



PRONAR Sp. z o.o.

17-210 NAREW, UL. MICKIEWICZA 101A, PODLASKIE, POLAND

tel.: +48 085 681 63 29 +48 085 681 64 29

+48 085 681 63 81 +48 085 681 63 82

fax: +48 085 681 63 83 +48 085 682 71 10

www.pronar.pl

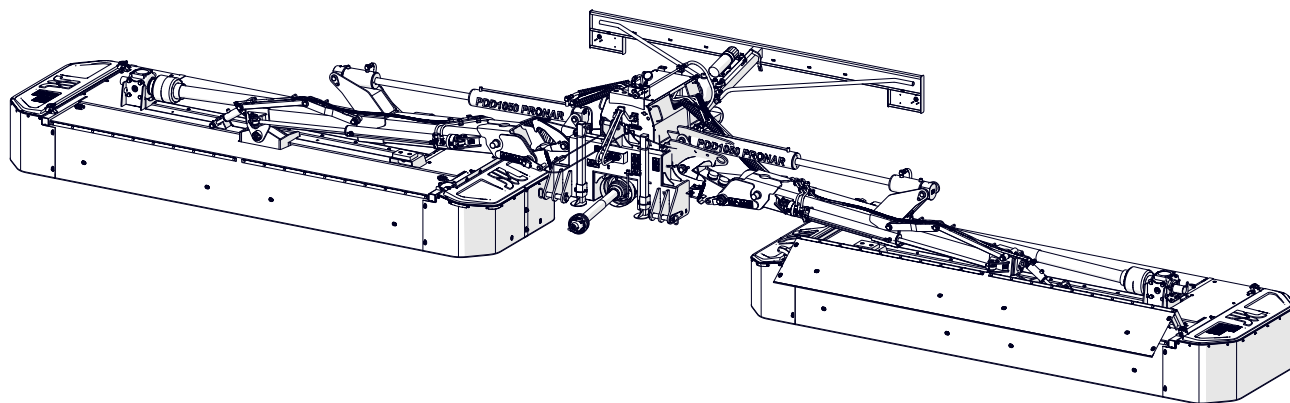
USER MANUAL

DISC MOWER

PRONAR PDD1050

PRONAR PDD1050C

TRANSLATION OF THE ORIGINAL MANUAL



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Manufacturer's address

*PRONAR Sp. z o.o.
ul. Mickiewicza 101A
17-210 Narew*

Contact phones

*+48 085 681 63 29
+48 085 681 64 29
+48 085 681 63 81
+48 085 681 63 82*

Website

*<https://pronar.pl>
<https://pronar-recycling.com/pl/>*

Service helpline

*+48 085 682 71 14
+48 085 682 71 93
+48 085 682 71 20
serwis@pronar.pl*

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

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

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PRONAR Sp. z o.o.

ul. Mickiewicza 101 A
17-210 Narew, Polska

tel./fax (+48 85) 681 63 29, 681 63 81, 681 63 82,
681 63 84, 681 64 29

fax (+48 85) 681 63 83

http://www.pronar.pl

e-mail: pronar@pronar.pl

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:	Double-sided Disc Mower	
Type:	PDD1050	PDD1050C
Model:	-	
Serial number:		
Commercial name:	Double-sided Disc Mower PRONAR PDD1050 Double-sided Disc Mower PRONAR PDD1050C	

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

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

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

Narew, the 2020-12-01

Place and date

Z-CA DYREKTORA
d/s technicznych
członek zarządu

Roman Omszianuk

*Full name of the empowered person
position, signature*

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INTRODUCTION

INTRODUCTION

The information contained in the publication is current at the date of publication. As a result of improvement, some sizes, illustrations and completion (standard, additional and optional equipment) contained in this publication may not correspond to the actual state of the machine delivered to the user.

The drawings contained in this publication are aimed at clarifying the principle of machine operation and may differ from the facts. This can not be a reason for any claims for this.

The manufacturer reserves the right to introduce constructional changes in the manufactured machines to facilitate operation and improve the quality of their work, without making any current changes to this publication.

The operating instruction is the basic equipment of the machine. Before using the machine, the user must read the

The User Manual is intended for the end user. Therefore, some of the required maintenance is presented in the inspection tables, but the procedure is not described in this publication. To perform them, call the manufacturer's authorized service.

contents of this manual and observe all recommendations contained therein. This will guarantee safe and trouble-free operation of the machine. The machine was constructed in accordance with applicable standards, documents and current legal regulations.

If the information contained , in the operating instructions does not turn out to be comprehensible, please contact the sales office where the machine was purchased or directly to the Manufacturer.

After purchasing the machine, write down the serial numbers of the machine and major components in the fields below.

Machine serial number

.....

U.01.2.EN

TARGET GROUP

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

END USER (USER, AUTHORIZED USER, OPERATOR)

An end user, otherwise known as **the user** or **operator** is the person authorized to operate the machine.

The user can be authorized to handle the machine if the following conditions have been met.

- The user has been trained in the operation of the machine and in the field of safety and local and plant regulations.
- The user has familiarized with the content of the "User's Manual".

The knowledge acquired by the **user** allows the safe operation of the machine. In unforeseen cases, the **user** should follow reasonable behaviour and first of all ensure the safety of himself and those of people in the vicinity of the working machine.

The knowledge and skills are entitled to **the end user** to handle the machine, carry

out maintenance and repair or adjustment procedures in the scope specified by the manufacturer.

QUALIFIED PERSON (QUALIFIED PERSONNEL)

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

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

SERVICE PERSONNEL

Service personnel, otherwise known as

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

UNAUTHORIZED USER

An unauthorized user also known as a **bystander** is a person who has not been trained by the manufacturer or an authorized seller, has not been familiarized with the basic issues of security, knowledge of the machine, did not familiarize with the entire content of the operating instructions, and therefore there are no authorizations to operate the machine.

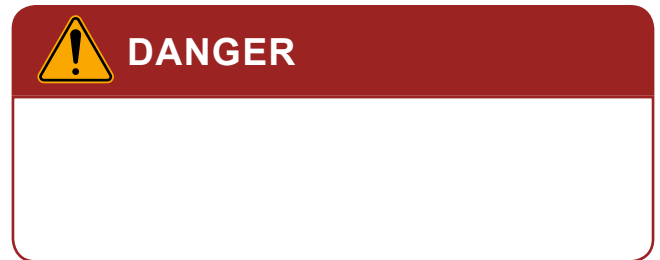
A bystander can not be admitted to work with the machine.

Bystanders, who by their profession are in the vicinity of the machine's stopping place, must be trained.

SYMBOLS AND TAGS USED IN THE MANUAL

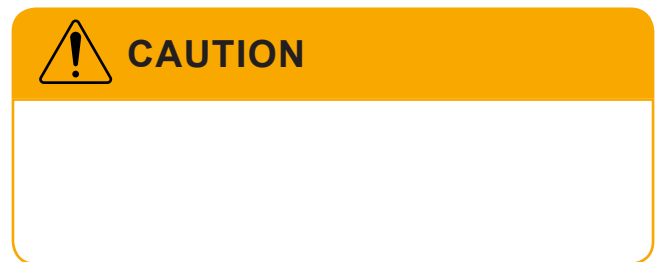
DANGER

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



CAUTION

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

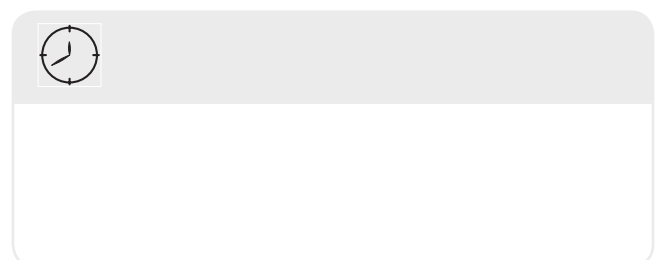


ADVICE

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



In order to draw the user's attention to the need for periodic maintenance, the text in the manual has been marked with a clock.



PERSONAL PROTECTIVE EQUIPMENT PICTOGRAMS

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

U.02.3.EN

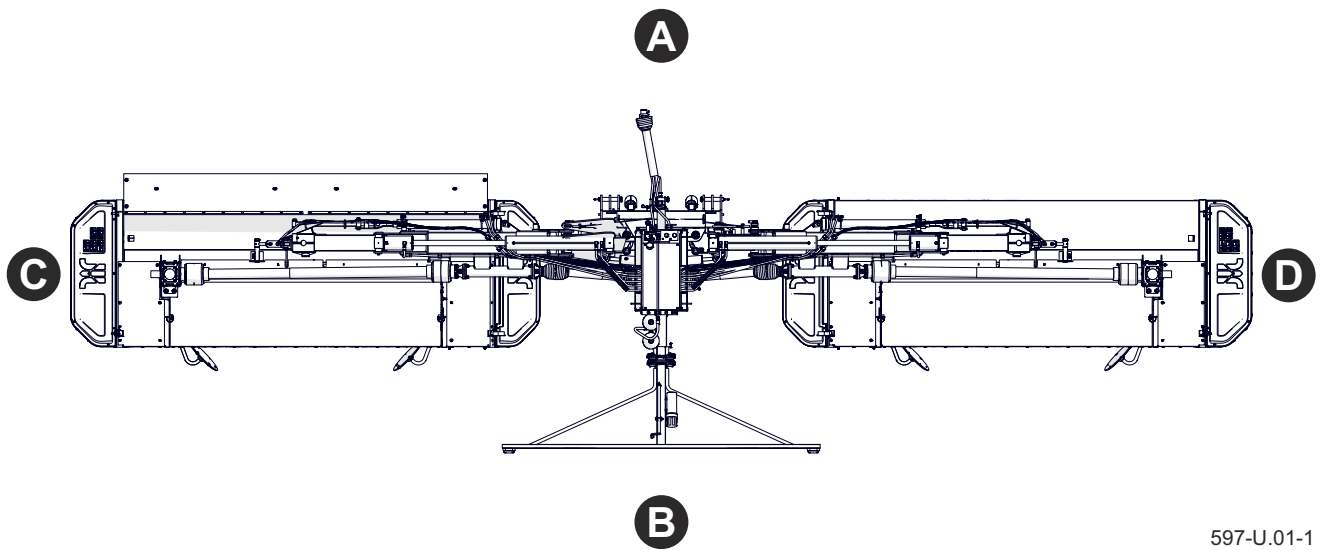
DESIGNATION OF DIRECTIONS IN THE MANUAL

Left side – the left hand side of the observer facing the machine in the forward direction.

Right side - the right hand side of the observer facing the machine in the forward direction.

Turn right – turn the mechanism clockwise (operator facing the mechanism).

Turn left – turn the mechanism counter-clockwise (operator facing the mechanism).



597-U.01-1

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

U.03.1.EN

CHECKING THE MACHINE AFTER DELIVERY

The manufacturer ensures that the machine is fully functional, has been checked in accordance with control procedures and is approved for use. However, this does not release the user from the obligation to check the machine after delivery and before commissioning. Detailed information on the transfer can be found in the *WARRANTY CARD*.

Before connecting the machine to the tractor, check its suitability for this purpose (see Implement carrier requirements).

INSPECTION RECOMMENDATIONS

- Check the completeness of the machine in accordance with the order (standard and additional equipment).
- Check the machine for missing parts or damage resulting from improper transport of the machine to its destination (dents, punctures, bending or breaking of details, etc.).
- Check the technical condition of the covers and safety devices.
- Check the condition of the paint

ADVICE

Handing over of the machine includes a detailed inspection and checking of its operation, as well as instructing the buyer about the basic rules of use. The first launch takes place in the presence of the Seller.

coating, check for signs of corrosion.

- Check the technical condition of the load-bearing suspension and the correctness of its mounting.
- Check the technical condition of the hydraulic conduits.
- Make sure there are no hydraulic oil leaks.
- Check the condition of the lighting and signalling system.
- Check the technical condition of PTO shafts, guards and securing chains.
- Check the cylinders for hydraulic oil leaks.

In case of any irregularities found, report them directly to the seller to remove any defects.

U.11.3.EN

THE FIRST START OF THE MACHINE



CAUTION

The first start-up consists in checking the machine in the presence of the seller. The seller is obliged to conduct training in the safe and proper operation of the machine.

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

Before starting the machine, you will be familiarized with its construction, principle of operation, available equipment and operation, and above all safety rules.

SCOPE OF ACTIVITIES

- Read the contents of this *USER'S MANUAL* and follow the recommendations contained therein.
 - Perform a daily inspection of the machine in accordance with the guidelines contained in the inspection schedule.
 - Check all machine lubrication points, lubricate if necessary according to the lubrication schedule.
 - Check the correctness of mounting and tightening of screw connections (in particular, cutting knives, cutter bar, suspension system, protective covers).
 - Check the oil level in the angle gears and in the cutter bars.
- Check the technical condition of PTO shafts, guards and securing chains.
 - check the technical condition of the hitch pins and securing cotter pins.
 - Make sure that the hydraulic and electric connections in the agricultural tractor comply with the requirements, otherwise the machine should not be connected.
 - Make sure that the hydraulic oil in the machine and in the tractor is of the same type and grade or is miscible with the oil filling the machine system.
 - Make sure that the attached PTO shaft for connecting to the tractor can be connected to the tractor (the PTO shaft should be adapted to the tractor - see PTO SHAFT OPERATION MANUAL).

Check the length of the PTO shaft in the lightest and the heaviest working conditions, check if there is a sufficient degree of pipe coverage at the widest angle of setting, check if at the smallest angle of setting (bend) it can still be slipped, check the consistency of the PTO shaft rotation.

**CAUTION**

The overlap of the shaft tubular profiles must be at least 1/2 of the length under normal operating conditions and at least 1/3 of the length under all operating conditions.

When adjusting the PTO shaft, follow the manufacturer's operating instructions for the PTO shaft.

When turning or driving over rough terrain, the shaft may be damaged and/or destroyed as it pushes or disengages due to improper fit.

**DANGER**

Careless and improper use and operation of the machine, as well as non-compliance with the recommendations contained in the operating manual, pose a threat to health and life.

It is forbidden to use the machine by unauthorized persons, children, persons under the influence of alcohol or other drugs.

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

ADVICE

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

If all the above actions have been performed and the technical condition of the machine does not raise any objections, connect the machine to the tractor (see AGGREGATING WITH THE TRACTOR).

Start the tractor, check the individual systems and carry out a test run of the machine at a standstill without load. It is recommended that the inspection be carried out by two persons, one of whom should be permanently present in the tractor operator's cabin. The test run should be performed in the sequence shown below.

- Connect the machine to the agricultural tractor.
- Connect the PTO shaft and secure it properly.
- Connect the hydraulic and electrical cables.

- Move the machine to the working position.
- Check the correct operation of the lighting system.
- Start the agricultural tractor.
- Check the correct operation of the mower's hydraulic systems.

Activate the individual hydraulic cylinders. Check the correct connection of the wires.

- At low revolutions, start the PTO drive in the tractor (starting the cutting units gear drive) and leave it for a few minutes.

Check whether there are no knocks or noises from the grinding of metal elements from the drive system and the cutting unit gearbox. Check that the discs on the cutter bar rotate smoothly and without any jamming, and that there are no excessive vibrations in the cutter bar. Check that the rotation of

the cutting unit is correct.

- The operation of the mower without load should be smooth, vibrations of the drive transmission system, cutting unit, tone-changing noises and vibrations coming from loose screw connections are unacceptable.
- Disengage the PTO drive, switch off the agricultural tractor's engine, immobilize the tractor with the parking brake and disconnect the machine from the tractor.

The machine can be used when all preparatory activities have been successful. If during the test run, alarming symptoms appear, such as:

- excessive noise and unnatural noises from rubbing moving parts,
- hydraulic oil leaks,
- incorrect operation of the brake cylinders,
- other faults,



CAUTION

Before using the mower always check its technical condition. In particular, check the technical condition of the cutting system, the completeness of the protective guards, the correct mounting of the cutting knives.



CAUTION

Check the compatibility of the hydraulic connections. If necessary, replace the cable plugs. Failure to comply with the instructions contained in the manual or incorrect start-up of the machine may cause damage to the machine. The technical condition before starting the machine must not raise any objections.

immediately cut off the oil supply, turn off the PTO drive in the tractor and stop using the machine until the failure is repaired. If the fault cannot be rectified or remedied, you will void the warranty, contact the place of purchase for clarification or repair.

U.12.5.EN

CHAPTER 1

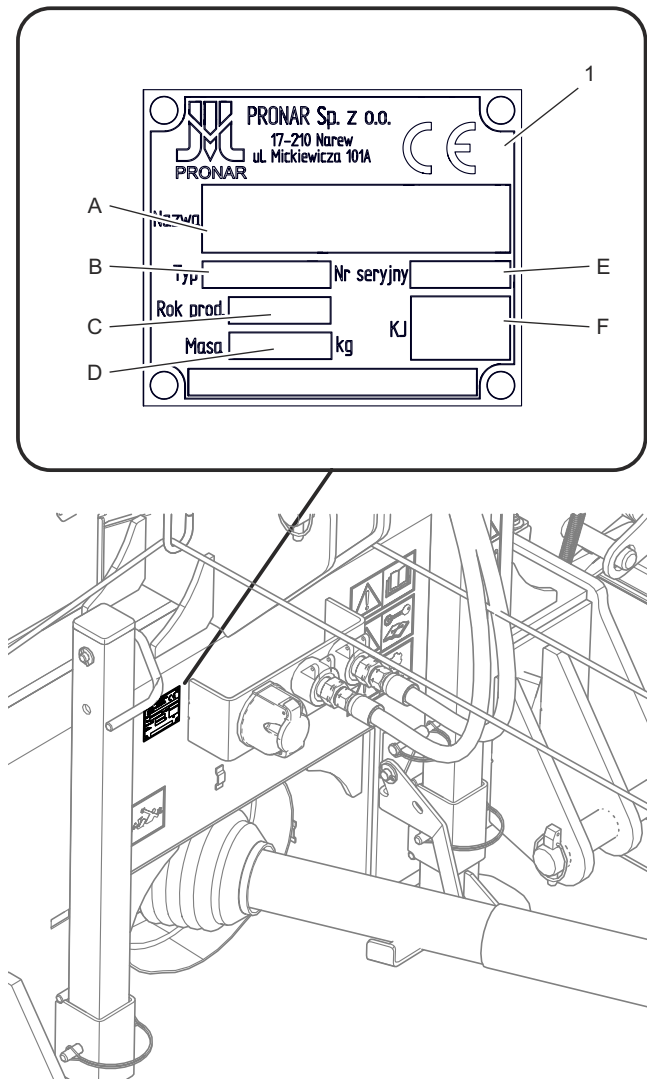
GENERAL

1.1 IDENTIFICATION

The double-sided disc mower is marked with a nameplate (1), located on the left side of the machine's hitch. When purchasing the mower check the compliance of the serial numbers on the machine with the number written in the *Warranty Card*, in the sales documents and in the *User Manual*.

The meaning of the individual fields on the nameplate- figure (1.1) is shown in the table below.

- A - machine name
- B - machine type/symbol
- C - year of production,
- D - total weight [kg],
- E - serial number
- F - Quality Control mark.



597-E.01-1

Figure 1.1 Location of the nameplate.

E.1.1.597.01.1.EN

1.2 PURPOSE

The double-sided disc mower is a combined structure of two disc mowers with a working width of 3.9 m each, mounted on a common hitch. It is designed to work in a set with front mowers with a working width of 2.6 m to 3.4 m. The mowing width with such a set (3.4 m) is 10.5 m.

It is designed for mowing grass and low-stem green fodder on permanent grasslands (meadows) and on unstoned fields with an even surface. The mower is the basic machine in the production of hay and silage. Any other use of the machine is prohibited.

The transport of people, animals and other materials is prohibited and treated as not intended use. When using the machine, comply with the road traffic regulations and transport regulations in force in a given country, and any violation of these regulations is treated by the Manufacturer as misuse.

Intended use also includes all activities related to the correct and safe operation and maintenance of the machine.

Therefore, the user is obliged to:

- understand the principle of machine operation and the safe and proper operation,



CAUTION

The machine must not be used contrary to its intended use, in particular:

- transport of people, animals,
- to transport any materials or items.

- act in compliance with established maintenance and adjustment plans,
- work in compliance with general safety regulations,
- accident prevention,
- comply with the road traffic regulations and transport regulations in force in the country in which the machine is used,
- read the OPERATOR'S MANUAL FOR AGRICULTURAL TRACTOR and follow its recommendations,
- couple the machine only with such an agricultural tractor that meets all the requirements set by the machine's Manufacturer.

The machine may only be used by persons who:

- have become familiar with the content of this publication and the documents attached to the machine, as well as with the content of the operating instructions for the agricultural tractor and front mower (if present in the set),

Table 1.1. Tool carrier (tractor) requirements.

Content	Unit	Requirements
Suspension system Rear suspension system	-	Category III according to ISO 730- 1
Rear power take-off (PTO) Type	-	type 1 according to ISO 500 (nominal diameter 35 mm, 6 splines)
Rotational speed (max.)	rpm	1000
The hydraulic system Hydraulic oil	-	HL32 ⁽¹⁾
Nominal pressure of the system	bar/MPa	160 / 16
Hydraulic socket	-	one single-acting section and free float
Electrical system Connection of electrical installation	V	12
Connection socket	-	7-pole according to ISO 1724
Other requirements Minimum: power requirement	kW/HP	
- for PDD1050		125 / 170 ⁽²⁾
- for PDD1050C		160 / 220 ⁽²⁾
The tractor is equipped with an operator's cabin		YES

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

⁽²⁾ – for a set with a front mower with a working width of min. 3.4m

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

E.1.1.597.02.1.EN

1.3 EQUIPMENT

Table 1.2. Machine equipment

Equipment	Standard	Additional	Optional
User manual	•		
Warranty Card	•		
Connection cable of the lighting system	•		
PTO shaft	•		
Control Panel	•		
Document tube	•		
Knife replacement key	•		

ADVICE

Recommended shaft for connecting the machine to the tractor: T601010ENC12RF6 Comer

E.1.1.597.03.1.EN

1.4 TERMS OF WARRANTY

ADVICE

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

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

The warranty does not apply to parts and sub-assemblies of the machine, which are subject to wear in normal operating conditions, regardless of the warranty period. The warranty services apply only to such cases as: mechanical damage not attributable to the user, factory defects of parts, etc.

In the event that the damage arose as

a result of:

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

the user loses the warranty.

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

Modifications to the machine without the written consent of the Manufacturer are prohibited. In particular, it is unacceptable to weld, drill, cut and heat the main structural elements of the machine, which directly affect the safety of work with the machine.

E.1.7.578.04.1.EN

1.5 TRANSPORT

The machine is ready for sale completely assembled and does not require packing. Only the technical documentation of the machine and any accessories (e.g. beam) are packed.

Delivery to the user is carried out by road transport or independent transport by aggregating it with an agricultural tractor. During independent transport, the machine must always be moved to the transport position and properly secured when travelling on roads - see the section TRANSPORT OF THE MACHINE. Observe the safety rules when aggregating and transporting on public roads and the provisions of the Highway Code.

When loading and unloading of the machine, follow the general principles of workplace health and safety for reloading work. Persons operating reloading equipment must have the required permissions to use these devices. Use only lifting devices with a capacity greater than the weight of the machine, including the ropes, straps or chains used for handling.

The machine should be attached to lifting devices in places specially designed for this purpose (see the figure: *Machine hanging points*). The mounting locations are marked with an information sticker.



CAUTION

When transporting the carrier independently, the operator of the carrier should read this manual and follow the recommendations contained therein.

When transported by car, the machine must be mounted on the platform in accordance with the safety requirements during transport. The driver of the car should exercise extreme caution while driving. This is due to the vehicle's centre of gravity shifting upwards with the machine loaded.

When loading, the mower should be unfolded to the working position and locked.

Parking supports should be lowered and secured with pins.



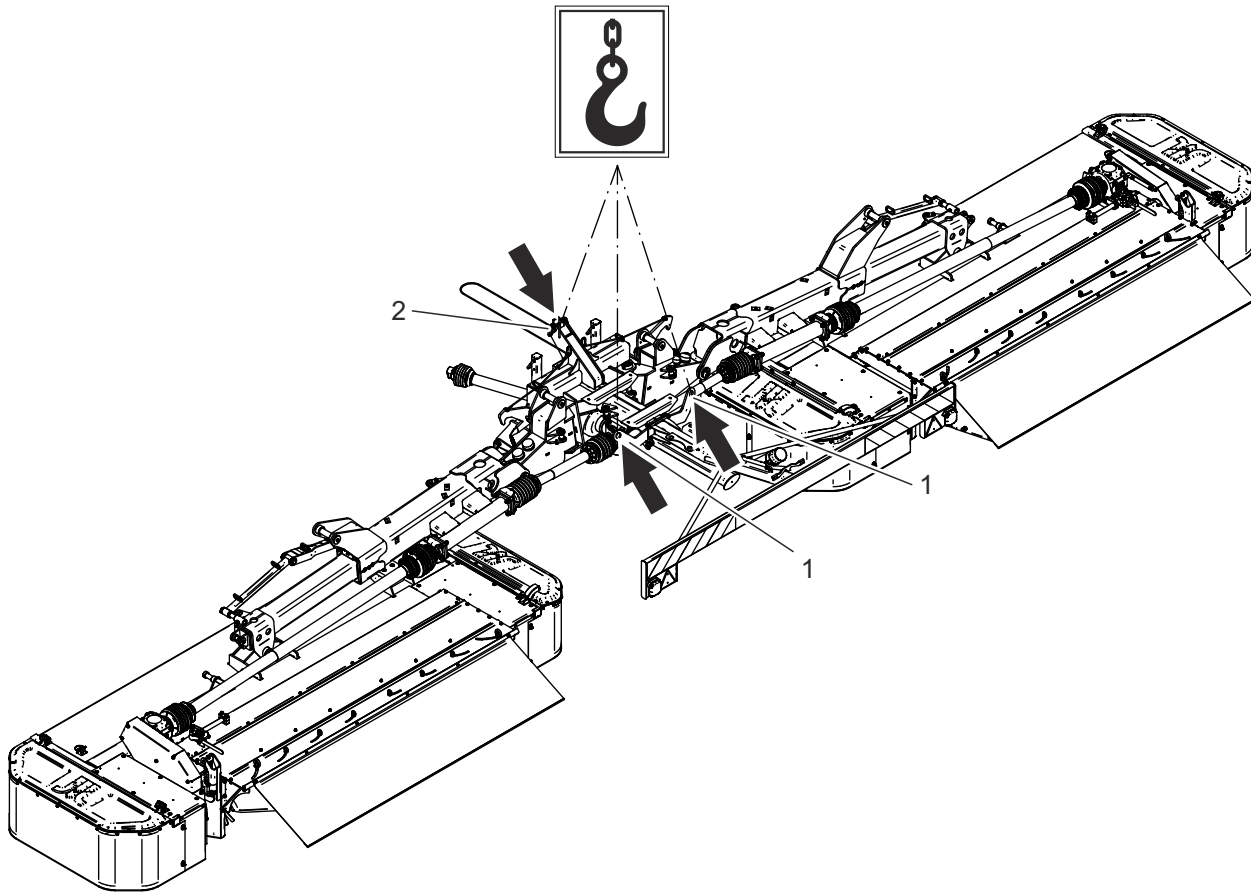
DANGER

Incorrect application of securing measures may cause an accident.

No one is allowed in the maneuvering area when transferring the machine to another means of transport.

When lifting the machine, be especially careful due to the possibility of tipping over the machine and the risk of injuries from protruding parts of the machine. Additional lashing is recommended to keep the machine in the right direction.

The machine should be securely fastened to the platform of the means of transport with belts or chains equipped with a tensioning mechanism. Fastening means must have a valid safety certificate. During reloading work, pay special attention not to damage elements of the



597-E.02-1

Figure 1.2 *Machine hanging points*
 (1) transport eye (2) central connector fixing pin

machine equipment and the paint coating. The mower's curb weight in ready-to-use condition is given in the table (*Basic technical data in standard equipment*).



CAUTION

Use only approved and technically reliable securing measures. Read the operating instructions of the securing measures manufacturer. It is forbidden to attach slings and all kinds of load securing elements to elements other than those indicated (e.g. hydraulic and electrical systems).



CAUTION

PTO shafts must be protected against damage during transport.

E.1.1.597.05.1.EN

1.6 ENVIRONMENTAL HAZARD

A hydraulic oil leak is a direct threat to the environment due to the limited biodegradability. When carrying out maintenance and repair works where there is a risk of leakage of oil, perform these works in rooms with an oil-resistant 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. Collect the remaining oil with sorbents or mix the oil with sand, sawdust or other absorbent materials. The collected oil contamination should be stored in a sealed and marked container, resistant to hydrocarbons, and then sent to the point dealing with oil waste utilization. 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 due to the loss of



DANGER

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



CAUTION

Oil waste may only be delivered to a point dealing with the utilization or regeneration of oils. It is forbidden to throw or pour oil into drains or water reservoirs.

ADVICE

The machine's hydraulic system is filled with L-HL 32 Lotos oil.

its properties is recommended to be stored in its original packaging in the same conditions as described previously. Detailed information on oil can be found in the product safety data sheet.

E.1.1.597.06.1.EN

1.7 WITHDRAWAL

If the user decides to withdraw the machine from use comply with the provisions in force in the given country regarding withdrawal from use and recycling of machines withdrawn from use.

Before proceeding to dismantle of the machine, the oil must be completely removed from the hydraulic system and gearbox.

Worn or damaged elements that cannot be regenerated or repaired should be taken to a collection point for recyclable materials. Hydraulic oil, as well as rubber or plastic elements should be delivered to plants dealing with the utilization of this type of waste.



DANGER

During dismantling, use appropriate tools and equipment (overhead cranes, elevators, lifts, etc.) and use personal protective equipment, i.e. protective clothing, footwear, gloves, glasses, etc.
Avoid oil contact with skin. Do not allow oil to leak.

E.1.1.597.07.1.EN

CHAPTER 2

SAFETY OF USE

2.1 SAFETY RULES WHEN OPERATING OF THE MACHINE

- Before using the machine, the user should carefully read this publication, the manual attached to the PTO shaft and *the Warranty Card*. During its operation, all recommendations contained therein must be observed.
- The machine may only be used and operated by persons authorized to drive tool carriers (tractors) and trained in the use of the machine. The machine is operated by one person.
- Careless and improper use and operation of the machine, non-compliance with the recommendations contained in this manual poses a threat to the health of the operators and bystanders.
- Be aware of the existence of a minimal risk of danger, therefore the application of the principles of safe use and sound behaviour should be the basic principle of using a machine.
- It is forbidden to use the machine by persons not authorized to drive tool carriers (tractors), including children, persons under the influence of alcohol and those under the influence of drugs or other intoxicating substances.



CAUTION

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

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

2.2 SAFETY DURING COUPLING OF THE MACHINE

- Connect and transport the machine only with a carrier (tractor) that meets the requirements set by the Manufacturer (minimum tractor power requirement, required three-point hitch category, etc.) - compare the table REQUIREMENTS FOR AGRICULTURAL TRACTOR.
- Before connecting the machine, check the technical condition of the mower's and the tractor's hitching system.
- It is forbidden to connect the machine to the carrying vehicle (tractor) if the hydraulic oils used in both machines are not miscible.
- Use only original pins and protections to connect the machine to the carrying vehicle (tractor).
- The carrying vehicle (agricultural tractor) to which the machine will be hitched must be technically efficient and must meet the requirements set by the manufacturer of the machine.
- Be especially careful when connecting the machine.
- When attaching, there must be nobody between the machine and the carrier.
- After aggregation is complete, check the security features.
- Before each use of the machine, check its technical condition, especially in terms of safety. In particular, check the technical condition of the linkage system, cutting system, hydraulic system connection elements, correct mounting of the cutting knives and protective covers.
- Coupling and uncoupling may only take place when the machine and carrying vehicle (tractor) are switched off.
- When machine is disconnected from the carrier, it must be placed on a level, suitably hard surface in such a way that it can be connected again.
- The machine disconnected from the tractor must be supported with supports secured with pins.

F.1.1.597.02.1.EN

2.3 SAFETY RULES WHEN OPERATING THE HYDRAULIC SYSTEM

- The hydraulic system of the machine is under high pressure during operation.
- Use hydraulic oil recommended by the Manufacturer. Never mix two types of oil.
- Regularly check the technical condition of connections and hydraulic lines. Oil leaks are unacceptable.
- In the event of failure of the hydraulic system, the machine must be decommissioned until the failure is remedied.
- When connecting the hydraulic conduits to the carrier, make sure that the hydraulic system is not under pressure. If necessary, reduce the residual pressure in the installation.
- In the event of injuries being caused by pressurized hydraulic oil, contact a doctor immediately. Hydraulic oil can penetrate the skin and cause infection. If the oil gets into the eyes, rinse with plenty of water and if irritation occurs, contact a doctor. In the event of contact of oil with skin, wash the area of contact with water and soap. Do not use organic solvents (petrol, kerosene).
- It is forbidden to store oil in packaging intended for food storage.
- Rubber hydraulic conduits must be replaced every 4 years regardless of their technical condition.
- Repairs and replacement of hydraulic system components should be entrusted to suitably qualified persons.

F.1.7.578.03.1.EN

2.4 SAFETY DURING THE TRANSPORT

Before driving:

1. Make sure that the machine is properly connected to the carrying vehicle (tractor) and check that the lighting works properly.
2. Fold the machine to the transport position and raise it to the appropriate height using the rear linkage.
3. Check the correct operation of the lighting.

And more than that:

- When driving on public roads, comply with the road traffic regulations in force in the country where the machine is used.
- Do not exceed the speed limit resulting from road conditions and construction restrictions (max. 40 km/h). Adjust the speed to the prevailing

road conditions and restrictions resulting from the provisions of the road traffic law.

- It is forbidden to leave the lifted and unsecured machine when the carrying vehicle is parked. The machine must be lowered when parked.
- It is forbidden to transport people on the machine and transport materials.
- It is forbidden to leave the tractor operator's position while driving.
- When driving on public roads, the tractor operator must ensure that the machine and the tractor are equipped with an attested or approved reflective warning triangle.
- Reckless driving and speeding can cause an accident.

F.1.1.597.04.1.EN

2.5 SAFETY DURING MAINTENANCE WORK

- It is forbidden to perform service and repair work under a loaded or raised and unsecured attachment. It is recommended that any repairs shall be carried out by specialized workshops.
- In the event of any faults or damage, withdraw the machine from use until it is repaired.
- During work, use appropriate, close-fitting protective clothing, gloves and the right tools. In the case of works related to the hydraulic system, it is recommended to use oil-resistant gloves and protective glasses.
- Any modifications to the machine release the PRONAR Narew company from liability for any damage or health detriment.
- Before undertaking any work on the machine, switch off the engine of the carrying vehicle (tractor) and wait until all rotating parts have stopped.
- Regularly check the technical condition of the protections and the correct tightening of screw connections.
- Perform regular inspections of the machine in accordance with the scope specified by the Manufacturer.
- It is forbidden to perform service or repair work under the raised and



DANGER

During transport, always disconnect the shaft from the tractor. The disconnected PTO shaft should be placed in the place provided for this purpose.

unsecured machine.

- Before commencing repair work on the hydraulic system, reduce the oil pressure.
- Perform maintenance and repair activities applying the general principles of health and safety at work. In case of injury, wash and disinfect the wound immediately. If you experience more serious injury, seek medical advice.
- Repair, maintenance and cleaning work should be carried out only with the engine of the carrying vehicle (tractor) switched off and the ignition key removed from the ignition. The carrying vehicle (tractor) must be secured with the parking brake. Secure the cab of the carrying vehicle (tractor) against unauthorized access.
- If it is necessary to replace 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 starting welding work. Burning paint fumes are poisonous to humans and animals. Welding work should be performed in a well-lit and ventilated room.
 - During welding work pay attention to flammable or fusible elements (elements of electrical and hydraulic installations, elements made of plastic). If there is a risk of ignition or damage, they must be removed or covered with non-flammable material before welding. Before starting work, have a CO₂ fire extinguisher or foam extinguisher ready.
 - Check the condition of protective elements, their technical condition and correct fastening.
 - In the event of work requiring the machine to be raised, use properly certified hydraulic or mechanical lifts for this purpose. After lifting the machine, stable and durable supports must also be used.
 - It is forbidden to support the machine with fragile elements (bricks, hollow bricks, concrete blocks).
 - After completing work associated with lubrication, remove excess grease or oil.
 - Perform daily visual and functional checks to detect damage at an early stage or prevent accidents.
 - Keep the machine clean to reduce the risk of fire.
- Observe the rules contained in the chapter "Cleaning the machine".*

F.1.1.597.05.1.EN

2.6 SAFETY DURING WORK WITH MACHINE

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

Stop the machine when bystanders enter the danger zone.

- The machine operator is responsible for ensuring that the machine and the working area are properly visible.
- Do not enter the working and folding area of the machine.
- Before each start-up of the machine, make sure that all guards are operational and correctly positioned. Damaged or incomplete components must be replaced with new original ones.
- Always check the condition and correct mounting of the cutting knives, cutter bar and support arms before starting work.
- Use the correct working position when mowing.
- Mowing should be started after the PTO reaches nominal revolutions.
- Before raising and lowering the cutting units of the machine, make sure that there are no bystanders nearby.
- Before starting the tractor with the aggregated machine, make sure that the PTO shaft is not engaged - otherwise the machine may start uncontrollably.
- It is forbidden to occupy any position other than the operator's position in the vehicle cabin while working with the machine. It is forbidden to leave the operator's cabin while the machine is operating.
- It is forbidden to stay near the machine until the rotating elements have stopped.
- It is forbidden to operate the machine while driving backwards. Raise the machine when reversing.

F.1.1.597.06.1.EN

2.7 SAFE OPERATION OF THE PTO SHAFT

- The machine may be connected to the carrying vehicle (tractor) only with the use of a properly selected PTO shaft recommended by the Manufacturer.
- Before starting work, read the drive shaft operating manual issued by the shaft manufacturer and follow the recommendations contained therein.
- Adjust the length of the PTO shaft to the cooperating carrying vehicle (tractor) in accordance with the PTO shaft operating manual.
- The PTO shaft has markings on the housing indicating which end of the shaft should be connected to the carrying vehicle (tractor).
- Never use a damaged PTO shaft, it may cause an accident. A damaged shaft must be repaired or replaced with a new one.
- Disconnect the drive of the shaft each time when there is no need to drive the machine or when the tractor and the machine are in an unfavourable angular position to each other.
- During transport, the shaft should be stored in a horizontal position so as to avoid damaging the guards and other securing elements.
- The disconnected PTO shaft should



DANGER

Before connecting or disconnecting the shaft, you should:

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

be placed in the holder provided for this purpose.

- Before starting the PTO, make sure that the direction and the selected number of PTO revolutions are consistent with the permissible number of revolutions and direction in the machine.
- When using the shaft and the machine, do not exceed the permissible rotational speed of the shaft. It is forbidden to overload the shaft and the machine and engage the clutch suddenly.
- The chain securing the shaft cover against rotation during operation of the shaft must be attached to a permanent structural element of the machine.
- It is forbidden to use safety chains to support the shaft when the machine is parked or transported.
- The drive shaft must be equipped

with guards. It is forbidden to use the shaft with damaged or missing safety elements.

- After installing the shaft, make sure that it is correctly and securely connected to the carrying vehicle (tractor) and the machine.
- Before connecting the PTO shaft, make sure that the direction of PTO rotation is correct.
- Do not wear loose clothing, loose

belts or anything that could get caught in a rotating shaft. Contact with the rotating articulated telescopic shaft may cause serious injuries.

- It is forbidden to go over and under the shaft and to stand on it both during operation and when the machine is parked.
- Before starting the PTO shaft, lower the cutting unit to the working position.

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2.8 DESCRIPTION OF RESIDUAL RISK

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

- using the machine contrary to its intended use,
- staying between the tool carrier (tractor) and the machine while the engine is running and when connecting the machine,
- being on the machine during engine work,
- work with the machine with removed or inoperative guards,
- not keeping a safe distance from dangerous zones or standing in these zones while the machine is operating,
- operation of the machine by unauthorized and incapable persons, in particular children, persons under the influence of alcohol, persons under the influence of drugs or other intoxicants, etc.,
- cleaning, maintenance and technical inspection with the carrying vehicle

(tractor) connected and running,

- making changes to the machine without the Manufacturer's consent,
- use of a faulty PTO shaft.

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

- prudent and unhurried operation of the machine,
- sensible application of the remarks and recommendations contained in the operating instructions,
- performing maintenance and repair work in accordance with the principles of operating safety,
- maintenance work carried out by trained personnel,
- Using appropriate fitted protective clothing,
- securing the machine against access by unauthorized persons, especially children,
- keeping a safe distance from prohibited and dangerous places,
- a ban on being on the machine while it is working or during transport.

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2.9 INFORMATION AND WARNING STICKERS





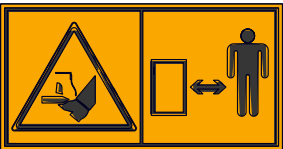

The machine is marked with the information and warning stickers mentioned in table *Information and warning stickers*.

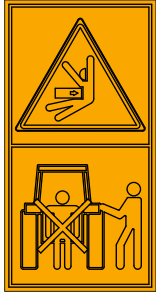
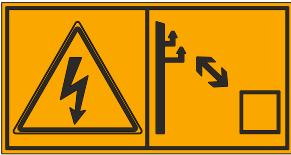





The machine user is obliged to ensure that the inscriptions, warning and information symbols placed on the machine are legible throughout the entire period of use. In the event of their destruction,



they must be replaced. New assemblies replaced during repair must be marked again with the appropriate safety signs. When cleaning of the machine do not use solvents that may damage the label coating and do not direct a strong stream of water at them.

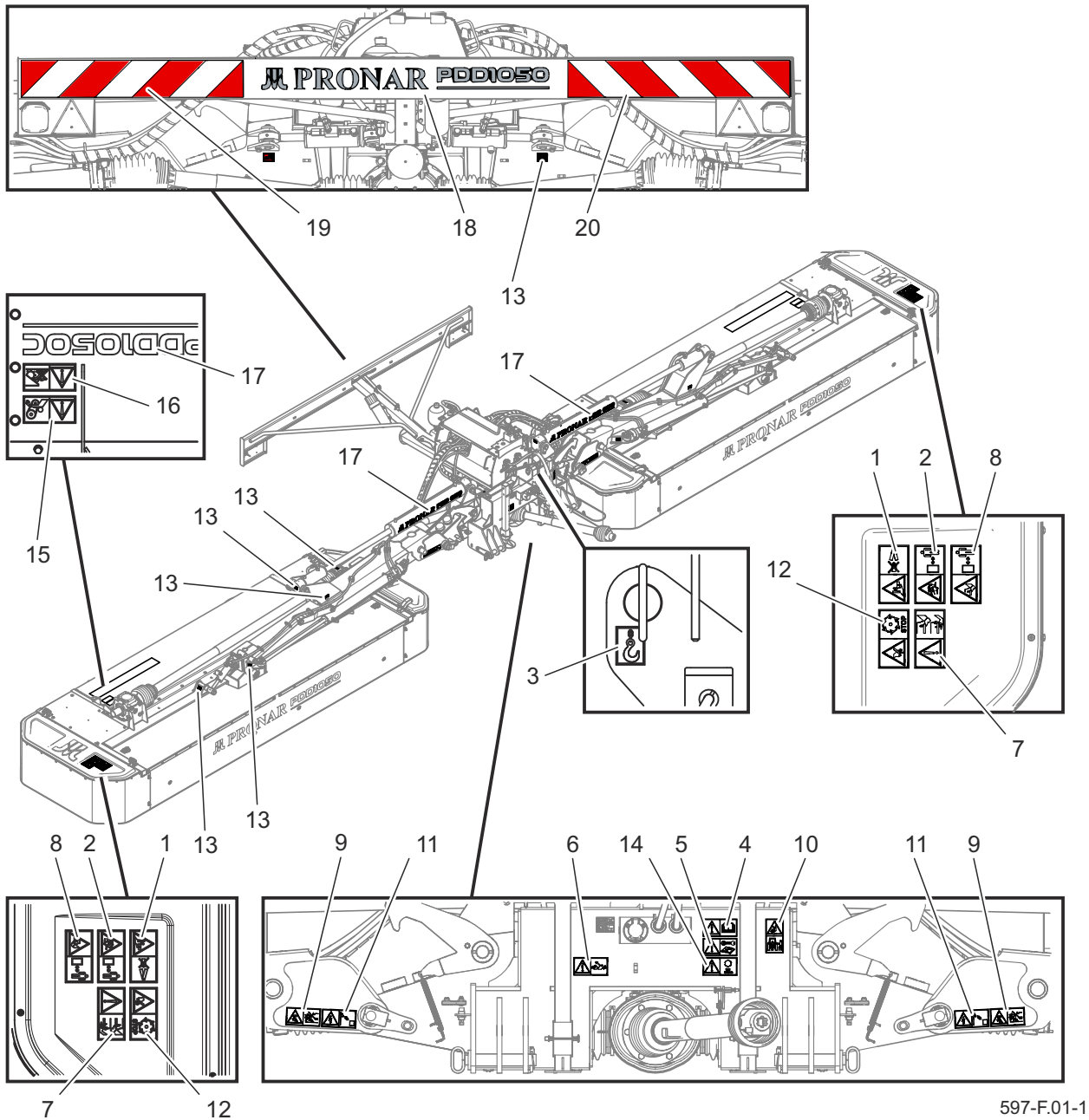
Table 2.1. INFORMATION AND WARNING STICKERS

Item	STICKER	Meaning
1		<p>Do not reach into the crush area if components may be moving. There is a risk of crushing fingers or hands.</p> <p>178N-00000005</p>
2		<p>Thrown or flying objects, whole body hazard.</p> <p>Keep a safe distance.</p> <p>178N-00000006</p>
3		<p>Marking of transport handles.</p> <p>178N-00000009</p>

Item	STICKER	Meaning
4		<p>Caution. Before starting work, read the User's Manual. 185N-00000001</p>
5		<p>Danger of unexpected start-up, rolling of the machine. Before beginning of any servicing activities or repairs, turn off the engine and remove the key from the ignition switch. 185N-00000002</p>
6		<p>Caution. Danger related to the rotating PTO shaft. 185N-00000003</p>
7		<p>Note - cutting knives. Keep away from the mower while it is operating. 185N-00000005</p>
8		<p>Keep a safe distance from the mower blade area when the tractor engine is running and the transfer shaft is engaged. 185N-00000006</p>
9		<p>Impact hazard due to moving the machine assemblies into the transport or working position. 185N-00000007</p>

Item	STICKER	Meaning
10		<p>Do not stand directly behind the tractor when operating the lift. 185N-0000008</p>
11		<p>Keep a safe distance from overhead power lines. 185N-0000009</p>
12		<p>Do not touch machine components until all assemblies have come to a complete stop. 185N-0000010</p>
13		<p>Lubricate the machine according to the schedule outlined in the User's Manual. 185N-0000011</p>
14		<p>Permissible PTO speed is 1000 rpm 188N-0000002</p>
15		<p>Caution - belt transmission. Be especially careful. 206N-0000004</p>
16		<p>Caution - impeller. Be especially careful. 228N-0000002</p>

Item	STICKER	Meaning
17	<p>JL PRONAR <u>PDD1050</u></p> <p>JL PRONAR <u>PDD1050C</u></p>	<p>PDD1050 machine symbol. 597N-08000001</p> <p>PDD1050C machine symbol. 597N-11000001</p>
18	<p>JL PRONAR <u>PDD1050</u></p> <p>JL PRONAR <u>PDD1050C</u></p>	<p>PDD1050 machine symbol. 597N-08000002</p> <p>PDD1050C machine symbol. 597N-11000002</p>
19		<p>Left adhesive warning foil 597N-09000001</p>
20		<p>Right adhesive warning foil 597N-09000002</p>



597-F.01-1

Figure 2.1 Arrangement of information and warning stickers.

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CHAPTER 3

CONSTRUCTION AND PRINCIPLE
OF OPERATION

3.1 TECHNICAL CHARACTERISTICS

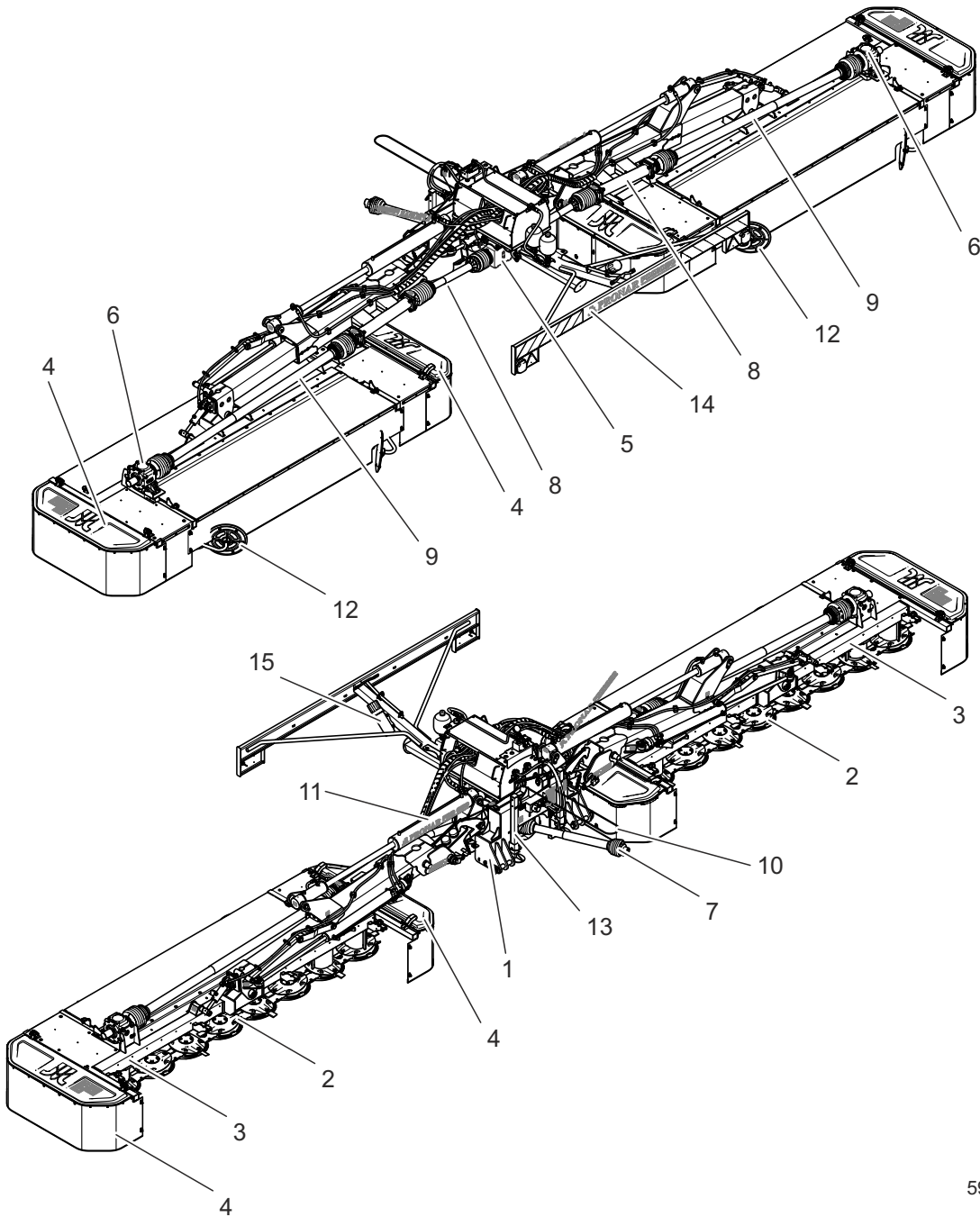
Table 3.1. Basic technical data as standard equipment

Content	Unit	PDD1050	PDD1050C
Dimensions in transport position			
Total length	mm	2,400	
Total width	mm	3,000	
Total height (folded side covers, ground clearance approx. 220mm)	mm	4,000	
Dimensions in working position			
Total length	mm	2,400	
Total width	mm	11,000 ⁽¹⁾	
Total height	mm	1,700 ⁽¹⁾	
Performance parameters			
Mowing width	mm	9,700– 10,500 ⁽²⁾	
Swath width min / max	mm	2x (1,300/1,600)	2x (1,450/2,200)
Performance (at recommended operating speed)	ha / h	9.7 – 10.5	
Karb weight	kg	2,900	3420
Minimum power requirement	kW/HP	125 / 170	160 / 220
Maximum PTO speed	rpm	1,000	
Suspension system	-	Cat. III according to ISO 730- 1	
Number of discs	pcs	18	
Number of cutting knives:			
Left	pcs	20	
Right	pcs	16	
Dimensions of cutting knives	mm	120x49x4 Ø21	
Maximum rotational speed of discs	rpm	3,000	
Recommended working speed	km/h	10	
Quick change of cutting knives	-	Yes	
Other information			
Emitted noise level	dB(A)	99	

Content	Unit	PDD1050	PDD1050C
Connection of electrical installation	V	12	
Transport position	-	Hydraulically adjustable	
<i>(1) - with the set maximum mowing width</i>			
<i>(2) - depending on the cooperating front mower (from 2.6 to 3.4 m) and the set value of overlapping mowing areas</i>			

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3.2 GENERAL STRUCTURE



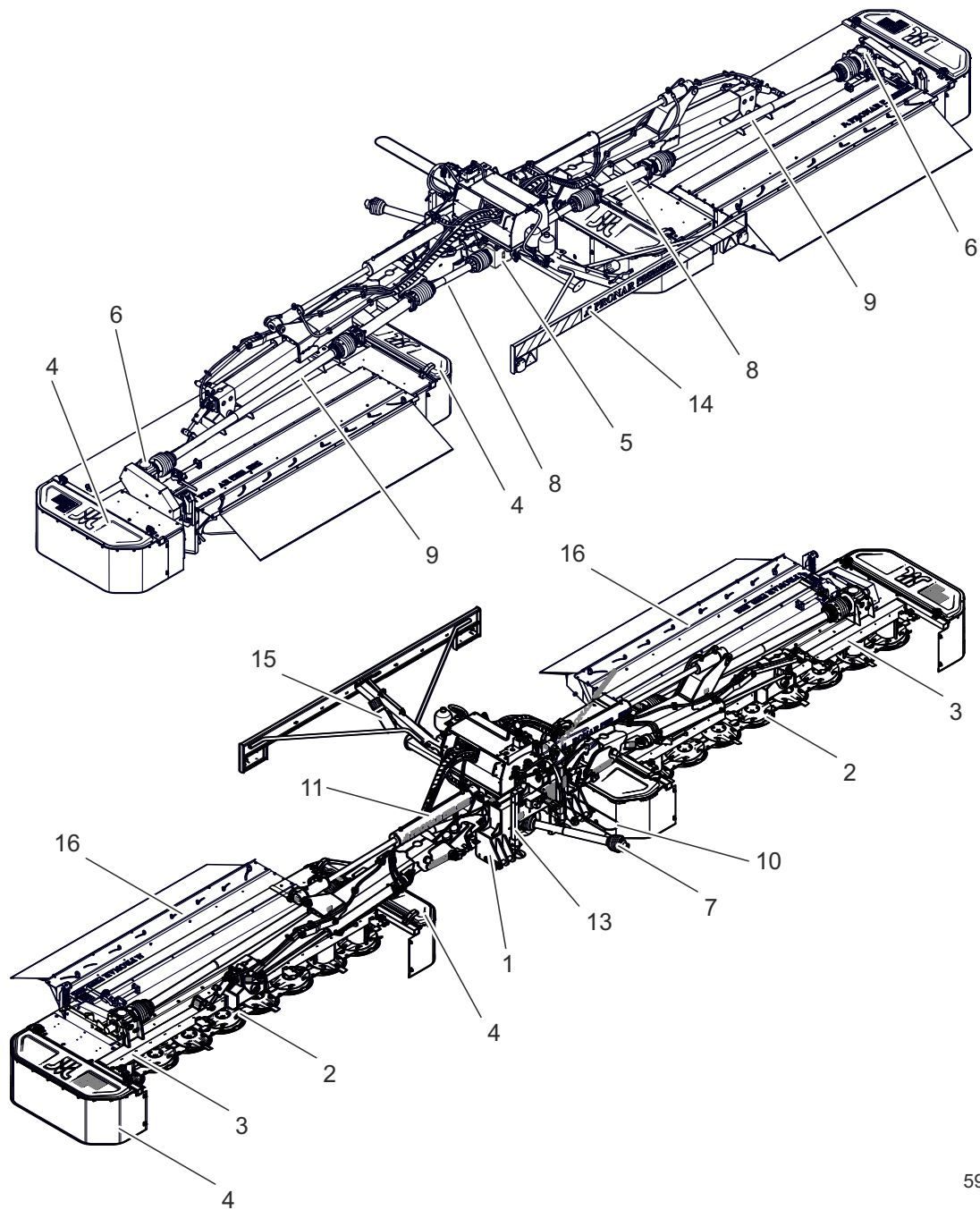
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Figure 3.1 Construction of the PDD1050 mower

(1) suspension frame
 (4) lifted cover
 (7) PTO shaft I
 (10) locking cable
 (13) support foot

(2) cutter bar
 (5) central gear
 (8) PTO shaft II
 (11) hydraulic system
 (14) lighting beam

(3) main frame
 (6) angle gear
 (9) PTO shaft III
 (12) swath scraper
 (15) tube for documents



597-G.02-1

Figure 3.2 Construction of the PDD1050C mower

- | | | |
|----------------------|-------------------------|------------------------|
| (1) suspension frame | (2) cutter bar | (3) main frame |
| (4) lifted cover | (5) central gear | (6) angle gear |
| (7) PTO shaft I | (8) PTO shaft II | (9) PTO shaft III |
| (10) locking cable | (11) hydraulic system | (13) support foot |
| (14) lighting beam | (15) tube for documents | (16) swath conditioner |

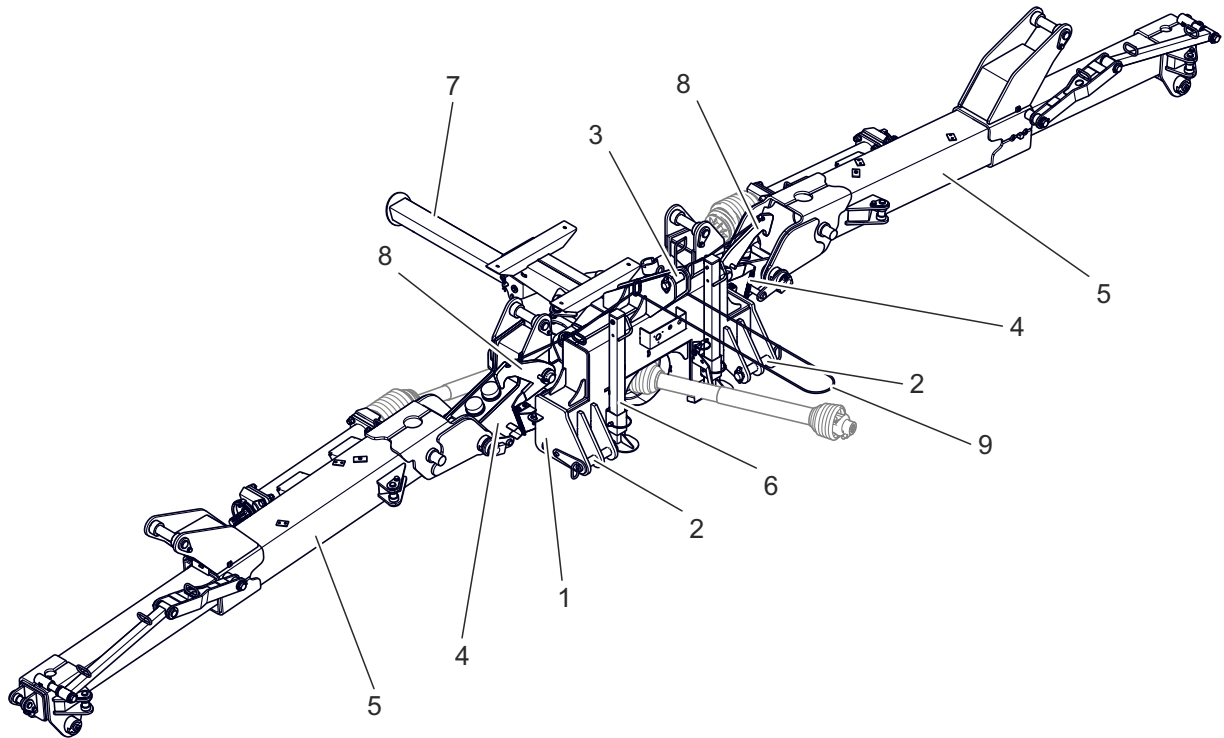
The PDD1050 and PDD1050C mower is designed to be attached to the tractor's rear three-point linkage. The construction of the mower is shown in the figure (3.1, 3.2). The disc mower consists of a suspension

frame (1), connected with the left and right main frame by means of tie rods and pins (3). Raised side shields (4) and sliding swath guides (12) are attached to the main frames. The drive from the tractor

to the cutter bars (2) is transferred via the PTO shaft for connecting to the tractor (7), centrally located gearbox (5), PTO shafts (8) (9) and gearbox (6). Moreover, in the PDD1050C disc mower, the drive from the tractor's PTO through the central gear (5), PTO shafts (8) (9) and angle gears (6) is transferred to the swath conditioners (16).

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3.3 SUSPENSION SYSTEM



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Figure 3.3 Construction of the suspension system

- | | | |
|-----------------------|--------------------|------------------------|
| (1) hitch | (2) lower link pin | (3) central link pin |
| (4) movable arm | (5) carrying arm | (6) front support foot |
| (7) rear support foot | (8) arm lock | (9) lock cable |

The main element of the linkage is the hitch (1) equipped with two lower pins (2) and an upper pin (3) for connecting to the tractor's three-point linkage. The movable arms (4) allow the cutting system to be tilted backwards when it hits an obstacle. The support arms (5) are used to lift the cutting unit.

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3.4 DRIVE TRANSMISSION SYSTEM

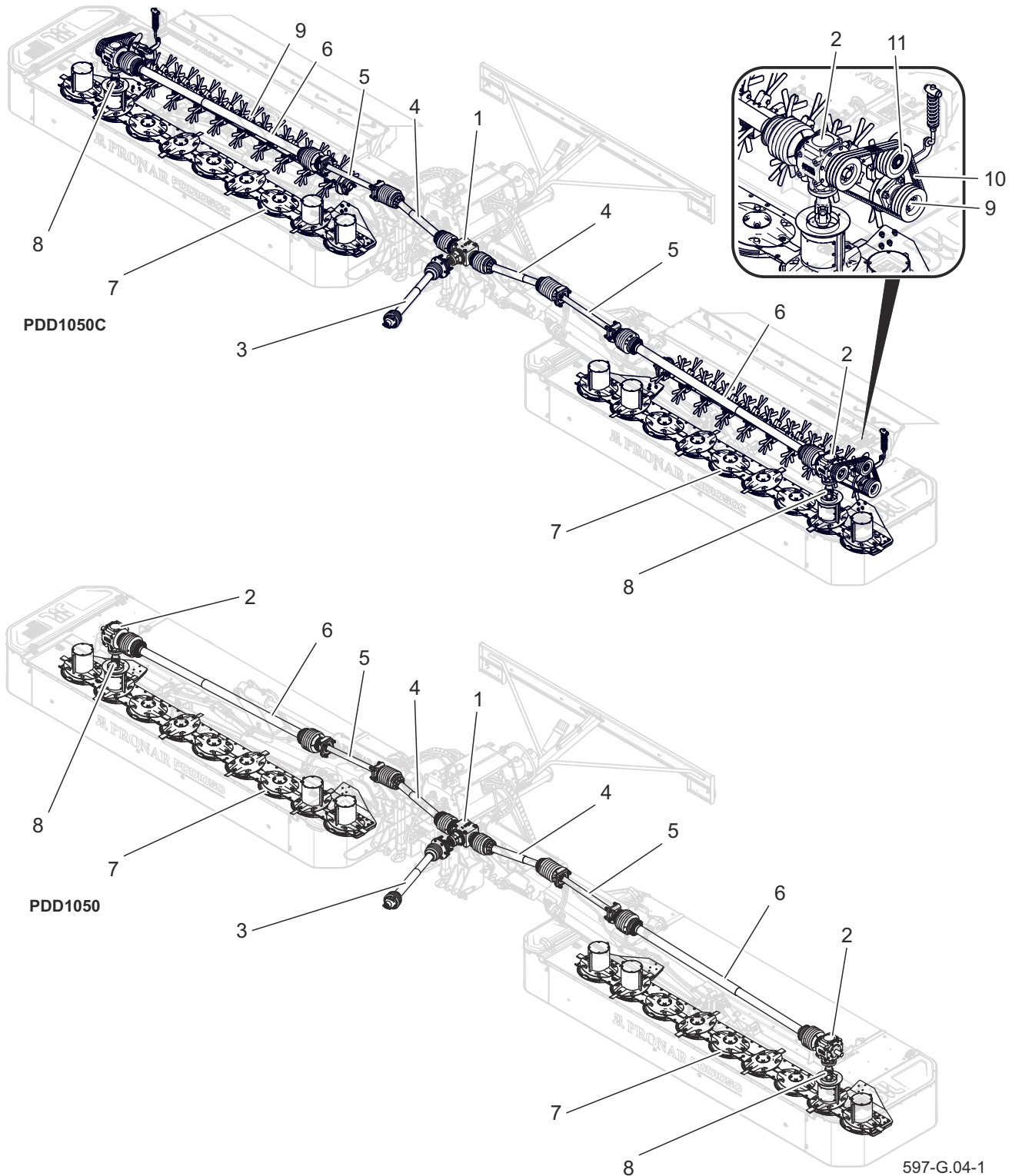


Figure 3.4 Construction of the drive transmission system

- | | | |
|------------------|---------------------------------|---|
| (1) central gear | (2) angular gear | (3) PTO shaft for connecting to the tractor |
| (4) PTO shaft I | (5) drive shaft | (6) PTO shaft II |
| (7) cutter bar | (8) connector with double joint | (9) swath conditioner shaft |
| (10) V-belt | (11) tensioner | |

The disc mower is designed to work with the PTO speed of 1000 rpm and is suitable for connecting to tractors whose direction of rotation is clockwise looking at the rear of the tractor.

The torque from the tractor's PTO shaft is transmitted by means of a PTO shaft with a one-way friction clutch (3) to the central gear of the mower (1). From the central gear, the drive is transmitted via shafts (4,5,6) to the angular gear (2). Then, through the double joint linkage (8), the drive is transferred to the drive disc of the cutter bar (7). In addition, in the PDD1050C disc mower, the drive from the tractor's PTO through the central gear (1), shafts (4,5,6) and angle gears (2) is transmitted to the swath conditioner shaft (9).

**CAUTION**

Do not exceed the PTO speed of 1000 rpm.
To drive the system, use only PTO shafts recommended by the manufacturer.

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3.5 CUTTING UNIT

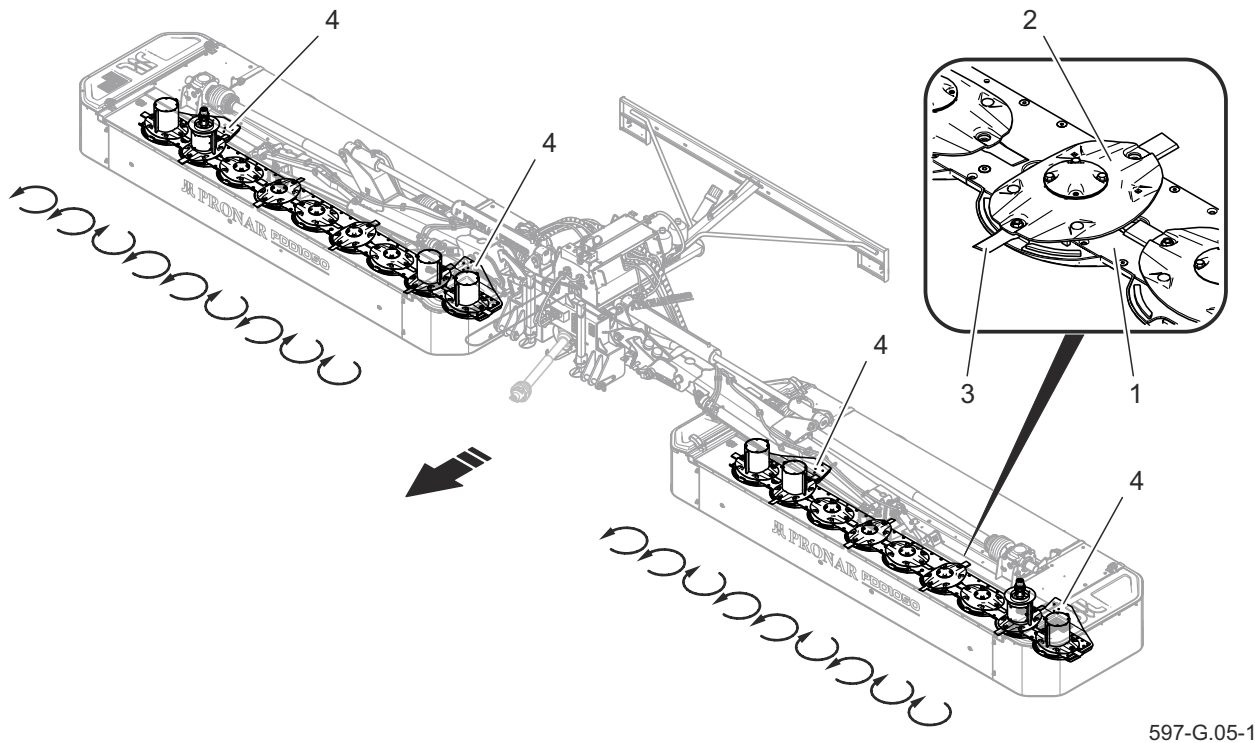


Figure 3.5 Cutting unit

(1) cutter bar

(2) cutter disc

(3) knife

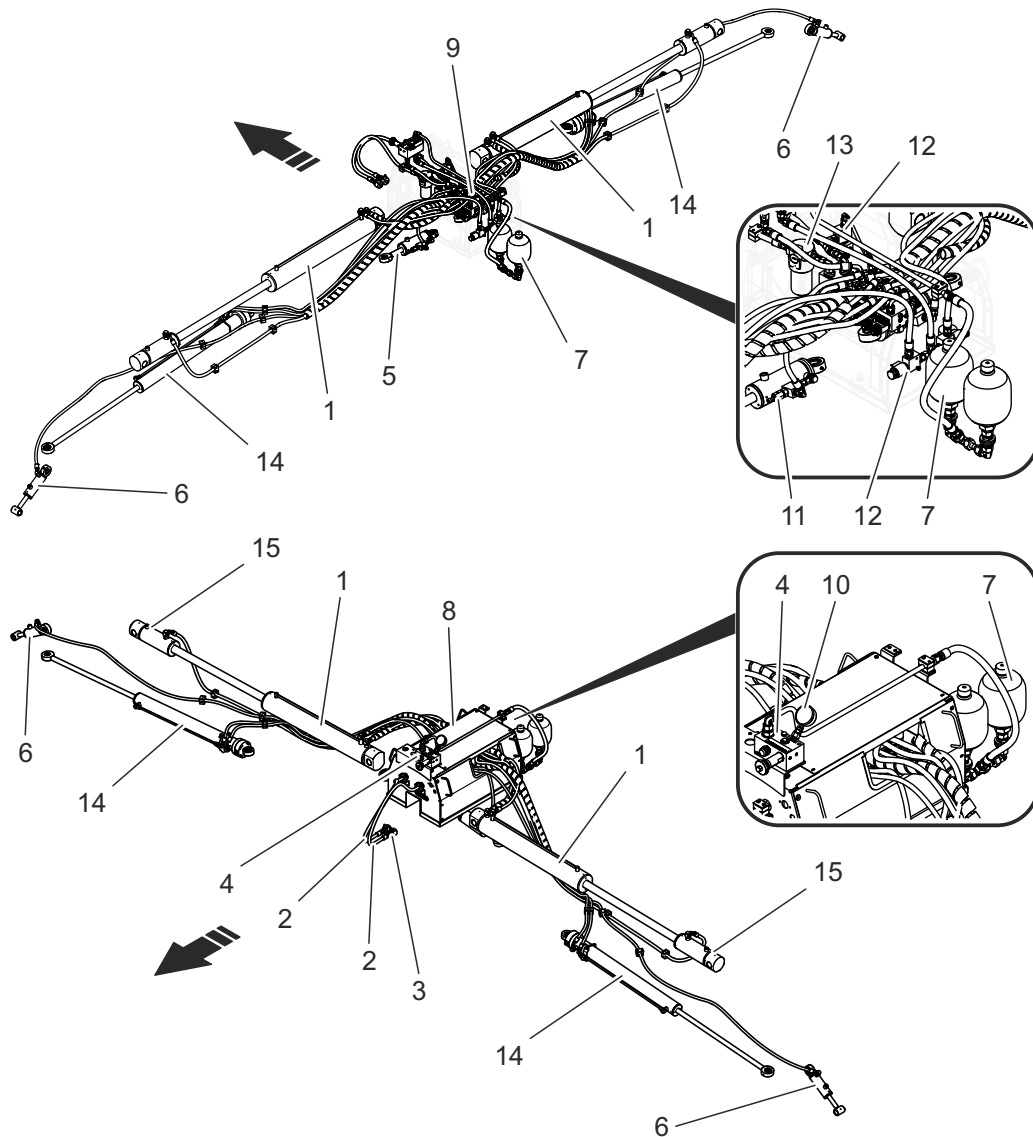
(4) foot

The double-sided disc mower is equipped with two cutting units with a working width of 3.9 m. Such a unit consists of a cutter bar (1) on which 9 cutting discs (2) are mounted. The cutter bar is attached to the frame with a foot (4). On each of the cutting discs, two cutting knives (3) are mounted, right or left, depending on the direction of rotation of the disc.

If the discs rotate clockwise, the right knives are mounted on them, and if they turn counterclockwise, the left knives are mounted on them. The figure (*Cutting unit*) shows the directions of rotation of individual cutting discs and the direction of mowing with arrows.

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3.6 THE HYDRAULIC SYSTEM



597-G.06-1

Figure 3.6 Construction of hydraulic installation

- | | | |
|----------------------------|--------------------------|-----------------------------|
| (1) lifting cylinder | (2) conduit | (3) quick coupler |
| (4) hydraulic relief block | (5) safety cylinder | (6) transport lock cylinder |
| (7) diaphragm accumulator | (8) box | (9) valve block |
| (10) control manometer | (11) safety valve | (12) ON-OFF hydraulic valve |
| (13) high-pressure filter | (14) telescopic cylinder | (15) relief cylinder |

The mower's hydraulic system is powered from the tractor's external hydraulic system. The installation is connected using two conduits (2) connected to the tractor section (single-acting and free-flowing).

ADVICE

CABLE MARKING:

red "+" power supply - connect to the section in the tractor
 blue "+" return - connect to the free drain in the tractor

The mower is equipped with hydro-pneumatic relief. This allows to adjust the pressure of the machine on the ground by changing the oil pressure in the hydraulic cylinders (15).

The hydro-pneumatic unloading system is equipped with two ON-OFF hydraulic valves (12). The valves are responsible for switching on or off floating on the right/left arm.

Lift cylinders (1) are used to raise and lower the mower's cutting units.

Safety cylinders (5) act as a hydraulic protection that protects the machine against damage due to hitting an obstacle.

Transport lock cylinders (6) block the mower unit during transport, while mowing they are in the floating position.

Telescope cylinders (14) are used to extend or retract the mowing units, thus setting the mowing width and overlapping of the cutter bars.

Relief cylinders (15) are used to unload the hydraulic mower unit and to fold the mower.

**CAUTION**

After connecting the hydraulic line, it must be completely depressurised. Work on systems with hydroaccumulators (repairs, connecting pressure gauges, etc.) may only be carried out after releasing the fluid pressure.

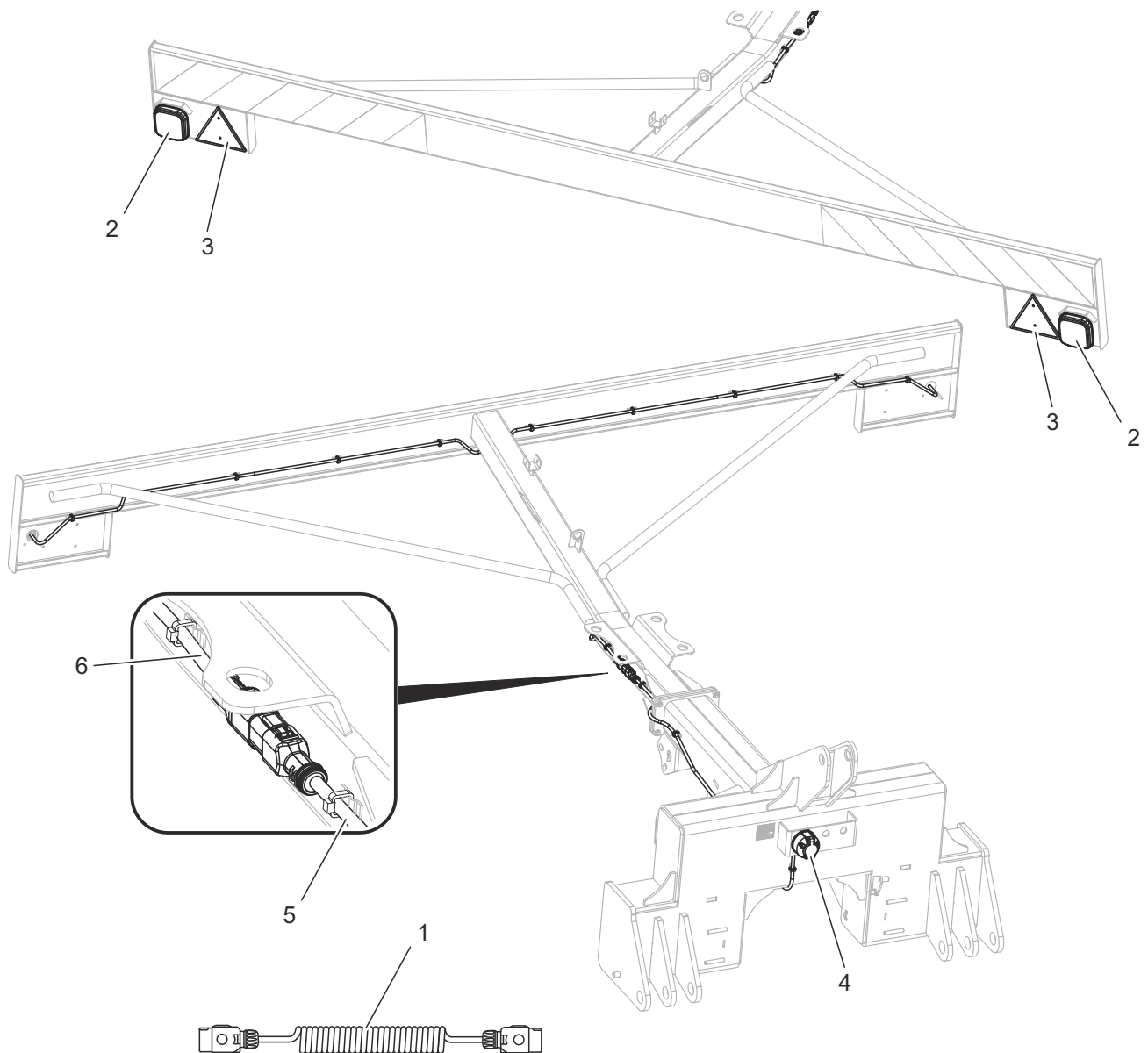
The accumulator body can get hot - risk of burns.

**DANGER**

Hydroaccumulators may only be filled with nitrogen, never filled with oxygen or air, risk of explosion! Danger of breakage and loss of approval for mechanical processing or welding and soldering work!

G.1.1.597.06.1.EN

3.7 LIGHTING INSTALLATION



597-G.07-1

Figure 3.7 Arrangement of electrical system components and reflective elements

(1) connecting cable

(2) rear lamp assembly

(3) reflective triangle

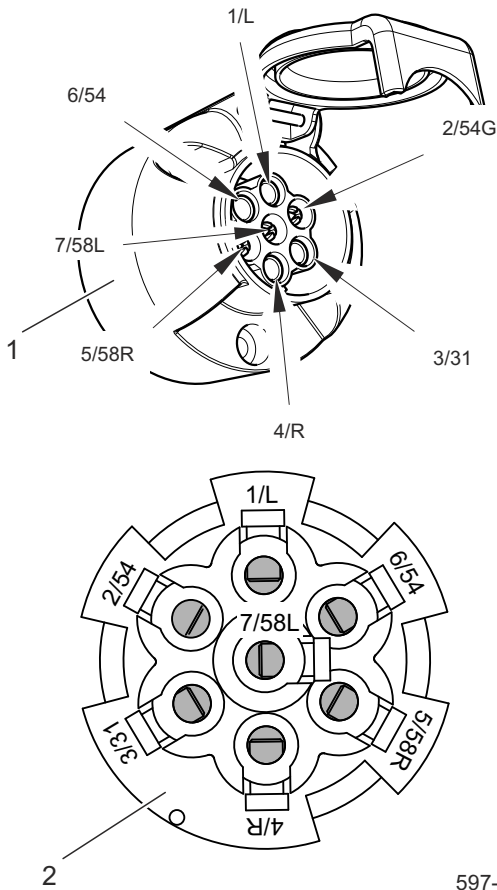
(4) 7-pole socket

(5) central beam

(6) rear beam

The machine's electrical system is designed to be powered from a 12V DC source. The electrical system should be connected to the tractor using the

appropriate connection cable (1), which is included with the machine.



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Figure 3.8 Connection markings for the connection socket

Designations according to table (3.2)

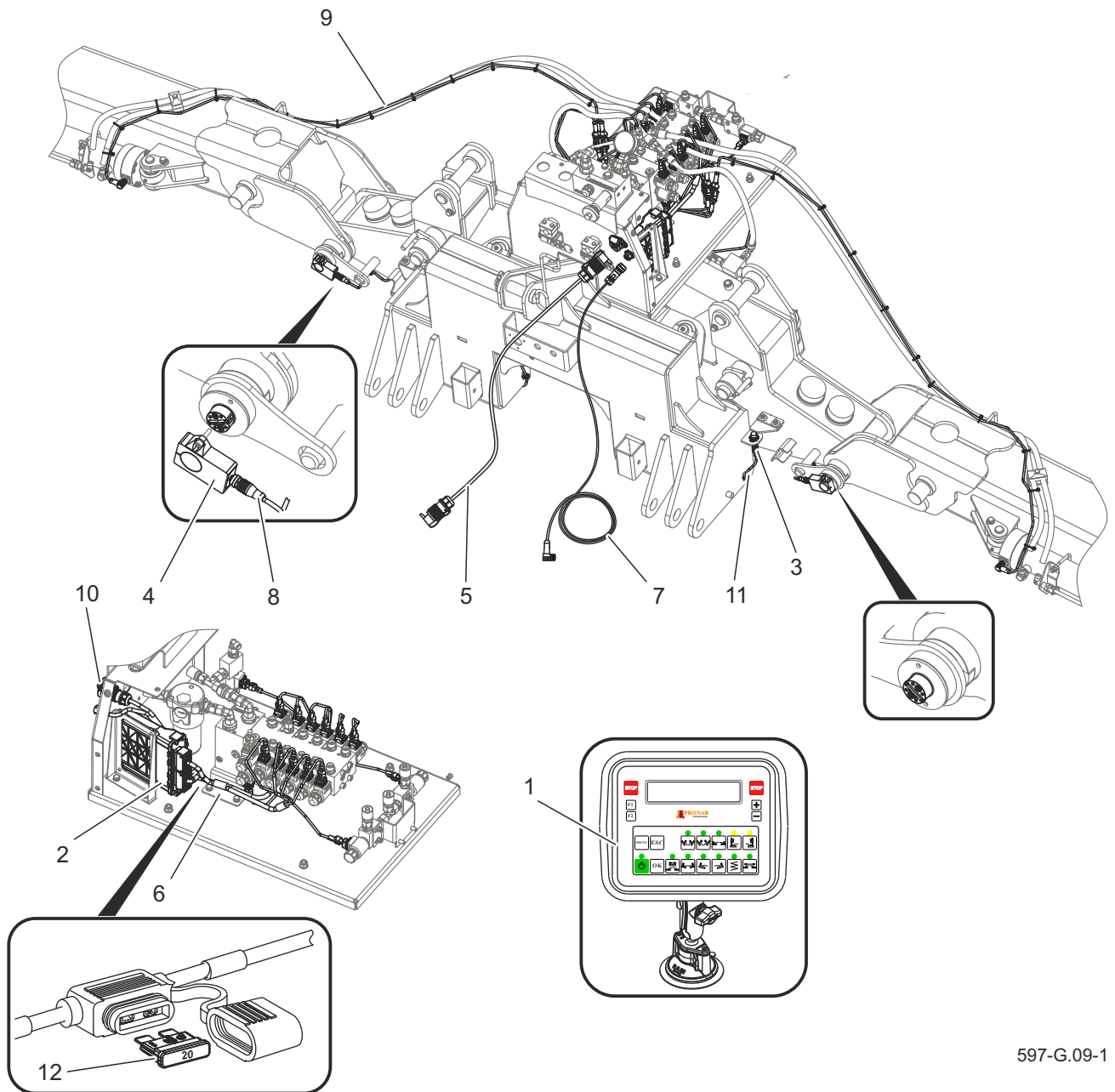
(1) socket (2) view from the beam side

Table 3.2. Connection markings for the connection socket

Marking	Function (wire colour)
1/L	Left indicator (yellow)
2/54 is cancelled	Not used
3/31 is cancelled	Ground (white)
4/R	Right direction indicator (green)
5/58R	Rear right position light (brown)
6/54 is cancelled	STOP light (red)
58L	Left rear position lamp (black)

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3.8 ELECTRICAL CONTROL INSTALLATION



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Figure 3.9 Electrical control installation

- | | | |
|-------------------------|----------------------------|--------------------------|
| (1) control panel | (2) ECU module | (3) inductive sensor |
| (4) position transducer | (5) connection cable | (6) control beam |
| (7) panel beam | (8) angle sensor beam | (9) cylinder sensor beam |
| (10) 3-pole socket | (11) inductive sensor beam | (12) 20A fuse |

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3.9 ACTUATORS AND SENSORS

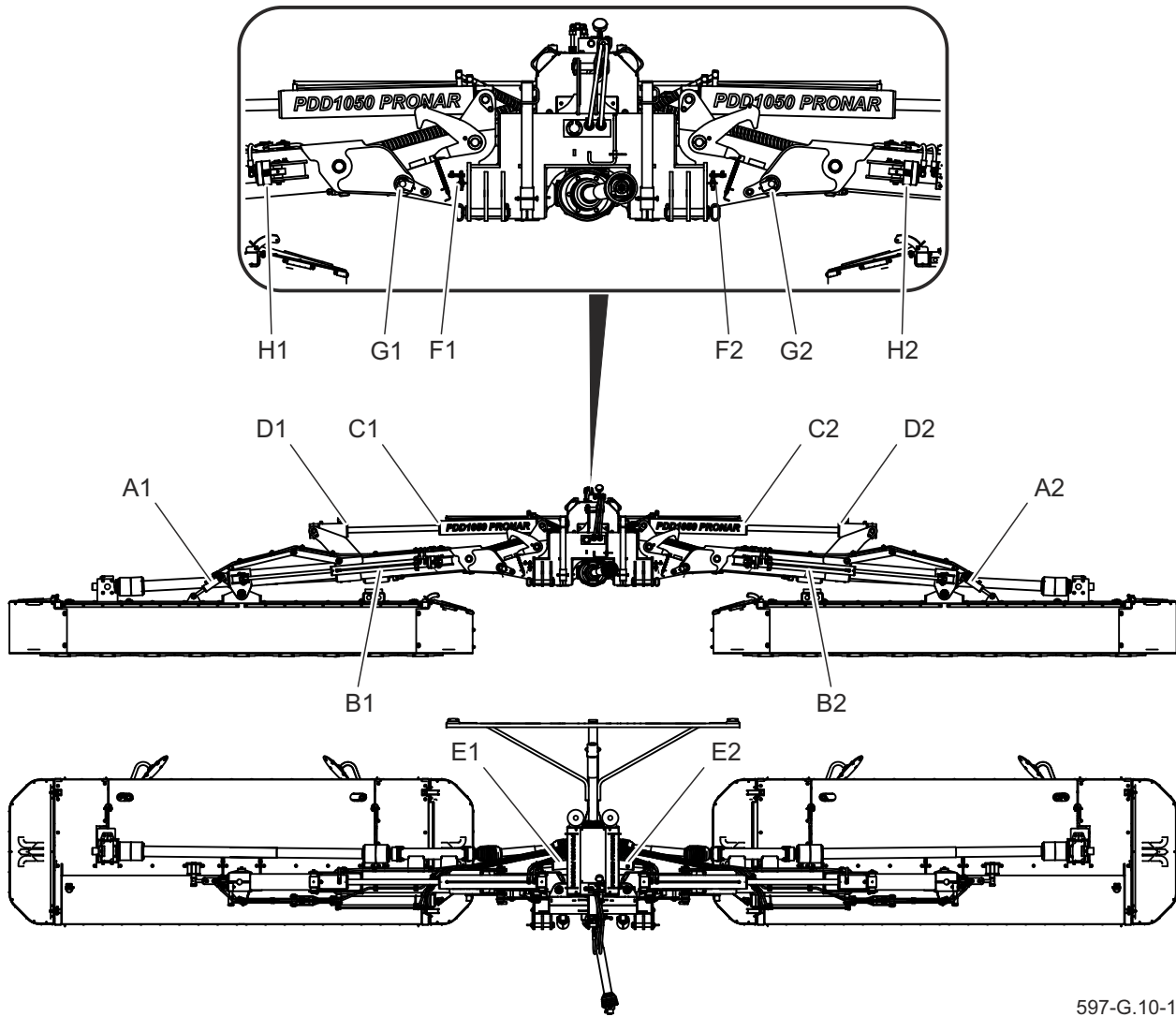


Figure 3.10 Cylinders and sensors

Table 3.3. Cylinders and sensors

Cylinder	Function	Sensor	Function
A1	Right transport lock cylinder	F1	Right fuse sensor
A2	Left transport lock cylinder	F2	Left fuse sensor
B1	Right telescope cylinder	G1	Right angle sensor
B2	Left telescope cylinder	G2	Left angle sensor
C1	Right lifting cylinder	H1	Right cylinder sensor
C2	Left lifting cylinder	H2	Left cylinder sensor
D1	Right relief cylinder		
D2	Left relief cylinder		
E1	Right fuse cylinder		
E2	Let fuse cylinder		

Cylinders A1 i A2 block the mower unit during transport, while mowing they are in the floating position.

Cylinders C B1 i B2 are used to extend or retract the mowing units, thus setting the mowing width and overlapping of the cutter bars.

Cylinders C1 and C2 are used to fold and unfold the mower.

Cylinders D1 i D2 are used to unload the hydraulic mower unit and to fold the mower.

Cylinders E1 and E2 keep the mower arms straight. When the mower collides with an obstacle, the pressure in the cylinder increases, causing the overflow valve to open and fluid out of the cylinder. The cylinder folds and the mower arm swings backwards while lifting up.

Sensors F1 and F2 detect the deflection of the mower arm caused by a collision.

Sensors G1 and G2 control the angular position of the mower arms.

Sensors H1 and H2 control the extension of the mower's telescopic arms.

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CHAPTER 4

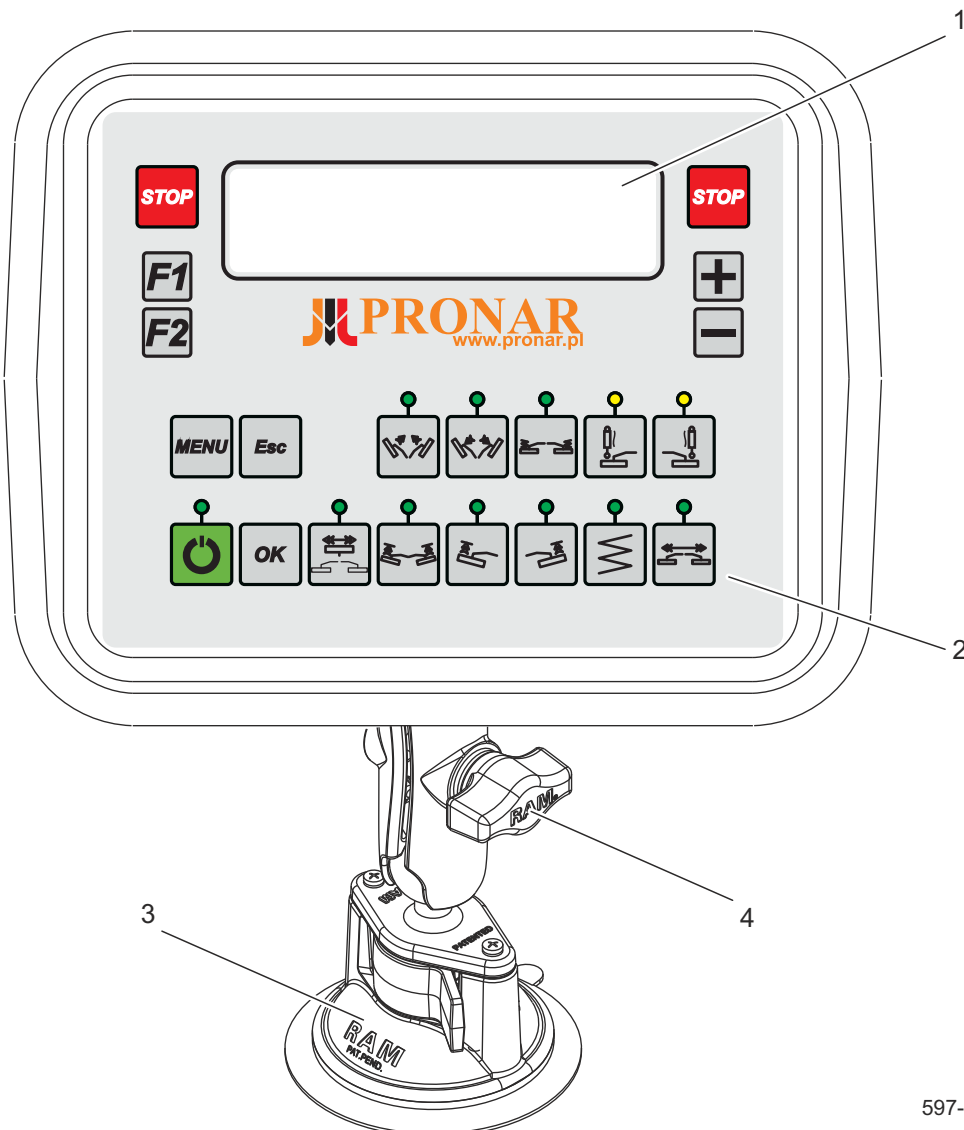
CONTROL PANEL

4.1 CONTROL PANEL

The mower is controlled using the control panel located in the tractor cabin. The control panel consists of a display (1), which displays information on the machine's operating parameters, alarm and warning states. The selection of available

control functions or information panels is carried out after pressing the button (2) assigned to this function. The active function is highlighted by the corresponding LED.

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Figure 4.1 Construction of the control panel

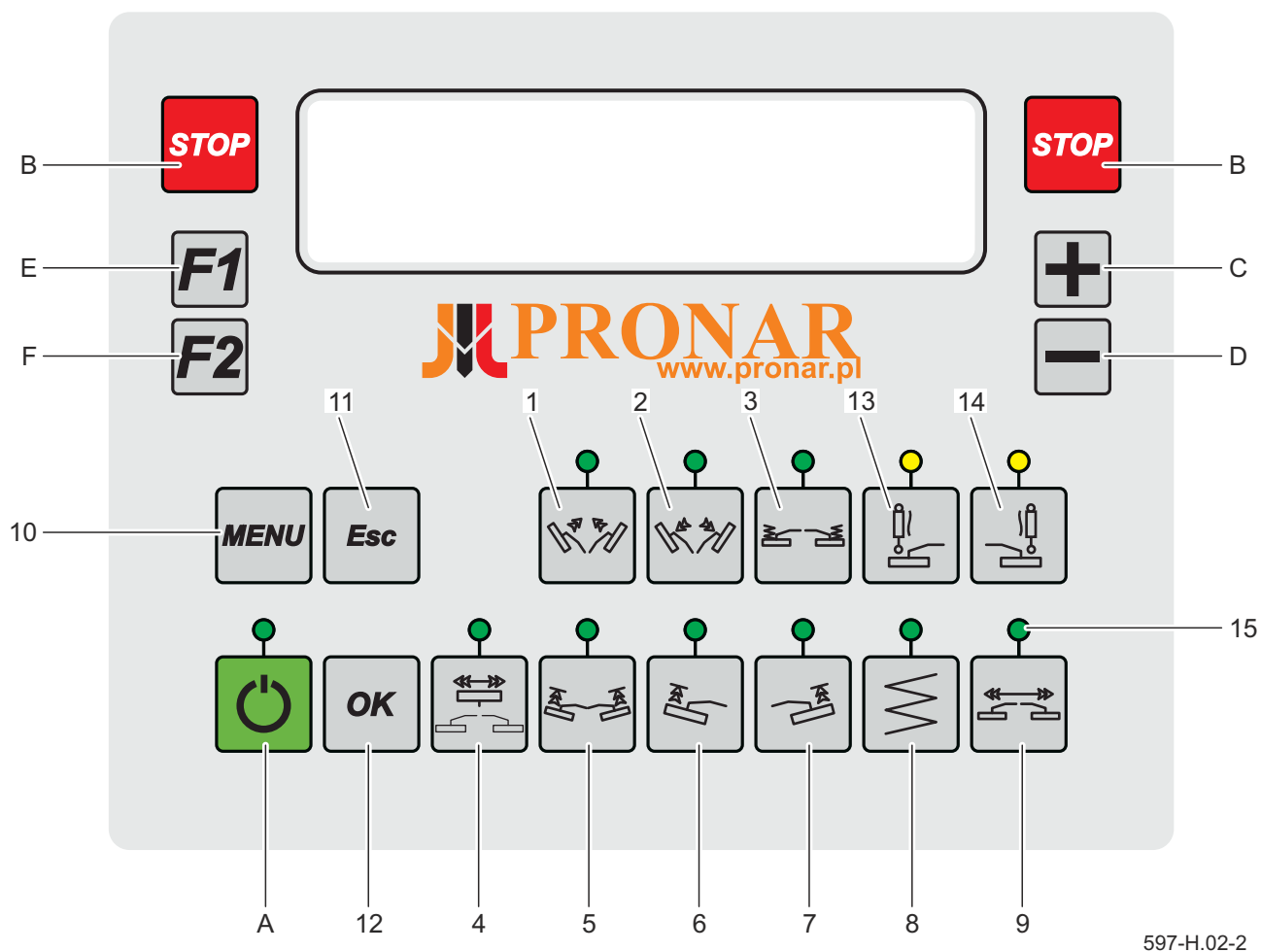
(1) LCD display

(2) function buttons

(3) panel holder

(4) holder lock

4.2 CONTROL PANEL FEATURES



597-H.02-2

Figure 4.2 Control panel features

Table 4.1. Control panel features

Marking	Function
A	Off/On the panel
B	[STOP] emergency stop of the mower function
C	[+]increase value (cutting width / front mower width)
D	[-] decrease value (cutting width / front mower width)
E	[F1]show left/right fuse status
F	[F2] Show the overlap value of the mowing areas of the front and rear mower. Show left/right arm extension.
1	folding of the mower / lifting of the mower
2	unfolding of the mower / lowering of the mower
3	tensioning of the mower's protection system in the event of a collision
4	changing of the working width of the front mower
5	drive over the swaths of the left and right mower
6	drive over the swaths of the left mower
7	drive over the swaths of the right mower
8	equalizing of the pressure of the left and right mower relief system
9	changing of the working width
10	[MENU] enters the menu
11	[Esc] undo / cancel
12	[OK] confirm
13	left mower float indicator
14	right mower float indicator
15	LED indicating function activity

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4.3 DESCRIPTION OF CONTROL PANEL FEATURES

FOLDING OF THE MOWER FOR TRANSPORT



CAUTION

Before folding the mower for transport, the movable guards must be folded. Folding the movable covers will ensure a transport height of less than 4 m while maintaining a clearance of 20 cm. Failure to fold the inner covers may also cause them to collide with the mower's hitch during folding.

- Fold up the movable covers.
- Activate the hydraulic section in the tractor and press and hold the button (1).

The mower will fold in the following sequence: raising both mower arms to the position of driving over the swaths => fully retracting the mower arms => fully raising both mower arms (the arms should engage the mechanical transport locks).



CAUTION

The folding process should be visually controlled by the operator in order to detect possible collisions of the mower's moving elements with the ground or other objects.

ADVICE

The folding function can be used to steplessly lift the mower.



CAUTION

If the mower arms, despite the activated hydraulic section and the fold button, do not want to fold completely (they are raised but not locked with mechanical locks), the pressure in the mower relief system is probably too low to automatically pull the mower arms to the transport position. In this case, press and hold the button (8) with the tractor's hydraulic section activated. The mower's arms should be pulled to the transport position and locked with mechanical locks.

UNFOLDING OF THE MOWER FOR WORK

- Release the arm locks with the cable (if you cannot release the arm locks by pulling the cable, try activating the mower's folding function to loosen the locks).
- Activate the hydraulic section in the tractor and press and hold the button (2).

The mower will unfold by performing the following sequence: lowering both mower arms to the position of driving over the swaths => extending the mower arms to the working width saved in the panel => lowering the mower to the ground / switching on floating for both sides.

- After both mowing units fall to the ground, use the tractor's rear

**CAUTION**

After the automatic start of floating during unfolding, the mower descends very dynamically and releasing the unfolding button will not stop the process of lowering the mowing units. No one is allowed near the lowering arms with the mower units during unfolding.

**CAUTION**

After unfolding the mower to the working position, unfold the movable guards. Starting the cutter bar with the movable guards folded may damage them.

**CAUTION**

Before starting to mow, be sure to check the pressure in the mower relief system. If in the working position the pressure read from the pressure gauge differs significantly from the one set on the valve, use the function no. 8 (pressure equalization of the relief system).

**CAUTION**

If the mower's arms, despite the activated hydraulic section and the unfolding button, do not want to lower completely (they are raised and do not want to fall freely to the ground), the pressure in the mower's relief system is probably too high. In this case, without the hydraulic section in the tractor being activated (the hydraulic return should be connected to free flow), press the button (8) one at a time. Function LED no. 8 will start flashing and the pressure relief process will begin to equalize to the value set on the valve. After equalizing the pressure in the system and lowering the arms to the ground, you can turn off the function by pressing the button (8) again (the function diode should stop flashing).

**CAUTION**

The unfolding process should be visually controlled by the operator in order to detect possible collisions of the mower's moving elements with the ground or other objects.

three-point linkage to set the working position of the mower.

The left angle and the right angle should be close to 5°.

- After unfolding the mower to the working position, unfold the movable guards.

TENSIONING THE MOWER SAFETY SYSTEM IN THE EVENT OF A COLLISION.

The mower is equipped with a safety device that protects the structural elements of the machine in the event of a collision with an obstacle while mowing. At the moment of collision of the mowing unit with an obstacle, the arm together with the mowing unit moves backwards and is lifted up at the same time. This move allows to jump over low obstacles that may be in the meadow. After the fuse has tripped, it is necessary to tighten the protection system:

- Press function button no. 3 (section in the tractor must be running).

Pressing the button (3) will raise the mower's arms to the position of driving over swaths with simultaneous tension of the securing system.

- After carrying out the procedure, the mower can be lowered with function no. 2.

**CAUTION**

The restraint system tensioning procedure must be performed even if the mower arm returns to its original position after being deflected due to a collision.

ADVICE

The status of the fuses (left/right) is displayed on the machine panel.

ADVICE

Above the position of driving over swaths, function no. 3 tightens the mower protection system without additional lifting.

**CAUTION**

The sensitivity of the safety system can be adjusted by a screw in the non-return valve. By unscrewing the screw we increase the sensitivity of the fuse. By screwing in the screw, we stiffen the system.

CHANGING OF THE WORKING WIDTH OF THE FRONT MOWER.

- After starting the function with the button (4), a window will open in which, by manipulating the buttons (C, D) [-/+], enter the working width of the front mower expressed in meters.
- Confirm with button (12) [OK].

**CAUTION**

Based on the selected working width of the front and rear mowers, the panel calculates the theoretical overlap of their mowing areas. It is not recommended to work with an overlap of mowing areas less than 0.25 m.

DRIVE OVER THE SWATHS OF THE LEFT AND RIGHT MOWER

- Start the section in the tractor and press function button no. 5.

The mower will raise the right and left arms to the swath over position.

**CAUTION**

The mower can be lowered again using function no. 2.

DRIVE OVER THE SWATHS OF THE LEFT MOWER

- Start the section in the tractor and press function button no. 6.

The mower will raise the left arm to the swath over position, the right arm will remain in working position with active floating.

**CAUTION**

The left mower can be lowered again using function no. 2.

DRIVE OVER THE SWATHS OF THE RIGHT MOWER

- Start the section in the tractor and press function button no. 7.

The mower will raise the right arm to the swath over position,

**CAUTION**

The right mower can be lowered again using function no. 2.

the left arm will remain in working position with active floating.

EQUALIZING OF THE PRESSURE OF THE LEFT AND RIGHT MOWER RELIEF SYSTEM

Pressure equalization of the relief system is performed when the actual pressure of the system (read from the pressure gauge) in the working position of the mower differs significantly from the pressure set on the unloading block. The discrepancy between the actual pressure of the system and the one set on the block may result, for example, from:

- leaks (decrease in actual pressure relative to the set one),
- use function no. 8 omitting the pressure equalization stage (increase in actual pressure relative to the set one),
- after emergency folding of the mower with function no. 8 (increase in actual pressure relative to the set one).

If the pressure read is lower than the set pressure on the unload block:

- Activate the hydraulic section in the tractor and press and hold the function button no. 8.

The system pressure shown on

**CAUTION**

At the stage of performing pressure equalization (function no. 8 flashes) the hydraulic section should be turned off. The activated section of the hydraulics will not allow the pressure in the system to drop completely to the relief block set on the valve.

**CAUTION**

The return of the mower should be connected to the free drain in the tractor.

the pressure gauge will start to rise.

- If the pressure gauge arrow exceeds the pressure value set on the valve, you can turn off the hydraulic section and release the function button no. 8.

Function LED no. 8 will start flashing and the levelling phase will begin during which excess pressure will be discharged back into the tractor. The system should stabilize at the set pressure on the relief block.

- After equalizing the pressure in the relief system, you can turn off the function by pressing the button (8) again.

The function LED will turn off and float will be activated for both sides of the mower.

If the pressure read is higher than the set pressure on the unload block:

- Without running the hydraulic section

in the tractor, press the function button no. 8 (the return from the mower should be connected to the free drain in the tractor).

Function LED no. 8 will start flashing and the levelling phase will begin during which excess pressure will be discharged back into the tractor. The system should stabilize at the set pressure on the relief block.

- After equalizing the pressure in the relief system, you can turn off the function by pressing the button (8) again.

The function LED will turn off and float will be activated for both sides of the mower.

ADJUSTING THE MOWER'S LOAD RELIEF SYSTEM

The mower is equipped with a hydraulic relief system that allows to adjust the pressure of the mowing units to the mown area. The pressure force is expressed in a unit of pressure and can be read from the manometer located on the hydraulic unloading block.

Ways to adjust the relief system:

1. Imprecise

Mower in working position, tractor off, hydraulics off, hand-brake on.



CAUTION

When adjusting the pressure system, be especially careful, a change in pressure in the mower's relief system may cause a slight movement of the mower's arms. Body parts should not be placed where they could be pinched by the movement of the arms of the machine.

ADVICE

The recommended pressure of the relief system for the PDD1050 mower is 65-75 BAR.
The recommended pressure of the relief system for the PDD1050C mower is 80-90 BAR



CAUTION

The valve in the relief block is used to regulate the relief system. Turning the knob clockwise increases the set pressure in the system, turning it counter-clockwise decreases the set pressure in the system. Manipulating of the valve setting does not instantly change the system pressure.



CAUTION

After each change of the pressure settings in the relief system (decrease/increase of the unloading force), it is necessary to equalize the pressure in the relief system (function no. 8), in order to check the adjustment effects.



CAUTION

By changing the pressure in the relief system, the mower can be adapted to work on different terrain. For example, if the ground is muddy and unstable, you can increase the pressure in the system so that the mower glides easier on the ground.

Excessive pressure in the relief system may cause the mower decks to bounce on uneven ground, leaving unevenly mowed grass.

Too low pressure in the relief system will cause the mowing units to slide heavily on the ground, destroying the turf and putting additional resistance to the tractor, causing higher fuel consumption.

- Slightly turning the knob clockwise increases the relief force.
- Slightly turning the knob counterclockwise decreases the relief force.
- The effect of changing the unloading force will be visible only after performing pressure equalization of the relief system (function no 8).

2. Precise

Mower in working position, tractor switched off, hydraulics switched off, handbrake applied, return from the mower must be connected to the free drain of the tractor.

- In order to precisely reduce the pressure in the mower's relief system, press the function button no. 8.

Function No. 8 LED will start flashing and the process of pressure equalization in the relief system will start.

- At the stage of performing pressure equalization (function no. 8 LED flashes), watch the manometer and carefully turn the adjusting knob counterclockwise.

The pressure on the manometer should start to drop.

- After setting the desired pressure, you can press function button no. 8 to turn it off (the function LED will stop



CAUTION

Adjustments of the relief system should be carried out with the mower in working position and arms freely lowered to the ground.



CAUTION

Before servicing, it is essential to completely depressurize the mower's relief system.

flashing).

- Turn the adjustment knob clockwise to precisely increase the pressure in the mower's relief system.
- Perform pressure equalization of the relief system (function no. 8).
- Relieve the excess pressure to the desired value according to the instructions for precise pressure relief in the relief system.

PRESSURE DROP IN SERVICE SYSTEM

- Press function button no. 8.

Function No. 8 LED will start flashing and the process of



CAUTION

When carrying out the operation, be especially careful, reducing the pressure in the mower's relief system may cause a slight movement of the mower's arms. Body parts should not be placed where they could be pinched by the movement of the arms of the machine.

The operation should be performed with the tractor switched off, the parking brake applied, the return hose from the mower should be connected to a free sink of the tractor.

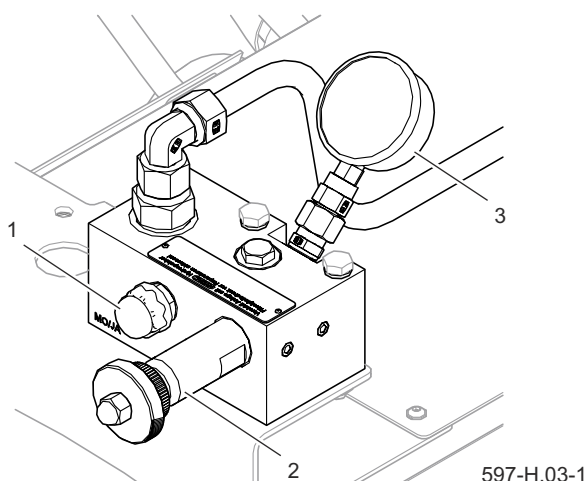


Figure 4.3 Hydraulic relief block
 (1) relief valve (2) adjustment knob
 (3) pressure gauge

pressure equalization in the relief system will start.

- At the stage of performing pressure equalization (function no. 8 LED flashes), press the relief valve on the mower's hydraulic relief block.

The pressure on the pressure gauge should drop to 0 BAR.

CHANGING OF THE WORKING WIDTH

- After running function no. 9, a window will open in which, by manipulating the buttons (C, D) [-/+], enter the working width of the mower expressed in meters.
- Confirm with OK.

If the mower's arms are not in the position of driving over the swaths or higher, after confirming the working width with



CAUTION

The mower will change its working width only when you try to lower it to the ground with function no. 2. The working width of the rear mower should be adjusted to the working width of the front mower. The overlap of the mowing areas of the front and rear mower should be a minimum of 0.25 m, recommended 0.35 m or more. The overlapping of the mowing areas of the front and rear mower can be checked with the F2 function.

the OK button, the mower's arms will be raised to the position of driving over the swaths.

EMERGENCY CONTROL

To start the emergency mode, press the button (10) [MENU] and confirm with the button (12) [OK]. In emergency mode, you can control the mower independently of the sensors and related automation. Emergency mode changes the functions assigned to the buttons.

1 - folding of the right arm



CAUTION

Use extreme caution when using emergency mode. The emergency control is used to control the mower in the event of sensor failure resulting in the immobilization of the mower's automation.

ADVICE

CABLE MARKING:
 red "+" power supply - connect to the section in the tractor.
 blue "+" return - connect to the free drain in the tractor.

2 - unfolding of the right arm

4 - lowering of the left arm

5 - lifting of the left arm

6 - lowering of the right arm

7 - lifting of the right arm

8 - folding of the left arm

9 - unfolding of the left arm

To exit the emergency mode, press the button (11) [Esc] twice.

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CHAPTER 5

RULES OF USE

5.1 PREPARATION FOR WORK



DANGER

Before using the machine the user should carefully read the content of this document. Careless and improper use and operation of the machine, and non-compliance with the recommendations given in this operator's manual is dangerous to your health.

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



DANGER

The machine must not be used by persons who are not authorized to drive agricultural tractors (carriers), including children and people under the influence of alcohol or other drugs. Non-adherence to the principles of safe use may endanger the health of the operator and others.



DANGER

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



CAUTION

Before using the machine always check its technical condition. In particular, check the technical condition of the hitching system, cutting unit, drive system, completeness of protective covers and lighting.



CAUTION

Before starting of work, check all lubrication points and lubricate the machine if necessary.

must check the technical condition of the machine.

For this purpose:

- read the contents of this manual and follow the recommendations contained therein, get to know the construction and understand the principle of operation of the machine,
- check the condition of the paint coating,
- inspect individual elements of the mower for mechanical damage resulting from min. due to incorrect transport of the machine (dents, punctures, bends or breakage of details),
- check all machine lubrication points, lubricate if necessary according to the lubrication schedule.
- check the correct mounting of the cutting knives, cutter bar, carrying arms, and protective covers,

- check the compatibility of the machine's hitch with the carrier's (tractor's) hitch with which it is to be aggregated,
- check the compliance of PTO shaft parameters, e.g. type of PTO end, rotational speed, direction of rotation,
- make sure that the attached PTO shaft can be connected to the tractor (the shaft should be adapted to the carrying vehicle in terms of length, type, strength, etc. - see the PTO shaft manufacturer's manual),
- check the technical condition of the hitch pins and securing cotter pins,
- check the level of lubricating oil in the angular gears and the cutter bar.

If all the operations described above have been performed and the machine is in good technical condition, connect it to the carrying vehicle, start it, check its individual systems and carry out a test run of the mower at a standstill.

For this purpose:

- connect the machine to the carrier (see section "CONNECTING TO THE CARRIER"),
- connect the PTO shaft to the tractor and the mower,
- connect the wires of the electrical system, control panel and hydraulic

system, and then check the correct operation of individual machine systems and check the hydraulic system for tightness.

- move the mower to the working position,
- start the PTO drive at idle.

Let it idle for a few minutes while checking:

- whether there are knocks and noises caused by the rubbing of metal elements from the drive system,
- that there is no excessive vibration in the cutting unit,
- whether the discs on the cutter bar rotate smoothly and without any jams,
- rotation of the cutting unit.

The operation of the mower without load should be smooth, vibrations of the cutting unit and the entire machine, variable noises and vibrations from loose screw connections are unacceptable. After stopping the mower, check the mounting of the cutting blades. Check whether the reduction gears and the cutter bar are not leaking gear oil.

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

5.2 TOOL CARRIER LOADING

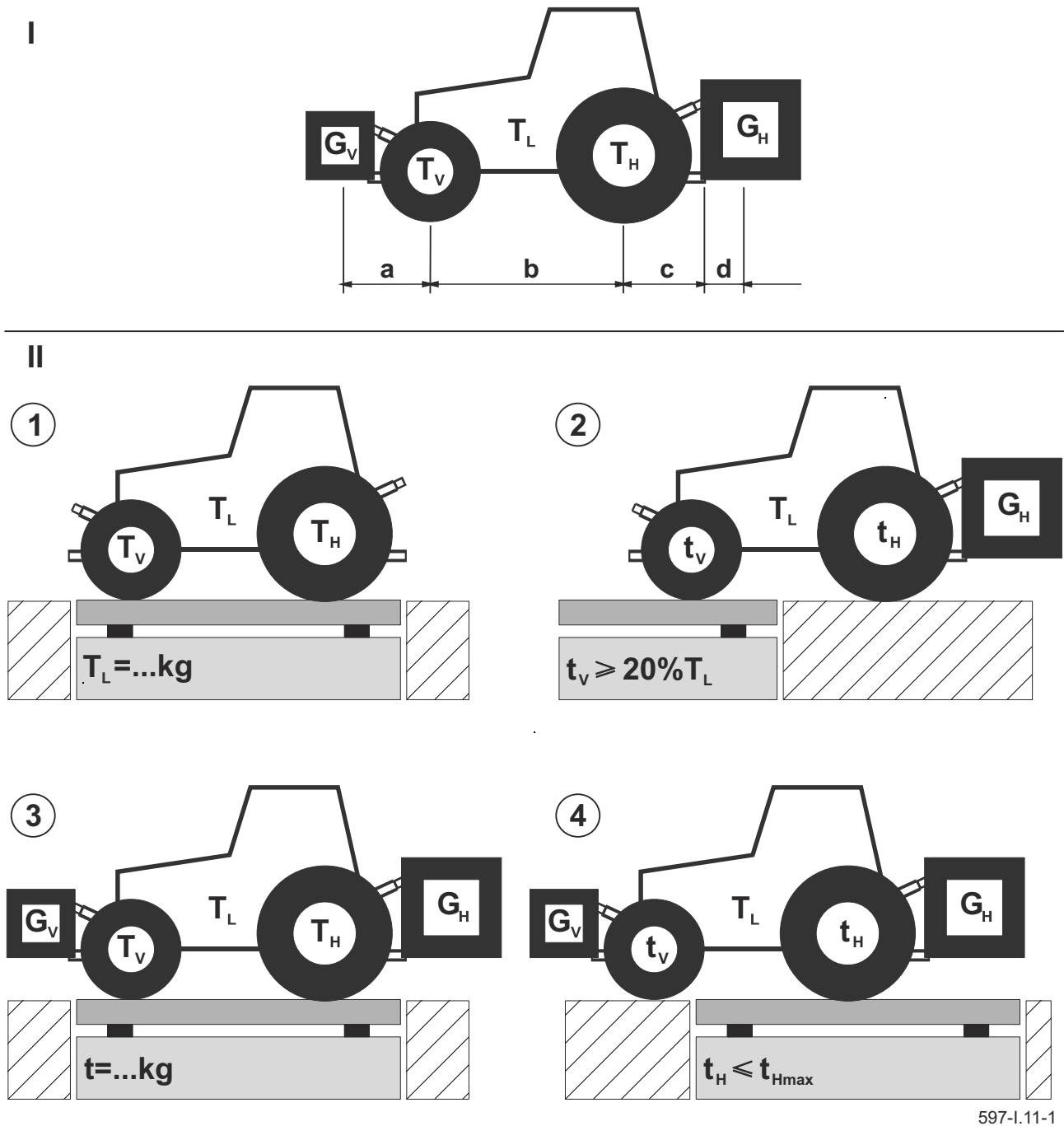


Figure 5.1 Loading of the tractor

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



CAUTION

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

permissible axle load and load capacity of tractor tires. The front axle of the tractor must always be loaded with at least 20% of the empty weight of the tractor.

To ensure that these conditions are met, perform the following calculations:

CALCULATION OF MINIMUM FRONT BALLAST $G_{V_{MIN}}$

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

CALCULATION OF MINIMUM REAR BALLAST $G_{H_{MIN}}$

$$G_{H_{min}} = \frac{G_V \cdot a - T_H \cdot b + 0,45 \cdot T_L \cdot b}{b + c + d}$$

The calculation of the required minimum front and rear ballast assumes that all parameters are known.

If the parameters are not known and cannot be determined, measurements should be made using a scale.

Table 5.1. Loading of the tractor

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

MEASUREMENT OF PERMISSIBLE AXLE LOADS USING A SCALE

- Measure the curb weight of the tractor (T_L).
- Hitch the machine to the tractor and measure the front axle load (t_v). If the load is less than 20% of the weight of the tractor alone (T_L), add weights to bring the load above the minimum value ($t_v \geq 20\% T_L$).
- Measure the total weight (t) of the tractor with the machine and weights.



CAUTION

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

- Check the tractor manual to see if the measured value is less than the Average Gross Weight.
- Measure the load on the rear axle (t_H) and check in the tractor manual whether the measured value is lower than the permissible maximum value of the load on the rear axle of the tractor (tH_{max}).

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5.3 CONNECTING OF THE MACHINE TO THE TOOL CARRIER



CAUTION

Before connecting the machine, check the technical condition of the hitch system of the machine and the tractor, as well as the connection elements of the hydraulic and electrical systems.

Pay attention to the compatibility of the oils in the hydraulic system of the tractor and in the hydraulic system of the machine.



DANGER

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

The mower may only be coupled to a tractor that meets the requirements in the table "REQUIREMENTS FOR AGRICULTURAL TRACTOR". Ensure good visibility during coupling.

In order to connect the machine to the tractor, follow the instructions below:

- The machine should be connected on level ground.
- Drive the tractor under the mower's hitch.

When reversing the tractor, bring the tractor's three-point linkage arms closer to the pins (1) of the machine.

- Set the tractor lower links to the correct height.
- Turn off the tractor's engine and close

the cab, protecting it against unauthorized access.

- Connect the lower pins (1) with the tractor's rods and secure them with cotter pins (7).
- Connect the tractor's central connector with the mower's pin (2) and secure it with a cotter pin.
- Raise the machine with the tractor's three-point linkage.
- Adjust the position of the mower using the upper link (central connector).
- Raise the parking stands (3, 4) and



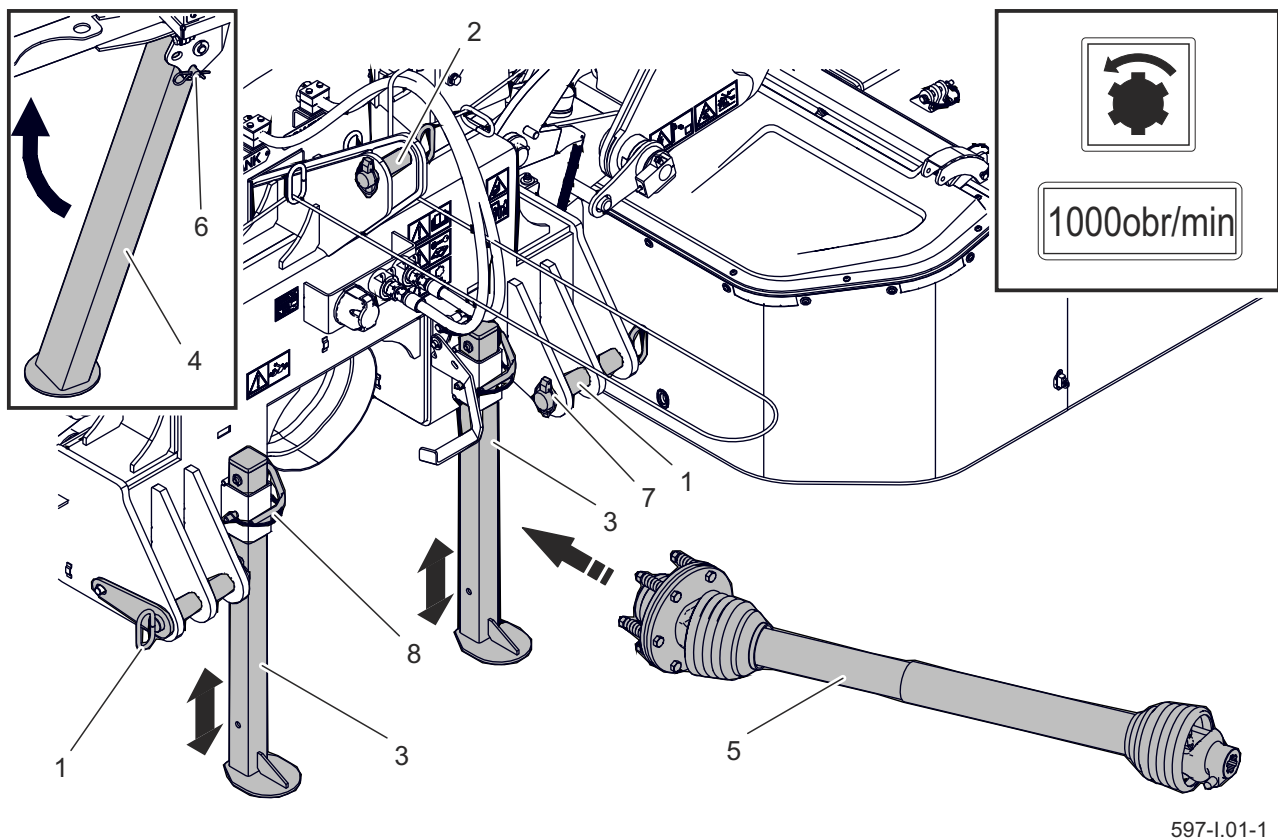
DANGER

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



DANGER

When connecting the hydraulic conduits to the tractor, make sure that the hydraulic system of the tractor and mower is not under pressure.



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Figure 5.2 Connecting to the tractor

- | | | |
|-------------------------|---|-------------------|
| (1) lower linkage pin | (2) central link mounting pin | (3) front support |
| (4) rear support | (5) PTO shaft for connection to the tractor | |
| (6) pin with cotter pin | (7) cotter pin | (8) cotter pin |

secure them with pins and cotter pins (6, 8).

The tractor's three-point linkage lower links must be set at the same height.

- Connect the hydraulic system conduits to the tractor.

The hydraulic circuit must be equipped with the so-called floating section.

- Connect the plug of the power supply cable to the lighting electrical system.
- Connect the PTO shaft (5) (PTO)



CAUTION

Hydraulic and electrical cables should be routed so that they do not become entangled in moving parts of the machine and carrier and are not at risk of kinking or pinching when turning. Electrical plugs and sockets should be clean and dry.



DANGER

Before connecting the PTO shaft, it is absolutely necessary to read the manual provided by the PTO shaft manufacturer and observe all recommendations contained therein. Before connecting to the carrier, check the technical condition of the shaft guards, the completeness and condition of the securing chains.

to the PTO of the carrying vehicle (tractor) and secure it with safety chains.

Make sure that the ends of the shaft on the side of the tractor and the machine are well matched and the hitch is properly fastened.

- Connect the control panel to the control box on the mower.

The connected panel should be placed in the tractor.



CAUTION

Before the first start-up, the length of the shaft should be adjusted according to the guidelines in the manual of the shaft manufacturer.



DANGER

Before connecting the PTO shaft, turn off the tractor engine and remove the ignition key. The tractor must be secured against unauthorized access.

ADVICE

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

ADVICE

Concentricity of the PTO shaft of the implement carrier (tractor) with the shaft of the machine's drive system significantly extends the service life of the drive shaft.

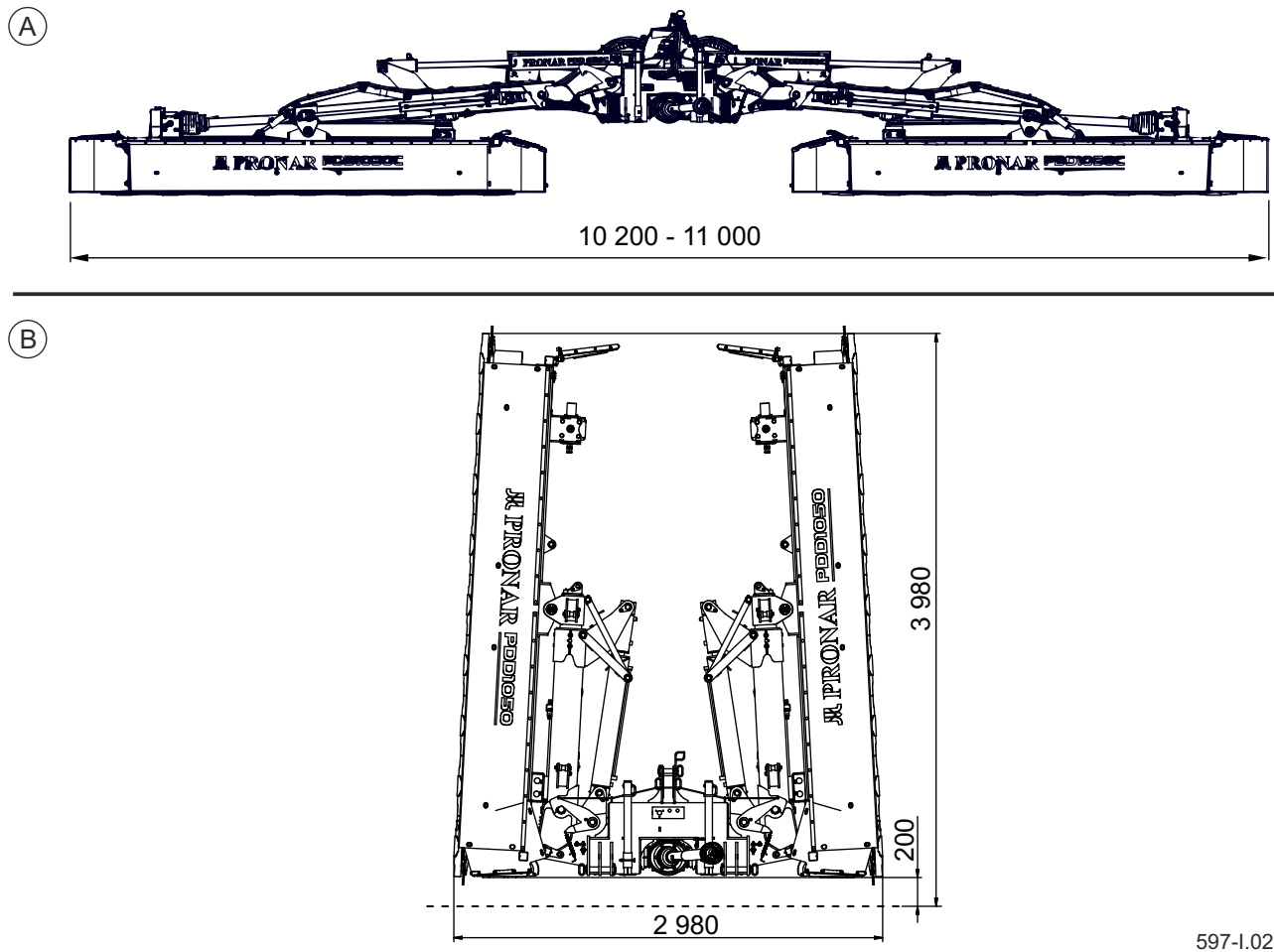


CAUTION

It is forbidden to start the machine with the PTO rotational speed higher than the permissible one.

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5.4 TRANSPORT



597-I.02-1

Figure 5.3 Mower positions

(A) working position

(B) transport position



DANGER

When moving the machine to the working or transport position, make sure that no one is in the danger area.



DANGER

The machine can only be transported with the telescopic shaft disconnected.



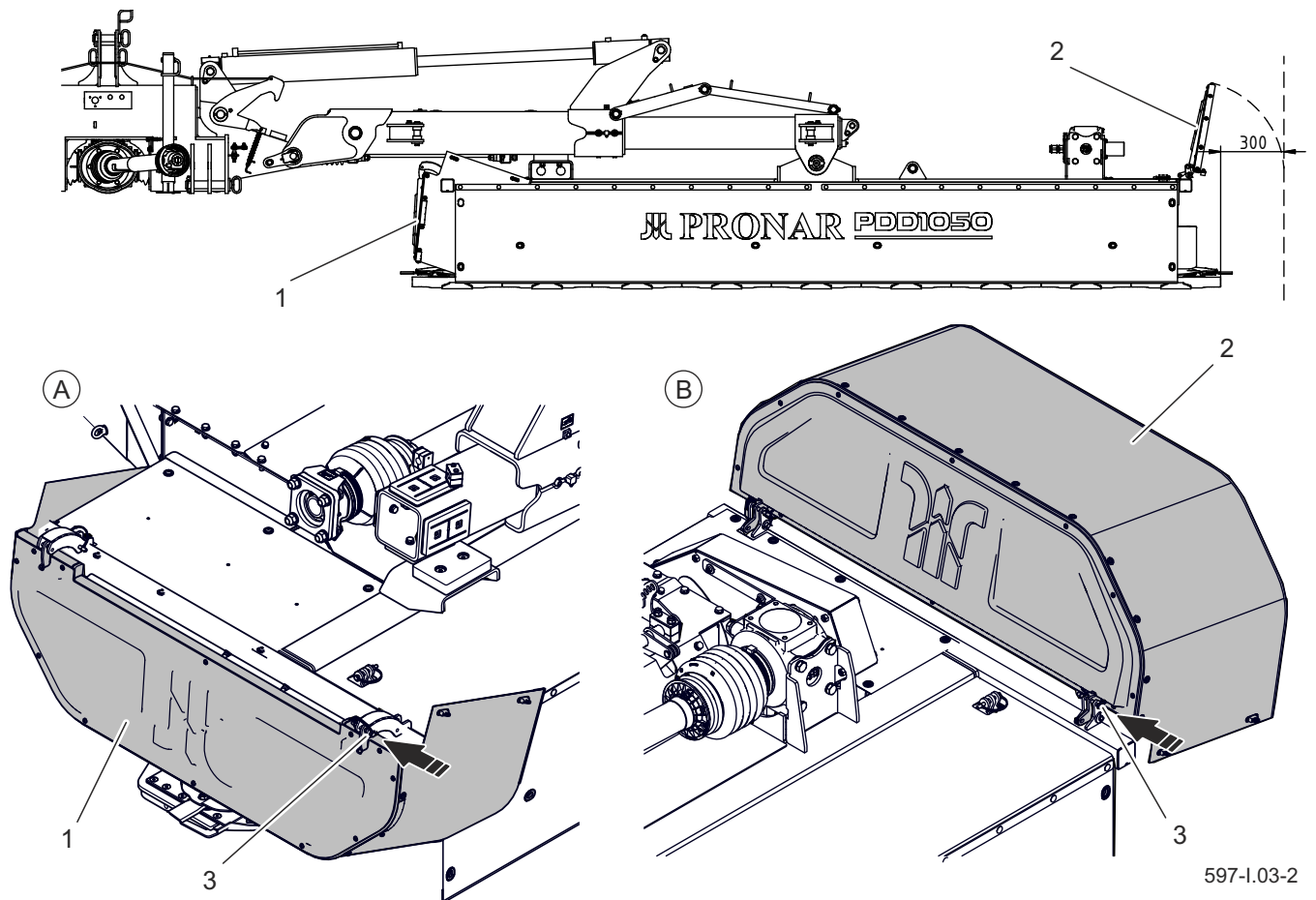
CAUTION

During operation and travel of the machine, the parking supports must be maximally raised up.

For transport to and from the work site, the machine must be moved to the transport position. In order to move the machine from the working position (A) to the transport position (B) - figure (5.3), perform the following actions:

- Lift the mower on the tractor's lower links using the three-point linkage.

The lower links of the tractor should be at a height of about 30 cm above the ground. Parking



597-I.03-2

Figure 5.4 Lifting of covers for transport

(A) left shield in transport position (B) right shield in transport position

(1) left cover

(2) right cover

(3) cotter pin

stands should be raised and secured with pins.

- Raise the side shields from the working position to the transport position in order to reduce the total transport height - figure (5.4).

(I) Unlock and pull out the cotter pins (3), then fold the covers (1)(2) to position A and B. (II) Secure the covers in the transport position with cotter pins (3). Folding the side covers made the mower narrower by 600mm.

- Raise the cutting unit to the vertical position until the latch closes.

See section "CONTROL PANEL FUNCTIONALITY - Folding the mower for transport".

- Check that the lock is fully engaged.
- Set the transport height on the tractor links so that it does not exceed 4 m.
- Before driving, check the operation of the lighting.

The most important guidelines for steering a tractor with a mower attached are presented.

- Transport on public roads and outside

fields must always be carried out with the machine lifted.

- Before moving make sure that there are no bystanders, especially children, near the mower and tractor. Ensure proper visibility.
- Make sure that the mower is properly connected to the tractor and the PTO shaft is properly secured.
- The permissible design speed and speed resulting from restrictions on road traffic regulations must not be exceeded. Travel speed should be adjusted to the prevailing road conditions.

**CAUTION**

It is forbidden to travel on public roads with faulty braking system, lighting and signalling system of the tractor.

- The travel speed should be reduced sufficiently in advance of driving to curves, when driving on uneven or sloping terrain.
- Control the behaviour of the mower and tractor when driving on uneven terrain and adjust the speed to terrain and road conditions.

H.1.1.597.04.1.EN

5.5 WORKING WITH THE MACHINE

Working units are controlled by pressing the button assigned to a given function on the control panel. The active function is highlighted by the corresponding LED (See chapter 4. CONTROL PANEL”).

SETTING OF THE WORKING POSITION

After the machine has been transported to the job site, it must be changed from transport to working configuration. The machine may only be adapted to work on an even, stable surface. To move the machine to working position:

- Unlock the support arms lock pawls by stretching the cables and, controlling the tractor's hydraulic circuit, lower the support arms with the cutting unit so that the cutter bars are resting freely on the ground.

See section "CONTROL PANEL FUNCTIONALITY - Unfolding the mower for work". Set the tractor's three-point linkage lower links at a height of 630-640mm above the ground.

- Turn off the tractor engine and remove the ignition key, immobilize the tractor with the parking brake and secure it against access by unauthorized



DANGER

When moving the machine to the working or transport position, make sure that no one is in the danger area.



DANGER

It is forbidden to occupy any position other than the operator's position in the vehicle cabin while working with the machine. It is forbidden to leave the operator's cabin while the machine is operating. It is forbidden to stay between the carrier and the machine.



HIGH LEVEL OF NOISE.

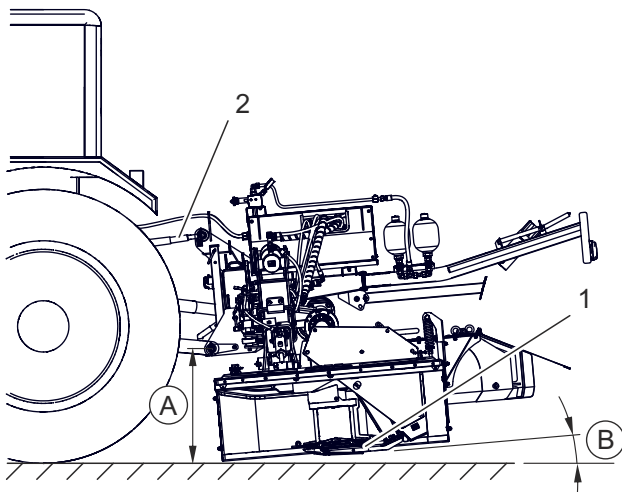
Depending on the working conditions, the tractor (carrier) with the machine may generate noise exceeding the level of 85dB at the operator's position. In such conditions, the operator should use personal protective equipment (protective headphones). In order to reduce the noise level during operation, the windows and doors of the operator's cabin should be closed.

persons.

- Move the side guards from the transport position to the working position.

MOWING HEIGHT ADJUSTING

Adjust the mowing height after lowering the machine to the ground. Changes in setting are made by shortening or lengthening the central connector (2) in such way that the angle (B) of the cutter bar inclination is from 4° to 5°. Extending of the



597-1.04-1

Figure 5.5 Mowing height adjusting
 (A) distance of lower pull rods from the ground -
 $630 \div 640 \text{mm}$ (B) angle of inclination of the cutter
 bar - $4 \div 5^\circ$ (1) cutter bar (2) central connector

**CAUTION**

The optimal angle of inclination of the cutter bar forward is from 4° to 5° . Tilting backwards will cause faster wear of the cutter bar sliding surfaces.

linkage increases the cutting height and shortening it reduces the cutting height.

SETTING THE SWATH WIDTH OF THE PDD1050 MOWER

The width of the swath can be smoothly adjusted in the range of $1,200 \div 1,600 \text{ mm}$ through the appropriate setting of both scrapers.

In order to adjust the scraper assembly in the horizontal plane:

- Loosen the locknuts and adjusting screws (7).
- Move the arm (3) accordingly, tighten the screws (7) and secure with

**DANGER**

When adjusting the scrapers, be especially careful because of the possibility of crushing your fingers with the spring-tensioned mower mechanisms. After completing the adjustment, make sure that all screw connections are properly tightened and the range of movement of the scrapers is correct. The mower can only be started when all guards and aprons are lowered.

locknuts.

In order to adjust the angular position of the scraper assembly, set the appropriate length of the limiting chain (9) by fixing it at the appropriate length in the mounting hole of the head (4). After fastening, the chain should be secured against slipping out of the head hole.

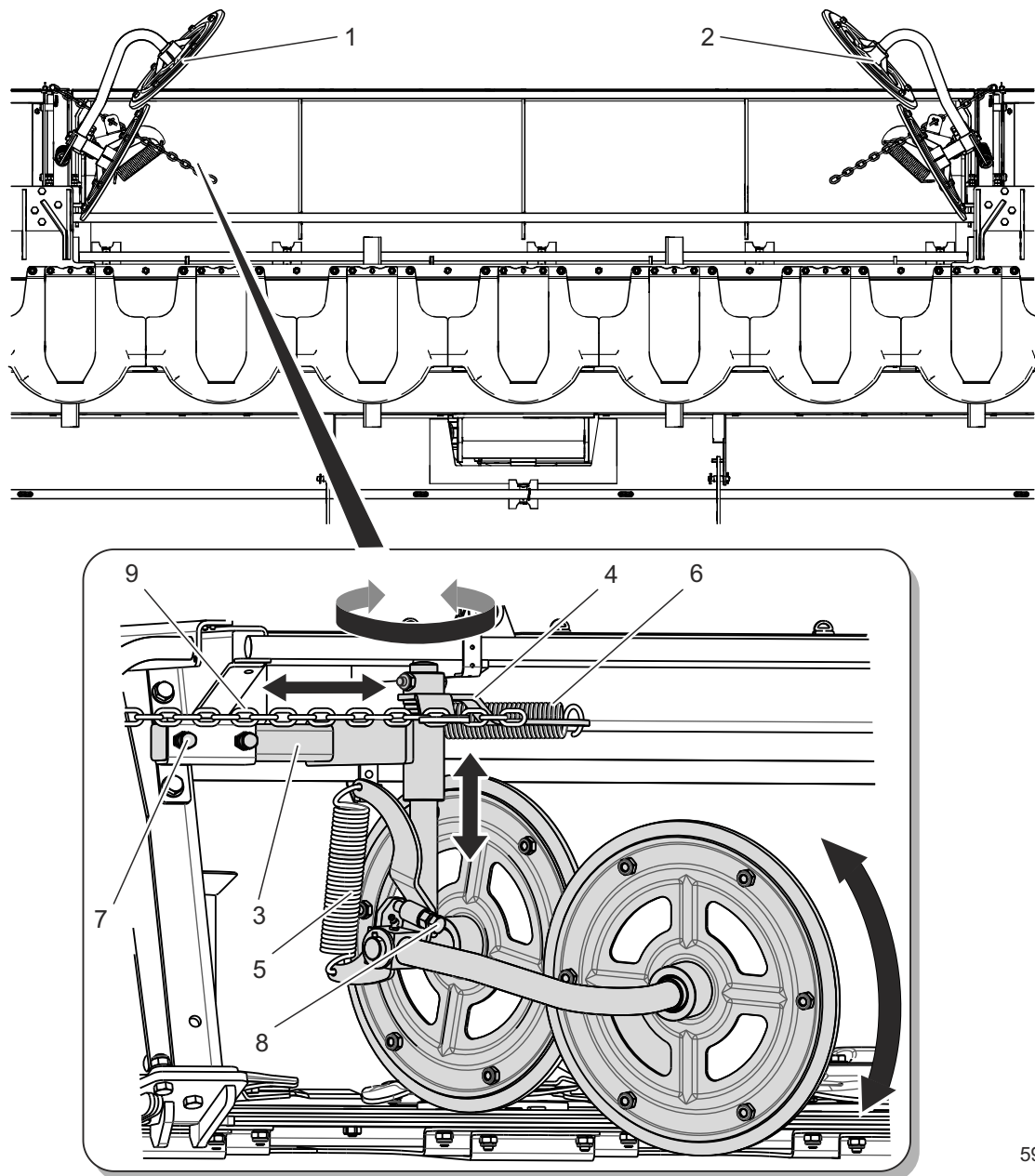
Adjust the second swath guide for this bar and the guides for the second cutter bar in the same way. When there is a blockage, make the widest swath.

SETTING THE SWATH WIDTH OF THE PDD1050C MOWER

Two swath guides mounted on the carrying frame of the conditioning unit are used to adjust the swath width.

The width of the swath can be smoothly adjusted in the range of $1,450 \div 2,200 \text{ mm}$ through the appropriate setting of both scrapers (1). To adjust the scraper:

- Loosen the adjusting screw (3) in the bean hole of the top cover (4) at the scraper (1).



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Figure 5.6 Setting the swath width of the PDD1050 mower

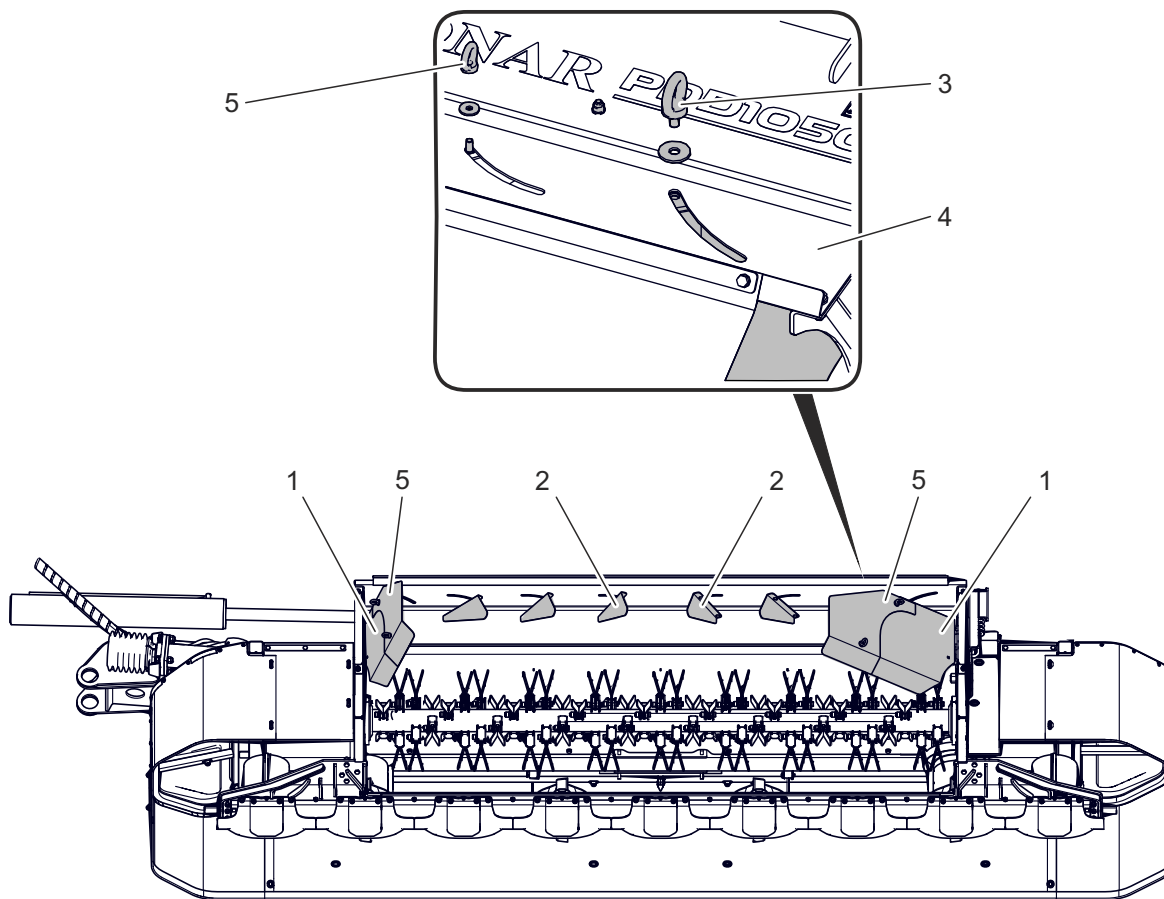
(1) left swath scraper (2) right swath scraper (3) scraper arm (4) head
 (5) damping spring for the scraper assembly in the vertical plane (6) damping spring for the scraper assembly in the horizontal plane (7) arm adjustment screw (8) spring tension adjustment screw in the vertical plane (9) limiting chain

- Turn the scraper (1) to set the proper swath width and tighten the adjusting screw (3) in the bean hole.

Then adjust the setting of the swath guide (2) to the setting of the swath guide (1).

For this purpose:

- Loosen the adjusting nut (5) in the bean hole.
- Set the swath guide (2) properly and tighten the adjusting nut (3) in the



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Figure 5.7 Setting the swath width of the PDD1050C mower

- | | | |
|-----------------------|-------------------|----------------------------------|
| (1) swath scraper | (2) swath scraper | (3) swath scraper adjustment |
| screw | (4) top cover | (5) swath scraper adjustment nut |
| (6) scraper extension | | |

bean hole.

Adjust the second guide and the other swath guides in the same way. All adjustments must be repeated for the second cutter bar.

SETTING THE INTENSITY OF THE SWATH CONDITIONING OF THE PDD1050C MOWER

The intensity of swath conditioning is set using the lever (1) on the casing of the conditioning unit connected to the damping cover (4). The correct setting of

the damping cover should be selected so that the mowed material is not choked between the cutter bar and the conditioner shaft.

In order to adjust the intensity of conditioning, you should:

- Unlock and remove the safety pin (2).
- Move the adjustment lever (1) upwards in order to obtain a greater degree of conditioning of the mown material (MAX) or downwards in order to reduce the intensity of

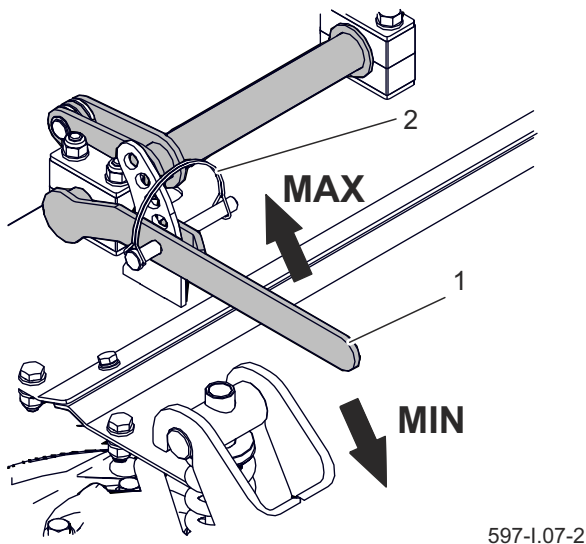


Figure 5.8 Setting of the intensity of conditioning the swath of the PDD1050C mower

(1) swath conditioner adjustment lever

(2) cotter pin

(MAX) increase of the gap (shutter - conditioner)

(MIN) decreases of the gap (shutter - conditioner)

conditioning (MIN).

- Position the lever so that the hole in the lever aligns with the hole in the housing bracket.
- Insert the cotter pin (2) into the hole and secure it.

MOWING

After moving the mower to the working position and setting the angle of the cutter bar, the following procedure should be followed:

- With the engine running at idle, engage the PTO drive.
- Gradually increase the speed until you reach 1000 rpm for the PTO.

- Engage the appropriate gear of the tractor and drive into the field to be mowed.

The mowing speed should be adjusted to the existing conditions, i.e. to the amount of mown material, the type of ground on which we are mowing. The driver must keep the tractor under control at all times and be able to avoid bumps and foreign objects in front of the tractor and machine. In hilly terrain, the operating speed should be reduced and the driver must pay attention to the movements of the machine in relation to the ground.

When driving the mower over swaths and during turns, the mower's cutting units must first be lifted using the lifting arms' hydraulic cylinders, and the number of revolutions and driving speed must be reduced. Speed should be reduced if:

- the mown area is uneven,
- the mown material is laid down or



DANGER

Before starting the carrier engine, make sure that the PTO drive is turned off. Otherwise, uncontrolled start of the machine may occur, threatening the life and health of bystanders.

The drive of the machine can only be started when all safety guards are properly attached.

Before engaging the PTO drive, make sure that there are no bystanders, especially children, near the machine. Ensure that the machine is clearly visible during operation.

Never engage the PTO drive when the machine is in the raised position.

very high and dense,

- there is a high risk of hitting foreign objects, e.g. stones, branches, heaps of earth.

If the overload clutch of the drive shaft is activated during mowing, the PTO drive in the tractor must be switched off and the cause of the overload must be checked. The overload clutch may be activated as a result of the machine becoming clogged or the rotational speed of the cutting unit being too low.

In order to remove the cause of clogging of the machine, lower the cutting unit to the ground, turn off the PTO drive and the tractor engine, remove the key from the ignition switch and exercise extreme caution.

The mower is equipped with an overrun fuse (see the section "DESCRIPTION OF CONTROL PANEL FUNCTIONS - Voltage of the mower protection system in the event of a collision"), which protects the machine against damage due to hitting an obstacle. When hitting an obstacle, the



DANGER

Along slopes, ditches and furrows, always exercise extreme caution and reduce the driving speed due to the possibility of foreign objects and due to soil differences at the border of slopes and ditches. Failure to reduce the speed may lead to landslides and overturning of the tractor with the machine.



CAUTION

The construction of the machine does not allow driving backwards with the machine in working position. When mowing, always maintain a constant rotational speed of 1000 rpm so that the cutting tools work optimally. When the number of revolutions decreases, the load on the drive increases significantly and it may happen that the friction clutch will work to protect the system. In this case, always switch off the drive and check the cause of the overload.

Pay particular attention to sudden movements and impacts to the cutting deck. Always check the machine for damage after hitting an obstacle hard. Replace damaged elements with new ones.



CAUTION

If the machine is in the working position and mows, the section should be set in a floating position so that the cutting units can move freely, copying the area in an optimal way.

On uneven soils there is a risk of the machine running over piles of earth or foreign objects and the driver must minimize the risk of damage to the machine.

carrying arm with the cutting unit rises and swings back.

EMERGENCY STOP OF MACHINE FUNCTIONS

Emergency stop of the mower functions may be used only in the event of a threat to life or health of people in the vicinity of the working machine or in the event of a risk of serious damage to the machine.

To stop the machine functions in emergency mode, press the "STOP" button (1) on the control panel.

To disable the emergency mode, restart the control panel with the "Panel on/off"

**CAUTION**

The "STOP" button will not stop the machine drive. In the event of a serious failure, stop the drive of the machine, turn off the tractor engine and remove the ignition key. Then contact the service, and in the event of an accident, follow the rules of first aid and call the appropriate services.

button (2).

Before restarting the machine, make sure that the resumption of work does not pose a threat to bystanders and that any problems have been removed.

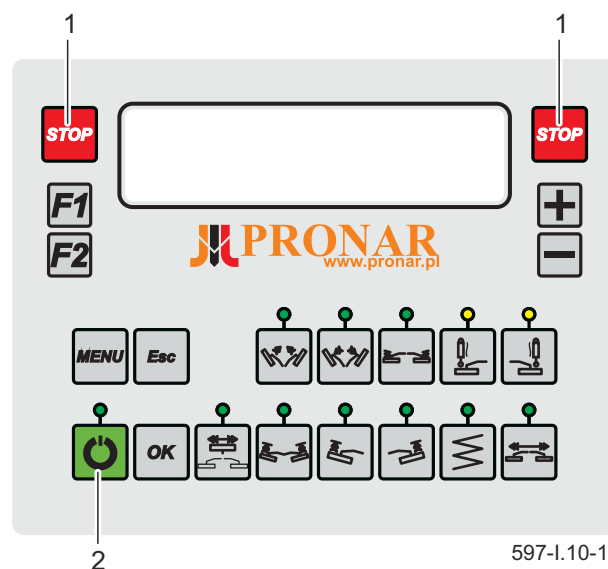


Figure 5.9 Stopping of the machine
 (1) stopping mower function "STOP"
 (2) panel on/off

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5.6 DISCONNECTING FROM THE MEDIA



DANGER

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

Exercise extreme caution when disconnecting the machine from the carrier. Nobody is allowed between the mower and the tractor.

Before lowering or raising the cutting units, make sure that nobody is near the machine and nobody is doing any activities near it.

Before disconnecting the tractor from the mower, check whether the machine is well secured against tipping over.

Depressurize the system before disconnecting the hydraulic system.

It is forbidden to use safety chains to support the shaft when the machine is parked or transported.

When disconnected from the carrier, the machine must be placed on a level, suitably hard surface in such a way that it can be connected again.

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

- Lower the parking stands and secure them with pins and cotter pins.
- Lower the mower using the three-point hitch until the supports rest completely on the ground.

- Disconnect the end of the PTO shaft from the tractor's PTO or dismantle the entire shaft and put it on the appropriate bracket.
- Turn off the tractor engine, remove the ignition key and turn it on parking brake.
- Reduce the residual pressure in the hydraulic system by moving the appropriate lever for controlling the hydraulic circuit in the carrying vehicle.
- Disconnect the hydraulic and electrical cables from the carrier and place them in the appropriate sockets on the machine.
- Disconnect the control panel to the control box on the mower.
- Disconnect the upper linkage link.
- Disconnect the lower pins of the machine's linkage and drive the tractor away from the machine.

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5.7 MACHINE CLEANING

The machine should be cleaned depending on the needs and before a period of prolonged downtime. The use of a pressure washer obliges the user to familiarize himself with the principle of operation and recommendations regarding the safe operation of this device.

GUIDELINES FOR CLEANING OF THE MACHINE

- For machine cleaning, use only clean running water or water with a cleaning detergent additive with a neutral pH.
- The use of pressure washers increases the effectiveness of washing, but particular care should be taken during work. While washing, do not put the nozzle of the cleaning aggregate closer than 50 cm from the surface to be cleaned.
- The water temperature should not exceed 55 °C.
- Do not direct the water stream directly at the machine's system components and equipment, i.e. valves, hydraulic cylinders, electric and hydraulic plugs, lights, electrical connectors, information and warning stickers, rating plate, conduit connectors, machine lubrication points, etc. high pressure of the water stream may cause mechanical damage to these elements.
- For cleaning and maintenance of plastic surfaces, use only clean water or specialized preparations intended for this purpose.
- Do not use organic solvents, preparations of unknown origin or other substances that may damage the lacquered, rubber or plastic surface. It is recommended to make a test on an invisible surface in case of doubt.
- Surfaces oily or greasy should be cleaned with petrol or degreasing agents, and then washed with clean water and detergent. Follow the cleaning agent manufacturer's instructions.
- Detergents intended for washing should be stored in their original containers, or alternative containers, but marked exactly. Preparations cannot be stored in food and drink containers.
- Keep the hoses and gaskets clean. The materials from which these elements are made may be susceptible to organic substances and some detergents. As a result of long-term exposure to various substances, the

**DANGER**

Refer to the instructions for using cleaning detergents and preservatives.

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

When cleaning the machine the tractor engine must be turned off, the articulated telescopic shaft must be disconnected.

aging process is accelerated and the risk of damage increases. Elements made of rubber are recommended to be maintained with the use of specialized preparations after prior thorough washing.

- Observe environmental protection principles, wash machine in designated places.
- Washing and drying of the machine must take place at an ambient temperature above 0 °C.
- After washing, wait until the machine is dry and then lubricate all checkpoints as recommended. Wipe off excess grease or oil with a dry cloth.

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5.8 STORAGE

- After cleaning, check the entire machine, inspect the technical condition of individual elements. Worn or damaged components must be repaired or replaced with new ones.
- It is recommended that the machine be stored in a closed or roofed room, inaccessible to unauthorized persons and animals.
- After disconnecting from the carrying vehicle (tractor), the machine should be placed on a horizontal, suitably hard ground in such a way that it is possible to connect it again.
- If the machine will not be used for a long period of time, it is necessary to protect it against weather conditions, especially those that cause steel corrosion and accelerate tire aging. Wash and dry the machine very carefully. The machine should be thoroughly washed and dried.
- Corroded areas should be cleaned of rust, degreased and protected with a primer paint, and then painted with a topcoat according to the colour scheme.
- In the event of a longer stop it is necessary to lubricate all points regardless of the period of the last treatment.
- PTO shafts should be stored in a horizontal position.

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CHAPTER 6

PERIODIC INSPECTIONS AND
TECHNICAL SERVICE

6.1 GENERAL

When using the trailer, it is necessary to constantly check the technical condition and perform maintenance procedures that will allow the machine to be kept in good technical condition. Performing all maintenance and adjustment activities specified by the Manufacturer in accordance with the established schedule is obligatory.

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

In the event of unauthorized repairs, changes to factory settings or activities that have not been considered possible by the machine's operator, the user loses the warranty.

Detailed information on inspections can be found in the tables:

- *“The frequency of machine inspections”*
- *“Schedule of inspections and maintenance activities”*.

WARRANTY INSPECTIONS

Warranty inspections are performed by an authorized service point of the manufacturer or dealer.

The first inspection should be performed after 50 hours of operation. Subsequent inspections should be performed every 250 hours of operation, i.e. after 250, 500,



CAUTION

It is forbidden to use a damaged machine. Repairs during the warranty period may only be carried out by authorized service centres.



CAUTION

If it is necessary to replace individual parts, use only original part 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 damage the machine.

750 hours of operation, etc. The allowable delay in the inspection cannot be longer than 50 hours from the assumed interval. Failure to perform the assumed inspection results in the loss of warranty.

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

SECURING OF THE MACHINE AGAINST ACCIDENTAL OR UNAUTHORIZED START-UP

The activities aimed at securing the machine are aimed at preventing third parties from starting the machine. During this time, repair or maintenance work may be in progress, which during the operation of the machine is impossible or extremely dangerous.

1. Stop the machine drives.
2. Turn off the engine of the carrying

**DANGER**

Make sure that the machine is secured against unauthorized switching on.

ADVICE

The displayed plate should be made in such a way that it will not be damaged by moisture.

vehicle (tractor), remove the ignition key and brake the tractor with the parking brake.

3. Lock the cabin door.
4. Keep the keys in a safe place.

The tractor must be secured against unauthorized access. Only one person should have access to the start-up keys.

5. Post an information sign that reads "DO NOT OPERATE, REPAIR " or a similar warning sign.

The plate should be placed in a visible place and must be placed in such a way that it cannot break off on its own, e.g. under the influence of a gust of wind.

Of course, there may also be other circumstances that require special protection of the machine.

The operator and persons responsible for work safety should take into account the risk of an accident and adequately

counteract such situations.

MACHINE UNLOCKING

1. Make sure that there are no bystanders (especially children) or animals in the danger zone.
2. Check the completeness of safety guards, their technical condition and correct mounting.
4. Check that no tools have been left in the machine after repairs.
6. Remove the "DO NOT OPERATE, REPAIR " plate.

STAYING IN HIGH RISK AREAS

While operating the machine, being in high-risk areas can result in serious injury or death. Situations that require you to be in such areas include:

- maintenance works,
- repair work,
- periodic and control inspections,
- removing of clogs, jamming mechanisms,
- machine cleaning,

Persons who must perform the above-mentioned activities are strictly obliged to comply with the following requirements, the fulfilment of which is absolutely necessary due to the high risk of an accident, if they are ignored.

- Before entering high-risk places, secure the machine against unauthorized or accidental start-up.

- Inform co-workers about planned works.
- Follow local labour laws.

ADVICE

Depending on the type of work, use appropriate clothing and personal protective equipment.

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6.2 PERIODICAL INSPECTION SCHEDULE

Table 6.1. The frequency of machine inspections

Category	Description	Performs	Frequency
A	Every day daily	Operator	Inspection carried every day before first start-up or every 10 hours of continuous shift work.
B	Maintenance	Operator	The inspection is carried out each time every 50 hours of operation. All daily inspections must also be performed before starting work.
C	Maintenance	Operator	Inspection performed every 250 hours of operation or every 6 months, whichever comes first. Before starting work, you should also perform all activities of inspection every 50 hours of operation.
D	Maintenance	Operator	Inspection performed every 500 hours of operation or every 12 months, whichever comes first. Before starting work, you should also perform all activities of inspection every 250 hours of operation.
E	Maintenance	Service ⁽¹⁾	Inspection performed every 4 years of the machine use

(1) - post-warranty service

Table 6.2. Schedule of inspections and maintenance activities

Description of activities	A	B	C	D	E
Inspection of the connection of the mower to the tractor's suspension system	•				
Machine operation check	•				
Checking of plugs and connection sockets	•				
Checking of the protective covers	•				
Inspection of the technical condition of the PTO shaft ⁽¹⁾	•				
Inspection of cutting knives	•				
Conditioner Tines Control (PDD1050C)	•				
Inspection of the main gearbox oil level	•				
Checking of the oil level in the cutter bar	•				
Control of the lighting and signalling system	•				
Checking the tightness of the hydraulic system	•				
Replacement of the pressure filter element		• ⁽²⁾		•	
Replacement of the transmission oil		• ⁽²⁾		•	
Replacement of hydraulic hoses					•
Lubrication	See table: <i>Lubrication schedule</i>				
Checking screw connections	See chapter: <i>Tightening screw connections</i>				
<i>(1) in accordance with the operating instructions of the PTO shaft manufacturer</i>					
<i>(2) first replacement;</i>					

6.3 MACHINE OPERATION CHECK

- Secure the machine against accidental or unauthorized start-up.
- Carry out a daily visual inspection of the machine and make any required repairs immediately if necessary.
- Check the completeness and correct closure of the safety devices and the completeness of the information and warning stickers.
- Check the functionality of the controls.
- The machine must be cleaned daily.



CAUTION

Before each start-up, the operator must check that the condition of the machine allows it to be used safely.



CAUTION

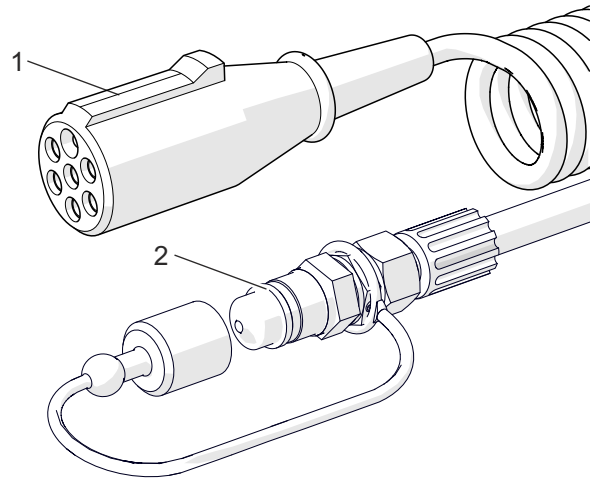
Service work on the machine may only be carried out in suitable work clothes, work gloves and non-slip shoes.

Always wear safety glasses when working on the hydraulic system. Avoid contact with hydraulic oil. Allow the oil to cool before starting work.

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6.4 CHECKING OF PLUGS AND CONNECTION SOCKETS

A damaged connector or socket body qualifies for replacement. In the event of damage to the cover or gasket, replace these elements with new, functional ones. If the machine is disconnected from the tractor, connections should be protected with covers or placed in their designated sockets. Before the winter period, it is recommended to preserve the seal with preparations intended for this purpose (e.g. silicone lubricants for rubber elements). Each time before connecting the machine, check the technical condition and degree of cleanliness of connections and sockets on the agricultural tractor. If necessary clean or repair tractor sockets.



578-I.02-1

Figure 6.1 Machine connections
(2) electrical plug (3) hydraulic plug

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6.5 CHECKING OF THE PROTECTIVE COVERS

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

THE SCOPE OF ACTIVITIES

- Check the completeness of the protective covers and their correct mounting.



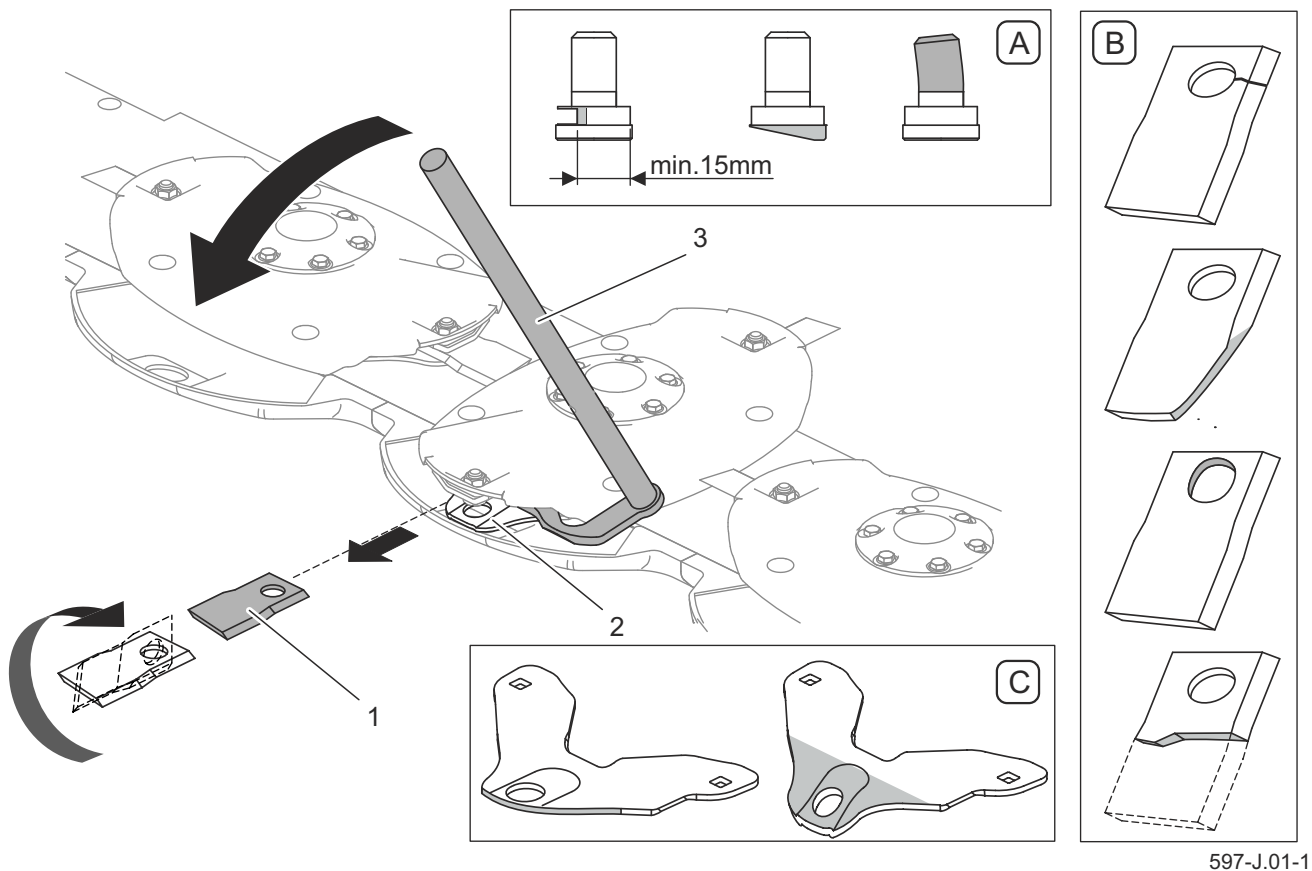
DANGER

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

- Visually assess the technical condition and completeness of PTO shafts and shaft guards.
- Tighten the screw connections of the cover fixings if necessary.

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6.6 CONTROL AND REPLACEMENT OF CUTTING KNIVES



597-J.01-1

Figure 6.2 Replacement of cutting knives

(1) cutting knife (2) knife holder (3) wrench for changing knives

(A) examples of damage to the mounting pins of the cutting knife (B) examples of damage to the cutting knives (C) examples of damage to the knife holder

Cutting knives and their mounting should be regularly inspected during operation of the mower. The inspection consists of a visual assessment of the knives and mandrels, and checking the tightening torque of the mandrels nuts. This is especially important after driving over or hitting a foreign object, installing new cutting knives and after first starting the machine. Cutting knives should be replaced if:



DANGER

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

- on the same disc have different lengths and different weights,
- are deformed,
- are heavily worn.

REPLACEMENT OF CUTTING KNIVES

- Insert the key (3) between the knife holder (2) and the cutting disc, then press the key (3) until the knife (1) can be removed.

The cutter bar must rest on the ground.

- Replace the knife with a new one and remove the key.

Check the direction of rotation of the discs. *Double-sided knives that are not deformed can be re-installed by turning them by 180°, remembering the principle that the knife should pick up the grass after cutting it.*

- When replacing knives, pay attention to the condition of the pin securing



CAUTION

Missing knife or its fragment causes excessive vibration of the cutting disc and may damage the cutter bar.

ADVICE

Damaged or worn knives should be replaced with new ones in pairs to maintain the balance of the cutting disc.



CAUTION

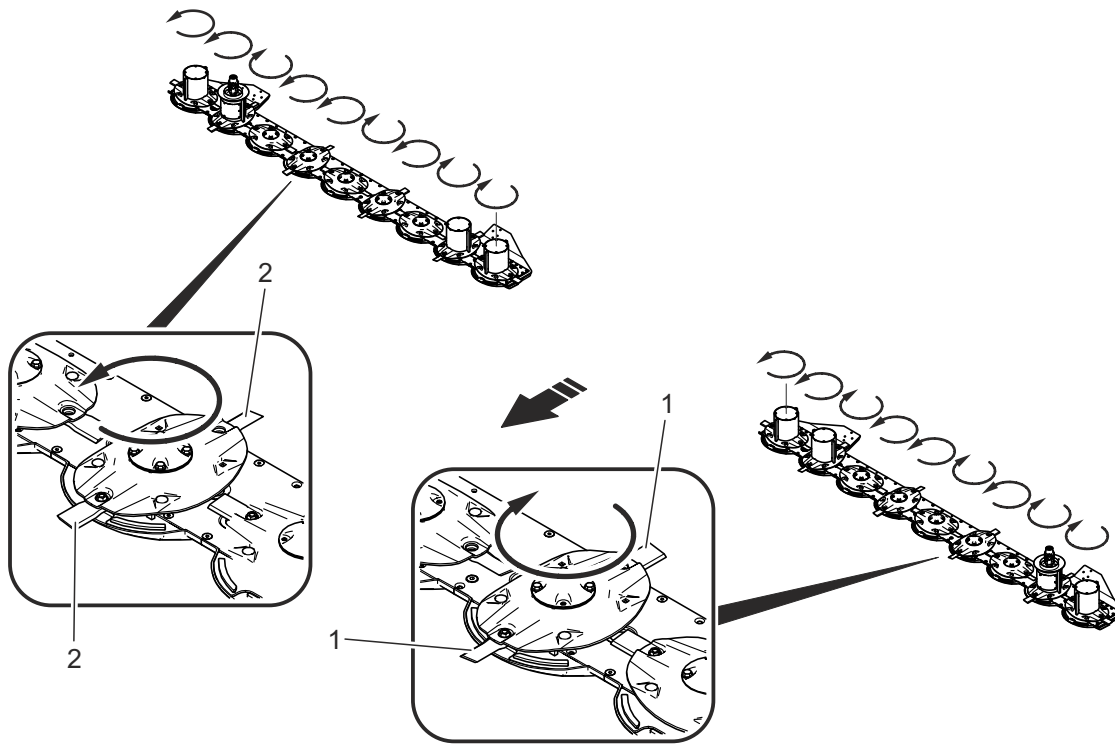
Only knives with CE declarations for compliance with the ISO 5718 standard should be used.

the knife to the cutting disc and the knife holder.

Excessively worn or damaged pin or holder should be replaced with a new one. Tighten the pin nuts to 50 Nm.

Table 6.3. Characteristics of cutting knives

Marking of knife	Dimensions [mm]	Rotation direction	Quantity [Cutter bar]
BRZW 120/49/4 P		Right	8
BRZW 120/49/4 L		Left	10



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Figure 6.3 Directions of rotation of the cutting discs
 (1) right cutting knife (2) left cutting knife

Retaining pins must be replaced if:

- are heavily worn and their diameter is less than 15 mm,
- are deformed.

The cutter bar, due to the different direction of rotation of the cutting discs (see the drawing "*Directions of rotation of the cutting discs*"), is equipped with right (A) and left (B) knives. The direction of rotation is indicated on the knives.



CAUTION

Inspection of the technical condition of the knives should be carried out each time after hitting a solid obstacle, i.e. a stone, a piece of wood, metal, etc.



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

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6.7 INSPECTION AND REPLACEMENT OF FLAIL TINES OF THE PDD1050C SWATH CONDITIONER

Inspection of the flail tines should be carried out systematically. The inspection consists in a visual check of the condition of the flail tines, their mounting and rubber blocks. Worn rubber blocks, a bent or damaged tine should be replaced with a new one.

REPLACING OF THE FLAIL TINES

- Unscrew the self-locking nut (6),
- Remove the fixing screw (5),
- Remove the pair of tines (1) from the lock (2).
- When replacing the tines, pay attention to the condition of the fastening screw (5), the tines and the



DANGER

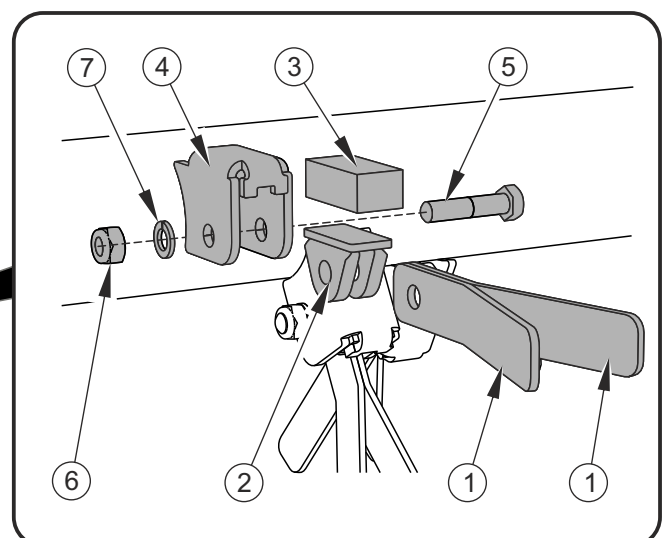
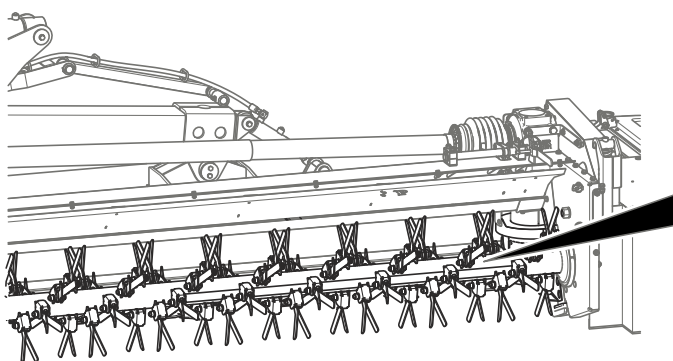
When inspecting and replacing the flail fingers, turn off the tractor engine, remove the ignition key, brake the tractor with the parking brake and remove the PTO shaft. The tractor must be secured against unauthorized access. The conditioner unit must be based on the ground on parking supports.

ADVICE

Damaged or worn tines should be replaced with new ones in pairs to maintain the balance of the cutting disc.

rubber block (3).

Excessively worn, damaged mounting bolt or rubber block should be replaced with a new one.



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Figure 6.4 Replacement of flail tines of the swath conditioner (PDD1500C)

(1) flail tines (2) tine lock (3) rubber block (4) tine fastening (5) M12x55 fixing screw (6) M12 self-locking nut (7) spring washer

- Install the new flail tines in the reverse order.

The nut (6) of the fastening screw should be tightened so that the flail tines (1) can move freely in the tine lock (2).



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

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6.8 DRIVE SYSTEM SERVICE

GEARBOX OPERATION

Servicing of the drive system comes down to a general inspection of the bevel gears, replacement or refilling of gear oil losses. If the gearbox is damaged, contact an authorized service centre for repair.

OIL LEVEL CONTROL

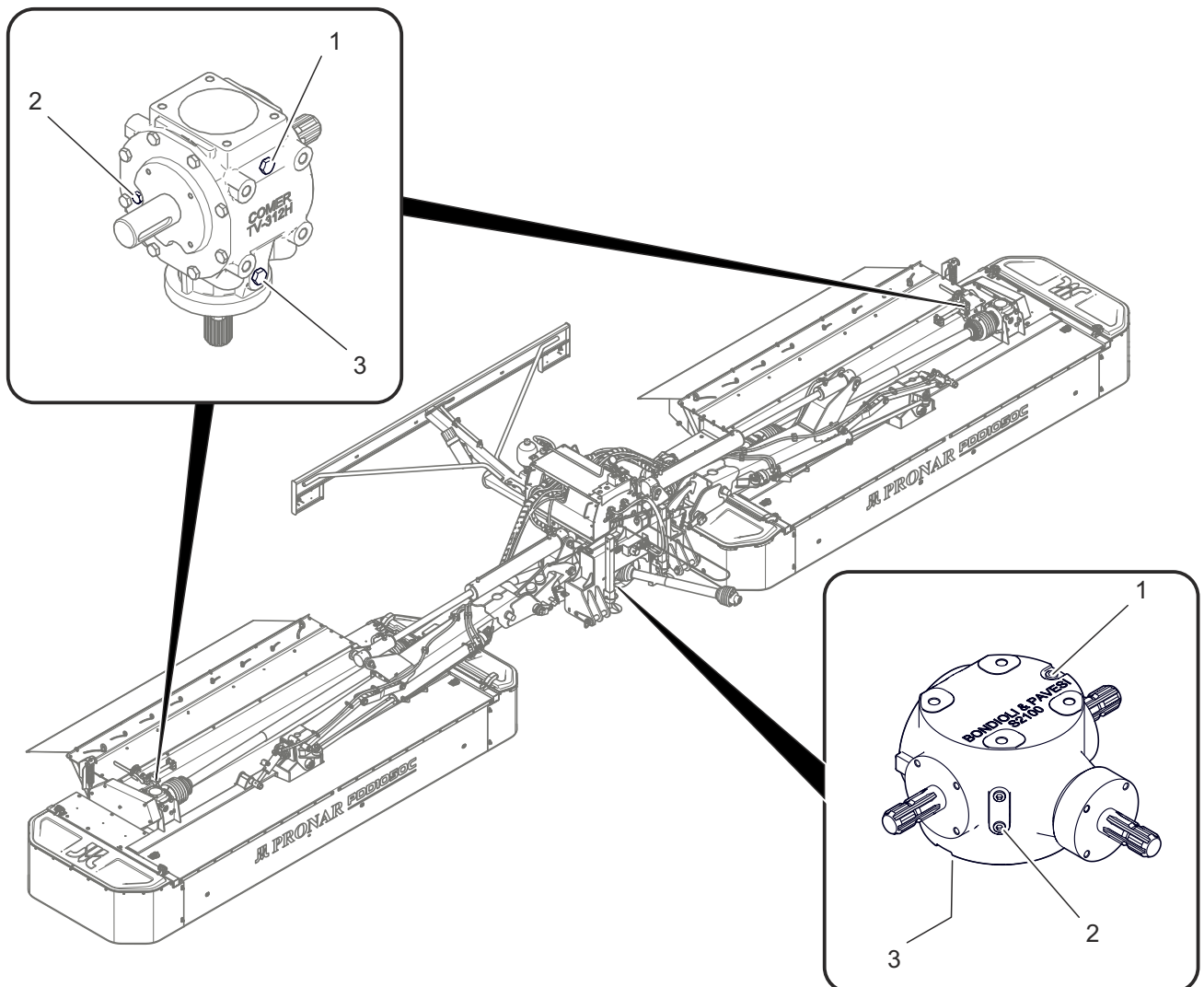
- Place the machine on a hard and flat surface.



Check the oil level in the bevel gears before each start of the machine.

- Unscrew the inspection plug (2).

The oil level should reach the lower edge of the inspection plug opening (2). In the central gear, check the oil level on



597-J.03-1

Figure 6.5 Location and control points of bevel gears
(1) filler plug with air vent (2) control plug (3) drain plug

**DANGER**

In the case of a machine connected to a carrier, before starting the inspection, turn off the PTO and the engine, remove the ignition key and immobilize the vehicle with the parking brake.

It is forbidden to perform maintenance and repair work under the lifted and unsecured machine.

**CAUTION**

The gearbox must be switched off and the oil cooled down during the inspection.

Avoid pouring too much oil. Too much oil can cause the gearbox to overheat.

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

the inspection plug (2) located below.

- If necessary, unscrew the plug (1) and top up the oil to the required level. Tighten the plug.

OIL CHANGE

- Place the machine on a hard and flat surface.
- Unscrew the filler plug (1) and inspection plug (2).
- Unscrew the drain plug (3) and drain the oil into a previously prepared container.
- If the oil manufacturer recommends flushing the gearbox, follow the instructions of the oil manufacturer.

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



The oil in the bevel gears should be changed after the first 50 hours of operation. Change the oil every 500 hours of operation or after a year, whichever comes first.

ADVICE

Gear oil SAE 90 EP (API GL-5 SAE 80W/90) is used to lubricate the angular gears of the rake in the amount of:

- **1.7 litres** - central gear,
- **1.5 litres** - each side gear.

- Tighten the drain plug (3).
- Fill the gearbox with oil to the required level.

The oil level should reach the lower edge of the inspection plug opening (2).

- Tighten the filler plug (1) and control plug (2).

Used oil should be handed over to a point dealing with the utilization or regeneration of oils.

BELT TRANSMISSION TENSION ADJUSTMENT (PDD1050C)

In mowers with a swath conditioner, in addition to servicing the angle gears, periodic checks of the belt tension of the swath conditioner belt transmission are carried out.

SCOPE OF ACTIVITIES

- Remove the transmission drive cover (1).

**DANGER**

Do not touch the gearbox when the machine is stopped! Due to the high oil temperature, gear surfaces can reach high and dangerous temperatures.

During work related to the inspection and replenishment of oil, appropriate personal protective equipment should be used, i.e. protective clothing, footwear, gloves, glasses. Avoid oil contact with skin.

**CAUTION**

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

To do this, remove the screw (2) and nuts (5).

- Adjust the tension of the belts using the adjusting nut (6) of the tensioner bolt (8).

To do this, unscrew the counter nut (7) and tighten the adjusting nut (6) on the screw (8) until the tensioner spring reaches the required tension. The deflection of the belt (3) measured in the middle place between the pulley on the bevel gear and the pulley of the conditioner shaft should not exceed 20 mm under a pressure of 75N.

**DANGER**

Before inspecting or adjusting the belts of the drive transmission system, turn off the tractor engine, remove the ignition key and remove the PTO shaft.

If it is not possible to adjust the tension of the belts, replace the belts with new ones.

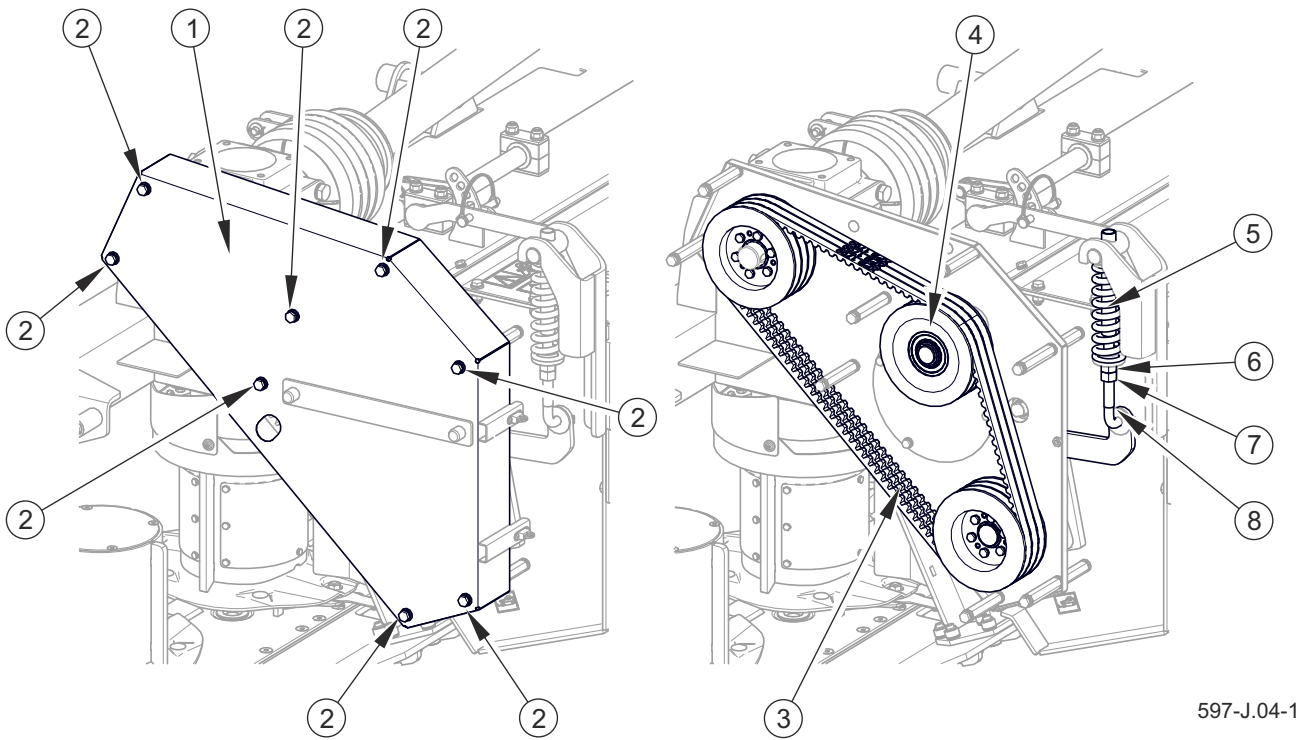
REPLACEMENT OF TRANSMISSION BELTS

- Remove the drive cover (1), then loosen the spring tensioner (4) using the adjusting screw (6) and remove the belts from the transmission pulleys.

There are three XPB 1700 belts in the drive train.

- After 2 hours of operation of the mower, check the tension of the belts of the conditioning unit.

If necessary, tighten the belts according to the above guidelines.



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Figure 6.6 Belt transmission tension adjustment

(1) drive cover (2) bolt (3) transmission belt (4) tensioner (5) tensioner spring
 (6) adjusting nut (7) locknut (8) tensioner bolt

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6.9 CUTTER BAR OPERATION

Maintenance of the cutter bar comes down to a general inspection of the condition of the cutter bar as well as checking the level and changing the oil in the cutter bar. If the bar is damaged, contact an authorized service centre for repair.

OIL LEVEL CONTROL

- The cutter bar should be lowered and set on a hard, level surface.
- Unscrew the inspection plug (1).

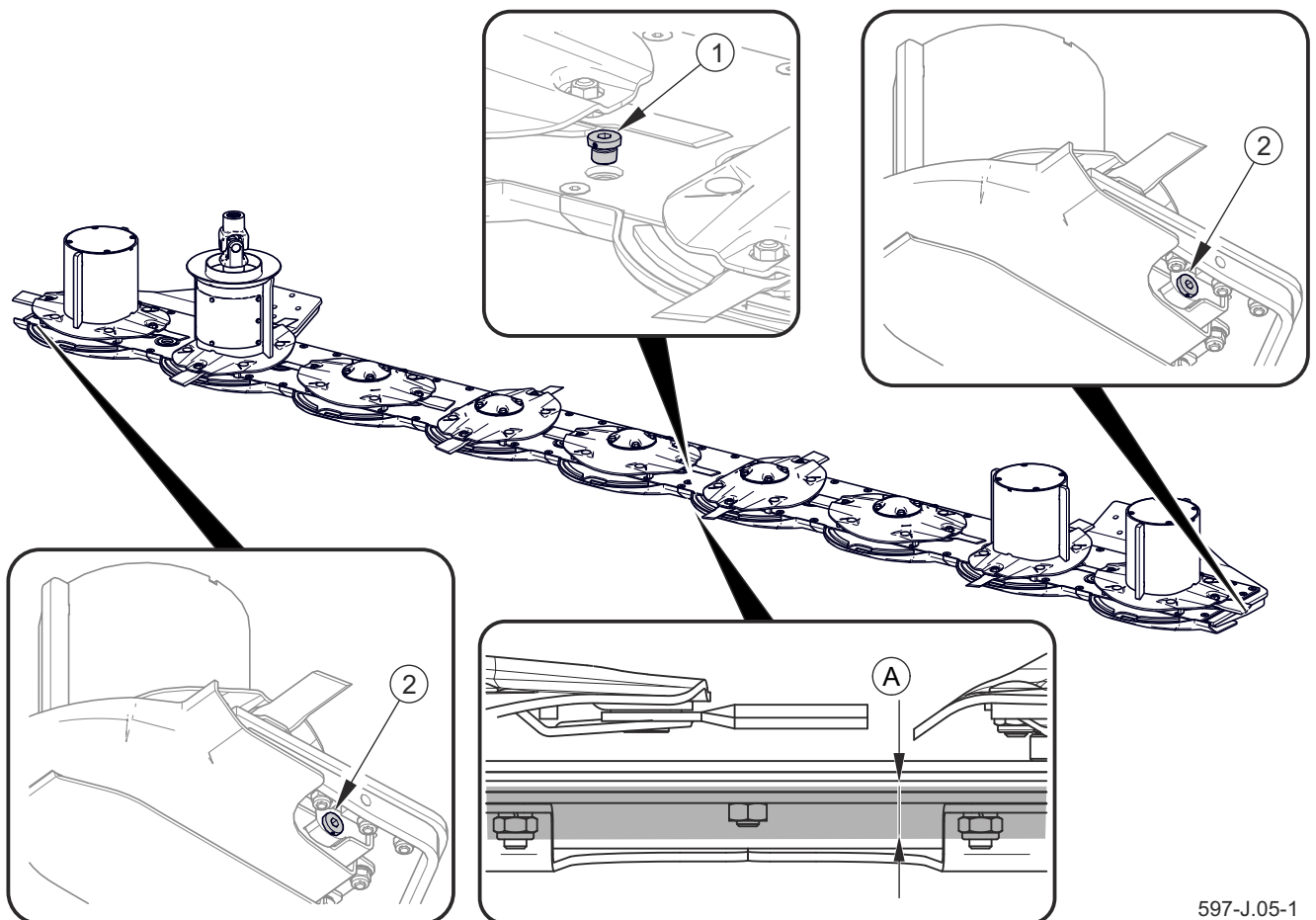
The oil level should be 6-8 mm



Check the oil level in the cutter bar before each use of the mower.

from the bottom of the bar. When checking with cold oil, wait 15 minutes and check again.

- If necessary, add oil to the required level and tighten the plug.



597-J.05-1

Figure 6.7 Cutter bar oil check and change points

(1) inlet and control plug (2) drain plug (A) correct oil level 6÷8mm from the bottom of the bar

OIL CHANGE

- The oil change should be carried out at operating temperature, when the machine has been working for a few minutes, then any impurities in the bar will mix with the oil and then be drained together with it.
- Unscrew the inspection plug (1).
- Lift the bar.
- Unscrew the drain plug (2) and drain the oil into a previously prepared container.
- Tighten the drain plug (2).
- Lower the cutter bar to the horizontal position.
- Fill the cutter bar with oil to the required level and screw the filler plug (1).

The oil level should be 6-8 mm from the bottom of the bar.

If a leak is noticed, carefully inspect the seal and check the oil level. Operation of the mower with a low oil level may cause permanent damage to the mower.

In order for the mower to work properly, clean and lubricate the articulated joint of the drive disc (1) on a regular basis - see the drawing ("*Cleaning and lubricating of the drive disc*"). Failure to clean and lubricate the articulation link (2) on a regular basis can lead to jamming of the articulation and serious machine failure.



CAUTION

Never add more or less oil than recommended. Inadequate amount of oil leads to overheating of the bar and, consequently, to the destruction of the bearings. Use only the oil recommended by the manufacturer.



The oil in the cutter bar should be changed after the first 50 hours of operation. Change the oil every 500 hours of operation or after a year, whichever comes first.

ADVICE

SAE 90 EP (API GL-5 SAE 80W/90) gear oil in the amount of 4 litres for each piece is used to lubricate the mower's cutter bar.

CLEANING AND LUBRICATION OF THE ARTICULATED JOINT

- Unscrew the screws (4) and remove both covers (3).
- Clean and lubricate the articulated joint (2) and clean the inner surfaces of the covers.
- Install the covers and tighten the screws.

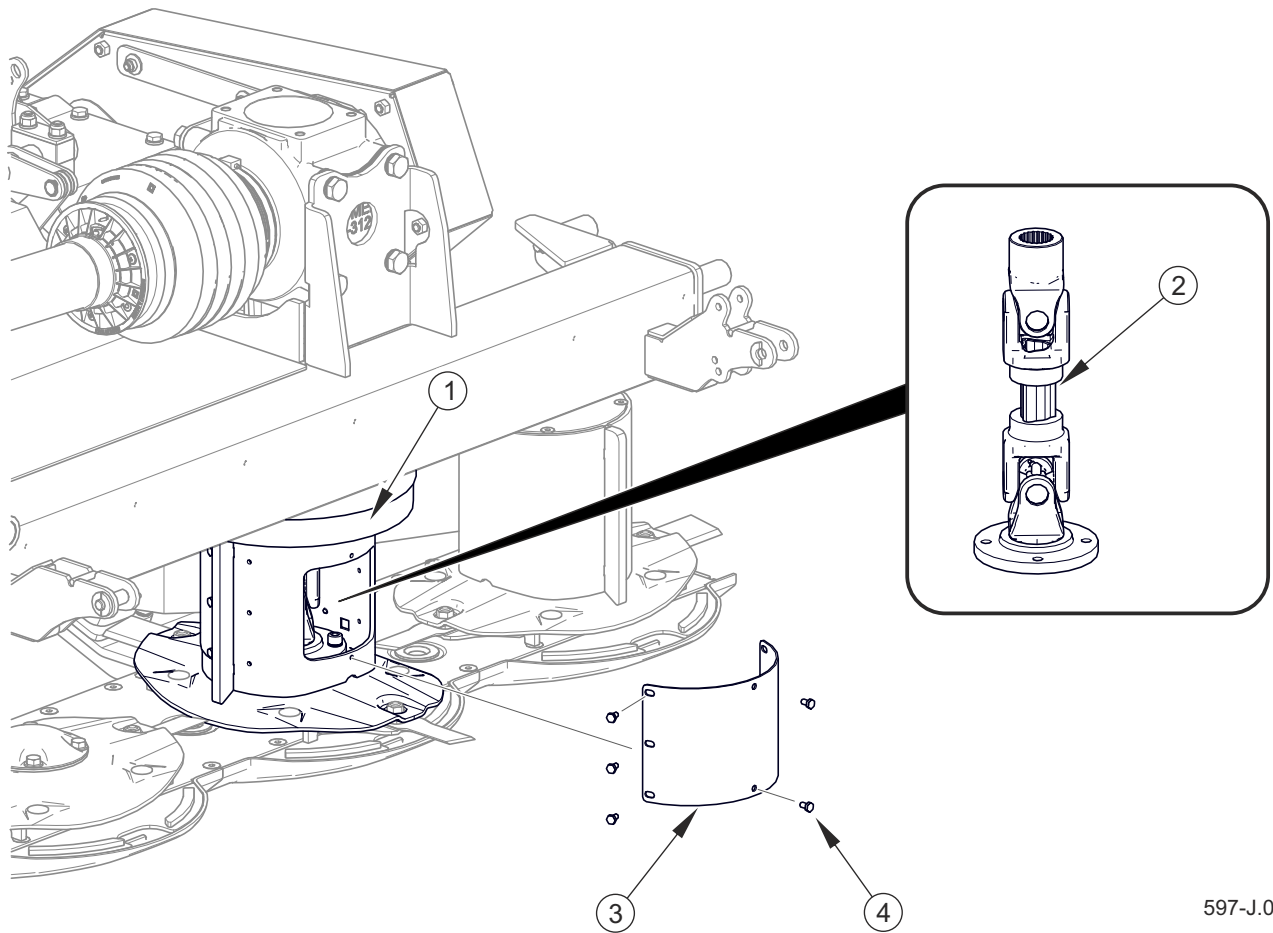


CAUTION

Accumulated impurities inside the drive disc in the form of grass residues, sand, etc. can lead to blockage of the articulated joint. Immobilization of the joint can cause damage to the mower gearbox.



Perform maintenance on the drive disc at least twice during the mowing season and always at the end of it.



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Figure 6.8 Cleaning and lubricating the drive disk

(1) drive cover

(2) articulated connector

(3) cover

(4) M8x25 screw

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6.10 ELECTRICAL SYSTEM SERVICE AND WARNING ELEMENTS

The user's responsibilities include technical inspection of the electrical installation and warning devices

SCOPE OF ACTIVITIES

- Connect the the machine to the tractor with a suitable connection lead.

Make sure the connection cable is OK. Check the connection sockets on the tractor and on the machine.

- Connect the control panel to the control box on the mower.
- Check the operation of individual control functions.
- Check the completeness, technical condition and correct operation of the lighting.
- Check the completeness of all reflectors.



DANGER

It is forbidden to carry out any repairs to the electrical system on your own, except for the activities described in this chapter. Repairs to the electrical system may only be carried out by suitably qualified persons.



CAUTION

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

ADVICE

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

- Before travelling on a public road, make sure that the tractor has a reflective warning triangle.

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6.11 HYDRAULIC SYSTEM HANDLING



CAUTION

Before starting work, make a visual inspection of the hydraulic system components.

The user's responsibilities related to the operation of the hydraulic system include:

- checking the tightness of the cylinder and hydraulic connections,
- inspection of the technical condition of wires,
- periodic replacement of the high-pressure filter element.

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

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



DANGER

It is forbidden to use the machine with a leaking hydraulic system.



DANGER

When working on the hydraulic system, use appropriate personal protective equipment, i.e. protective clothing, footwear, gloves, glasses. Avoid oil contact with skin.



DANGER

In case of fire, extinguish the oil with carbon dioxide (CO₂), foam or extinguishing steam. Do not use water!



Technical condition of the hydraulic system should be inspected on an ongoing basis while the is in use of the machine.

compounds may be released.

The hydraulic system shall be completely tight. When the hydraulic cylinders are fully extended, the seals should be checked. In the event of oiling on the hydraulic actuator body, the nature of the leakage must be check. Slight leaks are permissible with symptoms of "sweating", however in the event of noticing leaks in the form of "droplets" stop using the machine until the fault is remedied.

In case of finding an oil leak on the

Table 6.4. Characteristics of the hydraulic oil

Item	Name	Value
1	Viscosity classification according to ISO 3448VG	32
2	Kinematic viscosity at 40 °C	28.8 – 35.2 mm ² /s
3	Quality classification according to ISO 6743/99	HL
4	Quality classification according to DIN 51502	HL
5	Flash-point, °C	Above 210
6	Maximum operating temperature, °C	80

Table 6.5. Tightening torques of hydraulic elements

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

connections of hydraulic conduits, tighten the connector, if this does not remove the defect, replace the conduit or connector elements with new ones. Any mechanical damage to the component also requires replacement with a new one.

In the hydraulic system of the machine there is a pressure oil filter equipped with a replaceable filter element.

REPLACEMENT OF THE PRESSURE FILTER ELEMENT

- Remove the right box cover (1)
- Thoroughly clean the body (2) and the housing (3) of the filter.
- Unscrew the housing (3) of the filter cartridge.

- Drain the hydraulic oil into a suitable container (in an environmentally friendly manner), clean the cartridge housing.
- Check the seal of the new filter cartridge and insert it into the housing.
- Screw the housing (3) of the filter cartridge to the body.

If you need to change the hydraulic oil for another, read the oil manufacturer's instructions carefully. If it recommends flushing of the system with an appropriate preparation, follow these recommendations. It should be ensured that the chemicals used for this purpose do not attack the materials of the hydraulic system.

Spilled oil should be collected immediately and placed in a labelled, sealed container. Used oil should be handed over to a point dealing with the utilization or regeneration of oils.

**CAUTION**

When unscrewing the used filter, do not use a hammer, chisel, etc., because the filter body may be damaged. Use filters recommended by the manufacturer. Screw on the filter by hand, without using any other tools.



The filter element of the pressure oil filter should be replaced every 500 hours of operation or once a year, whichever comes first. It is advisable to replace the filter cartridge before the start of the season.

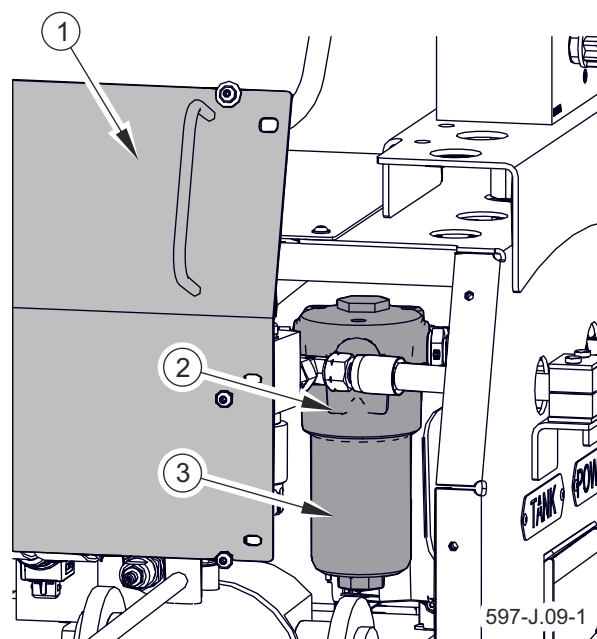


Figure 6.9 High pressure filter

(1) box cover

(2) body

(3) cartridge housing

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6.12 REPLACEMENT OF HYDRAULIC HOSES

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



CAUTION

Due to the nature of the work and the material (ageing, high pressure, changing loads), flexible hydraulic hoses must be replaced every 4 years.


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6.13 LUBRICATION


Lubrication of the machine should be performed according to the specified schedule or each time after washing the machine, regardless of the time of the last lubrication treatment. Keep the lubrication points clean as excess lubricant contributes to the deposition of debris. The machine should be lubricated using generally available tools such as manual, foot, pneumatic lubricators, etc., which are filled with the recommended lubricant.

Clean the lubrication points before lubricating. Inspect the grease nipples and replace missing parts if necessary. After finishing work, wipe off excess grease or oil. The gear oil in the cutter bar should be changed in accordance with the recommendations contained in the "CUTTER BAR MAINTENANCE" chapter. A detailed description of changing the oil in the bevel gears is presented in the section entitled "SERVICE SYSTEM MAINTENANCE".

In addition, drive shafts are lubricated in accordance with the shaft operating

 **DANGER**

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

 **CAUTION**

Empty containers of grease or oil shall be disposed of in accordance with the lubricant manufacturer's instructions.

ADVICE

When using the machine, the user is obliged to follow the lubrication instructions in accordance with the lubrication schedule. Excess lubricant will result in the deposition of additional contaminants on places requiring lubrication, therefore it is necessary to keep the individual elements of the machine clean.

instructions provided by the drive shaft manufacturer.

Table 6.6. Lubricants

Item	Symbol	Description
1	A	General purpose machine grease (lithium, calcium),
2	B	SAE 90EP(80W90 GL-5) gear oil

Table 6.7. Lubrication schedule

Item	Lubrication point	Number of lubrication points	Type of grease (Table 6.6)	Frequency
1	Support arm lifting pin	2	A	20H
2	Movable arm pin	2	A	20H
3	Main frame pin	2	A	20H
4	Scraper Disc Axle (PDD1050)	4	A	50H
5	Arm tilt cylinder pin	4	A	50H
6	Arm lifting cylinder pin	4	A	50H
7	Transport lock actuator pin	4	A	50H
8	Fuse actuator pin	4	A	50H
9	Drive shaft splines	2	A	20H
10	PTO shafts*	*	*	*
11	Central Gear **	1	B	500H
12	Lateral bevel gear **	2	B	500H
13	Cutter bar	2	B	500H
14	Cutter bar connector joints	6	A	50H
15	Sliding insert of the support arms (grease block)	8	A	50H
16	Sliding insert of the support arms	8	A	50H
17	Swath conditioner shaft bearings (PDD1050C)		A	50H
H - hour D - day M - month PU - each time before use				
* Refer to the shaft manufacturer's manual for details on operation and maintenance				
** First replacement after 50 hours of operation				

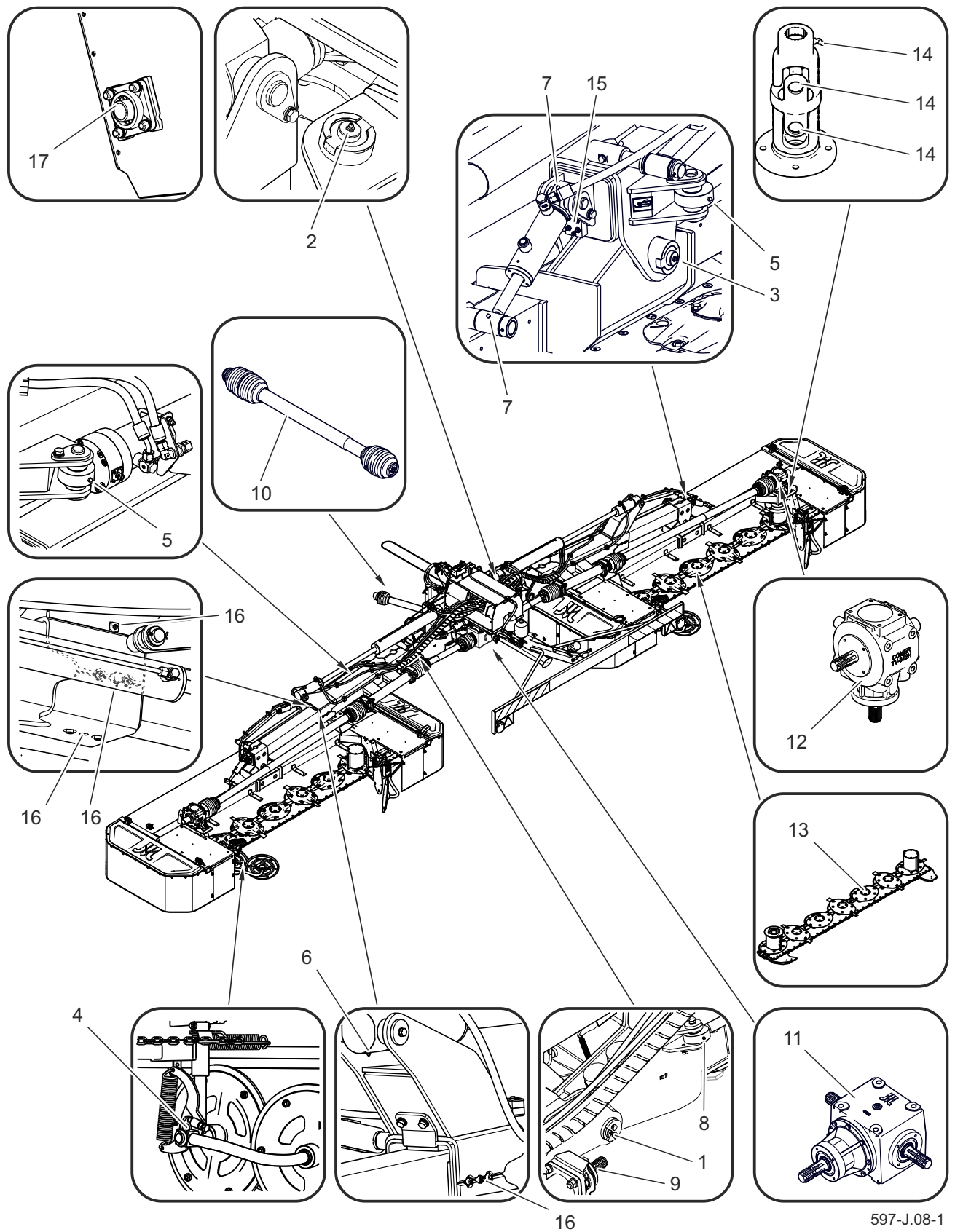


Figure 6.10 Mower lubrication points

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6.14 TIGHTENING OF THE SCREW CONNECTIONS

Each time before using the machine and during maintenance and repair work, check the tightness of all screw connections. In the event of any looseness in bolted connections, tighten the bolted connection with the appropriate torque (Tightening torques for bolted connections table), unless other tightening parameters are specified. The given values apply to non-lubricated steel bolts.

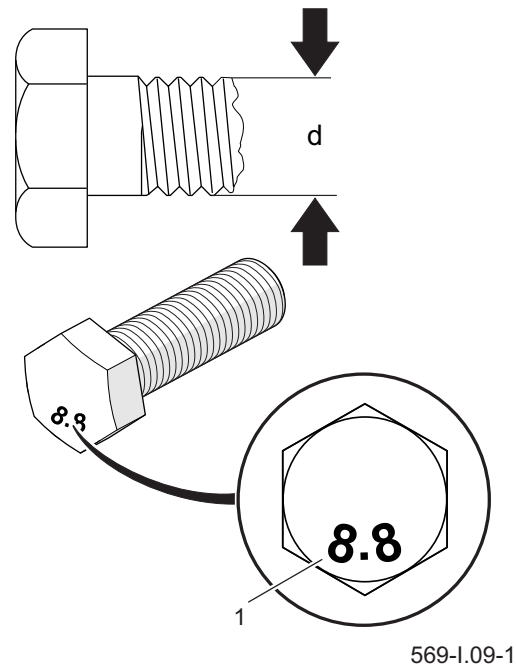


Figure 6.11 Screw with metric thread
(1) strength class (d) thread diameter

Table 6.8. Tightening torques for screw connections with standard metric threads

MARKING OF THRED [mm]	8.8	10.9	12.9
	TIGHTENING TORQUE [Nm]		
M6	10	15	18
M8	25	36	43
M10	49	72	84
M12	85	125	145
M14	135	200	235
M16	210	310	365
M20	425	610	710
M22	571	832	972
M24	730	1,050	1,220
M27	1,100	1,550	1,800
M30	1,450	2,100	2,450

Table 6.9. Tightening torques for screw connections with metric fine thread

MARKING OF THRED [mm]	8.8	10.9	12.9
	TIGHTENING TORQUE [Nm]		
M12x1.5	88	130	152
M14x1.5	145	213	249
M16x1.5	222	327	382
M18x1.5	368	525	614
M20x1.5	465	662	775
M24x2	787	1,121	1,312
M27x2	1,148	1,635	1,914

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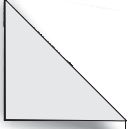
6.15 FAULTS AND METHODS TO REMOVE THEM

Table 6.10. Faults and methods to remove them

Fault	Possible cause	Solution
Excessive vibration during operation	Broken knife or missing knife	Check knives, replace if necessary
	PTO shaft damaged	Check shafts, replace if necessary
	Damaged cutter bar bearings	Carry out a repair with the service help
	Bent conditioner shaft	Carry out a repair with the service help
	Damaged gearbox	Carry out a repair with the service help
Excessive heating of the angle gears or cutter bar	Incorrect oil level.	Check the oil level and top up loss.
	Incorrect type of level.	Change the oil to the one recommended by the manufacturer.
	Defective bearings.	Carry out a repair with the service help
Stopping of mower drives during mowing	Shaft overload clutch activated due to jamming of the cutting discs	Turn off the mower, remove any grass build-up or foreign matter from the cutting deck
	Damaged gears in the cutter bar	Carry out a repair with the service help
	Damaged bevel gearbox	Replace or repair with service help
The mower's cutting unit does not raise or lower	Incorrectly connected or damaged quick couplers	Check quick couplers and connection method or replace fasteners
	Locked actuator pawl	Unlock the pawl by pulling the cord
	Inefficient tractor hydraulic system	Check the condition of the hydraulic system in the tractor
The stubble is uneven	Tractor PTO speed too low	Maintain correct, constant PTO speed
	The cutting unit is too much relieved	Adjust the hydro-pneumatic relief accordingly.
	Worn cutting knives	Turn the knives to the other side or replace them with new ones
	Incorrect cutting angle	Set the appropriate inclination of the cutter bar by adjusting the upper connector
The fuse blows too often	Fuse actuator hydraulic valve incorrectly adjusted or damaged	Carry out a repair with the service help

Transmission oil leakage or transmission heating	Unsealing of the system	Check the seals, check the tightness of the screws.
	Too much oil in the gearbox	Check the oil level, drain the excess.
Oil leakage from the cutter bar	Unsealing of the system	Check the sealing of the plugs and tighten them properly if necessary
	Too much oil in the bar	Check the oil level, drain the excess.
Noisy gearbox operation	No oil in the gearbox	Top up the oil according to the operating instructions
	Incorrectly adjusted (shortened) shaft	Carry out a repair with the service help
The mower locks up	The swath guides are set too narrow	Set swath guides properly
	Cutting speed too slow	Recommended mowing speed - 10km/h
	Damaged gears in the cutter bar	Carry out a repair with the service help
	Too narrow clearance between the conditioner shaft and the mower cover	Adjust the conditioner shutter

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