

INSTRUCTION MANUAL

MULCHER

Mark: BERTI Macchine Agricole
Models: EKR/M



 *Read this manual thoroughly before using the machine* 

ORIGINAL VERSION

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INTRODUCTION

This instruction manual contains the description of operation and the instructions necessary for performing the main operations, routine and periodic maintenance of the mulcher correctly, which will hereon be called machine.

This manual is divided into identifiable chapters, for easy reference.

The indications contained in this manual are intended for a professional user, who must have specific knowledge regarding use of the machine and must be authorised, instructed and appropriately trained.

Use of original spare parts and accessories is recommended. As well as invalidating the warranty, use of non-original spare parts could be dangerous, reducing lifespan and duration of the machine and serious injury/damage to persons, animal and objects.

In the event of transfer or re-sale, this instruction manual must always accompany the machine. If it is damaged or lost, a copy must be requested from the Manufacturer of the machine or previous owner. The manual is considered an integral part of the machine.



ATTENZIONE

For the USER: Before starting to work with the machine purchased, it is mandatory to read this instruction manual which states all of the operational technical indications relative to the correct use of the machine, paying particular attention to all provisions concerning safety. The abuse of performance and the failure to comply with the Safety Standards and use make the operator liable for damage/injury caused to the equipment, objects, persons and animals.

The machine manufacturer does not have direct control over application, method of use and maintenance and it is therefore the user's responsibility to use common sense in the operating areas, doing everything possible to safeguard his own safety and that of third parties, animals and objects, evaluating the hazard every time before starting to work.

Whenever the user delegates the use of the machine to another user, he is responsible for having this instruction manual read thoroughly and checking that it has been understood and implemented.

This instruction manual must be on hand for immediate consultation, if necessary.



ATTENZIONE

For the DEALER, the RETAILER and the IMPORTER: the person assigned to delivering the machine to the final user must perform application to the tractor. Therefore he must read this instruction manual and understand the content before the machine is assigned definitively. He is also responsible for training the final user and making sure that he has understood everything stated in the instruction manual.

GLOSSARY

Machine	Mulcher.
Tractor	Vehicle equipped with an engine that is used to tow other vehicles, especially agricultural machines.
User	The user is considered as the owner and/or staff, the operator/user assigned to running the machine, cleaning it, performing maintenance and repairs and that can recognise hazards deriving from use of the machine, and therefore prevent them.
Specialised staff	Those persons especially trained and enabled to perform maintenance interventions or repairs that require particular knowledge of the machine, its operation, safety devices and methods of intervention.
Safety staff	Staff assigned to moving persons away from the working range of the machine.
Manufacturer	Company that produces the → Berti Macchine Agricole S.p.A. machine
Three-point hitch	Hitching device that allows to connect the mulcher to the tractor, setting the width of the parallel elements of the tractor itself. The parallels adjustment tie-rods have notches along the threading of the registers, which have the categories engraved on them. The three-point hitch can be of category 1, cat. 2, cat. 3 or cat. 4 (if a cat. 3 mulcher must be hitched, adjust the registers of the tractor parallels onto cat. 3. In this way the tractor will be perfectly aligned with the measurements of the mulcher).

Machine working range	The working range, fixed at 50 m , delimits the machine working area and must be considered a “dangerous area” . Persons, animals and objects must remain outside the machine working range.
 PERICOLO	DANGER - This sign indicates an imminent and real hazardous situation, which if not prevented, leads to serious injury and even death.
 ATTENZIONE	ATTENTION - This sign indicates a potential hazardous situation which, if not prevented, could lead to serious injury and even death. Hazards identified by this sign therefore represent a smaller risk of serious injury or death with respect to those indicated by the DANGER sign.
 CAUTELA	CAUTION - This sign indicates a potential hazardous situation which, if not prevented, could lead to slight injury or moderate wounds. The symbol is used to warn that determined practices can lead to consequential events that could cause wounds and personal damage.
	NOTA BENE

1. INFORMATION REGARDING THE INSTRUCTION MANUAL

This manual is an integral part of the machine and must accompany the same in the event of re-sale and until its demolition.
If the manual is lost or damaged, request a copy from the manufacturer ("BERTI Macchine Agricole S.p.A.", via Musi 1/A – 3, Caldiero – Vr. Tel. +39.045.6139711) or from the Dealer.



The presence of this symbol, in its three versions, indicates that maximum attention must be paid to the subject discussed.

Some devices described in the manual may not be present on your machine. This is due to the set-up selected and the market to which the machine is destined.

1.1. MANUAL UPDATES

The information, descriptions and illustrations contained in the manual correspond with the current technology at the time of marketing the machine.

The Manufacturer reserves the right to make modifications to the machine at any time for technical or marketing reasons. These modifications do not oblige the Manufacturer to intervene on machines marketed up to that time and do not invalidate this documentation.

Any subsequent supplements to the manual that the Manufacturer considers appropriate to supply, must be kept together with the manual and considered as an integral part of the same.

1.2. COPYRIGHT

The copyright for this manual belongs to the Manufacturer. This manual contains technical texts, drawings and illustrations, which must not be disclosed or transmitted to third parties in full or partially, without the written authorisation of the Manufacturer.

1.3. MACHINE IDENTIFICATION PLATE AND CE MARK

The machine has an identification plate, which states:

- "CE" Mark;
- Country of manufacturer;
- Name and address of the manufacturer;
- Model and type;
- Serial number with year of manufacturer;
- Weight.

The machine is supplied as per standard with:

- Machine use and maintenance manual;
- Manufacturer's "CE" Declaration of Conformity.



Figure 1

EKR/M MODEL:

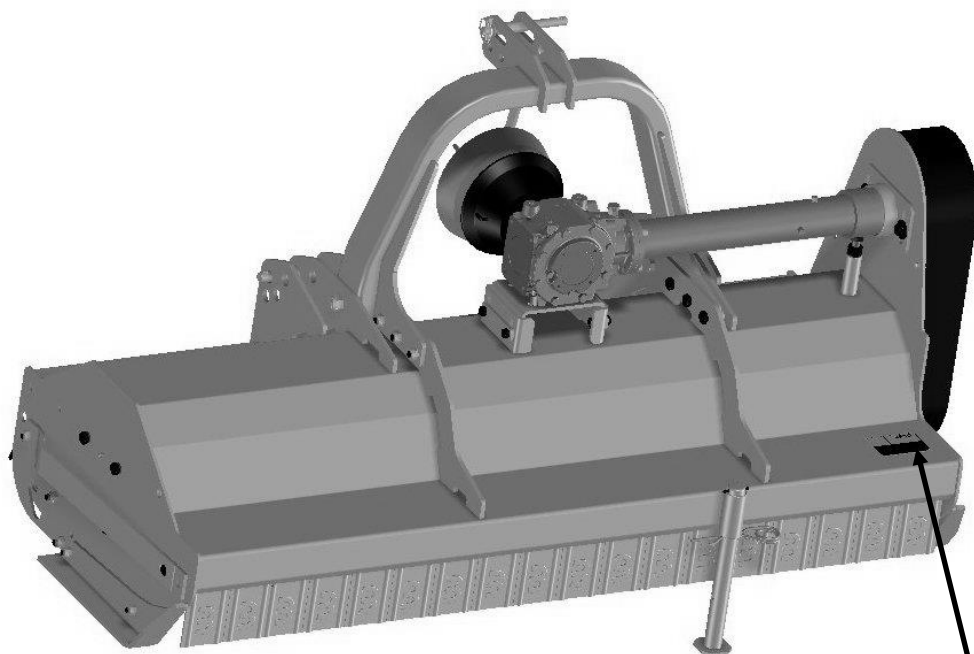


Figure 2

Position of the plate

1.4. MACHINE DECLARATION OF CONFORMITY

	BERTI® BERTI MACCHINE AGRICOLE S.p.A. Via Musi 1/a - 3 - 37042 CALDIERO (Verona) - ITALY Tel. +39.045.6139711 - Fax +39.045.6150251 info@bertima.it - www.bertima.it		
 Dichiarazione CE di Conformità ai sensi della direttiva 2006/42/CE EC Certificate of Conformity - conforming Directive 2006/42/CE EG Konformitätserklärung entsprechend der EU-Richtlinie 2006/42/CE Déclaration CE de conformité à la directive de la 2006/42/CE			
La Ditta / We / Wir / Nous		BERTI Macchine Agricole S.p.A. 37042 CALDIERO - VERONA - ITALY	
dichiara sotto la propria responsabilità nella sua qualità di costruttore, che la macchina a cui si appiava questa dichiarazione, è conforme ai requisiti essenziali di sicurezza e di tutela della salute di cui alla <u>Direttiva 2006/42/CE</u>. Per la verifica delle macchine sono state consultate le seguenti norme armonizzate: declare in sole responsibility, in quality of Manufacturer, that the product to which this certificate applies, conforms to the basic safety and health requirements of <u>Directive 2006/42/CE</u>, and according to the European harmonized standards: erklären in alleiniger Verantwortung, als Hersteller, dass das Produkt auf das sich diese Erklärung bezieht, mit den grundlegenden Sicherheits- und Gesundheitsschutzanforderungen der <u>EU-Richtlinie 2006/42/CE</u>, und mit den Änderungen der gemeinsamen EU-Richtlinien konform ist: déclarons sous notre seule responsabilité, comme Fabricante, que le produit faisant l'objet de la déclaration est conforme aux prescriptions fondamentales en matière de sécurité et de santé stipulées dans la <u>Directive de la 2006/42/CE</u>. Nos déclarations que les normes harmonisées suivantes ont été appliquées: <u>UNI EN 13624:2003+A1:2009</u> <u>UNI EN ISO 13857:2009</u> <u>UNI EN ISO 3767-1/2:1998</u> <u>UNI EN ISO 12100:2010</u> Nonché le seguenti specifiche tecniche: And the following technical specifications: Und die folgende technische Ausstellungen: Et les spécifications techniques suivantes: <u>ISO 11684:1995</u>			
MODELLO -- TYPE EKR M 180 MATRICOLA -- N° DE SERIE XXXXXXXXXX			
legale rappresentante e custode del fascicolo tecnico legal representative and custodial of the technical pamphlet Gesetzlicher Vertreter und Hüter des technischen Heft Représentant juridique et dépositaire du dossier technique		BERTI® Macchine Agricole S.p.A. BERTI MARIO <i>Amministratore Unico</i> P.PDCE_M01r00	
La presente certificazione è parte integrante della macchina This EC certificate is an integral part of the unit Die hier beigelegte Erklärung ist wesentlicher Bestandteil der Maschine Cette déclaration de conformité est partie intégrative de l'appareil			
Cod. Fisc. e Reg.Impr. di VR n° 00068150234 - P.IVA : 00068150234 - R.E.A. VR 84849 - Cap. Soc. € 151.704,00 iv Società soggetta a direzione e coordinamento da parte della società HB Holding Berti S.r.l. R.I. di VR03068950241			

1.5. INFORMATION REGARDING THE MACHINE

1.5.1. DECLARED USE

The EKR/M mulcher has been designed to be used exclusively in the agricultural sector, for mulching grass, bushes, scrub and pruning up to a diameter of about 4 cm, depending on the type of tool used.

The machine is carried by the tractor using a three-point hitch and operates on the ground in virtue of its own weight and rotation of the rotor, activated by the tractor power take-off via cardanic connection.

The machine must be used exclusively in the agricultural sector.

DO NOT USE THE MACHINE DIFFERENTLY TO THE INDICATIONS SUPPLIED

Use is prohibited if coupled to a tractor with features different to those listed in paragraph 1.5.3, on land with stones, scrap iron, iron wire and any other material that is not of vegetable origin on the surface, to fell trees, to grind stumps, on land that causes precarious balance for the tractor, (e.g. steep uphill or downhill travel, steep slopes, in the vicinity of a precipice, on very uneven land etc.) and in all those situations, without any exception, that can cause general dangerous conditions and serious consequences for the user, objects, persons and animals.



PERICOLO

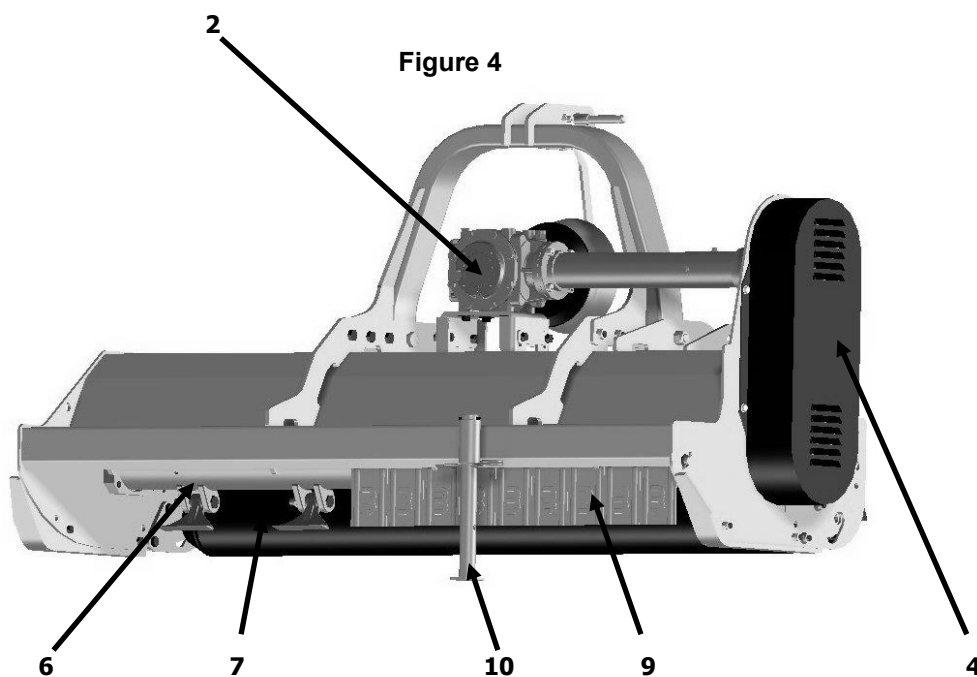
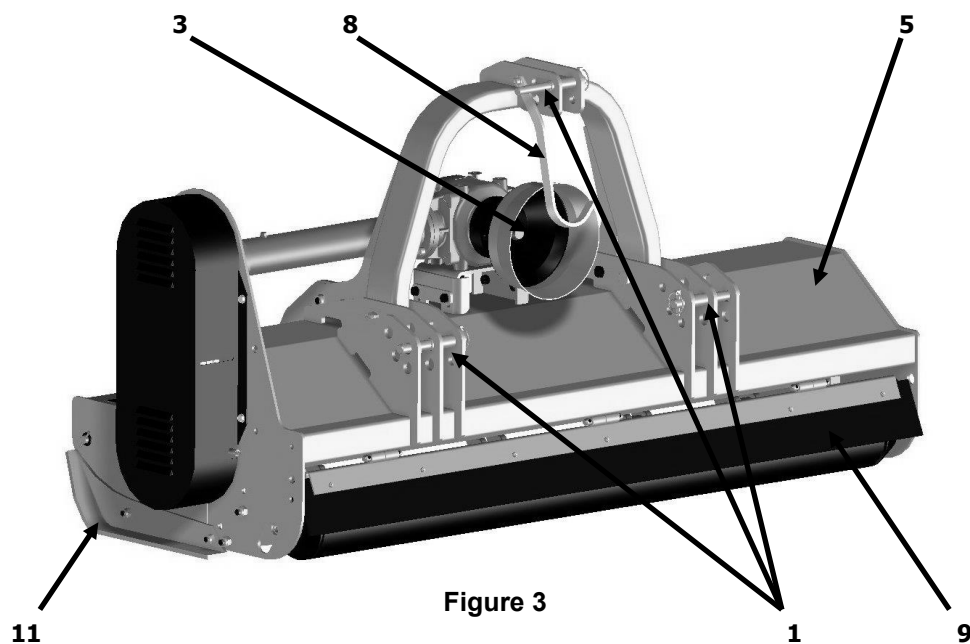
Any use of the machine different to that indicated in the instruction manual is considered unauthorised and dangerous.

1.5.2. DESCRIPTION

The machine has a working tool that is made up from a horizontal axle rotor, which mounts the mulching tools, which turn at high speed.

The mulcher is substantially composed of:

- a chassis;
- a three-point hitch connection system;
- a cardan shaft coupling;
- an overgear unit;
- a distributor unit
- a rotor;
- a series of mulching tools;
- a support device in parked position;
- a rear roller.



- | | |
|-------------------------|-------------------------|
| 1 Three-point hitch | 7 Roller |
| 2 Overgear unit | 8 Cardan shaft support |
| 3 Cardan shaft coupling | 9 Front and rear guards |
| 4 Distributor unit | 10 Support feet |
| 5 Chassis | 11 Side skids |
| 6 Rotor | |

Mulcher Mod. **EKR/M**

1.5.3. TECHNICAL DATA

The machine can be applied to tractors with power between 37 and 59 kW (50 - 80 CV) and works being towed at the rear of the tractor.

The illustration and the table given below indicate the machine's technical features.

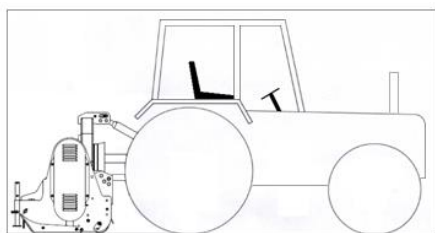


Figure 5

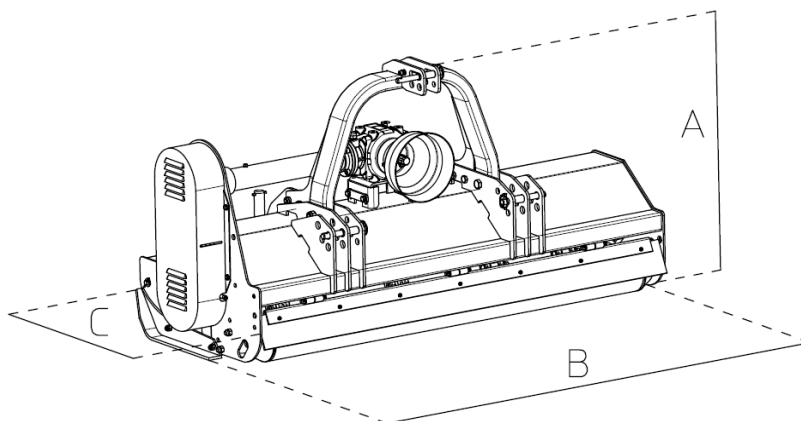


Figure 6

MODEL: EKR/M		180	200
Total width B	cm	198	218
Working width	cm	180	200
Length C	cm	100	100
Height A	cm	80	80
Weight *	Kg	475	530
Number of tools (hammers)	n.	16	18
Number of tools (blades)	n.	48	54
Tractor minimum power	CV	50	50
Power take-off speed	rpm	540 (1000)	540 (1000)
Number of belts	n.	4	4

Table 1

1.6. PROJECTION OF MATERIALS



PERICOLO

Materials can be projected by the machine in certain work situations. Pay particular attention:

- check that the working part guards and the rear inspection hood are present, in the correct position and efficient;
- perform regular cleaning and maintenance on the machine;
- check there are no persons, animals or objects within the working range of the machine, which could be injured/damaged.



PERICOLO

It is prohibited to use the machine if the tractor, to which it is coupled, does not have a cab with shatterproof/strengthened/laminated windows and fixed guards (e.g. metal grid). The final user is responsible for supplying the tractor with suitable guards that resist the impact of material/objects projected at high speed by the machine according to the state-of-the-art of current technology and to contact the manufacturer to request all clarifications on the subject.

1.7. NOISE LEVEL AND VIBRATIONS



PERICOLO

The machine exceeds 80 dB (A) also in idle running periods and hearing must be protected from the noise generated during work processes: use hearing protection or ear plugs.

It is mandatory for the user to measure sound emission from the tractor - mulcher unit following installation and always before commissioning the machine, in compliance with that envisioned by the Laws in force.

The noise level of the tractor - mulcher unit may increase through time due to wear: it is recommended to periodically evaluate the risk of exposure to noise.

The use of PPD is mandatory and they must guarantee the reduction of the noise level recorded in compliance with the Laws in force.



The vibrations at the tractor - mulcher system lie within the context of the vibrations produced by the tractor only. Excessive vibration can be caused by a machine fault, which must be signalled immediately and eliminated so as not to jeopardise machine reliability and/or damage the operator's health. Always work in suitable environmental conditions (e.g. with perfect visibility, with ground able to support the weight of the tractor - mulcher unit, with gradients that allow suitable vertical and lateral stability of the tractor - mulcher unit etc.).

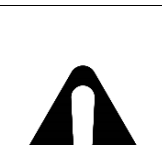
2. SAFETY AND ACCIDENT-PREVENTION STANDARDS

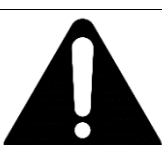
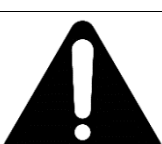
2.1. GENERAL SAFETY STANDARDS

Correct use of the machine, strict observance of the Standards indicated herein and the rigorous application of all precautions aimed at preventing dangerous situations, contribute to averting accidents or injuries, ensure better and longer operation of the machine and reduce faults to a minimum.

"BERTI MACCHINE AGRICOLE S.P.A." declines any objective and subjective liability in cases where the regulations indicated in this manual have not been applied and respected.

 PERICOLO	The machine is not designed to be used in sectors other than the agricultural sector and any use different to that specified is considered improper.
 PERICOLO	The machine must be used by a single operator driving the tractor.
 PERICOLO	It is mandatory for the user to check the correct tractor - mulcher coupling. The weight the tractor can lift in the most unfavourable conditions must be over the weight of the mulcher.
 PERICOLO	Before getting off the tractor and before any maintenance on the mulcher, engage the parking brake, switch off the engine, remove the keys from the dashboard and keep them safe and wait inside the cab for 5 minutes for the rotor and all relative tools to stop completely.
 PERICOLO	It is prohibited to abandon and/or leave the tractor-mulcher unit when the tractor is running.
 PERICOLO	It is prohibited to use the machine if the tractor, to which it is coupled, does not have a cab with laminated/shatterproof/strengthened windows and fixed guards (e.g. metal grid). The final user is responsible for supplying the tractor with suitable guards that resist the impact of material/objects projected at high speed by the machine according to the state-of-the-art of current technology and to contact the manufacturer to request all clarifications on the subject.
 PERICOLO	During use, the user must have sufficient visibility of the work areas deemed dangerous. Therefore it is good practice to keep the tractor mirrors and windows in an excellent state.

 PERICOLO	During the work phases, the user must always remain protected inside the cab. It is prohibited to work with doors/windows open. Projected objects hazard!
 PERICOLO	The machine must only be used by authorised, educated and appropriately trained staff. As well as having read the instructions contained in this manual, the user assigned must have understood and assimilated the same, must have had sufficient preparation regarding the correct use of the machine, must have a driving license and be an adult. The operator must contact the manufacturer if in doubt regarding use of the machine and interpretation of this manual.
 PERICOLO	Never use the machine without knowing its features.
 PERICOLO	The manual must always be readily available so that it can be consulted when necessary. If it is lost or damaged, request a replacement copy from the manufacturer.
 ATTENZIONE	The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine. 
 PERICOLO	The machine may emit dusts during use with dry products (hay, straw, etc.). It is recommended to periodically check the cab ventilation system filter and to always use suitable protection systems for the respiratory tract, such as dust masks.
 PERICOLO	The operator assigned to the machine must not wear clothing that can cause entanglement.
 PERICOLO	It is prohibited to use the machine to lift persons, animals or objects.

 PERICOLO	It is prohibited to use the machine to transport persons, animals or objects.
 PERICOLO	It is prohibited to use the flexible hoses as handholds. These components are mobile and are not a stable support.
 PERICOLO	The work area must be inspected before using the machine, removing any stones, scrap iron, steel cables, manholes, stumps and all materials and obstacles without limits, which can constitute a source of danger, accident and serious injury/damage to the user, persons, animals and objects.
 PERICOLO	The user must make sure that no person or animal stops within the machine work range during operation of the same. The user is responsible for stopping the machine immediately and clearing persons and animals from the work range. Never activate the machine near to persons or animals within or transiting through the machine working range.
 PERICOLO	If the machine is to be used on roads and public areas, all precautions must be taken to protect persons, animals and objects, for example using safety staff, warning signs, positioning them at the limits of the machine working range, in compliance with the Laws in force in the country of use.
 PERICOLO	Never work in areas with steep counterslopes, on slippery land and in areas/zones that reduce tractor adherence to the ground. Always pay great attention when changing direction.
 PERICOLO	Use the machine during the day and with perfect visibility.
 PERICOLO	It is prohibited to work in adverse weather conditions such as storms, snow, high winds, rain, fog etc.
 PERICOLO	Do not operate the machine on muddy, sandy or soft ground.

 PERICOLO	Pay attention to the risk of unintentional contact of the machine with high voltage overhead lines.
 PERICOLO	Do not use the machine when ill, tired or under the influence of medication, drugs or alcohol.
 PERICOLO	Carefully check the machine each time before starting it.
 PERICOLO	Before using the machine, ensure that all the safety devices are correctly positioned and in good working order. If these are broken or damaged, replace them immediately.
 PERICOLO	It is prohibited to remove or tamper with all guards and/or safety devices.
 PERICOLO	Make sure that the safety pictograms are in good condition, legible and clean. If the pictograms have deteriorated, they must be replaced with other originals obtained from the manufacturer and placed in the position indicated in the instruction manual (paragraph 2.3.2). If dirty, clean them with a damp cloth.
 ATTENZIONE	The signs applied to the machine provide a series of important instructions: comply with them for your own safety.
 PERICOLO	It is prohibited to make any modification that alters the original state of the machine.
 PERICOLO	Any arbitrary modification made to this machine relieves the manufacturer from any liability for damage or injury, which can happen to the operators, third parties and objects.

 PERICOLO	Keep the machine clean, eliminating foreign materials (debris, tools, various objects), which may damage its functioning or harm the operator.
	The following paragraphs list other very important Safety Standards. It is mandatory to read this instruction manual entirely before using the machine.

2.2. FIRE PREVENTION MEASURES

 ATTENZIONE	Keep an extinguisher with suitable capacity on board the tractor and periodically service the same. The extinguisher must only be used by staff capable of operating it, therefore it is the user's responsibility to supply training courses.
 ATTENZIONE	It is mandatory that staff assigned to operating the machine is informed regarding the principal procedures in the event of fire.
 ATTENZIONE	Do not use the machine in areas with risk of explosions and/or fire.
 ATTENZIONE	Maintenance residues, e.g. cloths or material replaced containing inflammable substances must be kept away from sources of ignition and disposed of in compliance with the Laws in force in the country of use.
 ATTENZIONE	Use suitable extinguishing equipment: e.g. Carbon dioxide, foam, chemical powder.
 ATTENZIONE	Do not weld in the proximity of tanks, pipes, cans, electrical cables or flammable materials in general.
 ATTENZIONE	When welding protect flammable parts with appropriate guards.

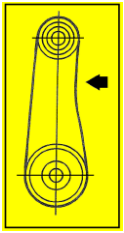
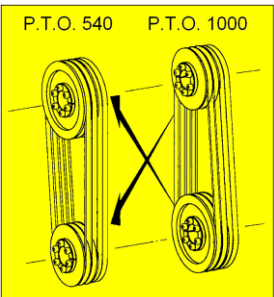
2.3. SAFETY SIGNS

Make sure that the safety pictograms are in good condition. If the pictograms have deteriorated, replace them with originals obtained from the manufacturer and place them in the position indicated in the operating and maintenance manual. Make that all safety pictograms are legible. Clean them using a cloth, water and soap.

2.3.1.DESCRPTION OF PICTOGRAMS POSITIONED ON THE MACHINE

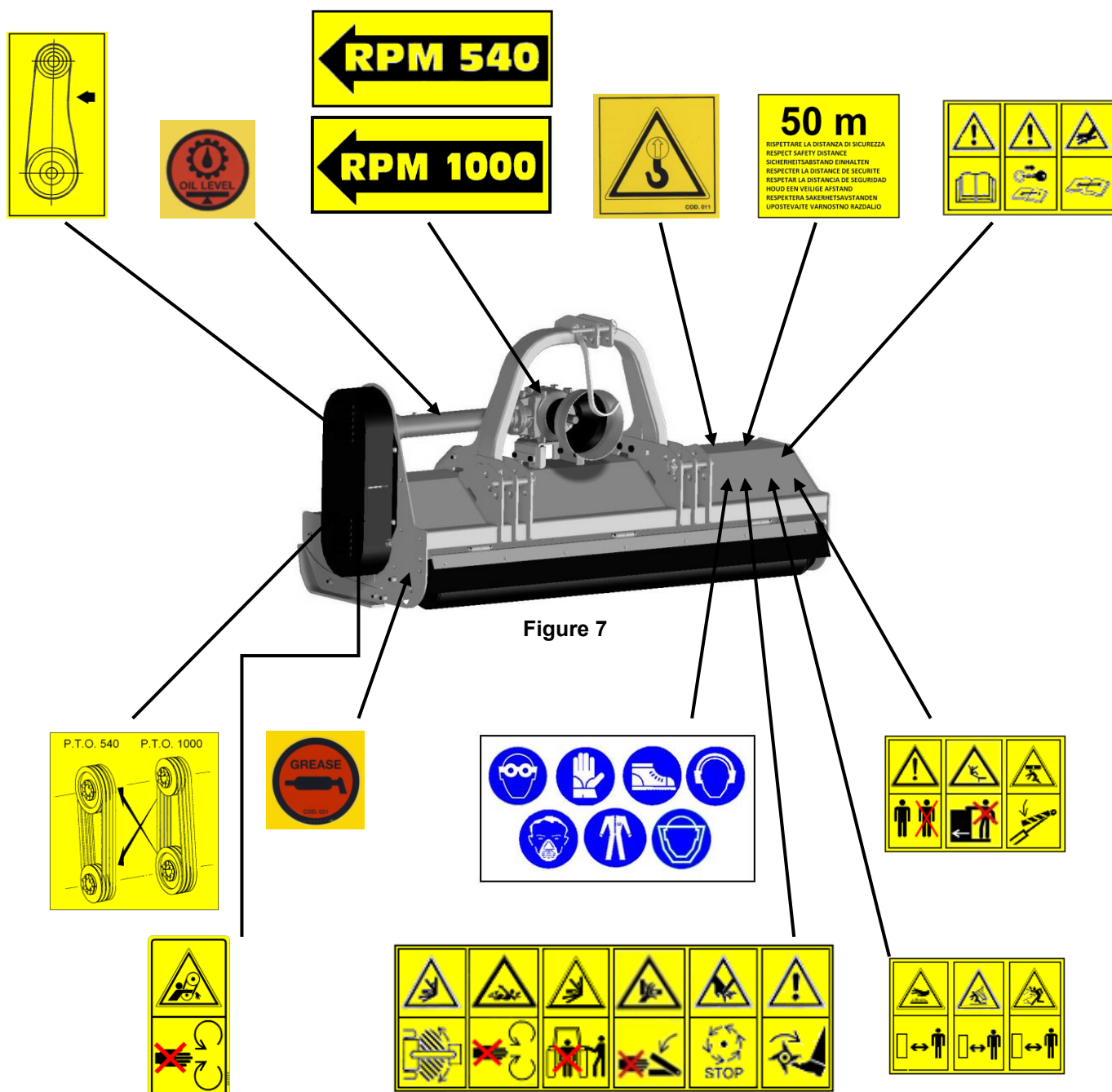
	ATTENTION: adjustment and maintenance operations must be performed in fully equipped workshops after the use and maintenance manual has been read. For further information, refer to chapter 3 - 4 of this instruction manual.
	ATTENTION – DANGER: this machine must be used by just one operator.
	ATTENTION: it is prohibited to climb onto or be transported by the machine.
	ATTENTION – DANGER falling suspended parts. Apply mechanical blocking systems
	ATTENTION – DANGER of projecting objects. Keep at a safe distance.
	ATTENTION: risk of folding machine parts falling.
	ATTENTION - DANGER of burns. Keep at a safe distance.

	ATTENTION – DANGER of contact with rotating tools. Keep at a safe distance.
	ATTENTION - DANGER shearing hands.
	ATTENTION – DANGER of crushing. Do not position yourself between the tractor and the mulcher.
	ATTENTION – DANGER of contact with moving parts. Wait for moving parts to stop.
	ATTENTION – DANGER of crushing, dangerous area deriving from machine movement.
	ATTENTION - DANGER of entanglement and dragging Do not place hands and feet near to moving parts.
	ATTENTION – DANGER of contact with moving parts. Do not place hands near transmission belts.
	PERSONAL PROTECTION DEVICES

	GREASING POINTS.
	OIL LEVEL.
	ATTENTION-DANGER minimum safety distance 50 m.
	LIFTING POINT.
	TENSIONED BELTS.
	CHANGING P.T.O.: by inverting the pulleys, pass from cardan shaft rotation of 540 rpm to 1000 rpm.
	ROTATING CARDAN SHAFT AT 540 rpm
	ROTATING CARDAN SHAFT AT 1000 rpm

2.3.2. POSITION OF THE PICTOGRAMS ON THE MACHINE

The pictograms are applied as per layout:



3. USE

3.1. INTRODUCTION

	Before using the machine, the manual must have been read thoroughly, understood and you must have familiarised with the machine. Use is recommended by skilled and suitable trained persons.
 ATTENZIONE	Always keep all body parts inside the tractor cab, to minimise the possibility of exposure to any external dangers, for example the projection of materials.
 PERICOLO	Before getting off the tractor and before any maintenance on the mulcher, engage the parking brake, switch off the engine, remove the keys from the dashboard and keep them safe and wait inside the cab for 5 minutes for the rotor and all relative tools to stop completely.
 ATTENZIONE	The safety of the user and the persons present in the vicinity depend on his capacity of judgement and caution when using the machine. It is therefore necessary to be fully aware of its functionality and all Safety Standards relative to its use.
 ATTENZIONE	The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine. 
 ATTENZIONE	The machine must always be in good working order and must only be repaired using original spare parts.

3.2. HANDLING AND TRANSPORT

Pay maximum attention to safety during loading and unloading operations, which must be performed by qualified staff. If the machine is lifted, it is mandatory to use the appropriate lifting points indicated in the pictograms (figure 8-9). Always perform a visual check before moving the machine so as to prevent unstable parts creating dangerous situations.

 CAUTELA	Never lift or handle the machine by fastening it to the rotor.
-------------	--



ATTENZIONE

The manufacturer declines all liability regarding injury/damage to persons, animals and objects deriving from incorrect machine handling using means of lifting and transport with capacities lower than the mass values stated in the table in the **1.5.3. TECHNICAL DATA** paragraph.

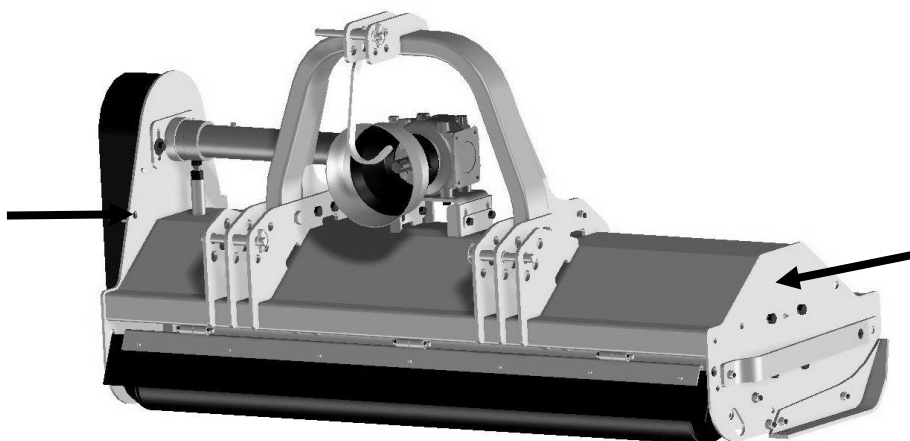


Figure 8

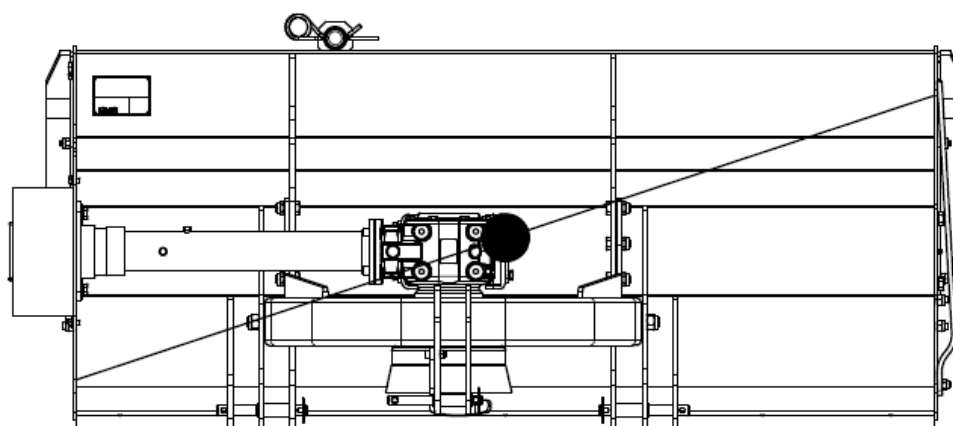


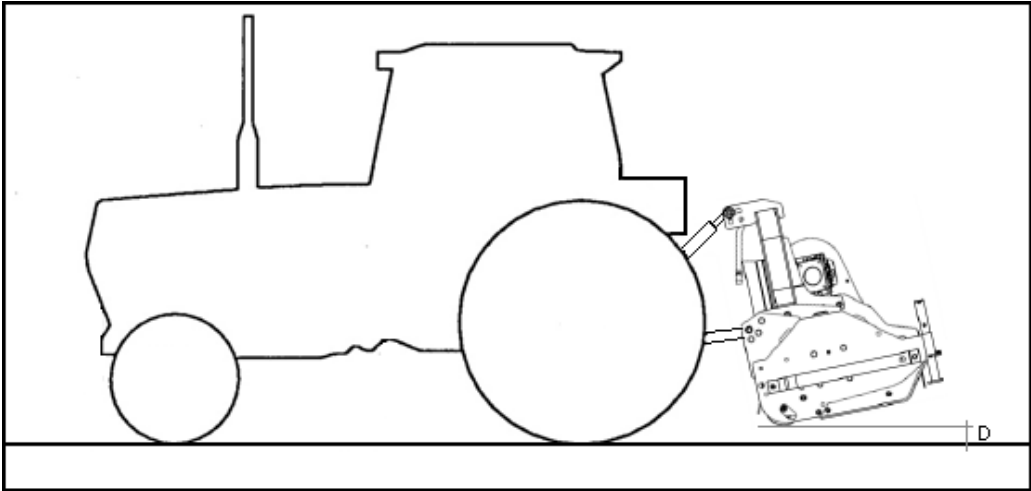
Figure 9

The machine is delivered assembled and must be hitched to the tractor in order to make it operational.

3.2.1. TRANSIT ON PUBLIC ROADS

 ATTENZIONE	If you have to travel on a public road, you must comply with the Highway Code, paying particular attention to speed.
	Before entering the road, any optional light bars must be installed (if prepared).
	It is mandatory to equip the vehicle with a flashing yellow or orange light.
	Before returning to a public road from an unpaved or dirty area, you must thoroughly clean the tractor tyres from mud residues.
 ATTENZIONE	When transiting on a public road, the mulcher must remain in transport position and the tractor PTO must be disconnected.

3.2.2. MACHINE TRANSPORT PROCEDURE

 ATTENZIONE	Before going onto the road, check that all machine parts are integral and in good working order.
	1. Disengage the P.T.O. and wait until the rotor is at a complete standstill; 2. Lift the machine just enough (D) so that the transmission parts do not touch the ground (figure 10);
	 Figure 10



ATTENZIONE

The weight of the machine modifies the stability of the tractor-mulcher unit, affecting the ability to steer and brake, therefore you must travel at moderate speed.

In particular, remember that the front axle must always be burdened with a load equal to at least 20% of the total weight of the tractor - mulcher.

Check the lifting capacity and stability of the tractor via the following formula and, if necessary, apply ballasts to the front.

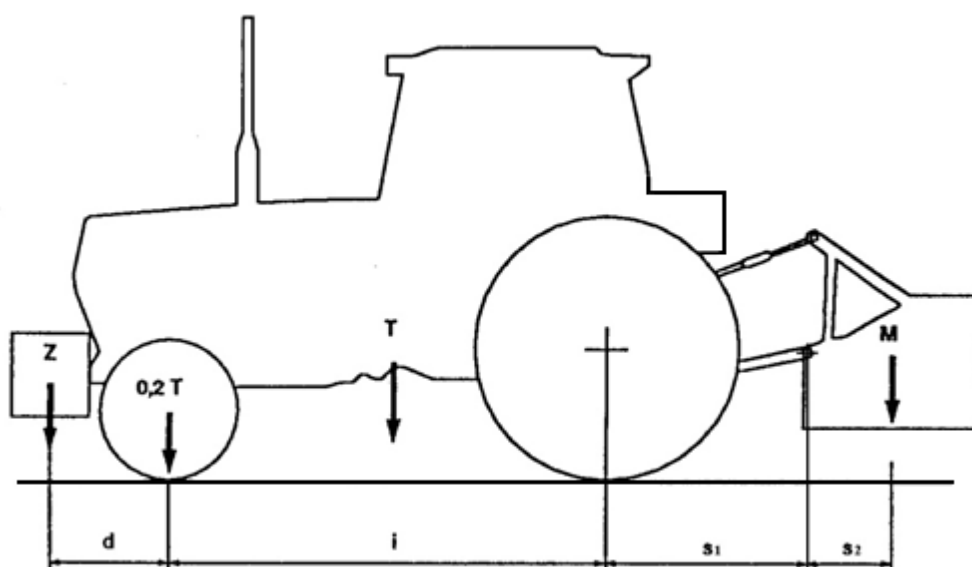


Figure 11

$$M \cdot (s_1 + s_2) \leq 0.2 T \cdot i + Z (d + i)$$

$$M \leq 0.3 T$$

- i** = tractor wheel c/c distance
- d** = distance of the front axle from the ballasts
- s₁** = distance between the rear axle and the centre of the lowering hitching points
- s₂** = distance between the centre of the lower hitching points and the barycentre of the hedge mower arm
- T** = tractor mass + 75 kg (operator)
- Z** = ballast mass
- M** = machine mass

 ATTENZIONE	Road transport must be performed with great attention in order to prevent dangers to persons and vehicles in transit.
 ATTENZIONE	During transport, the machine must be fastened down well and always remain within the clearance of the tractor.

3.3. VISIBILITY

The work areas can be controlled with the tractor rear view mirrors and the operator's sight.

 ATTENZIONE	When reversing dead spots may be created, which are not visible in the rear view mirrors.
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3.4. HITCHING THE MACHINE TO THE TRACTOR

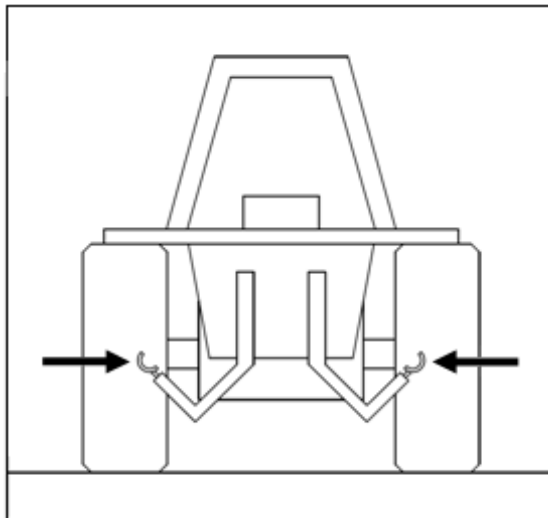
Before installing the machine, check that it is in perfect working order, resting on the ground and in a stable position. Check that the lubricants are at the correct level and that all parts subject to wear and/or deterioration are perfectly efficient and that the guards are integral and functioning.

 PERICOLO	It is mandatory to check the correct tractor - mulcher coupling. The lifting capacity and the stability of the tractor must respect the parameters described in chapter 3.2.2
 ATTENZIONE	It is prohibited to stop between the mulcher and the tractor during the hitching phase and all unauthorised persons must be moved away from the machine working range.
 ATTENZIONE	Before using the machine you need to familiarise with the controls and their operation.
 PERICOLO	Always keep all body parts inside the tractor cab in all circumstances, to minimise the possibility of exposure to any external dangers.

 PERICOLO	Before getting off the tractor and before any maintenance on the mulcher, engage the parking brake, switch off the engine, remove the key from the dashboard and keep it safe and wait for the rotor and all mobile parts to stop completely.
--	--

3.4.1. HITCHING PROCEDURE

The machine must be hitched to the tractor with PTO activated at 540 rpm (on request 1000 rpm by inverting the pulleys), with suitable weight and power, in compliance with the legal requirements in force in the country of use.

 ATTENZIONE	The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine. 
 PERICOLO	1. Remove the safety pins (1), slide out the washer (2), the crank pin (3) and the pins (7) (figure 13); 2. Move the tractor in reverse gear to approach the rear lifting bars to the mulcher hitches (figure 12):  Figure 12
	3. Engage the tractor parking brake, switch the engine off, extract the ignition key from the dashboard, keep it in a safe place and climb down;
	4. Insert the pins (7) and the relative safety pins (1) (figure 13);
	5. Connect the machine third point (tie-rod) to the tractor, insert the supplied jack (3), washer (2) and relative safety pin (1); adjust the length of the third point in a way that the jack is about at the centre of the slot;
	6. Lift the mulcher until the machine and tractor power take-off sockets are at the same height and regulate the tensioner, taking the mulcher to the horizontal position; lift the support feet (6) (figure 13);

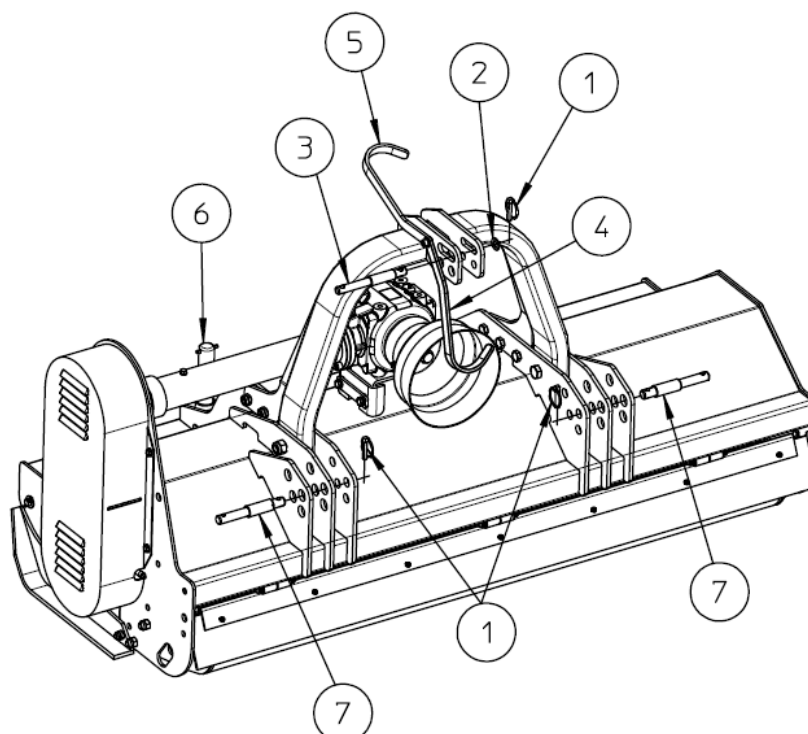


Figure 13

7. Block the tractor lifting bars to prevent the machine oscillating sideways, thus compromising the transversal stability of the unit;
8. Insert the cardan shaft onto the machine splined shaft, keeping the safety pin pressed, release the safety pin and recede with the cardan until the pin is engaged with an audible "clack" in the relevant seat. If you do not hear the plug click, repeat the procedure;
9. Do not use the cardan shaft without suitable protections in compliance with legal requisites.

DO NOT CLIMB OVER THE CARDAN SHAFT FOR ANY REASON WHETHER IT BE MOVING OR AT A STANDSTILL.

The cardan shaft is the drive component that allows to activate the mulcher. It must be selected according to precise criteria that define its dimensions and length.

The table shown below, the size of the cardan shaft is greater with respect to the power absorbed during work. This choice is necessary in order to guarantee maximum cardan shaft strength during maximum extension.

Model	Maximum power absorbed		Power that can be transmitted by the cardan shaft at 540-1000 rpm	
	kw	HP	kw	HP
EKR/M 180	29 – 33	40 – 45	37	50
EKR/M 200	33 – 37	45 – 50	37	50

Table 2



ATTENZIONE

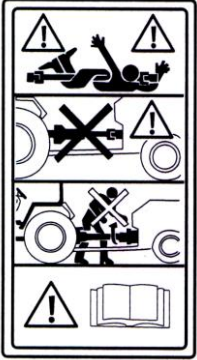
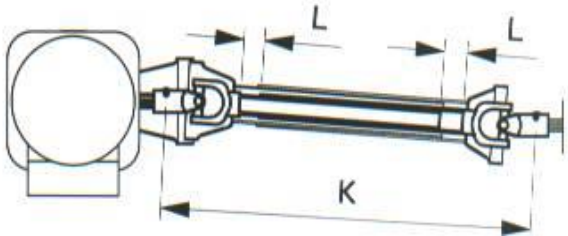


ATTENZIONE

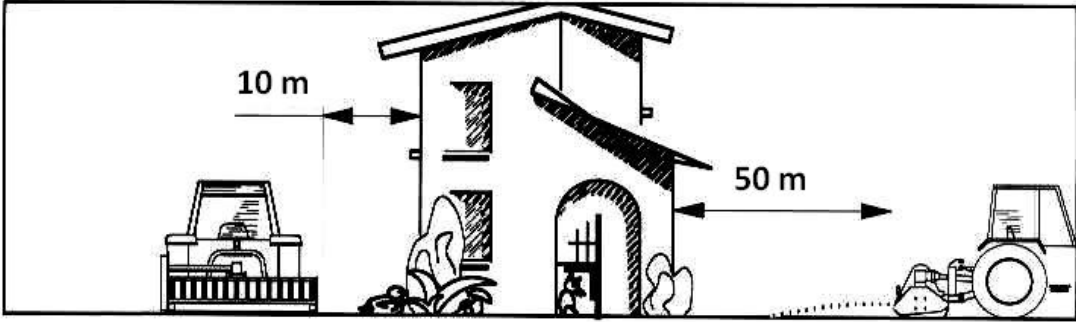
The manufacturer indicates that the cardan shaft must be suitably dimensioned to safely support the power absorption levels during work processes as long as all operating and use conditions are complied with. If the cardan shaft is replaced it can be replaced by another that meets CE Standards and that is suitable for transmitting the power indicated in table 2 of this paragraph.



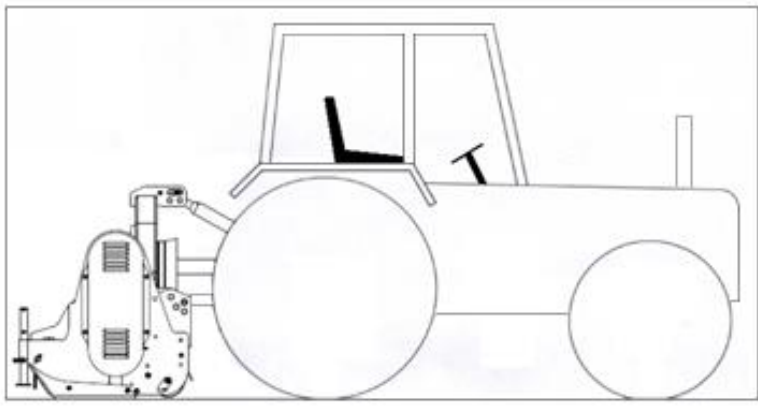
Before any operation, carefully read the instruction handbook attached to the cardan shaft.

	During operation, the cardan shaft can cause risks and hazardous situations. Therefore: • read and keep the use and maintenance handbook attached to the cardan shaft; • check that the cardan shaft is suitable for transmitting the required power; • only use the cardan shaft supplied with the machine; • check that guards are properly installed, integral and effective; • replace worn, broken or missing guards; • switch the tractor motor off before working on the cardan shaft or on the machine itself; • never allow children or unauthorised persons come near to the machine when it is operating and/or undergoing maintenance; • when not in use, rest the cardan shaft on a relevant support; • wear suitable garments (that cannot be caught by the machine or pulled into it), especially close-fitting garments (e.g. work overalls with safety wrists and ankles).
 ATTENZIONE	On first installation of the cardan shaft, measure the distance K between the P.T.O. buttons grooves with the machine resting on the ground, level and with the overgear axially aligned with the tractor's P.T.O. If necessary, adapt the length of the cardan shaft, making sure that the telescopic tubes overlap for a length that permits between 40 and 50 mm of play L at their ends (figure 14).  Figure 14 This operation must be carried out on commissioning, at every replacement and every time the machine is installed on another tractor. After assembly of the cardan shaft, fix the guard using the appropriate chains on both sides. When the machine is put to rest, house the cardan shaft on a relevant support, envisioned on the three-point drawbar in order to prevent the accumulation of dirt, deformation and breakage on the guard. After installation of the cardan shaft, make a few up and down movements of the machine. This is to check that the pipes of the shaft itself are free to run without getting stuck.
 ATTENZIONE	Grease the cardan shaft according to the recommendations envisioned in the instruction manual referring to the same. Do not work with cardan shafts that have no protections. Read the instruction handbook attached to the cardan shaft thoroughly.
 ATTENZIONE	10. Turn the cardan support rod from position (4) to position (5) (figure 13); Check that the safety pins are well inserted and efficient. Make sure the restraining devices have been inserted inside the connection jack.
	11. The machine is ready for start-up.

3.5. STARTING THE MACHINE

 ATTENZIONE	Before each start-up, follow that stated below:
	- Make sure that there are no persons, animals and objects within the work range of the machine as there are dangers present, e.g. the projection of objects at high speed, which can cause serious injury and even death. Remain at a minimum safe distance, equal to the machine's work range of 50 m.  Figure 15
	- Do not allow persons, animals or objects to approach or stop in the machine's work range.
	- Before using the machine you need to familiarise with the controls and their work operation.
 ATTENZIONE	The user must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine. 
	- Always keep the guards integral, in position and perfectly efficient.
	- The tractor must have the engine off, the parking brake engaged, the power take-off disengaged, the ignition key removed from the dashboard and kept in a safe place by the user.
	- The rotor and relative machine tools must be at a standstill.
	- Always inspect the machine, controlling tightness of all screws and nuts and the presence of damage which must be repaired before start-up, in order to take the machine back to its original state;
	- Supervise the work area, removing stones, pieces of metal, steel cables and all dangerous material, without any exception. Use all necessary guards for your own protection and that of others. Protect the cab or the driver's position from falling/projection of material at high speed using shatterproof/strengthened/laminated windows and fixed guards (e.g. metal grid) that can resist the impact in compliance with the state-of-the-art of current technology. Contact the manufacturer to request any clarifications on the subject.
	- Check that the position and the conditions of the ground in the work area do not jeopardise the stability of the tractor-mulcher unit in any way.
	- Make sure that the safety pictograms are in good condition. If the pictograms have deteriorated, replace them with originals obtained from the manufacturer and place them in the position indicated in the instruction manual.
	- Make that all safety pictograms are legible. Clean them using a damp cloth.

STARTING PROCEDURE

 PERICOLO	1. Using the lifting device controls, lower the machine until the levelling roller rests on the ground;
 ATTENZIONE	2. Engage the P.T.O. and accelerate the tractor gradually until the normal speed of 540 rpm is reached (1000 rpm with pulley inverted);
	3. Engage the gear and start working;
	4. Travel a brief tract of road with the machine activated;
	 Figure 16
	5. Decelerate the tractor to minimum;
	6. Switch the tractor engine off, engage the parking brake, disengage the power take-off, remove the ignition key from the dashboard and user must keep it in a safe place;
	7. Climb down from the tractor and check there are no oil leaks at the gearbox and extension;
 PERICOLO	Never use the hands to identify pressurised fluid leaks.
	8. Check the quality of the job performed; if it is not satisfactory, use the lifting device to adjust the working height, preventing the cutting parts (hammers or blades) going into contact with the ground. Repeat the steps from point 1 and, if necessary, look at the machine adjustment operations again. These are given in paragraph 3.5.1.

3.5.1. MACHINE ADJUSTMENTS

3.5.1.1. FORWARD SPEED

Adjust the working speed, based on the size (diameter) and volume of the material to be mulched, as well as the degree of grinding to be obtained. The machine must work exclusively in compliance with the declared use.

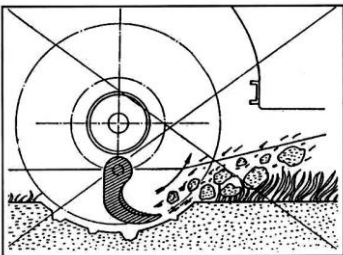
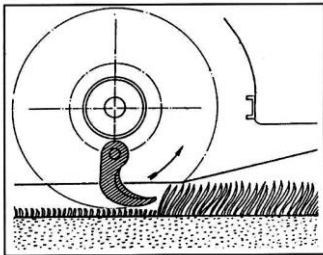
 PERICOLO	Excess speed puts excessive stress on mobile machine parts, thus wearing them out ahead of time. This will produce poor-quality shredded material, with possible projection of large pieces of material, thus creating dangerous situations for the operator.
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The following table contains speeds we recommend to get maximum performance from the machine, in particular:

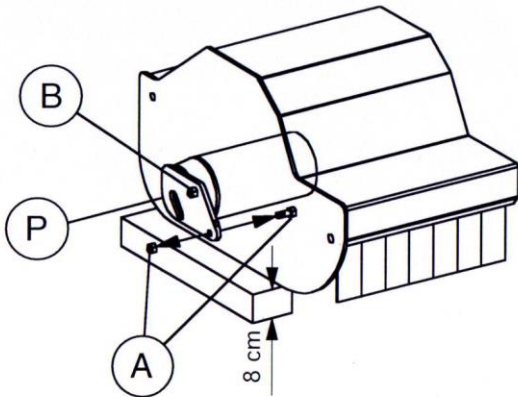
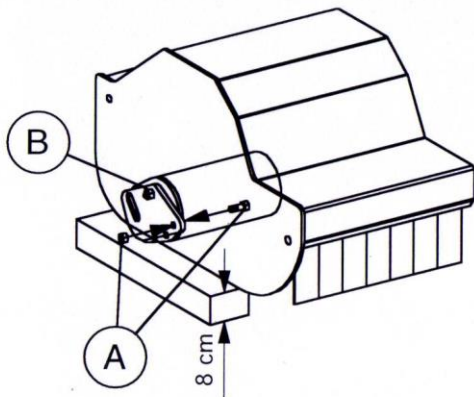
TYPE OF MATERIAL	RECOMMENDED FORWARD SPEEDS (km/h)														
	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	8
Plain grass															
Grass uncultivated for months															
Grass uncultivated for years or very fibrous															
Vineyard pruning															
Apple tree-pear tree pruning															
Olive-peach tree pruning															
Brush - woodland															

3.5.1.2. ADJUSTMENT OF CUTTING HEIGHT

	Before adjusting the machine cutting height, this instruction book must have been thoroughly read and understood.
 PERICOLO	All adjustments must be carried out by authorised workshops and specialised staff.
 PERICOLO	The work height must be adjusted in a way to prevent the cutting tools (hammers or blades) coming into contact with the ground, thus generating consequent projections (figure 17-18).

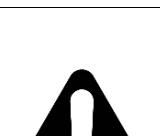
	 Figure 17 NO	 Figure 18 YES
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To adjust the cutting and therefore work height, operate on the position of the machine rear roller as follows:

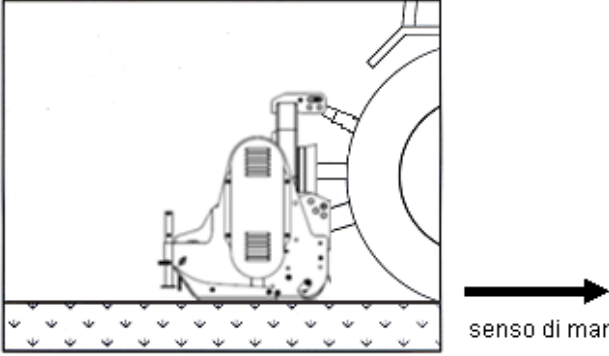
 ATTENZIONE	In order to perform the operations described below, make sure that the tractor engine is off, the parking brake is engaged, the power take-off disconnected, the ignition key removed from the dashboard and kept in a safe place.
 PERICOLO	In the workshop, use suitable equipment to handle and support the machine especially in terms of liftable and sustainable weight (see table 1.5.3 for data relative to the machine), in compliance with the Laws in force in the country of use.
	1. Position the machine in a level manner with a 8 cm shim under the sides (figure 19);   Figure 19
	2. Completely loosen and remove the bolt A;
	3. Loosen the bolt B;
	4. Turn the support plate P until a hole in the plate itself is centred with that in the side panel of the mulcher;
	5. Re-mount the bolts A and tighten them;
	6. Tighten the bolt B;
	7. Check for any damage/breakage and perform any repairs immediately, using original spare parts only.
	8. Repeat the actions stated in paragraphs 3.4 and 3.5 "Hitching and Starting of the machine" and start to work in the ways described in paragraph 3.6.
	The operations must be performed on both ends of the roller.

3.6. MACHINE IN WORK STAGE

 PERICOLO	Before starting to work, make sure that everything described in chapter 2 "SAFETY STANDARDS AND ACCIDENT-PREVENTION" and in chapter 3 paragraphs 3.1, 3.2, 3.3, 3.4 and 3.5 are fully satisfied.
 PERICOLO	The work area must be inspected before using the machine, removing any stones, scrap iron, steel cables, manholes, stumps and all materials and obstacles without limits, which can constitute a source of danger, accident and serious injury/damage to the user, persons, animals and objects.
 PERICOLO	When working at the roadside, delimit the working range of the tractor using signs, safety staff and means in compliance with the Laws in force in the country of use.
 PERICOLO	The user must make sure that no person or animal stops within the machine work range during operation. The user must stop the machine immediately and move any unauthorised persons away. Never activate the machine near to persons within or transiting through the machine working range.
 PERICOLO	It is prohibited to use the mulcher if the tractor, to which it is coupled, does not have a cab with strengthened/shatterproof/laminated windows and fixed guards (e.g. metal grid). The final user is responsible for supplying the tractor with suitable guards that resist the impact of material/objects projected at high speed by the machine according to the state-of-the-art of current technology and to contact the manufacturer to request all clarifications on the subject.
 ATTENZIONE	Because all mechanical parts settle down generally in the first phase of the machine's lifespan, it is indispensable that the machine is checked with maximum precision.
 PERICOLO	Make sure that all machine parts function regularly when operating. Remember that most problems and breakdowns that can occur during use of the machine are caused by loosening of the fixing elements.
 PERICOLO	It is prohibited to remove and/or modify the guards on the machine.
 ATTENZIONE	When changing direction, turning and reversing, lift the head from the ground slightly after disengaging the power supply to the machine, in order to prevent damage to the structure.

 PERICOLO	It is prohibited to use work configurations that prevent the user on the tractor from seeing the machine.
 PERICOLO	It is prohibited to use work configurations that put the tractor - mulcher unit stability at risk. The tractor must always be on flat land that can sustain its weight. The user is responsible for risk assessment every time, depending on the work area, assuming full responsibility for the damage caused as a consequence of incorrect evaluation.
 ATTENZIONE	It is prohibited to use the machine as a support point for the tractor. The pressure exerted by the tractor would cause the machine chassis to collapse with consequent breakage of the same.
 ATTENZIONE	Never rest or press the rotor on stumps or rocks for example because it could bend and turn then unbalanced. Operating the machine damaged in this way in a brief time will compromise structural integrity with sudden and uncontrolled breakage.
 PERICOLO	Never work on stones, especially in the presence of very dry grass or brush. The sparks caused by the contact of the tools with the stones could start a fire. In the event of a fire, call the competent authorities immediately, move the tractor-mulcher unit away to a safe place if possible, carry out the procedure stated in paragraph 3.7 and reach safety.
 PERICOLO	The machine must rest on the ground at the end of the job. Before getting off the tractor, engage the parking brake, switch off the engine, remove the keys from the dashboard and keep them safe and wait inside the cab for 5 minutes for the rotor and all relative tools to stop completely.
 ATTENZIONE	If the mulcher should remain entangled in the dense vegetation or scrap iron e.g. scrub, shrubs, large quantities of bushes, steel cables and all those materials that can obstruct the machine, the tractor parking brake must be engaged, the engine switched off, the ignition key removed from the dashboard and kept safely. It is also mandatory to wait inside the cab for 5 minutes in order to allow the rotor and relative tools to come to a complete standstill. It is then possible to climb down from the tractor. At this point, the operator must release the machine manually, following all Safety Standards regarding this case. Check for any damage/breakage and perform any repairs immediately, using original spare parts only. If this is not the case, climb back onto the tractor and continue with the job, following the methods described in paragraph 3.5 "Starting the machine" and in paragraph 3.6 "Machine in work stage".

MULCHING PROCEDURE

 ATTENZIONE	It is recommended to carry out the job at a constant forward speed that is suitable for the quantity of material to be mulched. In this case, there will be an excellent production of mulched material and the reduced possibility of large pieces of material being expelled.
 ATTENZIONE	The tractor must always be on flat land that can sustain its weight.
Prepare the working area and proceed as follows:	
	1. Engage the tractor PTO with the tractor engine ticking over;
	2. Accelerate gradually until reaching the working speed of 540 rpm (1000 rpm on request by inverting the pulleys);
	3. Start the job modulating the movement speed in a way that the machine can complete mulching the material and discharge the mulched material onto the ground at the same time (figure 20);
	If the vegetation is very dense or tall, it may be necessary to pass the first time with the mulcher lifted from the ground and then pass again with the mulcher at the ground to complete the job.
	 senso di marcia trattore Figure 20
 PERICOLO	It is prohibited to move the machine to the next place of work until the rotor and machine tools are at a complete standstill.

3.7. STOPPING THE MACHINE

To stop the machine, disengage the tractor PTO so that the rotor and the relative tools are at a complete standstill.

 PERICOLO	Always remain inside the cab during operations and make sure there are no persons, animals or objects within the work range of the machine. Any operation on the machine must be performed with the parking brake engaged, the tractor engine off, the ignition key removed from the dashboard and kept safe. Wait for a couple of minutes inside the cab to give the rotor and relative tools time to come to a complete standstill.
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3.8. UNHITCHING THE MACHINE

When unhitching the machine from the tractor:

 ATTENZIONE	1. Make sure that the tractor-mulcher unit is on flat, stable ground; 2. Disengage the tractor PTO and wait for the rotor and tools to be at a complete standstill;
	3. Rest the machine on the levelling roller; 4. Take the tractor engine to minimum and engage the parking brake; 5. Climb down from the driver's position; 6. Lower the machine support feet; 7. Climb onto the tractor and operating on the lifting device, rest the machine completely on the ground; 8. Switch the tractor off, remove the key from the dashboard and keep it in a safe place; 9. Climb down from the driver's position; 10. Disconnect the cardan shaft, operating on the retainer shackles; 11. Place the cardan shaft on the relevant support; 12. Disconnect the tie-rod from the third point; 13. Disconnect the tractor rear hydraulic lifting device arms from the mulcher parallel hitching points; 14. Climb back onto the tractor;
 ATTENZIONE	15. Start the tractor and move away carefully.
 ATTENZIONE	The land where the machine is parked must be flat and within a protected area, in a way to prevent unauthorised staff from approaching.

3.9. JAMMING

	This instruction manual must have been read and understood thoroughly before unjamming the machine.
 ATTENZIONE	It must be remembered that any variation in the conditions of the field such as type or volume of the material to be mulched, can cause the mulcher to jam.
 ATTENZIONE	If the machine jams, follow that stated in paragraph 3.8 "UNHITCHING THE MACHINE" and take the machine to an authorised workshop .

In the workshop:

 PERICOLO	1. Hitch the machine, turn it over and rest it on suitable supports;
	In the workshop, use suitable equipment (tackle and beams) to handle the machine especially in terms of liftable and sustainable weight (see table 1.5.3 for data relative to the machine).
	2. Unjam the machine manually;
	3. Check for any damage/breakage and perform any repairs immediately, using original spare parts only.
	4. Once the operations have been completed, turn the machine over again and place it on the ground;
	5. Repeat the actions stated in paragraphs 3.4 and 3.5 "Hitching Cutting and Starting of the machine" and start to work in the ways described in paragraph 3.6.

4. MAINTENANCE

 ATTENZIONE	In the event of breakdown, the user must follow the machine stopping procedure, take the tractor engine to minimum, engage the parking brake, switch the engine off, disengage the power take-off, remove the ignition key and wait inside the cab a few minutes for the rotor and the machine tools to come to a complete standstill. Climb down to check the size of the problem and contact the authorised workshop in order to solve the problem.
--	--

The following operations must be carried out before starting any maintenance operation:

	This instruction manual must have been read and understood thoroughly before performing any maintenance on the machine.
 PERICOLO	The machine must be in an equipped and authorised workshop for all routine and extraordinary maintenance operations, with specialised staff. The machine must be at a standstill and unhitched from the tractor. It is prohibited to perform maintenance and repairs in the open and in places that are not suitably equipped.
 ATTENZIONE	The specialised staff must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine. 
 ATTENZIONE	Only perform any maintenance when the temperature of the oil and the hot parts of the machine has dropped below 60°C.
 PERICOLO	Do not carry out repairs of which you have no knowledge. Always follow instructions and contact the manufacturer if they are not available.
 ATTENZIONE	Do not use lifting points different to those prescribed.

 ATTENZIONE	Make sure that the lifting equipment is suitable to carry out the operations in compliance with Safety Standards in the country of use.
 ATTENZIONE	Maintenance residues, e.g. cloths or material replaced containing inflammable substances must be kept away from sources of ignition and disposed of in compliance with the Laws in force in the country of use.
 ATTENZIONE	The oil collected must be disposed of in compliance with the Laws in force in the country of use.

4.1. MACHINE HOT POINTS

Before any maintenance intervention, make sure that the potentially hot parts have dropped to a temperature below 60°C.
Pay extreme attention to:

- Transmission casing;
- Extension and gearbox;
- Pulleys and belts.

4.2. MAINTENANCE INTERVENTIONS

The qualified staff must know about and precisely follow the indications and must have stopped and unhitched the machine in compliance with paragraphs 3.7 and 3.8.

The periodic checks and maintenance operations must be performed within the times and using the methods established and are the user's responsibility.

Failure to comply with maintenance times and regulations jeopardises the correct operation of the machine and its duration and consequently makes warranty validity null and void.

Intensify the frequency of maintenance in heavy duty operating conditions (frequent stopping and starting, extended winter period, etc.).

4.2.1. GREASING

Periodic and systematic greasing and lubrication of the machine maintain its performance and increase its useful life span.
Use a special universal greasing pump, supplied to all workshops, to grease the points indicated.

LUBRICATING THE TRANSMISSION SYSTEM:

 ATTENZIONE	Carefully clean the parts around plugs before working on transmission units; this prevents dirt from penetrating these units.
--	---

Transmission units require:

- check the oil level in the gearbox and pulley during the first 20 working hours: oil must come up to the level hole. Add oil as required. Perform the next oil level checks at 50 hour intervals.
- replace the oil in the gearbox and pulley totally after the first 40 work hours. Repeat this operation every 250 work hours.

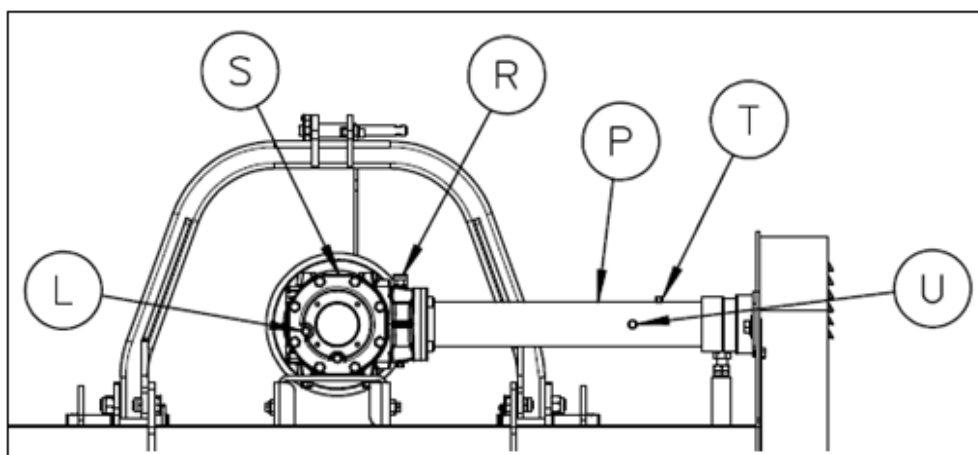


Figure 21

- Oil is introduced into the gearbox S through the hole closed by plug R. The level is given by the hole closed with plug L.
- Oil is introduced into the extension P via the hole closed by plug T. The level is given by the hole closed with plug U.

GENERAL GREASING:



ATTENZIONE

Carefully clean the parts around plugs before working on machine greasing points; this prevents dirt from penetrating these points.

Pos.	Name	Lubrication intervals	Notes
RT	Rotor	8 hours	Grease by activating the manual pump 1-2 times to prevent damage to the internal seals of the supports. The rotor is lubricated from the pulley side via a greaser set-up on the small pipe that escapes from the transmission casing (figure 22-23).
RL	Roller	8 hours	Grease both ends of the roller, activating the manual pump 1-2 times to prevent the grease escaping (figure 22-23).

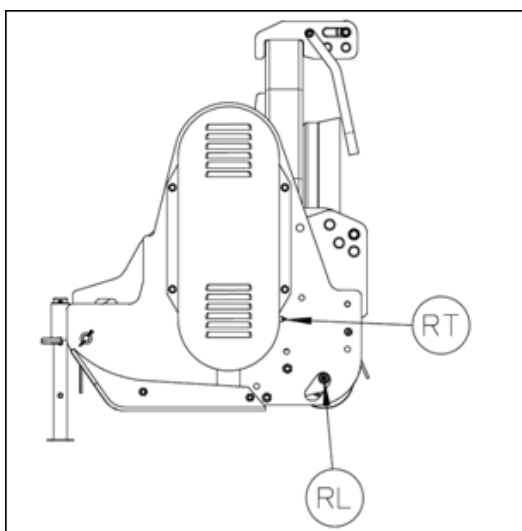


Figure 22

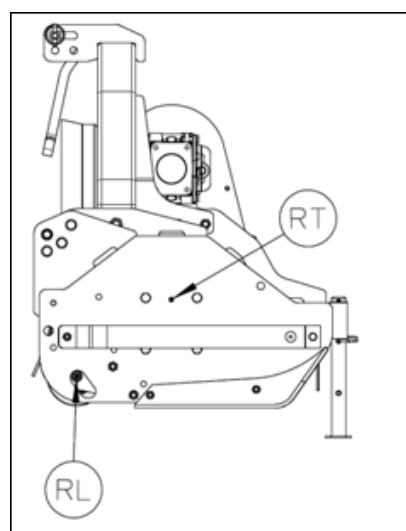


Figure 23

Only use a manual greasing pump in order to prevent laceration of the bearing seals and the grease passage piping.

LUBRICANTS TO USE	
Gear box	SAE 90 - 140 gearbox oil
Rotor – levelling roller – other greasing points	EP2 grease



Periodic and systematic greasing and lubrication of the machine maintain its performance and increase its useful life span.

4.2.2. ADJUSTMENT OF TRANSMISSION BELT TENSION

	Before adjusting tension of the belts, this instruction book must have been thoroughly read and understood.
 PERICOLO	All adjustments must be carried out by authorised workshops and specialised staff.
 ATTENZIONE	The tractor must be on a stretch of flat land, with the head on the ground, the engine stopped, the parking brake engaged, the P.T.O. disengaged and the ignition key removed from the dashboard and kept safely.
	A dynamometer must be used to adjust belt pre-tensioning. This is an instrument that measures elastic deformation of a spring in proportion to the force applied on a graduated scale. By pressing with a force of 50 N on the individual belt, the flexure value must be between 8 - 10 mm (see figure 24). It is very important to check the tension of the belts in order to obtain excellent performance and to prolong useful life: perform the adjustments after the first 4 hours and successively every 50 hours until the sag is in compliance with that stated above. Figure 24

BELTS TENSION ADJUSTMENT PROCEDURE:

Proceed as follows to adjust the tension of the transmission belts:

1. Remove the transmission covering casing P (figure 25);
2. Loosen the screws A positioned on the sides of the gearbox support (n° 4 screws) (figure 25-26);
3. Loosen the screws C of the side panel support (n°2 screws);

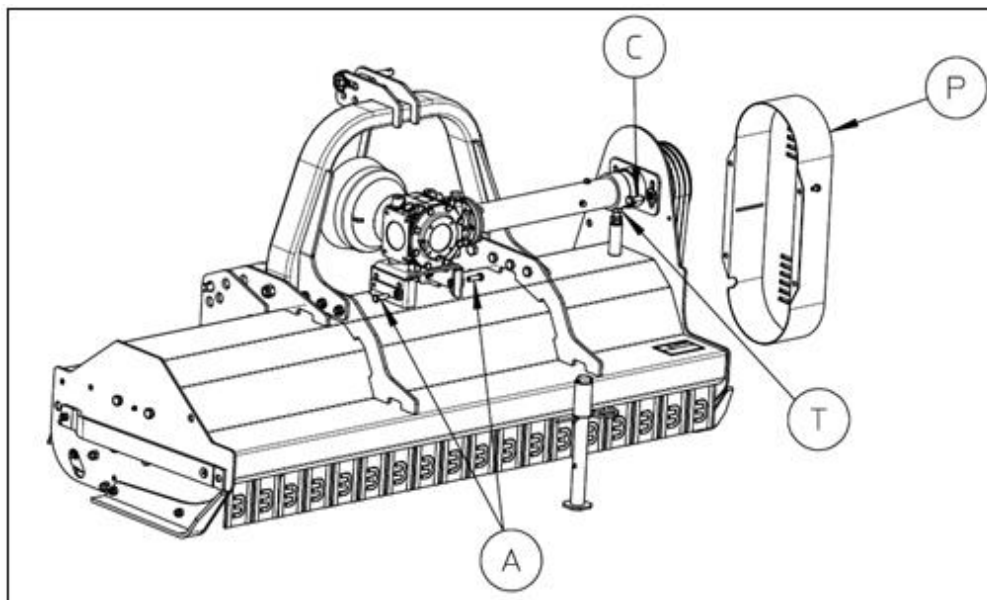


Figure 25

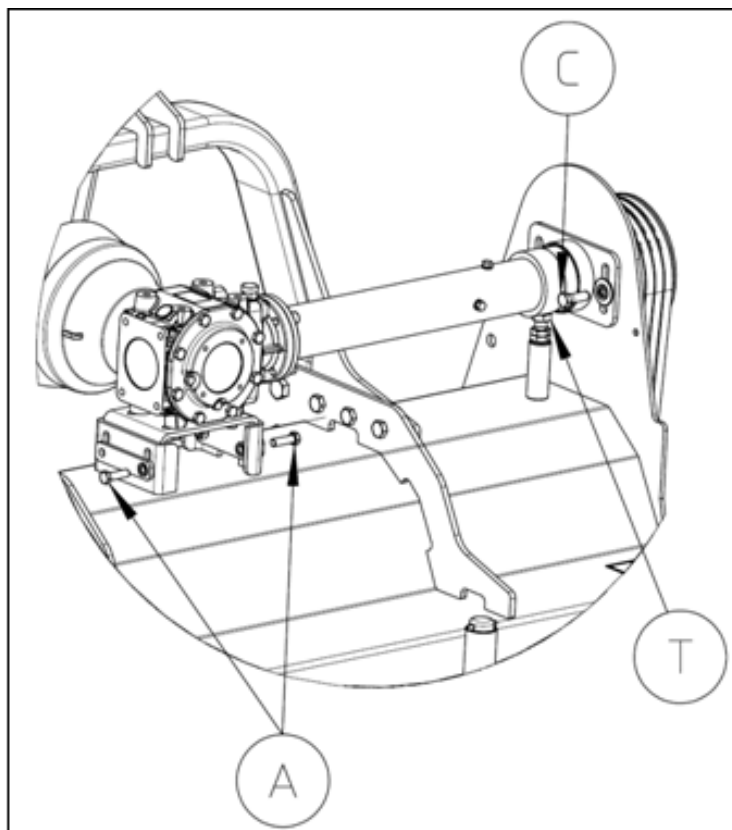
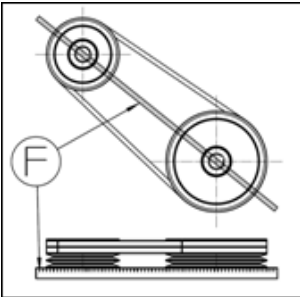
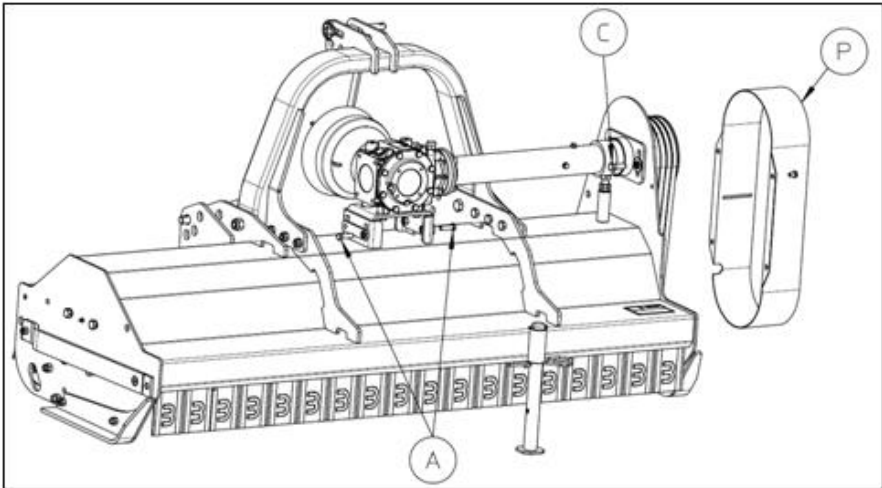


Figure 26

	4. By operating on the tensioning screw T, the correct belt tension will be reached. The gearbox extension must be parallel to the chassis: in this way, the pulleys must also result aligned;
 ATTENZIONE	Use a ruler to check that the pulleys are aligned (figure 27). If this is not the case, correct alignment by operating on the tensioning screw T.
	 Figure 27
	5. Block the tensioning screw T;
	6. Tighten screws A and C;
	7. Re-mount the casing P, fixing it with the relevant screws.
 ATTENZIONE	Do not work without belts protection casing

4.2.3. REPLACING THE TRANSMISSION BELTS

The transmission belts replacement operations must be carried out with the mulcher resting on the ground, the tractor off, the power take-off disengaged, the parking brake engaged and the ignition key removed from the block.

	1. Remove the transmission covering casing P;
	2. Loosen screws A and C positioned on the gearbox support plate and on the side panel support (figure 28);
	 Figure 28

3. Loosen the tensioning screw T in a way to lower the gearbox and the extension parallel to the machine chassis (figure 29);

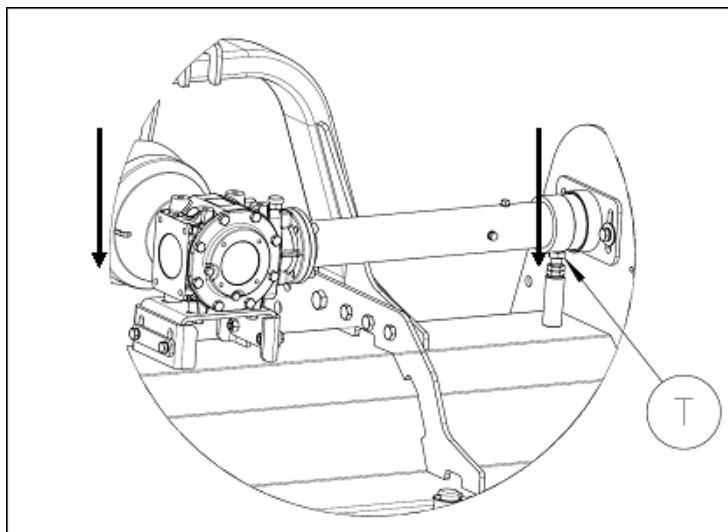


Figure 29

4. As the belts are no longer tensioned, they can be replaced (figure 30). It is important to check the state of wear of the pulleys by cleaning the grooves.

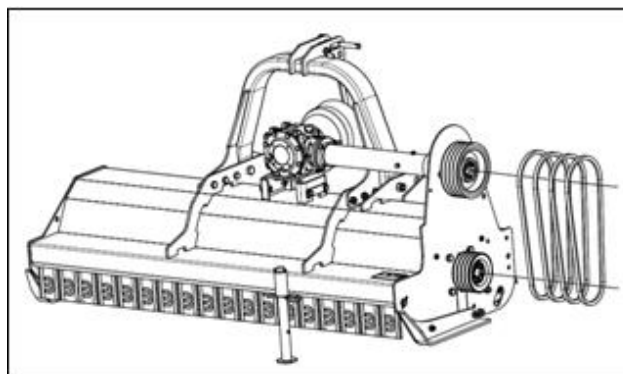


Figure 30



CAUTELA

The trapezoidal belts must be mounted without force, without the use of screwdrivers, jacks etc. which would cause damage to the belt itself. Correct assembly allows to save time and money and increase duration of the belt.

5. After replacement, tighten the tensioning screw T until the correct belt tension is obtained. The gearbox and the extension must be parallel to the chassis and the pulleys aligned with each other (see explanation in paragraph 4.2.2. Belts tension adjustment");
6. Tighten screws A and C (figure 28);
7. Make the belts turn a few times and check tensioning again;
8. Re-mount the casing P, fixing it with the relevant screws (figure 28).



ATTENZIONE

Do not work without belts protection casing

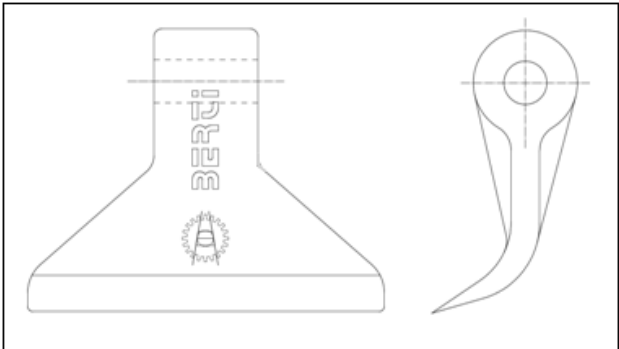
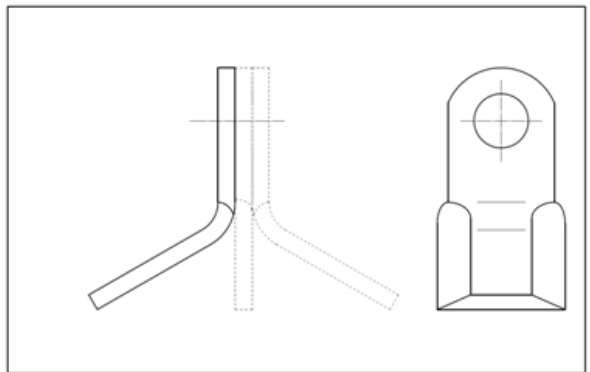
When the belt replacement operations have been completed, make the adjustment, as described in chapter 4.2.2.

4.2.4. CHECKING WEAR OF TOOLS

The wear of the mulching tools is performed visually. Replace when an imperfect size of material or increases in power absorption are noted. This is possible by a sensitive increase in the temperature of the mulcher oil. Using the machine with blunt tools compromises the quality of the job.

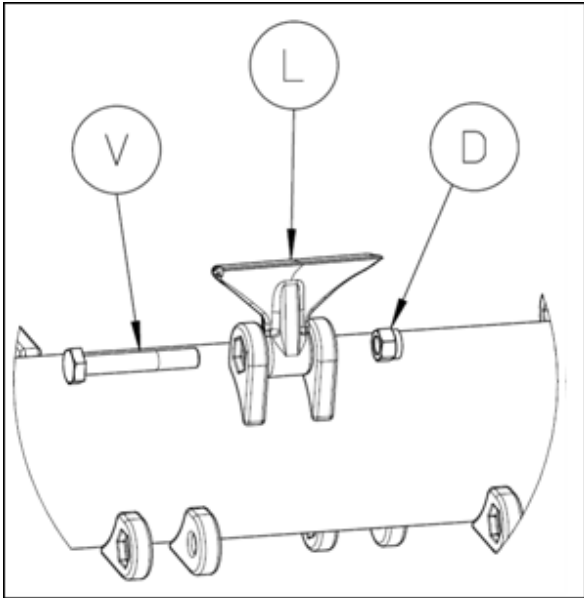
The dimensions and weights of the tools are strictly controlled: if they are replaced completely, the rotor may not have to be dynamically balanced (refer to "TOOLS REPLACEMENT PROCEDURE").

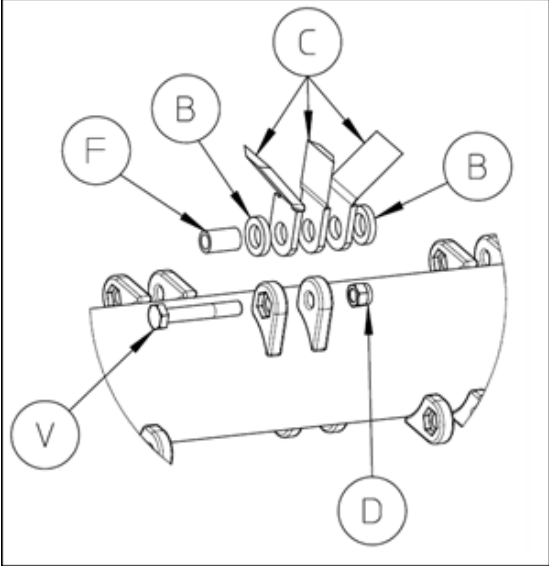
Broken tools or tools that are too worn transmit vibrations to the machine. In this case, stop the job immediately and only start again after the tools have been replaced.

 ATTENZIONE	Replace the worn and/or damaged tools with original tools distinguished by the Berti mark.
	"L" type hammer:  Figure 31 "Y" universal blade:  Figure 32

Duration of the tools depends on the type of use and type of land worked. It is recommended to replace them completely every 200 operating hours on average.

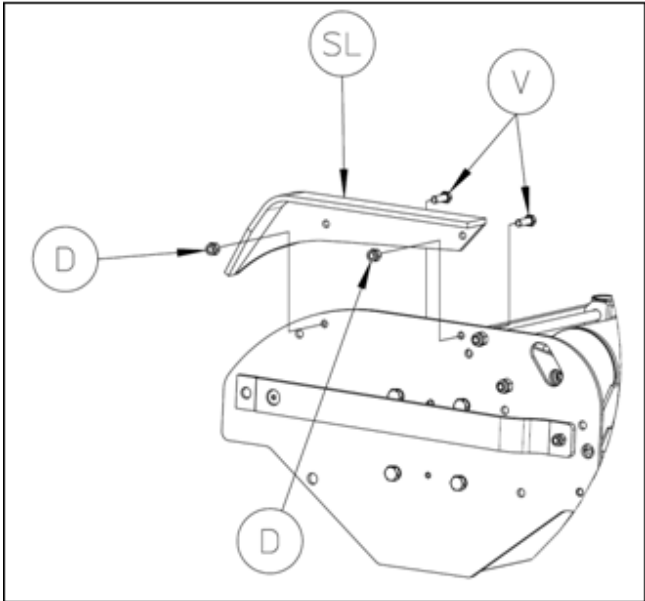
4.2.4.1. TOOLS REPLACEMENT PROCEDURE

 ATTENZIONE	If an individual tool must be replaced, it is recommended to replace the entire range. Not using original spare parts can cause the machine to vibrate anomalously. When mounting the tools, pay attention to the direction (figure 33).  Figure 33
 PERICOLO	1. Hitch the machine, turn it over and rest it on suitable supports; In the workshop, use suitable equipment (tackle and beams) to handle the machine especially in terms of liftable and sustainable weight (see table 1.5.3 for data relative to the machine), in compliance with the Laws in force in the country of use.
If the mulcher rotor is the hammer type, operate as follows:	
	Loosen the nut D, hold the hammer L and slide the screw V out (Figure 34). When the hammer has been removed, check the state of wear of the supports, in particular the ovalisation of the holes, the hexagonal seat of the screw head and peripheral wear. If the phenomena described are present, contact the manufacturer for indications.  Figure 34
	Replace the new hammer L, positioning it between the rotor supports. Insert the new screw, making sure to fit the screw head with the hexagon recessed on the support.
	Mount the new nut and tighten it.

If the mulcher rotor is the blades type, operate as follows:	
	Loosen the nut D, hold the blades C with the bush F, the spacers B and slide out the screw V (figure 35). When the blades have been removed, check the state of wear of the supports, in particular the ovalisation of the holes, the hexagonal seat of the screw head and peripheral wear. If the phenomena described are present, contact the manufacturer for indications.  Figure 35
	Replace the blades C, positioning them between the rotor supports. Insert the new screw, making sure to fit the screw head with the hexagon recessed on the support.
	During these operations, pay attention to positioning of the bush F and the shims B, which must be positioned in the same position as previous to replacement.
	Mount the new nut and tighten it.
	2. Re-position the machine on the ground and repeat the hitching and starting procedure described in paragraph 3.4 to 3.5.
 ATTENZIONE	When mounting the tools, pay attention to the direction. If they are mounted in the wrong direction they cannot cut.
 PERICOLO	If there are still vibrations when the tools have been replaced, the rotor must be dynamically balanced again in a specialised workshop.
 ATTENZIONE	Periodically check the tightness of the hammer screws and nuts. The loosening of the same may damage the rotor and give rise to dangerous projections.
	Our spare parts guarantee complete and correct use of your machine again.

4.2.5. REPLACING THE SKIDS

The machines have anti-wear skids that can be replaced at the end of their lifespan as follows:

 PERICOLO	1. Turn the machine over and rest it on suitable supports; In the workshop, use suitable equipment to handle and support the machine especially in terms of liftable and sustainable weight (see table 1 paragraph 1.5.3), in compliance with the Laws in force in the country of use.
	2. Loosen the nuts D and remove the screws V as in figure 36;  Figure 36
	3. Replace the anti-wear skids SL on the right and left of the machine;
	4. Mount the screws V with the relative nuts D;
	5. Once all of the operations have been completed, turn the machine over again, place it on the ground and repeat the "hitching and starting" procedure described from paragraph 3.4 to 3.5.

4.2.6. REPLACING THE MACHINE FRONT GUARDS

The machine has front protections made up from flaps or chains fixed to the machine case.

FRONT GUARDS WITH FLAP	
 PERICOLO	The flaps must always be present and be in excellent working order. Working without flaps means working without guards and is therefore considered improper. The manufacturer declines all liability in the event of serious damage/injury to the user, persons, objects and animals deriving from improper use.
	1. Hitch the machine, turn it over and rest it on suitable supports;



PERICOLO

In the workshop, use suitable equipment (tackle and beams) to handle the machine especially in terms of liftable and sustainable weight (see table 1.5.3 for data relative to the machine), in compliance with the Laws in force in the country of use.

2. Remove the safety pin C with the respective washer R (figure 37);



ATTENZIONE

3. Slide the front protection pin P out a bit at a time, paying attention that the flaps B do not fall to the ground;

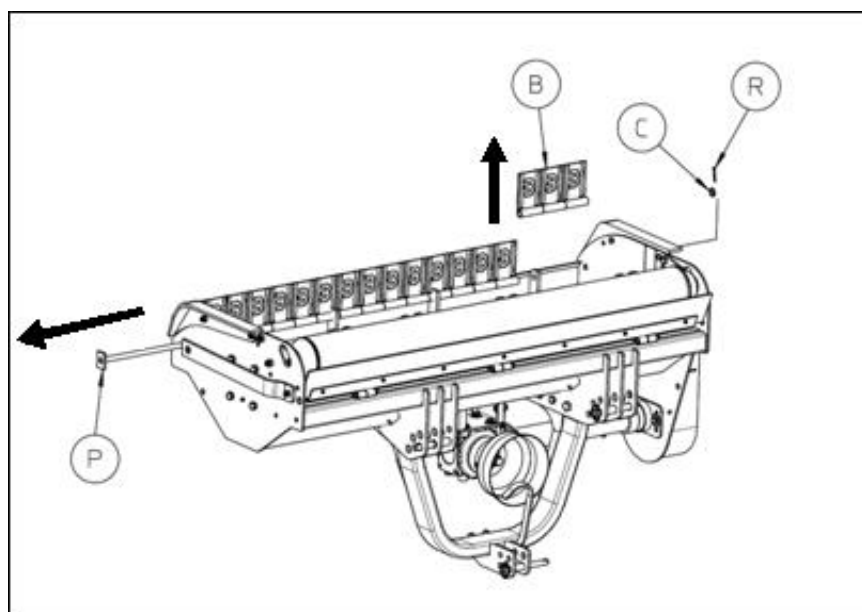


Figure 37

4. Check for any damage, which must be repaired immediately in a way to restore the original state;

5. Replace the flaps B, inserting them inside the through-studs P; Insert the flaps in proximity of the through-stud supports so as not to leave a space between the flaps themselves (figure 38).

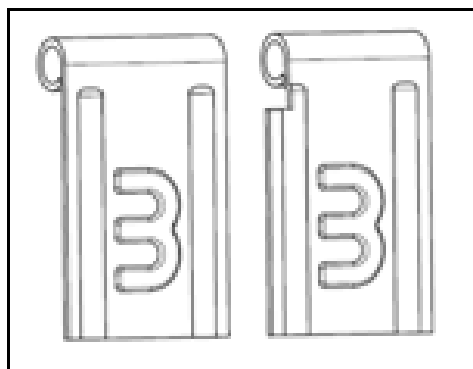
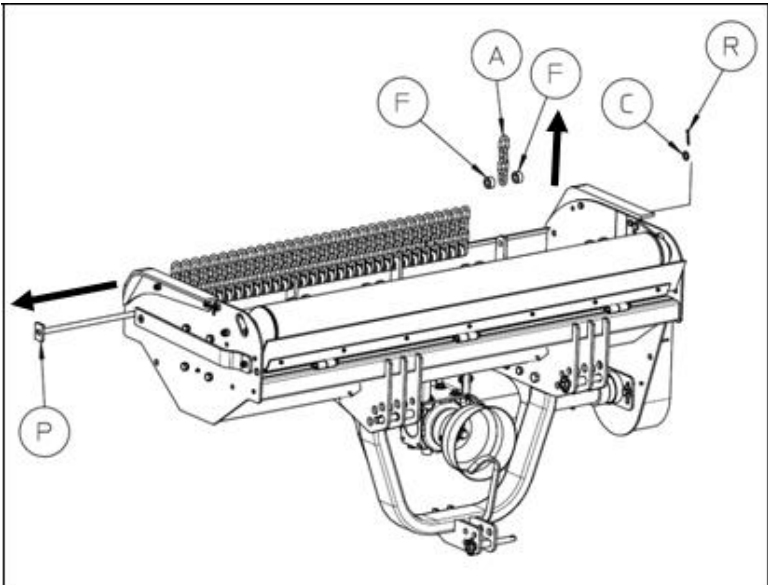
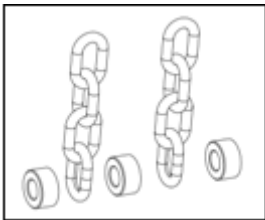


Figure 38

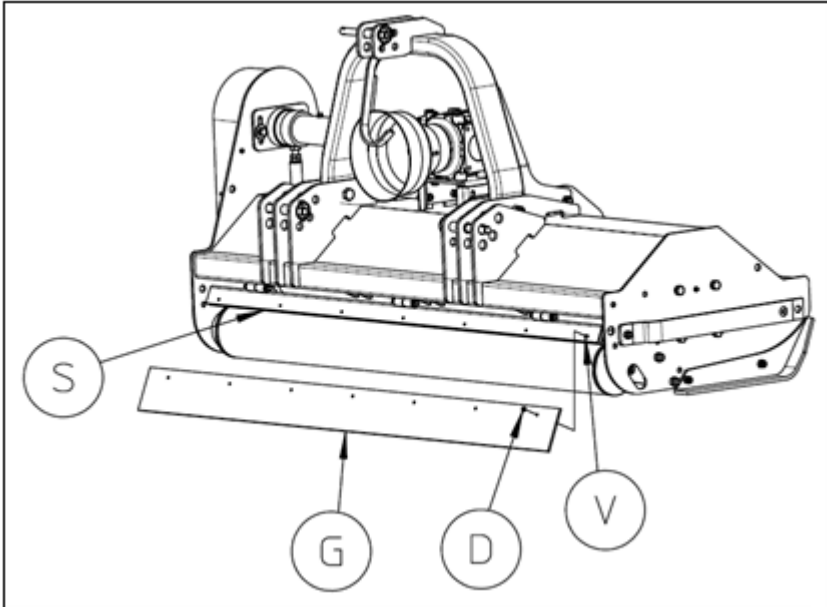
6. Insert the washer R and a new safety pin C.

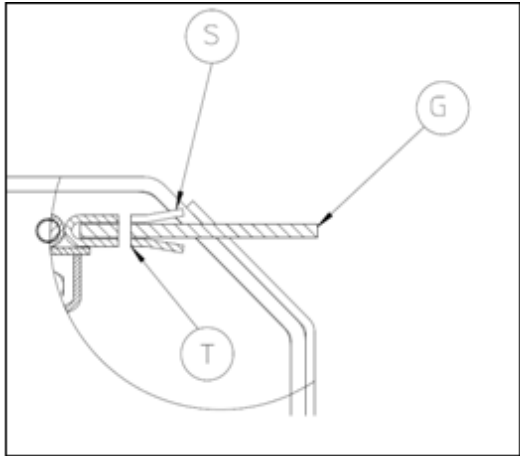
FRONT GUARDS WITH CHAINS	
 PERICOLO	The chains must always be present and be in excellent working order. Working without chains means working without guards and is therefore considered improper. The manufacturer declines all liability in the event of serious damage/injury to the user, persons, objects and animals deriving from improper use.
	1. Hitch the machine, turn it over and rest it on suitable supports;
 PERICOLO	In the workshop, use suitable equipment (tackle and beams) to handle the machine especially in terms of liftable and sustainable weight (see table 1.5.3 for data relative to the machine), in compliance with the Laws in force in the country of use.
	2. Remove the safety pin C with the respective washer R (figure 39);
 ATTENZIONE	3. Slide the front protection pin P out a bit at a time, paying attention that the chains A and the shims F do not fall to the ground;
	 Figure 39
	4. Check for any damage, which must be repaired immediately in a way to restore the original state;
	5. Replace the chains A and the shims F, inserting them inside the through-stud P; Repeat the order of assembly of the chains and shims as in figure 40.  Figure 40

	6. Insert the washer R and a new safety pin C.
	Re-position the machine on the ground and repeat the hitching and starting procedure described from paragraph 3.4 to 3.5.
	Our spare parts guarantee complete and correct use of your machine again.

4.2.7. REPLACING THE MACHINE REAR GUARD

The machine has a rear protection made up from a sheet of rubberised fabric fixed onto a relevant support using bolts.

 ATTENZIONE	The sheet of rubberised fabric must always be present and be in excellent state. Working without the rubberised sheet means working without protection and therefore is considered improper. The manufacturer declines all liability in the event of serious damage/injury to the user, persons, objects and animals deriving from improper use.
 PERICOLO	Use suitable equipment in the workshop in compliance with the Laws in force in the country of use.
 PERICOLO	Before performing the operation on the mulcher, engage the tractor parking brake, switch off the engine, remove the ignition keys from the dashboard and keep them safe and wait inside the cab for 5 minutes for the rotor and all relative tools to stop completely.
	1. Loosen the nuts D and remove the screws V (figure 41);  Figure 41
 ATTENZIONE	2. Extract the worn protection rubber G from the support S;

	3. Check for any damage to the support S, which must be repaired immediately in a way to restore the original state;
	4. Replace the new rubber, positioning it in the relative support S;
	5. Make holes in the rubber G in correspondence with the holes of the screws T in the support S (figure 42);
	 Figure 42
	6. Fix the new rubber using the screws V and nuts D.
	7. Repeat the "machine hitching and starting" procedure described from paragraph 3.4 to 3.5.
	Our spare parts guarantee complete and correct use of your machine again.

4.2.8. CLEANING THE MACHINE

Clean the machine regularly using pressurised water and paying particular attention to residues of flammable materials. Ensure that the hot parts of the machine are free of straw, hay or residues of flammable materials.

4.3. STORAGE – RE-COMMISSIONING

If the machine is immobilised for long periods, store it in a place sheltered from the elements and protect it from damage.

Before re-commissioning, it is advisable to operate as follows:

- release the rotor and the tools from any mulching residues;
- clean the machine thoroughly;
- carry out a general visual check of the machine in order to identify any structural damage, detect any deep scratches in the paintwork, check that original safety pictograms are present in their positions and that they are integral and legible;
- grease all mechanical parts and locking pins;
- if possible, store the machine in a covered place, on a level and smooth surface.

	Check that the storage temperature is between 0°C and 50°C.
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 ATTENZIONE	For the disposal of oil and all materials used for collection, cleaning etc. follow the provisions in force in the country of use.
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4.4. SCRAPPING

 ATTENZIONE	If the machine is scrapped, it must be disposed of in the appropriate waste sites in accordance with the laws in force in the country of use. Before scrapping, separate the plastic and rubber parts, electrical and electronic parts (if present). Recover any used oil and discard at the appropriate collection centres. Parts consisting only of plastic, aluminium or steel may be recycled if collected by the appropriate centres.
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4.5. SCHEDULED MAINTENANCE TABLE

Description	Controls
GENERAL MACHINE CHECKS	
Rotor greasing	Every 8 operating hours
Roller greasing	Every 8 operating hours
Check machine bolt tightness	After the first 4 hours and then every 50 hours
Check belts tensioning	After the first 4 hours and then every 50 hours
Check wear and fixing of tools	Before every job
Replace tools, screws and nuts	Every 200 operating hours or when damaged or no longer sharp
Replace transmission belts	Every 400 hours or when too worn
Replace pulleys	Every 400 hours or when too worn
Rotor balancing	Every partial or total replacement of the tools
Replace skids	Every 400 hours or when too worn
Check guards integrity	Every machine start-up. Restore the guards if worn and/or damaged.
Check pictograms	Every machine start-up. Restore if worn and/or damaged.

4.6. TROUBLESHOOTING TABLE

ANOMALY	CAUSE	SOLUTION
Mulching not uniform	- Tools worn or damaged - Machine not adjusted in agreement with the instructions - Machine clogged - The rotor does not turn at envisioned speeds - Broken roller support - Worn skids - Excessively uneven land	- Replace the tools - Make the adjustments - Decrease the advancement speed - Control tension of the belts - Replace the roller support - Replace skids - Perform the job a few times
Premature wear of the tools	- Stony/sandy land - Cutting height of tools too low - The rotor turns at a rotation speed that is too high or too low	- Scour the ground in advance - Adjust cutting height - Check machine adjustment
Machine noise	- Rotor unbalanced - Loss of counterweights - Tools damaged, worn or missing - Bearings worn	- Balancing in specialised workshop - Replace the tools - Replace the bearings
Excessive overheating of the gearbox and extension	- Mulcher oil level too low - Spent oil - Excessive amount of material to work; - Under-dimensioned mulcher oil cooling system	- Add oil to the mulcher - Replace the oil - Perform the job a few times and/or reduce the advancement speed. - Strengthen the cooling system
Frequent breakage of the gearbox oil retainer	- Pressurised machine tank - Engine worn	- Bleed the tank periodically and contact the mulcher manufacturer - Replace the gearbox
Frequent breakage of bearings	- Machine chassis bent - No bearings lubrication - Rotor excessively stressed - Rotor unbalanced/bent	- Replace the machine chassis - Grease the bearings in agreement with the Scheduled maintenance table - Use the machine in compliance with the allowed working limits - Balancing in specialised workshop or replace the rotor
Rotor does not turn	- Foreign body jammed - Bearing breakage - Gearbox breakage - Transmission breakage - Belts breakage - Rotor shaft breakage - Mulcher feed plant failure	- Refer to the "Machine jamming" procedure - Replace bearings and gaskets - Replace gearbox - Replace transmission - Replace belts - Replace rotor - Contact the mulcher mechanic

Sealing rings broken/worn	• Excessive lubrication • High rotor rotation speed • Incorrect assembly of the gaskets	• Change the sealing rings • Check machine adjustment • Request information from the manufacturer
Chassis broken/unwelded	• Sheet steel worn • Chassis stressed excessively and crushed to the ground • Rotor unbalanced	• Change the chassis • Change the chassis • Balance the rotor
Rear roller blocked	• Supports broken • No greasing • Support roller bent • Wet land • Material deposited in the supports	• Replace the supports • Grease • Replace the support roller • Do not work with unfavourable environmental conditions • Clean the support and lubricate
The rotor vibrates	• The rotor is unbalanced; • Tools worn/broken, • Rotor bent	• Balancing in specialised workshop • Replace the worn and/or broken and/or missing tools. • Replace rotor

5. GENERAL CONDITIONS

5.1. SPARE PARTS

Repairs and replacements must be carried out using original spare parts, which must be requested from the Authorised Dealer. Please note that the presence of spare parts should be properly accompanied by the following indications:

- type of vehicle;
- serial number;
- spare part code that can be obtained from the Spare Parts Catalogue.

If it is a component that is part of a major unit (rotor, overgear unit, guards), you should also specify the model and serial number of the unit.

5.2. WARRANTY

On delivery, check that the machine has not been damaged during transport and that the accessories are complete.

WARRANTY CONDITIONS:

- The manufacturer guarantees its products for a period of 12 months from the date of delivery on the condition that the attached form is filled-in in full and sent to the manufacturer within 15 days of date of delivery (the delivery document acts as evidence).
- In accordance with the aforementioned terms, the manufacturer agrees to supply all components to be replaced under warranty according to its own evaluation or the opinion of its authorised representatives regarding parts that have material or manufacturing defects. Shipping and labour costs shall in any case be charged to the customer.
- The warranty does not include payment for damage caused by improper use of the machine by the operator and for parts normally subject to wear and tear and breakage such as: hammers, blades, belts, etc.
- The manufacturer is not liable for accidents involving the operator or third parties, deriving from improper use of the machine.
- This warranty is not valid in the case in which:
 - a) the maintenance and repairs have been performed by unauthorised individuals or companies;
 - b) the machine has been previously repaired or modified with non-original spare parts;
 - c) in the event of an incorrect manoeuvre;
 - d) due to insufficient maintenance and/or lubrication;
 - e) when permissible power limits have been exceeded;
 - f) whenever the instructions given in this manual are not followed;
 - g) whenever unauthorised modifications have been made.
- Machine breakdowns during or after the warranty period shall not give rise to any right to interrupt payments for the goods that have already been delivered. No breakage or malfunction can be used as a pretext for delaying payment.
- The manufacturer reserves the right, at all times, to make any modifications in order to improve its own product and is not obliged to add these modifications to previously manufactured machines, which have already been delivered or are undergoing manufacture.
- These general warranty terms replace and cancel all previous explicit or implicit terms.

5.3. NOTES

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