

# PRONAR Sp. z o.o.

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

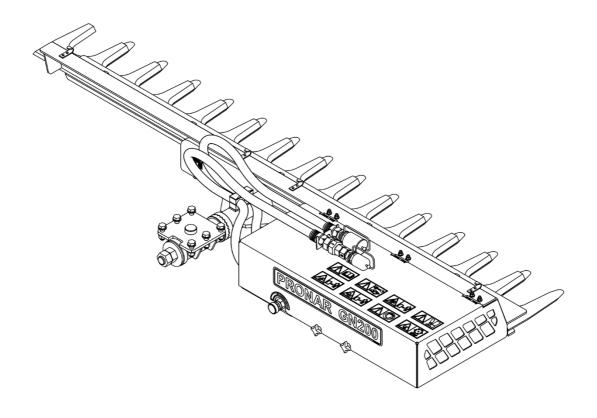
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www.pronar.pl

# **OPERATOR'S MANUAL**

# BRANCH CUTTER PRONAR GN200

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



EDITION 1B-02-2017

PUBLICATION NO. 86N-00000000-UM



# **BRANCH CUTTER**

# **PRONAR GN200**

MACHINE IDENTIFICA	IION			
SYMBOL /TYPE:				
SERIAL NUMBER:				

# 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 GN200 branch cutter. 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**

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# SYMBOLS APPEARING IN THIS OPERATOR'S MANUAL

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



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

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



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

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



Additional tips and advice for machine operation are marked 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.



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# EC DECLARATION OF CONFORMITY OF THE MACHINERY

PRONAR Sp. z o.o. declares with full responsibility, that the machine:

Descript	ion and identification of the machinery
Generic denomination and function:  Scissor cutter	
Type:	GN200
Model:	-
Serial number:	
Commercial name:	Scissor cutter PRONAR GN200

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 2017-04-21 2017-04-21 Roman Sacraniuk

Place and date

Full name of the employered person position, signature

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# **BASIC INFORMATION**

# 1.1 IDENTIFICATION

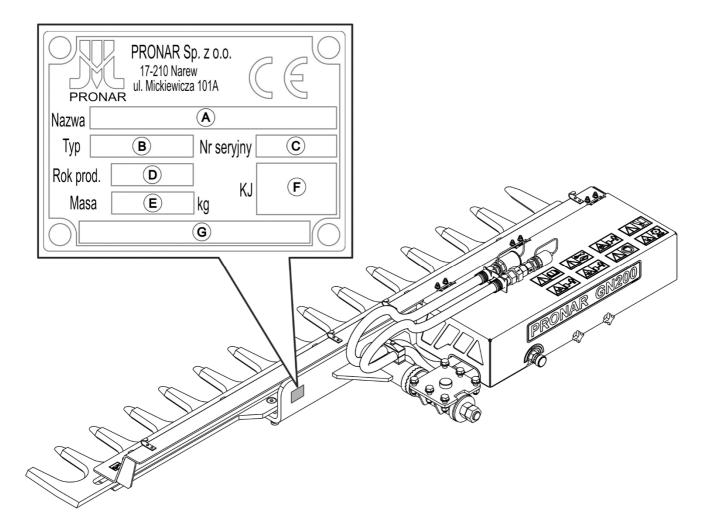


FIGURE 1.1 Location of the data plate.

PRONAR GN200 branch cutter 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*.

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The meanings of the individual fields found on the data plate (FIGURE 1.1) are presented in the table below:

A - machine name, B - machine type/symbol

C – serial number, D – year of manufacture,

E - gross weight [kg], F – Quality control stamp,

G – machine name, name extension

# 1.2 PURPOSE

The PRONAR GN200 branch cutter is designed to current safety requirements and engineering standards.



# **ATTENTION**

The PRONAR GN200 branch cutter is compatible with PRONAR PRONAR WWT600 / 604D / 600P / 604P / 700T / 704T and WWP500 / 600 / 500U / 500UH multifunction arms.

The PRONAR GN200 branch cutter on the muti-function arm is used to trim the branches of trees along the road, trimming tree branches in orchards and gardens, as well as pruning shrubs. Arm design allows you to operate in hard-to-reach areas such as ditches or furrows behind protective barriers.

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

# **ATTENTION**



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

- for transporting people and animals,
- for transport of whatever materials or objects.

Using it as intended involves all actions connected with the safe and proper operation and maintenance of the machine. Due to the above, the user is obliged to:

• carefully read 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 a 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 cutter 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 cutter operation and work safety,
- have the required authorisation to drive and are familiar with the road traffic regulations and transport regulations.

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# 1.3 ACCESSORIES

TABLE 1.1 The PRONAR GN200 branch cutter options

SPECIFICATION	STANDARD	OPTION
Operator's Manual	•	
Warranty book	•	
POG01 adapter head		•

# 1.4 TERMS & CONDITIONS OF WARRANTY

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. These components include blades, slide strip, cylinder mounting bolts.

The warranty service only applies to factory defects and mechanical damage that is not due to the user's fault.

In the event of damage arising from:

- mechanical damage which is the user's fault, road accidents,
- by incorrect use, adjustment or maintenance, use of the branch cutter 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 accurately fills out the WARRANTY BOOK and warranty repair coupons. A missing date of purchase or sale point stamp, may make the user ineligible for any warranty repair or refund.

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 machine.

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

# 1.5 TRANSPORT

The branch cutter 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 cutter 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.

During transport install guards on branch cutter blades.

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

When being transported on a motor vehicle the branch cutter shall be secured in accordance with the road transport safety requirements. It is recommended to transport the branch cutter mounted on a wooden pallet.

When loading and unloading the branch cutter, 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.

SECTION 1 PRONAR GN200

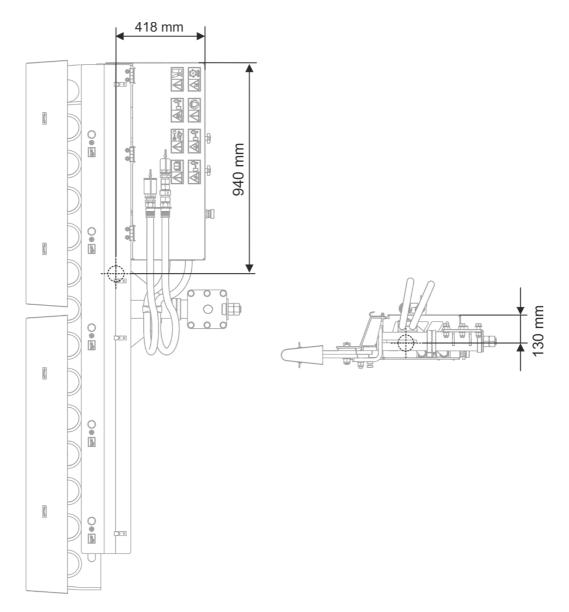


FIGURE 1.2 Location of centre of gravity of the GN200 branch cutter.

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 particular 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 transferring branch cutter to other form 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 a 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.

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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 cutter 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 cutter is designed for operation by a single operator.
- If the information in this Operator's Manual is difficult to understand, contact the dealer, who runs an manufacturer authorised service, or contact the manufacturer directly.
- 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.
- Be aware of the residual risk. Use caution when operating this branch cutter 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 cutter 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 cutter 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.

SECTION 2 PRONAR GN200

 In order to limit occupational risks associated with exposure to noise during branch cutter operation use individual protection (hearing protectors). In order to reduce the level of noise during work the tractor cab window and door should be closed.

# 2.1.2 HITCHING AND UNHITCHING FROM CARRYING VEHICLE

- After hitching the machine, check the safeguards. Carefully read the tractor (carrying vehicle) Operator's Manual.
- Use only original bolts and guards to hitch the branch cutter to the multifunction arm.
- The multifunction arm to which the branch cutter will be hitched must be technically reliable and must fulfil the requirements of the branch cutter Manufacturer.
- Be especially careful when linking and disconnecting the machine. During these operations the blade guard should be on at all times.
- When hitching, there must be nobody between the branch cutter and the multifunction arm and the tractor.
- Do NOT disconnect the branch cutter from multifunction arm when in raised position. Exercise caution when unhitching the machine.
- Connect with multifunction arm only when the tractor/implement carrier engine is off.
- The branch cutter disconnected from the multifunction arm must rest on a stable, level surface.
- All branch cutter hydraulic quick couplers 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 lines.
   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 quick couplers to the branch cutter, 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 find its way under the skin and cause infections. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor. In the event of contact of oil with skin wash the area of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene).
- Use the hydraulic oil recommended by the Manufacturer. Never mix two types of oil.
- After changing the hydraulic oil, the used oil should be properly disposed of. Used
  oil or oil which has lost its properties should be stored in original containers or
  replacement containers resistant to action of hydrocarbons. Replacement
  containers must be clearly marked and appropriately stored.
- Do not store hydraulic oil in packaging designed for storing food or foodstuffs.
- Rubber hydraulic lines must be replaced every 4 years regardless of their technical condition.
- Repair and replacement of hydraulic system elements should be entrusted to the appropriately qualified persons.

# 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 travel speed to the prevailing road conditions and other limitations arising from road traffic regulations limits.
- Before driving off, the multifunction arm and branch cutter must be folded into transport position.
- Do NOT leave machine raised and unsecured while the tractor (implement carrier) is parked. When parked, the machine should be lowered.

SECTION 2 PRONAR GN200

- Do not transport the branch cutter set in the working position.
- The branch cutter 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, cutting unit
  guards, cutting blades, and connection components for hydraulic systems.
- Reckless driving and excessive speed may cause accidents.
- When driving on public roads always put protective guards on the cutting unit blades.

## 2.1.5 MAINTENANCE

- During the warranty period, any repairs may only be carried out by Service authorised by the manufacturer. It is recommended that necessary repairs to machine should be undertaken by specialised workshops.
- In the event of any fault or damage, do not use the branch cutter until the fault has been corrected.
- During work use the proper, close-fitting protective clothing, gloves and appropriate tools. When working on hydraulic systems it is recommended to use oil resistant gloves and protective goggles.
- Any modification to the branch cutter frees the manufacturer from any responsibility for damage or detriment to health, which may arise as a result.
- Before undertaking any work on the branch cutter turn off the tractor/implement carrier 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 service 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/implement carrier engine turned off and the ignition key removed.
   Immobilise the tractor/implement carrier 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. Nonadherence 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 cutter 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 cutting blades must be replaced for new ones recommended by the manufacturer.
- In order to reduce the danger of fire the machine must be kept in a clean condition.

# 2.1.6 OPERATE THE BRANCH CUTTER

- Before lowering or lifting the branch cutter mounted on the multifunction arm, make sure there are no bystanders near the machine.
- Before you run the branch cutter, remove the transport cover.
- Before you run the branch cutter, set it in working position.

SECTION 2 PRONAR GN200

 Before starting the branch cutter, 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.

- Cut branches only when nominal PTO speed or nominal hydraulic power is reached. Do not overload the branch cutter.
- When cutting branches do not use pressure and oil flow exceeding the recommended values.
- Trimming the branches at high altitudes could hazardous for the operator.
   Operator's cab should be equipped with a Falling Object Protection 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 carrying vehicle cab, when the machine drive is engaged.
- Do NOT stand within the branch cutter's working zone.
- Do NOT approach cutting unit blades until the rotating cutting parts come to a complete standstill.
- Do NOT operate branch cutter while reversing. When reversing raise the machine and stop the branch cutter drive.
- Do not operate the branch cutter when visibility is limited or at night.
- Keep a safe distance from electric power lines during travel with raised branch cutter.

# 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/implement carrier and the machine while the engine is running and when the machine is being attached,
- being on the machine during drive operation,
- operating the branch cutter with removed or faulty safety guards,

 not maintaining safe distance from the danger zone or being within the zones while the machine is operating,

- The machine must never be used by unauthorised persons, including children, and people under the influence of alcohol, drugs or other intoxicants.
- cleaning, maintenance and technical checks when the multifunction arm is connected and working.

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

- operate the machine in prudent and unhurried manner,
- reasonably apply all the remarks and recommendations stated in the Operator's Manual,
- carry out repair and maintenance work in line with operating safety rules,
- carry out repair and maintenance work 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 cutter is marked with the information and warning decals listed in table (2.1). The symbols are positioned as presented 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 can be purchased from the Manufacturer of the machine or your PRONAR dealer. New assemblies, changed during repair, must be labelled once again with the appropriate safety signs. When cleaning the branch cutter, do not use solvents which may damage the coating of information decals and do wash them off with strong water jets.

SECTION 2 PRONAR GN200

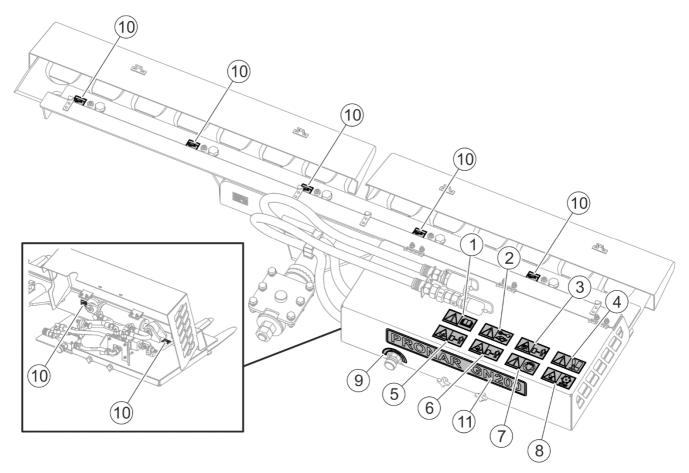


FIGURE 2.1 Locations of information and warning decals.

Meaning of symbols (TABLE 2.1)

**TABLE 2.1** Information and warning decals

ITEM	DECAL	MEANING
1		Before starting work, carefully read the Operator's Manual.
2		Before beginning servicing or repairs, turn off engine and remove key from ignition
3		Thrown out objects endanger the whole body. Keep a safe distance from the operating machine.

ITEM	DECAL	MEANING
4		Danger of crushing toes or feet.
5		ATTENTION Cutting blades — do NOT approach an operating machine.
6		ATTENTION Cutting blades — do NOT approach an operating machine.
7		High noise level warning.
8	STOP	Do not touch any rotating elements until they come to a complete standstill.
9		Hydraulic oil flow sticker
10		Lubrication points
11	PRONAR GN200	Machine type

Numbers in the item column correspond to decals in figure (2.1)

3

# DESIGN AND OPERATION

# 3.1 TECHNICAL SPECIFICATION

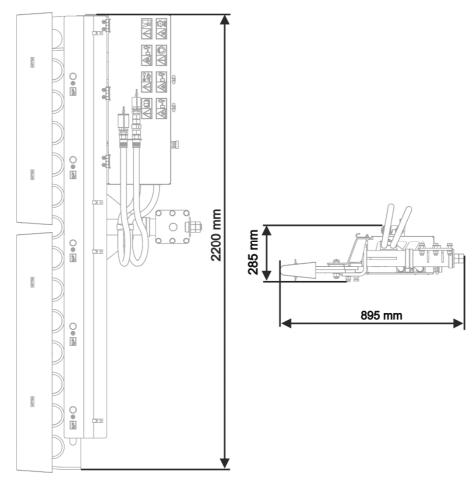


FIGURE 3.1 Basic dimensions

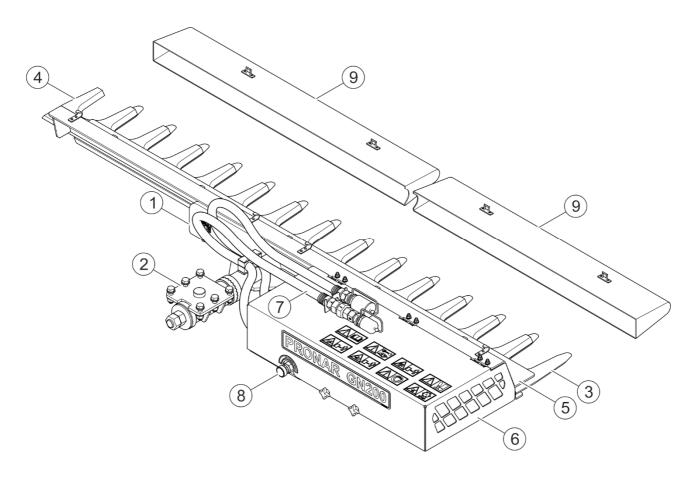
TABLE 3.1 BASIC TECHNICAL DATA

	Unit	GN200
Dimensions and weight		
Transport length:	mm	895
Transport width:	mm	2200
Transport height:	mm	285
Cutting width:	mm	2000
Tare weight	kg	250
Technical specification		
Method of linking with carrying vehicle	-	Square plate 140x140 - 6 x M14x50
Transmission type	-	hydraulic
Maximum cutting diameter	mm	Ø100
Number of cutting blades	pc.	14
Cutting speed adjustment	-	stepless

SECTION 3 PRONAR GN200

**Carrying vehicle requirements** The WWT600 / 604D / 600P / 604P / 700T / 704T Multifunction arm – use without TYP60 and TYP80 couplers Implement carrier type The WWP500 / 600 / 500U / 500UH Multifunction arm - requires POG01 adapter head and TYP80P coupler Nominal oil flow rate I/min 80 Nominal oil working pressure 210 bar Hydraulic supply 1x supply; 1x return pc. Connection socket size 1" - for supply/return sections

# 3.2 GENERAL DESIGN



# FIGURE 3.2 General design.

(1)- mount body; (2)-connection; (3)-lower blade; (4)-upper blade; (5)-front cover; (6)-hydraulic drive cover; (7)-hydraulic lines; (8)-hydraulic oil flow knob; (9)-cutting blade transport guards.

Branch cutter consists of the mount body (1) (Figure 3.2) with attached a fixed bottom blade (3) and connection (2) to connect the branch cutter to multifunction arm.

Upper blade (4) driven by double-acting hydraulic cylinder supplied by hydraulic lines (7) from the multifunction arm cuts the branches. Blade drive hydraulic system is located under the guard (6) fitted on hinges to the front guard (5). Blade speed (4) is controlled by the hydraulic flow regulator knob (8).

During transport cutting units (3) and (4) should be protected by guards (9).

4

# **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.

# NOTE

Before using the branch cutter always check its technical condition. In particular check the technical condition of the cutting unit, drive system, and integrity of protective guards.

Before hitching to the multifunction arm, the machine operator must check the technical condition of the branch cutter 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 cutting unit, 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/implement carrier engine, check all systems and perform a test run before beginning work. In order to inspect:

- hitch the branch cutter to the multifunction arm (see "HITCHING TO MULTIFUNCTION ARM")
- set in working position,
- remove the cutting unit guards (Figure 5.1);
- Power up the multifunction arm, and then use the control panel to start the branch cutter.

Engage branch cutter drive for 3 minutes and check the following:

SECTION 4 PRONAR GN200

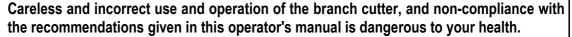
• that there is no knocking or noise in the hydraulic cylinder arising from scraping or grinding of metal elements,

Cutting blades do not have excessive play

The branch cutter operation without load should be smooth. Shaking of cutting unit and whole machine is not acceptable, nor is abnormal noise and vibrations coming from loose nut and bolt connections. After a complete stop, check cutting blade mounting. Check the hydraulic cylinder and hydraulic line connections for oil leaks.

# **DANGER**

Before using the branch cutter, carefully read this operator's manual.





The implement must never be used by persons who are not authorised to drive agricultural tractors/implement carriers, 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 cutter, 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 CHECK TECHNICAL CONDITION**

When preparing the multifunction arm for use, check individual elements 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.	
Check if hydraulic lines and linkage are correctly installed	Check if correctly installed	ork
Technical condition of the hydraulic system.	For details please refer to section "DRIVE SYSTEM MAINTENANCE"	Daily before beginning work
Check if all main nut and bolt connections are properly tightened	Torque values should be according to table (5.2)	oefore be
Technical condition of drive system	Check the mounting of the hydraulic cylinder and cutting blades.	Daily t
Lubrication points	Lubricate in accordance with the "Lubrication" section	
Technical condition of cutting blades	Assess visually and sharpen, if necessary	



# **NOTE**

Do NOT use branch cutter that is out of order.

# 4.3 HITCHING TO EXTENSION BOOM

The PRONAR GN200 branch cutter can be used with the WWT600 / 604D / 600P / 604P / 700T / 704T multifunction arm without the TYP60 and TYP80 connections and WWP600 / 500 / 500U / 500UH in conjunction with the POG01 adapter and TYP80P connection (Figure 4.1).



#### NOTE

Before attaching the branch cutter, the user must carefully read the operator's manuals of the branch cutter, tractor/implement carrier and multifunction arm and observe all instructions contained in the manuals.



## **DANGER**

When hitching, there must be nobody between the machine and the tractor/implement carrier. Exercise caution when hitching the machine.

# **DANGER**



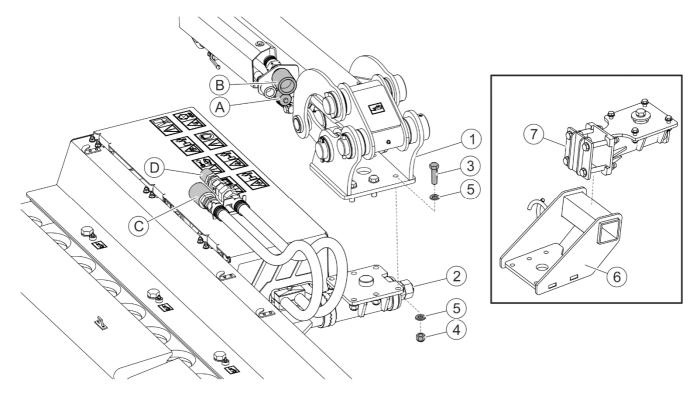
Before hitching the branch cutter, turn off the tractor/implement carrier engine and remove the key from the ignition. Ensure that unauthorised persons do not have access to the tractor/implement carrier cab.

Check technical condition of the branch cutter guards and its general technical condition.

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

- Control the multi-function arm and bring its connector (1) to the connector (2) of the branch cutter.
- Using the control panel, position the multifunction arm connector (1) above the branch cutter connector (2).
- Immobilize the tractor/universal implement carrier and prevent it from moving;
- Connecto the multifunction arm connector (1) with the branch cutter connector (2) using six fastening bolts (3).
- When connecting the branch cutter connector (2) with WWP600, WWP500, WWP500U or WWP500UH multifunction arm connector (1), use POG01 adapter head
   (6) with TYP80P connector (7).
- Connect quick couplers of multifunction arm hydraulic lines (A) i (B) with branch cutter hydraulic system connectors (C) and (D).

Using multifunction arm control panel raise branch cutter.



# FIGURE 4.1 Hitching to multifunction arm

(1)- multifunction arm connector; (2)- branch cutter connector; (3) fixing bolts; (4)-nuts; (5)-washers; (6) POG01 adapter; (7)-TYP80P connector; (A) multifunction arm hydraulic quick coupler socket; (C)- branch cutter hydraulic quick coupler socket; (D)- branch cutter hydraulic quick coupler return plug.



# **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 lines to the branch cutter, make sure that the hydraulic system of the multifunction arm is not under pressure.

# 4.4 TRANSPORTING THE MACHINE

#### **ATTENTION**



Before driving on public roads in order to transport the multifunction arm with the branch cutter to the work site and back, the multifunction arm must be folded to its transport position.

When driving on public roads, comply with the road traffic regulations in force in the country in which the machine is used.

Before driving onto a public road, check if all the lights and warning plates on the multifunction arm are properly mounted and visible.

The multifunction arm may not be used or transported in conditions of limited visibility.

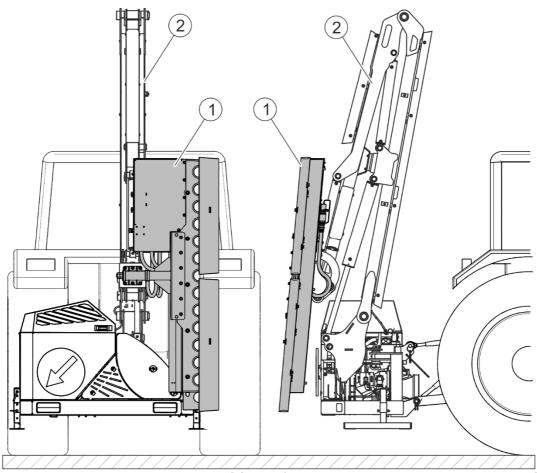


FIGURE 4.2 Example transport position of the branch cutter on the multifunction arm

(1)-branch cutter in the transport position; (2)- multifunction arm.

For transport to work site and back, set the multifunction arm in the transport position (Figure 4.2), so that the transport width of the multifunction arm along with the branch cutter was minimum, and the branch cutter does not protrude beyond the outline of the tractor and

secure the machine in accordance with the multifunction arm operator's manual. Protect the branch cutter cutting unit with protective guards (Figure 5.1).



# **DANGER**

The drive of the branch cutter must not be turned on when the multifunction arm is in its transport position.

# 4.5 BRANCH CUTTER WORKING POSITION AND OPERATION

# 4.5.1 SET THE BRANCH CUTTER IN WORKING POSITION

To set the branch cutter in working position:

- Remove the branch cutter cutting unit transport protective guards (Figure 5.1)
- Control the relevant hydraulic circuits and position the multifunction arm so as to place the branch cutter in the working area (FIGURE 4.3)

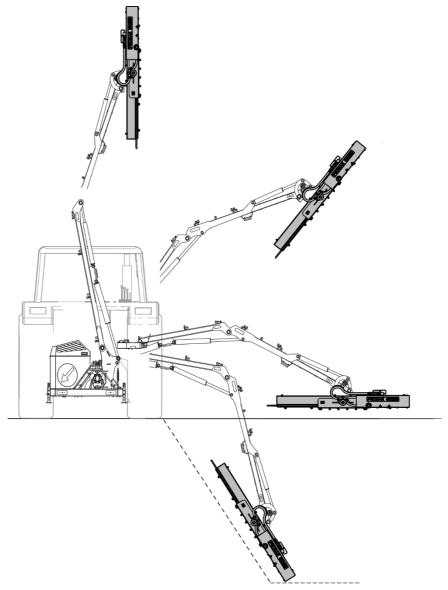


FIGURE 4.3 Examples of the branch cutter working positions of on the multifunction arm.

#### 4.5.2 OPERATE THE BRANCH CUTTER

# **DANGER**



The branch cutter may only be started when all guards are in place and the cutting unit is set in working position.

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

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

Do not operate the branch cutter when visibility is limited or at night.

When branch cutter is set in operating position, you can start the cutting blade drive using the multifunction arm controls.

Engage appropriate gear of the carrying vehicle (tractor) and start working.

# HIGH NOISE LEVEL WARNING



Depending on the working conditions, the tractor (implement carrier) with the machine may generate noise exceeding the level of 85dB at the driver position. In such conditions the driver should apply individual protection (protective ear guards).

In order to reduce the level of noise during work the tractor cab window and door should be closed.

During branch cutter operation, the multifunction arm operator must ensure unrestricted visibility of the machine and work site so that the operator may see obstacles and possible hazards in the route of the branch cutter, such as power lines, poles, fences, etc.).

#### DANGER

Bystanders should remain at a safe distance from the branch cutter during operation on raised arm because of the risk of various materials (splinter, branches etc.) falling and being thrown by the branch cutter.



# **DANGER**

During operation with the arm of the multifunction arm raised, keep the arms and branch cutter at a safe distance from overhead power lines (FIGURE 4.4).

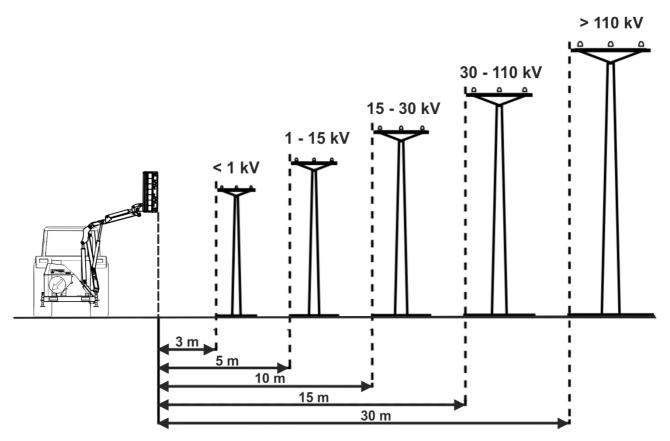


FIGURE 4.4 Safe distances of the machine from power lines.

In line with regulations in force, it is not acceptable to place work stations, machines or devices directly below overhead power lines or at a distance, calculated horizontally from extreme lines, lower than (FIGURE 4.4):

- 3 m for lines with rated voltage up to 1 kV,
- 5 m for lines with rated voltage above 1 kV and up to 15 kV,
- 10 m for lines with rated voltage above 15 kV and up to 30 kV,
- 15 m for lines with rated voltage above 30 kV and up to 110 kV,
- 30 m for lines with rated voltage above 110 kV.

If it is impossible to keep the minimum distances in order to work safely in the vicinity of power lines, then apply to the nearest Power Utility and have the lines deenergised for the duration of operation.

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#### NOTE



Operation and transport by the tractor/implement carrier with hitched multifunction arm and branch cutter is allowed only on slopes with the maximum inclination of 7°. However, due to changing location of centre of gravity depending on type of carrying vehicle (tractor) and length of multifunction arm, the allowable slope inclination angle may be smaller. That is why the user must exercise due caution and determine the maximum slope inclination angle for operating the carrying vehicle (tractor) with the branch cutter.

If the full reach of the multifunction arm is to be used, make sure that stability of the carrying vehicle (agricultural tractor) will be maintained.

While working on slopes, do not raise the branch cutter more than 0,5 m above the ground.

In the event of a tilt of the carrying vehicle (agricultural tractor) with the multifunction arm, immediately lower the branch cutter to the ground and stop the carrying vehicle (agricultural tractor).

When the multifunction arm with branch cutter is raised, always start operating the branch cutter at the highest point and move the cutting unit gradually downward. When the operation of the branch cutter involves the falling of diverse plant material (branches) from a height, secure the work site so that no one is present in the working zone and of the falling plant material.

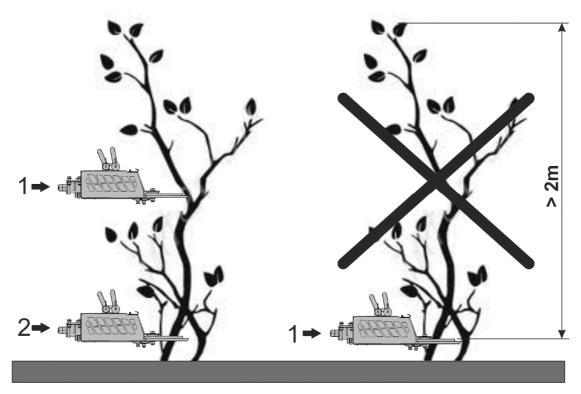


FIGURE 4.5 The method and order of trimming the branches with branch cutter.

• 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 (Figure 4.5).

 Do not operate the branch cutter near ground. This creates a risk of damage to the cutter blades.

- When working with the branch cutter do not move the multifunction arm. This could cause damage to the cutter blades.
- Do not operate the branch cutter with cutting blades dirty. Sand, stones and other debris may cause blunting or damage to the blades.
- Branch cutter is designed only to cut branches and other wood materials with a diameter of not more than 10 cm
- Do not operate branch cutter when there is significant play between the blades or without lubricant.

While operating the branch cutter, pay attention to uneven surface and obstacles on the route of moving multifunction arm. If you encounter an obstacle stop the vehicle as soon as possible and bypass the obstacle with raised branch cutter.

The speed of the tractor/implement carrier with operating branch cutter depends on the thickness and quantity of cut branches, as well as the type of terrain.

Tractor speed must be reduced if:

- The number of branches is large or branches are too thick,
- 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 cutter on the multifunction arm and disengage the branch cutter drive.

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

#### 4.5.3 REMOVE BLOCKAGES

#### **DANGER**



If branch cutter blades get stuck on some material, turn off the tractor engine and remove the key from the ignition. Secure tractor using parking brake and ensure that unauthorised persons, especially children, have no access to the tractor.

In the event of work requiring the branch cutter to be raised, 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).

If the branch cutter drive system is blocked during operation, disengage the drive and check the cause of blockage.

If the blockage is a result of foreign objects (stones, heaps of soil), then put on protective gloves and remove accumulated material (with a sharp tool), and then check the condition of the cutting blades and their fastening.

If the branch cutter drive is blocked with excessive number of branches cut, do the following:

- Stop branch cutter drive;
- Reverse the branch cutter to release the cutting blades;
- Start the branch cutter and make another attempt at cutting branches.

To minimize the risk of blocking the branch cutter drive, limit tractor/implement carrier speed while operating the branch cutter.

#### 4.5.4 ADJUST CUTTING BLADE SPEED

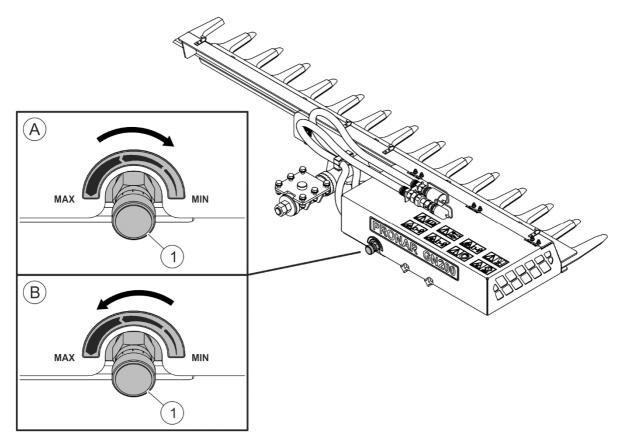


FIGURE 4.6 Adjust cutting blade speed.

(1)-hydraulic oil flow regulator dial; (A) reduce oil flow; (B)- increase oil flow.

Hydraulic system supplying the hydraulic cylinder that drives the cutting unit features an oil flow regulator (Figure 4.6). This allows the operator to match the cutting blade speed to the individual needs.

Turn the knob clockwise to reduce oil flow rate. Reduction in oil flow reduces the cylinder and the cutting blade speed.

Turn the knob anticlockwise to increase oil flow rate. Increase in oil flow increases the cylinder and the cutting blade speed.

# 4.6 UNHITCHING FROM EXTENSION BOOM



# DANGER

Reduce pressure prior to disconnecting the hydraulic system.

In order to detach the branch cutter from the multifunction arm (FIGURE 4.1), proceed as follows:

- lower the branch cutter on 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 covers.
- disconnect multifunction arm quick couplers from branch cutter hydraulic system and secure with plugs,
- disconnect the multifunction arm connector (1) from branch cutter connector (2) by loosening the six fixing screws (3).,

Once detached from multifunction arm, the branch cutter should rest on the ground.

5

# **MAINTENANCE**

# 5.1 INSPECTION AND DISASSEMBLY OF SAFETY GUARDS

The branch cutter may only be used when all the safety guards and other protective elements are technically sound and correctly positioned. Safety guards protect the drivetrain components from slivers of wood. Cutting unit transport protection guard should be installed during transport. In the event of loss or destruction of the safety guards, they must be replaced with new ones.

# Â

#### **DANGER**

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

Figure 5.1 show how to dismantle the cutting unit transport safety guard

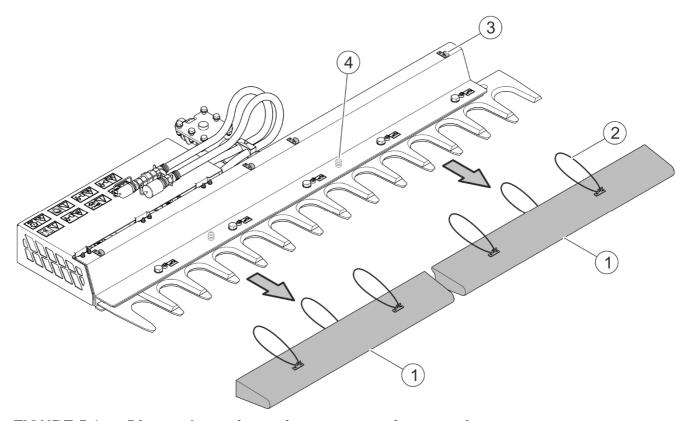


FIGURE 5.1 Dismantle cutting unit transport safety guard.

(1)-blade transport guards; (2)-rubber fastening cords; (3)-hook (4)-fastening stud.

To remove the blade transport safety guards (1) remove rubber fastening cords (2) from four hooks (3) and two fastening studs (4), and then remove the guards from cutting blades.

Pay special attention to correct mounting of safety guards. Rubber cords (2) attached to hooks (3) and fastening studs (4) should firmly keep guards (1) on the cutting unit.

# **ATTENTION**



Do NOT transport the branch cutter, when the transport safety guards are damaged or incorrectly fitted.

Do NOT start the branch cutter when the transport guards are installed on the cutting unit.

# 5.2 INSPECT AND REPLACE THE CUTTER BAR BLADES



### **DANGER**

Before inspecting or replacing the cutting blades, turn off the tractor/implement carrier engine and remove the key from the ignition. Branch cutter must firmly rest on a flat and hard surface.

Regularly inspect the cutting blades. Visually inspect the blades of the upper and lower cutting unit. The blades must be sharp. A bent, cracked or otherwise damaged blade must be replaced with a new one provided by the branch cutter manufacturer.

In order to sharpen or replace cutting blade, please visit the manufacturer's authorized service.

Before proceeding to replace the blades, clean the residue of mown material from the branch cutter.



#### NOTE

Damaged or bent cutting blade can damage the branch cutter and pose a risk to the operator.



# **DANGER**

Use only the blades provided by the branch cutter manufacturer.



# **NOTE**

Inspect the condition of the cutting blades and their proper mounting every time before starting to work, and if you accidentally hit an obstacle such as a stone, concrete, metal, etc.

# 5.3 DRIVE SYSTEM MAINTENANCE



### **DANGER**

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

Periodically inspect the condition of hydraulic line connections (2) (Figure 5.2), make sure it operates correctly and check the hydraulic cylinder (1) mounting points.

# 5.3.1 CHECK HYDRAULIC SYSTEM TIGHTNESS



Connections of hydraulic lines 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.

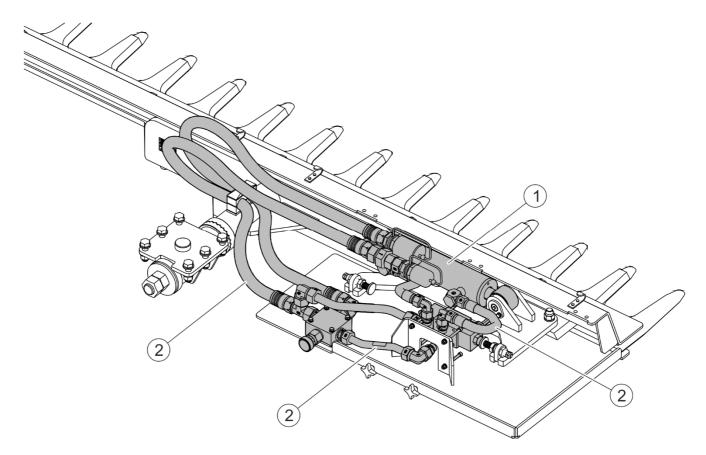


FIGURE 5.2 Check the connections of hydraulic lines supplying power to the hydraulic cylinder.

(1) hydraulic cylinder, (2) hydraulic lines.



# **NOTE**

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

The hydraulic system should be completely tight sealed. In the event of noticing leaks stop using the machine until faults are remedied.

In the event of confirmation of an oil leak on hydraulic line connections, tighten connections, and if this does not remedy faults then change line or connection elements. Change of sub assemblies is equally required in each instance of mechanical damage. Also, pay attention to ensure that flexible hydraulic lines are not fractured.



Flexible hydraulic lines should be replaced after 4 years of use.

Make sure that the oil in the branch cutter hydraulic system is of adequate grade. Do not add hydraulic oil of other grade. In a new branch cutter, the hydraulic system is filled with HL46 hydraulic oil.

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

#### 5.3.2 OIL FLOW DIRECTION SWITCHING SYSTEM

Oil flow direction switching system in branch cutter manifold (Figure 5.3) is set in factory and does not require further adjustment. However, it may need adjustment after the replacement of the drive system components.

For initial adjustment, do the following:

- dimension (A) (approx. 30 mm) (Figure 5.3) should be set so that it is the same in adjustment screws (2). Set dimension (A) by means of the nuts (4).
- Dimension (B) (approx. 360 mm) must be obtained through setting the same dimension (A) on both sides of the splitter and adjusting the position of nuts (3).

The final adjustment must be performed operating the branch cutter.

If branch cutter drive does not operate correctly, contact the manufacturer's authorized service.

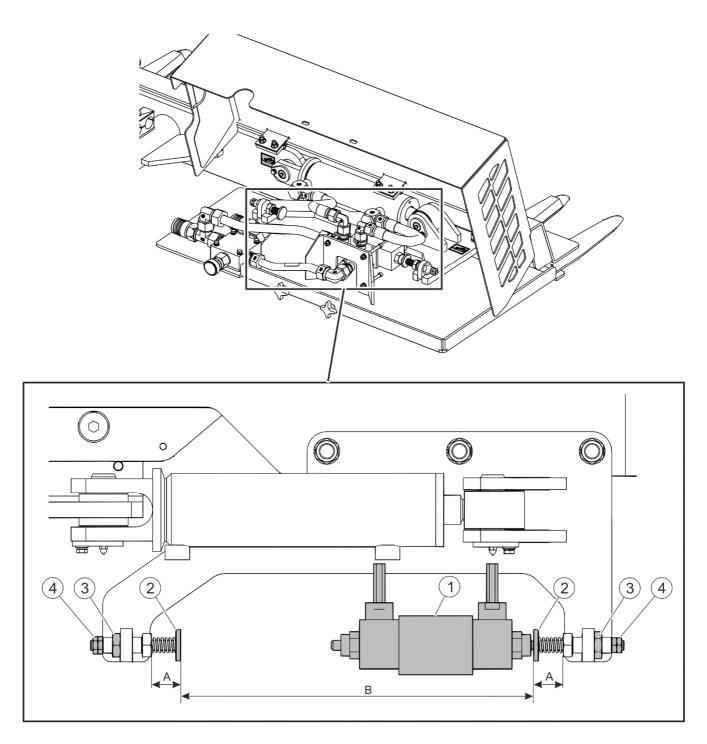


FIGURE 5.3 Adjust oil flow direction switching system.

(1)- splitter; (2)- adjustment screw; (3)- adjustment nut; (4)- adjustment nut; (A)- dimension: ~30 mm; (B)- dimension: ~360 mm

# 5.4 STORAGE

After completion of work the branch cutter should be carefully cleaned and washed with a water jet. While washing do not direct a strong water or steam jet at information and warning decals, or hydraulic lines. 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. Branch cutter should be kept in closed or roofed building.

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

During storage install guards on branch cutter blades.

# 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



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

Lubricate all grease nipples marked with a pictogram:



Lubrication points are shown in FIGURE 5.4 and detailed in Table 5.1.

**TABLE 5.1 LUBRICATION POINTS** 

ITEM	NAME	NUMBER OF LUBRICATION POINTS	TYPE OF GREASE	LUBRICATION FREQUENCY
1	Cutting unit	5	grease	daily
2	Hydraulic cylinder mounting points	2	grease	daily

Marking description in Item column TABLE 5.1 conforms with numbering shown (FIGURE 5.4)

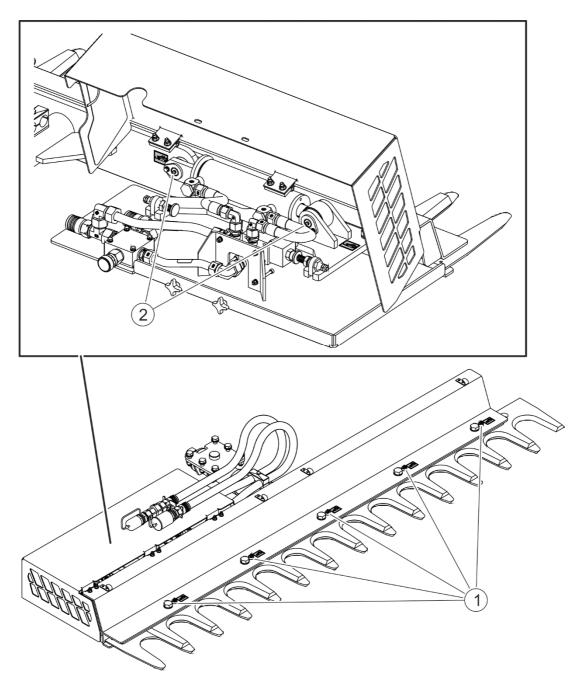


FIGURE 5.4 Lubrication points.

Lubrication points are described in table 5.1

# 5.6 TIGHTENING TORQUE FOR NUT AND BOLT CONNECTIONS

Unless other tightening parameters are given, during maintenance repair work apply appropriate torque to tightening nut and bolt 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	5.8	8.8	10.9		
DIAMETER [mm]	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** 

TYPE OF FAULT	CAUSE	REMEDY	
	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	
Branch cutter drive	Branch cutter hydraulic system defective	Check condition of the branch cutter hydraulic system	
won't start	Branch cutter hydraulic cylinder damaged	Repair or replace with a new one	
	Damaged bolts fastening the branch cutter hydraulic cylinder	Install new bolts	
	Faulty manifold or poorly adjusted oil flow direction switching system	Replace the manifold or adjust the system	
The multifunction arm won't move the branch cutter	Hydraulic system of multifunction arm is out of order	Check condition of the multifunction arm's hydraulic system	
Abnormal noise from branch cutter	Too much slack on hydraulic cylinder mounting bolts or clearances on bolt connections	Check mounting of hydraulic cylinder and tighten the bolt connections	
	The bolts that remove clearance between the cutting blades tightened too much	Loosen the tightening bolts	
Cutting unit blades slow	Cutting blades not lubricated	Lubricate	
	Insufficient oil flow rate	Check and set the oil flow regulator	
Branch cutter drive stops during operation	Multifunction arm or branch cutter hydraulic system faulty	Repair at an authorised service point	
Problem when cutting branches	Damaged or blunt cutting blades	Repair or replace with a new one	

# **NOTES**
