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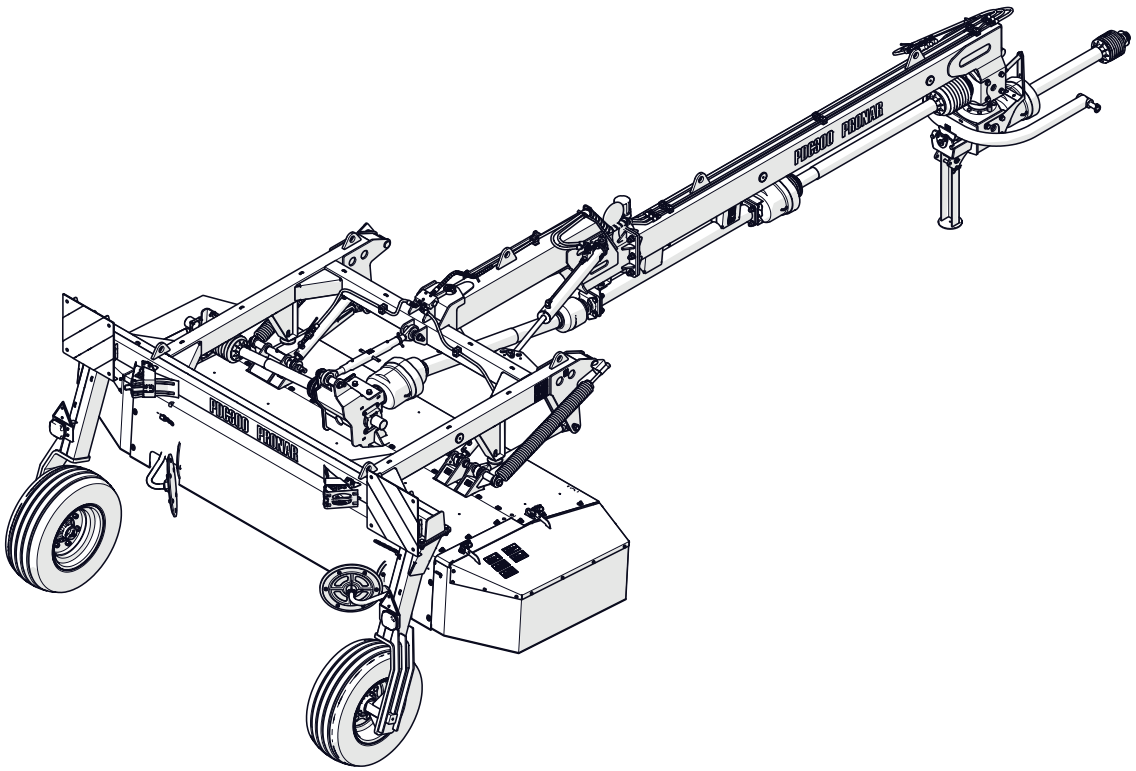
OPERATOR MANUAL

ROTARY DISC MOWER

PRONAR PDC300 / PDC300C

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



KEEP FOR FUTURE REFERENCE

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EN

INTRODUCTION

INTRODUCTION

Information in this document is current at date of publication. As a result of improvements, some numerical values, illustrations and assemblies (standard, additional and optional equipment) referred to in this publication may not correspond to the actual specification of the machine delivered to the user.

The figures shown in this publication are intended to explain the principle of operation of the machine and may differ from the actual specification. The above cannot be a reason for any claims.

The manufacturer reserves the right to introduce design changes in machines produced that facilitate and improve the quality of machine operation, without making minor amendments to this Operator Manual.

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

If the information in this Operator Manual needs clarification, refer for assistance to the sale point where the machine was purchased or to the Manufacturer.

The serial numbers of the machine and major subassemblies should be inscribed in the spaces below after purchase of the machine.

Machine serial number ☐☐☐☐☐☐

This Operator Manual contains important safety and operating instructions for the machine. The Operator Manual should be kept near the machine so that it is accessible to authorized operators.

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

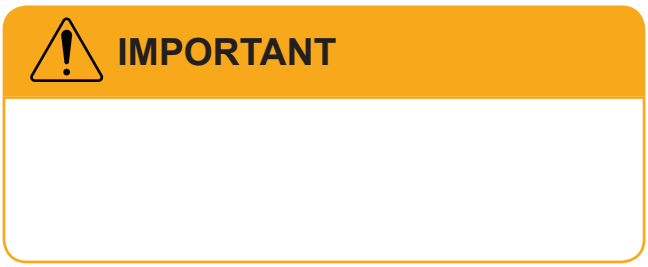
The Operator Manual is intended for the end user. For this reason, some required maintenance activities are listed in the inspection tables but the procedure is not described in this Operator Manual. To perform these steps, call the manufacturer's authorized service centre.

SYMBOLS APPEARING IN THIS OPERATOR MANUAL

DANGER

Information, descriptions of danger and precautions as well as recommendations and prohibitions associated with the safety of use are marked in the text with the sign **DANGER**. Failure to observe the instructions may endanger the machine operator's or other person's health or life.**ATTENTION**

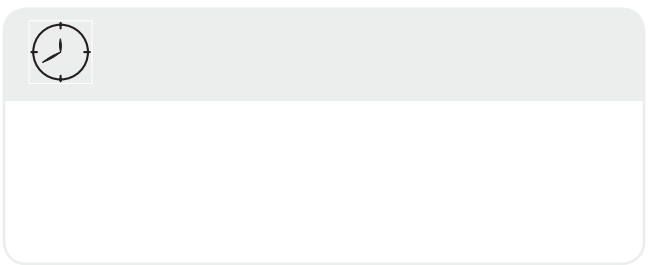
Vital information and instructions that must be observed are highlighted by a border and accompanied by the text: **IMPORTANT** Failure to observe the instructions may lead to damage to the machine as a result of improper operation, adjustment or use.



TIP

Additional tips included in the Operator Manual describe useful advice for the machine operation and are marked with the sign **TIP**.

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



DIRECTIONS USED IN THIS OPERATOR MANUAL

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

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

Rotation to the right – clockwise rotation of a mechanism (the operator is facing the mechanism).

Rotation to the left – counterclockwise rotation of a mechanism (the operator is facing the mechanism).

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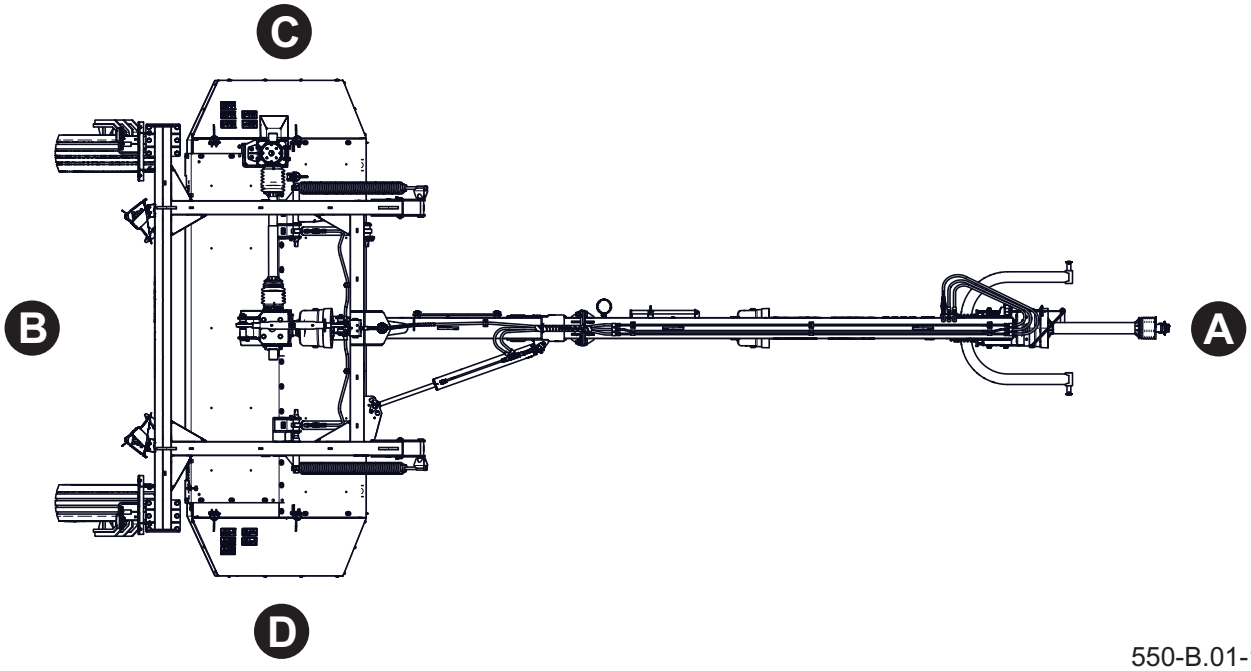

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Figure 1.1 Directions used with reference to the machine
(A) front, - (B) rear, - (C) left side, - (D) right side

INSPECT THE MACHINE UPON DELIVERY

The manufacturer guarantees that the machine is fully operational and has been checked according to quality control procedures and is ready for use. This does not release the user from an obligation to check the machine's condition after delivery and before first use. Detailed information concerning the machine hand-over are included in the *WARRANTY BOOK*.

Before hitching the machine to the tractor, confirm that it is suitable for this purpose (see *Requirements for carrier vehicle*).

INSPECTION RECOMMENDATIONS

- Check completeness of the machine according to order (standard and optional equipment).
- Check the machine for missing parts or damage resulting from wrong transport of the machine to its destination (crushing, piercing, bending or breaking of parts etc.).
- Check technical condition of covers and protection devices.
- Check condition of paint coating; check the machine for traces of corrosion.

TIP

Releasing the machine to the buyer involves a detailed visual inspection and verification of the machine operation, as well as instructions for the buyer on the basic principles of operation. The trailer is operated for the first time in the presence of the Seller.

- Check technical condition of tyres and tyre pressure.
- Check if the nuts and bolts fixing the wheels are properly tightened.
- Check technical condition of suspension system and if correctly installed.
- Check technical condition of hydraulic lines.
- Check that there are no hydraulic oil leaks.
- Check technical condition of the machine lights and indicators.
- Check technical condition of PTO shafts, their shields and securing chains.
- Check hydraulic cylinders for leaks of hydraulic oil.

Discovered defects should be notified directly to the seller in order to remove them.

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FIRST START-UP OF THE MACHINE

IMPORTANT

During the first use, the machine is checked in the presence of the Seller. The Seller is obliged to conduct the training in safe and correct operation of the trailer.
Training by the seller does not release the user from the obligation to read this Operator Manual and the Operator Manual of PTO shaft attached to the machine and observe all recommendations.

Before you start using the machine, you should familiarize yourself with its design, principle of operation, available equipment and operation and, above all, with safety rules.

PROCEDURE

- The user must read this *Operator Manual* and follow all instructions.
- Perform the daily inspection of the machine in accordance with the guidelines in the inspection schedule.
- Check all the machine lubrication points, lubricate if necessary according to the recommendations in the lubrication schedule.
- Check bolt and nut connections for correct fixing and tightening (in particular bolt and nut connections of cutting blades, cutter bar, suspension system, wheels, protective shields).
- Check level of lubricating oil in angle transmissions and cutterbar.
- Check technical condition of PTO shafts, their shields and securing chains.
- Check technical condition of hitching system pins and locking cotter pins.
- Ensure that hydraulic and electric connections in agricultural tractor are according to the requirements, if not the machine should not be hitched to the carrier vehicle.
- Make sure that the oil of the same kind and grade is used in the disc mower hydraulic system and the tractor hydraulic system or the oils used in the disc mower hydraulic system and the tractor hydraulic system are mixable.
- Make sure that the tractor PTO rotation direction is correct and that the PTO speed is in compliance with the disc mower rotation speed. As standard, the mower is designed for PTO speed of 1000 rpm.
- Make sure that the attached PTO shaft may be connected to the tractor (*PTO shaft should be suitable for the tractor – see the OPERATOR MANUAL OF PTO SHAFT),*

  Check the PTO shaft length in the most favourable and the most difficult working conditions, check

IMPORTANT

Pipe profiles of the PTO shaft must overlap at least at 1/2 of the length in normal working conditions and at least at 1/3 of the length in all working conditions.
When adjusting the PTO shaft, follow the instructions presented in the Operator Manual of the PTO shaft.
When the tractor with the manure spreader are turning or travelling on an uneven terrain, the PTO shaft may be damaged and/or destroyed if it is squeezed or disconnected as a result of its wrong adjustment.

TIP

Adjustment of the PTO shaft applies only to a specific type of tractor. If the machine is connected to a different type of tractor, the adjustment procedure for this type of tractor should be possibly carried out.

whether the PTO shaft pipes are sufficiently covered when the widest angle is set between the tractor and the machine, check whether the PTO shaft can be still slid when the smallest angle is set (while turning), make sure that the tractor PTO rotation direction is correct.

If all the above checks have been performed and there is no doubt as to the machine good technical condition, it can be connected to tractor (see section *HITCHING TO TRACTOR*).

Start tractor engine, check all systems and perform a test run of the machine without load before beginning work. It is

DANGER

Careless and incorrect use and operation of the machine, and failure to follow instructions in this Operator Manual is dangerous to your life and health.
The machine must never be used by unauthorised persons, including children, and people under the influence of alcohol or other abusive substances.
Non-compliance with the safety rules of this Operator's Manual can be dangerous to the health and life of the operator and others.

recommended that the inspection is conducted by two people, one of which should always remain in the tractor cab. Test start should be conducted according to the sequence shown below.

- Hitch the machine to tractor.
- Connect PTO shaft and secure it in a proper manner.
- Connect hydraulic system and electrical system lines.
- Check lights for correct operation.
- Start tractor.
- Check the mower's hydraulic systems for correct operation.

Using the appropriate selective control valve lever in the tractor cab, start the hydraulic cylinders. Check whether lines are connected in a correct manner.

- At idle speed, start the tractor PTO drive and leave it for a few minutes.

Check that there is no knocking or noise caused by rubbing

metal elements in the drive system and the cutting unit, that the discs on the cutter bar rotate smoothly and without any jams, and that there are no excessive vibrations in the cutting unit. Check synchronised rotation of cutting unit.

- The mower operation at no load should be smooth. Shaking of drive transmission, cutting unit and whole machine is not acceptable, nor is changed noise and vibrations coming from loose nut and bolt connections.
- Turn off the PTO drive, turn off the agricultural tractor engine, immobilize the tractor with the parking brake and unhitch the machine from the tractor.
- After stopping mower, check fastening of cutting blades. Check that gear oil does not leak from reduction gear and cutter bar.

The machine may be used only when all preparatory activities have been completed satisfactorily. If during test run worrying symptoms occur such as:

- excessive noise and abnormal sounds originating from the rubbing of moving elements,
- hydraulic oil leak,
- incorrect hydraulic system operation
- other faults,

immediately cut off oil supply, turn off tractor PTO drive and do not operate the machine until the malfunction is corrected. If a fault cannot be rectified or the repair could void the warranty, please contact retailer for additional clarifications or to perform the repair.

IMPORTANT

Before using the mower always check its technical condition. In particular check the technical condition of the cutting unit, the wheels and the set of safety guards and confirm that the cutting blades are mounted correctly.

U.12.5.EN

IMPORTANT

Check correctness of hydraulic connections. Replace conduit plugs possibly.
Failure to follow instructions in this Operator Manual or starting the machine incorrectly may cause damage to the machine.
The technical condition before starting the machine must be no cause for concern.

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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:	**Disc Mower**	
Type:	**PDC300**	**PDC300C**
Model:	–	–
Serial number:		
Commercial name:	**Disc Mower PRONAR PDC300** **Disc Mower PRONAR PDC300C**	

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

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

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

Z-CA DYREKTORA
ds. technicznych

Narew, the 2020-05-06

Place and date

Full name of the empowered person
position, signature

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BASIC INFORMATION

SECTION 1

1.1 IDENTIFICATION

The disc mower is marked with a name-plate, placed on left side of machine's lifting arm. When purchasing the machine, make sure that the serial numbers on the machine are the same as entered in the *Warranty Book*, in sales documents and in the *Operator Manual*.

The meaning of individual items of the nameplate – (Figure 1.1) are presented in the table below:

A - machine name,

B - machine type/symbol

C – serial number,

D – year of manufacture,

E – gross weight [kg],

F – Quality Control stamp,

G - axle load,

H - hitch load.

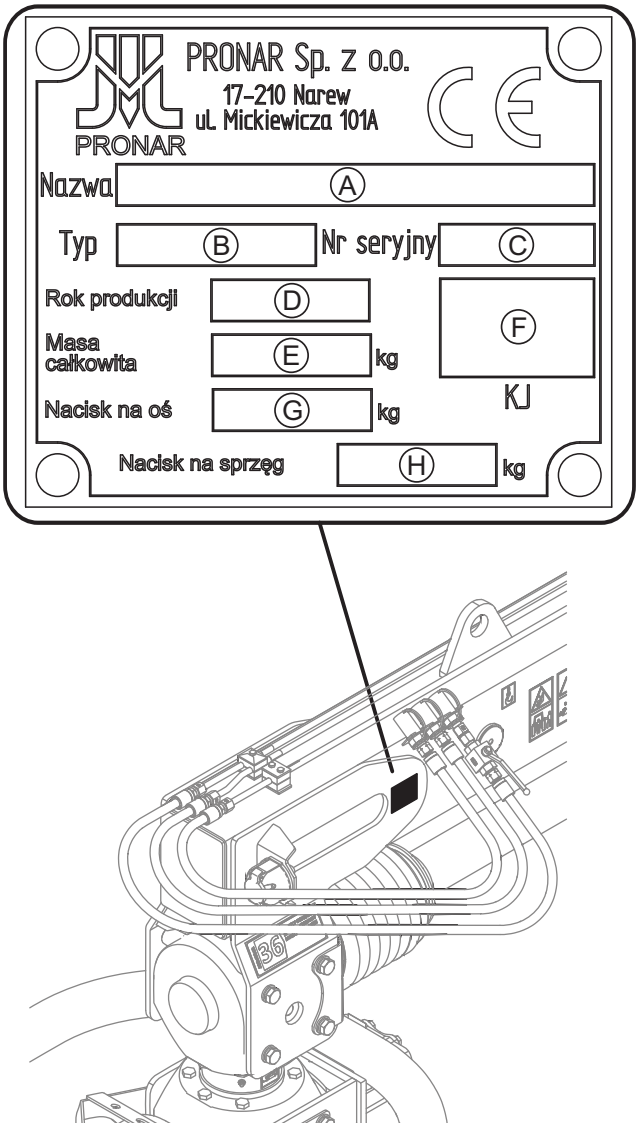

Figure 1.1 Location of the nameplate.

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1.2 INTENDED USE

The PDC300 / PDC300C disc mower is designed to cut low stemmed green fodder (grass, lucerne, etc) on stone free cultivated fields with a level surface. Swath conditioner in PDC300C mower breaks the mown plant stalks and also removes layer of wax from the plant, which effectively accelerates the drying process. The central drawbar enables mowing on the left or right side of the tractor. Do NOT use the machine for any other purpose.

Transporting people, animals or other materials is prohibited and regarded as contrary to the intended purpose. During the use of the machine comply with all road traffic regulations and transport regulations in force in the given country, and any breach of these regulations is regarded by the Manufacturer as use contrary to the intended use of the machine.

Using it as intended also involves all actions connected with the safe and proper operation and maintenance of the machine.

Due to the above, the user is obliged to:

- carefully read this *OPERATOR MANUAL*, *WARRANTY BOOK* , *PTO SHAFT OPERATOR MANUAL* and observe the instructions contained in these documents,
- understand the machine's operating principle and how to operate it safely and correctly,
- adhere to the established maintenance and adjustment plans,
- comply with general safety regulations while working,
- prevent accidents,
- comply with the road traffic regulations and transport regulations in force in the given country, in which the machine is used,
- carefully read the *Operator Manual* and comply with its recommendations,
- only hitch the machine to an agricultural tractor which meets all the Manufacturer's requirements.

IMPORTANT

The machine must not be used for purposes other than those for which it is intended, in particular for:
- transporting people, animals
- for transporting whatever materials or objects.

The machine may only be used by persons, who:

- are familiar with the contents of this publication and with the contents of the agricultural tractor Operator Manual,
- have been trained in the machine operation and work safety,

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

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Table 1.1. Requirements for carrier vehicle (agricultural tractor).

Contents	Unit	Requirements
Rear three-point linkage Category	- -	 II according to ISO 7301
Rear power take-off shaft (PTO) Max engine RPM	 rpm	 540/1000
Hydraulic system Hydraulic oil System pressure rating Hydraulic sockets	 - bar / MPa -	 HL32(1) 160 / 16 One double acting section + one single acting section with floating position
Electrical system Electrical system voltage Connection socket	 V -	 12 7-pole, ISO 1724
Other requirements Minimum carrier vehicle (tractor) power demand: - PDC300 - PDC300C	 kW / hp kW / hp	 55 / 75 67 / 90

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

Detailed information can be found on the product information card.

1.3 EQUIPMENT

Table 1.2. Machine equipment

Equipment	Standard	Additional	Optional
Operator Manual	●		
Warranty Book	●		
Wheel chocks	●		
Wide-angle shaft for connecting the mower with tractor	●		
Document holder	●		
Lighting system connection cable	●		
Wide tread tyres 340/55-16			●

TIP

Recommended wide-angle shaft for connecting the mower with tractor: B&P 7G7N081CER07007

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1.4 TERMS & CONDITIONS OF WARRANTY

TIP

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

PRONAR Sp. z o.o. Narew guarantees the reliable operation of the machine when it is used according to its intended purpose as described in the *Operator Manual*. Defects discovered during the warranty period will be removed by the Warranty Service. The repair period is specified in the *Warranty Book*.

The warranty does not cover those parts and sub-assemblies of the machine which are subject to wear in normal usage conditions, regardless of the warranty period.

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

In the event of damage arising from:

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

the user will lose the right to warranty service.

The user is obliged to immediately report all noticed damage, regardless of whether the damage is covered by the warranty or not. For detailed Terms & Conditions of Warranty, please refer to the *Warranty Book* attached to each newly purchased machine.

Do NOT attempt to modify the machine without the written consent of the Manufacturer. In particular, do NOT weld, drill holes in, cut or heat the main structural elements of the machine, which have a direct impact on the machine operation safety.

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1.5 TRANSPORT

The machine is prepared for sale completely assembled and does not require packing. Packing is only required for the machine's technical documentation and any extra accessories.

The machine is delivered to the user on a transport vehicle. Transport of the machine is permissible connected to a carrier vehicle provided the vehicle's driver familiarises himself with the machine's Operator Manual and particularly with information concerning safety and principles of hitching and transport on public roads.

IMPORTANT

When transporting the machine independently, the user must carefully read this Operator Manual and observe all its instructions.
When being transported on a motor vehicle the machine must be secured on the vehicle's platform in accordance with the transport safety requirements.
The driver of the vehicle should use extreme caution while driving. This is due to the vehicle's centre of gravity shifting upwards when the machine is loaded.

DANGER

Incorrect use of securing measures may cause an accident.
Persons must NOT be present in the manoeuvring zone during transferring the machine to another means of transport.

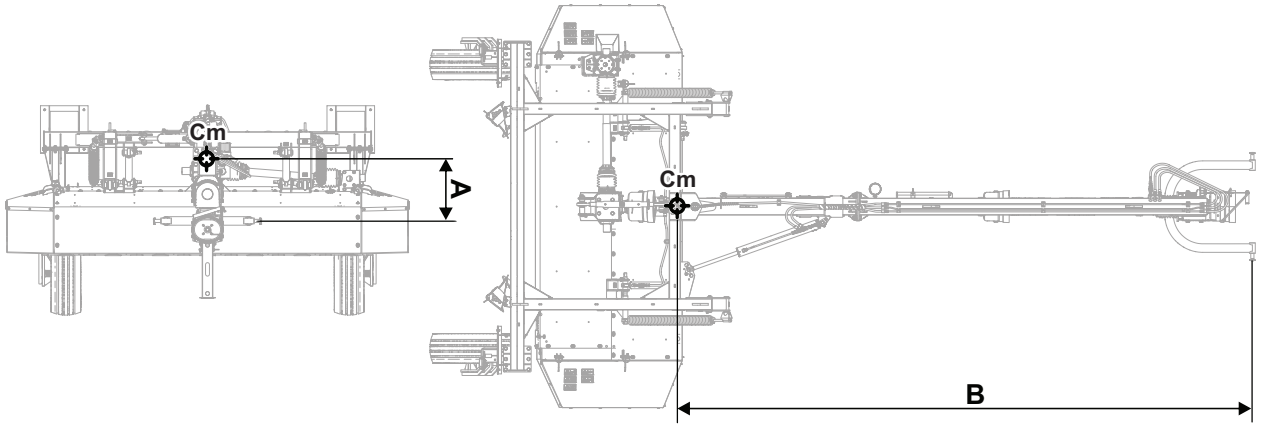

Figure 1.2 Machine's centre of gravity

Table 1.3. Centre of gravity.

		Mower model	
DIMENSION (Figure 1.2)	**Unit**	**PDC300**	**PDC300C**
A	mm	270	270
B	mm	4730	4980

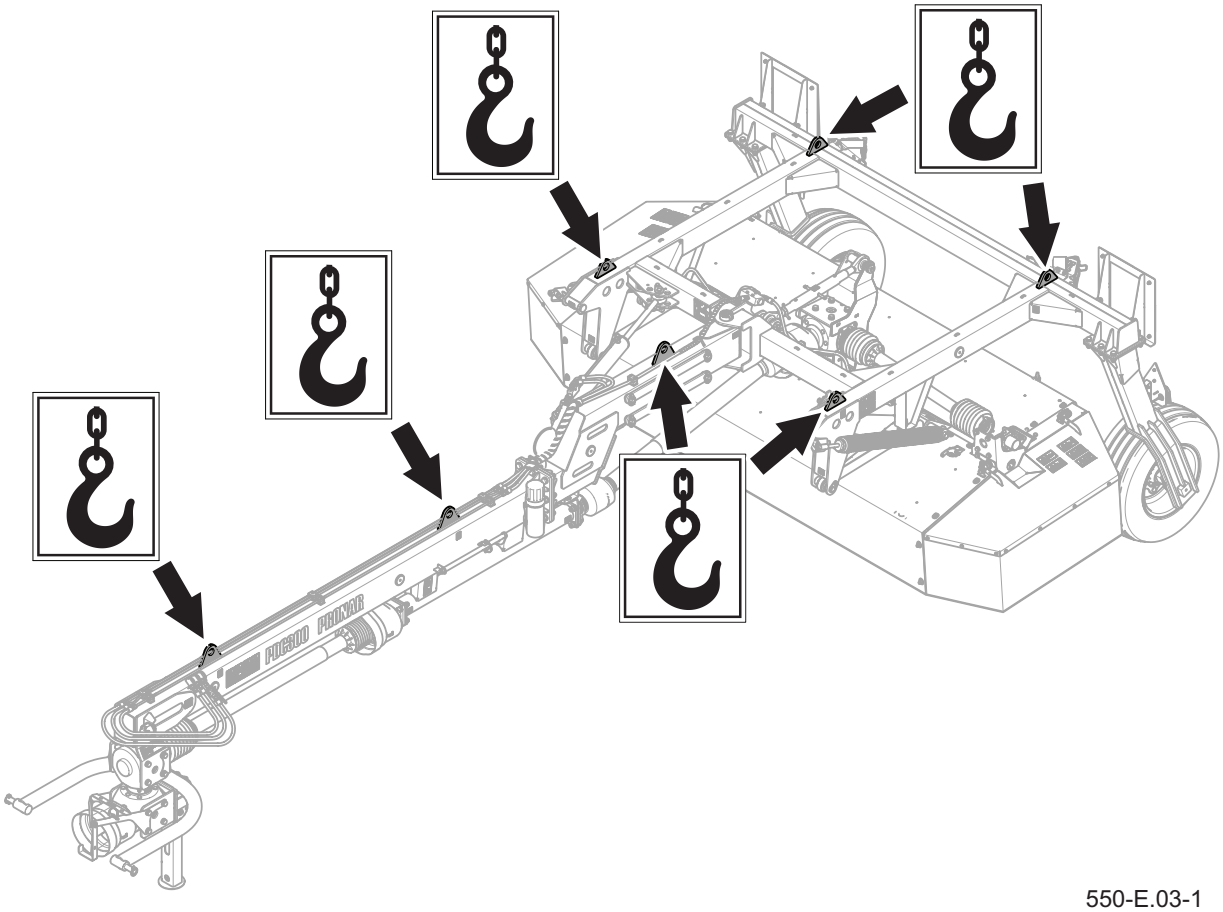

Figure 1.3 Location of transport lugs

When loading and unloading the machine, follow the general health and safety regulations for reloading work. Persons operating reloading equipment must have the qualifications required to operate these machines. The machine should be attached to lifting equipment in places specially designed for this purpose (Figure 1.3). Securing point is marked with information decal.

It is recommended that the mower is placed in the transport position during handling and transport, i.e. the side shields of the cutting unit should be raised and the support foot of the suspension system should be lowered. When lifting the machine take special care to avoid tipping

IMPORTANT

Use only certified and technically reliable securing measures. Carefully read the information contained in the Operator Manuals for the given securing measures.
Do not attach slings and any kind of cargo fasteners to elements other than those intended for this purpose (do NOT attach to hydraulic system and electrical system components).

TIP

During loading, machine should be placed in transport position.

over the machine and the risk of injuries from protruding parts.

The machine should be firmly secured on the transport vehicle platform with belts or chains equipped with a tensioning mechanism. The fastening equipment used must have a valid safety certificate. Chocks or other objects without sharp edges should be placed under the mover wheels to prevent it from rolling. The chocks must be fixed to the platform of the vehicle.

During reloading work, take special care not to damage any accessories or paint finish. The tare weight of the mover in condition ready for travel is given in *Table 3.1*.

IMPORTANT

During transport, the PTO shafts should be protected against damage.

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1.6 ENVIRONMENTAL RISK

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. Detailed information on hydraulic oils can be found in the Material Safety Data Sheets.

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 L-HL32 Lotos hydraulic oil.

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1.7 WITHDRAWAL FROM USE

Should you decide to withdraw the machine from use, comply with the regulations in force in the given country regarding withdrawal from use and recycling of machines withdrawn from use.

Before proceeding to dismantle equipment, oil shall be completely removed from hydraulic system and transmission. Locations of drain plugs and method for draining oil are described in Section 5.

When spare parts are changed, worn out or damaged parts should be taken to a collection point for recyclable raw materials. Used oil and also rubber and plastic elements should be taken to the appropriate facilities dealing with the recycling of this type of waste.

DANGER

During dismantling, use the appropriate tools, equipment (overhead crane, crane or hoist etc.) and use personal protection equipment, i.e. protective clothing, footwear, gloves and eye protection etc.
Avoid contact of skin with oil. Do not allow used hydraulic oil to spill.

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SECTION 2

SAFETY ADVICE

2.1 SAFE USE

- Before using the machine, carefully read this Operator Manual, the Operator Manual of the PTO shaft and *Terms & Conditions of Warranty*. When operating the machine, follow all instructions in these documents.
- The machine may only be used by persons qualified to drive carrier vehicles (tractors) and trained in machine operation. Mower can be operated by a single person only.
- Careless and improper use and operation of the machine, and failure to comply with the instructions of this Operator Manual is dangerous to your health as well as health of bystanders.
- Be aware of the residual risk. Use caution when operating this machine and follow all relevant safety instructions.
- The machine must never be used by persons, who are not authorised to drive carrier vehicles (agricultural tractors), including children and people under the influence of alcohol or other drugs.
- The machine must not be used for purposes other than those for which it is intended. Anyone who uses the machine for purposes other than those for which it is intended takes full responsibility for any consequences of this potentially incorrect use. Use of the machine for purposes other than those for which it is intended by the Manufacturer may invalidate the guarantee.
- The machine may only be used when all the protective features (i.e. safety guards, bolts, cotter pins, warning decals) are technically sound and correctly positioned. In the event of loss or damage to the protective features, they must be replaced with new ones.
- Do NOT use an inoperative machine.
- Any modification of the machine releases the manufacturer from any responsibility for damage or detriment to health which may arise as a result.
- In order to limit occupational risks associated with exposure to noise during mower operation use

IMPORTANT

If the information in this Operator Manual is difficult to understand, contact the seller who runs the authorised technical service on behalf of the Manufacturer, or contact the Manufacturer directly.

individual protection (hearing protectors). In order to reduce the level of noise during work, the operator cab windows and door should be closed.

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2.2 SAFETY WHEN HITCHING THE MACHINE

- The machine should be hitched to and transported with only such a carrier vehicle (tractor) which meets the Manufacturer's requirements (minimum tractor power demand, required three-point linkage category, etc.) – see table *REQUIREMENTS FOR AGRICULTURAL TRACTOR*.
- Before hitching the machine to the tractor, check the technical condition of the hitching system of the mower and the tractor.
- Do NOT hitch the machine to carrier vehicle (agricultural tractor) if hydraulic oil in the two machines is of different types.
- Use only genuine pins and safeguards to hitch the machine to the carrier vehicle.
- The carrier vehicle (agricultural tractor) to which the machine will be coupled must be technically reliable and must meet all manufacturer's requirements.
- Be especially careful when hitching and unhitching the machine.
- When hitching, there must be nobody between the machine and the carrier vehicle.
- After completion of hitching the machine, check the safeguards.
- Before using the mover always check its technical condition, especially in terms of safety. In particular check the technical condition of the suspension system, wheels, hydraulic system connections and correct mounting of cutting blades and protective shields.
- Hitching and unhitching may only take place when the machine and tractor (carrier vehicle) are turned off.
- Machine unhitched from the carrier vehicle must be placed on level, sufficiently hard surface in such a manner as to ensure that it is possible to connect it again.
- The mover uncoupled from tractor must be supported by support and secured against rolling away by using wheel chocks or other elements without sharp edges.

F.1.7.550.02.1.EN

2.3 SAFETY RULES WHEN MAINTAINING HYDRAULIC SYSTEM

- The hydraulic system is under high pressure when operating.
- Use the hydraulic oil recommended by the Manufacturer. Never mix two types of oil.
- Regularly check the technical condition of the hydraulic lines and connections. There must be no oil leaks.
- In the event of the hydraulic system malfunction, discontinue using the machine until the malfunction is corrected.
- When connecting hydraulic lines to carrier vehicle, make sure that the hydraulic system is not under pressure. If necessary, reduce residual pressure in the system.
- In the event of injuries being caused by pressurised hydraulic oil, contact a doctor immediately. Hydraulic oil may find its way under the skin and cause infections. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor. In the event of contact of oil with skin wash the area of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene).
- Do not store hydraulic oil in packaging designed for storing food or foodstuffs.
- Rubber hydraulic lines must be replaced every 4 years regardless of their technical condition.
- Repair and replacement of hydraulic system elements should be entrusted to the appropriately qualified persons.

F.1.7.578.03.1.EN

2.4 SAFETY DURING TRANSPORT TRAVEL

Before driving on the roads:

1. Make sure that the machine is correctly hitched to the carrier vehicle (tractor) and check whether lights work correctly.
2. Fold the mower to transport position and raise it to an appropriate height using the suspension system.

   In order to prevent inadvertent activation of the hydraulic system, the cut-off valves must be closed while moving the machine during its transport.
3. Transport lock of the cutting unit suspension system must be always engaged during transport.
4. Secure moving parts of the machine so as to eliminate any dangers posed by these parts while the machine is in motion.

Also:

- When driving on public roads, observe all road traffic regulations in force in the country, in which the machine is used.
- Do not exceed the maximum speed resulting from road conditions and design restrictions. Adjust speed to the prevailing road conditions and other limitations arising from road traffic regulations.
- Do NOT ride on the machine or transport any materials on it.
- Do NOT leave tractor driver's seat when the tractor is moving.
- While driving on public roads, the tractor must be fitted with a certified or authorised reflective warning triangle.
- Reckless driving and excessive speed may cause accidents.

DANGER

During transport, always disconnect the shaft from the tractor. Disconnected PTO shaft should be placed in the specifically prepared holder.

F.1.7.550.04.1.EN

2.5 SAFETY DURING MAINTENANCE WORK

- During the warranty period, any repairs may only be carried out by warranty service authorised by the Manufacturer. It is recommended that necessary repairs to machine should be undertaken by specialised workshops.
- In the event of any fault or damage, do not use the machine until the fault has been corrected.
- During work, use appropriate, close-fitting protective clothing, gloves and appropriate tools. When working on hydraulic systems it is recommended to use oil resistant gloves and protective goggles.
- Any modification of the machine releases the manufacturer from any responsibility for damage or detriment to health which may arise as a result.
- Before commencing any work on the machine, turn off the carrier vehicle (agricultural tractor) engine and wait until all rotating parts have come to a stop.
- Regularly check the technical condition of the safety devices and correct tightening of bolt connections.
- Regularly perform service inspections of machine as recommended by the Manufacturer.
- Do NOT perform maintenance or repair work under raised and unsupported machine.
- Before beginning repairs on hydraulic systems, reduce oil pressure.
- Servicing and repair work should be carried out in line with the general principles of workplace health and safety. In the event of injury, the wound must be immediately cleaned and disinfected. In the event of more serious injuries, seek a doctor's advice.
- Repair, maintenance and cleaning work should be carried out with the carrier vehicle (agricultural tractor) engine turned off and the ignition key removed. Immobilise the carrier vehicle (agricultural tractor) with parking brake. Ensure that unauthorised persons do not have access to the carrier vehicle (agricultural tractor) cab.
- Should it be necessary to change individual parts, use only original parts. Non-adherence to these requirements may put the user and other people's health and life at risk, and also damage the machine and invalidate the warranty.

- Before welding or electrical work, the machine should be disconnected from the power supply.
- The paint coating should be cleaned off before beginning welding work. Burning paint fumes are poisonous for people and animals. Welding work should be carried out in a well lit and well ventilated space.
- During welding work, pay attention to flammable or fusible elements (parts of the electric and hydraulic systems, plastic parts). If there is a risk that they will catch fire or be damaged, they should be removed or covered with non-flammable material before commencing welding work. Before beginning work, get ready a CO_2 or foam extinguisher.
- Regularly check technical condition and mounting of all guards and protective elements.
- 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, stable and durable supports must also be used.
- The machine must not be supported using fragile elements (bricks or concrete blocks).
- After completing work associated with lubrication, remove excess oil or grease.
- Perform daily visual inspection and functional checks to detect defects in the early stages or prevent accidents.
- In order to reduce the danger of fire the machine must be kept in a clean condition.

  Observe the rules contained in chapter “Cleaning the machine”.
- After finishing servicing or repair work remove all tools from the machine.

F.1.7.550.05.1.EN

2.6 SAFETY DURING MACHINE OPERATION

- Before starting the machine make sure that there are no bystanders (especially children) or animals in the danger zone.

  Stop the machine when bystanders are in the affected danger zone.
- The machine operator is obliged to ensure proper visibility of the machine and the working area.
- Do not enter the machine rotation and folding zone.
- Each time the machine is used, always ensure that all the safety guards are in good condition and in place. Damaged or incomplete sub-assemblies must be exchanged for original new ones.
- Before starting work, always check cutting blades for technical condition and proper mounting.
- Before starting mower drive, the mower must be in working position.
- Before raising and lowering the machine's wings, make sure there are no bystanders nearby.
- Before starting the tractor with the connected machine make sure the PTO drive is not engaged, otherwise it can lead to uncontrolled operation of the machine.
- Mowing should begin after reaching the nominal speed of the PTO. Do NOT overload the shaft and the mower and also do NOT engage the clutch suddenly.
- During machine operation do not occupy a different position than that of the operator in the tractor cab. Do NOT leave the cab, when the machine is in operation.
- Do NOT approach the machine until the rotating parts come to a complete stop.
- When mowing on the edges of streets, public roads, on stony ground there is a risk that thrown out stones and foreign objects may pose a risk to bystanders and other vehicle passing by.
- While reversing and during turns, the PTO drive must be disengaged and the cutting unit must be raised.

F.1.7.550.06.1.EN

2.7 SAFE OPERATION OF THE PTO SHAFT

- The machine may only be connected to the carrier vehicle (tractor) by means of an appropriately selected PTO shaft recommended by the Manufacturer.
- Before using the machine, carefully read the PTO shaft Operator Manual and follow all instructions.
- Adjust the length of PTO shaft to compatible carrier vehicle (tractor) according to the Operator Manual of PTO shaft.
- The PTO shaft has markings on the casing, indicating which end of the shaft shall be connected to the carrier vehicle (tractor).
- Never use a damaged PTO shaft, it may cause an accident. A damaged shaft must be repaired or replaced.
- Disconnect the shaft drive each time when it is not necessary to drive the machine, or when the carrier vehicle (tractor) and the machine are positioned at an unsuitable angle with regard to each other.
- During transport the shaft must be stored in the horizontal position to avoid damage to safety guards or other protection elements.
- Disconnected PTO shaft should be placed in the specifically prepared holder.

DANGER

Before connecting or disconnecting the shaft, you must:
- disengage PTO drive
- switch off the engine of the implement carrier (tractor),
- engage parking brake,
- remove key from ignition.

- Before starting PTO, make certain that the PTO rotation direction and rotation speed are compliant with allowable rotation speed and rotation direction specified for the machine.
- When using the PTO shaft and the mower, do not exceed the allowable rotation speed of the PTO shaft. Do NOT overload the shaft and the mower and also do NOT engage the clutch suddenly.
- The chains preventing the shaft cover from turning while the shaft is working, shall be secured to a fixed element of machine structure.
- Do NOT use the securing chains to support the shaft while machine is parked or when transporting the machine.
- The drive shaft must be equipped

with a cover. Do NOT use the shaft with damaged or missing guards.

- After connecting the shaft, ensure that it is correctly and safely connected to the carrier vehicle (tractor) and to the machine.
- Do NOT wear loose clothing, straps or whatever that may become wrapped round the rotating drive shaft. Contact with rotating PTO shaft may cause severe injuries.
- Do NOT go over and under the shaft or stand on it equally during work as also when the machine is parked.

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2.8 RESIDUAL RISK

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

- using the machine for purposes other than those for which it is intended,
- being between the carrier vehicle (agricultural tractor) and the machine while the engine is running and when the machine is being attached,
- being on the machine while the engine is running,
- operating the machine with removed or faulty safety guards,
- failure to maintain a safe distance from the danger zone or being within the zones while the machine is operating,
- use of the machine by persons who are not authorised and not able to operate it, in particular children and persons under the influence of alcohol, drugs or other abusive substances, etc.
- cleaning, maintenance and technical checks when carrier vehicle (agricultural tractor) is connected and engine is running.
- making modifications to the machine without the consent of the Manufacturer,
- using unreliable PTO shaft.

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

- operate the machine in prudent and unhurried manner,
- sensibly apply the remarks and recommendations contained in the Operator Manual,
- carry out repairs and maintenance work in line with operating safety rules,
- repair and maintenance work should be carried out by persons trained to do so,
- use close fitting protective clothing,
- ensure unauthorised persons have no access to the machine, especially children,
- maintain a safe distance from prohibited or dangerous places
- do not climb on the machine when it is operating or transported

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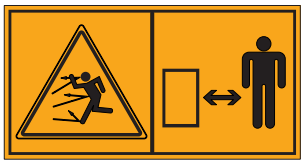
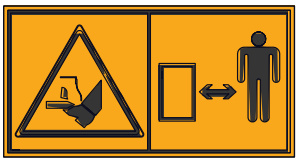
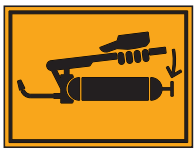
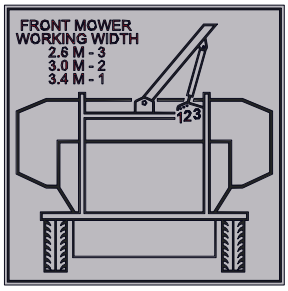
2.9 INFORMATION AND WARNING DECALS

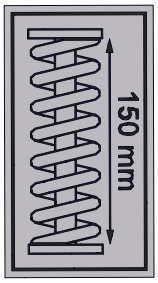
The machine is labelled with the information and warning decals mentioned in *Table 2.1.* Throughout the machine use, you must ensure that any warning messages and information decals located on the machine are clear and legible. If any are destroyed or damaged, they must be replaced with new. New assemblies, changed during repair, must be labelled once again with the appropriate safety signs. During machine cleaning do not use solvents, which may damage the coating of information decals and do not subject them to strong water jets.

Table 2.1. Information and warning decals

Item	Decal	Meaning
1		Note Before starting work, carefully read the Operator Manual. **178N-00000001**
2		Danger of inadvertent starting or rolling of the machine. Before beginning servicing or repair work, turn off the tractor engine and remove the key from the ignition. **178N-00000002**
3		Note Danger associated with the rotating PTO shaft. **178N-00000003**

Item	Decal	Meaning
4		Do not reach into crushing space because elements may move. Danger of crushing hands or fingers. **178N-00000005**
5		Thrown out objects endanger the whole body. Keep a safe distance. **178N-00000006**
6		Transport lug points marking. **178N-00000009**
7		"36-month warranty" sticker **178N-00000013**
8		Warning- cutting elements do not approach an operating mower. **185N-00000005**
9		Risk of injury to foot or leg. Keep a safe distance. **185N-00000006**
10		Risk of injury when machine is being arranged in transport or working position. **185N-00000007**
11		Do not stand directly behind the tractor while operating the rear hitch. **185N-00000008**

Item	Decal	Meaning
12		Injuries to fingers or hands. Do NOT touch the machine components until all machine assemblies have come to a full stop. **185N-00000010**
13		Grease the machine according to the lubrication schedule in the Operator Manual. **185N-00000011**
14	PDC300 PRONAR	Machine model PDC300 PRONAR\ **550N-08000001**
15		Setting the mower's drawbar hydraulic cylinder. **550N-07000003**
16		Danger of hitting due to failure to apply the suspension system lock. **570N-05000005**
17	PDC300C PRONAR	Machine model PDC300C PRONAR **550N-07000001**
18		Note — The drive chain or toothed belt drive. Exercise extra caution. (PDC300C) **206N-00000004**
19		Caution - rotor. Exercise extra caution. (PDC300C) **228N-00000002**

Item	Decal	Meaning
20		Tensioner spring setting. (PDC300C) **594N-03000004**

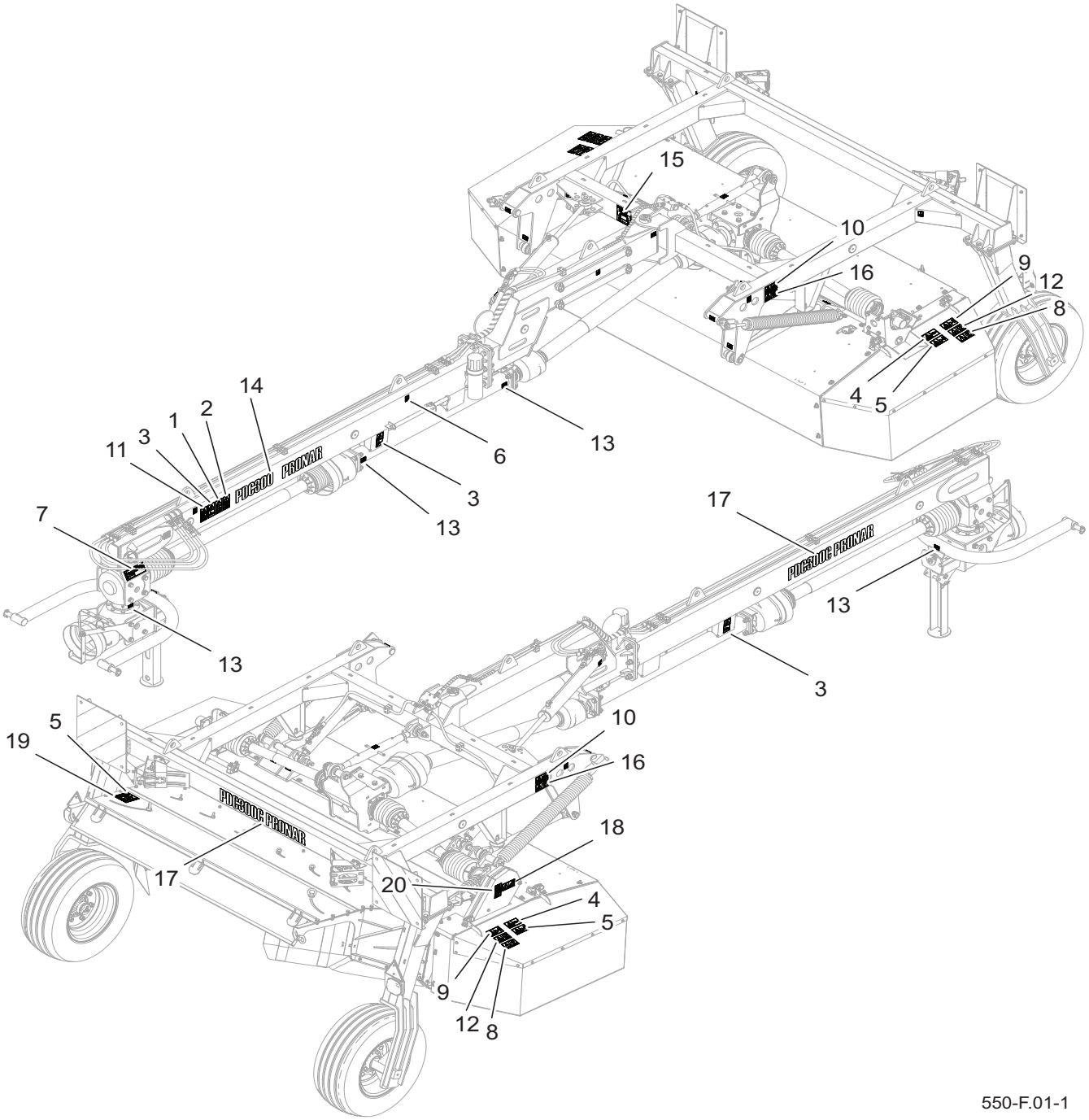


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Figure 2.1 Locations of information and warning decals.

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SECTION 3

DESIGN AND OPERATION

3.1 TECHNICAL SPECIFICATION

Table 3.1. Standard equipment specification

Contents	Unit	PDC300	PDC300C
Dimensions in the transport position			
Length	mm	7,300	
Width	mm	3,000	
Height	mm	1,860	
Dimensions in the operating position			
Length	mm	(6,565 / 6,425 / 6,265) *	
Width	mm	(4,720 / 4,920 / 5,120) *	
Height	mm	1,860	
Technical specification			
Cutting width	mm	3,000	
Swath width min / max	mm	1,400 / 1,800	1,100 / 1,900
Recommended mowing speed	km/h	10	
Capacity (at recommended cutting speed)	ha/h	3	
Tare weight	kg	1,690	2,000
Minimum power demand	hp / kW	55 / 75	67 / 90
Maximum PTO speed	RPM	1000 - standard; 540 - option	
Hitch	-	semi-mounted, cat. II according to ISO 730-1	
Drawbar	-	central	
Number of discs	pc.	7	
Number of cutting blades	pc.	14	
Type of cutting blades	-	twisted	
Dimensions of cutting blades		120x49x4 Ø21	
Rotation speed of discs	RPM	3,000	
Axle load	kg	1130	1420
Hitch load	kg	560	580
Tyres			
Tyre	-	10.0 / 75- 15.3	
Air pressure in the tyres	kPa	400	

* - depending on the set level of the drawbar deflection adjustment

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3.2 GENERAL DESIGN

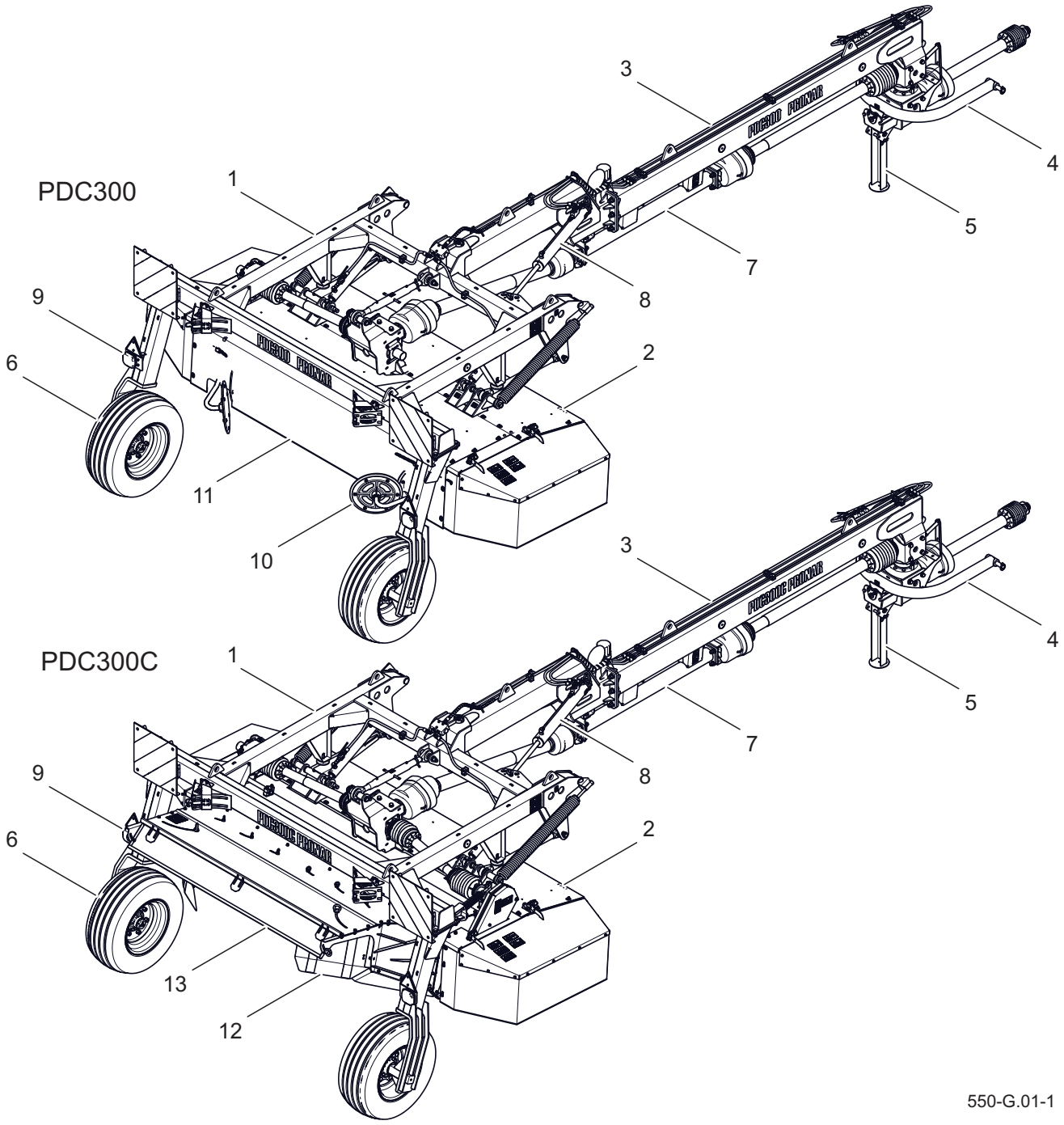

Figure 3.1 General design.

(1) suspension frame *(2) cutting unit* *(3) drawbar*
(4) catch *(5) parking stand* *(6) wheels*
(7) drive system *(8) hydraulic system* *(9) electrical lighting system*
(10) PDC300 swath guides *(11) rear shield (PDC300)* *(12) PDC300C swath guides*
(13) conditioner (PDC300C)

Mover design is shown in Figure (3.1). The main component of the machine is the suspension frame (1) connected by means of tie rods and rocker arms to the cutting unit frame (2) and the drawbar (3). In the front part of the drawbar there is a hitch (4) for connecting with the tractor's three-point linkage. When the mower is parked, the hitch and the drawbar rest on the support foot (5). In the rear part, the mower's suspension frame (1) rests on two wheels (6). Power is transmitted from the tractor to the cutter bar by means of the drive system (7) consisting of bevel gears and PTO shafts.

Swath guides (10) secured to the cutting unit frame (2) (PDC300) enable swath width to be set at widths from 1.4 to 1.8 m. The PDC300C mower is fitted with a conditioner (13) fixed to the mower cutting unit frame behind the cutter bar (CHAPTER 3.6 „CONDITIONER (PDC300C)").

The angle of the drawbar deflection in relation to the tractor and the height of the cutting unit suspension (2) on the frame (1) can be adjusted hydraulically with hydraulic system cylinders.

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3.3 SUSPENSION SYSTEM AND WHEELS

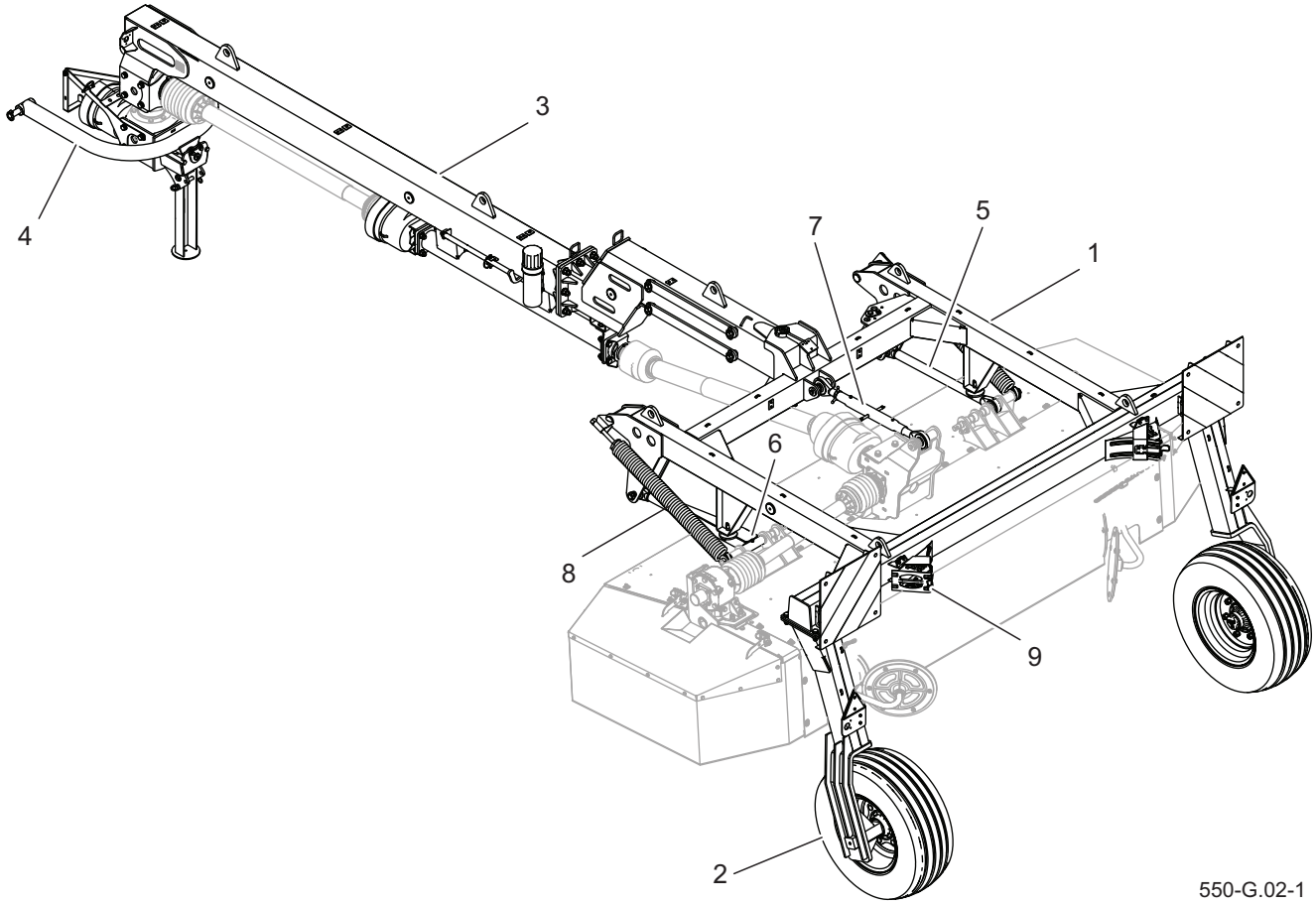

Figure 3.2 Design of axle system and hitch system

(1) suspension frame *(2) wheels* *(3) drawbar*
(4) catch *(5) tie rod* *(6) rocker arm*
(7) central connector *(8) stay springs* *(9) wheel chocks*

The mower's suspension system (Figure 3.2) mainly consists of suspension frame (1), two wheels (2), drawbar (3) and hitch (4) for connecting the mower to the tractor's three-point linkage.

The suspension frame (1) supported on two wheels (2) supports the cutting unit's main frame at three points by means of tie rod (5), rocker arm (6) and central connector (7). To ensure correct pressure of cutter bar on the surface, the mover is equipped with two stay springs (8). Spring adjustment system allows setting of optimal cutter bar pressure depending on type of surface and type of forage mown.

The suspension frame (1) is connected to hitch (4) by means of drawbar (3) which enables mowing on the left or right side of the tractor.

3.4 CUTTING UNIT

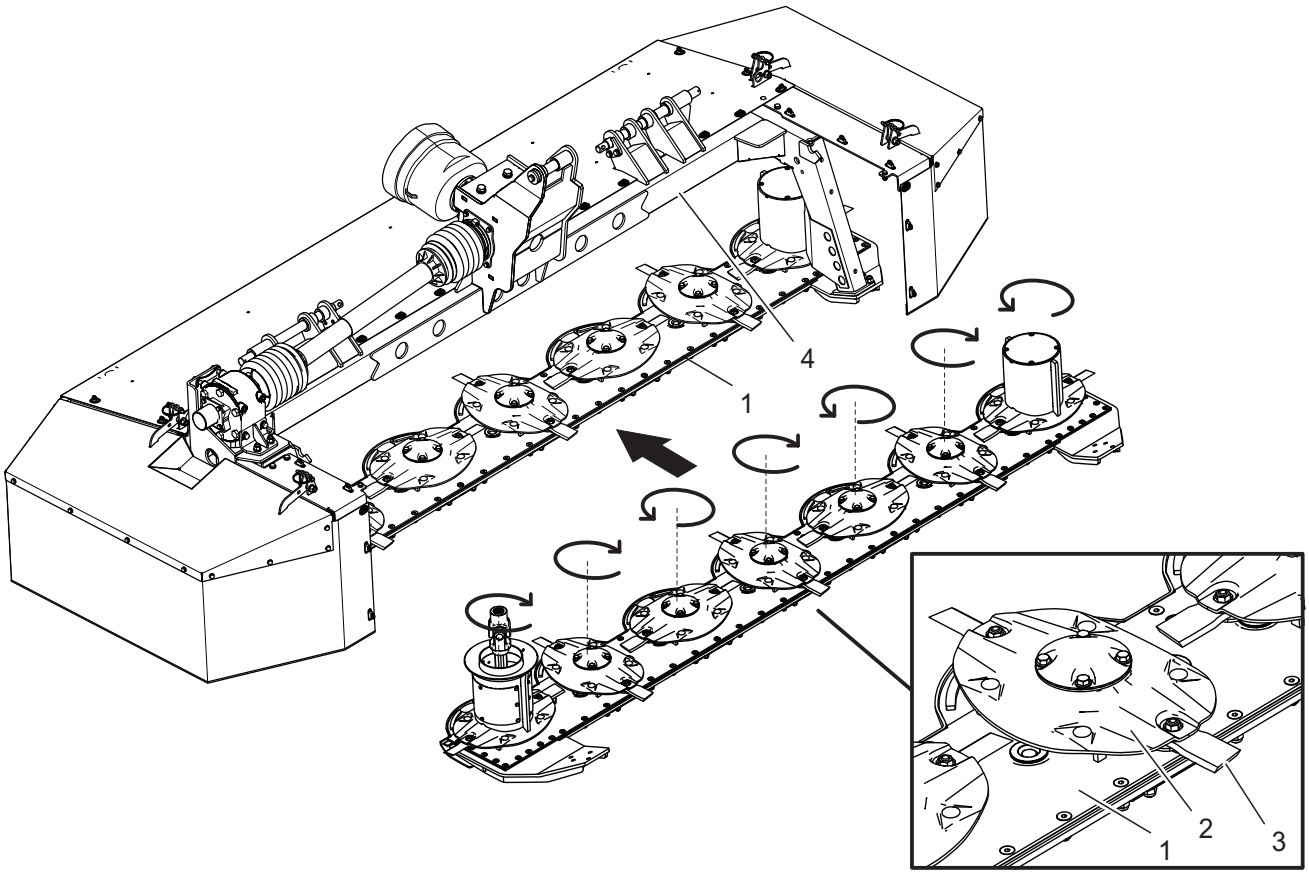

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Figure 3.3 Cutting unit design

(1) cutter bar *(2) cutting disc* *(3) cutting blade*

(4) cutting unit frame

The mower's cutting unit consists of, among others, cutter bar (1) connected to frame (4). Cutting discs (2) are mounted on the cutter bar.

Two cutting blades (3) are mounted on each of the cutting discs (2), right or left depending on disc rotation direction. If disks rotate clockwise then right blades are mounted, if anticlockwise then left blades are mounted. Disc rotation direction and machine forward motion are marked with arrows. (Figure 3.3)

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3.5 CONDITIONER (PDC300C)

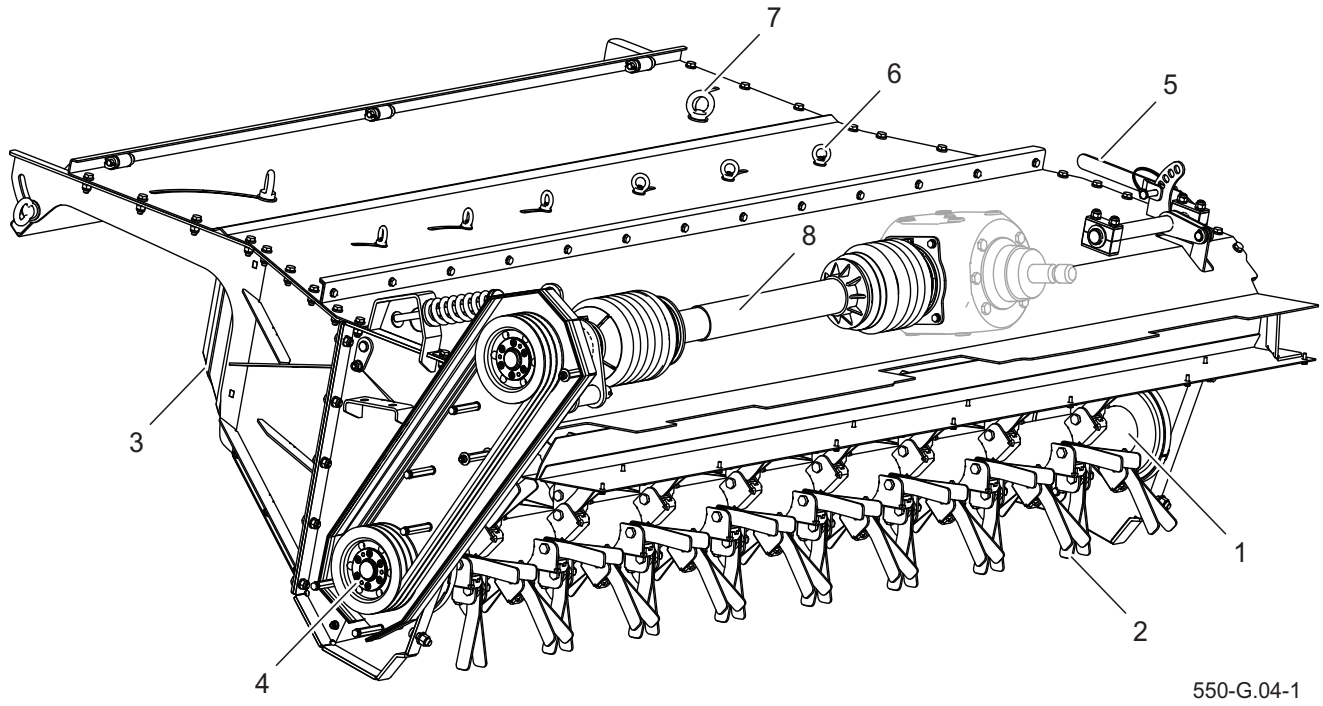

Figure 3.4 Conditioning assembly design
(1) conditioner shaft (2) conditioner spring tine (3) swath guides (4) belt transmission (5) damping barrier adjustment lever (6) swath blade adjustment bolts (7) swath guide adjustment bolts (8) drive shaft

PRONAR PDC300C mower conditioner consists of a shaft (1) on which spring tines (2) are fitted. Swath conditioner flail blades intercept mown material from the cutter bar and toss it over the conditioner shaft (1) through swath blades (6) adjustable with bolts to swath guides (3), which, depending on how they are set with bolts, form a swath with a width from 1.1 to 1.9 m. The conditioning intensity can be adjusted using the lever (5), which sets the damping barrier relative to the conditioner shaft so that the material is properly formed and conditioned. The entire conditioning unit is driven by the mower's central bevel gear through belt transmission (4) and drive shaft (8).

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3.6 DRIVE TRANSMISSION.

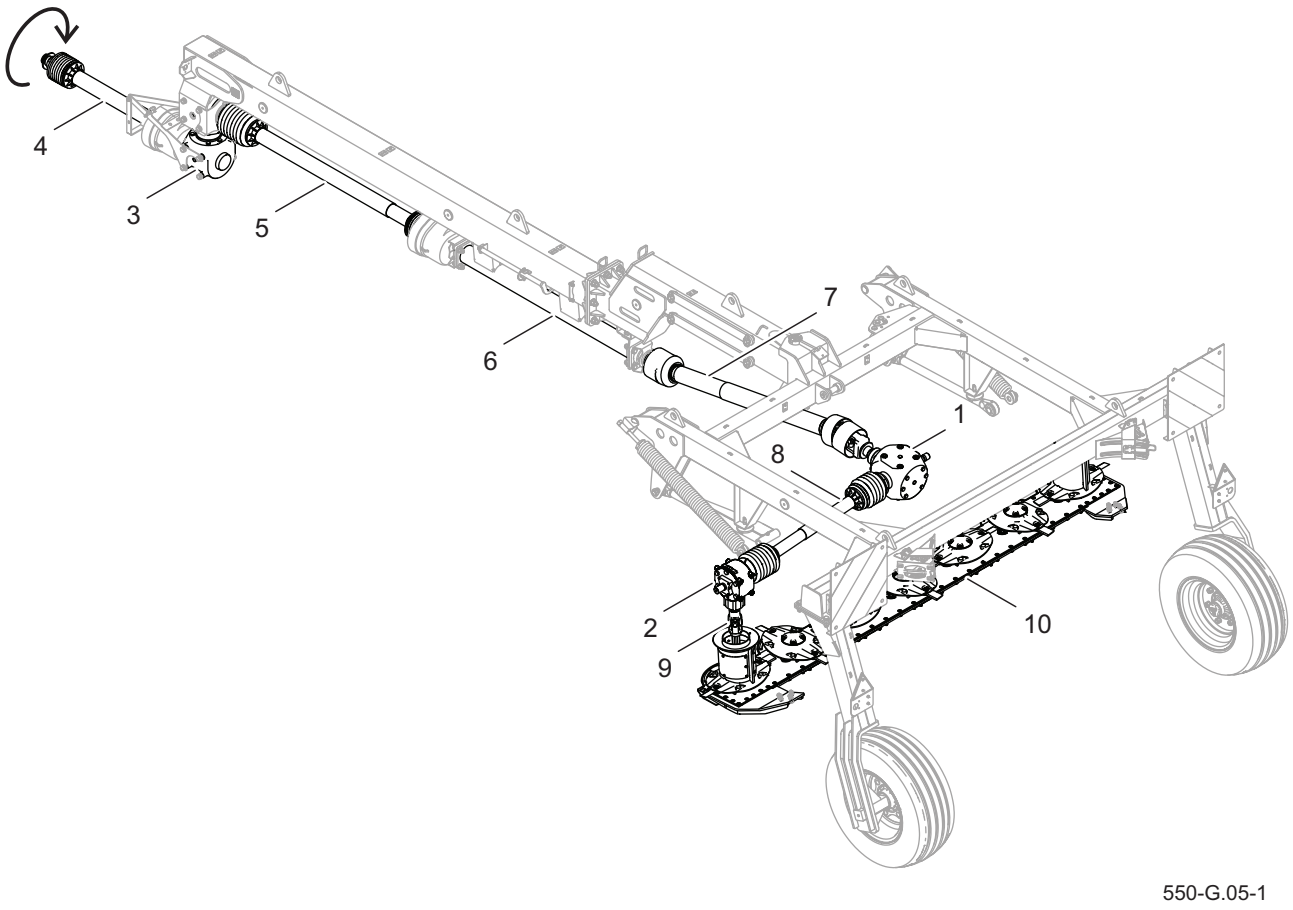

Figure 3.5 Design of drive transmission system

(1) mover central transmission for connection with tractor (2) cutter bar drive transmission (3) rotary drive gear (4) PTO shaft (5) PTO shaft (6) driving shaft (7) PTO shaft (8) PTO shaft of the cutter bar drive (9) double joint connector (10) cutter bar.

IMPORTANT

Only use the machine with tractors with power:
PDC300- 55 kW / 75 hp or more
PDC300C- 67 kW / 90 hp or more
Only PTO shafts recommended by the manufacturer should be used for driving the cutting unit.

As standard, the PDC300 / PDC300C mower is designed for working with PTO speed of 1000 rpm and is suitable for hitching to tractors with clockwise rotation direction of the PTO shaft end. After turning the rotary gear (3) by 180° , the mower can work with PTO speed of 540 rpm. The torque from the tractor's PTO is transmitted by means of PTO shaft (4) with friction clutch to rotary drive gear (3), and then through PTO shafts (5) (7) and drive

shaft (6) to the mower's central gear (1). From the central transmission, the drive is transmitted by shaft (8) to the cutter bar transmission (2). Then through connection to double articulated joint (9) the drive reaches the first disc on the cutter bar (10).

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3.7 HYDRAULIC SYSTEM

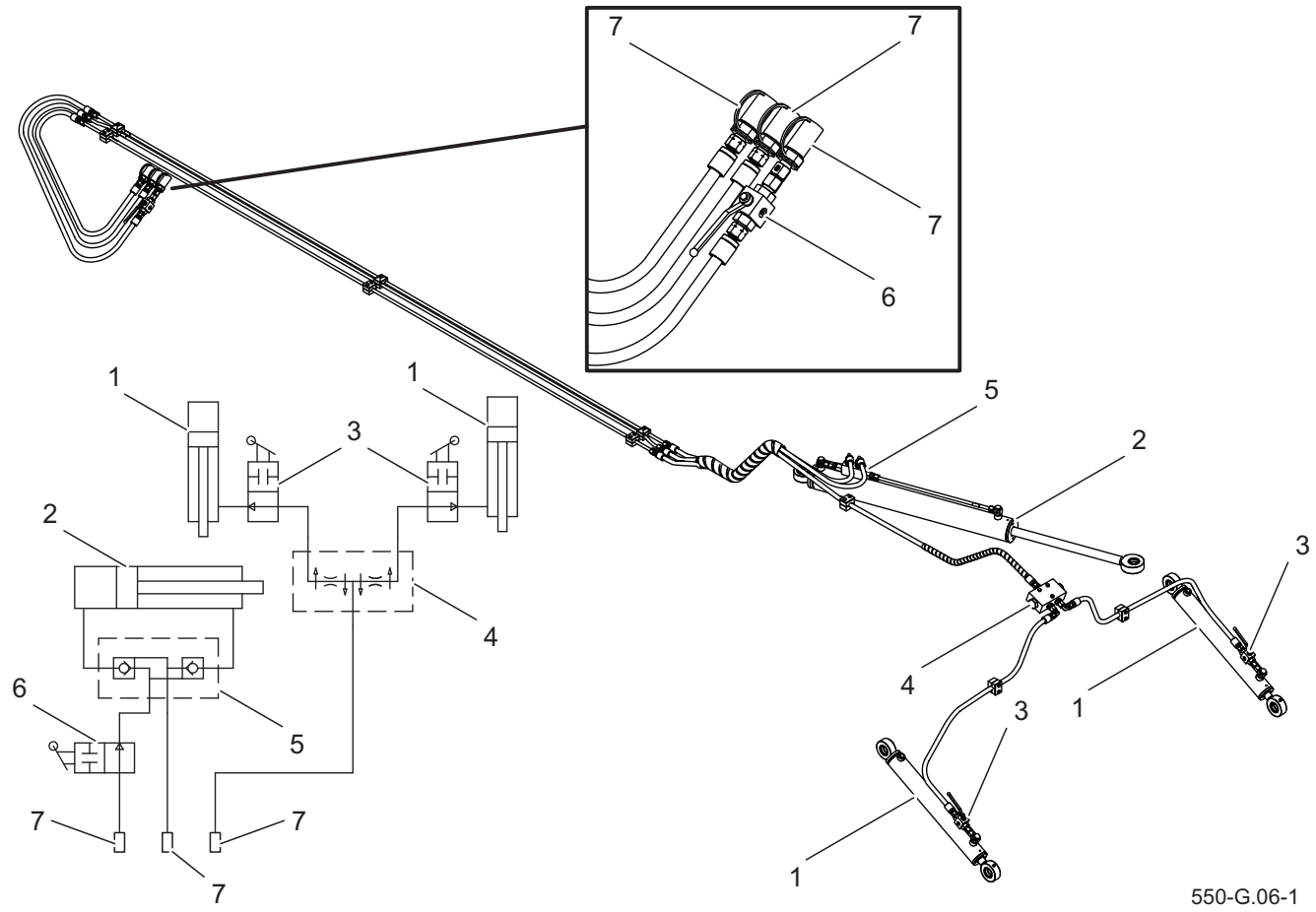

Figure 3.6 Hydraulic system design
(1) hydraulic cylinders for lifting the cutting unit (2) hydraulic cylinder for setting the drawbar
(3) valves for locking the cutting unit lifting (4) flow divider (5) hydraulic lock
(6) valve for locking the hydraulic cylinder for setting the drawbar (7) hydraulic quick couplers

The hydraulic system is used for controlling the height of the cutting unit's suspension and setting the angle of the drawbar deflection in relation to the tractor. The hydraulic system is supplied from the tractor external hydraulic system through hydraulic quick couplers.

Quick coupler for controlling the lifting / lowering cylinders (1) should be connected to the section with floating position. In such configuration the pistons of both lifting/lowering hydraulic cylinders can move freely. Consequently, the raking assemblies can adjust to uneven terrain. Ball valves (3) are mounted on hydraulic cylinders (1) to block the cylinders in the transport position.

The angle of deflection of the mower's

drawbar in relation to the tractor is controlled by double-acting hydraulic cylinder (2) and valve locking in the transport position (6). Quick couplers (7) of hydraulic cylinder (2) should be connected to one double-acting section in the tractor.

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3.8 LIGHTING SYSTEM

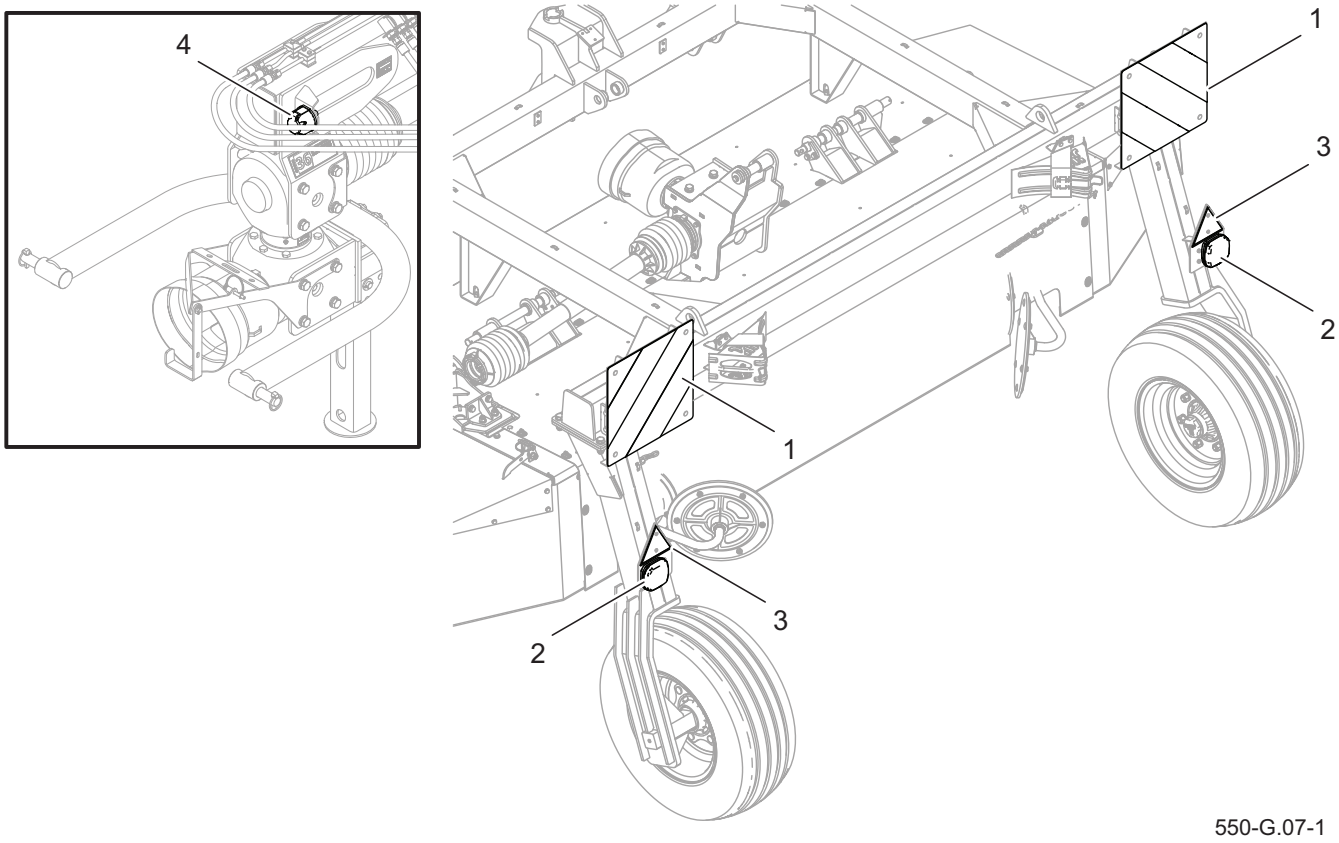

Figure 3.7 Positioning of electrical system components and reflective elements
(1) warning board *(2) rear lamp* *(3) warning reflective triangle*
(4) electric socket

The mover electrical system is designed for supply of 12 V DC. Connection of the electrical system with the tractor should be made through an appropriate connection lead that is part of the machine's standard equipment.

Table 3.2. Electrical system diagram markings

Symbol	Function
GP	7-pin socket, front
ZP	Rear right lamp assembly
ZL	Rear left lamp assembly

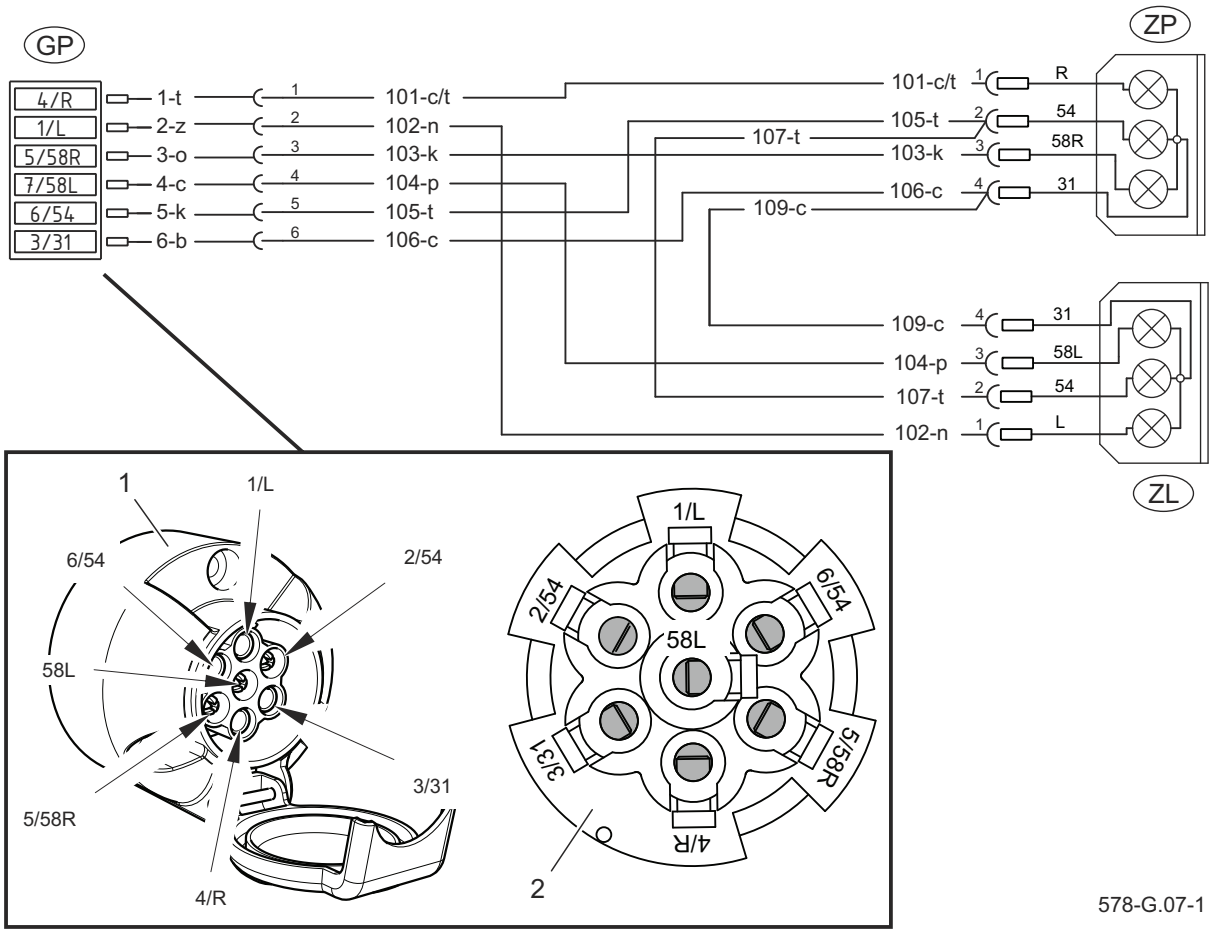

Figure 3.8 Electrical system diagram

Marking according to table (3.2), (3.3) (1) socket (2) view from the wiring harness side

Table 3.3. Conduit colour marking

Symbol	Colour
B	White
C	Black
K	Red
N	Blue
P	Orange
T	Green
C/T	Black and green
O	Brown
Z	Yellow

Table 3.4. Markings of connection socket's connections

Marking	Function (lead colour)
1/L	Left indicator (yellow)
2/54	unused
3/31	Ground (white)
4/R	Right indicator (green)
5/58R	Rear right parking light (brown)
6/54	STOP light (red)
58L	Rear left parking light (black)

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CORRECT USE

SECTION 4

4.1 CONNECT THE MACHINE TO THE CARRIER VEHICLE

IMPORTANT

Prior to attaching the mower, check the technical condition of the machine's and tractor hitch system and connection elements of the hydraulic and electrical systems.
Ensure compatibility of oils in tractor and mower hydraulic systems.

DANGER

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

The mower can be connected to an agricultural tractor if all electrical and hydraulic connections and the linkage on the agricultural tractor meet the machine manufacturer's requirements. The machine's wheels must be chocked. Ensure sufficient visibility during hitching.

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

- Reversing the tractor bring the lower three point linkage connection points (B) of the tractor close to pins (1) of the linkage.
- Set lower links (B) of the tractor three-point linkage at appropriate height.
- Turn off tractor engine, secure cab to prevent unauthorised access.
- Connect lower pins (1) with linkage arms (B) and lock with the aid of cotter pins.
- Connect hydraulic lines to the tractor.

  Connect the plug of line (4) for lifting / lowering the cutting unit to the section with the so-called "floating position". Connect the plugs of lines (5) for controlling the drawbar position to the double acting section in the tractor. Plugs should be marked in order to exclude the possibility of wrong connection.
- Lift mower drawbar using tractor

DANGER

Use only genuine pins and safeguards to hitch the machine to the carrier vehicle.

IMPORTANT

Before you connect the electrical wires and hydraulic system lines, carefully read the Operator Manual of the carrier vehicle and observe all manufacturer's recommendations

DANGER

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

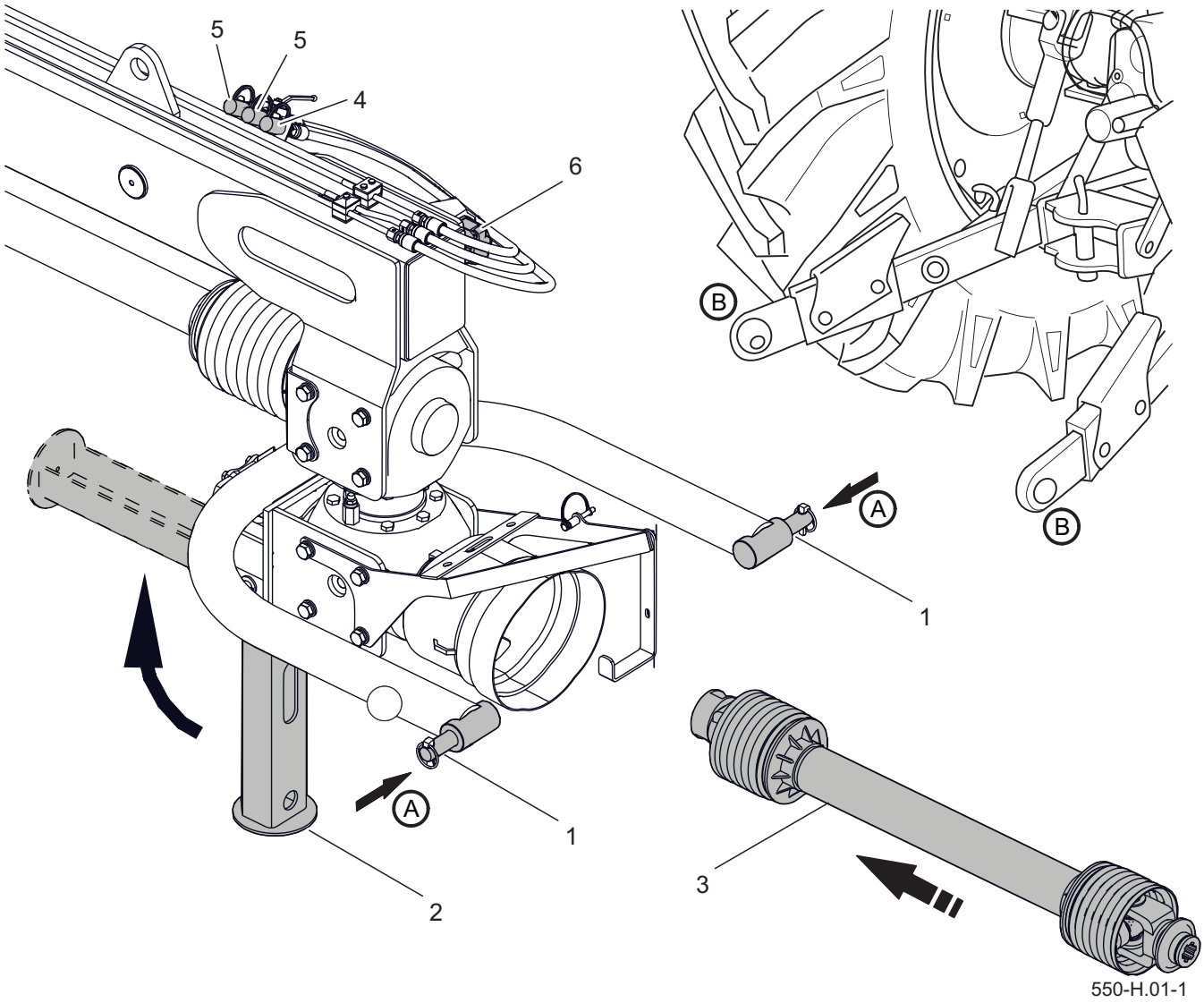

Figure 4.1 Hitching to tractor
(1) lower linkage pin (2) support
(3) PTO shaft(4)(5) hydraulic line plugs
(6) lighting system cable plug
(A) category II attachment points (B) lower links of the tractor's three-point linkage

three point linkage.

- Lift the support (2) and secure it with a pin and a cotter pin.

  Lower links of the tractor three-point linkage must be set at the same height.

- Connect the plug (6) of the electric lighting system power cable.
- Connect the articulated telescopic shaft (3) to the PTO of the carrier (tractor) and secure it with safety chains.

DANGER

Before connecting the PTO shaft it is absolutely necessary to carefully read the Operator Manual attached by the Manufacturer of the shaft and observe the instructions contained in it.
Before connecting to the carrier vehicle, check technical condition of shaft guards as well as completeness and condition of protecting chains.

Make sure that shaft ends on both the tractor and mover fit well and the linkage is properly secured.

TIP

The proper alignment of the PTO shaft of the implement carrier (tractor) with the shaft of the machine's drive system significantly extends the life of the drive shaft.

IMPORTANT

Hydraulic and electric lines should be routed in such a way that they do not get caught in the moving parts of the machine and the carrier and are not exposed to kinking or cutting during turning.

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4.2 TRANSPORTING THE MACHINE

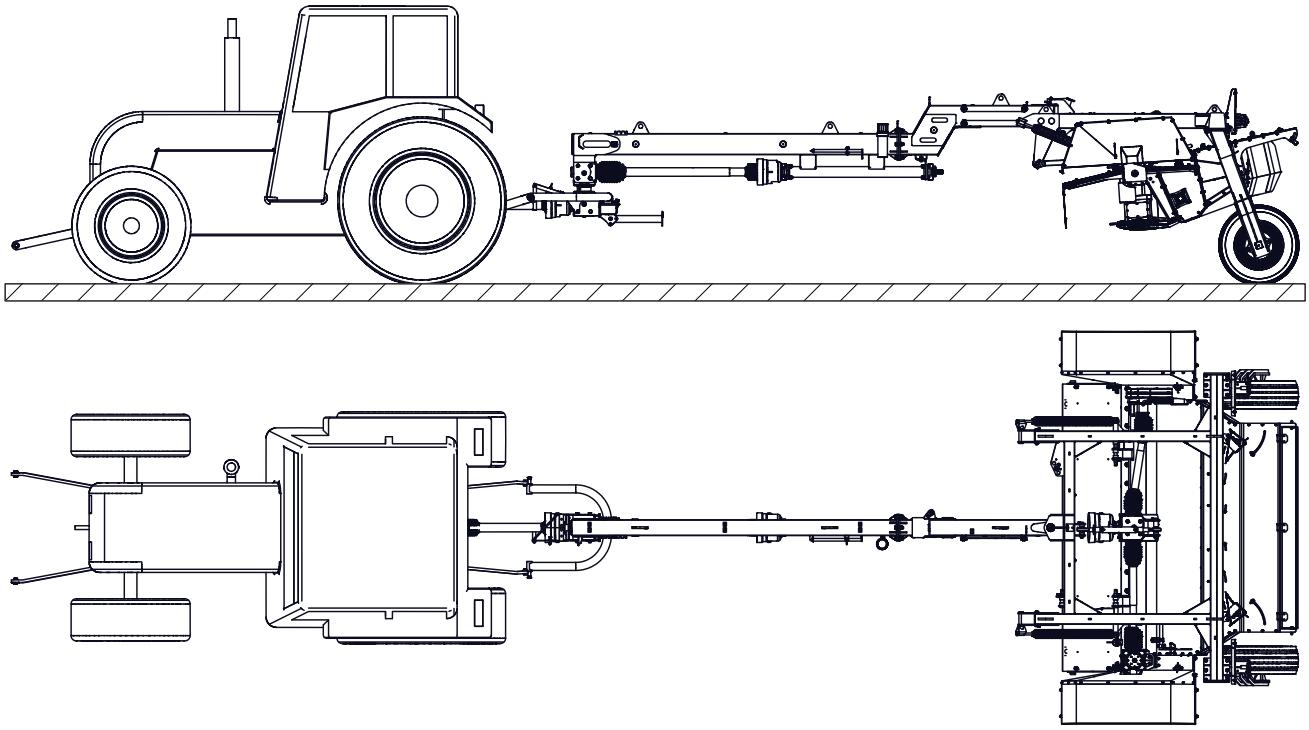

Figure 4.2 Mower transportation position

IMPORTANT

Do NOT travel with machine which has an unreliable brake, lighting or signalling system.

DANGER

Before setting the rotary rake in working position or transport position make sure that there are no by-standers in the danger zone.

For transport to place of work and back, set the mover in transport position (Figure 4.2). To do this, proceed as follows:

- Set the mower directly behind the tractor (in the tractor driving axis) using the drawbar tilt cylinder.
- Lock the drawbar in transport position with the lock valve (3) of the drawbar tilt cylinder (1) (Figure 4.4).

  Set the lock valve (3) of the drawbar position cylinder to the closed position "Z".
- Move the protective shields from the working position to the transport position in order to reduce the overall transport width (Figure 4.3).

  Raise mower lateral guards (1) and secure with cotter pins (2).
- Lift the mower's cutting unit maximally

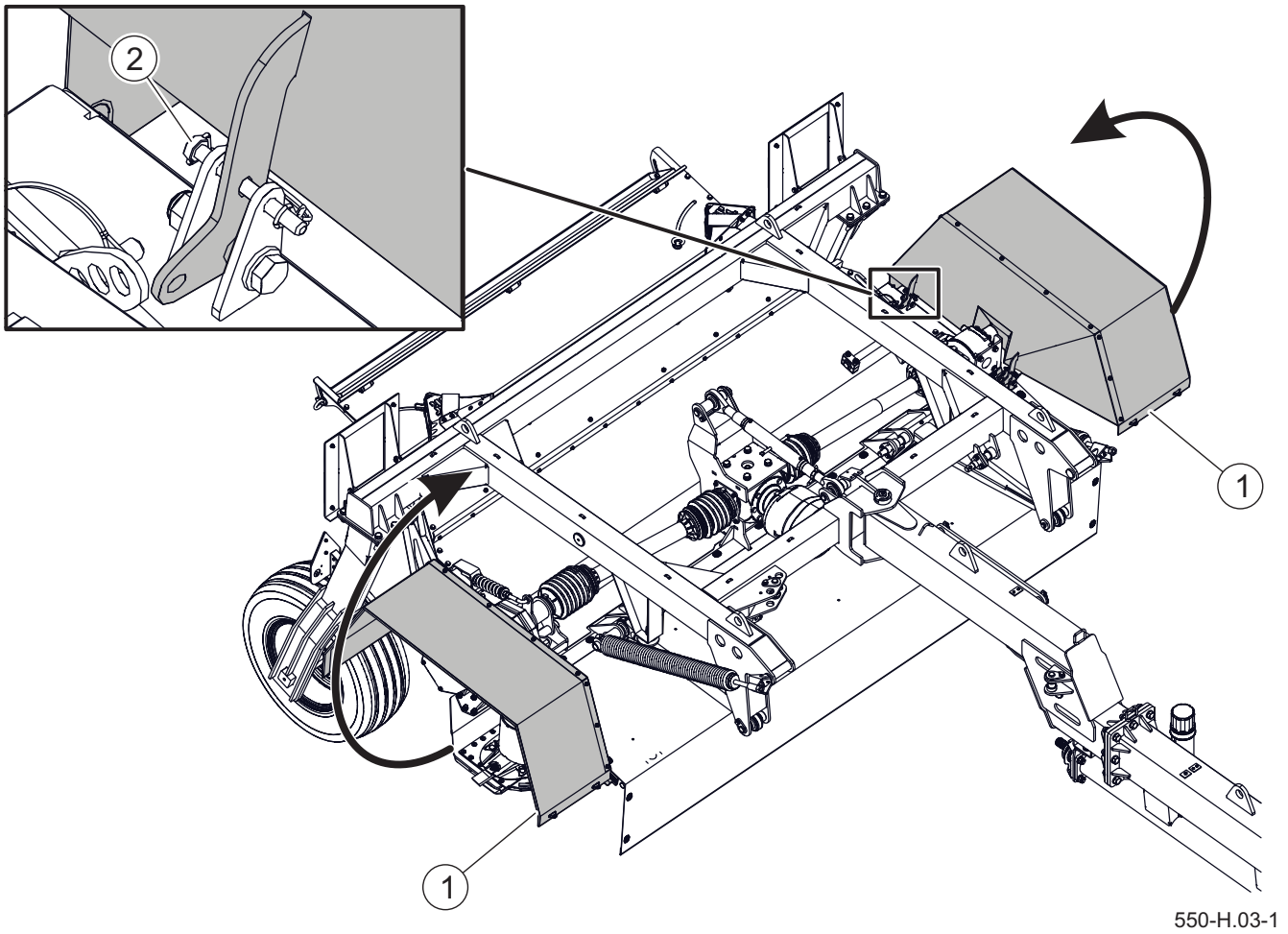

Figure 4.3 Raising guards to the transport position
(1) – side guards; (2) – securing pins

with the use of hydraulic cylinders (2) and lock the cylinders with the cylinder lock valves (4) in the transport position (Figure 4.4).

Set the cylinder lock valves (4) to the closed position "Z".

- install transport locks (5) on the cutting unit suspension pins and secure with cotter pins (6) (Figure 4.4)
- disconnect the mower drive PTO shaft from the tractor PTO shaft.
- lift the mower drawbar using lower links of the tractor's three-point linkage
- lift the support foot (2) to the transport position and secure it with a cotter pin (Figure 4.1)
- before driving on public roads, check the lights.

DANGER

Only transport the machine with the telescopic shaft disconnected.

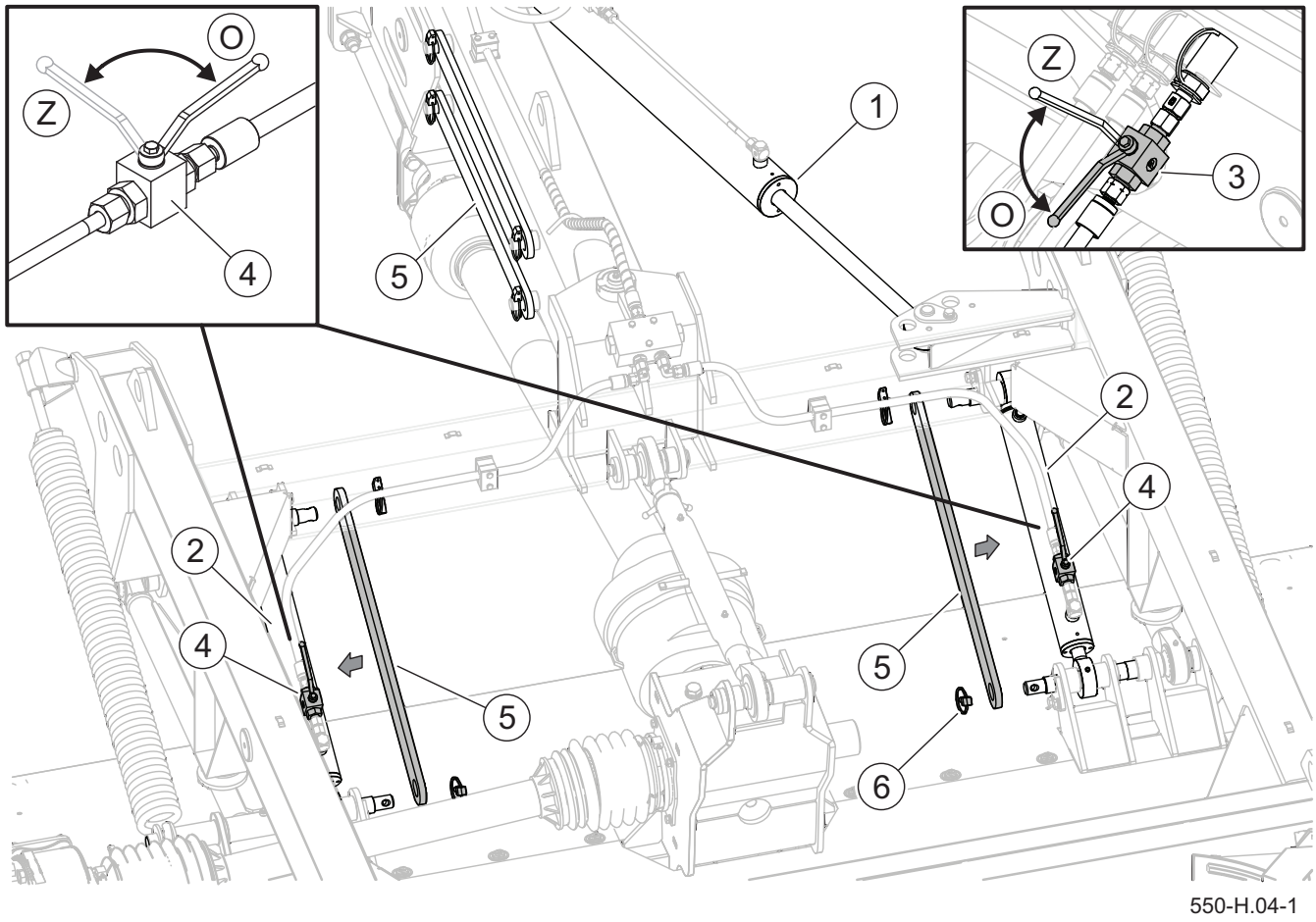

Figure 4.4 Locking the mower in the transport position

(1) drawbar position hydraulic cylinder, (2) cutting unit lifting hydraulic cylinders, (3) lock valve of drawbar position hydraulic cylinder, (4) lock valves of cutting unit lifting hydraulic cylinders, (5) transport lock, (6) cotter pin, (O) valve in open position, (Z) valve in closed position.

IMPORTANT

The parking stand must be maximally raised during machine operation or travel.

IMPORTANT

Before you start driving the tractor with the mower in the transport position, check if:
- pins connecting the mower and tractor are properly secured,
- the mower is properly locked with the locks (5) of the suspension system (FIGURE 4.4).

Do NOT transport the mower with valves (3) and (4) of the cylinder in the open position (O) (FIGURE 4.4)

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4.3 MACHINE OPERATION

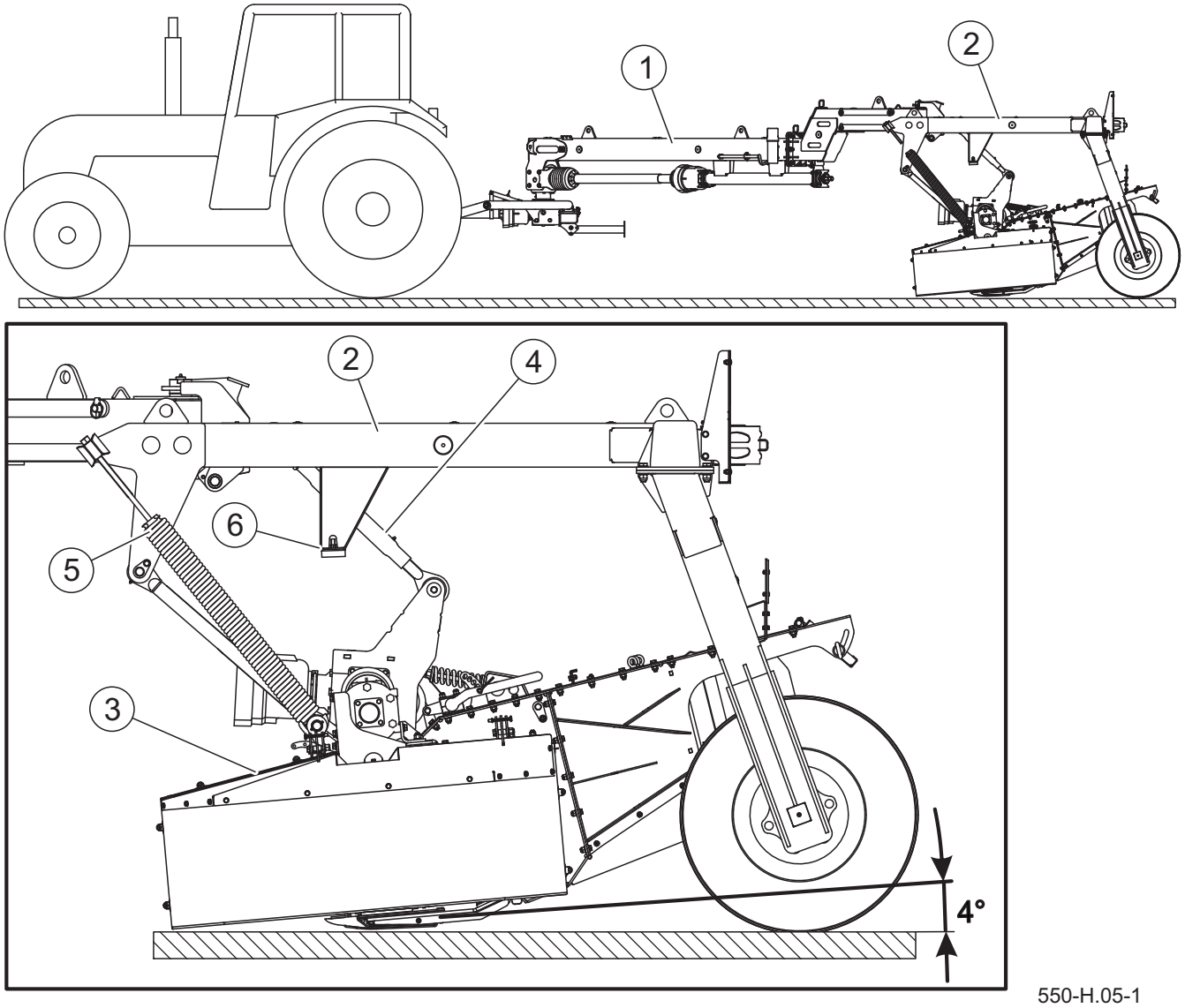

Figure 4.5 Mower working position (adjustments).
(1) – drawbar; (2) – suspension frame; (3) - cutting unit; (4) - central connector; (5) - stay springs; (6) - bumper

SETTING THE MOWER INTO THE OPERATING POSITION AND ADJUSTING THE CUTTING HEIGHT

DANGER

Before setting the rotary rake in working position or transport position make sure that there are no bystanders in the danger zone.

DANGER

During machine operation do not occupy a different position than that of the operator in the tractor cab. Do NOT leave the cab, when the machine is in operation.
Do NOT stay between the carrier and the machine.

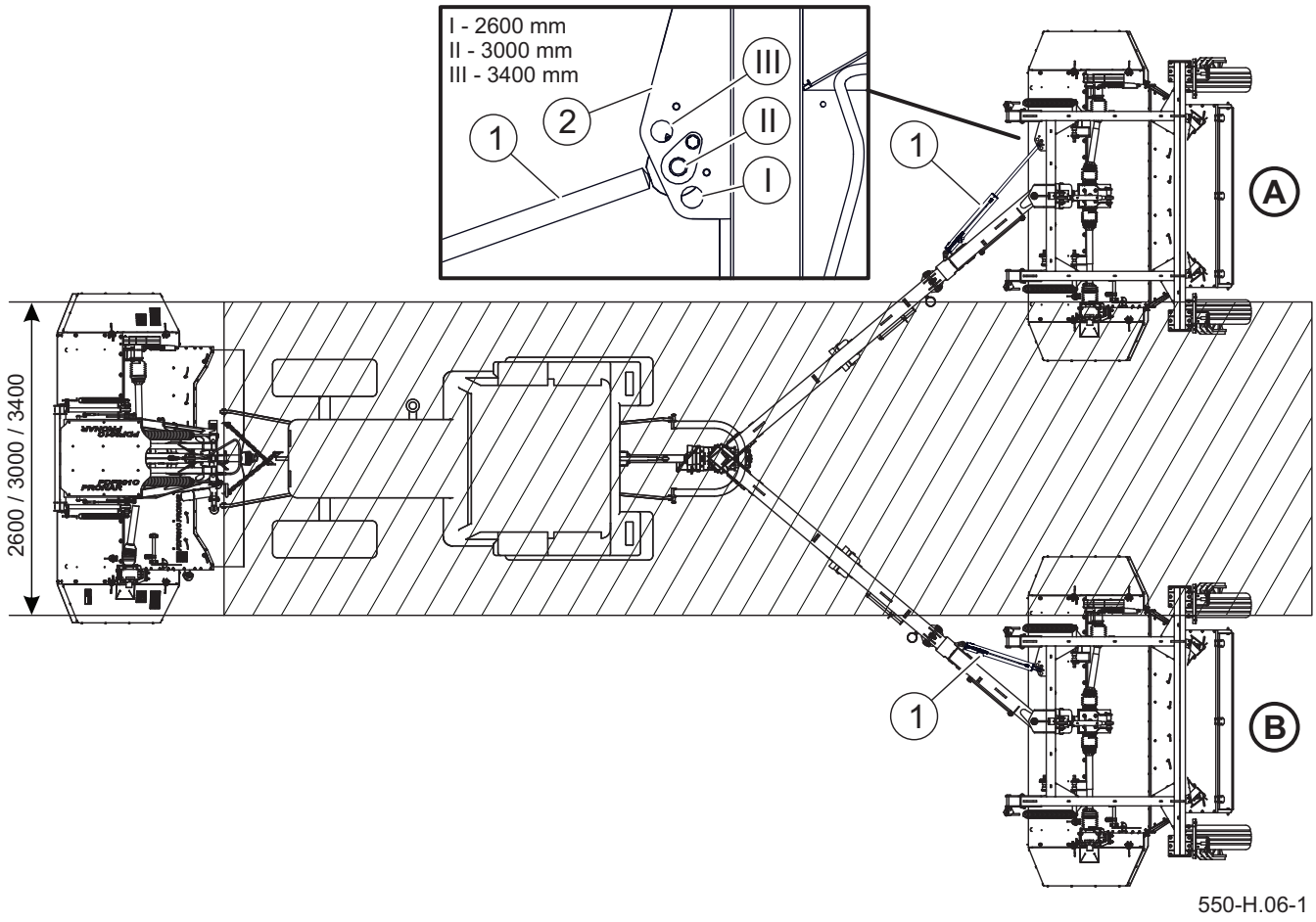

Figure 4.6 Setting mower drawbar in working position
(1) – drawbar position cylinder; (2) – cylinder mount bracket

After transporting the machine to the workplace, change its configuration from transport to operating configuration. Preparing of the machine for work must only take place exclusively on level and stable surface. Perform the following actions in order to set the rotary rake in working position:

- set the tractor's three-point linkage lower links in such a position that the mower's suspension frame (2) is parallel to the ground (Figure 4.5)
- connect the mower drive PTO shaft to the tractor PTO shaft.
- remove the transport locks (5) of the cutting unit suspension (Figure 4.4)
- unlock the valves (4) of the cutting unit cylinders (Figure 4.4) and lower the mower's cutting unit until the mower's cutter bar touches the ground.

  Set cylinder intelock valves (4) in open position „O”

- Change protective covers from transport position (2) to working position (1) - figure (4.3).

  Lower mower lateral guards (1)

and secure with cotter pins (2).

- use the central connector (4) of the cutting unit (3) to adjust the mowing height (Figure use the central connector (4) of the cutting unit (3) to adjust the mowing height (Figure 4.5)

Lengthening central connector increases the cutting height and shortening reduces the cutting height. The optimum cutter bar inclination angle is 4°.

- adjust the cutter bar relief using the relief springs (5) (Figure 4.5)
- when the mower works in combination with a front mower, set the drawbar cylinder mounting depending on the working width of the front mower (Figure 4.6)
- use the drawbar position cylinder to move the mower to the right or left side of the tractor (Figure 4.6)

Withdraw the cylinder maximally to move the mower to the left side of the tractor, and extend the cylinder maximally to move the mower to the right side of the tractor.

DANGER

The adjustment of the mower cutting height and the cutter bar pressure must be performed with the tractor engine turned off Remove the key from the ignition, ensure that unauthorised persons do not have access to the tractor. Tractor shall be immobilised with parking brake.

ADJUSTMENT OF CUTTER BAR PRESSURE

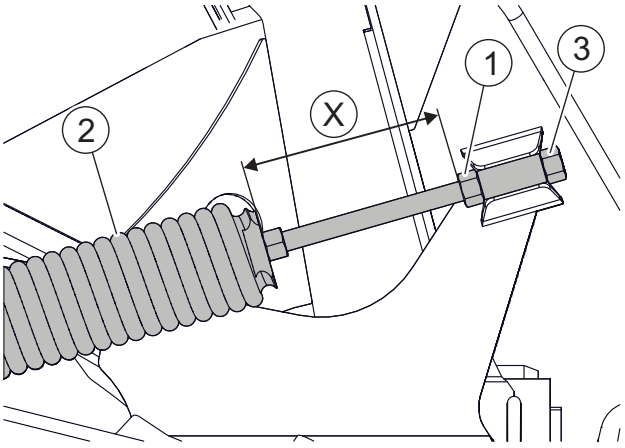

Figure 4.7 Adjustment of cutter bar pressure
(1) lock nut, (2) stay spring, (3) adjustment bolt

IMPORTANT

Machine loading is set in a factory so that pressure on the soil is suited to work in normal conditions.

In order to protect the stubble during cutting and reduce partial wear on slide skates of the cutting unit and also to ensure good ground surface tracking it is necessary to adjust the pressure of the cutterbar on the surface appropriately (FIGURE 4.7). The stay springs (2) are for this purpose. The pressure must be suitable to the ground conditions, the means of movement, type of surface and type of forage mown.

The loading is adjusted by changing the tension of both springs (2).

- loosen lock nut (1),
- turn adjustment bolt (3) so that spring tension is adjusted,

- turning the bolt clockwise increases spring tension and reduces cutter bar pressure on the ground (distance X is reduced).

- turning the bolt anticlockwise reduces spring tension and increases cutter bar pressure on the ground (distance X is increased),

After achieving required tension, tighten lock nut (1).

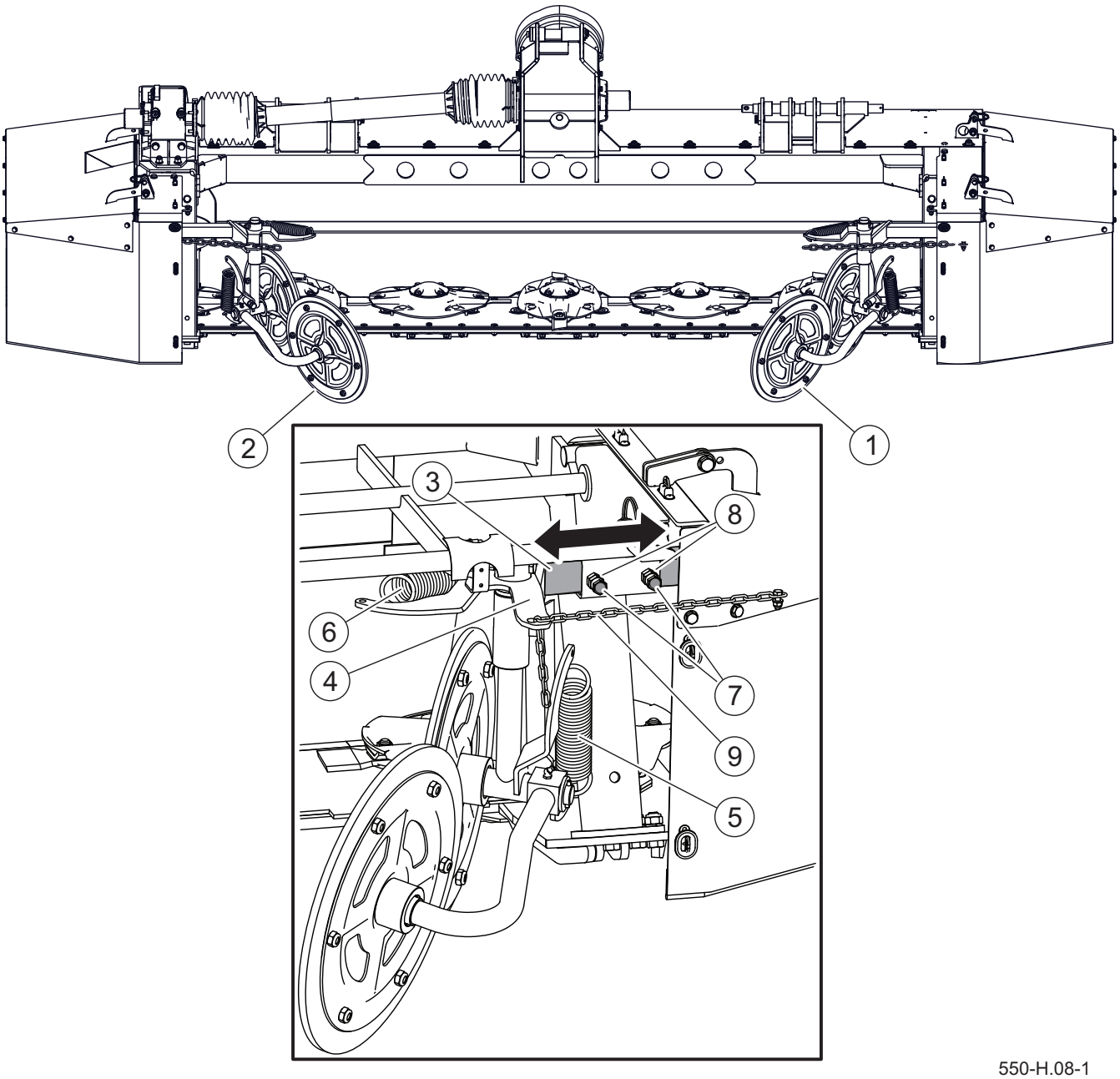

Figure 4.8 PDC300 swath guide adjustment
(1)- right swath guide unit; (2)- left swath guide unit; (3)- guide arm; (4)- head; (5)- guide unit cushion spring for the vertical plane; (6)- guide unit cushion spring for the horizontal plane; (7)- arm press bolts; (8)- lock nuts; (9)- limiting chain.

SETTING THE SWATH WIDTH IN PDC300 MOWER

Adjust the swath width depending on the density and length of the crop. With dense and long crops the swath should be wide, while with short crops the swath width should be reduced.

Two swath guides installed on the cutting unit's support frame are used to adjust the swath width.

You may adjust the swath width smoothly within 1,400 ÷ 1,800 mm by adjusting the

two swath guides as appropriate.

To adjust the entire swath guide unit in the horizontal plane (Figure 4.8):

- loosen lock nuts (8) and bolts (7),
- move arm (3) as required, tighten bolts (7) and secure with lock nuts (8),

Besides the adjustment of the guide unit operating width you may also adjust the dampening scope of the spring (6) in the horizontal plane, which also affects the swath width. To this end, adjust the length of the limiting chain (9) as appropriate by attaching it in the head (4) fastening hole at the right length (4).

Proceed the same way with the opposite swath guide.

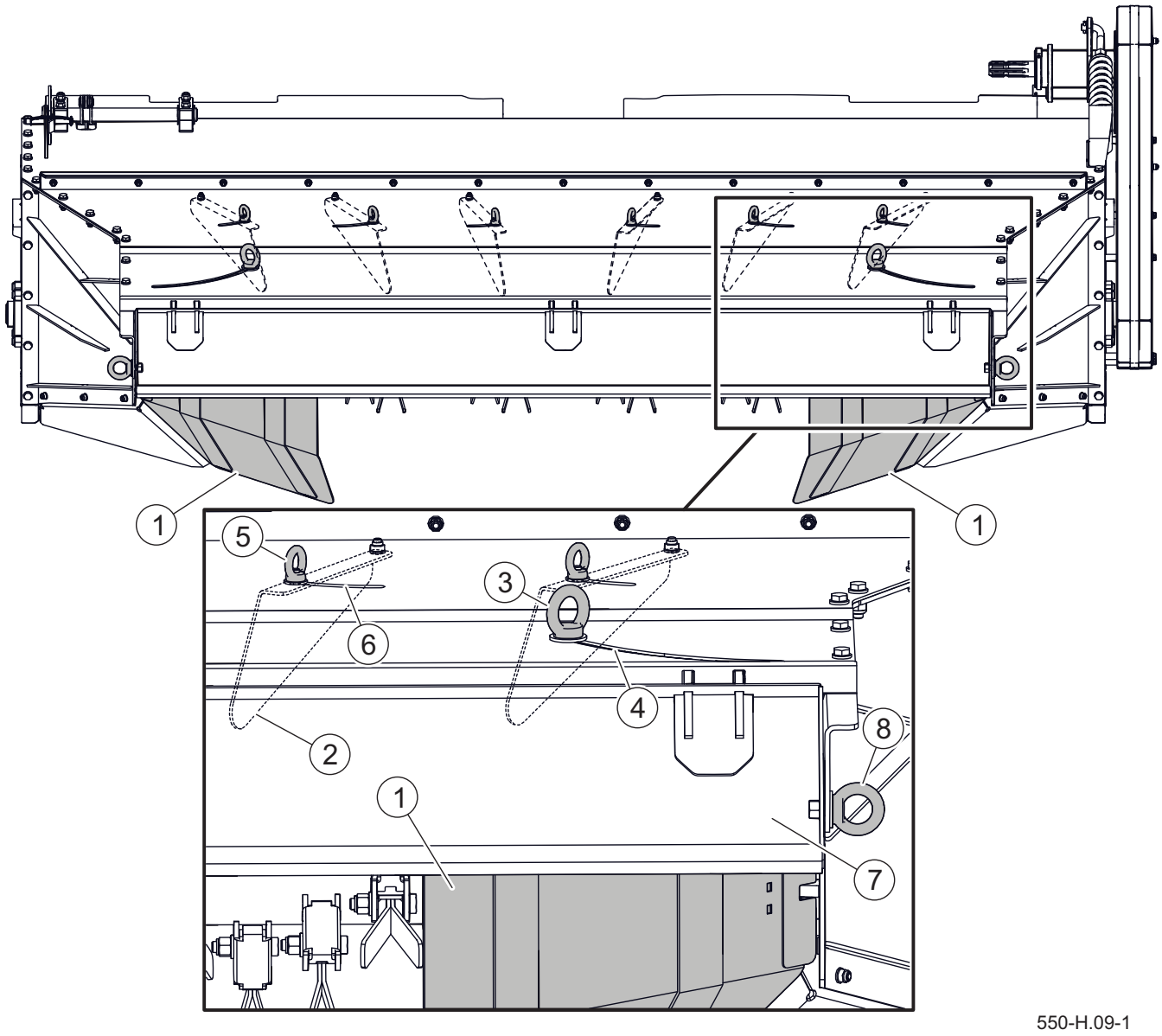

Figure 4.9 PDC300C swath guide adjustment
(1)- swath guides; (2)- swath blade; (3)- swath guide adjustment bolt; (4)- swath guide kidney slot; (5)- swath blade adjustment bolt; (6)- swath blade kidney slot; (7)- swath conditioner flap; (8)- swath conditioner flap adjustment bolt.

SETTING THE SWATH WIDTH IN PDC300 MOWER

Two swath guides installed on the conditioner unit support frame are used to adjust the swath width.

You may adjust the swath width smoothly within 1100 ÷ 1900 mm by adjusting the two swath guides (1) as appropriate. To adjust the swath guide (Figure 4.9):

- loosen the adjusting screw (3) in the kidney slot (4) at the swath guide (1),
- rotate swath guide (1) setting the appropriate swath width, and tighten the adjusting bolt (3) in the kidney slot (4),

Then adjust the setting of swath blade (2) appropriately to the swath guide (1) so that

the mown materials is directed to swath guide. In order to do this:

- loosen the adjusting bolts (5),
- set the swath blades (2),
- tighten the adjusting bolts (5).

Adjust the second swath guide (1) and all swath blades (2).

Adjust also the distance of the mown material discharge using the rear flap (7) of the conditioner. Make the adjustment using the adjusting bolts (8).

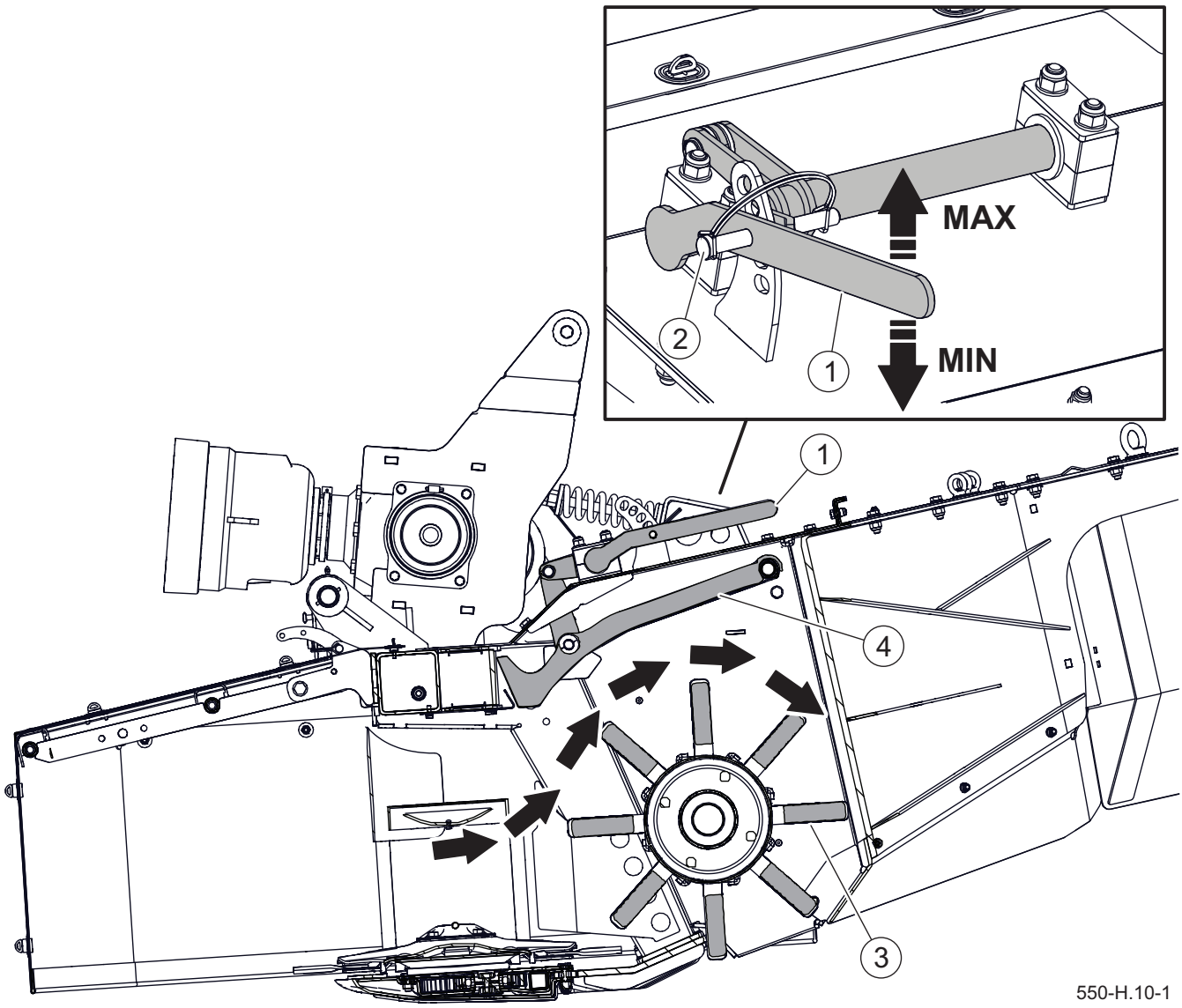

Figure 4.10 PDC300C swath conditioner adjustment.
(1)- swath conditioner adjustment lever; (2)- cotter pin; (3)- swath conditioner flail blades; (4)- damping barrier; MIN- minimum swath conditioning intensity setting; MAX- maximum swath conditioning intensity setting;

SETTING THE SWATH CONDITIONING INTENSITY IN THE PDC300C MOWER

Depending on the type and density of the mown material, you can set the intensity of swath conditioning (Figure 4.10). This is done by the lever (1) on the support frame of the conditioning assembly connected to the damping barrier. The damping barrier must be adjusted so that the mown material does not collect between the cutterbar and conditioning shaft.

To adjust swath conditioning intensity:

- release and take out locking cotter pin (2),
- move the adjustment lever (1) up to achieve a greater mown material conditioning intensity (MAX) or down to reduce the conditioning intensity

(MIN);

- adjust the lever so that the hole in the lever is in line with a hole in the bracket;
- insert cotter pin (2) in the hole and secure it.

MOWING

If the mower is correctly set for working in the field, is totally serviceable and its technical condition causes no concerns one may commence work.

DANGER

Before starting the carrier engine make sure that the PTO drive is disengaged. Otherwise, the machine may start uncontrollably and endanger the life and health of bystanders.
The machine drive may only be started when all guards and safety aprons are lowered and correctly attached and the cutting unit is in the working position.
Before engaging PTO drive, make sure that there are no bystanders, especially children, near the machine. Maintain proper visibility of machine during work
Other persons should be at a safe distance from the mower during work because of the danger that objects may be thrown (stones, branches from beneath cutting unit.

IMPORTANT

Do not start the machine with PTO speed higher than the allowable one.

Selective control valve lever of the tractor external hydraulic system used for controlling operation of the lifting/lowering hydraulic cylinders of cutting unit should be set in "floating" position. Consequently, the cutting unit can adjust to uneven terrain.

After setting mower in working position, observe the following procedure:

- at low engine RPM connect PTO drive,
- gradually increase RPM until the maximum PTO speed is reached,
- engage appropriate tractor gear and drive into standing crop.

During starting, the cutting unit generates considerable noise. Noise is reduced when mower is driven into standing crop.

Ground speed is adjusted during working. cutting speed should be adjusted to the existing conditions that is the density of the crop, and the type of ground surface, on which one is cutting. The driver must always have the tractor under control and avoid unevenness and foreign objects in front of the tractor and machine. On hilly

HIGH NOISE LEVEL WARNING

Depending on the working conditions, the tractor with the machine may generate noise exceeding the level of 85dB at the driver position. In such conditions, the operator should use personal protective equipment (ear protectors).
In order to reduce the level of noise during work, the operator cab windows and door should be closed.

terrain the working speed should be reduced and the driver must pay attention to movements of the machine in relation to the ground surface.

Mowing speed must be reduced if:

- mown ground is uneven,
- crop is laid, or very tall and dense,
- there is a great risk of running into foreign objects e.g. stones, branches and heaps of soil.

Be especially careful when mowing along ditches, furrows and slopes.

During crossing over swaths with the mower and during turning the mower cutting unit must first be raised with the aid of the lifting cylinder and the number of rotations must be reduced. Ground speed must be reduced.

If during cutting the overload release clutch of the drive shaft is activated, disconnect PTO drive in tractor and check what caused the overload. The overload clutch may be activated because of too low rotation speed of cutting unit.

IMPORTANT

If the machine is in the working position and cuts, the single acting cylinder for lifting the cutting unit must always be set in floating position so that the cutting unit may move freely tracking the ground contours optimally.
On uneven ground there is a risk of the machine colliding with mounds of soil or foreign objects and the driver must minimise the risk of damaging the machine.

IMPORTANT

Do NOT operate mower while reversing. The machine design does not allow reversing with the machine in working position.
Reversing the mower is impossible, unless the cutting unit is raised from the ground with mower hydraulic cylinders.
During cutting always maintain constant RPM speed for optimum cutting performance. If RPM speed falls the drive loading increases significantly and it may occur at the friction clutch would be activated to protect the system. In such a situation always disconnect the drive and check the cause of the overloading.
Give special attention to sudden movements and impacts in the cutting unit. After a strong impact was an obstacle always check the machine in case of possible damage. Damaged elements must be replaced.

DANGER

Along banks, ditches and furrows always be especially careful and reduce speed because of the possibility encountering foreign objects and because of soil differences on the edges of banks and furrows. Not reducing speed may cause the soil to slip and the tractor and machine to overturn.

4.4 UNHITCHING THE MACHINE FROM THE CARRIER VEHICLE

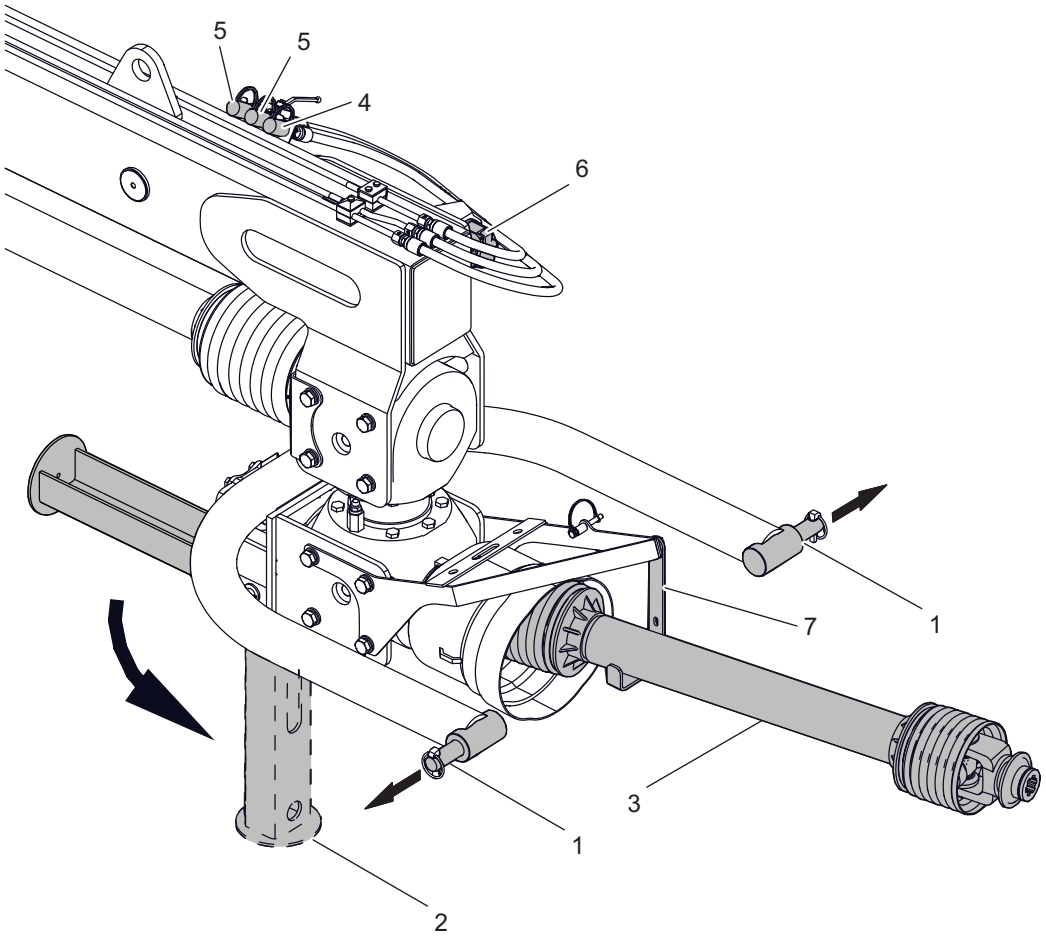

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Figure 4.11 Unhitching the mower

(1) lower pins of mower hitch (2) support (3) PTO shaft (4)(5) hydraulic line plugs..(6) lighting system cable plug (7) PTO shaft bracket

DANGER

Before unhitching the machine from the carrier vehicle, turn off the carrier vehicle's engine, engage parking brake and secure cab against access of unauthorised persons.
Be especially careful when unhitching the machine from the carrier vehicle.

DANGER

Reduce pressure prior to disconnecting the hydraulic system.

DANGER

Do NOT use the securing chains to support the shaft while machine is parked or when transporting the machine.

DANGER

Before lowering or raising mower on three point linkage make certain that nobody is near the machine and that nobody is operating it.

Machine unhitched from the carrier vehicle must be placed on level, sufficiently hard surface in such a manner as to ensure that it is possible to connect it again.

In order to disconnect the machine from the carrier vehicle, proceed as follows:

- Put the machine in a parking place.
- Unlock the cutting unit suspension cylinders from the transport position and lower the cutting unit maximally.
- Lower the support (2) and secure it with a pin and a cotter pin.
- Set the mower using three-point linkage until support (2) fully rests on the ground,
- Place chocks under mower wheels.

  Wheel chocks shall be so placed that one of them is in front of the wheel and the second is behind it.
- Switch off engine, remove key from ignition and engage parking brake.
- Reduce residual pressure in the hydraulic system by moving the appropriate control lever of the hydraulic circuit in the carrier.
- Disconnect the hydraulic lines (4) (5) from the carrier vehicle and place them on the lines bracket.
- Disconnect the electric lighting system power cable (6)
- Disconnect PTO shaft (3) from carrier PTO drive and place on bracket (7),
- Disconnect pins (1) of the mower's hitch from the lower links of the tractor three point linkage and drive the tractor away from the machine.

The mower unhitched from the tractor should rest on the support foot (2) and two wheels.

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4.5 PROPER USE AND MAINTENANCE OF TYRES

- When working on tyres, the machine should be secured against rolling by placing chocks under the wheels.
- Repair work on the wheels or tyres should be carried out by persons trained and entitled to do so. This work should be carried out using appropriate tools.
- Checking the tightening of nuts should be made after the first use, after the first day of work, and then at regular intervals every 50 hours of work. The inspection should be repeated individually if a wheel has been removed from the wheel axle. Wheel nuts should be tightened according to recommendations provided in the section *5. MAINTENANCE*.
- Regularly check and maintain the correct pressure in tires in accordance with the instructions (especially if not used for an extended).
- Air pressure in tyres should be also checked during the whole day of intensive work. Please note that higher temperatures could raise tyre pressure by as much as 1 bar. At high temperatures and pressure, reduce speed.
- Do not release air from warm tyres to adjust the pressure or the tyres will be underinflated when temperatures return to normal.
- Tyre valves should be protected with the appropriate caps to avoid soiling.
- Do not exceed the maximum machine speed.
- When machine is operated all day, check temperature of tyres.
- Avoid potholes, sudden manoeuvres or high speeds when turning.

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4.6 CLEAN THE MACHINE

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

MACHINE CLEANING GUIDELINES

- To clean the machine, use only clean running water or water with a cleaning detergent additive with neutral pH.
- The use of pressure washers increases the effectiveness of washing, but be careful when working. During washing, washer nozzle may not be closer than 50 cm from the surface being cleaned.
- Water temperature should not exceed 55°C.
- Do not direct the water jet directly at machine components and equipment, i.e. valves, hydraulic cylinders, lights, electric and hydraulic plugs, electric connections, information and warning stickers, rating plate, line connections and lubrication points etc. High water jet pressure may damage these elements.
- For cleaning and maintenance of plastic coated surfaces it is recommended to use clean water or special preparations designed for this purpose.
- Do not apply organic solvents, preparations of unknown origin or other substances, which may cause damage to lacquered, rubber or plastic surfaces. In the event of doubt it is recommended to make a test on an unseen surface area.
- Surfaces smeared with oil or grease should be cleaned by application of white spirit or other degreasing agents and then washed with clean water with added detergent. Follow the cleaning agent manufacturer instructions.
- Detergents should be kept in original containers, optionally in replacement containers, but very clearly marked. Preparations may not be stored in food and drink containers.
- Ensure flexible lines and seals are clean. The plastic from which these elements are made may be susceptible to organic substances and some detergents. As a result of long-term reaction of some substances, the ageing process may be accelerated

DANGER

Carefully read the instructions for application of detergents and maintenance preparations.
While washing with detergents wear appropriate protective clothing and goggles protecting against splashing.
Switch tractor engine off and disengage PTO shaft before cleaning the machine.

and risk of damage increased. Rubber elements should be maintained with the aid of special preparations after previous thorough washing.

- Observe the rules of environmental protection and wash the machine in a place designed for this purpose.
- Washing and drying the machine must take place at temperatures above 0°C.
- After finishing washing wait until the machine is dry and then grease all inspection points according to recommendations. Remove excess oil or grease with a dry cloth.

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4.7 STORAGE

- After cleaning, inspect the whole machine, inspect technical condition of individual elements. Repair or replace any used or damaged components.
- Machine should be stored in a closed or roofed building inaccessible for unauthorized people and animals.
- The machine unhitched from the carrier vehicle should be placed on level, sufficiently hard surface in a way as to ensure that it is possible to hitch it again.
- If the machine will not be used for a long time, it is essential to protect it from adverse weather, especially rust and accelerated tyre deterioration. The machine should be very carefully washed and dried.
- Corroded places should be cleaned of rust, degreased and protected using undercoat paint and then painted with surface paint according to colour scheme.
- In the event of a prolonged storage, it is essential to lubricate all components regardless of the date of the last lubrication.
- Wheel rims and tyres should be carefully washed and dried. During longer storage of unused machine it is recommended that every 2 to 3 weeks the machine may be moved a bit so that the place of contact of tyres with ground is changed. The tyres will not be deformed and maintain proper geometry. Also, air pressure in tyres should be inspected from time to time and, if necessary, pressure should be increased to an appropriate value.
- PTO shafts should be stored in horizontal position.

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SECTION 5

MAINTENANCE

5.1 BASIC INFORMATION

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

Repairs during the warranty period may only be performed by the Authorised Points of Sale and Service (APSS).

The warranty will be void if you attempt unauthorized repairs, modify factory settings or use the machine not as intended (not described in this manual).

IMPORTANT

The machine must not be used when not in working order.
Repairs during the warranty period may only be performed by authorised service points.

Warranty inspection of the machine may be carried out only by an authorized warranty service point.

After the warranty period, we recommended that these inspections should be performed by specialised workshops.

IMPORTANT

Should it be necessary to change individual parts, use only original parts or those indicated by the Manufacturer. Non-adherence to these requirements may put the user and other people's health and life at risk, and also cause damage to the machine.

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5.2 PERIODIC MAINTENANCE SCHEDULE

Table 5.1. Inspection categories

Category	Description	Carried out by	Frequency
A	Inspection daily	Operator	Inspection conducted daily before the first start or every 10 hours of continuous operation in shift mode.
B	Maintenance inspection	Operator	Inspection performed every 50 hours of operation. Before commencing work, perform also all the activities included in the scope of daily inspection.
C	Maintenance inspection	Operator	Inspection performed every 250 hours of operation or every 6 months, whichever comes first. Before starting work, also perform all inspection steps every 50 hours of operation.
D	Maintenance inspection	Operator	Inspection performed every 500 hours of operation or every 12 months, whichever comes first. Before starting work, also perform all inspection steps every 250 hours of operation.
E	Maintenance inspection	Service (1)	Inspection carried out every 4 years of the machine use

(1) - post-warranty service

Table 5.2. Inspection schedule

Description of activities	A	B	C	D	E
Check connection of the mower to the tractor's linkage	•				
Check air pressure in tyres and technical condition of wheels	•				
"Kontrola wtyków i gniazd przyłączy"	•				
"Kontrola osłon" Check protective shields	•				
Check technical condition of PTO shaft(1)	•				
Check oil level in bevel gears	•				
Check oil level in cutterbar	•				
Check the technical condition of cutting blades (PDC300 / PDC300C) and conditioner spring tines (PDC300C)	•				
Check correct operation of lights and indicators.	•				
"Kontrola instalacji hydraulicznej"	•				
Check if the wheels are properly tightened		•			
"Kontrola luzu łożysk osi jezdnych"			•(2)		
Change gear oil		•(3)		•	
Replace hydraulic lines					•
"Smarowanie"	See table: *Lubrication schedule.*				
"Kontrola połączeń śrubowych"	See section: *"Kontrola połączeń śrubowych"*				
(1) in accordance with the PTO shaft's Operator Manual *(2) after the first month of use, every 6 months of use* *(3) first change*					

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5.3 INSPECT AND REPLACE THE CUTTER BAR BLADES

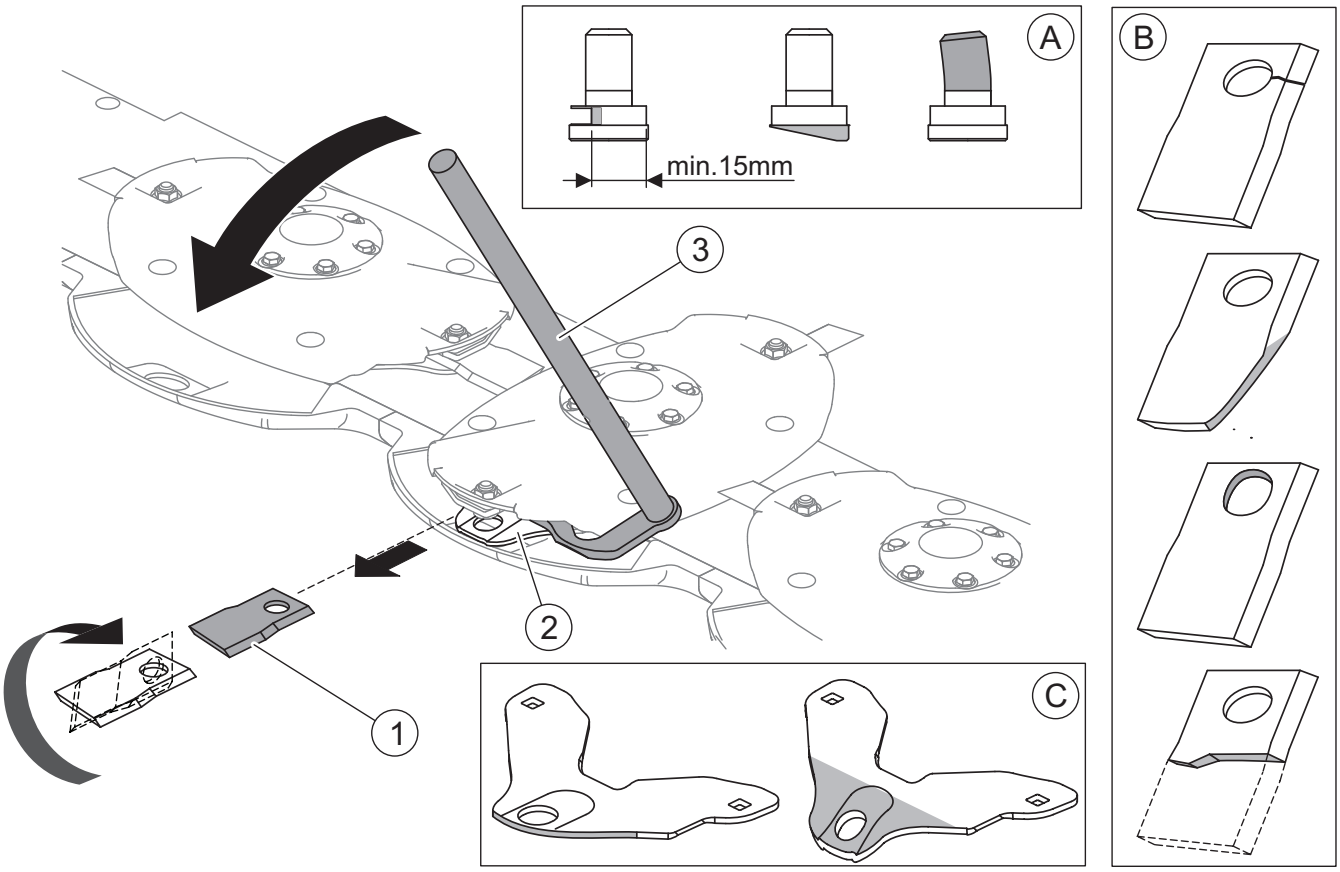

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Figure 5.1 Replacement of the cutter bar blades
(1) cutting blade; (2) blade holder; (3) blade changing key; (A) arbor damage example; (B) blade damage example; (C) blade holder damage example

DANGER

Before inspection and replacement of blades, turn off tractor engine, remove the key from the ignition, remove the PTO shaft and engage tractor parking brake. Ensure that unauthorised persons do not have access to the tractor.
Cutter bar must rest on the ground.
Use only CE certified blades meeting the requirements of ISO 5718 standard.

Regularly inspect the blades. Visual inspection involves checking of the blade and mounting. blades should be worn down uniformly. If blade is worn down naturally it can be reversed and reinstalled on the cutting disk (this applies to double edged blades).

A bent or damaged blade must be replaced with a new one.

Before proceeding to replace the blades,

TIP

Damaged or worn blades must be changed in pairs in order to maintain balance of cutting disc.

IMPORTANT

Missing blade or its fragment will cause imbalance and excessive cutting disk vibration and may damage the cutter bar.

clean the residue of mown material from the cutter bar.

Place key (3) between blade holder (2) and cutting disc, next press on key (3) till it is possible to take the blade (1) out. When changing blades check the condition of the arbor securing the blade to the cutting disk and also the blade holder. An excessively worn or damaged arbor or blade holder should be replaced with a new part. Tighten arbor nuts with torque of 50 Nm.

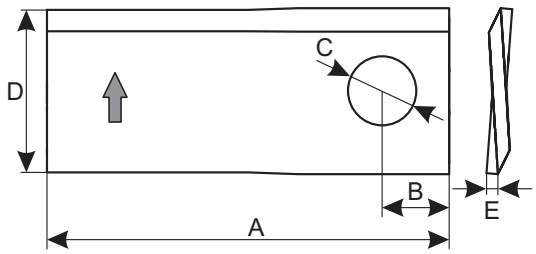
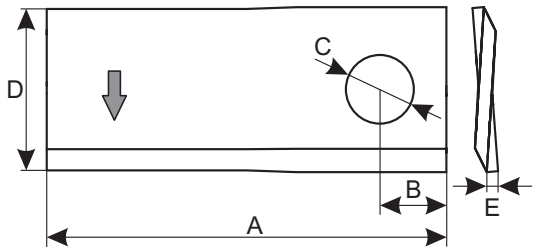
Due to different cutting disc rotation direction, cutter bar (Figure 5.2) is equipped with the right blades (A) and left blades (B). Rotation direction is indicated on the blade.

IMPORTANT

Each time a blade hits an obstacle such as a stone or a branch, its technical condition must be inspected.

Before starting work with the mower, check the condition of the cutting blade connections.

Table 5.3. Cutting blade specification.

MARKING BLADE	FIGURE	DIMENSIONS [mm]				
		A	B	C	D	E
120/49/4 P (RIGHT)		120	20	21	49	4
120/49/4 L (LEFT)		120	20	21	49	4

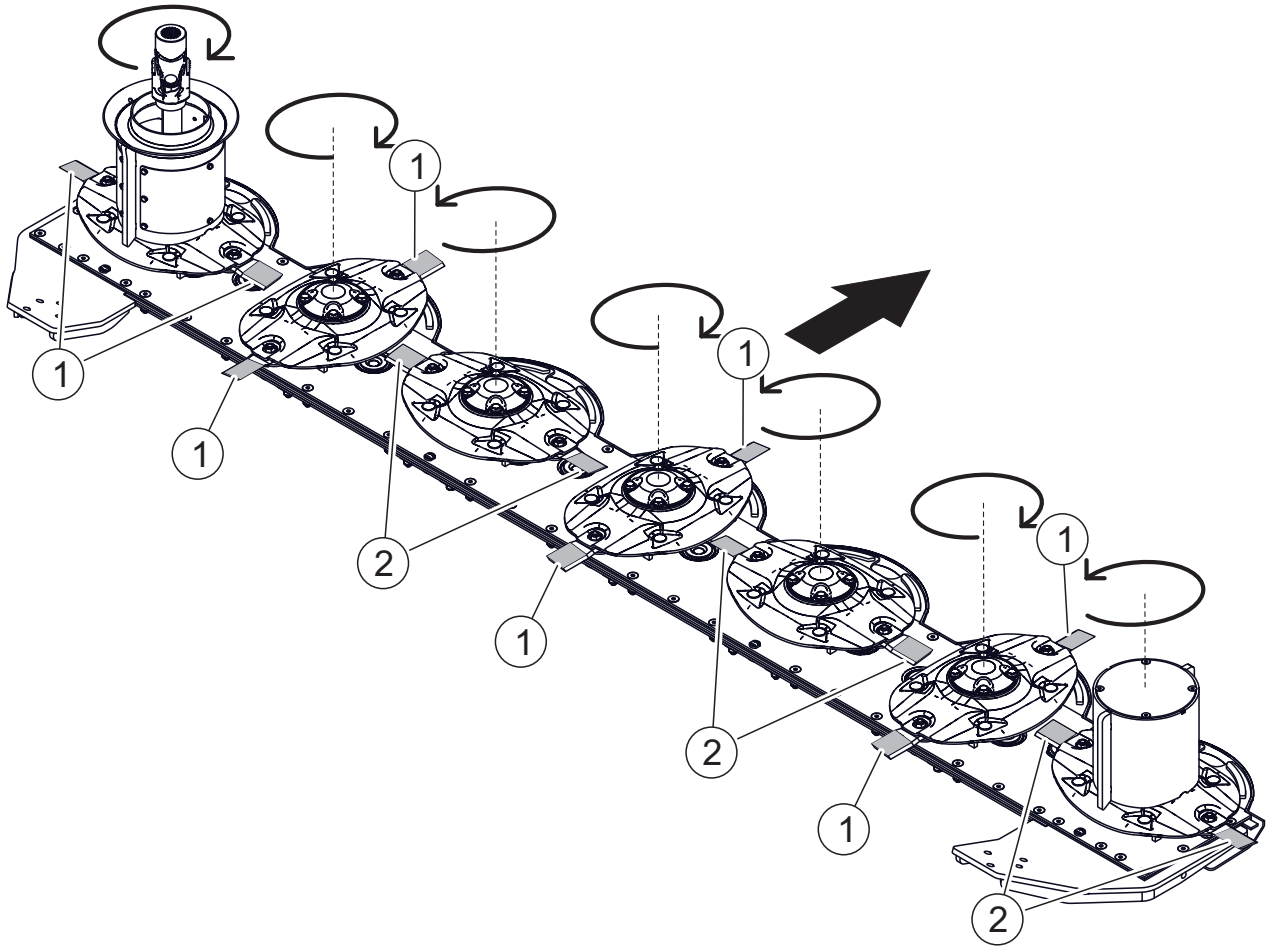


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Figure 5.2 Cutting disc rotation direction
(1) right cutting blade (2) left cutting blade

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5.4 INSPECT AND REPLACE SWATH CONDITIONER FLAIL BLADES (PDC300C)

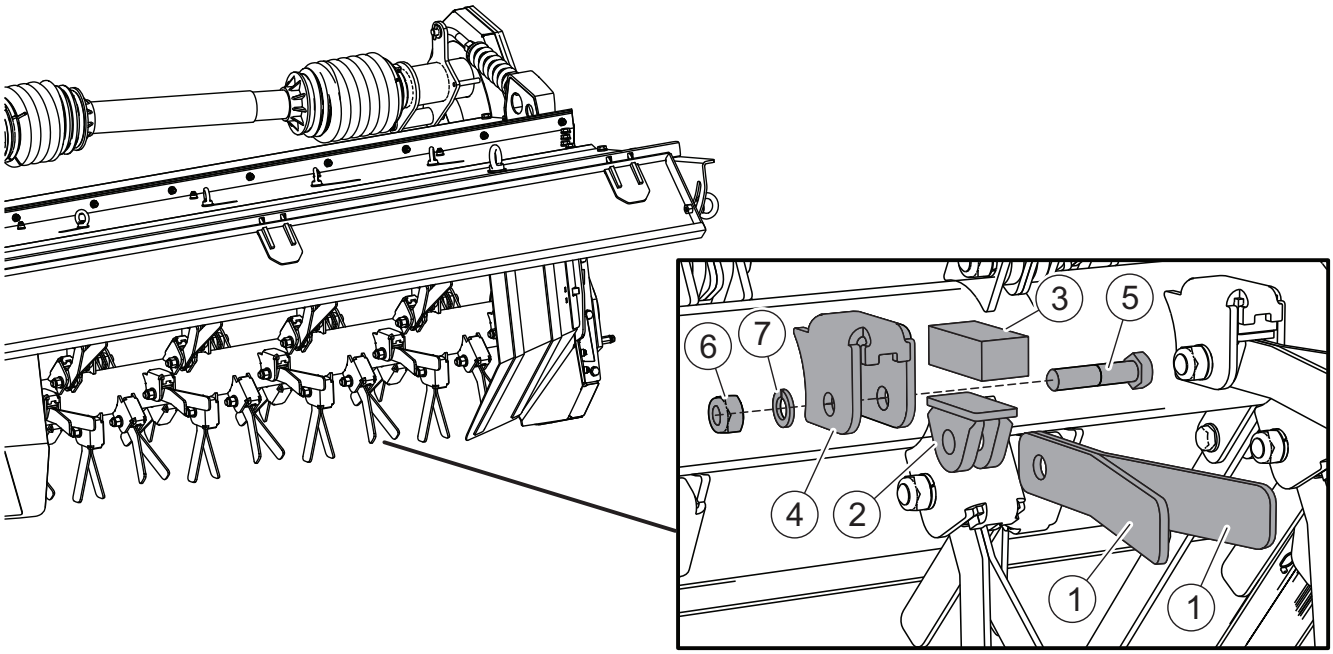

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Figure 5.3 Replacing the sprong tines of the swath conditioner (PDC300C).
(1) - spring tines, (2) - blade lock, (3) - rubber block, (4) - spring tines mount (5) - M12x60 kl.8.8 mounting bolt; (6) - M12 kl.8.8 self-locking nut; (7) - spring washer.

DANGER

Before inspection and replacement of flail blades, turn off tractor engine, remove the key from the ignition, remove the PTO shaft and engage tractor parking brake. Ensure that unauthorised persons do not have access to the tractor.
Rest conditioner assembly on the ground.

Regularly inspect flail blades. Visually inspect flail blades, their mounting and rubber blocks. Worn rubber blocks, distorted or broken flail blades should be replaced. Flail blades should be replaced in pairs to maintain balance.

To replace the flail blades (Figure 5.3):

- unscrew the M12 self-locking nut (6)
- Remove the M12x60 fixing bolt (5)
- remove a pair of flail blades (1) from the lock (2).

When replacing the flail blades pay attention to the condition of the fixing bolt (5) and rubber block (3). Excessively worn or damaged bolt or rubber block should be replaced. Installation of the new flail blades should be performed in reverse order. Nut (6) of the fixing bolt must be tightened so

that the flail blades (1) can move freely in the blade lock (2).

Before starting work with the mower, check the condition of the flail blade connections.

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5.5 CUTTERBAR MAINTENANCE

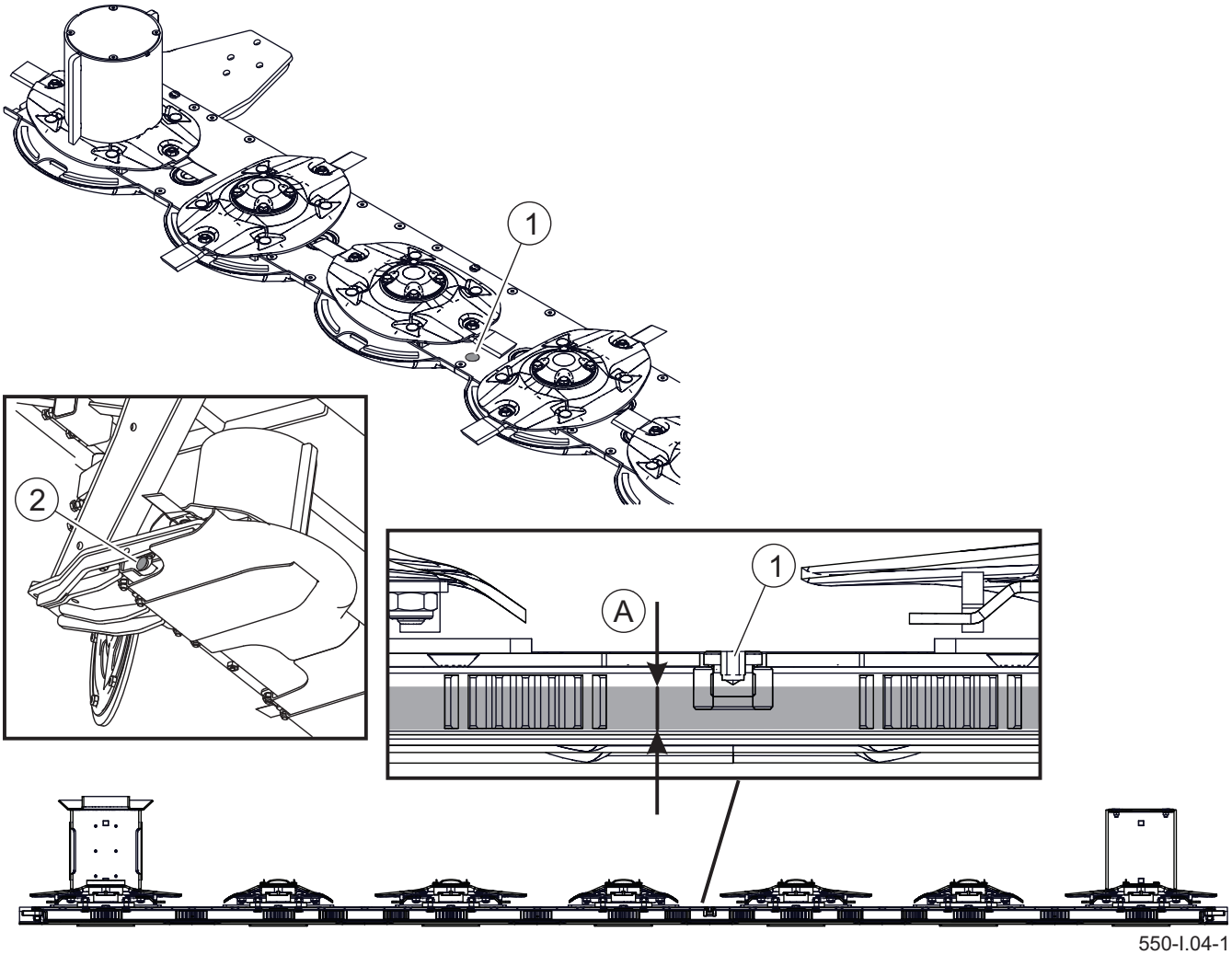

Figure 5.4 Check oil level in cutter bar
(1)- inlet cap; (2)- drain plug; (A)- correct oil level 6 ÷ 8mm from the cutter bar bottom

Cutting unit maintenance involves periodical checking of oil level and changing of oil in cutter bar. In the event of damage to cutter bar contact authorised service point in order to perform repairs.

Correct oil level (A) with cutter bar in horizontal position is 6 ÷ 8mm from the cutter bar bottom. To check oil level remove inlet cap (1) located between the third and fourth disk (Figure 5.4). When oil is cold wait approximately 15 minutes before checking the oil level. Just check the oil level on a level cutter bar.

First oil change should be made after 50 hours of mower operation and then, after each 500 hours of operation or at least once in the season, whichever occurs first. Cutter bar is filled with 3.0 litre of

Check oil level in cutter bar each time before beginning work.

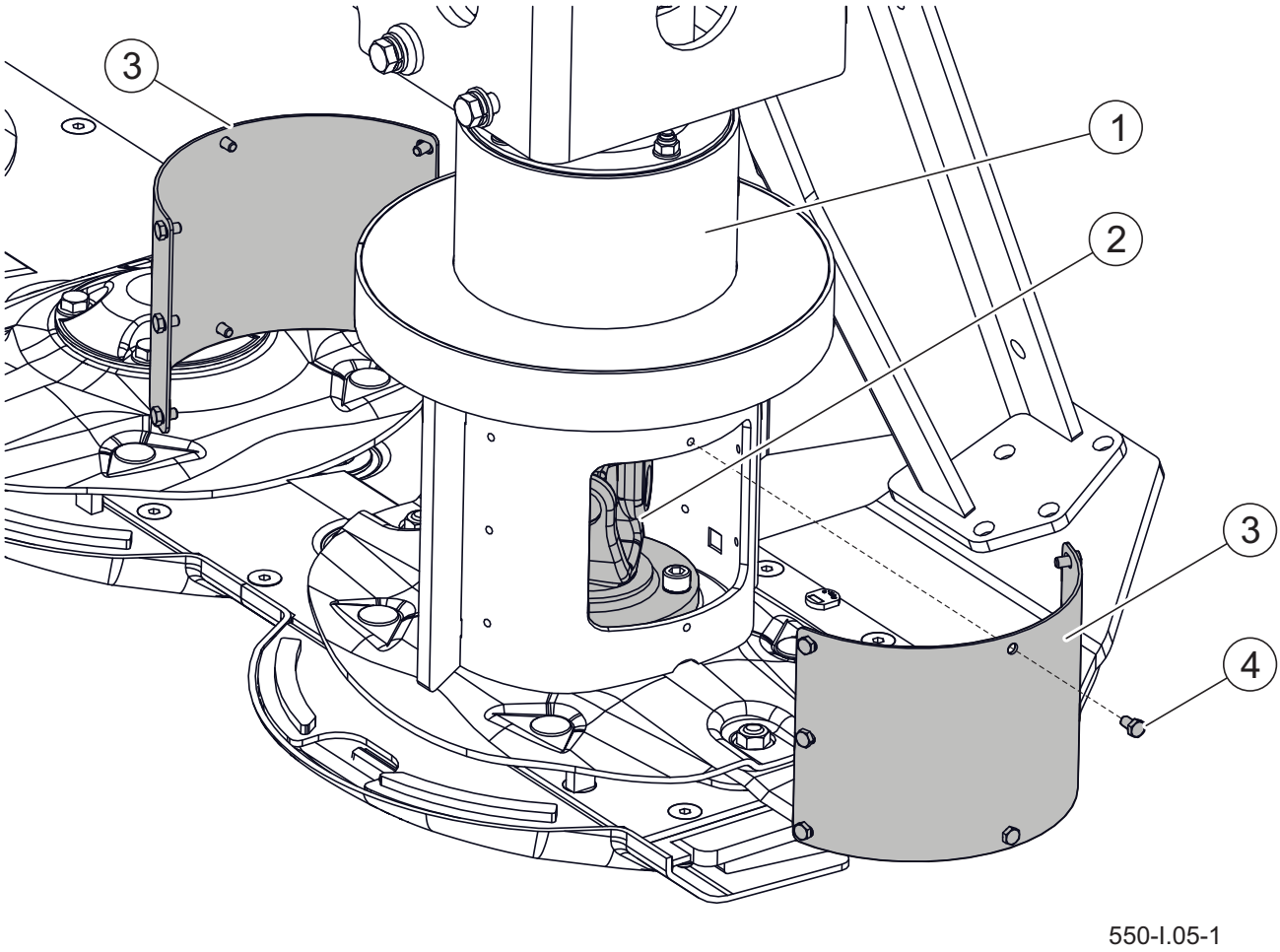

Figure 5.5 Cleaning and lubricating the drive disk
(1) drive disc, (2) articulated connector, (3) cover, (4) bolt

transmission oil SAE90EP (80W90 GL-5).
It is best to change oil immediately after completing work when cutter bar is still hot and impurities are mixed with oil.
In order to change oil in cutter bar:

- unscrew inspection filler plug (1) (Figure 5.4),
- raise cutter bar,
- unscrew drain plug (2) and drain oil to previously prepared container,
- tighten drain plug (2),
- Position cutting unit horizontally and pour the required quantity of oil through the inlet (1),

If a leak is noticed, carefully inspect seals and check oil level. Mower operation with low oil level in cutter bar may cause lasting damage. Repairs of cutter bar during warranty period (except blade replacement) may only be performed at authorised mechanical workshops.

Oil in cutter bar must be changed after the first 50 hours of work. The next oil change should be made after 500 hours of work or once a year, whichever occurs first.

To ensure proper operation of the mower, regularly clean and lubricate drive disc (1) articulated shaft (2) - (Figure 5.5). Failure to regularly clean and lubricate the articulated connector (2) can lead to seizing of the connection and machine damage.

Required maintenance:

- unscrew screws (4),
- remove both covers (3),
- clean and lubricate the lubricated shaft (2), and clean the internal surfaces of covers,
- replace the covers and screw in bolts.

IMPORTANT

The dirt accumulated inside the drive disc such as grass clippings, sand, etc. can lead to seizure of the articulated connector. Connector seizure can damage the mower transmission.

Carry out maintenance of the drive disc at least twice during the grass mowing season and always after the season.

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5.6 HALF AXLE MAINTENANCE

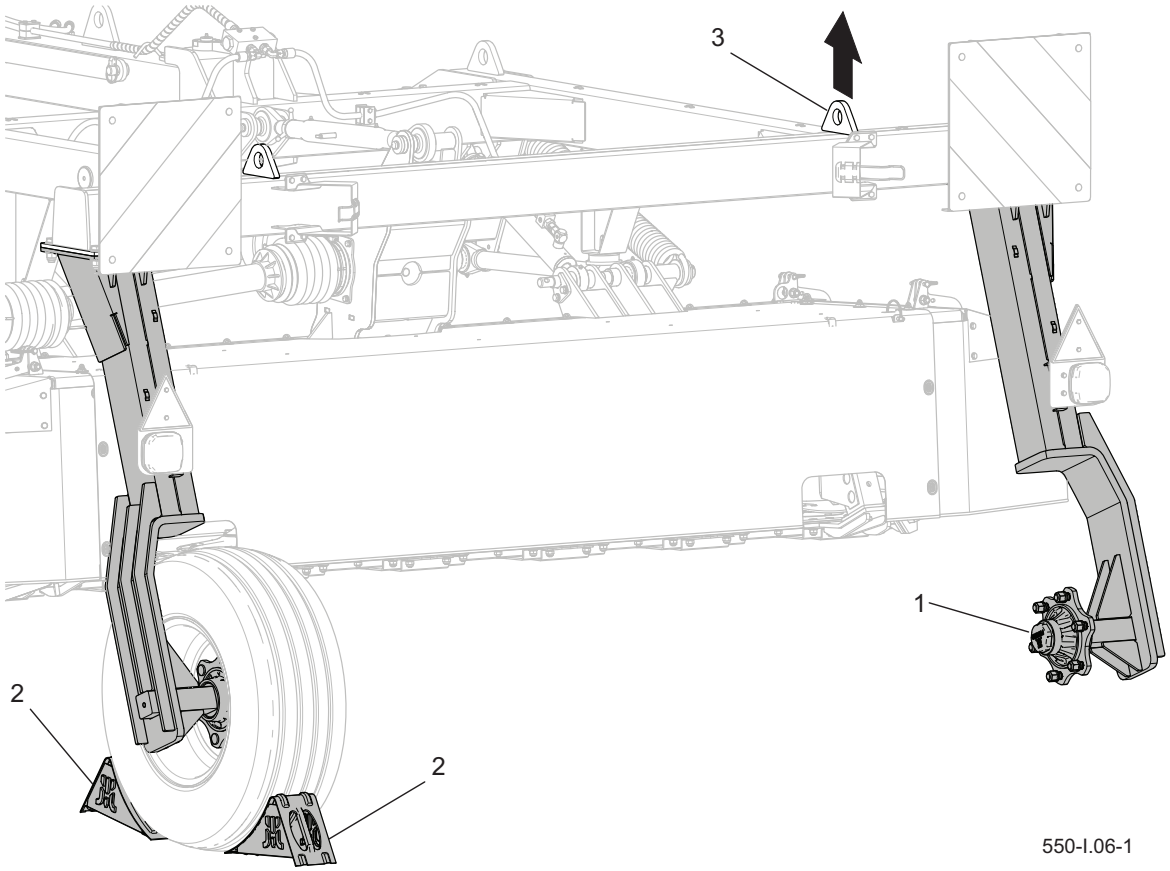

Figure 5.6 Half axle maintenance.
(1) half axle (2) wheel chocks (3) transport lug

Work connected with the repair, change or regeneration of half axle (1) components should be entrusted to specialist establishments, having the appropriate technology and qualifications for this type of work.

The duties of the user include only inspecting and adjusting slackness of half axle bearings.

Change of grease in the axle shaft bearings and replacement of bearings and hub seals may be performed by specialist workshops only.

PREPARATION PROCEDURES FOR INSPECTING AND ADJUSTING SLACKNESS OF HALF AXLE BEARINGS

- Hitch machine to tractor, immobilise tractor with parking brake
- Park tractor and machine on hard level ground.

  Tractor must be placed to drive forward.
- Place the wheel chocks (2) under the machine's wheel opposite to the lifted wheel. Ensure that machine will not

move during inspection.

- Raise the wheel (opposite to the side where chocks are placed) with a chain hoist.

  Attach the chain hoist to the transport lug (3) and slowly raise the mower's frame together with the wheel. Lifting jack must be suitable for machine weight.

IMPORTANT

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

DANGER

Make sure that the machine does not roll when checking and adjusting the wheel half axle bearings slackness.

CHECKING HALF AXLE SHAFT BEARINGS FOR SLACKNESS

- Turning the wheel slowly in both directions check that movement is smooth and that the wheel rotates without excessive resistance.
- Turn the wheel so that it rotates very quickly, check that the bearing does not make any unusual sounds.

Check wheel half axle bearings for looseness:
- after the first month of use,
- every 6 months of use.

- Moving the wheel try to detect slackness.

  You may use a lever placed under the wheel supporting the other end of the lever on the floor.

- Repeat the procedure for the other wheel, remembering that the lifting jack must be on the side opposite to the chocks.

If slackness is felt, adjust bearings. Unusual noise made by the bearing may be a symptom of excessive wear, dirt or damage. In such an event the bearing, together with sealing ring, should be replaced with new parts, or cleaned and greased again During inspection of bearings ensure that possibly detected looseness comes from the bearing and not from the axle system

Check condition of hub cover, if necessary replace it with a new cover. Only inspect bearings for looseness, when the machine is hitched to a tractor.

TIP

If hub cover is damaged or missing, contamination and dampness enter the hub, which causes significantly faster wear of bearings and hub seals.
Bearing life is dependent on machine working conditions, loading, ground speed and lubrication conditions.

ADJUST SLACKNESS OF HALF-AXLE SHAFT BEARINGS

- Take off hub cover (1).
- Take out cotter pin (3) securing castellated nut (2).
- Tighten castellated nut in order to eliminate slackness.

  Wheel should rotate with insignificant resistance.

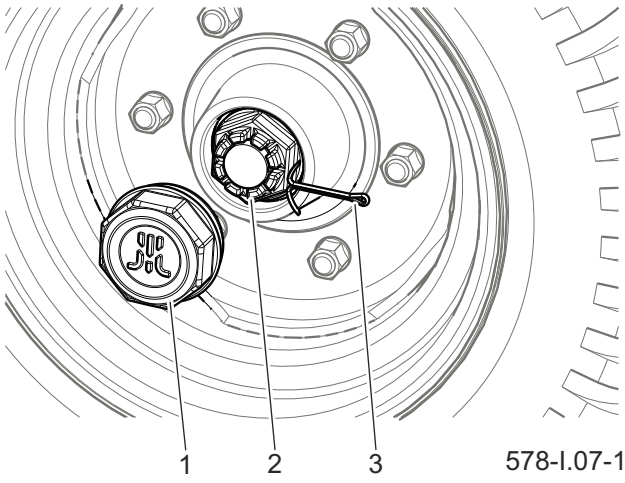

Figure 5.7 adjustment of road wheel axle bearings

(1) hub cover (2) castellated nut

(3) - securing cotter pin

- Undo nut (not less than ⅓ of a turn) to align the nearest thread groove with the opening in wheel half axle pin.

  Wheel should rotate without excessive resistance. The nut must not be excessively tightened. Do not apply excessive pressure because working conditions of the bearings may deteriorate.

- Secure castellated nut with cotter pin and mount the hub cap.
- Delicately tap the hub cap with rubber or wooden mallet.

The wheel should turn smoothly without jamming and detectable resistance. Only adjust bearings, when the machine is hitched to a tractor.

TIP

The bearing clearance is easier to check and adjust if the wheel is removed.

I.1.7.550.06.1.EN

5.7 WHEEL MAINTENANCE

CHECKING AIR PRESSURE IN TYRES AND TECHNICAL CONDITION OF WHEELS

Check tyres before you drive off when tyres are not warm, or after the machine has been parked for an extended period.

- Visually inspect if the tyres are properly inflated.
- If necessary, check air pressure using a manometer and inflate the tyre up to the recommended pressure.

  Required tyre pressure values are specified on the information decal (1) placed on the wheel rim.

- While checking pressure pay attention to technical condition of wheels and tyres.

  Look carefully at tyre sides and check the condition of tread. Wheels should be inspected with regard to distortion, breaking of material, breaking of welds, corrosion, especially in the area of welds and contact with tyre.

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

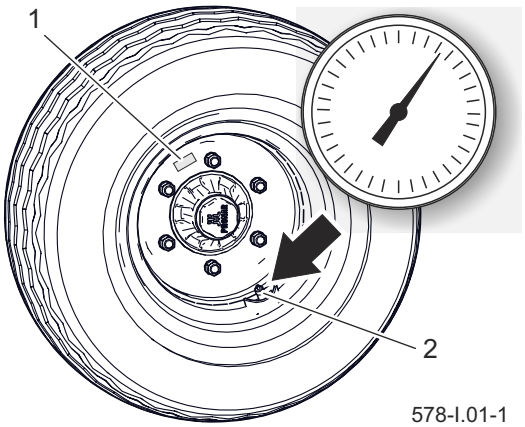

Figure 5.8 Wheel

(1) decal *(2) valve*

DANGER

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

IMPORTANT

Wrong air pressure in tyres accelerates the wear of tyres and may also lead to their permanent damage.

REMOVE WHEEL

- Place chocks under the wheel that will not be dismounted.
- Ensure that machine is immobilised when wheel is being removed.
- Loosen wheel nuts according to the sequence shown in figure - *Sequence of nut tightening*.
- Place lifting jack and lift rotary rake.
- Dismount wheel.

INSTALL WHEEL

- Clean half axle pins and nuts of contamination.

  Do not grease thread of nuts and pins.

- Check condition of pins and nuts, if necessary replace them.
- Place wheel on hub, tighten nuts so that wheel rim tightly fits the hub.
- Lower the machine, tighten nuts according to recommended torque and given sequence.

TIGHTENING NUTS

Nuts should be tightened gradually diagonally, (in several stages, until obtaining the required tightening torque) using a torque spanner.

Check tightening of half axle wheel nuts:

- after the first use of the trailer,

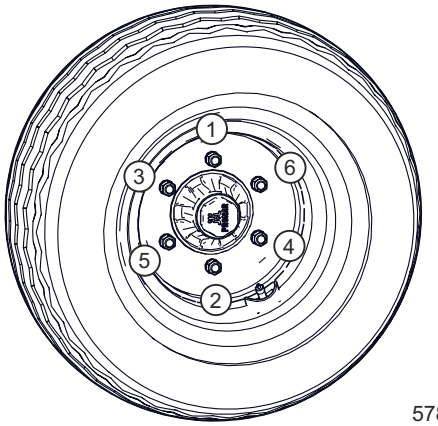

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Figure 5.9 Sequence of nut tightening

- after first day of work,
- at regular intervals (50 h).

The inspection should be repeated individually if a wheel has been removed from the wheel axle.

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

I.1.7.578.04.1.EN

IMPORTANT

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

TIP

Wheel nuts should be tightened using the torque of 270 Nm – M18x1.5 nuts.

5.8 INSPECTION OF CONNECTION PLUGS AND SOCKETS

Damaged connection body or socket body should be replaced. In the event of damage to cover or seal, change these elements for new reliable elements.

If the machine is unhitched from the tractor, connections should be protected by covers or placed in their designated sockets. Before the winter, it is recommended to preserve the seal with special preparations (e.g. silicon grease for rubber elements).

Each time before hitching the machine, inspect technical condition and cleanness of connectors and sockets in tractor. If necessary, clean or repair tractor sockets.

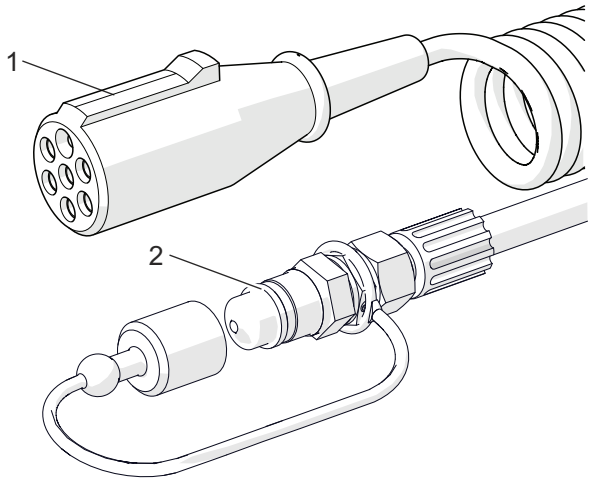

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Figure 5.10 Machine's connections
(2) electrical plug *(3) hydraulic plug*

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5.9 INSPECTION OF PROTECTIVE SHIELDS

Shields protect the machine user's health and life and the machine subassemblies against damage. Therefore, their technical condition must be checked before using the trailer. Any damaged or lost components must be repaired or replaced.

DANGER

Do NOT use the machine with damaged or incomplete shields.

PROCEDURE

- Check the protective shields for completeness and correct mounting.
- Visually inspect the technical condition and completeness of the PTO shafts and their shields.
- If necessary, tighten the bolt connections fixing the shields.

I.1.7.578.06.1.EN

5.10 MAINTENANCE OF BEVEL GEARS

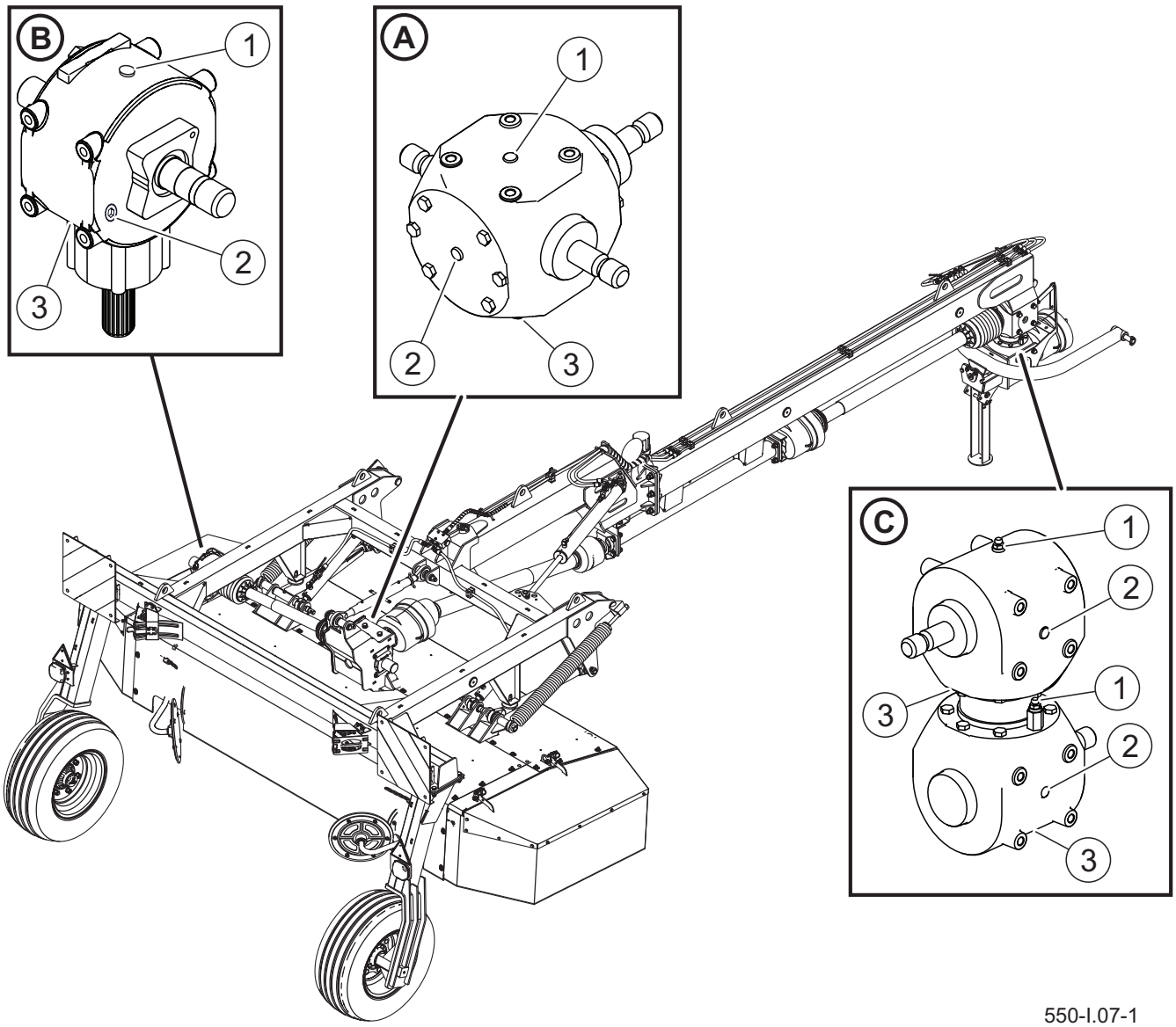

Figure 5.11 Check oil level and change oil in bevel gears

(A) central bevel gear *(B) drive bevel gear* *(C) rotary bevel gear*

(1) filler plug *(2) inspection plug* *(3) drain plug*

DANGER

If the machine is hitched to the carrier, disengage the PTO, remove the key from the ignition and immobilize the vehicle with the parking brake before you inspect the machine.
Do NOT perform service or repair work under raised and unsupported machine.

DANGER

Do not touch the bevel gear after stopping the machine!

Due to the high oil temperature, the surfaces of the gears can reach high and dangerous temperatures. When checking oil level and adding oil, use appropriate personal protection equipment i.e. protective clothing, safety shoes, gloves, safety goggles. Avoid contact of skin with oil.

IMPORTANT

Check oil level in the gears before each start of the machine.
During inspection, the gear must be turned off and the oil cooled down.
Avoid overfilling with oil. Excessive amount of oil can cause the temperature of the gear to rise too high.
If a leak is noticed, carefully inspect seals and check oil level. Operating the transmission with insufficient amount of oil or without oil may cause permanent damage.

TIP

Lubricate the mower's bevel gears with gear oil SAE 90 EP (API GL-5 SAE 80W/90) in the following amounts (Figure 5.11):
- central transmission (A): 2 litres;
- drive gear (B): 1.1 litres;
- rotary gear (C): 2 litres for the upper half and 2 litres for the lower half.

Maintenance of the bevel gears is conducted during general inspection, change or topping up gear oil. In the event of damage to transmission, contact authorised service point in order to perform repairs.

IMPORTANT

Repairs of the transmission during warranty period may only be performed at authorised mechanical workshops.

CHECK OIL LEVEL

- Set the machine on a hard and level surface.
- Unscrew inspection plugs (2).

  Oil level should reach the lower edge of the inspection plug opening (2).
- If necessary unscrew filler plug (1) and add oil to the required level. Tighten the plug.

OIL CHANGE

To change oil in bevel gear, set the mower on a hard surface and level it, and then, in the case of the central bevel gear (A) and the drive gear (B):

The first change of oil in the gear should be made after the first 50 hours of work. The next oil changes should be made every 500 hours or once a year (whichever occurs first).

- unscrew filler plug (1),
- unscrew drain plug (3) in the lower part of the gear, drain oil into an oil-resistant tight container,
- if oil Manufacturer recommends flushing transmission with washing detergent, that operation should be performed according to the guidelines of the oil Manufacturer,
- tighten drain plug (3),
- add oil until oil flows out of inspection plug opening (2), found on side wall of gear transmission.

- tighten filler plug (1) and inspection plug (2).

In the case of a rotary bevel gear (C):

- unscrew filler plugs (1) in the upper and lower part of the rotary gear,
- unscrew drain plugs (3) in the lower parts of the gear housings and drain oil into an oil-resistant tight container,
- if oil Manufacturer recommends flushing transmission with washing detergent, that operation should be performed according to the guidelines of the oil Manufacturer,
- tighten drain plugs (3),
- add oil until oil flows out of inspection openings (2),
- tighten filler plugs (1) and inspection plugs (2).

Used oil should be taken to the appropriate facility dealing with recycling or regeneration of oils.

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5.11 MAINTENANCE OF BELT TRANSMISSION (PDC300C)

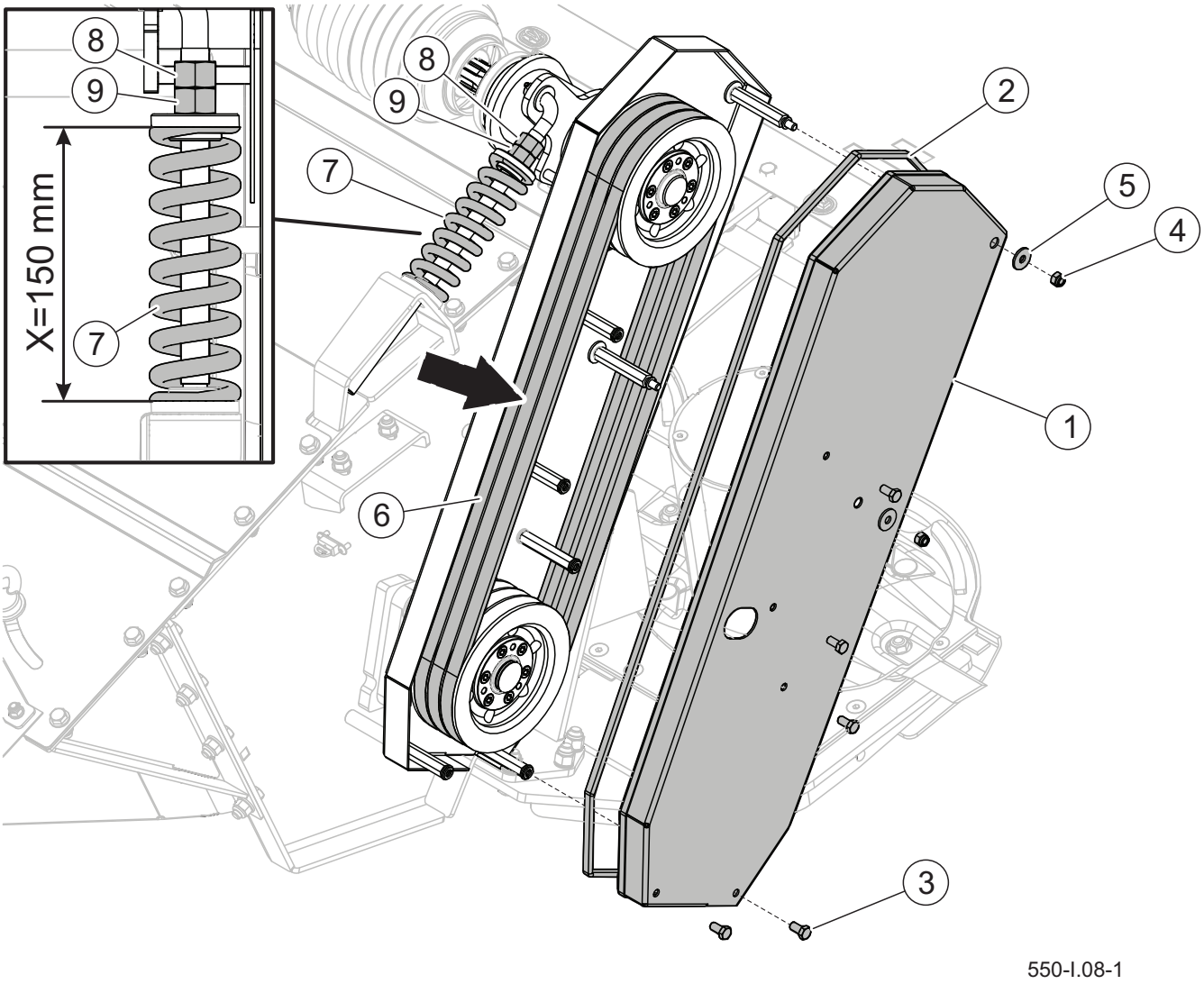

Figure 5.12 PDC300C belt drive tension adjustment

(1)- transmission shield; (2)- edge shield; (3)- bolt; (4)- nut; (5)- washer; (6)- transmission belts; (7) - tensioner spring; (8) - locknut; (9) - adjusting nut

DANGER

If the machine is hitched to the carrier, disengage the PTO, remove the key from the ignition and immobilize the vehicle with the parking brake before you inspect the machine.
Do NOT perform service or repair work under raised and unsupported machine.

In addition to periodic inspection of bevel gears, swath conditioner mowers (PDC300C) also require the monitoring of belt tension in swath conditioner belt drive. Belt tension (Figure 5.12) can be adjusted using the adjustment nut (9) that adjusts the tensioner spring tension (7). To do this, unscrew the locknut (8) and tighten the adjusting nut (9) on the bolt until the tensioner spring (7) is minimally tensioned. The deflection of the belt (6) measured at

the midpoint between the pulleys (marked with an arrow in the figure) should not exceed 20 mm under a pressure of 7.5 daN (kg), which should correspond to the length X = 150mm of the compressed spring (7). After adjustment, tighten the locknut (8).

If tension cannot be adjusted, replace belts with new ones. There are three SPB 1600 belts in the transmission system. To replace V-belts, loosen the spring tensioner wheel (4) by means of the adjustment nut (9) and remove belts from drive pulleys. After 2 hours of mower operation, check again the tension of belts of the conditioning assembly belt drive and readjust belts tension as necessary.

I.1.7.550.08.1.EN

5.12 MAINTENANCE OF ELECTRICAL SYSTEM AND WARNING ELEMENTS

The duties of the user include the technical inspection of the electrical system and warning elements as well as the replacement of light bulbs.

PROCEDURE

- Connect mower to tractor with appropriate connection lead.

  Check if the connection wire is reliable. Check connection sockets in tractor and mower.

- Check completeness and technical condition of machine lights.
- Check completeness of all reflectors.
- Before driving on to public road, check that the tractor is equipped with a warning reflective triangle.

IMPORTANT

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

TIP

Before driving off, make certain that all lamps and reflectors are clean.

DANGER

Do not independently repair electrical system, except items described in this section. All electrical system repairs must be performed only by suitably qualified personnel.

I.1.7.550.09.1.EN

5.13 HYDRAULIC SYSTEM MAINTENANCE

IMPORTANT

Before starting work, visually inspect the hydraulic system components.
Before commencing whatever work on hydraulic system reduce the pressure in the system.

DANGER

The machine with a leaking hydraulic system must NOT be used.

DANGER

When working with hydraulic system, use the suitable personal protection equipment i.e. protective clothing, footwear, gloves, eye protection. Avoid contact of skin with oil.

DANGER

Oil fires should be quenched with carbon dioxide (CO_2), foam or extinguisher steam.
Do NOT use water for fire extinguishing!

The condition of hydraulic system should be inspected regularly while using the machine.

The duties of the user related to the hydraulic system maintenance include checking the technical condition and tightness of hydraulic cylinders, hydraulic lines and hydraulic connectors.

The hydraulic system of new machine is factory filled with HL32 hydraulic oil. Because of its composition, the oil is not classified as a dangerous substance, however long-term action on the skin or eyes may cause irritation.

In the event of contact of oil with skin wash the place of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene). Contaminated clothing should be changed to prevent access of oil to skin. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor. Hydraulic oil in normal conditions is not harmful to the respiratory tract. A hazard only occurs when oil is strongly atomised (oil vapour), or in the case of fire during which toxic compounds may be released.

The hydraulic system must be tight. Inspect the seals when the hydraulic cylinders are completely extended. If oil is found on hydraulic cylinder body, check origin of leak. Minimum leaks are permissible with symptoms of "sweating", however in the event of noticing leaks in the form of "droplets" stop using the machine until faults are remedied.

If an oil leak is found on hydraulic

connections, tighten the connections. If this does not remedy the problem, replace the lines and connection components. Always exchange each mechanically damaged component.

If it is necessary to change hydraulic oil for another oil, check the recommendations of the oil Manufacturer very carefully. If it is recommended to flush the system with the appropriate preparation, then comply with these recommendations. It should be ensured that the chemicals used for this purpose do not compromise the materials of the hydraulic system.

Spilt oil should be immediately collected and placed in a marked tight container. Used oil should be taken to the appropriate facility dealing with recycling or regeneration of oils.

Table 5.4. Hydraulic oil characteristics

Item	Name	Value
1	ISO 3448VG viscosity classification	32
2	Kinematic viscosity at 40°C	28.8 – 35.2 mm2/s
3	ISO 6743/99 quality classification	HL
4	DIN 51502 quality classification	HL
5	Flash point, [°C]	Above 210°C
6	Maximum operating temperature, [°C]	80

Table 5.5. Hydraulic components tightening torque

Nut thread	Line diameter DN (in)	Tightening torque [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
M22x1,5 | 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

I.1.7.578.10.1.EN

5.14 REPLACE HYDRAULIC LINES

Rubber hydraulic lines must be replaced every 4 years regardless of their technical condition. This should be done in specialised workshops.

IMPORTANT

Flexible hydraulic lines must be replaced every 4 years due to their working characteristics and material (ageing, high pressure, variable loads).

I.1.7.578.11.1.EN

5.15 LUBRICATION

Lubrication of the machine should be performed according to the specified schedule or each time after washing the machine, regardless of the date of previous lubrication. Keep lubrication points clean as excessive amount of lubricant causes dirt to accumulate. Lubrication should be performed using generally available tools such as manually or foot operated pneumatic grease guns, etc. filled with a recommended grease.

Clean the lubrication points before lubricating. Check grease nipples. If necessary, supplement missing elements. Remove and wipe off excess oil or grease.

The drive shafts are to be lubricated as instructed in the shaft Operator's Manual provided the shaft manufacturer.

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

DANGER

Before beginning preparation work turn off tractor engine and remove the key from the ignition and engage tractor parking brake. Ensure that unauthorised persons do not have access to the tractor.

IMPORTANT

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

TIP

When using the machine the user is obliged to observe lubrication instructions according to attached schedule. Excess lubricant causes depositing of additional contaminants in places requiring lubrication, therefore it is essential to keep individual machine components clean.

Table 5.6. Lubrication schedule

Item	Lubrication point	Number of lubrication points	Type of grease (Table 5.7)	Frequency
1	Relief spring pins	4	A	20H
2	Cutting unit rocker arm sleeve	1	A	20H
3	Hydraulic cylinder eyes	6	A	50H
4	Central connector	2	A	50H
5	Drive shaft bearings	2	A	50H
6	Cutter bar double articulated connection joint	2	A	50H
7	Swath guide axis shaft (PDC300)	2	A	20H
8	Drawbar pin	1	A	50H
9	Hub bearings	2	A	24M
10	Multi-splined drive shafts	2	A	20H
11	Ball joint lugs	5	A	20H
12	Hitch pin	1	A	50H
13	Rotary gear bearing	1	A	50H
14	Cutter bar	1	B	500H
15	Bevel gears *	3	B	500H
16	PTO shafts **	**	**	**
17	Swath conditioner shaft bearings (PDC300C)	2	A	50H
H - hours | M - months				
*** First change after 50 working hours*				
*** For detailed information on operation and maintenance please refer to Operator Manual enclosed with the shaft.*				

Table 5.7. Lubricants

Item	Symbol	Description
1	A	machine general-purpose grease (lithium, alkaline),
2	B	SAE 90EP (80W90 GL-5) transmission oil .

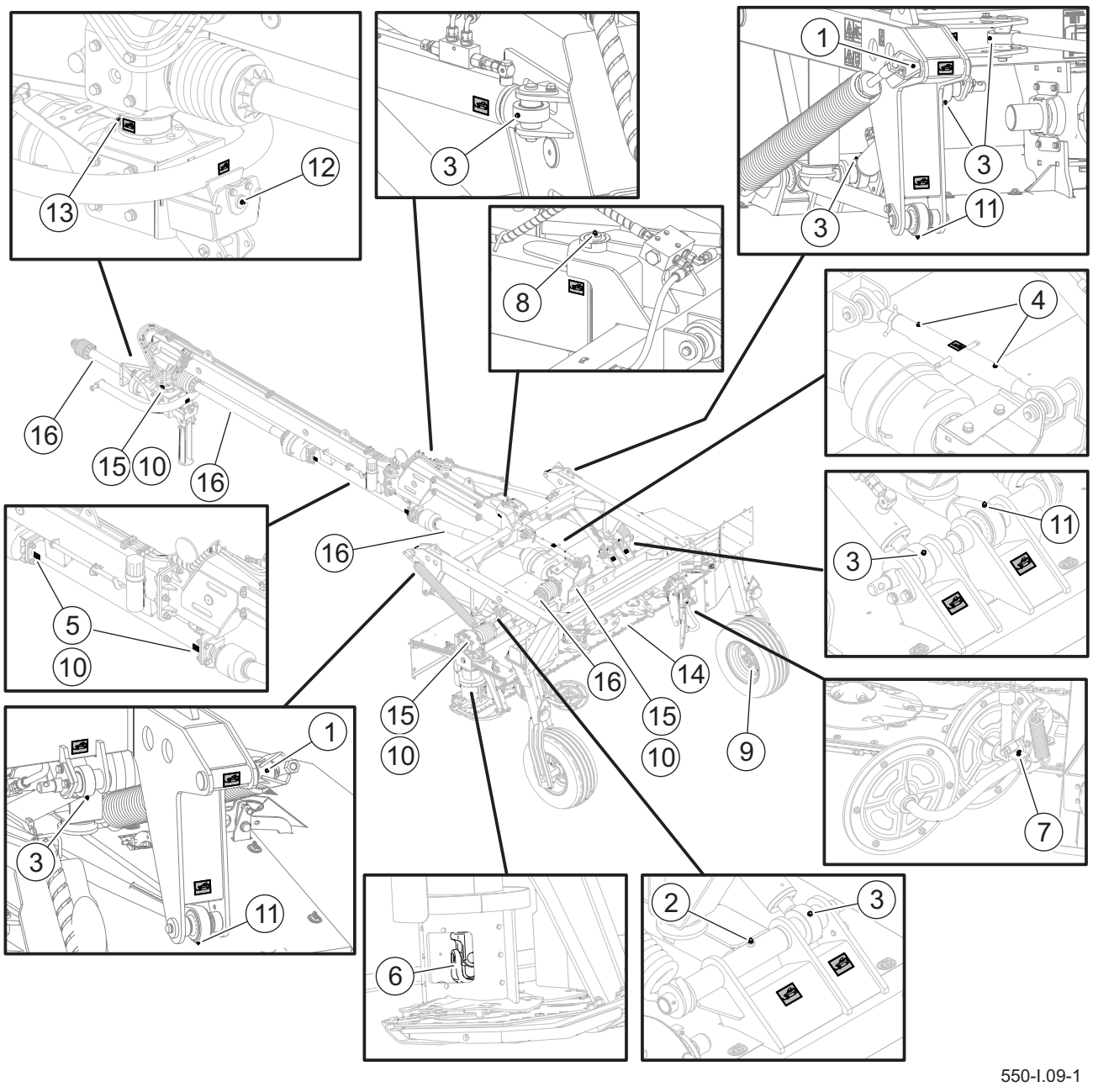

Figure 5.13 Lubrication points on the PDC300/PDC300C mower

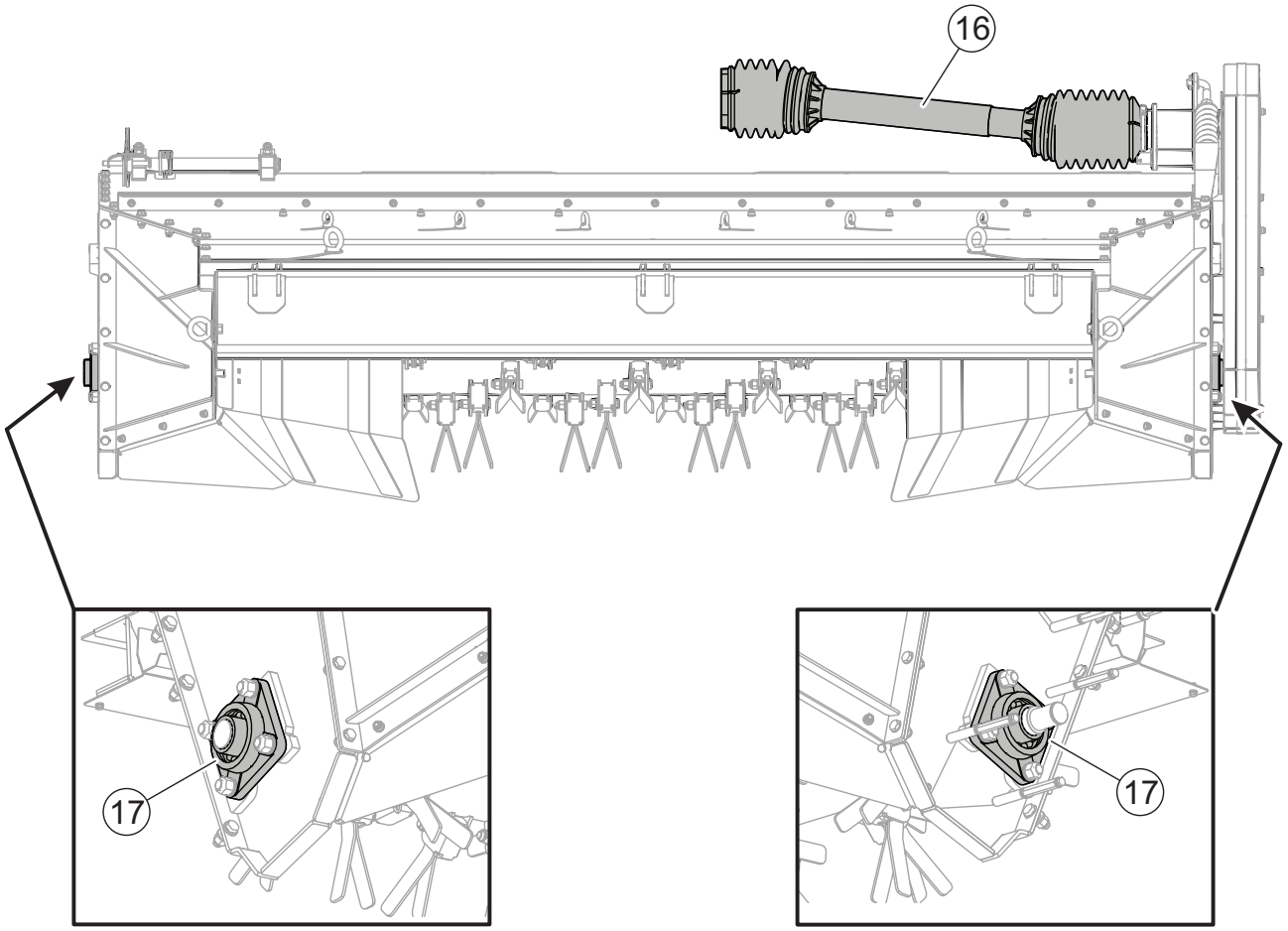

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Figure 5.14 Lubrication points on the PDC300C mower

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5.16 TIGHTENING BOLT CONNECTIONS

Before each use of the machine and during maintenance and repair work, confirm that all bolt connections are properly tightened. If any clearances in bolt connections are found, tighten bolt connections using appropriate tightening torque (Table)*Tightening torque for nut and bolt connections*, unless other tightening parameters are given. Recommended torque values apply to non-greased steel bolts.

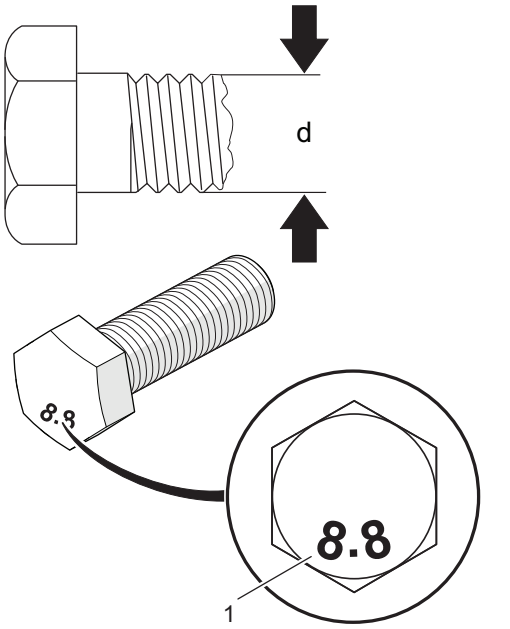

Figure 5.15 Bolt with metric thread
(1) resistance class *(d) thread diameter*

Table 5.8. Tightening torque for nut and bolt connections

THREAD MARKING [mm]	8.8	10.9
	TIGHTENING TORQUE [Nm]	
M6	10	15
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

5.17 TROUBLESHOOTING

Table 5.9. Troubleshooting

Fault	Possible cause	Solution
Excessive vibration during work	Damaged or missing blade	Check blades, if necessary replace
	Damaged PTO shaft	Check shafts, if necessary replace
	Damaged cutter bar bearing	Repair at an authorised service point
Excessive heating of bevel gear or cutter bar	Incorrect oil level. Check oil level and add oil.	
	Wrong oil type.	Change the oil with the one recommended by the manufacturer.
	Damaged bearings.	Repair at an authorised service point
Mower drive stops during cutting	Shaft overload clutch activated as a result of cutting discs being blocked	Disconnect power from mower; remove collected grass or foreign body from cutting unit
	Damaged cog in cutter bar	Repair at an authorised service point
	Damaged bevel gear	Replace or repair at authorised service point
Mower cutter unit cannot be lifted or lowered	Incorrectly connected or damaged quick coupler	Check quick couplers and manner of their connection
	Hydraulic cylinder transport lock is installed	Remove hydraulic cylinder lock
	The tractor hydraulic system is out of order	Check condition of tractor hydraulic system
Stubble is uneven	Tractor PTO rotation speed too low	Maintain correct, constant PTO speed
	Cutter bar is excessively load relieved	Set load relief spring appropriately
	Worn cutting blades	Turn blades onto the second side or replace
	Incorrect cutting angle	Set appropriate cutter bar inclination by adjustment of top link

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