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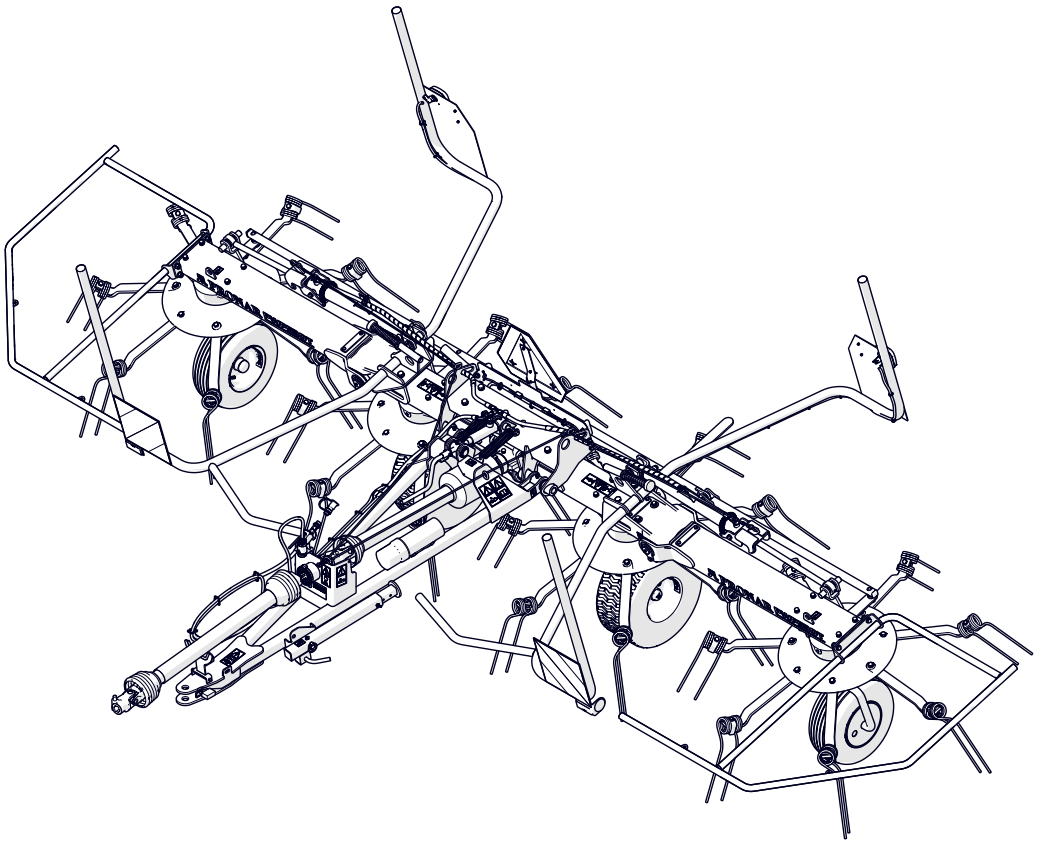
USER MANUAL

ROTARY TEDDER

PRONAR PWP530T

TRANSLATION OF THE ORIGINAL MANUAL



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

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

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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:	**Rotary Tedder**
Type:	**-**
Model:	**PWP530T**
Serial number:	
Commercial name:	**Rotary Tedder PRONAR PWP530T**

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.

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Roman Omelianiuk

Narew, the 2023-03-14

Place and date

Full name of the empowered person
position, signature

CHAPTER 1

INTRODUCTION

PRONAR PWP530T

1.1 DEAR USER

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

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

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

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

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

Machine serial number:

WST.3.B-001.01.EN

1.2 RULES FOR USING THE USER'S MANUAL

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

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

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

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

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

WST.3.B-002.01.EN

1.3 TARGET GROUP

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

1.3.1 End user (User, Authorized User, Operator)

Who is the end user?

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

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

Responsibilities and permissions

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

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

1.3.2 Qualified person (qualified personnel)

Who is a qualified person?

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

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

Activities that can be performed by a qualified me-

chanic are marked with a pictogram:

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

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

1.3.3 Service personnel

Who is the service personnel?

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

1.3.4 Unauthorized user

Who is an unauthorized user?

An unauthorized user also known as a bystander is a person who has not been trained by the manufacturer or an authorized seller, has not been familiarized

with the basic issues of security, knowledge of the machine, did not familiarize with the entire content of the operating instructions, and therefore there are no authorizations to operate the machine. A bystander can not be admitted to work with the machine.

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1.4 SYMBOLS AND TAGS USED IN THE MANUAL

1.4.1 Danger

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

1.4.2 Caution

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

1.4.3 Advice

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

1.4.4 Personal protective equipment pictograms

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

1.4.5 Qualification pictograms

	operator
	qualified mechanic
	qualified plumber
	qualified electrician

1.4.6 Typography of the User Manual

Bulleted list

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

Example of using a bulleted list

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

Comment on the text

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

An example of a comment

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

Defined list

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

Example of using a defined list

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

References to pages

Reference to chapter (place in the manual) related thematically

An example of a reference application

📖 *page 9.4*

WST.3.B-004.02.EN

1.5 GLOSSARY

Agricultural tractor

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

Tractor

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

Final acceptance

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

Bbystander

See - an unauthorized user

Qualified person

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

Truck

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

Danger zone

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

TUZ

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

End user

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

Unauthorized user

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

PTO

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

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1.6 DESIGNATION OF DIRECTIONS IN THE MANUAL

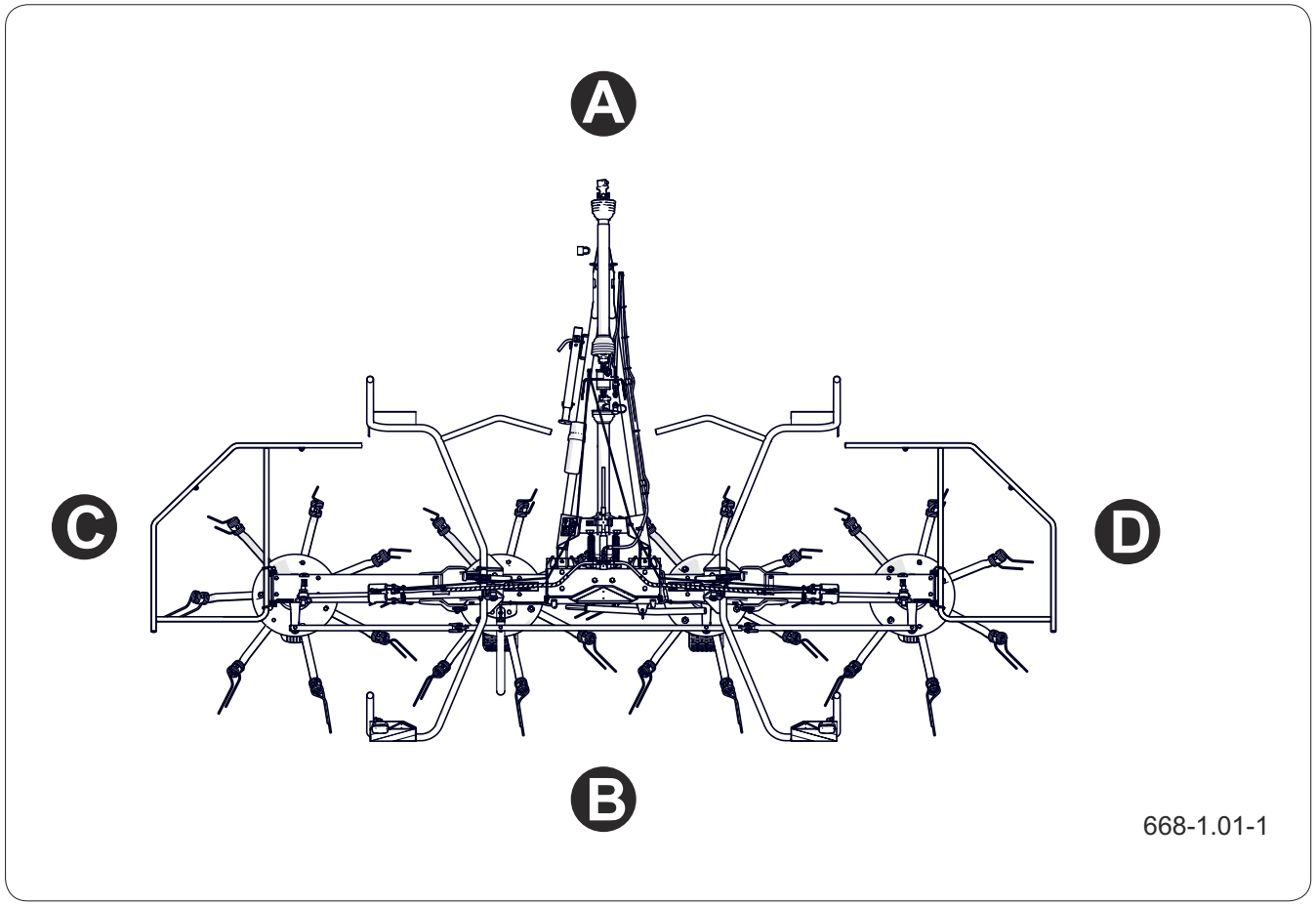

Figure 1.1 Determination of directions on the machine
(A) front *(B) rear* *(C) left side*
(D) right side

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

WST.1.1-001.11.EN

1.7 FINAL ACCEPTANCE

1.7.1 Preliminary information

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

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

1.7.2 Checking the machine after delivery

The scope of control

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

1.7.3 The first start of the machine

CAUTION

Training by the seller does not release the user from the obligation to read this manual and the PTO shaft manual attached to the machine and to follow the recommendations contained therein.

ADVICE

Adjustment of the PTO shaft applies only to a specific type of tractor. If the machine is aggregated with another tractor, it may be necessary to repeat the adjustment of the shaft to this tractor.

CAUTION

The overlap of the shaft tubular profiles must be at least 1/2 of the length under normal operating conditions and at least 1/3 of the length under all operating conditions. When adjusting the PTO shaft, follow the manufacturer's operating instructions for the PTO shaft.

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

The scope of activities for the first start-up

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

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

- Connect the machine to the tractor hitch.
- Connect the properly matched PTO shaft.
- Connect the hydraulic and electrical cables.
- Move the machine to the working position.
- Check the correct operation of the hydraulic and electrical systems.
- Engage the PTO and check the operation of the driven system.
- Release the tractor parking brake.

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

- Noise and unnatural sounds coming from the rubbing of moving parts against the machine structure,
- hydraulic or transmission oil leaks,
- incorrect operation of the brake cylinders,

or other faults, diagnose the problem. If the fault cannot be repaired or repairing it may void the warranty, contact the point of sale to explain the problem or make repairs.

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

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1.8 ENVIRONMENTAL HAZARD

DANGER

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

CAUTION

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

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

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

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

WST.3.B-008.01.EN

1.9 PERSONAL PROTECTIVE EQUIPMENT

1.9.1 General

CAUTION

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

Follow local regulations regarding personal protective equipment.

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

1.9.2 Work clothing

Work clothing should fit the operator's body correctly.

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

1.9.3 Hearing protectors

It is recommended to use of ear muffs for use with a protective industrial helmet for hearing protection. The selection of the damping value should be se-

lected individually depending on the noise level at the location of the machine, which is the result of various sources (e.g. loader, belt conveyors, etc.).
Remember to properly store and maintain your hearing protectors. Poorly stored and maintained hearing protectors lose their protective properties over time. Periodically replace the soundproofing cushions according to the manufacturer's recommendations.

1.9.4 Work shoes

Work shoes should have the following properties:

- non-slip sole,
- sole material made of a material resistant to oils,

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

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

1.9.5 Warning vest

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

1.9.6 Protective gloves

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

Strong protective gloves

Strong protective gloves for hand protection are used for protection during heavy work such as cleaning the machine, removing clogs and the like, where there is a risk of damaging the hands. Protective gloves

should protect the hands from cuts, scratches, abrasions, punctures and similar injuries to the skin and against light burns in contact with hot surfaces.

Light protective gloves

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

Nitrile gloves

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

1.9.7 Safety glasses with side shields

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

1.9.8 Industrial protective helmet

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

and is therefore not recommended.

The protective helmet must fit correctly to the anatomical shape of the skull. There are adjustment straps for this purpose. The helmet has a limited shelf life. After this date, the material from which it was made loses its properties and does not fulfil the

assumed task. The helmet must be replaced.

CAUTION

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

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

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

Minimum half mask recommendations:

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

WST.3.C-004.01.EN

CHAPTER 2

GENERAL

PRONAR PWP530T

2.1 IDENTIFICATION

2.1.1 Machine identification

ADVICE

You should require the seller to carefully fill out the *Warranty Card* and complaint coupons. The lack of e.g. date of sale or point of sale stamp exposes the user to not accept any complaints.

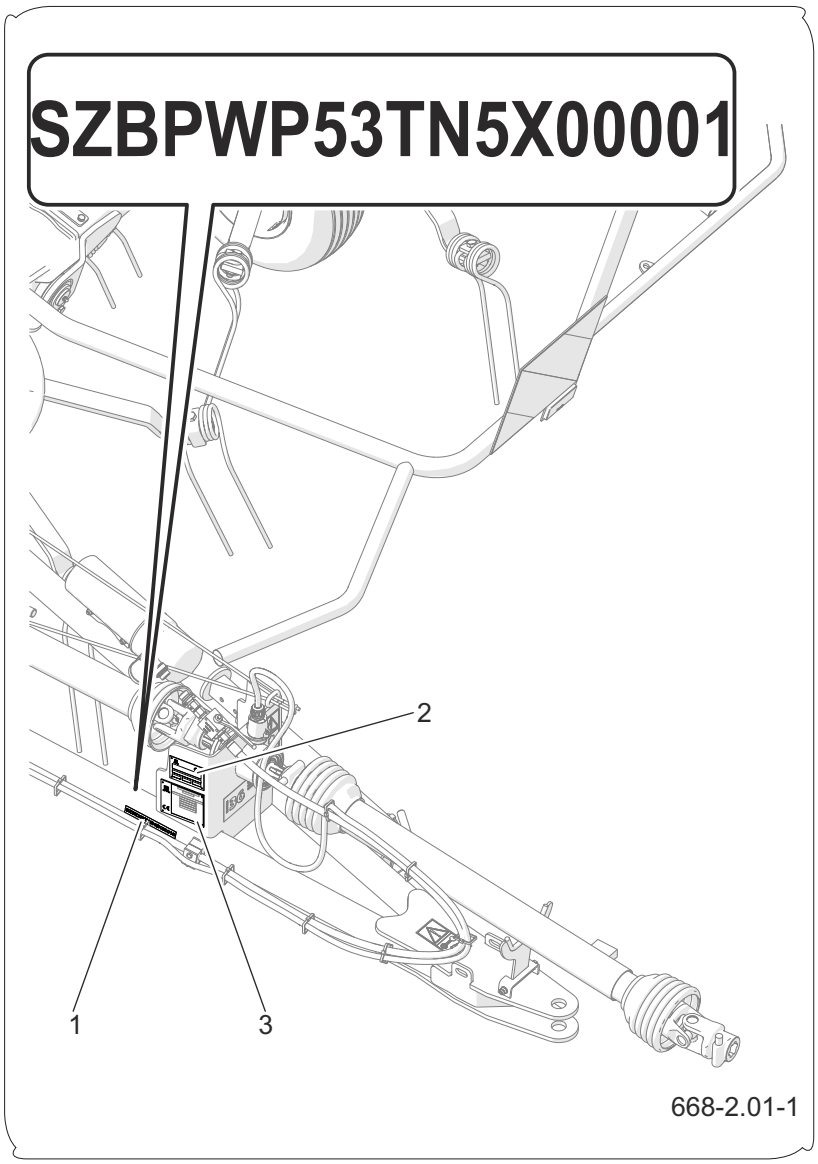


Figure 2.1 Machine identification
(1) VIN number *(2) PL name plate*
(3) EU name plate

The machine is marked with the name plates (2) and the serial number (3) placed on the highlighted rectangular field on the machines frame. The machine has Polish and European approval, therefore, due to the country of operation and applicable regulations, the machine can be equipped with two models of rating plates.

When purchasing the machine, check the compliance of the serial numbers on the machine with the number written in the *Warranty Card*, in the sales documents and in *the User Manual*".

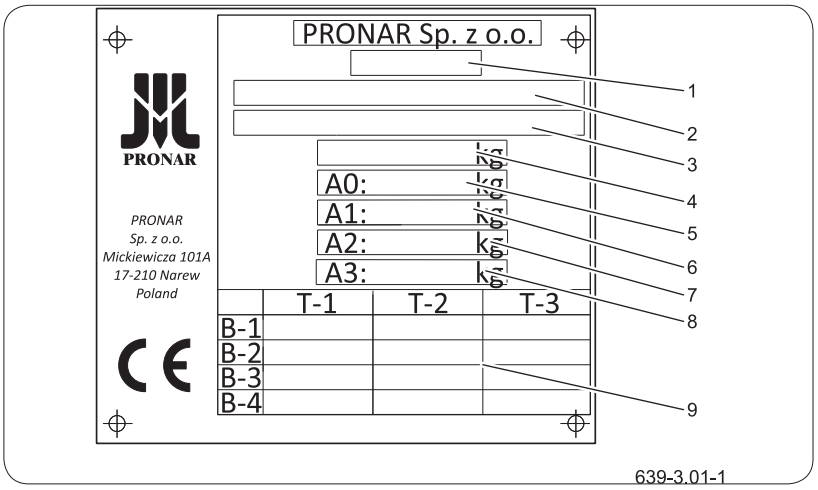


Figure 2.2 EU Name plate

(1) Vehicle category, subcategory and speed rating
(2) Number of the EU approval certificate
(3) VIN number of the product
(4) Permissible total weight (5) Drawbar eye load
(6) Maximum permissible weight per axle 1
(7) Maximum permissible weight per axle 2
(8) Maximum permissible weight per axle 3
(9) Technically permissible towed masses

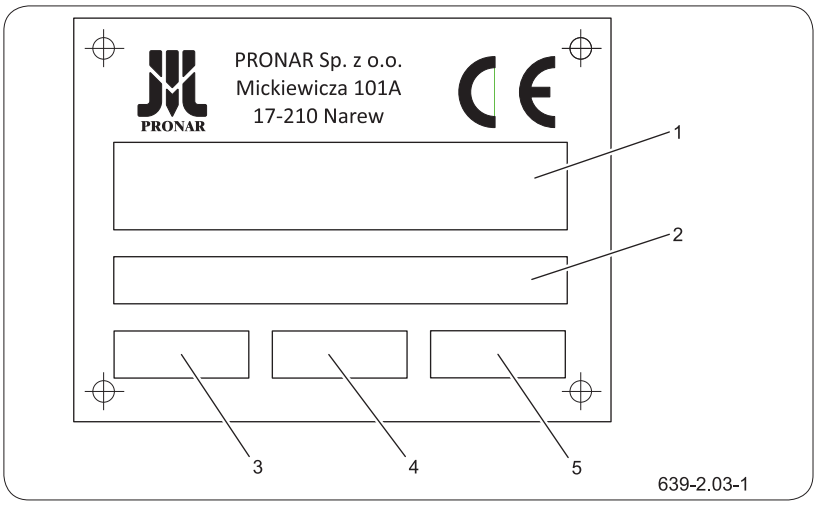


Figure 2.3 PL Name plate

(1) Product trade name or generic designation and function
(2) Product VIN number
(3) Product type (assigned in the EU approval process)
(4) Year of manufacture of the product (5) Model of the product

INF.1.1-001.11.EN

2.2 INTENDED USE OF THE MACHINE

2.2.1 Using the machine in accordance with intended use

DANGER

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

The rotary tedder is used for work on farms. The machine is intended only for tedding cut crops (straw, grass, hay) on grassland with no stones and an even surface. Any other use of the machine is prohibited.
When using the machine, comply with the road traffic regulations and transport regulations in force in a given country, and any violation of these regulations is treated by the Manufacturer as misuse.
The rotary tedder can be aggregated with a tractor that meets the requirements specified in the *Agricultural tractor requirements* table.

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

- read the User's Manual, Warranty Card and the User's Manual for the PTO shaft and follow the recommendations contained in these studies,
- understand the principle of machine operation and the safe and proper operation,
- act in compliance with established maintenance and adjustment plans,
- work in compliance with general safety regulations,
- accident prevention,
- comply with the road traffic regulations and transport regulations in force in the country in which the machine is used.

The machine may only be used by persons who:

- become familiar with the contents of this publications and documents attached to the machine and the contents of manual of an agricultural tractor (carrier),

- have been trained in operation and work safety,
- have the required driving license and are familiar with the road traffic regulations and transport regulations.

2.2.2 Expected misuse

The rotary tedder must not be used contrary to its intended use, in particular for:

- for transport of people and animals,
- carrying any cargo,
- all kinds of soil treatment,
- work without covers,
- work in the vicinity of bystanders,
- work with an incomplete or damaged working shaft,
- work with non-recommended media and parameters.

An employee who has not been trained in the field of operation and safety at work, does not have appropriate qualifications and the required skills cannot be allowed to operate the machine.

When operating the machine, it is strictly forbidden to:

- stay in the danger zone,
- climb onto the machine while it is working,
- make any unauthorized design changes,
- repairs and service by unauthorized and unqualified personnel.

INF.1.4-001.01.EN

2.3 AGRICULTURAL TRACTOR REQUIREMENTS

Table 2.1. Agricultural tractor requirements

Content	Unit	Requirements
Rear power take-off PTO		
Type of shaft	-	Type 1 according to ISO 730-1 1 $^{3}/_{8}$" z=6
Rotational speed (max.)	rpm	540
Rotation direction	-	clockwise (looking at the face of the shaft)
The hydraulic system		
Hydraulic outlets required	-	1 double-acting section
Nominal pressure in the hydraulic installation	bar/MPa	180 / 18
Hydraulic oil	-	API: GL-4 (Agrol U) [(1)]
Electrical system		
Connection of electrical installation	V	12
Lighting socket	-	7-pole according to ISO 1724
Tractor suspension system		
Type	-	rear linkage cat. I and II according to ISO 730-1
Other requirements		
Minimum tractor power	kW/HP	22 / 30

[(1)] - it is allowed to use other oil, provided that it can be mixed with the oil filled in the machine. Detailed information can be found in the product information sheet.

2.3.1 Minimum load on the front axle of the tractor

CAUTION

The load on the front axle of the tractor must be at least 20% of its own weight and the load of the aggregated machine. If this condition is not met, additionally load the front axle. danger

DANGER

Inadequate weighting of the front axle of the tractor may cause damage, insufficient stability and the ability to steer and brake the tractor.

The front axle of the tractor must always be loaded with at least 20% of the tractor's own weight and the load of the aggregated machine. See the chapter *"Rules of use"*

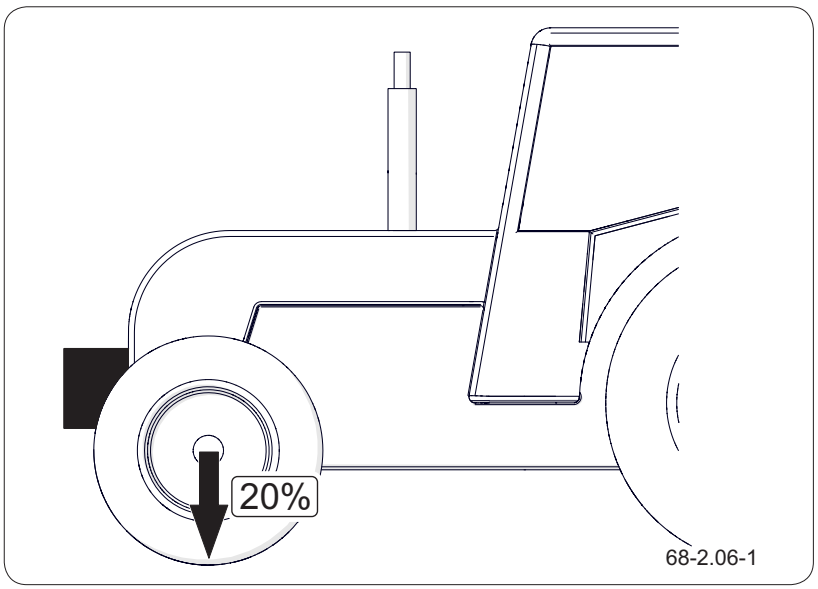


Figure 2.4 Minimum load on the front axle of the tractor

INF.1.4-002.01.EN

2.4 MACHINE EQUIPMENT

Table 2.2. Equipment

Content	Standard	Additional	Optional
User manual	●		
Warranty Card	●		
PTO shaft 457520/502.P45B1/6	●		
Telescopic shaft 457170/502.J501/6	●		
Electrical lighting installation	●		
Document tube			●
Distinguishing plate TW-11			●

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

INF.1.4-003.01.EN

2.5 TRANSPORT

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

2.5.1 Trucking

When loading and unloading of the machine, follow the general principles of workplace health and safety for reloading work. Persons operating reloading equipment must have the required permissions to use these devices.

Loading and unloading of a machine from a car should be carried out using a loading ramp with a farm tractor. The machine must be correctly connected to the tractor in accordance with the requirements of this manual.

When loading and unloading the machine with lifting devices, use only lifting devices with a lifting capacity greater than the weight of the machine together with the ropes, straps or chains used for handling. The

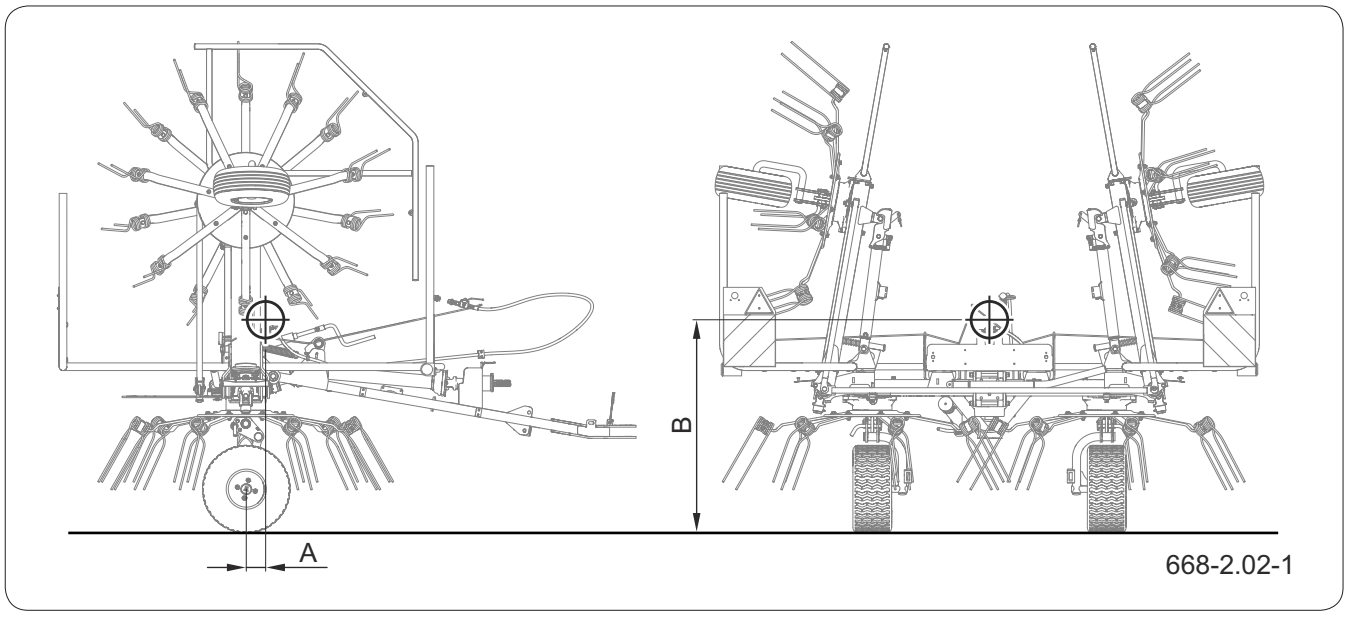


Figure 2.5 The location of the centre of gravity of the machine
A = 120mm *B = 1090mm*

DANGER

During road transport, the machine must be mounted on the platform of the vehicle in accordance with safety requirements and regulations.

The driver of the car should exercise particular care while driving. This is due to the vehicle's centre of gravity shifting upwards with the machine loaded.

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

Incorrect application of securing measures may cause an accident.

machine's curb weight in ready-to-use condition is given in the table (*Basic technical data in standard equipment).* In the event that the ropes or belts of reloading devices can catch on the protruding elements of the machine placed in the transport position, they should also be dismantled.

The machine should be attached firmly to the platform of the vehicle using straps, chains, lashings or other fastening devices equipped with a tensioning mechanism. Attach the fasteners in the intended transport holders marked with stickers.

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

Use certified and technically efficient securing

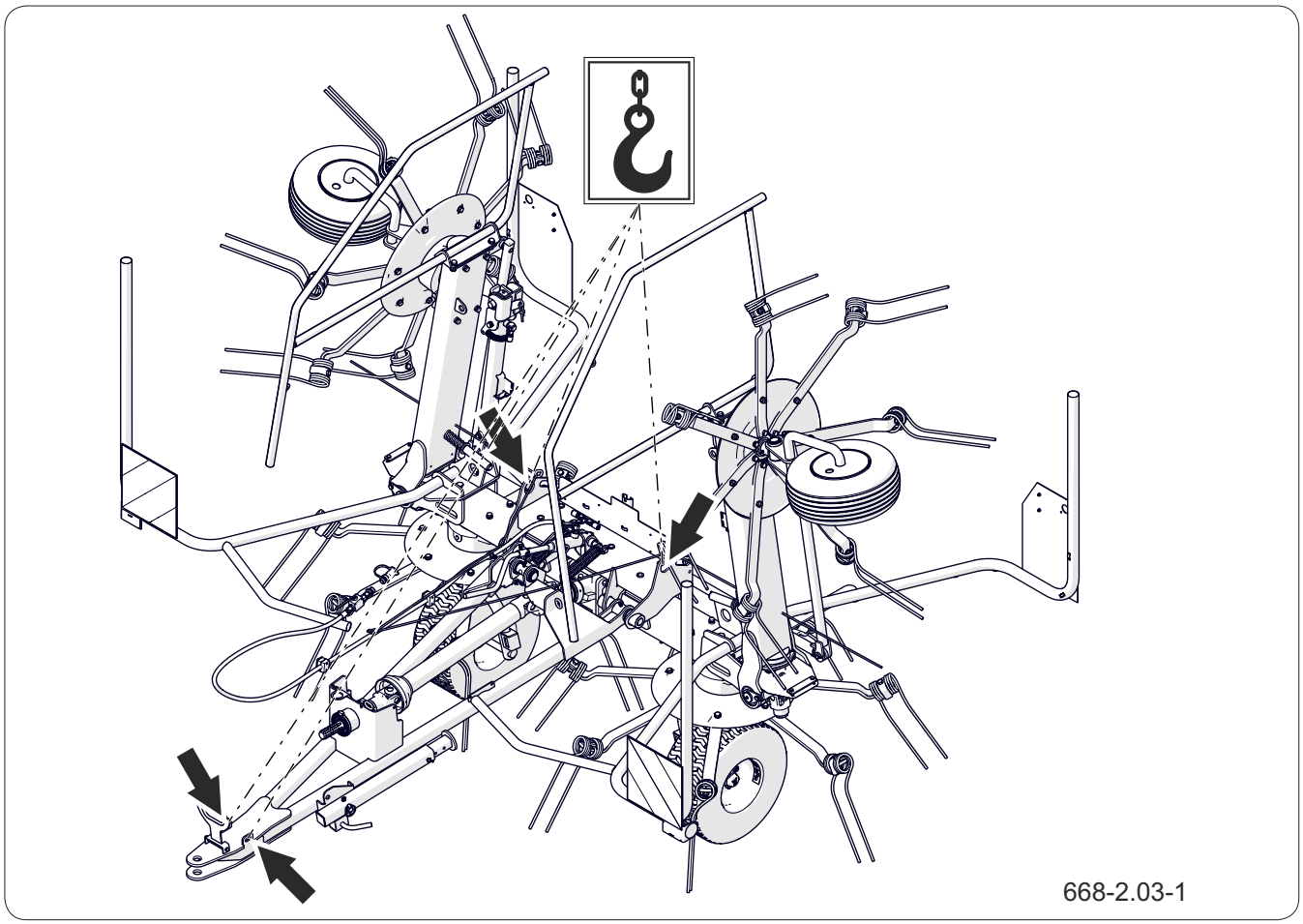


Figure 2.6 *Machine hanging points*

CAUTION

It is forbidden to attach slings and any kind of fastening elements to the elements of the hydraulic system, electric system and fragile elements of the machine (e.g. covers, wires).

CAUTION

PTO shafts must be protected against damage during transport.

ADVICE

When loading, the machine should be folded to the transport position

measures. Worn straps, cracked fasteners, bent or corroded hooks or other damage may disqualify the agent from use. Familiarize yourself with the information contained in the operating instructions of the manufacturer of the securing agent used. The number of fastening elements (ropes, belts, chains, lashings, etc.) and the force needed to tension them depend, among others, on the weight of the machine's own, the structure of the transporting car, travel speed and other conditions. Therefore, it is not possible to specify the fastening plan in detail.

The fastening means must be selected in accordance with the guidelines of the manufacturer of these elements. In case of doubt, a larger number of attachment and securing points for the machine should be used. If necessary, protect the sharp edges of the machine, thus securing the securing measures against damage during transport.

During reloading work, pay special attention not to damage elements of the machine equipment and the paint coating.

During transport, the machine should be rested on the parking stand.

2.5.2 Independent transport

Self-contained transport, when connected to the carrier, can be used for machines equipped with a lighting system.

In case of independent transport, read the User Manual and follow its recommendations. Independent transport involves towing a machine with own agricultural tractor to its destination. While driving, adjust the speed to the prevailing road conditions, but it must not be greater than the maximum design speed.

During transport, disconnect the PTO shaft from the tractor and the machine and protect it against damage.

CAUTION

When transporting independently, as an operator, read the contents of this User's Manual and follow the recommendations contained therein.

INF.1.4-004.01.EN

2.6 TERMS OF WARRANTY

ADVICE

You should require the seller to carefully fill out the Warranty Card and complaint coupons. The lack of e.g. date of sale or point of sale stamp exposes the user to not accept any complaints.

PRONAR Sp. z o.o. in Narew guarantees easy operation of the machine when it is used in accordance with the technical and operational conditions described in the USER MANUAL. Defects revealed during the warranty period will be removed by the Warranty Service. Deadline for completion of repairs is specified in the Warranty Card.

The warranty does not apply to parts and sub-assemblies of the machine, which are subject to wear in normal operating conditions, regardless of the warranty period. The group of these elements includes, among others, the following parts/components:

- Tires
- Spring fingers,
- Bearings.

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

In the event that the damage arose as a result of:

- mechanical damage caused by the fault of the user, a road accident,
- from improper operation, adjustment and maintenance, misuse of machine,
- use of a damaged machine,
- performing repairs by unauthorized persons, improper repairs,
- execution of user changes in machine design,

the user loses the warranty.

The user is obliged to immediately report all noticed defects regardless of whether the damage is covered by the warranty or not. Detailed warranty conditions are given in the WARRANTY CARD attached to the newly purchased machine.

Modifications to the machine without the written consent of the Manufacturer are prohibited. In

particular, it is unacceptable to weld, drill, cut and heat the main structural elements of the machine, which directly affect the safety of work with the machine.

INF.1.4-005.01.EN

2.7 ENVORONMENTAL RISK

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.

IMPORTANT

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

TIP

The hydraulic system of the mower is filled with Agrol U Lotos hydraulic oil.

A hydraulic oil leak constitutes a direct threat to the natural environment owing to its limited biodegradability. While carrying out maintenance and repair work, which involves the risk of an oil leak, this work should take place on an oil resistant floor or surface. In the event of oil leaking into the environment, first of all contain the source of the leak, and then collect the leaked oil using available means. Remaining oil should be collected using sorbents, or by mixing the oil with sand, sawdust or other absorbent materials. The oil contaminations, once gathered up, should be kept in a sealed, marked, hydrocarbon resistant container, and then passed on to the appropriate oil waste recycling centre. The container should be kept away from heat sources, flammable materials and food.

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

INF.1.1-007.01.EN

2.8 WITHDRAWAL

DANGER

Before commencing dismantling, reduce residual pressure in hydraulic systems.

DANGER

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

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

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

Before proceeding with disassembly, reduce the residual pressure in the hydraulic system, completely remove the oil from the system and the gearbox. In the event of replacement of parts, take the worn or damaged elements to a collection point for recyclable materials. Take used oil as well as rubber or plastic elements to plants dealing with the utilization of this type of waste.

INF.2.9-008.01.EN

Table 2.3. Codes of waste generated by dismantling of the machine

Item	Code	Meaning
1	07 02 13	Plastic waste
2	13 01 10	Other hydraulic oils
3	13 02 04*	Mineral engine, gear and lubricating oils containing halogenated organic compounds
4	13 02 06*	Synthetic engine, gear and lubricating oils
5	13 02 08*	Other engine, gear and lubricating oils
6	13 05 02*	Sludges from oil dewatering in separators
7	13 05 08*	A mixture of sand trap waste and oil dewatering in separators
8	15 01 10*	Packaging containing residues of or contaminated by hazardous substances
9	15 02 02*	Sorbents, filter materials and protective clothing contaminated with hazardous substances
10	16 01 03	Worn tires
11	16 01 17	Ferrous metals
12	16 01 22	Other not listed items

CHAPTER 3

SAFETY OF USE

PRONAR PWP530T

3.1 BASIC SAFETY RULES

CAUTION

If the information contained in the User's Manual is difficult to understand, contact a seller who runs an authorized technical service on behalf of the manufacturer, or contact the manufacturer directly.

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

CAUTION

The machine may only be used and operated by persons qualified to drive agricultural tractors (carriers).

alcohol, drugs or other intoxicating substances, etc.

- The machine may not be used for purposes other than those for which it was intended. Everyone who uses the machine in a manner contrary to its intended use, thus takes full responsibility for all consequences arising from its use.
- Use of the machine for purposes other than envisaged by the Manufacturer is inconsistent with the intended use and may void the warranty.
- The machine may only be used when all safety elements (e.g. covers, pins, cotter pins, warning labels) are technically sound and placed in the right place. If the safety elements are damaged or lost, replace them with new ones.

BHP.2.9-001.01.EN

3.2 SAFETY DURING COUPLING OF THE MACHINE

DANGER

Be especially careful when connecting the machine.

- Do not connect the machine to the tractor, if it does not meet the requirements set by the Manufacturer (minimum power demand of the tractor, inadequate connections, etc.) - see the section *"Tractor requirements".*
- Familiarize yourself with the content of the tractor operator's manual.
- Before connecting the machine, make sure that the oil in the external hydraulic system of the tractor may be mixed with the hydraulic oil of the machine.
- Before coupling of the machine, make sure that both machines are technically sound.
- Use only original pins and protections to connect the machine to the carrying vehicle (tractor).
- Be especially careful when connecting the machine.
- When attaching, there must be nobody between the machine and the tractor.
- You can couple and uncouple the machine only when the carrier is immobilized.
- After aggregation is complete, check the security features.
- Coupling and uncoupling may only take place when the machine's drive is switched off and the tractor is switched off and immobilized.
- When machine is disconnected from the carrier, it must be placed on a level, suitably hard surface in such a way that it can be connected again.
- The machine disconnected from the tractor must be supported with a support and secured against rolling with the use of wheel chocks or other elements without sharp edges.
- The machine uncoupled from the carrying vehicle must be secured against unauthorized use

by means of a safety device.

BHP.1.4-001.01.EN

3.3 SAFETY DURING THE TRANSPORT

DANGER

During transport, disconnect the PTO shaft from the tractor and the machine and protect it against damage.

Accidental starting of the machine with the modules raised can cause life-threatening injuries as well as damage to the machine.

Before driving:

1. Make sure that the machine is correctly attached to the tractor.
2. Fold the machine to the transport position, secure the tilting modules with the lock and close the ball valve of the hydraulic system.

   Verify that the mechanical locks on the tilt cylinders engage properly and that the ball valve on the tilt cylinders is in the "CLOSED" position.
3. In the rear part of the machine, place the triangular slow-moving vehicle sign in the plate holder.
4. Check the correct operation of the lighting.

And more than that:

- When driving on public roads, comply with the road traffic regulations in force in the country where the machine is used.
- Do not exceed the speed limit resulting from road conditions and construction restrictions. Adapt the speed to the road conditions.
- It is forbidden to transport people on the machine and transport materials.
- Before each use of the machine, check its technical condition, especially in terms of safety. In particular, check the technical condition of the suspension system, the chassis, the correct mounting of the arms and spring fingers of the carousel and the connection elements of the hydraulic system.
- Reckless driving and speeding can cause an accident.
- When driving the machine on uneven terrain, be especially careful and reduce the driving speed due to the possibility of damage and/or

overturning of the carrier with the machine.

- It is forbidden to leave the tractor operator's position while driving.

BHP.1.4-002.01.EN

3.4 SAFETY RULES WHEN OPERATING THE HYDRAULIC SYSTEM

DANGER

The hydraulic system of the machine is under high pressure during operation.

- Regularly check the technical condition of connections and hydraulic lines.
- Machine operation with a leaking system is forbidden.
- In the event of failure of the hydraulic system, the machine must be decommissioned until the failure is remedied.
- When connecting the hydraulic conduits to the carrier, make sure that the tractor and machine hydraulic systems are not under pressure. If necessary, reduce the residual pressure of the installation (see chapter "*Hydraulic installation operation*").
- Use hydraulic oil recommended by the manufacturer.
- After changing the hydraulic oil, the used oil must be disposed of. Used oil or oil which has lost its properties should be stored in original containers or replacement packaging resistant to hydrocarbons. Replacement containers must be accurately described and properly stored.
- It is forbidden to store oil in packaging intended for food storage.
- Rubber hydraulic hoses should be replaced every 4 years regardless of their technical condition.

Procedure in the event of an accident

- In the event of injuries being caused by pressurized hydraulic oil, contact a doctor immediately. Hydraulic oil can penetrate the skin and cause infection.
- If the oil gets into the eyes, rinse with plenty of water and if irritation occurs, contact a doctor.
- In the event of contact of oil with skin wash the area of contact with water and soap. Do not use

organic solvents (petrol, kerosene).

BHP.2.9-003.01.EN

3.5 MAINTENANCE AND CLEANING

- It is forbidden to perform service and repair work under a loaded or raised and unsecured attachment. It is recommended that any repairs shall be carried out by specialized workshops.
- Whenever you find any faults in operation or damage to the machine, do not use it until it is repaired.
- During work, use appropriate, close-fitting protective clothing, gloves and the right tools. In the case of work related to the hydraulic system, use oil-resistant gloves and protective glasses.
- Any modifications to the machine release the PRONAR Narew company from liability for any damage or health detriment.
- Before undertaking any work on the machine switch off the engine of the carrying vehicle (tractor) and wait until all rotating parts have stopped.
- Regularly check the technical condition of the protections and the correct tightening of screw connections.
- Perform regular inspections of the machine in accordance with the scope specified by the Manufacturer.
- Before starting repair work in the hydraulic system, completely reduce the residual pressure of the oil.
- Carry out repair, maintenance and cleaning works only with the vehicle engine turned off and the ignition key removed. Secure the vehicle with the parking brake. Secure the tractor cabin against access by unauthorized persons.
- Should it be necessary to replace individual elements, use only the parts recommended by the Manufacturer. If you do not comply with

these requirements, you may pose a threat to the health or life of bystanders or operators, and contribute to machine damage. This is the basis for the warranty withdrawing.

- Check the condition of protective elements, their technical condition and correct fastening.
- In the event of work requiring the machine to be raised, use properly certified hydraulic or mechanical lifts for this purpose. After lifting the machine use additional stable and durable supports. You cannot perform any work under the machine, which has only been lifted with the jack.
- Do not support the machine with fragile elements (bricks, hollow blocks, concrete blocks).
- After completing work connected with lubrication, remove excess oil or grease. Keep the machine clean.
- You can't do any work under the machine, raised only with a lift. In the event of damage to these elements, have them repaired at an authorized repair point or replace the elements with new ones.
- When working with tires, the machine should be secured against rolling by placing chocks or other elements without sharp edges under the wheels.
- Keep the machine clean to reduce the risk of fire.
- Clean the machine as required.
- Before using the pressure washer, familiarize yourself with the principle of operation and the recommendations for safe use of this device.
- Use only clean running water for washing. It is possible to use cleaning detergents with a neutral pH reaction, which are not aggressive to the structural elements of the machine.
- The use of pressure washers increases washing

DANGER

Refer to the instructions for using cleaning detergents and preservatives.

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

efficiency, but be careful when working. While washing, do not put the nozzle of the cleaning aggregate closer than 50 cm from the surface to be cleaned.

- The water temperature should not exceed 55 °C.
- Do not direct the water stream directly to the installation components and equipment, i.e. control valves, placents, electric and hydraulic lights, electric connectors, information and warning stickers, rated plate, cable connectors, lubricating points, control panels, safety switches, etc. high stream pressure Water can cause water to penetrate and, as a result, mechanical damage or corrosion.
- Do not use organic solvents, preparations of unknown origin or other substances that may damage the lacquered, rubber or plastic surface. It is recommended to make a test on an invisible surface in case of doubt.
- Surfaces oily or greasy should be cleaned with petrol or degreasing agents, and then washed with clean water and detergent. Follow the cleaning agent manufacturer's instructions.
- Detergents intended for washing should be stored in their original containers, or alternatively, but marked exactly. Preparations cannot be stored in containers intended for the storage of food and drinks or in containers that are not marked.
- Observe environmental protection principles, wash machine in designated places.
- Washing and drying of the must take place at temperatures above 0 ^{0}C.
- Lubricate the machine each time after washing.
- Perform maintenance and repair activities applying the general principles of health and safety at work.

Procedure in the event of an accident

- In case of injury, wash and disinfect the wound immediately.
- If you experience more serious injury, seek medical advice.

BHP.1.4-003.01.EN

3.6 SAFETY DURING WORK WITH MACHINE

DANGER

The machine can throw objects to a distance during operation. Stop the machine when bystanders enter the operating zone.

- Before starting the machine make sure that there are no bystanders (especially children) or animals in the danger zone.
- The machine operator is responsible for ensuring that the machine and the working area are properly visible.
- Before each start-up of the machine, make sure that all guards are operational and correctly positioned. Damaged or incomplete components must be replaced with new original ones.
- Before starting work, check the condition and correctness of attachment of the elastic fingers to the arms.
- When working with the machine, use the right working position settings.
- When working with the machine, use the recommended working speed.
- Before raising and leaving the carousel, make sure that there are not bystanders nearby.
- Before starting the tractor with the aggregated machine, make sure that the PTO is not switched on - otherwise the machine can be started without control.
- It is forbidden to occupy any position other than the operator's position in the vehicle cabin while working with the machine. It is forbidden to leave the operator's cabin while the machine is operating.
- It is forbidden to enter the work and move the machine elements.
- It is forbidden to stay in the scatter zone.
- It is forbidden to stay between the carrier and the machine during its work.
- It is forbidden to stay near the machine until the rotating elements have stopped.

- It is forbidden to operate the machine while driving backwards. When driving back and during turning back, the machine drive must be turned off.

BHP.1.4-004.01.EN

3.7 SAFE OPERATION OF THE PTO SHAFT

CAUTION

Before starting work, read the operator's manual of the shaft provided by the shaft manufacturer.

- Before starting work, read the operator's manual of the PTO provided by the shaft's manufacturer and follow the recommendations contained therein.
- If necessary, adjust the length of the shaft to the cooperating tractor in accordance with the shaft's instruction manual.
- The machine may only be connected to the tractor with the use of a properly selected articulated telescopic shaft recommended by the Manufacturer.
- The drive shaft must be equipped with guards. It is forbidden to use the shaft with damaged or missing safety elements.
- Some parts of the PTO shaft (especially the clutch) can become very hot. Do not touch hot parts.
- After installing the shaft, make sure that it is correctly and securely connected to the tractor and the machine.
- Do not wear loose clothing, loose belts or anything that could get caught in a rotating shaft. Contact with the rotating articulated telescopic shaft may cause serious injuries.
- Before disconnecting the shaft, turn off the tractor engine and remove the key from the ignition switch. Secure the tractor with the parking brake.
- When working in conditions of limited visibility, use the tractor's working lights to illuminate the articulated telescopic shaft and its surroundings.
- During transport, the shaft should be stored in a horizontal position so as to avoid damaging the guards and other securing elements.
- During the use of the shaft and the machine,

DANGER

Before disconnecting of the shaft, you should:

- turn off the PTO drive,
- turn off the engine of the carrying vehicle (tractor)
- remove the ignition key.

do not use a different speed of PTO than the permissible one. Do not overload the shaft and the machine, do not engage the clutch suddenly. Before starting the articulated telescopic shaft, make sure that the PTO rotation direction is correct.

- Do not go over or under the shaft and do not stand on it, both during operation and when the machine is stopped.
- The articulated telescopic shaft has markings on the casing, indicating which end of the shaft should be connected to the tractor.
- Never use a damaged PTO shaft, it may cause an accident. Repair the damaged shaft or replace it with a new one.
- Do not use PTO shaft extensions / adapters.
- Disconnect the drive of the shaft each time when there is no need to drive the machine, or when the tractor and the machine are in an unfavourable angular position to each other.
- Prevent the shaft cover securing chain from turning while the shaft is working, and attach it to a fixed structural element of the machine.
- Do not use protective chains to support the shaft during a stop or transport of the machine, use a folding bracket on the machine's frame.

BHP.2.9-007.01.EN

3.8 FIRE HAZARD

- Keep the machine clean, which will allow you to reduce the risk of damage and reduce the risk e.g. due to fuel or oil leakage.
- Remember, oil spills, excess grease, and other contaminants increase the risk of a fire.
- If you notice fire or smoke, stop the machine immediately. Notify the fire brigade and locate the source of fire or smoke as soon as possible and start extinguishing the fire using appropriate extinguishing agents depending on the material burning. Be especially careful.
- Read the information leaflets on the available extinguishing agents.
- Do not block access for fire guards.

BHP.1.4-007.01.EN

3.9 DESCRIPTION OF RESIDUAL RISK

Pronar Sp. z o. o. in Narew has made every effort to eliminate the risk of an accident. However, there is some residual risk that can lead to an accident and is primarily associated with the following activities:

- using the machine contrary to its intended use,
- staying between the carrier (tractor) and the machine while the engine is running and when connecting the machine
- being on the machine during engine work,
- work with the machine with removed or inoperative guards,
- not keeping a safe distance from dangerous zones or standing in these zones while the machine is operating,
- machine operation by unauthorized persons under the influence of alcohol or drugs,
- cleaning, maintenance and technical inspection with the carrying vehicle (tractor) connected and running,
- introducing design changes without the consent of the Manufacturer,
- presence of persons, animals or obstacles in areas invisible from the operator's position,

Residual risk can be reduced to a minimum by following these recommendations:

- prudent and unhurried operation of the machine,
- sensible application of the remarks and recommendations contained in the operating instructions,
- performing maintenance and repair work in accordance with the principles of operating safety,
- maintenance work carried out by trained personnel,
- using appropriate fitted protective clothing,
- securing the machine against access by

unauthorized persons, especially children,

- keeping a safe distance from prohibited and dangerous places,
- a ban on being on the machine while it is working or during transport.

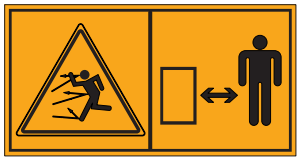
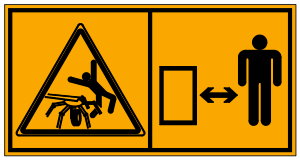
BHP.2.9-008.01.EN

3.10 INFORMATION AND WARNING STICKERS

The machine is marked with information and warning decals mentioned in table 3.1. The machine user is obliged to ensure that the inscriptions, warning and information symbols placed on the machine are legible throughout the entire period of use. In the event of their destruction, they must be replaced. New assemblies replaced during repair must be marked again with the appropriate safety signs. When cleaning of the machine do not use solvents that may damage the label coating and do not direct a strong stream of water at them.

Table 3.1. Information and warning stickers

Item	STICKER	Meaning
1		Before using the machine: Read the operating instructions for the attachment. **178N-00000001**
2		Before beginning of any servicing activities or repairs, turn off the tractor and screen engine and remove the key from the ignition switch. **178N-00000002**
3		The danger associated with the rotating telescopic shaft. **178N-00000003**

Item	STICKER	Meaning
4		Do not exceed the maximum PTO speed. **178N-00000004**
5		Do not reach into the crush area if components may be moving. The danger of crushing of hands or fingers. **178N-00000005**
6		Thrown or flying objects, hazardous for the whole body. Keep a safe distance. **178N-00000006**
7		The danger of impact of the rotating elements of the machine. Keep a safe distance from a raking assembly. **178N-00000007**
8		Place of attachment of belts or transport chains. **178N-00000009**
9	PRONAR PWP530T	Machine model. **668N-00000001**
10		The danger of crushing the whole body - the force applied in advance. Do not stay in the machine swing field. **185N-00000007**

Item	STICKER	Meaning
11		Lubricate the machine according to the schedule outlined in the User's Manual. **185N-00000011**
12		The jack's support point. **443N-00000007**
13		Air pressure in the tires. (1) **64RPN-00.00.006**
14		Air pressure in the tires. (1) **103RPN-00.00.00.06**
15	 	Marking according to DIN 11030 282x282.
(1) - The pressure value depends on the tires used		

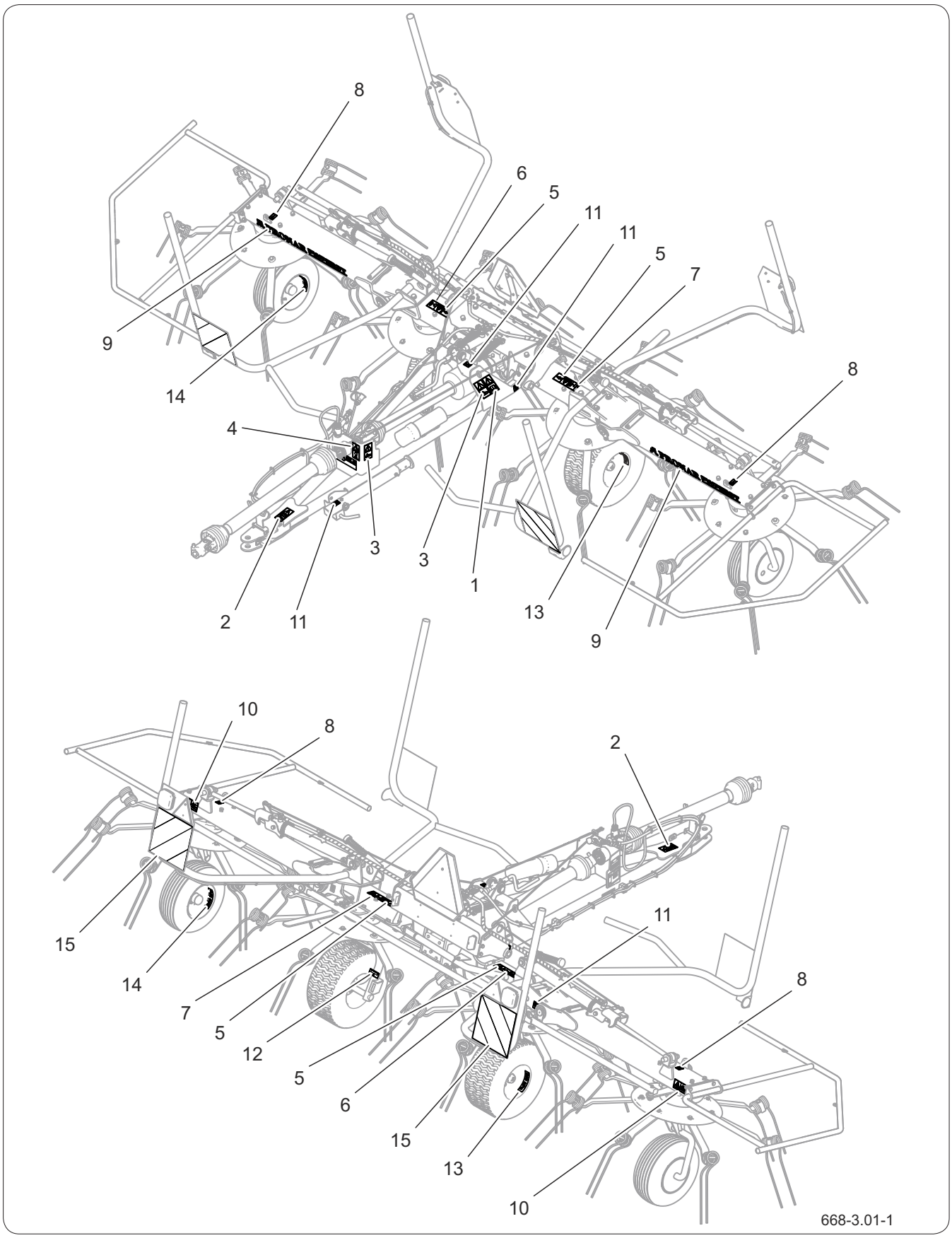


Figure 3.1 Arrangement of information and warning stickers

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CHAPTER 4

CONSTRUCTION AND PRINCIPLE OF OPERATION

PRONAR PWP530T

4.1 TECHNICAL CHARACTERISTICS

Table 4.1. Basic technical data*

Content	Unit	PWP530T
Dimensions		
Width in the working position	mm	5,653
Width in the transport position	mm	2,980
Height in the transport position	mm	2,694
Height in the transport position	mm	3,200
Performance parameters		
Operating width	mm	5,300
Karb weight	kg	680(1)
Minimum power requirement	kW/HP	22/30 is cancelled
Carousel number	pcs	4
Number of working arms on one carousel	pcs	7
Suspension system	-	Cat. I and II according to ISO 730-1
Wheel-axle assembly	-	two middle transport wheels and two outer wheels
Type of central transmission	-	Wet (in the oil bath)
Type of carousel transmission	-	Maintenance -free (lubricated with solid grease)
Pressure on the coupling	kg	75
Maximum PTO speed	rpm	540
Working performance	ha/h	5.3
Working speed (2)	km/h	10
Permissible transport speed (3)	km/h	30
Working angle adjustment (angle of scatter)	-	Manually, each wheel separately in the range 13°, 16°, 19°
Tedding on borders	-	After manually switching the wheels (each wheel separately)
Raising of the carousel to the transport position	-	hydraulic
Other information		
Connection of electrical installation	V	12

Content	Unit	PWP530T
Nominal pressure in the hydraulic installation	MPa (bar)	18 (180)
Level of emitted acoustic pressure	dB	below 70
Tires	-	18.5x8.50-8 – 300 kPa 16x6.5-8(6PR) – 240 kPa
Operation	-	one-man

*- Depending on the legal restrictions in the country of sales and the set of the machine, the above data may differ from the provided
(1) - depending on the optional equipment
(2) - Adjust the working speed to the type and amount of crushed material and terrain
(3) - The permissible transport speed is determined by local traffic regulations in the user of the machine user

CAUTION

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

BIZ.1.4-001.01.EN

4.2 GENERAL STRUCTURE

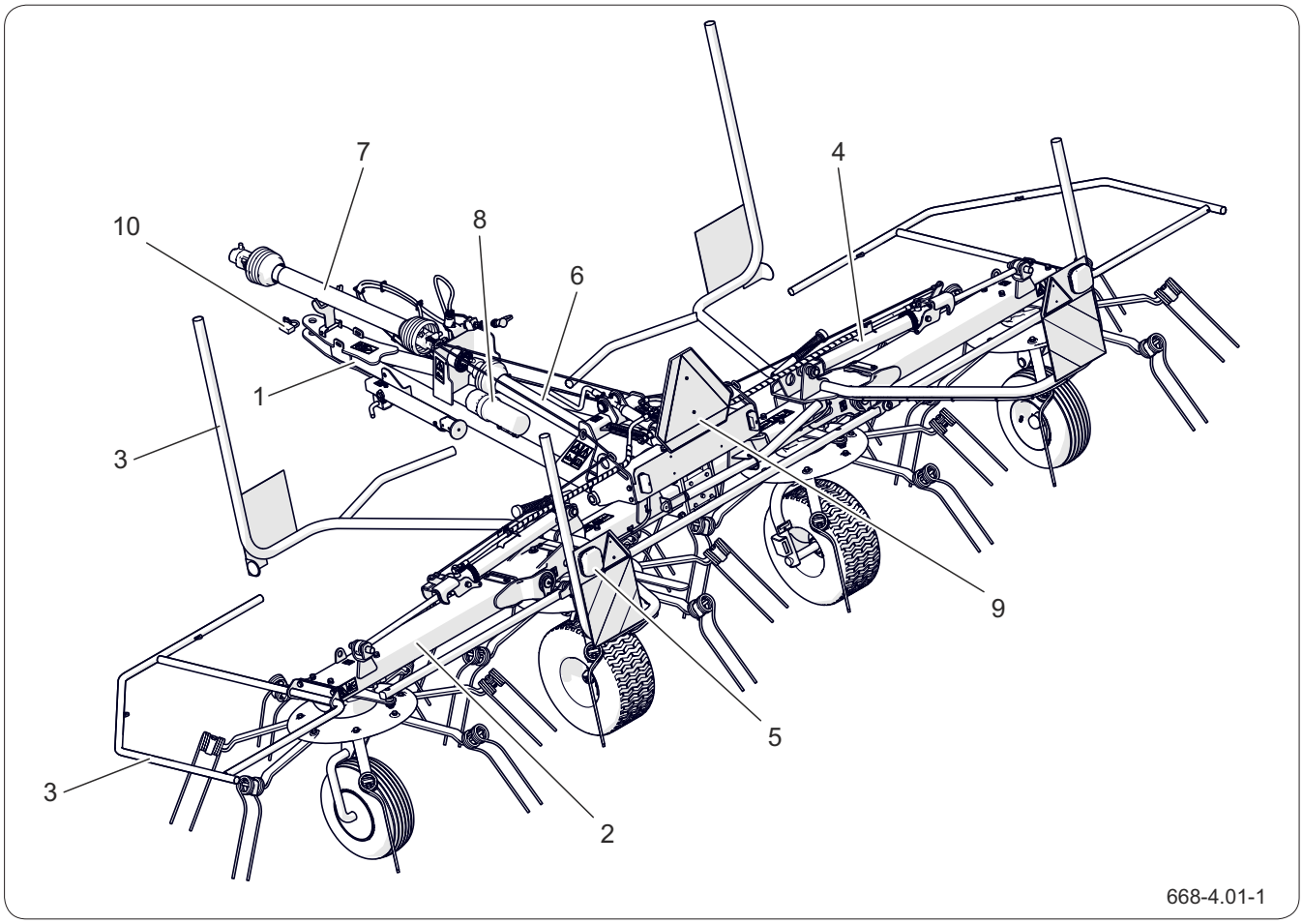

Figure 4.1 Machine construction

(1) drawbar assembly *(2) module assembly* *(3) cover assembly*
(4) hydraulic system *(5) electrical system* *(6) telescopic shaft*
(7) PTO shaft *(8) Document tube* *(9) Distinguishing plate*
(10) security device (padlock)

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4.3 DRAWBAR ASSEMBLY

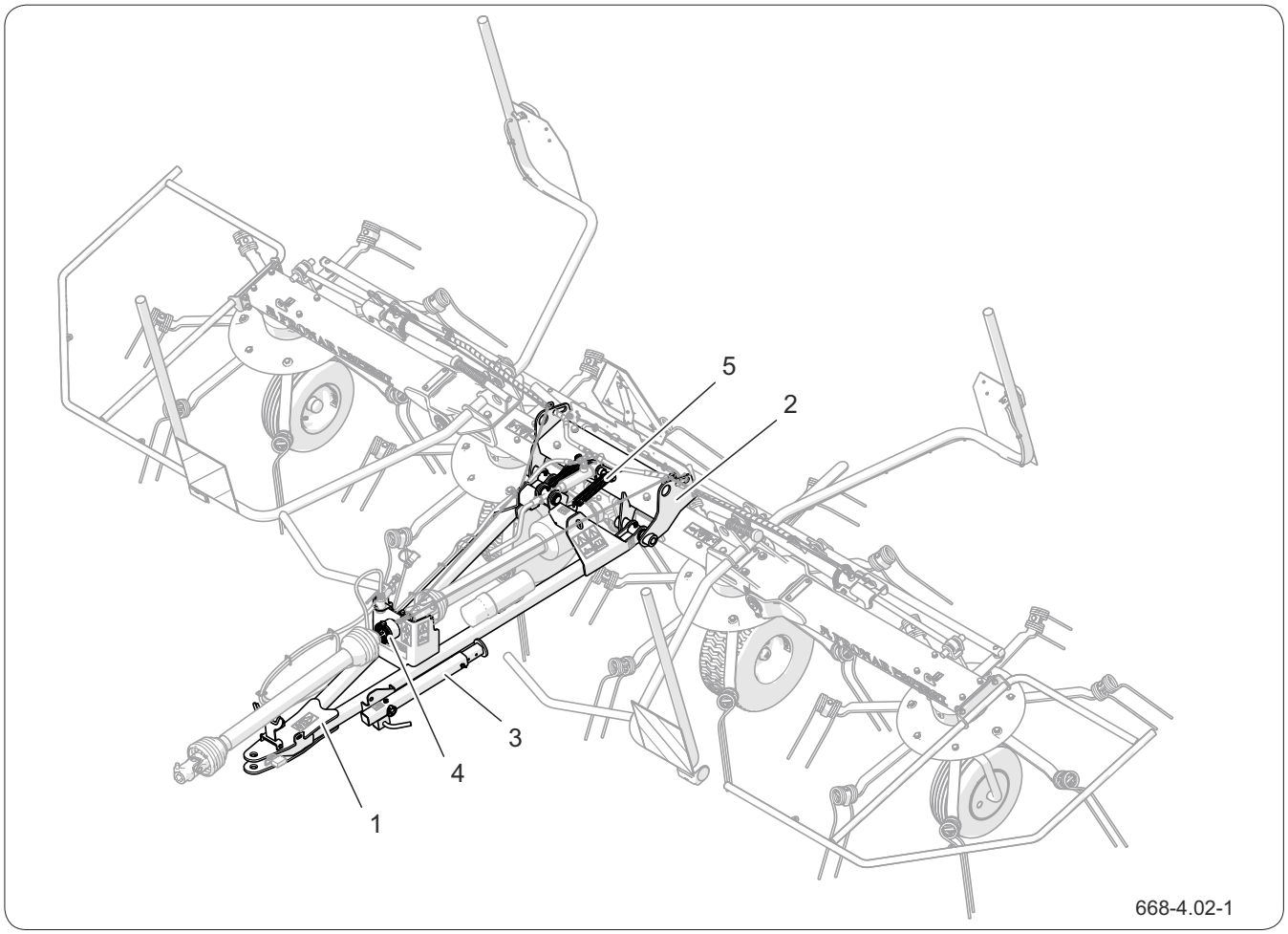

Figure 4.2 Drawbar construction

(1) drawbar *(2) bearing boom* *(3) support foot*
(4) PTO link shaft *(5) spring*

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4.4 MODULES ASSEMBLY

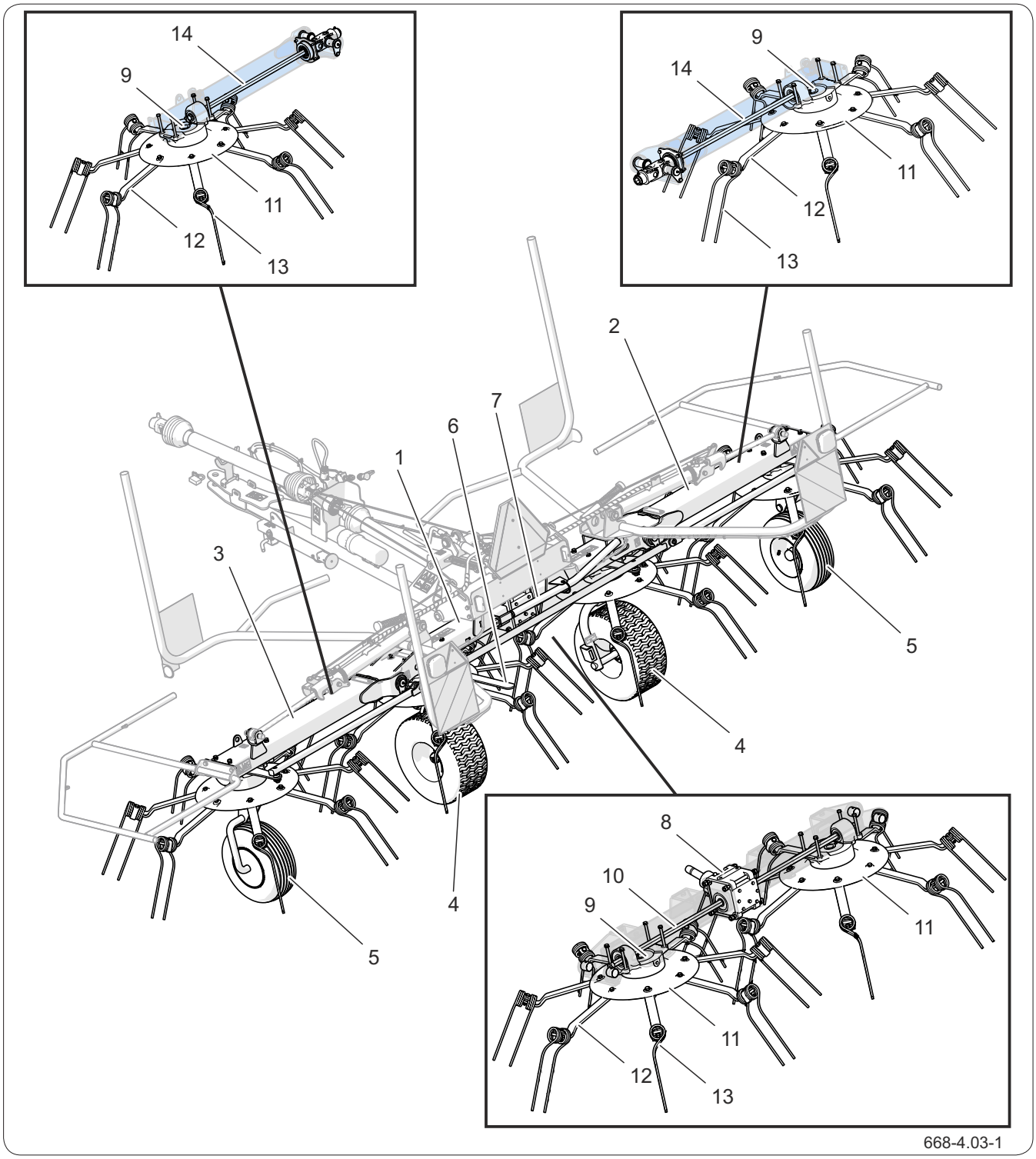

Figure 4.3 Modules construction

(1) central module *(2) right swing module* *(3) left swing module*
(4) transport wheel *(5) outer wheel* *(6) driving direction lever*
(7) lever *(8) central gear* *(9) carousel gear*
(10) drive shaft I *(11) clamping plate* *(12) finger arm*
(13) tedder finger *(14) drive shaft II*

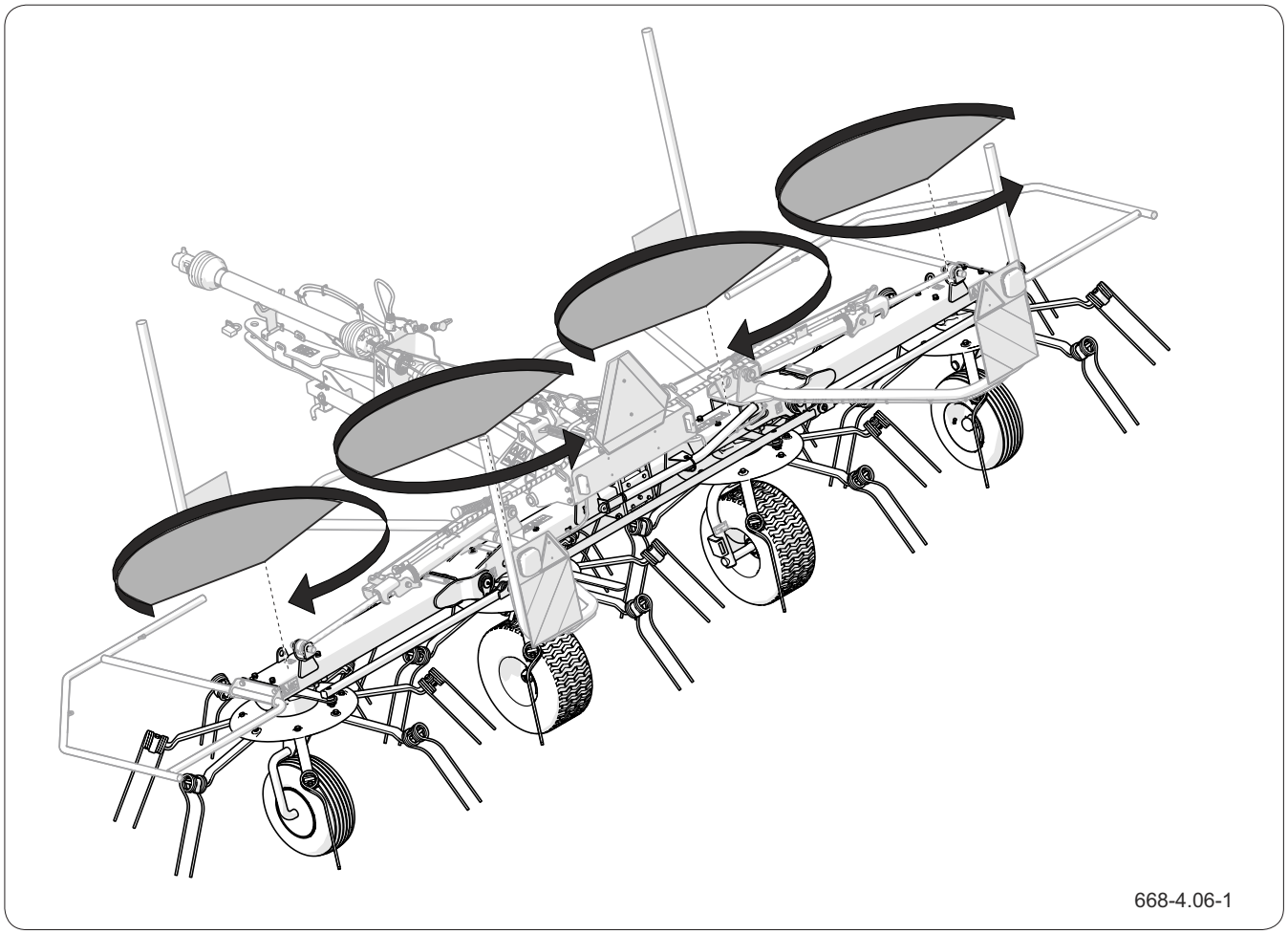

Figure 4.4 Swath tedding phase

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4.5 THE HYDRAULIC SYSTEM

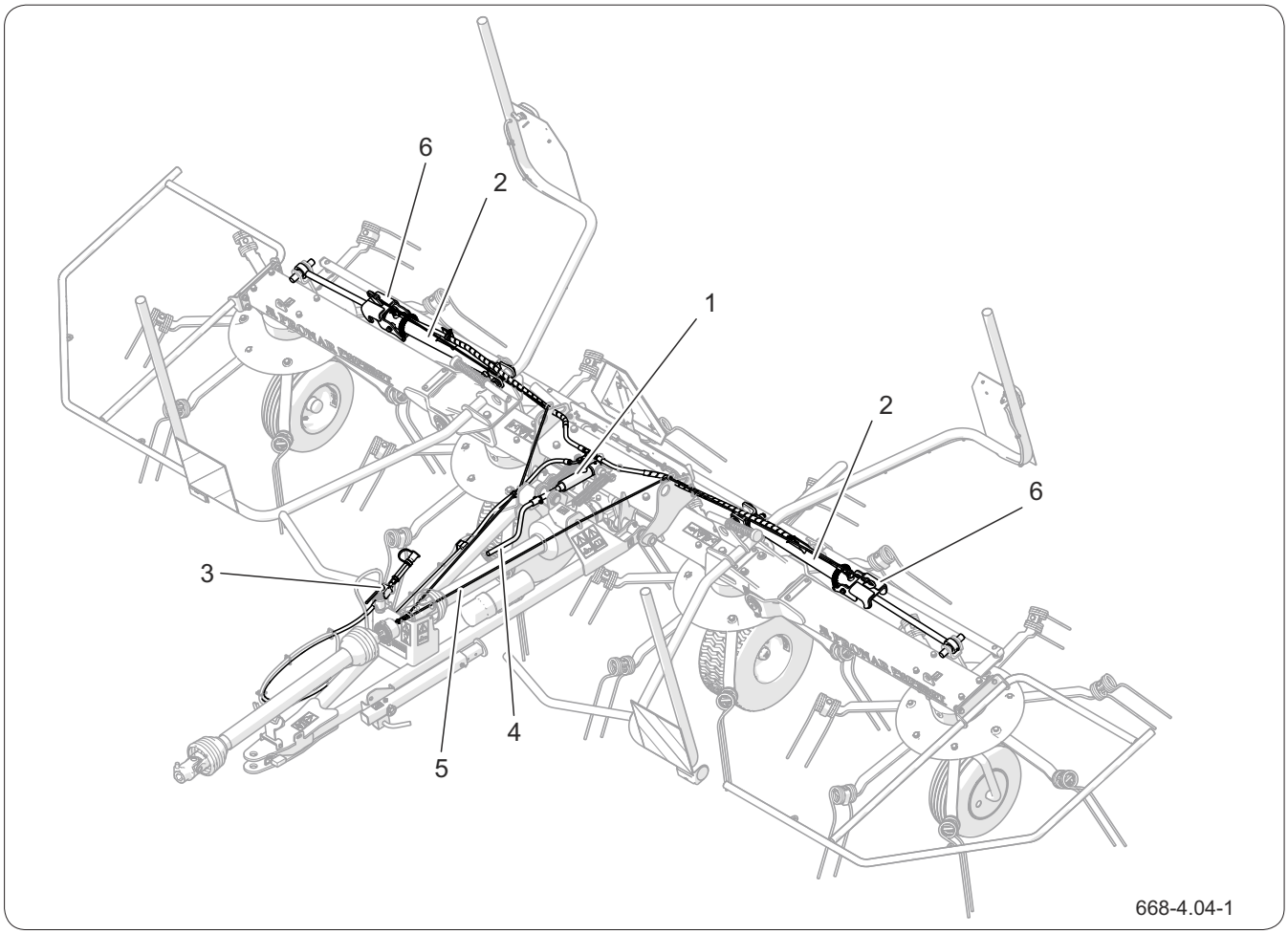

Figure 4.5 Construction of hydraulic installation

(1) working tilt cylinder *(2) left/right module tilt cylinder* *(3) ball valve*
(4) angle adjustment mechanism *(5) release cord* *(6) mechanical lock*

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4.6 ELECTRICAL SYSTEM

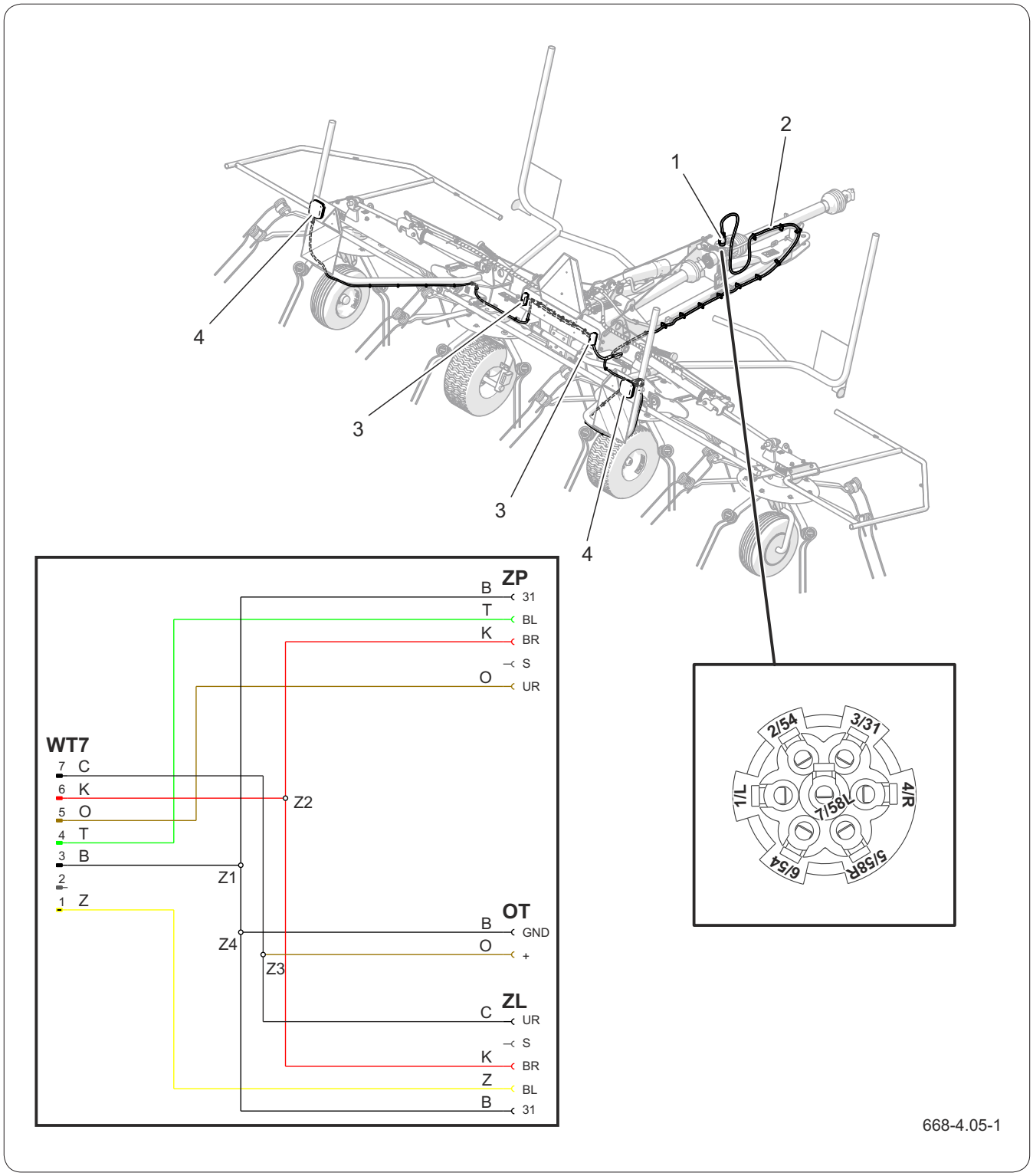

Figure 4.6 Design of the electrical system
(1) 7-pin electric plug *(2) central harness* *(3) license plate light*
(4) rear combination lamps

Table 4.2. Markings of connection socket

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

Table 4.3. Wire colour marking

Marking	Colour
b	White
c	Black
f	Violet
k	Red
l	Lazurite
n	Blue
o	Brown
p	Orange
r	Pink
s	Grey
t	Green
z	Yellow

Table 4.4. Electrical components designations

Marking	Function
WT7	7 - pin socket
ZP	Right rear combination lamp
ZL	Left rear combination lamp
OT	License plate illumination lamp

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CHAPTER 5

RULES OF USE

PRONAR PWP530T

5.1 PREPARATION FOR WORK

DANGER

Before using the machine the user should carefully read the content of this document.

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

DANGER

The machine must not be used by persons who are not authorized to drive agricultural tractors (carriers), including children and people under the influence of alcohol or other drugs.

Non-adherence to the principles of safe use may endanger the health of the operator and others.

CAUTION

Before using the machine always check its technical condition. In particular, check the technical condition of the suspension system, transmission system, completeness of protective covers, lighting, condition and completeness of spring fingers and their fastening.

CAUTION

Before starting the machine, make sure that there are no bystanders in the danger zone.

The manufacturer ensures that the machine is fully functional, has been checked in accordance with control procedures and is approved for use. However, this does not release the user from the obligation to check the machine after delivery and before commissioning. The machine is delivered to the user completely assembled. Before connecting to the carrying vehicle (tractor), the operator of the machine must check the technical condition of the machine.

To do this:

- read the contents of this manual and follow the recommendations contained therein, get to know the construction and understand the principle of operation of the machine,
- check the compatibility of the machine's suspension system with the suspension system of the carrier (tractor) with which it is to be aggregated,
- check the compliance of the parameters of the power take-off shaft (PTO), e.g. type of tip, rotational speed, direction of rotation,
- make sure that the telescopic articulated shaft can be connected to the tractor (the PTO shaft should be adapted to the tractor in terms of length, type, strength, etc. - see the PTO shaft manufacturer's manual),
- check the compliance and technical condition of the hydraulic and electrical installations, including the compliance of hydraulic connections,
- inspect individual elements of the machine for mechanical damage resulting from min. due to incorrect transport of the machine (dents, punctures, bends or breakage of details),
- check the condition of the tires of the road wheels, the air pressure in the tires and the

DANGER

Before starting the machine with the equipment, make sure that there are no bystanders in the danger zone.

DANGER

When starting the machine for the first time as well as after servicing the machine's hydraulic system, be especially careful because air in the hydraulic system causes accelerated movements of the working elements of the system.

correct mounting of the wheels,

- check the completeness and technical condition of the spring tines, tedding arms, protective covers and the correctness of their attachment,
- check the technical condition of the suspension system components, covers and safety pins and the correctness of their mounting,
- check the level of lubricating oil in the central gear.

If all the activities described above have been performed and the machine is in good technical condition, connect it to the carrying vehicle, start it up and check the individual systems.

To do this:

- connect the machine to the carrier (see chapter: *Connecting to the carrier*),
- after connecting the hydraulic and electrical system conduits, check the correctness of operation of individual systems, compliance of the rotation of the tedding system and check the hydraulic system for tightness,

  Lower the right and left tilting modules of the frame from the transport position to the working position, level the tedder carousels using the linkage system so that the spring fingers do not touch the ground. Engage the PTO drive.

- In the event of operational disturbances, immediately stop using the machine, locate and repair the fault. If the defect cannot be removed or its removal may void the warranty, please contact the seller or directly the Manufacturer in order to clarify the problem.

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5.2 DRAWBAR PROTECTION

CAUTION

Always secure the uncoupled machine against unauthorized use by attaching the securing device to the drawbar.

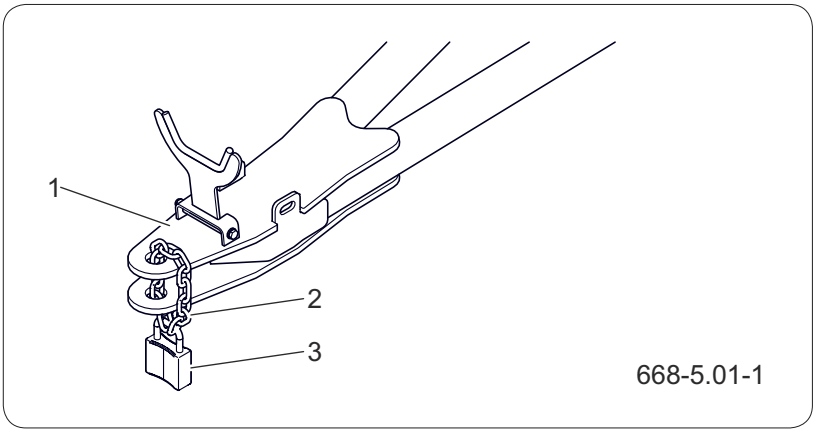

Figure 5.1 Drawbar protection
(1) drawbar *(2) chain*
(3) padlock

Disassembly of protection

1. Open the padlock (3).
2. Unclip the chain (2).
3. Disassemble the safety device, lock the safety elements with a padlock.
4. Protect the padlock key from being lost.

Installation of the protection

1. Open the padlock (3).
2. Put the chain (2) on the drawbar (1).
3. Close the padlock (3).
4. Protect the padlock key from being lost.

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5.3 CARRIER LOADING

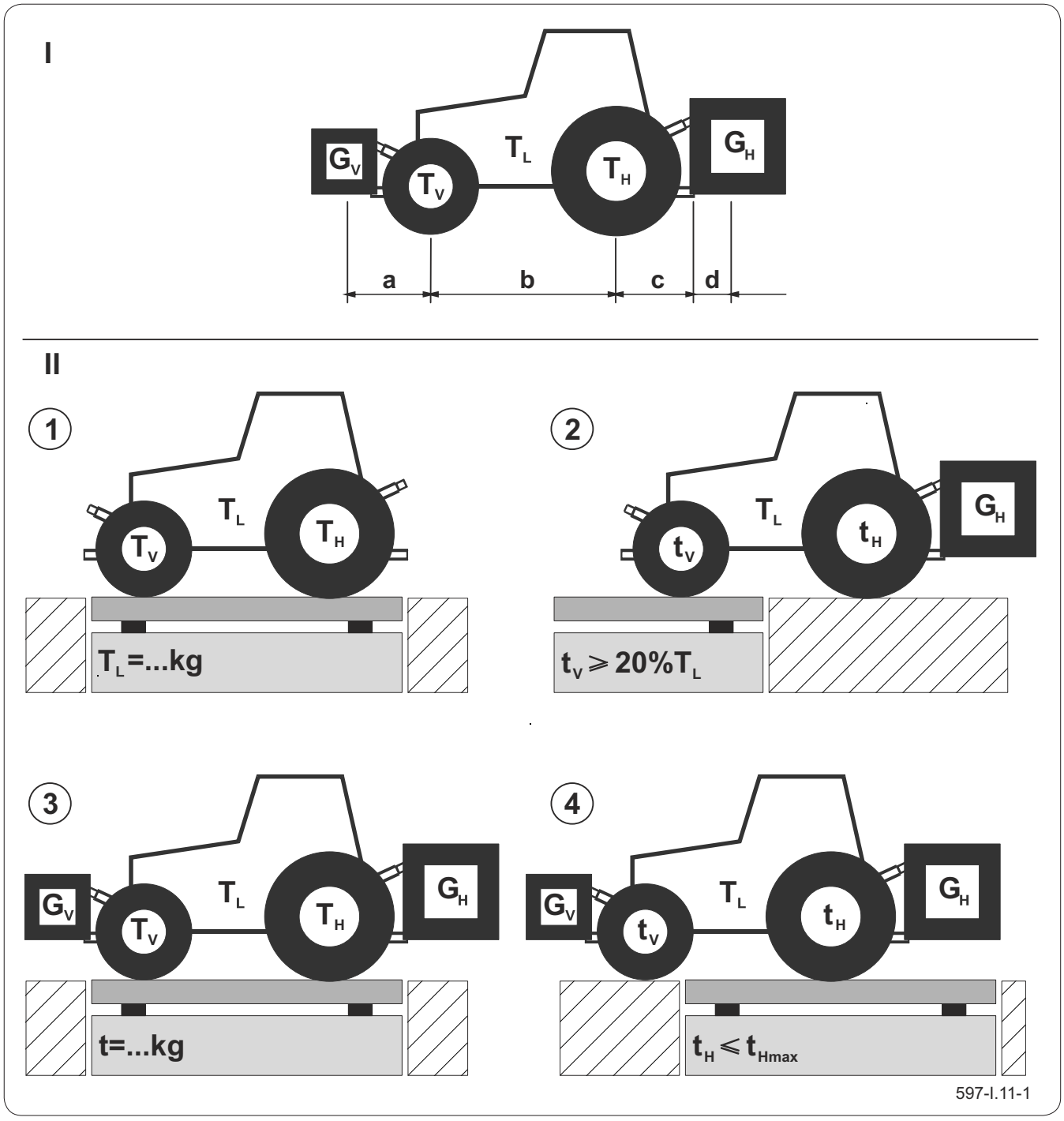

Figure 5.2 Loading of the tractor

CAUTION

The load on the front axle of the tractor must be at least 20% of its own weight and the load of the aggregated machine.

Before attaching the machine to the tractor, check the suitability of your tractor for this purpose. Suspension of tools in the three-point linkage at the front or rear must not exceed the permissible total weight, permissible axle load and load capacity of tractor tires. The

CAUTION

Incorrect use of the tractor may cause breakage, insufficient stability and the ability to steer and brake the tractor.

front axle of the tractor must always be loaded with at least 20% of the tractor's own weight and the load of the aggregated machine.
To ensure that these conditions are met, perform the following calculations:

CALCULATION OF MINIMUM FRONT BALLAST G_{Vmin}

$$G_{Vmin} = \frac{G_H \bullet (c+d) - T_V \bullet b + 0{,}2 \bullet T_L \bullet b}{a + b}$$

Table 5.1. Carrier loading

Symbol / dimensions	Unit	Description
T_L	kg	Carb weight of the tractor
T_V	kg	The load on the front axle of the tractor without the machine
T_H	kg	The load on the rear axle of the tractor without the implement
t	kg	Axle load of the tractor with the machine
t_V	kg	The load on the front axle of the tractor with the machine
t_H	kg	The load on the rear axle of the tractor with the machine
G_H	kg	Total weight of the rear-attached machine or rear weight
G_v	kg	The total weight of the front-attached machine or front weight
a / *and*	m	Distance between the centre of gravity of the front-mounted machine/front load and the centre of the front axle
b	m	Tractor wheelbase
c	m	Distance from the centre of the rear axle to the centre of the tractor lower links
d	m	Distance from the centre of the tractor's lower links to the centre of gravity of the rear-attached machine or rear weight

CALCULATION OF MINIMUM REAR BALLAST G_{Hmin}

$$G_{Hmin} = \frac{G_V \bullet a - T_H \bullet b + 0{,}45 \bullet T_L \bullet b}{b + c + d}$$

The calculation of the required minimum front and rear ballast assumes that all parameters are known.
If the parameters are not known and cannot be determined, measurements should be made using a scale.

MEASUREMENT OF PERMISSIBLE AXLE LOADS USING A SCALE

Measure the curb weight of the tractor (T_L).
Hitch the machine to the tractor and measure the front axle load (t_V). If the load is less than 20% of the weight of the tractor alone (T_L), add weights to bring the load above the minimum value ($t_V \geq 20\% T_L$).
Measure the total weight (t) of the tractor with the machine and weights. Check the tractor manual to see if the measured value is less than the Average Gross Weight.
Measure the load on the rear axle (t_H) and check in the tractor manual whether the measured value is lower than the permissible maximum value of the load on the rear axle of the tractor (t_{Hmax}).

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5.4 HANDLING OF THE PARKING STAND

CAUTION

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

Before driving, make sure that the support is fully raised and folded. Be sure to secure the support foot with the safety pin.

DANGER

Be especially careful when operating the support - it also applies to bystanders or helping people, there is a risk of crushing limbs.

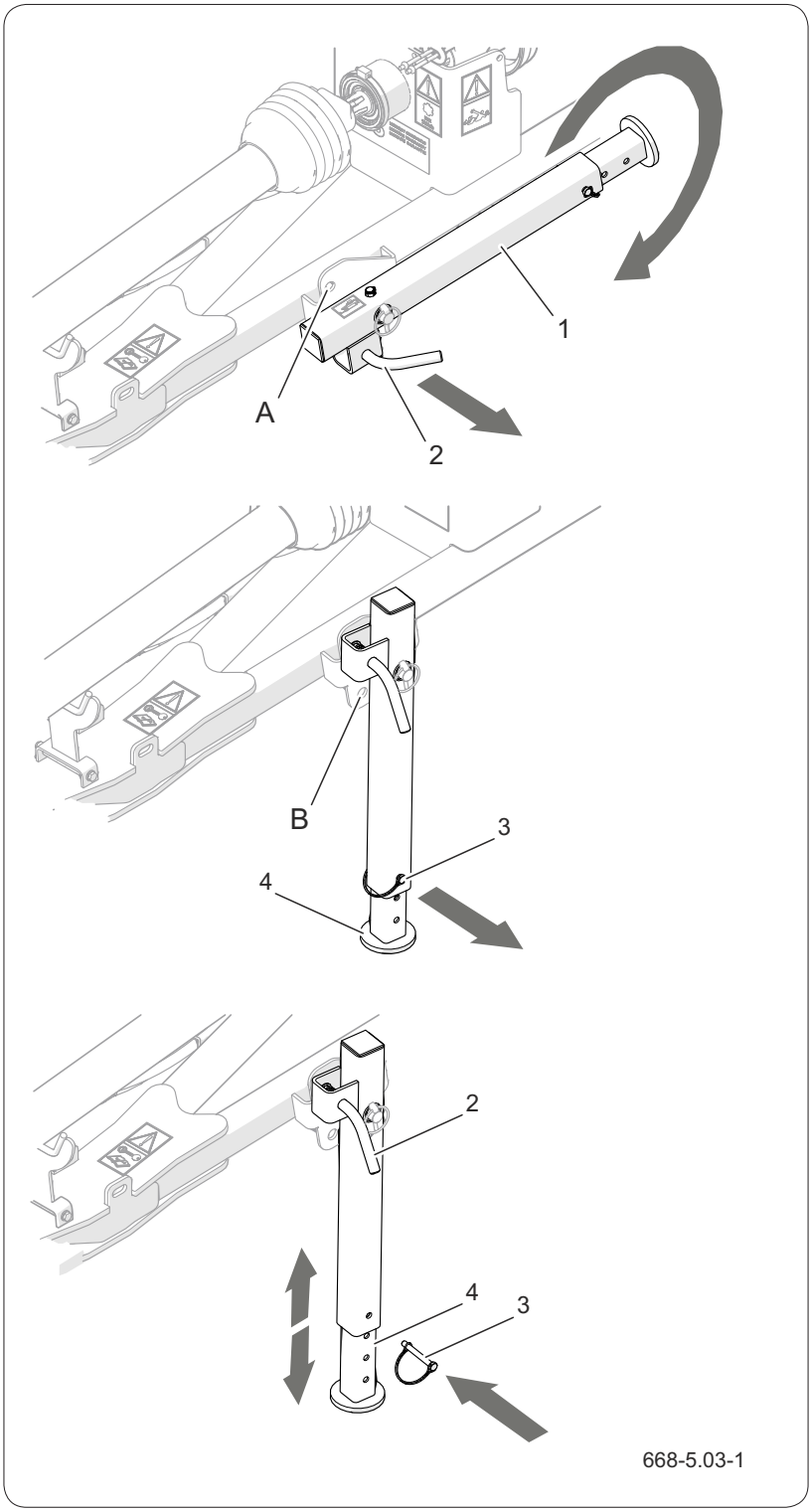

Figure 5.3 Parking stand

(1) support
(2) locking pin
(3) cotter pin
(4) support foot
(A) pin socket A
(B) pin socket B

Handling of the mechanical support

1. Secure the machine against rolling away.
2. Switch off the tractor engine.
3. Engage the parking brake of the tractor.

Lifting up of the support

1. Raise the drawbar of the machine using the tractor's three-point hitch so that the cotter pin (3) can be removed.
2. Unlock and remove the cotter pin (3), slide the support foot (4) as far as possible and secure it again with the cotter pin.
3. Pull the locking pin (2) out of socket A.
4. Move the support (1) from the vertical to the horizontal (transport) position.
5. Secure the support with the locking pin (2) in socket B.

Lowering of the support

1. Pull the locking pin (2) out of socket B.
2. Move the support (1) from the horizontal to the vertical position.
3. Secure the support with the locking pin (2) in socket A.
4. Unlock and remove the cotter pin (3).
5. Extend the support leg to the appropriate position and secure it with the cotter pin (3).

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5.5 CONNECTING OF THE MACHINE TO THE CARRIER

DANGER

During hitching, there must be no by-standers between the machine and the tractor. The tractor operator when connecting the machine should take particular care during work and make sure that unauthorized persons are not in the danger zone during coupling.

Ensure good visibility during coupling.

After aggregation is complete, check the security features.

You can connect the machine to a farm tractor, if all connections (electrical, hydraulic) and the tractor's suspension system comply with the machine manufacturer's requirements given in the *"Agricultural tractor requirements*" table.

Connecting of the machine to the tractor's linkage:

- The machine should be connected on level ground.

  The wheels of the machine must be immobilized with wedges.

- Remove the safety device from the drawbar.
- Place the tractor with its back facing straight ahead of the machine drawbar.

  The machine should be connected to the tractor by means of a drawbar and three-point linkage hitching boom.

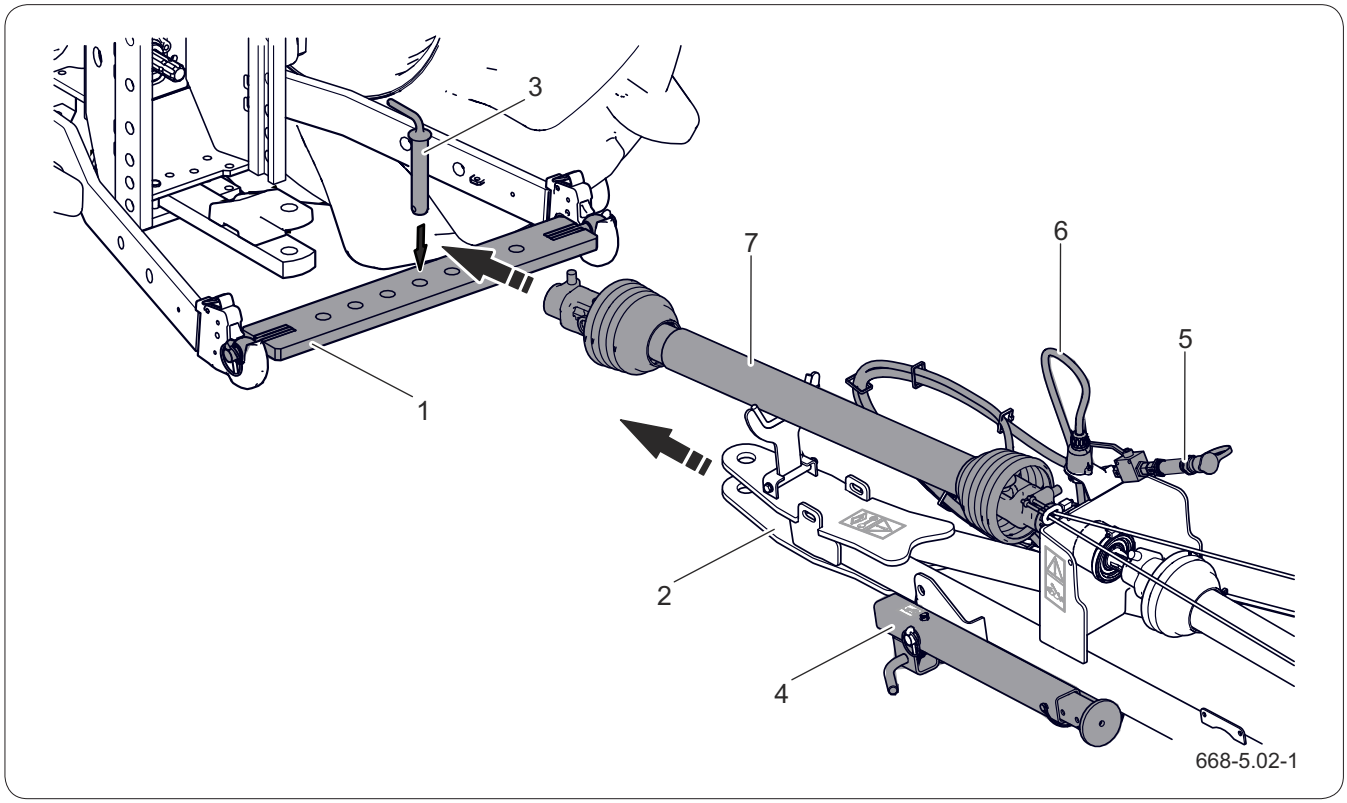

Figure 5.4 Connecting of the machine to the carrier

(1) drawbar *(2) drawbar* *(3) pin with cotter pin*
(4) support foot *(5) hydraulic hose* *(6) electrical hose*
(7) PTO shaft

DANGER

Use only original pins and protections to connect the machine to the carrying vehicle (tractor).

CAUTION

After connecting the machine, block the lower three-point linkage of the tractor to prevent side movements of the machine.

DANGER

Depressurize the system before connecting the machine to the hydraulic system.

CAUTION

Before connecting the hydraulic and electrical system conduits, read the carrying vehicle's manual and follow the manufacturer's instructions

CAUTION

Hydraulic and electrical conduits should be routed so that they do not become entangled in moving parts of the machine and carrying vehicle and are not exposed to damage.

- When reversing the tractor, bring the drawbar (1) of the tractor's lower three-point linkage arms to the drawbar (2) of the machine and set it at the appropriate height.
- Connect the drawbar with the boom with a pin (3) and secure it with a cotter pin.
- Turn off the tractor engine, immobilize with the parking brake. Secure the cabin against access by unauthorized persons.
- After aggregating the machine, turn the support foot (4) backwards and secure with the pin.

  Be especially careful when folding the support - danger of limbs being cut.
- Connect the pipe (5) of the hydraulic system.

  Pay attention to the compatibility of the oils in the hydraulic system of the tractor and in the hydraulic system of the machine.
- Connect the cable (6) of the lighting electrical system and check the operation of the lights.

  If the tractor does not have the appropriate sockets or the sockets are of a different type, have the installation performed by qualified

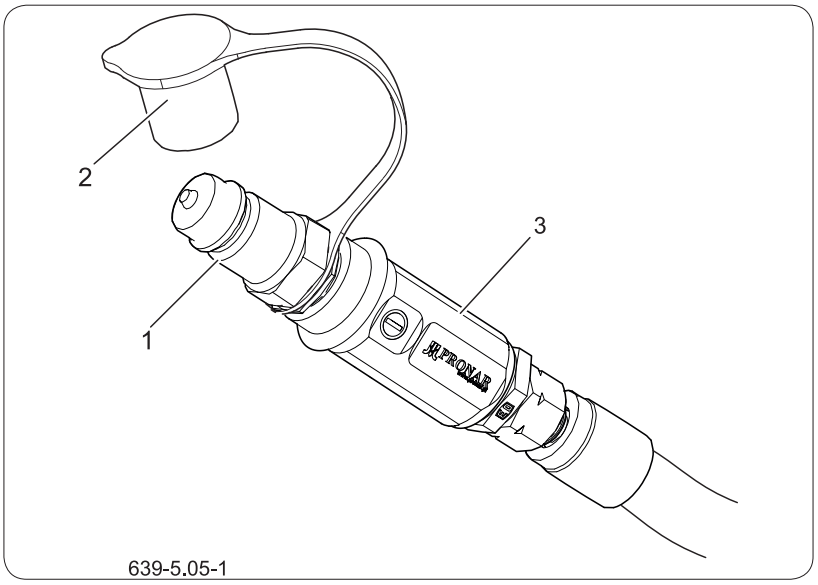

Figure 5.5 Hydraulic system connection
(1) hydraulic plug (2) coloured plug
(3) coloured straight nipple (Kennfixx)

DANGER

Before connecting the PTO shaft, it is absolutely necessary to read the manual provided by the PTO shaft manufacturer and observe all recommendations contained therein.

Before connecting to the carrier, check the technical condition of the shaft guards, the completeness and condition of the securing chains.

persons.

- Connect the PTO shaft (7) and secure it with the fastening chains.

  If necessary, shorten the shaft according to the shaft manufacturer's instructions.

- Check the steering of the tractor with the attached machine.

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5.6 WORKING WITH THE MACHINE

DANGER

Make sure that no bystanders or animals are in the vicinity of the machine (at least 50 meters) during maintenance operations.

DANGER

When driving the machine in the transport position on uneven terrain, be especially careful and reduce the driving speed due to the possibility of damage and/or overturning of the carrying vehicle with the machine.

DANGER

Before starting the carrier engine, make sure that the PTO drive is turned off. Otherwise, uncontrolled start of the machine may occur, threatening the life and health of bystanders.
The drive of the machine can only be started when all safety guards are properly attached.
Before engaging the PTO drive, make sure that there are no bystanders, especially children, near the mower. Ensure that the machine is clearly visible during operation.

Moving the machine into working position

After the machine has been transported to the job site, it must be changed from transport to working position. To do this:

- Place the tractor with the machine on a flat surface and a stable surface.
- Immobilize tractor with parking brake.
- Turn the ball valve to position A - OPEN.
- Unlock the pawls (1) with the cable (2).

  At the same time, pull and hold the cable that releases the mechanical lock of the hydraulic cylinders of the beams of the right and left outer carousel.
- After releasing the lock of the cylinders, slowly control the hydraulic circuit in the tractor, lower the swing modules of the carousels until the outer wheels contact the ground and release the cable of the cylinders' lock.

  The cylinders should be fully extended
- Tilt the machine to the working position with the work tilt cylinder.
- If necessary, while lowering the tractor's

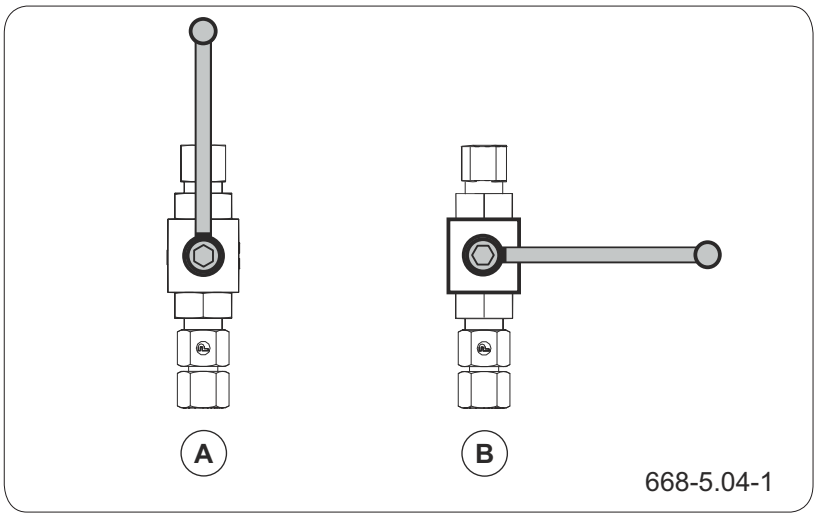

Figure 5.6 Ball valve
(A) open position (B) closed position

DANGER

Adjustment of the working height and spreading angle of the tedder must be done with the tractor engine switched off. The key should be removed from the ignition switch and the tractor should be secured against unauthorized access. The tractor must be braked with the parking brake.

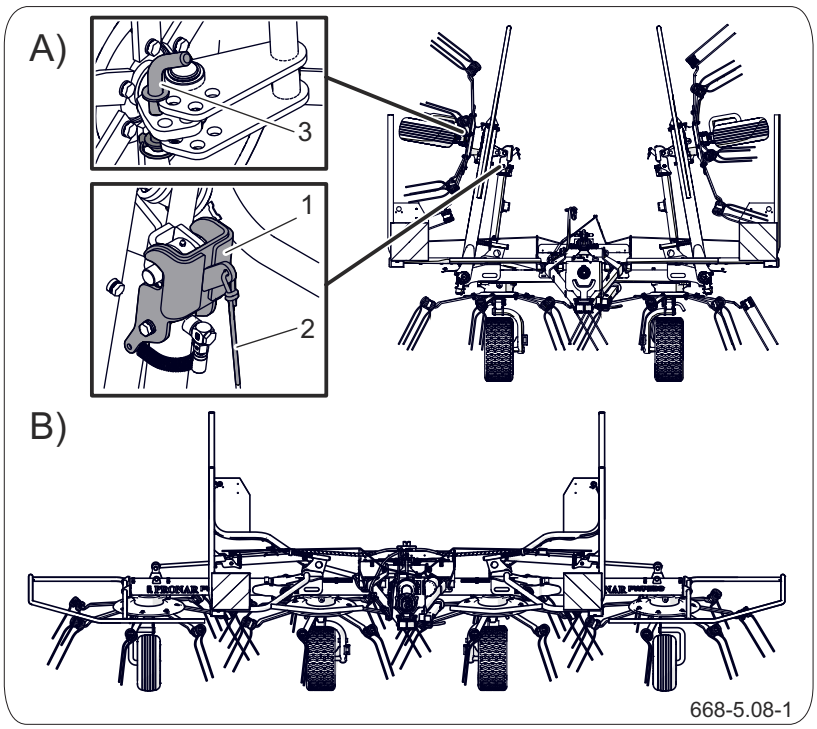

Figure 5.7 Tedder positions
(A) transport position
(B) working position
(1) pawl
(2) cable
(3) wheel lock pin

three-point hitch bar, set the inclination of the rotors so that the distance between the tedder's fingers and the ground is not less than 1 cm.

- Set the control lever of the distributor in the floating position.
- Switch off the tractor engine. Close the tractor cabin and secure it against unauthorized access.
- Connect the previously matched PTO shaft.

Before connecting the PTO shaft, it is absolutely necessary to read the manual provided by the PTO shaft manufacturer and observe all recommendations contained therein.

DANGER

Lowering of the tedder tines below 1 cm above the ground may cause faster wear of the tines, damage to the machine, damage to the ground (turf), etc.

Setting of the spreading angle

The correct working position of the tedder has a decisive influence on the quality of the tedded material and the comfort of work. The tedder has the ability to adjust the inclination angle of the carousel by adjusting the position of the machine's road wheels. To

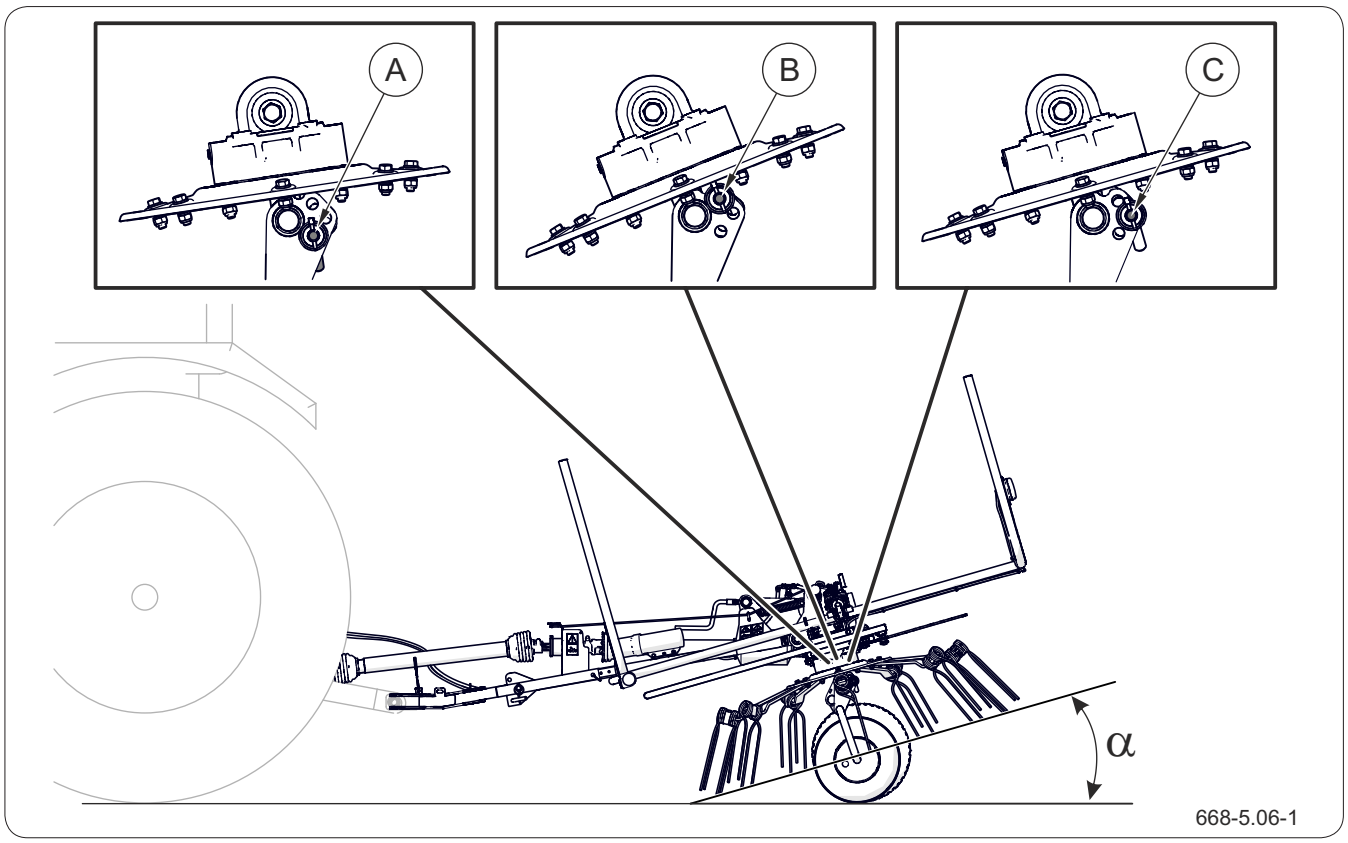

Figure 5.8 Adjusting of the tilt angle of the carousel (spread angle)
(α) spread angle (A) large spread angle (B) small spread angle (C) normal spread angle

DANGER

Before lifting the machine with lifting equipment, read this manual and the manual of the manufacturer of the fastening agent used.
When adjusting under the lifted machine, prevent it from falling.

do this:

- Using lifting devices, raise the machine to the minimum height that allows the deflection of the road wheels and support it so as to prevent it from falling.

  Use only lifting devices with a capacity greater than the weight of the machine, including used ropes, straps or chains.

  You can set the outer wheels after setting the machine to the transport position.
- Move the pins locking the position of the wheels to the desired angle of inclination (A), (B) or (C) and secure them with cotter pins.
- Move the machine to the working position.
- Check the working height and, if necessary, correct the setting using the working tilt cylinder or lowering/raising the tractor's three-point hitch bar.

DANGER

It is forbidden to occupy any position other than the operator's position in the vehicle cabin while working with the machine. It is forbidden to leave the operator's cabin while the machine is operating.
It is forbidden to stay between the carrier and the machine.
It is forbidden for the operator to stay near the machine until the rotating elements have stopped.

DANGER

While working as a tractor operator, you are obliged to ensure proper visibility of the machine and the working area in order to be able to see obstacles and possible threats on the way of the working tedder.

DANGER

It is forbidden to operate the machine while driving backwards. When driving back and during turning back, the machine drive must be turned off.

- Selection of the carousel's height and inclination angle depends on the amount of cut swath, degree of humidity, assumed tedding speed and the ground on which the tedder will move.

  If the tines are too far from the ground, there is a risk that not all of the swath will be tedded. When set low, the swath may be contaminated with soil, turf, stones, etc. In addition, the risk of damage to the tedder, mainly the tines and their attachment to the arm, increases.
- Check the selection of the height on an ongoing basis during the operation of the tedding unit and correct the setting if necessary.

Working with the machine

- After connecting the rotary tedder to the tractor and properly setting it to the working position, you can start the machine.
- Engage the rear PTO drive in the tractor at a sufficiently low engine speed, and then gradually increase it until you reach the permissible PTO speed.

  The permissible revolutions of the PTO shaft are 540 rpm, however, the recommended speed is about 500 rpm.

  Rotation speed that is too low causes rolls formation.
- After obtaining the appropriate revolutions of the tractor's PTO shaft, you can start work.
- The recommended working speed should be up to 10 km/h.

  Too high working speed causes uneven spreading of the swath. Select a working speed so that the swath is divided cleanly and completely.
- The rotational speed of the shaft and the speed

DANGER

Never exceed the permissible PTO speed. Otherwise, the drive system of the machine may be damaged.

of travel depend on several factors, including size of the swath, degree of humidity, length of the swath, terrain, therefore the selection of appropriate operating parameters is responsibility of the person operating the tedder.

- Avoid driving across embankments.

  The swath is then unevenly distributed and the machine is unevenly loaded, which may

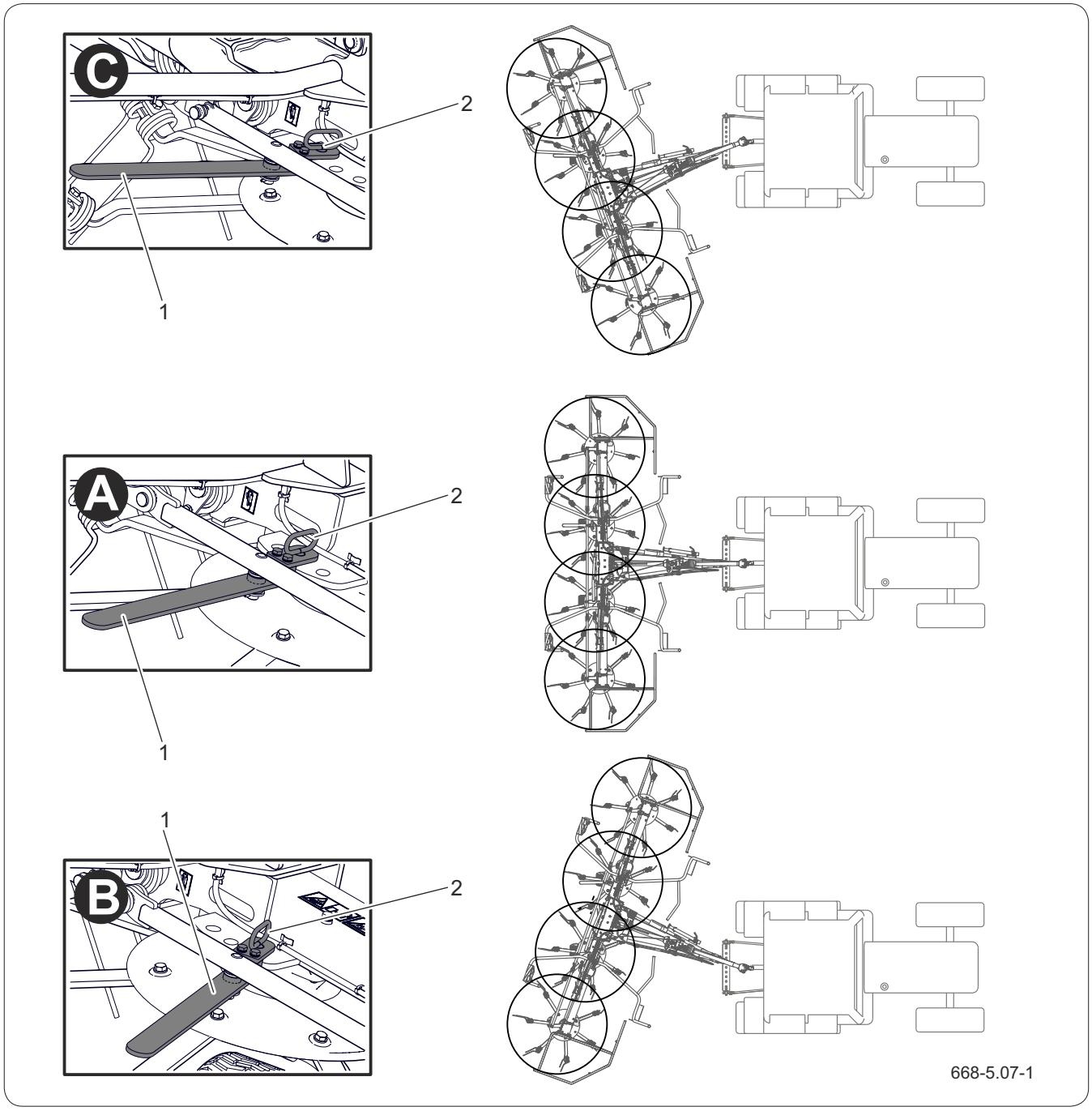

Figure 5.9 Boundary tedding (along the edge of the field)
(1) adjustment lever *(2) locking pin with cotter pin*
(A) center tedding *(B) right side tedding* *(C) left side tedding*

DANGER

It is forbidden to remove the clogs and the jams while the machine is operating. The drive of the machine and the tractor must be absolutely switched off.

DANGER

When maneuvering around sharp curves (during turning), reduce the operating speed accordingly and disengage the PTO drive.

DANGER

Pay special attention to the terrain when tedding at the field boundary On slopes, the tractor and machine may tip over.

cause damage to the machine.

- Avoid obstacles in good time and with sufficient distance.
- In the event of the machine blocking due to winding of swath or grass, remove the accumulated material with a sharp tool.

Apply security measures in the form of personal protective equipment, e.g. protective gloves. To avoid clogging and jamming, adjust the working speed to the field conditions.

Tedding on borders

- During border tedding (along the edge of the field), use the lever (1) to adjust the deflection of all road wheels. When the tedder is working at the right edge of the field, move all wheels to the right (B), when working at the left edge of the field, move all wheels to the left (C). When the tedder is operating in the middle of the field, set all wheels to the middle position (A).

To move the wheels, unlock and remove the locking pin (2), and set the adjustment lever (1) in the desired position (A), (B) or (C) securing it with a pin with a cotter pin.

After completing of the field work

- Turn off the tractor's PTO drive and wait until the rotating elements of the machine stop.
- Change the configuration of the machine to the transport position.

Make sure that the cylinder lock pawls are properly locked.

- Turn off the tractor engine, remove the ignition key, engage the parking brake. Close the tractor cabin and secure it against unauthorized access.
- Move the ball valve of the machine's hydraulic system to position B - CLOSED.

- To disconnect the machine from the carrier, follow the section "Uncoupling of the machine from the carrier".
- Remove coarse dirt and swaths from the machine after each use.

OBS.1.4-005.01.EN

5.7 TRANSPORT

DANGER

When driving the machine in the transport position on uneven terrain, be especially careful and reduce the driving speed due to the possibility of damage and/or overturning of the carrying vehicle with the machine.

DANGER

A transport trip is possible only with the PTO shaft disconnected.

When driving comply with traffic regulations, be prudent and considerate. The most important guidelines for steering a tractor with a machine attached are presented below.

- Before driving, make sure that there are no bystanders, especially children, near the machine and the tractor. Ensure proper visibility.
- Make sure that the machine is properly connected to the tractor and the hitching system is properly secured.
- Make sure the ball valve of the machine's hydraulic system is in the B - CLOSED position.
- The weight of the machine affects the steering of the tractor.
- Do not exceed the permissible transport speed and the speed resulting from the restrictions of the road traffic law. Adjust the speed of travel to the prevailing road conditions and other conditions.
- When travelling on public roads, place a slow-moving vehicle sign at the rear of the vehicle.
- When driving with the machine, use the orange flashing light on the tractor.
- Damaged or lost lighting and signalling components must be repaired or replaced immediately.
- Avoid ruts, depressions, ditches, or driving along roadside slopes. Driving across such obstacles can cause the machine and tractor to tilt suddenly. Driving near the edges of ditches or canals is dangerous due to the risk of landslides under the wheels of tractor.
- Reduce speed before cornering, when driving on uneven or sloping terrain.
- When driving, avoid sharp turns, especially on slopes.

- It should be remembered that the braking distance of the set increases significantly with the increase in the weight and the increase in speed.
- Control the behaviour of the machine while driving on uneven terrain. Adjust speed to terrain and road conditions.

OBS.1.4-006.01.EN

5.8 RULES FOR THE USE OF TIRES

- When working with tires, the machine should be secured against rolling by placing chocks under the wheels.
- Repair work on wheels or tires should be performed by persons trained and authorized for this purpose. These works should be performed with the use of appropriately selected tools.
- Inspect the tightness of the wheel nuts before the first use of the machine, after the first use and driving about 5 km, then after each day of work during the first month of using the machine, and then every 50 hours of driving. Always repeat all operations if the wheel was disassembled. Wheel nuts should be tightened in accordance with the recommendations contained in the *Inspections and technical service*chapter.
- Regularly check and maintain proper tire pressure as recommended in the instructions (especially after a long break in the machine use).
- Tire pressure should also be checked during all-day intensive work. Take into account that an increase in tire temperature can increase the pressure by up to 1 bar. With this increase in temperature and pressure, reduce the load or speed of the machinee.
- Never reduce the pressure by venting if it increases due to temperature.
- Valves must be secured with appropriate caps to avoid soiling.
- Do not exceed the machine speed limit.
- Avoid damaged surfaces, sudden and variable manoeuvres, and high speeds when turning.

OBS.1.1-008.01.EN

5.9 CLEANING

DANGER

Refer to the instructions for using cleaning detergents and preservatives.

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

DANGER

When the machine is connected to the carrier, it is only possible to stay near the machine when:

- the carrier engine is turned off,

- PTO shaft is disconnected.

CAUTION

Each time the work with machine is finished, clean it of the remains of the material.

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

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

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

Guidelines for cleaning of the machine

Stop the carrier and the machine on a flat, even surface.

- Turn off the carrier engine and remove the ignition key.
- Secure the tractor with the parking brake and the cab against access by other persons.
- Remove any plant debris from the surface of the machine.
- Clean and wash the machine with a strong stream of water and allow to dry in a dry and ventilated place.

  The use of pressure washers increases the effectiveness of washing, but particular care should be taken during work. While washing, do not put the nozzle of the cleaning aggregate closer than 50 cm from the surface to be cleaned.

  The water temperature should not exceed 55 °C.

  During washing with too high pressure, the paint may be damaged.
- Do not direct the water stream directly at the elements of the machine's installation and equipment, i.e. valves, actuators, electric and hydraulic plugs, lights, electrical connectors, information and warning stickers, rating plate, cable connectors, lubrication points, etc. High pressure of the water stream may cause mechanical damage of these items.

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

In winter, frozen water may damage the paint coating or machine parts.

OBS.1.4-007.01.EN

5.10 DISCONNECTING OF THE MACHINE FROM THE CARRIER

DANGER

Before disconnecting the machine from the carrying vehicle, turn off the engine, engage the parking brake and secure the cabin against unauthorized access.

Exercise extreme caution when disconnecting the machine from the carrier.

DANGER

Depressurize the system before disconnecting the hydraulic system.

CAUTION

Always secure the uncoupled machine against unauthorized use by attaching the tie rod protection.

Before disconnecting from the carrier, place the machine on a level, sufficiently hard surface in such a way that it can be reconnected.

To disconnect the machine from the carrier, follow these steps:

- Park the tractor with the machine in the parking place.
- Turn off the tractor engine, immobilize with the parking brake. Secure the cabin against access by unauthorized persons.
- Secure the machine against rolling with wheel chocks.
- Lower the support to the parking position and secure it (see: *"Parking stand handling").*
- Disconnect the PTO shaft from the carrier.

  Secure PTO ends with covers.
- Reduce the residual pressure in the hydraulic system by moving the appropriate lever for controlling the hydraulic circuit in the carrying vehicle.

  Due to the variety of hydraulic systems in agricultural tractors, the manufacturer of the machine is unable to specify a universal method of reducing the pressure in the hydraulic system. Familiarize yourself with the of the tractor operator's manual.
- Close the ball valve and disconnect the hydraulic system plug from the carrier, secure it with the plug and place it in the bracket on the machine.
- Disconnect the electrical plug from the carrier and place it in the machine bracket.
- Disconnect the drawbar from the tractor's hitch.
- Start the tractor and drive away from the machine.
- Secure the machine against unauthorized use with a safety device.

OBS.1.4-008.01.EN

5.11 STORAGE

After finishing work, carefully clean and wash the machine.

Check the entire machine, inspect the technical condition of individual elements. Worn or damaged components must be repaired or replaced with new ones.

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

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

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

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

Wash and dry the rims and tires. During longer storage, it is recommended to move the machine once every 2-3 weeks so that the place of contact of the tire with the ground is in a different position. The tires do not deform and maintain the correct geometry. You should also check your tire pressure from time to time, and if necessary inflate the wheels to the correct value.

Store the PTO shaft in a horizontal position in a dry place.

Secure the machine against unauthorized use with a safety device.

OBS.1.4-009.01.EN

CHAPTER 6

PERIODIC INSPECTIONS AND TECHNICAL MAINTENANCE

PRONAR PWP530T

6.1 GENERAL

CAUTION

It is forbidden to use a damaged machine.

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

When using the trailer, it is necessary to constantly check the technical condition and perform maintenance procedures that will allow the machine to be kept in good technical condition. Mandatory perform all maintenance and regulatory activities specified by the manufacturer in accordance with the assumed schedule.

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

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

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

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

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

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6.2 MAINTENANCE AND INSPECTION SCHEDULE

Table 6.1. Inspection categories

Category	Description	Performs	Frequency
A	Daily review	Operator	Inspection carried every day before first start-up or every 10 hours of continuous shift work.
B	Maintenance	Operator	Inspection performed periodically every 1 month of machine Each time before carrying out this inspection, a daily inspection should be performed.
C	Maintenance	Operator	Inspection performed periodically every 3 months. Before each performance of this inspection, a daily inspection should be performed and a monthly inspection of the machine should be performed.
D	Maintenance	Operator	Inspection performed periodically every 12 months. Before each performance of this inspection, it is necessary to perform a daily inspection, inspection every 1 month of using the machine and inspection every 3 months.
E	Warranty	APSiO(1)	Inspection carried out for a fee after the first 12 months of use of the machine, after reporting the owner.
F	Maintenance	Service (2)	Inspection performed every 4 years of the machine use

(1) - Authorized Sales and Service Point

(2) - post-warranty service

Table 6.2. Technical inspection schedule

Description of activities	A	B	C	D	E	F
Correctness of attaching the tedder spring fingers to the arms and the arms to the rotor of the carousel	•					
Technical condition of PTO shaft, guards and securing chains (1)	•					
Checking of plugs and connection sockets	•					
Air pressure measurement, tire and rim inspection	•					
Checking of the protective covers	•					
Checking and refilling of the transmission oil	•					
Efficiency of the electrical lighting system	•					
Checking of the tightness of road wheel		•				
Checking of the looseness of the half-shaft bearings			•(2)			
Checking of the hydraulic system		•				
Changing of the transmission oil		•(3)		•		
Replacement of hydraulic hoses						•
Lubrication	See table: *Lubrication schedule*					
Checking screw connections	See table: *Schedule for tightening of the critical bolted connections*					

(1) in accordance with the operating instructions of the PTO shaft manufacturer

(2) after the first month of use, every 6 months of use

(3) first replacement;

SER.1.4-001.01.EN

6.3 CHECKING OF PLUGS AND CONNECTION SOCKETS

DANGER

The hydraulic system of the machine and the tractor is under high pressure during operation.

It is forbidden to use a damaged machine.

A damaged body of a hydraulic or electric conduit or socket requires replacement. In the event of damage to the cover or gasket, replace these elements with new, functional ones.

If the machine is disconnected from the tractor, protect the hydraulic plugs with covers and place them in the brackets intended for this purpose.

Hydraulic couplings for connecting to the tractor must be technically sound and kept clean.

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

If necessary clean or repair tractor sockets.

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

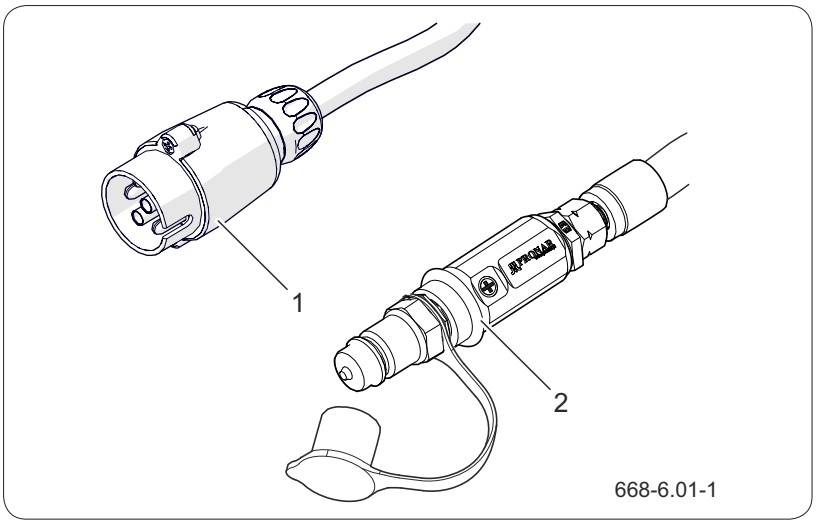

Figure 6.1 Machine connections
(1) electrical plug *(2) hydraulic plug*

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6.4 AIR PRESSURE MEASUREMENT, TIRE AND RIM INSPECTION

ADVICE

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

CAUTION

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

Incorrect tire pressure also causes faster wear of the tire.

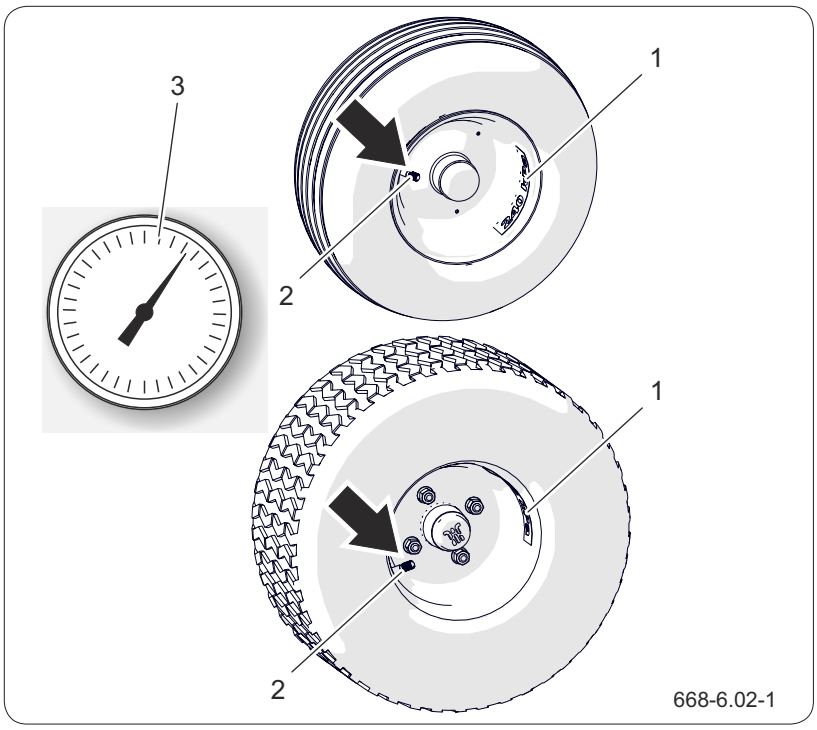

Figure 6.2 Machine wheel
(1) sticker (2) valve (3) pressure gauge

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

The scope of activities

1. Connect the pressure gauge (3) to the valve (2).
2. Check the air pressure.
3. If necessary, inflate the wheel to the required pressure.

   The required air pressure is described on a sticker (1) on the rim.
4. Check the tread depth.
5. Check the side wall of the tire.
6. Inspect the tire for defects, cuts, deformations, bumps indicating mechanical damage to the tire.

7. Check that the tire is correctly positioned on the rim.
8. Check the tire age.
9. Rims should be checked for deformation, material cracks, weld cracks, corrosion, especially around welds and in the place contact with the tire.
10. In the event of mechanical damage, consult your nearest tire service centre and ensure that your tire defect is eligible for replacement.

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6.5 CHECKING OF THE PROTECTIVE COVERS

DANGER

It is forbidden to use the machine with damaged or incomplete guards.

The guards protect the user of the machine against loss of health or life and are a protective element of the machine's components. For this reason, their technical condition must be checked before starting work. Damaged or missing items must be repaired or replaced.

The scope of activities

1. Check the completeness of the protective covers and their correct mounting.
2. Visually assess the technical condition and completeness of PTO shafts and shaft guards.
3. Tighten the screw connections of the cover fixings if necessary.

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6.6 CHECKING OF THE HYDRAULIC SYSTEM

DANGER

The hydraulic system of the machine is under high pressure during operation.

CAUTION

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

Checking the tightness of the hydraulic system

1. Connect the machine to the tractor.
2. Connect all hydraulic system conduits in accordance with the *"User's Manual".*
3. Clean the hose connections, hydraulic cylinders and couplings.
4. Activate all hydraulic systems in turn, extending and retracting the piston rods of the cylinders.
5. Repeat all operations 3-4 times.
6. Leave the hydraulic cylinders fully extended.
7. Check the all hydraulic circuits for leaks.
8. After completing the inspection, put all cylinders to the rest position.

When the cylinder is fully extended, check the the seal locations. In the event of oiling on the hydraulic cylinder body, the nature of the leakage must be check. Small leaks with symptoms of "sweating" are permissible. When you notice "droplets" type leaks do not use the machine until the fault is removed.

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

Control of the technical condition of hydraulic connectors

Follow the steps described in the *„Checking plugs and connection sockets".*

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6.7 REPLACEMENT OF HYDRAULIC HOSES

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

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6.8 MAINTENANCE OF ELECTRICAL INSTALLATION AND WARNING ELEMENTS

CAUTION

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

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

Work related to the repair, replacement or regeneration of electrical installation components should be entrusted to specialized workshops that have appropriate technologies and qualifications to perform this type of work.

The user's duties include only technical inspection of the electrical installation and reflectors.

The scope of activities

1. Connect the machine to the tractor with a suitable cable.

   Check the connection socket on the tractor and the cable plug on the machine.
2. Check the completeness, technical condition and correct functioning of the machine lighting.
3. Check the wiring harnesses for damage (abrasion in the insulation, broken wires, etc.).
4. Check the correct installation of the triangular plate for slow-moving vehicles and its holder.
5. Before travelling on a public road, make sure that the tractor has a reflective warning triangle.

SER.1.4-005.01.EN

6.9 TIGHTENING TORQUES FOR SCREW CONNECTIONS

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

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

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

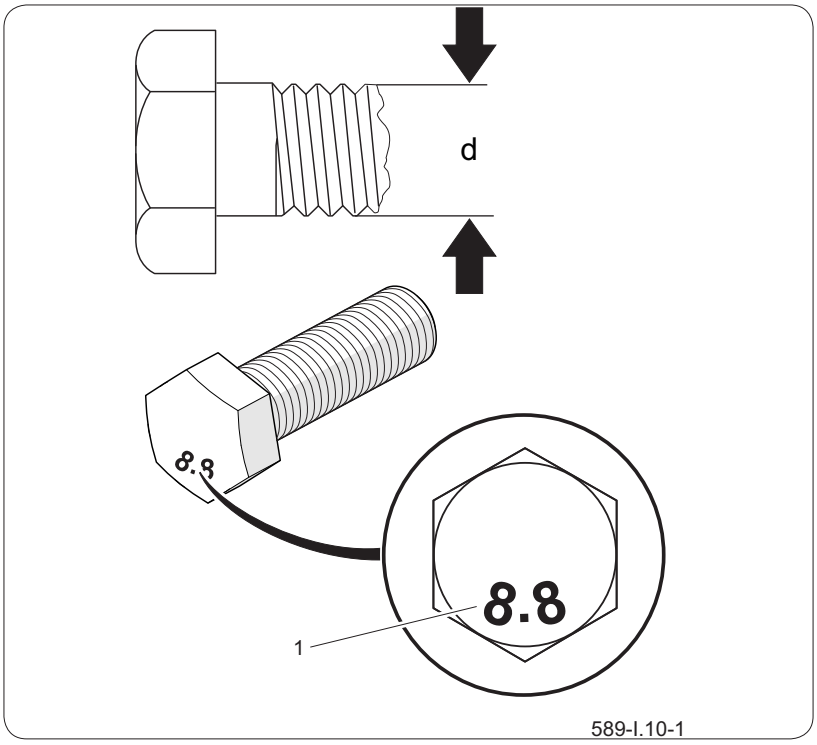

Figure 6.3 Screw with metric thread
(1) strength class, (d) thread diameter

Table 6.3. Tightening torques for screw connections

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

(*) - strength class according to DIN ISO 898

Table 6.4. Tightening torques of hydraulic elements

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

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6.10 SERVICING OF HALF-SHAFT

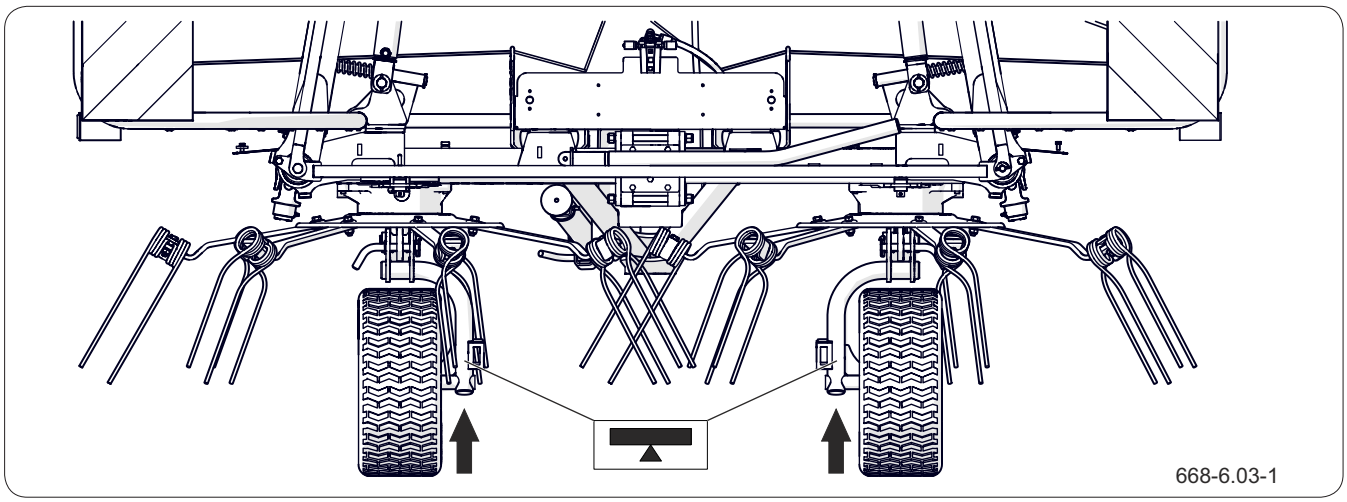

Figure 6.4 The jack's support point

CAUTION

Before starting work, read the instructions for the lift and follow the manufacturer's instructions.

ADVICE

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

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

Entrust work related to the repair, replacement or regeneration of half-shaft elements to specialized workshops that have the appropriate technology and qualifications to perform this type of work.

The responsibilities of the user are limited to:

- control and adjustment of play in wheel half-shaft bearings,
- assembly and disassembly of the wheel, checking the tightness of the wheels,
- air pressure control and maintenance, assessment of the technical condition of wheels and tires.

Activities related to:

- grease change in half-shaft bearings,
- replacement of bearings, hub seals,

can be carried out by specialized workshops.

Preparatory activities of control and regulation

1. Connect the machine to the tractor.
2. Place the tractor and the machine on firm and level ground and immobilize with the parking brake.

DANGER

Crushing hazard. Be especially careful. Make sure that the hydraulic jack has the proper load capacity and is technically sound.

Call service personnel if necessary.

The jack must be stably supported on the ground and the wheel half-shaft.

Ensure that the machine will not roll when checking the looseness of the half-shaft bearings.

Inspection and adjustment of bearing looseness should only be carried out when the machine is hitched to the tractor.

Figure 6.5 Clearance checking

Position the tractor for straight-ahead travel.

3. Place chocks under the machine wheel opposite to the lift wheel. Make sure that the machine does not roll during the inspection.
4. Raise the wheel (opposite to the stacked chocks).

   Place the jack in the place indicated by the arrow in the drawing "The jack support points". The jack must be adjusted to the machine weight.

Checking of the looseness of the half-shaft bearings

1. Turn the wheel slowly in two directions to check if the movement is smooth and the wheel rotates without excessive resistance and jams.
2. Turn the wheel so that it rotates very quickly, check the that the bearing does not make any unusual sounds.
3. Try to feel looseness by moving the wheel. You can use the lever under the wheel, resting the other end on the ground.
4. Repeat steps separately for each wheel.

   Remember that the lift must be on the opposite side of the wedges!
5. If looseness is felt, adjust the bearings.

ADVICE

Checking of the looseness of the half-shaft bearings:
– After the first month of use,
– Every 6 months of use.

ADVICE

Bearing play is easier to check and adjust if the wheel is removed.

ADVICE

The jack is not included with the machine.

6. Unnatural sounds coming from the bearing may be symptoms of excessive wear, dirt or damage. In this case, the bearing together with the sealing rings should be replaced or cleaned and re greased.
7. When checking bearings, make sure that any noticeable looseness comes from the bearings, not the driving system.
8. Check the the technical condition of the hub cover, replace if necessary.

Adjusting of the looseness of the half-shaft bearings

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

   The wheel should rotate with slight resistance.
4. Unscrew the nut (not less than 1/3 of a turn) to cover the nearest groove of the nut with a hole in the journal of the axle (the pin's hole is marked with a black arrow in the drawing).

   The wheel should rotate without excessive resistance. Too strong pressure is not recommended due to the deterioration of

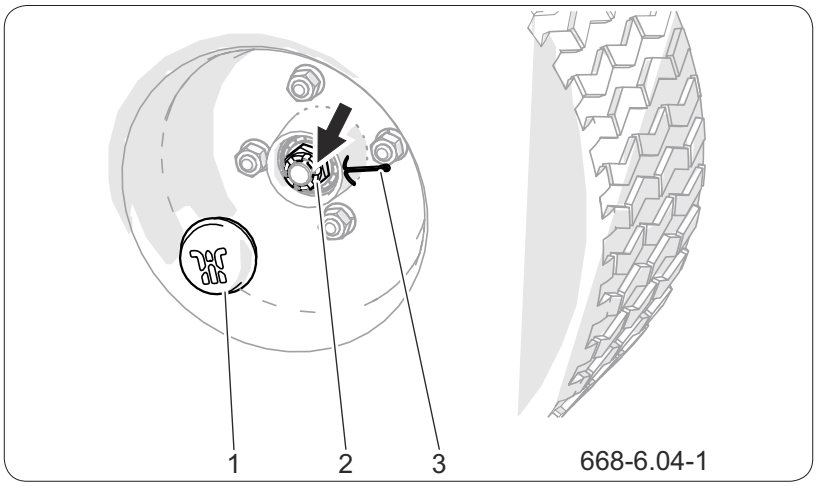

Figure 6.6 Adjusting of the play of the half-shaft bearings
(1) hub cover *(2) crown nut*
(3) safety pin

bearings. The wheel should turn smoothly, without jams and no noticeable resistance.

5. Secure the castellated nut with a spring cotter pin and mount the hub cover.
6. Gently tap the hub with a rubber or wooden hammer.

SER.1.4-006.01.EN

6.11 TIGHTENING OF THE ROAD WHEELS

Removing of the wheel

1. Place chocks under the wheel that will not be dismounted.
2. Ensure that the machine is properly secured and will not move during wheel dismantling.
3. Loosen the wheel nuts according to the sequence given in the figure *"The sequence of loosening and tightening of the nuts*.
4. Lower the jack and raise the machine.
5. Remove the wheel.

Wheel attachment

1. Clean wheel axle pins and nuts from dirt.

   Do not lubricate the thread of the nut and stud.
2. Check the condition of pins and nuts, replace if necessary.
3. Put the wheel on the hub, tighten the nuts in such a way that the wheel rim adheres exactly to the hub.
4. Lower the machine, tighten the nuts according

CAUTION

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

ADVICE

Wheel nuts should be tightened with a torque of 90- 100Nm - nuts M12x1.5.

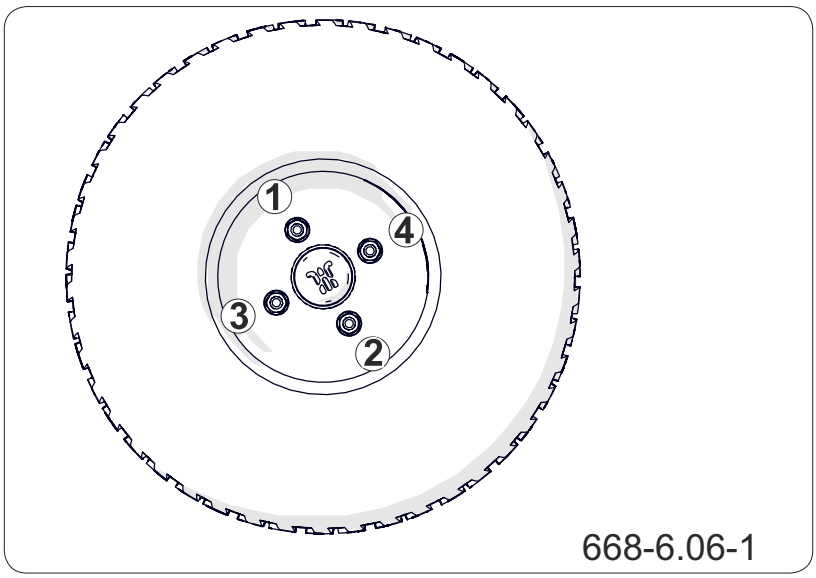

Figure 6.7 The order of the nuts tightening (4 pcs)

ADVICE

The value of the tire pressure is specified on the information sticker, placed on the rim.

DANGER

Damaged tires or rims can cause a serious accident.

to the recommended torque and the given order.

Tightening of the nuts

The nuts should be tightened gradually diagonally (in several stages, until the required tightening torque is obtained), using a torque wrench.

Checking the tightening of the drive shaft wheels:

- after using the machine for the first time,
- after the first day of work,
- at regular intervals (50h).

Repeat the checks if the wheel was disassembled.

The greatest tightening accuracy is achieved with a torque wrench. Before starting work, make sure that the correct torque value is set.

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6.12 OPERATION OF THE DRIVE TRANSMISSION SYSTEM

DANGER

In the case of a machine connected to a carrying vehicle, before inspecting and operating the transmission system, switch off the PTO and the engine, remove the ignition key and immobilize the vehicle with the parking brake.

DANGER

Do not touch the gearbox when the machine is stopped!

Due to the high oil temperature, gear surfaces can reach high and dangerous temperatures.

CAUTION

Repair of the gearbox during the warranty period may only be performed by specialized mechanical workshops.

Operation of the drive transmission system consists of:

- periodic inspection and replacement of oil in the central transmission and inspection of the carousel transmission.
- lubrication of telescopic shafts in accordance with the recommendations of the shaft manufacturer.

Check the oil level only in working position and with the machine level.

It is best to change the oil right after work when the gear is warmed up and any impurities are mixed with the oil. Perform all activities related to oil change when the machine is leveled, disconnected from the tractor and resting on the parking stand.

If a leak is noticed, carefully inspect the seal and check the oil level. Operation of the gearbox with a low or no oil level can lead to permanent damage to its mechanism.

Central Gear

The correct oil level (3) in the central transmission should reach the lower edge of the inspection hole secured with the inspection plug (1). The filler hole secured with a plug with an air vent (2) is used for refilling the oil.

To change the centre gear oil:

1. Place the tedder on firm ground and tilt the machine as far back as possible.
2. Prepare a container for used oil.
3. Unscrew the filler cap (2).
4. Unscrew the control and drain plug (1) and pour the oil into the container.
5. If the oil manufacturer recommends flushing

ADVICE

The first oil change in the central gearbox should be made after the first 50 hours of operation. Subsequent oil changes should be made every 500 hours or once a year (whichever comes first).

ADVICE

Fill the central gear with 1.2 litres of SAE 90EP oil.

The carousel gears are factory-filled with Shel Alvania EP NLGI 0 - 0.2 kg grease (the grease does not require replacement).

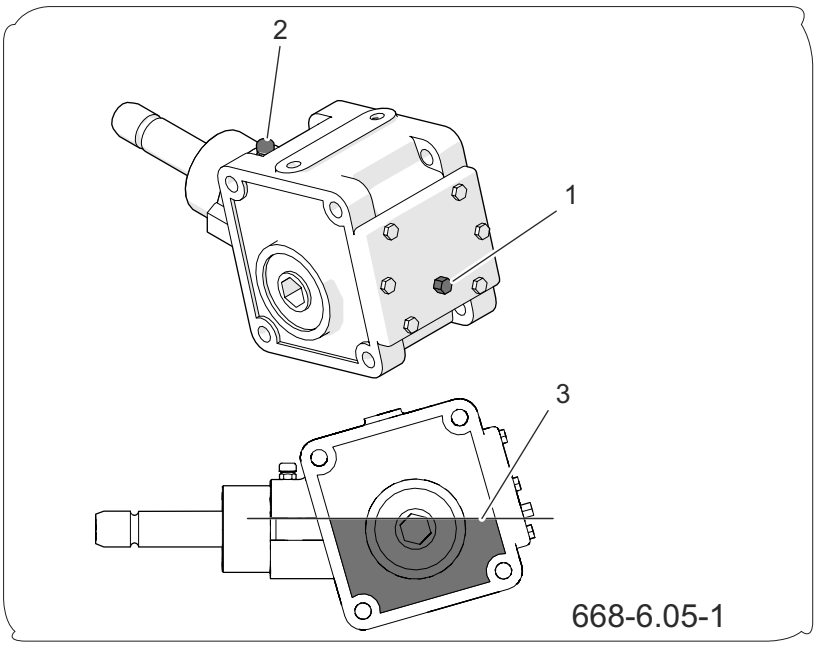

Figure 6.8 Central Gear
(1) drain plug *(2) filler plug with air vent*
(3) correct oil level

the gearbox, follow the instructions of the oil manufacturer.

Such remarks may be listed on the packaging of the oil.

6. Level the machine.
7. Pour new oil through the filler hole until oil appears in the inspection and drain hole.
8. Close the filler and drain plugs.

Carousel gears

The carousel gears are grease filled and maintenance free after the first filling. Servicing of carousel gears is limited to a general visual inspection and lubrication

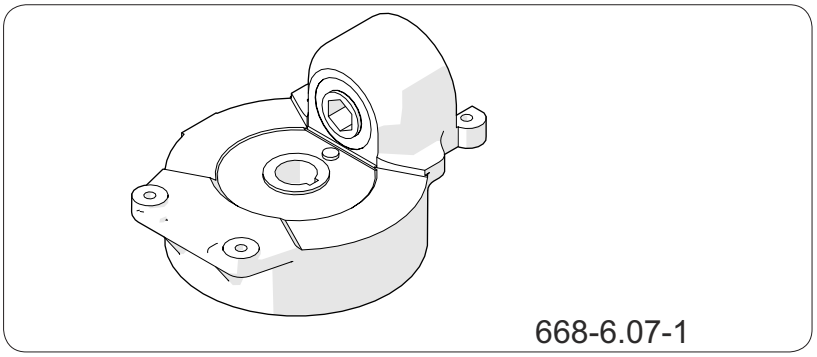

Figure 6.9 Carousel gears

DANGER

Do not touch the telescopic shafts immediately after the machine has stopped!

The shafts are equipped with friction clutches, which can become very hot when slipping.

in accordance with the "Lubrication" chapter. If the gearbox is damaged, contact an authorized service centre for repair.

PTO shafts

Perform technical service of PTO shafts in accordance with the recommendations contained in the attached manual of the PTO shaft manufacturer.

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6.13 CONTROL AND REPLACEMENT OF SPRING FINGERS

DANGER

Before starting work, turn off the tractor engine, remove the ignition key and brake the tractor with the parking brake. The tractor must be secured against unauthorized access.

CAUTION

When assembling the fingers, pay attention to the direction of rotation (R) of the carousel rotor.

ADVICE

Before starting work, check the condition of the connections of the spring fingers to the arm and the arms to the rotor of the carousel.

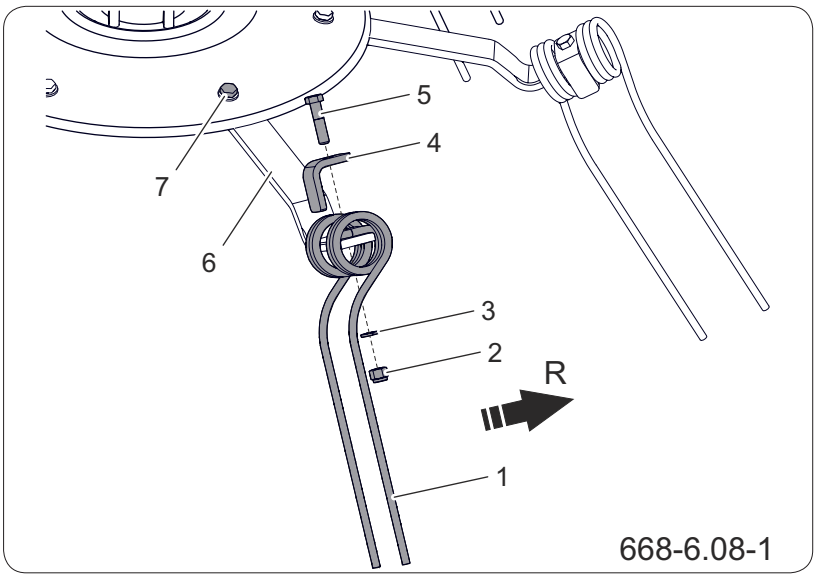

Figure 6.10 Replacement of spring fingers
(1) spring finger *(2) nut*
(3) washer *(4) fastener*
(5) bolt securing the finger to the arm *(6) rotor arm*
(7) screw securing the arm to the rotor *(R) direction of rotation of the carousel rotor.*

Spring fingers and their mounting should be regularly inspected during operation of the tedder. Damaged parts should be replaced with new ones. Spring fingers cannot be repaired.

Replacement of spring fingers

1. Remove nut (2).
2. Remove the fastener (4) and the screw (5).
3. Remove the damaged spring finger (1) from the arm (6) and insert a new one.

   Only use original tines recommended by the machine manufacturer.
4. Install the screw (5) and the fastener (4) and tighten the nut (2) with the appropriate torque in accordance with the table "Tightening torques for screw connections".

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6.14 LUBRICATION

ADVICE

The maintenance intervals stated in the instruction manual refer to normal operating conditions. In severe operating conditions, it is recommended to increase the frequency of maintenance.

- Lubrication of the machine perform with manual or foot lubricators filled with the recommended lubricant. Before starting work, remove the old grease and other pollution. After finishing work, wipe off excess grease.
- Parts that should be lubricated using machine oil should be wiped with a dry and clean cloth. Apply the oil with a brush or oiler. Wipe off excess oil.
- Empty containers of grease or oil be disposed of in accordance with the lubricant manufacturer's instructions.
- If the machine will not be used for a long time, it is necessary to lubricate it, regardless of the period of the last treatment.

Table 6.5. Lubricants

Item	Symbol	Description
1	A	General purpose machine grease (lithium, calcium),
2	B	Solid grease for heavily loaded components with the addition of MoS_2 or graphite
3	C	anticorrosive spray
4	D	regular machine oil, silicone spray grease
5	E	SAE 90EP gear oil

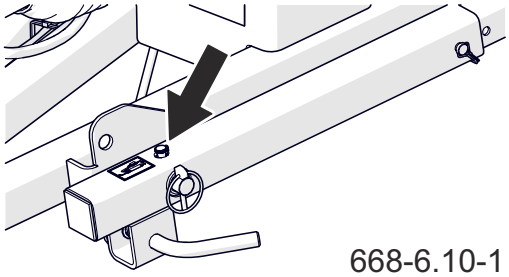
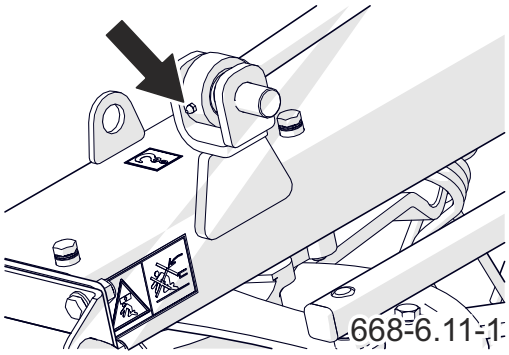
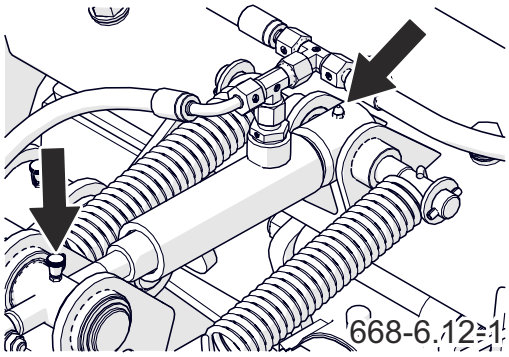
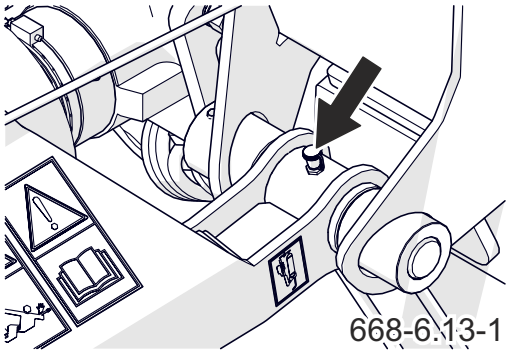
ADVICE

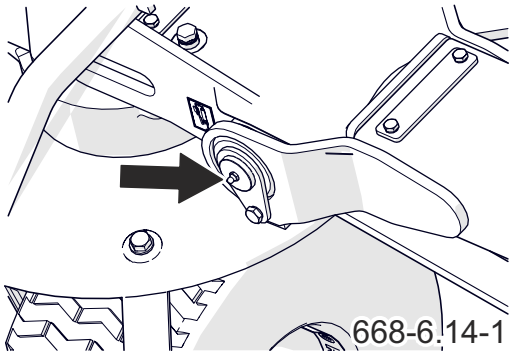
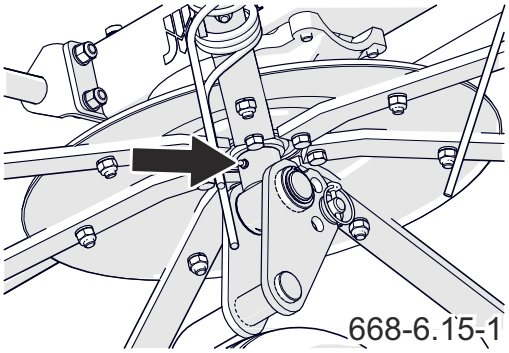
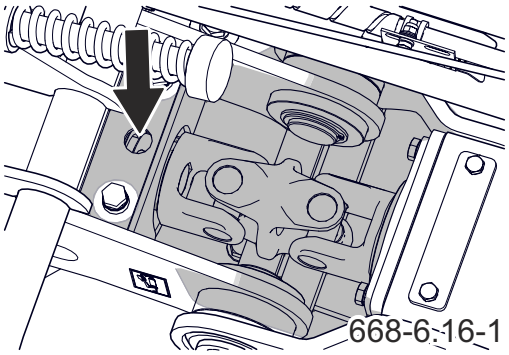
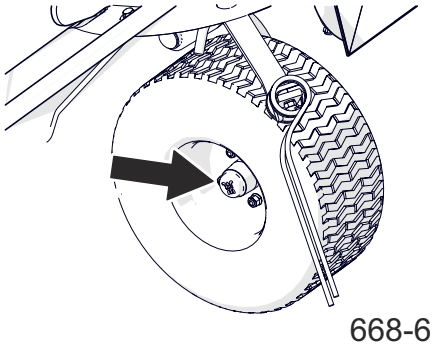
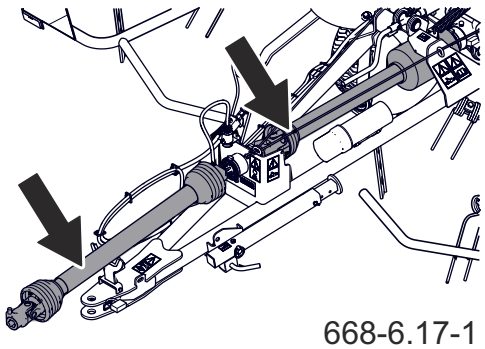
Lubrication frequency (Table Machine lubrication schedule):

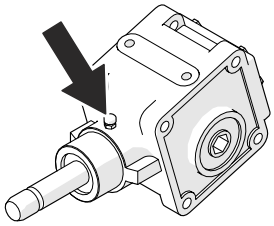
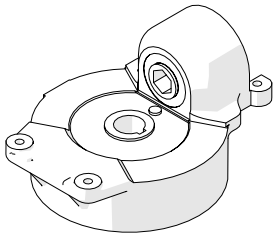
D - working day (8 hours of trailer),

M - month.

Table 6.6. Machine lubrication schedule

Name	Number of	Type of grease	Frequency	
Support foot pin	1	A	6M	 668-6.10-1
Tilt cylinder lug	2	A	5D	 668-6.11-1
Drawbar cylinder pin	2	A	15D	 668-6.12-1
Drawbar pin	2	B	5D	 668-6.13-1

Swing module pin	4	B	5D	 668-6.14-1
Wheel adjustment arm pin	4	B	5D	 668-6.15-1
Drive shaft joint	2	B	5D	 668-6.16-1
Half shaft of the road wheel	2	A	6M	 668-6.20-1
PTO shafts	*	*	*	 668-6.17-1

Central Gear**	1	E	12M	 668-6.18-1
Carousel gears***	***	***	***	 668-6.19-1

** Refer to the shaft manufacturer's manual for details on operation and maintenance.*
***- The first oil change in the central gearbox should be made after the first 50 hours of operation. Subsequent oil changes should be made every 500 hours or once a year (whichever comes first).*
**** - The carousel gears are factory filled with Shel Alvania EP NLGI 0 - 0.2kg grease and are maintenance free after the first filling.*

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6.15 CONSUMABLES

6.15.1 Hydraulic oil

ADVICE

In the hydraulic system of the machine, Agrol U Lotos oil was used.

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

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

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

Table 6.7. Characteristics of Agrol U Lotos oil

Item	Name	Unit	
1	Kinematic viscosity at 100ºC	-	10.0-11.5
2	Viscosity index, min		>95
3	Pour point, max	ºC	<-24
4	Base number mgKOH/g	-	9.9
5	Flash-point	ºC	>230

DANGER

Do not use water to extinguish a fire of oil!

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

6.15.2 Lubricants

ADVICE

Lubrication frequency (Table Machine lubrication schedule)

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

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6.16 FAULTS AND METHODS TO REMOVE THEM

Table 6.8. Faults and methods to remove them

Problem	Possible cause	Solution
Unable or uneven folding of the machine to the working/transport position	Incorrectly connected or damaged hydraulic system	Check the connection or replace damaged hydraulic components
	Dirty hydraulic components	Clean the hydraulic components
	The hydraulic oil level in the carrier is too low or the carrier's hydraulic system is out of order	Check the oil level or the condition of the carrier's hydraulic system
	Broken lift cylinder	Replace actuator or damaged components
	Locked or damaged actuator pawl	Unlock the pawl or replace damaged components
	Oil flow rate too low	Increase the rotation speed of carrier
Excessive vibration	Carousel drive shaft damaged	Check shaft, replace if necessary
	PTO shaft damaged	Check shaft, replace if necessary
	Spring fingers worn or missing	Replace or add the spring fingers
Stopping of machine drives during work	Carousel drive shaft damaged	Check shaft, replace if necessary
	PTO shaft damaged	Check shaft, replace if necessary
	Defective central gear or carousel gear	Replace the gear
Overheating of the gear	Incorrect oil level	Check the oil level and top up or drain the excess
	Incorrect type of level	Change the oil to the one recommended by the manufacturer
	Defective bearings.	Replace gear or damaged bearing
Leak from the gear	Unsealing of the system	Check the seals, check the tightening of the screws and the level of the lubricant and top up
Excessive clutch slippage	Clutch linings badly worn or warped plates	Repair the coupling according to the shaft manual
	Shaft load too high	Reduce travel speed and shaft speed
	Oil on the linings	Replace the linings
	Working position set is too low	Set the correct height
The swath is very contaminated	The setting of the tedding arms is too low	Set the correct height

The swath is not collected	The setting of the tedding arms is too high	Set the correct height
	Excessive driving speed	Reduce the driving speed
The machine does not follow the track behind the carrier	Damaged wheel mount, adjustment lever or steering linkage	Replace damaged parts
Damage of spring fingers	The setting of the tedding arms is too low	Set the correct height

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6.17 TIRES

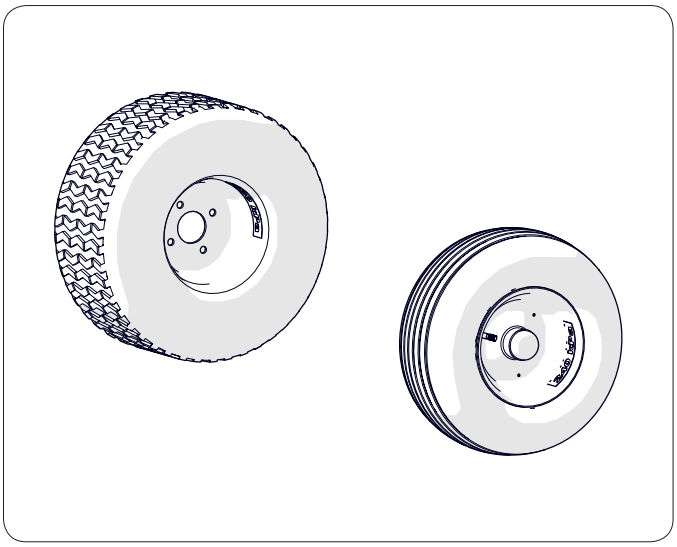

Table 6.9. Machine tires - transport wheels

Item	Tire size	Disc wheel size	Air pressure in the tires
1	18.5x8.50-8 6PR TL WANDA 78M (308-300-000401)	-	300 kPa

Table 6.10. Machine tires - external wheels

Item	Tire size	Disc wheel size	Air pressure in the tires
1	16x6.50-8 10PR K401 KENDA 82A4 (308-300-000411)	5.50X8	240 kPa

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