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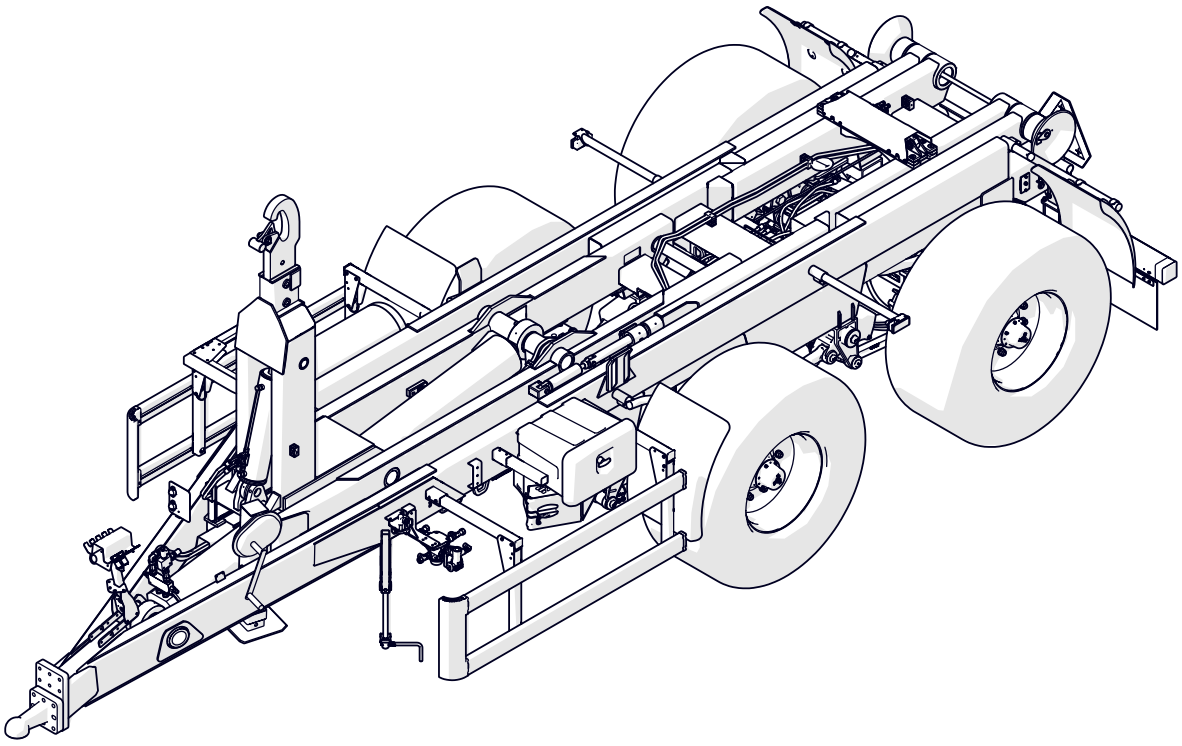
OPERATOR'S MANUAL

AGRICULTURAL TRAILER

PRONAR T285/1

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



EDITION 3A

10-2022

PUBLICATION NO 385.01.UM.3A.EN

EN

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Niniejsza instrukcja zawiera istotne wskazania dotyczące bezpieczeństwa oraz zasad obsługi maszyny. Instrukcję należy przechowywać w pobliżu maszyny, aby była dostępna dla osób uprawnionych do jej obsługi.

Niniejszą instrukcję zachowaj do wykorzystania w przyszłości. W przypadku zagubienia lub zniszczenia instrukcji skontaktuj się ze sprzedawcą lub z producentem w celu wydania duplikatu.

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

Remember!!!

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

Table of contents

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CE

EC Declaration of Conformity

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

Machine description and identification data	
General description and purpose:	**Agricultural trailer**
Type:	**T285/1**
Model:	–
VIN number:	
Commercial name:	**Trailer PRONAR T285/1**

referred to in this declaration meets the requirements of the Directive **2006/42/EC** of The European Parliament and of The Council of 17 May 2006 on machinery

The machine has been designed for and meets the requirements of the following standards:

PN-EN ISO 12100, PN-EN 1853

This declaration applies exclusively to the machine in the condition, in which it was sold and does not include components or parts added or subsequent modifications made by the final user.

The operator's manual is an integral part of the machine.

The Implementation Department Manager of PRONAR Sp. z o.o., 17-210 Narew, ul. Mickiewicza 101A is authorised to provide the technical documentation.

Z-CA DYREKTORA d/s technicznych członek zarządu Roman [illegible]

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Narew, on 2022-01-12
Date and place issued

Full name of the authorised person, position, signature

CHAPTER 1

INTRODUCTION

PRONAR T285/1

1.1 DEAR USER

The manual instruction is 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 center.

Before starting the machine, you will be familiarized with its construction, principle of operation, available equipment and operation, and above all safety rules. The operator and qualified personnel should be trained during final reception.

Remember!!! You can run the machine only when you have read the content of this "User Manual", you have been trained and you can handle it safely. In case of any doubts, contact the seller to clarify the problem.

The most important thing during operation is your safety, therefore, regardless of everything, all recommendations contained in the "User's Manual" should be observed and guided by reasonable procedure. Remember that the correct service, in accordance with the manufacturer's instructions, reduces the risk of an accident to a minimum, and working with the machine is more efficient and less emergency.

When buying machines, check the compatibility of serial numbers placed on the machine with the number entered in the "Warranty card" and in the sales documents. For information on identifying the machine, see "Basic information" chapter. We recommend that you have the most important serial numbers entered the field below.

Machine serial number:

WST.3.B-001.01.EN

1.2 RULES FOR USING THE USER'S MANUAL

The information contained in the publication is current as at the date of publication. As a result of improvement, some sizes and illustrations contained in this publication may not correspond to the actual state of the machine delivered to the user.

The drawings contained in this publication are aimed at clarifying the principle of machine operation and may differ from the facts. This can not be a reason for any claims for this. The manufacturer reserves the right to introduce constructional changes in the manufactured machines to facilitate operation and improve the quality of their work, without making any current changes to this publication.

The operating instruction is the basic equipment of the machine. If the information contained in this study prove not fully understandable to ask for aid to the point of sale in which the machine has been purchased or directly to the manufacturer.

The machine was constructed in accordance with applicable standards, documents and current legal regulations.

Separate studies can be attached to this manual that can be found in the chapter "*Attachments and additional materials*".

WST.3.B-002.01.EN

1.3 TARGET GROUP

The User Manual is intended for staff operating the machine called end users, and qualified persons (electrician, mechanic, plumber). Detailed information on the competences and liability of end users and qualified personnel can be found later in this chapter.

1.3.1 End user (User, Authorized User, Operator)

Who is the end user?

An end user, otherwise known as the user or operator, call the person authorized to operate the machine. The user can be authorized to handle the machine if the following conditions have been met.

- The user has familiarized with the content of the "User's Manual".
- He gets acquainted with the contents of the farm tractor instruction manual and observes its recommendations.
- He complies with road traffic regulations and transport regulations in force in the country in which the machine is used,
- He has been trained in terms of compliance with established maintenance and regulation plans.
- He has authorizations to drive vehicles (vehicle assemblies) required in the country of use.

Responsibilities and permissions

The user acquired by the user allows for safe handling of the machine. In unforeseen cases, the user should follow a reasonable procedure and take care of their safety, people located near a working machine and other traffic users.

The knowledge and skills are entitled to the end user to handle the machine, carry out maintenance and repair or adjustment procedures in the scope specified by the manufacturer. The activities that can be performed by the operator are marked with the pictogram:

1.3.2 Qualified person (qualified personnel)

Who is a qualified person?

We call a qualified person any person admitted to perform some maintenance, repair or regulatory work in the scope specified by the machine manufacturer and who gained appropriate technical education in a specific profession and confirmed by the relevant document, completed the training carried out by the authorized manufacturer's or seller staff, can see threats and counteract them. Professional experience and professional skills entitle a qualified person to carry out some repairs of the machine and perform basic maintenance procedures in the scope provided by the manufacturer. A qualified person in addition to the necessary knowledge has the skills to use the specialized accessories necessary to perform the obligations. The following persons include qualified persons:

- qualified mechanic,
- qualified electrician,
- qualified plumber.

Activities that can be performed by a qualified mechanic are marked with a pictogram:

Activities that can be performed by a qualified electrician are marked with a pictogram:

Activities that can be performed by a qualified plumber are marked with a pictogram:

1.3.3 Service personnel

Who is the service personnel?

Service personnel, otherwise known as the manufacturer's service or service, is a person or a group of qualified persons who have a much greater experience and knowledge to perform certain corrective and maintenance activities than qualified personnel. It has the right tools necessary to carry out work. The manufacturer's service has the required permissions and is a representative of a machine manufacturer or other equipment.

1.3.4 Unauthorized user

Who is an unauthorized user?

An unauthorized user also known as a bystander is a person who has not been trained by the manufacturer or an authorized seller, has not been familiarized with the basic issues of security, knowledge of the machine, did not familiarize with the entire content of the operating instructions, and therefore there are no authorizations to operate the machine. A bystander can not be admitted to work with the machine.

WST.3.C-002.01.EN

1.4 SYMBOLS AND TAGS USED IN THE MANUAL

1.4.1 Danger

Information, descriptions of hazards and precautions as well as instructions and orders related to the safety of use in the content of the manual are marked with a frame with the word **DANGER**. Failure to comply with these recommendations may endanger the health or life of persons operating the machine or bystanders.

1.4.2 Caution

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

1.4.3 Advice

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

1.4.4 Personal protective equipment pictograms

	Work shoes
	reflective vest
	industrial helmet
	working clothes
	respiratory protection
	safety goggles
	protective gloves
	hearing protectors

1.4.5 Qualification pictograms

	operator
	qualified mechanic
	qualified plumber
	qualified electrician

1.4.6 Typography of the User Manual

Bulleted list

The bulleted list presents actions to perform whose order is not relevant.

Example of using a bulleted list

- ....
- Check the condition of connections and hydraulic and pneumatic hoses. Hydraulic oil leaks and air defects from a leaky installation are unacceptable.
- In the event of a hydraulic or pneumatic installation failure, the trailer should be turned off from operation until the failure is removed.
- .....

Comment on the text

Comment is most often a supplement and additional explanation to order a specific activity. Additional information can also be included in the comment.

An example of a comment

The required air pressure is described on the sticker placed on the machine frame, over the wheel.

Defined list

List shows the to-do, which execution order is important.

Example of using a defined list

1. .....
2. Unscrew the handles (2) securing the crank (1).
3. Insert the crank into a square shaft of the gear and turning the clock clockwise on the direction of the clock.
4. ....

References to pages

Reference to chapter (place in the manual) related thematically

An example of a reference application

📖 *page 9.4*

WST.3.B-004.02.EN

1.5 GLOSSARY

Agricultural tractor

A motor vehicle constructed for use together with agricultural, forest or gardening equipment; such tractor can also be adapted for pulling trailers and for earthworks.

Tractor

A car vehicle designed only to pull the trailer; This term includes a tractor and a ballast tractor.

Final acceptance

Group of activities associated with the preparation and actual transfer of the finished product for use. The final acceptance contains the transmission of documentation, basic training, reception for transport and the first launch of the machine.

Bystander

See - an unauthorized user

Qualified person

A person admitted to perform some maintenance, repair or regulatory work in the scope specified by the machine manufacturer and which has gained appropriate technical education in a specific profession and confirmed by the relevant document and completed the training carried out by the authorized manufacturer's or seller staff, can notice the threats and counteract them.

Truck

A car vehicle designed structurally for carriage; This term also includes a cargo-passenger car designed for transporting loads and people in a number from 4 to 9 including the driver.

Danger zone

A dangerous zone is an area around the machine in which people who are vulnerable to the risk of losing health or life.

TUZ

A three-point suspension system - a lever system used in agricultural tractors for aggregation of machines and devices suspended on a hydraulic lifter.

End user

Otherwise known as the user, an authorized user or operator, the person authorized to operate the machine.

Unauthorized user

Also known as a bystander - person who has not been trained and has not been allowed to handle the machine.

PTO

Power reception shaft - transmitting a drive from the vehicle to the moving machine.

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1.6 DESIGNATION OF DIRECTIONS IN THE MANUAL

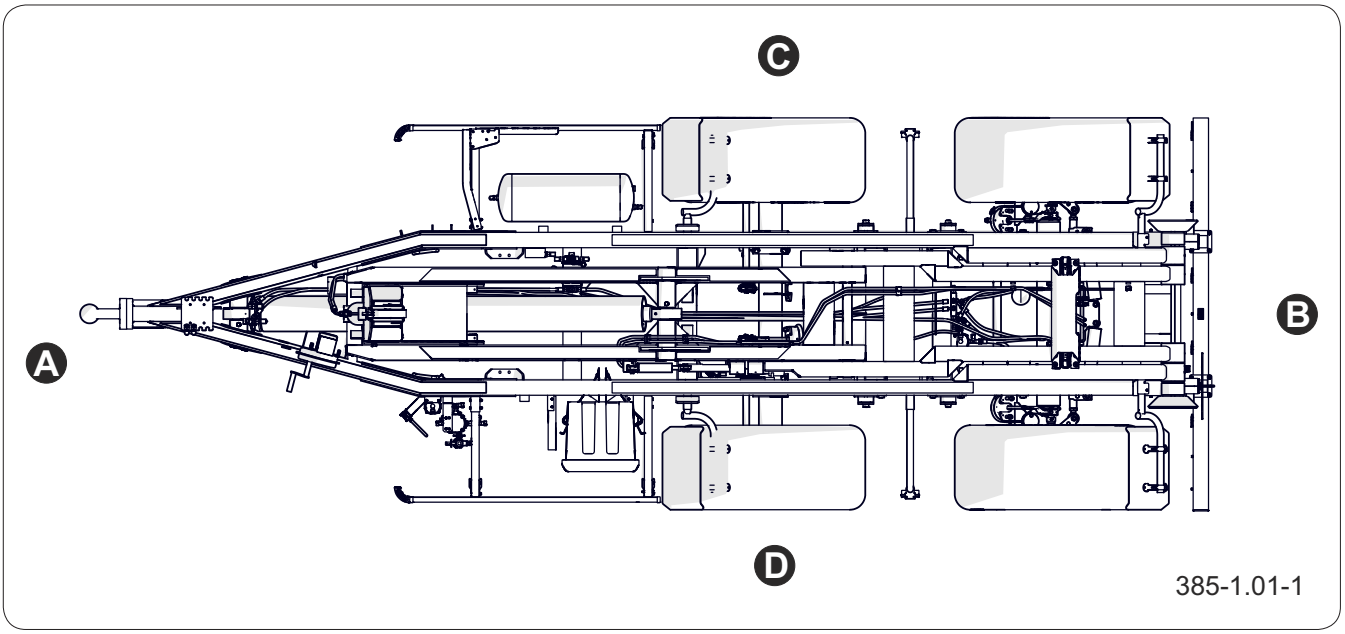

Figure 1.1 Determination of directions on the machine
(A) front *(B) rear* *(C) right side*
(D) left side

Left side – the left hand side of the observer facing the machine in the forward direction.
Right side - the right hand side of the observer facing the machine in the forward direction.
Turn right – turn the mechanism clockwise (operator facing the mechanism).
Turn *left* – turn the mechanism counterclockwise (operator facing the mechanism).

WST.3.B-006.41.EN

1.7 FINAL ACCEPTANCE

1.7.1 Preliminary information

Final acceptance takes place after the machine has been delivered. The acceptance covers the following issues:

- providing the required documents, including the “User Manual", “Warranty Card" and others,
- information from the seller about the method of use, hazards resulting from using the machine contrary to its intended use and about aggregating the machine with a tractor and working with it.
- checking the machine after delivery,
- first start-up of the machine and discussion of machine operation.

1.7.2 Checking the machine after delivery

The scope of control

- Check the completion of the machine in accordance with the order.
- Check technical condition of guards.
- Check the condition of the paint coating, check for any signs of corrosion.
- Check the machine for missing parts or damage resulting from incorrect transport of the machine to its destination point (dents, punctures, bends or broken parts, etc.).
- Check the condition of the tires on the road wheels and the air pressure in the tires. Check the correct tightening of the wheels.
- Check the technical condition of flexible conduits of the hydraulic and pneumatic systems. Make sure the layouts are tight.
- Inspect the hydraulic and/or pneumatic cylinders for leaks and leaks.

1.7.3 The first start of the machine

The start-up must be preceded by training conducted by the Seller or authorized employees of the Seller.

The scope of activities for the first start-up

- Make sure that the pneumatic, hydraulic and electrical connections on the agricultural tractor comply with the manufacturer's requirements.
- Check all lubrication points, re lubricate if necessary.
- Drain the air reservoir the brake system.

If the condition of the machine does not raise any objections, go to the test drive:

- Connect the machine to the tractor hitch.
- Connect the pneumatic, hydraulic and electrical conduits.
- By activating the individual lights, check the correct operation of the electrical system.
- Control the correct operation of the hydraulic system by controlling the appropriate circuits of the tractor's hydraulic distributor.

  Optionally, start the PTO and check the operation of the hydraulic system of the machine driven by the tractor's PTO shaft.
- Apply the brake.
- While moving off, check the operation of the main brake system.
- Release the tractor parking brake.

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

- Noise and unnatural sounds coming from the rubbing of moving parts against the machine structure,
- Leaking braking system,
- hydraulic oil leaks,
- Incorrect operation of hydraulic and/or pneumatic actuators,

or other faults, diagnose the problem. If the fault

cannot be repaired or repairing it may void the warranty, contact the point of sale to explain the problem or make repairs.
After completing the test run, check the tightness of the wheel nuts.

WST.3.B-007.01.EN

1.8 ENVIRONMENTAL HAZARD

DANGER

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

CAUTION

Oil waste may only be delivered to a point dealing with the utilization or regeneration of oils. Under no circumstances should oils be poured into drains or water bodies.

A leakage of hydraulic, lubricating or diesel oil is a direct threat to the natural environment due to the limited biodegradability of the substance.

When carrying out maintenance and repair works where there is a risk of leakage, perform these works in rooms with an oil-resistant surface. In the event of a substance leak into the environment, first secure the source of the leak, and then collect the spilled substance using available means. Collect the remaining oil with sorbents or mix with sand, sawdust or other absorbent materials. The collected contaminants should be stored in a sealed and marked container, resistant to hydrocarbons, and then transferred to a disposal point. The container should be kept away from heat sources, flammable materials and food.

Used oils or oils that cannot be reused due to the loss of their properties are recommended to be stored in their original packaging in the same conditions as described above.

WST.3.B-008.01.EN

1.9 PERSONAL PROTECTIVE EQUIPMENT

1.9.1 General

CAUTION

Personal protective equipment should be used in accordance with the recommendations of the security manufacturer.

Follow local regulations regarding personal protective equipment.

The personal protective equipment listed below is a minimum protection for the operator against the effects of unfavourable external factors and is only a recommendation for use.
We recommend carrying out a risk assessment at the machine's workplace and adjusting the personal protective equipment of operator depending on the actual working conditions.

1.9.2 Work clothing

Work clothing should fit the operator's body correctly. The material from which the clothing is made should be characterized by high tear strength. Clothing must not have any protruding elements that may be accidentally caught by the mechanisms of the machine.

1.9.3 Hearing protectors

It is recommended to use of ear muffs for use with a protective industrial helmet for hearing protection. The selection of the damping value should be selected individually depending on the noise level at the location of the machine, which is the result of various sources (e.g. tractor, loader, belt conveyors, etc.).
Remember to properly store and maintain your hearing protectors. Poorly stored and maintained hearing protectors lose their protective properties over time. Periodically replace the soundproofing cushions according to the manufacturer's recommendations.

1.9.4 Work shoes

Work shoes should have the following properties:

- non-slip sole,
- sole material made of a material resistant to oils, gasoline and other organic solvents.
- toe cap resistant to impact with an energy of 200 J,
- insert securing the foot against piercing of the sole.

The above properties correspond to the S3 shoe category according to PN-EN ISO 20345.

1.9.5 Warning vest

The warning (reflective) vest is designed to increase the operator's visibility to other users. Instead of a reflective vest, you may wear work clothes that meet the requirements of EN471. It is recommended that the warning vest (or work clothing) be class 2.

1.9.6 Protective gloves

Protective gloves should be selected depending on the currently performed work.

Strong protective gloves

Strong protective gloves for hand protection are used for protection during heavy work such as cleaning the machine, removing clogs and the like, where there is a risk of damaging the hands. Protective gloves should protect the hands from cuts, scratches, abrasions, punctures and similar injuries to the skin and

against light burns in contact with hot surfaces.

Light protective gloves

For light work (general operation, minor maintenance etc.), we recommend using light protective gloves for work in a dry or slightly oily environment. The working surface of the gloves (internal part should be covered with an impermeable material, e.g. nitrile.

Nitrile gloves

Nitrile gloves designed for working with urea, fuel or lubricants. They are designed for light work where there is a risk of skin contact with lubricants, fuel, urea, gear oil and hydraulic oil.

1.9.7 Safety glasses with side shields

Safety glasses to protect the eyes against contact with hazardous substances, splashing liquids or dust and airborne of the machine dust. Safety glasses with side shields increase the level of protection.

1.9.8 Industrial protective helmet

The industrial safety helmet is designed to protect the head against injuries related to the fall of thrown objects, parts or materials. The design of the helmet should be in accordance with the EN397 standard. During normal machine operation, wearing lightweight industrial helmets will not protect the user from injury and is therefore not recommended.

The protective helmet must fit correctly to the anatomical shape of the skull. There are adjustment straps for this purpose. The helmet has a limited shelf life.,

After this date, the material from which it was made loses its properties and does not fulfil the assumed task. The helmet must be replaced.

1.9.9 Anti-dust respirator

CAUTION

Remember that personal protective equipment should be regularly maintained and used in accordance with the recommendations of the product manufacturer. Following these guidelines will ensure safe use and the best protection.

Dust can become airborne when operating the machine. It is recommended to use disposable respirators with an exhalation valve to protect the respiratory tract.

The size of the mask should match the operator's face. The mask should fit snugly against the skin. The nasal part should be adjusted using the adjustment plate. Remember that facial hair can make it difficult to seal the face mask.

Minimum half mask recommendations:

- type FFP1, in accordance with EN-149: 2001 + A1: 2009, protection against non-toxic liquid or solid aerosols,
- P1 class.

WST.3.C-004.01.EN

CHAPTER 2

GENERAL

PRONAR T285/1

2.1 IDENTIFICATION

2.1.1 MACHINE IDENTIFICATION

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.

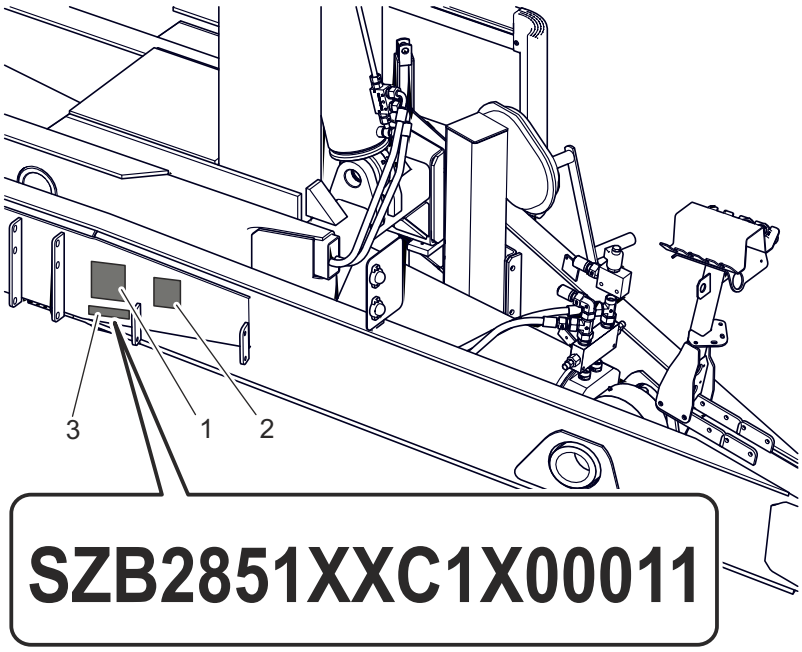

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Figure 3.1 MACHINE IDENTIFICATION
(1) nameplate I (2) nameplate II (3) VIN number

Due to the country of operation and the regulations applicable there, the machine is marked with different designs of rating plates (1) and (2) and a factory number (3) placed on a distinguished rectangular field on the machine frame.
When purchasing the trailer, check the compliance of the serial numbers on the machine with the number written in the "Warranty Card", in the sales documents and in the "User's Manual".
The meaning of the individual fields on the name plate is shown in the table below.

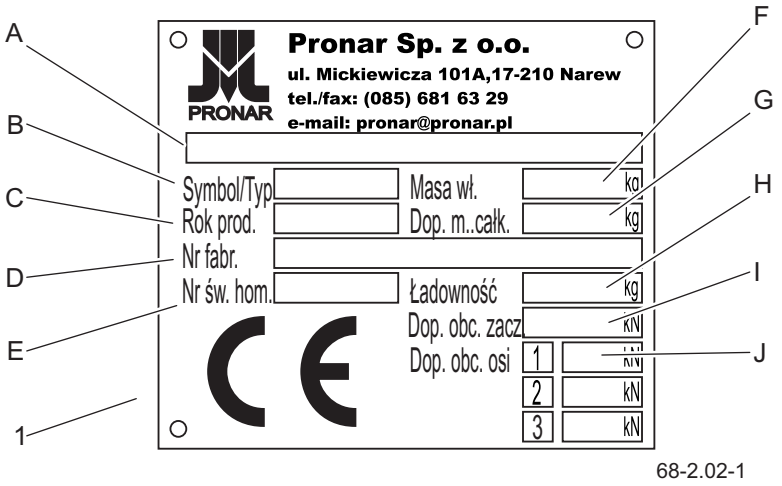


Figure 3.2 Nameplate PL - standard version

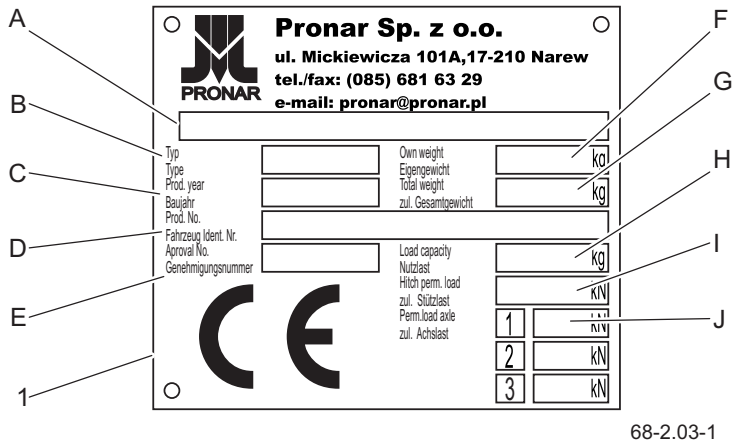


Figure 3.3 Nameplate - UK type

Table 3.1. Name plate markings - PL and UK version

Item	Meaning
A	General information and function
B	Machine symbol / type
C	Year of machine production
D	VIN Number
E	Certificate approval number
F	The machine's karb weight
G	Permissible gross weight
H	Capacity
I	Permissible load on coupling
J	Permissible load on individual axles

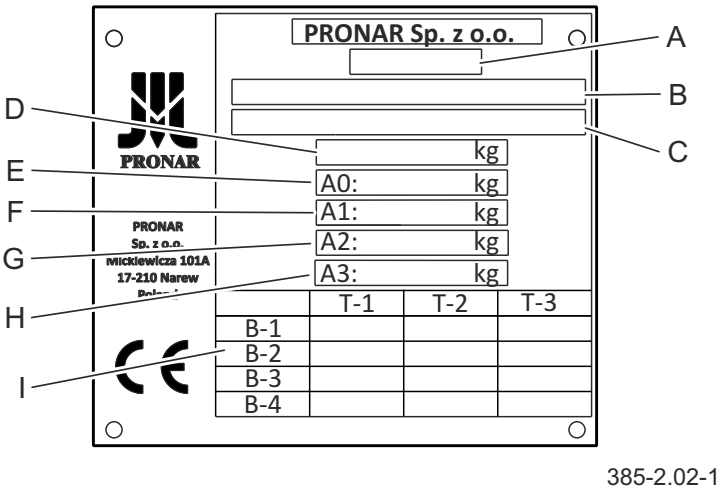


Figure 3.4 Nameplate - EU type

Table 3.2. Name plate markings - EU version

Item	Meaning
A	Category, subcategory and vehicle speed indicator
B	Certificate approval number
C	VIN Number
D	Permissible gross weight
E	Permissible load on coupling
F	Permissible load for 1 axles
G	Permissible load for 2 axles
H	Permissible load for 3 axles
I	Technically permissible towable masses for each chassis/brake configuration of a R- or S-category vehicle

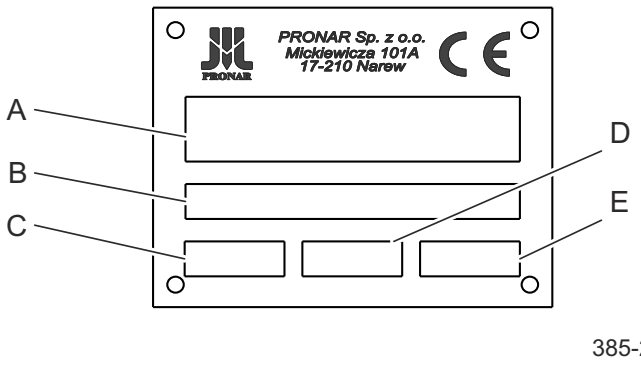


Figure 3.5 CE nameplate - EU version

Table 3.3. CE nameplate markings - EU version

Item	Meaning
A	Trade name of the product or general term and function
B	VIN Number
C	Type
D	Year of machine production
E	Model

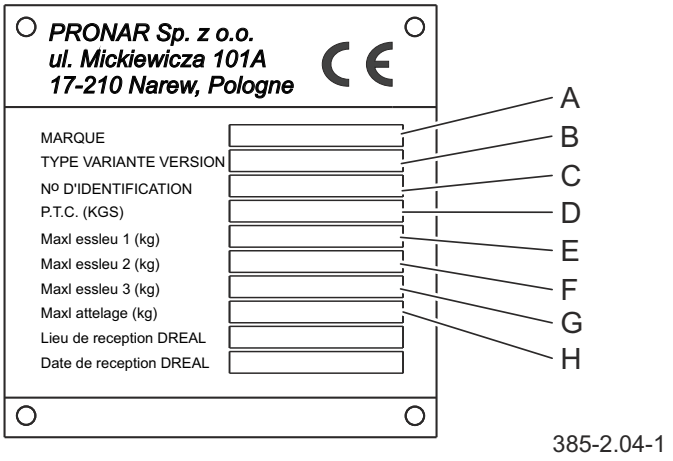
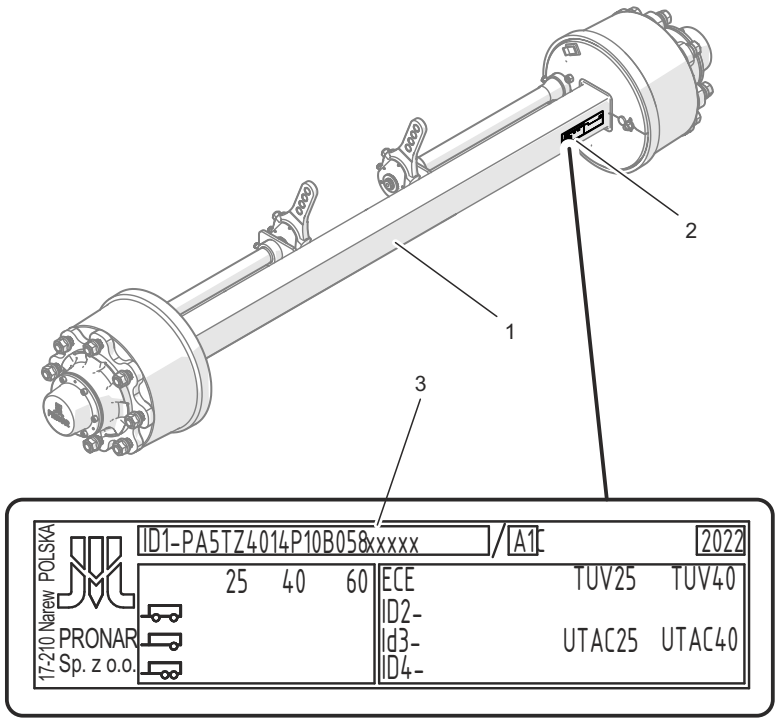


Figure 3.6 Nameplate - FR type

Table 3.4. Name plate markings - FR version

Item	Meaning
A	Marka
B	Type
C	VIN Number
D	Permissible gross weight
E	Permissible load for 1 axles
F	Permissible load for 2 axles
G	Permissible load for 3 axles
H	Permissible load on coupling

Axle identification



68-2.05-2

Figure 3.7 Axis identification
(1) driving axle (2) nameplate
(3) axle serial number

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

INF.3.4-001.01.EN

2.2 INTENDED USE OF THE MACHINE

2.2.1 Intended use

DANGER

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

CAUTION

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

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

- DIN30722-1,
- SS3021 (trailer with hydraulic container lock),

The permissible dimensions of which are specified in the table ("Container requirements"). The trailer design allows for loading and removing containers, and unloading them by tipping backwards. The type of cargo transported depends on the purpose of the container. Non-compliance with the recommendations of carriage and loading specified by the Manufacturer and road transport regulations in force in the country in which the trailer is used will void the warranty services and is treated as using the machine for purposes other than those intended.

The trailer is not adapted and intended for the transport of people, animals and goods classified as hazardous materials.

The braking system as well as the lighting and signalling system meet the requirements arising from

Table 2.5. Container requirements

Data	Unit	Value
Minimum Length (1)	mm	5,400
Maximum length (1)	mm	6,400
Maximum width	mm	2,550
Maximum height (including rollers)	mm	2,500
Permissible gross weight	mm	16,360
Hook height according to DIN 30722-1	mm	1,570
Hook height according to SS 3021	mm	1,450
(1) - the length specified from the hook axis to the rear dimension		

traffic regulations.

In the countries where the trailer is used, restrictions related to the road traffic laws in force in a given country must be observed.

The trailer speed must not be greater than the maximum design speed.

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

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

The trailer may only be used by persons who:

- Become familiar with the contents of publications and documents attached to the trailer and the contents of manual agricultural tractor,
- have been trained in trailer operation and work safety,
- have the required authorization to drive and are familiar with the traffic rules and transport regulations.

2.2.2 Anticipated improper use

The expected misuse of the machine is primarily due to the transport of materials not in accordance with the manufacturer's recommendations, for example:

- transport of people, animals,
- dangerous materials, aggressive loads as a result of chemical reactions to trailer structural elements (causing corrosion of steel, damaging paint coverings, dissolving plastic elements, destroying rubber elements, etc.),
- transport improperly secured cargo that could cause road and environmental pollution while driving,
- transporting incorrectly fastened loads that could change their position in the container while driving,
- transport cargo that location of the center of gravity adversely affects the stability of the trailer,
- carry loads that affect uneven loading and/or overloading of the axles and suspension components.
- Connecting containers that do not comply with the manufacturer's requirements.

An employee who has not been trained in operation and safety, is not qualified and has the required skills must not be allowed to operate the machine.

When operating the machine, it is strictly prohibited to:

- stay in the danger zone,
- climb on the machine while it is running,
- make arbitrary structural changes,
- repair and servicing by unauthorized and unqualified personnel.

INF.3.4-002.01.EN

2.3 AGRICULTURAL TRACTOR REQUIREMENTS

Table 2.6. Agricultural tractor requirements

Content	Unit	Requirements
Braking system		
Pneumatic 2 - wire	-	socket in accordance with ISO 1728
Max. pressure of the pneumatic installation	bar / kPa	6.5 / 650
Hydraulic	-	sockets in accordance with ISO 7241- 1
Max. pressure of the hydraulic system	bar / MPa	150 / 15
The hydraulic system		
Hydraulic oil	-	L HL 32 Lotos (1)
Maximum system pressure	bar / MPa	200 / 20
Minimum oil flow	L	25
Sockets	-	in accordance with ISO - 7241- 1
Electrical system		
Electrical system voltage	V	12
Connection socket	-	7 poles in accordance with ISO 1724
Connection socket	-	3 poles
Tractor hitches		
Type of hitch	-	lower transport hitch
Minimum vertical load capacity of the hitch	kN / kg	29.43 / 3,000
Rear Power take-Off (PTO) (2)		
Type of shaft	-	type 1(1 3/8”) Z=6 acc. to ISO 500
Rotation speed	rpm	540
Number of splines on the shaft	pcs.	6
PTO rotation direction	-	Clockwise (looking at the shaft head)
Other requirements		
Minimal power requirement	kW / KM	92 / 125

(1) - a different oil may be used, provided it can be mixed with oil in the trailer. Detailed information can be found in the product information card.
(2) - applies to the trailer version with its own hydraulic system

2.3.1 Minimum load on the front axle of the tractor

The front axle of an agricultural tractor must always be loaded by at least 20% of the tractor's own weight.

CAUTION

The load on the tractor's front axle must be at least 20% of its own weight - this also applies to the transport of a loaded trailer. If this condition is not met, add additional weight to the front axle.

DANGER

Inadequate load on the front axle of the tractor may result in damage, insufficient stability and insufficient steering and braking ability of the tractor.

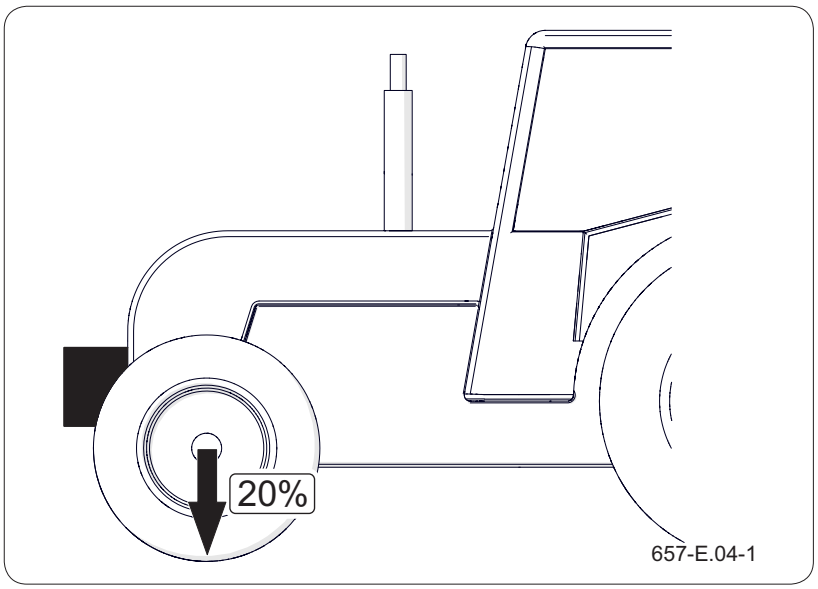


Figure 2.8 Minimum load on the front axle of the tractor

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2.4 EQUIPMENT OF THE MACHINE

Table 2.7. Trailer equipment*

Content	STANDARD	ADDITIONAL	OPTIONAL
User manual	●		
Warranty Card	●		
Electrical installation connection cable	●		
Electrical lighting installation	●		
LED lighting electrical installation			●
Electrical lighting installation (France)			●
LED lighting electrical installation (France)			●
Pneumatic installation 2-wire without rear output	●		
Pneumatic installation 2-wire with rear output			●
2-wire ALB pneumatic installation			●
Hydraulic braking system			●
Pneumatic-hydraulic braking system			●
Parking brake	●		
Hydraulic installation (tipping with hydraulic hooklift/tipper switching, hydraulic suspension lock, hydraulic container lock, hydraulic hook frame) (1)	●		
Hydraulic system with distributor (electric cable control) (2)			●
Own hydraulic system with PTO driven pump and own oil reservoir (electric cable control) (2)			●
Hydraulic system outputs at the rear of the trailer			●
Hydraulic system outputs on the hook		●	
Hydraulic steering lock system	●		
Lifting assistance system			●
Wheel chocks	●		
Straight hydraulic support	●		
The mechanical support			●

Content	STANDARD	ADDITIONAL	OPTIONAL
Telescopic support			●
Rotary tie rod Ø50	●		
Ball tie rod K80			●
Ø40 fixed tie rod			●
Ø50 fixed tie rod			●
Manual rear hook		●	
Automatic rear hook		●	
Plastic mudguards	●		
Aluminium mudguards			●
Rear protection 2445	●		
Rear protection 2550			●
Axle stabilizer		●	
Plate for slow-moving vehicles		●	
Warning reflective triangle		●	
Side covers		●	
Tool box		●	
Rear apron		●	
Document tube		●	

(1) - 3 pairs of hydraulic outlets needed in the tractor
(2) - vehicle functions control (suspension lock, switching the hooklift/tipper function with container lock, hook frame movements, tilting frame movements)

** - Some standard equipment items listed in the table may not be included in the trailer delivered. This is due to the possibility of ordering a new machine with a different set - optional equipment, replacing the standard equipment.*
The tire information is given at the end of the publication in APPENDIX.

INF.3.4-004.01.EN

2.5 TRANSPORT

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

2.5.1 Trucking

DANGER

During road transport, the machine 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 centre of gravity shifting upwards with the machine loaded.

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

Incorrect use of securing measures can cause an accident.

Load and unload the machine from the car using the loading ramp with a farm tractor. During work act in compliance with the general principles of workplace health and safety for reloading work. Persons operating reloading equipment must have the required permissions to use these devices. The machine must be correctly connected to the tractor in accordance with the requirements contained in this manual. The machines braking system must be activated and checked before going down or onto the ramp.
The machine should be attached firmly to the platform of the vehicle using straps, chains, lashings or other fastening devices equipped with a tensioning

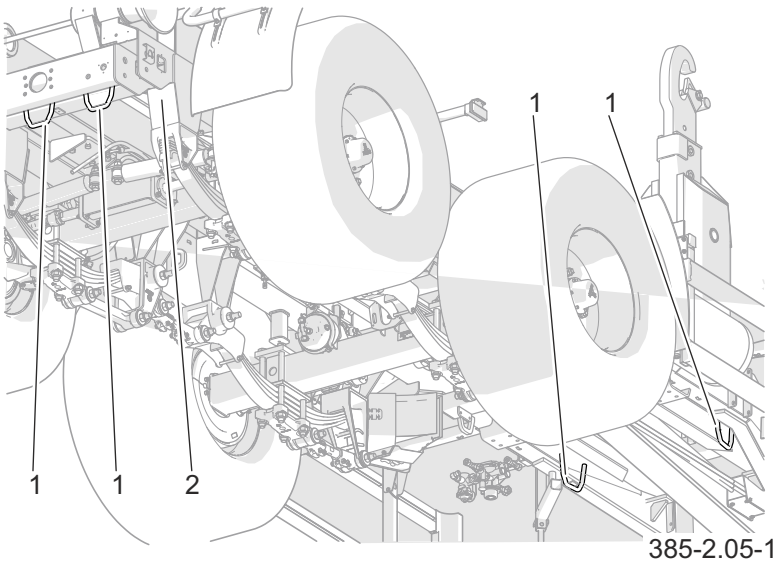

Figure 2.9 Attachment points
(1) handle *(2) lower frame*

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).

mechanism. Secure the fasteners in the shipping brackets (1) for this purpose.

Chocks or other elements without sharp edges should be placed under the machines wheels, protecting the machine against rolling. The wheel lock must be secured to the vehicle loading platform in such a way that it cannot move.

Use approved and technically reliable securing measures. Wiping belts, cracked fasteners, bent or corroded hooks or other damage may disqualify the product from being used. Please refer to the instructions in the manual of the manufacturer of the securing material used. The number of fastening elements (ropes, belts, chains, lashings, etc.) and the force needed for their tension depends, among others, on the weight of the trailer, the construction of the car carrying the trailer, the speed of travel and other conditions. Therefore, it is not possible to specify the fastening plan in detail.

For optimum attachment of the machine to the load platform, support the drawbar by placing a wooden block under the drawbar. A properly attached machine will not change its position relative to the transporting vehicle. The fastening means must be selected according to the manufacturer's instructions. In case of doubt, a larger number of attachment and securing points for the machine be used. If necessary, the sharp edges of the machine must be secured to protect the fastening means against damage during transport.

During reloading work, particular attention be paid so as not to damage the machine equipment components and the paint coating.

2.5.2 User's transport

If you decide to transport the machine after purchasing, read and follow the machine's User's Manual.

CAUTION

When transporting independently, the operator should read the instructions the operating and follow the recommendations contained therein.

Independent transport involves towing a wrapper with own agricultural tractor to its destination. While driving, adjust the speed to the prevailing road conditions, but it must not be greater than the maximum design speed.

INF.3.G-005.31.EN

2.6 TERMS OF WARRANTY

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 easy operation of the machine when it is used in accordance with the technical and operational conditions described in the USER MANUAL. Deadline for completion of repairs is specified in the Warranty Card.

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

In the event that damage occurs as a result of:

- mechanical damage caused by the user's fault, road accident,
- from improper operation, adjustment and maintenance, use contrary to its purpose,
- use of a damaged machine,
- repairs carried out by unauthorized persons, improper repairs,
- execution of user changes in machine design,

the user loses the warranty.

The user is obliged to immediately report all noticed defects in the paint coatings or traces of corrosion, and order removal of defects regardless of whether the damage is covered by the warranty or not.

Detailed warranty conditions are given in the WARRANTY CARD attached to the newly purchased machine.

Modifications to the machine without the written consent of the Manufacturer are prohibited. In particular, welding, reaming, cutting and heating of the main machine components that directly affect safety during use are not permitted

INF.3.B-006.01.EN.

2.7 THREAT TO THE ENVIRONMENT

ADVICE

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

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.

A hydraulic oil leak is a direct threat to the natural environment owing to its limited biodegradability. Repair works with a risk of leakage of oil, should be carried out in rooms with an oil resistant surface. In the event of oil leaking into the environment, first of all contain the source of the leak, and then collect the leaked oil using available means. Collect oil residue with sorbents or mix the oil with sand, sawdust or other absorbent materials. Collected oil contaminants should be stored in an airtight and marked container, resistant to hydrocarbons, 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 previously. Waste code 13 01 10 (hydraulic oil). Detailed information on oil can be found in the product safety data sheet.

INF.3.B-007.01.EN.

2.8 WITHDRAWAL

DANGER

Before commencing dismantling, reduce residual pressure in pneumatic and hydraulic systems.

DANGER

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

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

In the event of decision by the user to withdraw the machine from use, comply with the regulations on withdrawal from use and recycling of machines withdrawn from use in force in a given country.

Before proceeding to dismantling, reduce the residual pressure in the hydraulic system, drain the oil completely. Remove all air from the pneumatic system of the machine by draining the air reservoir.

In the event of replacement of parts, take the worn or damaged elements to a collection point for recyclable materials. Take used oil as well as rubber or plastic elements to plants dealing with the utilization of this type of waste.

Table 2.8. Codes of waste generated by dismantling of the machine

Item	Code	Meaning
1	07 02 13	Plastic waste
2	13 01 10	Other hydraulic oils
3	13 02 04*	Mineral engine, gear and lubricating oils containing halogenated organic compounds
4	13 02 06*	Synthetic engine, gear and lubricating oils
5	13 02 08*	Other engine, gear and lubricating oils
6	13 05 02*	Sludges from oil dewatering in separators
7	13 05 08*	A mixture of sand trap waste and oil dewatering in separators
8	15 01 10*	Packaging containing residues of or contaminated by hazardous substances
9	15 02 02*	Sorbents, filter materials and protective clothing contaminated with hazardous substances
10	16 01 03	Worn tires
11	17 04 05	Iron and steel
12	17 04 11	Cables other than those mentioned in 17 04 10

INF.3.B-008.01.EN

CHAPTER 3

SAFETY OF USE

PRONAR T285/1

3.1 BASIC SAFETY RULES

CAUTION

The machine may only be used and operated by **persons qualified** to drive agricultural tractors with a trailer.

- Before using the machine, please read carefully the content of this publication and the „*Warranty Card*”. During operation, follow all recommendations.
- The user manual should be available to the operator for all the time. Protect the manual from damage.
- If the information contained in the User's Manual is difficult to understand, contact a seller who runs an authorized technical service on behalf of the manufacturer, or contact the manufacturer directly.
- If you ignore the recommendations contained in these document, you create a threat to the health and life of bystanders and/or the machine operator.
- Use and operate the machine carefully! By a careless work, you create a threat to the health and life of bystanders and/or the machine operator.
- You are obliged to familiarize yourself with the construction, operation principles and safe operation of the machine.
- Familiarize yourself with all machine controls before starting work. Do not use the machine without knowing its function.
- Before each start-up of the machine, check that it is properly prepared for work, first of all in terms of safety.
- There is a residual risk of threats, therefore the basic principle of using the machine should be the application of the principles of safe use and sensible behaviour. Remember that your safety is the most important thing.
- It is forbidden to use the machine by persons

who are not authorized to drive carriers, including children, people under the influence of alcohol, drugs or other intoxicating substances, etc.

- The machine may not be used for purposes other than those for which it was intended. Everyone who uses the machine in a manner contrary to its intended use, thus takes full responsibility for all consequences arising from its use.
- Use of the machine for purposes other than envisaged by the Manufacturer is inconsistent with the intended use and may void the warranty.

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3.2 SAFETY WHEN THE MACHINE AGGREGATING

DANGER

Take special care when aggregation the machine.

- It is forbidden to connect the trailer to the tractor if it does not meet the manufacturer's requirements (minimum power requirement of the tractor, inadequate connection, etc.) - see chapter *TRACTOR REQUIREMENTS*.
- Before connecting the trailer, make sure that the oil in the tractor's external hydraulic system can be mixed with the machine's hydraulic oil.
- Before coupling the machine, make sure that both machines are technically sound.
- During coupling of the machine, use only the appropriate hitch of the tractor. After coupling the machines, check the the hitch safety device. Read the tractor operating instructions. If the tractor is equipped with an automatic hitch, make sure that the coupling operation is completed.
- Take special care when connecting the machine.
- When connecting, nobody may be between the machine and the tractor.
- You can only couple and unhitch the machine when the machine is immobilized using the parking brake. If the trailer is on a slope or hill, additionally protect it against rolling by placing chocks or other elements without sharp edges under the wheels. Secure the rigid axle wheels. Ensure that the wedges are in the machine.
- The machine 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.
- Do not support a loaded machine with a parking stand. Before disconnecting the machine from the tractor, the load must be unloaded.
- It is forbidden to disconnect the machine from the tractor if the swing frame or middle frame

CAUTION

Use the wedges only under the rigid axle wheels.

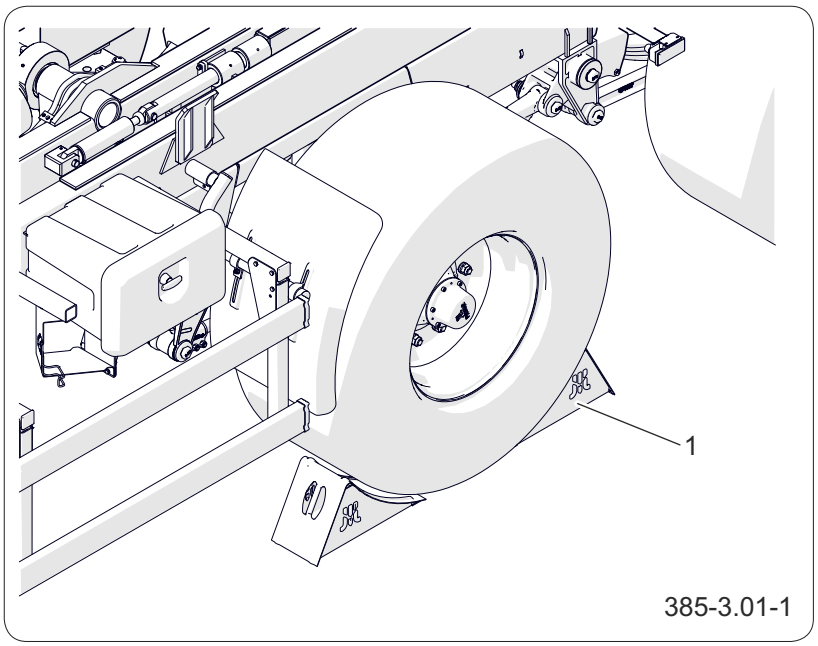

Figure 3.1 Placement of locking wedges
(1) wedge

are not folded and when the suspension lock cylinders are extended.

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3.3 SAFETY WHEN PULLING IN AND REMOVING THE CONTAINER

- Before pulling in the container, remove the sign warning slow-moving vehicles.
- The trailer operating mode can be selected only when the tilting frame is in the rest position and the rear bumper is fully folded.
- The correct switch of the trailer to the "hook" or "tipper" function must be indicated by a corresponding indicator light. See *chapter "Trailer operation"*.
- When connecting the container, position yourself in such a way that the longitudinal axis of the trailer coincides with the longitudinal axis of the container. Otherwise, the side members of the container may not fit in the trailer rollers. As you pull the container in, make sure that the side members are properly resting against the trailer guide rollers. Once pulled in, lock the container onto the trailer using the hydraulic container lock.
- After pulling in, lock the container on the trailer with the hydraulic container lock. When the container is fully locked, the corresponding indicator light must come on. See *chapter "Trailer operation"*.
- It is forbidden for unauthorized persons to occupy the space near the trailer, especially behind the container that is being connected or disconnected.
- Be especially careful when working near power lines.

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3.4 SAFETY WHEN OPERATING THE HYDRAULIC AND PNEUMATIC SYSTEMS

DANGER

The hydraulic and pneumatic systems are under high pressure during operation.

- Regularly check the technical condition of the connections and the hydraulic and pneumatic lines. Machine operation with a leaking system is forbidden.
- In the event of a hydraulic or pneumatic installation failure, the trailer should be turned off from operation until the failure is removed.
- When connecting the hydraulic conduits to the tractor, make sure that the tractor and machine hydraulic systems are not under pressure. If necessary, reduce the residual pressure in the installation. See chapter „*Hydraulic system handling...*”.
- 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 oil in packaging intended for food storage.
- Rubber hydraulic hoses should be replaced every 4 years regardless of their technical condition.

Procedure in the event of an accident

- In the event of injuries being caused by pressurized hydraulic oil, contact a doctor immediately. Hydraulic oil can penetrate the skin and cause infection.
- If the oil gets into the eyes, rinse with plenty of water and if irritation occurs, contact 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).

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3.5 SAFETY WHEN LOADING AND UNLOADING THE CONTAINER

CAUTION

Loading and unloading work should be carried out by a person experienced in this type of work.

- It is forbidden to exceed the permissible load capacity of the trailer because it threatens road safety and may cause damage to the machine.
- It is forbidden to transport people and animals both on the trailer chassis and in containers. The trailer is not intended for transporting people or animals.
- The different types of containers are adapted to transport different groups of materials, so the user is obliged to read the contents of the container manual and follow the recommendations contained therein.
- The cargo in container must be arranged in such a way that it does not threaten the stability of the trailer and does not hinder driving.
- The arrangement of the cargo in container must not overload the chassis and the trailer drawbar.
- Loading and unloading operations can only be carried out if the trailer is placed on a level and hard surface. Tractor and trailer must be placed for straight-ahead driving.
- When unloading the container, it is forbidden to control the central frame lock with the frame raised.
- Please ensure that there are no unauthorized persons in the loading/unloading area of the container. Before tipping make sure that it is visible and make sure there are no bystanders nearby.
- It is forbidden to start or drive with a raised container.
- Be especially careful when working near power lines.
- Be especially careful when opening the container locks because the load presses against the walls.

- Be careful when closing the container walls because of the risk of crushing your fingers.
- Tipping of the container is prohibited during strong gusts of wind.
- If the load does not fall from the raised container, stop unloading immediately. Re-tipping is possible only after removing the cause of the problem (wedging, sticking).
- It is forbidden to jerk the trailer forward if the bulk or difficult-to-pour load has not been unloaded.
- Do not lift the container if there is any risk of the trailer tipping over.
- After unloading, make sure the container is empty.
- Driving with a raised container is prohibited.

BHP.3.4-003.01.EN

3.6 PRINCIPLES OF SAFE MAINTENANCE

- Keep the machine clean.
- You cannot transport people or animals on the machine
- Keep a safe distance during loading and unloading. Keep bystanders away from the working area of the machine.
- During the warranty period, any repairs should be performed only by Warranty Service authorized by the manufacturer. After the end of the warranty period, it is recommended that any repairs shall be carried out by specialized workshops.
- Whenever you find any faults in operation or damage to the machine, do not use it until it is repaired.
- During maintenance work, use appropriate, close-fitting protective clothing, gloves, shoes, glasses and the right tools.
- Any modifications to the machine release the PRONAR Narew company from liability for any damage or health detriment.
- The machine may only be entered when it is absolutely motionless and the tractor engine is turned off. Secure the set with the parking brake. Secure the tractor cabin against access by unauthorized persons.
- Regularly check the technical condition of the safety devices and the correct tightening of the screw connections (in particular the drawbar eye and wheels).
- Carry out inspections of the machine in accordance with the frequency specified in this manual.
- Before commencing repair works on hydraulic or pneumatic systems, reduce residual oil or air pressure completely. How to proceed See

chapter „*Hydraulic system handling...*” , „*Pneumatic system handling...*”

- Carry out repair, maintenance and cleaning works only with the tractor engine turned off and the ignition key removed. Secure the tractor and the machine with the parking brake and additionally place chocks under the machine wheel. Secure the tractor cabin against access by unauthorized persons.
- Only a completely immobilized machine can be disconnected from the tractor.
- Should it be necessary to replace individual elements, use only the parts recommended by the Manufacturer. If you do not comply with these requirements, you may pose a threat to the health or life of bystanders or machine operators, and contribute to machine damage. This is grounds for voiding the warranty.
- Before welding or electric works, disconnect the machine from the power supply. Clean the paint coating. Burning paint fumes are poisonous to humans and animals. Perform welding work in a well-lit and ventilated room.
- During welding work pay attention to flammable or fusible elements (elements of pneumatic, electric and hydraulic systems, elements made of plastics). If there is a risk that they will catch fire or be damaged, remove them or cover them with non-flammable material before welding. Before starting work, have a CO_2 fire extinguisher or foam extinguisher ready.
- In the event of work requiring the machine to be raised, use properly certified hydraulic or mechanical lifts for this purpose. After lifting the machine use additional stable and durable supports. You cannot perform any work under the machine, which has only been lifted with the

jack.

- Do not support the machine with fragile elements (bricks, hollow blocks, concrete blocks).
- After completing work connected with lubrication, remove excess oil or grease. Keep the machine clean.
- You cannot repair elements of the hydraulic or pneumatic system yourself, i.e. control valves, actuators and regulators. In the event of damage to these elements, have them repaired at an authorized repair point or replace the elements with new ones.
- You may not install additional devices or accessories that do not comply with the specifications defined by the Manufacturer.
- You may tow the machine only when the axle, lighting and braking systems are functional.

Procedure in the event of an accident

- Perform maintenance and repair activities applying the general principles of health and safety at work.
- In case of injury, wash and disinfect the wound immediately.
- If you experience more serious injury, seek medical advice.

BHP.3.G-004.01.EN

3.7 OPERATING OF THE MACHINE WITH A POWER TAKE-OFF SHAFT (PTO)

CAUTION

Before starting work, read the drive shaft operating instructions provided by the shaft manufacturer.

- Before starting work, please familiarize yourself with the propeller shaft operating instructions provided by the shaft manufacturer and follow the recommendations contained therein.
- If necessary, adjust the length of the PTO shaft to the cooperating tractor in accordance with the shaft's operating instructions.
- You can connect the machine to the tractor only using a properly selected PTO shaft recommended by the manufacturer.
- The drive shaft must be equipped with covers. It is forbidden to use the shaft with damaged or missing safety elements.
- Some components of the drive shaft (especially the clutch) may become very hot. Do not touch hot parts.
- After installing the shaft, make sure it is properly and safely connected to the tractor and machine.
- Make sure that there are no bystanders (especially children) in the danger zone. Ensure proper visibility of the work area.
- It is forbidden to wear loose clothing, loose belts or anything that could get caught in the rotating shaft. Contact with rotating PTO shaft may cause serious injury.
- Before disconnecting the shaft, turn off the tractor engine and remove the key from the ignition. Secure the tractor against rolling using the parking brake.
- When working in conditions of limited visibility, the articulated telescopic shaft and its surroundings should be illuminated with the help of tractor work lights.
- During transport, the shaft should be stored in

a horizontal position to avoid damage to guards and other safety devices.

- Do not use any PTO speed other than the permissible speed when operating the shaft and the machine. Do not overload the shaft and the machine, do not engage the clutch sharply. Before starting PTO shaft make sure that the PTO rotation direction is correct.
- 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.
- 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 it may cause an accident. Repair the damaged shaft or replace it with a new one.
- Do not use PTO shaft extensions/adapters.
- Disconnect the shaft drive each time when there is no need to drive the machine, or when the tractor and machine are in an unfavourable angular position with respect to each other.
- The chains preventing the shaft cover from turning while the shaft is working, should be secured to a fixed structural element of the machine.
- It is forbidden to use safety chains to support the shaft during standstill or transporting of the machine.

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3.8 RULES FOR MOVING ON PUBLIC ROADS

- When driving on public roads, the tractor operator must ensure, that the machine and tractor are equipped with an approved or homologated warning reflective triangle.
- If the vehicle is driven without a container, place a triangular "Slow Moving Vehicles" symbol on the rear beam ; if the machine is the last vehicle in the set. If the passage is with a container, place a plate distinguishing slow-moving vehicles on the back wall of the container.
- Before driving on roads, remove the rear lamp covers.
- When driving on public roads, comply with traffic regulations and transport regulations in force in the country where the machine is used.
- Do not exceed the maximum design speed. The travel speed must be adapted to the ambient conditions and the load. If possible avoid driving over uneven terrain and unexpected turns.
- Never leave the machine unprotected. The machine disconnected from the tractor must be immobilized with the parking brake and secured against rolling with wedges or other elements without sharp edges placed under the vehicle wheel.
- Before driving, make sure that the machine is correctly connected to the tractor, especially that the hitch pins are secured.
- Vertical load carried by the machine’s drawbar eye affects the steering of the agricultural tractor.
- It is forbidden to drive with a raised container.
- Before using the machine 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

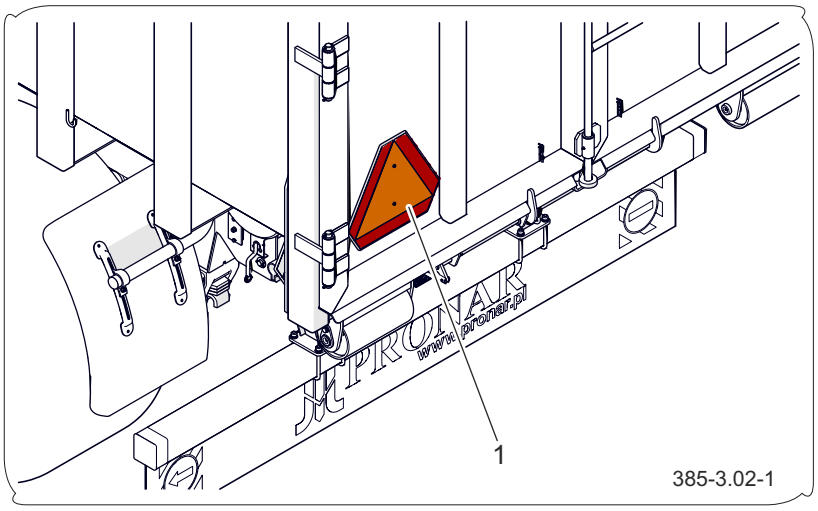

Figure 3.2 Warning triangle
(1) Plate for slow-moving vehicles

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).
- The machine is adapted for driving on slopes up to a maximum of 8^0. Moving the machine on terrain with a steeper slope may cause the set to tip over due to loss of stability.
- 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.
- Do not exceed the maximum load capacity of the machine. Exceeding the carrying capacity may lead to damage to the machine, loss of stability and a hazard while driving. The braking system

of the machine has been adapted to the total weight of the machine, exceeding of which will drastically reduce the operation of the service brake.

- Prolonged travel over sloping ground creates a risk of loss of braking performance.
- When reversing, ask for help of another person. During manoeuvres, 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 machine while driving.
- Parking the machine on a decline is prohibited.

BHP.3.4-005.01.EN

3.9 TIRES

- When working with tires, secure the machine against rolling by placing chocks under the wheels. 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.
- Regularly check if the nuts securing the road wheels are properly tightened.
- Avoid damaged road surfaces, sudden and variable manoeuvres and high speed when turning.
- Regularly check the air pressure in the tires.
- Secure the tire valves with the appropriate caps to avoid contamination penetration.
- Do not use remanufactured tires. Tires should have all approvals required by law, allowing them to be used.

BHP.3.4-006.01.EN

3.10 FIRE HAZARD

- Make sure the machine is clean, which will allow you to reduce the risk of damage and reduce the risk of fire, e.g. due to oil leakage.
- Remember, oil leaks, excess grease and other contaminants increase the risk of fire.
- If you notice fire or smoke, stop the machine immediately. Notify the fire brigade and locate the source of fire or smoke as soon as possible and start extinguishing the fire using appropriate extinguishing agents depending on the material burning. Take special care.
- Read the information leaflets on the available extinguishing agents.
- Do not block the fire road.

BHP.3.4-009.01.EN

3.11 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 activities:

- using the machine for purposes other than described in the manual,
- being between the tractor and machine trailer when the engine is running and when connecting the machine or connecting a second machine,
- machine operation by persons under the influence of alcohol or drugs,
- machine operation by unauthorized persons,
- being on the machine during work,
- cleaning, maintenance and technical inspection of the machine,
- failure to maintain a safe distance when loading, disconnecting, connecting or unloading the container,
- introducing design changes without the consent of the Manufacturer,
- presence of persons or obstacles 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 notes contained in the User Manual,
- keeping a safe distance from prohibited and dangerous places,
- a ban on being on the machine during its work,
- carrying out maintenance and repair work by trained persons,
- using appropriate protective clothing,
- securing the machine against access by unauthorized persons, especially children.

BHP.3.4-007.01.EN

3.12 INFORMATION AND WARNING STICKERS

- The machine is marked with information and warning decals mentioned in table (3.1).
- The arrangement of symbols is shown in figure (3.3). User, you are obliged to ensure the legibility of inscriptions, warning and information symbols placed on the trailer throughout the entire period of use.
- In the event of their destruction, they must be replaced. Information and warning stickers can be purchased directly from the Manufacturer or in the place where the machine was purchased.
- The catalogue numbers of the stickers can be found in the table (3.1) and in Spare parts catalogue. New assemblies replaced during repair must be marked again with the appropriate safety signs. When cleaning the machine, do not must use solvents that may damage the label coating and do vehicles not direct a strong water jet.

Table 3.1. Information and warning stickers

Item	Description of the decal	Catalogue number
1	Before starting any servicing or repair work, switch off the tractor engine and remove the ignition key. Secure the tractor cab against unauthorized access.	70RPN-00.00.00.05
2	Caution! Before starting work, read the *User's Manual*.	70RPN-00.00.00.04
3	Caution. Danger of electric shock. Keep a safe distance from the power lines when tipping or attaching and/or disconnecting the container.	58RPN-00.00.020
4	Information sticker Regularly check the tightness of wheel nuts and other bolted connections.	104RPN-00.00.00.06
5	Lubricate the trailer according to the schedule outlined in the User's Manual.	104RPN-00.00.00.04
6	Type of machine	385N-00000004
7	Tire pressure. (1)	-
8	Permissible vertical load on the tongue tie-rods.	103RPN-00.00.00.02
9	Information sticker Information about the currently set trailer function: "the hooker", "the tipping."	385N-03000002
10	Transport sticker. Fastening points for transport.	58RPN-00.00.019
11	The position of the valve controlling the operation of the support hydraulic system.	45RPN-26.00.002
12	Extending and retracting of the hydraulic support.	45RPN-00.00.011
13	Permissible design speed is 40 km/h.	204N-00000008
14	Permissible design speed is 60km/h.	443N-00000005
15	Permissible design speed 25 km/h (FR). (3)	370N-00000005
16	G36 sticker.	589N-00.00.00.03
17	Distributor sticker. Trailer operation control.	385N-07000003
18	Console sticker. Trailer operation control.	385N-07000004
19	Safety decal. Danger related to the rotating articulated telescopic shaft. (2)	78RPN-00.00.00.05
20	Permissible PTO rotational speed. (2)	75RPN-00.00.00.04
21	Wiring function label.	385N-03000006
22	Approval sticker for the drawbar.	158N-22000026

Item	Description of the decal	Catalogue number
23	Approval sticker for the grounds (FR). (3)	385N-00000003
24	Sticker - Center of Gravity (FR). (3)	370N-00000006
25	Reflective device rectangular, self-adhesive yellow (FR). (3)	DOB35

(1)- the pressure depends on the used tires
(2) - applies to the trailer version with its own hydraulic system
(3) - applies to trailers in FRANCE version

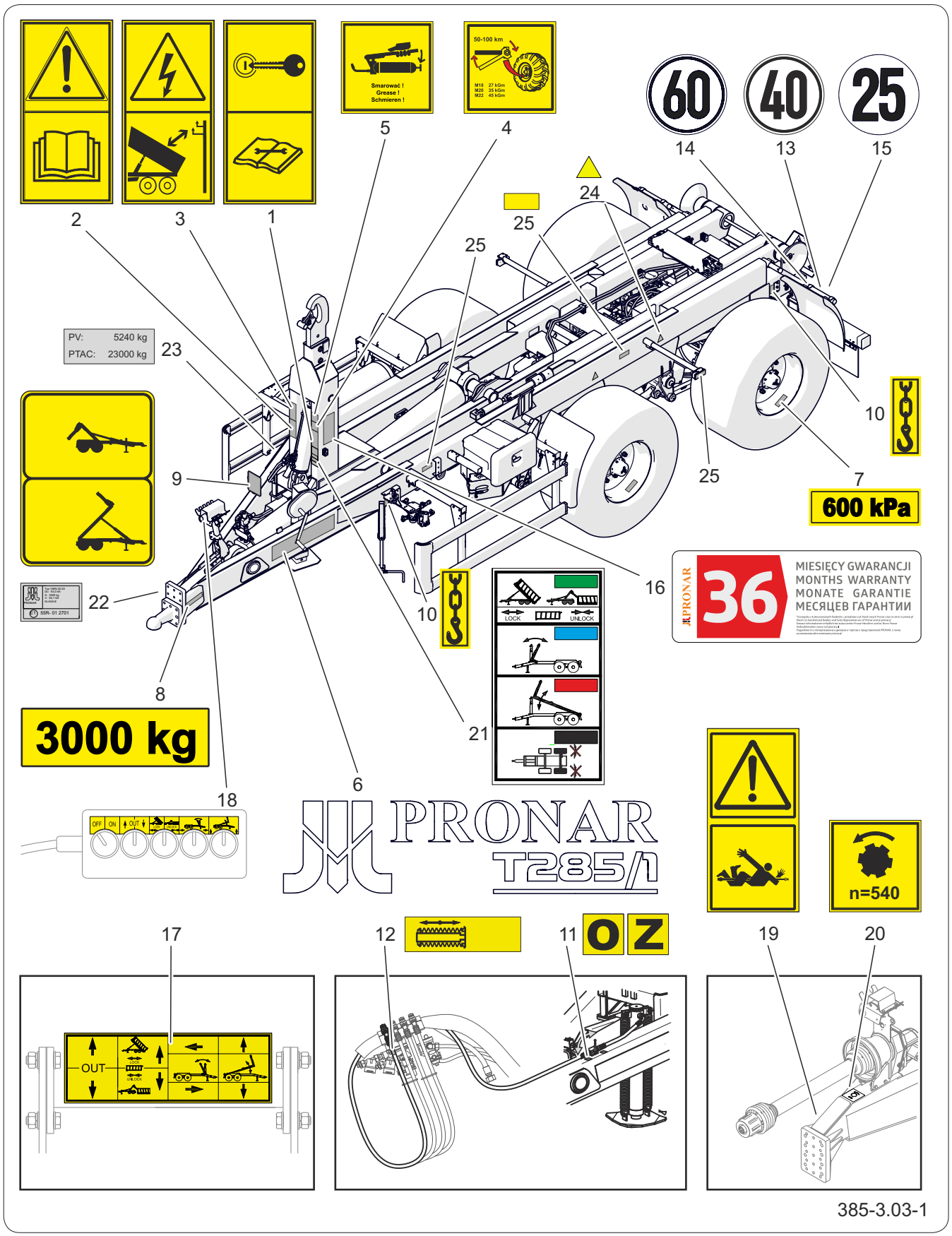

Figure 3.3 Arrangement of information and warning stickers

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CHAPTER 4

CONSTRUCTION AND PRINCIPLE OF OPERATION

PRONAR T285/1

4.1 TECHNICAL CHARACTERISTICS

Table 4.1. Basic technical data*

Content	Unit	T285/1 (Standard)	T285/1 (60km/h)	T285/1 (EU)	T285/1 (FR)	T285/1 (UK)
Dimensions						
Total length without container	mm	7,321				
Overall width(1)	mm	2,550				
Height (without container / with container)	mm	2 981 / 3 650 (2)				
Length with the shortest container	mm	7,413				
Length with the longest container	mm	8,413				
Hook mounting height (2 positions) (3)	mm	1,450 / 1570				
Roll spacing	mm	1,070				
Performance parameters						
Permissible gross weight	kg	23,000	23,000	18,000	23,000	23,000
Load capacity (4)	kg	17,760	17,760	11,974 - 13,546	17,760	17,760
The trailer's karb weight	kg	5,240	5,240	4,454 - 6,026	5,240	5,240
Acceptable dimensions of the container						
Overall length (min/max)	mm	5,400 / 6,400				
Overall maximum width	mm	up to 2,550				
Overall height	mm	2,500				
Other information						
Maximum container tipping angle	(°)	53				
Track wheel spacing	mm	2,000				
Permissible design speed	km/h	40	60	40	25	40
Permissible load on the drawbar eye	kg	3,000				
Oil demand (5)	L	25				
Rated pressure of the hydraulic system	MPa	20				
Min. tractor power	kW / KM	92 / 125				

(1) - trailer width exceeds 2 550 mm for 600/55-22.5, 600/50R22.5, 620/50R22.5 tires,
(2) - dimension with a container height of 2500 mm,
(3) - the height from the base of the container to the axis of the hook,
(4) - payload including the weight of the container,
(5) - without hydraulic braking system.
**- depending on legal restrictions in the country of sale and the trailer's assembly, the above data may differ from the given ones.*

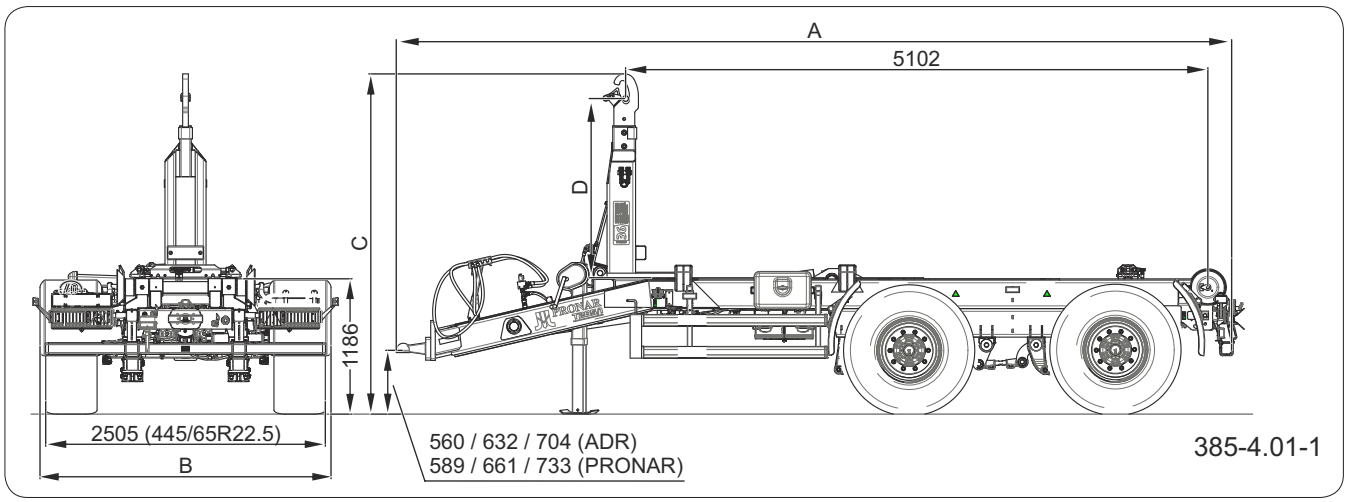

Figure 4.1 Basic dimensions of the machine

Table 4.2. Basic dimensions of the machine

Content	Unit	T285/1
Total length without container (A)	mm	7,321
Overall width (B)	mm	2,550
Height without with container (C)	mm	2,981(1)
Hook mounting height (2 positions) (2) (D)	mm	1,450 / 1570

(1) - dimension with ADR axes (for PRONAR axis - 3010mm),
(2) - the height from the base of the container to the axis of the hook.

CAUTION

Depending on the additional equipment of the trailer, some technical parameters may change.

- Tire information is provided at the end of the publication in APPENDIX A.
- Dimensions of the hook trailer, i.e. width, height and track width, may vary depending on the tires used (optional).

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4.2 CONSTRUCTION OF THE MACHINE

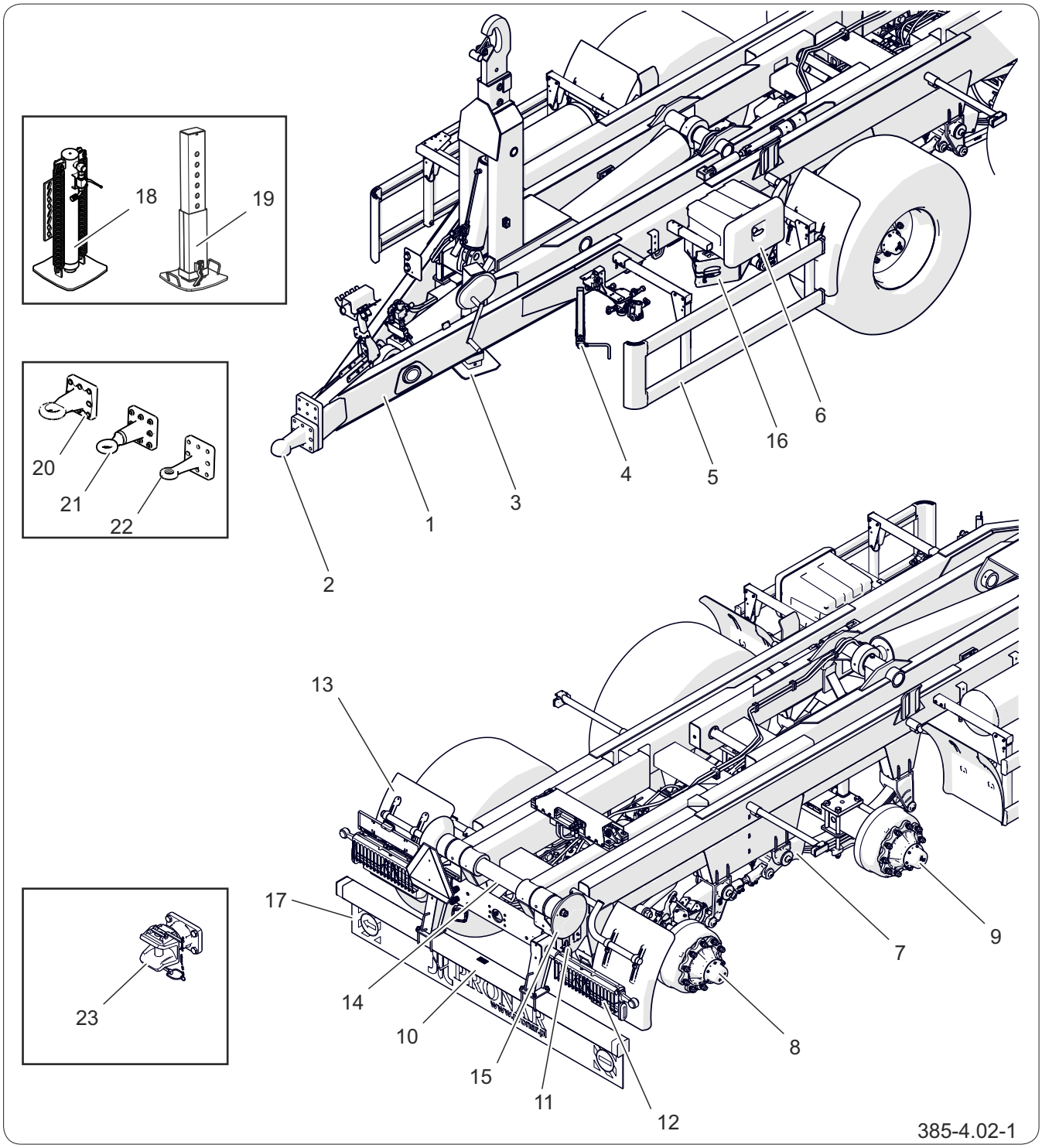

Figure 4.2 Construction of the machine

(1) lower frame *(2) tie rod* *(3) straight support with mechanical transmission*
(4) hand brake mechanism *(5) side overrun guards* *(6) tool box*
(7) tandem suspension *(8) steering axle* *(9) rigid axle*
(10) rear beam *(11) beam pin* *(12) lighting set*
(13) fender *(14) hoist axle* *(15) fixed roller*
(16) wheel chocks *(17) swinging apron* *(18) straight hydraulic support*
(19) telescopic support *(20-22) linkage* *(23) rear hitch*

ADVICE

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

The main load-bearing element of the hook trailer is the lower frame (1) - figure (4.2). At the front of the frame is the drawbar to which the tie rod (2) is attached. Depending on the version, the trailer may be equipped with other types of tie-rods, as shown in chapter 1.

The trailer support (3) is bolted to the left-hand side member of the drawbar. On the left-hand side of the frame, the parking brake mechanism (4) is welded to the support. On the left side of the frame, the parking brake mechanism (4) is welded to the bracket. Side shields (5) can be installed on both sides of the trailer and the left-hand side tool box (6). Fenders (13) are mounted on the supports to the lower frame.

The trailer axle assembly consists of a tandem mechanical suspension (7), a rigid axle (9) and a steering axle (8) with a hydraulic steering lock. The trailer axles are equipped with drum brakes. The actuators for the brakes are pneumatic or hydraulic actuators depending on the brake system installed.

At the rear of the frame there is a rear beam (10) (rear protection) manually extendable with the possibility of locking in two positions by means of pins (11).

Complete light beams (12) are mounted on both sides. The combination lamps and reflective triangles included in the lighting kit are protected against damage by means of covers. When driving the trailer on public roads, these covers must be removed and attached to the other side of the lighting beam profiles using star nuts.

Swing frame - figure (4.3) is connected to the chassis by a tipping axle and a tipping cylinder. The swing frame consists of the rear frame (1), the centre frame (2) and the hook frame (3) to which the hook (4) with automatic container protection is bolted. The individual frames are connected by means of pins set in the bushings. The swing frame lock (6) is installed

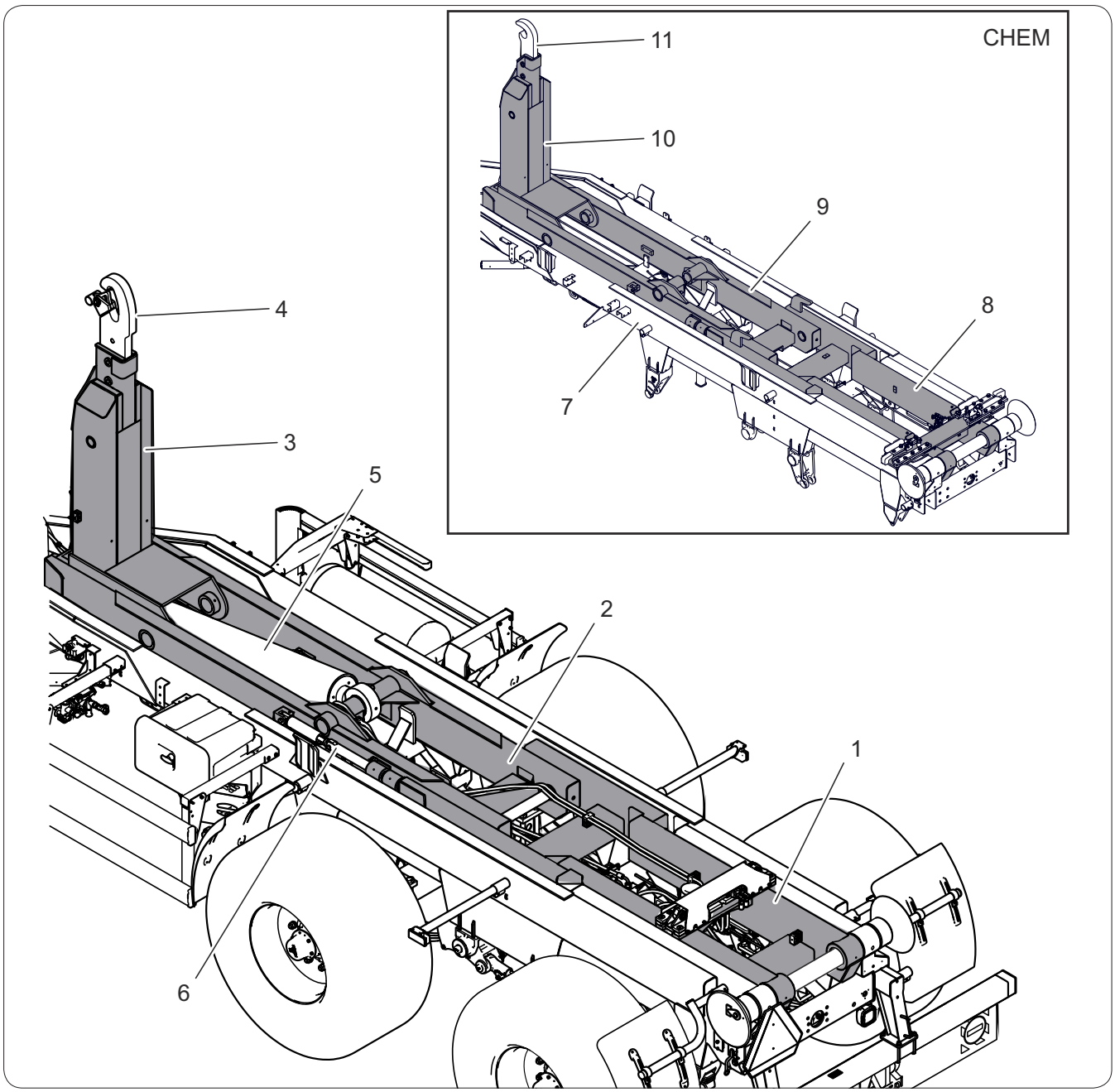

Figure 4.3 Swing frame

(1) rear frame
(2) center frame
(3) hook frame
(4) adjustable hook with latch
(5) tilt cylinder
(6) swivel frame lock
(7) lower frame CHEM
(8) rear frame CHEM
(9) centre frame CHEM
(10) CHEM hook frame
(11) CHEM hook

on the left-hand side frame rail.

The swing frame lock is controlled from the tractor operator's cab by the lever of the tractor's auxiliary hydraulic distributor (by switching the ends (1, 2) of the shift cylinder (3) – figure 4.4). When the container is tilted backwards, the centre frame must be immobilized with the rear frame (the shift cylinder (3) is

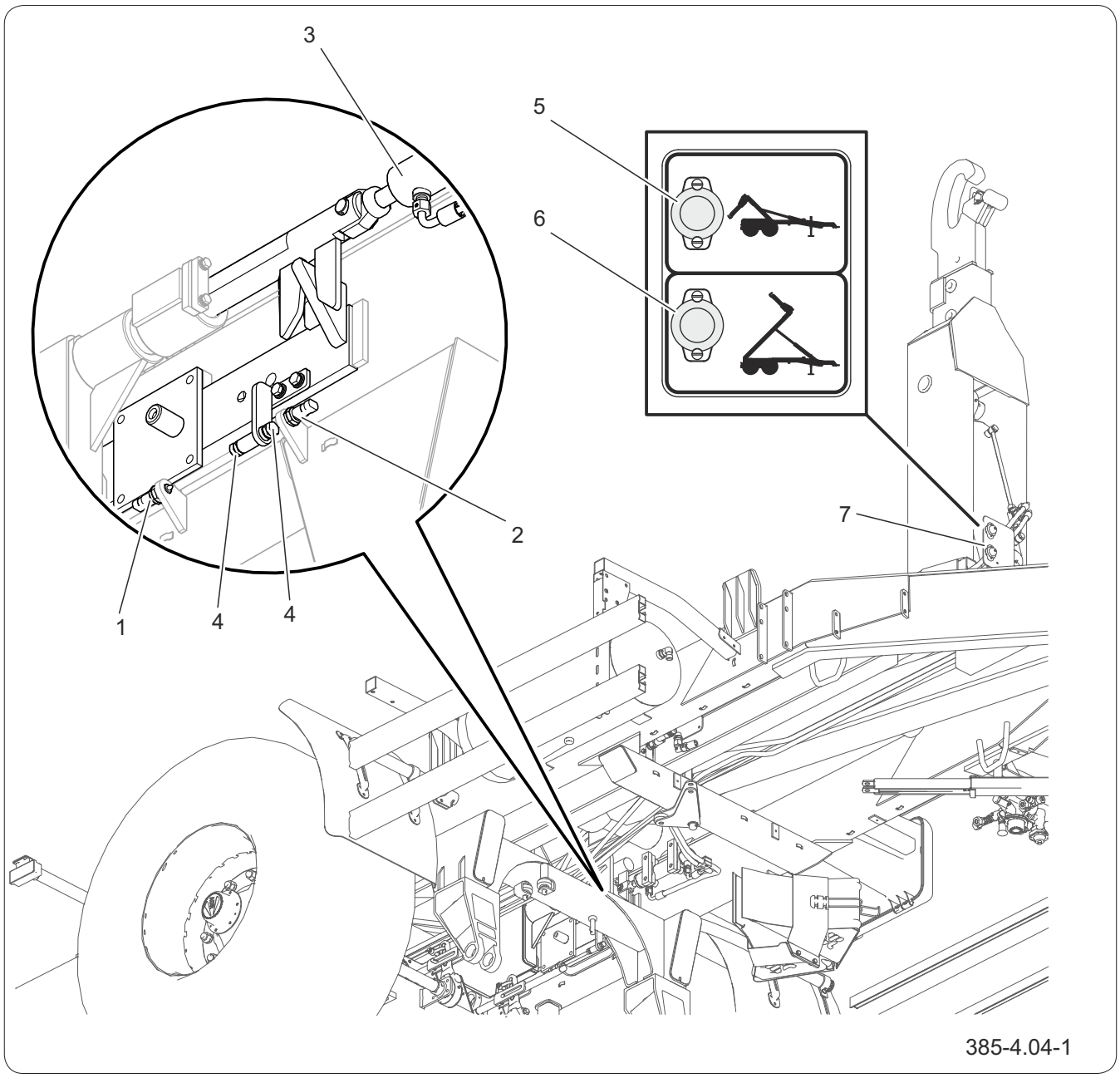

Figure 4.4 Swing frame lock
(1) left limit switch *(2) right limit switch* *(3) switching actuator*
(4) screw with nut *(5) marker lamp I* *(6) marker lamp II*
(7) signalling board

extended as far as it will go). The left end (1) is to be pressed down when the tow tractor is in the "tipping" position, the end-outline lamp II (6) on the signalling plate (7) must light up in this position. The entire swing frame is raised by the tilt cylinder.

Tilting of the central frame allows you to attach or detach the container. To do this, unlock the centre frame by controlling the shift cylinder (3) accordingly.

The right limit switch (2) is to be pressed when the hook trailer is in the "hook trailer" position - in this position, the marker lamp I (5) on the signalling board (7) must light up. In this position, the rear frame remains on the lower frame of the trailer, the centre frame is raised by the tipping cylinder. The hook frame (3) is controlled only when the container is unlocked. The hook has automatic container protection and is adjustable in two positions (adapted to containers made according to DIN 30722 and containers according to SS 3021).

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4.3 PNEUMATIC BRAKING SYSTEM

ADVICE

First connect the yellow wire, then the red wire.

Disconnect the air hoses in reverse order.

The pneumatic service brake is activated from the driver's cab by pressing the tractor brake pedal. The control valve (1) – figure (4.5) activates the trailer brakes simultaneously with applying the tractor brake. In the event of an unexpected disconnection of the brake cable between the machine and the tractor, the control valve automatically activates the machine's brake. After connecting the cable to the tractor connector, the system automatically moves to the position enabling normal operation of the brakes. The control valve (1) has a brake release button (3), used when the trailer is disconnected from the tractor.

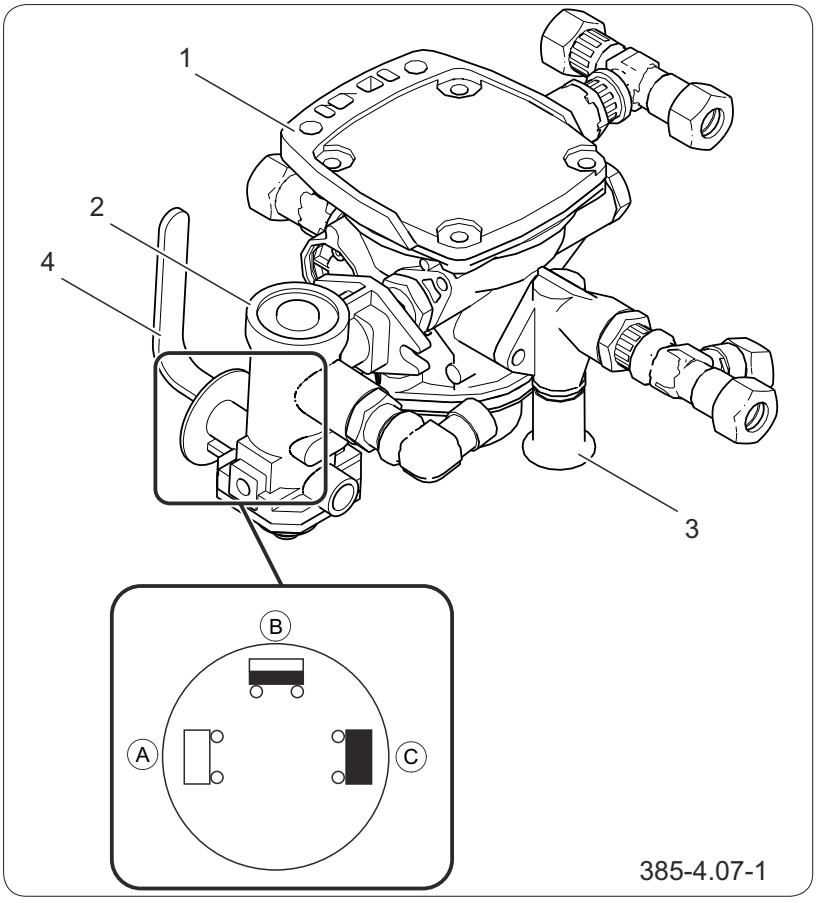

Figure 4.5 Control valve and braking force regulator
(1) control valve (2) brake force regulator (3) release button (4) setting lever
(A) "NO LOAD" position (B) "HALF LOAD" position (C) "FULL LOAD" position

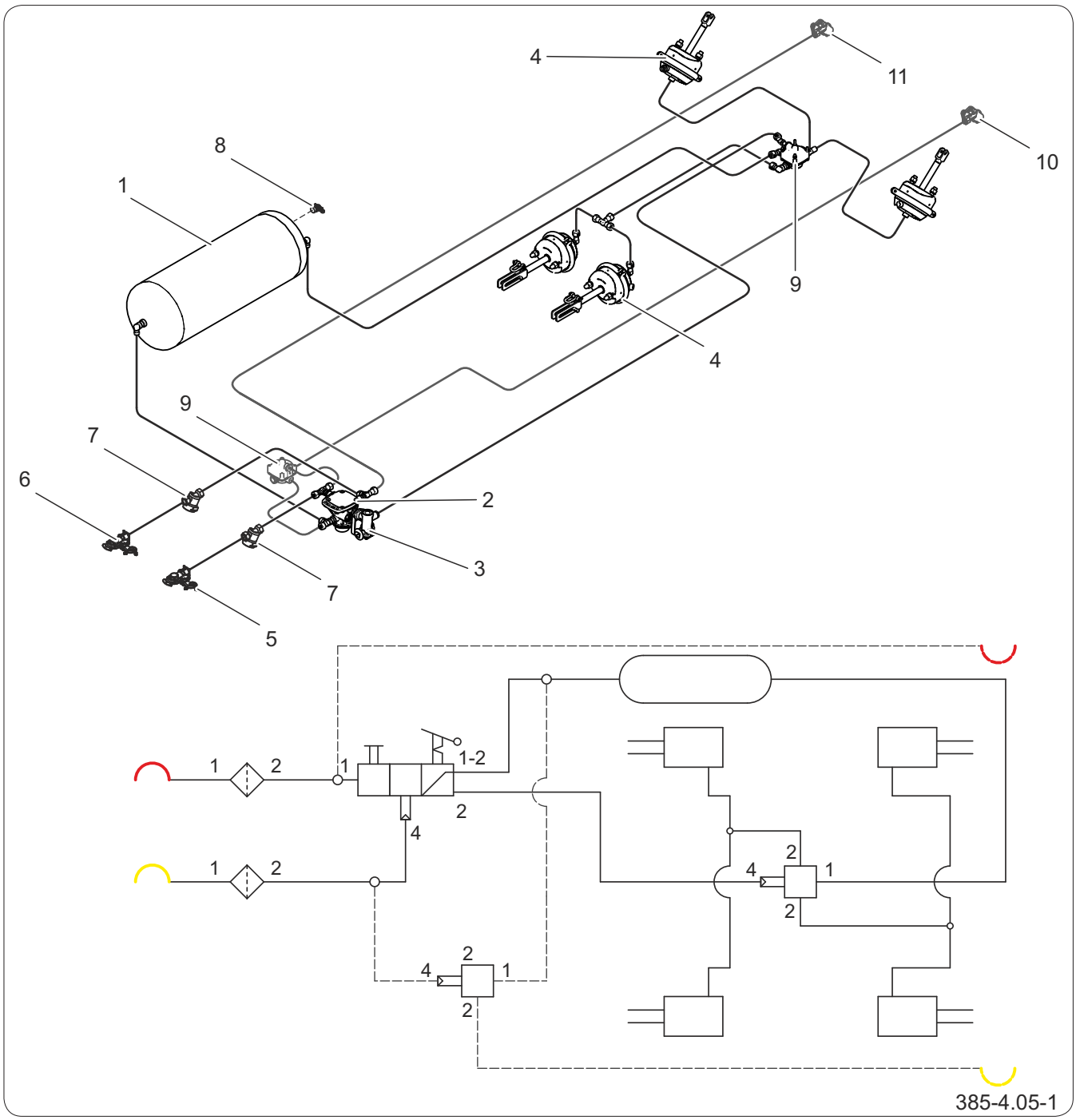

Figure 4.6 Diagram and structure of the pneumatic braking system with manual brake force control

(1) air tank *(2) control valve* *(3) braking force regulator*
(4) brake cylinder *(5) yellow cable connector* *(6) red cable connector*
(7) air filter *(8) tank control connector* *(9) relay valve*
(10) yellow socket *(11) red socket*

Pneumatic system with manual control – figure (4.6) is equipped with a three-band brake force regulator that adjusts the braking force according to the setting. Switching to the appropriate operating mode is done manually by the machine operator before starting

the journey using the lever. Three work positions are available: A - ‘No load’, B - ‘Half load’ and C - ‘Full load’.

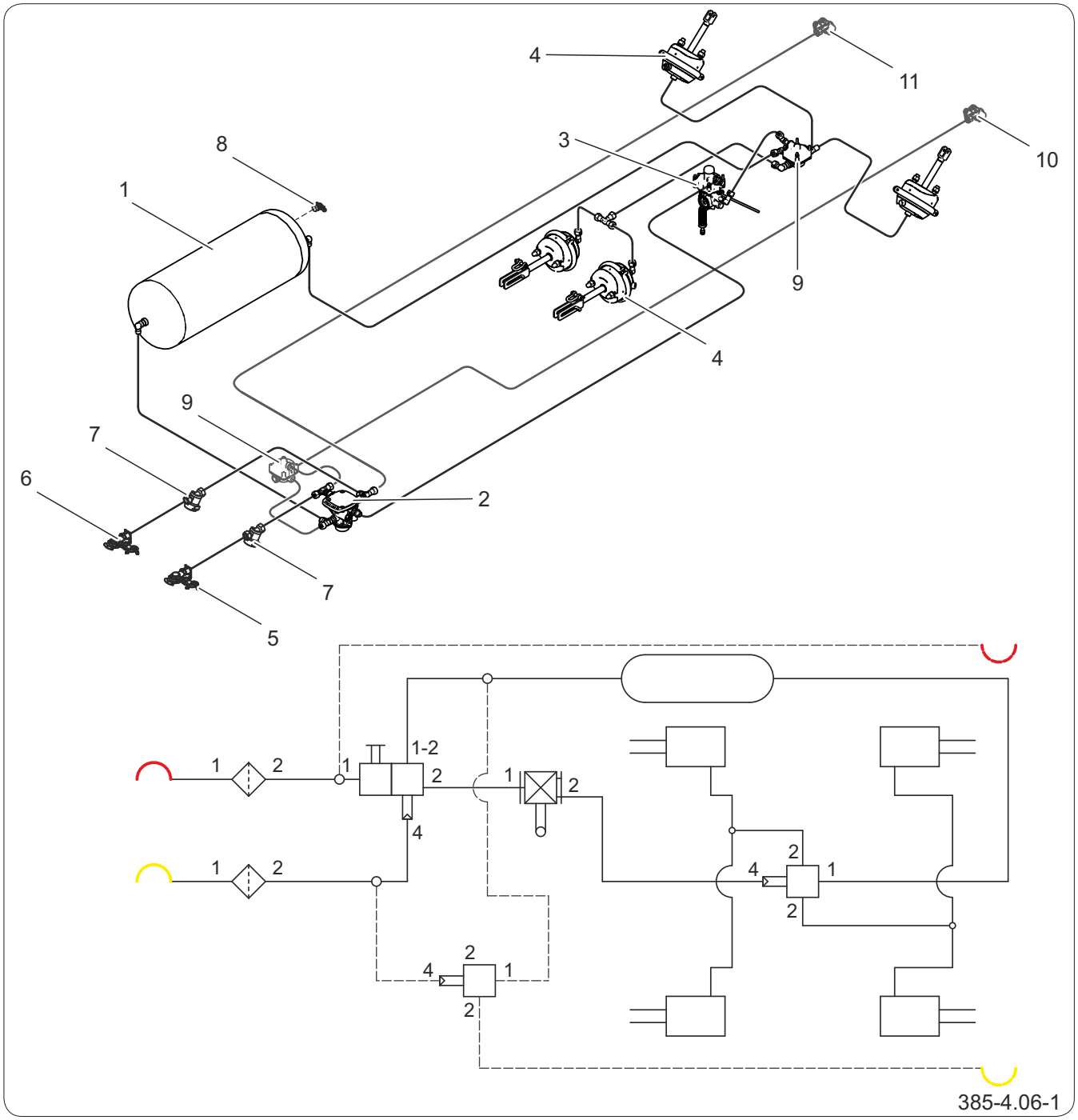

Figure 4.7 Diagram and structure of the pneumatic braking system with automatic brake force control

(1) air tank *(2) control valve* *(3) braking force regulator*
(4) brake cylinder *(5) yellow cable connector* *(6) red cable connector*
(7) air filter *(8) tank control connector* *(9) relay valve*
(10) yellow socket *(11) red socket*

Pneumatic system with automatic control - figure (4.7) is equipped with an automatic brake control that adjusts the machine's braking force to the weight of the load being transported and does not require operator service during normal operation.

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4.4 HYDRAULIC BRAKING SYSTEM

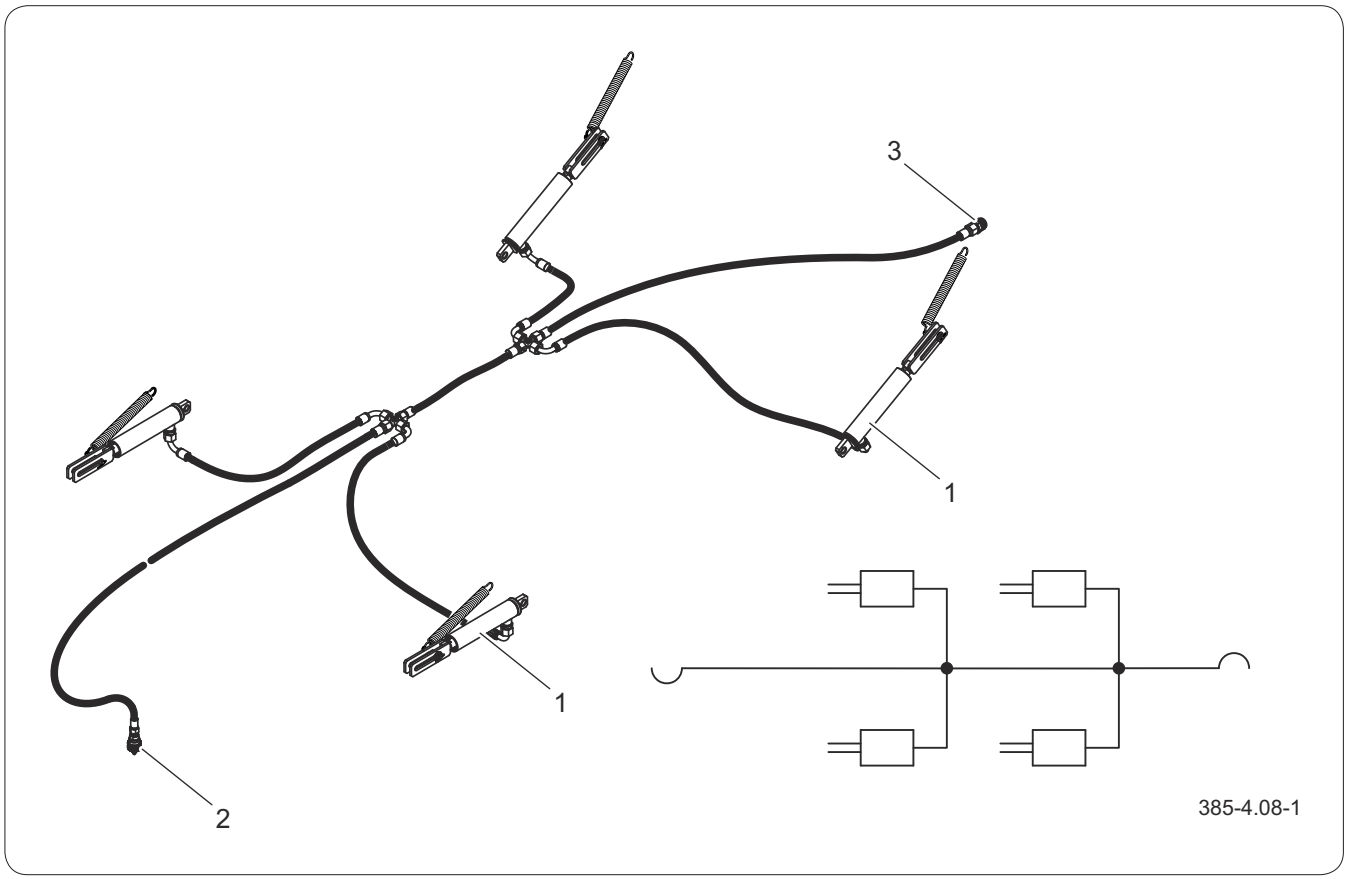

Figure 4.8 Diagram and structure of the hydraulic braking system
(1) hydraulic cylinder (2) quick connector socket
(3) quick coupler plug (for rear output)

ADVICE

The hydraulic braking system of the machine was filled with L-HL32 hydraulic oil.

Hydraulic service brake, is activated from the operator's cabin by pressing the tractor brake pedal.

BIZ.3.4-004.01.EN

4.5 HYDRAULIC BRAKE SYSTEM (FRANCE)

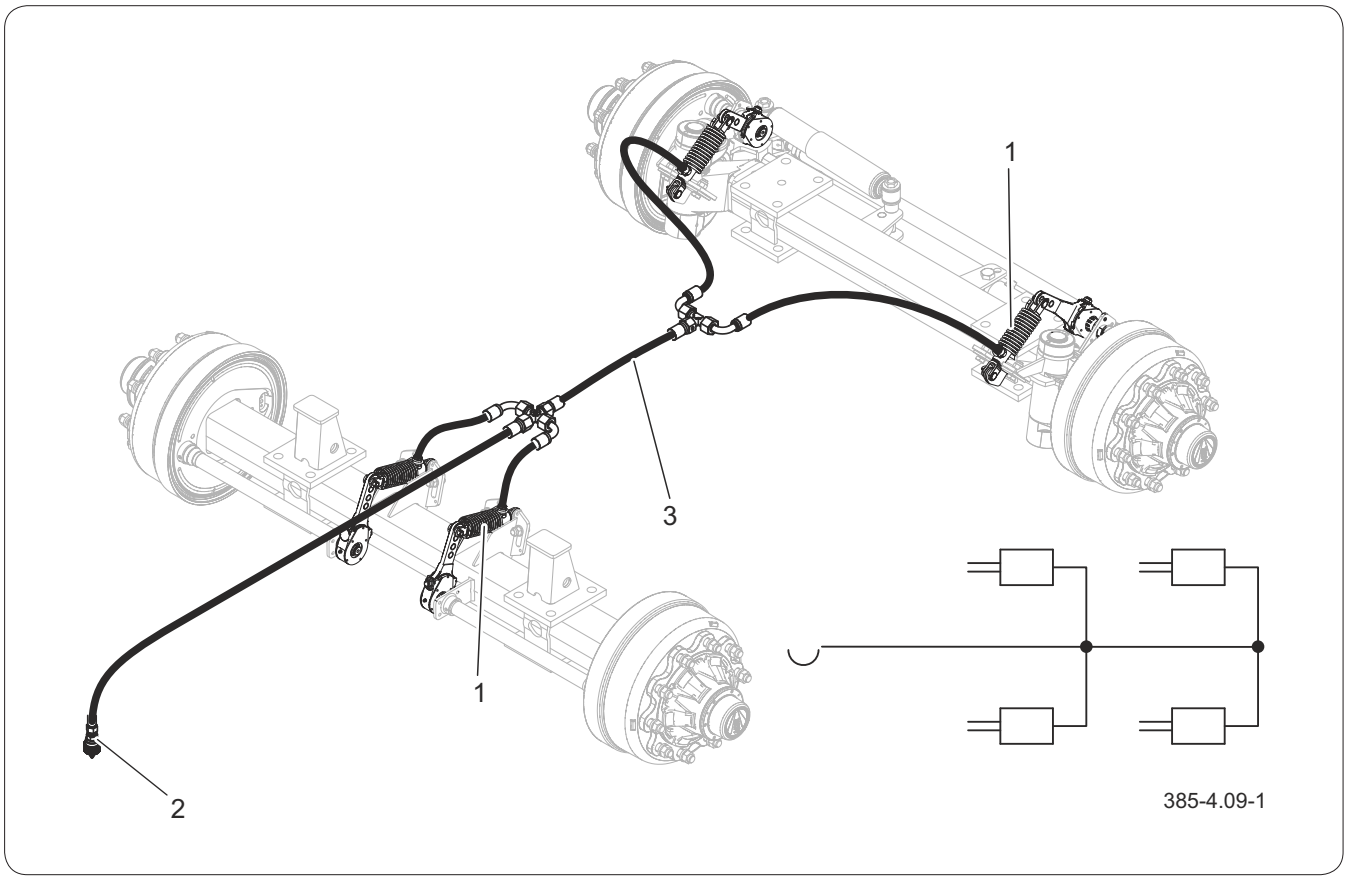

Figure 4.9 Diagram and structure of the hydraulic braking system (FR)
(1) hydraulic cylinder (2) quick connector socket (3) cable

ADVICE

The machine's hydraulic braking installation was filled with L-HL32 hydraulic oil.

Hydraulic service brake, is activated from the operator's cabin by pressing the tractor brake pedal.

BIZ.3.4-005.01.EN

4.6 PNEUMATIC-HYDRAULIC BRAKING SYSTEM

ADVICE

First connect the yellow wire, then the red wire.

Disconnect the air hoses in reverse order.

The pneumatic-hydraulic braking system (combined) combines a pneumatic system with a manual braking force regulator with a hydraulic system equipped with an electro-hydraulic brake valve.

The pneumatic-hydraulic service brake is activated from the operator's cabin by pressing the tractor brake pedal. The task of the hydraulic solenoid valve (1)– figure (4.10) is to activate the trailer's brakes simultaneously with the tractor's brake Before driving, perform a test braking by pressing the brake pedal several times in order to obtain the appropriate pressure in the hydraulic accumulators. The connection cable is used to power the trailer valve from the tractor's electrical system. In the event of an unexpected disconnection of this conduit, the brake valve automatically activates the machine brake. The same emergency braking effect is obtained by switching off the tractor engine and decaying voltage on the solenoid valve.

The valve used has a brake release button, used when the trailer is disconnected from the tractor. The brake is released by reducing the pressure in the trailer system. Connecting of the connection and hydraulic supply lines to the tractor and applying voltage to the control valve allows the brakes to operate normally.

The electro-hydraulic brake valve 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. Three work positions are available: A - ‘No load’, B - ‘Half load’ and C - ‘Full load’.

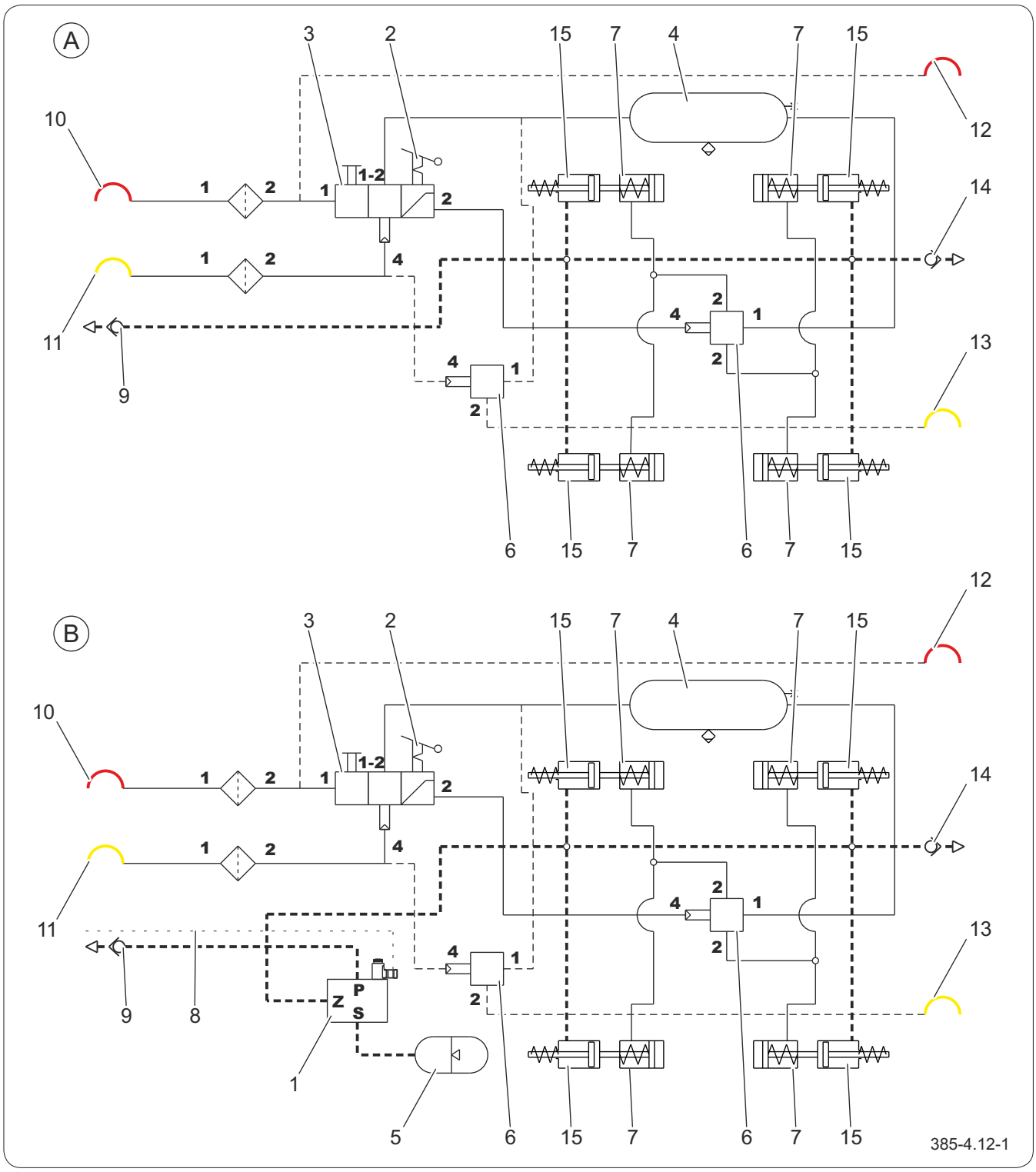

Figure 4.10 Diagram of the pneumatic-hydraulic braking system
(A) With manual brake force regulator
(B) with manual brake force regulator and electrohydraulic brake valve

(1) electrohydraulic brake valve *(2) brake force regulator*
(3) control valve *(4) air receiver* *(5) hydraulic accumulator*
(6) relay valve *(7) pneumatic actuator* *(8) electrical connection*
(9) hydraulic power cable *(10) red cable connector* *(11) yellow cable connector*
(12) red socket *(13) yellow socket* *(14) hydraulic socket*
(15) hydraulic cylinder

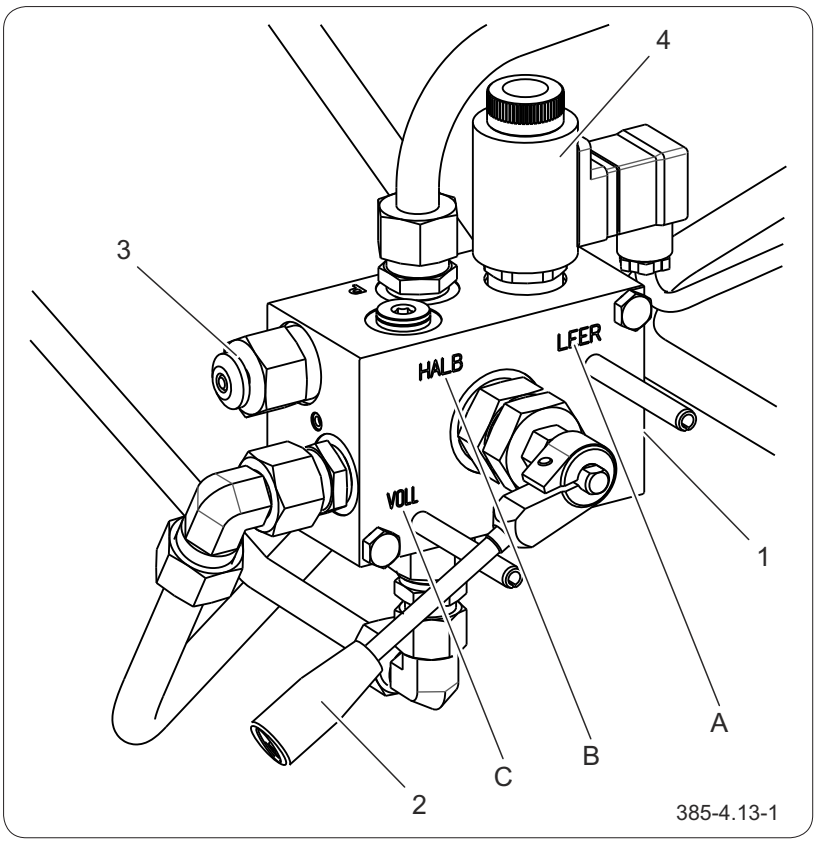

Figure 4.11 Electro-hydraulic brake valve
(1) electrohydraulic valve *(2) selector lever*
(3) release button *(4) electric coil,*
(A) "NO LOAD" position *(B) "HALF LOAD" position*
(C) "FULL LOAD" position

BIZ.3.4-007.01.EN

4.7 PARKING BRAKE

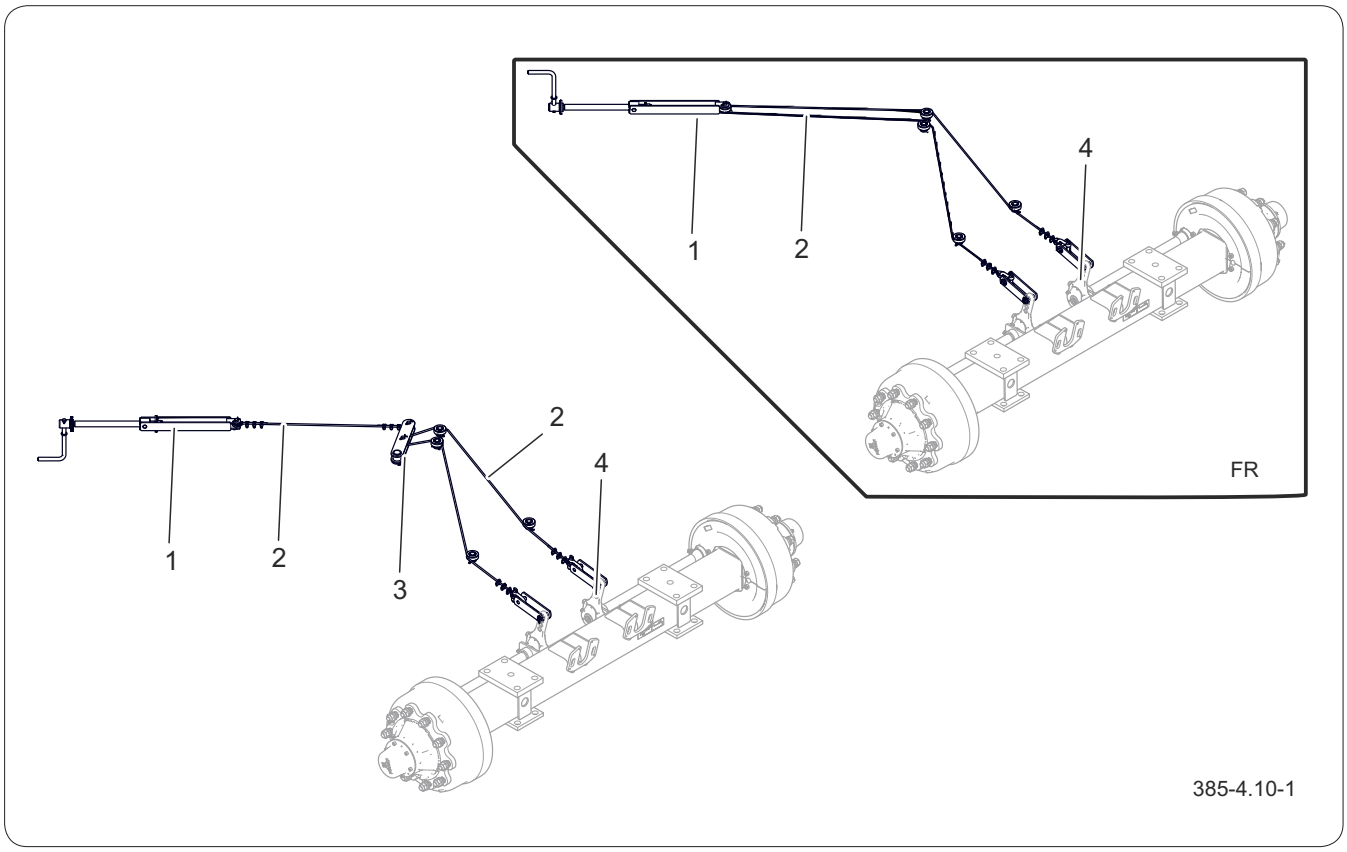

Figure 4.12 Parking brake construction
(1) brake mechanism *(2) cable* *(3) lever*
(4) spreader lever

The parking brake is used to immobilize the machine during parking. The brake crank mechanism (1) is connected with steel cables to the spreader levers (4) of the driving axle. Turning the crank mechanism (1) clockwise, the steel cable tightens causing the brake expander levers to swing, which by opening the brake shoes cause the machine to immobilize. Before driving, release the parking brake - the steel cable must hang loosely.

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4.8 SAFETY BRAKE

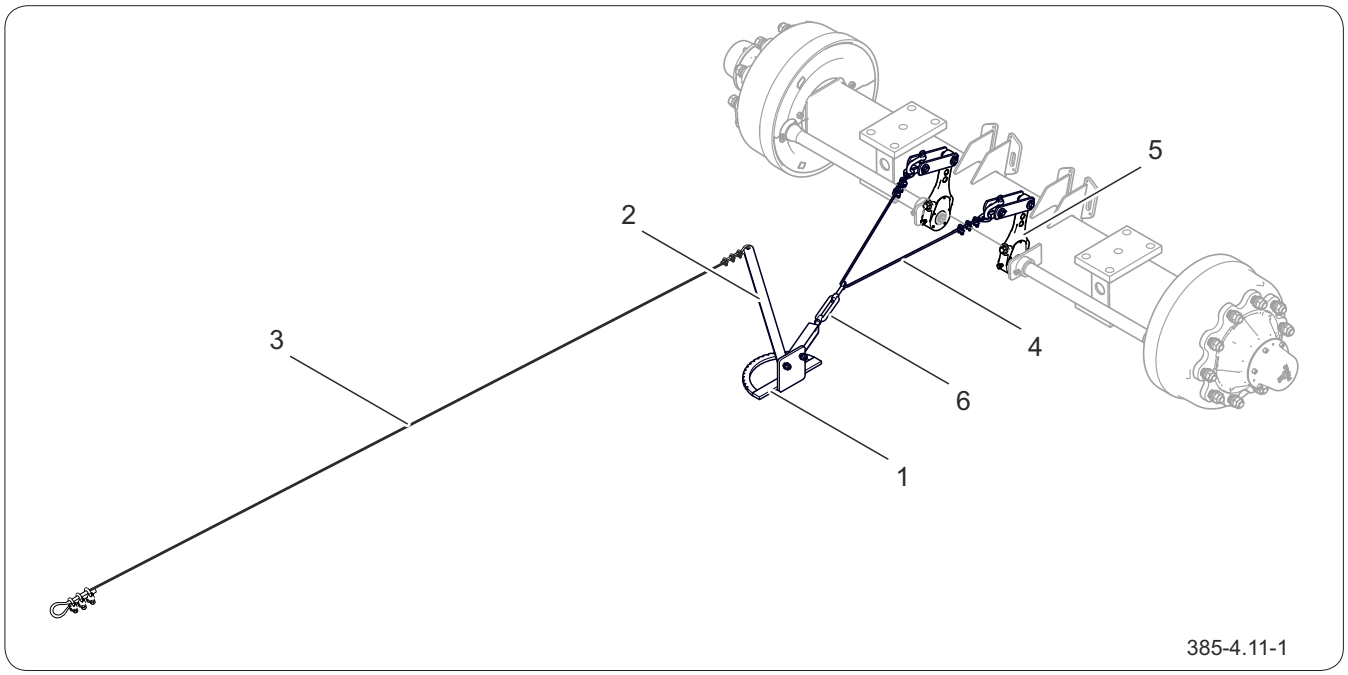

Figure 4.13 Construction of the safety brake (FR)
(1) ratchet mechanism *(2) mechanism lever* *(3) safety cable*
(4) brake cable *(5) expander lever* *(6) turnbuckle*

CAUTION

Before driving, make sure that the emergency brake is unlocked and the safety cable is correctly positioned and securely attached to the tractor structure.

The safety brake is used to stop the trailer when the coupling is disengaged while the set is moving.
One end of the cable (3) is connected to the ratchet lever (2) (1) and the other to the stationary part of the tractor. The ratchet mechanism (1) is connected with a steel cable (4) with the spreader levers (5) of the road axle.
While the trailer is moving, when the coupling is disconnected, the safety cable (3) will act on the mechanism lever (1), which will cause the brake spreader levers to deflect, which, by opening the brake shoes, immobilizes the trailer. Before driving, check the emergency brake - the steel cable and safety cable must be hanging loosely and the ratchet mechanism must be in the unlocked position. The turnbuckle (6) is used to adjust the tension of the cable (4).

BIZ.3.4-006.01.EN

4.9 THE HYDRAULIC SYSTEM

ADVICE

The spreader's hydraulic system was filled with L-HL32 hydraulic oil.

CAUTION

Before starting the PTO, check that the shaft is properly secured, that the rotation direction is clockwise and that the speed is 540 rpm.

It is not permitted to engage the PTO if the shaft fails, the shaft guards are damaged, or if bystanders are nearby. Be especially careful!

CAUTION

Connect the hydraulic lines first. Then start the remote control, engage the tractor PTO in the last step.

The standard trailer is equipped with a central hydraulic system - figure (4.14) with electrohydraulic safety system.

The hydraulic system requires the supply and return lines to the tractor's external hydraulic connections and is controlled by the tractor's hydraulic distributor.

The trailer can optionally be made in a version with a distributor - figure (4.15) and with its own hydraulic system - figure (4.16).

Only two lines, the supply and return lines, are connected on the splitter system. The remote control is controlled - see chapter *"Hydraulic operation"*.

On the version with its own hydraulic system, the tractor is powered by the PTO shaft. The remote control is controlled - see chapter *"Hydraulic operation"*.

The central hydraulic system controls the following functions:

- hydraulic suspension lock,
- hydraulic container lock,
- hydraulic tipping with hydraulic shifting hook / tipper,
- hydraulic hook frame.

The hydraulic suspension lock is used to lock the suspension arms during unloading of the container. By controlling the hydraulic distributor lever, the suspension lock cylinders (3) are extended first - figure (4.14) and the lift cylinder (4) can be extended when the pressure is reached. When the lift cylinder is extended, the limit valve (5a) is activated to prevent the suspension from unlocking. The suspension will be unlocked when the lift cylinder is fully retracted (swivel frame park position). Shock-free valves (6) relieve the system from sudden pressure spikes, which makes the cylinder work smoother.

The hydraulic container lock ensures that the container

is secured to the trailer chassis during both transport and chute operations. The lock is controlled from the tractor cabin via the hydraulic distributor lever. When the rod of the container lock cylinder (7) is extended, the end piece (8) is disengaged and the hook frame cylinder (10) cannot be controlled. When extending the lifting cylinder (4), the end valve (5b) is activated, which prevents the container from being unlocked. The hook frame is controlled only when the container is unlocked.

The system is equipped with hydraulic locks (11) located on the cylinders (7.10). The use of a hydraulic lock increases the safety of the trailer. In the event of damage to the installation pipes (abrasion, leakage), the hydraulic lock will lock the actuator in a fixed, unchangeable position.

The hydraulic tipping control with hydraulic hook/tipper switching and the hook frame control are described in the section "*Construction of the machine"*.

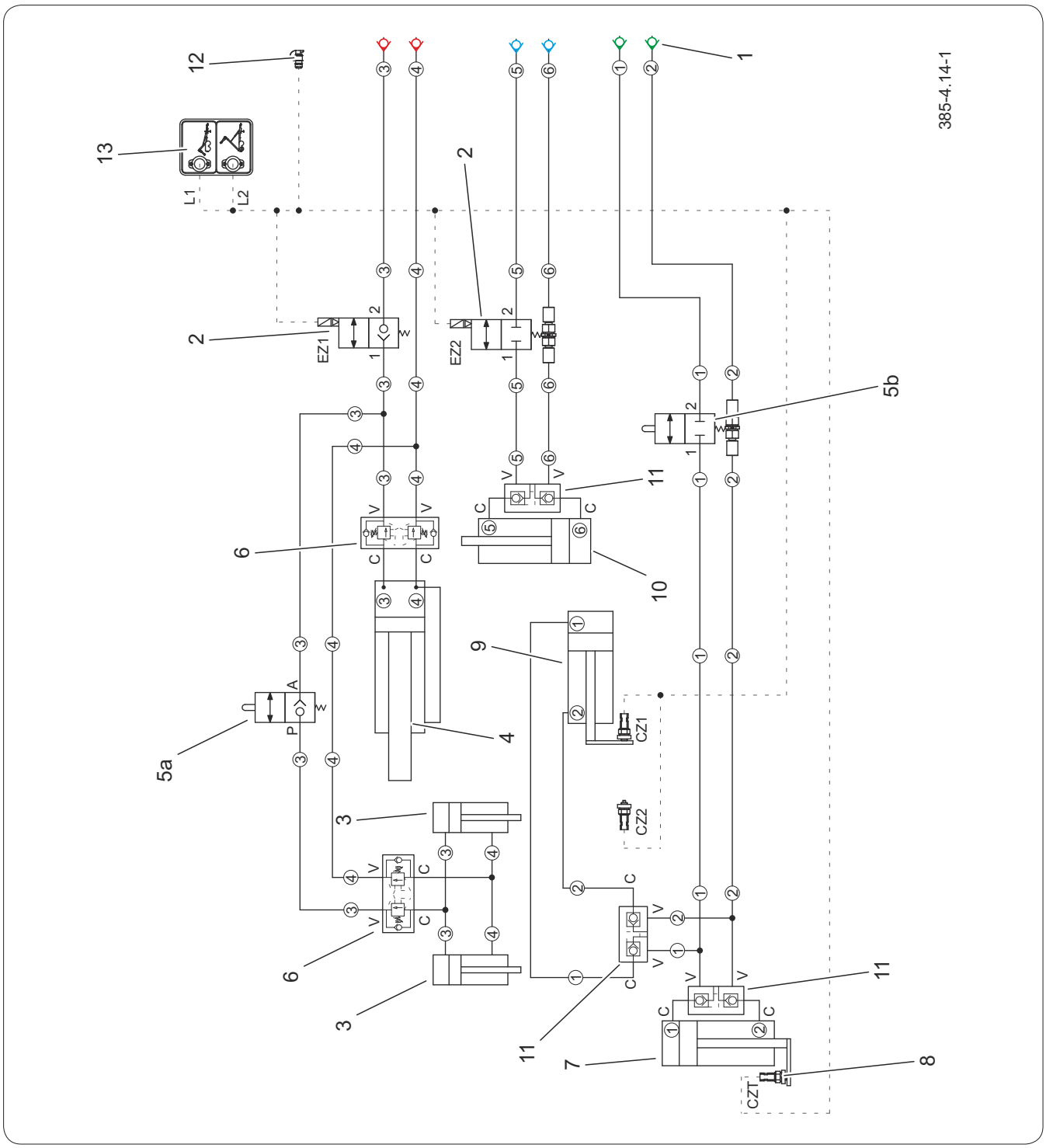

Figure 4.14 Hydraulic installation diagram (standard)

(1) quick-connect fitting *2) electro-hydraulic valve* *(3) suspension cylinder,*
(4) lift cylinder *(5a) limit valve* *(5b) limit valve*
(6) anti-shock valve *(7) container lock actuator* *(8) sensor - limit*
(9) shift cylinder *(10) hook frame cylinder* *(11) hydraulic lock*
(12) electrical connection *(13) signalling plate*

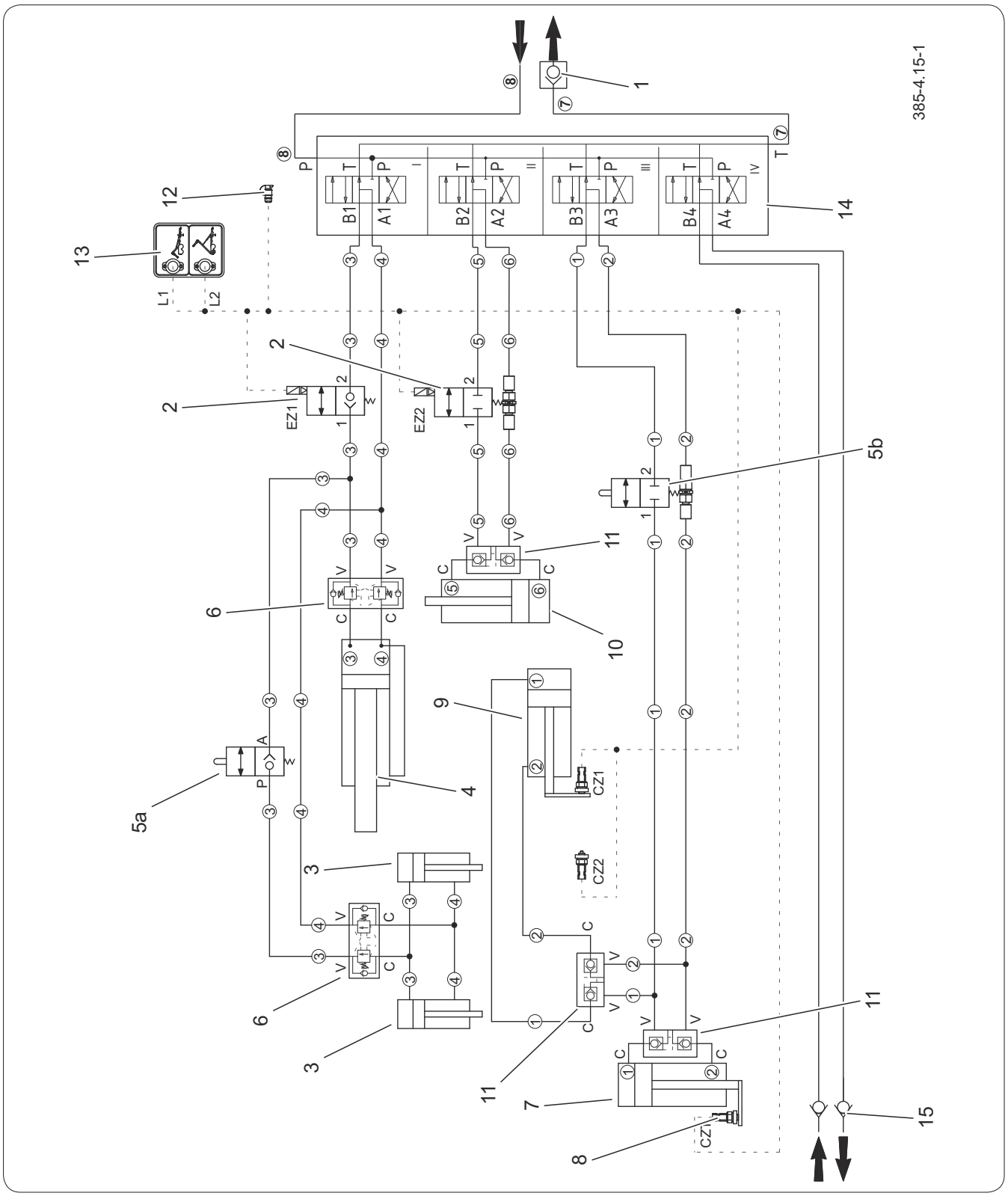

Figure 4.15 Diagram of the hydraulic installation with a distributor

(1) quick-connect fitting *(2) electro-hydraulic valve* *(3) suspension cylinder,*
(4) lift cylinder *(5a) limit valve* *(5b) limit valve*
(6) anti-shock valve *(7) container lock actuator* *(8) sensor - limit*
(9) shift cylinder *(10) hook frame cylinder* *(11) hydraulic lock*
(12) electrical connection *(13) signaling board* *(14) hydraulic distributor*
(15) quick connector-socket

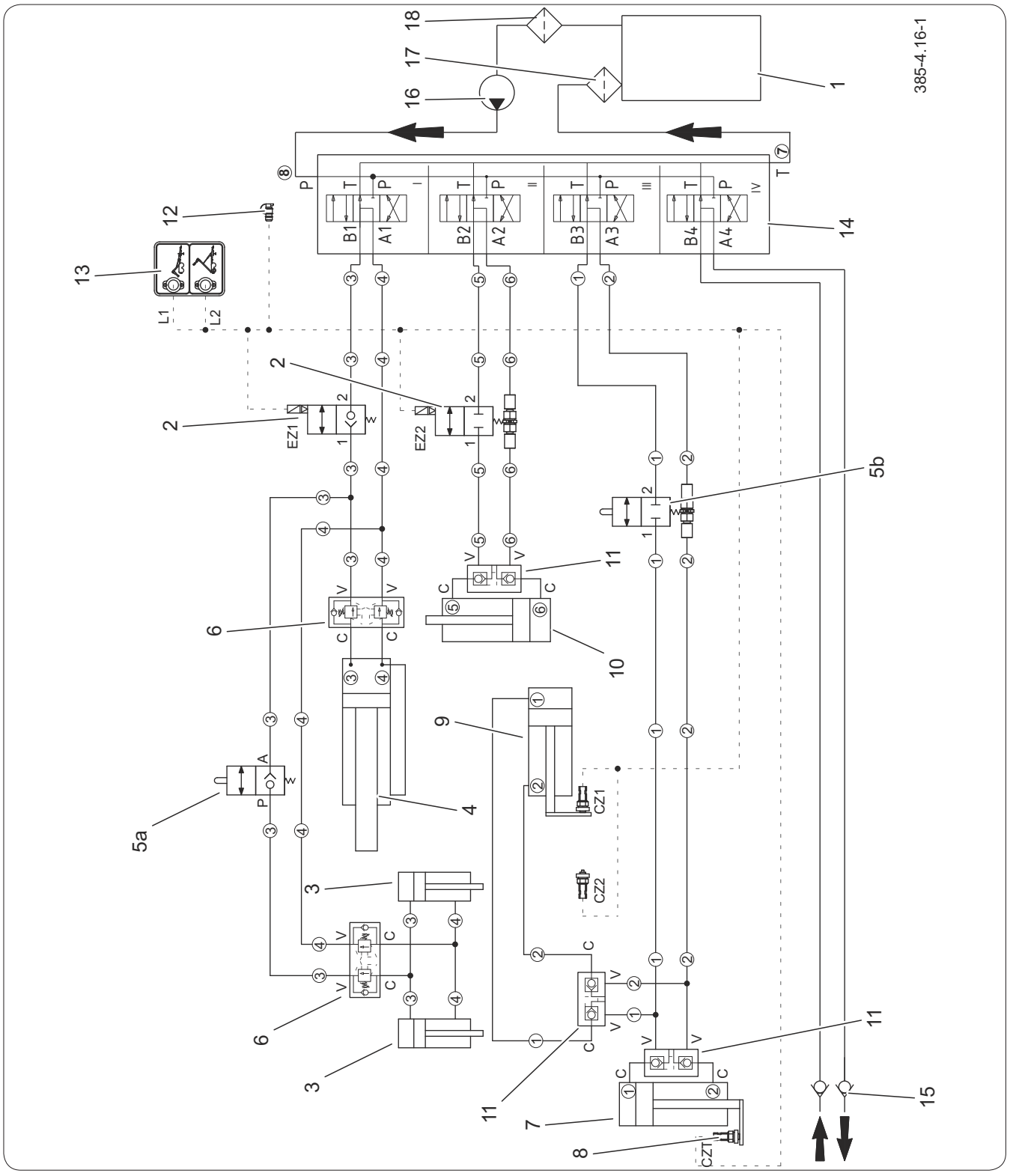

Figure 4.16 Diagram of the hydraulic system with distributor, tank, PTO

(1) oil tank *(2) electro-hydraulic valve* *(3) suspension cylinder*
(4) lift cylinder *(5a) limit valve* *(5b) limit valve*
(6) anti-shock valve *(7) container lock actuator* *(8) sensor - limit*
(9) shift cylinder *(10) hook frame cylinder* *(11) hydraulic lock*
(12) electrical connection *(13) signalling board* *(14) hydraulic distributor*
(15) quick connector-socket *(16) pump (17) filter with gasket* *(18) suction filter*

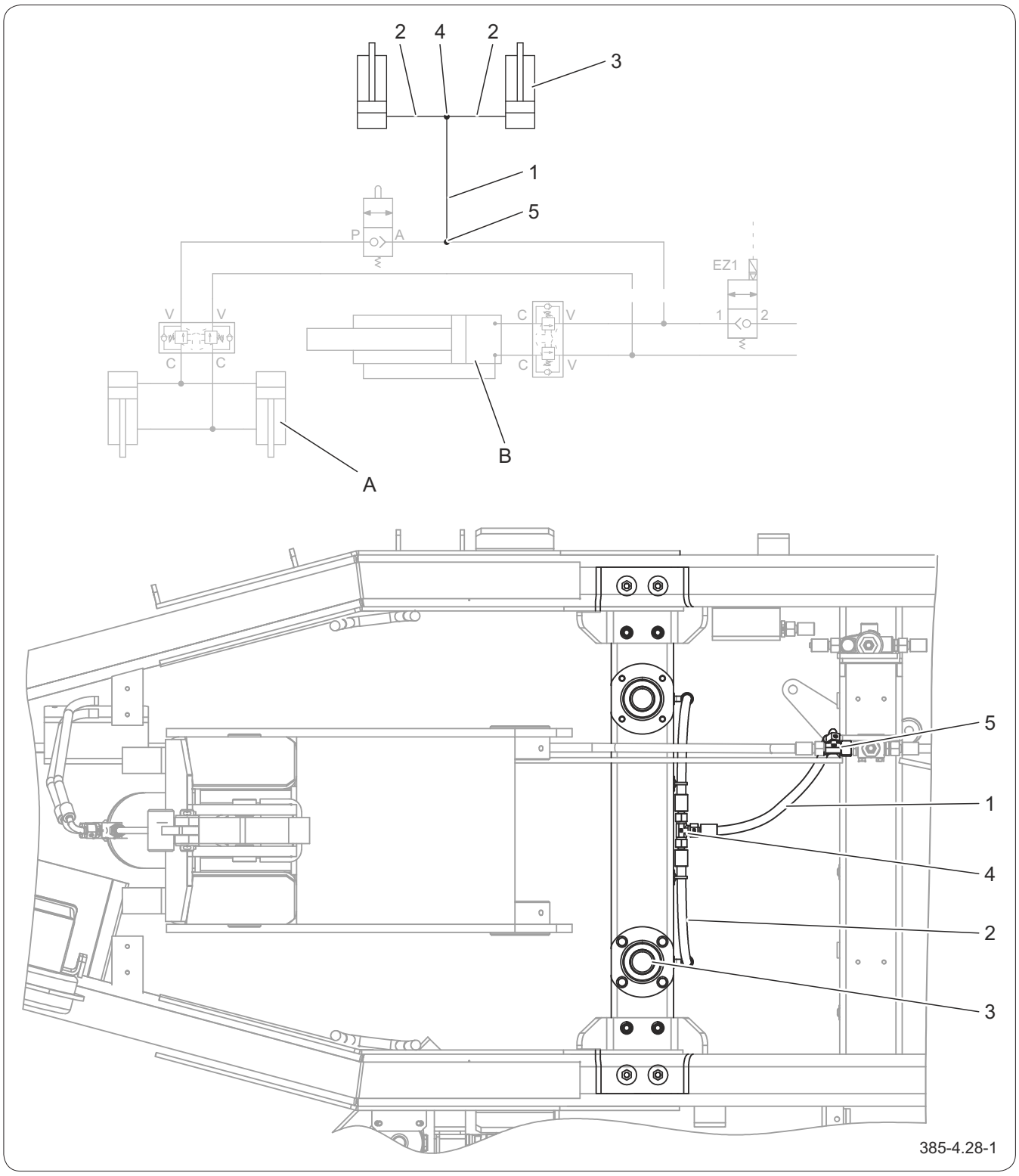

Figure 4.17 Structure and diagram of the lift assist cylinders to the hydraulic system

(1) hose *(2) hose* *(3) lifting cylinder*
(4) t-piece *(5) t-piece*
(A) suspension lock cylinder *(B) lift cylinder*

BIZ.3.4-008.01.EN

4.10 HYDRAULIC SYSTEM OUTPUTS ON THE HOOK

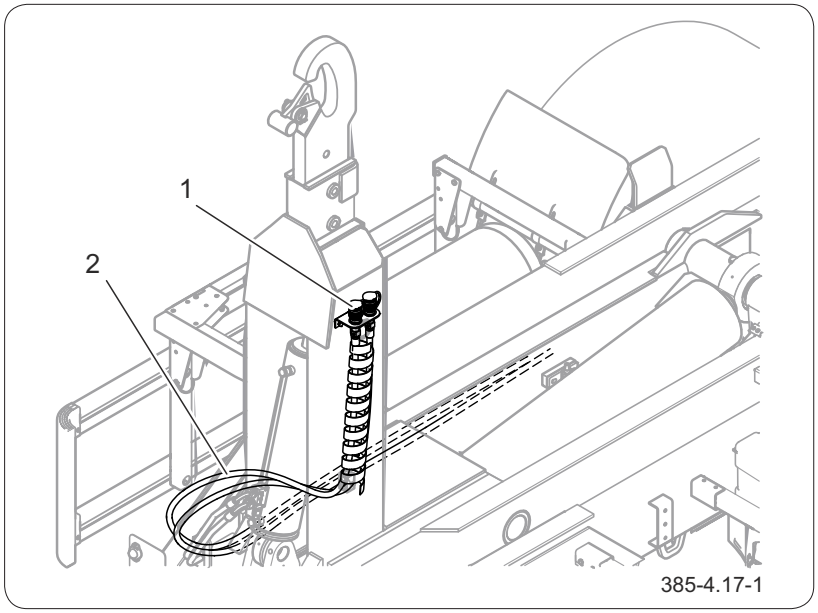

Figure 4.18 Hydraulic outputs on the hook
(1) quick coupler - socket (2) hydraulic hose

The trailer can be equipped with an additional pair of hydraulic system outputs located on the hook. A pair of hydraulic outlets on the tractor is required to operate.

BIZ.3.4-009.01.EN

4.11 HYDRAULIC SYSTEM OF THE STRAIGHT SUPPORT

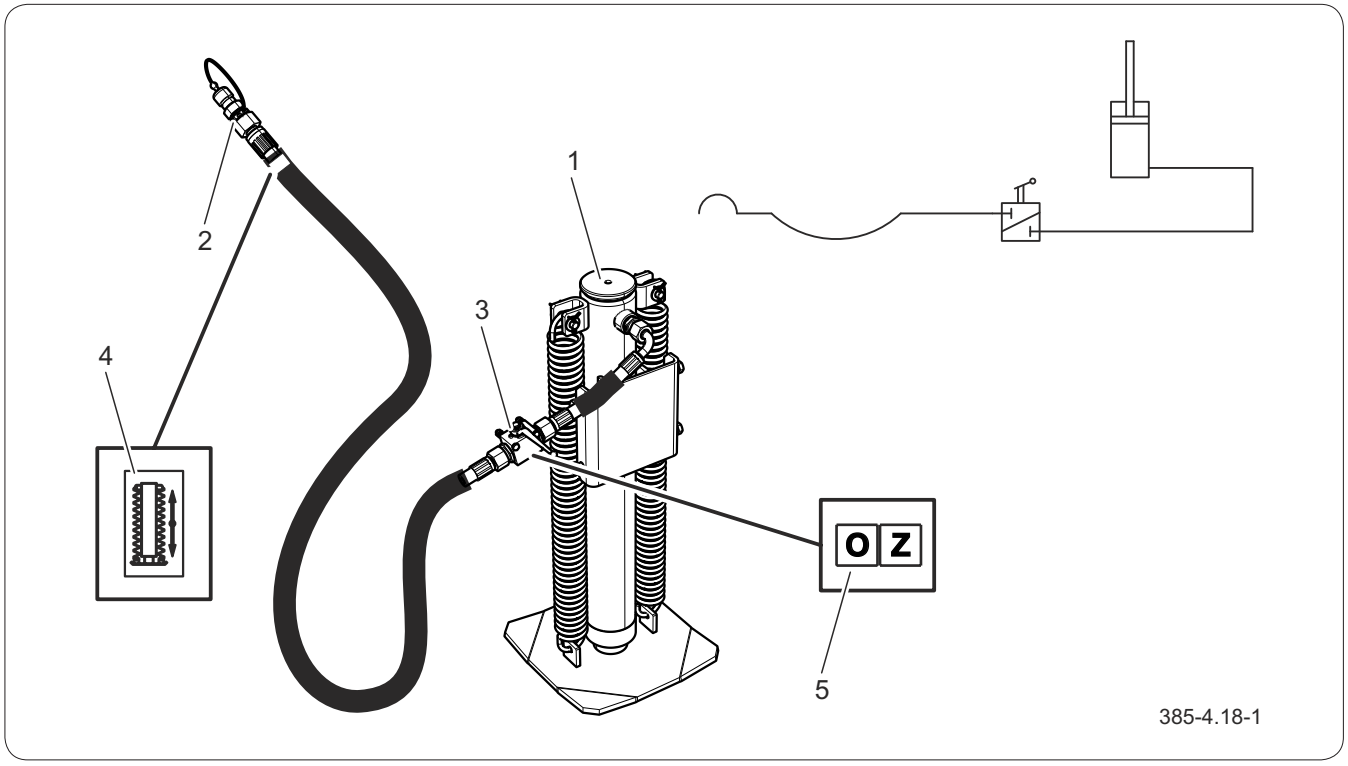

Figure 4.19 Construction and diagram of the hydraulic installation of the straight support
(1) hydraulic support (2) quick coupler (3) valve
(4) information sticker: "Extending and retracting the hydraulic support"
(5) information sticker: "O" - valve in open position "Z" - valve in closed position

ADVICE

The hydraulic system of the support was filled with L-HL32 hydraulic oil.

CAUTION

The valve must be closed before disconnecting the supply line from the tractor. Otherwise, the lines will not be reconnected.

The support hydraulic system is used to set the support to support the trailer disconnected from the tractor or to garage the trailer after use. Using the hydraulic support, you can obtain the appropriate drawbar height when connecting and disconnecting the trailer. The support is supplied from the tractor's auxiliary hydraulics and controlled by the distributor lever on the tractor.

The support is extended or retracted by extending or retracting the hydraulic cylinder rod. Moving the valve handle (3) to position (Z) locks the support in a fixed position. The support is lowered by moving the valve handle to the open position (O).

Hydraulic oil fed from the tractor's hydraulic distributor extends the cylinder piston to the desired height. The straight support is returned to the transport position

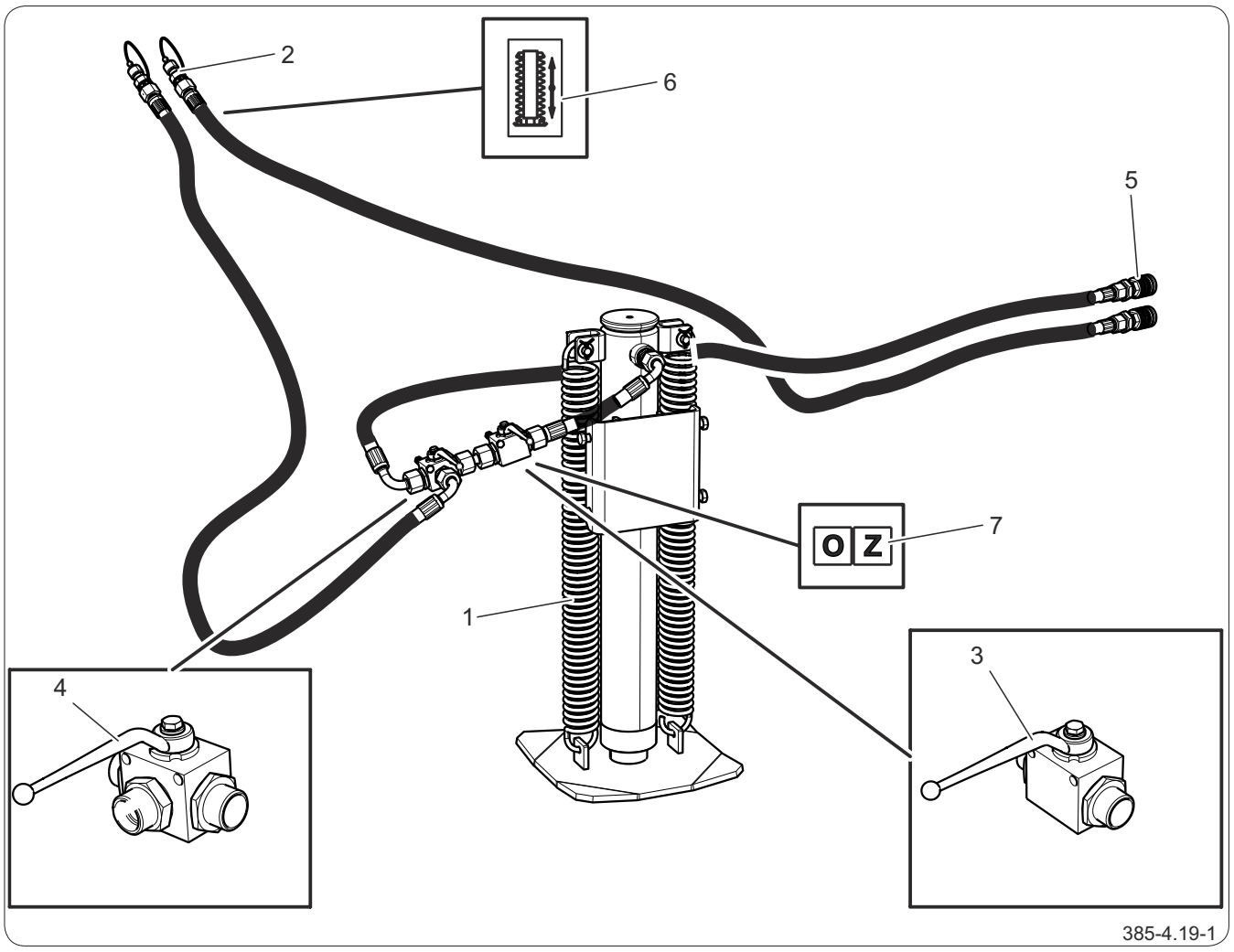

Figure 4.20 Construction of a straight support hydraulic system with rear outputs
(1) hydraulic support *(2) quick coupler* *(3) valve*
(4) three-way valve *(5) quick connector-socket*
(6) information sticker: "Extending and retracting the hydraulic support"
(7) information sticker: "O" - valve in open position "Z" - valve in closed position

by placing the distributor section on the tractor in the floating position and is forced by the springs.

Hydraulic outlets completed by means of quick couplers - sockets can be used, for example, to supply a second trailer or a hydraulic container flap.

BIZ.3.4-010.01.EN

4.12 HYDRAULIC INSTALLATION FOR EXITS TO THE REAR

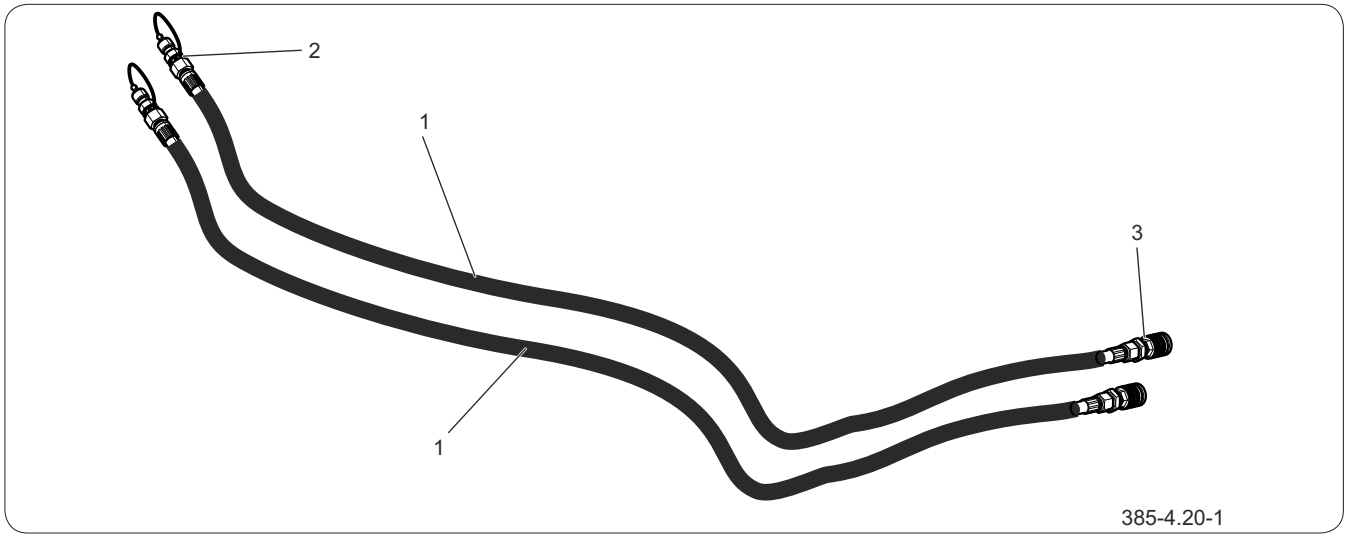

Figure 4.21 Construction of a hydraulic system for exits to the rear
(1) hose *(2) quick connector-plug* *(3) quick connector-socket*

ADVICE

The hydraulic installation is filled with L-HL32 hydraulic oil.

DANGER

Before connecting the hydraulic lines, reduce the pressure in the system.

The trailer can be equipped with an additional pair of hydraulic system outlets located at the rear of the trailer. Hydraulic outlets completed by means of quick couplers - sockets can be used, for example, to supply a second trailer or a hydraulic container flap.

BIZ.3.4-011.01.EN

4.13 HYDRAULIC STEERING LOCK SYSTEM

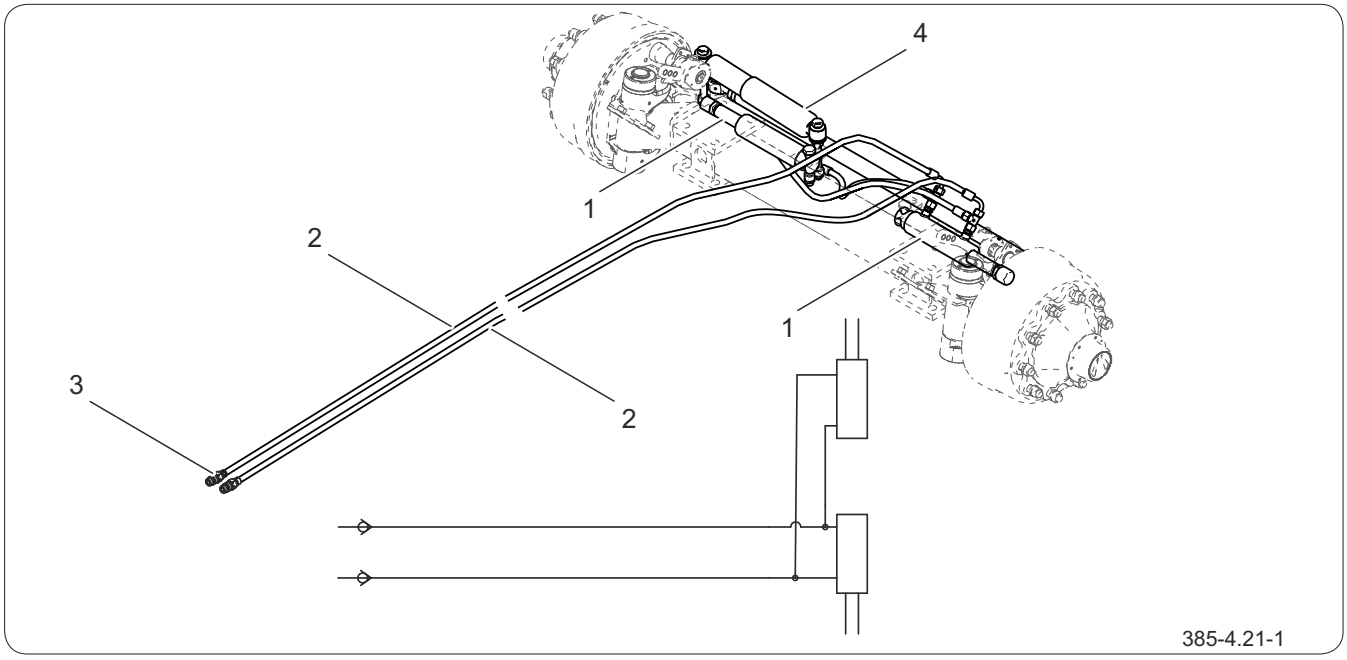

Figure 4.22 Construction and diagram of the hydraulic installation of the rear axle steering lock
(1) steering lock cylinder (2) hydraulic hose (3) hydraulic quick coupler (4) shock absorber

The hook trailer is equipped with a passively steered rear axle. This solution makes it easier to maneuver the vehicle, improves stability when cornering, reduces unfavorable forces in the suspension and chassis during turning, thus reducing tire wear and improving the comfort of driving the tractor-trailer combination.

When reversing, lock the rear axle stub axles with wheels, otherwise the trailer will tend to turn left or right. The locking system is powered by the tractor's external hydraulic system with hydraulic conduits (2) connected to the sockets of one section of the tractor using quick connectors (3). The axle is locked by sliding in or out the piston rods of the hydraulic actuators (1). The shock absorber (4) ensures the stability of the steering axle, thus preventing it from vibrating too much.

BIZ.3.4-012.01.EN

4.14 ELECTRICAL INSTALLATION FOR THE HYDRAULIC SYSTEM CONTROL

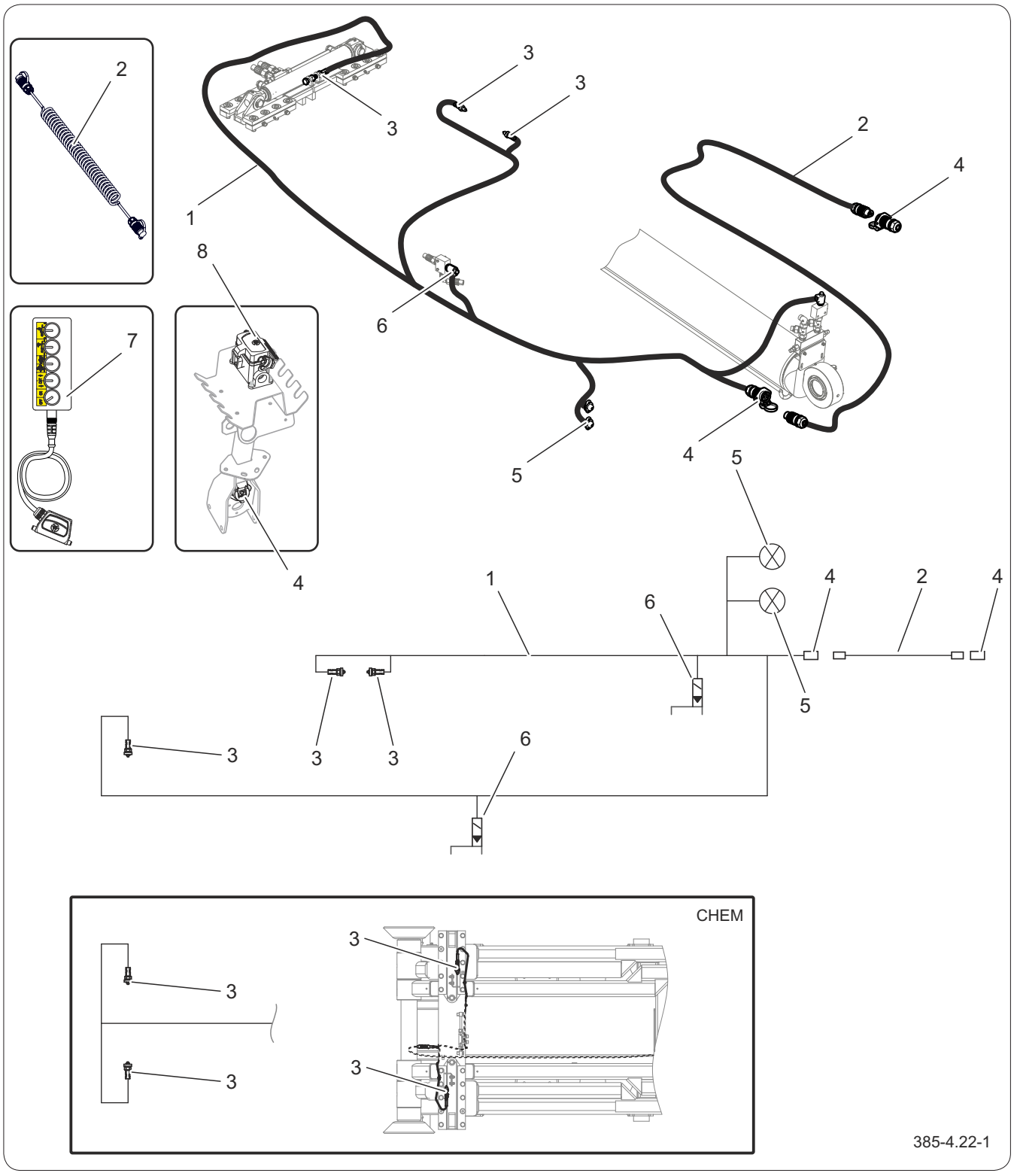

Figure 4.23 Construction and diagram of the electrical installation of the hydraulic system

(1) solenoid harness *(2) connection cable* *(3) sensor*
(4) 3-pin socket *(5) front end-outline lamp* *(6) solenoid valve*
(7) control panel with harness *(8) communication socket*

The electrical installation for controlling the trailer's hydraulic system is designed to be powered by a 12 V DC source. The system is powered by a connection cable (2) terminated with a 3-pin plug on both sides. The wire is used to connect the 3-pin socket (4) on the trailer to the 3-pin socket on the tractor - see section (ATTACHING AND DETACHING OF THE TRAILER). If the tractor does not have such sockets 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. The basic equipment of the trailer is equipped with a 3-pin socket for retrofitting the tractor.

BIZ.3.4-013.01.EN

4.15 ELECTRICAL LIGHTING SYSTEM

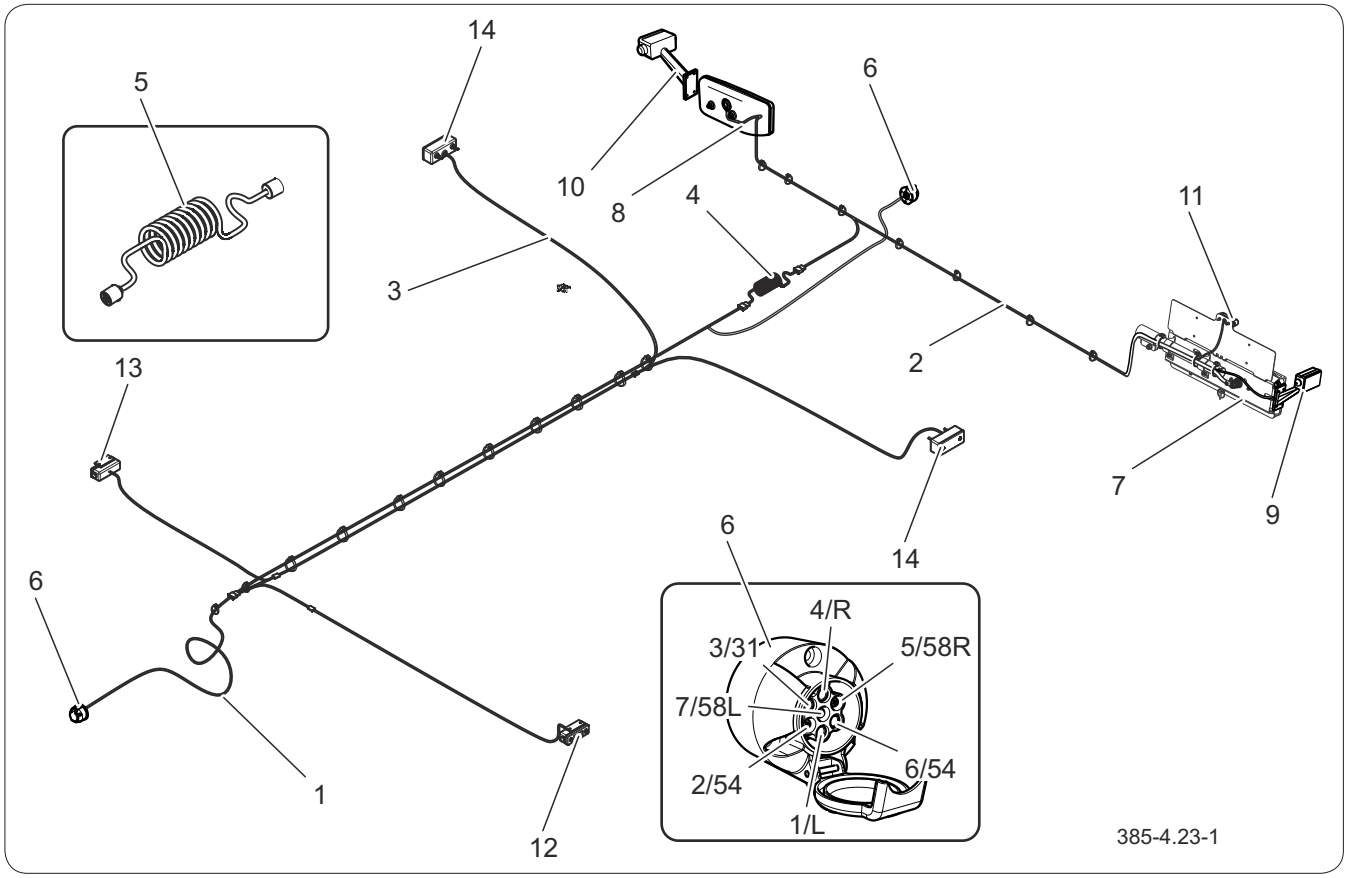

Figure 4.24 Construction of electrical lighting system
(1) centre harness *(2) rear harness* *(3) front harness*
(4) connecting harness *(5) connection cable* *(6) 7-pin socket*
(7)(8) left/right combination rear lamp (9)(10) front-rear and side position lamp left/right
(11) license plate lamp *(12)(13) front marker lamp and side position lamp left/right*
(14) side position lamp

CAUTION

Before driving, check the operation and completeness of the electrical system.

It is forbidden to drive with inefficient lighting system.

The trailer lighting electrical system is adapted to the supply from a DC power source of 12 V. for proper operation with the trailer, the tractor should be equipped with a 7-pin electrical socket. Connect the trailer lighting electrical system to the tractor with a suitable connection cable (5), terminated on both sides with a 7-pin plug.

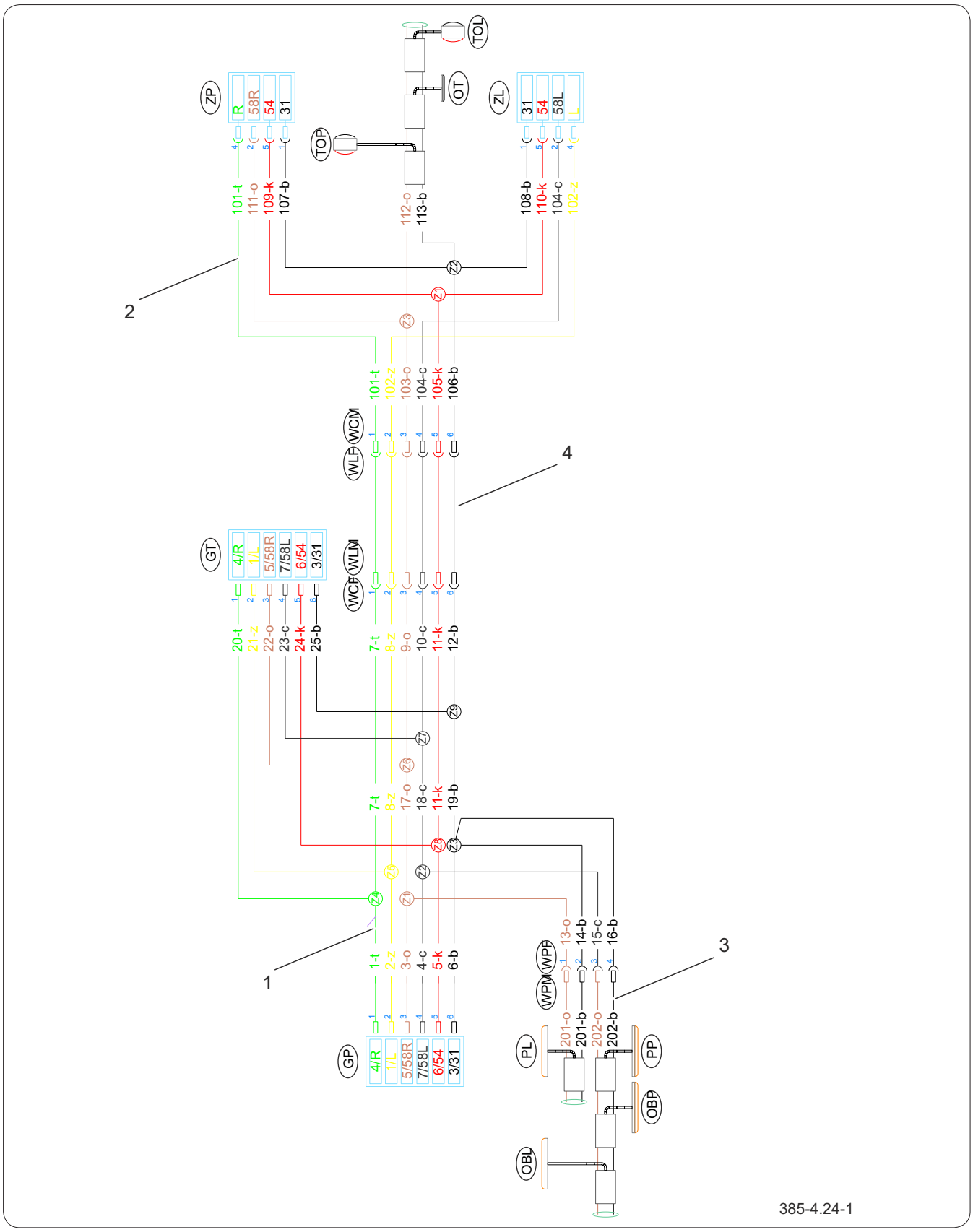

Figure 4.25 Schematic diagram of the electrical lighting installation
(1) centre harness *(2) rear harness* *(3) front harness*
(4) connecting harness
Designations according to tables 4.3, 4.4, 4.5

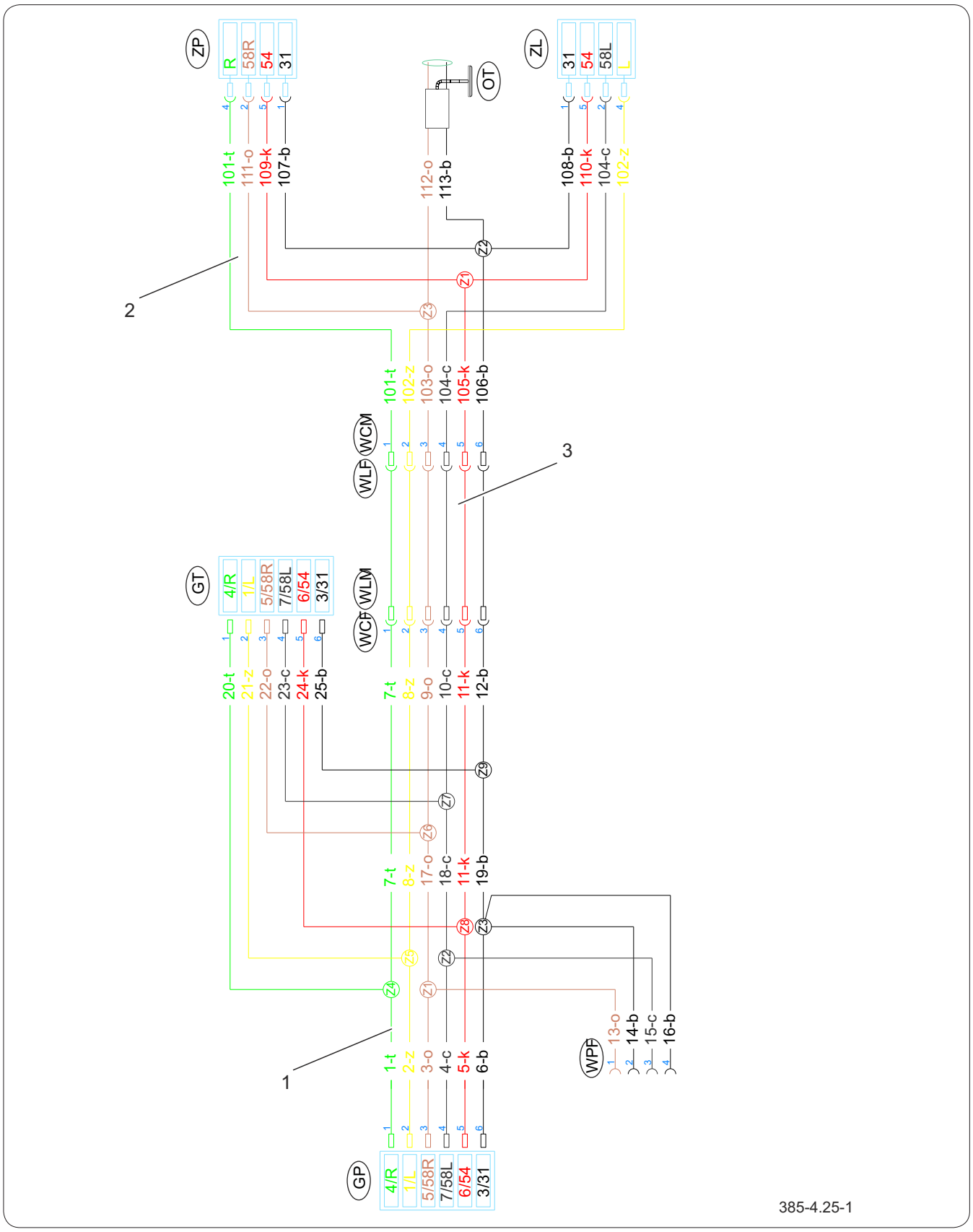

Figure 4.26 Schematic diagram of the electrical lighting installation(FR)
(1) centre harness (2) rear harness (3) connecting harness
Designations according to tables 4.3, 4.4, 4.5

Table 4.3. List of electrical components markings

Symbol	Function
PP	Front marker lamp and right side position lamp
PL	Front marker lamp and left side position lamp
ZP	Multifunctional rear right lamp
ZL	Multifunctional rear left lamp
OT	License plate lighting lamp
GP	7-pin front socket
GT	7-pin rear socket
TOP	Front-rear clearance lamp and right side position lamp
TOL	Front-rear clearance lamp and left side position lamp
OBP	Multifunctional right lamp
OBL	Multifunctional left lamp

Table 4.4. Marking of GP and GT socket connections

Marking	Function
3/31	Weight
2/54	Not used
1/L	Left direction indicator
6/54	STOP light
7/58L	Rear left position light
5/58R	Rear right position light
4/R	Right direction indicator

Table 4.5. Color coding of wires

Marking	Barwa
B	White
C	Black
F	Purple
K	Red
L	Azurite
N	Blue
O	Brown
P	Orange
R	Pink
S	Grey
T	Green
Z	Yellow

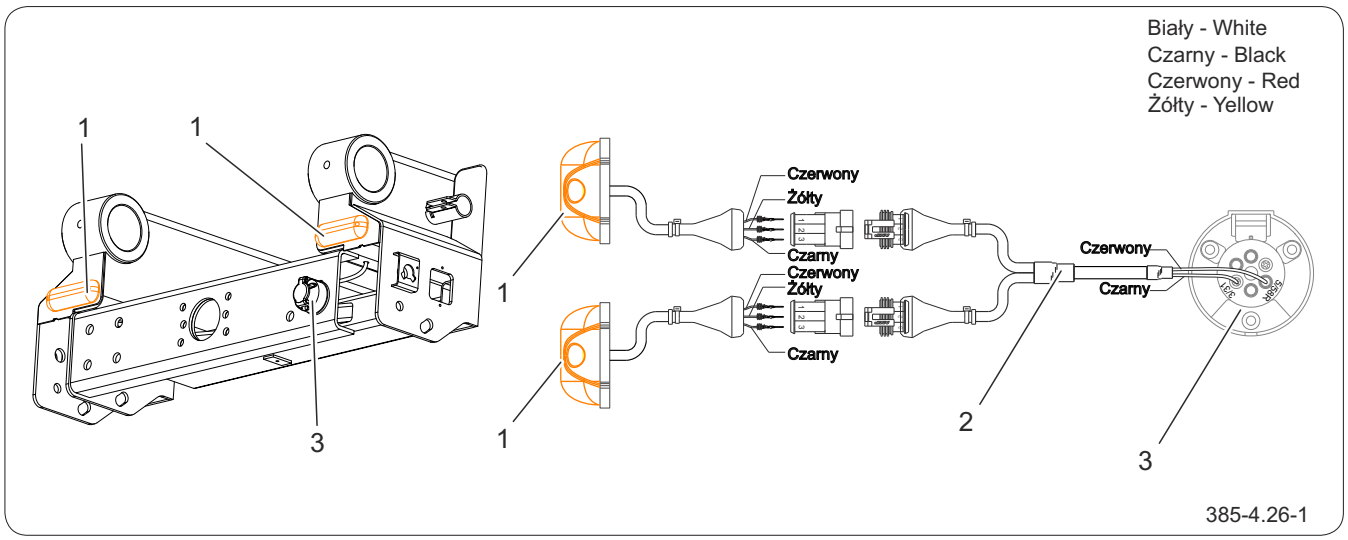

Figure 4.27 Warning flashers
(1) warning light *(2) warning light harness* *(3) 7-pin socket*

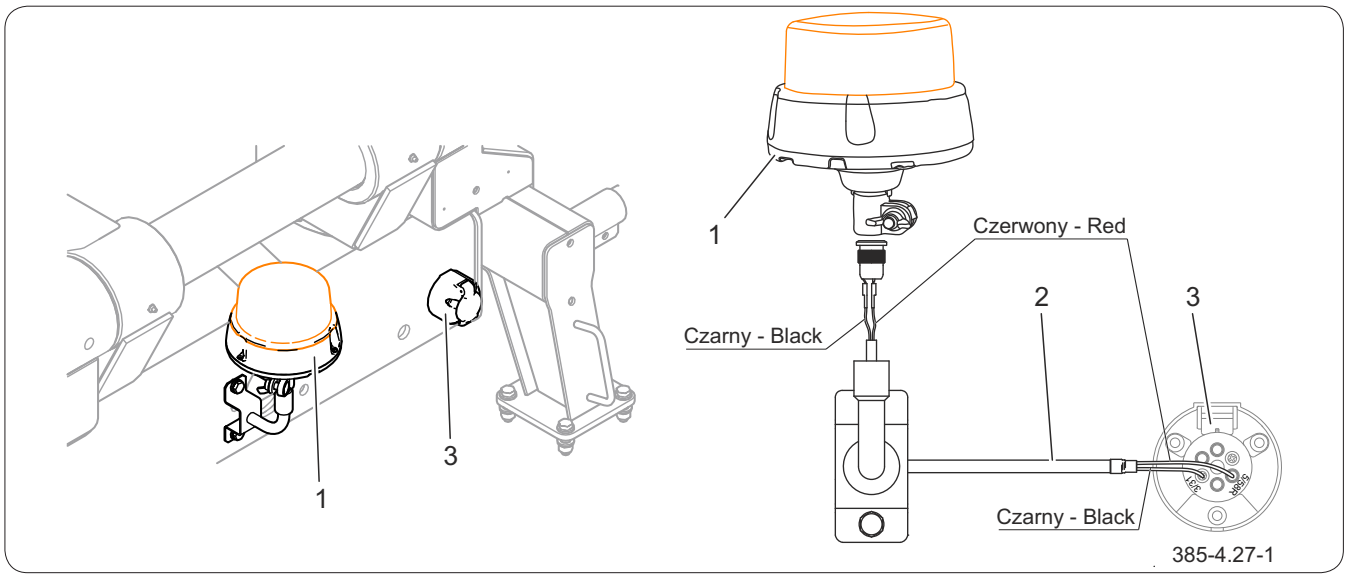

Figure 4.28 Warning lamp (FR)
(1) warning light *(2) warning light harness* *(3) 7-pin socket*

BIZ.3.4-014.01.EN

CHAPTER 5

RULES OF USE

PRONAR T285/1

5.1 ADJUSTING THE POSITION OF THE DRAWBAR EYE

DANGER

Be especially careful when adjusting as limbs may be crushed.

Never adjust when the machine is loaded with a load that presses against the parking stand. Risk of accident.

CAUTION

Pay attention to the technical condition of the drawbar cable and its screw connections. Lubricate the recommended lubrication points.

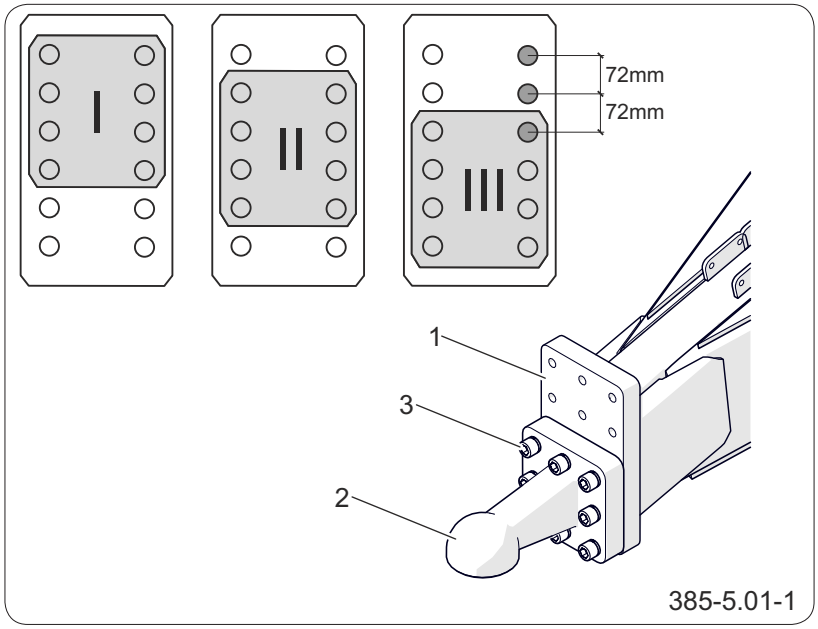

Figure 5.1 Drawbar link height adjustment
(1) front plate *(2) drawbar link*
(3) bolted connection

Select the position of the drawbar eye individually depending on the size of the machine's tires and the type and height of the agricultural tractor hitch with which the machine will be coupled. Set the height so that when connected to the tractor, the machine is level, which will ensure even distribution of the machine's weight on the road axles.

Drawbar eyes height setting

- Lock the machine with the parking brake.
- Place support wedges under the rigid axle wheel.
- Fold out the parking stand.
- Unscrew the drawbar link (2) from the drawbar faceplate (1).
- Set the cable in the new position and tighten it to the appropriate torque.

  The design of the front plate (1) allows for 3 tie positions with a spacing of mounting screws of 72mm.
- Check the bolt connections of the drawbar link.

OBS.3.4-001.01.EN

5.2 OPERATION OF THE MECHANICAL SUPPORT WITH GEAR

DANGER

Be especially careful when operating the support due to the risk of crushing your feet - this also applies to bystanders or helpers.

CAUTION

It is forbidden to start and drive with the support lowered.

Before driving, make sure that the support is fully raised and the crank is moved to neutral (a). It is essential to secure the support foot with the safety pin.

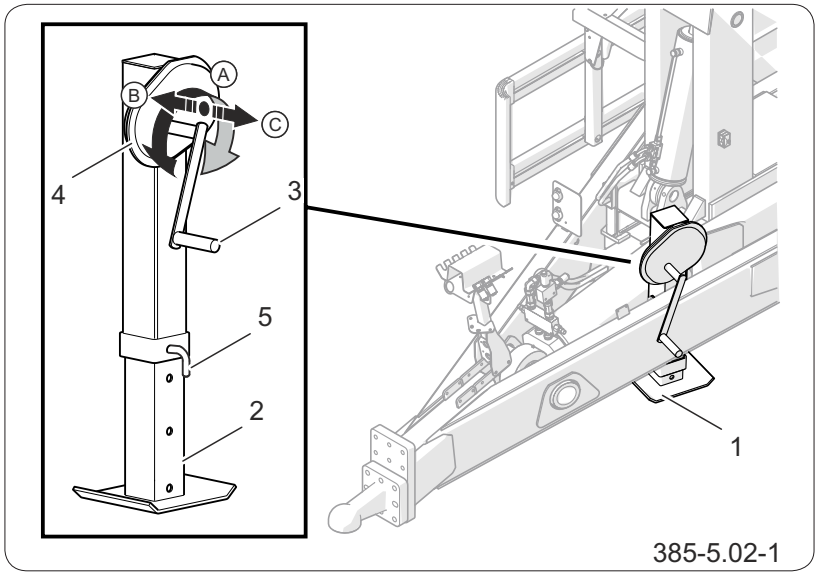

Figure 5.2 The mechanical support
(1) support *(2) feet*
(3) crank *(4) gear*
(5) safety pin *(A) neutral position*
(B) 1st gear (slow) *(C) 2nd gear (fast)*

Determining the correct height of the drawbar eye relative to the tractor's hitch can be obtained with the help of a telescopic support with a mechanical transmission.

Position (C) is used to quickly lower and raise the support foot to level the clearance between the support foot and the ground. Position (B) is used to lower and raise the of an unloaded machine. In position (B), the support foot (2) extends more slowly and you do not need to apply much force to raise the machine.

Raising the support

- Remove the pin (5).
- Move the crank (3) of the support from neutral (A) to position (B)- slowly.
- By turning the crank counterclockwise, raise the support foot (2) up as far as it will go.
- Install the safety pin (5), and move the crank to

neutral (A) position.

Lowering of the support

- Remove the pin (5).
- Move the crank (3) of the support from neutral position (A) to position (B) - slowly or (C) fast.
- By turning the crank clockwise, lower the support to the ground or adjust the height of the drawbar in relation to the hitch (if the machine is to be coupled to a tractor).
- Install the safety pin (5), and move the crank to neutral (A) position.

OBS.3.4-002.01.EN

5.3 OPERATION OF THE HYDRAULIC SUPPORT

DANGER

Take special care when operating the support - it also applies to bystanders or assistants.

CAUTION

It is forbidden to start and drive with the support lowered.

Make sure that the support is fully raised before driving.

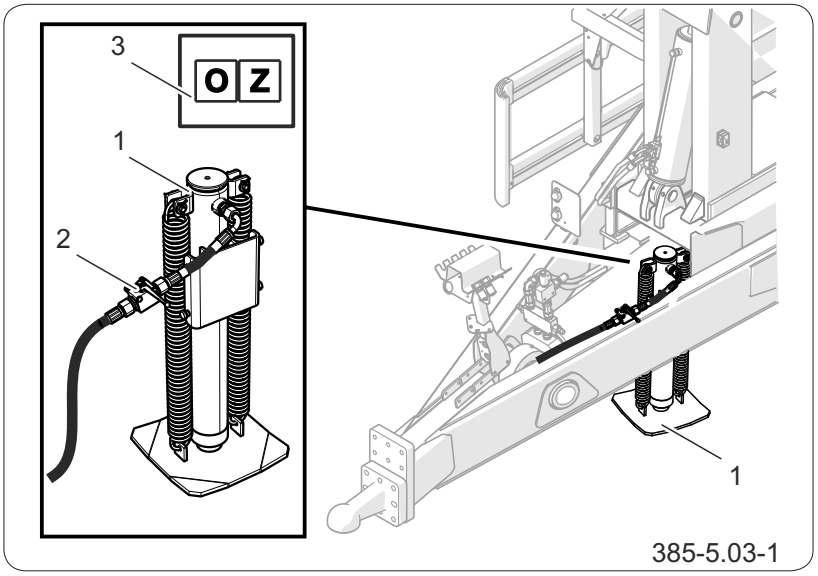

Figure 5.3 Hydraulic support
(1) support *(2) shut-off valve*
(3) information sticker: "O" - valve in open position "Z" - valve closed

- Immobilize the tractor and the trailer with parking brake.

  The machine must be connected to the tractor. Connect the hydraulic hose to the hydraulic socket on the tractor.
- Move the shut-off valve to the "O" - open position.
- Use the tractor auxiliary hydraulic lever to set the support to the desired height.
- Place the distributor lever in the "neutral" position and move the shut-off valve to the "Z" position - closed.
- Set the hydraulic section on the tractor to which the support stand is connected to the "float" position in order to relieve the pressure in the hydraulic lines.

OBS.3.4-003.01.EN

5.4 TELESCOPIC SUPPORT SERVICE

DANGER

Take special care when operating the support - it also applies to bystanders or assistants.

CAUTION

It is forbidden to start and drive with the support lowered.

Make sure that the support is fully raised before driving.

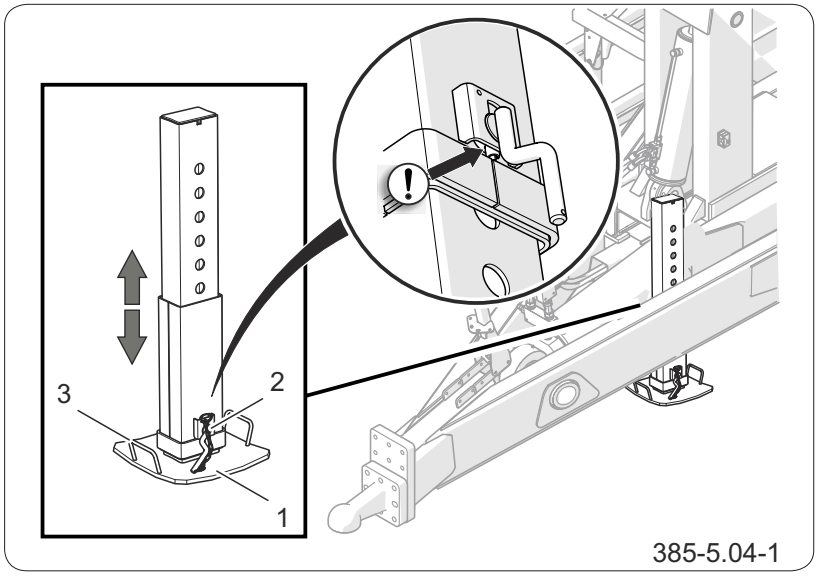

Figure 5.4 Telescopic support
(1) support feet *(2) pin*
(3) handle

Raising the support

- After connecting the trailer to the tractor, lift the drawbar slightly up using the hydraulic system of the agricultural hitch.
- Turn the pin (2) with the handle up 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 the pin.

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

Lowering of the support

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

OBS.3.4-004.01.EN

5.5 REAR PROTECTION OPERATION

CAUTION

Before each trip, check that the pins are secure.

CAUTION

When moving the trailer on public roads, the rear protection should be extended so that its maximum distance from the rearmost point of the vehicle (e.g. container) does not exceed 337 mm. When the bumper is extended, it is essential to prevent it from sliding using the locking pins.

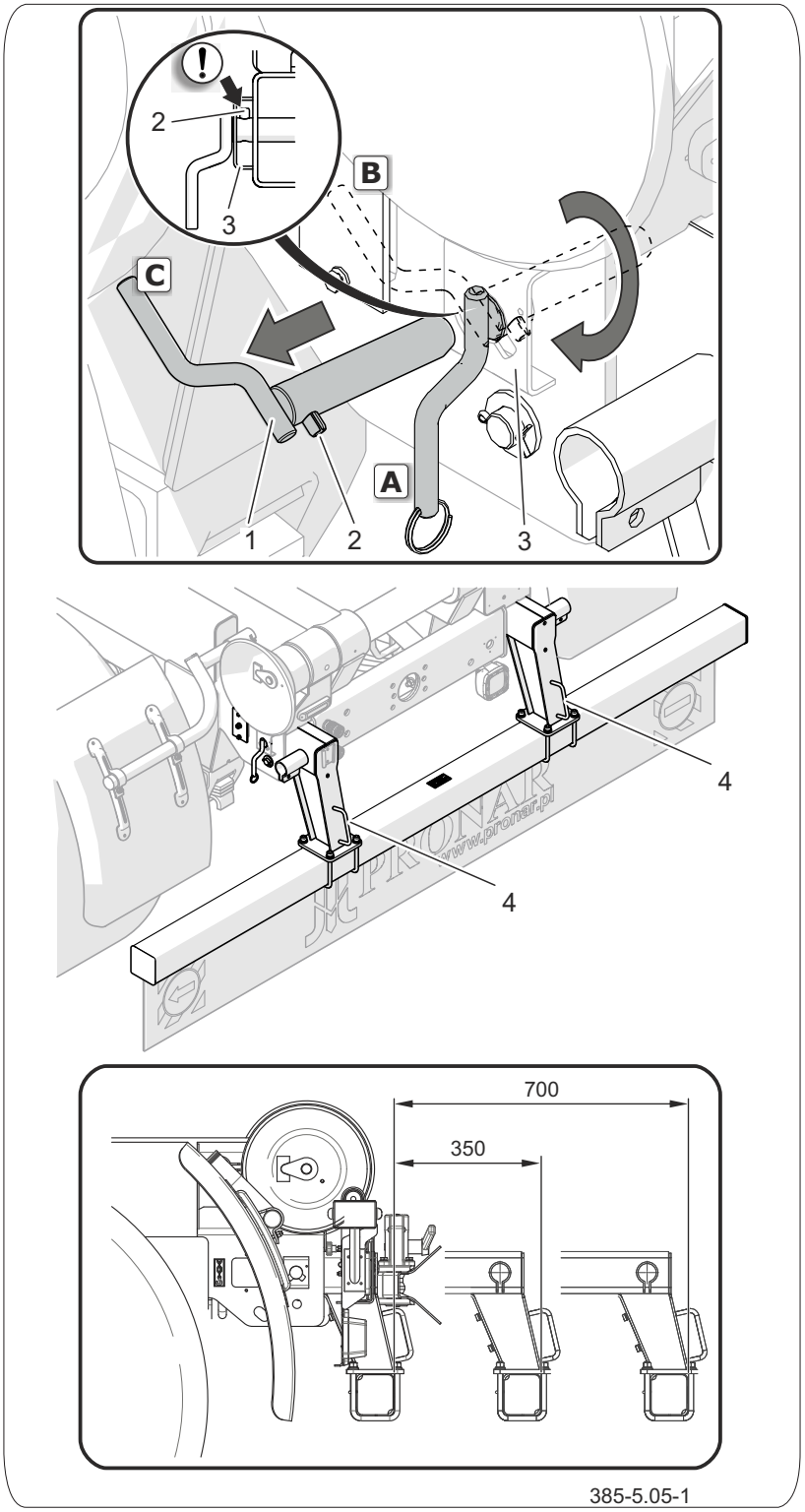

Figure 5.5 Rear protection
(1) pin holder (2) pin
(3) socket plate (4) beam holder

- Turn the pin from position (A) to position (B).
- Pull pin out of frame - position (C).

- Similarly, pull the pin out from the other side of the trailer.
- Hold the handles (4) and move the rear safety device to the required position.
- Insert the pin into the slot at an angle - position (C).

  Move the pin until the pin (2) is between the frame profile and the cavity plate (3).
- Turn the pin to position (A), the pin holder must face vertically downwards.
- Install and secure the pin on the other side of the trailer.

OBS.3.4-005.01.EN

5.6 OPERATION OF THE SIDE OVERRUN PROTECTION

CAUTION

Side guards cannot be used as elements helping to climb onto the trailer. It is forbidden to drive with raised overrun protection. Before driving, make sure that the covers are lowered and locked in the down position. If it is not necessary, do not leave the covers in raised position.

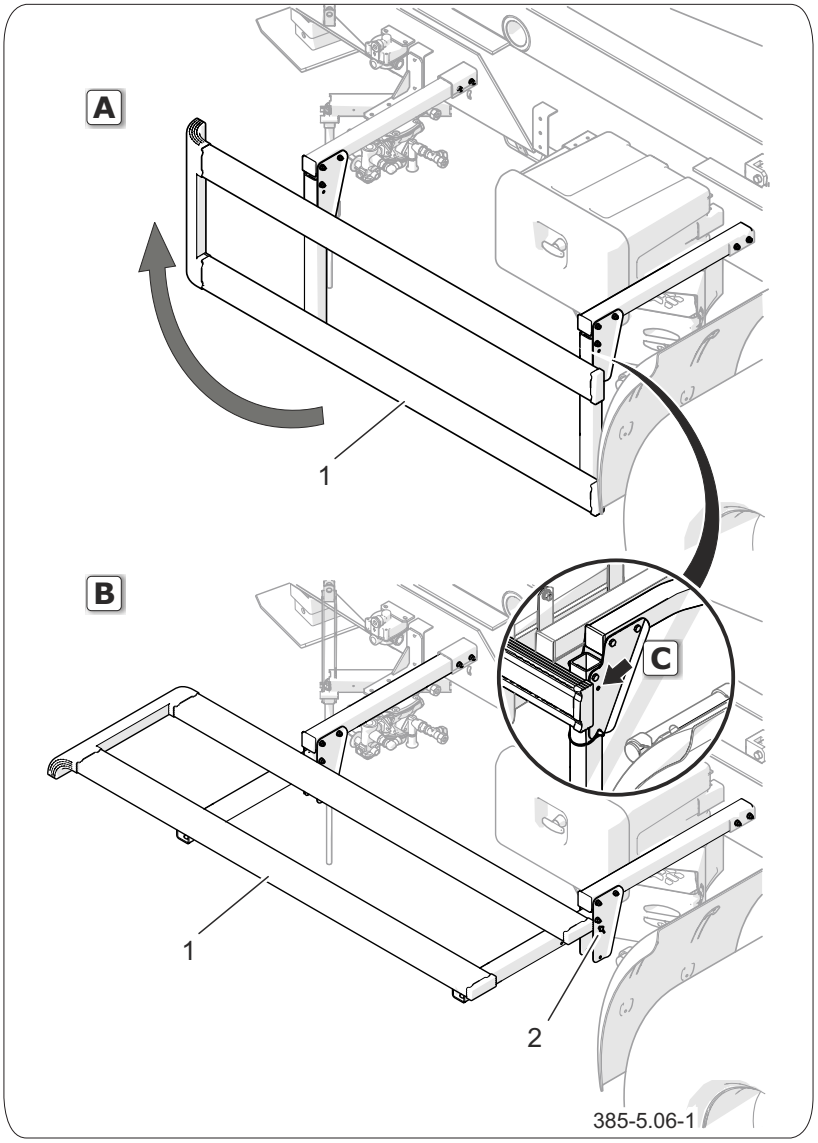

Figure 5.6 Side overrun protection
(1) overrun strip *(2) cotter pin*
(A) cover in transport position
(B) cover in the raised position
(C) hole for the cover lock pin

The design of the side overrun guards enables locking them in the transport position and in the raised position.

Lifting

- Remove the cotter pin (2) securing the overrun protection.
- Raise the cover to a suitable height so that it can be locked - position (B).

- Secure the cover with cotter pins in the hole marked with a black arrow in the figure - position (C).

Lowering

- Lowering of the cover should be carried out in reverse order.

Remember! The cover should be secured in the lower position with the use of pins.

OBS.3.4-006.01.EN

5.7 HOOK POSITION ADJUSTMENT

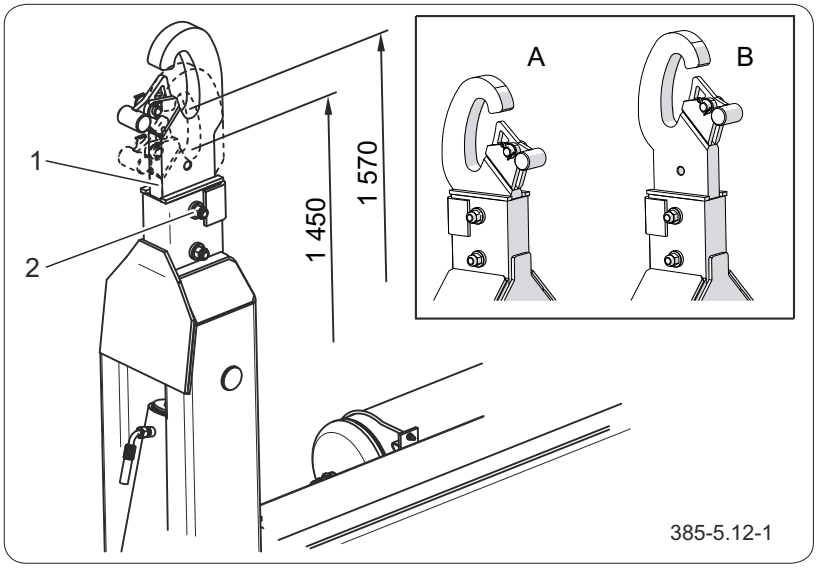

Figure 5.7 Hook position adjustment
(1) adjustable hook *(2) hook screw connection*
(A) Hook position - 1 450 mm *(B) Hook position - 1 570 mm*

The hook-type trailer allows the connection of containers with a hitch eye height of 1 570 mm (according to DIN 30722-1) or 1 450 mm (according to SS 3021). The height is measured between the plane on which the container rests and the axis of the hook. Changing the hook height should be done by two people.

Setting the hook height

- Remove the two M20 nuts.
- Remove the hook mounting bolts.
- Move the hook to the desired position.
- Install the bolts and tighten the nuts with the correct torque according to the section *Checking the screw connections.*

OBS.3.4-011.01.EN

5.8 COUPLING AND UNCOUPLING OF THE MACHINE

5.8.1 Coupling of the machine

CAUTION

After connecting the machine, perform a daily inspection of the machine before travelling.

The external examination of the machine without connecting it to the tractor will not allow verification of its technical condition.

The machine may be connected to an agricultural tractor if all connections (electrical, pneumatic, hydraulic) in the tractor are in accordance with the machines manufacturer's requirements given in the table *Requirements of the agricultural tractor*.

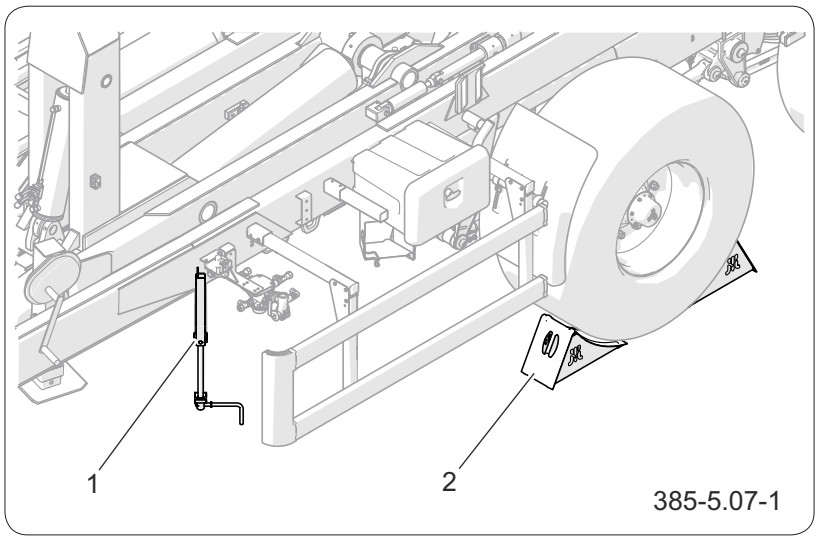

Figure 5.8 Securing of the trailer
(1) parking brake *(2) support wedges*

Preparation

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

  Turn the brake mechanism (1) clockwise as far as it will go.
- Make sure that blocking wedges are placed under the trailer wheel (2).
- Position the agricultural tractor directly in front of the drawbar eye.

Height adjustment of the trailer's drawbar

- Use the parking stand to adjust the height of the drawbar to the drawbar of the agricultural tractor. Follow the Support Operation section.
- If the trailer is equipped with a telescopic stand, no adjustment of the height of the tongue tie-rod

DANGER

During coupling it is forbidden to stand bystanders between the machine and the tractor. The agricultural tractor operator when connecting the machine should make sure that bystanders are not in the danger zone during coupling.

Be especially careful when connecting the machine.

Ensure good visibility during coupling.

After completing the coupling check the safety of the coupling bolt.

Take special care when folding the support – risk of pinching the limbs.

CAUTION

If the machine is parked for a long time, 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.

is required.

Connecting of the trailer to the tractor's hitch

- Reverse the tractor and connect the machine to the appropriate hitch.

  If the trailer is equipped with a telescopic stand, the machine can only be combined with a tractor equipped with a hitch. Lift the hitch.
- Check the coupling safety device protecting the machine against accidental disconnection.
- If an 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.
- Turn off the tractor engine and of the tractor the keys from the ignition. Secure the tractor with the parking brake. Close the tractor cabin and and secure it it against unauthorized access.

Connecting of the braking system

Depending on the completion of the trailer, connect the brake system connections to the appropriate sockets of the tractor.

- Connect the 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 machine 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 air pressure in the tank. To operate the system, the air in the tank must be filled to the correct pressure.

CAUTION

When connecting the pneumatic conduits of a dual-line system, first connect the conduit marked yellow, and then the conduit marked red.

Disconnect the dual-line pneumatic hoses in reverse order.

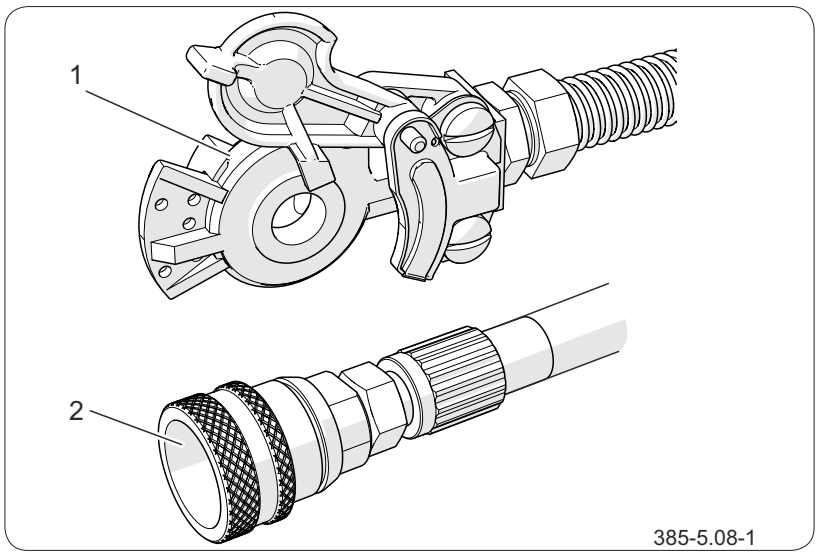

Figure 5.9 Brake system connections
(1) pneumatic plug *(2) hydraulic socket*

- Connect the hydraulic braking system conduit (applies to trailer version with hydraulic braking system).

Connecting of the hydraulic system

Depending on the machine's configuration, connect the hydraulic system connections to the appropriate tractor sockets.

- Connect the quick connectors of the hydraulic system.

  The lines are color coded (red, green, blue). The same color must be plugged into one section of the tractor divider.

DANGER

Driving with a faulty or damaged hydraulic system is prohibited.

Be especially careful, the hydraulic system may be under high pressure.

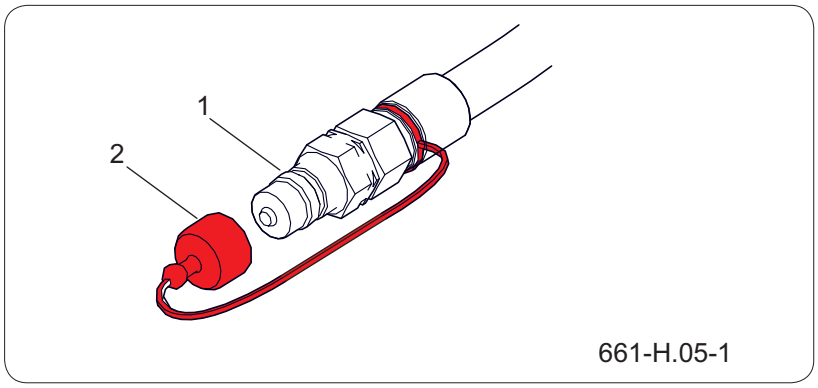

Figure 5.10 Hydraulic system connections
(1) hydraulic plug *(2) plug*

CAUTION

Pay attention to the compatibility of oils in the tractor hydraulic system and in the hydraulic system of the trailer system.

CAUTION

The PTO shaft is supplied with the original shaft manufacturer's manual, which describes all service operations related to the supplied product.

- In the case of a hydraulic system with an oil tank, also connect the telescoping hook-up.

Connecting of the PTO shaft

- Connect the previously matched shaft to the PTO of the agricultural tractor.
- Inspect the shaft guards and the condition of the retaining chains.
- Connect the 3-pin cable, place the remote control in the cab of the tractor.

Set the agricultural tractor PTO speed to 540 rpm

Connecting of the lighting electrical installation

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

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

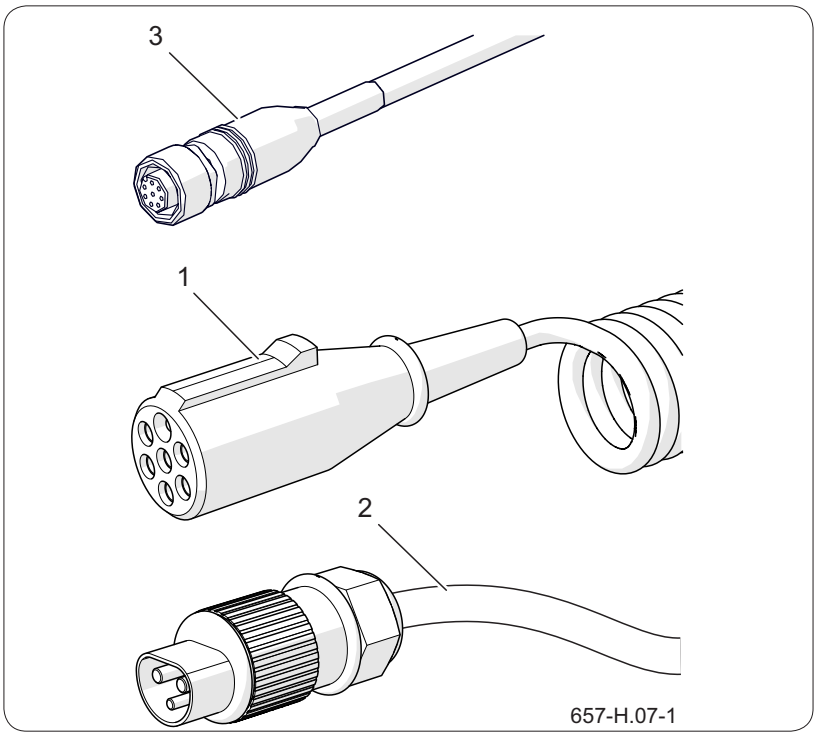

Figure 5.11 Electric system connections
(1) 7-pin wire *(2) 3-pin wire*
(3) Remote control wire

CAUTION

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

DANGER

The use of defective machine is forbidden.

the tractor manufacturer.

Additional information

- Check whether the connected cables will not become entangled in moving parts of the tractor or machine during operation. Secure the cables as necessary.
- Perform a daily inspection of the machine.
- If the machine is functional, you can start working.
- Immediately before driving, remove the wheel chocks and release the machine parking brake.

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

5.8.2 Disconnecting the trailer

DANGER

When disconnecting the trailer from the tractor, take particular care.

Ensure good visibility. When connecting, nobody shall be between the trailer and the tractor.

Before disconnecting the cables, shaft and drawbar rod, close the tractor cabin and secure it against unauthorized access. Switch off the tractor engine.

- Place the machine on a hard and flat surface.
- Immobilize the tractor and trailer with parking brake.
- Place locking chocks under one wheel of the machine's rigid axle, one at the rear and the other at the front of the wheel.
- Lower the jack to the park position so that the trailer can be unlocked and detached. Follow the Support Operation section.

  If the trailer is equipped with a telescopic support, lower the hitch beam.
- Shut off the tractor engine and remove the ignition key, and prevent unauthorized access to the tractor.
- Disconnect all lines one by one, securing the ends by placing the plug caps on the hydraulic connections.
- Place the lines on the support.
- Disengage the power take-off.
- Disengage the tractor hitch, disconnect the

CAUTION

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.

It is forbidden to park the trailer with the container loaded, disconnected from the tractor and supported by the support.

trailer linkage from the tractor hitch, start the tractor and drive away.

In the case of a ball hitch, first of all unlock the tractor's hitch, then raise the drawbar with the support and drive away with the tractor.

OBS.3.4-007.01.EN

5.9 CONNECTING AND DISCONNECTING OF A SECOND TRAILER

CAUTION

Only two-axle trailers with a permissible total weight not greater than the parameters of the drawbar and rear hitch of the towing trailer can be aggregated with the trailer.

It is forbidden to connect a second trailer with a permissible total weight greater than the first.

When connecting two trailers to the tractor, both should have the same type of braking system.

DANGER

When connecting / disconnecting nobody may be between the trailers. Take special care. The person who helps aggregate the machine should stand in a place outside the hazardous area and be visible at all times by the tractor operator.

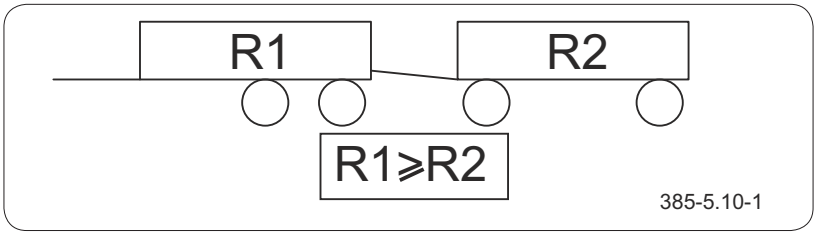

Figure 5.12 Permissible weights of trailers

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.

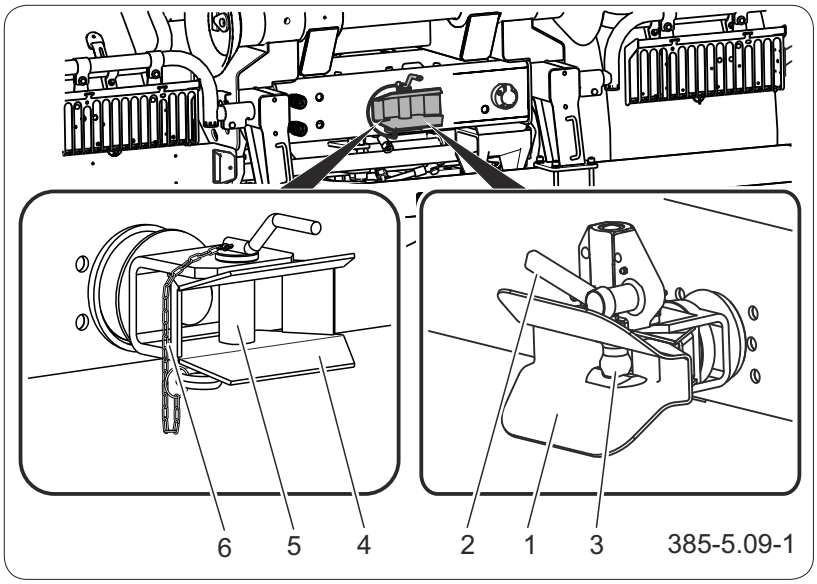

Figure 5.13 Rear hook
(1) automatic hitch (2) lifting handle for automatic hitch pin
(3) hitch pin *(4) manual hitch*
(5) pin *(6) cotter pin*

5.9.1 Second trailer requirements

- Before connecting the second trailer, check whether the oil in the hydraulic systems of both trailers can be mixed together.

- Position the tractor with the first trailer attached straight ahead of the second trailer's drawbar.
- Immobilize the the second trailer with the parking brake.
- Remove the cotter pin (6) securing the pin and remove the hitch pin (5) in the first trailer.

  If the automatic rear hitch is used in the trailer, the bolt should be lifted up using the handle (2)
- Adjust the height of the drawbar of the second trailer so that the machines can be coupled.
- When reversing the set (tractor and trailer), move the rear hitch of the first trailer onto the drawbar of the second trailer.

  In the case of an automatic drawbar, make sure that the aggregation operation is completed and the drawbar eye of the second trailer is secured.
- Install the pin and the cotter securing the pin.
- Connect the brake, hydraulic and electrical system cables in accordance with the recommendations in the Connecting and disconnecting the machine chapter.

CAUTION

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

5.9.2 Disconnecting of the second trailer

- Place the trailer on a hard and flat surface.
- Immobilize the tractor and trailer with parking brake.
- Shut off the tractor engine and remove the ignition key, and prevent unauthorized access to the tractor.
- Disconnect the brake, hydraulic and electrical system cables in accordance with the recommendations in the Connecting and disconnecting the machine chapter.
- Unlock the rear hitch pin on the first trailer. Remove the bolt and drive the tractor away.

OBS.3.4-008.01.EN

5.10 HYDRAULIC SYSTEM OPERATION

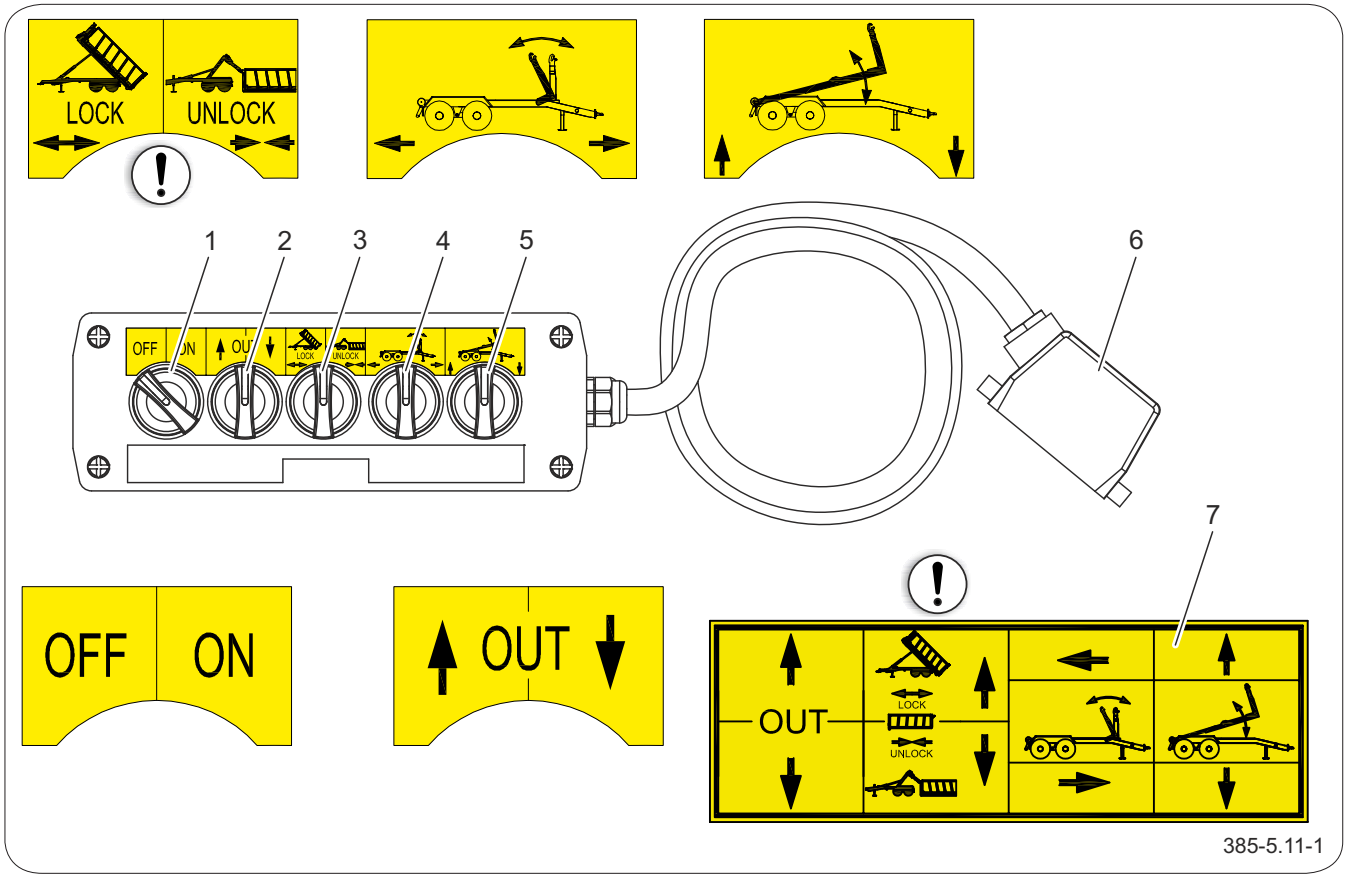

Figure 5.14 Trailer control pilot
(1) power switch (2) power supply for the trailer's rear outputs (3) container lock control
(4) hook frame control (5) tipping frame control (6) plug
(7) distributor sticker

Depending on the trailer assembly, the hydraulic system can be operated:

- by means of the tractor's external hydraulic system,
- wired remote control (electrical control).

Operation by means of the tractor's external hydraulic system

- Connect the trailer as described in the chapter *Attaching and detaching of the machine*.
- Read the agricultural tractor's operating manual and follow the tractor manufacturer's guidelines.

Operation with wired remote control

- Connect the trailer as described in the chapter *Attaching and detaching of the machine*.
- With the tractor engine running, move the tractor

remote divider lever to the engaged position or start the tractor PTO depending on the hydraulic option.

- Trailer operation is controlled by the remote control. The functions of the knobs or levers are indicated by decals.
- For remote control, turn switch (1) to the ON position, then control the trailer using switches (2), (3), (4) and (5). In the middle position, the knob is in the neutral position.
- When you have finished working, turn off the power by turning the on/off switch to the OFF position (remote control).
- Disengage the tractor PTO.

OBS.3.4-009.01.EN

5.11 LOADING OF THE CONTAINER

CAUTION

Pulling/removing of the container, perform it on a flat, even, horizontal surface.

If the trailer or container tilts to the side or is not in the centre line of the trailer when the container is pulled in, stop the attachment and remove the container.

DANGER

When pulling the container onto the trailer, the drawbar link and the tractor hitch are subjected to heavy loads.

It is forbidden for unauthorized persons to occupy the space near the trailer, especially behind the container that is being connected.

Be especially careful when working near power lines.

When connecting of the container, it is forbidden to control the frame lock. The trailer operating mode can be selected only when the tilting frame is in the rest position.

- Hide the rear protection and remove the slow-moving vehicle warning sign.
- If necessary, adjust the position of the hook to the appropriate height.
- Switch the trailer to the "hook" function.

  Correct switching will be signalled by the light next to the "hooklift" symbol. In this function, the lifting and hook frame work and the container lock will be unlocked.
- Make sure the container lock is hidden.
- Ensure that the suspension locking cylinders are extended.
- Position the tractor and trailer in front of the container in a straight line, approximately 1 meter from the container hitch.
- Extend the hook frame as far as possible.
- Swing the centre frame to the position where the hook is at the height of the hitch in the container.
- Retract the trailer to a position so that the container can be hooked.
- Partially fold the hook frame until the front of the container is slightly raised.

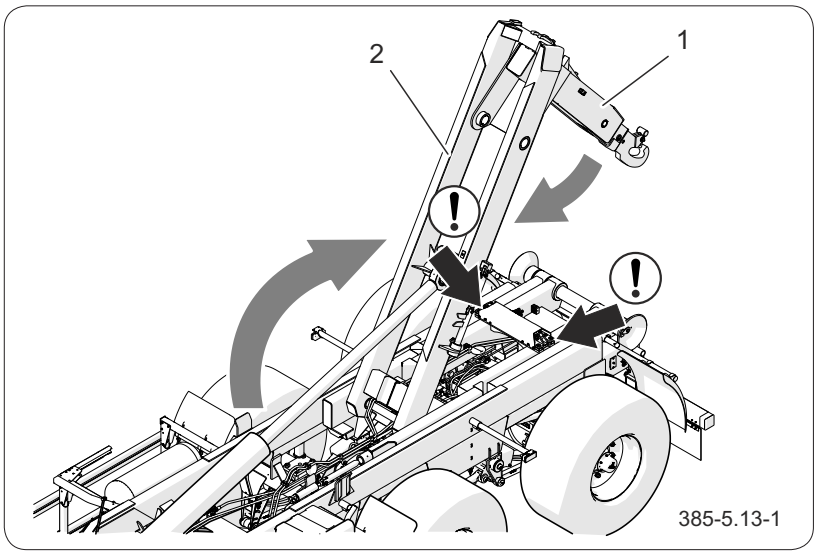

Figure 5.15 Frames unfolding
(1) hook frame *(2) centre frame*

CAUTION

When pulling in the container, make sure that the container's longitudinal members do not hit the trailer rollers. If so, stop folding the centre frame. Raise the front of the container slightly by folding the hook frame.

Failure to observe the note may cause the container to become detached, damage to the trailer.

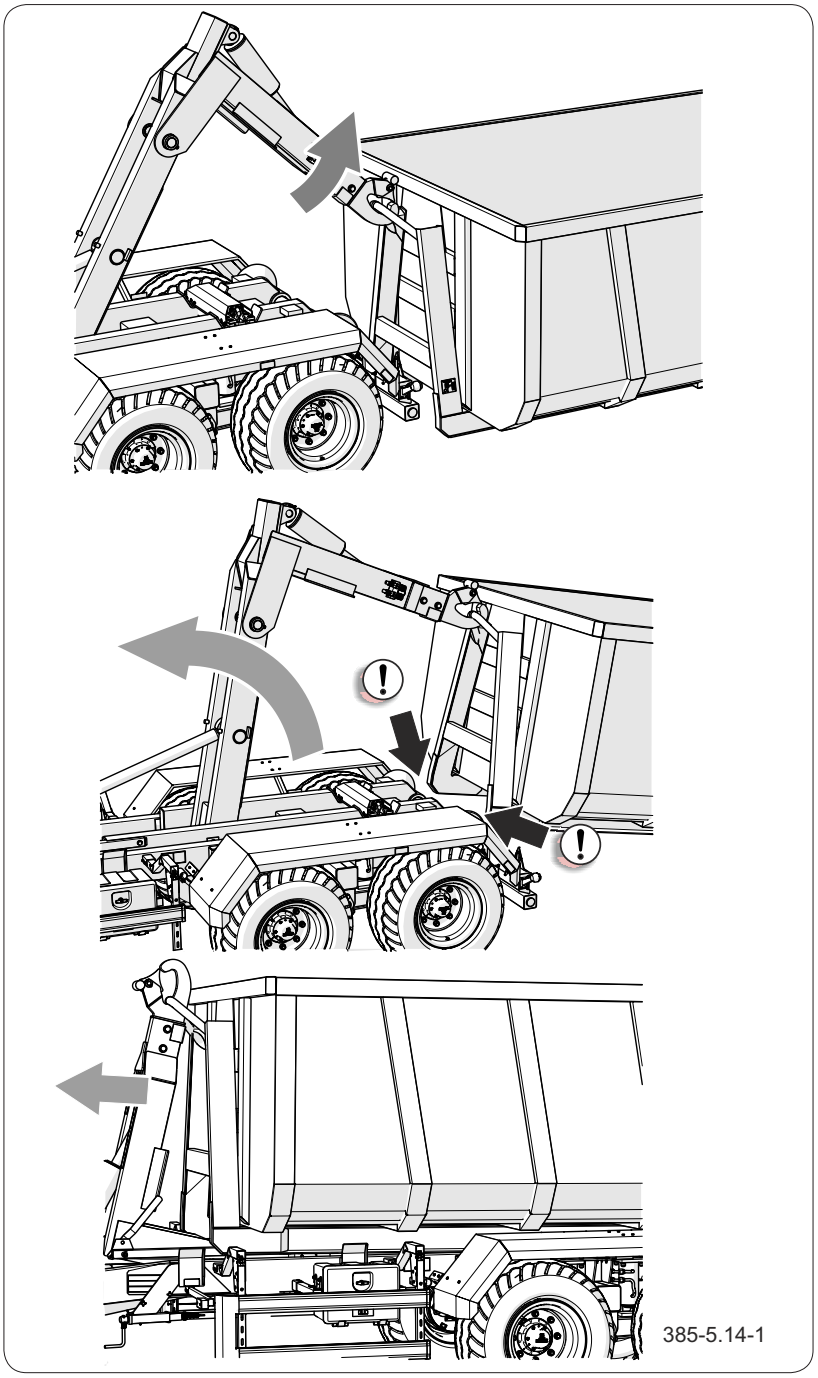

Figure 5.16 Attaching and pulling of the container

- Fold the centre frame back to its original position.

  Make sure that the side members of the container do not block the trailer rollers. If so, stop folding the centre frame. Raise the front of the container slightly by folding the hook frame. When the container longitudinal members are above the rollers, the centre frame can be reassembled.

- When the centre frame is folded back to its

CAUTION

The hook frame is controlled only when the container is unlocked.

Remember not to fold the hook frame completely. Folding the hook frame while attaching the container may prevent the container from locking properly. When moving a short container, make sure that the container rollers are not in front of the trailer rollers (the fenders can be damaged).

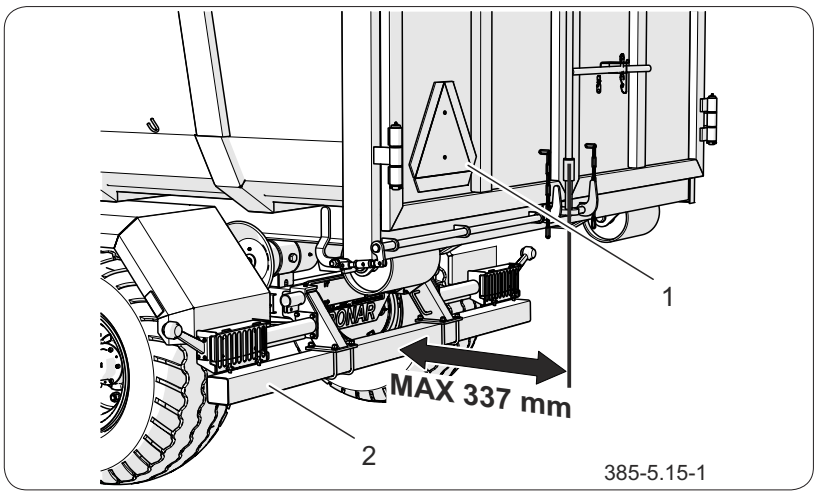

Figure 5.17 The rear bumper
(1) Plate for slow-moving vehicles
(2) Rear protection

original position, fold the hook frame completely.

- Switch the trailer to the "tipper" function.

  Correct switching will be signalled by the light next to the tipper symbol. In this function the lifting works, the hook frame does not work and the container lock will lock the container.

- Make sure that the suspension locking cylinders are fully retracted.
- Attach a slow-moving vehicle warning sign to the rear wall of the container.
- Extend and lock the rear protection (bumper) so that the distance from the end of the container to the bumper does not exceed 337mm.

In the case of loading a container that is not on hard ground, it is allowed to retract the trailer after raising the container to a height that allows it to be pulled in. The rough ground prevents the container rolls from rolling smoothly, which significantly hinders the process of pulling in. When reversing the tractor and pulling the container in at the same time, be careful.

OBS.3.4-010.01.EN

5.12 REMOVING OF THE CONTAINER

CAUTION

Pulling/removing of the container, perform it on a flat, even, horizontal surface.

When disconnecting the container, pay special attention to ensure that the container does not hit the trailer structural components before lowering it to the ground.

DANGER

When disconnecting the container from the trailer, the drawbar link and the tractor hitch are subjected to heavy loads.

It is forbidden for unauthorized persons to occupy the space near the trailer, especially behind the container that is being disconnected.

Be especially careful when working near power lines.

When disconnecting the container, it is forbidden to control the frame lock. The trailer operating mode can be selected only when the tilting frame is in the rest position.

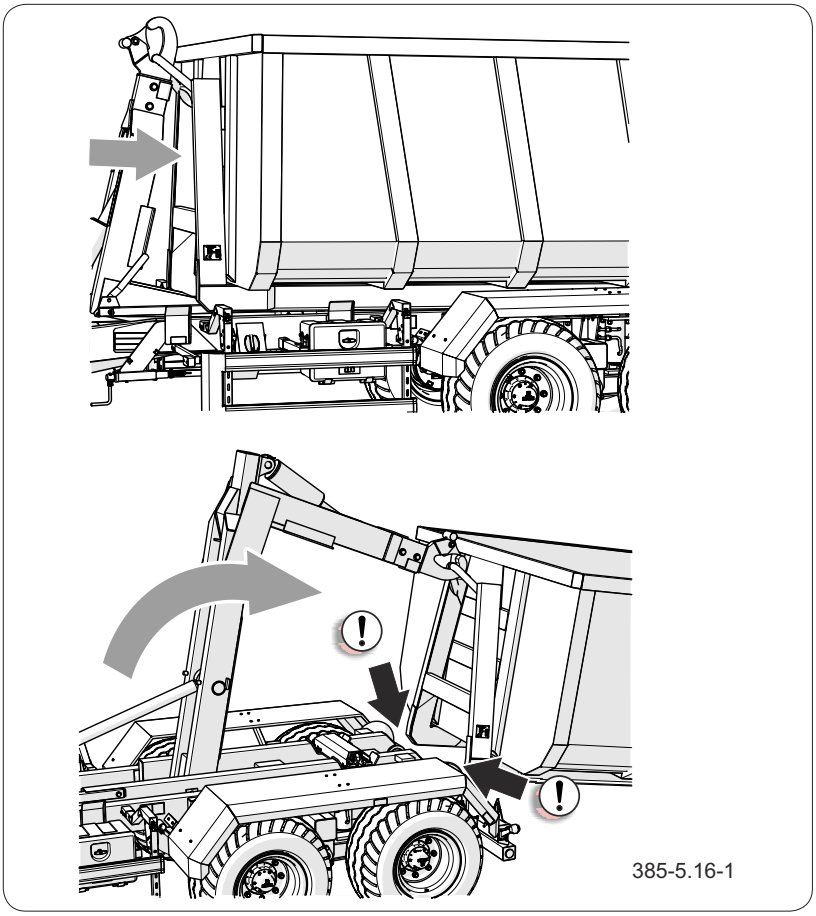

Figure 5.18 Removing of the container

- Place the tractor and trailer on firm and level ground. Otherwise, the wheels of the container may sink into the ground and make it difficult to disconnect it from the trailer. It is forbidden to leave the container on a slope.
- Position the tractor and the trailer for straight-ahead travel.
- Hide the rear protection and remove the slow-moving vehicle warning sign.
- Switch the trailer to the "hook" function.

  Correct switching will be signalled by the light next to the "hooklift" symbol. In this function, the lifting and hook frame work and the container lock will be unlocked.
- Ensure that the suspension locking cylinders are

extended.

- Fully extend the hook frame by moving the container rearward.
- Tilt the centre frame backwards.

  When removing, make sure that the side members of the container do not block the trailer rollers. If so, stop swinging the middle frame and move the hook frame forward, thereby raising the front of the container. Once the front of the container is above the rollers, the centre frame can be swung again.
- When you place the container on the ground, stop swinging the centre frame.
- Place the hook frame in a position that allows the hook to be disconnected from the container, and then move away from the container to detach it.
- Fold the hook frame and centre frame.
- Make sure that the suspension locking cylinders are fully retracted.
- Attach a slow-moving vehicle warning sign to the rear wall of the container.

OBS.3.4-012.01.EN

5.13 LOADING

DANGER

It is forbidden to transport people and animals.

DANGER

When loading the container, the drawbar link and the tractor hitch are subjected to high vertical loads.

DANGER

The transported load must be protected against shifting and contaminating the road during transit. If it is not possible to properly secure the load, it is forbidden to transport this type of material.

DANGER

Read the content of the load manufacturer's information leaflets and follow the transport recommendations.

Make sure that additional personal protective equipment (masks, rubber gloves, etc.) is necessary during loading work.

DANGER

There must be no bystanders in the unloading/loading area. Before unloading of the load box make sure that it is visible and make sure there are no bystanders nearby.

- Before loading, make sure 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 and stable 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 performed by a person experienced in this type of work and having appropriate qualifications to operate the equipment (if required).

  The type of cargo transported depends on the purpose of the container.
- Avoid dropping loads that could damage the trailer from high heights.
- Due to the different density of materials, using the total capacity of the container may result in exceeding the permissible load capacity of the hook trailer.

  Please note that the weight of the empty container plus the weight of its load must not exceed the permissible load capacity of the trailer.
- Materials that may corrode steel, cause chemical damage, or otherwise react adversely to the structural materials of the container may only be transported if the load is properly prepared.

  Materials must be tightly packed (in plastic bags, plastic containers, etc.).
- During transport, the contents of the packages cannot get into the container, so make sure the containers are properly tight.
- Due to the variety of materials, tools, methods of

DANGER

If there is a danger of the load shifting in the packaging, you cannot transport this type of materials. The shifting load is a serious danger when driving the tractor operator and other road users.

CAUTION

It is forbidden to exceed the permissible load capacity of the trailer because it threatens road safety and may cause damage to the machine.

CAUTION

The load on the container must be evenly distributed and must not hinder driving. Loading work should be carried out by authorization person experienced in this type of work.

CAUTION

The different types of containers are adapted to transport different groups of materials, so the user is obliged to read the contents of the container manual and follow the recommendations contained therein.

securing and securing loads, it is not possible to describe all methods of loading. When working, be guided by reason and your own experience.

You are obliged to read the regulations regarding road transport and comply with their recommendations.

OBS.3.4-013.01.EN

5.14 WEIGHT OF THE TRANSPORTED MATERIALS

DANGER

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

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

Approximate specific weight of selected materials is presented in Table below. Therefore, pay special attention not to overload the trailer.

Table 5.1. Approximate volumetric weights of selected loads

Type of material	Weight [kg/m^3]
Root Crops:	
raw potatoes	700 – 820
steamed mashed potatoes	850 – 950
dried potatoes	130 – 150
sugar beets - roots	560 – 720
fodder beets - roots	500 – 700
Mineral fertilizers:	
ammonium sulphate	800 – 850
potassium salt	1,100 – 1,200
super phosphate	850 – 1,440
basic slag	2,000 – 2,300
potassium sulphate	1,200 – 1,300
ground lime fertilizer	1,250 – 1,300
Concentrated feed and compound feed:	
stored chaff	200 – 225
oil cake	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
expeller pressed beet	750 – 800
dry beet pulp	350 – 400
bran	320 – 600
bone meal	700 – 1,000
fodder salt	1,100 – 1,200
molasses	1,350 – 1,450
silage (underground silo)	650 – 1,050

Type of material	Weight [kg/m^3]
silage (tower silo)	550 – 750
Seeds:	
broad bean	750 – 850
mustard	600 – 700
pea	650 – 750
lentil	750 – 860
bean	780 – 870
barley	600 – 750
Shamrock	700 – 800
grass	360 – 500
maize	700 – 850
wheat	720 – 830
rape	600 – 750
flax	640 – 750
lupine	700 – 800
oat	400 – 530
Lucerne	760 – 800
rye	640 – 760
Plant litter and roughage:	
dry meadow hay on the swath	10 - 18
hay wilted on the swath	15 - 25
hay in a collecting trailer (dry)	50 - 80
hay wilted, cut	60 - 70
dry pressed hay	120 - 150
wilted pressed hay	200 - 290
dry stored hay	50 - 90
cut stored hay	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 stored clover	40 - 60
dry chopped stored clover	80 - 140
dry straw in rollers	8 - 15
wet straw in rollers	15 - 20
wet straw cut on a volume trailer	50 - 80
Dry straw cut on a volume trailer	20 - 40
dry straw cut 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
cereal mass cut on a collecting trailer	60 - 100

Type of material	Weight [kg/m^3]
forage	28 - 35
forage cut on a volume trailer	150 - 400
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
Other:	
dry soil	1,300 – 1,400
wet soil	1,900 – 2,100
fresh peat	700 – 850
compost soil	250 – 350

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

OBS.3.8-005.01.EN

5.15 TRANSPORT PASSAGE

When driving on roads, comply with road traffic regulations and use caution and reasonable behaviour. The most important guidelines for steering a tractor with a trailer attached are presented below.

- Before moving off make sure that there are no bystanders, especially children, near the trailer and tractor. Ensure proper visibility.
- Make sure that the trailer is correctly connected to the tractor and tractor's hitch is properly secured.
- When transporting the container, the trailer must be switched to the "tipper" function.
- The vertical load carried by the trailer drawbar eye affects the steering of the agricultural tractor.
- Do not overload the trailer. The load must be distributed evenly in such a way that it does not exceed the permissible pressure on the trailer's running gear. Exceeding the permissible load capacity of the vehicle is prohibited and may cause damage to the machine. Overloading is a hazard when driving on the road for the tractor and trailer operator or other road users.
- Do not exceed the maximum design speed and the speed limit specified by road traffic law. The travel speed shall be adjusted to the prevailing road conditions, trailer load condition, type of load carried and other conditions.
- If you disconnect the trailer from the tractor, you must secure it by blocking it with the parking brake and placing chocks under the wheel.
- The tractor operator is required to equip the trailer with an approved or approved warning reflective triangle.
- When driving on public roads, mark the trailer with the Slow Moving Vehicle Indicator Plate,

CAUTION

Leaving an unsecured trailer is prohibited.

In the event of a machine breakdown, stop at the side of the road without endangering other road users and mark the stopping place in accordance with traffic regulations.

place the plate on the rear chassis beam (for a trailer without a container), or on the rear wall of the container.

- While driving, obey the rules of the road, signal the change of direction by means of direction indicators, keep clean and take care of the technical condition of the lighting and signalling installation.
- Damaged or lost lighting and signalling components must be repaired or replaced with new ones immediately.
- Avoid ruts, depressions, ditches, or driving along roadside slopes. Driving across such obstacles can cause the trailer and tractor to tilt suddenly. This is particularly important because the centre of gravity of the trailer with load (and especially with volumetric load) adversely affects driving safety. Driving near the edges of ditches or canals is dangerous due to the risk of landslides under the wheels of a trailer or tractor.
- Reduce your speed before approaching bends or when driving over uneven or sloped terrain.
- When driving, avoid sharp turns, especially on slopes.
- When driving a trailer (with or without a container), the 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. Before starting to drive, properly adjust the braking force of the trailer by appropriately setting the braking force regulator (applies to pneumatic braking system).
- Check trailer behaviour when driving on rough terrain. Adjust your speed to the terrain and road

CAUTION

Travelling with a volumetric load through ruts, ditches, slopes etc. poses a great risk of tipping over. Be especially careful.

conditions.

- When the trailer is travelling on roads (public and non-public), remove the protective grilles for the rear combination lamps and secure them to the other side of the beam profiles with star nuts.
- The manure spreader is adapted for driving on slopes up to a maximum of 8°.

  Moving the trailer over slopes may cause the trailer to overturn as a result of loss of stability. Prolonged driving on sloping ground creates a risk of loss of braking efficiency.

OBS.3.4-014.01.EN

5.16 UNLOADING

DANGER

Make sure that no one is near a tilted container or falling load during unloading.

Tipping can only be performed when the trailer is connected to the tractor.

It is forbidden to tilt container during strong gusts of wind.

It is forbidden to start or drive with a raised container.

Be especially careful when working near power lines.

Be especially careful when opening the container locks because the load presses against the walls.

Be especially careful when closing the container wall to avoid crushing your fingers.

Unloading of the materials contained in the container is carried out by tipping the container backwards.

Unload in the following order:

- The tractor and trailer be placed for straight ahead on flat and hard terrain.
- Immobilize the tractor and trailer with parking brake.
- Fully insert the rear trailer protection and secure it against sliding.
- Open the rear wall of the container and secure it against accidental closing.

  Use caution when opening, as the load can put a lot of pressure on the opened walls.
- Switch the trailer to the "tipper" function.

  Correct switching will be signalled by the light next to the tipper symbol. In this function the lifting works, the hook frame does not work and the container lock will lock the container.
- Lift the swing frame with the container and unload the container.

  Ensure that the suspension locking cylinders extend when the middle frame is raised.
- If in the initial phase the tilting frame does not manage to lift the container, you should:
  1. Fully lower the swing frame.
  2. Switch the trailer to the "hook" function.

     Correct switching will be signalled by the light next to the "hooklift" symbol. In this function, the lifting and hook frame work and the container lock will be unlocked.
  3. With the hook frame, move the container backwards.
  4. Switch the trailer to the "tipper" function.

5. Continue to raise the swing frame with the container.

- After unloading, lower the swing frame.
- If necessary, move the container fully forward with the hook frame, switching to the "hook" function.
- Clean the edges of the container and the trailer components of the residual load.
- Close and secure the back wall of the container.
- Extend and lock the rear protection (bumper) so that the distance from the end of the container to the bumper does not exceed 337mm.
- Ensure that the suspension lock cylinders are raised as far as possible.

OBS.3.4-015.01.EN

5.17 RULES FOR THE USE OF TIRES

- When working with tires, the machine should be secured against rolling by placing chocks under the wheels. Wheels can be taken off only when the machine is not loaded.
- Repair work on wheels or tires should be performed by persons trained and authorized for this purpose. These works should be performed with the use of appropriately selected tools.
- Checking the tightening of the wheel nuts carry out after the first use of the machine, every 2-3 hours during the first month of using the machine, and then every 30 hours of driving. Always repeat all operations if the wheel was disassembled. Wheel nuts should be tightened in accordance with the recommendations contained in the *Inspections and technical service*chapter.
- Regularly check and maintain proper tire pressure as recommended in the instructions (especially after a long break in the machine use).
- Tire pressure should also be checked during all-day intensive work. Take into account that an increase in tire temperature can increase the pressure by up to 1 bar. With this increase in temperature and pressure, reduce the load or speed of the machinee.
- Never reduce the pressure by venting if it increases due to temperature.
- Valves must be secured with appropriate caps to avoid soiling.
- Do not exceed the machine speed limit.
- During the whole day cycle, take a minimum of one hour break at noon.
- Observe 30 minutes breaks for cooling the tires after driving 75 km or after 150 minutes of

continuous driving, whichever comes first.

- Avoid damaged surfaces, sudden and variable manoeuvres, and high speeds when turning.

OBS.3.G-008.01.EN

5.18 CLEANING

DANGER

Refer to the instructions for using cleaning detergents and preservatives.

When washing with detergents, wear suitable protective clothing and eye protection.

When cleaning the machine and staying on the cargo box, the tractor engine must be turned off, the articulated telescopic shaft must be disconnected.

Every day, after finishing, thoroughly clean the trailer of the remains of the transported material. If you use a pressure washer, learn about the principle of operation and recommendations for safe operation of this device.

Guidelines for cleaning the trailer

- Stop the tractor and trailer on a flat, even surface.
- Turn off the tractor engine and remove the ignition key.
- Secure the trailer and tractor with the parking brake, place wedges under the manure spreader wheel.
- Secure the tractor against unauthorized persons.
- Clean and wash the trailer with a strong stream of water and allow to dry in a dry and ventilated place.

The use of pressure washers increases the effectiveness of washing, but be careful when work. 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 55^0C.

Paint damage may occur when washing with excessive pressure.

Do not direct the water jet directly at the system components and trailer equipment, i.e. the control valve, brake cylinders, pneumatic, electric and hydraulic plugs, lights, electrical connectors, information and warning decals, data plate, conduit connections, lubrication points, etc. high water pressure may cause mechanical damage to these components.

- For cleaning and maintenance of plastic surfaces, use clean water or specialized preparations intended for this purpose.

CAUTION

Each time the work with trailer is finished, clean the trailer of the remains of the transported material.

After washing, wait for the machine to dry and then apply grease to all lubrication points as recommended. Wipe off excess grease or oil with a dry cloth.

During work, use appropriate, close-fitting protective clothing, gloves and the right tools.

- Do not use organic solvents, preparations of unknown origin or other substances that may damage the lacquered, rubber or plastic surface. Perform test on an invisible surface in case of doubt.
- Surfaces oily or greasy should be cleaned with petrol or degreasing agents, and then washed with clean water and detergent. Follow the cleaning agent manufacturer's instructions.
- Detergents intended for washing should be stored in their original containers, or alternatively, but marked exactly. The preparations cannot be stored in containers intended for storing food and beverages.
- Observe environmental protection principles, wash trailer in designated places.
- Washing and drying the trailer must take place at temperatures above $0\ ^{0}C$.

  In winter, frozen water can cause damage to the paint coat or machine components.

OBS.3.8-011.01.EN

5.19 STORAGE

After finishing work, carefully clean and wash the machine.

In the event of damage to the paint coating, damaged areas must be cleaned of rust and dust, degreased, and then painted with paint while maintaining a uniform colour and uniform thickness of the protective coating. Until painting, damaged areas shall be covered with a thin layer of grease, anti-corrosive agent or primer.

It is recommended that the machine be stored indoors or under a roof.

For long-term storage outside the room, it must be protected against the effects of weather conditions, especially factors causing corrosion of steel and accelerating the aging of tires.

In the event of a longer stop, it is necessary to lubricate all points regardless of the period of the last treatment.

Wash and dry the rims and tires. During longer storage, 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.

Store the articulated telescopic shaft for connecting to the tractor in a horizontal position.

OBS.3.8-012.01.EN

CHAPTER 6

PERIODIC INSPECTIONS AND TECHNICAL SERVICE

PRONAR T285/1

6.1 GENERAL

CAUTION

It is forbidden to use a damaged machine.

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

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. Mandatory perform all maintenance and regulatory activities specified by the manufacturer in accordance with the assumed schedule.

Repair of the during the warranty period may only be carried out by Authorized Sales and Service Points (APSiO). The machine's warranty inspection is only carried out by authorized service centres.

In the event of unauthorized repairs, changes to factory settings or activities that have not been considered as being possible by the trailer operator (not described in this manual), the user loses the warranty.

Detailed information on the review schedule can be found in chapter entitled "*Maintenance and inspection schedule*".

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

During work, use protective clothing and protective equipment suitable for requirements.

SER.3.B-001.01.EN

6.2 MAINTENANCE AND INSPECTION SCHEDULE

Table 6.1. Review categories

Category	Description	Responsible	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 machines works, whichever comes first. Each time before performing this review, a daily check must be carried out.
C	Maintenance	Operator	Inspection carried out periodically every 3 months. Each time before carrying out this inspection, carry out a daily inspection and inspection every one month of use of the machine.
D	Maintenance	Operator	Inspection carried out periodically every 6 months. Each time before carrying out this inspection, perform a daily inspection, inspection every 1 month of the machine use and inspection every 3 months.
E	Maintenance	Operator	Inspection carried out periodically every 12 months. Each time before carrying out this inspection, perform a daily inspection, inspection every 1 month of the machine use and inspection every 3 months.
F	Guarantee	APSiO(1)	Inspection carried out for a fee after the first 12 months of use of the machine, after reporting the owner.
G	Maintenance	Service (2)	Inspection carried out every 4 years of machine use

(1) - Authorized Sales and Service Centre

(2) - post-warranty service

Table 6.2. Technical inspection schedule

Description of activities	A	B	C	D	E	F	G	Page
Air pressure control	•							6.14
Tank drainage	•							6.8
Checking plugs and connection sockets	•							6.9
Covers inspection	•							6.11
Checking of the machine before driving	•							6.12
Air pressure measurement, tire and rim inspection		•						6.14
Cleaning the air filters			•					6.16
Checking brakelining wear				•				6.17
Checking of the clearance of the axle bearings				•				6.18
Checking of mechanical brakes				•				6.20
Cleaning the drainage valve				•				6.22
Checking of parking brake cable tension					•			6.23
Hydraulic system checking					•			6.25
The pneumatic braking system inspection					•			6.27
Lubrication	See table: *Machine lubrication schedule*							6.28
Inspection of screw connections	See table: *Schedule for tightening screw connections*							6.33
Replacement of hydraulic hoses							•	6.39
Replacement of limit valves and limit switches							•	6.40

Table 6.3. Control parameters and settings

Description	Value	Notes
Hook height		
Position I	1,450 mm	
Position 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 trailer axis and the fork	90^{O}	With the brake depressed
Parking brake		
Permitted parking brake cable clearance	20 mm	

SER.3.4-001.01.EN

6.3 PREPARATION OF THE TRAILER

DANGER

Secure the tractor cab against unauthorized access.

When working with the jack, the user must read the instructions for this device and follow the manufacturer's instructions. The jack must stand firmly against the ground and machine elements.

Before starting maintenance and repair work with the machine raised, make sure that it is properly secured and that it will not roll during the inspection.

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

  Make sure the trailer will not roll during the inspection.
- If it is necessary to lift the wheel during the inspection, place locking chocks under the rigid axle wheel on the opposite side. Place the jack in places marked in figure with an arrow.

  The jack must rest on a firm and stable surface. Place the jack between the U-bolts securing the axle to the spring.
- The jack must be suited to the trailer weight.
- In exceptional cases, release the machine parking brake, e.g. when measuring the play of the axle bearings. Be especially careful while working.

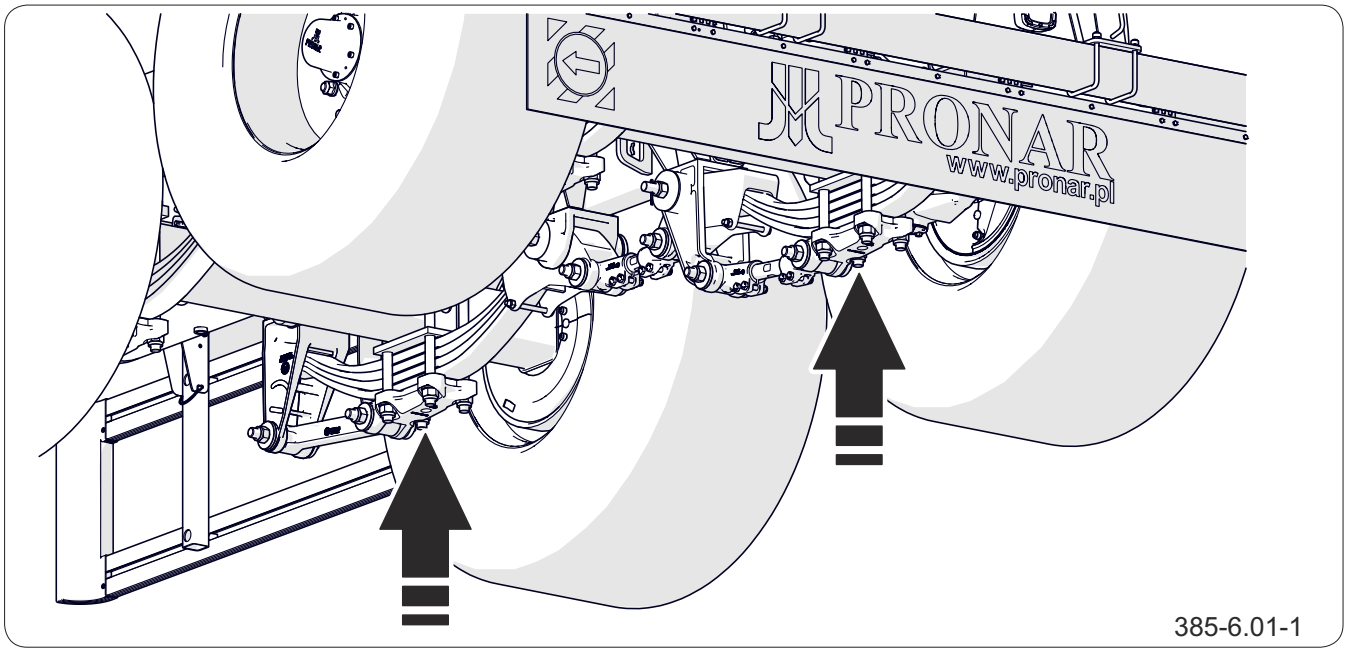

Figure 6.1 Recommended machine support points

SER.3.4-002.01.EN

6.4 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 outflow of air from the tank.
- If the valve stem does not want to return to its position, wait until the tank empties. Then unscrew and clean or replace the valve with a new one.
- If it is necessary to clean the drain valve, follow the chapter "*Cleaning the drain valve"*.

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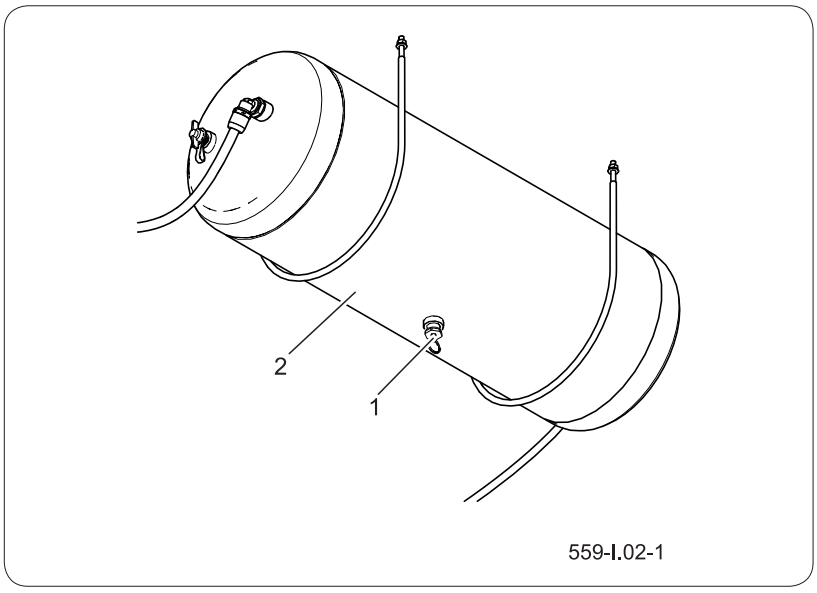

Figure 6.2 Air tank
(1) drain valve (2) air tank

6.5 CHECKING PLUGS AND CONNECTION SOCKETS

A damaged body of the hydraulic or pneumatic hose connector or socket 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.

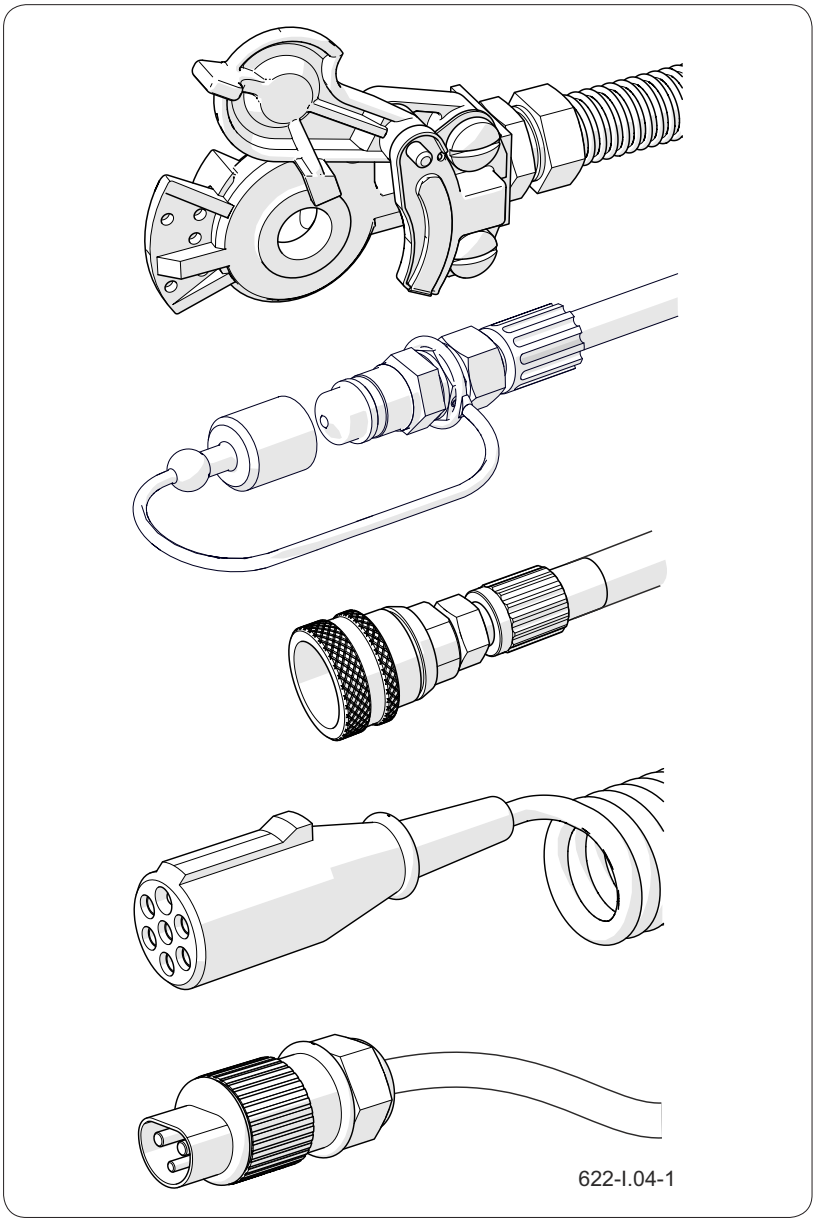

Figure 6.3 Checking the trailer connections

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

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

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6.6 COVERS INSPECTION

DANGER

The machine must not be used with damaged or incomplete covers.

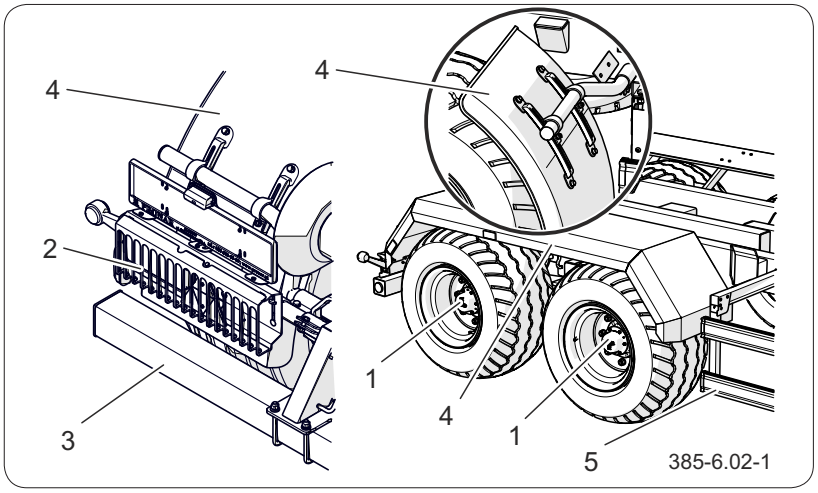


Figure 6.4 Trailer covers
(1) axle cap
(2) lamp cover
(3) bumper
(4) fender
(5) side cover

Covers protect the machine user against loss of health or life and 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 immediately.

The scope of activities

- Check the the completeness of the safety guards.
- Check whether the covers are properly installed, assess the condition of the bumper (3), side overrun covers (5) and the mounting of the lamp cover covers (2).
- Check protection and completeness of hubcaps (1).
- Inspect fenders (4) for secure mounting.
- Inspect the PTO shaft guard and the IDL guards.
- If necessary, tighten the the screw connections of the covers.

SER.3.4-003.01.EN

6.7 CHECKING OF THE MACHINE BEFORE DRIVING

DANGER

Driving with faulty lighting or brake system is prohibited.

In the event of damage to the machine, do not use it until it is repaired.

Before connecting 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 machine lighting.

Check the cleanliness of all electric lamps and reflectors.

Before travelling on a public road, remove the rear lamp covers and place them in the designated place.

Check the correct mounting of the triangular sign holder for slow moving vehicles and the plate itself.

Make sure that the tractor has a reflective warning triangle.

Check the 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 defrost the actuator and remove the accumulated water through the blocked vents. If any damage is found, replace the actuator. When mounting the actuator, keep its original position

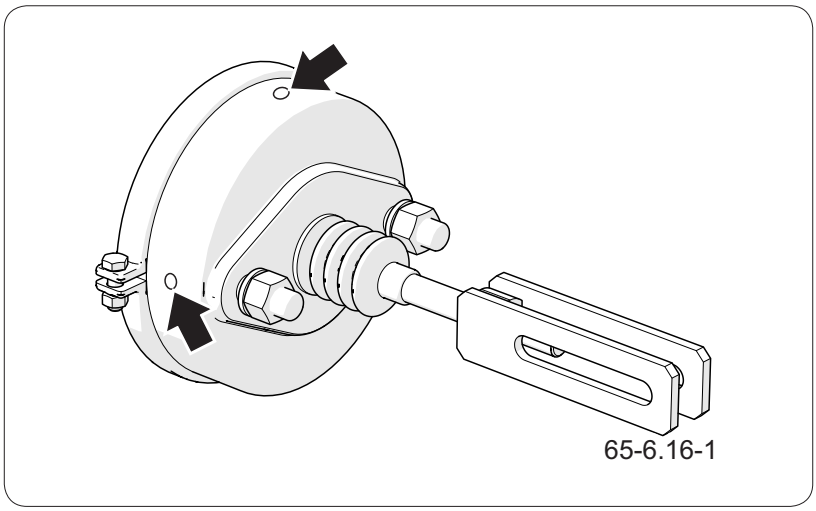


Figure 6.5 Brake cylinder

relative to the bracket.
While moving off, check the operation of the main brake system. For proper operation of the pneumatic system, an appropriate level of air pressure in the machine air tank is required.
Check the correct operation of the other systems while operating the machine.

SER.3.G-006.01.EN

6.8 AIR PRESSURE MEASUREMENT, TIRE AND RIM INSPECTION

ADVICE

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

CAUTION

Using a machine in which tires are not properly inflated may lead to permanent tire damage as a result of delamination of the material.

Incorrect tire pressure also causes faster wear of the tire.

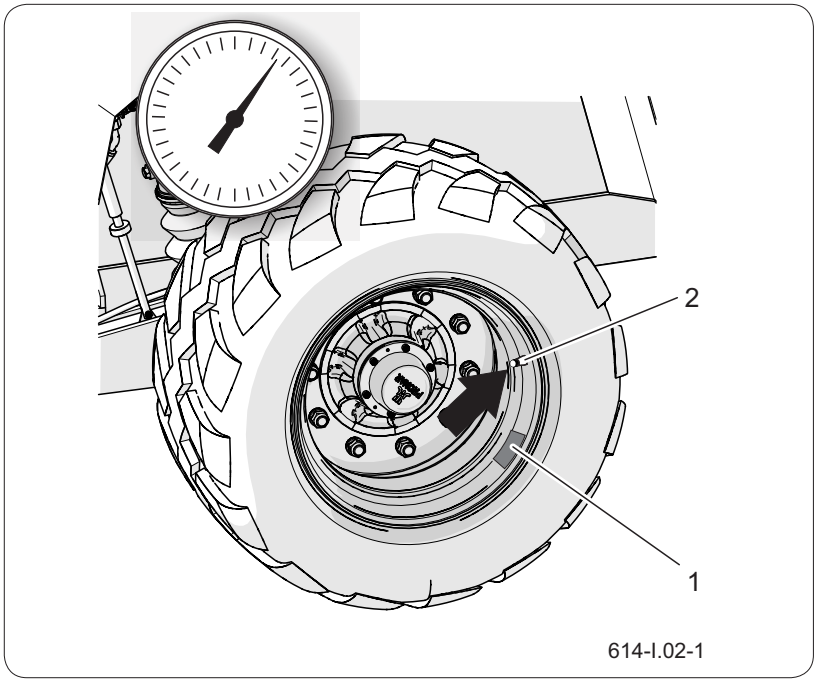


Figure 6.6 Trailer's wheel
(1) sticker *(2) valve*

The machine must be unloaded during pressure measurement. The inspection should be performed before driving, when the tires are not warm, or after the machine has been parked for a longer period of time.

The scope of activities

- Connect the pressure gauge to the valve.
- Check the air pressure.
- If necessary, inflate the wheel to the required pressure.
- The required air pressure is described on a sticker (1) on the rim.
- Check the tread depth.
- Check the side wall of the tire.
- Inspect the tire for defects, cuts, deformations, bumps indicating 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 centre and ensure that your tire defect is eligible for replacement. Rims should be checked for deformation, material cracks, weld cracks, corrosion, especially around welds and in the place contact with the tire.

SER.3.G-007.01.EN

6.9 CLEANING THE AIR FILTERS

The scope of activities

- Reduce pressure in the supply line.

  The pressure in the pipe can be reduced by pushing the plug of the pneumatic connection as far as it will go.

- Slide out the filter lock (1).

  Hold the filter cover (2) with your other hand. After removing the slide, the cover will be pushed out by the spring located in the filter housing.

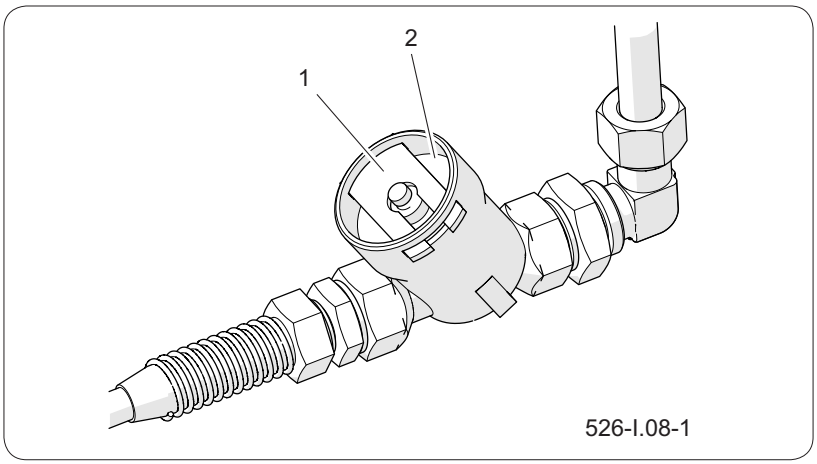


Figure 6.7 Air filter
(1) filter *(2) cover*

- The cartridge and the filter body should be thoroughly washed and blowed out with compressed air. Installation should be made in reverse order.

SER.3.8-008.01.EN

6.10 CHECKING BRAKE LINING WEAR

ADVICE

Brake lining wear control,

- according to the schedule of inspections,
- if the brakes overheat,
- the stroke of the brake cylinder piston significantly increases,
- in the event of unnatural noises coming from around the road axle drum.

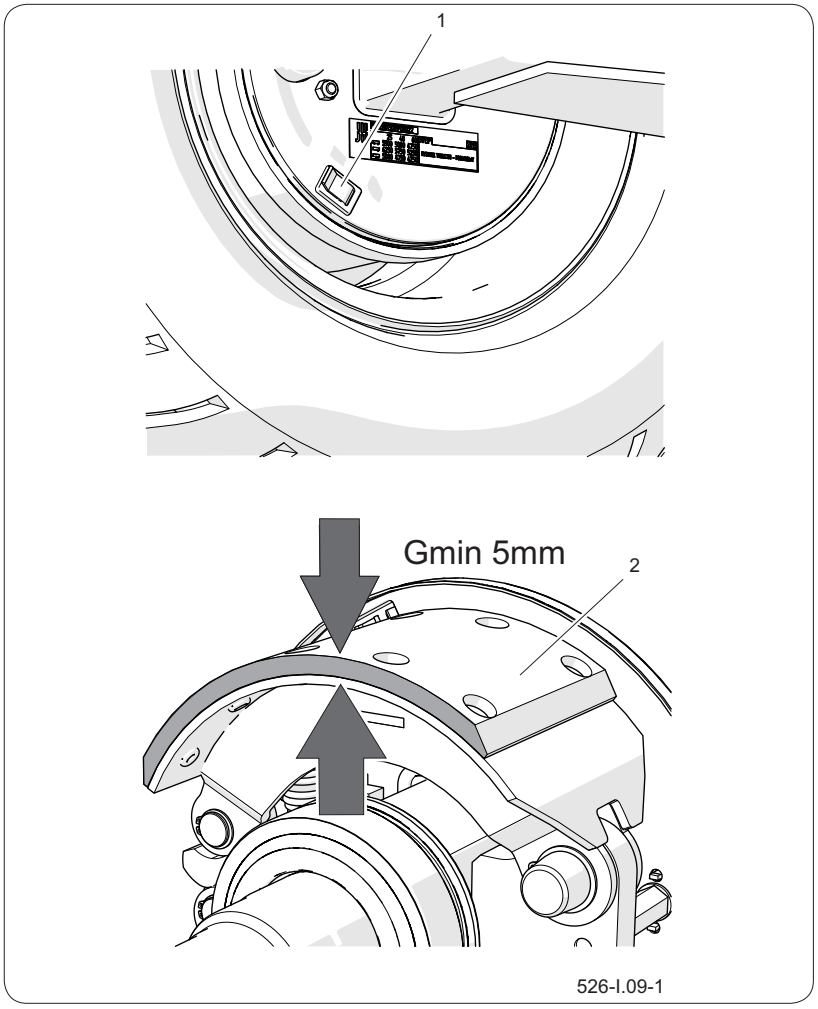


Figure 6.8 Checking the brake lining thickness
(1) blanking plug (2) brake lining

- Find the inspection hole.

  Depending on the version of the road axle, the inspection hole may be located in a different place than the figure shows, but it will always be located on the brake shield.
- Remove the upper and lower plugs and then check the thickness of the lining.
- The brake shoes must be replaced if the thickness of the brake lining is less than 5 mm.
- Check the the remaining linings for wear.

SER.3.8-009.01.EN

6.11 CHECKING OF THE CLEARANCE OF THE AXLE BEARINGS

ADVICE

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

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

DANGER

Before starting work, read the jack User's Manual.

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

Control the play of bearings only when the machine is connected to the tractor and is unloaded.

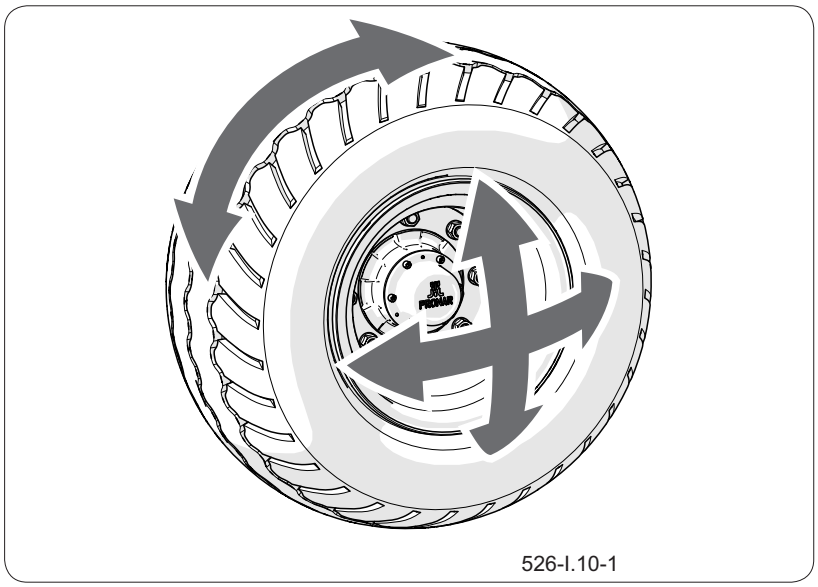


Figure 6.9 Clearance checking

- 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 the that the bearing does not make any unusual sounds.
- Try to feel looseness by moving the wheel.
- Repeat steps separately for each wheel.

  Remember that the lift must be on the opposite side of the wedges!
- If looseness is felt, adjust the bearings. Unnatural sounds coming from the bearing may be symptoms of excessive wear, dirt or damage. In this case, the bearing together with the sealing rings should be replaced or cleaned and re greased. When checking bearings, make sure that any noticeable looseness comes from the bearings, not the suspension system (e.g.

looseness on the spring pins, etc.).

- Check the the technical condition of the hub cover, replace if necessary.

SER.3.G-009.01.EN

6.12 CHECKING OF MECHANICAL BRAKES

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.

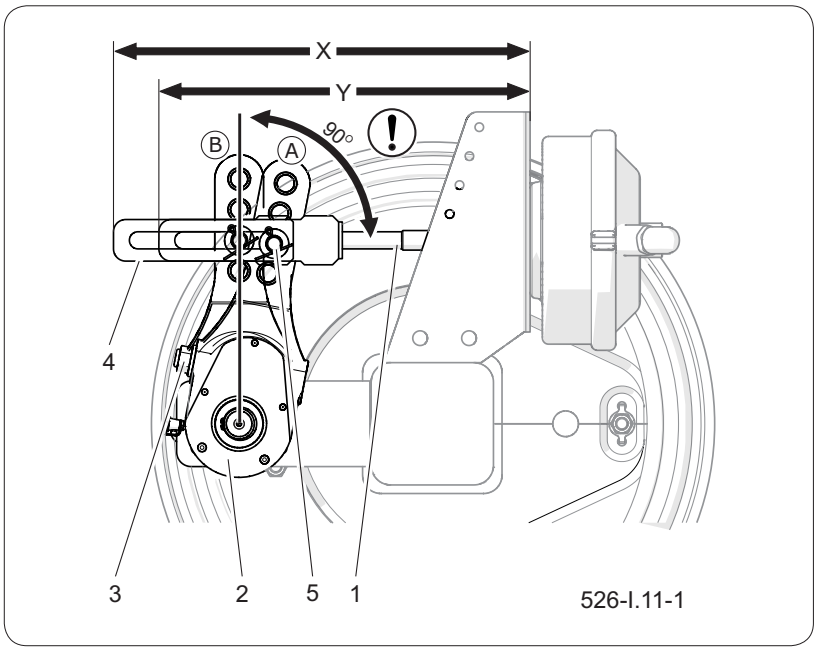


Figure 6.10 Brake check
(1) cylinder piston
(2) expander arm
(3) adjustment screw
(4) of the cylinder fork
(5) pin position
(A) position of the arm in the released position
(B) arm position in braking position

In a correctly adjusted brake the cylinder piston stroke brake should be within the range given in Table 6.3 and depends on the type of cylinder used. When the wheel is fully braked, the optimal 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.

The scope of activities

- Measure the distance X with the tractor brake pedal released.
- Measure the distance Y with the tractor brake pedal pressed.
- Calculate the distance difference X-Y (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.

SER.3.8-011.11.EN

6.13 CLEANING THE DRAINAGE VALVE

DANGER

Bleed the air tank before removing the drain valve.

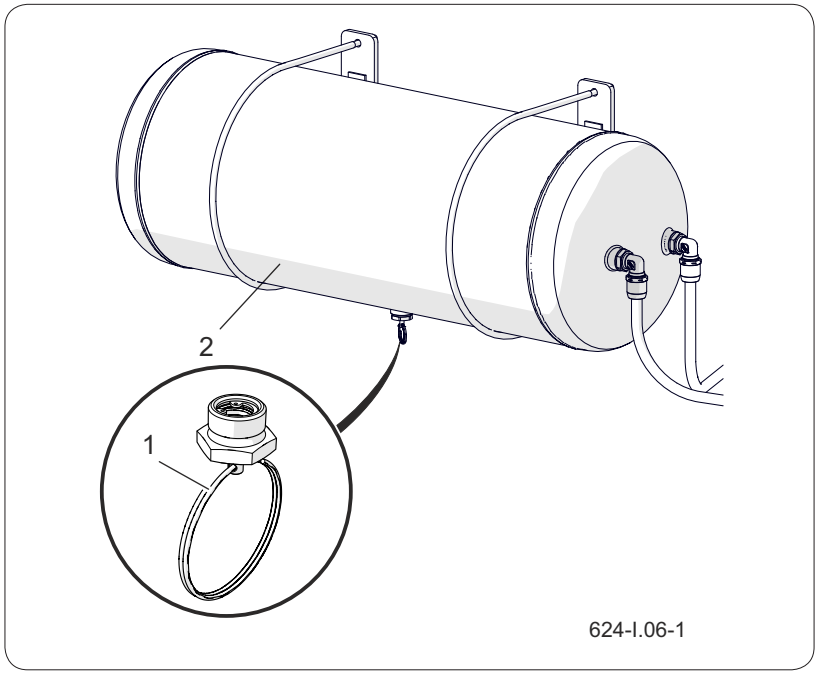


Figure 6.11 Air tank
(1) drain valve *(2) tank*

The scope of activities

- Fully reduce the pressure in the air reservoir (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.

SER.3.8-012.01.EN

6.14 CHECKING OF PARKING BRAKE CABLE TENSION

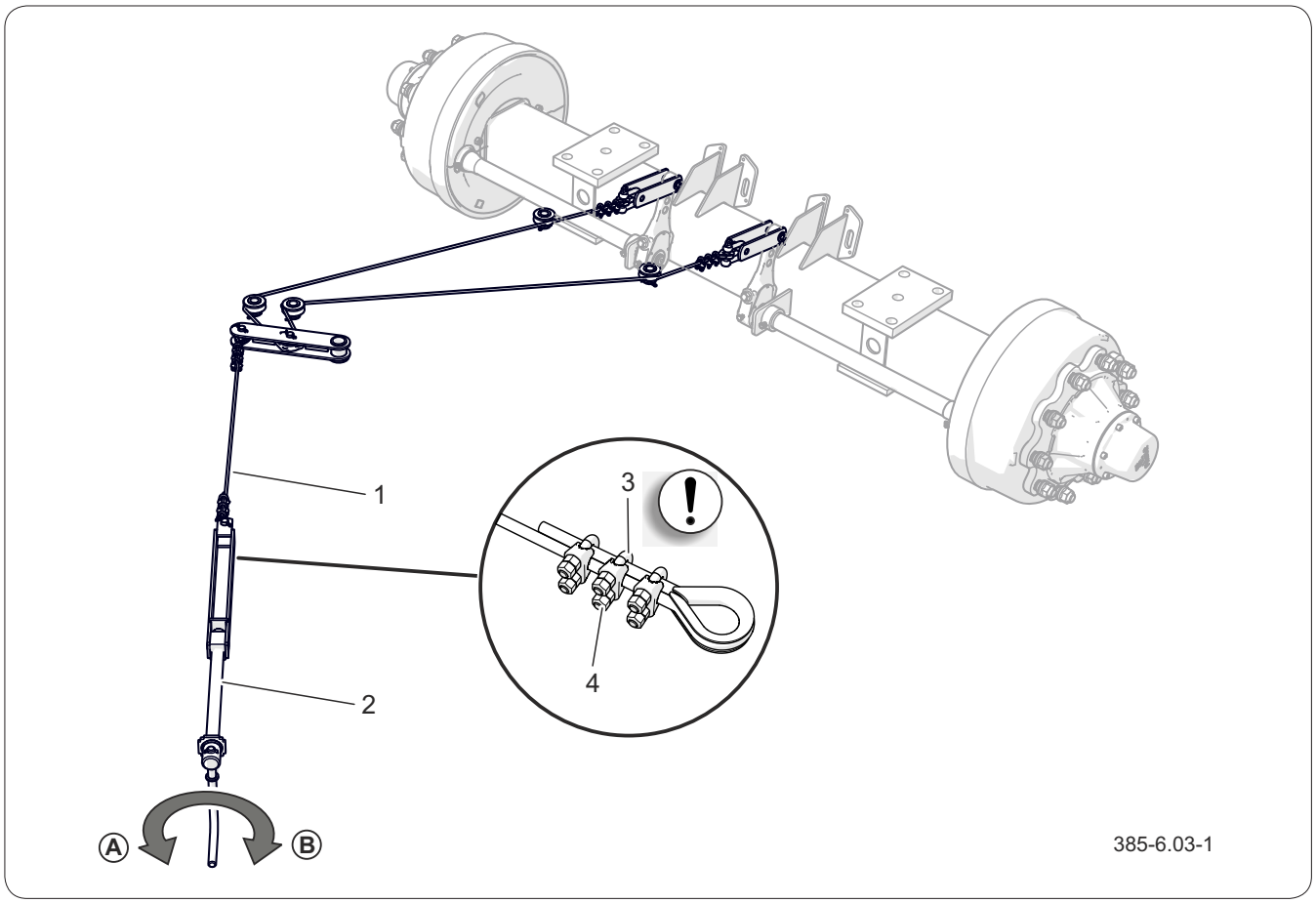


Figure 6.12 Cable tension inspection
(1) cable, (2) brake mechanism, (3) bow clamp, (4) clamp nut

DANGER

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

Voltage control

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

- Connect the machine to the tractor. Place the machine and tractor on a level surface.
- Place chocks under one wheel of the rigid machine axle.
- Turn the parking brake crank (2) towards (B) and apply the parking brake.
- Check cable tension (1).

When the mechanism screw is completely removed, 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).
- Loosen the 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 slack.

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

SER.3.4-004.01.EN

6.15 HYDRAULIC SYSTEM CHECKING

UWAGA

It is forbidden to use the machine with a faulty hydraulic installation.

Checking the tightness of the hydraulic system

- Connect the trailer to tractor.
- Connect all hydraulic system hoses according to the instructions in the manual.
- Clean the hose connections, hydraulic cylinders and couplings.
- Activate all hydraulic systems in turn, extending and retracting the piston rods of the cylinders. Repeat all operations 3-4 times.
- Leave the hydraulic cylinders fully extended. Check the all hydraulic circuits for leaks.
- After completing the inspection, put all cylinders to the rest position.

In the event of oiling on the hydraulic cylinder body, the nature of the leakage must be check.

When the cylinder is fully extended, check the the seal locations. Small leaks with symptoms of "sweating" are permissible. When you notice "droplets" type leaks do not use the machine until the fault is removed. If malfunctions appeared in brake cylinders or other brake installation elements, you can not move with the trailer until the fault is removed.

If visible moisture appears on the cable connectors tighten the connector with a specified torque and carry out the test again. If the problem persists replace the leaking element.

Control of the technical condition of hydraulic connectors

Hydraulic couplings for connecting to the tractor must be technically sound and kept clean. Each time before connecting, make sure that the sockets in the tractor are maintained in good condition. The tractor's

and trailer’s hydraulic systems are sensitive to the presence of solid impurities that can cause damage to precise components of the installation (scratch the surface of cylinders, etc.)

SER.3.8-015.01.EN

6.16 THE PNEUMATIC BRAKING SYSTEM INSPECTION

DANGER

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

DANGER

Repair, replacement or regeneration of pneumatic system components may be performed only in a specialized workshop.

The scope of activities

- Connect the machine to the tractor.
- Block the tractor and the machine with the parking brake. Put the wedges under one wheel of the rigid axis of the machine.
- Start the tractor to supplement the air in the machine braking system tank.
- Switch off the tractor engine.
- Check the the system components with the tractor brake pedal released.
- Pay special attention to cable connections and brake actuators.
- Repeat the system check with the tractor brake pedal depressed.

In the event of a leak, the compressed air will leak out in places of damage with a characteristic hiss. The leakage of the system can detect coating checked elements for washing or other foaming preparation, which will not interact aggressively to the elements of the installation. Damaged elements should be replaced or sent for repair. If the leak appeared around the connections, user can tighten the connector on their own. If the air continues to leak replace the elements of the connector or sealing into new ones.

When checking for leaks, pay attention to the technical condition and degree of cleanliness of the system components. Contact of pneumatic conduits, seals etc. with oil, grease, gasoline etc. may damage them or accelerate the aging process. Bisted, permanently deformed, cut or damaged wires should be replaced for new ones.

SER.3.G-019.01.EN

6.17 LUBRICATION

ADVICE

Frequency of lubrication (table Lubrication schedule of the machine):

M-month,

D - working day (8 hours of trailer work),

OC - daily service (check daily before use, do not allow dry work),

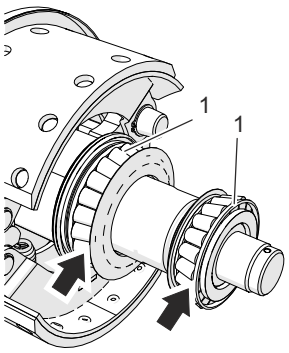
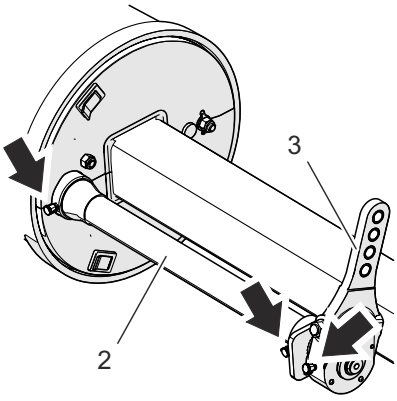
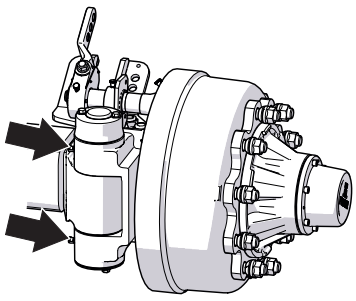
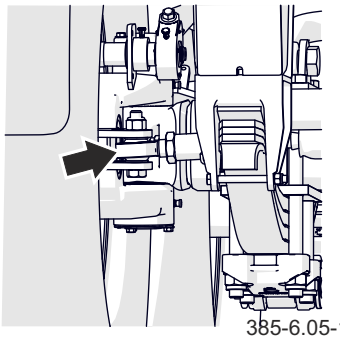
C - the cycle.

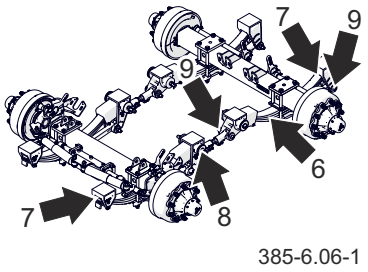
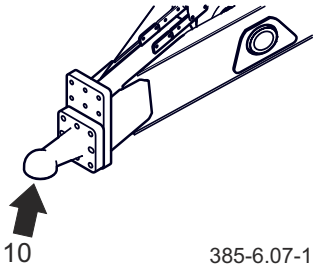
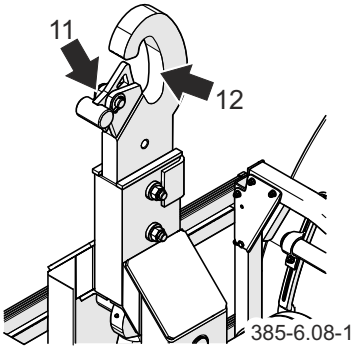
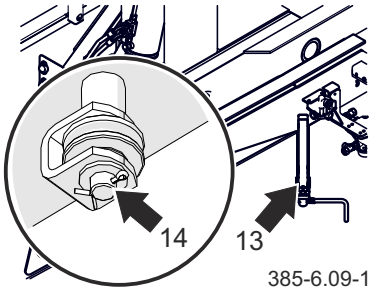
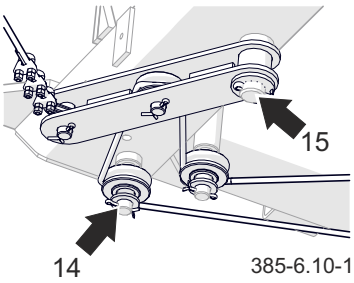
- Lubricate the machine with a hand or foot lubricator filled with the recommended lubricant. Remove old grease and other debris before starting work. After finishing work, wipe off excess grease.
- Wipe the parts that should be lubricated with machine oil with a dry and clean cloth. Apply the oil with a brush or oiler. Wipe off excess oil.
- The replacement of grease in wheel hub bearings should be entrusted to specialized service points equipped with the appropriate tools. Dismantle the entire hub, of the tractor the bearings and individual sealing rings. After thorough cleaning and inspection, install lubricated components. Replace bearings and seals with new ones if necessary.
- Empty containers of grease or oil be disposed of in accordance with the lubricant manufacturer's instructions.

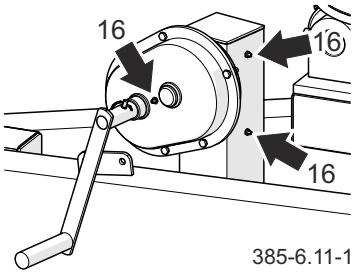
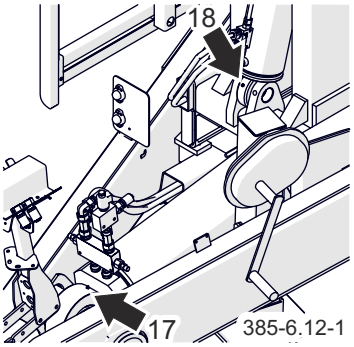
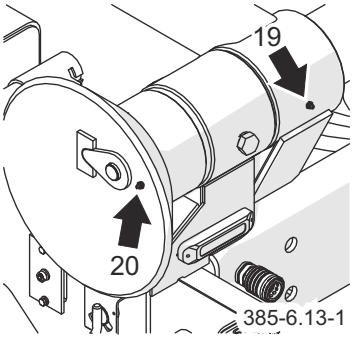
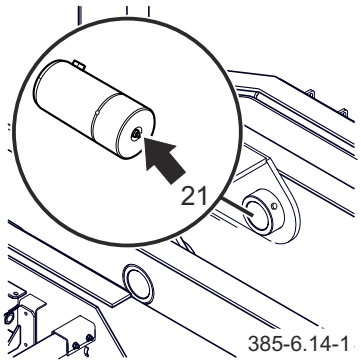
Table 6.4. Lubricants

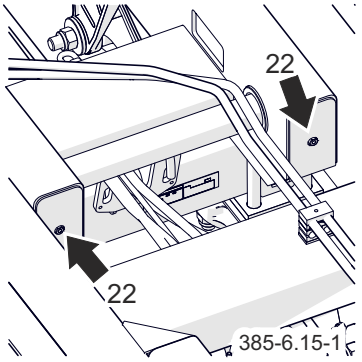
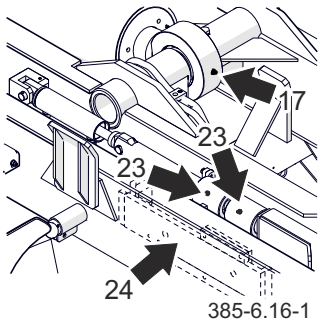
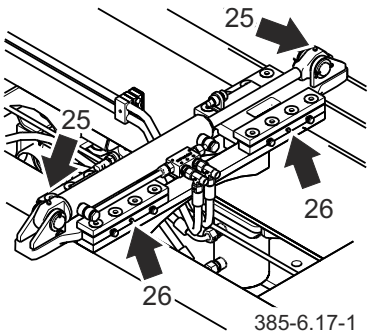
Item	Symbol	Description
1	A	general purpose machine grease (lithium, calcium),
2	B	solid grease for heavily loaded components with the addition of MOS_2 or graphite
3	C	anti-corrosive spray
4	D	plain machine oil, silicone spray grease

Table 6.5. Machine lubrication schedule

Item	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	Steering spindle axis	4	B	3M	
5	Steering axle cylinder bearings	2	B	3M	

Item	Name	Number of points	Type of grease	Frequency	
6	Spring leaves	4	C	3M	 385-6.06-1
7	Spring surfaces	8	B	OC	
8	Control arm pin	4	B	1M	
9	Connector pin	12	B	1M	
10	Drawbar tie rod (fixed, swivel, ball)	1	B	14D	 385-6.07-1
11	Hook latch pin	1	A	2M	 385-6.08-1
12	Working surface of the drawbar eye	1	B	14D	
13	Parking brake mechanism	1	A	6M	 385-6.09-1
14	Parking brake guide roll pins	5	A	6M	
15	Parking brake lever pin	1	A	6M	 385-6.10-1

Item	Name	Number of points	Type of grease	Frequency	
16	Telescopic support with gear	3	A	3M	
17	The slide bearing of the tipper cylinder	2	A	3M	
18	Hook frame cylinder slide bearing	2	A	3M	
19	Tipping axle	2	A	1M	
20	Fixed roller bushing	2	A	3M	
21	Hook frame pivot pin	2	B	3M	

Item	Name	Number of points	Type of grease	Frequency	
22	Center frame pivot pin	2	B	3M	
23	Frame lock bushing	2	A	2M	
24	Locking latch	1	A	2M	
25	Container lock cylinder pin	2	A	3M	
26	Sideshift	4	A	3M	

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6.18 SCHEDULE FOR SCREW CONNECTIONS TIGHTENING

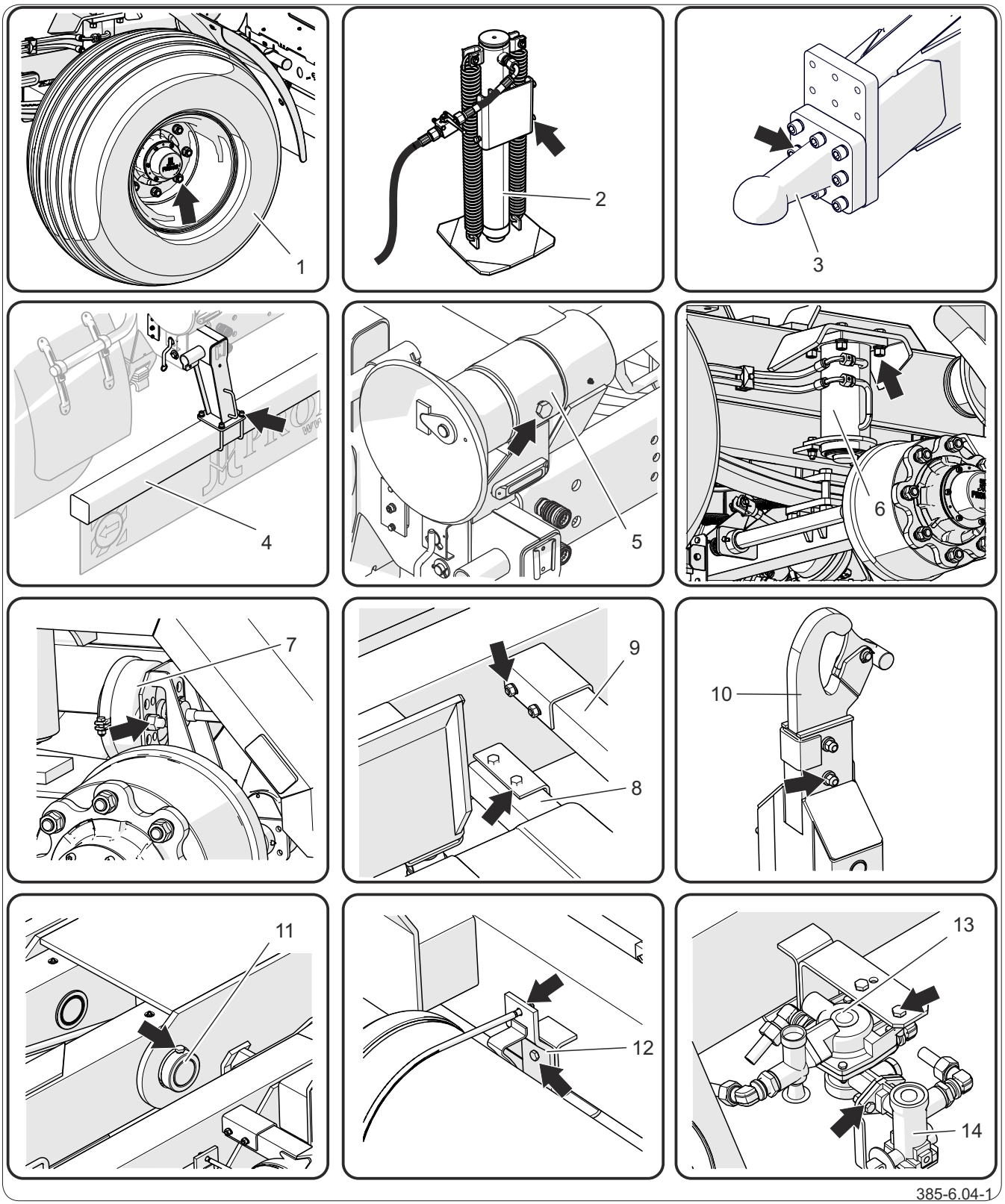

Figure 6.13 Point for screw connections checking

Table 6.6. Schedule for screw connections tightening

Item	Trailer layout/part name	Frequency
1	Road wheel	*Ref: Tightening road wheels*
2	Parking stand	30H
3	Drawbar hitch eye	30H
4	Rear beam	30H
5	Frame axle	6M
6	Suspension lock cylinder	6M
7	Brake cylinders	3M
8	Tool box support	6M
9	Overrunning guard support, mudguards	6M
10	Hook	3M
11	Securing of the pins	6M
12	Air tank mounting	6M
13	The control valve mounting, hydraulic distributor	6M
14	The regulator mounting	6M

Frequency: H - hours, M - months

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6.19 TIGHTENING TORQUES FOR SCREW CONNECTIONS

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

Hydraulic lines and other hydraulic components with rubber seals should be tightened with torque according to the Table *"Tightening torques of hydraulic elements"*.

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

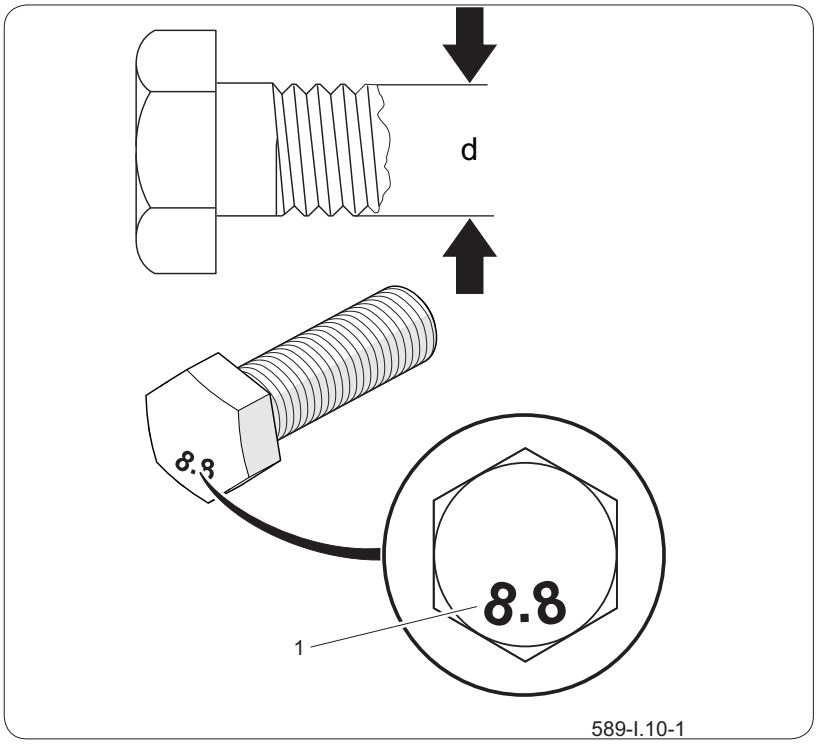

Figure 6.14 Screw with metric thread
(1) strength class, (d) thread diameter

Table 6.7. Tightening torques for screw connections

Metric		
	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

(*) - strength class according to DIN ISO 898

Table 6.8. Tightening torques of hydraulic elements

Thread of nuts	Wire diameter DN (inch)	Tightening torques [Nm]
M10x1 | M12x1.5 | M14x1.5	6 (1/4”)	30÷ 50
M16x1.5 | M18x1.5	8 (5/16”)	30÷ 50
M18x1.5 | M20x1.5 | M22x1.5	10 (3/8”)	50÷ 70
M22x1 | M24x1.5 | M26x1.5	13 (1/2”)	50÷ 70
M26x1.5 | M27x1.5 | M27x2	16 (5/8”)	70÷ 100
M30x1.5 | M30x2 | M33x1.5	20 (3/4”)	70÷ 100
M38x1.5 | M36x2	25 (1”)	100÷ 150
M45x1.5	32 (1.1/4”)	150÷ 200

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6.20 TIGHTENING ROAD WHEELS

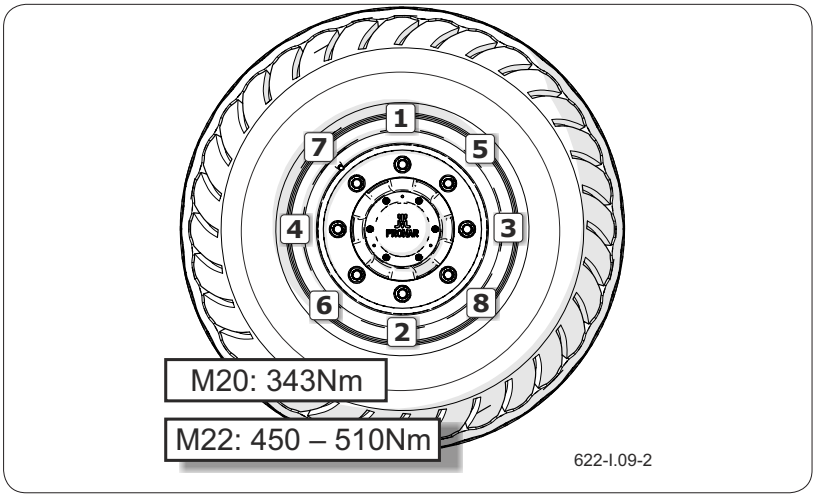

Figure 6.16 The order of the nuts tightening (8 pcs)

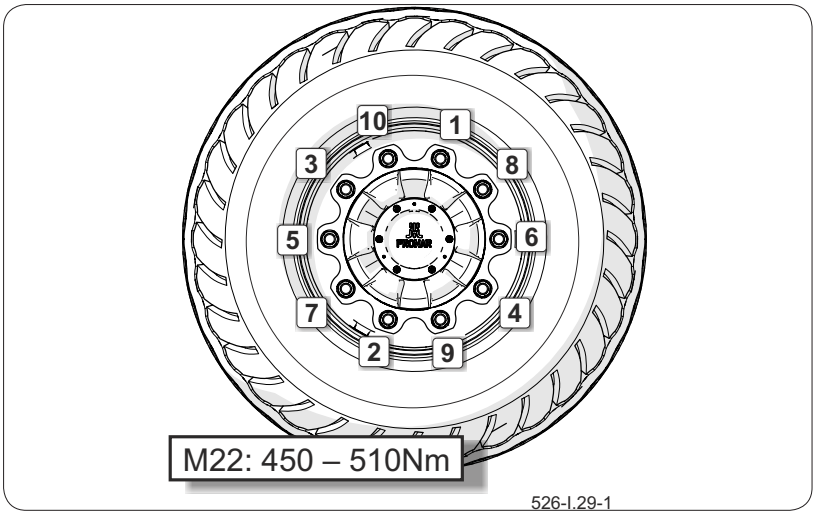

Figure 6.15 The order of the nuts tightening (10 pcs)

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

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

The wheels should be tightened according to the following scheme:

- after first use of the machine (one-time inspection),
- every 2-3 hours of driving during the first month of use,
- every 30 hours of driving.

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

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6.21 REPLACEMENT OF HYDRAULIC HOSES

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

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6.22 REPLACEMENT OF LIMIT 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 workshops.

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6.23 CHECKING THE SIGNALLING AND SAFETY SYSTEM

CAUTION

Check the signalling and safety system without load (no load box loaded), only for machines equipped with hydraulic function shifting.

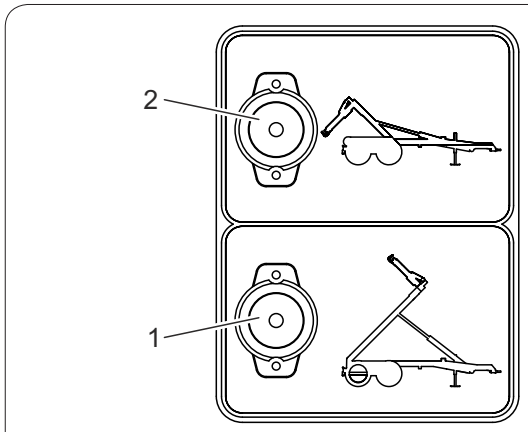

Figure 6.17 Indicator lights
(1) trailer "tipper" function
(2) trailer "hook" function

- Switch the trailer to the "tipper" function and check that the corresponding indicator light (1) comes on and the lock is extended and that the movements of the hook frame are blocked.
- Lift the frames to a height of approximately 3 cm. Function switching is not possible.
- Switch the trailer to the "hook" function and check that the corresponding indicator light (2) comes on and the lock is hidden.

  Hook frame and main cylinder movements are possible.

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6.24 MAINTENANCE OF ELECTRICAL INSTALLATION AND WARNING ELEMENTS

CAUTION

Driving with faulty lighting installation is prohibited. Damaged lighting must be replaced immediately before driving. Lost or damaged reflectors should be replaced with new ones.

Before leaving, make sure that all lamps and reflectors are clean.

ADVICE

The light source in the lamps are LED diodes and in the event of damage, they are replaced only as a complete lamp without the possibility of repair or regeneration.

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 technical inspection of the electrical installation and reflectors.

The scope of activities

- Connect the machine to the tractor with a suitable connection lead.
- Make sure the connection cable is OK. Check the connection sockets on the tractor and on the machine.
- Check the completeness, technical condition and correct functioning of the machine lighting.

  Check the wiring harness for damage (rubbed insulation, wire break, etc.). Check the completeness of lamps and all reflectors.
- Check the correct installation of the triangular plate holder for slow moving vehicles.
- Before travelling on a public road, make sure that the tractor has a reflective warning triangle.

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6.25 WHEEL ASSEMBLY AND DISASSEMBLY

DANGER

Danger of crushing. Be especially careful. Make sure that the hydraulic jack has the appropriate load capacity and is in good technical condition.

It is forbidden to support the machine with fragile elements (bricks, hollow bricks, concrete blocks).

After lifting the machine, secure it by placing stable and durable supports under the frame of appropriate load capacity.

The machines can be lifted only when it is placed on a horizontal and stable hardened surface, e.g. concrete or asphalt surfaces. Lifting the machine on slopes or unstable ground is prohibited.

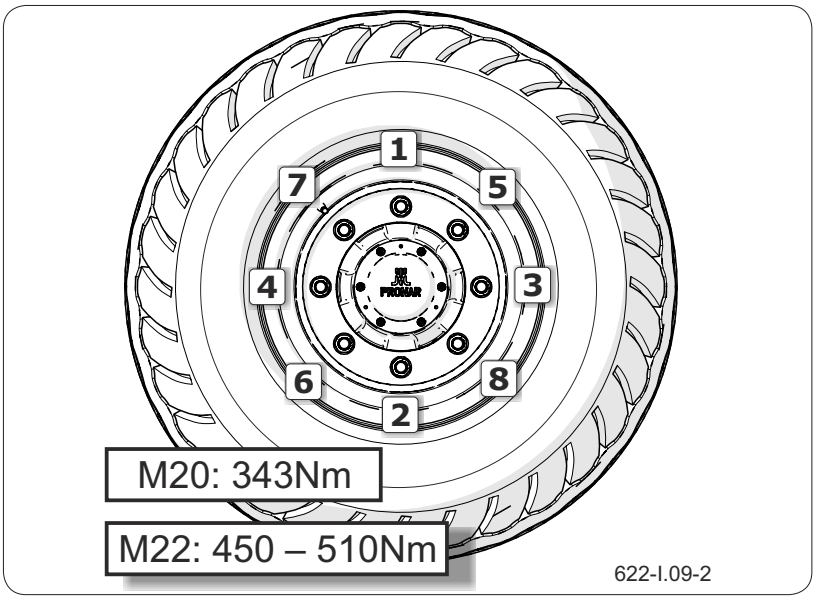

Figure 6.18 The order of the nuts tightening (8 pieces)

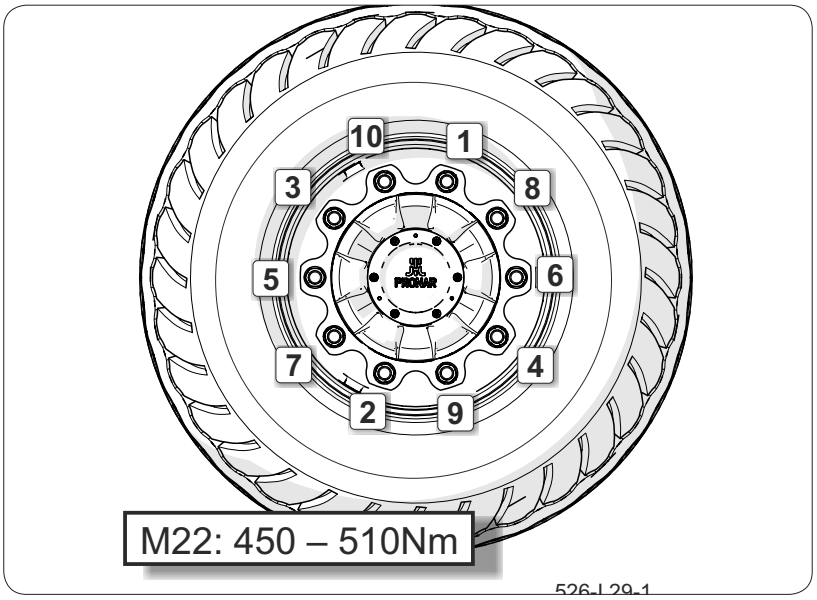

Figure 6.19 The order of the nuts tightening (10 pieces)

Wheel disassembly

- Secure the machine against rolling.
- Loosen the wheel nuts according to the sequence given in the figure *„The sequence of loosening and tightening the nuts”*.
- Place the jack and raise the machine *(See*

chapter: Trailer preparation).

Refer to "Recommended Machine Support Points" for support location. The used lift should have adequate load capacity, it should be technically sound.

- Remove the nuts and remove the wheel.

Wheel mounting

- Clean the seating surface of the hub and rims.
- The contact area can be sprayed with a small amount of grease, the so-called dry lubricant (e.g. Teflon).
- Check the air pressure in the mounted wheel, if necessary, pump up the wheel.
- Clean wheel axle pins and nuts from dirt.

  Do not lubricate the thread of the nut and stud.
- Check the condition of pins and nuts, replace if necessary.
- Put the wheel on the hub.
- Tighten the nuts so that the rim adheres exactly to the hub.
- Remove the supports and lower the machine.
- Tighten the nuts in accordance with the recommended torque and sequence.

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6.26 PARKING BRAKE CABLE REPLACEMENT

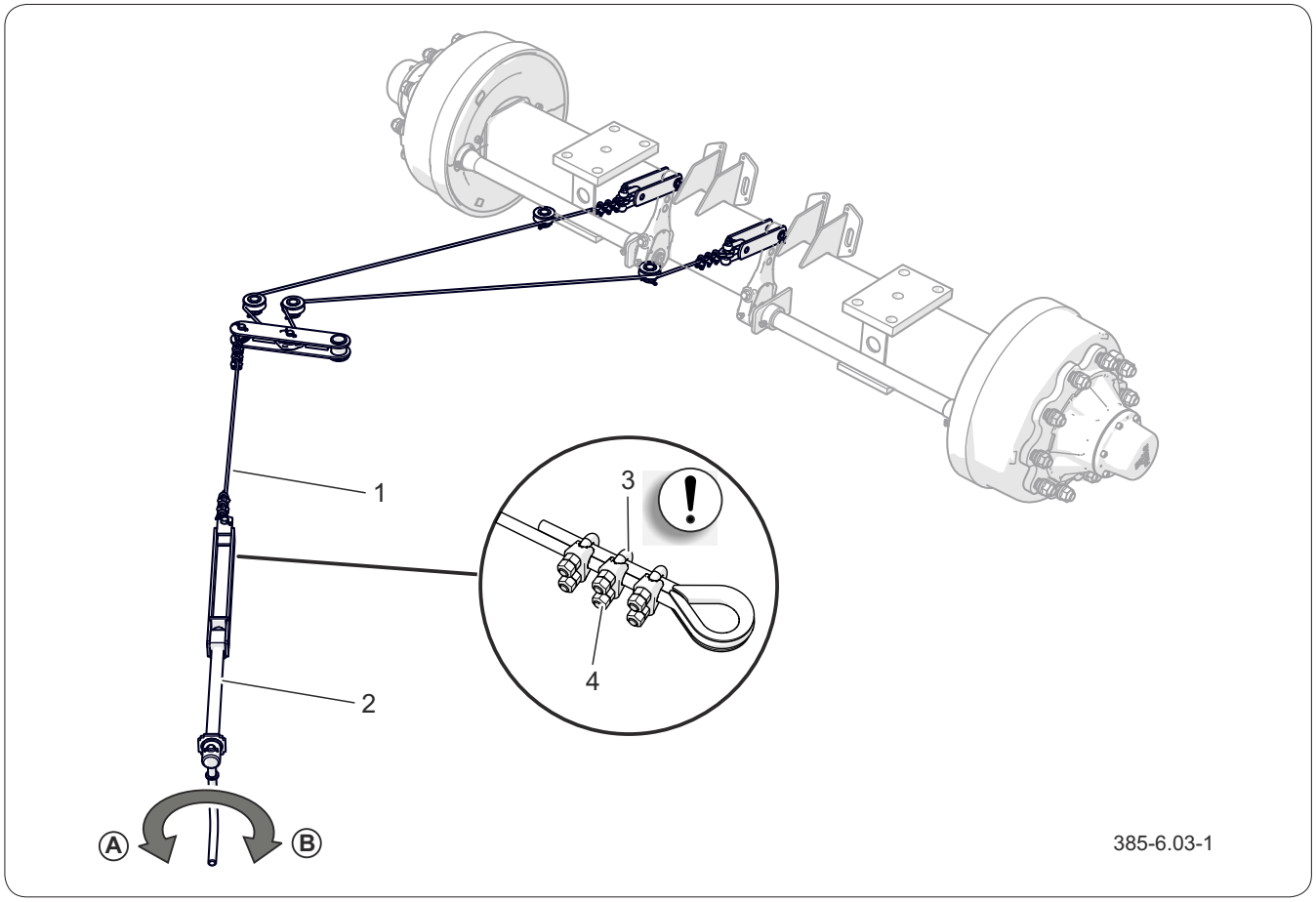

Figure 6.20 Parking brake cable replacement
(1) cable *(2) brake mechanism* *(3) bow clamp* *(4) clamp nut*

- Connect the machine to the tractor. Place the machine and tractor on a level surface.
- Place chocks under one wheel of the rigid machine axle.
- Unscrew the brake mechanism screw (2) as far as possible by turning the crank in the direction (A).
- Loosen the nuts (4) of the bow clamps (3) on the handbrake cable (1) that you want to replace.
- Clean the parking brake components.
- Lubricate the parking brake crank mechanism and pins of the cable guide rollers.

CAUTION

Clamp jaws must be placed on the load-carrying cable side - see figure.

Secure the ends of the cable with a heat shrink tube.

The distance between the clamps should be 40 mm, with the first clamp placed as close as possible to the thimble.

- Attach a new cable or cables.

  The thimbles and three bow clamps must be fitted at the ends of the rope. Pay attention to the correct positioning of the terminals - see drawing.
- Install pins and new securing caps.
- Adjust the parking brake cable tension.
- After the first load on the brake, check the tension and condition of the cable ends, adjust if necessary.

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6.27 ADJUSTMENT OF THE CLEARANCE OF WHEEL AXLE BEARINGS

CAUTION

Adjust the play of bearings only when the machine is connected to the tractor and unloaded.

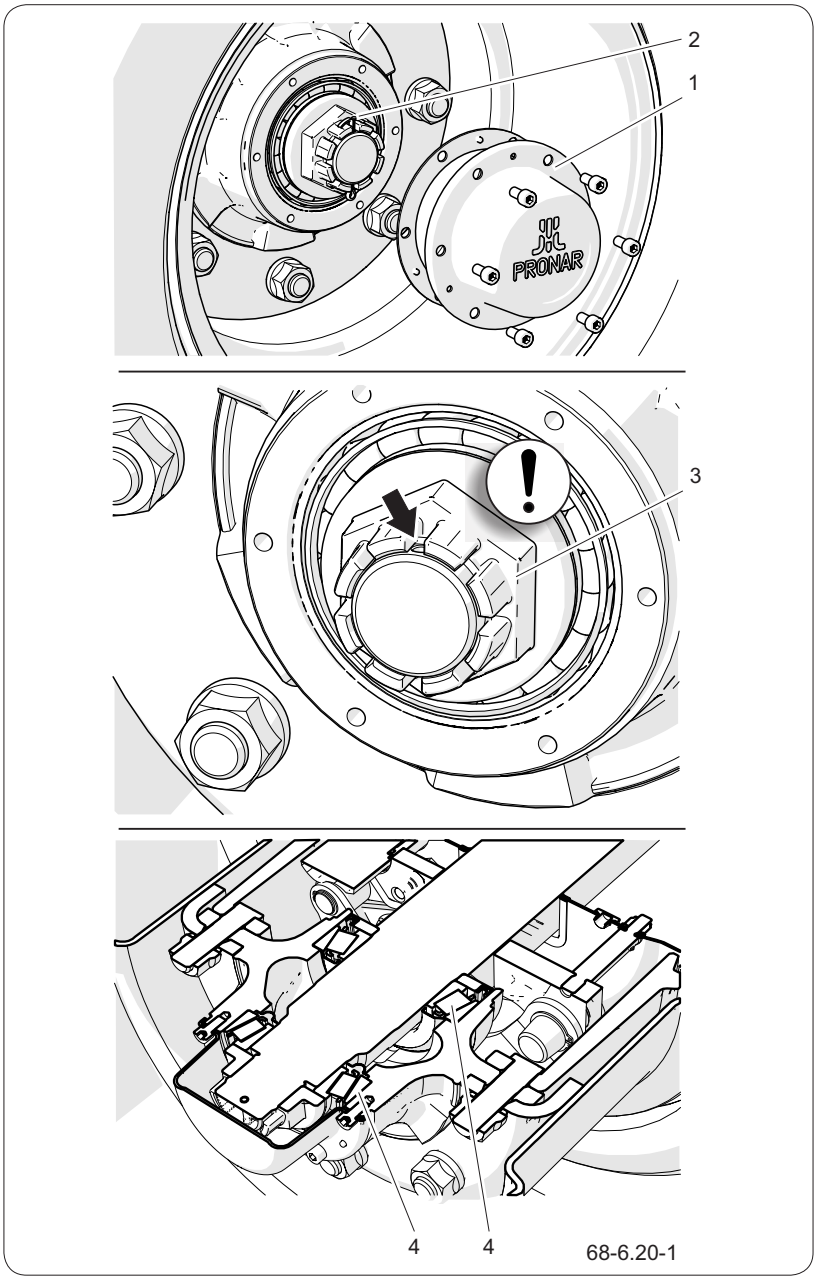

Figure 6.21 The principle of bearing clearance adjustment
(1) hub cover, *(2) cotter pin,*
(3) nut, *(4) tapered roller bearing*

The scope of activities

Prepare the tractor and machine for adjustment as described in chapter „Preparing of the machine”.

- Remove the hub cover (1).

- Remove the cotter pin (2) securing the castellated nut (3).
- Tighten the the castellated 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 pin's hole is marked with a black arrow in the drawing). The wheel should rotate without excessive resistance.

  The wheel should rotate without excessive resistance. Too strong pressure is not recommended due to the deterioration of bearings.
- Secure the castellated nut with a cotter pin and mount the hub cover (1).
- Gently tap the hub with a rubber or wooden hammer.

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6.28 BRAKE ADJUSTMENT

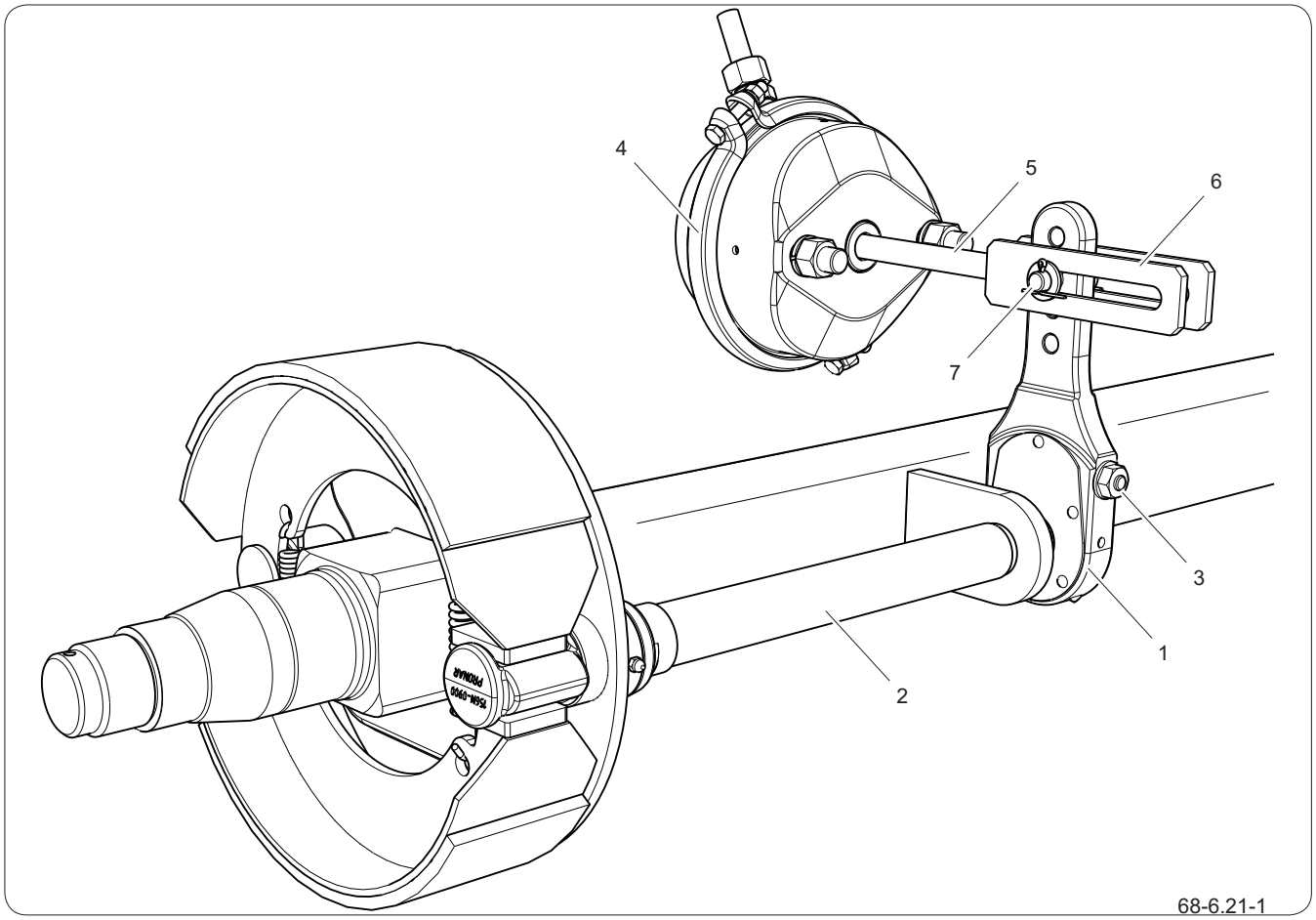

Figure 6.22 Construction of the pneumatic brake of the driving axle
(1) expander arm, (2) expander shaft, (3) adjusting screw, (4) pneumatic cylinder, (5) cylinder, (6) cylinder fork, (7) cylinder pin

ADVICE

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

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

During braking, the piston rod stroke should be within the specified operating range, and the angle between the piston rod (1) and the expander arm (3) should be approximately 90°. The machine wheels must brake simultaneously.

The braking force also decreases when the angle of operation of the brake actuator piston rod (5) is not appropriate in relation to the expander arm (1).

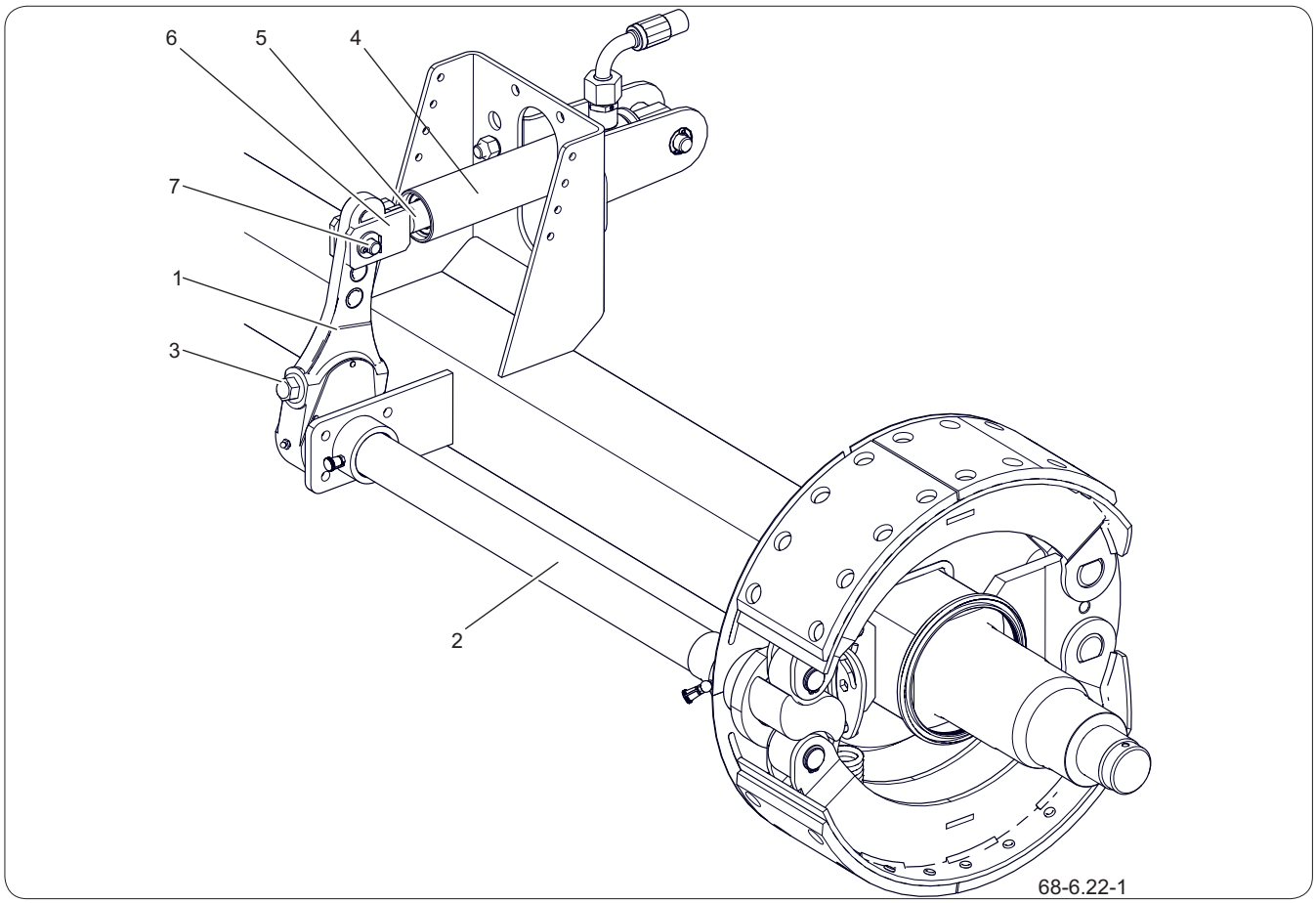

Figure 6.23 Construction of the hydraulic brake of the driving axle
(1) expander arm, (2) expander shaft, (3) adjusting screw, (4) hydraulic cylinder, (5) cylinder piston rod, (6) cylinder fork, (7) cylinder pin

CAUTION

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

In order to obtain the optimal mechanical operating angle, the piston rod fork (6) must be mounted on the expander arm (1) in such a way that the operating angle amounts to approx. 90° when fully braking.

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

When disassembling of the cylinder fork (6), remember or mark the original position of the cylinder fork pin (7). The mounting position depends on the type of braking system and the size of the tires used in the machine, it is selected by the Manufacturer and cannot be changed.

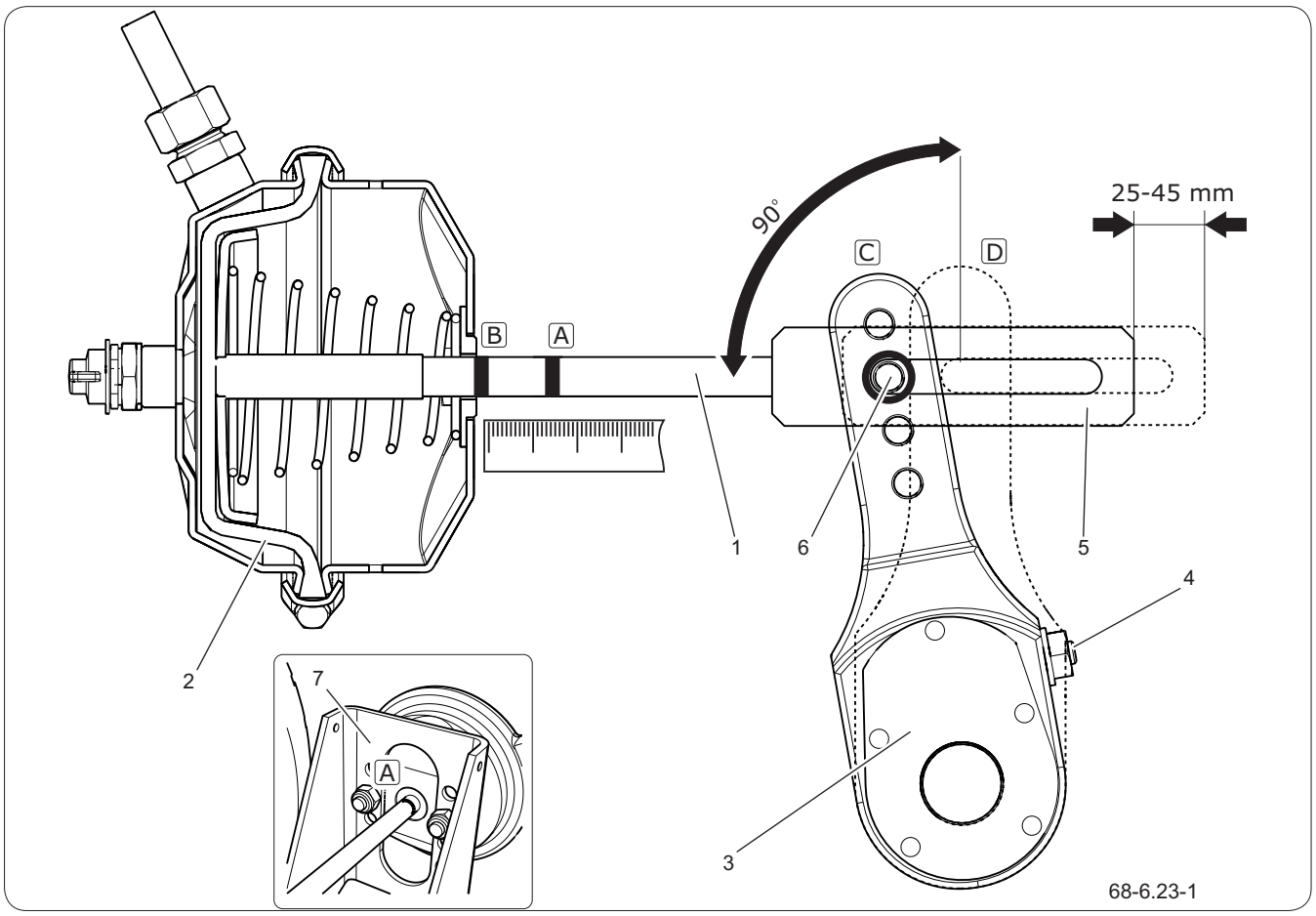

Figure 6.24 Pneumatic brake adjustment principle
(1) piston, (2) cylinder membrane, (3) expander arm,
(4) adjustment screw, (5) cylinder fork, (6) fork pin,
(7) cylinder support
(A) the tag on the piston in the brake release position, (b) the tag on the pistons in the full stop position,
(c) the position of the arm in the brake release position, (D) arm in full stop position

CAUTION

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

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

The scope of activities

- Connect the machine to the tractor.
- Turn off the tractor engine and remove the ignition key.
- Immobilize tractor with parking brake.
- Make sure the machine is not braked.
- Secure the machine against rolling with wheel chocks.
- On the piston rod (1) of the cylinder mark with a line (A) the position of the maximum retraction of the piston rod with the trailer brake off.
- Press the brake pedal on the tractor, mark with a line (B) the position of maximum extension of

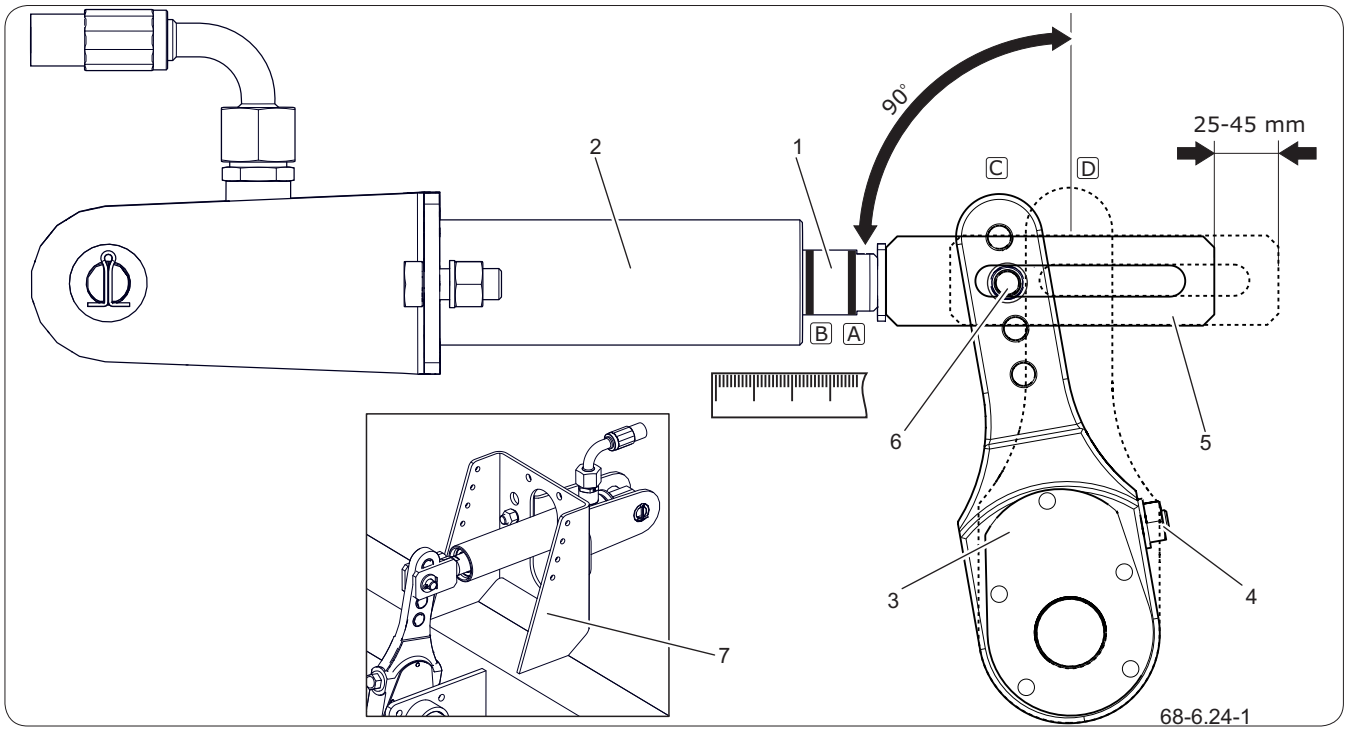

Figure 6.25 Hydraulic brake adjustment principle
(1) piston rod, (2) cylinder piston, (3) expander arm,
(4) adjustment screw, (5) cylinder fork, (6) fork pin,
(7) cylinder bracket (A) mark on the piston rod in the release position,
(B) the mark on the piston rod in the fully braked position,
(C) position of the arm in the unbraked position, (D) arm in full stop position

the piston rod.

- Measure the distance between the lines (A) and (B). If the piston rod stroke is not within the correct working range (25-45mm), adjust the expander arm.
- Remove the the actuator fork pin (6).
- Remember or mark the original position of the cylinder fork (6) in the expander arm bore (3).
- Check the that the cylinder piston moves freely and within the full nominal range.
- Check that the air vents of the actuator are not clogged with dirt and that there is no water or ice inside (pneumatic actuator). Check the correct mounting of the actuator.
- Clean the cylinder, defrost if necessary and drain water through the unblocked ventilation holes

(pneumatic cylinder). 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 expander arm coincides with the hole of the cylinder fork
- During adjustment, the diaphragm (2) must rest on the rear wall of the cylinder (pneumatic cylinder).
- Install the piston rod fork pin and washers and secure the pin with cotter pins.
- Turn the adjusting screw (4) clockwise to make one or two clicks in the expander arm adjustment mechanism.
- Repeat the adjustment on the second cylinder on the same axis.
- Apply the brake.
- Wipe previous markings and measure piston rod stroke again.
- If the piston rod stroke is not within the correct operating range, repeat the adjustment.

Functional check

- After completing the adjustment, carry out out a test drive.
- Perform several brakes. Stop the machine and check the temperature of the brake drums.
- If any drum is too hot, correct the brake adjustment and perform the test drive again.

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6.29 ADJUSTMENT OF END VALVES AND LIMIT SWITCHES

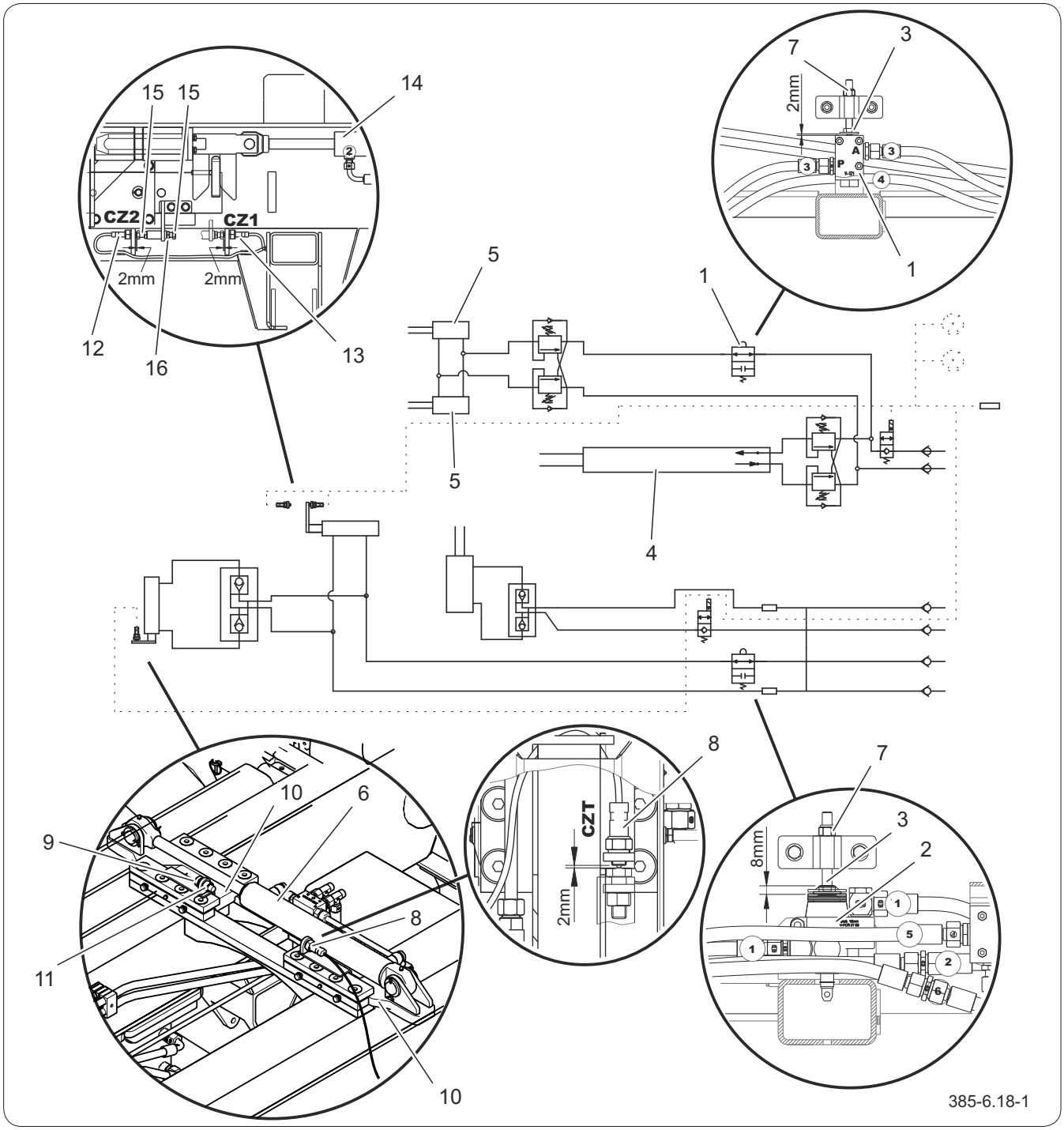

Figure 6.26 Adjustment of end valves and limit switches

(1) VF-NC limit valve (one way open) *(2) NC limit valve (both sides closed)* *(3) bumper*
(4) lifting cylinder *(5) suspension cylinder* *(6) container lock cylinder* *(7) lock nut*
(8) CZT limit switch *(9) screw* *(10) locking slider* *(11) lock nut*
(12) left limit switch CZ2 *(13) right limit switch CZ1* *(14) switching actuator* *(15) screw*
(16) locknut

CAUTION

Connect and adjust the signal ends and container locks so that the signal lights indicate the correct function.

The limit valve (1) is adjusted using the bumper adjusting screw (3). When the piston rod of the main actuator (4) is fully retracted, the valve pusher must be pressed so that the gap between the limit switch and the bumper is 2 mm (the suspension lock cylinders should operate in both directions). After adjustment, secure the adjusting bolts with the counter nuts (7).

The limit valve (2) is adjusted using the bumper adjusting screw (3). When the piston rod of the main cylinder (4) is fully retracted, the valve pusher must be pressed in by at least 8 mm (the container locking cylinder and the hooklift/tipper switching cylinder should operate in both directions). After adjustment, secure the adjusting bolts with the counter nuts (7).

The switch on the end of the container lock (8) must be adjusted with the screw (9). When the lock sliders (10) are retracted, the end piece (8) must be pressed down. After adjustment, secure the screw (9) against loosening with the lock nut (11). Clip the wiring harness onto the actuator using cable ties to prevent damage.

The activation of the limit switches (12) (13) of the switching actuator (14) should be adjusted using screws (15).

When the trailer is in the "hooklift" position, the CZT and CZ1 limit switches must be pressed simultaneously (in this position, the appropriate lamp on the signaling board must light up). The left limit switch CZ2 is to be pressed when the trailer is in the "tipper" position (the switching actuator is fully extended - in this position the appropriate lamp on the signaling board must light up). After adjustment, (15) secure the adjusting bolts with the counter nuts (16).

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6.30 MECHANICAL SUSPENSION SUPPORT

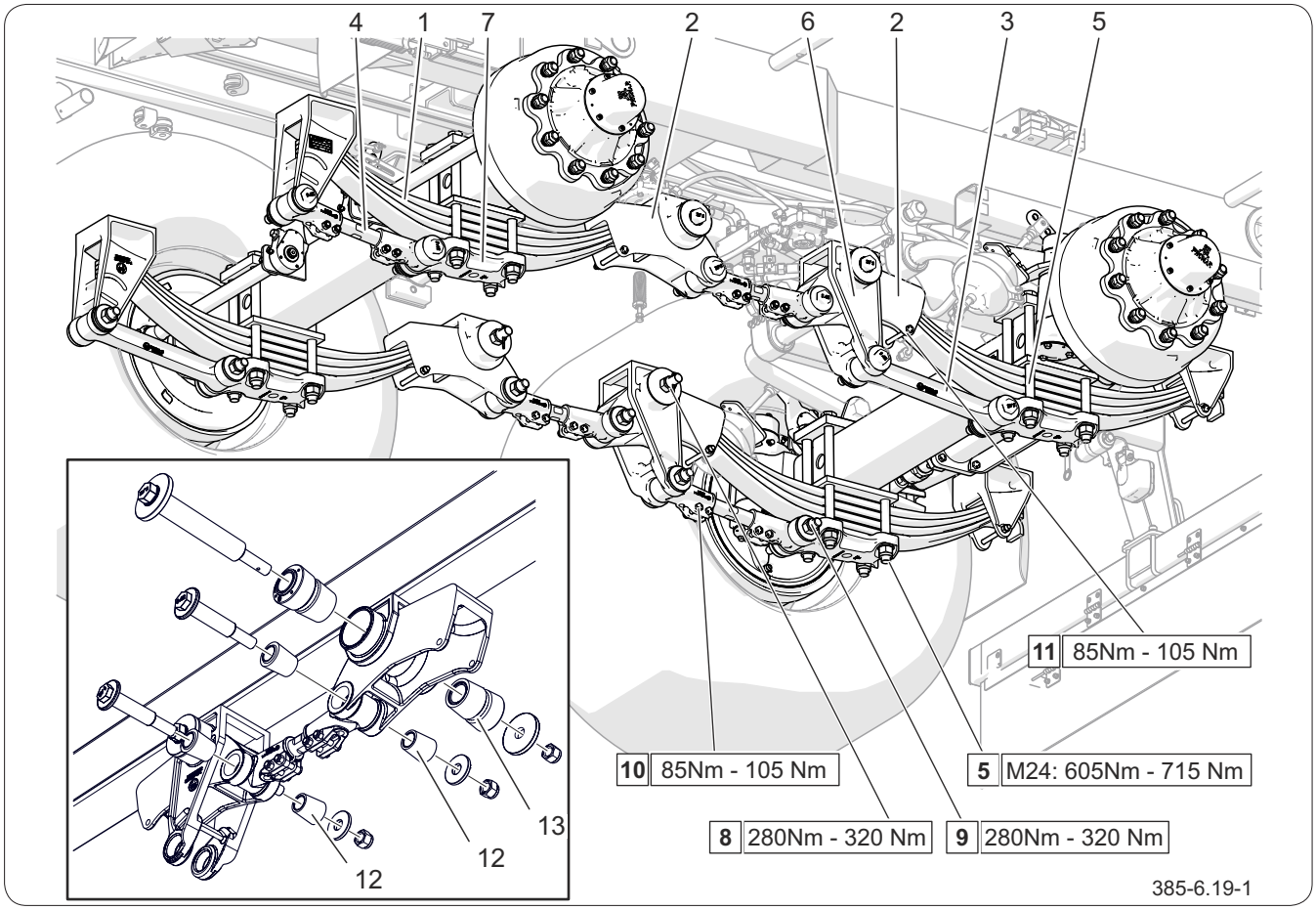

Figure 6.27 Mechanical suspension support

(1) spring
(2) arm
(3) rigid link
(4) adjustable link
(5) axle mounting pin
(6) arm support
(7) spring support
(8) swing pin
(9) linkage pin
(10) adjustable link screw
(11) spring blade mounting
(12) (13) metal-rubber sleeve

CAUTION

The screw connections should be tightened under load.

Pneumatic wrenches are not allowed when tightening. Tighten the screw connections with a torque wrench.

Maintenance of the suspension includes checking the technical condition of components such as springs, linkages, arms, bolts and other components of the suspension parts. In addition, the suspension is serviced by periodically greasing the points according to the Lubrication Schedule for the machine table , and checking and tightening the screw connections.

When checking the condition of the suspension, pay attention to the wear of the various parts, the play in the circuit, and check that all components are whole

ADVICE

In the event of severe conditions of use or heavy use, maintenance should be carried out more often.

and do not show any signs of cracking or deformation. If any of the suspension components are found to be damaged or excessively worn, the trailer operation must be stopped immediately and the damaged component must be replaced or repaired.

Table 6.9. Suspension control schedule

Item	Service activities	Frequency
1	Check the tightness of the axle mounting stud nuts (5) on the axles using a torque wrench with a torque setting of 605 - 715 Nm. Tighten the nuts diagonally to the specified torque.	First, after travelling the 50 km with a load or after 500 hours of operation, next, after 5000 km or after 1500 hours of operation, then once a year
2	Check the tightening of the nuts (10) of the adjustable connectors using a torque wrench with a torque of 85 - 105 Nm.	First, after travelling the 50 km with a load or after 500 hours of operation, next, after 5000 km or after 1500 hours of operation, then once a year
3	Check the tightening of the pin nuts (8) (9) using a torque wrench with a torque set to 280 - 320 Nm. Check the condition of the locking pin for the swing arm pins. If they are worn/damaged, replace with a new one.	First, after travelling the 50 km with a load or after 500 hours of operation, next, after 5000 km or after 1500 hours of operation, then once a year
4	Checking the spring support consists of checking that there is grease in the area where the spring contacts the support or arm. Use lithium grease with EP additive for lubrication.	after receiving the trailer, then once a year
5	The inspection of the metal-rubber bushings (12)(13) consists of a visual assessment of the condition of the bushings. The pressure washers should not contact the support, if they are in contact, replace the rubber tapered bushings.	once a year
6	Check the condition of the springs (1), clean and brush the sides of the springs thoroughly to check for cracks.	once a year

SER.3.4-012.01.EN

6.31 CONSUMABLES

6.31.1 Hydraulic oil

ADVICE

In the hydraulic system of the machine, L-HL 32 LOTOS oil was used.

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

If you need to change the hydraulic oil for another, read the oil manufacturer's instructions carefully. If he recommends flushing the system with an appropriate preparation, follow these recommendations. It ensured that the chemicals used for this purpose do not act aggressively on the materials of the hydraulic system. During normal operation of the machine, it is not necessary to change the hydraulic oil, however, if necessary, this operation should be entrusted to specialist service centres.

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

Table 6.10. Characteristics of the L-HL 32 oil

Item	Name	Unit	
1	Viscosity classification according to ISO 3448VG	-	32
2	Kinematic viscosity at 400°C	mm^2/s	28.8 – 35.2
3	Quality classification according to ISO 6743/99	-	HL
4	Quality classification according to DIN 51502	-	HL
5	Flash-point	C	230

DANGER

Do not use water to extinguish a fire of oil!

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

6.31.2 Lubricants

ADVICE

Lubrication frequency (Table Trailer lubrication schedule).

For heavily loaded parts, it is recommended to use lithium grease with the addition of molybdenum disulphide (MOS2) or graphite. For less loaded components, it is recommended to use general-purpose machine greases that contain anti-corrosive additives and are highly resistant to water washout. Similar properties should be characteristic of aerosol preparations (silicone lubricants, anti-corrosive lubricants). Before using lubricants, read the information leaflet for the selected product. Particularly important are safety rules and how to handle a given lubricant and how to dispose of waste (used containers, contaminated rags, etc.). The information leaflet (product card) store together with the grease.

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6.32 TIRES

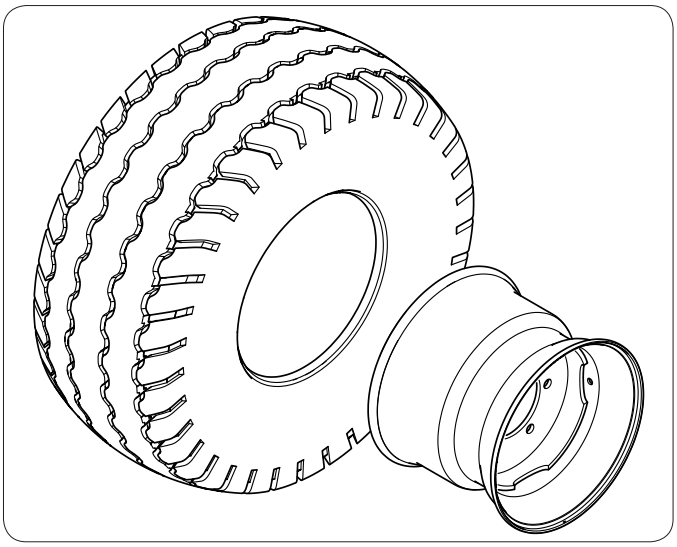

Table 6.11. Machine tires

Item	Tire size	Rim	Pressure	Load index	Speed index
1	445/65R22.5	14.00x22.5 ET=-30 (225.14. 104)	825 kPa	172	A8
2	445/65R22.5	14.00x22.5 ET=-30 (225.14.124.6)	825 kPa	164	C
3	500/60R22.5	16.00x22.5; ET=0 (225.16. 152)	400 kPa	165	A8
4	550/60R22.5	16.00x22.5; ET=0 (225.16. 152)	340 kPa	171	A8
5	560/60R22.5	16.00x22.5; ET=+10 (225.16. 263)	400 kPa	172	A8
6	600-55-22.5	20.00x22.5H2 ET=-40 (225.20.165.6)	280 kPa	169	A8
7	600/50R22.5	20.00x22.5; ET=-40 (225.20.165.6)	400 kPa	170	A8
8	620/50R22.5	20.00x22.5H2 ET=-40 (225.20.165.6)	400 kPa	172	A8
9	650/50R22.5	20.00x22.5; ET=-40 (225.20.165.6)	400 kPa	175	A8
10	650/50R22.5	20.00x22.5; ET=-40 (225.20.165.6)	400 kPa	164	C
11	600/55R22.5	20.00x22.5; ET=-40 (225.20.165.6)	400 kPa	164	C
12	560/60R22.5	16.00x22.5; ET=+10 (225.16. 386.6)	400 kPa	172	A8

SER.3.4-013.01.EN

6.33 FAULTS AND HOW TO REMOVE THEM

Table 6.12. Faults and how to remove them

Defects	Cause	Resolve method
Trouble with starting.	Brake system lines not connected.	Connect the brake lines (applies to pneumatic system)..
	Pneumatic connection lines damaged.	Replace.
	Parking brake applied.	Release the parking brake.
	Connection leakage	Tighten the washers or sealing sets, replace hoses.
	Low pressure in the pneumatic system	Fill the system with the appropriate pressure.
	Defective control valve or braking force regulator.	Inspect valve, repair or replace.
Low braking efficiency.	System pressure too low.	Check the pressure on the pressure gauge on the tractor, wait for the compressor to fill the tank to the required pressure. Damaged tractor air compressor. Repair or replace. Damaged brake valve on the tractor. Repair or replace. System leakage. Check systems for leaks.
Noise in the hub of the axle.	Excessive bearing looseness.	Check the clearance and adjust if necessary
	Damaged bearings.	Replace the bearings.
	Damaged hub components.	Replace.
Excessive heating of the axle hub.	Incorrectly adjusted service or parking brake.	Adjust expander arm positions or parking brake cable tension.
	Worn brake pads.	Dimensions 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, replace the oil in the tractor and/or trailer

Incorrect hydraulic system operation.	Insufficient tractor hydraulic pump performance, tractor hydraulic pump defective.	Check the hydraulic pump on the tractor.
	Damaged or dirty actuator.	Check the the cylinder piston rod (bending, corrosion), check the cylinder for leaks (piston rod seal), repair 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 hoses are tight, not kinked and properly tightened. Replace or tighten if necessary.
The individual functions of the machine do not work.	Hydraulic pipes not connected or connected incorrectly.	Check the connection and connect the cables in accordance with the operating instructions.
	Trailer control electrical system not connected.	Check the connection and connect the cables in accordance with the operating instructions.
	Remote control off.	Turn on the remote control.
	Faulty remote control.	Repair with service help.
	Damaged hydraulic quick couples.	Replace.
	Insufficient amount of hydraulic oil in the tractor's hydraulic system.	Use a tractor with hydraulic oil capacity that matches the trailer oil demand.
	Incorrect settings of limit valves and limit switches.	Adjust limit valves and limit switches.
Knocking noises in the suspension area while driving.	Suspension lock cylinders are not fully retracted.	Push the cylinders all the way up.
Damage to the PTO shaft.	Too much angular deviation during operation.	Use a wide angle shaft or disconnect the PTO when cornering.
	Roller too short or too long.	Change the PTO shaft to another one. Align the shaft according to the instructions in the manual provided by the shaft manufacturer.

Excessive wear of the left and right shoulder tires on both sides.	System pressure too low. Too high cornering speed with a loaded trailer. Too fast air loss due to damaged rim, valve, puncture etc.	Check air pressure. Check the road tires for proper inflation check. Too much load on the trailer. Do not exceed the permissible total weight of the machine. Reduce speed when cornering on a hardened surface. Check rim and valve. Replace the damaged parts.
Excessive tire wear in the centre.	Air pressure too high.	Check air pressure. Check the road tires for proper inflation regularly.
Excessive unilateral wear on the left or right shoulder tires.	Incorrect convergence. Driving axes incorrectly set.	Damaged spring leaf on one side of the suspension. Replace the springs.
Tread wear.	Damaged suspension system, broken spring. Damaged braking system, brake blocking, incorrectly adjusted braking system. Too frequent and sudden braking.	Check the slack in the suspension system, check the springs. Replace damaged or worn parts. Check the braking system for malfunctions. Adjust the trailer levers.
Rim damage (hardening and cracking around the rim), tire crumbling.	Incorrect braking technique. Too frequent sudden braking. Damaged braking system.	Check braking system. Control braking technique. Damage arises due to excessive heating of the hub and the resulting wheel rims.
No lighting.	Electrical installation not connected.	Connect the installation.
	Faulty machine electrical system (e.g. broken harness).	Replace or repair with service help.

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