

CynkoMet Sp. z o.o.  
ul. Fabryczna 7 W  
16-020 Czarna Białostocka  
phone (085) 710 24 56

# Lime attachment

For N-233 series spreaders

## INSTRUCTIONS FOR USE AND OPERATION

Identification of the machine

Symbol/Type: 2233/23.00.000

**NOTE!**

The manufacturer reserves the right to introduce, in the manufactured machines, structural alterations facilitating servicing and improving the quality of their work. The information on significant design changes are communicated to the user by means of enclosed information (annexes).

Comments and observations about the design and operation of the machine should be sent to the manufacturer. This information will allow objective evaluation of the machine, and serve as guidelines in their further modernization.

 <p><b>NOTE!</b></p>	<p><b>NOTE!</b></p> <p>Before the operation, the user should be familiar with this manual and follow all recommendations. This will ensure safe maintenance and trouble-free operation of the machine.</p>
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If the information contained in the manual will prove to be insufficient or not fully understandable, it is advisable to seek help at the sales point in which the machine was purchased or go directly to the manufacturer.

Manufacturer's Address:

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INSTRUCTIONS FOR USE AND SERVICE CONSTITUTES BASIC EQUIPMENT  
OF THE MACHINE!

The machine is designed in accordance with the applicable standards, documents and legal regulations currently in force.

**DETERMINATION OF DIRECTIONS IN THE MANUAL**

**Left side** - side to the left hand of the observer facing in the direction of travel of the spreader forward.

**Right side** - the right-hand side of the observer facing in the direction of travel of the spreader forward.

**Rear** - behind the back of the observer facing in the direction of forward travel of the spreader.

**Front** - in front of the observer facing in the direction of forward travel of the spreader.



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## 1. Introduction

This manual describes the basic principles of safe use and operation of the lime attachment.

 NOTE!	NOTE! Before using the attachment, you should carefully read the content of the user's manual. Before each running of the attachment, it must be checked in terms of operational safety.
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If the information contained herein will prove to be not fully understood, seek help from the manufacturer of the machine or the sales point where it was purchased.

Particularly important information and recommendations, the observance of which is absolutely necessary in the text are highlighted in bold or preceded by the word "CAUTION!".

Information, descriptions of threats and precautions as well as commands and orders related to the safety of use are highlighted in the manual with a sign  and also mentioned in the chapter "SAFETY OF USE".

 NOTE!	NOTE! The operating instructions must absolutely be passed at the moment of delivering the machine to another user, allowing him to get acquainted with its content. It is recommended that the transfer of the instruction is done against a confirmation.
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## 2. Purpose of the attachment

The lime attachment is optional equipment for N-233 series spreaders with a horizontal A2HS adapter.

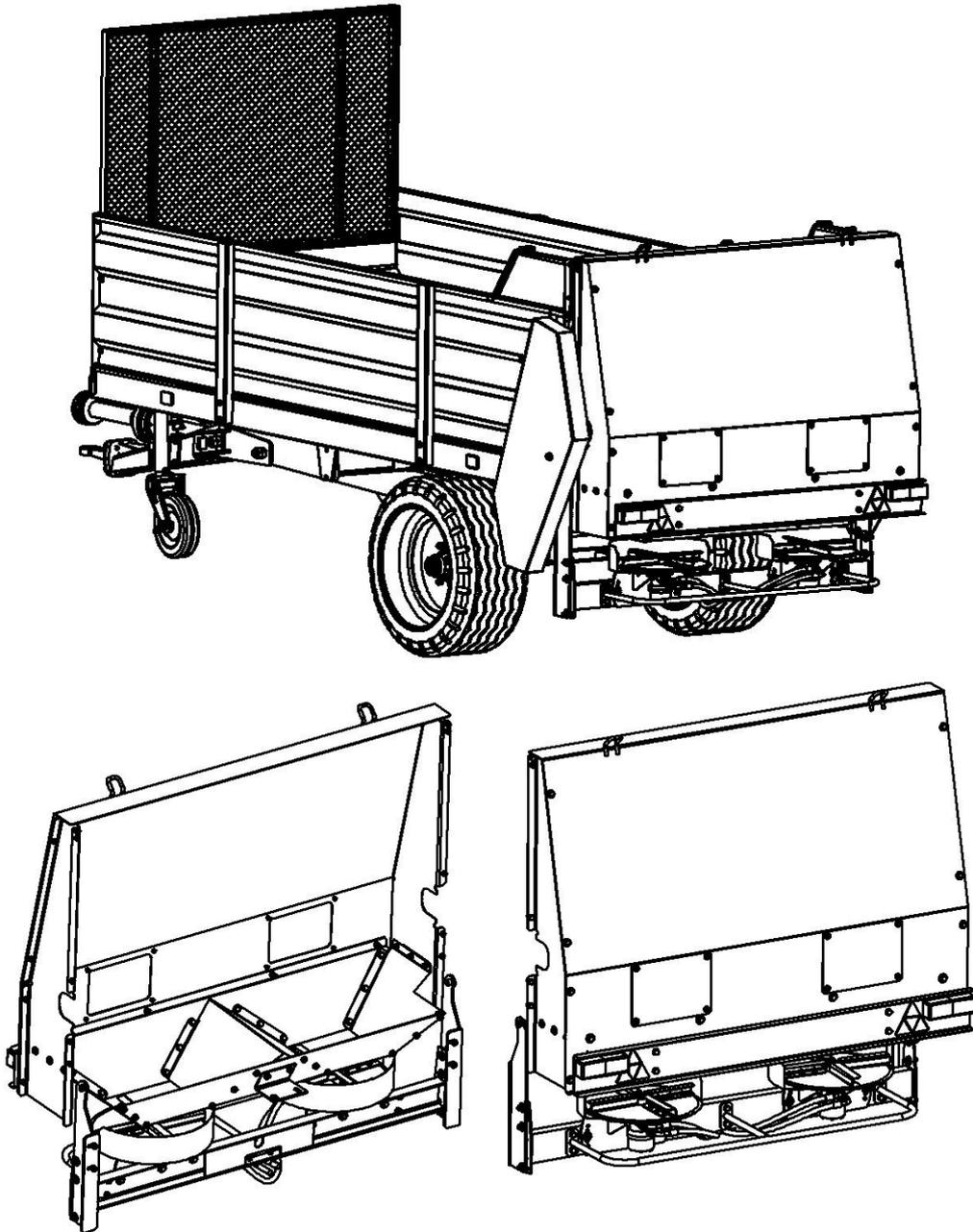


Figure 1. Lime attachment.

 <p>NOTE!</p>	<p>NOTE!</p> <p>The manufacturer is not responsible for changes made independently by the user to the design of the lime attachment, and such changes will void the warranty.</p>
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 <p>NOTE!</p>	<p>NOTE!</p> <p>The attachment must not be used incompatibly with its purpose, and in particular:</p> <ul style="list-style-type: none"> <li>• To spread gravel and stones.</li> <li>• To spread lime containing hard objects, e.g. metal scrap.</li> </ul>
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Use in accordance with the product's destination also includes all activities related to correct and safe operation and maintenance of the machine. Therefore, the user is obliged to:

- read the contents of the user's manual of the attachment and the warranty card, and adhere to the recommendations contained therein,
- comply with maintenance plans and mechanism regulation instructions,
- comply with general safety regulations while working
- read the contents of the instructions for operating the agricultural tractor and comply with the recommendations given therein – particularly with regard to sections concerning connection to a spreader or agricultural trailer,

The lime attachment can be handled and operated only by persons of full age who:

- Are familiar with **ALL THE CONTENT** of the lime attachment's manual,
- have the required license to drive and are familiar with the road traffic regulations and transport regulations.

 <b>NOTE!</b>	<b>NOTE!</b> The operation and use of the machine not in accordance with the Instruction Manual releases the manufacturer from liability for the consequences resulting from non-compliance with the provisions contained therein and voids the warranty.
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## 3. Safety in use

### 3.1 General safety and accident prevention regulations

- Before using the attachment, you should carefully read the contents of the instruction manual. During operation, adhere to all instructions contained in the manual.
- Before each start, the attachment should be checked in terms of operational safety (completeness of all guards, tightening of all bolts, cracks or visible damage on the structure).
- Any repair and maintenance works are only possible when the machine is at a complete stop and  the Power take-off (PTO) is disconnected from the tractor.
- When using the machine, pay special attention to marked crushing and cutting points, as well as to all pictograms on the spreader and lime attachment.
- When mounting and dismounting the attachment on/from the spreader, you must take special caution.
- Before you start work, check if the attachment has any loose parts.
- Modifications can be made only with the permission of the manufacturer. The basic condition for safety are original spare parts and components. Using other parts may result in exclusion of liability of the manufacturer for resulting consequences.
- Careless operation and use of the attachment may injure the operator or third parties and damage the machine, spreader or tractor.

- It is forbidden to use the machine by persons not qualified to drive agricultural tractors, including under aged persons and persons under the influence of alcohol.
- It is forbidden to use the attachment in non-compliance to its purposes. The staff operating the machine should strictly observe basic occupational health and safety rules.
- It is prohibited to use an incomplete attachment.
- Prior to every use of the attachment, check its technical condition, especially the condition of the hydraulic installation and tightening of bolts.
- It is prohibited to spread material contaminated with hard materials (e.g.: scrap metal, stones, bricks, etc.) or elements that may catch in the machine's mechanism (e.g.: rope, rags).

### 3.2 Hydraulic installation

- During work, the hydraulic system is under high pressure.
- Check the technical condition of hydraulic hose connections regularly. Oil leaks are a sign of damage to the system, making further use of the machine impossible.
- In case of failure of the hydraulic installation, the lime attachment should be out of operation until failure removal.
- When connecting hydraulic hoses to the tractor, remember that there should not be excessively high pressure in them. If necessary, reduce the pressure in the installation.
- In the case of injury by a jet of hydraulic oil, consult a physician immediately. Hydraulic oil may cause infections if it penetrates into the body. In the event of eye contamination, wash eyes with a large amount of water and consult a physician.
- In the event of contact of oil with skin, wash the dirty spot with soap and water. Do not use organic solvents (petrol, kerosene).
- Use the hydraulic oil recommended by the manufacturer.

- After replacing the hydraulic oil, the used oil must be disposed of. Used oil is to be stored in its original containers or in hydrocarbon-resistant substitute packages. Replacement containers must be carefully described and stored properly.
- It is forbidden to store hydraulic oil in packaging designed for food storage.

### 3.3 Maintenance.

- Repair, maintenance and cleaning operations and the removal of functional faults can be performed only after disconnecting the spreader from the tractor, i.e. disconnecting the PTO and the lime attachment's hydraulic installation.
- During maintenance and repair work, use the appropriate tools and protective clothing.
- In the event where replacement is necessary - used oil and grease are to be disposed of.
- Prior to electrical or welding works, disconnect the power supply to the electrical installation.
- Use spare parts according to the catalog of spare parts.
- Modifications can be made only with the permission of the manufacturer. The basic condition for safety are original spare parts and components. Using other parts may result in exclusion of liability of the manufacturer for resulting consequences.
- Maintenance operations of the attachment should be carried out on a stable surface and with securing the spreader against uncontrolled rolling off (through planting chocks under the wheels, using the parking brake)
- It is forbidden to weld galvanized elements because of the harmful vapors.

### 3.4 The principles of movement on public roads.

- When driving on public roads, mount the triangular plate distinguishing slow-moving vehicles (item 1, fig. 2). The triangle is to be fastened to the holder on the guard of the drums.

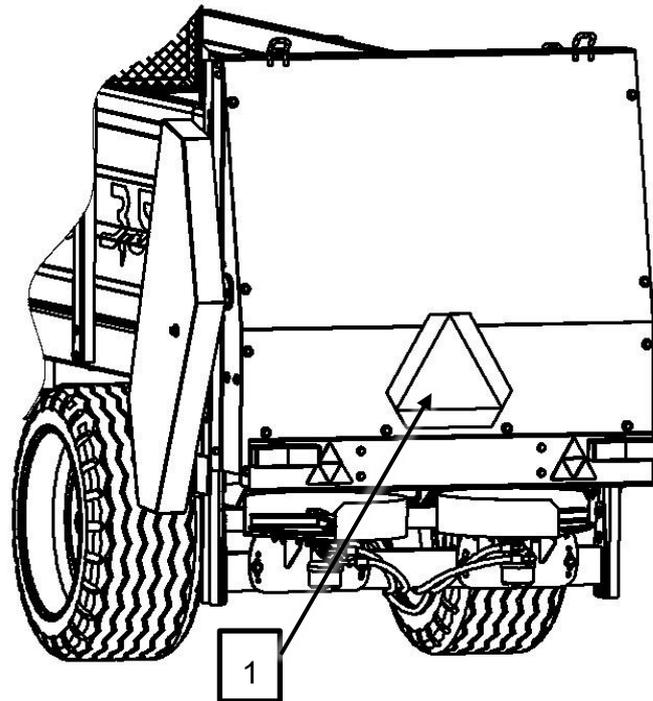


Figure 2. The location of the placement of the plate distinguishing slow-moving vehicles.

 <p>NOTE!</p>	<p>NOTE!</p> <p>Before each maneuver of reversing and start of spreading the material loaded on the load box, use of the beep signal 2 times is recommended in the tractor in order to inform bystanders about the threat.</p>
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### 3.5 Description of residual risk.

Although the "CYNKOMET" Czarna Białostocka company takes responsibility for the design and construction in order to eliminate the danger, and has made every effort to eliminate the risk of an accident, some elements of risk during operation of the spreader are unavoidable. The residual risk stems from the wrong behavior of the machine operator.

The greatest danger occurs when you do the following:

- use the attachment for purposes other than those described in the manual,
- are present in the spreading zone after engagement of the attachment's hydraulic installation,
- coupling of the spreader to the tractor,
- mount and dismount the attachment on/from the spreader,
- operating the machine by unauthorized persons, under aged persons or under the influence of alcohol or other drugs,
- cleaning / maintenance of the attachment during operation (without disconnecting the PTO and hydraulic installation from the tractor),
- not keeping a safe distance from bystanders when operating the machine – and when spreading materials for which the attachment has not been designed,
- introduce design changes without the consent of the manufacturer,
- clean, carry out maintenance and technical checks of the machine,
- presence of people or animals in areas not visible from the operator's position,
- inserting body parts or other items (such as tools) into rotating parts of the spreader's adapter, into moving parts of the conveyor and into the spinning discs of the attachment.

When presenting the residual risk, the lime attachment is treated as a machine, which until the start of production was designed and manufactured according to the current "state of the art".

### **3.6 Residual risk assessment.**

When observing such recommendations as:

- careful reading of the operating instructions and strict adherence to its provisions,
- prohibition of placing hands and other parts of the body in inaccessible and

forbidden places,

- prohibition of presence in the spreading zone during operation of the attachment, tractor or spreader,
- maintenance and repair of the machine according to the manual and by persons having the appropriate knowledge and licenses,
- use of personal protection equipment,
- securing the machine against the access of children and animals,
- adherence to the notes and recommendations contained in the operating instructions,
- performing maintenance and repair jobs in accordance with the security service rules,  
residual risk can be eliminated.



**NOTE!**

**NOTE!**

There is residual risk in the event of failure to comply with the recommendations and guidelines that have been set out.

### 3.7 Information and warning stickers.

The attachment bears informational and warning stickers according to the specification (table 2 and fig. 4). The user of the machine is obliged to take care of the readability of the subtitles, warning symbols and information placed on the machine throughout the entire period of its use. In the case of destruction, replace them with new ones. Labels with inscriptions and symbols are available from the manufacturer or the place where the machine was purchased. New units replaced during repairs must be re-marked with the appropriate safety signs. When cleaning the lime attachment, do not use a strong water jet or solvents that could damage the coating of stickers

Table 2. Information and warning stickers.

Item no.	The symbol (sign) of safety or the content of the inscription	Meaning of the symbol (sign)	The placement on the machine
1.		<p>Ejected objects. Risk to whole body. Maintain a safe distance from the spreader.</p>	<p>Rear guard</p>
2.		<p>Pulling in of hand or upper trunk Maintain a safe distance from the spreader.</p>	<p>Rear guard</p>
3.		<p>Hitching point</p>	<p>Rear guard</p>

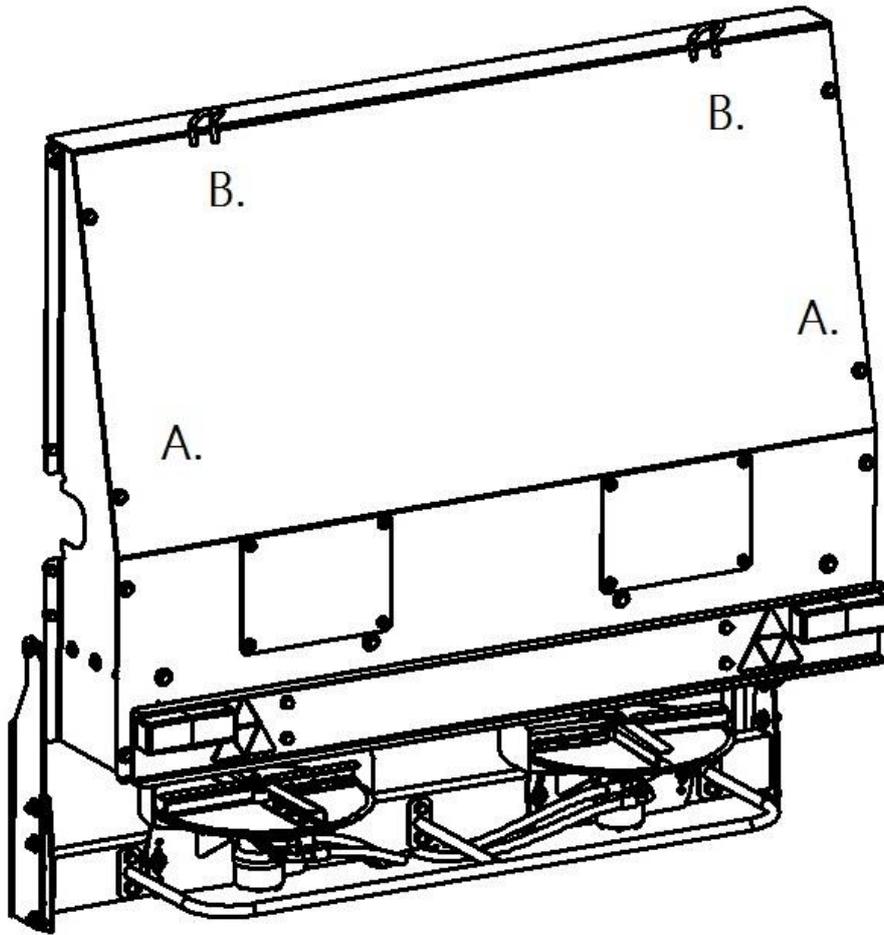


Figure 3. Placement of stickers on walls.

A. Stickers: 1, 2;

B. Stickers: 3;

## 4. Information regarding use

### 4.1 Technical characteristics.

Table 3. Basic technical specifications of hydraulic motors.

Type		ALSG2 80
Working volume (cm <sup>3</sup> /rev)		81,5
Max. speed (rpm)	continuous <sup>1</sup>	750
	instant <sup>2</sup>	940
Max. torque (N*m)	continuous	195
	instant	220
	max <sup>3</sup>	270
Output power (kW)	continuous	12,5
	instant	15,0
Max. pressure (MPa)	continuous	17,5
	instant	20
	max	22,5
Max. flowrate (L/min)	continuous	60
	instant	75
Weight (kg)		6,9

<sup>1</sup> – continuous motor operation.

<sup>2</sup> – at the most, for 6 seconds per minute

<sup>3</sup> – at the most, for 0.6 seconds per minute

## 4.2 Description of construction and operation.

### 4.2.1 General Description

The lime attachment is an agricultural machine adapted for inter-operation with N-233 series spreaders, for spreading lime. The approximate spreading range is a semi-circle with a diameter of about 7 meters (see Fig. 5). The range may differ according to the granulation, looseness and moisture content of the spread lime.

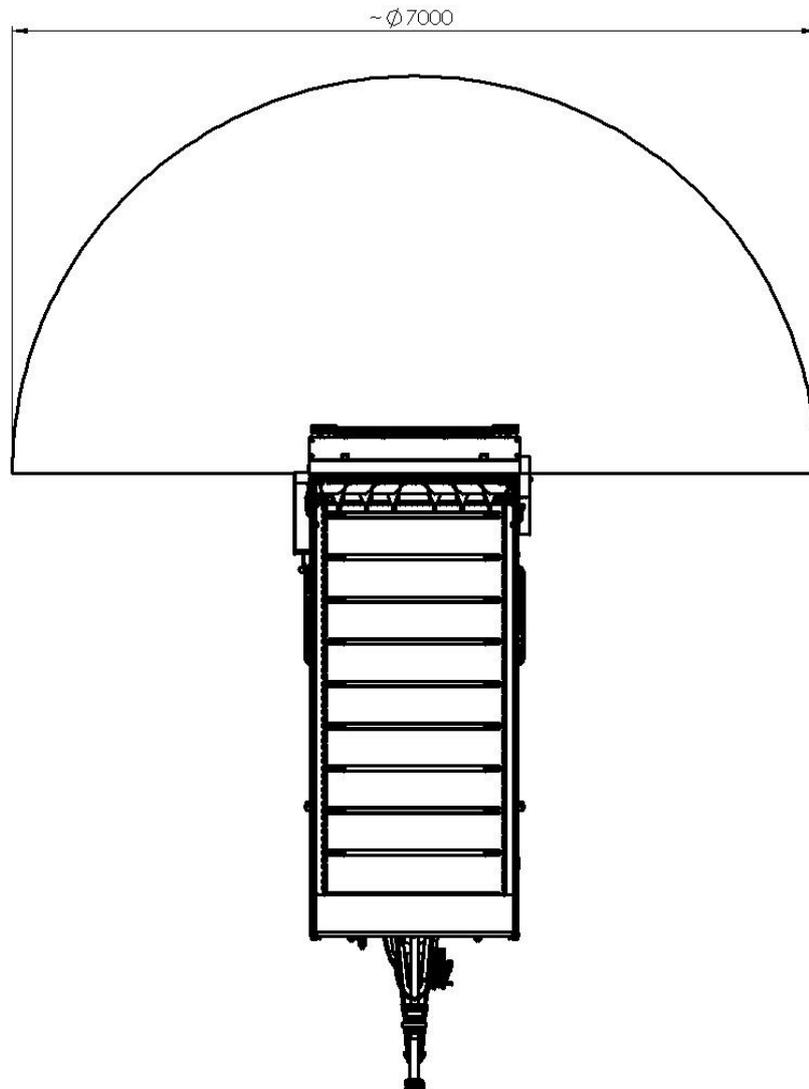


Figure 4. Approximate range.

## 4.2.2 Hydraulic system

Table 4. Characteristics of Agrol U oil

Item no.	Requirements	Research method based on	Unit	Value
1.	kinematic viscosity at 100°C	ASTM D 445	mm <sup>2</sup> / s	10,0-11,5
2.	flow temperature	ASTM D 97	°C	<-24
3.	flash point	ASTM D 92	°C	>230
4.	base number	ASTM D 2896	mgKOH/g	9,9
5.	viscosity index	ASTM D 2270		>95
6.	CCS structural viscosity at -18°C	ASTM D 5293	mPa*s	<9000

Equivalents of Agrol U oil:

- API GL-4
- DIN HLP
- ISO VG 100
- John Deere J20C
- MF CMS M1145
- Volvo WB101
- ZF TE-ML-03E, ZF TE-ML-05F

 NOTE!	<b>NOTE!</b> The factory-made hydraulic system of the machine is filled with Agrol U oil. It is possible to fill the hydraulic system with a different oil with similar specifications. The system must be thoroughly flushed out beforehand. The hydraulic oil change operation is to be performed by authorized service stations
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#### 4.2.4 Electrical installation, lighting and signaling.

The electrical installation is adapted to be powered from a 12V DC power source.

The electrical system consists of:

- rear bundle,
- two LT 20 cluster lamps.

All lamps are equipped with a cable terminated by a plug for connection to the rear bundle. Lighting is supplemented by two red, triangular reflectors.

The rear harness is identical to the one applied in N-233 spreaders and must be plugged into the spreader's central harness.

### 4.3 Rules of proper use of the lime attachment.

#### 4.3.1 Preparation before running for the first time.

##### 4.3.1.1 Control of the attachment after delivery

The manufacturer guarantees that the lime attachment is fully operational and complete, and has been checked according to quality control procedures at the plant and is approved for use. However, this does not relieve the user from the obligation of checking the machine after delivery and before first use.

Before starting work, the operator must:

- Inspect the machine's technical condition and prepare it for **first start-up**.
- Read the contents of these instructions, attached to the attachment, and adhere to the recommendations given therein.
- Learn the machine's design and principle of operation.



NOTE!

NOTE!

Before connecting and before starting the lime attachment, read this manual and follow the instructions contained therein.

External visual inspection:

- Check the completion of the machine (standard and optional equipment).

- Check the condition of the anti-corrosion coatings.
- Check all individual components of the attachment for mechanical damage (dented, bent or broken parts) arising from improper machine transport.
- Inspect the technical state of the flexible hydraulic hoses.
- Make sure that there are no leaks of hydraulic oil.
- Check the electric lamps of lighting (if included).
- Check markings on the machine - pictograms (Tab. 2).

#### 4.3.1.2 Preparing the attachment for the first connection.

##### Preparation

- Check the attachment's hydraulic motors – make sure they rotate fluidly.
- Check for loose screws – particularly near the blades of discs.  
If necessary, tighten them.
- Make sure that the hydraulic connections in the agricultural tractor are compliant with the machine's connection points, otherwise do not connect the attachment.

##### Trial drive / start

If all of the above activities have been performed and the attachment's technical condition does not raise doubts, the machine should be connected to the spreader, according to the sequence given in section 5.2, and then, after connecting the spreader to the tractor:

- connect the power take-off and fasten shaft guards into place.



**NOTE!**

**NOTE!**

It is strictly prohibited to use a Power Take-Off if a guard is missing or damaged.

- connect the attachment's hydraulic installation to the tractor.
- set travel speed (fig. 5).
- start the tractor and disengage the parking brake

- move the whole set by a few meters.
- engage PTO revolutions - revolutions of the adapter's drums and conveyor's feed rate and attachment's hydraulic installation.
- in the event of improper feeder feed rate, set the adjusting lever to the proper position (fig. 5). Feed rate is changed by switching the lever from neutral position (item 2, fig. 5) – the closest holes (item A, fig. 5) correspond to the lowest speed, and the farthest - the highest speed (item B, fig. 5).

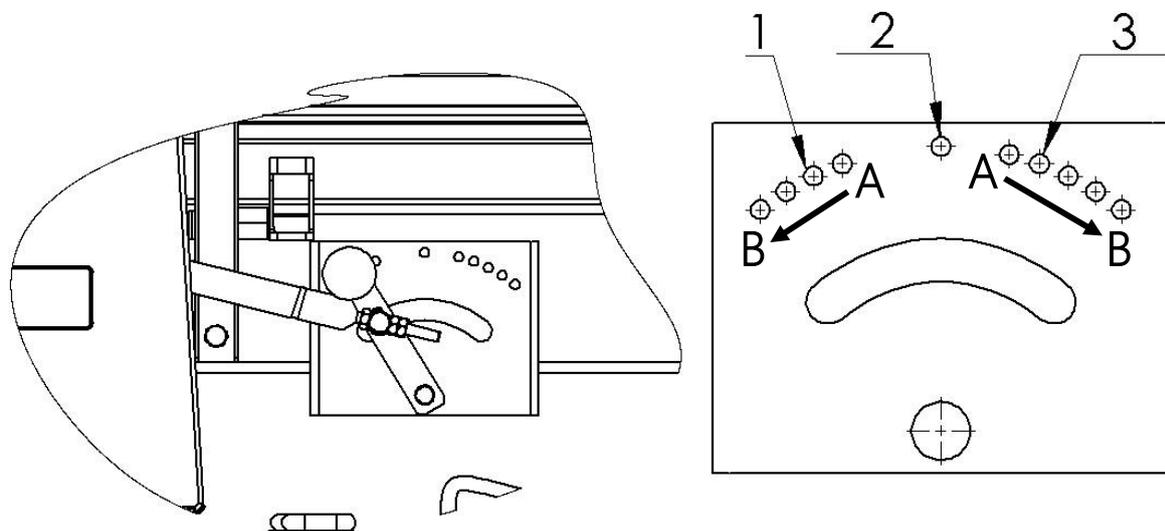


Figure 5. Conveyor's adjusting lever.

Directions of conveyor movement and lever position:

- holes item 1 - forward conveyor movement (loading),
- holes item 2 - neutral position (no feed),
- holes item 3 - reverse conveyor movement (unloading),
- A – slow feed rate, B – fast feed rate;

If during the test drive/start-up, you experience disturbing symptoms such as:

- noise and unnatural noises coming from the rubbing of moving parts on the construction of the attachment,

- leakage of hydraulic oil,
- Improper operation of hydraulic actuators,  
 stop the spreader's and lime attachment's operation immediately and remove the cause of these symptoms.

If a fault cannot be removed or removing it will invalidate the warranty, please contact your dealer to resolve the problem.

 <p>NOTE!</p>	<p>NOTE!</p> <p>It is strictly prohibited for the operator to leave the tractor's cabin when:</p> <ul style="list-style-type: none"> <li>- the engine is running</li> <li>- the key is in the ignition switch.</li> </ul>
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 <p>NOTE!</p>	<p>NOTE!</p> <p>Take special caution while the machine is working. Do not insert limbs into hazardous areas. Adhere to the markings on the attachment (pictograms).</p>
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 <p>NOTE!</p>	<p>NOTE!</p> <p>Before each maneuver and before starting spreading of the material loaded on the load box, use of the beep signal 2 times is recommended in the tractor in order to inform bystanders about the threat.</p>
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 <p>NOTE!</p>	<p>NOTE!</p> <p>Careless and improper use and operation, as well as non-compliance with the recommendations contained in this manual pose a threat to life and health.</p>
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### 4.3.2 Preparation for work.

In preparation for the attachment's work, the following should be checked:

- Leaktightness of the hydraulic installation.
- Tightness of bolts.

 <p>NOTE!</p>	<p>NOTE!</p> <p>When connecting the hydraulic hoses to the tractor, pay attention that the hydraulic system of the tractor is not under pressure.</p>
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 <p>NOTE!</p>	<p>NOTE!</p> <p>Pay attention to the compatibility of oils in the tractor's hydraulic system and the hydraulic system of the lime attachment.</p>
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 <p>NOTE!</p>	<p>NOTE!</p> <p>Observe strictly that there are no bystanders in the loading zone and when turning on the lime attachment. Before commencing the loading of the spreader and during its work, ensure that there is proper visibility and make sure that there are no bystanders nearby.</p>
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## 5. Technical Support

When using the lime attachment, constant monitoring of the technical condition and the execution of maintenance procedures is required to keep the machine in good technical condition. Therefore, the user of the attachment is obliged to perform all maintenance and regulatory tasks specified by the manufacturer.

To ensure proper functioning and avoid serious failures, the lime attachment must be kept in the proper technical condition and operated according to the manufacturer's guidelines.

An important element of the operation is the daily maintenance of the lime attachment (before commencing work), it foresees:

- checking tightness of threaded joints (table no. 5),
- checking the tightness of the hydraulic system,
- check the functioning of the electrical system (if purchased),

All detected faults are to be removed as soon as they are detected. Use of a faulty attachment may have serious consequences.



NOTE!

**NOTE!**

In the case of noting any irregularities in the operation or damage to systems or assemblies of the lime attachment, the machine must be taken out of use until repair and removal of the defect.

It is forbidden to carry out service and repair work under a burdened cargo bed of the spreader and with the tractor engine running. All maintenance work performed after disconnecting the PTO.

All maintenance and repair tasks are to be performed in compliance with general occupational health and safety rules. In the case of injury, the wound should immediately be washed and disinfected. In the case of serious injuries, consult a physician.

Table 5: Orientational tightening torques for screws

Metric thread	Screw class		
	5.8	8.8	10.9
	Nm		
<b>M6</b>	5	7	11
<b>M8</b>	12	18	26
<b>M10</b>	23	35	52
<b>M12</b>	40	60	89
<b>M14</b>	64	98	144
<b>M16</b>	95	145	213
<b>M18</b>	133	209	297
<b>M20</b>	186	292	416
<b>M22</b>	247	389	553
<b>M24</b>	320	502	715
<b>M27</b>	464	729	1039
<b>M30</b>	634	997	1420

### 5.1 Hydraulic installation maintenance.

Always follow the principle that the oil in the lime attachment's hydraulic system and the oil in the external hydraulic system of the tractor are to be of the same type. The use of different types of oil is not permitted.

The hydraulic system should be completely tight. Checking the tightness of the hydraulic system:

- connect the attachment to the tractor;
- start the hydraulic motor;
- Turn on the hydraulic system for 30 seconds, and check the system for leaks.

If oil leaks are detected, take one of the following steps:

- tighten the connector,
- replace the connector,
- replace the hose.

Hydraulic hoses should be replaced at least every four to six years from their date of manufacture, unless previously found to be damaged and replaced.

In the case of noting oiling on the body of the hydraulic motor, check the nature of the leak. Minor leaks with symptoms of "sweating" are acceptable, but if you see a leak of a "drip" type, you must stop the spreader's operation and repair the failure.



NOTE!

**NOTE!**

The state of the hydraulic system should be controlled up to date during work with the spreader. It is prohibited to use the attachment when the hydraulic system is damaged.

## 5.2 Mounting the lime attachment

If it is necessary to independently mount the attachment on the spreader, follow these steps:

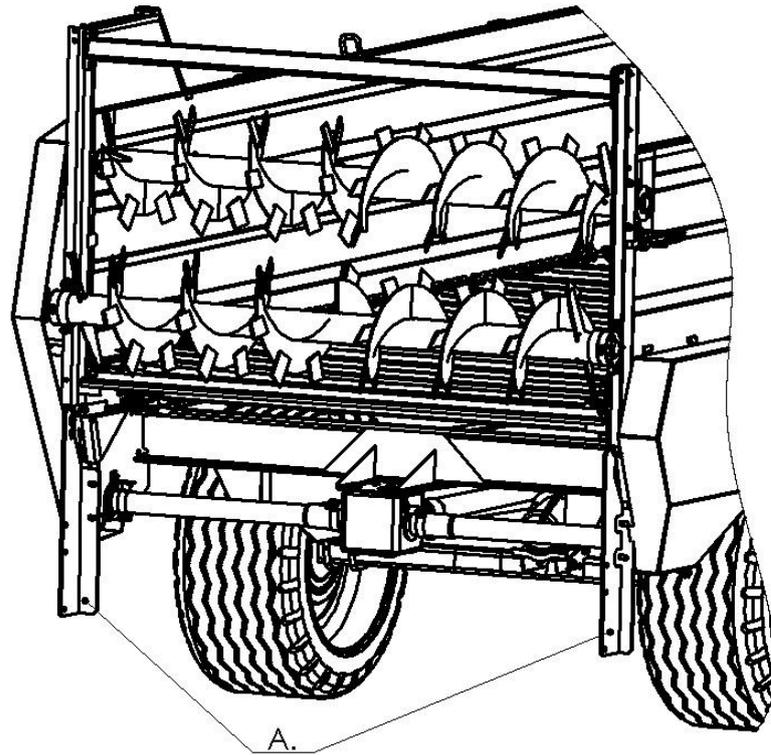


Figure 6. Step 1 - mount the left and right suspension (A) on the pins of the top frame.

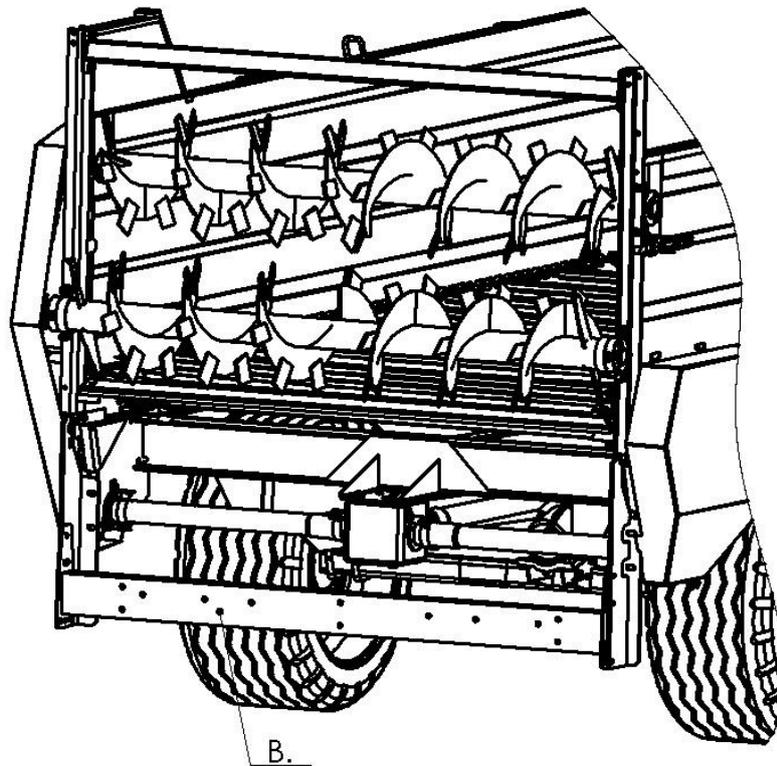


Figure 7. Step 2 - Bolt the channeled cross-bar (B) to the left and right suspension.

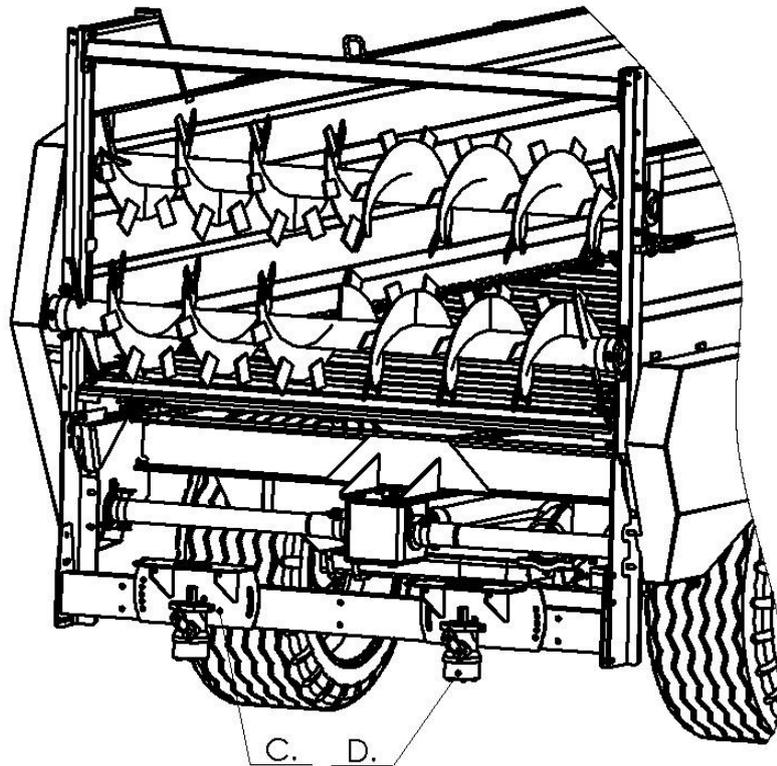


Figure 8. Step 3 - bolt motor holders (C) to the channel bar and mount hydraulic motors (D).

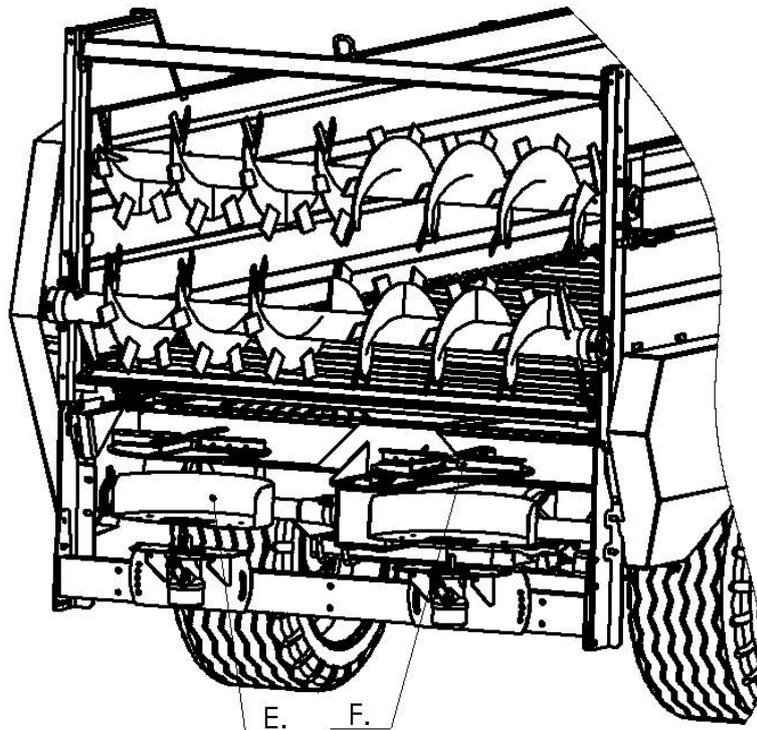


Figure 9. Step 4 - Bolt the mounts of guards (E) and mount discs (F), paying attention to the groove for the key.

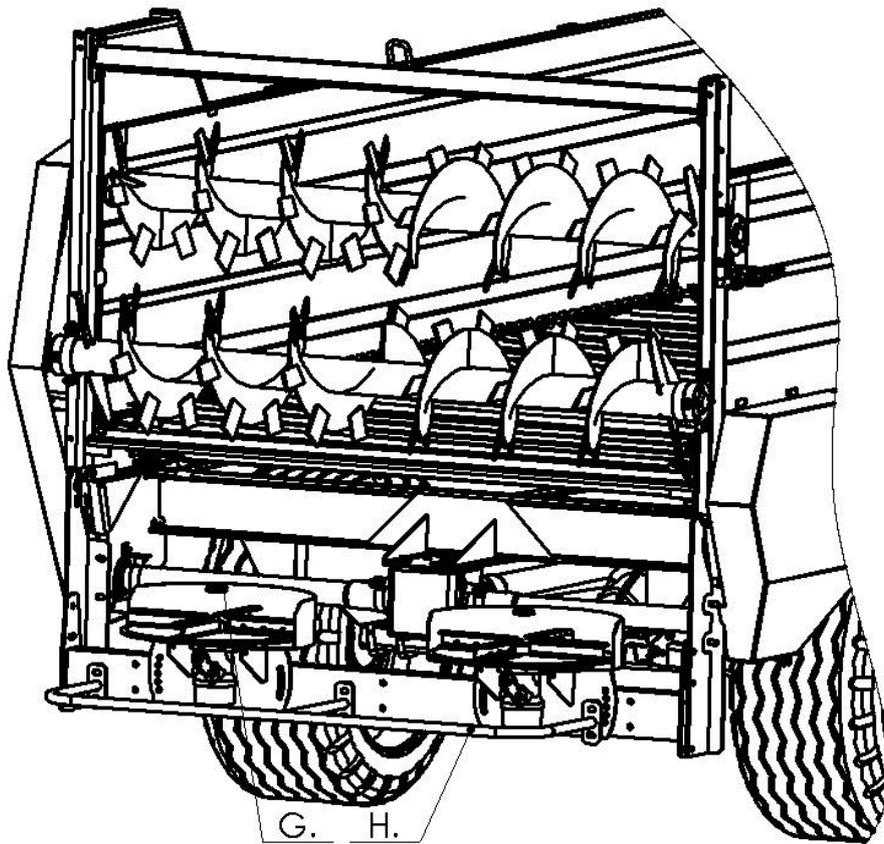


Figure 10. Step 5 - Secure discs using washers (G). Mount the additional disc guard (H).

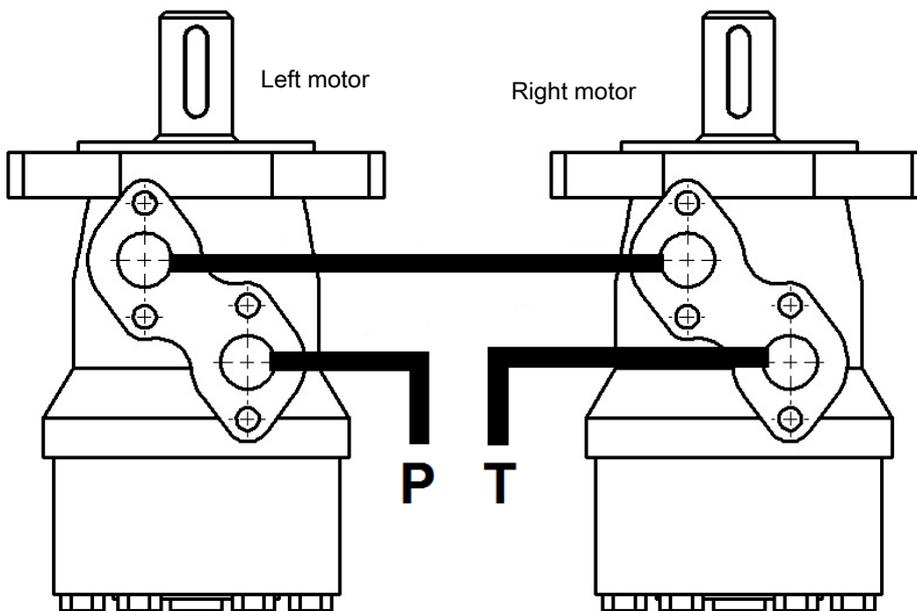


Figure 11. Step 6 - Connecting hydraulics. P – Feed; T - Outlet.

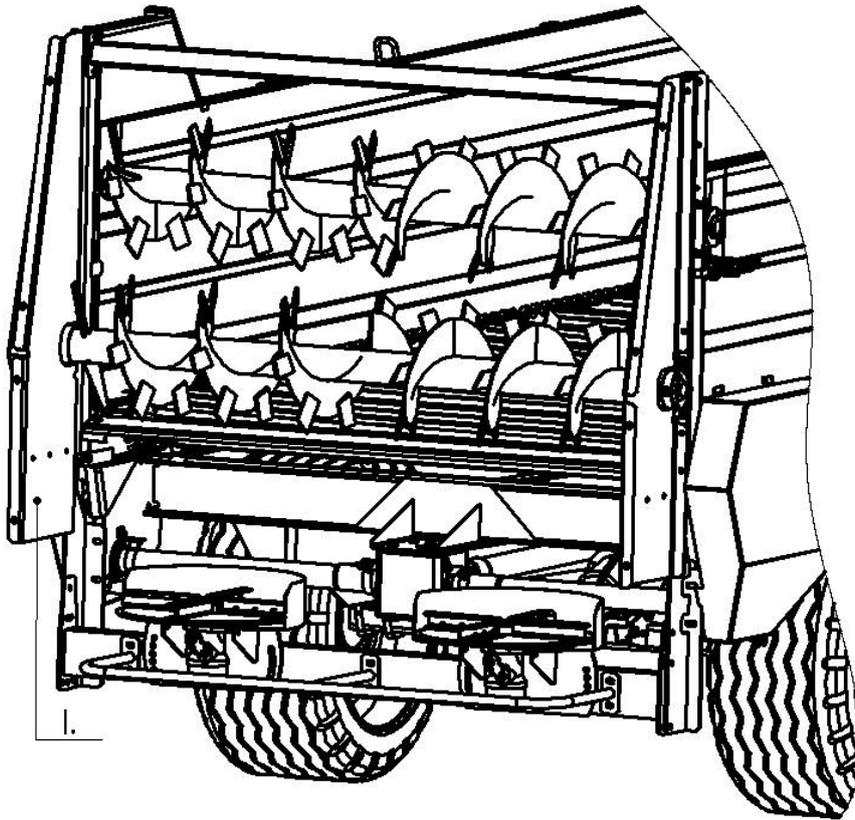


Figure 12. Step 7 - Mount side guards (l) on the adapter frame.

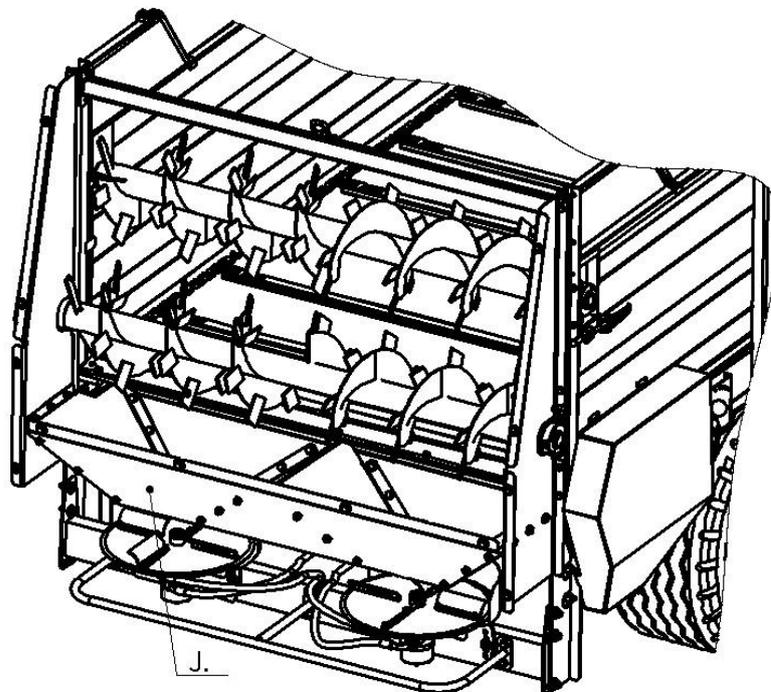


Figure 13. Step 8 – Mount chutes on discs (j).

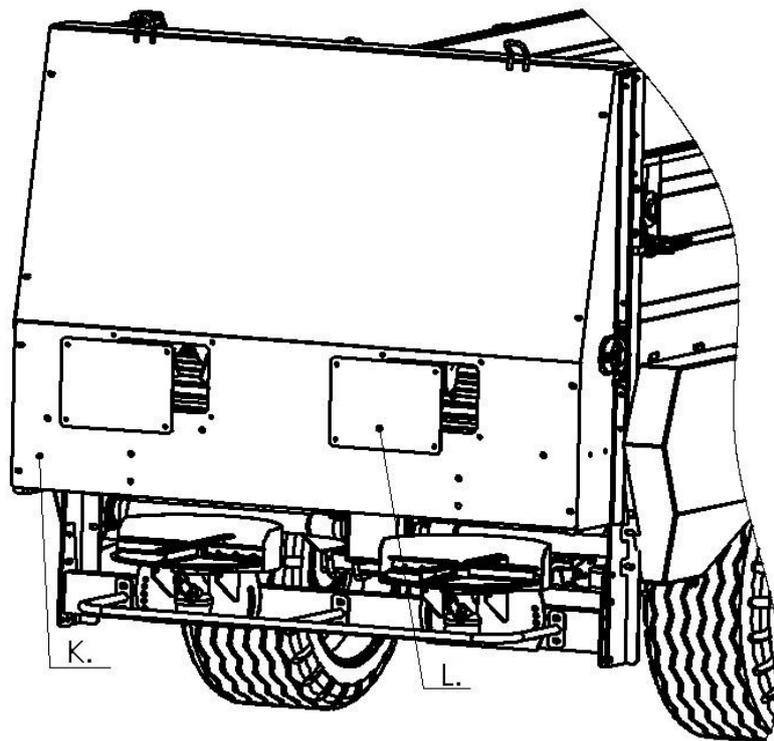


Figure 14. Step 9 - Mount the rear guard (K), then fasten guards (L).

### 5.3 Maintenance of discs and guards

Maintenance of discs involves continuous monitoring of the condition of elements directly working with the spread material. Elements guarding the adapter's drums (e.g.: guards/deflectors, levers) should also be cleaned of residual material after work.

In every instance, before starting work with the lime attachment, **the condition of rotor blades** must be checked. It is prohibited to use the attachment when rotor blades are damaged.



NOTE!

NOTE!

It is essential, before every use of the attachment, to check the tightness of screws. Failure to perform this activity may lead to severe damage to the machine or injury to persons found in the proximity of the running machine.

 <p>NOTE!</p>	<p>NOTE!</p> <p>Use only original rotor blades. Failure to do so rules out the manufacturer's liability with regard to the warranty and to the safety of the machine's use.</p>
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To adjust plate inclination, set the attachment according to the guidelines given in the drawing below.

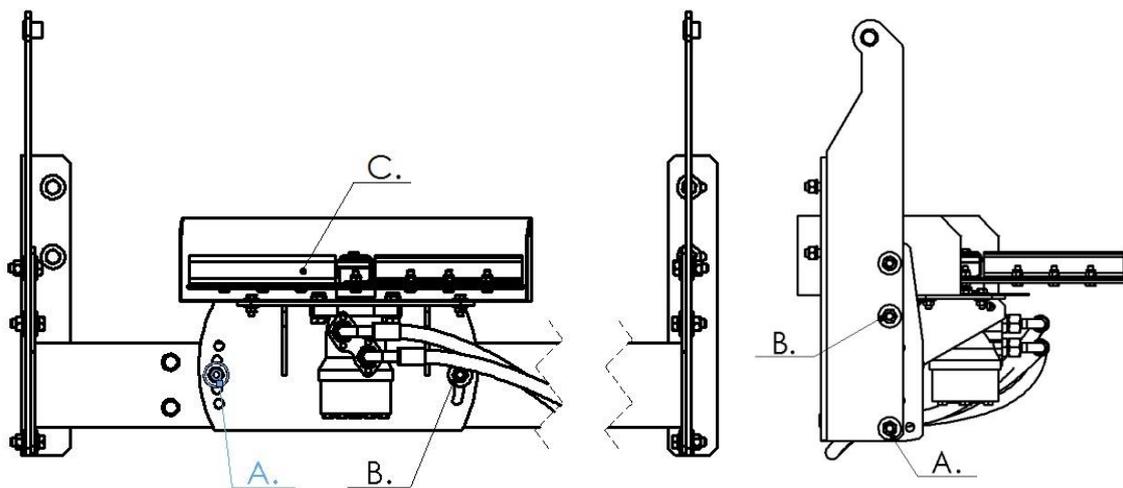


Figure 15. A. Screws to be unfastened and inserted into the desired hole.  
 B. Screws that should only be loosened – protecting against hazardous tilting of the attachment.  
 C. Rotor blades

#### 5.4 Maintenance of the electrical system (OPTIONAL)

The work connected with the repair, replacement or regeneration of electrical components should be entrusted to specialized workshops, which have the appropriate technology and qualifications for this type of work.

The duties of the user include only:

- technical inspection of the electrical installation and reflectors.

- replacing light bulbs.

 <b>NOTE!</b>	<b>NOTE!</b> Driving on public roads with a faulty lighting system is prohibited. Damaged shades, and burned-out bulbs must be replaced immediately before driving. Lost or damaged reflective lights must be replaced with new ones.
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## 5.5 Storage and maintenance.

After ending operation, the lime attachment must be carefully cleaned and washed with a stream of water, and then left in a dry and ventilated area.

Stains/discolorations in various shades of gray present on the zinc coating do not constitute grounds for claims, as long as the zinc coating still has the required minimum thickness (PN-EN ISO 1461: 2000) – in the case of proper machine maintenance, such stains are a natural process that do not affect the coating's properties.

In the case of damage of the external paint coating (hydraulic motors), the damaged areas must be cleaned of rust and dust, degreased, and painted retaining the same color and uniform thickness of the protective coating. Until painting, the damaged areas should be covered with a thin layer of grease or anticorrosion preparation.

During a long break in the use of the lime attachment, it is recommended to place it indoors in a closed room or in a roofed and ventilated place.

## 5.6 Troubleshooting.

Table 6. Faults and remedies

Uneven spreading of the material on the box	Spreading element (rotor blades) absent or damaged	Replacement of the damaged item with a new one
Deposition of spread material on discs	Mismatched conveyor feed to the spread material	Adjust the feed conveyor in accordance with the spread material
	Mismatched conveyor feed to the spreader driving speed	Adjust the feed conveyor according to the vehicle speed

Improper operation of the hydraulic system	Improper hydraulic oil viscosity	Check the quality of oil, make sure that the oil in both machines is of the same type. If necessary, replace the oil in the tractor / attachment
	Insufficient efficiency of the tractor hydraulic pump, damaged tractor hydraulic pump.	Check the hydraulic pump on the tractor.
	Damaged or polluted hydraulic motor	Check the motor's condition: flexure of the mandrel, corrosion, tightness, remove dirt, if necessary, repair or replace the motor.
	Too much motor load	Reduce conveyor feed rate; Check and, if necessary, remove residual material on plates before start-up;
	Damaged hoses	Check to make sure that the hydraulic hoses are tight, not refracted and run properly. If necessary, replace or tighten.

## 6. Transport

The lime attachment is prepared for sale in a complete state and does not require packing. Only the instruction manual of machine handling and the connecting cable of the electrical system undergo packaging.

Delivery to the user takes place by means of car transport. Loading and unloading of the lime attachment from the car must be carried out using a crane or gantry crane. During operation, observe the general safety rules with handling operations. Persons operating the reloading equipment must have the required permissions to use these devices.

When loading / unloading the attachment by crane or lever to lift, lift it with the help of approved fasteners designed to carry the load with sufficient capacity. The belts must be in good condition, they cannot show any signs of damage.

The belts should be placed in such places that, when lifting the machine, the belts do not have the possibility of moving, and the attachment when moving is not tilting. If there is a possibility of damage or fraying of belts against components of the machine, put washers in these areas.

The lime attachment should be attached firmly to the platform of the transport mean with belts, chains, lashing or other fastening means fitted with a tightening mechanism. Fastening elements are to be fastened to fixed structural elements. Use certified and technically efficient fastening means. Frayed belts, cracked mounting brackets, opened or corroded hooks or other damage may disqualify the given mean for use.

	<p><b>NOTE!</b></p> <p>During independent transport, the trailer operator should be familiar with the contents of this manual and follow the recommendations contained in it. During road transport, the attachment is mounted on a platform of the transport mean in accordance with the manufacturer's technology. The driver of the car, while transporting the machine, should take extra caution.</p>
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## 7. Scrapping

Should the user make a decision to scrap the machine, he must pass the entire attachment to the scrap depot designated by the Governor or Starost.

Dismounted parts and parts remaining after repair of the lime attachment must be submitted to the collection point of recyclable materials.

## 8. Guarantee

"CYNKOMET" Sp. z o.o. in Czarna Białostocka ensures the smooth operation of the machine according to the technical-operational terms described in the operating manual. The condition of accepting a complaint is to follow all the recommendations contained in the operating and use manuals.

### ***TERMS OF THE WARRANTY:***

The guarantee will be respected after the presentation by the customer of a clearly and correctly filled warranty card of the machine undergoing reclamation.

- 1) Failures detected during the warranty period will be removed by warranty service no later than 14 working days from the date of delivery by the repair station or any other agreed period.
- 2) In a written notification claim (mail, fax, e-mail, etc.) you must give the data and contact of the owner of the machine, its name, serial number,

purchase date and a description of the complaint.

- 3) Parts subject to wear during exploitation are not covered by the warranty e.g. tires, brake linings, lighting, damage caused by external causes, such as: mechanical injuries, improper handling, as well as the operation incompatible with the intended purpose.
- 4) This manual does not allow you to make changes, alterations, modifications to the discretion of the Customer without consulting with the manufacturer.

Detailed warranty conditions are mentioned in the warranty card attached to each newly purchased machine.

 <b>NOTE!</b>	<p><b>NOTE!</b></p> <p>It is advisable to require from the seller to fill in the warranty card and reclamation coupons. Lack of e.g. the date of sale or point of sale stamp exposes the user to non-recognition of any complaints.</p>
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## 9. Environmental hazard

Hydraulic oil leakage is a direct threat to the environment because of the limited biodegradability of the substance.

The created layer of oil on the water can a result of direct physical action on organisms, can cause change in the oxygen content in the water due to absence of direct contact of the air with water.

Maintenance - repair work at the time of which there is a risk of leakage should be performed in rooms with oil resistant surface.

In the event of an oil spill, you must first secure the source of the leak, and then collect the spilled oil using available means. Collect the oil residues using sorbents, or mix the oil with sand, sawdust or other absorbent materials. The collected oil waste should be kept in a sealed and marked container, resistant to hydrocarbons. The container should be kept away from heat sources, flammable materials and food.



**NOTE!**

**NOTE!**

Used hydraulic oil or gathered remains mixed with absorbent material should be stored in a carefully marked container. For this purpose, do not use food containers.

Used oil or unsuitable for reuse due to the loss of its properties should be stored in its original packaging in the same conditions as previously described. Oil waste must be transferred to a point taking care of recycling or oils regeneration. Waste code: 13 01 10. Detailed information concerning hydraulic oil can be found in the safety data sheet.



**NOTE!**

**NOTE!**

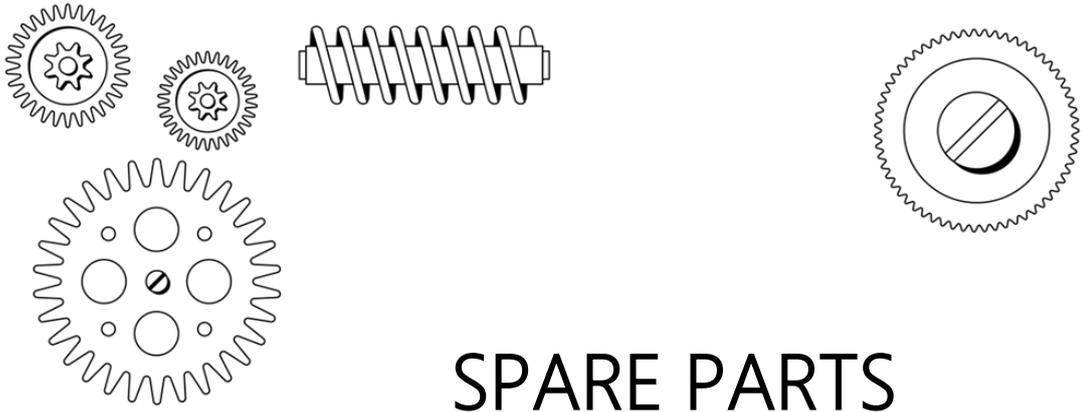
Oil waste can be delivered only to the point taking care of disposal or oils regeneration. It is forbidden to throw or pour oil into drains or water.



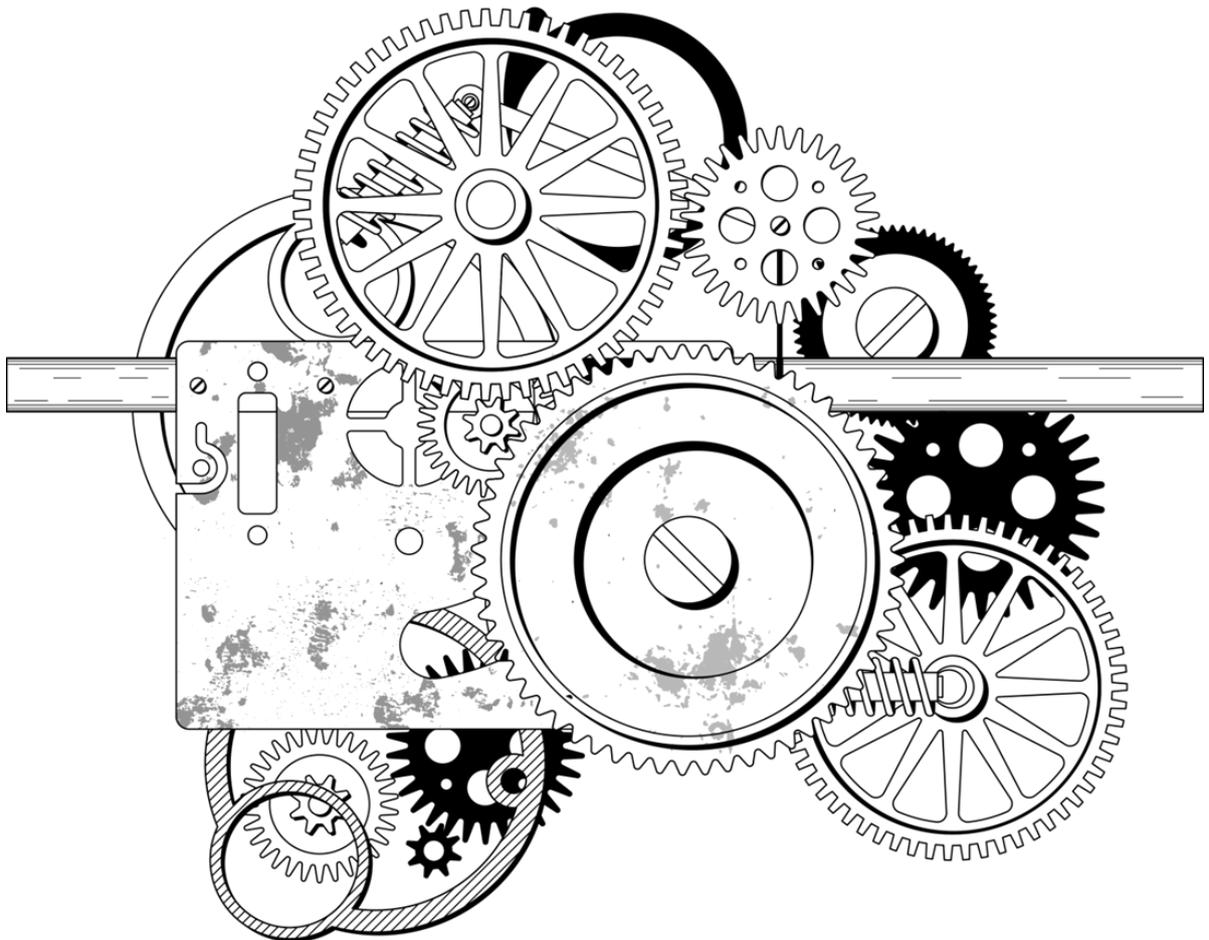
**NOTE!**

**NOTE!**

Is absolutely forbidden to start the spreader conveyor loaded with material (e.g. manure, peat, lime, etc.) while the lime attachment is not engaged. Failure to do so may cause irreparable damage to the adapter and your warranty.



# SPARE PARTS CATALOGUE



# SPARE PARTS CATALOGUE

## Lime attachment

### 1. Introduction

The "Spare parts catalog" is, next to the "Instruction manual", the basic operation and maintenance document intended for trailer users.

The catalogue includes:

- **drawings of all assemblies and mechanisms of the spreader**
- **lists of parts of individual units and mechanisms.**

### 2. How to use the catalogue

For each drawing, there is a text table added, containing the list of parts of the unit or the mechanism.

In order to obtain the part number, select an assembly or mechanism drawing, which includes the part from the catalogue, read the number of its position, and then on the appropriate plate, find the appropriate position under this name and part symbol

When ordering please specify:

- **the exact address of the orderer (recipient of the parts),**
- **part name according to the catalog,**
- **KTM symbol,**
- **the number of pieces of the ordered parts,**
- **year of production and serial number of the machine.**

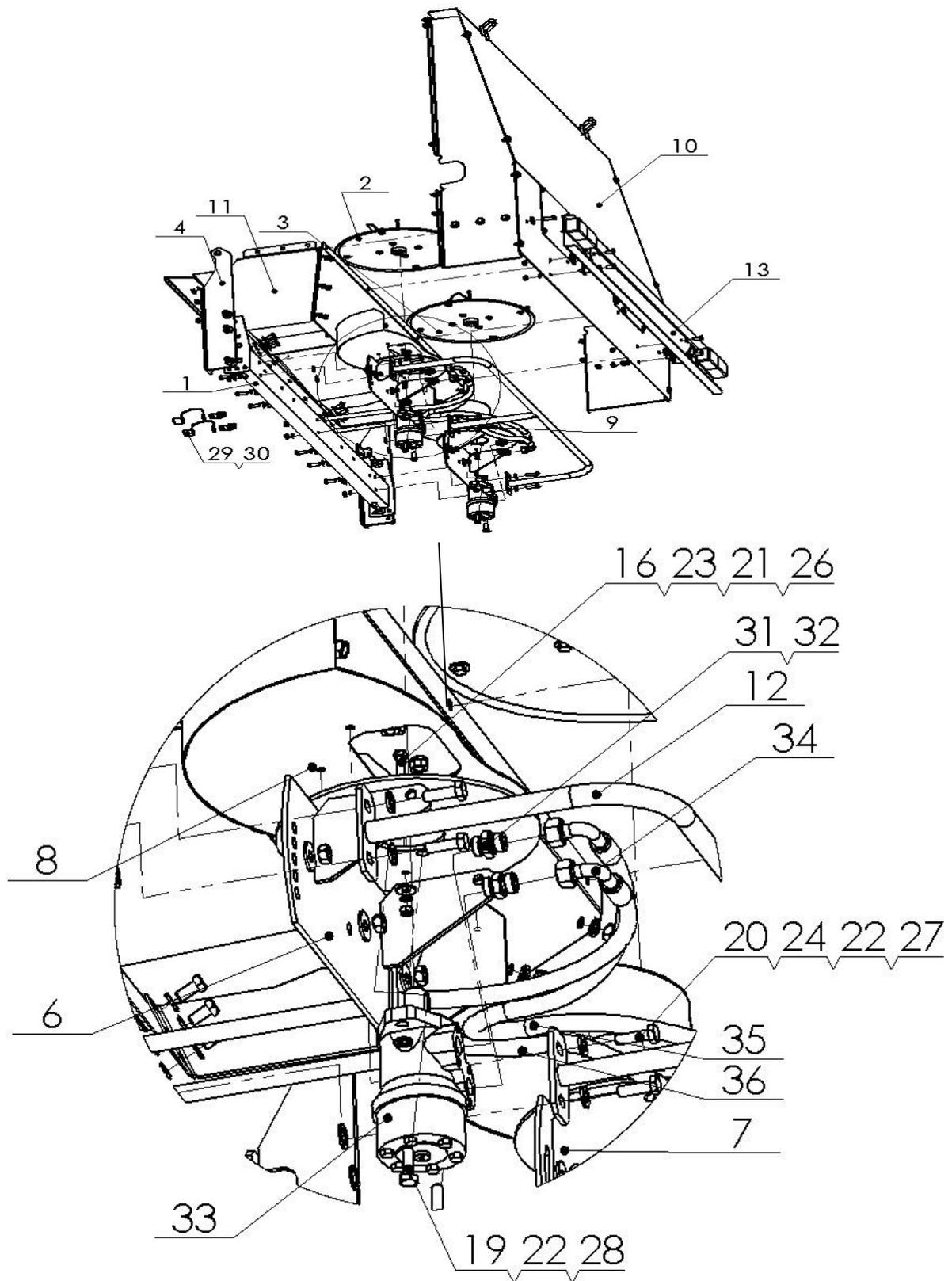


Fig. 1. Lime attachment

Table 1

Item no.	Number	Specification	Amount
1	2233/23.01.000	Channeled cross-beam set	1
2	2233/23.02.000	Left rotor	1
3	2233/23.03.000	Right rotor	1
4	2233/23.04.000	Left suspension set	1
5	2233/23.05.000	Right suspension set	1
6	2233/23.06.000	Left inclination adjustment	1
7	2233/23.07.000	Right inclination adjustment	1
8	2233/23.08.000	Left mount	1
9	2233/23.09.000	Right mount	1
10	2233/23.10.000	Drum guard set	1
11	2233/23.11.000	Attachment chute	1
12	2233/23.12.000	Disc guard	1
13	2233/23.13.000	Bar for electrical wiring	1
14	2233/23.00.001	Rotor plug	2
15	7076/32.00.002	Clamp	2
16	PN-85/M-82105	M8x25-8.8 screw	12
17	PN-85/M-82105	M8x35-8.8 screw	2
18	PN-85/M-82105	M12x25 screw	34
19	PN-85/M-82105	M12x35-8.8 screw	18
20	PN-85/M-82105	M12x40-8.8 screw	12
21	PN-77/M-82008	Spring Washer 8.2	14
22	PN-77/M-82008	Spring Washer 12.2	64
23	PN-59/M-82030	Round washer 8,5	22
24	PN-77/M-82005	Washer 13	40
25	PN-59/M-82030	Enlarged washer 13	32
26	PN-86/M-82144	M8 Nut	12
27	PN-86/M-82144	M12 Nut	60
28	PN-85/M-82175	Self-locking nut M12	4
29	ISO 7241-B	ISO-12,5 Plug cover	2
30	ISO 7241-A	ISO-12,5 (16L) Plug cover	2
31	GM 1/2"/M22x1,5	Straight connector	4

32	U C 1/2	1/2" metal-rubber seal	4
33	IOW ALSG2 80	Hydraulic motor IOW ALSG2 80	2
34	AA-16-7000	Flexible hose 90 deg.	1
35	AA-16-1600	Flexible hose 90 deg.	1
36	AA-16-7800	Flexible hose 90 deg.	1

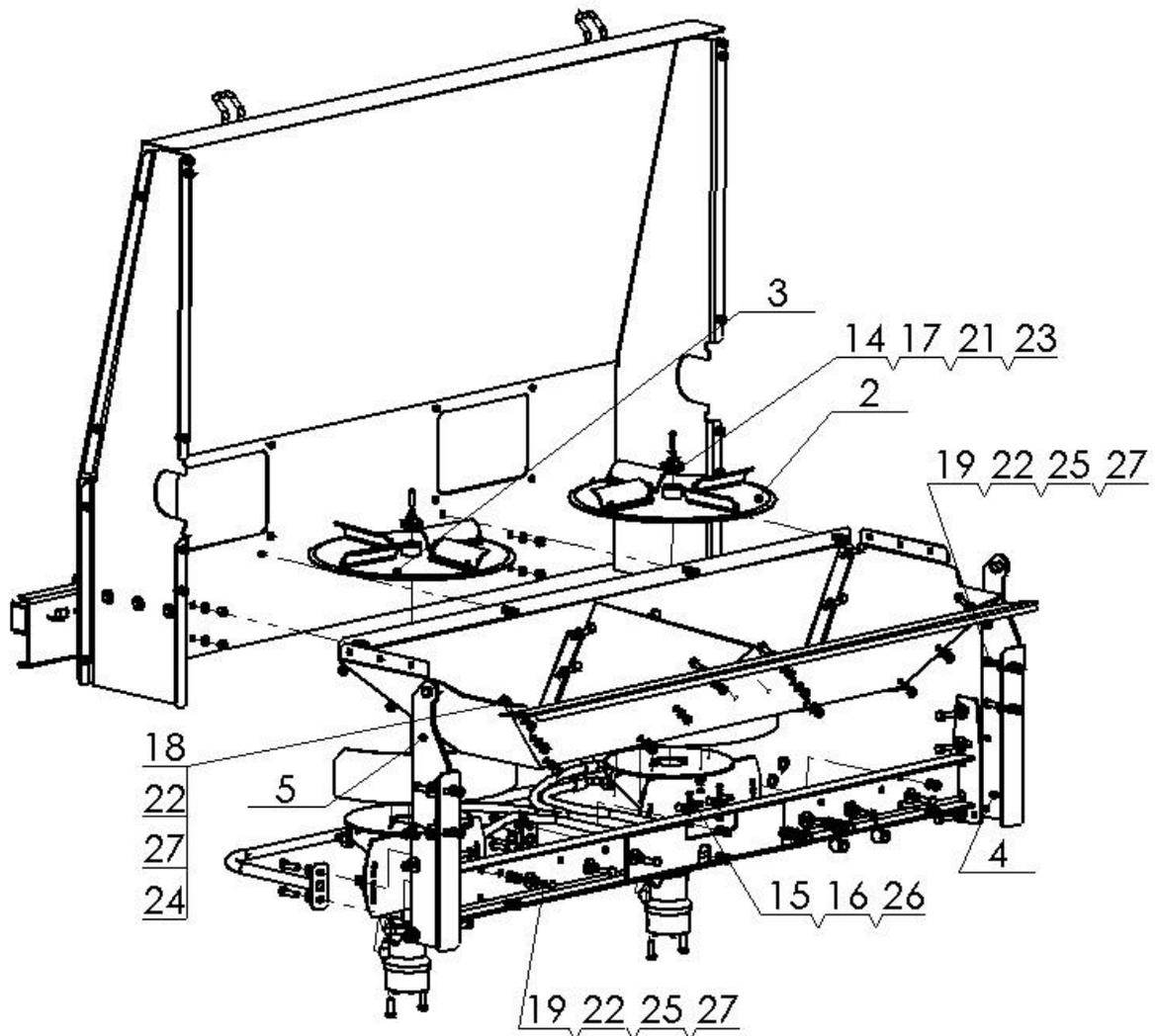


Fig. 2. Lime attachment

Table 2

Item no.	Number	Specification	Amount
1	2233/23.01.000	Channeled cross-beam set	1
2	2233/23.02.000	Left rotor	1
3	2233/23.03.000	Right rotor	1
4	2233/23.04.000	Left suspension set	1
5	2233/23.05.000	Right suspension set	1
6	2233/23.06.000	Left inclination adjustment	1
7	2233/23.07.000	Right inclination adjustment	1
8	2233/23.08.000	Left mount	1
9	2233/23.09.000	Right mount	1
10	2233/23.10.000	Drum guard set	1
11	2233/23.11.000	Attachment chute	1
12	2233/23.12.000	Disc guard	1
13	2233/23.13.000	Bar for electrical wiring	1
14	2233/23.00.001	Rotor plug	2
15	7076/32.00.002	Clamp	2
16	PN-85/M-82105	M8x25-8.8 screw	12
17	PN-85/M-82105	M8x35-8.8 screw	2
18	PN-85/M-82105	M12x25 screw	34
19	PN-85/M-82105	M12x35-8.8 screw	18
20	PN-85/M-82105	M12x40-8.8 screw	12
21	PN-77/M-82008	Spring Washer 8.2	14
22	PN-77/M-82008	Spring Washer 12.2	64
23	PN-59/M-82030	Round washer 8,5	22
24	PN-77/M-82005	Washer 13	40
25	PN-59/M-82030	Enlarged washer 13	32
26	PN-86/M-82144	M8 Nut	12
27	PN-86/M-82144	M12 Nut	60
28	PN-85/M-82175	Self-locking nut M12	4
29	ISO 7241-B	ISO-12,5 Plug cover	2
30	ISO 7241-A	ISO-12,5 (16L) Plug cover	2

31	GM 1/2"/M22x1,5	Straight connector	4
32	U C 1/2	1/2" metal-rubber seal	4
33	IOW ALSG2 80	Hydraulic motor IOW ALSG2 80	2
34	AA-16-7000	Flexible hose 90 deg.	1
35	AA-16-1600	Flexible hose 90 deg.	1
36	AA-16-7800	Flexible hose 90 deg.	1

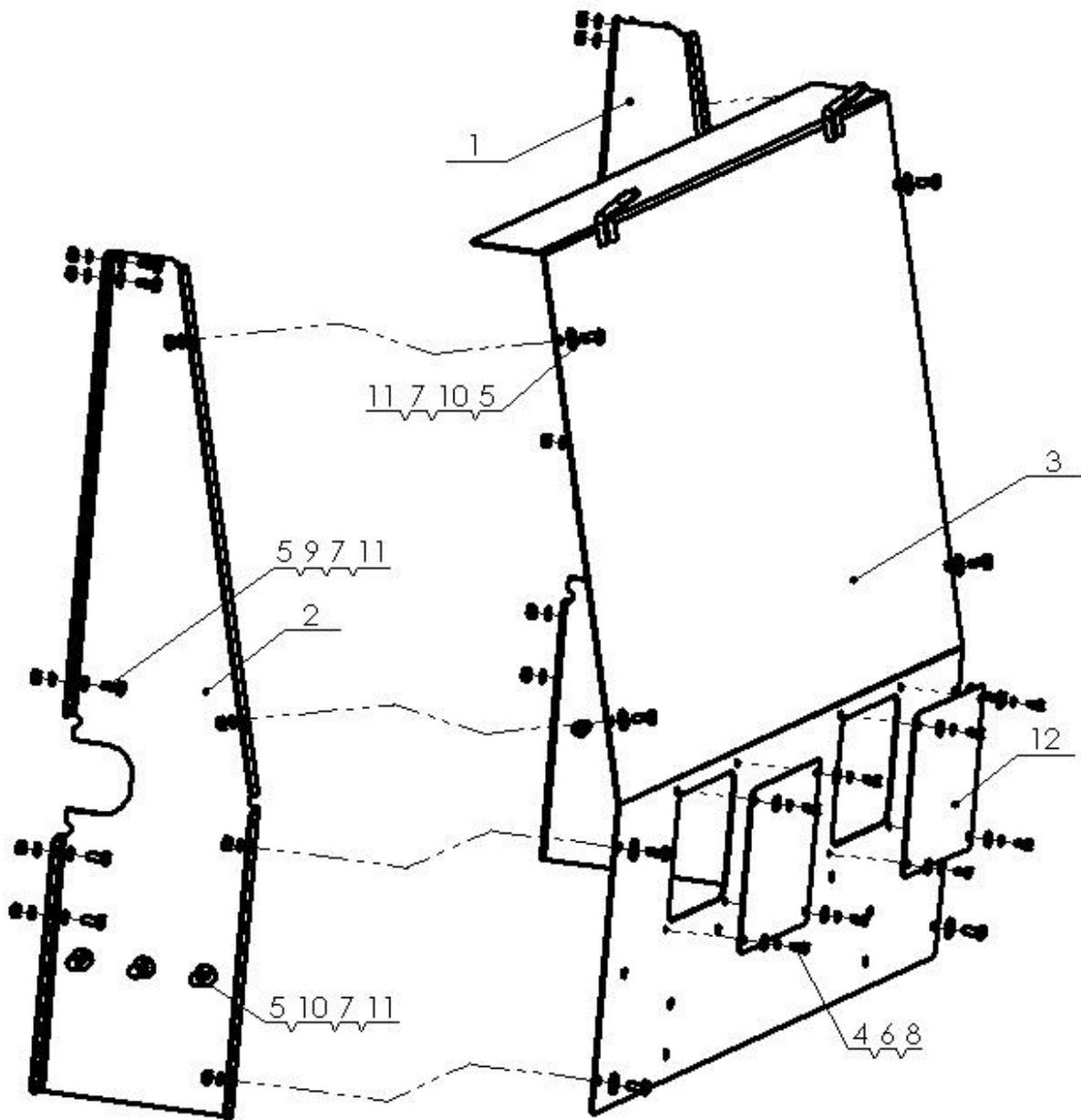


Fig. 3. Drum guards

Table 3

Item no.	Number	Specification	Amount
1	2233/23.10.001	Right guard	1
2	2233/23.10.002	Left guard	1
3	2233/23.10.100	Rear sheet set	1
4	PN-85/M-82105	M8x16 screw	8
5	PN-85/M-82105	M10x25 screw	24
6	PN-77/M-82008	Spring Washer 8.2	8
7	PN-77/M-82008	Spring washer 10.2	24
8	PN-59/M-82030	Round washer 8,5	8
9	PN-78/M-82005	Washer 10.5	10
10	PN-59/M-82030	Enlarged washer 10.5	14
11	PN-86/M-82144	M10 Nut	24
11	2233/23.10.102	Flap	2

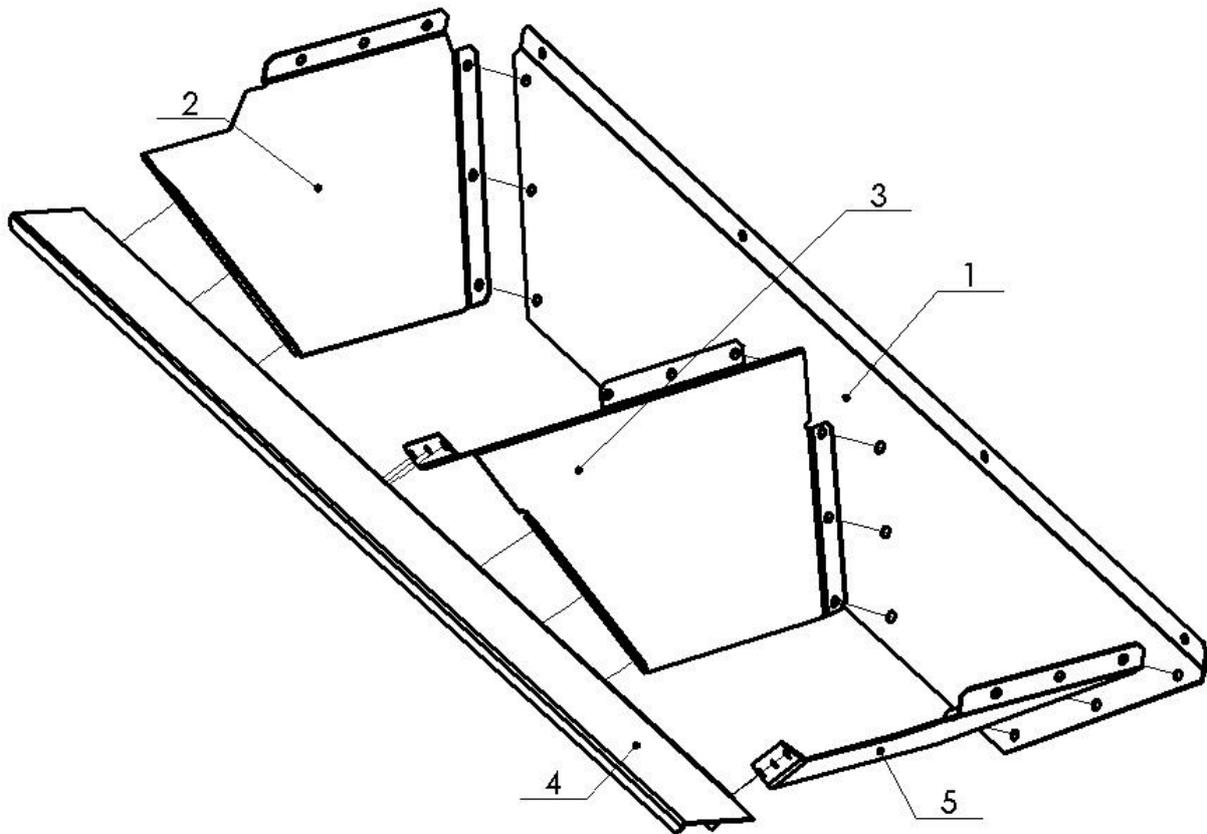


Fig. 4. Chute

Table 4

Item no.	Number	Specification	Amount
1	2233/23.11.001	Rear sheet	1
2	2233/23.11.004	Right sheet	1
3	2233/23.11.005	Middle sheet	1
4	2233/23.11.002	Sheet for conveyor	1
5	2233/23.11.003	Left sheet	1



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