

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

MANURE SPREADER

series

N-233

Type: 4, 4-1, 4-2

INSTRUCTIONS FOR USE AND OPERATION

Identification of the machine

Symbol/Type: N-233/.....

Serial number:


The serial number is stamped on the nameplate and on the front beam of the upper frame of the machine. The rating plate is riveted to the front beam of the upper frame.

When buying the machine, check the conformity of the serial numbers stamped on the spreader with the serial number written in the warranty card, in the sales documents and in the instruction manual.

CAUTION!

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.

 CAUTION!	CAUTION! 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.
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According to the Regulation of the Minister of Infrastructure of 31 December 2002 on the technical conditions of vehicles and obligatory equipment, the manufacturer announces that the agricultural tractors and low-speed vehicles, and trailers designed to connect with these vehicles should be marked with a distinctive plate (section 3.6, figure 2). The plates are not required when the vehicle is included in the kit and is the last vehicle in the set.

In accordance with the above Regulation, the manufacturer has equipped the spreader with a plate holder.

The N-233 spreader complies with the rules of moving on public roads by machines with a speed of up to 30[km/h] (Act on Road Traffic Law of 20 June 1997). . The manufacturer also claims that the supplied spreader cannot be moved faster on public roads than the above-indicated speed.

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:

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

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 machine forward.

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

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

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

CynkoMet sp z o.o.

16-020 Czarna Białostocka ul. Fabryczna 7 W Polska

acting as the producer

declare with full responsibility that the machine:

MANURE SPREADER

TYPE / MODEL: N-233 YEAR OF PRODUCTION:

SERIAL NUMBER:

BRIEF DESCRIPTION OF THE MACHINE AND ITS FUNCTIONS:

The spreader is a universal machine intended for spreading manure of any kind, lime, peat and compost. After installing the extension and replacing the adapter with a back wall it can be used as a volumetric dump trailer. The spreader consists of a box, drawbar, interior wall and adapter.

To which this declaration relates complies with the requirements:

- Directive 2006/42/EC of the European Parliament and the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (OJ L157 of 09.06.2006, pages 24-86)
- Regulation of the Minister of Economy of 21 October 2008 on essential requirements for machines (Journal of Laws of 2008, No. 199, item 1228)

For the conformity evaluation, the following harmonized standards have been used:

- PN-EN ISO 4254-1 Agricultural machinery – Safety – Part 1: General requirements of 2014.
- PN-EN 690 Agricultural machinery – Manure spreaders – Safety
- PN-ISO 11684:1998P Tractors, machinery for agriculture and forestry, powered lawn and garden equipment – Safety signs and hazard pictorials – General principles of 1998
- PN-EN ISO 12100-1:2012 Safety of machinery – General principles for design – Risk assessment and risk reduction, dated 2012
- PN-EN ISO 13857:2010 Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs, dated 2010

Person authorized to prepare technical documentation: Head of Constructors and Technologists

Address: Fabryczna 7 W ,16-020 Czarna Białostocka , Poland

THE DECLARATION LOSES ITS VALIDITY, IF THE MACHINE IS CHANGED OR REBUILT WITHOUT CONSENT OF THE PRODUCER.

Czarna Białostocka
Place and date of declaration

The identity and signature of the person authorized to
make declarations


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1. Introduction


This manual describes the basic principles of safe use and operation of manure spreader.

 CAUTION!	CAUTION! Before using the spreader, you should carefully read the content of the user's manual. Before each running of the spreader, 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".

 CAUTION!	CAUTION! 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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1.1 Identification of the machine

The manure spreader is marked with the use of a rating plate (1) and a serial number (2). The serial number and rating plate are found on the front beam of the upper frame – figure 1.

When buying the spreader, check the compatibility of the serial numbers on the machine with the number written in the WARRANTY CARD , in the sales documents and in the USER'S MANUAL.

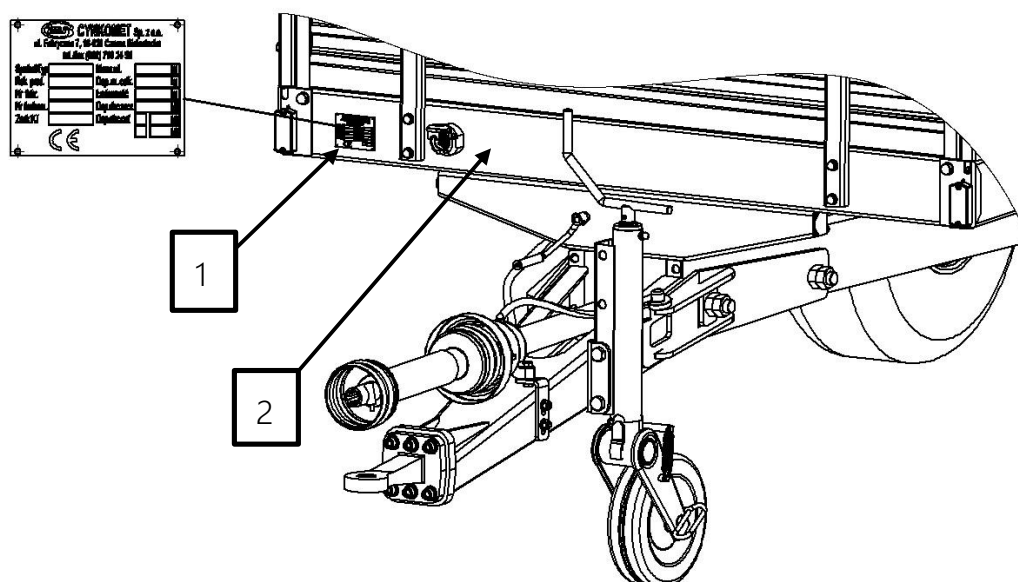

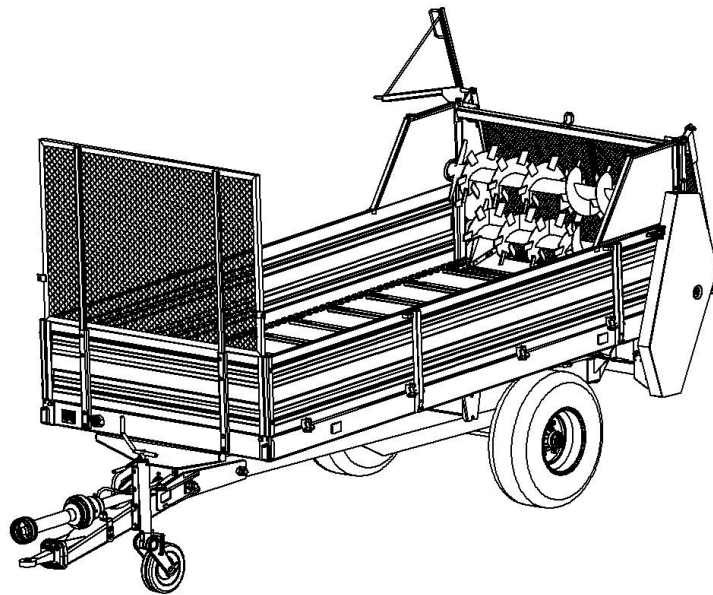


Figure 1. Location of the nameplate and issue of the serial number
1 - nameplate, 2 - serial number

 CAUTION!	<p>CAUTION!</p> <p>It is forbidden to use the spreader when the nameplate is illegible or has been removed from the machine.</p>
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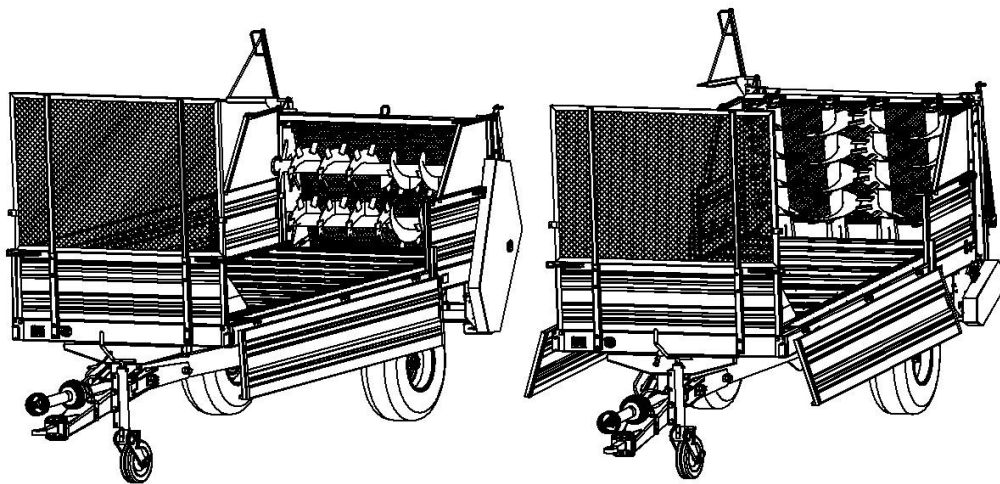
1.2 Models

a) N-233/4



Model with 3.5t load capacity, equipped with non-tilting side walls with a height of 0.5m. A2HS adapter.

b) N-233/4-1, N-233/4-2



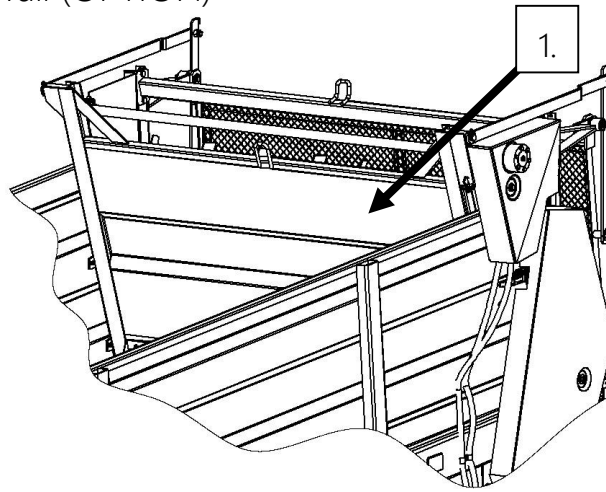
Model with 3.5 t load capacity, equipped with tilting side walls with a height of 0.5 m. From the left:

Model N-233/4-1 – A2HS horizontal adapter.

Model N-233/4-2 – A4VS-P vertical adapter.

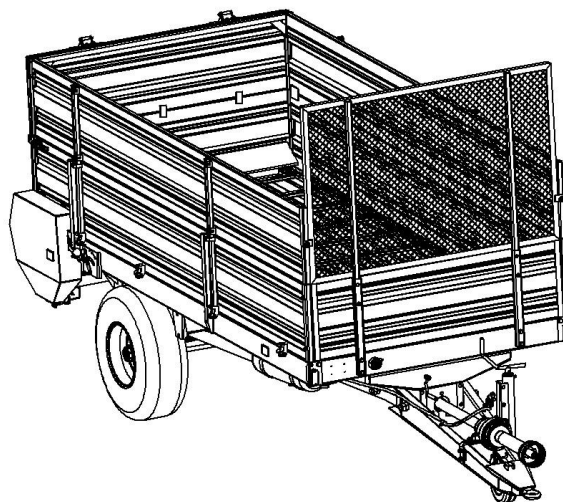
1.3 Additional equipment (OPTION – optional equipment)

a) Rear hydraulic wall (OPTION)



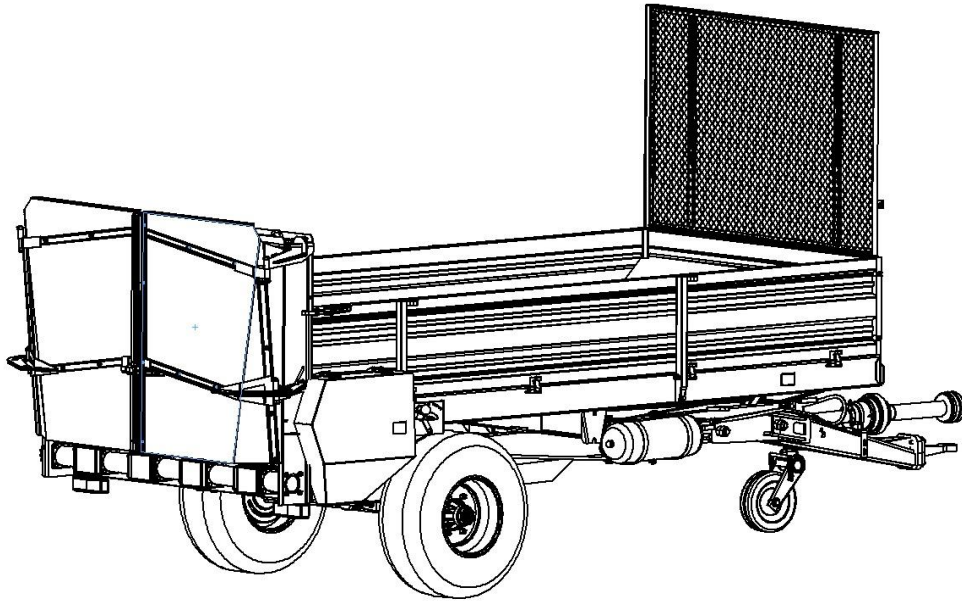
The rear hydraulic wall (item 1) secures the cargo against being spread on the road. It makes it possible to transport bulk material on public roads without dismounting the adapter.

b) Extensions set and rear wall (OPTIONAL)



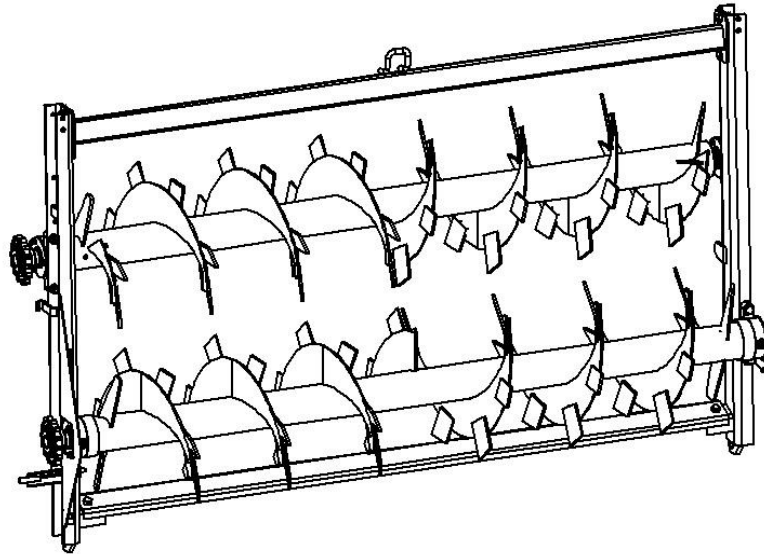
Extensions increase the capacity of the load box after the adapter is removed, and the extension set is installed in models N-233/4, N-233/4-1 and N-233/4-2. Increasing the wall height from 0.5 m to 1 m can increase capacity from 3.4 m³ to 6.8 m³. The set includes the left extension, right extension, rear extension and rear wall.

c) Deflectors (OPTION)



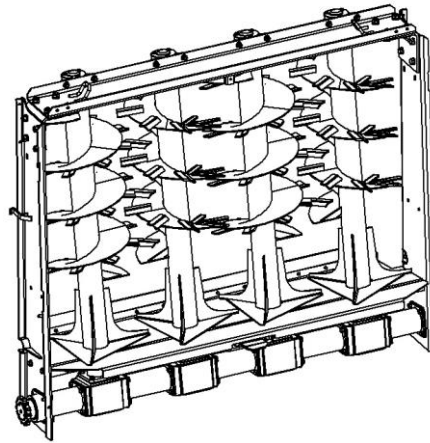
Additionally mounted on the A4VS-P adapter. Deflectors make it possible to control the width over which material is spread.

d) A2HS adapter



The horizontal A2HS adapter consists of a bolted frame and two horizontal drums with shredding blades with a diameter of 400 mm.

e) A4VS-P adapter



The vertical-inclined A4VS-P adapter consists of a bolted frame and four vertical drums with shredding blades with a diameter of 460mm.

f) Double-circuit pneumatic brake system (OPTION)
Section 4.2.6.g) Hydraulic brake system (OPTION)
Section 4.2.6.

Tab.1. Basic and optional equipment – table

	N-233/4	N-233/4-1	N-233/4-2
Single-circuit pneumatic brake system	X	X	X
Double-circuit pneumatic brake system	•	•	•
Hydraulic brake system	•	•	•
Openable side walls		X	X
Wheels 11.5/80x15.3	X	X	X
0.5 m extensions	•	•	•
Rear hydraulic wall	•	•	•
Rear wall	•	•	•
A2HS adapter	X	X	
A4VS-P adapter			X
Deflector			•

Legend:	X	standard equipment
	•	optional equipment

2. Purpose of the spreader


The spreader is a universal agricultural machine designed for spreading manure of any kind, lime, peat and compost. After installing extensions (installation - section 4.3.3.) and replacing the adapter with the rear wall, it can be used as a self-dumping volumetric transporter. Depending on the model, the A2HS adapter with horizontal drums or A4VS-P with vertical drums can be mounted.

The brake system and lighting system meet the requirements arising from the "Regulation of the Minister of Infrastructure of 31 December 2002 on technical conditions of vehicles and the scope of their necessary equipment".

Failure to follow the transport and loading of goods specifications described by the manufacturer and the rules on road transport in force in the country in which the spreader is used, will void the warranty service and is regarded as use of the machine incompatibly with its purpose.

Models equipped with hydraulic elements are adapted for cooperation with agricultural tractors equipped with an external hydraulic system and lower trailer hitch with capacity of 2000 kg.

The spreader IS NOT SUITABLE and cannot be used to transport people and / or animals and other materials identified in the following pages.


 <p>CAUTION!</p>	<p>CAUTION!</p> <p>The spreader must not be incompatibly with its purpose, and in particular:</p> <ul style="list-style-type: none">• for transporting people and animals,• for transporting bulk hazardous toxic materials when there is a possibility of causing environmental contamination,• to transport machinery and equipment,• with removed security guards, and use without its covers• spreading manure, peat, lime, where in those materials there are stones, pieces of wood or other solid materials that can damage the adapter and threaten the safety of users and bystanders• to carry stones, gravel and other building materials.
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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 spreader 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,
- comply with the road traffic regulations and transport regulations in force in the country in which the spreader is used.

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


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

 CAUTION!	<p>CAUTION!</p> <p>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.</p>
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 CAUTION!	<p>CAUTION!</p> <p>The manufacturer is not responsible for changes made independently by the user to the design of the spreader, and such changes will void the warranty.</p>
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3. Safety in use


3.1 General safety and accident prevention regulations

- Before using the spreader, you should carefully read the contents of the instruction manual. During operation, adhere to all instructions contained in the manual.
- Before every start-up, check the spreader for operational safety (completeness of all screens, tightness of all the screws, if there are no cracks on the structure or visible damage, proper tension of the feeder chain (section 6.8)).
- Entering the spreader is possible only during absolute motionlessness of the machine and  disconnection of the Power take-off (PTO) from the tractor.
- The spreader should be combined with tractors recommended by the

manufacturer accordingly to table 3 (section 4.1).

- When using the machine, pay special attention to marked crushing and cutting points, as well as to all pictograms on the spreader.
- During transport, check the condition of preheat of the tires, brake drums and wheel bearings. In the case of detecting an excessively heating element, stop the machine from operating until the cause is determined, and then rectify the fault.

 <p>CAUTION!</p>	<p>CAUTION!</p> <p>Before driving with the spreader in a place where there are flammable materials you should imperatively check the status of the heating elements of the spreader, especially the brake drums and driving wheel bearings, due to the risk of fire.</p>
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- The speed of driving must always be adapted to the environmental conditions.
- When coupling and decoupling the machine to/from the tractor, you must take special caution.
- Exceeding the permissible load can cause accidents on the road and damage to the machine.
- When cornering, you should take into account the inertia of the machine.
- Before you start, check if the spreader has any loose parts.
- Within additional elements which are force operated (e.g. by hand), there are places of crushing and shearing.
- Malfunctioning of the machine should be removed only during absolute motionlessness of the machine and  disconnection of the PTO from the tractor.
- The presence of persons between the tractor and spreader is prohibited until the vehicle is secured against rolling by means of the parking brake ("handbrake") and wedges under the wheels.
- The permissible transport speed 30 km / h cannot be exceeded.
- It is forbidden to transport people or animals on the spreader.
- It is forbidden to enter into the loading platform during operation and when

coupling the tractor with the spreader.

- The machine is designed to work on slopes up to 8 °.
- Decoupling of the spreader from the tractor is not allowed while the engine is running and the key has not been removed.
- 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 spreader may injure the operator or third parties and damage the tractor-spreader set.
- 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 spreader in non-compliance to its purposes. The staff operating the machine should strictly observe basic occupational health and safety rules.
- Prior to every use of the spreader, check its technical condition, especially the condition of the coupling system, drive system, brake system and light signaling system.
- The machine is marked with information and warning inscriptions in the form of stickers as specified in table no. 2. The user is obliged to constantly take care of the readability of signs and warning symbols on the machine. In the event of damage or destruction replace them with new ones. Labels with inscriptions and symbols are available from the manufacturer.

3.2 Attaching and detaching the machine to the tractor

- Before attaching the spreader, make sure that the tractor and spreader are technically efficient.
- When connecting the spreader, use only the intended trailer hitch in accordance with the instruction manual of the tractor. After completion of the machine coupling, check the security of the hitch. Read the whole

manual for the tractor's use. If the tractor is equipped with an automatic hitch, make sure the coupling operation has been completed correctly.

- Be very careful when you connect the machine.
- The presence of persons on the spreader's cargo bed and between machines during coupling is strictly prohibited. The adjustable drawbar support must always be used.
- Coupling and uncoupling of the spreader may only take place when the machine is immobilized with the parking brake.

3.3 Road wheels

- When working with the driving wheels (wheel replacement) - always secure the spreader against uncontrolled movement by means of the parking brake and wedges laid under the wheels.
- Wheel replacement is to be performed on a stable surface, in order to prevent dropping of the jack or other wheels.
- Repair work should be performed using the appropriate tools.
- After each every installation of a wheel, tighten the fastening nuts after the first 10 working hours, then check their tightness every 50 working hours.
- Inspect air pressure regularly.
- Dismantling the wheels can be carried out only in the case when the spreader is not loaded.
- Avoid damaged road surface, quick and variable maneuvers and high speed during turns.
- Tire valves are to be protected with caps to prevent penetration of impurities.

3.4 Pneumatic and hydraulic system

- During work, the hydraulic and pneumatic systems are under high pressure.
- Check the technical condition of hydraulic and pneumatic hose connections regularly. Oil and air leaks are a sign of damage to the system, making further use of the machine impossible.

- In case of failure of the hydraulic or pneumatic installation, the spreader should be out of operation until failure removal.
- When connecting hydraulic hoses to the tractor, remember that the hydraulic system of both machines must not be under pressure. If necessary, reduce the pressure in the system so as to enable connection.
- 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.

3.5 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.
- 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.
- Before electrical, welding works and work on the electrical system, separate the supply of power to the tractor's electrical system.
- 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 spreader 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.

3.6 The principles of movement on public roads.

- When driving on public roads you must adapt to the road traffic regulations and transport regulations in force in the country in which the spreader is operated.
- Do not exceed the speed limit.
- Adapt the speed to the prevailing road conditions and the degree of loading of the spreader.
- 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.

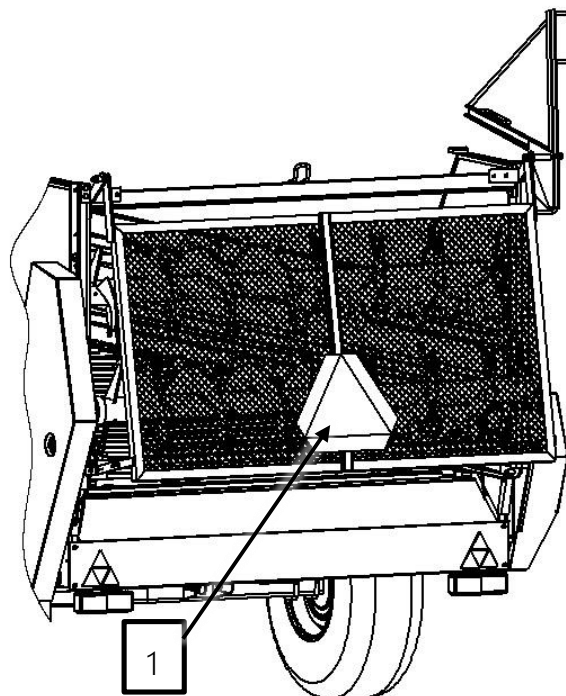


Figure 2. The location of the placement of the plate distinguishing slow-moving vehicles.

- The presence and transport of people in the load crate of the spreader is prohibited.
- Before driving, make sure that the spreader is properly connected to the tractor (in particular, check the link pin hook).
- It is forbidden to park on the slopes with a loaded and unsecured machine. Securing is based on pulling the parking brake and laying chocks under the wheels. The chocks (item 1) should be placed only under a wheel (item 2) on one side of the machine (one in front of the wheel, one to the back of the wheel – fig. 3).

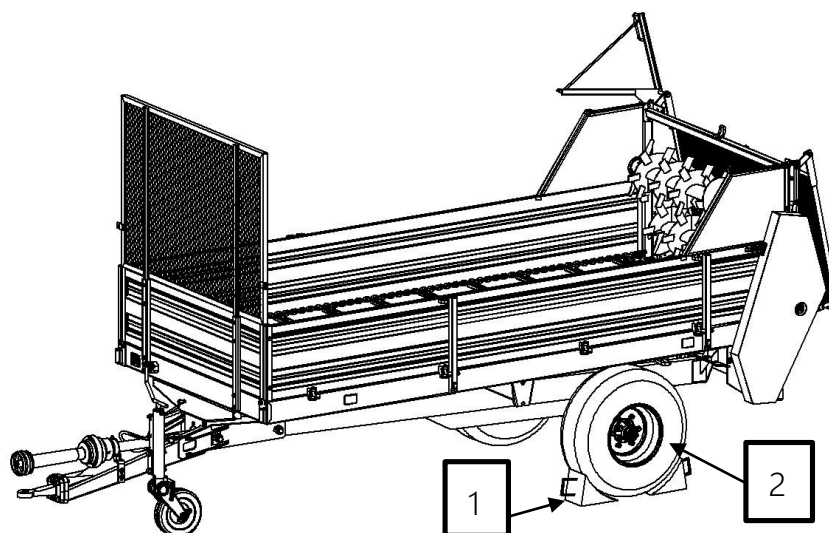


Figure 3. The way of placing the chocks.

- Before driving, check that the pins securing the drum guard are in place. Make sure that all the walls and guards and their fastenings are not damaged mechanically and if that malfunction could cause detachment of the particular item from the construction of the spreader.




CAUTION!

CAUTION!

Driving on roads with the spreader is only permitted when the spreader's drums are shielded by their guard.

- Prior to each spreader's use, check its technical condition, especially in terms of safety. In particular, check the technical condition of the coupling system, drive system, brakes and signaling lights and hydraulic, pneumatic and electrical connection elements.
- Before driving, check whether the parking brake is released and the braking force regulator (included with double-circuit pneumatic brake system) is set in the proper position (fig. 8, section 4.2.3). The spreader is adapted for driving on slopes up to a maximum inclination of 8°. Moving the spreader on steeper slopes may cause the spreader to tip over as a result of loss of stability.
- Each time after finishing work, empty water from the air tank by means of the drain valve (section 6.3). During frosts, freezing water may cause damage to components of the pneumatic brake system.
- It is prohibited to exceed the admissible spreader load. Exceeding the carrying capacity may lead to equipment damage, loss of stability while driving, scattering of the load and cause a hazard to third parties during driving. The brake system of the machine has been adapted to the total weight of the spreader, which if exceeded will result in a drastic reduction in the effectiveness of the brake system.
- The load on the spreader should be distributed evenly and must not impede driving the set.
- When reversing, it is recommended to use the assistance of another person. During maneuvering, the person helping must keep a safe distance from the danger zones and at all times be visible to the operator of the tractor.
- If during reversing we are not using the help of a second person, before commencing the maneuver, make sure that nobody is in the danger zone.

 <p>CAUTION!</p>	<p>CAUTION!</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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3.7 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 spreader for purposes other than those described in the manual,
- stay between the spreader and the tractor when the engine is running,
- coupling of the spreader to the tractor,
- occupy the space between machine during reversing, turning maneuvers,
- operating the machine by unauthorized persons, under aged persons or under the influence of alcohol or other drugs,
- being on the machine during operation (without disconnecting the PTO of the tractor),
- cleaning / maintenance of the machine during operation (without disconnecting the PTO of the tractor),
- not keeping a safe distance from bystanders when operating the machine – when reversing, driving, spreading materials for which the spreader has 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 adapter, or into moving parts of the conveyor.

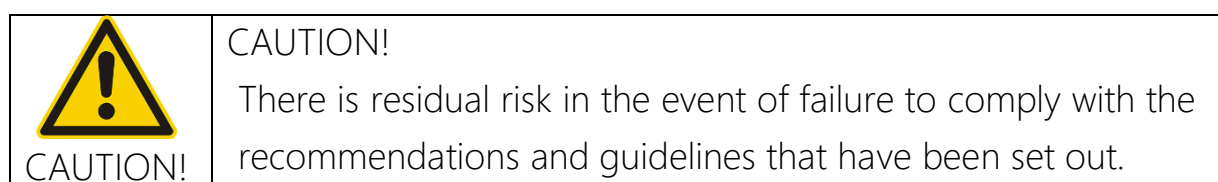
When presenting the residual risk, the spreader is treated as a machine, which until the start of production was designed and manufactured

according to the current "state of the art".

3.8 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 being on the machine during operation of the tractor, spreader,
 - maintenance and repair of the machine according to instructions,
 - 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,
 - keeping a safe distance from forbidden or dangerous places during unloading, loading and coupling of the spreader,
 - performing maintenance and repair jobs in accordance with the security service rules,
 - prohibition on being on the machine during driving, work, loading or unloading,
- residual risk can be eliminated.
















3.9 Information and warning stickers.

The spreader 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 spreader, do not use a strong water jet or solvents that could damage the coating of stickers

Table 2. Information and warning stickers.

No.	The symbol (sign) of safety or the content of the inscription	Meaning of the symbol (sign)	The placement on the machine
1.		Caution Before starting work, please read the User's Manual.	Front wall
2.		Caution Turn off the engine and remove the key before starting maintenance or repair	Front wall
3.		Pressure in the tires ⁽¹⁾	On the side walls above the wheels
4.		Informational note	The right-side wall, left side wall
5.		Model designation	The right-side wall, left side wall
6.		PTO revolutions	Front wall
7.		Pulling in of hand or upper trunk Maintain a safe distance from the spreader.	Right side wall

8.		Ejected objects. Risk to whole body. Maintain a safe distance from the spreader.	Right side wall
9.	General safety mark and note: "It is prohibited to enter the trailer while the drive is engaged"	-	Front wall
10.	Note: "Machine coupling only with hitch for single-axle trailers."	-	Front wall
11.	Note "Maximum load capacity 3500kg" ⁽²⁾	-	Right wall
12.		Designation of lifting points for lifts	On spreader's load-carrying beam
13.		Marking of conveyor chain tensioning points	On frame on the sides of the spreader
14.		Direction of chainwheel revolutions	Drive guards
15.		Direction of conveyor travel	Control panel
16.		Adapter's hitching point	Adapter's top beam
17.	Note: "115kg" ⁽³⁾	Adapter weight	Adapter drive guard

(1) – pressure dependent on the used tire

(2) – value dependent on spreader model

(3) – value dependent on adapter model

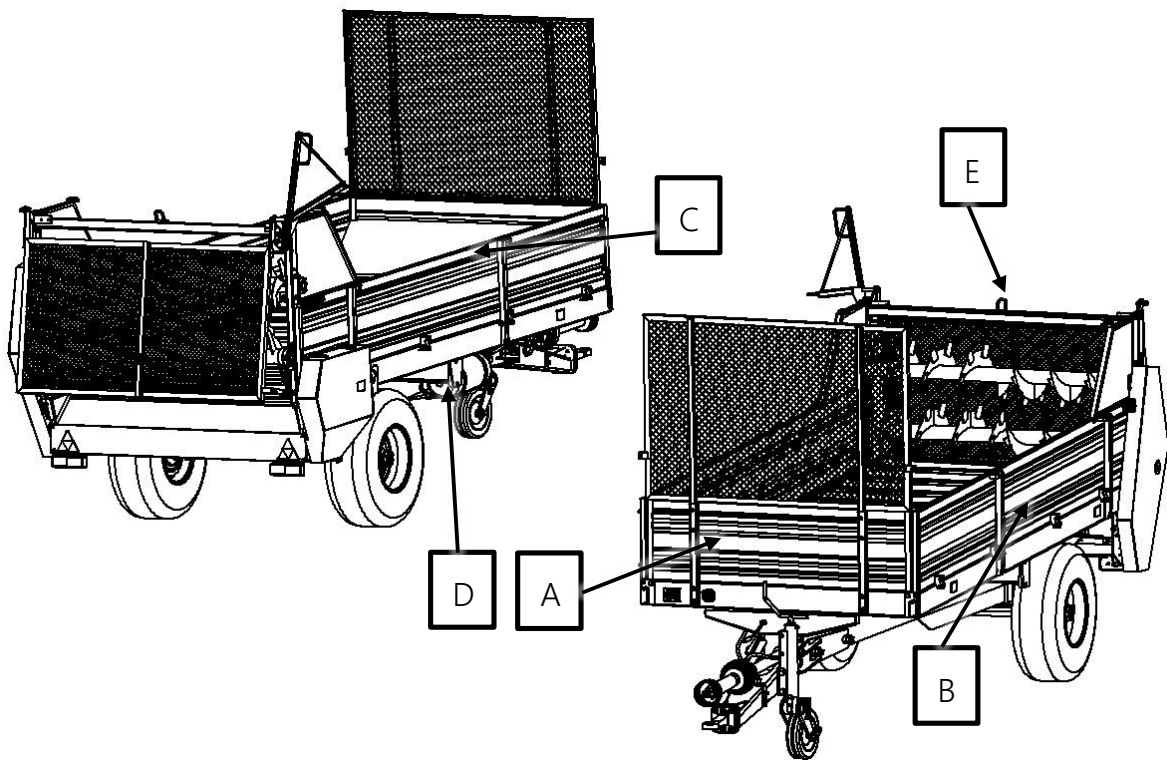


Figure 4. Placement of stickers on walls.

- A. Stickers: 1, 2, 6, 9, 10;
- B. Stickers: 3, 4, 5, 13, 14, 17;
- C. Stickers: 3, 4, 5, 7, 8, 11, 13, 15;
- D. Sticker no. 12;
- E. Sticker no. 16;

4. Information regarding use

4.1 Technical characteristics.

Table 3. Basic technical specifications of the spreader

NO.	Content	J.m.	N-233/4	N-233/4-1	N-233/4-2	
1.	Total length	mm	5770		5730	
2.	Total width	mm	2060			
3.	Total height	mm	2600			
4.	Dimensions of the loading crate:	mm				
	• Length					3960
	• width					1720
• height	500					
5.	cargo capacity	m ³	3,4			
6.	Loading surface	m ²	6.8			
7.	Height of the loading surface	mm	1040			
8.	Road clearance	Mm	395			
9.	Vehicle weight	kg	1380	1600		
10.	Permissible loading capacity ⁽¹⁾	kg	3500			
11.	Track of wheels	mm	1500			
12.	Tire size		11,5/80-15,3 12PR			
13.	Max. tire pressure	kPa	350			
14.	Max. pressure in hydraulic system	bar/MPa	160/16			
15.	Rated voltage	V	12 V			
16.	Permissible design speed ⁽²⁾	km/h	30			
17.	Permissible max. speed during work	km/h	8			
18.	Power requirement	kW/KM	33/45			
19.	Noise emission ⁽³⁾	dB	78 - 82dB			
20.	Adapter		A2HS	A2HS	A4VS-P	
21.	Openable sides		NO	YES	YES	

⁽¹⁾ – capacity depends on the equipment of the spreader

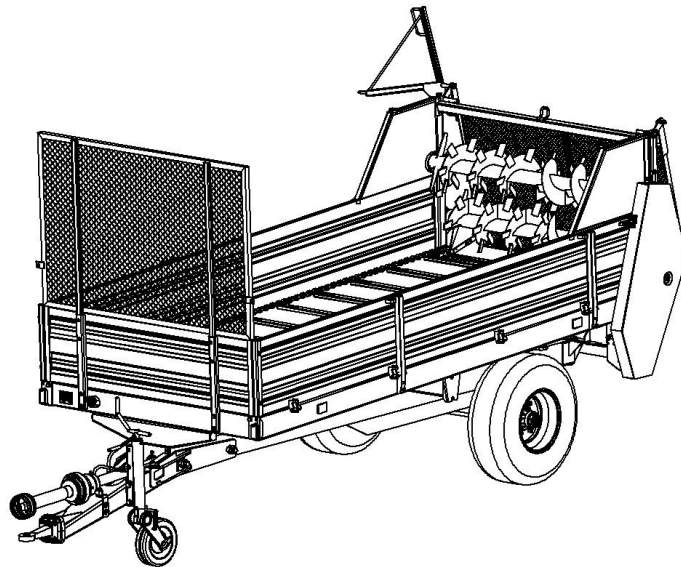
⁽²⁾ - The permitted speed of the spreader moving on public roads in Poland is 30 km / h (according to the Act of 20 June 1997, "the Road Traffic Law", art. 20). In countries where the machine is operated, observe the restrictions associated with the relevant national law on road traffic.

⁽³⁾- During work in idle gear. The value is lower during spreading due to attenuation.

4.2 Description of construction and operation.

4.2.1 General description

The spreader is a universal agricultural machine designed for spreading manure of any kind, as well as lime, peat and compost. After installing extensions (installation - section 4.3.3.) and replacing the adapter with the rear wall, it can be used as a self-dumping volumetric transporter. Depending on the model, the A2HS adapter with horizontal drums or A4VS-P with vertical drums can be mounted.



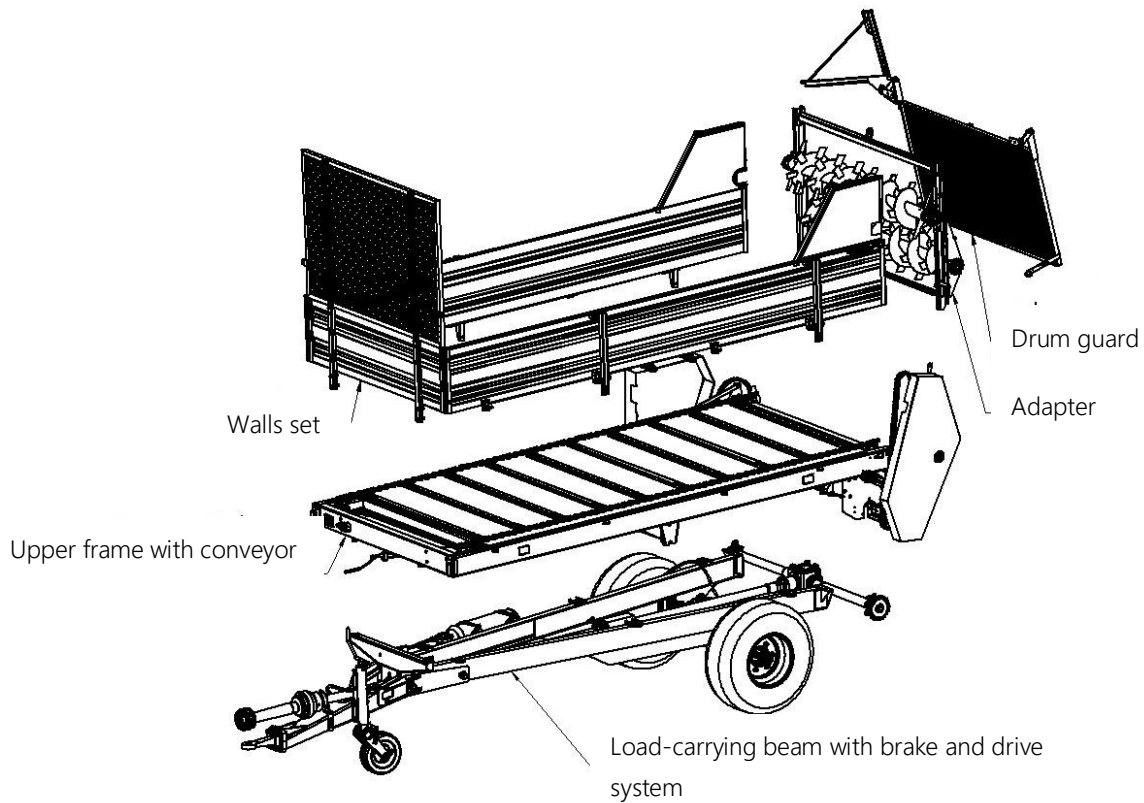


Figure 5. Spreader design.


4.2.2 Hydraulic system

Table 4. Characteristics of Agrol U oil

No.	Requirements	Research method based on	Unit	Value
1.	kinematic viscosity at 100°C	ASTM D 445	mm ² / 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

 <p>CAUTION!</p>	<p>CAUTION!</p> <p>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</p>
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4.2.3 Brake system: working and parking brake

The spreader is equipped with a brake system, consisting of a working brake and parking brake. The standard brake system is controlled by means of a single-circuit pneumatic system. At the customer's request, a double-circuit pneumatic system or hydraulic brake system can be installed.

 <p>CAUTION!</p>	<p>CAUTION!</p> <p>In the event of disconnection of the spreader's and tractor's pneumatic systems during driving, the brake system ensures self-braking of wheels.</p>
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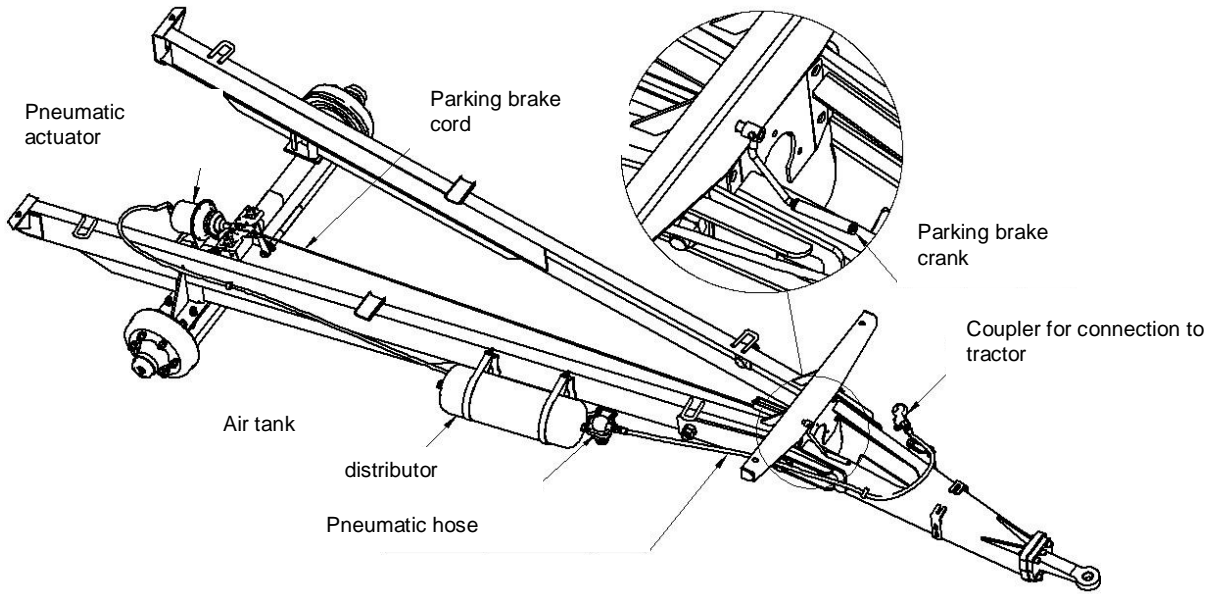


Figure 6. Diagram of single-circuit pneumatic brake system.

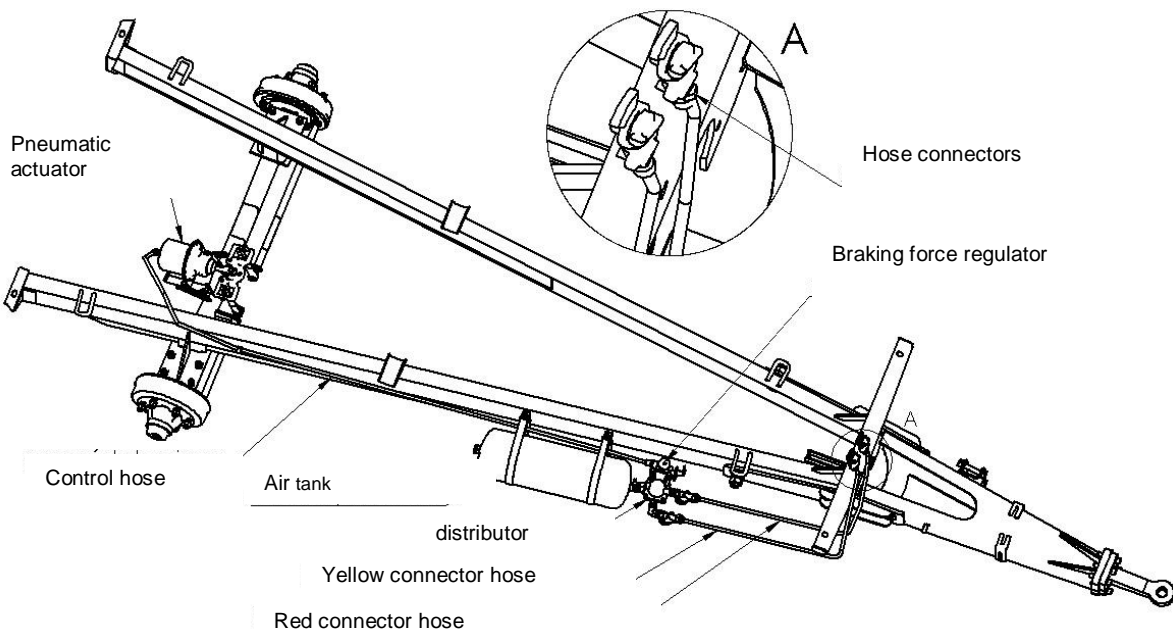




Figure 7. Diagram of double-circuit pneumatic brake system.

 <p>CAUTION!</p>	<p>CAUTION!</p> <p>Pay special attention that pneumatic hoses designated by the appropriate color are properly connected to the tractor: yellow-yellow, red-red</p>
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 CAUTION!	<p>CAUTION!</p> <p>Be the first to connect the plug marked yellow to a yellow socket in the tractor, and then the plug marked in red to the red socket in the tractor.</p>
---	--

In the case of the double-circuit pneumatic system, it is important to set the braking force regulator depending on the degree to which the spreader is loaded. Regulation is performed using the lever found on the regulator. Possible lever positions:

- position "0" - empty machine;
- position "1" - medium load;
- position "2" - full load;

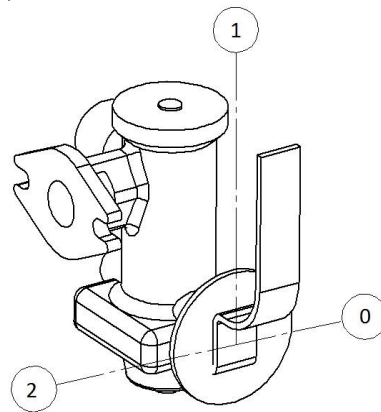


Figure 8. Braking force regulator.

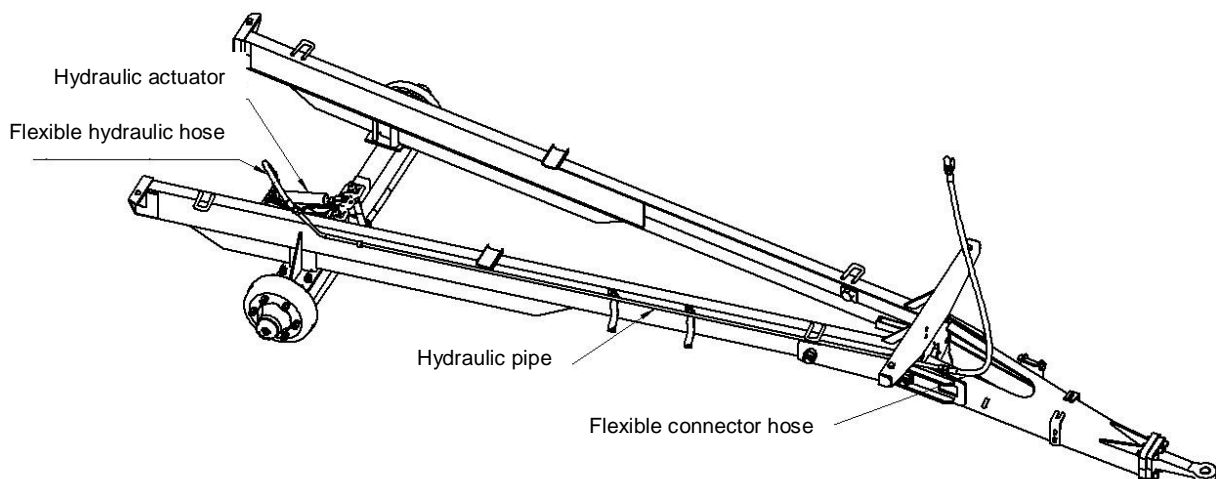


Figure 9. Diagram of a hydraulic brake system.

4.2.4 Electrical installation, lighting and signaling

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

The electrical system consists of:

- central bundle,
- rear bundle,
- two LP 170 position lights,
- two LT 20 cluster lamps.

All lamps are equipped with a cable terminated by a plug for connection to the central bundle and rear bundle. Four rectangular reflectors -yellow - serve to supplement lighting, along with two triangular reflectors - red.

Joining the electrical installation of the spreader with the tractor's installation should be made with a suitable connecting line.

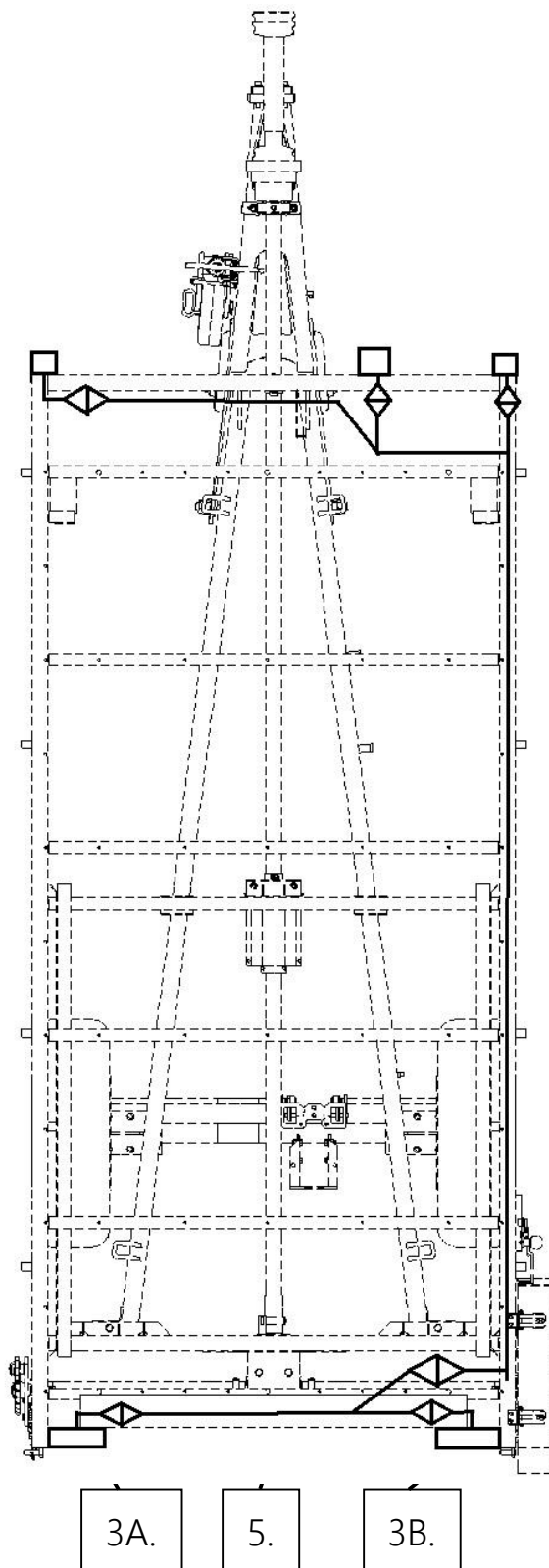
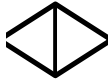


Figure 10. Schematic diagram of the electrical system

1. Plug-in socket;
2. LP170 position light;
- 3A. LT20 left cluster lamp;
- 3B. LT20 right cluster lamp;
4. Central bundle;
5. Rear bundle;

 - plug-in points to the bundle for components

4.

3A.

5.

3B.

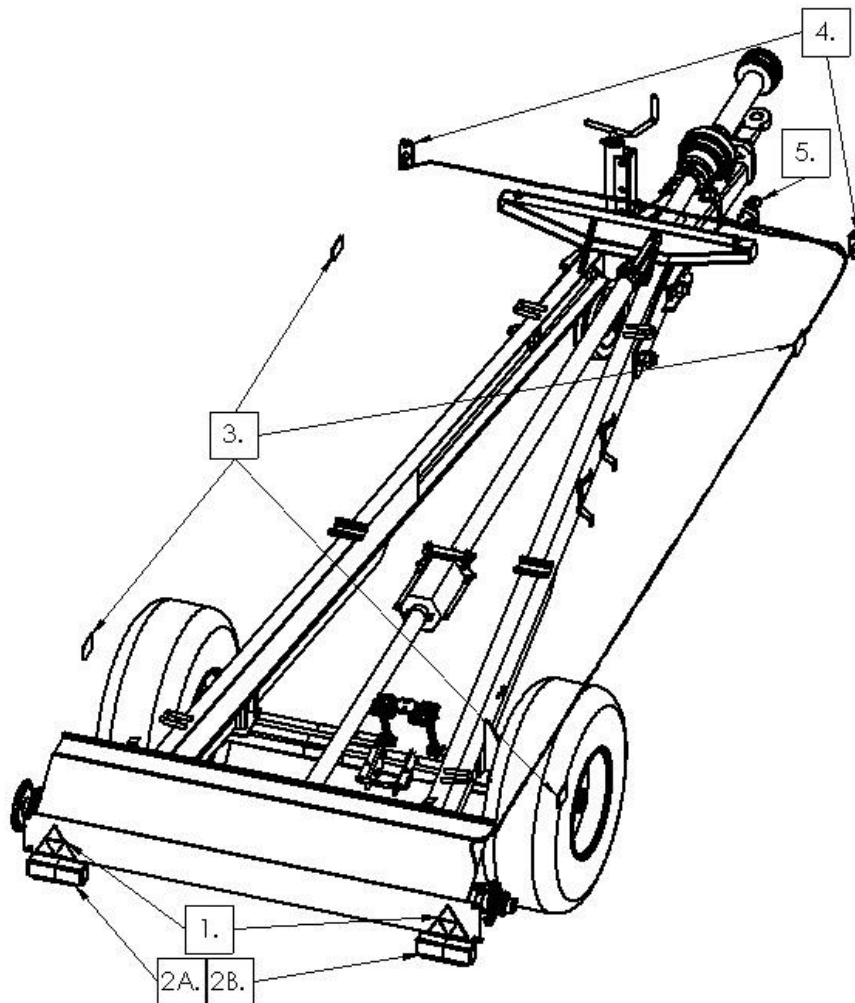


Figure 11. Placement of lamps and reflective elements

1 – Red reflective triangle; 2A - rear cluster lamp (left); 2B - rear cluster lamp (right); 3 – Yellow rectangular reflector; 4 – Front position light; 5 – Plug-in socket;

4.3 Rules of proper use of the spreader.


4.3.1 Preparation before running for the first time.

4.3.1.1 Control of the spreader after delivery

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

Before starting work, the operator of the spreader must:

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

 CAUTION!	CAUTION! Before connecting and before starting the spreader, read this manual and follow the instructions contained therein.
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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 spreader for mechanical damage (dented, bent or broken parts) arising from improper machine transport.
- Check the condition of tires of the driving wheels and the air pressure in the tires (Tab. 2, section 4.1).
- Inspect the technical state of the flexible hydraulic hoses.
- Check the technical condition of pneumatic cables.
- Make sure that there are no leaks of hydraulic oil.
- Check the electric lamps of lighting.
- Check markings on the machine - pictograms (Tab. 2).

4.3.1.2 Preparing the spreader for the first connection.

Preparation

- Check all lubrication points of the spreader, if necessary, lubricate the machine (section 6.10).
- Check for proper tightening of nuts fixing the driving wheels (Tab. 7, section 6).
- Drain water from the air tank in the pneumatic brake system (section 6.3).
- Make sure that the pneumatic, hydraulic and electrical connections in the agricultural tractor are compliant with the machine's connection points, otherwise do not connect the spreader.
- Adjust the height of the shaft location in the spreader or the position of the upper transport hitch on the tractor through a regulated bracket.

Trial drive / start

If all the above steps have been performed and the technical condition of the spreader does not raise any objections, connect the machine to the tractor in compliance with the following sequence.

- secure the spreader against uncontrolled rolling of through the use of a parking brake and placing wheel chocks under the wheel.
- set the spreader shaft at the height of the hitch in the tractor using the adjustable support.
- perform the reversing maneuver and couple the drawbar to the tractor's hitch.
- switch off the tractor's engine (turn the key to the desired position and remove the key from the ignition), set the parking brake on the tractor.
- check the correctness of the connection of the drawbar to the hitch in accordance with the instruction manual of the tractor.
- connect the power take-off and fasten guards into place.
- Connect all installations according to the instructions of the tractor and spreader.

- raise the adjustable bracket and set the wheel of the bracket in the "up" position (so that it does not catch on the ground during driving).

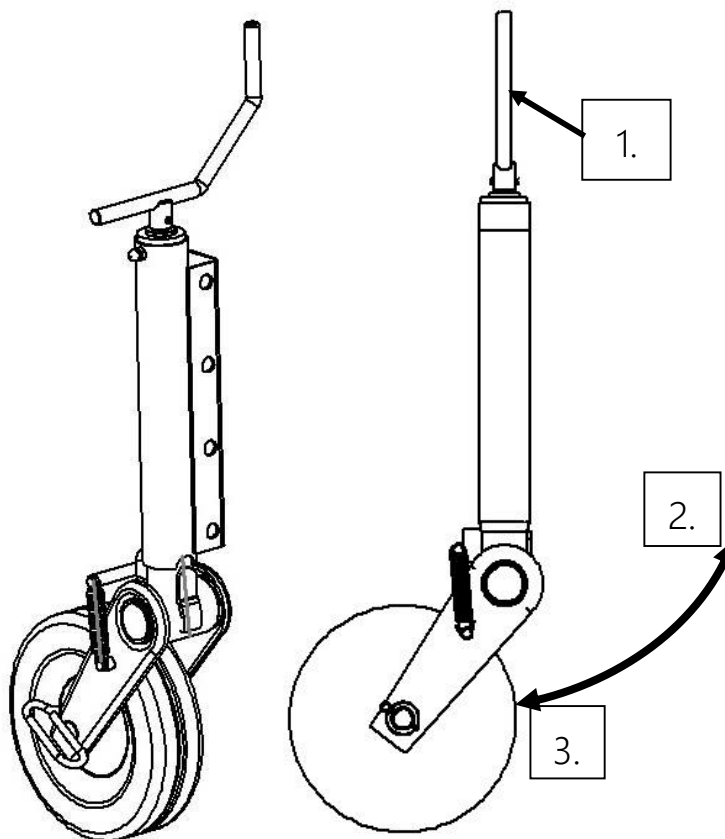


Figure 12. Adjustable support (from the left: isometry, side projection).

1. Bracket raising lever;
2. Wheels up position – "drive";
3. Wheels down position – "park";

- pull the wedges from under the wheels of the spreader.
- release the parking brake in the spreader.
- check that the deflector / guard is in a closed and secured position.
- set travel speed (fig. 13). Remember that only the first 3 holes for unloading (item 3, fig. 13) serve for spreading. The last two holes, with the greatest speed, serve for unloading when the spreader is set up for work as a self-dumping transporter.
- start the tractor and disengage the parking brake
- move the whole set by a few meters.

- open the hydraulic wall (check the proper up / down operation), leave in an open position.
- engage PTO revolutions - revolutions of the adapter's drums and conveyor's feed rate.
- in the event of improper feeder feed rate, set the adjusting lever to the proper position (fig. 12). Feed rate is changed by switching the lever from neutral position (item 2, fig. 12) – the closest holes (item A, fig. 12) correspond to the lowest speed, and the farthest - the highest speed (item B, fig. 12).

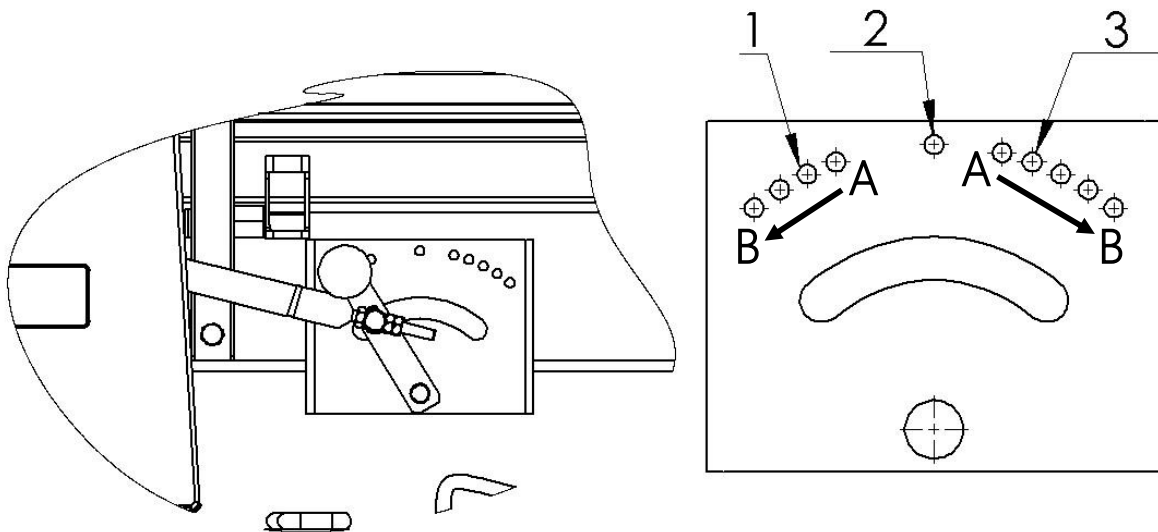


Figure 13. Conveyor's adjusting lever.

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 spreader,
- leakage of hydraulic oil,

- pressure drop in the brake system,
 - incorrect operation of hydraulic and / or pneumatic actuators
- stop the spreader'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>CAUTION!</p>	<p>CAUTION!</p> <p>Make sure that the jointed-telescopic shaft meets the following specifications:</p> <ul style="list-style-type: none"> • Nominal torque: min. 400 Nm; • Nominal revolutions 540 rpm; • Distance between joint axes: <ul style="list-style-type: none"> ○ In collapsed state, no more than 510 mm; ○ In extended state, no less than 785 mm; • Certified with "CE" mark;
 <p>CAUTION!</p>	<p>CAUTION!</p> <p>It is recommended that the test start-up is performed by 2 persons, and the operator of the tractor must always keep the other person in their field of vision.</p>
 <p>CAUTION!</p>	<p>CAUTION!</p> <p>Take special caution while the machine is working. Do not insert limbs into hazardous areas. Adhere to the markings on the spreader (pictograms).</p>
 <p>CAUTION!</p>	<p>CAUTION!</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 <u>turn</u>.</p>

 <p>CAUTION!</p>	<p>CAUTION!</p> <p>It is strictly prohibited for the operator to leave the tractor's cabin when:</p> <ul style="list-style-type: none">- the engine is running- the key is in the ignition switch.
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 <p>CAUTION!</p>	<p>CAUTION!</p> <p>Presence of third parties between machines is absolutely prohibited at the time of aggregation of the spreader to the tractor. Failure to follow these instructions and perform the maneuver correctly can lead, in extreme cases, to death of the person who are between the spreader and the tractor.</p>
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After completion of the test drive / start-up, check the tightness of the nuts of the driving wheels, with the engine switched off (key removed from the ignition), parking brake secured in the spreader.

 <p>CAUTION!</p>	<p>CAUTION!</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>
---	---

4.3.2 Preparation for the spreader's work.

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

- the wear and condition of the tires and driving wheels,
- Air pressure in the tires,
- condition of the drive axle,
- tightening of the driving wheels to wheel hubs and the condition of other threaded joints.

In addition, after combining the machine with the tractor check:

- the serviceability of the electrical system and lighting system of the spreader,
- the effectiveness of the brake system,

4.3.3 Preparation for operating the spreader as a transporter.

Start preparation of the spreader for work as a transporter by dismantling the adapter along with the deflector (guards). Perform work using a front loader with a minimum lifting capacity of 2000 kg.

Dismounting the adapter:

- disconnect the adapter's drive shaft
- remove the adapter's drive shaft. Secure it against falling
- attach belts/slings to the handles found on the adapter's top beam for the purpose of securing it against uncontrolled falling.
- unfasten the screws joining the adapter's structure to the spreader's walls and frame.
- dismount the adapter, put it away in a safe place, and secure it against falling.

Installation of extensions:

- Place the extension brackets in the guides installed on the walls. (Item 1, Fig. 14)
- Tighten the bolts on the front mesh brackets. (Item 2, Fig. 14)
- Connect the right and left extension wall using the rear beam. (Item 3, Fig. 14)
- place the rear wall on the pins of the frame. Secure against sliding out

- using a pin. (Item 4, Fig. 14)
- Mount the rear extension in the hinge located on the top beam. (Item 3, Fig. 14)
 - Close the rear wall. Secure against opening by means of side latches.

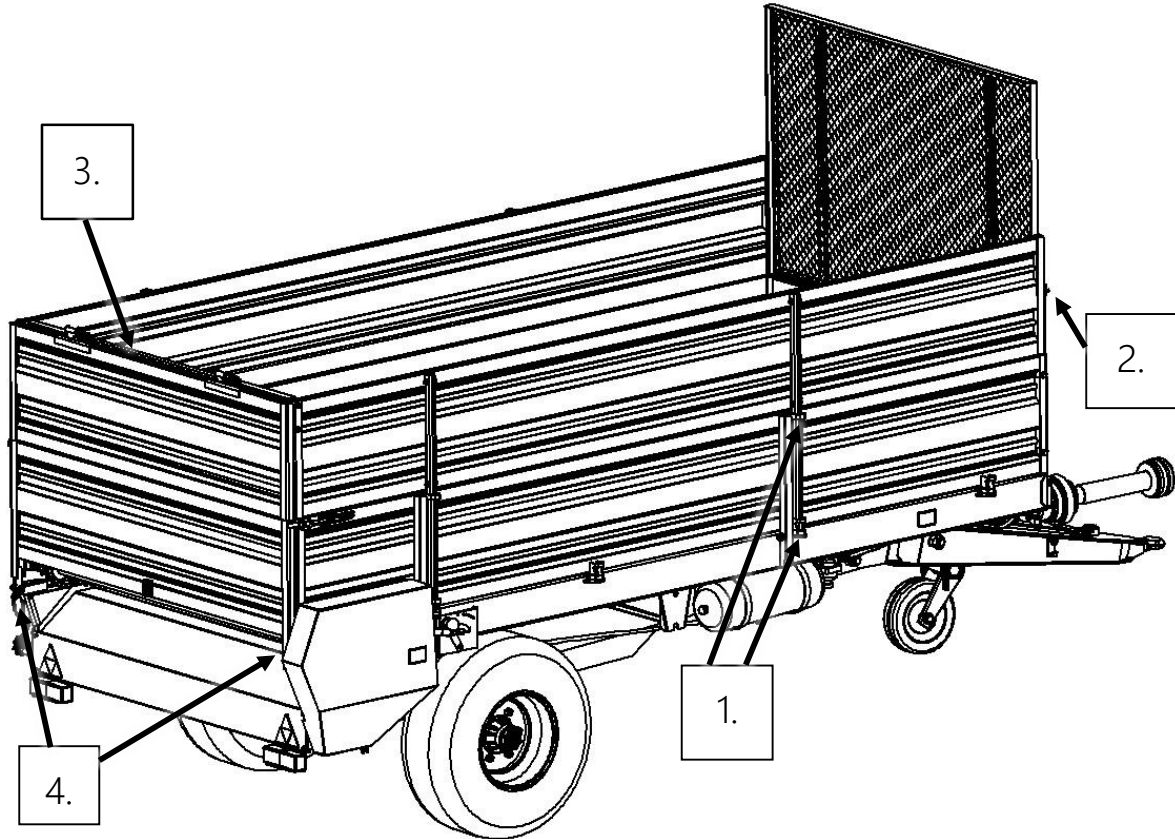





Figure 14. Installation of extensions.


 CAUTION!	<p>CAUTION!</p> <p>It is strictly prohibited to drive with a transporter that has its rear wall unsecured against opening.</p>
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 CAUTION!	<p>CAUTION!</p> <p>When adapted for work as a transporter, the spreader is not a trailer within the meaning of the Act on "Road Traffic Law" of 20 June 1997.</p> <p>Machines with a dismantled adapter may not be used on public roads.</p>
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4.3.4 Loading the spreader.

Loading of the spreader should take place after proper connection of the machine to the tractor, with the tractor engine off and the parking brake engaged in both the tractor and the spreader. Loading should be carried out while the spreader is resting on a horizontal plane and stable ground. Loading may be performed by means of additional machines (e.g. tractor with front loader).

 CAUTION!	CAUTION! Loading is to be performed in such a way that the material loaded onto the cargo bed is evenly distributed.
---	---

 CAUTION!	CAUTION! The user is strictly required to check that there are not solid bodies in the material loaded onto the spreader, such as stones, pieces of wood, metal parts, wires, etc. Failure to comply with this requirement may result in permanent damage to the machine's structure and void the warranty, as well as in injury to bystanders or animals caused by such elements.
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4.3.5 Connecting and disconnecting with the tractor.


The spreader can be connected to the agricultural tractor, if all connections (electrical, pneumatic, hydraulic), and the hook in the agricultural tractor comply with the requirements of the manufacturer of the spreader and the tractor.


In order to connect the spreader to the tractor, perform the following steps:


- check whether the spreader's parking brake is engaged.
- set the drawbar at the height of the tractor's transport hitch by adjusting the drawbar's bracket.

- reversing the tractor, couple the end of the drawbar to the proper transport hitch on the tractor.
- stop the tractor engine and remove the key from the ignition.
- install and secure the hitch swivel from falling out or check the locking of the automatic hitch.
- connect cables and hoses of the electrical, hydraulic and brake systems to the tractor according to the instructions.
- release the parking brake of the machine.

 CAUTION!	<p>CAUTION!</p> <p>At the time of the coupling, unauthorized people cannot be between the spreader and the tractor. The operator of the tractor, when connecting the machine should be particularly careful when working and make sure that in the course of coupling, other people are not in the danger zone.</p>
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 CAUTION!	<p>CAUTION!</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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 CAUTION!	<p>CAUTION!</p> <p>When coupling ensure adequate visibility. If the case of restricting visibility, use the sound signal from the tractor or use the help of another person.</p>
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 CAUTION!	<p>CAUTION!</p> <p>Connecting the spreader to a hitch other than the original transport hitch is unacceptable because it threatens the safety of road traffic and to third parties.</p> <p>After completion of the machine coupling, check the security of the hitch.</p>
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When connecting the braking system (two-wire pneumatic), the correct sequence of connecting hoses is important. Hoses are designated by color by means of colored protective covers.

Be the first to connect the plug marked yellow to a yellow socket in the tractor, and then the plug marked in red to the red socket in the tractor.


In order to disconnect the spreader from the tractor, perform the following steps:

- switch off the engine and remove the keys from the ignition
- pull the parking brake in the tractor and spreader
- if the spreader with the cargo is located on a steep slope, it should be protected additionally against rolling by planting chocks under the machine's wheel.
- disconnect the hydraulic, electrical and brake system cables of the trailer from the spreader.
- disconnect the drawbar from the tractor transport hitch and drive the tractor away.

 <p>CAUTION!</p>	<p>CAUTION!</p> <p>When disconnecting the spreader from the tractor, keep particular caution.</p> <p>Provide yourself a good visibility. Before disconnecting the hoses and rods, the cabin of the tractor must be closed to prevent it from unauthorized access. The tractor engine is to be turned off and remove the key from the ignition.</p>
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 <p>CAUTION!</p>	<p>CAUTION!</p> <p>Pay attention to the compatibility of oils in the tractor hydraulic system and the hydraulic system of the spreader.</p>
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4.3.6 Loading the crate.

 CAUTION!	CAUTION! Loading of the cargo bed can take place only when the spreader is connected to the tractor, set on level ground, and when the parking brake is engaged on the tractor and spreader.
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You should aim for even load distribution in the loading crate.

When loading or unloading the spreader, it is recommended to use a crane, loader or a conveyor according to general safety rules. Before loading, check that all the moving parts are closed (locks, guards, etc.)

Lightweight, bulk materials may be loaded even above the cargo bed's extensions, however, only up to 5cm above the edge of the side walls, paying special attention to the spreader's stability.

Regardless of the type of the load carried, the user is required to secure it in such a way that the load does not cause contamination of the road.

Due to the varied density of the materials, the use of the total capacity of the container may result in exceeding the permissible load of the machine.

The approximate bulk weights of various materials are given in table 5. Avoid exceeding the spreader's maximum load capacity.

Table 5

No.	Material type	Volume weight [kg / m ³]
1	Root:	
2	raw potatoes	700 - 820
3	steamed mashed potatoes	850 - 950
4	dried potatoes	130 - 150
5	sugar beet - roots	560 - 720
6	fodder beet - roots	500 - 700
7	Organic fertilizers:	
8	Old manure	700 - 800
9	Long laying manure	800 - 900
10	Fresh manure	700 - 750
11	compost	950 - 1 100
12	dry peat	500 - 600
13	Mineral fertilizers:	
14	ammonium sulfate	800 - 850
15	potassium salt	1 100 - 1 200
16	superphosphate	850 - 1 440
17	basic phosphate	2 000 - 2 300
18	potassium sulphate	1 200 - 1 300

19	kainite	1 050 – 1 440
20	lime-rich ground fertilizer	1 250 - 1 300
21	Building Materials:	
22	cement	1 200 – 1 300
23	dry sand	1 350 – 1 650
24	wet sand	1 700 – 2 050
25	Full bricks	1 500 – 2 100
26	hollow bricks	1 000 – 1 200
27	stone	1 500 – 2 200
28	Soft wood	300 - 450
29	Hard timber	500 - 600
30	impregnated timber	600 - 800
31	steel structures	700 – 7 000
32	roasted ground lime	700 - 800
33	Slag	650 - 750
34	Gravel	1 600 – 1 800
35	plant litter and roughage:	
36	dry meadow hay for swath	10 - 18
37	hay wilted for swath	15 - 25
38	hay in a collective trailer (dry withered)	50 - 80

39	cut wilted hay	60 - 70
40	compressed dry hay	120 - 150
41	pressed wilted hay	200 - 290
42	stored dry hay	50 - 90
43	stored cut hay	90 - 150
44	clover (Lucerne), wilted for swath	20 - 25
45	clover (Lucerne), wilted cut on the trailer	110 - 160
46	clover (Lucerne), wilted on the collective trailer	60 - 100
47	stored dry clover	40 - 60
48	cut stored dry clover	80 - 140
49	dry straw in rolls	8 - 15
50	moist straw in rolls	15 - 20
51	damp straw cut on a volumetric trailer	50 - 80
52	dry straw cut on a volumetric trailer	20 - 40
53	dry straw on a collective trailer	50 - 90
54	Dry straw cut in a haystack	40 - 100
55	compressed straw (low degree of deformation)	80 - 90
56	compressed straw (high degree of deformation)	110 - 150
57	grain mass in rolls	20 - 25
58	grain mass cut on a volumetric trailer	35 - 75

59	grain mass on a collective trailer	60 - 100
60	green forage for swath	28 - 35
61	green forage cut on a volumetric trailer	150 - 400
62	green forage on a collective trailer	120 - 270
63	Fresh beet leaves	140 - 160
64	Freshly cut beet leaves	350 - 400
65	beet leaves on a collective trailer	180 - 250
66	Concentrated feed and compound feed:	
67	stored husks	200 - 225
68	oilcake	880 - 1 000
69	Ground fascine	170 - 185
70	Compound feed	450 - 650
71	Mineral feedingstuffs	1 100 - 1 300
72	Oat middling	380 - 410
73	wet beet skins	830 - 1 000
74	Extruded beet skins	750 - 800
75	Dry beet skins	350 - 400
76	bran	320 - 600
77	bone meal	700 - 1 000
78	Fodder salt	1 100 - 1 200


79	molasses	1 350 – 1 450
80	Silage (lower silo)	650 – 1 050
81	hay silage (tower silo)	550 - 750
82	Seeds:	
83	Vicia faba	750 - 850
84	charlock	600 - 700
85	pea	650 - 750
86	lentil	750 - 860
87	bean	780 - 870
88	barley	600 - 750
89	clover	700 - 800
90	grass	360 - 500
91	corn	700 - 850
92	wheat	720 - 830
93	rape	600 - 750
94	flax	640 - 750
95	lupine	700 - 800
96	oat	400 - 530
97	Lucerne	760 - 800
98	rye	640 - 760


99	Other:	
100	dry soil	1 300 – 1 400
101	Wet soil	1 900 – 2 100
102	fresh peat	700 - 850
103	Gardening soil	250 - 350


Source: "The technology of machine works in agriculture", PWN, Warsaw 1985


* - the loading height no higher than 5 cm above the height of the walls

* - Material is to be charged according to the table of the goods mass

 CAUTION!	<p>CAUTION!</p> <p>It is advised to aim at an even distribution of the load in the loading crate.</p>
--	--

 CAUTION!	<p>CAUTION!</p> <p>It is prohibited to exceed the admissible spreader load, because it threatens the safety of road traffic and might cause damage to the machine.</p>
--	---


 CAUTION!	<p>CAUTION!</p> <p>Overloading the spreader and incompetent loading are the most common causes of accidents during transport. The load must be arranged so as not to threaten the stability of the spreader and not obstruct driving the set.</p>
--	--

 CAUTION!	<p>CAUTION!</p> <p>Observe strictly that there are no bystanders in the loading zone and when turning on the adapter. 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>
---	--

4.3.7 Load transport

When driving on roads, you must adapt to the road traffic regulations in force in the given country, be guided by prudence and reasonable conduct. Below are the most important tips to drive the tractor with an attached spreader.

- Before starting, make sure that in the vicinity of the spreader and the tractor there are no bystanders. Ensure sufficient visibility.

 CAUTION!	<p>CAUTION!</p> <p>Before driving, make sure that:</p> <ul style="list-style-type: none"> • the spreader braking system is connected to the tractor and works properly • the spreader hydraulic system is connected to the tractor and works properly • the spreader's electric installation is connected to the tractor and works properly • all the elements of the spreader are in good general condition (no mechanical defects)
---	--


- Do not exceed the maximum construction speed and speed limitations resulting from road traffic law. The travel speed must be adapted to the prevailing road conditions, machine load, type of cargo and other conditions.
- During travel on public roads the spreader must be marked with a plate distinguishing slow-moving vehicles, placed on the drum guard or deflector (Fig. 2).


- The operator of the tractor is obliged to equip the spreader with a certified or homologated sign distinguishing slow-moving vehicles in accordance with applicable regulations of the country in which it is driven.
- When driving, observe the traffic rules, signal the change of direction with the help of indication,
- The lighting and signaling installation should be kept clean and it is advised to take care of its technical condition.
- Damaged or lost lighting and signaling elements are to be immediately repaired or replaced.
- Avoid ruts, depressions, ditches or driving on shoulders of the road. Driving through such obstacles can cause sudden tilting of the spreader and tractor. This is particularly important because the center of gravity of the loaded spreader adversely affects driving safety. Driving near the edge of ditches or canals is dangerous because of the risk of landslides under the wheels of the spreader or tractor.
- The driving speed must be reduced sufficiently in advance before approaching turns or unevennesses and inclines in the terrain.
- When driving avoid sharp corners, especially on slopes.
- Please note that the braking path of the set increases significantly as the weight of the carried cargo increases and as speed increases.
- Control the behavior of the spreader while driving on uneven terrain, and adjust the speed to terrain and traffic conditions.
- The spreader is adapted for driving on slopes of maximally up to 8°. Moving the spreader over steeper slopes may cause the machine to tip over.
- When driving down slopes with a loaded spreader, speed must be reduced.

4.3.8 Unloading of the crate serving as a transporter.

Before unloading the loading crate of the spreader / transporter you should:

- check that the area around the spreader / transporter is safe,
- before raising / opening the rear wall, you must absolutely use the horn twice (honk)
- open the rear wall,
- turn on the conveyor feed,
- after unloading turn off the conveyor feed,
- using the horn signal twice, signal readiness to close the wall,
- close the rear wall

 CAUTION!	CAUTION! Be extremely careful when opening and closing the side walls because of the risk of crushing fingers or hands.
--	--

 CAUTION!	CAUTION! Engaging the conveyor feed while the rear wall is closed may result in damage to the machine.
---	---

5. Equipment and accessories

Table 6 Equipment

Equipment	Standard	Option
User manual	•	
Warranty Card	•	
Parts catalogue	•	
Connecting cable of the electrical system	•	
Hydraulic brake installation		•
Two-wire pneumatic installation		•
Load box extensions with rear wall – 500 mm		•
Chocks under wheels		•
Tools*		•
Jointed - telescopic shaft		•
Connecting cable of the electrical system		•
Warning triangle		•
Signboard distinguishing slow-moving vehicles		•
Rear bolt/hydraulic wall		•
Deflector for A4VS-P adapter		•

* - includes 22x24 flat wrench for adjusting chain tension of the floor conveyor and 17x19 flat wrench for unfastening side guards and adjusting tension.

6. Technical Support


When using the spreader, 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 spreader is obliged to perform all maintenance and regulatory tasks specified by the manufacturer.

To ensure proper functioning and avoid serious failures, the spreader 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 spreader (before commencing work), it foresees:

- checking tightness of threaded joints (table no. 7),
- checking the tightness of the hydraulic system
- checking the tightness of the pneumatic system,
- checking the correct operation of mechanisms (conveyor feed).
- check the functioning of the brake system,
- check the functioning of the electrical system,
- checking and performance of lubrication, according to the instructions (section 6.10),
- checking the tire pressure (tab. 3),
- checking all locks/latches (e.g. side walls), whether they are properly closed and secured by pins, and that there is no risk of spontaneous opening.

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

 <p>CAUTION!</p>	<p>CAUTION!</p> <p>If you need to lift the wheels of the spreader, observe the following rules:</p> <ul style="list-style-type: none">- the spreader attached to the tractor is to be set in the direction for driving straight ahead on a flat, stable base, and then tractor's parking brake is to be engaged,- plant securing chocks under the wheel of the spreader that will not be raised,- place the jack under the load-carrying beam at the point marked by a special informational sticker (tab. 2 item 12, Fig. 4) and raise it,- secure the spreader against falling down in the event of a jack failure by placing a stable support under the machine.
---	--


 <p>CAUTION!</p>	<p>CAUTION!</p> <p>In the case of noting any irregularities in the operation or damage to systems or assemblies of the spreader, the machine must be taken out of use until repair and removal of defects.</p> <p>It is forbidden to carry out service and repair work under a burdened cargo bed and with the tractor engine running. All maintenance work performed after disconnecting the PTO.</p> <p>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.</p>
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Table 7: Orientational tightening torques for screws

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

6.1 Regulation of driving wheel bearings backlash.

After driving the first 100 km and after every 1500-2000 km after that - check, and if necessary adjust, the backlash of the wheel bearings.

In order to check backlash:

- raise the wheel of the spreader intended for backlash adjustment,
- by slowly turning the wheel, check whether motion is fluid and the wheel turns without excessive resistance and jamming - if this is not the case, replace the bearing,
- by gripping the top of the tire with one hand and the bottom of the tire with the other and deflecting both ends from vertically in an alternating fashion, check whether the wheel has any noticeable backlash,
- if the wheel's deflection is greater than just barely perceptible, adjust backlash.

Adjustment of backlash:

- dismount the hub cap by levering it out in several places around the

- circumference and remove the cotter pin of the castellated nut,
- turning the wheel, simultaneously tighten the castellated nut until the wheel stops completely,
 - unscrew the nut by 1/6 -1/3 turn, until alignment with the next groove for the pin with the hole in the pivot.
 - Secure the nut with a new cotter pin, and firmly press the hub cap in.

The mentioned steps should be repeated checking the remaining wheels.

The wheel, after correct adjustment of the bearings should turn smoothly without stops and perceptible resistance.

The soundness of bearings backlash has to be finally checked after driving a few kilometers with the spreader, checking the degree of the hubs' heating by hand.

The following may be causes of significant resistance when turning wheels and strong heating of hubs:

- improper adjustment of bearing backlash,
- contaminants found in grease,
- damaged bearings,

The above symptoms require dismantling the wheel hub and removing the fault (replacement of grease or bearings).

6.2 Brake adjustment.

Brake adjustment should be carried out if:

- the brakes of both wheels do not brake uniformly.
- expander levers are not parallel to each other,
- a repair of the brake system was carried out.

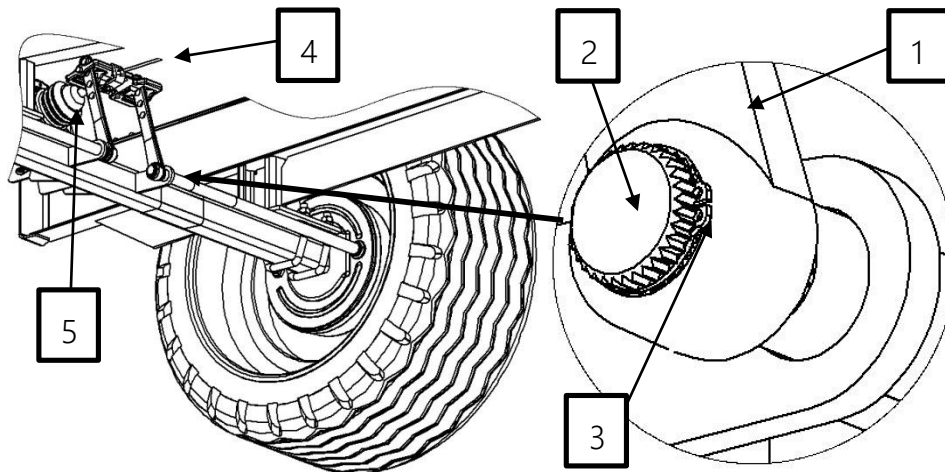


Figure 15. Brakes regulation

1 – expander arm, 2 – expander roller, 3 - retaining ring (Seeger), 4 - hand brake cable, 5 – brake cylinder

With properly adjusted brakes, braking of both wheels must take place at the same time.

Brake adjustment involves changing the position of the expander arm (item 1, fig. 15) with respect to the expander roller (item 2, fig. 15).

To do this you need to:

- remove the seating ring (item 3, fig. 15) from the shaft;
- remove the expander arm (item 1, fig. 15) from the shaft;
- reposition the expander arm by one or more teeth on the shaft in the proper direction:
 - ✓ back - if the brake is too late;
 - ✓ forward - if the brake is too early;
- After the proper position is obtained, mount the seating ring.

The adjustment should be conducted separately for each spreader

wheel. After proper brake adjustment, expander arms should form an angle of approx. 90° with the actuator's piston rod while the brake pedal is pressed down.

During dismounting of actuators, remember or mark the original setting. The mounting position is chosen by the manufacturer and cannot be changed.

6.3 Handling the pneumatic brake system.

As part of routine maintenance, check the tightness of the pneumatic system (pay most attention to places of all connections). If the conduits, seals or other components are damaged, compressed air will penetrate outside with a typical hiss. The damaged seals or conduits causing leaks should be replaced.

Periodically, remove the condensate gathering in the water from the air tank.

To do this you need to:

- open the drain valve (item 2, fig. 16) situated at the bottom of the tank.
- the compressed air in the tank will push the water out.
- After water outflow stops, close the drain valve

Once a year, before the winter, unscrew the drain valve and clean off the accumulated dirt.

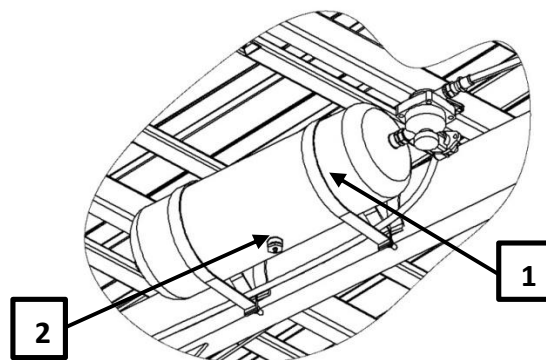



Figure 16. Draining the air tank

1 - air tank, 2 - drain valve

 CAUTION!	CAUTION! Before dismantling the drain valve, reduce the pressure in the air tank.
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In the case of a double-hose pneumatic system, depending on the operating conditions of the spreader, but not less frequently than once every three months, remove and clean the air filter inserts, which are located between the control valve and connector hoses. The inserts are reusable and cannot be replaced unless they are damaged by mechanical means.

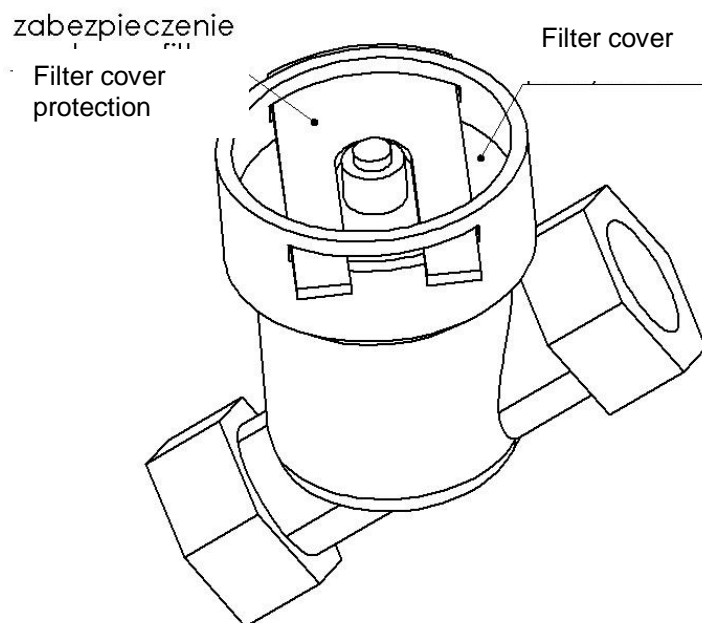



Figure 17. Wired air filter

 CAUTION!	CAUTION! Before demounting the air filters, reduce the pressure in the brake system.
--	--

6.4 Handling of the hydraulic system of the rear wall and brakes.

Always follow the principle that the oil in the spreader 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 is optional in the case where the spreader is equipped with a

hydraulic brake system and rear gate.

The hydraulic system of the spreader should be completely tight.

Checking the tightness of the hydraulic system:

- connect the spreader to the tractor;
- engage the hydraulic cylinder or motor;
- hold in maximum extension position 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.

The steps are analogous when testing the tightness of the hydraulic brake system. If leaks occur after pressing down on the brake for 30 seconds, proceed as above.

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 cylinder, check the nature of the leak. When fully taking out the cylinder actuator, check all sealing places. 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.



CAUTION!

CAUTION!

The state of the hydraulic system should be controlled up to date during its use. It is prohibited to use a machine with a damage hydraulic system of the rear wall or brakes.

6.5 Maintenance of the drive axle.

Maintenance of the drive axle is based on continuous inspection of the condition of brakes and checking for cracks. It should not be permitted for a thick layer of dried mud to accumulate on the system.



CAUTION!

CAUTION!

In the case of noticing a cracked part, e.g. a bow screw, the machine should be out of operation until the fault has been rectified.

6.6 Mounting the adapter's drum guard

The guard of the adapter's drums is required for driving with the spreader on public roads. The spreader is delivered with the lever serving to open the guard dismounted. Figure 19 presents the mounting procedure.

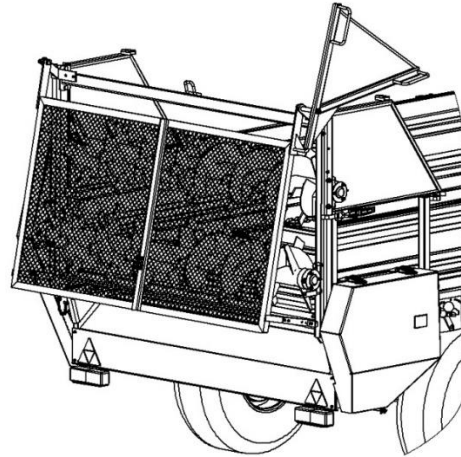
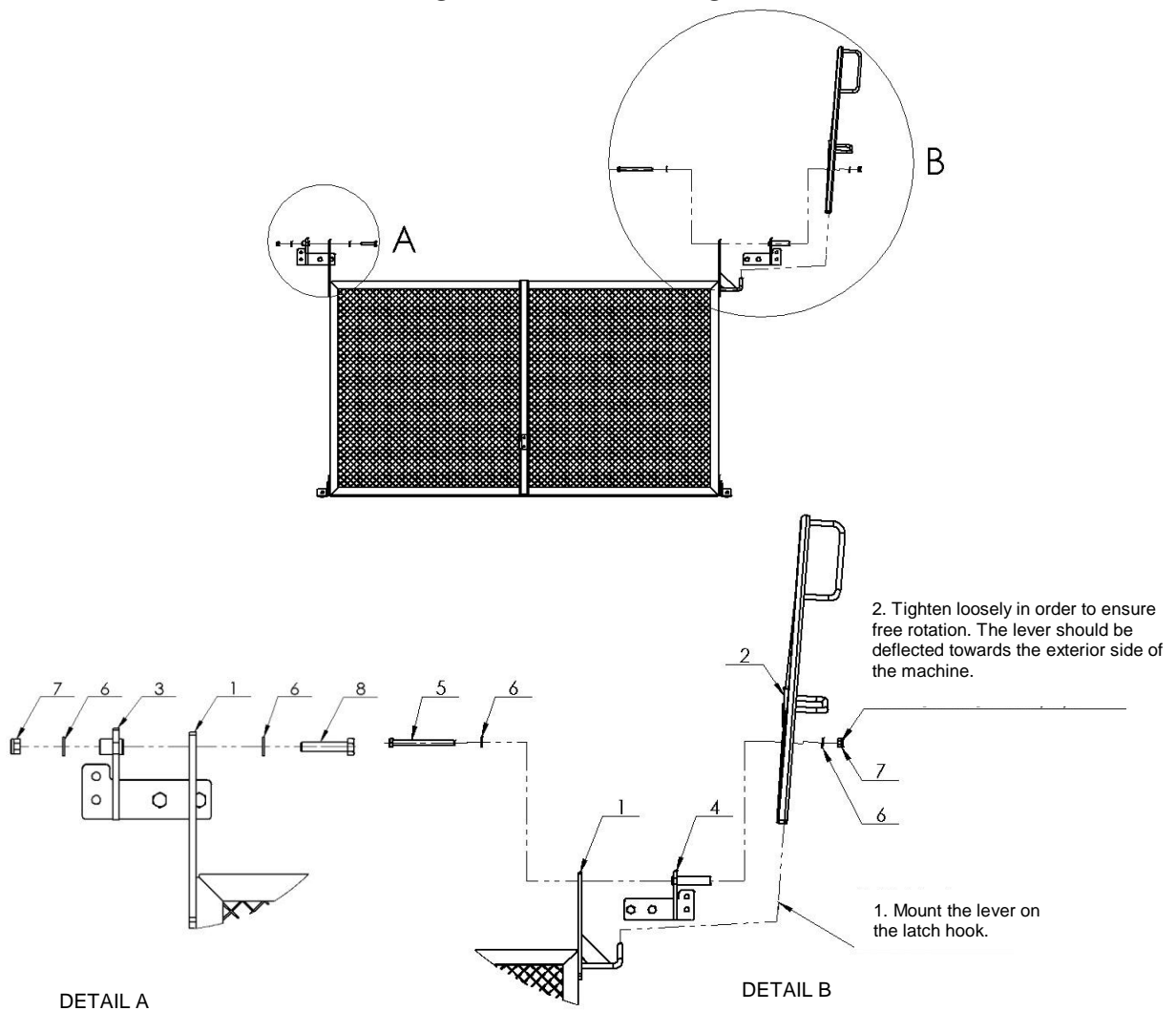


Figure 18. Mounted guard.




Lp.	Numer	Wyszczególnienie	Ilość
1	2233/76.04.000	Adapter guard	1
2	2233/76.05.000	Guard lever	1
3	2233/76.06.000	Left bracket set	1
4	2233/76.07.000	Right bracket set	1
5	PN-85/M-82101	M12x145 screw	5
6	PN-78/M-82005	Washer 13	4
7	PN-85/M-82175	M12 Self-locking nut	2
8	PN-85/M-82101	M12x60 screw	1


Figure 19. Mounting the adapter's drum guard.

6.7 Adapter support

Use of the adapter is based on controlling the current state of the elements cooperating directly with the spread material and used to guard the adapter's drums (guards / deflectors, levers).

Each time before starting work with the spreader, it is essential to check the condition of blades and spreading strips. If the case of noticing damage to the blade in the form of cracking or deformation that can cause damage to associated components such as: guard / deflector, inner wall, cooperating drum, the damaged part must be replaced immediately.

 CAUTION!	<p>CAUTION!</p> <p>It is essential, before every use of the spreader, 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>
--	--

 CAUTION!	<p>CAUTION!</p> <p>Absolutely use the original drums and 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>
--	---

6.8 Operation of the floor conveyor

Works related to conveyor maintenance are based on:

- checking the front and rear socket wheels for cracks, visible damage and hazardous pollution,
- checking the condition of the chain, support points and bearings of conveyor parts, and whether there is visible damage,
- checking whether "scrapers" for self-cleaning of socket wheels are positioned centrally in the channel of a socket wheel and have no visible damage or wear.
- checking the condition and proper tension of the chain.

This check is based on raising the chain at the center of its length from the top upwards (on an area of floor), and determining the height of raising:

- if this height exceeds 100 mm and the tensioner is able to slide, adjust the chain's tension by fastening the nut on the tensioner.
- if the height of 100 mm is exceeded and there is no space for sliding of the tensioner, shorten the conveyor's chain by 2 links.

Shortening of the chain is based on:

- unlatching the coupling link of the chain,
- taking away 2 links so that the final link is in horizontal position (with its hole facing up),
- re-coupling the chain using the coupling link.

In case of insufficient effect of tension, this action should be repeated shortening the chain by another 2 links. The chains must be shortened in pairs by the same number of links.

Shortening should be done with extreme care while maintaining compliance with basic occupational health and safety rules and using personal protective equipment.



CAUTION!

CAUTION!


It is essential before each use to check the tension of the chains and their technical condition (the thickness of the links, whether the links have visible damage)

6.9 Handling electrical equipment.

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.

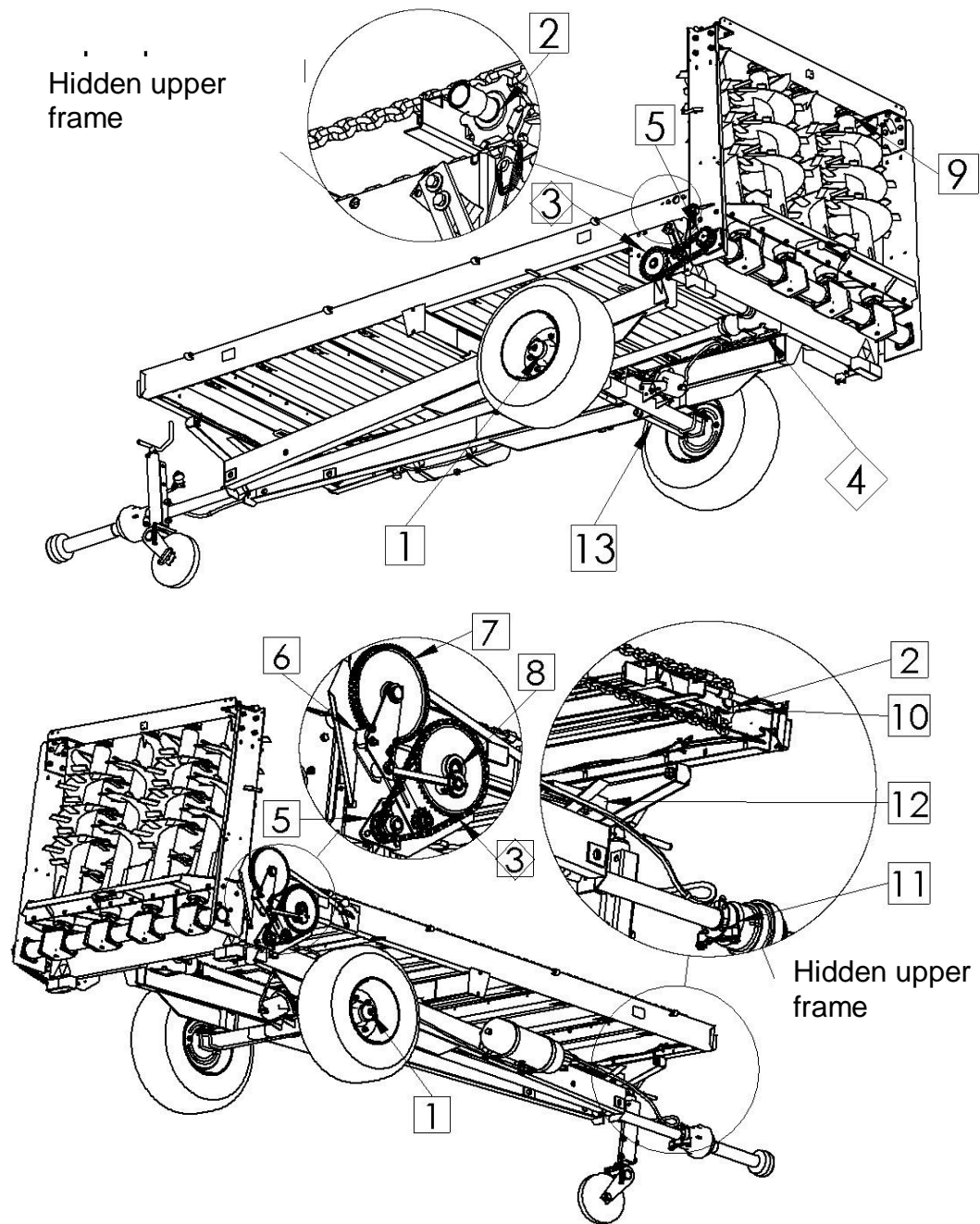
 CAUTION!	CAUTION! Driving with a faulty lighting system is prohibited. Damaged shades, and burned-out bulbs must be replaced immediately before driving. Lost or damaged reflective lights must be replaced with new ones.
---	--

6.10 Lubrication.

Lubrication of the spreader is to be performed at the points listed in table 7, shown in figure 20.

Table 7. The frequency and method of lubrication of the spreader's mechanisms

No.	PLACE OF LUBRICATION	NUMBER OF POINTS	GREASE TYPE	LUBRICATION NOTES
1	Wheel hub	2	ŁT 43	Bearings are to be lubricated after removal of
2	Conveyor socket wheels	4	ŁT 43	Before every standstill of greater length and winter storage.
3	Drive chains	2	ŁT 43 / AGROL U	After spring and autumn operations are concluded.
4	Transmission	1	AGROL U	Replacement immediately after completing work with the spreader.
5	Bearings of the conveyor's rear	2	ŁT 43	
6	Latches	2	ŁT 43	
7	Ratchet-wheel teeth	1	ŁT 43	
8	Crankshaft	1	ŁT 43	
9	Spreader drum bearings	4/2	ŁT 43	
10	Tensioners	2	ŁT 43	After spring and autumn operations are concluded.
11	Drive bearing	2	ŁT 43	
12	Parking brake screw	1	ŁT 43	
13	Expander brake	2	ŁT 43	



Lubrication frequency	Points
Every 10h of work	5, 6
Every half year	2, 3, 7, 10
Every year	1, 8, 9, 11, 12, 13
Every 100h of work	4

Name of grease	Standard	Symbol
ŁT 43	PN/C-96134	□
AGROL U oil	PN/C-96100	◇

Figure 20. Lubricating the spreader

Before commencing the lubrication of the grease fitting, the greased surfaces and places nearby lubrication points must be thoroughly cleaned of mud and dust. The grease should be injected in the grease fitting until release of fresh grease in the gaps between the mating parts.

The oil with which the transmission box is filled is to be replaced after the first 20 hours of work, then after every 100 hours of work. Check and maintain the minimum oil level in the transmission.

To change oil:

- Disconnect the connector of the electrical installation under the guard, then unfasten guard screws (fig. 21) on both sides of the machine. Then remove the guard;

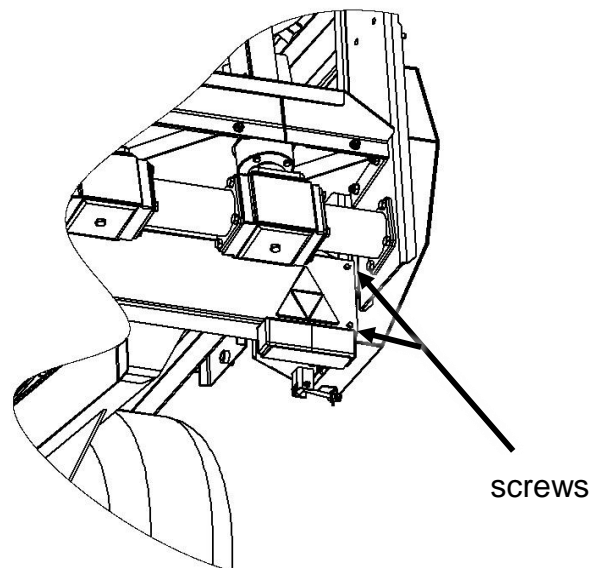


Figure 21. Positions of screws for unfastening the guard

- The drain plug (item 1, fig. 22) found at the bottom of the body serves to remove oil. Oil from the transmission box is to be removed immediately after the machine's operation, when the oil is hot, into the container intended for this purpose.
- The vent hole (item 2, fig. 22) situated at the top of the body serves for filling of the transmission box with oil.
- The proper oil level can be assessed when the spreader is in horizontal position by means of the oil level indicator window (item 3, fig. 22), which is found in the mount of bearings.

- The indispensable amount of oil is 1.6l.
- Before replacing the drain plug, clean it of contaminants.

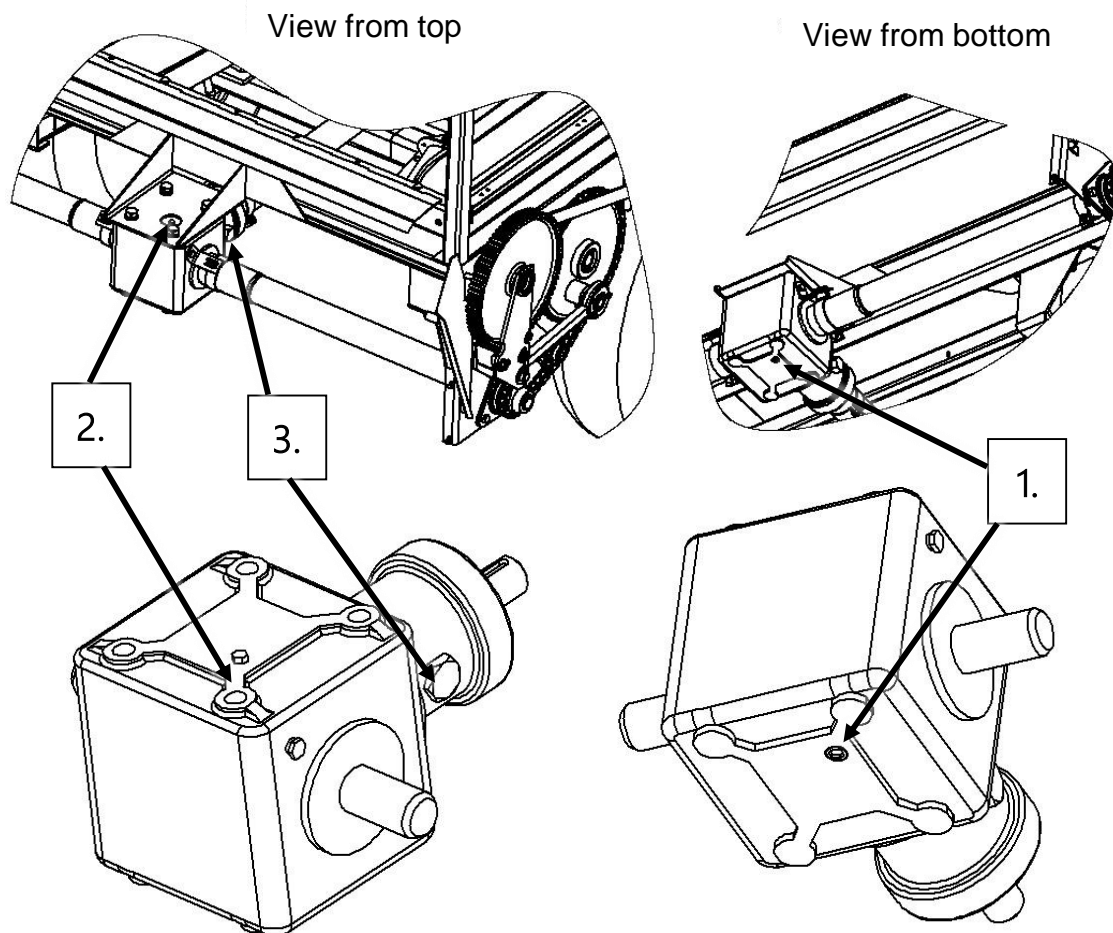


Figure 22. Gearbox

1. Drain plug; 2. Vent hole; 3. Oil level indicator window;



CAUTION!

CAUTION!

Before starting the machine, always check the oil level in the transmission and replenish oil if the level is too low.

Sealing ring OR 23.2 x 3 (PN-60/M-86961) is found near the window of the oil level indicator, and it must be replaced in the event of leaks.

Any plug sealing rings must strictly be replaced with new ones whenever plugs are unfastened.

6.11 Storage and maintenance.

After ending operation, the spreader 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, 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 spreader, it is recommended to place it indoors in a closed room or in a roofed and ventilated place.

6.12 Adjustment of conveyor drive and adapter drive chain tension.

The tensioner (item 1, fig. 23 and fig. 24) serves to adjust the tension of the floor conveyor's and adapter's drive chain. The play on the working part of the chain at half of its length should be 5-15mm, and 5-20mm near the adapter's drive.

In the case of detecting greater play than mentioned above:

- Loosen fixing screws. (item 2, fig. 23 and fig. 24)
- Slide the tensioners (item 1, fig. 23 and fig. 24) in the direction of the chain (item 3, fig. 23 and fig. 24) until the proper play is achieved and then fasten screws once again (item 2, fig. 23 and fig. 24).

If elimination of play by means of tensioners proves to be impossible, shorten the chain by one or more links.

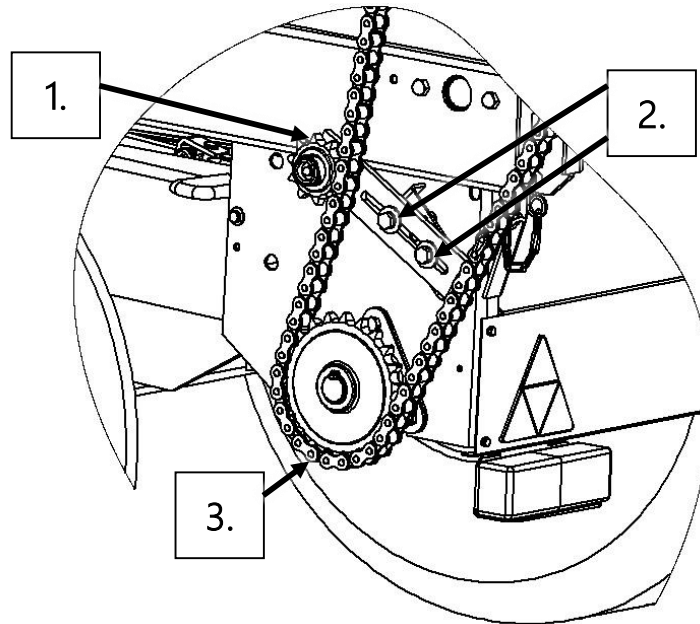


Figure 23. Adapter drive.

1. Chain tensioner, 2. Fixing screws, 3. Chain

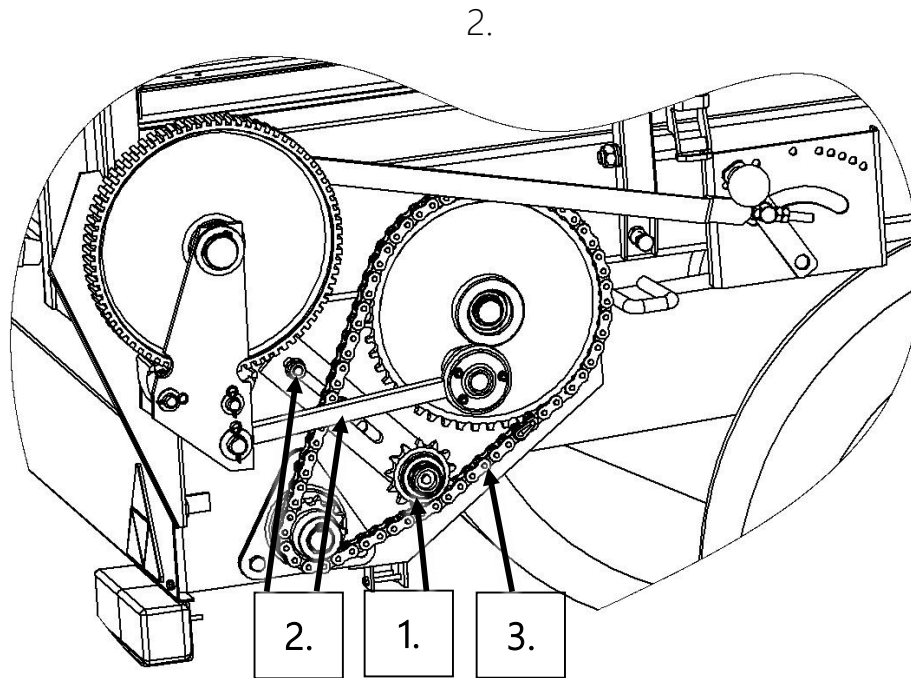


Figure 24. Floor conveyor drive.

1. Chain tensioner, 2. Fixing screws, 3. Chain

6.13 Adapter drum lock

During the machine's operation, an emergency may occur that results in stopping of the adapter's drums. In this situation, regardless of the cause, adhere strictly to the guidelines described in section "6. Technical Support".

Moreover, strictly:

- leave the connection to the tractor in order to ensure stability,
- switch off the tractor's engine and remove the keys from the ignition,
- disconnect the PTO,
- remove the cause of the adapter's blockade,
- connect the PTO,
- take special caution when restarting the machine.

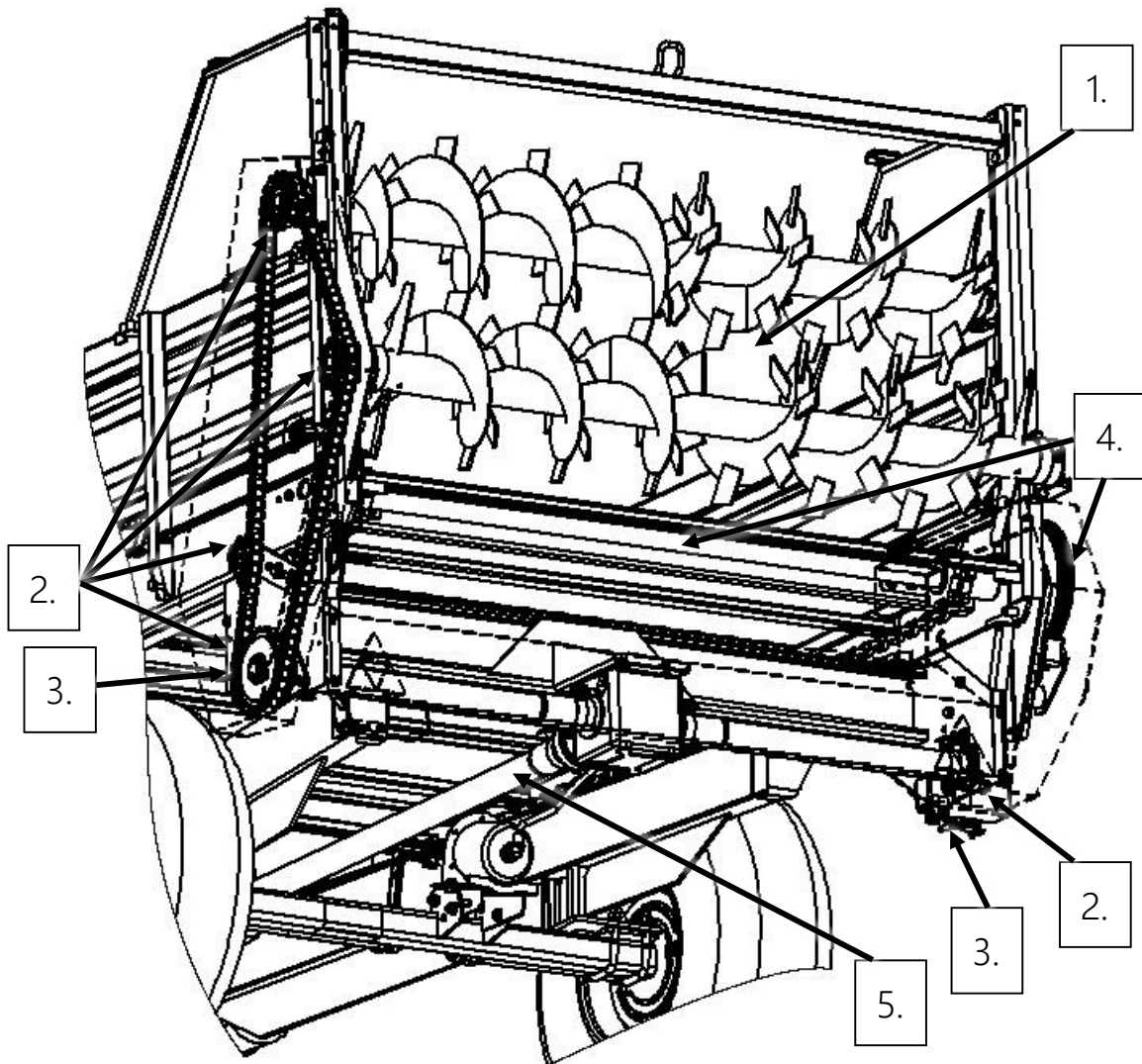


Figure 25. Possible causes of no adapter drum revolutions:

1. Hard object (stone) jammed between drums.
2. Damage of gears interlocking with the drive chain.
3. Chain fell off from gears.
4. Jamming of floor conveyor.
5. Problems with the drive system

6.14 Troubleshooting.

Table 8. Faults and remedies

Fault	Reason	Way of removal
Problems with moving	Disconnected hoses of the brake system	Connect the brake hoses
	Parking brake engaged	Release the parking brake
	Damaged connection cables of the pneumatic system	Replace
	Connections leakage	Tighten, replace washers, seal sets, replace the hoses.
	Damaged control valve or brake force regulator	Check the valve, repair or replace it
Noise in the hub of the driving axle	Excessive clearance on the bearings	Check clearance and adjust if necessary
	defective bearings	replace bearings
	damaged items	Replace
Low efficiency of the braking system Excessive heating of the driving axle hub	Pressure too low in the system	Check the pressure gauge on the tractor, wait till the compressor fills the tank to the required pressure.
	Improperly adjusted essential or parking brake	Adjust the position of the spreader arms
	Worn out brake linings	Replace the brake shoes
	Installation leakage	Check the tightness of the installation
	Damaged air compressor in the tractor	Repair or replace.
	Damaged brake valve in the tractor	Repair or replace
Uneven feed	Damaged flow regulator	Exchange
	Damage of the conveyor	Remove the damaged

	elements	element, clean the socket wheel
Uneven spreading of the material on the box	Spreading element (the knife, scattering strip) absent or damaged	Replacement of the damaged item with a new one
Clogging adapter	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 and / or spreader
	Insufficient efficiency of the tractor hydraulic pump, damaged tractor hydraulic pump.	Check the hydraulic pump on the tractor.
	Damaged or contaminated actuator	Check the actuator's piston: bending, corrosion, tightness; repair or replace the actuator if necessary.
	Too much actuator load	Check and, if necessary, reduce the load on the actuator
Improper operation of the hydraulic system	Damaged hoses	Check to make sure that the hydraulic hoses are tight, not refracted and properly looped. If necessary, replace or

		tighten.
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7. Transport

The spreader 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.

The delivery of the spreader to the user is done by independent transport after connecting with the tractor or automobile (in this case, the spreader because of the height can be mounted on the platform of the transport mean on the hubs - with unscrewed and taken off wheels or on wheels secured with chocks, but with disassembled and folded upper extensions.

Loading and unloading of a spreader from a car should be carried out using the loading ramp with an agricultural tractor or using a crane, lever. 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 using the tractor, the spreader must be properly connected with the tractor according to the requirements contained in this manual. The spreader braking system must be running and tested before running off or driving on the ramp.

When loading / unloading using a crane or a lever, the spreader is to be lifted 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 under the lower frame of the spreader in such places that when lifting the machine the belts do not have the possibility of moving, and the spreader when moving is not tilting. If there is a possibility of damage or frayed belts against components of the machine, put washers in sensitive areas.

In order to avoid compression of the walls to the inside the spreader, when loading with the use of a crane, use a special traverse, where the places of hooking the belts will be spaced wider than the total width of the machine.

The spreader should be attached firmly to the platform of the transport mean with belts, chains, lashing or other fastening means equipped with a tightening mechanism. Fastening elements are to be fastened to fixed structural elements of the spreader (longitudinal beams, cross-bars, etc.). Transport handles are welded to the longitudinal bar of the bottom frame, one pair on each side of the spreader (fig. 26). 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.

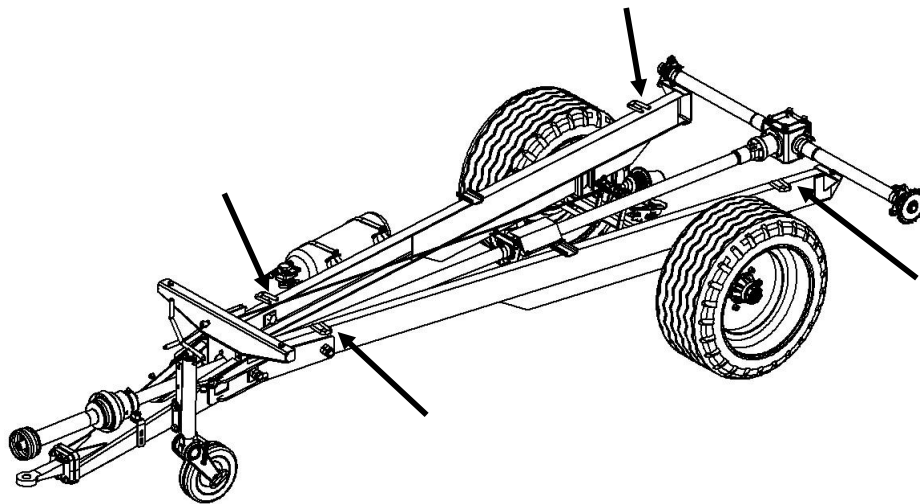




Figure 26. Transport handles

Under the wheels of the spreader chocks, it is advisable to put wooden beams or other elements without sharp edges, preventing the machine from rolling. The spreader wheels chocks must be attached to the loading platform of the car so as to prevent their shifting.

 CAUTION!	CAUTION! During car transport, pull the parking brake in the spreader.
 CAUTION!	CAUTION! 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 spreader is fastened on the platform of the means of transport in accordance with the manufacturer's technology. The driver of the car, while transporting the machine, should take extra caution. This is due to the upward movement of the vehicle's center of gravity with a loaded machine.

8. Spreader cassation

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

The dismantled parts remaining after repair of the spreader must be submitted to the collection point of recyclable materials.

9. 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.

 <p>CAUTION!</p>	<p>CAUTION!</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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10. 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.

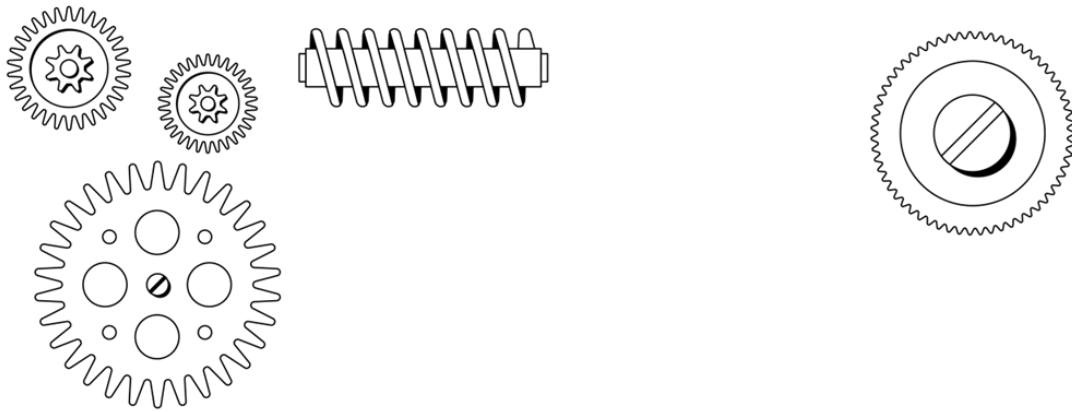
In the event of an oil spill, you must first secure the source of the leak, and then collect the spilled oil using available means. Collect the oil residues using sorbents, or mix the oil with sand, sawdust or other absorbent materials. The collected oil waste should be kept in a sealed and marked container,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

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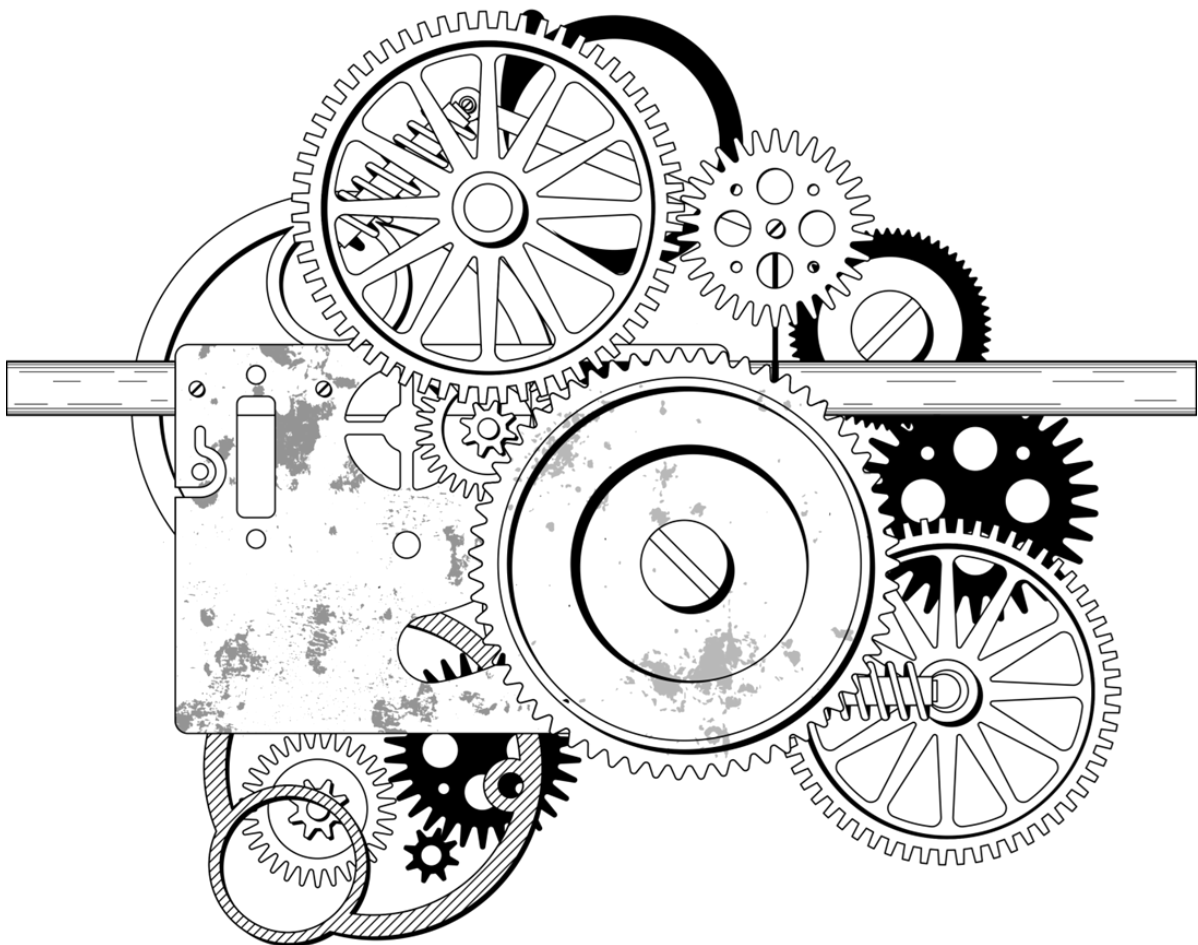
Used oil or unsuitable for reuse due to the loss of its properties should be stored in its original packaging in the same conditions as previously described. Oil waste must be transferred to a point taking care of recycling or oils regeneration. Waste code: 13 01 10. Detailed information concerning hydraulic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

 CAUTION!	<p>CAUTION!</p> <p>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.</p>
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 CAUTION!	<p>CAUTION!</p> <p>Is absolutely forbidden to start the conveyor loaded with material (e.g. manure, peat, lime, etc.) with the power adapter on and a closed wall / hydraulic gate valve. Failure to do so may cause irreparable damage to the adapter and your warranty.</p>
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PARTS CATALOGUE



SPARE PARTS CATALOGUE

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.

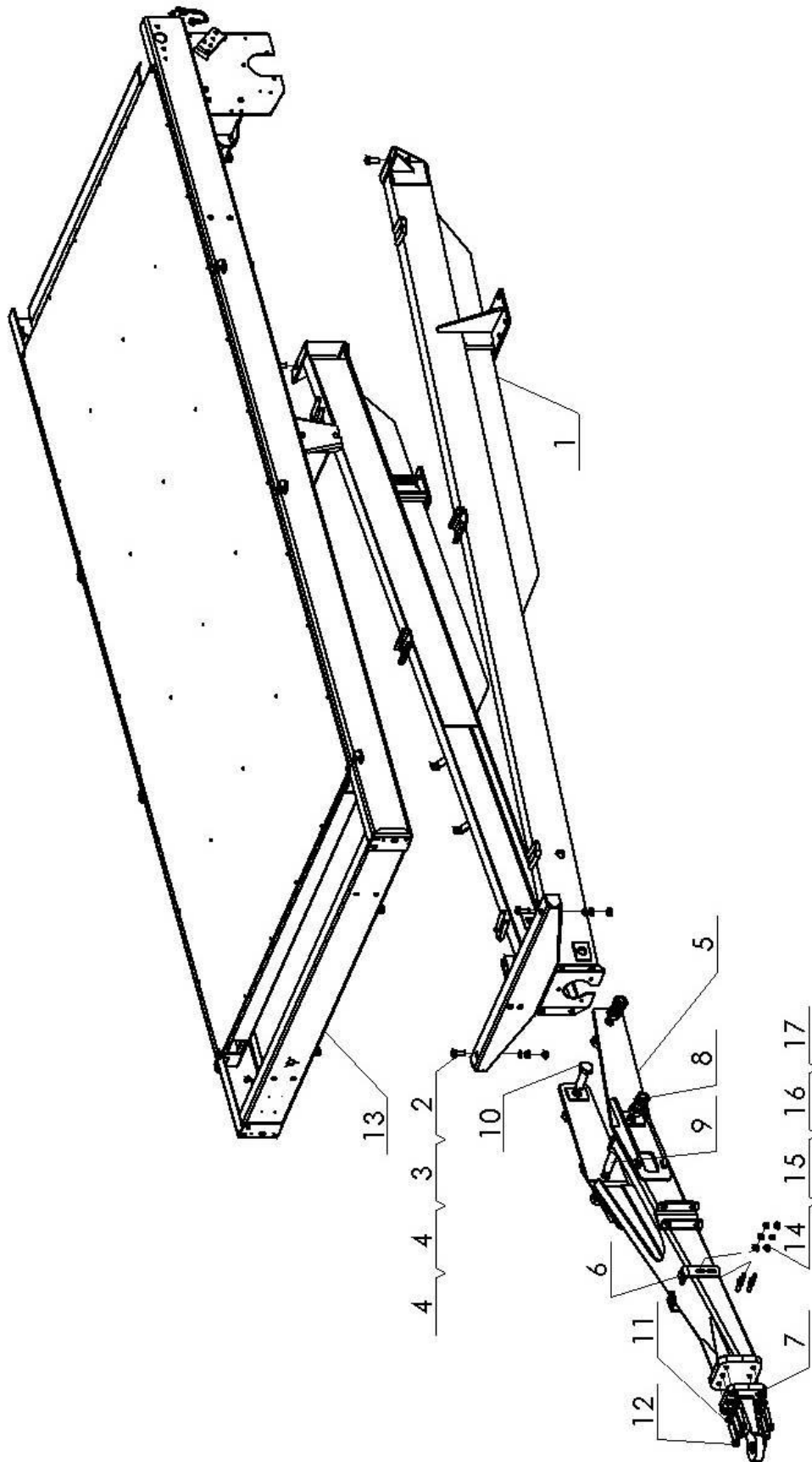
For each drawing, there is a text table added, containing the list of parts of the unit or the mechanism.

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.

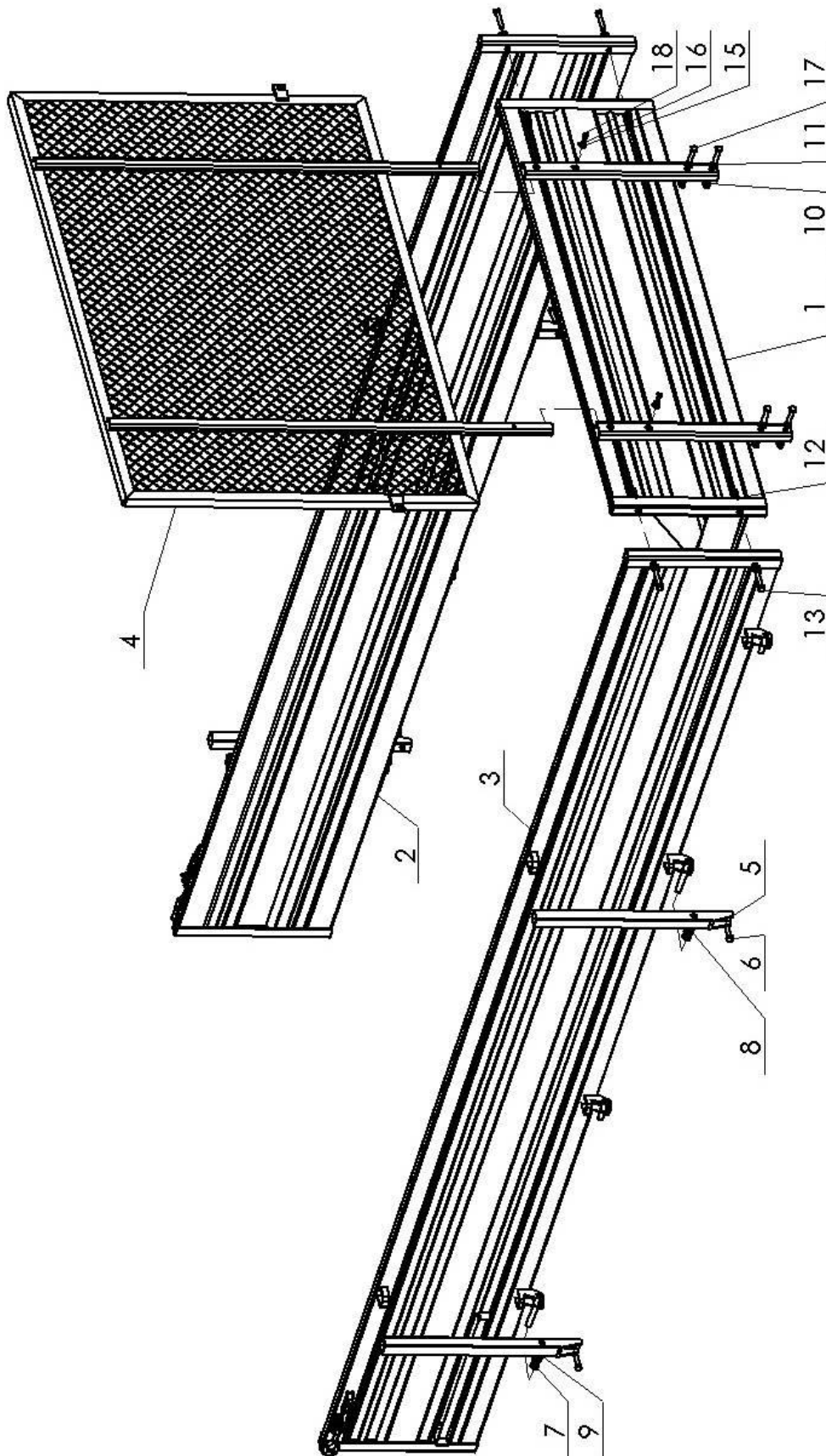
Table 1 Bottom frame, load-carrying beam, drawbar



Tab. 1

No.	Number	Specification	Amount
1	2233/01.00.000/1	Load-carrying beam up to (4.5 T)	1
2	PN85/M-82105	M16x45 screw	4
3	PN-85/M-82005	Washer 17	4
4	PN86/M-82144	M16 nut	8
5	2233/04.10.000	Welded drawbar	1
6	2233/05.00.001	Bearing bracket	2
7	TMW D50-C, B8, T45	Drawbar ear	1
8	PN-77/M-82008	Nut M30-8-B Fe/Zn12	8
9	PN-86/M-82144	Screw M30x110-8.8-B Fe/Zn12	2
10	PN-86/M-82144	Screw M30x90-8.8-B Fe/Zn12	2
11	PN-77/M-82008	Spring washer 16.3	6
12	PN-M-82302	M16x80 hexagon screw	6
13	2233/02.00.000/10 2233/02.00.000/9	Frame set. N-233/4 N-233/4-1, N-233/4-2	1
14	PN-78/M-82005	Washer 13	4
15	PN-77/M-82008	Spring washer 12.2	4
16	PN-85/M-82105	M12x35-8.8 Screw	4
17	PN-86/M-82144	M12 Nut	4

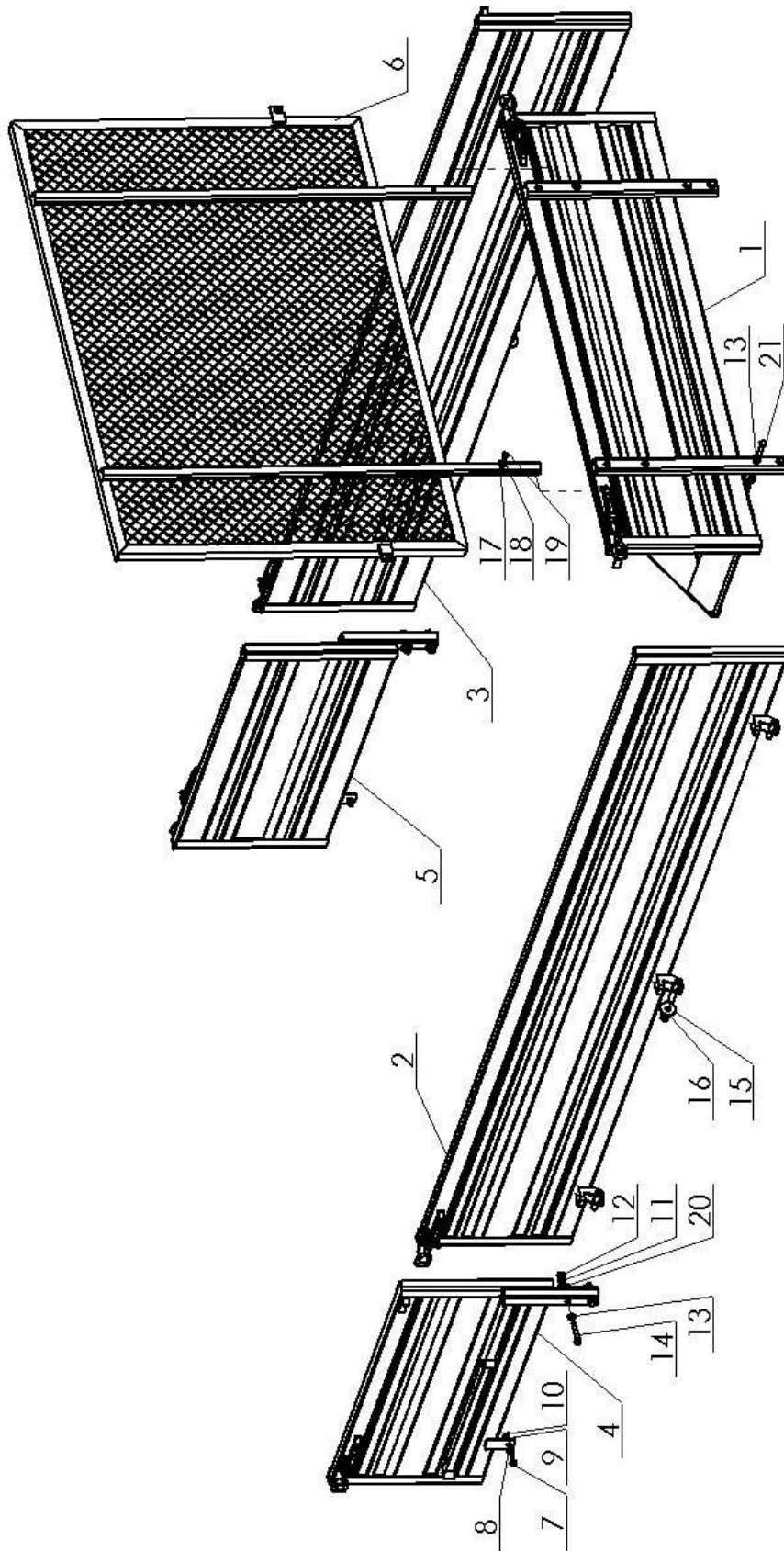
Table 2 Walls 500 – Model N-233/4



Tab. 2

No.	Number	Specification	Amount
1	2235/22.04.000	Front wall	1
2	2235/22.02.000	Left wall	1
3	2235/22.01.000	Right wall	1
4	2235/22.03.000	Front mesh	1
5	2219/11.00.500/0	Wall bracket profile	4
6	PN-85/M-82101	M12x45 8.8 B screw	4
7	PN86/M-82144	M16 nut	4
8	PN-77/M-82008	Spring washer 16.3	4
9	PN-85/M-82005	Washer 17	4
10	PN-86/M-82144	M12 nut	8
11	PN-77/M-82005	Washer 13	12
12	PN-77/M-82008	Spring washer 12.2	8
13	PN85/M-82101	M12x65 screw	4
14	PN-77/M-82030	Washer 13	4
15	PN-59/M-82030	Round washer 8,5	2
16	PN-77/M-82008	Spring washer 8.2	2
17	PN-85/M-82101	M12x55-8,8-B Screw	4
18	PN-85/M-82105	M8x25-8.8 Screw	2

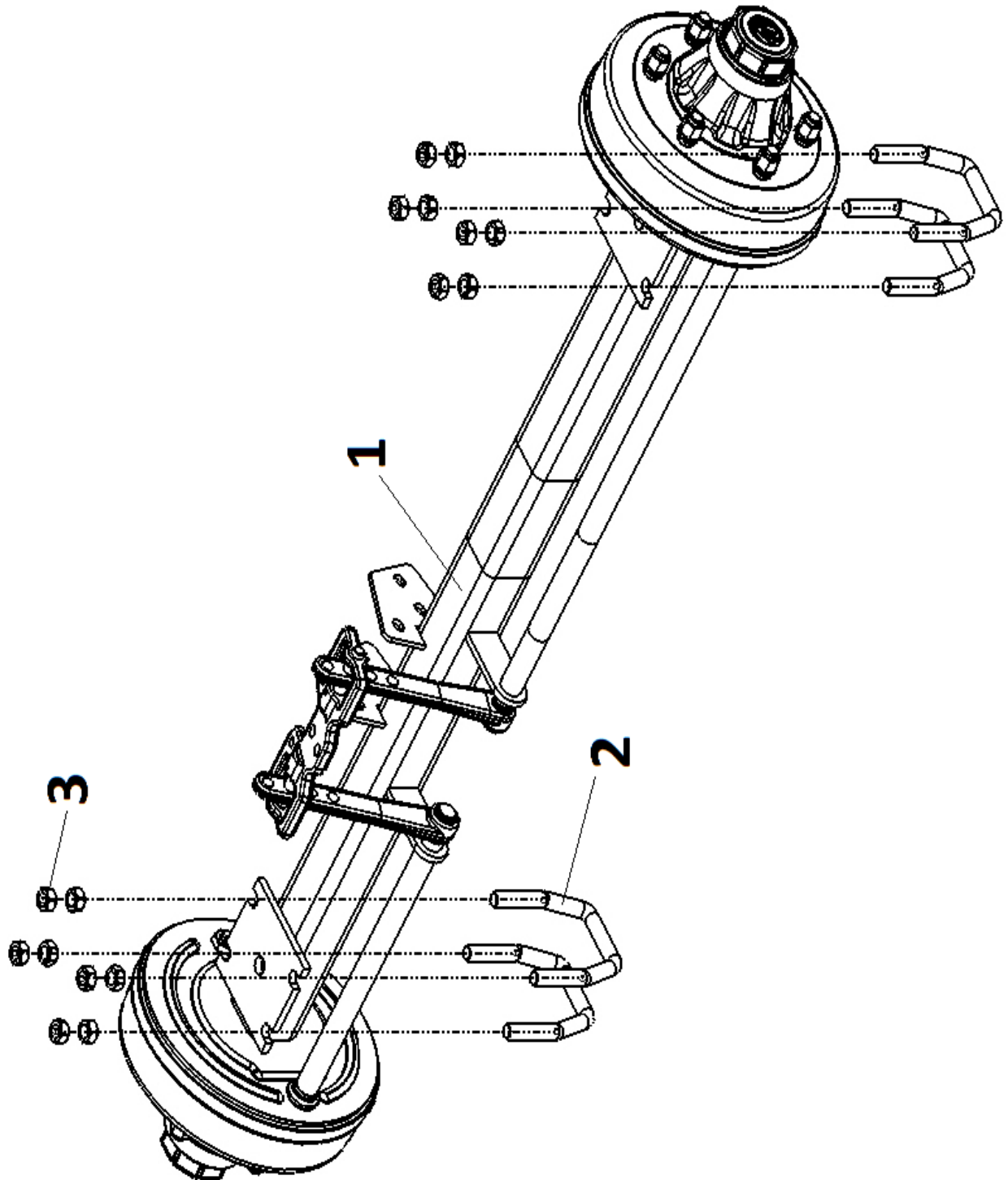
Table 3 Split walls 500 – Models N-233/4-1 and N-233/4-2



Tab. 3

No.	Number	Specification	Amount
1	2233/13.01.000	Front wall	1
2	2233/13.02.000	Right wall	1
3	2233/13.03.000	Left wall	1
4	2233/13.04.000	Right wall segment	1
5	2233/13.05.000	Left wall segment	1
6	2235/22.03.000	Front mesh	1
7	PN-85/M-82105	M10x30 8.8 screw	2
8	PN-78/M-82005	Round washer 10,5	2
9	PN-77/M-82008	Spring washer 10.2	2
10	PN-86/M-82144	M10 nut	2
11	PN-77/M-82008	Spring Washer 12,2	8
12	PN-86/M-82144	M12 nut	8
13	PN-78/M-82005	Washer 13	8
14	PN-85/M-82101	M12x70-8.8 Screw	4
15	PN-78/M-82030	Enlarged washer 17	2
16	PN-85/M-82175	M16 Self-locking nut	2
17	PN-59/M-82030	Round washer 8,5	2
18	PN-77/M-82008	Spring washer 8.2	2
19	PN-85/M-82105	M8x20-8,8-B Screw	2
20	PN-77/M-82030	Washer 13	8
21	PN-85/M-82101	M12x55-8,8-B Screw	4

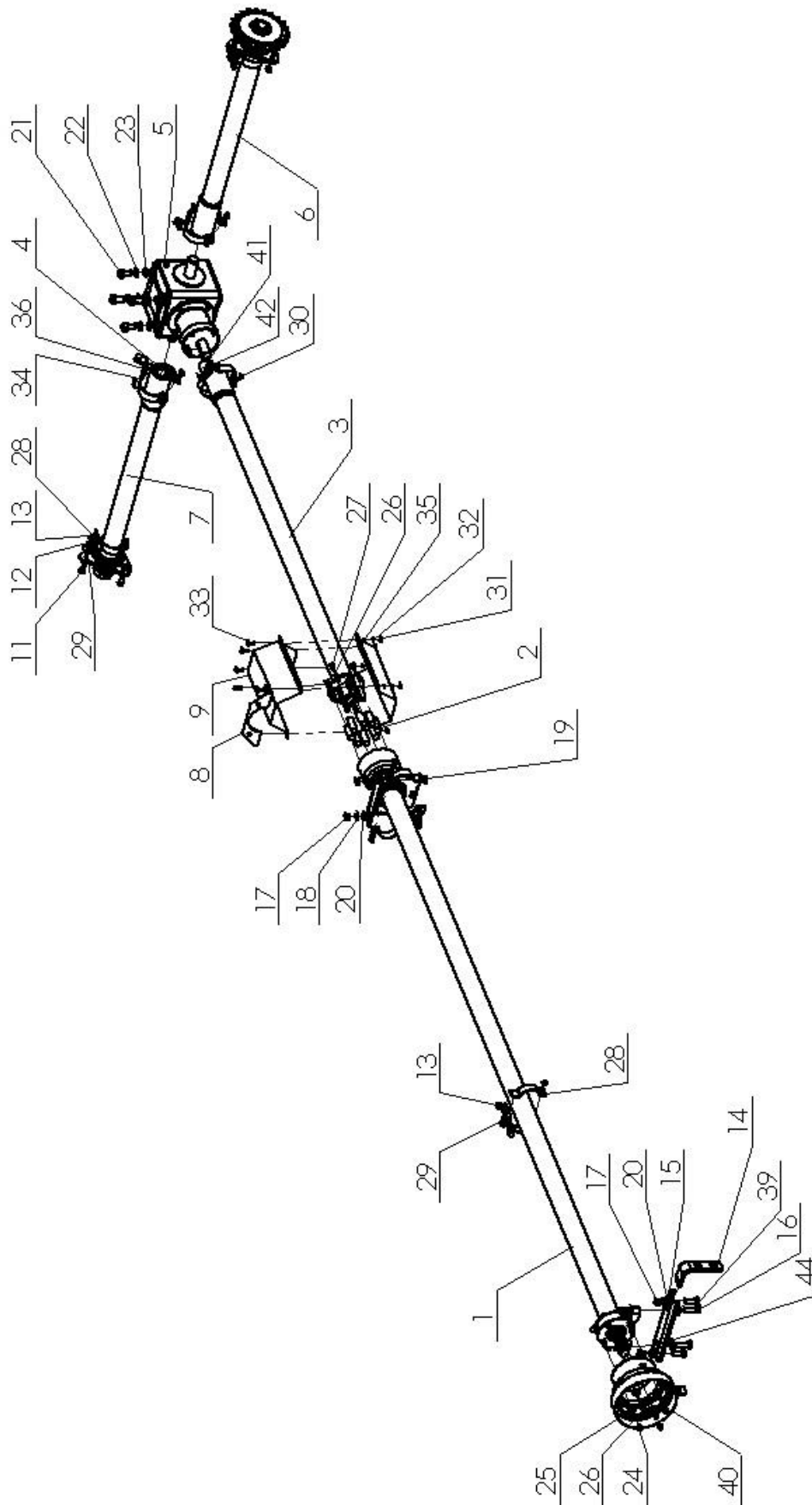
Table 4 Braked driving axle



Tab. 4

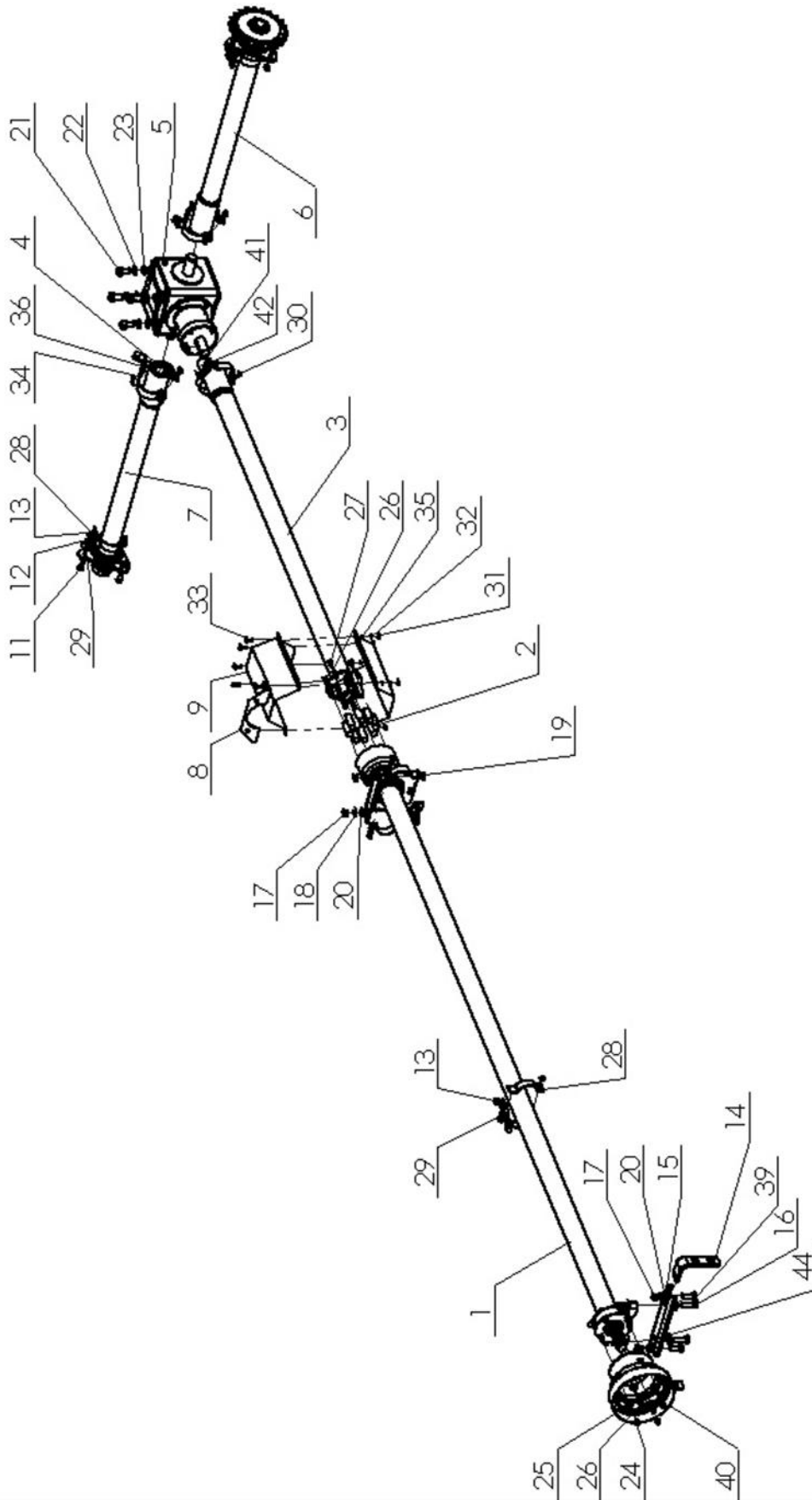
No.	Specification	Number	Amount
1	ATW axle	2233/18.00.000/2	1
2	U-bolt	2219/00.00.002/0	4
3	M16-4-C nut	PN-86/M-82144	16

Table 5 Drive transmission system



Tab. 5

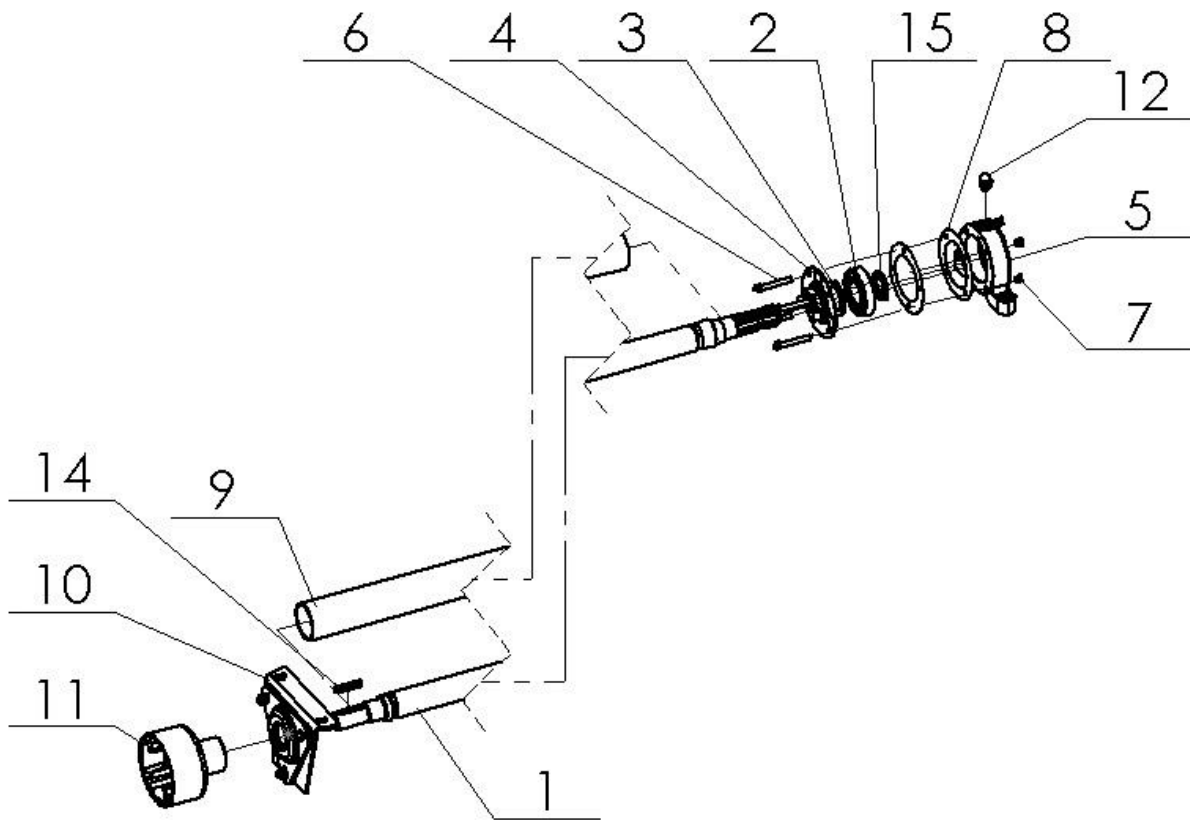
No.	Number	Specification	Amount
1	2219/05.11.000/2	Shaft 1 set	1
2	PN/C-94150	Insert	8
3	2219/05.14.000	Shaft 2 set	1
4	2219/73.00.005	Clamp II	6
5	Mobex MB 28.62	Transmission box MB 2862	1
6	2219/73.14.000	Shaft 4 set	1
7	2219/73.15.000	Shaft 5 set	1
8	2221/06.00.400	Guard bracket	1
9	2221/06.08.000	Guard set	1
10	2221/06.08.001	Guard	1
11	PN-85/M-82105	M10x30 8.8 screw	7
12	PN-77/M-82008	Spring washer 10.2	7
13	PN-86/M-82144	M10 nut	7
14	2233/05.00.001	Bearing bracket	2
15	2219/18.00.003/1	Attachment channel-bar	1
16	PN-85/M-82101	M12x45 8.8 B screw	2
17	PN-86/M-82144	M12 nut	6
18	PN-77/M-82008	Spring Washer 12,2	6
19	PN-85/M-82101	M12x30 8.8 B screw	2
20	PN-78/M-82005	Washer 13	4
21	PN-85/M-82101	M16x30 8.8 B screw	4
22	PN-77/M-82008	Spring washer 16.3	4
23	PN-85/M-82005	Washer 17	4
24	PN-86/M-82144	M8 nut	11
25	PN-59/M-82030	Round washer 8,5	4
26	PN-77/M-82008	Spring washer 8.2	16
27	PN-85/M-82105	M8x16 screw	4
28	2219/05.00.009	Clamp	8
29	2219/05.00.005/0	Guard bracket	5



Tab. 5 ctd.

30	PN-85/M-82105	M8x25-8.8 Screw	7
31	PN-86/M-82144	M6 Nut	6
32	PN-77/M-82008	Spring washer 6.1	6
33	PN-85/M-82105	M6x20 8.8 B screw	6
34	2219/05.00.004/0	Guard bracket	2
35	PN-77/M-82005	Washer 6.4	6
36	PN-70/M-85005	Parallel key A10x8x50	2
37	PN-70/M-85005	Parallel key A8x7x50	1
38	2208/03.01.026/0	Felt ring	1
39	PN-85/M-82105	M12x35-8.8 Screw	2
40	Ośłona WPM 41 701	PTO shaft guard	1
41	PN-59/M-82005	Round washer 8,4	1
42	PN-85/M-82105	M8x20-8,8-B Screw	1
43	PN-85/M-82101	Pressing screw M8x15 N	2
44	PN-77/M-82030	Washer 13	2

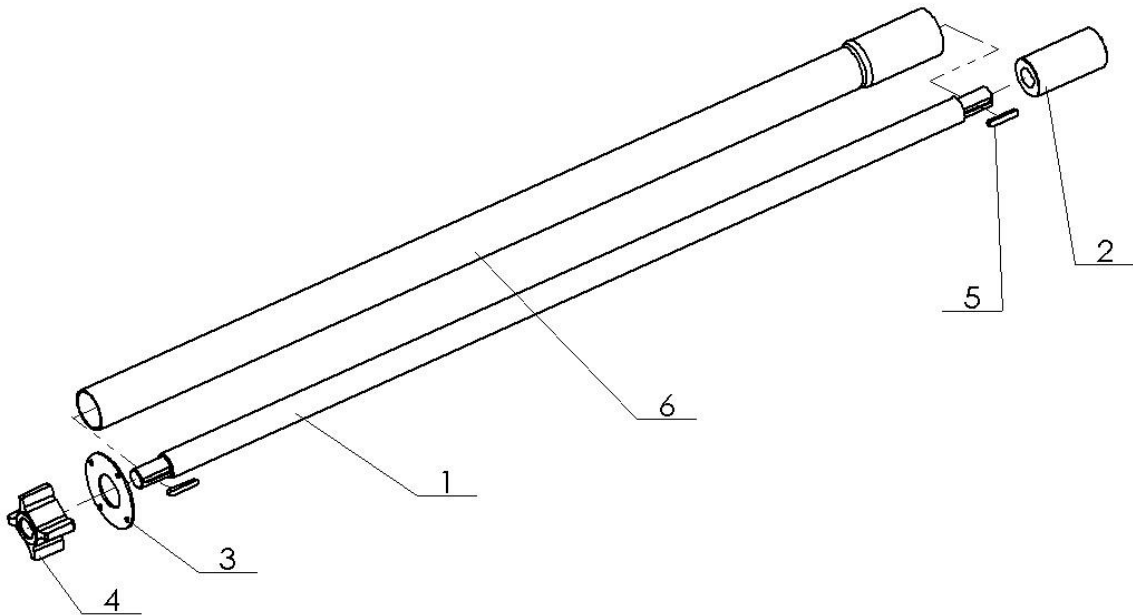
Table 6 Shaft 1 set



Tab. 6

No.	Number	Specification	Amount
1	2219/05.11.010/1	Shaft 1	1
2	PN-86/M-86260	Ball bearing 6208	1
3	2208/03.00.013/0	Felt ring no. 10	1
4	2213/02.12.030	Bearing cover 3	1
5	2213/02.11.001	Bearing housing	1
6	PN-85/M-82101	M8x60 screw	4
7	PN-86/M-82144	M8 nut	4
8	2219/18.00.006	Bearing seal	2
9	2219/05.11.001	Tube guard	1
10	2219/05.13.000	Shaft suspension	1
11	2213/02.00.015/0	Attachment	1
12	PN-76/M-86002	M10 grease fitting	1
13	2213/02.11.020	Bearing cover 1	1
14	PN-70/M-85005	Parallel key A8x7x50	1
15	2208/03.01.026/0	Felt ring	1

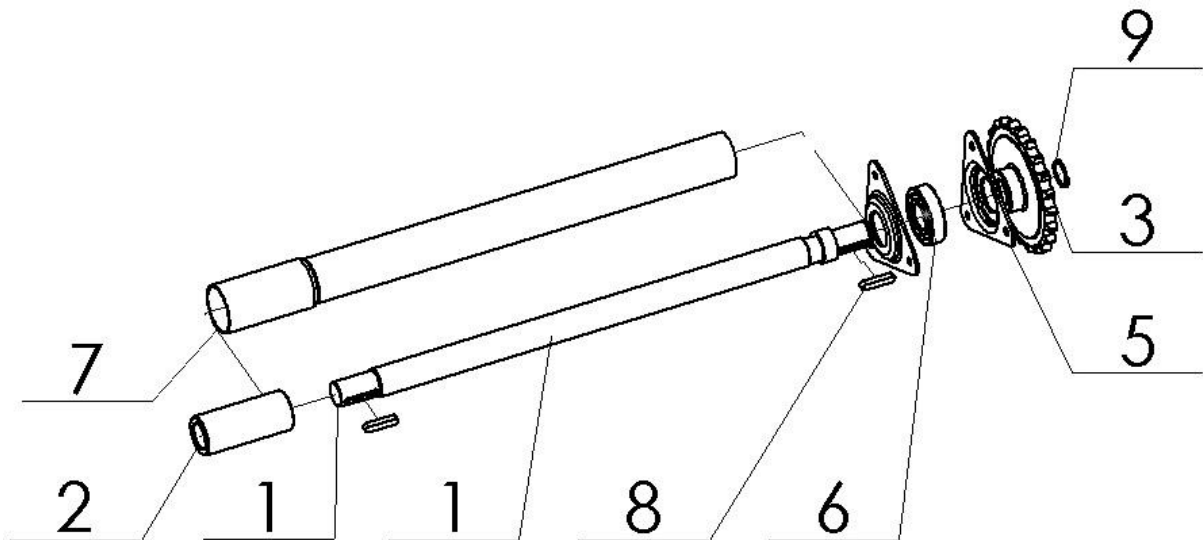
Table 7 Shaft 2 set



Tab. 7

No.	Number	Specification	Amount
1	2219/05.14.001	Shaft II	1
2	2213/02.00.012/0	Sleeve	1
3	2213/02.00.013/0	Cover	1
4	2213/02.00.016/0	Insert	1
5	PN-70/M-85005	Parallel key A8x7x50	2
6	2219/05.14.002	Pipe guard	1

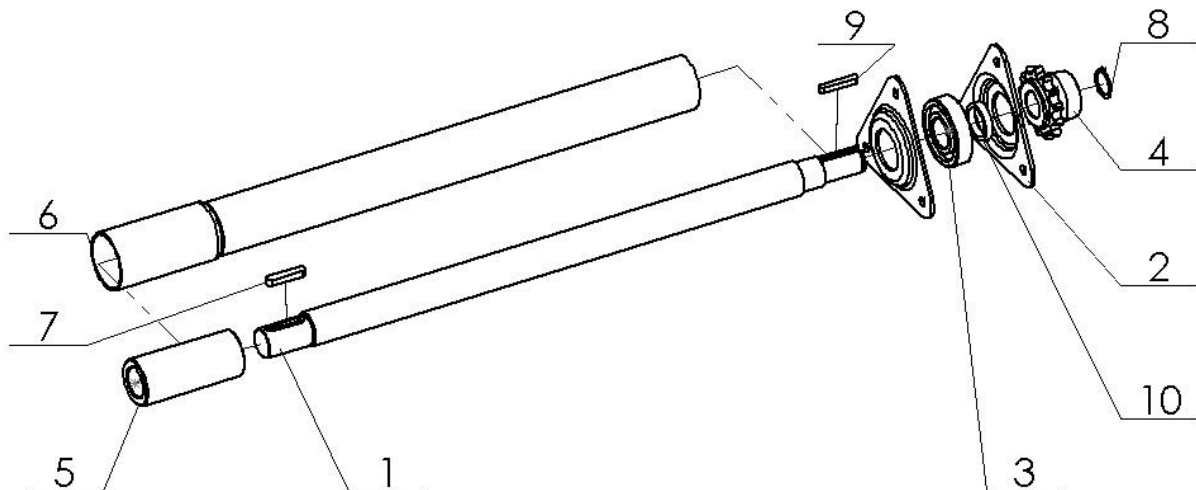
Table 8 Shaft 4 set



Tab. 8

No.	Number	Specification	Amount
1	2213/02.14.001	Shaft IV	1
2	2213/02.14.002	Sleeve II	1
3	2213/02.14.003	Chain wheel Z-22	1
4	2213/02.14.004	Sleeve	1
5	2219/05.00.003/0	Bearing housing	2
6	PN-86/M-86260	Ball bearing 6307 2RS	1
7	2219/73.14.001	Guard II	1
8	PN-70/M-85005	Parallel key 10x8x50	2
9	PN-81/M-85111	Mounting ring of spring Z35	1

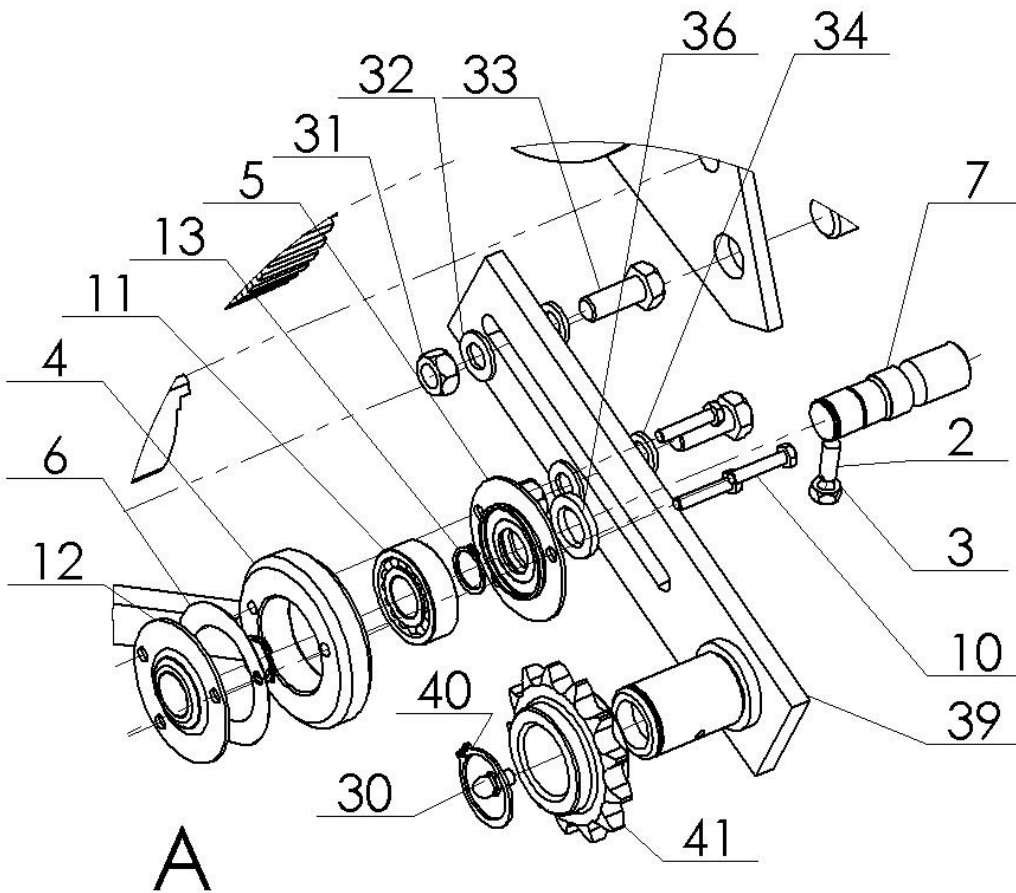
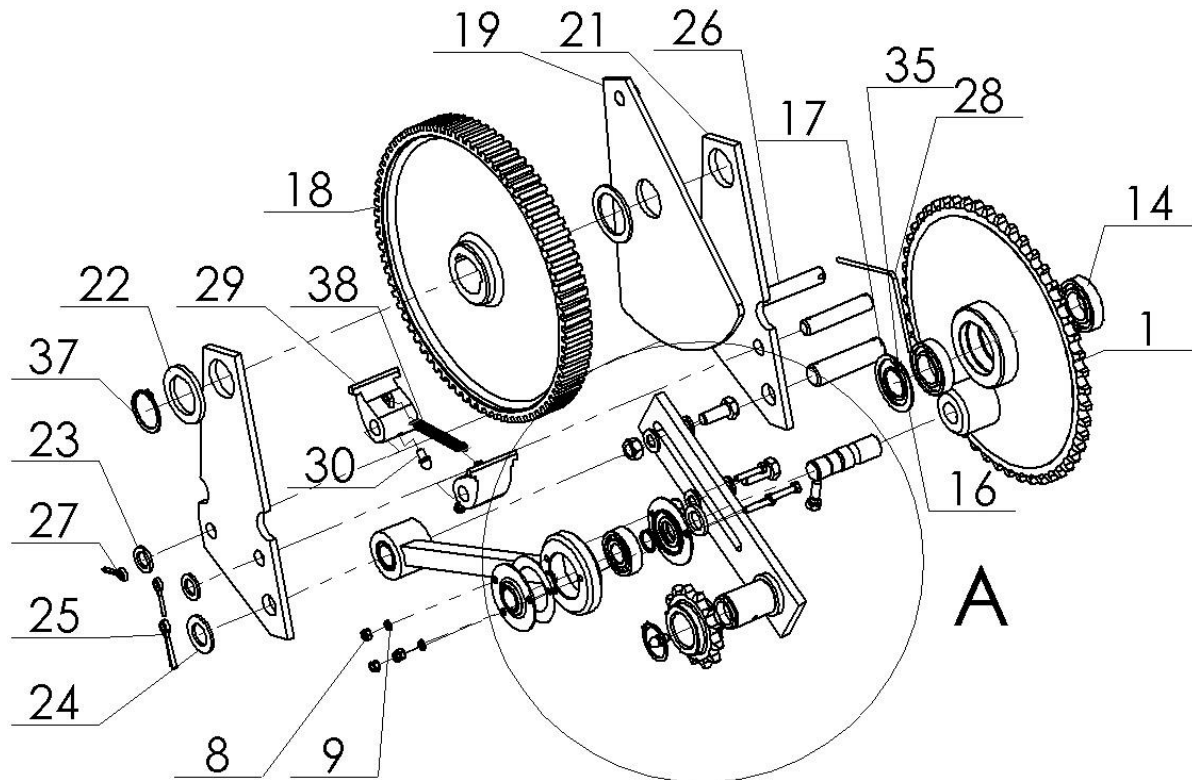
Table 9 Shaft 5 set



Tab. 9

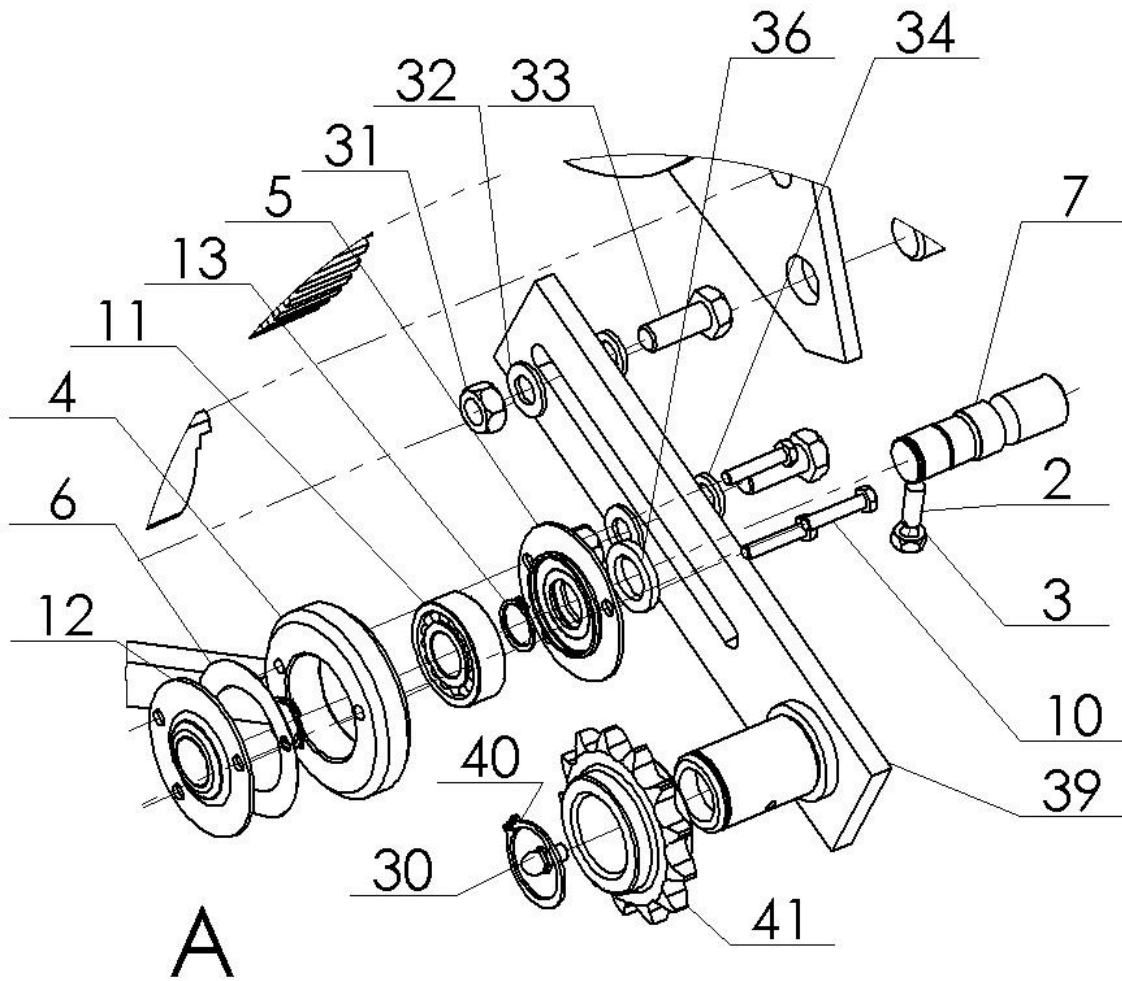
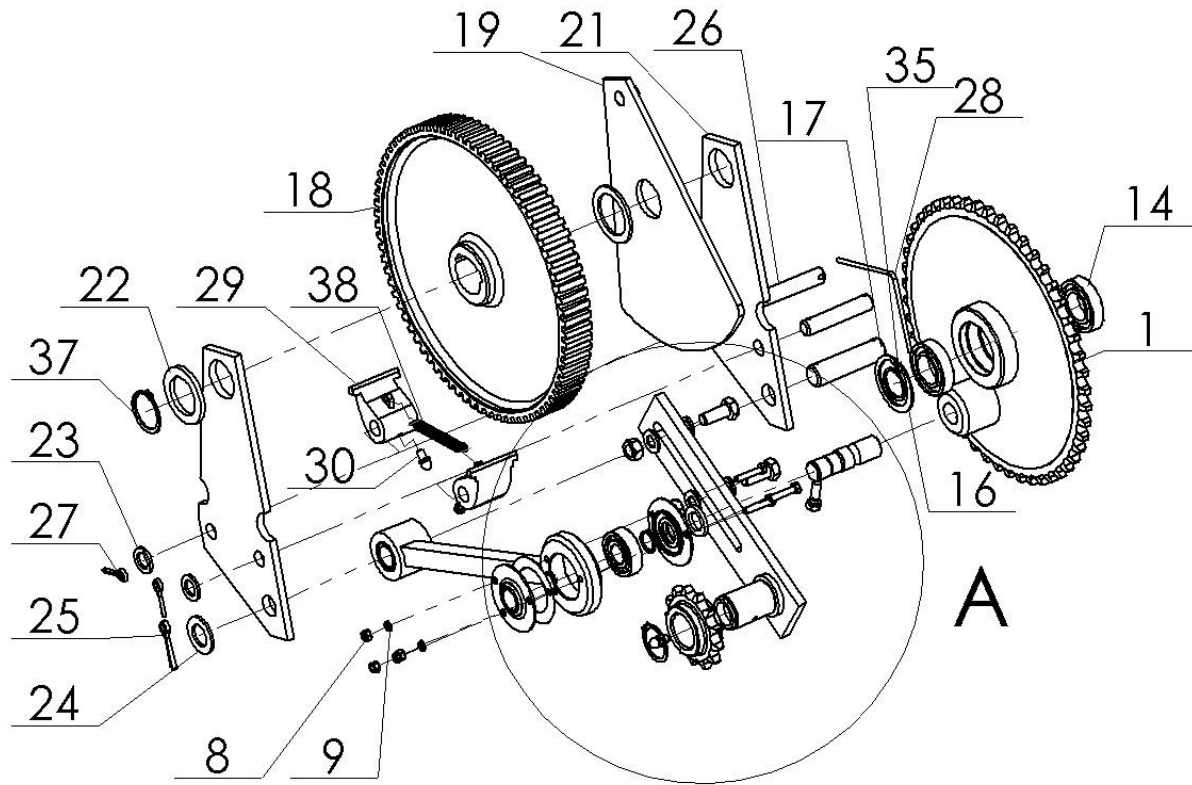
No.	Number	Specification	Amount
1	2213/02.15.001	Shaft V	1
2	2219/05.00.003/0	Bearing housing	2
3	PN-86/M-86260	Ball bearing 6307 2RS	1
4	2219/06.00.008/1	Chain wheel	1
5	2213/02.14.002	Sleeve II	1
6	2219/73.14.001	Guard II	1
7	PN-70/M-85005	Parallel key A10x8x50	1
8	PN-81/M-85111	Mounting ring Z 30x1.5	1
9	PN-70/M-85005	Parallel key A8x7x50	1
10	2219/73.15.001	Sleeve	1

Table 10 Conveyor drive



Tab. 10

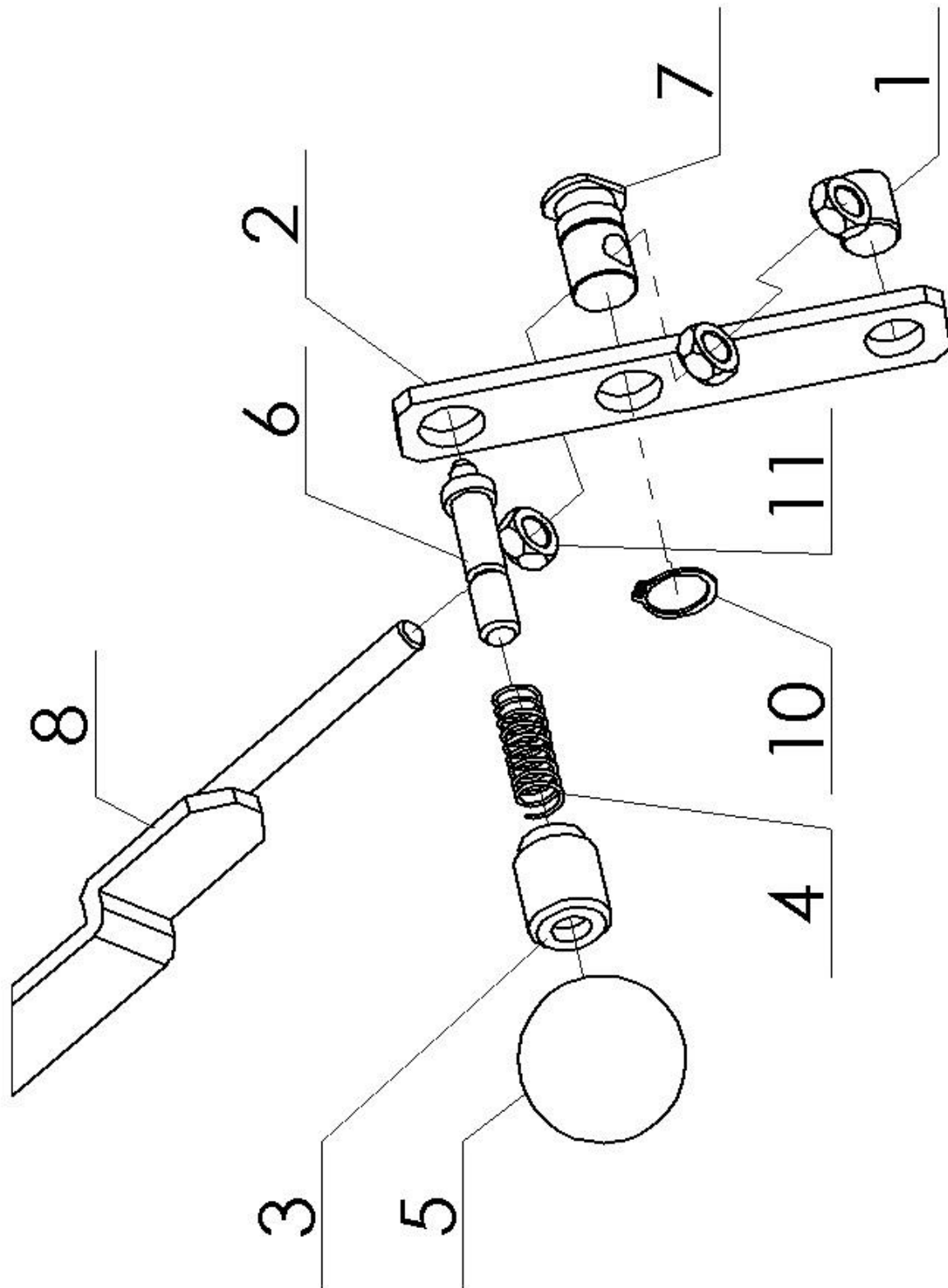
No.	Number	Specification	Amount
1	2219/06.09.000	Chain wheel	1
2	PN-85/M-82101	Pressing screw M8x25 N	1
3	PN-86/M-82144	M8 nut	1
4	2219/06.07.000	Crankshaft	1
5	2219/06.06.000	Cover 1	1
6	2219/06.00.020	Seal	1
7	2219/06.00.016/1	Pin	1
8	PN-86/M-82144	M6 Nut	3
9	PN-77/M-82008	Spring washer 6.1	3
10	PN-85/M-82101	M6x30 8.8 B screw	3
11	PN-86/M-86260	Ball bearing 1204	1
12	2219/06.06.001	Cover 2	1
13	PN-81/M-85111	Mounting ring of spring 20x1,2	2
14	PN-86/M-86260	Ball bearing 6006 2RS	2
15	2219/06.00.017	Distance sleeve	1
16	PN-81/M-85111	Mounting ring W55	2
17	2219/06.00.007/0	Crankshaft pin	1
18	2219/06.08.000	Ratchet-wheel	1
19	2219/08.01.000/0	Disk set	1
20	2213/11.00.006/7	Washer	1
21	2219/06.00.002/0	Rocker	2
22	2208/04.00.002/0	Washer 1	1
23	PN-85/M-82005	Washer 17	2
24	PN-77/M-82008	Washer 23	1
25	PN-82/M-85023	S-Zn 5x36 clip pin	1
26	2219/06.00.006/0	Latch pin	2
27	PN-82/M-85023	S-Zn 4x25 clip pin	2



Tab. 10 ctd.

28	2219/06.00.005/0	Securing rod	1
29	2219/06.00.004/0	Latch	2
30	PN76/M-86002	M6 grease fitting	3
31	PN-86/M-82144	M12 nut	2
32	PN-78/M-82005	Washer 13	2
33	PN-85/M-82101	M12x30 8.8 B screw	2
34	PN-77/M-82008	Spring washer 12.2	2
35	PN-81/M-85111	Mounting ring Z 30x1.5	1
36	2214/06.00.005/0	Felt ring	1
37	PN-81/M-85111	Z40 retaining circlip ring	1
38	2219/06.00.009/0	Tensioning spring	1
39	2213/01.23.100/7	Tensioner lever set	1
40	PN-81/M-85111	Mounting ring of spring Z35	1
41	2213/01.23.001/7	Tensioner pulley	1

Table 11 Conveyor control lever



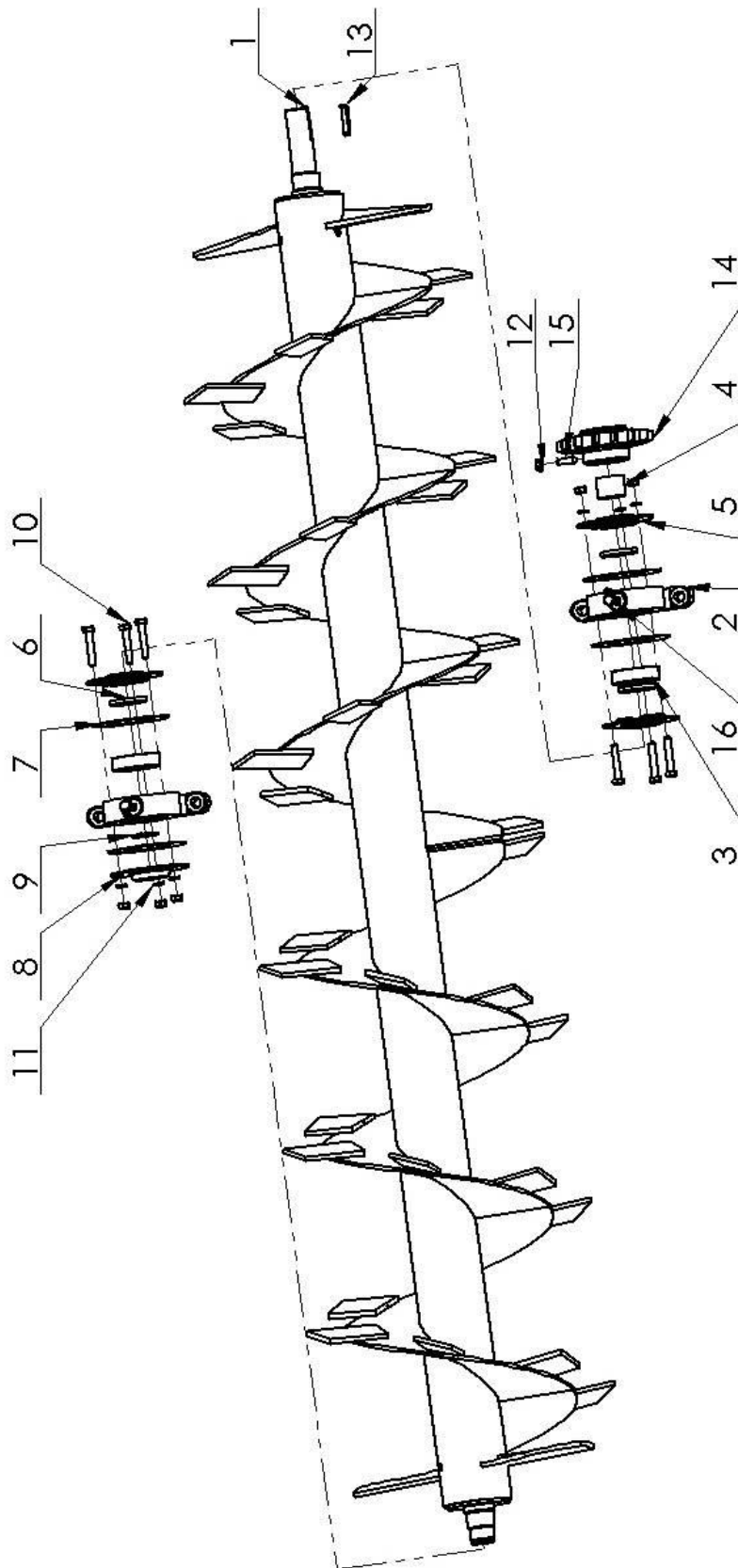
Tab. 11

No.	Number	Specification	Amount
1	2213/20.06.002/0	Pin	1
2	2219/08.09.001/0	Lever	1
3	2219/08.09.002/0	Sleeve	1
4	2219/08.09.003/0	Spring	1
5	2219/08.00.005/0	Spherical knob	1
6	2219/08.09.004/0	Pin	1
7	2219/08.00.007/0	Pin	1
8	2235/08.01.000/3	Arm set	1
9	PN-81/M-85111	Mounting ring of spring Z 15	1
10	PN-81/M-85111	Mounting ring of spring 20x1,2	1
11	PN-86/M-82144	M10 nut	3

Tab. 12

No.	Number	Specification	Amount
1	2235/20.01.100	Right bracket set	1
2	2235/25.01.300/2	Top beam	1
3	2235/20.01.200	Left bracket set	1
4	PN-86/M-82144	M12 nut	14
5	PN-77/M-82008	Spring Washer 12,2	14
6	PN-85/M-82101	M12x30 8.8 B screw	4
7	2235/10.01.000	Adapter spreader	1
8	2219/79.02.000	Bottom adapter spreader	1
9	2219/79.00.100	Bottom hitch set	2
10	2235/25.00.001/2	Lower beam	1
11	2219/25.00.001/0	Side guard 2	1
12	PN-85/M-82105	M8x20-8,8-B Screw	2
13	PN-77/M-82008	Spring washer 8.2	2
14	PN-86/M-82144	M8 nut	2
15	PN-85/M-82101	M12x45 8.8 B screw	8
16	PN-85/M-82105	M12x25 screw	2
17	PN-77/M-82005	Washer 13	2

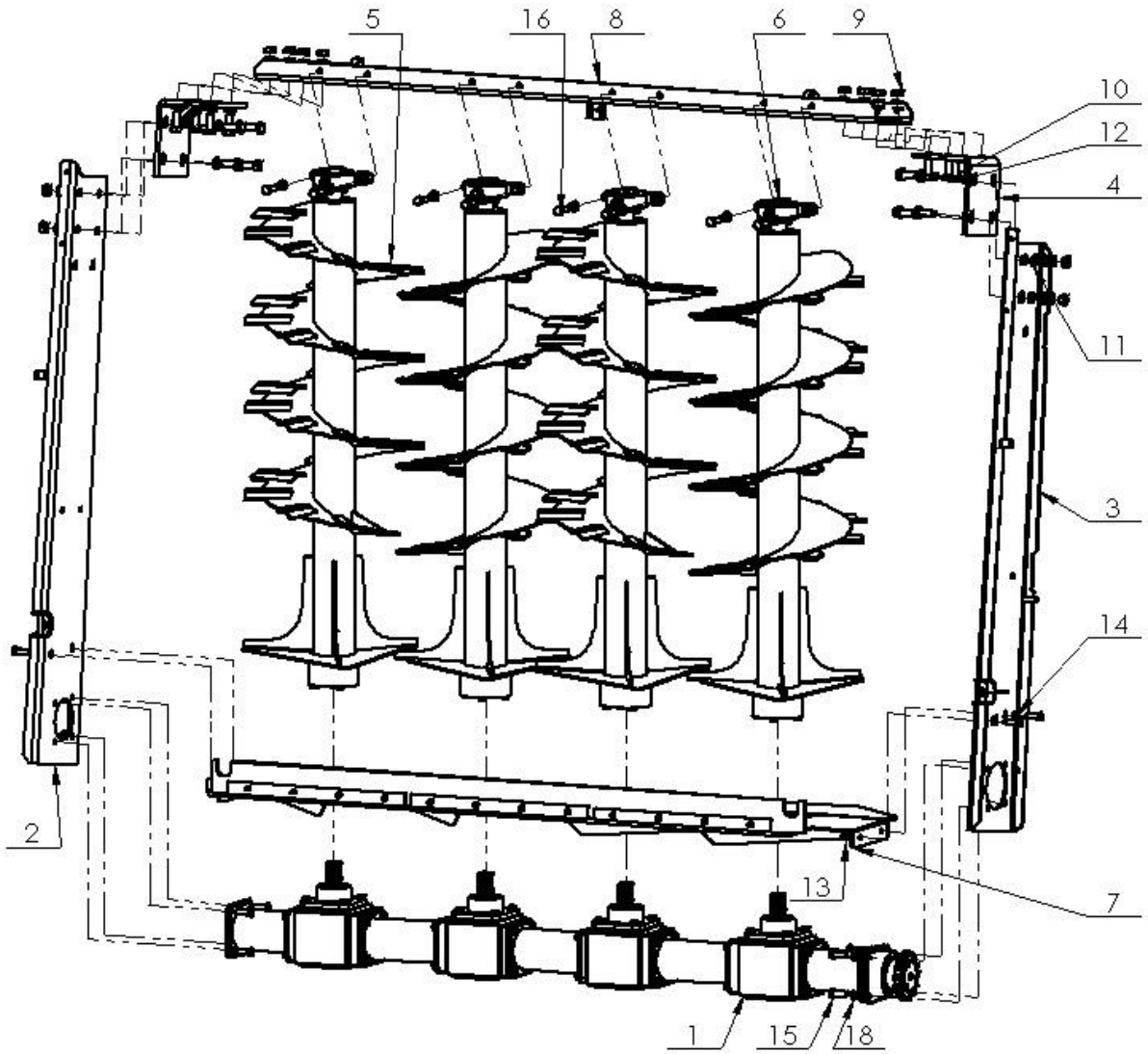
Table 13 Spreader of adapter A2HS



Tab. 13

No.	Number	Specification	Amount
1	2235/10.01.100	Spreader drum	1
2	2208/03.00.005/0	Bearing housing 1	2
3	PN-86/M-86260	Bearing 1206	2
4	2219/25.01.002	Distance sleeve	1
5	2208/05.01.200/0	Left bearing cover	3
6	2208/03.01.026/0	Felt ring	3
7	2208/03.00.007/0	Bearing seal 1	4
8	2208/05.01.301/0	Cover without hole	1
9	PN-81/M-85111	Mounting ring Z 30x1.5	1
10	PN-85/M-82101	M8x45 8.8 B screw	6
11	PN-77/M-82008	Spring washer 8.2	6
12	PN-86/M-82144	M8 nut	7
13	PN-70/M-85005	Parallel key A8x7x40	1
14	2219/25.01.001 (z14)	Toothed chain wheel	1
15	PN-85/M-82101	Pressing screw M8x25 N	1

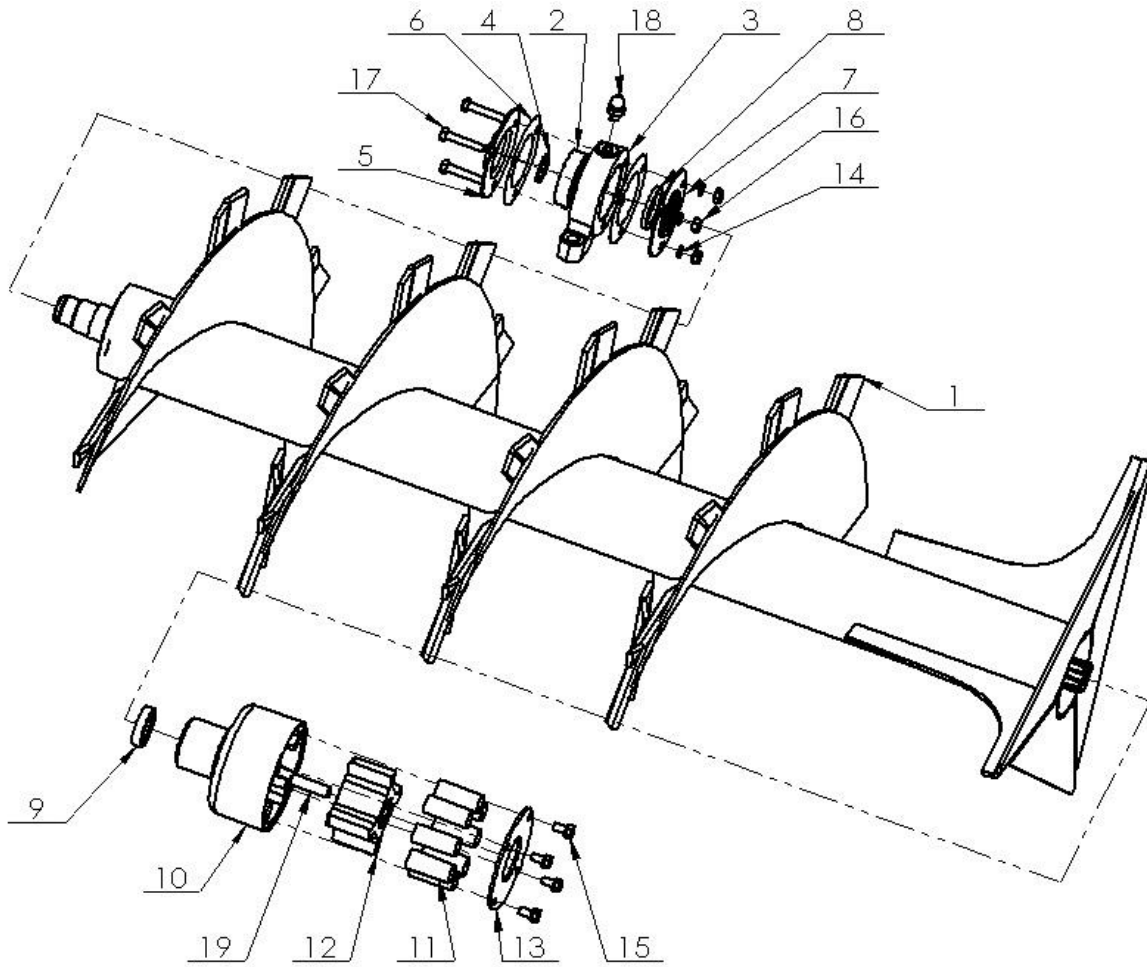
Table 14 Adapter A4VS-P



Tab. 14

No.	Number	Specification	Amount
1	Napęd MB-05.04	Gearbox	1
2	2233/37.20.000	Right bracket set	1
3	2233/37.10.000	Left bracket set	1
4	2221/21.09.000	Bracket set	2
5	2233/37.40.000	Levorotating drum set	2
6	2233/37.50.000	Dextrorotating drum set	2
7	2233/37.60.000	Counter set	1
8	2233/37.30.000	Welded top beam	1
9	PN86/M-82144	M16 nut	16
10	PN-85/M-82005	Washer 17	32
11	PN-77/M-82008	Spring washer 16.3	16
12	PN-85/M-82105	M16x40 8.8 screw	16
13	PN-85/M-82175	M12 Self-locking nut	12
14	PN-78/M-82005	Washer 13	24
15	PN-85/M-82105	M12x35-8.8 Screw	12
16	PN-85/M-82101	M12x45 8.8 B screw	8
17	PN-86/M-82144	M12 nut	4
18	PN-77/M-82008	Spring Washer 12,2	8

Table 15 A4VS-P drum

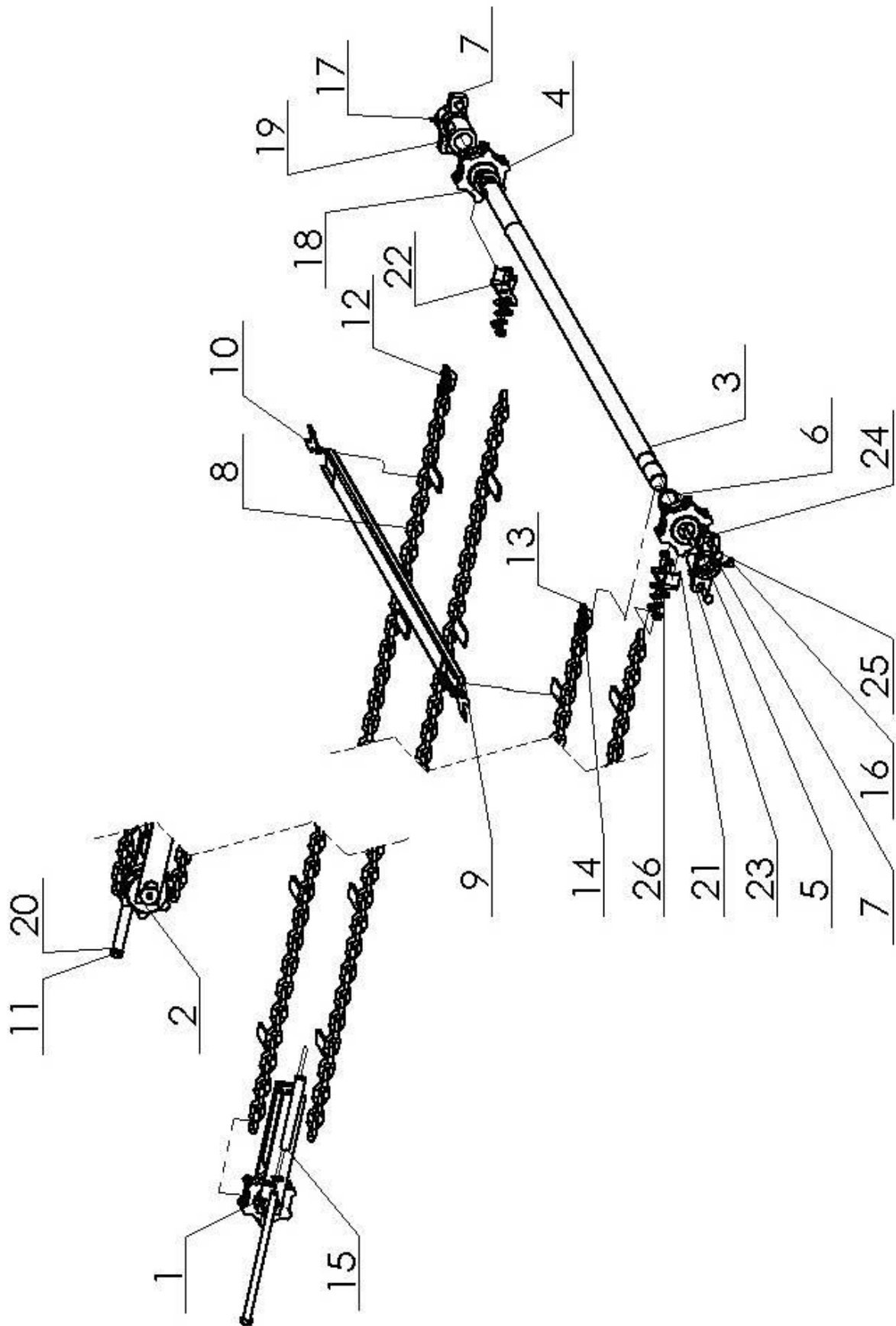


Tab. 15

No.	Number	Specification	Amount
1	2233/37.40.100	Levorotating drum ⁽¹⁾	1
2	PN-86/M-86260	Bearing 1206	1
3	2208/03.00.005/0	Bearing housing 1	1
4	PN-81/M-85111	Mounting ring Z 30x1.5	1
5	2208/05.01.301/0	Cover without hole	1
6	2208/03.00.007/0	Bearing seal 1	2
7	2208/05.01.200/0	Left bearing cover	1
8	2208/03.01.026/0	Felt ring	1
9	2233/37.40.001	Distance sleeve	1
10	2219/36.20.005	Attachment	1
11	PN/C-94150	Insert	8
12	2219/36.20.006	Insert	1
13	2213/02.00.013/0	Cover	1
14	PN-77/M-82008	Spring washer 8.2	7
15	PN-85/M-82105	M8x16 screw	4
16	PN-86/M-82144	M8 nut	3
17	PN-85/M-82101	M8x45 8.8 B screw	3
18	PN-76/M-86002	M10 grease fitting	1
19	2221/21.00.002	Peg	1

⁽¹⁾ - Dextrorotating drum differs in part no. 1, and its number is: 2233/37.50.100

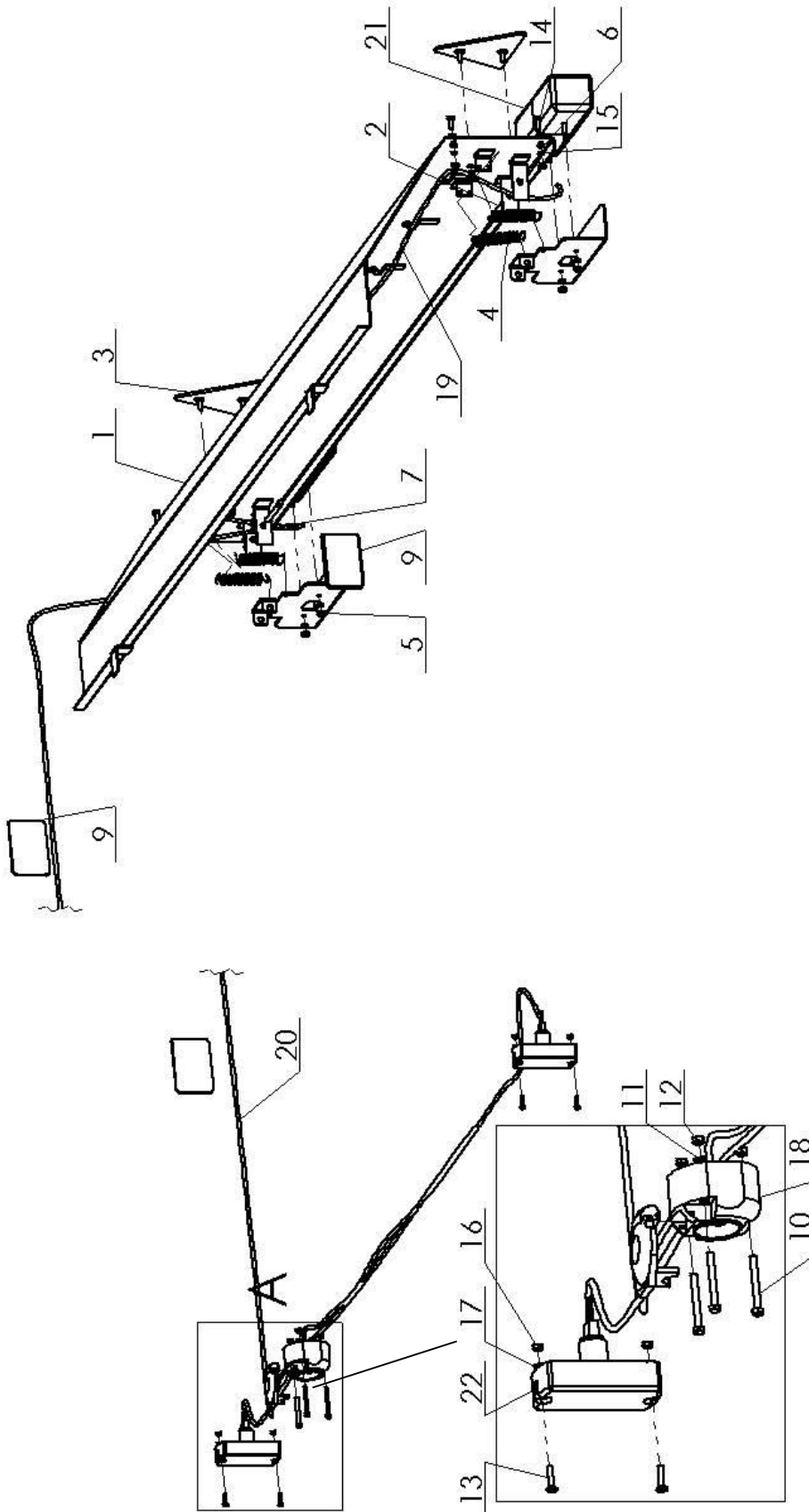
Table 16 Conveyor



Tab. 16

No.	Number	Specification	Amount
1	2221/07.05.000	Left tensioner	1
2	2221/07.06.000	Right tensioner	1
3	2219/07.07.001/1	Rear shaft	1
4	2219/07.00.007/1	Rear socket wheel	2
5	PN-70/M-85005	Parallel key A 12x8x56	2
6	PN-81/M-85111	Z40 retaining circlip ring	1
7	2213/12.05.000	Bearing set	2
8	2219-07.05.000	Chain with attachments	40
9	2219/07.00.221/2	Conveyor strip	1
10	2219/07.00.222/1	Strip cover	2
11	PN-85/M-82005	Washer 17	2
12	2213/12.00.003/0	Coupling link	1
13	2213/12.00.004/0	Cap	2
14	2213/12.00.005/7	Link protection	2
15	2221/07.00.007	Guard L=180	2
16	PN-76/M-86002	M10 grease fitting - 90 degrees	1
17	PN-76/M-86002	M10 grease fitting	1
18	2208/04.00.002/0	Washer 1	1
19	2213/12.00.205	Exterior sleeve	1
20	PN-85/M-82101	M16x320 8.8-B screw	2
21	2221/07.00.008	Scraper	2
22	PN-85/M-82105	M12x25 screw	4
23	PN-86/M-82144	M12 nut	8
24	PN-77/M-82008	Spring Washer 12,2	8
25	PN-85/M-82101	M12x45 8.8 B screw	4
26	PN-77/M-82030	Washer 13	4

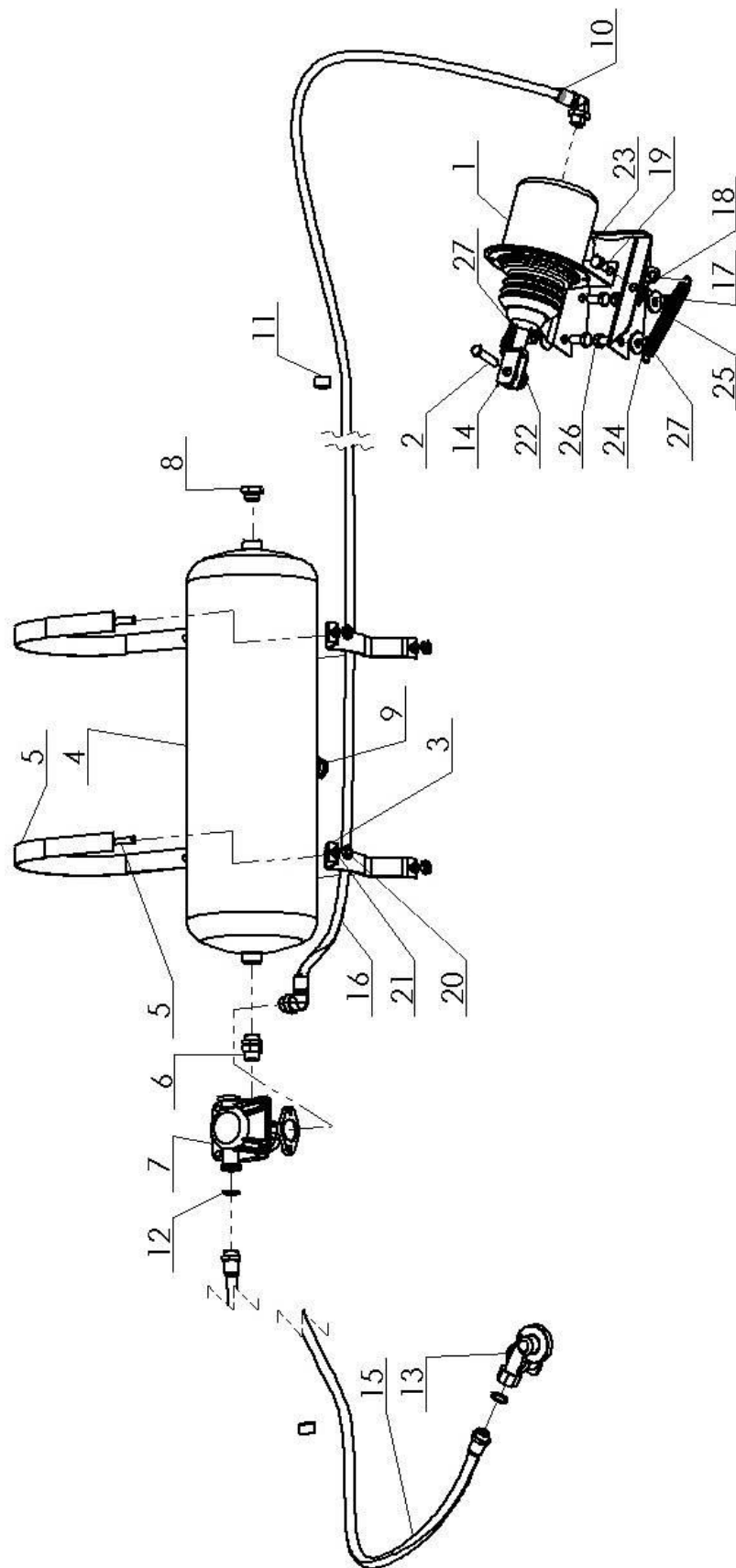
Table 17 Electrical installation



Tab. 17

No.	Number	Specification	Amount
1	2235/04.01.100/1	Rear guard set	1
2	2235/04.01.002	Rod	2
3	PN-90/S-73100	Reflective triangular red device UT-150S	2
4	2219/06.00.009/0	Tensioning spring	4
5	PN-86/M-82144	M6 nut	12
6	PN-77/M-82005	Washer 6.4	12
7	PN-76/M-82001	S-Zn 2.5x15 clip pin	2
8	2235/04.01.001/2	Bracket	2
9	UP-40R-ŻÓŁTE	Reflective yellow device	4
10	PN-85/M-82101	M5x45 screw	3
11	PN-77/M-82008	Round washer 5,3	3
12	PN-86/M-82144	M5 nut	3
13	PN-85/M-82101	M4x20 screw	4
14	PN-85/M-82101	M6x16 screw	4
15	PN-77/M-82008	Spring washer 6.1	8
16	PN-86/M-82144	M5 nut	4
17	PN-77/M-82008	Round washer 4,3	4
18	PN-83/S-76055	Plug-in socket 12N	1
19	2235/04.10.002	Rear bundle	1
20	2235/04.10.001	Central bundle	1
21	LT 20.00.00	Lamp LT20	2
22	LP 170	Front outline lamp LP 170	2

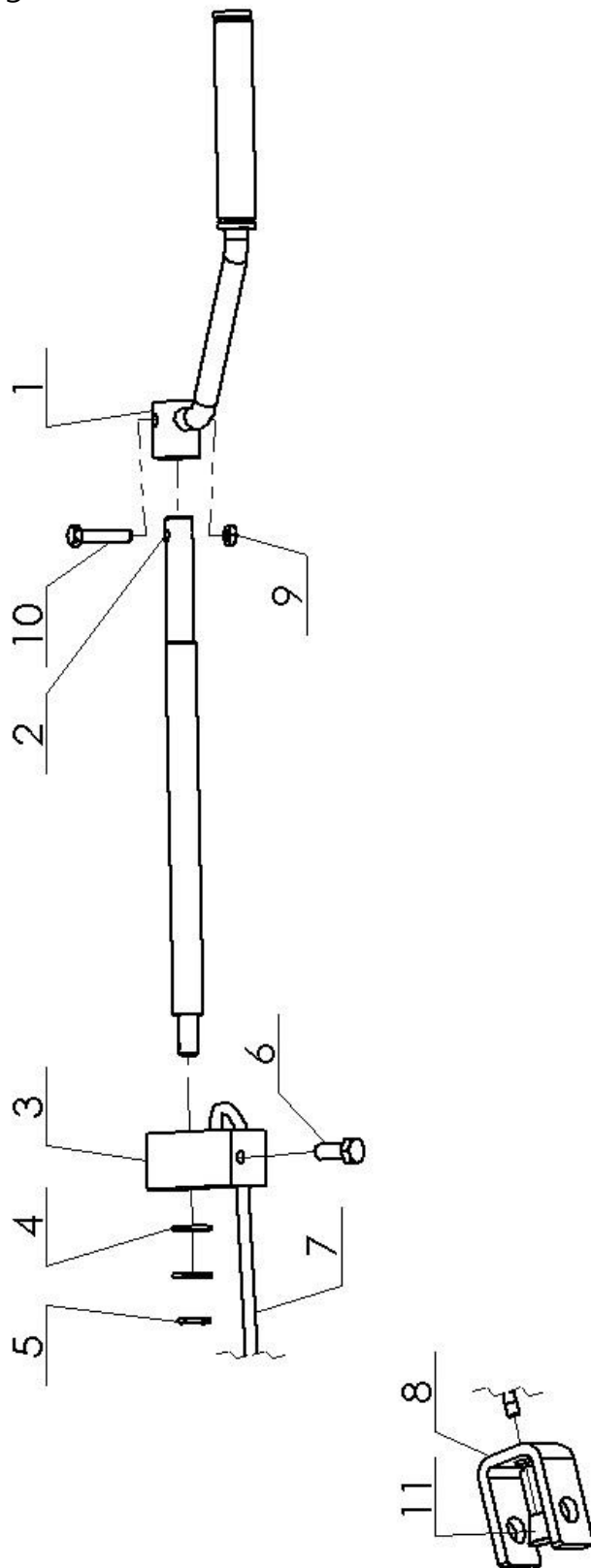
Table 18 1-hose pneumatic brake system



Tab. 18

No.	Number	Specification	Amount
1	1029-690-001-00	Pneumatic actuator X53-35-00-A	1
2	2208/02.00.018/0	Piston rod pin	1
3	2219/15.00.002/0	Tank bracket	2
4	20L 510.00.000	Air tank 20 ZP,20,00,00	1
5	2219/15.01.000/0	Tank clamp	2
6	2 703 52215B	Reduction M22x1.5 - 2 703 52215B	1
7	0876-692-000-10	Trailer control valve 44.11.011.0	1
8	S1110038000000	Cap A M22x1.5 BN-71-1902-21	1
9	S1110002003800	ZS/M22 draining valve	1
10	1209022155	Elbow M22x1.5 - 2810	2
11	2219/15.00.003	Rubber sleeve	2
12	U c 1/2	Metal-rubber seal 21x26x2	2
13	87.30.010.0	Hose connector	1
14	PN-78/M-82001	Pin S-Zn 3,2x25	1
15	L-5000 M22x1,5/M22x1,5	Red spiral pneumatic hose	1
16	Tekalan fi 15x1,5	Actuator feed hose L-2840	1
17	PN-86/M-82144	M12 nut	2
18	PN-77/M-82008	Spring Washer 12,2	2
19	PN-85/M-82105	M12x20 screw	2
20	PN-86/M-82144	M10 nut	4
21	PN-77/M-82008	Spring washer 10.2	4
22	PN-78/M-82005	Round washer 15	1
23	131/09.04.000	Cylinder base	1
24	PN-85/M-82175	M12 Self-locking nut	4
25	PN-78/M-82030	Enlarged washer 13	4
26	PN-85/M-82105	M12x25 screw	4
27	7104/08.00.001	Spring	2

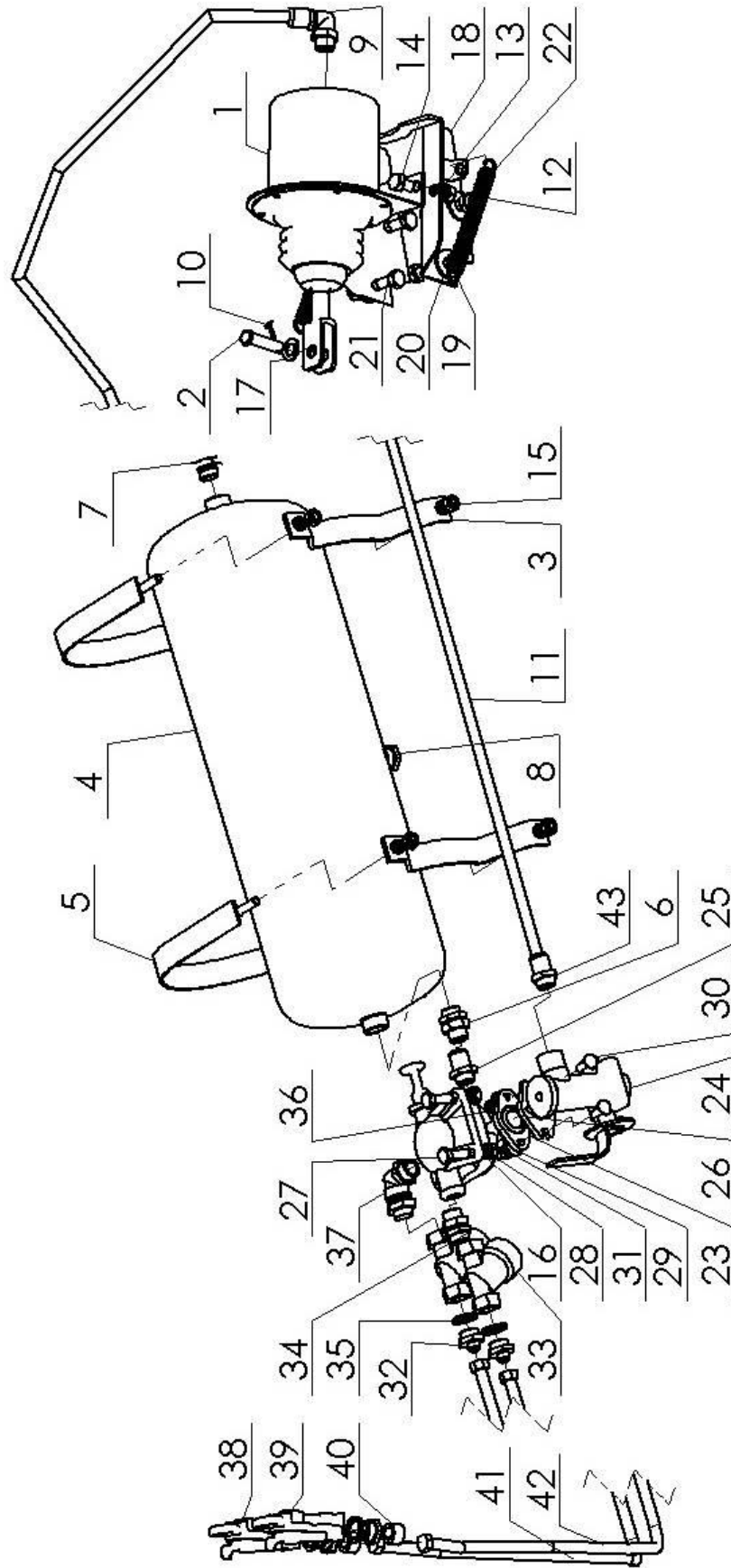
Table 19 Parking brake



Tab. 19

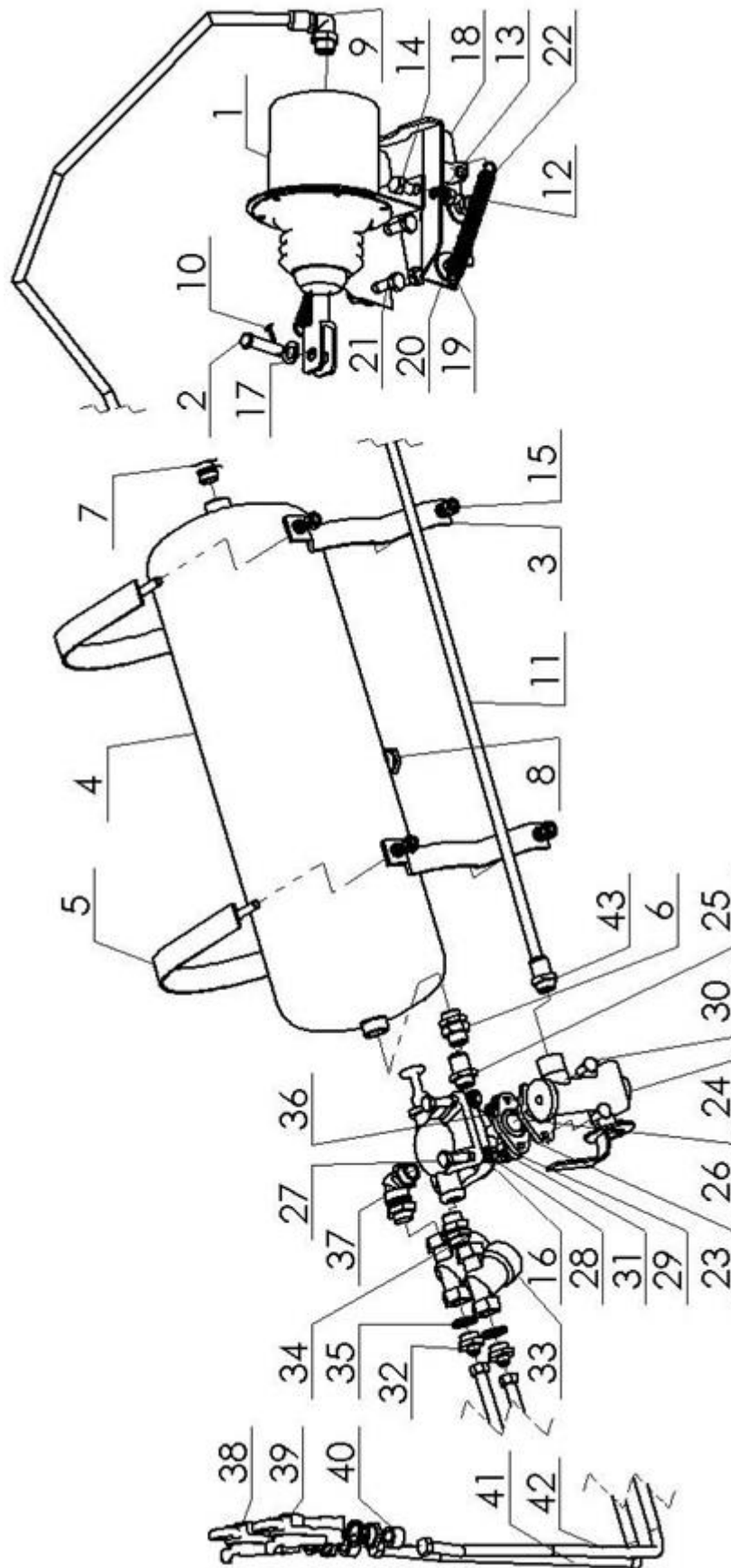
No.	Number	Specification	Amount
1	2213/03.23.000	Crank	1
2	2213/03.00.017/7	Screw	1
3	2213/03.00.018/7	Special nut	1
4	PN-78/M-82005	Round washer 10,5	2
5	PN-78/M-82001	S-Zn 2,5x20 Pin	1
6	PN-85/M-82105	M8x20-8,8-B Screw	1
7	2219/09.01.000	Cord dia. 5.5T6X19X170-2/S-IIG160	1
8	2208/02.00.017/0	Parking brake clamping ring	1
9	PN-86/M-82144	Self-locking nut M6-8-B	1
10	PN-85/M-82101	M6x30 8.8 B screw	1
11	2208/02.00.102/0	Sleeve	1

Table 20 2-hose pneumatic brake system



Tab. 20

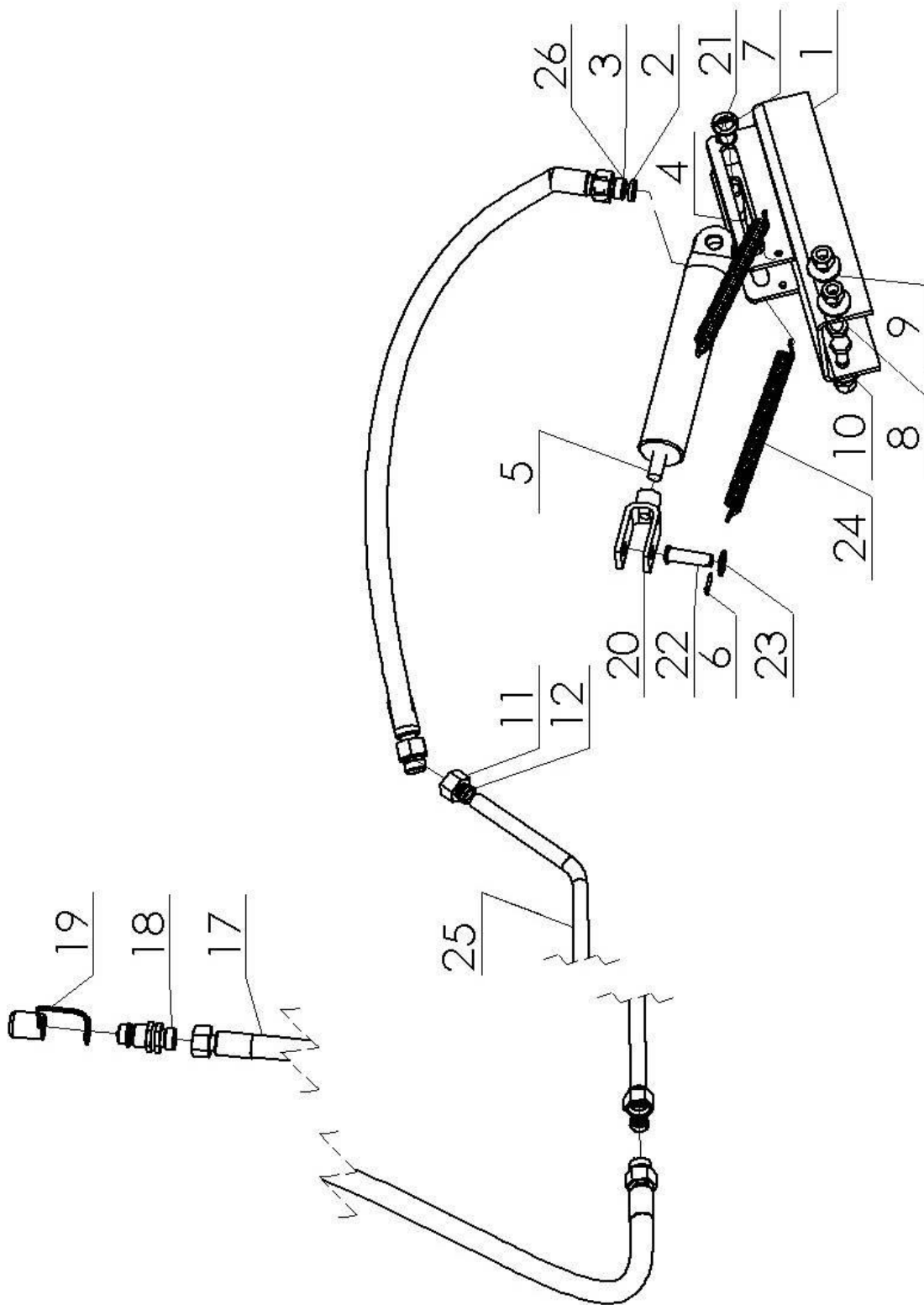
No.	Number	Specification	Amount
1	1029-690-001-00	Pneumatic actuator X53-35-00-A	1
2	2208/02.00.018/0	Piston rod pin	1
3	2219/15.00.002/0	Tank bracket	2
4	20L 510.00.000	Air tank 20 ZP,20,00,00	1
5	2219/15.01.000/0	Tank clamp	2
6	2 703 52215B	Reduction M22x1.5 - 2 703 52215B	1
7	S1110038000000	Cap A M22x1.5 BN-71-1902-21	1
8	S1110002003800	ZS/M22 draining valve	1
9	1209022155	Elbow M22x1.5 - 2810	1
10	PN-78/M-82001	Pin S-Zn 3,2x25	1
11	Tekalan fi 15x1,5	Actuator feed hose L-2840	1
12	PN-86/M-82144	M12 nut	2
13	PN-77/M-82008	Spring Washer 12,2	2
14	PN-85/M-82105	M12x20 screw	2
15	PN-86/M-82144	M10 nut	4
16	PN-77/M-82008	Spring washer 10.2	6
17	PN-78/M-82005	Round washer 15	1
18	131/09.04.000	Cylinder base	1
19	PN-85/M-82175	M12 Self-locking nut	4
20	PN-78/M-82030	Enlarged washer 13	4
21	PN-85/M-82105	M12x25 screw	4
22	7104/08.00.001	Spring	2
23	44.12.010.0	HZS-4 Control valve	1
24	61.11.013.0	Braking force regulator	1
25	S1110015003800	ZŁW-15/M22 simple connector	2
26	PN-64/M-73093	22x5 sealing ring	1
27	PN-85/M-82105	M10x30 8.8 Screw	2
28	PN-86/M-82144	Nut M10	2
29	PN-59/M-82030	Round washer 8,5	2
30	PN-73/M-82406	M8x25 screw	2
31	PN-77/M-82008	Spring washer Ø 8.2	2
32	270352215B	Reduction M22x1.5/M22x1.5/F16x1.5	4



Tab. 20 ctd.

33	81.10.010.0	Inline filter	2
34	S1113838007800	Hose connector with nut and seal ZłW-M22/M22d+NUM M22	1
35	U c 1/2	Metal-rubber seal 1/2 22/30x3	4
36	PN-86/M-82144	M8 nut - 8 - B	2
37	S111003838000	Elbow connector ZłW-15/M22/M22-KOL	1
38	87.10.020.0	A1 hose connector	1
39	87.10.030.0	A2 hose connector	1
40	2219/15.00.003	Rubber sleeve	3
41	-	Red spiral connector hose M22X1.5 L=5000	1
42	-	Red spiral connector hose M22X1.5 L=5000	1
43	120902215	Straight M22x1.5 - 2800	1

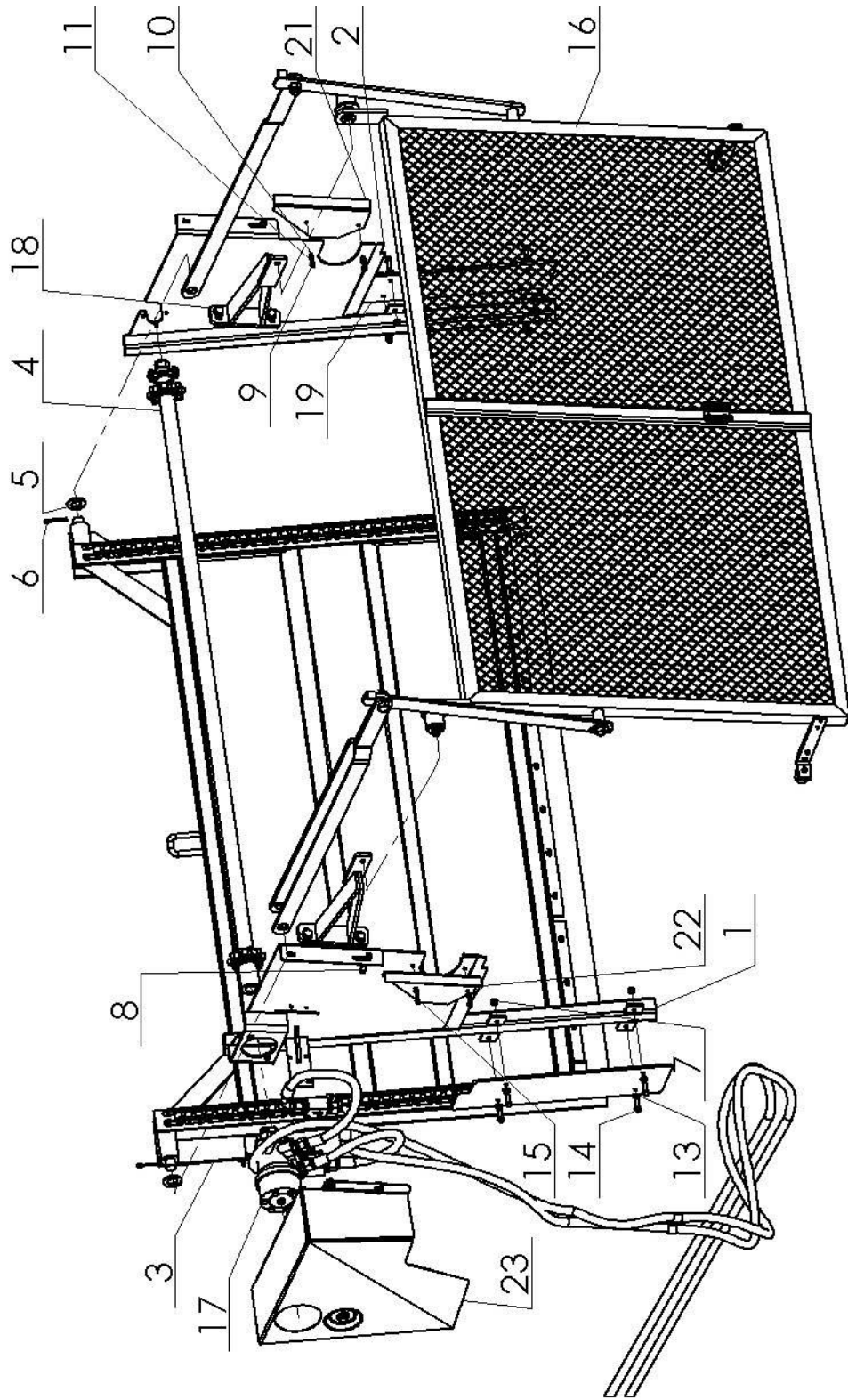
Table 21 Hydraulic brake installation



Tab. 21

No.	Number	Specification	Amount
1	131/15.02.000	Actuator bracket	1
2	7074/04.00.003	Washer I	1
3	7079/12.00.002	Connector	1
4	7076/36.00.006/1	Pin	1
5	CN2E-18-25/140Z	Hydraulic plunger cylinder	1
6	PN-78/M-82001	Pin S-Zn 3,2x25	3
7	PN-85/M-82005	Washer n 17	2
8	PN-85/M-82105	M12x25 8.8 B screw	4
9	PN-77/M-82030	Ø13 washer	4
10	PN-86/M-82175	Nut with polyamide insert M12 - 8 - B	4
11	PN-65/M-73139	16-13 Nut	2
12	PN-65/M-73137	16-13 Cutting ring	2
13	7074/04.00.006	Clamp II	1
14	PN-86/M-82144	M8 nut - 8 - B	1
15	PN-77/M-82008	Spring washer Ø 8.2	1
16	PN-85/M-82105	M8x20-8,8-B Screw	1
17	BN-81/1903-01	AB-16-2000-13/13 Hose	1
18	ISO 7241-A	ISO-12,5 (16L) Plug cover	1
19	ISO 7241-B	ISO-12,5 Plug cover	1
20	131/15.00.100	Clamp set.	1
21	PN-81/M-85111	External mounting ring Z16	2
22	7105/13.00.001	Pin	1
23	PN-78/M-82005	Round washer 15	1
24	7104/08.00.001	Spring	2
25	2219/44.00.001	Tube L=3000	1
26	BN-87/1903-01	AB-16-550-13/13 Hose	1

Table 22 Hydraulic wall



Tab. 22

No.	Number	Specification	Amount
1	2233/35.05.000	Left guide	1
2	2233/35.06.000	Right guide	1
3	2233/35.01.100	Rear wall set	1
4	2233/35.02.000	Guide shaft set	1
5	PN-78/M-82005	Round washer 25	2
6	PN-82/M-85023	S-Zn 4x40 clip pin	2
7	PN-85/M-82175	Nut with polymide insert M8-8-B	10
8	PN-85/M-82105	M8x20-8,8-B Screw	2
9	PN-86/M-82144	M6 nut	8
10	PN-77/M-82005	Washer 6.4	16
11	PN-77/M-82008	Spring washer 6.1	8
12	PN-85/M-82101	M6x16 8.8 B screw	4
13	PN-59/M-82005	Round washer 8,4	8
14	PN-85/M-82105	M8x25-8.8 Screw	8
15	PN-85/M-82105	M6x20 8.8 B screw	4
16	2233/35.03.000	Rear guard set	1
17	2233/35.10.000	Hydraulic installation	1
18*	2233/35.11.000	Rear mesh bracket set	2
19	2233/35.00.005	Plate	2
20	2233/35.00.006	Blind 2	2
21	2233/35.00.004	Blind	1
22	2233/35.00.003	Blind	1
23	2233/35.08.000	Guard set	1

* - With A4VS-P adapter in the case of the hydraulic wall

2233/76.00.500	Right bracket set	1
2233/76.00.400	Left bracket set	1

Table 23 Hydraulic installation for wall

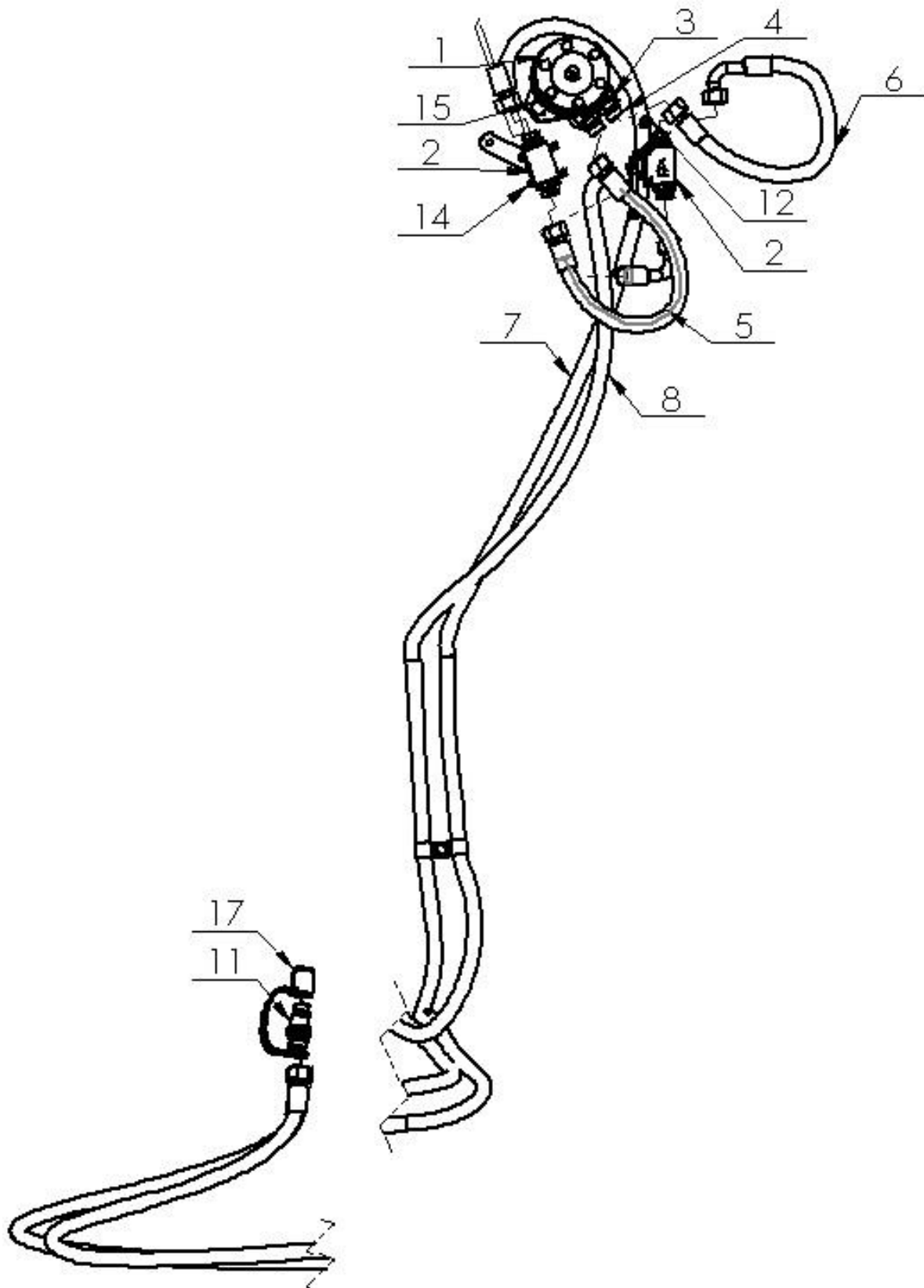
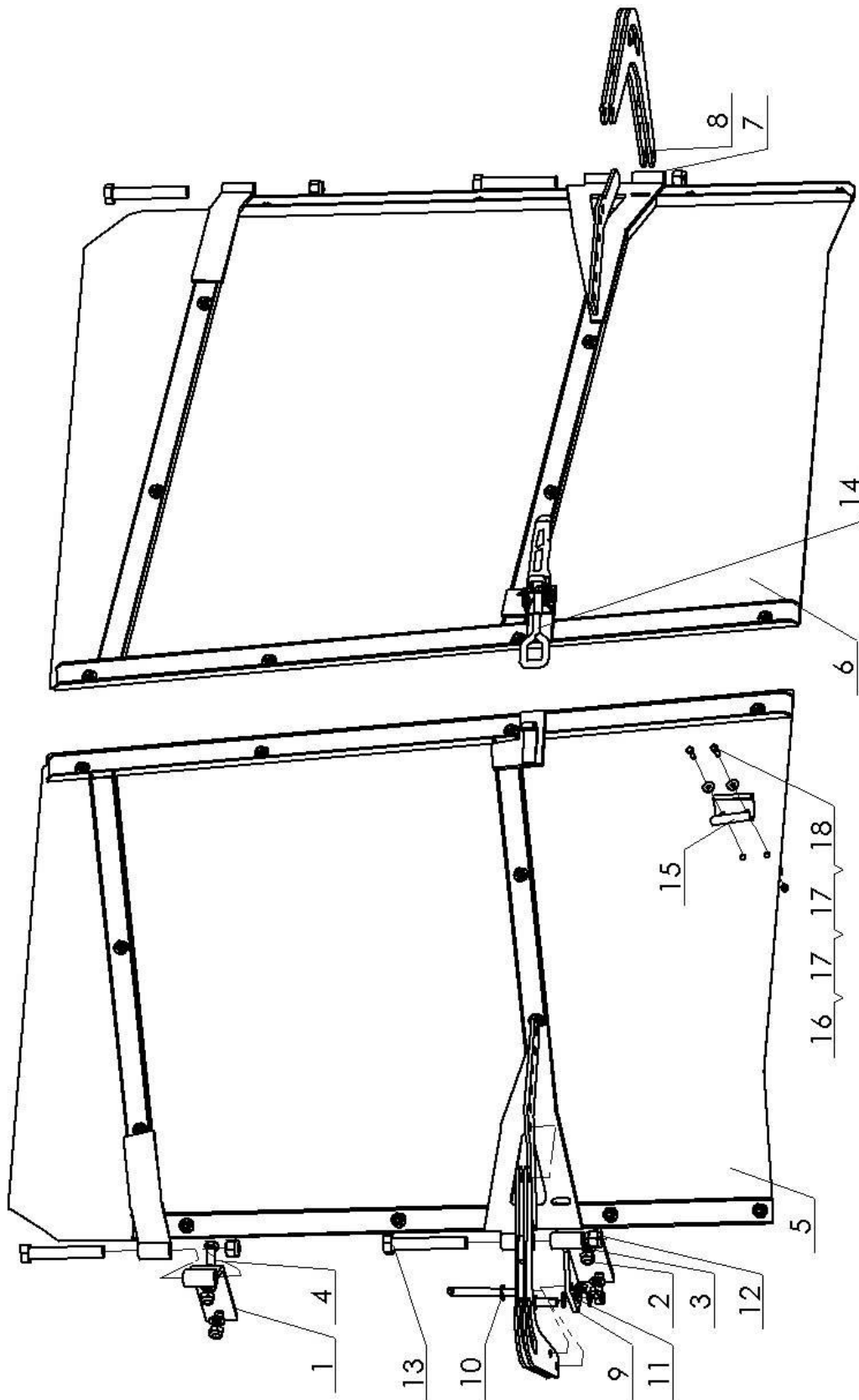


Table 23

No.	Number	Specification	Amount
1	IOW ALSG2 160	Hydraulic motor IOW ALSG2 160	1
2	HBKM-15L-456.01.120	Two-way hydraulic valve	2
3	B340-22730020	Metal rubber washer 22	2
4	ZN-140 BSP/M	Nypel M22x1.5	1
5	BN-81/1903-01	AA-16-400-13/13 Hose	1
6	BN-81/1903-01	Flexible hose AA-13/ 90-deg angle-400-13	1
7	BN-81/1903-01	Flexible hose AA 13-7500-13	1
8	BN-81/1903-01	Flexible hose AA-13/ 90-deg angle-7500-13	1
9	PN-85/M-82175	M8 nut with polyamide insert	1
10	PN-85/M-82105	M8x20-8,8-B Screw	1
11	ISO 7241-A	ISO-12,5 (16L) Plug cover	2
12	PN-86/M-82144	M6 nut	4
13	PN-77/M-82008	Spring washer 6.1	4
14	PN-85/M-82101	M6x50 screw	4
15	PN-85/M-82105	M12x35-8.8 Screw	2
16	PN-85/M-82175	M12 Self-locking nut	2
17	ISO 7241-B	ISO-12,5 Plug cover	2
18	2233/35.10.015	Gland	1

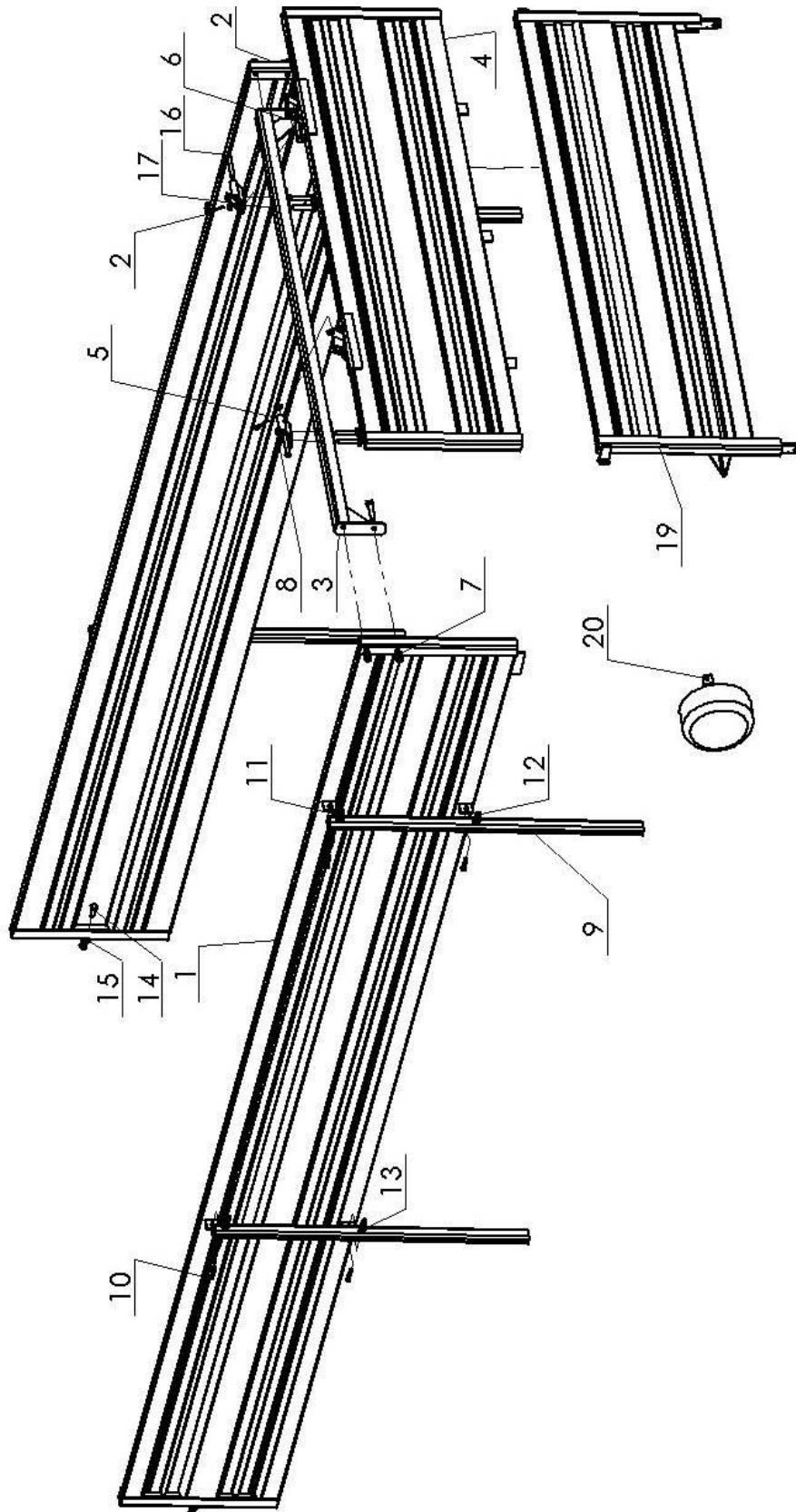
Table 24 Deflector



Tab. 24

No.	Number	Specification	Amount
1	2233/37.70.100	Upper hinge	2
2	PN-85/M-82175	Self-locking nut M12	10
3	PN-78/M-82005	Washer 13	20
4	PN-85/M-82105	M12x35-8.8 Screw	10
5	2233/37.70.400	Left guard	1
6	2233/37.70.500	Right guard	1
7	2233/37.70.300	Lower right hinge	1
8	2233/37.70.600	Guard arm	2
9	2233/37.70.200	Lower left hinge	1
10	2233/37.70.700	Pin	2
11	4P agricultural clip pin	Pin 4mm double-coil DIN 11024	2
12	ISO 7040	Self-locking high nut M16	4
13	PN-85/M-82105	M18x120 screw	4
14	ZB-15 V.3	Side latch	1
15	PN-93/S-73103	Handle	1
16	PN-86/M-82144	M6 nut	2
17	PN-77/M-82030	Washer 6.5	4
18	PN-85/M-82101	M6x20 8.8 B screw	2

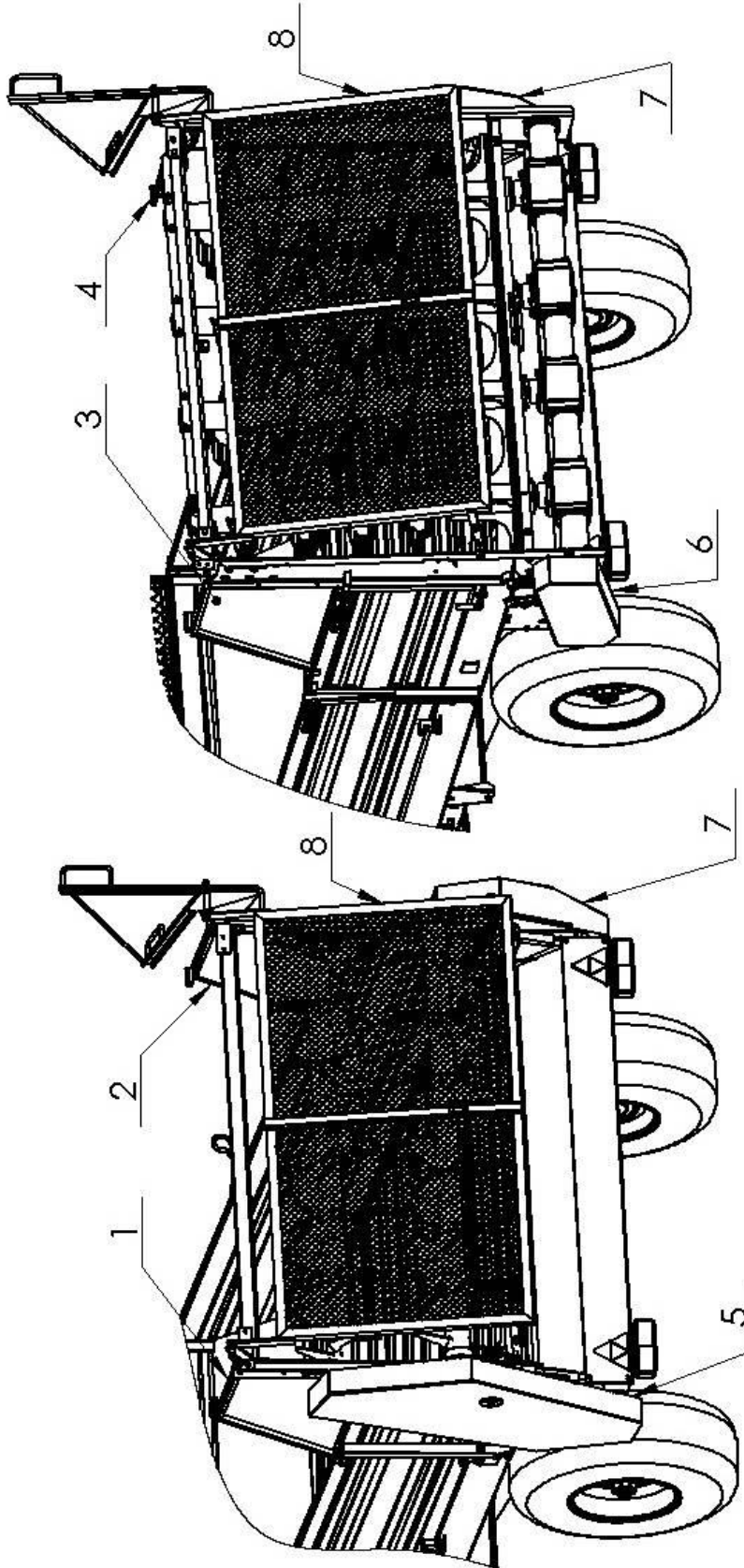
Table 25 500 extensions



Tab. 25

No.	Number	Specification	Amount
1	2235/30.02.000	Left extension	1
2	2235/30.01.000	Right extension	1
3	2235/30.04.000	Rear beam	1
4	2235/30.03.000	Rear extension	1
5	2213/17.10.000/0	Hinge eye	2
6	PN85/M-82101	M12x65 screw	8
7	PN-77/M-82008	Spring Washer 12,2	10
8	PN-86/M-82144	M12 nut	10
9	2235/30.00.001	Extension bracket	4
10	PN-85/M-82101	M8x45 8.8 B screw	8
11	PN-77/M-82008	Spring washer 8.2	8
12	PN-86/M-82144	M8 nut	8
13	PN-59/M-82030	Round washer 8,5	8
14	PN-85/M-82105	M12x35-8.8 Screw	2
15	PN-77/M-82030	Washer 13	2
16	2213/17.00.004/0	Special rivet IV	2
17	PN-78/M-82005	Round washer 10,5	2
18	PN-82/M-85023	S-Zn 4x40 clip pin	2
19	2235/30.05.000	Rear wall	1
20	2219/00.02.000/2	Drive wheel guard	1

Table 26 Guards



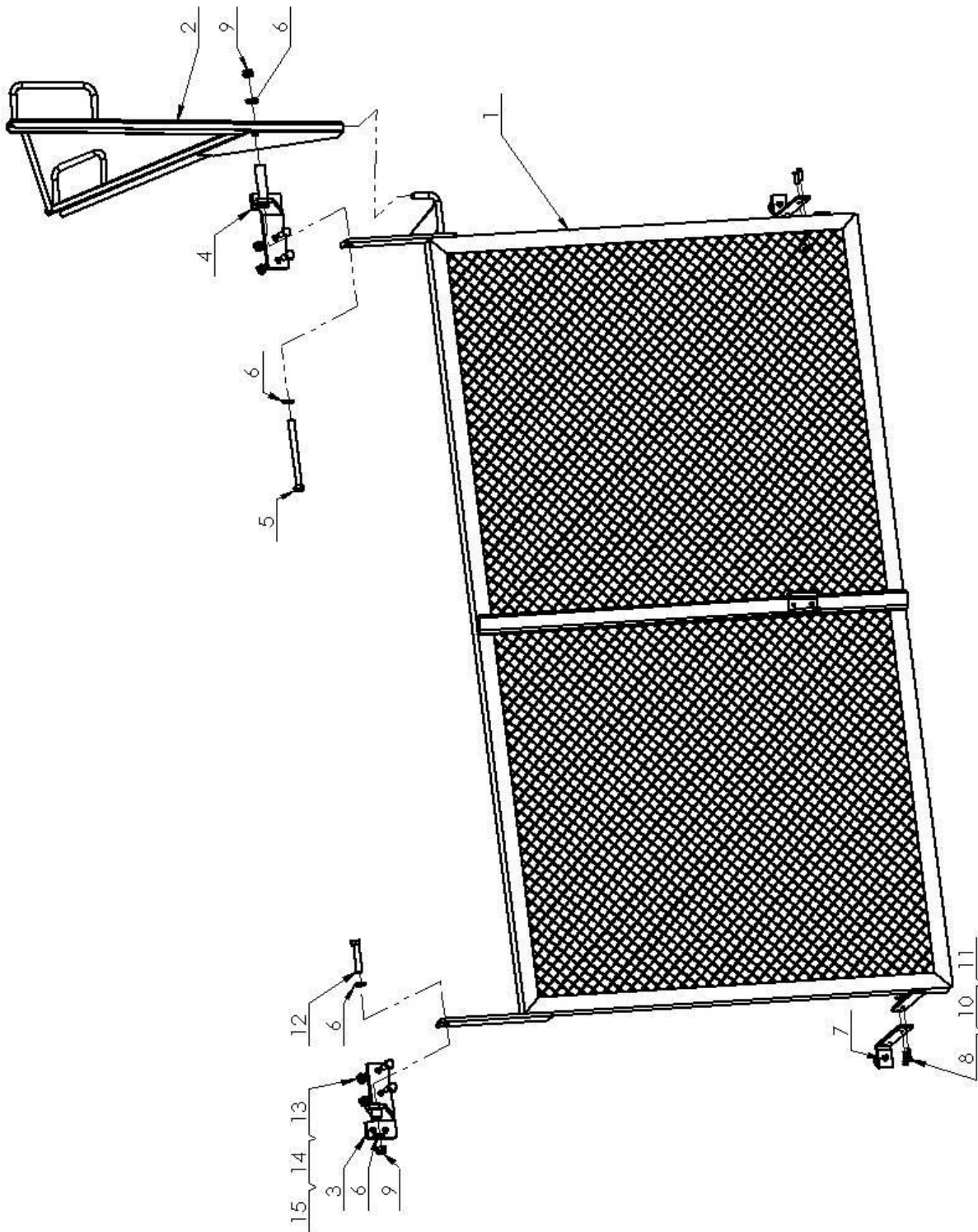
N-233/4-2

N-233/4 N-233/4-1

Tab. 26

No.	Number	Specification
1	2219/00.06.000/1	Left side guard
2	2219/00.05.000/1	Right side guard
3	2219/00.06.000/2	Left side guard
4	2219/00.05.000/2	Right side guard
5	2245/00.20.000/1	Guard set
6	2221/66.04.000/1	Guard set
7	2219/00.01.000/3	Guard set
8	2233/76.00.000/5	Drum guard

Table 27 Drum guard set



Tab. 27

No.	Number	Specification	Amount
1	2233/76.04.000	Adapter guard	1
2	2233/76.05.000	Guard lever	1
3	2233/76.06.000	Left bracket set	1
4	2233/76.07.000	Right bracket set	1
5	PN-85/M-82101	M12x145 screw	1
6	PN-78/M-82005	Washer 13	4
7	2233/35.03.200	Bumper set	2
8	PN-85/M-82105	M6x20 8.8 B screw	4
9	PN-85/M-82175	M12 Self-locking nut	2
10	PN-77/M-82008	Spring washer 6.1	4
11	PN-86/M-82144	M6 nut	4
12	PN-85/M-82101	M12x60 screw	1
13	PN-86/M-82144	M10 nut	4
14	PN-85/M-82105	M10x25 screw	4
15	PN-77/M-82008	Spring washer 10.2	4

