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 the PRONAR T026, PRONAR T026M and T026KM 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 PHONE NUMBERS

+48 085 681 63 29 *+48 085 681 64 29*
+48 085 681 63 81 *+48 085 681 63 82*

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 unauthorized bystanders.

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

and preceded by the word **„CAUTION”.** Failure to comply with these recommendations creates the risk of damage to the machine due to improper handling, 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 the machine and are marked with a 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.

THE SCOPE OF SERVICE ACTIVITIES

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

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

PRONAR Sp. z o.o.
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17-210 Narew, Polska
tel./fax (+48 85) 681 63 29, 681 63 81, 681 63 82,
681 63 84, 681 64 29
fax (+48 85) 681 63 83
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:	**T026**
Model:	**- - - - -**
Serial number:	
Commercial name:	**TRAILER PRONAR T026**

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

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

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

Z-CA DYREKTORA
d/s technicznych
członek zarządu
Roman Chełłaniuk

Narew, the _____

Place and date

Full name of the empowered person position, signature

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CHAPTER

1

GENERAL

1.1 IDENTIFICATION

1.1.1 IDENTIFICATION OF TRAILER

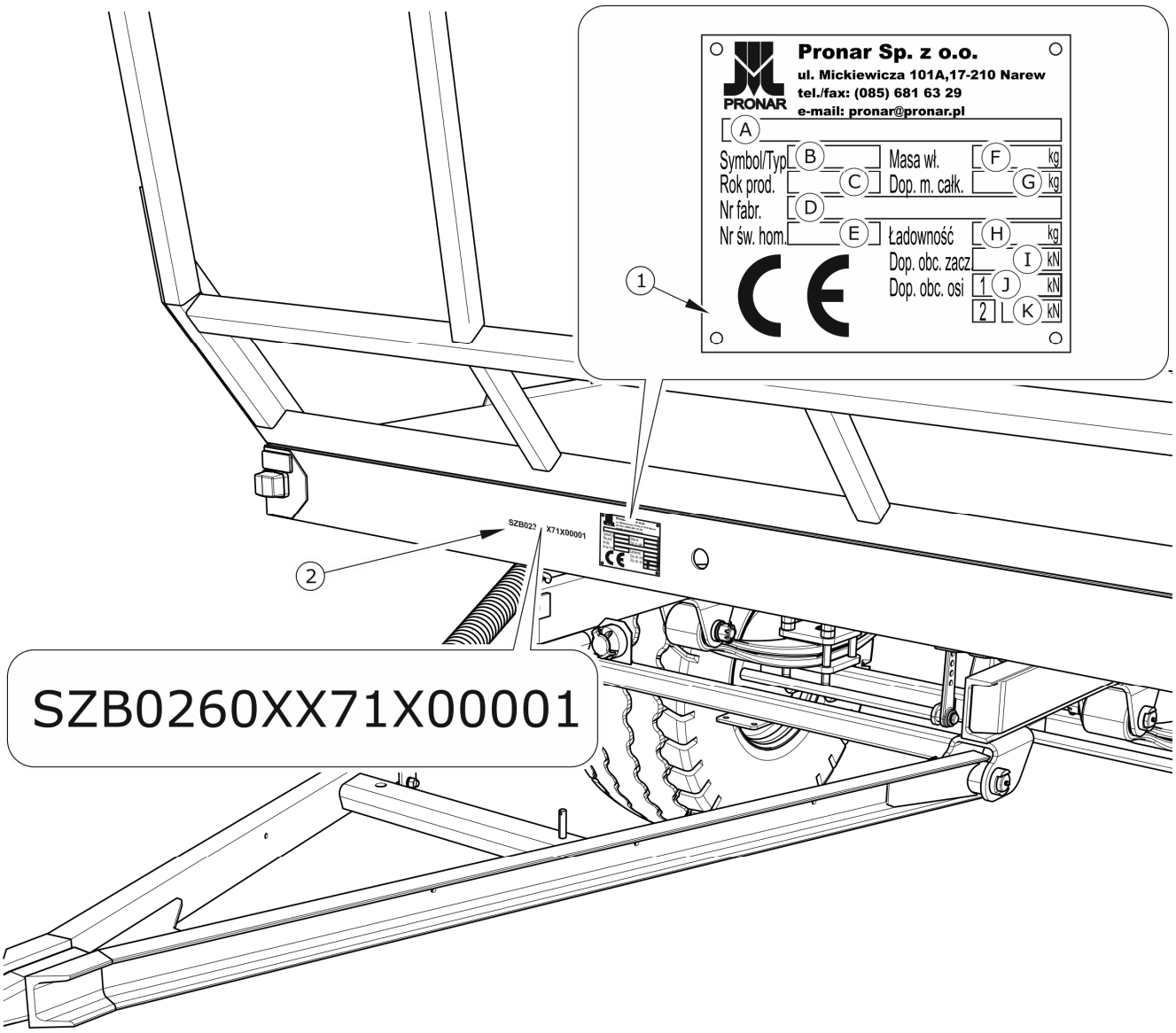


FIGURE 1.1. *Location of the nameplate and VIN number stamping*

(1) nameplate (2) example of VIN number

Agricultural trailers Pronar T026, Pronar T026M and Pronar T026KM 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.

TABLE 1.1. *Nameplate markings*

ITEM	MARKING
A	General information and function
B	Machine symbol / type
C	Year of machine production
D	Seventeen-digit identification number (VIN)
E	Certificate approval number
F	The machine's karb weight
G	Permissible gross weight
H	Capacity
I	Permissible load on the coupling device
J	Permissible front axle load
K	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).

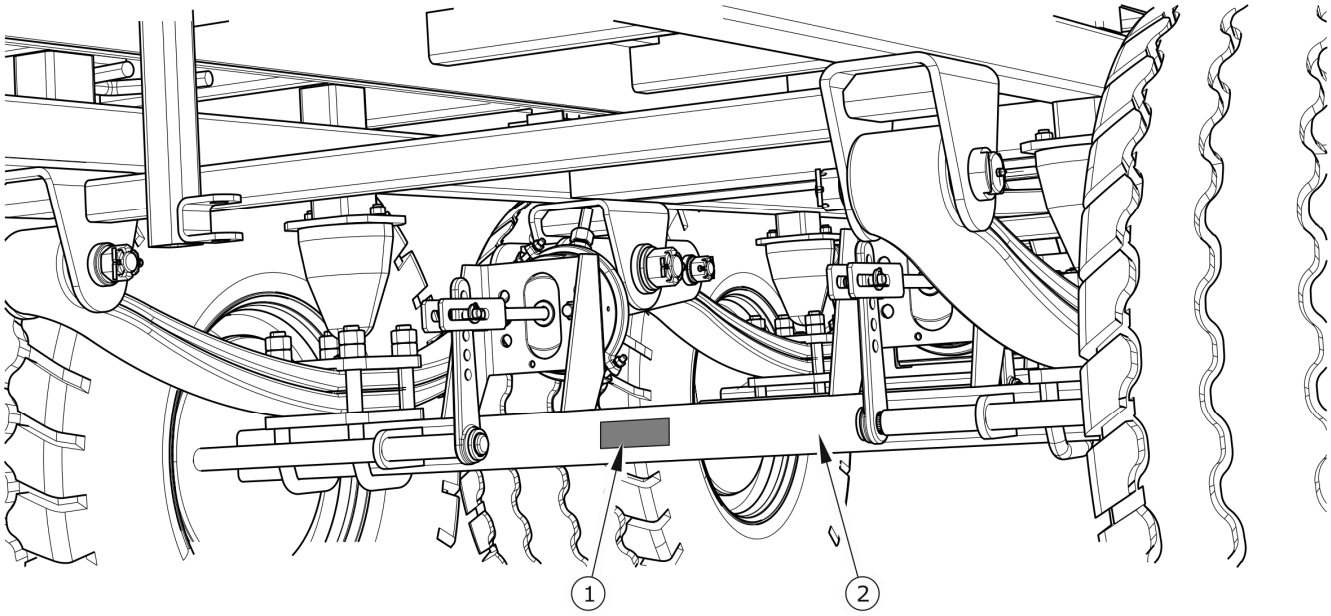


FIGURE 1.2. *Location of the nameplate of driving axle*

(1) nameplate, (2) driving axle

1.1.3 LIST OF SERIAL NUMBERS

TABLE 1.2. *LIST OF SERIAL NUMBERS*

VIN NUMBER																
S	**Z**	**B**	**0**	**2**	**6**	**0**		**X**			**X**					
SERIAL NUMBER OF THE FRONT DRIVING AXLE																
SERIAL NUMBER OF THE CENTRAL DRIVING AXLE																
SERIAL NUMBER OF THE REAR DRIVING AXLE																

ADVICE

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)

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. The trailer, equipped with stanchions, is also adapted to transport the assortment of cut or processed wood.

TABLE 1.3. *Recommended pallet types*

PALETTE NAME– TYPE	LENGTH [mm]	WIDTH [mm]	HEIGHT [mm]
EUR pallet - standard	1200	800	144
EUR pallet - 1/2	800	600	144
EUR pallet - large	1200	1200	144
ISO Pallet	1200	1000	144

Transport of the above-mentioned crops, agricultural products and wood 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. A trailer adapted for traffic on public roads cannot exceed a length of 12 meters. For this reason, when using ladders and timber stakes, set the sliding frame in such a way that the permissible length is not exceeded. It is not allowed to load the rear extension frame with lump wood. The frame is not designed to be loaded with crosswise stacked timber. The sliding frame can be used for the transport of long logs.

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

The braking system as well as the lighting and signalling system meet the requirements arising from traffic regulations. The maximum speed of the set may not be exceeded (the speed limit depends on the country in which the trailer is used). The trailer speed must not, however, be greater than the maximum design speed 40 km/h.

DANGER

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

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

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 road traffic regulations and transport regulations in force in the country in which the machine is used,
- get acquainted with the contents of the farm tractor instruction manual and comply with 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 trailer operation and work safety,
- have the required authorization to drive and are familiar with the traffic rules and transport regulations.

TABLE 1.4. *Agricultural tractor requirements*

CONTENT	UNIT	REQUIREMENTS
Connection sockets for the braking system		
Pneumatic 1 - line	-	in accordance with A DIN 74 294
Pneumatic 2 - line	-	in accordance with ISO 1728
Hydraulic	-	in accordance with ISO - 7421-1
Nominal pressure of the system		
Pneumatic 1 - line	bar	5.8 – 6.5
Pneumatic 2 - line	bar	6.5
Hydraulic	bar	150
Electrical system		
Electrical system voltage	V	12
Connection socket	-	7 poles in accordance with ISO 1724
Tractor hitches		
Type of hitch	-	Upper transport hitch
Other requirements		
Min. tractor power	KM/ kW	93.6 / 68.8

1.3 EQUIPMENT

ADVICE

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

TABLE 1.5. *Equipment*

EQUIPMENT	STANDARD	ADDITIONAL	OPTIONAL
USER MANUAL, WARRANTY CARD	•		
V-type drawbar with link ∅40	•		
Y-type drawbar with ∅40			•
Pneumatic braking 2 - line system	•		
Pneumatic braking 1 - line system			•
Pneumatic braking 2- line system with ALB regulator			•
Braking system: combined (pneumatic 2l + hydraulic)			•
Braking system: combined (pneumatic 2l + hydraulic with electric protection)			•
Hydraulic braking system			•
Tool box		•	
Rear hitch		•	
Folding ladders (to be attached with a securing chain) (1) (3)	•		
Folding ladders (to be attached with a strapping rope) (2)	•		
Fixed ladders (to be attached with a securing chain) (1) (3)			•
Belt retractors (1) (3)		•	
Spare wheel winch with spare wheel		•	
Mudguards (front and rear)		•	
Side overrun protection		•	
Front and rear stanchions (4 pieces each) (3)		•	
Front and rear stanchions (4 pieces each), side stanchions (14 pieces) (3)		•	

EQUIPMENT	STANDARD	ADDITIONAL	OPTIONAL
Fastening chain (1) (3)		•	
Rear hitch		•	
Plate for slow-moving vehicles		•	
Warning reflective triangle		•	
Wheel chocks	•		

(1) – completion available only with T026M,

(2) – completion available only with T026

(3) – completion available only with T026KM,

1.4 TERMS OF WARRANTY

PRONAR Sp. z o.o. in Narew guarantees smooth 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 min. the following parts/components:

- drawbar hitch eye,
- filters on pneumatic system connectors,
- tires,

- gaskets,
- bearings,
- bulbs and LED lamps,
- brake shoes,

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

In the event that damage occurs as a result of:

- mechanical damage caused by the user's fault, road accident,
- from improper operation, adjustment and maintenance, using the machine contrary to its purpose,
- use of a damaged machine,
- repairs carried out 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, reaming, cutting and heating of the main machine components that directly affect safety during use are not permitted.

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.

Moving the machine with lifting equipment can only take place with the use of fixed machine structural elements. 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.

Chocks, wooden beams or other elements without sharp edges should be placed under the trailer wheels, protecting the machine against rolling. wheel blocks must be nailed to the load platform planks of the car or secured in another way preventing their movement.

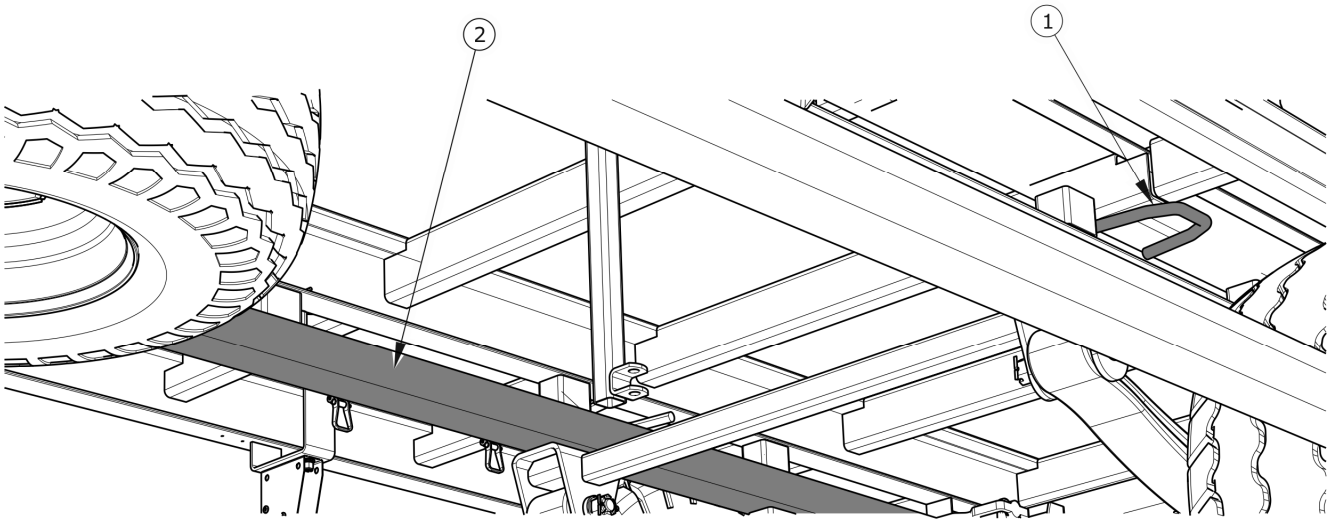


FIGURE 1.3. *Transport handles*

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

Use certified and technically reliable securing measures. Wiping belts, cracked fasteners, bent or corroded hooks or other damage may disqualify the product from being used. 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 for their tension depends, among others, on the weight of the trailer, the construction of the car carrying the trailer, the speed of travel and other conditions. Therefore, it is not possible to specify the fastening plan in detail.

DANGER

Incorrect use of securing measures can cause an accident.

A properly attached machine will not change its position relative to the transporting vehicle. The fastening means must be selected according to the manufacturer's instructions. 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.

During reloading work, particular attention should be paid so as not to damage the machine equipment components and the paint coating. The weight of the trailer is given in table (3.1).

CAUTION

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

While driving, the car driver should exercise extreme caution. The centre of gravity of the vehicle carrying the machine shifts up, which threatens the stability of the transport unit.

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

1.5.2 USER'S TRANSPORT

In the case of independent transport by the user, read the *OPERATING 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 read the instructions and follow the recommendations contained therein.

1.6 THREAT TO THE ENVIRONMENT

A hydraulic oil leak is a direct threat to the natural environment owing to its limited biodegradability. 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. An oil leak into water reservoirs can, however, lead to a reduction in oxygen content.

DANGER

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

When carrying out maintenance and repair work where there is a risk of leakage, this work should be carried out in rooms with an oil resistant surface. In the event of oil leaking into the environment, first of all contain the source of the leak, and then collect the leaked oil using available means. Collect oil residue 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 an oil disposal or regeneration point. 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 trailer's hydraulic system is filled with L-HL 32 Lotos oil.

CAUTION

Oil waste can only be delivered to a point dealing with the utilization or regeneration of oils. It is prohibited to throw or pour oil into the sewage system or water reservoirs.

1.7 WITHDRAWAL FROM USE

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 the 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 authorized to drive agricultural tractors and the agricultural machine.
- 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, non-observance of the recommendations contained in these instructions creates a threat to 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. Use of the trailer for purposes other than envisaged by the Manufacturer is inconsistent with the purpose of the machine and may void 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. Adequate height, safe and durable platforms or ladders should be used.

- In the event of damage to the braking system, the trailer must not be used until the fault has been rectified.
- The trailer disconnected from the tractor must be immobilized with the parking brake. If the machine stands on a slope, it must be additionally secured against rolling by placing wedges 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.
- The trailer's maximum carrying capacity must not be exceeded. Exceeding the carrying capacity may lead to damage to the machine, loss of stability while driving, scattering of the load and a hazard while driving or working.
- Before each use of the trailer, check the technical condition of the trailer and tractor hitch system as well as connection elements of the braking and electrical systems.
- Take special care when connecting or disconnecting the machine from the tractor.
- When connecting, nobody may be between the trailer and the tractor.
- When connecting the trailer to a tractor, use only the upper transport hitch. Check securities.
- 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 work area.
- The load must be secured against shifting with straps, chains, straps or other securing measures. They must be equipped with a tensioning mechanism and have appropriate safety approvals.

- When transporting the wood assortment, do not load the pull-out rear frame with lump wood.
- 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 hoses.
- When connecting the hydraulic conduits to the tractor, make sure that the tractor hydraulic system and trailer are not under pressure.
- Before beginning repair or maintenance work on pneumatic or hydraulic systems, reduce air or oil pressure.
- In the event of injuries being caused by pressurized hydraulic oil, contact 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 wedges 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 before welding. The fumes of burning paint are poisonous to humans and animals. Welding work should be carried out in a well-lit and ventilated room.
- During welding work, pay attention to flammable and easily fusible elements (elements of hydraulic, pneumatic, electrical installations, elements made of plastic and rubber). If there is a risk of ignition or damage, they must be removed before welding.

- Repair work on wheels or tires should be carried out by persons trained and authorized to do so. These works should be carried out using appropriately selected tools.
- Checking the tightening of the wheel nuts should be carried out after the first use of the trailer, every 2-3 hours during the first month of using the machine and then every 30 hours of driving. Each time, repeat all operations if the wheel was disassembled. Wheel nuts should be tightened in accordance with recommendations contained in section 5 MAINTENANCE.
- Check tire pressure regularly.
- In the event of any faults or damage, the trailer should be decommissioned until repaired. It is forbidden to use a damaged trial.
- When operating the machine, use protective gloves, close-fitting clothing and appropriate tools.
- Perform maintenance and repair activities applying general principles of health and safety at work. In the event of a cut, the wound should be immediately washed and disinfected. In case of serious injuries consult a physician.
- Repair, maintenance and cleaning work should only be carried out with the tractor engine switched 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.
- During the warranty period, any repairs may only be carried out by a Warranty Service authorized by the manufacturer.
- If it is necessary to replace individual parts, use only parts recommended by the manufacturer. Failure to comply with these requirements may endanger the health or life of bystanders or persons operating the trailer, cause damage to the machine and constitute the basis for withdrawing the warranty.
- In the event of work requiring the trailer to be raised, use properly certified hydraulic or mechanical lifts for this purpose. After lifting the machine, stable and

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

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

2.1.2 RULES FOR MOVING ON PUBLIC ROADS

- Comply with traffic regulations.
- Exceeding the maximum load capacity of the trailer may damage it and also threaten road safety.
- The speed limit should not be exceeded. Adjust speed to 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.

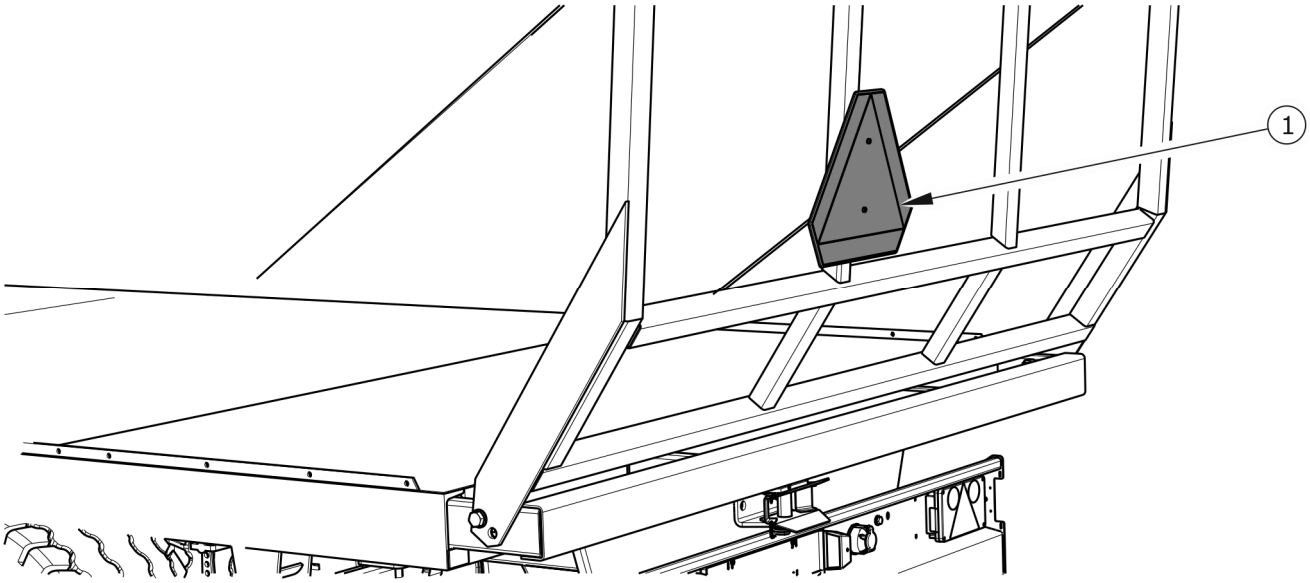


FIGURE 2.1. *Location of the board*

(1) Plate for slow-moving vehicles

2.1.3 DESCRIPTION OF RESIDUAL RISK

Pronar Sp. z o. o. in Narew 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,
- trailer operation by persons under the influence of alcohol or drugs,
- 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 leisurely machine operation,
- Reasonable use of the notes contained in the User Manual,
- keeping a safe distance from prohibited and dangerous places,

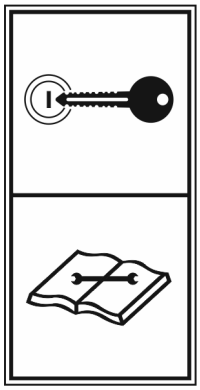
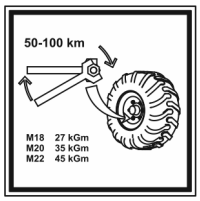
- a ban on being on the machine during its work,
- carrying out maintenance and repair work by trained persons,
- Using appropriate fitted protective clothing,
- securing the machine against access by unauthorized persons, especially children.

2.2 INFORMATION AND WARNING STICKERS

The trailer is marked with information and warning decals mentioned in table (2.1). The arrangement of symbols 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 must use solvents that may damage the label coating and do vehicles not direct a strong water jet.

TABLE 2.1. *Information and warning stickers*

ITEM	SYMBOL	MEANING
1		Caution. Before starting work, read the *USER'S MANUAL.* **70N-00000004**

ITEM	SYMBOL	MEANING
2		Before commencing servicing or repairs, turn off the engine and remove the key from the ignition switch. **70N-00000005**
3		Danger of the whole body crushing. Keep a safe distance from ladders and the drawbar. **147N-00000002**
4		Regularly check the tightness of wheel nuts and other bolted connections. **104N-00000006**
5		Lubricate the machine according to the schedule outlined in the *USER'S MANUAL.* **104N-00000004**
6	**T026 PRONAR**	Type of machine **147N-00000003**
7	**T026M PRONAR**	Type of machine **147N-00000012**

ITEM	SYMBOL	MEANING
8	**T026KM PRONAR**	Type of machine **147N-00000013**

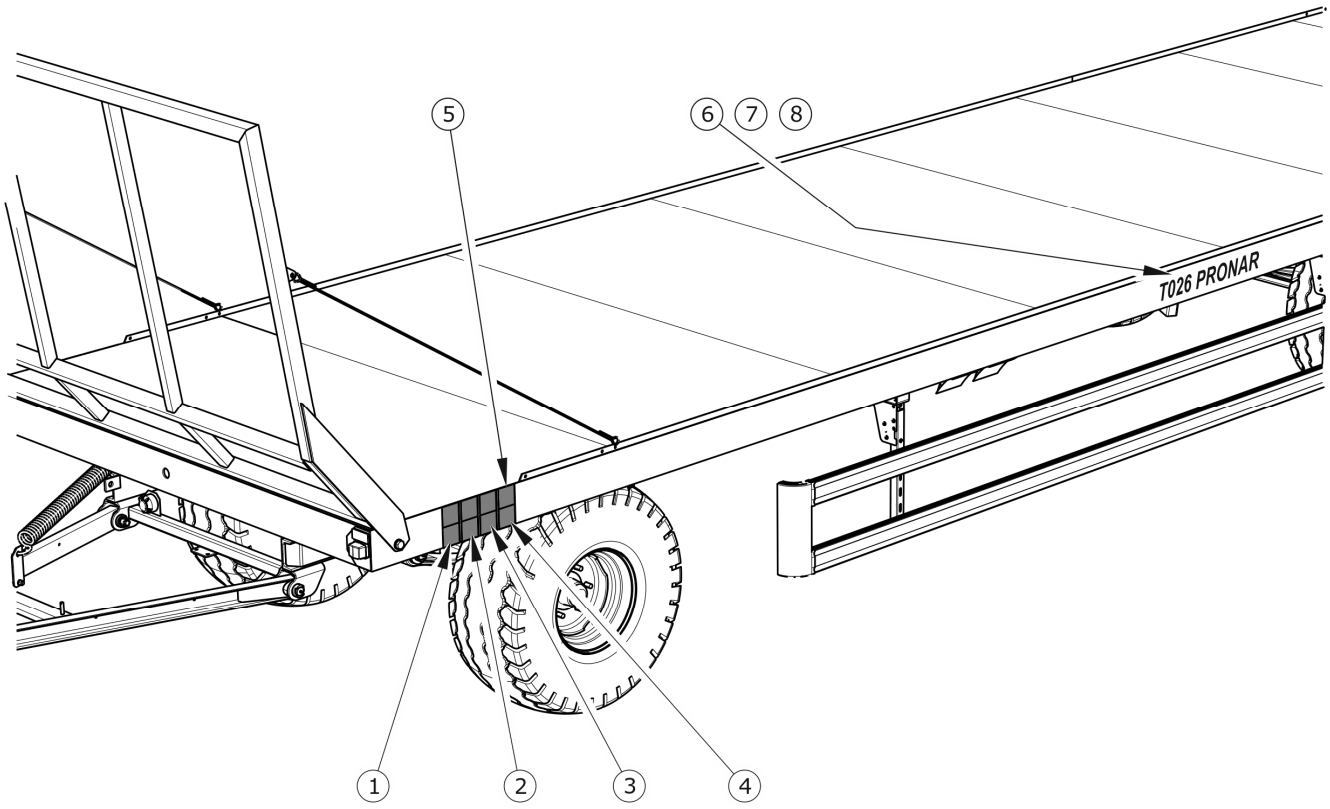


FIGURE 2.2. *Arrangement of information and warning stickers*

CHAPTER

3

CONSTRUCTION AND PRINCIPLE OF OPERATION

3.1 TECHNICAL CHARACTERISTICS

TABLE 3.1. *Basic technical data as standard equipment*

CONTENT	UNIT	T026	T026M	T026KM
Dimensions				
Length	mm	13170	13170	13170
- with the rear frame extended	mm	11995	11995	11995
- with the rear frame retracted	mm	2500	2550	2550
Width	mm	2860	2860	2860
Height				
Loading platforms dimensions				
Loading area length	mm	10770	10770	10770
- with the rear frame extended	mm	9880	9880	9880
- with the rear frame retracted	mm	2435	2517	2517
Width				
Performance parameters				
Capacity	kg	13720	13720	13720
Permissible gross weight	kg	18000	18000	18000
The trailer's karb weight	kg	4280	4280	4280
Platform height from the ground	mm	1180	1180	1180
Loading area				
- with the rear frame extended	m^2	26.2	26.2	26.2
- with the rear frame retracted	m^2	24	24	24
Other information				
Electrical system voltage	V	12	12	12
Wheel track	mm	1820	1820	1820
Permissible design speed	km/h	40	40	40
Min. tractor power	KM/ kW	93.6 / 68.8	93.6 / 68.8	93.6 / 68.8

3.2 CONSTRUCTION OF A TRAILER

3.2.1 CHASSIS

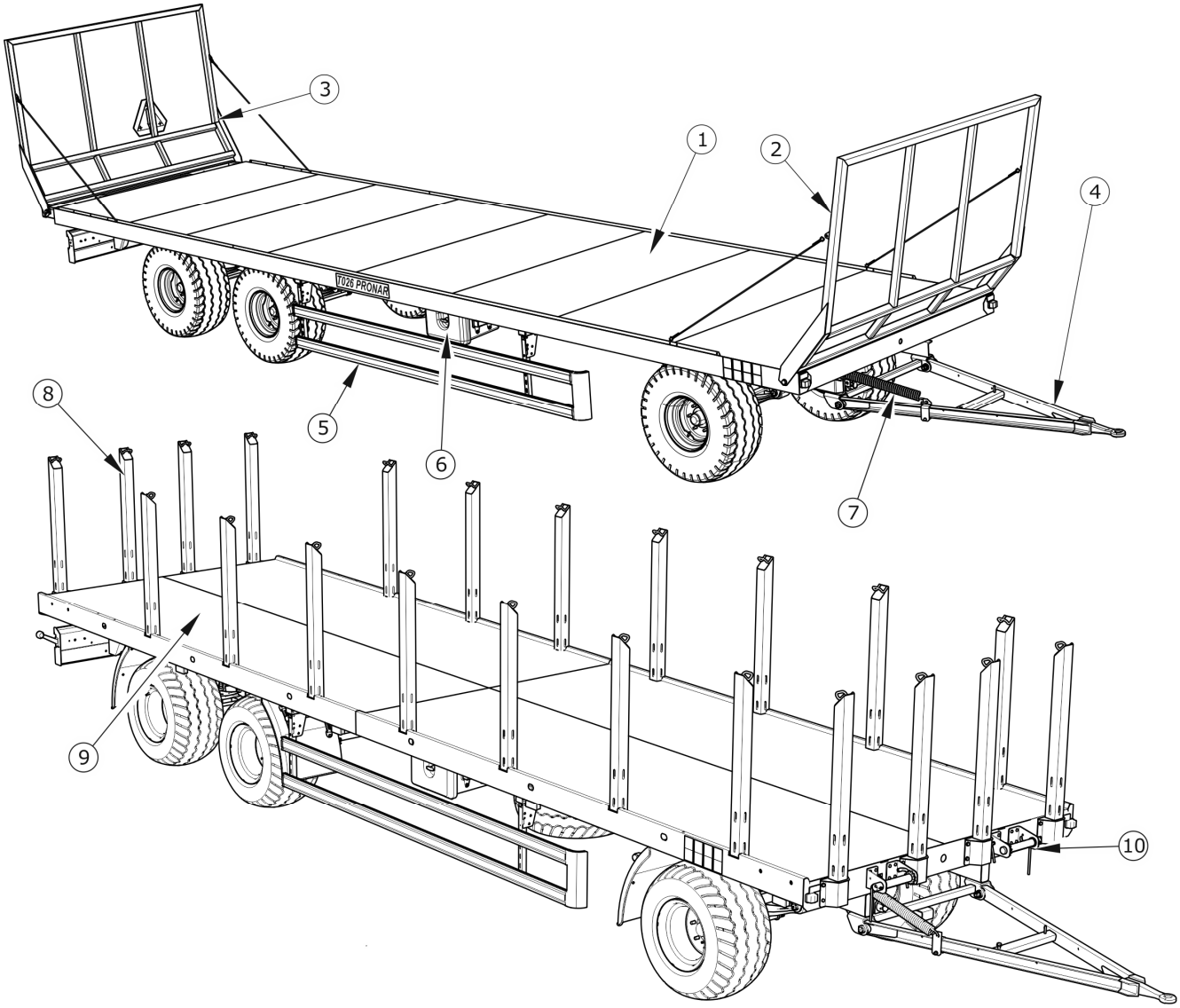


FIGURE 3.1. *Construction of a trailer*

(1) frame - loading platform, (2) front ladder, (3) rear ladder, (4) drawbar, (5) drive-on guard, (6) tool box, (7) spring, (8) stanchions, (9) frame - loading platform with stake holders, (10) belt retractor

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 (T026) or a profiled edge (T026M). 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. In the T026KM trailer, in the frame (9) there are sockets for mounting the stanchions (8) - (front, rear and/or side).

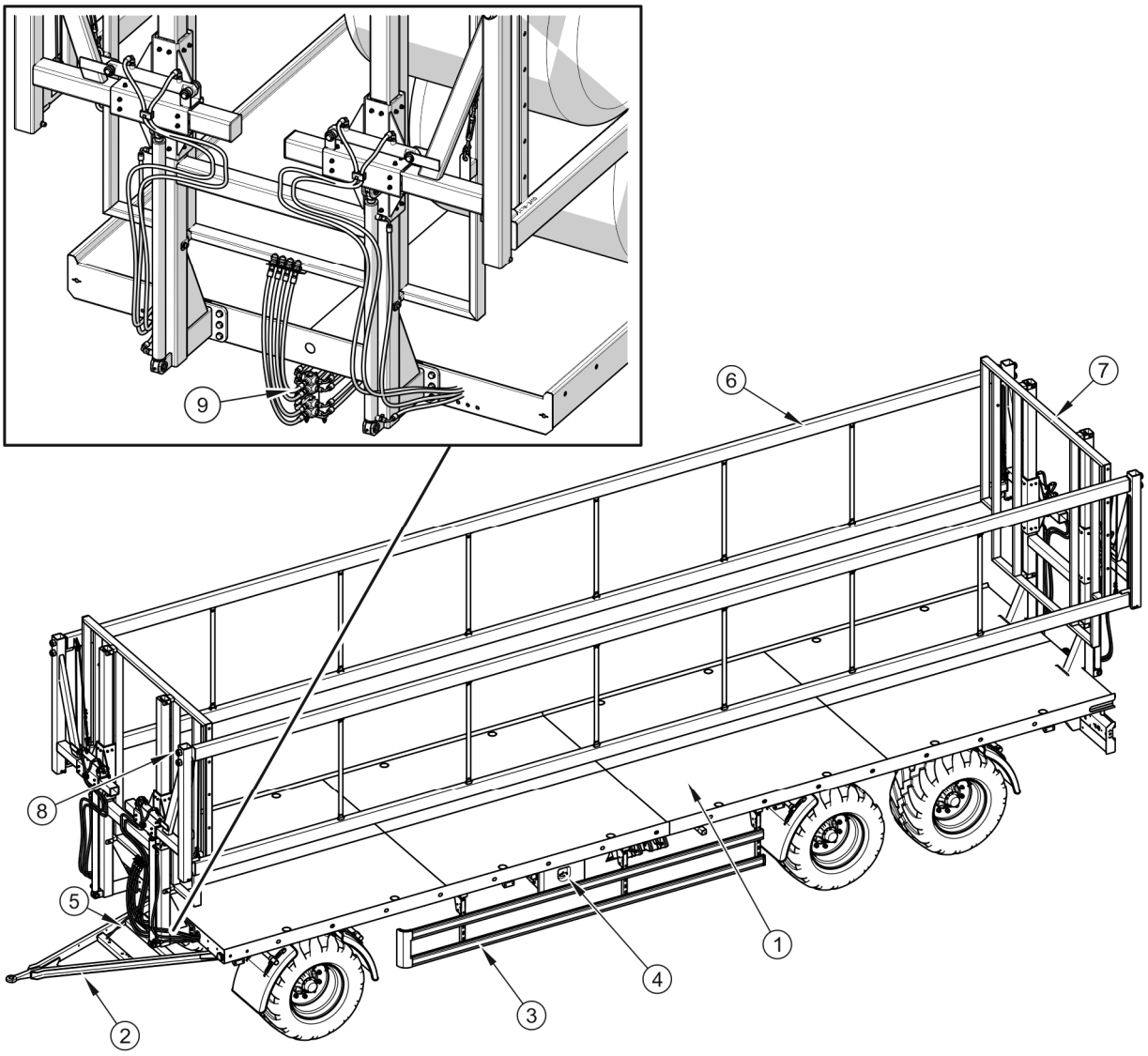
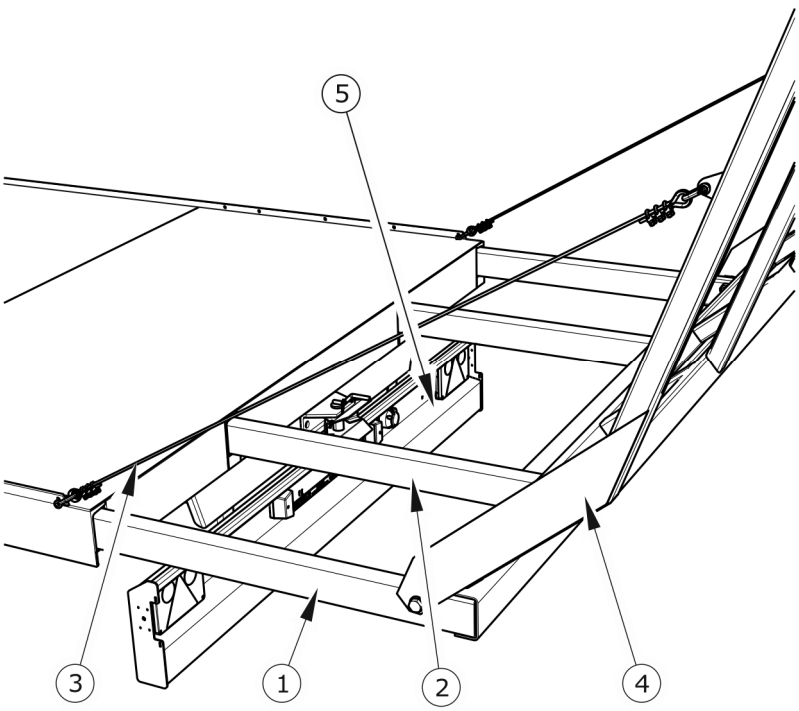


FIGURE 3.2. *Construction of a trailer with hydraulic walls*

(1) frame - loading platform, (2) drawbar, (3) ramp, (4) tool box, (5) spring, (6) side hydraulic wall, (7) rear wall, (8) front wall, (9) hydraulic distributor;

Figure *(3.2)* shows the options for making a trailer with hydraulically raised side walls (6). The rear wall (7) and the front wall (8) are stationary, and there are hydraulic mechanisms for lifting the side walls. The system is powered by the agricultural tractor's external hydraulics.

The walls are controlled simultaneously for the left and right walls by means of a hydraulic distributor (9) located in the front part of the trailer above the drawbar. Hydraulic walls are designed to secure the transported load in the form of bales or pressed cubes, however, the use of walls does not release the operator of the set from careful and prudent driving. It is not allowed to load materials in such a way that the load presses against the raised side walls. More information on hydraulically raised sidewalls can be found in chapter 3.2.5.



Extendable frame - figure (3.2) consists of the outer (1) and inner (2) frames. When driving on public roads, the extendable frame must be folded to the transport position and secured with bolts located under the frame floor.

The trailer's frame ends with a lighting beam (5), which is designed for mounting electrical equipment, a license plate and reflectors.

FIGURE 3.3. *Extendable frame*

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

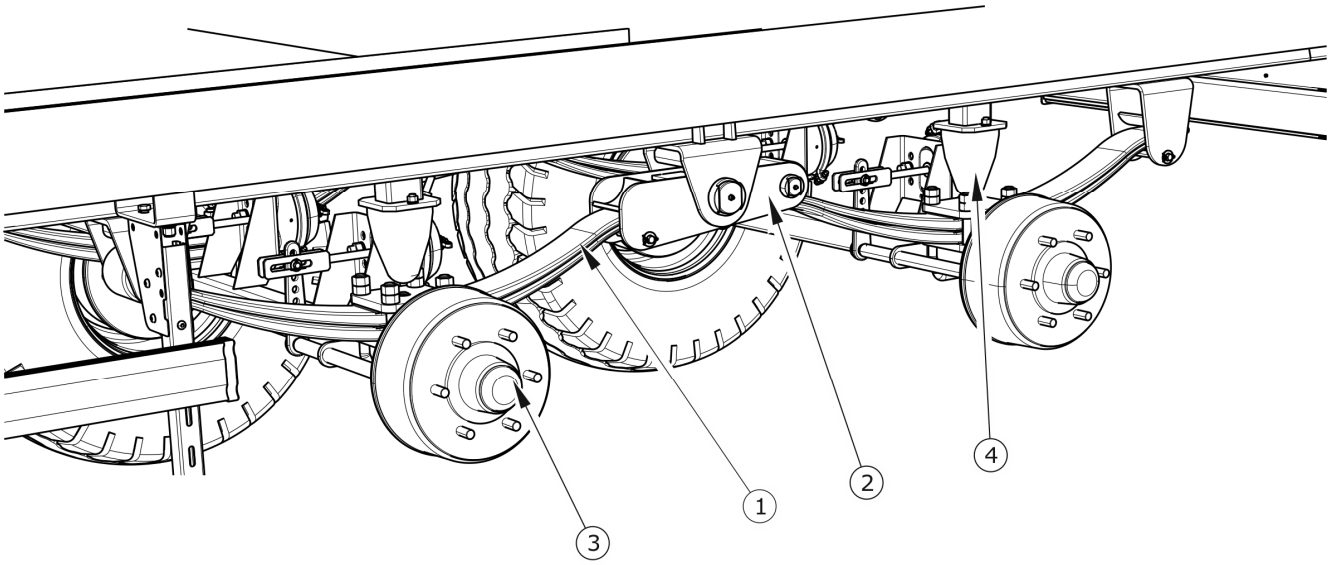


FIGURE 3.4. *Rear suspension*

(1) suspension spring, (2) rocker arm, (3) road axle, (4) rubber bumper

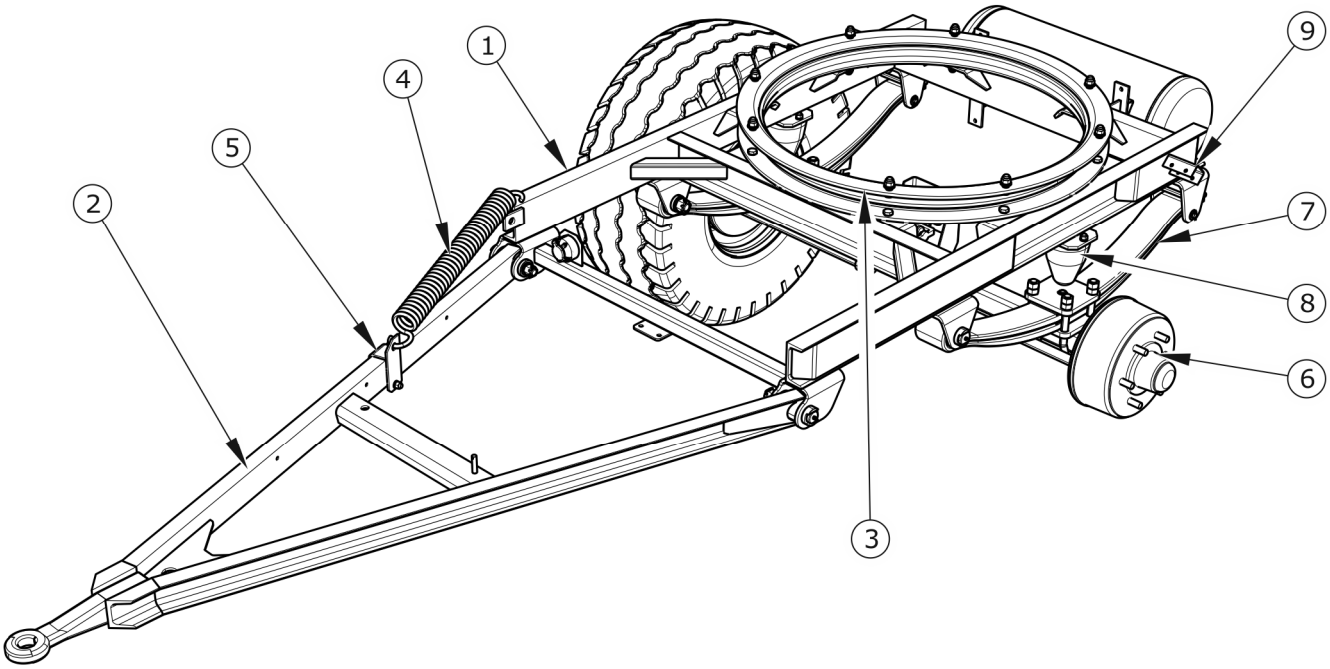


FIGURE 3.5. *Front suspension*

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

The drawbar (2) is attached to the turntable frame (1) with bolts. As a standard, a V-type drawbar with a rigid drawbar eye of ø40mm is available. As an option, a Y-type drawbar with

a rigid drawbar eye of the same eye diameter is also available. The height of the drawbar eye can be adjusted by moving the hitch (5) securing the spring to the drawbar.

The front axle and rear 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 calliper brakes actuated by mechanical cam expanders.

3.2.2 SIDE OVERRUN PROTECTION

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.

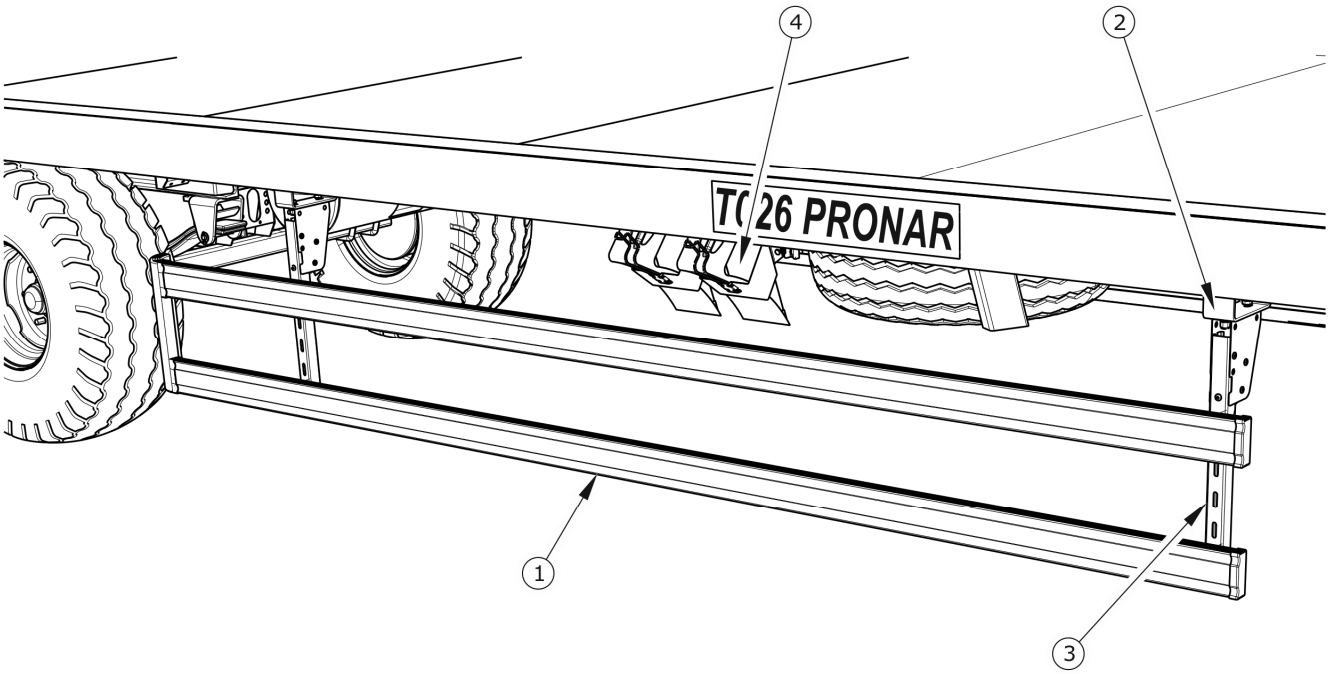


FIGURE 3.6. *Side overrun protection*

(1) cover strip, (2) fixing channel, (3) bracket, (4) wedges

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 four types of service brake:

- double line pneumatic system with a three-position regulator, figure (3.6) - standard equipment,
- double line pneumatic system with an automatic regulator, figure (3.7) - optional equipment,
- single line pneumatic system with a three-position regulator, figure (3.8) - optional equipment,
- hydraulic brake system, figure (3.9) - optional equipment.
- pneumatic-hydraulic braking system - figure (3.10) - optional equipment,
- Pneumatic-hydraulic braking system with electric protection - figure (3.11) - optional equipment,

The service brake (pneumatic or hydraulic) is activated from the driver's cab by pressing the tractor brake pedal. The task of the control valve is to activate the trailer brakes simultaneously with the tractor brake applied. In addition, in the event of an unforeseen disconnection of the hose between the trailer and the tractor, the control valve automatically applies the machine's brake (applies only to pneumatic systems).

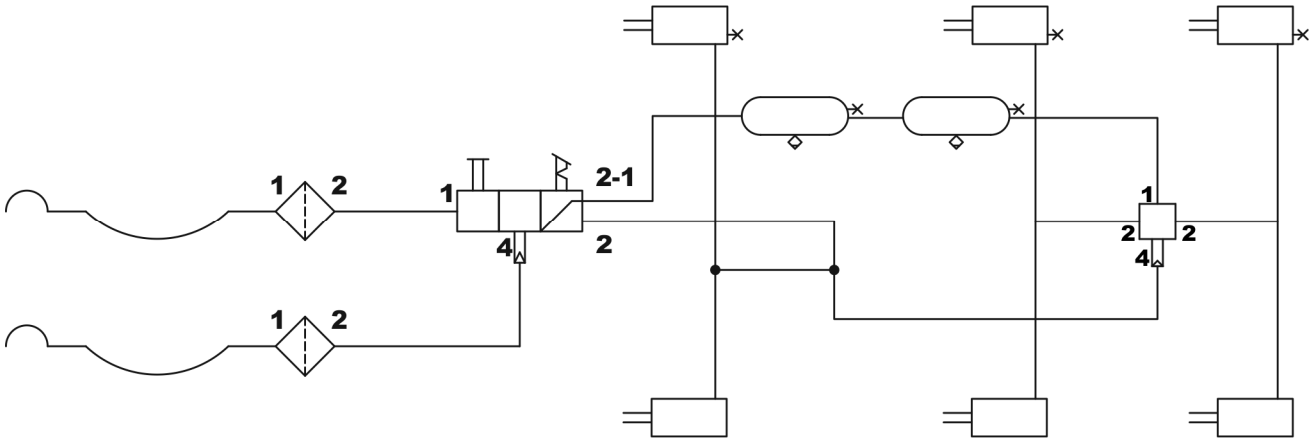


FIGURE 3.7. *Diagram of the double line pneumatic system with a manual regulator*

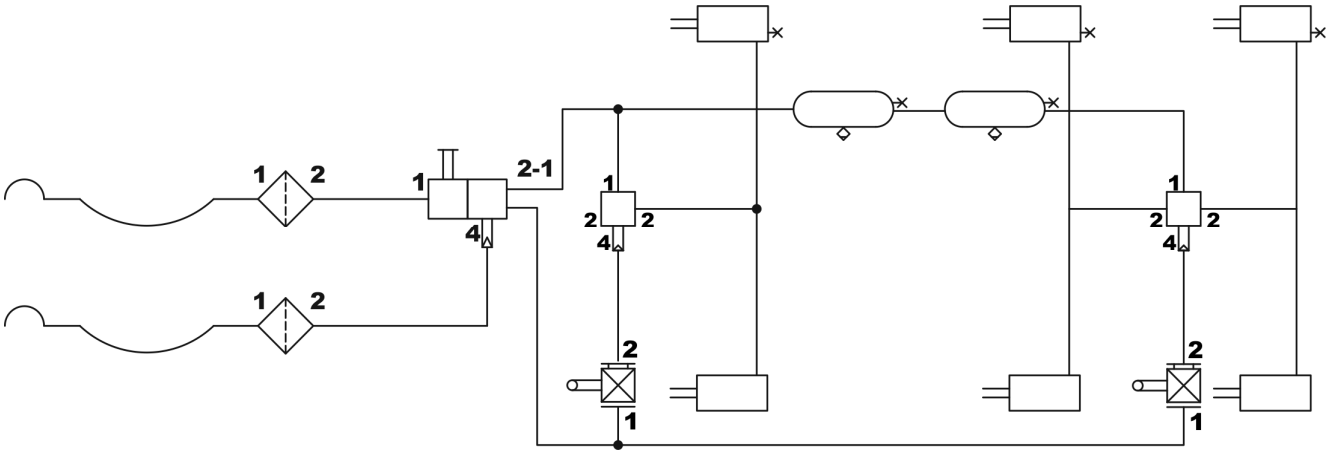


FIGURE 3.8. *Diagram of the double line pneumatic system with an automatic regulator*

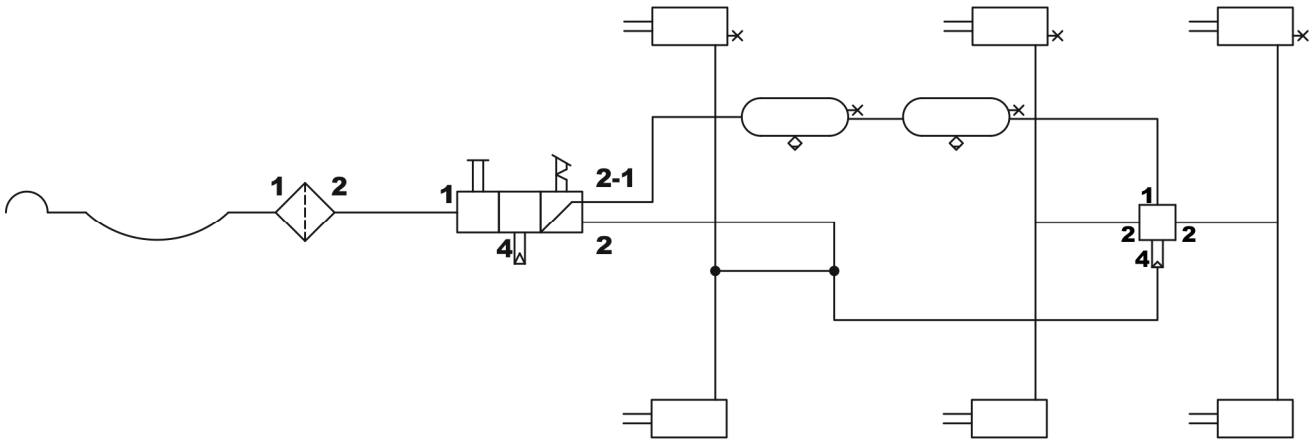


FIGURE 3.9. *Diagram of the single line pneumatic system with a manual regulator*

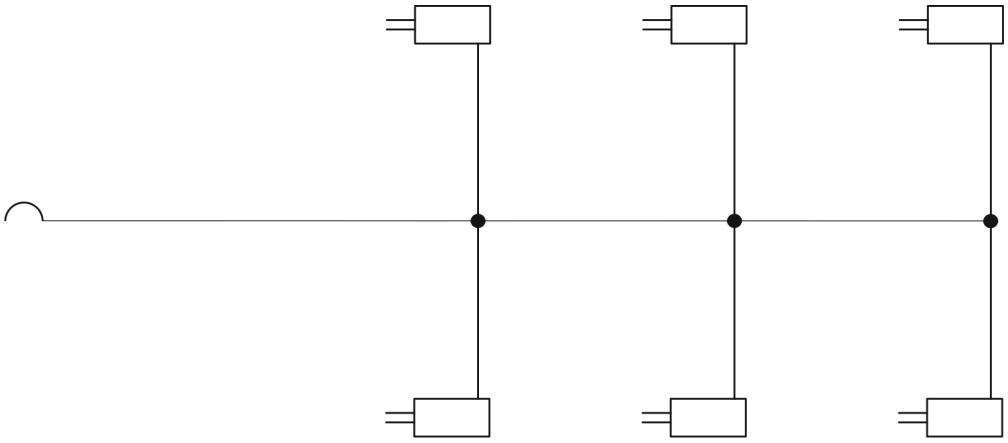


FIGURE 3.10. *Diagram of the hydraulic system*

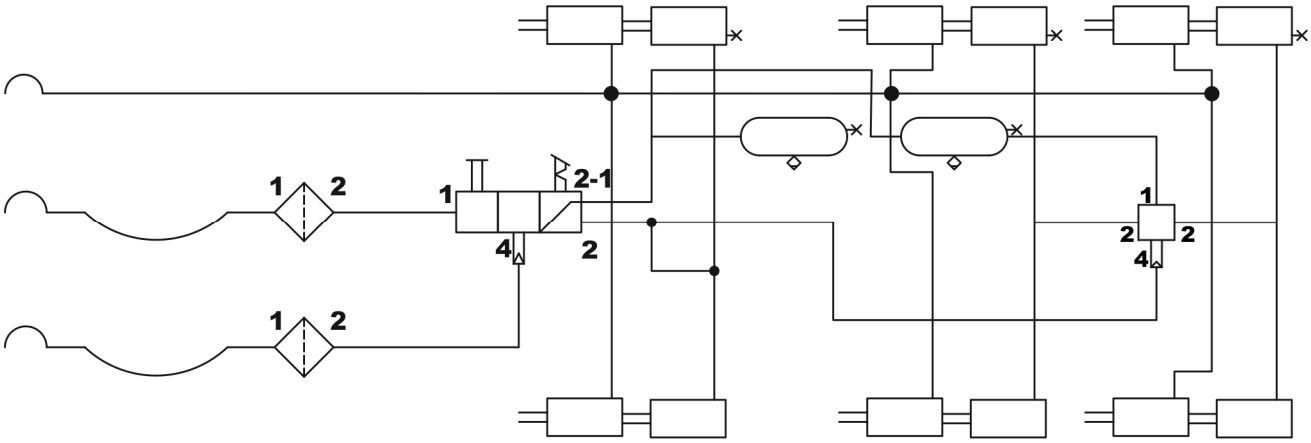


FIGURE 3.11. *Diagram of a pneumatic-hydraulic system*

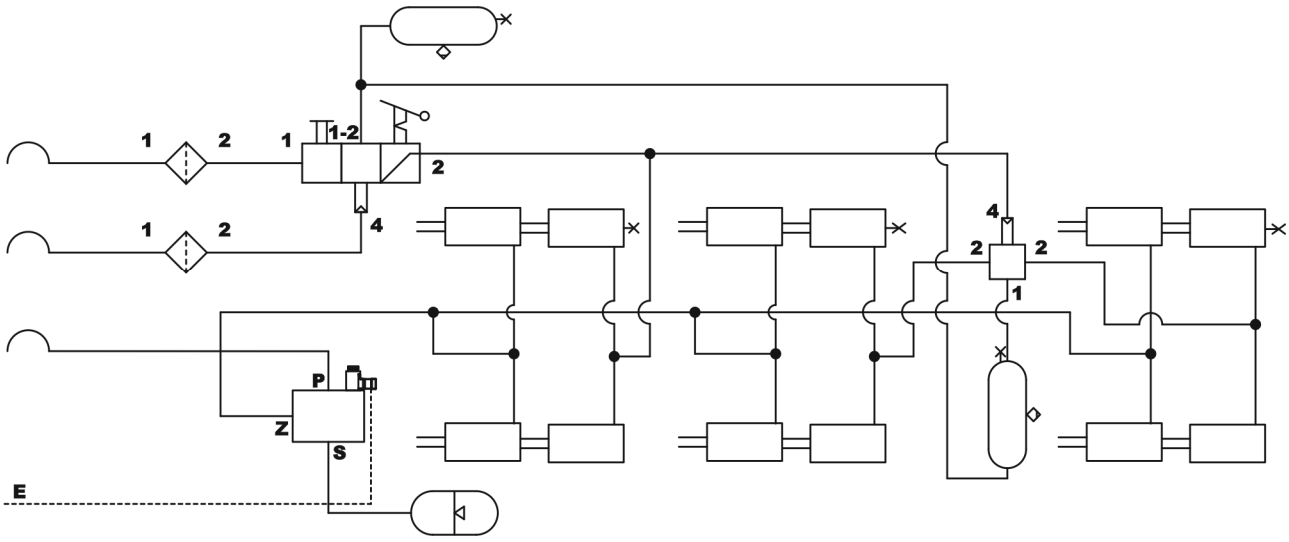
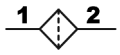
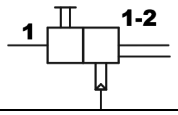
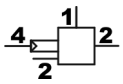
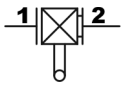
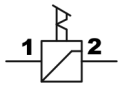
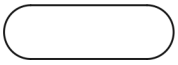
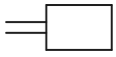


FIGURE 3.12. *Diagram of a pneumatic-hydraulic system with electric protection*

TABLE 3.2. *List of symbols used in the schemes*

SYMBOL	MEANING
	Pneumatic connection(plug)
	Air filter
	Drainage valve
	Main control valve
	Relay valve
	Automatic braking force regulator
	Manual three-position braking force regulator
	Wire connection (connector)
	Air tank
	Actuator
	Control valve (connector)

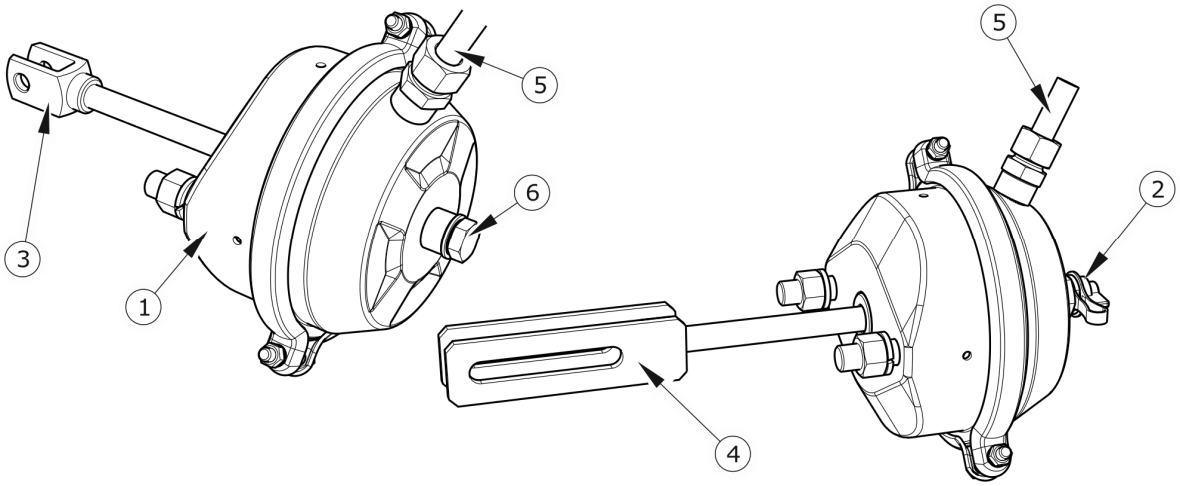


FIGURE 3.13. *Pneumatic brake cylinders*

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

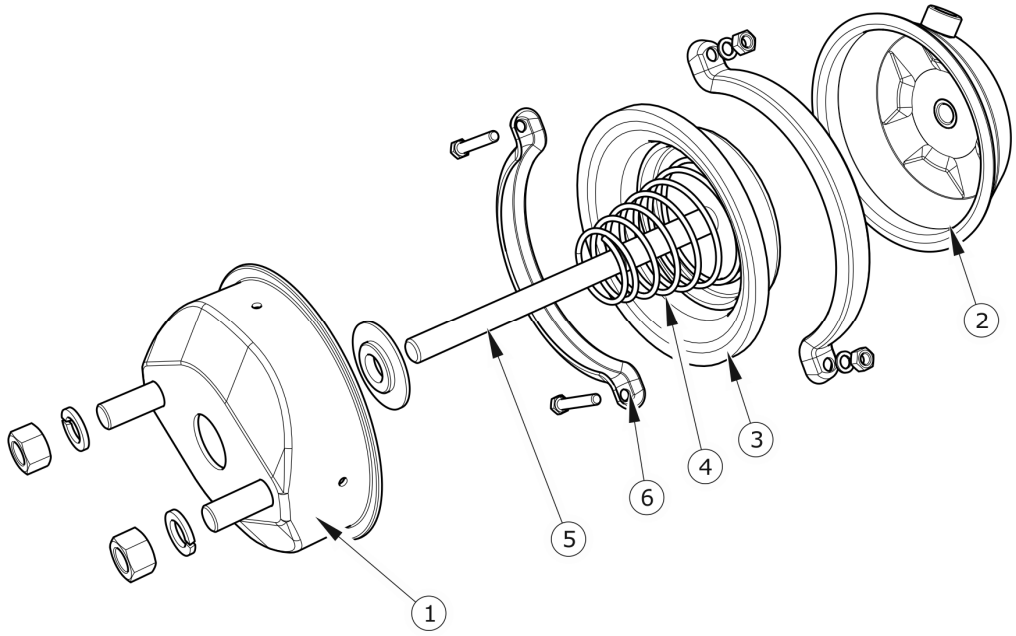


FIGURE 3.14. *Construction of a pneumatic actuator*

(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 (3.14). After connecting the air line to the tractor, the release device automatically adjusts to the position enabling normal operation of the brakes.

Three-range brake force regulator (2) - figure (3.14), adjusts the braking force depending on the setting. Switching to the appropriate operating mode is done manually by the machine operator before starting the journey using the lever (4). Three work positions are available: 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.

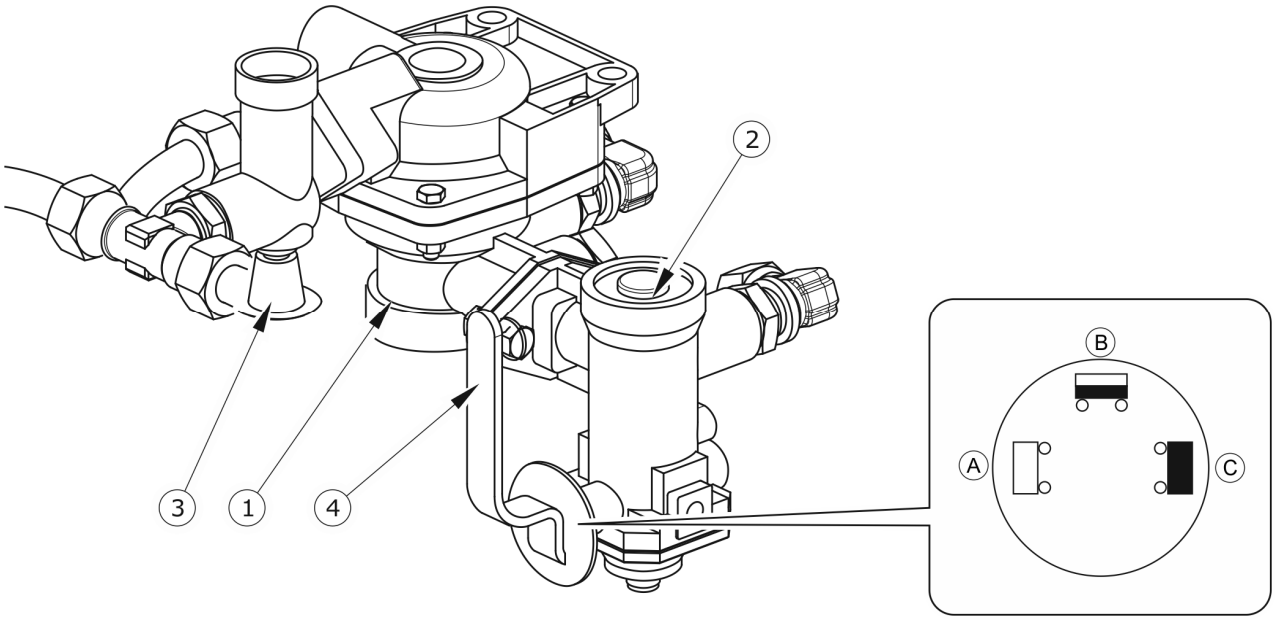


FIGURE 3.15. *Control valve and braking force regulator*

(1) control valve, (2) braking force regulator, (3) trailer brake release button when parking, (4) regulator selection lever, (A) ‘UNLOADED’ position, (B) ‘HALF LOAD’ position, (C) 'FULL LOAD’ position

3.2.4 PARKING BRAKE

The parking brake is used to immobilize the trailer during parking. 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. Expander arms exerting pressure on the brake shoes, causing the axle to become immobilized. The parking brake must be released before driving - the steel cable must hang loosely.

3.2.5 HYDRAULICALLY RAISED SIDE WALLS

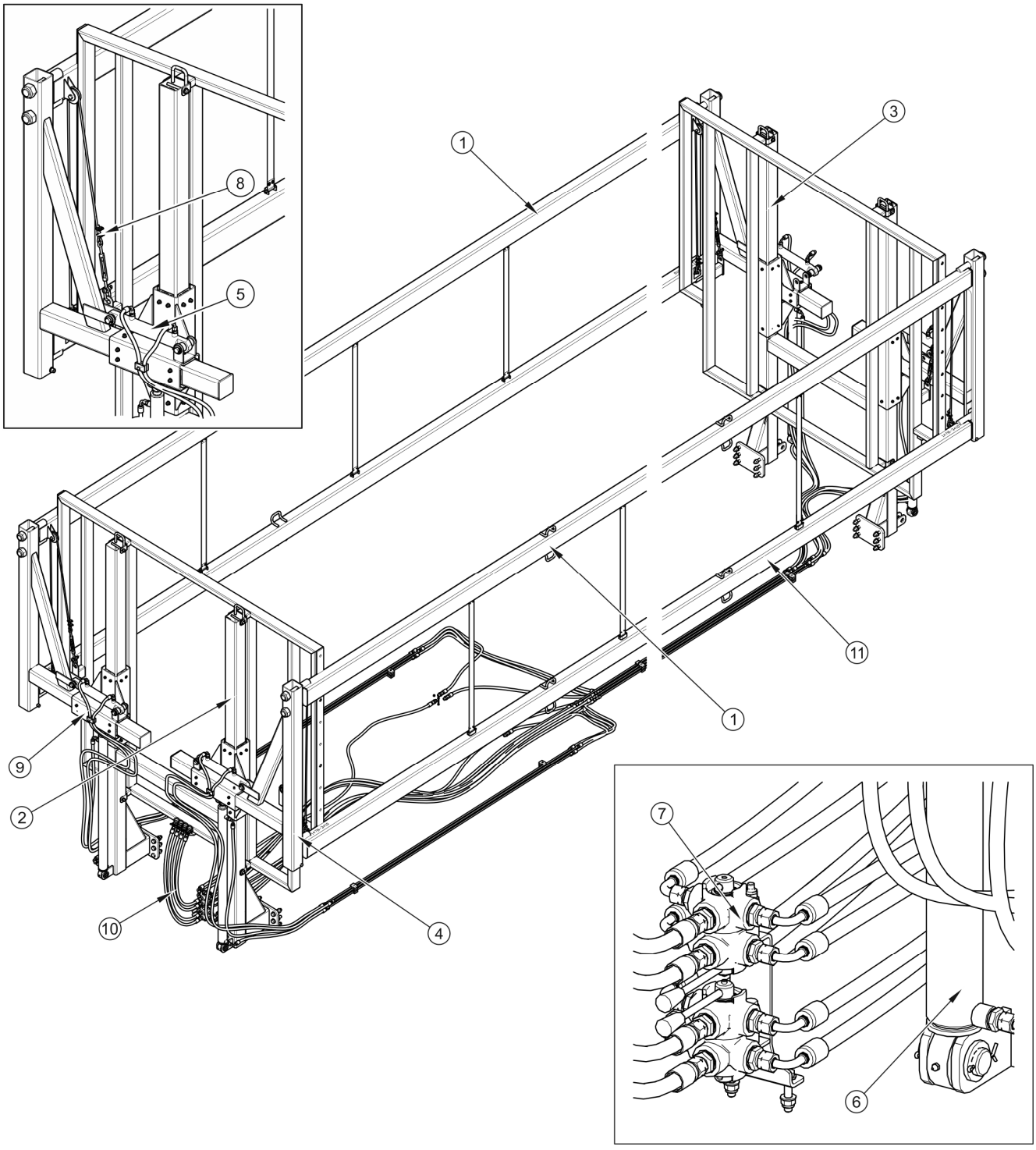


FIGURE 3.16. *Construction of a hydraulic system for lifting walls*

(1) side wall, (2) front columns, (3) rear columns, (4) arm, (5) arm actuator, (6) trolley actuator, (7) six-way valve, (8) cable, (9) trolley , (10) connection pipes, (11) bottom profile

Optional equipment of the trailer are hydraulically lifted side walls - figure *(3.16)*. The front columns (2) form a fixed front wall and the rear columns (3) form a fixed rear wall. Trolleys (9) are mounted on the columns, which, while moving vertically along the columns, raise and lower the side walls (1). The horizontal movement of the arms (4) in the trolleys (9) causes the side walls to move apart while simultaneously lifting the lower profile (11) by means of the cable (8). This solution significantly facilitates loading, increasing the room for manoeuvre for the equipment loading the trailer. The vertical movement of the trolleys (9) is carried out by means of actuators (6), while the horizontal movement of the arms (4) is carried out by means of actuators (5). All cylinders are powered with hydraulic oil from the external installation of the farm tractor. Connection conduits (10) should be connected to the appropriate sections of the tractor's manifold. By controlling the valve levers (7), start the hydraulic system for raising the side walls. The upper six-way valve (7) is responsible for raising and lowering the side walls (1), and the lower one for extending and folding the arms (4).

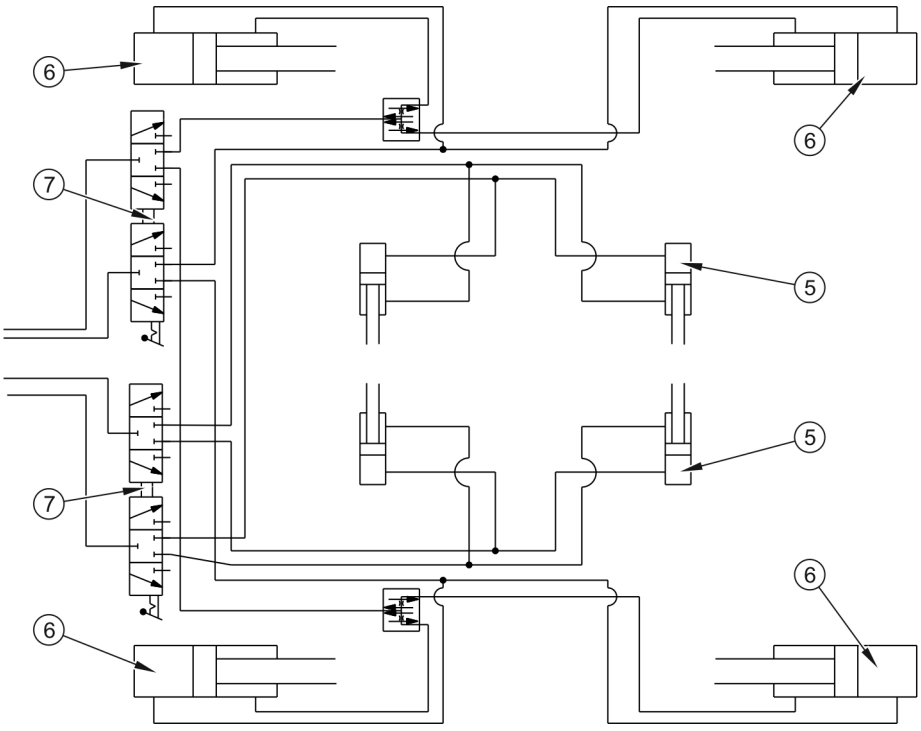


FIGURE 3.17. *Diagram of the hydraulic system for lifting the walls*

(5) arm cylinder, (6) trolley cylinder, (7) six-way valve

3.2.6 ELECTRICAL LIGHTING INSTALLATION

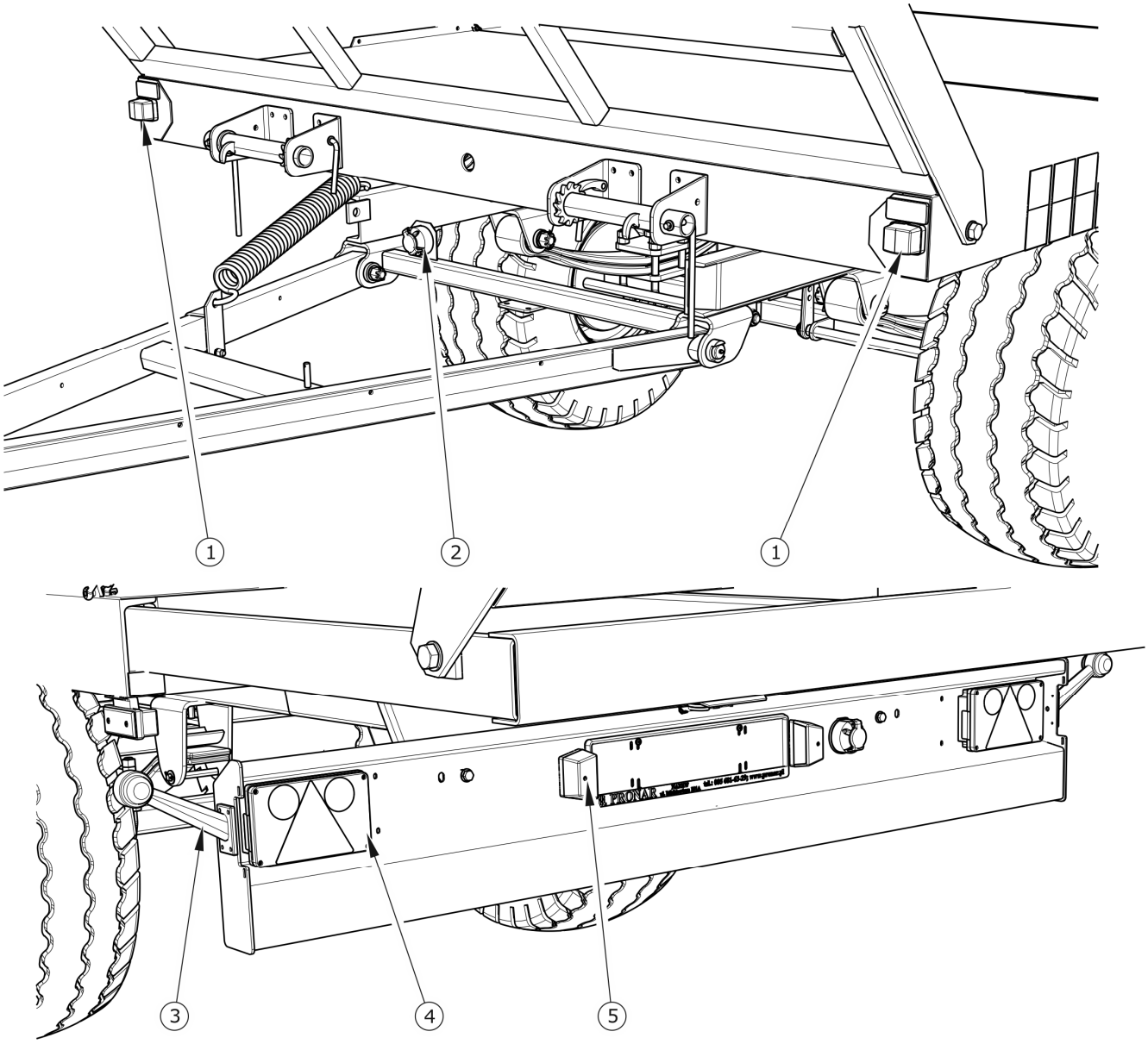


FIGURE 3.18. *Arrangement of elements of electrical installation*

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

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 (3.15) and (3.16).

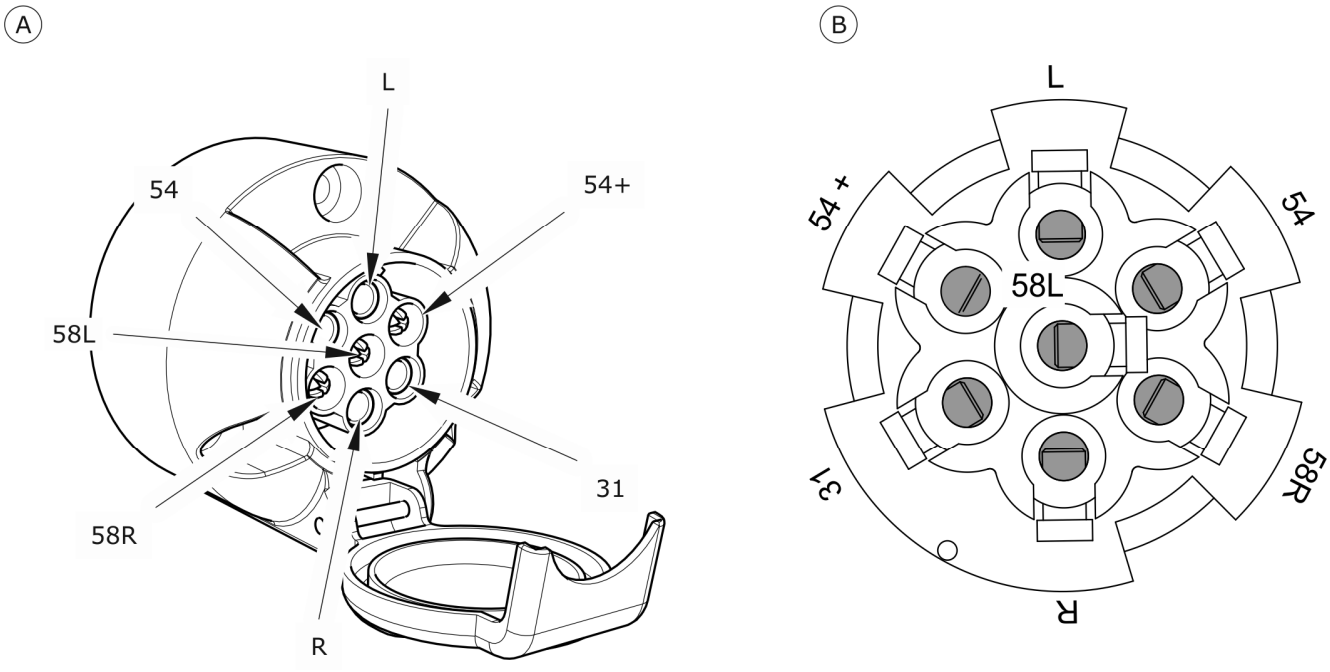


FIGURE 3.19. *Connection socket*

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

TABLE 3.3. *Markings of connection socket*

MARKING	FUNCTION
31	Weight
54+	+ 12V power supply
L	Left direction indicator
54	STOP light
58L	Rear left position light
58R	Rear right position light
R	Right direction indicator

3.2.7 SPARE WHEEL WINCH

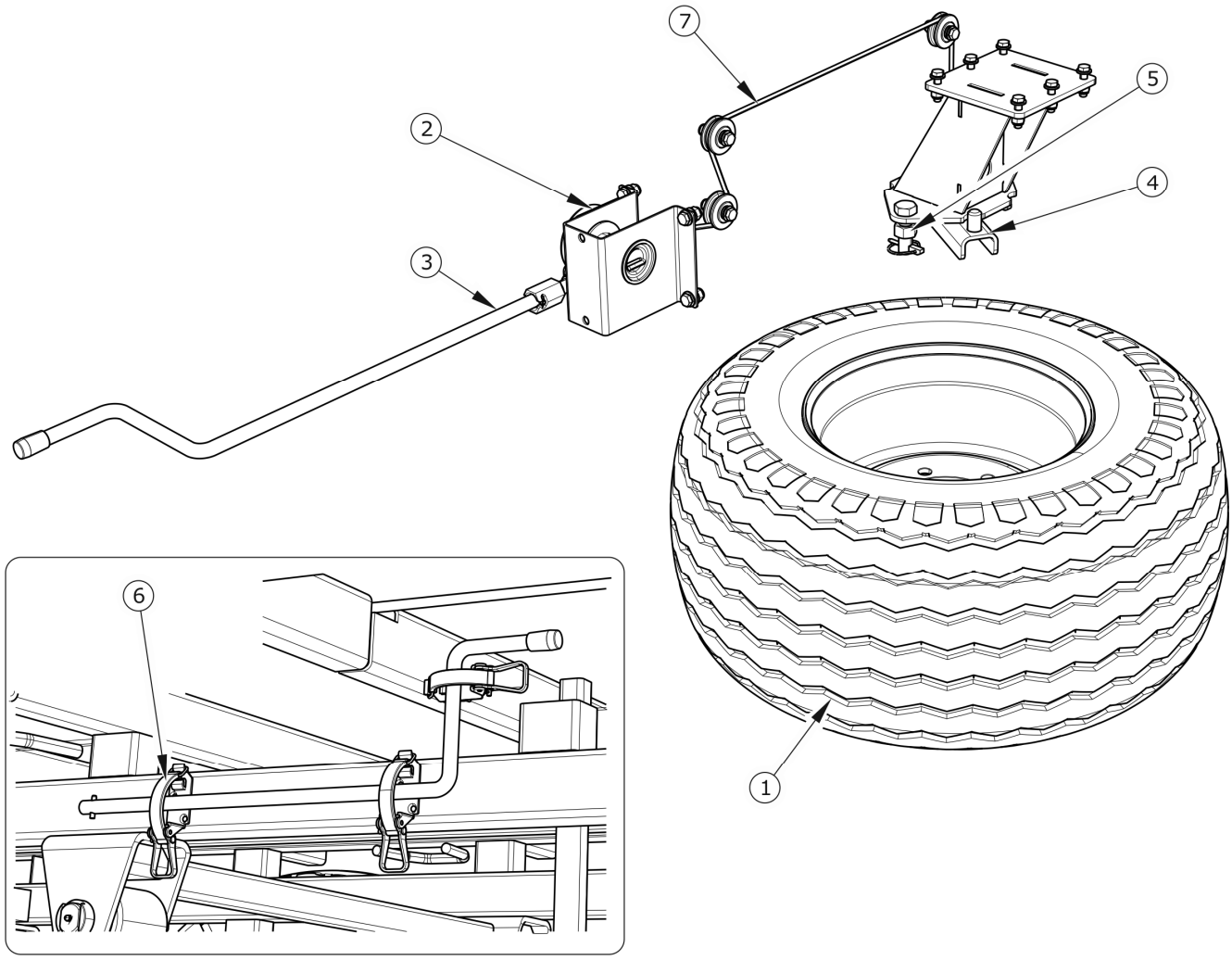


FIGURE 3.20. *Spare wheel winch construction*

(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 is delivered to the user completely assembled and does not require any 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.

Test run

- 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 braking 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.
- Hitch trailer to tractor.

- By activating individual lights, check the correct operation of the electrical system.
- Release the tractor parking brake. Perform a test drive. 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

The 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.
- Fold in the extendable frame if the trailer will be moving on public roads.

DANGER

Careless and improper use and operation of the trailer, non-observance of the recommendations contained in these instructions creates a threat to 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-compliance with the rules of safe use poses a threat to the health of the operating and bystanders.

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 connect the trailer with the tractor, perform the following actions in order.

Connecting

- Position the agricultural tractor directly in front of the trailer eye.
- Reverse the tractor, connect the trailer to the appropriate hitch tractor, check the coupling safety device protecting the machine against accidental unhitching.
- If an automatic coupling is used in the agricultural tractor, make sure that the aggregation operation is completed and the drawbar eye is secured.
- Switch 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.
- ⇨ If the trailer is equipped with a pneumatic-hydraulic system, connect the pneumatic or hydraulic system conduits and the electric conduit of the protection (if available in the brake system option). Connect the pneumatic conduits in the same way as in the case of a double conduit system.

➡ Connect the electric lighting system 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.

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 the trailer installations are not under pressure.

Ensure good visibility during coupling.

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

CAUTION

It is forbidden to use an inefficient trailer.

Disconnecting

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

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

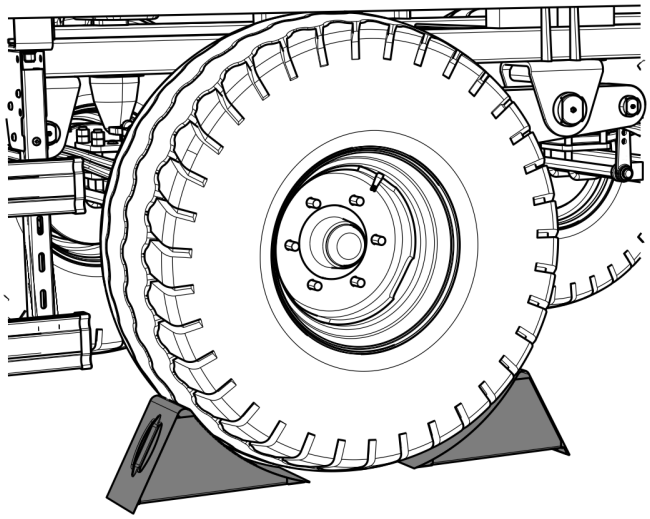


FIGURE 4.1. *Correct wedge setting*

DANGER

When disconnecting the trailer from the tractor, take particular care. Ensure good visibility. Unless it is necessary, do not stay between the machine and the tractor.

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

It is forbidden to disconnect the trailer when the machine is loaded.

- ➡ Disconnect the braking system lines.
  - ⇨ 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.
- ⇨ In case of hydraulic-pneumatic installation, disconnect the electric conduit of the safety device (if it is available in the brake system option) and then the pneumatic or hydraulic conduits. Disconnect the pneumatic conduits as in the case of a double conduit system.

➡ Secure the cable ends with covers.

➡ Unlock tractor hitch, drive tractor away.

4.3 LOADING AND LOAD SECURING

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 for transporting crops and agricultural products transported on pallets and for transporting the assortment of cut or processed wood (trailer version equipped with stanchions).

The trailer must be placed for straight ahead and connected to the tractor. Loading 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. Make sure the stanchions are properly tightened. 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 work area.

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 pallets, pay attention to

their distribution on the platform. The pallets must be secured so that they cannot move freely on the platform. Laying pallets in layers is prohibited.

CAUTION

The trailer's maximum carrying capacity must not be exceeded.

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 authorization 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 may cause overloading of the trailer's chassis.

It is forbidden to transport people and animals.

Keep a safe distance from overhead power lines during operation.

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 (logs, pressed cubes, bales, pallets 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,
- ear welded on top of the stanchion.

The number of safeguards used depends on the method of loading, type of load and size of the load. If the transport will take place on slopes and/or with 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 loads, it is not possible to describe all methods of loading. When working, be guided by reason and your own experience. The trailer user is obliged to read the regulations regarding road transport and comply with their recommendations.

4.3.3 OPERATION OF THE HYDRAULIC WALLS

In order to operate the hydraulic walls:

- stop the tractor and trailer on flat, level ground; select the side from which you want to load/unload;
- Steer both manifold levers in the desired direction
- Move the wall aside and then lift it up;
- Load/unload the trailer;
- Lower the wall and then press the wall.

CAUTION

Both valve levers must be operated in one direction at the same time (do not set them in different directions - one to the left and one to the right). Both levers to the left - the left side works; both right - right. You cannot handle two sides at the same time, choose one.

4.3.4 TENSIONER OPERATION

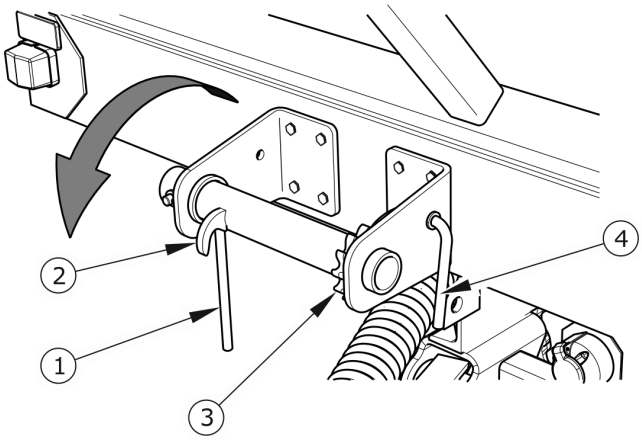


FIGURE 4.2. *Right tensioner*

(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 T026M 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

When driving comply with traffic regulations, be prudent and considerate. The most important guidelines for steering a tractor with a trailer attached are presented below.

- Before moving off 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 distributed evenly in such a way that it does not exceed the permissible pressure on the trailer's running gear. Exceeding the permissible load capacity of the vehicle is forbidden and may cause damage to the machine, and may also pose a threat during road travel for the tractor and trailer operator or other road users.
- 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 immobilizing it with the parking brake and placing it under the wheel chocks. Leaving an unsecured trailer is prohibited. 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 travelling on public roads, the trailer must be marked with a slow-moving vehicle warning sign located on the rear wall of the load box, if the trailer is the last vehicle in the set.
- 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 the trailer with load (and especially with volumetric load) adversely affects driving safety. Driving near the edges of ditches or canals is dangerous due to the risk of landslides under the wheels of a 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.
- While driving on public roads, the extendable frame must be retracted.

CAUTION

Travelling with a volumetric load through ruts, ditches, slopes etc. poses a great risk of tipping over. Take special care.

- 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 trailer when driving on uneven terrain and adjust the speed to terrain and road conditions.
- Prolonged driving on sloping ground creates a risk of loss of braking efficiency.
- When driving the trailer without a load, fold the front and rear ladders.

4.5 UNLOADING

The trailer must be placed for 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.

Keep a safe distance from overhead power lines during operation.

When unloading long timber, proceed with caution as there is a risk of collision with surrounding objects.

It is recommended to use a loader, conveyor or forklift truck to unload the trailer. When working, ensure good visibility and 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 using generally accepted principles of health and safety.

4.6 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 carried out by persons trained and authorized to do so. These works should be carried out using appropriately selected tools.

- Checking the tightening of the wheel nuts should be carried out after the first use of the trailer, every 2-3 hours during the first month of using the machine and then every 30 hours of driving. Each time, repeat all operations if the wheel was disassembled. Wheel nuts should be tightened in accordance with recommendations contained in section 5 MAINTENANCE.
- Regularly check and maintain proper tire pressure as recommended in the instructions (especially after a long break of not using the trailer).
- Tire pressure should also be checked during all-day intensive work. It should be taken into account that an increase in tire temperature can increase the pressure by up to 1 bar. With such a rise in temperature and pressure, reduce the load or speed.
- Never reduce 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 were not taken into account as possible for the trailer operator to perform this user loses the warranty.

5.2 DRIVING AXLE SERVICE

5.2.1 PRELIMINARY INFORMATION

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

User responsibilities include only:

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

Activities related to:

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

can be performed by specialized vehicle service stations.

5.2.2 CHECKING OF THE CLEARANCE OF THE AXLE BEARINGS

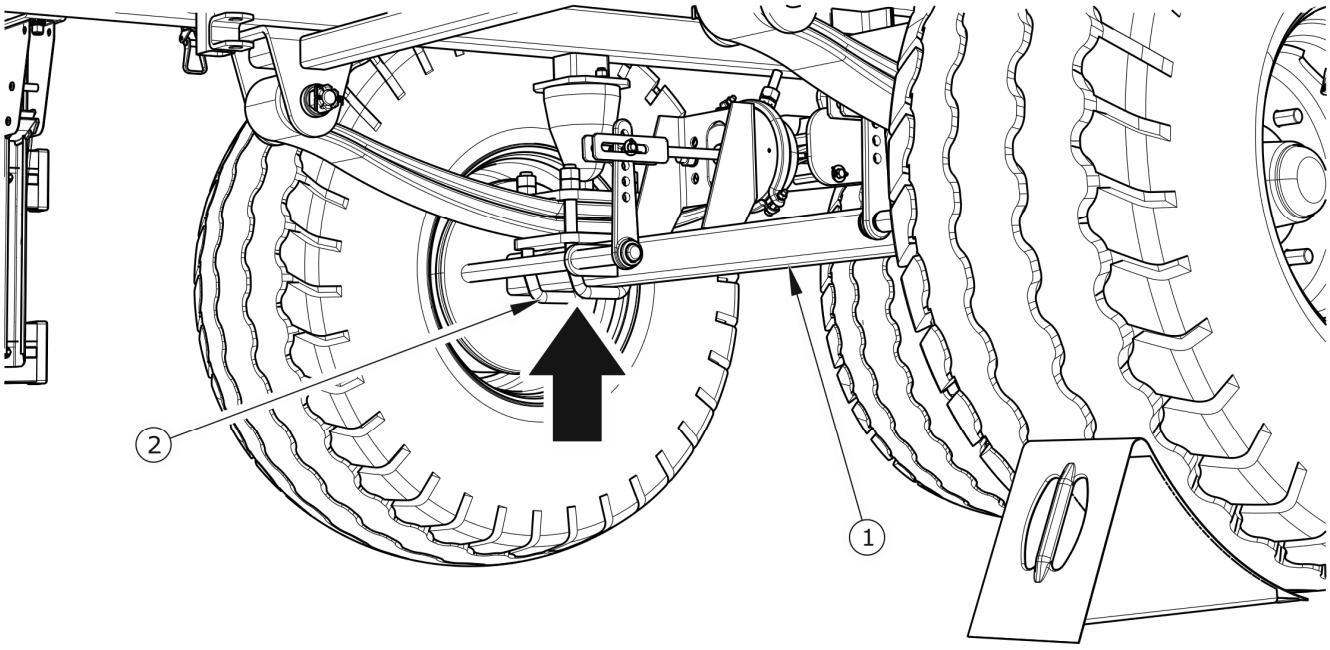


FIGURE 5.1. *Hoist support point*

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

Preparatory activities

➡ Hitch 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. Ensure that the machine will not roll during inspection.

➡ Raise the wheel (located on the opposite side of the placed wedges).

⇨ 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 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, check that the bearing does not make any unusual sounds.
- ➡ Loading a bale on the turntable may only take place when the trailer 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.

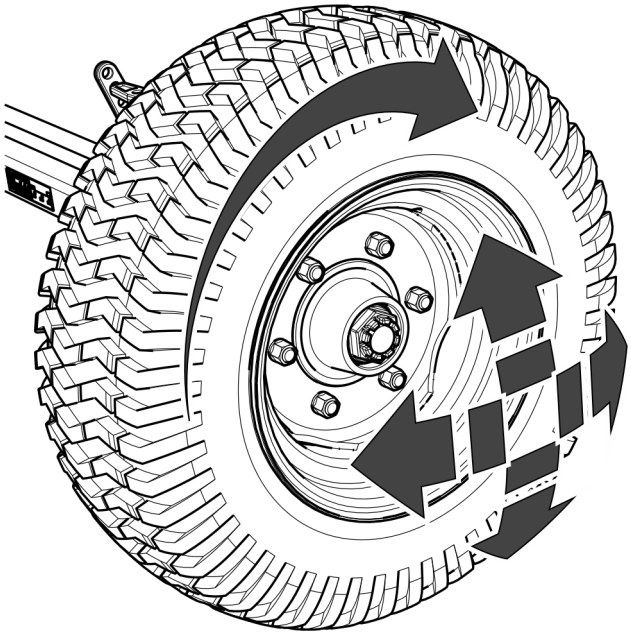


FIGURE 5.2. *Clearance inspection*

ADVICE

Damaged hub cover or lack thereof will cause the penetration of dirt and moisture into the hub, which will result in much faster wear of 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

Checking the clearance of the axle bearings:

- *after covering the first 1,000 km,*
- *before intensive use of the trailer,*
- *every 6 months of use or 25,000 km.*

Check the technical condition of the hub cover, replace if necessary. 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 lift must stand firmly against the ground and the axle.

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

5.2.3 ADJUSTING THE CLEARANCE OF THE AXLE BEARINGS

The wheel should rotate smoothly, without any jams or noticeable resistance. Adjustment of bearing looseness may be performed only when the trailer is not loaded and is connected to the tractor.

Ensure that the trailer is properly secured and will not move during dismantling

➡ Remove the hub cover (1), figure (5.3).

➡ Remove the cotter pin (3) securing the castellated nut (2).

- Tighten the castellated nut to remove slack.
- 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 apply too much pressure due to deterioration of bearing operating conditions.
- Secure the castellated nut with a cotter pin and mount the hub cover.

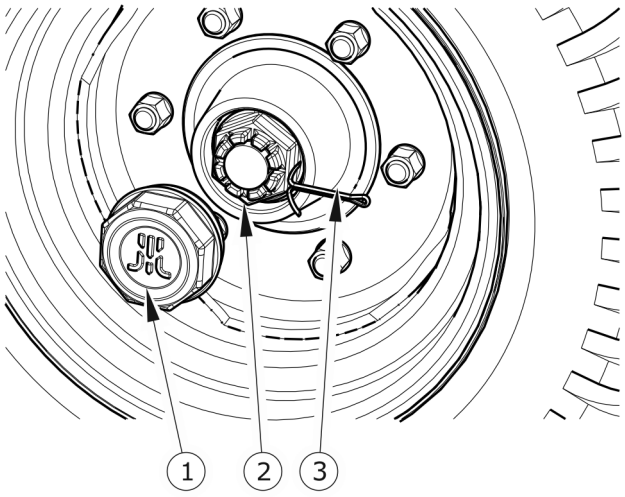


FIGURE 5.3. *Clearance adjustment*

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

- Gently tap the hub with a rubber or wooden hammer.

5.2.4 WHEEL ASSEMBLY AND DISASSEMBLY, CHECKING NUT TIGHTNESS

Wheel disassembly

- Place blocking chocks under the wheel that will not be removed.
- 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.
  - ⇨ The used lift should have adequate load capacity, it should be technically sound.

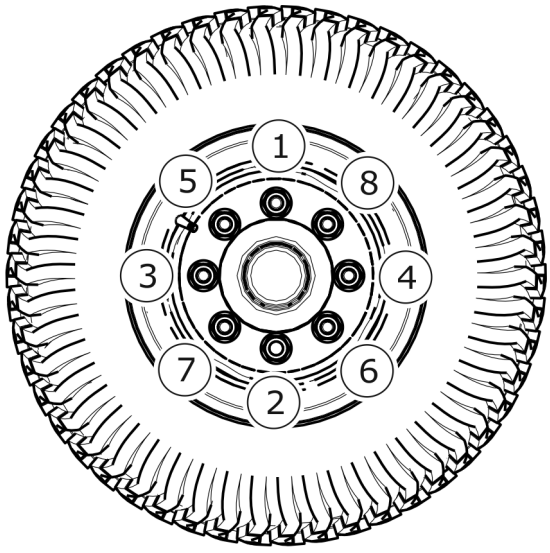


FIGURE 5.4. *The order of the nuts unscrewing and tightening*

- ⇨ The jack must be placed on an even, hard surface that will prevent it from sinking or slipping during operation.
- ⇨ If necessary, use properly selected sleepers to prevent the jack from sinking into the ground.

➡ Remove the wheel.

Wheel attachment

➡ Clean the axle pins and nuts from contamination.

- ⇨ Do not lubricate the threads of the nut and stud.

➡ Check the condition of the pins and nuts, replace if necessary.

➡ Mount the wheel on the hub, tighten the nuts so that the rim fits snugly to the hub.

➡ Lower the trailer, tighten the nuts according to the recommended torque and the given order.

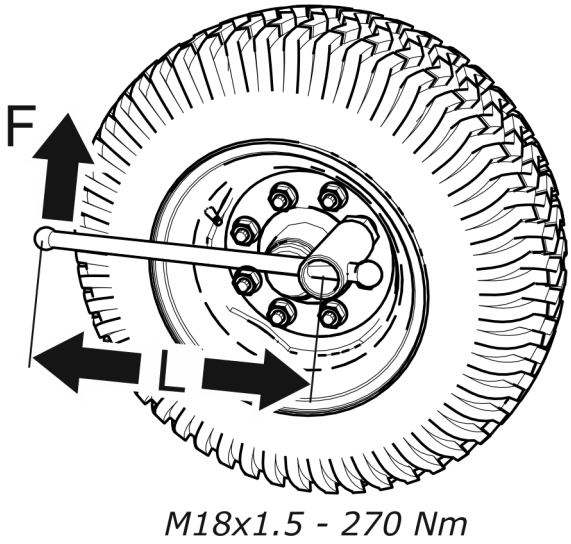


FIGURE 5.5. *Tightening method*

(F) - weight of the person tightening the wheel, (L)- length of the wrench's arm

Tightening the nuts

The nuts should be tightened gradually diagonally (in several stages until the required tightening torque is achieved), using a torque wrench. In the absence of a torque wrench, you can use a regular wrench. 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 when 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

Checking wheel axle tightening:

- *After first use of the trailer (one-time inspection).*
- *Every 2– 3 hours of driving (during the first month of use of the trailer)*
- *Every 30 hours of trailer driving.*
- *All operations should be repeated if the wheel was disassembled.*

ADVICE

Wheel nuts should be tightened to 270 Nm - M18x1.5 nuts.

TABLE 5.1. *Key arm length selection*

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 highest tightening accuracy is obtained with a torque wrench. Before starting work, make sure that the correct torque value is set.

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

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 often. The trailer must be unloaded at this time. Checking should be carried out before driving, when the tires are not warm, or after a long standstill of the machine.

DANGER

Damaged tires or wheels can be the cause of a serious accident.

When checking pressure, pay attention to the technical condition of rims and tires. Look carefully at the side surfaces of the tires and check the tread condition. 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 contact with the tire.

INSPECTION

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

5.2.6 BRAKE LINING THICKNESS CONTROL,

While using the trailer, the drum brake friction linings will wear out. While using the trailer, the drum brake friction linings will wear out. Excessive wear of the brake shoes is a condition in which the thickness of the brake linings glued or riveted to the steel structure of the shoes exceeds the minimum value and is manifested by the extension of the cylinder piston 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.

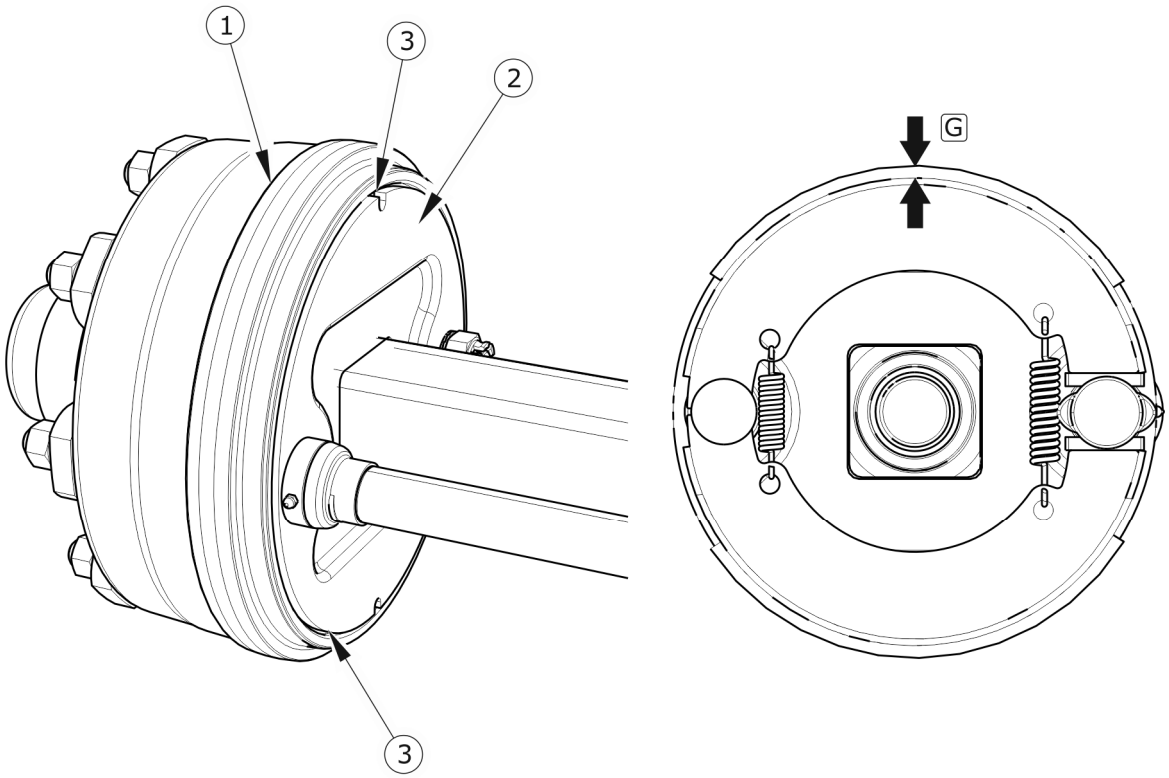


FIGURE 5.6. *Brake lining control*

(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 lining wear increases the stroke of the brake cylinder piston and reduces braking performance.

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 cylinder piston rod (5) is not correct - figure (5.7) in relation to the expander arm (1). To obtain the optimum mechanical angle of operation of the piston rod fork (6) must be mounted on the expander arm (1) so that when fully braked the angle of operation is approx. 90 °.

CAUTION

An improperly adjusted brake can cause the rubs to rub against the drum, which can result in faster wear of the brake linings and / or overheating of the brake.

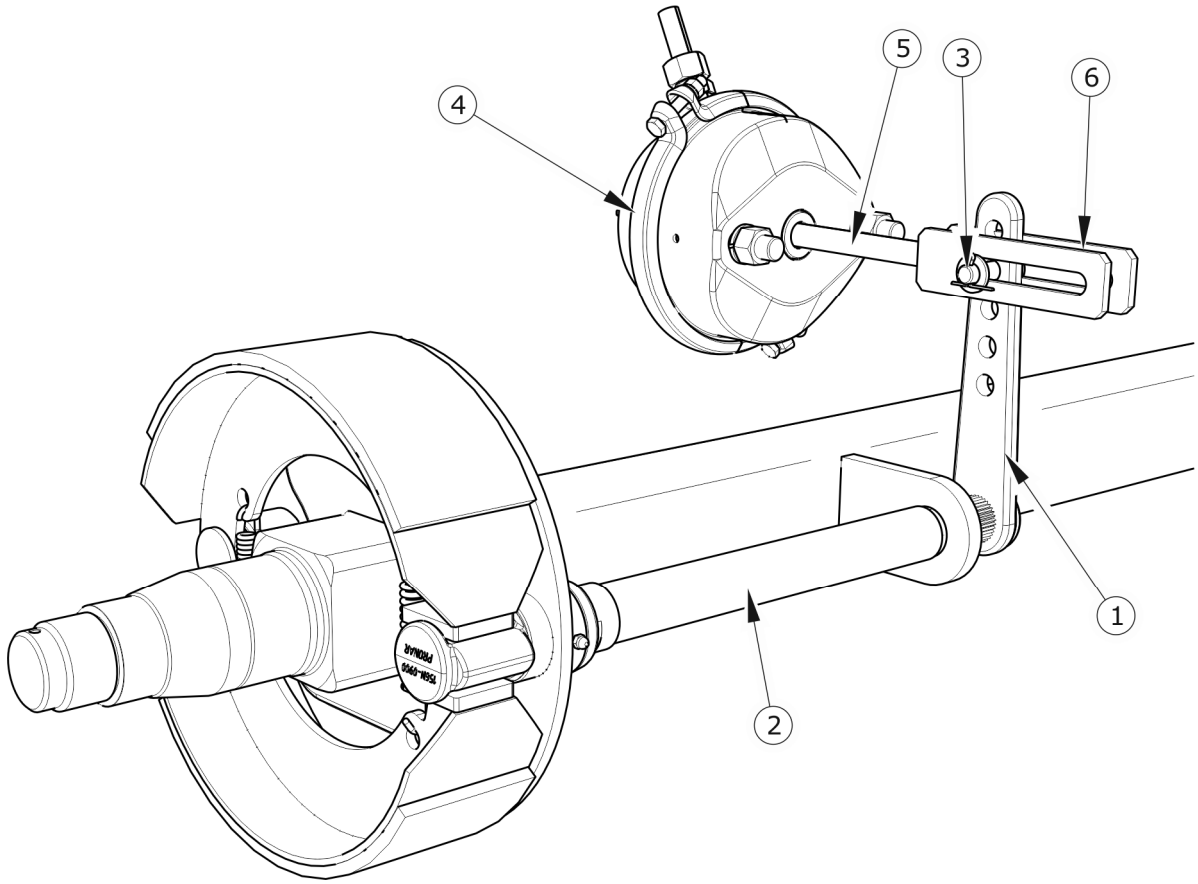


FIGURE 5.7. *Construction of axle brake*

(1) expander arm, (2) expander shaft, (3) fork bolt, (4) brake cylinder, (5) cylinder piston, (6) cylinder fork

TABLE 5.2. *Pneumatic cylinder operational data*

NOMINAL CYLINDER STROKE L [mm]	MINIMUM CYLINDER STROKE L_{MIN} [mm]	MAXIMUM CYLINDER 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 during braking at a standstill. If the piston rod stroke exceeds the maximum value (45 mm), the system should be adjusted.

The scope of service activities

- Hitch 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).
- Press the brake pedal on the tractor, mark with a line (B) the position of maximum extension of the piston rod.
- Measure the distance between the lines (A) and (B). If the piston rod stroke is not within the correct working range, adjust the expander arm.
- Remove the actuator fork pin.
- Note or mark the original position (5) of the cylinder fork (4) in the hole in the expander arm (3).

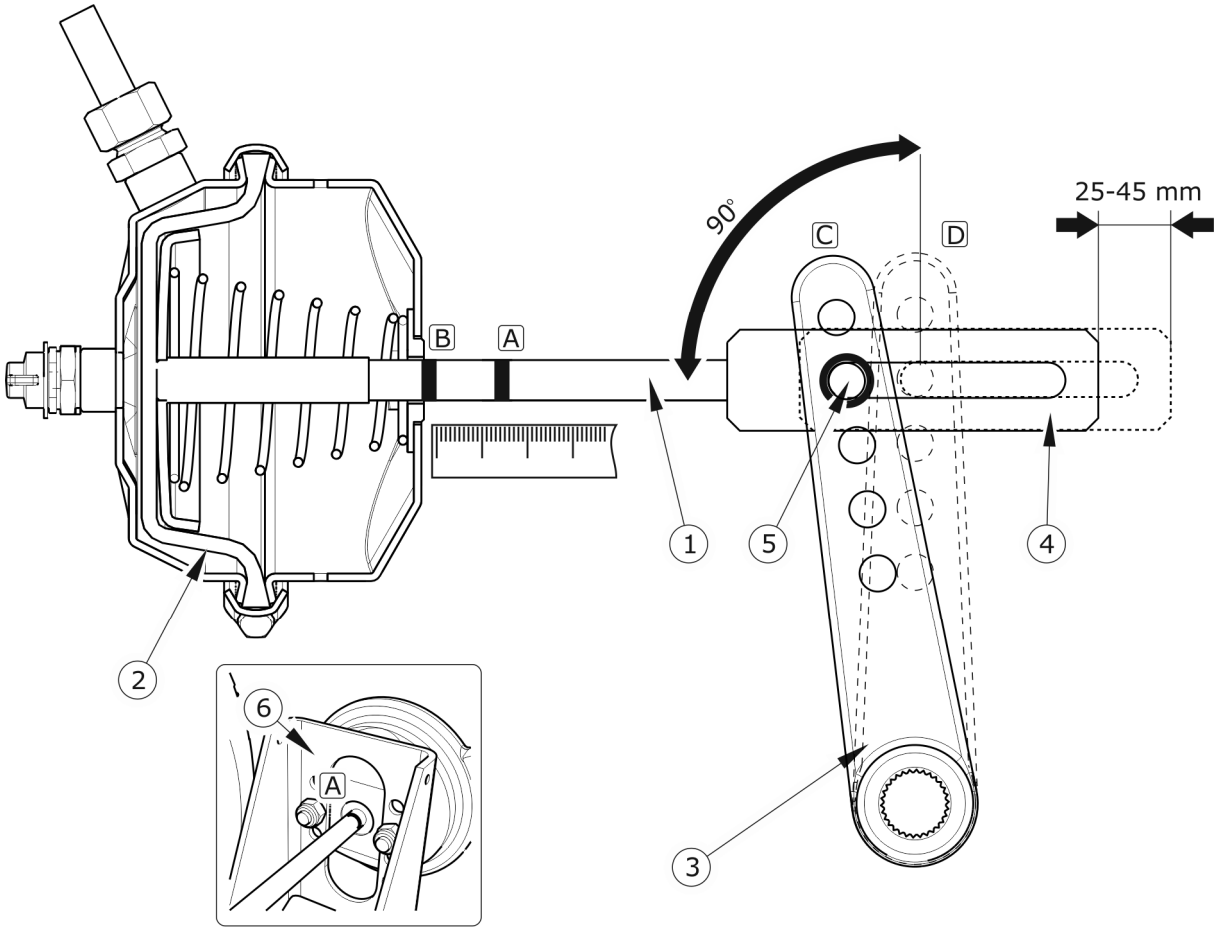


FIGURE 5.8. *Brake adjustment principle*

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

- Check that the cylinder piston moves freely and within the full nominal range.
- Check that the actuator ventilation openings are not clogged with dirt and that there is no water or ice inside. Check the correct mounting of the actuator.
- Clean the actuator, defrost if necessary and remove water through the vent holes. If damage is found, replace the actuator with a new one. When mounting the actuator, keep its original position relative to the bracket (6).
- Remove the expansion ring securing the expander arm.
- Adjust the expander arm so that the marked hole of the expander arm coincides with the opening of the cylinder fork

⇨ During adjustment, the diaphragm (2) must rest on the rear wall of the actuator - compare figure (5.8).

➡ Install the piston rod fork pin and washers and secure the pin with cotter pins.

➡ Repeat the adjustment on the second cylinder on the same axis.

➡ Apply the brake.

➡ Wipe previous markings and measure piston rod stroke again.

➡ If the piston rod stroke is not within the correct operating range, repeat the adjustment.

INSPECTION

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

CAUTION

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

Whenever removing the pin or actuator, it is recommended to mark the location of the original attachment.

5.2.8 REPLACEMENT AND ADJUSTMENT OF 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.

Parking brake cable replacement

➡ Hitch 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 a new cable, adjust cable tension.

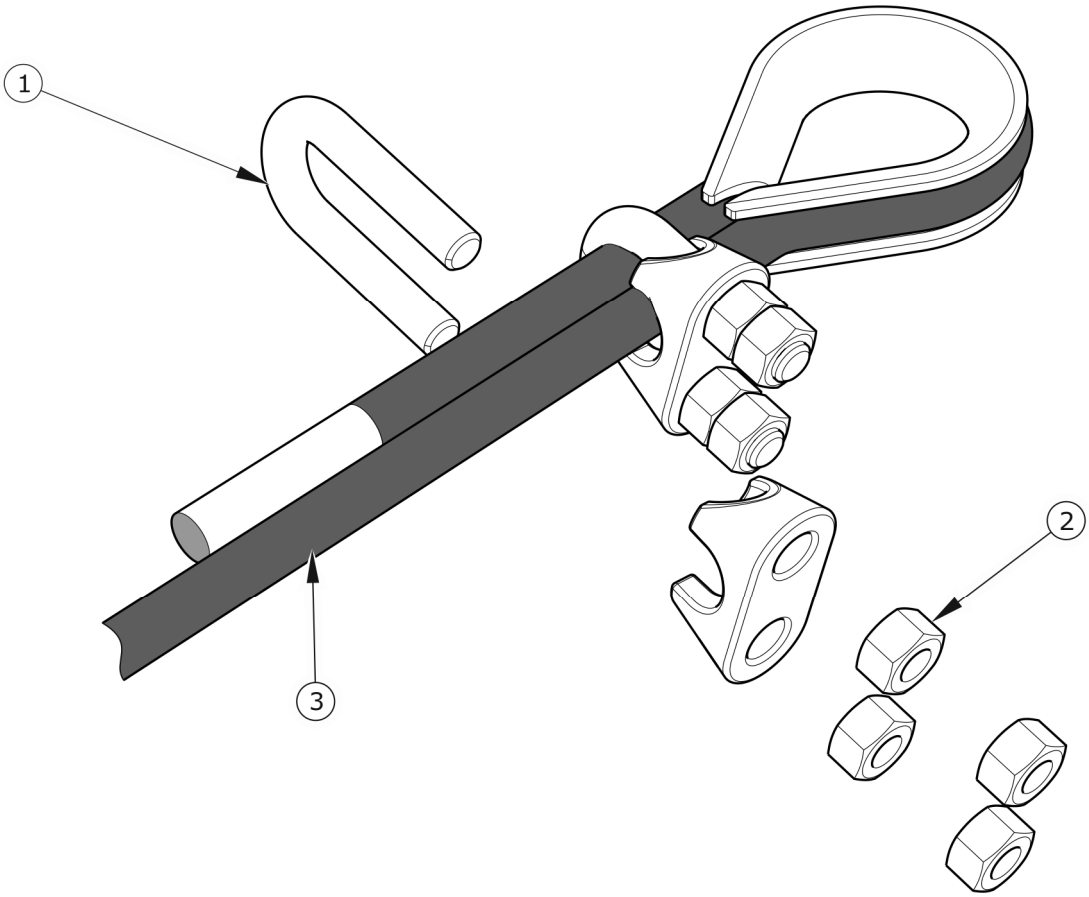


FIGURE 5.9. *Parking brake cable assembly*

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

Adjustment of parking brake cable tension

- ➡ Hitch 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 the cable and tighten the 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 carried out in the case of:

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

Before adjusting, make sure that the axle brake is properly adjusted and functions properly.

INSPECTION

- *Every 12 months.*

5.3 PNEUMATIC SYSTEM SERVICE

5.3.1 PRELIMINARY INFORMATION

Work related to the repair, replacement or regeneration of system components (brake cylinders, lines, control valve, braking force regulator, etc.) should be entrusted to specialized workshops that have the appropriate technologies and qualifications to perform this type of work.

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

- checking system tightness and visual inspection of the system,
- cleaning the air filter (filters),
- air tank drainage,
- cleaning the drainage valve,
- cleaning and maintenance of pneumatic conduit connectors.

DANGER

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

5.3.2 CHECKING FOR LEAKS

Checking the tightness of pneumatic systems

➡ Hitch 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, the air pressure should be around 6.5 bar.

➡ Switch off the tractor engine.

➡ Check the system components with the tractor brake pedal released.

⇨ Pay special attention to cable connections and brake cylinders.

➡ Repeat the system check with the tractor brake pedal depressed.

⇨ The help of another person is required.

In the event of a leak, the compressed air will leak out in places of damage with a characteristic hiss. The system leak can also be detected by coating the checked elements with washing liquid or other foaming agent, which will not aggressively affect the elements of the installation. It is recommended to use commercially available preparations intended for leak detection. Damaged elements should be replaced or sent for repair. If the leak appeared around the connections, the user can tighten the connector on their own. If air still leaks, replace the connector components or seals 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 for leaks, 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. Bent, permanently deformed, cut or frayed wires are only eligible for replacement.

INSPECTION

- *Each time during the leak check.*

5.4 CLEANING THE AIR FILTERS

Depending on the trailer's working conditions, but at least once every three months, the air filter inserts, which are located on pneumatic system connection hoses, should be removed and cleaned. Cartridges are reusable and cannot be replaced unless they are mechanically damaged.

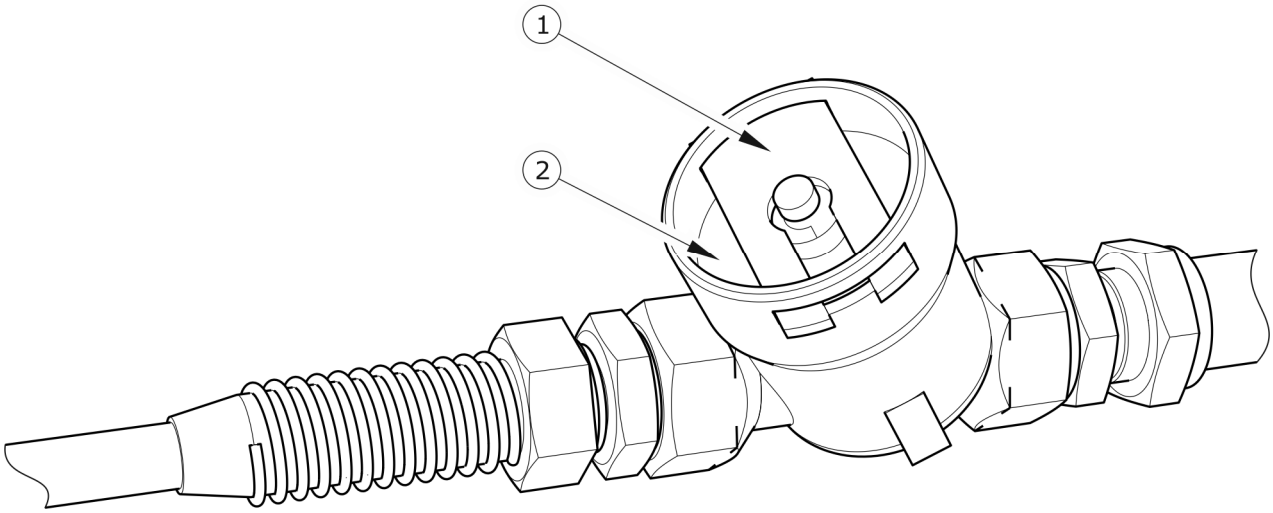


FIGURE 5.10. *Air filter*

(1) securing slide, (2) filter cover

DANGER

Before removing the filter, reduce the pressure in the supply line. When removing the filter slide, hold the cover with the other hand. Point the filter cover away from you.

The 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 slide, the cover will be pushed out by the spring located in the filter housing.

➡ The filter element and filter body should be thoroughly washed and blown with compressed air. Installation should be in reverse order.

INSPECTION

- *Every 3 months.*

5.4.1 AIR TANK DRAINAGE

The 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 stem, the valve should close automatically and stop the outflow of air 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.*

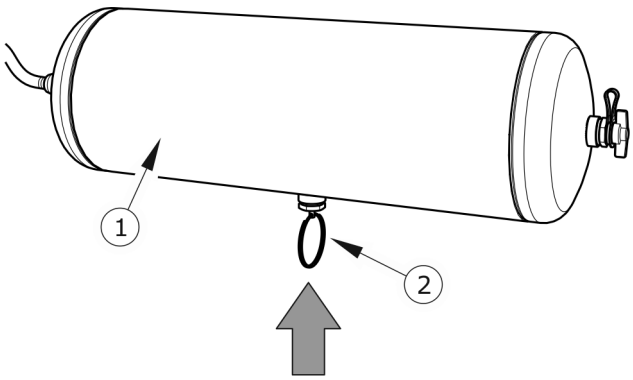


FIGURE 5.11. *Tank drainage*

(1) air tank, (2) drain valve

5.4.2 CLEANING OF THE DRAINAGE VALVE

DANGER

Bleed the air tank before removing the drain valve.

The 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.
- ➡ 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 MAINTAINING PNEUMATIC CONNECTORS AND SOCKETS

DANGER

Faulty and dirty trailer connections can 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 OPERATION

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:

- checking system tightness and visual inspection of the system,
- checking the technical condition of the hydraulic connectors.

5.5.2 CHECKING THE THIGHTNESS OF THE HYDRAULIC SYSTEM

The scope of service activities

- ➡ Hitch trailer to tractor.
- ➡ Connect the hydraulic brake system conduits in accordance with the recommendations of the User's Manual.
- ➡ Clean connectors and hydraulic cylinders.

➡ Start the tractor and depress the brake pedal several times. Leave the cylinders in their fully extended position.

➡ Turn off the tractor engine and check the hydraulic cylinders.

In the event of oiling on the hydraulic cylinder body, the nature of the leakage must be checked. When the cylinder is fully extended, check the seal locations. 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 THE TECHNICAL CONDITION OF THE HYDRAULIC CONNECTORS 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.

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

TABLE 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	Parking brake mechanism	1	A	6M

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	FREQUENCY
4	Handbrake cable guide axle	2	A	6M
5	Expander shaft sliding bush	6	A	3M
6	Drawbar bolt	2	B	3M
7	Springs	6	C	3M
8	Spring surfaces	6	B	1M
9	Spring pin	6	B	1M
10	Control arm pin	6	B	1M
11	Turntable	2	B	3M

lubrication periods - M month, D - day

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

TABLE 5.4. *Recommended lubricants*

DESIGNATION FROM TABLE (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 should be disposed of in accordance with the lubricant manufacturer's instructions.

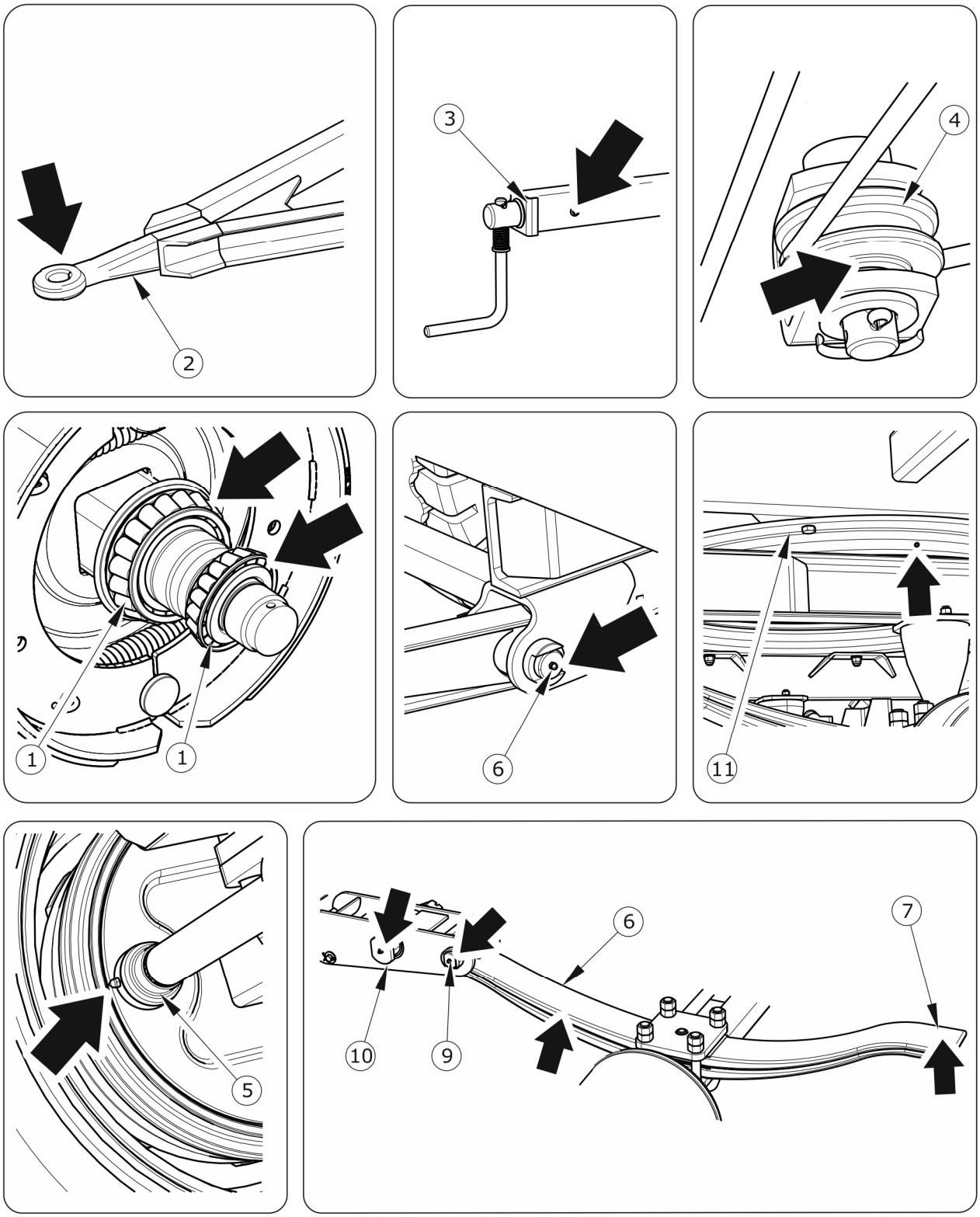


FIGURE 5.12. *Trailer lubrication points*

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 (5.12), 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 oil, read the oil manufacturer's instructions carefully. If he recommends flushing the system with an appropriate preparation, follow these recommendations. It must be ensured that the chemicals used for this purpose do not act aggressively on 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.

TABLE 5.5. *Characteristics of hydraulic oil L-HL 32 Lotos*

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

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

skin, wash the place of contact with water and soap. Do not use organic solvents (gasoline, kerosene). Soiled 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. The hazard only occurs when the oil is strongly atomized (oil mist), or in the event of a fire during which toxic compounds may be released.

DANGER

Oil should be quenched 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. Aerosol preparations (silicone greases, anti-corrosive lubricants) should have similar properties.

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) should be kept 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 become familiar with the principle of operation and recommendations for 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 be careful when working. During washing, the nozzle of the cleaning aggregate must not be closer than 50 cm from the surface being cleaned.
- The water temperature should not exceed 55 ^{0}C.
- Do not direct the water jet directly at the system components and trailer equipment, i.e. the control valve, brake force regulator, brake cylinders, hydraulic cylinders, 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, it is recommended to use 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 by grease 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. The preparations cannot be stored in containers intended for storing food and beverages.
- 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 effects of various substances, the aging process is accelerated and the risk of damage increases. Elements made of rubber are recommended to be maintained with the help of specialized preparations after 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 components 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 will not deform and will maintain proper 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

TABLE 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	1050
M27	820	1150	1650
M30	1050	1450	2100

(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

The hydraulic hoses should be tightened with a torque of 50 - 70 Nm.

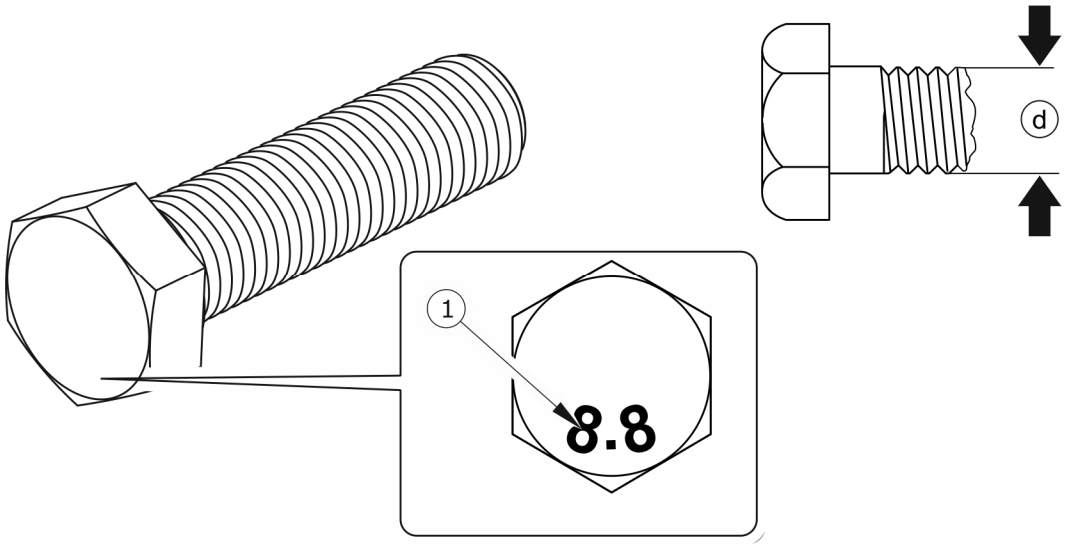


FIGURE 5.13. *Metric thread screw*

(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 THE POSITION OF THE DRAWBAR

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.

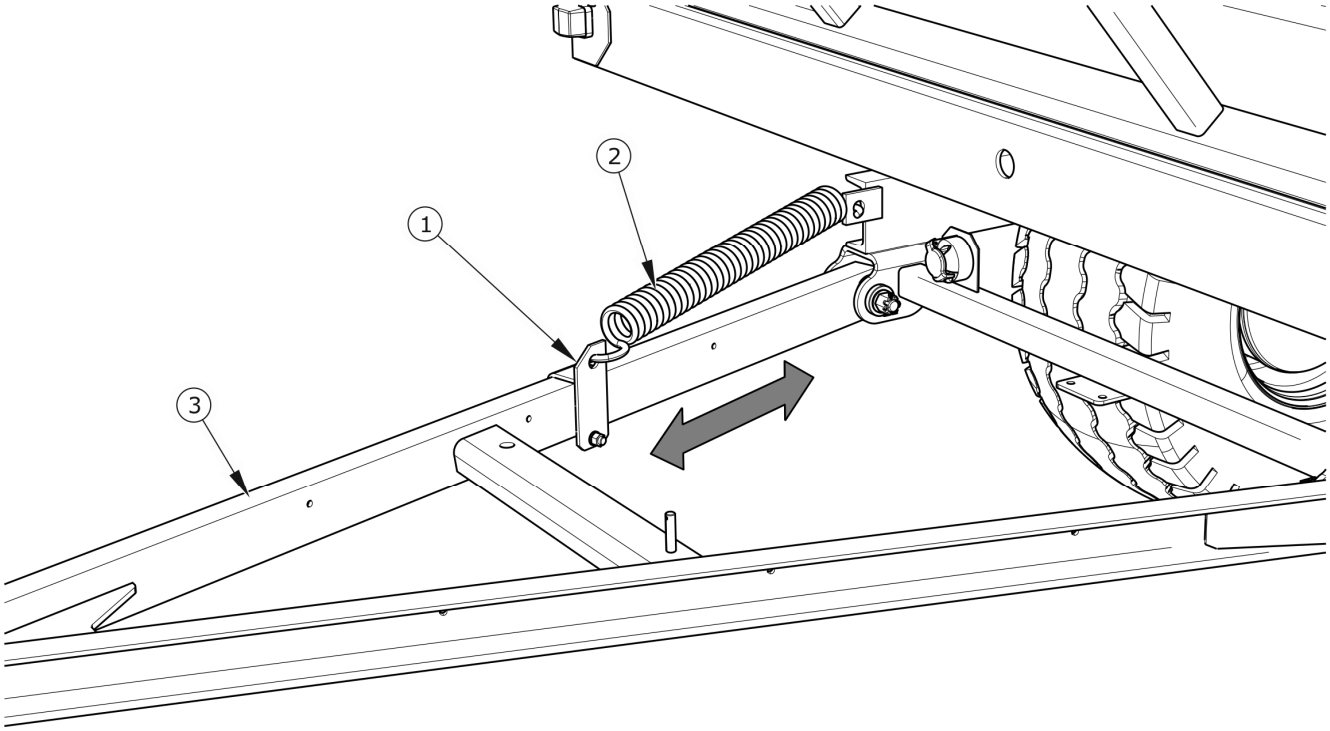


FIGURE 5.14. *Adjusting the position of the drawbar*

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

5.11 TROUBLESHOOTING

5.11.1 FAULTS AND HOW TO REMOVE THEM

FAULT	CAUSE	REMOVAL METHOD
Trouble with starting	Brake system lines not connected	Connect the brake lines (applies to pneumatic system).
	Parking brake applied	Release the parking brake.
	Pneumatic connection lines damaged	Replace.

FAULT	CAUSE	REMOVAL METHOD
	Connection leakage	Tighten, replace washers or sealing sets, replace hoses.
	Defective control valve or braking force regulator	Check valve, repair or replace.
Noise in the hub of the axle	Excessive bearing looseness	Check the clearance and adjust if necessary
	Damaged bearings	Replace bearings
	Damaged hub components	Replace
Low braking efficiency	System pressure too low	Check the pressure on the pressure gauge on the tractor, wait for the compressor to fill the tank to the required pressure. Damaged tractor air compressor. Repair or replace. Damaged brake valve on the tractor. Repair or replace. System leakage. Check systems for leaks.
Excessive heating of the axle hub	Incorrectly adjusted service or parking brake	Adjust expander arm positions
	Worn brake pads	Replace 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 on the tractor.
	Damaged or dirty actuator	Check the cylinder piston rod (bending, corrosion), check the cylinder for leaks (piston rod seal), repair or replace the cylinder if necessary.

FAULT	CAUSE	REMOVAL METHOD
	Actuator load too high	Check and reduce the cylinder load if necessary.
	Damaged hydraulic lines	Check and make sure that the hydraulic hoses are tight, not kinked and properly tightened. Replace or tighten as necessary.
Excessive wear of the left and right shoulder tires on both sides.	System pressure too low. Too high cornering speed with a loaded trailer. Too fast air loss due to damaged rim, valve, puncture etc.	Check air pressure. Check the road tires for proper inflation regularly. Too much load on the trailer. Do not exceed the permissible total weight of the machine. Reduce speed when cornering on a hardened surface. Check rim and valve. Replace damaged parts.
Excessive tire wear in the centre.	Air pressure too high.	Check air pressure. Check the road tires for proper inflation regularly.
Excessive unilateral wear on the left or right shoulder tires	Incorrect convergence. Driving axes incorrectly set.	Damaged spring leaf on one side of the suspension. Replace the springs.
Tread wear.	Damaged suspension system, broken spring. Damaged braking system, brake blocking, incorrectly adjusted braking system. Too frequent and sudden braking.	Check the slack in the suspension system, check the springs. Replace damaged or worn parts. Check the braking system for malfunctions. Adjust the trailer levers.
Lateral fracture.	Long-lasting ride on tires with low air pressure. Too much load on the trailer.	Check air pressure regularly. Check the weight of the load during loading.

FAULT	CAUSE	REMOVAL METHOD
Abrasions on the lateral outer edge of the tire.	Too frequent climbing over sharp, high obstacles (e.g. curbs).	Control the driving technique.
Rim damage (hardening and cracking around the rim), tire crumbling.	Incorrect braking technique. Too frequent sudden braking. Damaged braking system.	Check braking system. Control braking technique. Damage arises due to excessive heating of the hub and the resulting wheel rims.

CONTENT

NOTES

APPENDIX A

TIRE	DISC WHEEL
500/50-17 14PR 149 A8	16.00x17 ET=-35
500/50-17 18PR 155 A8	16.00x17 ET=-35
520/50-17,159 A8	16.00x17 ET=-20