PRONAR SP. Z O.O.

17-210 NAREW, UL. MICKIEWICZA 101A, WOJ. PODLASKIE

TEL.: +48 085 681 63 29 +48 085 681 64 29

+48 085 681 63 81 +48 085 681 63 82

FAX: +48 085 681 63 83 +48 085 682 71 10

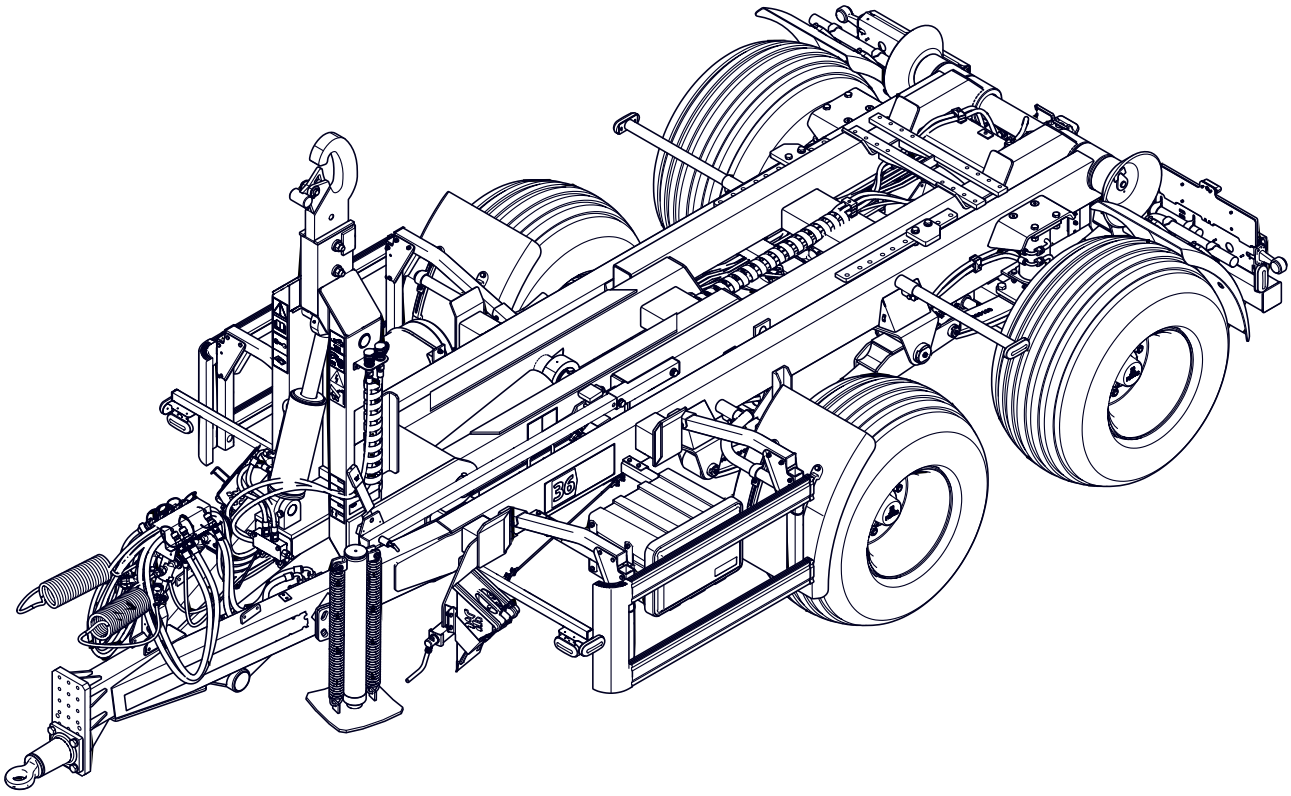
www.pronar.pl

USER MANUAL

AGRICULTURAL TRAILER

PRONAR T185/1

ENGLISH VERSION OF THE ORIGINAL USER MANUAL



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EN

INTRODUCTION

INTRODUCTION

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

The User Manual is the basic part of the machine. Before using the machine, the user must read the contents of this manual and follow all the recommendations contained therein. This will guarantee safe operation and ensure trouble-free operation of the machine. The machine was constructed in accordance with applicable standards, documents and current legal regulations.

If the information contained in the operator's manual is incomprehensible, please contact the sales department where the machine was purchased or directly to the Manufacturer. After purchasing the machine, we recommend to enter the machine serial number in the fields below.

Machine serial number

This manual contains important safety and operating instructions for the machine. The manual should be kept near the machine so that it is accessible to authorized persons.

Keep this manual for future reference. If the manual is lost or damaged, contact the seller or the manufacturer for a duplicate.

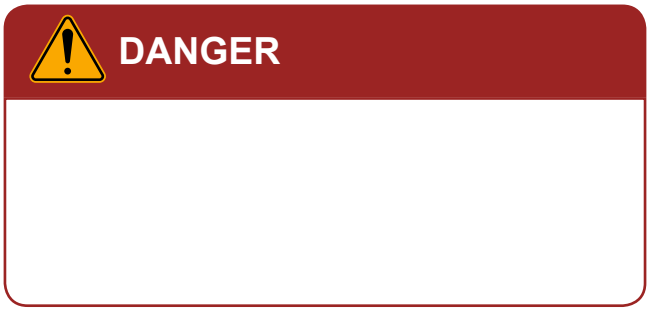
The User Manual are intended for the end user. For this reason, some required maintenance is listed in the inspection tables but the procedure is not described in this publication. To perform them, call the manufacturer's authorized service centre..

U.10.1.EN

SYMBOLS USED IN THE MANUAL

DANGER

Information, descriptions of hazards and precautions as well as instructions and orders related to the safety of use in the contents of the manual are marked with a frame with the word DANGER. Non-compliance with the recommendations described will endanger the health or life of persons using the machine or bystanders.



CAUTION

Particularly important information and recommendations, the observance of which is absolutely necessary, are highlighted in the text with a frame saying CAUTION. Failure to comply with these recommendations creates the risk of damage to the machine as a result of incorrect handling, adjustment or use.

ADVICE

Additional instructions contained in the manual describe useful information on the operation of the machine and are marked with a frame with the word ADVICE.

U.02.1.EN

DETERMINATION OF DIRECTIONS IN THE MANUAL

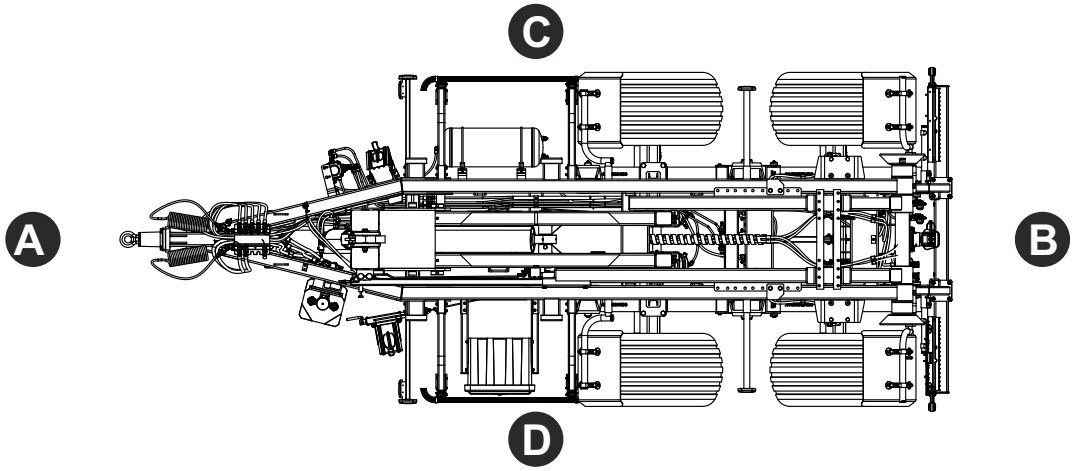


Figure 1.1 Determination of directions on the machine
(A) front (B) rear (C) right side (D) left side

Left side - the side on the left hand of the observer facing the machine in the forward direction of travel.

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

Turn clockwise - turn the mechanism clockwise (operator facing the mechanism).

Turn left - turn the mechanism counter clockwise (operator facing the mechanism).

U.03.1.EN

CONTROL OF THE MACHINE AFTER DELIVERY

The manufacturer ensures that the machine is technically sound, has been checked in accordance with control procedures and is put into service. However, this does not release the user from the obligation to check the machine after delivery and before first use. The machine is delivered to the user completely assembled. Detailed information on the transfer can be found in the WARRANTY CARD.

CONTROL RECOMMENDATIONS

- Check completeness of machine as ordered (standard and optional equipment).
- Check the machine for missing parts or damage resulting from incorrect transport of the machine to its destination (dents, punctures, bends or broken parts, etc.).
- Check technical condition of guards, safety devices.
- Check the condition of the paint coating, check for signs of corrosion.
- Check the condition of the tires on the road wheels and the air pressure in the tires.

ADVICE

The handover of the machine includes a detailed examination and check of its operation, as well as instruction for the buyer on the basic principles of use. The first start takes place in the presence of the Seller.

- Check the correct tightening of the road wheels.
- Check the technical condition of the drawbar eye and its fastening.
- Check the technical condition of the flexible hydraulic hoses.
- Check technical condition of pneumatic hoses.
- Make sure there are no hydraulic oil leaks.
- Check the machine's lighting electric lamps.
- Check the electrical controls (panel, harness).
- Check cylinders for hydraulic oil leaks.

In case of any irregularities found, report them directly to the seller to remove the defects.

U.11.2 EN

FIRST USE OF THE MACHINE

CAUTION

The first start-up involves checking the machine in the presence of the seller. The seller is obliged to conduct training in the safe and proper operation of the machine.
Training by the seller does not release the user from the obligation to become familiar with the contents of this manual and to follow the recommendations contained therein.

Before starting the machine, the user will be familiarized with its construction, operation principle, available equipment and operation, and first of all safety rules..

SCOPE OF ACTIONS

- Read the contents of this USER'S MANUAL and follow the recommendations contained therein.
- Perform a daily machine inspection in accordance with the guidelines contained in the inspection schedule.
- Check all lubrication points on the machine, lubricate if necessary according to the recommendations in the lubrication schedule.
- Check the correct tightening of screw connections (in particular the suspension, drawbar eye and road wheels).
- Make sure that the pneumatic, hydraulic and electrical connections on the agricultural tractor comply with the requirements, otherwise do not connect the trailer.
- Make sure that the hydraulic oil in the trailer and tractor is of the same type and grade.
- Check the height of the hook position and adjust if necessary, to the requirements of the containers to be handled.
- Adjust the height of the drawbar eye to the hitch on the tractor.

If all the above-mentioned activities have been carried out and the technical condition of the trailer does not raise any objections,
connect the machine to the tractor. Start the tractor, check individual systems and carry out a test run of the machine and carry out a test drive without load (with unloaded trailer). It is recommended that visual inspection be carried out by two people, one of them should be permanently in the tractor's cab. The test run must be carried out in the order shown below.

- Connect the machine to appropriate hitch of the agricultural tractor.
- Connect the brake, electrical and hydraulic system lines.
- Connect the control panel.
- Raise the support to transport

position.

- Turn on the individual lights, check the correct operation of the electrical installation.
- Start and check the correct operation of the following hydraulic systems: hydraulic support (if present), suspension locks, container lock, hook frame travel, lifting and lowering the swing frame.
- Check the operation of the service brake when moving off.
- Perform a test drive.
- Stop the tractor and turn off the engine, immobilize the tractor and machine with the parking brake.

If during the test run occur worrying symptoms such as:

- excessive noise and unnatural noises from moving parts rubbing,
- leakage and pressure drop in the braking system,
- improper operation of hydraulic and / or pneumatic cylinders,
- other faults,

the trailer should be stopped until the failure is removed. If the fault cannot be rectified or remedied, you will void the warranty, contact the place of purchase for clarification of the problem or for reporting the repair.

After completing the test drive, check the tightness of the wheel nuts.

DANGER

Careless and improper use and operation of the machine, as well as non-compliance with the instructions contained in the operating instructions, can pose a risk to health and life.
The machine may not be used by unauthorized persons, children, people under the influence of alcohol or other drugs.
Non-compliance with the rules of safe use poses a threat to the health of operators and bystanders.

U.12.3.EN

PRONAR Sp. z o.o.
ul. Mickiewicza 101 A
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:	**AGRICULTURAL TRAILER**
Type:	**TH02**
Model:	**T185/1**
Serial number:	
Commercial name:	**PRONAR T185/1**

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.

PRONAR Spółka z o.o.
17-210 Narew ul. Mickiewicza 101A
Tel. (85) 681 63 29 , 682 72 54
Fax: (85) 681 63 83
NIP 543-02-00-939, KRS 0000139188
BDO 000014169

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

Narew, the 2020-03-09

Place and date

Full name of the empowered person position, signature

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TECHNICAL SERVICE

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CHAPTER 1

GENERAL INFORMATION

1.1 IDENTIFICATION

S	Z	B	1	8	5	1	X	X								

The PRONAR T185/1 agricultural trailer has been marked with a name plate (1) located on the side surface of the container socket and the serial number (2) stamped on the right drawbar longitudinal member. The meaning of individual fields located on the name plate is presented in table (1.1). Record the trailer's serial number in the top field.

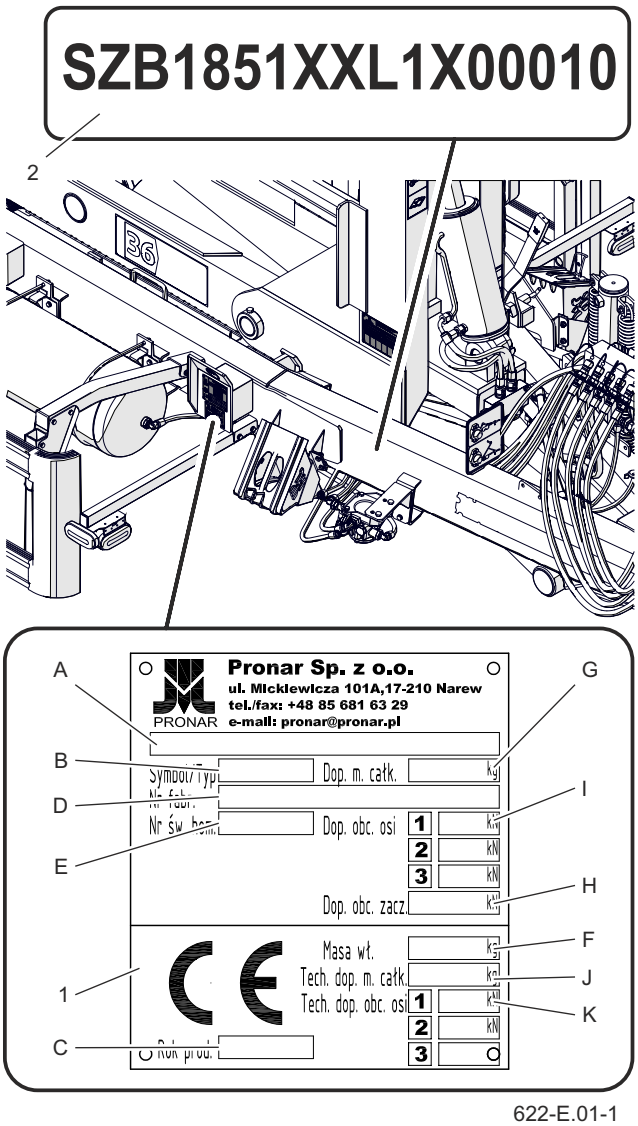

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Figure 1.1 Trailer identification
(1) Name plate
(2) trailer VIN number

Table 1.1. Name plate markings

Item	Meaning
A	General term and function
B	Trailer symbol/type
C	Year of production
D	VIN number
E	Certificate approval number
F	Curb weight
G	Permissible gross weight
H	Permissible load on coupling
I	Permissible axle load
J	Technically permissible total weight
K	Technically permissible axle load

E.3.4.622.01.1.EN

1.2 IDENTIFICATION OF THE AXLE

The serial number of the driving axles and their type is stamped on the name plate (2) attached to the axle profile - figure (1.2). After purchasing the trailer, it is recommended that individual serial numbers be entered in the fields below.

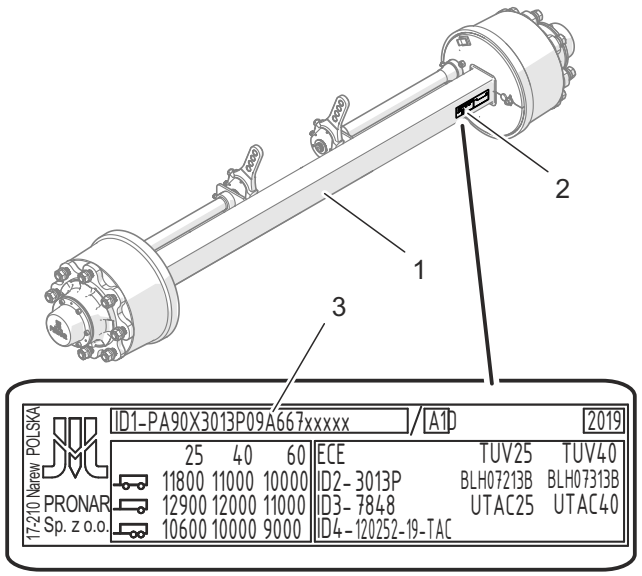

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Figure 1.2 Axis identification

(1) Driving axle

(2) Name plate

(3) Axle serial number

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1.3 INTENDED USE

DANGER

The machine may not be used for purposes other than those for which it was intended..

The hook trailer is designed and adapted to cooperate with containers with executions in accordance with the standards:

- DIN30722-1
- SS3021 (after retrofitting the trailer with a hydraulic blockade whose permissible dimensions are specified in the table (1.2).

Table 1.2. Container requirements

Requirements		[mm]
Minimum hitch height	h	1 450
Maximum hitch height	h	1 570
Roll spacing	w	1 070
Minimum overall length	L	4 400
Maximum overall length	L	4 900
Maximum overall width	W	2 550
Maximum overall height	H	2 000

CAUTION

It is forbidden to use technically defective containers. The container should have adequate strength at which it can be loaded and unloaded at full load.

CAUTION

The trailer speed must not be greater than the maximum design speed of 40 km/h.

A necessary condition for proper cooperation of the trailer with containers made according to the SS3021 standard is to equip the trailer with a hydraulic container lock.

The design of the trailer enables the attachment and disconnection of containers and their unloading by swing backwards. The type of cargo carried depends on the intended use of the container.

Using the trailer in a different way than

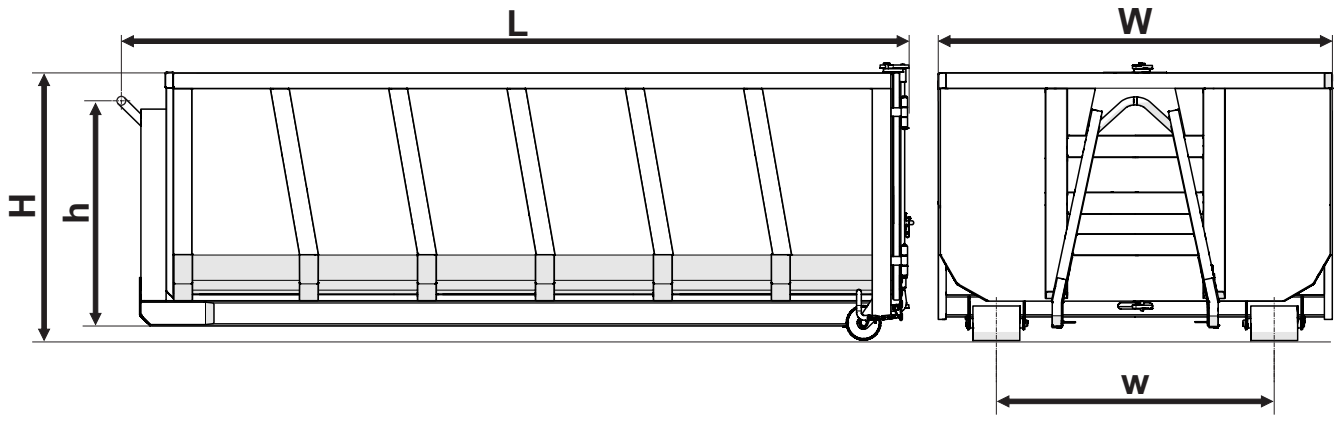

Figure 1.3 Container size

described above is not allowed.

The braking system as well as the lighting and signalling system meet the requirements arising from traffic regulations. The maximum speed of a trailer traveling on public roads in Poland is **30 km/h** (in accordance with the Act of 20 June 1997, „Road Traffic Law", Art. 20). In the countries where the trailer is used, restrictions related to the applicable road traffic law must be observed. The trailer speed must not, however, be greater than the maximum design speed of **40 km/h**. Intended use also includes all activities related to the correct and safe operation and maintenance of the machine. Therefore, the user is obliged to:

- read the trailer User's Manual and the Warranty Card and comply with the recommendations contained therein,
- understand the principle of machine operation and the safe and proper operation of the trailer,
- compliance with established maintenance and adjustment plans,
- compliance with general safety regulations during work,
- accident prevention,
- comply with traffic regulations and transport regulations in force in the country in which the trailer is used,
- become acquainted with the contents of the farm tractor user manual and comply with its recommendations,
- aggregating the vehicle only with such an agricultural tractor that meets all the requirements set by the trailer Manufacturer.

The trailer may only be used by persons who:

- become acquainted with the content of this publication and documents attached to the trailer as well as with the content of the farm tractor operating instructions,
- were trained in the scope of trailer operation and work safety,
- have the required authorization to drive and are familiar with the traffic rules and transport regulations.

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

- for transport of people and animals,
- for transport of unprotected toxic materials in bulk when it is possible to cause environmental contamination,
- for transporting machines and devices whose centre of gravity location has a negative effect on the stability of the trailer,
- to carry loads that affect uneven loads axle load and overload,
- to transport unloaded loads that can

change their position in the container while driving,

- connecting containers that do not comply with the manufacturer's requirements.

E.3.4.622.03.1.EN

1.4 REQUIREMENTS

Table 1.3. Agricultural tractor requirements

Content	Unit	Requirements
Connection sockets for the braking system		
Pneumatic 2 - wire	-	acc. to ISO 1728
Hydraulic	-	acc. to ISO 7241-1
Nominal pressure of the braking system		
Pneumatic 2 - wire	bar	6.5
Hydraulic	bar	150
Hydraulic system		
Hydraulic oil	-	HL32
Nominal pressure of the installation	bar	200
Number of external hydraulics sockets	-	3 pairs
Oil demand	L	15
Electrical system		
Electrical system voltage	V	12
Connection socket	-	7-poles, ISO 1724
Connection socket	-	3-poles
Tractor hitches		
Type		Lower transport hitch
Minimum vertical load capacity of the hitch	kg	2 000
Other requirements		
Minimal tractor power requirement	kW/KM	57.3/78

E.3.4.622.04.1.EN

1.5 EQUIPEMENT

Table 1.4. Trailer equipment.

Equipment	Standard	Additional	Optional
User manual	●		
Warranty Card	●		
Lighting connection cable	●		
12V (LED) lighting system with clearance lighting	●		
Rear lighting lamps with protective grilles	●		
Wheel chocks	●		
2-wire pneumatic system with manual regulator	●		
2 line pneumatic system with ALB			●
Hydraulic braking system			●
Rotary cable Ø50 mm	●		
Ø40 mm rigid cable			●
K80 rigid cable			●
Hydraulic straight drawbar support	●		
Telescopic drawbar support with a two-stage gear			●
Telescopic drawbar support with a pin			●
Hook with automatic container lock	●		
Rear pull out manually	●		
Metal mudguards	●		
Aluminium mudguards			●
Plastic mudguards			●
Hydraulic swing system with manual hook lift / tipper [1]	●		
Suspension lock hydraulic system [1]	●		
Hydraulic installation of the hook frame [1]	●		
Mechanical container lock [2]	●		

Hydraulic hook/tipper function changeover integrated with hydraulic container lock, with electrohydraulic safety system - for locking containers in accordance with DIN 30722 [3]			●
Wired electric control [4]			●
Own hydraulic system (cable electric control) [4]			●
Hydraulic system outlets at the rear of the trailer [5]		●	
Hydraulic system outlets at the rear of the trailer + hook outlets [5]		●	
Side covers		●	
Rear warning lamps		●	
Rear manual hitch		●	
Slow-moving vehicles distinguishing sign		●	
Warning reflective triangle		●	
Tool box		●	
Document tube		●	

(1) 3 pairs of hydraulic outlets on the tractor are needed
(2) for containers made according to DIN 30722, with the possibility of changing the position depending on the transported container
(3) independently controlled system, 4 pairs of hydraulic outlets in the tractor are needed
(4) five vehicle functions control (suspension lock, hook lift / tipper function with container lock, hook frame movements, swing frame movements)
(5) a pair of hydraulic outlets in the tractor are needed to operate it

Some standard equipment items that are listed in the table may not be included in the trailer supplied. This is due to the possibility of ordering a new machine with a different set - optional equipment, replacing the standard equipment.

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

E.3.4.622.05.1.EN

1.6 WARRANTY CONDITIONS

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.

PRONAR Sp. z o.o. in Narew guarantees the smooth operation of the machine when used in accordance with the technical and operational conditions described in the User's Manual. The date of repair is specified in the Warranty Card.

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

In the event that damage arises as a result:

- mechanical damage caused by the user's fault, road accident,
- from improper operation, adjustment and maintenance, misuse,
- using a damaged machine,
- carrying out repairs by unauthorized persons, incorrect repairs,
- making arbitrary changes in the ma chine design,

the user loses the warranty. The user is obliged to immediately report all noticed defects in paint coatings or traces of corrosion, and to 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.

E.3.4.622.06.1.EN

1.7 TRANSPORT

The machine is ready for sale completely assembled and does not require packing. Only the machine's technical documentation and possibly some elements of additional equipment are packed. Delivery to the user takes place by car or independent transport (towing a trailer with an agricultural tractor).

DANGER

Incorrect use of securing measures may cause an accident.

VEHICLE TRANSPORT

Loading and unloading a trailer from a car should be carried out using a loading ramp using a farm tractor. During work adhere to the general principles of workplace health and safety for reloading work. Persons operating reloading equipment must have the required permissions to use these devices. The machine must be correctly connected to the tractor in accordance with the requirements contained in this manual. The trailer braking system must be activated and checked before going down or onto the ramp.

The machine should be mounted firmly on the platform of the vehicle using straps, chains, haul-offs or other securing devices equipped with a tensioning mechanism. Fasteners should be attached to the transport handles provided for this purpose (1) - Figure (1.4). Transport handles are welded to the bottom frame longitudinal members.

Chocks or other components without sharp edges should be placed under the

DANGER

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. This is due to the vehicle's center of gravity shifting upwards with the machine loaded.
Use only approved and technically reliable securing devices. Familiarize yourself with the contents of the fastener manufacturer's operating instructions.

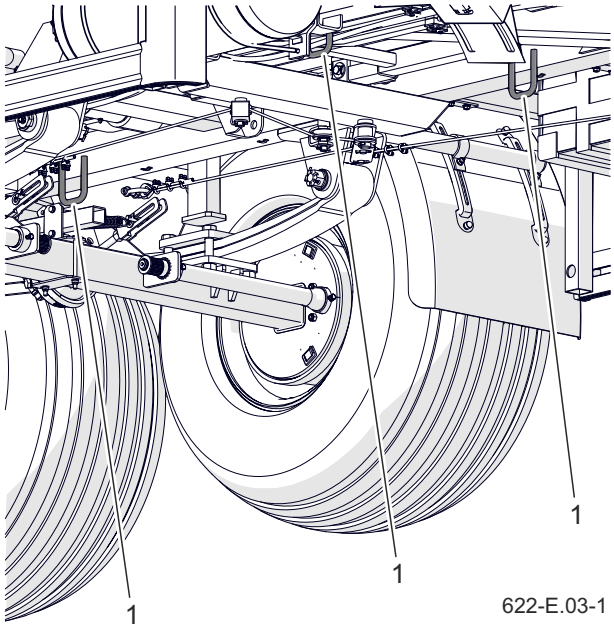

Figure 1.4 Trailer attachment points
(1) transport handle

trailer wheels, protecting the machine against rolling away. Wheel locks must be secured to the vehicle loading platform in a way that prevents them from sliding.

Use certified and technically reliable securing measures. Worn belts, cracked securing brackets, bent or corroded hooks or other damage may disqualify the product from being used. Read the information contained in the operating instructions of the manufacturer of the securing material used. The number of fastening elements (ropes, belts, chains, haul-offs, etc.) and the force needed for their tension depends, among others, on the machine's own weight, construction of the transporting car, travel speed and other conditions. Therefore, it is not possible to specify the fastening plan in detail.

In order to optimally attach the trailer to the loading platform, support the drawbar by placing a support under it in the form of a wooden block. A properly attached trailer will not change its position relative to the transporting vehicle.

The fastening means must be selected according to the manufacturer's instructions.

CAUTION

It is forbidden to attach slings and all kinds of fastening elements to the elements of the hydraulic and electrical systems as well as the slender elements of the machine (e.g. covers, wires).

In case of doubt, a larger number of attachment and securing points should be used. If necessary, protect 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 curb weight of the trailer in running order is given in table (3.1).

INDIVIDUAL TRANSPORT

In the case of independent transport by the user after purchasing a hook trailer, read the trailer User's Manual and follow its recommendations. Independent transport involves towing a trailer with your 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.

DANGER

When transporting independently, the operator should read the contents of these User Manual and observe the recommendations contained therein.

E.3.4.622.07.1.EN

1.8 ENVIRONMENTAL HAZARD

A hydraulic oil leak constitutes a direct threat to the natural environment owing to the limited biodegradability of the substance. Maintenance and repair work at which there is a risk of oil leakage should be carried out in rooms with oil resistant surfaces. 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 pollution should be stored in an airtight and marked container, resistant to hydrocarbons, and then transferred to an oil waste disposal point. 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 above. Waste code 13 01 10 (hydraulic oil). Detailed information on oils can be found in the product safety data sheets.

DANGER

Do not store oil waste in food containers.
Store used oil in containers resistant to hydrocarbons.

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.

ADVICE

The trailer's hydraulic system is filled with L-HL 32 Lotos oil.

E.3.4.622.08.1.EN

1.9 WITHDRAWAL

If the user decides to withdraw the machine, please comply with the provisions in force in the given country regarding withdrawal from use and recycling of machines withdrawn from use.

The oil must be completely drained of the hydraulic system before dismantling the machine.

In the event of parts being replaced, worn or damaged parts should be taken to a recycling centre. Used oil as well as rubber or plastic elements should be taken to plants dealing with the utilization of this type of waste.

DANGER

During dismantling, use appropriate tools and equipment (overhead cranes, cranes, lifts, etc.), use personal protective equipment, i.e. protective clothing, footwear, gloves, glasses, etc.
Avoid oil contact with skin. Do not allow oil to leak.

E.3.4.622.09.1.EN

CHAPTER 2

SAFETY OF USE

2.1 BASIC SAFETY RULSE

- Before using the trailer, the user should carefully read the content of this publication and the WARRANTY CARD. During their operation, all recommendations contained therein must be observed.
- The trailer may only be used and serviced by persons authorized to drive agricultural tractors with a trailer.
- If the information contained in the Operator'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, as well as non-compliance with the recommendations contained in this manual puts the health and life of bystanders and/or the machine at risk.
- The trailer user is obliged to familiarize himself with the construction, principles of operation and safe operation of the trailer.
- Before starting work, become familiar with all machine controls. Do not start the machine without knowing its function.
- Be aware of the existence of a minimal risk of danger, therefore the use of safe handling principles and sound behaviour should be the basic principle of using a trailer.
- The machine must not be used by persons who are not authorized to drive tractors, including children, people under the influence of alcohol or other drugs, etc.
- The trailer may not be used for purposes other than those for which it was intended. Everyone who uses the trailer in a manner contrary to its intended use, thus takes full responsibility for all consequences arising from its use. Use of the machine for purposes other than envisaged by the Manufacturer is inconsistent with the purpose of the machine and may void the warranty.
- Before starting the trailer, make sure that it is properly prepared for work, first of all in terms of safety.

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2.2 SAFETY DURING MACHINE AGGREGATION

- It is forbidden to connect the trailer to the tractor if it does not meet the manufacturer's requirements (minimum tractor power demand, inadequate connections, etc.) - see chapter REQUIREMENTS.
- Before connecting the trailer, make sure that the oil in the tractor's external hydraulic system can be mixed with the trailer's hydraulic oil.
- Before connecting the trailer, make sure that both machines are technically sound.
- When connecting the trailer, use the appropriate tractor hitch. After coupling the machines, check the hitch safety device. Read the tractor operating instructions. If the tractor is equipped with an automatic hitch, make sure that the coupling operation has been completed.
- Take special care when connecting the machine.
- No one may be between the trailer and the tractor during coupling.
- Disconnecting the trailer from the tractor is forbidden if the swing frame is raised.
- Hitching and unhitching the trailer may only take place when the machine is immobilized by means of the parking brake. If the trailer stands on a slope or slope, it should be additionally secured against rolling away by placing wedges under the wheels of the trailer or other elements without sharp edges under the wheels.
- The trailer cannot be moved when the support is extended and rests on the ground. There is a risk of damage to the support during machine movement.
- The trailer cannot be disconnected from the tractor if the swing frame or middle frame are not folded and when the suspension lock cylinders are extended.

F.3.4.622.02.1.EN

2.3 PULLING IN AND REMOVING THE CONTAINER

- Before pulling the container, remove the sign for slow moving vehicles.
- Selecting the trailer's operating mode is only possible when the swing frame is in the rest position and the rear bumper is maximally folded.
- Correct switching of the trailer to the „hook lift" or „tipper" function must be signalled by means of an appropriate indicator light - see chapter TRAILER OPERATION.
- When connecting the container, position in such a way that the longitudinal axis of the trailer coincides with the longitudinal axis of the container. Otherwise, the container side members may not fit in the rollers of the trailer. When pulling the container, make sure that its longitudinal members are correctly supported on the trailer's guide rollers. If necessary, manoeuvre the trailer to correctly connect the container.
- After pulling in, block the container on the trailer with the mechanical lock of the container. In the event of hydraulic blocking, after fully blocking the container, the corresponding indicator light must come on - see chapter TRAILER OPERATION.
- It is forbidden for unauthorized persons to stand near the trailer, especially behind connected and detachable containers.
- Use extreme caution when working near power lines.

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2.4 LOADING AND UNLOADING OF THE CONTAINER

- Loading and unloading work should be carried out by a person experienced in this type of work.
- It is forbidden to exceed the trailer's maximum carrying capacity as it threatens road safety and may cause damage to the machine.
- It is forbidden to transport people and animals both on the chassis of the trailer and in containers. The trailer is not intended for transporting people and animals.
- Individual types of containers are adapted to transport various groups of materials, therefore the user is required to read the container instruction manual and follow the recommendations contained therein.
- The load in the container must be arranged in such a way that it does not endanger the stability of the trailer and does not hinder driving.
- The arrangement of the load in the container must not cause overloading of the running gear and trailer drawbar eye.
- Loading and unloading works may only be carried out when the trailer is placed on level and hard ground. The tractor and trailer must be placed for straight-ahead driving.
- When unloading the container, it is prohibited to control the middle frame lock with the frame raised.
- Ensure that there are no bystanders in the container loading/unloading area. Before swing, ensure adequate visibility and make sure that there are no bystanders nearby.
- It is forbidden to start or drive with the raised container.
- Use extreme caution when working near power lines.
- Be careful when opening container closures due to pressing the load against the walls.
- Be careful when closing container walls because of the risk of fingers crushing.
- Tilting of the container is prohibited during strong wind gusts.
- If the load does not fall from the raised container, unload immediately. Another swing over is only possible after removing the cause of the problem (wedging, sticking).
- It is forbidden to jerk the trailer forward in the event that the volumetric load or hard-pouring load has not been unloaded.

- Do not lift the container if there is any danger of the trailer swing over.
- After unloading, make sure the container is empty.
- Do not drive with the container raised.

F.3.4.622.04.1.EN

2.5 SAFETY RULES FOR OPERATION OF HYDRAULIC AND PNEUMATIC SYSTEMS

- The hydraulic and pneumatic systems are under high pressure during operation.
- Regularly check the technical condition of connections as well as hydraulic and pneumatic hoses. The trailer's operation with leaking installations is not allowed.
- In the event of hydraulic or pneumatic system failure, the trailer should be decommissioned until the failure has been eliminated.
- When connecting the hydraulic conduits to the tractor, make sure that the tractor hydraulic system and trailer are not under pressure. If necessary, reduce the residual pressure of the system.
- In the event of injuries being caused by pressurized hydraulic oil, contact a doctor immediately. Hydraulic oil can penetrate the skin and cause infection. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor. In the event of contact of oil with skin, wash the area of contact with water and soap. Do not use organic solvents (petrol, kerosene).
- Use hydraulic oil recommended by the Manufacturer.
- After changing the hydraulic oil, the used oil must be disposed of. Used oil or oil which has lost its properties should be stored in original containers or replacement packaging resistant to hydrocarbons. Replacement containers must be accurately described and properly stored.
- It is forbidden to store hydraulic oil in packaging intended for food storage.
- Rubber hydraulic conduits must be replaced every 4 years regardless of their technical condition.

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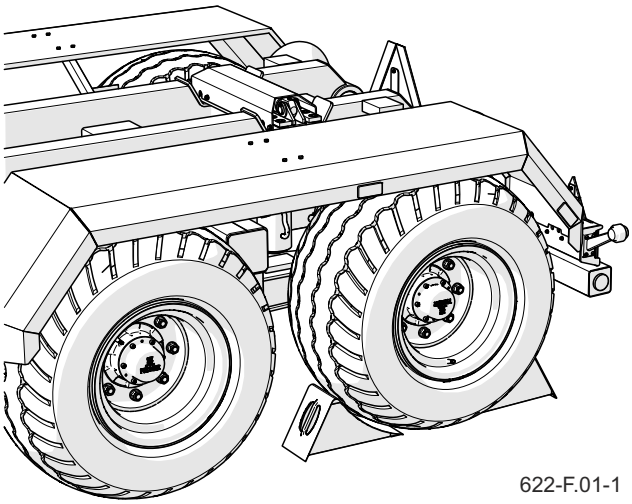
2.6 RULES FOR SAFE TECHNICAL SERVICE

- During the warranty period, any repairs may only be carried out by a Warranty Service authorized by the manufacturer. After the end of the warranty period, it is recommended that any repairs to the trailer be carried out by specialized workshops.
- In the event of any fault or damage, do not use the trailer until the time of repair.
- During maintenance work, use appropriate, close-fitting protective clothing, gloves, shoes, glasses and the right tools.
- Any modification of the trailer releases PRONAR Narew from any liability for resulting damage or injury.
- Climbing the trailer is possible only when the trailer is absolutely stationary and the tractor engine is switched off. Tractor and trailer should be secured with parking brake and chocks should be placed under the trailer wheel. Secure the tractor cab against unauthorized access.
- Regularly check the technical condition of the safety devices and the correct tightening of bolted connections (in particular the tie rods and wheels).
- Inspect the trailer according to the frequency specified in this manual.
- Before starting repair work on hydraulic or pneumatic systems, the residual oil or air pressure must be completely reduced.
- Perform maintenance and repair operations applying the general principles of health and safety at work. In the event of a cut, the wound should be immediately washed and disinfected. In the event of serious injuries, seek medical advice.
- Repair, maintenance and cleaning work should only be carried out with the tractor engine switched off and the ignition key removed. Tractor and trailer should be secured with parking brake and chocks should be placed under the trailer wheel.
- Secure the tractor cab against unauthorized access.
- During maintenance or repair work the trailer may be disconnected from the tractor, but secured by means of wedges and parking brake.
- If it is necessary to change individual parts, use only parts recommended by the Manufacturer. Failure to comply with these requirements



622-F.01-1

Figure 2.1 The locking wedges positions

may endanger the health or life of bystanders or persons operating the trailer, cause damage to the machine and constitute the basis for loss of warranty.

- Before welding or electrical work, the trailer should be disconnected from the power supply. The paint coating should be cleaned.
- 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 or fusible elements (elements of pneumatic, electric, hydraulic systems, elements made of plastic). If there is a risk of ignition or damage, they must be removed or covered with non-flammable material before welding. Before starting work, it is recommended to prepare a CO2 fire extinguisher or foam extinguisher.
- 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 jack.
- It is forbidden to support the trailer with fragile elements (bricks, blocks, concrete blocks).
- After completing work associated with lubrication, remove excess grease or oil. The trailer should be kept clean.
- It is forbidden to carry out independent repairs of hydraulic or pneumatic system components, i.e. control valves, actuators and regulators. In case of damage to these elements, the repair should be entrusted to authorized repair centres or replace the elements with new ones.
- It is prohibited to install additional devices or accessories that do not comply with the specifications specified by the Manufacturer.
- The trailer may only be towed if the chassis, lighting and braking systems are functional.

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2.7 RULES FOR MOVE ON PUBLIC ROADS

- When driving on public roads, comply with traffic regulations and transport regulations in force in the country where the trailer is used.
- Do not exceed the maximum speed resulting from restrictions on road conditions and design restrictions. Adjust the speed to the prevailing road conditions, the load capacity of the container, and the restrictions resulting from the provisions of the road traffic law.
- Wedges should only be placed under one wheel (one in front of the wheel, the other in the rear).
- Never leave the machine unsecured. The trailer disconnected from the tractor must be immobilized with the parking brake and secured against rolling away using wedges or other elements without sharp edges placed under the vehicle wheel.
- Before driving off make sure that the trailer is correctly connected to the tractor, especially that the coupling bolts are secured.
- Vertical load transmitted by the trailer drawbar eye affects the steering of the agricultural tractor.
- When transporting the container, the trailer must be switched to the „tipper" function.
- When transporting the container, the hydraulic locking lock must be locked, which prevents the container from shifting and bouncing when being transported on a trailer.
- It is forbidden to drive with the container raised.
- Before using the trailer always check its technical condition, especially in terms of safety. In particular, check the technical condition of the hitch system, the running gear, the braking system and traffic lights as well as the connecting elements of the hydraulic, pneumatic and electrical systems.
- Before driving, check that the parking brake is released and the braking force regulator is in the correct position (applies to pneumatic systems with a manual, three-position regulator).
- If the trip is carried out without a container, a slow-moving vehicle sign should be placed on the rear beam of the trailer, if the machine is the last vehicle in the set. If the journey is carried out with a container, the sign indicating slow moving vehicles should be placed on the rear wall of the container.

- The trailer is adapted for driving on slopes up to a maximum of 5°. Moving the trailer over a steeper slope may cause the trailer to overturn as a result of loss of stability.
- When driving on public roads, the tractor operator must ensure that the trailer and the tractor are equipped with an approved or homologated warning reflective triangle.
- Periodically drain the air tank in the pneumatic system. During frosts, freezing water may cause damage to pneumatic system components.
- Reckless driving and excessive speed can cause accidents.
- Load protruding beyond the outline of the trailer should be marked in accordance with traffic regulations. It is forbidden to transport loads not allowed by the manufacturer.
- The trailer's maximum carrying capacity must not be exceeded.
- Exceeding the carrying capacity may lead to damage to the machine, loss of stability and cause a hazard while driving. The braking system of the machine has been adapted to the total weight of the trailer, exceeding of which will drastically reduce the operation of the service brake.
- Prolonged travel over sloping ground creates a risk of loss of braking efficiency.
- It is recommended to use the help of another person when reversing. During maneuvers, the helping person must keep a safe distance from danger zones and be visible to the tractor operator at all times.
- It is forbidden to get on the trailer while driving.
- During travel, the rear protective grilles must be removed from the lighting beam profiles and fixed on the other side of the profiles with star nuts.
- It is forbidden to park the trailer on a decline.
- When moving the trailer on public roads, the rear protective beam may not be hidden deeper than 375mm under the container.

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2.8 TIRES

- During work with tires, the trailer should be immobilized with the parking brake and secured against rolling by placing wedges under the wheel. It is recommended to disassemble the wheel when the trailer is without a container.
- 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 performed 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 travel. Each time, repeat all operations if the wheel was disassembled. Wheel nuts should be tightened in accordance with the recommendations contained in the sections: TECHNICAL MAINTENANCE/Wheel assembly and disassembly, PERIODIC INSPECTIONS/Checking screw connections.
- Avoid damaged road surfaces, sudden and variable maneuvers, and high speeds when turning.
- Regularly check tire pressure. 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 suitable caps to avoid penetration of dirt.

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2.9 WORKING WITH PTO SHAFT

- Before starting work, read the User's Manual of the propeller shaft and follow the recommendations contained therein.
- The machine may be connected to the tractor only by means of a properly selected PTO shaft recommended by the Manufacturer.
- The propeller shaft must be equipped with covers. It is forbidden to use the shaft with damaged or missing safety elements. Before starting the machine, make sure that all guards are in good working order and correctly positioned. Damaged or incomplete components must be replaced with new original ones.
- The PTO shaft has markings on the housing, indicating which end of the shaft should be connected to the tractor.
- Never use a damaged PTO shaft as this may cause an accident. A damaged shaft must be repaired or replaced.
- Disconnect the shaft drive whenever there is no need to drive the machine or when the tractor and trailer are at an unfavourable angular position with respect to each other.
- The chain protecting the shaft covers against turning while the shaft is working should be attached to the trailer's permanent structural element.
- It is forbidden to use safety chains to support the shaft during standstill or transporting the trailer.
- After installing the shaft, make sure it is correctly and securely connected to the tractor and the machine.
- Before starting PTO drive, make sure that there are no bystanders (especially children) in the danger zone. The machine operator must ensure that the working area is clearly visible.
- Before commissioning the PTO shaft, adjust the length according to the shaft manufacturer's instructions.
- Before starting PTO shaft make sure that the PTO rotation direction is correct.
- When using the shaft and trailer, do not use a higher speed than the permissible speed. Overloading the shaft and machine is prohibited.
- Before disconnecting or connecting the shaft, turn off the tractor engine and remove the key from the ignition. The tractor must be secured against rolling away with the parking brake.

- During transport, the shaft should be stored in a horizontal position to avoid damage to guards and other safety elements.
- It is forbidden to wear loose clothing, loose belts or anything that could get caught in the rotating shaft. Contact with a rotating PTO shaft can cause serious injury.
- It is forbidden to walk over and under the shaft and stand on it both during work and when the machine is at a standstill.
- During work in conditions of limited visibility, the shaft and its surroundings should be illuminated with the help of tractor working lights.
- Telescopic pipes must overlap at least 1/3 of their length during shaft operation.

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2.10 DESCRIPTION OF RESIDUAL RISK

Pronar Sp. z o. 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:

- using the trailer contrary to its purpose,
- staying between the tractor and the trailer when the engine is running and when connecting the machine or connecting a second trailer,
- being on the machine during work,
- failure to maintain a safe distance when loading, disconnecting, connecting or unloading a container,
- trailer operation by unauthorized persons or persons under the influence of alcohol or other intoxicants,
- introducing structural changes without the consent of the Manufacturer,
- cleaning, maintenance and technical inspection of trailer,
- presence of persons or animals in areas invisible from the operator's position.
- Residual risk can be reduced to a minimum by following these recommendations:
- prudent and leisurely machine operation,
- sensible application of the remarks and recommendations contained in the operating instructions,
- maintaining a safe distance from prohibited and dangerous places,
- performing maintenance and repair work in accordance with the principles of operational safety,
- carrying out maintenance and repair work by trained persons,
- the use of close-fitting protective clothing and appropriate tools,
- securing the machine against access by unauthorized persons, especially children,
- a ban on being on the machine during her work.

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2.11 INFORMATION AND WARNING STICKERS

The trailer is marked with information and warning decals mentioned in table (2.1). Arrangement of symbols 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 at the place where the machine was purchased.

The catalogue numbers of the labels can be found in the table (2.1) and in the Spare parts catalogue. New assemblies replaced during repair must be marked again with the appropriate safety signs. When cleaning the screen, do not use solvents that may damage the label coating and do not direct a strong water jet.

Other information stickers on the system connection cables are presented in chapter 4.

Table 2.1. Information and warning stickers

No.	Description	Catalogue number
1	Warning! Before starting work, read the User's Manual	70RPN-00.00.00.04
2	Before starting servicing or repair work, switch off tractor engine and remove key from ignition. Secure the tractor cab against access by unauthorized persons	70RPN-00.00.00.05
3	Warning sticker. It is forbidden to carry out maintenance or repair work under a loaded and/or unsupported container.	104N-00000003
4	Lubricate the trailer according to the schedule outlined in the User's Manual.	104RPN-00.00.00.04
5	Information sticker. Information on the possibility of using the swing frame lock depending on its position	104N-00000005
6	Information sticker. Regularly check the tightness of the wheel nuts and other bolted connections..	104RPN-00.00.00.06
7	Information sticker. Swing frame lock. Position I. Container swing.	104N-00000007
8	Information sticker. Unlocking the middle frame. Position II. Container disconnection/attachment.	104N-00000008
9	Cable function sticker	622N-03000001
10	Information sticker. Information about the currently set trailer function: - „hook" - „trailer".	385N-03000002
11	„Machine type" sticker (left and right).	622N-00000001 (L) 622N-00000002 (R)

No.	Description	Catalogue number
12	Warning. Danger of electric shock. Keep a safe distance from power lines when swing or connecting and/or disconnecting the container.	58RPN-00.00.020
13	Tire pressure.*	-
14	Warning sticker. Danger due to rotating PTO shaft.	78RPN-00.00.00.05
15	Permitted PTO shaft speed	75RPN-00.00.00.04

** the pressure depends on the used tires*

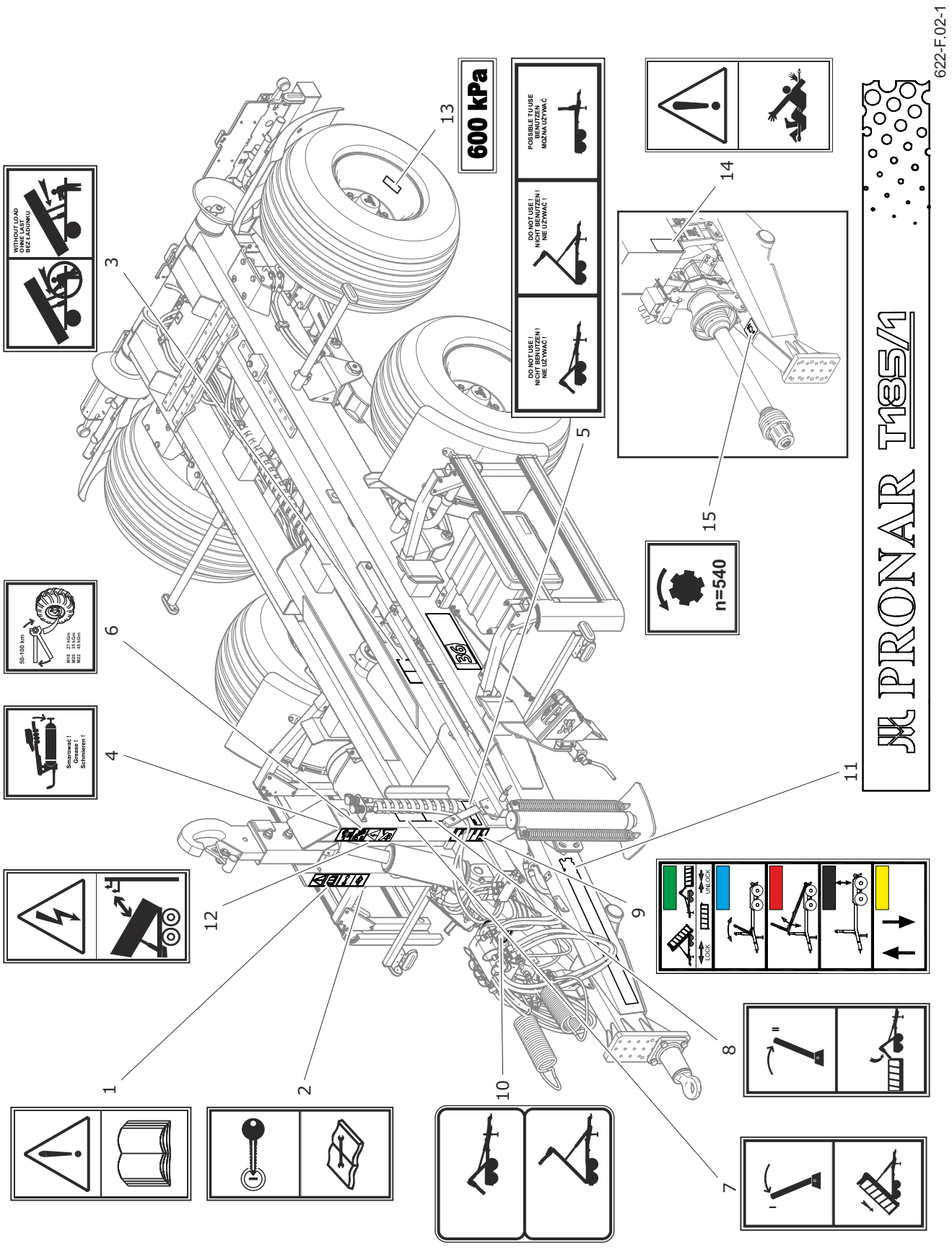

Figure 2.2 Arrangement of information and warning stickers

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CHAPTER 3

CONSTRUCTION AND OPERATION

3.1 TECHNICAL FEATURES

Table 3.1. Basic technical data

Content	Unit	T185
Dimensions (without container)		
Length	mm	5 940
Width	mm	2 380
Height	mm	2 770
Dimensions with container		
Length with the longest container	mm	6 780
Length with the shortest container	mm	6 180
Width with container (max)	mm	2 550
Total container length (min / max)	mm / mm	4 400 / 4 900
Weight		
Load capacity (including container weight)	kg	11 900
Curb weight	kg	3 100
Permissible gross weight	kg	15 000
Other information		
Permissible design speed	km/h	40
Height of rollers guiding the container	mm	990
Wheel track	mm	1 860
Maximum container swing angle	deg	46
Permissible vertical load on the drawbar eye	kg	2 000
Oil demand	L	15
Nominal pressure of the installation	bar	200
Electrical system voltage	V	12
Minimal tractor power requirement	kW/KM	57.3/78

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

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3.2 GENERAL CONSTRUCTION

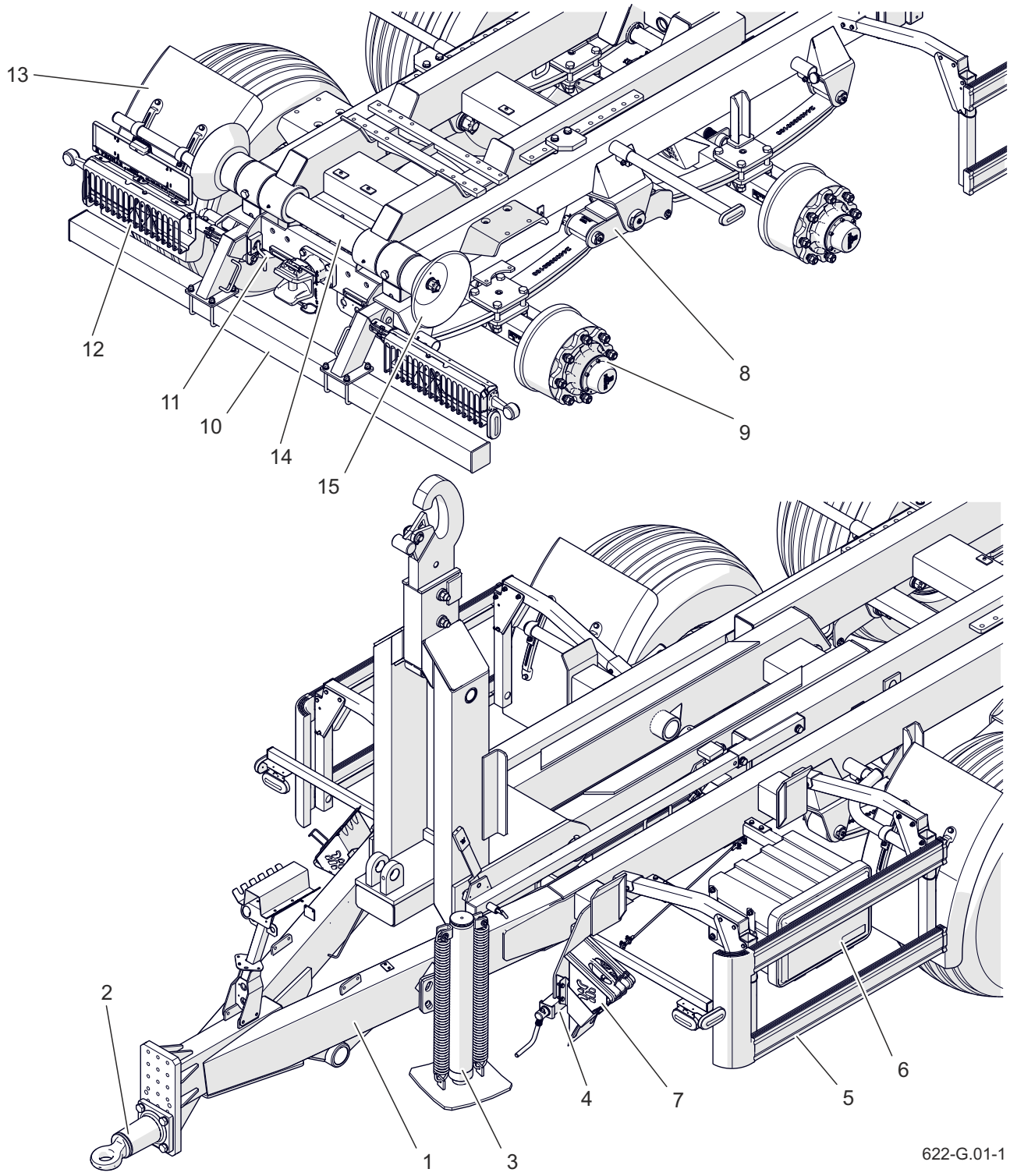

Figure 3.1 Trailer chassis

(1) lower frame *(2) drawbar beam* *(3) straight hydraulic support*
(4) handbrake mechanism *(5) side underrun protection*
(6) tool box *(7) wheel chock* *(8) tandem suspension* *(9) road axle*
(10) rear beam *(11) beam bolt* *(12) lighting set* *(13) mudguard*
(14) swing axle *(15) guide roller*

The main load-bearing element of the hook trailer is the lower frame (1) - Figure (3.1), which is a welded structure made of steel sections. In the front part of the frame there is a drawbar beam to which the drawbar eye (2) is attached. Depending on the version, the trailer may be equipped with other types of drawbar beam, presented in chapter 1.

The left support of the drawbar beam is screwed to the trailer support (3). The parking brake mechanism (4) is welded to the bracket on the left side of the frame. The rollers for the brake cable and the brake lever are attached to the bottom of the frame.

Side covers (5) can be mounted on both sides of the trailer, and tool box (6) on the left. The mudguards (13) are mounted on the brackets to the lower frame.

The trailer chassis consists of a tandem mechanical suspension (8) and rigid axles (9). Trailer axles are equipped with drum brakes. Actuators actuating brakes are pneumatic or hydraulic cylinders depending on the installed braking system.

In the rear part of the frame there is a rear beam (3) (rear protection) which can be manually pulled out and can be locked in two positions using pins (11).

Complete lighting beams (12) were mounted on both sides. The combined lamps and reflective triangles included in the lighting set have been protected against damage by covers. When driving the trailer on public roads, these covers must be removed and fixed on the other side of the lighting beam profiles with star nuts.

The swing frame - Figure (3.2) is connected to the chassis by means of a swing axle and a swing cylinder. The swing frame consists of a rear frame (1), a central frame (2) and a hook frame (3) to which the hook (4) with automatic container protection is screwed. Individual frames are connected by means of pins mounted in sleeves. A locking system is attached to the left rear side member.

During the container tipping backwards, the locking system fixes the middle frame together with the rear frame. Lock lever (1) - Figure (3.4) is at this time in position (I). The entire swing frame is lifted by means of a tipping cylinder. The lever (1) is secured

CAUTION

Switching the locking lever (1) - figures (3.4) and (3.5) is only allowed when the tipping frame is in the rest position. During this time, the rear frame and the middle frame are set in a position relative to each other, which makes it possible to easily lock or unlock the system. Attempting to shift the lever in another position may cause damage to the trailer and seriously threaten the safety of persons operating the trailer or bystanders. About this threat is indicated by a sticker placed on the hook frame - figure (3.3)

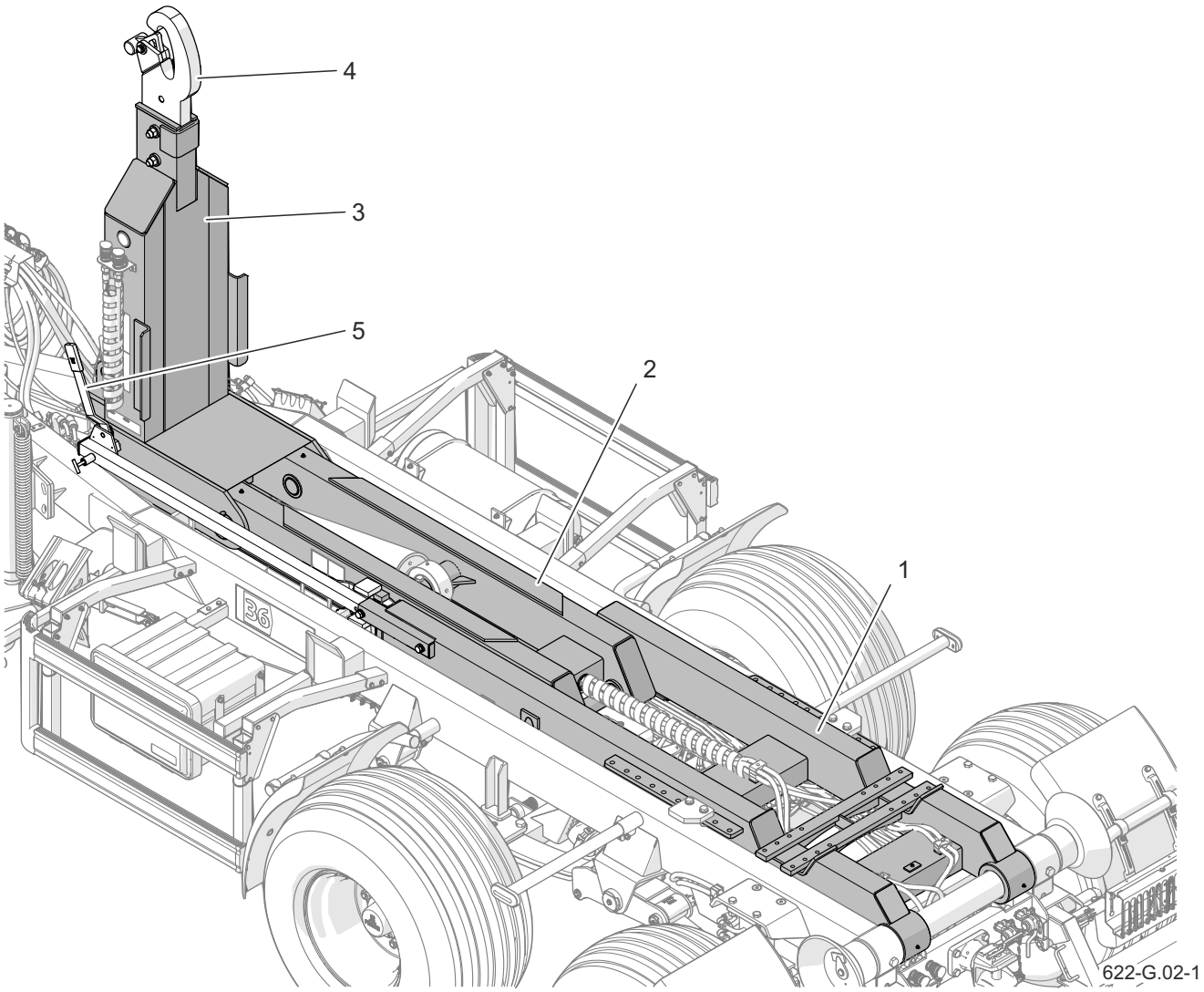

Figure 3.2 Swing frame
(1) rear frame (2) middle frame (3) hook frame (4) adjustable hook with latch (5) locking lever

by means of a lock (4) which prevents its accidental switching. In setting lever (1) - Figure (3.5) in position II, the middle frame is unlocked. The rear frame remains on the lower trailer frame, the middle frame is raised by the tipping cylinder. Tilting the middle frame enables the attachment or disconnection of the container. The hook frame is controlled irrespective of the lever position (1).

Figure 3.3 Information sticker

ADVICE

Drawings describing the construction of the trailer show an example equipment configuration. Detailed information on all options can be found in the Equipment chapter.

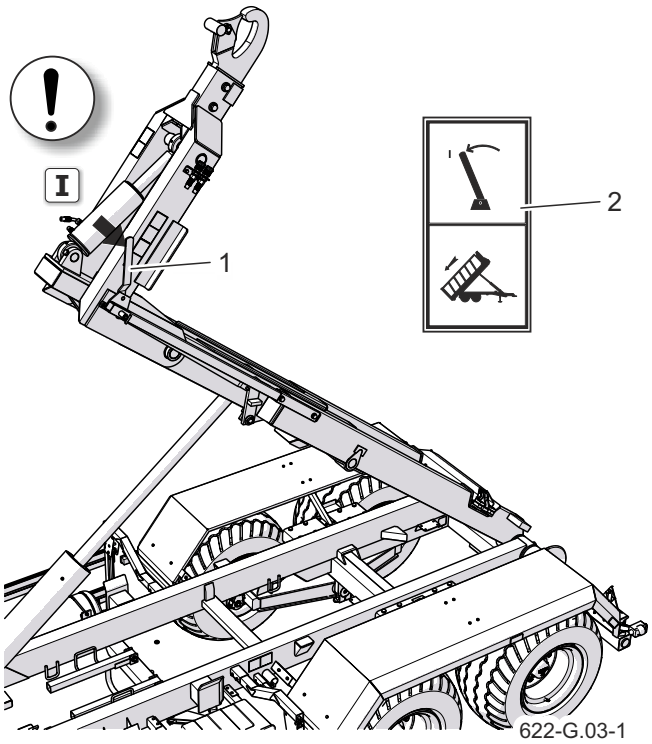

Figure 3.4 Raising of the swing frame
(1) locking lever (2) information sticker

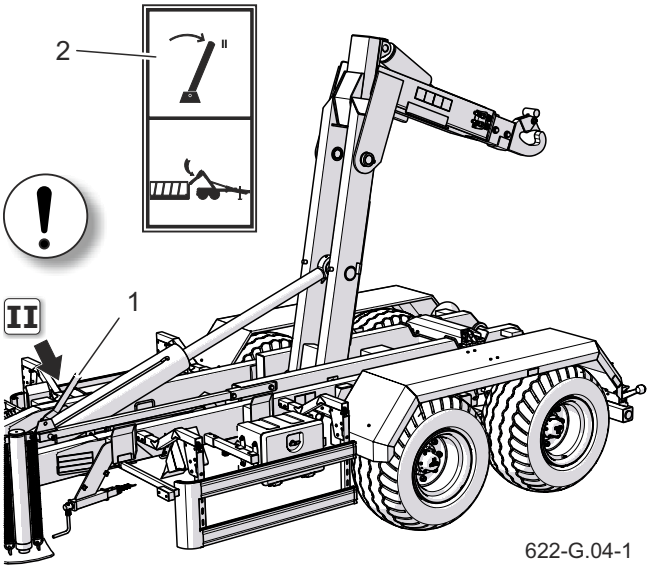

Figure 3.5 Raising of the central frame
(1) locking lever (2) information sticker

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3.3 MAIN BREAK

The main brake is activated from the driver's cab by pressing the tractor brake pedal. The task of the control valve used (1) - figure (3.6) in pneumatic systems is to activate the hook trailer brakes simultaneously with the tractor brake applied. In addition, in the event of unforeseen disconnection of the hose between the trailer and the tractor, the control valve automatically applies the machine's brake. The valve used has a brake release system, used in the event when the trailer is disconnected from the tractor. After connecting the air hose to the tractor, the release device automatically adjusts to the position enabling normal operation of the brakes.

The three-range braking force regulator (2) used in pneumatic systems 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).

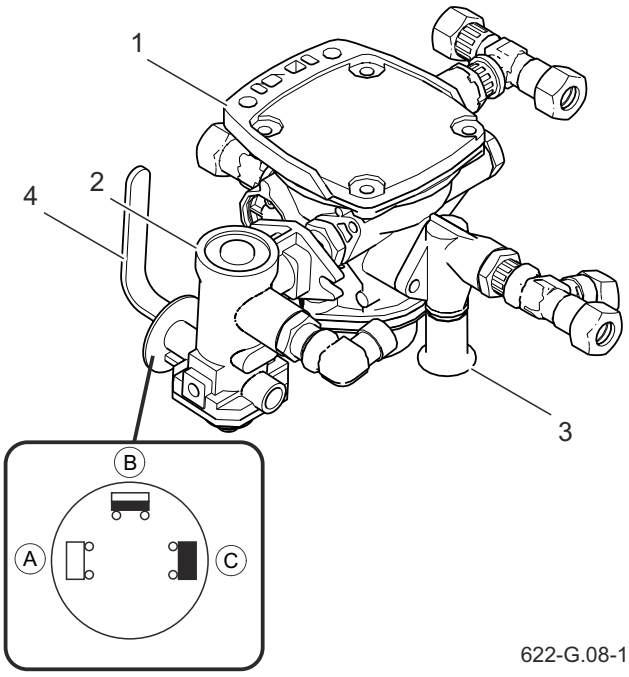

Figure 3.6 Control valve and braking force regulator

(1) control valve (2) brake force regulator (3) brake release button (4) setting lever

(A) ‚UNLOADED' Position

(B) 'HALF LOAD' Position

(C) 'FULL LOAD' Position

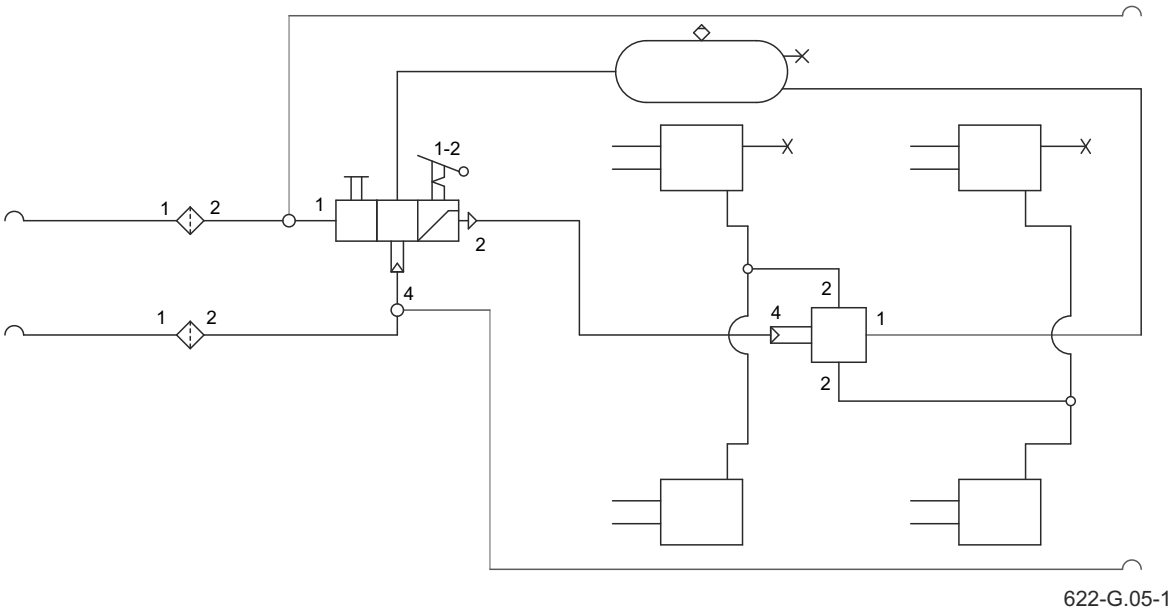

Figure 3.7 *Diagram of a 2-wire pneumatic braking system*

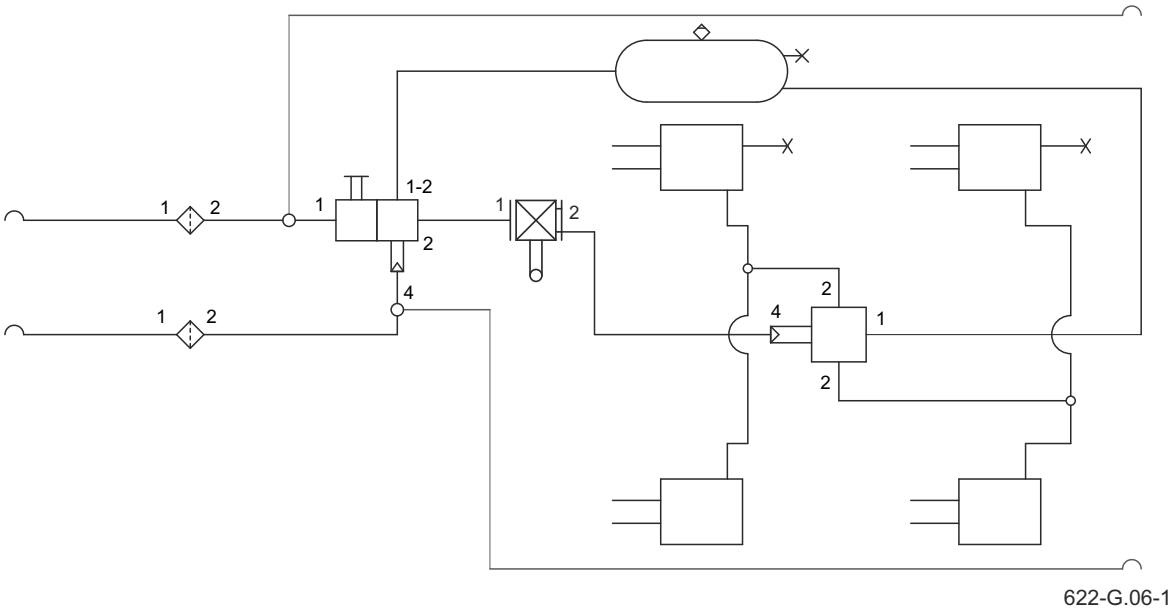

Figure 3.8 Diagram of the ALB 2-wire pneumatic braking system

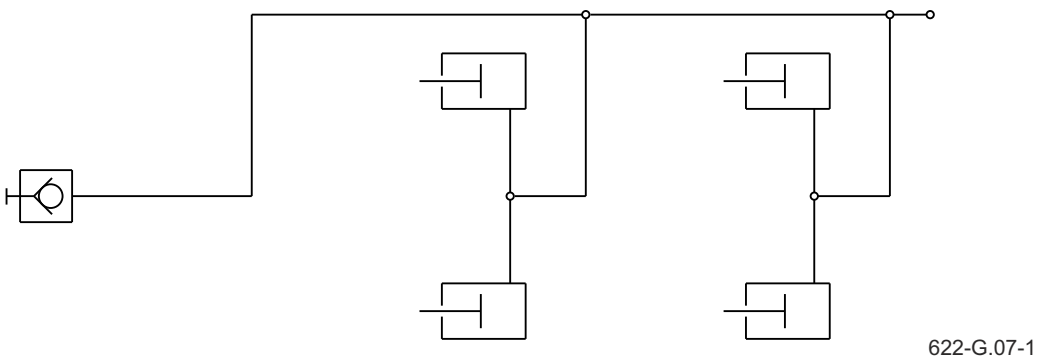

Figure 3.9 Hydraulic braking system diagram

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3.4 PARKING BRAKE

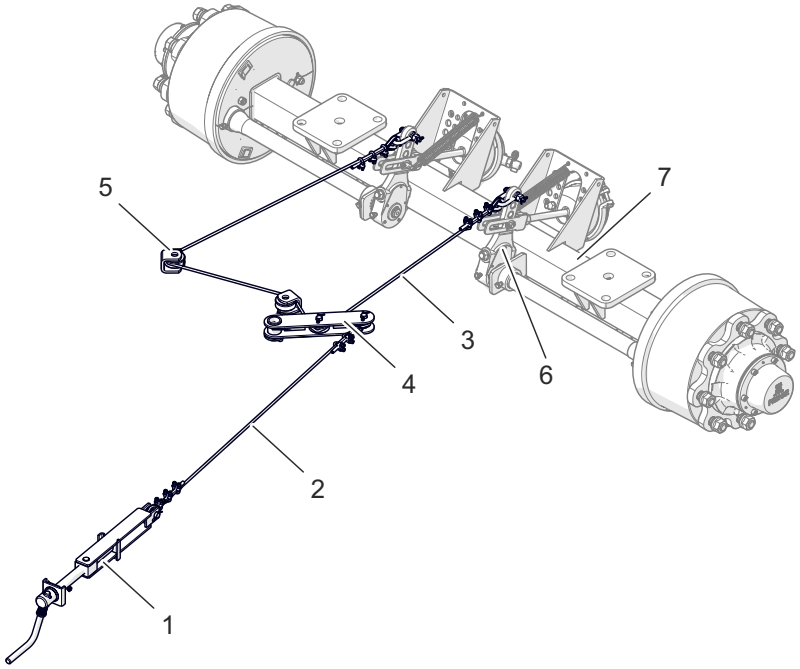

Figure 3.10 Parking brake

(1) crank mechanism *(2) (3) steel cable* *(4) lever* *(5) roller*
(6) expander lever *(7) driving axle*

The parking brake is used to immobilize the trailer during parking. The brake crank mechanism body (1) is welded to the bracket located to the left longitudinal member of the lower frame. The steel cable (3) run through the rollers (5) is connected to the expander levers (6) of the front axle (7). Tensioning the cable causes the expander levers to swing, which rotate to open the brake shoes and immobilize the trailer when parked.

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3.5 HYDRAULIC SYSTEM

The trailer in standard equipment is equipped with a hydraulic system - Figure (3.11) consisting of a tipping installation with manual hook-and-tipper switching, suspension blocking installation and hook frame installation. The hydraulic circuits listed require the connection of supply and return lines to the external connections of the tractor. In a system with a manifold - Figure (3.12), only 2 supply and return lines are connected. The control is carried out by means of a remote control - see chapter Hydraulic system operation. The last variant of the installation is a hydraulic system with its own oil tank, with a pump driven shaft, electrically controlled - Figure (3.13).

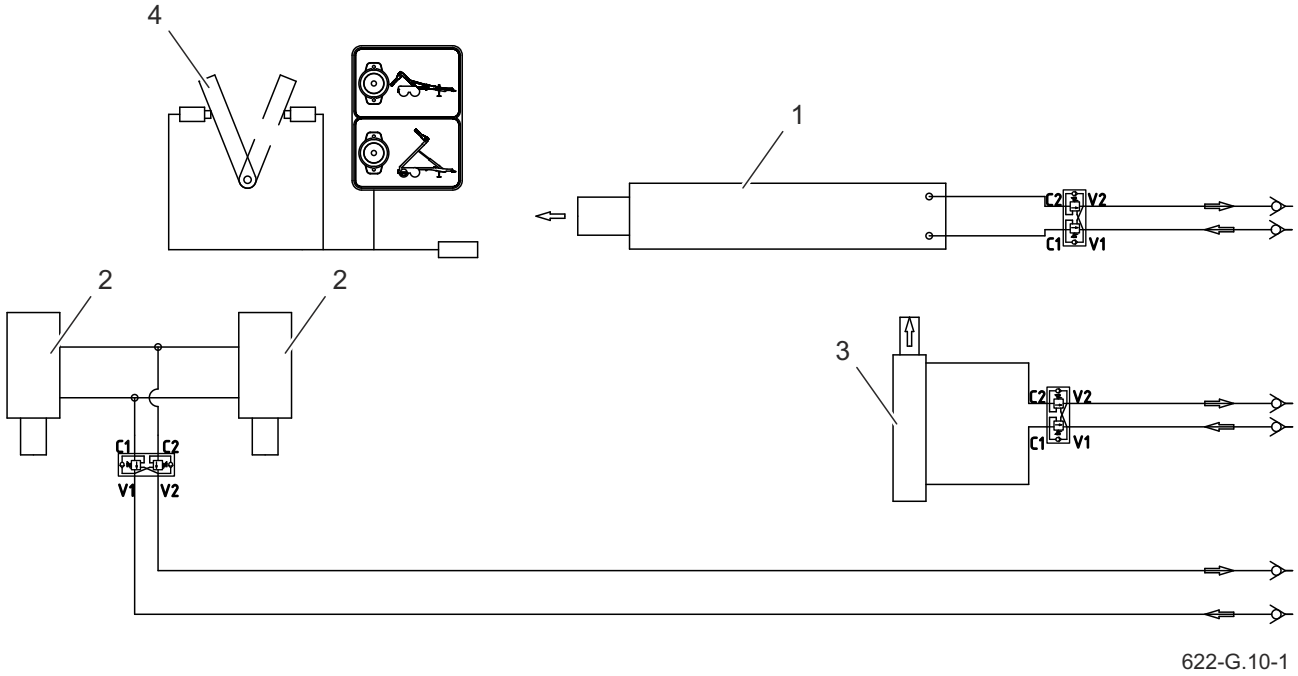

Figure 3.11 Hydraulic tipping system diagram, suspension lock and hook frame
(1) tipping cylinder (2) suspension lock cylinders (3) hook frame cylinder
(4) mechanism for work functions switching

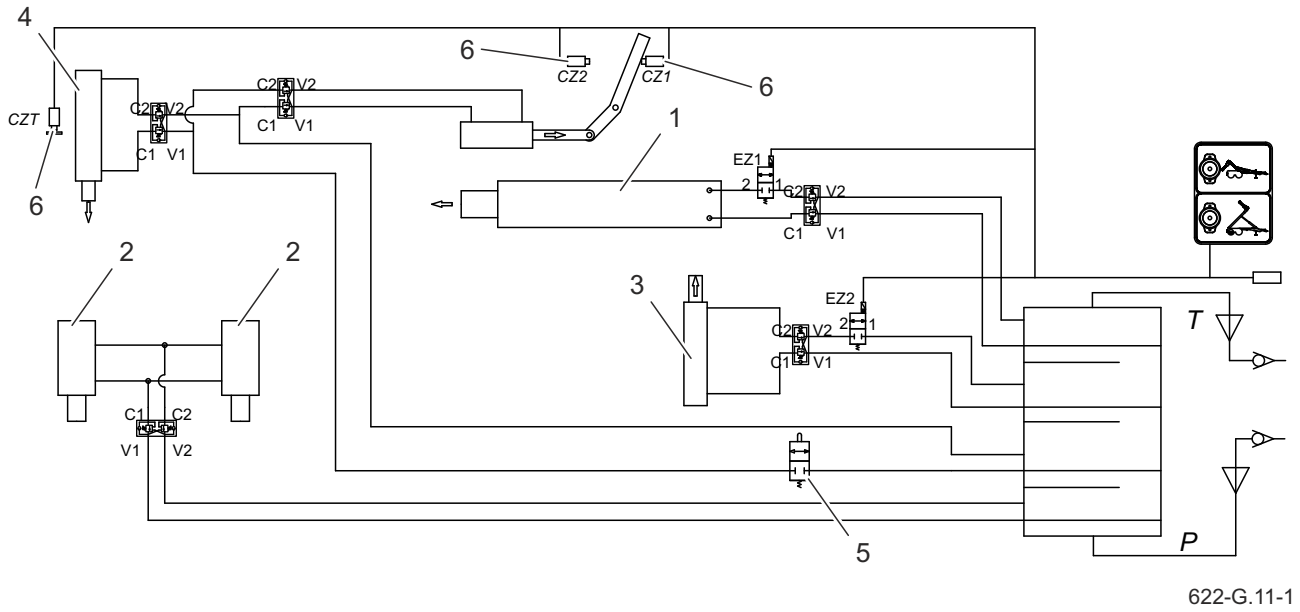

Figure 3.12 Hydraulic system diagram with 4 section distributor

(1)tipping cylinder (2) suspension lock cylinders (3) hook frame cylinder

(2) (4) container lock actuator (5) limit valve (6) sensor - limit switch

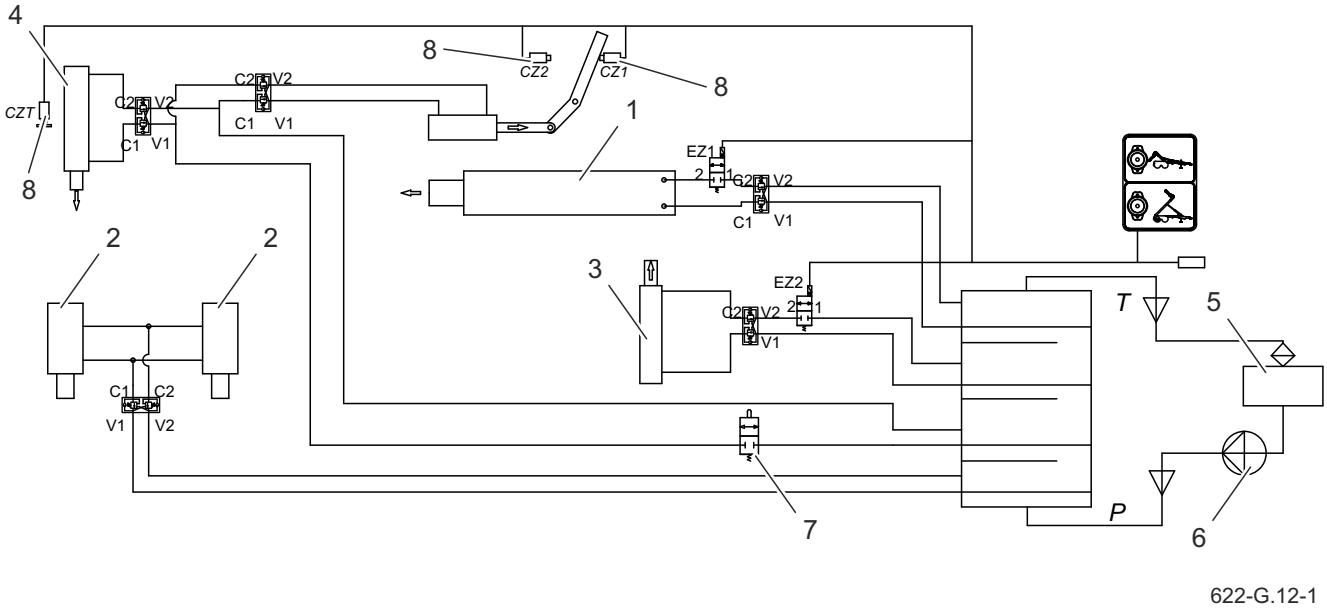

Figure 3.13 Diagram of a hydraulic system with a PTO drive with its own oil tank

(1) tipping cylinder (2) suspension lock cylinders (3) hook frame cylinder (4) container lock cylinder

(5) oil tank (6) pump (7) limit valve (8) sensor - limit switch

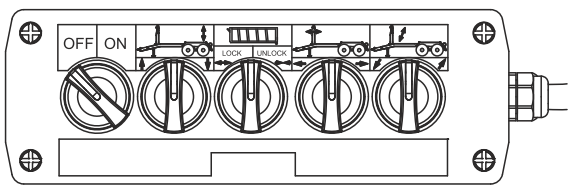

Figure 3.14 Remote control

The trailer can be equipped with an additional pair of hydraulic outlets located on the hook with a pair of hydraulic outlets at the rear of the trailer. A pair of hydraulic outlets on the tractor are needed for operation.

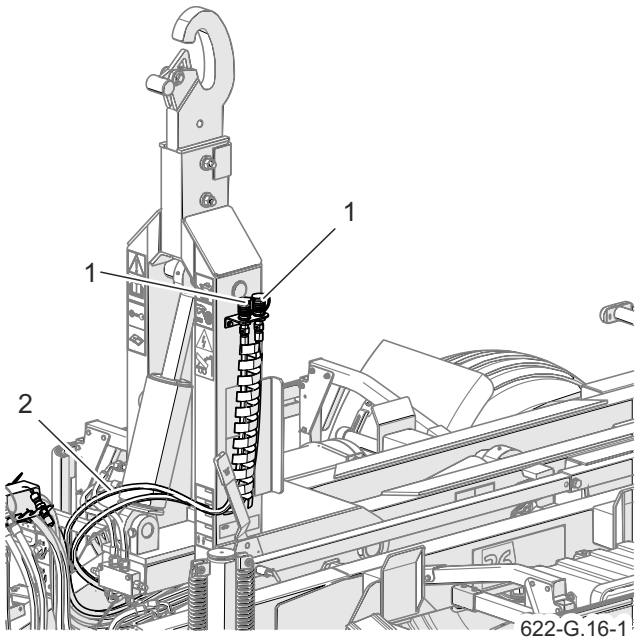

Figure 3.15 Hydraulic outlets on the hook
(1) quick release coupling - socket,
(2) hydraulic hose

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3.6 ELECTRIC LIGHTING SYSTEM

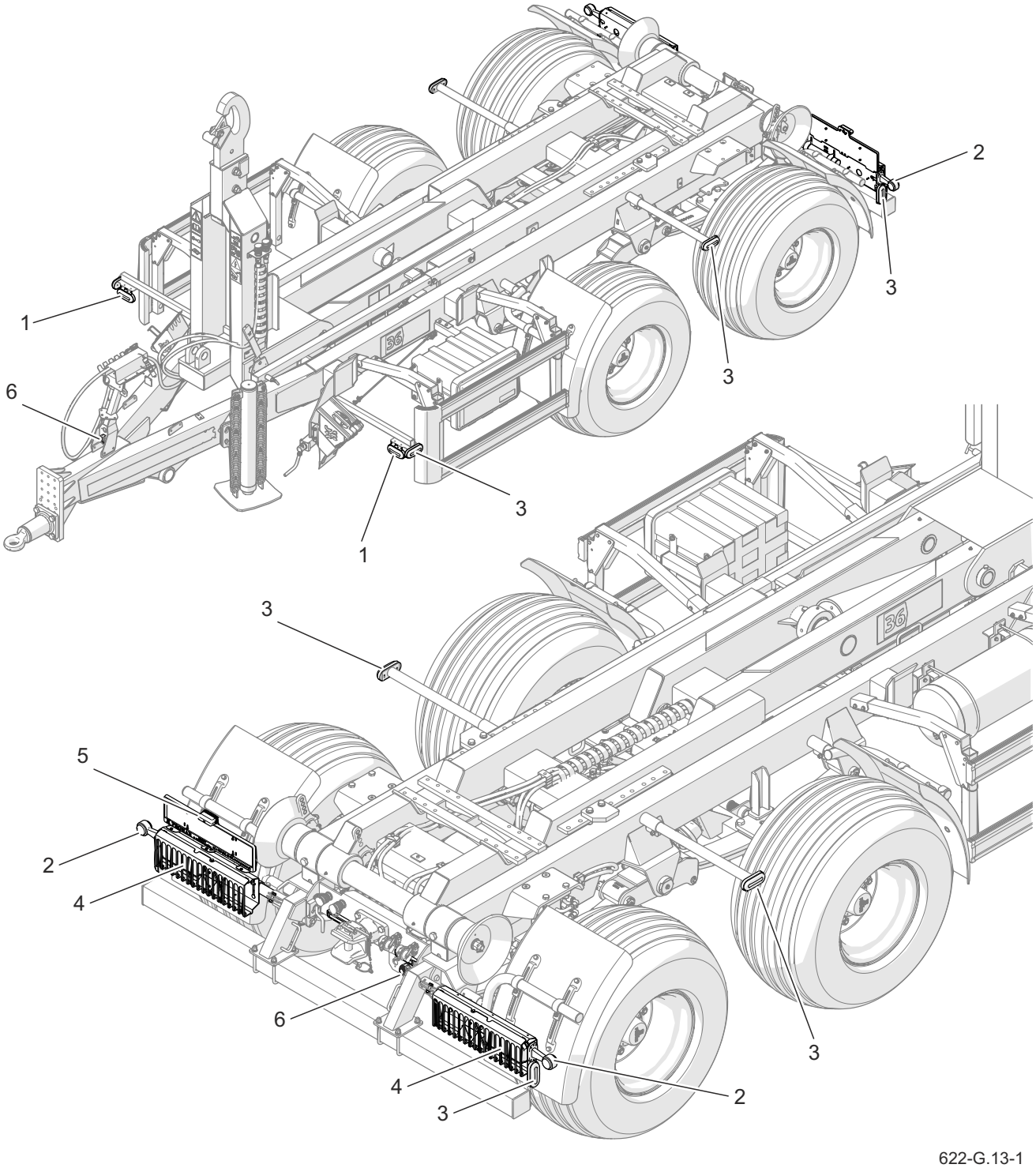

Figure 3.16 Arrangement of lighting system elements

(1) front position lamp (2) rear position lamp (3) side position lamp

(4) rear combination lamp (5) license plate lamp (6) seven-pole socket

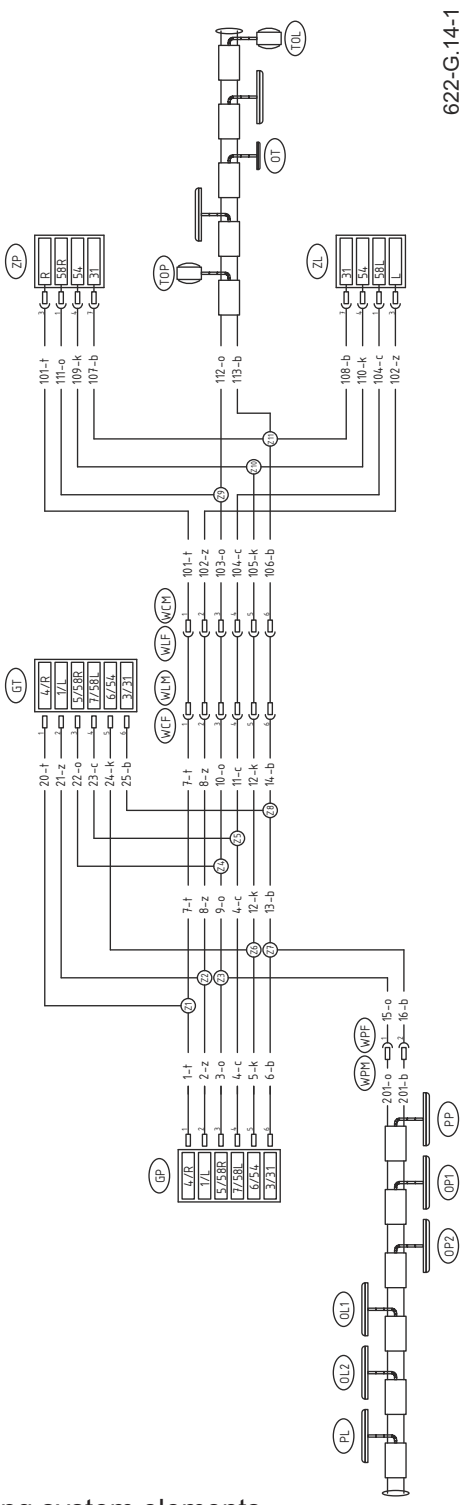

Figure 3.17 Arrangement of lighting system elements
(1) front position lamp (2) rear position lamp (3) side position lamp
(4) rear combination lamp (5) license plate lamp (6) seven-pole socket

The trailer's electrical system is adapted to be supplied from a 12 V DC source. Connecting the hook trailer's electrical system to the tractor should be done with a suitable connecting cable, which is included in the machine's equipment.

The arrangement of electrical components of the lighting system in the standard version is shown in Figure (3.16).

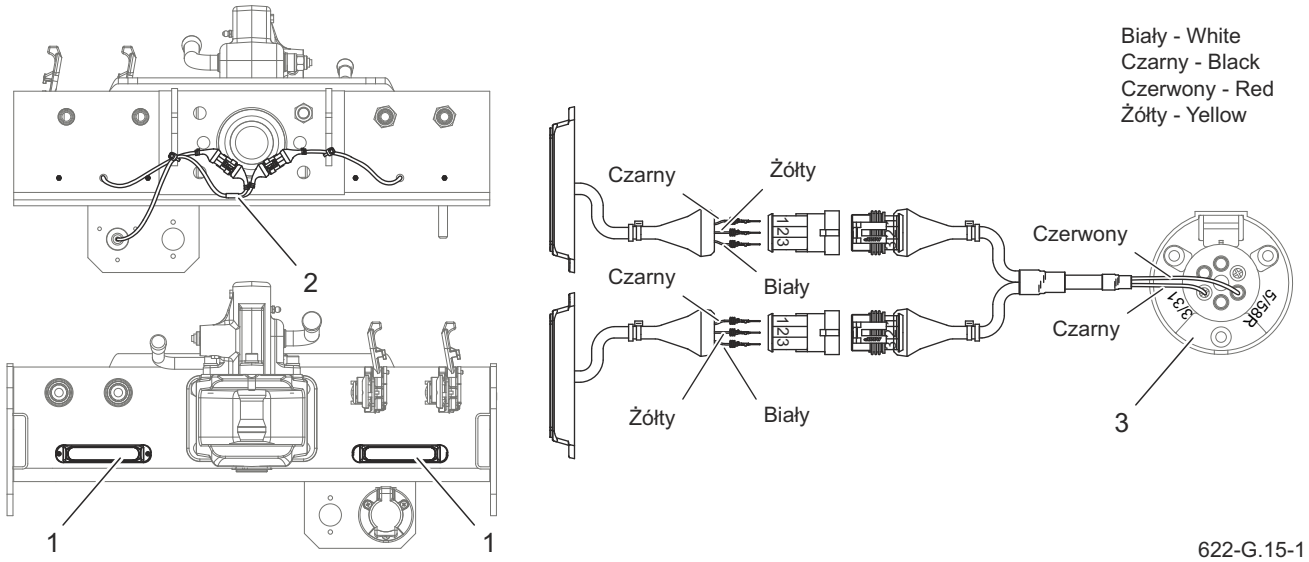

Figure 3.18 Flashlights

(1) warning lamp (2) warning lamp harness (3) seven-pole socket

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TERMS OF USE

CHAPTER 4

4.1 HANDLING OF EQUIPMENT/COMPONENTS

REAR PROTECTION

- Turn the pin from position (A) to (B).
- Pull the bolt out of the frame - position (C).
- Remove the bolt from the other side of the trailer.
- Move the rear protection to the required position by holding the handles (4),.
- Insert the bolt into the socket at an angle - position (C).

  Move the bolt until the pin (2) is between the frame profile and the socket plate (3).

- Turn the pin to position (A), the pin holder must point vertically downwards.
- Insert and secure the bolt on the other side of the trailer.

CAUTION

Check the security of the pins before each trip.

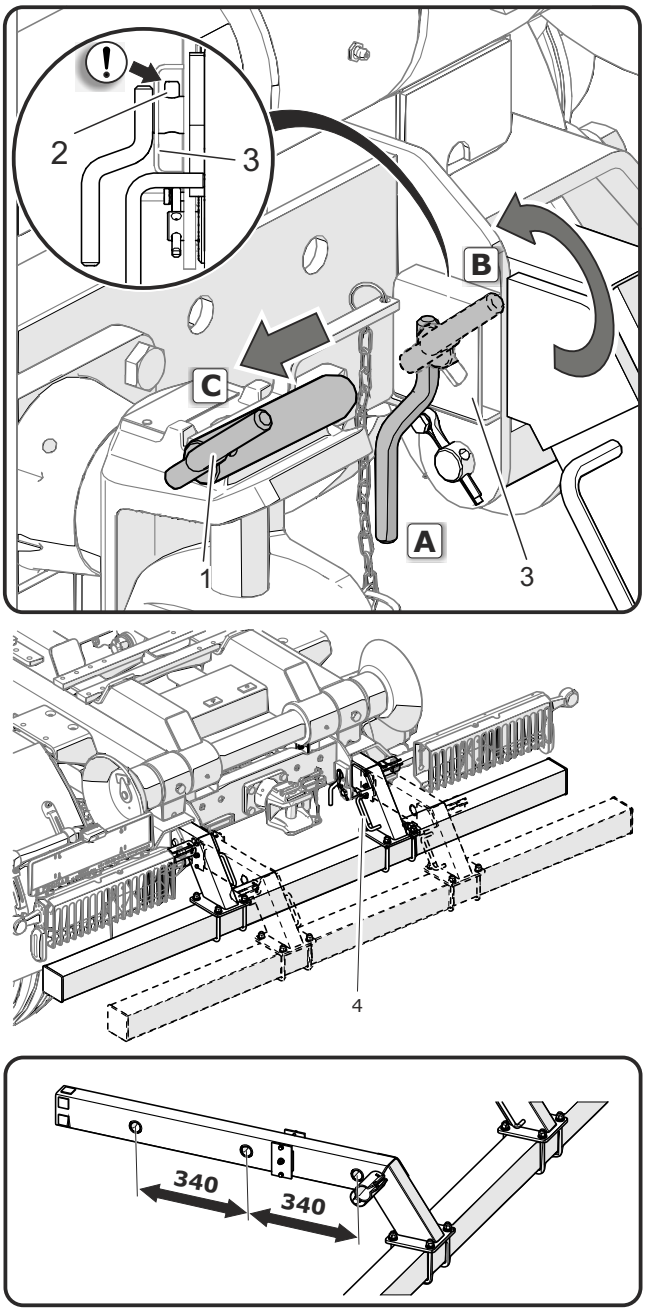

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Figure 4.1 Rear protection

(1) pin holder *(2) pin*

(3) socket plate *(4) beam holder*

MECHANICAL SUPPORT

LIFTING

DANGER

Be careful because of the risk of feet crushing.

CAUTION

Remember that the gear's high gear - position (B) of the crank is only intended for supporting the support if the foot is unloaded. Use this gear only when the foot is not resting on the ground.

- Push the crank (4) in direction (A) - low gear.
- Turn the crank in the direction (C) - counter clockwise to raise the support foot from position (D) to (E).
- If the foot loses contact with the ground, the support transmission can be shifted to a higher gear.

  To do this, pull the crank in the direction (B).
- Turn the bolt (6) with the handle upwards and slide it out of the telescope (2).
- Raise the support foot to the uppermost position (F) by holding the handle (7).
- Insert the pin and secure it.

  Remember! The pin bolt must be between the plate and the telescope.

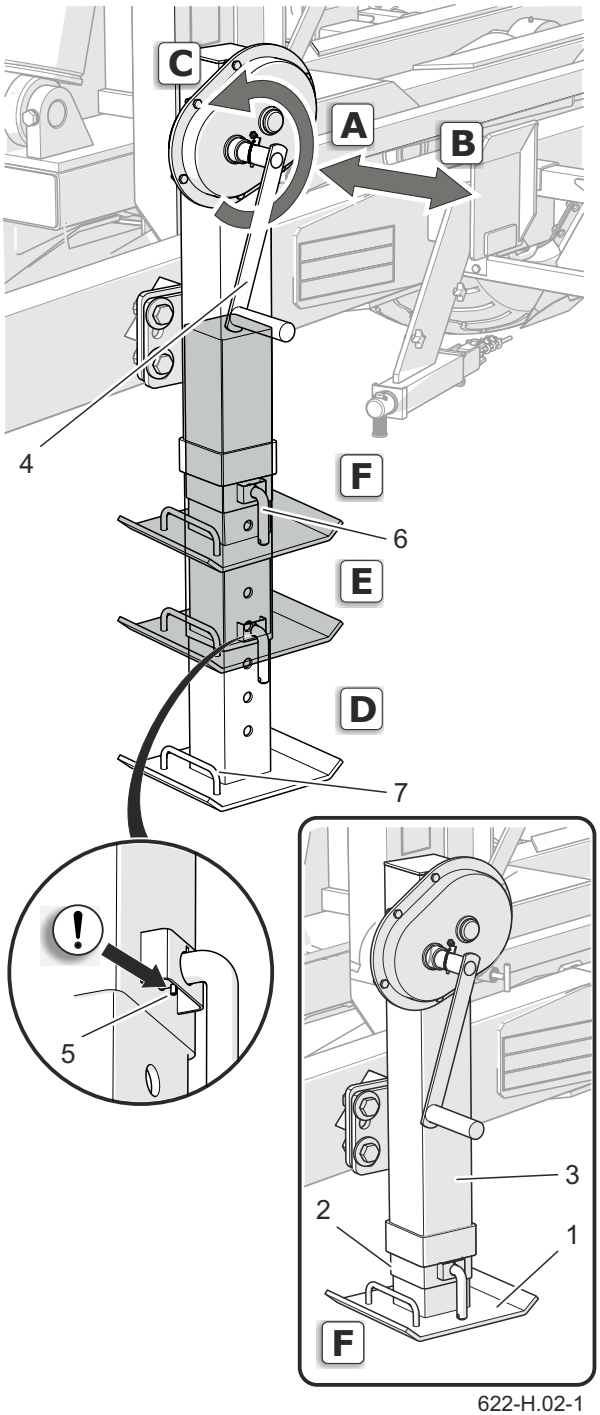

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Figure 4.2 Mechanical support

(1) support foot *(2) telescope*
(3) body (4) crank
(5) spring pin *(6) bolt*
(7) a holder

LOWERING

- Hold the support foot by the handle (7) and remove the bolt (6).

- Set the support foot to the desired position.
- Secure the support foot with a bolt.

  Remember! The bolt of the pin must be between the plate and the telescope.
- Shift the support gear to a higher gear.

  To do this, pull the crank in the direction (B).
- Turn the crank clockwise to lower the support foot to contact the ground.
- Shift the support gear to a lower gear.

  To do this, move the crank in the direction (A).
- Set the support at the desired height.

HYDRAULIC SUPPORT

DANGER

Be careful because of the risk of feet crushing..

- Turn the shut-off valve to the O position - open.
- Using the tractor's external hydraulic lever set the support to the desired height.
- Turn the shut-off valve to the Z position - closed.

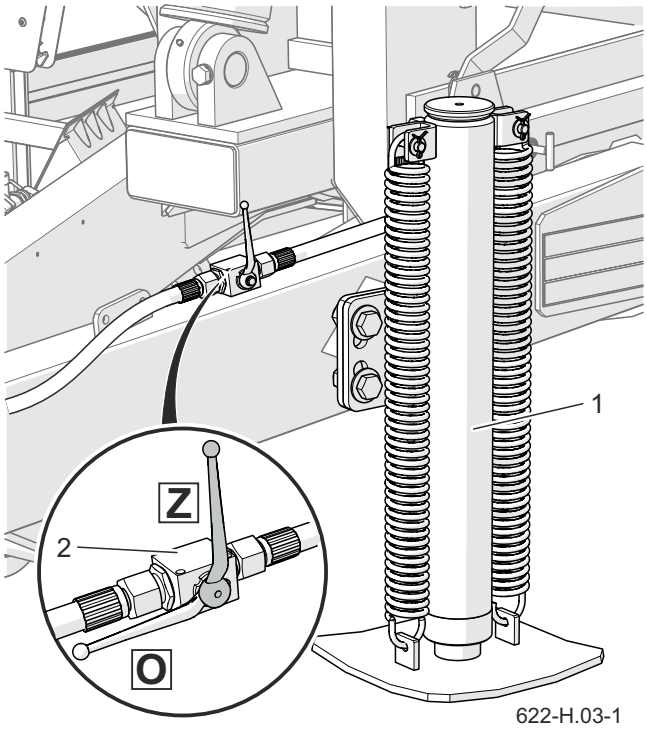

Figure 4.3 Hydraulic support

(1) support *(2) shut-off valve*

TELESCOPIC SUPPORT

LIFTING

LIFTING

Be careful because of the risk of feet crushing.

- After connecting the trailer to the tractor, raise the drawbar slightly upwards using the hydraulic system of the agricultural hitch.
- Turn the bolt (2) with the handle upwards and slide it out of the body.
- Holding the support foot (1) by the handle (3), raise the foot to the extreme upper position.
- Secure the support foot with a bolt.

Remember! The spring bolt of the pin must be between the metal plate and the body.

LOWERING

When lowering the support, proceed in the reverse order to that described above.

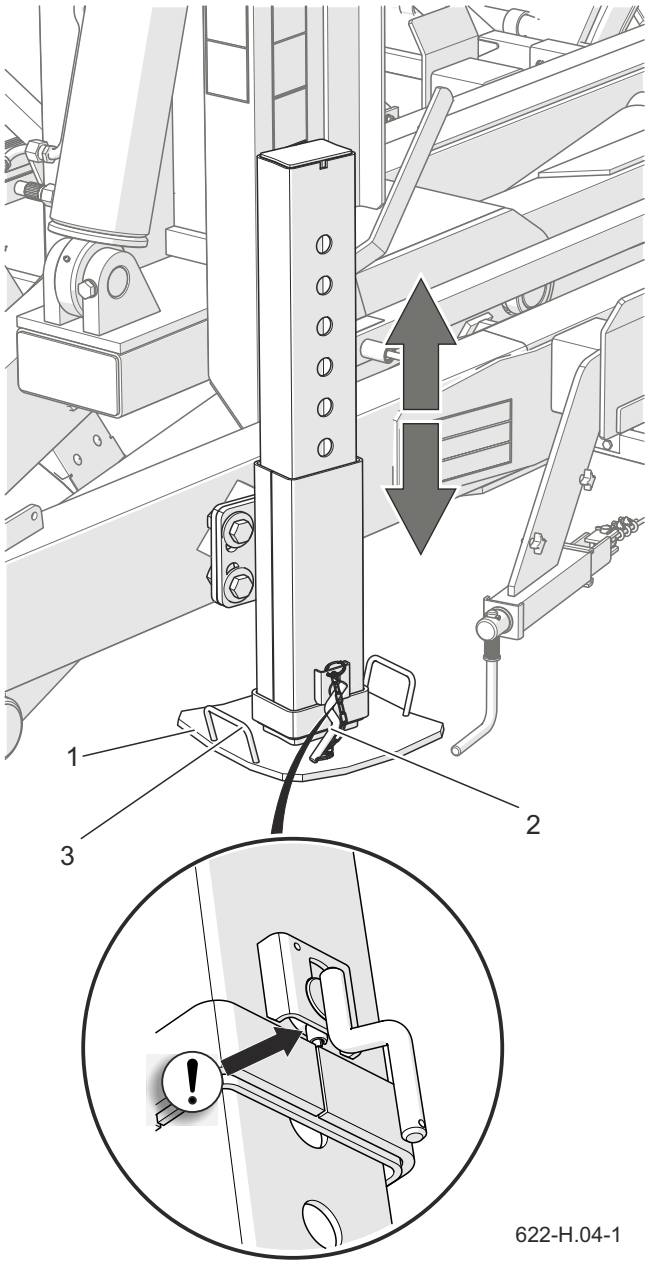

Figure 4.4 Telescopic support
(1) Support foot (2) bolt
(3) handle

SIDE RUNNING SHIELDS

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

LIFTING

- Remove the cotter pin (2) securing the underrun protection.
- Raise the guard to a suitable height so that it can be locked - position (B).
- Secure the cover with the pin in the hole marked with a black arrow in the drawing - position (C).

LOWERING

- Lower the cover in the reverse order.

Remember! The cover should be secured in the lower position with a cotter pin.

CAUTION

Side covers cannot be used as elements helping to get on the trailer. Do not drive with the overrun guard raised. Before driving, make sure the guards are lowered and locked in the down position.
If this is not necessary, do not leave the covers in the raised position.

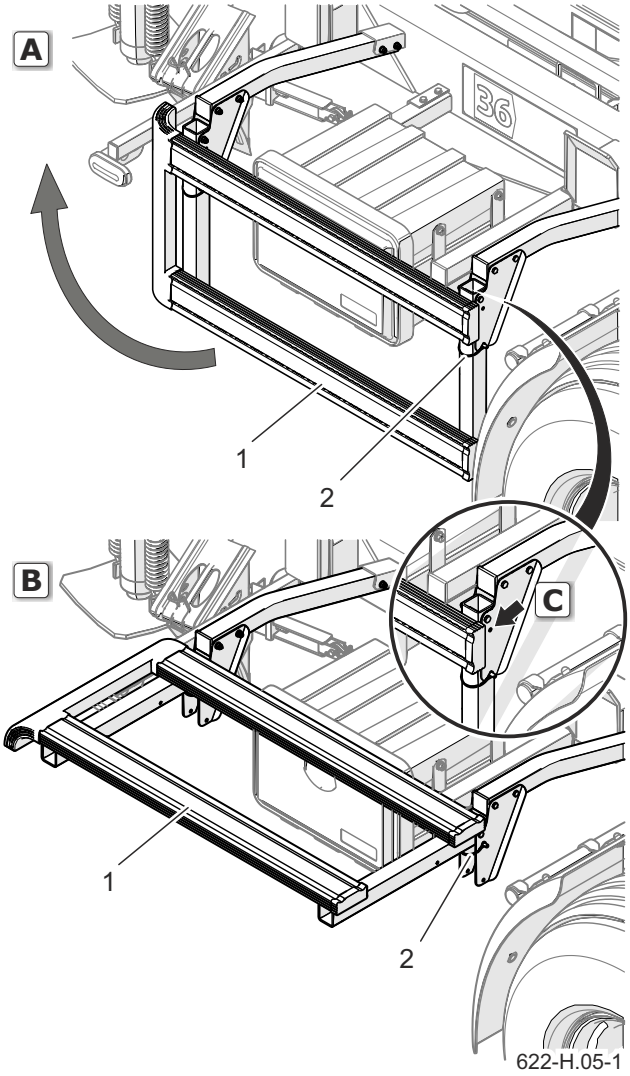

Figure 4.5 Right running shield
(1) The rollover bar (2) cotter
(A) shield in transport position
(B) shield in the raised position
(C) hole for shield lock pin

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4.2 CONNECTING AND DISCONNECTING OF THE TRAILER

CONNECTING OF THE TRAILER

CAUTION

After connecting the trailer, perform a daily inspection of the machine before traveling.
The external examination of the machine without connecting it to the tractor will not allow verification of its technical condition.
Detailed information on inspections is provided in chapter 5.

The trailer can be connected to an agricultural tractor if all connections (electrical, pneumatic, hydraulic) in the agricultural tractor are in accordance with the trailer manufacturer's requirements given in the table Tractor requirements.

PREPARATION

- Make sure the trailer is immobilized with the parking brake.

  Turn the brake mechanism as far as it will go clockwise - Figure (4.6).

- Make sure that blocking wedges are placed under one trailer wheel - Figure (4.7).
- Position the agricultural tractor directly in front of the drawbar eye.

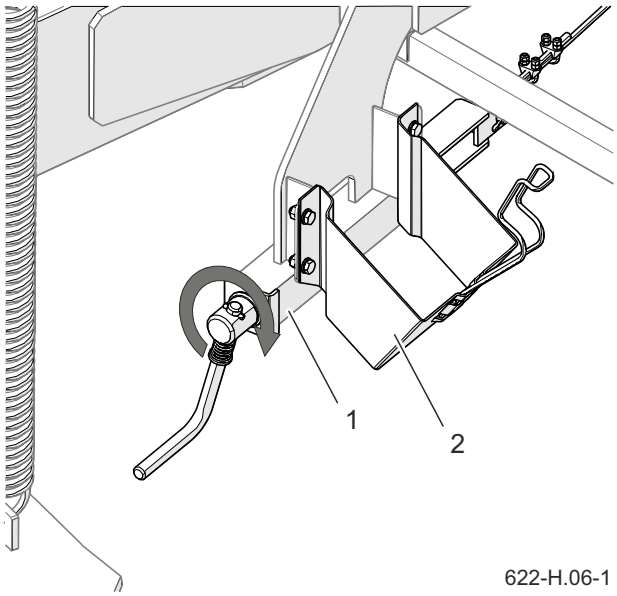

Figure 4.6 Parking brake
(1)brake
(2) wedge pocket

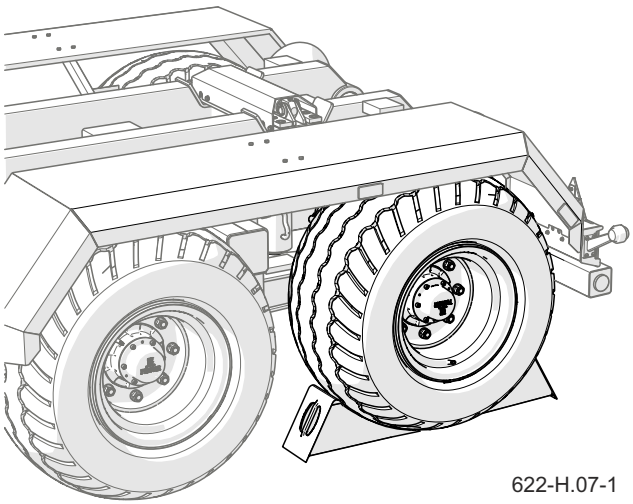

Figure 4.7 Locking wedges

ADJUSTING THE TRAILER NOZZLE HEIGHT

DANGER

During coupling it is forbidden to stand bystanders between the trailer and the tractor. The agricultural tractor operator when connecting the machine should make sure that bystanders are not in the danger zone during coupling. Take care when connecting the trailer.
Ensure good visibility during coupling.
After completing the coupling, check the pin hitch safety..

- If the trailer is equipped with a hydraulic support, first connect the hydraulic hose line marked with sticker (1) - Figure (4.8). Then follow the chapter Hydraulic support.
- In the event that the trailer is equipped with a parking support with mechanical transmission, the adjustment is done using the support transmission - see Mechanical support.
- If the trailer is equipped with a telescopic support, height adjustment of the drawbar eye is not required.

CONNECTING THE TRAILER TO THE TRACTOR HITCH

- everse the tractor and connect the trailer to the appropriate hitch.
- If the trailer is equipped with a telescopic support, the machine may only be aggregated with a tractor equipped with a HITCH. Raise the hitch.
- Check coupling safety device protecting the machine against accidental disconnection.
- If the automatic coupling is used in the tractor, make sure that the aggregation operation is completed and the drawbar eye is secured.
- Move the parking stand to transport position.
- Switch off the tractor engine and remove the ignition key. Secure the tractor with the parking brake. Close the tractor cabin and secure it against unauthorized access.

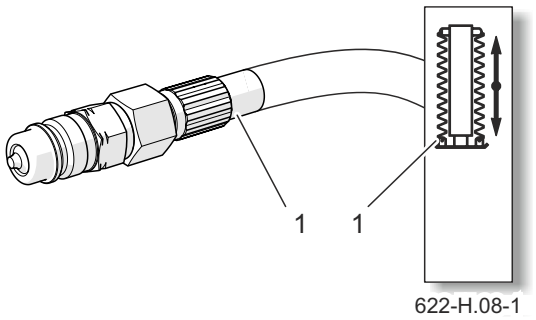

Figure 4.8 Hydraulic connection of the support
(1) Information sticker

THE BRAKE INSTALLATION CONNECTING

- Depending on the configuration of the trailer, connect the connectors of the braking system to the appropriate tractor sockets.
- Connect pneumatic system lines.

  First, connect the yellow plug to the yellow socket on the tractor, and then the red plug to the red socket on the tractor. After connecting the second conduit, the brake release system will switch to normal operation mode (disconnection or interruption of the air conduits causes the trailer control valve to automatically move to the machine braking position).
- If the brakes do not react after connecting the pneumatic hoses, this may indicate a low pressure in the tank. For the system to work, it must be filled with the correct pressure.
- Connect the hydraulic braking system conduit (applies to trailer version with hydraulic braking system).

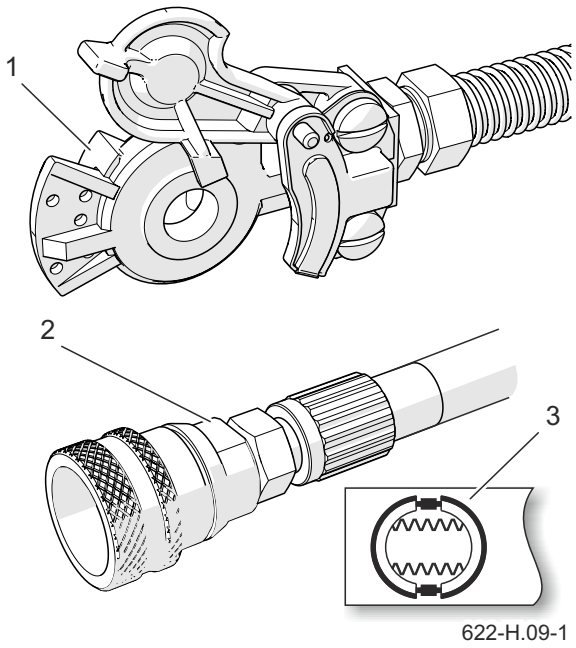

Figure 4.9 Brake system connections
(1) pneumatic plug (red, yellow)
(2) hydraulic plug (3) sticker

UWAGA

Podczas łączenia przewodów pneumatycznych instalacji dwuprzewodowej w pierwszej kolejności podłączyć przewód oznaczony kolorem żółtym a następnie przewód oznaczony kolorem czerwonym.

CONNECTION OF HYDRAULIC SYSTEM

- Depending on the configuration of the trailer, connect hydraulic system connectors to the appropriate tractor sockets.

  The connecting cables have been marked with red plugs Return line with check valve should be connected to the tractor's drain connection „Free sink". If the tractor has no sink

connector, connect the wires to one section. The section control lever on the tractor must have the latch in the on position.

- In the case of a hydraulic system with an oil tank, also connect the articulated telescopic shaft.

CONNECTION OF ELECTRIC LIGHTING SYSTEM

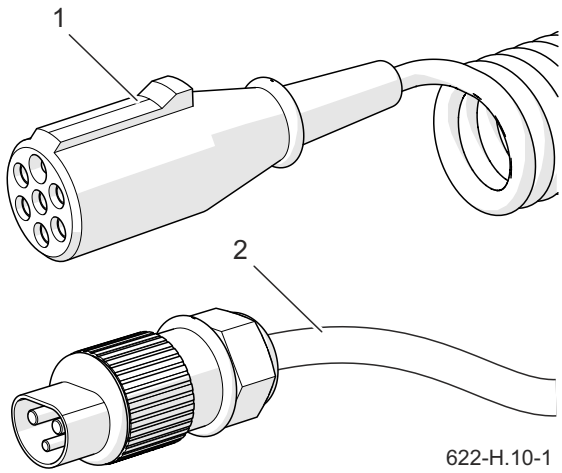

Figure 4.10 Electrical connections
(1) 7-pin cable (2) 3-pin cable

- Connect the main cable (1) supplying the lighting electrical system (7-pin) and connection cable (2) of the hydraulic system (3-pin) to the sockets on the tractor.

If the tractor does not have such or the sockets are of a different type then assembly should be carried out by a qualified person in accordance with the recommendations of the tractor manufacturer.

ADDITIONAL INFORMATION

- After completing the connection of all hoses, make sure that they will not become entangled in moving parts of the tractor or trailer during operation. Secure the cables as necessary.
- Perform a daily inspection of the trailer.
- If the trailer is functional, you can start working.
- Remove the wheel chocks and release the machine's parking brake immediately before starting to drive. Ensure suspension cylinders are retracted.

Turn the crank handle anti-clockwise as far as it will go.

CAUTION

After completing the coupling, secure the hydraulic, braking and electrical lines in such a way that they do not become entangled in the moving parts of the agricultural tractor during travel and are not subject to kinking or cutting when turning.

CAUTION

In the event of a longer standstill of the trailer, it may turn out that the air pressure in the pneumatic braking system is insufficient to release the brake shoes. In this case, after starting the tractor and the air compressor, wait until the air in the pneumatic tank is topped up.

DANGER

The use of defective trailers is forbidden.

TRAILER DISCONNECTING

- Place the trailer on a hard and flat surface.
- Lower the support to parking position.
- If the trailer is equipped with a telescopic support, lower the HITCH drawbar.
- Switch off the tractor engine and remove the ignition key, secure the tractor with the parking brake.
- Immobilize the trailer with parking brake.
- Place blocking wedges under one wheel of the trailer, one in the rear and the other in front of the wheel.

CAUTION

When disconnecting the pneumatic cables of a dual cable, first disconnect the cable marked red and only then the cable marked yellow.
It is forbidden to park the trailer with the container loaded, disconnected from the tractor and supported by the support.
It is forbidden to disconnect the trailer from the tractor if the swing frame or middle frame are not folded and when the suspension lock cylinders are extended.

Take particular care when disconnecting the trailer from the tractor.
Ensure good visibility. Unless it is necessary, do not stay between the trailer and the tractor.
Before disconnecting cables and drawbar eye, close tractor cab and secure it against access by unauthorized persons. The tractor engine must be turned off..

- Disconnect all cables in turn. Secure the ends by fitting the rubber caps on the hydraulic connectors.
- Place the cables on the cable support (1) - Figure (4.12).
- Release the drawbar eye, start the tractor and drive away with the tractor.

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4.3 HOW TO CONNECT AND DISCONNECT THE SECOND TRAILER

CAUTION

It is forbidden to connect a second trailer built on a chassis other than in a two-axle system.

A second trailer may only be connected if it is a machine built on a two-axle chassis and if it meets all the requirements of Chapter 1.

Aggregating a second trailer with a set requires experience in steering an agricultural tractor with a trailer. It is recommended that when coupling the second trailer use the help of another person who will inform the tractor operator about the course of the operation.

CONNECTING A SECOND TRAILER

- Position the tractor with the first trailer attached straight ahead of the second trailer's drawbar.
- Immobilize the second trailer with the parking brake.
- Remove the cotter pin and remove the coupling pin (2) in the first trailer - Figure (4.11).
- Adjust the height of the drawbar of the second trailer so that the machines can be coupled.
- When reversing the tractor drive the rear hitch of the first trailer onto the drawbar of the second trailer.
- Insert the pin and the pin securing pin.
- Connect the brake, hydraulic and electrical wiring in accordance with the instructions in section (4.2).

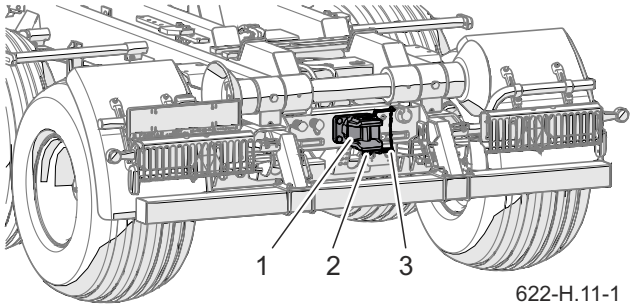

Figure 4.11 Rear hitch
(1) hitch body *(2) hitch pin*
(3)chain with safety pin

DANGER

Nobody may stay between the trailers during coupling/uncoupling. Take special care. The person who helps to aggregate the machine should stand in a place outside the danger zone and be visible at all times by the tractor operator.

DISCONNECTING OF THE SECOND TRAILER

- Immobilize tractor and trailers with parking brake.
- Switch off the tractor engine.
- Close the tractor cabin and secure it

against unauthorized access.

- Disconnect the brake, hydraulic and electric lines according to the instructions in section (4.2).
- Unlock the coupling bolt on the first trailer. Remove the bolt and drive the tractor away.

ADVICE

Before disconnecting the hydraulic hoses, reduce the pressure in the hoses. For this purpose, move the lever of the tractor's external hydraulic system distributor to the floating position with the tractor engine running.

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4.4 HYDRAULIC SYSTEM OPERATION

Depending on the completion of the trailer, the hydraulic system can be operated:

- using the tractor's external hydraulic system,
- by wired remote control (electric control).

OPERATION USING THE TRACTOR'S INTERNAL HYDRAULIC SYSTEM

- Hitch trailer according to the recommendations contained in chapter 4.2.
- Read the instructions for use of the agricultural tractor and follow the instructions of the tractor manufacturer.

OPERATION WITH THE WIRED REMOTE

- Hitch trailer according to the recommendations contained in chapter 4.2.
- With the tractor engine running, move the lever of the tractor's external hydraulic system distributor into the on position or start the tractor PTO drive depending on the hydraulic system option.
- The trailer operation is controlled by means of a remote control - figure (4.13). The functions of the knobs or levers are marked with stickers.
- For remote control, turn the switch (1) to the ON position. and then control the trailer operation by means of switches (2), (3), (4) and (5). In the middle position, the knob is in the neutral position.
- After finishing work, turn off the power by turning the switch to OFF (remote control).
- Switch off tractor PTO drive.

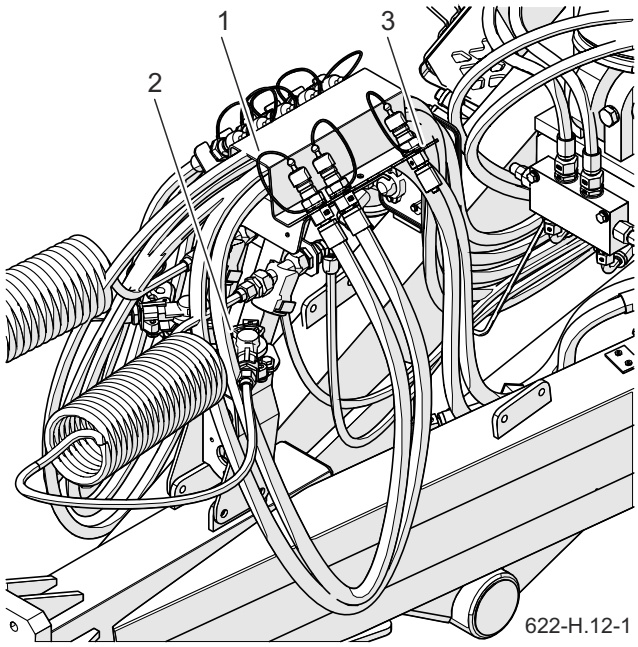

Figure 4.12 Stabling sockets
(1) cable support
(2) pneumatic connector holders
(3) hydraulic connector holders

ADVICE

If the hydraulic installation will not be equipped with a container locking control circuit, then the pilot or distributor will not have the appropriate section to control this circuit - compare Figure (4.13).

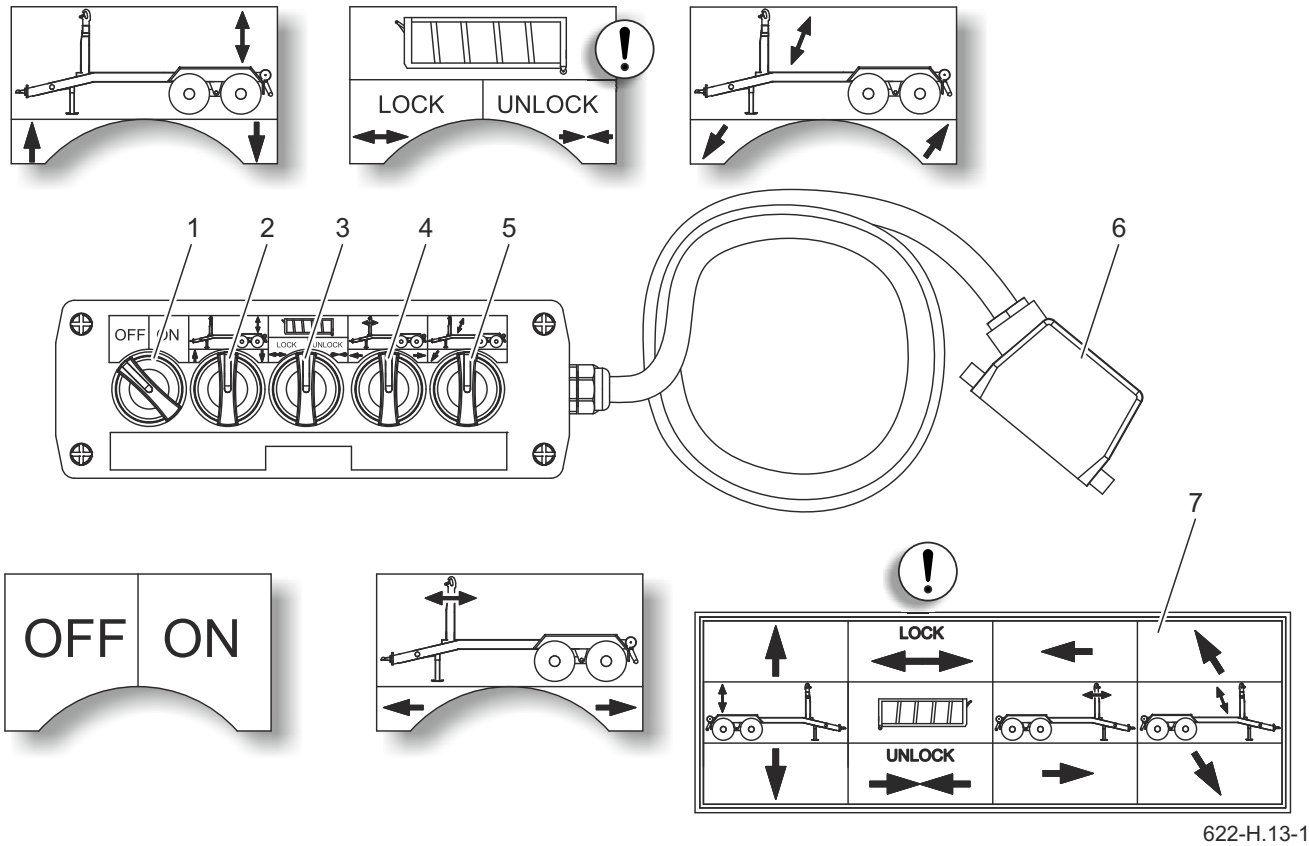

Figure 4.13 Remote control of trailer operation

(1) power switch *(2) suspension lock control* *(3) container lock control*
(4) hook frame control *(5) tipper frame control* *(6) plug*
(7) distributor sticker

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4.5 PULLING IN THE CONTAINER

CAUTION

Container must be lifted/removed on a flat, level, level surface.
If the trailer or container tilts to the side when the container is being pulled in or is not in the axis of symmetry of the trailer, stop connecting and remove the container.

- Retract the rear beam and remove the slow-moving vehicle warning plate.
- If necessary, adjust the position of the hook by setting the appropriate height.
- Lock the suspension using the suspension interlock system cylinders.
- Switch the trailer to the „hook lift" function. Correct switching will be indicated by a lamp next to the „hooklift" symbol. In this function, the container lock will be unlocked (optional for hydraulic function switching with container lock).

  In a system with manual hook lift / tipper switch, pull back the locking bolt (2) - Figure (4.14) and move the lever (1) to position (II) „hook lift".

- Make sure the container lock is retracted.
- Place the tractor and trailer in front of

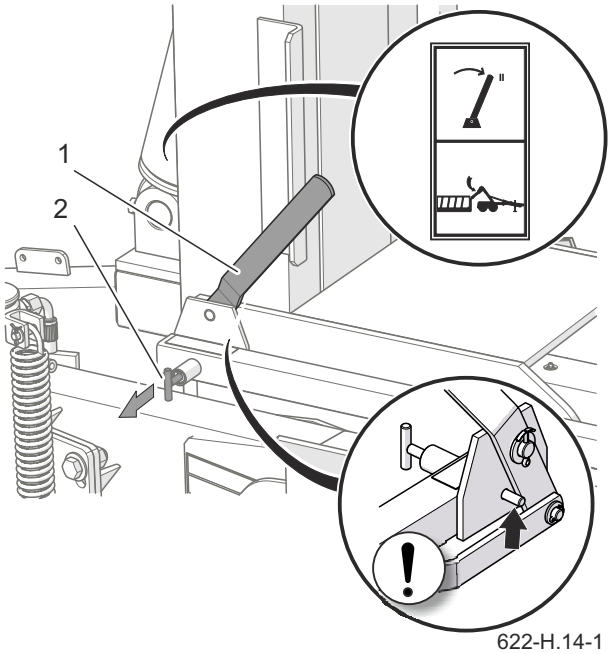

Figure 4.14 Setting the trailer's operating mode
(1) lever *(2) interlocking*

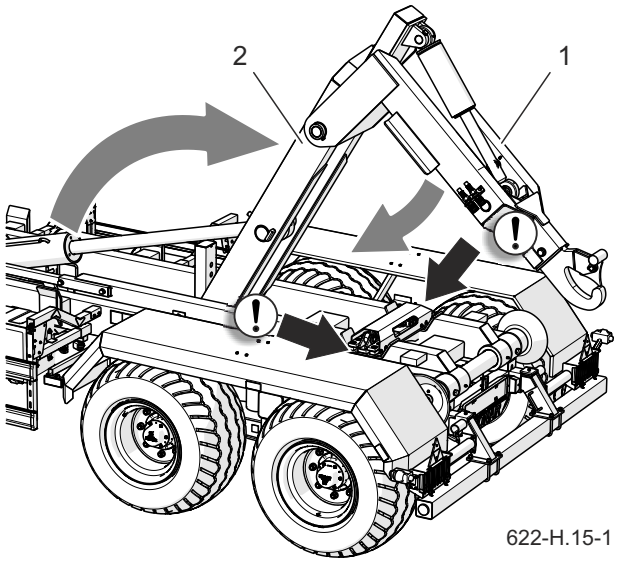

Figure 4.15 Unfolding of the frames
(1) hook frame *(2) internal frame*

CAUTION

After moving the lever to position (II) make sure that the locking pin (2) correctly secures the lever against uncontrolled movement.

CAUTION

When pulling the container in, make sure that the container side members do not stick to the trailer rollers. If so, stop folding the middle frame. Raise the front of the container slightly by folding the hook frame.
Failure to comply may result in unhooking the container, damage to the trailer.

the container in a straight line, about 1 meter from the container hitch.

- Fold out the hook frame as much as possible.
- Swivel the middle frame into the position in which the hook will be at the height of the hitch in the container.
- Reverse the trailer to such a position that it is possible to hook the container, Figure (4.16).
- Fold the hook frame up partially until the front of the container slightly lifts.
- Fold the middle frame to its original position - Figure (4.17)

Make sure that the container side members do not catch the trailer rollers. If so, stop folding the middle frame. Raise the front of the container slightly by folding the hook frame. As soon as the container side members are above the rollers, the middle frame folding can be resumed

- After folding the middle frame to its original position, fully fold the hook frame.
- Insert the suspension interlock cylinders.

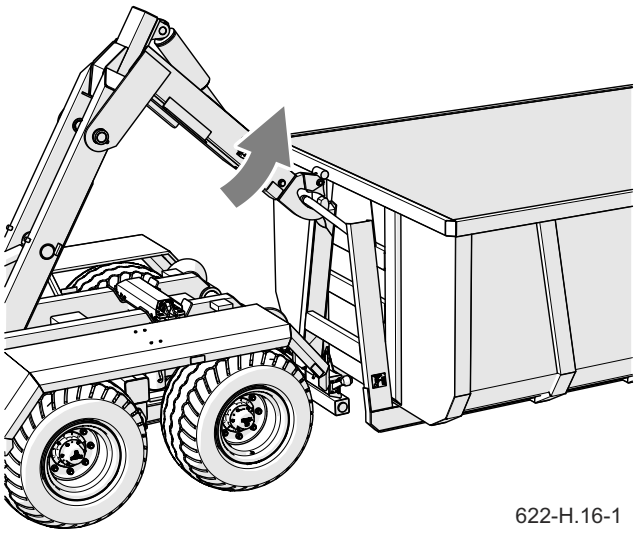

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Figure 4.16 Container connecting

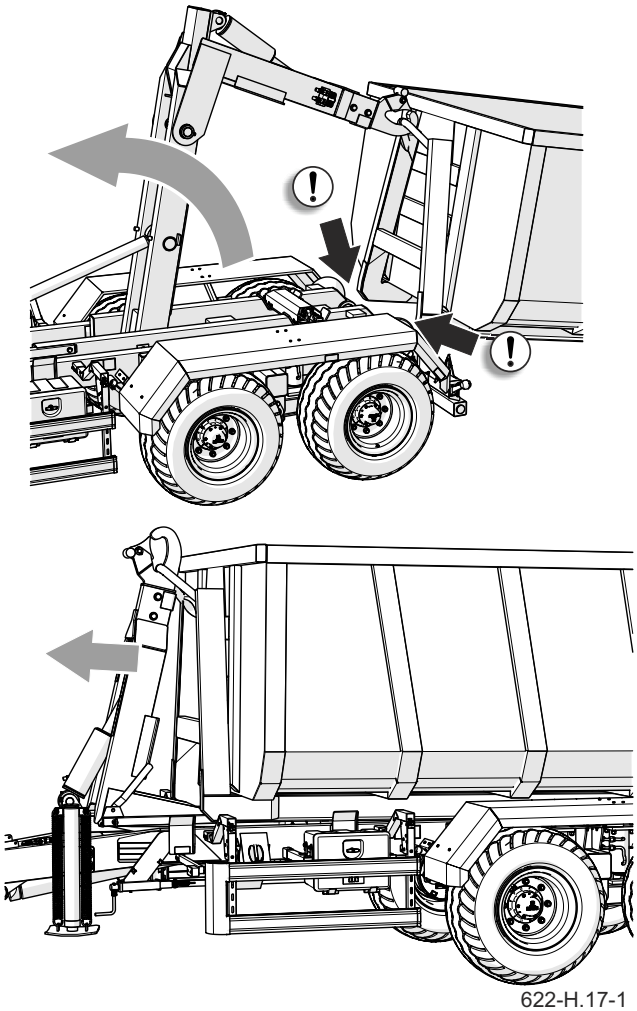

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Figure 4.17 Container pulling

DANGER

When the container is pulled onto the trailer, the drawbar eye and the tractor hitch are subjected to great loads.
It is forbidden for bystanders to stand near the trailer, especially behind the connected container.
Use extreme caution when working near power lines.
When connecting the container, it is prohibited to control the frame lock. The trailer's operating mode can only be selected when the tipping frame is in the rest position.

- Install a slow-moving vehicle warning sign on the back of the container.
- Extend and lock the rear beam so that the distance from the end of the container to the bumper does not exceed 375mm.

In the event of hauling in a container that is not on solid ground, the trailer may be retracted after lifting the container to a height enabling it to be pulled in. The boggy ground makes it impossible smooth rolling of container rolls which makes the pulling in process much more difficult. Tractor retraction and retraction of the container should be performed at the same time with extreme caution.

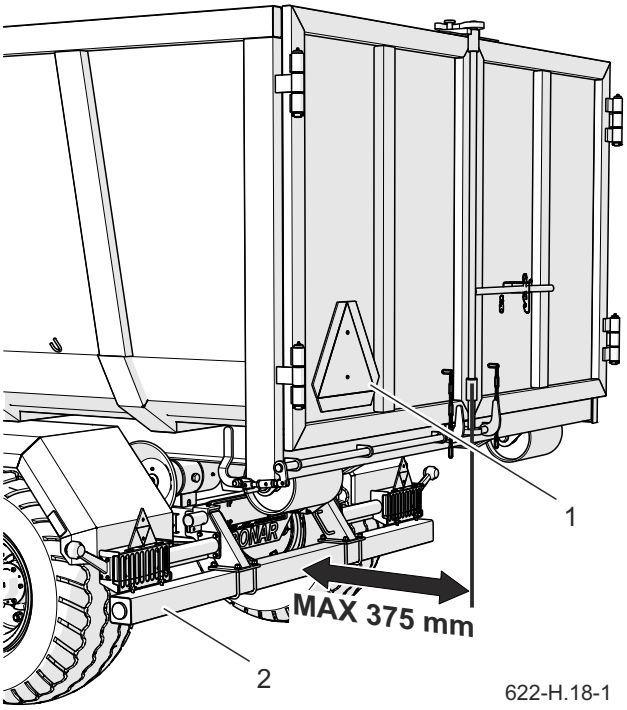

Figure 4.18 Rear beam
(1) able of slow moving vehicles
(2) rear beam

CAUTION

The hook frame is controlled only when the container is unlocked.
Remember not to fold the hook frame completely. Folding the hook frame when connecting the container may prevent its correct locking When moving the short container, make sure that the container rollers do not come in front of the trailer rollers (fenders can be damaged).

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4.6 REMOVING THE CONTAINER

- Place the tractor and trailer on a flat and hard surface. Otherwise the container wheels may sink into the ground and make it difficult to disconnect from the trailer. It is forbidden to leave the container on the slope.
- Position the tractor and trailer for straight-ahead travel.
- Retract the rear beam and remove the slow-moving vehicle warning plate.
- Switch the trailer to the „hook" function. Correct switching will be signaled by a lamp next to the „hooklift" symbol. In this function, the container lock unlocks the container (optional for hydraulic function switching with container lock).

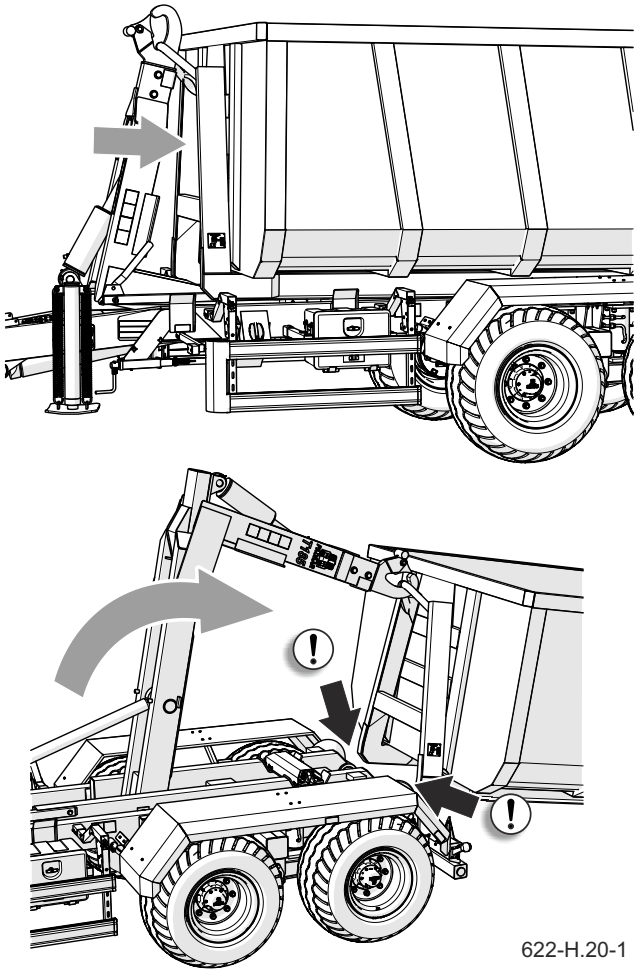

Figure 4.20 Removing the container

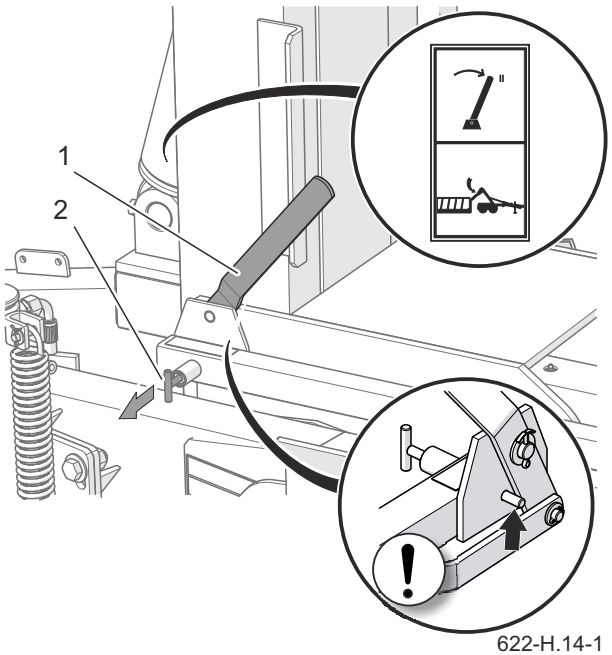

Figure 4.19 Setting the trailer's operating mode
(1) lever (2) interlocking

In a system with manual hook lift / tipper switch, pull back the locking bolt (2) - Figure (4.19) and move the lever (1) to position (II) „hook lift".

- Lock the suspension using the suspension interlock system cylinders.
- Fold the hook frame out completely by moving the container backwards.
- Swing the central frame backwards

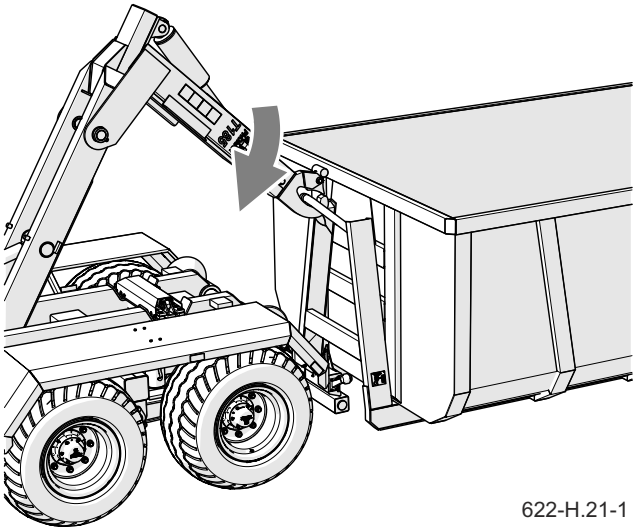

Figure 4.21 Container detachment

CAUTION

When removing the container, make sure that the container side members do not stick to the trailer rollers. If so, stop swinging the middle frame and move the hook frame forward, thus lifting the front of the container. Failure to comply may result in unhooking the container, damage to the trailer.

When removing, make sure that the container side members do not stick to the trailer rollers. If so, stop swinging the middle frame and move the hook frame forward, thus lifting the front of the container. When the front of the container is over the rollers, you can resume tilting the middle frame

CAUTION

When disconnecting the container, make sure that before lowering the container to the ground it does not hit the trailer's structural elements.

- After placing the container on the ground, stop swinging the middle frame.
- Set the hook frame in a position that will allow the hook to be disconnected from the container, and then move away from the container to disconnect it.
- Fold the hook frame and middle frame.
- Insert the suspension interlock cylinders.
- Fit the slow-moving vehicle warning sign.

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4.7 CONTAINER LOADING

Before loading, make sure that the container walls are properly closed and secured. 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 ground. The load in the container should be distributed evenly using the appropriate tools (crane, loader, conveyor, etc.), depending on the type of load. Loading should be done by a person experienced in this type of work and having appropriate authorization to operate the equipment (if required). The type of cargo carried depends on the intended use of the container.

Due to the different density of materials, the use of the total capacity of the container may cause exceeding the permissible load capacity of the hook trailer. It should be remembered that the weight of an empty container plus the weight of its load may not exceed the permissible load capacity of the trailer. Approximate specific weight of selected materials is presented in table (4.1). Therefore, pay special attention not to overload the trailer.

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.

Mineral fertilizers and other materials, the contact of which with painted or steel surface may contribute to damage, it is recommended to transport them in airtight packages (bags, boxes, barrels etc.).

CAUTION

The load should be evenly distributed in the container. It is forbidden to exceed the maximum load capacity of the trailer because it threatens road safety and may cause damage to the machine. Individual types of containers are adapted to transport various groups of materials, therefore the user is required to read the contents of the container manual and follow the recommendations contained therein.

Table 4.1. Approximate volumetric weights of selected loads

Material	Weight [kg/m3]
Root crops:	
raw potatoes	700 - 820
dried potatoes	130 - 150
sugar beets - roots	560 - 720
fodder beets - roots	500 - 700
Organic fertilizers:	
old manure	700 - 800
settled down manure	800 - 900
fresh manure	700 - 750
compost	950 – 1 100
dry peat	500 - 600
Mineral fertilizers:	
ammonium sulphate	800 - 850
potassium salt	1 100 – 1 200
superphosphate	850 – 1 440
basic slag	2 000 – 2 300
potassium sulfate	1 200 – 1 300
kainit	1 050 – 1 440
ground lime fertilizer	1 250 - 1 300
Building Materials:	
cement	1 200 – 1 300
dry sand	1 350 – 1 650
wet sand	1 700 – 2 050
solid bricks	1 500 – 2 100
brick blocks	1 000 – 1 200
stone	1 500 – 2 200
soft wood	300 - 450
hardwood	500 - 600

Material	Weight [kg/m3]
impregnated timber	600 - 800
steel structures	700 – 7 000
ground quicklime	700 - 800
slag	650 - 750
gravel	1 600 – 1 800
Plants litter and bulky feed:	
dry meadow hay on the swath	10 - 18
hay wilted on the swath	15 - 25
hay in a collecting trailer (dry, wilted)	50 - 80
withered hay cut	60 - 70
dry pressed hay	120 - 150
withered pressed hay	200 - 290
dry hay stored	50 - 90
cut hay stored	90 - 150
clover (alfalfa) wilted on the swath	20 - 25
clover (alfalfa) withered cut on a trailer	110 - 160
clover (alfalfa) wilted on a collecting trailer	60 - 100
dry clover stored	40 - 60
dry clover stored cut	80 - 140
dry straw in rollers	8 - 15
moist straw in rollers	15 - 20
moist straw cut on a volume trailer	50 - 80
dry straw cut on a volume trailer	20 - 40
dry straw on a collecting trailer	50 - 90
dry straw cut in a haystack	40 - 100
pressed straw (low compaction)	80 - 90
pressed straw (high compaction)	110 - 150
cereal mass cut on a volume trailer	35 - 75
grain mass on a collecting trailer	60 - 100
green forage	28 - 35
green fodder cut on a volume trailer	150 - 400

Material	Weight [kg/m3]
forage on a collecting trailer	120 - 270
fresh beet leaves	140 - 160
fresh cut beet leaves	350 - 400
beet leaves on a harvesting trailer	180 - 250
Concentrated feed and compound feed:	
stored chaff	200 - 225
oilcake	880 – 1 000
dried mince	170 - 185
compound feed	450 - 650
mineral mixtures	1 100 – 1 300
oat middlings	380 - 410
wet beet pulp	830-1 000
beet pressed pomace	750 - 800
dry beet pulp	350 - 400
bran	320 - 600
bone meal	700 – 1 000
fodder salt (1)	1 100 – 1 200
molasses	1 350 – 1 450
silage (underground silo)	650 – 1 050
silage hay (tower silo)	550 - 750
Seeds:	
broad bean	750 - 850
mustard	600 - 700
pea	650 - 750
lentil	750 - 860
bean	780 - 870
barley	600 - 750
Clover	700 - 800
grass	360 - 500
maize	700 - 850
wheat	720 - 830

Material	Weight [kg/m3]
rape	600 - 750
flax	640 - 750
lupine	700 - 800
oat	400 - 530
alfalfa	760 - 800
rye	640 - 760
Other:	
dry soil	1 300 – 1 400
wet soil	1 900 – 2 100
fresh peat	700 - 850
gardening land	250 - 350

Source: „Technologia prac maszynowych w rolnictwie”, PWN, Warsaw 1985

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4.8 TRANSPORT OF LOAD

When driving on roads (public and non--public), comply with traffic regulations, be prudent and considerate. Follow this instruction and pay special attention to the instructions below for driving the tractor with the trailer attached.

- 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.
- Vertical load carried by the trailer drawbar eye affects the steering of the agricultural tractor.
- When moving the trailer with loaded container on public roads, the maximum distance of the rear bumper (anti-overrun device) from the point of the vehicle which is the most rearward (container) should not exceed 375 mm.
- For the version with hydraulic function switching when transporting the container, the trailer must be switched to the „tipper" function in order to block the container.
- When transporting the container, the container lock must be locked which prevents the container from shifting and bouncing when being transported on a trailer.
- The trailer must not be overloaded, the load must be distributed evenly in such a way that it does not exceed the permissible loads on the trailer's chassis and hitch. Exceeding the maximum load capacity of the trailer 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 may be towed on slopes up to 5°, unloading should only be carried out on level ground.
- 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 creating danger to other road users and mark the stopping place in accordance with traffic regulations.
- When traveling on public roads, the trailer must be marked with a slow--moving vehicle warning sign, placed on the rear chassis beam (in the case of a trailer without a container), or on the rear wall of the container.
- 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 with the help of direction indicators, keep clean and take care of the technical condition of the lighting and signaling installation. Damaged or lost lighting and signaling components should be immediately repaired or replaced with new ones.
- Avoid ruts, depressions, ditches, or driving along roadside slopes. Driving through such obstacles can cause the trailer and tractor to tilt suddenly. This is particularly important because the center of gravity of the laden trailer adversely affects driving safety. Driving near the edges of ditches or channels is dangerous because of the risk of landslides under the wheels of a trailer or tractor.
- Reduce your speed sufficiently in advance of approaching bends, when driving on uneven or sloping terrain.
- When driving, avoid sharp turns, especially on slopes.
- Control the behavior of the trailer when traveling on uneven terrain and adjust the speed to terrain and road conditions.
- During trailer travel (with or without container), suspension lock cylinders must be fully raised.
- 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.

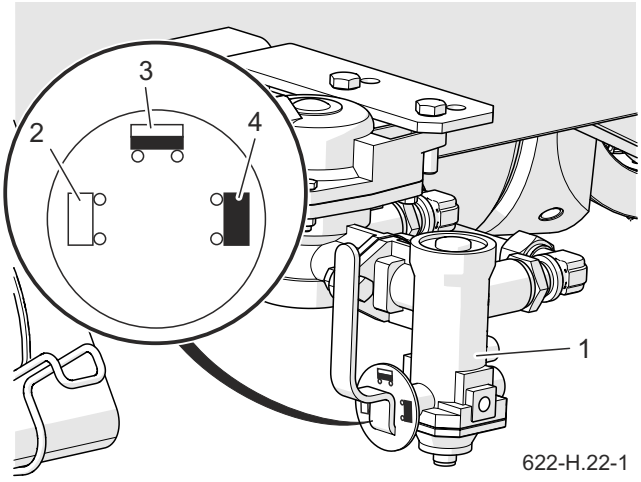

Figure 4.22 Braking force regulator
(1) regulator
(2) NO LOAD position
(3) HALF-LOAD position
(4) FULL LOAD position

- Before starting to drive, adjust the braking force of the trailer by adjusting the braking force regulator lever - Figure (4.22).
- When driving the trailer on roads (public and private) remove the protective grilles for rear combination lamps and fix them on the other side of the lighting beam profiles with star nuts.

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4.9 UNLOADING

The unloading of materials in the container is done by tipping the container backwards. The trailer is unloaded in the following order:

- The tractor and trailer should be placed for straight ahead on flat, level and hard ground.
- Immobilize tractor and trailer with parking brake.
- Extend the suspension interlock cylinders.
- Insert the rear bumper of the trailer as far as possible and secure it against sliding.
- Open the rear wall of the container and secure it against accidental closing.

  Be particularly careful when opening, as the load can put a lot of pressure on the wall that you are opening.

- Switch the trailer to the „tipper" function. Correct switching will be signaled by a lamp next to the dumper symbol. In this function, the container lock will lock the container (optional for hydraulic function switching with container lock).

  In a system with manual hook lift/tipper switch, pull back the locking bolt (2) and put the lever (1) in position (I) „tipper" - Figure (4.23).

- Raise the swing frame with the container and unload the container.

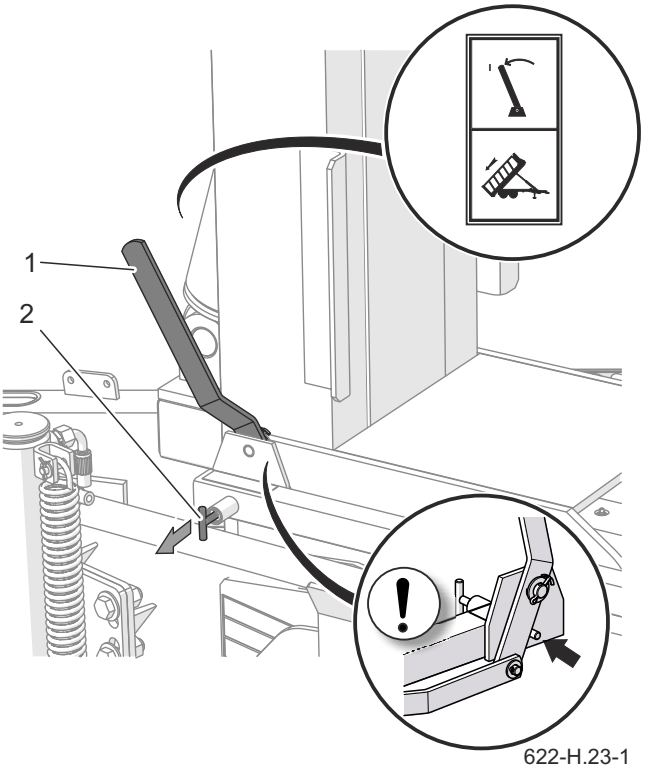

Figure 4.23 Setting the trailer's operating mode
(1) lever (2) interlock

Tipping may only be carried out when the trailer is connected to the tractor.
It is forbidden to tilt the container during strong gusts of wind.
It is forbidden to start or drive with a raised container.
Use extreme caution when working near power lines.
Take care when opening container closures, due to pressing the load on the walls.
Be careful when closing the container wall to avoid crushing your fingers. Make sure that during unloading nobody is near the tilted container and the falling load.

CAUTION

If at the initial stage the swing frame cannot lift the container, lower the swing frame completely, retract the container lock and use the hook frame to move the container back, pull out the container lock and raise the swing frame with the container again.

- Lower the swing frame after unloading.
- If required, move the container completely forward using the hook frame.
- Clean container edges and trailer elements from cargo residues.
- Close and secure rear wall of container.
- Slide hydraulic cylinder suspension blocks maximally upwards.
- Extend and lock the rear beam so that the distance from the end of the container to the bumper does not exceed 375mm.
- Secure the container with the container lock.

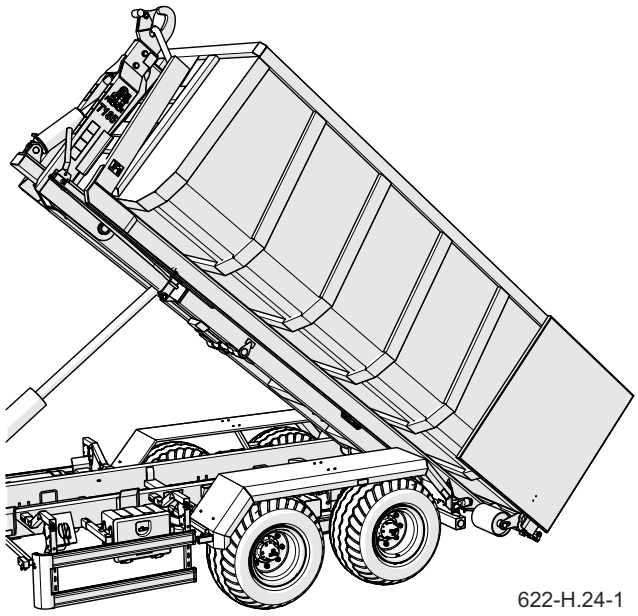

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Figure 4.24 Trailer tipping

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4.10 RULES OF THE TIRES USING

- When working on fire, secure the machine against rolling away by placing wedges under the wheel. 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 the recommendations contained in the MAINTENANCE chapter.
- Regularly check and maintain proper pressure in tires as recommended in the instructions (especially after a long period of non-use of 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.
- Valves must be secured with suitable caps to avoid soiling.
- Do not exceed the maximum trailer speed.
- Take a minimum of one hour break at noon during the whole day cycle.
- Observe 30 minutes breaks for cooling tires after driving 75 km or after 150 minutes of continuous ride depending on what comes first.
- Avoid damaged surfaces, sudden and variable maneuvers, and high speeds when turning.

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4.11 CLEANING OF THE TRAILER

The trailer should be cleaned depending on demand and before a longer standstill (e.g. before winter). 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.

GUIDELINES FOR CLEANING THE TRAILER

- To clean the trailer, use only clean running water or water with a cleaning detergent additive with a neutral pH.
- The use of pressure washers increases the cleaning efficiency, 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°C.
- Do not direct the water jet directly at the elements of the installation and equipment of the trailer, i.e. the control valve, braking force regulator, brake cylinders, hydraulic cylinders, pneumatic, electric and hydraulic plugs, lights, electrical connectors, information and warning decals, rating plate, connectors conduits, trailer lubrication points, etc. High pressure water jets can cause mechanical damage to these components.
- For cleaning and maintenance of plastic surfaces, it is recommended to use clean water or special preparations intended for this purpose.
- Do not use organic solvents, preparations of unknown origin or other substances that may damage the painted, rubber or plastic surface. It is recommended to carry out the test on an invisible surface in case of doubt.
- Surfaces stained with oil or 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 to be washed should be stored in their original containers, or in replacement containers, but very clearly marked. The preparations cannot be stored in containers intended for storing food and beverages.

DANGER

Refer to the instructions for using cleaning detergents and preservatives.
When washing with detergents, wear suitable protective clothing and eye protection.

- Ensure cleanliness of flexible hoses and gaskets. 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.
- Observe environmental protection principles, wash trailer in designated places.
- Washing and drying the trailer must take place at temperatures above 0°C.
- After washing, wait for the trailer to dry and then grease all control points as recommended. Wipe off excess grease or oil with a dry cloth.

H.3.4.622.11.1.EN

4.12 STORAGE

- It is recommended that the trailer be stored indoors or under a roof.
- If the machine will not be used for a long period of time, it must be protected against the effects of weather conditions, especially those that cause corrosion of steel and accelerate the aging of tires. 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 color scheme.
- In the event of a longer stop, it is necessary to grease 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 your tire pressure from time to time, and if necessary inflate the wheels to the correct value.
- PTO shafts should be stored in a horizontal position.

H.3.4.622.12.1.EN

CHAPTER 5

PERIODIC INSPECTIONS

5.1 GENERAL 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 machine user is obliged to perform all maintenance, control and adjustment activities specified by the Manufacturer in accordance with the assumed schedule.

Repairs during the warranty period may only be carried out by Authorized Sales and Service Points (APSiO).

In the event of unauthorized repairs, changes to factory settings or activities which were not considered to be possible by the trailer operator (they were not described in this manual), this user loses the warranty. The trailer's warranty review is only carried out by an authorized service center.

After the warranty expires, it is recommended that inspections be carried out by specialized repair workshops.

DANGER

It is forbidden to use a damaged trailer. The trailer may only be towed when the braking system, drawbar and running gear are functional.
Repairs during the warranty period may only be carried out by authorized service centers.

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5.2 SCHEDULE OF PERIODIC INSPECTIONS

Table 5.1. Categories of inspections

Category	Description	Respon-sible	Frequency
A	Daily review	Operator	Every day before first start-up or every 10 hours of continuous shift work.
B	Maintenance	Operator	The inspection is carried out periodically every 1000 kilometres travelled or every month the trailer works, whichever comes first. Each day before carrying out this review, perform a daily check.
C	Maintenance	Operator	Inspection carried out periodically every 3 months. Each time before carrying out this inspection, a daily inspection and inspection every 1 month of trailer use should be performed..
D	Maintenance	Operator	Inspection carried out periodically every 6 months. Each time before carrying out this inspection, a daily inspection, inspection every 1 month of trailer use and inspection every 3 months should be performed.
E	Maintenance	Operator	Inspection carried out periodically every 12 months. Each time before carrying out this inspection, a daily inspection, inspection every 1 month of trailer use and inspection every 3 months should be performed.
F	Maintenance	Serwis (1)	Inspection carried out every 4 years of trailer use

(1) - post-warranty service

Table 5.2. Schedule of periodic inspections

Description of activities	A	B	C	D	E	F	Page
Checking the air pressure in the wheels	•						5.7
Air tank drainage	•						5.8
Checking plugs and connection sockets	•						5.9
Shield control	•						5.10
Checking the trailer before driving off	•						5.11
Checking the signaling and protection system	•						5.31
Measuring air pressure, checking tires and wheels		•					5.12
Cleaning the air filters			•				5.13
Checking brake lining wear				•			5.14
Checking the clearance of the axle bearings				•			5.15
Checking the mechanical brakes				•			5.16
Cleaning the drain valve				•			5.17
Checking the parking brake cable tension					•		5.18
Checking the hydraulic system					•		5.19
Pneumatic system control					•		5.20
Lubrication	See table: Trailer lubrication schedule						5.25
Checking screw connections	See chapter: Checking screw connections						5.21
Replacement of hydraulic hoses						•	5.30
Replacement of limit valves and limit switches						•	5.32

Table 5.3. Control parameters and settings

Descriptions	Value	Remarks
Hook height		
Location I	1 450 mm	
Location II	1 570 mm	
Braking system		
Piston rod stroke in pneumatic systems	25 - 45 mm	
Piston rod stroke in hydraulic systems	25 - 45 mm	
Piston rod stroke in pneumatic and hydraulic systems	25 - 45 mm	
Minimum brake lining thickness	5 mm	
Angle between the spreader axis and the fork	90^{O}	With the brake de-pressed
Parking brake		
Permitted parking brake cable clearance	20 mm	

I.3.4.622.02.1.EN

5.3 PREPARATION OF TRAILER

DANGER

Secure the tractor cabin against unauthorized access.
When working with the lift, the user must read the instructions for this device and follow the manufacturer's instructions. The lift must stand firmly against the ground and trailer elements.
Before starting maintenance and repair work with the trailer raised, make sure that it is properly secured and will not roll during operation.

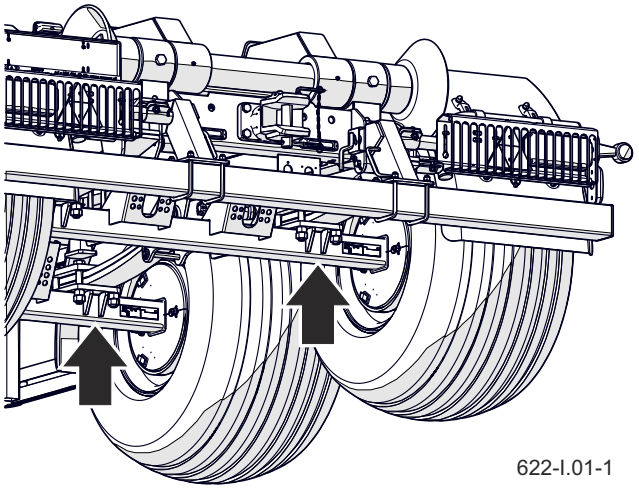

Figure 5.1 Recommended lift substitution points

- Hitch trailer to tractor.
- Place the tractor and trailer on firm and level ground. Position the tractor for straight-ahead travel.
- Apply the tractor parking brake.
- Switch off the tractor engine and remove the ignition key. Close the tractor cabin, thus securing the tractor against unauthorized access.
- Place blocking wedges under trailer wheel.

  Make sure the trailer will not roll during the inspection.
- W If the wheel needs to be raised during the inspection, place the locking wedges under the wheel on the opposite side. Place the support in places marked with an arrow.

  The lift must rest on a firm and stable surface.
- The lift must be adjusted to the weight of the trailer.
- In exceptional cases release the parking brake of the trailer, e.g. when measuring the play of the axle bearings. Take special care then

I.3.4.622.03.1.EN

5.4 THE WHEEL PRESSURE INSPECTION

- Visually assess the inflation rate of the road wheels.
- If necessary, check the air pressure with a manometer and inflate the wheel to the required pressure.

The required air pressure is described on a sticker (1) on the rim.

CAUTION

Using the trailer in which tires are not properly inflated may lead to permanent damage to the tire as a result of delamination of the material.
Incorrect tire pressure is also a reason for faster tire wear.

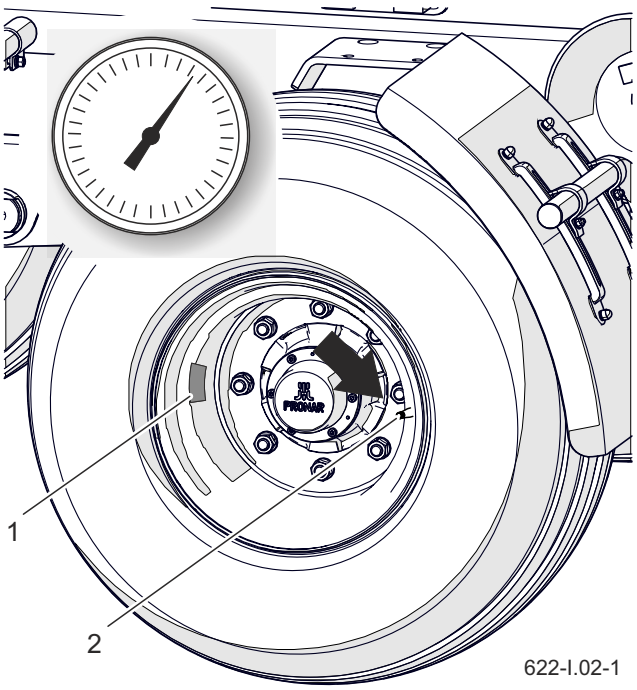

Figure 5.2 Trailer wheel
(1) sticker *(2) valve*

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5.5 AIR TANK DRAINAGE

- Press the stem of the drain valve (1) located at the bottom of the tank (2).

  The compressed air in the tank will remove water outside.

- After releasing the stem, the valve should close automatically and stop the flow of air from the tank.
- If the valve stem does not want to return to its position, wait until the tank is empty. Then unscrew and clean or replace the valve with a new one.

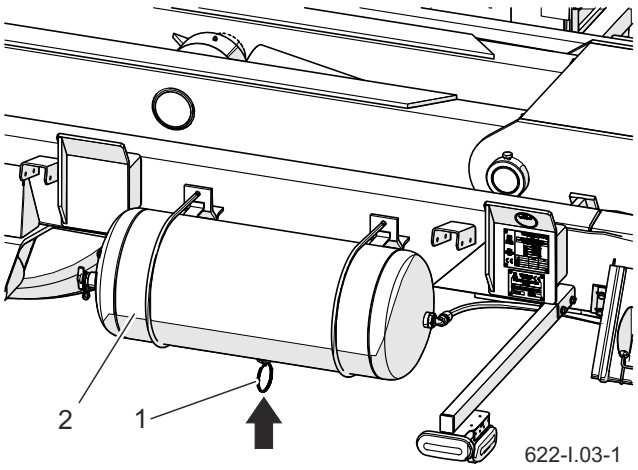


Figure 5.3 Air tank
(1) drain valve *(2) air tank*

I.3.4.622.05.1.EN

5.6 PLUGS AND CONNECTION SOCKETS INSPECTION

A damaged connector body or socket for connecting a second trailer qualifies them for 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 gasket using preparations designed for this purpose (e.g. silicone lubricants for rubber parts).

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

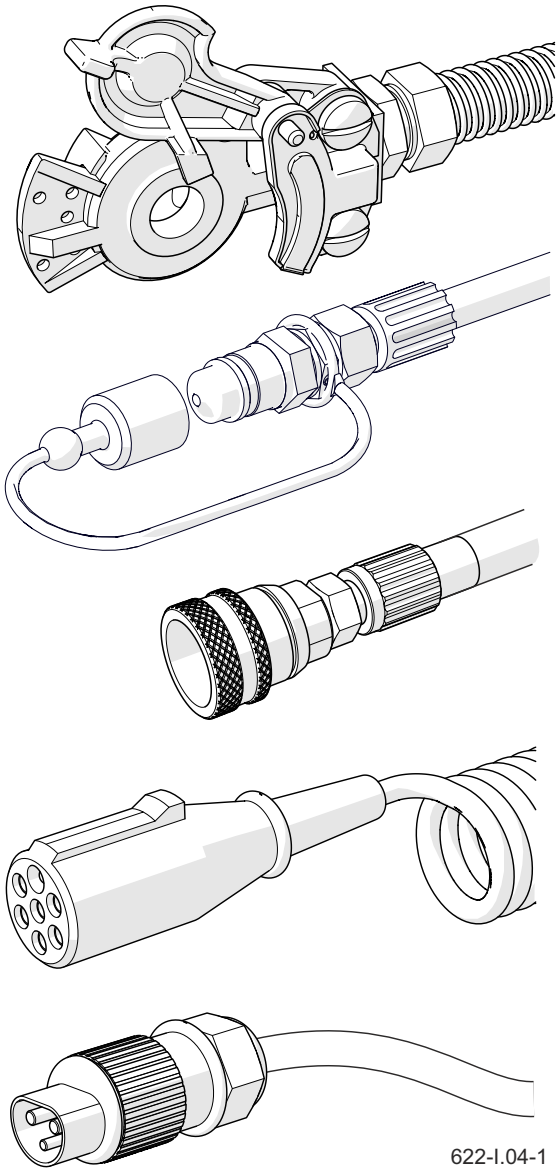


Figure 5.4 Examples of trailer connections

I.3.4.622.06.1.EN

5.7 GUARDS INSPECTION

Guards protect the trailer user against loss of health or life or constitute a protective element of machine components. Therefore, their technical condition must be checked before commencing work. Damaged or lost components must be repaired or replaced with new ones

SCOPE OF ACTIONS

- Check the completeness of the safety guards.
- Check that the covers are mounted correctly. Check that the side underrun guards and rear beam are in good working order.
- Check the condition of the mudguards.
- Check PTO shaft cover and PTO shaft covers.
- Check correct locking of the rear beam pins.
- Check completeness of mudguards.
- If necessary, tighten the screw connections of the mudguards.

DANGER

It is forbidden to use the trailer with damaged or incomplete covers

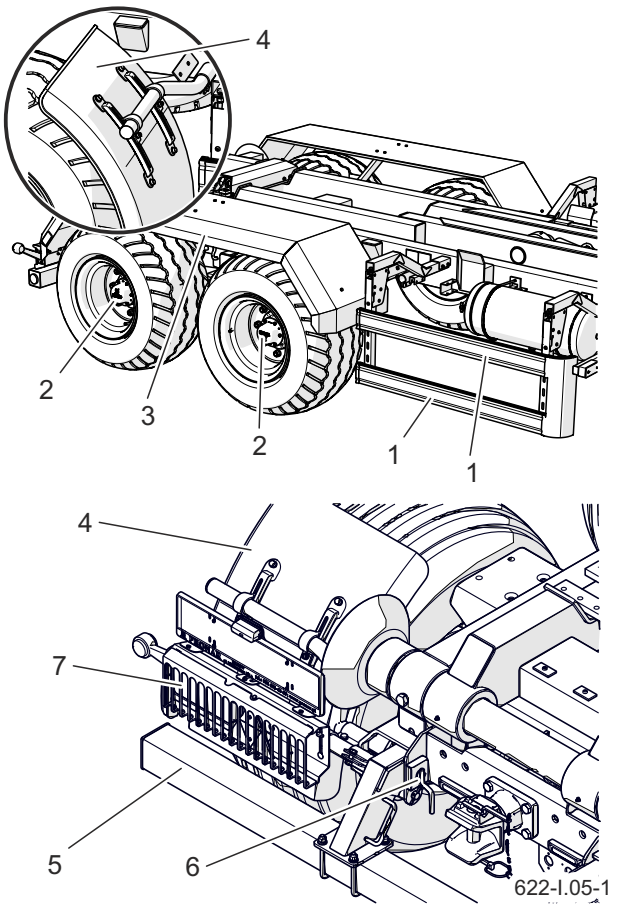


Figure 5.5 Trailer guards

(1) side guard *(2) axle mudguards*
(3) steel guard *(4) plastic guard*
(5) rear beam *(6) beam bolt*
(7) rear light cover

I.3.4.622.07.1.EN

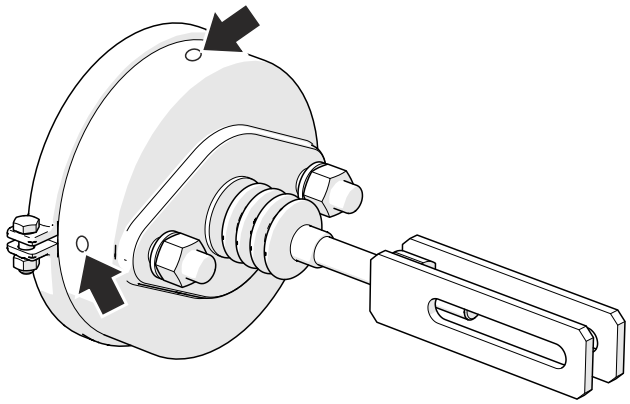
5.8 CHECKING THE TRAILER BEFORE DRIVING

- Before connecting the trailer to the tractor make sure that the hydraulic and pneumatic conduits are not damaged.
- Check the completeness, technical condition and correct functioning of the trailer lighting.
- Check the cleanliness of all electric lamps and reflectors.
- Before traveling on a public road, remove the rear lamp covers and place them in the designated place.
- Check the correct installation of the triangular plate holder for slow moving vehicles and the plate itself.
- Make sure that the tractor has a reflective warning triangle.
- 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 if necessary. In winter, it may be necessary to thaw the actuator and remove accumulated water through the vent holes. If any damage is found, replace the actuator. When mounting the actuator, keep its original position relative to the bracket.

DANGER

Driving with malfunctioning lighting or braking installations is prohibited.
In the event of damage to the trailer, discontinue use until it is repaired.



622-I.06-1

Figure 5.6 Brake cylinder

- Check the operation of the service brake system when moving away. For proper operation of the pneumatic system, an appropriate level of air pressure in the trailer air tank is required.
- Regularly check the correct operation of other systems during trailer operation.

I.3.4.622.08.1.EN

5.9 MEASUREMENT OF AIR PRESSURE, TIRES AND RIMS CHECK

During pressure measurement the trailer must be unloaded. The check should be carried out before driving off, when the tires are not warmed up, or after a longer stand-still of the trailer.

SCOPE OF ACTIONS

- Connect a pressure gauge to the valve.
- Check air pressure.
- If necessary, pump the wheel to the required pressure.

  The required air pressure is described on a sticker (1) on the rim.

- Check tread depth.
- Check the sidewall of the tire.
- Inspect the tire for defects, cuts, deformations, protrusions that indicate mechanical damage to the tire.
- Check that the tire is correctly positioned on the rim.
- Check the tire age.

When checking pressure, pay attention to the technical condition of rims and tires. In the event of mechanical damage, consult your nearest tire service center and make sure that the tire defect is eligible for replacement.

The rims should be checked for deformation, material cracks, weld cracks, corrosion, especially around the welds and in the place of contact with the tire

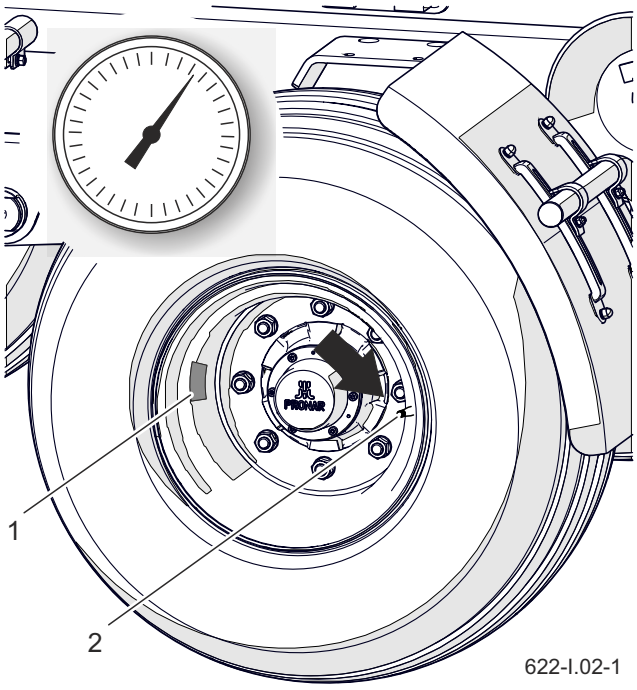


Figure 5.7 Trailer wheel
(1) sticker *(2) valve*

ADVICE

In the event of intensive use of the trailer, we recommend more frequent pressure checks.

CAUTION

Using the trailer in which tires are not properly inflated may lead to permanent damage to the tire as a result of delamination of the material.
Incorrect tire pressure is also a reason for faster tire wear.

I.3.4.622.09.1.EN

5.10 CLEANING OF THE AIR FILTERS

SCOPE OF ACTIONS

- 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.

- Extend the filter slide (1).

  Use the other hand to hold the filter cover (2). After removing the slide, the cover will be pushed out by the spring located in the filter housing.

- Wash the filter element and body thoroughly with water and blow with compressed air. Installation should be in reverse order.

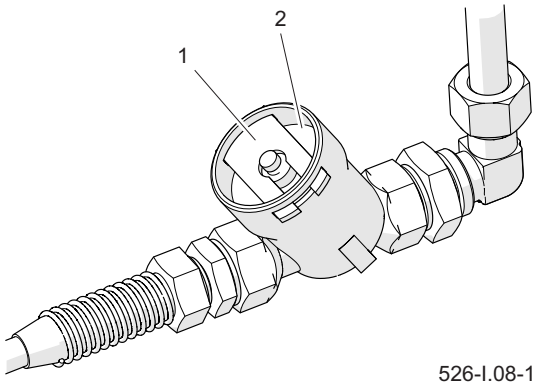


Figure 5.8 Air filter
(1) filter slide *(2) cover*

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5.11 KONTROLA ZUŻYCIA OKŁADZIN SZCZĘK HAMULCOWYCH

- Locate the inspection hole.

  Depending on the version of the driving axle, the inspection hole may be located in a different place than the one shown, but it will always be located on the brake shield.

- Remove the upper and lower plugs and then check the thickness of the cladding.
- The brake shoes should be replaced if the thickness of the brake lining is less than 5 mm.
- Check the remaining linings for wear.

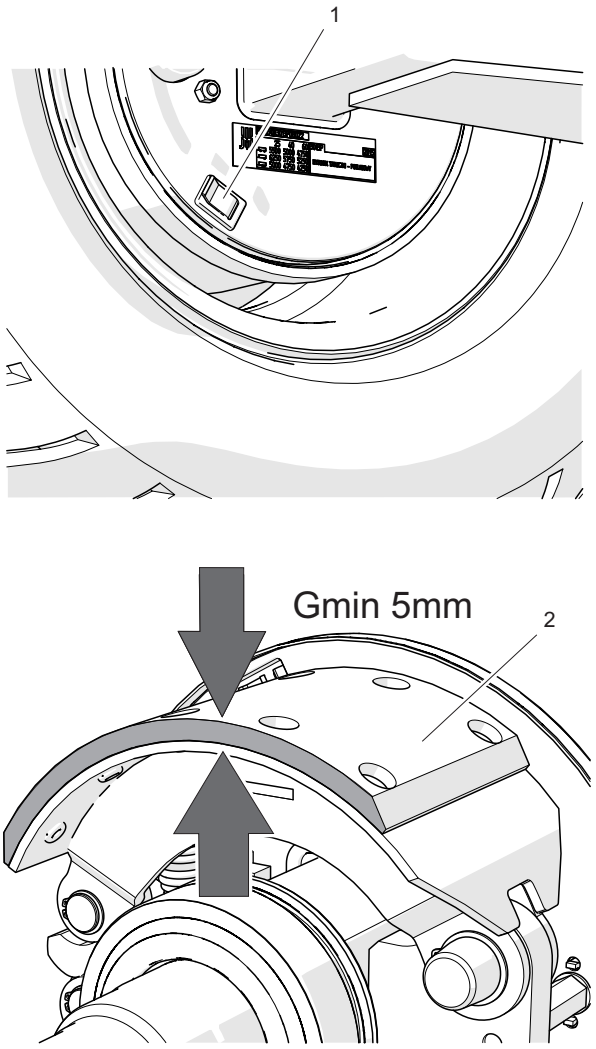

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Figure 5.9 Checking the brake lining thickness
(1) plug (2) brake lining

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5.12 INSPECTION OF WHEEL AXLE BEARINGS

- Raise the wheel with a jack.
- Turn the wheel slowly in two directions. Check that the movement is smooth and the wheel rotates without excessive resistance and jamming.
- Turn the wheel so that it rotates very quickly, check that the bearing does not make any unusual sounds.
- Try to feel looseness by moving the wheel.
- Repeat the steps for each wheel separately, remembering that the jack must be on the opposite side of the wedges.
- If looseness is felt, adjust the bearings. Unusual sounds emanating from a bearing can be symptoms of excessive wear, dirt or damage. In this case, the bearing, together with the sealing rings, should be replaced or cleaned and regreased.
- When checking bearings, make sure that any perceptible looseness comes from the bearings, not the suspension system (e.g. play on the spring pins, etc.).
- Check the technical condition of the hub cover, replace if necessary.

526-I.10-1

Figure 5.10 Looseness check

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.

I.3.4.622.12.1.EN

5.13 MECHANICAL BRAKES INSPECTION

ADVICE

Checking the technical condition of the brakes:
- according to the schedule of inspections,
- before the period of intensive use,
- after repairing the braking system.
- in the event of uneven braking of the trailer wheels.

In a correctly adjusted brake, the stroke of the brake cylinder piston should be within the range given in the table (5.3) and depends on the type of cylinder used. When the wheel is fully braked, the optimum angle between the expander lever and the piston rod should be approx. 90°. With this setting, the braking force is optimal. Checking the brakes consists in measuring this angle and the piston rod stroke in each wheel.

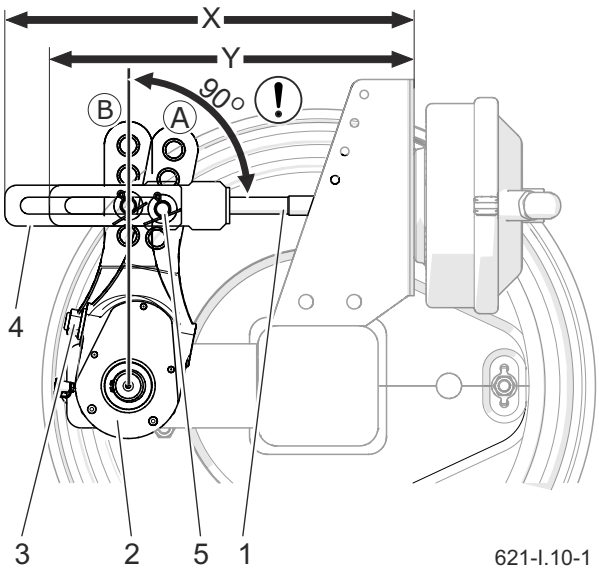

Figure 5.11 Brake check
(1) actuator piston rod (2) expander arm
(3) adjustment screw (4) cylinder fork
(5) pin position
(A) position of the arm in the released position
(B) position of the arm in braked position

SCOPE OF ACTIONS

- Measure distance X with the tractor brake pedal released.
- Measure the distance Y with the tractor brake pedal pressed.
- Calculate the difference in distance X-Y (piston rod stroke).
- Check the angle between the cylinder piston axis and the expander lever.
- If the expander arm angle (2) and piston rod stroke exceed the range given in table (5.3), the brake should be adjusted.

I.3.4.622.13.1.EN

5.14 CLEANING OF THE DRAINAGE VALVE

- Completely reduce the pressure in the air tank (2).

  The pressure in the tank can be reduced by swinging the drain valve stem.

- Unscrew the valve (1).
- Clean the valve, blow with compressed air.
- Replace the gasket.
- Screw in the valve, fill the tank with air, check the tank for leaks.

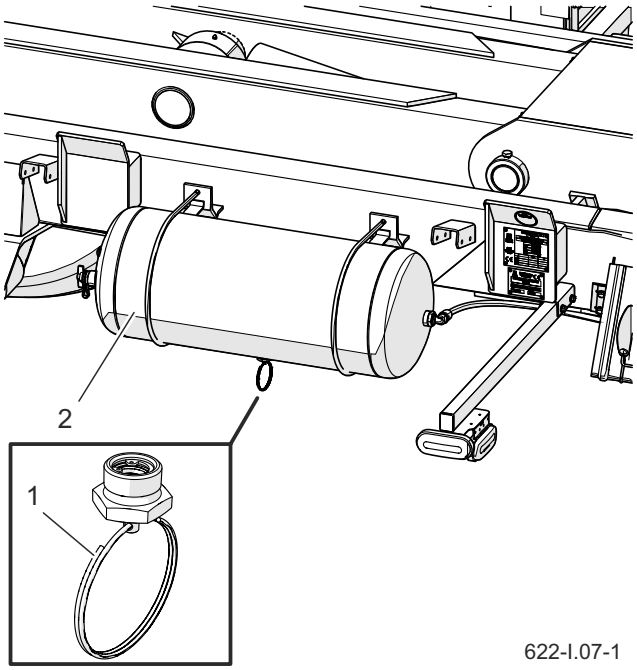

Figure 5.12 Air tank
(1) drainage valve *(2) tank*

I.3.4.622.14.1.EN

5.15 THE PARKING BRAKE CABLE INSPECTION

TENSION CHECK

Check the parking brake after checking the mechanical brake of the axle.

- Hitch trailer to tractor. Place the trailer and tractor on a level surface.
- Place wedges under the trailer wheel.
- Turn the parking brake crank (2) in direction (B) to apply the parking brake.
- Check cable tension (1).

When the mechanism screw is completely unscrewed, the cable should hang about 10 to 20 mm.

CABLE TENSION ADJUSTMENT

- Unscrew the brake mechanism screw (2) as far as possible by turning the crank in the direction (A) (counter clockwise).
- Loosen the nuts (4) of the bow clamps (3) on the handbrake cable (1).
- Tighten the cable (1) and tighten the nuts (4) of the clamps.
- Apply the parking brake and release it again. Check (approximately) cable tension

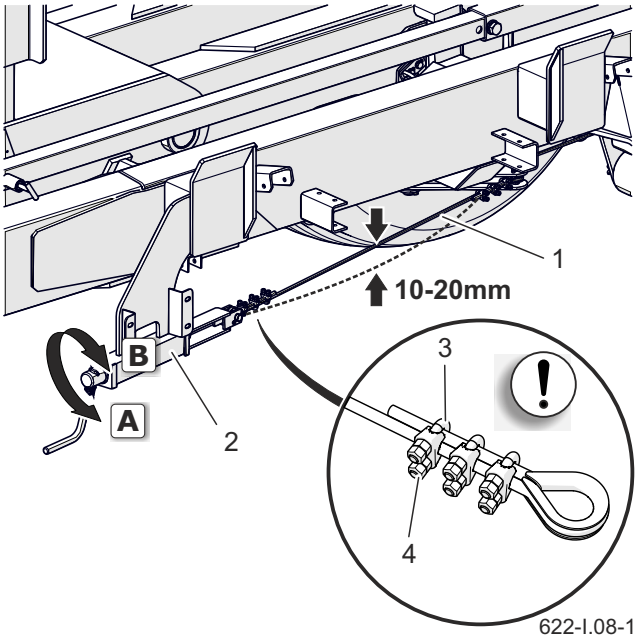

Figure 5.13 Cable tension inspection
(1) cable *(2) brake mechanism*
(3) bow clamp *(4) clamp nut*

When the work and parking brakes are completely released, the cable should hang about 10-20 mm. The axle expander levers should be in the rest position.

If it is necessary to replace the brake cable, refer to the section Replacing the parking brake cable.

I.3.4.622.15.1.EN

5.16 HYDRAULIC SYSTEM INSPECTION

- Hitch trailer to tractor.

  Each time before connecting the trailer to the tractor or connecting a second trailer, check the hydraulic connectors and sockets.

- Secure tractor and trailer with parking brake.
- Clean hose connections, hydraulic cylinders and couplings.
- Activate all hydraulic systems several times by extending and removing the piston rods of the cylinders.
- If the trailer is equipped with hydraulic braking system, press the brake pedal on the tractor several times.
- Check all hydraulic circuits for leaks.

  If necessary tighten the connectors if moisture is visible.

- After completing the inspection, put all cylinders to the rest position.

If visible moisture appears on the cable connectors, tighten the connectors at the specified torque and retest. If the problem persists replace the leaking element.

DANGER

It is forbidden to use the trailer with a malfunctioning hydraulic system.
It is forbidden to use the trailer with a defective hydraulic brake system.

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. Small leaks are permissible with symptoms of „sweating”, while in the event of noticing leaks in the form of „droplets” stop using the trailer until the fault is removed. If a malfunction has appeared in the brake cylinders, it is forbidden to drive the trailer with a damaged installation until the defect is removed.

I.3.4.622.16.1.EN

5.17 PNEUMATIC SYSTEM INSPECTION

- Hitch trailer to tractor.
- The tractor and trailer should be immobilized with the parking brake. Additionally, place wedges under the rear wheel of the trailer.
- Start the tractor to supplement the air in the trailer brake system reservoir.

  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.

DANGER

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

In the event of a leak, the compressed air will leak outside with a characteristic hissing sound. 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. Damaged elements should be replaced or sent for repair. If there is a leak around the connections, tighten the connector. If air still leaks, replace the connector components or seals with new ones.

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5.18 INSPECTION OF SCREW CONNECTIONS

TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

When performing maintenance and repair work, use appropriate tightening torques for screw connections, unless other tightening parameters are given. Recommended tightening torques for the most common bolted connections are shown in Table (5.4). The given values apply to non-lubricated steel bolts. The hydraulic hoses should be tightened with a torque of 50-70Nm.

Check the tightness using a torque wrench. During the daily inspection of the trailer pay attention to loose connections and tighten the connector if necessary. Replace lost items with new ones.

Table 5.4. Tightening torques

Thread	Tightening torque	
	8.8	**10.9**
M8	25	36
M10	49	72
M12	85	125
M14	135	200
M16	210	310
M20	425	610
M24	730	1 050
M27	1 150	1 650
M30	1 450	2 100

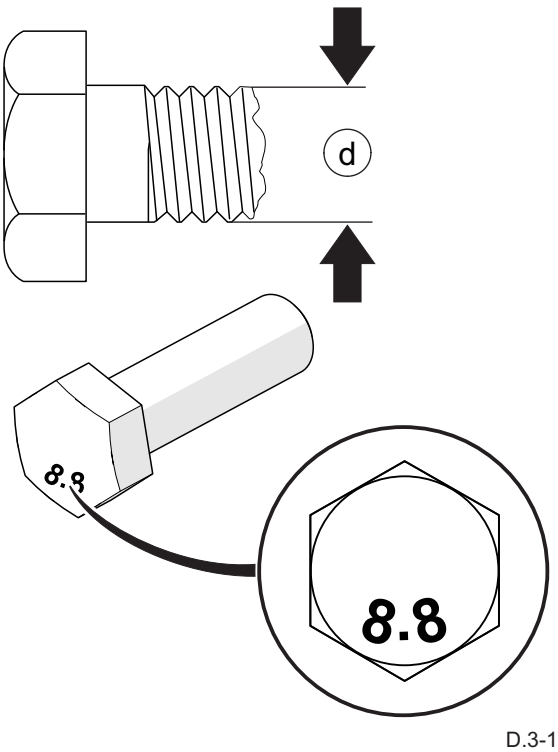

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Figure 5.14 Metric thread screw.

TIGHTENING THE WHEELS

The wheel nuts should be tightened gradually diagonally (in several stages until the required tightening torque is achieved), using a torque wrench. The recommended order of tightening the nuts and the tightening torque is shown in the drawing Tightening principle of the wheel.

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

The wheels should be tightened according to the following scheme:

- after using the trailer for the first time (one-time inspection),
- every 2-3 hours of driving during the first month of use,

Figure 5.15 Wheel tightening rule

- every 30 hours of driving.

If the wheel was disassembled, the above steps should be repeated.

HSCHEDULE OF SCREW CONNECTIONS

TIGHTENING

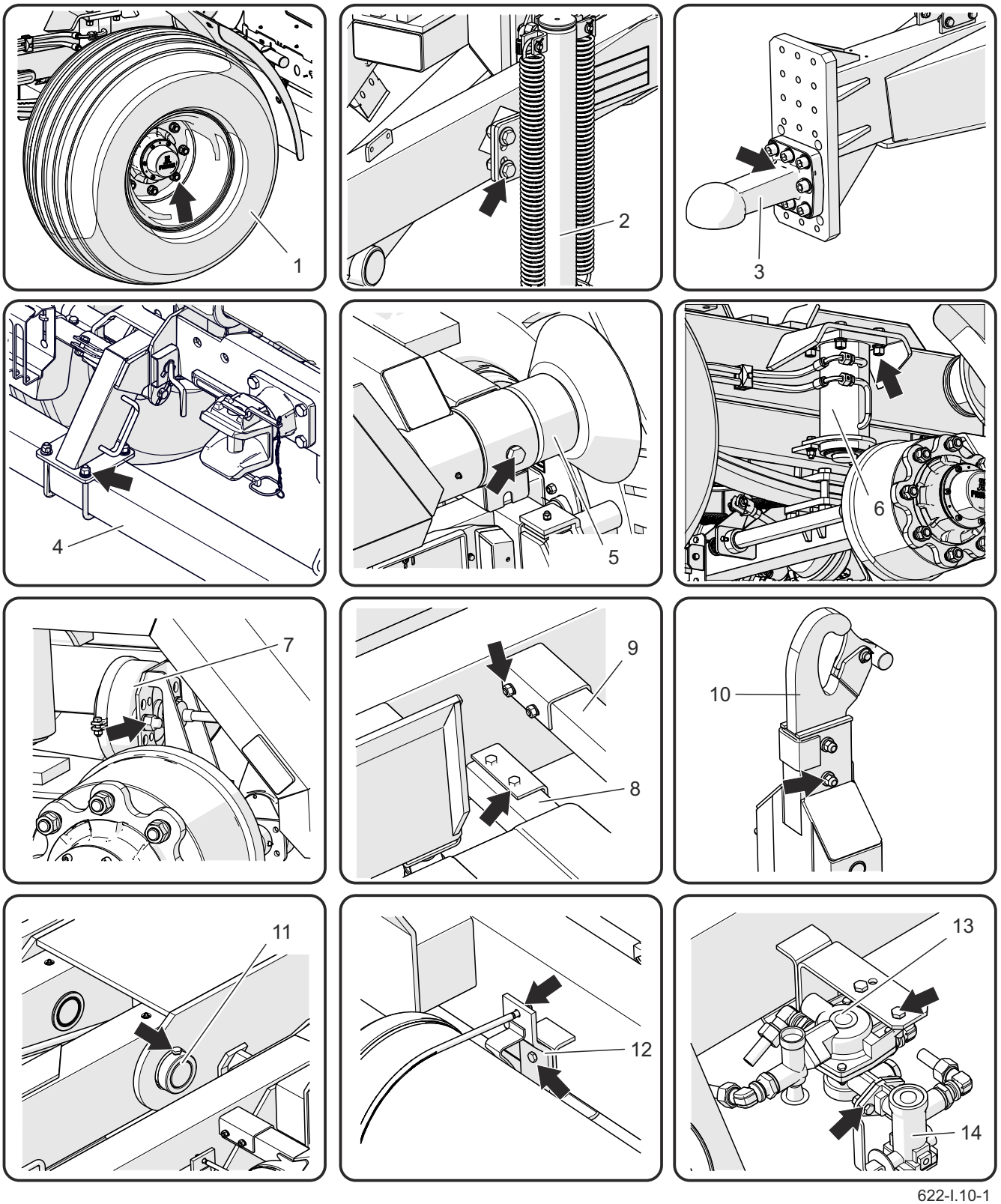


Figure 5.16 Screw connection checkpoints

Table 5.5. Tightening schedule for important bolted connections

No.	Trailer system/part name	Frequency
1	Road wheel	*see: Tightening the road wheels*
2	Parking stand	30H
3	Drawbar hitching eye	30H
4	Rear beam	30H
5	Frame axis	6M
6	Suspension lock cylinder	6M
7	Brake cylinders	3M
8	Tool box bracket	6M
9	Bracket for underrun protection, mudguards.	6M
10	Hook	3M
11	Pin security	6M
12	Air tank mounting element	6M
13	Fastening the control valve, hydraulic distributor	6M
14	Regulator mounting element	6M

Frequency: H - hours, M - months

I.3.4.622.18.1.EN

5.19 LUBRICATION

- Lubrication of the trailer should be done with a hand or foot grease gun, filled with recommended lubricant. If possible, remove old grease and other contaminants before starting work. After finishing work, wipe off excess grease.
- Wipe parts that should be lubricated with machine oil with a dry clean cloth. Apply the oil with a brush or oiler. Wipe off excess oil.
- Change of grease in wheel hub bearings should be entrusted to specialized service points, equipped with appropriate tools. Remove the entire hub, remove the bearings and individual sealing rings. After thorough cleaning and inspection, replace the lubricated components. If necessary, replace the bearings and seals with new ones.
- Dispose of empty grease or oil packaging in accordance with the lubricant manufacturer's instructions.

Table 5.6. Lubricants

No.	Symbol	Description
1	A	general purpose machine grease (lithium, calcium),
2	B	solid grease for heavily loaded components with the addition of MoS_2 or graphite
3	C	anti-corrosive spray
4	D	plain machine oil, silicone spray grease

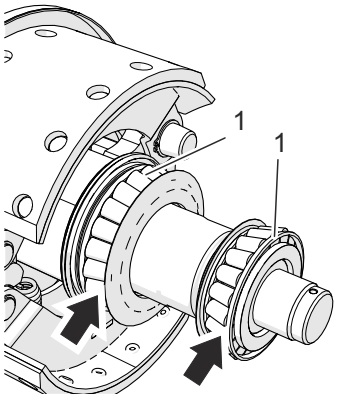
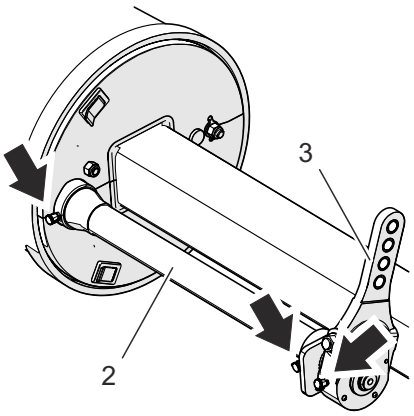
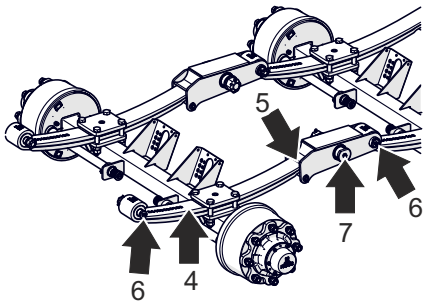
ADVICE

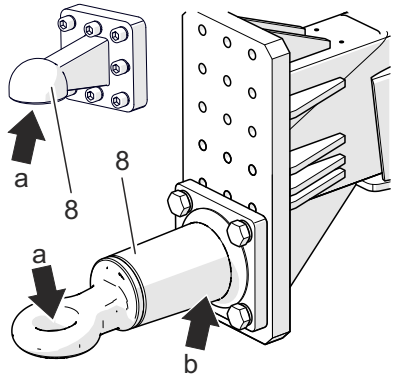
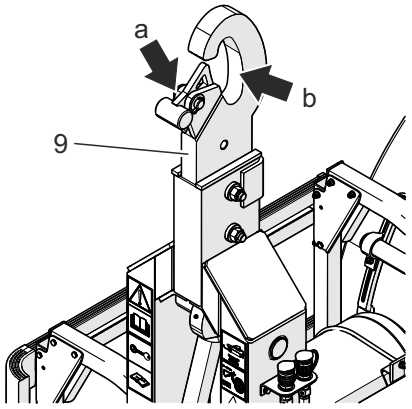
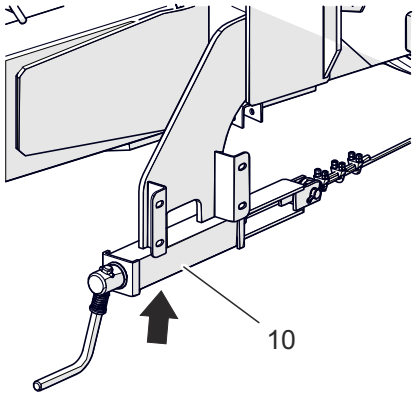
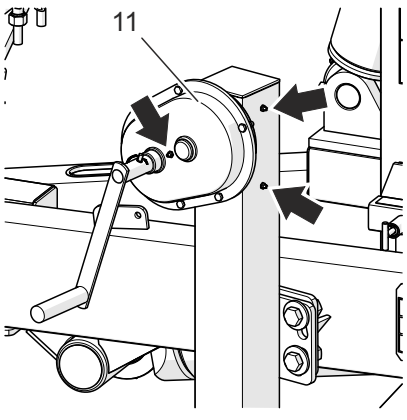
Lubrication intervals (table, Trailer lubrication schedule):
D - working day (8 hours of trailer work), M - month

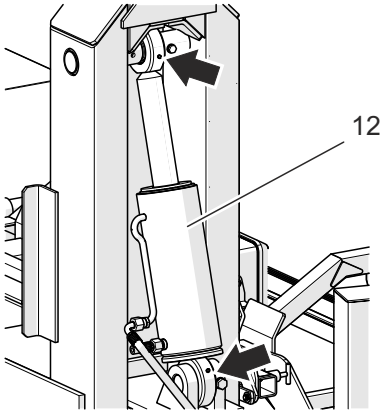
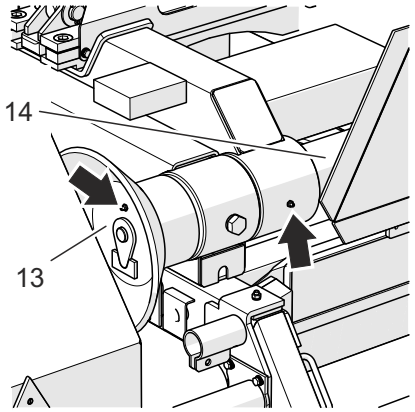
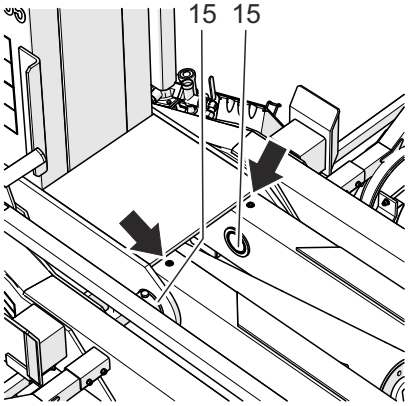
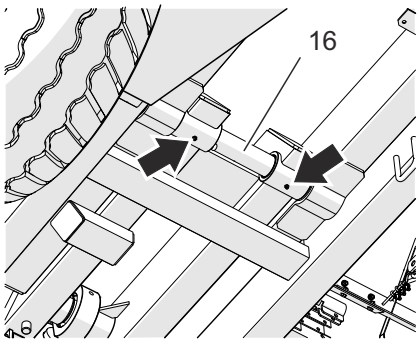
CAUTION

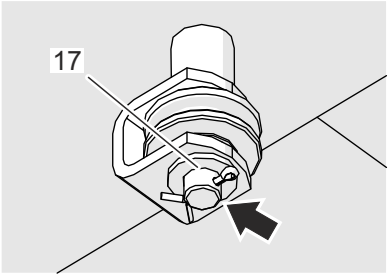
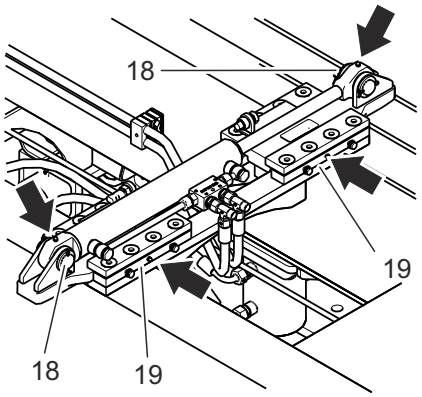
Lubricate all lubrication points after the first month of use.
After finishing washing wait until trailer is dry and then grease all inspection points according to recommendations. Remove excess oil or grease with a dry cloth.

Table 5.7. Trailer lubrication schedule

No.	Name	Number of points	Type of grease	Frequency	
1	Hub bearing (2 pieces in each hub)	8	A	24M	
2	Expander shaft bushing	8	A	3M	
3	Expander arm	4	A	3M	
4	Spring leaves	4	C	3M	
5	Sliding surface of the springs	4	B	1M	
6	Spring pin	4	B	1M	
7	Control arm pin	2	B	1M	

No.	Name	Number of points	Type of grease	Frequency	
8a	Drawbar eye	1	B	14D	
8b	Rotary drawbar	1	B	1M	
9a	Hook latch pin	1	A	2M	
9b	The working surface of the front ear	1	B	14D	
10	Parking brake mechanism	1	A	6M	
11	Telescopic support with gear	3	A	3M	

No.	Name	Number of points	Type of grease	Frequency	
12	Cylinder bearing (hook frame, middle frame)	4	B	1M	
13	Guide roller left / right	2	A	3M	
14	Tipping axis	2	A	1M	
15	Hook frame rotation pin	2	B	3M	
16	Middle frame rotation pin	2	B	3M	

No.	Name	Number of points	Type of grease	Frequency	
17	Parking brake guide pins	3	A	3M	
18	Container lock actuator pin	2	A	3M	
19	Side slide	4	A	3M	

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5.20 REPLACEMENT OF HYDRAULIC HOSES

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

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5.21 INSPECTION OF SIGNALING AND SAFETY SYSTEM

CAUTION

The signaling and safety system should be checked without load (without load box), only for machines equipped with hydraulic function switching.switching.

- Switch the trailer into function
- „Tipper" and check that the corresponding signal lamp (1) comes on and the locking mechanism opens and that the hook frame movements are blocked.

  Raise the frame about 3 cm high. Function switching is not possible.
- Switch the trailer to the „hooklift" function and check whether the corresponding signal lamp (2) turns on and the blockade retracts.

  Movements of the hook frame and main cylinder are possible.

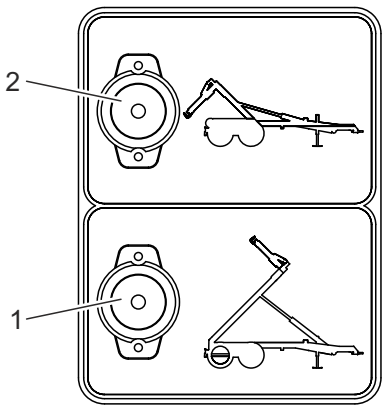

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Figure 5.17 Signa lights
(1) trailer function „tipper"
(2) trailer function „hook lift""

I.3.4.622.21.1.EN

5.22 REPLACEMENT OF END VALVES AND LIMIT SWITCHES

Limit valves and limit switches (sensors) should be replaced every 4 years, regardless of their technical condition. This operation should be entrusted to specialized services.

I.3.4.622.22.1.EN

TECHNICAL SERVICE

CHAPTER 6

6.1 MOUNTING AND DISMOUNTING OF THE WHEEL

DISMOUNTING OF THE WHEEL

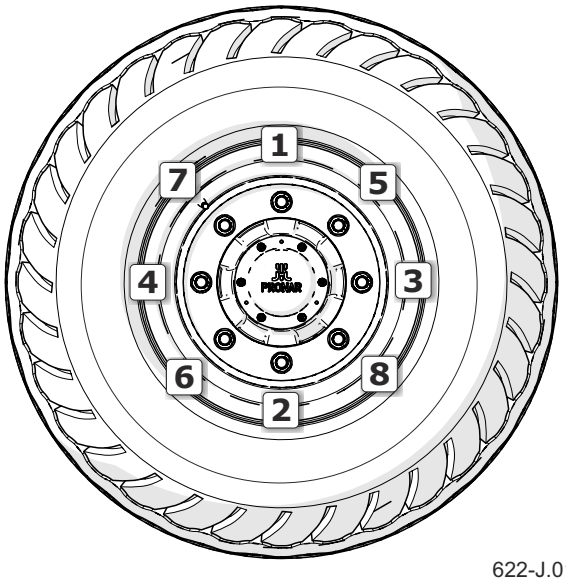
- Before lifting the wheel that will be removed, loosen the wheel nuts in the order given in the drawing.
- Place locking wedges on the opposite side of the disassembled wheel.
- Place the jack under the axle between the bolts for spring mounting (see chapter: Preparing the trailer).

  The used jack should have adequate load capacity, it should be technically sound.
- If necessary, use properly selected sleepers to reduce the unit pressure of the elevator base on the ground to prevent penetration into the ground.
- Raise the trailer to such a height that the wheel being changed does not rest on the ground.
- Remove the wheel.

MOUNTING OF THE WHEEL

- Clean the axle pins and nuts from the dirt with a wire brush. If necessary, degrease the thread.

  Do not lubricate the threads of the nut and stud.



622-J.01-1

Figure 6.1 Order of the nuts tightening

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. Make sure that the trailer does not roll when dismounting the wheels.

- Check technical condition of pins and nuts, replace if necessary.
- Mount the wheel on the hub, tighten the nuts so that the rim fits tightly onto the hub.
- Lower the trailer, tighten the nuts according to the recommended torque and the order given.

J.3.4.622.01.1.EN

6.2 THE HOOK POSITION ADJUSTING

The hook trailer allows you to connect containers with a hitch eye at a height of 1 570 mm (in accordance with DIN 30722-1) or 1 450 mm (in accordance with SS 3021). The height is measured between the plane on which the container rests and the axis of the hook. The height of the hook should be changed by two people.

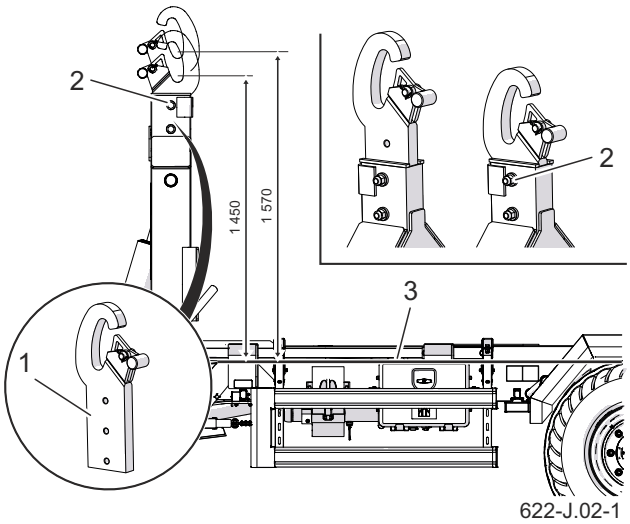


Figure 6.2 Adjusting the hook position
(1) adjustable hook
(2) screw connection of the hook
(3) container seating plane

SCOPE OF ACTIONS

- Unscrew the two M20 nuts.
- Remove the hook fixing bolts.
- Move the hook to the desired position.
- Install the screws.
- Tighten the nuts with the correct torque according to the chapter *Checking screw connections / Tightening torques for screw connections.*

J.3.4.622.02.1.EN

6.3 PARKING BRAKE CABLE REPLACING

- Hitch trailer to tractor. Place the trailer and tractor on a level surface.
- Place chocks under the trailer wheel.
- Unscrew the crank mechanism screw (2) of the brake as far as possible.
- Loosen the nuts (4) of the bow clamps (5) at the ends of the cable (1) that you want to replace.
- Remove the shackles, pins, clamps and the cable to be replaced.
- Clean the parking brake components.
- Lubricate the parking brake crank mechanism and pins of the cable. Insert a new cable or cables

  The thimbles and three bow clamps must be fitted at the ends of the rope. Make sure that the clamps are correctly fitted - see figure.

- Install pins and new securing pins.
- Adjust the parking brake cable tension.
- After the first brake application, check the tension and the end condition of the cables, make adjustments if necessary.

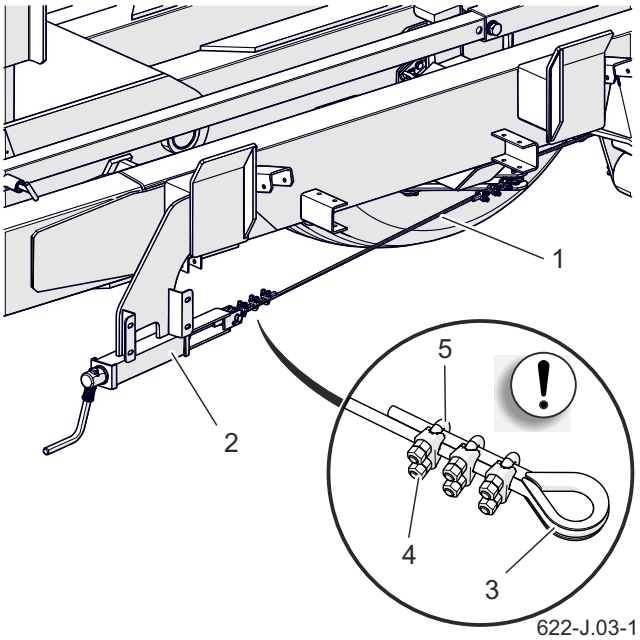


Figure 6.3 Replacing the parking brake cable
(1) brake cable *(2) brake mechanism*
(3) thimble *(4) nut* *(5) clamp*

CAUTION

Clamp jaws must be placed on the side of the load carrying cable - see illustration.
Secure the ends of the cable with a heat-shrink tube.
The distance between clamps should be 40 mm, the first clamp must be placed as close as possible to the thimble.

J.3.4.622.03.1.EN

6.4 RADJUSTMENT OF AXLE BEARING CLEARANCE

- Remove the hub cover (1).
- Remove the cotter pin (2) securing the castellated nut (3).
- Tighten the crown nut to remove slack.

  The wheel should rotate with slight resistance.
- Unscrew the nut (3) (not less than 1/3 of a turn) to cover the nearest groove of the nut with a hole in the journal of the axle (the hole of the cotter is marked with a black arrow in the drawing). The wheel should rotate without excessive resistance.

  Do not overtighten the nut. Too much pressure is not recommended due to deterioration of bearing operating conditions.
- Secure the castellated nut with a cotter pin and mount the hub cap (1).
- Gently tap the hub with a rubber or wooden hammer.

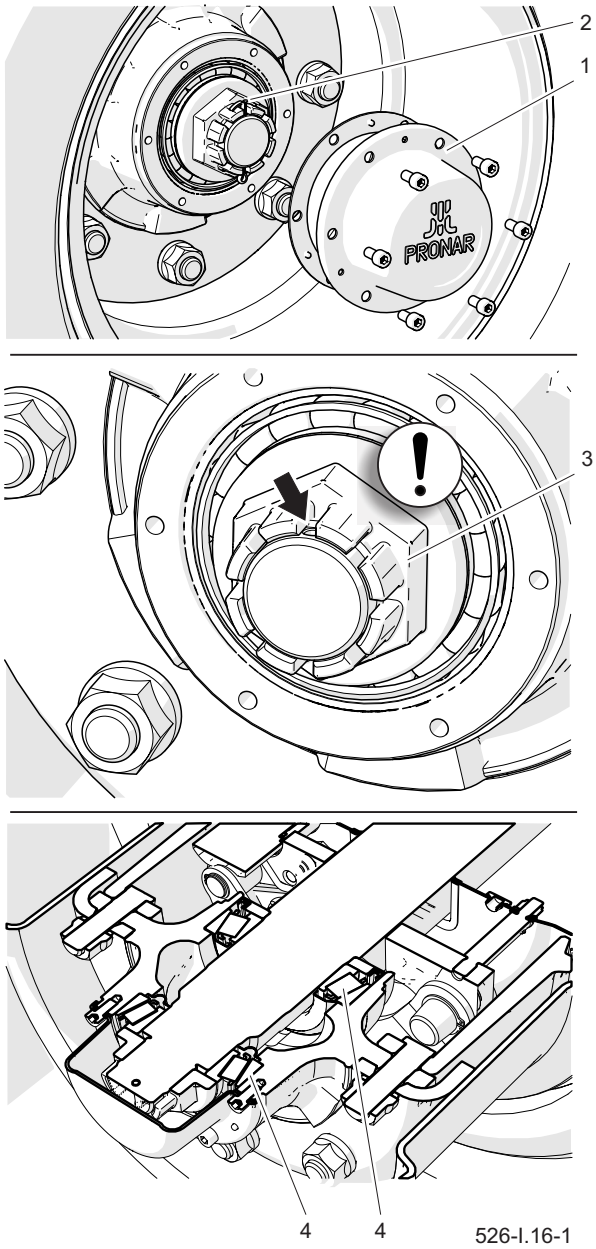


Figure 6.4 The rule for bearing clearance adjustment
(1) hub cap (2) cotter pin (3) nut
(4) tapered roller bearing

CAUTION

Adjustment of bearing looseness may be performed only when the trailer (without load) is connected to the tractor..

J.3.4.622.04.1.EN

6.5 BRAKES ADJUSTMENT

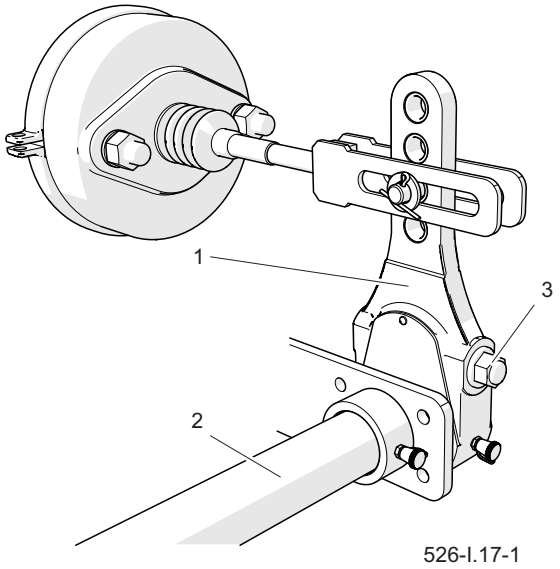


Figure 6.5 Brake adjustment
(1) expander lever (2) expander shaft
(3) adjustment screw

- Secure the trailer with additional wedges.
- Release the trailer parking brake.
- Remove the cylinder fork pin.
- On the cylinder piston rod (1) - Figure (6.6) mark with a line the position of the maximum piston rod retraction (A).
- Press the brake pedal on the tractor, mark with a line the position of maximum extension of the piston rod (B).
- Measure the distance between dashes (A) and (B). If the background stroke is outside the correct working range - Table (5.3), adjust the expander lever.
- Remember or mark the original position of the pin (6) - Figure (6.6) in the hole of the expander lever (3).
- Check that the cylinder piston moves freely and within the full nominal range.
- Check the correct mounting of the actuator.
- Check that the actuator ventilation openings are not clogged with dirt and that there is no water or ice inside.

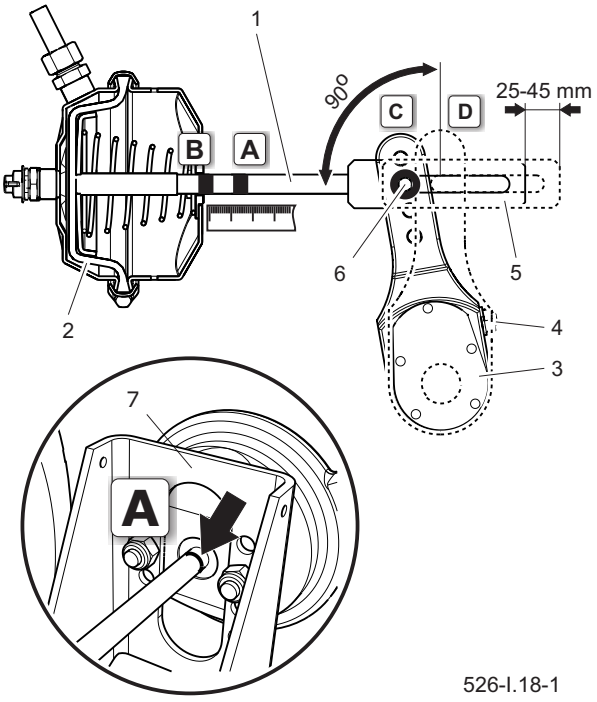


Figure 6.6 Brake adjustment rule
(1) piston rod *(2) diaphragm*
(3) expander lever *(4) adjustment screw*
(5) actuator fork *(6) pin position*
(7) actuator bracket
(A) mark on piston rod in uninhibited position
(B) mark on piston rod in braked position
(C) arm position in the uninhibited position
(D) arm position in full braking position

- 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 (7).
- Turn the adjusting screw (4) so that the marked hole of the spreader lever matches the hole of the cylinder fork.

  During adjustment, the diaphragm (2) must rest on the rear wall of the actuator.

- Mount the pin of the fork yoke, washers and secure the pin with cotter pins.
- Turn the adjusting screw (4) clockwise to make one or two clicks in the adjuster mechanism of the expander lever.
- Repeat the adjustment on the other cylinders.
- Apply the brake.
- Wipe the previous marks, and measure the piston rod stroke again.
- If the piston rod stroke is not within the correct working range, repeat the adjustment.

OPERATION CHECK

- Carry out a test drive after the adjustment.
- Perform several brakes. Stop the trailer and check the temperature of the brake drums.
- If any drum is too hot, adjust the brake and re-adjust, conduct a test drive.

J.3.4.622.05.1.EN

6.6 ADJUSTING THE DRAWBAR HITCH POSITION

Adjustment of the position of the drawbar eye is carried out by changing the position of the drawbar eye (2) relative to the front plate (1) of the drawbar.

SCOPE OF ACTIONS

- Unscrew the drawbar eye from the front plate (1) of the drawbar.
- Set the cable in the new position and tighten it with the correct torque.
- The design of the front plate (1) allows 2 positions of the tie rod with 120mm bolt spacing and 6 positions of the tie rod with 110mm bolt spacing - see illustration.
- Check correct tightening of the cable after the first trip with a load.

CAUTION

Correct adjustment of the drawbar eye position significantly simplifies trailer aggregation. After adjustment, the drawbar should be in a horizontal position. Take special care during adjustment due to the significant weight of the drawbar and the possibility of crushing limbs.

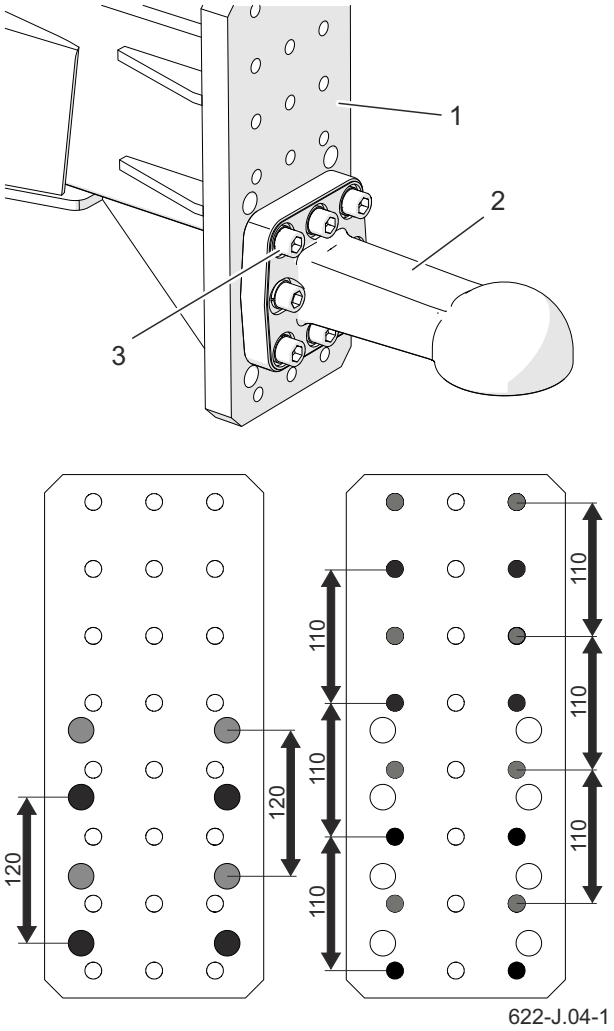


Figure 6.7 Adjusting the position of the drawbar eye

(1) front plate (2) cable (3) screw connection

J.3.4.622.06.1.EN

6.7 OPERATION OF ELECTRICAL INSTALLATION AND WARNING ELEMENTS

CAUTION

Driving with defective lighting installations is prohibited. Damaged lamps must be replaced immediately before driving off. Lost or damaged reflectors should be replaced with new ones.
Before traveling, make sure that all lamps and reflectors are clean.

Electrical installation service is reduced to periodic control of the operation of the control system as well as lighting system.
Work related to the repair, replacement or regeneration of electrical installation components should be entrusted to specialized workshops that have appropriate technologies and qualifications to perform this type of work.
The user's duties include only the technical inspection of the electrical installation and reflectors.

SCOPE OF ACTIONS

- After aggregating the trailer with the tractor, connect the lines supplying the lighting electrical system and the hydraulic system control system.

  Make sure that the connecting cables are functional. Check the connection sockets on the tractor and on the trailer. If necessary, clean all dirt and dust

- Check the completeness, technical condition and correct functioning of the trailer lighting.

  Check the wiring harness for damage (rubbed insulation, wire break, etc.). Check the completeness of the lamps and all reflectors.

- Check the correct mounting of the triangular plate holder for slow moving vehicles.
- Before traveling on a public road, make sure that the tractor has a reflective warning triangle.

ADVICE

The light source in the lamps are LEDs in the event of damage are replaced only as a complete lamp without the possibility of repair or regeneration.

J.3.4.622.07.1.EN

6.8 ADJUSTMENT OF LIMIT VALVES AND LIMIT SWITCHES

The limit valves close the oil flow in the hydraulic system (normally closed valve). The valve opens by pushing the slider (pusher).

ADJUSTMENT OF THE LIMIT VALVE (I)

- Loosen the nuts (2).
- Adjust the limit valve (1) by moving it in the direction of the arrows (A) and (B).

  When the return cylinder piston rod (4) is maximally retracted, the valve tappet must be depressed. It is possible to switch the trailer function

- Tighten the nuts (2) after adjustment.

LOCK SWITCHES ADJUSTMENT (II)

- Loosen the lock nut (9).
- Switch on the limit switch (6) with the screw (7).

  When the lock sliders (8) are pushed together, the end (6) must be pressed in.

- After adjustment, secure the screw (7) against loosening with the counter nut (9).

LOCK SWITCHES ADJUSTMENT (III)

- Loosen the screws (14) and nuts (15).
- Switching on the limit switches (11) should be regulated by a stop (12) and fixing the limit switches (13) by moving them in the directions marked with arrows (A) and (B) respectively.

  The terminals of the signaling system should be connected and adjusted so that after mechanical switching of the lever (16) the signal lamps (17) indicate the correct function.

- After adjustment, tighten the screws (14) and nuts (15).

CAUTION

The limit valve should be adjusted so that after lowering the middle frame completely it is possible to switch the function of the trailer. Switching must be locked on the raised frame.
Connect the terminals of the signaling system and the container lock so that the signal lamps indicate the proper function.

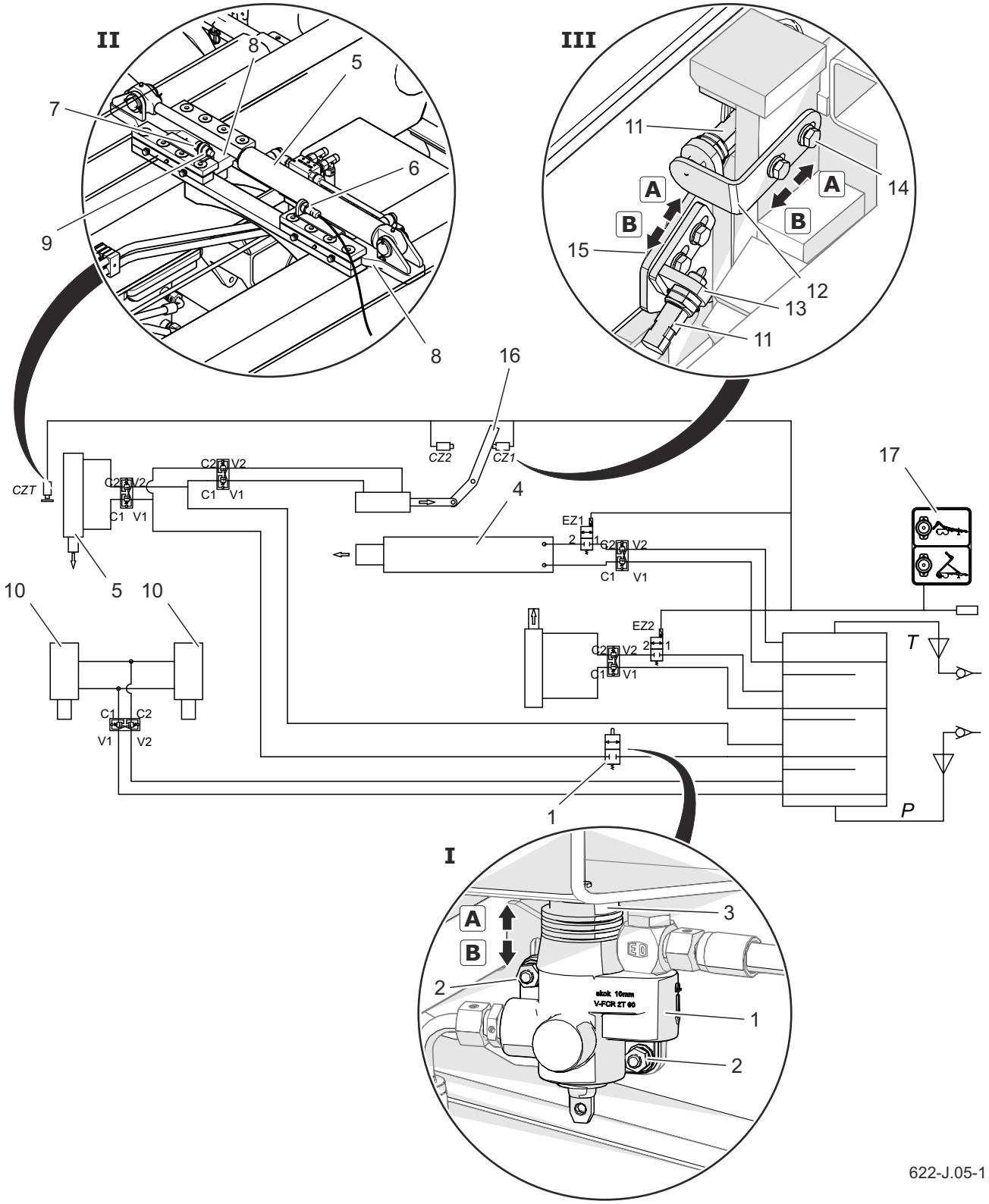


Figure 6.8 Limit valve and limit switch adjustment

(1) limit valve (2) nut (3) bumper (4) tipping cylinder (5) container lock cylinder

(6) sensor - limit switch (7) screw (8) locking slider (9) counter nut (10) suspension lock actuators

(11) sensor - limit switch (12) bumper (13) mounting limit switch (14) screw (15) nut

(16) lever for switching work functions (17) signaling lamps

J.3.4.622.08.1.PL

6.9 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. When using different types of oil, make sure that both hydraulic agents can be mixed together. The use of different types of oil may cause damage to the trailer or agricultural tractor. The new machine is 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 is important to ensure that chemical agents for this purpose do not act aggressively on the materials of the hydraulic system. During normal operation of the trailer, it is not necessary to change the hydraulic oil, however, if necessary, this operation should be entrusted to specialist service centers.

The oil used due to its composition is not classified as a hazardous substance, however, long-term exposure to 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 (petrol, kerosene). Soiled clothing should be removed to prevent oil from getting on your skin. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a 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 can be released. Oil should be quenched with

Table 6.1. L-HL 32 Oil properties

No.	Name	Unit	
1	Viscosity classification according to ISO 3448VG	-	32
2	Kinematic viscosity at 400°C	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

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 molybdenum disulphide (MOS2) or graphite additive. 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 lubricants, anti-corrosive lubricants) should have similar properties.

Before using lubricants, read the information leaflet for the selected product. Particularly important are the safety rules and the handling of the lubricant and the waste disposal method (used containers, contaminated rags, etc.). The information leaflet (product card) should be kept together with the grease.

ADVICE

Lubrication frequency (table Lubrication schedule of the trailer).

Table 6.2. Lubricants

LP.	Symbol	Opis
1	A	smar stały maszynowy ogólnego przeznaczenia (litowy, wapniowy),
2	B	smar stały do elementów mocno obciążonych z dodatkiem MoS_2 lub grafitu
3	C	preparat antykorozyjny w aerozolu
4	D	olej maszynowy zwykły, smar silikonowy w aerozolu

J.3.4.622.09.1.EN

6.10 TROUBLESHOOTING

Table 6.3. Failures

Failure	Possible cause	Solution
Problem with start.	Brake system lines not connected.	Connect the brake lines.
	Parking brake applied.	Release the parking brake.
	Pneumatic connection lines damaged.	Replace.
	Connection leak.	Tighten, replace washers or sealing sets, replace hoses
	Defective control valve or braking force regulator.	Check valve, repair or replace
	Low pressure in the pneumatic system.	Fill the system with the correct pressure.
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 efficiency of the braking system.	System pressure too low.	Check the pressure on the manometer of the tractor, wait for the compressor to fill the tank to the required pressure.
	System leakage.	Check installations for leaks.
	Tractor air compressor defective.	Repair or replace.
	Defective braking valve on the tractor.	Repair or replace.

Failure	Possible cause	Solution
Excessive heating of the axle hub.	Incorrectly adjusted service or parking brake.	Adjust expander arm positions or parking brake cable tension.
	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 contaminated actuator.	Check the cylinder piston rod (bending, corrosion), check the cylinder for leaks (piston rod seal), repair or replace the cylinder if necessary.
	Actuator load too high.	Check and reduce the cylinder load if necessary.
	Damaged hydraulic lines.	Check and make sure that the hydraulic lines are tight, not kinked and properly tightened. Replace or tighten as necessary.
	Contaminated hydraulic oil.	Check oil cleanliness, change filters, change oil, clean tank.
	Incorrect oil level.	Check oil level and make up for leaks.
	Adjusted end valves or limit switches	Adjust limit valves and limit switches.
The individual functions of the machine do not work..	Hydraulic system hoses not connected or not connected correctly.	Check the connection and connect the wires in accordance with the operating instructions.
	Trailer control electrical system not connected.	Check the connection and connect the wires in accordance with the operating instructions.

Failure	Possible cause	Solution
The individual functions of the machine do not work.	Off remote control.	Turn on the remote control.
	Remote control damaged.	Repair by service.
	Damaged hydraulic quick couplings	Replace.
	Insufficient amount of hydraulic oil in the tractor's hydraulic system.	Use a tractor whose hydraulic oil capacity will match the trailer's oil demand.
	Adjusted end valves or limit switches	Adjust limit valves and limit switches.
Knocking around the suspension while driving.	Suspension lock cylinders are not fully retracted	Push the cylinders up to the maximum.
Excessive wear on both sides of the left and right shoulder.	Air pressure too low. Too high cornering speed. Too fast air loss due to damaged rim, valve, puncture, e.g.	Check air pressure. Check the road tires for inflation regularly. Reduce speed when cornering on a hardened surface. Check rim and valve. Replace damaged parts.
Excessive tire wear in the middle.	Air pressure too high.	Check air pressure. Check the road wheels for proper inflation.
Excessive unilateral wear of the left or right shoulder tire.	Incorrect convergence. Driving axes incorrectly set.	Damaged spring leaf on one side of the suspension. Replace the springs.
Tread wear	Damaged suspension system, spring broken. Damaged braking system, brake locking, 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 spreader levers.

Failure	Possible cause	Solution
Lateral fracture.	Long-lasting ride on tires with low air pressure. Machine load too high.	Check the air pressure regularly. Check the weight of the load during loading
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 braking too frequent. Damaged braking system.	Check brake system. Control braking technique. Damage arises due to excessive heating of the hub and the resulting wheel rim.

J.3.4.622.10.1.EN

APPENDIX A

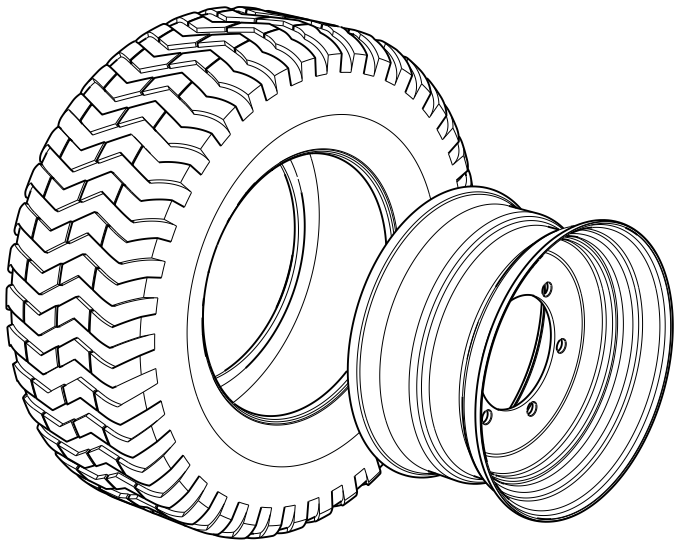


Table A.1. Tires

Item	Tire	Rim	Pressure
1	500/50-17 18PR 157A8 AW-708 TL IMPLEMENT BKT	16.00x17” catalog number 17.16.33	440 kPa
2	500/50-17 18PR 155A8 IM-07 TL IMPLEMENT MITAS	16.00x17” catalog number 17.16.33	440 kPa
3	500/50-17 18 PR 157 A8 Farm Impl. Flotation Carlstar Group	16.00x17” catalog number 17.16.33	475 kPa
4	500/50-17 18PR 154 A8 327 FarmPro IMP Alliance	16.00x17” catalog number 17.16.33	300 kPa
5	500/50-17 18PR 154A8 IM72 TL TVS Eurogrip	16.00x17” catalog number 17.16.33	360 kPa
6	500/50-17 18PR 154A8 IM36 TL TVS Eurogrip	16.00x17” catalog number 17.16.33	360 kPa
7	385/55 R22.5 160F reg. Kargo-Radial TL BANDENMARKT	11.75x22.5 ET-30 catalog number 225.1175.109	550 kPa
8	385/55 R22.5 160F XZA2 TL BANDENMARKT	11.75x22.5 ET-30 catalog number 225.1175.109	550 kPa
9	385/55 R22.5 160F Farmer G&H EF15	11.75x22.5 ET-30 catalog number 225.1175.109	550 kPa
10	520/50-17 159A8 Rib Trailer 306 TL TRELLEBORG	16.00x17” catalog number 17.16.33	360 kPa
11	520/50-17 159A8 ST-156 TL STARCO	16.00x17” catalog number 17.16.33	400 kPa

Item	Tire	Rim	Pressure
12	520/50-17 162A8 AW TL Starco	16.00x17” catalog number 17.16.33	400 kPa
13	520/50-17 FL18 159B (162A8) TL TVS Eurogrip	16.00x17” catalog number 17.16.33	400 kPa
14	520/50-17 IM135 164A8 TL TVS Eurogrip	16.00x17” catalog number 17.16.33	450 kPa
15	385/55 R22.5 TL HN 809 (HA) WIND POWER	11.75x22.5 ET-30 catalog number 225.1175.109	800 kPa
16	385/55 R22.5 TL KLS 03 (VA) KUMHO	11.75x22.5 ET-30 catalog number 225.1175.109	800 kPa
17	385/55 R22.5 DSR118 DOUBLESTAR	11.75x22.5 ET-30 catalog number 225.1175.109	900 kPa
18	385/55 R22.5 LLA38 TL LingLong	11.75x22.5 ET-30 catalog number 225.1175.109	850 kPa
19	385/55 R22.5 TL Leao A928	11.75x22.5 ET-30 catalog number 225.1175.109	850 kPa
20	500/50R17 146D (155A8) 381 Flotmaster Alliance	16.00x17” catalog number 17.16.33	400 kPa
21	500/50R17 149D (159A8) IMP Multiservice Continental	16.00x17” catalog number 17.16.33	490 kPa
22	500/50R17 145D (155A8) ELS Nokian	16.00x17” catalog number 17.16.33	400 kPa