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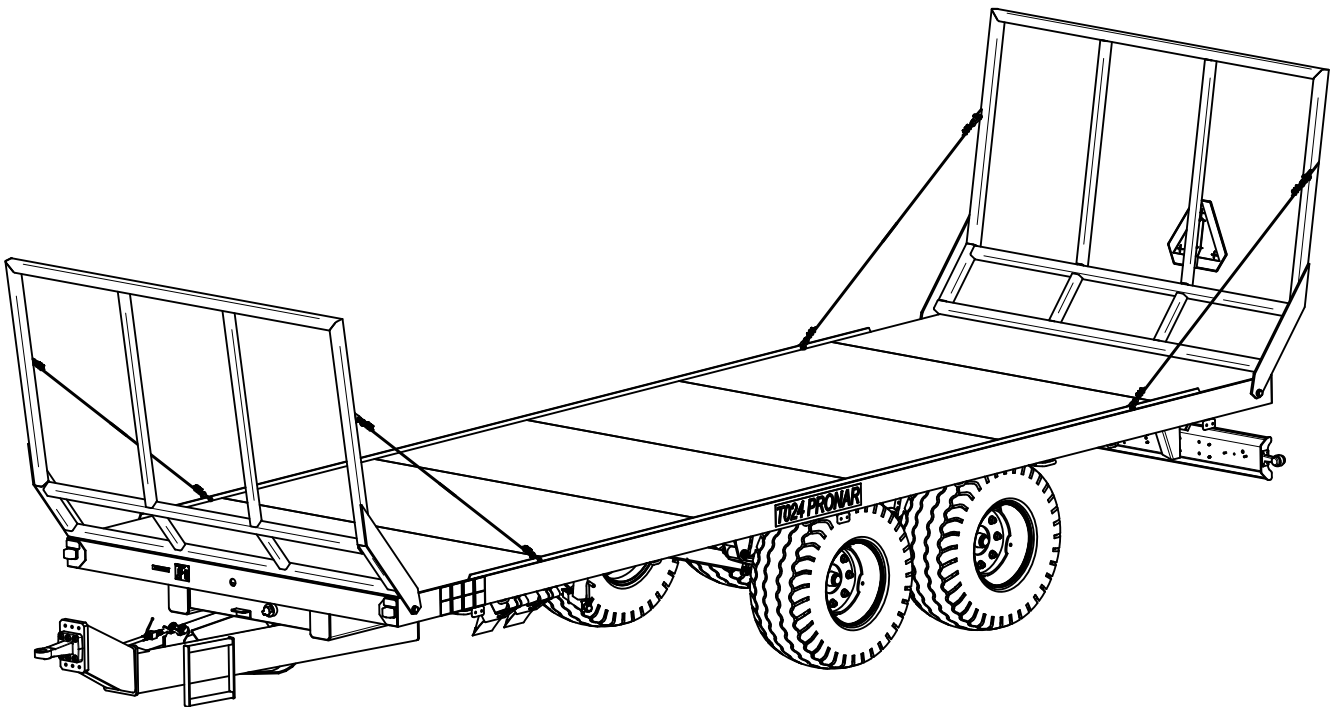
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OPERATOR'S MANUAL

AGRICULTURAL TRAILER

PRONAR T024

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



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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. Please send your comments and proposals on the design and operation of the machine to the Manufacturer. This information enables objective evaluation of the machines produced and provides indications for their further improvement. Information on significant design changes is passed on to users on information inserts attached to this Operator's Manual (annexes).

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.

The manual describes the basic safety rules and operation of agricultural trailer Pronar T024. If the information contained in the Operator's Manual needs clarification then the user should refer for assistance to the sale point where the machine was purchased or to the Manufacturer.

Manufacturer's address:

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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: ⇨

Results of service/adjustment 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:	T024
Model:	-----
Serial number:	
Commercial name:	TRAILER PRONAR T024

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

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

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

Narew, the _____

Place and date

Z-CA DYREKTORA
d/s technicznych
członek zarządu

Roman Omelaniuk

*Full name of the empowered person
position, signature*

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SECTION

1

BASIC INFORMATION

IDENTIFICATION

PROPER USE

EQUIPMENT

WARRANTY TERMS

TRANSPORT

ENVIRONMENTAL HAZARDS

WITHDRAWAL FROM USE

1.1 IDENTIFICATION

1.1.1 TRAILER IDENTIFICATION

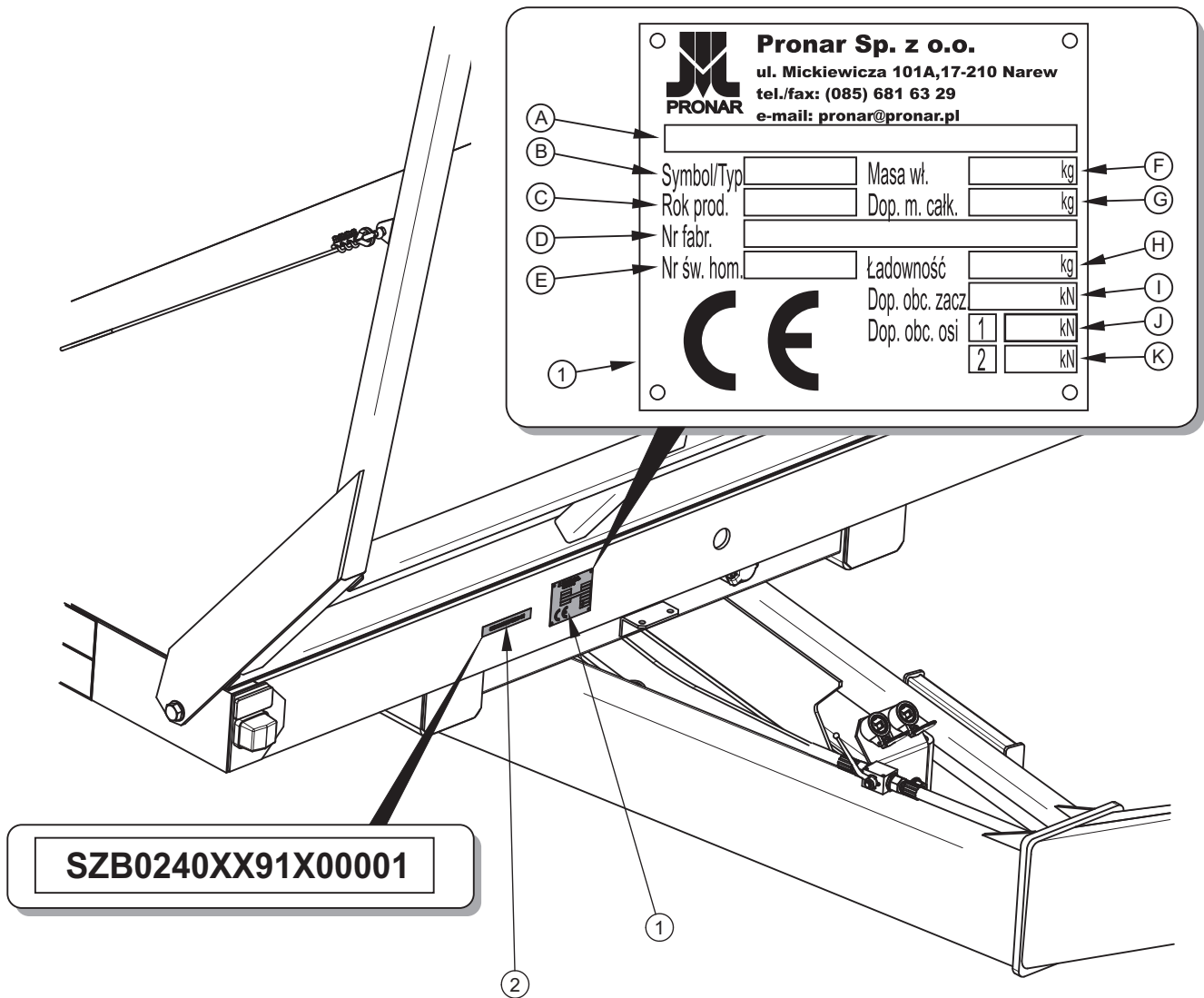


FIGURE 1.1A Location of the data plate and serial number

(1) data plate, (2) serial number

The trailer has a data plate (1) located on the front beam of the frame. The factory number is stamped into the identity plate (1) and into front beam of the platform, on a rectangle area (2) painted gold. When buying the trailer check that the serial numbers on the machine agree with the number written in the *WARRANTY BOOK*, in the sales documents and in the *OPERATOR'S MANUAL*.

TABLE 1.2 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

2.1.1 AXLE IDENTIFICATION

The factory number of the axle and its type are stamped onto the aluminium data plate secured to the axle beam.

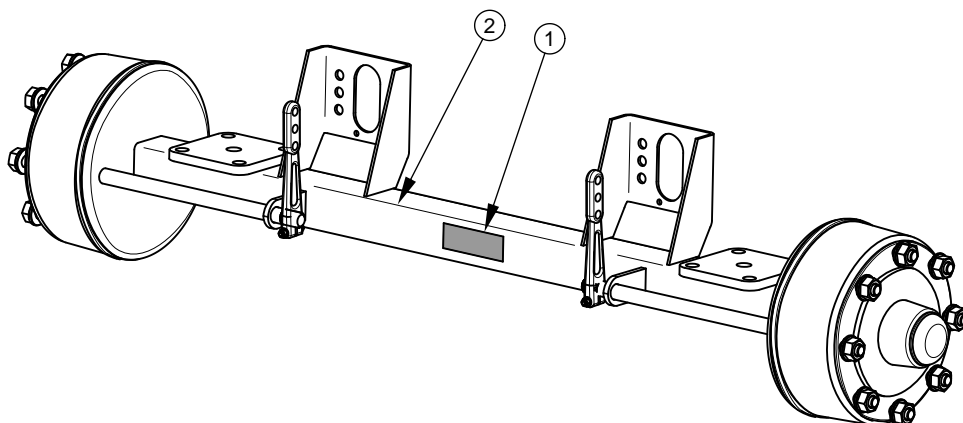


FIGURE 1.2A Location of the axle data plate

(1) data plate, (2) axle



TIP

In the event of ordering a replacement part or in the case of the appearance of problems it is often essential to give the factory numbers of parts or the VIN number of the trailer, therefore it is recommended that these numbers are inscribed in the spaces below.

TRAILER VIN NUMBER

S	Z	B	0	2	4	0	X	X			X				
---	---	---	---	---	---	---	---	---	--	--	---	--	--	--	--

FRONT AXLE FACTORY NUMBER

REAR AXLE FACTORY NUMBER

1.2 PROPER USE

The trailer is designed for transport of harvested crops and agricultural products in the form of pressed bales or blocks, at the farm and on public roads. The machine is also designed for transport of harvested crops and agricultural products transported on pallets. During the use of the machine comply with all road traffic regulations and transport regulations in force in the given country, and any breach of these regulations is regarded by the Manufacturer as use contrary to its intended purpose.

TABLE 1.1 Recommended types of pallets

PALLET NAME AND SITE	LENGTH [mm]	WIDTH [mm]	HEIGHT [mm]
EUR – standard	1 200	800	144
EUR – 1/2	800	600	144
EUR – extended	1 200	1 200	144
ISO	1 200	1 000	144

Using it as intended involves all actions connected with the safe and proper operation and maintenance of the machine. In connection with this the user is obliged to:

- carefully read the *OPERATOR'S MANUAL* of the trailer and the *WARRANTY BOOK* of the machine and conform with the recommendations contained in these documents,
- acquaint himself with the construction of the trailer and the principles of safe and proper usage of the machine,
- carry out periodical service inspections according to the schedule,
- comply with general safety regulations while working,
- comply with the road traffic regulations and transport regulations in force in a given country, in which the trailer is used,
- prevent accidents,
- carefully read the Operator's Manual and comply with its recommendations,

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 and animals,
- for transporting any materials other than those stipulated in the manual.

Axle system (axles, leaf springs, wheels and tyres), meet the requirements for agricultural machines. The fulfilment of these requirements is secured by proper operation and the adherence to the principles included in this *OPERATOR'S MANUAL*.

TABLE 1.2 Agricultural tractor's requirements

CONTENTS	UNIT	REQUIREMENTS
Brake system		
Pneumatic system 1 - conduit	-	socket compliant with PN-ISO 1728:2007
Pneumatic system 2 - conduit	-	sockets compliant with PN-ISO 1728:2007
Nominal pressure of the system 1 p.	kPa	600
Nominal pressure of the system 2 p.	kPa	800
Hydraulic system		
Hydraulic oil	-	HL 32
Pressure rating of the system	MPa	18
Hydraulic oil demand	l	6
Electrical system		
Electrical system voltage	V	12
Attachment socket	-	7 polar compliant with ISO 1724
Tractor hitch		
Minimum vertical load capacity of hitch	kg	2 000
Other requirements		
Minimum power demand	kW	45.9

The trailer may only be used by persons, who:

- are familiar with the contents of this publication and with the contents of *THE WARRANTY BOOK*,
- are familiar with the contents of the agricultural tractor Operator's Manual,
- have the required authorisation to drive and are familiar with the road traffic regulations and transport regulations.

1.3 EQUIPMENT

TABLE 1.3 Trailer optional equipment

OPTIONAL EQUIPMENT	STANDARD	OPTION
<i>OPERATOR'S MANUAL</i>	✓	
<i>WARRANTY BOOK</i>	✓	
Connection lead for the electrical system	✓	
Wheel chocks	✓	
Slow-moving vehicle warning sign		✓
Warning reflective triangle		✓
drawbar eye Ø40 mm (in version with upper drawbar)	✓	
Swivel drawbar eye Ø50 mm (in version with lower drawbar)	✓	

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,
- 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,
- arbitrary and wilful adjustments to the trailer's structure,

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 (towed).

When loading and unloading the trailer, comply with the general principles of workplace health and safety for reloading work. Persons operating reloading equipment must have the qualifications required to operate these machines.

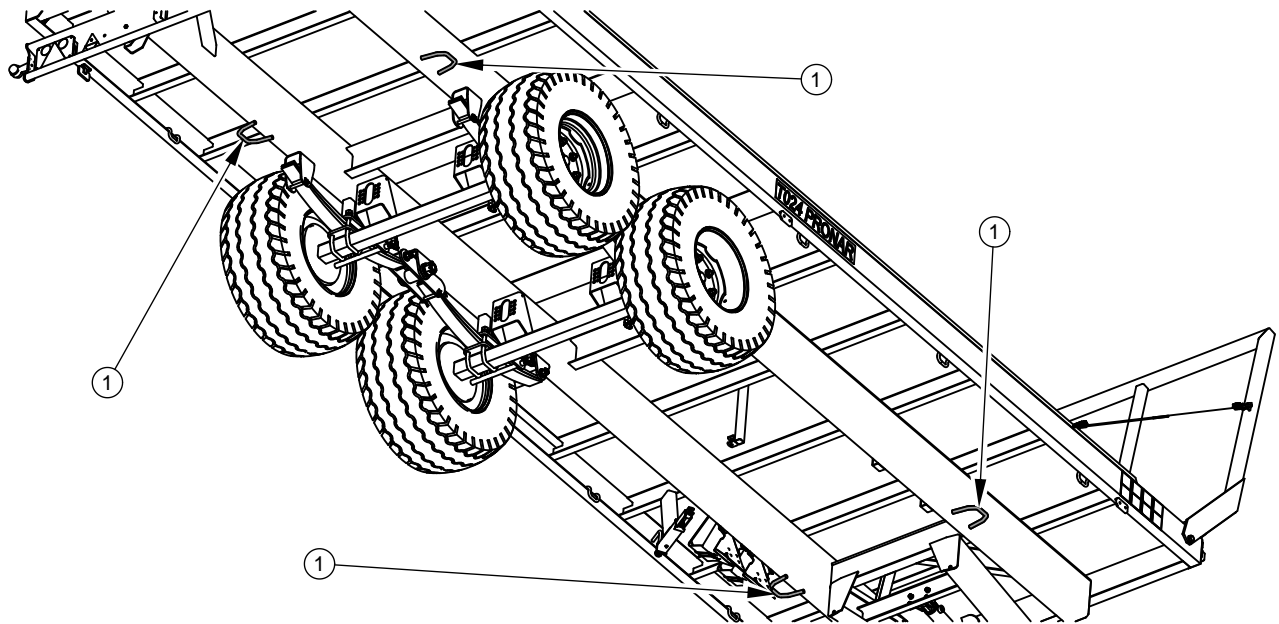


FIGURE 1.3A Positioning of transport lugs

(1) *transport lug*

IMPORTANT!



When transporting independently, the user must carefully read this operator's manual and observe its recommendations. When being transported on a motor vehicle the trailer must be mounted on the vehicle's platform in accordance with the transport safety requirements. The driver of the vehicle should take particular care while driving. This is due to the vehicle's centre of gravity shifting upwards when loaded with the machine.

The trailer should be attached firmly to the platform of the vehicle using straps or chains fitted with a tightening mechanism. The fastening equipment used must have a valid safety certificate. Chocks or other objects without sharp edges should be placed under the wheels of the trailer to prevent it from rolling. The chocks must be fixed to the platform of the vehicle. During reloading work, particular care should be taken not to damage parts of the trailer's fittings or the lacquer coating. Belts and/or chains should be attached to transport hitches (1) (location of the hitches on the left side of the trailer is shown on figure (1.3A)), or to other

permanent elements of the trailer (longitudinal members, crossbars etc.). Particular care should be taken not to damage the machine. Belts and/or chains should be attached securely to guarantee safe transport. Transport hitches are welded to the lower part of the longitudinal members of the frame.

1.6 ENVIRONMENTAL HAZARDS

A hydraulic oil leak constitutes a direct threat to the natural environment owing to its limited biodegradability. 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, and then passed on to the appropriate oil waste recycling centre. The container should be kept away from heat sources, flammable materials and food.

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

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.

When spare parts are changed, worn out or damaged parts 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

BASIC PRINCIPLES OF SAFE OPERATION
REPAIR AND MAINTENANCE
COUPLING AND UNCOUPLING THE TRAILER
DANGERS DURING TRANS-SHIPMENT WORK
PNEUMATIC SYSTEM AND HYDRAULIC SYSTEM
SAFETY WHEN WORKING WITH TYRES
DRIVING ON PUBLIC ROADS
DESCRIPTION OF MINIMAL RISK
INFORMATION AND WARNING DECALS

2.1 BASIC PRINCIPLES OF SAFE OPERATION

- Before using the trailer, the user must carefully read this operator's manual. When operating the machine, the operator must comply with the recommendations. The trailer may only be used and operated by persons qualified to drive agricultural tractors and trained in the use of the machine.
- 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.
- Careless and improper use and operation of the trailer, and non-compliance with the recommendations given in this operator's manual is dangerous to your health.
- Be aware of the existence of a minimal risk, and for this reason the fundamental basis for using this machine should be the application of safety rules and sensible behaviour.
- 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 trailer must not be used for purposes other than those for which it is intended. Anyone who uses the machine other than the way intended takes full responsibility for himself for any consequences of this use. Use of the trailer for purposes other than those for which it is intended by the Manufacturer may invalidate the guarantee.
- Before using the trailer always check its technical condition, especially in terms of safety. In particular, check the hitch system, the axle system, indicator lights, safety guards and the connection elements of the brake system.
- The trailer may only be used when all the safety guards and other protective elements are technically sound and correctly positioned. In the event of loss or destruction of the safety guards, they must be replaced with new ones.

2.2 REPAIR AND MAINTENANCE

- Any modification to the bale trailer frees PRONAR Narew from any responsibility for damage or detriment to health, which may arise as a result.
- The trailer can only be stood on when it is absolutely motionless and the tractor engine is switched off. Tractor and trailer should be immobilized with the parking brake and chocks should be placed under the trailer wheels. The trailer should be climbed on using safe and resistant platforms or ladders of proper height.
- It is recommended that necessary repairs to trailer should be undertaken by specialised workshops. During the warranty period, any repairs may only be carried out by a Warranty Service authorised by the Manufacturer.
- In the event of any fault or damage whatsoever, do not use the trailer until the fault has been fixed. The machine must not be used when not in working order.
- Repair, maintenance and cleaning work should be carried out with the tractor's engine switched off and the ignition key removed. Trailer and tractor must be immobilised with parking brake. Additionally, chocks should be placed under the wheels of the trailer to prevent it from rolling.
- Regularly check the condition of nut and bolt connections, in particular connections of drawbar eye with drawbar and wheel nuts.
- 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 and fusible elements (parts of the hydraulic, pneumatic and electric systems, plastic and rubber parts). If there is a risk that they will catch fire or be damaged, they should be removed before commencing welding work.
- 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.

- Before welding or electrical work, the trailer should be disconnected from the power supply.
- 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.
- 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.
- Use appropriate tools, close-fitting protective clothing and gloves when operating, maintaining or cleaning the machine.

2.3 COUPLING AND UNCOUPLING THE TRAILER

- The trailer unhitched from tractor must be immobilised with parking brake and using chocks placed under the wheels.
- The trailer and tractor must not be attached if the hydraulic oil in the two machines is of different types.
- Exercise caution when connecting and disconnecting trailer from the tractor.
- When hitching, there must be nobody between the trailer and the tractor.
- While connecting the trailer to the tractor, use the appropriate tractor hitch. Check safety clips. The tractor hitch must meet the requirements concerning load capacity.
- Be especially careful when hitching the machine to tractor. Ensure appropriate visibility and check that persons assisting in hitching the trailer are at a safe distance from danger zone.
- Machines must not be coupled if the tractor or trailer does not meet the manufacturer's requirements associated with linking the trailer and tractor (lack

of proper hydraulic, pneumatic and electrical connections, incorrect tractor hitch etc.).

- Trailer may be hitched directly to an agricultural tractor or a trailer. The length of the trailer-tractor unit is defined by the traffic code regulations and must not be exceeded.
- A single axle trailer or a trailer with tandem suspension must not be hitched to the trailer. The length of the trailer-tractor unit is defined by the traffic code regulations and must not be exceeded.
- After coupling, the parking stand must be set in the transport position, and the control valve must be set in CLOSED position.

2.4 DANGERS DURING TRANS-SHIPMENT WORK

- People or animals must not be carried.
- Do NOT exceed the trailer's maximum carrying capacity. Exceeding the carrying capacity may lead to damage to the machine, loss of stability while driving, scattering of the load and danger while working or driving. The trailer brake system is adjusted to the gross weight of the machine, exceeding the weight limit causes drastic reduction of basic braking effectiveness.
- Load on the trailer must be uniformly distributed. Incorrect load distribution and overloading the machine may cause the trailer to tip over or cause damage to its components.
- Keep a safe distance during loading and unloading. Do not allow anyone to approach the place where works are carried out.
- Load should be protected against moving by means of belts, chains and tapes or other securing measures. The securing measures must be fitted with a tightening mechanism and have proper safety certificates.
- Ensure that nobody is near the falling load danger zone.
- Proper transloading equipment suitable for a type and weight of the load transported should be used for loading (unloading) operations.

- The arrangement of the load may not cause an overload on the axle or hitch system of the trailer or tractor.

2.5 PNEUMATIC SYSTEM AND HYDRAULIC SYSTEM

- When operating, the air tank and hydraulic brake system are under high pressure.
- Check the condition of machine hydraulic system frequently. Oil leaks in the system are not allowed.
- Regularly check the technical condition of the connections and the pneumatic and hydraulic conduits.
- When connecting the hydraulic conduits to the tractor, make sure that the tractor hydraulic system and trailer are not under pressure.
- Before beginning repair or maintenance works on pneumatic or hydraulic systems reduce air or oil pressure.
- 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.
- Use the hydraulic oil recommended by the Manufacturer. Never mix two types of oil.
- After changing the hydraulic oil, the used oil should be properly disposed of. Oil unsuitable for further use should be stored in clearly marked containers away from heat sources and food.
- Do not make independent repairs of control valve, brake cylinders and braking force regulator. In the event of damage to these elements, repair should be entrusted to authorised service point or replace elements with new parts.

2.6 SAFETY RULES WHEN WORKING WITH 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.

- Each time a wheel is replaced,
- check tyre pressure regularly.

2.7 DRIVING ON PUBLIC ROADS

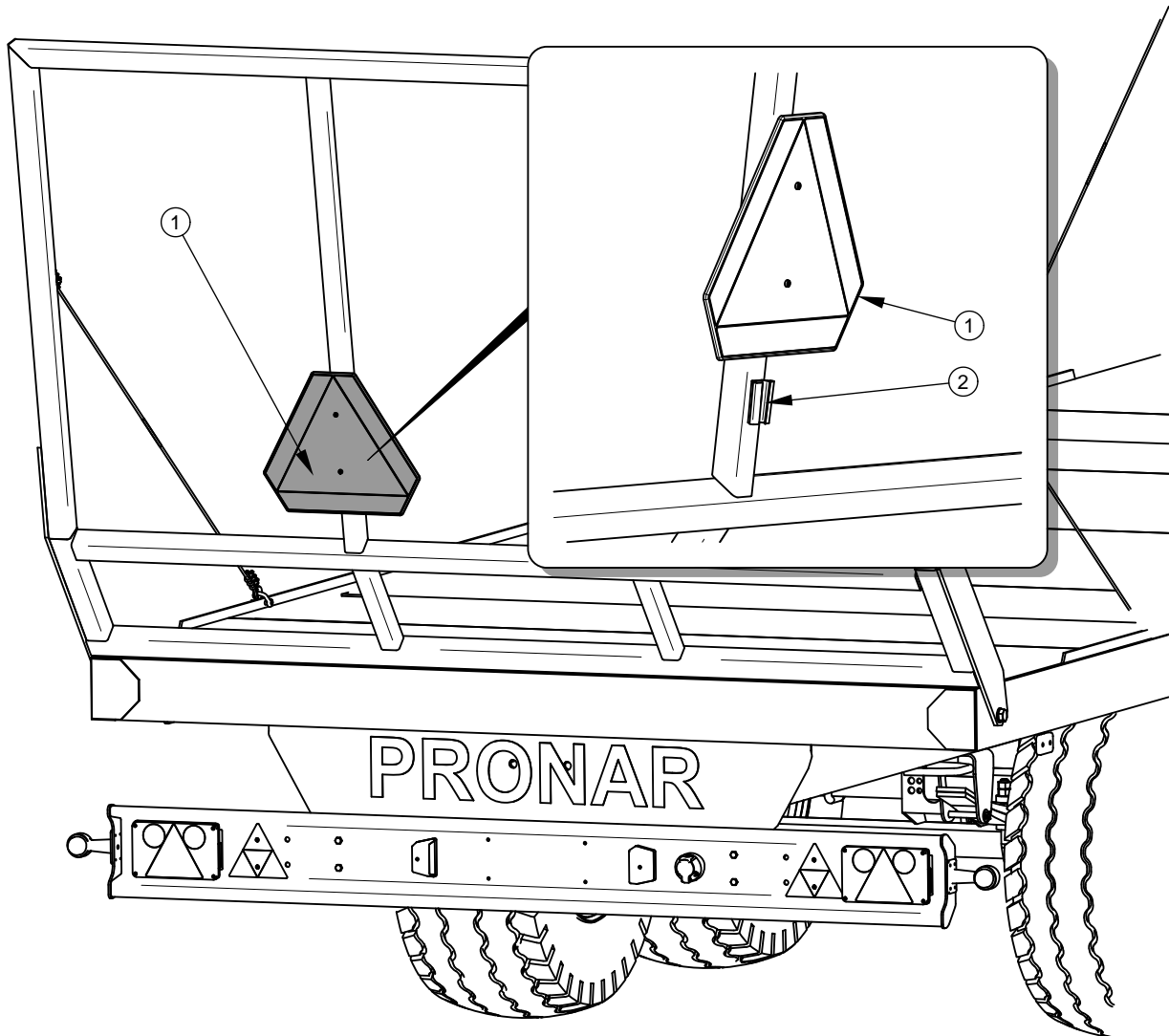


FIGURE 2.1A Positioning the warning sign

(1) *slow-moving vehicle warning sign* , (2) *bracket*

- Before moving off, set the brake force regulator to a suitable working position - depending on trailer load. Drain air tank at least once a week.
- While driving on public roads the trailer shall be marked with a warning triangle distinguishing slow-moving vehicles. The warning triangle should be attached to the rear ladder.

- Comply with the road traffic regulations.
- Exceeding the maximum load capacity of the trailer may damage it, and also threaten the safety of traffic.
- Do not exceed the maximum speed limit. Adjust your speed to the road conditions.
- The trailer must NOT be left unsecured. Securing the trailer involves engaging the parking brake and placing chocks under trailer wheels.
- While driving on public roads the trailer must be fitted with a certified or authorised reflective warning triangle.
- Adjust travel speed to the prevailing road conditions, trailer loading and road traffic regulations limits.

2.8 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 the trailer by unauthorised persons,
- being on the machine during loading and driving,
- careless cleaning, maintenance and technical checks of the trailer.

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

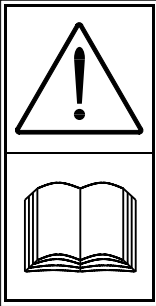
- prudent and unhurried operation of the machine,

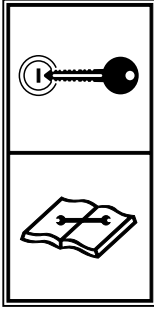

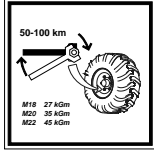

- sensible application of the remarks and recommendations contained in the Operator's Manual,
- maintaining safe distance from forbidden or dangerous places,
- a ban on being on the machine when it is operating,
- carrying out repair and maintenance work by persons trained to do so,
- using close fitting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

2.9 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 (2.2A). 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	SYMBOL	MEANING OF SYMBOL
1		<p>Before starting work, carefully read the Operator's Manual.</p>

ITEM	SYMBOL	MEANING OF SYMBOL
2		<p>Switch off engine and remove key from ignition prior to servicing or repairs,</p>
3		<p>Keep a safe distance. Danger of crushing by the drawbar and protective ladders.</p>
4		<p>Check the condition of the screw and nut connections of the wheel axles regularly</p>
5		<p>Grease according to the recommendations in the Operator's Manual</p>
6	<div style="border: 1px solid black; padding: 5px; display: inline-block;">425 kPa</div>	<p>Air pressure in the tyres*</p>
7	<div style="border: 1px solid black; padding: 5px; display: inline-block;">T024 PRONAR</div>	<p>Type of trailer</p>

* - air pressure in tyres depends on tyres used

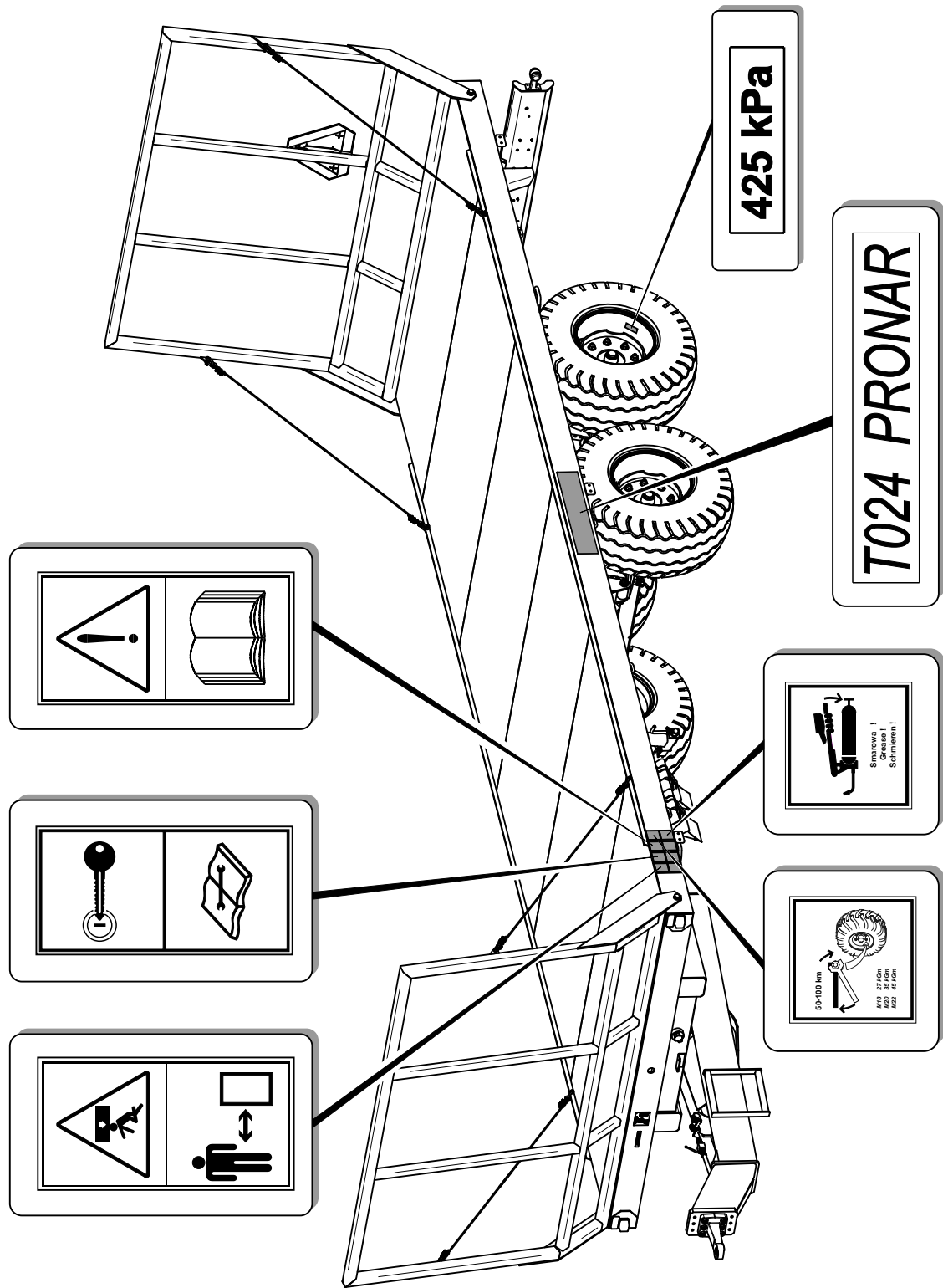


FIGURE 2.2A Locations of information and warning decals.

SECTION

3

SAFETY ADVICE

TECHNICAL SPECIFICATION

TRAILER CONSTRUCTION

MAIN BRAKE

PARKING BRAKE

ELECTRICAL SYSTEM, REFLECTIVE LIGHTS

SUPPORT HYDRAULIC SYSTEM

3.1 TECHNICAL SPECIFICATION

TABLE 3.1 Technical specification of standard fittings

CONTENTS	UNIT	T024
Dimensions		
Length	mm	9 290
Width	mm	2 500
Height	mm	2 800
Load box dimensions		
Length	mm	7 170
Width	mm	2 450
Technical specification		
Maximum design carrying capacity	kg	8 900
Maximum gross weight	kg	12 000
Tare weight	kg	3 100
Lift of load surface	mm	1 120
Tyres		
Tyre dimensions	-	15.0/70-18 TL 16PR
Wheel rim size	-	13.00 x 18"
Air pressure in the tyres	kPa	425*
Other information		
Electrical system voltage	V	12
Axle track	mm	1 700
Maximum design speed	km/h	40
Minimum power demand	hp / kW	62.5 / 45.9
Noise emission level	dB	<70
Drawbars		
Drawbar (eye diameter)	mm	Ø50
Fixed drawbar (eye diameter)	mm	Ø40
Height of rotating drawbar eye	mm / mm / mm	400 / 455 / 510
Height of fixed drawbar eye	mm / mm / mm	840 / 895 / 950

* - depending on the tyres used

3.2 TRAILER DESIGN

Trailer design is shown on figure (3.1A). Frame (1) of the load box is a structure welded from steel sections. The main support elements are longitudinal members connected with crossbars. Load platform is limited by means of ladders (2) and (3). The ladders are protected against excessive deflection with steel cables (5). The bolt mechanism of the parking brake is welded underneath, on the left side of the frame.

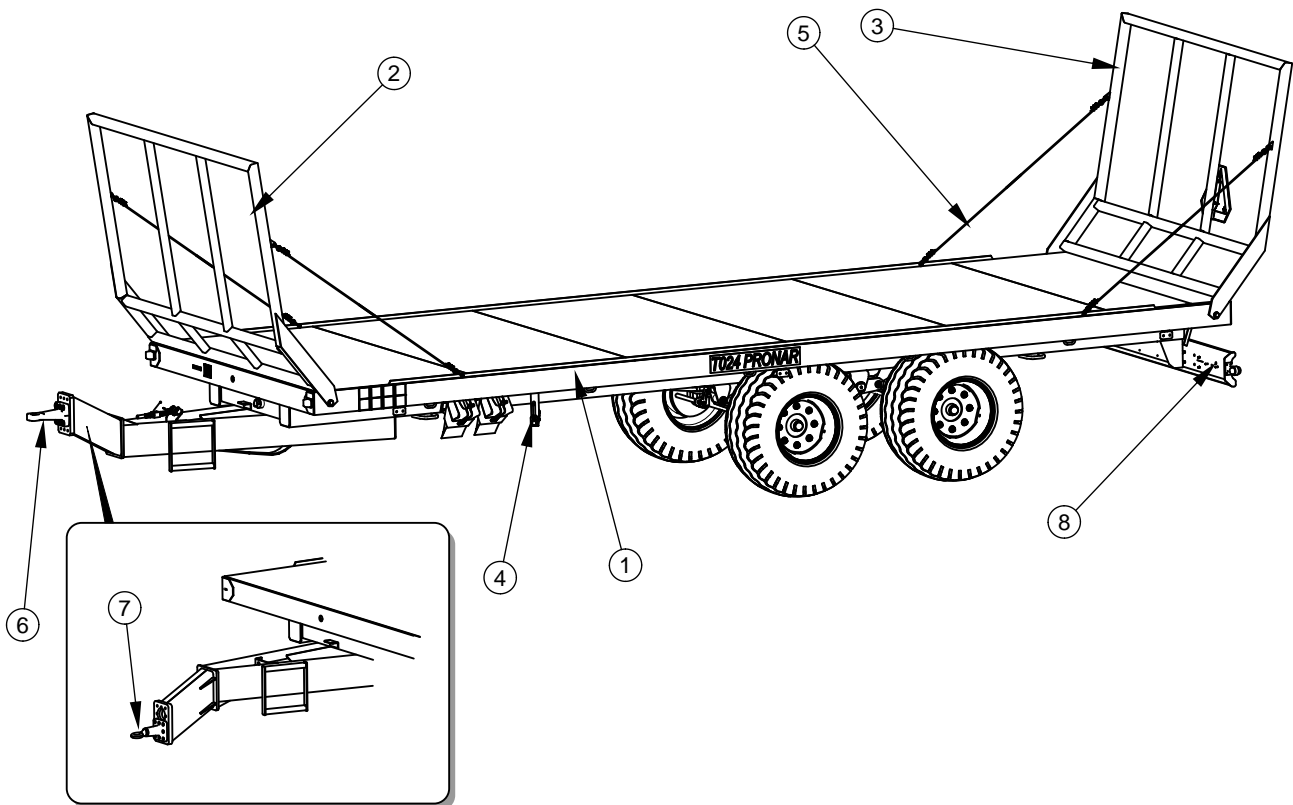


FIGURE 3.1A Trailer construction

(1) frame – load platform, (2) front ladder, (3) rear ladder, (4) parking brake mechanism, (5) clamping cable, (6) fixed drawbar eye $\varnothing 40$ mm, (7) rotating drawbar eye $\varnothing 50$ mm,

Depending on the trailer version, the frame may be equipped with a lower or upper drawbar. In the first case, the hitching device is fixed drawbar (6) with eye of $\varnothing 40$ mm. For the frame with lower drawbar, rotating drawbar (7) with $\varnothing 50$ mm eye is used. Height of drawbar eyes with regard to the head plate of the drawbar can be adjusted.

In the rear part of the frame there is lights support beam (8).

The trailer suspension is the tandem type system – figure (3.2A). Front axle (1) and rear axle (2) are made from rectangular rod terminated with pins, on which on cone bearings are mounted wheel hubs. The wheels are single, equipped with brake shoes activated through mechanical expander cams. Axles are mounted to leaf spring absorbers (4) with U bolts (5).

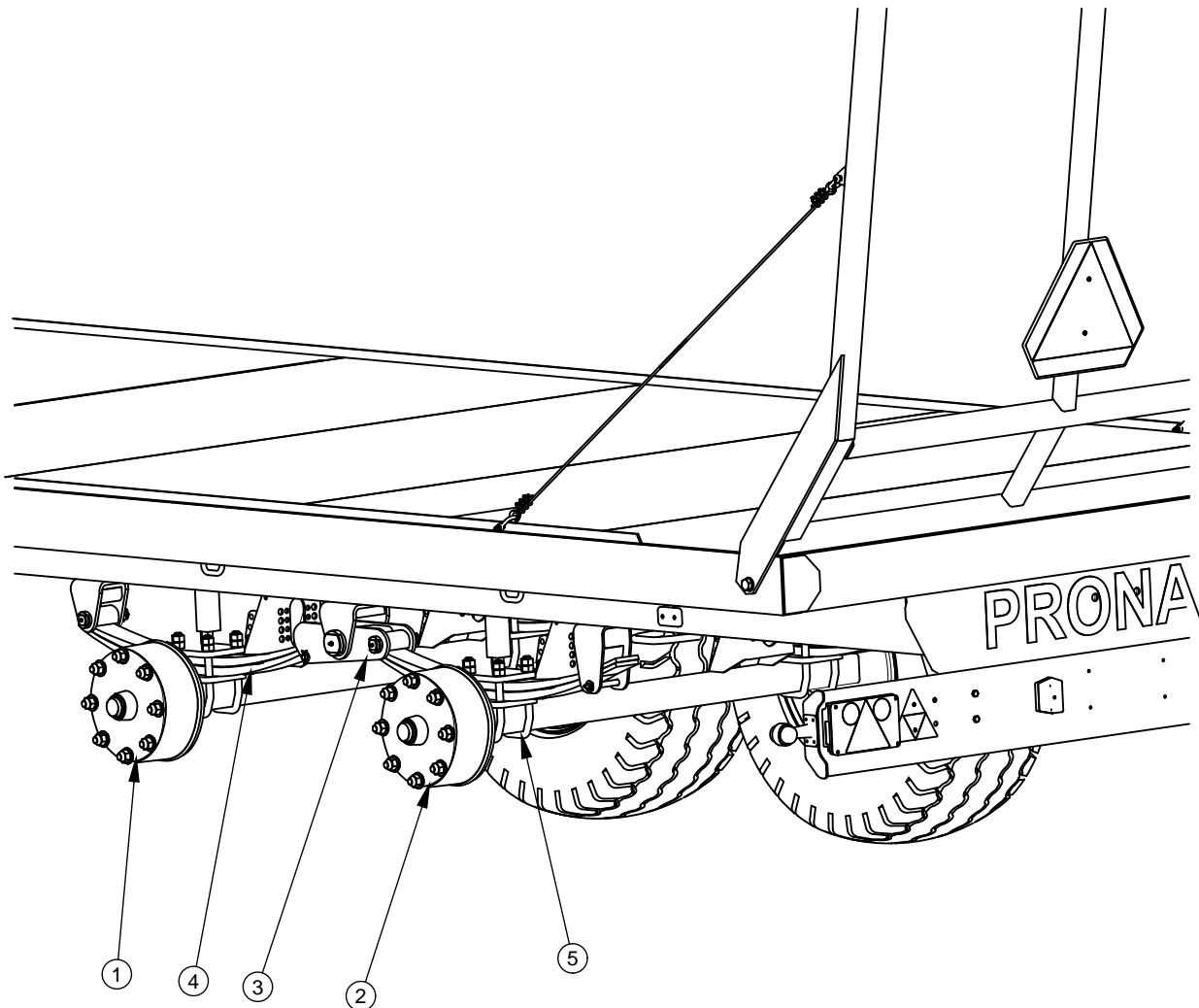


FIGURE 3.2A The trailer suspension

(1) front axle, (2) rear axle, (3) rocker arm, (4) taper leaf spring, (5) U bolt

3.3 MAIN BRAKE

Depending on the version, the trailer is equipped with one of the three types of working brake system:

- single conduit pneumatic system with three position regulator, figure (3.3A),

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

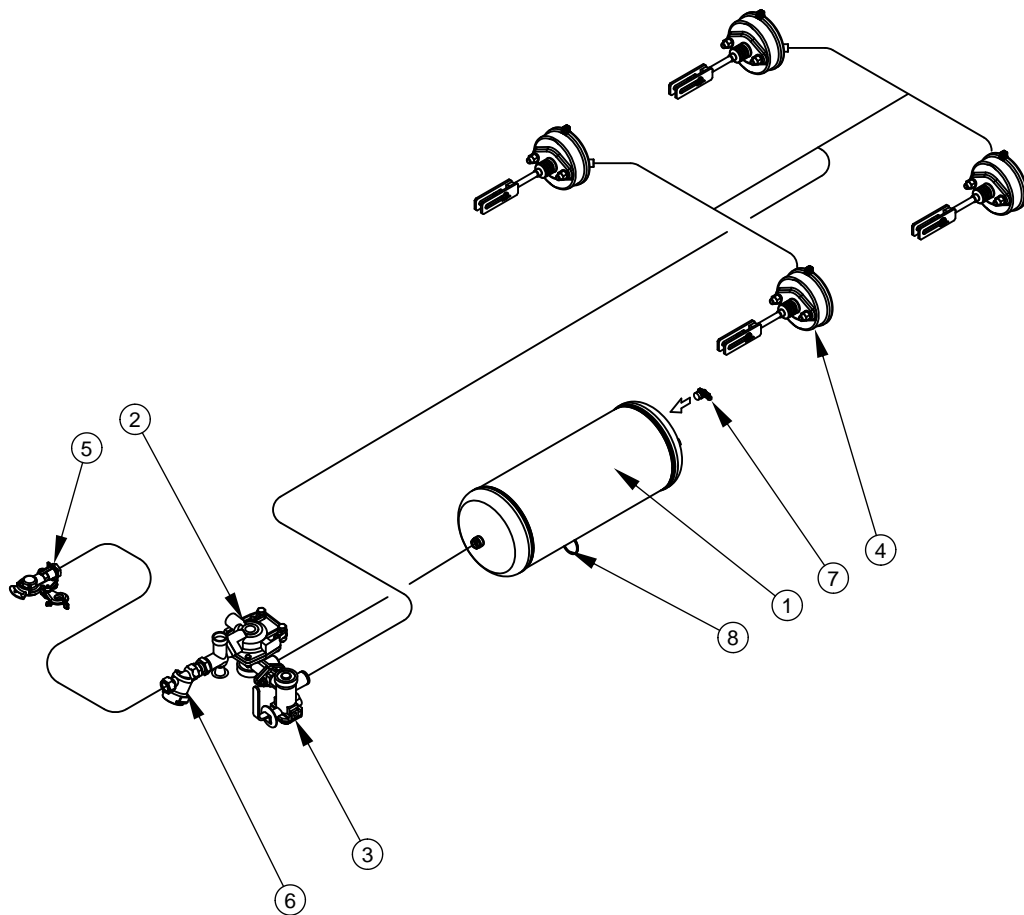


FIGURE 3.3A Single conduit pneumatic system

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

Working brake is activated from the tractor driver's seat by pressing on the brake pedal in the tractor. The control valve activates the trailer brakes when the brake pedal is pressed in the tractor. Furthermore, in case of an inadvertent disconnection of the connection conduit in the pneumatic systems, between the trailer and the tractor, the control valve will automatically activate the 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.

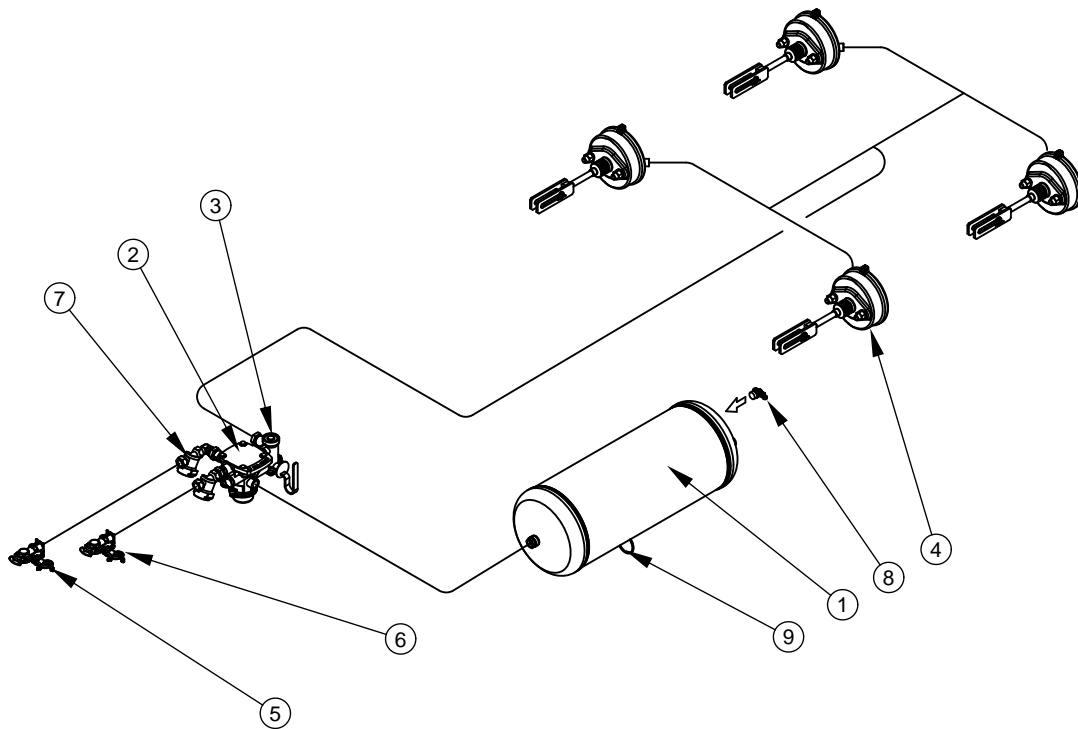


FIGURE 3.4A Double conduit pneumatic system

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

Three-step brake force regulator (figure (3.6a) in pneumatic system adjusts braking force depending on the regulator setting. Switching to a suitable working mode is done manually by trailer operator using the regulator lever prior to moving off. The regulator has 3 working positions: "no load", "half load", "full load".

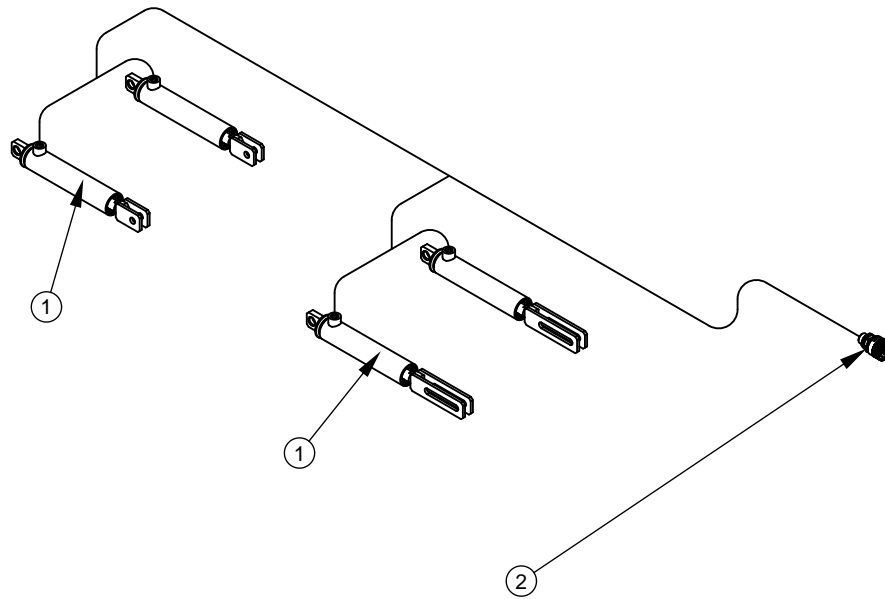


FIGURE 3.5A Hydraulic brake system

(1) hydraulic brake cylinder, (2) supply conduit connector

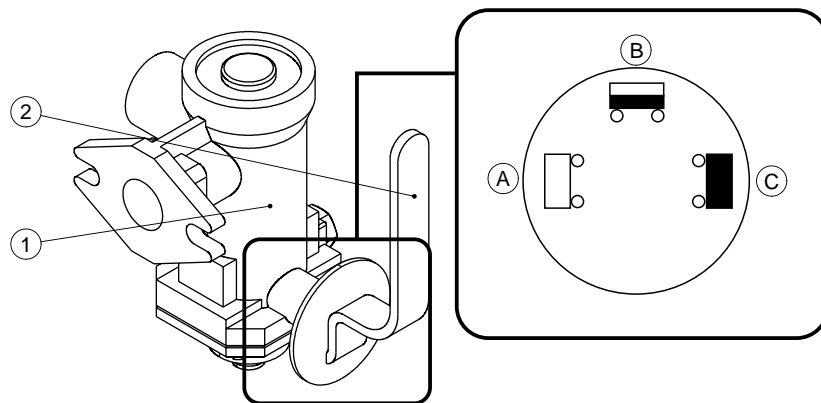


FIGURE 3.6A Three-step braking force regulator

(1) braking force regulator, (2) lever, (a) "no load" (b) "half load", (c) "full load"

3.4 PARKING BRAKE

The parking brake is for immobilising trailer while standing motionless. The brake crank mechanism, located on the left side of the frame, is connected with the axle expander levers using a steel cable. Rotation of the crank increases tension of the steel cable. Expander arms exert pressure on brake shoes and cause the axle to brake. Prior to moving off, handbrake must be released - steel cable must hang loose.

3.5 ELECTRICAL SYSTEM, REFLECTIVE LIGHTS

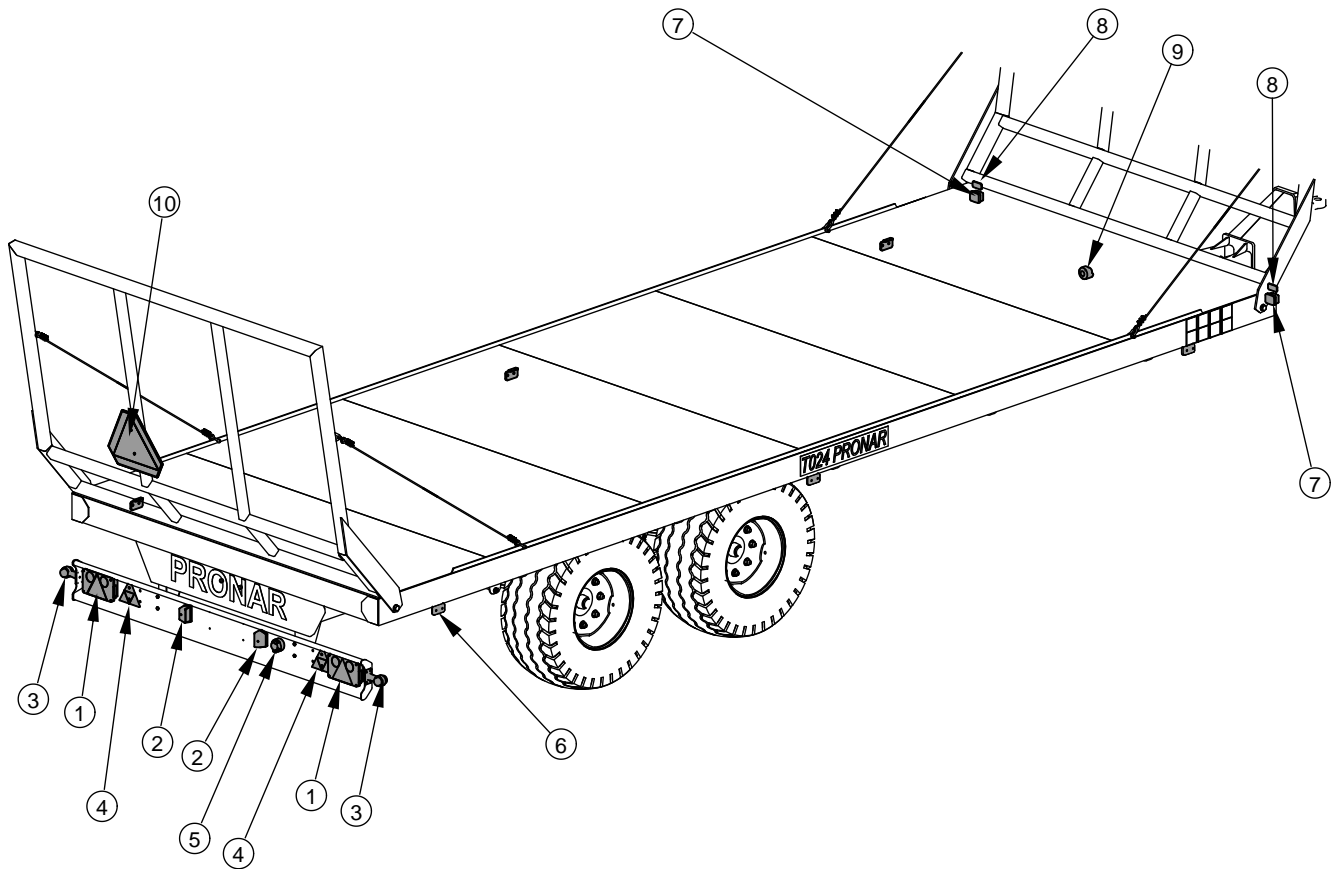


FIGURE 3.7A Positioning of electrical components and reflective lights

(1) rear lamp assembly, (2) license plate light, (3) rear clearance lamp, (4) triangular reflective light, (5) electric socket, (6) side clearance lamp, (7) front parking (position) lamp, (8) white front reflector, (9) electric socket, (10) slow-moving vehicle warning sign

The trailer electrical system is designed for supply from direct current source of 12 V. Connection of the trailer electrical system with the tractor should be made through an appropriate connection lead delivered with the vehicle.

cylinder while the trailer is parked or driven with the support folded in the transport position. Cut-off valve position (open/closed) is marked with the aid of information decal (3).

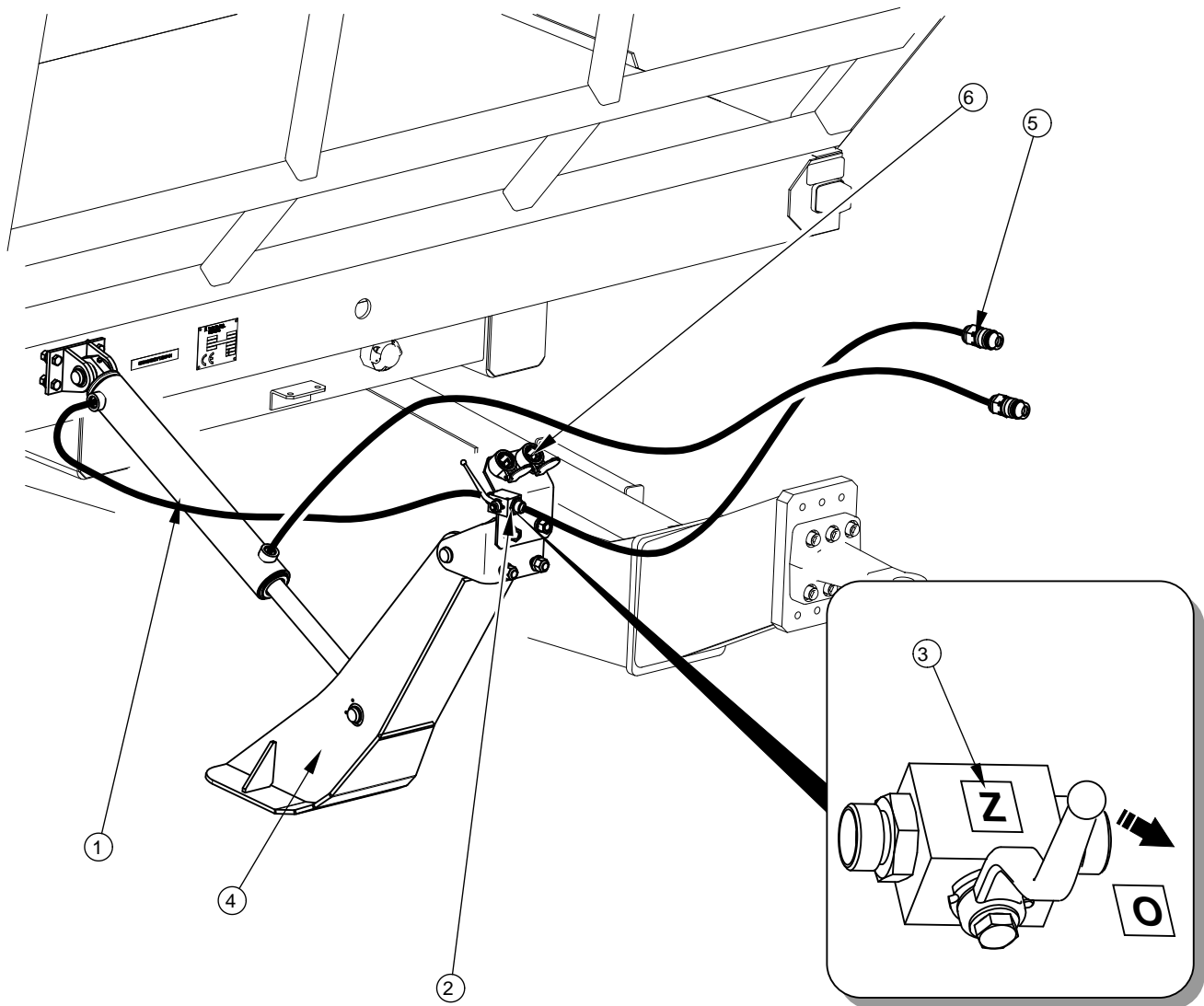


FIGURE 3.9A Design of the parking stand hydraulic system

(1) hydraulic cylinder, (2) cut off valve, (3) information decal, (4) support foot, (5) hydraulic connector, (6) connector socket (side socket)

SECTION

4

CORRECT USE

PREPARING FOR WORK BEFORE FIRST USE

COUPLING AND UNCOUPLING TRAILER

LOADING, UNLOADING

TRANSPORTING THE MACHINE

PROPER USE AND MAINTENANCE OF TYRES

4.1 PREPARING FOR WORK BEFORE FIRST USE

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.



IMPORTANT!

Before commencing work, the user must carefully read this Operator's Manual and observe its all recommendations as well as understand the design and the principle of machine operation.

External inspection

- ⇒ Check completeness of machine (standard and optional equipment).
- ⇒ Check condition of protective paint coat,
- ⇒ Check technical condition of ladders and linking cables and correctness of their installation.
- ⇒ 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.

Prepare a trailer for first hitching to tractor

- ⇒ Check all lubrication points, lubricate the machine as needed according to recommendations provided in section 5,
- ⇒ Check if the nuts and bolts fixing the wheels and drawbar 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.

Test drive

If all the above checks have been performed and there is no doubt as to the machine's good technical condition, make test drive without loading (without load on the platform)

- ⇒ Connect the conduits of the parking stand hydraulic system.
- ⇒ Raise and secure support foot.
- ⇒ Connect trailer to appropriate hitch on agricultural tractor.
- ⇒ Connect brake and electrical system conduits.
- ⇒ Check correct operation of lights and indicators.
- ⇒ When moving off check if the main brakes operate correctly.
- ⇒ Drive several hundred meters.



TIP

Service operation: hitching/unhitching from tractor, lifting/lowering the parking stand etc. are described in detail in further parts of the Operator's Manual.

Test drive may be performed only when all preparatory activities including visual inspection of technical condition have been completed satisfactorily. During test drive, control pressure in the brake system and listen whether abnormal sounds originating from the axle system are heard. Perform the following activities after the test drive:

- ⇒ check temperature of brake drums (by touching the axle hub),
- ⇒ check hydraulic systems for leak tightness.

If any faults are noticed during test drive or technical inspection of the trailer, notify immediately the seller who is responsible for warranty service on behalf of the Manufacturer.

4.2 HITCHING AND DISCONNECTING THE TRAILER

IMPORTANT!



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.

Hitching the trailer to agricultural tractor

- ⇒ Position agricultural tractor directly in front of drawbar eye.
- ⇒ Ensure that the trailer and tractor are secured by parking brake.
- ⇒ Connect the conduits of the shear type support hydraulic system to the tractor.
- ⇒ Set cut-off valve (1) in OPEN position.
- ⇒ Set proper height of drawbar eye in relation to tractor hitch by means of the manifold in the agricultural tractor.
 - ➔ The drawbar eye position may be also adjusted by changing the position of the drawbar eye on the drawbar front plate. A detailed description can be found in section 5.
- ⇒ Reverse tractor, hitch trailer to appropriate hitch on tractor, check hitch lock protecting machine against accidental unhitching.
- ⇒ Raise the support foot maximally, set cut-off valve in CLOSED position.
- ⇒ Turn off tractor ignition.
- ⇒ Connect pneumatic system conduits (applies to two conduit systems):
 - ➔ Connect pneumatic conduit marked yellow with yellow socket in tractor.
 - ➔ Connect pneumatic conduit marked red with red socket in tractor.
- ⇒ Connect pneumatic system conduit (applies to single conduit systems):

- ➔ Connect pneumatic conduit marked black with black socket in tractor.
- ⇒ Connect the hydraulic brake system conduit to the hydraulic socket of the tractor's brake system (applies to hydraulic system).
- ⇒ Connect main conduit supplying electric lighting system.
- ⇒ Prior to moving off, release parking brake of the tractor and trailer.
 - ➔ Turn the parking brake mechanism crank counter-clockwise.

IMPORTANT!



Trailer may only be hitched to a tractor, which has the appropriate connection sockets for braking, hydraulic and electrical, and hydraulic oil in both machines is the same type and also the tractor hitch is capable of bearing the vertical drawbar loading of the loaded trailer.

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.

During connection of the conduits of the double conduit pneumatic brake system 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).

DANGER



While coupling the trailer to the agricultural tractor, there must be no bystanders between the machines. Persons who help during coupling the trailer to the tractor must maintain safe distance from dangerous places and, simultaneously, ensure good visibility of the hitch and drawbar eye.

Before hitching the trailer to the tractor, make sure that the tractor is secured by parking brake.

The trailer unhitched from tractor must be immobilised with parking brake. If the trailer 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.

Disconnecting the trailer from the tractor

- ⇒ Immobilise tractor and trailer with parking brake.
 - ➔ Turn the parking brake mechanism crank clockwise.
- ⇒ Set the parking stand cut-off valve in OPEN position – figure (4.1A).
- ⇒ Lower the parking stand until the drawbar hitching eye is slightly lifted.
- ⇒ Set the parking stand cut-off valve in CLOSED position.
- ⇒ Turn off the agricultural tractor engine.
- ⇒ Disconnect the electrical system wiring.
- ⇒ Disconnect conduits of brake (hydraulic or pneumatic) system.
 - ➔ When disconnecting the conduits of the double-conduit pneumatic system, first disconnect the red conduit and only then disconnect the yellow conduit.
- ⇒ Release the drawbar eye protection, disconnect the trailer from the hitch on the tractor.
- ⇒ Drive tractor away.

Hydraulic conduits should be protected against dirt by placing conduit terminals in sockets located on the trailer drawbar. Pneumatic connections are protected with covers integrated with connections.

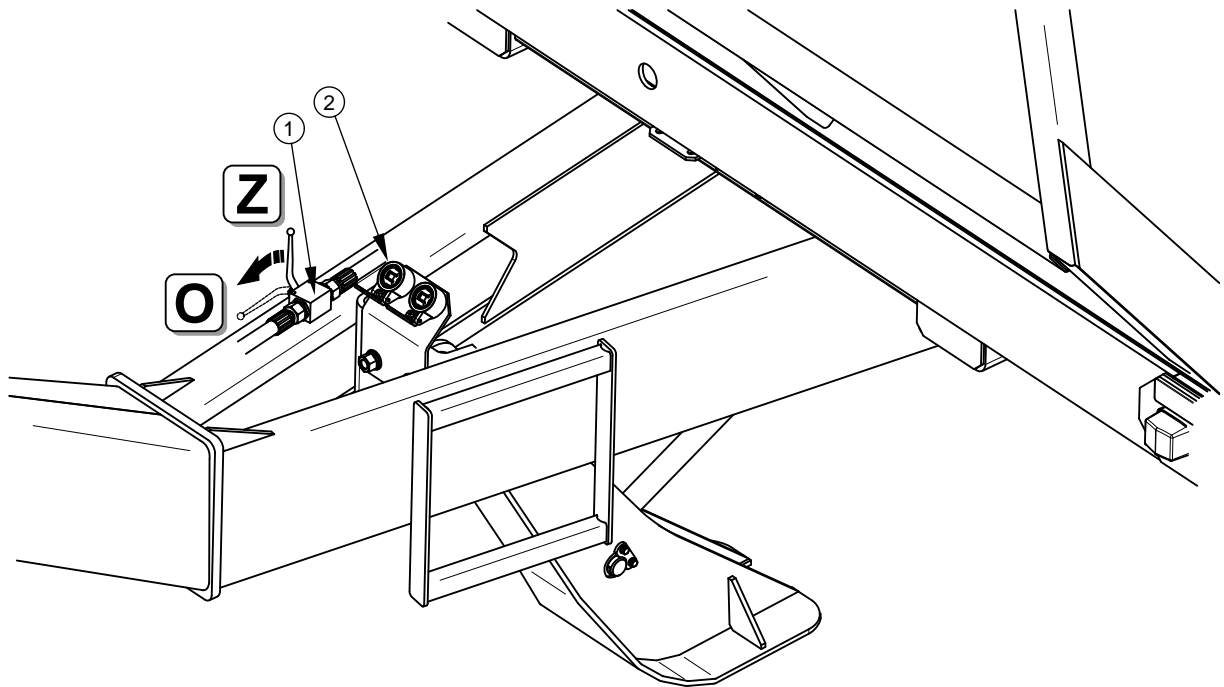


FIGURE 4.1A Control of the shear type drawbar support

(1) cut off valve, (2) sockets, (O) cut-off valve OPEN position, (Z) cut-off valve CLOSED position



TIP

Pneumatic system conduits are identified by coloured protective covers integrated with pneumatic connections.

4.3 LOADING, UNLOADING

Notes on loading

Load box can be loaded only when the trailer is connected to the tractor and positioned horizontally. Machine should be secured using parking brake and wheel chocks. Before loading, check the technical condition of linking cables and correctness of their attaching to the ladders and trailer frame. Do not load or drive the trailer with damaged linking cables.

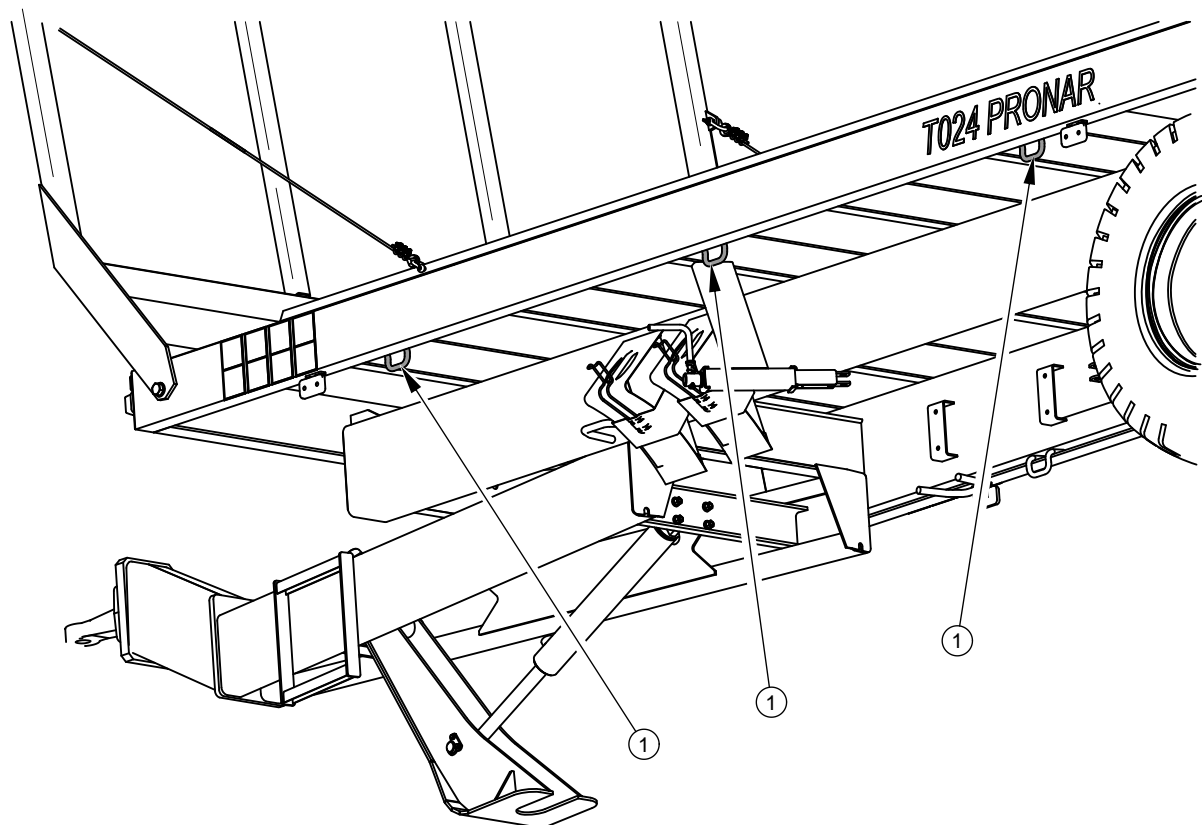


FIGURE 4.2A Load fixing lugs

(1) lugs for fixing protections

Load should be uniformly distributed along the length and width of the platform in order to ensure proper distribution of axle and drawbar eye loads as well as to ensure proper stability of the machine. Load must not extend beyond the outline of the load platform. Number of load layers depends on size of pressed bales or blocks, their arrangement on the load platform and their weight. However, the permissible loading height defined by the road traffic regulations and permissible design load of the trailer must not be exceeded. When loading goods on pallets pay special attention to load distribution on the platform. Pallets must be secured against the displacement on the platform. Pallets must not be stacked in layers.

Load (rectangular or round bales or pallets) should be adequately protected against moving by means of belts with a tightening mechanism. Belts may be attached to the left and right longitudinal member of the platform and to the front beam and rear beam of the extendible frame as well as to the fixing brackets (1) – figure (4.2A), welded to longitudinal members. The extent of protection depends on loading method, type of load and size of load. If load is

to be transported on slopes and/or in strong gusty winds conditions, limit the load height according to existing conditions.

IMPORTANT!



Do NOT exceed the trailer's maximum carrying capacity.

People or animals must not be carried.

Load placed on the platform must be uniformly distributed and properly secured.

Pay attention to danger posed by electric power lines.

Notes on unloading

Before unloading the trailer, position the trailer on flat surface, immobilise the tractor and trailer using parking brake. It is recommended to unload the trailer using a loader, conveyor or forklift truck. Keep a safe distance during loading and unloading. Do not allow anyone to approach the place where works are carried out.



DANGER

Ensure that during unloading nobody is in the vicinity of the load handled.

4.4 TRANSPORTING THE MACHINE

When driving 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 trailer combination.

- 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.
- Set braking force regulator according to the degree of loading of the trailer.
- Raise trailer parking stand maximally, set cut-off valve in CLOSED position.
- Make sure that the trailer is correctly attached to the tractor and tractor's hitch is properly secured.

- The trailer must not be overloaded, loads must be uniformly distributed so that the maximum permissible axle and drawbar loads are not exceeded. The trailer's maximum carrying capacity must not be exceeded as this can damage the machine 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.
- 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.
- 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 canals is dangerous as there is a risk of the wheels sliding down the slope or the slope collapsing.
- 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.
- Speed must be sufficiently reduced before making a turn or driving on an uneven road or a slope.
- During reversing one should use the assistance of another person, who gives directions standing clear of the danger zone.

4.5 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.
- After removing a wheel, always check how firmly the nuts are screwed in. Inspection should be carried out each time after first use, and then every 50 – 100 kilometres of travel.
- 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.
- Avoid potholes, sudden manoeuvres or high speeds when turning.

SECTION

5

MAINTENANCE

PRELIMINARY INFORMATION

TRAILER INSPECTIONS

ADJUSTING DRAWBAR EYE TO MATCH THE HITCH

CONSUMABLES

CLEANING TRAILER

STORAGE

TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

TROUBLESHOOTING

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. 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 TRAILER INSPECTIONS

TABLE 5.1 Maintenance service procedures schedule

OPERATION NUMBER	DESCRIPTION	FREQUENCY
1	Draining water from air tank	7 days
2	Cleaning drain valve	12 months
3	Checking technical condition of connections	Before each hitching
4	Checking action of braking system	Daily
5	Checking braking system tightness	6 months
6	Checking leak tightness of the parking stand hydraulic system	6 months
7	Checking lighting system	Daily
8	Cleaning the air filters	3 months
9	Check wheel axle bearings	6 months

10	Adjustment of main brakes	12 months
11	Adjustment of parking brake	12 months
12	Checking nut and bolt tightness on wheels and drawbar	50 – 100 km
13	Checking technical condition of wheels	3 months
14	Checking lubrication points	According to schedule

5.2.1 OPERATION NO. 1 - DRAINING WATER FROM THE AIR TANK

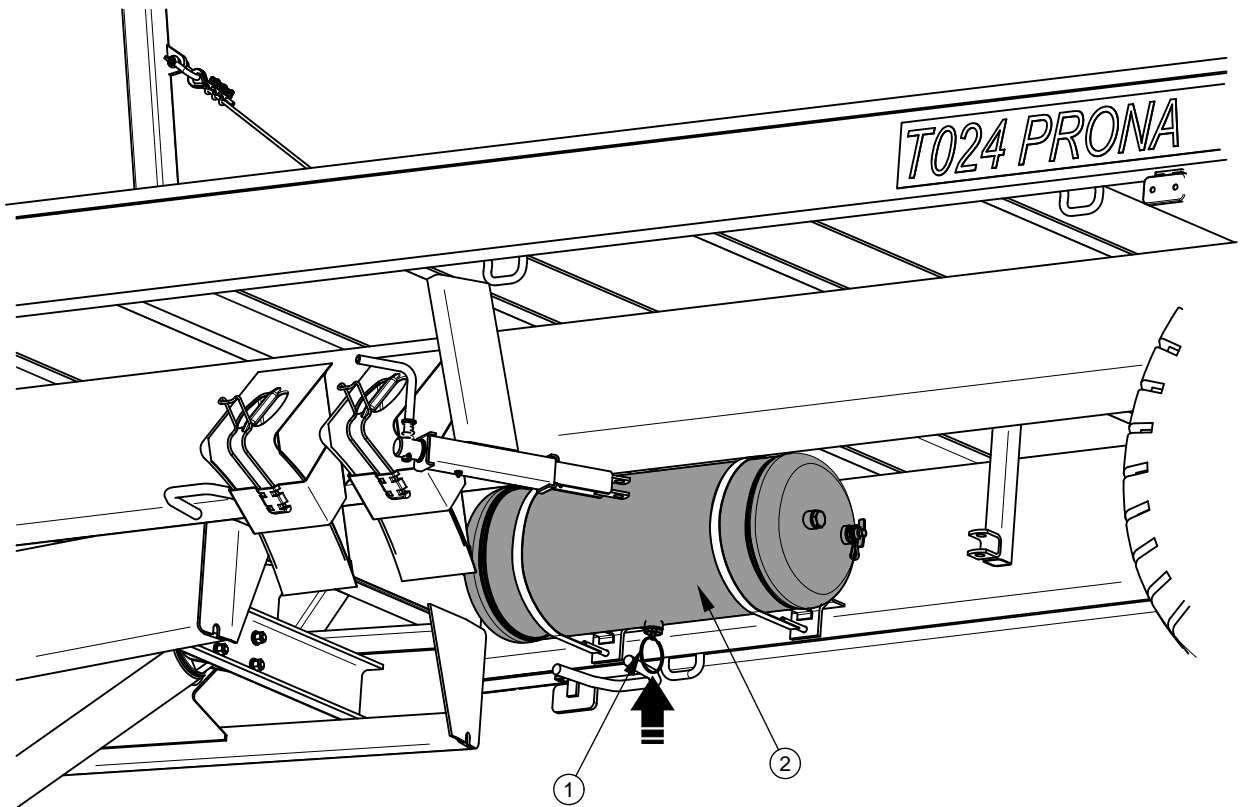


FIGURE 5.1A Draining water from air tank

(1) drain valve stem, (2) air tank

Required service actions

- ⇒ Open out drain valve (1) placed in lower part of tank. The compressed air in the tank causes the removal of water to the exterior.
- ⇒ Release drain valve stem.
 - ➔ After release valve stem should automatically close and stop airflow from tank. Otherwise, completely release air from the tank, unscrew the valve and clean it. If necessary, replace the valve together with the seal.



Water should be drained from the air tank of the brake system at least once a week.

5.2.2 OPERATION NO. 2 - CLEANING DRAIN VALVE

Required service actions

- ⇒ Release air from the tank.
- ⇒ Unscrew valve.
- ⇒ Clean valve, purge with compressed air.
- ⇒ Screw in valve, fill air tank, and check tank tightness.
 - ➔ Replace copper seal each time the valve is unscrewed.



Drain valve should be unscrewed and cleaned annually, before winter period.



DANGER

Before dismantling drain valve release air from tank.

5.2.3 OPERATION NO. 3 - CHECKING CONNECTIONS

Required service actions

- ⇒ Check technical condition of bodies of pneumatic, hydraulic and electrical connectors.
- ⇒ Check electric contacts.
- ⇒ Check condition of pneumatic connector seals, check condition of safety covers.



Electrical, pneumatic and hydraulic connections must be inspected regularly while using the trailer. Each time before hitching the trailer, inspect technical condition and cleanness of the connections.

A connection with cracked body, burnt or broken electrical contacts should be replaced. In the event of damage to cover or seal of pneumatic connector, these elements must be replaced with 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, connections should be protected by covers or placed in their designated sockets. Each time before connection of the trailer inspect technical condition and cleanness of contacts and sockets in tractor.



DANGER

Unreliable and dirty trailer connections may cause unreliability and faulty functioning of braking, electric or hydraulic system.

5.2.4 OPERATION NO. 4 – CHECKING BRAKING SYSTEM ACTION

After correct hitching of trailer to tractor and starting the engine and compressor, compressed air is transferred to pneumatic braking system. If air pressure is too low trailer brakes will not be released and operator must wait until pressure reaches at least 0.5 MPa.

After moving off, inspect braking by pressing tractor brake pedal. If trailer wheels brake simultaneously on hard and level surface, the machine will not have a tendency to slide sideways, if there is an insignificant pressure drop in braking system one should consider the system to be reliable.

A metallic noise during braking, rapid heating of brake drums, uncontrolled slips sideways, jerking of trailer, too low air pressure, sudden pressure drop or other symptoms appearing during braking may be the cause of brake shoe lining wear, damage connectors or conduits, unreliability of control valve or other serious system faults. In such instances immediately stop and check condition of connectors and check tightness of system. If fault cannot be detected and repair is impossible without breach of guarantee, contact service .and conduct braking system diagnosis and execution of repair.

In case of hydraulic braking system, check, first of all, leak tightness of brake cylinders (a detailed description can be found in section "Checking braking system tightness."



DANGER

Do not use the trailer with damaged braking system.



Checking action of braking system:

- daily.

Change of hydraulic conduits:

- every 4 years

5.2.5 OPERATION NO. 5 – CHECKING BRAKING SYSTEM TIGHTNESS

As a part of trailer maintenance, conduct inspection of braking system leak tightness (pneumatic or hydraulic braking system), paying particular attention to all places of connection. Tightness of the pneumatic system should be checked at nominal pressure in the system of approx. 0.6 MPa in single conduit systems, and approx. 0.8 MPa in two conduit systems. In order to check the pneumatic system tightness, connect trailer to tractor and, if necessary, start tractor in order to supplement air in the braking system tank (to achieve the required pressure of air). To inspect tightness release brake pedal and press brake pedal of tractor (the help of the second person is required).

If conduits, seals or other system elements are damaged, compressed air will escape in these damaged places 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 elements. Damaged seals or conduits, causing leaks

should be replaced. If the cause of the system leak is the outflow from a piston, control valve body or braking force regulator should be taken to authorised repair provider for repair or replacement of parts.

Contact of pneumatic leads with oils, greases, petrol etc. may cause damage and accelerate ageing process. Bent conduits, permanently deformed, cut or worn should be replaced.

In case of hydraulic braking system, check leak tightness of brake cylinders. The inspection should be carried out when the brake pedal is released and when the brake pedal is pressed (the help of the second person is required). During inspections pay attention to conduit connections and their technical condition. Damaged hydraulic conduits should be replaced. If oil leaks are found at conduit connections, tighten the connection lightly or replace it (replace connectors or conduits).

In the event of confirmation of oil on hydraulic ram cylinder bodies ascertain origin of leak. Inspect seals when cylinder piston 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. Damage or wear of cylinder seals may be a probable cause of leaks. In such an event the whole set of seals must be changed. Corroded cylinder piston or cylinder piston with pinholes on its surface should be replaced. Cylinder piston should be replaced or repaired if deep scratches appear on its surface. Such scratches may gradually damage the cylinder seals.



ATTENTION!

The trailer and tractor must not be attached if the hydraulic oil in the two machines is of different types.

Do not use the trailer with damaged hydraulic system.

All hydraulic conduits must be changed every 4 years regardless of their technical condition.



Checking braking system tightness:

- after first use,
- every 6 months of use

Change of hydraulic conduits:

- every 4 years,

5.2.6 OPERATION NO. 6 – CHECKING LEAK TIGHTNESS OF THE PARKING STAND HYDRAULIC SYSTEM

Required service actions

- ⇒ Hitch trailer to tractor.
- ⇒ Set the parking stand cut-off valve in OPEN position.
- ⇒ Lift and lower the support foot several times using the tractor hydraulic manifold.
- ⇒ Check leak tightness of cylinder piston and cylinder seals.
- ⇒ Check hydraulic conduits.
- ⇒ Lower the parking stand to enable uncoupling the trailer.
- ⇒ Set cut-off valve in CLOSED position, disconnect trailer drawbar from the tractor and pull tractor away slightly (supply conduits must not be strained).
- ⇒ If the drawbar hitching eye remains at the same height for 5 minutes, cut-off valve is leak tight.



ATTENTION!

The trailer and tractor must not be attached if the hydraulic oil in the two machines is of different types.

Do not use the trailer with damaged hydraulic system.

If cylinder or connections leak or conduits are damaged, follow the instructions included in description of operation "Checking braking system tightness."

All flexible conduits of the parking stand hydraulic system must be replaced every 4 years regardless of their technical condition.



Checking operation of the parking stand hydraulic system:

- after first use,
- every 6 months of use

Replacement of hydraulic conduits of the parking stand hydraulic system:

- every 4 years,

5.2.7 OPERATION NO. 7. CHECKING LIGHTING SYSTEM



IMPORTANT!

Travel with unreliable lighting and signalling system is forbidden. Damaged lamp lenses, and burned-out bulbs must be replaced before travelling.

Required service actions

- ⇒ Hitch trailer to tractor.
- ⇒ Switch on all lights in succession.
- ⇒ Check completeness and technical condition of lights.

TABLE 5.2 List of bulbs and lamp part numbers

LAMP	LAMP PART NUMBER	BULB
Rear right lamp assembly W21	115až	R10W – 4 units P21W – 4 units PY21W – 1 unit T4W – 1 unit
Rear left lamp assembly W21	114až	R10W – 4 units P21W – 4 units PY21W – 1 unit T4W – 1 unit
Licence plate illumination light	LT-120	C5W-SV8.5 – 1 unit

LAMP	LAMP PART NUMBER	BULB
Front parking light	LO-110PP	C5W-SV8.5 – 1 unit
Side clearance lamp	127 021 00 00	R5W – 1 unit
Side parking light	W17d	-



Operation of electrical lighting system and damage to reflective lights should be checked regularly during trailer use.

5.2.8 OPERATION NO. 8. CLEANING AIR FILTER



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. In order to clean insert first reduce pressure in supply conduit. Next remove securing slide (1) – figure (5.2A). 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.

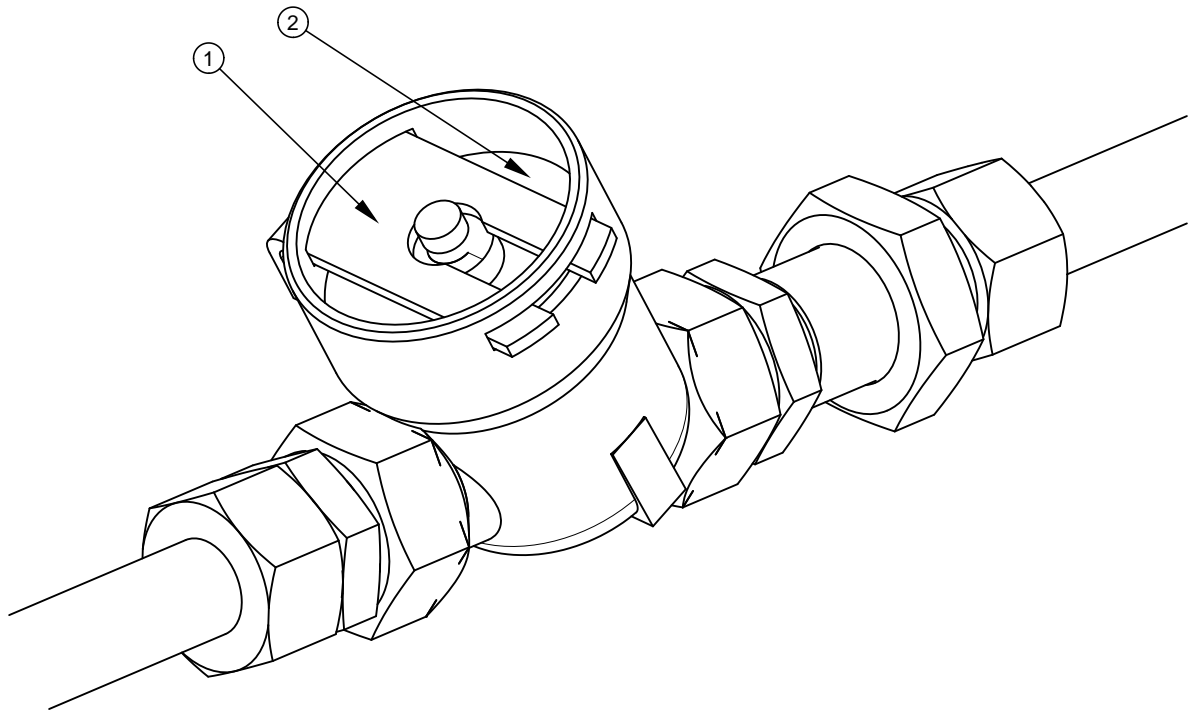


FIGURE 5.2A Air filter

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



Cleaning the air filter (filters):

- every 3 months of use,

5.2.9 OPERATION NO. 9 - CHECKING WHEEL AXLE BEARINGS

In newly purchased trailer, after the first week of use and then, every half a year of trailer use, check and adjust wheel bearings when needed. Worn or damaged bearing should be replaced.

Required service actions

- ⇒ Hitch trailer to tractor, braking tractor with parking brake. Place blocking chocks or other objects without sharp edges under trailer wheels and raise wheels in succession using the appropriate lifting jack. The lifting jack should be placed under the axle between U bolts fixing shock absorber leaf springs to the axle. Make certain that the trailer will not move during inspection of the bearing.

- ⇒ Turning the wheel slowly in both directions check that movement is smooth and that the wheel rotates without excessive resistance.

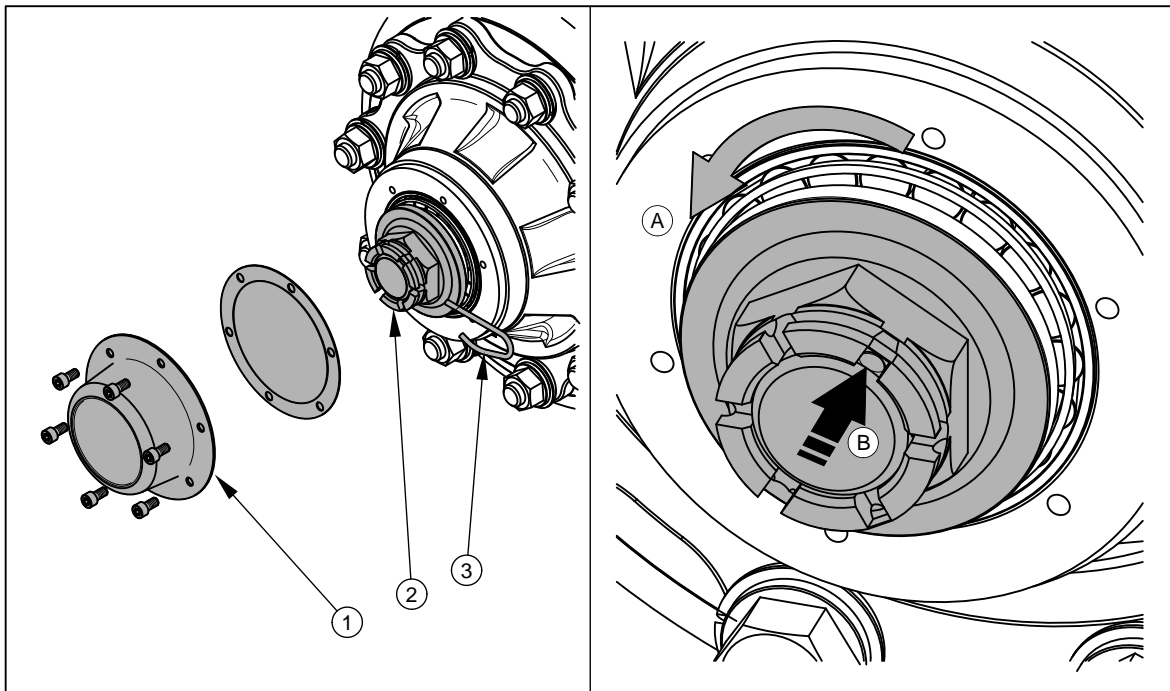


FIGURE 5.3A Adjustment of road wheel axle bearings

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

- ⇒ Turn the wheel so that it rotates very quickly, check that the bearing does not make any unusual sounds.
- ⇒ Grasp wheel above and below and try to feel any slack play, this may equally be checked with the aid of a jack placed under the wheel supported on the floor/ground.

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. Bearing adjustment should be performed according to the following instructions – figure (5.3A):

- ⇒ take off hub cover (1),
- ⇒ take out split cotter pin (3) securing castellated nut (2),
- ⇒ turning the wheel simultaneously tighten castellated nut until the wheel comes to a stop,

- ⇒ unscrew nut (not less than 1/3 rotation) to cover the nearest thread groove with alignment to opening in wheel stub axle
- ⇒ secure castellated nut with cotter pin and mount hub cap.

The wheel should turn smoothly without stiffness or detectable resistance not originating from abrasion of brake shoes in brake drum. Inspection and adjustment of bearings may only be conducted, when the trailer is hitched to a tractor and trailer load platform is not loaded.



Checking and/or adjustment of wheel axle bearings:

- After a week of use
- Every 6 months of use.

Bearings replacement, lubrication and repairs connected with brake system and wheel axle should be entrusted to specialist service provider. For axle technical service, the user may only inspect the technical condition of the axle system, inspect bearing slack and their adjustment.

5.2.10 OPERATION NO. 10 - ADJUSTMENT OF MAIN BRAKE

Brakes adjustment is necessary when:

- as a result of wear of brake shoe linings between lining and drum there is excessive slack and reduced braking effectiveness,
- wheel brakes do not brake evenly or simultaneously.
- repairs are made to braking system

If brakes are correctly regulated, braking of trailer road wheel takes place simultaneously. Brakes adjustment involves changing setting of axle shaft expander arm (2) in relation to expander shaft (1). To do this regulate the shaft position (2) with the aid of retaining bolt (3) in appropriate direction:

- forward (A), if braking is too early,
- backwards (B), if braking is too late.

Adjustment should be conducted separately for each wheel. After proper brake adjustment, at full braking the axle shaft expander arm should create an angle of 90° with ram piston. Axle shaft expander arms must make the same movement and braking process must take place simultaneously on all wheels. 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.

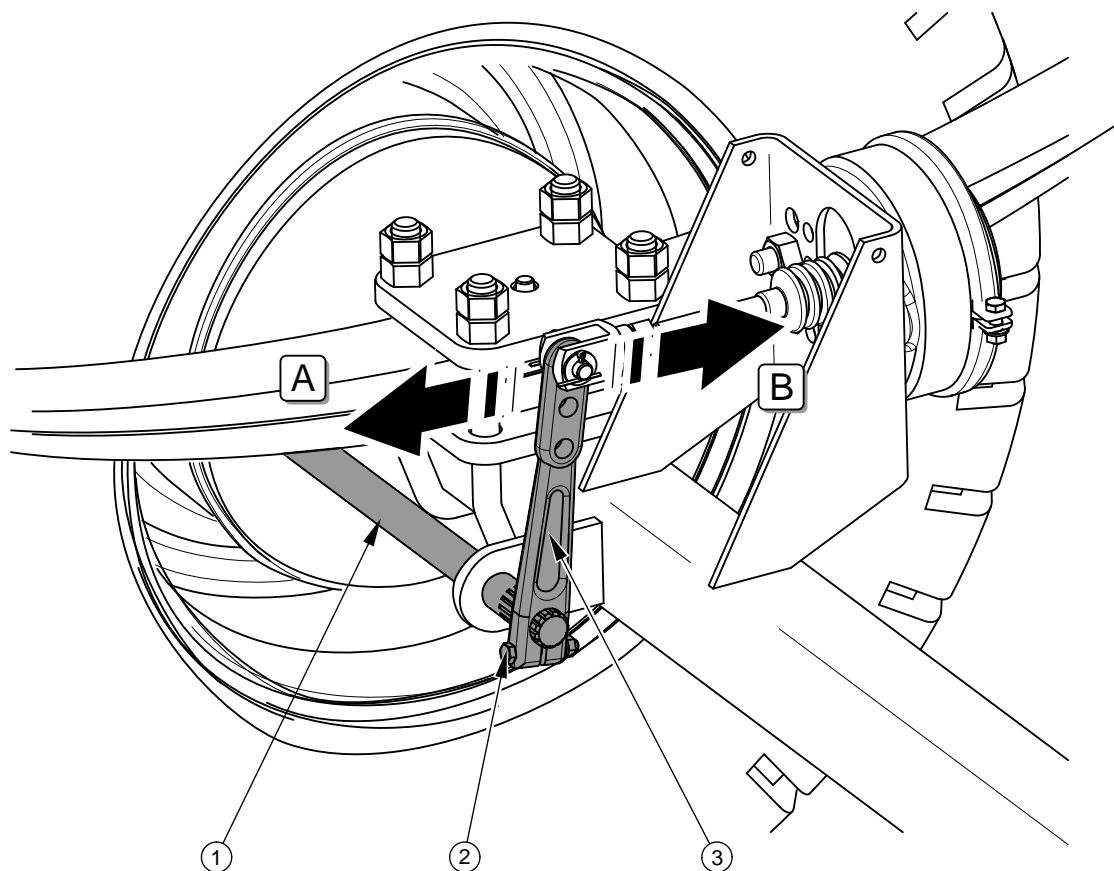


FIGURE 5.4A Adjustment of main brakes

(1) expander shaft, (2) clamping screw, (3) expander lever

TABLE 5.3 Main brake braking force

PARAMETER	UNIT	VALUE
Main brake braking force	kN	60

With properly regulated brakes, trailer main brake braking force should reach a value not less than that given in table(5.3).



Checking and adjustment of main brake:

- every 12 months,
- if needed.

Difference in braking force may not be greater than 30%, considering that 100% constitutes greater force.



IMPORTANT!

Main brake braking force, is the braking force of all trailer wheels.

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.

5.2.11 OPERATION NO 11 – PARKING BRAKE ADJUSTMENT

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

- stretching of cable,
- loosening of parking brake cable clamps
- after adjustment of main brake,
- after repairs in main brake system,
- after repairs in parking brake system.

Before commencing adjustment make certain that the main break is functioning properly. Parking brake adjustment should be performed according to the following sequence:

- ⇒ park trailer on level surface,
- ⇒ chocks or other objects without sharp edges should be placed under the wheels,
- ⇒ Unscrew maximally the brake mechanism bolt (anticlockwise),
- ⇒ loosen brake cable clamps,
- ⇒ tighten cable and tighten clamps.

TABLE 5.4 **Parking brake braking force**

PARAMETER	UNIT	VALUE
Parking brake braking force	kN	21.6



Checking and adjustment of parking brake:

- every 12 months,
- if needed.

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. With properly regulated brakes, trailer parking brake braking force should reach a value not less than that given in table (5.4). Difference in braking force may not be greater than 30%, considering that 100% constitutes greater force.



IMPORTANT!

Braking force of parking brake is the braking force of the trailer front axle wheels.

5.2.12 OPERATION NO. 12 - INSPECTION OF TIGHTNESS OF WHEELS AND DRAWBAR NUTS AND BOLT CONNECTIONS

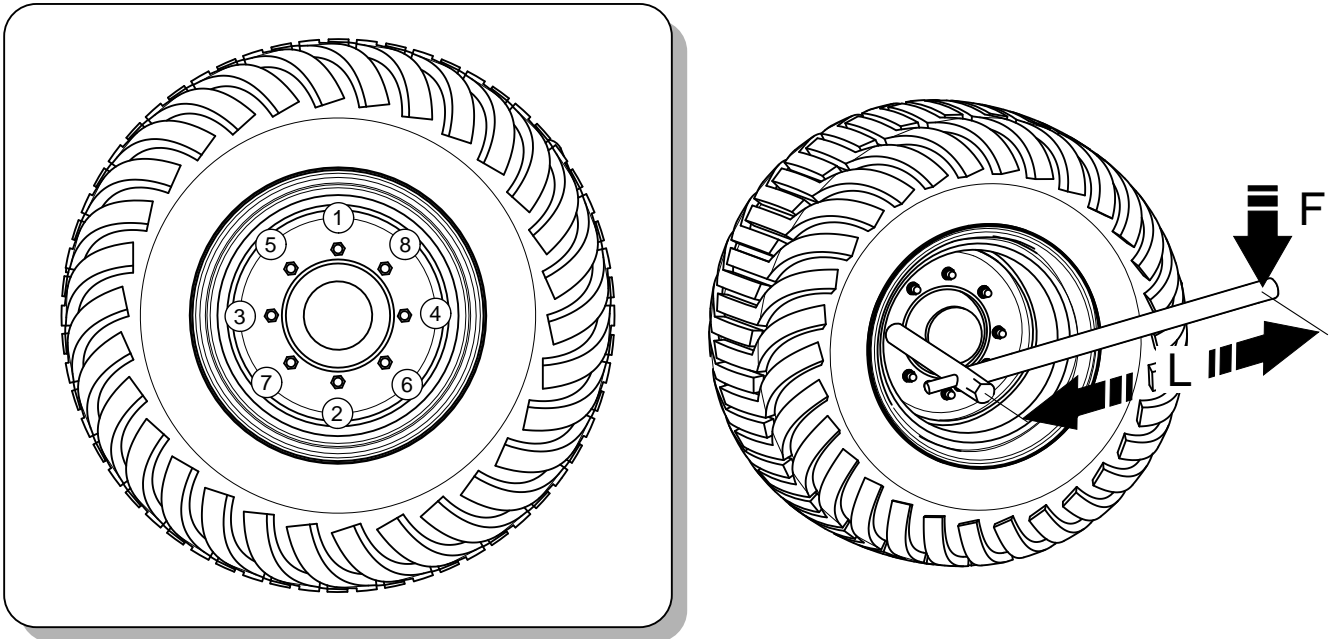


FIGURE 5.5A Tightening of wheel nuts

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

Wheel nuts should be tightened using a torque of 270 Nm. Inspection of tightness should be carried out each time after first use, and then every 50 – 100 kilometres of travel. Nuts should be tightened gradually diagonally, using a torque spanner. If a torque spanner is not available, one may use an ordinary spanner. The arm of the spanner selected according to the weight of the person tightening the nut. Remember that this method of tightening is not as accurate as the use of a torque spanner.



Checking wheel axle and drawbar eye tightening:

- after first use (without loading),
- every 50 – 100 kilometres of travel.

TABLE 5.5 SPANNER ARM


WHEEL TIGHTENING TORQUE [NM]	BODY WEIGHT (F) [kg]	ARM LENGTH (L) [m]
270	60	0.45
	70	0.38
	80	0.33
	90	0.30

Drawbar eye tightness should be checked simultaneously with wheel nut tightness checking. Torque values should be according to table (5.8) Nuts should be tightened gradually diagonally, using torque spanner.

Bolts and nuts should be in good technical condition. Corroded parts or those with damaged threads should be replaced.

5.2.13 OPERATION NO. 13 - CHECKING TECHNICAL CONDITION OF WHEELS

Tyre pressure should be checked each time after changing spare wheel and not less than every 3 months. 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.

	IMPORTANT! Damaged tyres or wheels may be the cause of a serious accident.
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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 3 months of use,
- if needed.

5.2.14 OPERATION NO.14 - CHECKING LUBRICATION POINTS

TABLE 5.6 Trailer lubrication schedule

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	FREQUENCY ⁽¹⁾
1	Handbrake crank mechanism	1	A	6M
2	Drawbar hitching eye	1	B	1M
3	Leaf spring absorber pins	4	A	3M
4	Rocker arm pins	2	A	3M
5	Leaf spring absorber sliding surfaces	4	A	1M
6	Leaf spring absorbers	4	C	3M
7	Resistance surfaces of front ladder and rear ladder	4	A	6M
8	Wheel bearings	4	A	24M
9	Rotating drawbar eye	1	B	1M
10	Parking stand cylinder bearings	2	A	3M

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	FREQUENCY ⁽¹⁾
11	Parking stand support foot pin	1	A	3M

(1) lubrication frequency M month

A - permanent machine general-purpose grease

B - permanent grease for heavily loaded elements with addition of MOS2 or graphite

C – spray anticorrosion and lubrication agent

Trailer lubrication should be performed with the aid of a manually or foot operated grease gun, filled with generally available permanent grease based on lithium or lime soap. Before commencing lubrication insofar as is possible remove old grease and other contamination. After lubricating the machine according to instructions, wipe off excess grease. Complete trailer lubrication procedure should be carried out each time after trailer washing, before longer idle periods and before commencing the season of machine use.

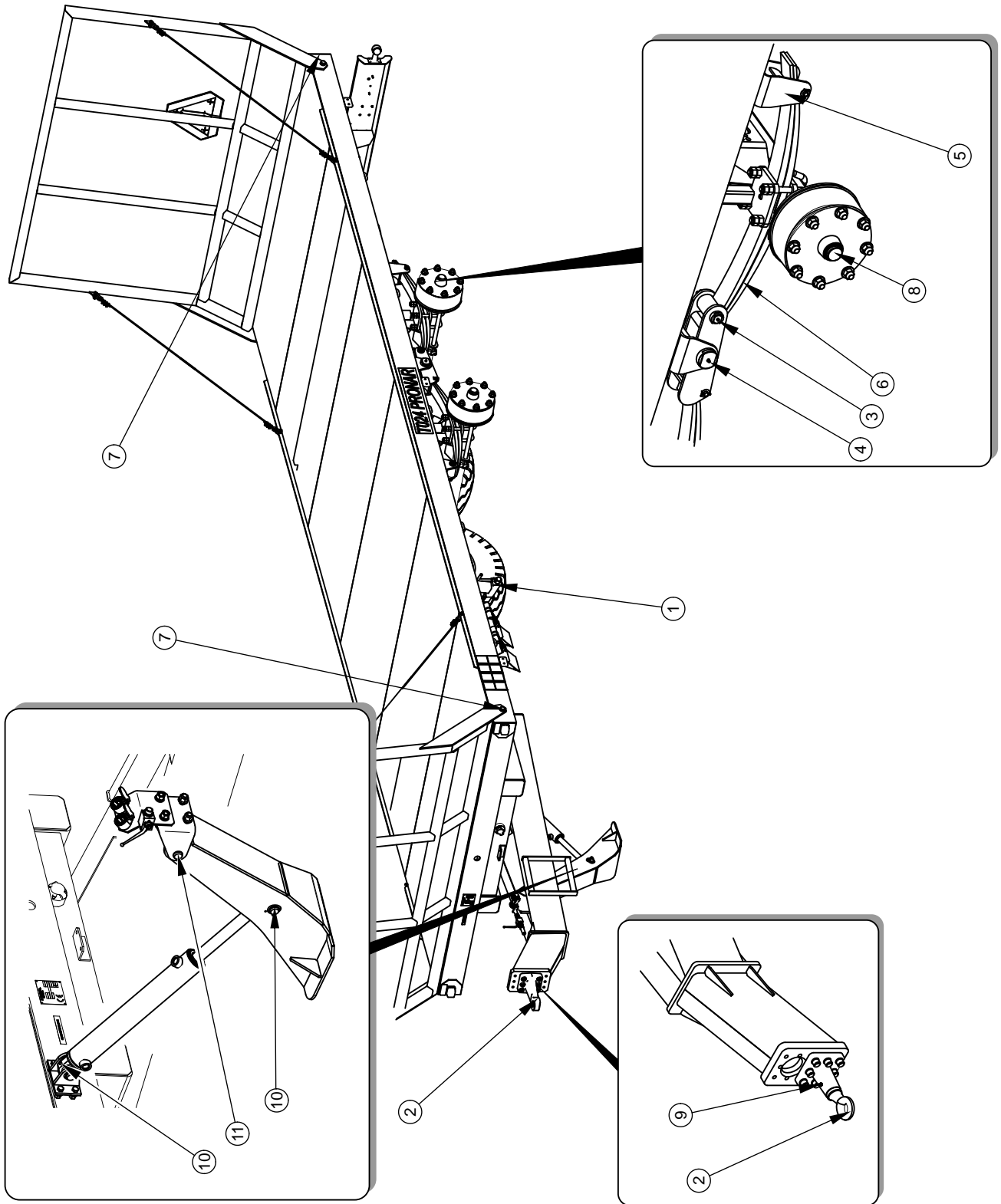


FIGURE 5.6A Trailer's lubrication points

5.3 ADJUSTING DRAWBAR EYE TO MATCH THE HITCH

The trailer can be equipped with one of the two types of drawbar eye: fixed drawbar eye or rotating drawbar eye. Depending on the hitch on the tractor, the drawbar eye height can be set as needed. In order to do this:

- ⇒ unscrew drawbar eye from the drawbar head plate,
- ⇒ set drawbar eye in a selected position,
- ⇒ screw down drawbar eye using appropriate tightening torque,
- ⇒ after first travel with load, check if fixing bolts are properly tightened.

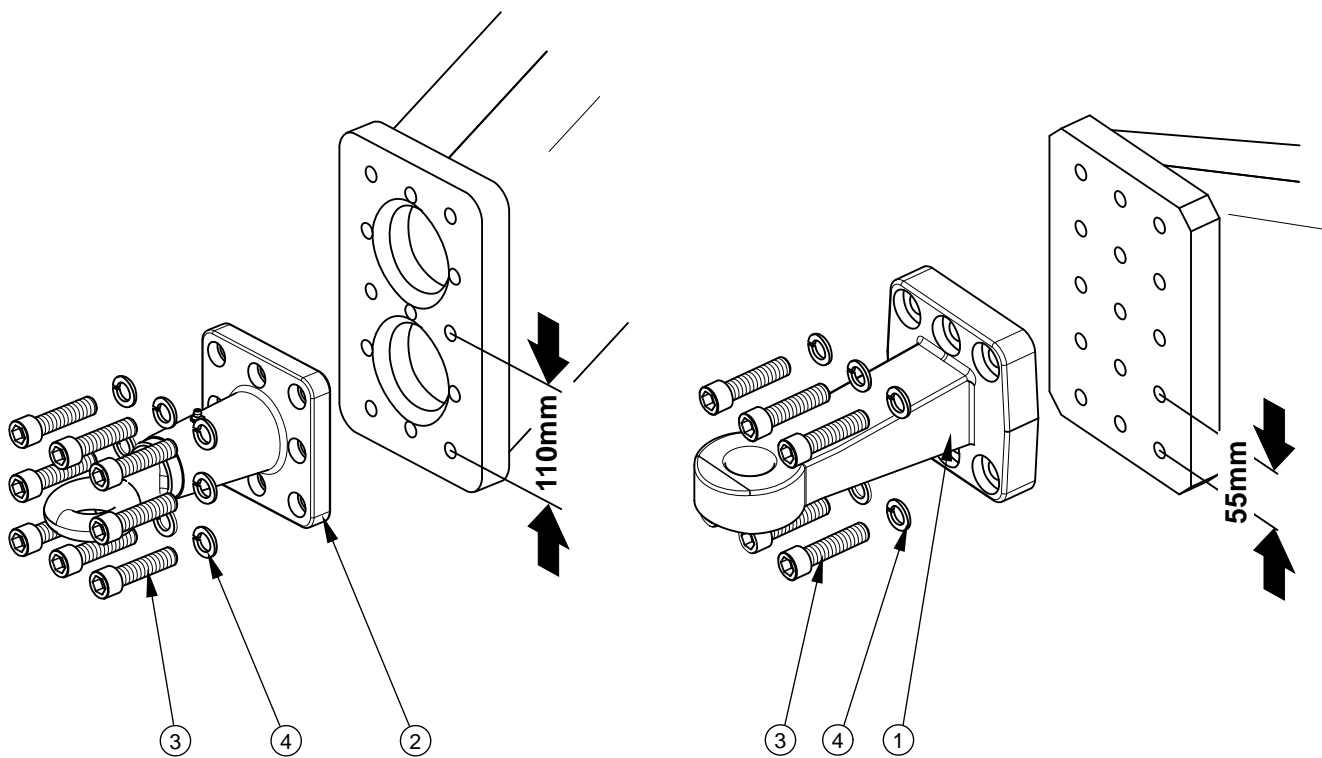


FIGURE 5.7A Adjusting drawbar eye to match tractor hitch

(1) fixed drawbar eye, (2) rotating drawbar eye, (3) bolt, (4) spring washer

Rotating drawbar eye (2) can be located in two working positions - with 110 mm spacing. Fixed drawbar eye (1) can be screwed down in one of the three working positions – spaced every 55 mm.

5.4 CONSUMABLES

5.4.1 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. Application of different types of oil is not permitted. In a new machine, the hydraulic system is filled with HL32 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.

TABLE 5.7 HL32 HYDRAULIC OIL CHARACTERISTICS

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

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.

5.4.2 GREASES

For parts under great load it is recommended to apply lithium grease with molybdenum disulphide (MOS₂) 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.

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. Information leaflet (material safety data sheet) should be kept together with grease.

5.5 TRAILER CLEANING

Trailer should be cleaned depending on requirements. 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

- Before washing trailer, carefully clean load remains from the load platform.
- To clean machine 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 should not exceed 55 °C.
- Do not direct the water jet directly at system elements and equipment 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 plate, conduits, etc. Great water jet pressure may damage these elements.
- Do not direct water jet at individual trailer lubrication points.
- 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 and then washed with clean water with added detergent.



IMPORTANT!

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

While washing 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 that are harmful to health 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 lubricant with a dry cloth.
- Observe environmental protection principles and wash trailer in a place designated for such purpose.

5.6 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 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.

5.7 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.

TABLE 5.8 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

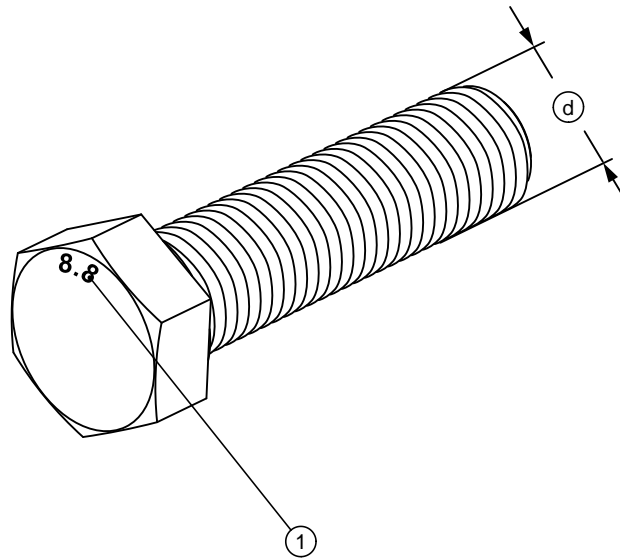


FIGURE 5.8A Bolt with metric thread

(1) resistance class, (d) thread diameter

5.8 TROUBLESHOOTING

TABLE 5.9 Faults and means of remedying them

FAULT	CAUSE	REMEDY
Problem with moving off	Brake system pneumatic conduits not connected	Connect brake conduit.
	Applied parking brake	Release parking brake.
	Insufficient pressure in break 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.
	Damaged pneumatic system connection conduits	Replace.

FAULT	CAUSE	REMEDY
	Leaking connections	Tighten, replace washers or seal set, replace conduits.
	Damaged 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	Replace bearing
Excessive heating of axle hubs	Incorrect main or parking brake adjustment	Regulate setting of expander arms
	Worn brake linings	Change brake shoes
Incorrect hydraulic system operation	Improper hydraulic oil viscosity	Check oil quality, make sure that the oil in both machines is at the same type. If necessary change oil in tractor or in trailer
	Insufficient tractor hydraulic pump output, tractor hydraulic pump is damaged.	Check tractor hydraulic pump.
	Damaged or contaminated ram cylinder	Check cylinder ram piston (bending, corrosion), check ram cylinder for tightness (piston seal), in case of need repair or replace ram cylinder.
	Excessive cylinder ram loading	Check mechanism controlled by ram cylinder for mechanical damage
	Damaged hydraulic conduits	Check and ascertain that hydraulic conduits are tight, not fractured and properly tightened. If necessary replace or tighten.
Jerking, uneven trailer braking.	Damaged or unconnected brake system supply conduit	Check conduit, check connection socket. Repair, change or connect conduit.

NOTES

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