

INSTRUCTION MANUAL

DITCH MULCHER

Brand: BERTI Macchine Agricole
Versions: TA/P – TA/PS



📖 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. 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.

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 its 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.



ATTENZIONE

For the SUPPLIER, DEALER and IMPORTER: the person in charge of delivering the machine to the end user must apply it to the tractor. Therefore it is their responsibility to read this instruction manual and understand its contents before finally delivering the machine. 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	Ditch 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.
THREE-POINT CONNECTION	Connection device that allows connecting the mulcher to the tractor by setting the width of the parallel of the tractor. The adjustment rods of the parallels have notches along the thread of the logs, in which are engraved the categories. The three-point connection may be of category Cat. 1, Cat. 2, Cat. 3 or Cat. 4 (if connecting a mulcher of Cat. 3 simply adjust the regulators of the parallels of the tractor on Cat. 3, so the tractor will be perfectly aligned with the measurements of the mulcher).
machine operating area	The operating area, fixed at 50 m , delimits the machine operating area and should be considered "dangerous zone" . Persons, things and animals must remain outside the machine operating area.
 PERICOLO	DANGER - This signal indicates and imminent and real dangerous situation, that may cause serious injuries or death if not avoided.

 ATTENZIONE	WARNING - This signal indicates a potentially dangerous situation, that may cause serious injuries or death if not avoided. Dangers marked by this signal present lesser degree of risk of serious injury or death than those indicated by the signal DANGER.
 CAUTELA	CAUTION - This signal 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. INFORMATIONS 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, in all three of its versions, 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 and type;
- Serial Number;
- Year of manufacture;
- Mass;
- 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 14 - 37042 G. L. FERRO - VR - ITALY www.bertima.it - www.bertiprofessional.it - info@bertima.it
MADE IN ITALY	
Modello - Model - Modèle - Modell - Modelo Matricola - Serial Number - Numéro de série - Seriennummer - Matrícula Anno Produzione - Manufacturing Year - Année de Production - Jahr der Produktion Massa - Weight - Poids - Gewicht - Peso (kg) Versione Modello - Model Year - Année du Modèle - Modelljahr - Año del Modelo	

TA/P

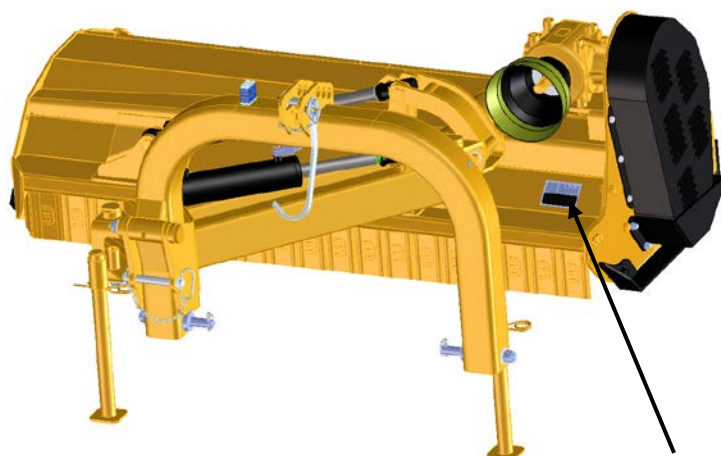
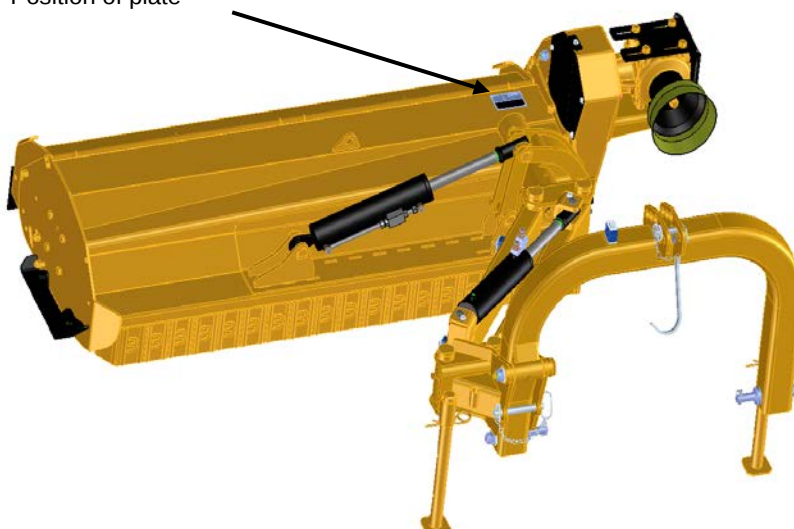


Plate location

TA/PS

Position of plate



1.4. CE CERTIFICATE OF CONFORMITY OF THE MACHINE

 **BERTI**
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Tel. +39 045 6139711 - Fax +39 045 6150251
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 Dichiarazione CE di Conformità ai sensi della direttiva 2006/42/CE e 2014/30/EU(*)
EC Certificate of Conformity - conforming to EEC Directives 2006/42/CE and 2014/30/EU(*)
Déclaration de conformité pour la CEE conforme à la directive de la 2006/42/CE et 2014/30/EU(*)

La Ditta / We / Nous **BERTI Macchine Agricole S.p.A. Via Musi 1/a - 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 2014/30/EU (*). Per la verifica della macchina sono state consultate le seguenti norme armonizzate:

declare 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 2014/30/EU (*), and according to the European harmonized standards:

déclare sous notre seule responsabilité que le produit faisant l'objet de la déclaration est conforme aux prescriptions fondamentales en matière de sécurité et de santé stipulées dans la Directive de la 2006/42/CE et 2014/30/EU(*). Nos déclarations que les normes harmonisées suivantes ont été appliquées:

UNI EN 13524:2014
UNI EN ISO 4254-1:2015
UNI EN 15811:2015

Nonché le seguenti specifiche tecniche:
And the following technical specifications:
Et les spécifications techniques suivantes:

ISO 11684:1995

(*)
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 that are subject to the directives/harmonized norms/technical terms here indicated.
Valable uniquement si la machine est équipée avec des dispositifs/accessoires assujettis aux directives/normes harmonisées/spécifications techniques indiquées ici.

MODELLO -- TYPE --
Modèle

MATRICOLA -- SERIAL
NUMBER -- Numéro de
série

Custode del fascicolo tecnico Technical file repository
Dépositaire du dossier technique
MARIO BERTI
C/o Ufficio Tecnico: BERTI MACCHINE AGRICOLE S.p.A.
Via Musi 1/a - 3 - 37042 CALDIERO (Verona) - ITALY
Caldiero, 03/06/2016

per la società / for the Company
für die Firma / pour la société
BERTI Macchine Agricole S.p.A.
BERTI MARIO
Amministratore Unico

La presente certificazione è parte integrante della macchina
This EC certificate is an integral part of the unit
Cette déclaration de conformité est partie intégrative de l'appareil

Cod. Fisc. e Reg. Impr. di VR n° 02068150234 - P. IVA : 02068150234 - R.E.A. VR 64849 - Cap. Soc. € 151.704,00 Iv
Società soggetta a direzione e coordinamento da parte della società HB Holding Berti S.r.l. R.L. di VR0306950241

1.5. MACHINE INFORMATION

1.5.1. SPECIFIED USE

The ditch mulcher model TA/P and TA/PS has been designed to be used exclusively in the agricultural sector, for mulching grass, plant residues, bushes and shoots up to a maximum diameter of about 7-8 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 rotor, activated by the tractor power points via cardan connection.

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

NEVER USE THE MACHINE FOR DIFFERENT PURPOSES FROM THOSE PROVIDED

The use of the mulcher 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.



PERICOLO

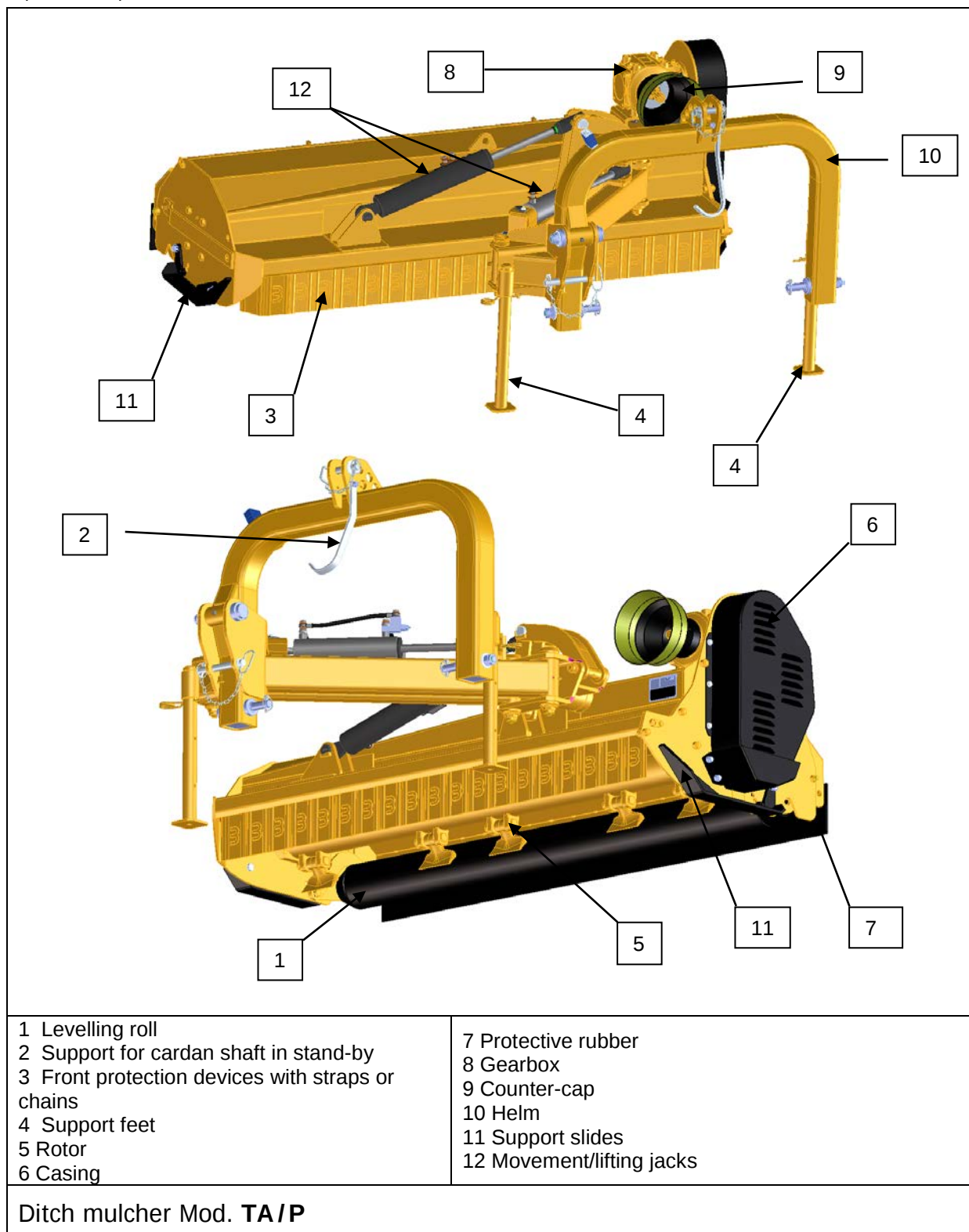
Any other use of the machine (different from the one indicated in the instruction manual) should be considered unauthorised and therefore dangerous.

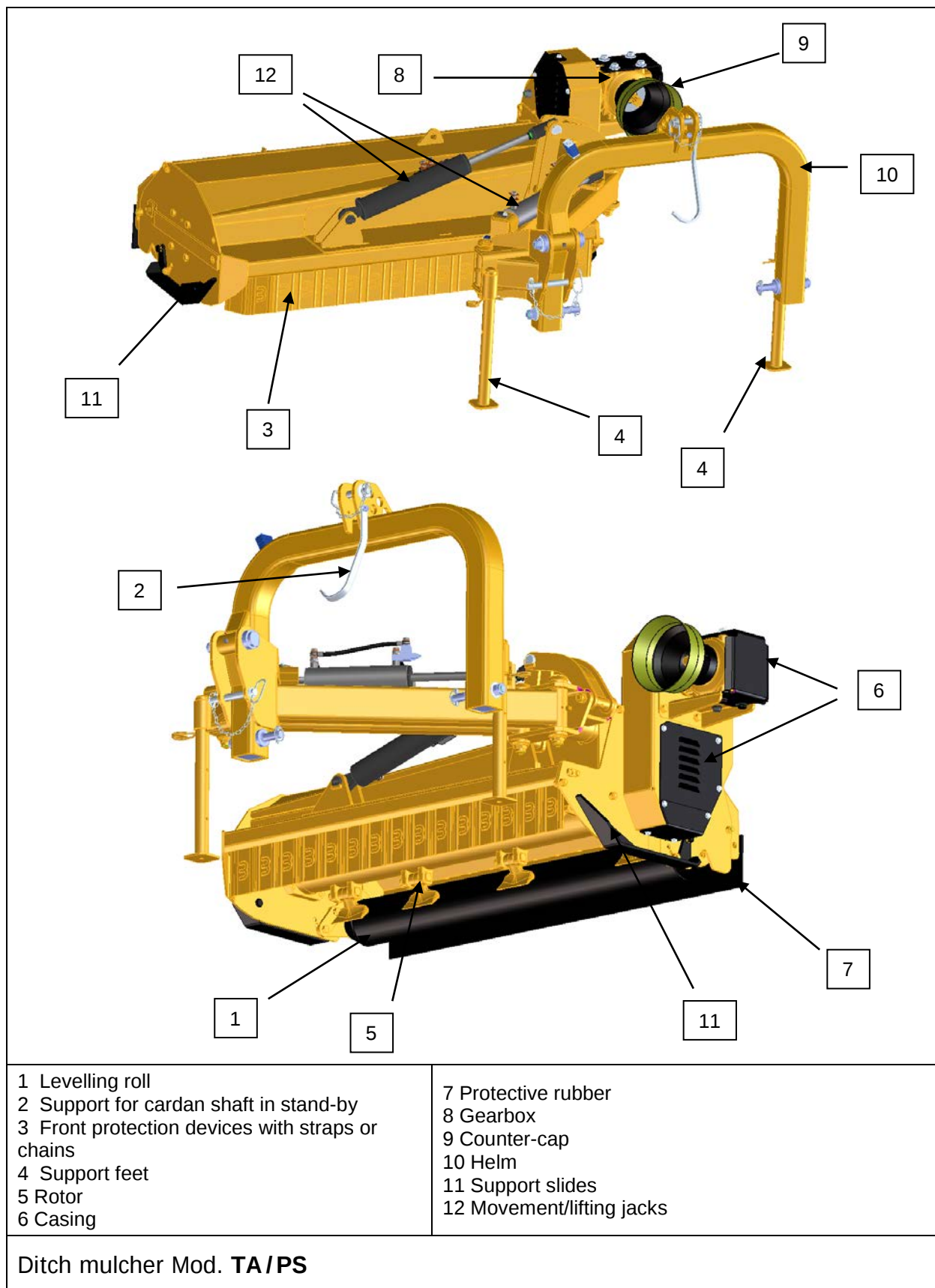
1.5.2. DESCRIPTION

The machine has an operating component consisting of a rotor with horizontal axis, on which the mulcher tools are mounted , that rotates at high speed.

The mulcher is made of:

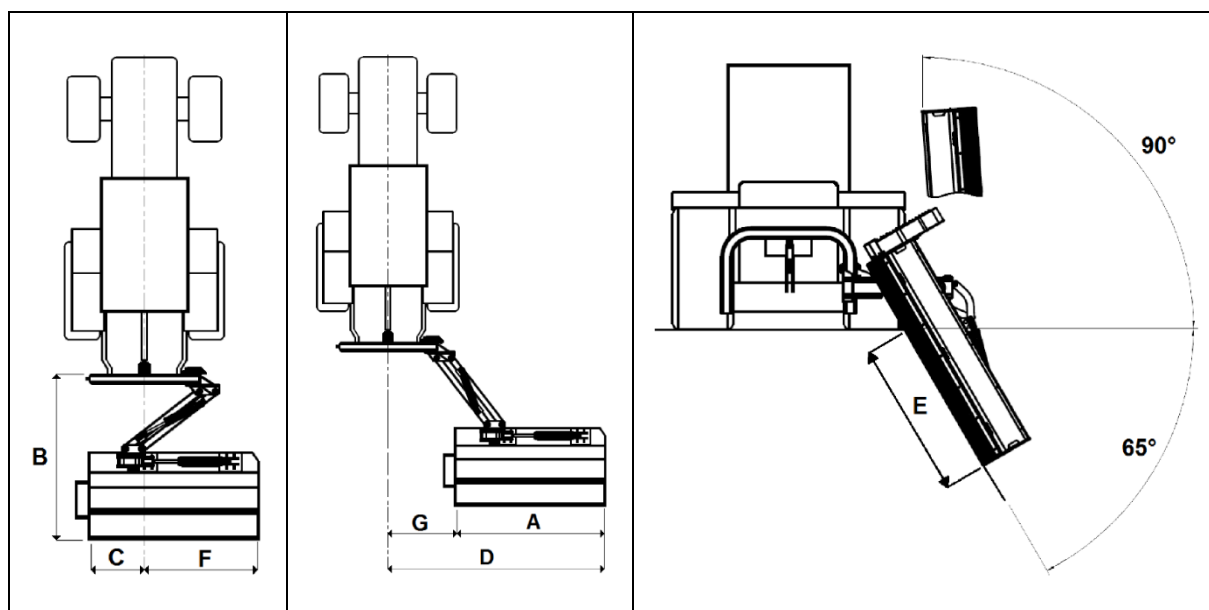
- A chassis, a three-point connection system, a cardan shaft coupling, a gearbox, a transmission (pulleys, clamps, automatic belt tensioner), a rotor, a set of mulcher tools, a support device for the parking position, a rear roller and CE accident prevention protections.





1.5.3. TECHNICAL DATA

The machine can be applied to tractor with power between 58 and 148 kW (80 and 200 HP).
It can operate behind the tractor, on the side, on the banks of ditches tilted upwards or downwards.
The drawing and the tables below, indicate the machine operation field.



Mod.	A	B	C	D	E	F	G
	cm	cm	cm	cm	cm	cm	cm
TA/P 160	160	203	57	238	104	103	78
TA/P 180	180	203	57	258	124	123	78
TA/P 200	200	203	57	278	144	143	78
TA/P 220	220	203	57	298	164	163	78
TA/P 250	250	203	57	328	194	193	78

Mod.		 HP					 KG	 KG	
	cm	Min	Max	n°	n°	n°	PTO	min	max
TA/P 160	160	80	200	14	42	5	540	920	1075
TA/P 180	180	85	200	16	48	5	540	970	1125
TA/P 200	200	85	200	18	54	5	540	1020	1175
TA/P 220	220	85	200	20	60	5	540	1070	1225
TA/P 250	250	100	200	22	66	5	540	1135	1290

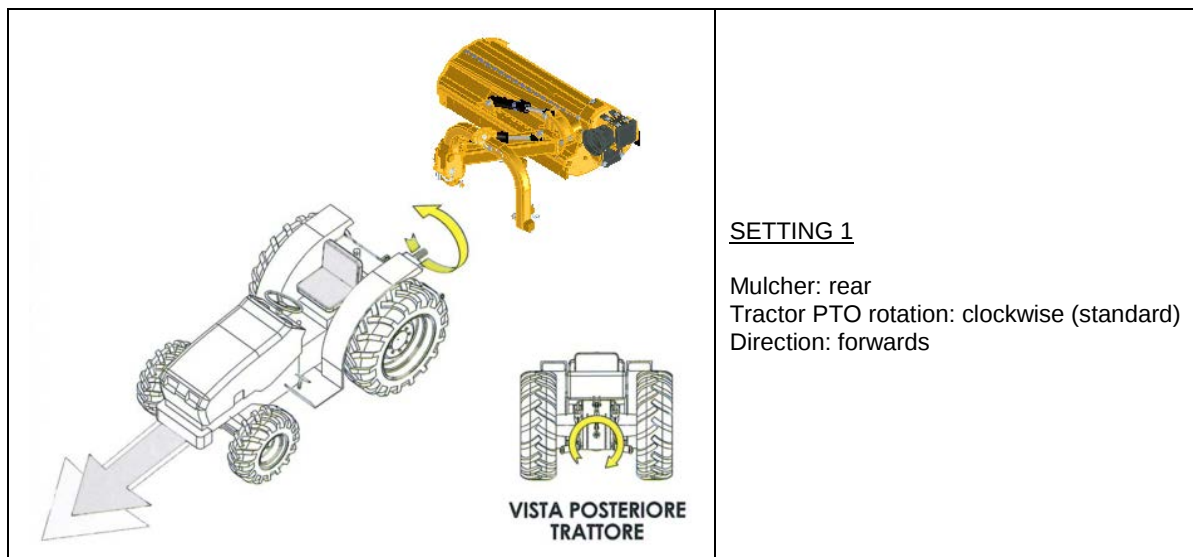
Table 1

Mod.	A	B	C	D	E	F	G
	cm	cm	cm	cm	cm	cm	cm
TA/PS 180	180	203	17	297	164	163	117
TA/PS 200	200	203	17	317	184	183	117
TA/PS 220	220	203	17	337	204	203	117
TA/PS 250	250	203	17	367	234	233	117

Mod.		 HP							
	cm	Min	Max	n°	n°	n°	PTO	min	max
TA/PS 180	180	90	200	16	48	5	540	1015	1170
TA/PS 200	200	100	200	18	54	5	540	1060	1215
TA/PS 220	220	100	200	20	60	5	540	1110	1265
TA/PS 250	250	100	200	22	66	5	540	1175	1330

Table 2

SETTINGS:

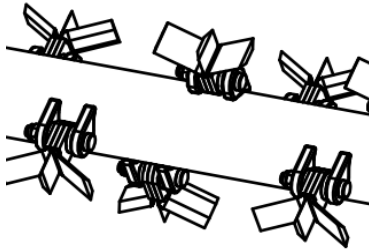
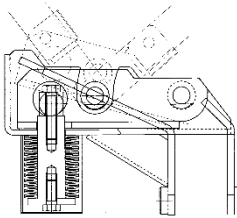


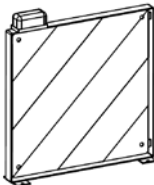
1.5.4. ACCESSORIES

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													
Knives "Y"	<table border="1"><thead><tr><th></th><th>No.</th></tr></thead><tbody><tr><td>TA/P - TA/PS 160</td><td>42</td></tr><tr><td>TA/P - TA/PS 180</td><td>48</td></tr><tr><td>TA/P - TA/PS 200</td><td>54</td></tr><tr><td>TA/P - TA/PS 220</td><td>60</td></tr><tr><td>TA/P - TA/PS 250</td><td>66</td></tr></tbody></table> 		No.	TA/P - TA/PS 160	42	TA/P - TA/PS 180	48	TA/P - TA/PS 200	54	TA/P - TA/PS 220	60	TA/P - TA/PS 250	66	-- (As an alternative to the hammers)
	No.													
TA/P - TA/PS 160	42													
TA/P - TA/PS 180	48													
TA/P - TA/PS 200	54													
TA/P - TA/PS 220	60													
TA/P - TA/PS 250	66													
Chain sections + Tyre		-- (as an alternative to the panels)												
BERTI Anti-shock system	 	120 kg												
Pair of support slides		10 kg												
Electronic hour meter		2 kg												

Double-acting distributor with 2 levers and flexible cables	 	10 kg
Road sign kit		5 kg
Double omocinetic cardan shaft		40 kg



It is strictly forbidden to work with the rear hood open or in any position other than those indicated and shown in the instruction manual in chapter 3 paragraph 3.6. The risk of projection is high! Keep the hood open only for inspections or for maintenance operations, with the tractor engine off, the parking brake engaged, the pto disabled and the ignition key removed from the dashboard and kept by the operator.

1.6. MATERIALS THROW

 PERICOLO	During some of the operations performed with the machine, you may check the materials projection; in particular, you should pay utmost attention to: - Make sure that the protections of the operating components and the rear inspection hood are properly placed and effective; - 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. The use of the machine is strictly forbidden if the tractor to which is connected is not provided with cabin made of anti-break / armoured / 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

 PERICOLO 	Even when operating without load, the machine exceeds 80dB(A) and the operators must use hearing protective equipment 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 cause damages 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.

 PERICOLO	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 mulcher is still running.

 PERICOLO	The use of the machine is strictly forbidden if the tractor to which is connected is not provided with cabin made of anti-break / armoured / 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.
	During the operating phases, the user must always stay inside the cabin, where he is safe. It is strictly forbidden the operation with the doors/windows open. 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 lifting persons, animals or objects.
	It is strictly forbidden to use the machine for transporting 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 of 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.
	Do not use the machine if you are tired, ill or under the effect of alcohol, medicines or drugs.
	Carefully check the machine each time before starting it.
	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.

 PERICOLO	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.
	The signs on the machine provide important indications: follow them for your safety.
	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.
	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

 ATTENZIONE	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, tubes, 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 by the use and maintenance manual. Make sure that the safety pictograms are readable. Clean them using a cloth, water and soap.

2.3.1. DESCRIPTION OF THE PICTOGRAMS PLACED ON THE MACHINE

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		GENERAL WARNINGS.
12		TENSIONED BELTS.	13		DO NOT REMOVE THE BELTS TENSIONER.
14		RESTING FOOT SAFETY LOCK.	15		NOTES ON WARRANTY.
16		WARNING – DANGER: this machine must be used by a single operator; it is forbidden to climb onto or ride on the machine; risk of suspended parts falling.			

17

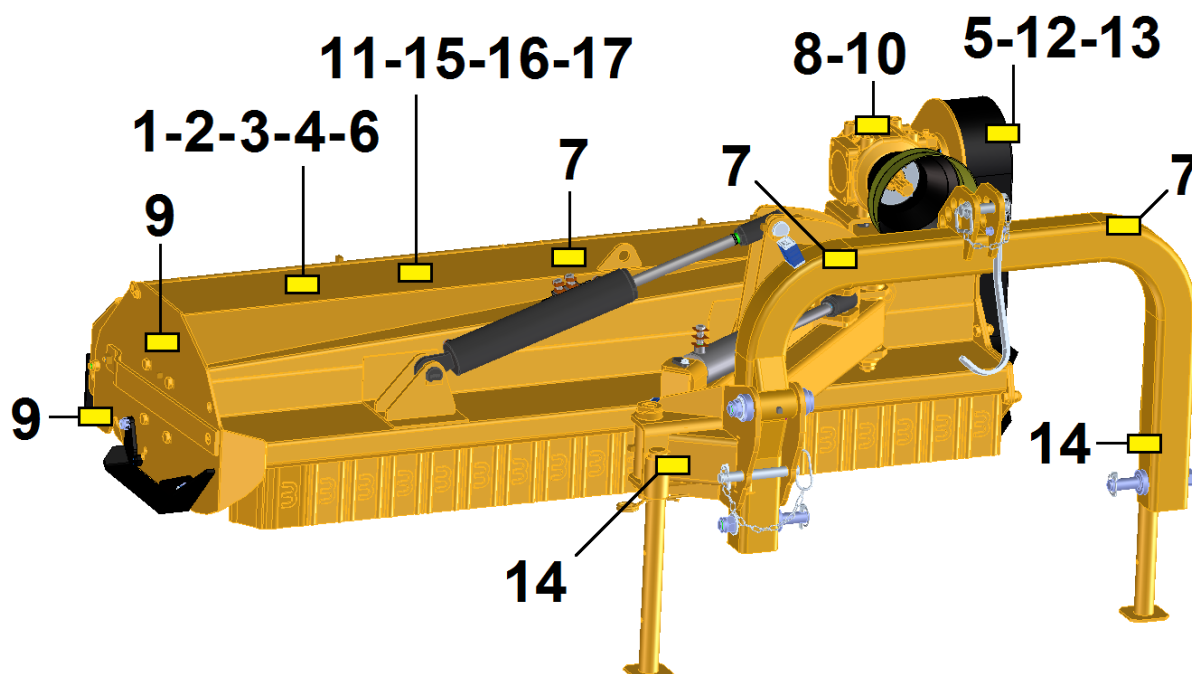
	LUBRIFICANTI RACCOMANDATI - recommended lubricant empfohlenen Schmiermittel - lubrifiant recommandé					
	AGIP BLA SIA 460	IP MELLANA OIL 460	ESSO SPARTAN EP 460	SHELL OMALA 460	MOBIL MOBILGEAR 624	BP ENERGOL GR-XP 460
GREASE 	GREASE MU EP 2	ATHE SIA EP GREASE 2	BEACON EP 2	ALVANIA GR EP 2	MOBILUX EP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

RECOMMENDED LUBRICANTS.

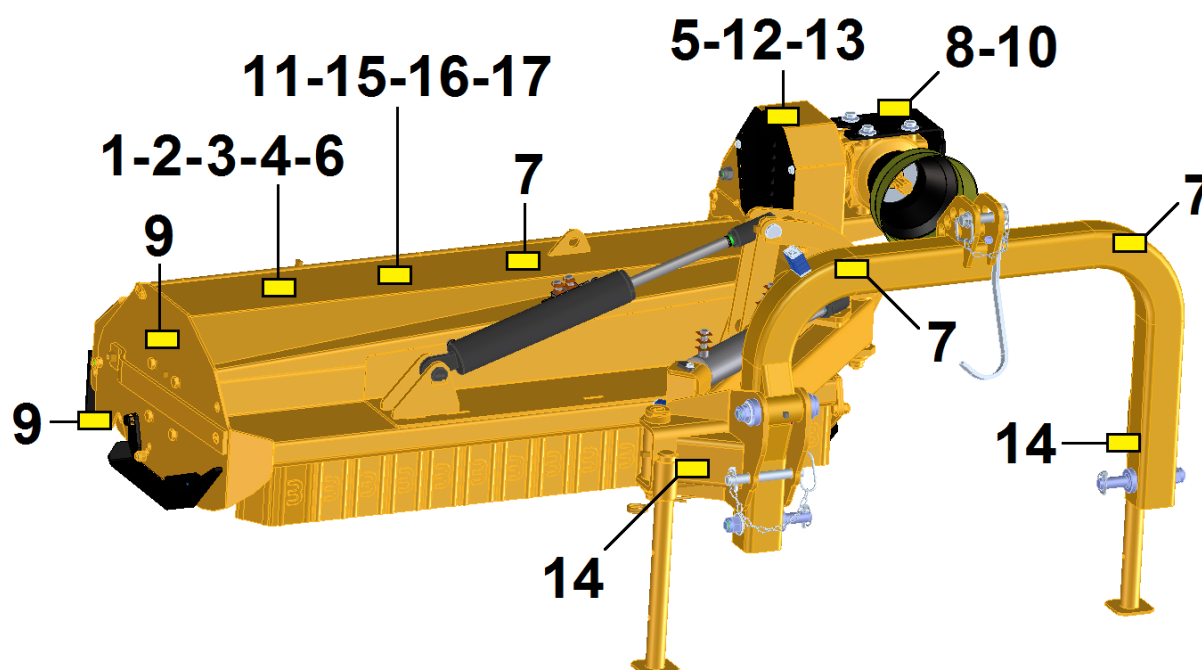
2.3.2. POSITION OF PICTOGRAMS ON THE MACHINE

The pictograms are inserted as indicated in diagram:

TA/P



TA/PS



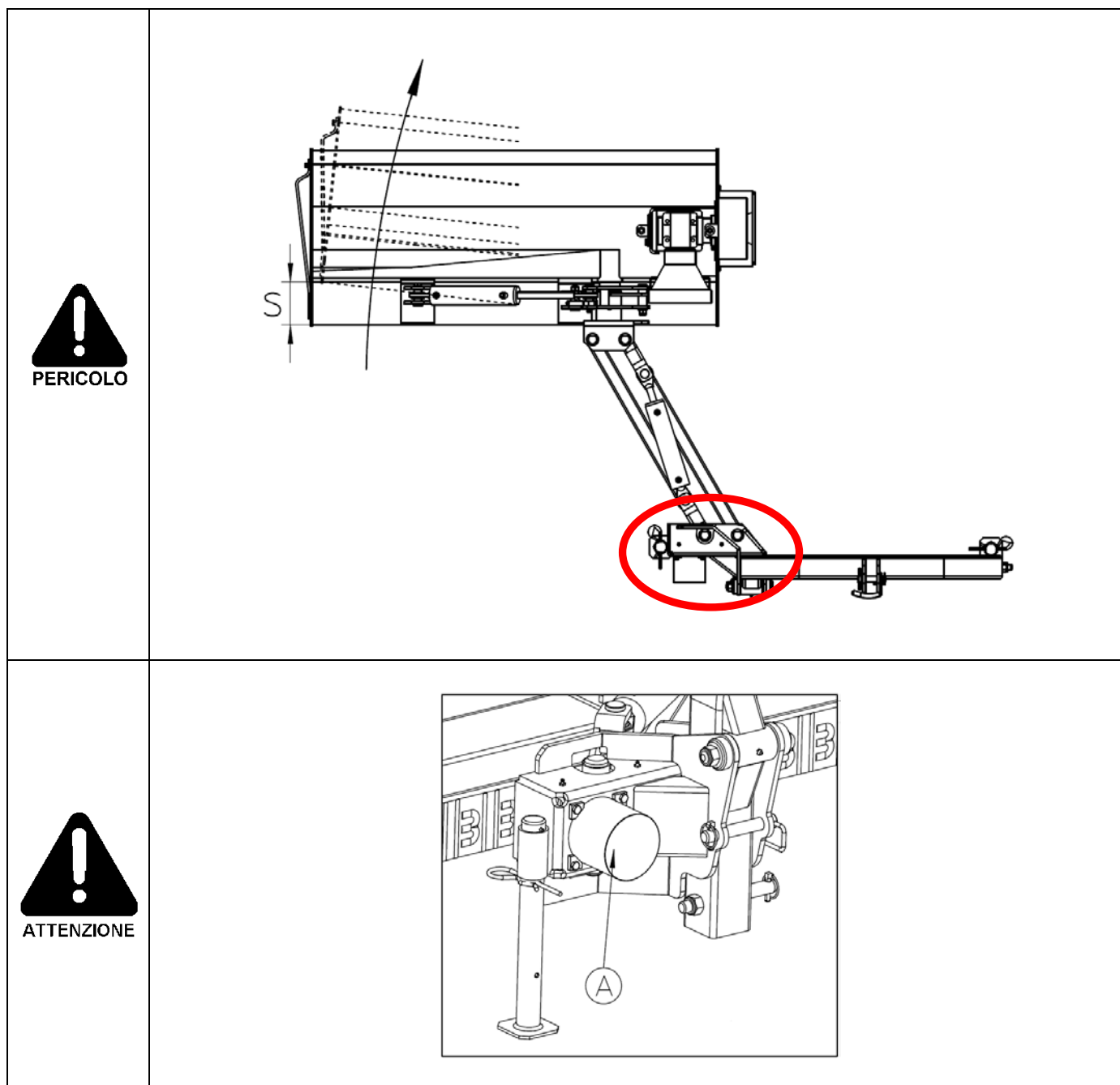
2.4. "BERTI" "ANTI-SHOCK" SAFETY SYSTEM (OPTIONAL)

This innovative system has been designed and built by the company "BERTI Macchine Agricole S.p.A." to increase the safety of the machine and operator while working on the field, when working with the TA series mulcher protruding from the tractor.

This technology allows the machine to respond immediately to an impact in an elastic manner, with a movement S opposite to the direction of travel and horizontally to the ground, in the event that the machine collides with a fixed obstacle on the ground while working (e.g. plant, pole).

This reaction prevents further damage to the machine, it prevents damage to the helm and it allows the operator to intervene in time by stopping the operation and moving the machine away from the dangerous obstacle.

The patented anti-shock consists of calibrated springs enclosed in box A, which allow for the machine - parallelogram assembly to move in the opposite direction to the direction of travel and then to return to the initial position thanks to the springs.



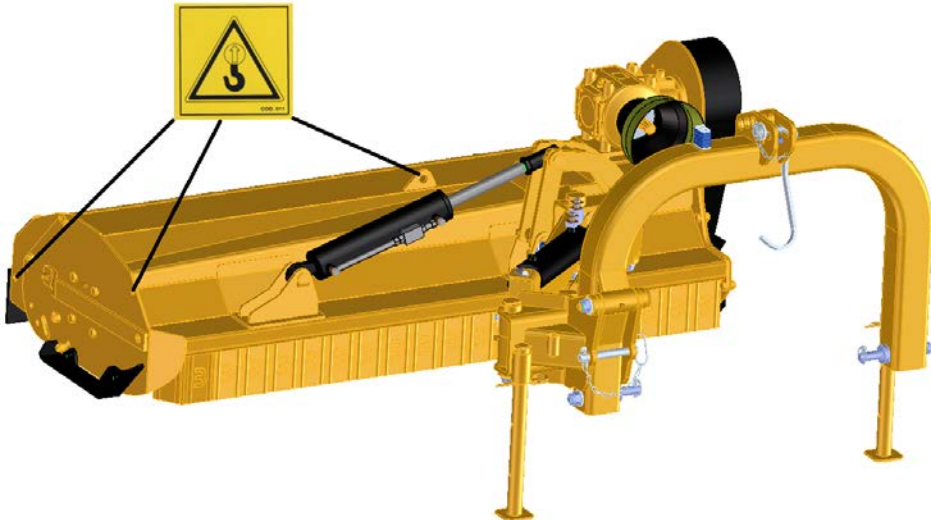
3. USE

3.1. INTRODUCTION

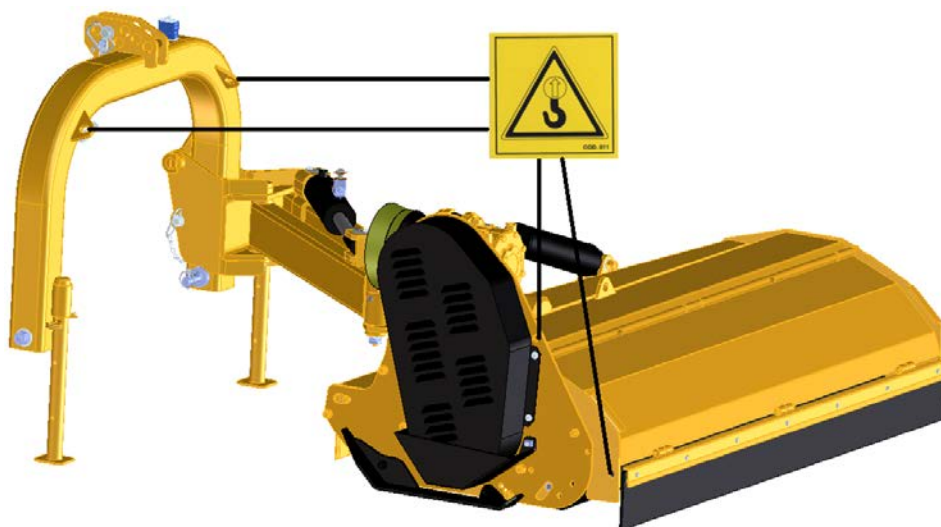
  ATTENZIONE	Before using the machine, carefully read and understand the instruction manual and get familiarised with the machine. The machine may only be used by expert and properly trained users.
	Keep all the parts of your body inside the tractor cabin, to reduce to a minimum the exposure to any external 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.
	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

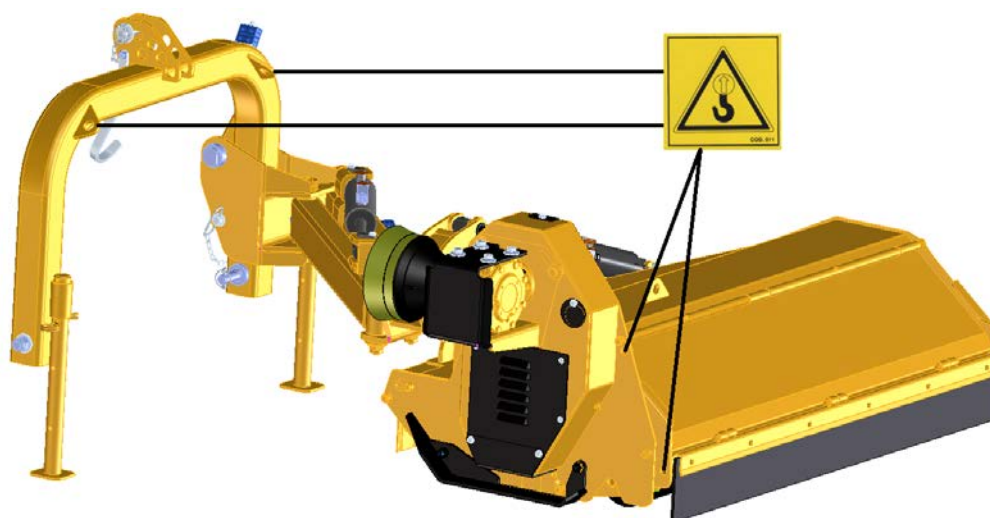
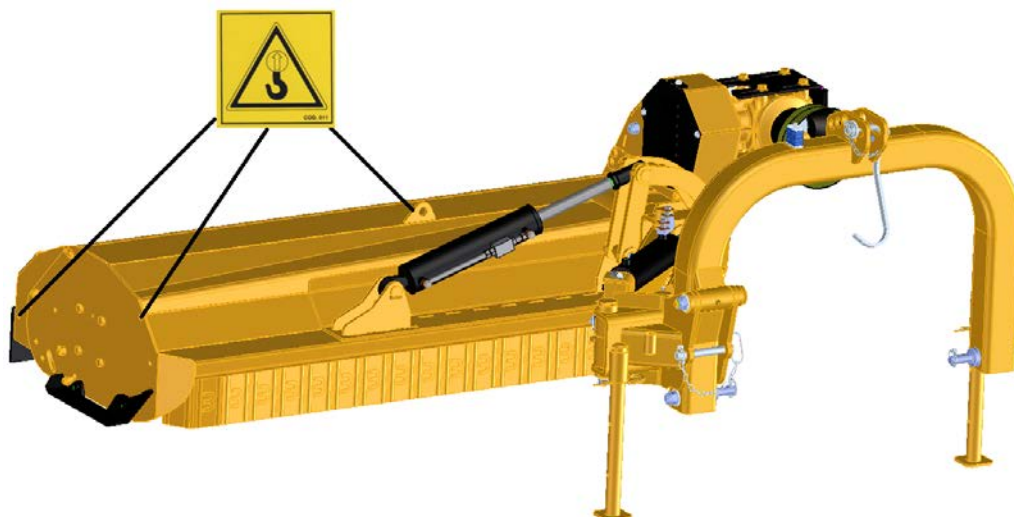
pay utmost attention to safety during the loading and unloading operations, that must be performed only by specialised personnel. When lifting the machine you must use the appropriate lifting points, indicated in the pictograms. Visually check the machine before handling it as to make sure that the unstable parts do not represent a danger.

 CAUTELA	Never lift or handle the machine anchoring it to the rotor!
	The manufacturer declines any responsibility regarding any damage to people, animals and things due to incorrect handling of the machine using lifting and transportation means of lower capacity than the weight values indicated in the table from paragraph 1.5.3. TECHNICAL DATA.
	TA/P 

TA/P



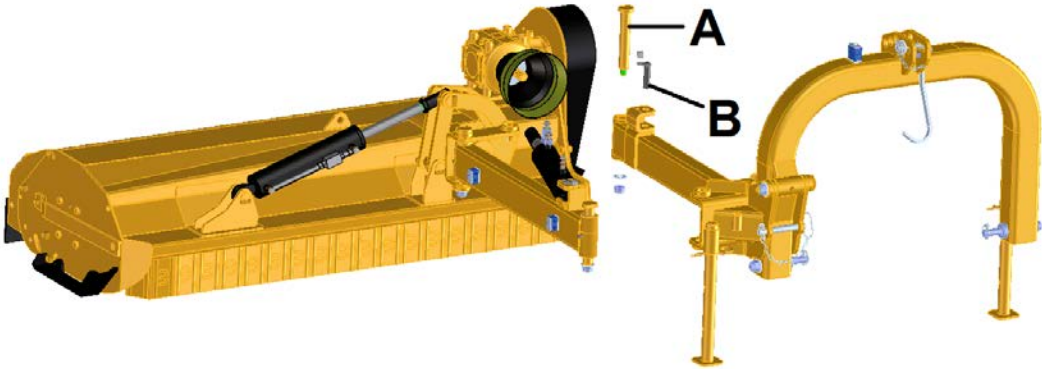
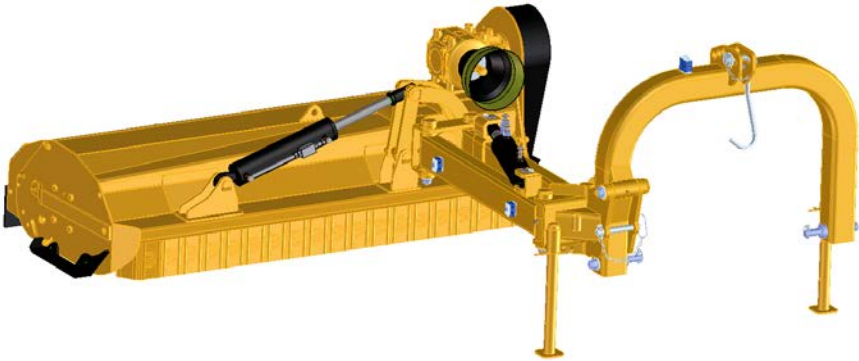
TA/PS



ATTENZIONE



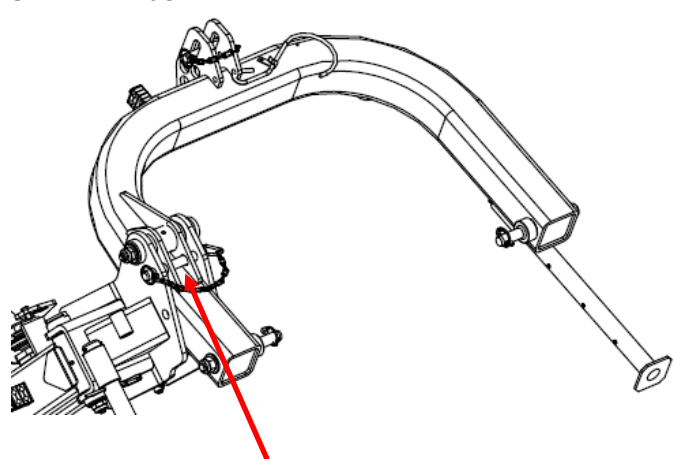
PERICOLO

 ATTENZIONE  PERICOLO	The machine is delivered partly disassembled to limit its size for transport: it is therefore necessary to reassemble it to make it operational.
	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. Steadily place the machine on a flat surface;
	2. Remove the three-point helm from the packaging and place it on the ground;
	3. Carefully move the parallelogram arms to align them with the relative holes, and then secure them using plug A;
	
	4. Move the jack and secure it using plug B;
	5. The machine is ready to be connected to the tractor.
	

3.2.1. TRANSPORTATION KIT

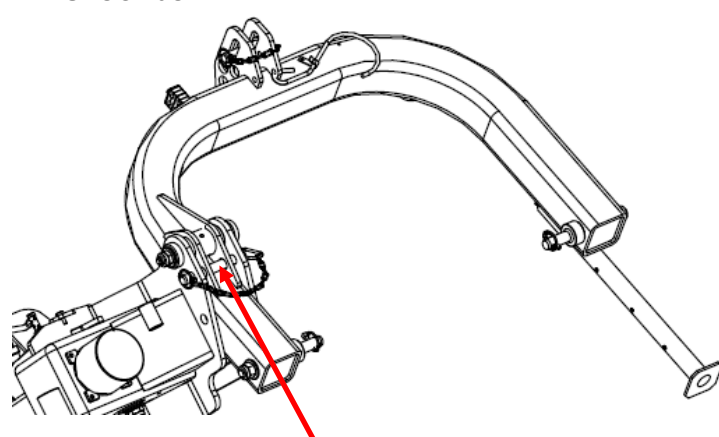
The machine can be delivered already assembled on the transportation kit (optional).

STANDARD JOINT:

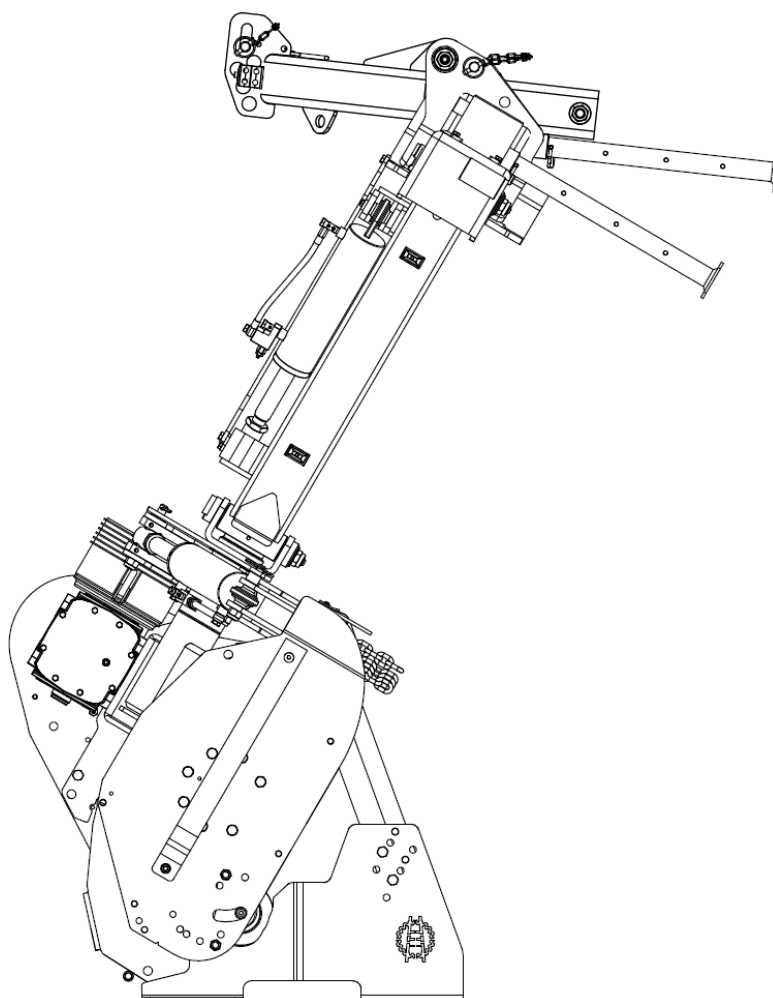


POSITION OF THE PIN ONLY DURING TRANSPORTATION

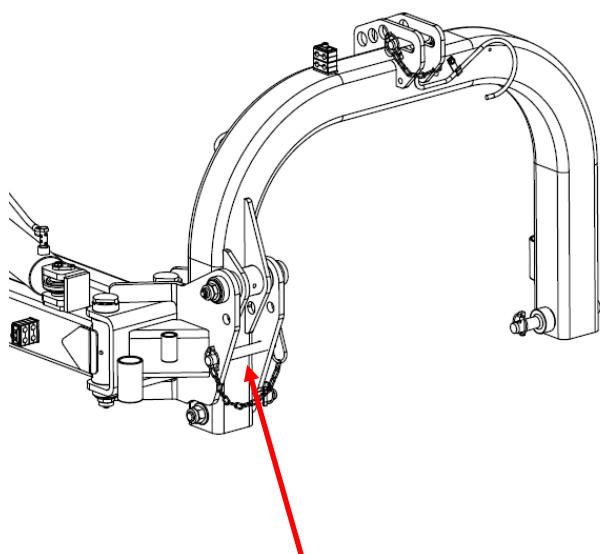
ANTISHOCK JOINT:



POSITION OF THE PIN ONLY DURING TRANSPORTATION

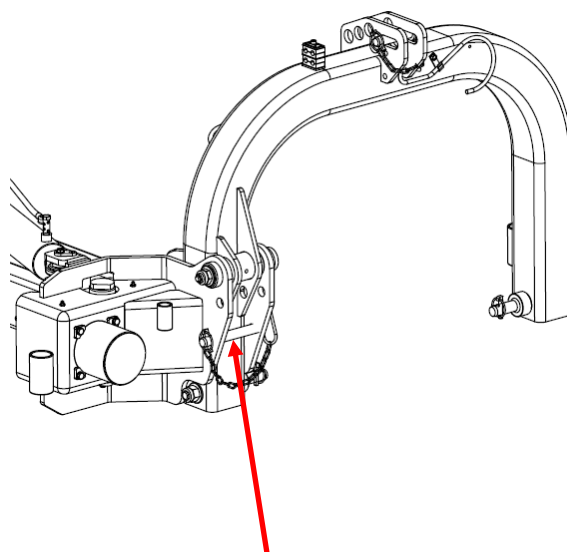


STANDARD JOINT:



POSITION OF THE PIN DURING ROAD TRANSPORTATION

ANTISHOCK JOINT:

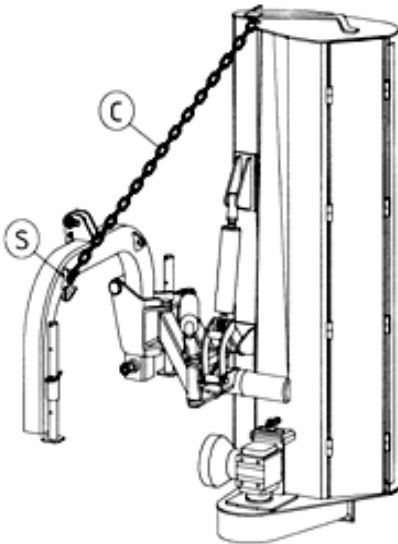


POSITION OF THE PIN DURING ROAD TRANSPORTATION

3.2.2. TRANSPORTATION IN PUBLIC AREAS

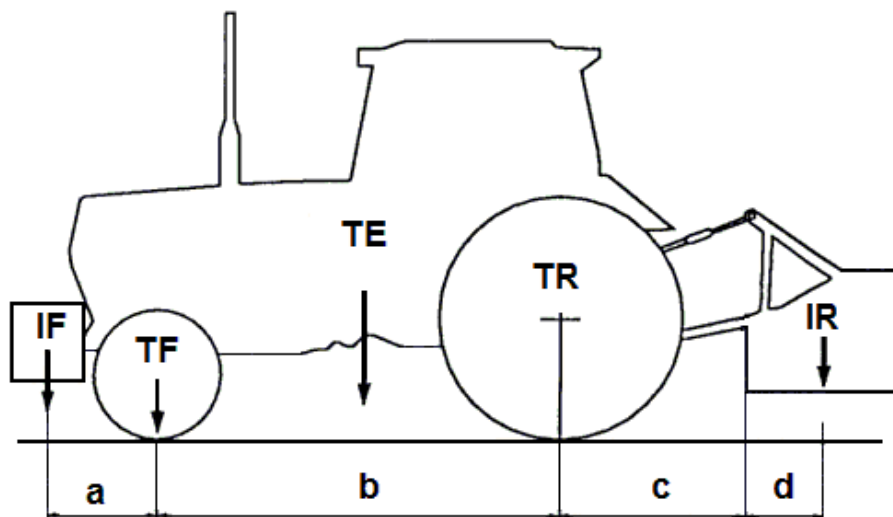
 ATTENZIONE	If the machine must be transported on a public road, the road regulations must be strictly respected, paying utmost attention in choosing the speed.
	Before starting the transportation on the public road, you must install (if necessary) optional light bars.
	The means must be provided with orange or yellow blinking light.
	Before entering on a public road from a non-paved or dirty area, you must thoroughly clean the tires of the tractor from any residual mud.
	During the transport on the road, the mulcher must be kept in transportation position and the PTO of the tractor must be switched off.

3.2.3. MACHINE TRANSPORT PROCEDURE

 ATTENZIONE	Before being transported, all machine parts must be intact and in good conditions.
	1. Disengage the P.T.O. and wait for the rotor to stop completely;
	2. By acting on the distributor that controls the movement jack, close the machine behind the tractor;
	3. Lift the machine from the ground as much as is required to rotate it vertically;
	4. By acting on the distributor that controls the articulation jack, rotate the machine vertically;
	5. Secure the safety chain C in the dedicated hook S;
	
	6. If necessary, lift the machine further 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 be encumbered by 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



ATTENZIONE

Road transportation must be performed paying maximum attention in order to avoid putting the persons or other vehicles in danger.

During the transport, the machine must be properly secured and must stay within the outline of the tractor.

3.3. VISIBILITY

The working areas can be controlled using the rear view mirrors of the tractor and the operator's range of view.



ATTENZIONE

While moving in reverse, dark areas may be created that cannot be seen using the rear view mirrors.

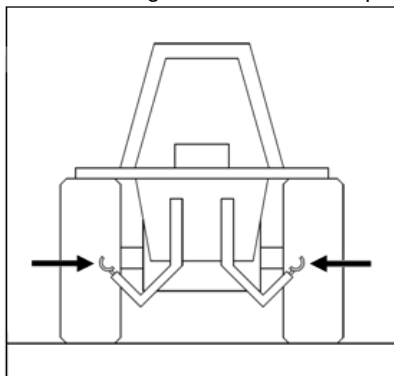
3.4. CONNECTION OF THE MACHINE TO THE TRACTOR

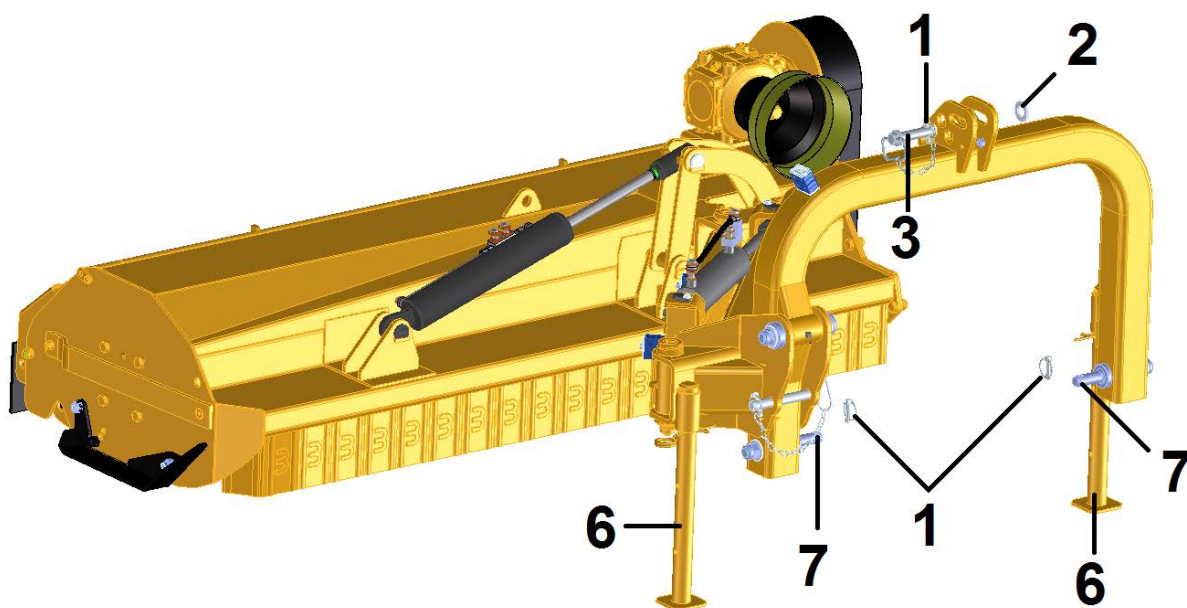
Before installing the machine, make sure that it is in perfect condition, placed on the ground, levelled and in stable position, that there is a proper amount of lubricant, that all parts subject to wear and/or deterioration are efficient and that the protections are complete and functioning.

 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 3.2.2.
	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.
 PERICOLO	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.
	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 as to make sure that the rotor and relative tools completely stop.

3.4.1. CONNECTION PROCEDURE

The machine must be connected to the tractor with a 540 rpm driven power take-off, having suitable weight and power, in compliance with the standards in force in the country of use.

 ATTENZIONE  PERICOLO	The user must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases.
	
	1. Remove the safety pins (1), remove the washer (2) and the plug (3);
	2. Move the tractor in reverse until the rear lifting bars reach the couplings of the mulcher;
	
	3. Use the tractor parking brake, turn the engine off, remove the keys from the dashboard and get off the machine;
	4. Connect the third point (tensioner) of the machine to the tractor, insert the provided pin (3), the washer (2) and the relative safety pin (1); adjust the length of the third point as to make sure that the pin is placed in the centre of the slot;
	5. Insert the safety pins (1) in the pins (7);
	6. Lift the mulcher until the machine and tractor power points are taken to the same height and adjust the tensioner, taking the mulcher to a horizontal position; lift the support feet (6);



7. Block lifting bars of the tractor to prevent the machine oscillating laterally, compromising the transversal stability of the complex.

8. Insert the Cardan shaft onto the splined shaft of the machine, holding the safety pin pressed. Release the pin and retract with the Cardan until the pin itself engages in the relevant seat with an audible "click". If you do not hear the "click", repeat the procedure;

9. Do not use a cardan shaft without proper protections compliant to the law requirements.

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

The cardan shaft is the transmission component that drives the mulcher; it must be chosen based on specific criteria that define its length and power.

In the table below, the size of the cardan shaft is greater than the power absorbed during operations.

This choice is necessary in order to ensure high resistance of the cardan shaft, in the phase of maximum extension.

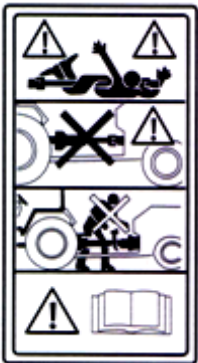
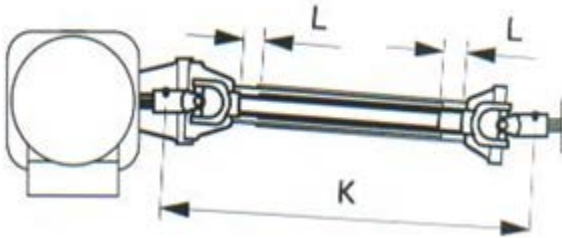
The manufacturer ensures that the cardan shaft provided along with the machine, is of appropriate size as to safely sustain the power absorbed during operations, if the use conditions respected.

If replacing the cardan shaft, another one may be installed in compliance with CE standards, able to transmit the power indicated in table 3 of this paragraph.

Model	Kw	HP		Model	Kw	HP
TA/P 160	59	80		TA/PS 160	63	85
TA/P 180	63	85		TA/PS 180	66	90
TA/P 200	63	85		TA/PS 200	73	100
TA/P 220	63	85		TA/PS 220	73	100
TA/P 250	73	100		TA/PS 250	73	100

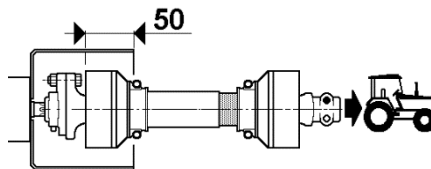
Table 3



	Before performing any operation, carefully read the instruction booklet attached to 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; • 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; • When not used, place the cardan shaft on the appropriate support; • Wear suitable clothing (non-durable, non-attachable), especially tight clothing (e.g. work overalls with wrist and ankle protections).
 ATTENZIONE	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.  This operation must be performed at the first installation, after each replacement and every time the machine is installed on another tractor. After installing the cardan shaft, fasten the guard on both sides using appropriate chains. When the machine is in stand by, place the cardan shaft on the appropriate supporting bar, provided on the three-point tiller to avoid any dirt accumulation, deformation or breakage of the guard. After installing the cardan shaft perform some opening, closing and articulation movements on the machine to make sure that the tubes of the shaft are free to slide without any obstacles.
	 ATTENZIONE The COMER cardan uses only one chain on the tractor side, as the two halves of the PTO protection pipe have a groove that prevents rotation. The chain must be perpendicular to the cardan shaft. If the normal chain fixing position is not perpendicular, do not use the cardan. This will damage the PTO protection!

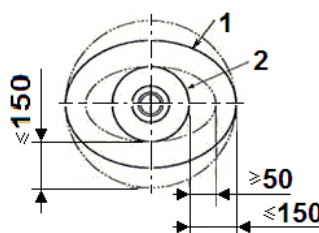
Grease the cardan shaft following the recommendations provided in the instruction manual of the cardan shaft.
Do not operate with cardan shafts without guards.
Carefully read the instruction booklet attached to the cardan shaft.

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.

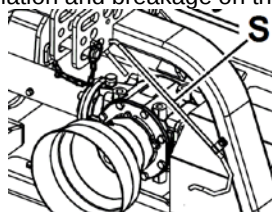
- 1 - machine protective cap
- 2 - cardan shaft protective cap



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

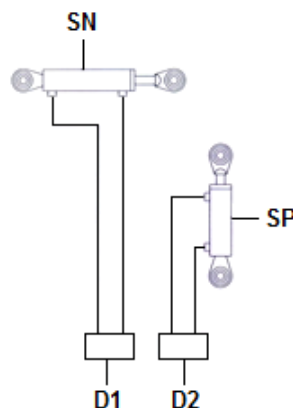


When it is not being used, the cardan shaft must be placed on the suitable support **S** located on the three-point tiller in order to avoid the accumulation of dirt, deformation and breakage on the protection.



10. Connect the transmission tubes of the jacks;

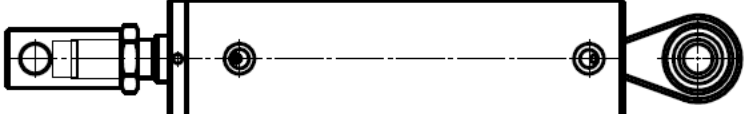
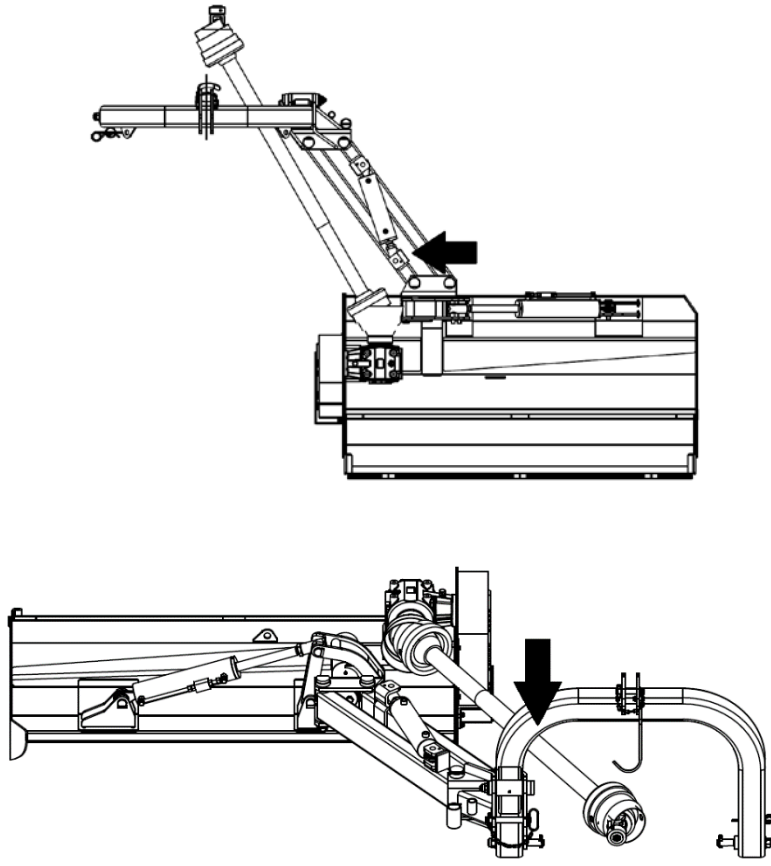
SN: articulation jack
SP: movement jack
D1: double acting distributor
D2: double acting distributor



the machine is equipped with a jack that triggers the movement; the machine is supplied from the tractor hydraulic system via the quick coupling tubes.
the tractor must be provided with a double effect distributor with operating pressure of 140-160 bar.

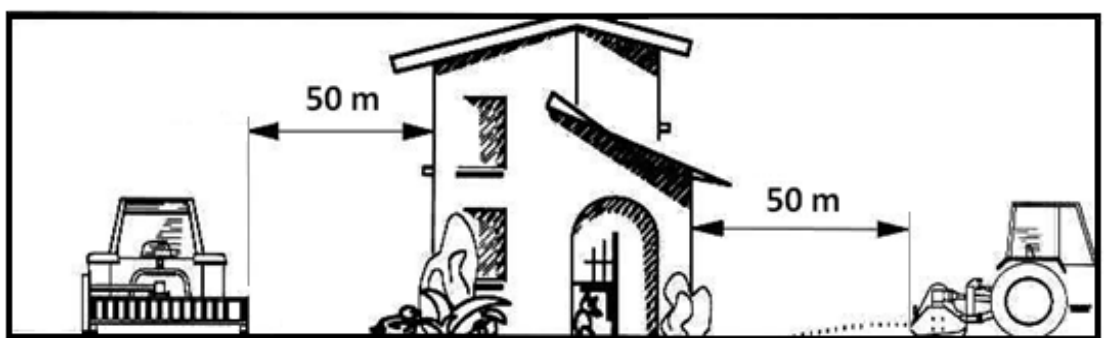


	After connecting the tubes, perform some movement operations to discharge any air bubbles that may form inside the jack.
	Connect the transmission tubes of the jacks on the distributors.
 ATTENZIONE	Check that all safety pins are properly inserted and functioning correctly. Make sure that you inserted the anti-threading devices in the coupling pin. Make sure that the quick couplings are properly inserted. The movement jack is equipped with a maximum pressure valve, which allows the machine to return partially when it collides with an obstacle while moving to the side. The resistance of the machine on the obstacle can be adjusted by acting on the screw that adjusts the valve calibration: • Tighten the screw to increase the resistance on the obstacle; • Loosen the screw to decrease the resistance on the obstacle; ATTENTION: Tighten the lock nut after the adjustment.
	
	 PERICOLO
	The articulation jack is equipped with an automatic locking valve (burst valve) that allows to prevent the machine from falling in an uncontrolled manner if a pipe breaks.
	
	Check that all safety pins are properly inserted and functioning correctly. Make sure that you inserted the anti-threading devices in the coupling pin. Make sure that the quick couplings are properly inserted.

	11. NOTE: When installing for the first time, make sure that the cardan shaft does not touch the handlebar with the machine completely open. If it does, act on the terminal of the movement jack using the special thread. 
 ATTENZIONE  PERICOLO	 12. The machine is ready to be started.

3.5. STARTING THE MACHINE

Before starting the machine, you must follow the indications below:

 ATTENZIONE	- 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. 
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 ATTENZIONE	- 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.
	The user must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases.
	
	- Always keep the guards in perfect state, properly placed and effective.
	- The engine of the tractor must be 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 check the machine verifying the nuts fastening, checking for any damage; if any damage is found, it must be repaired before starting the machine and thus restoring the machine 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 / armoured / shatter-proof windows and fixed guards (e.g. metallic grid) that can resist to 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.

Starting procedure

 PERICOLO	1. Using the distributor that controls the articulation jack, rotate the machine until it reaches a horizontal position; 2. Using the distributor that controls the movement jack, move the machine until it reaches the operating area;
	3. Remove the locking pin of the helm and put it back in the special pin-holder;

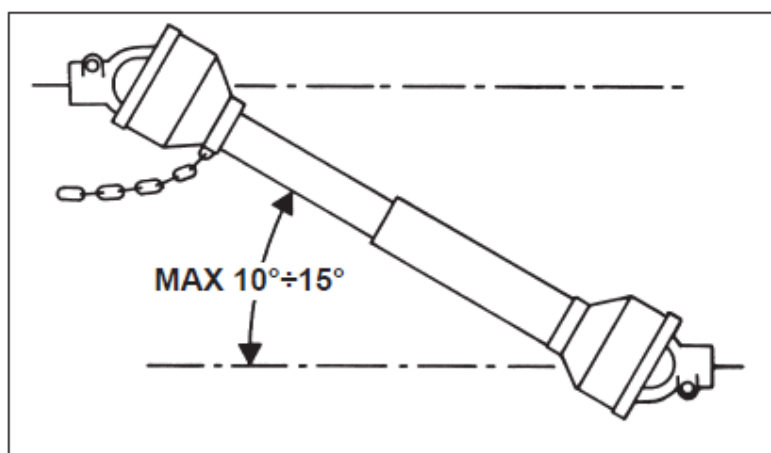
The locking pin of the helm consists of:

- A- Pin;
- B- Safety plug;
- C- Pin-holder.

This pin is used to increase the safety of the machine when it is disconnected and stored or during transport, so that the floating helm cannot move, as this would compromise the stability of the same (paragraph 3.2.2).
During the operating phase, the pin (A) must be removed and placed in the special pin-holder (C) to allow for the helm to ensure, thanks to its movement, that the mulcher follows the characteristics of the ground perfectly, especially when the ground is not flat.

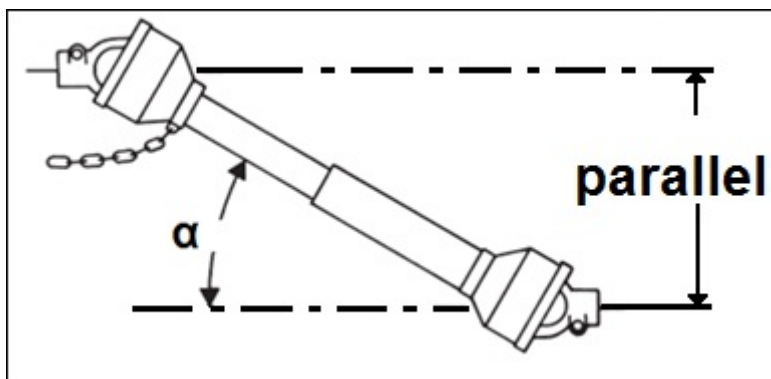
 ATTENZIONE	4. By acting on the lifter controls, lower the machine until the levelling roll reaches the ground;
	5. Engage the P.T.O. and gradually accelerate the tractor until reaching the operating speed of 540 rpm;
	6. Engage running mode and start the operating process;
	7. Go along a short distance with the machine engaged;
	8. Decelerate the tractor as much as possible;
 PERICOLO	9. Stop the tractor engine, engage the parking brake, disengage the PTO, take the ignition key out of the dashboard and place it in a secure place.
	10. Get off the tractor and make sure that there are no oil losses at the mulcher hydraulic tubes couplings;
	11. Do not use your bare hands to check for any loss of liquids under pressure;
	12. Check the quality of the worked performed; if the quality is not good enough, adjust the operating height using the elevator, avoiding the contact between the cutting components (hammers or blades) and the terrain; repeat the steps from point 1 and if necessary review the machine adjustment operations indicated in paragraph 3.5.1.

- Before inserting the power take-off, check the pre-set number of revolutions.
- Do not interchange the 540 rpm speed with the 1000 rpm one.
- When transporting by road, with the machine raised, place the control lever of the tractor's hydraulic lift in the lock position.
- When lifting from the ground, the cardan shaft joints are bent more than 40° (PTO stopped). Remove the shaft from the tractor PTO.
- Before inserting the power take-off, make sure that there are no persons or animals in the area of action and that the chosen speed corresponds to the one permitted. Never exceed the envisaged maximum. Do not insert the power take-off with the engine off.
- Always switch off the power take-off when the cardan shaft angle is too wide (never more than 10 degrees) and when it is not in use.

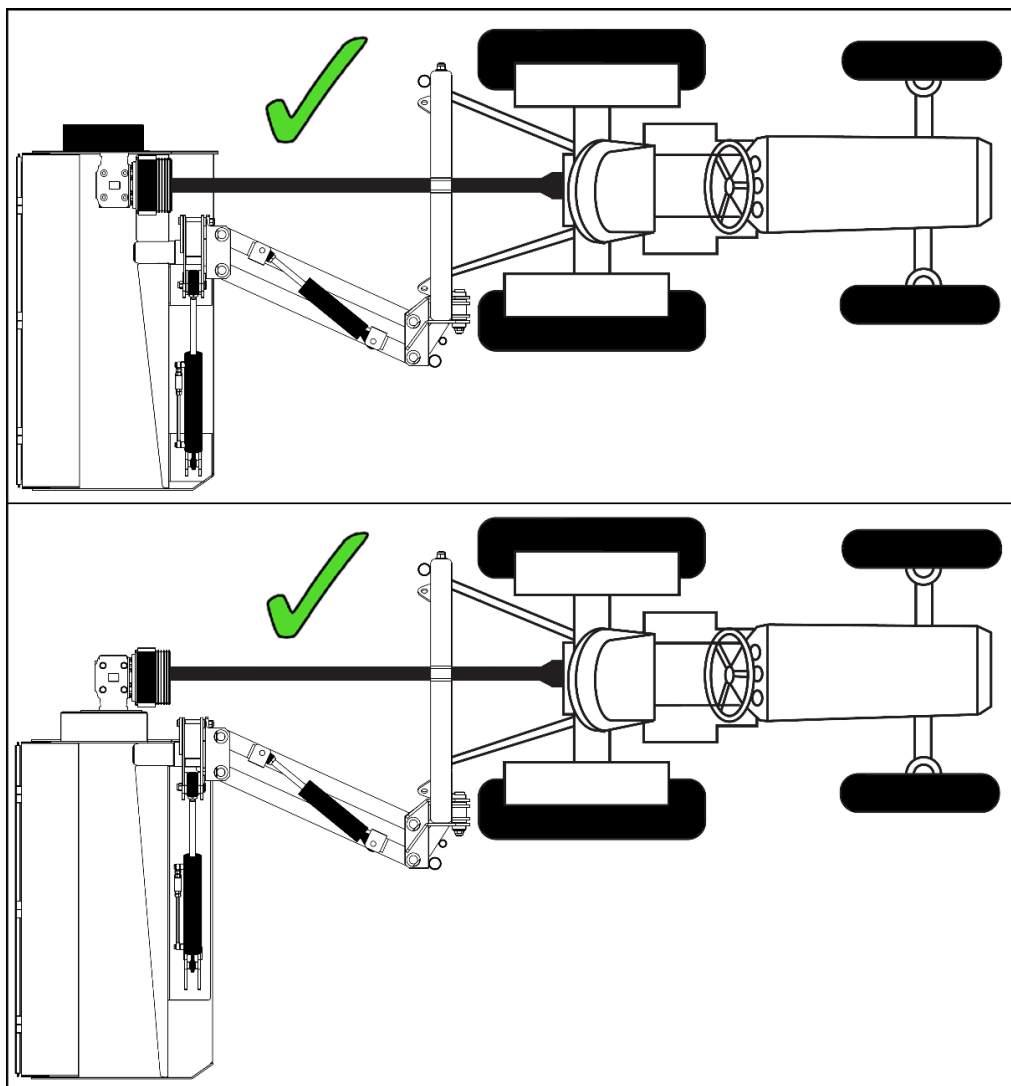


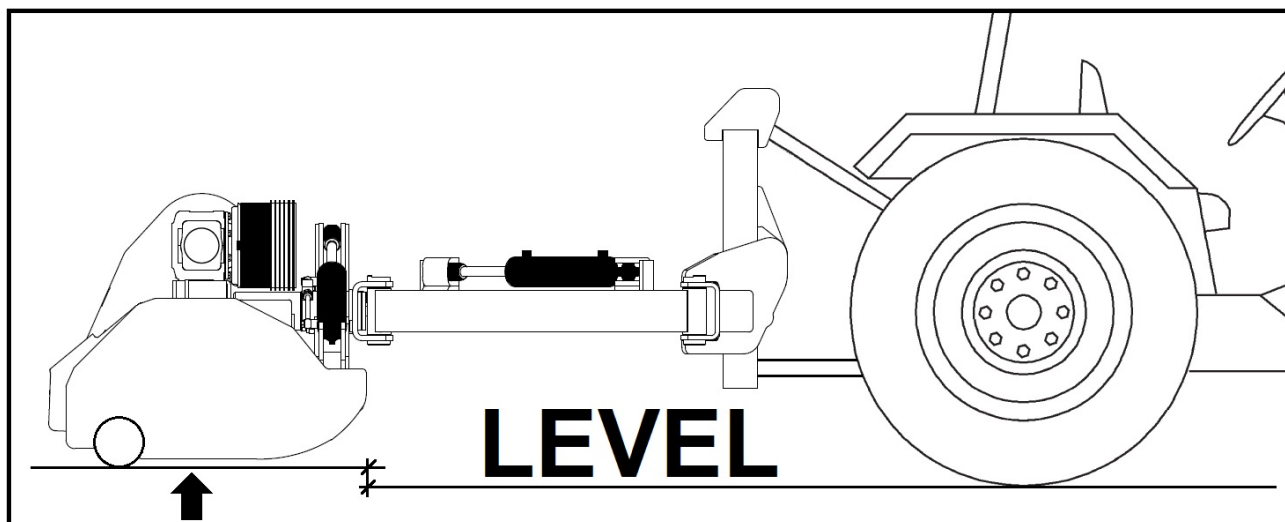
- Clean and grease the cardan shaft only when the power take-off is disengaged, the engine is off, the parking brake is applied and the key is removed.
- When the machine is disconnected, rest the cardan shaft on the support provided.
- Prolonged use of the machine may result in the secondary effect of heating of the gearbox and any elements of the hydraulic circuit. Avoid touching these elements during and immediately after use, because of the risk of burns.
- Engage the cardan shaft and make sure it is perfectly locked on the power take-off.
- Check that the protection rotates freely and secure it with the dedicated chain.

- It is necessary to obtain parallelism between the axis of the machine's power take-off shaft and that of the tractor's power take-off. Operating in these conditions means limiting the stresses on the power take-off itself and extending the life of the cardan shaft and of the machine.



- Insert the P.T.O. and **gradually** accelerate the tractor until reaching the speed of the P.T.O. (540 rpm).
- Always start the machine with the cardan straight, then closed behind the tractor. Operating in these conditions means limiting the stresses on the power take-off itself and extending the life of the cardan shaft and of the machine.
- Always start the machine with the rotor slightly raised off the ground!





- It is never advisable to exceed the revolutions indicated above as the machine has been sized to operate at those speeds, thus ensuring maximum efficiency.
- Engage running mode and start the operating process.

STANDARD CARDAN:

Never exceed the 10-15° inclination of the forks during work!

DOUBLE HOMOCINETARY CARDAN:

Never exceed the 25-40° inclination of the forks during work!

	NORMAL CARDAN	WIDE-ANGLE CARDAN
MAXIMUM OPERATING ANGLE AT FULL POWER	10°	25°
MAXIMUM CARDAN ANGLE FOR SHORT PERIODS AND WITH LIMITED POWER	15°	40°
MAXIMUM WORKING ANGLE WITH CARDAN STOPPED	90°	80°

3.5.1. MACHINE ADJUSTMENT

3.5.1.1. ADVANCEMENT 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.

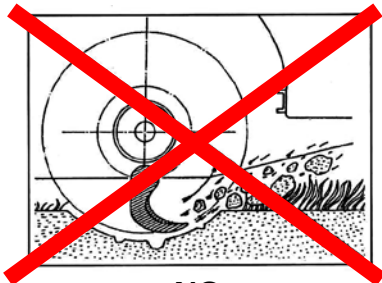
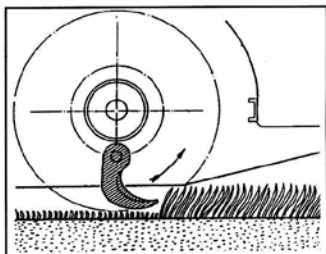
	Excessive speed stresses the mobile components of the machine, reducing their lifetime. In this case the amount of shredded material will be poor; it may cause the machine to throw large pieces of material that may put the operator in danger.
--	---

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

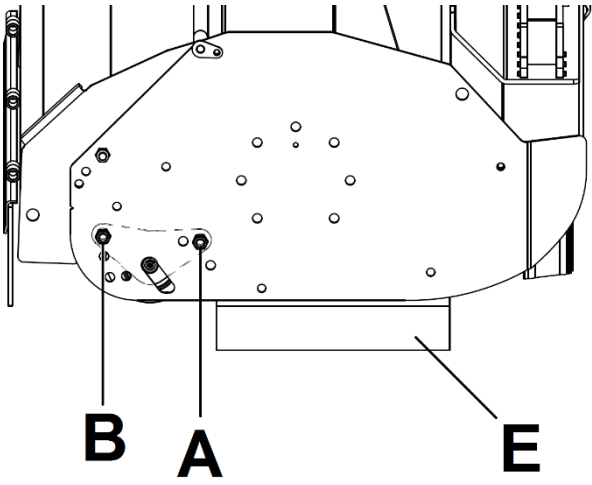
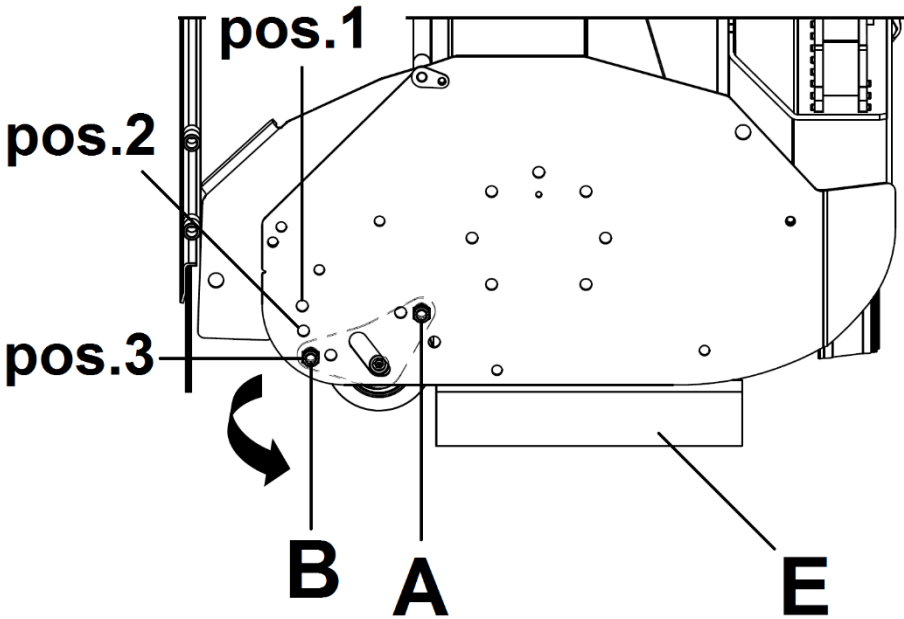
TYPE OF MATERIAL	RECOMMENDED FORWARD SPEED (km/h)														
	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	8
Sparse grass															
Grass that has not been mowed for months															
Grass that has not been mowed for years, very dense															
Shoots in general.															
Branches															

Table 4

3.5.1.2. CUTTING HEIGHT ADJUSTMENT

  PERICOLO	Before adjusting the machine cutting height, carefully read and fully understand the instruction manual.															
	All adjustment operations must be performed at authorised workshops by specialised personnel.															
	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 rear 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. 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.
	The adjustment operations must be performed both on the left and on the right side of the machine.
 ATTENZIONE	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 (3 adjustments); 5. Remount bolt B; 6. Check for any damage/breakage and proceed to immediate repair of the same using original spare parts. 7. Tighten bolts A and B 
 ATTENZIONE	 8. After completing all the operation, repeat the "Machine Connection and Start-up" procedure described from paragraph 3.4 to 3.5.

3.6. MACHINE RUNNING

 PERICOLO	Before starting the operating cycle, make sure that are met all indications in chapter 2 "ACCIDENT PREVENTION SAFETY STANDARDS" and those in chapter 3 paragraphs 3.1, 3.2, 3.3, 3.4 and 3.5.
	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.
	When operating on road, the operating radius of the tractor must be delimited using appropriate signals, safety personnel and means in compliance with the laws in force in the country of use.
	The operator must make sure that no person or animal stops within the radius of action of the same during machine functioning. The user must immediately stop the machine and keep away any unauthorised person. Never activate the machine near to persons standing or transiting within the radius of action of the machine.
	It is strictly forbidden the use of the machine away from the terrain to cut down trees or hedges as the risk of pieces being thrown is high.
	The use of the mulcher is strictly forbidden if the tractor to which is connected is not provided with cabin made of anti-break / armoured / 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.
	As at the beginning of the machine lifetime is performed a general settlement of all the mechanical and hydraulic connections, it is essential to carry out the controls of the machine with the utmost accuracy.
	make sure that during operation all machine organs operate properly. the majority of the inconveniences and faults that may arise during the use of the machine are due to the fact that the fastening components loosen over time.
	It is strictly forbidden to remove and/or change the guards installed on the machine.
	In the operations of change of direction, turn and reverse, slightly raise the head from the ground, after switching off the power to the machine, in order to avoid damage to the structure.
 ATTENZIONE	Pay attention to the risk of accidental ignition of the electric arc machine with overhead power lines.
	It is strictly forbidden to adopt configurations that prevent the user working on the tractor from seeing the machine.
	it is strictly forbidden to adopt configurations that put at risk the stability of the tractor - mulcher assembly. The tractor must always stay on plane terrains that can sustain its weight. The user must periodically assess the risk, depending on the working area, assuming full responsibility for the damages caused due to any incorrect assessment.
 PERICOLO	It is strictly forbidden to use the machine as sustain point for the tractor. The pressure exerted by the tractor would collapse the frame of the machine with consequent rupture of the same.
	Never lean or press the rotor on logs or rocks because it could bend and then rotate unbalanced. Using the machine while damaged will affect its structural integrity due to unexpected and uncontrollable breakages.
	Never use the machine on stones, especially if there is very dry grass or bushes. The sparks that result when the tools come into contact with the stones may generate fire. In case of fire, immediately contact the institutions in charge and move away, if possible, the tractor-mulcher assembly, bring it in a safe area, follow the procedure in paragraph 3.7. and go in a safe place.
	At the end of the operating process the machine must be placed on the ground. Before getting out of the tractor, use the parking brake, turn off the engine, remove the ignition keys from the dashboard, and wait for 5 minutes inside the cabin as to make sure that the rotor and relative tools completely stop.
 ATTENZIONE	If during operation the mulcher remains entangled in the thick vegetation or any metallic scrap, such as, brambles, shrubs, thick bushes, steel cables and any other material that may stop the proper operation of the machine, the operator must engage the tractor brake, turn off the engine, remove the ignition keys from the dashboard, and wait for 5 minutes inside the cabin as to make sure that the rotor and relative tools completely stop. At this point the operator must manually free the machine following all applicable safety standards. 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".

MULCHING PROCEDURE



ATTENZIONE

It is recommended to perform the operations at a constant speed, appropriate for the quantity of material to be mulched. This way the production of shredded material will be optimal and the risk of ejection of large sized pieces will be reduced to a minimum.

The tractor must always stay on plane terrains that can sustain its weight.

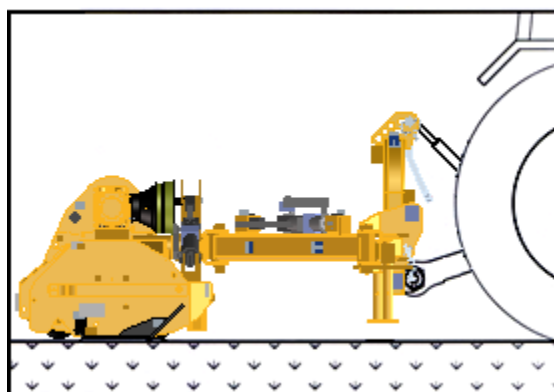
Go near the area in which you want to operate and proceed as follows:

1. With the tractor engine idling, insert the PTO of the same.
2. Gradually accelerate the tractor until reaching the operating speed of 540 rpm;
3. Start the operating cycle modulating the movement speed as for the machine to complete the shredding of the material and at the same time download on the ground the mulched product;

If the vegetation is very thick or high, you may pass one time over it with the mulcher lifted from the ground and the second time with the mulcher on the ground to complete the operation.



ATTENZIONE



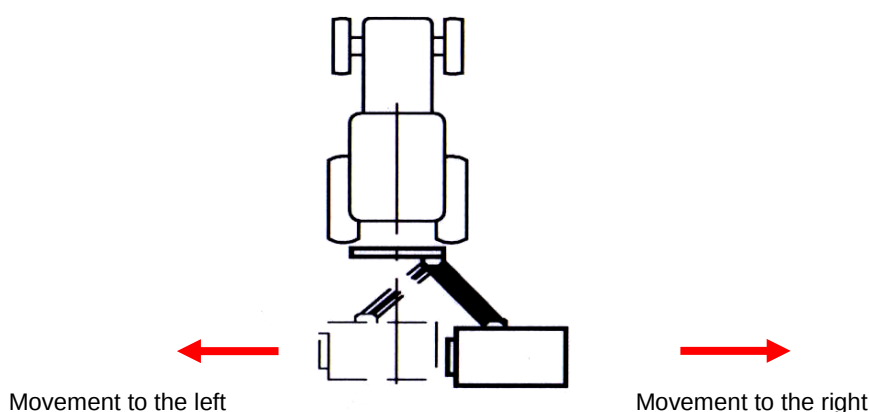
Direction of travel of the tractor



ATTENZIONE

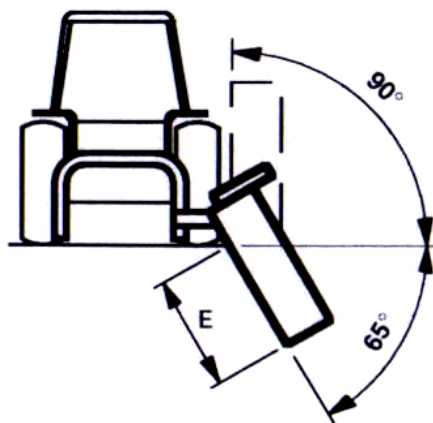


PERICOLO



If grass needs to be cut on the side of a road, it is possible to move with the tractor at a suitable speed (see paragraph 4.2.2 "Adjustment of the speed of travel") and let the machine follow the shape of the terrain.

If operating inclined with respect to the ground, make sure that the machine does not exceed 90° upwards and 65° downwards. Pay attention to the projection of material that may cause damage to people, animals or objects.



The mulcher should not be moved to a new operating area if the rotor and the tools haven't stopped yet.

3.7. MACHINE STOPPAGE

In order to stop the machine, the tractor PTO must be disengaged and the rotor and related tools will also stop.



PERICOLO

make sure that during all operations, the operator stays all the time inside the cabin and there are no persons, animals or things in the machine action radius. Any intervention on the machine must be performed with the parking brake engaged, the engine stopped, the ignition key removed from the dashboard and only after waiting for about 5 minutes inside the cabin to allow the rotor and related tools to stop completely.

3.8. MACHINE DISCONNECTION

When disconnecting the machine from the tractor you must:



ATTENZIONE

1. Make sure that the tractor- mulcher assembly is placed on a stable, levelled terrain.
2. Lower the machine resting feet.
3. Disengage the tractor PTO and wait for the rotor and related tools to stop;
4. Bring the engine of the tractor in idle mode, use the parking break, turn off the tractor, remove the ignition key from the dashboard and store it properly;



ATTENZIONE

5. Descend from the driver position.
6. Disconnect the cardan shaft using the appropriate triggers;
7. Rest the Cardan shaft on the relevant support.
8. Disconnect the tie rod of the third point;
9. Fix the third point to the appropriate support on the tractor.
10. Disconnect the arms of the rear hydraulic elevator of the tractor from the parallel connection points of the mulcher;
11. Disconnect the supply cables of the jack;
12. Get back inside the tractor.
13. Start the engine and move away carefully.

The machine must be parked on flat land and within a protected area, so as to prevent unauthorised staff from approaching.

3.9. CLOGGING

  ATTENZIONE	Before removing the machine clogs, carefully read and fully understand the instruction manual.
	Keep in mind that any change of the field conditions, such as the type and the amount of material to be mulched, may clog the mulcher.
	If the machine clogs, follow the indications in paragraph 3.8 "MACHINE DISCONNECTION" and bring the machine to an authorised workshop .

At the workshop:

 PERICOLO	1. Hook the machine, turn it over and place it on appropriate supports;
	At the workshop, use appropriate equipment (hoists and beams) to 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).
	2. Manually unclog the machine;
	3. Check for any damage/breakage and proceed to immediate repair of the same using original spare parts.
	4. After completing all operations, turn the machine over and place it on the ground;
	5. Repeat the actions described in paragraphs 3.4 and 3.5 "Machine connection and start-up" and restore the operating cycle following the methods described in paragraph 3.6.

4. MAINTENANCE

 ATTENZIONE	In case of damage of the machine, the user must perform the machine shut-down procedure, set the tractor engine to idle mode, use the parking break, turn off the engine, disengage the PTO, remove the ignition key and wait inside the cabin for a few minutes until the rotor and the tools of the machine stop. Descend from the driver position to check the nature of the problem and contact the authorised workshops in order to solve it.
--	--

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

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

 ATTENZIONE  PERICOLO	The machine must be brought in a properly equipped workshop, authorised to perform all ordinary and extraordinary maintenance operations with specialised personnel. The machine must be stopped and disconnected from the tractor. The maintenance and repair operations must not be performed in open space or in improperly equipped workshops.
	The specialised personnel must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases.
	       
	Any maintenance operation can be performed only after the temperature of the oil and other hot parts of the machine is below 60 °C.
	Do not perform repairs of which you have no knowledge. Always follow the instructions. If they are missing, contact the manufacturer.
	Do not use lifting points different from those prescribed.

	Make sure that the chosen lifting device is suitable to carry out operations in compliance with the safety Standards in force in the country of use.
	Any 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.
	The gathered oil 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 temperature of the hot parts is below 60°C.
 Pay utmost attention to the:

- Drive sump;
- Gearbox;
- Belt tensioner, pulleys and belts;
- Hydraulic pipes.

4.2. MAINTENANCE INTERVENTIONS

Qualified staff must precisely know and follow the indications and must stop and disconnect the machine following the indications in paragraphs 3.7. and 3.8.

The periodic controls and the maintenance operations described in this chapter must be performed in the times and ways established 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.)

4.2.1. TABLE OF TIGHTENING TORQUES

Tightening torque table for steel screws 8.8

Large pitch screw	M8	M10	M12	M14	M16	M20	M24
Tightening torque Nm	25	49	86	135	210	410	710
Fine pitch screw	M8x1	M10x1.25	M12x1.25	M14x1.5	M16x1.5	M20x1.5	M24x2
Tightening torque Nm	27	52	95	150	225	460	780

Tightening torque table for steel screws 10.9

Large pitch screw	M8	M10	M12	M14	M16	M20	M24
Tightening torque Nm	35	69	120	190	295	580	1000
Fine pitch screw	M8x1	M10x1.25	M12x1.25	M14x1.5	M16x1.5	M20x1.5	M24x2
Tightening torque Nm	38	73	135	210	315	640	1100

FOR THE FASTENING OF BOLTS OF THE ROTORS, REFER TO THE TABLE BELOW:

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

4.2.2. GREASING

Periodical greasing and lubrication of the machine will keep its performances high and increase its lifetime.
Grease the indicated points using an appropriate universal greasing pump that can be found in any workshop.

LUBRICATION OF THE TRANSMISSION UNIT:

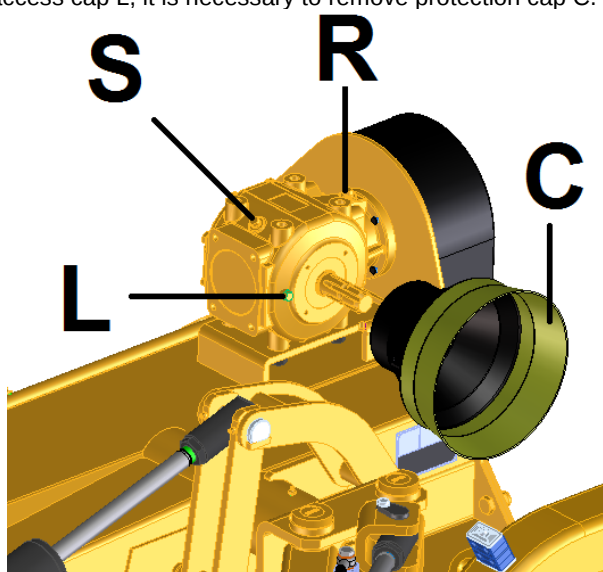
Before taking any action on the transmission unit, properly clean the areas around the caps, to avoid any dirt intrusion inside the units.

For the transmission units:

- 1- During the first 20 hours of operation, check the oil level in the gearbox; the oil must touch the level hole. If necessary, add some more oil; then check the oil level every 50 hours;
- 2- After the first 40 working hours replace all the oil in the multiplier. Then repeat the operation every 250 working hours.

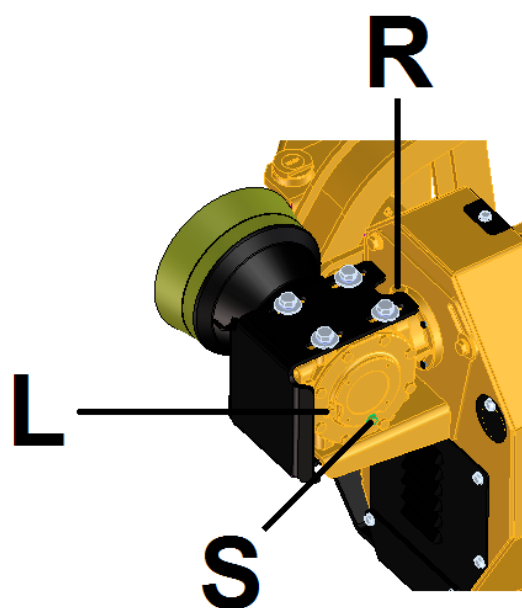
MODEL TA/P

The oil reaches gearbox S by through the hole closed by cap R.
The level is give by the hole closed by cap L:
To access cap L, it is necessary to remove protection cap C.



MODEL TA/PS

The oil reaches gearbox S by through the hole closed by cap R.
The level is give by the hole closed by cap L:



OVERALL GREASING:

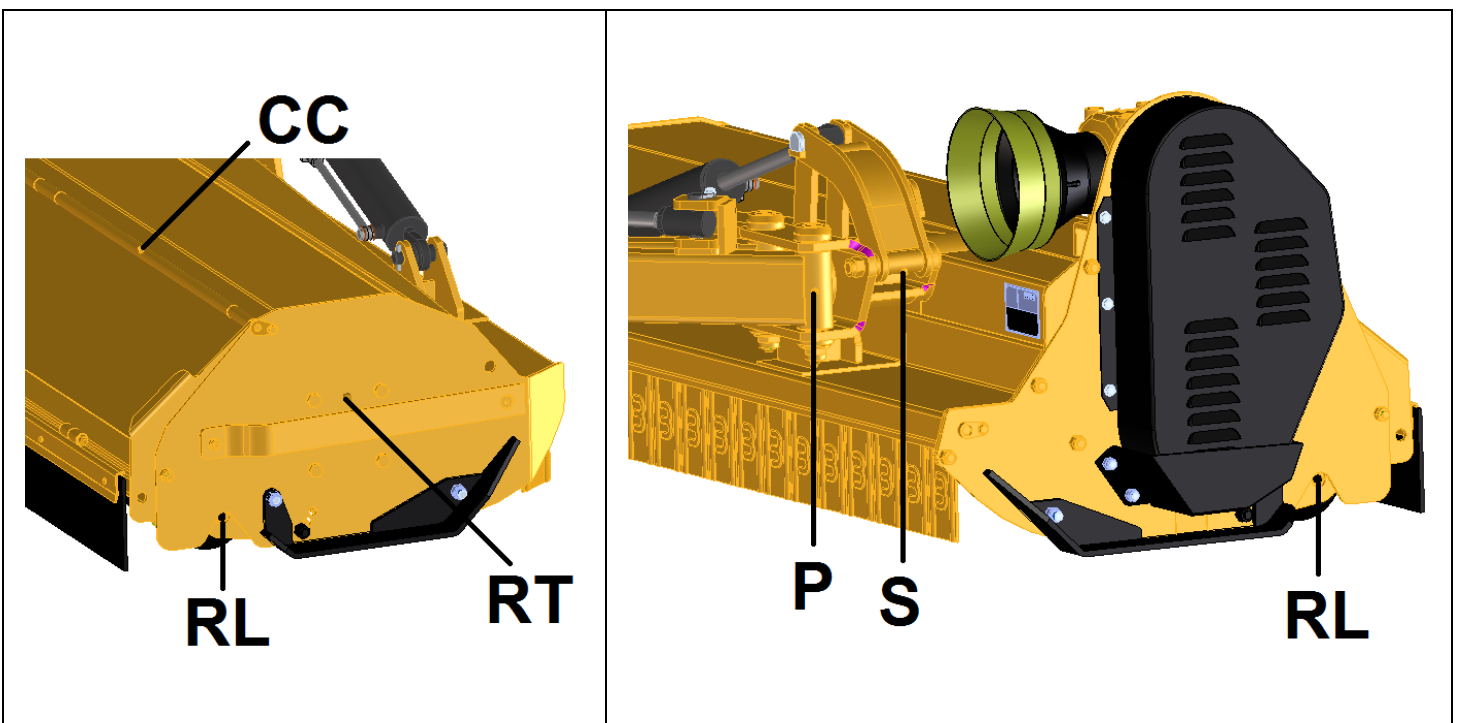
Before taking any action on the machine greasing points, properly clean the areas around the caps, to avoid any dirt intrusion inside the points.

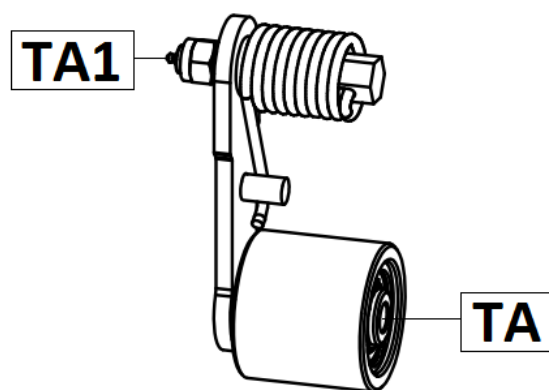
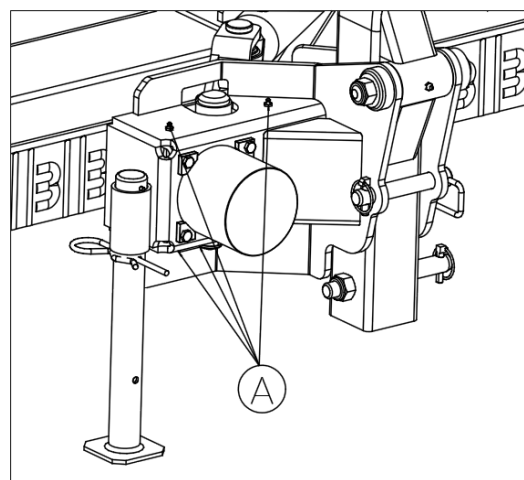
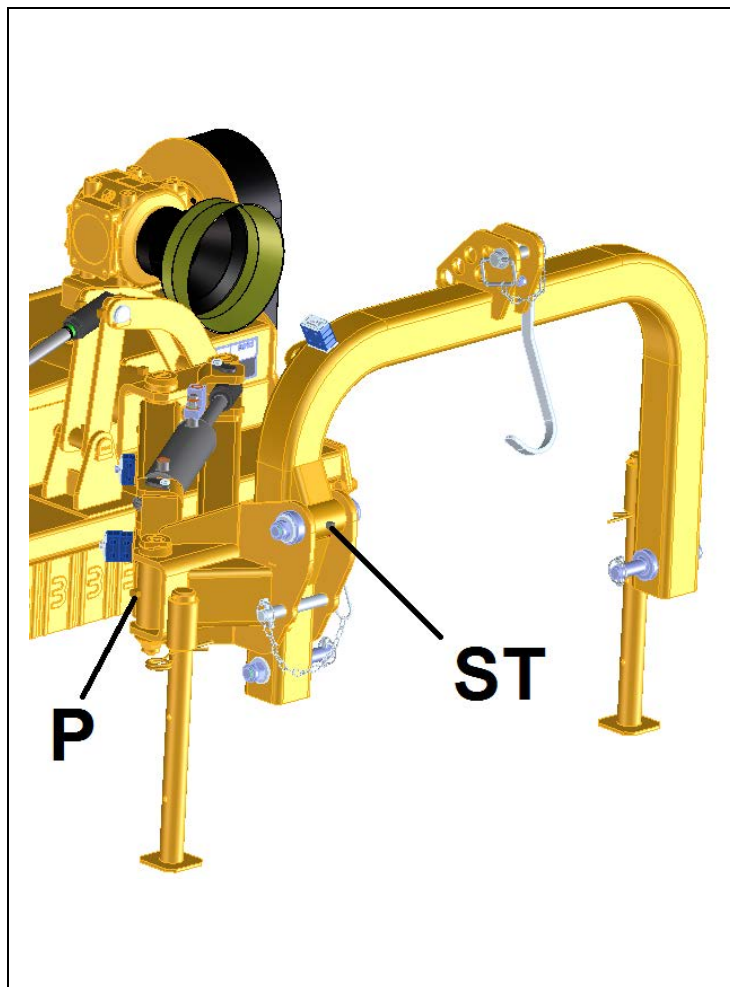
Pos.	Name	Lubrication intervals	Notes
RT	Rotor	8 hours	Grease it using the manual pump 1-2 times, to avoid damaging the inner seals of the supports.
RL	Roller	8 hours	Grease the roller on both sides, using the manual pump 1-2 times, to prevent the grease from flowing out.
S	Joint	20 hours	Grease it using the manual pump 1-2 times on all the grease fittings of the joint.
TA	Automatic belt tensioner	80 hours (or during each belts' tension check)	Grease it using the manual pump 1-2 times. To grease the automatic belt tensioner it is necessary to remove the crankcase of the belts.

Pos.	Name	Lubrication intervals	Notes
TA1	Automatic belt tensioner	8 hours	Grease it using the manual pump 1-2 times.
TA	Automatic belt tensioner	80 hours (or during each belts' tension check)	Grease it using the manual pump 1-2 times. To grease the automatic belt tensioner it is necessary to remove the crankcase of the belts.
CC	Hood hinge	8 hours	Grease it using the manual pump 1-2 times on the grease fittings of the hood hinges.
P	Parallelogram	20 hours	Grease it using the manual pump 1-2 times on the 4 grease fittings of the two parallelogram arms.
ST	Helm joint	20 hours	Grease it using the manual pump 1-2 times on all the grease fittings of the helm joint.
A	Anti-shock (optional)	20 hours	Grease it using the manual pump 1-2 times on the 4 grease fittings (A) of the anti-shock safety system (figure 40).

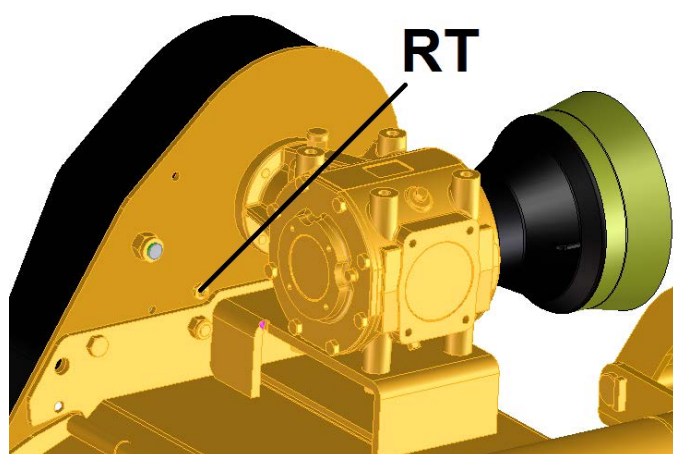
Table 3

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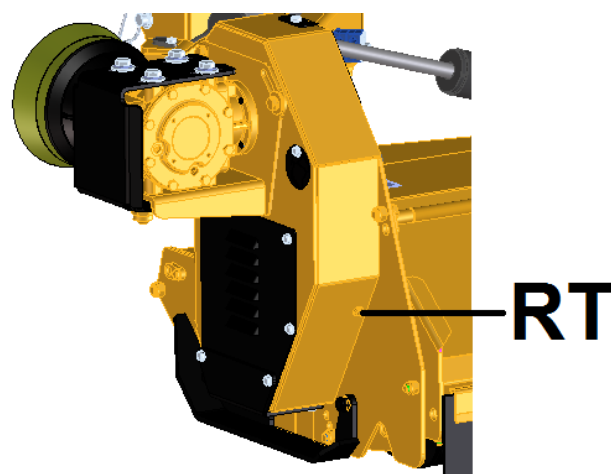




TA/P



TA/PS



Only use a manual greasing pump, in order to prevent the breaking of bearing seals and grease passage pipes.

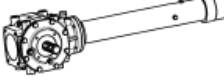
 LUBRIFICANTI RACCOMANDATI - recommended lubricant empfohlenen Schmiermittel - lubrifiant recommandé							
	PETRONAS	TAMOIL	ENI	IP	ESSOMOBIL	SHELL	TOTAL
	GEAR MEP 460	CARTER EP 460	BLASIA 460	MELLANA 460	MOBILGEAR 600XP 460	OMALA S2 G 460	CARTER EP 460
GREASE 	AMBRA GRS PLUS EP2	TAMLITH EXTRA BLU EP2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

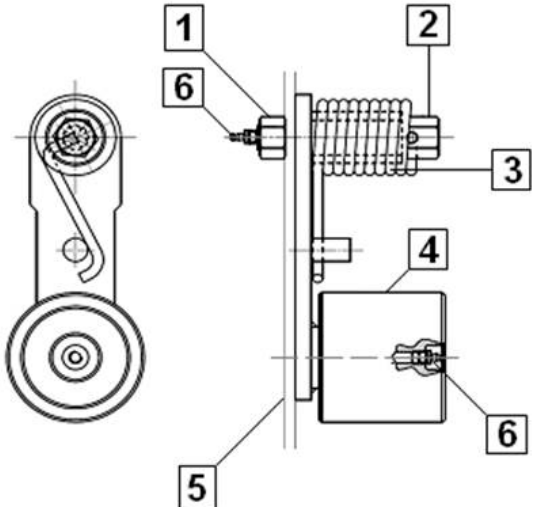
Table 4

4.2.3. ADJUSTMENT OF TRANSMISSION BELTS TENSIONING

  PERICOLO	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.
	Place the machine on level terrain, with the head resting on the ground, the engine stopped, the parking brake engaged, the PTO disengaged, the ignition key out of the dashboard and properly stored.
	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.

PROCEDURE TO ADJUST THE TENSION OF THE BELTS MODEL TA/P:

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

 ATTENZIONE	1. Remove the sub-cover and the cover covering the transmission.													
	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 hex bolt 30;													
	 <table border="1"> <thead> <tr> <th>Pos.</th><th>Name</th></tr> </thead> <tbody> <tr> <td>1</td><td>Self-locking nut M20</td></tr> <tr> <td>2</td><td>Hex bolt of 30</td></tr> <tr> <td>3</td><td>Tensioning spring</td></tr> <tr> <td>4</td><td>Sliding point</td></tr> <tr> <td>5</td><td>Machine side</td></tr> <tr> <td>6</td><td>Greaser</td></tr> </tbody> </table> Table 5	Pos.	Name	1	Self-locking nut M20	2	Hex bolt of 30	3	Tensioning spring	4	Sliding point	5	Machine side	6
Pos.	Name													
1	Self-locking nut M20													
2	Hex bolt of 30													
3	Tensioning spring													
4	Sliding point													
5	Machine side													
6	Greaser													
	3. Turning the tensioning unit on the bolt with hex 30, lean the sliding roll on the belts;													

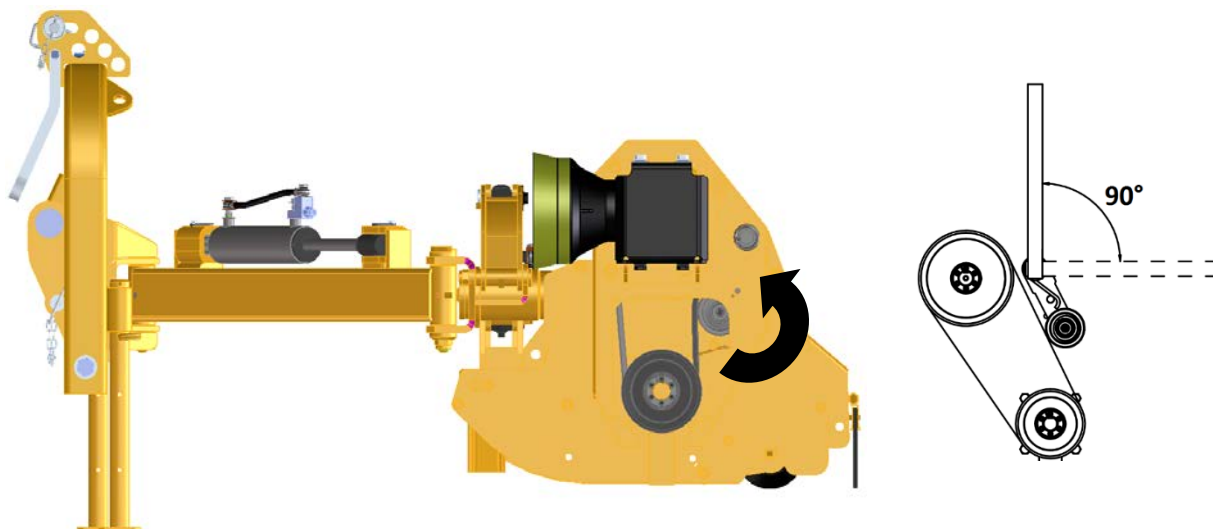
4. After leaning the roll. using a 30 key, turn the bolt and lock the nut M20, fastening it using another 30 key;

Giving the correct PRE-LOAD to the spring, ensures proper tensioning of the belts!
The pin must be rotated by 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 unit may rotate freely. Put pressure on the roll, moving it away from the belts for a few inches and then release it. The roll must run freely;

7. Remount the crankcase using the appropriate screws.

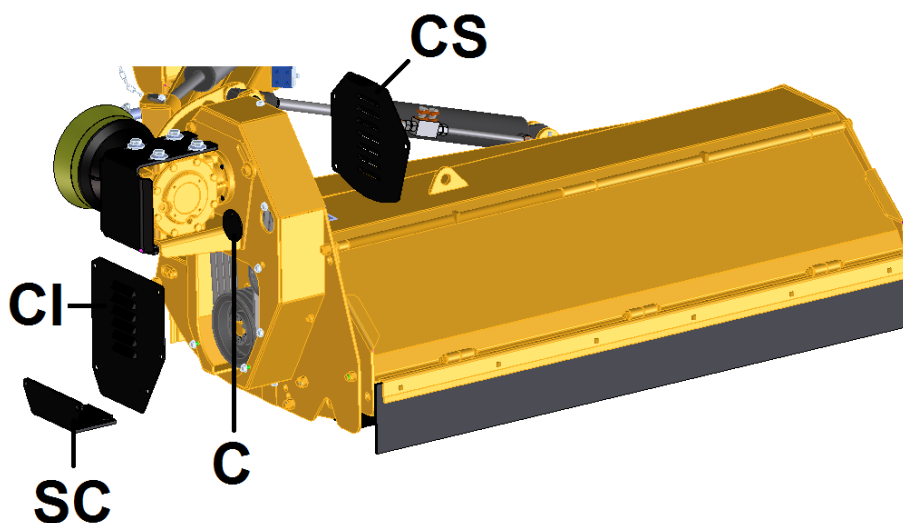


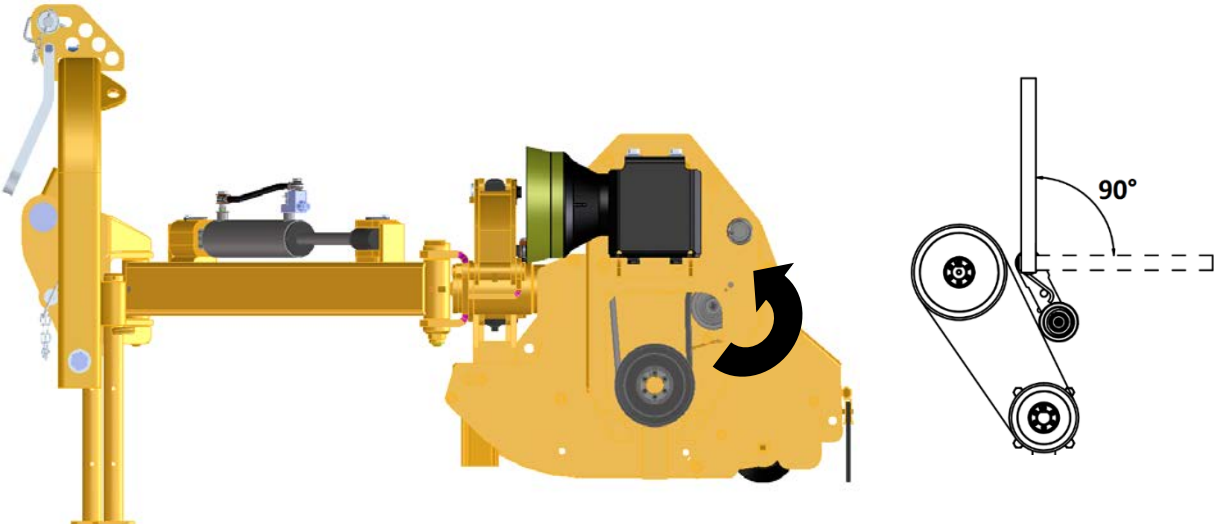
Never work without the belt cover fitted.

BELTS TENSION ADJUSTMENT PROCEDURE FOR MODEL TA/PS:

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

1. Remove the sub-cover SC, the cover C, the bottom cover CI and the top cover CS covering the transmission;



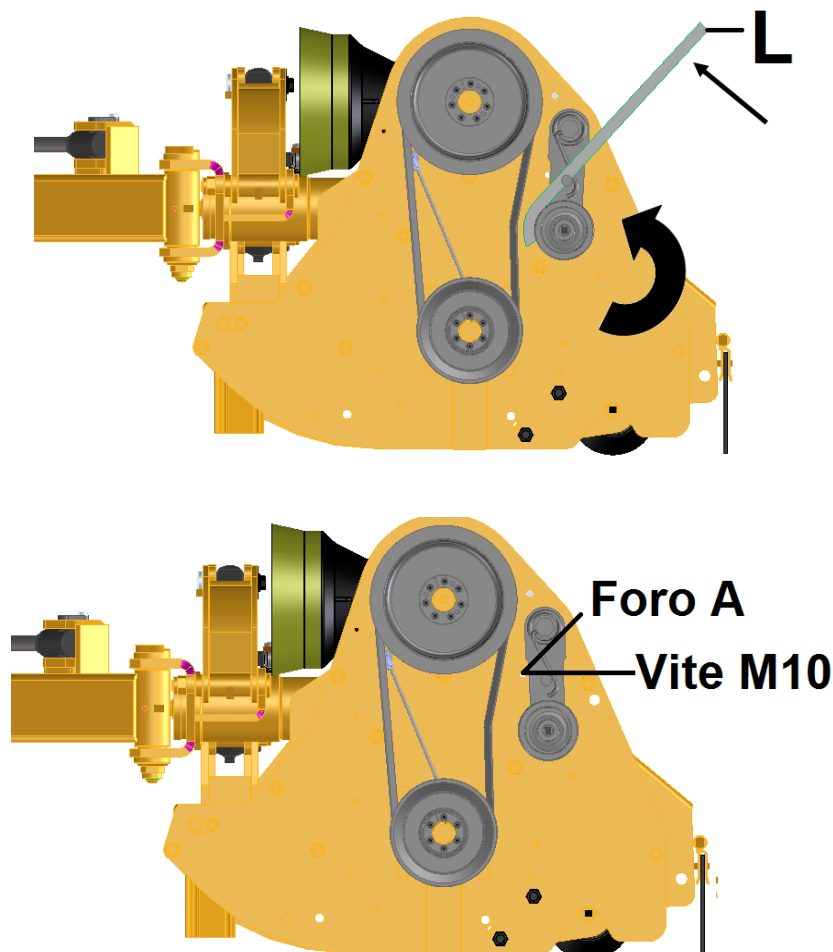
 ATTENZIONE	2. After replacing the spring or any other damaged part, take the tensioning unit and place it on the side of the mulcher, inserting the hex bolt 30;
	
	3. Turning the tensioning unit on the bolt with hex 30, lean the sliding roll on the belts; 4. After leaning the roll, using a 30 key, turn the bolt and lock the nut M20, fastening it using another 30 key; Giving the correct PRE-LOAD to the spring, ensures proper tensioning of the belts! The pin must be rotated by 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 unit may rotate freely. Put pressure on the roll, moving it away from the belts for a few inches and then release it. The roll must run freely; 7. Refit the sub-cover SC, the cover C, the bottom cover CI and the top cover CS covering the transmission using the dedicated screws. Never work without the belt protection casing.

4.2.4. REPLACING THE TRANSMISSION BELTS

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.

MODEL TA/P:

 ATTENZIONE	1. Remove the sub-cover and the cover covering the transmission. 2. Using lever L, put pressure on the roll by pulling it outwards until a M10 x30÷40 screw can be inserted into hole A, then release it, slowly place the belt tensioner plate on the screw inserted in hole A;
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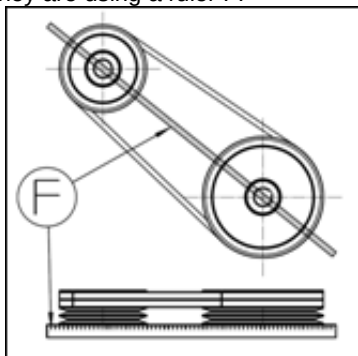
3. Now there should be no more pressure on the belts, thus allowing the operator to replace them;

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.

4. After replacing it, put some more pressure on the sliding roll until removing the screw M10 from hole A, then slowly bring the belt tensioner roll near the belts and lean it on them. The roll sustained the initial pre-load and no further interventions are required.

When you need to check the tensioning or re-tension the belts tensioner, follow the indications in chapter 4.2.2.

The pulleys must be aligned: make sure they are using a ruler F.



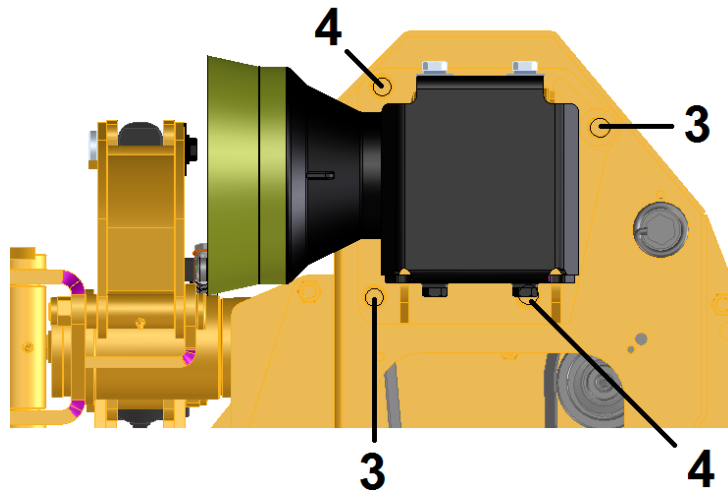
5. Remount the crankcase using the appropriate screws.

Never work without the belt protection casing.

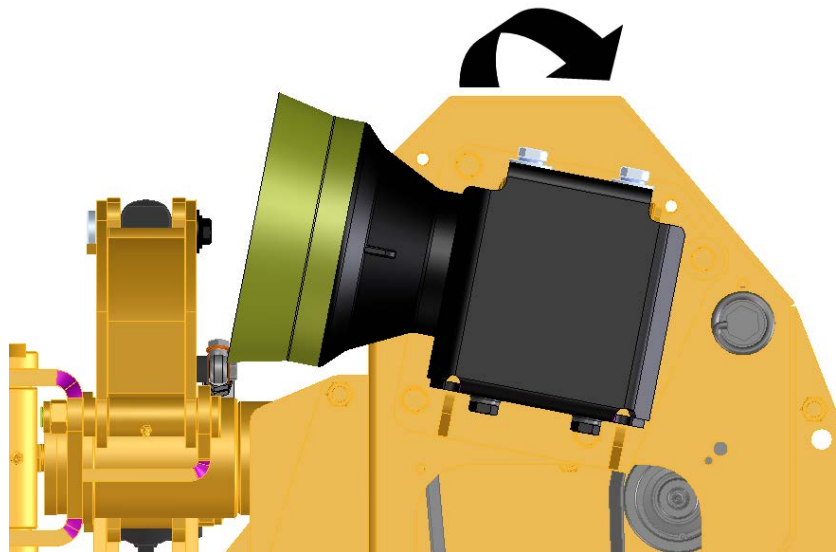
After replacing the belts, adjust them as described in chapter 4.2.2.

MODEL TA/PS:

1. Remove the sub-cover SC, the cover C, the bottom cover CI and the top cover CS covering the transmission;
2. Loosen the screws (3);
3. Loosen and remove the screws (4);
4. Rotate the support (5) of the element securing the gearbox until it touches the opposite part of the slot of the support itself; at this point, the belts will be much looser;



ATTENZIONE



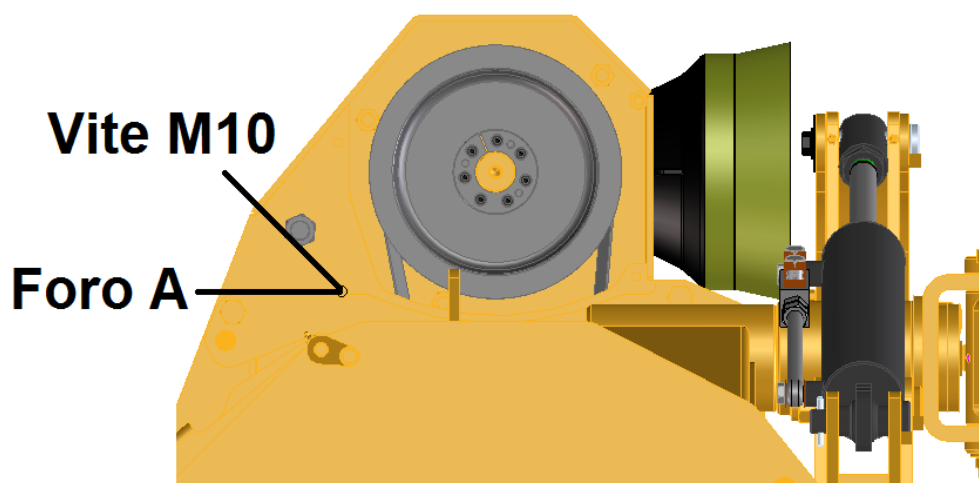
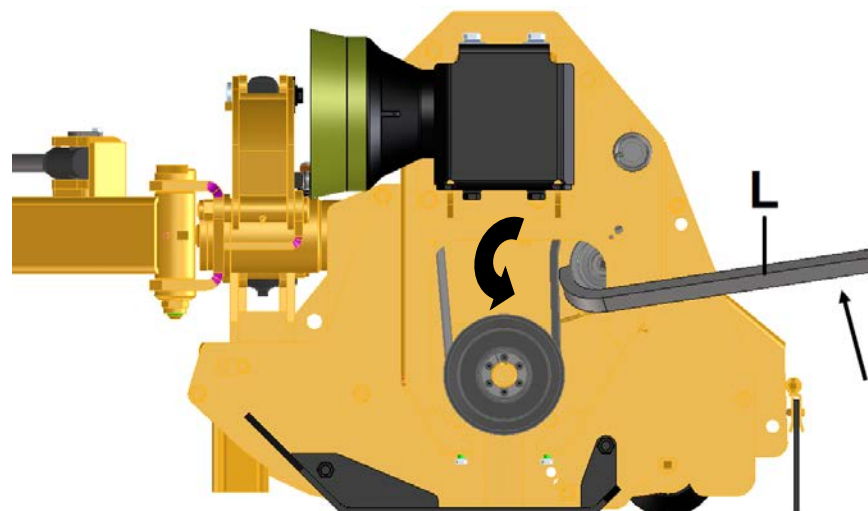
5. Using lever L, put pressure on the roll by pulling it outwards until a M10 x30÷40 screw can be inserted into hole A, then release it, slowly place the belt tensioner plate on the screw inserted in hole A;



ATTENZIONE



CAUTELA



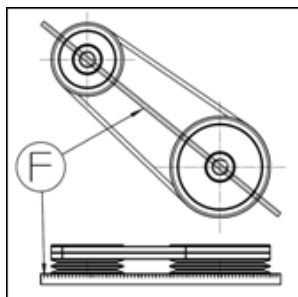
6. Now there should be no more pressure on the belts, thus allowing the operator to replace them;

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.

7. After replacing it, put some more pressure on the sliding roll until removing the screw M10 from hole A, then slowly bring the belt tensioner roll near the belts and lean it on them. The roll sustained the initial pre-load and no further interventions are required.

When you need to check the tensioning or re-tension the belts tensioner, follow the indications in chapter 4.2.2.

The pulleys must be aligned: make sure they are using a ruler F.



8. Remount the crankcase using the appropriate screws.

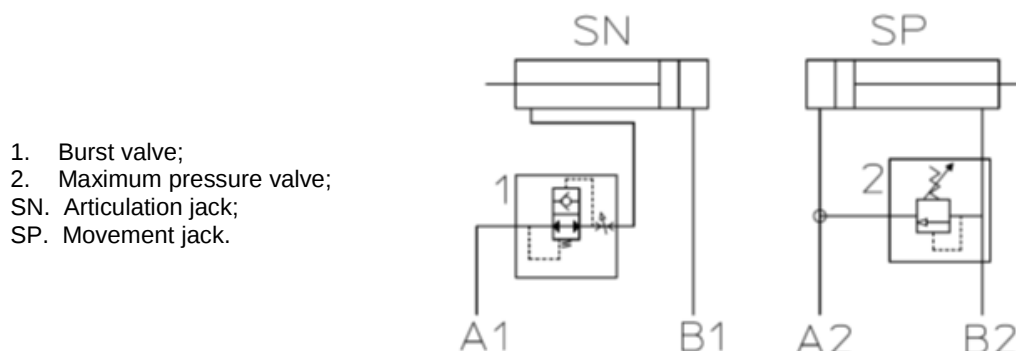
Never work without the belt protection casing.

After replacing the belt, adjust it as described in chapter 4.2.2.

4.2.5. HYDRAULIC SYSTEM

 ATTENZIONE	Visually check the machine, make sure tat there are no loosened couplings, damaged tubes, cuts or any other signs of wear. Tighten the loosened couplings and replace the damaged or worn tubes.
--	---

The hydraulic system diagram of the machine is indicated below and consists of:



In order to connect the machine consult chapter 3 paragraph 3.4

HYDRAULIC TUBING REPLACEMENT PROCEDURE

 ATTENZIONE	1. Before removing a hydraulic tube, make sure that any residual pressure was discharged from the system;
	2. Precisely identify the damaged tube and loosen using an appropriate key the two connection points, paying attention to any possible leakages of hydraulic fluid;
	3. Replace the damaged tube using only original spare parts;
	4. Before installing the new tube make sure that the connection points are in proper state (threads, seals, etc.);
	5. With the proper tools screw clockwise the fittings of the hydraulic tubes that present leakage. Do not tighten excessively otherwise you will damage the threads of the fittings.
	Any 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.
	The gathered oil must be disposed of in compliance with the laws in force in the country of use.

4.2.6. 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.

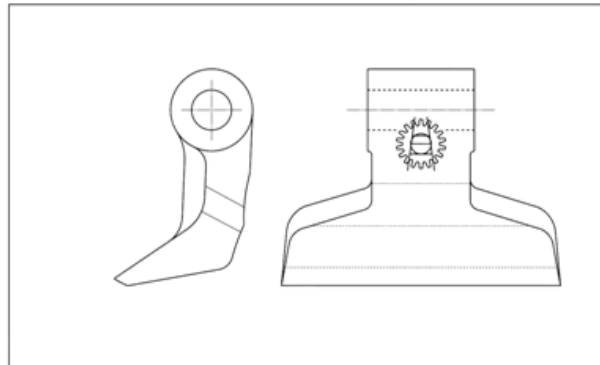
The dimensions and weights of the tools are strictly controlled: if they are completely replaced, the rotor may not require dynamic balancing again (refer to: "TOOLS REPLACEMENT PROCEDURE")

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.

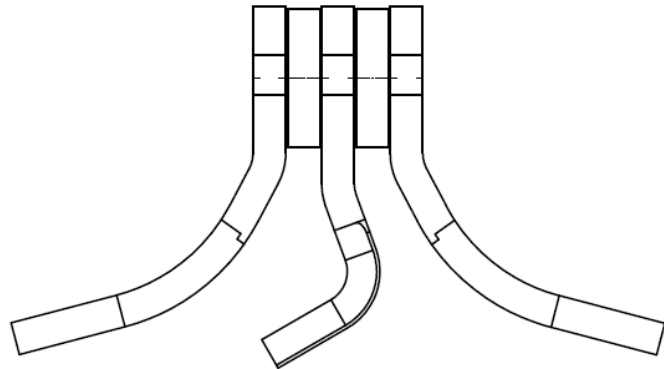


replace the worn and/or damaged tools with original tools marked with the Berti brand.

Hammer type "A":



Universal blade "Y":



The lifetime of the tools depends on the type of operation and on the type of terrain being processed. They should be fully replaced after about 200 working hours.

4.2.6.1. TOOLS REPLACEMENT PROCEDURE



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. Pay attention to the direction in which you assemble the tools.

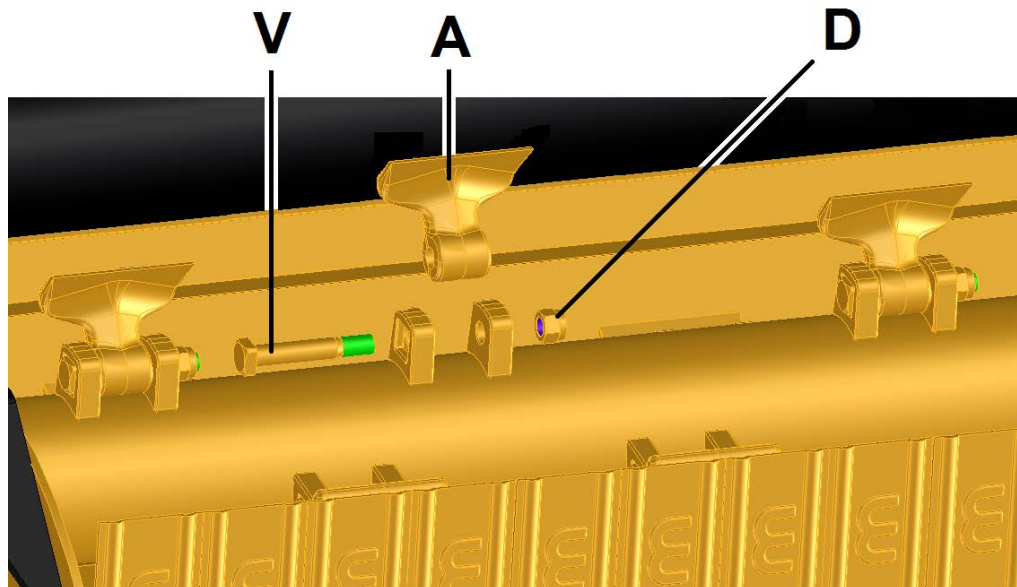


Hook the machine, turn it over and place it on appropriate supports;

At the workshop, use appropriate equipment (hoists and beams) to 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.

IF THE MACHINE ROTOR USES HAMMERS, PROCEED AS FOLLOWS:

Loosen nut D, hold hammer A and remove screw V. Once the hammer has been removed, check the conditions of the supports, in particular the ovalisation of the holes, of the square housing of the screw head and check for any peripheral wear. If any of the described phenomena are present, contact the manufacturer and request further indications.

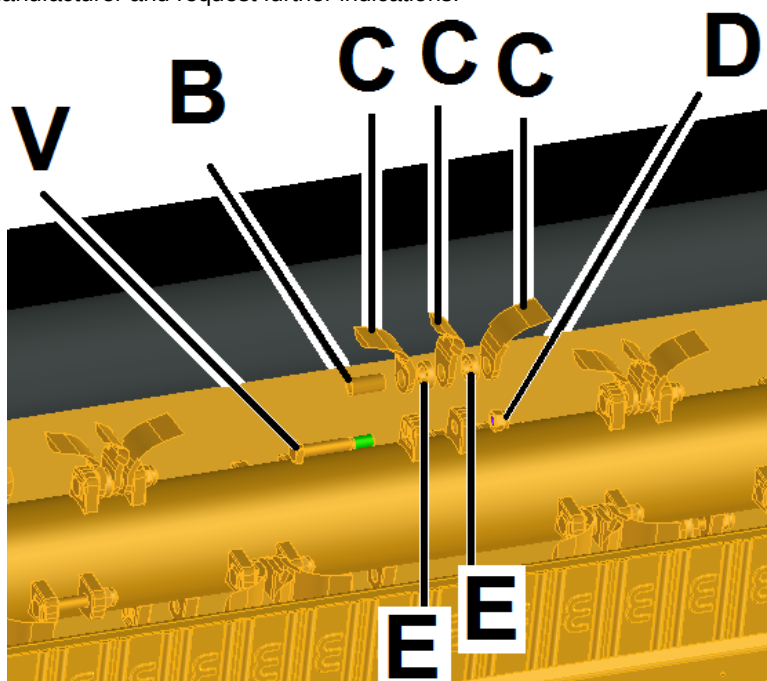


Replace the new hammer A placing it between the rotor supports, insert the new screw paying attention to match the square head of the screw with the housing on the support.

Mount the new nut and fasten it.

IF THE MACHINE ROTOR USES BLADES, PROCEED AS FOLLOWS:

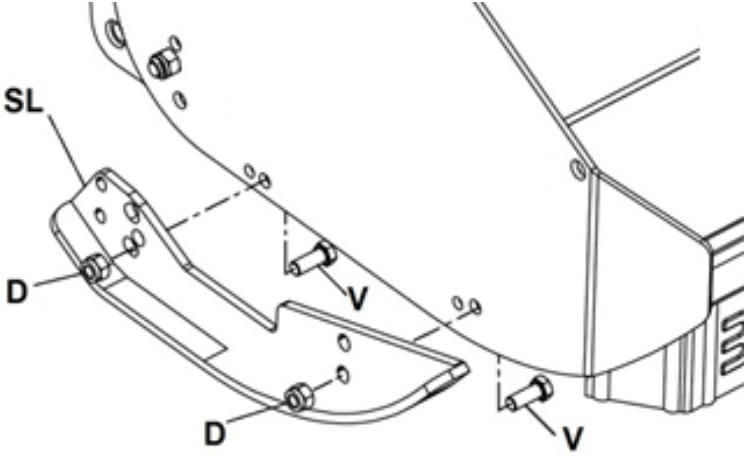
Loosen nut D, hold blades C and remove screw V, taking care that spacers E and bushing B do not fall on the floor. Once the blades have been removed, check the conditions of the supports, in particular the ovalisation of the holes, of the square housing of the screw head and check for any peripheral wear. If any of the described phenomena are present, contact the manufacturer and request further indications.



 ATTENZIONE	Replace the new blades C placing them between the rotor supports with the respective spacers E and bushings B, insert the new screw matching the square head of the screw with the square housing on the support.
	Mount the new nut and fasten it.
	After completing all operations, turn the machine over once again, place it on the ground and repeat the connection and start-up procedure described in paragraphs 3.4. and 3.5.
	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.
	If after replacing the tools, the vibrations persist, proceed with a new dynamic balancing of the rotor at a specialised workshop.
	Periodically check the hammers screws and nuts fastening; if they are loose, the rotor may get damaged and dangerous ejections may occur.
	The original spare parts provided by our company ensure complete and correct use of the machine.

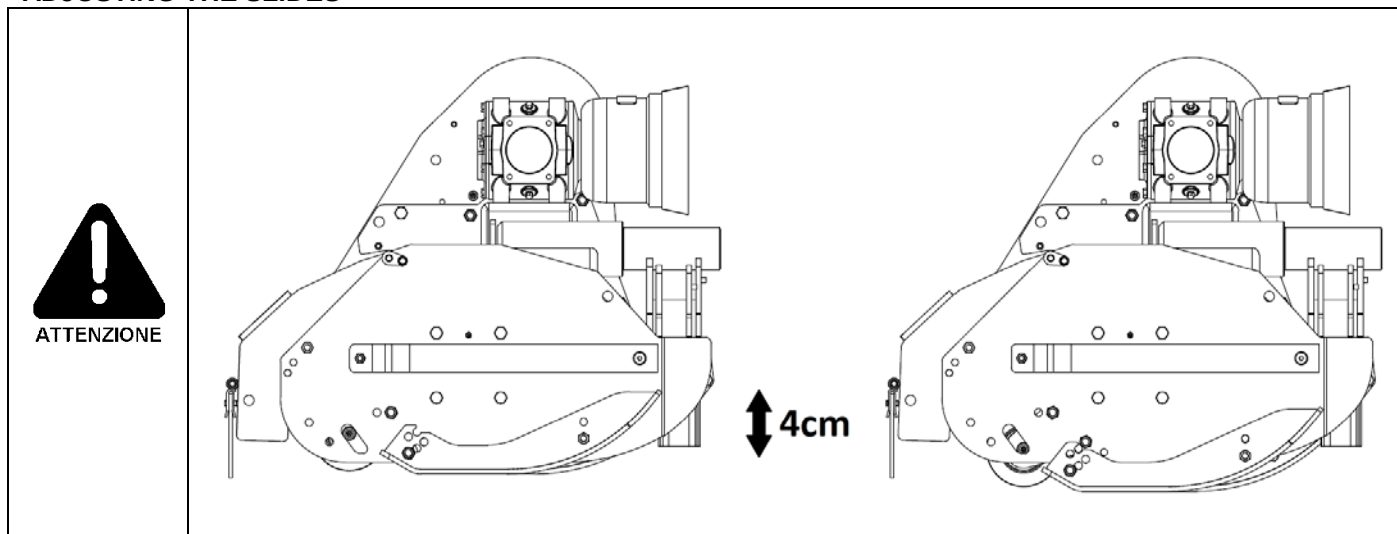
4.2.7. SUPPORT SLIDES REPLACEMENT

The machine is equipped with anti-wear slides that can be replaced in the following mode:

 ATTENZIONE	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 paragraph 1.5.3) in compliance with the laws in force in the country of use.
	1. Unscrew nuts D and remove screws V;
	
	2. Replace the anti-wear slides SL both from the right and from the left side of the machine;
	3. Mount the screws V using the appropriate nuts D;
	4. After completing all operations, repeat the "Machine Connection and Start-up" procedure described from paragraph 3.4 to 3.5.

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

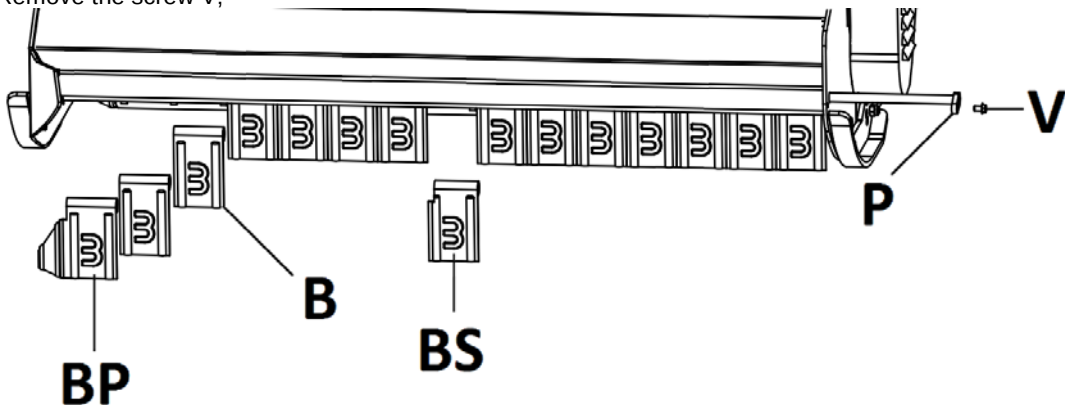
ADJUSTING THE SLIDES

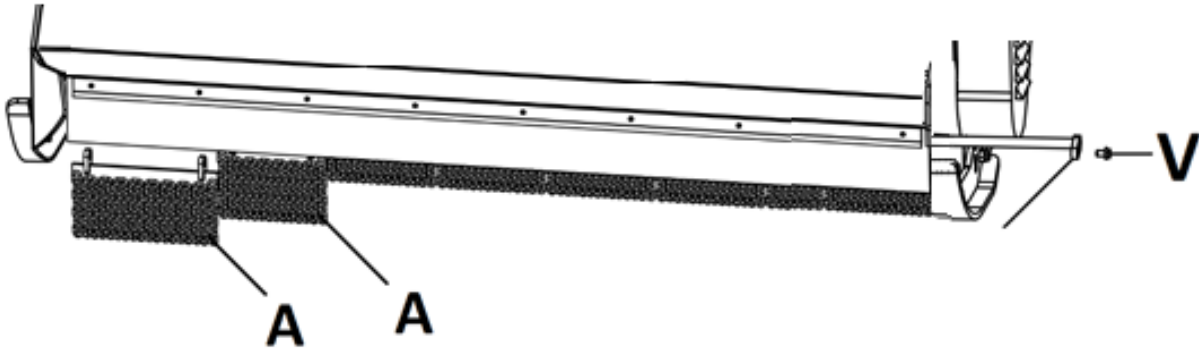


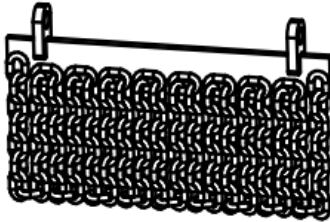
 ATTENZIONE	The skids can be adjusted to achieve a different cutting height. IMPORTANT: adjust the height of the levelling roller according to the height of the skids. The machine must be parallel to the ground.
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4.2.8. REPLACEMENT OF THE FRONT GUARDS OF THE MACHINE

The machine is equipped with frontal guards consisting of panels or chains fastened to the machine crate.

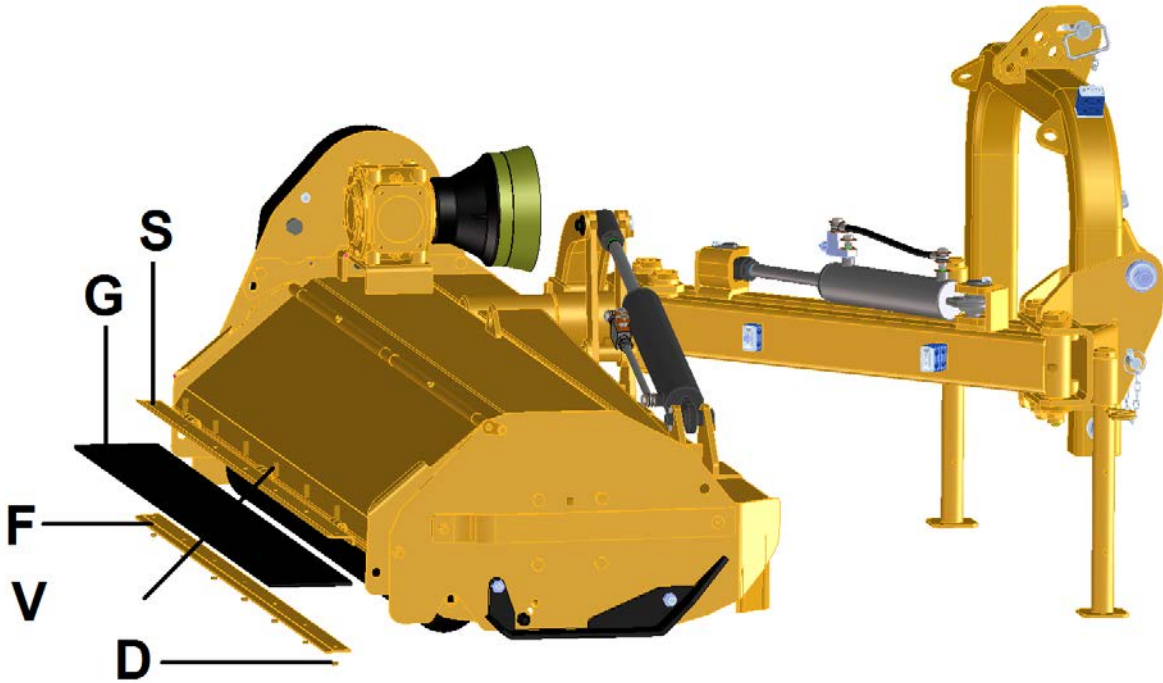
FRONT GUARDS - PANELS	
 PERICOLO  ATTENZIONE	Panels must always be present and they must be in excellent state. Operating without panels means operating without guards, and therefore the use of the machine in such conditions is considered improper. The manufacturer declines any responsibility for serious damages/accidents to persons, property and animals due to improper use of the machine.
	At the workshop, use appropriate equipment (hoists and beams) to 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. Remove the screw V; 
	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;

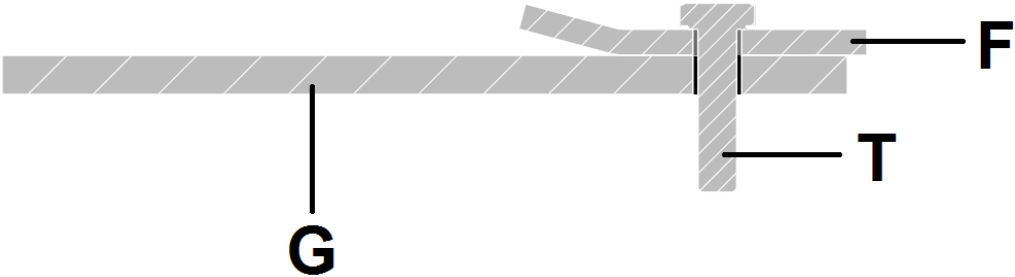
 ATTENZIONE	4. Replace the panels (the first in the series must be notched BP), introducing them into the through-pin P; near the supports of the through-pin thread, introduce the notched panels leaving no gap between them.  5. Tighten the screw V. Repeat the "Machine Connection and Start-up" procedure described from paragraph 3.4 to 3.5.
	The original spare parts provided by our company ensure complete and correct use of the machine.
FRONT GUARDS - CHAINS	
 PERICOLO  ATTENZIONE	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. At the workshop, use appropriate equipment (hoists and beams) to 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. Remove the screw V;  2. Gradually remove the front protection pin P, making sure that the sections of the chains A do not fall to the ground; 3. Check for any damage; if any, proceed to immediate repair so as to restore the initial state;

 ATTENZIONE	4. Replace the sections of the chains A, threading them through the through pin P; 
	5. Tighten the screw V.
	Put the machine back on the ground 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.

4.2.9. REPLACEMENT OF THE REAR PROTECTION OF THE MACHINE

The machine features a rear protection consisting of a rubber plate attached to a suitable support by means of bolts.

 PERICOLO  ATTENZIONE	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 paragraph 1.5.3) in compliance with the laws in force in the country of use.
	1. Disconnect the machine from the tractor; 2. Rotate the rubber support S about 90° then unscrew nuts D and remove screws V, making sure that the rubber plate G and the bolted support D do not fall to the ground.
	
	3. Check for any damage on the support S; if any, proceed to immediate repair so as to restore its initial state;
	4. Replace the rubber plate G;

	5. Place the new rubber plate G in support F, taking care to fit it perfectly in its housing. Drill a hole in the rubber in correspondence with holes T; 
	6. Secure the new rubber G to support S by tightening nuts D and screws V;
	7. Refit support S with the rubber mounted in the starting position.
	8. After completing all the operation, repeat the "Machine Connection and Start-up" procedure described from paragraph 3.4 to 3.5.

4.2.10. 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 of straws, hay or flammable residues.

4.3. STORAGE - WINTERING

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.

4.4. SCRAPPING

 ATTENZIONE	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 re-cycled, if collected by appropriate centres.
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4.5. SCHEDULED MAINTENANCE TABLE

Description	Checks
GENERAL MACHINE CHECKS	
Rotor greasing	Every 8 hours of work
Roll greasing	Every 8 hours of work
Joint greasing	Every 20 hours of work
Automatic belt tensioner greasing	Every 8 working hours / Every 80 working hours
Helm joint greasing	Every 20 hours of work
Hood hinge greasing	Every 8 hours of work
Parallelogram greasing	Every 20 hours of work
Anti-shock greasing	Every 20 hours of work
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
Support slides replacement	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	
Hydraulic tubes fastening check	At each start-up and each fluid leakage
Check of the hydraulic tubes	Check at every start-up. In case of damage or seepage, replace immediately

4.6. 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 tractor advancement speed • Check belts tensioning, oil capacity, supply pressure • Replace the roll support • Replace the slides • Go over the area several times
Premature tool wear	• Terrain with stones or sandy • Tools cutting height too Low • The rotor rotates too quickly or too slowly	• Searching • Adjust cutting height • Check the machine adjustment
Machine noise	• Unbalanced rotor • Counter-weights loss • Damaged, worn or missing tools • Worn bearings	• Balancing in specialised workshop • Replace the tools • Replace bearings
Excessive heating of the gearbox	• Mulcher oil level too low • Oil finished • Blockages in the power circuit of the machine • Excessive amount of material to be processed; • Mulcher oil cooling system too small	• Add more oil in the mulcher • Replace oil • Remove the quick couplings. • Go over the area several times or decrease the advancement speed • Give more power to the cooling system
Frequent breakage of the gearbox oil seal	• Pressurised machine reservoir • Worn out engine	• Periodically vent the tank and contact the mulcher dealer • Replace the gearbox
Frequent breakage of the bearings	• The machine frame is folded • The bearing were not lubricated • The rotor was stressed excessively • Unbalanced/folded rotor	• Replace the machine frame • 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 • Disconnected hydraulic tubes • fault at the mulcher supply system	• Consult the "machine clogging" procedure • Seals and bearings replacement • Gearbox replacement • Transmission replacement • Belts replacement • Rotor replacement • Properly connect the hydraulic tubes • Contact the mulcher mechanic
Worn/thorn 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 blade • Excessively stressed frame and crushed to the ground • Unbalanced rotor	• Change the frame; • Change the frame; • 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

5. GENERAL CONDITIONS

5.1. 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.

5.2. WARRANTY

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

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 tax 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 confirmation of incorrect operation of the operator;
 - 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 damages to the machine 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 to make any modifications considered necessary to improve its products at any moment and is not obliged to add these modifications to machines that have already been manufactured, delivered or are under construction.
- These general warranty conditions replace and cancel any other previous condition, expressed or implied.

5.3. NOTES

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