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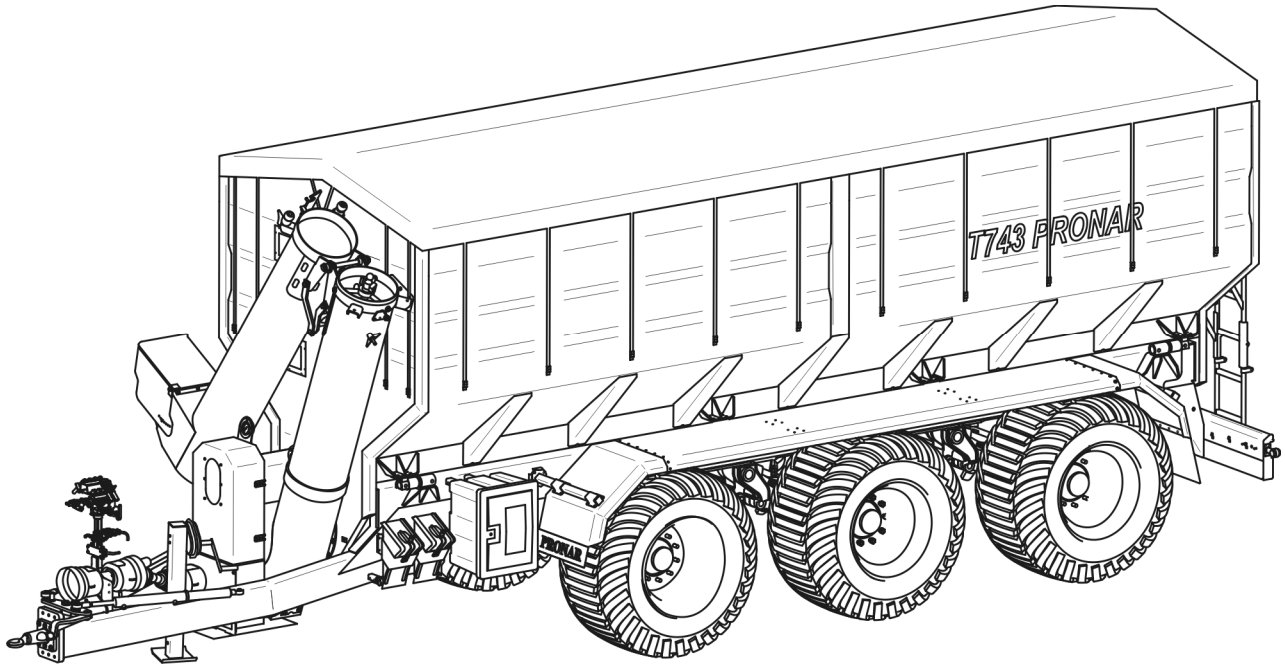
OPERATOR'S MANUAL

AGRICULTURAL TRAILER

PRONAR T743

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.

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 Pronar T743 trans-shipment 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 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: ➡

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:	**T743**
Model:	**- - - - -**
Serial number:	
Commercial name:	**TRAILER PRONAR T743**

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

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

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

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

Narew, the _____

Place and date

Full name of the empowered person position, signature

CONTENTS

SECTION

1

BASIC INFORMATION

1.1 IDENTIFICATION

1.1.1 TRAILER IDENTIFICATION

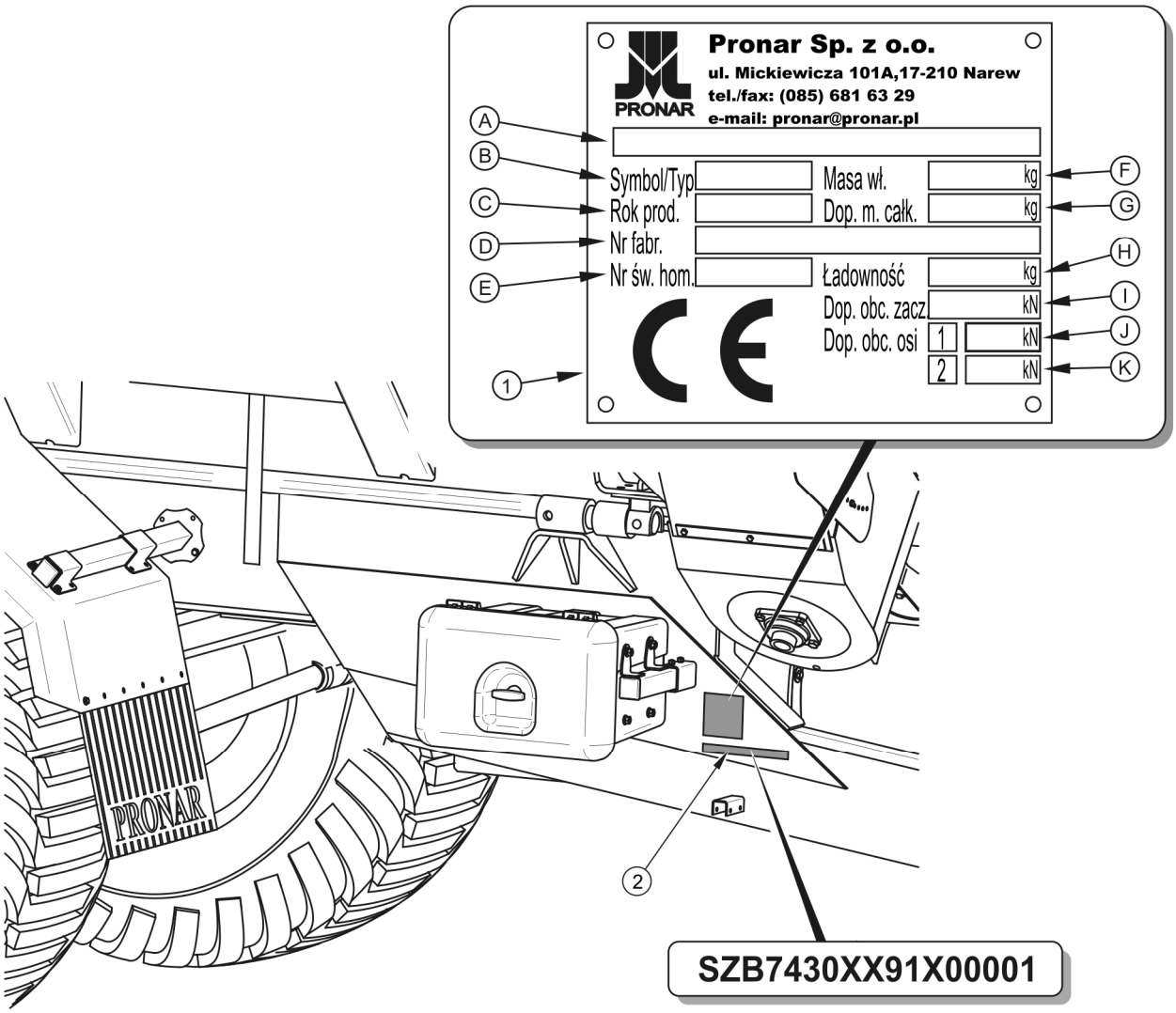


FIGURE 1.1 Location of the data plate and serial number

(1) data plate, (2) serial number

The trailer is marked with the data plate (1), located on the right frame brace and the factory number (2) located on a gold painted rectangle. 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*.

The meanings of the individual fields found on the data plate – figure (*1.1*) are presented in table *(1.2)*.

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 axle 1 load
K	Permissible axle 2 load

1.1.2 AXLE IDENTIFICATION

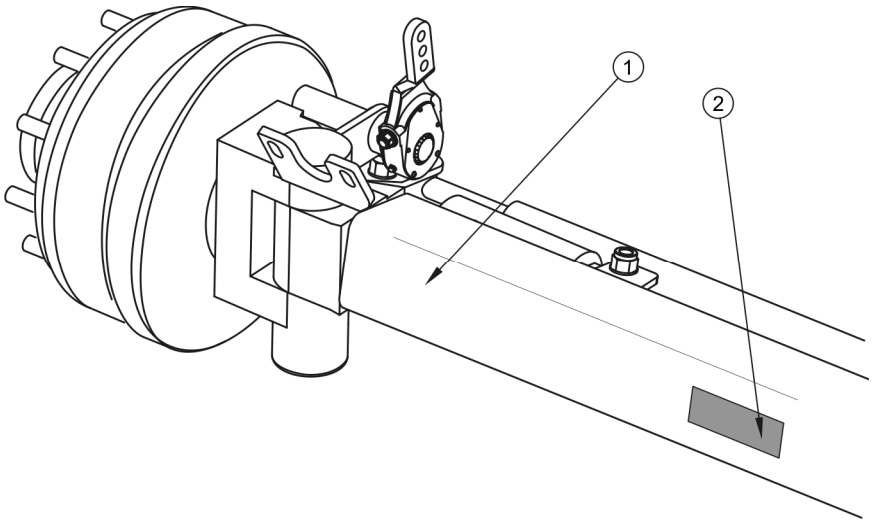


FIGURE 1.2 Axle identification

(1) axle, (2) axle data plate

The serial number of the axle and its type are stamped onto the data plate secured to the axle beam – figure *(1.2)*. In the event of ordering a replacement part it you must know the trailer factory number and axle type.

1.1.3 LIST OF FACTORY NUMBERS

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.

VIN number

S	**Z**	**B**	**7**	**4**	**3**	**0**	**X**	**X**			**X**					

FRONT STEERING AXLE SERIAL NUMBER

MIDDLE FIXED AXLE SERIAL NUMBER

REAR STEERING AXLE SERIAL NUMBER

1.2 PROPER USE

The trailer Pronar T743 is constructed according to current safety requirements and engineering standards. The brake system and the light and indicator system meet the requirements of road traffic regulations.

The machine is designed for the transport and trans-shipment of cereals and maize seed grain from combines to transport vehicles. Transporting people, animals or other materials is forbidden and regarded as contrary to the intended purpose. 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.

IMPORTANT!

The trailer must not be used for purposes other than those for which it is intended. The user MUST NOT:

- **transport people, animals, hazardous materials, chemically aggressive loads that will corrode the construction elements of the trailer (causing corrosion of steel, destruction of paint coat, dissolving plastic elements and destruction of rubber elements etc.),**
- **transport incorrectly secured load, which during travel may cause contamination of the road and natural environment,**
- **transport incorrectly secured load, which during travel may change position in load box or fall out of the load box,**
- **transport loads, whose centre of gravity may destabilise the trailer,**
- **transport loads, which have uneven load distribution and/or overload axles and suspension elements.**

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 Pronar T743 trailer and the *WARRANTY BOOK* and conform with the recommendations contained in these documents,
- understand the trailer's operating principle and how to operate it safely and correctly,
- adhere to the established maintenance and adjustment plans,
- comply with general safety regulations while working,
- prevent accidents,
- comply with the road traffic regulations and transport regulations in force in a given country, in which the trailer is used,
- carefully read the Operator's Manual of the agricultural tractor, PTO shaft and weigher (if included in trailer equipment) and comply with the instructions included in these manuals.

TABLE 1.2 AGRICULTURAL TRACTOR'S REQUIREMENTS

CONTENTS	UNIT	REQUIREMENTS
Brake system		
Pneumatic system 1 – conduit	-	sockets compliant with DIN 74 294
	-	
Pneumatic system 2 – conduit		sockets compliant with ISO 1728
Hydraulic system – conduit		sockets compliant with ISO 7421-1
Nominal pressure of the system 1 p.	bar	5.8 – 6.5
Nominal pressure of the system 2 p.	bar	6.5
Nominal pressure of the hydraulic system	bar	150
Hydraulic system		
Hydraulic oil	-	HL 32
Pressure rating of the system	MPa	16
Oil demand:	l	15
Electrical system		
Electrical system voltage	V	12
Attachment socket	-	7 polar compliant with ISO 1724
Tractor hitches		
Maximum vertical drawbar load	kg	3 000
Other requirements		
Minimum tractor power demand	kW / Horsepower	161.7 / 220
Cigarette lighter socket (1)	V	12

(1) – *Weigher power supply (optional equipment)*

The trailer may only be used by persons, who:

- are familiar with the contents of this publication and with the contents of the agricultural tractor Operator's Manual,
- have been trained in trailer operation and safe operation,

- have the required authorisation to drive and are familiar with the road traffic regulations and transport regulations.

IMPORTANT!

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

- **for transporting people and animals,**
- **using the machine to transport and trans-ship any materials other than those listed in the manual.**

1.3 OPTIONAL EQUIPMENT

TABLE 1.3 Trailer optional equipment

EQUIPMENT	STANDARD	ADDITIONAL	OPTIONS
Operator's Manual	•		
Warranty Book	•		
Pneumatic system 2 conduit		•	
Pneumatic, double line breaking system with ALB			•
Combined (hydraulic+ pneumatic) breaking system			•
Hydraulic breaking system			•
Mudguards set	•		
Wheel chocks	•		
Ball drawbar	•		
Slow-moving vehicle warning sign		•	

EQUIPMENT	STANDARD	ADDITIONAL	OPTIONS
Warning reflective triangle		•	
EZ 400 weigher Operator's Manual		•	
Complete set of wall extensions.	•		
Electrical system with weigher		•	
Electrical system without weigher	•		
Tarpaulin cover	•		
Pipe chute			•
PTO shaft	•		
Hydraulic steering system			•
Hydraulic axle blocking system			•

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,
- chains,
- 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. Securing elements should be attached to permanent structural elements of the trailer (longitudinal members, crossbars etc.). 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.

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.

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.

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.

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.

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.

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 dismantling use the appropriate tools, equipment (overhead travelling crane, crane or hoist etc.), using personal protection equipment, i.e. protective clothing, footwear, gloves and eye protection 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 and the *WARRANTY BOOK*. 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.
- The user is obliged to acquaint himself with the construction, action and the principles of safe usage of the trailer.
- 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 trailer 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 machine always check its technical condition, especially in terms of safety. In particular, check the drawbar eye and the drawbar, axle system,

signalling lights, safety guards, correct mounting of conveyor and connected hydraulic and brake system elements.

- 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.
- When operating the machine wear protective gloves and use the appropriate tools.
- In the event of any fault or damage whatsoever, do not use the machine until the fault has been corrected. The trailer must not be used when not in working order.
- Assembly and disassembly of extension walls, the frame and tarpaulin cover, can only be carried out with the use of appropriate platforms, ladders or from a ramp. These fittings must be in good condition to fully protect the persons working on them against falling. The above procedure should be performed by at least two persons.
- In the final phase of folding the tarpaulin cover, at all times hold with one hand the railing of the fenced platform or top of the front frame. Non-compliance with this rule can put the user at risk of falling.
- While walking or standing on trailer or in the container do NOT use mudguards and wheels etc. for this purpose. Steps and platforms are designed for use while working on trailer. Trailer and agricultural tractor must at this time be immobilised with parking brake, PTO shaft disconnected and the tractor cab closed and protected against access of unauthorised persons. Trailer should be additionally protected with the use of chocks.

2.1.2 HITCHING AND DISCONNECTING THE TRAILER

- Be especially careful when hitching the machine. Ensure appropriate visibility and check that persons assisting in hitching the machine are at a safe distance from danger zone.
- The trailer and tractor must not be attached if the hydraulic oil in the two machines is of different types, the trailer drawbar is not compatible with the tractor

hitch or electric connections or brake connections of the tractor or the trailer are damaged.

- While connecting the trailer to the tractor, use the appropriate hitch. After completing the coupling of the machine check the safety of the hitch. Carefully read the tractor Operator's Manual.
- When hitching, there must be nobody between the trailer and the tractor. A person assisting in the hitching of the machine should stand in such a place (beyond the area of danger), in order to be continuously visible to the tractor driver.
- When connecting the hydraulic conduits to the tractor, make sure that the tractor hydraulic system and trailer are not under pressure.
- Coupling and uncoupling the trailer may only take place when the machine is immobilised by use of the parking brake.
- After completing trailer hitching, the support leg must be maximally raised and mechanical raising/lowering crank placed in neutral position.
- While lowering the support, take particular care with regard to the danger of being crushed.
- While placing the support in transport position or rest position, do not place hand between moving elements of the support. Ensure that the support is properly locked with the use of an interlock.
- The agricultural tractor to which the trailer will be linked and coupled must be technically reliable and must fulfil the requirements of machine Manufacturer.
- When disconnected from the tractor the trailer must be secured by parking brake and chocks.

2.1.3 HYDRAULIC AND PNEUMATIC SYSTEMS

- The hydraulic system is under high pressure when operating.
- Regularly check the technical condition of the connections and the hydraulic and pneumatic leads. There must no oil or air leaks.

- 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 machine 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. Never mix two types of oil.
- 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.
- Unauthorised adjustment of the hydraulic manifold's settings is strictly forbidden.

2.1.4 TRANSPORTING THE MACHINE

- When driving on public roads, comply with the road traffic regulations. in force in the country, in which the trailer is used.
- Do not exceed the permitted speed arising from limitations of road conditions and construction limitations. Adjust travel speed to the prevailing road conditions, trailer load and road traffic regulations limits.
- The machine must NOT be left unsecured. When not connected to the tractor, the trailer must be immobilised with parking brake and protected against rolling with

chocks or other objects without sharp edges placed under the front and back wheels.

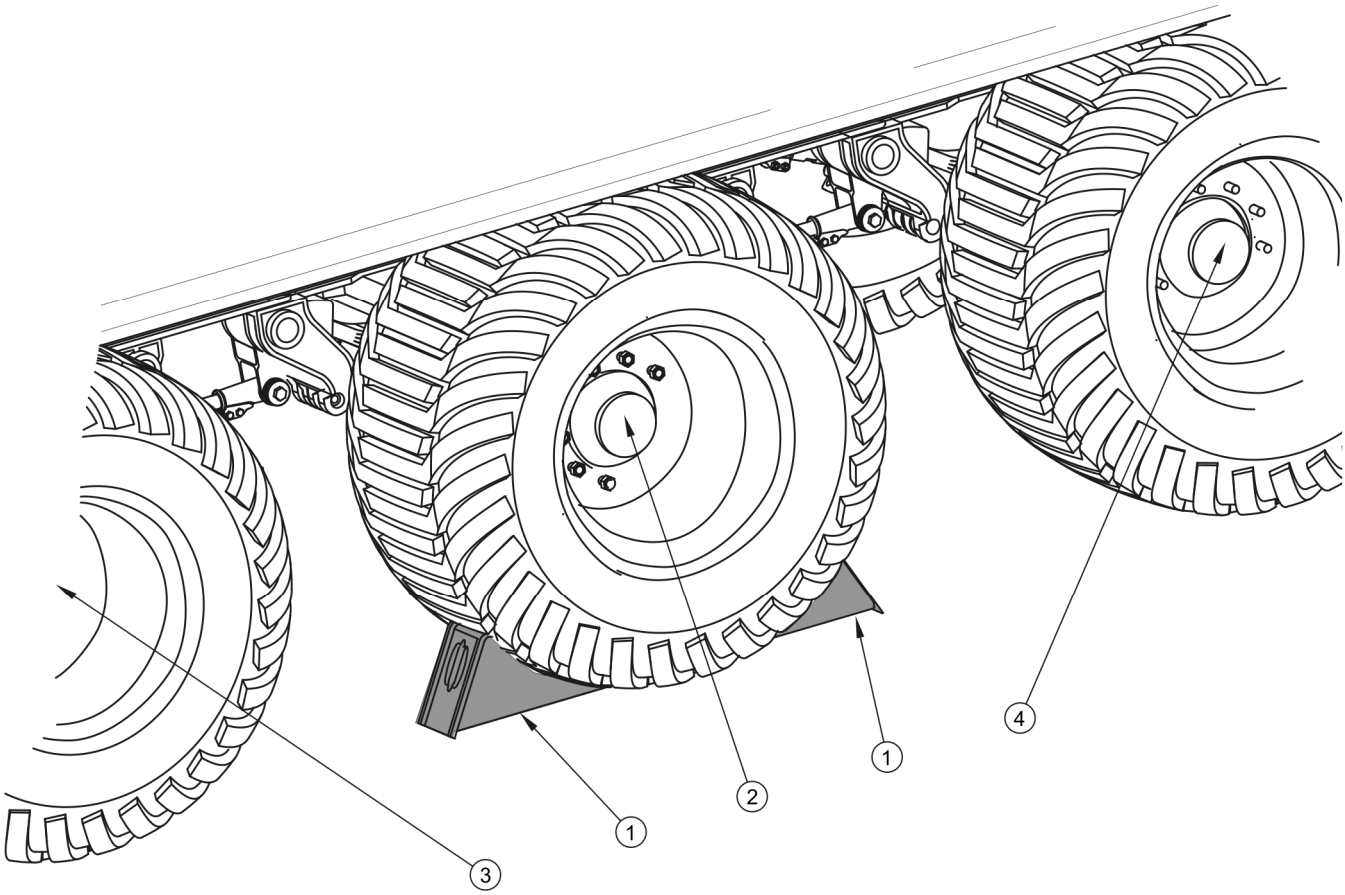


FIGURE 2.1 Method of placing chocks

(1) wheel chock, (2) middle fixed axle, (3) front turning axle, (4) rear turning axle

- Chocks should be placed only under one wheel (one in front of the wheel, the second behind the wheel - figure (*2.1*)). Chocks should not be placed under wheels on turning axles.
- Exceeding the maximum load capacity of the trailer may damage it, and also threaten the safety of traffic and reduces the effectiveness of braking action.
- Before using the trailer always check its technical condition, especially in terms of safety. In particular, check the technical condition of the hitch system, the axle system, the brake system, indicator lights and the connective elements of the hydraulic, pneumatic and electrical systems.

- Before driving off check that the parking brake is released, the braking force regulator is positioned in the proper position (applies to manual three position regulators).
- While driving on public roads the trailer must be fitted with a certified or authorised reflective warning triangle.
- If the trailer is the last vehicle in the group, a slow-moving vehicle sign should be placed on the trailer's rear load box wall – (figure *2.2)*.
- Periodically drain water from the air tank in pneumatic system. During frosts, freezing water may cause damage to system components.
- Reckless driving and excessive speed may cause accidents.
- Before moving off make sure that the support is properly placed in transport position and secured.
- Forbidden loads as well as people or animals must not be carried on the trailer.
- 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 driving. The brake system is adjusted to the gross weight of the trailer, exceeding the weight limit causes drastic reduction of basic braking effectiveness.
- When travelling with a trailer having extension walls installed, take special safety measures, which include: Monitor machine's behaviour when travelling on an uneven terrain, and adjust driving speed to road conditions, slow down early enough when turning.
- 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.
- Do NOT move off or drive when support is lowered.
- do not allow anyone to claim on the trailer when it is moving.

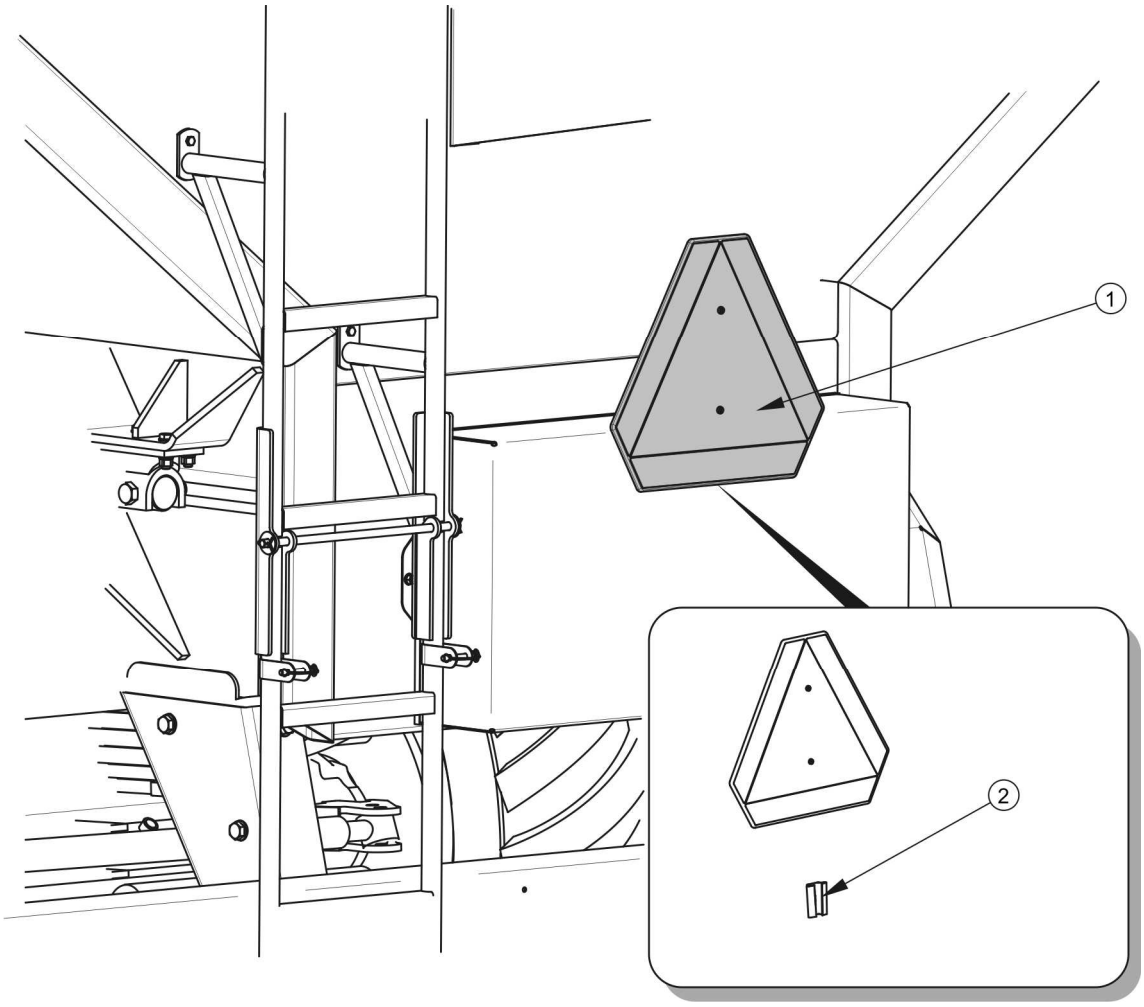


FIGURE 2.2 Mounting place for slow-moving vehicle sign

(1) warning sign, (2) attachment point

2.1.5 TYRES

- After removing a wheel, always check how firmly the nuts are screwed in. Inspection should be carried out each time after first use, after first travel with 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.
- 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.
- Regularly inspect the tightness of nuts securing the wheel to the axle according to the recommendations of the axle Manufacturer.
- 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.
- The trailer is adapted for driving on slopes up to a maximum of 8°. Moving the trailer over slopes may cause the trailer to overturn as a result of loss of stability. Prolonged driving on sloping ground creates a risk of loss of braking efficiency.
- Avoid ruts, depressions, ditches, or driving along roadside slopes. Driving across such obstacles can cause the trailer and tractor to tilt suddenly. This is particularly important because the centre of gravity of the trailer with load (and especially with volumetric load) adversely affects driving safety. Driving near the edges of ditches or canals is dangerous due to the risk of landslides under the wheels of a trailer or tractor.
- The travel speed should be reduced sufficiently in advance of driving to curves, when driving on uneven or sloping terrain. When driving, avoid sharp turns, especially on slopes.

2.1.6 MAINTENANCE

- During the warranty period, any repairs may only be carried out by Warranty Service authorised by the manufacturer. It is recommended that necessary repairs to trailer should be undertaken by specialised workshops.
- In the event of any fault or damage whatsoever, do not use the machine until the fault has been corrected.

- During work use the proper, close-fitting protective clothing, gloves and appropriate tools. When working on hydraulic systems it is recommended to use oil resistant gloves and protective goggles.
- Any modification to the trailer frees the manufacturer 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 secured using parking brake and in addition chocks should be placed beneath trailer wheel. Ensure that unauthorised persons do not have access to the tractor cab.
- Regularly check the technical condition of the safety devices and correct tightening of bolt connections (in particular connections of drawbar eye, wheels).
- Regularly service machine according to schedule defined by Manufacturer.
- Before beginning repair works on hydraulic or pneumatic systems reduce oil or air pressure.
- 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.
- Repair, maintenance and cleaning work should be carried out with the tractor's engine switched off and the ignition key removed. Tractor and trailer should be secured using parking brake and in addition chocks should be placed beneath trailer wheel. Ensure that unauthorised persons do not have access to the tractor cab.
- 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.
- Regularly check technical condition and mounting of all guards and protective elements.
- Before welding or electrical work, the trailer should be disconnected from the power supply. The paint coating should be cleaned. Burning paint fumes are

poisonous for people and animals. Load cell shall be dismantled (in the event of electric welding), if not, it may be damaged. 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 or covered with non-flammable material before commencing welding work. Before beginning work prepare a CO_2 or foam extinguisher.
- In the event of work requiring the trailer to be raised, use properly certified hydraulic or mechanical lifts for this purpose. After lifting the machine, stable and durable supports must also be used. 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).
- Unauthorised adjustment of rear wheel alignment is strictly forbidden. Incorrect alignment leads to accelerated tyre wear and hinders steering.
- Do NOT change the settings of bolts placed on axle body limiting angle of axle turning (turning block bolts are set in the factory). Change of bolt settings may cause damage to braking system elements and damage to tyres.
- After completing work associated with lubrication, remove excess oil or grease. The trailer should be kept clean and tidy.
- Exercise caution when climbing on top of the load box. Climbing on top of the load box is possible through the fenced platform, ladders placed on the back wall, while extension and folding steps attached inside the load box. Do not use mudguards and wheels etc. for this purpose. Before entering load box prevent trailer moving with parking brake and chocks.
- 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.
- Do NOT make repairs to drawbar eye (straightening, repairing or welding). Damaged drawbar eye should be replaced.

- After changing the hydraulic oil, the used oil should be properly disposed of.

2.1.7 LOADING AND UNLOADING

- Loading and unloading work should be carried out by someone experienced in this type of work.
- The trailer is not intended for transporting people, animals or hazardous materials, to which separate regulations apply.
- 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 driving. The brake system is adjusted to the gross weight, exceeding the weight limit causes drastic reduction of basic braking effectiveness.
- Incorrect load distribution and overloading the machine may cause the trailer to tip over or cause damage to its components.
- Incorrect loading of trailer may cause deterioration of machine steering characteristics and braking action.
- Do NOT move off or drive with extended front conveyor.
- Do NOT climb on load box during loading and unloading.
- Do not be in the danger zone i.e. near working auger conveyor, between tractor and trailer and near to trans-shipment system drive elements.
- After completing unloading, ensure that the load box is empty.

2.1.8 OPERATION OF PTO SHAFT

- While reversing and during turns, the PTO drive must be disengaged.
- Do NOT leave the tractor cab, when the machine drive is engaged.
- The PTO shaft has markings on the casing, indicating, which end of the shaft shall be connected to the tractor.
- Never use a damaged PTO shaft, it may cause an accident. A damaged shaft must be repaired or replaced.

- Disconnect the drive shaft each time when it is not necessary to drive the machine, or when the tractor and trailer are at an unsuitable angle to each other.
- The chains preventing the shaft cover from turning while the shaft is working, shall be secured to a fixed element of trailer structure.
- Do NOT use the securing chains to support the shaft while machine is parked or when transporting the machine.
- Before using the machine, the user should thoroughly acquaint himself with the PTO shaft Operator's Manual and adhere to the recommendations contained in it.
- The trailer may only be connected to the tractor by appropriately selected PTO shaft recommended by the Manufacturer.
- The drive shaft must be equipped with a cover. Do NOT use the shaft with damaged or missing guards.
- After connecting shaft ensure that it is correctly and safely connected to the tractor and to the trailer.
- Before starting the machine make sure that there are no bystanders (especially children) in the danger zone. The machine operator is obliged to ensure proper visibility of the machine and the working area.
- When using the trailer and power takeoff shaft, do not use PTO rotation speed greater than 1000 rpm. Do NOT overload shaft and machine and also engage the clutch suddenly. Before starting PTO shaft make certain that the PTO rotation direction is correct.
- Before disconnecting the shaft, turn off the tractor engine and remove the key from the ignition.
- Do NOT wear loose clothing, straps or whatever that may become wrapped round the rotating drive shaft. Contact with rotating PTO shaft may cause severe injuries.
- Do NOT go over and under the shaft or stand on it equally during work as also when the machine is parked.

2.1.9 SAFETY TIPS FOR HYDRAULIC CLUTCH OPERATION

- The user should ensure that for operation, maintenance and repairs only authorised persons are employed, who are familiar with the mounting and maintenance instructions, understand them and observe them in order to:
    - ⇨ avoid physical danger and health risk to user and to third persons,
    - ⇨ ensure operational safety of drive units,
    - ⇨ Eliminate danger to the environment through incorrect machine operation.
- Conax clutch should be operated, maintained and repaired exclusively by authorised, trained and instructed personnel.
- All work on Conax clutch may only be performed with disconnected drive engine. Secure engine against repeated, unintentional starting.
- If during clutch operation an unusual, disturbing sound or vibration is noticed, immediately stop machine.
- Permissible loading and maximum revs may not be exceeded.
- Do not exceed or reduce recommended connection pressures. In the event of insufficient pressure the clutch slips, whereas excessively high pressure may destroy the clutch. Equally application of short lasting high-pressure impact, e.g. in order to remove blockages is forbidden.
- On no account may oil or grease come in contact with abrasive surfaces, if they do the clutch will not achieve the required rotation moment.
- Abrasive coatings may not be cleaned with solvents, i.e. benzene, acetone or kerosene. If the coating is contaminated with oil, it must be replaced.
- Cleaning substances may not come into contact with the clutch.
- The clutch may not be cleaned under running water, e.g. hose or nozzle jet with hot steam stream.
- Note: During maintenance and repair work there is a danger of burning by clutch, which has heated up during work.

- Attention should be given to the tightness of oil conduits and connections in steering parts.

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 the trailer for purposes other than those for which it is intended,
- being between the tractor and the machine while the engine is working and when the trailer is being attached,
- being on the machine while the engine is working,
- operating the trailer with the safety guards removed or faulty,
- not maintaining safe distance during loading or unloading of trailer,
- operation of the trailer by persons under the influence of alcohol,
- 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 during unloading, loading and hitching machine,
- carrying out repair and maintenance work in line with operating safety rules,
- 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,
- maintaining safe distance from forbidden or dangerous places,

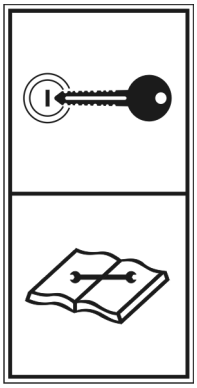
- a ban on being on the machine when it is operating,
- maintaining the machine in due technical condition.

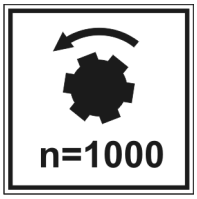
2.3 INFORMATION AND WARNING DECALS

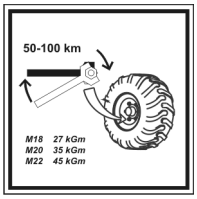
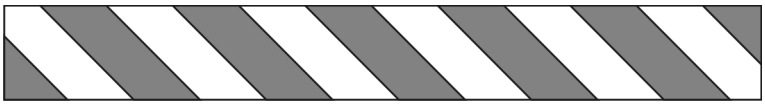
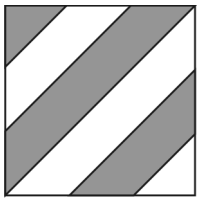
The trailer is labelled with the information and warning decals mentioned in table (*2.1)*. The symbols are positioned as presented in figure (*2.3*). Throughout the time it is in use, the user of the machine is obliged to take care that notices and warning and information symbols located on the trailer 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. During machine cleaning do not use solvents which may damage the coating of information label stickers and do not subject them to strong water jets.

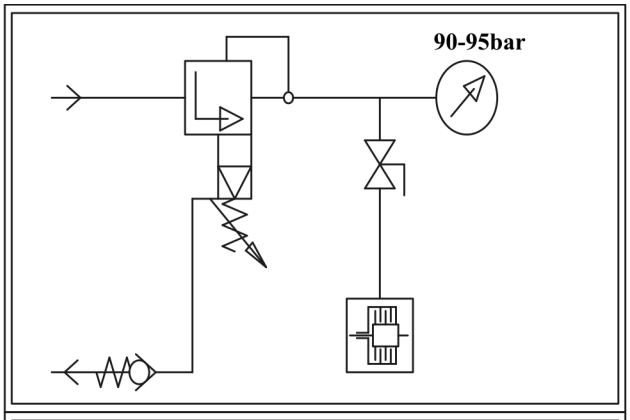
TABLE 2.1 Information and warning decals

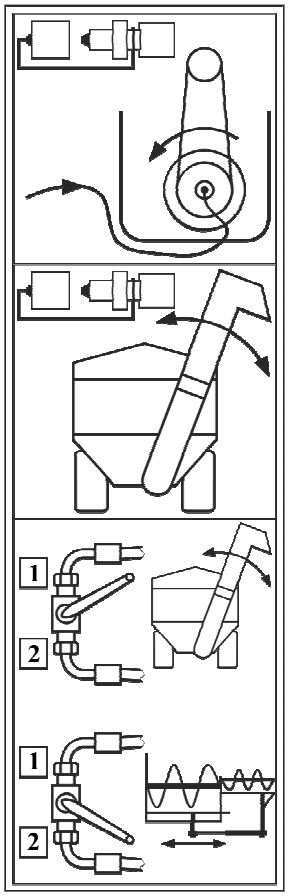
ITEM	DECAL	MEANING OF SYMBOL
1		Note: Before starting work, carefully read the OPERATOR'S MANUA.

ITEM	DECAL	MEANING OF SYMBOL
2		Before beginning servicing or repairs, consult Operator's Manual, switch off engine and remove key from ignition.
3		Danger of being pulled in by rotating auger conveyors. Do not approach and do not place hands near rotating mechanisms.
4		Danger of crushing. Do not place limbs in crushing danger zone.
5		Caution! Do not stand on auger conveyors.

ITEM	DECAL	MEANING OF SYMBOL
6		Danger of being pulled in by rotating auger conveyors of the trailer.
7		Danger of crushing to limbs. Take care when in the vicinity of rotating machine elements.
8		Before entering load box or on platform disconnect tractor engine and remove key from ignition.
9		Maximum rotation speed of Power Takeoff Shaft

ITEM	DECAL	MEANING OF SYMBOL
10		Check correct tightness of nut and bolt connections on axles.
11		Grease according to the recommendations in the Operator's Manual .
12		Clearance warning decal.
13		Clearance warning decal.
14	**T743 PRONAR**	Machine type.

ITEM	DECAL	MEANING OF SYMBOL
15	 Ciśnienie robocze oleju wsprzęgle hydraulicznym nie może przekraczać zakresu 90-95bar. Ciśnienie resztkowe przy wyłączonym sprzęgle max. 2 bar. Przewód powrotny sprzęgła hydraulicznego łączyć tylko pod gniazdo wolnego spływu hydrauliki zewnętrznej ciągnika. Pozagregowaniu przyczepy z innym typem ciągnika sprawdzać ciśnienie robocze sprzęgła 90-95 bar i w razie potrzeby wyregulować. Working pressure of hydraulic clutch should not exceed 90-95bar. Restpressure of turned-off hydraulic clutch max. 2 bar. Return hose of hydraulic clutch connect only with return-flow socket. After attaching the trailer to another tractor check and set working pressure of hydraulic clutch on 90-95 bar. Arbeitsdruck der Hydraulikkupplung kann nicht 90-95 bar überschreiten. Restdruck bei ausgeschalteter Hydraulikkupplung max. 2 bar. Rücklaufleitung der Hydraulikkupplung nur mit Rücklaufeingang der Schlepperhydraulik verbinden. Nach Ankoppelung des Anhängers mit anderem Schlepper der Arbeitsdruck der Hydraulikkupplung überprüfenund auf 90-95 bar einstellen.	Hydraulic clutch operation information decal.

ITEM	DECAL	MEANING OF SYMBOL
16		Hydraulic connection function and hydraulic valves designation information decal.
17	1 2	Hydraulic valve lever position.
18	3000 kg	Maximum vertical drawbar load
19	240 kPa	Air pressure in the tyres

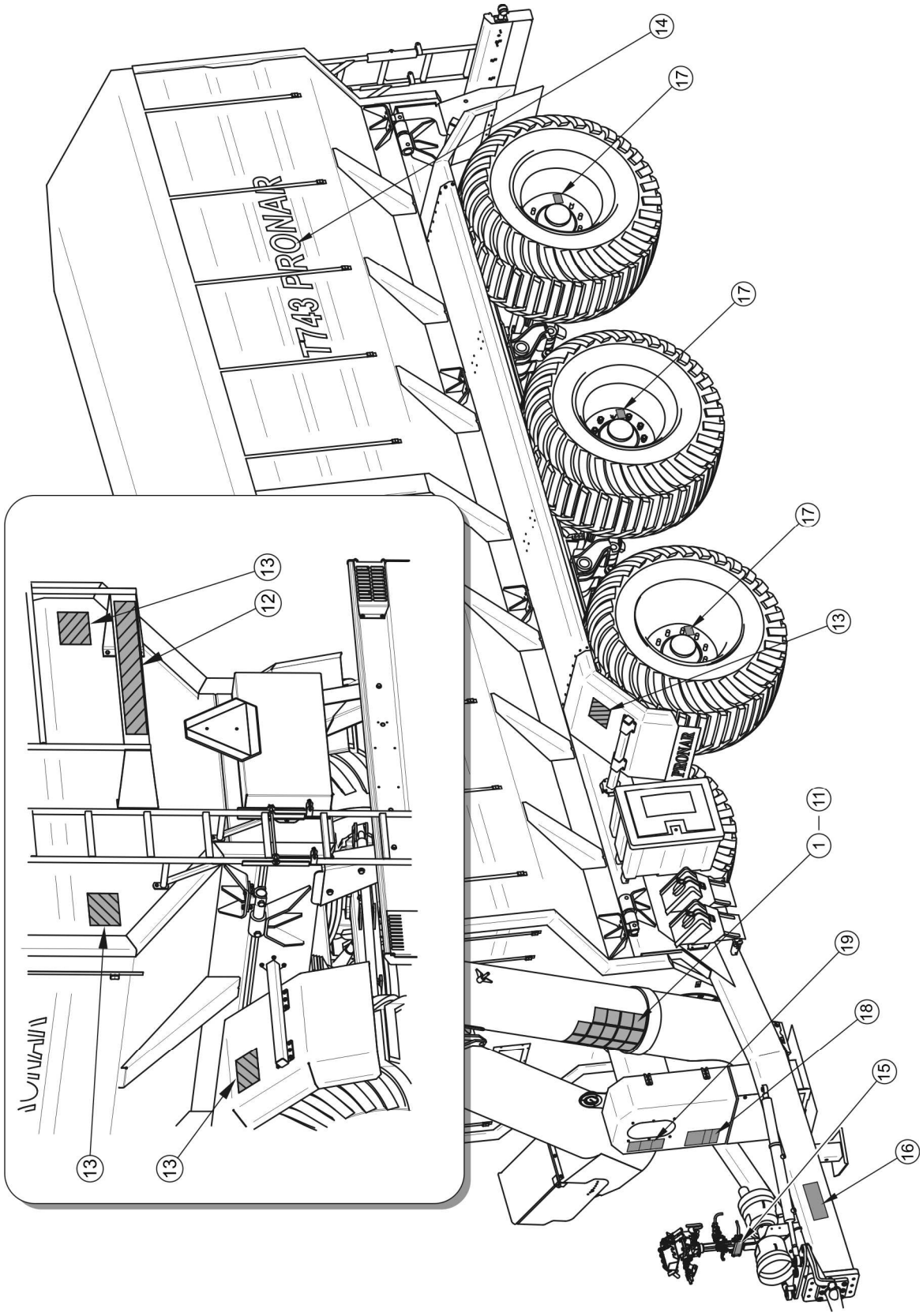


FIGURE 2.3 Locations of information and warning decals.

SECTION

3

DESIGN AND OPERATION

3.1 TECHNICAL SPECIFICATION

TABLE 3.1 TECHNICAL SPECIFICATION OF STANDARD FITTINGS

CONTENTS	UNIT	T743
Dimensions		
Total length	mm	10 392
Width	mm	2 900
Height	mm	3 660
Load box dimensions		
Length	mm	7 265
Width	mm	2 492
Maximum height	mm	2 570
Technical specification		
Load box capacity	m3	34
Maximum design carrying capacity	kg	22 700
Maximum gross weight	kg	33 000
Tare weight	kg	10 300
Maximum design speed	km/h	40
Axle base	mm	1 810
Tyres		
Tyre	-	700/50-26.5 16PR
Load capacity index	-	174 A8
Air pressure in the tyres	kPa	240
Other information		
Electrical system voltage	V	12
Axle track	mm	2 200
Permissible hitching system loading	kg	3 000
Drawbar attachment point lift	mm	600
Minimum clearance	mm	380
Hydraulic oil demand	l	15
Minimum tractor power demand	hp	220
Maximum PTO speed	RPM	1 000

CONTENTS	UNIT	T743
Minimal clutch working pressure	bar	15
Maximum clutch working pressure	bar	16

3.2 CHASSIS

Trailer chassis is shown on figure *(3.1)*. The frame is made as a welded structure from steel profiles. The main support elements are two longitudinal members connected with crossbars. To the frame is welded the drawbar longitudinal members, at the end of which is the hitching eye plate and drawbar eye (5). On the left side of the drawbar is screwed the support with two gear mechanism.

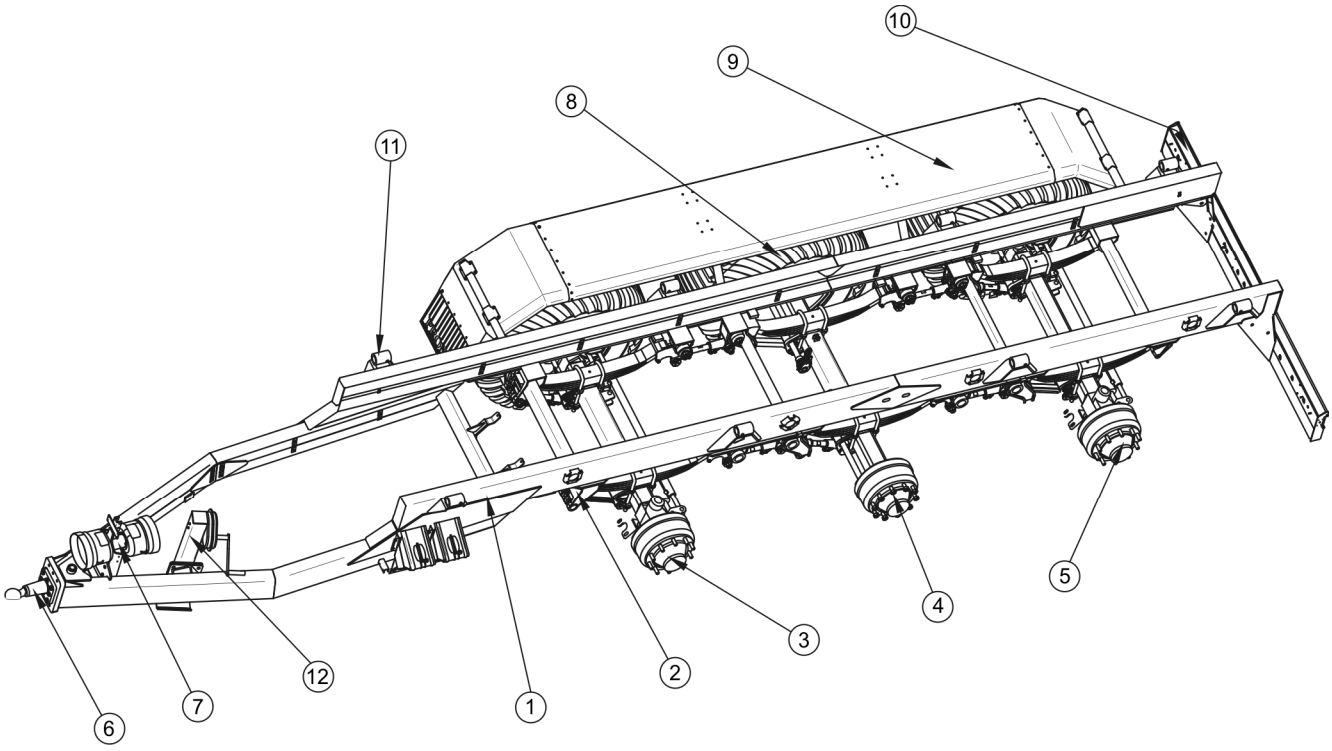


FIGURE 3.1 Agricultural trailer chassis

(1) lower frame, (2) suspension, (3) front steering axle, (4) middle fixed axle, (5) rear turning axle, (6) drawbar hitching eye, (7) PTO connection, (8) wheel, (9) mudguard, (10) rear lighting beam, (11) weight simulator / loading link cell, (12) parking stand

At the rear part of the frame the tridem type suspension (2) with parabola leaf springs is secured. Front axle and rear axle (3) and (5) are steering axles with trailer hydraulic steering system. Middle axle (4) is rigid.

Depending on installed electrical system optional equipment, weight simulators (10) or loading link cells are secured in 8 sockets in the upper part of the frame. The trailer load box is mounted on them.

3.2.1 DRAWBAR HITCHING EYE

As standard, Pronar T743 agricultural trailer is equipped with ball drawbar of internal diameter ∅ 80mm. The ball drawbar is secured to the head plate (2) of the drawbar with 6 bolts. Due to the use of steering mechanism, the drawbar hitching eye's vertical position is not adjustable.

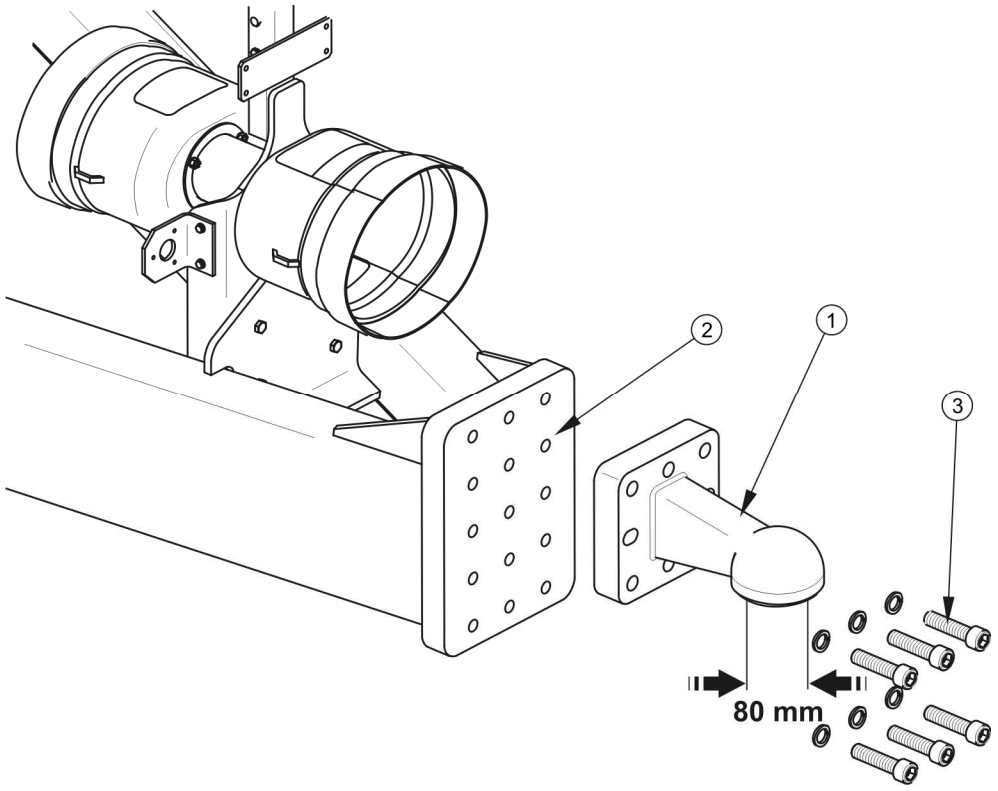


FIGURE 3.2 Drawbar hitching eye

(1) ball drawbar ∅80 mm, (2) drawbar head plate, (3) securing screws

3.2.2 TRAILER PARKING STAND

Trailer parking stand (1) is mounted on the left side of the chassis on drawbar longitudinal rail. It is designed to support an unhitched machine and set height of the drawbar during hitching to agricultural tractor. When travelling the parking stand must be set in the transport position maximally raised and secured using pin (5), and crank (3) setting neutral position

(A). The support is equipped with two gear gearing mechanism. Setting is changed by pulling crank to position (C) or pressing it into position (B).

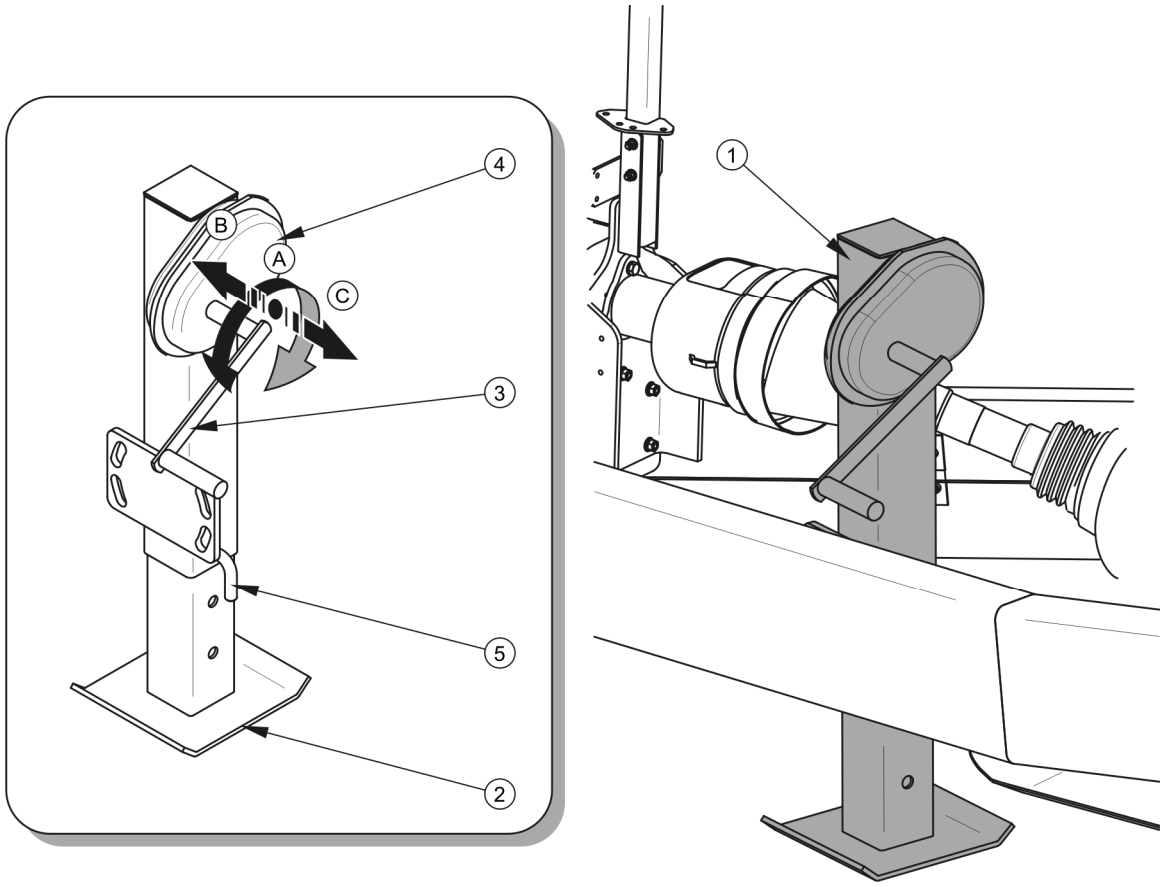


FIGURE 3.3 Trans-shipment shaft support

(1) support (2) support foot, (3) crank, (4) gearing, (5) securing pin, (A) neutral position, (B) gear position I , (C) gear position II

TIP

Permissible vertical loading of support KRA 750 is 7,500 kg.

IMPORTANT!

Before moving off, check that the support is maximally raised, and the crank is set in neutral position (A). The support foot must be additionally secured using a securing pin.

3.3 LOAD BOX

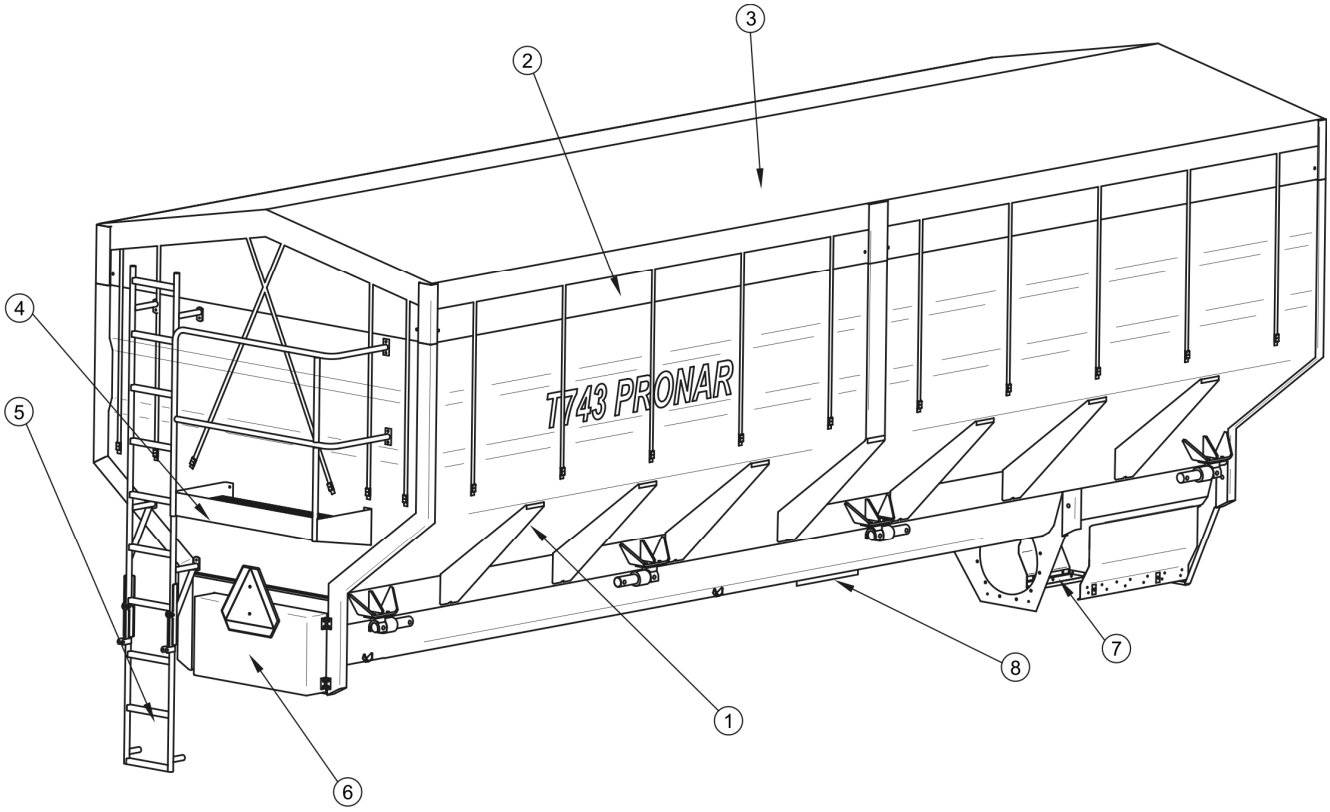


FIGURE 3.4 Load box design

(1) load box (container), (2) height extension set, (3) cover tilt, (4) rear platform, (5) ladder, (6) rear chain gearing, (7) chute slide, (8) inspection cover

The load box is constructed as a welded structure and seated on the lower frame with the aid of weight simulators or loading link cells. On the upper part of the load box is installed a wall extension set (2) with canvas cover (3). On the rear wall of the load box is placed the platform (4) and folding ladder (5). In the lower part of the rear wall is the chain gearing (6).

In the container channel placed in the bottom of the load box are openings, which are closed with inspection covers (8) – figure (*3.4*). in the front part is installed the chute slide (7), controlled with the aid of a hydraulic ram. Inspection covers and chute slide are designed for the complete emptying of the load remains from the container.

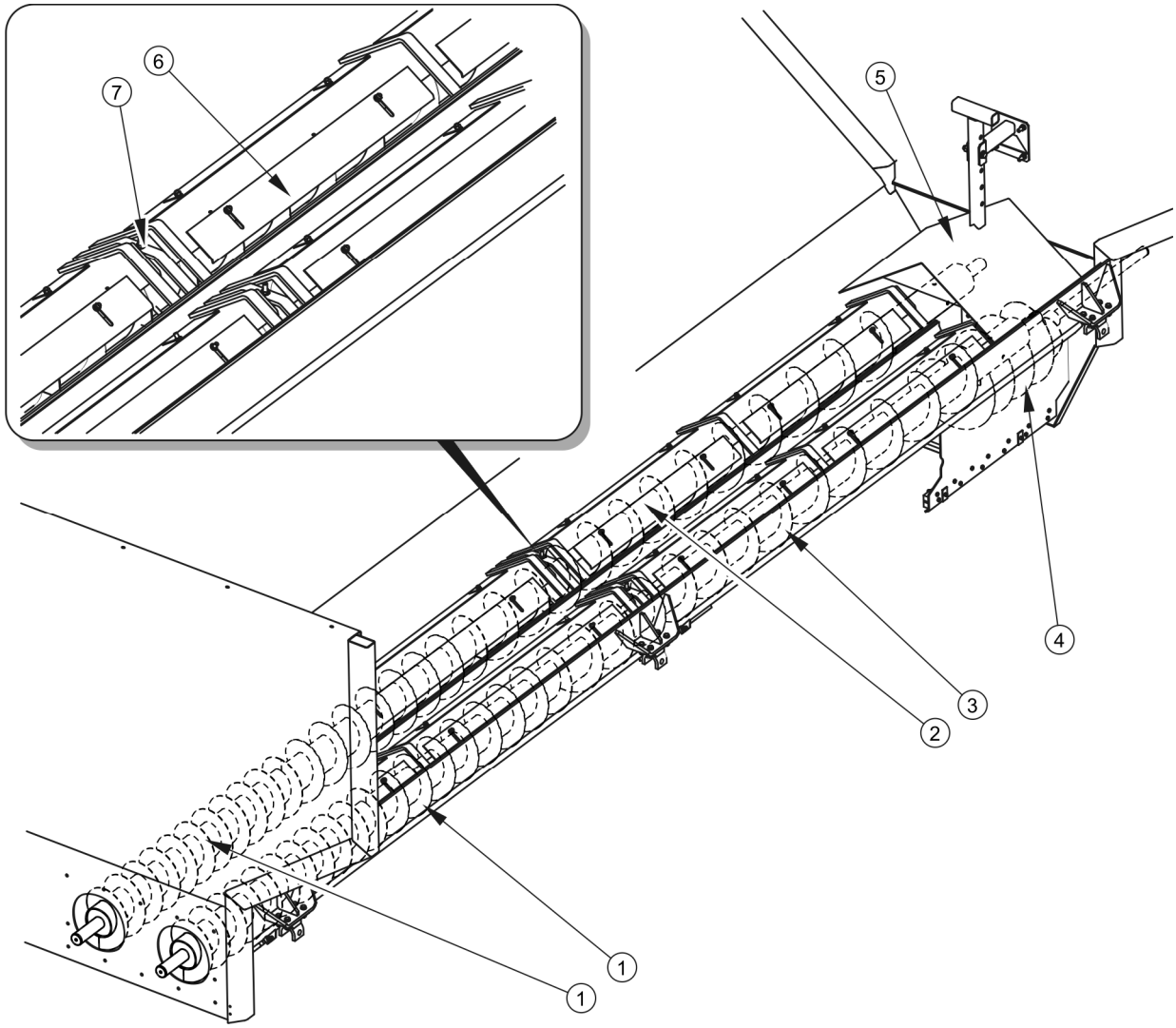


FIGURE 3.5 Load box design

(1) auger conveyor IX (rear), (2) auger conveyor X (left front), (3) auger conveyor XI (right front), (4) auger conveyor VIII (collecting), (5) auger intake control roof, (6) channel slide cover, (7) bearing connector

On the front wall of the load box (inside container) all their intake control roof is bolted to brace (5) – figure (*3.5*). By changing the height of the roof one regulates the speed of grain flow to the collecting auger conveyor (4), placed in the lowest part of the container (beneath roof). Remaining 4 auger conveyors are placed in two parallel channels of load box. Rear auger conveyors (1) bearings are in rear chain gearing and bearing connectors (7) in central part of load box. Auger conveyor (3), receiving torque from gearing shaft (placed on front wall of load box) is connected to augur conveyor (1) from right side of trailer.

Speed of inflow of grain to container channel depends on the setting of channel slides (6), placed over conveyors.

Auger conveyors transporting grain in container channels have a variable pitch, which prevents blocking during unloading and enables even transport of grain from rear part of low box to the collecting auger conveyor. Rotation speed of conveyors (1), (2) and (3) is dependent on the setting of gear wheel lever on front wall of load box.

3.4 FRONT CONVEYOR

Front conveyor is made in two basic elements: vertical conveyor (1) – figure (*3.6*) and folding back conveyor (2). Collecting pipe (7) is directly connected to the front wall of the container. Inside the pipe is placed the collecting auger conveyor, which transfers load from load box to front conveyor. Grain is then transported by conveyors (1) and (2) the regulated discharge chute (4).

Power transmission of auger conveyors is transmitted through front chain gearing and then through intersecting axis gear placed in the lower part of the vertical conveyor pipe. After connecting PTO drive in tractor both auger conveyors begin to rotate. Gathering auger conveyor and auger conveyors placed in low box rotate after initiation of hydraulic clutch.

The upper conveyor (folded down), is raised and lowered by the age of a hydraulic ram (2) – figure (*3.7*). After complete extension of folded down conveyor the locking bolt (6) bolts the striker tube and is clamped by spring (5). At the moment of starting the hydraulic ram (1), the striker (4) moves the bolt, folding conveyor is secured, due to which upper sub-assembly is placed in transport position.

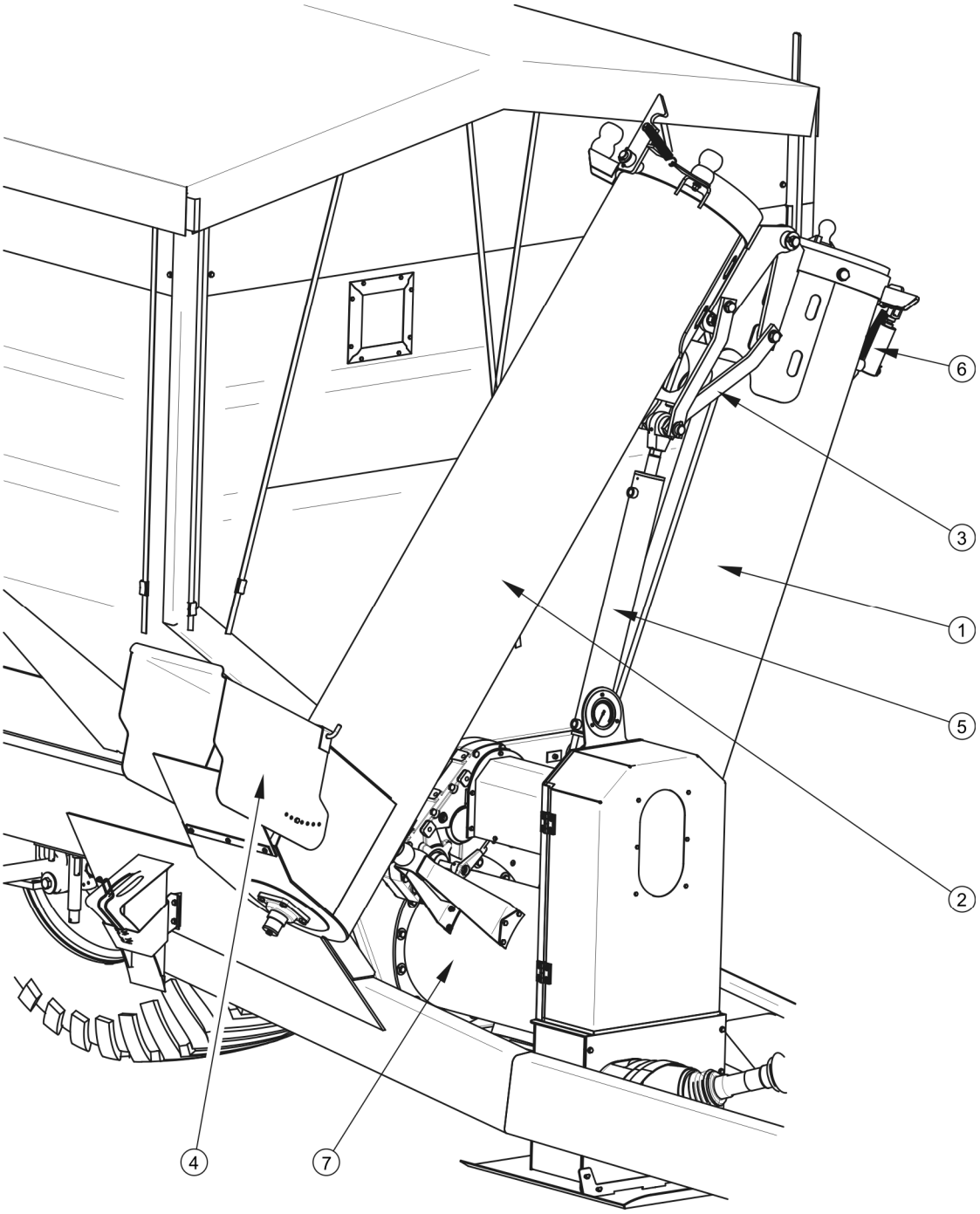


FIGURE 3.6 Front conveyor

(1) vertical conveyor, (2) folding conveyor, (3) conveyor hinge, (4) chute, (5) folding ram / unfolding conveyor, (6) ram bolting folded conveyors, (7)collection pipe

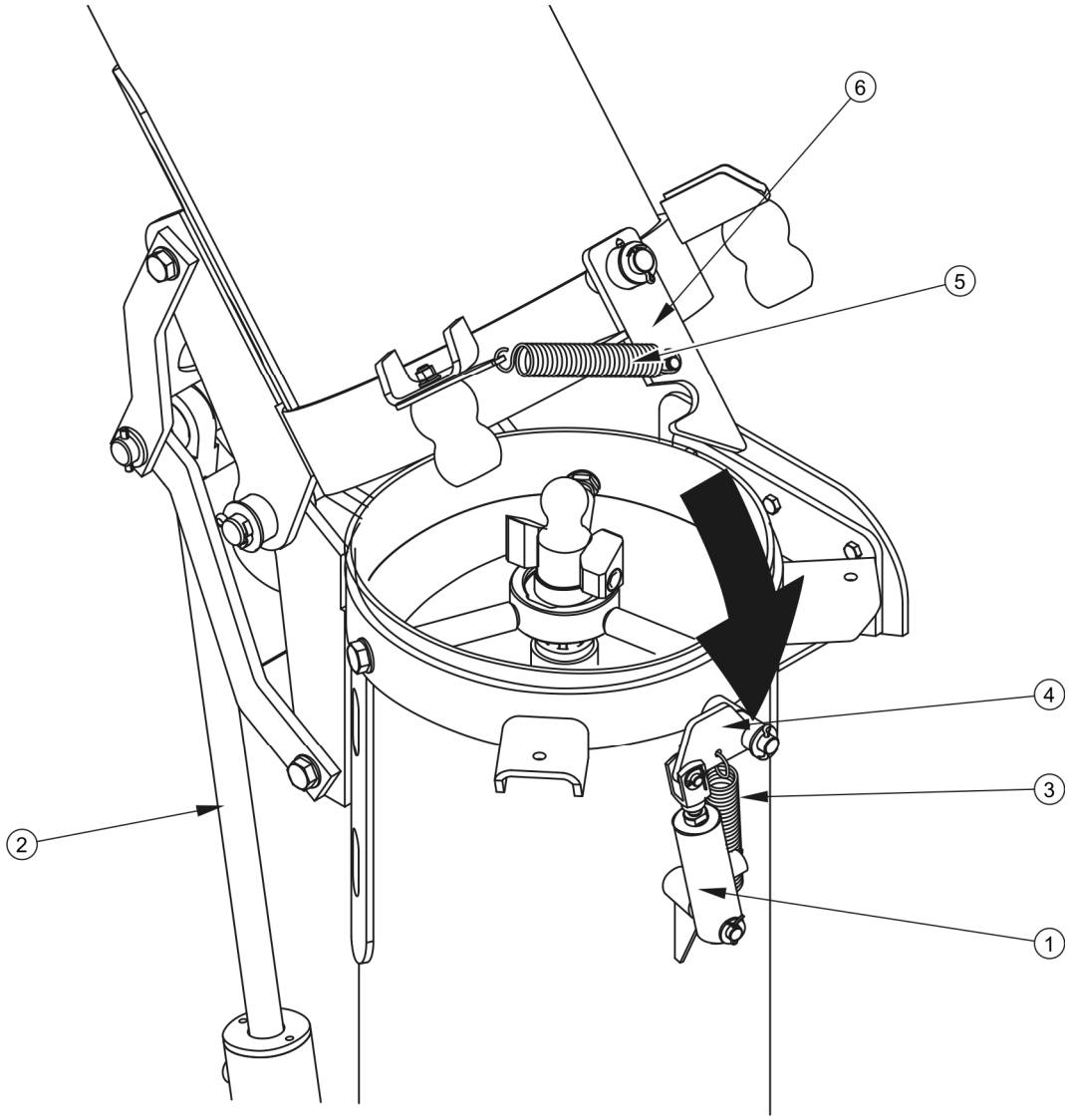


FIGURE 3.7 Bolting method

(1) ram unbolting folded conveyor, (2) ram folding/unfolding conveyor, (3) spring, (4) striker, (5) spring, (6) locking bolt

3.5 FRONT CHAIN TRANSMISSION

Front chain transmission transmits torque to the two auger conveyors placed in container and front auger conveyor. Gear design is shown on figure (*3.8*).

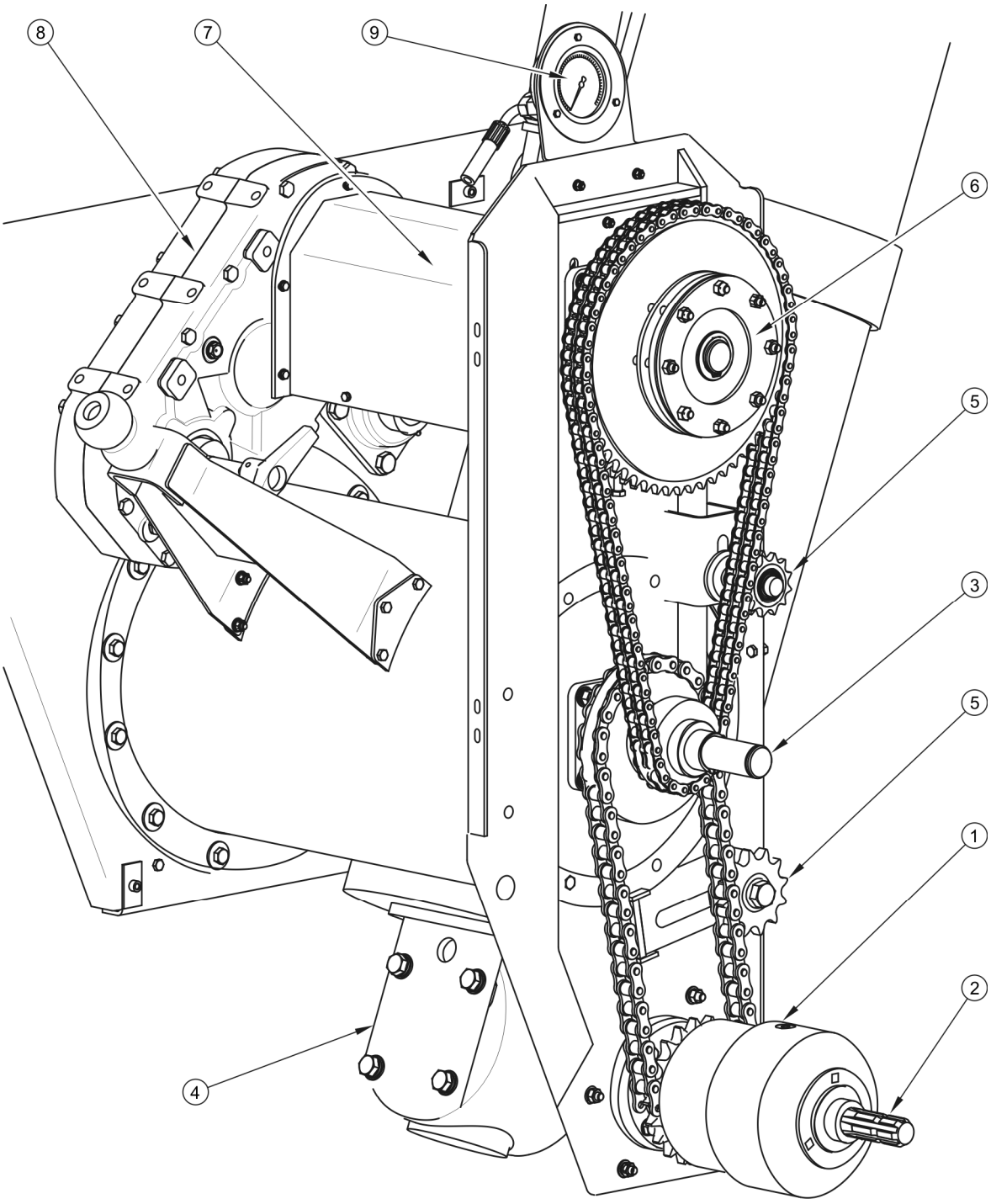


FIGURE 3.8 Front chain transmission

(1) hydraulic clutch, (2) drive shaft, (3) collecting auger conveyer shaft, (4) intersecting axis gearing, (5) toothed cog securing pin, (6) abrasive friction clutch, (7) exit shaft housing , (8) gear wheel transmission (two gears), (9) pressure gauge

Power transmission shaft (2) is connected through PTO shaft and articulated shaft to PTO of tractor. Hydraulic clutch is located on drive shaft. Both transmission stages are working after engaging PTO drive and after initiation of hydraulic clutch (1). The torque is transmitted via gear wheels to intersecting axis gearing (4), which drives two auger conveyors mounted in the front conveyor. Next, the torque is transmitted to further receivers – the collecting auger conveyor (3) and two auger conveyors (divided) placed in container.

In upper part of gearing, on rear wall housing is placed the pressure gauge indicating actual pressure of hydraulic oil conducted to hydraulic clutch.

IMPORTANT!

Oil pressure in hydraulic clutch may not be greater than 95 bar or less than 90 bar. Too low power pressure causes slipping clutch and therefore more rapid wear of abrasive surface, too high pressure may damage clutch body.

3.6 GEAR WHEEL TRANSMISSION

Front gear wheel transmission (1) is placed on the front wall of load box. Drive is transferred to drive shaft (2) from front chain drive. Torque is directly transmitted to right front auger conveyor placed in load box.

Gear transmission is equipped with lever a enabling change of setting. In lever setting (B) high rotation is set for conveyors placed in container, position (C) reduces mechanism RPM. Position (A) is neutral setting and may be used to remove blockages or thoroughly clean the container channel.

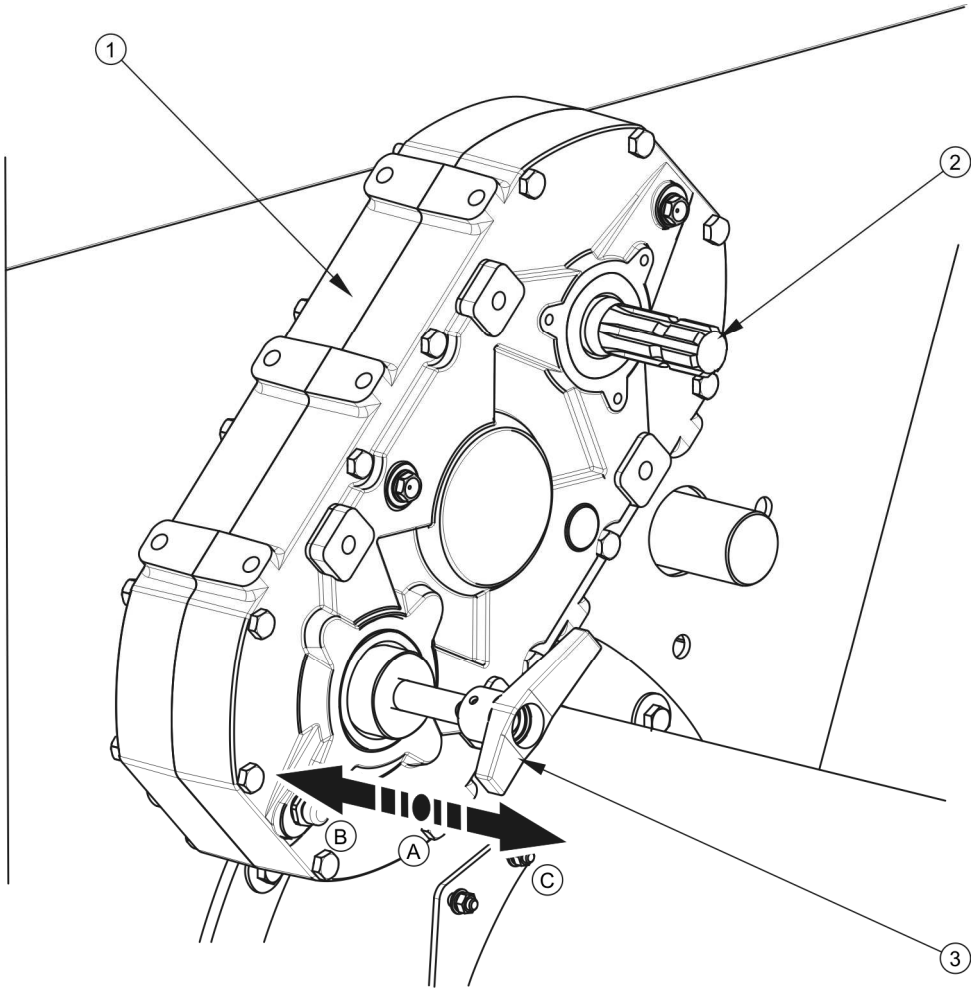


FIGURE 3.9 Gear wheel transmission

(1) gear wheel transmission, (2) drive shaft (3) setting change lever, (A) neutral position, (B) RAPID RPM position, (C) SLOW RPM position

3.7 REAR CHAIN TRANSMISSION

Rear chain transmission is mounted on container wall. It transmits torque from auger conveyors located in channel on the right side of the container to 2 conveyors located on the left side of the container. Gear design is shown on figure (*3.10*).

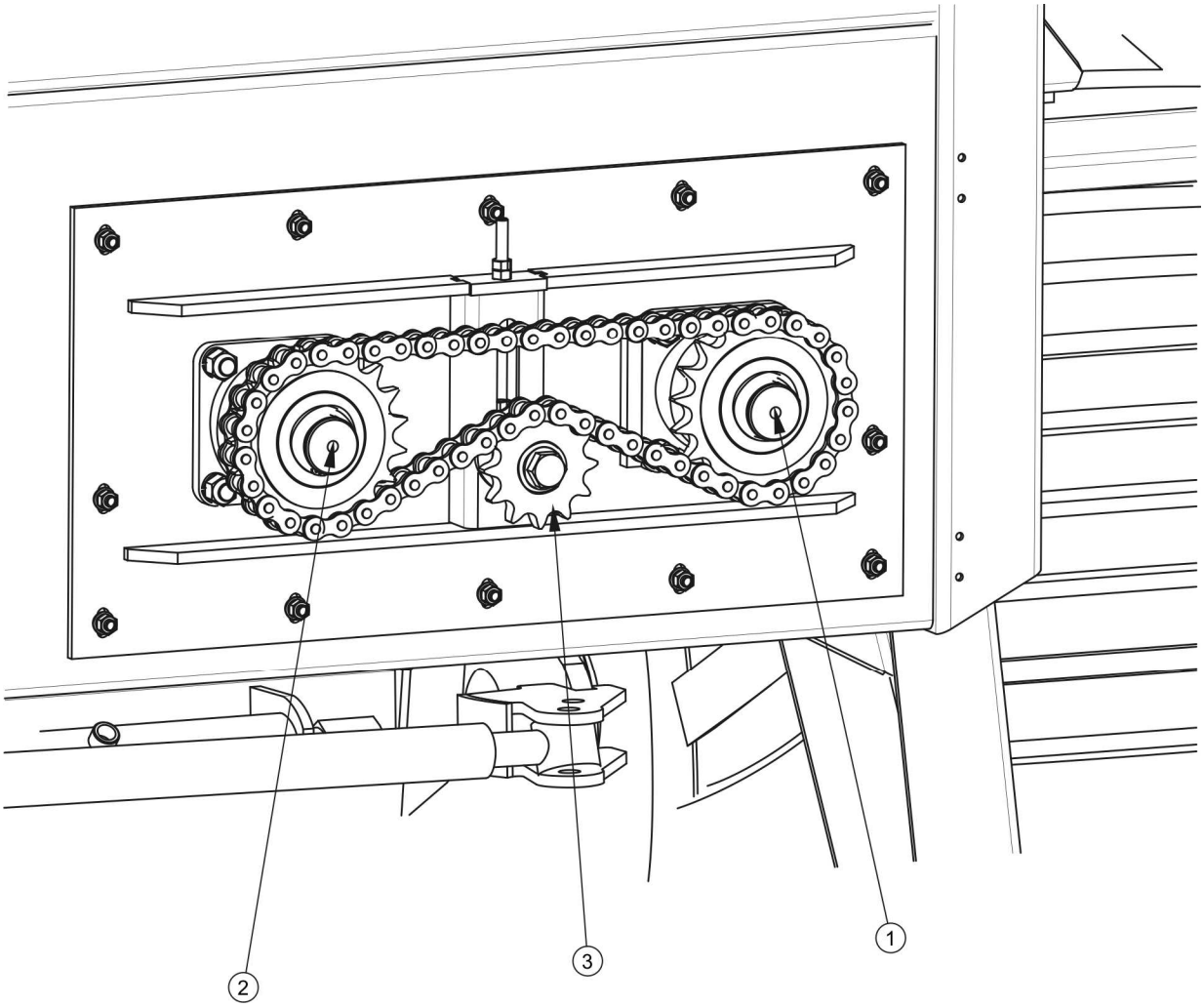


FIGURE 3.10 Rear chain transmission

(1) Rear right auger conveyer shaft, (2) rear left auger conveyer shaft, (3) tightening cog

3.8 MAIN BRAKE

The trailer is equipped with one of two types of working brake systems (pneumatic brakes):

- two-conduit pneumatic system with three-step braking force regulator - figure *(3.11)* – standard equipment,
- two-conduit pneumatic system with automatic braking force regulator ALB - figure *(3.13)* - optional equipment,
- hydraulic braking system - figure (*3.15*),
- combined braking system (pneumatic-hydraulic braking system) – figure (*3.16*).

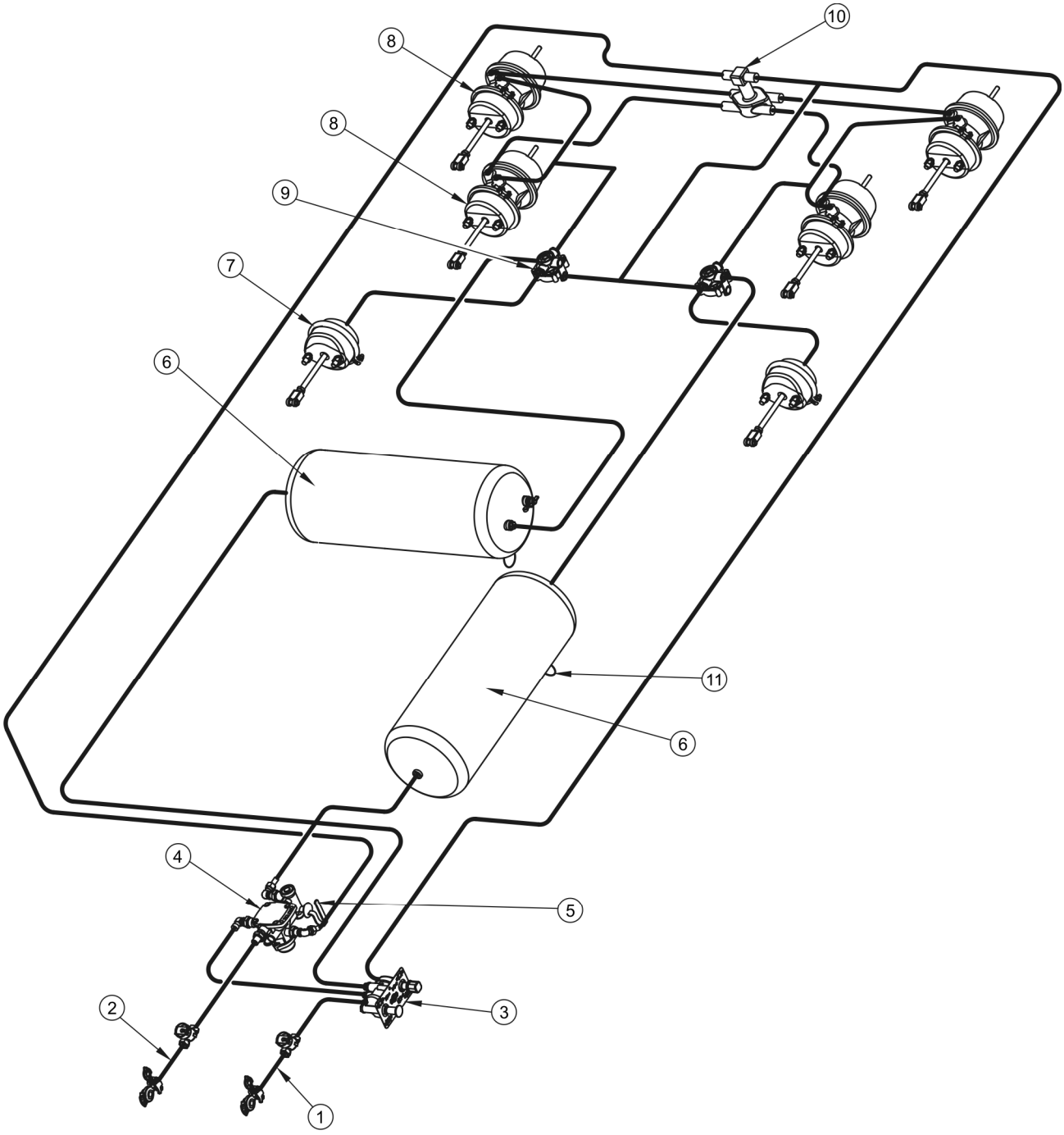


FIGURE 3.11 Design of the two-conduit pneumatic brake system

(1) supply conduit connection with a filter (red), (2) control conduit connection with a filter (yellow), (3) loosening-parking valve, (4) brake valve, (5) manual braking force regulator, (6) air tank, (7) diaphragm actuator, (8) diaphragm-spring actuator, (9) relay valve (10) two-way valve, (11) drain valve

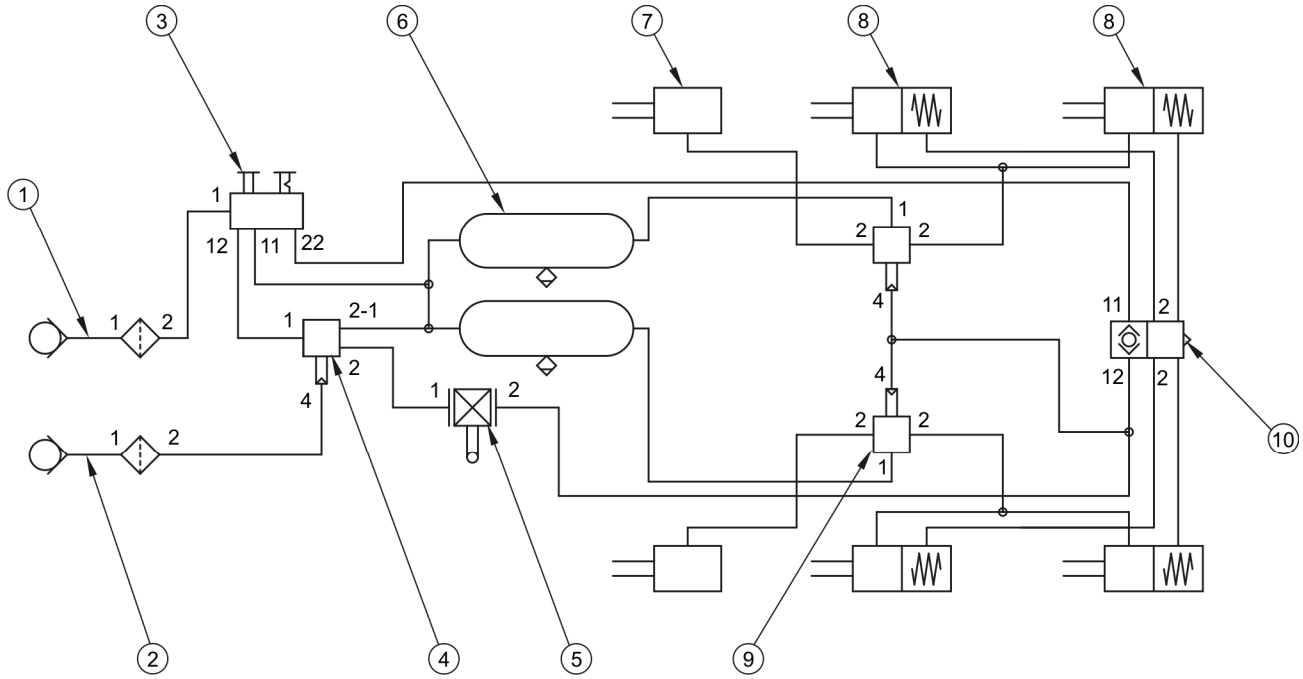


FIGURE 3.12 Diagram of braking system with manual braking force regulator

(1) supply conduit connection with a filter (red), (2) control conduit connection with a filter (yellow), (3) loosening-parking valve, (4) brake valve, (5) manual braking force regulator, (6) air tank, (7) diaphragm actuator, (8) diaphragm-spring actuator, (9) relay valve (10) two-way 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), applied in pneumatic systems is the operation of the trailer 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.

Figure (3.15) shows the design of the combined braking system (i.e. pneumatic-hydraulic braking system). The system combines the pneumatic braking system with manual braking force regulator and the hydraulic braking system with electro-hydraulic brake valve.

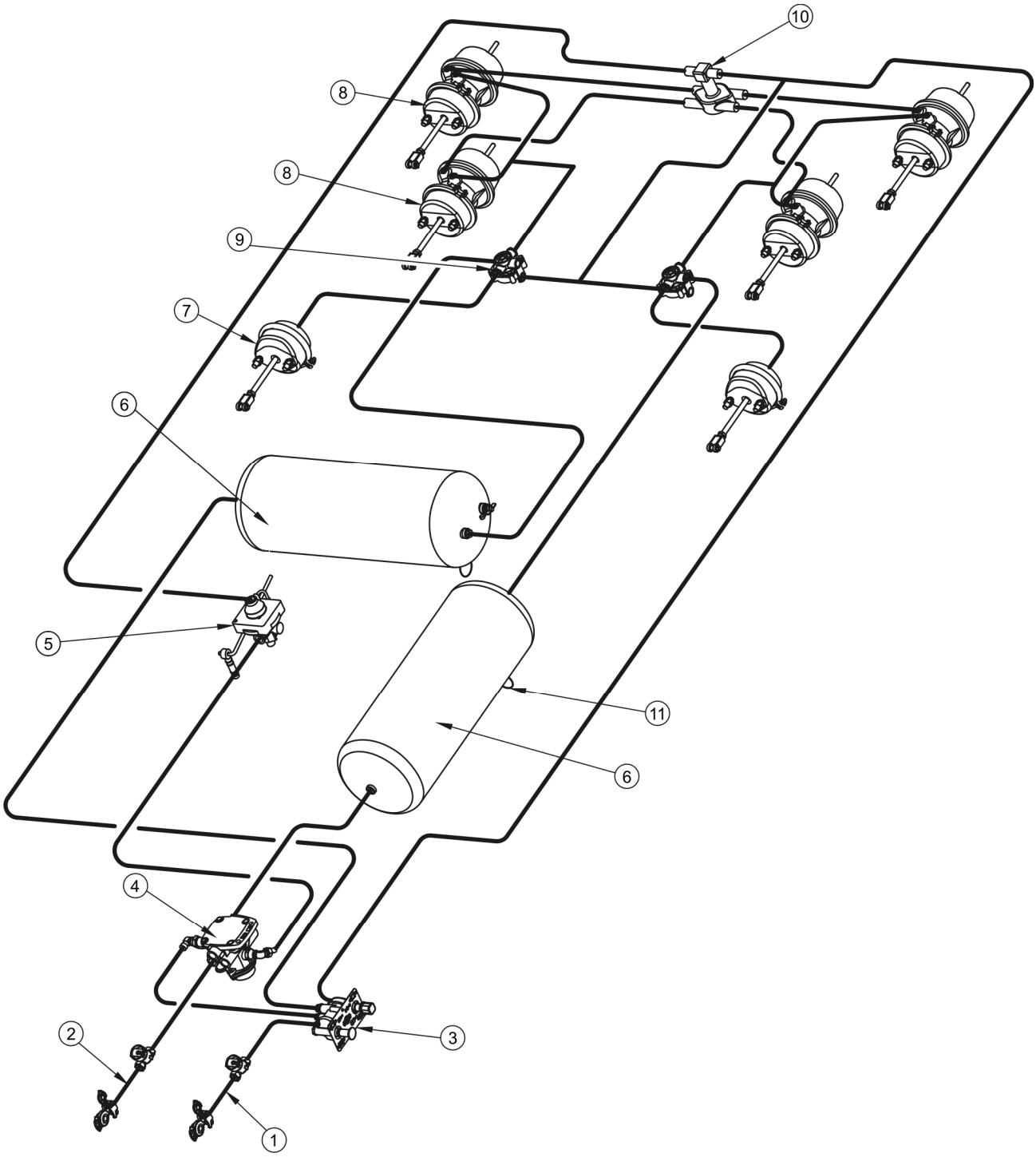


FIGURE 3.13 Design of the two conduit pneumatic brake system with ALB

(1) supply conduit connection with a filter (red), (2) control conduit connection with a filter (yellow), (3) loosening-parking valve, (4) brake valve, (5) regulator ALB, (6) air tank, (7) diaphragm actuator, (8) diaphragm-spring actuator, (9) relay valve (10) two-way valve, (11) drain valve

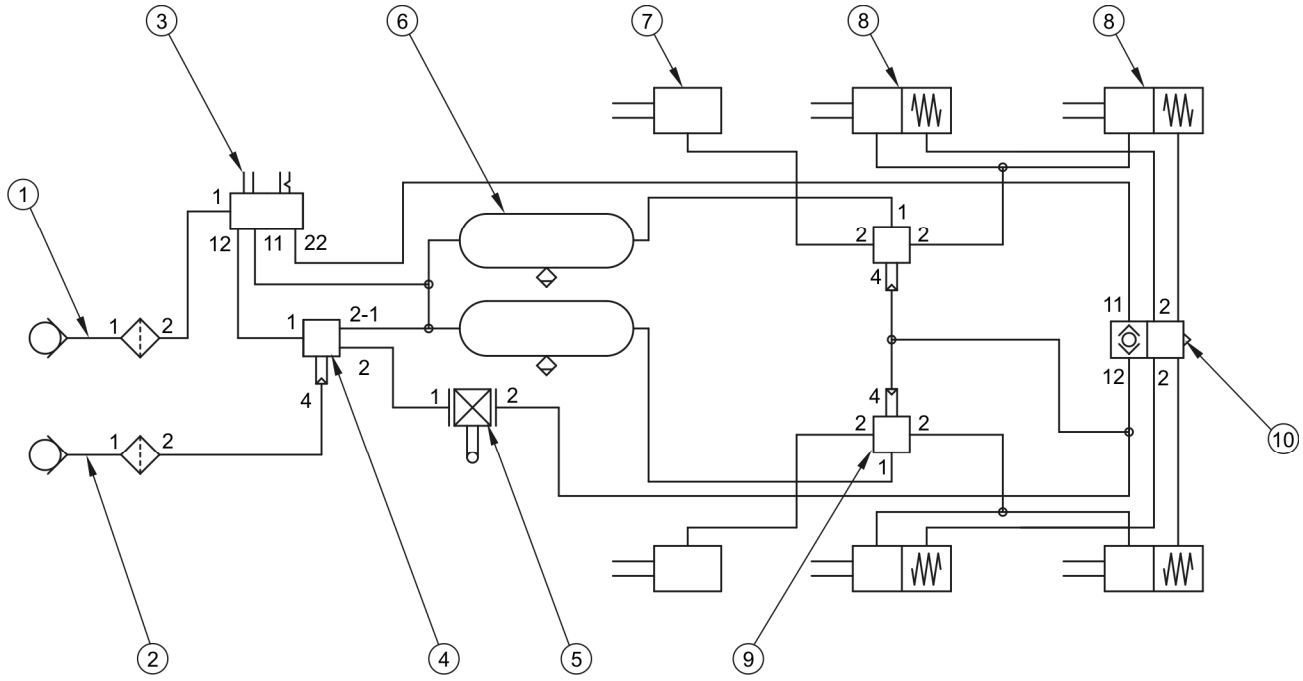


FIGURE 3.14 Diagram of brake system with ALB automatic regulator

(1) supply conduit connection with a filter (red), (2) control conduit connection with a filter (yellow), (3) loosening-parking valve, (4) brake valve, (5) regulator ALB, (6) air tank, (7) diaphragm actuator, (8) diaphragm-spring actuator, (9) relay valve (10) two-way valve, (11) drain valve

Brake pneumatic cylinders applied in the systems are mounted on specially prepared brackets welded to the axle. These are diaphragm actuators and diaphragm-spring actuators. Air supplied to cylinder exerts pressure on membrane which in turn moves cylinder piston and rotates to axle expander lever. Return of cylinder to neutral position is assisted by draw back springs.

Three-step brake force regulator - figure *(3.15)*, applied in pneumatic systems adjusts braking force depending on setting. Switching to a suitable working mode is done manually by machine operator with the aid of the lever (2) prior to moving off. Three working positions are available: A - "no load", B - "half load" and C - "full load".

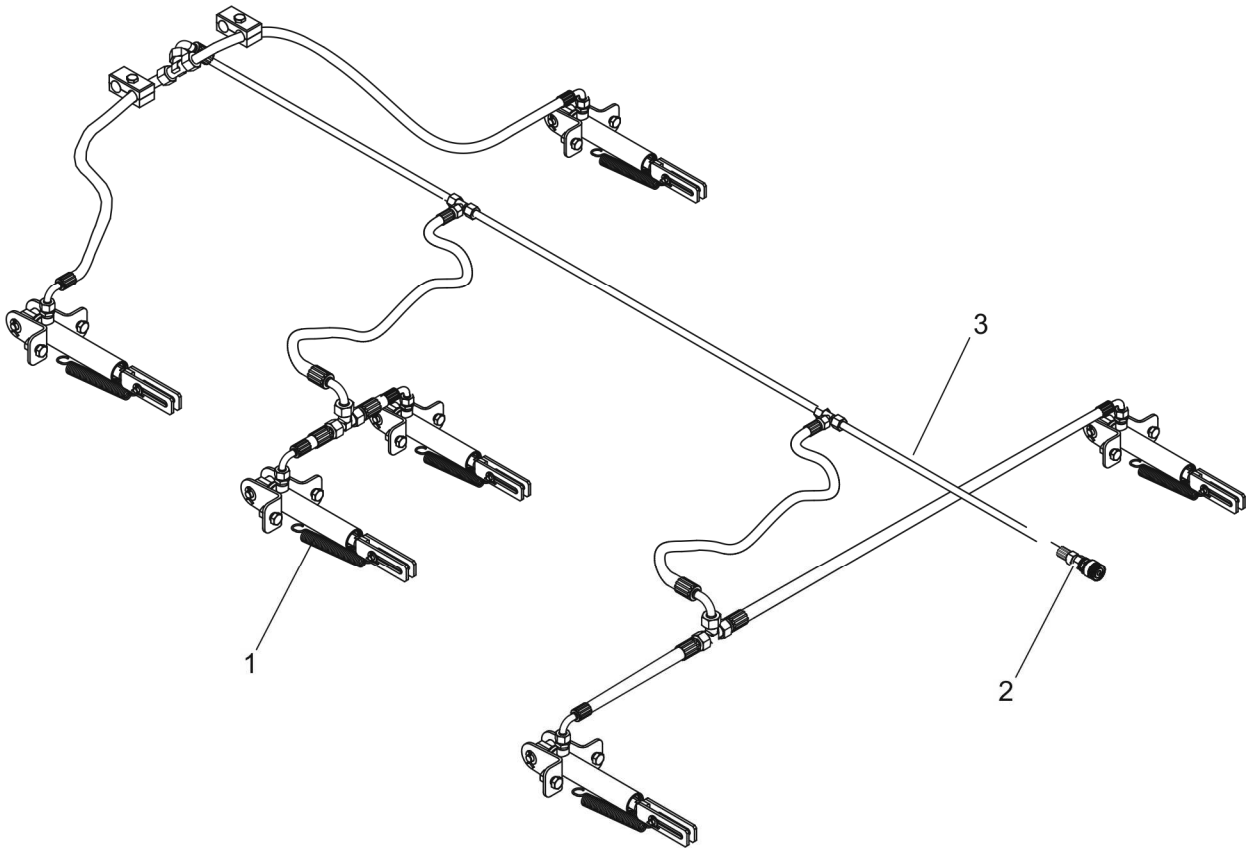


FIGURE 3.15 Design and diagram of hydraulic braking system

(1) hydraulic cylinder, (2) hydraulic quick coupler, (3) hydraulic supply conduit

The main hydraulic brake (available as optional equipment) is activated from the tractor driver's cab by pressing on the brake pedal. Agricultural tractor equipped with suitable hydraulic system is required to operate the hydraulic braking system. The function of the hydraulic solenoid valve (1) - figures (3.15) is to activate the trailer's brakes simultaneously with the tractor's brakes. Before moving off, perform test braking by pressing brake pedal several times in order to obtain proper pressure in hydraulic accumulators. Connection lead is used for supplying the trailer's valve from the tractor's electrical system. In case of an inadvertent disconnection of this lead, the brake valve will automatically activate the machine's brakes. The same emergency braking is activated by switching off the tractor's engine or deenergizing the solenoid valve.

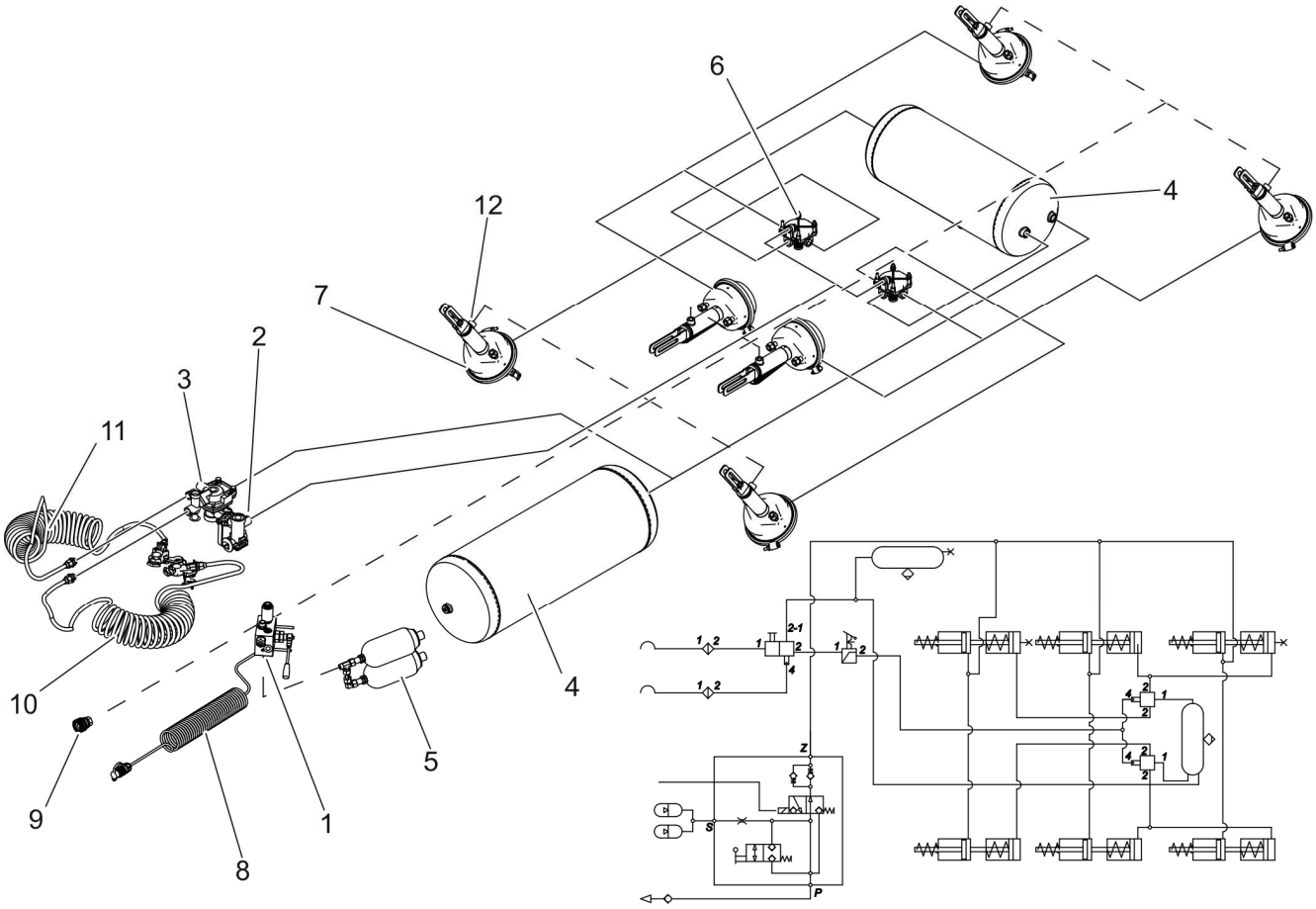


FIGURE 3.16 Design and diagram of combined braking system (pneumatichydraulic braking system)

(1) electro-hydraulic brake valve, (2) braking force regulator, (3) control valve, (4) air tank, (5) hydraulic accumulators, (6) relay valve , (7) pneumatic cylinder, (8) electric connection, (9) hydraulic supply conduit, (10) conduit connector (red), (11) conduit connector (yellow), (12) hydraulic cylinder

The system is equipped with two pneumatic connections. They are marked with coloured safety covers, which enable identification of individual connections:

- red – supply connection,
- yellow - control connection.

Additionally, each pneumatic connection is equipped with a cut-off valve, which automatically cuts off outflow of pneumatic conduit in the event of disconnection from agricultural tractor socket.

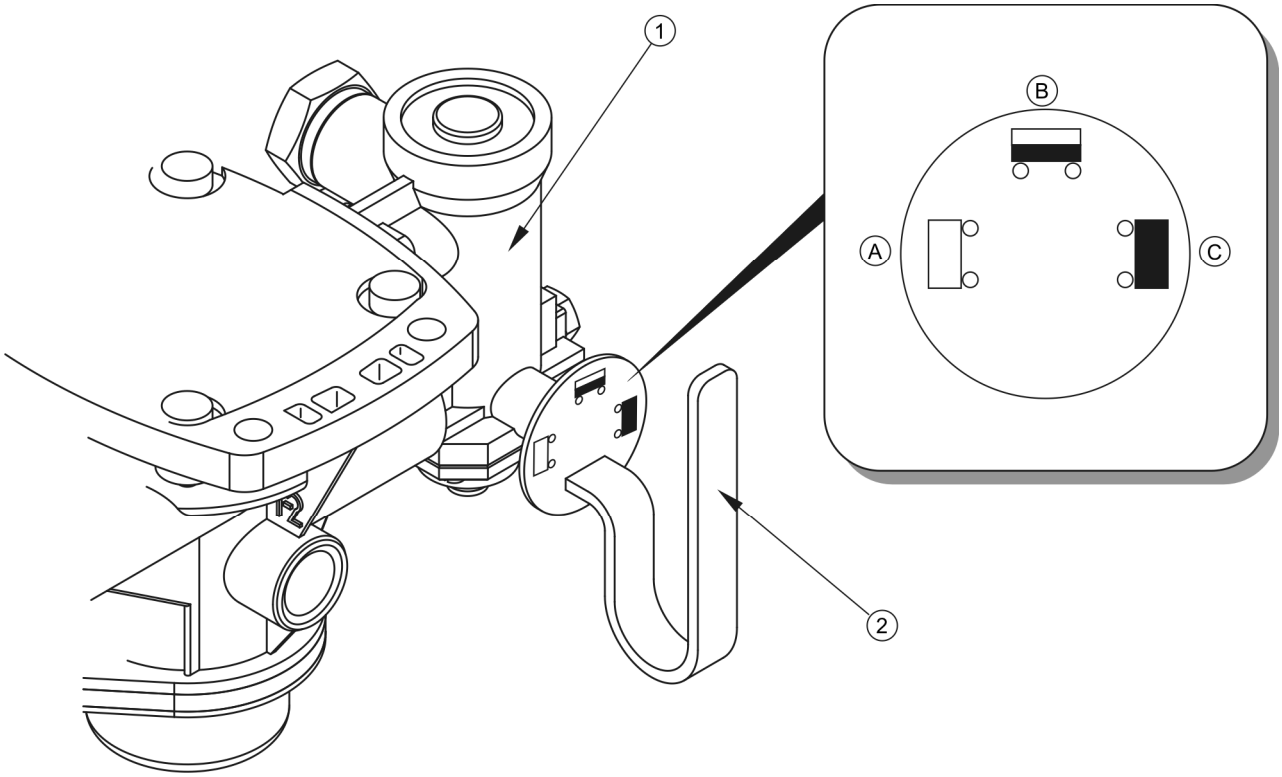


FIGURE 3.17 Three position manual regulator

(1) three-step brake force regulator, (2) regulator setting control lever, (A), (B), (C) regulator operation position

Valve used in the system is equipped with release button (3) causing the brakes to be applied when trailer is disconnected from the tractor. Brakes are applied as a result of reduction of pressure in the trailer's braking system. The brakes can operate normally after connecting the connection lead (6) and hydraulic supply conduit to tractor and after energizing the control valve.

Electro-hydraulic brake valve (1)- figure (3.17) adjusts braking force depending on setting. Switching to a suitable working mode is done manually by machine operator using the lever (2) prior to moving off. Three working positions are available: A - "no load", B - "half load" and C - "full load".

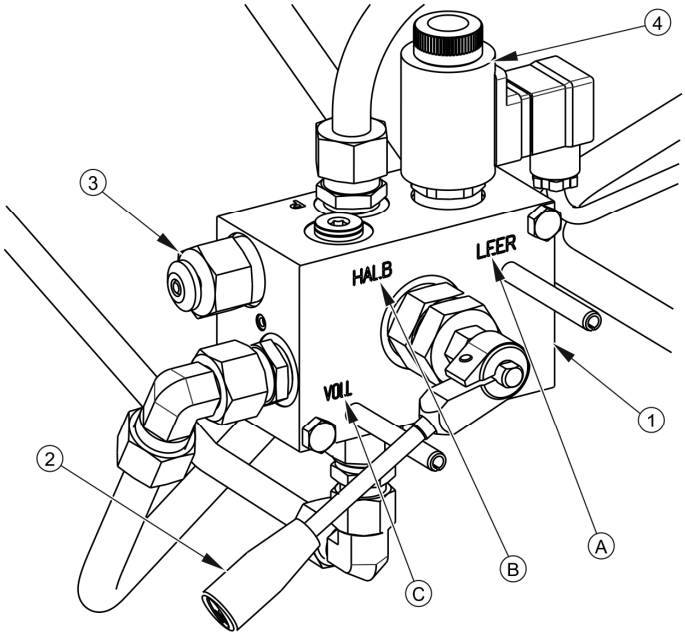


FIGURE 3.18 Electro-hydraulic brake valve

(1) electro-hydraulic valve, (2) valve operation selection lever, (3) release button, (4) electric coil, (A) "NO LOAD" position, (B) "HALF LOAD" position, (C) "FULL LOAD" position

3.9 PNEUMATIC PARKING BRAKE

The parking brake is for immobilising trailer while standing motionless. The parking brake is activated by loosening-parking valve (1) – figure (*3.19*). Two push-buttons located in this valve make it possible to set the trailer to an appropriate working mode. Black push-button (2) controls the loosening valve, that is designed for releasing or engaging the brake if the trailer is unhitched from the tractor. There is no possibility of pressing this push-button if pneumatic connections are connected to tractor.

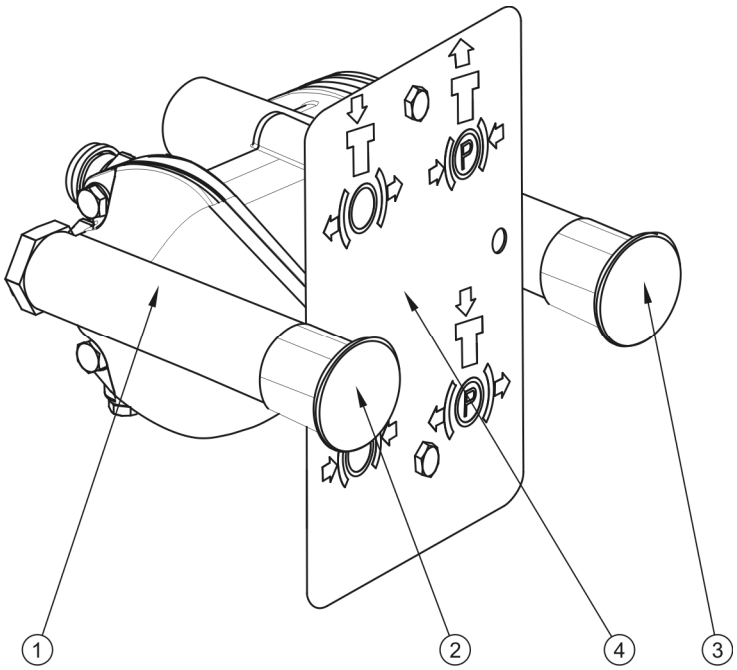


FIGURE 3.19 Loosening-parking valve

(1) loosening-parking valve, (2) black push-button, (3) red push-button, (4) information plate

Red push-button controls operation of parking valve. In the trailer that is correctly hitched to the tractor by means of connections (red and yellow), the black push-button of the loosening valve should be pulled out. Braking of the trailer wheels is carried out by pulling out the red push-button (3). Location of individual push-buttons is shown on the plate (4).

3.10 PARKING BRAKE

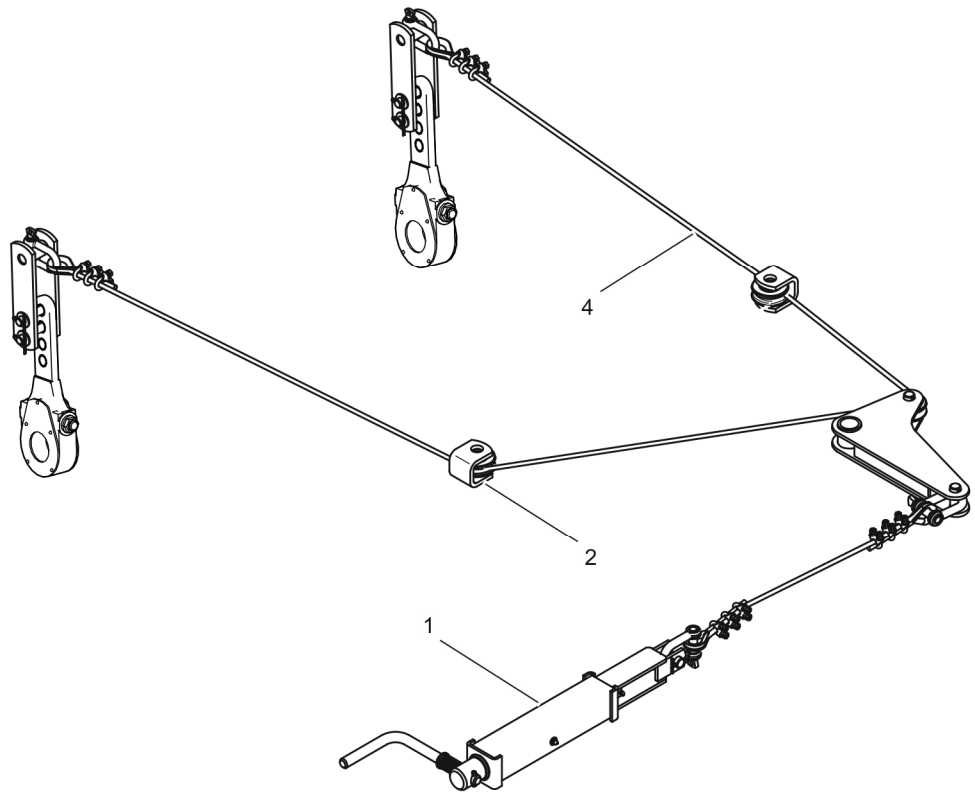


FIGURE 3.20 Parking breake

(1) parking brake crank mechanism, (2) handle with wheel, (3) axle expander lever, (4) steel cable

The parking brake is for immobilising trans-shipment trailer while standing motionless. The brake crank mechanism (1) is mounted on the left longitudinal of the lower frame. Steel cable (4) is connected to axle expander lever (3) with crank mechanism. Tightening the cable causes tilting of the expander lever, which parts the jaws of the brake shoes immobilising the trans-shipment trailer.

3.11 HYDRAULIC STEERING SYSTEM

Hydraulic steering system is designed for controlling the wheels of the trailer front and rear axles. The solution applied has a beneficial effect on improvement of machine steering characteristics and it reduces load applied to the trailer structural elements as well as reduces terrain damage and tyre wear.

Hydraulic accumulators (6) are used in order to eliminate minimal swing of directional cylinders and reduce load applied to the system during turning.

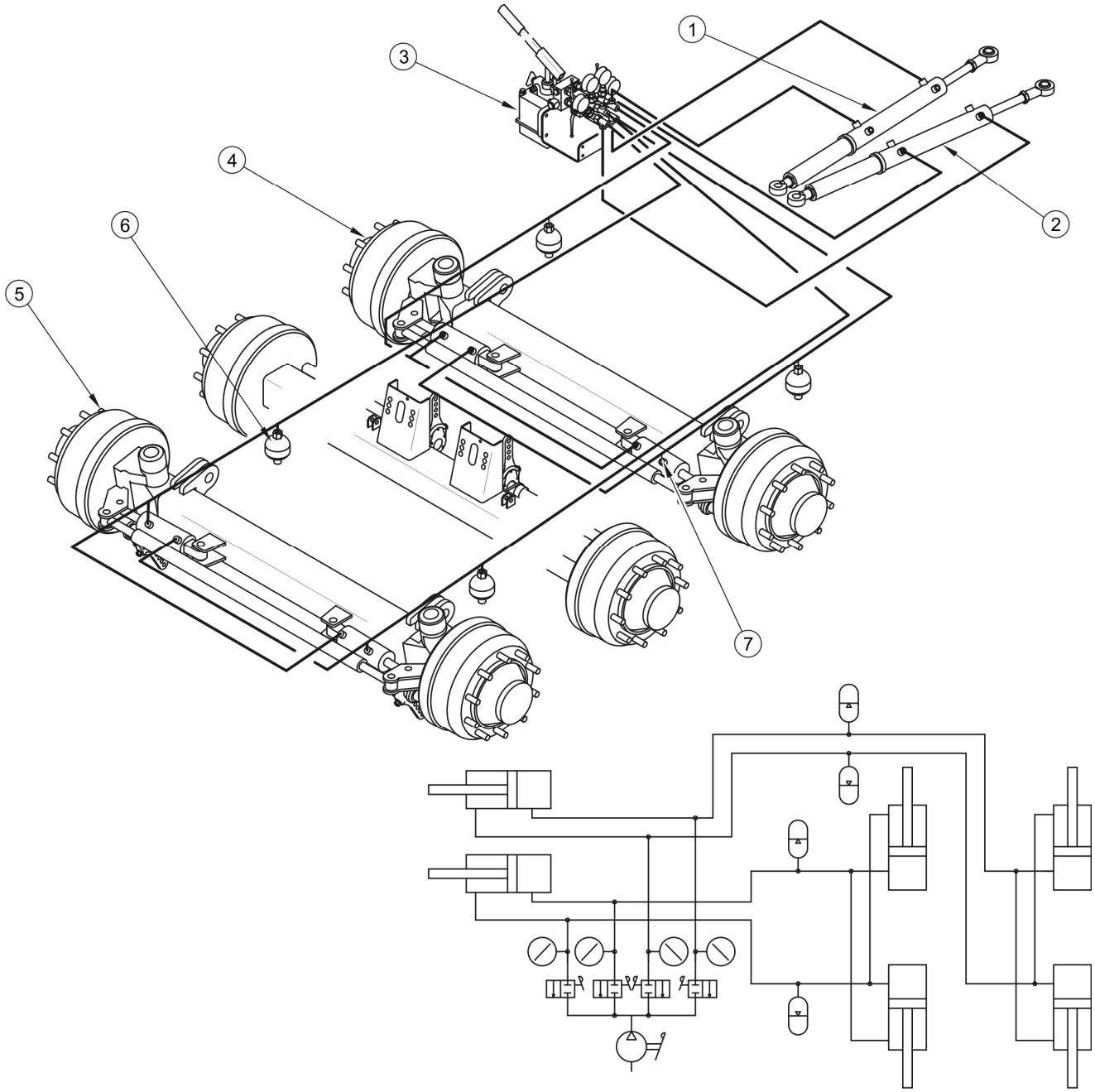


FIGURE 3.21 Hydraulic steering system design and diagram

(1) front axle steering cylinder, (2) rear axle steering cylinder, (3) supply pump, (4) steering axle, (5) fixed axle, (6) hydraulic accumulator, (7) hydraulic cylinder

System design is shown on figure *(3.21)*. Axles (4) and (5) are equipped with steering cylinders (7), which control position of wheels. Control is accomplished thanks to connection

of directional cylinders (1) and double acting cylinders (2) with agricultural tractor via ball hitch - figure *(4.2)*.

On the left side of the trailer, there is a supply pump (3) that is used for initial adjustment. During tractor turning, hydraulic oil flows from cylinders (1) and (2) to turning cylinders located on axles.

3.12 HYDRAULIC SYSTEM SLIDE BOLT AND CONVEYOR

- System design and concept diagram are presented on figures (*3.22*) and (*3.23*).

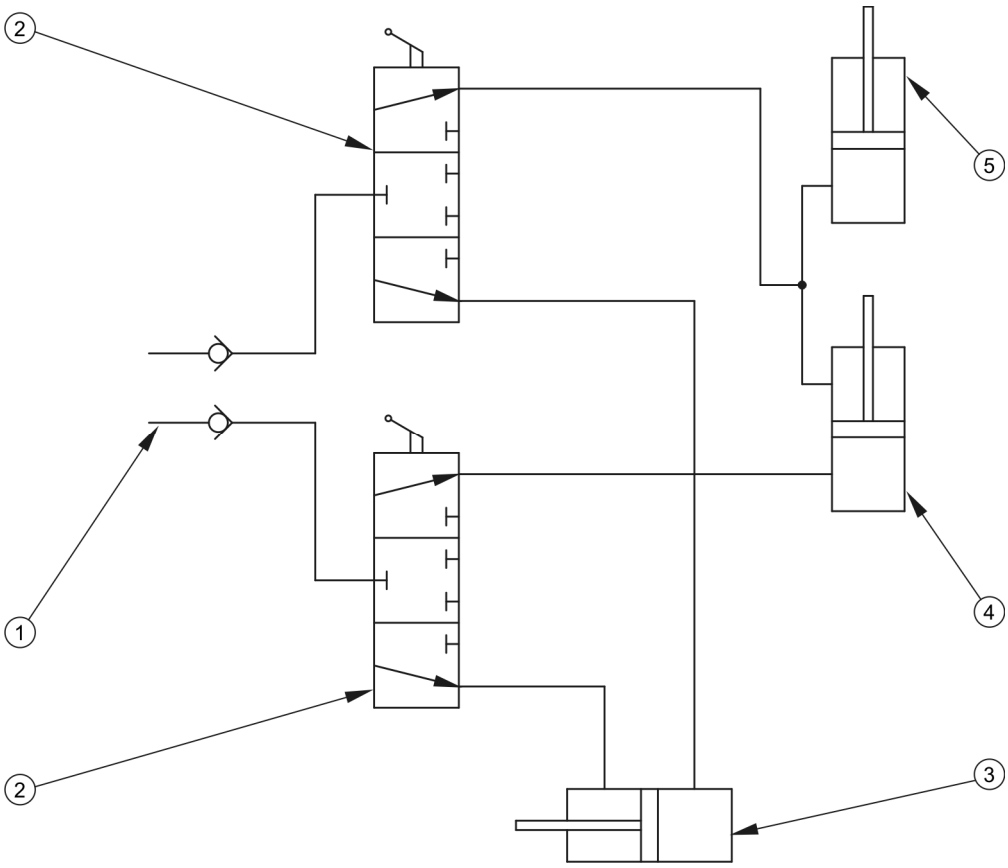


FIGURE 3.22 Slide bolt and conveyor hydraulic system concept diagram

(1) quick couplers, (2) hydraulic valve, (3) slide bolt cylinder, (4) folded conveyor raising cylinder, (5) folded conveyor bolting cylinder

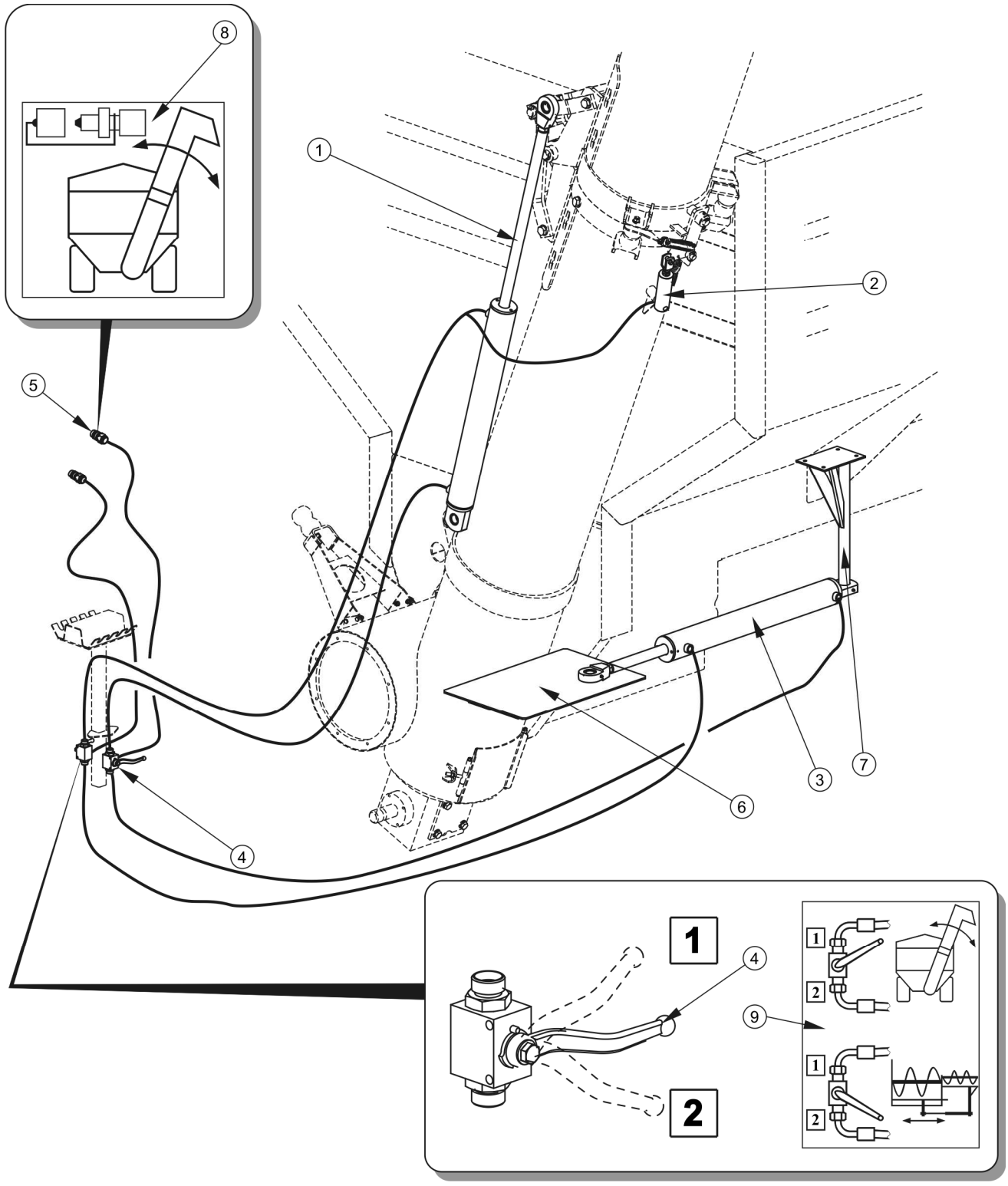


FIGURE 3.23 Slide bolt and conveyor hydraulic system concept diagram

(1) folded conveyor raising cylinder, (2) folded conveyor bolting cylinder, (3) locking bolt cylinder, (4) hydraulic valve, (5) quick couplers, (6) slide bolt, (7) cylinder bracket, (8), (9) information decal

Hydraulic slide bolt and conveyor system fulfil the following function in trailer:

- raising / lowering folded conveyor,
- locking / unlocking folded conveyor,
- opening / closing container channels slide.

IMPORTANT!

Remember the setting of both valves simultaneously during work.

Connecting individual circuits for work takes place manually by the machine operator with the aid of hydraulic valves (4) – figure (*3.23*), placed on bracket. Valve set in position 1 directs hydraulic oil stream to cylinders (1) and (2). In the event of setting valves in position 2, oil is directed to circuit controlling slide cylinder. In central position, the supply of hydraulic oil to system is cut off.

Hydraulic system quick couplers are marked with the aid of red stoppers, as stated on information decal (8). Working positions of valves are marked on information decal (9).

3.13 HYDRAULIC CLUTCH SYSTEM

Hydraulic clutch system is designed for remote starting of trailer container auger conveyor drive. Position of system elements is shown in figure (*3.24*).

With regard for the significant differences in the design of agricultural tractors (supply pressure from hydraulic manifold), conduct reduction valve adjustment after connection to tractor. If not, the hydraulic clutch may be damaged.

IMPORTANT!

After connecting agricultural tractor trailer regulate the reduction valve (1) – figure (3.24).

TIP

Hydraulic oil pressure range for starting clutch is 90-95 bar.

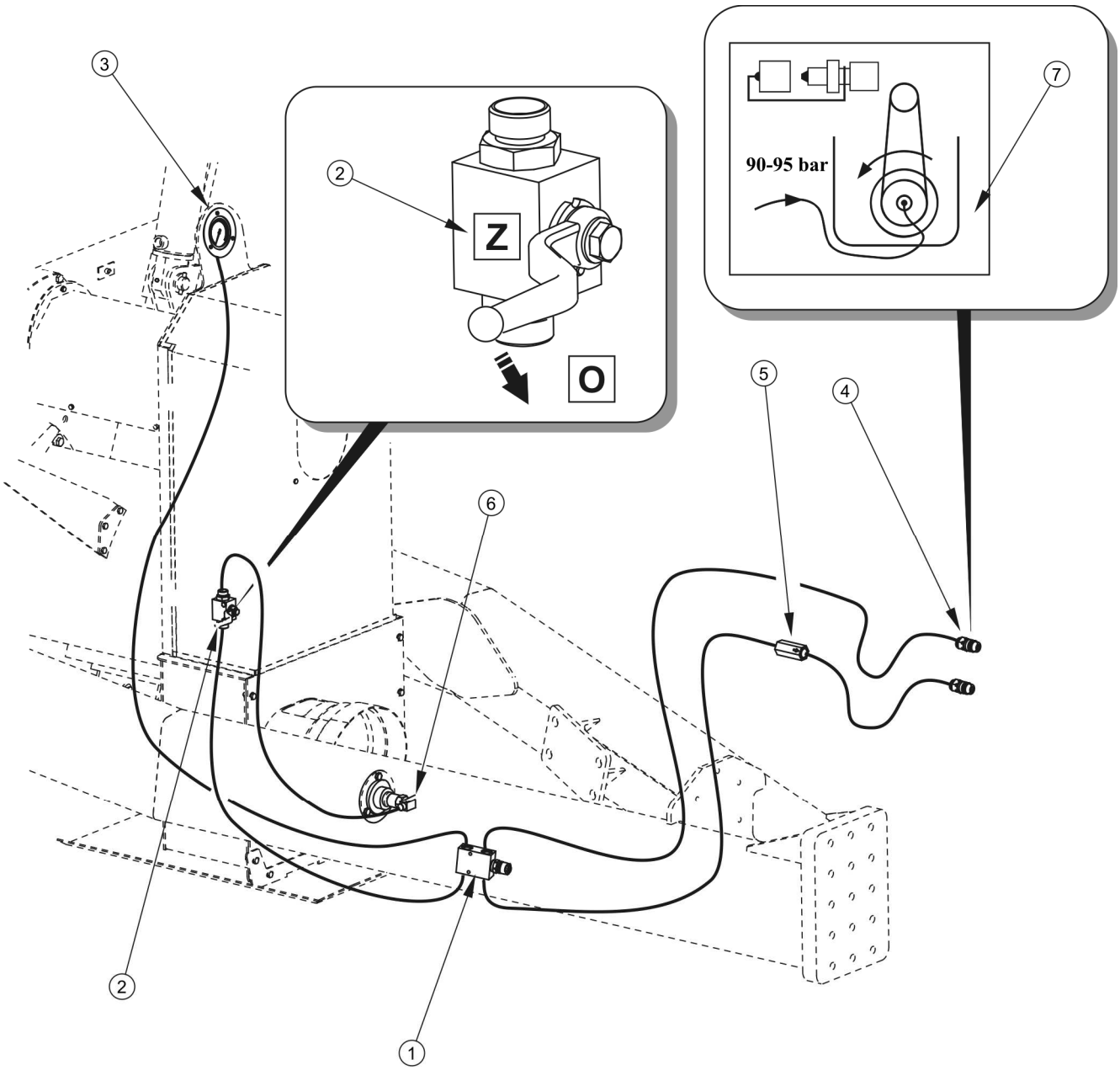


FIGURE 3.24 Position of hydraulic clutch system elements

(1) reduction valve connection plate, (2) hydraulic valve, (3) pressure gauge, (4) quick couplers, (5) return valve, (6) rotary connection, (7) information decal

Cut-off valve (2) is designed for cutting off hydraulic oil in flow to clutch during working pressure adjustment of system. In the course of normal use it must be set in open position.

Quick coupler terminals are marked with black coloured stoppers, as stated on information decal (7). Cut-off valve position (2) is marked with the aid of decal „O", „Z" (O-Open/Z-Closed).

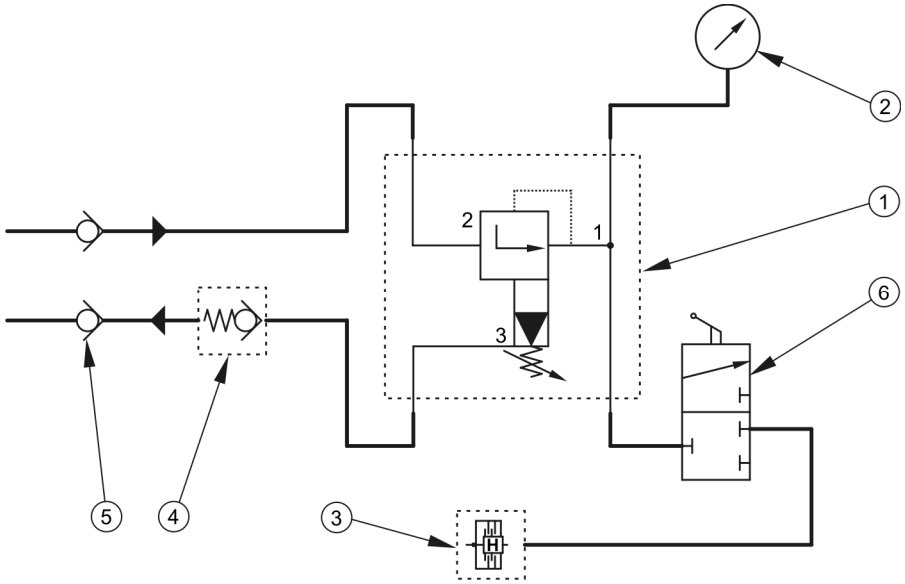


FIGURE 3.25 Hydraulic clutch system concept diagram

(1) reduction valve connection plate panel, (2) pressure gauge, (3) hydraulic clutch, (4) return valve, (5) quick couplers, (6) hydraulic valve

3.14 ELECTRIC LIGHTING SYSTEM

TABLE 3.2 LIST OF MARKINGS APPLIED ON FIGURE (3.22)

SYMBOL	FUNCTION
ZP	Rear right lamp assembly
ZL	Rear left lamp assembly
GP	Front seven pin socket
G3	3-pin plug
WZ	Cigarette lighter supply plug
TOP	Rear right clearance lamp

SYMBOL	FUNCTION
TOL	Rear left clearance lamp
OTP	Right license plate light
OTL	Left license plate light
LR	Working light

Trailer electric lighting system is adapted to supply from direct current source of 12 V. Connection of the machine electrical system with the tractor should be made through an appropriate connection lead that is a part of the trailer's standard equipment.

TABLE 3.3 MARKING OF CONNECTIONS

MARKING	SYMBOL
31	Weight
+	Power supply +12V (not used)
L	Left indicator
54	STOP light
58L	Rear left parking light
58R	Rear right parking light
R	Right indicator

TABLE 3.4 CONDUIT COLOUR MARKING

MARKING	CONDUIT COLOUR	MARKING	CONDUIT COLOUR
B	White	O	Brown
C	Black	P	Orange
F	Violet	R	Pink
K	Red	S	Grey
L	Lazurite	T	Green
N	Blue	Z	Yellow

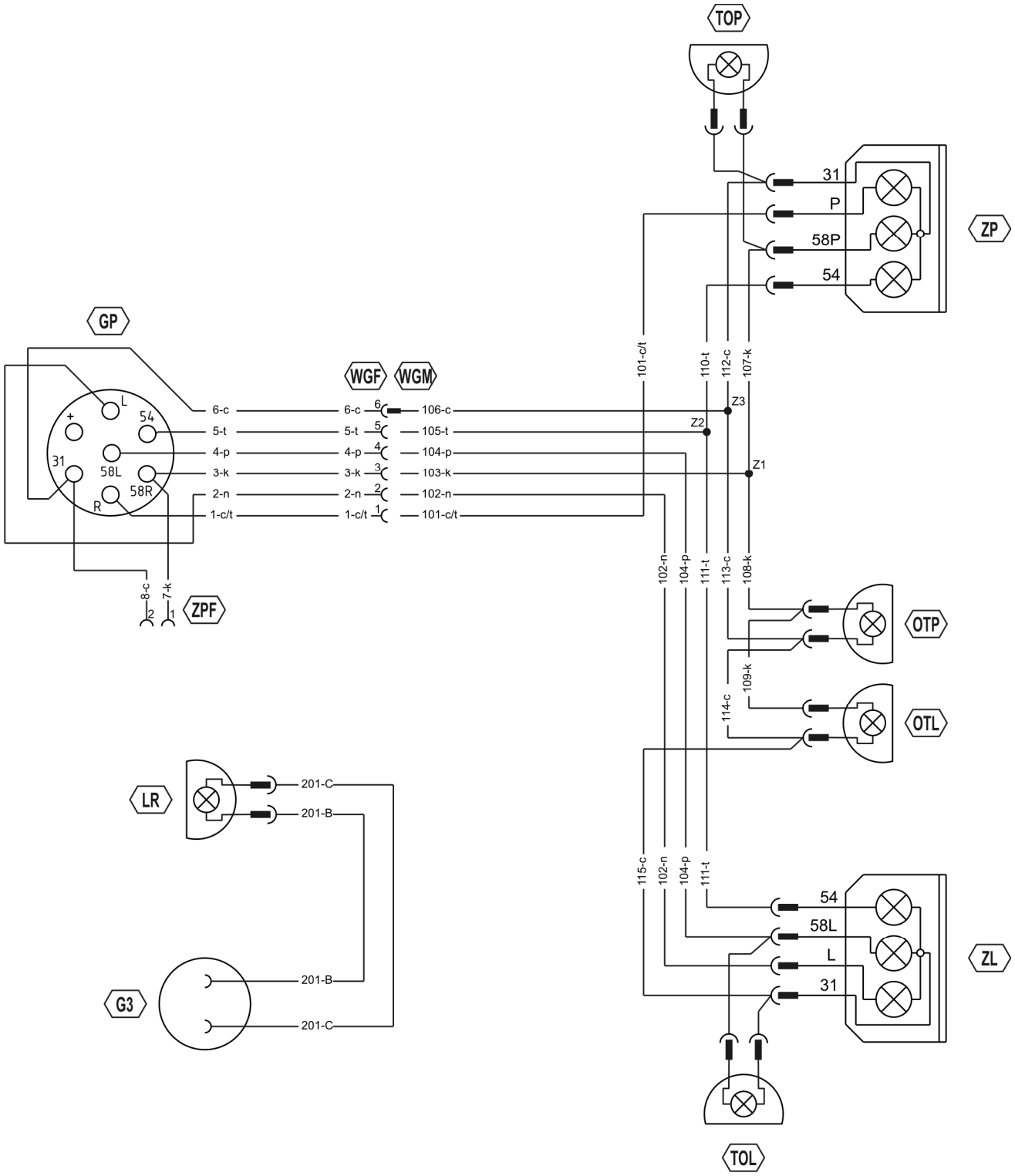


FIGURE 3.26 Electric lighting system diagram

Marking description in table (3.2)

Working lamp placed on vertical conveyor is supplied from 12V DC socket mounted on rear of tractor.

3.15 ELECTRIC WEIGHING SYSTEM INSTALLATION

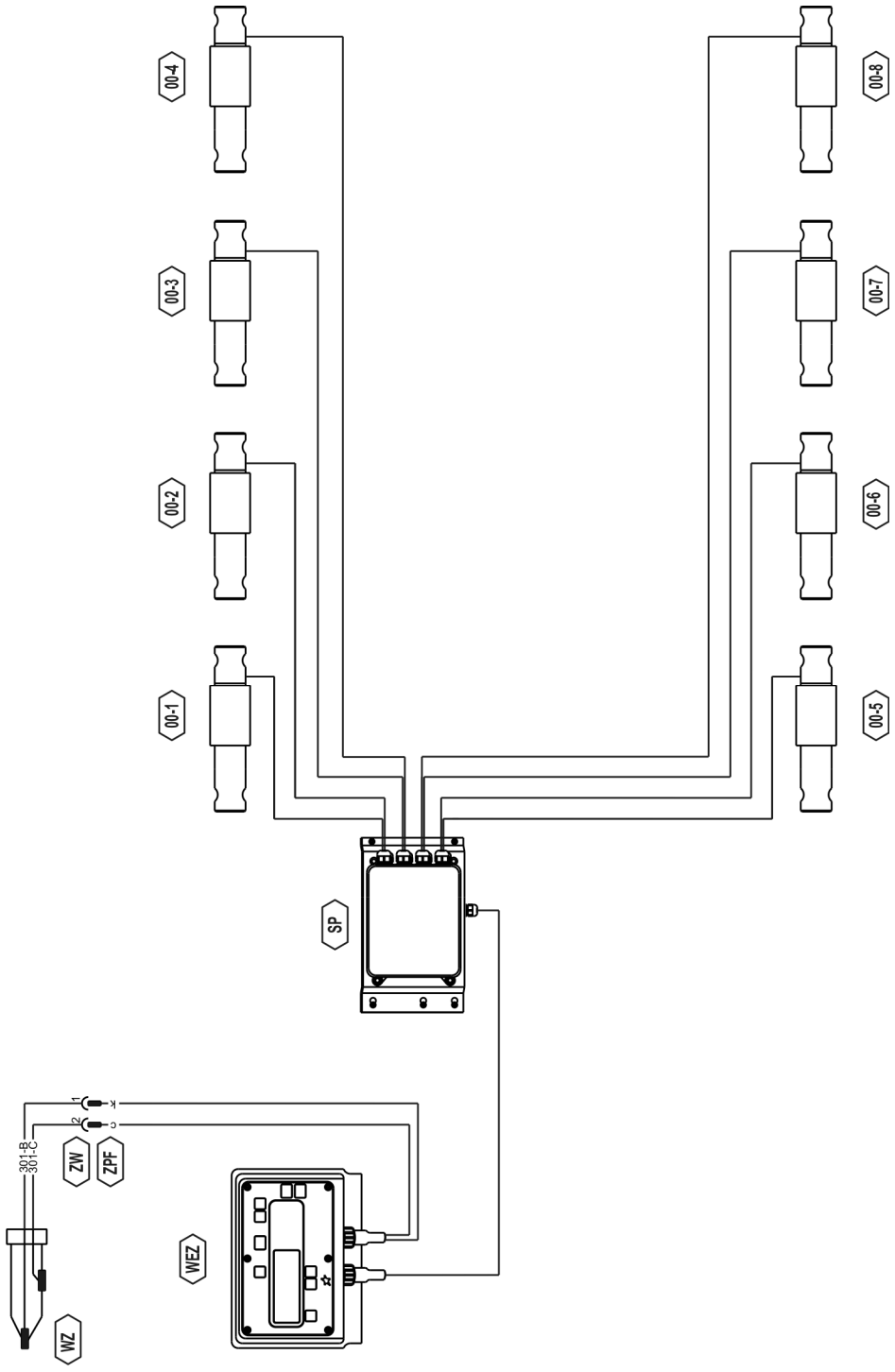


FIGURE 3.27 Weighing system diagram

Marking description on table (3.5)

Agricultural trailer may be equipped with transported load weighing system. The system applied is composed of eight loading link cells placed on lower frame mounting brackets. Trailer load box is placed on them. If the machine is not equipped with weighing system, load cells are replaced with weight simulators.

Load cells are connected through connection box with electronic display, which analyses electric signals originating from weighing points and calculating load weight.

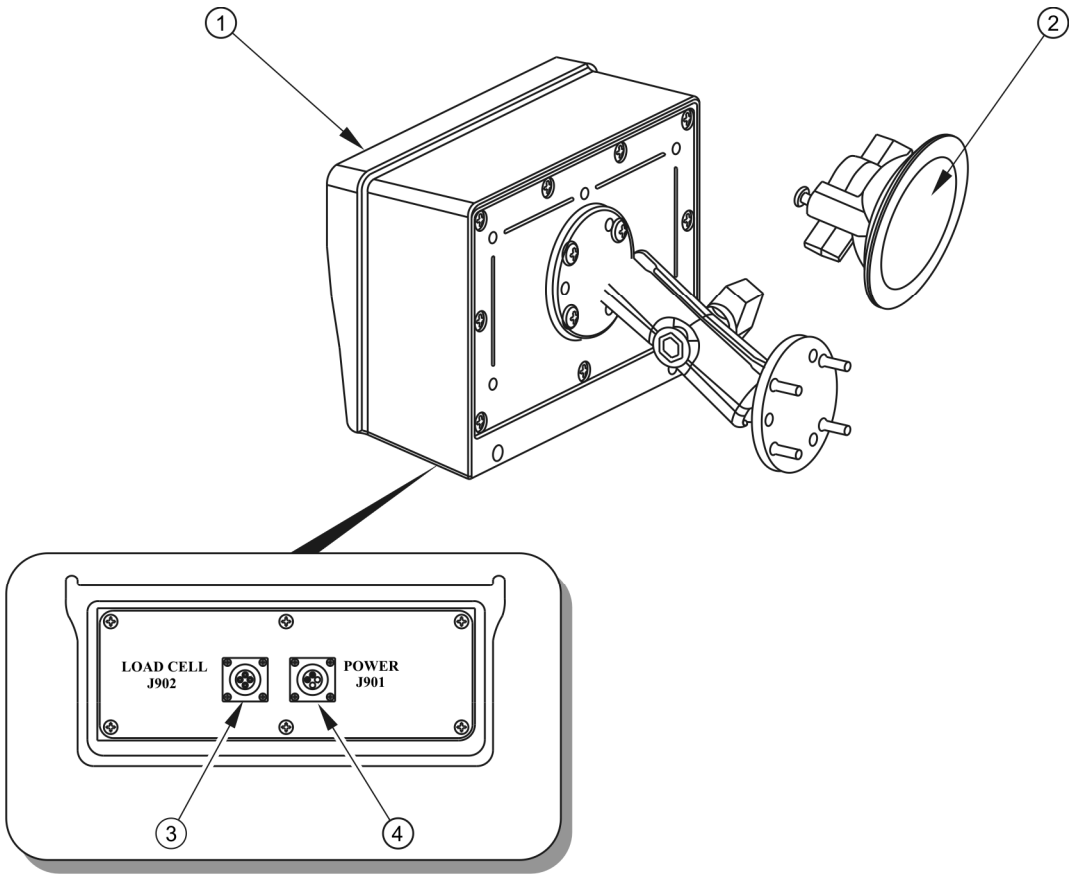


FIGURE 3.28 Lighting panel

(1) counter, (2) rubber vacuum cup, (3) load cell connection socket, (4) power supply socket

Counter (1) is mounted in tractor operator cab on bracket with rubber suction pad. Power supply to counter and whole weighing system is through connection conduit connected with the lighter socket in the tractor.

TABLE 3.5 LIST OF MARKINGS IN FIGURE (3.23)

SYMBOL	FUNCTION
WZ	Cigarette lighter supply plug
WEZ	Electronic display EZ 400
SP	Connection box
OO-1…OO-6	Load cells

3.16 HYDRAULIC AXLE BLOCKING SYSTEM

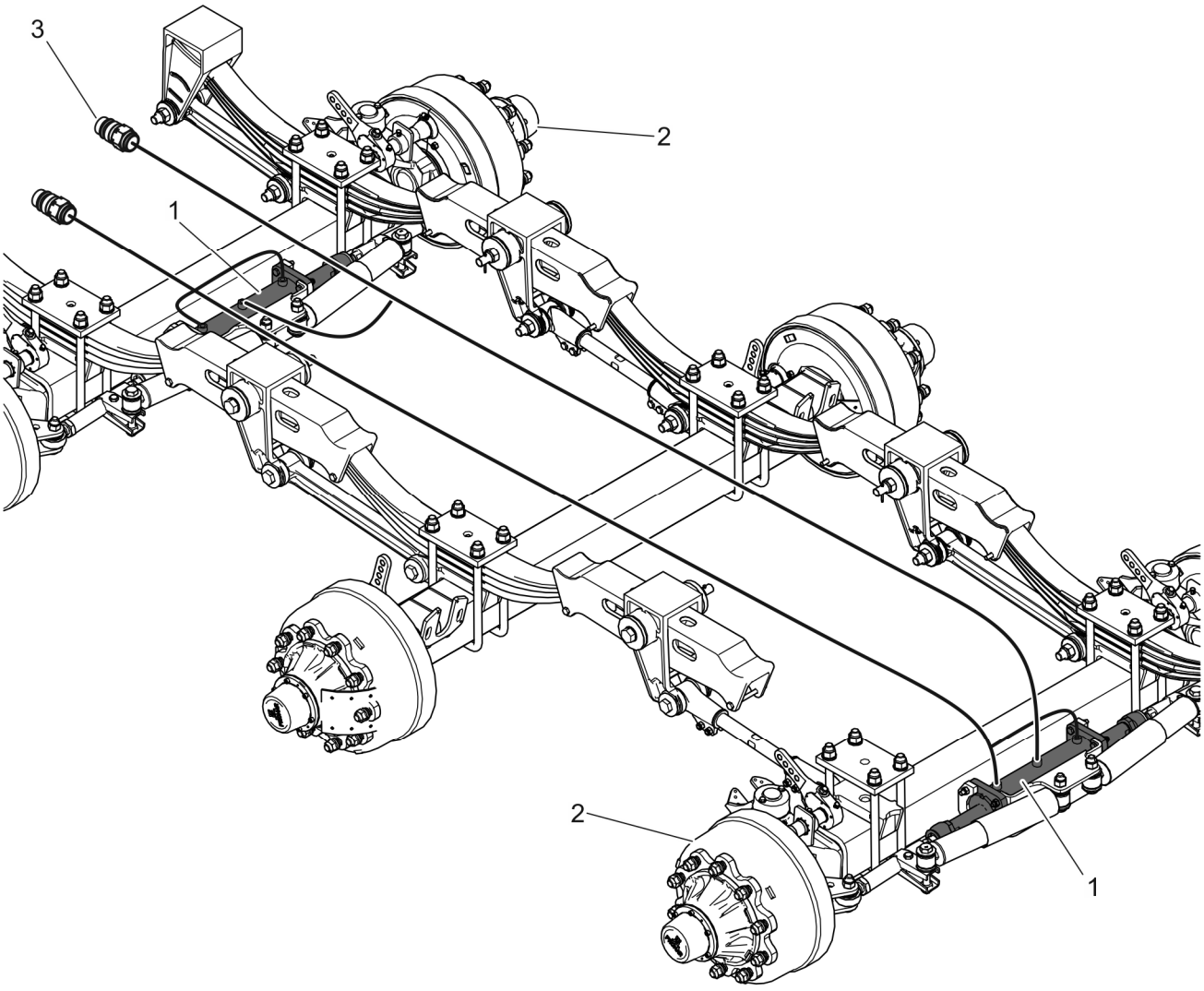


FIGURE 3.29 Construction of a hydraulic steering blocking system

(1) blocking system hydraulic cylinder, (2) steering axle, (3) hydraulic quick coupler

The trailer is equipped as standard with two steering axles, passively steered. The axle design allows smoother cornering and maneuvering on miry terrain, which reduces machine tire wear. When reversing, the axle hubs must be locked, otherwise the trailer will tend to turn uncontrollably to the left or right.

The axle system can be blocked by the hydraulic system shown in the picture (3.29). Before driving backwards, extend the blocking steering system hydraulic cylinders (1) using the tractor distributor lever.

SECTION

4

CORRECT USE

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. The user must carefully read this Operator's Manual and additional publications attached to machine, 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,
- Check technical condition and set of safety guards.
- 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 the trailer for the first use

- 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, the drawbar and front conveyor 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.
- Ensure that the attached PTO shaft may be connected to the tractor, check rotation direction of tractor PTO.

Test start

If all the above checks have been performed and there is no doubt as to the machine's good technical condition, trailer can be connected to tractor. Start the tractor, check all systems and test the trailer (without 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 ball hitch.
- Raise and secure support foot.
- Connect brake, electrical and hydraulic system conduits.
- Place electronic counter in tractor operator cab, connect counter power supply.
- Start tractor.
- Regulate hydraulic clutch supply pressure
- Check correct operation of lights and indicators.
- When moving off check if the main brakes operate correctly.
- Perform a trial run in order to check correctness of operation and adjustment of the hydraulic steering system.
- Raise folded conveyor, ensure that it is properly locked in upper setting.
- Start tractor PTO drive (starting vertical conveyor drive).

- After three minutes operation of vertical conveyor start hydraulic clutch (starting container auger conveyors drive).
- Open and close container channels slides.
- Disconnect PTO drive, turn off tractor engine, unhitch trailer from tractor.

TIP

Service operation: hitching/unhitching from tractor, adjustment of clutch pressure supply etc. are described in detail in further parts of the Operator's Manual.

The trailer may be hitched only when all preparatory activities including inspection of technical condition have been completed satisfactorily. If during test start 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 hydraulic system operation
- blocking of pneumatic pistons,
- other suspected faults.

immediately disconnect oil supply to hydraulic clutch and disconnect tractor PTO drive. 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.

4.2 HITCHING TO 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.

In order to hitch the trailer to the tractor perform the actions below in the sequence presented. Machine must be immobilised by parking brake.

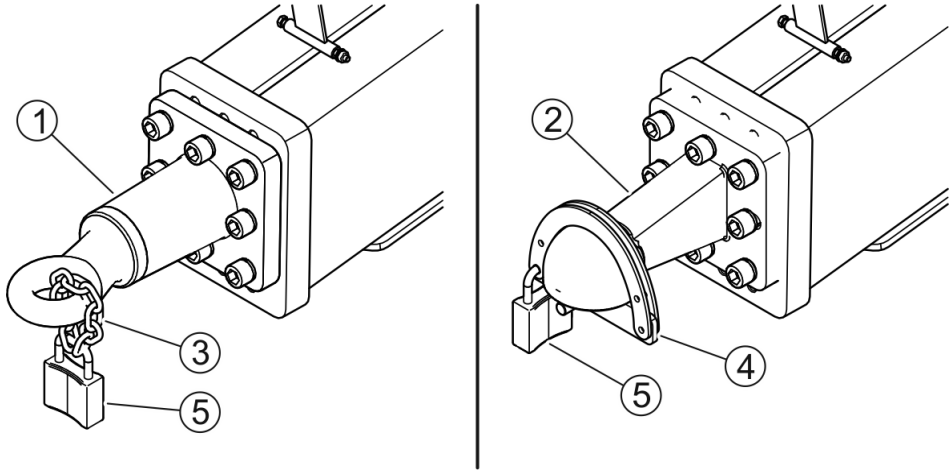


FIGURE 4.1 Drawbar eye protective device

(1) rotating eye, (2) ball drawbar, (3) chain, (4) security, (5) padlock

Connection

- Position agricultural tractor directly in front of drawbar eye.
- Open the padlock (5) and unfasten the chain (3) or protective device (4) – figure (4.1).
- With the aid of the support regulate the height of the drawbar with regard to the hitch of the tractor.
- Reverse tractor, hitch trailer, check hitch lock protecting machine against accidental unhitching.
- Turn off tractor ignition.
- Raise support foot upwards, secure it with pin, move crank to central position (neutral position).

- 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 conduits (applies to single conduit systems):
  - Connect pneumatic conduit marked black with black socket in tractor
- Connect hydraulic braking system conduits (applies to trailer version with hydraulic braking system).
- Connect conduits of combined braking system (applies to pneumatic-hydraulic braking system):
  - Connect hydraulic brake conduit.
  - Connect pneumatic conduit marked yellow with yellow socket in tractor.
  - Connect pneumatic conduit marked red with red socket in tractor.
  - Connect connection lead of solenoid valve.
- Connect main conduit supplying electric lighting system and conduit supplying vertical conveyor auxiliary lamp.
- Place electronic counter in tractor operator cab, connect counter to cigarette lighter power supply.

DANGER

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

Be especially careful when hitching the machine to tractor.

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

- Connect two conduit slide and conveyor system (red).

➡ Connect to conduit hydraulic clutch system (black). Conduit with mounted return valve should be connected to socket "slow pouring" by-passing hydraulic manifold.

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 braking system conduits the correct sequence of conduit connection is very important. First in sequence connect yellow coloured plug to yellow socket in tractor, and then afterwards the red coloured plug to the red socket in 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).

TABLE 4.1 CONDUIT COLOUR MARKING

CONDUIT / SYSTEM	COLOUR
Double conduit pneumatic system:	
- supply conduit	RED
- control conduit	YELLOW
Single conduit pneumatic system:	
- supply conduit	BLACK
Hydraulic system:	
- slide bolts and conveyor	RED
- hitch	BLACK

4.3 TRAILER PARKING STAND OPERATION

Setting proper height of drawbar eye in relation to tractor hitch is achieved by the aid of support with mechanical gearing - figure (*4.2*).

In order to reduce the force necessary to raise trailer drawbar, place support crank (3) in position (B). In this position there is greater mechanical gearing leverage, support foot (2) moves slowly, but little force is necessary to raise the front of the machine.

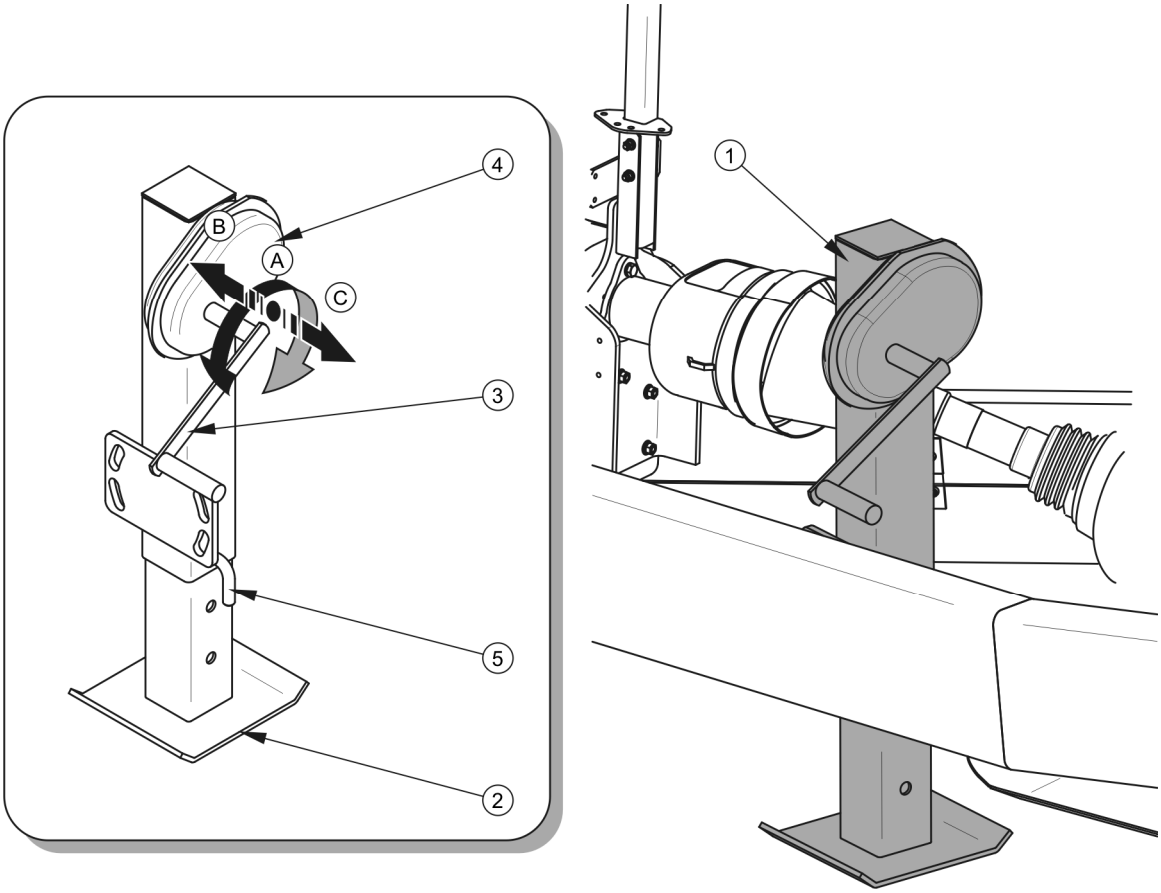


FIGURE 4.2 Fold support leg

(1) parking stand, (2) parking stand foot, (3) crank, (4) gear, (5) securing pin

Raising support

- ➡ Remove safety pin (5).
- ➡ Move support crank from neutral position (A) to position (B).
- ➡ Turn the crank anticlockwise to raise support foot maximally.
- ➡ Place safety pin in position.
- ➡ Place crank in neutral position (A).

Lowering support

- ➡ Remove safety pin.

- Set crank in position (B) or (C).
- Turn crank clockwise to lower support to the ground, adjust drawbar height in relation to hitch (if trailer shall be hitched to tractor).
- Place safety pin in position, and set crank in neutral position (A).

4.4 HYDRAULIC STEERING SYSTEM OPERATION

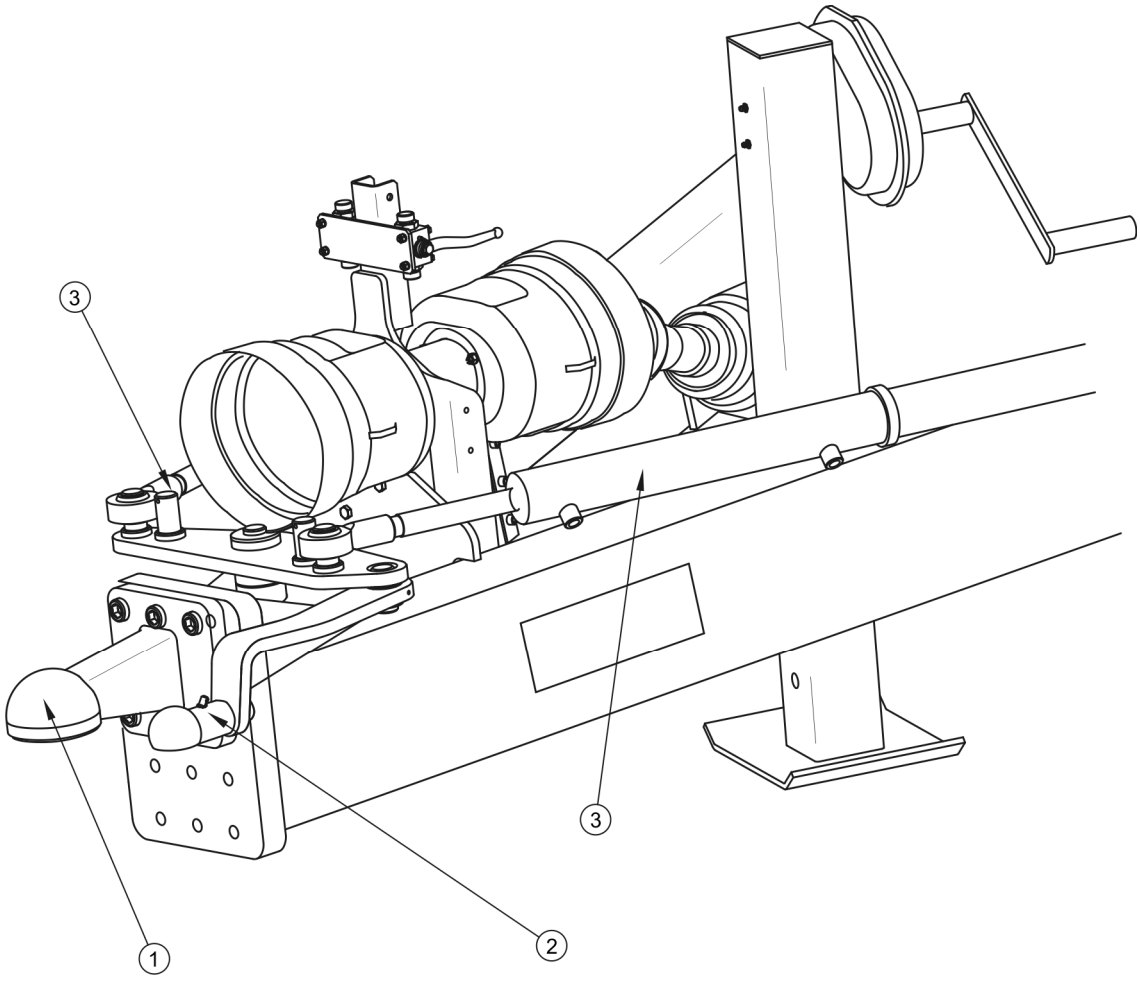


FIGURE 4.3 Connecting the steering system with the tractor hitch

(1) drawbar eye, (2) ball control hitch, (3) cylinder,

During first linking of the trailer and the tractor, check correctness of operation of the steering system - figure *(4.3)*. If system operation is found to be incorrect, follow these steps:

- hitch trailer to tractor with drawbar eye (1) and ball control hitch (2) and then, secure the drawbar,

- open four valves (3) located near the hand pump - figure *(4.4)*
- drive the tractor with the trailer attached at such a distance as to position the trailer wheels for forward driving,

IMPORTANT!

Do not drive if the steering system is incorrectly adjusted.

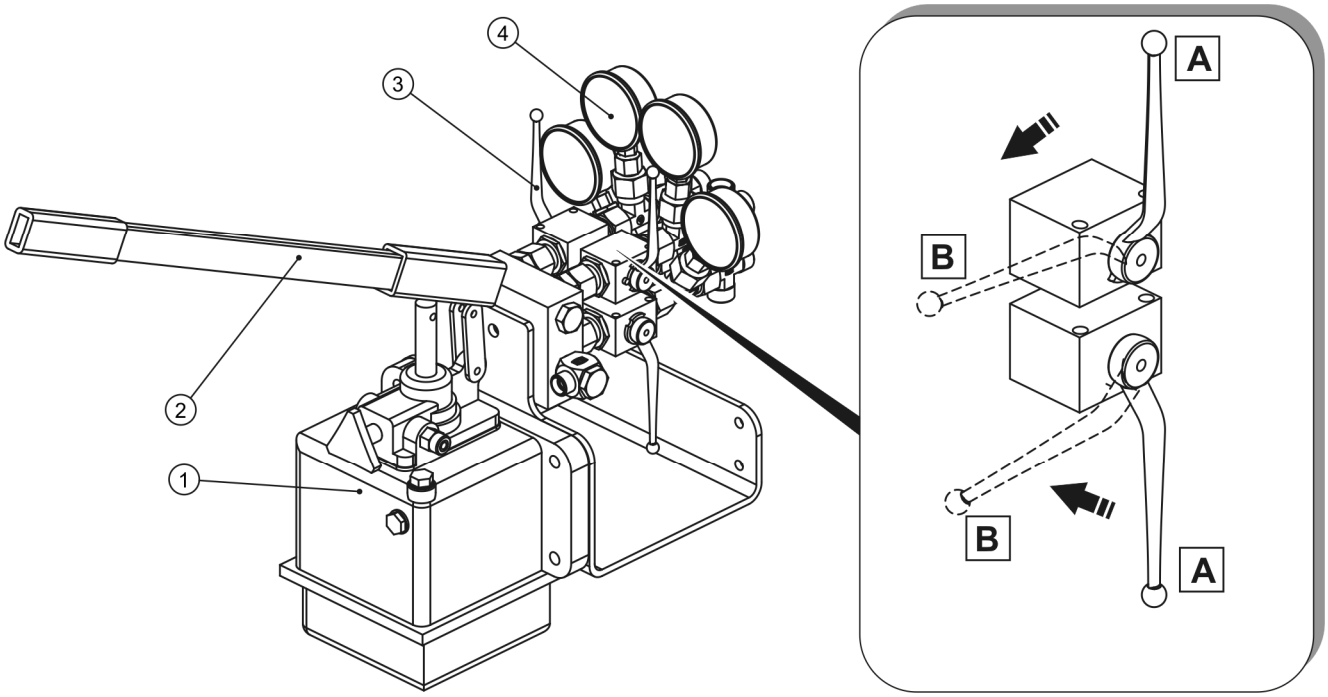


FIGURE 4.4 Hydraulic hand pump

(1) oil tank, (2) hand pump lever, (3) hydraulic valve, (4) pressure gauge, (A) closed position, (B) open position,

- fill the system by means of the pump using hand lever (2) until each pressure gauge (4) indicates pressure of 80 bar,
- close all valves (3) and set the pump lever aside.

4.5 LOADING

Load box can be loaded only when the trailer is connected to the tractor and positioned horizontally. Always aim at distributing the load uniformly in the load box. This will ensure stability when travelling and correct axle and drawbar loads.

DANGER

Do NOT exceed the trailer's maximum carrying capacity.

People or animals must not be carried.

Before beginning loading make certain that the chute slide gate and inspection slides are properly closed and secured. Take tarpaulin cover straps out of clamps on container sides and roll tarpaulin cover to the left side of trailer. Tarpaulin cover should be rolled while standing on the platform placed on the rear side wall. Rolled tarpaulin cover should be supported by bracket bolted to load box side extension.

Trailer may be loaded travelling in parallel to the combine harvester. Operators of both machines must synchronise travel speed and maintain particular care during the operation. During such time trailer conveyor must be folded. Load should be distributed evenly in load box.

DANGER

Loading work should be conducted by person having experience of this type of work.

During loading on the move maintain a constant distance between machines and synchronise travel speed of both machines.

If the trailer is equipped with a weighing system, it may be used to determine the actual degree of container loading.

Due to the various densities of materials, using the total load box capacity may cause exceeding permissible carrying capacity of the trailer.

IMPORTANT!

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

4.6 SECURING LOAD

Regardless of the type of load carried, the user is obliged to secure it in such a manner that the load is unable to spread and cause contamination of the road. Before beginning loading make certain that the inspection slides and chute slide are properly closed and load cannot spill out.

To secure load use tarpaulin cover, with which it should be covered whenever trailer moves on public roads.

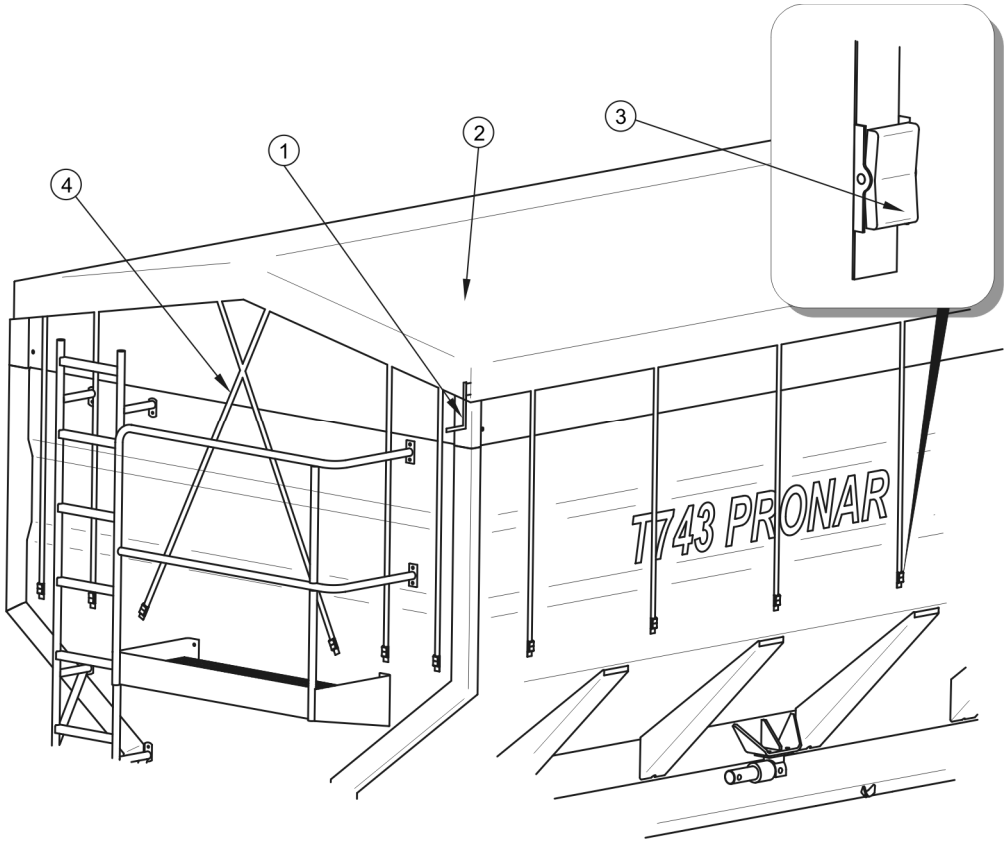


FIGURE 4.5 Tarpaulin cover

(1) crank strip, (2) tarpaulin cover, (3) strap clamp, (4) fastening strap

Load protection with tarpaulin cover

- ➡ Standing on rear platform unroll tarpaulin cover using crank.
- ➡ Attach all pull straps to clamps on container.
- ➡ Pull tarpaulin cover from the right side.
- ➡ Pull tarpaulin cover to the front and finally to the rear wall of the load box.

DANGER

Exercise particular care when rolling tarpaulin cover. During work use the rear platform or ladder of appropriate height or ramp.

4.7 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 load box (does not apply to trans-shipment trailer equipped with braking system with automatic regulator).
- Raise trailer parking stand and secure it in transport 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.
- Before driving backwards, extend the blocking steering system hydraulic cylinders using the tractor distributor lever.

4.8 UNLOADING

Unloading with the aid of vertical conveyor

➡ Tractor and trailer must be placed to drive forwards on flat ground.

➡ Immobilise tractor and trailer with parking brake.

- ➡ Set gear ratio change lever (1) figure *(4.5)* to position (B) or (C).
- ➡ Extend vertical conveyor using tractor's manifold lever
- ➡ Start tractor PTO at speed of approx. 500 revs^{-1} (auger conveyor begins to rotate).
- ➡ Using tractor manifold lever start hydraulic clutch (drive to container augurs is started). Gradually increase PTO revs, until a speed of 1,000 revs $^{-1}$ is reached.
- ➡ During unloading monitor working pressure of hydraulic clutch.

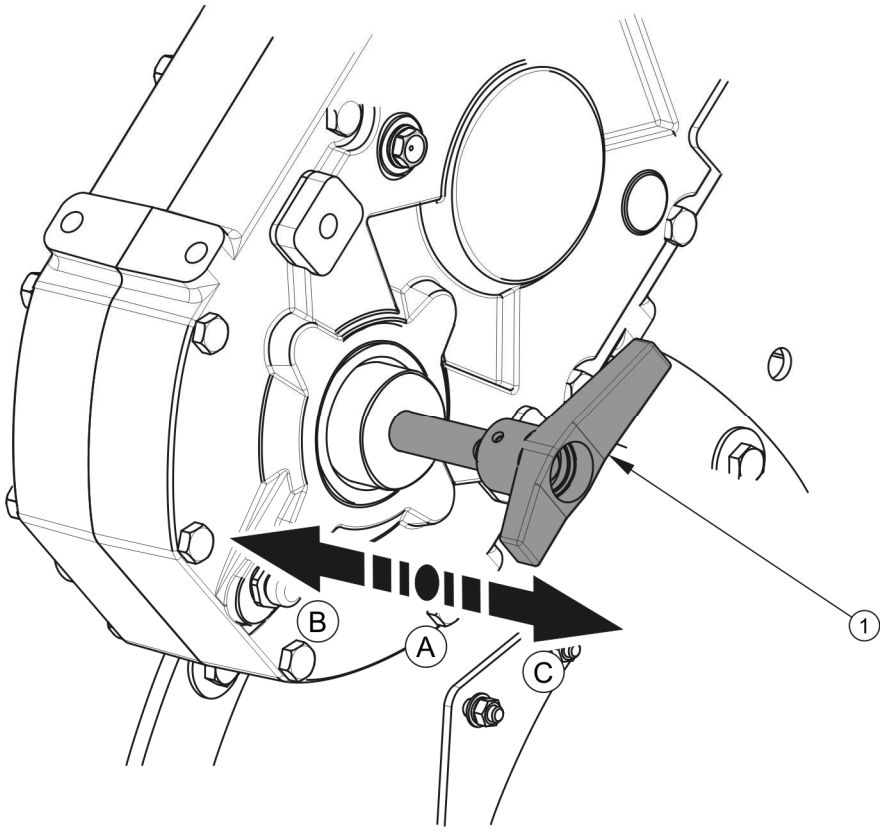


FIGURE 4.6 Front gear wheel transmission

(1) changes of lever position, (A) neutral position, (B) RAPID RPM position, (C) SLOW RPM position

During unloading monitor the operation of vertical conveyor and drive assembly. In the event of overload, sudden increase in pressure at clutch or drive fault, immediately disconnect hydraulic clutch and then the tractor PTO drive.

TIP

Time of unloading load box depends on the setting of the roof shield and covers placed in load box and on the rotation speed of container auger conveyors.

In the final phase of unfolding the vertical conveyor the hydraulic ram speed should be significantly reduced. Failing to reduce speed during unfolding causes the impact and shakes the trailer.

Unloading with the use of channel chute

- Position trailer so that the channel chute is directly above reception hopper grating.
- Immobilise tractor and trailer with parking brake.
- Changes of lever setting (1) figure (*4.6*) set in position (B) or (C).
- Open chute slide using tractor manifold lever
- Start tractor PTO with the lowest rotation speed possible (auger conveyor begins to rotate).
- Wait until grain ceases to fall out of chute.
- Using tractor manifold lever start hydraulic clutch for a few seconds (drive to container auger is started).
- Disconnect clutch. Operation of auger conveyors in container must be short enough so that grain from the collecting shaft does not reach the vertical conveyor.
- During unloading monitor working pressure of hydraulic clutch.

During unloading using the channel chute there is no need to unfold the vertical conveyor. The load from the container shall pour directly to the reception hopper grating. In the event of overload, sudden increase in pressure at clutch or drive fault, immediately disconnect hydraulic clutch and then the tractor PTO drive.

IMPORTANT!

In each case after changing tractor towing the trailer, or after a longer period of not using the trailer it is essential to regulate the hydraulic clutch working pressure. Do not start clutch without prior adjustment.

DANGER

Ensure that during unloading nobody is in the vicinity of the danger zone. Keep a safe distance from moving elements of the trailer.

Do not stand directly below vertical conveyor.

Unloading using channel chute should be performed with the aid of another person, who was standing at a safe distance shall observe whether all of the grain pours out of the chute. Clutch should be started for a few seconds, because longer work of container conveyors causes grain to reach vertical conveyor.

4.9 DISCONNECTING FROM TRACTOR

Disconnecting the trailer

- Stop tractor, immobilise trailer with parking brake and if needed place chocks under wheels.
- Remove safety pin from support, release support.
- Disconnect from the tractor all electrical system leads as well as hydraulic and braking system conduits,
- Disconnect drawbar from the tractor's hitch and move the tractor forward.
- The machine, when uncoupled from the tractor, must be protected against unauthorised use by bystanders, especially children. A protective device must be fitted. – figure (4.1).

Wheel chocks shall be so placed in such a manner that one of them is in front of the wheel and the other is behind the wheel on the middle fixed axle.

Pneumatic system conduits must be placed in the sockets designed for this purpose positioned on the drawbar bracket. Hydraulic system conduits should be secured with the aid of attached clamps and suspend in sockets on the same bracket.

4.10 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, after first travel with 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 every100 km.
- 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.

4.11 WEIGHER OPERATION

4.11.1 MOUNTING INDICATOR

Weight indicator should be placed in tractor operator cab. Panel should be secured with the aid of rubber suction to windscreen. Select mounting place, we are indicator shall be visible

and animal operation will not cause difficulty during driving the tractor. After securing indicator then connect conduit supply connecting attached to weighing system.

IMPORTANT!

Supplied conduit must be disconnected during battery charging.

Conduit should be connected to panel socket – connection POWER, supply plug should be connected to lighter socket. The second conduit - signal, should be connected to display panel - LOAD CELL socket (second terminal of conduit is permanently connected to terminal connection box).

TABLE 4.2 SUPPLY WIRING STRAND MARKING

ITEM	COLOUR	PROPER USE
1	RED	Power supply +12V DC
2	BLACK	Weight
3	ORANGE	Not used
4	BLUE	Not used

TABLE 4.3 SIGNAL WIRING STRAND MARKING

ITEM	COLOUR	PROPER USE
1	WHITE	Signal (+)
2	GREEN	Signal (-)
3	RED	Induction (+)
4	BLACK	Induction (-)

TIP

Power supply and signal lead plugs are so designed that it is impossible to connect them incorrectly to the indicator panel.

4.11.2 STANDARD WORK

Switching weigher on.

- Press ON/OFF button . A short HELLO message appears. Weigher moves into weighing mode GROSS (total weight). Mode GROSS illuminates the change in weight since the last weigher zeroing.
- Press GROSS/NET button and within three seconds press ZERO button. "0" appears on the screen confirming completion of weigher zeroing, weigher moves to GROSS (total weight) weighing mode.

GROSS and NET mode

In GROSS mode the change in weight since the last weigher zeroing is displayed. Weigher is in GROSS mode, if flashing arrow points to GROSS text (notice on right side of display window).

NET mode indicates change after performance of operation TARE (vehicle weight). TARE is temporarily a zero point. The weigher is in NET mode, if the flashing arrow indicates NET text (notice on right side of display window).

Switching between NET and GROSS modes.

GROSS/NET button is an alternative function button. If the weigher is in GROSS mode, then after pressing the GROSS/NET button the weigher sets itself in NET mode. If the weigher is in NET mode, then after pressing GROSS/NET button the weigher sets itself in GROSS mode.

Switching weigher off.

Press and hold ON/OFF button until BYE notice appears on display.

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 TRAILER INSPECTIONS

TABLE 5.1 MAINTENANCE SERVICE PROCEDURES SCHEDULE

OPERATION NUMBER	DESCRIPTION	FREQUENCY						
		A	B	C	D	E	F	G
1	Checking wheel axle bearings		•				•	
2	Checking and adjustment of main brake							•
3	Inspection and regulation of parking brake							•
4	Draining water from air tank			•				
5	Cleaning drain valve							•
6	Checking technical condition of connections				•			
7	Checking action of braking system				•			

OPERATION NUMBER	DESCRIPTION	FREQUENCY						
		A	B	C	D	E	F	G
8	Checking braking system tightness			•				•
9	Cleaning the air filters					•		
10	Checking hydraulic system tightness			•				•
11	checking lighting and signalling system				•			•
12	Checking nut and bolt tightness on wheels and drawbar	See 5.2.12						
13	Checking lubrication points	According to schedule						
14	Checking technical condition of wheels					•		
15	Adjustment of working pressure of clutch	See 5.2.14						
16	Checking chain tightness of front chain transmission (I stage)	See 5.2.15						
17	Checking chain tightness of front chain transmission (II stage)	See 5.2.16						
18	Checking chain tightness of rear chain transmission	See 5.2.17						
19	Change oil in gear wheel transmission	After the first 50 hours of work and then every 500 hours						
20	Change oil in conveyor intersecting axis gearing	After the first 50 hours of work and then every 500 hours						

TABLE 5.2 INSPECTION PERFORMANCE FREQUENCY

FREQUENCY	INSPECTION	DESCRIPTION
A	After first use	Perform service after first travel of trailer (without load) - once only inspection.
B	After first travel with load	Perform service after first travel of trailer (with load) - once only inspection.
C	After a week of use	Perform inspection after first week of normal use of trailer – once only inspection (does not apply to draining water from air tank).
D	Daily	General check of technical condition of individual trailer sub-assemblies.
E	3 months	Perform inspection after 3 months of normal use of trailer - repeat inspection every 3 months of use.
F	6 months	Perform inspection after 6 months of normal use of trailer - repeat inspection every 6 months of use.
G	12 months	Perform inspection after 12 months of normal use of trailer - repeat inspection every 12 months. It is recommended to make an inspection before commencing the season of machine use.

5.2.1 OPERATION NO. 1 - CHECKING WHEEL AXLE BEARINGS

In newly purchased trailer, after the first week of use or covering a distance of 100 km, while during further use – after 6 months of vehicle use check and regulate wheel bearing slackness when needed. Worn or damaged bearing should be replaced.

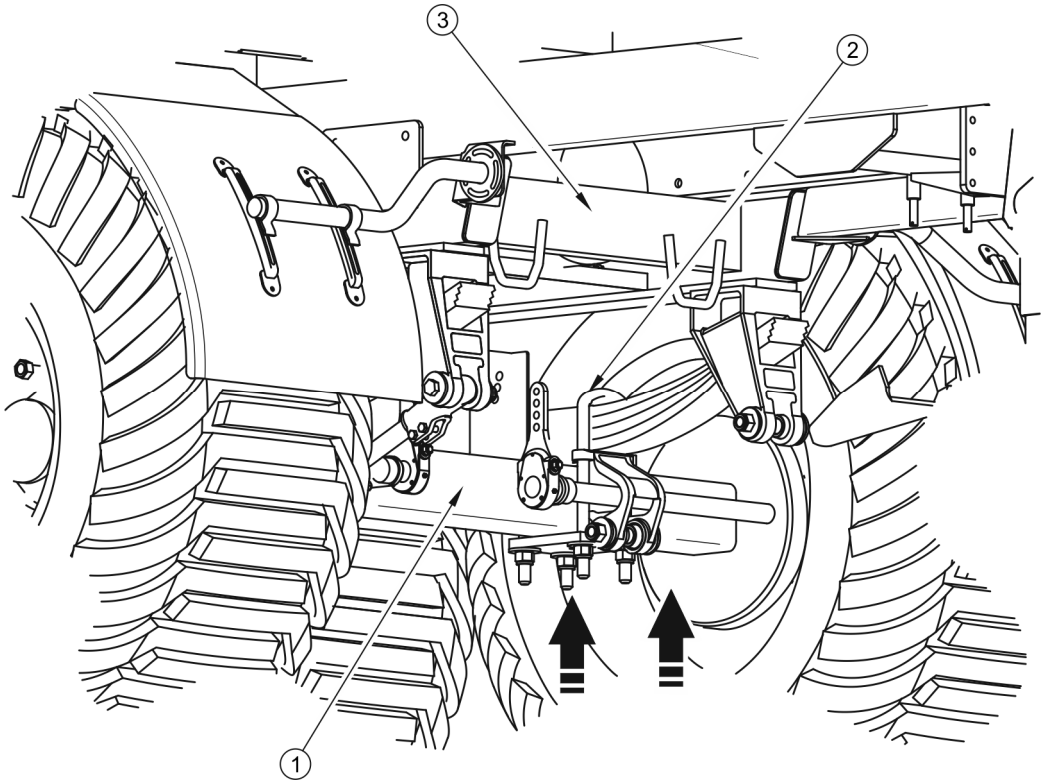


FIGURE 5.1 Lifting jack support point

(1) wheel axle, (2) U bolt, (3) lower frame

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.
- Recommended support points are marked with arrows. Lifting jack must be suited to weight of trailer.

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

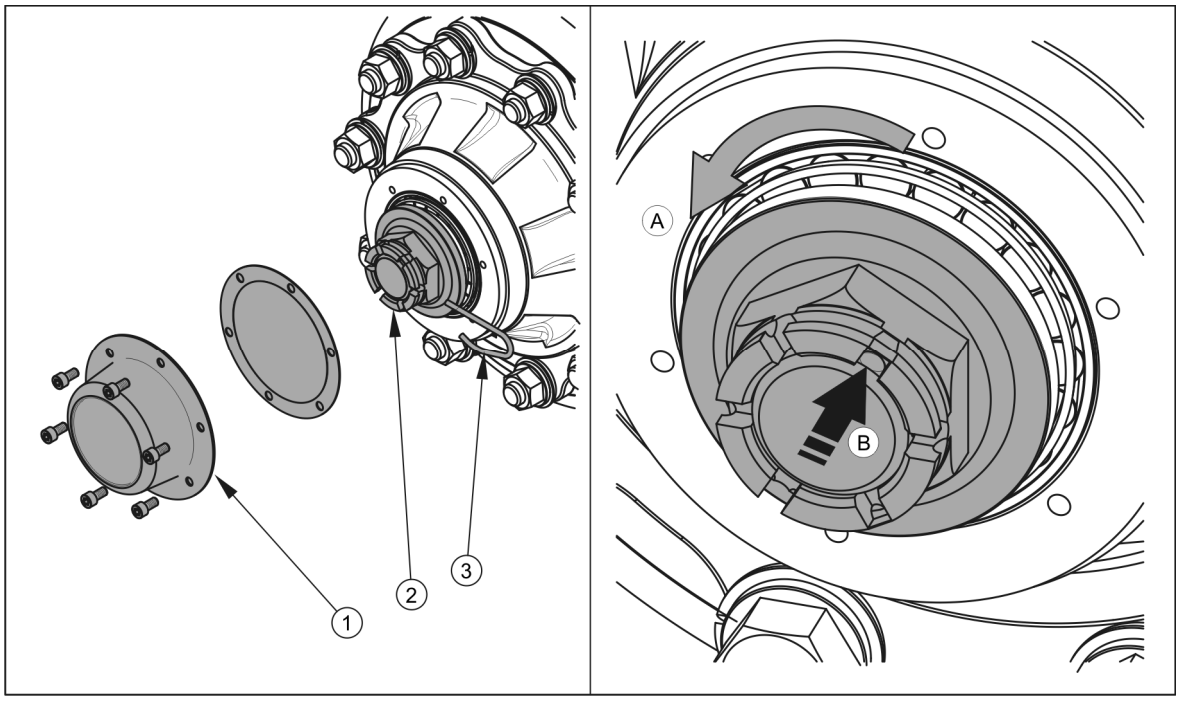


FIGURE 5.2 Adjustment of road wheel axle bearings

(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 (*5.2*):

➡ 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 than1/3 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 box is empty.

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.

Checking and/or adjustment of wheel axle bearings:

- **after the first week of use or covering a distance of 100 km,**
- **Every 6 months of use.**

5.2.2 OPERATION NO. 2 - 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 adjusted, braking of trailer wheels 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:

- in direction A, if braking is too early,
- in direction B, if breaking is too late.

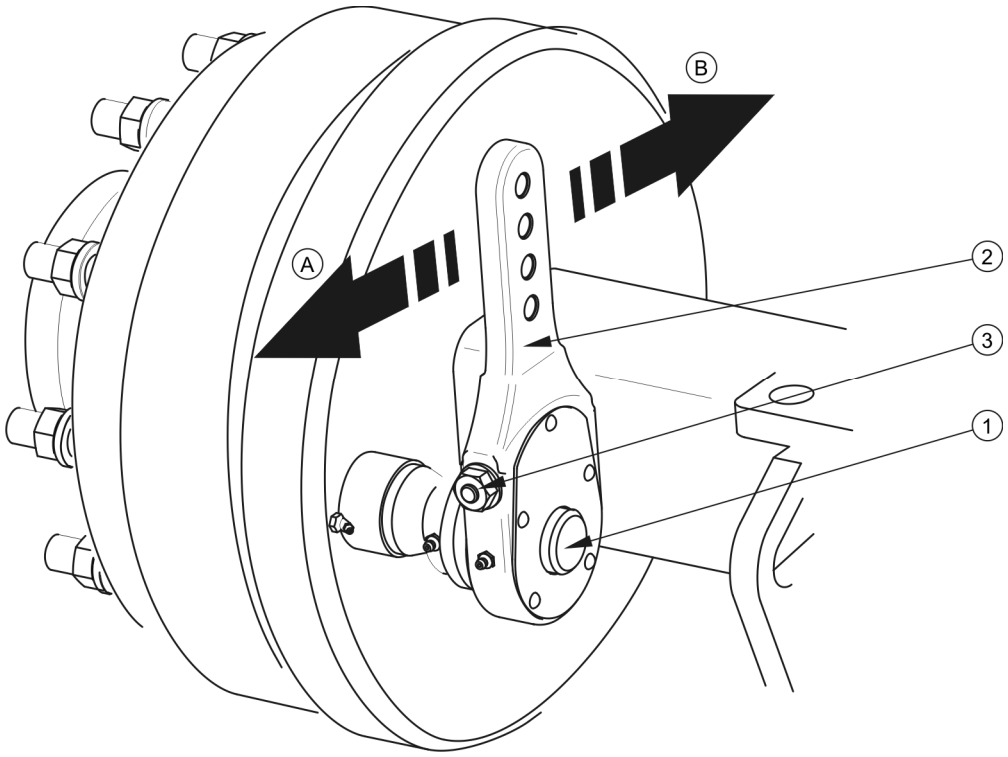


FIGURE 5.3 Adjustment of main brakes

(1) expander shaft, (2) expander arm, (3) adjustment bolt

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 the brake is released, expander arms may not be supported on any structural elements, because insufficient withdrawal of a piston ram may cause abrasion of brake shoes in drum and result in overheating trailer brakes.

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.

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.

5.2.3 OPERATION NO. 3 - REGULATION OF PARKING BRAKE

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

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

Inspection and regulation of parking brake:

Every 12 months

if needed.

ATTENTION!

The braking force of the parking brake, is the braking force of the two front wheels of the trans-shipment trailer.

Before commencing regulation make certain that the main break is functioning properly. Brake regulation must be performed according to the following sequence:

- park trans-shipment trailer on a level surface.
- wedges or other objects without sharp edges should be placed under the wheels.
- unscrew maximally the brake mechanism screw (anticlockwise).
- loosen brake cable clamps.
- 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

5.2.4 OPERATION NO. 3 - DRAINING WATER FROM THE AIR TANK

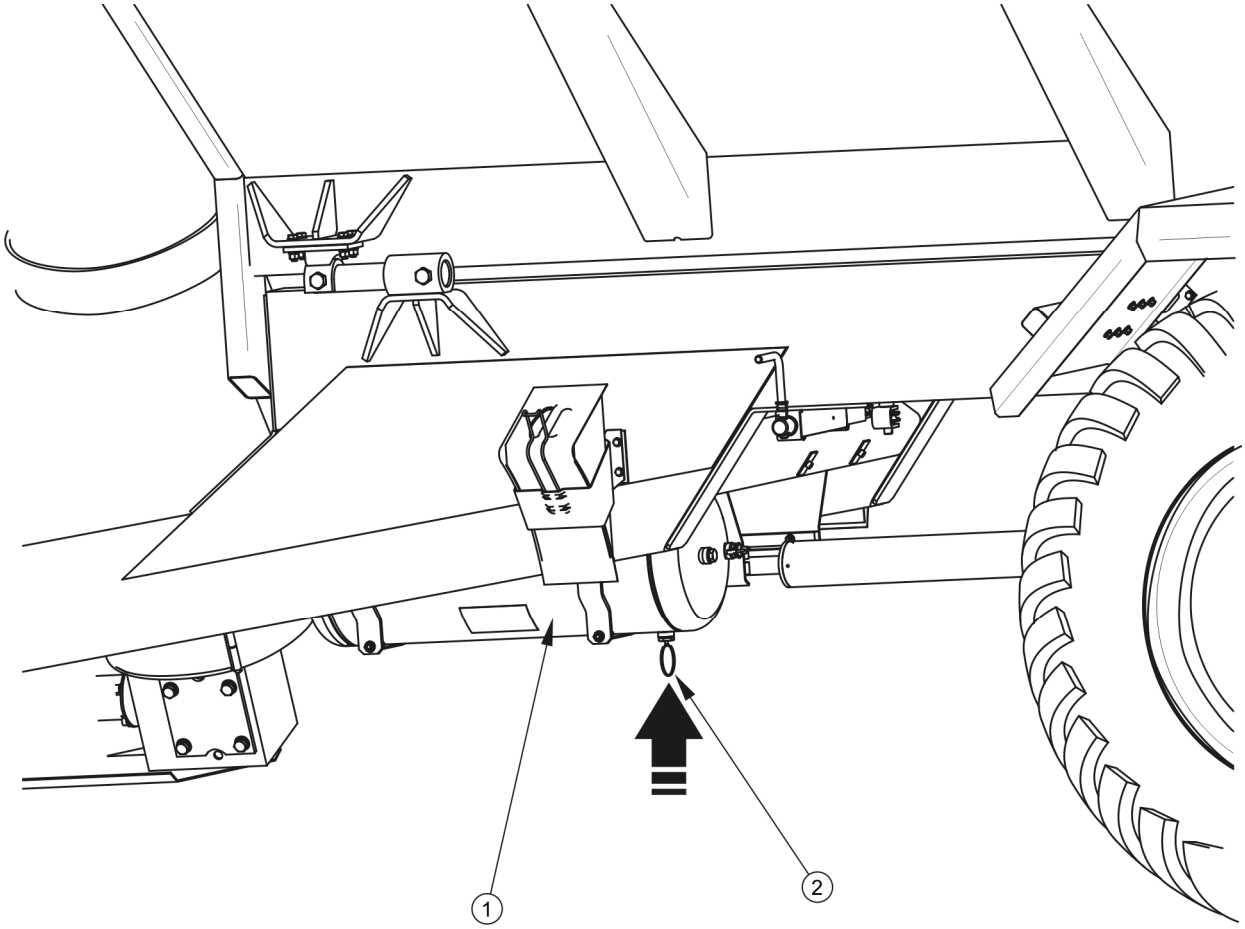


FIGURE 5.4 Draining water from air tank

(1) air tank, (2) drain valve

Required service actions

- Open out drain valve (2) placed in lower part of tank.
- 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).

Draining water from air tank:

- **after each week of use.**

5.2.5 OPERATION NO. 4 - CLEANING DRAIN VALVE

Required service actions

- ➡ Release air from the tank.
- ➡ 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).**

DANGER

Before dismantling drain valve release air from tank.

5.2.6 OPERATION NO. 5 - 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.

Damage including cracking of body, burnt or broken electrical contacts, damage thread classifies contact for replacement. In the event of damage to 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.

Inspect trailer connections:

- **daily.**

DANGER

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

Each time before connection of the machine inspect technical condition and cleanness of contacts and sockets in tractor.

5.2.7 OPERATION NO. 6 – CHECKING BRAKING SYSTEM ACTION

After correct hitching of trailer to tractor and starting engine, compressed air is transferred to 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.

DANGER

Do not use the trailer with damaged pneumatic system.

Checking action of braking system:

- **daily.**

5.2.8 OPERATION NO. 7 – CHECKING BRAKING SYSTEM TIGHTNESS

As a part of trailer maintenance, conduct inspection of pneumatic system leaktightness, paying particular attention to all places of connection. Tightness of the system should be checked at nominal pressure in system of approximately 0.8 MPa. In order to check system tightness connect trailer to tractor and if necessary start tractor in order to bring system to the required pressure. 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.

Checking tightness:

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

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.

5.2.9 OPERATION NO. 8- CLEANING THE AIR FILTERS

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 (*5.5*). 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.

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.

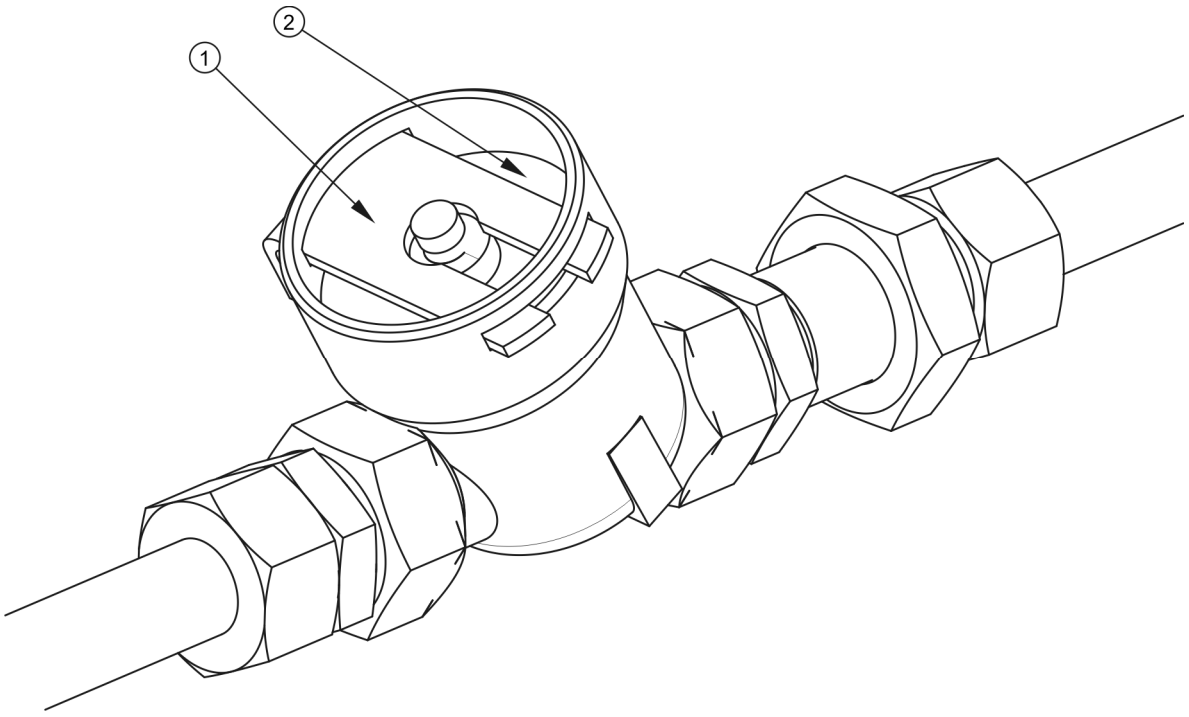


FIGURE 5.5 Air filter

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

Cleaning the air filter (filters):

- **every 3 months of use,**

5.2.10 OPERATION NO. 9 – CHECKING HYDRAULIC SYSTEM TIGHTNESS

Required service actions

- ➡ Hitch trailer to tractor.
- ➡ Connect all hydraulic system conduits according to service instructions.
- ➡ Clean connectors and ram cylinders.
- ➡ Start in turn all systems without starting PTO drive (vertical conveyor lifting and interlocking system, clutch system, chute slide system, power steering 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.

During leak tightness inspection check technical condition of hydraulic conduits. All conduits should be replaced after 4 years of trailer use, regardless of their wear.

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.

Checking tightness:

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

Replace all hydraulic conduits after 4 years of trailer use.

5.2.11 OPERATION NO. 10 - CHECKING LIGHTING AND SIGNALLING SYSTEM.

Required service actions

- Hitch trailer to tractor.
- Switch on all lights in succession.
- Check completeness and technical condition of lights.
- Check completeness of all reflective lights.
- Check correct mounting of triangular slow-moving vehicle sign.
- Check connection conduit and conduit plug.
- Check condition of conduit group and connection blocks.

IMPORTANT!

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

Checking technical condition of electrical system:

- **daily,**
- **every 12 months of use.**

Annual inspection of system does not relieve user of daily checking of technical condition of lighting system.

5.2.12 OPERATION 11- CHECKING NUT AND BOLT TIGHTNESS ON WHEELS AND DRAWBAR

Wheel nuts should be tightened using a torque of 450 Nm. Inspection of nut and bolt tightness should take place each time after first use, after first journey with a load and then every 6 months of trailer use. In the event of intensive work checking the nut tightening should be done at least every 100 km.

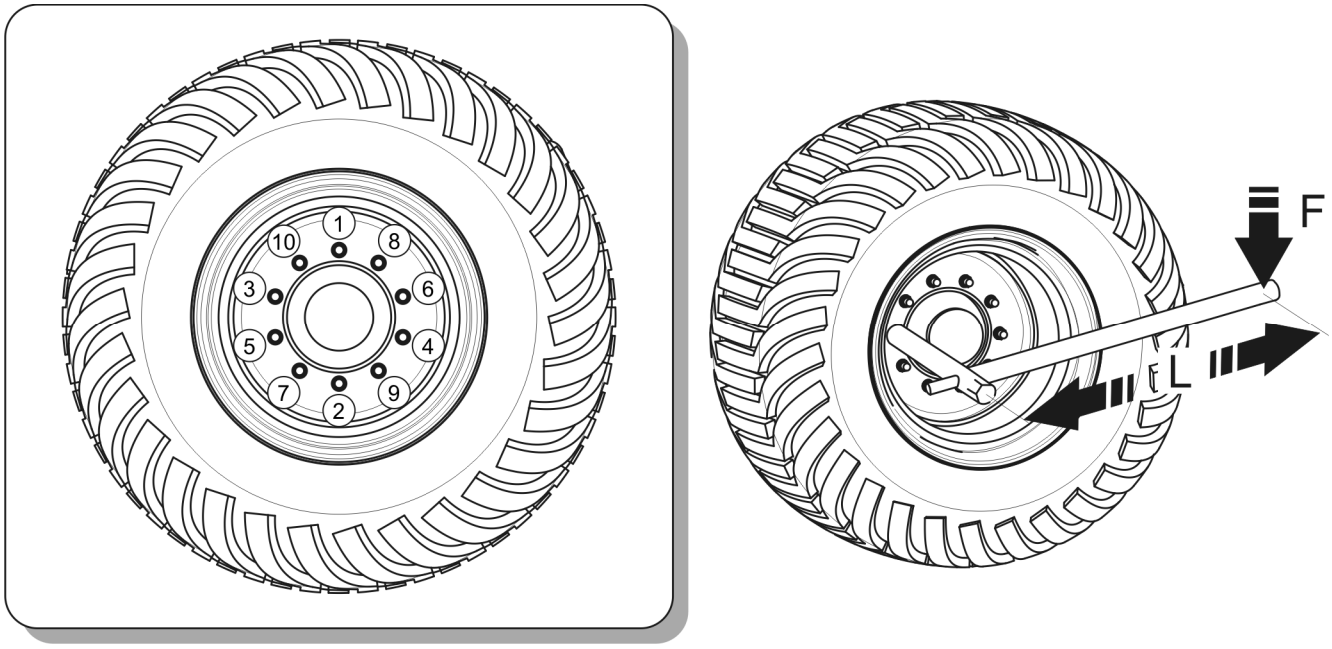


FIGURE 5.6 Tightening wheels nuts

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

Drawbar eye tightness should be checked simultaneously with wheel nut tightness checking. Tightening torque should amount to 240 Nm. Nuts should be tightened gradually diagonally, using torque spanner.

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.

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

Checking wheel axle and drawbar eye tightening:

- **each time after first use,**
- **each time after first travel with load**
- **after 6 months or covering a distance of25,000 km,**

TABLE 5.3 SPANNER ARM SELECTION

WHEEL TIGHTENING TORQUE [Nm]	BODY WEIGHT (F) [kg]	ARM LENGTH (L) [m]
450	60	0.75
	70	0.65
	80	0.55
	90	0.50

5.2.13 OPERATION NO.12 - CHECKING LUBRICATION POINTS

TABLE 5.4 TRAILER LUBRICATION SCHEDULE

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	FREQUENCY
1	Hub bearing	6	A	24M
2	Drawbar hitching eye	1	B	14D
3	Turning axle connecting pins	4	A	3M
4	Turning axle stub axles	8	A	1M
5	Lever	6	A	3M
6	Expander shaft bracket sleeve	6	A	3M
7	Expander shaft sleeve in drum hub	6	A	3M
8	Support gearing	3	A	6M

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	FREQUENCY
9	Leaf spring shock absorbers	6	C	6M
10	Multi-flanged terminal of PTO shaft	1	B	14D
11	Shaft elbows (1)	6	B	14D
12	Leaf spring absorber sliding surfaces	6	A	3M
13	Striker sleeve	1	A	3M
14	Sliding bearing of folding conveyor cylinder ram	2	A	3M
15	Lock sleeve	1	A	3M
16	Bolting ram securing pin	2	D	3M
17	Self-centering bearing	1	A	1M
18	Two conduit cone gearing (2)	1	E	500H
19	Upper conveyor bearing group	1	A	10H
20	Cylinder bolt and pin	5	D	3M
21	Hinge pin	4	A	3M
22	Gear wheel transmission	1	E	500H
23	Shaft elbows	6		

ITEM	LUBRICATION POINT	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	FREQUENCY
24	Drive chains	3	F	10H
25	Bearing assembly	8	A	10H

(1) comply with the instructions of shafts manufacturer, lubrication periods – M month, D – day, H man-hour, (2) the first oil change should be carried out after 50 hours work,

A - permanent machine general-purpose grease

B - permanent grease for heavily loaded elements with addition of MOS_2 or graphite

C – anticorrosion preparation in aerosol

D – ordinary machine oil

E – SAE 90 EP gear oil

F – chain grease

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.

Gear wheel transmission should be lubricated with gear oil according to classification SAE90 EP. Oil changing is discussed in further on in this section.

Before commencing lubrication of gear chains, first wash them with generally available substances for this purpose. After complete drying, grease chains using a brush. After completing lubrication do not use the trailer for at least 1 hour.

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

Thoroughly wash accumulated deposits off parabolic leaf springs and then after drying lubricate internal surfaces of leaves with anticorrosion and lubrication preparation.

During trailer use the user is obliged to observe lubrication instructions according to attached lubrication schedule.

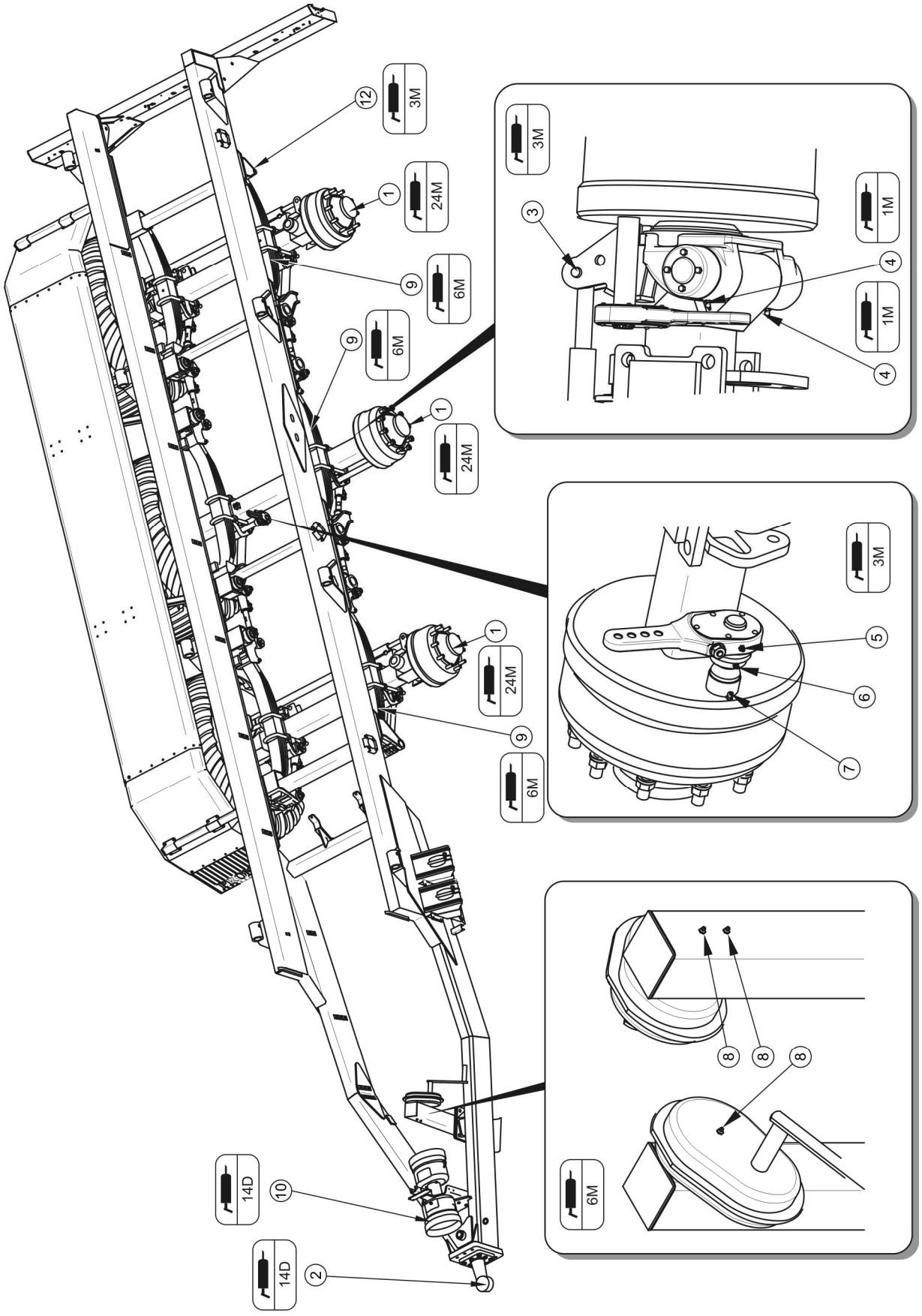


FIGURE 5.7 Trailer lubrication points – chassis

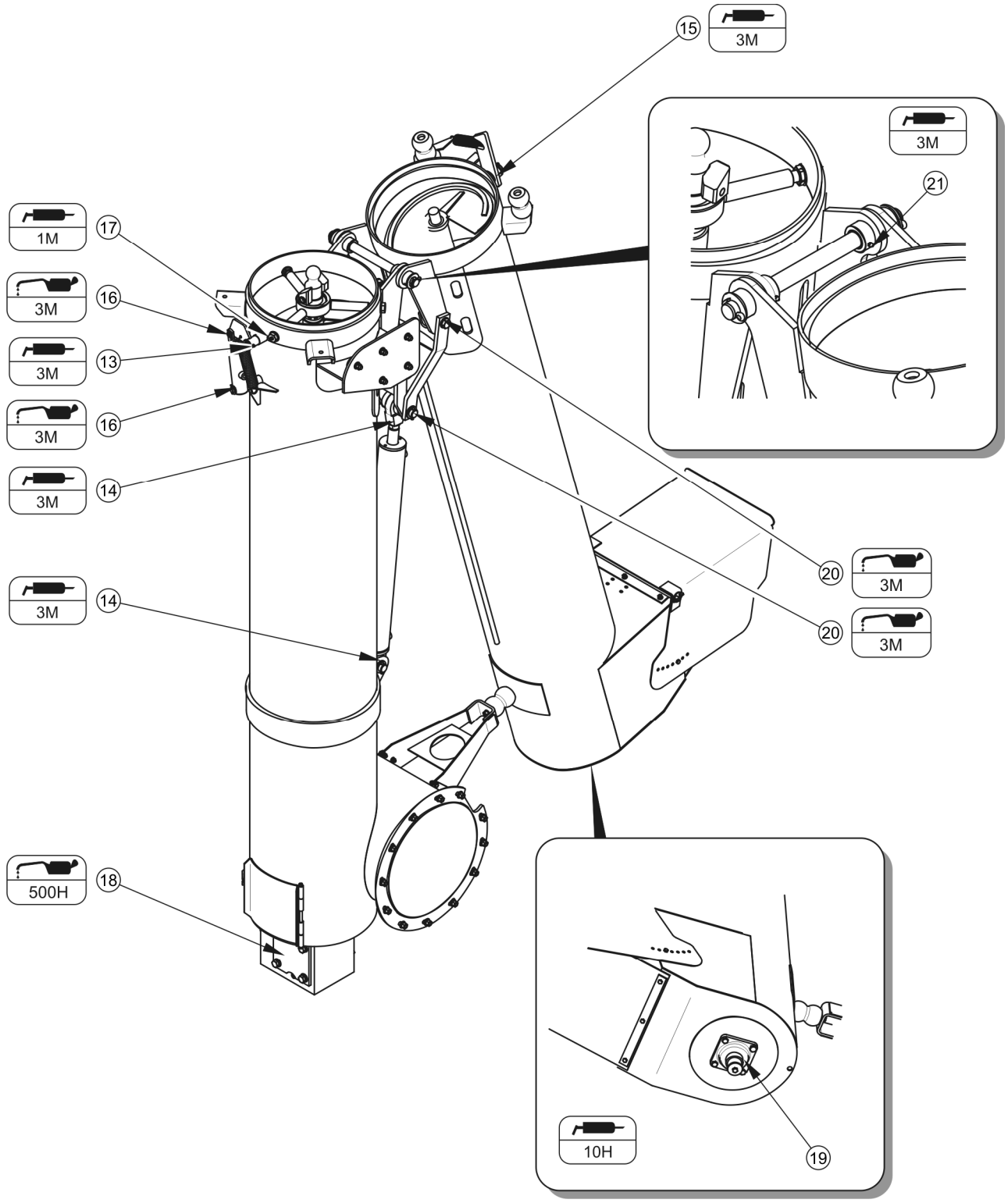


FIGURE 5.8 Trailer lubrication points - vertical conveyor

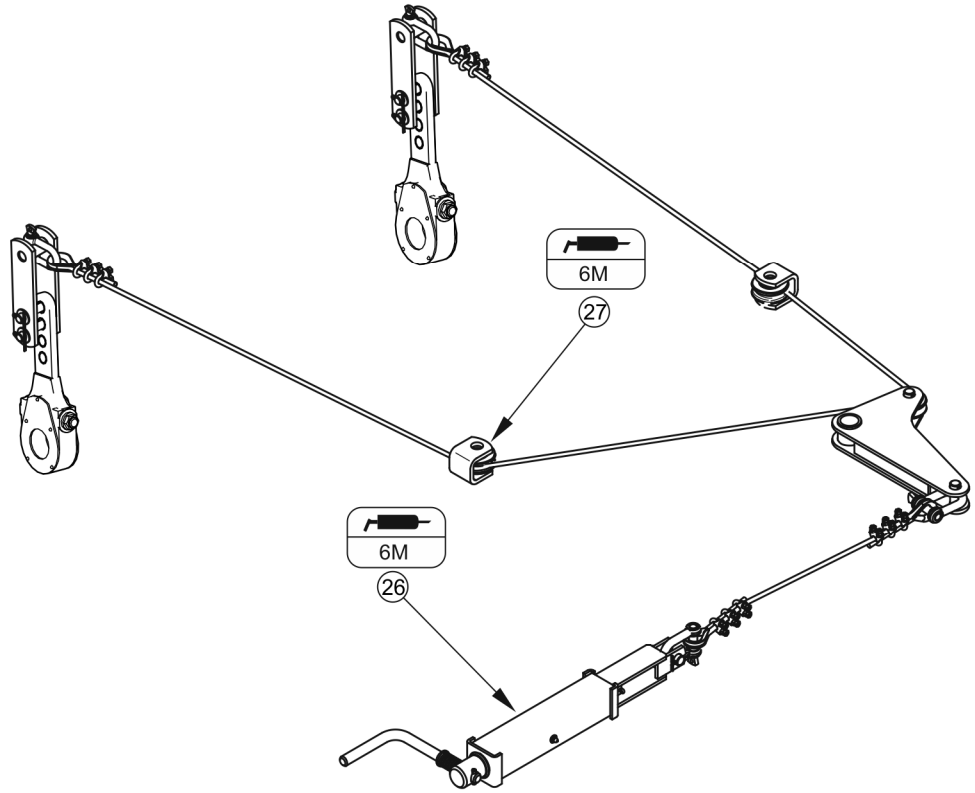


FIGURE 5.9 Trailer greasing points – parking brake

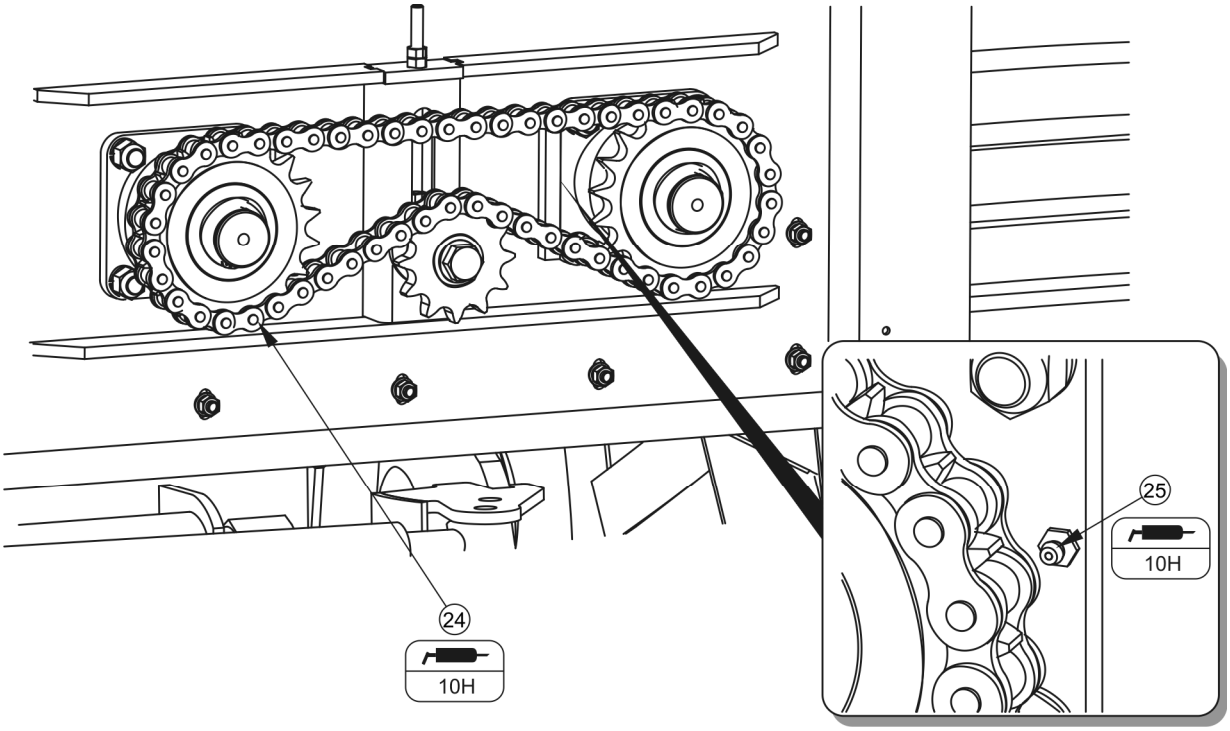


FIGURE 5.10 Trailer lubrication points - rear chain transmission

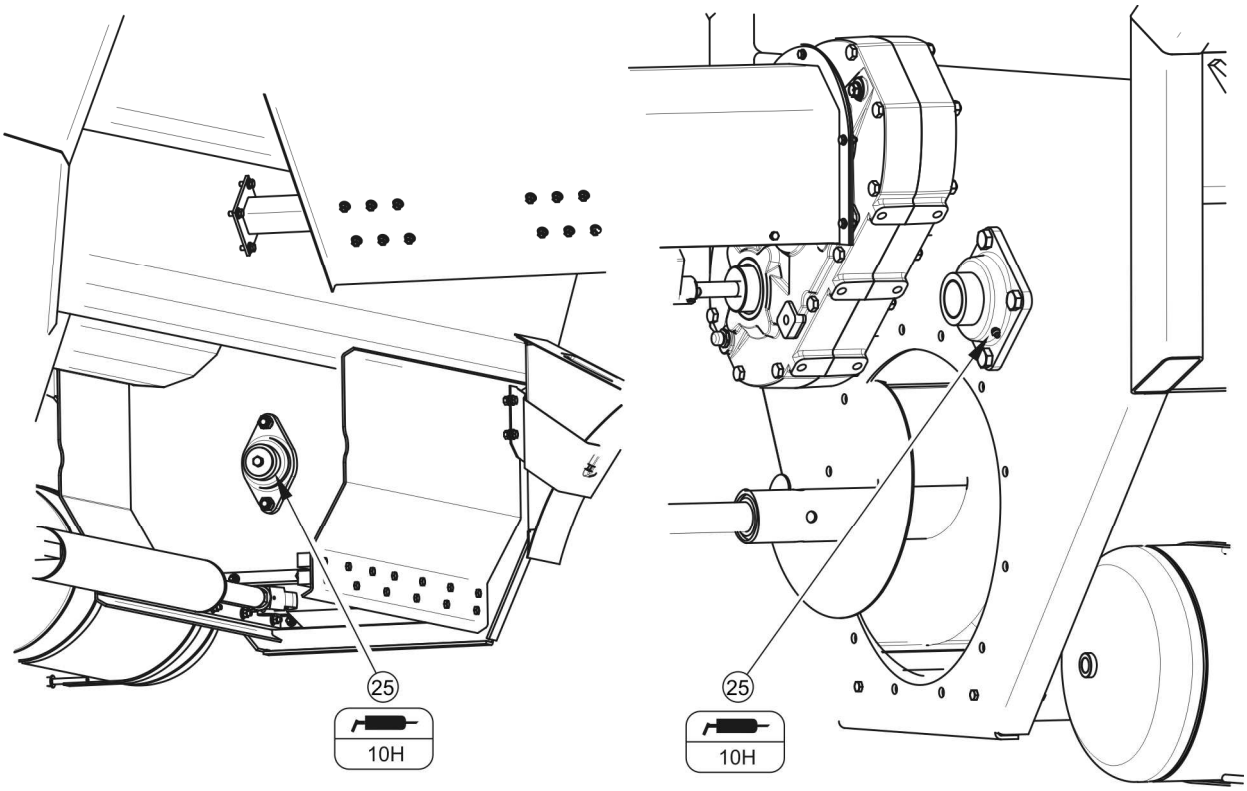


FIGURE 5.11 Trailer lubrication points – gathering auger shaft and container auger shaft bearing assembly.

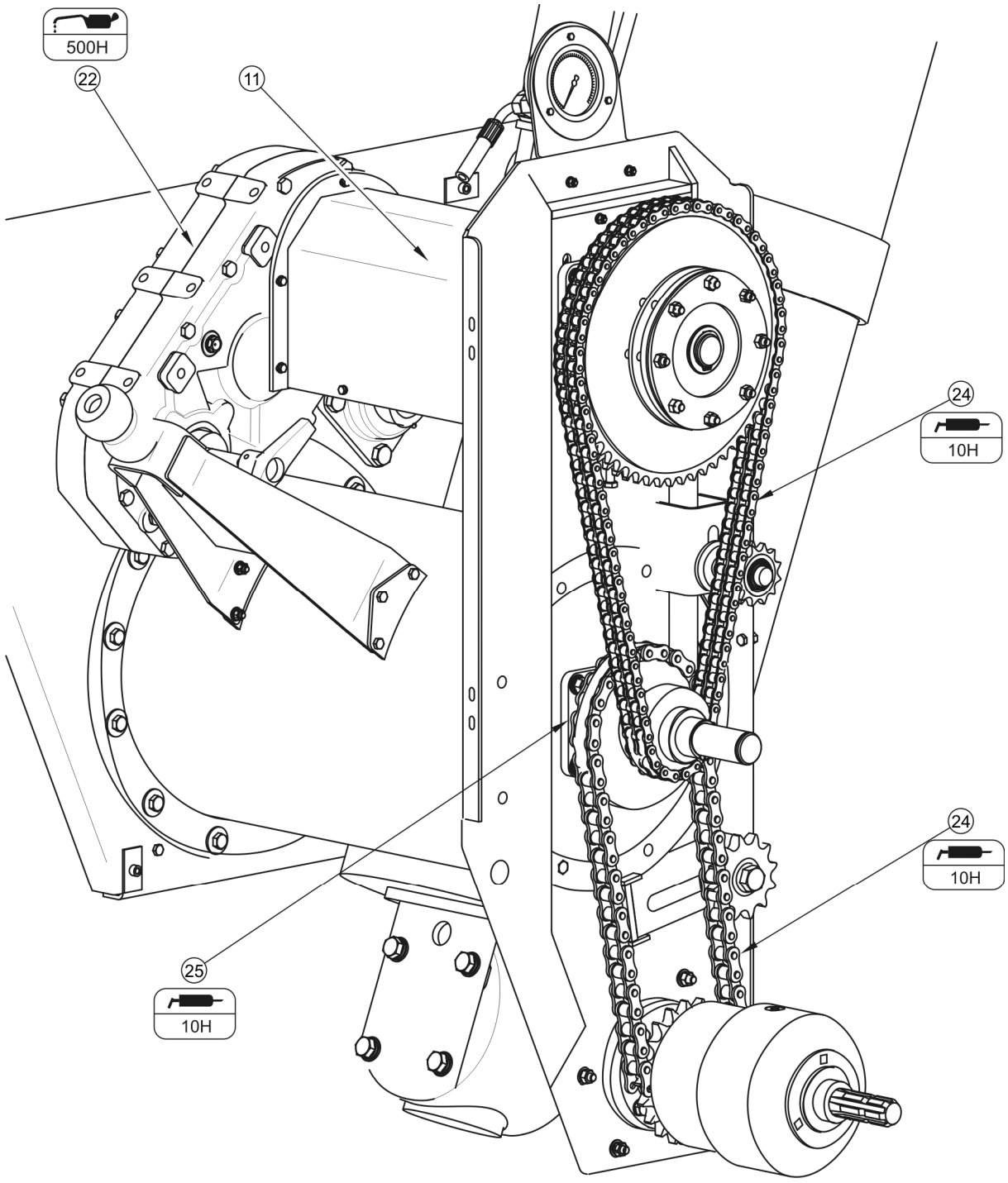


FIGURE 5.12 Trailer lubrication points - front chain transmission.

5.2.14 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 trailer parking.

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.

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

DANGER

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

Checking tyre pressure and steel rims:

- **every 3 months of use,**
- **if needed.**

5.2.15 OPERATION NO. 14 - ADJUSTMENT OF CLUTCH WORKING PRESSURE

In each case after changing tractor towing the trailer or after an extended idling period of the trailer, regulate the clutch working pressure. Starting clutch without adjustment may cause damage to it.

Required service actions

- ➡ Hitch trailer to tractor.
- ➡ Immobilise tractor and trailer with parking brake.
- ➡ Set cut-off valve (2) in (Z) position – closed.
- ➡ Start tractor, using hydraulic manifold supplying hydraulic clutch system.
- ➡ Using reduction valve (1), placed on connection plate (3) regulate pressure in clutch system. Nominal working clutch pressure must be set in within the range of 90 – 95 bar. Check pressure on pressure gauge (4), placed on gearing housing.

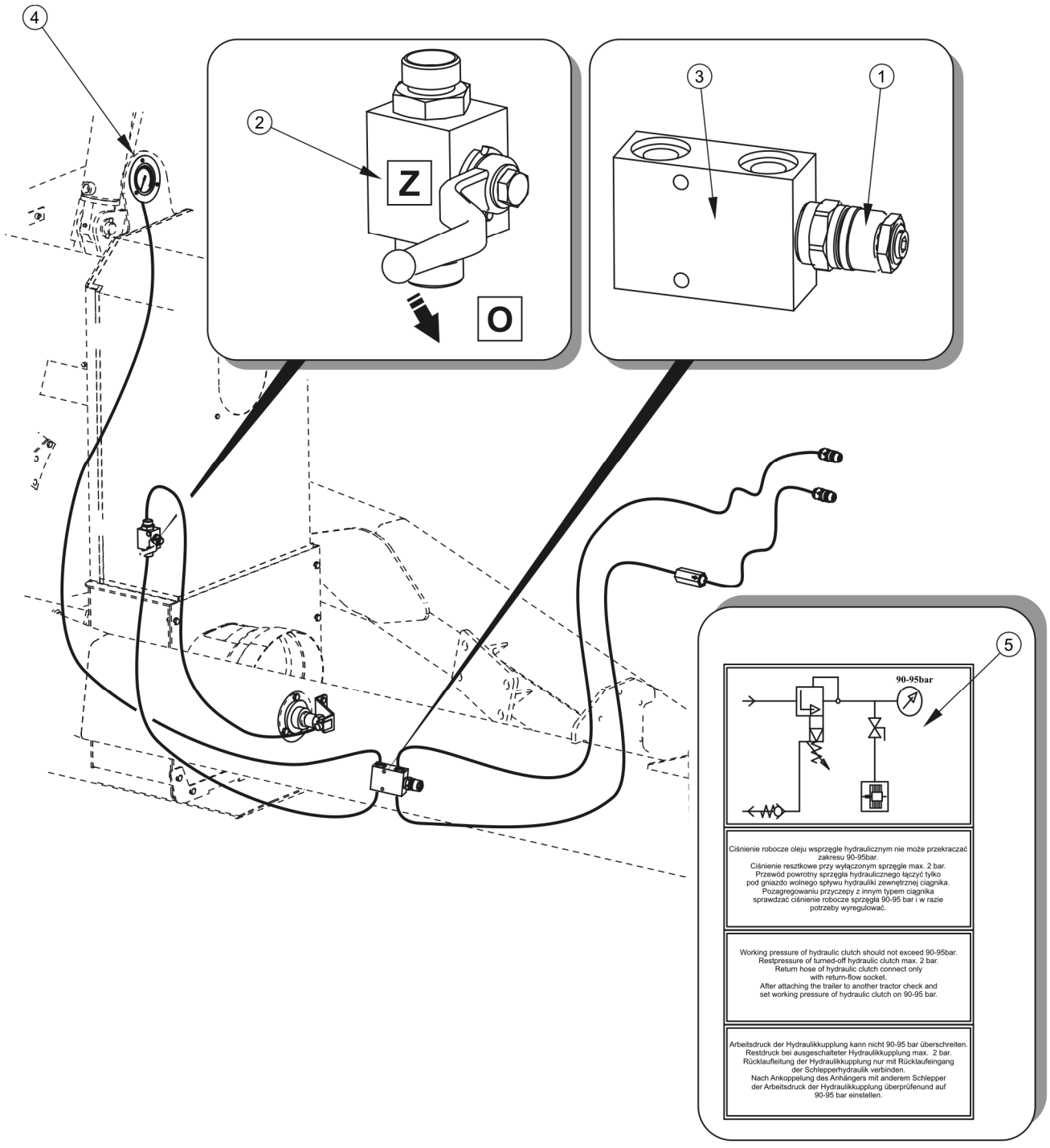


FIGURE 5.13 Adjustment of working pressure of clutch

(1) reduction valve, (2) cut-off valve, (3) connection plate, (4) pressure gauge, (5) information decal

- ➡ Cut off oil flow to trailer hydraulic clutch system, turn off tractor.
- ➡ Open cut off valve (2).

Clutch working pressure adjustment diagram is shown on information decal (5).

TIP

When clutch is disengaged pressure remaining in system may not be greater than1.5 bar.

Adjustment of working pressure of clutch:

- **every 12 months of use.**
- **after each change of tractor.**

5.2.16 OPERATION NO. 15 – INSPECTION OF TIGHTNESS OF FRONT CHAIN GEARING (I STAGE)

Required service actions

- ➡ Immobilise the trailer with parking brake.
- ➡ Put two chocks behind the wheel, to stop machine rolling.
- ➡ Open front transmission cover.
- ➡ Check chain looseness. Press with thumb in mid-length (place marked with arrow), chain loose play should amount to 7 – 15 mm.
- ➡ If there is greater looseness then loosen counter nut (4), and nut (5) tighten chain (1). Tensioner block, joined with tensioner toothed wheel (2) is moved left.
- ➡ After achieving required tightness, tighten counter nut (4).

Checking drive chain tightness of the I stage of transmission gear:

- **every 10 hours of work - before lubrication chain.**

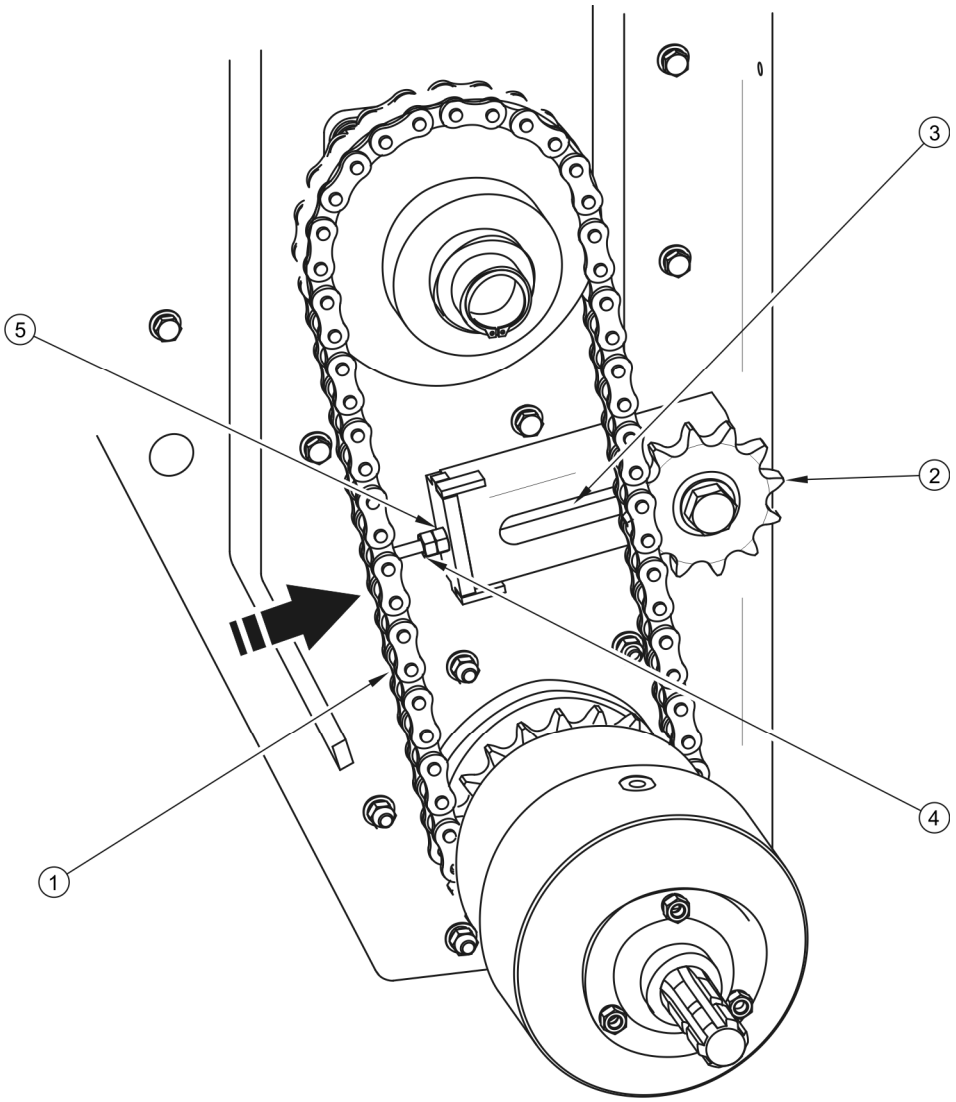


FIGURE 5.14 I stage of front chain gearing

(1) chain, (2) tensioner toothed cog, (3) tensioning bolt, (4) counter nut, (5) tightening nut

5.2.17 OPERATION NO. 16 – INSPECTION OF TIGHTNESS OF FRONT CHAIN TRANSMISSION (II STAGE)

Required service actions

- ➡ Immobilise the trailer with parking brake.
- ➡ Put two chocks behind the wheel, to stop machine rolling.
- ➡ Open front transmission cover.
- ➡ Check chain looseness. Press with thumb in mid-length (place marked with arrow), chain loose play should amount to 7 – 15 mm.

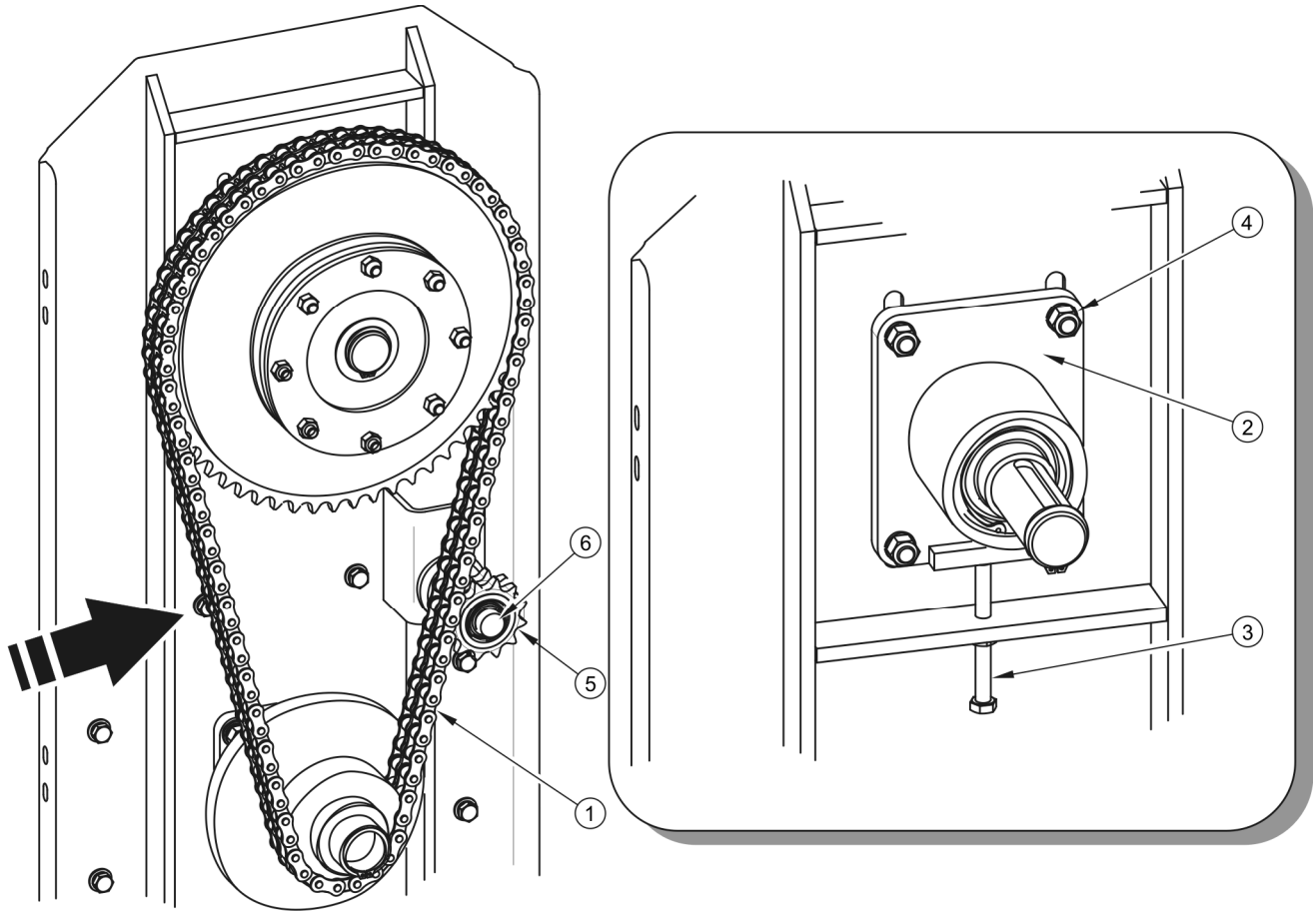


FIGURE 5.15 II stage of front chain transmission

(1) chain, (2) connector housing, (3) tensioner bolt, (4) bolt connection, (5) tensioner toothed wheel, (6) tensioner bolt

- If there is an excessive looseness, loosen tensioner bolt (6) and tighten chain (1) while lifting the wheel. Tensioner block, joined with tensioner toothed cog (5) is moved upwards.
- After achieving required tightness, tighten tensioner bolt (6).
- If there is still an excessive looseness in the transmission, loosen 4 nuts (4) and tighten chain (1) using adjustment bolt (3) – connector housing (2) is moved upwards.
- After achieving required tightness, tighten nut (4).

Checking drive chain tightness of the III stage of transmission gear:

- **every 10 hours of work - before lubrication chain.**

5.2.18 OPERATION NO.17 – INSPECTION OF TIGHTNESS OF REAR CHAIN TRANSMISSION

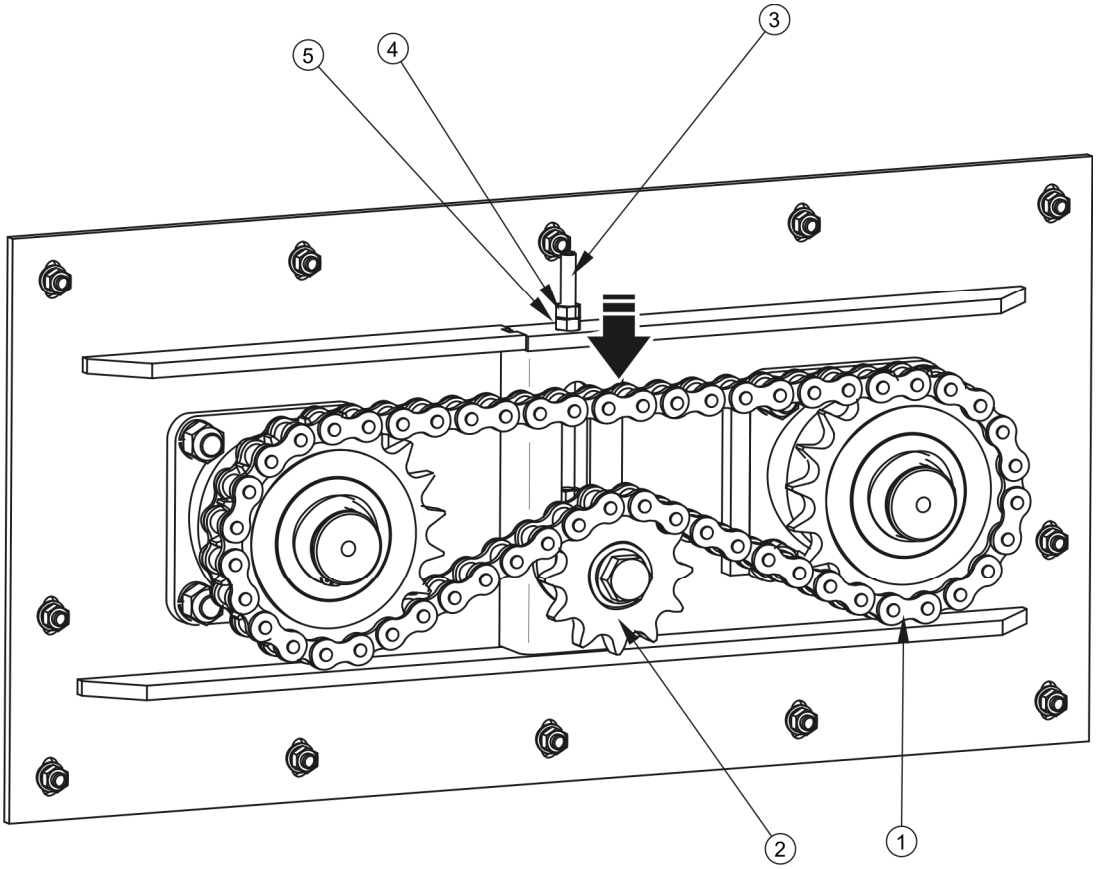


FIGURE 5.16 Rear chain transmission

(1) chain, (2) tensioner toothed cog, (3) tensioning bolt, (4) counter nut, (5) tightening nut

Required service actions

- ➡ Immobilise the trailer with parking brake.
- ➡ Put two chocks behind the wheel, to stop machine rolling.
- ➡ Open transmission cover.
- ➡ Check chain looseness. Press with thumb in mid-length (place marked with arrow), chain loose play should amount to 7 – 15 mm.

- If there is greater looseness then loosen counter nut (4), and nut (5) tighten chain (1). Tensioner block, joined with tensioner toothed cog (2) is moved upwards.
- After achieving required tightness, tighten counter nut (4).

Checking chain tightness of rear chain transmission:

- **every 10 hours of work - before lubrication chain.**

5.2.19 OPERATION NO. 18 – CHANGE OIL IN FRONT GEAR WHEEL TRANSMISSION

Required service actions

- Immobilise the trailer with parking brake.
- Put two chocks behind the wheel, to stop machine rolling.
- Unscrew inlet plug (2),
- Unscrew drain plug (1).
- Drain used oil into container.
- Draw out remaining oil.
- Tighten drain plug.
- Pour in new oil (3.5 litres).
- Tighten inlet plug.

First oil change should be performed after working 50 hours and then after every 500 hours of work.

- **Check gearing each month for oil leaks and mechanical damage.**

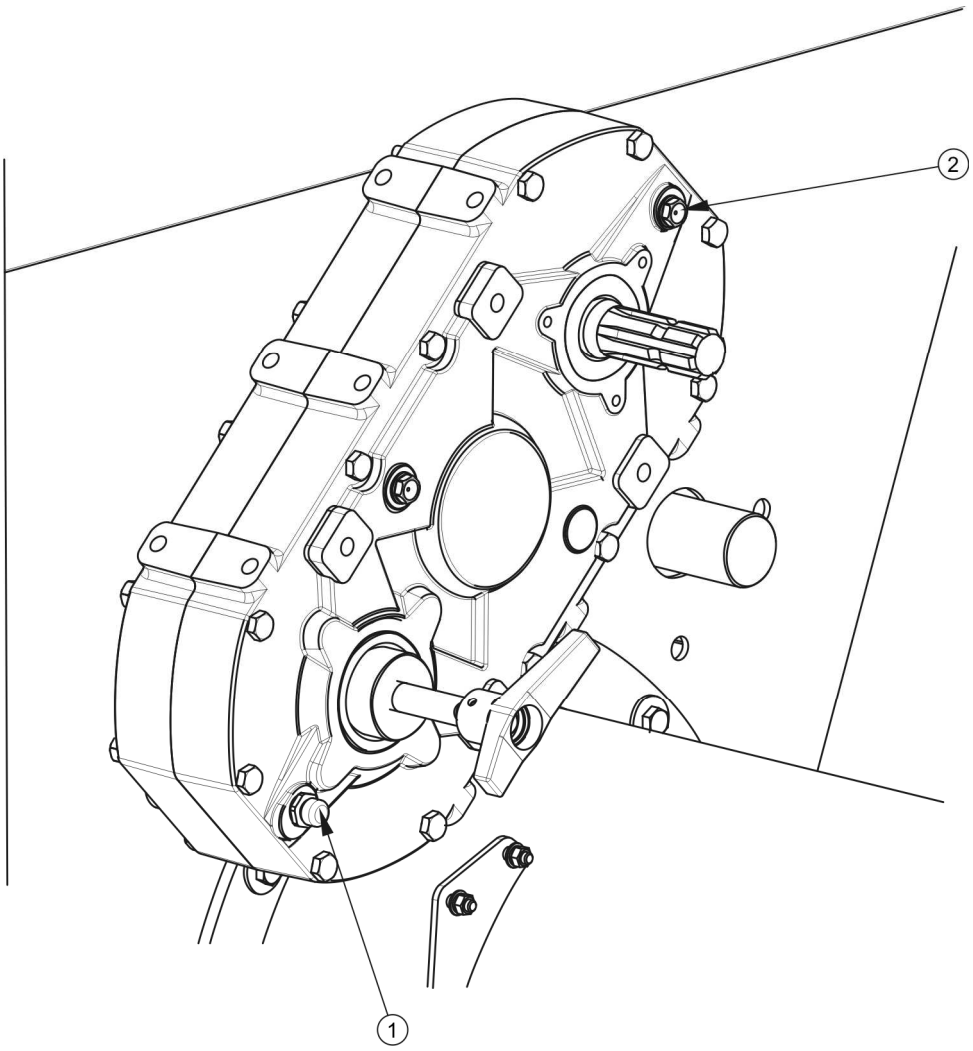


FIGURE 5.17 Gear wheel transmission

(1) oil drain plug, (2) oil filler plug

5.2.20 OPERATION NO. 19 – CHANGE OIL IN CONVEYOR INTERSECTING AXIS GEARING

Required service actions

- ➡ Immobilise the trailer with parking brake.
- ➡ Put two chocks behind the wheel, to stop machine rolling.
- ➡ Unscrew inlet plug (2) - inlet plug is on the opposite side to the drain plug (1).
- ➡ Unscrew drain plug (1).
- ➡ Drain used oil into container.
- ➡ Tighten drain plug.

➡ Pour in new oil (2.3 litres).

➡ Tighten inlet plug.

First oil change should be performed after working 50 hours and then after every 500 hours of work.

- **Check gearing each month for oil leaks and mechanical damage.**

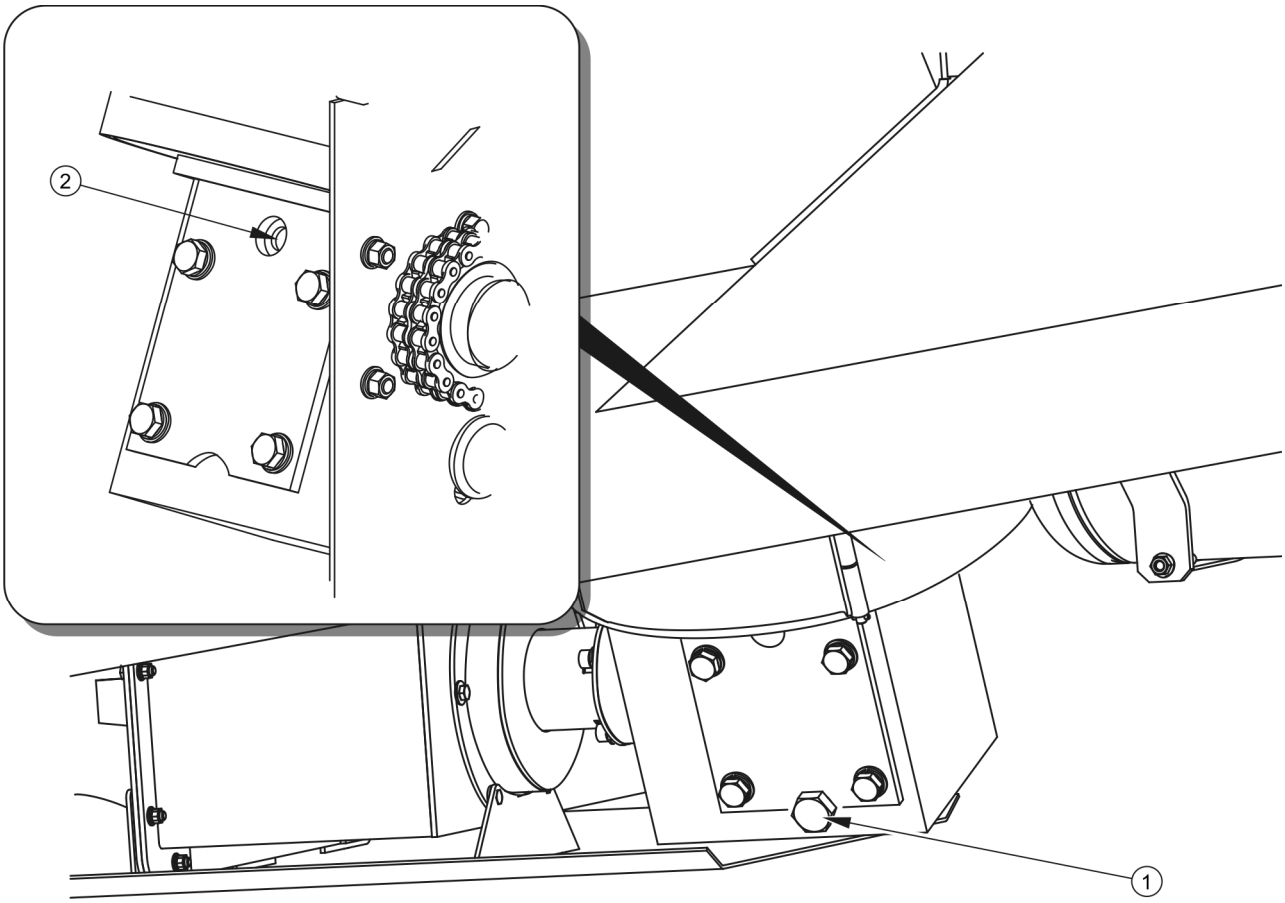


FIGURE 5.18 Conveyor intersecting axis gearing

(1) oil drain plug, (2) oil filler plug

5.3 UNLOADING SPEED ADJUSTMENT

The unloading time of grain (with the assumption that the PTO revolution speed is constant), is dependent on several factors:

- setting of front gear wheel transmission,

- roof cover position,
- grain tank channel slides position.

Recommended settings are shown in table below.

TABLE 5.5 ROOF AND CHANNEL SLIDES SETTING

TYPE OF LOAD	ROOF	CHANNEL SLIDE
Dry grain(1)	75% - 100%	75% - 100%
Moist grain(1)	25% - 50%	25% - 50%
All types(2)	0% - 25%	0% - 25%

(1) – setting the front gear wheel transmission (B) – RAPID RPM

(2) – setting the front gear wheel transmission (C) – SLOW RPM - long unloading time established

5.3.1 ROOF HEIGHT ADJUSTMENT

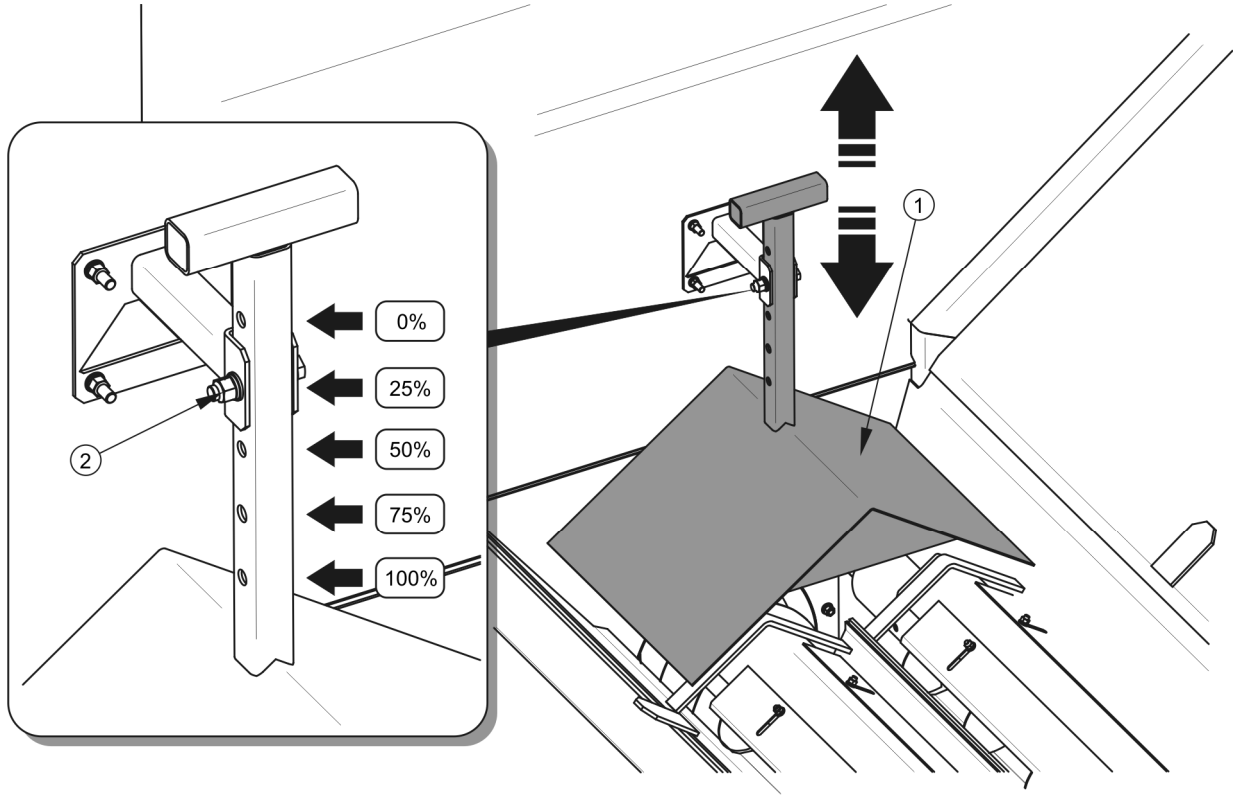


FIGURE 5.19 Roof height adjustment

(1) roof, (2) bolt connection

Roof placed in load box slows flow of grain direct into gathering auger conveyor hopper. In the lowest roof setting (0%) the load pours the most slowly.

Required service actions

- ➡ Immobilise trailer with parking brake.
- ➡ Dismantle PTO shaft, connecting tractor with machine (if trailer is connected to tractor).
- ➡ Unscrew nut (2) and take out bolt.
- ➡ Move roof upwards or downwards choosing the appropriate setting.
- ➡ Insert bolt and tighten nut.

DANGER

Before entering grain tank switch off tractor engine, disconnect PTO shaft, immobilise trailer using parking brake and secure tractor against access of unauthorised persons.

TIP

Roof position adjustment must be performed with empty grain tank.

5.3.2 ADJUSTMENT OF CHANNEL SLIDES IN GRAIN TANK

Required service actions

- ➡ Immobilise trailer with parking brake.
- ➡ Dismantle PTO shaft, connecting tractor with machine (if trailer is connected to tractor).
- ➡ Loosen two nuts (2).
- ➡ Move channel slide choosing appropriate setting.
- ➡ Tighten both nuts.
- ➡ repeat action for remaining channel slides, maintaining constant distance of slide sheets from tank sides in all elements.

TIP

Channel slide position adjustment must be performed with empty grain tank.

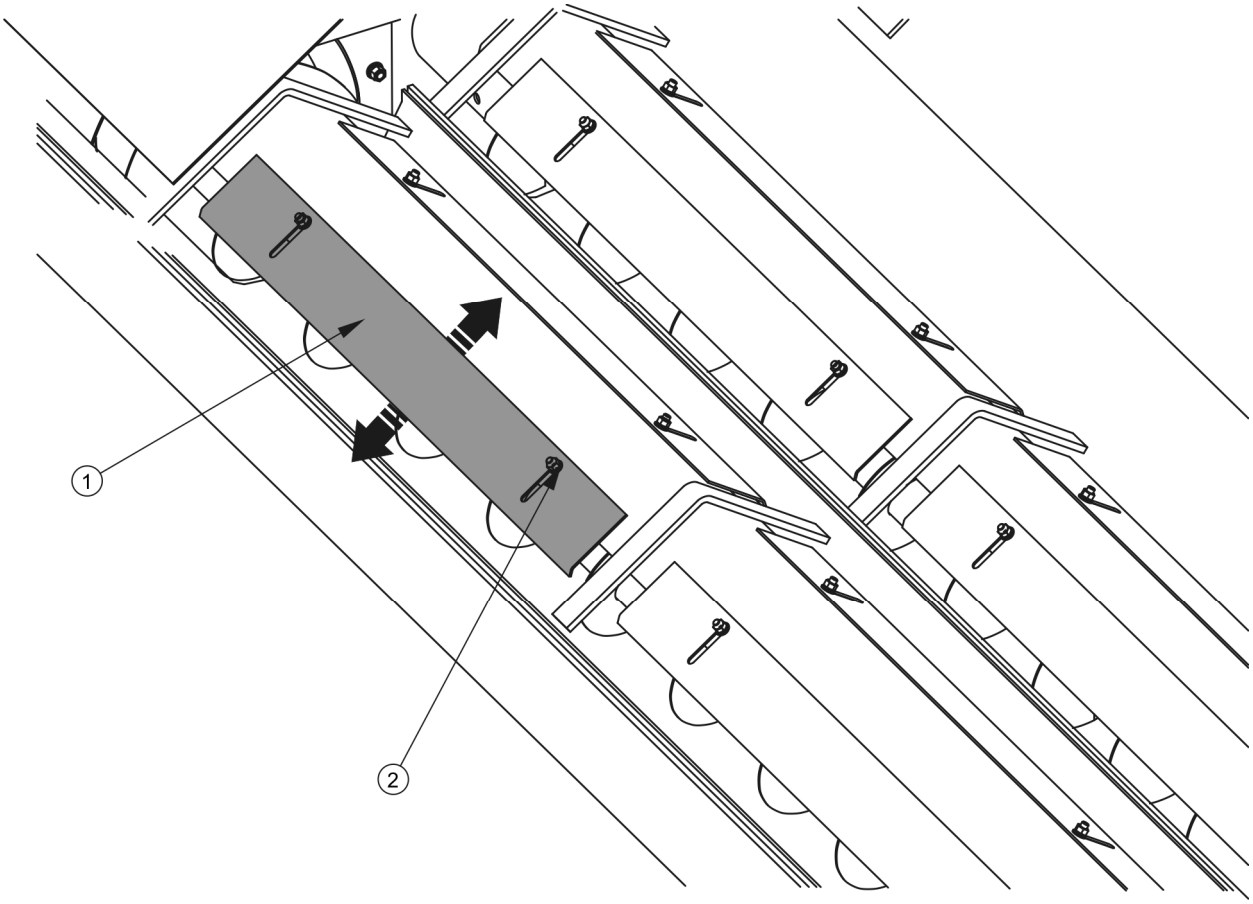


FIGURE 5.20 Channel slides adjustment

(1) channel slide, (2) nut

DANGER

Before entering grain tank switch off tractor engine, disconnect PTO shaft, immobilise trailer using parking brake and secure tractor against access of unauthorised persons.

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 5.6 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 ^oC

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 (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.

Before starting to use greases acquaint oneself with the content off 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 HYDRAULIC CLUTCH OPERATION

5.5.1 SAFETY ADVICE FOR HYDRAULIC CLUTCH CLEANING AND MAINTENANCE

- On no account may oil or grease come in contact with abrasive surfaces, if they do the clutch will not achieve the required torque.
- Abrasive coatings may not be cleaned with solvents, i.e. benzene, acetone or kerosene. If surface is contaminated with oil, it must be replaced.
- Cleaning substances may not come into contact with the clutch.
- The clutch may not be cleaned under running water, e.g. hose or nozzle jet with hot steam stream.

5.5.2 MOUNTING, MAINTENANCE AND CARE ADVICE

- Note: During maintenance and repair work there is a danger of burning by clutch, which has heated up during work.
- Do not exceed the adjustment limit values.
- Attention should be given to the tightness of oil conduits and connections in steering parts.
- Incorrect dismantling of clutch may lead to damage the body. Pay attention that the clutch is under spring tension.
- Much may be subject to malfunction as a result of loosening bolts. Adhere to given tightening torque.

- Before starting remove all workshop aids and mount safety guards.

5.5.3 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

TABLE 5.7 TIGHTENING TORQUE FOR CLUTCH BOLT CONNECTIONS (1)

RESISTANCE CATEGORY	M6	M8	M10	M12	(M14)	M16	(M18)	M20	(M22)	M24
8.8	11.3	27.3	54	93	148	230	329	464	634	798
10.9	16.5	40.1	79	137	218	338	415	661	904	1 136

(1) – clutch Manufacturer requirements

5.5.4 SERVICE INSPECTION PERIODS

Clutch service inspection periods arising from clutch application conditions. Users should check normal working condition and inspect clutch in the event of the occurrence of other noises during operation. Check silent running of roller bearings. Damaged bearings should be replaced. During inspections pay particular attention to the hydraulic oil leaks. In the event of defect notify service point in order to perform repair.

Repair of clutch during guarantee period may only be performed by service points authorised by the Manufacturer.

5.6 THOROUGH LOAD TANK CLEANING

Change of grain type requires thorough cleaning of trailer container to remove remains of previous load. The chute slide, inspection covers and conveyor covers are used for this purpose, which should be opened before beginning work. Compressed air is recommended for thorough cleaning of tank. If it is not possible to clean tank in this way then apply a stream of running water. Before loading trailer, it must be dried otherwise channel and conveyor may be blocked.

DANGER

Before entering grain tank switch off tractor engine, disconnect PTO shaft, immobilise trailer using parking brake and secure tractor against access of unauthorised persons.

Never start auger conveyor drive if tank and vertical conveyor inspection covers are open.

5.7 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, clean container and conveyor off grain remains completely. Grain swells when it is moistened and its removal may become more difficult. Open chute slide, inspection covers and conveyor cover.
- 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 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, flexible hoses of the systems, hydraulic clutch, chain transmissions 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.
- 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.
- Surfaces smeared with oil or grease should be cleaned by application of benzene and then washed with clean water with added detergent.
- 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.

DANGER

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

DANGER

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.

Container interior may only be cleaned with clean running water.

5.8 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 - does not apply to changing oil in gearing units. Chains should be taken off and carefully washed if suitable for further use, reinstalled and smeared generously with grease.

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.

Weigher indicator panel must be kept in a dry room together with electrical supply lead.

5.9 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

TABLE 5.8 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

THREAD METRIC	5.8(1)	8.8(1)	10.9(1)
	M_D [Nm]		
M10	37	49	72
M12	64	85	125
M14	100	135	200
M16	160	210	310

THREAD METRIC	5.8(1)	8.8(1)	10.9(1)
	M_D [Nm]		
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

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.

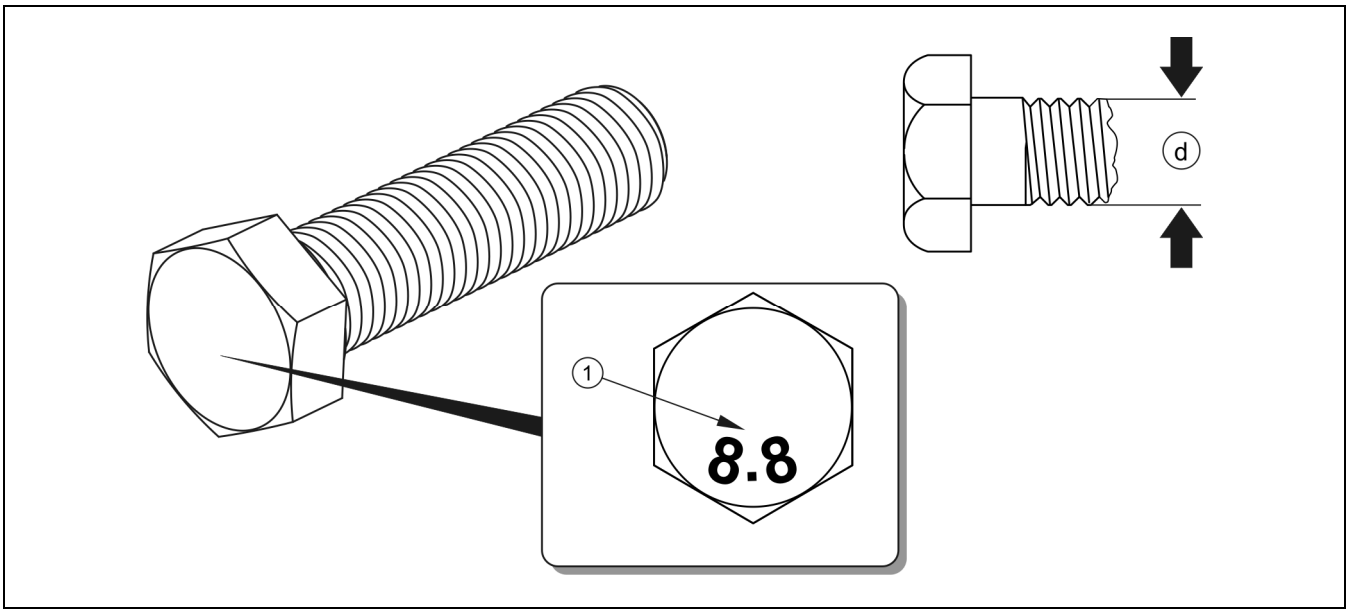


FIGURE 5.21 Bolt with metric thread

(1) resistance class, (d) thread diameter

TABLE 5.9 TIGHTENING TORQUE FOR HYDRAULIC CONDUITS

HOSE SIZE	DN 6, DN 8	DN 10, DN 13	DN 16; DN 20	DN 25	DN 32
TIGHTENING TORQUE M_D [Nm]	30 - 50	50 - 70	70 – 100	100 - 150	150 – 200

5.10 LIST OF BULBS

TABLE 5.10 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 unit	2

5.11 EMERGENCY RELEASE OF DIAPHRAGM ACTUATOR

Pneumatic system failure causing air release from brake cylinders results in braking the trailer by means of diaphragm actuators. Emergency release of these actuators involves putting a spring under tension by means of a tensioning bolt. During normal operation, the bolt is located in the actuator holder (5).

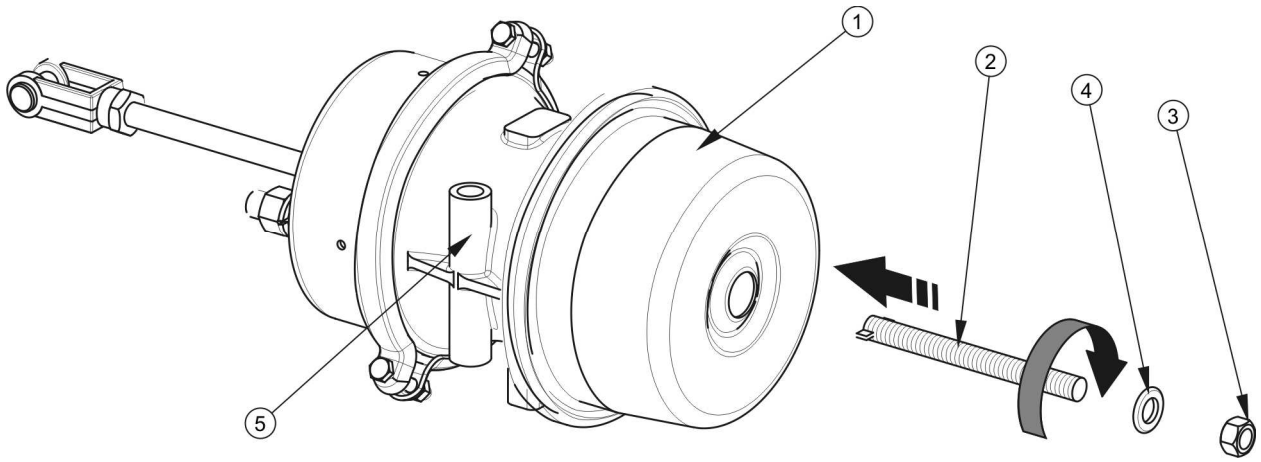


FIGURE 5.22 Emergency release of diaphragm actuator

(1) diaphragm-spring actuator, (2) tensioning bolt, (3) nut, (4) washer, (5) tensioning bolt holder

Emergency release of diaphragm actuator

- Immobilise trailer by placing wheel chocks under the wheels,
- Insert tensioning bolt (2) into rear opening of the diaphragm actuator (1),
- Turn the bolt 90°,
- Install washer (4) and screw nut (3) on,
- Tighten the nut until resistance is felt,
- Repeat the above steps for other actuators.

In order to return to actuator normal operation mode, undo nut (3) and take tensioning bolt (2) out of the actuator. After completion of the activities, place the bolt together with other elements in the actuator holder (5). Secure the opening in the actuator body with a plastic nut.

DANGER

Exercise caution while working. During putting the actuator spring under tension, the trailer is not immobilised with parking brake. That is why chocks must be placed under the trailer wheels in order to secure the trailer against rolling.

The actuator may be repaired only in an authorised service centre.

Do NOT travel with unreliable brake system.

5.12 TROUBLESHOOTING

TABLE 5.11 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.
	Leaking connections	Tighten, replace washers or seal set, replace conduits.
	Damaged control valve or brake force regulator	Check valve, repair or replace.
	Incorrectly adjusted steering system	Adjust position of wheels on turning axles.
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

FAULT	CAUSE	REMEDY
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.
Hydraulic clutch does not transfer required torque.	Worn out abrasive ring	Install a new abrasive ring
	Grease on abrasive surface	Grease contaminated surface of steel or cast iron may be washed with benzene or acetone. Change abrasive ring.
	Insufficient working pressure	Check pressure and set at required value.
Clutch heats to over 120°C when connected	Springs slips because oil pressure is too low	Check pressure and set at required value.
	Worn out abrasive ring	Install a new abrasive ring.
Clutch heats when disconnected	Cone shield resting on pin	Restore slow rotation to cone shield on pins.

FAULT	CAUSE	REMEDY
	Cone shield does not reduce speed, because pressure in cylinder is too great.	Ensure proper cylinder air venting.
	Cone shield does not reduce speed, because is resting on pressure spring.	Install a new pressure spring.
Incorrect operation of a hydraulic steering system	Insufficient working pressure.	Check pressure on pressure gauges and set at required value.

NOTES

ANNEX A

Tire size	Wheel size
600/55 - 26.5 16PR 170A8	20.00x26.5H2, ET=-50
600/55 R26,5, 165D (176A8)	20.00x26.5H2, ET=-50
700/50 26.5 16PR 174A8	24.00x26.5H2; ET=-80
710/50 R26.5 170D (181A8)	24.00x26.5H2; ET=-80