



**PRONAR Sp. z o.o.**

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

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

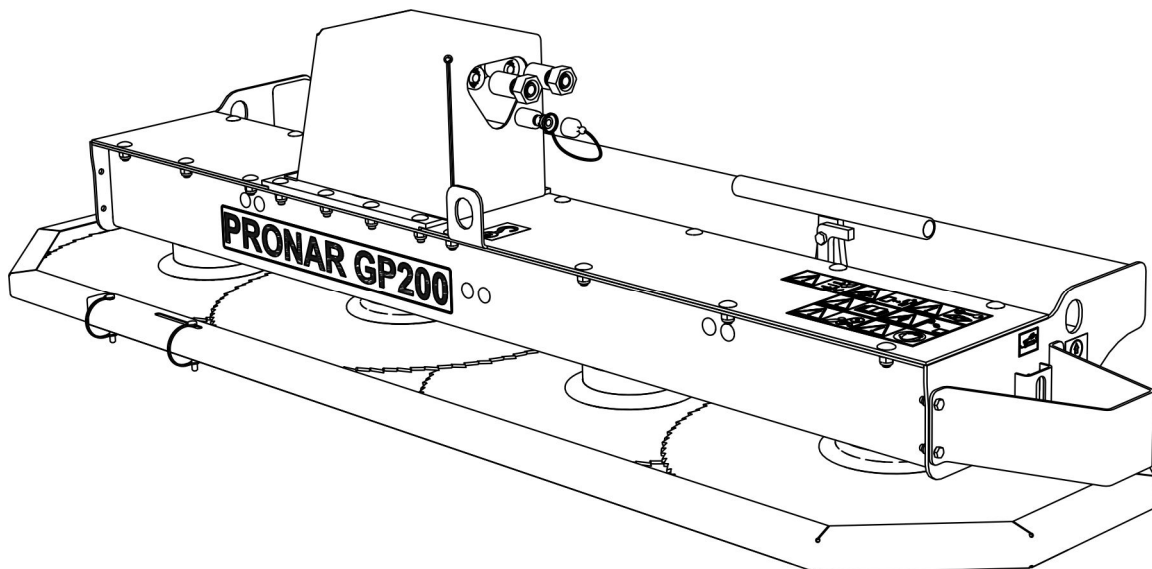
*www.pronar.pl*

# **OPERATOR'S MANUAL**

## **BRANCH CUTTING SAW**

### **PRONAR GP200**

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



EDITION 2C-08-2013

PUBLICATION NO. 267N-00000000-UM





# BRANCH CUTTING SAW

## PRONAR GP200

### MACHINE IDENTIFICATION

SYMBOL /TYPE:

SERIAL NUMBER:

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# INTRODUCTION

Information contained herein is current at date of publication. As a result of improvements, some numerical values and illustrations contained in this publication may not correspond to the factual specification of the machine supplied to the user. The manufacturer reserves the right to introduce design changes in machines produced that facilitate operation and improve the quality of their work, without making minor amendments to this Operator's Manual.

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

The manual describes the basic safety rules and operation of PRONAR GP200 branch cutting saw. If the information stated in the Operator's Manual needs clarification then the user should refer for assistance to the sale point where the machine was purchased or to the Manufacturer.

## MANUFACTURER'S ADDRESS:

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

## CONTACT TELEPHONES

<i>+48 085 681 63 29</i>	<i>+48 085 681 64 29</i>
<i>+48 085 681 63 81</i>	<i>+48 085 681 63 82</i>

## SYMBOLS APPEARING IN THIS OPERATOR'S MANUAL

Information, descriptions of danger and precautions and also recommendations and prohibitions associated with user safety instructions are marked:



and also preceded by the word "**DANGER**". Failure to observe the instructions may endanger the machine operator's or other person's health or life.

Particularly important information and instructions, the observance of which is essential, are distinguished in the text by the sign:



and also preceded by the word "**ATTENTION**". Failure to observe the instructions may lead to damage to the machine as a result of improper operation, adjustment or use.

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



Additional tips and advice for machine operation are marked with the sign:



and also preceded by the word "**TIP**".

## DIRECTIONS USED IN THIS OPERATOR'S MANUAL

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

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





**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](mailto: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:	<b>Hedge cutter</b>
Type:	<b>GP200</b>
Model:	–
Serial number:	
Commercial name:	<b>Hedge cutter PRONAR GP200</b>

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 2011 -03- 2 4

*Place and date*

Z-CIA DYREKTORA  
d/s technicznych  
członka zarządu  
*Roman Chmielewski*

*Full name of the empowered person  
position, signature*





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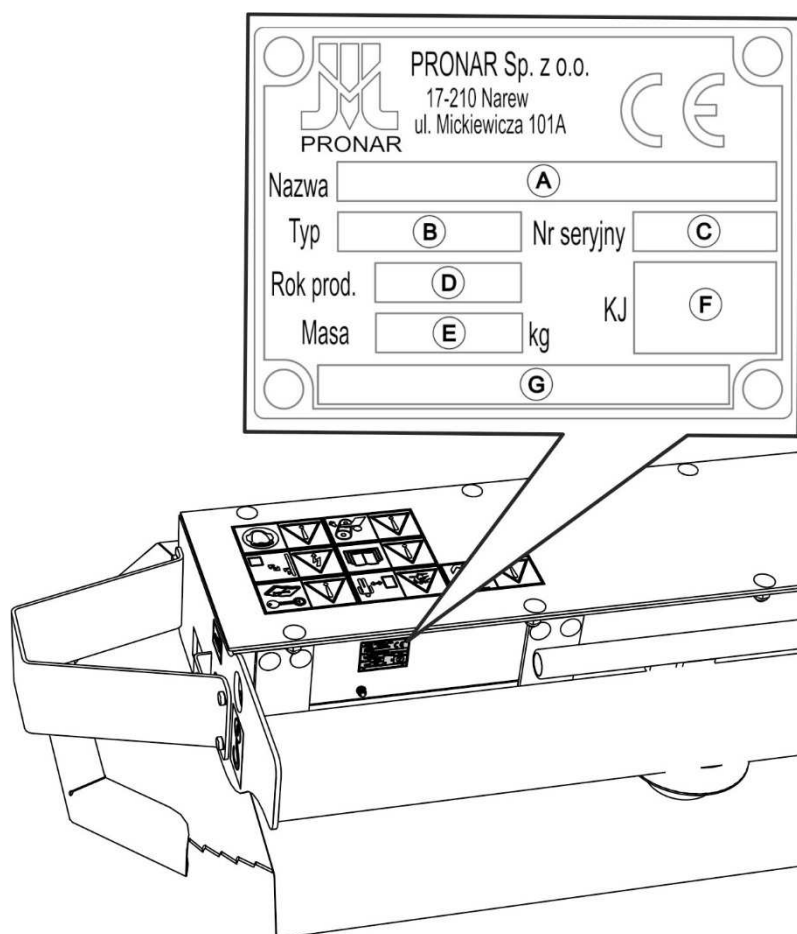
*SECTION*

**1**

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**BASIC INFORMATION**

## 1.1 IDENTIFICATION



**FIGURE 1.1** Location of the data plate.

PRONAR GP200 branch cutting saw is marked with the data plate located on its body. When buying the machine check that the serial numbers on the machine agree with the number written in the *WARRANTY BOOK*, in the sales documents and in the *OPERATOR'S MANUAL*.



- carefully read the *OPERATOR'S MANUAL* and comply with its recommendations,
- understand the machine's operating principle and how to operate it safely and correctly,
- adhere to the established maintenance and adjustment plans,
- comply with general safety regulations while working,
- prevent accidents,
- comply with the road traffic regulations and transport regulations in force in the given country, in which the machine is used,
- Carefully read the Operator's Manual of the agricultural tractor or implement carrier and the Operator's Manual of the multifunction arm and comply with their recommendations.

The branch cutting saw may only be used by persons, who:

- are familiar with the contents of this publication and with the contents of the Operator's Manual of the agricultural tractor or implement carrier and the Operator's Manual of the multifunction arm,
- have been trained in the branch cutting saw operation and work safety,
- have the required authorisation to drive carrying vehicles and are familiar with the road traffic regulations and transport regulations.

## 1.3 EQUIPMENT

**TABLE 1.1** Equipment of the PRONAR GP200 branch cutting saw

EQUIPMENT	STANDARD	OPTION
Operator's Manual	•	
Warranty book	•	
Set of wrenches	•	
Hydraulic motor housing, left		•

## 1.4 WARRANTY TERMS

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

The warranty does not cover those parts and sub-assemblies of the machine which are subject to wear in normal usage conditions, regardless of the warranty period. Consumables include, among others, circular saw blades and drive belts.

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

In the event of damage arising from:

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

the user will lose the right to warranty service.

**TIP**

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

The user is obliged to report immediately on noticing any wear in the paint coating or traces of corrosion, and to have the faults rectified whether they are covered by the guarantee or not. For detailed Terms & Conditions of Warranty, please refer to the WARRANTY BOOK attached to each newly purchased machine.

Modification of the branch cutting saw without the written consent of the Manufacturer is prohibited. In particular, do NOT weld, drill holes in, cut or heat the main structural elements of the machine, which have a direct impact on the machine operation safety.

## 1.5 TRANSPORT

The branch cutting saw is ready for sale completely assembled and does not require packing. Packing is only required for the machine's technical documentation and any extra fittings.

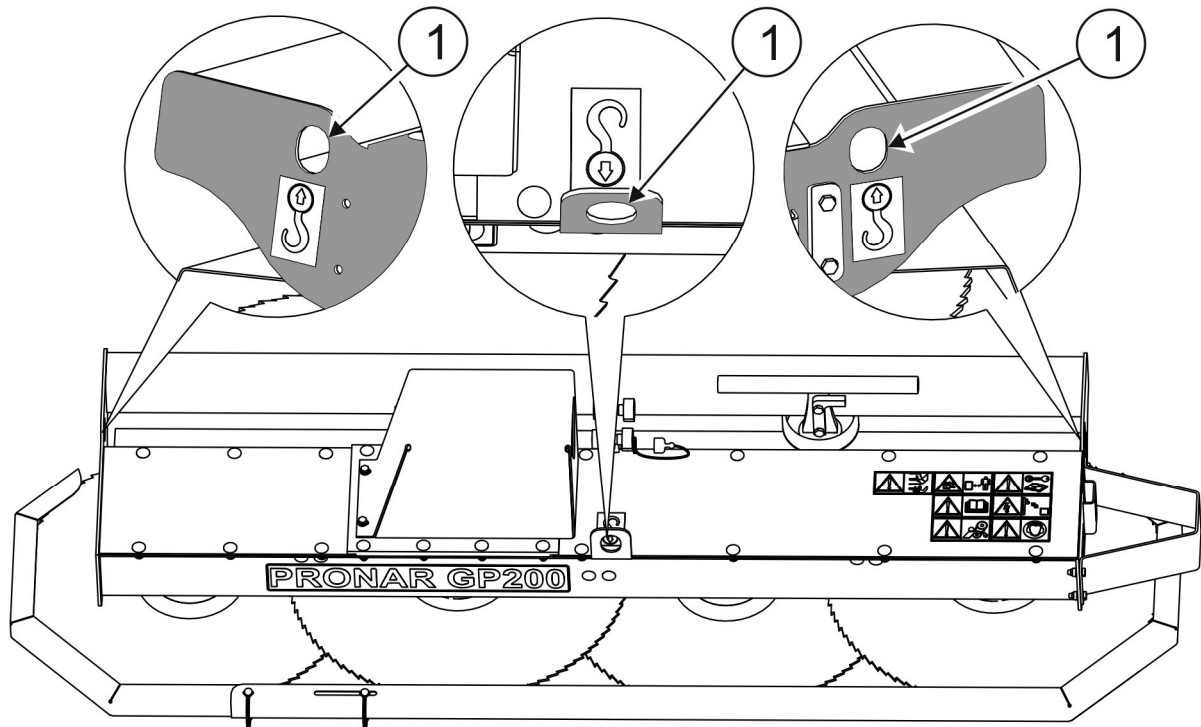
**ATTENTION**

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

Delivery is either by transport on a vehicle or independently. Transport of the branch cutting saw connected to the multifunction arm is allowed provided that the tractor or implement carrier driver is familiar with the Operator's Manual of the branch cutting saw and the Operator's Manual of the multifunction arm, in particular, with the information concerning safety and principles of hitching and transport of the branch cutting saw on public roads. Do NOT drive the tractor or implement carrier with the multifunction arm and the branch cutting saw connected when visibility is limited.

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

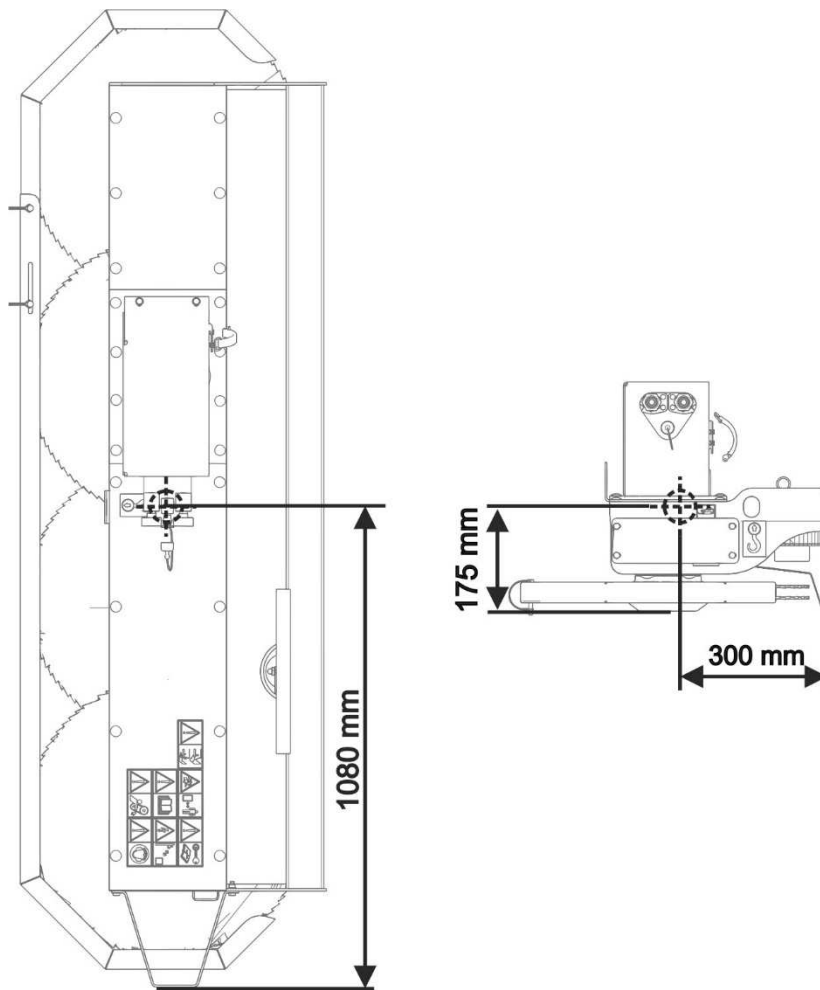




**FIGURE 1.2** Lifting equipment attachment points.

*(1)- attachment points*

The branch cutting saw should be attached to lifting equipment in places designed for this purpose (FIGURE 1.2), i.e. by the lug in the centre of the housing and by the openings on the right side and the left side of the branch cutting saw housing. The lifting equipment attachment points are marked with pictograms.



**FIGURE 1.3 Location of the centre of gravity of the branch cutting saw.**

The machine should be attached firmly to the platform of the vehicle using straps or chains fitted with a tightening mechanism. The fastening equipment used must have a valid safety certificate. Exercise due caution when lifting the machine. To keep lifted machine in the correct direction it is recommended to apply additional guy cables. During the loading work particular care should be taken not to damage paint coating.



**ATTENTION**

Nobody may be in the manoeuvring zone when moving the branch cutting saw to other means of transport.

## 1.6 ENVIRONMENTAL HAZARDS

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

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

## 1.7 WITHDRAWAL FROM USE

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

Before proceeding to dismantle machine, oil shall be completely removed from hydraulic system.

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



### ATTENTION

During dismantling, personal protection equipment shall be used i.e. protective clothing, boots, gloves and protective goggles etc.

Avoid contact of skin with oil. Do not allow used oil to spill.



***SECTION***

**2**

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**SAFETY ADVICE**

## 2.1 BASIC SAFETY RULES

### 2.1.1 USE OF MACHINE

- Before using the machine, the user must carefully read this Operator's Manual and the *WARRANTY BOOK*. When operating the machine, the operator must comply with all recommendations contained in the Operator's Manual.
- The branch cutting saw may only be used and operated by persons qualified to drive agricultural tractors and implement carriers and trained in the use of the machine. The branch cutting saw may be operated by a single operator only.
- If the information contained in the Operator's Manual is difficult to understand, contact the seller who runs the authorised technical service on behalf of the Manufacturer, or contact the Manufacturer directly.
- Careless and incorrect use and operation of the machine, and non-compliance with the recommendations given in this Operator's Manual is dangerous to your health.
- Be aware of the residual risk. Use caution when operating the branch cutting saw and apply all relevant safety principles.
- This machine must never be used by persons who are not authorised to drive agricultural tractors or implement carrier, including children and people under the influence of alcohol, drugs or other drugs.
- Non-compliance with the safety rules of this Operator's Manual can be dangerous to the health and life of the operator and others.
- The machine must not be used for purposes other than those for which it is intended. Anyone who uses the branch cutting saw other than the way intended takes full responsibility for himself for any consequences of this use. Use of the machine for purposes other than those for which it is intended by the Manufacturer may invalidate the guarantee.
- The branch cutting saw may only be used when all the safety guards and other protective elements are technically sound and correctly positioned. In the event of loss or destruction of the safety guards, they must be replaced with new ones.
- Use personal protective equipment (hearing protectors) in order to limit occupational risks associated with exposure to noise during the branch cutting saw

operation. In order to reduce the level of noise during work, the operator cab windows and door should be closed.

### **2.1.2 HITCHING AND UNHITCHING THE MACHINE**

- After hitching the machine, check the safeguards. Carefully read the tractor (carrying vehicle) Operator's Manual.
- Use only original bolts and protections to hitch the branch cutting saw to the multifunction arm.
- The multifunction arm to which the branch cutting saw will be hitched must be technically reliable and must fulfil the requirements of the branch cutting saw Manufacturer.
- Be especially careful when hitching and unhitching the machine. During these operations, the guard of the circular saw blades should be on at all times.
- When hitching, there must be nobody between the branch cutting saw and the multifunction arm and the tractor.
- Do NOT unhitch the branch cutting saw from the multifunction arm if the saw is raised. Exercise caution when unhitching the machine.
- Connect the machine with multifunction arm only when the tractor/carrying vehicle engine and the machine are off.
- The branch cutting saw disconnected from the multifunction arm must rest on a stable, level surface.
- All hydraulic quick couplers of the branch cutting saw must be connected to the multi-function arm.

### **2.1.3 HYDRAULIC SYSTEM**

- The hydraulic system is under high pressure when operating.
- Regularly check the technical condition of the connections and the hydraulic conduits. There must be no oil leaks.
- In the event of the hydraulic system malfunction, discontinue using the machine until the malfunction is corrected.

- When connecting the hydraulic conduits to the hydraulic motor, make sure that the hydraulic system of the multifunction arm is not under pressure. If necessary, reduce residual pressure in the system.
- In the event of injuries being caused by pressurised hydraulic oil, contact a doctor immediately. Hydraulic oil may penetrate the skin and cause infections. In the event of contact of oil with eyes, rinse eyes with a large quantity of water and in the event of the occurrence of irritation consult a doctor. In the event of contact of oil with skin wash the area of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene).
- Use the hydraulic oil recommended by the Manufacturer. Never mix two types of oil.
- After changing the hydraulic oil, the used oil should be properly disposed of. Used oil or oil which has lost its properties should be stored in original containers or replacement containers resistant to action of hydrocarbons. Replacement containers must be clearly marked and appropriately stored.
- Do not store hydraulic oil in packaging designed for storing food or foodstuffs.
- Rubber hydraulic conduits must be replaced every 4 years regardless of their technical condition.
- Repair and replacement of hydraulic system elements should be entrusted to the appropriately qualified persons.

#### **2.1.4 TRANSPORTING THE MACHINE**

- When driving on public roads, comply with the road traffic regulations in force in the country in which the machine is used.
- Do not exceed the permitted speed arising from road conditions and design limitations. Adjust travelling speed to the prevailing road conditions and other limitations specified in the road traffic regulations.
- Before driving off, the branch cutting saw must be folded to transport position and mounted on the hitch of the multifunction arm head.
- Do NOT leave machine raised and unsecured while the tractor (implement carrier) is parked. When parked, the machine should be lowered.



- Do not transport the branch cutting saw set in the working position.
- The branch cutting saw may not be used or transported in conditions of limited visibility.
- Do NOT ride on the machine or transport any materials on it.
- Before using the machine always check its technical condition, especially in terms of safety. In particular, check the technical condition of the linkage, guards, circular saw blades and hydraulic system connections.
- Reckless driving and excessive speed may cause accidents.
- When driving on public roads, always put the transport protective guard on the circular saw blades.

### **2.1.5 MAINTENANCE**

- During the warranty period, any repairs may only be carried out by warranty service authorised by the Manufacturer. It is recommended that necessary repairs to machine should be undertaken by specialised workshops.
- In the event of any fault or damage whatsoever, do not use the branch cutting saw until the fault has been fixed.
- During work, use the proper, close-fitting protective clothing, gloves and appropriate tools. When working on hydraulic system it is recommended to use oil resistant gloves and protective goggles.
- Any modification to the branch cutting saw frees PRONAR Narew from any responsibility for damage or detriment to health, which may arise as a result.
- Before undertaking any work on the branch cutting saw, turn off the tractor/carrying vehicle engine and wait until all rotating parts come to a stop.
- Regularly check the technical condition of the safety devices and correct tightening of bolt connections.
- Regularly perform service inspections of machine as recommended by the Manufacturer.
- Do NOT perform maintenance or repair work under raised and unsupported machine.

- Before beginning repair works on hydraulic systems, reduce oil pressure.
- Servicing and repair work should be carried out in line with the general principles of workplace health and safety. In the event of injury, the wound must be immediately cleaned and disinfected. In the event of more serious injuries, seek a doctor's advice.
- Repair, maintenance and cleaning work should be carried out with the tractor/carrying vehicle engine turned off and the ignition key removed. Immobilise the tractor/carrying vehicle with parking brake. Ensure that unauthorised persons do not have access to the vehicle cab.
- Should it be necessary to change individual parts, use only original parts. Non-adherence to these requirements may put the user and other people's health and life at risk, and also damage the machine and invalidate the warranty.
- Regularly check technical condition and mounting of all guards and protective elements.
- In the event of work requiring the branch cutting saw to be raised, use properly certified hydraulic or mechanical lift jacks for this purpose. After lifting the machine, stable and durable supports must also be used. Do NOT carry out work under the machine, which has only been raised with the multifunction arm.
- The machine must not be supported using fragile elements (bricks or concrete blocks).
- After completing work associated with lubrication, remove excess oil or grease.
- Damaged or excessively worn circular saw blades must be replaced with new ones recommended by the branch cutting saw manufacturer.
- In order to reduce the danger of fire the machine must be kept in a clean condition.

### **2.1.6 OPERATION OF THE BRANCH CUTTING SAW**

- Before lowering or rising the branch cutting saw mounted on the multifunction arm, make sure there are no bystanders near the machine.
- Remove the transport cover before starting the branch cutting saw drive.
- Before starting the branch cutting saw drive, the cutting unit must be set in working position.

- Before starting the branch cutting saw, make sure that there are no bystanders (especially children) or animals in the danger zone. The machine operator is obliged to ensure proper visibility of the machine and the working area.
- Start working with the branch cutting saw only when the nominal speed of the multifunction arm PTO or nominal hydraulic power is reached. Do NOT overload the branch cutting saw.
- When cutting branches, do NOT use a PTO speed higher than nominal and the oil pressures and flow rates exceeding the recommended ones.
- Cutting the branches at a high altitude could be hazardous for the operator. The operator's cab should be equipped with a Falling-Object Protective Structure (FOPS) according to ISO 8083.
- When trimming the branches on the edge of the road, there is a risk that falling branches and debris can pose a hazard to bystanders and other road users.
- Do NOT leave the tractor/carrying vehicle cab, when the machine drive is engaged.
- Do NOT stand within the branch cutting saw's working zone.
- Do NOT approach the guards of the circular saw blades until the rotating parts come to a complete stop.
- Do NOT operate the branch cutting saw while reversing. Raise the machine while reversing.
- Keep a safe distance from overhead electric power lines during travel with the raised branch cutting saw.

## 2.2 RESIDUAL RISK

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

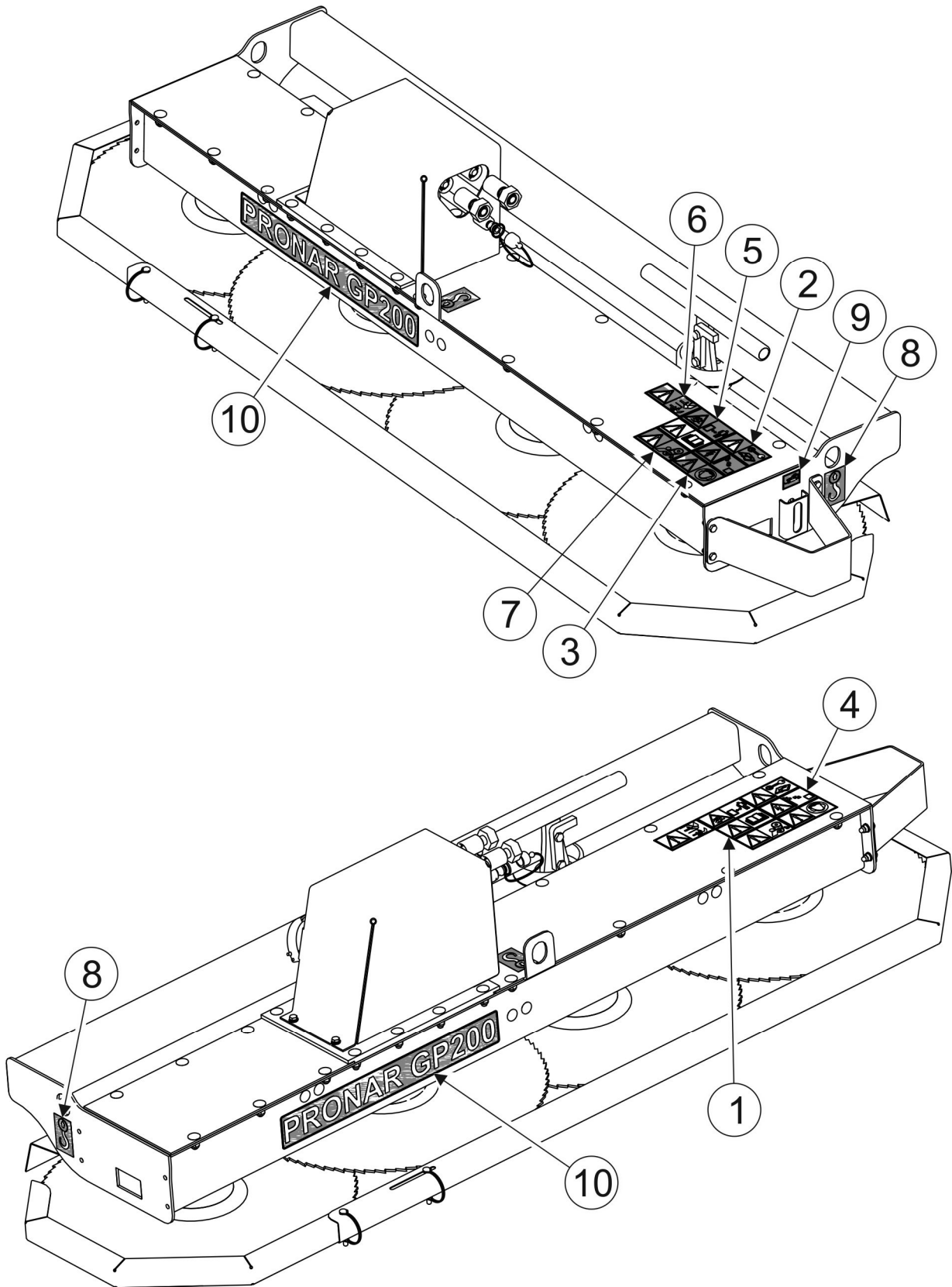
- using the machine for purposes other than those for which it is intended,
- being between the tractor/carrying vehicle and the machine while the engine is running and when the machine is being attached,
- being on the machine while the engine is running,
- operating the branch cutting saw with removed or faulty safety guards,
- not maintaining a safe distance from the danger zone or being within the zones while the machine is operating,
- operation of the machine by persons under the influence of alcohol,
- cleaning, maintenance and technical checks when the multifunction arm is connected and working.

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

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

## 2.3 INFORMATION AND WARNING DECALS

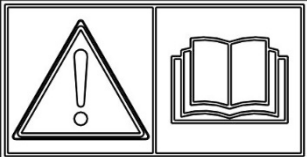
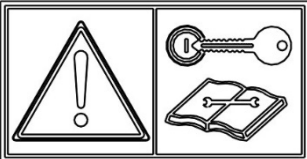
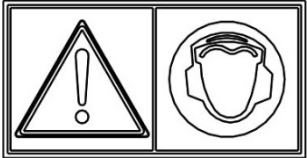
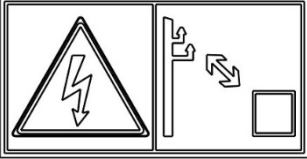
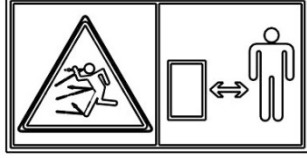
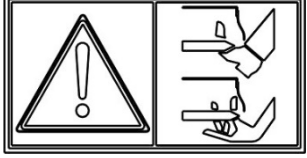
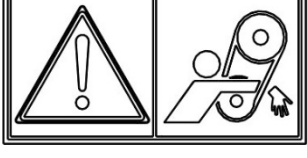
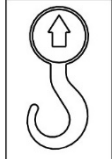

The branch cutting saw is labelled with the information and warning decals mentioned in table (2.1). The symbols are positioned as shown in figure (2.1). Throughout the time it is in use, the user of the machine is obliged to take care that notices and warning and information symbols located on the machine are clear and legible. In the event of their destruction, they must be replaced with new ones. Safety decals are available from your PRONAR dealer or directly from PRONAR customer service. New assemblies, changed during repair, must be labelled once again with the appropriate safety signs. When cleaning the branch cutting saw, do not use solvents which may damage the coating of information label stickers and do not subject them to strong water jets.



**FIGURE 2.1** Locations of information and warning decals

*Meaning of symbols (TABLE 2.1)*

**TABLE 2.1 Information and warning decals**

NO.	DECAL	MEANING
		<p>Before starting work, carefully read the Operator's Manual.</p>
		<p>Before beginning maintenance or repairs, turn off engine and remove key from ignition.</p>
		<p>High noise level warning.</p>
		<p>Take particular care while working near electric power lines. Danger of electric shock.</p>
		<p>Thrown out objects endanger the whole body. Keep a safe distance from the operating machine.</p>
		<p><b>IMPORTANT!</b> Circular saw blades — do NOT approach an operating machine.</p>
		<p>Attention! Belt transmission, take extreme care.</p>
		<p>Transport lugs marking.</p>
		<p>Lubrication points</p>

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NO.	DECAL	MEANING
	<b>PRONAR GP200</b>	Machine type

*Numbers in the Item column correspond to decals (FIGURE 2.1)*



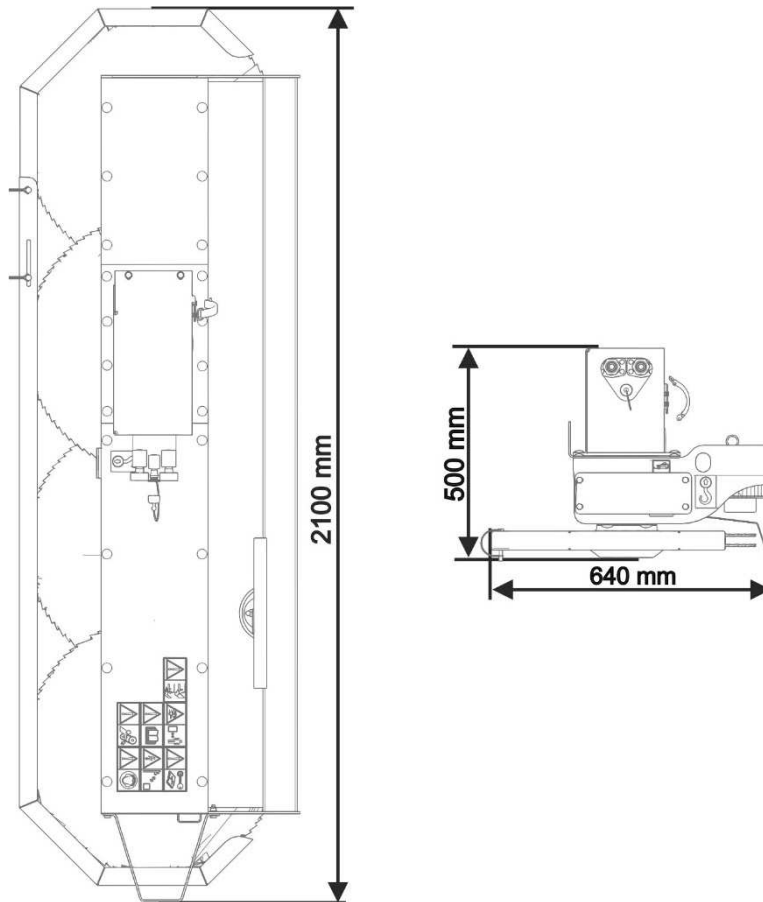
*SECTION*

**3**

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**DESIGN AND  
OPERATION**

### 3.1 TECHNICAL SPECIFICATION

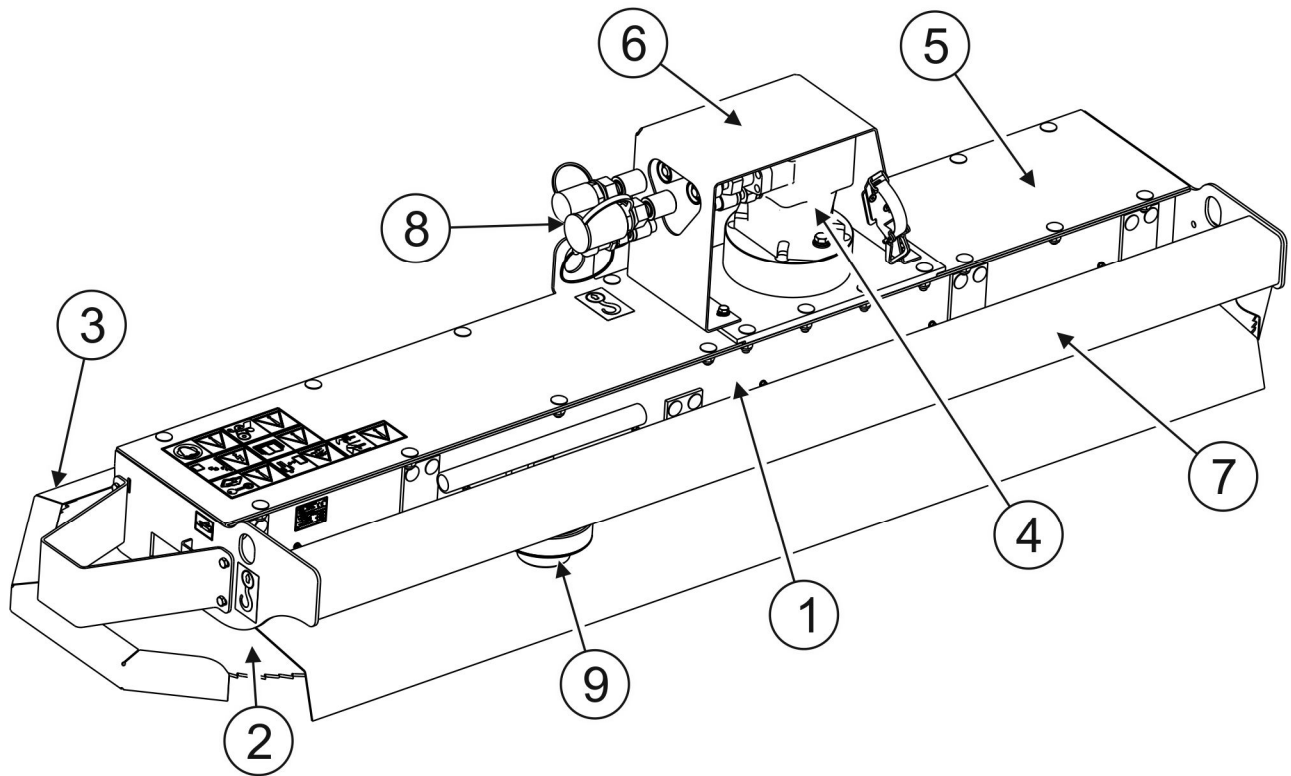


**FIGURE 3.1 Basic dimensions**

**TABLE 3.1 BASIC TECHNICAL DATA**

	Unit	GP200
<b>Dimensions and weight</b>		
Transport length:	mm	640
Transport width:	mm	2100
Transport height:	mm	500
Working width:	mm	2000
Tare weight	kg	232
<b>Technical specification</b>		
Circular saw blade diameter	mm	Ø600
Number of circular saw blades	pc.	4
Nominal oil working pressure	bar	220
Nominal oil flow rate	l/min	60

## 3.2 GENERAL DESIGN



**FIGURE 3.2** General design.

(1)- branch cutting saw housing; (2)- circular saw blade; (3)- transport guard; (4)- hydraulic motor; (5)- cover; (6)- hydraulic motor shield; (7)- support beam; (8)- hydraulic conduits; (9)- set of special wrenches.

The branch cutting saw consists of housing (1) (FIGURE 3.2) on which support beam (7) is installed. The beam makes it possible to hitch the branch cutting saw to the multifunction arm head.

The branch cutting saw is driven by hydraulic motor (4) that is supplied through hydraulic conduits (8) running from the multifunction arm. The torque from the hydraulic motor is transmitted by belt transmissions to circular saw blades (2) of cutting units. The cutting unit consists of four circular saw blades that are shielded with guard (3) during transport. The set of special wrenches (9) is used for replacing the circular saw blades and installing the hydraulic motor.



***SECTION***

**4**

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**CORRECT USE**

## 4.1 PREPARING FOR WORK

The manufacturer guarantees that the machine is fully operational and has been checked according to quality control procedures and is ready for use. This does not release the user from an obligation to check the machine's condition after delivery and before first use. The machine is delivered to the user completely assembled.



### ATTENTION

**Before using the branch cutting saw always check its technical condition. In particular check the technical condition of the circular saw blades, drive system, and integrity of protective guards.**

Before hitching to the multifunction arm, the machine operator must check the technical condition of the branch cutting saw and prepare it for test start-up. In order to do this:

- the user must carefully read this Operator's Manual and observe all recommendations, understand the design and the principle of machine operation,
- check the condition of protective paint coat,
- inspect machine's individual components for mechanical damage resulting from incorrect transport (dents, piercing, bent or broken components),
- check technical condition of the hydraulic system;
- check if circular saw blades, linkage and safety guards are correctly installed,

If all the above checks have been performed and there is no doubt as to the machine's good technical condition, hitch the machine to the multifunction arm. Start the tractor/carrying vehicle's engine, check all systems and perform a test run before beginning work. In order to inspect:

- hitch the branch cutting saw to the multifunction arm (see "*HITCHING TO MULTIFUNCTION ARM*")
- set it in working position,
- remove the shield protecting the circular saw blades (FIGURE 5.1);
- power up the multifunction arm, and then use the control panel to start the branch cutting saw drive.

Engage the branch cutting saw drive for 3 minutes and check the following:

- that there is no knocking or noise in the hydraulic motor arising from scraping or grinding of metal elements,
- that the circular saw blades do not vibrate excessively.

The branch cutting saw's operation at no load should be smooth. Shaking of hydraulic motor and circular saw blades is not acceptable, nor is abnormal noise and vibrations coming from loose nut and bolt connections. Check fastening of circular saw blades after they have come to a complete stop. Confirm that oil does not leak from the hydraulic motor.

## **DANGER**



**Before using the branch cutting saw, the user must carefully read this Operator's Manual.**

**Careless and incorrect use and operation of the branch cutting saw, and non-compliance with the recommendations given in this Operator's Manual is dangerous to your health.**

**The branch cutting saw must never be used by persons who are not authorised to drive agricultural tractors/carrying vehicles, including children and people under the influence of alcohol or other drugs.**

**Non-compliance with the safety rules of this Operator's Manual can be dangerous to the health and life of the operator and others.**

**Before starting the branch cutting saw, make sure that there are no bystanders in the danger zone.**

If any faults are detected they must be identified and rectified. If a fault cannot be rectified or the repair could void the warranty, please contact retailer for additional clarifications.

## 4.2 TECHNICAL INSPECTION

When preparing the branch cutting saw for normal use, check individual components according to guidelines presented in table (4.1)

**TABLE 4.1 TECHNICAL INSPECTION SCHEDULE**

DESCRIPTION	MAINTENANCE ACTIVITIES	FREQUENCY
Condition of safety guards	Check the technical condition of safety guards, if complete and correctly mounted.	Daily before beginning work
Check if hydraulic conduits and linkage are correctly installed	Check if correctly installed	
Technical condition of the hydraulic system.	Check according to section " <i>DRIVE SYSTEM MAINTENANCE</i> "	
Check if all main nut and bolt connections are properly tightened	Tightening torque values should be according to table (5.2)	Every 2 hours
Lubrication points	Lubricate in accordance with the "LUBRICATION" section	Every 10 hours
Technical condition of drive system	Check the mounting of the hydraulic motor and circular saw blades.	Every 2 hours
Technical condition of circular saw blades	Visually inspect and, if necessary, sharpen.	Every 8 hours
Condition of drive belts	Check according to Section 5.3.1	Every 8 hours



### ATTENTION

Do NOT use out of order branch cutting saw.



## 4.3 HITCHING TO MULTIFUNCTION ARM

PRONAR GP200 branch cutting saw can be hitched to WWT420 / 424C / 480 / 484C / 600 / 604D / 620D / 624D / 600P / 604P / 700T / 704T or WWP600 / 500 / 500U / 500UH multifunction arm.



### ATTENTION

Before hitching the branch cutting saw, the user must carefully read the operator's manuals of the branch cutting saw, tractor (carrying vehicle) and multifunction arm and observe all instructions contained in the manuals.



### DANGER

When hitching, there must be nobody between the machine and the tractor/carrying vehicle.

Exercise caution when hitching the machine.



### DANGER

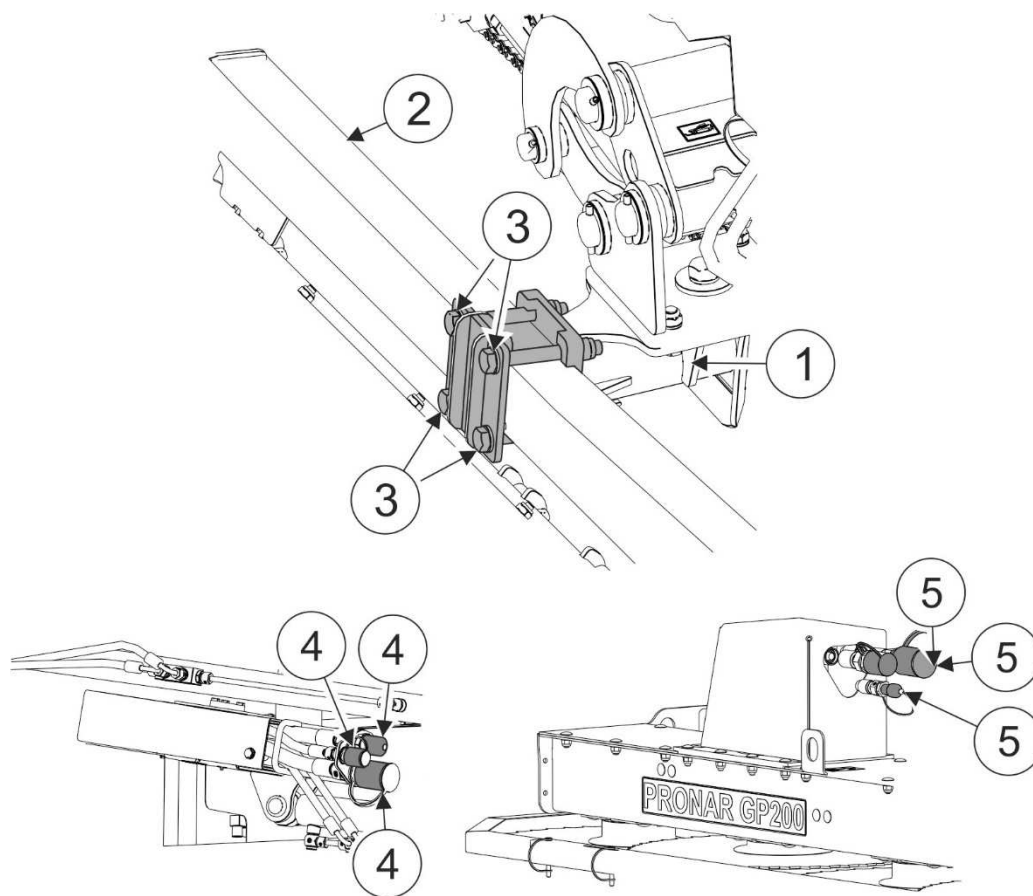
Before hitching the branch cutting saw, turn off the tractor/carrying vehicle's engine and remove the key from the ignition. Ensure that unauthorised persons do not have access to the tractor/carrying vehicle cab.

Check technical condition of the branch cutting saw's guards and general technical condition of the machine.

In order to hitch the branch cutting saw to the multifunction arm head (FIGURE 4.1), proceed as follows:

- Control the multifunction arm and bring its head (1) close to the support beam (2) of branch cutting saw.
- Using the control panel, set the multifunction arm head (1) at the same height with the support beam of the branch cutting saw.
- Immobilize the tractor/carrying vehicle and prevent it from moving.
- Connect the multifunction arm head (1) to the support beam of the branch cutting saw (2) using four fixing bolts (3).
- Connect quick couplers of hydraulic conduits (4) of multifunction arm to quick couplers (5) of the hydraulic motor of the branch cutting saw.

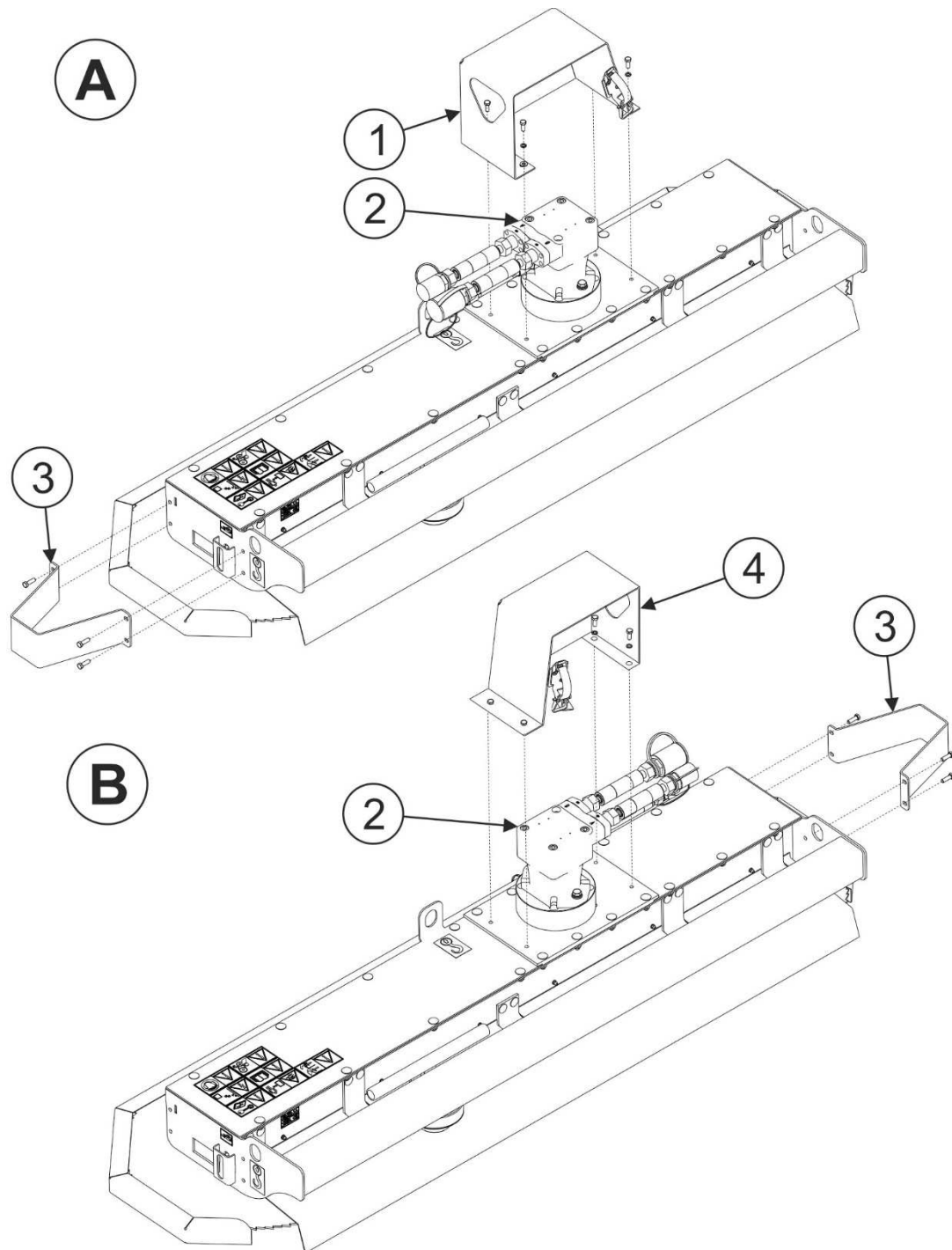
- Raise the branch cutting saw using the control panel of the multifunction arm.



**FIGURE 4.1 Hitching to multifunction arm**

(1)- multifunction arm head; (2)- support beam of branch cutting saw; (3)- fixing bolts of branch cutting saw; (4)- quick couplers of multifunction arm; (5)- quick couplers of the hydraulic motor of the branch cutting saw.

The standard version of the branch cutting saw is designed for working on the multifunction arm installed on the right side of the tractor. If the branch cutting saw has to work on the multifunction arm installed on the left side of the tractor, turn the hydraulic motor (2) (FIGURE 4.2) by 180 degrees and install the left housing (4) (optionally available) designed for the relocated motor. Move the side shield (3) of the branch cutting saw from the left side to the right side of the housing (FIGURE 4.2).



**FIGURE 4.2** Adapting the branch cutting saw to operation on the left side of the multifunction arm.

(A)- the branch cutting saw adapted to working on the right side of the multifunction arm; (B)- the branch cutting saw adapted to working on the left side of the multifunction arm; (1)- motor shield; (2)- hydraulic motor; (3)- side shield; (4)- left motor shield (option).

**DANGER**

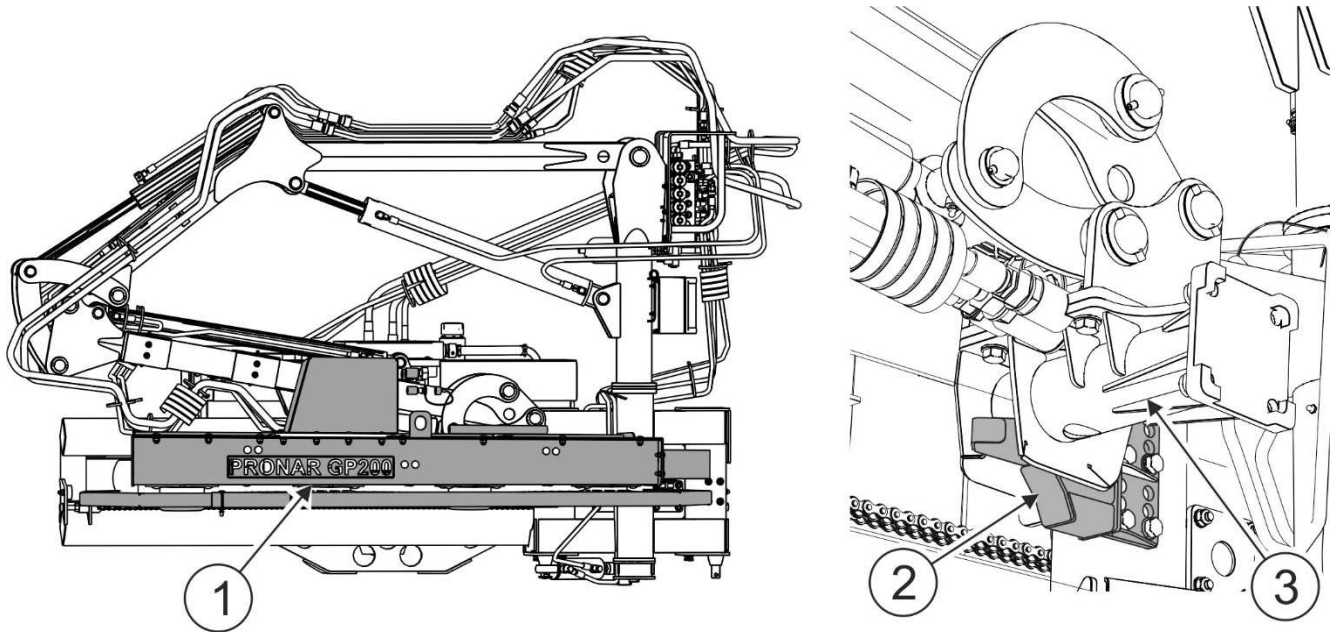
Prior to connecting individual hydraulic system conduits, the user must carefully read the operator's manual of the multifunction arm and observe all recommendations of the Manufacturer.

**DANGER**

When connecting the hydraulic conduits to the branch cutting saw, make sure that the hydraulic system of the multifunction arm is not under pressure.

## 4.4 TRANSPORTING THE MACHINE

For transport to place of work and back, raise the branch cutting saw (1) and mount it on hitch (2) of multifunction arm head (3) (FIGURE 4.3). Protect the circular saw blades with protective guard (FIGURE 5.1).



**FIGURE 4.3** Transport position

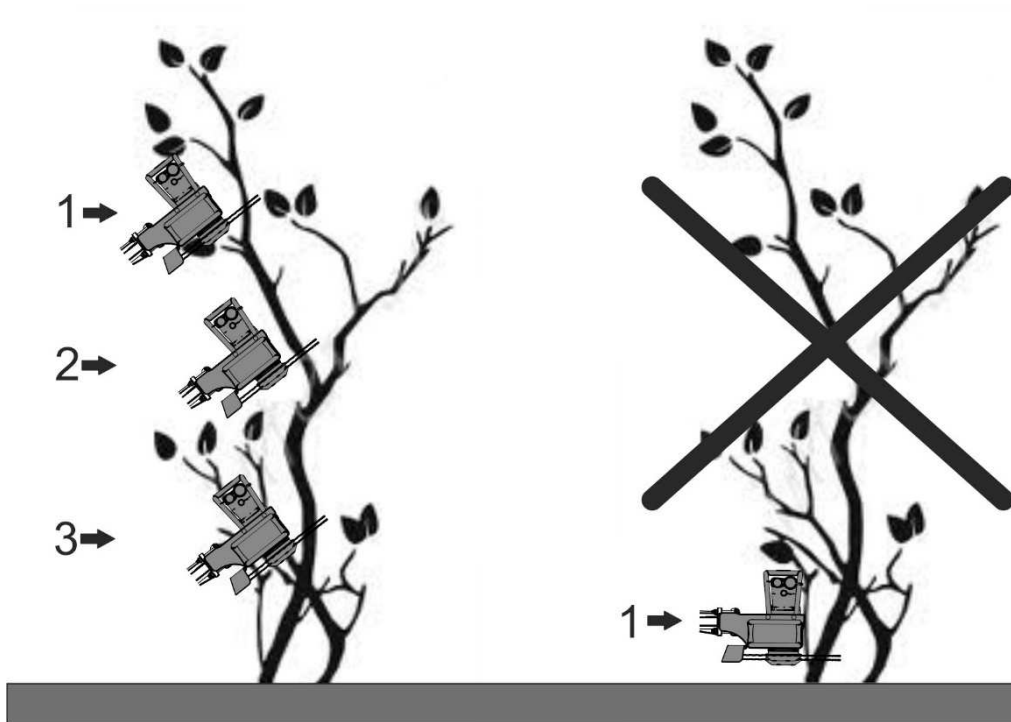
(1)- branch cutting saw in transport position; (2)- hitch of multifunction arm head; (3)- multifunction arm head.

## 4.5 SETTING AND OPERATING THE BRANCH CUTTING SAW

### 4.5.1 SETTING THE BRANCH CUTTING SAW IN WORKING POSITION

To set the branch cutting saw in working position:

- remove the transport protective guard of the branch cutting saw (FIGURE 5.1)
- raise the branch cutting saw above the hitch of the multifunction arm head (FIGURE 4.2)
- controlling appropriate hydraulic circuits, set the arms of the multifunction arm so as to place the branch cutting saw in the working area.



**FIGURE 4.4** The branch cutting saw setting and branch trimming sequence.

- The branch cutting saw should not be positioned in parallel to the ground. Otherwise, wood fragments may be ejected towards the operator or other persons.
- Do not cut the branches to a length exceeding 2 m. The long tree limbs should be cut gradually into short sections starting from the top.
- Do not operate the branch cutting saw near the ground. The circular saw blades may get damaged.

## 4.5.2 OPERATION OF THE BRANCH CUTTING SAW

### DANGER



The branch cutting saw may only be started when all guards, except the transport protective guard, are installed and the saw is set in working position.

Before engaging the branch cutting saw drive, make sure that there are no bystanders, especially children, near the branch cutting saw and then remove the transport protective guard.

Other persons should be at a safe distance from the branch cutting saw during work because of the danger that objects may be ejected (splinters, branches).

After setting the branch cutting saw in working position, the branch cutting saw drive may be started.

### HIGH NOISE LEVEL WARNING



Depending on the working conditions, the tractor (carrying vehicle) with the machine may generate noise exceeding the level of 85dB at the driver position. In such conditions the operator should use personal protective equipment (ear protectors).

In order to reduce the level of noise during work, the operator cab windows and door should be closed.

When operating the branch cutting saw, pay attention to obstacles in the working area (power lines, poles, fences, etc.). Working speed of the branch cutting saw depends on thickness of branches, as well as the type of terrain where tractor (carrying vehicle) is moving. Travelling speed during operation must not exceed 2 km/h.

Working speed of the branch cutting saw should be limited if:

- thick branches are being trimmed,
- the terrain is uneven and there are obstacles nearby,
- there is a high risk of collision with an obstacle.

When driving across the road, pavement or other obstacles and when making turns, raise the branch cutting saw by means of the multifunction arm and disengage the drive of the circular saw blades.

Exercise due caution during operation. If the branch cutting saw's drive system is stopped during operation, disengage the drive and check the cause of overload.

## 4.6 UNHITCHING FROM MULTIFUNCTION ARM



### **DANGER**

Reduce pressure prior to disconnecting the hydraulic system.

In order to unhitch the branch cutting saw from the multifunction arm (FIGURE 4.1), proceed as follows:

- lower the branch cutting saw by means of the multifunction arm to rest position, on level surface,
- power off the multifunction arm and remove the key from ignition
- reduce residual pressure in the hydraulic system by movement of appropriate lever controlling hydraulic circuit,
- install transport protective guards.
- disconnect quick couplers (4) of hydraulic system conduits from the branch cutting saw's hydraulic motor and protect with plugs,
- disconnect multifunction arm head (1) from support beam (2) of the branch cutting saw by unscrewing four bolts (3) that fix the head to the support beam,

The branch cutting saw unhitched from the multifunction arm should be supported on the shields of the circular saw blades.



***SECTION***

**5**

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**MAINTENANCE**

## 5.1 INSPECTION AND DISASSEMBLY OF SAFETY GUARDS

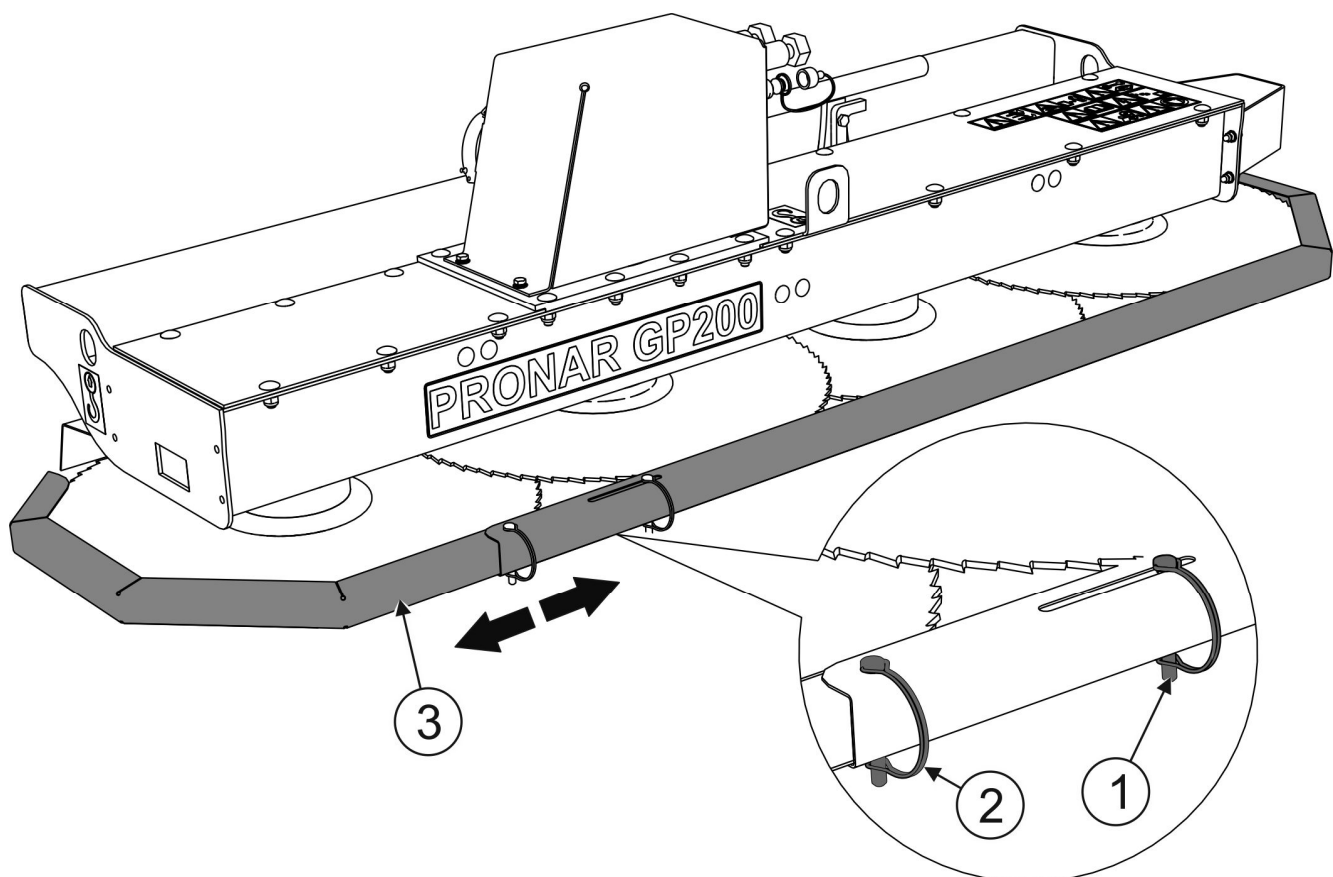
The branch cutting saw may only be used when all the safety guards and other protective elements are technically sound and correctly positioned. The guards should ensure protection against ejected wood fragments. The transport protective guard should be installed during transport. In the event of loss or destruction of the safety guards, they must be replaced with new ones.



### DANGER

When inspecting and dismantling safety guards be sure to power off the multifunction arm. The branch cutting saw must rest on the ground. Ensure unauthorised persons, especially children, have no access to the machine.

Method of disassembly of the guards of the circular saw blades is shown in FIGURE 5.1.



**FIGURE 5.1** Disassembling the guards of the circular saw blades.

(1)- cotter pin; (2)- securing cotter pin; (3)- transport protective guard.

When disassembling the transport protective guard (3) of the branch cutting saw, take out the securing cotter pin (2), and then pull the guard components apart so that the guard can be removed from the circular saw blades.

When installing the guard, pay special attention to correct mounting of the guard. The securing cotter pin (2) should fix the guard components installed on the circular saw blades and should be properly secured.

**ATTENTION**

**Do NOT transport the branch cutting saw if the transport protective guard is damaged, incorrectly mounted or unsecured.**

**Do NOT start the branch cutting saw if the transport protective guard is mounted on the circular saw blades.**

## 5.2 INSPECTION AND REPLACEMENT OF CIRCULAR SAW BLADES



### DANGER

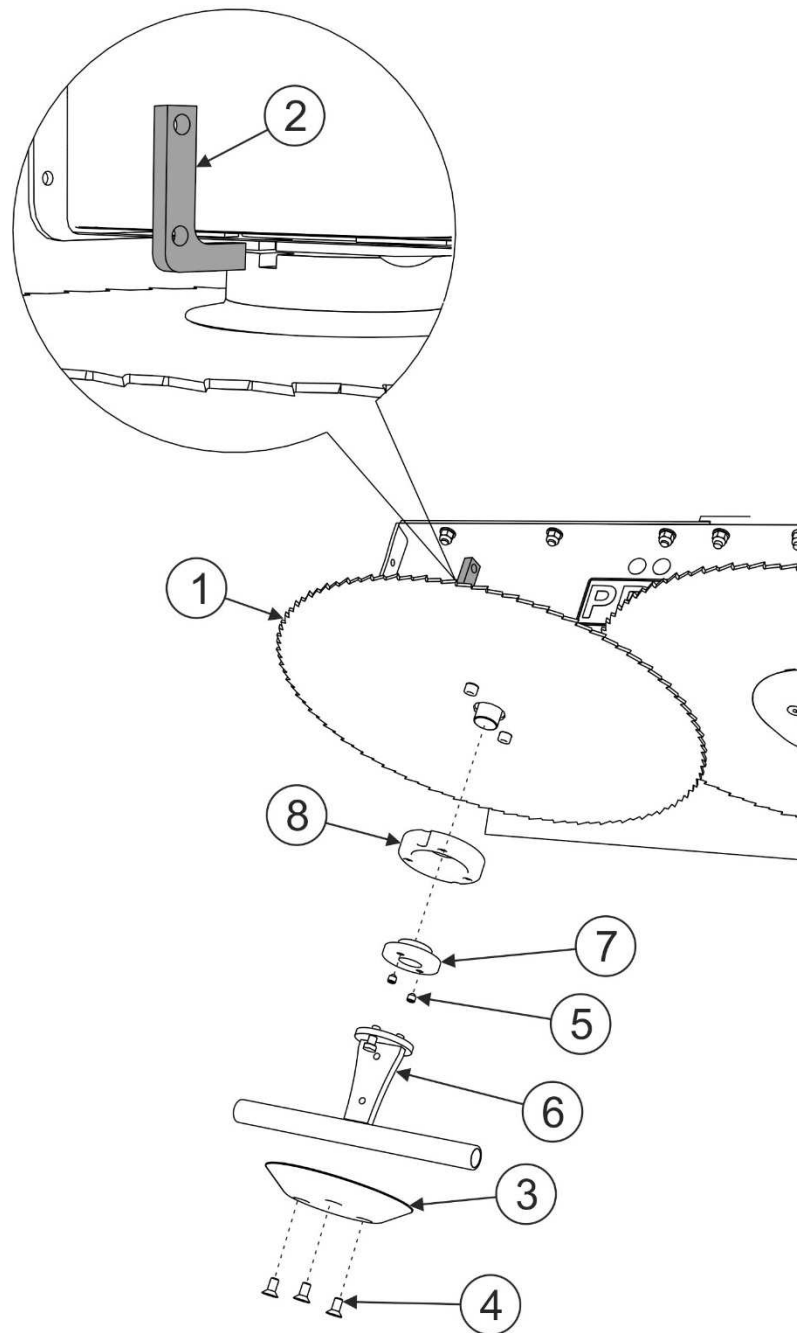
Before inspecting or replacing the circular saw blades, turn off the tractor/carrying vehicle's engine and remove the key from the ignition. The branch cutting saw must be mounted on the hitch of the multifunction arm's head in transport position and supported on stable and strong supports.

Regularly inspect the circular saw blades. Visually inspect the technical condition of the circular saw blades, their teeth and fixing. The circular saw blade teeth should be sharp and properly shaped according to the dimensions specified in FIGURE 5.3. The circular saw blade teeth should be sharpened and levelled by a qualified specialist. A bent, broken or damaged circular saw blade must be replaced with a new one provided by the manufacturer of the branch cutting saw (part number: 267N-00000010). Before proceeding to replace the circular saw blade, clean the residue of cut material from the blade.

In order to replace the circular saw blade proceed as follows (FIGURE 5.2):

- rotate the circular saw blade (1) so that the recesses on the distance disc and on the circular saw blade housing are aligned;
- lock the circular saw blade (1) by inserting the wrench (2) into the recesses on the distance disc and on the circular saw blade housing;
- dismount the protective cover (3) by unscrewing three bolts (4);
- unscrew two set screws (5) from the clamp nut (7);
- undo the clamp nut (7) using the special wrench (6). Mount the wrench on the clamp nut (7) using two bolts (included in the set of wrenches) screwed in place of the set screws (5).
- remove the clamp (8);
- remove the circular saw blade (1) from the drive module axle.

In order to install a new circular saw blade (1), perform the same operations as in case of disassembling but in the reversed order.



**FIGURE 5.2 Replacement of circular saw blades**


(1)- circular saw blade; (2)- wrench I; (3)- protective cover; (4)- screws fixing the cover; (5)- set screws; (6)- wrench II; (7)- clamp nut; (8)- clamp;

When replacing the circular saw blade (1) (FIGURE 5.2), pay attention to condition of clamp nut (7) that fixes the circular saw blade to the shaft. Damaged nut fixing the circular saw blade should be replaced with a new one of the same type.



### ATTENTION

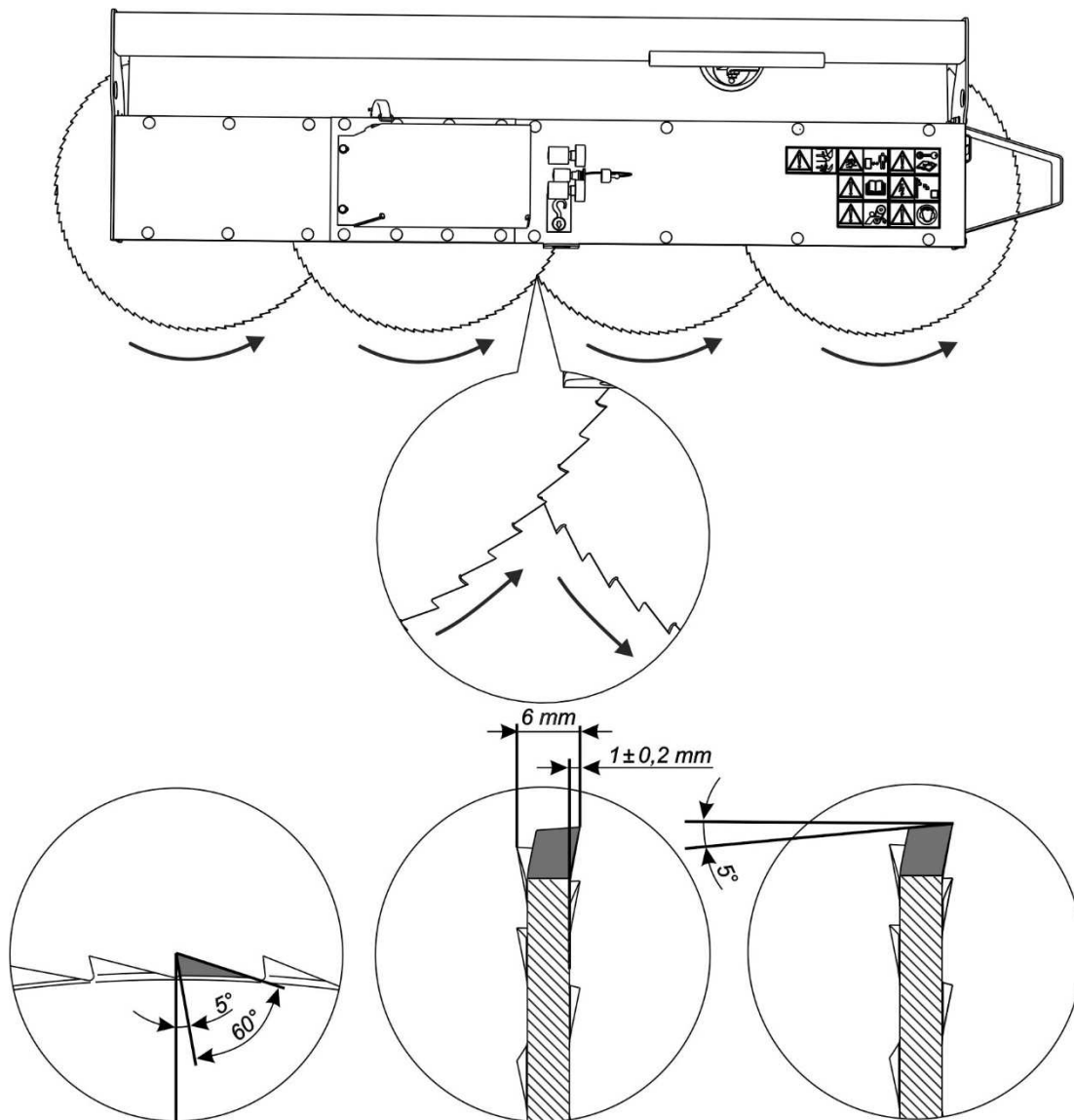
Damaged or bent circular saw blade may vibrate excessively and cause damage to the branch cutting saw and pose a risk for the operator.




**DANGER**

Use only circular saw blades supplied by the manufacturer of the branch cutting saw.

When replacing the circular saw blades, pay attention to the direction of the circular saw blade teeth (FIGURE 5.3). The circular saw blades should rotate counterclockwise when looking from above the machine and their teeth should be tilted to the right.



**FIGURE 5.3** Arrangement and sharpening parameters of the circular saw blade teeth.



**ATTENTION**

Each time before starting work, check the technical condition of the circular saw blades and their mounting.

## 5.3 DRIVE SYSTEM MAINTENANCE



### DANGER

Do NOT perform service or repair work under raised and unsupported machine.

Drive system maintenance involves periodic inspection, adjustment and possible replacement of serpentine belts and inspection of the connections of the hydraulic motor's hydraulic conduits.



### ATTENTION

The serpentine belts should be inspected every 8 hours of the branch cutting saw operation.

The inspection of the serpentine belts (6) (FIGURE 5.4) involves checking the technical condition and tension of the belts. To gain access to the serpentine belts, dismount two top covers (2) and (3) of the saw drive system.

### 5.3.1 CHECKING THE SERPENTINE BELTS TENSION

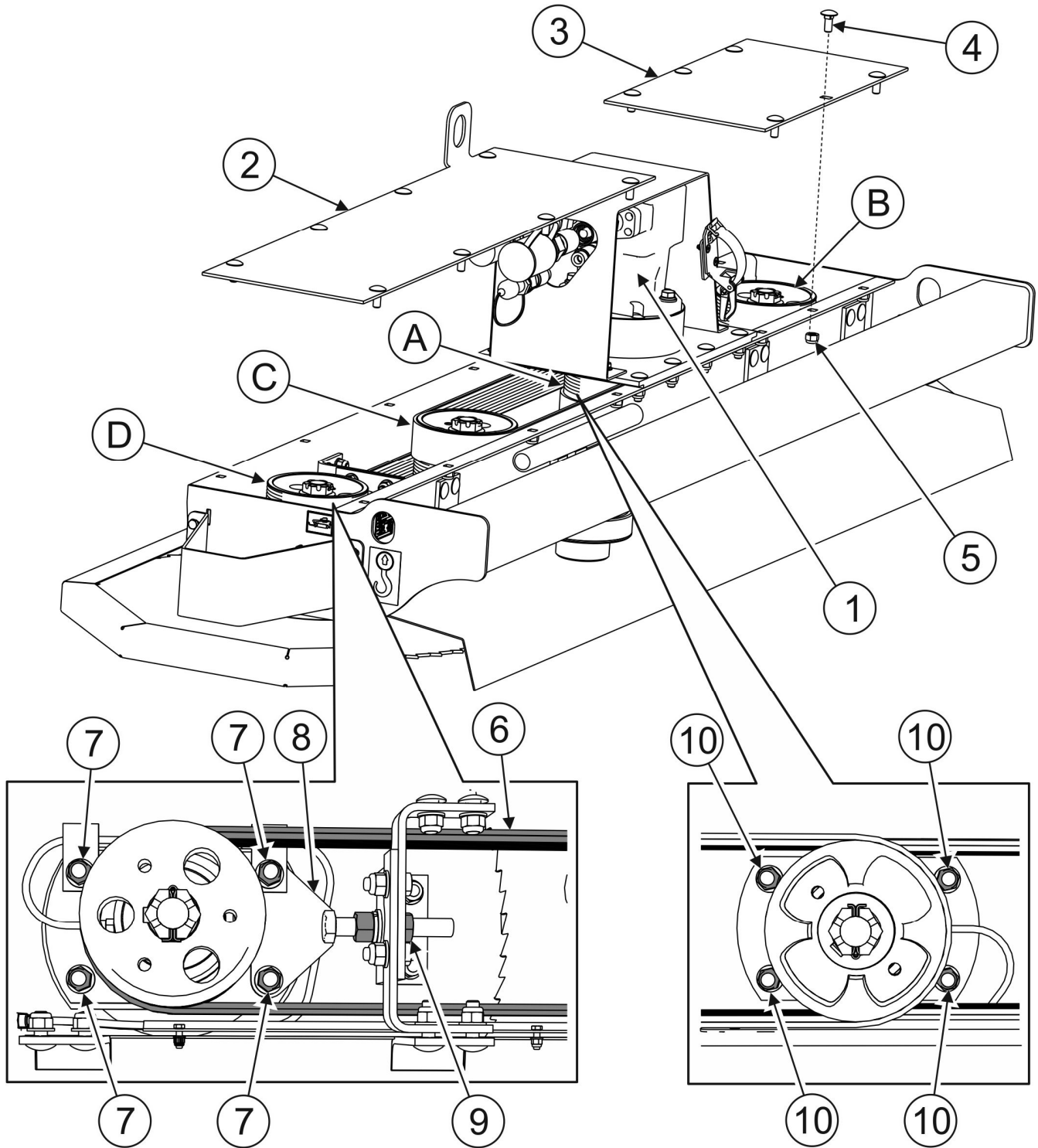
Before checking the serpentine belts tension, check tightening of the bolts (10) that fix the bracket of the pulley (A) of the hydraulic motor (1) (FIGURE 5.4).

The belts tension can be changed using the pulley tensioners (8). Start the inspection of the belts tension by adjusting the pulley (B) belt. To do this, loosen the securing nut (9) and the bolts (7) that fix the bracket of the pulley (B) tensioner. Pre-tighten the belt using the tensioner (8) so that the belt is rigid and then, draw two marks on the belt. The distance between the marks should be 400 mm. Tighten the belt again using the tensioner nut (8) until the distance between the marks is 402.5 mm. Secure the tensioner using the securing nut (9) and tighten the bolts (7) that fix the tensioner bracket. Adjust the (C) pulley and the (D) pulley in the same way. When tightening the belt, turn the pulley by at least 360°.



### ATTENTION

Wrong tension of the belts may result in accelerated wear of the drive system components (belts, bearings) and damage to the machine.

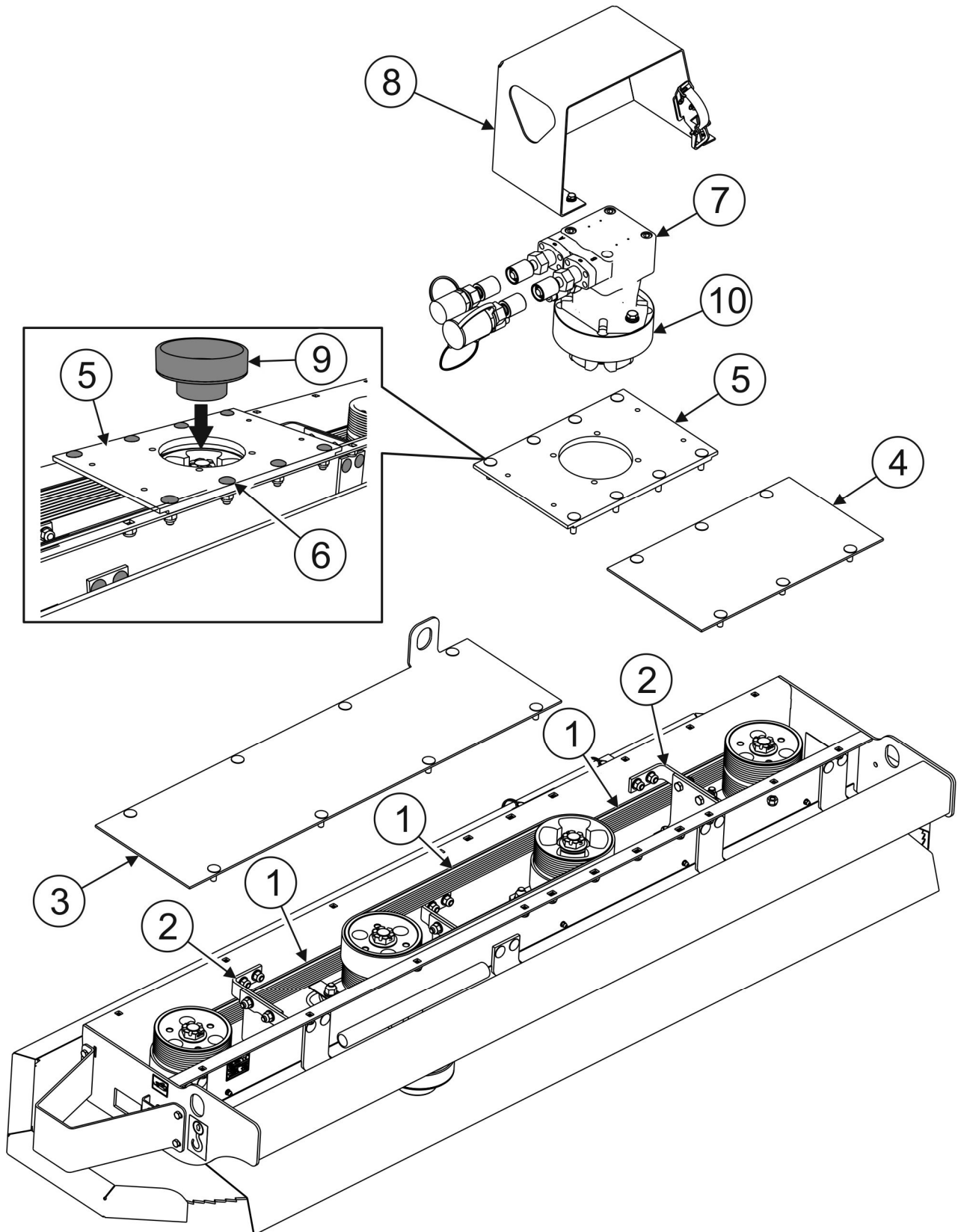


**FIGURE 5.4** Checking and adjusting the tension of the serpentine belts

(1)- hydraulic motor; (2),(3)- cover; (4)- bolt, (5)- nut; (6)- serpentine belts; (7)- tensioner bracket bolts; (8)- tensioner; (9)- securing nut; (A)- pulley of hydraulic motor; (B)(C)(D)- pulleys of circular saw blades.



## 5.3.2 REPLACEMENT OF SERPENTINE BELTS



**FIGURE 5.5** Replacement of serpentine belts

(1)- serpentine belts; (2)- tensioner bracket; (3),(4)- cover; (5)- cover plate; (6)- bolts; (7)- hydraulic motor; (8)- motor shield; (9)- centring sleeve; (10)- motor spacer.

If one of the belts is damaged, replace it. There are three serpentine belts (part number: 10 PL 1397) in the drive transmission system. To replace the serpentine belt, dismount the covers (3) and (4) (FIGURE 5.5) and the tensioner bracket (2). To replace the drive belts installed on the motor pulley, dismount also the motor shield (8), the hydraulic motor (7) together with the motor spacer (10) and the cover plates (5). After dismounting the tensioner bracket (2) and the motor, loosen the bolts (7) (FIGURE 5.4) that fix the pulley bracket and then, move the pulley so far as to make it possible to remove the serpentine belt from the pulley.

After mounting the new belts and tensioner brackets, the cover plate (5) can be mounted. The cover plate (5) must be centred in relation to the motor pulley axle. To do this, use the centring sleeve (9) included in the set of special wrenches. Install the centring sleeve (9) in the opening of the cover plate (5) and the pulley, tighten the fixing bolts (6) and remove the centring sleeve from the cover plate opening. Now, the hydraulic motor (7) and the shield (8) can be installed.

After the replacement, adjust the serpentine belts according to Section 5.3.1.

### 5.3.3 INSPECTION OF HYDRAULIC SYSTEM



Connections of hydraulic conduits supplying hydraulic motor should be checked daily.



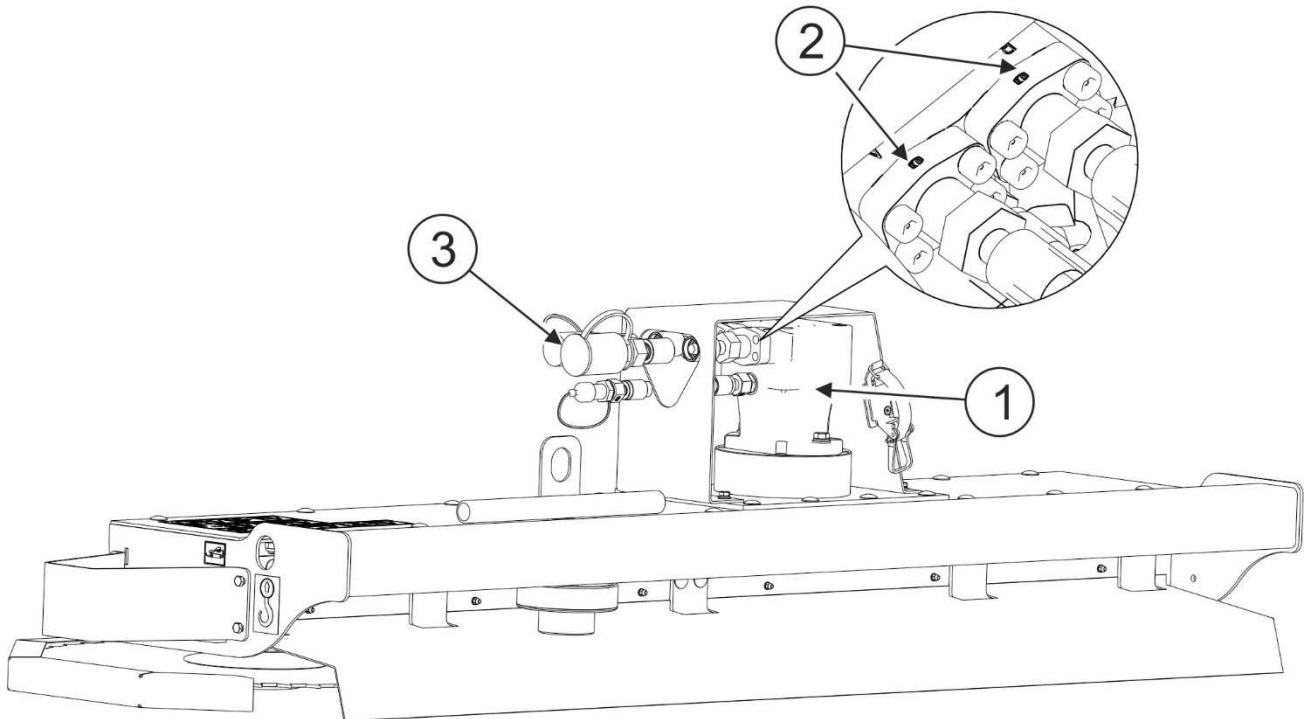
#### **DANGER**

Before commencing whatever work on hydraulic system reduce the pressure in the system.



#### **DANGER**

During work on hydraulic system, use the appropriate personal protection equipment i.e. protective clothing, footwear, gloves and eye protection. Avoid contact of skin with oil.



**FIGURE 5.6** Inspecting connections of quick couplers of the hydraulic motor's hydraulic conduits.

(1) - hydraulic motor, (2) - hydraulic conduit connectors, (3) - quick couplers of the motor's hydraulic conduits.

Make sure that the oil in the hydraulic system of the branch cutting saw is of adequate grade. Do not add hydraulic oil of other grade. The hydraulic system in a new branch cutting saw is filled with HL32 hydraulic oil.



### ATTENTION

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

The hydraulic system should be completely tight. If oil leak is detected on hydraulic motor body (1) (FIGURE 5.6), ascertain origin of leak. In the event of noticing leaks stop using the machine until faults are remedied.

Connections of hydraulic conduits (2) to hydraulic motor (1) and quick couplers (3) of the branch cutting saw should be tight.

In the event of confirmation of an oil leak on hydraulic conduit connections, tighten connections, and if this does not remedy faults then change conduit or connection elements.

Always exchange each mechanically damaged component. Also, pay attention to ensure that flexible hydraulic conduits are not fractured.



**Flexible hydraulic conduits should be replaced after 4 years of use.**

**TABLE 5.1 HL32 hydraulic oil characteristics**

ITEM	NAME	VALUE
1	ISO 3448VG viscosity classification	32
2	Kinematic viscosity at 40°C	28,8 ÷ 35,2 mm <sup>2</sup> /s
3	ISO 6743/99 quality classification	HL
4	DIN 51502 quality classification	HL
5	Flash-point	above 210 °C

Because of its composition, the oil is not classified as a dangerous substance, however long-term action on the skin or eyes may cause irritation. In the event of contact of oil with skin wash the place of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene). Contaminated clothing should be changed to prevent access of oil to skin. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor. Hydraulic oil in normal conditions is not harmful to the respiratory tract. A hazard only occurs when oil is strongly atomised (oil vapour), or in the case of fire during which toxic compounds may be released. Oil fires should be quenched with carbon dioxide (CO<sub>2</sub>), foam or extinguisher steam. Do NOT use water for fire extinguishing.

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

## 5.4 STORAGE

After completed work, the branch cutting saw should be thoroughly cleaned and washed with a water jet. While cleaning, do not direct a strong water or steam jet at information and warning decals or hydraulic conduits. Nozzle of pressure or steam washer should be kept at a distance of not less than 30 cm from cleaned surface.

After cleaning, inspect the whole machine, inspect technical condition of individual elements. Used or damaged elements should be repaired or replaced.

In the event of damage to the paint coat, clean rust and dust from damaged area, degrease and then paint with undercoat and after it is dry paint with surface coat paint retaining colour uniformity and even thickness of protective coating. Until the time of touch-up painting, the damaged place may be covered with a thin layer of grease or anticorrosion preparation. The branch cutting saw should be kept in a closed or roofed building.

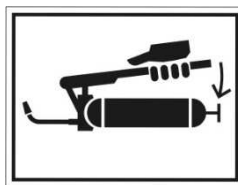
If the branch cutting saw shall not be used for a long period of time, protect it against adverse weather conditions.

## 5.5 LUBRICATION

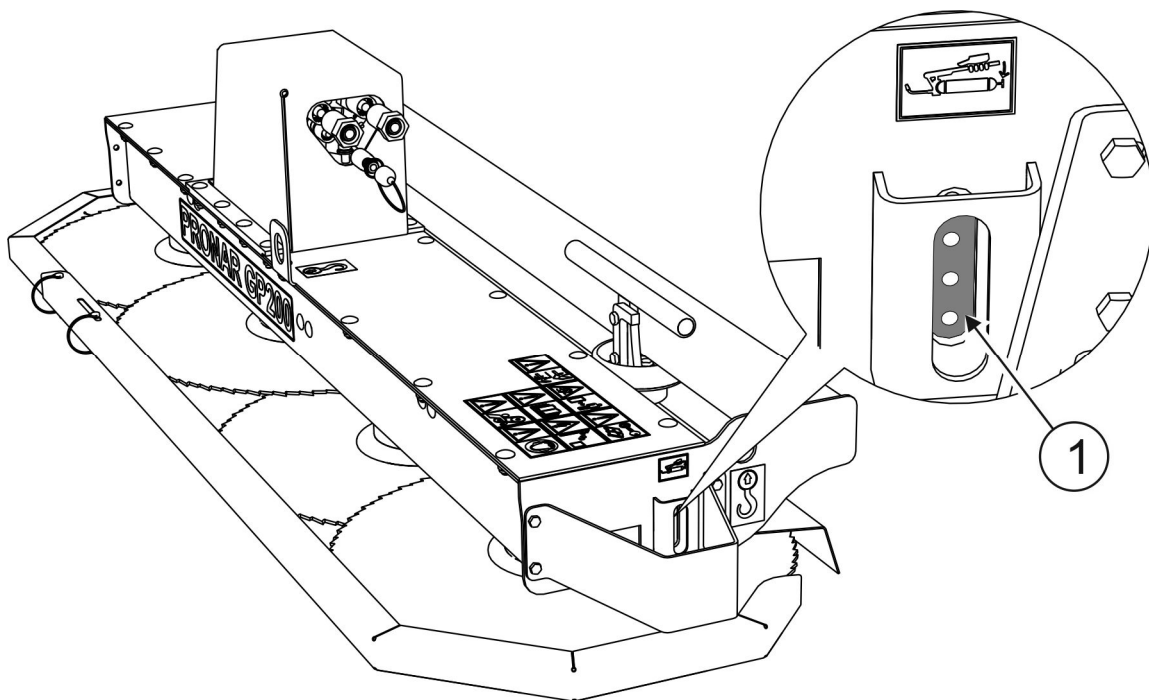
Machine lubrication should be performed with the aid of a manually or foot operated grease gun, filled with generally available grease. Before commencing lubrication insofar as is possible remove old grease and other contamination. Remove and wipe off excess oil or grease

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

Grease all grease nipples located in the grease nipple block (1) marked with the following pictogram:



and shown in FIGURE 5.7.



**FIGURE 5.7 Lubrication points.**

(1)- grease nipple block

## 5.6 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

Unless other tightening parameters are given, during maintenance and repair work apply appropriate tightening torque to bolt and nut connections. Recommended torque values apply to non-greased steel bolts.



### ATTENTION

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

**TABLE 5.2 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS**

THREAD DIAMETER [mm]	5.8	8.8	10.9
	TIGHTENING TORQUE [Nm]		
M6	8	10	15
M8	18	25	36
M10	37	49	72
M12	64	85	125
M14	100	135	200
M16	160	210	310
M20	300	425	610
M24	530	730	1 050
M27	820	1 150	1 650
M30	1050	1 450	2 100
M32	1050	1 450	2 100

## 5.7 TROUBLESHOOTING

**TABLE 5.3 TROUBLESHOOTING**

<b>TYPE OF FAULT</b>	<b>CAUSE</b>	<b>REMEDY</b>
The branch cutting saw drive can not be started	Incorrectly connected or damaged quick couplers of the multifunction arm	Check quick couplers and manner of their connection
	Hydraulic system of multifunction arm is out of order	Check condition of the multifunction arm's hydraulic system
It is impossible to set the branch cutting saw by means of the multifunction arm	Hydraulic system of multifunction arm is out of order	Check condition of the multifunction arm's hydraulic system
Excessive vibration during work	Damaged branch cutting saw Incorrect mounting	Check the circular saw blades, replace if necessary
The branch cutting saw drive stops during operation	The multifunction arm's hydraulic system or the branch cutting saw's hydraulic motor is out of order or the belt is broken	Repair at an authorised service point
Problem when cutting branches	Circular saw blades are blunt or installed in a wrong direction	Sharpen the circular saw blades Install the circular saw blades according to Operator's Manual



# NOTES

A series of horizontal dotted lines for writing notes.

