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OPERATOR'S MANUAL

AGRICULTURAL TRAILER

PRONAR T046/2

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



ISSUE 1A-07-2010

PUBLICATION NO 204N-00000000-UM



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.

AGRICULTURAL TRAILER

PRONAR T046/2

MACHINE IDENTIFICATION

SYMBOL /TYPE: Machine Symbol

SERIAL NUMBER:

S	Z	B	0	4	6	2	X	X		X						
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INTRODUCTION

Information contained herein is current at date of publication. As a result of improvements, some numerical values and illustrations contained in this publication may not correspond to the factual specification of the machine supplied to the user. The manufacturer reserves the right to introduce design changes in machines produced that facilitate operation and improve the quality of their work, without making minor amendments to this Operator's Manual.

This Operator's Manual is an integral part of the machine's documentation. Before using the machine, the user must carefully read this Operator's Manual and observe all recommendations. This guarantees safe operation and ensures malfunction free work of the machine. The machine is designed to meet obligatory standards, documents and legal regulations currently in force.

This Operator's Manual describes the basic safety rules and operation of PRONAR T046/2 AGRICULTURAL TRAILER. If the information contained in the Operator's Manual needs clarification then the user should refer for assistance to the sale point where the tractor was purchased or to the Manufacturer

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SYMBOLS APPEARING IN THIS OPERATOR'S MANUAL

Information, descriptions of danger and precautions and also recommendations and prohibitions associated with user safety instructions are marked:



and also preceded by the word "**DANGER**". Failure to observe the instructions may endanger the machine operator's or other person's health or life.

Particularly important information and instructions, the observance of which is essential, are distinguished in the text by the sign:



and also preceded by the word "**ATTENTION**". Failure to observe the instructions may lead to damage to the machine as a result of improper operation, adjustment or use.

In order to focus the user's attention on the need to perform maintenance, the relevant section of the Operator's Manual is marked with the pictogram:



Additional tips and advice for machine operation are marked:



and also preceded by the word „**TIP**”.

DIRECTIONS USED IN THIS OPERATOR'S MANUAL

Left side – side to the left hand of the operator facing in the direction of machine's forward travel.

Right side – side to the right hand of the operator facing in the direction of machine's forward travel.

REQUIRED SERVICE ACTIONS

Service actions described in the manual are marked: ➡

Result of service/adjustment actions or comments concerning the performance of actions are marked: ⇨



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EC DECLARATION OF CONFORMITY OF THE MACHINERY

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

Description and identification of the machinery	
Generic denomination and function:	TRAILER
Type:	T046/2
Model:	- - - - -
Serial number:	
Commercial name:	TRAILER PRONAR T046/2

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

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

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

Narew, the _____

Place and date

Z-CA DYREKTORA
d/s technicznych
członek zarządu

Roman Omelianuk

*Full name of the empowered person
position, signature*

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SECTION

1

**BASIC
INFORMATION**

1.1 IDENTIFICATION

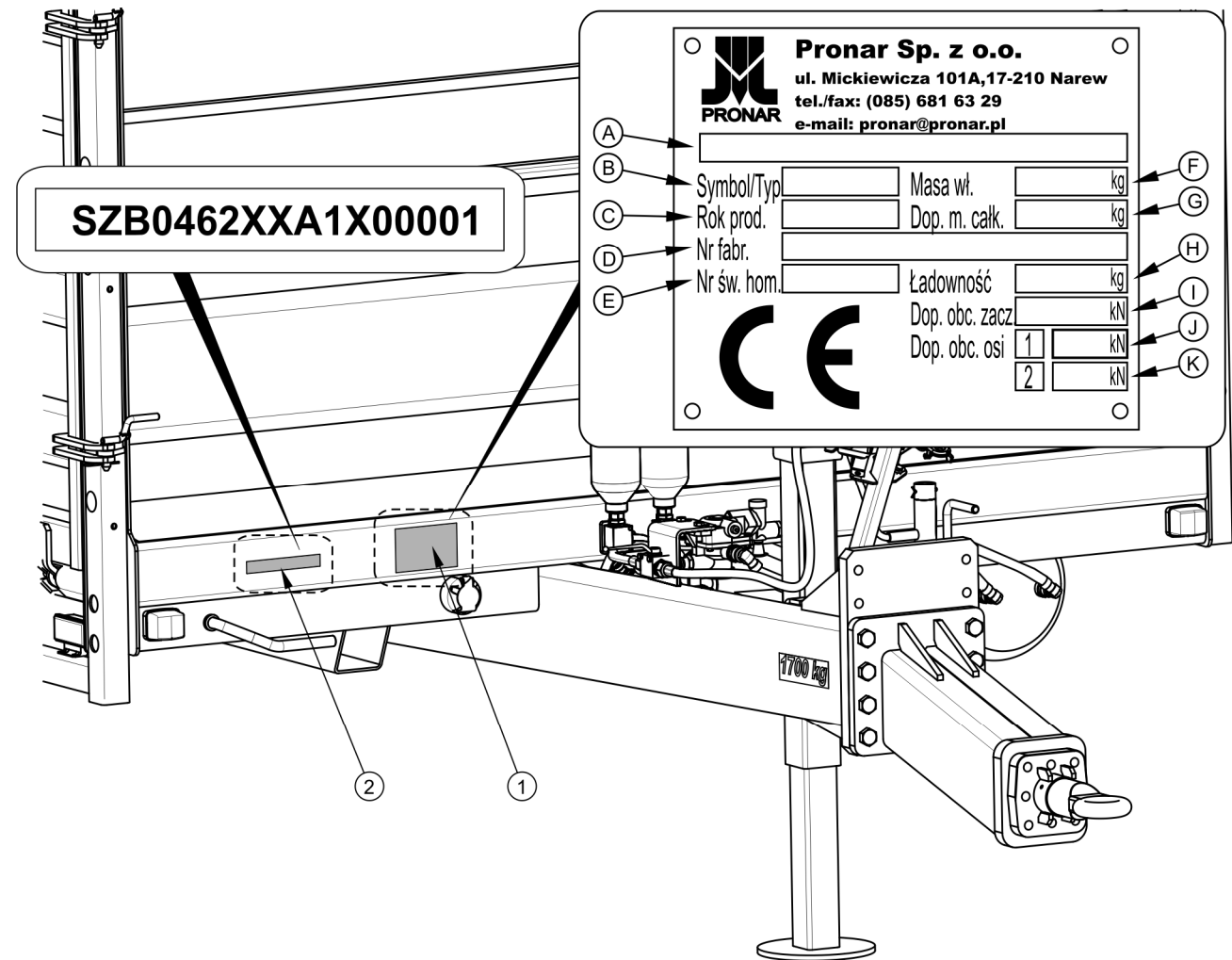


FIGURE 1.1 Location of the data plate

(1) data plate, (2) serial number

The trailer is marked with the data plate (1), and the seventeen-digit factory number (2) located on a gold painted rectangle. The serial number and data plate are on the beam of the trailer's upper frame (Fig. 1.1).

When buying the trailer check that the factory numbers on the machine agree with the number written in the *WARRANTY BOOK*, in the sales documents and in the *OPERATOR'S MANUAL*. The meanings of the individual fields found on the data plate are presented in the table below:

TABLE 1.1 Markings on data plate

ITEM	MARKING
A	General description and purpose
B	Symbol /Type
C	Year of manufacture
D	Seventeen digit serial number (VIN)
E	Official certificate number
F	Tare weight
G	Maximum gross weight
H	Carrying capacity
I	Permissible hitching system loading
J	Permissible front axle load
K	Permissible rear axle load

The factory number of the half axle shaft and its type are stamped onto the data plate secured to the axle shaft beam. In the event of ordering a replacement part it you must know the trailer factory number and axle type.

1.2 PROPER USE

The T046/2 trailer is used by farmers to transport animals (tied) to put them out to seasonal pasture up to a distance of 50 km from the farm. Transport of animals should be in accordance with the *COUNCIL REGULATION (EC) NO 1/2005 OF 22 DECEMBER 2004 ON THE PROTECTION OF ANIMALS DURING TRANSPORT AND RELATED OPERATIONS* and Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97.

The carriage of own animals by the farmers should be made through their own means of transport (the above trailer) fulfilling the general conditions of animal transport, ie:

- one can not transport animals or commission the transport of animals in a way as to cause injury or inflict suffering on the animals.

In addition, the following conditions must be met:

- the necessary steps must be taken to minimize the duration of the journey and the meet the needs of animals during transport,
- animals must be in a condition allowing them to travel
- trailer intended for the transport of animals is constructed, maintained and operating so as to avoid injury and suffering, and ensure the safety of the animals,
- equipment for loading and unloading must be properly designed, constructed, maintained and operated so as to avoid injury and suffering and ensure the safety of animals,
- staff dealing with animals should have adequate training or skills required and perform their duties without the use of violence or any methods likely to cause unnecessary fear, injury or suffering,
- transport must be carried out without delay to the destination and the welfare of animals must be regularly inspected and maintained at an appropriate level
- Animals must have sufficient floor area and roof height, appropriate to their size and the intended transport,
- Water, feed and rest must be provided at reasonable intervals and the its quality and quantity must correspond to animal species and size.

The trailer must not be used in any way other than that described above. Using it as intended also involves all actions connected with the safe and proper operation and maintenance. The trailer is not intended or designed for transporting people.

The brake system and the light and indicator system meet the requirements of road traffic regulations. The maximum speed of the trailer on public roads is 30 km/h in Poland (pursuant to Road Traffic Act of June 20th 1997, art. 20). In the countries where the trailer is used, the limits stipulated by the road traffic legislation in force in a given country must be observed. The trailer's speed must not, however, be greater than the maximum design speed of 40 km/h.

DANGER

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

- for transporting people,
- using the machine for transporting any materials other than those stipulated in the manual,
- for transporting unsecured animals.

Requirements concerning trailer operation with agricultural tractor are presented in the table below.

TABLE 1.2 Agricultural tractor's requirements

CONTENTS	UNIT	REQUIREMENTS
Brake system		
Double conduit pneumatic system	-	sockets compliant with PN-ISO 1728:2007
Single conduit pneumatic system	-	sockets compliant with PN-ISO 1728:2007
Pressure rating of the pneumatic system	kPa	650
Hydraulic system		
Hydraulic oil	-	L HL 32 Lotos ⁽¹⁾
Pressure rating of the system	bar	160
Electrical system		
Electrical system voltage	V	12
Attachment socket	-	7 polar compliant with ISO 1724
Minimum power demand	kW / Horsepower	47.8 / 65

⁽¹⁾ – use of other oil is permitted, on condition that it may be mixed with the existing oil.

Axle system (half axles, wheels and tyres), meet the requirements of agricultural trailers. The fulfilment of these requirements secures proper operation. The trailer user must carefully read the Operator's Manual and comply with it,

1.3 EQUIPMENT

TABLE 1.3 Trailer optional equipment

EQUIPMENT	STANDARD	ADDITIONAL
Operator's Manual	•	
Warranty Book	•	
Wheel chocks	•	
Connection lead for the electrical system	•	
Slow-moving vehicle warning sign		•
Warning reflective triangle		•
Side rails		•
Internal partition		•
Laced tarpaulin cover		•

Some standard equipment elements, which were listed in table (1.3), may not be present in the delivered trailer. This allows the possibility of ordering new machines with a different set of optional equipment, replacing standard equipment.

Information concerning tyres is provided at the end of this publication in *ANNEX A*.

1.4 WARRANTY TERMS

PRONAR Sp. z o.o., Narew guarantees the reliable operation of the machine when it is used according to its intended purpose as described in the *OPERATOR'S MANUAL*. The repair period is specified in the *WARRANTY BOOK*.

The guarantee does not apply to those parts and sub-assemblies of the machine, which are subject to wear in normal usage conditions, regardless of the warranty period. Consumables include the following parts/sub-assemblies:

- drawbar hitching eye,
- pneumatic system connector filters,
- tyres,
- brake shoes,
- bulbs and LED lamps,
- seals,
- bearings.

The warranty service only applies to such cases as: mechanical damage, which is not the user's fault, factory defects of parts, etc.

In the event of damage arising from:

- mechanical damage which is the user's fault, caused by road accidents,
- by inappropriate use, adjustment or maintenance, use of the trailer for purposes other than those for which it is intended,
- use of damaged machine,
- repairs carried out by unauthorised persons, improperly carried out repairs,
- making unauthorised alterations to machine design,

the user will lose the right to warranty service.

**TIP**

Demand that the seller carefully and precisely fills out the Warranty Book and guarantee repair coupons. A missing date of purchase or sale point stamp, may make the user ineligible for any warranty repair or refund.

The user is obliged to report immediately on noticing any wear in the paint coating or traces of corrosion, and to have the faults rectified whether they are covered by the guarantee or not. Detailed guarantee regulations are contained in the Warranty Book attached to each machine.

Modification of the trailer without the written consent of the Manufacturer is forbidden. In particular, do NOT weld, drill holes in, cut or heat the main structural elements of the machine, which have a direct impact on the machine operation safety.

1.5 TRANSPORT

The trailer is ready for sale completely assembled and does not require packing. Packing is only required for the machine's technical documentation and any extra fittings. The trailer is delivered to the user either transported on a vehicle or, after being attached to a tractor, independently (trailer towed with a tractor).

1.5.1 TRANSPORT ON VEHICLE

Loading and unloading of trailer from vehicle shall be conducted using loading ramp with the aid of an agricultural tractor. During work adhere to the general principles of Health and Safety at Work applicable to reloading work. Persons operating reloading equipment must have the qualifications required to operate these machines. The trailer must be properly connected with the tractor according to the requirements closed in this Operators Manual. The trailer brake system must be started in checked before driving off or onto ramp.

The trailer should be attached firmly to the platform of the vehicle using straps or chains fitted with a tightening mechanism. It is recommended to lower the trailer using hydraulic cylinders. Securing elements should be attached to the transport catches designed for this purpose (1) – figure (1.2), permanent structural elements of the trailer (longitudinal and transverse frame sections etc.). Transport lugs are welded to lower longitudinal frame of load box, one pair on each side of the trailer. Use certified and technically reliable securing measures. Worn straps, cracked securing catches, bent or corroded as well as other damage may disqualify use of the given element from use. Carefully read the information contained in the Operator's Manual for the given securing measure. Chocks, wooden blocks or other objects without sharp edges should be placed under the wheels of the trailer to prevent it from rolling. Trailer wheel blocks must be nailed to the low platform planks of the vehicle or secured in another manner preventing their movement. The number of securing elements (cables, straps, chains and stay etc.) and the force necessary for their tensioning depends on a number of things, including weight of the trailer, the construction of vehicle carrying trailer, speed of travel and other conditions. For this reason it is impossible to define the securing plan precisely. A correctly secured trailer does not change its position with regard to the transport in vehicle.

The securing elements must be selected according to the guidelines of the Manufacturer of these elements. In case of doubt apply a greater number of securing straps in order to immobilise the trailer. If necessary, sharp edges of trailer should be protected at the same time protecting the securing straps from breaking during transport.

During reloading work, particular care should be taken not to damage parts of the machine's fittings or the lacquer coating. The tare weight of the trailer in condition ready for travel is given in table (3.1).

**DANGER**

Incorrect application of securing measures may cause an accident.

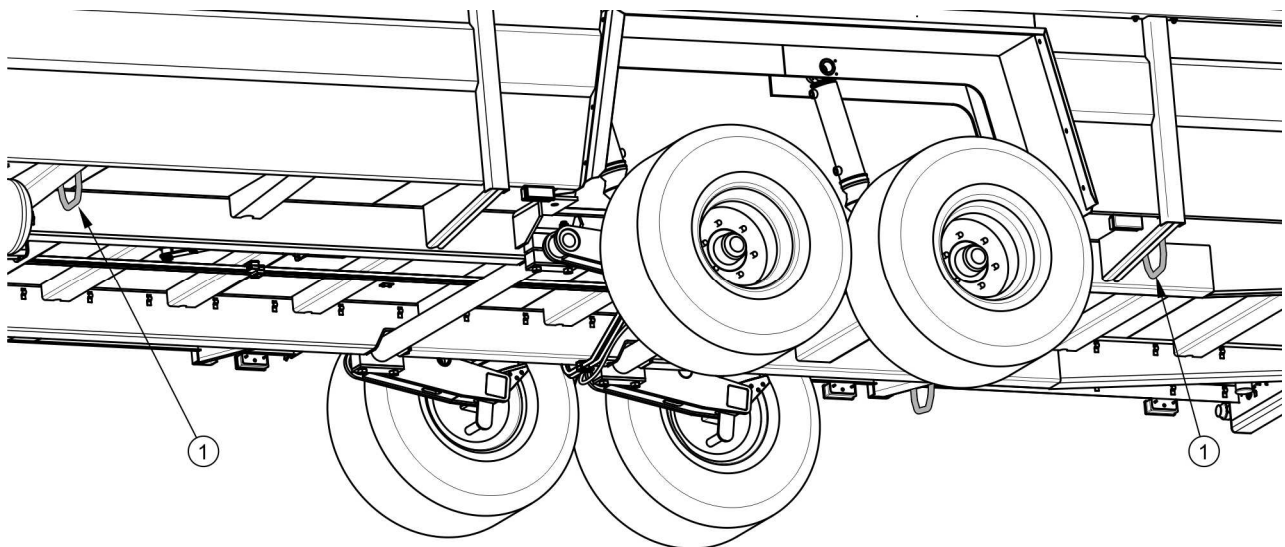


FIGURE1.2 **Positioning of transport lugs**

(1) transport lug

**IMPORTANT!**

When being road transported on a motor vehicle the trailer must be mounted on the vehicle's platform in accordance with the transport safety requirements and the regulations.

Driver of the vehicle should be particularly careful during travel. This is due to the vehicle's centre of gravity shifting upwards when loaded with the machine.

Use only certified and technically reliable securing measures. Carefully read the manufacturer's instructions for the securing measures.

1.5.2 INDEPENDENT TRANSPORT BY THE USER.

In the event of independent transport by the user after purchase of the trailer, the user must read the trailer Operator's Manual and adhere to the recommendations contained therein. Independent transport involves towing the trailer with own agricultural tractor to destination. During transport adjust travel speed to the prevailing road conditions, but do not exceed the maximum design speed.



IMPORTANT!

When transporting independently, the user must carefully read this operator's manual and observe its recommendations.

1.6 ENVIRONMENTAL HAZARDS

A hydraulic oil leak constitutes a direct threat to the natural environment owing to its limited biodegradability. The negligible solubility of hydraulic oil in water does not cause extreme toxicity of organisms living in the aquatic environment. The formation of a film of oil on the water may be the direct cause of physical action on organism, perhaps causing change of oxygen values in the water because of lack of direct contact of air with the water. An oil leak into water reservoirs may however lead to a reduction of the oxygen content.

While carrying out maintenance and repair work, which involves the risk of an oil leak, this work should take place on an oil resistant floor or surface. In the event of oil leaking into the environment, first of all contain the source of the leak, and then collect the leaked oil using available means. Remaining oil should be collected using sorbents, or by mixing the oil with sand, sawdust or other absorbent materials. The oil pollution, once gathered up, should be kept in a sealed, marked, hydrocarbon resistant container. The container should be kept away from heat sources, flammable materials and food.



DANGER

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

Oil, which has been used up or is unsuitable for further use owing to a loss of its properties should be stored in its original packaging in the conditions described above. Waste oil should

be taken to the appropriate facility dealing with the re-use of this type of waste. Waste code: 13 01 10. Detailed information concerning hydraulic oil may be found on the product's Material Safety Data Sheet.

**TIP**

The hydraulic system of the trailer is filled with L-HL32 Lotos hydraulic oil.

**IMPORTANT!**

Waste oil should only be taken to the appropriate facility dealing with the re-use of this type of waste. Do NOT throw or pour oil into sewerage or water tanks.

1.7 WITHDRAWAL FROM USE

In the event of decision by the user to withdraw the trailer from use, comply with the regulations in force in the given country concerning withdrawal from use and recycling of machines withdrawn from use. Before commencing dismantling, totally remove the oil from the hydraulic system and reduce air pressure completely in the pneumatic brake system (e.g. using air tank drain valve).

**DANGER**

During disassembly, use proper tools, equipment (cranes, lifts, elevators, etc.) personal protective equipment, such as protective clothing, footwear, gloves, glasses, etc.

Avoid contact of skin with oil. Do not allow used hydraulic oil to spill.

Worn out or damaged parts that cannot be reclaimed should be taken to a collection point for recyclable raw materials. Hydraulic oil should be taken to the appropriate facility dealing with the re-use of this type of waste.

SECTION

2

SAFETY ADVICE

2.1 BASIC SAFETY RULES

2.1.1 USE OF TRAILER

- Before using the trailer, the user must carefully read this operator's manual. During use all the recommendations laid down in this Operator's Manual should be observed.
- If the information contained in the Operator's Manual is difficult to understand, contact a seller, who runs an authorised technical service on behalf of the manufacturer, or contact the manufacturer directly.
- The user is obliged to acquaint himself with the construction, action and the principles of safe usage of the machine.
- Careless and improper use and operation of the trailer, and non-compliance with the recommendations given in this operator's manual is dangerous to your health.
- Non-compliance with the safety rules of this Operator's Manual can be dangerous to the health and life of the operator and others.
- Be aware of the existence of a minimal risk, and for this reason the fundamental basis for using this trailer should be the application of safety rules and sensible behaviour.
- The machine must never be used by persons, who are not authorised to drive agricultural tractors, including children and people under the influence of alcohol or other drugs.
- The trailer must not be used for purposes other than those for which it is intended. Anyone who uses the trailer other than the way intended takes full responsibility for himself for any consequences of this potentially improper use. Use of the machine for purposes other than those for which it is intended by the Manufacturer may invalidate the guarantee.
- Any modification to the trailer frees the manufacturer from any responsibility for damage or detriment to health, which may arise as a result.
- People must not be carried on the machine

2.1.2 HITCHING AND DISCONNECTING FROM TRACTOR

- Do NOT hitch trailer to tractor, if it does not fulfil the requirements made by the Manufacturer (minimal tractor power requirement, lack of required tractor hitch etc.) – compare table (1.2) Agricultural tractor requirements. Before hitching trailer make certain that oil in external hydraulic system of tractor may be mixed with the hydraulic oil of the trailer.
- Before hitching trailer to tractor check that both machines are in good technical condition.
- Before using the trailer, always ensure that all the safety guards are in good condition and in place. Damaged or incomplete sub-assemblies must be exchanged for original new ones.
- Before using the trailer always check its technical condition. In particular, check the technical condition of the tractor and trailer hitch system, the axle system, brake systems and indicator lights.
- Be especially careful when hitching the machine.
- When hitching, there must be nobody between the trailer and the tractor.
- Coupling and uncoupling the trailer may only take place when the machine is immobilised by use of the parking brake.
- Connecting trailer with a tractor should be done only with appropriate hitch provided for that purpose.
- After completing the coupling of the machine check the safety of the hitch. Carefully read the tractor Operator's Manual. If the tractor is equipped with an automatic hitch, make certain that the coupling operation is completed.
- The trailer unhitched from tractor must be immobilised with parking brake. If the machine is positioned on a slope or elevation it shall be additionally secured against moving by placing chocks or other objects without sharp edges under the trailer's wheels.

2.1.3 HYDRAULIC AND PNEUMATIC SYSTEMS

- When operating, the hydraulic and pneumatic systems are under high pressure.

- In the event of malfunction of the hydraulic or pneumatic system, do not use the trailer until the malfunction is corrected.
- When connecting the hydraulic conduits to the tractor, make sure that the tractor hydraulic system and trailer are not under pressure. If necessary reduce residual pressure in the system.
- In the event of injuries being caused by pressurised hydraulic oil, contact a doctor immediately. Hydraulic oil may find its way under the skin and cause infections. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor. In the event of contact of oil with skin wash the area of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene).
- Use the hydraulic oil recommended by the Manufacturer.
- After changing the hydraulic oil, the used oil should be properly disposed of. Used oil or oil, which has lost its properties, should be stored in original containers or replacement containers resistant to action of hydrocarbons. Replacement containers must be clearly marked and appropriately stored.
- Do not store hydraulic oil in packaging designed for storing food or foodstuffs.
- Rubber hydraulic conduits must be replaced every 4 years regardless of their technical condition.

2.1.4 LOADING AND UNLOADING OF ANIMALS ON A TRAILER

- During loading and unloading, the trailer must be hitched to the tractor.
- Loading and unloading work should be carried out by someone experienced in this type of work.
- Animals must be positioned uniformly on the trailer on the whole surface of the trailer
- Animals transported on the trailer must be secured.
- Climbing on the trailer in order to introduce the animals can only be done when it is absolutely motionless and the tractor engine is switched off.
- While introducing the animals on the side platform do not exceed the maximum load of the platform - see label item 8 Table (2.1).

- When you open the door, make sure that animals do not lean against the door because there is a high risk of injury or crushing.
- Do not exceed the permissible load of the trailer.

2.1.5 TRANSPORTING THE MACHINE

- When driving on public roads, comply with the road traffic regulations.

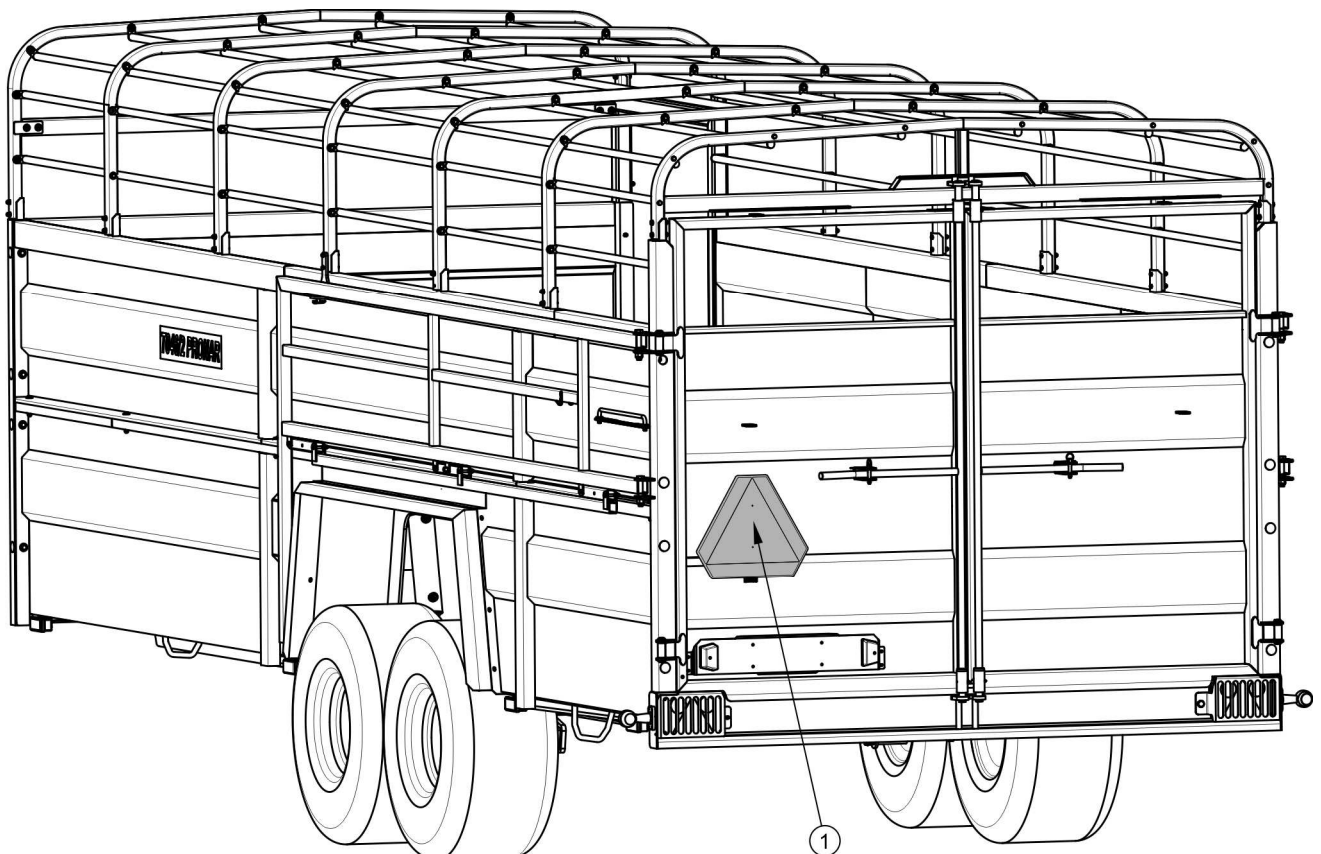


FIGURE 2.1 Mounting place for slow-moving vehicle sign

(1) slow-moving vehicle sign

- Before driving on the roads, remove the rear lamp guards.
- Before entering the public road, make sure that the guards and signalling devices (lights, reflectors) are in good condition and functioning properly.
- While driving on public roads the trailer must be fitted with a certified or authorised reflective warning triangle.
- Exceeding the maximum load capacity of the trailer may damage it, and also threaten the safety of traffic.

- Observe the maximum permitted dimensions while travelling on public roads.
- Do NOT exceed the maximum design speed of 40 km/h. Adjust your speed to the road conditions.
- Travel speed must be adapted to environmental conditions and load. If possible avoid travelling on uneven terrain and unexpected corners.
- You should never travel with the trailer partially lowered.
- The machine must NOT be left unsecured. Securing the trailer involves engaging the parking brake and/or placing chocks or other objects without any sharp edges under trailer wheels.
- During reversing one should use the assistance of another person. During manoeuvring the person helping must stay at a safe distance from the danger zone and be visible all the time to the tractor driver.

2.1.6 TYRES

- When working with tyres, the trailer should be immobilised with parking brake and secured against rolling by placing chocks under wheel. Wheels can be taken off the trailer axle only when the trailer is not loaded.
- Repair work on the wheels or tyres should be carried out by persons trained and entitled to do so. This work should be carried out using appropriate tools.
- Inspect tightness of nuts before first use of trailer, after first travel under load and then every 6 months of use or every 25 000 km. In the event of intensive work checking the nut tightening should be done at least every 100 km. The inspection should be repeated individually if a wheel has been removed from the wheel axle.
- Avoid potholes, sudden manoeuvres or high speeds when turning.
- Check the tyre pressure regularly. Pressure and tyres should be also checked after the whole day of intensive work. Please note that higher temperatures could raise tyre pressure by as much as 1 bar. At high temperatures and pressure, reduce load or speed. Do not release air from warm tyres to adjust the pressure or the tyres will be underinflated when temperatures return to normal.
- Protect tyre valves using suitable caps to avoid soiling.

2.1.7 MAINTENANCE

- The trailer should be kept clean and tidy.
- During the warranty period, any repairs may only be carried out by Warranty Service authorised by the manufacturer.
- Repair, maintenance and cleaning work should be carried out with the tractor's engine switched off and the ignition key removed.
- Servicing and repair work should be carried out in line with the general principles of workplace health and safety. In the event of injury, the wound must be immediately cleaned and disinfected. In the event of more serious injuries, seek a doctor's advice.
- During work use the proper, close-fitting protective clothing, gloves and appropriate tools.
- The trailer should be cleaned each time after finished work.
- Before starting any maintenance or repairs, secure the trailer by means of hydraulic cut-off valves.
- Regularly check the condition of the bolt and nut connections.
- Regularly check the technical condition of the connections and the hydraulic and pneumatic leads.
- Check condition of machine hydraulic system regularly, oil leaks are not allowed.
- Before beginning repair works on hydraulic or pneumatic systems reduce oil or air pressure.
- In the event of any fault or damage whatsoever, do not use the trailer until the fault has been fixed.
- Should it be necessary to change individual parts, use only original parts. Non-adherence to these requirements may put the user and other people's health and life at risk, and also damage the machine and invalidate the guarantee.
- Before welding or electrical work, the trailer should be disconnected from the power supply.

- The paint coating should be cleaned off before beginning welding work. Burning paint fumes are poisonous for people and animals. Welding work should be carried out in a well lit and well ventilated space.
- During welding work pay attention to flammable or fusible elements (parts of the pneumatic, electric and hydraulic systems, plastic parts). If there is a risk that they will catch fire or be damaged, they should be removed before commencing welding work.
- In the event of work requiring the trailer to be raised, use properly certified hydraulic or mechanical lifts for this purpose. After lifting the trailer, stable and durable supports must also be used. Work must not be carried out under a trailer, which has only been raised with a lift or jack.
- The trailer must not be supported using fragile elements (bricks or concrete blocks).
- After completing work associated with lubrication, remove excess oil or grease.
- Exercise caution when climbing on top of the trailer load box.
- Before entering the trailer load box secure tractor against unauthorized access and disconnect hydraulic system from the tractor.

2.2 DESCRIPTION OF MINIMAL RISK

Pronar Sp. z o. o. in Narew has made every effort to eliminate the risk of accidents. There is, however, a certain minimal risk, which could lead to an accident, and this is connected mainly with the actions described below:

- using trailer for purposes other than those described in the Operator's Manual,
- being between the tractor and the trailer while the engine is working and when the machine is being attached,
- operation of the trailer by persons under the influence of alcohol or other intoxicating substances,
- operation of trailer by an authorised person,
- being on the machine during work,
- cleaning, maintenance and technical checks of the trailer.

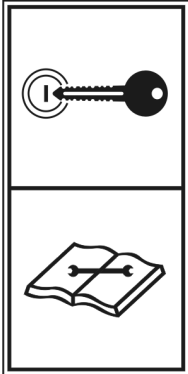
The minimal risk may be kept to a minimum by following the recommendations below:






- prudent and unhurried operation of the machine,
- sensible application of the remarks and recommendations contained in the Operator's Manual,
- maintaining safe distance from forbidden or dangerous places,
- a ban on being on the machine when it is operating,
- carrying out repair and maintenance work by persons trained to do so,
- using suitable protective clothing,
- ensuring unauthorised persons have no access to the machine, especially children,

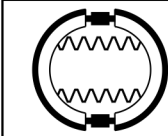
2.3 INFORMATION AND WARNING DECALS

The trailer is labelled with the information and warning decals mentioned in table (2.1). The symbols are positioned as presented in figure (2.2). Throughout the time it is in use, the user of the machine is obliged to take care that notices and warning and information symbols located on the trailer are clear and legible. In the event of their destruction, they must be replaced with new ones. Safety decals are available from your PRONAR dealer or directly from PRONAR customer service. New assemblies, changed during repair, must be labelled once again with the appropriate safety signs.

TABLE 2.1 Information and warning decals

ITEM	DECAL	MEANING OF SYMBOL
1		Before beginning servicing or repairs, switch off engine and remove key from ignition

ITEM	DECAL	MEANING OF SYMBOL
2		Before starting work, carefully read the Operator's Manual.
3		Grease according to the recommendations in the Operator's Manual
4		Check the condition of the screw and nut connections of the wheel axles
5	T046/2 PRONAR	Machine type
6		Caution! Danger of crushing
7	1700 kg	Maximum drawbar load
8	Dopuszczalne obciążenie podestu 150 kg	Maximum platform load 150 kg
9		Transport lug

ITEM	DECAL	MEANING OF SYMBOL
10		Conduit supplying hydraulic brake system. ⁽¹⁾

⁽¹⁾ - not shown in figure, the decal is applied close to the hydraulic plug

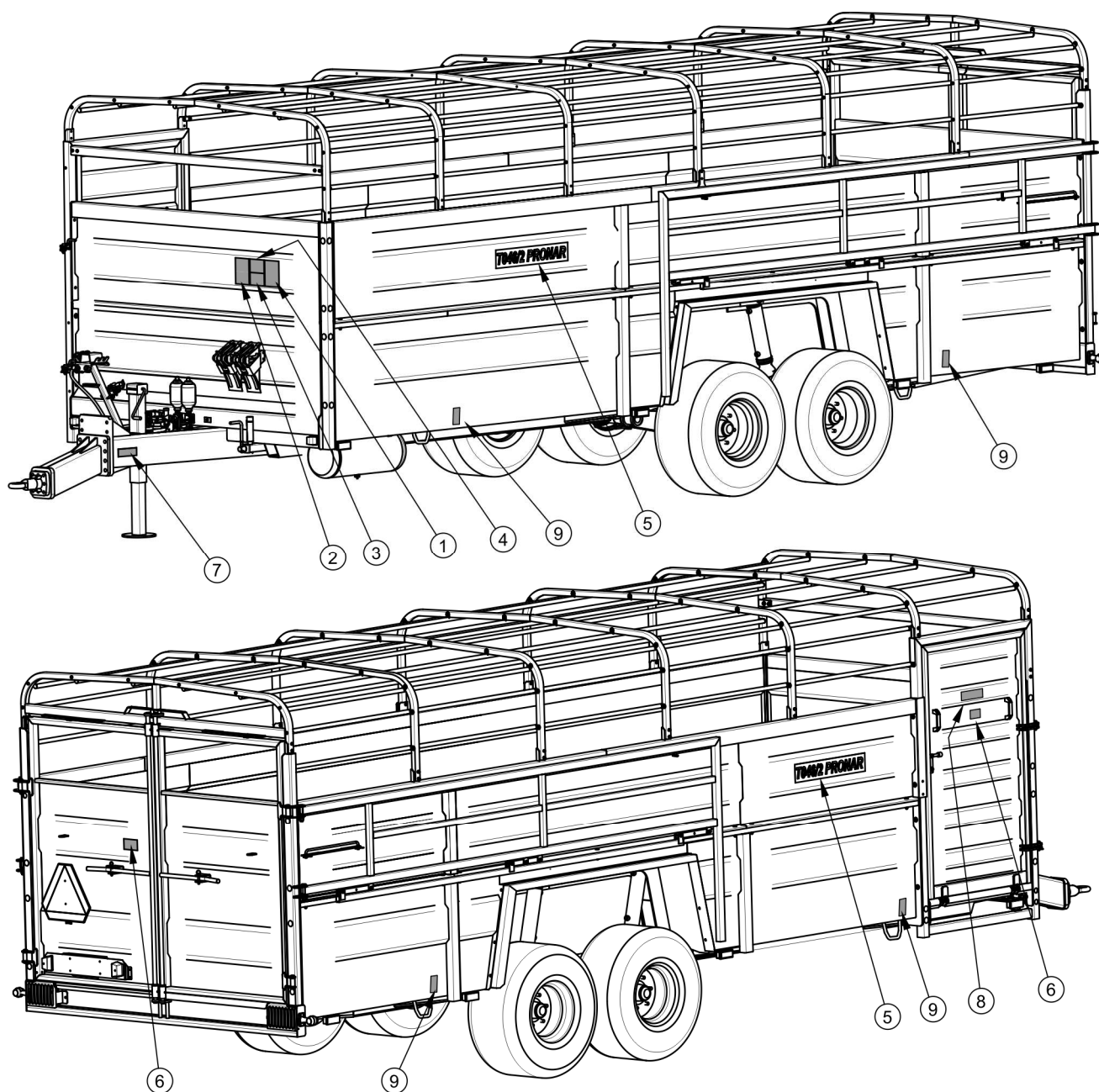


FIGURE 2.2 Locations of information and warning decals.

SECTION

3

**DESIGN AND
OPERATION**

3.1 TECHNICAL SPECIFICATION

TABLE 3.1 Basic technical data of the Pronar T046 / 2 trailer

CONTENTS	UNIT	DATA
Dimensions		
Total length	mm	8 920
Total width	mm	2 530
Total height	mm	2 800
Axle track	mm	2 200
Internal load box dimensions		
- length	mm	6 990
- width (front/rear)	mm	2 300
- height	mm	2 100
Technical specification		
Number of animals transported	item	10 - 12
Platform area	m ²	14
Weights		
Tare weight	kg	3 500
Maximum gross weight	kg	12 000
Maximum carrying capacity	kg	8 500
Tyres		
Wheel rim size	-	11.00 x 16"
Tyre dimensions	-	14.0 / 65- 16
Tyre pressure	kPa	550
Other information		
Nominal voltage	V	12
Maximum design speed	km/h	40
Hydraulic oil demand	l	28
Drawbar attachment point load	kg	1 700

3.2 CHASSIS

Trailer chassis consists of subassemblies indicated on figure (3.1). Lower load box (1) is a structure welded from steel sections and sheets. On the wall of the front load box wheels wedges (6) are placed. The main support elements of the load box are two longitudinal members connected with crossbars. At the front of the trailer the drawbar and cable bracket (7) are bolted to the load box longitudinal members. Trailer can be equipped with the lower drawbar (2) with rotating drawbar eye diameter 50 mm, or the upper drawbar (4) with a fixed drawbar eye diameter 40 mm. Trailer elements

The trailer can be equipped with mechanical support (4), or hydraulically controlled shear type drawbar support (5). The support is designed to support uncoupled trailer and setting the drawbar eye height when hitching trailer to a tractor.

The trailer is equipped with hydraulic suspension, which helps to lower the rear of the trailer for loading the animals. Hydraulic cylinders are shock absorbing elements that connect the lower load box (1) with the rocker arms (10) to half axles (9) are attached. Single wheels equipped with brake shoes activated through mechanical expander cams are mounted on half axles.

Hydraulic accumulators are installed in the hydraulic system circuit whose task is damping vibrations of the suspension while driving.

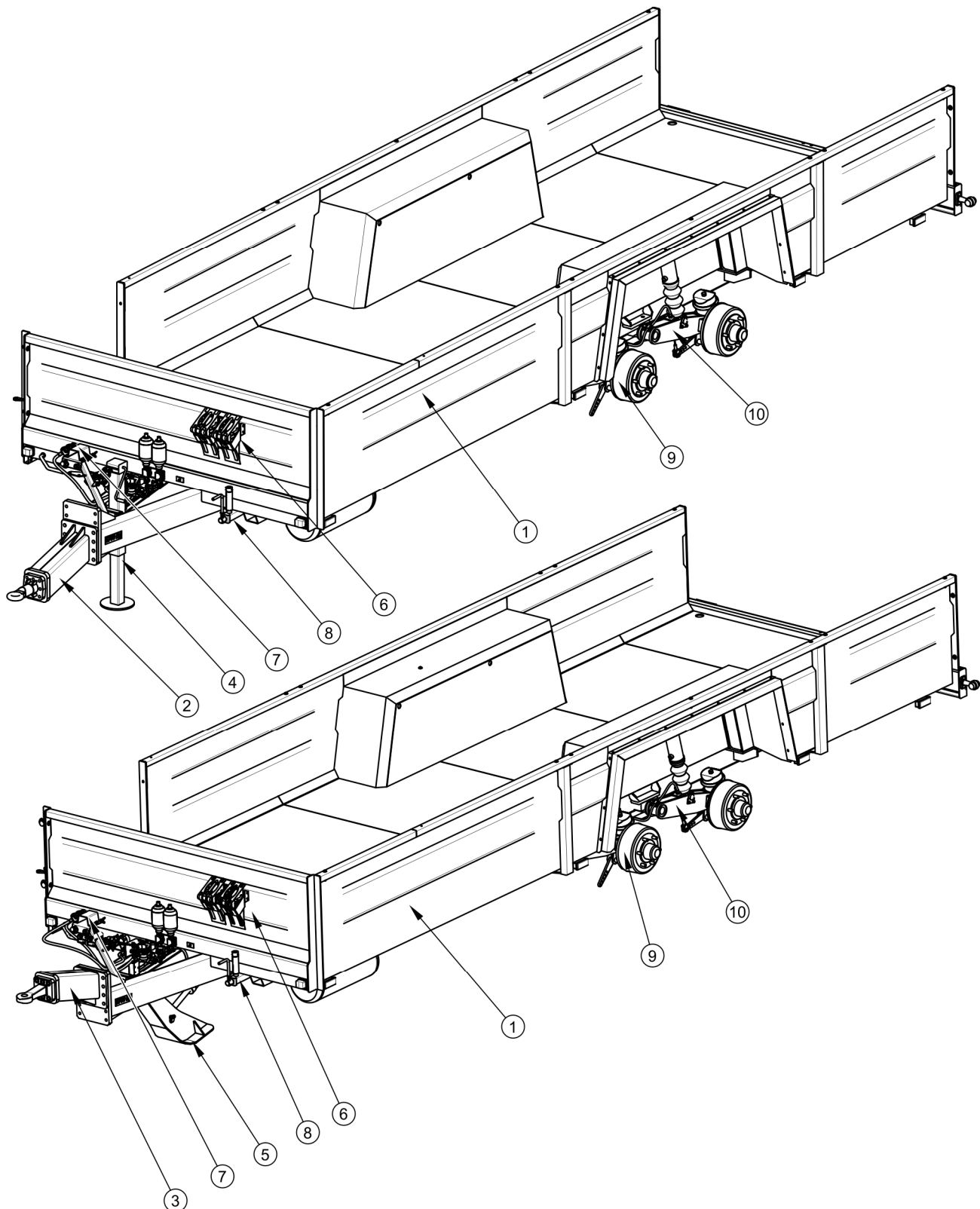


FIGURE 3.1 Trailer chassis

(1) the lower load box, (2) lower drawbar, (3) upper drawbar, (4) fixed support, (5) shear type drawbar support, (6) wheel chocks, (7) cable bracket (8) parking brake lever, (9) half-axis, (10) suspension rocker arm

3.3 LOAD BOX

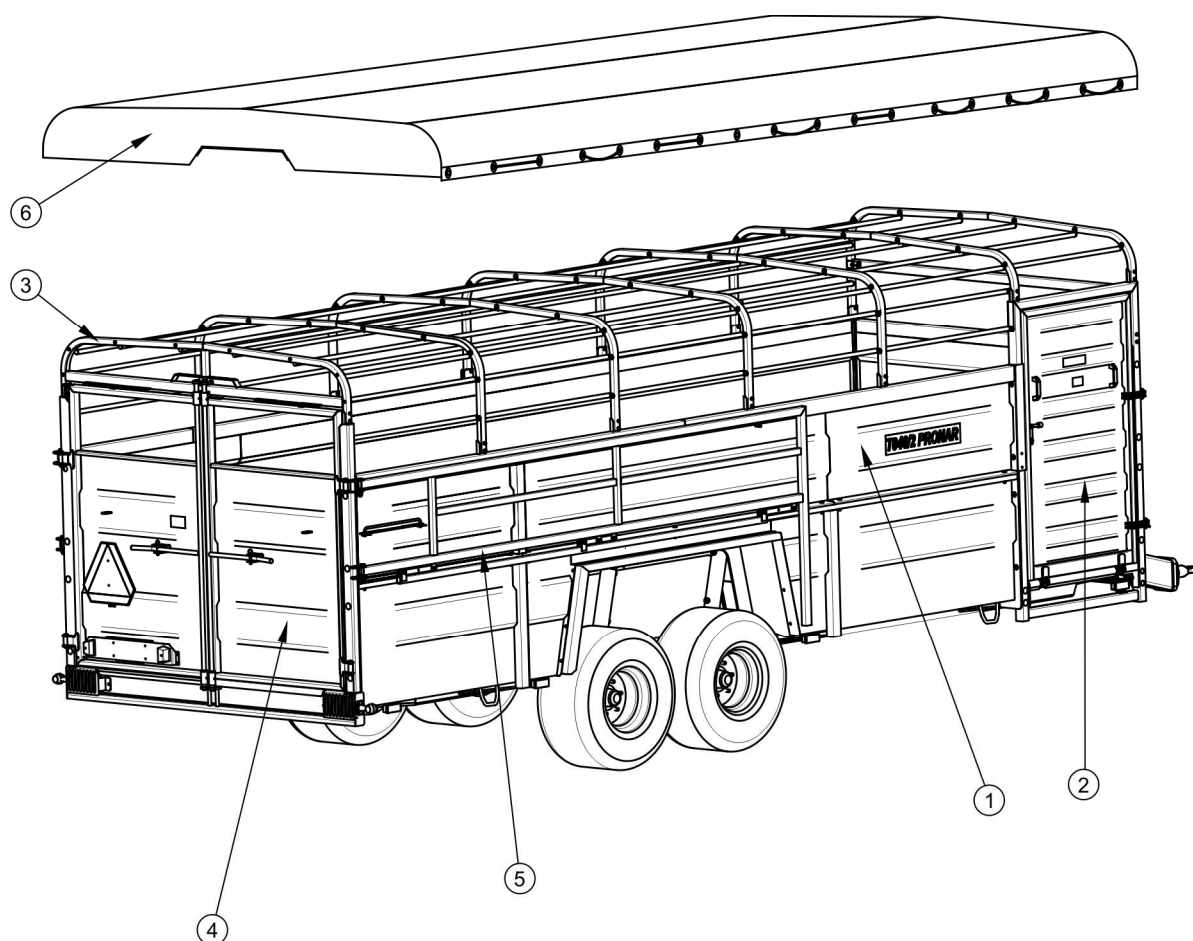


FIGURE 3.2 Load box

(1) wall extensions, (2) side doors, (3) frame, (4) rear doors, (5) side rail (optional), (6) tarpaulin cover (optional)

Load box is designed for the transport of farm animals. It consists of a set of wall extensions (1), the side doors (2) which also serve as a platform, frame (3), rear doors (4). Load box components are shown in Figure (3.2)). Trailer also can be equipped with side rails (5), an internal partition that separates the animals, and a tarpaulin cover (6).

3.4 MAIN BRAKE

The trailer is equipped with one of three types of working brake system:

- hydraulic brake system - figure (3.3),
- single conduit pneumatic system with three position regulator, figure (3.4),
- double conduit pneumatic brake system with three position regulator - figure (3.5).

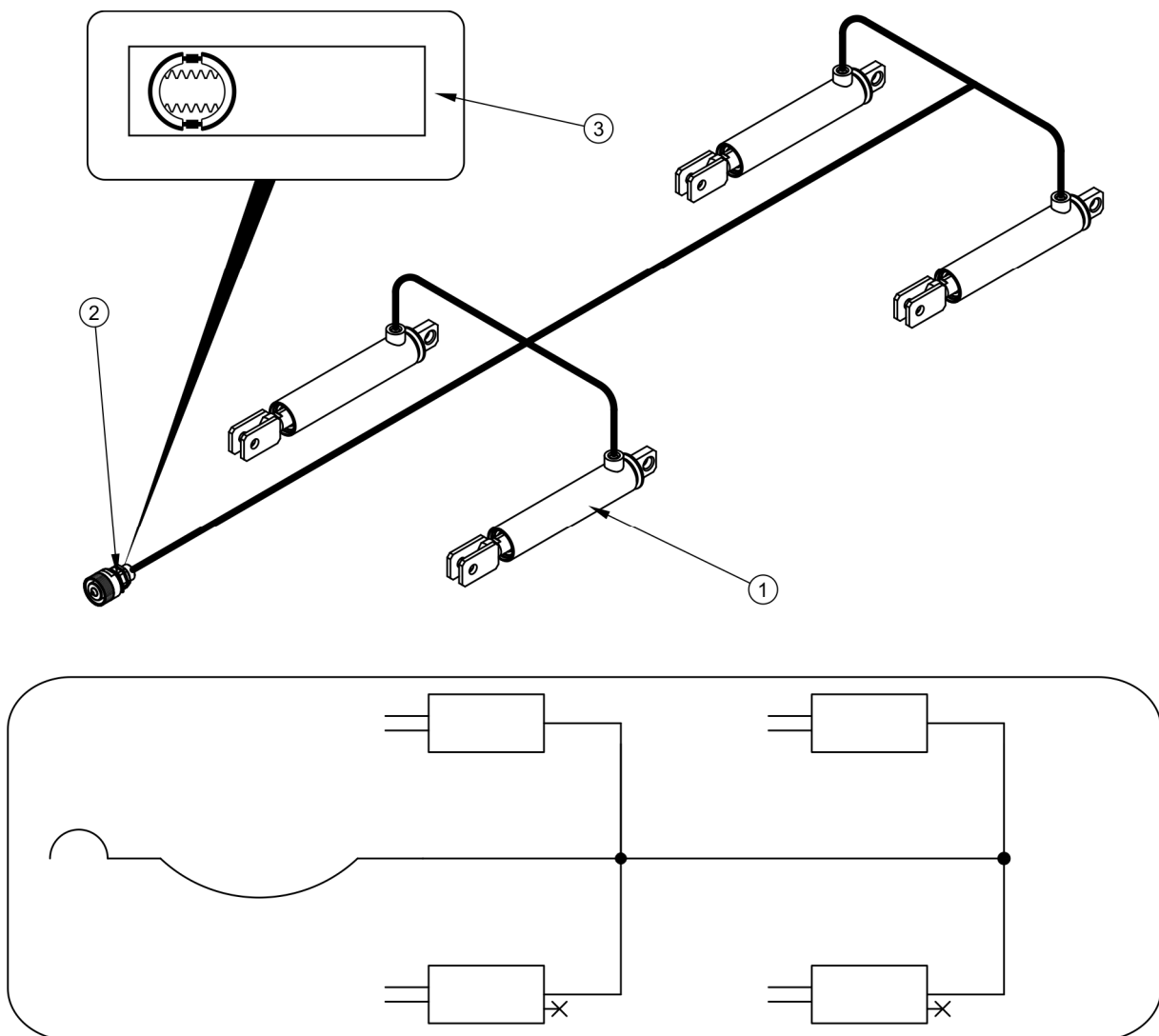


FIGURE 3.3 Hydraulic brake construction and system diagram

(1) hydraulic cylinder, (2) hydraulic quick coupler, (3) information decal

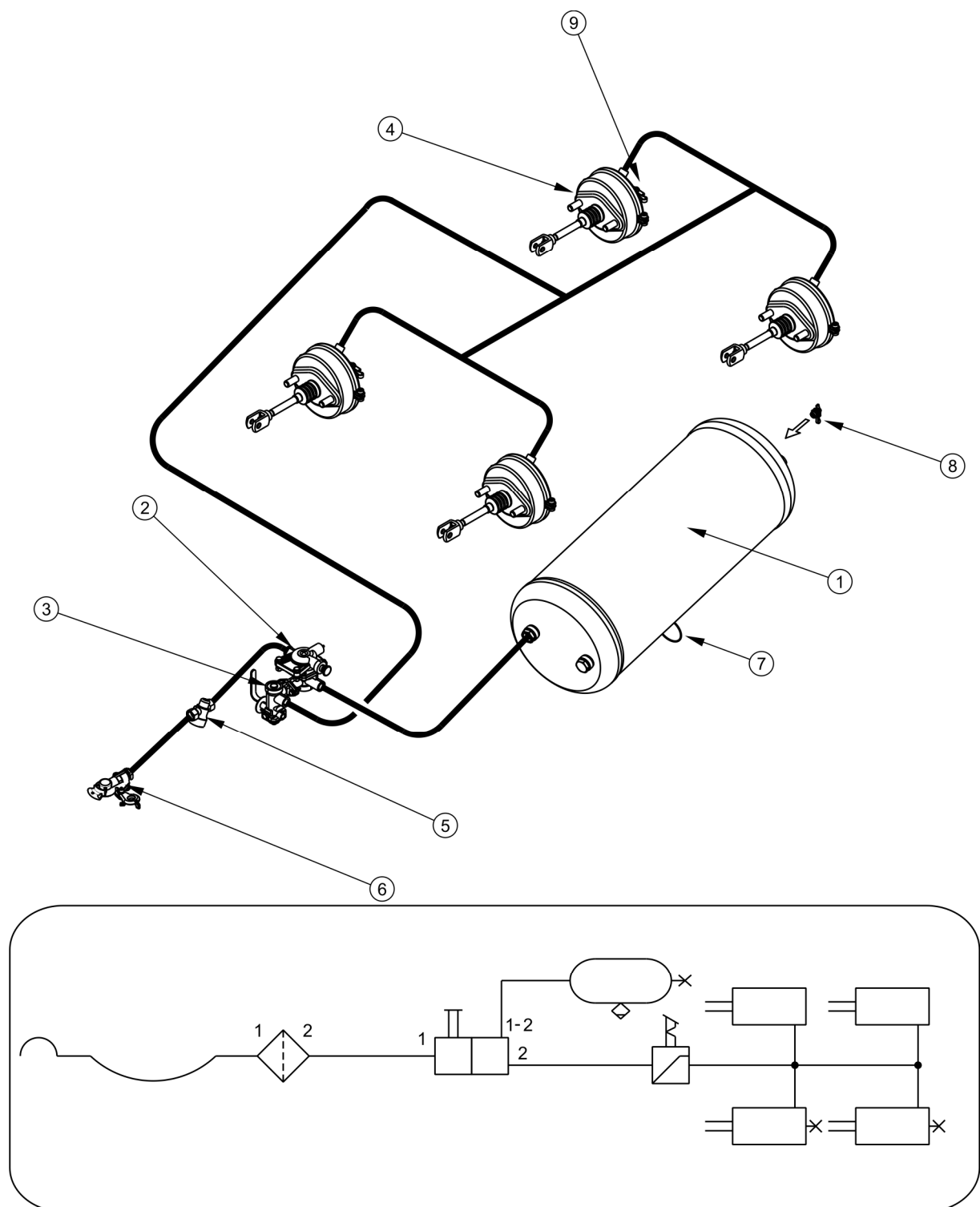


FIGURE 3.4 Single conduit pneumatic brake construction and system diagram

(1) air tank, (2) control valve, (3) brake force regulator, (4) pneumatic ram cylinder, (5) air filter (6) supply conduit (7), drain valve, (8), air tank control connector (9) pneumatic ram cylinder inspection connector

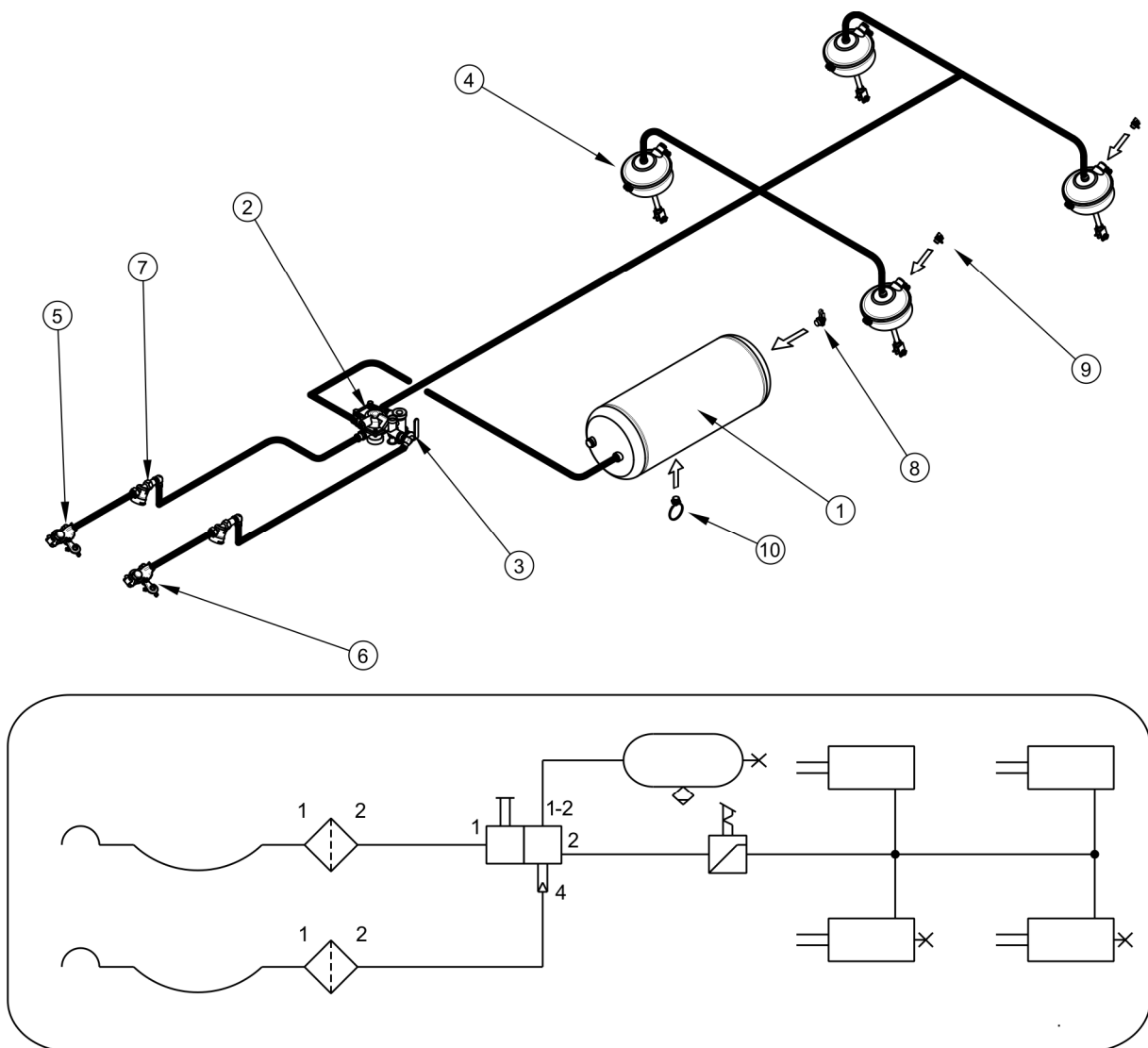


FIGURE 3.5 Double conduit pneumatic brake construction and system diagram

(1) air tank, (2) control valve, (3) braking force regulator, (4) pneumatic ram cylinder, (5) conduit connector (red), (6) conduit connector (yellow), (7) air filter, (8) air tank control connector, (9) pneumatic ram cylinder control connector, (10) drain valve

Working brake is activated from the tractor driver's cab by pressing on the brake pedal in the tractor. The function of the control valve (2) - figure (3.4) and (3.5) is the operation of the trailer's brakes simultaneously when tractor's brakes are applied. Furthermore, in case of an inadvertent disconnection of the conduit between the trailer and the tractor, the control valve will automatically activate trailer's brakes. Valve used in the system is equipped with a circuit causing the brakes to be applied when trailer is disconnected from the tractor. When compressed air conduit is connected to the tractor, the device automatically applying the brakes now changes its position to allow normal brake operation.

Three-step brake force regulator (2) - figure (3.6), adjusts braking force depending on setting. Switching to a suitable working mode is done manually by machine operator using the lever (4) prior to moving off. Three working positions are available: A - "no load", B - "half load" and C - "full load".

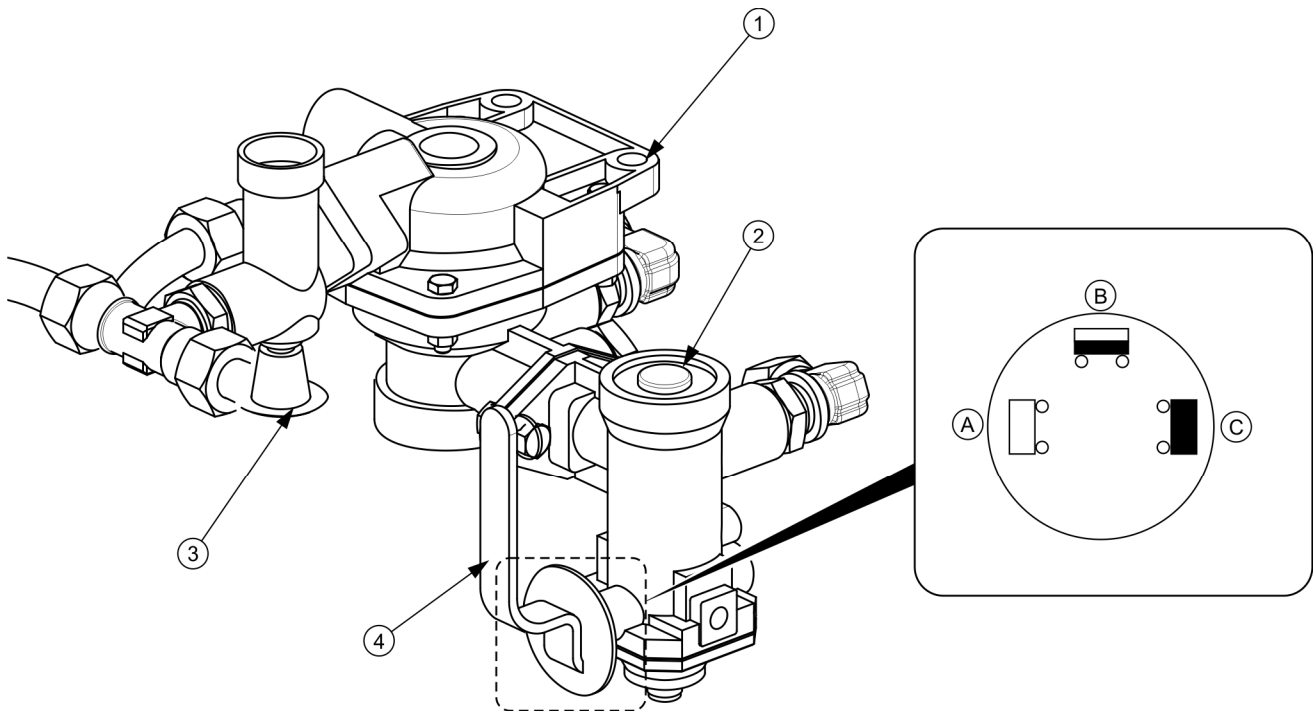


FIGURE 3.6 Three-step brake force regulator

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

3.5 PARKING BRAKE

The parking brake is for immobilising trailer while standing motionless. Crank mechanism (1) located on the front beam of lower load box is connected by steel cable (6) with the lever (2). Cable (5), connects the lever (2) with expander arms (4) of the rear axle (3). Tightening the cables (5) and (6) (turning the crank clockwise) causes tilting of the expander arm, which parts the jaws (4) of the brake shoes immobilising the trailer.

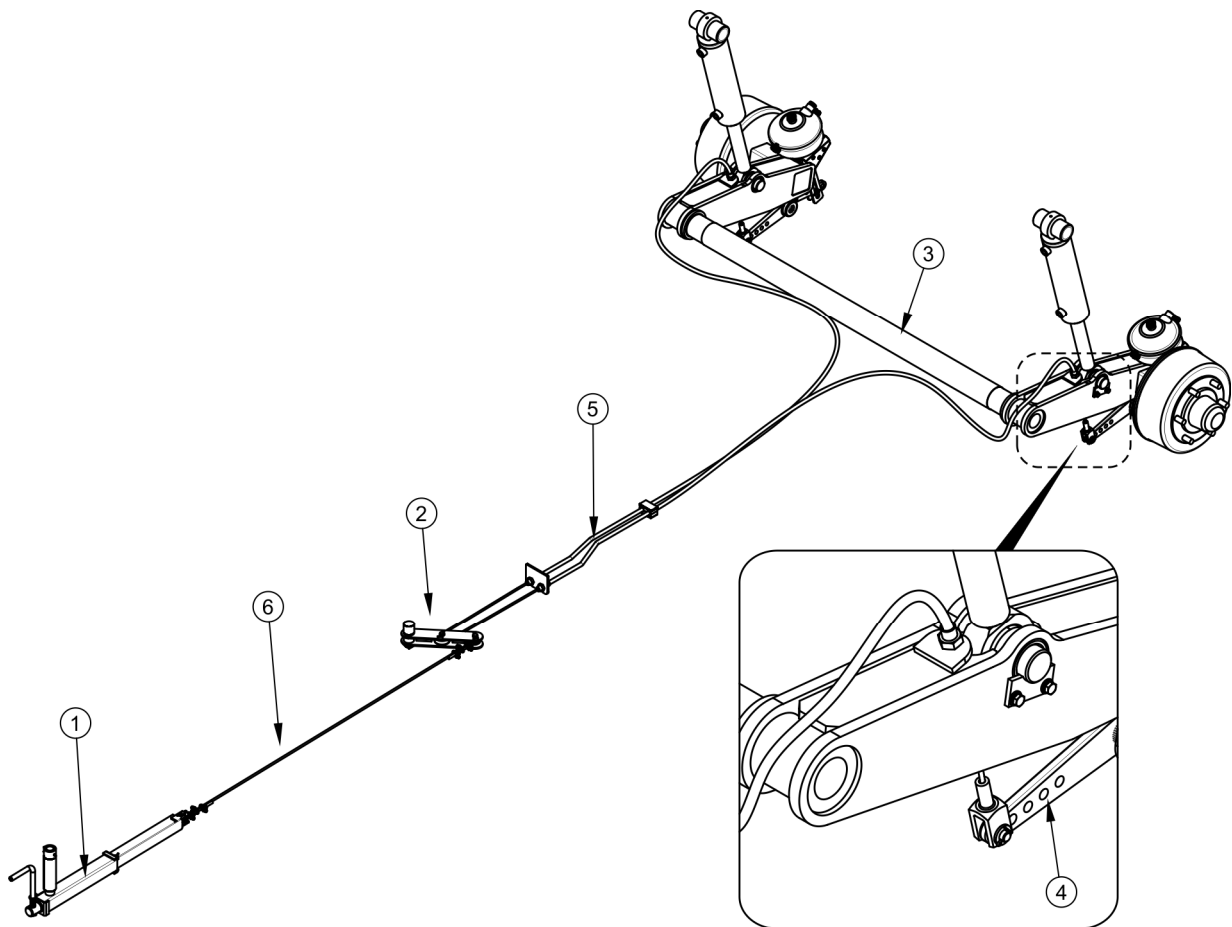


FIGURE 3.7 Parking brake housing with crank mechanism

(1) crank mechanism, (2) lever, (3) rear wheel axle, (4) expander arm, (5) cable I, (6) cable II

3.6 SUSPENSION HYDRAULIC SYSTEM.

T046/2 trailer suspension hydraulic system is used for lowering and lifting the trailer during the loading of the animals.

The hydraulic system is supplied with oil the tractor hydraulics. The circuit is controlled from the cab using the appropriate hydraulic lever.

The hydraulic suspension system consists of four suspension hydraulic cylinders (1) which serve as shock absorbers. Two are located on the right side of the suspension and another two on the left side. The hydraulic cylinders are connected together by means of hydraulic conduits. Two hydraulic accumulators (7) are placed in the hydraulic system circuits whose task is damping vibrations of the suspension while driving.

Hydraulic valves (6) are used to block the hydraulic cylinders during maintenance or repairs.

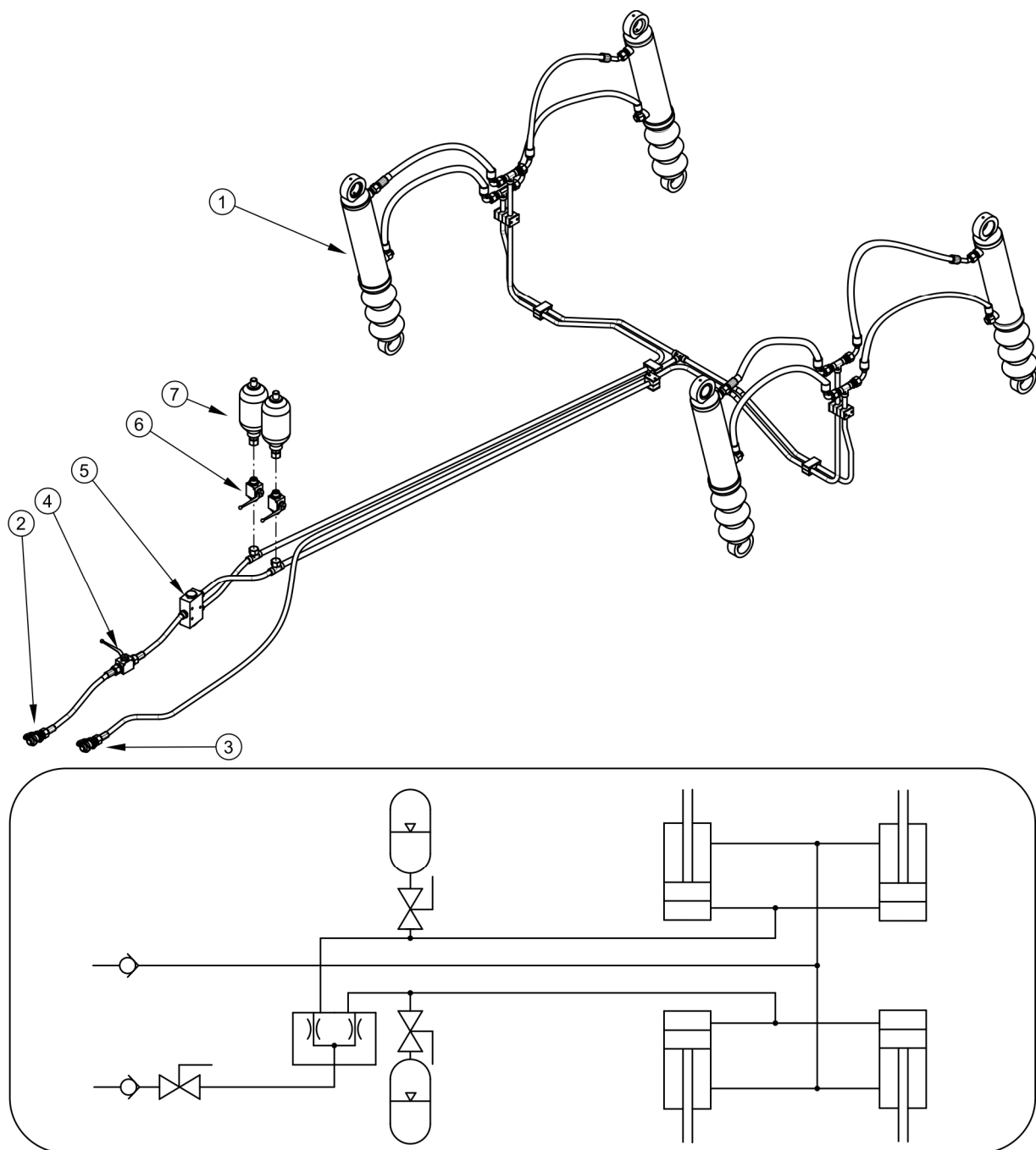


FIGURE 3.8 Diagram of the suspension hydraulic system.

(1) hydraulic cylinder, (2) quick coupler - plug (supply), (3) quick coupler - plug (return), (4) hydraulic valve, (5), flow divider, (6) hydraulic valve, (7) hydraulic accumulator



ATTENTION!

Before using the trailer always check the condition of hydraulic system conduits. In case of damage or wear, replace immediately.

Never travel with the trailer partially lowered.

3.7 ELECTRICAL SYSTEM, WARNING SIGNS AND INDICATORS

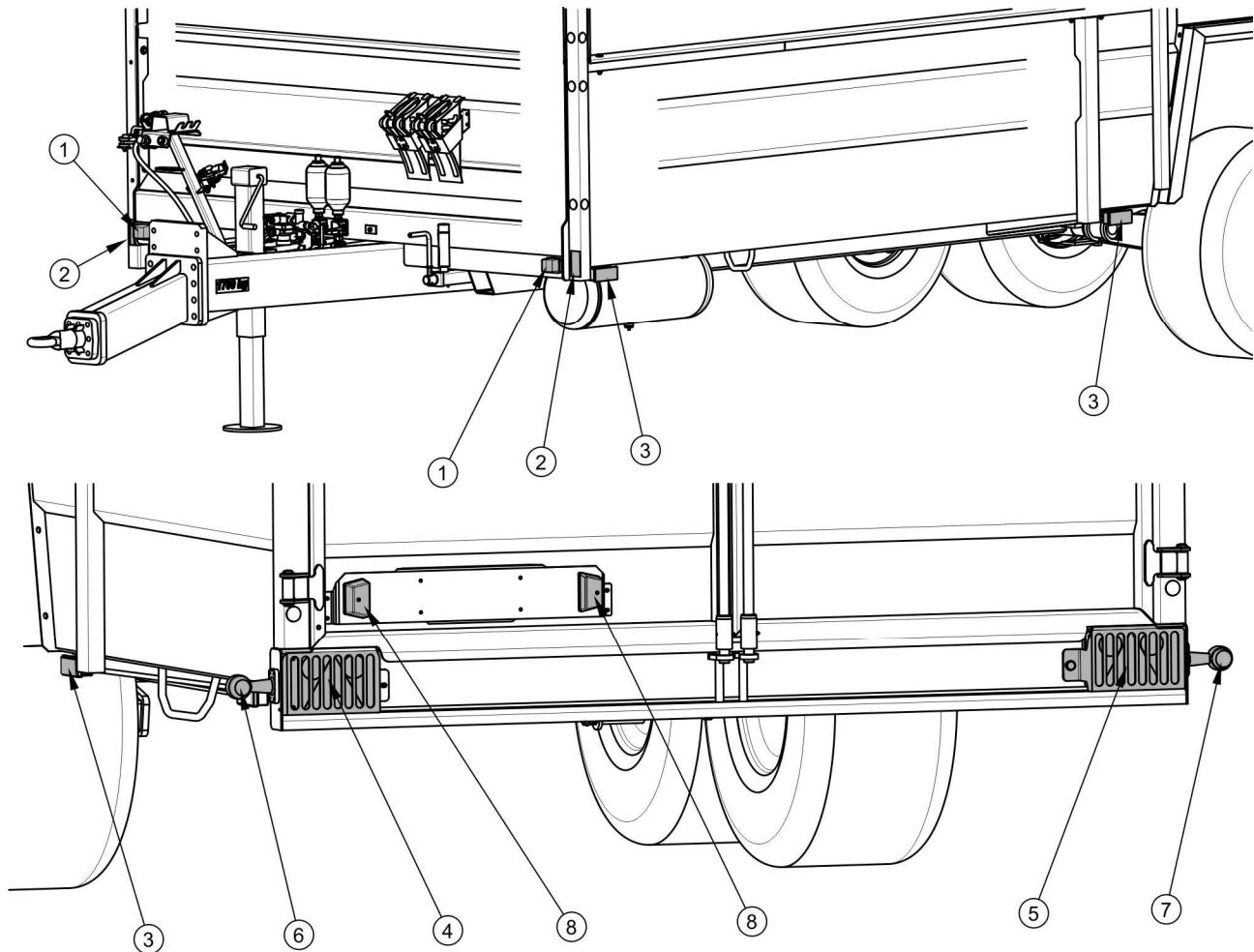
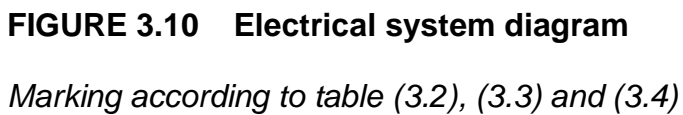


FIGURE 3.9 Positioning of electrical components and reflective lights

(1) front position lamp, (2) white front reflector, (3) side clearance lamp (4) left rear lamp assembly, (5) right rear lamp assembly, (6) left rear clearance light, (7) of rear clearance lamp, (8) license plate light



MARKING	FUNCTION
B	White
C	Black
K	Red
N	Blue
P	Orange
T	green
C/T	Black and green

TABLE 3.3 List of electrical component markings

SYMBOL	FUNCTION
ZP	Rear right lamp assembly
ZL	Rear left lamp assembly
GP	Front seven pin socket
TOP	Right rear clearance lamp
TOL	Left rear clearance lamp
OTP	Right license plate light
OTL	Left license plate light
PP	Front right parking light
PL	Front left parking light
OBP	Right clearance lamp
OBL	Left clearance lamp

TABLE 3.4 Socket connection markings GP

MARKING	FUNCTION
31	Weight
+	Power supply +12V
L	Left indicator
54	STOP light
58L	Front left parking light
58R	Front right parking light
R	Right indicator

SECTION

4

CORRECT USE

4.1 PREPARING FOR WORK BEFORE FIRST USE

4.1.1 CHECKING THE TRAILER AFTER DELIVERY

The manufacturer guarantees that the trailer is fully operational and has been checked according to quality control procedures and is ready for normal use. This does not release the user from an obligation to check the machine's condition after delivery and before first use. The machine is delivered to the user completely assembled.

Before commencing work, machine operator must inspect the technical condition of the trailer and prepare it for test start-up. The user must carefully read this Operator's Manual and observe all recommendations, understand the design and the principle of machine operation.



IMPORTANT!

Before proceeding to hitching to tractor the user must carefully read this Operator's Manual and additional publications attached to machine and observe all recommendations.

External inspection

- ➔ Check completeness of machine (standard and optional equipment).
- ➔ Check condition of protective paint coat,
- ➔ Inspect trailer's individual components for mechanical damage resulting from incorrect transport (dents, piercing, bent or broken components).
- ➔ Check technical condition of tyres and tyre pressure.
- ➔ Check technical condition of elastic hydraulic conduits,
- ➔ Check technical condition of pneumatic conduits,
- ➔ Check that there are no hydraulic oil leaks.
- ➔ Check electric lamps.
- ➔ Check suspension hydraulic cylinders for leaks of hydraulic oil.

4.1.2 PREPARE A TRAILER FOR FIRST HITCHING TO TRACTOR

Preparation

- ➔ Check all the trailer's lubrication points, lubricate the machine as needed according to recommendations provided in section 5.
- ➔ Check if side and rear doors open correctly, locks interlock properly, there are no missing cotter pins,
- ➔ Check if the nuts and bolts fixing the wheels are properly tightened.
- ➔ Drain air tank of the brake system.
- ➔ Ensure that pneumatic, hydraulic and electric connections in agricultural tractor are according to the requirements, if not the trailer should not be hitched to the tractor.
- ➔ Adjust the height of the drawbar setting or location of higher transport hitch.
 - ⇒ A detailed description can be found in section 5.11.

Test drive

If all the above checks have been performed and there is no doubt as to the trailer's good technical condition, it can be connected to tractor. Start the tractor, check all systems and conduct test run of trailer without load (no load in load box). It is recommended that the inspection is conducted by two people, one of which should always remain in the tractor cab. Test start should be conducted according to the sequence shown below.

- ➔ Connect trailer to appropriate hitch on agricultural tractor.
- ➔ Connect brake, electrical and hydraulic system conduits.
- ➔ Switch on individual lights, check correct operation of electrical system.
- ➔ Switch the valve on suspension hydraulic system supply conduit to the open position. Lower and raise the trailer several times.
- ➔ When moving off check if the main brakes operate correctly.
- ➔ Perform test drive.

**TIP**

Service operation: hitching/unhitching from tractor, adjustment of draw bar position, lowering the trailer etc. are described in detail in further parts of the Operator's Manual in sections 4 and 5.

If during test run worrying symptoms occur such as:

- noise and abnormal sounds originating from the abrasion of moving elements of the trailer design,
- hydraulic oil leak,
- pressure drop in brake system,
- incorrect operation of hydraulic and/or pneumatic cylinders

or other faults, find the cause of the problem. If a fault cannot be rectified or the repair could void the guarantee, please contact retailer for additional clarifications or to perform repair.

**DANGER**

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

The trailer must never be used by persons, who are not authorised to drive agricultural tractors, including children and people under the influence of alcohol or other drugs.

Non-compliance with the safety rules of this Operator's Manual can be dangerous to the health and life of the operator and others.

The technical condition prior to starting use may not give rise to any reservation.

After completion of test drive check tightness of wheel nuts.

4.2 CHECKING THE TRAILER'S TECHNICAL CONDITION

When preparing the trailer for normal use, check individual elements according to guidelines presented in table (4.1).

TABLE 4.1 Technical inspection schedule

DESCRIPTION	SERVICE OPERATION	FREQUENCY
Check technical condition of tyres and tyre pressure,	Visually inspect the tyres and check if they are properly inflated.	Before each use
Correct operation of lights and indicators.	After hitching trailer to the tractor activate in sequence individual lights, check if all reflective lights are installed, check if slow-moving vehicle warning sign is in place.	
Operation of brake system	Attach trailer to the tractor and test the brakes after moving off.	
Operation of the suspension hydraulic lifting system	Check operation and tightness of hydraulic systems when raising or lowering the load box.	
Check technical condition of tyres and tyre pressure,	Check the condition of tyre tread, lateral surfaces, wheel rim and if necessary inflate the tyres up to recommend pressure	Every month
Check if the nuts and bolts securing key bolt connections are properly tightened,	Torque values should be according to table (5.5).	Every three months
Lubrication	Lubricate elements according to guidelines presented in section "Lubrication".	According to table (5.4)
Degree of tightening of road wheel nuts	Torque values should be according to table (5.5).	According to section 4.8 "Proper use and maintenance of tyres"

**ATTENTION!**

The trailer must not be used when not in working order.

Prior to connecting individual system conduits the user must carefully read the tractor operator's manual and observe all Manufacturer's recommendations.

4.3 HITCHING AND DISCONNECTING FROM TRACTOR

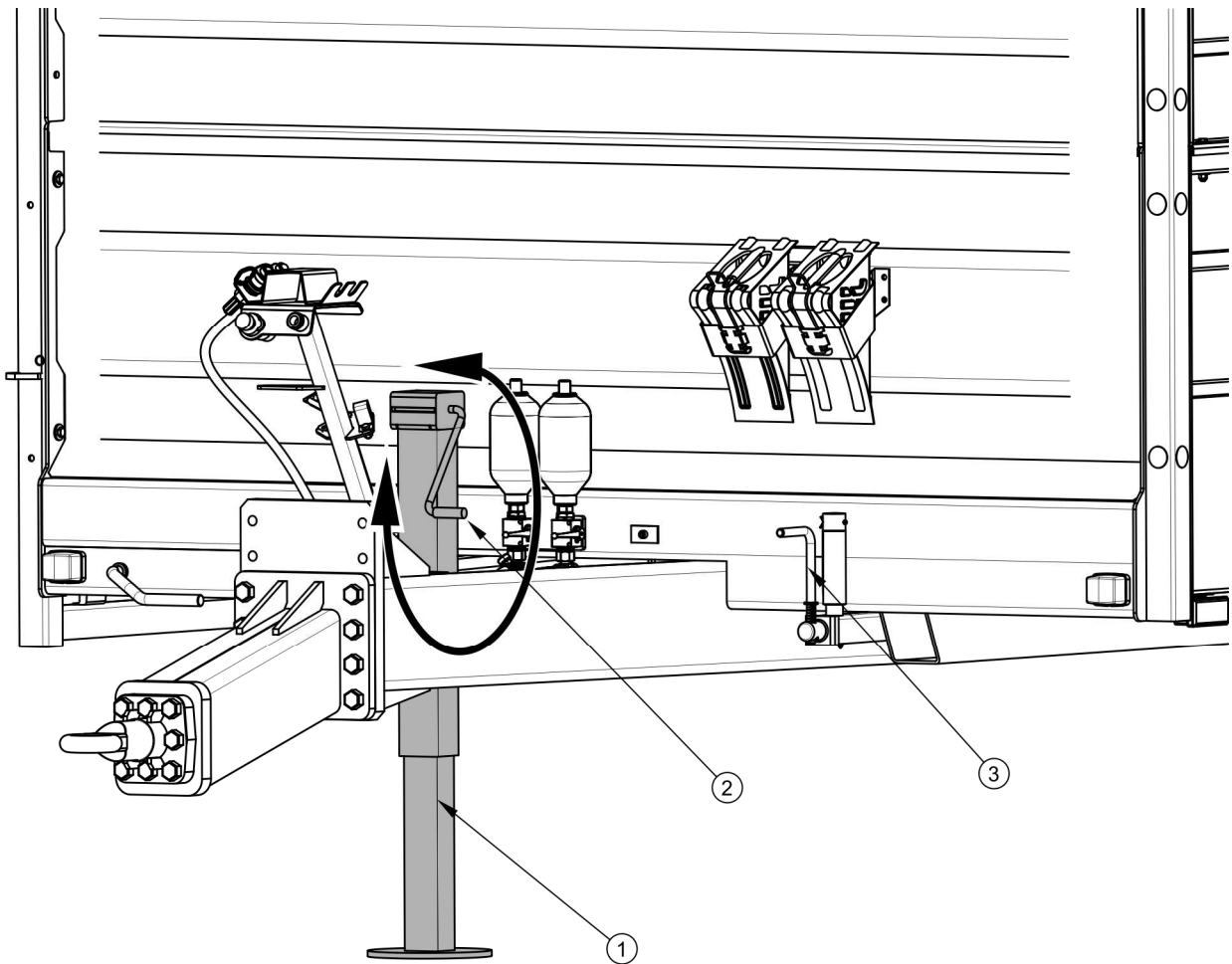
Ensure that pneumatic, hydraulic and electric connections and the hitch of agricultural tractor are according to the Manufacturer's requirements, if not the trailer should not be hitched to the tractor. Trailer can be only be hitched to a tractor equipped with the lower or upper hitch for single-axle trailers with a permissible vertical load of at least 1700 kg.

Prior to attempting to link the trailer to a tractor verify that the trailer is immobilised with a parking brake (3) and wheel chocks.

In order to attach the trailer to tractor, proceed as follows:

- ➡ Lubricate drawbar eye before each use,
- ➡ Position drawbar eye at the correct height.
 - ⇒ precise adjustment of the drawbar eye can be achieved by adjusting the height using the support by (1) by turning the knob (2) in such a way that the trailer can be easily connected to the tractor - Figure (4.1),
- ➡ While tractor is in reverse, connect drawbar eye to the tractor's hitch and check if the connection is secure,
 - ⇒ If the agricultural tractor is equipped with an automatic coupler, ensure that the hitching operation is completed and that drawbar eye is secured.
- ➡ Connect pneumatic system conduits (applies to single or double conduit systems):
 - ⇒ Connect pneumatic conduit marked yellow with yellow socket in tractor (double conduit system).

- ⇒ Connect pneumatic conduit marked red with red socket in tractor (double conduit system).
- ⇒ Connect pneumatic conduit marked black with black socket in tractor (single conduit system).
- ⇒ Wait until the tank is under pressure and make sure of the circuit tightness (locate any leaks with the hand). If any leaks are detected, perform all the necessary repairs.
- ⇒ Check the operation of the control valve (2) - Figure (3.6) and (3.7) (the system will automatically lock the wheel if pneumatic circuit has failed) When the vehicle has stopped and the brake system is under pressure, disconnect the supply (red cap in the double-conduit system or a black cap in a single-conduit system), the brakes should immediately clamp and lock the wheels. Reconnect the supply and wait until the tank is pressurised, the brakes should be released.
- ⇒ verify that when pressure is releases, the cylinder arm returns to its original position.
- ➔ Connect hydraulic brake system (applies to trailer version with hydraulic brake).
 - ⇒ Hydraulic brake system conduit is marked with information decal (10) – table (2.1).
- ➔ Connect hydraulic suspension system conduit.
 - ⇒ The supply conduit of suspension hydraulic system has a cut-off valve
- ➔ Connect main conduit supplying electric lighting system.
- ➔ Raise the support by turning the knob (2)
- ➔ Release trailer's parking brake.

**FIGURE 4.1 Trailer support**

(1) fixed support, (2) knob (3) handbrake

**DANGER**

There is a risk of crushing or losing a limb when operating the support.

During connection of braking system conduits (pneumatic double conduit) the correct sequence of conduit connection is very important. First connect the yellow connector to yellow socket in the tractor and only then connect the red connector to the red socket in the tractor. Once the 2nd conduit is connected, the braking system will switch to normal mode of operation (disconnection or interruption of the conduits causes the trailer's braking system control valve to automatically apply brakes). Conduits are marked with coloured protective covers, which identify the appropriate system conduit.

ATTENTION!

Trailer may only be hitched to a tractor, which has the appropriate transport hitch, connection sockets for braking, hydraulic and electrical systems, and hydraulic oil in both machines is the same type and may be mixed.

When hitching is completed, secure the electrical leads and hydraulic and braking system conduits in such a way that they do not become entangled in tractor's moving parts and are not at the risk of breaking or severed when making turns.

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

DANGER

When hitching, there must be nobody between the trailer and the tractor. when hitching the trailer, tractors driver must exercise caution and make sure that nobody is present in the hazard zone.

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

Ensure sufficient visibility during hitching.

Disconnecting the trailer

In order to disconnect the trailer from the tractor carry out the following actions in the following sequence:

- ➔ Immobilise tractor and trailer with parking brake.
- ➔ Place chocks under trailer wheel.
- ➔ Turn off tractor ignition. Ensure that unauthorised persons do not have access to the tractor cab.
- ➔ Lower the support foot using the knob (2) until the drawbar eye rests on the lower elements of the tractor hitch.
- ➔ Disconnect all hydraulic suspension system conduits from tractor.
- ➔ Disconnect electric lead.
- ➔ Disconnect pneumatic system conduits (applies to double conduit systems):
 - ⇒ Disconnect pneumatic conduit marked red.
 - ⇒ Disconnect pneumatic conduit marked yellow.

- ➔ Disconnect pneumatic system conduits (applies to single conduit systems):
 - ⇒ Disconnect pneumatic conduit marked black.
- ➔ Disconnect hydraulic brake system (applies to trailer version with hydraulic brake).
- ➔ Protect terminal ends with covers, Place conduit terminals in appropriate sockets.
- ➔ Disengage transport hitch and disconnect trailer drawbar from tractor hitch and drive tractor away.

DANGER



Exercise caution when disconnecting trailer from the tractor. Ensure good visibility. Unless it is necessary, do not go between tractor and trailer.

Do NOT park a loaded trailer, which is disconnected from the tractor and resting on the support.

Before disconnecting conduits and drawbar eye, close tractor cab and secure it against access by unauthorised persons. Turn off tractor ignition.

The trailer disconnected from the tractor must be immobilised with parking brake, and additionally secured against moving by placing wheel chocks or other objects without sharp edges under the trailer's wheels.

4.4 LOADING

During loading, the trailer must be hitched to the tractor. It is recommended to position the trailer on firm, level surface and immobilise the vehicle by placing chocks under the wheels and apply handbrake. Animals to be transported should be arranged uniformly over the entire surface of the trailer



ATTENTION!

Do NOT exceed permissible load weight of trailer because this may cause danger to road traffic and cause damage to the trailer.

4.4.1 OPENING REAR DOORS

To open the rear door should first unlock the linchpin (4), then pull the lever arm (3) thereby unlocking the locking hooks. The door should be opened without a problem. After opening the door, secure it with lock (5) to prevent accidental closure.

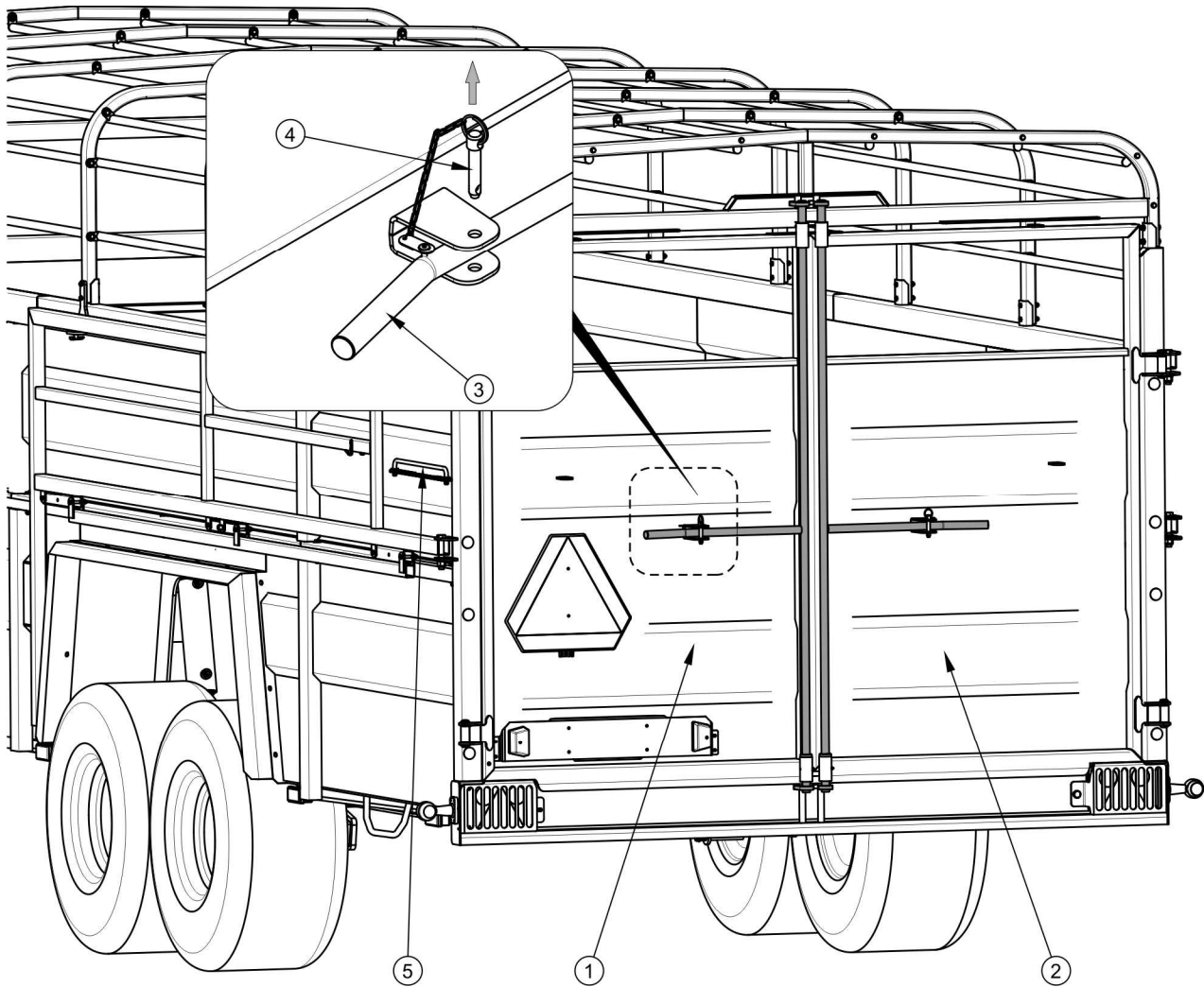


FIGURE 4.2 Opening rear doors

(1) left door, (2) right door, (3) a lever arm, (4) linchpin, (5) door lock



DANGER

When you open the rear door, make sure that animals do not lean against the door because there is a high risk of injury or crushing.

4.4.2 LOWERING THE TRAILER HYDRAULICALLY

Before lowering the trailer, check that the hydraulic suspension control conduits are properly connected to the tractor hydraulic system. Slowly set the hydraulic valve (4) - Figure (3.8) in the open position.

Before lowering be sure that the operation is performed on a stable and flat surface, and pay special attention not to damage the rear door, if opened.

The trailer is lowered by operating an appropriate hydraulic lever on the tractor.



ATTENTION!

Before using the trailer always check the condition of hydraulic system conduits.

Before lowering the trailer make sure that there are no people or animals under the trailer .

4.4.3 USING SIDE RAILS

Side rails are fixed to the outer wall of the trailer wall extension. To install the side rails (1), lower the trailer and unlock the linchpin (2). Then remove the rails from the hanger (3) and install on the side by setting in the desired position. When set, release the rubber cord (4) and spread the adjustable crossbar (5). Open the rear door so that it is as close to the side railings as possible.

On completion of loading prior to transport, follow the steps in reverse order. Check that railing is properly installed and secured.



ATTENTION!

Before driving off, the operator must be sure that the rear doors are properly closed and locked, rails are mounted in the original mounting points, animals secured and the trailer completely raised.

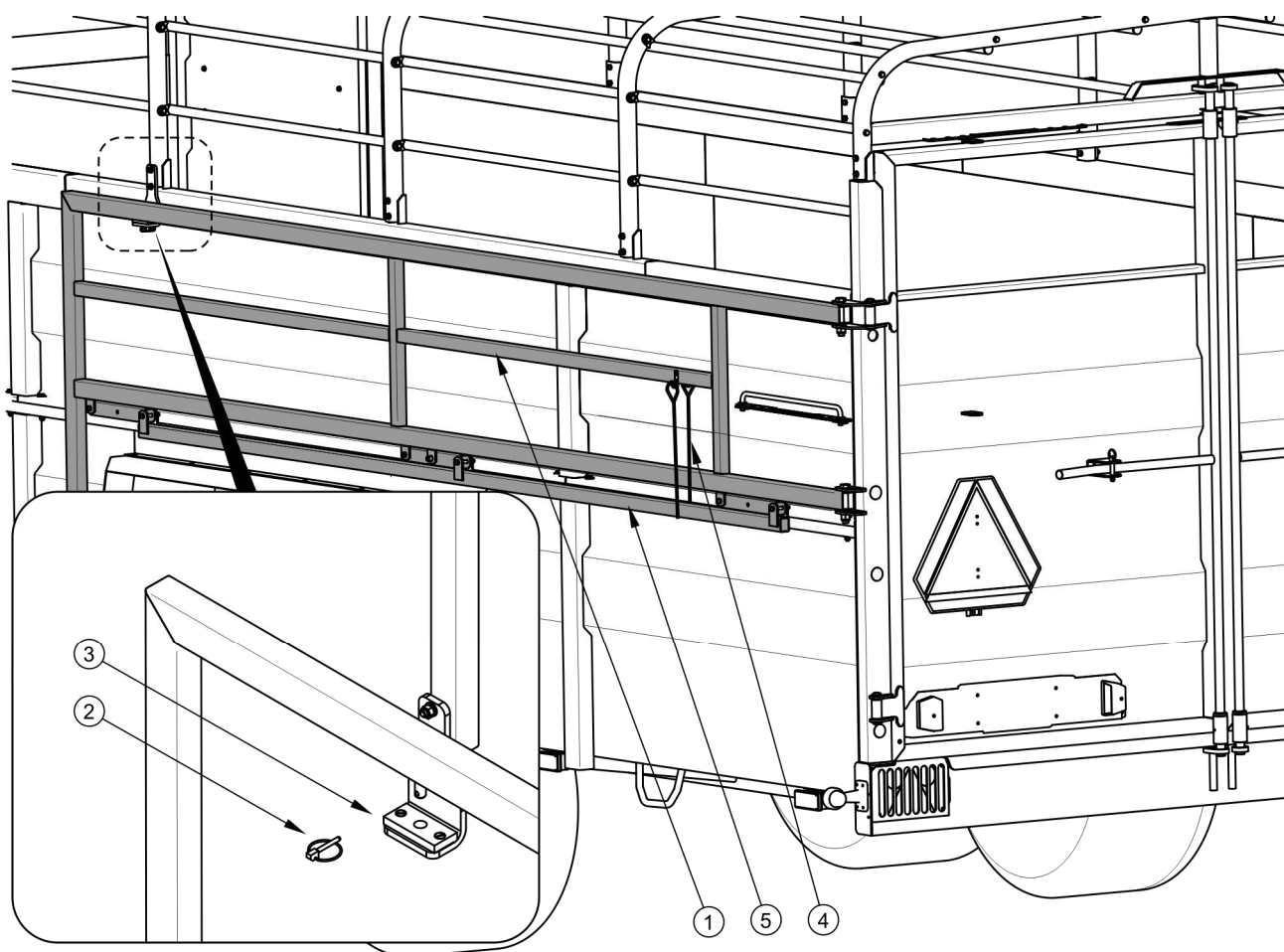


FIGURE 4.3 Side Rails

(1) side rail, (2) rail locking pin, (3) rail bracket, (4) rubber cord, (5) adjustable crossbar

4.5 TRANSPORT OF ANIMALS

When towing the trailer on public or private roads, respect the road traffic regulations, exercise caution and prudence. Listed below are the key guidelines for driving the tractor and the trailer for transporting animals.

- Before moving off make sure that there are no bystanders, especially children, near the trailer or the tractor. Take care that the driver has sufficient visibility.
- Make sure that the trailer is correctly attached to the tractor and tractor's hitch is properly secured. All trailer components should be properly secured (doors, rails, internal partition), and the animals cared for.
- Transported animals should be provided with comfort and safety.

- The trailer must not be overloaded, the animals should be uniformly distributed. The trailer's maximum carrying capacity must not be exceeded as this can damage the trailer and pose a risk to the operator or other road users.
- Permissible design speed and maximum speed allowed by road traffic law must not be exceeded. The towing speed should be adapted to the current road conditions, load carried by the trailer, road surface conditions and other relevant conditions.
- When not connected to the tractor, the trailer must be immobilised using parking brake and possibly also with chocks or other objects without sharp edges placed under the front and back wheels. Do NOT leave unsecured trailer.
- In the event of trailer malfunction, pull over on the hard shoulder avoiding any risk to other road users and position reflective warning triangle according to traffic regulations.
- When driving on public roads trailer must be marked with a slow-moving vehicle warning sign attached to the rear wall of the load box. While driving on public roads the trailer must be fitted with a certified or authorised reflective warning triangle. When driving, comply with all road traffic regulations, indicate an intention to turn using indicator lamps, keep all road lights and indicator lights clean at all times and ensure they are in good condition. Any damaged or lost lamps or indicator lights must be immediately repaired or replaced.
- Avoid ruts, depressions, ditches or driving on roadside slopes. Driving across such obstacles could cause the trailer or the tractor to suddenly tilt. This is of special importance because loaded trailer's centre of gravity is higher, which reduces safety. Driving near ditches or channels is dangerous as there is a risk of the wheels sliding down the slope or the slope collapsing.
- Speed must be sufficiently reduced before making a turn or driving on an uneven road or a slope.
- When driving, avoid sharp turns especially on slopes.
- Please note that the braking distance of tractor and trailer combination is substantially increased at higher speeds and loads carried in the trailer.
- Monitor trailer's behaviour when travelling on an uneven terrain, and adjust driving speed to road conditions, slow down early enough when turning.

ATTENTION!

Before driving on the roads:

- remove the cover of the rear lights,
- check whether the lights are visible and work properly,
- fully raise the trailer
- close the hydraulic valve located on the raising conduit.

Do NOT drive off when the trailer is partially or completely lowered.

4.6 UNLOADING

Before unloading the trailer, it is recommended to set the trailer on a firm, level surface. Immobilise the vehicle by placing chocks under the wheels and apply the parking brake.

Unloading the trailer should be carried out when exercising particular caution:

- open the hydraulic valve located on the raising conduit,
- Using the manifold lever in the operator's cab, initiate lowering of the trailer,
- install side rails (if needed)
- release rear door lock paying particular attention to the fact that animals do not lean against the door,
- take the animal off the trailer
- close and secure railings,
- close and secure rear doors.

ATTENTION!

Lowering the load box must be done on hard and level ground.

When opening load box side wall locks take particular care, because of the pressure of the animals leaning against the wall.

When closing the door, take particular care to avoid crushing fingers.

Make sure that during the unloading there is no one near the trailer.

Unloading can only take place only when trailer is hitched to tractor.

Do NOT drive off when the trailer is partially or completely lowered.

4.7 PROPER USE AND MAINTENANCE OF TYRES

- When working on the tyres, chocks or other objects without sharp edges should be placed under the wheels of the trailer to prevent it from rolling. Wheels can be taken off the trailer axle only when the trailer is not loaded.
- Repair work on the wheels or tyres should be carried out by persons trained and entitled to do so. This work should be carried out using appropriate tools.
- Inspect tightness of nuts before first use of trailer, after first travel under load and then every 6 months of use or every 25,000 km. In the event of intensive work checking the nut tightening should be done at least every 100 km. The inspection should be repeated individually if a wheel has been removed from the wheel axle.
- Regularly check and maintain correct pressure in tyres according to Operator's Manual (especially if trailer is not used for a longer period).
- Pressure and tyres should be also checked after the whole day of intensive work. Please note that higher temperatures could raise tyre pressure by as much as 1 bar. At high temperatures and pressure, reduce load or speed.
- Do not release air from warm tyres to adjust the pressure or the tyres will be underinflated when temperatures return to normal.
- Protect tyre valves using suitable caps to avoid soiling.
- Do not exceed the trailer's maximum design speed.
- When trailer is operated all day, stop working for a minimum of one hour in the afternoon.
- Adhere to 30 minutes rest for cooling tyres after driving 75 km or after 150 minutes continuous travel depending on which occurs first.
- Avoid potholes, sudden manoeuvres or high speeds when turning.

SECTION

5

MAINTENANCE

5.1 PRELIMINARY INFORMATION

When using the trailer, regular inspections of its technical condition are essential and the performance of maintenance procedures, which keep the machine in good technical condition. In connection with this the user of the trailer is obliged to perform all the maintenance and adjustment procedures defined by the Manufacturer.

Repairs during the guarantee period may only be performed by authorised service points.

Detailed procedures and extents of functions are described in this section, which the user may perform with his own resources. In the event of unauthorised repairs, changes to factory settings and other actions, which are not regarded as possible for the trailer operator to perform, the user shall invalidate the guarantee.

5.2 SERVICING BRAKES AND AXLES

5.2.1 PRELIMINARY INFORMATION

Work connected with the repair, change or regeneration of axle and brakes elements should be entrusted to specialist establishments, having the appropriate technology and qualifications for this type of work.

The responsibilities of the user are limited to:

- initial inspection of axle brakes,
- inspection and adjustment of loose play of axle bearings,
- mounting and dismounting wheel, inspection of wheel tightening,
- checking air pressure, evaluating technical condition of wheels and tyres,
- mechanical brakes adjustment,
- Replacing the parking brake cable and tension adjustment

Procedures connected with:

- changing grease in axle bearings,
- changing bearings, hub seals,
- changing brake linings, repairing brake,

may be performed by specialist workshops.

**DANGER**

Do NOT use the trailer when brake system is unreliable.

5.2.2 INITIAL INSPECTION OF AXLE BRAKES

After purchasing trailer, the user is responsible for general checking of brake system of trailer axle.



Initial inspection of axle brakes must be conducted:

- after first use,
- after first travel with load.

Inspection procedures

- ➔ Hitch trailer to tractor and place chocks under trailer wheel.
- ➔ Engage and release in turn the main brake and then the trailer parking brake.
 - ⇒ Main brake and parking brake should be engaged and released without great resistance and severity.
- ➔ Check means of securing cylinder and return springs.
- ➔ Check the tightness of parking brake cable clamps.
- ➔ Check the condition of parking brake cables.
- ➔ Check cylinder movement and correct return of piston to start position.
 - ⇒ The help of a second person is required, who shall engage trailer brake.
- ➔ Check if half axle elements are in place, (cotter pins in castellated nuts, expansion rings etc.).
- ➔ Check hydraulic cylinders or pneumatic cylinders for tightness - compare sections 5.3.2 and 5.4.2.

5.2.3 CHECK WHEEL AXLE BEARINGS FOR LOOSENESS

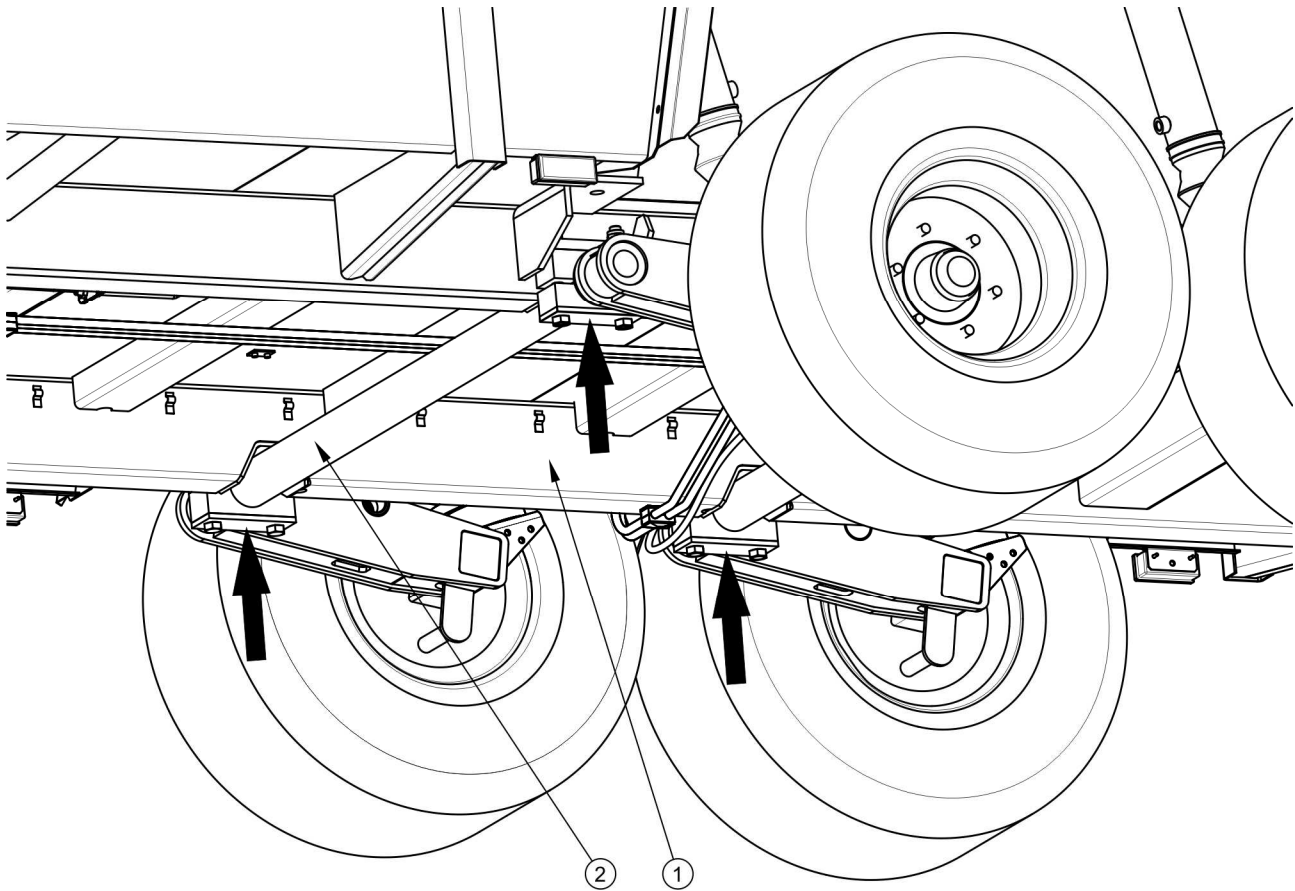


FIGURE 5.1 Lifting jack support point

(1) load box longitudinal member, (2) rocker arm axis

Preparation procedures

- Hitch trailer to tractor, braking tractor with parking brake.
- Park tractor and trailer on hard level ground.
 - ⇒ Tractor and wrapper must be placed to drive forward.
- Place securing chocks under one trailer wheel. Ensure that trailer shall not move during inspection.
- Raise wheel (opposite to the side where chocks are placed).
 - ⇒ Lift should be positioned under the supporting plate of the rocker arm (2) to load box longitudinal member (1) - figure (5.1). Recommended support points are marked with arrows. Lifting jack must be suited to weight of trailer.

Check wheel axle bearings looseness

- ➔ Turning the wheel slowly in both directions check that movement is smooth and that the wheel rotates without excessive resistance.
- ➔ Turn the wheel so that it rotates very quickly, check that the bearing does not make any unusual sounds.
- ➔ Turning the wheel try to detect looseness of the bearings.
 - ⇒ You may use a lever placed under the wheel supporting the other end on the floor.
- ➔ Repeat procedure to each wheel individually, remembering that the jack must be on the side opposite to the chocks.

If slack is felt, adjust bearing. Unusual sounds coming from bearing may be symptoms of excess wear, dirt or damage. In such an event the bearing, together with sealing ring, should be replaced with new parts, or cleaned and greased again. During inspection of bearings ensure that possibly detected looseness comes from the bearing and not from the suspension system.

**TIP**

Damaged hub cover or lack of hub cover causes penetration of contamination and dampness to hub, which causes significantly faster wear of bearing and hub seals.

Bearing life is dependent on working conditions of trailer, loading, speed of travel and lubrication conditions.

Check condition of hub cover, if necessary replace with new cover. Inspection of bearing looseness may only be conducted, when the trailer is hitched to a tractor, and the load box is empty.

**Check wheel axle bearings for looseness**

- after travelling the first 1 000 km,
- after intensive use of trailer,
- every six months use or every 25 000 km.

DANGER

Before commencing work the user must read the instructions for lifting and adhere to the manufacturer's instructions.

Lift must rest firmly on the ground.

Ensure that trailer shall not move during inspection of bearing looseness of axles.

5.2.4 ADJUSTMENT OF WHEEL AXLE BEARINGS LOOSENESS**Preparation procedures**

- ➔ Prepare tractor and trailer for adjustment procedures according with description provided in section 5.2.3.

Adjustment of road wheel axle bearings

- ➔ Take off hub cover (1) - figure (5.2).
- ➔ Take out split cotter pin (3) securing castellated nut (2).
- ➔ Tighten castellated nut in order to eliminate looseness.
 - ⇒ Wheel should rotate with insignificant resistance.
- ➔ Unscrew nut in (A) direction, (not less than 1/3 rotation) to cover the nearest thread groove with alignment to opening in wheel stub axle (B). Wheel should rotate with insignificant resistance.
 - ⇒ Nut may not be excessively tightened. Do not apply excessive pressure with regard for deterioration of bearing working conditions.
- ➔ Secure castellated nut with cotter pin and mount hub cap.
- ➔ Delicately tap hub cap with rubber or wooden hammer.

**TIP**

If the wheel is dismounted, bearing looseness is easy to check and adjust.

The wheel should turn smoothly without stiffness or detectable resistance not originating from abrasion of brake shoes in brake drum. Adjustment of bearing looseness may only be conducted, when the trailer is hitched to a tractor, and the load box is empty.

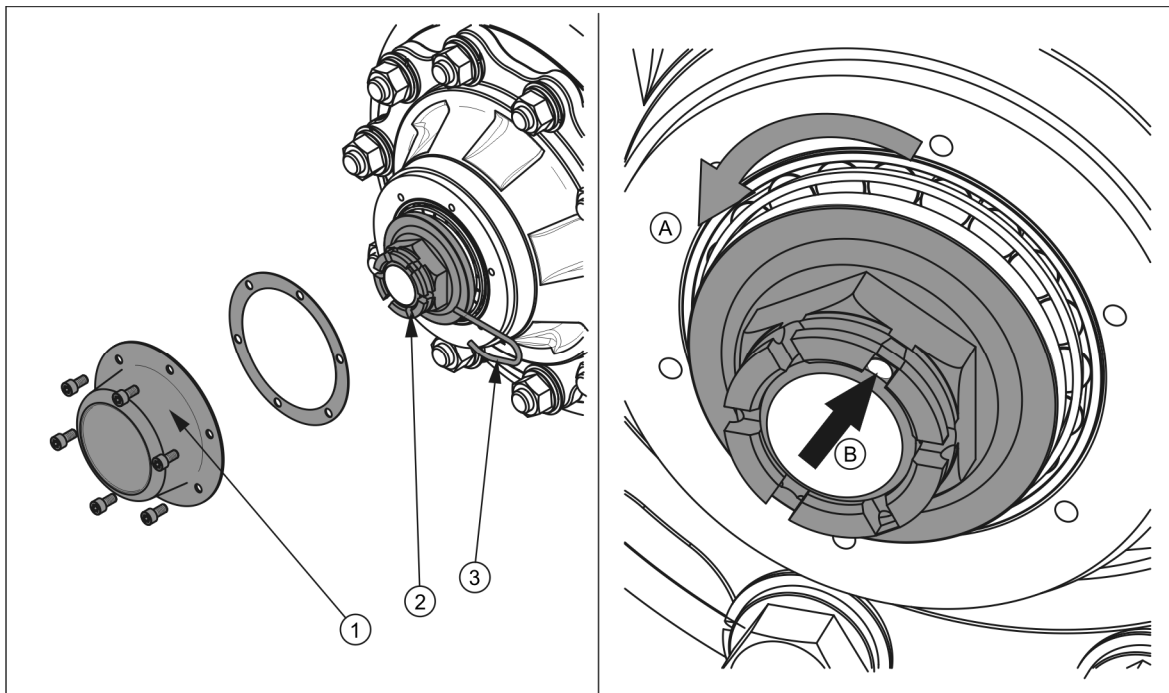


FIGURE 5.2 Adjustment of road wheel axle bearings

(1) hub cover, (2) castellated nut, (3) securing split cotter pin

5.2.5 MOUNTING AND DISMOUNTING WHEEL, INSPECTION OF WHEEL NUT TIGHTENING.

Dismounting wheel

- ➔ Immobilise trailer with parking brake.
- ➔ Place securing chocks under trailer wheel (opposite of the wheel being dismantled).
- ➔ Ensure that trailer shall not move during wheel dismantling.
- ➔ Loosen wheel nuts according to sequence given in figure (5.3).
- ➔ Place lifting jack and lift trailer.
- ➔ Dismount wheel.

Mount wheel

- ➔ Clean axle pins and nuts of dirt contamination.
 - ⇒ Do not grease thread of nuts and pins.
- ➔ Check condition of pins and nuts, if necessary replace.

- ➔ Place wheel on hub, tighten nuts so that wheel rim adjoins hub exactly.
- ➔ Lower trailer, tighten nuts according to recommended torque and given sequence.

**TIP**

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

Tightening nuts

Nuts should be tightened gradually diagonally, (in several stages, until obtaining the required tightening torque) using a torque spanner. If a torque spanner is not available, one may use an ordinary spanner. The arm of the spanner (L) figure (5.3) should be selected according to the weight of the person (F) tightening the nut. Remember that this method of tightening is not as accurate as the use of a torque spanner.

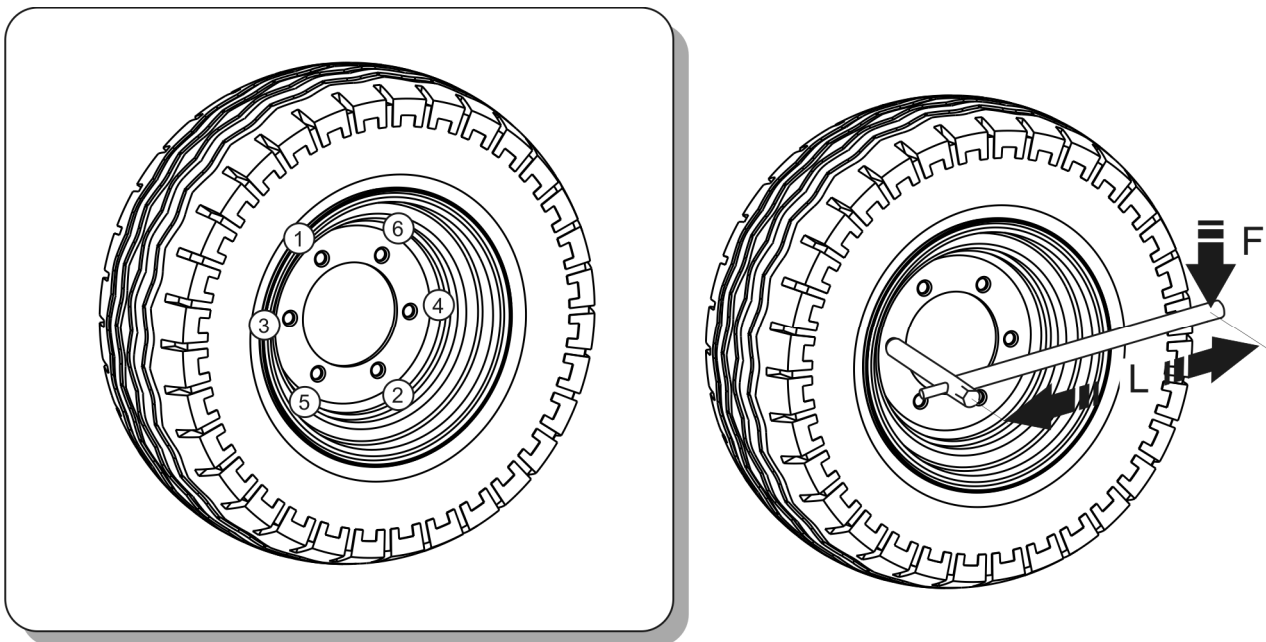


FIGURE 5.3 Sequence of nut tightening

(1) - (6) sequence of nut tightening, (L) spanner length, (F) user weight

Checking wheel axle tightening:

- after first use,
- after first travel with load,
- after travelling the first 1 000 km,
- every six months use or every 25,000 km.

In the event of intensive work checking the nut tightening should be done at least every 100 km. The above actions should be repeated individually if a wheel has been removed from the wheel axle.

TABLE 5.1 Spanner arm

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

IMPORTANT!

Axle nuts may not be tightened with impact wrench, because of danger of exceeding permissible tightening torque, the consequence of which may be breaking the thread connection or breaking off the hub pins.

The greatest precision is achieved by use of a torque spanner. Before commencing work, ensure that correct tightening torque value is set.

5.2.6 CHECK AIR PRESSURE, EVALUATE TECHNICAL CONDITION OF WHEELS AND TYRES,

Tyre pressure should be checked each time after changing spare wheel and not less than every month. In the event of intensive use it is recommended to check air pressure more frequently. During this time trailer must be unloaded. Checking should be done before travelling when tyres are not heated, or after an extended period of parking.

**TIP**

Tyre pressure values are specified in information decal, placed on wheel or on upper frame above trailer wheel.

**DANGER**

Damaged tyres or wheels may be the cause of a serious accident.

While checking pressure pay attention to technical condition of wheels and tyres. Look carefully at tyre sides and check the condition of tread.

In case of mechanical damage consult the nearest tyre service and check whether the tyre defect requires tyre replacement.

Wheels should be inspected with regard to distortion, breaking of material, breaking of welds, corrosion, especially in the area of welds and contact with tyre.

Technical condition and appropriate maintenance significantly extends the life of these components and ensures appropriate level of safety to trailer users.

**Checking tyre pressure and steel rims:**

- every 1 month of use,
- every week during intensive work,
- if needed.

5.2.7 ADJUSTMENT OF MECHANICAL BRAKES

During use of trailer abrasive friction covering of brake drums is subject to wear. Stroke of brake lever and the piston expands and the braking force decreases.

Adjustment must be made when:

- piston stroke amounts to 2/3 of maximum stroke,
- expansion levers are not set in parallel to each other during braking,
- repairs are made to braking system.

Trailer wheels must brake simultaneously. Brakes adjustment involves changing the setting of the expander arm (1) (*FIGURE 5.4*), in relation to expander shaft (2).

Required service actions

- ➔ Dismount cylinder fork (3) mounted on expander arm (1).
- ➔ Mark position of expander arm (1) with regard to the shaft (2).
- ➔ Dismantle expansion ring (4),
- ➔ Dismantle arm and set it in the appropriate position.
 - ⇒ in direction (A), if braking is too early,
 - ⇒ in direction (B), if breaking is too late.
- ➔ Repeat the process for the second arm.
- ➔ Replace the bolt fixing the cylinder fork.

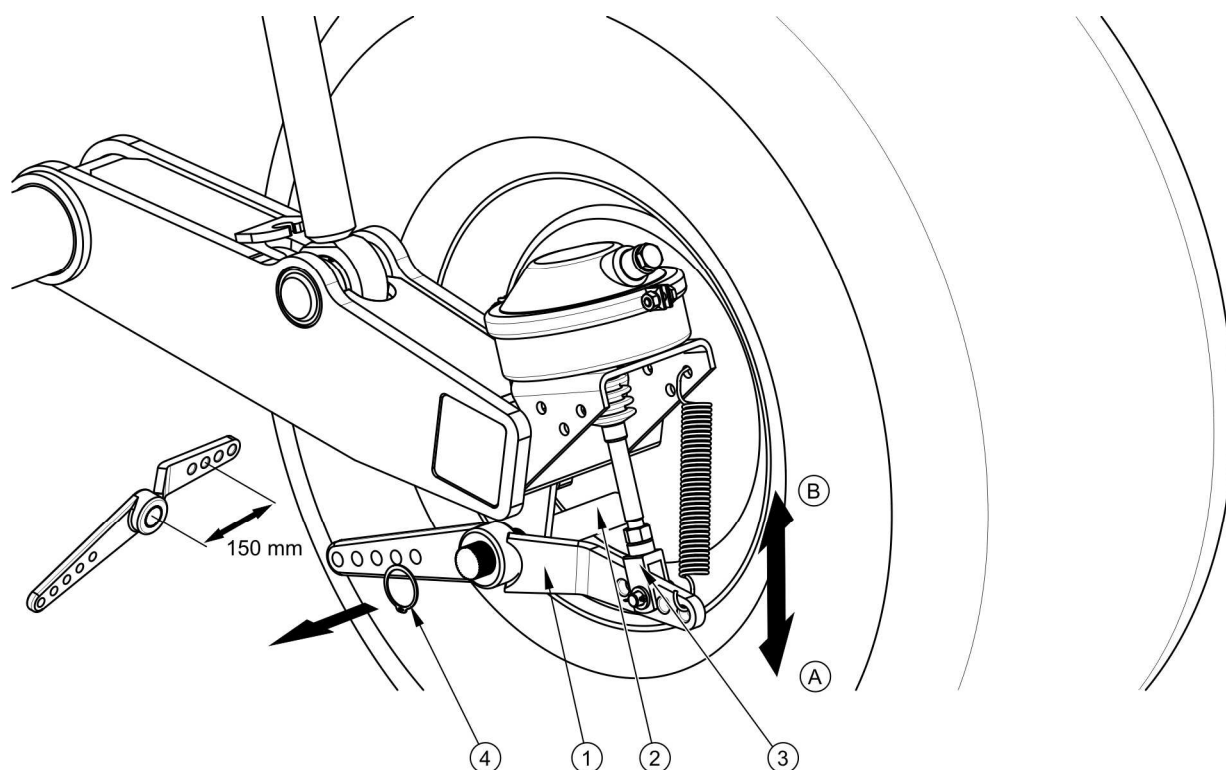


FIGURE 5.4 Adjustment of axle mechanical brakes

(1) expander arm, (2) expander shaft, (3) cylinder fork, (4) expansion ring

Adjustment should be conducted separately for each wheel. Expander arm (1) should be moved by one notch in chosen direction. If the extent of cylinder action is still incorrect, move

the lever again. After proper brake adjustment, at full braking by the cylinder, the stroke should amount to approximately half the length of the total stroke of the piston. After brake release expander arms may not be supported on any structural elements, because too little withdrawal of a piston ram may cause abrasion of brake shoes in drum and result in overheating trailer brakes. Expander arms on the same axle, must be positioned in parallel with regard to each other at full braking. If this is not so, adjust the position of the lever, which has the longer stroke.

If it is necessary to dismantle the cylinder fork, remember or mark its original position in the expander arms. The fork mounting position is selected by the Manufacturer and may not be changed. For all the braking systems on this trailer it should be 150 mm - see Figure (5.4).



Checking and adjustment of main brake:

- every 12 months,
- if needed.

Brake repairs, changes of brake linings etc. may be only undertaken in authorised service points. Making unauthorised repairs and modifications by the user voids the guarantee. Among the service operations which may be performed by the trailer user there is only brake adjustment by changing the setting of expander arms.

5.2.8 CHANGE OF PARKING BRAKE CABLE AND ADJUSTMENT OF CABLE TENSION.

Proper operation of the parking brake is dependent on the effectiveness of the rear axle brake and the correct brake cables tension.

Replacing the parking brake cable

- ➡ Hitch trailer to tractor. Park trailer and tractor on level surface.
- ➡ Place securing chocks under trailer wheel.
- ➡ Fully unscrew the bolt of the brake crank mechanism (1).
- ➡ Loosen nut of cable clamps (4).
- ➡ Unscrew the securing nuts (5),
- ➡ Dismantle cable end (6),
- ➡ Dismantle handbrake cables (2) and (3).

- ➔ Lubricate parking brake mechanism (1), and the lever bolts and cable guide roller.
- ➔ Fit the new cables and adjust tension.
 - ⇒ Parking brake cables must be fitted carefully.
 - ⇒ Thimbles and three clamps must be fitted at the ends of the cables.
 - ⇒ Clamps must be tightened. The distances between the clamps may not be less than 15 mm.
 - ⇒ Clamp jaws must be placed on the side of the cable under load.
 - ⇒ The first clamp should be placed directly on the thimble.
- ➔ After the first load of cable, re-check the condition of cable end, correct if necessary.

Adjustment of parking brake cable tension

- ➔ Hitch trailer to tractor. Park trailer and tractor on level surface.
- ➔ Place securing chocks under trailer wheel.
- ➔ Fully unscrew the bolt of the brake mechanism (1).
- ➔ Loosen nut of cable clamps (4).
- ➔ Tighten cable and tighten clamps.
 - ⇒ Length of parking brake cable should be so selected that at total release of working and parking brake the cable would be loose and hanging by 1 - 2 cm.



IMPORTANT!

After the first load of cable, re-check the tightening torque of clamps and correct, if necessary.

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

- stretching of cable,
- loosening of parking brake cable clamps
- after adjustment of axle brakes,

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

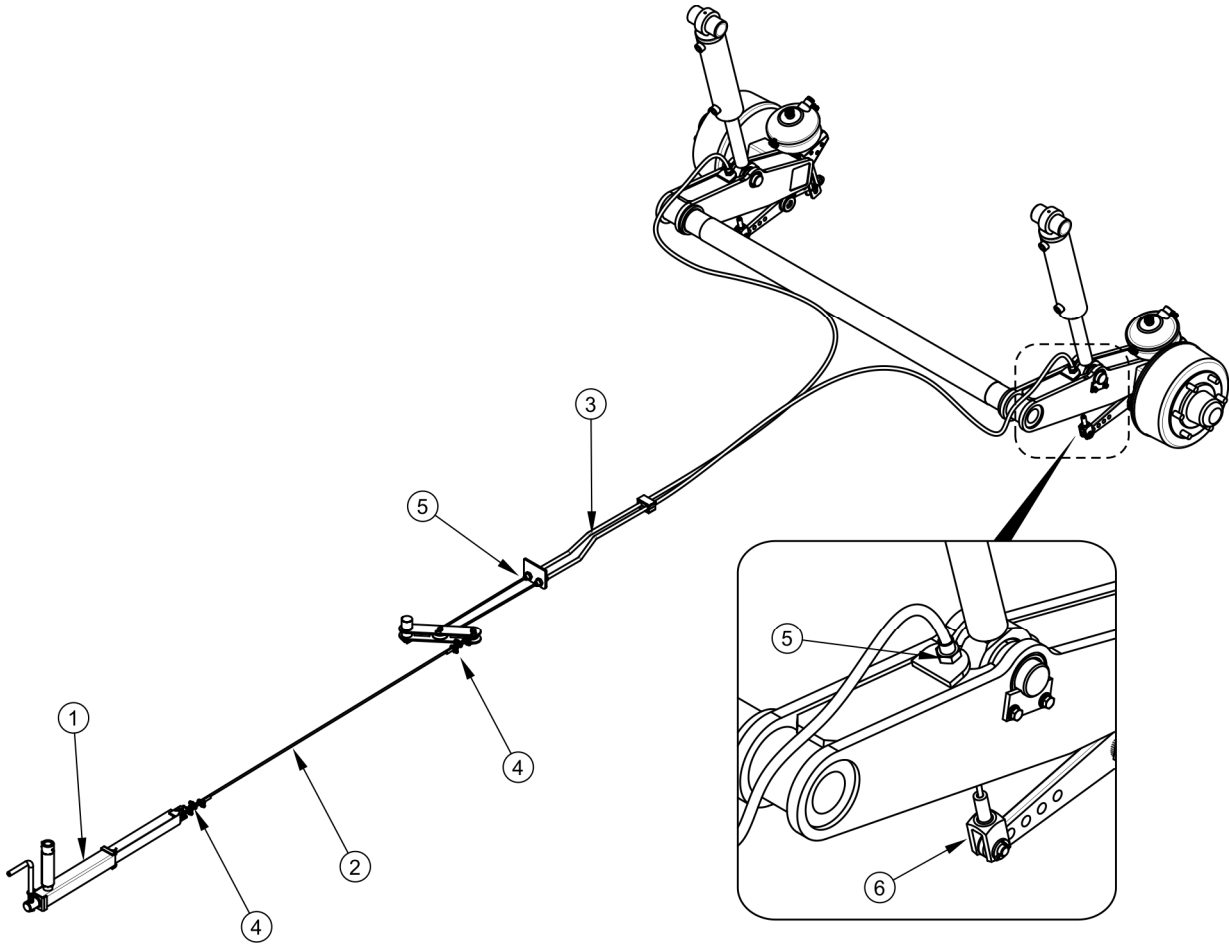


FIGURE 5.5 Adjustment of parking brake cable tension

(1) brake crank mechanism, (2) hand brake cable I, (3) Hand brake cable II, (4) cable clamps
(5) retaining nut, (6) handbrake cable end II

Before commencing adjustment make certain that the main break is correctly regulated and is functioning properly.



Checking and adjustment of parking brake:

- every 12 months,
- if needed.

5.3 PNEUMATIC SYSTEM OPERATION

5.3.1 PRELIMINARY INFORMATION

Work connected with the repair, change or regeneration of system components (brake cylinders, conduits, control valve, braking force regulator etc.) should be entrusted to specialist establishments, having the appropriate technology and qualifications for this type of work.

The duties of the operator connected with the pneumatic system include:

- inspecting and checking air tightness of system.
- cleaning the air filter (filters),
- draining water from air tank,
- cleaning drain valve,
- cleaning and maintaining pneumatic conduit connections,
- replacement of the pneumatic conduit.



DANGER

Do NOT use the trailer when brake system is unreliable.

5.3.2 INSPECTING AND CHECKING AIR TIGHTNESS OF PNEUMATIC SYSTEM.

Checking hydraulic system tightness

- ➔ Hitch trailer to tractor.
- ➔ Immobilise tractor and trailer with parking brake. Place chocks under trailer rear wheel.
- ➔ Start tractor in order to supplement air in trailer brake system tank.
 - ⇒ In single conduit systems air pressure should amount to approx. 5.8 bar.
 - ⇒ In double conduit systems air pressure should amount to approx. 8 bar.

- ➡ Turn off tractor ignition.
- ➡ Check system components by releasing brake pedal in tractor.
 - ⇒ Give particular attention to conduit connections and brake cylinders.
- ➡ Repeat system check with depressed tractor brake pedal.
 - ⇒ The help of a second person is required.

In the event of the appearance of leaks, compressed air will reach places of damage on the exterior, with a characteristic hiss. Lack of system tightness may be exposed by covering checked elements with washing fluid or other foaming preparations, which will not react aggressively with system components. It is recommended to supply preparations commercially available designed to facilitate discovering air leaks. Damaged components should be replaced or repaired. If leaks appear at connections then tighten the connections. If air continues to escape replace connection component or seal.

Check system tightness



- after travelling the first 1 000 km,
- each time after making repairs or changing system components,
- annually.

Visual assessment of system

During tightness inspection attention should additionally be given to technical condition and degree of cleanness of the system components. Contact of pneumatic conduit seals etc. with oil, grease, petrol etc. may cause damage and accelerate the ageing process. Bent conduits, permanently deformed, cut or worn should be replaced.

Visual assessment of system



- Conduct inspection of system at the same time as when checking tightness.



IMPORTANT!

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

5.3.3 CLEANING THE AIR FILTERS



DANGER

Before proceeding to dismantle filter, reduce pressure in supply conduit. While disengaging filter slide gate, hold cover with other hand. Stand away from filter cover vertical direction.

Depending on trailer working conditions, but not less than once in three months, take out and clean air filter inserts, which are located in pneumatic system connection conduits. Inserts are used many times and are not subject to changing unless they are mechanically damaged.

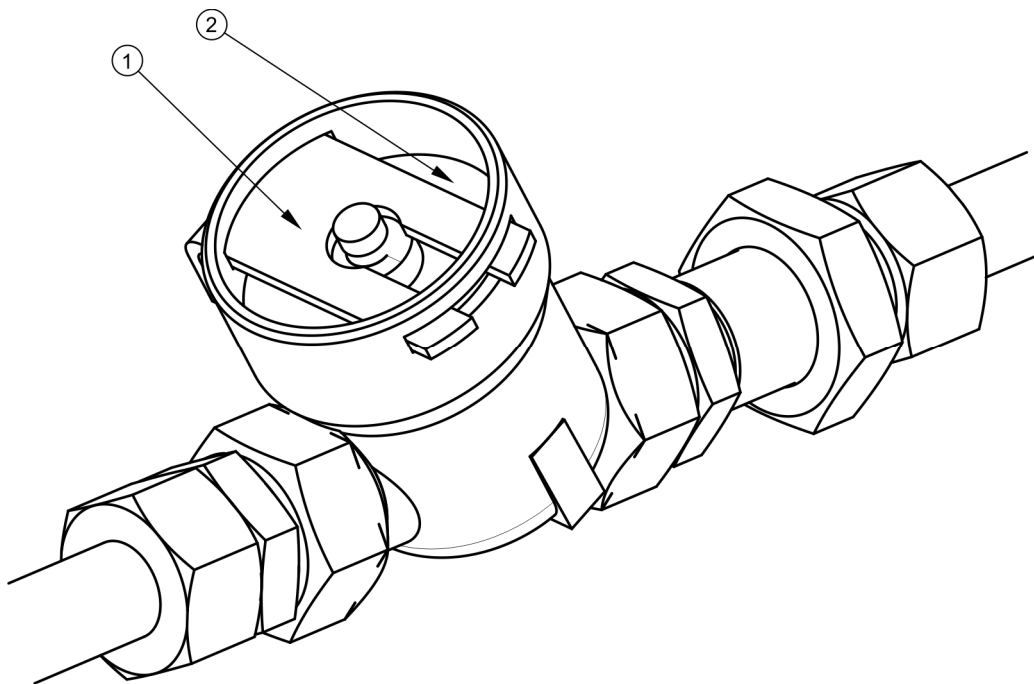


FIGURE 5.6 Air filter

(1) securing slide lock, (2) air filter cover

Required service actions

- ➔ Reduce pressure in supply conduit.
 - ⇒ Reduction of pressuring conduit may be achieved by pressing the head of the pneumatic connection to resistance point.
- ➔ Remove securing slide (1) – figure (5.7).
 - ⇒ Hold the filter cover (2) with the other hand. After removing slide lock, the cover is pushed off by the spring, in the filter housing.

- ➡ The insert and the filter body should be carefully washed out and blown through with compressed air. Assembly should be done in reverse order.

**Cleaning the air filter (filters):**

- every 3 months of use.

5.3.4 DRAINING WATER FROM AIR TANK

Required service actions

- ➡ Open out drain valve (2) placed in lower part of tank (1).
 - ⇒ The compressed air in the tank causes the removal of water to the exterior.
- ➡ After release valve pin should automatically close and stop airflow from tank.
 - ⇒ In the event, that the valve pin resists returning to its setting, then the whole drain valve must be unscrewed and cleaned, or replaced (if it is damaged) - see section 5.3.5.

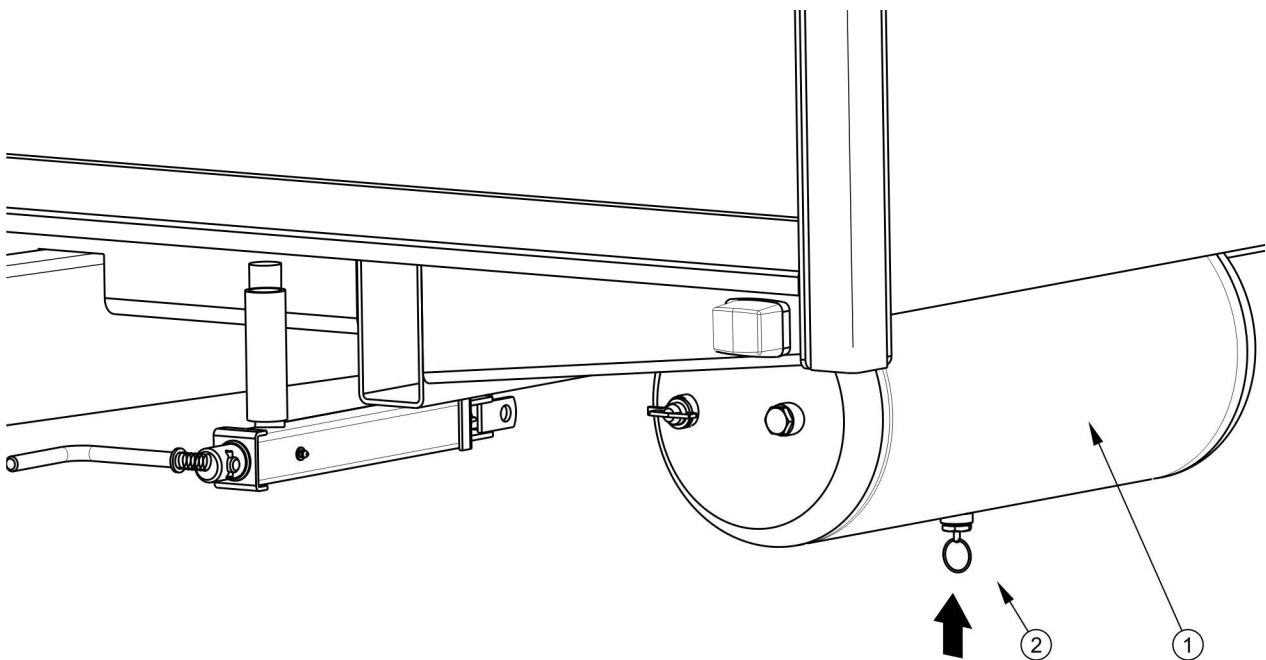


FIGURE 5.7 Air tank

(1) air tank, (2) drain valve



Draining water from air tank:

- every seven days of use.

5.3.5 CLEANING DRAIN VALVE,



DANGER

Before dismantling drain valve release air from tank.

Required service actions

- ➔ Reduce pressure in air tank.
 - ⇒ Reduction of pressure in tank is achieved by tilting the drain valve mandrel.
- ➔ Unscrew valve.
- ➔ Clean valve, purge with compressed air.
- ➔ Change copper seal.
- ➔ Screw in valve, fill air tank, and check tank tightness.



Cleaning valve:

- every 12 months (before winter period).

5.3.6 CLEANING AND MAINTAINING PNEUMATIC CONDUIT CONNECTIONS AND PNEUMATIC SOCKETS,



DANGER

Unreliable and dirty trailer connections may cause unreliability and faulty functioning of braking system.

Damaged connection body or connection socket to second trailer should be replaced. In event of damage to cover or seal, change these elements for new reliable elements. Contact of pneumatic connector seals with oils, grease, petrol etc. may cause damage and accelerate ageing process.

If the trailer is unhitched from the tractor, contact should be protected by cover or placed in its designated socket. Before the winter period it is recommended to preserve the seal with special preparations (e.g. silicon grease for rubber elements).

Each time before connection of the machine inspect technical condition and cleanness of contacts and sockets in tractor. If necessary clean or repair tractor socket.



Inspect trailer connections:

- each time before hitching trailer to tractor.

5.3.7 REPLACEMENT OF THE PNEUMATIC CONDUIT

Pneumatic conduits should be replaced when permanently deformed, cut or frayed.

Required service actions

- ➡ Release all pressure from the system.
 - ⇒ Reduction of pressure is achieved by tilting the drain valve mandrel.
- ➡ Remove the pneumatic conduit by loosening the nut (2).
- ➡ Fit the new conduit.
 - ⇒ The interior of the conduit should be clean.
 - ⇒ The ends of the pneumatic conduit (1) must be cut exactly at right angles.
 - ⇒ Reinforcing sleeve (4) of the conduit must be thoroughly depressed.
 - ⇒ Clamping ring (3) should be fitted according to figure (5.8).
- ➡ Check tightness of connections in accordance with Chapter (5.3.2).

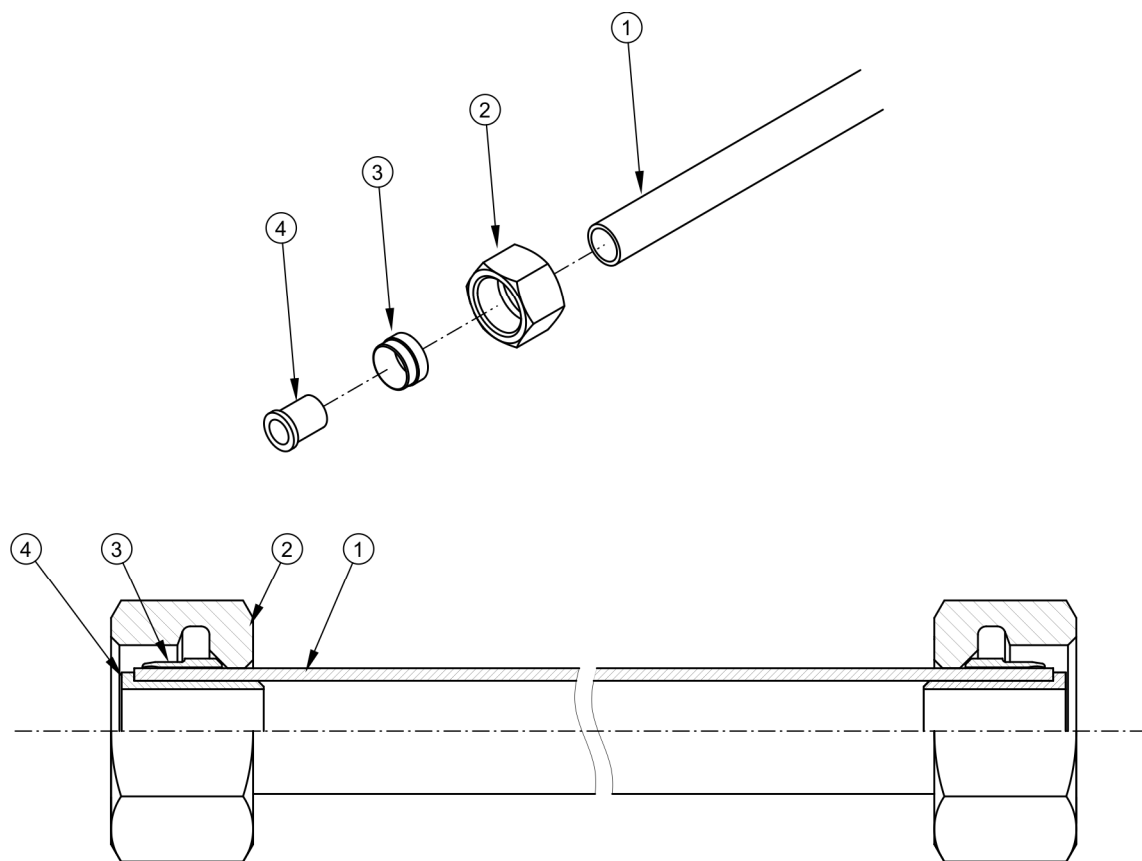


FIGURE 5.8 Installation of the pneumatic conduit

(1) pneumatic conduit, (2) connecting nut (3) clamping ring, (4) reinforcing sleeve

5.4 HYDRAULIC SYSTEM OPERATION

5.4.1 PRELIMINARY INFORMATION

Work connected with the repair, change or regeneration of hydraulic system components (suspension cylinders, valves etc.) should be entrusted to specialist establishments, having the appropriate technology and qualifications for this type of work.



TIP

The hydraulic system of the trailer is filled with L-HL32 Lotos hydraulic oil.

The duties of the operator connected with the hydraulic system include:

- inspecting and checking air tightness of system.

- Checking technical conditions of hydraulic connections.
- replacing a flexible hydraulic conduit.

**DANGER**

Do NOT use the trailer if hydraulic suspension system is unreliable.

Do NOT use the trailer if hydraulic brake system is unreliable.

5.4.2 CHECKING HYDRAULIC SYSTEM TIGHTNESS

Required service actions

- ➔ Hitch trailer to tractor.
- ➔ Connect all hydraulic system conduits according to service instructions.
- ➔ Clean connections and cylinders (suspension cylinders and possibly hydraulic brake cylinders).
- ➔ Perform three cycles of fully lowering and raising the trailer.
- ➔ Press tractor brake pedal several times.
 - ⇒ If trailer is equipped with hydraulic brake system.
- ➔ Check tightness of hydraulic system, inspect cylinders and hydraulic conduits.

In the event of confirmation of oil on hydraulic ram cylinder bodies ascertain origin of leak. Inspect hydraulic seals when ram cylinder is completely extended. Minimum leaks are permissible with symptoms of "sweating", however in the event of noticing leaks in the form of "droplets" stop using the trailer until faults are remedied. If unreliability is evident in brake cylinders do NOT use trailer with damaged system until faults are remedied.

**Checking tightness:**

- After a week of use,
- every 12 months of use.

5.4.3 CHECKING TECHNICAL CONDITION OF HYDRAULIC CONNECTIONS AND SOCKETS.

Hydraulic connections must be technically reliable and kept in a clean condition. Each time before connecting, check if socket in tractor are maintained in good working condition. Tractor and trailer hydraulic systems are sensitive to the presence of permanent contamination, which may cause damage to precision system components (contamination may cause scratching of hydraulic valves, abrasion of piston surfaces etc.)



Inspection of hydraulic connections and sockets:

- each time before hitching trailer to tractor.

5.4.4 CHANGE OF HYDRAULIC CONDUITS

Hydraulic conduits must be changed every 4 years regardless of their technical condition. This should be entrusted to specialised workshops. Do NOT replace hydraulic conduits when the system is under pressure.



Change of hydraulic conduits:

- every 4 years,

5.5 OPERATION OF ELECTRICAL SYSTEM AND WARNING ELEMENTS

5.5.1 PRELIMINARY INFORMATION

Work connected with the repair, change or regeneration of electrical system components should be entrusted to specialist establishments, having the appropriate technology and qualifications for this type of work.

The responsibilities of the user are limited to:

- technical inspection of electrical and reflective light system,
- Changing bulbs

**IMPORTANT!**

Do NOT travel with unreliable lighting system. Damaged lamp lenses, and burned-out bulbs must be replaced immediately before travelling. Lost or damaged reflective lights must be replaced.

Required service actions

- ➔ Hitch trailer to tractor with appropriate connection lead.
 - ⇒ Check if the connection lead is reliable. Check connection sockets in tractor and trailer.
- ➔ Check completeness and technical condition of trailer lights.
- ➔ Check completeness of all reflective lights.
- ➔ Check correct mounting of triangular slow-moving vehicle sign.
- ➔ Before driving on to public road check that the tractor is equipped with warning reflective triangle.
- ➔ Before driving on the public roads, remove the rear lamp guards.

**Checking technical condition of electrical system:**

- each time while connecting trailer.

**TIP**

Before driving away make certain that all lamps and reflective lights are clean.
Before driving on the public roads, remove the rear lamp guards.

5.5.2 CHANGE BULBS

Bulb set is presented in table (5.2). All light lenses are secured by screws and it is not necessary to dismantle whole lamp or trailer subassemblies.

TABLE 5.2 List of bulbs

LAMP	LAMP TYPE	BULB / QUANTITY IN 1 LAMP	NUMBER OF LAMPS
Rear left lamp assembly	WE 549L	R10W / 1 unit P21W / 2 units	1
Rear right lamp assembly	WE 549P	R10W / 1 unit P21W / 2 units	1
Licence plate illumination light	LT-120	C5W / 1 units	2
Front parking light	LO-110PP	C5W / 1 unit	2
Rear left clearance lamp	127 021 000	R5W	1
Rear right clearance lamp	127 021 000	R5W	1
Side clearance lamp	W17d	LED	8

5.6 TRAILER LUBRICATION

Trailer lubrication should be performed with the aid of a manually or foot operated grease gun, filled recommended grease. Before commencing work insofar as is possible remove old grease and other contamination. Remove and wipe off excess oil or grease.

TABLE 5.3 Trailer lubrication schedule

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	LUBRICATION FREQUENCY
1	Drawbar hitching eye	1	permanent	14 days
2	Handbrake bolt	1	permanent	3 – 4 months
3	Parking stand	1	permanent	6 months
4	Wheel bearings	4	permanent	2 years
5	Axle expander shaft sleeves	4	permanent	3 months

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	LUBRICATION FREQUENCY
6	Hydraulic cylinder ram eyes	8	permanent	6 months
7	Rear door hinges	4	permanent	3 – 4 months
8	Rear door locking mechanism	4	permanent	3 – 4 months
9	Side door hinges	2	permanent	3 – 4 months
10	Side door locking mechanism	1	permanent	3 – 4 months

Parts, which should be lubricated with machine oil, should be wiped with dry cleaning cloth and then a small quantity of oil should be applied do surfaces (with oil can or brush). Wipe off excess oil.

Change of grease in hub bearings should be entrusted to specialised service points, equipped with the appropriate tools. According to the recommendations of the axle Manufacturer, dismantle the entire hub, remove the bearing and individual sealing rings. After careful washing and inspection mount lubricated elements. If necessary, bearing and seals should be replaced with new parts. Lubrication of axle bearings shall be performed at least once in 2 years or every 50 000 km. In the event of intensive use, lubrication should be performed more frequently.

Empty grease or oil containers should be disposed of according to the recommendations of the lubricant Manufacturer.

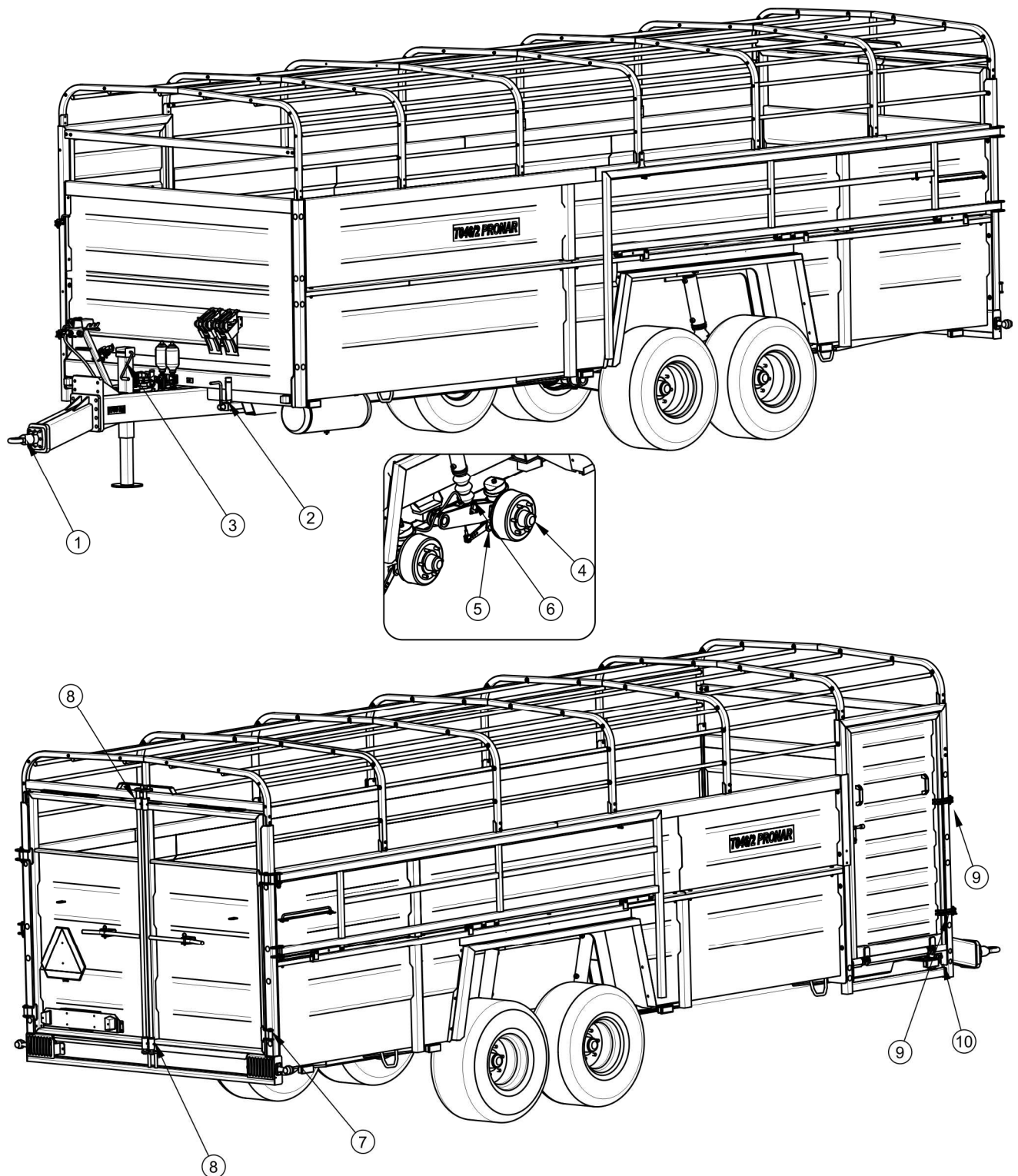


FIGURE 5.9 Lubrication points

5.7 CONSUMABLES

5.7.1 HYDRAULIC OIL

Always adhere to the principle that the oil in the trailer hydraulic system and in the tractor hydraulic system are of the same type. In the event of application of different types of oil make certain that both hydraulic substances may be mixed together. Application of different oil types may cause damage to trailer or tractor. In a new machine, the hydraulic system is filled with L HL32 Lotos hydraulic oil.

In the event of necessity of changing hydraulic oil for another oil, check the recommendations of the oil Manufacturer very carefully. If it is recommended to flush the system with the appropriate preparation, then comply with these recommendations. Attention should be given, so that chemical substances used for this purpose do not damage the materials of the hydraulic system. During normal trailer use change of hydraulic oil is not necessary, but if required, this operation should be entrusted to a specialist service point.

TABLE 5.4 L-HL 32 Lotos hydraulic oil characteristics

ITEM	NAME	UNIT	VALUE
1	ISO 3448VG viscosity classification	-	32
2	Kinematic viscosity at 40°C	mm ² /s	28.8 – 35.2
3	ISO 6743/99 quality classification	-	HL
4	DIN 51502 quality classification	-	HL
5	Flash-point	°C	230

The oil applied because of its composition is not classified as a dangerous substance, however long-term action on the skin or eyes may cause irritation. In the event of contact of oil with skin wash the place of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene). Contaminated clothing should be changed to prevent access of oil to skin. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor. Hydraulic oil in normal conditions is not harmful to the respiratory tract. A hazard only occurs when oil is strongly atomised (oil vapour), or in the case of fire during which toxic compounds may be released. Oil fires should be quenched with the use of carbon dioxide, foam or extinguisher steam. Do not use water to quench oil fires.

5.7.2 LUBRICANTS

For parts under great load it is recommended to apply lithium grease with molybdenum disulphide (MoS_2) or graphite additive. In the case of less loaded sub-assemblies the application of general purpose machine greases is recommended, which contain anticorrosion additive and have significant resistance to being washed away by water. Similar characteristics should typify aerosol preparations (Silicon greases and anticorrosive lubricant substances).

Before starting to use greases acquaint oneself with the content of the information leaflet for the chosen product. Particularly relevant are safety rules and handling procedures for given lubricant product and waste utilisation (used containers, contaminated rags etc). Information leaflet (material safety data sheet) should be kept together with grease.

5.8 CLEANING TRAILER

Trailer should be cleaned depending on requirements and before longer idle periods (e.g. before winter period). Before using pressure washer the user is obliged to acquaint himself with the operating principles and recommendations concerning safe use of this equipment.

Trailer cleaning guidelines

- To clean trailer only use clean running water or water with a cleaning detergent additive with neutral pH.
- Using pressure washer increases washing effectiveness, but particular care must be taken during work. During washing washer nozzle may not be closer than 50 cm from the surface being cleaned.
- Water temperature shall not exceed 55°C.
- Do not direct water stream directly at system and equipment elements of trailer i.e. control valve, braking force regulator, brake cylinders, hydraulic cylinders, pneumatic, electric and hydraulic plugs, lights, electrical connections, information and warning decals, identification plates, conduit connections and trailer lubrication points etc. Great water jet pressure may damage these elements.
- For cleaning and maintenance of plastic coated surfaces it is recommended to use clean water or special preparations designed for this purpose.

- Do not apply organic solvents, preparations of unknown origin or other substances, which may cause damage to lacquered, rubber or plastic surfaces. In the event of doubt it is recommended to make a test on an unseen surface area.
- Surfaces smeared with oil or grease should be cleaned by application of benzene or other degreasing agents and then washed with clean water with added detergent. Comply with recommendations of the Manufacturer.

DANGER

Carefully read the instructions for application of washing detergents and maintenance preparations.

While washing with detergents wear appropriate protective clothing and goggles protecting against splashing.

- Washing detergent should be kept in original containers, optionally in replacement containers, but very clearly marked. Preparations may not be stored in food and drink containers.
- Care for the cleanness of elastic conduits and seals. The plastic from which these elements are made may be susceptible to organic substances and some detergents. As a result of long-term reaction of some substances, the ageing process may be accelerated and risk of damage increased. Rubber elements should be maintained with the aid of special preparations after previous thorough washing.
- After finishing washing wait until trailer is dry and then grease all inspection points according to recommendations. Remove excess oil or grease with a dry cloth.
- Observe environmental protection principles and wash trailer in a place designated for such purpose.
- Washing and drying trailer must take place at temperatures above 0°C.

5.9 STORAGE

- Trailer should be kept in closed or roofed building.
- If the machine will not be used for a long time, it is essential to protect it from adverse weather, especially rust and accelerated tyre deterioration. During this time trailer must be unloaded. Trailer should be very carefully washed and dried.
- Corroded places should be cleaned of rust, degreased and protected using undercoat paint and then painted with surface paint according to colour scheme.
- In the event of prolonged work stoppage, it is essential to lubricate all elements regardless of the period of the last lubrication process.
- Wheel rims and tyres should be carefully washed and dried. During longer storage of unused trailer it is recommended that every 2 to 3 weeks the machine may be moved a bit so that the place of contact of tyres with ground is changed. The tyres will not be deformed and maintain proper geometry. Also tyre pressure should be inspected from time to time, and if necessary pressure should be increased to appropriate value.
- If trailer is equipped with tarpaulin it should be carefully washed and dried. If possible clean tarpaulin should be stored unrolled, otherwise carefully roll it not causing crushing and breaking of material.

5.10 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

Unless other tightening parameters are given, during maintenance repair work apply appropriate torque to tightening nut and bolt connections. Recommended tightening torque of most frequently applied nut and bolt connections are given in table below. Given values apply to non-lubricated steel bolts.



TIP

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

TABLE 5.5 Tightening torque for nut and bolt connections

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

⁽¹⁾ – resistance class according to DIN ISO 898 standard

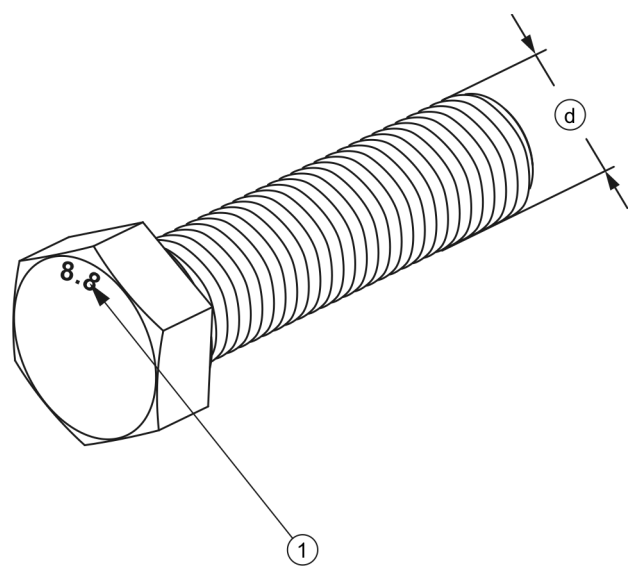


FIGURE 5.10 Bolt with metric thread

(1) resistance class, (d) thread diameter

5.11 ADJUSTMENT OF DRAWBAR POSITION

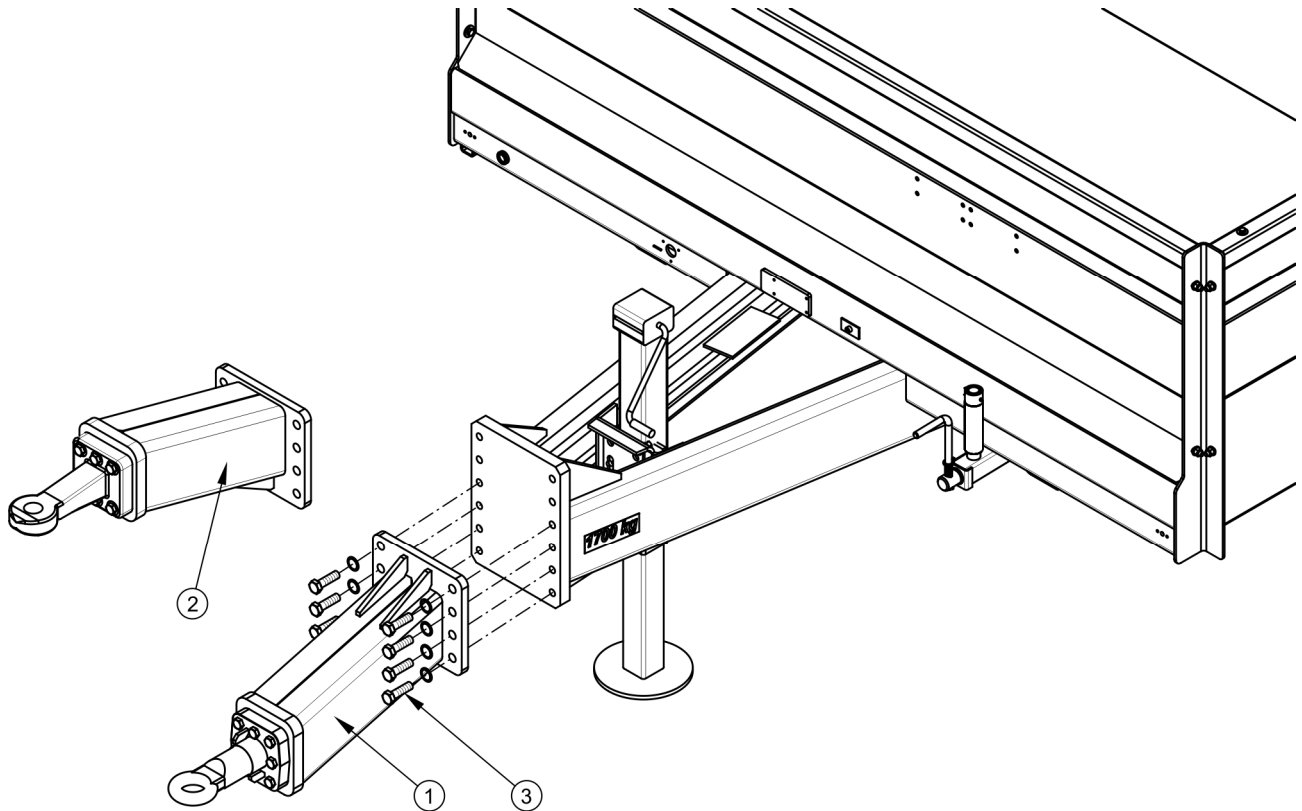


FIGURE 5.11 Adjustment of drawbar position

(1) lower drawbar with rotating drawbar eye, (2) upper drawbar with fixed drawbar eye, (3) bolt

Adjust the position of drawbar to the tractor hitch. For the lower or upper drawbar, you can set three different heights of the drawbar eye.

Changing height of drawbar should be performed by two persons. In order to do this:

- position the trailer on a flat surface, put chocks under the wheels, immobilise the trailer by applying the parking brake,
- using the knob, pull out or retract the support to such a height so that the trailer frame is positioned parallel to the ground,
- Unscrew and remove bolts (3) securing the drawbar to the faceplate,
- adjust the height of drawbar as required,
- insert bolts and tighten the elements using suitable torque.

The mounting height and position of the drawbar should be individually matched to tractor hitch.

DANGER



Changing height of drawbar should be performed by two persons. Take special care when removing the bolts because of the risk of crushing feet.

Trailer drawbar must be secured with 8 screws.

After changing the position of the drawbar check the tightening torques of bolt connections after a day's work.

5.12 TROUBLESHOOTING

TABLE 5.6 **Faults and means of remedying them**

FAULT	CAUSE	REMEDY
Problem with moving off	Brake system pneumatic conduits not connected	Connect brake conduit.
	Damaged pneumatic system connection conduits	Replace
	Leaking connections.	Tighten, replace washers or seal set, replace conduits.
	Parking brake applied	Release parking brake
	Damage control valve or brake force regulator	Check valve, repair or replace.
Noise in axle hubs	Excessive slack in bearings	Check slack and regulate if needed
	Damaged bearing	Change bearing together with sealing ring
	Damaged hub parts	Replace

FAULT	CAUSE	REMEDY
Poor reliability of braking system Excessive heating of axle hubs	Insufficient pressure in system	Check pressure on tractor pressure gauge, wait till compressor fills tank to required pressure. Damaged air compressor in tractor Repair or replace. Damaged brake valve in tractor. Repair or replace. Leaking system conduits or connections. Check system for tightness.
	Incorrect main or parking brake adjustment	Regulate setting of expander arms
	Worn brake linings	Change brake shoes
Unable to lower or raise the trailer	Unconnected hydraulic system conduits	Connect the hydraulic conduits
	Hydraulic valve closed	Set the valve the "open" position
	Insufficient tractor hydraulic pump output, tractor hydraulic pump is damaged.	Check oil level. Check tractor hydraulic pump.
	Air in hydraulic circuit	Repeatedly operate the lever in both directions, until the correct action is achieved.

NOTES

[illegible]



ANNEX A

Tyre dimensions

TRAILER VERSION	AXLE FRONT / REAR
T046/2	14.0 / 65-16 14PR ⁽¹⁾ 400 / 60-15.5 145 A8 ⁽²⁾

⁽¹⁾ - wheel disc 11x16" ET=0

⁽²⁾ - wheel disc 13x15.5 ET = -15