



ENERGREEN®

Professional machinery

NEW SPEED



Dynamic solutions with men and equipment always in the forefront

**USE AND MAINTENANCE INSTRUCTION MANUAL
CUTTING HEAD NEW SPEED 120 - 150**

NEW SPEED

EQUIPMENT FOR CUTTING GRASS, SHRUBS
AND THE MAINTENANCE OF GREEN AREAS

CAUTION

**BEFORE USING THE MACHINE, READ
THIS MANUAL CAREFULLY**

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

Dear Customer,

Thank you for having purchased an “**ENERGREEN**” product. We are pleased to provide you with this user manual to enable you to use our product correctly and obtain the best results with your work.

Please read the recommendations in the following pages with care, and make the manual available to the personnel who will be responsible for operating and maintaining machine.

ENERGREEN is at your disposition for any clarifications you may require, either when commissioning or using the machine.

Should you require routine or extraordinary maintenance interventions, **ENERGREEN** puts its personnel at your disposal to give you all the support and assistance and spare parts you might need.

Please find below a list of our useful phone numbers and address in order to receive faster assistance:

ENERGREEN.

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1 - GENERAL DESCRIPTION

1.1 - PRELIMINARY INFORMATION

This use and maintenance manual complies with the Machinery Directive 2006/42/EC and subsequent amendments and integrations.

Do not destroy or modify it; any additions must be made by adding files.

Manual code: EENUM31906
Revision no.: 06
Edition: 05/2018
Machine type: Professional flail hedge mowers
Model: NEW SPEED 120 - 150

The manual is valid from serial number: 120051810362
150061810407

Manufacturer data: ENERGREEN Srl
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for spares: parts@energreen.it

1.2 - TRAINING REQUIRED OF THE OPERATOR

Reading this manual thoroughly:

- All machine operators and maintenance personnel must read this entire manual thoroughly and carefully and follow the instructions provided.
- It is the duty of the employer to ensure that operators possess the skills required to operate the machine and that they have read this manual carefully.

1.3 - INSTRUCTIONS FOR USE AND STORAGE

The operating rules contained in this manual apply only to the ENERGREEN machine Mod. NEW SPEED 120 - 150.

This instruction manual must be read and used as follows:

- The instructions manual must be considered an integral part of the machine and must be read carefully;
- The instructions manual must be easily accessible to operators and maintenance technicians;
- Keep the manual for the entire lifetime of the machine;
- Ensure that any updates are incorporated in the text;
- Give the manual to any other user or subsequent owner of the machine;
- Use the manual in such a way as not to damage it or its contents;
- Do not remove, tear out or rewrite any part of the manual for any reason;
- Keep the manual away from moisture and heat;
- In the event that the manual is lost or partially damaged or it is otherwise not possible to read part or all of its content, a new copy should be requested from the manufacturer.

Pay the maximum attention to the following symbols and their meanings. They serve to highlight particular information such as:

CAUTION

Refers to supplements or suggestions for correct use of the machine.

WARNING



Refers to dangerous situations which can occur when using the machine, that could cause serious injuries or property damage.

DANGER



Refers to dangerous situations that may arise when using the machine, which if not avoided, could cause serious injuries or death.

1.4 - INTRODUCTION

The service standards outlined in this manual represent an integral part of the machine supply contract.

These instructions are also addressed to operators already specifically trained to operate this kind of machinery and contain all information necessary and essential for safe operation and correct/optimal use of the machine. Rushed and incomplete preparations lead to improvisation, the cause of many accidents. Read the following suggestions carefully and put them into practice before starting work:

- Familiarise yourself with all the operations that can be performed and work positions before manoeuvring the machine;
- The instructions manual must be available to the operator at all times;
- Programme all interventions carefully;
- Get all the information necessary for the transporting the machine on the road such as distance, rout, height of level crossing, bridge capacity etc.
- Have a detailed understanding of where and how the machine is intended to be used: ground bearing capacity, boom scope needed, limitations to movement due to the presence of buildings, power lines etc.
- Before starting work, make sure that the safety devices are working correctly and that there are no doubts regarding their functionality. If they are not working correctly or you have doubts, do not under any circumstances use the machine;
- While travelling on the road comply with all the rules and regulations of the highway code.
- Carefully follow the warnings regarding specific hazards indicated in this manual;
- Regular and thorough preventive maintenance will guarantee that the machine is always at its highest possible level of operational safety. Never put off the necessary operations, and ensure they are performed exclusively by specialised personnel, using only original spare parts.

1.4.1 - UPDATES TO THE MANUAL

The information, the descriptions and the illustrations contained in this manual reflect the state of the art at the moment the machine was sold.

The manufacturer reserves the right to make modifications to its products at any time for technical or commercial reasons. In the event that such modifications are made, the Manufacturer is under no obligation (for safety reasons) to modify the other machines sold up to that moment or issue updates to the manual. Moreover, this publication shall not be considered lacking in any way. Any supplements that the Manufacturer considers appropriate to supply at a later date must be kept together with the manual and considered an integral part of it.

1.4.2 - COPYRIGHT

The copyright of this manual belongs to the machine's manufacturer. This manual contains technical texts, drawings and illustrations which may not be divulged or transmitted to third parties, in whole or in part, without the written authorisation of the machine manufacturer.

1.5 - WARRANTY

Materials supplied by ENERGREEN are covered by a 12-month warranty, from the date of commissioning as indicated on the delivery note. In any case, refer to the machine order confirmation for special arrangements agreed during the sale.

ENERGREEN reserves the right to repair, or substitute, the pieces it agrees are defective during the warranty period (see the coupon booklet enclosed)

By replacing the defective part, ENERGREEN shall consider itself absolved from any other expense borne by the Dealer and the Dealer's Customer, for instance presumed damages, either present or future, such as lost earnings, liquidated damages, etc.

Scheduled and extraordinary maintenance must be performed in accordance with the instructions given in this manual. For all the cases not included and for any type of customer assistance you should contact the ENERGREEN company directly by means of registered letter or fax even when agreements are made over the telephone. ENERGREEN does not accept any liability for any delays or failure to intervene.

ENERGREEN shall not be held liable for any damage or malfunctions due to work of a technical nature being carried out on the machine by unauthorised personnel.

1.6 - LIABILITY

ENERGREEN shall not be held liable for any incident involving personal injury or property damage which may occur due to:

- Failure to comply with the instructions provided in this manual regarding the operation, use and maintenance of the machine.
- Abrupt movements or incorrect manoeuvres when operating or carrying out maintenance on the machine;
- Modifications made to the machine without the prior written authorisation from ENERGREEN;
- Events that fall outside the normal and correct use of the machine.

In any event, should the user ascribe any incident or accident to a machine defect, they must be able to demonstrate that the consequent damage was a principal and direct consequence of such a defect. Any tampering with the machine or the use of non-original spare parts can be grounds for voiding the warranty and put the operator's safety at risk.

WARNING



- **Always use original spare parts for repairs and maintenance.**
- **ENERGREEN shall not be held responsible for any damage which should occur due to failure to follow the above requirements.**
- **The machine is guaranteed according to the contractual agreements specified at the time of sale.**
- **The warranty shall nevertheless lapse whenever the regulations and instructions laid out in this manual should not be followed.**

1.7 - PERMITTED USES

The NEW SPEED 120 - 150 cutting head has been built to be used by professional personnel, mainly for green area maintenance and cutting plants or plant material found on the ground such as grass, reeds, bushes and shrubs having a maximum stem diameter of 8 cm.

The machine uses the high rotation speed of the flails to cut the materials and is operated by a hydraulic motor via a hydrostatic transmission driven by a belt wound between two pulleys.

The equipment must not be used with the cutting head raised from the ground and/or without its safety guards installed.

Any other use shall be considered inappropriate, and the manufacturer shall not be held responsible for any damage to the machine or other property, or for injuries which may result.

The machine is suitable for cutting operations at a speed of up to 8-10 km/h. It is only possible to achieve this speed if lift float devices are active, taking into account the condition of the ground and the type and condition of material to be cut (length, whether dry or wet, density etc.)

This machine is generally used during daylight hours. If, under exceptional circumstances, it has to be used at night or in conditions of reduced visibility, an auxiliary lighting system must be used. Always operate in daylight or with artificial lighting which guarantees visibility of at least 100 m.

1.8 - IMPROPER OR NON-PERMITTED USES

WARNING



This section indicates some of the uses considered improper or otherwise not permitted. Because it is impossible to predict all possible improper uses, in the event that you wish to use the machine for uses other than those indicated, contact ENERGREEN before carrying out any work.

The following uses must always and absolutely be avoided:

- Use of the machine by minors, inexperienced, untrained persons.
- Use of the machine to lift persons or things.
- Use of the cutting head as a piledriver.
- Use of the machine to tow accident-damaged vehicles.
- Use of the machine to shred brushwood and shrubs with diameter greater than 8 cm.
- It must not be used on surfaces on which there is glass, loose stones, pieces of metal or other foreign bodies that could be thrown into the air by the blades or damage the cutting head.
- Lifting or pulling loads.
- Use the boom to push and / or pull objects;
- Putting the machine into contact with accessories or equipment classified as dangerous due to their chemical or physical properties (e.g. flammable, toxic, explosive, etc. materials).
- Overloading the machine beyond its permitted limits.
- Use the machine with tools that have not been authorised by Energreen.
- Make modifications to the machine (hydraulic, electric or mechanical).

DANGER



- **Using the machine as mentioned above can cause tipping hazards or structural failure that could result in injuries or even death.**
- **The use of the machine without suitable safety guards can be dangerous both for the operator and for people or animals that are within the range of action of the machine.**

1.9 - RUNNING IN AND TESTING THE MACHINE

Every machine is scrupulously adjusted and tested before delivery. A new machine must however be used with caution for the first 100 hours, to carry out a good running-in of the various components.

If the machine is subjected to an excessive work load when it is first used, its performance may be affected and its functionality reduced within a short space of time.

1.10 - FOR YOUR SAFETY

- Never remove the safety guards when the cutting head and/or its accessories are moving.
- When the cutting head is in operation, it is recommended to keep at a safe distance of 100 m.
- The flails must never touch the ground during operation.
- Before carrying out any work on the cutting head, for example cleaning or maintenance, disengage the tractor PTO, wait for the rotor to come to a complete stop and switch the engine off.
- Do not carry passengers on the tractor while transporting or using the cutting head.
- When the rotors are rotating, do not attempt to introduce or remove materials in any way, and especially not using your hands or feet.
- Do not lift the cutting head more than 20 cm from the ground when the rotor is moving.

2 - MACHINE CHARACTERISTICS

2.1 - MACHINE DESCRIPTION

The “NEW SPEED” cutting head has been designed to be used by professional personnel for green area maintenance, mainly for cutting plants or plant material found on the ground such as grass, reeds, bushes and shrubs having a maximum stem diameter of 8 cm.



2.2 - STANDARDS FOLLOWED

This machine was designed and constructed in compliance with EC directives on safety and approximation of the laws of Member States, Specifically to the Machinery Directive 2006/42/EC, where applicable.

The following Standards were also taken into account during the machine's design:

UNI EN ISO 12100:2010 “safety of machinery” (terminology).

The following harmonised standards were used for updating the machine:

UNI EN 13524:2003+A2:2014.

As well as the following technical specifications:

ISO 11684:1995;
EN ISO 3767-2:2016;
ISO 3767-1:2016.



ENERGREEN[®]
Professional machinery

2.3 - COPY OF EC DECLARATION



ENERGREEN[®] **SRL**

AZIENDA CON SISTEMA
DI GESTIONE QUALITÀ
CERTIFICATO DA DNV
= ISO 9001 =
151550 - 2014

Mod.: EENAT31902

Declaration EC of compliance - Directive 2006/42/CE Attachment IIA

The Manufacturer ENERGREEN SRL
 VIA PIETRE 73
 36026 CAGNANO DI POJANA MAGGIORE, VICENZA, ITALY

DECLARES THAT THE FOLLOWING MACHINE:

Denomination: **PROFESSIONAL MOWING MACHINE**
Function: **MOWING**
Model/Type/Commercial Denomination: **CUTTING HEAD MOD. NEW SPEED 150**
Serial Nr: **XXXXXXXXXX**

IS IN ACCORDANCE WITH THE REGULATIONS WITH REFERENCE TO THE FOLLOWING DIRECTIVES AND THE RELATING NATIONAL REGULATIONS OF REALIZATION:

✓ **2006/42/CE Machines directive**

IT IS IN COMPLIANCE WITH THE FOLLOWING HARMONIZED STANDARDS:

UNI EN 13524:2003+A2:2014

IT IS IN COMPLIANCE WITH THE FOLLOWING REGULATIONS AND TECHNICAL SPECIFICATIONS:

- **ISO 3864-3:2012,**
- **ISO 11684:1995**

AUTHORIZED PERSON TO ISSUE THE TECHNICAL DOCUMENTATION:

Name: **Fraron Ivo**

Address: **c/o ENERGREEN S.r.l, Via Pietre, 73 - 36026 Cagnano di Pojana Maggiore (VI)**

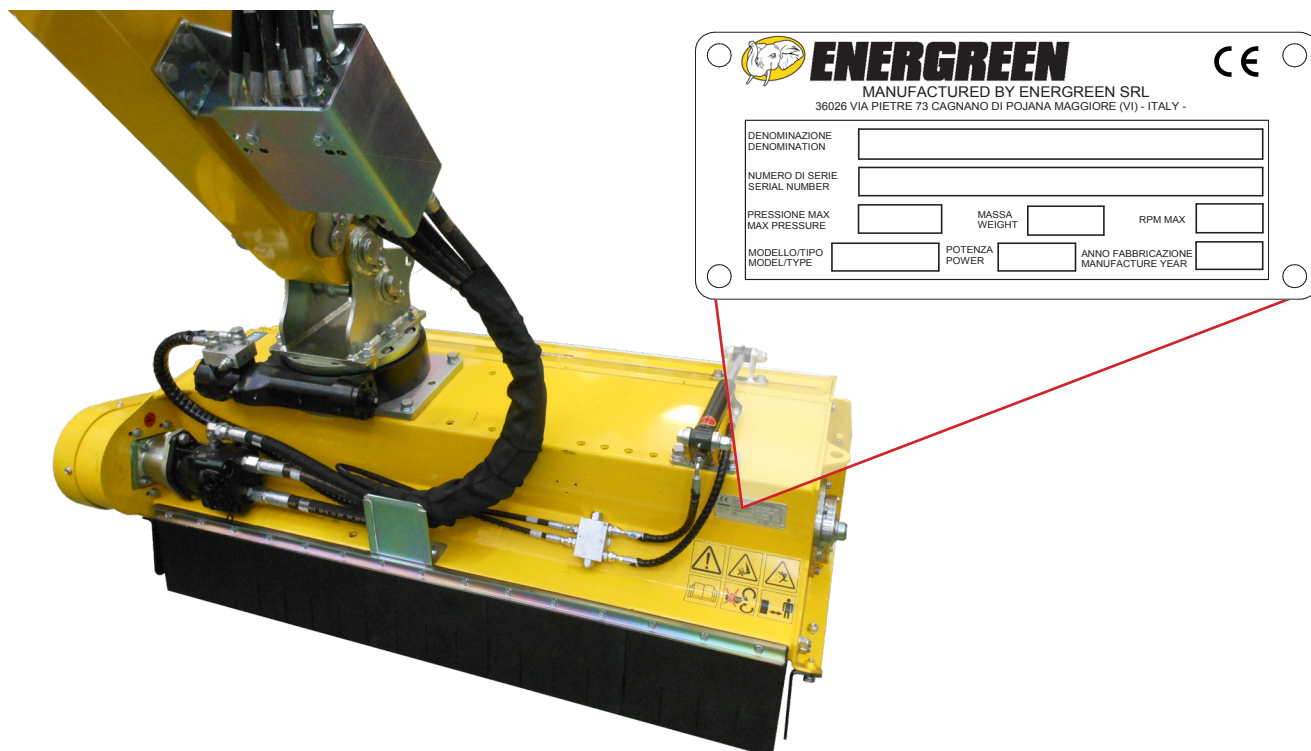
Date, Poiana Maggiore, XXXXXX

Responsible in charge
Fraron Ivo

ENERGREEN S.r.l.
Via Pietre, 73
36026 Cagnano di Pojana Maggiore (VI)
Part. IVA: 02799730243

2.4 - IDENTIFICATION OF THE MACHINE

The machine identification plate (A) is fastened to the right-hand side of its frame.
 The serial number (B) is stamped on the right-hand side of its frame.



WARNING



- Adhesive warning/information plates have been affixed to the machine, the purpose of which is to make it safer to use. For this reason, they must be replaced if they are no longer legible.
- The operator must not be someone who only works occasionally on this machine. He/she must be experienced with this type of machine and therefore trained to use it.
- Whenever direct visibility of the work zone from the control station is not sufficient, the operator must be assisted by a specifically assigned person.
- In order to be safe, the person assisting the operator must always stand at the side of the machine and NEVER in front of or behind it, and at a safe distance (more than 50 meters).
- Check the condition and operation of any part subject to wear daily: (pins, valves, piping, etc.). When necessary, replace with original materials.
- Do not tamper with the hydraulic system for any reason, and in any case never remove the seal from the valves, or any and all warranties shall lapse. Contact an authorised ENERGREEN repair centre if the valves require adjustment.

2.5 - NOISE LEVEL

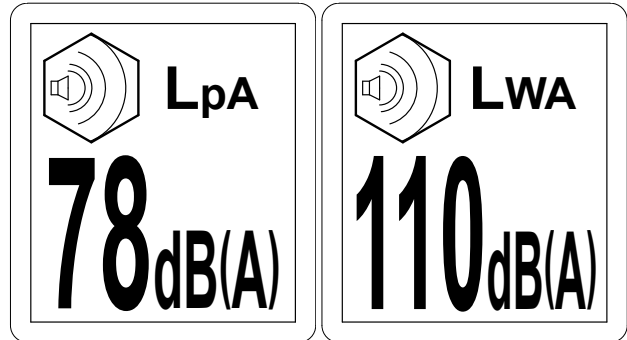
This value indicates the maximum sound level perceived by the operator's ear inside the fully enclosed cab.

The test was carried out with an ILF S1500 machine, in the various operating conditions.

This value refers to the sound level perceived by the operator inside the cab.

Standards:
ISO 3744:2010
ISO 11201:2010

Directive 2006/42/EC



3 - SAFETY INSTRUCTIONS

3.1 - GENERAL SAFETY RULES

3.1.1 - FULLY UNDERSTANDING THE MACHINE

The machine must be used exclusively by qualified personnel, who must be familiar with the location and function of all controls, tools, indicators, indicator lights and the various safety plates.

3.1.2 - WEARING PROTECTIVE CLOTHING

Wear tight-fitting clothing and use safety equipment which meets applicable regulations.



3.1.3 - INSTRUCTIONS FOR CARRYING OUT INSPECTION AND MAINTENANCE

When maintenance is being carried out on the machine:

- Remove the keys from the ignition before carrying out any checks or maintenance.
- Place a “DO NOT START ENGINE” sign on the machine in a clearly visible position.
- Delimit the area with road cones.
- Before carrying out maintenance, make sure that you know which operations have to be carried out.
- In the case of an extraordinary maintenance where the machine or parts of it have to be lifted, go to a service centre that is equipped with suitable lifting devices.
- If carrying out ordinary maintenance, position the head on level ground and make sure that the machine cannot move.
- On the other hand, if you need to replace the support roller and/or the rotor, you can place the head in an upright position (only if it is connected to the mower arm, otherwise do not do this) and with the aid of lifting equipment and suitable accessories, remove / install the components (rotor and/or support roller).

3.1.4 - INSPECTING THE MACHINE

- Inspect the machine thoroughly every day before using it, checking the condition and functionality of parts that are subject to wear: (pins, valves, piping, etc.). When necessary, replace with original materials.
- Start the engine only in a well ventilated area and ensure that there are no persons in the machine's working range.
- Covers and safety devices must not be removed. They are designed and manufactured for your safety.
- Do not use the machine if the safety devices or covers are damaged or missing.
- Make sure all safety devices are put back in place immediately after cleaning or repair work has been carried out.
- Keep the machine and all its accessories clean and in good working order at all times, removing any cut material that has been deposited on the machine.

WARNING



FIRE HAZARD

- It is strictly prohibited to make changes to the machine without the prior authorisation of the manufacturer.
- Changes to the machine can cause hazards and injuries.
- - The manufacturer shall not be held responsible for the machine if these instructions are not followed.

Range of action means an area that should be free of people, as it could be hazardous. Also consider the information contained in the individual equipment manuals and the different work modes in which the machine operates.

3.2 - GENERAL PRECAUTIONS

- Operators must not be occasional users, but those who have a certain amount of experience with this type of machine.
- An operator is a person trained to work with this type of machine and/or equipment
- It is mandatory to read and follow the instructions indicated in the use and maintenance manual before performing any operation or manoeuvre with the machine. It is too late to do so while working. Improper use or an incorrect manoeuvre can result in serious damage to persons or property;
- Operators and maintenance technicians must be very familiar with the machine, especially regarding the dangers associated with misuse or making incorrect repairs.
- Whenever direct visibility of the work zone from the control station is not sufficient, the operator must be assisted by a specifically assigned person.
- Before starting up the equipment, carry out all the checks on self-propelled vehicles regarding:
 1. Operation
 2. Road safety
 3. Accident prevention regulations
 4. Safety guards
- Even when the machine is being used correctly, stones or other things can be thrown a considerable distance by the machine. **Therefore, there must not be anyone within the danger area of 100 m.** Pay great attention when working near roads or buildings;
- Before beginning a day's work, always check the condition of the tools and all the guards. If they are damaged or missing, replace them.
- Make sure that nobody can start the machine by mistake whilst the machine is being inspected or repairs are being carried out.

- Do not wear loose clothing.
- Never use the cutting head to lift persons or things.
- Never work, walk or stand under the cutting head i.e. the raised boom.
- Never carry persons on the cutting head.
- Never stand next to the tool unless it has come to a complete stop.
- Before starting the machine, make sure that there are no people and/or animals within the range of action of the machine.
- Before leaving the machine unattended, proceed as follows:
 1. Make sure that no functions can be activated.
 2. Stop the machine and put the brake on. In the case of steep slopes, insert the wheel chocks.
 3. Turn off the engine and remove the ignition key.
- Replace any missing or worn warning plates or pictograms immediately.
- Never underestimate or ignore safety regulations.
- If any safety devices are not working, replace them immediately.

3.2.1 - SAFETY INSTRUCTIONS

The machine has been designed and constructed according to the current state of the art and technical standards for mowing grass, cutting shrubs and the maintenance of road verges, slopes, canals, drainage ditches etc. Observe the laws, dispositions, prescriptions, ordinances and directives in force for such machines.

The materials used and the equipment parts, as well as the production procedures, quality guarantee and checks meet the highest safety and reliability standards.

If the machine is used for the purposes specified in this manual, manoeuvred with care and maintenance and servicing is carried out carefully and correctly, the machine can provide constant reliability and high performance over time.

When being used on public land, comply with all the rules and regulations of the Highway Code for the country in which the machine is being used.

3.2.2 - ROAD SAFETY REGULATIONS

The manufacturer accepts no liability for accidents whilst the machine is being used if the user does not comply with current legislation, directives, recommendations and regulations for machines used for mowing grass, shrubs, the maintenance of roadside verges, slopes, canals, drainage ditches etc.

The machine is designed to work in normal weather conditions at a temperature ranging from -10°C to +40°C. It should therefore only be operated in these conditions.

As regards the mowing on public roads, please refer to the instructions given by the work supervisor as this is a mobile site.

- During road transfers, moderate the speed, especially on uneven roads.
- During the transit on public roads, comply with the applicable regulations.
- Never transport the machine with the tool in operation, even for short distances.
- Lock the boom and the equipment in position.

WARNING



Check that the overall dimensions of the machine, which are also shown in the technical data, comply with the regulations governing road traffic in the country the machine is used.

3.2.3 - OPERATIONAL SAFETY

The manufacturer cannot be held responsible in case of malfunction and damage if the machine:

- is used for purposes other than those for which it was intended;
- is not manoeuvred, operated and maintained according to the instructions specified in the following manual;
- is not regularly and periodically maintained as indicated, or non-genuine spare parts are used;
- is modified or its equipment is replaced without the written permission of the manufacturer, especially when the efficiency of the safety systems has been reduced or has intentionally been removed;
- is used outside the permitted temperature range and for purpose other than those for which it was designed.

The machine user is responsible for all property damage or personal injuries caused by machine operation.

3.2.4 - SAFETY RULES DURING USE

- When the machine is being used, be very careful not to let it come into contact with hard objects such as drain covers, manhole covers, pavements, guard rails, railway tracks etc. This could cause the tools to break and they could be projected at very high speed.
- Whenever wire, cables, chains or other objects become caught in the rotor, stop immediately in order to avoid damage or dangerous situations. Stop the machine, switch off the engine and remove the key. After having put on work gloves, remove any materials that have been caught in the rotor with the aid of pliers or shears.
- Do not continue to use the cutting head if there are vibrations that could lead to breakage and serious damage. Ascertain the cause of such problem and eliminate it.
- It is forbidden to carry out maintenance, cleaning, adjustments or similar operations on any part of the machine or the interchangeable equipment connected to it when the machine is running. Any maintenance, cleaning or adjustments must always be carried out with the engine switched off.

DANGER



- **Do not try to free the rotor by making it turn in a counterclockwise direction.**
- **Danger of projection of materials.**



3.2.5 - SAFETY RULES REGARDING THE HYDRAULIC SYSTEM

- Stop immediately if you notice oil leaks.
- Periodically check hoses. If they are worn, contact ENERGREEN. Before carrying out any work on the hydraulic system, rest the blade on the ground and switch off the engine.
- Used oils and greases must be disposed of according to pollution prevention regulations.
- Do not, for any reason, tamper with the hydraulic system and in any case never remove the seal from the valves, as this will void all warranties. Contact an authorised repair shop if the valves should require adjustment.
- Excessive heating of the hydraulic fluid can damage the seals of the hydraulic circuit and lead to the deterioration of the fluid itself. Heating is caused by the rolling oil by means of the pressure relief valve. For this reason, avoid prolonged operation with the jacks at the end of stroke.

CAUTION

- Do not look for oil leakages with your bare hands or other parts of your body. Use paper or rags to identify the leak.
- Always wear waterproof gloves and safety goggles.
- Wait for the oil to cool down before performing any work.
- Bleed out the oil pressure before disconnecting pipes or during maintenance of the system.
- High pressure oil could penetrate the skin and cause serious infections. If this happens, see a physician immediately.
- These operations **MUST** be performed by authorised personnel.

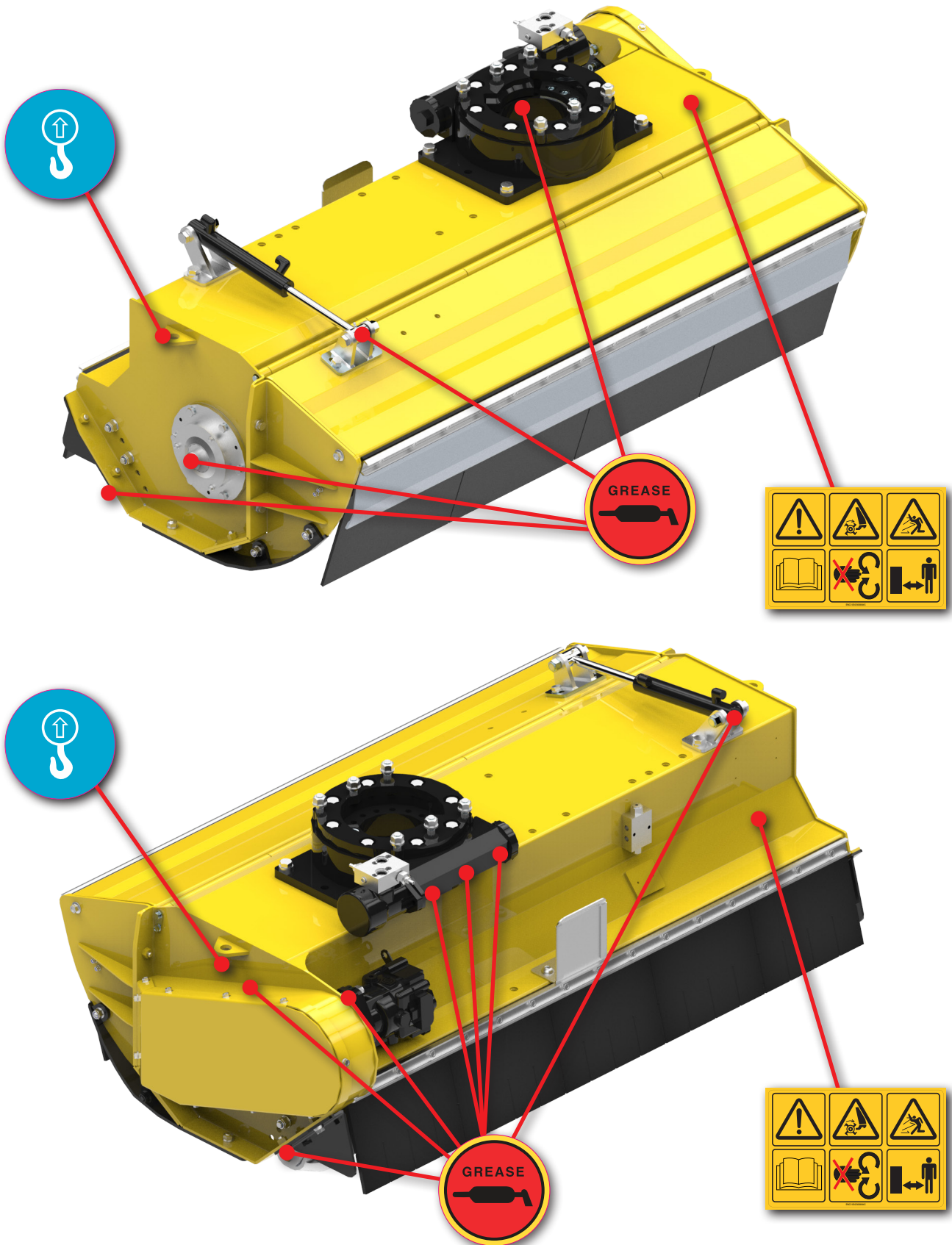
WARNING



Replace the hydraulic pipes whenever they are damaged, and in any case at least every 6 years.



3.2.6 - LOCATION OF THE SAFETY PLATES



3.2.7 - DESCRIPTION OF THE SAFETY PLATES

CAUTION

Make sure that the safety plates are in good condition. If the plates are damaged, they must be replaced with original plates that can be requested from ENERGREEN and placed in the position indicated in the manual. Make sure that the safety decals are readable. Clean them using a damp cloth dipped in soap and water.

- Rotating tools hazard warning.
- Never allow hands or feet to enter within their range of action. Flying objects hazard warning: this indicates the possibility that stones or other objects may be thrown clear of the machine and requires people to move outside the range of action of the machine.
- Crushing or shearing hazard warning: Do not insert limbs in the moving parts of the machine where this symbol is affixed.



There are some lifting points close to the stickers that can be used to lift the head if necessary.

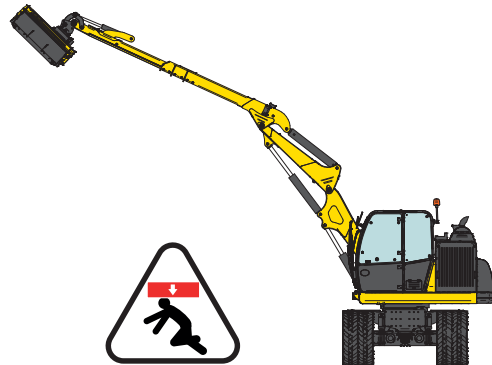


There are some lubrication points close to the stickers.



3.2.8 - CRUSHING PREVENTION

- Do not stand within the **range of action** of the machine (at least 30 m) when there is an operator on board and the engine is running.
- Do not stand or work under the boom or the joints when the boom is raised.
- Do not for any reason pass under the mower boom, whether it is in operation or not.



3.3 - SAFETY DURING MAINTENANCE

3.3.1 - CARE AND MAINTENANCE

The cause of many damages and accidents can be attributed to mistakes or lack of maintenance, such as:

1. Lack of oil, grease.
 2. Lack of cleaning.
 3. Lack of hydraulic system maintenance (damaged hoses, loose fittings etc.).
 4. Poor maintenance or systems modified without authorization.
- Remember that all maintenance must be carried out by trained, qualified personnel, with the machine switched off and stationary.
 - Maintenance and repair operations must not be performed outdoors, but in an appropriately equipped workshop.
 - The operator must wear Personal Protective Equipment (PPE) when using, adjusting, maintaining, repairing or handling the equipment.
 - The used hydraulic fluid must be collected and must not be dumped or poured down the drain, as it is classified as hazardous waste and must therefore be disposed of at an authorised facility. Take used hydraulic fluid to a dump/recycling facility equipped to handle this product.

The following operations must be performed before starting any maintenance:

- The machine must be positioned on flat, firm ground during maintenance work.
- Turn off the tractor engine, apply the parking brake and remove the ignition key from the dashboard.
- Put in place all accident prevention measures required for the type of operation to be performed.
- If compressed air is to be used to clean the machine, the operators must protect themselves with goggles and a dust mask.
- Do not carry out repairs you are not familiar with. Always follow the instructions; if these are not available, contact the supplier or an expert.
- Before starting maintenance work, make sure that any potentially hot parts have cooled down.
- Caution: replace the hydraulic pipes whenever they are damaged, and in any case at least every 6 years.
- Only use the specified lifting points.
- Make sure that the lifting equipment chosen is able to carry out the required operations in compliance with safety regulations.

- Before carrying out work underneath suspended components, or the machine if it is raised from the ground, make the machine safe using supports or stands of appropriate capacity for the weight of the components.
- Do not leave the tractor engine running in enclosed environments that are not equipped with an exhaust gas extraction system.
- Avoid prolonged or repeated contact of fuels/lubricants/other fluids with the skin, as these could cause skin irritations or other symptoms.
- Never swallow fuels/lubricants/other fluids. In the event of accidental contact with the eyes, rinse thoroughly with water.
- Never weld in enclosed or inadequately ventilated areas.
- Never weld painted surfaces, or surrounding areas, to avoid toxic vapours being generated.
- Remove any paint with appropriate products, then wash the area and allow it to dry.
- Discharge pressurised circuits before performing work on them.
- Never use your hands to find leaks of pressurised fluids.
- High-pressure fluid leaks can penetrate the skin and eyes, with very serious consequences.
- The operations described below do not require any specialisation. The operator must be aware of the instructions and follow them precisely, and must have taken the machine out of service.
- The periodic checks and maintenance operations must be performed in the established manner and at the specified time intervals, and are the responsibility of the operator.
- Failure to follow the maintenance intervals and standards prejudices correct operation of the machine and its working lifetime, and as a consequence the validity of the warranty shall lapse.
- Increase the maintenance frequency in demanding working conditions (frequent stops and starts, long winters etc.).

3.3.2 - WARNING PLATES

Before carrying out any type of maintenance work, position the machine on a firm and flat surface, rest the cutting head on the ground and switch off the engine. If other persons start the engine and activate the control levers while maintenance works are being carried out, serious injuries or death can result. To avoid these hazards, place warning signs on the steering wheel, control levers and ignition key; if considered necessary, before performing maintenance work, also place warning signs around the machine and especially on the grip handles



3.3.3 - TOOLS

Use only tools indicated by the machine manufacturer to prevent personal injuries, discard worn, damaged, low quality or makeshift tools.

3.3.4 - PERSONNEL

The routine maintenance indicated in the manual must be carried out exclusively by authorised and trained personnel. For the maintenance or overhaul of components that are not specified in this manual, contact ENERGREEN.

3.3.5 - KEEPING THE MACHINE CLEAN

The cleaning of the cutting head is part of ordinary machine maintenance and must be done in order to be able to check the condition of the machine itself.

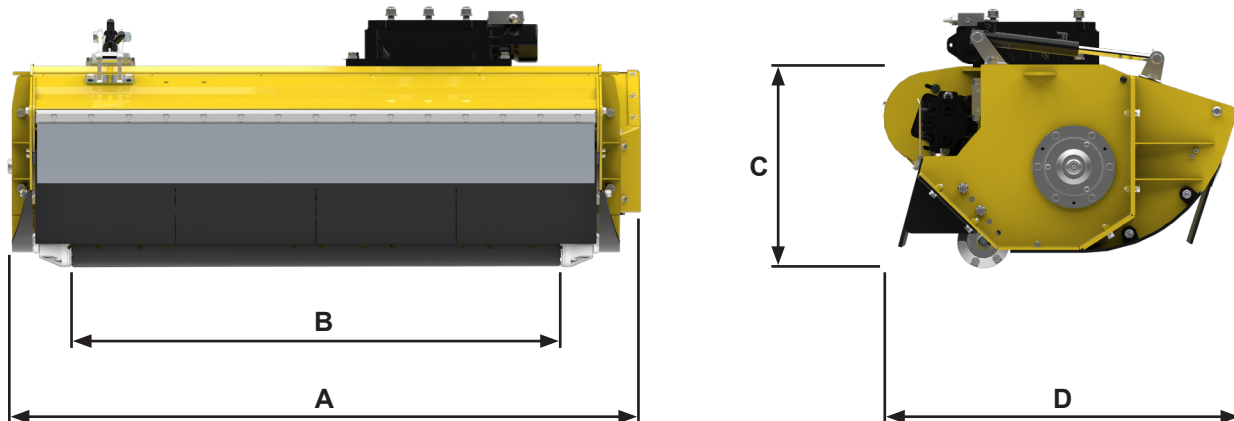
3.3.6 - PERIODIC REPLACEMENT OF ESSENTIAL SAFETY COMPONENTS

Periodically check the following components:

- Front and rear rubber flaps. Replace immediately if worn, otherwise any warranty will be become null and void.
- Flails: if cracked or even broken they should be replaced (in opposing pairs) otherwise a part of them could be ejected and/or the rotor could become unbalanced and the moving parts of it damaged (bearings etc.).
- Carefully check the condition and cleanliness of the quick fit connectors the machine is fitted with.
- Even if they appear to be in good condition, these components have to be periodically replaced with new ones. These components tend to deteriorate with time.
- If one of these parts is defective, replace or repair it even if it is still not scheduled to be replaced.

4 - TECHNICAL DATA

4.1 - DIMENSIONS



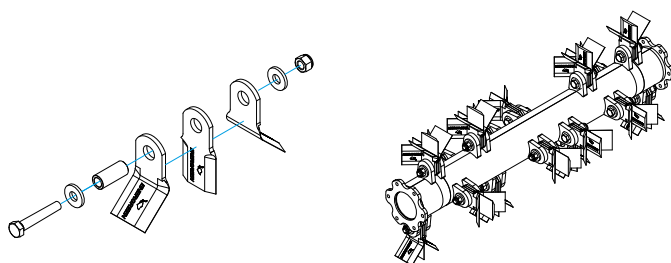
NEW SPEED			
		120	150
WIDTH (max)	A	1350 mm	1650 mm
WORKING WIDTH	B	1120 mm	1420 mm
HEIGHT (max)	C	510 mm	
DEPTH (max)	D	800 mm	

4.2 - TECHNICAL CHARACTERISTICS

NEW SPEED			
		120	150
ENGINE	cc	44	
	bar	350	
INPUT POWER (max)	HP	60/70	65/75
	kW	44/51.5	48/55
TRANSMISSION		belt driven	
ROTOR DIAMETER	mm	128	
ROTOR SPEED (max)	rpm	3000	
TOTAL WEIGHT (standard version)	kg	320	360
TOTAL WEIGHT WITH SLEWING RING (optional)	kg	350	390
ROTATION WITH SLEWING RING (optional)		180°	
CUTTING HEIGHT	min	2.5 cm	
	max	12 cm	

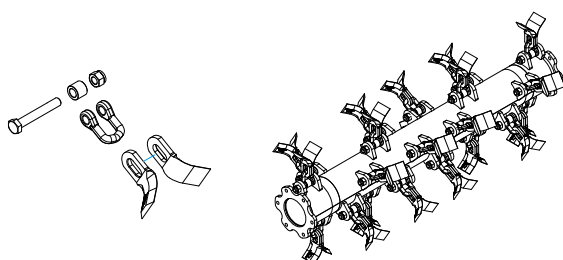
4.3 - ROTOR TYPES

ROTOR WITH MULTI-USE FLAILS



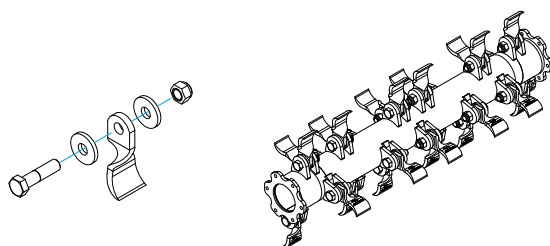
NEW SPEED 120		NEW SPEED 150	
Flail kit	16	Flail kit	22
Recommended for cutting:			
Grass, shrubs, vines, reeds, wood with a maximum diameter of 5 cm.			

ROTOR WITH ARTICULATED FLAILS



NEW SPEED 120		NEW SPEED 150	
Number of flails	24	Number of flails	36
Recommended for cutting:			
Grass, vines, bushes with a maximum diameter of 2.5 cm.			

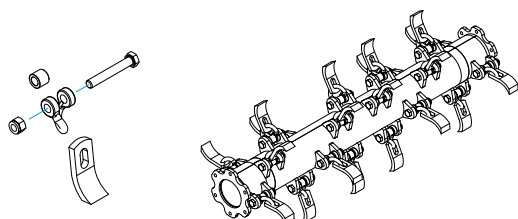
ROTOR WITH HALF-TURN FLAILS



NEW SPEED 120		NEW SPEED 150	
Number of flails	22	Number of flails	24
Recommended for cutting:			
Grass, vines, bushes with a maximum diameter of 3 cm.			

In this case, a specific, non-standard front guard is used and not a standard one as for other rotors. Contact Energreen for the correct guard to use.

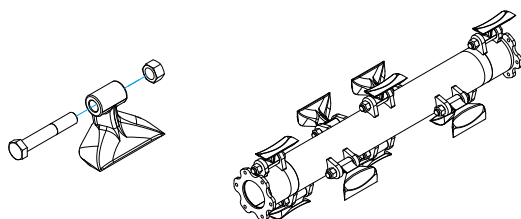
ROTOR WITH SPATULA-SHAPED FLAILS



NEW SPEED 120		NEW SPEED 150	
Number of flails	24	Number of flails	36
Recommended for cutting:			
Grass, vines, bushes with a maximum diameter of 2.5 cm.			

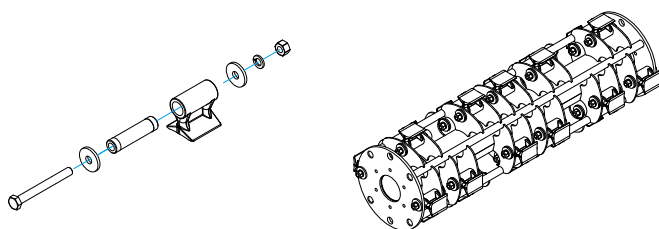


ROTOR WITH HAMMER FLAILS



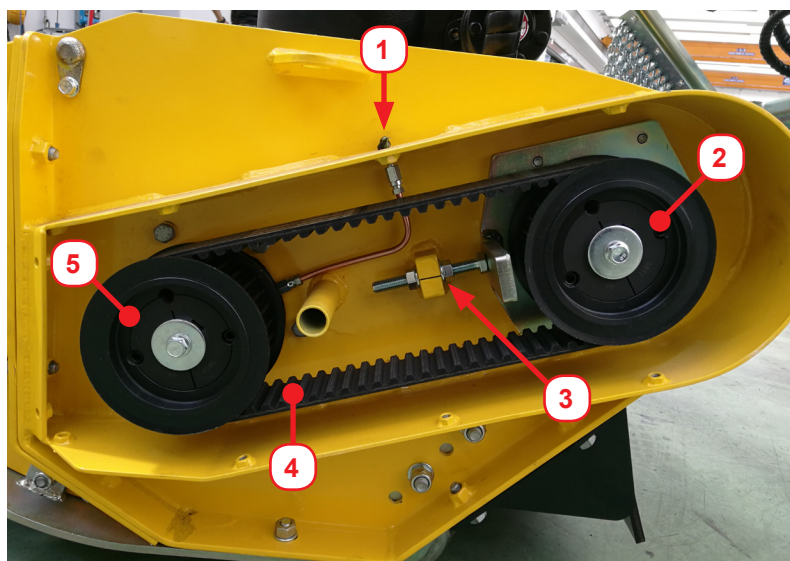
NEW SPEED 120		NEW SPEED 150	
Number of flails	10	Number of flails	14
Recommended for cutting:			
Grass, vines, wood with a maximum diameter of 5 cm.			

FORESTRY ROTOR

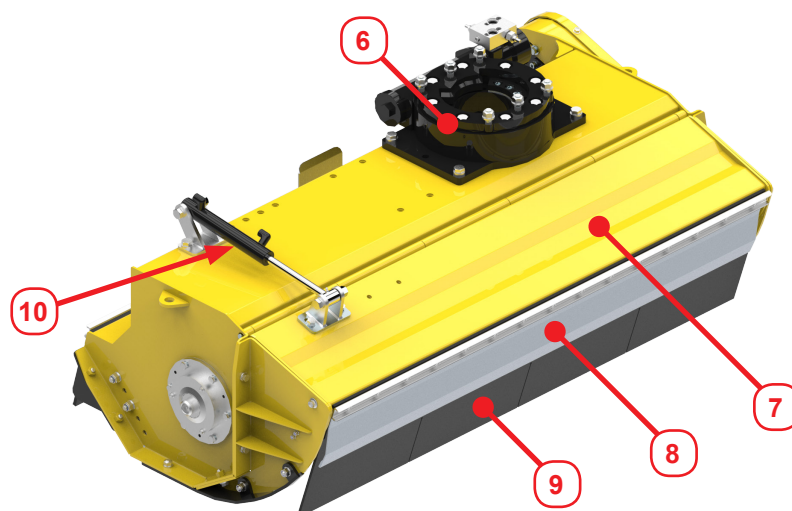


NEW SPEED 120		NEW SPEED 150	
Number of flails	22	Number of flails	26
Recommended for cutting:			
Wood with maximum diameter of 8 cm.			

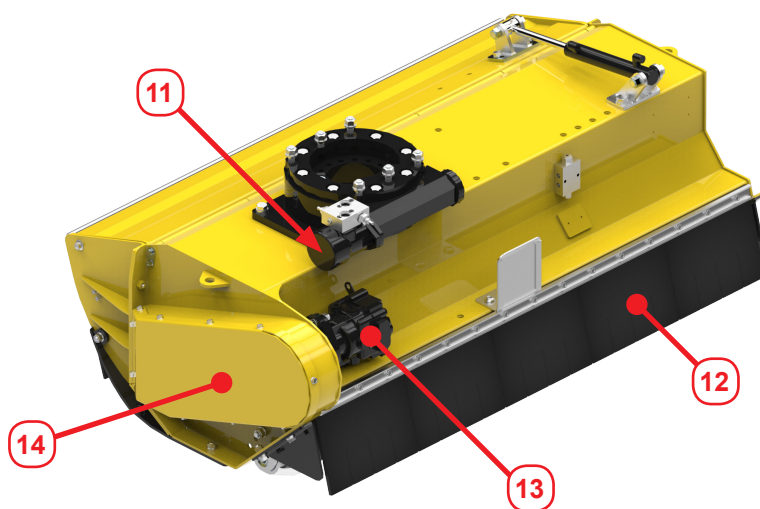
4.4 - PARTS NOMENCLATURE



No.	DESCRIZIONE
1	Grease nipple
2	Drive pulley (hydraulic motor)
3	Belt tensioner
4	Belt
5	Driven pulley (rotor)



No.	DESCRIZIONE
6	Slewing ring (optional)
7	Protection
8	Reinforcement for front flap
9	Front flap
10	Guard opening cylinder



No.	DESCRIZIONE
11	Hydraulic motor for slewing ring rotation
12	Rear flap
13	Hydraulic motor
14	Belt guard

5 - TERMINOLOGY

5.1 - DEFINITION OF THE TERMS USED

OPERATOR

Personnel trained to manoeuvre the machine when in operation, to move it and carry out normal machine inspection and cleaning.

Must not have disabilities of any kind or health problems.

SPECIALISED OR MAINTENANCE PERSONNEL

Personnel trained to carry out ordinary maintenance, mounting, disassembly and reassembly of some machine components.

Must not have disabilities of any kind or health problems.

AUTHORISED PERSONNEL

Personnel trained to carry out operations of extraordinary maintenance, mounting, disassembly and reassembly of particular machine components.

They must be authorised in writing by ENERGREEN to intervene on the machine.

Must not have handicaps of any kind or health problems.

OPERATOR ASSISTANT

Personnel trained to assist the operator with certain machine manoeuvres (manoeuvres on worksites with reduced visibility, loading and unloading from vehicles, using the manual pump etc.) and assists the activities on a mobile worksite (public road verge maintenance).

Must know the main work safety requirements.

AUTHORISED REPAIR WORKSHOP

Repair workshop with personnel trained to carry out extraordinary maintenance, mounting, disassembly and reassembly of specific machine components.

Must be authorised in writing by ENERGREEN to work on the machine.

The operator is asked to refer to standard UNI EN 12100-2010, for the definition of the other terms in this manual.

6 - USING THE MACHINE

6.1 - PRELIMINARY CHECKS

The operator must check that the equipment has been supplied with the:

- use and maintenance manual

If the equipment is resold as “second hand”, the customer / user must provide the purchaser with the complete use and maintenance manual.

6.2 - CHECKS TO BE PERFORMED AT THE START OF EACH WORKING DAY

Carry out an external inspection of the machine (joints, hoses, hydraulic components, etc.) and check for any leaks of oil or other liquids.

Check the rubber hoses and make sure there are no cuts, holes, wear, leaks etc.

Make sure that the safety guards are correctly positioned and intact. If they are damaged, replace them. If they are not positioned correctly, position them properly.

CAUTION

Do not look for oil leakages with your bare hands or other parts of your body. Use paper or rags to identify the leak. Always wear waterproof gloves and safety goggles.





6.3 - MOUNTING AND CONNECTING THE CUTTING HEAD

Prepare the cutting head to be attached to the arm of the machine via a fastening plate (A).

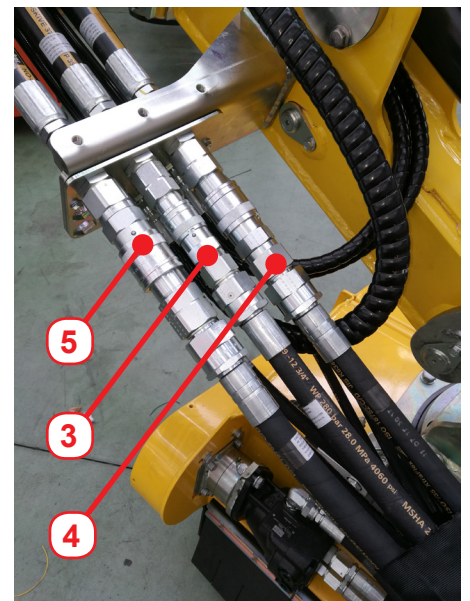
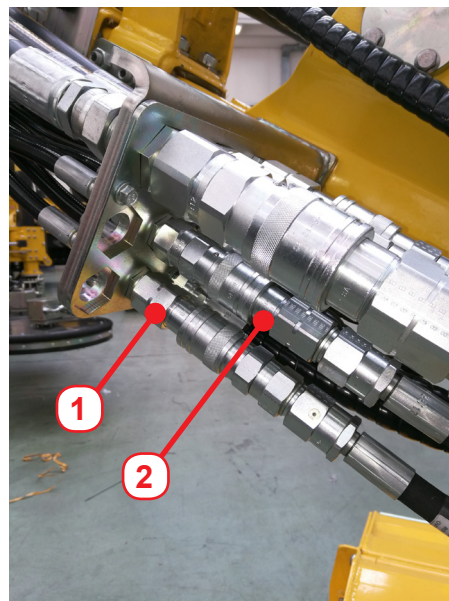
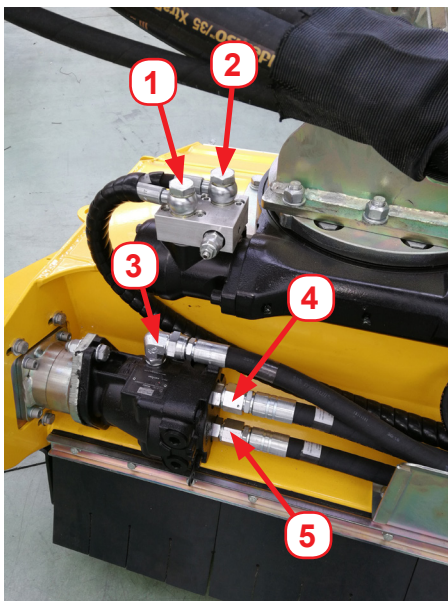
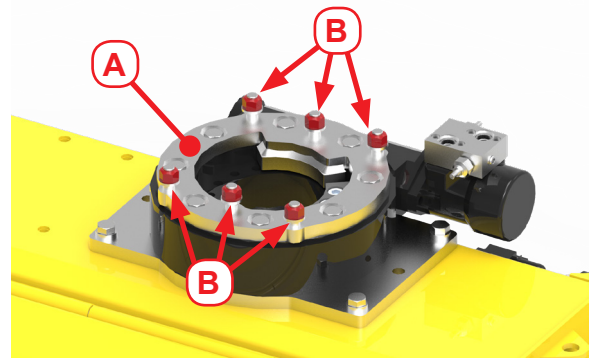
Screw the M16 lock nuts onto the screws (B) and tighten with a 24 mm spanner.

Take care when connecting the hydraulic piping to ensure you do not invert the direction of rotation.

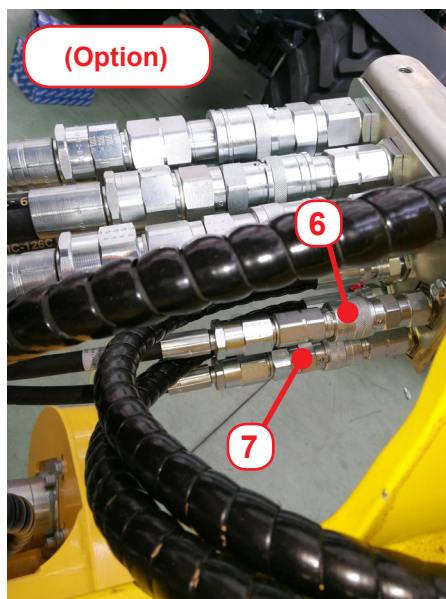
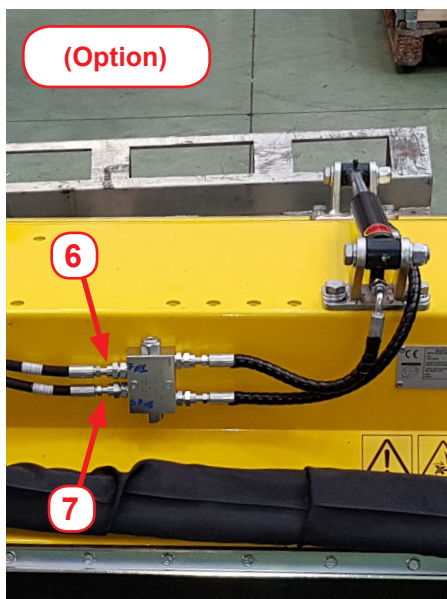
Connect the hydraulic pipes:

A. Slewing ring rotation (1)(2).

B. Cutting head hydraulic motor (3)(4)(5).



C. Guard opening (6)(7) (optional).





6.4 - ADJUSTING THE CUTTING HEIGHT

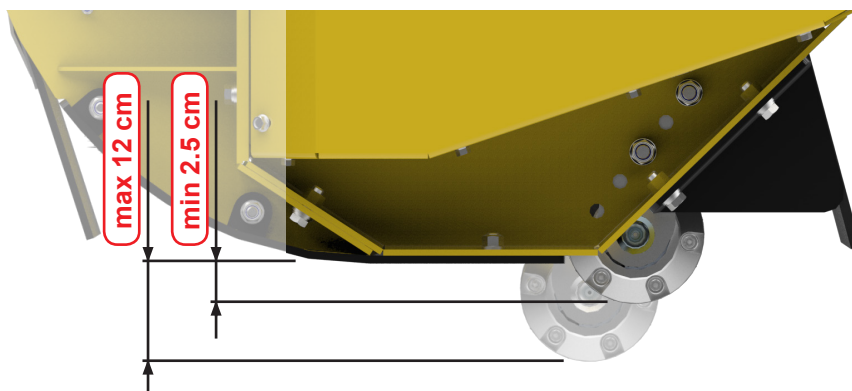
WARNING



- Make sure the cutting head is resting on the ground in a horizontal position before carrying out adjustments and fine-tuning.
- Make sure that all the screws are tight and that all guards are intact and correctly fitted before using the cutting head.
- Check the direction of rotation and rotation speed of the rotor; this must not exceed 3000 rpm.
- The flails must never touch the ground. The optimum height between the tools and the ground is 6 cm.
- Only adjust the cutting height with the machine switched off and the flails stationary.

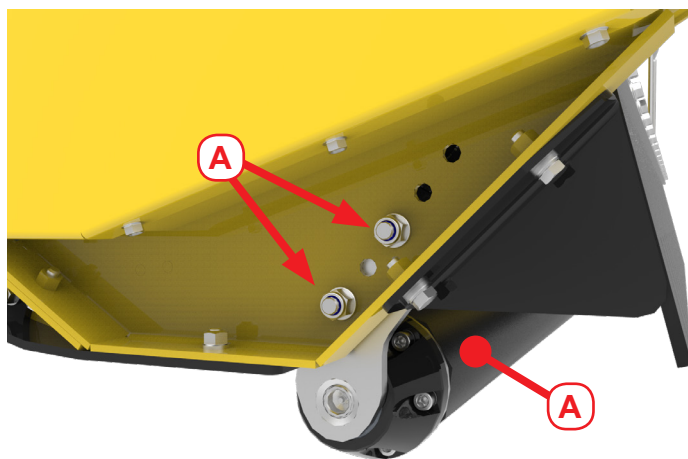
The cutting height of the head can be adjusted by regulating the position of the rear roller together with the side skid plates- The cutting height can be set to 6 positions, from a minimum of 2.5 cm to a maximum of 12 cm.

As a general rule, the flails must always be adjusted to a height which ensures they do not come into contact with the ground.



You have to:

1. Position the machine on level ground.
2. Apply the parking brake.
3. Stop the engine;
4. Disengage the PTO.
5. Remove the key and keep it in a safe place.
6. Unscrew the roller (B) fastening screws (A).
7. Adjust the roller according to requirements.
8. Screw the screws (A) back into the adjustment holes.



6.5 - CONTROLS FOR CUTTING HEAD IF IT IS MOUNTED ON AN ENERGREEN ILF MACHINE

6.5.1 - STARTING THE HYDRAULIC MOTOR OF THE CUTTING HEAD

1. Activate workmode using the appropriate switch.
2. Set the diesel engine to 1600-1800 rpm via the WORK MODE POTENTIOMETER.

Notes:

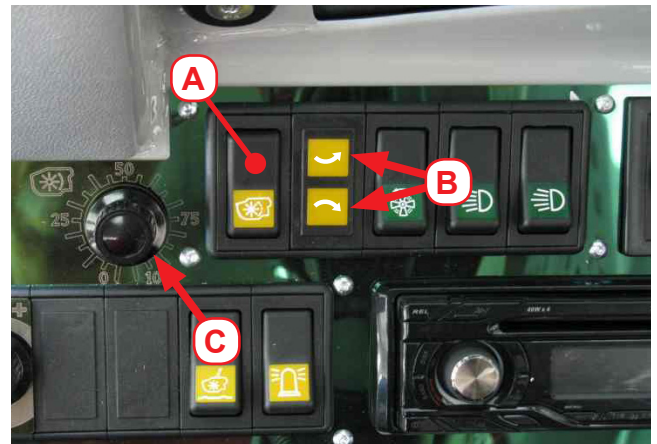
The above are described in detail in the use and maintenance manual of the self-propelled ILF KOMMUNAL, ILF R1500, ILF S1500, ILF B1200, ILF C1200, ILF B2000 machines.

Then press the switch (A) that activates the rotation of the cutting head rotor:

- If you press the top part of the switch, the flails of the head rotate anticlockwise.
- If you press the bottom part of the switch, the flails of the head will rotate clockwise.

The indicator lights next to the switch turn on according to the direction selected.

Turn the potentiometer (B) clockwise to increase or anticlockwise to decrease the rotation speed of the head.



CAUTION

Make sure that the direction of rotation / activation of the equipment is correct in case a mistake was made when connecting the quick couplings of the hydraulic motor of the equipment.

CAUTION

The hydraulic motor of the cutting head or the equipment only starts to operate after WORK MODE has been activated. Bring the diesel motor up to 1600-1800 rpm by using the WORK MODE potentiometer.

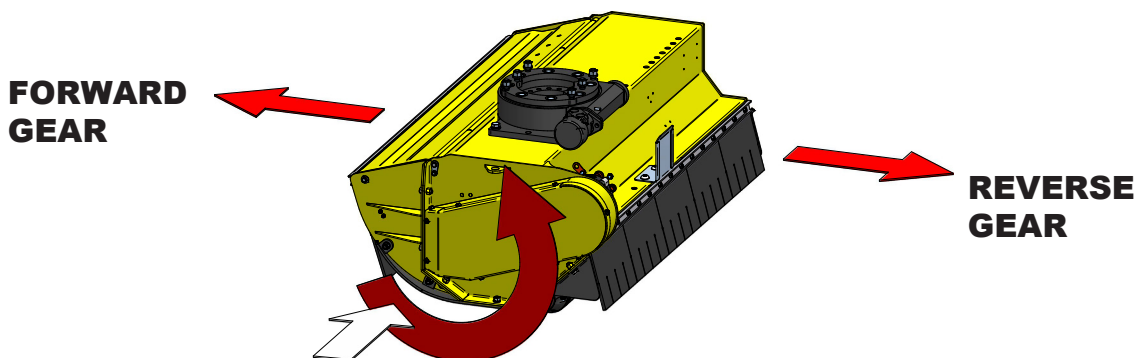
DANGER



- When the cutting head is started be very careful not to let it come into contact with hard objects such as drain covers, manhole covers, pavements, guard rails, railway tracks etc. This could cause the tools to break and they could be projected at very high speed.
- Furthermore, make sure that there are no persons within the working range of the machine.

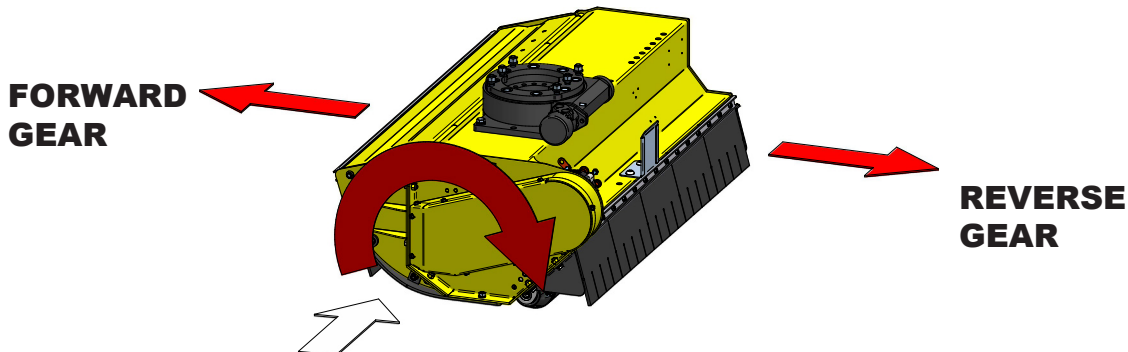
ANTI-CLOCKWISE ROTATION OF THE CUTTING HEAD ROTOR

This direction of rotation is recommended for cutting brushwood, branches and bushes with a forestry type rotor. It is used for coarse work and in this case, the material that is cut or lifted from the ground could be ejected towards the back of the machine.



CLOCKWISE ROTATION OF THE CUTTING HEAD ROTOR

This direction of rotation is recommended for cutting grass, reeds and brushwood. It is used for finishing work because it allows the cut material, which is shredded, to be kept inside the machine and then expelled towards the back of the machine. In this case, the material that is cut or lifted from the ground could be ejected towards the front of the machine.



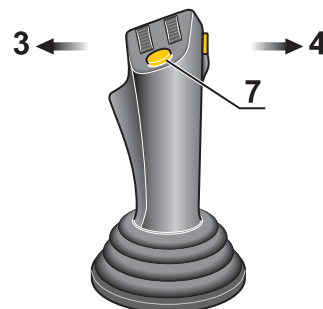
To determine whether the rotor is rotating forwards or backwards:

- the belt guard of the cutting head must be facing toward the cabin.
- look at the cutting head in the direction indicated by the white arrow.

6.5.2 - CUTTING HEAD ROTATION

To rotate the cutting head:

1. Press the button 7 on the right-hand joystick:
2. Move the joystick towards:
 - position 3 to rotate the head anti-clockwise
 - position 4 to rotate the head clockwise



6.5.3 - FRONT CUTTING HEAD GUARD SELECTOR SWITCH (OPTIONAL)

The key selector switch on the right, at the rear of the cabin, allows the operator to open the front guard of the cutting head.
In position:

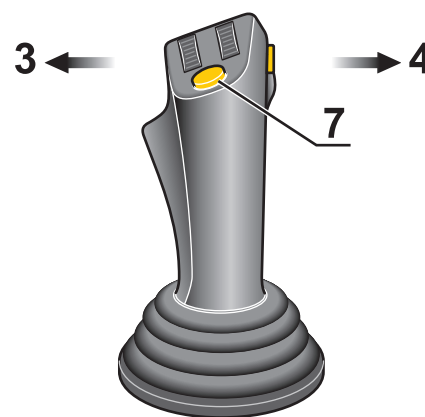
- (O) the function is disabled.
- (I) the function is enabled.

This command is used in particular to operate the front guard of the forestry heads in which the cut (direction of rotation and guard) is regulated according to the mode of operation.



To open the front guard of the cutting head:

1. Turn the selector to position (I).
2. Press the button 7 on the right-hand joystick:
3. Move the joystick towards:
 - position 3 to open the head
 - position 4 to close the head



DANGER



- This function is only used to release the machine from the high amount of vegetation to be cut.
- The operator must stop the rotor (see section 6.5.1) and wait for the flails to stop before opening the front guard of the head.

CAUTION:

ENERGREEN shall not be held responsible for damage or injury caused by the improper use of the cutting head.



6.6 - FAULTS, CAUSES AND SOLUTIONS

Malfunction	Cause	Solution
Unusual noises coming from the cutting head.	Insufficient lubrication of rotor bearings.	Grease the marked points.
	Foreign bodies wrapped around the rotor.	Stop the rotor and remove the foreign body.
	Transmission unit working incorrectly.	Check the tension of the belt and that it is aligned correctly.
Excessive vibration.	Excessive and irregular flail wear.	Replace the flails.
	Worn or broken flails.	Replace the flails.
	Foreign bodies wrapped around the rotor.	Stop the rotor and remove the foreign body.
Irregular cutting.	Worn or broken flails.	Replace the flails.
	Flail and/or cutting tool jammed.	Stop the rotor and check all the tools. Find out why it is blocked (material jammed, screws seized etc.). Release the tool.
Rapid flail wear.	Flails touching the ground.	Adjust the cutting height by adjusting the supports.
Premature belt breakage.	Excessive tension can damage the belt and cause it to break prematurely.	Make sure that the tension of the belt is correct. Also make sure that the pulleys are correctly aligned.
Rotor doesn't work.	Belt broken or damaged. Hydraulic motor broken or damaged.	Check the belt (replace if damaged). Check the hydraulic motor.
The rotor continues to rotate when the rotor control is not activated.	Pump is not zeroed correctly.	Check the zero of the pump and reset it. Contact ENERGREEN
Smoke or noise / whistling noise coming from the transmission belt zone.	Belt tension too low.	Check the belt tension.

NOTE: If the fault or the reason for it is not indicated in the list of faults shown in tables, contact ENERGREEN in order for repairs to be carried out.



7 - TRANSPORT AND HANDLING

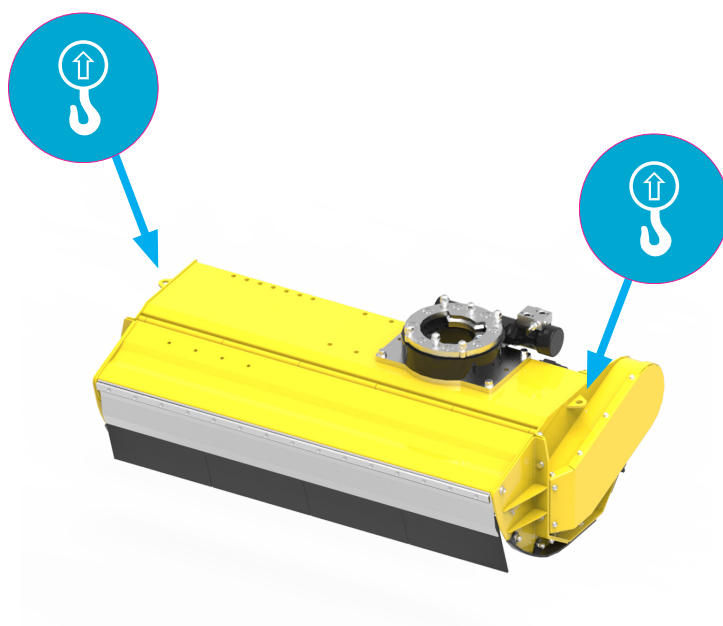
7.1 - LIFTING

Pay maximum attention to safety during loading and unloading operations, which must be performed by personnel qualified to use the corresponding equipment (slings, forklifts etc.).

The specific lifting points indicated by the pictograms must be used when lifting the machine.

When transporting the machine, a vehicle of appropriate power and size must be used.

The machine must be placed on a flat surface and anchored down with cables, and its stability checked once in position.

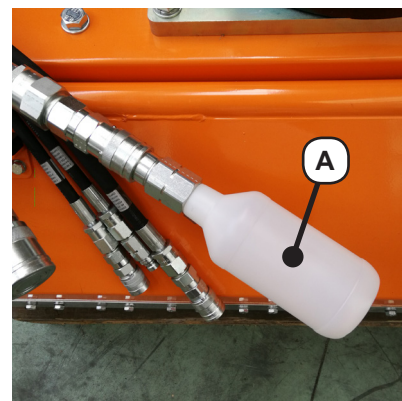


8 - STORAGE

If the machine is stopped for long periods, it must be stored in a place protected from the elements to prevent damage. Before storing the machine, it is recommended that you clean it thoroughly and lubricate all mechanical components to protect them from rust. The machine should be stored at a temperature between 0 °C and 40 °C.

Before storing the machine for long periods, you are recommended to perform the following steps:

- Free the rotor and tools from any cutting residues.
- Clean the machine carefully;
- Visually inspect the entire machine to identify any structural damage or deep scratches on the paintwork. Make sure that the original safety signs are still present in their proper positions and that they are integral and legible.
- Check the front and rear guards and their connections for any damage.
- Grease all mechanical parts that are subject to friction, the locking pins and all machine parts that are no longer covered with their original coating of paint in order to prevent rust from forming.
- Connect the expansion tank (A) supplied with the machine to the discharge tube.
- Store the machine on a flat surface, in a covered location where possible, checking its stability once it is in position.



WARNING



If the machine is left outdoors without the expansion tank, the hydraulic motor seal may become damaged. ENERGREEN shall not be held responsible for any damage or malfunction due to failure to comply with this warning.

8.1 - BEFORE USE OR PUTTING BACK INTO SERVICE AFTER A LONG PERIOD OF INACTIVITY

Before using the machine for the first time, or after a long period of inactivity, the following steps must be performed:

- Check that the machine has not been damaged
- Check the mechanical components, which must be in good condition and not rusty
- Check the flails for wear
- Thoroughly grease all moving parts
- Check that there are no leaks in the piping or unions
- Check that all guards are correctly positioned



8.2 - DISMANTLING AND DECOMMISSIONING

- Should you decide to no longer use the machine or part of it, it must be dismantled and decommissioned.
- Before scrapping, the plastic/rubber parts and electrical and electronic materials must be separated.
- Drain any used fluids and dispose of them in a dump/recycling facility equipped to handle this product.
- Carry out these operations according to the regulations in force.

WARNING



If the machine or parts of it were taken out of service, all parts that could constitute a hazard must be made safe.

WARNING



Remember that every time you change the oil, rubber hoses and any other parts of the machine that should be disposed of separately, you should always refer to current legislation regarding waste disposal. Take used hydraulic fluid to a dump/recycling facility equipped to handle this product.

9 - MAINTENANCE

WARNING



When coupling/uncoupling the machine, pay particular attention to the work area between the machine and the equipment. The operation can only be performed by trained personnel.

Make sure, before starting the machine that people or animals are sufficiently distant from the machine and not within the area between the machine and the towed unit.



9.1 - INTRODUCTION

To obtain the machine's best performances and ensure maximum durability of all its components, the instructions for use and maintenance must be followed carefully by machine operators. Therefore, we recommend our customers to carefully read these instructions and consult the manual any time they need advice on how to eliminate possible inconveniences. Because the machine usually operates in contact with water, sand, earth, etc., regular lubrication is necessary. This is of vital importance not only to ensure the long life of the machine, but also to keep running costs low. For further information, please contact our service centre:

Contact the ENERGREEN Technical Assistance Service:

Telephone 0039 0444 1511 200
E-mail service@energreen.it

9.2 - GENERAL INSTRUCTIONS

- Before carrying out any maintenance or inspecting and / or checking the equipment, turn off the machine's engine and remove the ignition key from the cabin.
- When removing or reinstalling parts of the equipment, always use suitable extractors, spanners and equipment that will not damage the components.
- - To release parts that are solidly adherent, use copper or wooden hammers.
- - Separate the pieces of the various units and partially screw the nuts onto their corresponding pins or stud bolts. Clean the parts using brushes or rags, then wash them using paraffin or warm water and remove all residues using compressed air.
- After grinding or finishing using abrasive tools, thoroughly clean the parts, making sure that all the abrasive dust has been removed.
- - When re-assembling the pieces, make sure that they are clean. and then lubricate appropriately.
- - Pay great attention to the safety rings and cotter pins. Replace them immediately if there are signs of breakage.
- Maintenance of the equipment must be carried out by authorised personnel.

9.3 - EXTRAORDINARY MAINTENANCE

These are repairs or replacements of one or more components of the machine, which only usually become necessary after years of good operation and which do not alter the characteristics of the machine. In the case of substantial modifications, the manufacturer cannot be considered liable for any risks that could arise. These interventions must be performed by authorised personnel.

9.4 - LUBRICANTS AND FLUIDS TABLE

9.4.1 - GREASES TABLE

COMPONENT	RECOMMENDED LUBRICANT	STANDARDS SPECIFICATIONS
HYDRAULIC SYSTEM Mineral oil	ISO 46 Q8 HELLER 46	DIN 51 524, 2-HLP DIN 51 524, 3-HLP API CD, CE, CF
HYDRAULIC SYSTEM Biodegradable oil	PANOLIN BIO HLP SYNTH E	FZG Test A/8.3/90 stage 12 ISO 15380 HEES
	Q8 HOLBEIN HP SE BIO 46	ISO 11158 Category HV Din 51524, Part 3 Category HVLP ISO 15380 / CEC-L33-A-93 - Water Hazard Class (VwVws) WGK 1 - Category HEES
PINS, BUSHES AND BEARINGS	MOLY GREASE, EP GREASE NLGI2 or NLGI3EP	Black lithium soap grease with Molybdenum Disulphide For automatic greasing the use added CONTACT GREASE NLG2 with purple lithium soap is recommended.
BEARINGS	GREENPLEX, EP GREASENLGI 2	EP ADHESIVE Grease, Aluminium complex soap

9.5 - DAILY MAINTENANCE

Carry out the following operations systematically at the beginning of each working day:

- Check for any loose screws and nuts and tighten if necessary.
- Check the condition of the safety guards and replace if damaged or worn.
- Check the condition of the hydraulic pipes, replace if damaged or worn.

9.5.1 - CLEANING THE MACHINE

Clean the machine at the end of each working day using pressurised water; removing any cutting residues, earth, dust etc. paying particular attention to flammable materials.



9.6 - BELT MAINTENANCE

9.6.1 - TIGHTENING THE BELT

CAUTION

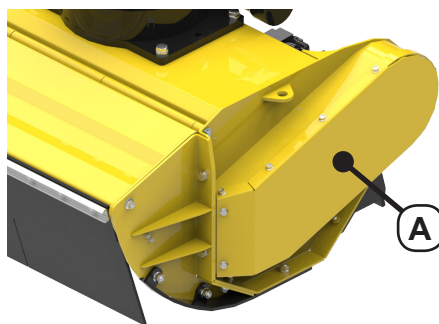
The tension of the belt should be checked after the first 4 hours of operation and in the case of:

- a new machine
- and every time the belt is replaced

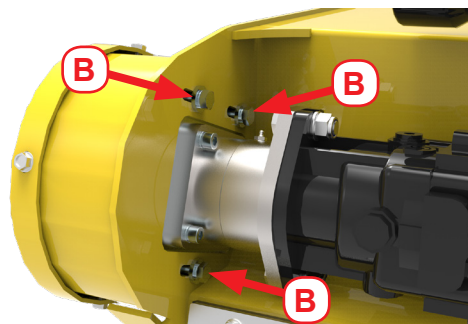
The tension of the belt must be checked **every week or every 50 hours**.

Perform the following operations to adjust the tension of the belts:

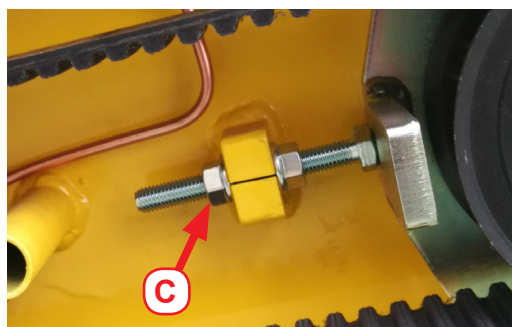
1. Remove the protective casing (A).



2. Loosen the three retaining screws (B).



3. Loosen the locknut (C).

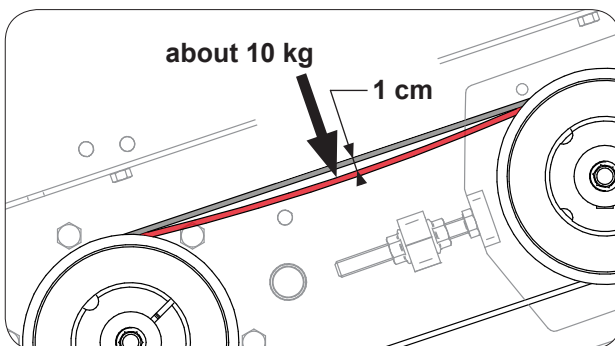
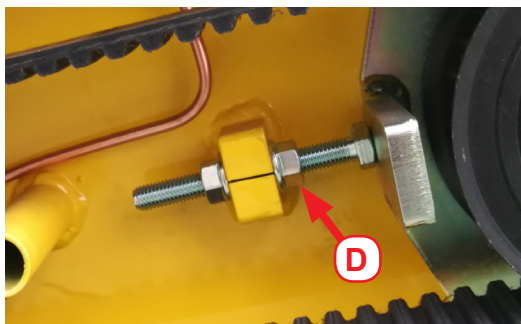




ENERGREEN®

Professional machinery

4. Tighten the nut (D) until you obtain a belt tension sot that it does not deflect by more than 1 cm. (equivalent to a pressure of approx. 10 kg).



5. Once the correct belt tension has been found, carry out the above operations in reverse and replace the safety guard.

WARNING



Make sure that you tension the belt correctly.

- If the tension is too low, the belt may slip and become damaged.
- If the tension is too high, it may cause it to break suddenly and prematurely.



9.6.2 - REPLACING THE BELT

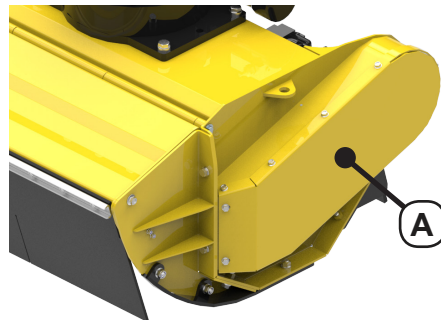
CAUTION

The tension of the belt should be checked after the first 4 hours of operation and in the case of:

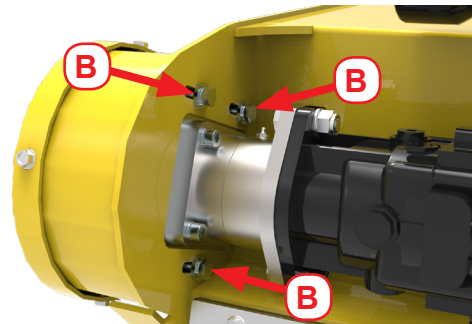
- a new machine
- and every time the belt is replaced

Carry out the following procedure to replace the belt:

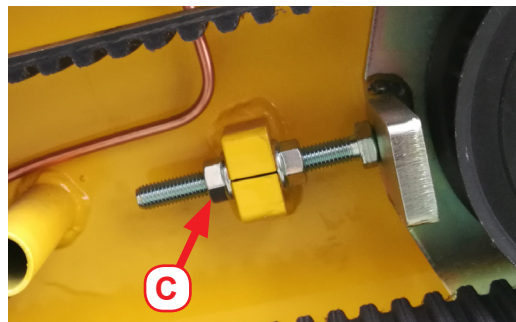
1. Remove the protective casing (A).



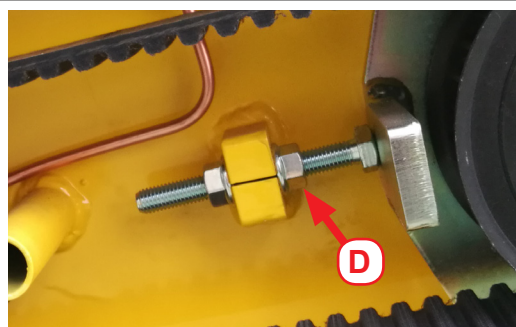
2. Loosen the three retaining screws (B).



3. Loosen the locknut (C).



4. Loosen the nut (D) until it is possible to remove the belt.



5. Replace the belt with a new one.



6. Tension the belt following the procedure in section 9.6.1.
7. Once the correct belt tension has been found, carry out the above operations in reverse and replace the safety guard.

WARNING



Make sure that you tension the belt correctly.

- **If the tension is too low, the belt may slip and become damaged.**
- **If the tension is too high, it may cause it to break suddenly and prematurely.**



9.7 - ROTOR MAINTENANCE

9.7.1 - CHECK AND REPLACE THE CUTTING FLAILS

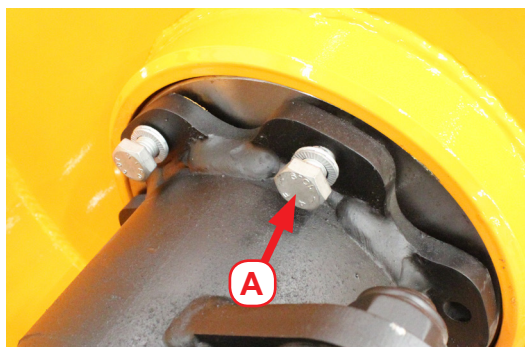
It is recommended to check the flails at the end of the day. Replace them if damaged or worn.

CAUTION

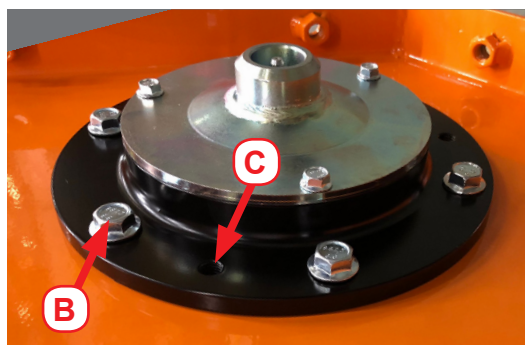
- When replacing a flail, it is recommended that you always replace the opposite flail at the same time in order to maintain the balance of the rotor.
- Not fitting original flails can cause irregular vibrations in the machine, as well as possible (and potentially very serious) personal injury and/or property damage.

9.7.2 - REPLACING THE ROTOR

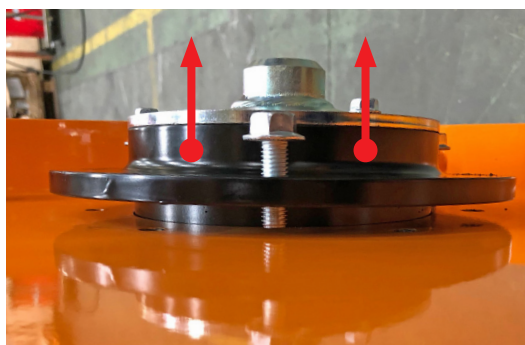
1. Remove the fastening screws (A) inside the rotor, both on the right and left.



2. Remove the six screws (B) from the right external rotor support and insert three of them into the threaded holes (C).



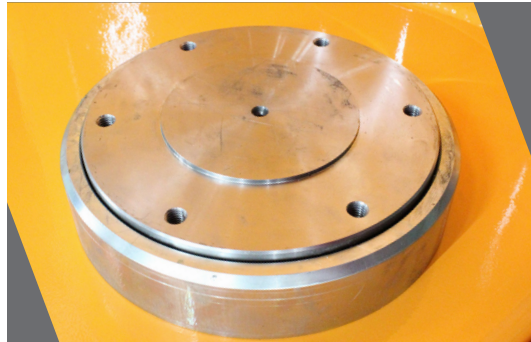
3. Tighten the three screws by the same amount, about 7 - 8 mm, to allow the rotor to be detached from its right external support.



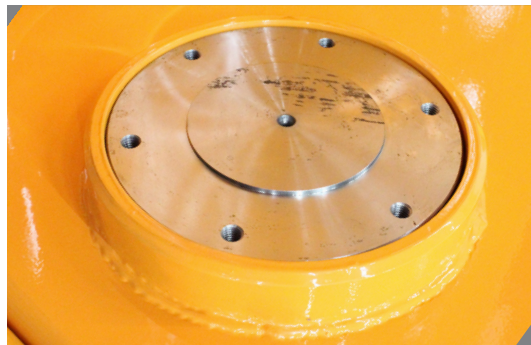
4. Remove the old rotor



5. Check and clean the left internal rotor support



6. Check and clean the right internal rotor support



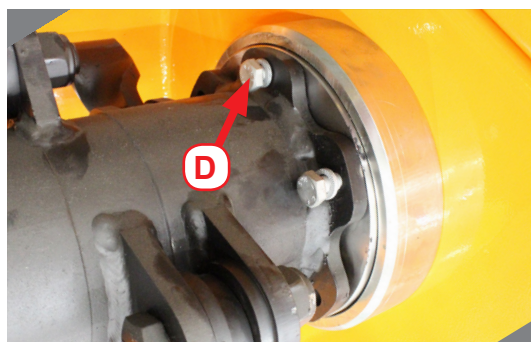
7. Insert and centre the new rotor on the left internal rotor support



8. Centre the new rotor on the right internal rotor support

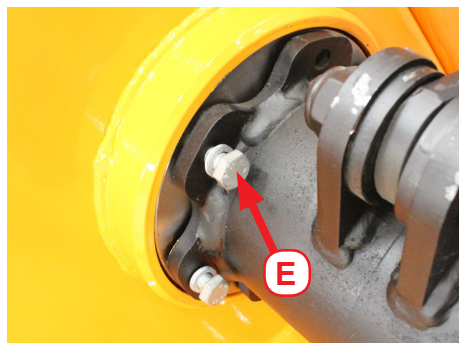


9. Screw the six screws (D) into the left internal rotor support

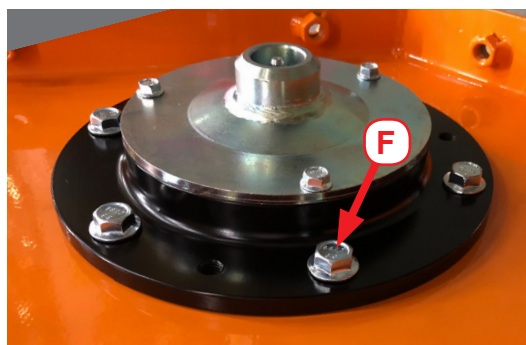




10. Screw the six screws (D) into the right internal rotor support



11. Replace the screws (F) in the outer upper support



The rotor can be turned round so that the unworn side of the cutting flails can be used, therefore avoiding having to invert individual flails.

CAUTION

- If there are unusual vibrations or noises coming from the cutting head, stop the rotor immediately and check for any missing or damaged cutting flails or damage to the rotor.
- **CONTINUING TO USE THE ROTOR WITH DAMAGED PARTS CAN CAUSE THE MACHINE TO MALFUNCTION AND BREAK DOWN.**

DANGER

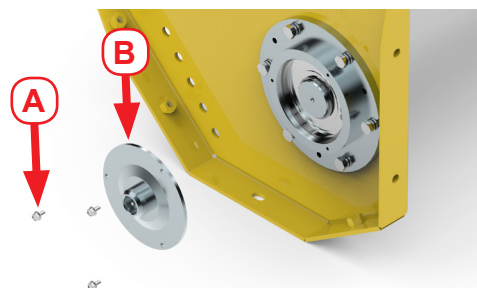


- Use appropriate PPE and protective clothing for the work to be carried out.
- Do not start any maintenance operation with the machine or any of its parts in movement.
- Make sure that the keys have been removed from the ignition panel.

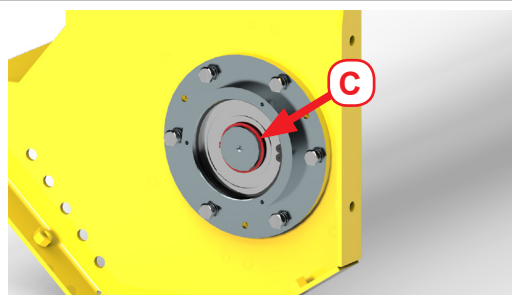
9.7.3 - REPLACING THE MOTOR SUPPORT BEARING

If the motor support bearing is damaged or broken, proceed as follows:

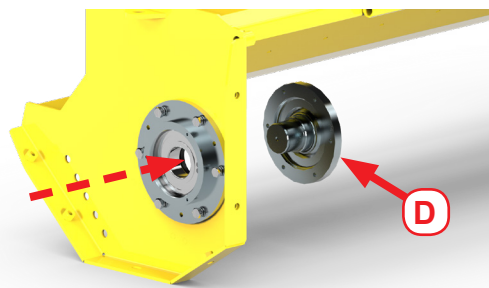
1. Remove the rotor.
2. Unscrew the three screws (A).
3. Remove the cover (B).



4. Remove the Seeger ring (C), shown in the figure, from the rotor support pin.



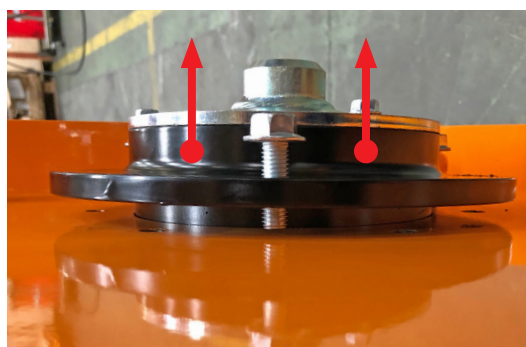
5. Remove the rotor support (D).



6. Unscrew the six screws (B) from the right external rotor support and insert three of them into the threaded holes (C).

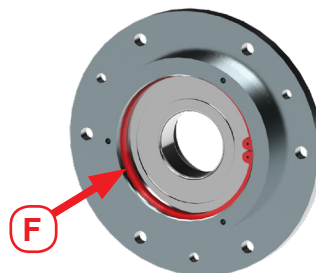


7. Tighten the three screws (E) until it is possible to remove the rotor support from the frame.

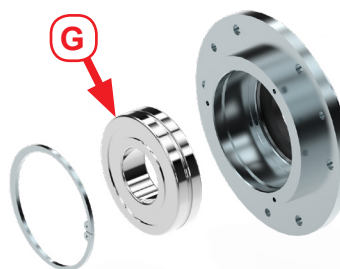




8. Once the rotor support has been removed from the frame, remove the Seeger ring (F) shown in the figure, from the rotor support pin.



9. Replace the bearing (G).
10. Reinstall everything following the instructions in reverse.



WARNING



- Always use original spare parts for repairs and maintenance.
- ENERGREEN shall not be held responsible for any damage which should occur due to failure to follow the above requirements.
- The machine is guaranteed according to the contractual agreements specified at the time of sale.
- The warranty shall nevertheless lapse whenever the regulations and instructions laid out in this manual should not be followed.

DANGER



- Use appropriate PPE and protective clothing for the work to be carried out.
- Do not start any maintenance operation with the machine or any of its parts in movement.
- Make sure that the keys have been removed from the ignition panel.

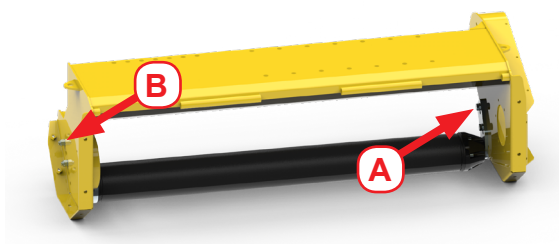


9.8 - SUPPORT ROLLER MAINTENANCE

9.8.1 - REPLACING THE BEARINGS

If the bearings of the support roller are broken or damaged, proceed as follows:

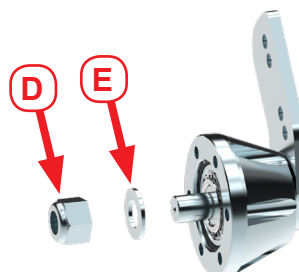
1. Detach the support roller from the frame. To do this, unscrew the internal screws (A) and the external bolts (B) on both sides.



2. Detach the support from the roller by first unscrewing the six screws (C).



3. Unscrew the nut (D) and remove the washer (E).

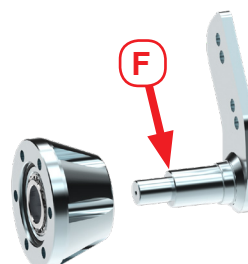


WARNING



When reassembling everything, the nut (D) must be screwed on by hand as far as the washer, and no further, otherwise the bearing will be blocked and will subsequently break!

4. Remove the support (F) from the bearing support using a rubber mallet.



REPLACING THE INTERNAL BEARING

5. Remove the internal bearing (G) using a bearing puller.



6. After removing the internal bearing, clean its seat and apply grease.
7. Insert the new bearing.
8. Reinstall everything following the instructions in reverse. If the other bearing also has to be replaced, follow the instructions below.



REPLACING THE EXTERNAL BEARING

9. Remove the Seeger ring (H).





10. Remove the oil seal (I) taking care not to damage it.



11. Remove the external bearing (L) using a bearing puller.



12. After removing the external bearing, clean its seat and apply grease.
13. Insert the new bearing.
14. Reinstall everything following the instructions in reverse.

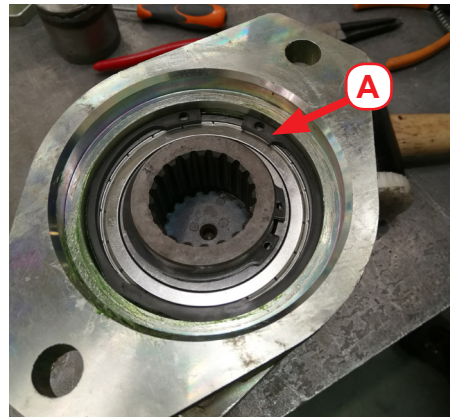


9.9 - BELT TENSIONER SUPPORT MAINTENANCE

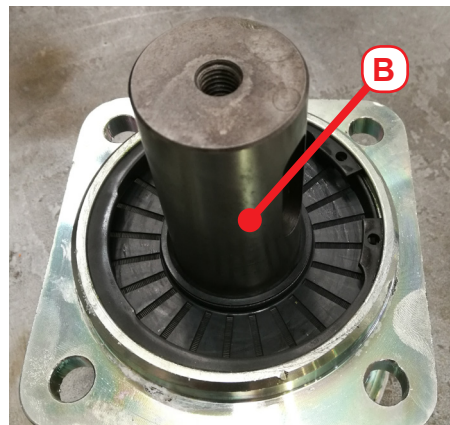
9.9.1 - REPLACING THE BEARINGS

If the bearings of the belt tensioner support are broken or damaged, proceed as follows:

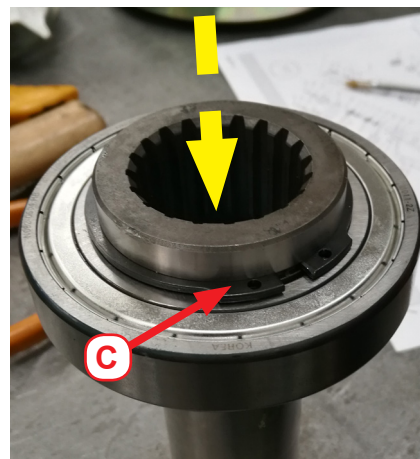
1. Remove the Seeger ring (A).



2. Remove the pin (B) using a rubber mallet.

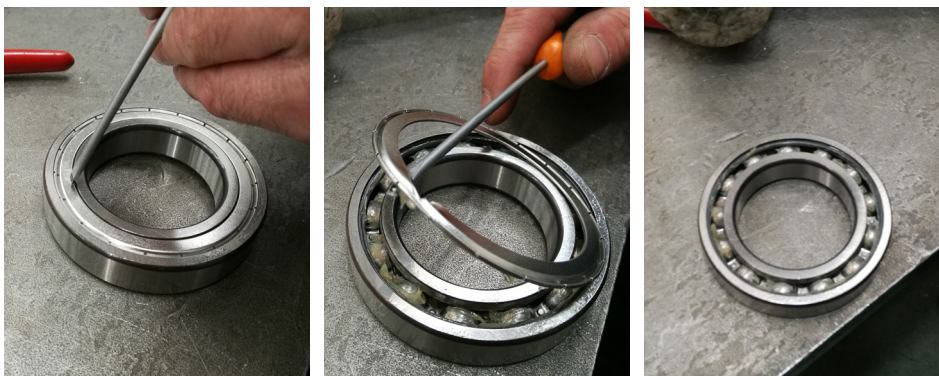


3. Remove the Seeger ring (C) that holds the bearing in place.
4. Remove the pin, using a rubber mallet, in the direction indicated by the yellow arrow in the figure.





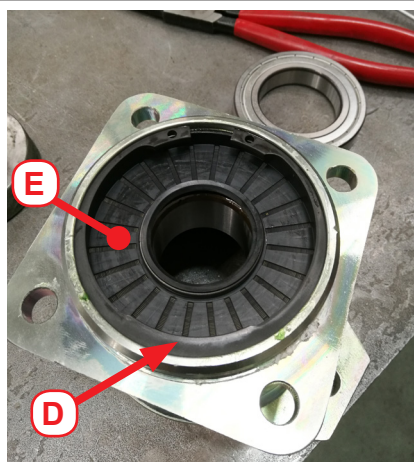
5. Remove the protective cover from the bearing using a screwdriver, **on one side only**.



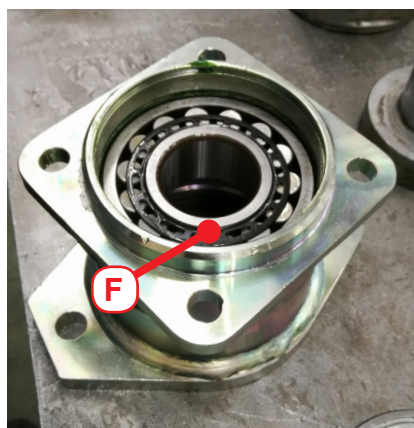
6. Place the new bearing onto the pin and replace the Seeger ring that was previously removed. Make sure that you insert the bearing in the direction shown in the figure.



7. Remove the Seeger ring (D) and then remove the oil seal (E), taking care not to damage it.

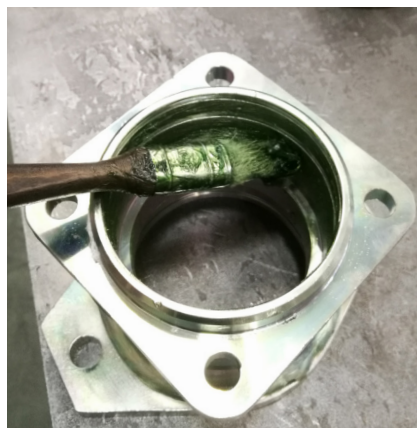


8. Remove the bearing (F) using a bearing puller.





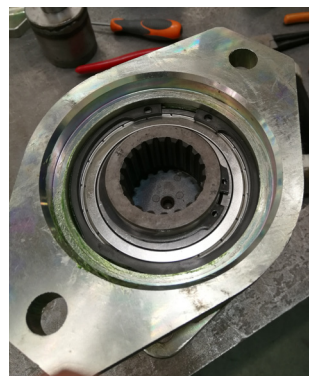
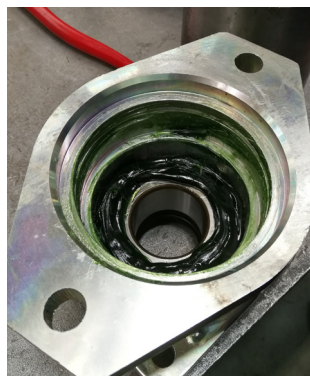
-
9. After removing the external bearing, clean its seat and apply grease.



-
10. Apply grease to the new bearing.
11. Install the bearing on the belt tensioner support, with the greased part towards the inside (as in the photo below)
12. Replace the oil seal (E) and the Seeger ring (D).



-
13. Install the pin, which was previously assembled, onto the belt tensioner support using rubber mallet.
14. Install the Seeger ring (A).

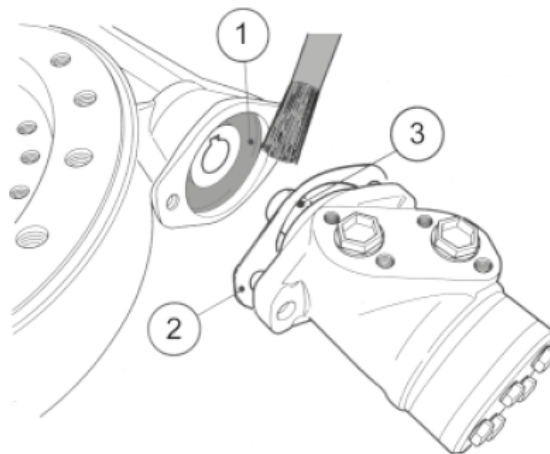


-
15. Reinstall the belt tensioner on the head.
-

9.10 - CUTTING HEAD SLEWING RING MAINTENANCE

9.10.1 - REPLACING THE HYDRAULIC MOTOR

Carefully clean the engine rotation coupling surfaces. Fill the cavity enclosing the inlet shaft (1) with grease. Insert the seal (2) or, alternatively, seal it with appropriate mastic. Lubricate the crankshaft (3) before inserting it, with the spanner, in the housing. Secure with M12 class 8.8 screws and tighten, using a torque wrench, to a torque of 73 Nm.

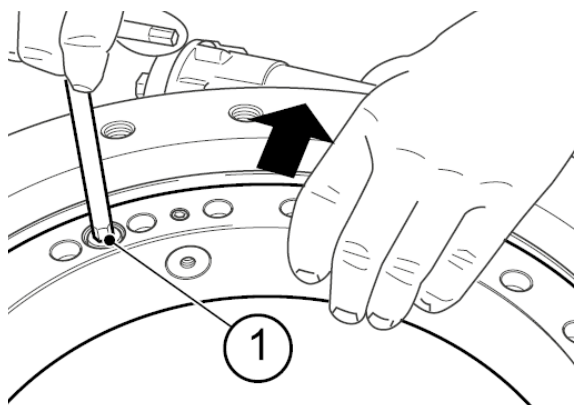


9.10.2 - SECURING THE SLEWING RING

Secure the slewing ring by using bolts with minimum ISO class of 10.9 or SAE grade 8. Tighten the M16 screws using a torque wrench with a tightening torque of **280 Nm**.

9.10.3 - ADJUSTING THE CROWN WHEEL

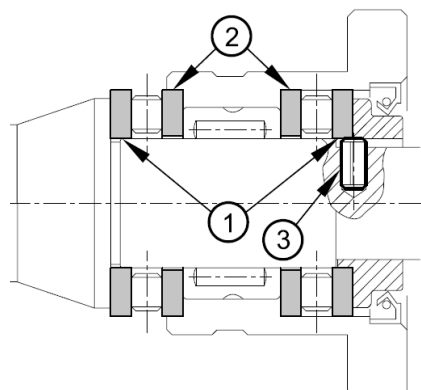
When play is detected between the crown wheel and the worm screw, this must be eliminated. Loosen the 3/4 M8x45 Allen screws (1) that fasten the crown wheel, pull it towards the worm screw as shown in the figure, then retighten the Allen screws that were previously removed.





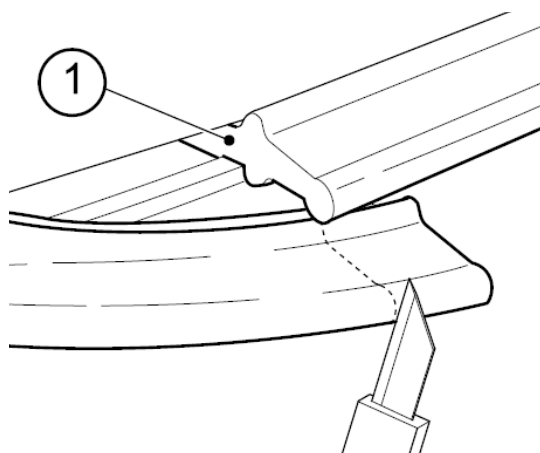
9.10.4 - REPLACING THE THRUST BEARINGS

In the event that it is necessary to replace the two thrust bearings (1), great care must be taken during assembly that centring is performed correctly on the internal diameter on the outer rings of the bearings (1) and on the external diameter on the internal rings (2). **Make sure that the pin (3) NEVER protrudes from the shaft diameter.**



9.10.5 - INSTALLING / REPLACING THE SEAL

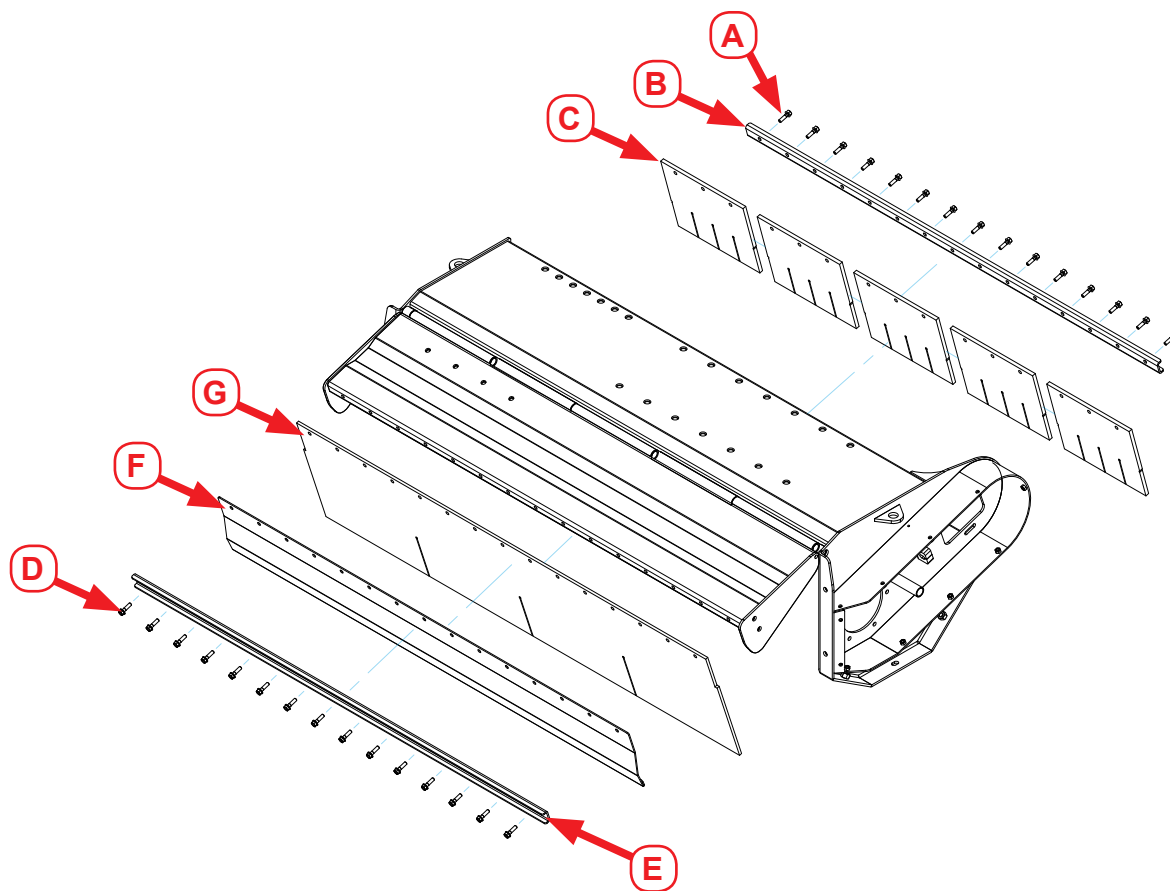
To install the seal, insert it in its channel (1), arranging it uniformly around the entire circumference. Once the entire circumference has been covered, use a sharp knife to cut the end of the seal so it lines up with the edge of the beginning.



The screws should be tightened every **every 250 hours**.



9.11 - GUARD MAINTENANCE



9.11.1 - REPLACING THE FRONT GUARD

If you notice that the front flap (G) has to be replaced when you carry out the inspection of the safety components, proceed as follows:

1. Unscrew the screws (D).
2. Remove the plate (E) and the reinforcement (F).
3. Remove the rubber flap (G) and install a new one.

9.11.2 - REPLACING THE REAR GUARDS

If you notice that the rear flap (G) has to be replaced when you carry out the inspection of the safety components, proceed as follows:

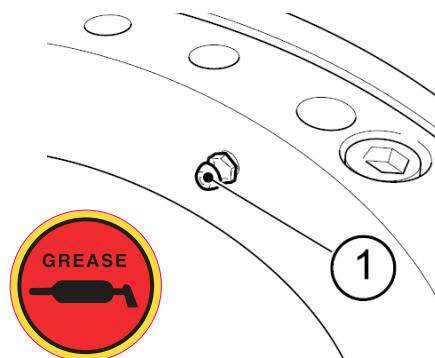
1. Unscrew screws (A).
2. Remove the plate (B).
3. Remove the rubber flap (C) and install a new one.

9.12 - LUBRICATION

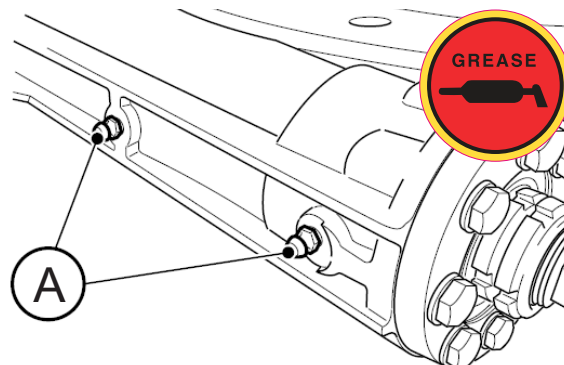
9.12.1 - GREASING THE SLEWING RING AND WORM SCREW

Grease the slewing ring **every 250 hours**.

The rotation components must be greased with water-repellent grease using the dedicated grease nipples in the inner ring (1). While rotating the fifth wheel, pump grease into all the grease nipples until it comes out of the gasket, forming a light, uniform ring.



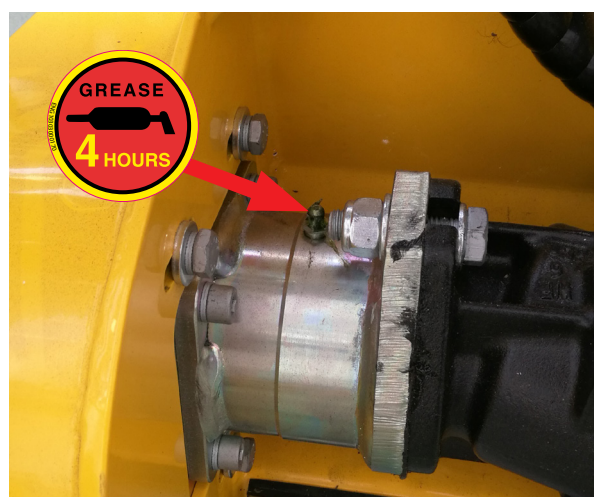
Grease the worm screw via the grease nipples (A) on the casing.



9.12.2 - GREASING THE BELT TENSIONER SUPPORT

Grease the belt tensioner support via the grease nipple.

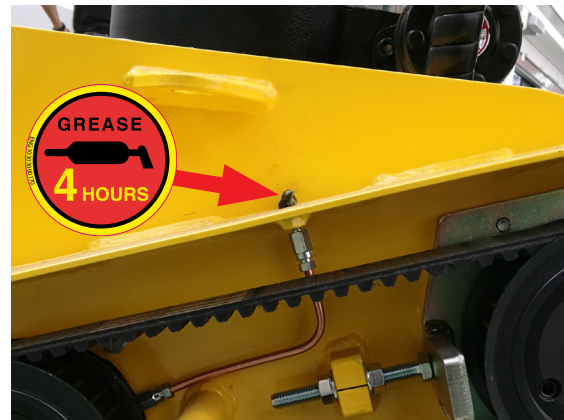
Grease **every 4 hours**.



9.12.3 - GREASING THE BELT TENSIONER FLANGE

Grease the belt tensioner flange via the grease nipple.

Grease **every 4 hours**.



9.12.4 - GREASING THE ROTOR SUPPORT

Grease the rotor support via the grease nipple.

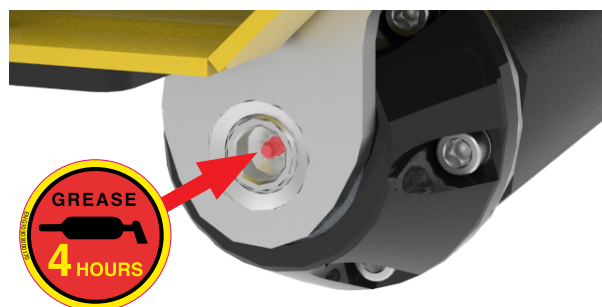
Grease **every 4 hours**.



9.12.5 - GREASING THE ROLLER SUPPORT

Pump grease into the grease nipples on both sides of the roller support.

Grease **every 4 hours**.



9.12.6 - GREASING THE GUARD OPENING CYLINDER

Pump grease into the grease nipples on the guard-opening cylinder.

Grease **every 4 hours**.



9.13 - PERIODICALLY REPLACE THE SAFETY COMPONENTS

To guarantee safety at all times when the machine is being used, the operator is required to replace the components as listed below.

- Hydraulic pipes _____ Every 6 years

9.14 - MAINTENANCE OPERATIONS

MAINTENANCE FREQUENCY

Component \ Period		Daily	After the first 4 hours	Every 4 hours	Every 50 hours	Every 250 hours	4000 hours
BELT	Tensioning		X ^(A)		X		
FLAILS	Check	X					
SLEWING RING	Greasing					X	
LUBRICATION POINTS	Greasing			X			
HYDRAULIC PIPES	Substitution						X

^(A) Only first check.



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10 - INSTRUCTIONS FOR EMERGENCY SITUATIONS

10.1 - FIRE

In case of fire, use a fire extinguisher in accordance with current regulations. If the machine catches fire or it is close to a fire, get out of the cab immediately, raise the alarm and contact the fire service.

11 - TIGHTENING CHART

11.1 - SCREW TIGHTENING CHART

Rated measurement Thread	actual area section As sq. mm	Resistance class								
		12.9			10.9			8.8		
		Ribbing load	Tightening tightening force force	Tightening tightening force	Ribbing load	Tightening tightening force force	Tightening tightening force	Ribbing load	Tightening tightening force force	Tightening tightening force
		N	N	Nm	N	N	Nm	N	N	Nm
M 3×0.5	5.03	5523	3865	2	4728	3316	1	3218	2256	1
M 4×0.7	8.78	9643	6749	4	8260	5778	3	5621	3934	2
M 5×0.8	14.2	15597	10918	8	13361	9349	7	9094	6367	5
M 6×1	20.1	22082	15460	14	18914	13234	12	12881	9015	8
M 8×1.25	36.6	40211	28144	33	34433	24103	28	23446	16412	19
M 10×1.5	58	63725	44606	65	54563	38200	56	37150	26006	38
M 12×1.75	84.3	92626	64834	114	79304	55515	97	54004	37798	66
M 14×2	115	126352	88446	181	108194	75733	155	73673	51571	105
M 16×2	157	172499	118102	282	147699	103388	241	100572	70397	164
M 18×2.5	192	210954	147669	387	180632	126441	332	126765	88731	232
M 20×2.5	245	269186	18843	549	230496	161345	470	161757	113227	330
M 22×2.5	303	332912	233036	748	285059	199535	640	200046	140028	449
M 24×3	353	387848	271491	950	332098	232468	813	233056	163140	571

11.2 - SCREW TIGHTENING CHART

Series	Pipe diam.	THREAD - TIGHTENING TORQUE					
		Thread diam. Gas	B form MT (Nm)	E for, MT (Nm)	Thread diam. metric.	B MT (Nm) shape	E for, MT (Nm)
Light	6	G 1/8"	25	20	M 10 x 1	25	20
	8	G 1/4"	45	40	M 12 x 1.5	30	30
	10	G 1/4"	45	40	M 14 x 1.5	50	50
	12	G 3/8"	85	80	M 16 x 1.5	80	60
	15	G 1/2"	160	100	M 18 x 1.5	90	80
	18	G 1/2"	105	100	M 22 x 1.5	150	140
	22	G 3/4"	230	200	M 26 x 1.5	240	200
	28	G 1"	390	380	M 33 x 2	400	380
	35	G 1" 1/4	600	500	M 42 x 2	600	500
42	G 1" 1/2	800	600	M 48 x 2	800	600	
Strong	6	G 1/4"	60	60	M 12 x 1.5	45	45
	8	G 1/4"	60	60	M 14 x 1.5	60	60
	10	G 3/8"	110	90	M 16 x 1.5	95	80
	12	G 3/8"	110	90	M 18 x 1.5	120	100
	14	G 1/2"	170	130	M 20 x 1.5	170	140
	16	G 1/2"	140	130	M 22 x 1.5	190	150
	20	G 3/4"	320	200	M 27 x 2	320	200
	25	G 1"	390	380	M 33 x 2	450	380
	30	G 1" 1/4	600	500	M 42 x 2	600	500
	38	G 1" 1/2	800	600	M 48 x 2	800	600



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