
Thank you for purchasing our trailer. In the interests of your safety and care for the reliability and durability of the machine, we ask that you familiarise yourself with the content of this manual.

Remember!!!

Before using the trailer for the first time, check if the wheels are properly tightened!!! Regularly check the technical condition of the machine in accordance with the attached schedule.

INTRODUCTION

The information contained in the publication is current at the date of publication. As a result of improvement, some sizes and illustrations contained in this publication may not correspond to the actual state of the machine delivered to the user. The manufacturer reserves the right to introduce constructional changes in the manufactured machines to facilitate operation and improve the quality of their work, without making any current changes to this publication.

The operating instruction is the basic equipment of the machine. Before using the machine, the user must read the contents of this manual and observe all recommendations contained therein.

This will guarantee safe and trouble-free operation of the machine. The machine was constructed in accordance with applicable standards, documents and current legal regulations.

The User Manual describes the basic principles of safe use and operation of PRONAR T022 and PRONAR T022M agricultural trailers.

If the information contained in the operating instructions does not turn out to be comprehensible, please contact the sales office where the machine was purchased or directly to the Manufacturer.

MANUFACTURER'S ADDRESS

*PRONAR Sp. z o.o.
ul. Mickiewicza 101A
17-210 Narew*

CONTACT PHONES

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SYMBOLS USED IN THE USER MANUAL

Information, descriptions of hazards and precautions as well as instructions and orders related to safe use in the manual are marked with:



and preceded by the word “**DANGER**”. Failure to comply with these recommendations may endanger the health or life of persons operating the machine or bystanders.

Particularly important information and recommendations, the observance of which is absolutely necessary, are marked in the text with the sign:



and preceded by the word “**CAUTION**”. Non-observance of the recommendations described may result in damage to the machine due to improper operation, adjustment or use.

In order to draw the user's attention to the necessity to perform periodic maintenance, the content of the manual is marked with the following sign:



Additional instructions contained in the manual describe useful information on operating of the machine are distinguished by the sign:



and preceded by the word “**ADVICE**”.

DESIGNATION OF DIRECTIONS IN THE MANUAL

Left side – the left hand side of the observer facing the machine in the forward direction.

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

SCOPE OF SERVICE ACTIVITIES

The service activities described in the manual are marked with the sign: ➡

The result of the service / adjustment activity or remarks concerning the performed activities is marked with the sign: ⇨



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17-210 Narew, Polska

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http://www.pronar.pl

e-mail: pronar@pronar.pl

EC DECLARATION OF CONFORMITY OF THE MACHINERY

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

Description and identification of the machinery	
Generic denomination and function:	TRAILER
Type:	T022
Model:	-----
Serial number:	
Commercial name:	TRAILER PRONAR T022

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

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

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

Narew, the _____

Place and date

Z-CA DYREKTORA
d/s technicznych
członek zarządu

Roman Omelaniuk

*Full name of the empowered person
position, signature*

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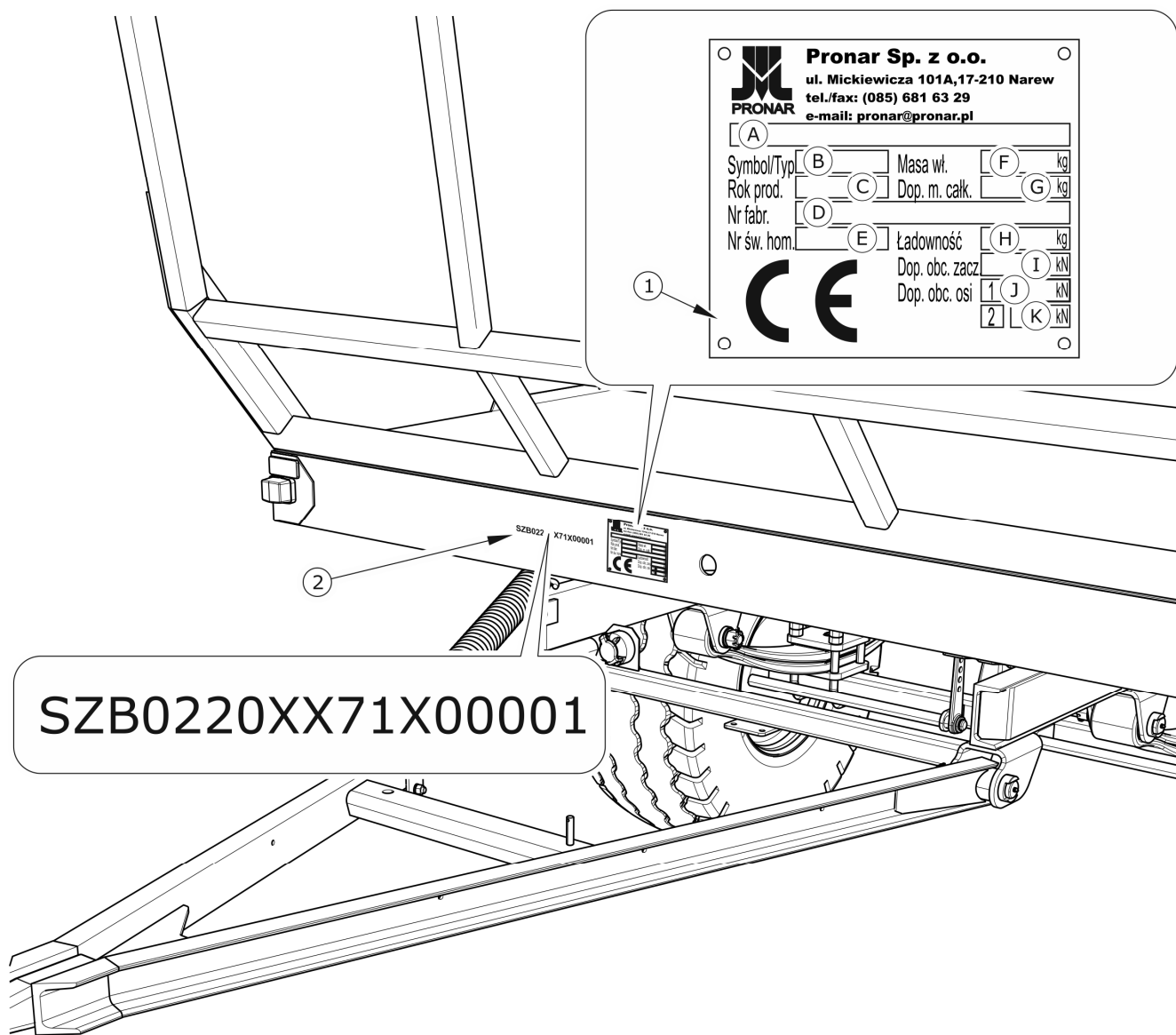
CHAPTER

1

GENERAL

1.1 IDENTIFICATION

1.1.1 IDENTIFICATION OF TRAILER



RYSUNEK 1.1 Location of the nameplate and VIN number stamping

(1) nameplate (2) example of VIN number

Agricultural trailers Pronar T022 and Pronar T022M are marked with a nameplate (1) and VIN identification number (2). The serial number and the nameplate are located in the central part of the frame's front beam - figure (1.1). When buying machines, check the compatibility of serial numbers placed on the machine with the number entered in the "WARRANTY CARD"

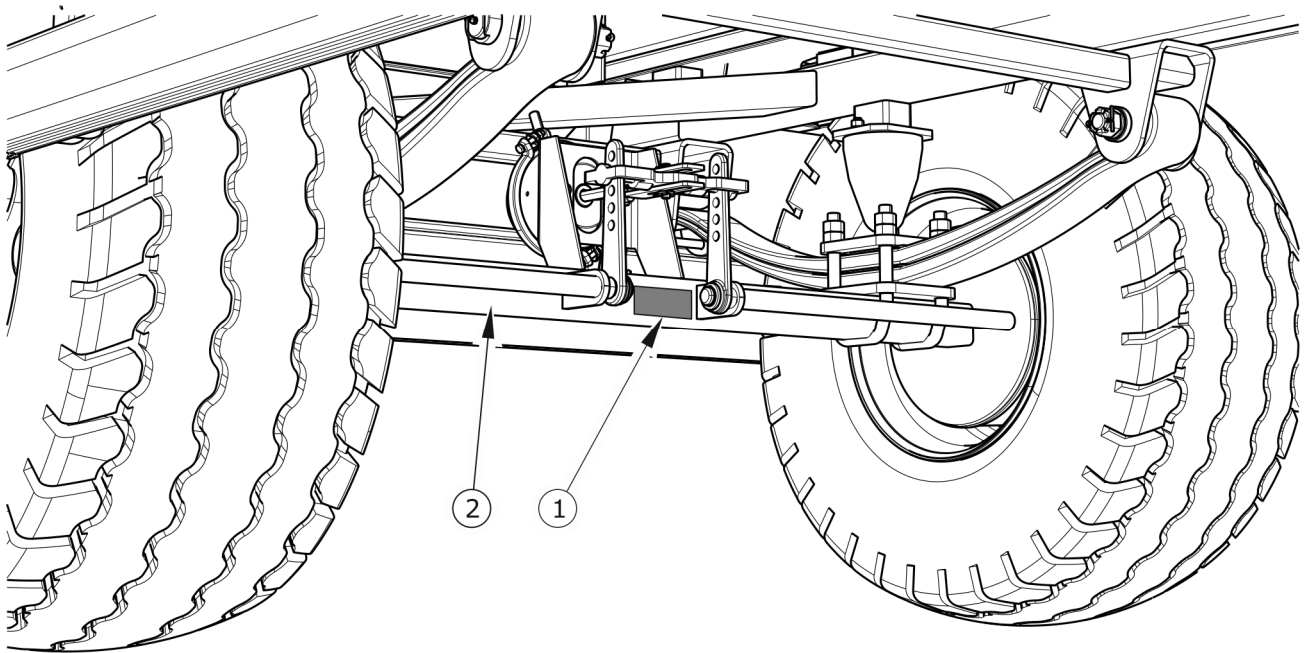
and in the sales documents. The meaning of the individual fields on the nameplate is shown in the table below.

TABELA 1.1 *Nameplate markings*

ITEM	MARKING
A	General information and function
B	Machine symbol / type
C	Year of production of the machine
D	Seventeen-digit identification number (VIN)
E	Approval certificate number
F	Carb weight of the machine
G	Permissible total weight
H	Loading capacity
I	Permissible load on the coupling device
J	Permissible front axle load
B	Permissible rear axle load

1.1.2 DRIVING AXLE IDENTIFICATION

The serial number of the driving axle and its type are stamped on the nameplate (1) attached to the driving axle beam (2) - figure (1.2).




RYSUNEK 1.2 Location of the nameplate of the driving axle

(1) nameplate, (2) driving axle

1.1.3 LIST OF SERIAL NUMBERS

TABELA 1.2 LIST OF SERIAL NUMBERS

VIN NUMBER														
S	Z	B	0	2	2	0		X			X			
SERIAL NUMBER OF THE FRONT DRIVING AXLE														
SERIAL NUMBER OF THE REAR DRIVING AXLE														

	<p>ADVICE</p> <p><i>If you need to order spare parts or if you have problems with it, it is very often necessary to provide the serial numbers of the trailer or axle, so it is recommended to write these numbers in the table (1.2)</i></p>
---	--

1.2 INTENDED USE

The agricultural trailer is designed to transport crops and agricultural products in the form of bales or pressed cubes within the farm and on public roads. The machine is also adapted to the transport of crops and agricultural products transported on euro-pallets and euro crates.

TABELA 1.3 *Recommended types of pallets*

PALLET NAME - TYPE	LENGTH [mm]	WIDTH [mm]	HEIGHT [mm]
EUR pallet - standard	1,200	800	144
EUR pallet - 1/ 2	800	600	144
EUR pallet - extended	1,200	1,200	144
ISO pallet	1,200	1,000	144

Transport of the above-mentioned crops and agricultural products is possible provided that the recommendations contained in this manual, and in particular the recommendations for securing loads contained in Chapter (4.3.2), are followed.

The trailer may only be aggregated with agricultural tractors that meet all the requirements set out in table (1.4).

DANGER

The trailer may not be used for purposes other than those for which it is intended in particular:



- *for transport of people, animals,*
- *for transporting loads that are unsecured or ineffectively secured against shifting or falling out,*
- *for transporting and reloading materials other than those provided for in the manual.*

The braking system as well as the lighting and signalling system meet the requirements arising from traffic regulations. The permissible speed of the trailer moving on public roads in Poland is 30 km/h (in accordance with the Act of June 20, 1997, "Road Traffic Law", art. 20).

In the countries where the trailer is used, the limits stipulated by the road traffic law in force in a given country must be observed. However, the trailer speed cannot exceed the maximum design speed of 40 km/h.

Intended use also includes all activities related to the correct and safe operation and maintenance of the machine. Therefore, the user is obliged to:

- Read the content of the *USER MANUAL* and with *WARRANTY CARD* and to the guidelines contained in these documents,
- understand the principle of machine operation and the safe and proper operation,
- act in compliance with established maintenance and adjustment plans,
- work in compliance with general safety regulations,
- accident prevention,
- comply with the road traffic regulations and transport regulations in force in the country in which the machine is used,
- become familiar with the content of the tractor unit operator's manual and follow its recommendations,
- couple the vehicle only with such an agricultural tractor that meets all the requirements set by the trailer Manufacturer.

The machine may only be used by persons who:

- become familiar with the contents of publications and documents attached to the machine and the contents of manual of an agricultural tractor,
- have been trained in the use of the trailer and work safety,
- have the required driving license and are familiar with the road traffic regulations and transport regulations.

TABELA 1.4 *Agricultural tractor requirements*

CONTENT	UNIT	REQUIREMENTS
---------	------	--------------

CONTENT	UNIT	REQUIREMENTS
Brake system connection sockets		
Pneumatic 1 - line	-	in accordance with A DIN 74294 in accordance with ISO 1728 in accordance with ISO 7421-1
Pneumatic 2 - line	-	
Hydraulic	-	
Nominal pressure of the system		
Pneumatic 1 - line	bar	5.8 – 6.5
Pneumatic 2 - line	bar	5.8
Hydraulic	bar	150
Electrical system		
Connection of electrical installation	V	12
Connection socket	-	7-pole according to ISO 1724
Tractor hitches		
Type of hitch	-	Upper transport hitch
Other requirements		
Minimum tractor power	KM / kW	67.6/49.7

1.3 EQUIPMENT

TABELA 1.5 *Equipment*

EQUIPMENT	STANDARD	ADDITIONAL	OPTIONAL
<i>USER MANUAL, WARRANTY CARD</i>	•		
Drawbar with rod Ø40	•		
Overrun drawbar with rod Ø40	•		
Pneumatic braking 2 - line system	•		
Pneumatic braking 1 - line system			•
Pneumatic braking 2- line system with ALB regulator			•

EQUIPMENT	STANDARD	ADDITIONAL	OPTIONAL
Hydraulic brake system			•
Overrun brake			•
Tool box		•	
Rear hitch		•	
Folding ladders (to be attached with a securing chain) ⁽¹⁾	•		
Folding ladders (to be attached with a strapping rope) ⁽²⁾	•		
Fixed ladders (to be attached with a securing chain) ⁽¹⁾			•
Belt retractors ⁽¹⁾		•	
Adjustable rear frame extending the loading surface	•		
Spare wheel winch with spare wheel		•	
Mudguards (front and rear)		•	
Side overrun protection		•	
Fastening chain ⁽¹⁾		•	
Rear hitch		•	
Plate for slow-moving vehicles		•	
Warning reflective triangle		•	

⁽¹⁾ - assembly available only with T022M, ⁽²⁾ - assembly available only with T022



ADVICE

Tire information is provided at the end of the publication in APPENDIX A.

1.4 TERMS OF WARRANTY

PRONAR Sp. z o.o. in Narew guarantees easy operation of the machine when it is used in accordance with the technical and operational conditions described in the *USER MANUAL*. Deadline for completion of repairs is specified in the *Warranty Card*.



ADVICE

You should require the seller to carefully fill out the WARRANTY CARD and complaint coupons. The lack of e.g. date of sale or point of sale stamp exposes the user to not accept any complaints.

The warranty does not apply to parts and sub-assemblies of the machine, which are subject to wear in normal operating conditions, regardless of the warranty period. The group of these elements includes, among others, the following parts/components:

- drawbar eye,
- filters on the connections of the pneumatic system,
- tires,
- seals,
- bearings,
- bulbs and LED lamps,
- brake shoes.

The warranty services apply only to such cases as: mechanical damage not attributable to the user, factory defects of parts, etc.

In the event that the damage arose as a result of:

- mechanical damage caused by the fault of the user, a road accident,
- from improper operation, adjustment and maintenance, using the machine contrary to its purpose,
- use of a damaged machine,
- performing repairs by unauthorized persons, improper repairs,

- execution of user changes in machine design,

the user loses the warranty.

The user is obliged to immediately report all noticed defects in the paint coatings or traces of corrosion, and order removal of defects regardless of whether the damage is covered by the warranty or not. Detailed warranty conditions are given in the "WARRANTY CARD" attached to the newly purchased machine.

Modifications to the machine without the written consent of the Manufacturer are prohibited. In particular, welding, drilling, cutting and heating the main structural elements of the machine, which directly affect the safety during use, are unacceptable.

1.5 TRANSPORT

The machine is ready for sale completely assembled and does not require packing. Only the machine's technical documentation, and any additional equipment elements are packed. Delivery to the user is carried out by road or independent transport (towing with an agricultural tractor).

1.5.1 TRUCKING

Loading and unloading of a trailer from a car should be carried out using a loading ramp using a farm tractor, lever of lift. During work act in compliance with the general principles of workplace health and safety for reloading work. Persons operating reloading equipment must have the required permissions to use these devices.

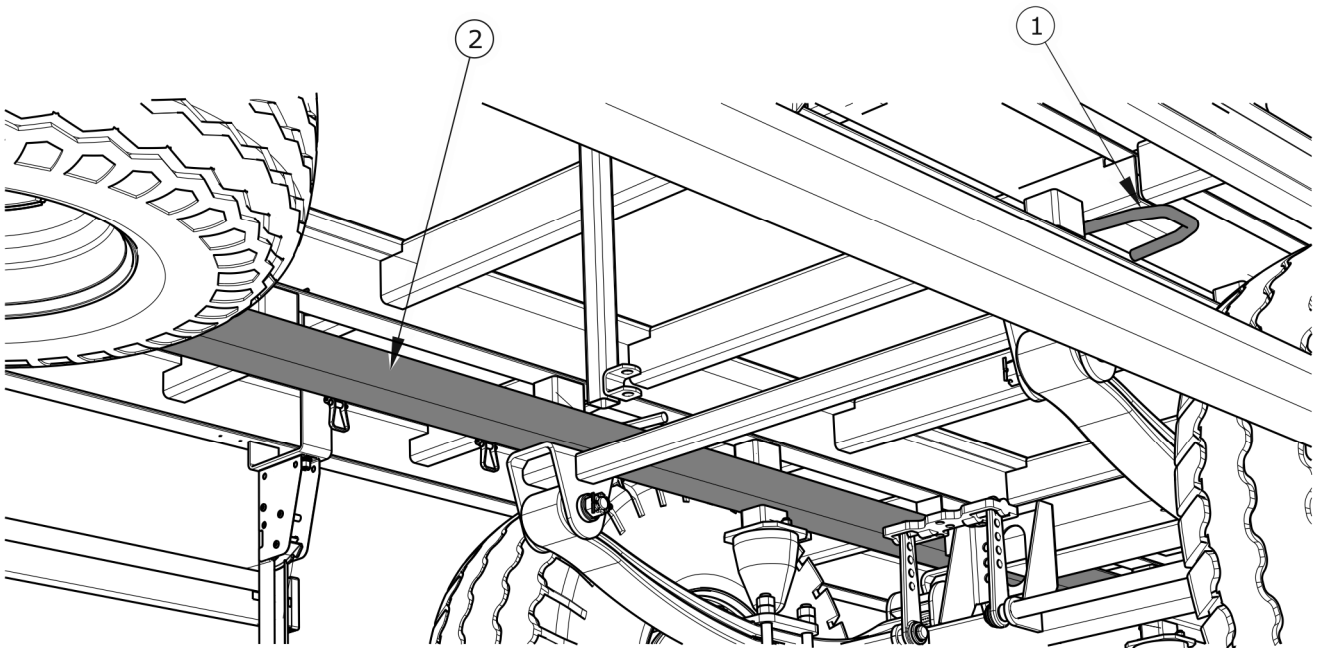
The machine may be moved with the use of lifting devices only with the use of fixed structural elements of the machine. These include, first of all, the frame, transport lugs and the wheel axle.



CAUTION

For attaching and hitching the trailer, the drawbar eye, overrun guards, fender supports and other structural elements that are not durable enough for this type of operation must not be used.

The trailer should be attached firmly to the platform of the vehicle using straps, chains, lashings or other fastening devices, equipped with a tensioning mechanism. In order to properly fasten the machine, it is recommended to use the transport lugs (1) - figure (1.3), belt the axles, the lower longitudinal members of the frame and, if necessary, the construction elements of the rotating frame.



RYSUNEK 1.3 *Transport handles*

(1) transport handle, (2) lower longitudinal member

Chocks, wooden beams or other elements without sharp edges should be placed under the trailer's wheels, protecting the machine against rolling. Wheel blocks must be nailed to the car loading platform planks or otherwise secured to prevent their movement.

Use certified and technically reliable securing measures. Worn straps, cracked fasteners, bent or corroded hooks or other damage may disqualify the agent from use. Please refer to the instructions in the operating instructions of the manufacturer of the securing material used. The number of fastening elements (ropes, belts, chains, lashings, etc.) and the force needed to tension them depend, among others, on the weight of the machine's own, the structure of the transporting car, travel speed and other conditions. Therefore, it is not possible to specify the fastening plan in detail.

A properly attached machine will not change its position relative to the transporting vehicle. The fastening means must be selected in accordance with the guidelines of the manufacturer of these elements. In case of doubt, a larger number of attachment and securing points for the machine should be used. If necessary, protect the sharp edges of the trailer, thus securing the securing means against damage during transport.

**DANGER**

Incorrect application of securing measures may cause an accident.

**CAUTION**

During road transport, the trailer must be mounted on the platform of the vehicle in accordance with safety requirements and regulations.

The driver of the car should exercise particular care while driving. The centre of gravity of the vehicle carrying the machine moves upwards, which threatens the stability of the transport unit.

Use only approved and technically reliable securing measures. Read the operating instructions of the securing measures manufacturer.

During reloading work, pay special attention not to damage elements of the machine equipment and the paint coating. The weight of the trailer is given in table (3.1).

1.5.2 USER OWN TRANSPORT

In case of independent transport by the user, read the *USER'S MANUAL* and follow its recommendations. Independent transport involves towing a machine with own agricultural tractor to its destination. While driving, adjust the speed to the prevailing road conditions, but it must not be greater than the maximum design speed.

**CAUTION**

When transporting independently, the tractor operator should familiarize himself with the content of this operator's manual and observe its recommendations.

1.6 ENVIRONMENTAL HAZARD

A hydraulic oil leak is a direct threat to the environment due to the limited biodegradability of the substance. The negligible solubility of hydraulic oil in water does not cause acute toxicity of organisms living in the aquatic environment. The formed layer of oil on the water may cause direct physical impact on organisms, it may cause changes in the oxygen content in water due to the lack of direct contact of air with water. However, oil leakage into water reservoirs can lead to a reduction in the oxygen content.



DANGER

Used hydraulic oil or collected residues mixed with absorbent material should be stored in an accurately marked container. Do not use food packaging for this purpose.

While carrying out maintenance and repair work which involves the risk of a leak, this work should take place on an oil resistant floor or surface. In the event of oil leaking into the environment, first of all contain the source of the leak, and then collect the leaked oil using available means. Collect the remaining oil with sorbents or mix the oil with sand, sawdust or other absorbent materials. Collected oil contaminants should be stored in an airtight and marked container, resistant to hydrocarbons. The container should be kept away from heat sources, flammable materials and food.

Oil which has been used up or is unsuitable for further use due to the loss of its properties is recommended to be stored in its original packaging in the same conditions as described previously. Oil waste should be taken to the point dealing with the utilization or regeneration of oils. Codes of waste (Hydraulic oil L-HL 32 Lotos): 13 01 10. Detailed information on oil can be found in the product safety data sheet.



ADVICE

The hydraulic system of the trailer is filled with L-HL 32 Lotos oil.

CAUTION

Oil waste may only be delivered to a point dealing with the utilization or



regeneration of oils. It is forbidden to throw or pour oil into drains or water reservoirs.

1.7 WITHDRAWAL

If the user decides to withdraw the machine from use, comply with the provisions in force in the given country regarding withdrawal from use and recycling of machines withdrawn from use. Before proceeding to dismantle, the oil must be completely removed from the hydraulic system.

Worn or damaged elements that cannot be regenerated or repaired should be taken to a collection point for recyclable materials. Hydraulic oil should be taken to an appropriate facility dealing with the utilization of this type of waste.

DANGER



During dismantling, use appropriate tools and equipment (overhead cranes, elevators, lifts, etc.) and use personal protective equipment, i.e. protective clothing, footwear, gloves, glasses, etc.

Avoid oil contact with skin. Do not allow oil to leak.

CHAPTER

2

SAFETY OF USE

2.1 SAFETY INFORMATION

2.1.1 BASIC SAFETY RULES

- Before using the trailer, the user should carefully read the content of this document. During its operation, all recommendations contained therein must be observed. The trailer may only be used and operated by persons qualified to drive agricultural tractors with an agricultural machines.
- If the information contained in the User's Manual is difficult to understand, contact a seller who runs an authorized technical service on behalf of the manufacturer, or contact the manufacturer directly.
- Careless and improper use and operation of the trailer, and non-compliance with the recommendations given in this operator's manual is dangerous to your health.
- Be aware of the existence of a minimal risk of danger, therefore the application of the principles of safe use and sound behaviour should be the basic principle of using a machine.
- The trailer must not be used by persons who are not authorized to drive agricultural tractors, including children and people under the influence of alcohol or other drugs.
- Non-compliance with the rules of safe use poses a threat to the health of the operating and bystanders.
- The trailer may not be used for purposes other than those for which it was intended. Everyone who uses the machine in a manner contrary to its intended use, thus takes full responsibility for all consequences arising from its use. Using of the trailer for purposes other than those provided for by the Manufacturer (see chapter (1.2)) is inconsistent with the intended use of the machine and may invalidate the warranty.
- Any modification of the trailer releases PRONAR Narew from any liability for damage or injury.

- Climbing and lowering on the trailer is possible only when the machine is absolutely stationary and the tractor engine is switched off. Appropriate height, safe and durable platforms or ladders should be used.
- In the event of damage to the brake system, it is forbidden to use the trailer until the failure is remedied.
- The trailer disconnected from the tractor must be immobilized with the parking brake. If the machine is standing on a slope or hill, it must be additionally secured against rolling by placing chocks or other elements without sharp edges under the wheels.
- It is forbidden to transport people and animals.
- It is forbidden to connect the trailer to an agricultural tractor if the hydraulic oils used in both machines are of a different type (applies to machines with a hydraulic brake system)
- It is forbidden to use a damaged machine.
- It is forbidden to exceed the permissible load capacity of the trailer. Exceeding the load capacity may lead to damage to the machine, loss of stability while driving, scattering of the load and cause a hazard while driving or working.
- Before each use of the trailer, check the technical condition of the trailer's and tractor's hitching system as well as connection elements of the braking and electrical systems.
- Be especially careful when attaching or detaching the machine to the tractor.
- When attaching, there must be nobody between the trailer and the tractor.
- When connecting the trailer to a tractor, use only the upper transport hitch. Check the safety device.
- If the trailer is equipped with a hitching system for connecting a second trailer, it is absolutely necessary to hide the extendable frame before hitching.
- The load must be evenly distributed.
- Keep a safe distance during loading and unloading. Keep bystanders away from the working area of the machine.

- The load must be secured against shifting by means of straps, chains, straps or other securing means. They must be equipped with a tensioning mechanism and have appropriate safety approvals.
- The air tank and the hydraulic brake system are under high pressure during operation.
- Check the condition of the brake system frequently. Oil leaks and leaks in the system are inadmissible.
- Regularly check the technical condition of connections and pneumatic and hydraulic lines.
- When connecting the hydraulic conduits to the tractor, make sure that the tractor hydraulic system and trailer are not under pressure.
- Before starting repair or maintenance works on pneumatic or hydraulic systems, reduce air or oil pressure.
- In the event of injury from the pressurized hydraulic oil, see a doctor immediately. Hydraulic oil can penetrate the skin and cause infection.
- Use hydraulic oil recommended by the Manufacturer. Never mix two types of oil.
- After changing the hydraulic oil, the used oil must be disposed.
- It is forbidden to repair the control valve, brake cylinders and the brake force regulator on your own. In case of damage to these elements, the repair should be entrusted to authorized repair centres or replace the elements with new ones.
- When working with tires, the trailer should be secured against rolling by placing chocks or other elements without sharp edges under the wheels. The wheel can be dismantled only when the trailer is not loaded.
- The paint coating should be cleaned off before starting welding work. Burning paint fumes are poisonous to humans and animals. Welding work should be performed in a well-lit and ventilated room.
- During welding work, pay attention to flammable and fusible elements (elements of hydraulic, pneumatic and electric systems, elements made of plastics and rubber). If there is a risk that they will catch fire or be damaged, they must be dismantled before commencing any welding work.

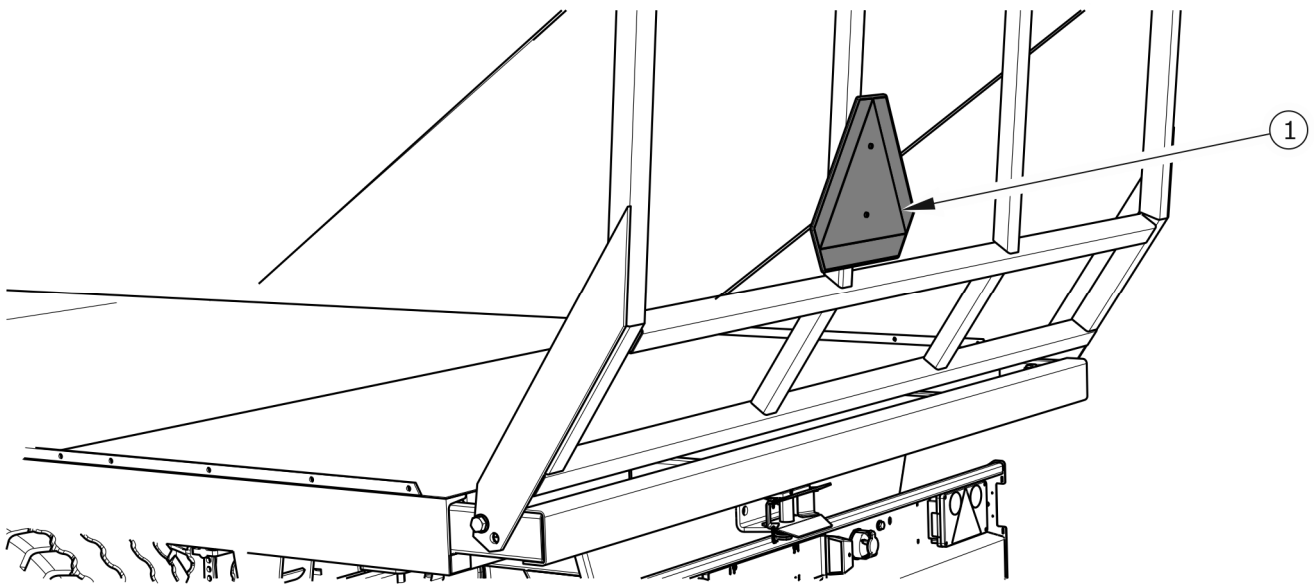
- Repair work on wheels or tires should be performed by persons trained and authorized for this purpose. These works should be performed with the use of appropriately selected tools.
- Checking the tightness of the nuts should be carried out after the first use of the trailer, after the first journey with a load and then every 6 months of use or after travelling 25,000 km, whichever comes first. In the event of intensive use, checking the tightening should be done at least every 10,000 kilometres. Each time the inspection activities should be repeated, if the trailer wheel was dismantled.
- Check tire pressure regularly.
- In the event of any faults or damage, withdraw the trailer from use until it is repaired. It is forbidden to use a damaged trailer.
- When operating the machine, use protective gloves, close-fitting clothing and appropriate tools.
- Perform maintenance and repair activities applying the general principles of health and safety at work. In case of injury, wash and disinfect the wound immediately. If you experience more serious injury, seek medical advice.
- Carry out repair, maintenance and cleaning works only with the tractor engine turned off and the ignition key removed.
- Regularly check the condition of the screw connections.
- Before welding or electrical work, the trailer should be disconnected from the power supply.
- It is forbidden to perform service and repair work under a loaded or raised and unsecured attachment.
- If it is necessary to replace individual parts, use only original parts. Non-adherence to these requirements may put the user and other people's health and life at risk, and also damage the machine and invalidate the warranty.
- In the event of work requiring the trailer to be raised, use appropriate and certified hydraulic or mechanical lifts for this purpose. After lifting the trailer, stable and

durable supports must also be used. It is forbidden to work under a trailer raised only with a lift.

- It is forbidden to support the trailer with fragile elements (bricks, blocks, concrete blocks).
- After completing work connected with lubrication, remove excess oil or grease.
- When operating, maintaining or cleaning the machine, use properly selected tools, tight-fitting clothing and protective gloves.

2.1.2 DRIVING ON PUBLIC ROADS

- Comply with road traffic regulations.
- Exceeding the maximum load capacity of the trailer may damage it and also threaten road safety.
- The permitted speed should not be exceeded. Adapt the speed to the road conditions.
- It is forbidden to leave the trailer unsecured. The protection consists in immobilizing it with the parking brake and possibly placing chocks under the wheels.
- When driving on public roads, the trailer must be equipped with an approved or approved warning reflective triangle.
- Driving on public roads with an extended extendable frame is forbidden.
- When driving on public roads, a slow-moving vehicle sign should be placed on the rear ladder.



RYSUNEK 2.1 *Location of the plate*

(1) Plate for slow-moving vehicles

2.1.3 DESCRIPTION OF RESIDUAL RISK

Pronar Sp. z o. o. in Narew has made every effort to eliminate the risk of an accident. However, there is some residual risk that can lead to an accident and is primarily associated with the following activities:

- using the trailer for purposes other than described in the manual,
- Being between the tractor and the trailer when the engine is running and when connecting the machine,
- operation of the trailer by people under the influence of alcohol or other intoxicants,
- Operation of the trailer by unauthorized persons,
- being on the machine during work,
- Careless cleaning, maintenance and technical inspection of the trailer.

Residual risk can be reduced to a minimum by following these recommendations:


- prudent and unhurried operation of the machine,
- Reasonable use of the notes contained in the User Manual,

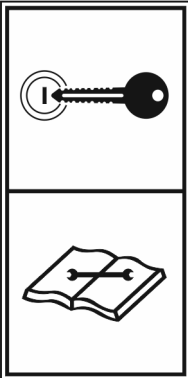

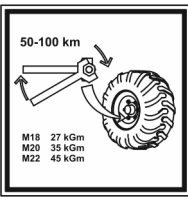


- keeping a safe distance from prohibited and dangerous places,
- a ban on being on the machine while it is working,
- maintenance work carried out by trained personnel,
- Using appropriate fitted protective clothing,
- securing the machine against access by unauthorized persons, especially children,

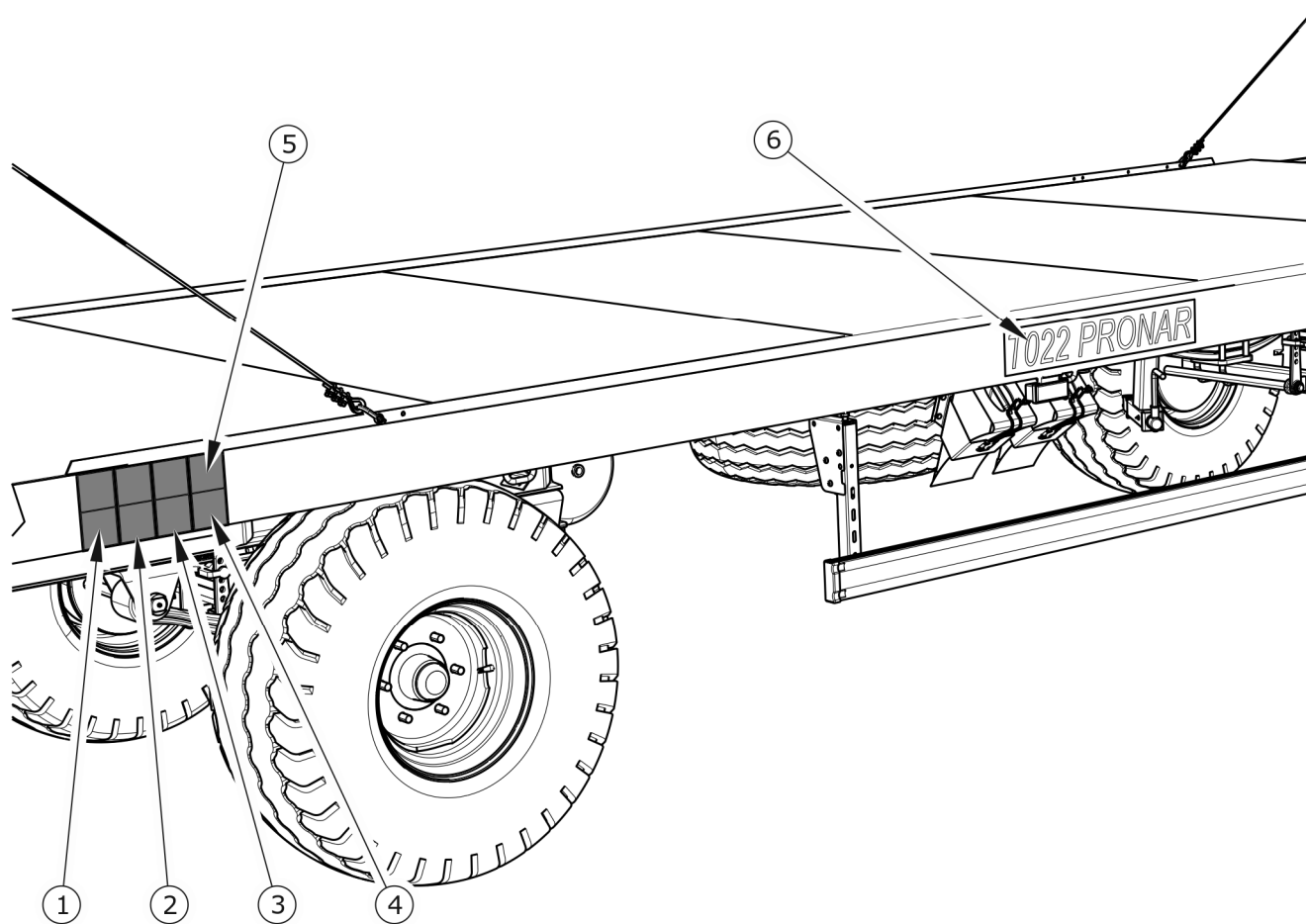
2.2 INFORMATION AND WARNING STICKERS

The trailer is marked with information and warning decals mentioned in table (2.1). The arrangement of pictograms on the machine is shown in figure (2.2). The machine user is obliged to ensure that the inscriptions, warning and information symbols placed on the trailer are legible throughout the entire period of use. In the event of their destruction, they must be replaced. Information and warning stickers can be purchased directly from the Manufacturer or in the place where the machine was purchased. The catalogue numbers of the information stickers can be found under the pictogram description in the table (2.1) and in the *SPARE PARTS CATALOG*. New assemblies replaced during repair must be marked again with the appropriate safety signs. When cleaning the trailer, do not use solvents that can damage the label coating and do not direct a strong stream of water.

TABELA 2.1 *Information and warning stickers*

ITEM	SYMBOL	MEANING
1		<p>Caution. Before starting work, read the <i>USER'S MANUAL</i>.</p> <p>70N-00000004</p>

ITEM	SYMBOL	MEANING
2		<p>Before beginning of any servicing activities or repairs, turn off the engine and remove the key from the ignition switch.</p> <p>70N-00000005</p>
3		<p>Danger of the whole body crushing.</p> <p>Keep a safe distance from ladders and the drawbar.</p> <p>147N-00000002</p>
4		<p>Regularly check the tightening of road wheel nuts and other bolted connections.</p> <p>104N-00000006</p>
5		<p>Lubricate the machine according to the schedule outlined in the <i>USER'S MANUAL</i>.</p> <p>104N-00000004</p>
6		<p>Type of machine</p> <p>66N-00000001</p>



RYSUNEK 2.2 *Arrangement of information and warning stickers*

CHAPTER

3

**CONSTRUCTION AND
PRINCIPLE OF
OPERATION**

3.1 TECHNICAL CHARACTERISTICS

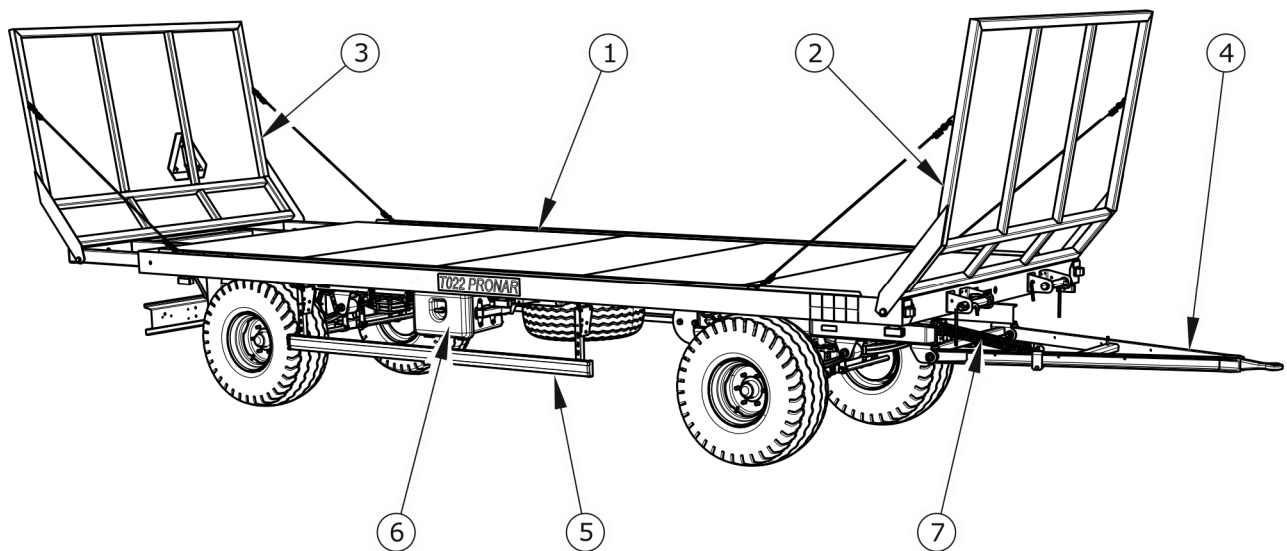
TABELA 3.1 *Basic technical data as standard equipment*

CONTENT	UNIT	T022	T022M
Dimensions			
Length			
- with the rear frame extended	mm	9,665	9,665
- with the rear frame retracted	mm	9,135	9,135
Width	mm	2,500	2,550
Height	mm	2,780	2,830
Loading platforms dimensions			
Length of the loading plane			
- with the rear frame extended	mm	7,270	7,270
- with the rear frame retracted	mm	6,740	6,740
Width	mm	2,435	2,517
Performance parameters			
Loading capacity	kg	7,360	7,360
Permissible total weight	kg	10,000	10,000
Carb weight of the vehicle	kg	2,640	2,640
Platform height from the ground	mm	1,150	1,150
Loading plan			
- with the rear frame extended	m ²	17.7	17.7
- with the rear frame retracted	m ²	16.4	16.4
Other information			
Connection of electrical installation	V	12	12
Track width	mm	1,730	1,730
Permissible design speed	km/h	40	40
Min. tractor power	KM/kW	67.6/49.7	67.6/49.7

3.2 CONSTRUCTION OF A TRAILER

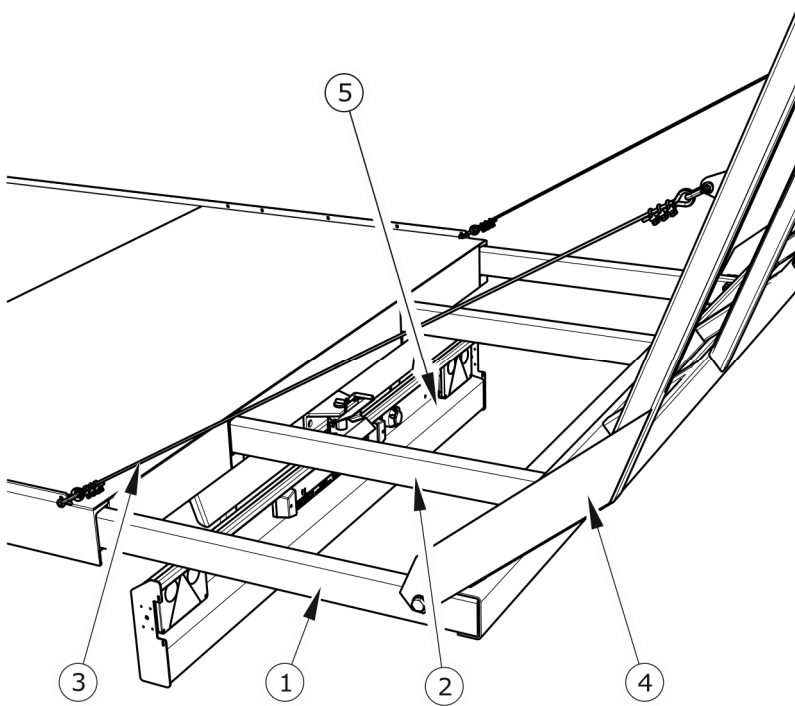
3.2.1 CHASSIS

Frame (1) - loading platform, is a structure welded from steel sections. The main load-bearing elements are stringers connected with crossbars. Depending on the trailer version, the sides of the floor can be finished with a welded steel flat bar (T022) or a profiled edge (T022M). The loading platform in the front and rear part is limited by ladders (2) and (3). Depending on the completion of the trailer, the ladders can be folded or fixed permanently. In case of folding ladders, the angle of inclination is limited by means of steel cables or a tensioning chain.



RYSUNEK 3.1 *Construction of a trailer*

(1) frame - loading platform, (2) front ladder, (3) rear ladder, (4) drawbar, (5) side drive-on guard, (6) tool box, (7) spring

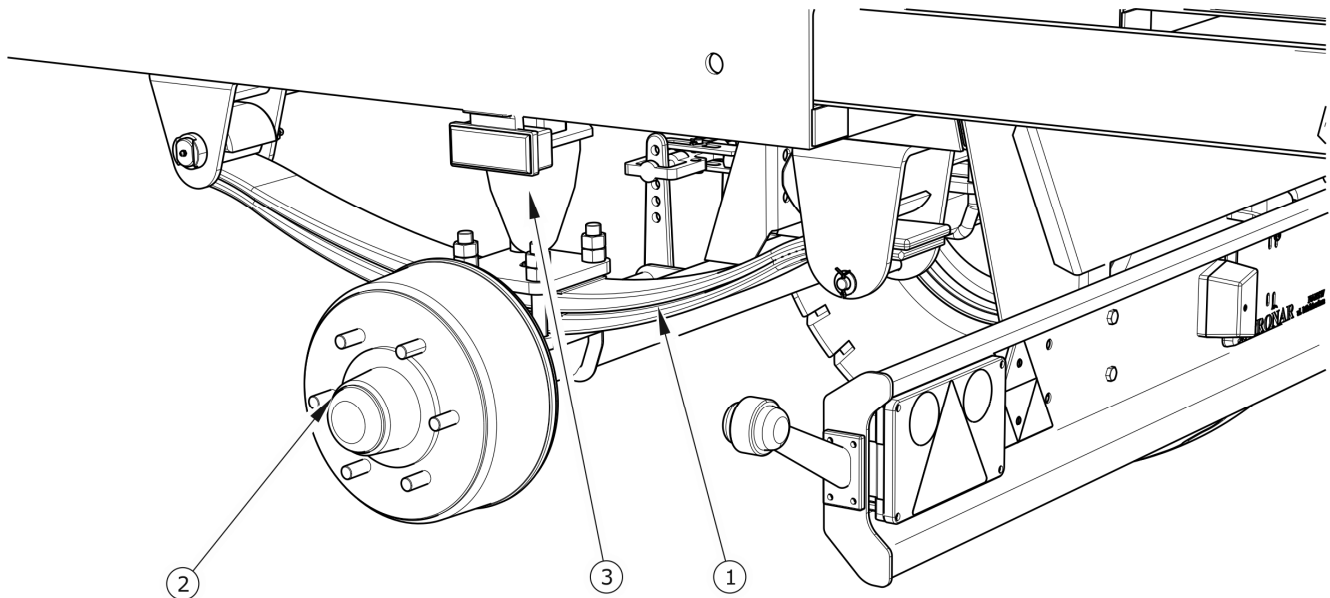


Sliding frame - figure (3.2) consists of the outer (1) and inner (2) frames.

The trailer's frame ends with a lighting beam (5), which is intended for mounting lighting equipment and a registration plate.

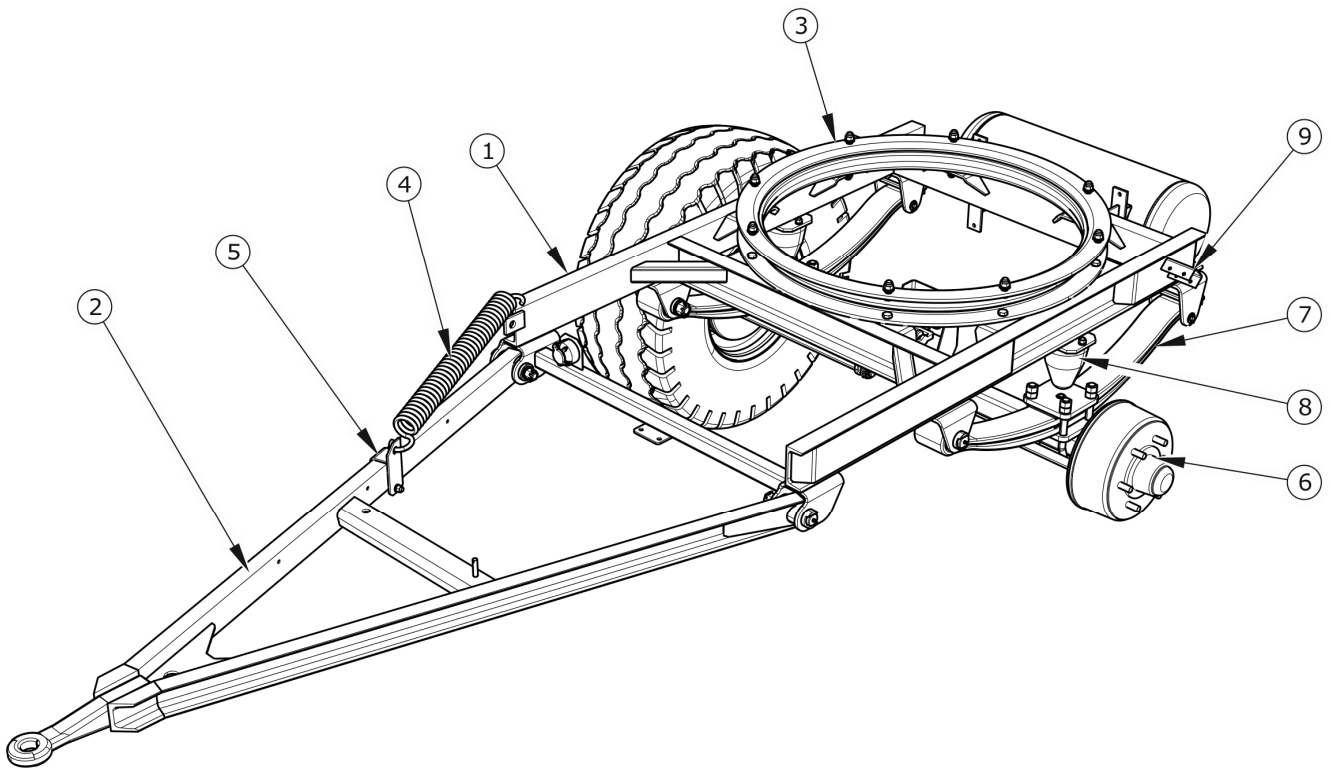
RYSUNEK 3.2 *Sliding frame*

(1) external sliding frame, (2) internal sliding frame, (3) tensioning rope, (4) rear ladder, (5) lighting beam



RYSUNEK 3.3 *Rear suspension*

(1) suspension spring (3) road axle, (3) rubber bumper



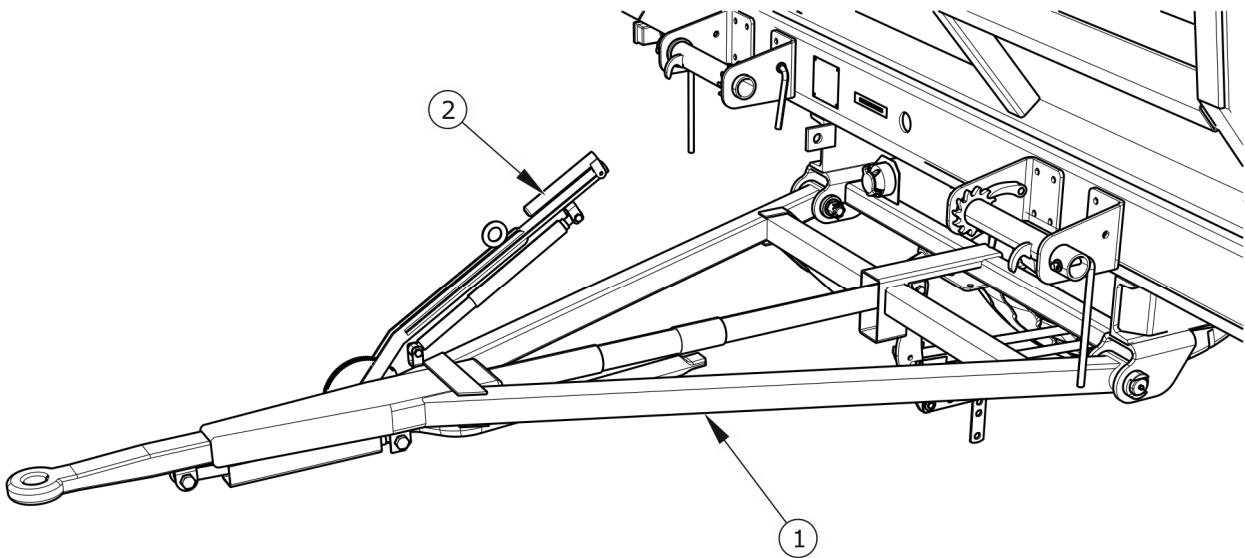
RYSUNEK 3.4 *Front suspension*

(1) turntable frame, (2) type drawbar, (3) ball turntable, (4) spring, (5) spring catch, (6) wheel axle, (7) suspension spring, (8) rubber bumper, (9) fender mounting socket

The drawbar (2) is attached to the turntable frame (1) with bolts. The height of the drawbar eye can be adjusted by moving the hitch (5) securing the spring to the drawbar.

The driving axles are made of a square bar terminated with pivots, on which road wheel hubs are mounted on conical bearings. These are single wheels equipped with drum brakes, actuated by mechanical cam expanders.

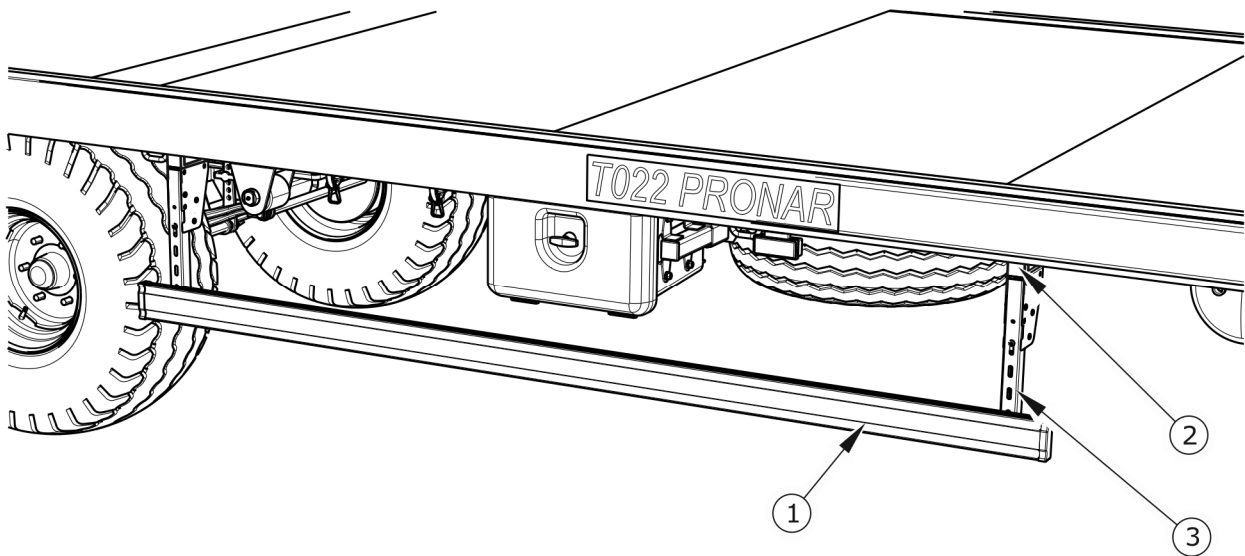
In the version of the trailer with an overrun brake, the drawbar is equipped with an overrun mechanism and a lever parking brake. Driving axles in the design of a trailer with overrun brake are equipped with a special drum brake mechanism with automatic reverse travel.



RYSUNEK 3.5 *Overrun drawbar*

(1) overrun drawbar, (2) parking brake lever

3.2.2 SIDE OVERRUN PROTECTION



RYSUNEK 3.6 *Side overrun protection*

(1) cover strip, (2) fixing channel, (3) bracket

In the central part of the chassis frame, on the left and right side of the trailer, two side overrun protection can be installed. Complete covers are screwed to the grip channel (2), welded to the trailer frame.

The design of the side guards allows them to be locked in the transport position and in the raised position.



CAUTION

Side guards cannot be used as elements helping to climb onto the trailer's platform.

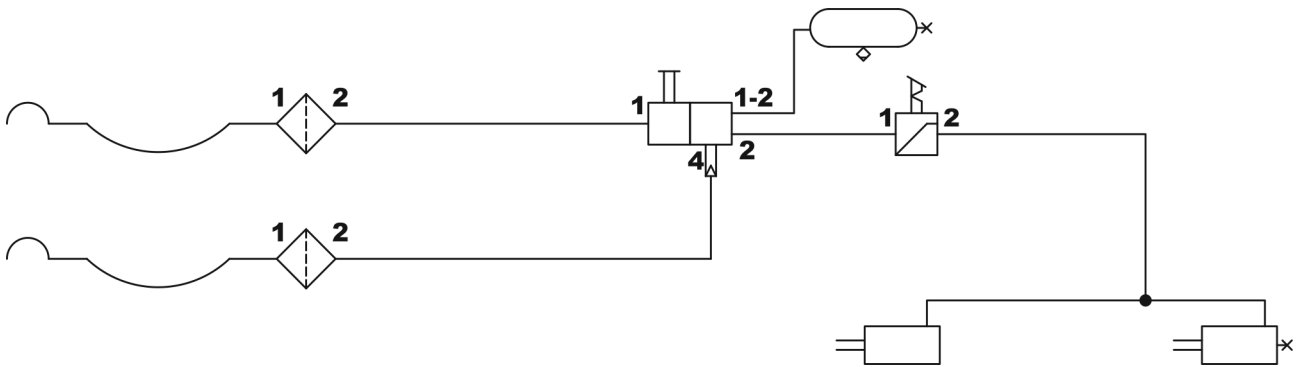
Before driving, make sure that the guards are in the transport position.

3.2.3 SERVICE BRAKE

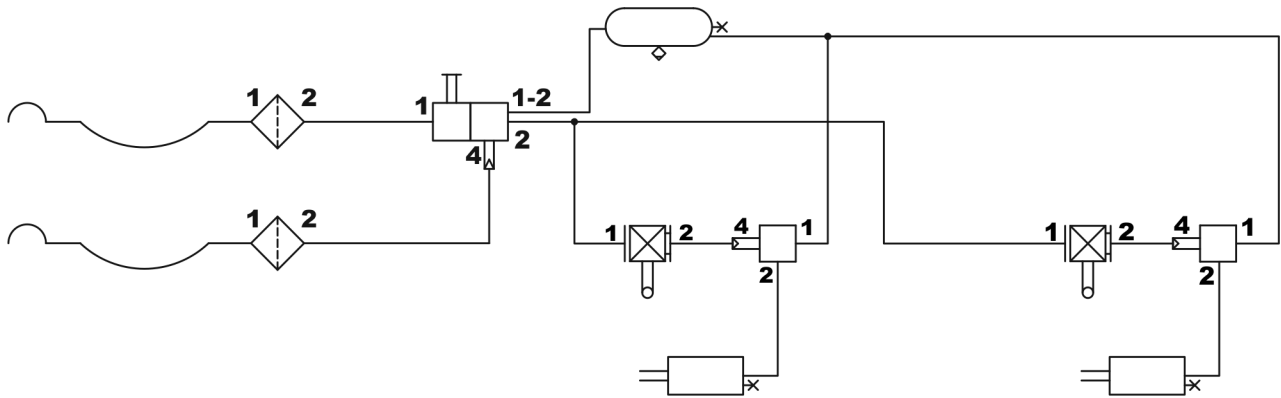
Depending on the version of the trailer, the machine is equipped with one of five types of service brake:

- double line pneumatic system with a three-position regulator, figure (3.7) - standard equipment,
- double line pneumatic system with an automatic regulator, figure (3.8) - optional equipment,
- single line pneumatic system with a three-position regulator, figure (3.9) - optional equipment,
- hydraulic brake system, figure (3.10) - optional equipment,
- overrun brake - optional equipment.

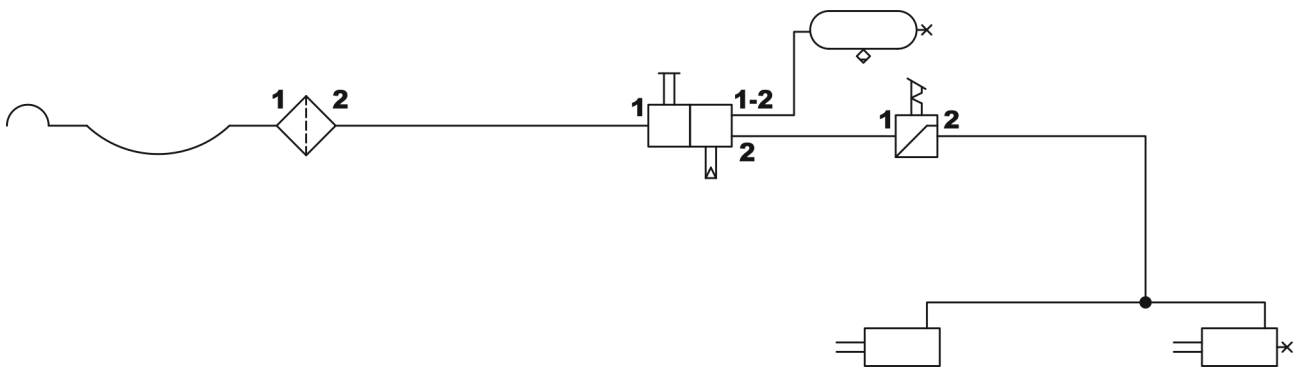
The main brake (pneumatic or hydraulic) is activated from the operator's cabin by pressing the tractor brake pedal. The task of the control valve is to activate the trailer's brakes simultaneously with the activation of the tractor's brakes. Moreover, in the event of an unexpected disconnection of the conduit between the trailer and the tractor, the control valve automatically activates the machine's brake - it applies only to pneumatic systems.



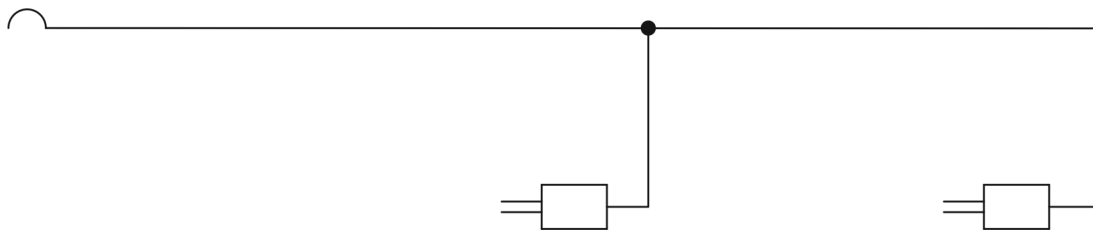
RYSUNEK 3.7 Diagram of the double line pneumatic system with a manual regulator



RYSUNEK 3.8 Diagram of the double line pneumatic system with an automatic regulator





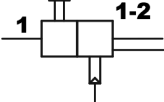
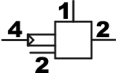
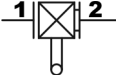
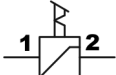




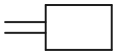

RYSUNEK 3.9 Diagram of the single line pneumatic system with a manual regulator



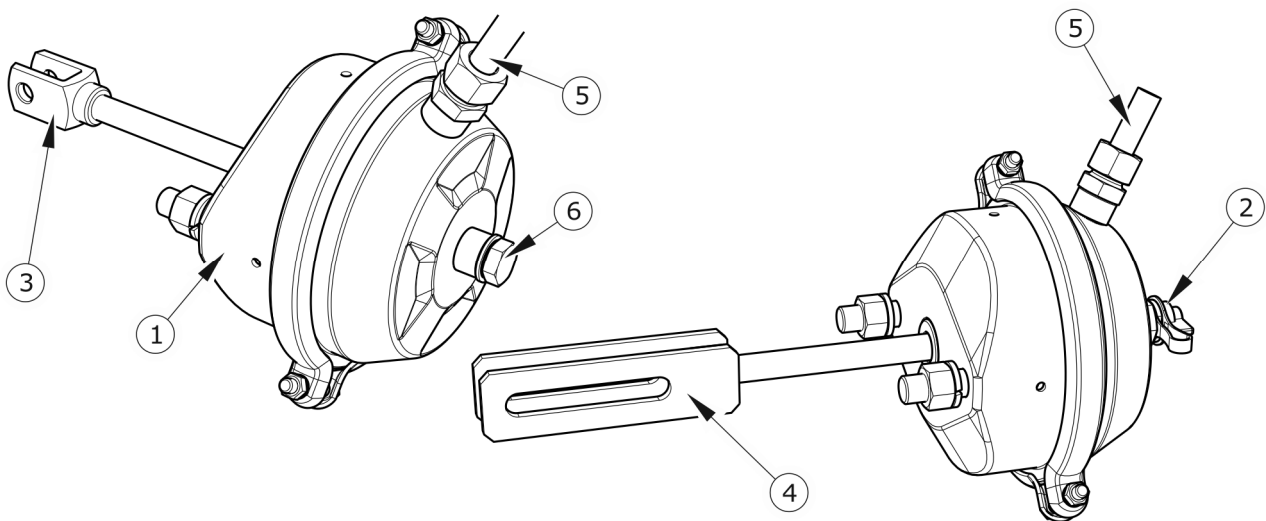
RYSUNEK 3.10 Diagram of the hydraulic system

TABELA 3.2 List of symbols used in diagrams

SYMBOL	MEANING
	Pneumatic connection(plug)
	Pneumatic connection with shut-off valve (socket)
	Air filter
	Drain valve
	Main control valve
	Relay valve
	Automatic brake force regulator
	Manual three-position braking force regulator
	Wire connection (connector)
	Air reservoir

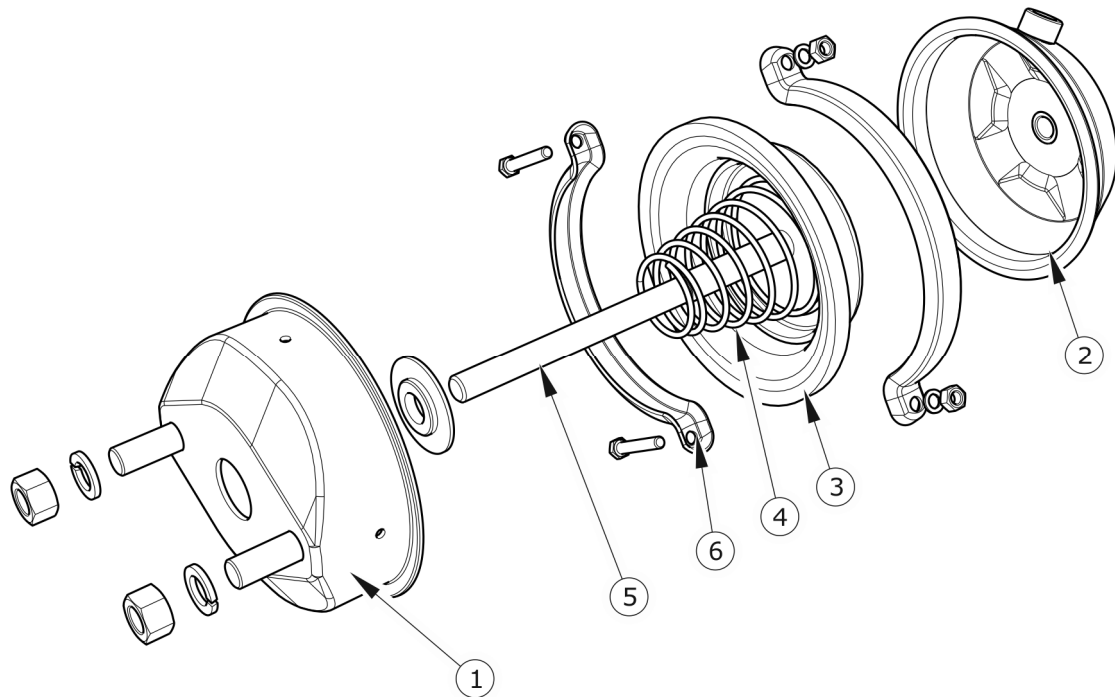
SYMBOL	MEANING
	Actuator
	Control valve (connector)

In the version of the trailer with overrun brake, the drawbar with a movable drawbar eye is attached to the turntable frame similarly to the rigid drawbar. The drawbar eye is connected with the overrunning axles through a system of pushers and steel cables. When the tractor brake is applied, the speeding trailer exerts pressure on the tractor hitch, as a result of which the drawbar eye slides into the body. The brake lines are stretched and the expander arms move as a result.



RYSUNEK 3.11 *Pneumatic brake cylinders*

(1) diaphragm actuator, (2) control joint, (3) short forks, (4) long forks, (5) pneumatic conduit, (6) plug



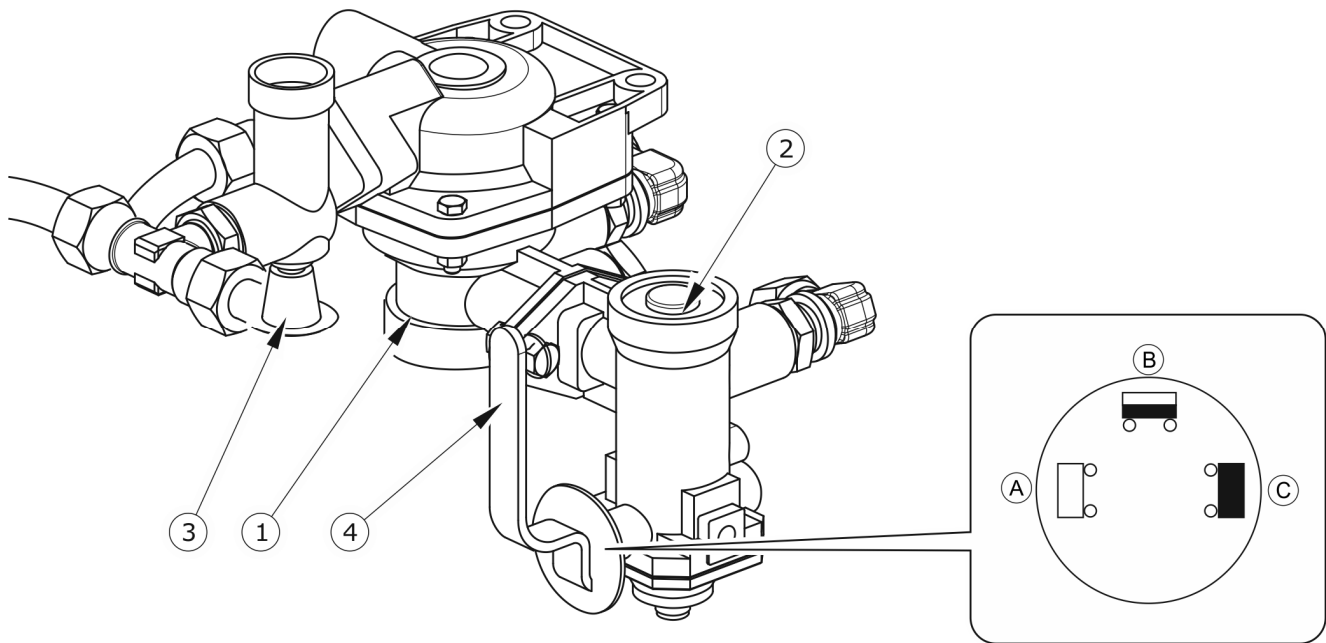
RYSUNEK 3.12 *Construction of a diaphragm actuator*

(1) front cover, (2) rear cover, (3) diaphragm, (4) spring, (5) piston rod, (6) clamp

The applied valve has a brake releasing system, used when the trailer is disconnected from the tractor - figure (3.13). As soon as the air hose is connected to the tractor, the retarder device automatically adjusts itself to the position which enables the brakes to operate normally.

Three-range brake force regulator (2) - figure (3.13), adjusts the braking force depending on the setting. Three-range braking force regulator (2) - figure (3.13), adjusts the braking force depending on the setting. There are three working positions: A - "No load", B - "Half load" and C - "Full load".

In double conduit systems with an automatic regulator, the braking force adjusts automatically depending on the trailer load. The automatic regulator does not require servicing during normal use of the trailer.



RYSUNEK 3.13 Control valve and brake force regulator

(1) control valve, (2) brake force regulator, (3) trailer brake release button when parked, (4) regulator operation selection lever, (A) "NO LOAD" position, (B) "HALF LOAD" position, (C) "FULL LOAD" item

3.2.4 PARKING BRAKE

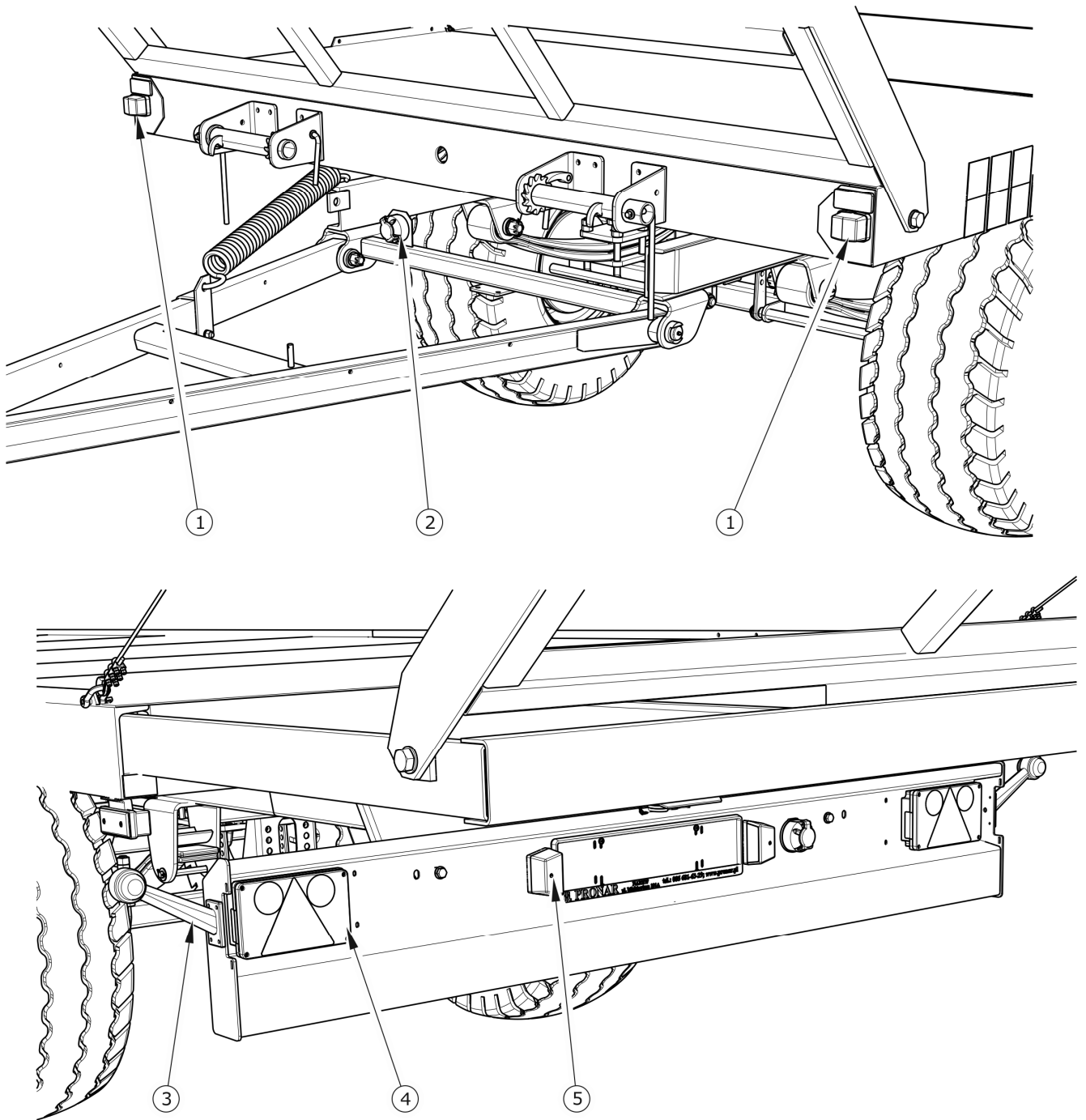
The parking brake is used to immobilize the trailer when parked. The brake crank mechanism, located in the front on the left side is connected by a steel cable to the expander levers of the driving axle. By turning the crank of the mechanism, the steel cable is tightened. The expander arms exerting pressure on the brake shoes, causing the axle to become immobilized. Before driving off, the parking brake must be released - the steel rope must hang loosely.

In the version of the trailer with overrun brake, the crank mechanism is replaced by a lever brake located on the overrun drawbar.

3.2.5 ELECTRICAL LIGHTING INSTALLATION

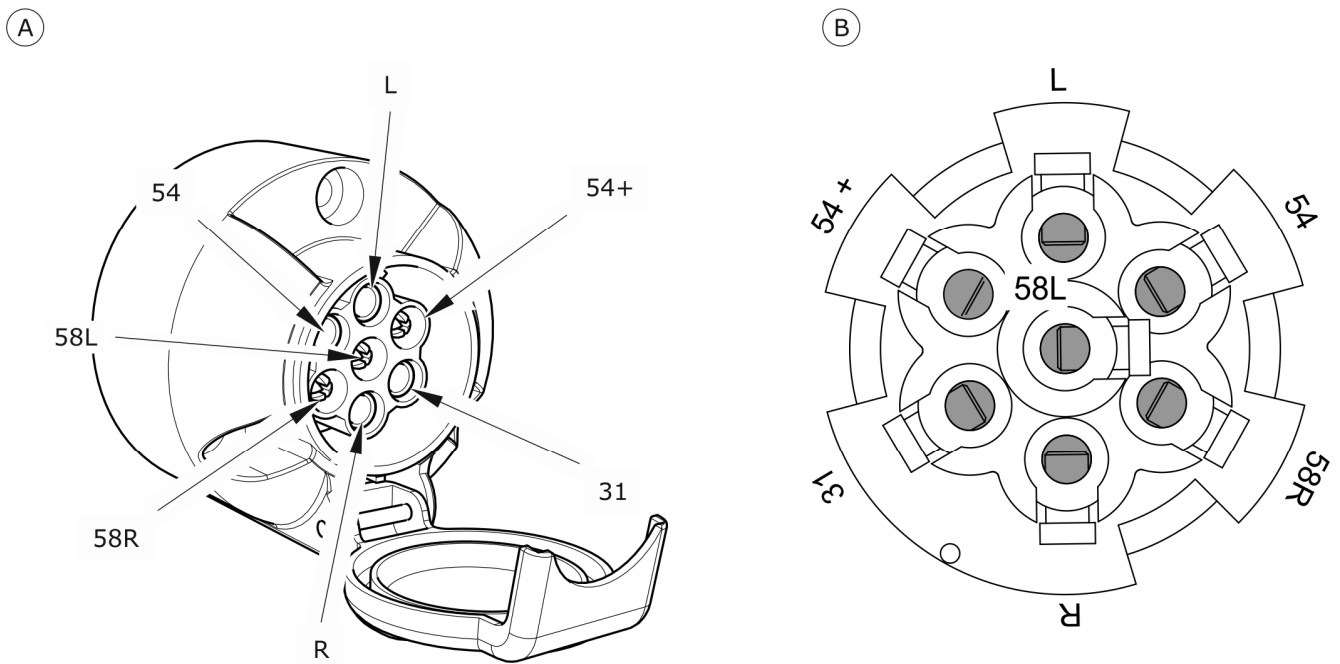
The trailer's electrical system is designed to be powered from a 12 V DC source. To connect the machine to a tractor, use the connection cable provided as standard equipment.

The arrangement of electrical system components and the connection diagram of the connection socket are shown in figures (3.13) and (3.14)



RYSUNEK 3.14 *Arrangement of elements of electrical installation*

(1) white front position lamp, (2) 7-pin connection socket, (3) rear marker lamp, (4) rear combination lamp, (5) license plate lamp



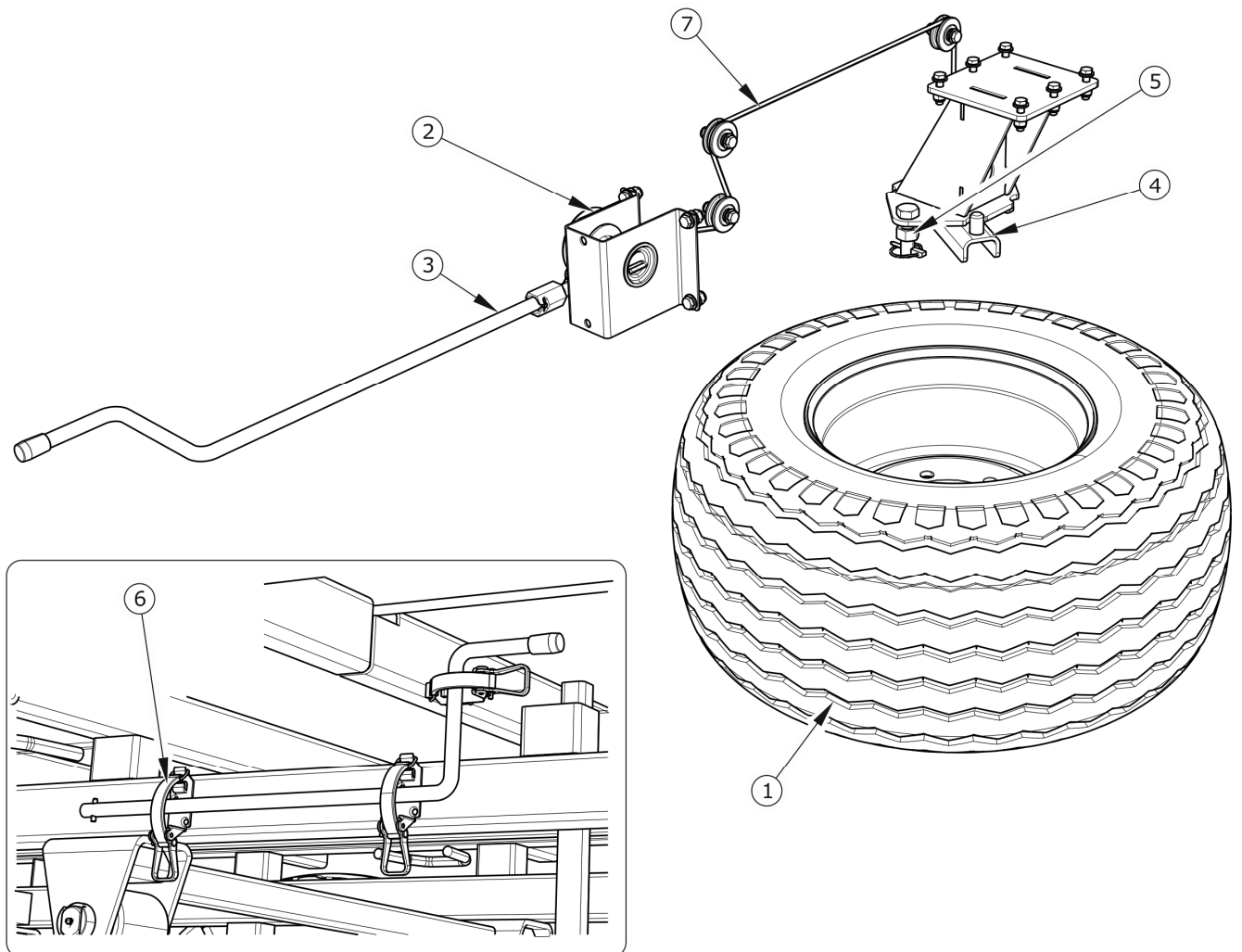
RYSUNEK 3.15 Connection socket

(A) socket view, (B) socket view from the wiring harness attachment side

TABELA 3.3 Markings of connection socket

MARKING	FUNCTION
31	Weight
54+	Power supply + 12V
L	Left direction indicator
54	STOP light
58L	Left rear position lamp
58R	Right rear position lamp
R	Right direction indicator

3.2.6 SPARE WHEEL WINCH



RYSUNEK 3.16 Spare wheel winch construction

(1) spare wheel, (2) winch mechanism, (3) crank, (4) wheel mounting bracket, (5) fixing bolt with locking pin, (6) crank handle, (7) steel cable

CHAPTER

4

RULES OF USE

4.1 PREPARATION OF TRAILER TO WORK

4.1.1 PRELIMINARY INFORMATION

The trailer delivered to the user is completely assembled and does not require additional assembly operations of machine components. The manufacturer ensures that the machine is fully functional, has been checked in accordance with control procedures and is approved for use. However, this does not release the user from the obligation to check the machine during purchase and before commissioning.

4.1.2 HAND-OVER AND INSPECTION OF THE MACHINE AFTER DELIVERY

After delivery of the machine to the recipient, the user is obliged to check the technical condition of the trailer - (one-time inspection). During the purchase, the user must be informed by the seller about the method of use of the machine, the dangers arising from improper use, how to connect the machine with and the principle of operation and construction. Detailed information on the transfer can be found in the *WARRANTY CARD*.

Checking the trailer after delivery

- Check the completion of the machine in accordance with the order.
- Check technical condition of guards.
- Check the condition of the paint coating, check for any signs of corrosion.
- Check the machine for missing parts or damage resulting from incorrect transport of the machine to its destination point (dents, punctures, bends or broken parts, etc.).
- Check the air pressure in the tires and the correct tightening of the nuts of the road wheels.
- Check the technical condition of the drawbar eye and its attachment.

In case of detected irregularities, do not aggregate and start the trailer. In case of any irregularities found, report them directly to the seller to remove any defects.

CAUTION

The seller is obliged to start the trailer for the first time in the presence of the user.

Training by the seller does not release the user from the obligation to become familiar with the contents of this manual.

4.1.3 PREPARING FOR THE FIRST USE, TEST RUNNING OF THE TRAILER

**ADVICE**

All service activities related to the trailer are described in detail further in this manual.

Preparation for trial run

- Read the contents of this *USER'S MANUAL* and follow the recommendations contained therein.
- Adjust the height of the drawbar to the hitch on your agricultural tractor.
- Carry out a visual inspection of the machine in accordance with the guidelines contained in the section *PREPARATION OF THE TRAILER FOR DAILY WORK*.
- Connect machine to the tractor. Immobilize tractor with parking brake.

Trail start-up

- Check all the trailer's lubrication points, lubricate the machine if necessary according to recommendations provided in section 5.
- Check if the road wheel nuts are properly tightened.
- Drain the air reservoir in the brake system.
- Make sure that the hydraulic, pneumatic and electric connections in the agricultural tractor comply with the requirements, otherwise the trailer should not be connected.
- Connect the trailer to tractor.

- By activating the individual lights, check the correct operation of the electrical system.
- Release the tractor parking brake. Release the tractor parking brake. Check the trailer's braking performance while driving.
- Stop the tractor and turn off the engine, immobilize the tractor and trailer with parking brake.

If during the test run, alarming symptoms appear, such as:

- excessive noise and unnatural noises from rubbing moving parts,
- leaking brake system, hydraulic oil leaks,
- incorrect operation of the brake cylinders,
- other faults,

do not use the trailer until the removal of fault. If the fault cannot be rectified or remedied, you will void the warranty, contact the place of purchase for clarification or repair.

4.1.4 PREPARATION OF TRAILER TO EVERY DAY WORK

Scope of control activities

- Visually assess the condition of inflation of the road wheels. If in doubt, check the air pressure carefully.
 - Check the technical condition of the drawbar eye.
 - Check correct operation of the electrical system.
 - Assess the technical condition and completeness of protective covers.
 - Install a triangular slow-moving vehicle sign - if the trailer will be moving on public roads.
-

DANGER

Careless and improper use and operation of the trailer, and non-compliance with the recommendations given in this operator's manual is dangerous to your health.

The machine must not be used by persons who are not authorized to drive agricultural tractors, including children and people under the influence of alcohol or other drugs.

Non-adherence to the principles of safe use may endanger the health of the operator and others.

4.2 CONNECTING AND DISCONNECTING OF THE TRAILER

The machine may be connected to an agricultural tractor, provided that all connections (electric, hydraulic and pneumatic) and the hitch on the agricultural tractor comply with the requirements of the manufacturer of the machine. In order to hitch the trailer to a tractor, perform the following actions, observing their sequence.

Connecting

- ➔ Position the agricultural tractor directly in front of the trailer drawbar eye.
- ➔ Reverse the tractor, hitch the trailer to the appropriate hitch on the tractor, check the hitch lock protecting the machine against accidental unhitching.
- ➔ If an automatic coupler is used in the agricultural tractor, make sure that the hitching operation is completed and that the drawbar eye is secured.
- ➔ Turn off the tractor engine. Close the tractor cabin and secure it against unauthorized access.
- ➔ Connect the braking system conduits.
 - ⇒ If the trailer is equipped with a double conduit pneumatic system, first connect the pneumatic conduit marked yellow with the yellow socket on the tractor, and then the pneumatic conduit marked red with the red socket on the tractor.

- ⇒ If the trailer is equipped with a single conduit pneumatic system, connect the pneumatic conduit marked black with a black socket in the tractor.
 - ⇒ If the trailer is equipped with a hydraulic brake system, connect the brake system conduit with the appropriate hydraulic socket in the tractor.
- ➔ Connect the electric installation cable
 - ➔ Check and, if necessary, protect the cables against abrasion or other mechanical damage.
 - ➔ Immediately before driving, remove the chocks from under the trailer wheels and release the parking brake.

**CAUTION**

It is forbidden to use a damaged trailer.

When turning, the connection conduits must hang loosely and not become entangled in the moving parts of the machine and the tractor.

**DANGER**

During hitching, there must be no bystanders between the trailer and the tractor. The agricultural tractor operator when connecting the machine should take particular care during work and make sure that unauthorized persons are not in the danger zone during coupling.

When connecting the hydraulic or pneumatic conduits to the tractor, make sure that the tractor and trailer installations are not under pressure.

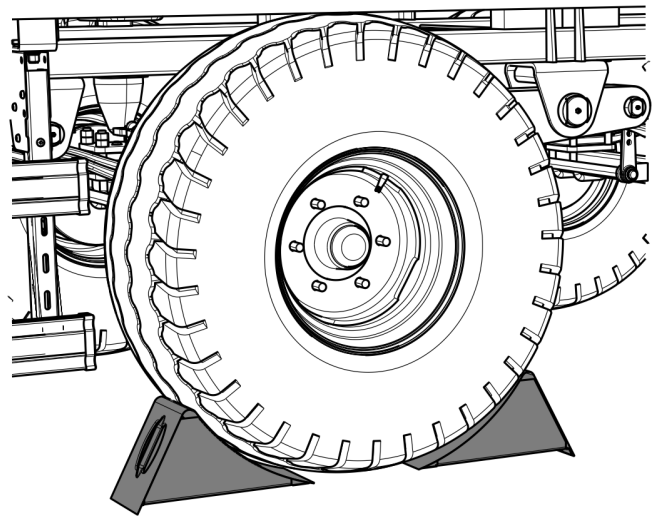
Ensure good visibility during coupling.

After completing the coupling check the safety of the pin hitch.

Uncoupling

In order to uncouple the trailer from the tractor, perform the following actions, observing their sequence.

- ➔ Immobilize the tractor with parking brake, turn off the tractor engine.
- ➔ Close the tractor cabin and secure it against unauthorized access.
- ➔ Place chocks under the trailer wheel to prevent it from rolling away.
- ➔ Disconnect the electric wire.



RYSUNEK 4.1 *Correct adjustment of the wedges*

DANGER



Particular caution should be exercised when disconnecting the trailer from the tractor. Ensure good visibility. Unless it is necessary, do not stay between the machine and the tractor.

Before disconnecting the wires and the drawbar eye, close the tractor cab and secure it against access by unauthorized persons. The tractor engine must be turned off.

Do NOT disconnect the trailer when the machine is loaded.

- ➔ Disconnect the brake system conduits.
 - ⇒ In case of a double conduit pneumatic system, first disconnect the conduit marked red and then the conduit marked yellow.
 - ⇒ In case of single conduit pneumatic installation, disconnect the conduit marked black.
 - ⇒ In case of hydraulic brake systems, disconnect the appropriate conduit from the tractor socket.
- ➔ Protect the ends of the wires with covers.

- ➔ Unlock tractor hitch, drive tractor away.

4.3 LOADING AND SECURING OF THE LOAD

4.3.1 GENERAL LOADING INFORMATION

The agricultural trailer is designed to transport crops and agricultural products in the form of bales or pressed cubes within the farm and on public roads. The machine is also designed to transport crops and agricultural products on pallets and box-pallets.

The trailer must be positioned to drive straight ahead and connected to the tractor. Loading process should take place only when the trailer is placed on level and stable ground. Before starting loading, check the technical condition of linking lines or chains, and whether they are properly secured to the ladders and the trailer frame. Loading and driving a trailer with damaged lines or chains is prohibited. It is recommended to use a loader, conveyor or forklift truck to unload the trailer. Keep a safe distance during unloading and loading. Keep bystanders away from the working area of the machine.

The load should be evenly distributed along the length and width of the platform to ensure proper distribution of axle loads and proper stability of the trailer. The load must not protrude beyond the outline of the load platform. The number of load layers depends on the size of the bales or pressed cubes, their distribution on the loading platform and the weight. However, the maximum height specified by road traffic regulations and the maximum load capacity of the trailer may not be exceeded. When loading goods in pallets or on crates, pay attention to their distribution on the platform. Pallets must be secured in such a way that they cannot slide freely on the platform. It is forbidden to stack the pallets in layers.

CAUTION



It is forbidden to exceed the permissible load capacity of the trailer.

The load on the platform must be evenly distributed and properly secured.

While driving on public roads, the extendable frame must be retracted.

The load must be arranged in such a way that it does not threaten the stability of the trailer and does not hinder driving.

Loading should be performed by a person with appropriate authorizations to operate the equipment (if required).

DANGER



Trailer overloading, inefficient loading and securing of loads are the most common causes of accidents during transport.

Uneven distribution of the load can overload the chassis of the trailer.

It is forbidden to transport people and animals.

During work, keep a safe distance from overhead power lines.

When loading or unloading, bystanders must be careful and keep a safe distance from hazardous areas

4.3.2 SECURING OF THE LOAD

The load (pressed cubes, bales or box-pallets) should be properly secured against shifting by means of belts with a tensioning mechanism. Belts can be attached to the following structural elements:

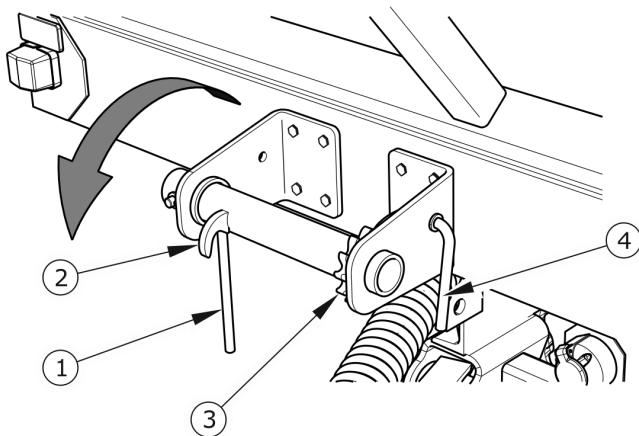
- left and right platform side members,
- front beam,
- rear beam of the sliding frame,
- handles welded to the stringers,
- oblong construction holes in the side part of the profiled floor,
- tensioners bolted to the front beam,
- handles welded to the front and rear ladders.

The number of security measures used depends on the method of loading, the type of load and the size of the load. If the transport will take place on slopes and/or in strong gusts of wind, the height of the load should be limited depending on the situation.

Regardless of the type of transported load, the user is obliged to secure it in such a way that the load cannot move freely and cause contamination of the road.

Due to the variety of materials, tools, methods of securing and securing cargo, it is not possible to describe all the methods of loading. When working, be guided by reason and your own experience. The trailer user is obliged to familiarize himself with the regulations concerning road transport and adhere to their recommendations.

4.3.3 TENSIONER OPERATION



RYСУNEK 4.2 *Right tensioner*

(1) tensioner lever, (2) mounting hook, (3) latch,
(4) release lever

Scope of activities

Two tensioners bolted to the front beam of the frame can be used to secure the load (the tensioner is available only in the T023M trailer version as an accessory).

Lashing straps or ropes should be installed on one side to a fixed structural element of the trailer, e.g. securing lugs on the rear ladder, and on the other side to a hook in the tensioner. Tighten the belt by turning the lever in the direction of the arrow

To remove belts or ropes, turn the lever (1) until you can release the lever (4). Release the lever (4) and unwind the belts.

4.4 LOAD TRANSPORTATION

During the journey, you must comply with road traffic regulations, be cautious and prudent. The most important guidelines for steering a tractor with a trailer attached are presented below.

- Before moving make sure that there are no bystanders, especially children, near the trailer and tractor. Ensure proper visibility.
- Make sure that the trailer is correctly connected to the tractor and tractor's hitch is properly secured.
- The trailer must not be overloaded, the load must be evenly distributed so that the maximum permissible axle loads are not exceeded. Exceeding the permissible

load capacity of the vehicle is prohibited and may cause damage to the machine, and may also pose a threat to the tractor and trailer operator or other road users when travelling on the road.

- The permissible design speed and speed resulting from restrictions on road traffic regulations must not be exceeded. The travel speed should be adjusted to the prevailing road conditions, trailer load condition, type of load carried and other conditions.
- The trailer disconnected from the tractor must be secured by immobilising it with the parking brake and placing chocks under the wheels. It is prohibited to leave the trailer unsecured. In the event of a machine breakdown, stop at the side of the road without endangering other road users and mark the stopping place in accordance with traffic regulations.
- When driving on public roads, the trailer must be marked with a slow-moving vehicle sign on the rear wall of the load box, if the trailer is the last vehicle in the group.
- The tractor operator is required to equip the trailer with an approved or approved warning reflective triangle.
- While driving, obey the rules of the road, signal the change of direction by means of direction indicators, keep clean and take care of the technical condition of the lighting and signalling installation. Damaged or lost lighting and signalling components must be repaired or replaced immediately.
- Avoid ruts, depressions, ditches, or driving along roadside slopes. Driving across such obstacles can cause the trailer and tractor to tilt suddenly. This is particularly important because the centre of gravity of a trailer with a load (and especially with a volumetric load) adversely affects driving safety. Driving near the edge of ditches or canals is dangerous due to the risk of landslides under the wheels of the trailer or tractor.
- The travel speed should be reduced sufficiently in advance of driving to curves, when driving on uneven or sloping terrain.
- When driving, avoid sharp turns, especially on slopes.

**CAUTION**

Travel with a high-volume load through ruts, ditches, slopes, etc. poses a high risk of overturning the trailer. Be especially careful.

- It should be remembered that the braking distance of the set increases significantly with the increase in the weight of the transported load and the increase in speed.
- Control the behaviour of the shredding machine when driving on uneven terrain and adjust the speed to terrain and road conditions.
- Prolonged driving on slopes creates the risk of losing braking efficiency.
- When driving the trailer without a load, fold the front and rear ladders.

4.5 UNLOADING

The trailer must be positioned to drive straight ahead and connected to the tractor. Unloading should take place only when the trailer is placed on level and stable ground.

**DANGER**

*Make sure that nobody is in the vicinity of the cargo during unloading.
During work, keep a safe distance from overhead power lines.*

It is recommended to use a loader, conveyor or forklift truck to unload the trailer. When working, ensure yourself good visibility and exercise extreme caution. Immobilize trailer and tractor with parking brake and turn tractor engine off. Place wedges under one wheel of the trailer. Remove all securing means (straps, ropes, etc.) immediately before unloading. Unload the trailer according to generally accepted health and safety rules.

4.6 RULES FOR THE USE OF TIRES

When working with tires, the trailer should be secured against rolling by placing chocks under the wheels. The wheel can be dismantled only when the trailer is not loaded.

- Repair work on wheels or tires should be performed by persons trained and authorized for this purpose. These works should be performed with the use of appropriately selected tools.
- Checking the tightness of the nuts should be carried out after the first use of the trailer, after the first journey with a load and then every 6 months of use or after travelling 25,000 km, whichever comes first. In the event of intensive use, checking the tightening should be done at least every 10,000 kilometres. Each time the inspection activities should be repeated, if the trailer wheel was dismantled.
- Regularly check and maintain proper tire pressure as recommended in the instructions (especially after a long break in the trailer use).
- Tire pressure should also be checked during all-day intensive work. Take into account that an increase in tire temperature can increase the pressure by up to 1 bar. With this increase in temperature and pressure, reduce load or speed.
- Never reduce the pressure by venting if it increases due to temperature.
- Tire valves should be protected with the appropriate caps to avoid their contamination.
- Do not exceed the maximum trailer speed.
- During the whole day cycle, take a minimum of one hour break at noon.
- Observe 30 minutes breaks for cooling the tires after driving 75 km or after 150 minutes of continuous driving whichever comes first.
- Damaged road surfaces, sudden and variable manoeuvres and high speed when turning should be avoided.

CHAPTER

5

TECHNICAL SUPPORT

5.1 PRELIMINARY INFORMATION

When using the trailer, it is necessary to constantly check the technical condition and perform maintenance procedures that will allow the machine to be kept in good technical condition. Therefore, the trailer user is obliged to perform all maintenance and adjustment activities specified by the Manufacturer.



CAUTION

Repairs during the warranty period may only be carried out by authorized service centres.

This chapter describes in detail the procedures and scope of activities that the user can perform on his own. In the event of unauthorized repairs, changes to factory settings or activities that have not been considered possible by the trailer operator, the user loses the warranty.

5.2 DRIVING AXLE SERVICE

5.2.1 PRELIMINARY INFORMATION

Work related to the repair, replacement or regeneration of wheel axle components should be entrusted to specialized workshops that have the appropriate technology and qualifications to perform this type of work.

The responsibilities of the user are limited to:

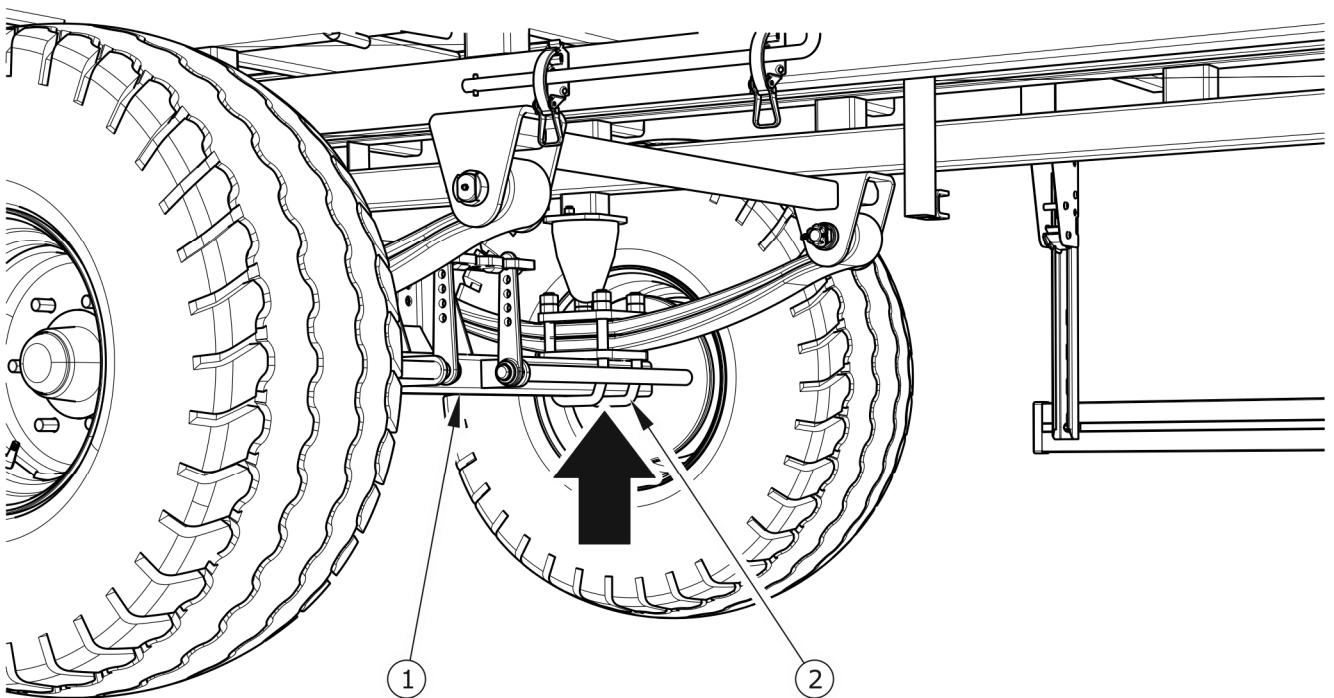
- control and adjustment of the clearance of wheel axle bearings,
- assembly and disassembly of the wheel, checking the tightness of the wheels,
- control and maintenance of air pressure, assessment of the technical condition of wheels and tires.
- checking of brake lining thickness,
- adjustment of mechanical brakes.

Activities related to:

- grease change in axle bearings,
- replacement of bearings, hub seals,
- replacement of brake shoes,
- other repairs of the axle,

may be performed by specialized vehicle service stations.

5.2.2 CHECKING OF THE CLEARANCE OF THE AXLE BEARINGS



RYSUNEK 5.1 *The jack's support point*

(1) driving axle, (2) U-bolt

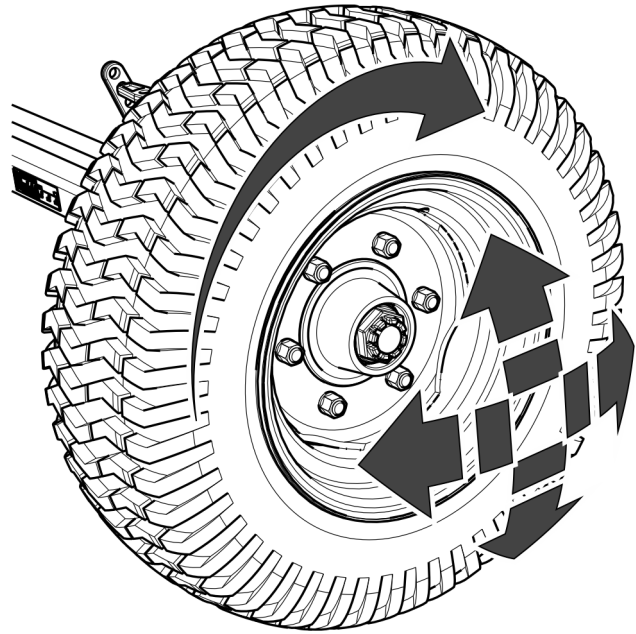
Preparatory activities.

- ➔ Hitch the trailer to tractor, immobilize tractor with parking brake.
- ➔ Place the trailer on a hard and flat surface.
 - ⇒ Position the tractor for straight-ahead travel.
- ➔ Place blocking chocks under the trailer wheel that will not be lifted. Make sure that the machine does not roll during the inspection.
- ➔ Raise the wheel (opposite to the stacked chocks).

- ⇒ The jack should be placed in the place indicated by the arrow in figure (5.1). The jack must be suited to the machine weight.

Checking of the clearance of the axle bearings

- ➔ Turn the wheel slowly in two directions to check if the movement is smooth and the wheel rotates without excessive resistance and jams.
- ➔ Turn the wheel so that it rotates very quickly, Checked by the that the bearing does not make any unusual sounds.
- ➔ Loading a bale on the turntable may only take place when the wrapper has been stopped
 - ⇒ You can use the lever under the wheel, resting the other end on the ground.
- ➔ Lower the jack, replace the chocks and repeat the checks for the remaining wheels.



RYSUNEK 5.2 *Bearing clearance checking*

ADVICE



A damaged hub cover or lack of it will cause the penetration of dirt and moisture to the hub, which will result in much faster wear of the bearings and hub seals.

Bearing life depends on trailer operating conditions, load, vehicle speed and lubrication conditions.

If looseness is felt, adjust the bearings. Unnatural sounds coming from the bearing may be symptoms of excessive wear, dirt or damage. In this case, the bearing, together with sealing rings, should be replaced with new ones (if they are not suitable for further operation), or cleaned and re-lubricated.

**INSPECTION**

- *After covering the first 1,000 km.*
- *Every 6 months of use or driving 25,000 km.*

Check the condition of the hub cover, if necessary replace it with a new one. Inspection of bearing looseness may only and exclusively be performed, when the trailer is hitched to the tractor. The machine cannot be loaded.

**DANGER**

Before starting work, read the instructions for the lift and follow the manufacturer's instructions.

The jack must be stably supported on the ground and the wheel axle.

Ensure that the trailer will not roll when checking the looseness of the axle bearings.

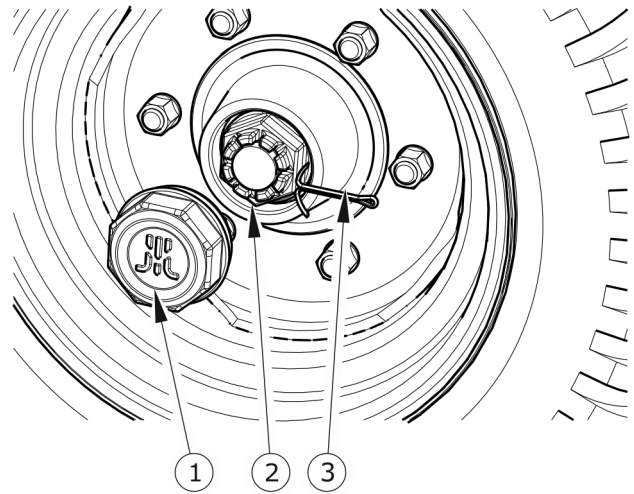
5.2.3 ADJUSTMENT OF THE CLEARANCE OF WHEEL AXLE BEARINGS

The wheel should turn smoothly, without jams and no noticeable resistance. Adjustment of bearing slackness may only be performed, when the trailer is not loaded and is hitched to the tractor.

Make sure that the trailer is properly secured and will not roll during disassembly

- ➔ Remove the hub cover (1), figure (5.3).
- ➔ Disassemble the hub cover (1), figure (5.3).

- ➔ Tighten the castellated nut to remove the clearance.
- ➔ The wheel should rotate with slight resistance.
- ➔ Unscrew the nut (not less than 1/3 turn) to cover the nearest nut groove with a hole in the axle pin. The wheel should rotate without excessive resistance.
- ➔ The nut must not be too tight. It is not recommended to use too much pressure due to the deterioration of the operating conditions of the bearings.
- ➔ Secure the castellated nut with a spring cotter pin and mount the hub cover.
- ➔ Gently tap the hub with a rubber or wooden hammer.



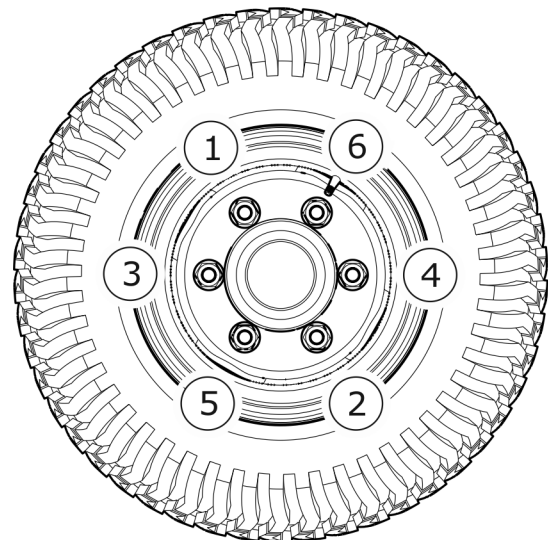
RYSUNEK 5.3 Clearance adjustment

(1) hub cover, (2) crown nut, (3) cotter pin

5.2.4 MOUNTING AND DISMOUNTING OF THE WHEEL, CHECKING THE TIGHTNESS OF THE NUTS

Removing of the wheel

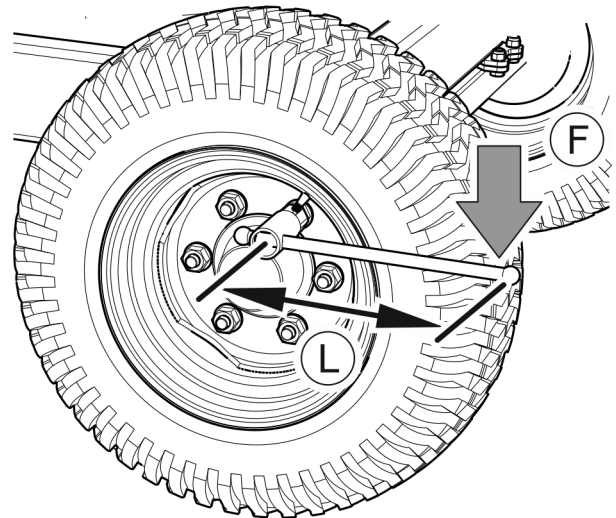
- ➔ Place chocks under the wheel that will not be dismantled.
- ➔ Ensure that the trailer is properly secured and will not move during wheel dismantling.
- ➔ Loosen the wheel nuts according to the order given in figure (5.4).
- ➔ Place the jack and raise the trailer.
- ➔ Remove the wheel.



RYSUNEK 5.4 The order of the nuts unscrewing and tightening

Wheel attachment

- ➔ Clean wheel axle pins and nuts from dirt.
 - ⇒ Do not lubricate the thread of the nut and stud.
- ➔ Check the condition of pins and nuts, replace if necessary.
- ➔ Put the wheel on the hub, tighten the nuts in such a way that the wheel rim adheres exactly to the hub.
- ➔ Lower the trailer, tighten the nuts according to the recommended torque and the given order.



M18x1.5 - 270 Nm

RYSUNEK 5.5 Tightening method

(F) - weight of the person tightening the wheel,

(L)- length of the wrench's arm

Tightening of the nuts

The nuts should be tightened gradually diagonally (in several stages, until the required tightening torque is obtained), using a torque wrench. In the absence of a torque wrench, an ordinary wrench can be used. The wrench arm (L), figure (5.5), should be selected according to the weight of the person (F) tightening the nut. It should be remembered that this method of tightening is not as accurate as using a torque wrench. The nuts should be checked at the intervals given in the table below. The activities should be repeated each time if the trailer wheel was dismantled.

INSPECTION



- *After the first use.*
- *After first travel with load.*
- *Every 6 months of use or every 25,000 km, whichever comes first.*
- *In the event of intensive use, checking the tightening should be done at least every 10,000 kilometres.*

ADVICE



Wheel nuts should be tightened with a torque of 270 Nm - nuts M18x1.5.

TABELA 5.1 *Key arm length selection*

WHEEL TIGHTENING TORQUE	BODY WEIGHT (F)	ARM LENGTH (L)
[Nm]	[kg]	[m]
270	90	0.30
	77	0.35
	67	0.40
	60	0.45

CAUTION



Wheel nuts must not be tightened with impact wrenches, due to the danger of exceeding the permissible tightening torque, which may result in breaking the connection thread or breaking the hub pin.

The greatest tightening accuracy is achieved with a torque wrench. Before starting work, make sure that the correct torque value is set.

5.2.5 AIR PRESSURE CONTROL, ASSESSMENT OF THE TECHNICAL CONDITION OF TIRES AND STEEL RIMS



ADVICE

The value of the tire pressure is specified on the information sticker, placed on the rim or upper frame, above the trailer wheel.

The tire pressure should be checked after each wheel change and at least once a month. In the event of intensive use, it is recommended to check the air pressure more frequently. The trailer must be unloaded during this time. The inspection should be performed before driving, when the tires are not warm, or after the machine has been parked for a longer period of time.

**DANGER**

Damaged tires or rims can cause a serious accident.

When checking the pressure, you should also pay attention to the technical condition of the rims and tires. You should take a close look at the side surfaces of the tires, check the condition of the tread. In the event of mechanical damage, consult your nearest tire service centre and ensure that your tire defect is eligible for replacement. Rims should be checked for deformation, material cracks, weld cracks, corrosion, especially around welds and in the place contact with the tire.

**INSPECTION**

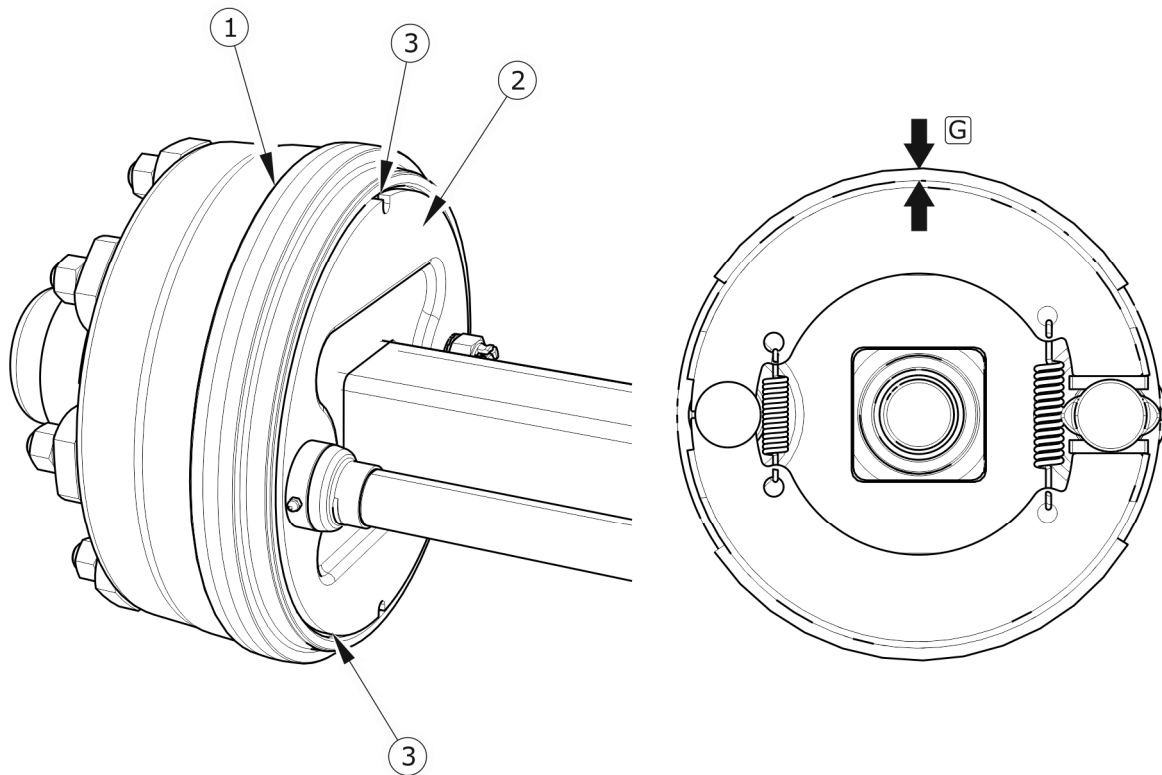
- *Every 1 month of use.*
- *Every 1 week in case of intensive use.*

5.2.6 CHECKING OF BRAKE LINING THICKNESS

During use of the trailer, friction linings of drum brakes are subject to wear. In this case, the complete brake shoes must be replaced with new ones. Excessive wear of brake shoes is a condition in which the thickness of the brake linings glued or riveted to the steel structures of the brake shoes exceeds the minimum value and is manifested by an elongation of the actuator piston rod stroke. Assessment of the technical condition of the brake linings should be carried out through the inspection holes (3) - figure (5.6).

**ADVICE**

The minimum thickness of the brake linings is 2 mm.



RYSUNEK 5.6 *Checking of the brake lining*

(1) brake drum, (2) disc, (3) inspection holes, (G) lining thickness



INSPECTION

The lining thickness should be checked every 6 months.

5.2.7 ADJUSTMENT OF MECHANICAL BRAKES

Preliminary information

Significant wear of linings causes an increase in the stroke of the brake actuator piston rod and deterioration of braking efficiency.

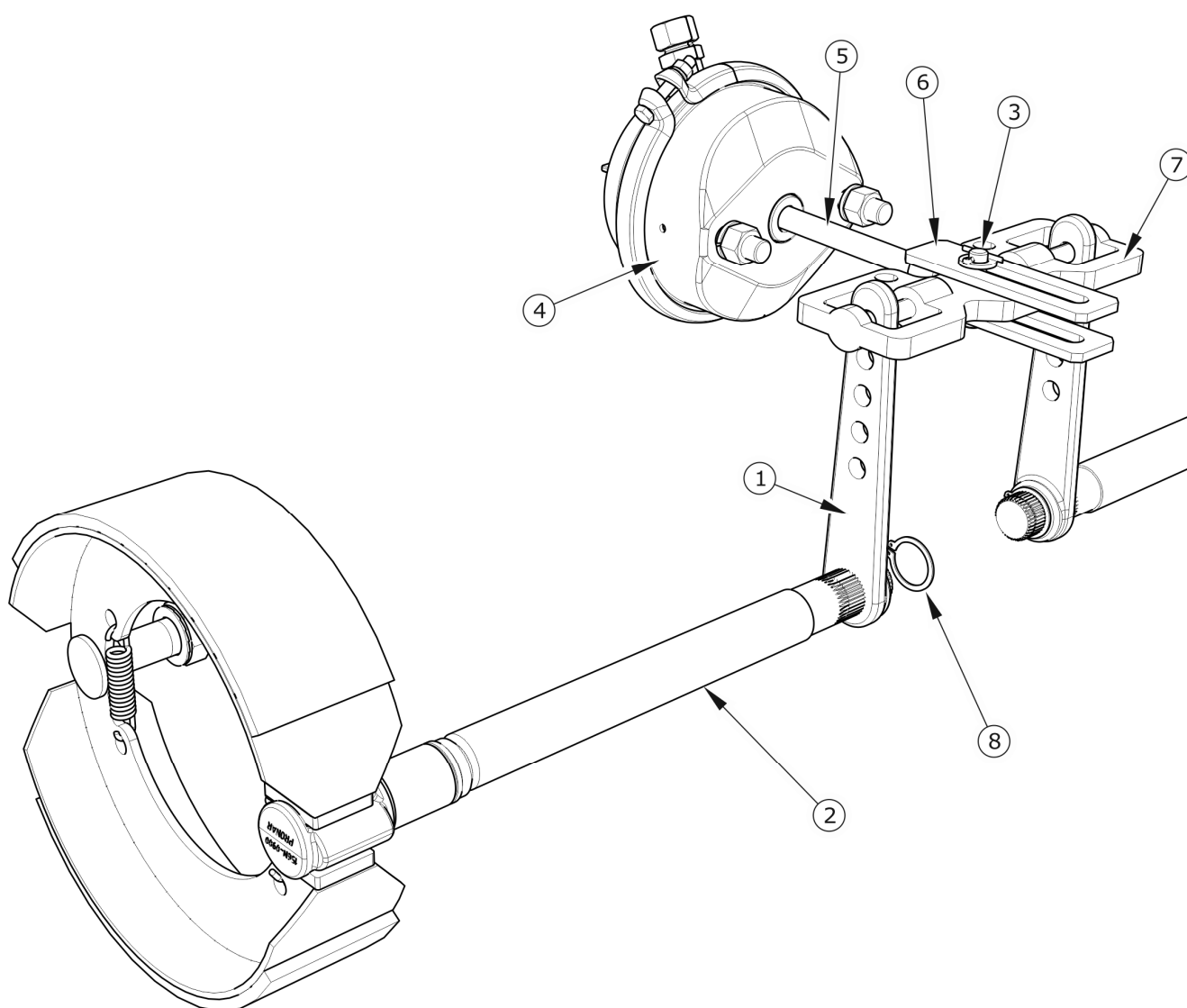


ADVICE

The correct stroke of the piston rod should be in the range of 25 - 45 mm.

When braking, the piston rod stroke should be within the specified working range, and the angle between the piston rod and the expander arm should be approximately 90° - compare Figure (5.8).

The braking force also decreases when the angle of operation of the brake actuator piston rod (5) is not appropriate— figure (5.7) in relation to the expander arm (1). In order to obtain the optimal mechanical operating angle, the piston rod fork (6) must be mounted on the expander arm (1) in such a way that the operating angle amounts to approx. 90° when fully braking.



RYSUNEK 5.7 *Construction of the brake of the driving axle*

(1) expander arm, (2) expander shaft, (3) fork pin, (4) brake actuator, (5) actuator piston rod, (6) actuator fork, (7) bar, (8) expansion ring

**CAUTION**

Incorrectly adjusted brake may cause the brake shoes to rub against the drum, which may result in faster wear of the brake linings and/or overheating of the brake.

TABELA 5.2 *Operating data of the pneumatic actuator*

NOMINAL ACTUATOR STROKE L [mm]	MINIMUM ACTUATOR STROKE L_{MIN} [mm]	MAXIMUM ACTUATOR STROKE L_{MAX} [mm]
75	25	45

**INSPECTION**

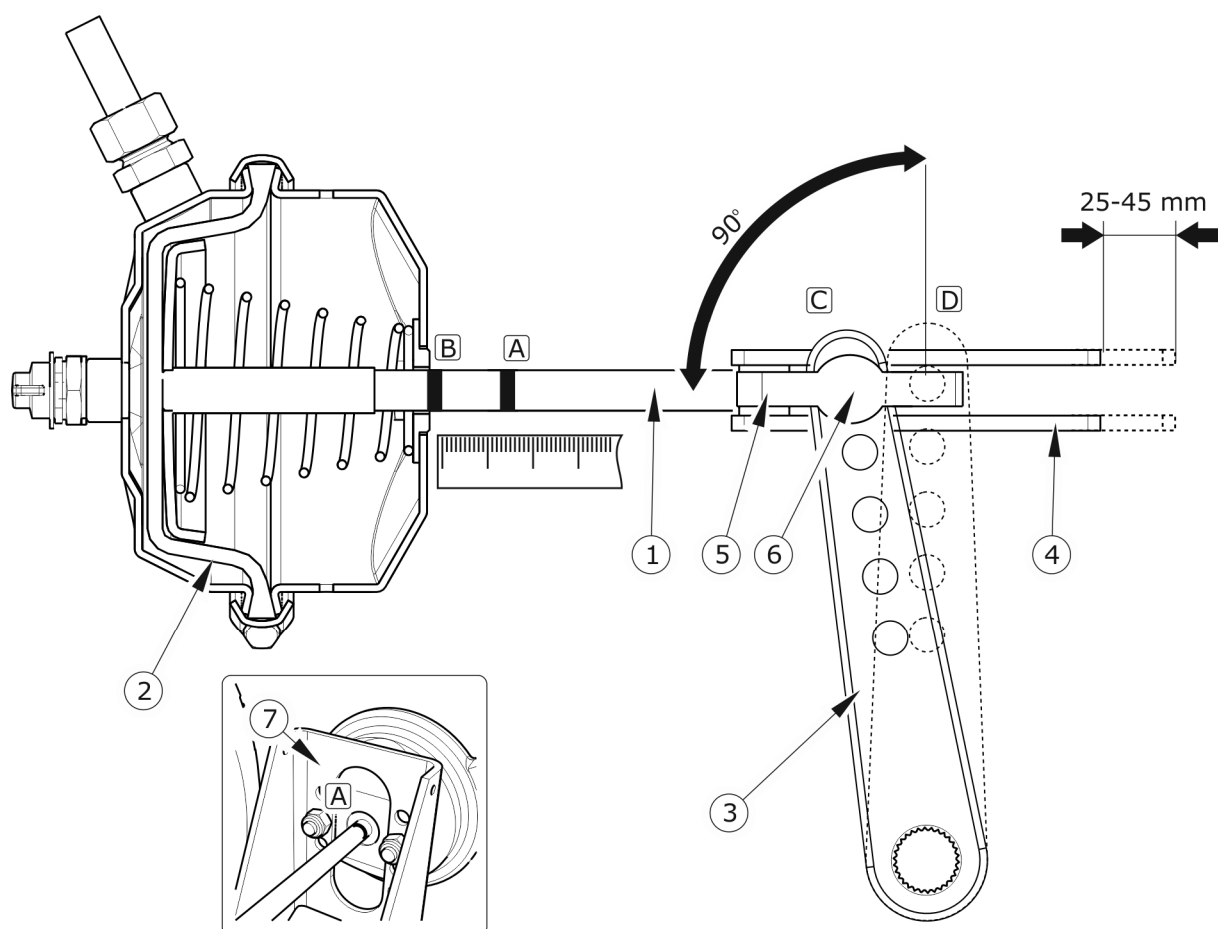
- *Every 6 months check the technical condition of the brake.*

The control consists in measuring the extension length of each piston rod while braking at a standstill. In the event that the piston rod stroke exceeds the maximum value (45 mm), the system should be adjusted.

Scope of service activities

- ➔ Connect the trailer to tractor.
- ➔ Turn off the tractor engine and remove the keys from the ignition.
- ➔ Immobilize tractor with parking brake.
- ➔ Make sure the trailer is not braked.
- ➔ Secure the trailer with wheel chocks.
- ➔ On the piston rod (1) of the actuator, mark the position of the maximum retraction of the piston rod with a line (A) - figure (5.8). Mark the position of the maximum retraction of the piston rod on the adjacent actuator.

- ➔ Press the brake pedal in the tractor, mark with a line (B) the position of the maximum extension of the piston rod. Mark the position of the maximum extension of the piston rod on the adjacent actuator.
- ➔ Measure the distance between the lines (A) and (B). If the piston rod stroke is not within the correct operating range, the expander arm should be adjusted.
- ➔ Remember or mark the original position of the bar in the openings of the spreader arms.
- ➔ Disassemble the pin of the actuator fork, disassemble the clip.



RYSUNEK 5.8 Brake adjustment principle

(1) actuator piston rod, (2) actuator diaphragm, (3) expander arm, (4) actuator fork, (5) bar, (6) bar position, (7) actuator bracket, (A) mark on the piston rod in the unbraked position, (B) the marker on the piston rod in the full brake position, (C) the arm position in the unbraking position, (D) the arm position in the full brake position

- ➔ Check that the piston rods of the actuators move freely and in the full nominal range.
- ➔ Check that the ventilation holes of the actuators are not clogged with debris and that there is no water or ice inside. Check the correct mounting of the actuator.
- ➔ Clean the cylinders, thaw if necessary and remove the water through the blocked vents. If any damage is found, replace the actuators with new ones. When mounting the actuator, keep its original position relative to the bracket (7).
- ➔ Remove the snap ring securing the expander arm.
- ➔ Shift the expander arm so that the marked hole in the expander arm coincides with the hole for mounting the t-bar.
 - ⇒ During adjustment, the diaphragm (2) must rest on the rear wall of the actuator - compare figure (5.8).
- ➔ Repeat all steps on the other actuator.
- ➔ After completing the adjustment, the expander arms of both actuators must be parallel to each other.
- ➔ Install the t-bar, piston rod fork pin, washers and secure the pin with cotter pins.
- ➔ Apply the brake.
- ➔ Clean previous markings and measure the piston rod stroke again (on both actuators).
- ➔ If the piston rod stroke is not within the correct operating range, repeat the adjustment.



INSPECTION

- *Every 6 months.*
- *After repairing of the brake system.*
- *In the event of uneven braking of the trailer wheels.*

CAUTION

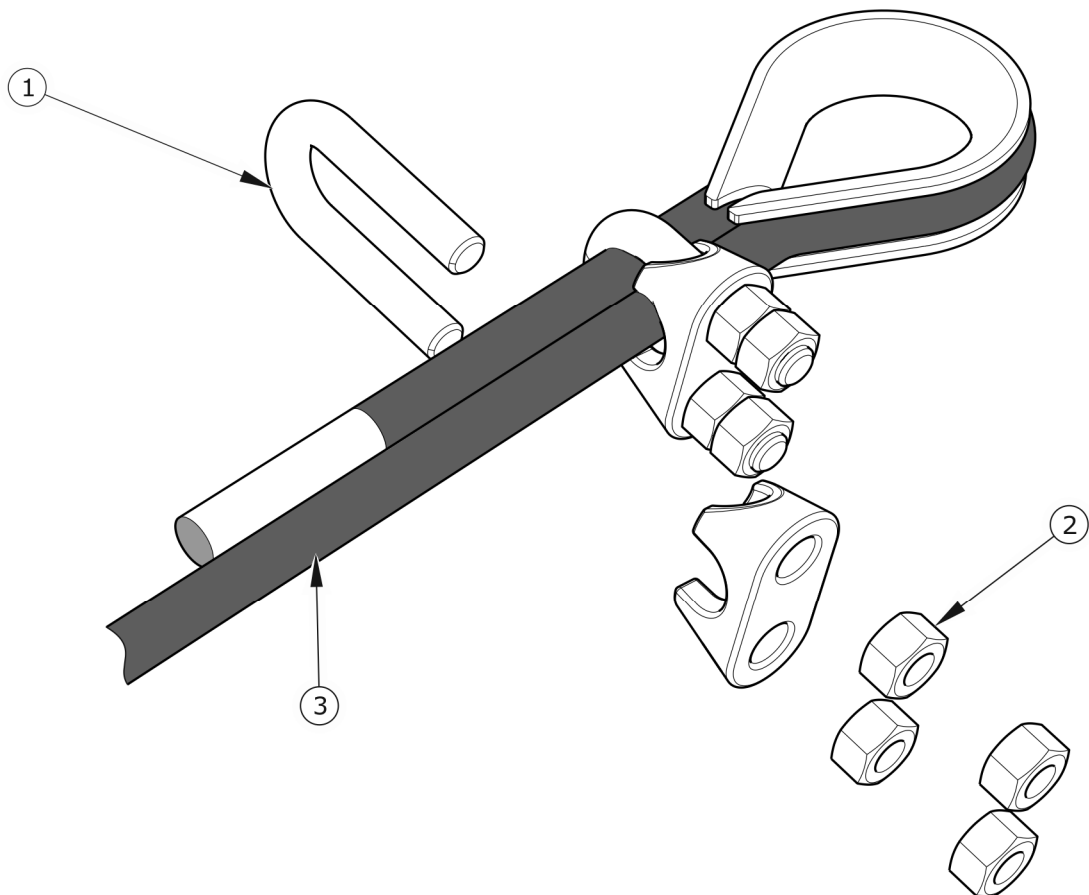
The mounting positions of the brake actuator in the bracket holes and the actuator pin in the expander arm are determined by the Manufacturer and cannot be changed.

Each time when removing the pin or the actuator, it is recommended to mark the place of the original fastening.

5.2.8 REPLACING AND ADJUSTING THE PARKING BRAKE CABLE TENSION

The correct operation of the parking brake depends on the effectiveness of the brakes on the axle and the correct tension of the brake cable.

Replacing the parking brake cable



RYSUNEK 5.9 *Parking brake cable assembly*

(1) U-shaped clamp, (2) clamp nuts, (3) hand brake cable

- ➔ Connect the trailer to tractor. Place the machine and tractor on level ground.
- ➔ Secure the trailer against rolling by placing chocks under the wheels. immobilize the tractor with the parking brake.
- ➔ Loosen the nuts (2) of the cable clamps and remove the cable.
- ➔ Lubricate the parking brake screw mechanism and pins of the cable guide rollers - see *LUBRICATION*
- ➔ Install new cable, adjust cable tension.

Adjusting the parking brake cable tension

- ➔ Connect the trailer to tractor. Place the machine and tractor on level ground.
- ➔ Secure the trailer against rolling by placing chocks under the wheels. immobilize the tractor with the parking brake.
- ➔ Remove the handbrake mechanism bolt as far as possible.
- ➔ Loosen all the nuts (2) - figure (5.9) of the handbrake cable clamps on the side of the brake mechanism.
- ➔ Tighten cable and tighten clamps.

The length of the parking brake cable should be selected so that when the service and parking brake is completely released, the cable is loose and hangs 1-2 cm.

CAUTION



Parking brake cable clamps must be fitted as shown in the figure (5.9), i.e. the clamp (2) must be fitted on the side of the shorter section of the brake cable. Tighten the nuts with the torque given in the table TIGHTENING TORQUES FOR BOLT JOINTS

Adjustment of parking brake cable tension should be performed in the event of:

- cable stretching,
- loosening of parking brake cable clamps,
- after adjusting the axle brake,

- after repairs in the axle brake system,
- after repairs in the parking brake system.

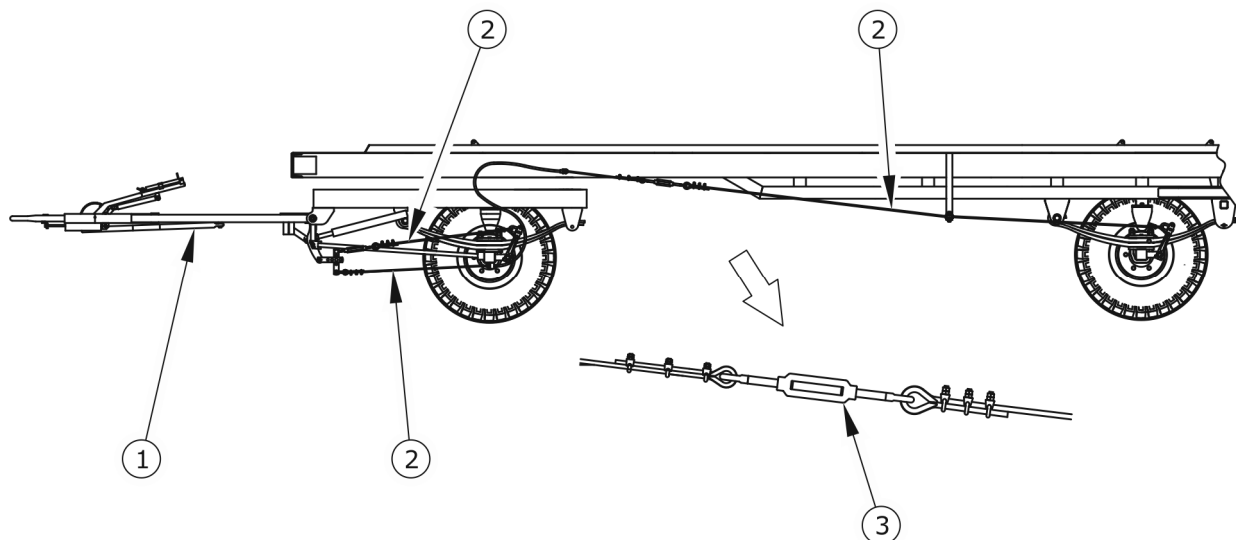
Before commencing adjustment, make sure that the wheel axle brake is correctly adjusted and works properly.



INSPECTION

- *Every 12 months.*

Overrun brake cable tension adjustment



RYSUNEK 5.10 *Overrun brake adjustment*

(1) overrun drawbar, (2) steel cable, (3) tensioner

- ➔ Connect the trailer to tractor. Place the machine and tractor on level ground.
- ➔ Secure the trailer against rolling by placing chocks under the wheels. immobilize the tractor with the parking brake.
- ➔ Release the parking brake lever (the lever is located on the overrunning drawbar).
- ➔ Tighten the front and rear brake cables with the tensioner (3).
 - ⇒ Each line has its own tensioner (3).

The length of the front and rear overrun brake cables should be selected so that when the working and parking brake are fully released, the cable is loose and hanging by 1 - 2 cm.

CAUTION



Parking brake cable clamps must be fitted as shown in the figure (5.9), i.e. the clamp clamp (2) must be fitted on the side of the shorter section of the brake cable. Tighten the nuts with the torque given in the table TIGHTENING TORQUES FOR BOLT JOINTS

Adjustment of parking brake cable tension should be performed in the event of:

- cable stretching,
- loosening of parking brake cable clamps,
- after adjusting the axle brake,
- after repairs in the axle brake system,
- after repairs in the parking brake system.

Before commencing adjustment, make sure that the wheel axle brake is correctly adjusted and works properly.



INSPECTION

- *Every 12 months.*

5.3 PNEUMATIC SYSTEM HANDLING

5.3.1 PRELIMINARY INFORMATION

Work related to the repair, replacement or regeneration of system components (brake cylinders, conduits, control valve, braking force regulator, etc.) should be entrusted to specialized workshops having the appropriate technology and qualifications for this type of work.

The obligations of the user related to the operation of the pneumatic system include only:

- installation tightness control and visual inspection of the installation,
- cleaning of the air filter (filters),
- tank drainage
- cleaning of the drainage valve,
- cleaning and maintenance of pneumatic conduit connections.

**DANGER**

It is forbidden to use the trailer with inefficient braking system.

5.3.2 CHECKING FOR LEAKS

checking the tightness of the pneumatic system

- ➔ Connect the trailer to tractor. Place the machine and tractor on level ground.
- ➔ Secure the trailer against rolling by placing chocks under the wheels. Immobilize the tractor and trailer with parking brake.
- ➔ Start the tractor in order to supplement air in the brake system tank.
 - ⇒ In single conduit systems air pressure should amount to approx. 5.8 to 6.5 bar.
 - ⇒ In double-conduit systems air pressure should amount to approx. 5.8 bar.
- ➔ Turn off the tractor engine.
- ➔ Check the the system components with the tractor brake pedal released.
 - ⇒ Pay special attention to cable connections and brake actuators.
- ➔ Repeat the system check with the tractor brake pedal depressed.
 - ⇒ A second person's help is required.

In the event of a leak, the compressed air will leak out in places of damage with a characteristic hiss. System leakage can also be detected by coating the checked elements with washing liquid or other foaming preparation that will not aggressively affect the system

elements. It is recommended to use commercially available leak detection agents. Damaged elements should be replaced with new ones or sent for repair. If a leak appears in the area of connections, the user can tighten the connection on his own. If air still flows out, replace the connection parts or the seal with new ones.



INSPECTION

- *After covering the first 1,000 km.*
- *Each time after repair or replacement of system components.*
- *Every 12 months.*

5.3.3 SYSTEMS OVERVIEW

When checking the tightness, you should additionally pay attention to the technical condition and degree of cleanliness of the system components. Contact of pneumatic conduits, seals etc. with oil, grease, gasoline etc. may damage them or accelerate the aging process. Kinked, permanently deformed, cut or frayed cables should only be replaced.

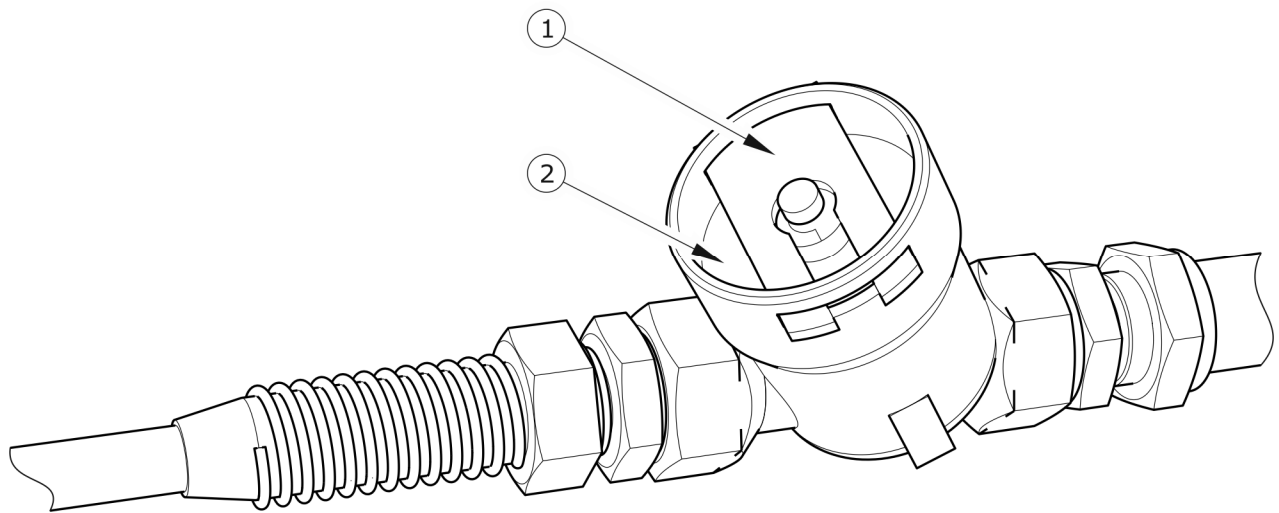


INSPECTION

- *Each time during the leak check.*

5.4 CLEANING OF THE AIR FILTERS

Depending on trailer working conditions, but not less than once in three months, take out and clean air filter inserts, which are located in pneumatic system connection conduits. Cartridges are reusable and cannot be replaced unless they are mechanically damaged.



RYSUNEK 5.11 *Air filter*

(1) securing slide, (2) filter cover



DANGER

Before proceeding to dismantle the filter, reduce pressure in the supply conduit. While disassembling the filter slide gate, hold the cover with the other hand. Turn the filter cover away from you.

Scope of service activities

- ➔ Reduce pressure in the supply line.
 - ⇒ The pressure in the pipe can be reduced by pushing the plug of the pneumatic connection as far as it will go.
- ➔ Slide out the securing lock (1).
- ➔ Hold the filter cover (2) with your other hand. After removing the latch, the cover will be pushed out by the spring located in the filter housing.
- ➔ The insert and the filter body should be thoroughly washed and blown through with compressed air. Installation should be made in reverse order.



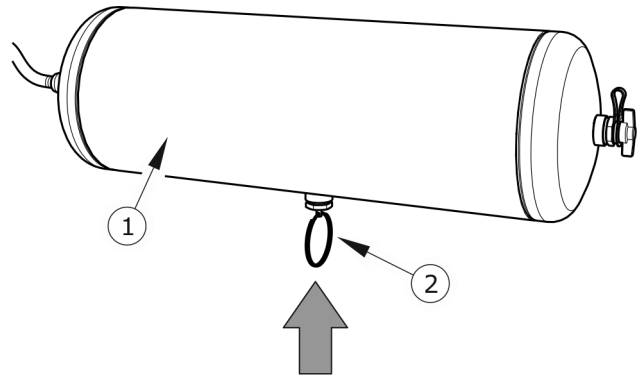
INSPECTION

- *Every 3 months.*

5.4.1 DRAINAGE OF THE AIR TANK

Scope of service activities

- ➔ Swing out the drain valve spindle (2) located at the bottom of the tank (1).
- ➔ The compressed air in the tank will remove water outside.
- ➔ After releasing the spindle, the valve should automatically close and stop air flow from the tank.
- ➔ In the event that the valve spindle does not want to return to its position, the entire drain valve should be unscrewed and cleaned, or replaced with a new one (if it is damaged) - see chapter *CLEANING OF THE DRAINAGE VALVE*.



RYSUNEK 5.12 *Tank drainage*

(1) air tank, (2) drain valve

5.4.2 CLEANING OF THE DRAINAGE VALVE

Scope of service activities

- ➔ Fully reduce the pressure in the air reservoir.
 - ⇒ The pressure in the tank can be reduced by swinging the drain valve stem.



DANGER

Bleed the air reservoir before removing the drain valve.

- ➔ Unscrew both valves.
- ➔ Clean and blow with compressed air.

- ➔ Replace the copper gasket.
- ➔ Screw in valves, fill tanks with air, check tightness.



INSPECTION

- *Every 12 months (before the winter period).*

5.4.3 CLEANING AND MAINTENANCE OF HOSE CONNECTIONS AND PNEUMATIC SOCKETS



DANGER

Faulty and dirty trailer connections may cause the braking system to malfunction.

A damaged connector body requires replacement. In the event of damage to the cover or gasket, replace these elements with new, functional ones. Contact of pneumatic connection seals with oils, grease, gasoline etc. may damage them and accelerate the aging process.

If the trailer is disconnected from the tractor, connections should be protected with covers or placed in their designated sockets. Before the winter period, it is recommended to preserve the seal with preparations intended for this purpose (e.g. silicone lubricants for rubber elements).

Each time before connecting the machine, check the technical condition and degree of cleanliness of connections and sockets on the agricultural tractor. If necessary clean or repair tractor sockets.



INSPECTION

- *Each time before connecting to the tractor.*

5.5 HYDRAULIC SYSTEM HANDLING

5.5.1 PRELIMINARY INFORMATION

Work related to the repair, replacement or regeneration of hydraulic system components should be entrusted to specialized workshops that have the appropriate technology and qualifications to perform this type of work.



ADVICE

The hydraulic system does not require bleeding during normal use of the trailer.

The obligations of the user related to the operation of hydraulic systems include only:

- installation tightness control and visual inspection of the installation,
- Checking of the technical condition of hydraulic plugs.

5.5.2 CHECKING OF THE TIGHTNESS OF THE HYDRAULIC SYSTEM

Scope of service activities

- ➔ Connect the trailer to tractor.
- ➔ Connect the hydraulic brake system conduits in accordance with the recommendations of the User's Manual.
- ➔ Clean connectors and hydraulic actuators.
- ➔ Start the tractor and depress the brake pedal several times. Leave the actuators in their fully extended position.
- ➔ Turn off the tractor engine and check the hydraulic actuators.

In the event of oiling on the hydraulic cylinder body, the nature of the leakage must be check. When the cylinder is fully extended, check the seals. Minimum leaks are permissible with symptoms of "sweating", however in the event of noticing leaks in the form of "droplets" stop using the trailer. If there is leakage at the connections, try to tighten the connection. If the leakage at the connections has not been eliminated, replace the hose, nipple and seals (depending on the leak location).

**INSPECTION**

- *After the first week of use.*
- *Every 12 months.*

5.5.3 CHECKING OF THE TECHNICAL CONDITION OF HYDRAULIC PLUGS AND SOCKETS

Hydraulic couplings must be technically efficient and kept in proper cleanliness. Before connecting it each time, make sure that the sockets in the tractor are maintained in the required condition. The tractor's and trailer's hydraulic systems are sensitive to the presence of solid contaminants, which may damage precise system components.

**INSPECTION**

- *Each time before hitching the trailer to the tractor.*

5.5.4 REPLACEMENT OF HYDRAULIC HOSES

**INSPECTION**

- *Every 4 years.*

Rubber hydraulic hoses should be replaced every 4 years regardless of their technical condition. This operation should be entrusted to specialized workshops.

5.6 LUBRICATION

The trailer should be lubricated with a hand or foot grease gun, filled with the recommended lubricant. If possible, remove old grease and other contaminants before starting work. After finishing work, wipe off excess grease or oil.

The replacement of grease in wheel hub bearings should be entrusted to specialized service points equipped with the appropriate tools. In accordance with the recommendations of the axle manufacturer, the entire hub should be disassembled, the bearings and individual sealing rings should be removed. After thorough cleaning and inspection, install lubricated components. If necessary, the bearings and seals should be replaced with new ones. The lubrication of wheel axle bearings should be carried out at least once every 2 years.

TABELA 5.3 *Lubrication schedule*

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	FREQUENCY
1	Hub bearings	12	A	24M
2	Drawbar eye	1	B	14D
3	Handbrake mechanism	1	A	6M
4	Handbrake cable guide axle	2	A	6M
5	Expander shaft sliding bush	6	A	3M
6	Drawbar pin	2	B	3M
7	Springs	6	C	3M
8	Spring sliding surfaces	6	B	1M
9	Spring pin	6	B	1M
10	Turntable	2	B	3M

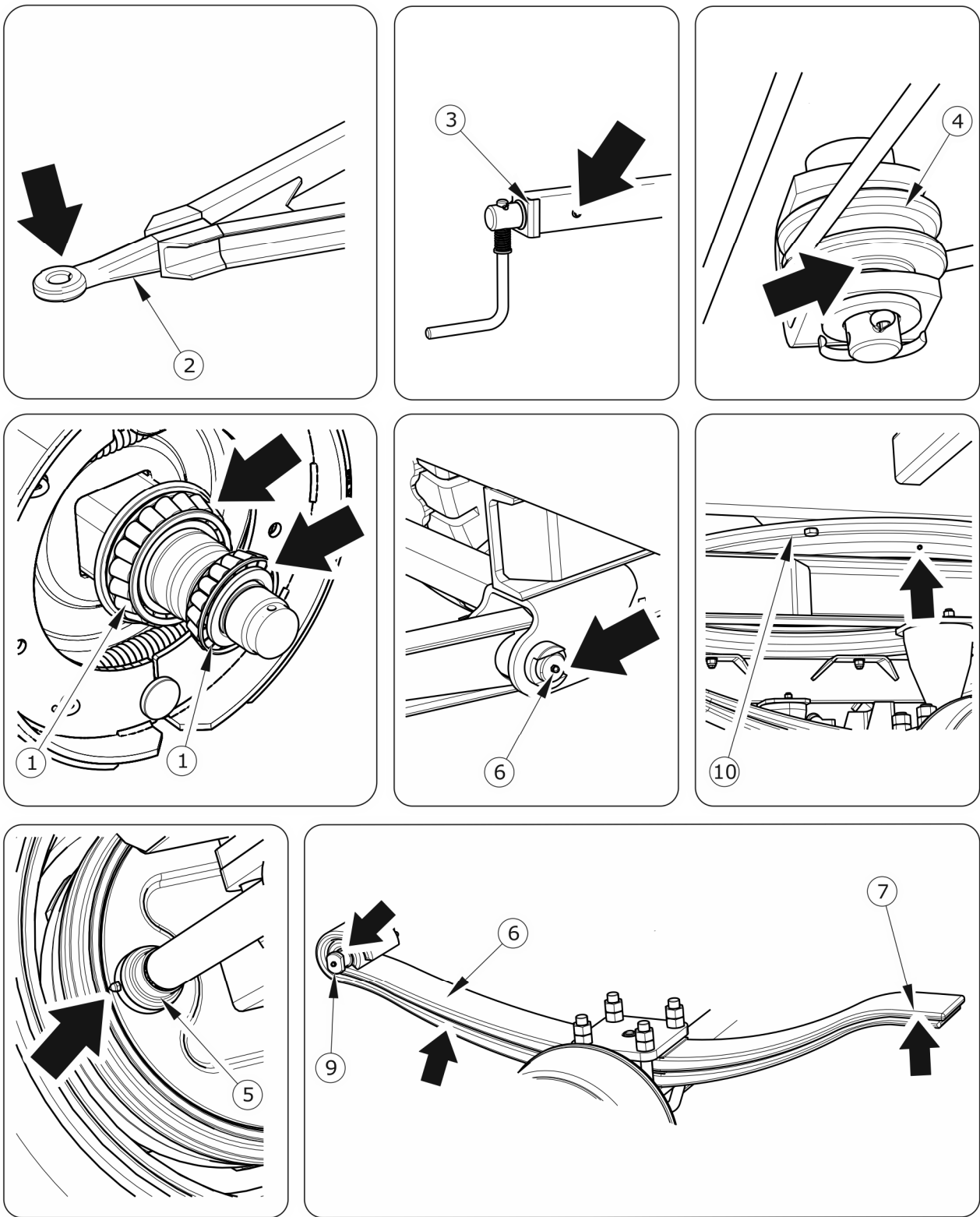
lubrication periods - M month, D - day

(1) - lubricate every 3 months or each time before intensive use

TABELA 5.4 *Recommended lubricants*

DESIGNATION FROM TAB. (5.3)	DESCRIPTION
A	General purpose machine grease (lithium, calcium).
B	Solid grease for heavily loaded components with the addition of MOS_2 or graphite.
C	Anticorrosive and penetrating spray.

Empty containers of grease or oil shall be disposed of in accordance with the lubricant manufacturer's instructions.



RYSUNEK 5.13 *Trailer lubrication points*

ADVICE

The number of lubrication points and components that require lubrication are listed in table (5.3) LUBRICATION SCHEDULE, depend on the completion of the trailer.

In figure (5.13), black arrows show the location of grease nipples or areas requiring lubrication.

5.6.1 CONSUMABLES**Hydraulic oil**

It is absolutely necessary to observe that the oil in the trailer's hydraulic system and the tractor's hydraulic system must be of the same type. If different types of oil are used, make sure that both hydraulic means can be mixed together. The use of different types of oil may cause damage to the trailer or agricultural tractor. The new machine filled with L HL32 Lotos hydraulic oil.

If you need to change the hydraulic oil for another, read the oil manufacturer's instructions carefully. If it recommends flushing of the system with an appropriate preparation, follow these recommendations. It should be ensured that the chemicals used for this purpose do not attack the materials of the hydraulic system. During normal use of the trailer, changing the hydraulic oil is not necessary, but in such a situation, this operation should be entrusted to specialist service points.

TABELA 5.5 Characteristics of hydraulic oil L-HL 32 Lotos

ITEM	NAME	UNIT	VALUE
1	Viscosity classification according to ISO 3448VG	-	32
2	Kinematic viscosity at 400C	mm ² /s	28.8 – 35.2
3	Quality classification according to ISO 6743/99	-	HL
4	Quality classification according to DIN 51502	-	HL
5	Flash-point	C	230

Due to its composition, the oil used is not classified as a dangerous substance, however, long-term action on the skin or eyes may cause irritation. In the event of contact of oil with

skin, wash the area of contact with water and soap. Do not use organic solvents (petrol, kerosene). Dirty clothing should be removed to prevent oil from getting on your skin. If the oil gets into your eyes, flush them with plenty of water and in case of irritation contact your doctor. Hydraulic oil under normal conditions is not harmful to the respiratory tract. There is only a risk when the oil is sprayed strongly (oil mist) or in the event of a fire where poisonous compounds may be released.

**DANGER**

The oil must be extinguished with carbon dioxide, foam or extinguishing steam. Do not use water to extinguish a fire.

Lubricants

For heavily loaded parts, it is recommended to use lithium grease with the addition of molybdenum disulphide (MOS₂) or graphite. For less loaded components, it is recommended to use general-purpose machine greases that contain anti-corrosive additives and are highly resistant to water washout. Similar properties should be characteristic of aerosol preparations (silicone lubricants, anti-corrosive lubricants).

Before using lubricants, read the information leaflet for the selected product. Particularly important are safety rules and how to handle a given lubricant and how to dispose of waste (used containers, contaminated rags, etc.). The information leaflet (product card) shall be stored together with the grease.

5.7 CLEANING OF THE TRAILER

- The trailer should be cleaned as needed. The use of a pressure washer obliges the user to familiarize himself with the principle of operation and recommendations regarding the safe operation of this device.
- Only clean running water should be used for washing. It is possible to use cleaning detergents with a neutral pH reaction, which is not aggressive to the structural elements of the trailer.

- The use of pressure washers increases the effectiveness of washing, but particular care should be taken during work. While washing, do not put the nozzle of the cleaning aggregate closer than 50 cm from the surface to be cleaned.
- The water temperature should not exceed 55 °C.
- Do not direct the water jet directly at the system components and trailer equipment, i.e. the control valve, brake force regulator, brake actuators, hydraulic actuators, pneumatic, electric and hydraulic plugs, lights, electrical connectors, information and warning decals, data plate, conduit connections, points suspension springs, drawbar springs, etc. High pressure of the water jet may cause water penetration and, as a result, mechanical damage or corrosion.
- For cleaning and maintenance of plastic surfaces, use only clean water or specialized preparations intended for this purpose.
- Do not use organic solvents, preparations of unknown origin or other substances that may damage the lacquered, rubber or plastic surface. It is recommended to make a test on an invisible surface in case of doubt.
- Surfaces oily or greasy should be cleaned with petrol or degreasing agents, and then washed with clean water and detergent. Follow the cleaning agent manufacturer's instructions.
- Detergents intended for washing should be stored in their original containers, or alternatively, but marked exactly. Preparations cannot be stored in food and drink containers.
- Keep the hoses and gaskets clean. The materials from which these elements are made may be susceptible to organic substances and some detergents. As a result of long-term exposure to various substances, the aging process is accelerated and the risk of damage increases. Elements made of rubber are recommended to be maintained with the use of specialized preparations after prior thorough washing.

**DANGER**

Refer to the instructions for using cleaning detergents and preservatives.

When washing with detergents, wear suitable protective clothing and eye

protection.

- Observe environmental protection principles, wash trailer in designated places.
- Washing and drying the trailer must take place at an ambient temperature above 0 ° C.
- The springs should be cleaned with a stiff brush. It is recommended to blow out the space between the feathers with compressed air.

5.8 STORAGE

- It is recommended that the trailer is kept in a closed or roofed room.
- If the machine will not be used for a longer period of time, it is necessary to protect it against the influence of weather conditions, especially those that cause steel corrosion, aggressively affect the anti-corrosion coating of the tank and accelerate tire aging. During this time the machine must be unloaded. The trailer should be thoroughly washed and dried.
- Corroded areas should be cleaned of rust, degreased and protected with a primer paint, and then painted with a topcoat according to the colour scheme.
- In the event of a longer stop it is necessary to lubricate all points regardless of the period of the last treatment.
- Rims and tires should be carefully washed and dried. During longer storage of the unused trailer, it is recommended to move the machine once every 2-3 weeks so that the place of contact of the tire with the ground is in a different position. The tires do not deform and maintain the correct geometry. You should also check the pressure in the tires from time to time and, if necessary, pump the wheels to the correct pressure.

5.9 CHECKING THE TIGHTNESS OF SCREW CONNECTIONS

5.9.1 TIGHTENING TORQUES FOR SCREW CONNECTIONS

TABELA 5.6 *Tightening torques for screw connections*

METRIC THREAD	5.8 ⁽¹⁾	8.8 ⁽¹⁾	10.9 ⁽¹⁾
	Md [Nm]		
M10	37	49	72
M12	64	85	125
M14	100	135	200
M16	160	210	310
M20	300	425	610
M24	530	730	1,050
M27	820	1,150	1,650
M30	1,050	1,450	2,100

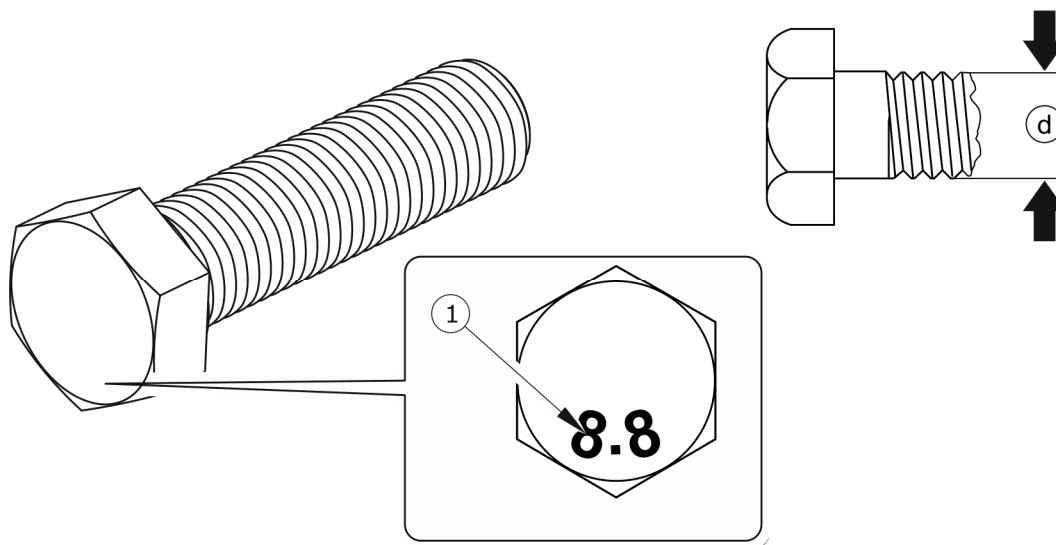
(1) - strength class according to DIN ISO 898

During maintenance and repair work, apply appropriate tightening torques to screw connections, unless other tightening parameters are given. Recommended tightening torques for the most commonly used bolted connections are shown in the Table (5.6). The given values apply to non-lubricated steel bolts.



ADVICE

Hydraulic conduits should be tightened with a torque of 50– 70 Nm.



RYSUNEK 5.14 Screw with metric thread

(1) strength class, (d) thread diameter

INSPECTION



- One time after purchasing the trailer, before the first start-up.
- Every 12 months.
- Every 3 months in case of intensive use.

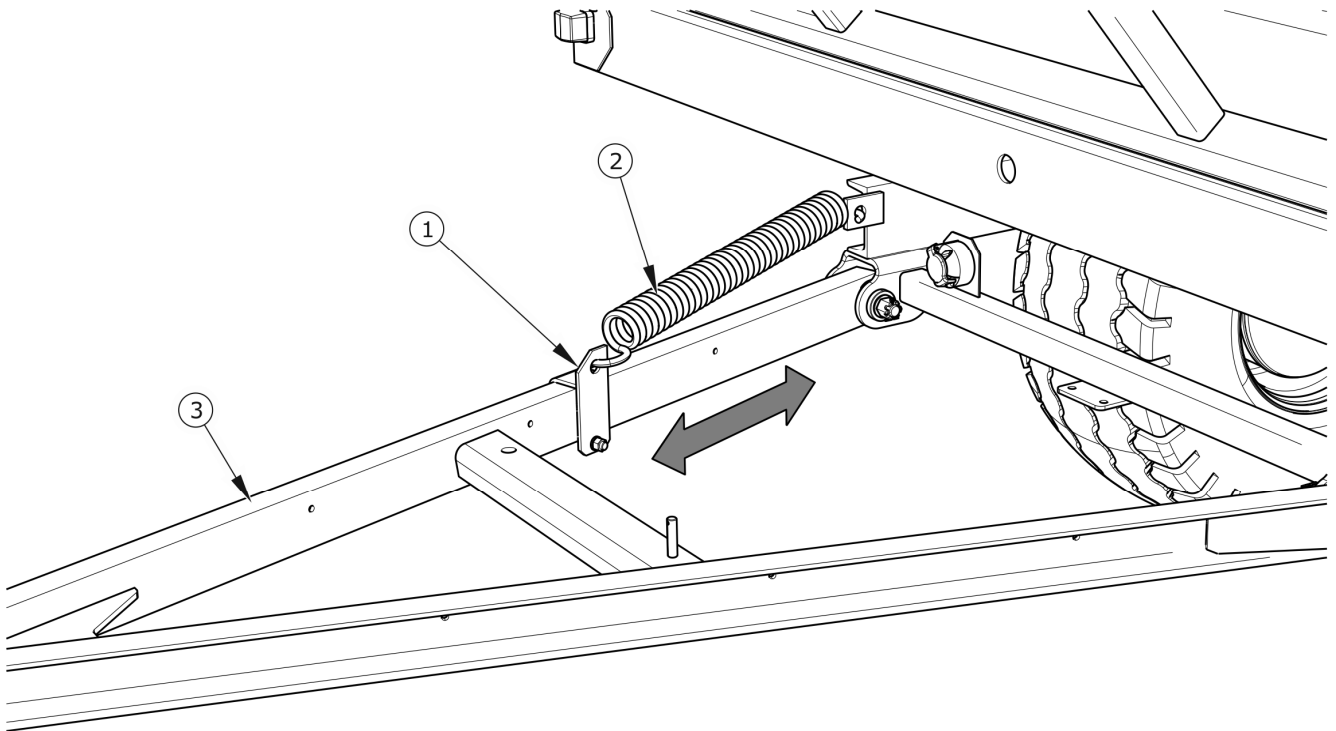
5.10 ADJUSTING OF THE DRAWBAR POSITION

The position of the drawbar should be selected individually depending on the height of the hitch on the tractor with which the trailer is to be aggregated. If possible, it is recommended to adjust the tractor hitch so that the drawbar of the trailer is in a horizontal position.

Scope of adjustments activities

- ➔ Block the trailer with parking brake.
- ➔ Secure the trailer against rolling by placing chocks under the wheels.
- ➔ Drive the tractor under the drawbar eye of the trailer.
- ➔ Loosen the clamp nut (1) and slide the clamp in the desired direction.

- ➔ Tighten the nut and check the position of the drawbar in relation to the tractor hitch.



RYSUNEK 5.15 *Adjusting of the drawbar position*

(1) adjustment clamp, (2) spring, (3) drawbar

5.11 TROUBLESHOOTING

5.11.1 FAULTS AND METHODS TO REMOVE THEM

FAULT	CAUSE	REMOVAL METHOD
Trouble with starting	Braking system conduits not connected	Connect the brake lines (applies to pneumatic systems)
	Parking brake applied	Release the parking brake.
	Damaged pneumatic system connection conduits	Replace.

FAULT	CAUSE	REMOVAL METHOD
	Connections leak	Tighten, replace washers or sealing kits, replace wires.
	Defective control valve or brake force regulator	Check valve, repair or replace.
Noise in the wheel axle hub	Excessive clearance in the bearings	Check the clearance and adjust if necessary
	Defective bearings.	Replace bearings
	Damaged hub components	Replace.
Low efficiency of the braking system	System pressure too low	<p>Check the pressure on the manometer in the tractor, wait until the compressor fills the tank to the required pressure.</p> <p>Damaged air compressor in the tractor. Repair or replace.</p> <p>Damaged brake valve on the tractor. Repair or replace.</p> <p>Installation leak. Check systems for leaks.</p>
Excessive heating of wheel axle hub	Incorrectly adjusted main or parking brake	Adjust the position of the expander arms
	Worn brake linings	Replace the brake shoes
Incorrect hydraulic system operation	Incorrect hydraulic oil viscosity	Check the oil quality make sure that the oils in both machines are of the same grade. If necessary, change the oil in the tractor and/or trailer
	Insufficient tractor hydraulic pump performance, tractor hydraulic pump defective..	Check the hydraulic pump in the tractor.
	Damaged or dirty actuator	Check the actuator piston rod (bending, corrosion), check the actuator for tightness (piston rod seal), repair or replace the actuator if necessary.

FAULT	CAUSE	REMOVAL METHOD
	The cylinder is overloaded	Check and if necessary reduce the load on the actuator.
	Damaged hydraulic lines	Check and make sure that the hydraulic conduits are tight, not kinked and properly tightened. Replace or tighten if necessary.
Excessive wear on both sides of the left and right shoulder of the tire.	Air pressure too low. Driving speed too high when cornering with a loaded trailer. Too fast loss of air due to a damaged rim, valve, puncture, etc.	Check air pressure. Check the road tires for proper inflation regularly. Trailer load too high. Do not exceed the permissible total weight of the machine. Reduce travel speed when cornering on paved surfaces. Check the rim and valve. Replace damaged parts.
Excessive wear of the tire in the centre section.	Air pressure too high.	Check air pressure. Check the road tires for proper inflation regularly.
Excessive one-sided wear of the left or right shoulder tire	Incorrect convergence. Driving axles incorrectly adjusted.	Damaged spring leaf on one side of the suspension. Replace the springs.
Tread wear.	Damaged suspension system, broken spring. Damaged brake system, blocking of the brakes, incorrectly adjusted brake system. Too frequent and sudden braking.	Check the clearance in the suspension system, check the springs. Replace damaged or worn parts. Check the brake system for malfunction. Adjust the trailer levers.
Lateral fracture.	Long-term driving on a tire with low air pressure. Trailer load too high.	Check tire pressure regularly. Check the weight of the load while loading.

FAULT	CAUSE	REMOVAL METHOD
Abrasions on the lateral outer edge of the tire.	Driving over sharp, high obstacles (e.g. curbs) too often.	Control your driving technique.
Damage to the rim (hardening and cracking in the area of the rim), crumbling of the tire.	Incorrect braking technique. Too frequent sudden braking. Damaged braking system.	Check the braking system. Control braking technique. The damage is caused by excessive heating of the hub and, as a result, of the road wheel rim.

NOTES

A series of horizontal dotted lines for writing notes.

