) - blade; (2) - bolt M5x20; (3) - nut M5; (4) - washer 5

TAB. 5.3 THE LIST OF WORKING COMPONENTS OF THE SPREADING DISC IN PRONAR FD1-M03L / M05L FERTILIZER SPREADER

Marking FIG. 5.3	**Name / Catalogue No.**	**Number** of items
1	Blade / AP26ŁK	6
2	Bolt M5x20-5.6-A2J PN-EN ISO 4017	12
3	Self locking nut M5-8-A2J PN-EN ISO 7040	12
4	Washer 5-100HV PN-EN ISO 7093-2	12

5.3 ADJUSTMENT OF FERTILIZER DOSE CHANGING LEVERS

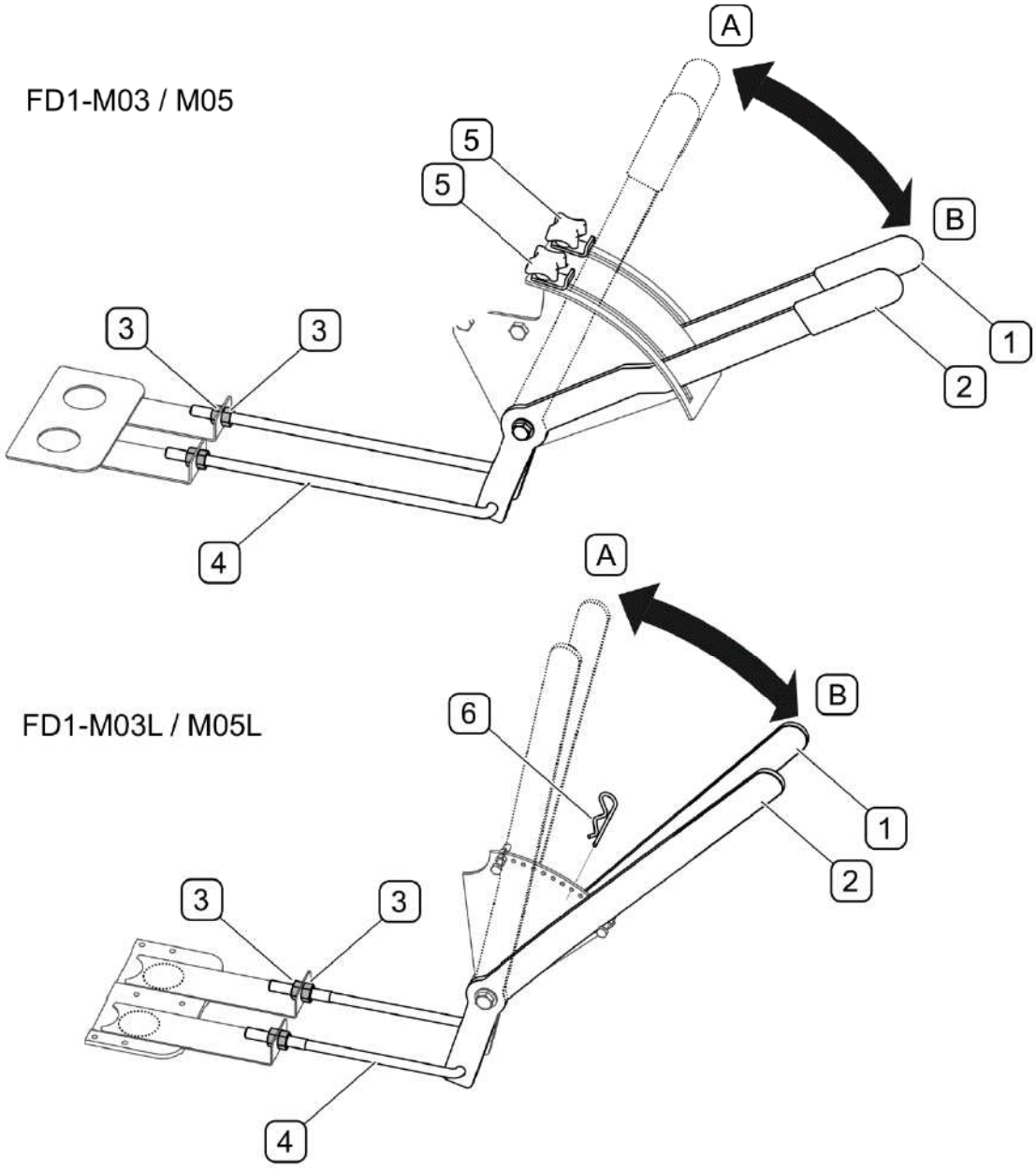


FIG. 5.4 Adjustment of fertilizer dose changing levers

(A) - levers in open position; (B) - levers in closed position; (1),(2) - fertilizer dose adjusting levers; (3) - adjusting nuts; (4) - links; (5) – limiters (applies to FD1-M03 / M05); (6) - cotter pin (applies to FD1-M03L / M05L)

Dose changing mechanism is set in the factory by the Manufacturer. Readjustment may be necessary if individual elements are replaced. Check position of dampers in extreme position of levers (1) and (2). When the levers are set in position (A), dosing holes in the tank should

be maximally open. When both levers are shifted to position (B), dosing holes in the tank should be completely closed.

In order to adjust the levers:

- Set limiters (5) in the extreme upper position *(applies to FD1-M03 / M05)*,
- Take out cotter pin (6) *(applies to FD1-M03L / M05L)*
- Loosen both nuts (3) on link (4) *(two nuts on each link)*.
- Turn a proper nut (3) in order to set a suitable link length (4).
- Check position of dampers in extreme positions of levers (A) and (B).
- Tighten nuts (3).

Adjust the second lever in the same way.

5.4 LUBRICATION

Before commencing lubrication insofar as is possible remove old grease and other contamination. Points (B and C FIG. 5.5) should be lubricated with grease ŁT-43-PN/C-96134. Remove excess of grease.

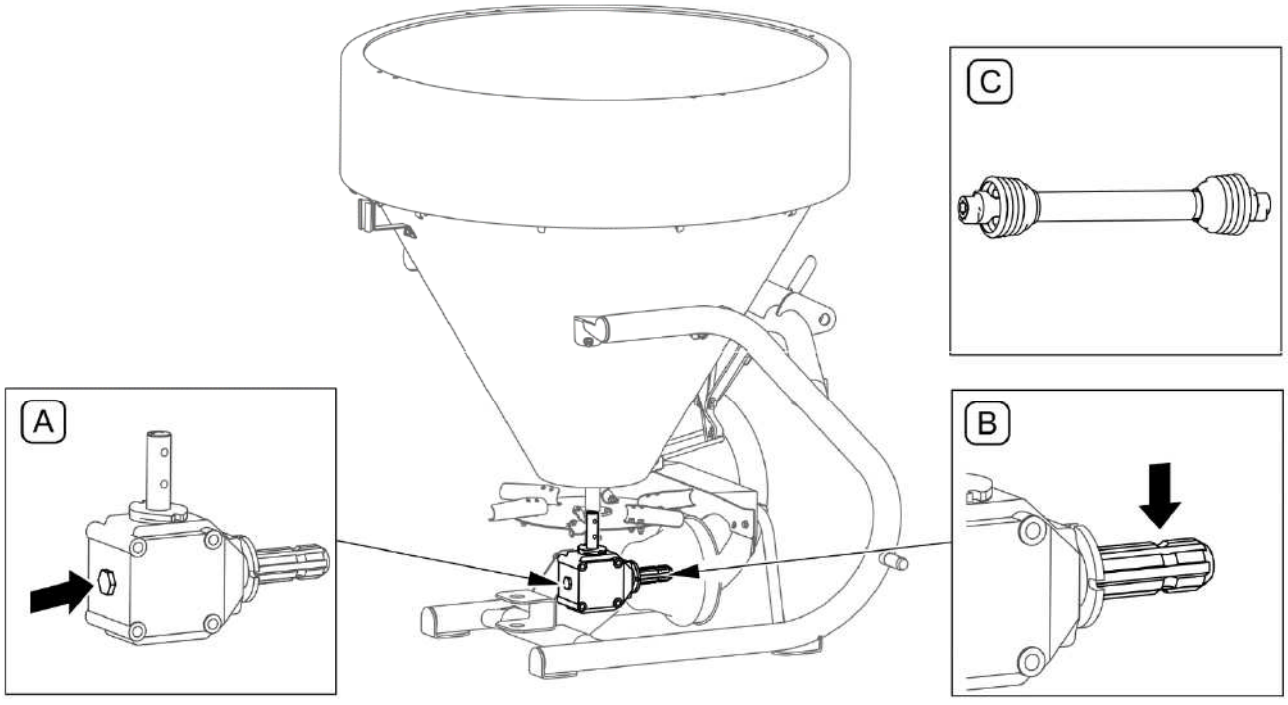


FIG. 5.5 Lubrication points

Lubrication points described in table 5.4

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. 5.4 LUBRICATION POINTS AND LUBRICATION FREQUENCY

ITEM	NAME	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	LUBRICATION FREQUENCY
A	Intersecting axis gear	1	semi-fluid grease	inspect once a year
B	Surface of multi-splined drive shaft	1	grease	20 hours
C	PTO shaft *	*	*	*

** – not included in the machine standard 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. 5.4) conforms with numbering shown (FIG. 5.5)

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. 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 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 fertilizer spreader's tank should be emptied and the spreading dose adjusting levers should be set in maximum open position. Install cover *(if any)* on the fertilizer spreader's tank.

ATTENTION

Remains of fertilizers accelerate 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. 5.5)

TAB. 5.5 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

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.

5.7 TROUBLESHOOTING

TAB. 5.6 TROUBLESHOOTING

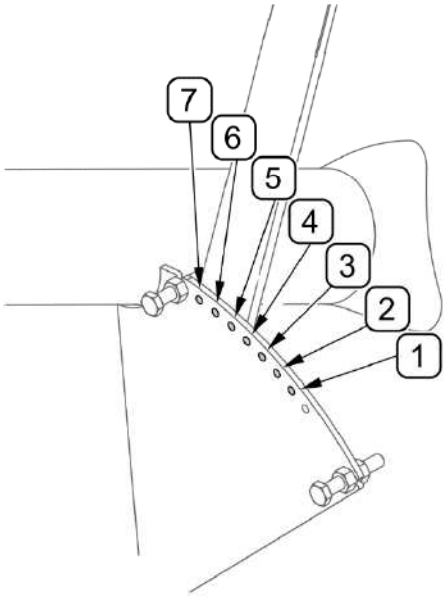
TYPE OF FAULT	CAUSE	REMEDY
Spreading disc does not rotate	PTO shaft is not connected	Connect PTO shaft to fertilizer spreader and tractor
	Tractor PTO drive is disengaged	Engage PTO drive
	Activation of clutch or another element protecting the shaft against overloading (depending on type of shaft)	Check the cause, remove possible jamming
	Damaged intersecting axis gear	Repair at an authorised service point
The fertilizer spreader does not spread fertilizers	Dose adjusting dampers are closed	Open, adjust according to operator's manual
	Packed material in the tank	Close spreading dose adjusting holes. Start the machine while parking, switch the spreading disc at a low rotation speed and disintegrate packed material in this way.
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
	Incorrectly set spreading disc blades	Change setting of blades according to the Operator's Manual
	Contaminated, excessively worn spreading disc blades	Clean, replace if necessary

ANNEX A

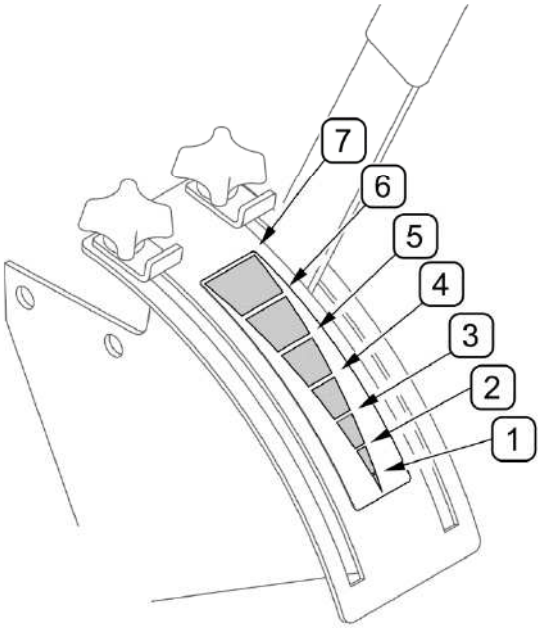
Fertilizer dose for FD1-M03, FD1-M03L, FD1-M05, FD1-M05L fertilizer spreaders

PTO speed – 540 rpm
Spreading width – 14 m
For one charging hole

FERTILISER TYPE	**Ammonium nitrate 34%** (Z.A. Kędzierzyn) **Ammonium nitrate 34%** (Z.A. Włocławek) **Ammonium nitrate 34%** (Z.A. Puławy)			**Granulated super phosphate 40%P_2O_5** (GZNF „Fosfory") **Polifoska 6NPK 6-20-30** (Z.A Police) **Saletrzak 27.5%N** (Z.A Kędzierzyn)		
	Ground speed			Ground speed		
Lever position	**8** km/h	**10** km/h	**12** km/h	**8** km/h	**10** km/h	**12** km/h
1	**16** kg/ha	**13** kg/ha	**11** kg/ha	**18** kg/ha	**15** kg/ha	**12** kg/ha
2	**33** kg/ha	**27** kg/ha	**22** kg/ha	**38** kg/ha	**31** kg/ha	**25** kg/ha
3	**52** kg/ha	**42** kg/ha	**35** kg/ha	**57** kg/ha	**46** kg/ha	**38** kg/ha
4	**70** kg/ha	**56** kg/ha	**46** kg/ha	**75** kg/ha	**60** kg/ha	**50** kg/ha
5	**120** kg/ha	**96** kg/ha	**80** kg/ha	**125** kg/ha	**100** kg/ha	**83** kg/ha
6	**150** kg/ha	**120** kg/ha	**100** kg/ha	**156** kg/ha	**125** kg/ha	**104** kg/ha
7	**187** kg/ha	**150** kg/ha	**125** kg/ha	**193** kg/ha	**155** kg/ha	**129** kg/ha



FD1-M03L, FD1-M05L



FD1-M03, FD1-M05

NOTES