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USER MANUAL

MOBILE WOOD CHIPPER PRONAR MR-15

TRANSLATION OF THE ORIGINAL USER MANUAL



VERSION: 1B-05-2020 PUBLICATION NO.: 620.01.UM.1A.PL



INTRODUCTION

1.1 INTRODUCTION

Information contained in the publication is current as at the date of its preparation. Some measures, illustrations and completion (standard, additional and optional equipment) contained in this publication may not correspond to the actual state of the machine delivered to the user becaouse of its updating.

The drawings in this publication are intended to explain the operating principle of the machine and may differ from the actual state. It cannot be the basis for any claims in this respect.

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 publication The User Manual is the basic equipment of the machine. Before starting the operation, the user must read this manual and observe all recommendations contained in it. This will ensure safe operation and failure-free operation of the machine. The machine was constructed in accordance with the applicable standards, documents and current legal regulations.

If the information contained in the User Manual turns out to be incomplete, please contact the store where the machine was purchased or the manufacturer directly. After purchasing the machine, we recommend that you write down the serial numbers of the machine and the most important components in the fields below.

Machine serial number				
Engine serial number				
Serial number of the dri- ving axle				

This User Manual contains important safety instructions and operating rules for the machine. The User Manual should be kept close to the machine and it should be available to persons authorized to operate it. Keep this User Manual for future reference. If the document is lost or damaged, contact the seller or the manufacturer for a

duplicate. The User Manual is intended for the end user. Therefore, some maintenance required is detailed in the inspection tables but

the procedure is not described in this publication. Call the manufacturer's authorized service to carry maintenace works.

1.2 SYMBOLS USED IN USER MANUAL

DANGER

Information, descriptions of hazards and precautions as well as instructions and orders related to the safe use conatined in the User Manual are marked with a box with the word **DANGER**. Non-adherence to the recommendations may pose a threat to the health and life of the machine operator or bystanders.

CAUTION

Particularly important information and recommendations, the observance of which is absolutely necessary, are highlighted in the text with a box with the inscription **CAUTION**. Non-observance of the recommendations described above may result in damage to the machine due to improper operation, adjustment or use.

NOTE

Additional hints in the User Manual describe useful information on the operation of the machine and are highlighted by a box with the word **NOTE**.





U.02.1.EN

1.3 DETERMINATION OF DIRECTIONS IN USER MANUAL



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

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

Right turn - clockwise rotation of the mechanism (operator facing the mechanism). *Left turn* - counterclockwise rotation of the mechanism (operator facing the mechanism).

U.03.2.EN

1.4 INSPECTION OF THE MACHINE AFTER DELIVERY

The manufacturer ensures that the machine is technically efficient, has been checked according to inspection procedures and is ready for use. However, this does not release the user from the obligation to inspect the machine after delivery and before its first use. The machine is delivered to the User completely assembled. After delivering the machine, the User is obliged to check the completion of the machine in accordance with the order.

INSPECTION RECOMMENDATIONS

- Check the completion of the machine according to the order.
- Check the technical condition of the safety guards, and the correct opening and closing.
- Check the condition of the paint coat, check whether there are traces of

corrosion.

- Check the machine for damage resulting from improper transport of the machine to its destination (dents, punctures, bends or broken details, etc.).
- Check: level of hydraulic oil in the reservoir, level of lubricating oil in the engine.
- Check the condition of tires and rims, check tire pressure.
- Top up the fuel tank.

In case of detected irregularities, they should be reported directly to the seller in order to remove the defects. Incorrect level of operating fluids (except for fuel) may indicate that a leak has occurred. Check the machine for leaks.

U.26.2.EN

1.5 REVIEWS

During use of the machine, it is necessary to constantly check its technical condition and perform maintenance procedures that will keep the machine in good technical condition. Therefore, the user is obliged to perform all maintenance and adjustment activities specified by the Manufacturer in accordance with the assumed schedule.

Repairs during the warranty period and all inspections, except for the daily inspection and inspection every 50 hours of operation, may be performed only by authorized service points.

Motor repairs and engine inspections not described in the manual may only be performed by an authorized service point of the engine manufacturer.

The warranty is void in the event of unauthorized repairs, changes to factory settings or activities that have not been considered possible by the machine operator.

The service and inspections of the drive motor are described in the chapter *Motor maintenance*.

The complete inspection of the machine

consists of the following activities:

- periodic inspection of the machine with the assumed interval in accordance with the guidelines contained in the *Periodic inspections, technical service* chapter,
- inspection of the motor with accessories in accordance with the guidelines contained in the *Motor maintenance* chapter,
- Perform lubrication in accordance with the *Lubrication Schedule* chapter.

The run-in inspection should be performed after 50 hours of motor operation, but not later than 100 hours. Subsequent inspections should be performed by an authorized service each time every 250 hours of motor operation, i.e. after 250, 500, 750 hours, etc. (during the warranty period). Acceptable delay in performing the inspection cannot be longer than 50 hours from the assumed interval. The scope of these inspections is specified in the User's Manual.

U.41.1.EN



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EC DECLARATION OF CONFORMITY OF THE MACHINERY

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

Descript	tion and identification of the machinery
Generic denomination and function: Mobile wood chipper	
Туре:	MR-2
Model:	MR-15
Serial number:	
Commercial name:	Mobile wood chipper PRONAR MR-15

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

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

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

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Roma

Narew, the _____2020-07-03

Full name of the empowered person position, signature

Place and date

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CHAPTER 1

GENERAL INFORMATION

1.1 IDENTIFICATION





The mobile chipper PRONAR MR-15 is marked with rating plates (1) and (2), placed on the right side of the frame - figure (1.1). The serial number (2) is located next to the rating plates. When purchasing the Table 1.1Marking on the rating plate

Symbol	Meaning
А	Approval certificate number
В	VIN number
С	Permissible gross weight
D	Permissible load on the coupling
Е	Permitted axle load 1
F	Permissible axle load 2
G	General term and function
Н	Machine symbol / type
I	Year of production
J	Kerb weight
К	Serial number
L	Quality Control mark

machine, check that the serial numbers on the machine correspond to the number entered in the *Warranty Card*, in sales documents and in the *User Manual*.

The table below presents the meaning of the individual fields on the rating plates (1.1).

NOTE

In the event of the need to order spare parts or in the event of problems, it is very often necessary to provide the VIN and serial number of the machine

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1.2 INTENDED USE

The PRONAR MR-15 mobile chipper has been designed in accordance with the applicable safety requirements and machine standards.

The MR-15 chipper is designed for shredding branches and bushes up to a maximum diameter of 15 cm. Use for other purposes is not in accordance with the intended purpose.

Transportation of people, animals and other materials is forbidden and considered as not in accordance with the intended use. When operating the machine, follow the road traffic regulations and transport regulations in force in a given country, and any breach of these regulations is considered by the Manufacturer as use not in accordance with the intended use.

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

The machine may not be used for purposes other than those for which it is intended, and in particular for grinding:

- roots from soil, stones, rocks,
- construction waste, plastics, glass, metal, paper, textiles.

It is forbidden to transport any cargo, especially people and animals.

Therefore, the user is obliged to:

- read the contents of the User Manual and follow its recommendations,
- understand the principle of operation of the machine and its safe and proper use,
- adherence to established maintenance and adjustment plans,
- compliance with general safety regulations at work,
- accident prevention,
- comply with the road traffic and transport regulations in force in the

Content	Unit	Requirements
Tow bar	-	Tow bar for trailers,
		ball diameter Ø 50 mm
Height of the tow bar	mm	450
Electric socket for lighting installation	-	13 poles according to ISO 11446
Electrical system voltage	V	12

 Table 1.2
 Requirements of the carrier for the machine towing

country where the machine is used.

The machine may only be used by persons who:

- read the content of this publication,
- have been trained in handling and safe work.

E.5.2.620.02.1.EN

1.3 EQUIPMENT

Table 1.3Equipment of the mobile chipper PRONAR MR-15

Equipment	
User Manual	S
Warranty Card	S
Electric harness for lighting installation	S
Folding rotating discharge chimney	S
Rigid rotating discharge chimney	0
Overrun brake	S
Support wheel	S
Wheel chocks	S

Equipment: <u>S</u>tandard; <u>O</u>ptional

E.5.2.620.03.1.EN

1.4 WARRANTY CONDITIONS

PRONAR Sp. z o.o. in Narew guarantees the efficient operation of the machine when it is used in accordance with the technical and operational conditions described in the *User Manual*. Defects revealed during the warranty period will be removed by the Warranty Service. The repair period is specified in the *Warranty Card*.

The warranty does not cover parts and subassemblies of the machine that are subject to wear in normal use conditions, regardless of the warranty period. The warranty services apply only to such cases as: mechanical damage not attributable to the user, factory defects of parts, etc.

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

- mechanical damage caused by the user's fault, road accident,
- from improper operation, adjustment and maintenance, use of the machine contrary to its intended purpose, shredding of prohibited materials,
- use of a damaged machine,
- · performing repairs by unauthorized

NOTE

The seller obligation is to carefully and precisely fill out the *Warranty Card* and complaint coupons. The lack of e.g. the date of sale or the stamp of the point of sale exposes the user to not accepting any complaints

persons, improper repairs,

 making any unauthorized changes to the structure of the machine

the user loses the warranty.

The user is obliged to immediately report all noticed paint defects or traces of corrosion, as well as order the removal of defects, regardless of whether the damage is covered by the warranty or not. Detailed warranty conditions are given in the *Warranty Card* attached to the newly purchased machine.

Modifications to the machine without the written consent of the Manufacturer are prohibited. In particular, welding, drilling, cutting and heating the main structural elements of the machine, which directly affect the safety of work with the machine, are not allowed.

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1.5 TRANSPORT



Figure 1.2Transport handles(1) transport handle(2) lifting eye

The MR-15 mobile chipper is ready for sale completely assembled and does not require packing. Packing is only required for the machine's technical and operational documentation and any additional equipment.

Delivery to the user is carried out by road transport on a loading platform or by independent transport (towing with a carrier). It is allowed to transport after connecting chipper to the carrier, provided that the driver of the carrier familiarizes himself with the chipper's User Manual, in particular with safety information and the rules of connection and transport on public roads.

The loading and unloading of the machine from the loading platform should be carried

Incorrect application of securing measures may cause an accident

out using a loading ramp, crossovers, low chassis trailer, using a carrier, an overhead crane or a lift. Persons operating reloading equipment should have the required authorizations to use these devices. When loading and unloading, comply with the general principles of health and safety during reloading work. The machine may be moved with lifting devices only by using the eye (2) - figure (1.2).

During road transport, the machine should be securely fastened to the loading platform by means of certified belts or chains equipped with a tensioning mechanism. In order to properly mount the machine, it is recommended to use the transport handle (1) - figure (1.2).

Chocks, wooden beams or other elements without sharp edges should be placed under the wheels of the machine to prevent it from rolling. Wheel blocks must be nailed to the car loading platform planks or otherwise secured to prevent their movement.

Use certified and technically efficient securing measures. Worn straps, broken fasteners, bent or corroded hooks or other damage may disqualify the agent from use. Please read the information contained in the operating instructions of the manufacturer of the securing agent used. The number of fastening elements (ropes, belts, chains, lashings, etc.) and the force required to tension them depend, among others, on the karb weight of the machine, vehicle structure, speed of travel and other conditions. It is therefore not possible to define the securing plan in detail.

A correctly secured machine will not change its position in relation to the transport vehicle. The fastening means must be selected in accordance with the guidelines of the manufacturer of these elements. In case of doubt, use a greater number of attachment points and securing the machine. If necessary, dismantle the discharge chimney.

During reloading work, special care should be taken to avpid damage of parts of the machine equipment and the paint coating. The karb weight of the chipper is given in

During independent transport the carrier's operator should read this manual and follow its recommendations. In case of road transport, the machine must be attached to the vehicle's platform in accordance with the safety requirements during transport. The driver of the vehicle should exercise particular caution while driving. This is due to the vehicle's center of gravity shifting upward when the machine is loaded.

table (3.1).

In the event of independent transport by the user, the contents of the User Manual should be read and adhered to. Independent transport involves towing the machine with a carrier to its destination.

The driver of the carrier should read the contents of the User Manual, especially with the safety information and the rules of connecting and transporting on public roads. While driving, adjust the driving speed to the prevailing road conditions, but it must not be higher than the maximum design speed of 90 km/h.

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1.6 THREAT TO THE ENVIRONMENT

A hydraulic oil leak is a direct threat to the natural environment due to the limited biodegradability of the substance. Maintenance and repair works, which involve the risk of an oil leak, should be performed in rooms with an oil-resistant surface. In the event of oil leaking into the environment, first of all contain the source of the leak, and then collect the leaked oil using available materials. Collect the remaining oil with sorbents or mix the oil with sand. sawdust or other absorbent materials. The collected oil contamination should be stored in a sealed and marked container, resistant to hydrocarbons, and then sent to a point dealing with oil waste utilization. The container should be kept away from heat sources, flammable materials and food.

The oil that is used up or cannot be reused

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

Do not store waste oil in food containers. Store used oil in hydrocarbon-resistant containers..

NOTE

The hydraulic system of the machine is filled with HLP 46 oil.

due to the loss of its properties is recommended to be stored in the original packaging in the same conditions as described above. Waste code 13 01 10 (hydraulic oil). Detailed information on oils can be found in the product safety data sheets.

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1.7 WITHDRAWAL FROM USE

If the user decides to withdraw the machine from use, he must act comply with the regulations in force in the given country regarding withdrawal from use and recycling of machines withdrawn from use. Before proceeding to dismantle the machine, oil must be completely removed from the hydraulic system.

In the event of replacement of parts, worn or damaged elements should be taken to

During disassembly, use appropriate tools, devices (overhead cranes, cranes, lifts, etc.), use personal protective equipment, i.e. protective clothing, shoes, gloves, glasses, etc.

Avoid skin contact with oil. Avoid oil leakage

a collection point for recyclable materials. Used oil as well as rubber or plastic elements should be taken to facilities dealing with the utilization of this type of waste

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CHAPTER 2

SAFETY OF USE

2.1 SAFETY RULES DURING THE USE OF THE MACHINE

- Before using the machine, the user should carefully read the contents of this publication and the *Warranty Card*. During operation, all recommendations contained therein must be followed.
- The chipper may only be used and operated by persons trained in the use of the machine. This publication provides information on the correct and safe operation and maintenance of the machine.
- If the information contained in the User Manual is difficult to understand, contact a seller who runs an authorized technical service on behalf of the manufacturer, or contact the manufacturer directly. Before starting work, familiarize yourself with all controls and indicators of the machine operation control.
- The User Manual should be available to the operator for all the time. Protect the User Manual against damage.
- Careless and improper use and operation of the machine, and non-compliance with the recommendations given in this User Manual is dangerous to life and health.
- Be aware of the existence of a minimal

risk, therefore the basic principle of using the machine should be the application of the principles of safe use and reasonable behavior.

- It is forbidden to use the machine by unauthorized persons, including children, people under the influence of alcohol and drugs or other intoxicating substances.
- Non-adherence to the rules of safe use may endanger the health of the operator and other peoples.
- It is forbidden to stay near the working machine (in the area of the danger zone - minimum 10m around the machine).
- Before each start-up of the machine, it is recommended to check that it is properly prepared for work, especially in terms of safety.
- The machine is not intended to transport any load (including people or animals).
- Before each transport of the machine, check the operation and completeness of the electrical lighting system.
- It is forbidden to use the machine contrary to its intended use. Anyone who uses the mobile chipper in a manner

inconsistent with its intended use, takes full responsibility for any consequences resulting from its use. Using the machine for purposes other than those provided by the Manufacturer is not in accordance with the intended use of the machine and may invalidate the warranty.

- The mobile chipper can only be used when all the covers and other protective elements are technically efficient and correctly positioned. In the event of damage or loss of the covers, they must be replaced with new ones.
- Before starting the machine operation, engage the parking brake and block the wheel with supporting chocks.
- It is forbidden to open the covers while the machine is running.

- It is forbidden to wear loose clothing, scarves, ties and jewelry (e.g. watches, wedding rings, rings, etc.) when working with the machine.
- Long hair must be properly shielded to prevent it from being caught in moving parts of the machine or the material to be chopped.
- The operator should use personal protective equipment such as protective clothing, goggles, helmet, ear protection, to reduce the risk of injury.
- In order to reduce the occupational risk related to exposure to noise during machine operation, use personal protective equipment (protective headphones).
- Do not leave the machine running unattended.
- Do not operate the machine in conditions of insufficient visibility.

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2.2 SAFETY DURING MACHINE CONNECTING

- The machine with the carrier can only be connected to the corresponding ball hitch.
- After connecting with the carrying vehicle, check the correct locking of the coupling. Connect the safety cable to the carrier.
- The carrier to which the machine will be connected must be technically efficient and must meet the requirements set by the manufacturer of the machine.
- Be especially careful when hitching the machine.
- There must be nobody between the machine and the carrying vehicle

during the connection.

- Before disconnecting the machine from the carrying vehicle, you must apply the parking brake. Place support chocks under the wheel.
- When disconnected from the carrying vehicle, the machine should stand on flat, level and properly hardened ground. Rest the disconnected chipper on the support wheel.
- Level the machine using the support wheel.
- Connect the lighting system cable and check the operation of individual lamps.

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2.3 SAFETYRULESWHENOPERATINGTHEHYDRAULICSYSTEM

- The hydraulic system is under high pressure during operation.
- Regularly check the technical condition of the connections and hydraulic lines. Oil leaks are inadmissible.
- In the event of failure of the hydraulic system, the machine must be decommissioned until the failure is remedied.
- In the event of injury from a powerful stream of hydraulic oil, contact a doctor immediately. Hydraulic oil can penetrate the skin and cause infections. If oil gets into eyes, rinse them with plenty of water and if irritation occurs, consult a doctor. In the event of contact of oil with the skin, wash the place of dirt with soap and water. Do not use 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 must be properly disposed of. Used oil or oil that has lost its properties should be stored in original containers or replacement containers resistant to hydrocarbons. Replacement containers must be clearly labeled and properly stored.
- It is forbidden to store hydraulic oil in packaging intended for food storage.
- Rubber hydraulic conduits must be replaced every 4 years, regardless of their technical condition.
- Repair and replacement of hydraulic system components should be entrusted to appropriately qualified persons.

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2.4 SAFETY DURING TRANSPORT

- 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 maximum speed of 100 km/h. Adjust the speed to the road conditions and limitations resulting from road traffic regulations.
- Before driving, release the parking brake, fold the support wheel to the transport position. Fold in and turn the discharge chimney parallel to the direction of travel.
- It is forbidden to transport people and animals on the machine and it is forbidden to transport any materials.
- Avoid damaged road surface, sudden

and variable maneuvers and high speed when turning.

- Reckless driving and speeding can cause an accident.
- It is forbidden to leave the machine unsecured. Securing consists in immobilizing the chipper with a parking brake and placing chocks under the wheel. Install the parking stand.
- Before using the machine always check its technical condition, especially in terms of safety. In particular, check the technical condition of the chassis and hitch. Check the operation and completeness of the lighting system.

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2.5 MAINTENANCE

- During the warranty period, any repairs may only be performed by a warranty service authorized by the manufacturer. It is recommended that any repairs should be performed by specialized workshops.
- In the event of any malfunctions or damage, the machine must be decommissioned until the repair.
- It is forbidden to perform maintenance or repair work with the machine turned on. When performing maintenance, adjustment or repair work, switch off the machine's engine and remove the ignition key. Close the door to the control panel.
- During work, use appropriate, closefitting protective clothing, gloves and appropriate tools. In case of works related to the hydraulic system, it is recommended to use oil-resistant gloves and protective glasses.
- During maintenance and repair work, restrict access to the machine only to necessary personnel.
- Any modifications to the machine release PRONAR Narew from liability for any damage or health detriment.
- Regularly check the technical condition of the safety devices and

the correct tightening of the screw connections.

- Regularly inspect the machine in accordance with the range specified by the Manufacturer.
- Before commencing repair work on hydraulic system, reduce oil pressure.
- It is forbidden to perform independent repairs of power hydraulics, automatics or engine components. In the event of damage to these elements, repair should be entrusted to authorized repair services or replaced with new ones.
- Before welding or electrical work, disconnect the chipper from the power supply (disconnect the (-) and (+) cables from the battery). Clean the paint coating as the fumes of burning paint are poisonous to humans and animals.
- Service and repair activities should be performed in accordance with the general principles of health and safety.
 In the event of injury, the wound should be immediately washed and disinfected. Seek medical advice in case of more serious injuries.
- Should it be necessary to replace individual parts, use only original parts.

Non-adherence to these requirements may put the user and other people's health and life at risk, and also damage the machine and invalidate the warranty.

- Check the condition of protective elements, their technical condition and correct fastening.
- In the event of work requiring the machine to be raised, use properly certified hydraulic or mechanical lifts for this purpose. After lifting the machine, stable and durable supports must also be used.

- It is forbidden to support the machine with brittle elements (bricks, blocks, concrete blocks).
- After completing work connected with lubrication, remove excess oil or grease
- In order to reduce the risk of fire, the machine should be kept clean.
- After completing maintenance and repair work, before starting the machine, make sure that no tools or loose spare parts are left inside and that all safety devices and covers are properly attached.

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2.6 SAFETY WHEN HANDLING THE BATTERY

- No flames or sparks are allowed near the battery. Danger of explosion. It is forbidden to smoke near the battery.
- Observe the correct order when disconnecting the battery terminals.
 First remove the clamp (-), then the clamp (+). When connecting the cables, proceed in the reverse order.
- When commencing electric welding work, disconnect the machine from the power source. To do this, disconnect both battery terminals.
- It is forbidden to short-circuit the battery poles. Danger of fire or explosion.
- The battery contains corrosive sulfuric

acid which can cause severe chemical burns if exposed to the body.

- In the event of splashes of electrolyte, immediately take off the contaminated clothes and rinse the area where the acid comes into contact with the skin or eyes with plenty of running water. If swallowed, do not induce vomiting. Drink plenty of cool water. Seek medical attention immediately.
- Use rubber gloves and protective glasses when working with the battery.
- Only charge the battery in rooms with efficient ventilation.

F.5.2.620.06.1.EN

2.7 SAFETY DURING WORK WITH CHIPPER

- Before starting the machine, 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.
- Before starting the machine, check that there are no tools, spare parts or blocked material inside.
- Before each start-up, make sure that all guards are operational and properly fastened.
- The machine may only be started when it is fully operational.
- Do not leave the machine running unattended.
- Do not open the covers while the machine is running.
- Use personal protective equipment, especially hearing protection.
- During operation, set the appropriate engine speed.
- During work, the chipper must be immobilized with the parking brake.

- Do not shred material larger than 15 cm in diameter. Use only for intended purpose.
- Do not put your hands into the working space of the machine. Remove any jams of the shredded material after the machine has stopped and the rotating disc has ceased.
- If the discharge chimney is clogged, stop working immediately. Clear the blockage with the machine engine off.
- While shredding the material, do not stand directly in front of the hopper, it is recommended to sit next to the hopper.
- Fragmented material is blown out of the chimney at high speed and may cause injury.
- It is forbidden to smoke or use open fire while working and refueling.
 Fuel vapors are flammable and form explosive mixtures.

F.5.2.620.07.1.EN

2.8 DESCRIPTION OF THE RESIDUAL RISK

Pronar Sp. z o. o. in Narew has made every effort to eliminate the risk of an accident. However, there is some residual risk that can lead to an accident, and is mainly related to the activities described below:

- using the machine contrary to its intended use,
- being within the ejection range of the material from the outlet chimney while the machine is operating,
- being on the machine during engine operation or transport,
- work with the machine with removed or inoperative covers,
- not keeping a safe distance from the danger zones or staying in these zones while the machine is working,
- operation of the machine by persons not authorized or under the influence of alcohol,
- cleaning, maintenance and technical inspection with the machine running.

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

- prudent and unhurried operation of the machine,
- sensible use of the comments and recommendations contained in the operating instructions,
- carrying out repair and maintenance work in accordance with the operating safety rules,
- carrying out repair and maintenance works by trained persons,
- use of tightly fitting protective clothing,
- securing the machine against access by unauthorized persons, especially children.
- keeping a safe distance from forbidden and dangerous places
- no to stay on the machine when it is working

F.5.2.620.08.1.EN

2.9 INFORMATION AND WARNING STICKERS

The machine is marked with the information and warning stickers mentioned in table (2.1). Throughout the time the machine 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 legible. In the event of their destruction, they should be replaced with new ones. Labels with inscriptions and symbols are available from the manufacturer or at the place where the machine was purchased. New assemblies, replaced during repair, must be re -marked with the appropriate safety signs. When cleaning the multifunction arm, do not use solvents that may damage the label coating and do not direct a strong stream of water.

NO.	Sticker	Meaning
1	Smarować I Grease I Schmieren I	Lubricate the machine according to the schedule in the User Manual 104N-0000004
2		Warning sticker. Danger of crushing or hur- ting fingers or hands. 123N-0000004
4	PRONAR PRONAR	Information sticker-logo 187N-0000033C
5		Warning sticker. Attention! Belt transmis- sion, be especially careful. 206N-00000004

2.12
NO.	Sticker	Meaning
7		Warning sticker. Danger of cutting off the limbs. Stay away from rotating parts. 361N-97000004
8	K STOP	Warning sticker. Do not touch any rotating parts of the machine until they have come to a complete stop. 361N-97000005
9		Warning sticker. High pressure liquid. Read User Manual 361N-97000006
10		Warning sticker. Be careful of hot surfaces, risk of burns. Keep a safe distance. 361N-97000007
11	Maksymalne ciśnienie układu hydraulicznego: bar The maximum pressure of the hydraulic system: bar Höchstdruck-Hydraulikanlage: bar Maksymalna pojemność zbiornika oleju: litr The maximum capacity of the oil tank: litr Maksymalna pojemność zbiornika paliwa: litr The maximum capacity of the fuel tank: litr Maximales Kraftstofftankvolumen: litr	Information sticker. Oil pressure, tank capa- city 361N-9700008

17

18

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2.14

Chapter 2		Safety of us
NO.	Sticker	Meaning F.5.2.260.09.1
12		Warning sticker. Use ear protection. 361N-97000027
13	PRONAR	Information sticker-large logo. 422N-9700001-M
14		Decorative sticker. 422N-9700006-B
15		Warning sticker. Do not use the machine when bystanders are in close proximity. 581N-97000006

FUEL Information sticker. Fuel tank marking. Petrol 620N-97000001 Information sticker www.pronar.pl www.pronar.pl 620N-9700002

> Information sticker. Machine model. 620N-97000003

F.5.2.260.09.1.PL

NO.	Sticker	Meaning
20	PUSH TO STOP	Information sticker. The drive stopping. 620N-97000004
21	BLADE TORQUE SETTINGS 248 Nm	Information sticker. Tightening torque of the cutting knife bolts. 620N-97000005
22		Warning sticker. Attention! Before starting work, please read the User Manual. 70N-0000004
23		Before commencing servicing or repair work, turn off the engine of the tractor and the chipper and remove the keys from the ignition switch. 70N-00000005
25	Silnik / Engine / Motor PRONAR B&S Vanguard V twin EFI Moc / Power / Leistung 27,2 kW	Information sticker. Motor power. 620N-11000002



Figure 2.1 Location of information and warning stickers.

2.16



Figure 2.2 Location of information and warning stickers.

2.18

CONSTRUCTION AND PRINCIPLE OF OPERATION

CHAPTER 3

3.1 SPECIFICATION

Tabela 3.1 Basic technical data

Content	Unit	MR-15
Motor		
Туре	-	internal combustion 4-stroke, two- cylinder, overhead valve (OHV)
Model	-	B&S Vanguard V-Twin
Power	KM	37
Swept capacity	cm ³	993
Cooling	-	air
Fuel type	-	unleaded petrol PB95
Start-up	-	electric
Machine weigth	kg	746
Suspension	-	steering axle, 750 kg with overrun and parking brake
Maximum diameter of the material to be shredded	cm	15
Number of cutting knives	pc	2x235mm (one-sided)
		2x213mm (double-sided)
Flywheel	mm	Ø580x25
Feeding system	-	2 rollers Ø125 hydraulically driven
Fuel tank capacity	dm³(L)	35
Oil tank capacity	dm³(L)	18
Electrical system voltage	V	12
The size of the intake port (throat)	mm	150x195
Sound power level	dB	113



Figure 3.1 Dimensions of the Pronar MR-15 mobile chipper. The dimensions in the drawing are in millimeters

G.5.2.620.01.1.EN

3.2 GENERAL CONSTRUCTION



The construction of the PRONAR MR-15 mobile chipper is built on a frame (1), on which a petrol internal combustion engine (6) is mounted, which on one side drives a hydraulic pump (8), and on the other, a cutting disc located in the working chamber (2). The working chamber (2) is ended with a foldable, rotating discharge chimney (14), a rigid chimney (4) is available as an option. At the rear of the machine there is a loading hopper (3) with a folding ramp. The whole structure is closed with covers (5).

The machine is designed to be towed by a carrier equipped with an appropriate hook and a 12V electrical socket. A set of lighting lamps is placed on the rear beam. The running gear consists of a braked axle (9) with road wheels. The tow bar (10) with overrun brake creates the machine's braking system, additionally there is a parking brake (11) and a support wheel mounted on it. (12).

G.5.2.620.02.1.EN

ELECTRICAL SYSTEM 3.3



Figure 3.3 Construction of an electrical system

- (1) battery (4) display (7) motor speed sensor (10) START button (12) hopper position senso
- (2) control box
- (5) fuel level sensor
- (8) cover opening sensor
- (11) button for changing the feed direction
- (13) safety switch

The construction of the electric system of the chipper is shown in figure (3.3). The control box (2) is equipped with an ignition switch (3) and a display (4). There are also number of sensors monitoring the chipper's work and ensuring the operator's safety. In the work area of the operator,

there are safety switches (13) and machine control buttons (10) and (11).

(3) ignition switch

(6) manifold

(9) stop sensor



Figure 3.4Fuses and relays

Designations according to the Table (3.2)

Table 3.2 Markings of fuses and relays

Marking	Description
Relay R0	Power supply of the box
Relay R1	Fuel pump
Relay R2	Starter
Relay R3	Motor shutdown
Fuse F0	Fuel pump 15A
Fuse F1	Starter 15A
Fuse F2	2A driver power supply
Fuse F3	Outputs 0-7VBB1 15A
Fuse F4	Outputs 8-11VBB2 15A
Fuse F5	30A box power supply

G.5.2.620.03.1.EN

3.4 LIGHTING SYSTEM



Figure 3.5Construction of electrical lighting system(1) connecting cable(2) 13-pin socket(4) left multifunction lamp(5) reflective element

(3) right multifunction lamp

The electric lighting system is powered from the carrier with 12V voltage by means of a connecting cable (1). The vehicle towing the machine should be equipped with a 13-pin socket. When the towing vehicle is equipped with a 7-pin socket, appropriate adapter plugs should be used.

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3.5 HYDRAULIC SYSTEM





The hydraulic system is used to drive the rollers that feed the shredded material to the cutting disc. The oil pump (2) driven by the combustion engine supplies hydraulic oil from the reservoir (3) via the flow regulator (5) to the hydraulic motors

(1). Regulation of the oil flow speed, and hence the rotational speed of the feeding rollers, is carried out by the regulator knob
(5) and the combustion engine speed. Hydraulic motors can work in both directions.

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3.6 SHREDDING MECHANISM



Figure 3.7 Construction of the shredding mechanism

- (1) cover
- (4) pulley
- (7) tensioner
- (10) fixed bottom knife
- (13) fixed lower roller
- (2) housing(5) upper roller arm
- (8) V-belts
- (11) fixed side knife
- (3) cutting disc
- (6) spring
- (9) two-sided cutting knife
- (12) upper movable roller

The shredding mechanism is built into a welded housing (2). The mechanism is accessed after unscrewing and folding the cover (1). The cutter disc (3) mounted on rolling bearings is driven by the combustion engine through a belt transmission. The drive belts (6) transmitting the drive from the engine pulley to the wheel (4) are tightened by means of a tensioner (7).

The housing (2) has a fixed side knife (11) and a fixed bottom knife (10). Two cutting

knives (9) are placed on the knife wheel(3). All knives are replaceable.

In the rear part of the housing there are rollers that feed the material to the set of shredding knives. The lower roller (13) cannot move, while the upper roller (12) placed on the movable arm (5) can move up/down depending on the diameter of the shredded material. Roller clamp (12) is realized by means of two springs (6).

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3.7 LOADING RAMP AND DISCHARGE CHIMNEY



Figure 3.8Construction of the loading and ejection mechanism(1) loading ramp(2) rigid discharge chimney(4) safety bar(5) steering wheel(7) folding mechanism

WIn the rear part of the machine there is a ramp (1) to facilitate loading of the shredded material. The ramp has a safety bar (4) which, when pressed, disengages the drive of the feeding rolls. The ramp can be locked in two positions; work - ramp folded out and transport - ramp folded up. In the lower housing there is a sensor signaling the position of the loading ramp, it is impossible to work with a folded ramp. The shredded material leaves the working chamber through a rotary ejection chimney, at the end of which an adjustable steering wheel (5) is placed. Depending on the

completion, the machine can be equipped				discharge chimney (2).				
with a	a	folding	chimney	(3)	or	а	rigid	

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3.8 MOTOR AND ACCESSORIES



Figure 3.9Internal combustion motor and its accessories(1) internal combustion motor(2) fuel tank(4) accelerator lever(5) pulley

(3) exhaust system6) motor bracket

In the front part of the frame, a gasoline internal combustion motor (1) is mounted on a cushioned handle (6). The motor speed is regulated by means of the fuel dose, the dose is controlled by means of the acceleration lever (4).

The motor runs on unleaded PB95 petrol in the fuel tank (2). The exhaust outlet is carried out through the exhaust system (3).

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3.9 CENTRAL LUBRICATION SYSTEM



620-G.09-1

Figure 3.10 Construction of central lubrication system

(1) lubrication block (2) conduit (3) grease nipple

Table 3.3 Central lubrication system lubrication points

Grease nipple No.	Lubrication point
Grease nipple 1	Movable roller, left binding
Grease nipple 2	Fixed roll left binding
Grease nipple 3	Movable roller, right binding
Grease nipple 4	Fixed roll right binding
Grease nipple 5	Cutting disc rear fitting
Grease nipple 6	Cutting disc front fitting

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CHAPTER 4

CONTROL PANEL

4.1 CONTROL PANEL



Figure 4.1	Location of the control panel		
(1) control panel	(2) control box		
(3) key switch	(4) rotation switch		
(5) cover			

The control panel (1) is located in the control box (2) next to the ignition switch (3) and the speed switch (4). The box with the control panel built into it and the ignition switch are covered with a cover (5) closed with a key - figure (4.1).

The control panel (figure (4.2)) consists of a color, liquid crystal display (1), which displays information about the machine's operating parameters. The buttons (2) are used to navigate the device menu, while the buttons (3) and (4) are used to enter/ exit the menu or save parameter changes. In the lower right corner there is a signaling



Figure 4.2	Construction of the control panel.
(1) display	(2) scroll button
(3) enter button	(4) cancel button
(5) diode	



Pictogram	Meaning
	Operating mode
\wedge	Warnings / Alarms
	Settings
í	Information

diode (9).

4.2 CONTROL PANEL MENU



Figure 4.3	Work mer	iu panel
(1) Work menu		(2) alarms
(3) warnings		(4) no communication with
the controller		
(5) total operating t	ime (6) battery voltage
(7) machine revolut	tions	(8) rollers working condition
(9) engine running	condition	

Table 4.3Chipper work states

Pictogram	Meaning
C C	The motor is not running.
Constant of the second	The motor is running.
= 2	Pause. The shredding me- chanism is stopped.
	Work. The shredding mecha- nism is working. The feed rollers feed the material.
	Reverse. The sredding me- chanism is working. The feed rollers retract the material.

Tabele	4.2	Alarms

Pictogram	Meaning
<u> </u>	Oil pressure too low
<u>111</u>	Battery is not charging
	Low fuel level in the tank
EMERGENCY	STOP Safety button pres- sed. Motor stop.

WORK MENU

To start the Work menu, use the scrolling buttons to go to position (1) - figure (4.3). Depending on the operating conditions of the machine, the control panel displays the appropriate operating states (table (4.3). A detailed description of each operating mode is presented in the further part of the Manual.

The table (4.2) describes the meaning of the alarm pictograms displayed in the upper right corner of the control panel. Special machine states are signaled here. Additionally, on the left side of the control panel, we read the battery voltage (6) and the total machine operation time (5).

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Figure 4.5	Settings menu panel	
(1) Settings menu	(2) scroll button	
(3) enter button	(4) cancel button	

SETTINGS MENU

The Settings menu is launched after using the navigation buttons to go to position (1) - figure (4.5). There is an option to select the menu language on the screen. Use the scroll buttons (2) to select the appropriate field, confirm the selection with the button (3), exit from a given screen to a higher level is done with the button (3).

INFORMATION MENU

To preview the Information menu, go to position 1 with the navigation buttons (2) (the current selection will be highlighted with an orange frame) - figure (4.6). In the I/O menu on the screen, information about the operation of the individual sensors of the machine is displayed.

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WARNINGS MENU

To preview the Messages menu, use the navigation buttons (2) to go to position 1 (the current selection will be highlighted with an orange frame) - figure (4.4).

An active alarm will be highlighted as well as appear on each of the control panel screens.

One alarm is that the motor oil pressure is too low. In this case, the motor will stop.

Pictogram	Meaning
	Folded loading ramp
	Motor hood open

The PLC INFO menu contains detailed information on the control panel and controller software.

The I/O menu contains the descriptions of the inputs/outputs and their current status



Figure 4.6	Information menu	ı panel
(1) Information but	ton (2) Ente	r button
(3) cancel button	(4) scrol	l button
(5) signals	(6) prog	ram versions

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CHAPTER 5

TERMS OF USE

5.1 PREPARATION FOR WORK BEFORE THE FIRST START

The manufacturer ensures that the machine is fully operational and has been checked according to inspection procedures and is ready for use. However, this does not release the user from the obligation to inspect the machine upon delivery and prior to its first use. The machine is delivered to the user completely assembled.

Before connecting to the carrying vehicle, the machine operator must check the technical condition of the mobile chipper and prepare it for a trial run. To do this:

- familiarize himself with the content of this User Manual and follow the recommendations contained therein, get to know the structure and understand the principle of operation of the machine,
- check the condition of the paint coating,
- perform a visual inspection of individual machine elements in terms of mechanical damage resulting, among others, from due to improper transport of the machine (dents, punctures, bends or broken details),
- check all lubrication points, lubricate the machine in accordance with the recommendations contained in

DANGER

Before using the machine, the user should carefully read the User Manual.

Careless and improper use and operation of the machine, and non-compliance with the recommendations given in this User Manual s dangerous to life and health.

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

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

Non-adherence to the recommendations contained in the manual or improper start-up may cause damage to the machine.

Before using the machine always check its technical condition. It cannot raise any objections. It is forbidden to use a defective machine.

chapter 8 "Lubrication Schedule",

- check the technical condition of the hydraulic system;
- check the level of hydraulic oil in the tank, the level of lubricating oil in the motor,
- refill fuel in the tank,
- check the condition of screw connections, pay particular attention to the hitch system and screws of the road wheels,
- · check the effectiveness of the parking

brake,

- check the pressure of the road wheels,
- check the correct mounting of the knife disc and individual cutting knives, it is recommended to rotate the cutting disc several times before starting the machine,
- check the tension of the V-belts of the cutting disc,

If all the above activities have been performed and the technical condition of the machine does not raise any objections, connect it to the carrier and check the other systems:

- connect the machine to the carrier (see "Connecting to the carrier"),
- check the operation of road lighting installations,
- perform a test run, check the operation of the overrun brake and the possibility of driving the set in reverse,

Disconnect the chipper from the carrying vehicle, secure it against rolling with the parking brake and wedges. Start the grinding mechanism:

- start the combustion motor (see "Starting the motor"),
- start the shredding mechanism (see "Operation with the machine"),
- check the operation of the control and safety buttons.

Operation of the machine without load should be smooth, vibrations of the shredding system, changing tones and vibrations from loose screw connections are unacceptable. Check the hydraulic system for proper operation of the system, check for oil leaks.

In the event of a malfunction, locate the fault. If it cannot be removed or its removal may void the warranty, please contact your dealer to clarify the problem.

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5.2 DAILY MAINTENANCE CHECKS

- Perform a daily check in accordance with the guidelines in the chapters "Periodic Inspections", "Maintenance", "Engine Maintenance" and "Lubrication Schedule". If necessary, carry out the required repairs immediately,
- Check the technical condition of safety covers and wearing parts.
 Check the completeness and correctness of closing the covers.
- If the machine is to be towed, particular attention should be paid to the chassis and hitch system. Before starting, check that the road lighting system is complete and operates correctly. Ensure that warning and



It is forbidden to start the machine if the daily check has not been performed.

reflective markings are complete.

- Check the fuel level in the fuel tank and top up if necessary. Check the hydraulic oil level in the oil reservoir.
- Check the technical condition of the cutting disc, the completeness of the elements and the correctness of their mounting.
- After finishing work, check and, if necessary, remove the accumulated material from the shredding chamber.

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5.3 CONNECTING AND DISCONNECTING OF THE MACHINE TO THE CARRIER



Figure 5.1	Machine connection
(1) overrun drawba	ar (2) support wheel
(3) tow bar	(4) securing cable
(5) parking brake	(6) lighting system cable

The carrier towing the machine should meet the requirements of Table (1.2) *"Requirements of the carrier for towing the machine*". Connect the machine according to the following guidelines.

• Retract the carrier as close as possible to the machine tow bar (3).

due to limited visibility, it is recommended to use the help of another person,

 Immobilize the carrier with the parking brake, remove the key from

When hitching the machine, exercise particular caution due to limited visibility and the possibility of an accident.

Before towing the machine, carefully check the coupling safety and the operation of the lighting system.

the ignition switch, secure the vehicle cabin against access by unauthorized persons.

- Install a securing cable (4) on the hook of the towing vehicle.
- Unlock the machine tow bar (3) and put it on the hook of the carrying vehicle, then secure the tow bar.
- Fold in the machine support wheel (2).
- Connect the machine's lighting system cable (6) to the carrier's electrical socket.
- Check the tow bar lock and release the machine parking brak (5).

Disconnecting of the the machine should be made in the reverse order.

5.4 DRIVING ON PUBLIC ROADS

While driving on public roads, obey the road traffic regulations, be cautious and reasonable. Make sure that the machine is properly connected to the carrier. When towing the machine, ensure sufficient rearward visibility.

Avoid ruts, depressions, ditches or driving on roadside slopes. Driving through such obstacles may cause the carrier to suddenly tilt with the machine. Driving near the edges of ditches or canals is dangerous due to the risk of landslides under the wheels of the vehicles. Travel speed should be reduced before cornering or when driving on uneven or sloping terrain. While driving, adjust the driving speed to the prevailing road conditions, but it cannot be higher than 90 km/h - the permissible design speed.

Before driving off, it is recommended to check the set according to the following points:

· Assess the correctness and lock of



The permissible design speed of the machine is 90 km/h and it must not be exceeded

The machine must not be towed with a damaged driving or braking system. It is unacceptable to transport any materials, including the transport of animals and people.

the coupling.

- Check the condition of the tires and tire pressure.
- Check the lighting system.
- Check that the covers are closed and secured, make sure that the discharge chimney is folded, secured with a lock and positioned parallel to the direction of travel.
- The loading ramp must be folded up and secured with locks.
- Check the operation of the overrun brake before towing the machine..

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PREPARATION FOR OPERATION 5.5



Figure 5.2

(1) foldable discharge chimney	(2) rigid discharge chimney
(4) lock	(5) steering lever
(7) chimney folding lock	(8) knob

(3) lever (6) steering arm

Before starting work, check and correctly set the machine. The workplace should be on even, flat and paved ground. There should be no overhead power lines as well as other obstacles hindering the loading of long branches. Before starting the engine and starting work, engage the parking brake and place chocks under the wheel and unfold the support wheel. Direct the discharge chimney in the desired direction.

Set the chimney according to the following guidelines - figure *(5.2)*:

- loosen both locks (4),
- grab the lever (2) to turn the chimney (1),
- lock the locks (4),
- for a folding chimney (1), unfold the chimney by releasing the lock (7) and set the ejection angle using the steering lever (5)
- for a rigid chimney, unscrew the knob
 (8) and move the arm (6) to change the angle of ejection of the shredded material.

The loading ramp must be folded during transport. Before starting work, it must be disassembled as described below. There is a sensor under the ramp that will prevent the machine from starting when the ramp is folded (message on the control panel) - figure (5.3).

- lift and turn both locks (3),
- unfold the loading ramp (1),
- block the locks (3) in the openings of the ramp (1),
- check the locking of the ramp,

correctly folded and locked ramp makes it possible to start the machine in work mode.

It is forbidden to change the position of the discharge chimney with the motor running.

While the machine is in operation, the discharge chimney must be secured against turning. Do not direct the shredded material into areas where people are present.

Material flying off quickly can cause serious injury. It is forbidden to work with the machine with a folded discharge chimney.




When operating the loading ramp, be especially careful due to the risk of crushing your fingers, use protective gloves.

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5.6 WORK WITH MACHINE



Figure 5.4	Control box		
(A) key switch	(B) switch		
(1) stop	(2) ignition		
(3) starting	(4) idling		
(5) Work turnover			

BASIC INFORMATION

The correct start-up of the machine includes a number of preparatory activities:

- · daily check,
- preparation to work,
- starting the motor,
- work.

If there are no contraindications to starting

To stop the engine, turn the key in the ignition switch fully to the left - position (1) figure (5.4).



It is forbidden to use malfunctioning machine. Never start the machine unless you are sure that the machine is in full working order.

It is forbidden for bystanders to stay in the machine's working area.



Make sure all covers are closed before starting the motor.

the machine, start the chipper.

STARTING THE MOTOR AND SETTING THE OPERATING PARAMETERS.

- put the key into the ignition switch (A),
- turn the key clockwise to the ON position (2) ignition - figure (5.4).
- after a while, turn the key to START(3). Start the motor.

After starting the motor, wait a while before starting work with the chipper. Then increase the motor speed with the switch (B) and set the feed speed. Switch (B) (figure (5.4) is used to switch the motor speed from idle position (4) to position (5) - Operation. RPM values for both positions are factory set and it is forbidden to change them. RPM values are displayed in real time on the machine control panel.

Do not turn off the motor when the machine is running at full load. Allow it to idle for a short time before stopping.

Start the feeding rollers by pressing the green START button.

Each time during operation, the speed of the feeding rolls should be selected for optimal working conditions. Set the speed of the feeding rolls so that the machine works without jamming (stopping the feed rolls and increasing the falling speed of the motor). This will allow the chipper to work optimally with maximum efficiency. For materials with a small diameter and lower density, the speed of the feeding rollers can be set faster, materials with a larger cutting diameter and hard (hardwood) wood, dry should be shredded at a lower speed.

Next to the control panel there is a flow regulator knob (1) to control the rotational speed of the feeding rolls - figure (5.5). Speed control of the feeding rolls:

• Turn the knob clockwise - increase the feed rate.



Figure 5.5Motor speed and feed roller speed(1) hydraulic distributor(2) handwheel(3) motor speed switch

NOTE

Idle motor speed -1 800 rpm. Motor speed in the working position - 3,600 rpm. The value of speed in the range +/- 50 rpm is allowed

• Turn the knob counterclockwise - reducing the feed speed - figure (5.5).

WORK

With the operating parameters set (speed of feeding rolls, motor speed in the working position) press the green START button (3) - figure (5.6).

In case of a mulching material jam or when it is necessary to remove it from the working chamber, press and hold the gray button (4).

> The direction of rotation of the feeding rolls is changed. The material will be pushed out of the shredding chamber



Figure 5.6 Eme (1) safety bar (3) green button START REVERSE

Emergency stop

(2) emergency button(4) gray button STOP/

EMERGENCY STOP

During operation, it may be necessary to stop the operation of the machine immediately.

When working with the machine, use appropriate and fitted protective clothing. Pay particular attention to the protection of hearing and eyesight. Wear protective gloves with cuffs on the wrists and a helmet with eye and hearing protection.

Do not wear watches, rings, chains, etc. It is forbidden to work in loose clothing, with loose hair Make sure that there are no bystanders and children in the work area.

Do not stand in front of the working chamber during shredding, there is a risk of being hit with the material being fed. Take a position on the side of the hopper. Use dust masks if necessary, some of the shredded materials may release harmful or irritating substances. Possible problems with breathing or poisoning. Do not reach with your hands and do not enter the hopper, put short pieces of grinding material on the rollers by pushing it with a piece of wood.

For long and heavy material to be fragmented, use the help of a second person.

NOTE

When inserting the material into the working chamber, start grinding from the thicker part of the branch or limb.

The rolls drive can be turned off by:

• tilting the safety bar (1) - figure (5.6),

The display will show the "Pause" icon - table (4.3). Reactivation of the rolls drive takes place after pressing the green START button.

 pressing the emergency button (2).
 The machine will be turned off; the feeding rolls will stop and the motor will stop.

The display will show the "STOP"

icon. The drive is turned onagain after pressing the button(2) and restarting the machine.

 pressing the gray STOP/REVERSE button (4). The feeding rolls will stop immediately and the motor runs.

> The display will show the "STOP" icon. Reactivation of the rolld drive takes place after pressing

the green button (3) START.

Table 5.1Chipper work states

Pictogram	Meaning			
(Jan	Motor speed too low for ma- terial shredding.			
Contraction of the second seco	Motor speed suitable for material shredding.			
= 2	Pause. The shredding me- chanism is stopped.			
	Work. The shredding mecha- nism is working. The feeding rolls feed the material.			
	Reverse. The shredding mechanism is working. The feeding rolls retract the ma- terial.			

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5.7 OPERATION OF THE WORKING CHAMBER

The material fed to the shredding chamber (1) must leave it through the discharge chimney (3) in the form of chips - figure (5.7). While working with the machine, you should check whether the shredded material leaves the working chamber. If the operator notices problems with the ejection of chips from the working chamber, immediately stop feeding the material and turn off the machine engine. Continued feeding of material with a clogged working chamber or a blocked discharge chimney will aggravate the problem and make it much more difficult to remove the blockage.

BLOCKAGE OF THE WORKING CHAMBER

In order to remove the clogging, it is necessary to:

- stop the motor and remove the key from the ignition,
- check the obstruction of the discharge chimney (3), clean the chimney if necessary.
- if there is clogging in the working chamber, open the front guard (4) release the handles (6).
- unscrew the fastening bolts (8) of the working chamber cover (2),
- tilt the cover (2) and clean the inside



Do not put your hands into the working chamber and the discharge chimney, always use protective gloves. The residual material should be removed with tools without sharp edges, e.g. a piece of wood. Sharp rotating parts, serious injury possible.

NOTE

Removing the fixed bottom knife will significantly facilitate cleaning of the working chamber - (Figure 5.9).

of the working chamber (1).



Figure 5.7	
------------	--

- (1) upper roll
- (3) protection
- (5) spring (
- (7) roll lever

The upper raised roll (2) roll arm

- (4) spring bolt6) nut

The tension of both springs must be the same. The roll lever is made of metal and cannot be used to feed material while the mowing mechanism is operating. Accidental getting the lever into the working chamber of the machine may cause serious failures.

BLOCKED FEEDING ROLLS

If the feeding rolls are blocked:

- stop the engine and remove the key from the ignition,
- open the front cover (4) by releasing the fasteners (6) figure (5.7),
- disassemble the side covers to gain access to the upper feeding rolls (1)

Before starting the cleaning and maintenance works on the feeding mechanism, check the correct locking of the arm.

Always use protective gloves.

The residual material should be removed with tools without sharp edges, e.g. a piece of wood.

Exercise particular caution as there is a possibility of serious cuts and pinching of the fingers.

and its arm (2) - figure (5.8),

- loosen or unscrew the nuts (6) of the tensioning bolt (4) on both sides,
- if necessary, remove the extension springs (5),
- insert the lever (7) into the arm socket (2),
- pull back and turn the securing device (3),
- use the lever (7) to lift the arm (2) with the roll (1),
- secure the roller arm with the lock (3), check the locking,
- with the roll lifted, carefully, without placing your hands near the mulching mechanism and the locking mechanism, remove any material remaining or blocking the work.



620-I.09-1

Figure 5.9	Cutting knives			
(1) cutting knife	(2) fixed cutting knife			
(3) fixed side knife	(4) spacer ring			

CUTTING KNIVES

Optimal and efficient operation of the machine requires sharp cutting knives. Regularly check the technical condition and degree of sharpening of the knives as well as their screw connections. The location and method of assembly of the cutting elements are shown in figure *(5.9)*.

Access to cutting knives:

- stop the engine and remove the key from the ignition,
- open the front cover (4) by releasing the fasteners (6) - figure (5.7),
- unscrew the fastening bolts (8) of the

NOTE

Some knife mounting bolts are secured with thread glue.

After replacing or sharpening the knives, set the gap between the knives on the miter blade (1) and the fixed knife (2) - Figure 5.9. Details are described later in the study.

Take special care there is a high risk of serious injury. Always use protective gloves.

Replacing the cutting knives only with new and original parts recommended by the manufacturer of the machine.

It is not allowed to sharpen cutting knives mounted on the machine. The rest of the material to be shredded can ignite. Remove the knife before sharpening. It is absolutely necessary to use eye and hearing protection during sharpening.

working chamber cover (2) and open it - figure (5.7),

- inspect the cutting surfaces of all knives. Any cracks and nicks in the blades disqualify the knife from further use and must be replaced with new ones,
- if the cutting edges are blunt, knife sharpening is allowed,
- unscrew the bolts of the individual knives and dismantle the knife.

H.5.2.620.07.1.EN

CHAPTER 6

TECHNICAL INSPECTIONS TECHNICAL SERVICE

6.1 SCHEDULE OF TECHNICAL INSPECTIONS

Table 6.1	Scheduled pe	riodic inspections	of the machine
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Insp.	Description	Made by
А	Inspection performed daily before first start-up or every 10 hours of continuous shift operation.	User.
В	Inspection carried out every 50 hours of engine operation. Before starting work, also perform all the activities related to the daily inspection.	User.
С	The inspection is carried out each time every 250 hours of motor operation. Before starting work, also perform all inspection activities every 50 hours of operation.	Warranty service.
D	Inspection performed every 500 hours of motor operation.	Warranty service.
E	The inspection is carried out every 1000 hours of engine operation. Before starting work, perform all activities related to the inspection every 50 and 250 working hours.	Warranty service.
F	The inspection is carried out every 3000 hours of motor operation. Before starting work, also perform all inspection activities every 50, 250, 500 and 1000 hours of operation.	Warranty service.
G	The inspection is carried out every 4 years of machine use.	Warranty service.
н	Inspection performed depending on the needs.	User.

During the warranty period, C, D, E, F and G inspections are performed by the warranty service. After the warranty expires, it is recommended that they are performed by specialized repair shops.

A, B, H inspections are performed by the machine operator in accordance with the schedule.

After carrying out the following servicing of the machine, also perform the engine inspection according to the schedule - see the *"Motor inspection schedule"* table, check individual elements according to the guidelines in Table 7.3.

Descrption of action	Α	в	С	D	Е	F	G	Н
Covers inspection		•						
Fuel control and refilling	•							
Fuel tank drainage			•					
Checking the hydraulic system	•							
Checking and topping up hydraulic oil	•							
Change of the hydraulic oil				•(2)				
Change of the hydraulic oil filter				•(2)				
Replacement of hydraulic hoses							•	
Checking the cutting blade	•							
Electrical installation inspection	•							
Checking the settings of the sensors						•		
Battery control		•(1)	•(2)					
Battery charging								•
Battery replacement								•
Measure air pressure, check tires and rims		•						
Checking the play of wheel axle bearings						•		
Brake lining thickness check					•			
Checking the tightness of screw connections		•						
V-belts tension control V-belts						•		
Lubrication - according to a separate schedule								
 (1) - for the first time (2) - or every 12 months, whichever comes first (3) - not less frequently than once a month 								

Table 6.2	Harmonogram	przeglądów	maszyny
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J.5.2.620.01.1.EN

6.2 COVERS INSPECTION



Figure 6.1 PRONAR MR-15 chipper covers

(1) front cover,

(4) left cover

(7) bumper

(2) top cover, (5) wheel fender,

(8) hopper curtain

Damaged or incomplete covers must be replaced or repaired immediately.

Operation of the machine without covers is prohibited and very dangerous.

Covers protect the user of the machine against loss of health or life or are a protective element of the machine components. For this reason, their technical condition must be checked before starting work. Damaged or missing components must be repaired or replaced with new

- (3) right cover(6) belt transmission cover
- (9) fastener

ones.

Check the completeness of safety covers.

- check if the covers are properly mounted and not damaged, missing fasteners should be replaced,
- check the locking of the front cover (1) with the fasteners (9), check the fastening of hinges and gas springs of the cover,
- assess the condition of the bumper(7) and fenders (5),
- the missing parts of the hopper

curtain (8) should be immediately replaced with new ones,

• If necessary, tighten the screw connections of the covers fasteners.

DANGER

The applied machine covers do not release the operator from the obligation to use personal protective clothing and equipment. Pay particular attention to the protection of hearing and eyesight.

Sharp parts of the machine rotating at high speed may lead to serious accidents, pay particular attention during operation and keep the machine guards complete.



It is forbidden to use malfunctioning machine.

J.5.2.620.02.1.EN

6.3 FUEL CONTROL AND REFUELING



Figure 6.2

Fuel level control

(1) fuel tank (3) fuel level sensor (2) filler cap (4) control panel

Be especially careful when refueling. Remember about static electricity.

When refueling, do not use open fire, do not smoke. Refueling may only be carried out with the motor stopped.

Wipe up any spilled fuel immediately.

Replace the lost or damaged cap with an original replacement cap.

Never remove the cap or refuel with the motor running.

Use fuels that meet the motor specifications.

Do not fill the tank completely, leave room for fuel to expand.

NOTE

The capacity of the fuel tank is 35 liters.

Before each start-up and during operation of the machine, check the fuel level in the fuel tank. The current fuel level and the total machine operating time are displayed on the control panel (4). Low fuel level is signaled in the *Alarms* menu.

In order to refuel in the tank:

- clean the surfaces around the filler cap (2),
- unscrew the fuel filler cap (2),
 the use of a fuel funnel is recommended to prevent fuel spillage.
- refuel in the tank, tighten the filler cap. If fuel has spilled, wipe and dry the area thoroughly.

J.5.2.620.03.1.EN

6.4 DRAINING OF THE FUEL TANK



Figure 6.3	Draining of the fuel tank		
(1) drain plug	(2) fuel tank		
(3) the filler cap			

It is forbidden to come close to the fuel tank with open fire. Spilled fuel should be wiped up immediately as it may cause a fire.

Contaminated fuel can cause motor damage or malfunction. Periodically clean the fuel tank by draining 1 to 2 liters of fuel.

- place a receptacle with a capacity of at least 2 liters under the drain plug (1),
- unscrew the fuel drain plug and drain about 1 liter of liquid,
- if the fuel is still contaminated, drain another liter of fuel,
- tighten the drain plug,

J.5.2.620.04.1.EN

6.5 HYDRAULIC SYSTEM INSPECTION

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

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

The hydraulic system is under high pressure during operation.

Regularly check the technical condition of the connections and hydraulic lines.

Flexible hydraulic conduits should not be twisted or kinked.

The hydraulic system has been filled at the factory with HLP 46 hydraulic oil.

The obligations of the user related to the operation of the hydraulic system include:

- visual inspection of the pump, motors and hydraulic connections tightness,
- inspection of the technical condition of cables,
- visual inspection of hydraulic couplings.

In the event of skin contact with oil, wash the area with soap and water. If oil gets into your eyes, rinse them with plenty of water and consult a doctor if irritation occurs. Organic solvents (petrol, kerosene) should not be used. Remove contaminated clothes to prevent oil from getting onto the skin. If oil gets into your eyes, rinse them with plenty of water, and if irritation occurs, consult a doctor.

Spilled oil should be immediately collected and placed in a marked, sealed container.

Before starting any work on the hydraulic system, reduce the pressure in the system.

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

It is forbidden to repair the hydraulic system on your own. Any repairs of the hydraulic system may be performed only by appropriately qualified persons.

The used oil should be taken to the point dealing with the utilization or regeneration of oils.

The hydraulic system should be completely tight. In the event of leaks on the pump seals, the damaged seals must be replaced. If there is leakage at the connections, try to tighten the connection. Tightening torques for hydraulic conduits are specified in the table *"Tightening torques*

Table 6.3Tighteningtorquesforhydraulic hose ends

Hydraulic hose	Tightening torque
DN	[Nm]
6	30÷50
8	30÷50
10	50÷70
13	50÷70
16	70÷100
20	70÷100
25	100÷150
32	150÷200

for hydraulic hose ends". If the leakage at the connections has not been eliminated, replace the hose, coupler and seals (depending on the leak location). Hydraulic oil leaks may also occur on rubber hoses as a result of delamination or abrasion. Replace the HOSE with a new one.

Oil should be extinguished with carbon

NOTE

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

The hydraulic system does not require bleeding during normal machine operation.

dioxide (CO_2) , foam or fire steam. Do not use water for extinguishing.

J.5.2.620.05.1.EN

6.6 CHECKING AND TOPPING UP OF HYDRAULIC OIL



Figure 6.4	Oil reservoir		
(1) oil reservoir	(2) indicato		
(3) filler plug	(4) filter		

Oil tank (1) holds 18 liters of HLP 46 hydraulic oil. Check the tightness of welded joints in the tank and hydraulic conduits to

Be especially careful when refilling the oil. Do not use open fire and do not smoke while working.

Spilled oil must be wiped up immediately. The cleaning cloths soiled with oil should be stored in containers intended for this purpose. Danger of spontaneous combustion.

the tank every day.

 check the hydraulic oil level on the indicator (2),

> the indicator has a scale for measuring the temperature of the hydraulic oil,

- use material to clean the filler plug and its vicinity, wipe the dipstick,
- if the hydraulic oil level is too low, unscrew the filler plug (3) and add oil,
- screw on the filler plug.

Table 6.4 Recommended oil grade depending on the operating temperature

NO	Oil name	Amount [L]	Recommended ambient temperature range [°C]
1	HLP 32 acc. DIN 51524-2	18	-20°C -:- +10°C
2	HLP 46 acc. DIN 51524-2	18	-5°C -:- +0°C
3	HLP 68 acc. DIN 51524-2	18	+10°C -:- +40°C

J.5.2.620.06.1.EN

6.7 CHANGE OF THE HYDRAULIC OIL AND OIL FILTER

Change of hydraulic oil and filtering element during the warranty period may only be performed by the warranty service. The oil filter is located in the oil return to the reservoir (1).

- unscrew the filler plug (2) and the oil drain plug (4).
- pour the oil into a previously prepared vessel (about 18 liters).
- unscrew the cover (5) then remove the contaminated filter insert (3).
- insert a new filter cartridge (3).
- remove and blow out the mesh filter (from under the filler plug (2)) with compressed air.
- inspect the filler plug seal (2), check the blockage of vent holes in the plug. Tighten the plug.
- pour fresh oil into the tank to the required level,
- dispose of used hydraulic oil in accordance with local regulations,



Figure 6.5	Oil filter	
(1) oil reservoir		(2) filler cap
(3) filter element		(4) drain plug
(5) cover		(6) sticker

Each time the oil in the reservoir is changed, the filter element inside the tank must be replaced. When unscrewing the oil filter cover, do not use a hammer, chisel, etc., as this may damage the filter body. Use filters recommended by the machine manufacturer (original).

J.5.2.620.07.1.EN

6.8 HYDRAULIC HOSES CHANGE

Rubber hydraulic hoses should be replaced every 4 years, regardless of their technical condition. It is recommended that replacement should be entrusted to specialized workshops.

Information on hydraulic hoses can be



Due to the nature of work and material (aging, high pressure, load variability), flexible hydraulic hoses must be replaced every 4 years.

found in the spare parts catalog.

J.2.4.415.18.1.EN

6.9 INSPECTION OF CUTTING DISC

The technical condition of the cutting knives of the shredding mechanism should be regularly checked, paying attention to mechanical damages, excessive wear and completeness of the fastening elements. It is important to check the correct mounting and setting of the cutting disc.

- open the latches of the front cover and open the front cover,
- unscrew the chamber cover bolts, swing the cover to the side,
- clean the working chamber of material residues,
- slowly turning the cutting disc to check the condition of the cutting knives (1),
- check the cutting gap for which the value between the knives should be in the range of 1-1.5mm - figure (6.6),
- check the wear of the lower fixed knife (2) and the fixed side knife (3),

if necessary, dismantle the appropriate knife and sharpen or replace it,,

- check the transverse and longitudinal clearance of the cutting disc,
- disassemble the cutting disc and check that there are no disturbing sounds from the bearing housings and that the disc rotates smoothly without jamming,



Figure 6.6	Cutting unit
(1) cutting knife	(2) fixed lower knife
(3) fixed side knife	(4) cutting disc
(5) nut	(6) washer

NOTE

In order to make it easier to pull out the lower fixed knife (2), screw the M12 bolt into the knife nut (5).

Be especially careful when checking and replacing the cutting knives, as there is a risk of crushing and serious injury.

NO	Name	Catalog number	Number[pcs.]
1	Two-sided cutting knife	303-890-000581	2
2	Fixed bottom knife	403-005-011210	1
3	Fixed side knife	403-005-011195	1
6	Spacer	324-300-000483	6

Table 6.5Spare parts for the chopping disc - according to the figure (6.6)



Figure 6.71Minimum permissible dimensions
of the knife after sharpening

Should it be necessary to replace 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 damage the machine.

- after sharpening or replacing the knives, the cutting gap should be checked and possibly set by means of spacers to the value of 1-1.5 mm,
- in the case of double-sided cutting knives, after blunting one cutting edge, it is possible to shift the knife so that it works with the other blade,

J.5.2.620.08.1.EN

6.10 ELECTRICAL SYSTEM INSPECTION



Disconnect the machine from the power source before starting any electrical repairs.

Driving with faulty lighting system is prohibited. Burned out or damaged lamps should be replaced with new ones.



It is forbidden to repair the electrical system on your own, except for the activities described in the Chapter "THE ELECTRICAL SYSTEM INSPECTION". Electrical system repairs may only be performed by appropriately qualified persons.

Table 6.6	Spare parts	for the	chopping	disc -	according	to the	figure ((6 6)
	oparc parts		chopping	ui30 -	according		inguic (0.0)

NO	Name	Catalog number	Number[pcs.]
1	Right multifunction lamp W125dP	302-320-000251	1
2	Left multifunction lamp W125dL	302-320-000250	1
3	45Ah battery	301-380-000042	1
6	13-pin cable	303-340-000159	1

The maintenance of the electrical system comes down to periodic inspection of the operation of the control system, as well as the lighting system.

If the lamp burns out, replace it with a new one. The list of lamps is presented in the table *"List of lighting elements"*.

If the electrical system fails, check the fuses. The fuses and relays are located in the control box underneath it. A damaged fuse should be removed from the housing and replaced with a new one. The list of fuses is presented in the figure and the table *"Fuses*".



Figure 6.9	Markings	of	fuses	and	relays
	according	to 7	able (6.	7)	

Table 6.7	Markings of fuses and relays

Markings	Description
Relay R0	Power supply of the box
Relay R1	Fuel pump
Relay R2	Starter
Relay R3	Motor shutdown
Fuse F0	Fuel pump 15A
Fuse F1	Starter 15A
Fuse F2	2A driver power supply
Fuse F3	Outputs 0-7VBB1 15A
Fuse F4	Outputs 8-11VBB2 15A
Fuse F5	30A box power supply

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6.11 CONTROLAND SETTING OF SENSORS

Table 6.8 Arrangement and setting of sensors

Sensor	Setting	Location	Figure
Cover opening sensor	A=5-6mm	Right side member of the lower frame, under the front cover.	620-J.08-1
Motor speed sensor	A=6-8mm	The front wall of the working chamber, un- der the front cover.	
Safety beam sensor	A=2-3mm	Lower surface of the hopper under the bun- dle cover.	

Sensor	Setting	Location	Figure
Sensor	A=2-3mm	Hinge for folding the hopper under the bun- dle cover.	

Incorrect sensor settings will be displayed on the control panel display in the Information menu in the Signals tab



The correct setting of the sensors is necessary for the correct operation of the machine.

I.5.2.620.10.1.EN

6.12 BATTERY CHECK

CHECKING THE ELECTROLYTE LEVEL IN THE BATTERY



361-K.33-1





The battery electrolyte is a highly corrosive acid, so wear protective goggles and appropriate work clothing when handling the battery. Before starting the density measurement, read the instructions for use of the aerometer. Do not lay tools or other metal objects on top of the battery.

As the battery is in use, the electrolyte will evaporate. The liquid level should be between the marks showing the upper and lower level, or if there are no marks, the amount of electrolyte should be 10 - 15 mm higher than the top of the battery electrodes. If the liquid loss is high, only add distilled water to the battery cells.

A battery in which excessive electrolyte loss has been allowed may be permanently damaged.

CHECKING THE RATE OF CHARGE OF THE BATTERY

The charge level of the battery should be carried out using available testers or by





measuring the density of the electrolyte.

Density measurement should be performed with a hydrometer taking a sample of the liquid from each battery cell. The electrolyte density in a properly charged battery should be 1.28 g/cm³ (not more than 1.29 g/cm³). If the electrolyte density is less than 1.26 g/cm³, charge the battery. Perform the measurement at the temperature of 25 °C. If the battery connections are sulfated, disconnect the battery cables and clean everything with fine sandpaper. Before reconnecting the cables to the battery, coat them with technical petroleum jelly or contact grease.

J.2.4.415.12.1.EN

6.13 BATTERY CHARGING

If the battery is maintenance-free and the electrolyte density cannot be checked, the voltage value should be checked without loading the battery. If the voltage dropped below 12.5V, the battery should be charged. The battery should be charged with a current of no more than 10% of its rated capacity (eg 4.5A at 45Ah capacity). Charging time should be at least 10 hours

- disconnect the cable (-) from the battery.
- disconnect the cable (+) from the battery.
- remove the battery.
- place the battery in a well-ventilated place.
- unscrew the plugs and check the electrolyte level and its density.
- top up any electrolyte shortages with distilled water.
- check the condition of the terminals and the obstruction of ventilation openings in the plugs and clean if necessary.
- connect the rectifier lead (+), then the lead (-). Set the charging current and connect the charger to the mains.
- Charge the battery until the electrolyte has a constant density
- 1.28 g/cm³. or the voltage on the

Do not go near the battery being charged (or immediately after charging) with naked flames. Danger of explosion.

The battery electrolyte is a highly corrosive acid, so wear protective goggles and appropriate work clothing when handling the battery.

- In the event of contact with acid: - rinse skin with plenty of water,
- TINSE SKITI WITH pienty of water,

- rinse eyes with water for about 15-30 minutes and consult a doctor immediately.

The charging should be stopped when the electrolyte temperature exceeds 55°C.

Never reverse the positive (+) and negative (-) battery terminals.

When charging the battery in a closed room, ensure that the room is adequately ventilated.

terminals of the unloaded battery will be at least 12.5V.

• After crimping, secure the terminals with technical petroleum jelly.

When operating the machine, remember that many factors affect the service life of the battery. The most important are:

- technical condition of the generator,
- working temperature.

If the machine is not going to be used for a longer period of time, it is recommended to remove the battery and store it in a warm and airy room, periodically checking its charge level. Check the voltage before installing the battery.

J.2.4.415.13.1.EN

6.14 BATTERY REPLACEMENT

- turn off the motor, remove the key from the ignition,
- remove the right cover,
- disconnect the cable (-) from the battery,
- disconnect the cable (+) from the battery,
- unscrew the battery holder,
- remove the battery,
- install a new battery.

Avoid short circuits and contact of live cables with ground.

Do not disconnect the battery with the engine running. The resulting voltage peaks can destroy electronic components.

- connect the cable (+) to the battery.
- connect the cable (-) to the battery.
- install the battery holder and cover.

J.5.2.620.11.1.EN

6.15 AIR PRESSURE MEASURES, TIRES AND RIMS CHECK

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

- connect a pressure gauge to valve and check air pressure. If necessary, pump up the wheel to the required pressure,
- check technical condition of tires (tread depth, tire sidewall),
- inspect the tire for losses, cuts, deformations, bulges indicating mechanical damage to the tire. In the event of mechanical damage, consult the nearest tire service center and make sure whether the defect of the tire qualifies it for replacement,
- check if the tire is properly seated on the rim. Check the age of the tire.

When checking the pressure, pay attention to the technical condition of the rims. Rims should be inspected for deformation, cracks in material, cracks in welds, corrosion, especially in the area of welds and in the place of contact with the tire.



Figure 6.12 Wheel of the Pronar MR-15 chipper



Figure 6.13

The place where the machine is supported by a jack

(1) support point(3) support wedge

(2) wheel axle



Incorrect tire pressure can lead to permanent damage to the tire by delamination of the material and also causes faster wear on the tire.

J.5.2.620.12.1.EN

6.16 THE CLEARANCE OF WHEELAXLE BEARINGS CHECK

- connect the machine to the carrying vehicle, immobilize the carrying vehicle with the parking brake.
- place the set on a hard and level surface to drive straight ahead.
- place chocks under the wheel opposite to the lifted wheel.
- lift the wheel (on the opposite side of the stacked chocks). The jack should be placed under the wheel axle.

the jack must be suitable for the karb weight of the machine.

- smooth and if the wheel rotates without excessive resistance and jams - figure.
- unscrew the wheel so that it rotates very quickly, check that the bearing does not make any unusual sounds.
- try to feel any play by moving the wheel.
- repeat the steps for the other wheel, remembering that the jack must be on the opposite side of the chocks.

Unnatural noises coming from the bearing may be a sign of excessive wear, contamination or damage.



Figure 6.14 Wheel of the Pronar MR-15 chipper

DANGER

Before starting work, read the manual of the jack and follow the manufacturer's recommendations. The hoist must stand firmly on the ground and the wheel axle. Make sure that the machine does not roll when checking the looseness of the wheel axle bearings. Inspection of bearing looseness may only be perfor-

med when the machine is connected to the carrying vehicle.

Signs of wear should be reported to the manufacturer's service. Detailed instructions for the wheel axle are attached to the machine documentation.

J.5.2.620.13.1.EN

6.17 BRAKE LINING THICKNESS CHECK



Figure 6.15Brake lining thickness inspection(1) inspection window

The friction linings of the drum brakes are subject to wear during transport. In this case, brake shoes should be adjusted or replaced with new ones. Transporting the machine in mountainous terrain causes faster wear of the brake linings. Check the thickness of the brake linings through

NOTE

Brake lining wear check:

- where the braking performance has decreased,
- in accordance with the inspection schedule,
- brakes overheating,
- in case there are unnatural noises
- coming from the vicinity of the wheel axle drum.

Maintenance and repair of the brake system should be entrusted to authorized service centers.

Driving with a defective brake system is unacceptable and may lead to serious accidents.

the inspection window - figure (6.15). If the lining thickness is less than 2mm, the brake shoes must be replaced with new ones. Adjustment activities should be performed by an authorized service center.

J.5.2.620.14.1.EN

6.18 CHECKING THE TIGHTNESS OF SCREW CONNEC-TIONS

TIGHTENING TORQUES FOR SCREW CONNECTIONS

During maintenance and repair work, appropriate tightening torques of bolted connections should be used, unless other tightening parameters are specified. Recommended tightening torques of the most commonly used bolted connections are presented in Table (6.9). The given values are for unlubricated steel bolts.

Hydraulic conduits should be tightened with a torque of 50-70Nm.

Check the tightening with a torque wrench. During the daily inspection of the machine



Figure 6.16Screw with metric thread.(1) strength class, (d) thread diameter

THREAD DIAMETER	5.8	8.8	10.9			
[mm]	TIG	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			

Table 6.9Tightening torques for screw connections

check for loose connections and retighten if necessary. Replace the lost elements with new ones.

TIGHTENING ROAD WHEELS

Road wheel bolts should be gradually tightened diagonally (in several stages, until the required tightening torque is obtained), using a torque wrench. The recommended bolt tightening sequence is shown in figure (6.18).

Road wheel bolts must not be tightened with impact wrenches, due to the risk of exceeding the permissible tightening torque, which may result in breaking the thread.

The wheels should be tightened as shown below:

• after the first run of the machine,





- every 20 km of driving during the first month of use,
- every 1,000 km of driving..

If the wheel was dismantled, repeat the above steps.

J.5.2.620.15.1.EN
6.19 TENSION CONTROL OF V-BELTS



(1) V-belts(2) gear wheel(3) tensioner(4) engine pulley

The correct process of shredding the material requires proper tension of the V-belts driving the cutting mechanism. If the belts show signs of wear, damage, fraying or have been excessively stretched, replace them with new ones. Incorrect tension of the V-belts will result in poor cutting performance, wear of the belts and pulleys.

TENSION OF V-BELTS

- open the front kalpa,
- unscrew and lift the top cover of the mowing mechanism,
- remove the side covers (5),
- · carefully inspect the pulleys, replace



Use only original spare parts. Always replace the V-belts in pairs. Particular attention should be paid to the condition of the V-belt guards and the completeness of their fastenings.

damaged or broken pulleys,

- check if possible axial and lateral play of both wheels,
- check the tension of the drive belts (1), if the belt tension is insufficient, use the tensioner (3) to tighten the belts so that under the pressure of 4.5 kg, the belt bends by 6 mm,
- check adhesion of drive belts to both wheels,
- put on all covers, close the working chamber, lower the front flap.

REPLACEMENT OF V-BELTS

- open the front hatch,
- unscrew and tilt the top cover of the mowing mechanism,
- remove the side covers (5),
- loosen tensioner bolt (3),
- remove worn V-belts. Unscrew the tensioner wheel and check if it rotates without jamming or disturbing noises, assess the condition of the bearings,
- · install new V-belts, starting from the

engine drive pulley (4),

- tighten the belts so that under the pressure of 4.5 kg the belt bends by 6 mm,
- check adhesion of drive belts to both wheels,
- put on all covers, close the working chamber, lower the front hatch.
- start the machine for a while, after



The belt gear rotates at high speed. It is forbidden to work with the machine with removed or damaged guards. Risk of serious accidents. Damaged parts of the belt transmission must be re-

placed with new ones, recommended by the machine manufacturer.

turning it off, check the belt tension again.

I.5.2.620.16.1.EN

CHAPTER 7

MOTOR

7.1 GENERAL INFORMATION

The section MOTOR MAINTENANCE presents only the technical description of the motor and instructions for starting, operating and maintaining the motor. During the service, the current standards and legal regulations as well as all internal regulations apply.

For the proper use of the motor, the prescribed inspection and maintenance intervals must be adhered to. Failure to follow these rules will damage the motor.

K2.2.4.415.01.1.EN

7.2 SAFETY RULES WHEN OPERATING THE MOTOR

- Before starting the motor, it is necessary to read the manual of the machine and the motor. This will prevent accidents, enable proper operation and maintenance and thus ensure maximum motor life.
- Before starting the motor, make sure that all intended protection devices are installed.
- Motor service, maintenance and repairs may be performed only by authorized (qualified) persons.
- Do not run the motor in an enclosed or unventilated place. Motor exhaust contains a toxic gas that can lead to unconsciousness or even death.
- Keep away from rotating motor parts.
- Keep a safe distance from hot motor components. Danger of burns. Keep flammable and explosive materials away from the motor.
- A lost or damaged fuel filler cap should always be replaced with an original replacement cap.
- Do not remove the fuel filler cap when the motor is running or near an open flame.
- Fuel vapors are very toxic. Follow the fuel manufacturer's instructions.
- Only refuel with the motor switched

off.

- Do not completely fill the fuel tank.
 Leave room for fuel to expand.
- Wipe up any spilled fuel and oil immediately. Keep the motor and motor compartment clean.
- Keep away from the motor with open fire. Danger of ignition of fuel or oil vapors.
- Perform all maintenance and repair work with the motor stopped, cooled down and disconnected from the power supply. Disconnect the electric wires from the battery. The key for the ignition switch should be protected against unauthorized persons.
- During maintenance and repair work, use appropriate, tight-fitting protective clothing, gloves, boots, glasses and appropriate tools. It is forbidden to wear chains or other loose objects that can be easily hooked on the device
- Use only the machine mounted starter to start the motor. The use of electrical bypasses is prohibited.
- The drive motor is marked with information and warning stickers. Follow these comments.
- · Information and warning decals

should be legible throughout the entire period of use. Clean the stickers with clean water or water with a little detergent. In the event of their destruction, they should be replaced with new ones.

- The applicable regulations for the protection and disposal of used oils, coolants, filters and cleaning agents must be complied with.
- Perform a visual inspection of the fuel lines before starting the motor. The escaping fuel can cause injury and burns, and may cause a fire. Perform technical inspections regularly.
- During maintenance work, pay particular attention to the condensation

from the exhaust system, which may contain sulfuric acid. Acid burns are dangerous to health and life. Using fuels with a sulfur content above 15 ppm increases the amount of acid. If acid comes into contact with the skin, wash the area with plenty of clean running water. Remove wet clothes immediately. Consult a physician.

Running the motor at no load or at very low load for a long period of motor operation may negatively affect its performance. Make sure that the motor load is at least 15%. With such a low level of power utilization, the motor should be loaded more heavily shortly before it is turned off.

K2.2.4.415.02.1.EN

7.3 TECHNICAL DATA AND MOTOR CONSTRUCTION



Figure 7.1	Location of the information sticker.		
(1) information stic	ker	(2) QR code	
(3) motor model		(4) motor serial number	

By purchasing the PRONAR MR-15 mobile chipper, the user receives the operation and use manual of the manufacturer of the internal combustion motor.

The motor manufacturer has placed the QR code on the information sticker. After scanning the code with the appropriate

Content	Data
Date of purchase	
Model - Type - Code	
Motor serial no.	

Tabela 7.1	Basic motor parameters
------------	------------------------

Туре		61E377-0012-J1		
Motor type	-	four-stroke en- gine naturally aspira- ted air cooled		
Combustion system	-	direct injection		
Number of cylin- ders	-	2		
Bore/Stroke	mm	85,5 / 86,5		
Displacement	cm ³	993		
Oil pressure	Min.	1.0 bar at 900 rpm (min ⁻¹)		
Engine oil capa- city	L	2,4 (1)		
Plug slit	mm	0,76		
Plug tightening torque	Nm	20		
Clearance of the intake valve	mm	0,10 - 0,15		
Clearance of the exhalation valve	mm	0,18 - 0,23		
Battery power	max. Ah	12V / 45 Ah		
⁽¹⁾ - These values should be understood as approximate. The MAX marking on the oil level gauge is always decisive.				



device, technical support for the product will be displayed.

When ordering spare parts or wanting to obtain technical support for a combustion motor, please provide: date of purchase, model - type and serial number of the motor. This information should be read on the information sticker and it is recommended to write it down.

NOTE

The end user will receive the internal combustion engine manufacturer's manual when purchasing the machine.



When technical support is required, or when ordering spare parts, the date of purchase of the machine, model or code, and the engine serial number must be provided.

K.5.2.620.01.1.EN

7.4 MOTO START-UP

Before the motor is started for the first time, carry out the inspection as described in section *5.1 PREPARING FOR WORK BEFORE THE FIRST START-UP*.

PREPARING THE MOTOR FOR THE START-UP

Check and fill motor oil level. The motor must be horizontal when checking the oil level.

• Check and fill the fuel level in the fuel tank.

When the fuel tank is filled for the first time, when the fuel system is empty or after replacing the fuel filter, there will be a difficult start before fuel has filled the entire fuel system.

STARTING THE MOTOR

- Open the cover (4) of the control panel (3). Put the ignition key (1) into the ignition switch - figure 7.3.
- Turn the key (1) to the ON "1" position, then to the START "2" position".

Use short starting cycles (maximum 5 seconds) to extend the life of the starter. Wait one minute between starting attempts.

Before starting the machine, make sure that there are no bystanders in the danger zone. Do not run the engine in closed or unventilated rooms, the motor exhaust fumes are highly poisonous.

Fuel and fuel vapors are flammable and explosive.

Before each start-up the operator must check that the machine is in a safe condition. Never use an aerosol spray to assist in starting the motor!



Figure 7.3Starting the motor(1) ignition key(2) lever(3) control panel(4) panel

- (4) panel cover
- After starting the motor, release the ignition key.

The key returns to the "1" ON position and remains in this position while the motor is running. Subsequent start-up can be performed after resetting the ignition switch (key in "0" OFF position).

· Set the desired motor speed with the

During breaks in work or after using the machine, secure the key against unauthorized access. Protect the ignition switch against dirt and moisture. With the ignition key pulled out, close the control panel cover.

control handle (2).

K.5.2.620.02.1.EN

7.5 MOTOR SWITCHING OFF

NOTE

When the machine is turned off, always turn the ignition key to the "0" position, otherwise the battery may be completely discharged.

Depending on the situation, the motor can be turned off in two ways:

- The ignition key.
- Emergency button.

SWITCHING OFF THE MOTOR WITH THE IGNITION KEY

Reduce the motor speed to a minimum using the lever, wait a moment - figure (7.3).

Turn the ignition key to the "0" OFF position

The motor will turn off.

- Remove the ignition key.
- Close the control panel cover.

SWITCHING OFF THE MOTOR WITH THE SAFETY BUTTON

At any time during the machine operation, pressing one of the two safety buttons (1) will stop the feed and immediately turn off the motor. *The motor, and thus the operation of the machine, will be stopped.*

Sudden motor stoppage is justified in unexpected situations, such as a threat to health and life, serious failure, fire, etc.

Before stopping the motor, reduce motor speed, wait a few moments, and then stop the motor. Do not stop the motor at high speed and while grinding the material.



Figure 7.4 Safety buttons.

STOP will be displayed on the control panel.

Turn the ignition key to the "0" OFF position and remove from the ignition switch.

After removing the ignition key, pull back the safety button and make sure it returns to its starting position.

7.6 TECHNICAL INSPECTIONS

Table 7.3 Motor inspection schedule

	After the first 5 hours of operation	every 8 - 15 hours or every day before first use	every 100 hours	every 250 hours	In case of emergency	The review is performed
Inspection		•				U
Cleaning the engine					•	U
Checking the engine lubricating oil level		•				U
Spark plug inspection and replacement			•			U
Clean or replace the air filter			•			U
Cooling air area control		•				U
Oil and oil filter change	•		•			U
Valve lash inspection and adjustment				•		S
Checking the tightness of screw connections	● (1)		•			S
Replacing the fuel filter			•(2)		•	S
(1) - or after 12 months at the latest, regardless of the total num	ber o	of moto	or op	eratiı	ng ho	ours

(1) - or after 12 months at the latest, regardless of the total number of motor operating hours
 (2) - the frequency of servicing the fuel filter depends on the cleanliness of the fuel used and may require a reduction of up to 250 hours of motor operation
 S - Warranty service; U - User

During the warranty period, inspections marked with the letter "S" in the table are performed by the warranty service. After the warranty expires, it is recommended that they are performed by specialized repair shops.

The inspections marked in the table with

the letter "U" are performed by the machine operator in accordance with the established schedule.

Maintenance work beyond the scope described in the manual may only be performed by authorized (qualified) persons.

7.7 A WALK AROUND

A walk-around inspection is a detailed inspection of the motor compartment. Perform it each time before starting the machine. During the round, pay special attention to fuel and oil leaks. If a leak is found, determine the location and cause of the leak. Wipe up any spilled liquid and repair or replace damaged parts before starting the motor.

- Check completeness of plugs, caps, etc.
- Check that the safety guards are technically sound and properly fastened.
- Check the wiring harnesses for damage (abrasion, broken wires, loose parts, contact with hot parts, etc.).
- Pay attention to loose screw connections, retighten if necessary.
- Check the hoses for mechanical

Damaged fuel lines can cause fuel to leak under high pressure, which can cause a fire.

It is forbidden to use the machine with damaged lines. Faulty and leaking lines may be the cause of a more serious fault.

damage and leaks. Damaged or weakened cables should be replaced with new ones. Check the clamps and tighten if necessary.

- Check that the motor compartment is clean, remove impurities if necessary.
- If a DO NOT OPERATE (or similar) label is displayed, contact the person who posted the warning. The motor may be out of order.

K2.2.4.415.07.1.EN

7.8 MOTOR CLEANING

Before cleaning the motor, stop the motor and turn the main electric switch to the OFF position. For the time of cleaning, it is recommended to put the DO NOT OPERATE tag in a visible place

(e.g. near the main electrical switch or ignition switch).

Always keep the motor clean. Do not use aggressive chemicals to clean the motor. Usually, blowing with compressed air is sufficient. In case of any doubts, it is recommended to contact the advisors of the motor manufacturer. When cleaning, avoid dampening of electrical components (cables, starter, sensors, etc.). If this is unavoidable, first disconnect the battery



Cleaning, maintenance and repair work should only be carried out with the motor switched off. A motor contaminated with grease, fuel or oil creates a fire hazard. Accumulated sludge or spilled flammable liquids must be removed on a regular basis.

and dry all components thoroughly with compressed air before reconnecting. Visually inspect the motor for leaks. Do not wash the motor and its accessories with a high-pressure cleaner. The pressure can cause a lot of damage and the water can get into undesirable places. Observe the instructions in the chapter "Machine cleaning".

K2.2.4.415.08.1.EN

Motor

7.9 INSPECTION OF THE MOTOR LUBRICATING OIL LEVELA

 Stop the motor and wait a few minutes for the motor oil to build up in the crankcase.

The motor must be cool and level.

- Clean debris from the motor in the area of the oil dipstick(1).
- Remove the dipstick and wipe it dry.
- Insert and remove the dipstick to check the motor oil level.

Add motor oil up to the top mark on the dipstick.

- If the oil level in the motor is too low, unscrew the filler plug (2) and add the correct amount.
- After adding fresh oil, allow the oil to flow into the oil pan then check the oil level again.
- Close the filler cap (2) and install the dipstick (1).



Figure 7.5
(1) level gauge

Motor lubricating oil. (2) filler plug

Operating of the motor with the oil level below the MIN level. or above the MAX level. can damage the motor.

When checking the oil level, the motor must be cool and in a horizontal position.

Too high an oil level may be the result of a leak in the fuel system, cooling system or other fault.

K2.2.4.415.09.1.EN

7.10 SPARK PLUG INSPECTION AND REPLACEMENT



(1) spark plug

(2) cap

• On a cold motor, remove the cap (2).



The internal combustion motor generates large amounts of heat during operation, wait until the engine cools down before starting maintenance and repair work. Probability of burns.

- Unscrew the spark plug (1) and check the gap with a feeler gauge, the correct value should be 0.76mm.
- Adjust the gap between the electrodes or replace the spark plug.
- Install the spark plug and tighten it to 20Nm.
- Put on the cap.
- Repeat for the second candle..

K.5.2.620.04.1.EN

7.11 CLEANING OR REPLACING OF THE AIR FILTER



Figure 7.7	Air filter		
(1) air filter		(2) safety filter	
(3) the cover		(4) retainer	
(5) nut		(6) sleeve	

Table 7.4List of air filters

Name	Manuf. no.
Pre-air filter (2)	692520
Air filter (1)	692519

• Unscrew the nut (5) and remove the cover (3).

Do not start the motor without the air filter. Contaminated air getting into the combustion chamber can permanently and seriously damage the engine. Use filters recommended by the motor manufacturer.

NOTE

Dirty pre-filter can be washed in water with some detergent. Install after complete drying. Do not lubricate the prefilter with oil.

- Remove the sleeve (6) and the retainer (4).
- Remove the air filter (1) with the prefilter (2).
- Tap the air filter (1) lightly on a hard surface and blow it out with compressed air. If the air filter is very dirty, replace it with a new one.
- Wash the pre-filter (2).
- After the pre-filter is dry, reassemble the filter set in reverse order.

K.5.2.620.05.1.EN

7.12 COOLING AIR AREA INSPECTION

The internal combustion motor is aircooled. Dirt or debris can restrict air flow and cause the motor to overheat, resulting in reduced motor performance and life.

- Open the motor hood.
- Clean the cover vents with a brush or compressed air.
- Check and remove any residual combustible material from the exhaust system.
- Clean the oil cooler fins.

NOTE

Strong dirt is a signal that due to a large amount of dust, the intervals between maintenance intervals of the air filter should be shortened accordingly.

Over time, the space between the fins of the motor cylinders becomes dirty, which leads to the motor overheating. In order to clean the debris, remove the motor covers.

It is recommended to commission these activities to specialized service points.

K.5.2.620.06.1.EN

7.13 OIL AND OIL FILTER REPLACEMENT



Use oils and filters recommended by the motor manufacturer. The use of unsuitable components may result in a serious failure and the loss of warranty.

Regular oil changes together with the oil filter are necessary for the proper operation of the internal combustion motor.

- Start the motor and warm up the oil, stop the motor.
- Remove the dipstick (4).
- Unscrew the drain plug (3) and drain

NOTE

Just before changing the oil, bring it to normal operating temperature.



The hot oil may cause burns, be very careful.

the used oil into a container.

- Unscrew the used filter (1).
- Clean any dirt around the drain plug and oil filter base.
- Screw in the drain plug.
- Before installing the new oil filter, coat the seal with a little clean motor oil.
- Screw on the new oil filter with your hand, no additional tools are required.
- Insert the oil dipstick (4). Unscrew the oil filler cap (2).
- Clean the oil filler cap area. Pour in new oil.
- Close the filler cap, insert the oil dipstick, thoroughly wipe up any spilled oil.
- Start the motor and check if there are any leaks.
- Check the oil level and top up if necessary.

K.5.2.620.07.1.EN

7.14 CONSUMABLES

 Table 7.5
 Briggs & Stratton Consumables Listing

Place of use - name	Qty	Number/type/standard
Air filter	1 pc	692519
Preliminary air filter	1 pc	692520
Engine oil filter	1 pc	842921
Fuel filter	1 pc	691035
Engine oil (with sump)	2,4 L	SAE 30 100028
Fuel tank - unleaded gasoline	35 L	PN-EN 590+A1:2010



Figure 7.9 Oil viscosity grade depending on temperature



The unproper engine oil will significantly shorten the life of the engine.

Use only motor oil that meets the specifications of the motor manufacturer.

For best performance it is recommended to use warranty certified Briggs & Stratton oil. Other high-quality oils are also allowed. Detergent-added oil if marked "For Service SF, SG, SH, SJ" or higher. Special additives should not be used.

The ambient temperature determines the

Tabela 7.2	Classification	of	engine	oils
	Olassincation		Chighte	0113

Lp.	Type of engine oil
Α	SAE 30 - If SAE 30 oil is used below 40°F (4°C) the engine will have difficulty starting
В	10W30 - At temperatures above 80°F (27°C), the use of 10W-30 oil may result in increased oil consumption. Check the oil level more frequently.
С	5W-30
D	5W-30 synthetic oil
E	15W-50 synthetic oil

appropriate oil viscosity in the motor. Refer to figure (7.9) for the best oil viscosity for a given ambient temperature range.

K.5.2.620.08.1.EN

7.15 TROUBLESHOOTING

Table 7.6Motor faults and method to remove them

Fault	Possible cause	Remedy/Solution	
Motor will not start or	No fuel in the fuel pump.	Pour in fuel Check the entire fuel system thoro- ughly. If no results are found, check: - cable leading to the engine, - fuel filter, - operation of the feed pump.	
starts poorly but can be turned with starter.	Not enough compression: - Incorrectly set valves. - Worn valves. - Worn cylinder and / or piston ring.	Check valve clearance, adjust if necessary. * Make a repair *	
	Defective spark plugs.	Check spark plugs, replace if neces- sary *	
The motor starts but immediately cuts out when the starter is disengaged.	Engine starting speed too low: - Oil too thick. - Insufficiently charged battery.:	Change engine oil. Pour in oil of the correct viscosity grade * Check the battery, if necessary, contact the service center.	
Defective starter or motor will not rev up	Interference in the electrical system: - Battery cables and / or other cable connections incorrectly connected. - Loose and / or rusty cable connections. - Defective and / or not char- ged battery. - Defective starter. - Faulty relays or monitors, etc.:	Check the electrical system and its parts or contact the service center	
The motor starts but	Fuel filter clogged.	Replace filter *	
when the starter is disengaged.	Fuel circulation interrupted.	Check the entire fuel system thoro- ughly.	
	Mechanical damage.	Contact the service center	
The engine cuts out by itself	Fuel circulation interrupted: - Empty tank. - Fuel filter clogged. - Fuel feed pump faulty.	Refuel. Replace filter * Check the entire fuel system *	

Fault	Possible cause	Remedy/Solution								
	Defective fuel system:	Refuel.								
	- Empty tank.	Replace filter *								
	- Fuel filter clogged.	Provide sufficient fuel tank ventila-								
The engine loses	- Insufficient tank venting.	tion								
power and RPM.	Leaky line connections	Check the tightness of the line con-								
	Leaky life confilections.	nections.								
	Linovan angina speed	Check the operation of the fuel dose								
	oneven engine speed.	control solenoid valve.								
Engine loses power	Dirty air filtar	Clean the air filter or replace it with								
and RPM, black smo-		a new one if necessary. *								
ke is rising from the exhaust pipe.	Valves not adjusted.	Valves adjustment *								
	Too much lubricating oil in the	Drain the engine oil to the upper								
The engine is	engine.	mark (MAX) of the dipstick								
overheating	- Contaminated entire area of cooling air.	Clean the cooling air area.								
*during the warranty period, inspection and repair should be performed by the warranty service										

K.5.2.620.09.1.EN

CHAPTER 8

LUBRICATION

8.1 LUBRICATION

Lubrication of the machine should be performed according to the specified schedule or each time after washing the machine, regardless of the time of the last lubrication treatment. Keep the lubrication points clean as excess lubricant contributes to the deposition of dirt. Lubrication should be performed with the use of generally available tools such as manual grease guns, foot grease guns, with a pneumatic drive, etc., filled with the recommended lubricant.

Before lubricating, remove excess old lubricant and other contamination. Check

Empty grease or oil containers should be disposed of in accordance with the recommendations of the lubricant manufacturer.

Before starting work, secure the machine against unintentional start-up by third parties.

the grease nipples and the set of plugs, if necessary add missing elements. After finishing work, wipe off excess grease or oil.

L.2.4.415.01.1.EN

8.2 LUBRICATION SCHEDULE

	Table 8.1	Machine	lubrication	schedule
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Name	Number of po- ints	Type of grease	Frequency	
Ball coupling (1)	1	В	3M	
Overrun device	2	A	12M	620-J.18-1
Handbrake pivot (1)	1	A	12M	
Articulating elements of the mechanism (2)	4	A	12M	620-J.19-1
Hub bearings (1) (2 in each hub)	4	A	12M	620-J.20-1

Name	Number of po- ints	Type of grease	Frequency	
Lubrication block (1)	6	В	6M	620-J.21-1
Lock pins (2)	3	С	12M	
Hopper hinge (3)	1	С	6M	

Table 8.1	Designation	of symbols in	Table 8.1
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Symbol										
Type of grease										
A general purpose machine grease (lithium, calcium),										
В	solid lubricant for heavily loaded elements with the addition of MoS2 or graphite									
С	anti-corrosive spray									
	Frequency									
D	working day (8 hours of trailer operation)									
М	month									

L.5.2.620.01.1.EN

CHAPTER 9

COMPLETION OF TIRES



Table 9.1Machine tires

NO	Tire size	Speed / Load Index
1	155/70R13C	85/83Q
2	155/80R13	79T

 	 	 	 - - - - -	 													