



BERTI®

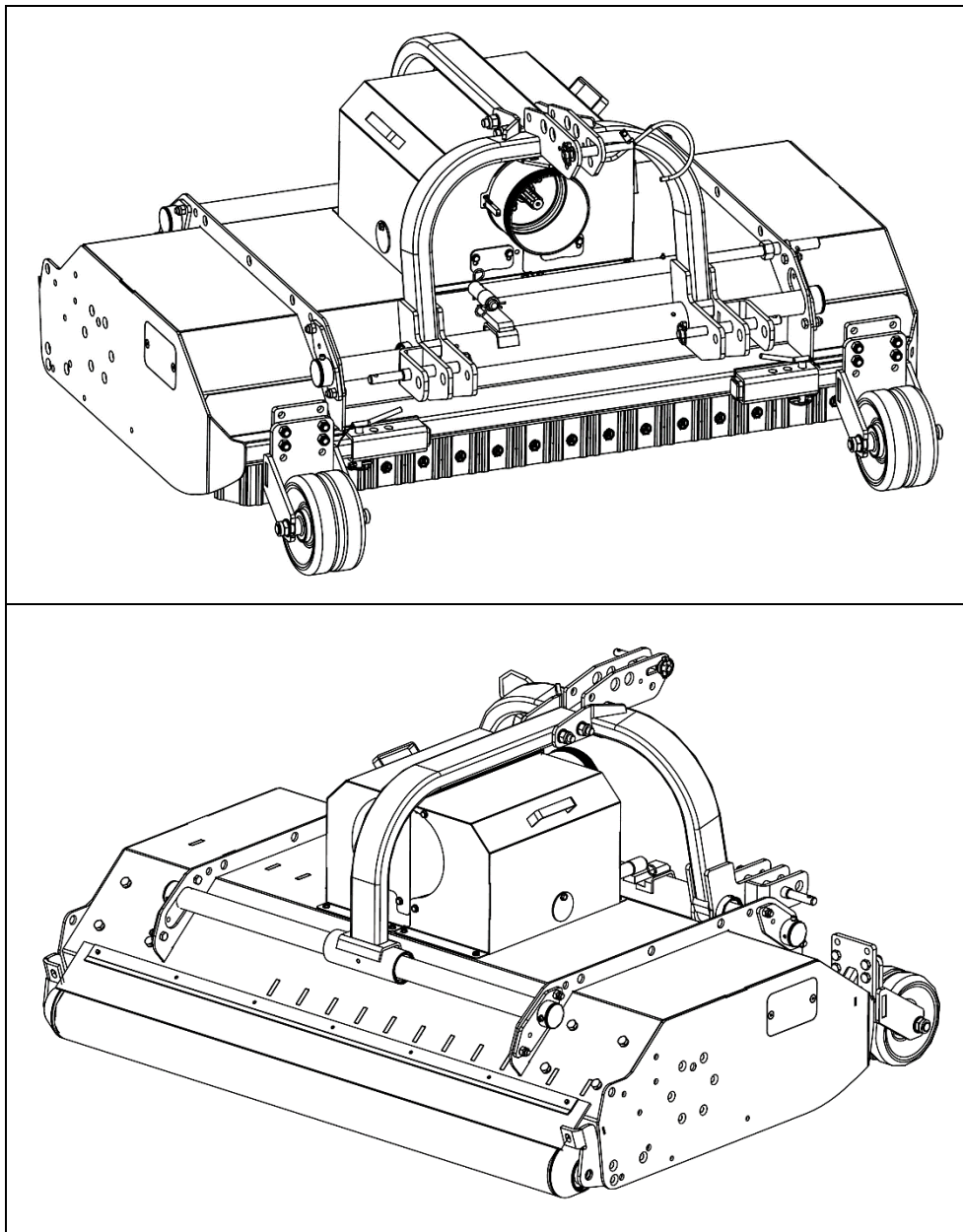


INSTRUCTION MANUAL

MULCHER

Brand: BERTI Machine Agricole

Model: ZETA



📖 Carefully read this manual before operating the machine 📖

ORIGINAL VERSION

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INTRODUCTION

This instruction manual describes the operating mode and contains all instructions necessary to properly use and maintain (perform ordinary and periodical maintenance operations) the mulcher that will be referred to from now on as machine.

To facilitate consultation, this instruction manual is divided into clearly identifiable chapters.

The indications contained in this manual are intended for professional users, with specific knowledge regarding the methods of use of the machine, that are authorised, trained and properly educated.

The use of original spare parts and accessories is recommended. The use of unoriginal parts triggers invalidity of the warranty and may cause dangers, reducing the lifetime and performance of the machine as well as serious damage/injury to persons, property and animals.

The manual must always accompany the machine, even if the latter is sold, and must always be delivered together with the machine. If the manual is damaged or lost, a copy should be requested to the Manufacturer of the machine or to the owner. This manual is an integral part of the machine.



ATTENZIONE

For the USER: Before using the machine you must carefully read this instruction manual in which are indicated the actions to be performed for proper use of the machine, paying particular attention to all the safety-related regulations. Abuse of performance and lack of compliance with the use and safety standards render the user responsible for any damages that may occur to persons, things or animals as a result of the use of the equipment.

The manufacturer of the machine does not directly control the field in which it is used, the method used or the method of maintenance and therefore the user is responsible to respect the rules of common sense in the operating areas, especially in the critical ones, paying utmost attention to his own safety, to the safety of other persons, animals and property, always assessing the danger before performing any operation.

If the user delegates the use of the machine to a third party, it is their responsibility to make sure that the other user has properly read and understood this instruction manual.

This instruction manual must always be kept in an accessible place, so that it can be immediately consulted in case of need.

For the SUPPLIER, DEALER and IMPORTER: the person in charge of delivering the machine to the end user must apply it to the tractor. It is therefore their responsibility to read this Instruction Manual and to understand the contents before the machine is definitively handed over. It is also his responsibility to train the final user and make sure that the latter has read and understood the indications in the instruction manual.

GLOSSARY

Machine	Mulcher.
Tractor	Motorised vehicle used to tow other vehicles, especially agricultural machines.
User	The user is considered as the owner and/or staff, the operator/user in charge of operating, cleaning, maintaining and repairing the machine, able to recognise and therefore avoid the dangers arising from the use of the machine.
Specialised personnel	Persons purposely trained and enabled to carry out maintenance or repair interventions requiring a particular knowledge of the machine, of its functioning, of the relative safety devices and their intervention modalities.
Safety Personnel	Personnel in charge of making sure that no persons are inside the machine operating area.
Manufacturer	Company that manufactures the mulcher → Berti Macchine Agricole S.p.A.
 PERICOLO	DANGER - This sign indicates and imminent and real dangerous situation, that may cause serious injuries or death if not avoided.
 ATTENZIONE	WARNING - This sign indicates a potentially dangerous situation, that may cause serious injuries or death if not avoided. Dangers marked by this sign present lesser degree of risk of serious injury or death than those indicated by the DANGER sign.
 CAUTELA	CAUTION - This sign indicates a potentially dangerous situation, that may cause minor injuries or moderate wounds. The symbol is used to inform that certain actions may cause personal injuries or damage.
	PLEASE NOTE

1 INFORMATION REGARDING THE INSTRUCTION MANUAL

This manual is an integral part of the machine and must accompany the same in case of resale and until its demolition.
If this manual should be lost or damaged, a copy of it must be requested from the manufacturer ("BERTI macchine agricole S.p.A.", via Musi 1/A - 3, Caldiero - Verona., Tel.+39.045.6139711) or from the Retailer.



The presence of this symbol informs the user to pay utmost attention to the subject in case.

Some of the devices described in this manual may not be present on your machine, depending on the chosen set up and on the market of destination.

1.1 MANUAL UPDATE

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

The Manufacturer reserves the right, at any time, to apply modifications to the machinery for technical or commercial reasons. Such modifications do not oblige the Manufacturer to intervene on machines sold up until that moment, nor to consider this publication inadequate.

Any integration that the Manufacturer will consider opportune to supply later on must be preserved together with the manual and be considered an integral part of the same.

1.2 COPYRIGHTS

The copyrights of this manual belong to the Manufacturer. This manual contains texts, drawings and technical designs that may not be shared with third parties, either completely or partially, without written authorisation from the Manufacturer.

1.3 MACHINE IDENTIFICATION PLATE AND CE MARKING

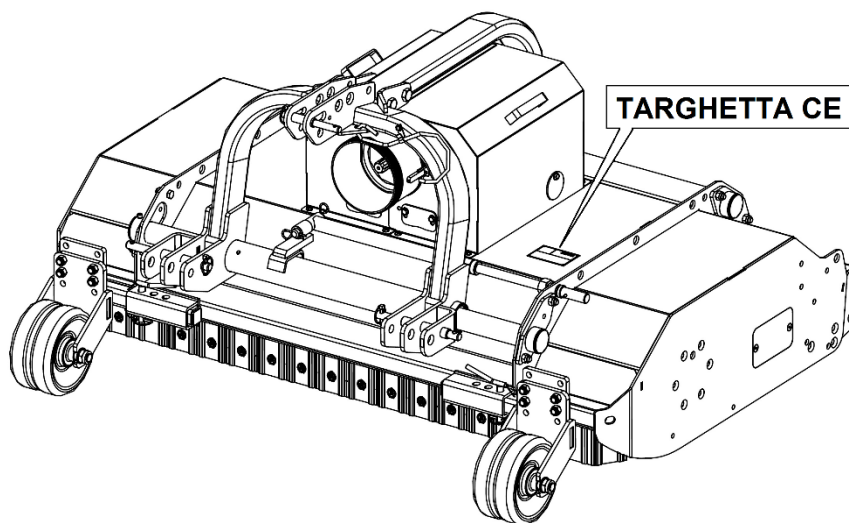
Every machine is equipped with an identification plate, containing the following data:

- CE Marking;
- Country of fabrication;
- Manufacturer's name and address;
- Model;
- Serial Number;
- Year of manufacture;
- Mass;
- Model version.

The machine is supplied as standard with:

- The machine use and maintenance manual;
- The manufacturer "EC" declaration of conformity.

	 MACCHINE AGRICOLE S.p.A. Via Musi 1/A-3 - 37042 CALDIERO (VR) - ITALY www.bertima.it - www.bertimagricole.it - info@bertima.it																				
MADE IN ITALY																					
<table border="1"><tr><td>Modello - Model -</td><td></td></tr><tr><td>Modèle - Modell - Modelo</td><td></td></tr><tr><td>Matricola - Serial Number - Numéro de série -</td><td></td></tr><tr><td>Seriennummer - Matricula</td><td></td></tr><tr><td>Anno Produzione - Manufacturing Year - Année de</td><td></td></tr><tr><td>Producción - Año de Producción</td><td></td></tr><tr><td>Masse - Weight -</td><td></td></tr><tr><td>Poids - Gewicht - Peso (Kg)</td><td></td></tr><tr><td>Versione Modello - Model Year -</td><td></td></tr><tr><td>Année du Modèle - Modelljahr - Año del Modelo</td><td></td></tr></table>		Modello - Model -		Modèle - Modell - Modelo		Matricola - Serial Number - Numéro de série -		Seriennummer - Matricula		Anno Produzione - Manufacturing Year - Année de		Producción - Año de Producción		Masse - Weight -		Poids - Gewicht - Peso (Kg)		Versione Modello - Model Year -		Année du Modèle - Modelljahr - Año del Modelo	
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Versione Modello - Model Year -																					
Année du Modèle - Modelljahr - Año del Modelo																					



1.4 DECLARATION OF CONFORMITY OF THE MACHINE

The design also considered
the following harmonised standards:

- UNI EN ISO 4254-1:2015
- UNI EN ISO 4254-12:2012
- UNI EN 15811:2015

Technical specifications:

- ISO 11684:1995

 BERTI BERTI MACCHINE AGRICOLE S.p.A. Via Musi 1/A - 3 - 37042 CALDIERO (Verona) - ITALY Tel. +39 045 5139711 - Fax +39 045 5139221 info@berti.it - www.berti.it			
CE Dichiarazione CE di Conformità ai sensi della direttiva 2006/42/CE e 2004/108/CE(*) EC Certificate of Conformity - conforming to EEC Directives 2006/42/CE and 2004/108/CE(*) EG Konformitätserklärung entsprechend der EU-Richtlinie 2006/42/CE und 2004/108/CE(*) Déclaration de conformité pour la CEE conforme à la directive de la 2006/42/CE et 2004/108/CE(*)			
La Ditta / We / Wir / Nous		BERTI Macchine Agricole S.p.A. Via Musi 1/A-3 37042 CALDIERO - VERONA - ITALY	
dichiara sotto la propria responsabilità, in qualità di costruttore, che la macchina a cui si applica questa dichiarazione, è conforme ai requisiti essenziali di sicurezza e di tutela della salute di cui alla Direttiva 2006/42/CE e 2004/108/CE(*) per la verifica della macchina sono state consultate le seguenti norme armonizzate:			
dedare in sole responsibility, that the product to which this certificate applies, conforms to the basic safety and health requirements of EEC Directives 2006/42/CE and 2004/108/CE(*), and according to the European harmonized standards:			
erklären in alleiniger Verantwortung, dass das Produkt auf das sich diese Erklärung bezieht, den wesentlichen Sicherheitsanforderungen der EU-Richtlinie 2006/42/CE und 2004/108/CE(*) und mit den Anforderungen der Harmonisierten EU-Richtlinien konform ist:			
déclarent sous notre seule responsabilité que le produit faisant l'objet de la déclaration en conformité aux principes fondamentaux en matière de sécurité et de santé stipulés dans la Directive de la 2006/42/CE et 2004/108/CE(*). Nous déclarons que les normes harmonisées suivantes ont été appliquées:			
UNI EN 745:2010 UNI EN ISO 4254-1:2015 UNI EN 15811:2015			
Nonché le seguenti specifiche tecniche: And the following technical specifications: Und die folgende technische Ausstattungen: Et les spécifications techniques suivantes:			
ISO 11684:1995 e UNI EN ISO 3767-2:1998(*)			
(*) Valido solo se la macchina è dotata di dispositivi e accessori soggetti alle direttive/norme armonizzate/specifiche tecniche ivi indicate. Valid only if the machine is equipped with devices and accessories not subjected to the directives/harmonized norms/technical terms here indicated. Nur gültig, wenn die Maschine mit T und Zubehör ausgestattet ist, dessen hier angegebenen Richtlinien, Normen und Technischen Daten entsprechen. Valable uniquement si la machine est équipée des dispositifs et accessoires assujettis aux directives/normes harmonisées/spécifications techniques indiquées ici.			
MODELLO - TYPE TRINCIATRICE FORESTALE ECFMD		MATRICOLA - N° S/N 	
Custode del fascicolo tecnico MARIO BERTI Cio Ufficio Tecnico: BERTI MACCHINE AGRICOLE S.p.A. Via Musi 1/A - 3 - 37042 CALDIERO (Verona) - ITALY Caldiero, I 		per la società / for the Company für die Firma / pour la société BERTI Macchine Agricole S.p.A. BERTI MACCHINE AGRICOLE S.p.A. Amministratore Unico 	
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. Imp. di Vtr. n° 00068150234 - P.IVA : 00068150234 - R.E.A. VR 34849 - Cap. Soc. € 151.706,00 i.v. Società soggetta a direzione e coordinamento di parte della società/100 Holding Berti S.r.l. R.L. di VR0369550241			

1.5 MACHINE INFORMATION

1.5.1 ENVISAGED USE

The mulcher for vineyard and orchard model ZETA has been designed to be used exclusively in the agricultural sector, for mulching grass, pruning and woody material up to a diameter of about 5/-6 cm, according to the type of tool used. The machine is towed by the tractor via the three-point hitch and acts on the ground in virtue of its own weight and the rotation of the rotors, activated by the working vehicle power points via cardan connection.

The machine can be applied to the front or rear lift of the machine.

The machine is not suitable to be used in other sectors than in agriculture.

NEVER USE THE MACHINE FOR PURPOSES OTHER THAN THOSE INDICATED

The use of the machine is strictly forbidden if connected to a tractor with different features from those listed in paragraph 1.5.3, on soils with stones, scrap metal, wire and any other synthetic materials, to fell trees, to mill logs, on unstable land (such as land with heavy uphill or downhill, steep slopes, near cliffs, on very uneven land etc....) and in any other situations that may cause dangerous conditions and serious consequences for the user, things, persons and animals.



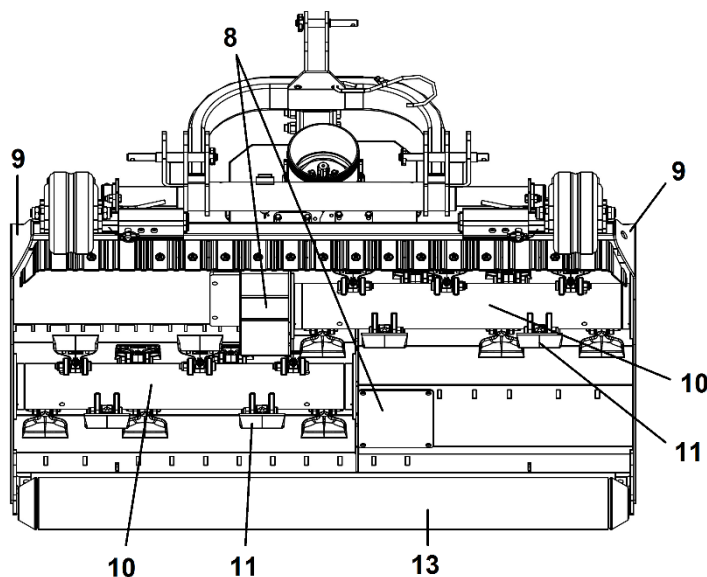
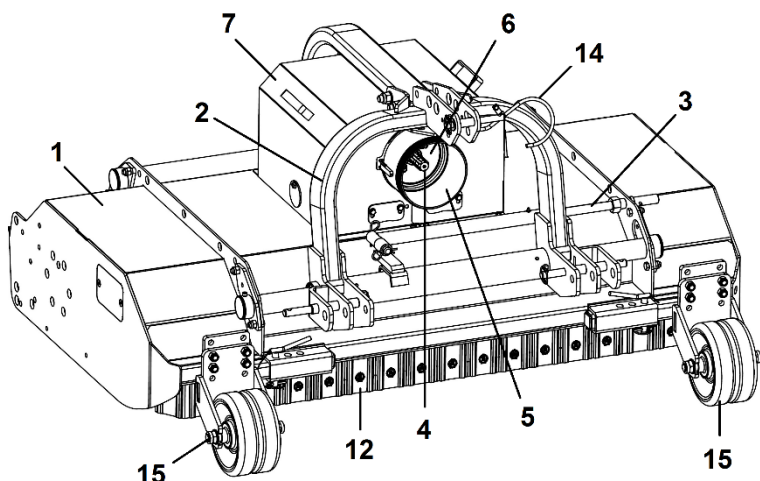
Any other use of the machine (different from the one indicated in the instruction manual) should be considered unauthorised and therefore dangerous.

1.5.2 DESCRIPTION

The machine has two working components consisting of two rotors with a horizontal axis, on which the mulching tools are mounted, which rotates at high speed.

NAME OF THE LABELLED COMPONENTS:

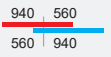
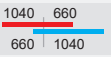
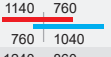
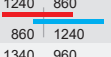
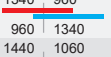
1. Chassis;
2. three-point moveable hitch (cat. 1-2);
3. Mechanical movement (hydraulic upon request);
4. Cardan shaft PTO;
5. Cardan shaft protective cap
6. Gear box multiplier;
7. Drive casing;
8. Central transmission (pulleys, locking sets, belts, automatic chain tensioner);
9. Side chamfers;
10. Tool holder rotor;
11. Mulching tools;
12. Front protection devices with straps (chains on request)
13. Levelling roll
14. Support cardan shaft in stand-by
15. Front wheels



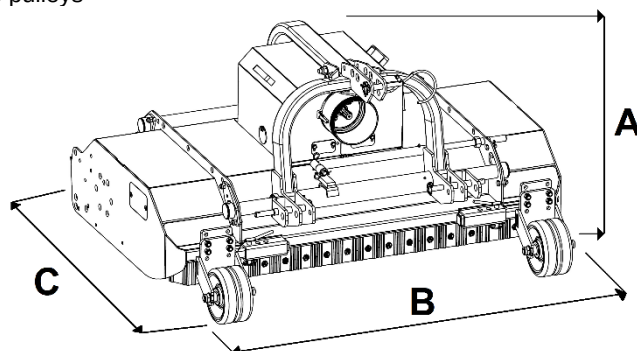
1.5.3 TECHNICAL DATA

The machine operates behind and in front of the tractor and can be applied on tractors with power between 44 and 73 kW (60 - 100 HP).

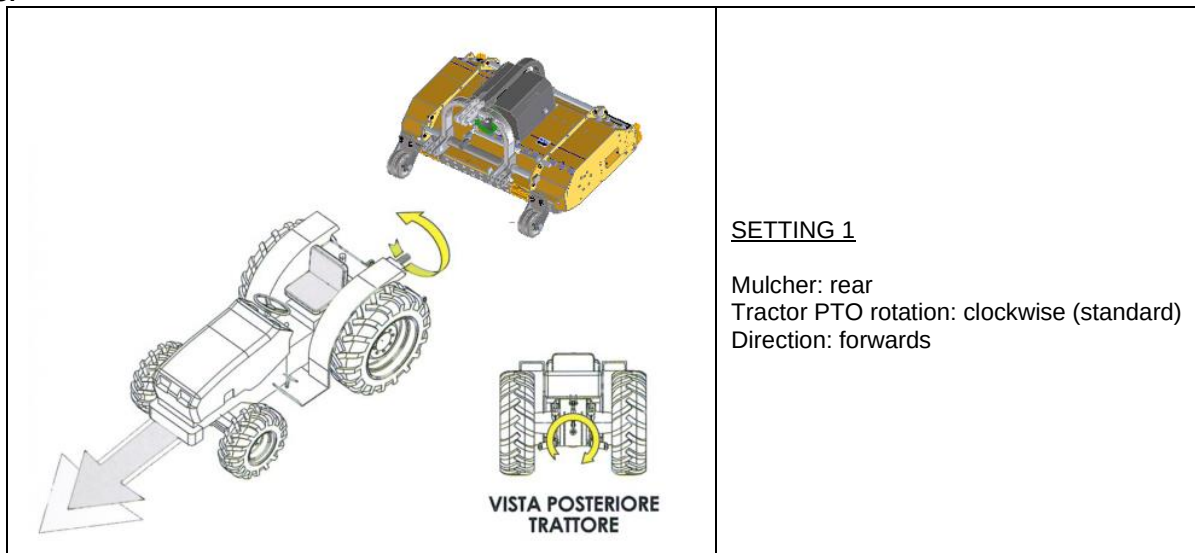
The table below indicates the machine operation field.

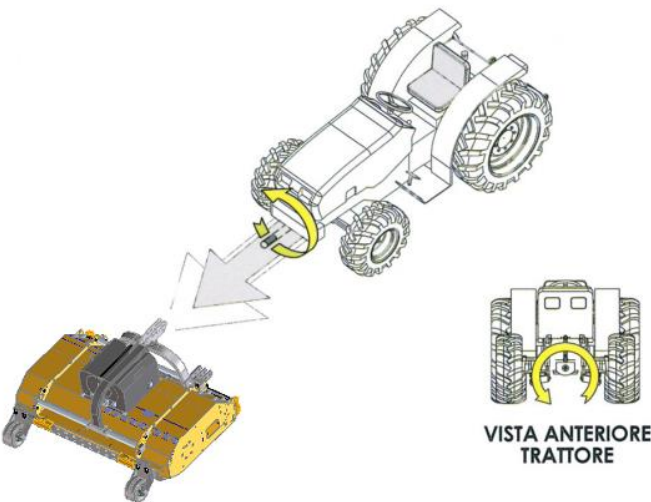
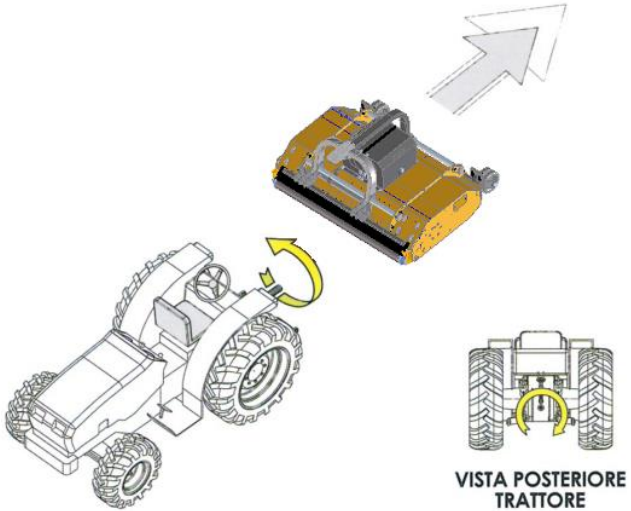
Mod.													
	cm	Min	Max	mm	n°	n°	n°	PTO	A	B	C	min	max
ZETA 150	150	60	100		8+8	24+24	3+3	540 (1000)	96	152	160	690	800
ZETA 170	170	60	100		8+8	24+24	3+3	540 (1000)	96	172	160	740	850
ZETA 190	190	60	100		10+10	30+30	3+3	540 (1000)	96	192	160	790	900
ZETA 210	210	70	100		10+10	30+30	3+3	540 (1000)	96	212	160	840	950
ZETA 230	230	70	100		12+12	36+36	3+3	540 (1000)	96	232	160	890	1000
ZETA 250	250	70	100		12+12	36+36	3+3	540 (1000)	96	252	160	940	1050

PTO 540 – 1000 rpm by inverting the pulleys



SETTINGS:



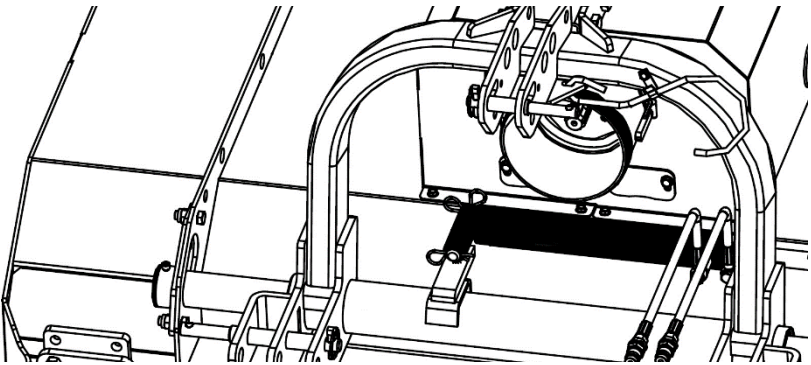
 VISTA ANTERIORE TRATTORE	<u>SETTING 2</u> Mulcher: front PTO rotating tractor: CCW (standard) Direction: forwards
 VISTA POSTERIORE TRATTORE	<u>SETTING 3</u> Mulcher: rear (rotated) Tractor PTO rotation: clockwise (standard) Advancement direction: rear

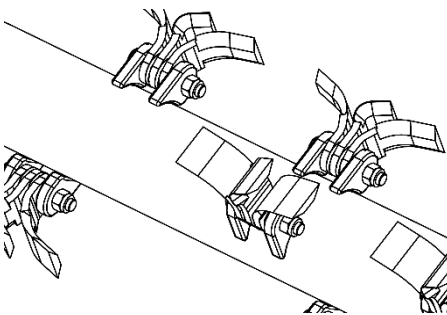
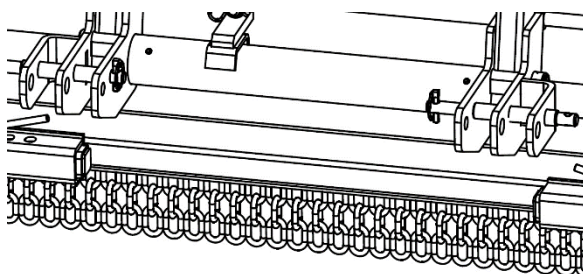
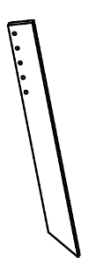
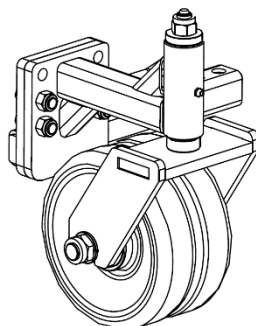
1.5.4 ACCESSORIES

The machine can be provided with several accessories.



For each application, bear in mind that the machine weights vary; make sure, for each application, that the stability of the tractor is not affected (see chapter [MACHINE TRANSPORT PROCEDURE](#)).

Description	Drawing	
Hydraulic movement with pipes and quick couplings		11

Description	Drawing															
Knives "Y"	<table border="1"><tr><td></td><td>No.</td></tr><tr><td>ZETA 150</td><td>24+24</td></tr><tr><td>ZETA 170</td><td>24+24</td></tr><tr><td>ZETA 190</td><td>30+30</td></tr><tr><td>ZETA 210</td><td>30+30</td></tr><tr><td>ZETA 230</td><td>36+36</td></tr><tr><td>ZETA 250</td><td>36+36</td></tr></table> 		No.	ZETA 150	24+24	ZETA 170	24+24	ZETA 190	30+30	ZETA 210	30+30	ZETA 230	36+36	ZETA 250	36+36	-- (As an alternative to the hammers)
	No.															
ZETA 150	24+24															
ZETA 170	24+24															
ZETA 190	30+30															
ZETA 210	30+30															
ZETA 230	36+36															
ZETA 250	36+36															
Front protection chains		-- (As an alternative to the panels)														
Collecting rakes	<table border="1"><tr><td>ZETA 150</td><td>10+4</td></tr><tr><td>ZETA 170</td><td>11+5</td></tr><tr><td>ZETA 190</td><td>11+5</td></tr><tr><td>ZETA 210</td><td>12+6</td></tr><tr><td>ZETA 230</td><td>13+7</td></tr><tr><td>ZETA 250</td><td>14+8</td></tr></table> 	ZETA 150	10+4	ZETA 170	11+5	ZETA 190	11+5	ZETA 210	12+6	ZETA 230	13+7	ZETA 250	14+8	1.5 (with single rake)		
ZETA 150	10+4															
ZETA 170	11+5															
ZETA 190	11+5															
ZETA 210	12+6															
ZETA 230	13+7															
ZETA 250	14+8															
Front castor wheels		-- (As an alternative to the front steering wheels)														

1.6 MATERIALS THROW



During some of the operations performed with the machine, you may check the materials projection; in particular, you should pay utmost attention to:

- Check that the working parts are present in the correct and efficient position;
- Periodically maintain and clean the machine;
- Make sure that there are no persons, animals or property in the machine operating area as they may become hurt/damaged.

Use of the machine is strictly forbidden if the tractor to which is connected is not provided with a cabin made of anti-break / reinforced / shatter-proof glass and fixed guards (e.g. metallic grid). The final user must provide the tractor with guards suitable to resist the impact with the materials/objects thrown at high speed from the machine depending on the current state of the art technologies and must contact the manufacturer to request all necessary information.

1.7 NOISE AND VIBRATIONS LEVEL



Even when operating without load, the machine exceeds 80dB(A) and the operators must use hearing protective equipment against the noise generated during operation: use earphones or earplugs.

In compliance with the standards in force, after installing the machine and before starting it, the user must perform the noise emission measurements on the assembly made of tractor - mulcher.

The tractor - mulcher assembly may produce an increased level of noise over time, due to wear; it is recommended to periodically evaluate the risk of exposure to noise.

The use of P.P.E. is mandatory and must ensure the dejection of the noise level registered in compliance with the standards in force.



The vibrations to the tractor - mulcher assembly are included in the vibrations produced by the tractor alone. Excessive vibrations may be caused by a fault in the machine that must be immediately signalled and eliminated to protect the reliability of the machine and/or avoid causing damage to the operator's health. Always work with suitable environmental conditions (e.g. with perfect visibility, terrain able to sustain the weight of the tractor - mulcher assembly, with slopes that allow proper vertical and lateral stability of the tractor - mulcher assembly etc.).

2 ACCIDENT PREVENTION AND SAFETY STANDARDS

2.1 GENERAL SAFETY STANDARDS

A proper use of the machine and compliance with the standards indicated in this manual along with thorough appliance of all precautions to avoid any dangerous situations, will help to avoid accidents or damage, extending the machine lifetime and will minimise faults.

The Company "BERTI Macchine Agricole S.p.A." declines any responsibility, objective or subjective, if the indications contained in this instruction manual are not respected.

	The machine must not be used in sectors other than agricultural and a use different from that specified is considered improper.
	The machine must only be used by one operator driving the tractor.
	The user must check the proper connection between tractor and mulcher. The weight that can be lifted by the tractor in the most unfavourable conditions must be greater than the weight of the mulcher.
	Before getting out of the tractor and before performing any maintenance operations on the mulcher, use the parking brake, turn off the engine, remove the ignition keys from the dashboard, and wait for 5 minutes inside the cabin to ensure that the rotor and relative tools completely stop.
	It is forbidden to abandon and/or leave the tractor - mulcher assembly while the tractor is still running.
	Use of the machine is strictly forbidden if the tractor to which is connected is not provided with a cabin made of anti-break / reinforced / shatter-proof glass and fixed guards (e.g. metallic grid). The final user must provide the tractor with guards suitable to resist the impact with the materials/objects thrown at high speed from the machine depending on the current state of the art technologies and must contact the manufacturer to request all necessary information.
	During use, the user must have proper visibility of the working areas that present dangers, therefore the mirrors and the windows of the tractor must be properly cleaned.

 PERICOLO	During the operating phases, the user must always stay inside the cabin, where he is safe. Operation with the doors/windows open is strictly forbidden. Danger from thrown objects!
	The machine must be used exclusively by authorised, instructed and trained operators. The operator, besides having read and understood the instructions contained in this manual, must also be sufficiently prepared on the proper use of the machine and must have a driving licence and must be an adult. The operator must contact the manufacturer if in doubt regarding use of the machine or interpretation of this manual.
	Never use the machine without knowing its features.
	The manual must always be on hand such that it can be consulted when necessary. If it should be lost or damaged, request a replacement copy from the manufacturer.
	The user must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases.
	
	During use, if operating with dry products (hay, straw, etc.), the machine may generate dust. The filters of the cabin ventilation system should be periodically checked and operators should always wear proper protection devices for the respiratory system, such as anti-dust masks.
	The operator assigned to the machine must not wear clothing that can cause entanglement.
	It is strictly forbidden to use the machine for the lifting of persons, animals or objects.
	It is strictly forbidden to use the machine to transport persons, animals or objects.
	It is strictly forbidden to use the flexible tubes as supports; these components are mobile and do not offer proper support.
	The operating area must be thoroughly inspected before using the machine, paying attention to remove any stones, iron residues, steel cables, manholes, strains and all those materials and obstacles without any limitation which may constitute a source of danger, accidents and serious damage to the user, people, animals and things.
	The operator must make sure that no person or animal stops within the radius of action of the same during machine functioning. The user is responsible for stopping the machine immediately and clearing the machine operating area from people and animals. Never activate the machine near persons and animals standing or transiting within the radius of action of the machine.
	If the machine is used in public areas and on roads, take all necessary precautions for the safety of persons, animals and property, for example, using safety personnel, warning signs, placing them at the ends of the machine operating area, according to the laws in force in the country of use.
	Never work in areas with strong counter slope, on slippery surfaces and in areas / zones that reduce the adhesion of the tractor to the ground. Pay utmost attention to changes of direction.
	Use the machine during the day and under conditions of perfect visibility.
	It is strictly forbidden to operate in adverse environmental conditions, for example during storms, snows, in windy, rainy or cloudy days, etc.
	Avoid working on muddy, sandy or soft terrain.
	Pay attention to the risk of accidental ignition of the electric arc machine with overhead power lines.
 PERICOLO	Before using the machine, make sure that all safety devices are properly in place and in good conditions. If there are failures or damage to the guards, replace them immediately.
	It is strictly forbidden to remove or tamper with the guards and/or safety devices.
	Make sure that the safety pictograms are in proper conditions, readable and clean. If the pictograms have deteriorated, they must be replaced with other original versions requested from the manufacturer and placed in the position indicated by the use and instruction manual (paragraph 2.3.2). If necessary, clean with a damp cloth.
	It is strictly forbidden to perform any modification that may alter the original condition of the machine.
	Any arbitrary modification made on this machine lifts the manufacturer from any responsibility for damage or injuries that could result to operators, third parties or to objects.
	Keep the machine free from foreign materials (debris, tools, other items), which may damage the operation or the operator.
 ATTENZIONE	The signs on the machine provide important indications: follow them for your safety.



The following paragraphs list other highly important safety standards. It is mandatory to read the entire instruction manual before using the machine.

2.2 FIRE-FIGHTING MEASURES



Keep an extinguisher of proper capacity in the tractor and maintain periodically. The hand extinguisher may only be used by personnel that know how to use it. The user is therefore responsible for providing proper training via particular courses.

The personnel that use the machine must know the main intervention techniques in case of fire.

Do not use the machine in areas that present explosion and/or fire hazard.

Maintenance residues, such as, straps or replaced materials containing flammable residues must be kept away from sources of ignition and disposed of in accordance with applicable laws in the country of use.

Use appropriate extinguishing means: e.g carbon dioxide, foam, chemical powder.

Do not perform any welding near containers, pipes, tanks, electric wires, or flammable materials in general.

In case of welding protect the flammable parts with appropriate screens.

2.3 SAFETY SIGNS

Make sure the safety pictograms are in good conditions. If the pictograms have deteriorated, they must be replaced with other original versions requested to the manufacturer and placed in the position indicated in the use and maintenance manual. Make sure that the safety pictograms are readable. Clean them using a cloth, water and soap.

1



ATTENTION: indicates the following hazards: do not stand between the equipment and the tractor, pay attention to the rotating parts, do not stand behind the tractor, risk of shearing, pay attention to the rotating tools for your hands and feet.

2



ATTENTION: indicates the following hazards: pay attention to hot parts and to the foldable parts of the machine, pay attention to the projection of objects.

3



ATTENTION: read the use and maintenance manual carefully, every action on the machine should be performed after switching off the tractor, removing the ignition key and inserting the hand brake, pay attention to the pipes under pressure

4



WARNING-DANGER
minimum safety distance
50 m.

5



WARNING - DANGER of coming into contact with moving elements. Do not place your hands and feet near the transmission belts.

6

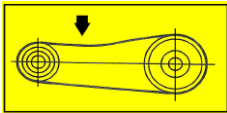
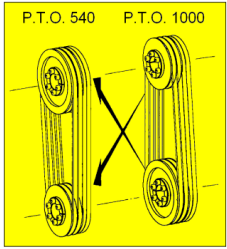


**PERSONAL
PROTECTIVE
EQUIPMENT.**

7



LIFTING POINT.

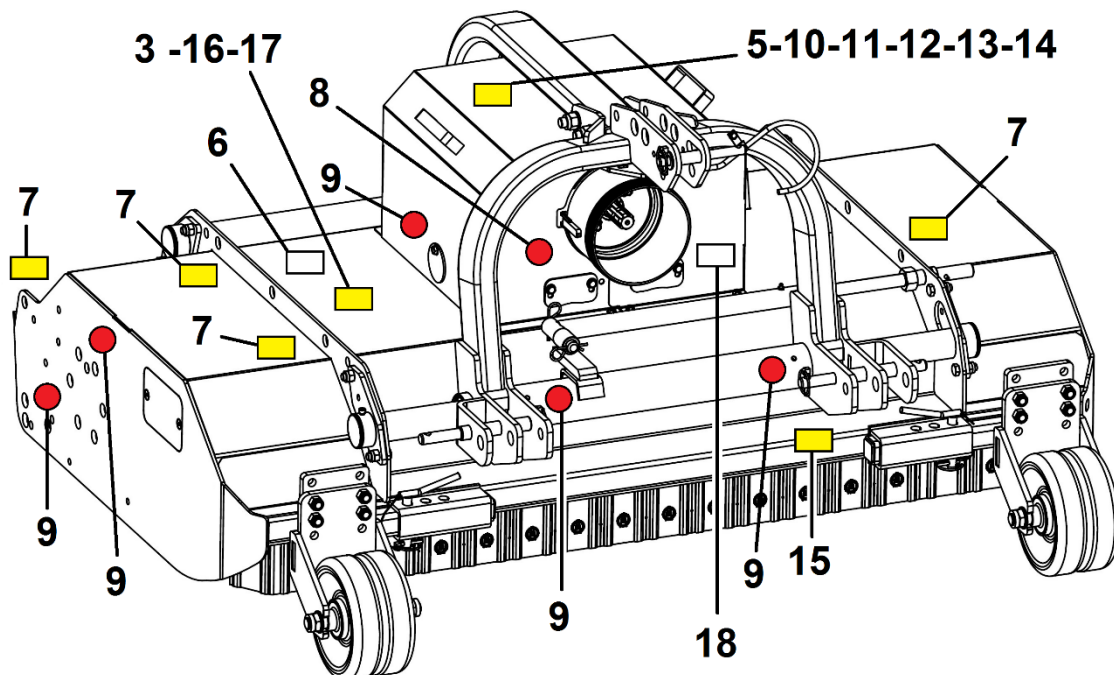
8		OIL LEVEL.	9		GREASING POINTS.
10		540 rpm, speed and rotating direction PTO.	11		1000 rpm, speed and rotating direction PTO.
12		TENSIONED BELTS.	13		1000 rpm, speed and rotating direction PTO.
14		PULLEYS INVERSION.	15		RESTING FOOT SAFETY LOCK.
16		NOTES ON WARRANTY.	17		GENERAL WARNINGS.

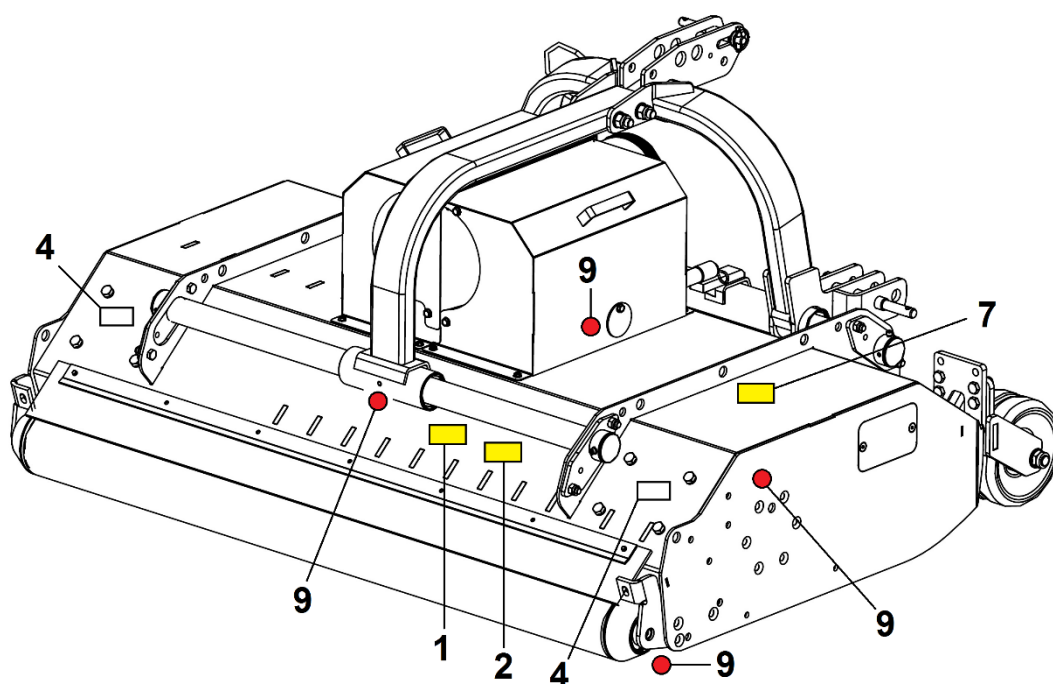
18

	LUBRIFICANTI RACCOMANDATI - recommended lubricant empfohlenen Schmiermittel - lubrifiant recommandé						
	AGIP BLA SIA 460	IP MELLANA OIL 460	ESSO SPARTAN EP 460	SHELL OMALA 460	MOBIL MOBILGEAR 624	BP ENERGOL GR-XP 460	TOTAL CARTER EP 460
GREASE 	GREASE MU EP 2	ATHE SIA EP GREASE 2	BEACON EP 2	ALVANIA GR EP 2	MOBILUX EP 2	GREASE LTX EP 2	MULTIS EP 2

RECOMMENDED LUBRICANTS.

2.4 POSITION OF PICTOGRAMS ON THE MACHINE





3 USE

3.1 INTRODUCTION



Before using the machine, carefully read and understand the instruction manual and get familiarised with the machine. The machine may only be used by expert and properly trained users.



ATTENZIONE

Keep all the parts of your body inside the tractor cabin, to reduce to a minimum the exposure to any external dangers such as thrown objects.

Before getting out of the tractor and before performing any maintenance operations on the mulcher, use the parking brake, turn off the engine, remove the ignition keys from the dashboard, and wait for 5 minutes inside the cabin to ensure that the rotor and relative tools completely stop.

The safety of the user and of the people around him depends on his judgement and prudence in the use of the machine. Therefore the functions of the machine and the safety standards must be properly known.



ATTENZIONE

The user must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases.

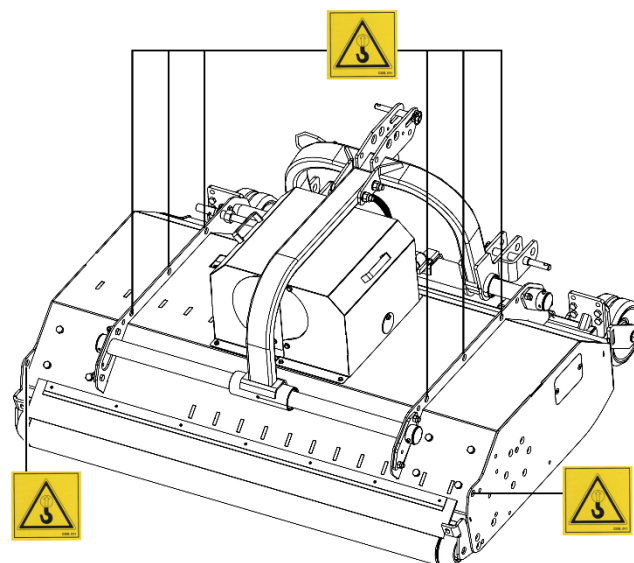


The machine must always be in perfect working condition and must be repaired only with original spare parts.

3.2 HANDLING AND TRANSPORTATION

Pay the utmost attention to safety during the loading and unloading operations, that must be performed only by qualified personnel (slingers, truck operators, etc.). Make sure that the lifting means are suitable by referring to the Technical Data table on page 8. In case you should lift the mulcher, use suitable chains equipped with hooks; fix them to the lifting points indicated by the pictograms.

In order to transport the machine, use a suitable vehicle with appropriate power and size. Once loaded, the mulcher must be secured with anchoring ropes.



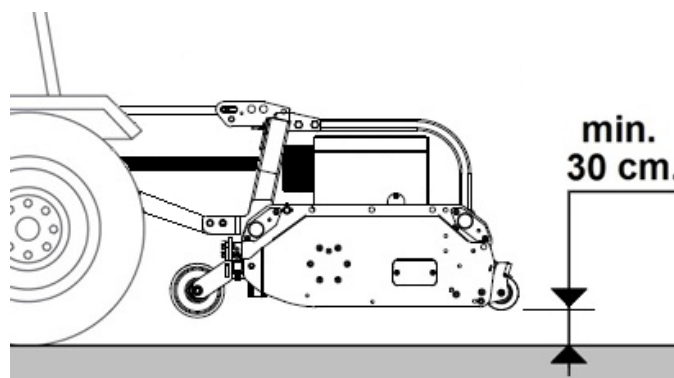
The procedures described below may present dangerous situation; also, due to the size and weight of the components, you need to use an appropriate lifting device.

3.2.1 TRANSPORTATION IN PUBLIC AREAS



If the machine must be transported on a public road, the road regulations must be strictly respected, paying utmost attention in choosing the operational speed.

It is mandatory to provide the vehicle with a flashing yellow or orange light. Before entering on a public road from a non-paved or dirty area, you must thoroughly clean the tires of the working vehicle from any residual mud. During the transport on the road, the mulcher must be kept in transportation position at 30 cm from the ground and the PTO of the tractor must be switched off. Before transport, check that all machine parts are integral and in good working order.



Road transportation must be performed paying maximum attention in order to avoid putting the persons or other vehicles in danger. Regulate the machine shift to the most internal position while respecting the outline of the tractor.

3.2.2 MACHINE TRANSPORT PROCEDURE



ATTENZIONE

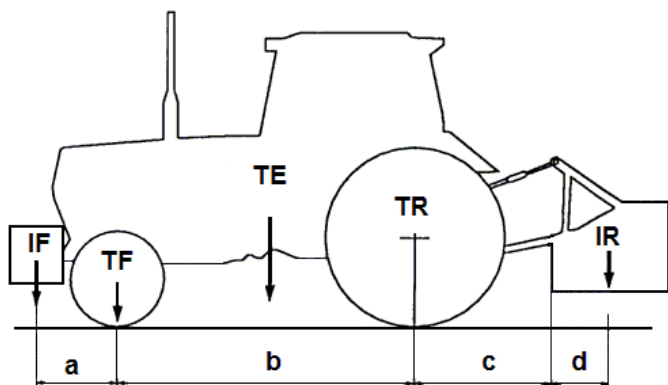
Before being transported, all machine parts must be intact and in good conditions.

Disengage the P.T.O. and wait for the rotor to stop completely.

Lift the machine as much as necessary (30 cm) so that the transmission organs do not touch the ground.

The machine weight changes the stability of the tractor - mulcher complex, influencing steering and braking capability. Therefore proceed at a moderate speed.

In particular, remember that the front axis must always support a weight equal to at least 20% of the total weight of the tractor - mulcher complex. Check the lifting capability and tractor stability using the following formula and, if necessary, apply ballasts on the front.



$$I_{F, \min} = \frac{(IR \times (c+d)) - (TF \times b) + (0.2 \times TE \times b)}{a + b}$$

TE = Weight of the tractor (empty)

TF = Front axle load (empty tractor)

TR = Rear axle load (empty tractor)

IR = Rear mulcher weight/rear ballast

IF = Front mulcher weight/front ballast

a. Distance from the centre of gravity of the front mulcher/front ballast to the centre of the front axle

b. Tractor wheelbase

c. Distance from the centre of the rear axle to the centre of the ball of the tractor's parallels

d. Distance from the centre of the tractor's parallels' ball to the centre of gravity of the rear mulcher/rear ballast

N.B.: if the machine is mounted on certified agricultural tractors registered before the 6th May 1997, the following relationship should also be checked: $M < 0.3 \times T$.

3.3 VISIBILITY



ATTENZIONE

The working areas can be controlled using the rear view mirrors of the tractor and the operator's range of view. While moving in reverse, dark areas may be created that cannot be seen using the rear view mirrors.

3.4 CONNECTION OF THE MACHINE TO THE TRACTOR

Before installing the machine, make sure that it is in a perfect condition, placed on the ground, levelled and in stable position, that there is the proper amount of lubricant, that all parts subject to wear and/or to deterioration are efficient and that the protections are complete and functioning.

ATTENZIONE	The user must check the proper connection between tractor and mulcher. The lifting capacity and the stability of the tractor must comply with the parameters described in chapter 1.5.3.
	Before using the machine, the operator must know the commands and the features of the machine.
	Always keep all the parts of your body inside the tractor cabin, to reduce to a minimum the exposure to any external dangers such as thrown objects.
PERICOLO	Before getting out of the tractor and before performing any maintenance operations on the mulcher, use the parking brake, turn off the engine, remove the ignition keys from the dashboard, and wait for a few minutes inside the cabin as to make sure that the rotor and relative tools completely stop.
	It is strictly forbidden to stand between the mulcher and the tractor during the connection phases and any unauthorised persons must be requested to leave the machine operating area.

3.4.1 HITCHING PROCEDURE



ATTENZIONE

Check the compatibility of the tractor with the machine to be connected (power, hitches category, PTO speed etc.), respecting the values stated in the technical data table on page 8.

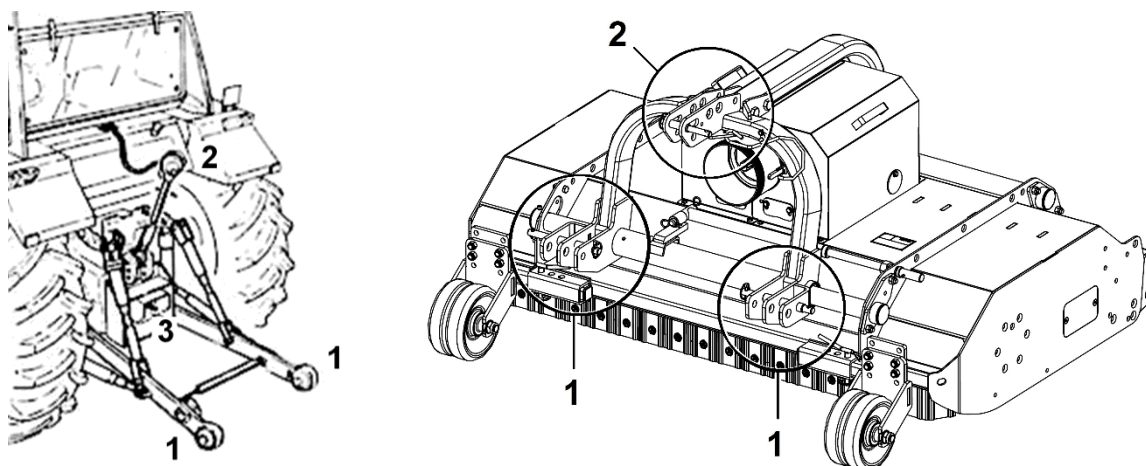
Connection to either more or less powerful tractors may hinder stability or cause sudden breakage.

During use, adjustment, maintenance, repair or handling, the operator must use adequate Personal Protection Equipment (PPE).



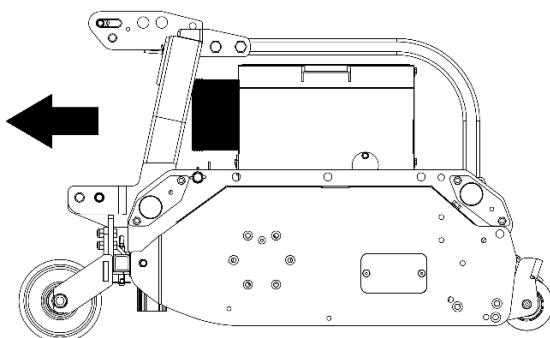
After having verified that previously described, connect the machine to the tractor, observing the following procedure:

- Remove the safety pin and the pins from the connection inlet 1 of the machine;
- With the tractor in reverse and activating the elevator, make the lower arms 1 match the lower corresponding connection inlet 1 of the mulcher;
- Insert the pins and lock them with the relating safety pins;
- Connect in the same way the third point of the tractor 2 with the corresponding inlet 2 on the machine;
- Adjust the third point so as the machine stands horizontally as regards the ground;
- Lift and secure every supporting foot on the machine.

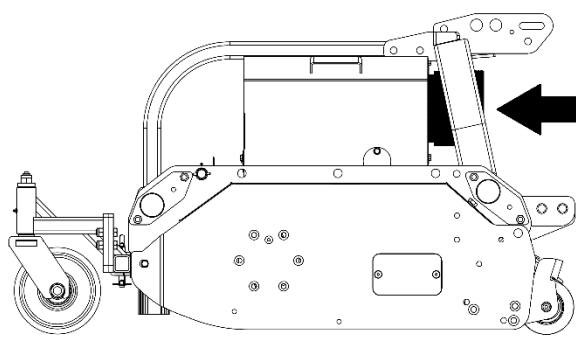


For application to the front lift, perform the same procedure described above.

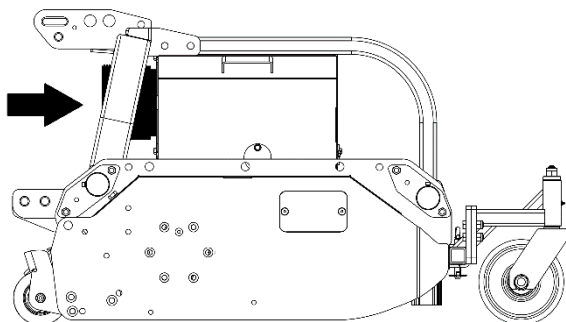
CONFIGURATION 1 (rear lift)



CONFIGURATION 2 (front lift)



CONFIGURATION 3 (rear lift)





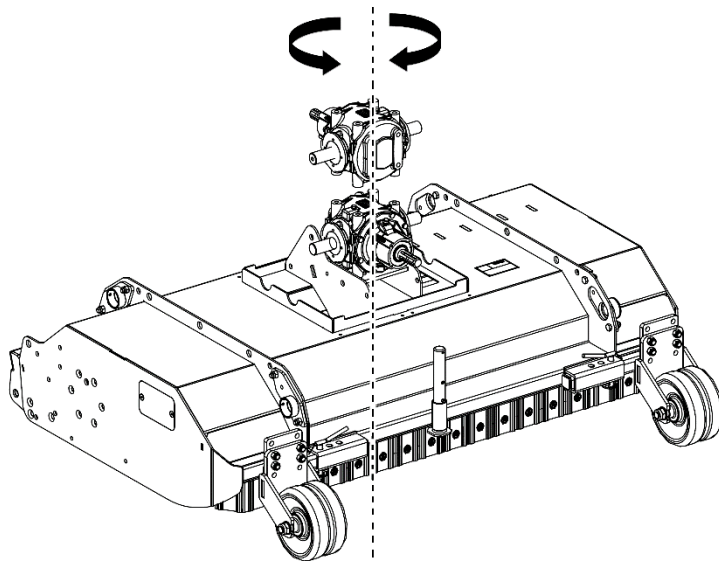
ATTENZIONE

ATTENTION: BE SURE TO HAVE ENGAGED THE SAFETY PINS IN THE COUPLING OPENING PINS 1 AND 2.
The following operations are very hazardous.
Avoid standing in front of the mulcher during the approach of the working vehicle.
Avoid the presence of uninvolved persons.
During the installation phases, the PTO of the mulcher should be disengaged.

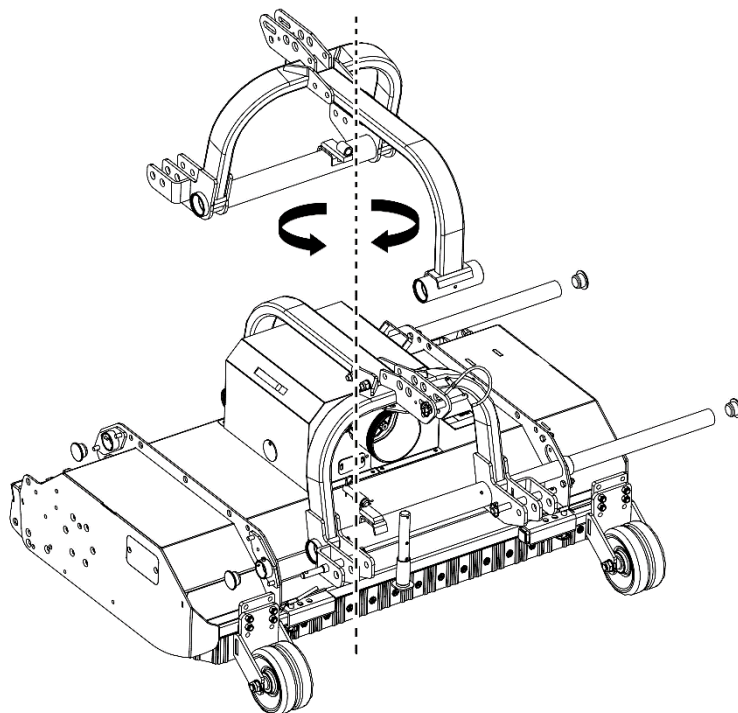
MACHINE REVERSIBILITY:

The machine was designed to be used in the traditional manner but also with tractors with reverse drive or with front attachment. To be able to switch from the traditional working mode to working with a tractor with reverse or front drive, or vice-versa, the machine must be adapted to the new system.

Orient the gearbox with respect to the tractor power take-off
(see belt replacement procedure):



Orient the drawbar with respect to the tractor power take-off:

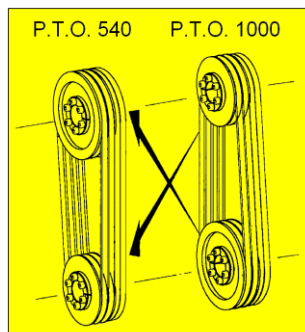




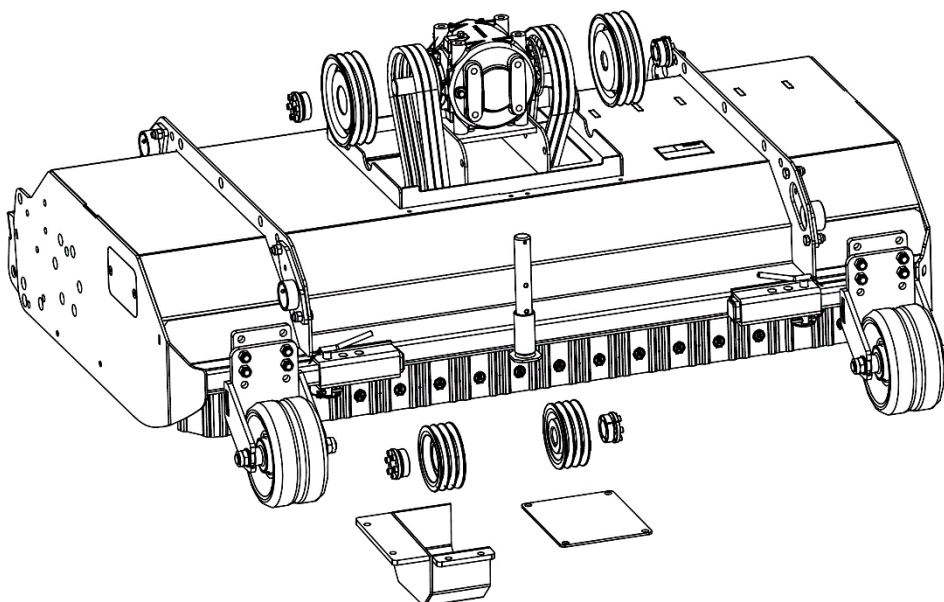
ATTENZIONE

To perform these operations, the machine must be level and released from the tractor (see paragraph MACHINE DISCONNECTION).
Contact an authorised workshop to perform the operations described above.

TRANSFORMATION PTO 540-1000 RPM OR VICE-VERSA:

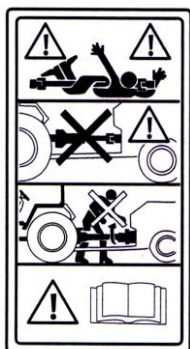


The P.T.O. can be transformed from 540 to 1000 rpm or vice-versa for entry to the transmission unit with simple inversion of the pulleys which transmit movement from the gearbox to the cutting rotors using the belts (see belt replacement procedure).



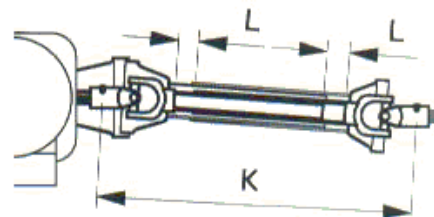
3.5 CONNECTING THE CARDAN SHAFT

During operation, the cardan shaft may generate dangerous situations.
Therefore you should:



- Read and store the use and maintenance booklet near the cardan shaft;
- Make sure that the cardan shaft is appropriate for transferring the required power;
- Only use the cardan shaft delivered with the machine;
- Make sure that the guards are properly installed, complete and functioning;
- Do not operate with cardan shafts without guards.
- Replace the worn, damaged or missing guards;
- Turn off the engine of the tractor before operating on the cardan shaft or on the machine;
- Do not allow children or unauthorised persons to go near the machine during operation and/or maintenance interventions;
- Wear suitable clothes (not resistance, no loose clothes), especially tight clothes (e.g. work overalls with wrist and ankle protection);
- Grease the cardan shaft following the recommendations provided in the instruction manual of the cardan shaft.

When installing the cardan shaft for the first time, measure the distance K between the grooves of the P.T.O. buttons with the machine placed on the ground, levelled and with the multiplier aligned with the P.T.O. of the tractor; if necessary, adapt the length of the provided cardan shaft, making sure that the telescopic tubes are staked by length as to create at the ends a jog L of 40 - 50 mm. Such operation must be performed during the first installation, during each substitution and each time the machine is installed on a different tractor.

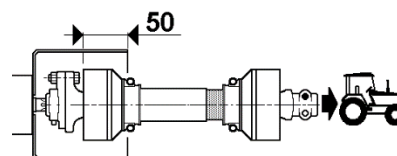


ATTENZIONE

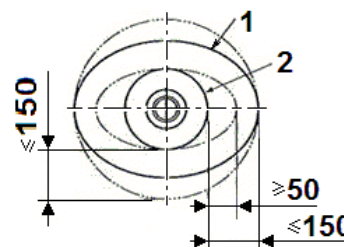
After installing the cardan shaft, fasten the guard on both sides using appropriate chains.

When the machine is in stand-by mode, after installing the cardan shaft, perform some lifting and lowering manoeuvres of the machine to make sure that the tubes of the shaft are free to slide without any obstacles.

Check that between the guard of the cardan shaft and the guard mounted on the PTO of the machine, a minimum overlap of 50 mm is present, as required from the safety standards.



Check that between the guard of the cardan shaft and the guard mounted on the PTO of the machine a minimum radial space between 50 and 150 mm is present so as to allow a hand to be inserted.



- 1 – machine protective cap
- 2 – cardan shaft protective cap

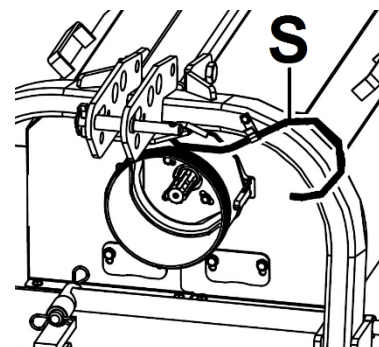


ATTENZIONE

Check the rotating direction of the PTO of the cardan, on the tractor, looking from the rear side, it should rotate in clockwise.



When it is not being used, the cardan shaft must be placed on the suitable support **S** located on the three-point tiller in order to avoid the accumulation of dirt, deformation and breakage on the protection.



PERICOLO

DO NOT CLIMB ON THE CARDAN SHAFT, EVEN IF IT IS STOPPED.

3.6 CARDAN SHAFT FEATURES

The cardan shaft is the transmission component that drives the mulcher; it must be chosen based on specific criteria that define its power and length. As far as its length is concerned, see chapter 3.5, for power use the chart shown here that indicates the minimum power that the cardan shaft has to sustain.

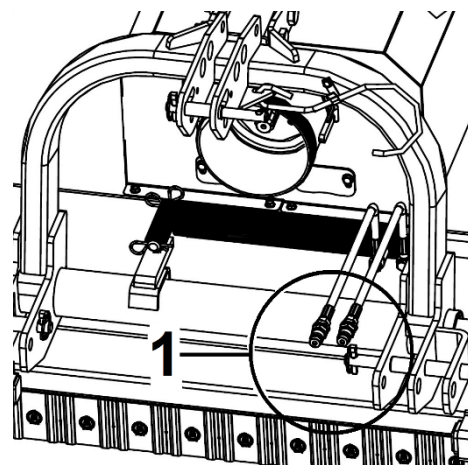
Model	kw	HP
ZETA 150	44	60
ZETA 170	44	60
ZETA 190	44	60
ZETA 210	44	60
ZETA 230	44	60
ZETA 250	44	60

3.7 HYDRAULIC SYSTEM

The machine can be provided (upon request) with the hydraulic system to facilitate work under plants.

Verify the level of the hydraulic oil; make sure that the tractor's system provides at least 140/160 bar, that it is provided with a double effect distributor, that the quick couplings 1 are compatible with those of the machine; you can now perform the connection.

Make sure that no-one is near the machine; with the machine adequately lifted from the ground, you can slowly adjust the command distributor lever of the hydraulic cylinder while verifying the change of position.



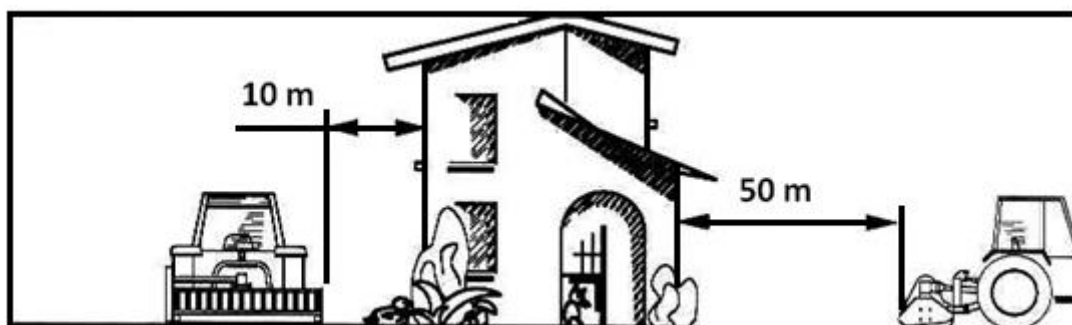
IMPORTANT: connect the 2 pipes 1 as a pair to the tractor distribution system. After connecting the pipes, perform some movement operations to discharge any air bubbles that may form inside the jack.

4 STARTING THE MACHINE



Before starting the machine, make sure that all indications described in chapter 2 "ACCIDENT PREVENTION SAFETY STANDARDS" are met; comply with the following indications:

- Make sure that there are no persons, animals and things in the machine operating area as there are dangers, such as objects being thrown at high speed, that may cause serious injuries or death.
- Keep a minimum safety distance equal to the machine operating radius of 50m.



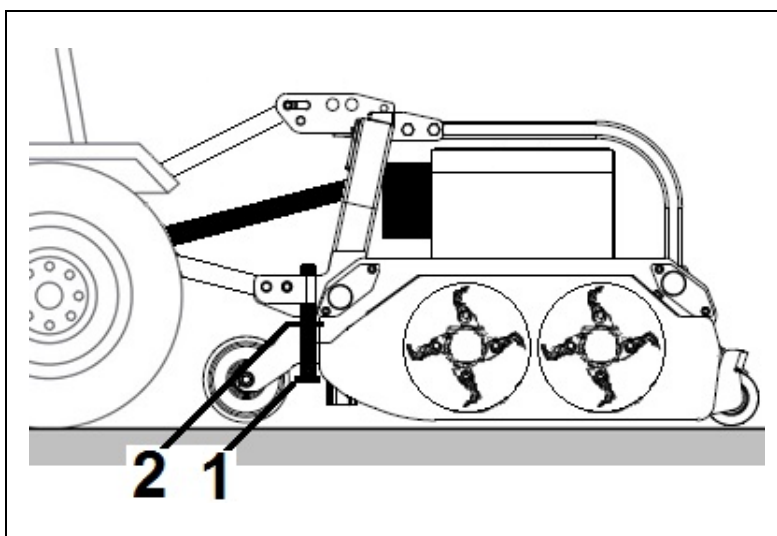
- Do not allow any persons, animals or things to get near and to stand in the machine operating radius.
- Before using the machine, the operator must know the commands and the features of the machine.
- Always keep the guards in perfect state, properly placed and effective.
- Any interventions on the mulcher must be performed exclusively when the engine of the tractor is stopped, the parking brake engaged, the PTO disengaged, the ignition key out of the dashboard and placed in a secure place.
- The rotor and relative machine tools must be stopped.
- Always inspect the machine, checking the 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 operating area removing any stones, metallic pieces, steel cables or any other dangerous materials. Take all the necessary safety precautions as to keep yourself and other persons safe. Protect the cabin or the control area against falling/objects thrown at high speed using anti-break/shatter-proof/armoured windows and fixed guards (e.g. metallic grid) that can resist impacts in compliance to the state of the art technologies. Contact the manufacturer to request any further information regarding this case.
- Check the position and status of the terrain in the operating area; make sure that they do not affect in any way the stability of the assembly tractor - mulcher.
- Make sure the safety pictograms are in good conditions. If the pictograms are deteriorated, they must be replaced with other original versions requested from the manufacturer and placed in the position indicated by the instruction manual. Make sure that the safety pictograms are readable. Clean them using a wet cloth.
- During operations relating to the change of direction, slightly lift the machine from the ground and disengage the P.T.O. in order to avoid damaging the structure.
- The user must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases.



4.1 WORK STAGE

When the machine is properly attached to the tractor, approach the work area and proceed as follows:

- 1- Lift support foot 1 to a high position and lock it by means of pin 2
- 2- Using the elevator commands to regulate the operating height, lower the machine until it reaches the desired cutting height
- 3- Engage the P.T.O. and gradually accelerate the tractor until reaching the operating speed of 540 rpm;
- 4- Engage running mode and start the operating process;
- 5- Cover a short distance so as to verify the quality of the work performed; if necessary, regulate the operating height with the tractor's lifter, always trying to prevent the tolls from touching the ground;
- 6- Control the mulching of the product if necessary; adjust the tractor's forward speed according to the mulching desired.



4.2 RECOMMENDED SPEED

Adjust the operating speed, using the size (diameter) and volume of the material to be mulched, as well as the degree of shredding to be obtained. The machine must be used only for the intended purposes.



Excessive speed damages the internal components of the machine; In this case the amount of shredded material will be poor; it may cause the machine to throw large pieces of material that may put the operator in danger.

In the table below are indicated the recommended speeds that should be respected in order to obtain maximum performance and in particular:

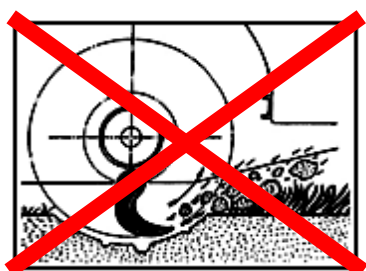
TYPE OF MATERIAL	RECOMMENDED FORWARD SPEED (km/h)														
	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	8
Sparse grass															
Grass that has not been mowed for months															
Grass that has not been mowed for years, very dense															
Vineyard pruning															
Apple - pear pruning															
Olive - peach tree pruning															
Bushes - branches															

4.3 ADJUSTMENT OF CUTTING HEIGHT

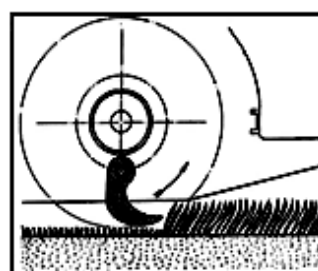


Before adjusting the machine cutting height, carefully read and make sure you have fully understood the instruction manual.

The operating height must be adjusted as to make sure that the cutting tools (hammers or blades) do not come into contact with the terrain causing projection.

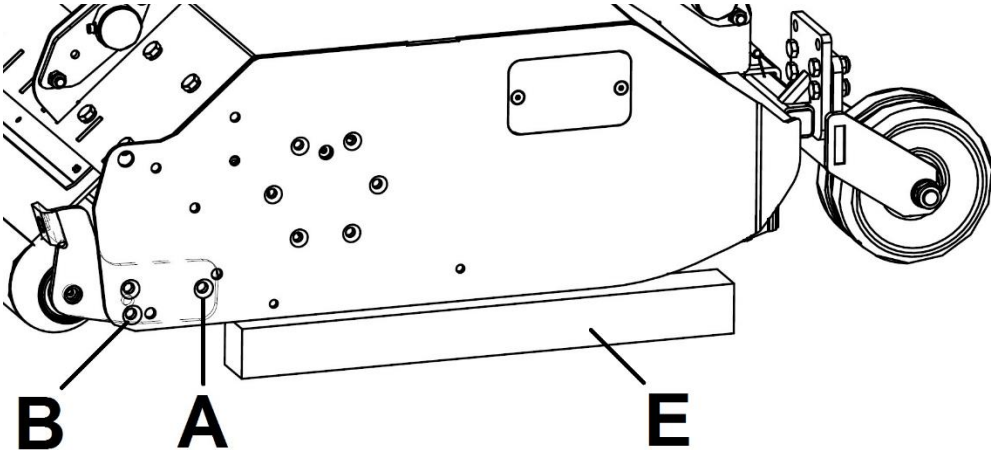


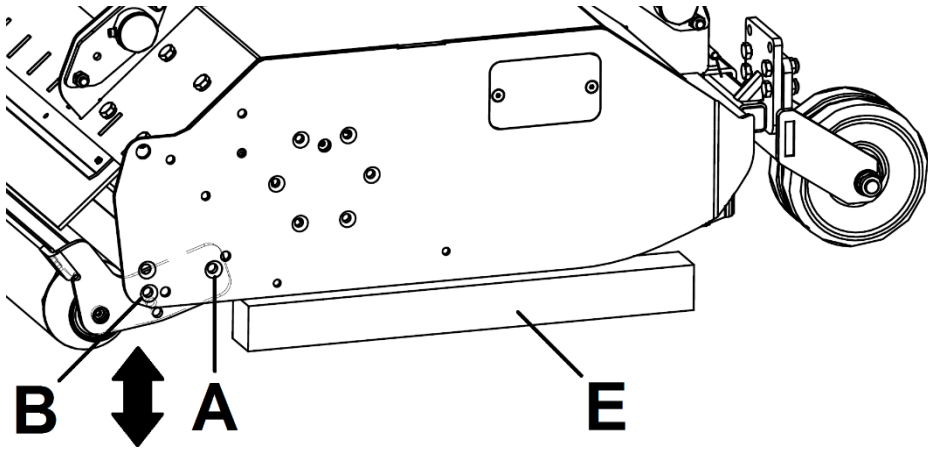
NO



YES

In order to adjust the cutting and therefore the operating height, act on the position of the levelling roll of the machine as follows:

 ATTENZIONE	In order to perform the operations described below, make sure that the engine of the tractor is off, the parking brake engaged, the PTO disengaged, the ignition key out of the dashboard and properly stored.
 PERICOLO	At the workshop, use appropriate equipment to support and move the machine especially regarding the maximum weight that can be lifted and sustained (see table 1.5.3. for data related to the machine) in compliance with the laws in force in the country of use.
	1. Level the machine leaving a thickness E of about 8 cm under the sides; 2. Make sure that the PTO is disengaged, brake and turn off the tractor; 3. Loosen bolt A and remove bolt B; 4. Rotate the plate of the roll, until centring the slot in the desired position of the plate with that of the side; 5. Remount bolt B; 6. Tighten bolts A and B. 
	The adjustment operations must be performed both on the left and on the right side of the machine.

	
	The adjustment operations must be performed both on the left and on the right side of the machine.

4.4 CLOGGING

If the machine 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, it is mandatory to:

- Operate the parking brake of the tractor;
- Turn off the engine;
- Remove the keys from the dashboard and keep them safe;
- Wait for the rotor and its tools to be completely still; get off the tractor.

Once the entity of the jamming has been verified, it might be necessary to:

- Manually free the machine following all **necessary safety norms**;
- In case manual operation should not be possible, contact **an authorised workshop**.

Check for any damage/breakage and proceed to immediate repair of the same using original spare parts.

If there are no damages, get in the tractor and proceed with the operation following the indications in paragraph 3.5 "Machine start-up" and paragraph 3.6 "Machine running".

4.5 MACHINE DISCONNECTION



PERICOLO

The operations described below may present dangerous situations: do not allow unauthorised people where the machine will be placed and nearby.

To disconnect the machine, carefully follow the indications given below:

- 1 Make sure that the working vehicle-machine unit is on flat, stable ground;
- 2 Disengage the P.T.O. and wait for the rotor to stop completely;
- 3 Brake the tractor;
- 4 Lower the support foot and block it with the adequate pin;
- 5 Rest the machine completely on the ground and switch the tractor off;
- 6 Disconnect the tiller fastening pins to the 3 points of the tractor;
- 7 Disconnect the cardan shaft from the tractor and place it on the bracket;
- 8 Disconnect the hydraulic supply tubes.

Put the connection pins and the safety clicking pins in their housings on the tiller; it will be easier to find them when operating the machine again.

5 MAINTENANCE



ATTENZIONE

In case of failure, the operator must stop the cardan from rotating, wait for the rotor and its tools to be still, disengage the ignition key, get off the tractor to verify the problem and perform the necessary interventions on the machine.



Before performing any maintenance operation, carefully read and fully understand the instruction manual.

Please note that all maintenance must be performed by qualified and trained personnel with the machine stopped. Maintenance and repair operations must not be carried out outside, but in a suitably equipped workshop.



During use, adjustment, maintenance, repair or handling, the operator must use adequate Personal Protection Equipment (PPE).

Used oil must be properly recovered and should not be released in the environment, since, according to the prevailing legislation, it is classified as hazardous waste and as such should be given to specialised collection sites. Therefore contact the nearest Used Oils Consortium.

Before starting any maintenance, the following operations must be carried out:

- During maintenance, the machine must be placed on flat and compact ground;
- Switch off the working vehicle engine, operate the parking brake and remove the key from the dashboard;
- Any maintenance operation can be performed only after the temperature of the oil is below 60 °C;
- Always use appropriate Personal Protection Equipment (safety shoes, overalls and work gloves, etc....);
- Provide all forms of accident prevention for the type of operation being conducted;
- If you use compressed air to clean the machine, you must protect yourself with special glasses;
- When maintenance operations implies accessing parts of the machine that cannot be reached from the ground, or from a height of more than 1.50 m, use a ladder or a platform compliant with norms in force;
- Do not perform repairs of which you have no knowledge. Always follow instructions; in the absence thereof, contact the dealer or experienced staff;
- Warning: replace worn or cracked tubes every time they are damaged;
- Do not use lifting points different from those prescribed;
- Make sure that the lifting equipment is suitable to carry out the operations in compliance with safety rules;
- Do not keep the tractor engine running indoors and without a suitable ventilation system to dispose of harmful exhaust gases;
- Avoid prolonged or repeated skin contact with fuels/lubricants/fluids, as it may create skin disorders or other syndromes;
- Do not ingest fuels/lubricants/fluids; In case of accidental contact with eyes, rinse the affected area thoroughly with clean water, contact a physician if necessary;
- Operate with extreme caution because of the possible high-temperature of oil/fluid discharged;
- Do not weld in closed or unsuitably ventilated environments;
- Do not weld on, or in proximity of, painted surfaces, to prevent the development of toxic vapours; Remove paint with suitable products, then wash the surfaces and leave to dry;
- Relieve pressure from the circuits before working;
- Do not try to detect leakages of pressurised fluids with your hands; leakages of pressurised fluids can penetrate the skin and eyes with very serious consequences.

5.1 MACHINE HOT POINTS

Before any maintenance intervention, make sure that the temperature of the hot parts is below 60°C. Pay the utmost attention to:

- Drive casing;
- Gearbox;
- Pulleys, automatic belt tensioner and belts;
- Hydraulic pipes.

5.2 MAINTENANCE INTERVENTIONS THAT CAN BE PERFORMED BY THE OPERATOR

The interventions described below do not require any specialisation. The operator has to know and thoroughly follow the indications; they have to stop and disconnect the machine before proceeding (see paragraph 4.5).

Periodic inspections and maintenance must be performed in the times and manner prescribed and are the operator's responsibility.

Failure to comply with rules and maintenance schedules undermine the proper operation of the machine and its duration and thus voids the warranty.

Increase the frequency of the maintenances in heavy duty conditions (frequent start-ups and shut-downs, prolonged winter, etc.).

5.3 TABLE OF TIGHTENING TORQUES

Ø screw	Hexagon	Class		8.8		10.9		12.9	
		Pitch		Pitch		Pitch		Pitch	
		Large	Fine	Large	Fine	Large	Fine	Large	Fine
	mm	mm	mm	Nm	Nm	Nm	Nm	Nm	Nm
M8	13.00	1.25	1.00	20	22	29	31	34	37
				25	27	35	38	42	46
M10	17.00	1.50	1.25	40	42	57	59	68	71
				50	53	70	74	84	89
M12	19.00	1.75	1.50	69	72	97	101	116	121
				85	89	119	125	143	150
M14	22.00	2.00	1.50	110	118	154	166	185	199
				135	148	190	208	228	250
M16	24.00	2.00	1.50	128	180	240	253	287	303
				212	226	298	318	357	382
M18	27.00	2.50	2.00	235	248	330	349	397	419
				290	310	402	436	490	523
M20	30.00	2.50	2.00	332	347	467	489	561	586
				413	436	580	614	697	736
M22	34.00	2.50	2.00	454	474	639	666	767	799
				568	597	798	840	958	1,008
M24	36.00	3.00	2.00	574	617	808	868	969	1,041
				714	781	1,004	1,098	1,204	1,317

FOR ROTARY HARDWARE:

Ø screw	Hexagon	Class 10.9
		Fine Pitch 1.5
	mm	Nm
M14	22.00	180
M16	24.00	200
M18	27.00	230
M20	30.00	300

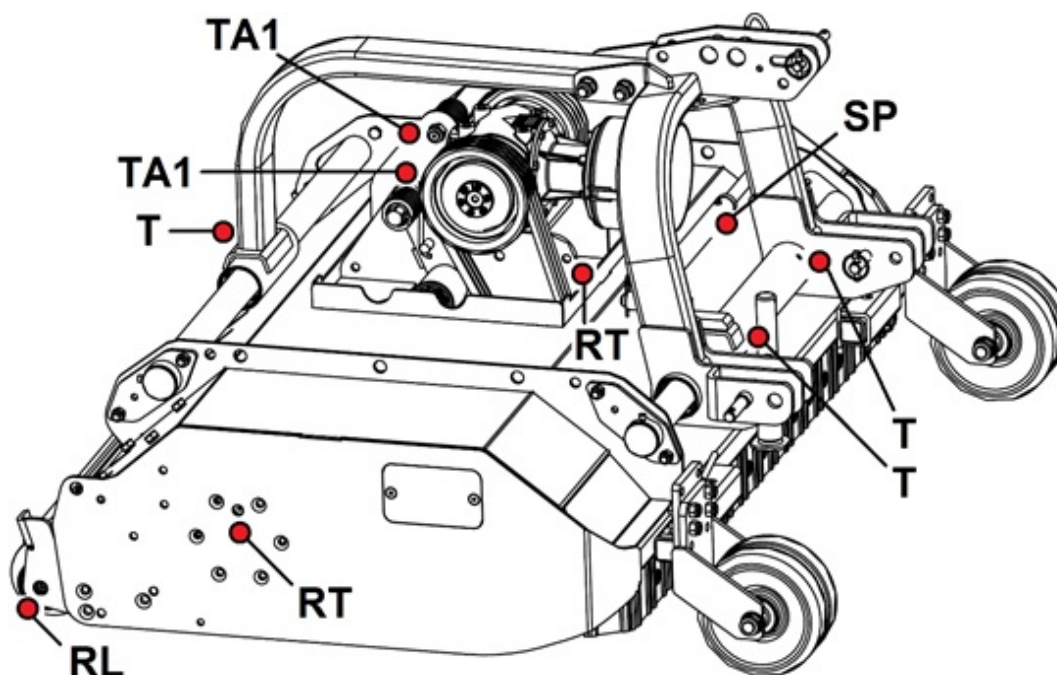
5.4 GREASING AND LUBRICATION

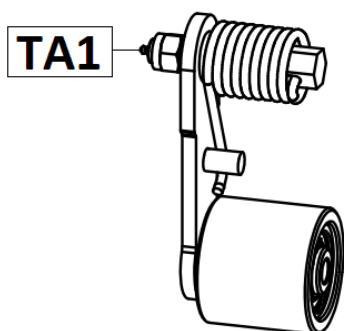
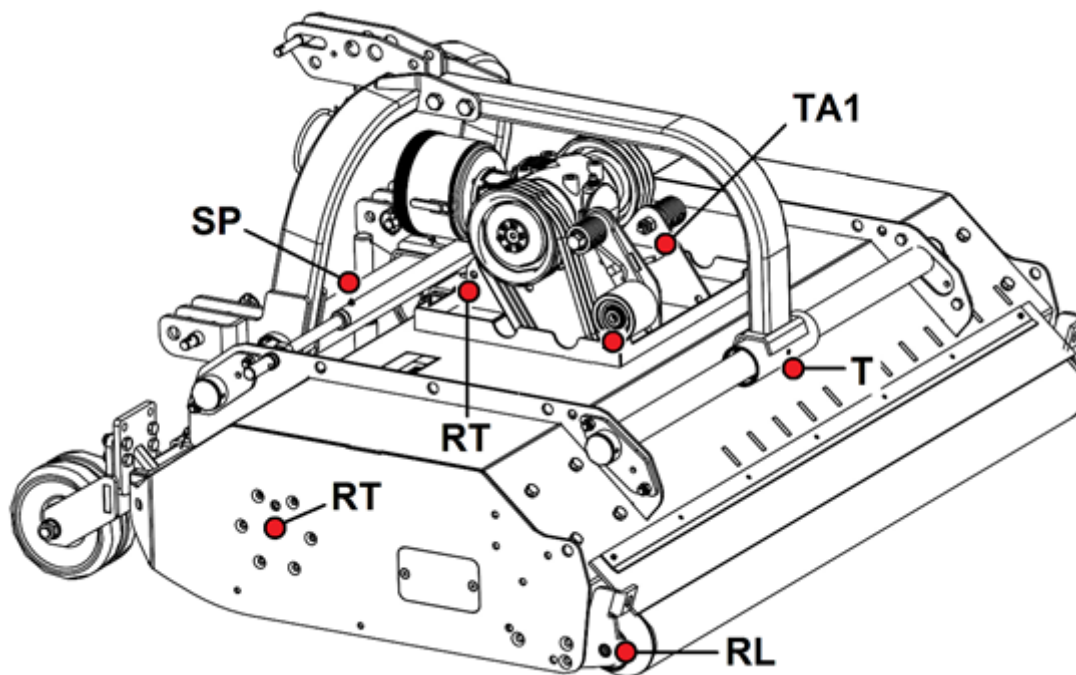
Periodical greasing and lubrication of the machine will keep its performances high and increase its lifetime
 Using a special greasing pump, thoroughly grease the points indicated by the sticker.
 Only use a manual greasing pump, in order to prevent the breaking of bearing seals and grease passage pipes.



Pos.	Name	Lubrication intervals	Notes
RT	Rotor	8 hours	Grease it using the manual pump 1-2 times, to avoid damaging the inner seals of the supports.
RL	Levelling roll	8 hours	Grease it using the manual pump 1-2 times, to avoid damaging the inner seals of the supports.
T	Tiller	8 hours	Grease it using the manual pump 1-2 times on the 3 grease fittings of the tiller.
SP	Movement	8 hours	Grease by operating the manual pump 1-2 times on the mechanical movement grease nipples.
TA1	Belt tensioner automatic	8 hours	Grease it using the manual pump 1-2 times.
AC	Cardan Shaft	—	Grease as indicated in the use and maintenance booklet of the cardan shaft provided by the manufacturer.

Always perform such operations on stable and flat ground in order to prevent non-authorized people from approaching.



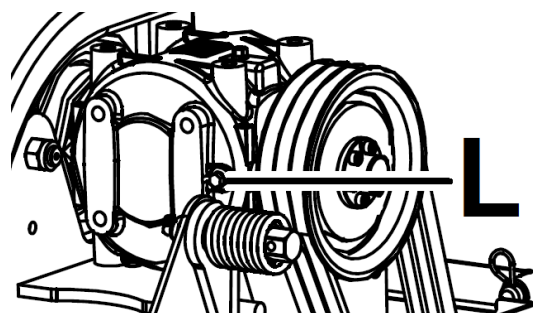
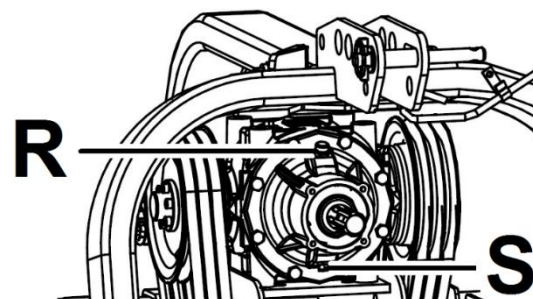


5.4.1 LUBRICATION OF THE TRANSMISSION UNIT

Before working on the transmission unit: reducer and extension, carefully clean the parts around the caps to avoid dirt getting inside the unit, work at the following pace:

- 1- During the first 20 hours of operation check oil levels: the oil must reach the hold of level L. If required, add oil from cap R, then check the oil level every 50 hours;
- 2- After the first 40 hours of work, completely replace the oil in the transmission group extracting it from the plug S. Thereafter, repeat the operation every 250 working hours.

Recommended lubricant:
Oil type ISO VG 460



R = filling and drain cap
L = level cap
S = drain cap



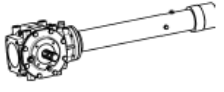
Used oil must be properly recovered and should not be released in the environment, since, according to the prevailing legislation, it is classified as hazardous waste and as such should be given to specialised collection sites. Contact the "Consortium for used oils" for the collection of waste oil.



Periodical greasing and lubrication of the machine will keep its performances high and increase its lifetime

5.4.2 LUBRICANTS TABLE

The following table represents the sticker affixed on the machine; the lubricant of reference is highlighted on a grey background:

 LUBRIFICANTI RACCOMANDATI - recommended lubricant empfohlenen Schmiermittel - lubrifiant recommandé							
	PETRONAS	TAMOIL	ENI	IP	ESSOMOBIL	SHELL	TOTAL
	GEAR MEP 460	CARTER EP 460	BLASIA 460	MELLANA 460	MOBILGEAR 600XP 460	OMALA S2 G 460	CARTER EP 460
 GREASE	AMBRA GRS PLUS EP2	TAMLITH EXTRA BLU EP2	GREASE MU EP 2	ATHESIA EP GREASE 2	MOBILPLEX EP 2	GADUS S2 V220 2	MULTIS EP 2

5.5 BELTS TENSIONING



Before adjusting the tension of the belts, carefully read and make sure you have fully understood the instruction manual.

All adjustment operations must be performed at authorised workshops by specialised personnel.



It is necessary to position the machine on a stretch of flat ground, with head resting on ground, the motor stopped, the parking brake is inserted, the power drive is not inserted, the ignition key is extracted from the dashboard and guarded.



Thanks to the automatic belt tensioner, is not necessary to adjust the belts tension. An intervention of the belts tension may be necessary only in case of:

- Mechanical breakage of the automatic tensioner spring;
- Loosening of the nuts that fasten the tensioner.

BELTS TENSION ADJUSTMENT PROCEDURE:

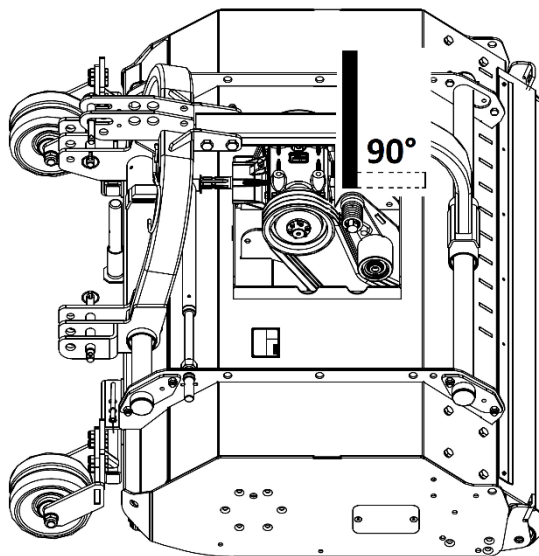
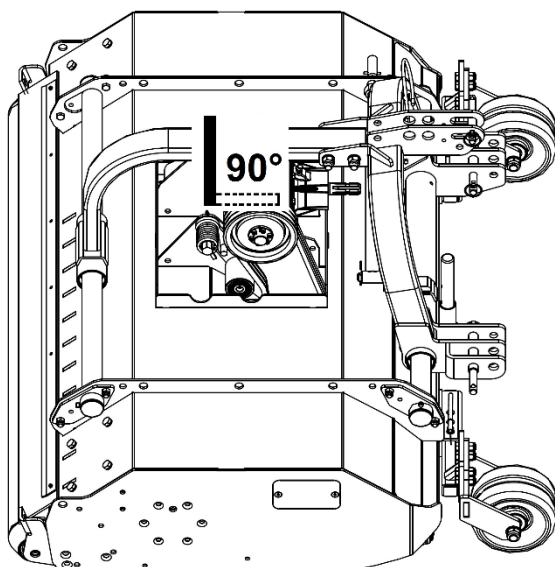
Proceed as follows to adjust the tension of the transmission belts:

1. Remove the transmission covering casings;
2. After replacing the spring or any other damaged part, take the tensioning unit and place it on the side of the mulcher, inserting the 30 mm nut;

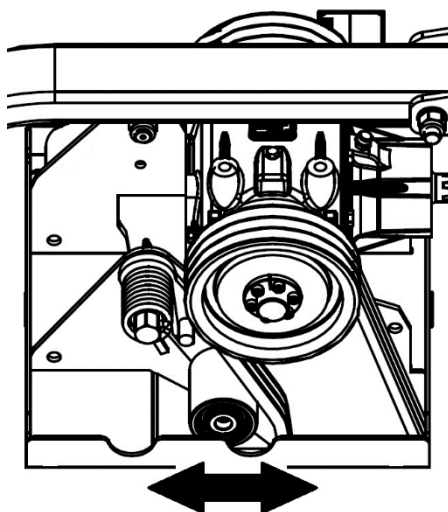
Pos.	Name
1	Self-locking nut M20
2	30 mm nut
3	Tensioning spring
4	Tensioner roller
5	Machine side
6	Greaser



3. Turning the tensioning unit on the bolt with 30 mm nut, touch the roller drum on the belts;
 4. Once touching the belt, using a 30 mm spanner, turn the bolt and lock the nut M20, fastening it using another 30 mm spanner;
- Giving the correct PRE-LOAD to the spring, ensures proper tensioning of the belts!
The bolt must be turned 90° (1/4 of a turn).
Torque wrench load: 65±5 Nm.



5. Lock the counter-nut M20;
6. Now, after properly tensioning the belts, check that the belt tensioning drum rotates freely. Put pressure on the roll, moving it away from the belts for a few inches and then release it. The roll should spring back freely;
7. Remount the casing using the appropriate screws.



Check the tension of the belts on both sides of the machine.

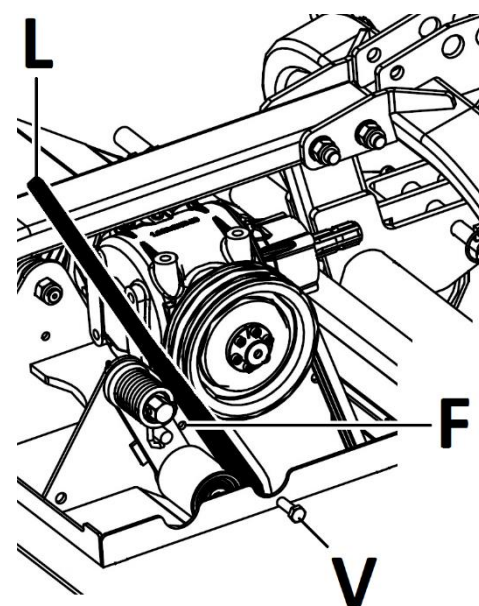


Do not work without the belt protection casings!

BELTS REPLACEMENT PROCEDURE:

The transmission belts replacement operations must be performed while the mulcher is placed on the ground, the tractor stopped, the PTO disengaged, the ignition key out of the dashboard.

1. Remove the transmission covering casings;
2. With a lever L press the roller until a M10 screw (V) is inserted;
3. Let the belt tensioner rest against the screw inserted in hole F;
4. Now there should be no more pressure on the belts, thus allowing the operator to replace them;
5. Once replaced, exert pressure on the sliding roll until screw M10 is removed from hole F;
6. Bring the belt tensioner near the belts and leave it there. The roller maintained the initial pre-load and no further operations are required.



ATTENZIONE

The V-belts must be mounted without forcing them, without using screwdrivers, crowbars, etc. that may damage the belt itself. Proper assembly allows money and time saving and increases the belt lifetime.

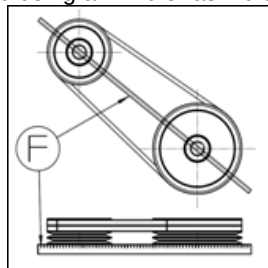
If the tensioning must be verified and the belt tensioner must be tightened, proceed as described in this chapter.



PERICOLO

NEVER WORK WITHOUT THE BELT PROTECTION CASING!

Always check that the pulleys are aligned using an F ruler as indicated in figure.



5.6 HYDRAULIC SYSTEM (WHERE REQUIRED)



ATTENZIONE

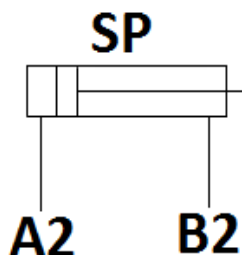


Visually check the machine, make sure that there are no loosened couplings, damaged pipes, cuts or any other signs of wear. Tighten the loosened couplings and replace the damaged or worn pipes. Make sure there is no leakage of pressurised oil.

The hydraulic system diagram consists of:

SP: Movement jack

A2 – B2: Tractor distributor



5.6.1 HYDRAULIC PIPE REPLACEMENT

Before attempting to replace a hydraulic pipe, be careful to take all safety measures for maintenance, stop the machine and close the hydraulic system valves.

Before removing a hydraulic pipe, be sure to release any residual pressure in the system.

Accurately identify the damaged pipe and loosen the two points of connection with a spanner, paying attention to potential leakage of hydraulic fluid.



Replace the damaged pipe with original spare parts only.

Before installing the new tube make sure that the connection points are in proper state (threads, seals, etc.).

With the proper tools, screw clockwise the fittings of the hydraulic pipes that present leakage. Do not tighten excessively otherwise you will damage the threads of the fittings.



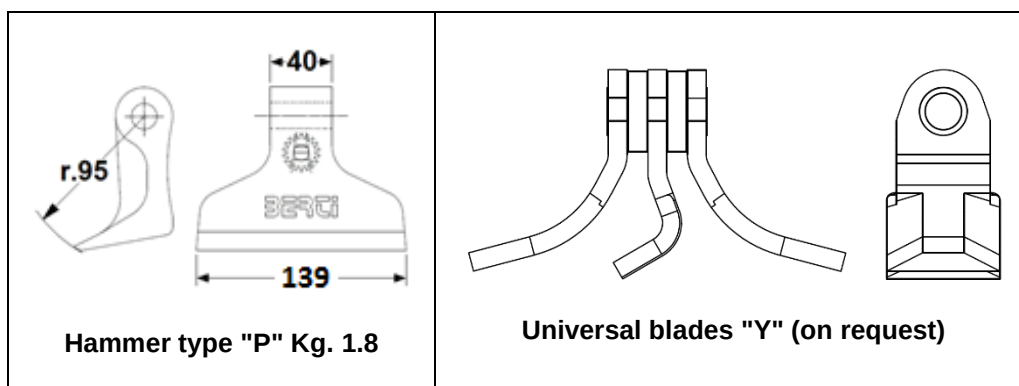
Used oil must be properly recovered and should not be released in the environment, since, according to the prevailing legislation, it is classified as hazardous waste and as such should be given to specialised collection sites. Contact the "Consortium for used oils" for the collection of waste oil.

5.7 TOOLS WEAR CHECK

The mulcher tools must be visually checked for any signs of wear. Replace them if the material is not perfectly cut or when observing that a slight increase of the absorbed power generates a significant increase of the oil temperature of the mulcher. If the machine is used with tools that are not sharpened, its performance will decrease.

The dimensions and weights of the tools are strictly controlled: if they are completely replaced, the rotor may not require dynamic balancing again (refer to: "TOOLS REPLACEMENT PROCEDURE").

Damaged or tools that are excessively worn might transmit vibrations to the machine; in this case, the operating cycle should be stopped immediately and it should be restored only after replacing the tools.



The lifetime of the tools depends on the type of operation and on the type of terrain being processed. Their complete replacement is recommended on average every 200 working hours.

WARNING: mounting only original tools is recommended.

5.8 TOOLS REPLACEMENT



All operations must be carried out by authorised workshops and specialised staff.



Attach the machine, lift it until it reaches the tools and place it on appropriate supports; use adequate lifting equipment to move the machine in terms of liftable and sustainable weight (see table 1.5.3 for data relating to the machine)



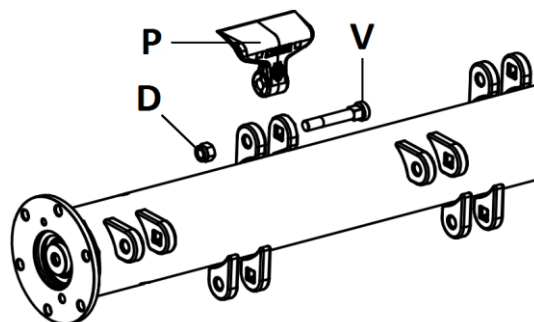
ATTENZIONE

In case only one tool should be replaced, it is recommended to replace the entire series.
 Using non-original tools can cause anomalous vibrations of the machine.
 When mounting the tools, pay attention to the assembly direction.



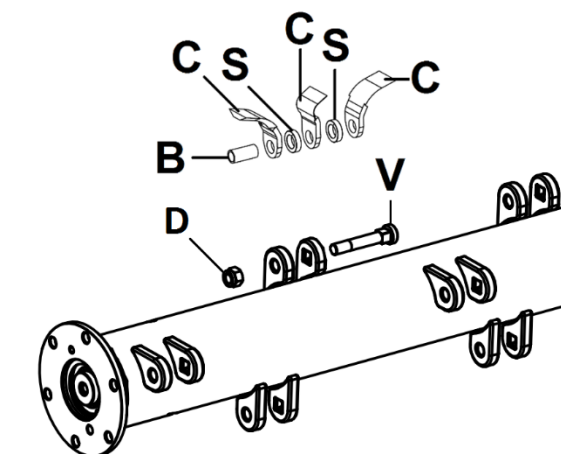
IF THE MACHINE ROTOR USES HAMMERS, PROCEED AS FOLLOWS:

Unscrew nut D, pick up hammer P and remove screw V.
 After removing the hammer, check the wear condition of the supports, paying particular attention to the oval holes, the squared housing of the screw head.
 If any of the described phenomena are present, contact the manufacturer and request further indications.
 Replace the new hammer A positioning it between the rotor supports, insert the new screw V taking care to align the square sub-head of the screw with the squared housing on the support.
 Mount the new nut D and fasten it.



IF THE MACHINE ROTOR USES BLADES, PROCEED AS FOLLOWS:

Unscrew nut D, pick up blades D and remove screw D being careful so as not to let spacers S and bushing B fall on the ground.
 After removing the blades, check the wear condition of the supports, paying particular attention to the oval holes, the squared housing of the screw head. If any of the described phenomena are present, contact the manufacturer and request further indications.
 Replace the new blades C placing them between the rotor supports, insert the new screw matching the square head of the screw with the square housing on the support.
 Mount the new nut D and fasten it.



Once all operations have been performed, reposition the machine on the ground by using the lifting devices and repeat the "Connection and start-up" procedure described in paragraphs 3.4. and 3.5.



ATTENZIONE

Pay attention to the direction in which you assemble the tools. If mounted in the wrong direction, the machine will not be able to cut.
 Periodically check the hammers screws and nuts fastening; if they are loose, the rotor may get damaged and dangerous ejections may occur.



PERICOLO

If after replacing the tools, the vibrations persist, proceed with a new dynamic balancing of the rotor at a specialised workshop.



The original spare parts provided by our company ensure complete and correct use of the machine.

5.9 REPLACEMENT OF THE SUPPORT SLIDES (IF PRESENT)

The machine can be equipped, on request, with anti-wear slides to be mounted as follows:



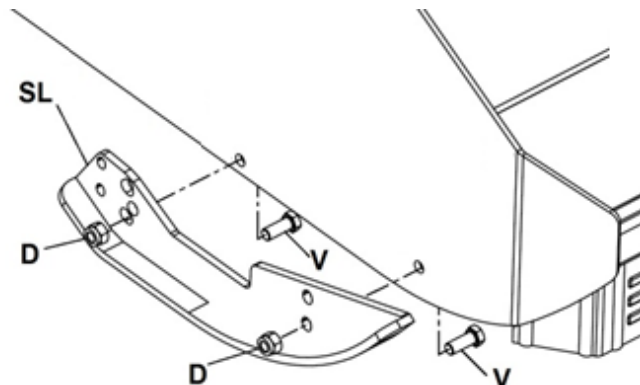
ATTENZIONE

All operations must be carried out by authorised workshops and specialised staff.



Attach the machine, lift it until it reaches adequate height and place it on appropriate supports; use adequate lifting equipment to move the machine in terms of liftable and sustainable weight (see table 1.5.3 for data relating to the machine).

Place the slide SL in the holes situated on the side; mount screws V by using nuts D; repeat the same operation on the opposite slide. The height of the slides can be adjusted according to the desired cutting height. Adjust the height of the slides equal to the height of the levelling roller. Once all operations have been performed, reposition the machine on the ground by using the lifting devices and repeat the "Connection and start-up" procedure described in paragraphs 3.4. and 3.5.



The original spare parts provided by our company ensure complete and correct use of the machine.

5.10 PANELS FRONT GUARDS REPLACEMENT



All operations must be carried out by authorised workshops and specialised staff.

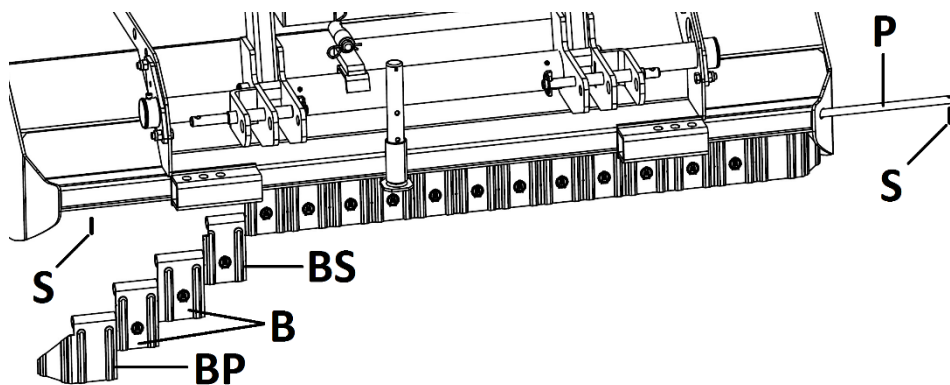
The machine is equipped with frontal guards consisting of panels or chains fastened to the machine crate. Panels must always be present and they must be in excellent state. Operating without panels means operating without guards, and therefore the use of the machine in such conditions is considered improper. The manufacturer declines any responsibility for serious damages/accidents to persons, property and animals due to improper use of the machine.



Attach the machine, lift it until it reaches adequate height and place it on appropriate supports; use adequate lifting equipment to move the machine in terms of liftable and sustainable weight (see table 1.5.3 for data relating to the machine).

1. Remove the pin S;
2. Gradually unscrew the front protection pin P, making sure that the panels B do not fall to the ground;
3. Check for any damage; if any, proceed to immediate repair so as to restore the initial state;
4. Replace the panels (the first in the series must be notched BP), introducing them into the through-pin P; near the supports of the through-pin thread, introduce the notched panels leaving no gap between them.
5. Insert the pin S.





Once all operations have been performed, reposition the machine on the ground by using the lifting devices and repeat the "Connection and start-up" procedure described in paragraphs 3.4. and 3.5.



The original spare parts provided by our company ensure complete and correct use of the machine.

5.11 CHAINS FRONT GUARDS REPLACEMENT



ATTENZIONE

All operations must be carried out by authorised workshops and specialised staff.

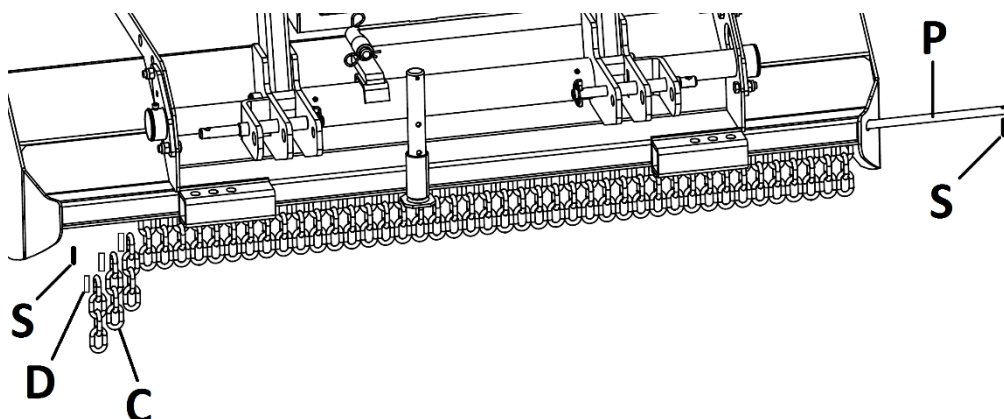
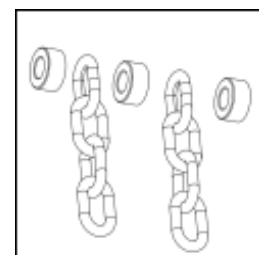
The machine can be equipped, on request, with chains front guards as an alternative to panels. The chains must always be present and must be properly stored. Operating without chains means operating without guards, and therefore the use of the machine in such conditions is considered improper. The manufacturer declines any responsibility for serious damages/accidents to persons, property and animals due to improper use of the machine.



PERICOLO

Attach the machine, lift it until it reaches adequate height and place it on appropriate supports; use adequate lifting equipment to move the machine in terms of liftable and sustainable weight (see table 1.5.3 for data relating to the machine).

1. Remove the pin S;
2. Gradually unscrew the front protection pin P, collecting chains C and spacers D;
3. Check for any damage; if any, proceed to immediate repair so as to restore the initial state;
4. Replace chains C by putting them into the through-pin P alternating them with the spacers D;
5. Insert the pin S.



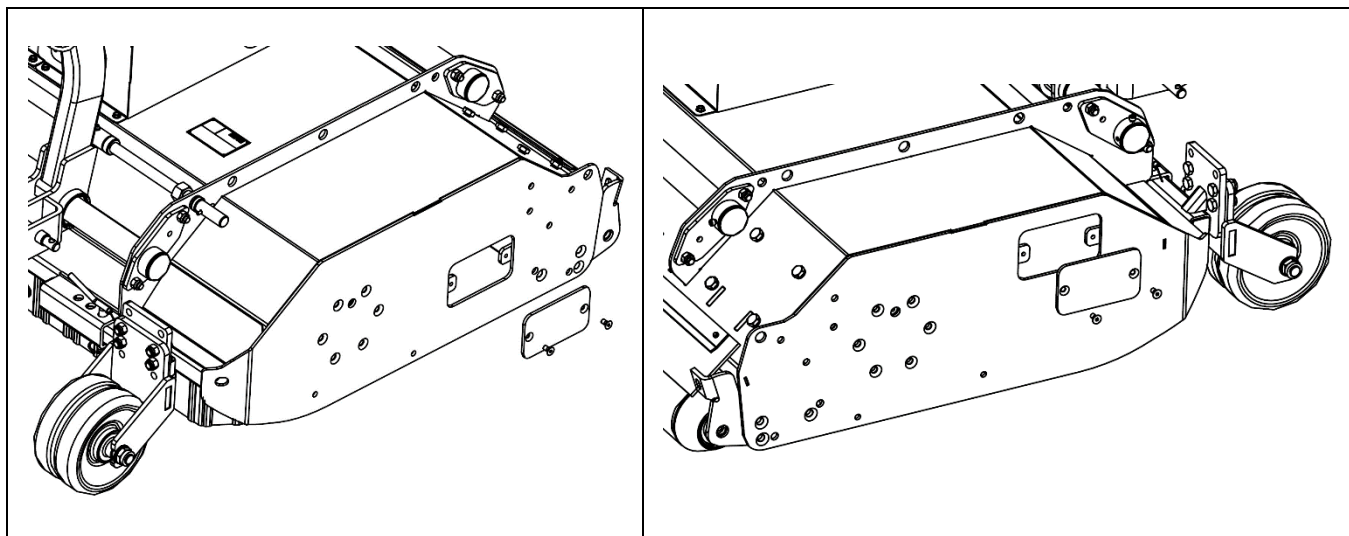
Once all operations have been performed, reposition the machine on the ground by using the lifting devices and repeat the "Connection and start-up" procedure described in paragraphs 3.4. and 3.5.



The original spare parts provided by our company ensure complete and correct use of the machine.

5.12 CLEANING THE MACHINE

Periodically clean the machine using water under pressure, paying particular attention to any flammable residues. Make sure that the hot parts of the machine are free from straw, hay or flammable residues. Using the dedicated openings on the sides, perform internal cleaning only with compressed air.



5.13 WAREHOUSING - STORAGE

If the machine is immobilised for long periods, it must be stored in a place sheltered from atmospheric conditions and be protected to avoid damage.

Before every wintering, proceed as follows:

- Free the rotor and the tools from trimmer residues;
- Clean the machine thoroughly;
- Carry out a general visual control of the machine to identify structural damage, to detect deep paint abrasions, to check that all original safety pictograms are in place, and that they are integral and legible;
- Grease all mechanical parts and fastening pins;
- If possible, recover the machine in a covered place, on flat and consistent ground.



Make sure that the storage temperature is between 0 °C and 50 °C.



ATTENZIONE

In order to dispose of the oil and of all the other materials used for gathering, cleaning it, etc., follow the standards in force in the country of use.

5.14 COMMISSIONING OR PUTTING INTO SERVICE AFTER A LONG PERIOD OF INACTIVITY

Before using the machine for the first time, or after a long period of downtime, proceed as follows:

- Verify that the machine is not damaged;
- Check mechanical parts; they must be in good conditions and not rusty;
- Check the wear condition of the tools;
- Accurately grease all mobile parts;
- Ensure that there are no oil leakages coming from the fittings or from the pipes;
- Ensure that all the protections are complete and correctly positioned.

5.15 SCRAPPING



In the event of scrapping, the machine must be disposed of in suitable waste disposal sites, in compliance with the laws in force in the country of use.

Before scrapping, separate the parts in rubber or plastic as well as the electric and electronic equipment (if present).

Recover any waste oils and dispose of them at relevant collection centres.

The parts made only in plastic, aluminium, steel, can be recycled, if collected by appropriate centres.

6 SCHEDULED MAINTENANCE TABLE

Description	Checks
GENERAL MACHINE CHECKS	
Rotor greasing	Every 8 hours of work
Roll greasing	Every 8 hours of work
Tiller greasing	Every 8 hours of work
Automatic belt tensioner greasing	Every 8 working hours
Mechanical movement greasing	Every 8 hours of work
Cardan shaft greasing	Grease as indicated in the use and maintenance booklet of the cardan shaft provided by the manufacturer
Machine bolts fastening check	After the first 4 h and then every 50 h
Belt tension check	After the first 4 h and then every 50 h
Tools wear and fastening check	Before each work shift
Tools, screws and nuts replacement	Every 200 working hours or when damaged or when worn
Transmission belts replacement	Every 400 hours or when too worn out
Pulleys replacement	Every 400 hours or when too worn out
Rotor balancing	Every partial or total replacement of tools
Replacing the support slide (if present)	Every 400 hours or when too worn out
Guards integrity check	Every machine start-up. Restore the guards if worn and/or damaged.
Pictograms check	Every machine start-up. Restore if worn and/or damaged.
HYDRAULIC PLANT	
Check tightening of hydraulic pipes	At each start-up and each fluid leakage
Check of the hydraulic pipes	Check at every start-up. In case of damage or seepage, replace immediately

7 TROUBLESHOOTING TABLE

PROBLEM	CAUSE	SOLUTION
Uneven or poor quality of mulching	- Worn or damaged tools - Improperly adjusted machine - Machine clogged - The rotor does not rotate as it should - Rotor roll support - Worn slides - Terrain with excessive ripples	- Replace the tools - Carry out adjustments - Decrease working vehicle advancement speed - Check the speed of the tractor's PTO - Replace the roll support - Replace the slides - Make more working passages
Premature tool wear	- Stony/sandy land - Tools cutting height too - The rotor rotates too quickly or too slowly	- Searching - Adjust cutting height - Check the speed of the tractor's PTO
Machine noise	- Unbalanced rotor - Counter-weights loss - Damaged, worn or missing tools - Worn bearings	- Balancing in specialised workshop - Balancing in specialised workshop - Replace the tools - Replace the bearings
Excessive heating of the gearbox	- Mulcher oil level too low - Oil finished - Excessive amount of material to be processed	- Add more oil in the mulcher - Replace oil - Make more passages or decrease the advancement speed
Frequent breakage of the bearings	- No bearings lubrication - The rotor was stressed excessively - Unbalanced/folded rotor	- Grease the bearings following the scheduled maintenance Table - Use the machine in compliance with the allowed working limits - Balancing performed at specialised workshop or rotor replacement
The rotor does not rotate	- Foreign body stuck - Breakage of the bearing - Breakage of the gearbox - Breakage of the transmission - Breakage of the belts - Breakage of the rotor shaft	- Consult the "machine clogging" procedure - Seals and bearings replacement - Gearbox replacement - Transmission replacement - Belts replacement - Rotor replacement
Worn/torn seal rings	- Excessive lubrication - High rotor rotation speed - Incorrect seals assembly	- Change the seal rings - Check the machine adjustment - Ask the manufacturer for further information
Broken/detached frame	- Worn sheet steel - Operate with machine on the ground - Unbalanced rotor	- Repair at an authorised workshop - Lift the machine when manoeuvring - Balance the rotor
Rear supporting roll locked	- Broken supports - Missed greasing - Folded support roll - Wet ground - Material encrusted on the supports	- Supports replacement - Grease - Replace the support roll - Avoid working in unfavourable working conditions - Clean the support lubricate
The rotor vibrates	- The rotor is unbalanced - The tools are worn/broken - Folded rotor	- Balancing in specialised workshop - Replace the worn and/ or deteriorated and/or missing tools - Replace the rotor

8 SPARE PARTS

Repairs and replacements must be performed using original spare parts, which must be requested from the Dealer. Remember that the request for spare parts must be correct and accompanied by the following indications:

- Machine type;
- Serial number;
- Spare part code that can be found in the Spare Parts Catalogue.

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

9 WARRANTY

Check on delivery that the machine was not damaged during transportation and that the accessories are complete.

9.1 CONDITIONS OF WARRANTY:

- The manufacturer guarantees its products for a period of 12 months from the delivery, stating that the form attached hereto is shipped from the manufacturer and completely filled within 15 days from the delivery date (refer to the delivery invoice document).
- In accordance with the terms mentioned above, the manufacturer is deemed to agree to provide warranty service all parts to be replaced according to his assessment, or in the opinion of its authorized representatives, with respect to defective parts in both the material and the construction. In any case, the transport and labour costs will be borne by the customer.
- The warranty does not include payment for damages due to improper use of the machine or for parts subject to wear and tear such as: hammers, blades, belts, etc.
- The manufacturer is not responsible for accidents to the operator or third parties arising from improper use of the machine.
- This warranty is void if:
 - 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) If there is an incorrect manoeuvre error;
 - d) The machine was not properly maintained/lubricated;
 - e) The permitted power limit is exceeded;
 - f) Whenever the instructions given in this manual are not followed;
 - g) Any unauthorised modifications were performed.
- Any damage to and faults on the machine that have occurred during or after the period covered by the warranty do not involve any right to suspend payments for already delivered goods. No breakage or fault may be used as a motive to delay the payment.
- The manufacturer reserves the right, at any time, to make any change in order to improve his product, and he is not obliged to add such changes to previously manufactured machines that have already been delivered or that are being built.
- These general warranty conditions replace and cancel any other previous condition, expressed or implied.

CERTIFICATO DI GARANZIA GUARANTEE CERTIFICATE GARANTIESCHEIN CERTIFICAT DE GARANTIE CERTIFICADO DE GARANTÍA GARANTIBEVIS GARANTIECERTIFICAAT	 
Nome / Name / Nom / Nombre / Namn / Naam Indirizzo / Address / Anschrift / Adresse / Dirección / Adress / Adres	Si conferma di aver ricevuto il libretto uso e manutenzione e di essere stati informati circa il trattamento dei dati personali in base al Decreto Lgs. 196/03. We confirm to have received the instructions manual and that we have accepted all the information of the Legislative Decree 196/03 about the treatment of personal information. Wir bestätigen, dass wir das Betriebs- und Wartungshandbuch erhalten haben und dass wir alle Informationen über die Verarbeitung unserer persönlicher Daten (Verordnung 196/03) gelesen haben. Nous confirmons d'avoir reçu la notice d'emploi et d'entretien de l'appareil et d'être informés notamment le traitement de nos coordonnées selon le décret législatif 196/2003. Se confirma la recepción del manual de uso y mantenimiento y haber sido informado acerca del tratamiento de los datos personales en base al Decreto legislativo 196/03. Undertecknad bekräftar mottagandet av användar- och underhållsmanualen och har informerats angående hantering av personuppgifter enligt lagdekret 196/03. Ik bevestig de handleiding voor gebruik en onderhoud te hebben ontvangen en dat ik geïnformeerd werd betreffende de behandeling van mijn persoonlijke gegevens, krachtens het Wetsdecreet 196/03. Firma dell'acquirente / Purchaser's signature / Unterschrift des Käufers / Signature de l'acheteur / Firma del comprador / Kopers onderschrift / Handtekening van de koper Data /Date/Datum/Fecha

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting or typing. There are no margins, text, or other markings on the page.



BERTI[®] MACCHINE AGRICOLE S.p.A.
Via Musi, 1/ A - 3 - 4
37042 Caldiero (Verona) - Italy
Tel. +39.045.6139711 - Fax +39.045.6150251
info@bertima.it – www.bertima.it

