



INSTRUCTION MANUAL

MULCHERS

Trademark:
Models:

BERTI Macchine Agricole
TA/M – TA/MI



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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.

This instruction manual is divided into clearly marked chapters.

The indications contained by this manual are intended for professional users, with specific knowledge regarding the methods of use of the machine, 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 damages/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.



For the DISTRIBUTOR, RESELLER and IMPORTER: the person responsible to deliver the machine to the end user must ensure application 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	Mulchers
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 produces the →Berti Macchine Agricole S.p.A. hydraulic hedge mower

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 a mulcher Cat. 3 must be connected simply adjust the registers of the parallels of the tractor on Cat. 3, so that 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, property and animals must remain outside the machine operating area.
	DANGER- This signal indicates and imminent and real dangerous situation, that may cause serious injuries or death if not avoided.
	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.
	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 the event 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 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 and year of manufacture;
- Weight

The machine is supplied as standard with:

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



Figure 1

TA/M

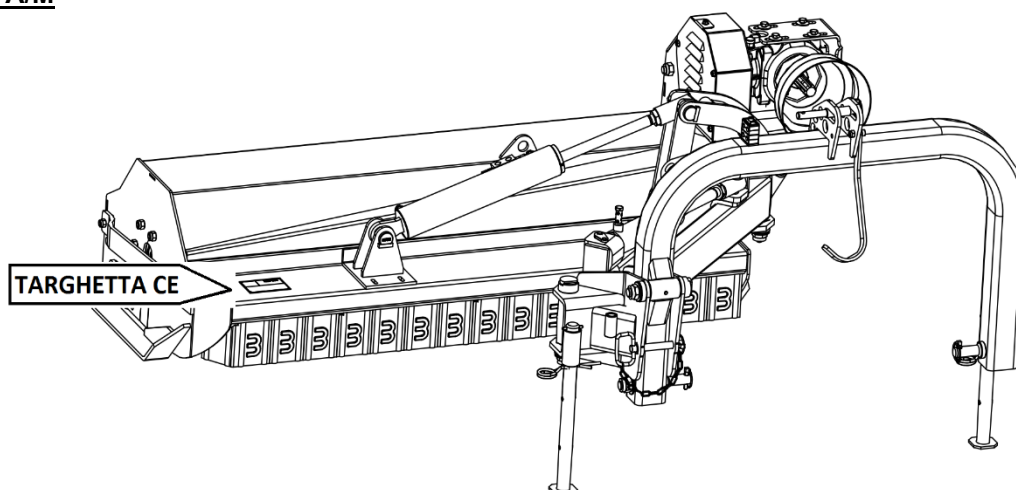


Figure 2

TA/MI

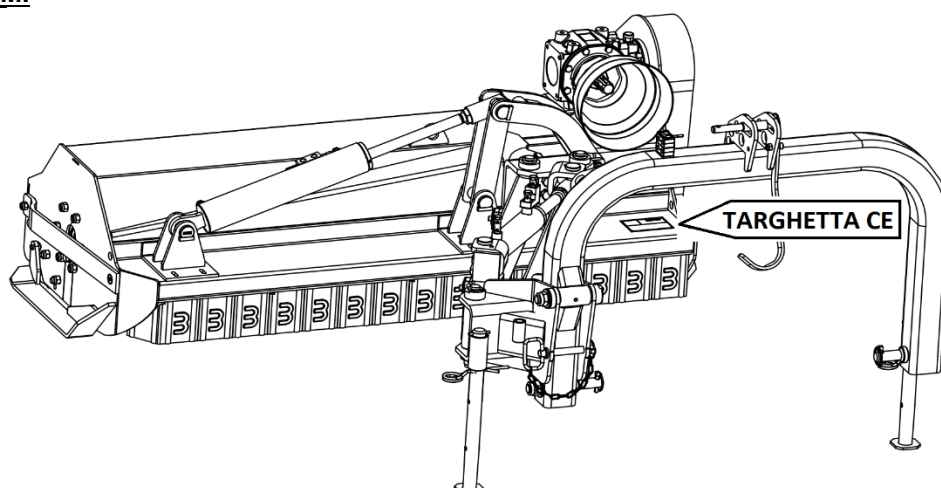


Figure 3

1.4. CE CERTIFICATE OF CONFORMITY OF THE MACHINE

	BERTI BERTI MACCHINE AGRICOLE S.p.A. Via Musi 1/a - 3 - 37042 CALDIERO (Verona) - ITALY Tel. +39.045.6139711 - Fax +39.045.6150251 info@bertima.it - www.bertima.it		
 Dichiarazione CE di Conformità ai sensi della direttiva 2006/42/CE EC Certificate of Conformity - conforming Directive 2006/42/CE EG Konformitätserklärung entsprechend der EU-Richtlinie 2006/42/CE Déclaration CE de conformité à la directive de la 2006/42/CE			
La Ditta / We / Wir / Nous		BERTI Macchine Agricole S.p.A. 37042 CALDIERO - VERONA - ITALY	
dichiara sotto la propria responsabilità nella sua qualità di costruttore, che la macchina a cui si applica questa dichiarazione, è conforme ai requisiti essenziali di sicurezza e di tutela della salute di cui alla <u>Direttiva 2006/42/CE</u>. Per la verifica delle macchine sono state consultate le seguenti norme armonizzate: declare in sole responsibility, in quality of Manufacturer, that the product to which this certificate applies, conforms to the basic safety and health requirements of <u>Directive 2006/42/CE</u>, and according to the European harmonized standards: erklären in alleiniger Verantwortung, als Hersteller, dass das Produkt auf das sich diese Erklärung bezieht, mit den grundlegenden Sicherheits- und Gesundheitsschutzanforderungen der <u>EU-Richtlinie 2006/42/CE</u>, und mit den Anforderungen der gemeinsamen EU-Richtlinien konform ist: déclarons sous notre seule responsabilité, comme Fabricante, que le produit faisant l'objet de la déclaration est conforme aux prescriptions fondamentales en matière de sécurité et de santé stipulées dans la <u>Directive de la 2006/42/CE</u>. Nos déclarations que les normes harmonisées suivantes ont été appliquées: <u>UNI EN 13521-2:2003-01-2009</u> <u>UNI EN ISO 13857:2009</u> <u>UNI EN ISO 2767-1-2:1998</u> <u>UNI EN ISO 12100:2010</u> Nonché le seguenti specifiche tecniche: And the following technical specifications: Und die folgende technische Ausstattungen: Et les spécifications techniques suivantes: <u>ISO 11694:1992</u>			
MODELLO -- TYPE		XXXXXXX	
MATRICOLA -- N° DE SERIE		XXXXXXX	
Legale rappresentante e custode del fascicolo tecnico Legal representative and custodian of the technical pamphlet Gesetzlicher Vertreter und Hüter des technischen Heft Représentant juridique et dépositaire du dossier technique  BERTI Macchine Agricole S.p.A. BERTIMARIO <i>Amministratore Unico</i>			
La presente certificazione è parte integrante della macchina This EC certificate is an integral part of the unit Die hier beigelegte Erklärung ist wesentlicher Bestandteil der Maschine Cette déclaration de conformité est partie intégrative de l'appareil P_PDCE_M01r00			
Cod. Fisc. e Reg. Impr. di VR n° 00068150234 - P.IVA : 00068150234 - R.E.A. VR 84849 - Cap. Soc. € 151.704,00 Iv Società soggetta a direzione e coordinamento da parte della società HB Holding Berti S.r.l. R.L. di VR03066950241			

1.5. MACHINE INFORMATION

1.5.1. SPECIFIED USE

The mulchers model TA and TA/MI have been designed to be used exclusively in the agricultural sector, for mulching grass, residual vegetation, bushes and branches up to a diameter of approximately 3-4 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.

DO NOT USE THE MACHINE FOR PURPOSES DIFFERENTLY 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 that 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 are mounted the mulcher tools, that rotates at high speed.

The mulcher is made of:

- A frame;
- A three-point connection system;
- A drive shaft coupling;
- A gearbox
- A distributor unit (pulleys, locking sets, automatic belt tensioner);
- A rotor;
- A series of mulching tools;
- A supporting device in stand-by position;
- A rear roll;
- CE accident prevention guards.

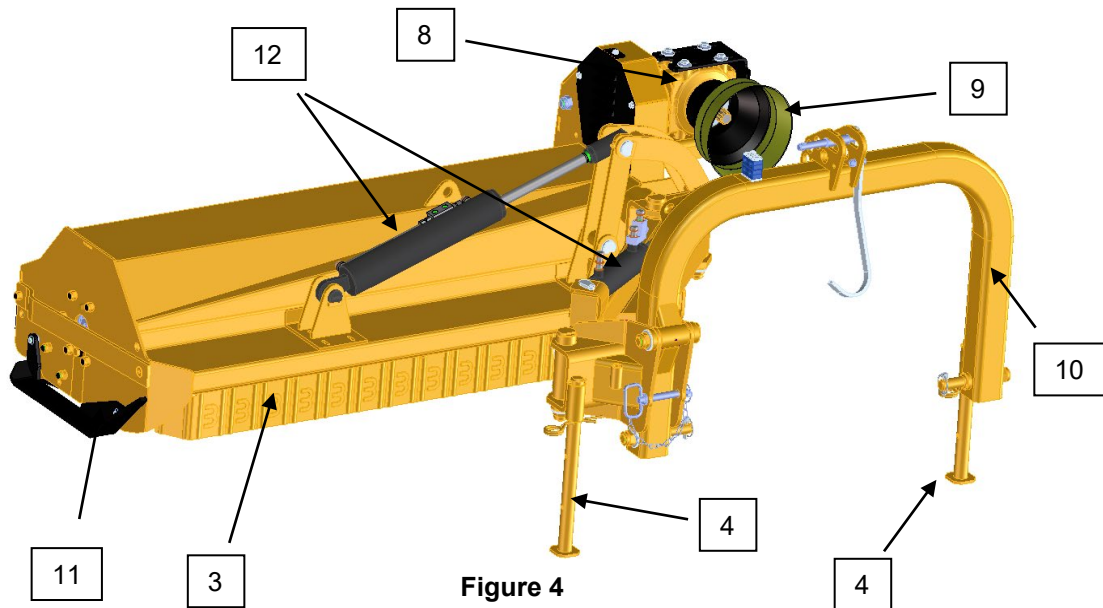


Figure 4

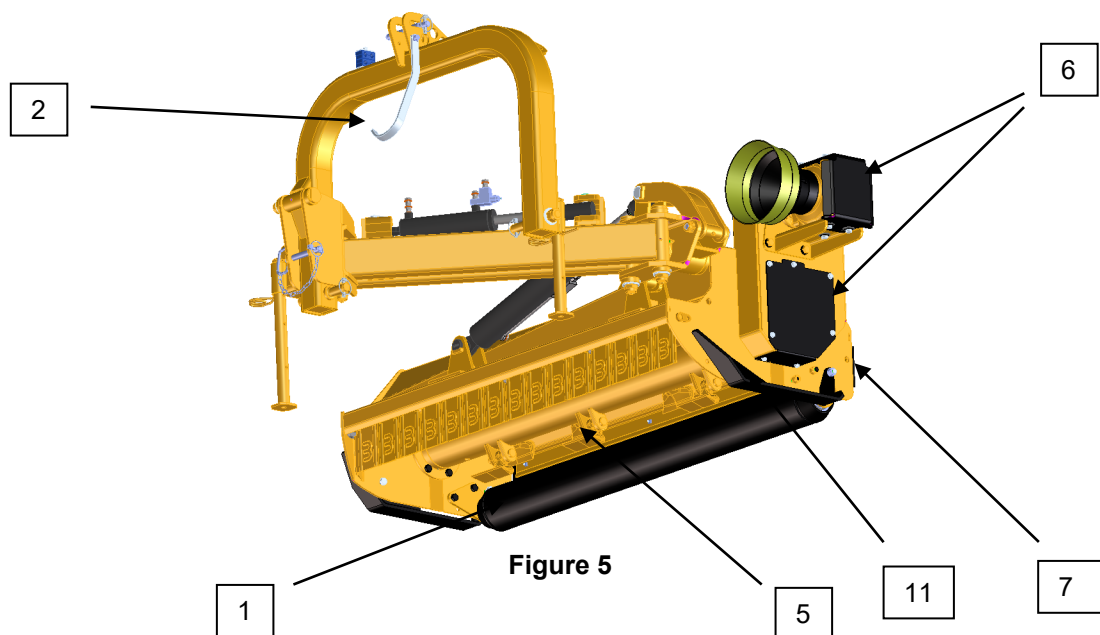
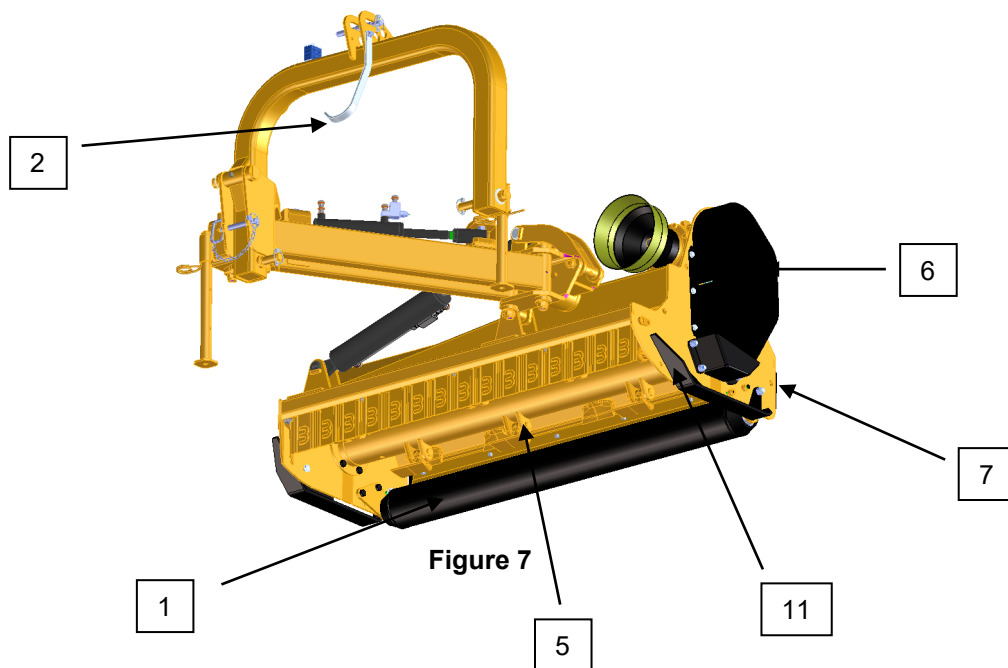
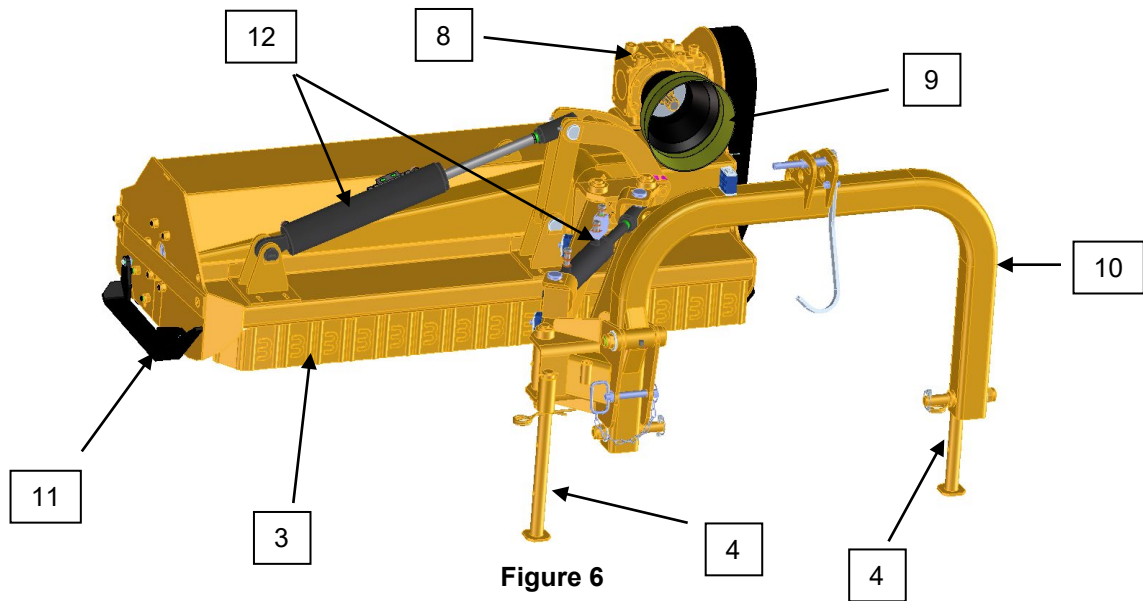


Figure 5

- | | |
|--|--------------------------|
| 1 Levelling roll | 7 Rear protection rubber |
| 2 Support cardan shaft in stand-by | 8 Gearbox |
| 3 Front protection devices with straps or chains | 9 Counter-cap |
| 4 Support foot | 10 Tiller |
| 5 Rotor | 11 Support slides |
| 6 Casing | 12 Movement jacks |

Mulcher Mod. **TA/M**



1 Levelling roller
2 Support cardan shaft in stand-by
3 Front protection devices with straps or chains
4 Support foot
5 Rotor
6 Casing

7 Rear protection rubber
8 Gearbox
9 Counter-cap
10 Tiller
11 Support slides
12 Movement jacks

Mulcher Mod. **TA/MI**

1.5.3. TECHNICAL DATA

The machine is suitable to be applied on tractors with power ranging from 37 to 66 kW (50 - 90 HP).
 It can work 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.

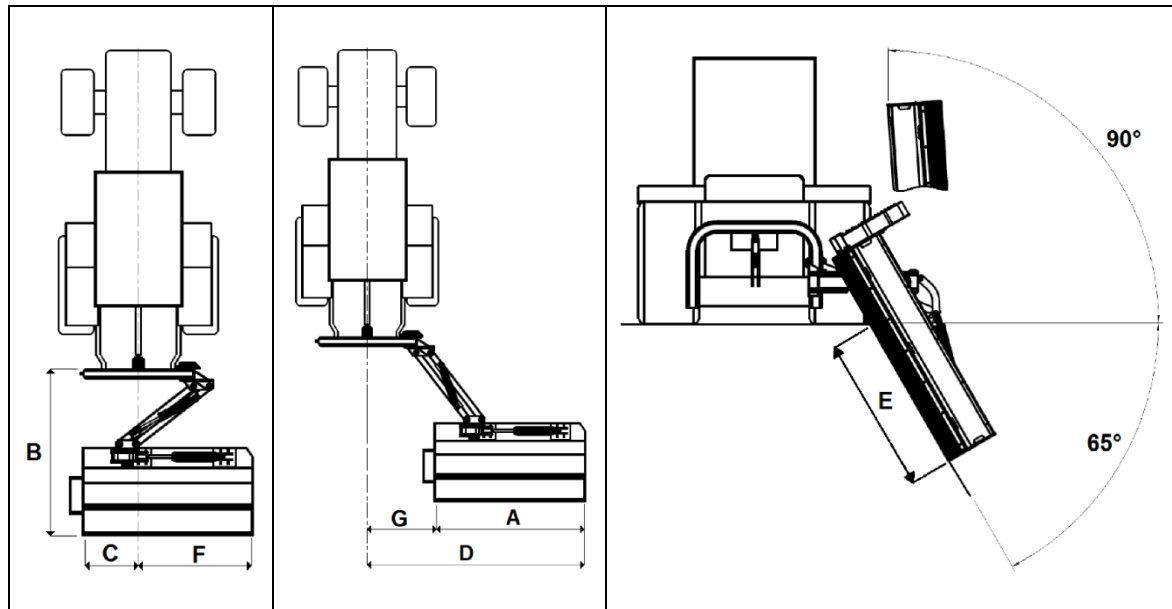


Figure 8

Mod.									
	cm	Min	Max	n°	n°	n°	PTO	min	max
TA/M 145	145	50	90	14	42	3	540	610	720
TA/M 160	160	50	90	14	42	3	540	640	750
TA/M 180	180	50	90	16	48	3	540	680	790
TA/M 200	200	50	90	18	54	3	540	720	830

Mod.	A	B	C	D	E	F	G
	cm	cm	cm	cm	cm	cm	cm
TA/M 145	145	167	16	266	140	129	121
TA/M 160	160	167	16	281	155	144	121
TA/M 180	180	167	16	301	175	164	121
TA/M 200	200	167	16	321	195	184	121

Table 1

Mod.									
	cm	Min	Max	n°	n°	n°	PTO	min	max
TA/MI 145	145	50	90	14	42	3	540	585	695
TA/MI 160	160	50	90	14	42	3	540	620	730
TA/MI 180	180	50	90	16	48	3	540	660	770
TA/MI 200	200	50	90	18	54	3	540	685	795

Mod.	A	B	C	D	E	F	G
	cm	cm	cm	cm	cm	cm	cm
TA/MI 145	145	167	54	228	102	91	83
TA/MI 160	160	167	54	243	117	106	83
TA/MI 180	180	167	54	263	137	126	83
TA/MI 200	200	167	54	283	157	146	83

Table 2



It is strictly prohibited to work with the rear hood open or in any case with the same in different positions with respect to the ones indicated and shown in the instructions manual in chapter 3 paragraph 3.6. The risk of projection is high. Use the hood open only for inspection or maintenance, with the tractor engine stopped, the parking brake enabled, the PTO removed and the ignition key extracted from the dashboard and guarded by the operator.

1.6. PROJECTION OF MATERIALS



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

- Make sure that the protections of the working 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



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

In time there may be an increase in the level of noise from the tractor - mulcher assembly due to phenomena of wear: it is advisable to regularly carry out assessment of risk from 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..
 PERICOLO	The machine must only be used by one operator driving the tractor.
 PERICOLO	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.
 PERICOLO	Before getting out of the tractor and before performing any maintenance operations on the mulcher, use the parking brake, turn off the engine, remove the ignition keys from the dashboard, and wait for 5 minutes inside the cabin to ensure that the rotor and relative tools completely stop.
 PERICOLO	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.
 PERICOLO	During use, the user must have proper visibility of the working areas that present dangers, therefore the mirrors and the windows of the tractor must be properly cleaned.

 PERICOLO	During the operating phases, the user must always stay inside the cabin, where he is safe. It is strictly forbidden the operation with the doors/windows open. Projected objects hazard!
 PERICOLO	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.
 PERICOLO	Never use the machine without knowing its features.
 PERICOLO	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.
 PERICOLO	The user must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases. 
 PERICOLO	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.
 PERICOLO	The operator assigned to the machine must not wear clothing that can cause entanglement.
 PERICOLO	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 to 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 the 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.

 PERICOLO	Pay attention to the risk of accidental ignition of the electric arc machine with overhead power lines.
 PERICOLO	Do not use the machine if you are tired, ill or under the effect of alcohol, medicines or drugs.
 PERICOLO	Carefully check the machine each time before starting it.
 PERICOLO	Before using the machine, make sure that all safety devices are properly in place and in good conditions. If there are failures or damage to the guards, replace them immediately.
 PERICOLO	It is strictly forbidden to remove or tamper with the guards and/or safety devices.
 PERICOLO	Make sure that the safety pictograms are in proper condition, 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.
 ATTENZIONE	The signs applied to the machine provide a series of important indications: their compliance will determine your safety.
 PERICOLO	It is strictly forbidden to perform any modification that may alter the original condition of the machine.
 PERICOLO	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.

 PERICOLO	Keep the machine free from foreign materials (debris, tools, other items), which may damage the operation or the operator.
	In the following paragraphs are listed other highly important safety standards. It is mandatory to read the entire instruction manual before using the machine.

2.2. FIRE-FIGHTING MEASURES

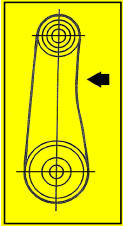
 ATTENZIONE	Keep in the tractor an extinguisher of proper capacity and maintain periodically. The hand extinguisher may only be used by personnel that know how to use it. The user is therefore responsible for providing proper training via particular courses.
 ATTENZIONE	The personnel that use the machine must know the main intervention techniques in case of fire.
 ATTENZIONE	Do not use the machine in areas that present explosion and/or fire hazard.
 ATTENZIONE	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.
 ATTENZIONE	Use appropriate extinguishing means: e.g. carbon dioxide, foam, chemical powder.
 ATTENZIONE	Do not perform any welding near containers, tubes, tanks, electric wires, or flammable materials in general.
 ATTENZIONE	In case of welding protect with appropriate screens the flammable parts.

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 from 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: it indicates the following dangers: do not stand between the equipments 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: it indicates the following risks: pay attention to hot parts and to the foldable parts of the machine, pay attention to the ejection of objects
3		ATTENTION: read carefully the use and maintenance manual, every action on the machine should be executed after switching off the tractor, after 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		CARDAN SHAFT ROTATING AT 540 rpm.
11		DO NOT REMOVE THE BELTS TENSIONER.
12		TENSIONED BELTS.
13		NOTES ON WARRANTY
14		GENERAL WARNINGS

2.3.2. POSITION OF PICTOGRAMS ON THE MACHINE

The pictograms are inserted as indicated in diagram:

TA/M

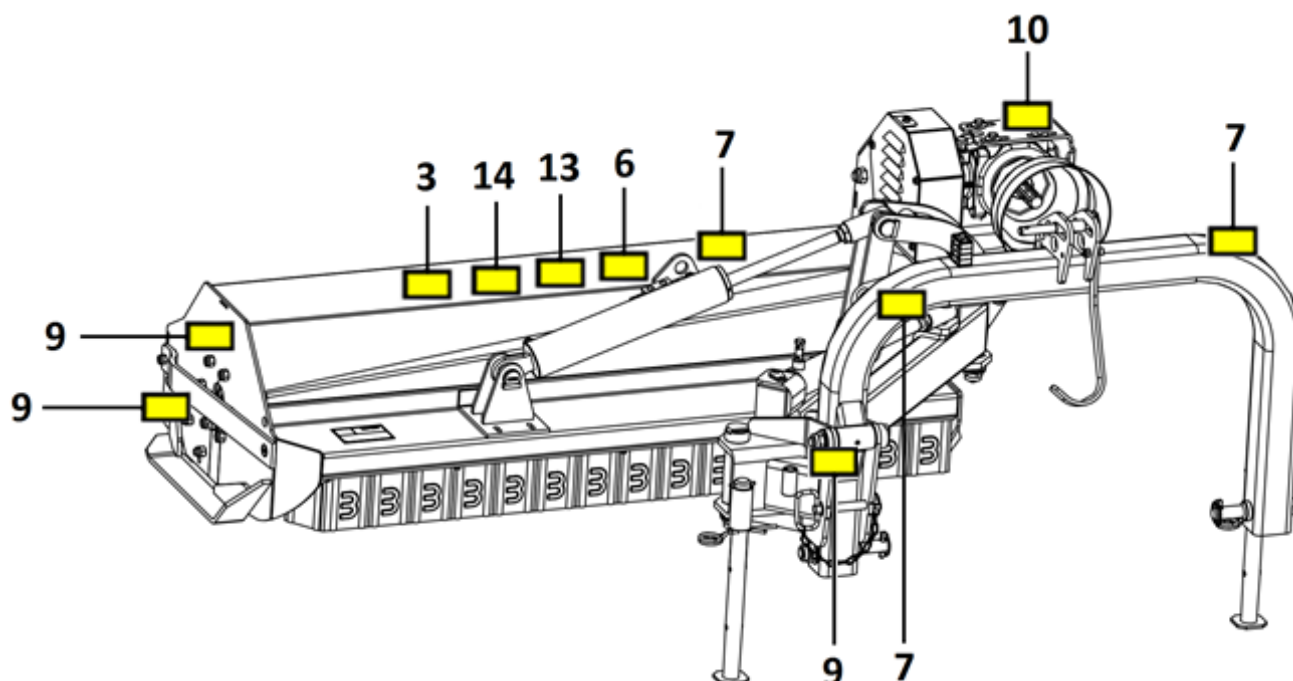


Figure 9

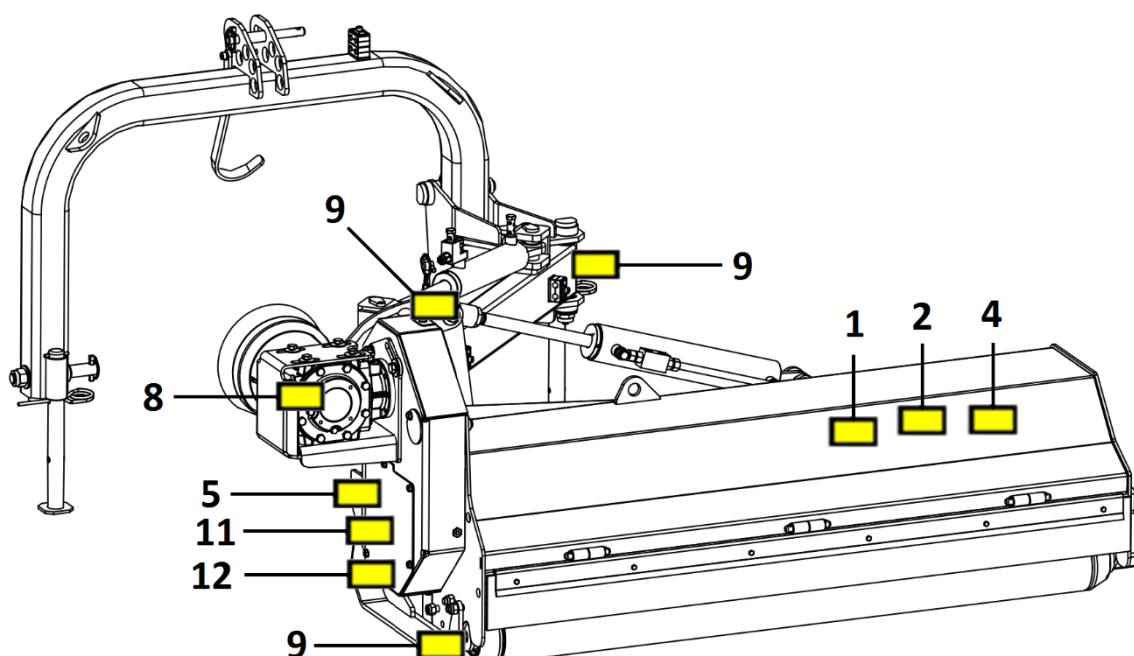


Figure 10

TA/MI

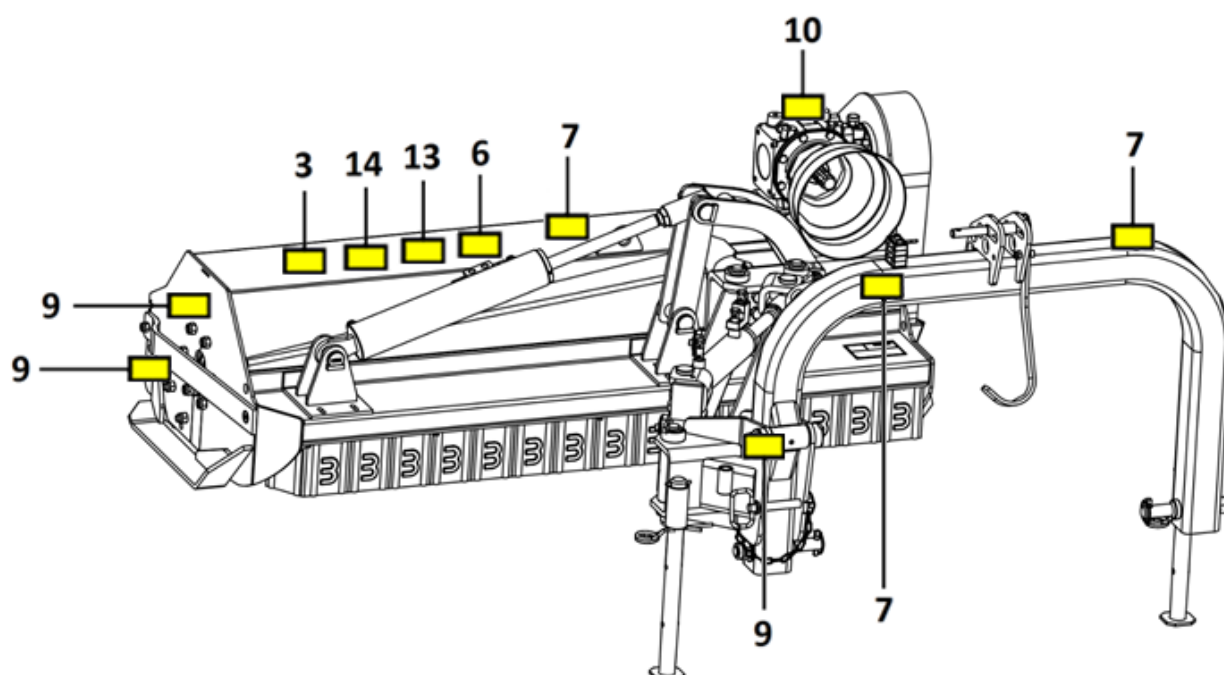


Figure 11

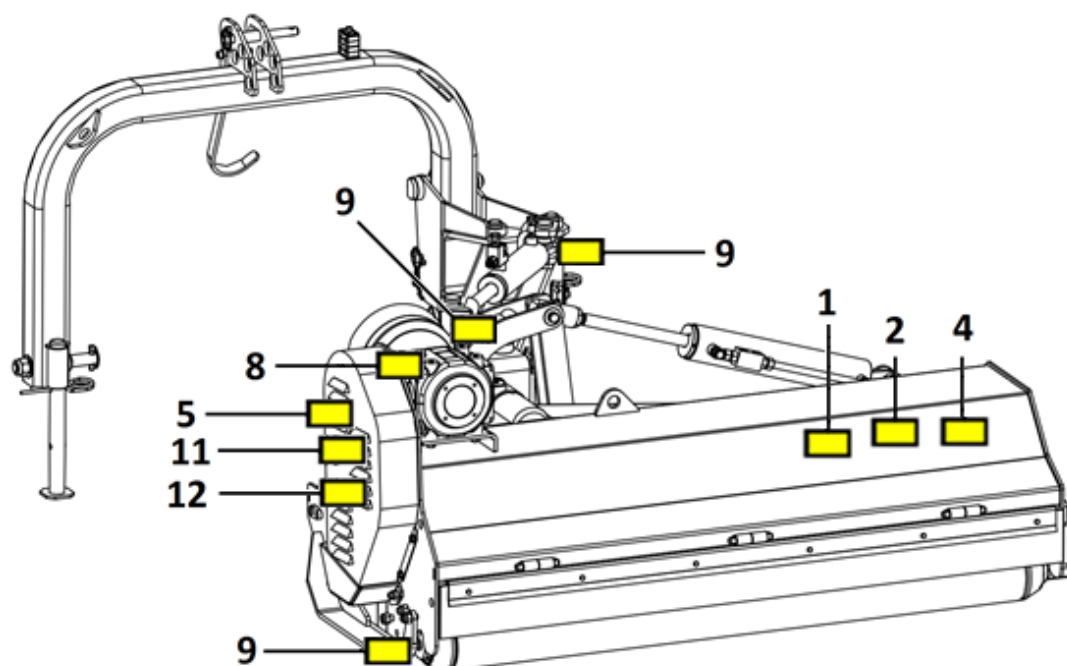


Figure 12

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

This innovative system was designed and built by the company "BERTI Macchine Agricole S.p.A." to increase the safety of the machine and the actual operator when working in the field, when working with the mulcher of the TA series protruding from the tractor. This technology allows the machine to respond immediately to a collision in a resilient manner, with a displacement S opposite to the direction of travel and horizontally to the ground (figure 10), in the event that the machine encounters during work an obstacle fixed to the ground (e.g. plant, pole).

The described reaction of the machine is used to prevent further damage to the same, to avoid damage to the tiller and allows the operator to intervene in time by stopping the work and by moving the machine away from the dangerous obstacle.

The patented anti-shock device is composed of calibrated springs in a box (figure 14) that allow movement opposite to the direction of work of the machine - parallelogram assembly to then return to the initial position thanks to the springs.

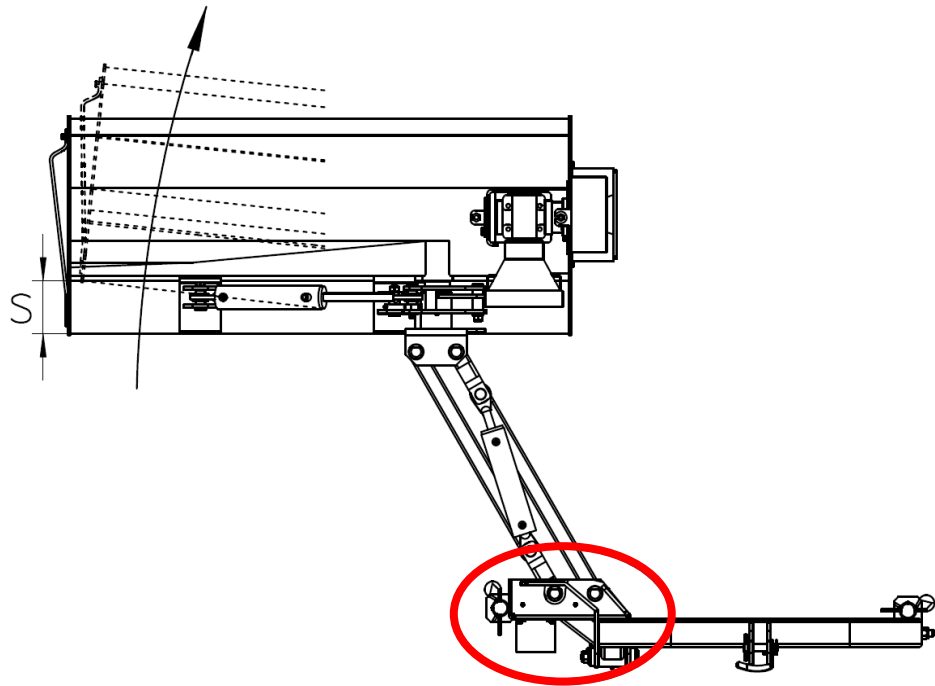


Figure 13

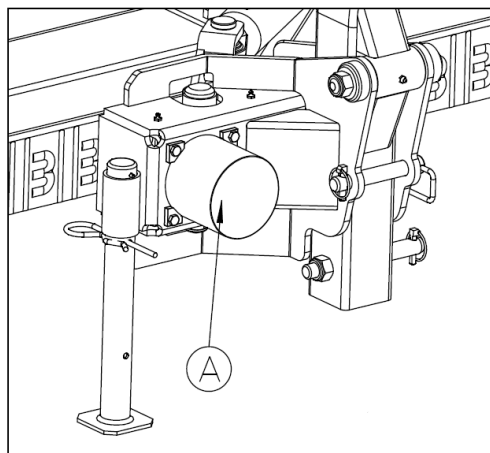


Figure 14

3. USE

3.1. INTRODUCTION

	Before using the machine, carefully read and understand the instruction manual and get familiarised with the machine. The machine may only be used by expert and properly trained users.
 ATTENZIONE	Keep all the parts of your body inside the tractor cabin, to reduce to a minimum the exposure to any external dangers such as thrown objects.
 ATTENZIONE	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.
 ATTENZIONE	The safety of the user and of the people around him depends on his judgement and prudence in the use of the machine. Therefore the functions of the machine and the safety standards must be properly known.
 ATTENZIONE	The user must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases. 
 ATTENZIONE	The machine must be in perfect functioning condition and must be repaired using only original spare parts.

3.2. HANDLING AND TRANSPORTATION

Pay maximum attention to safety during loading and unloading operations, which must be performed by qualified staff. When lifting the machine you must use the appropriate lifting points, indicated in the pictograms in figure 15-16. Visually check the machine before handling it as to make sure that the unstable parts do not represent a danger.



Never lift or handle the machine anchoring it to the rotor!



The manufacturer declines any responsibility regarding any damages to persons, animals and property 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/M

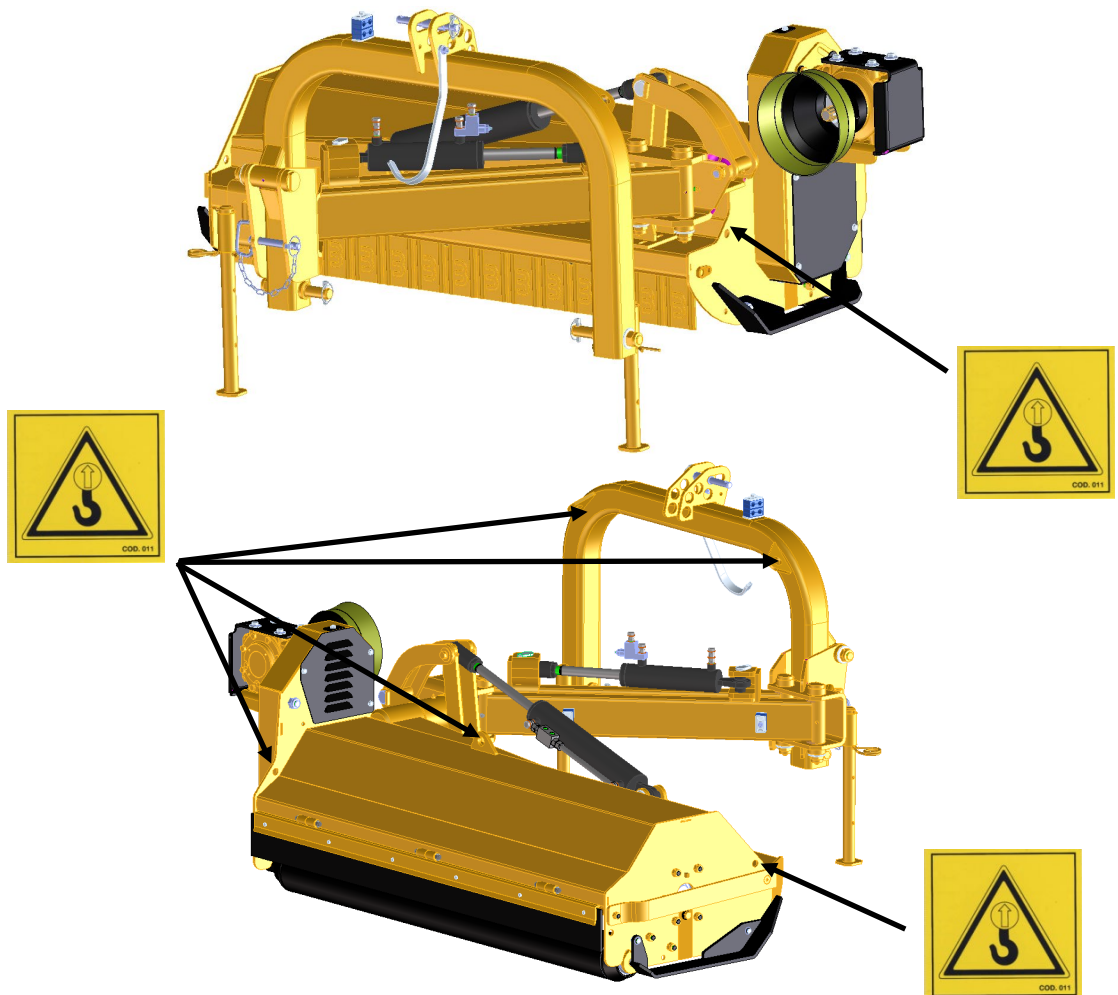


Figure 15

TA/MI

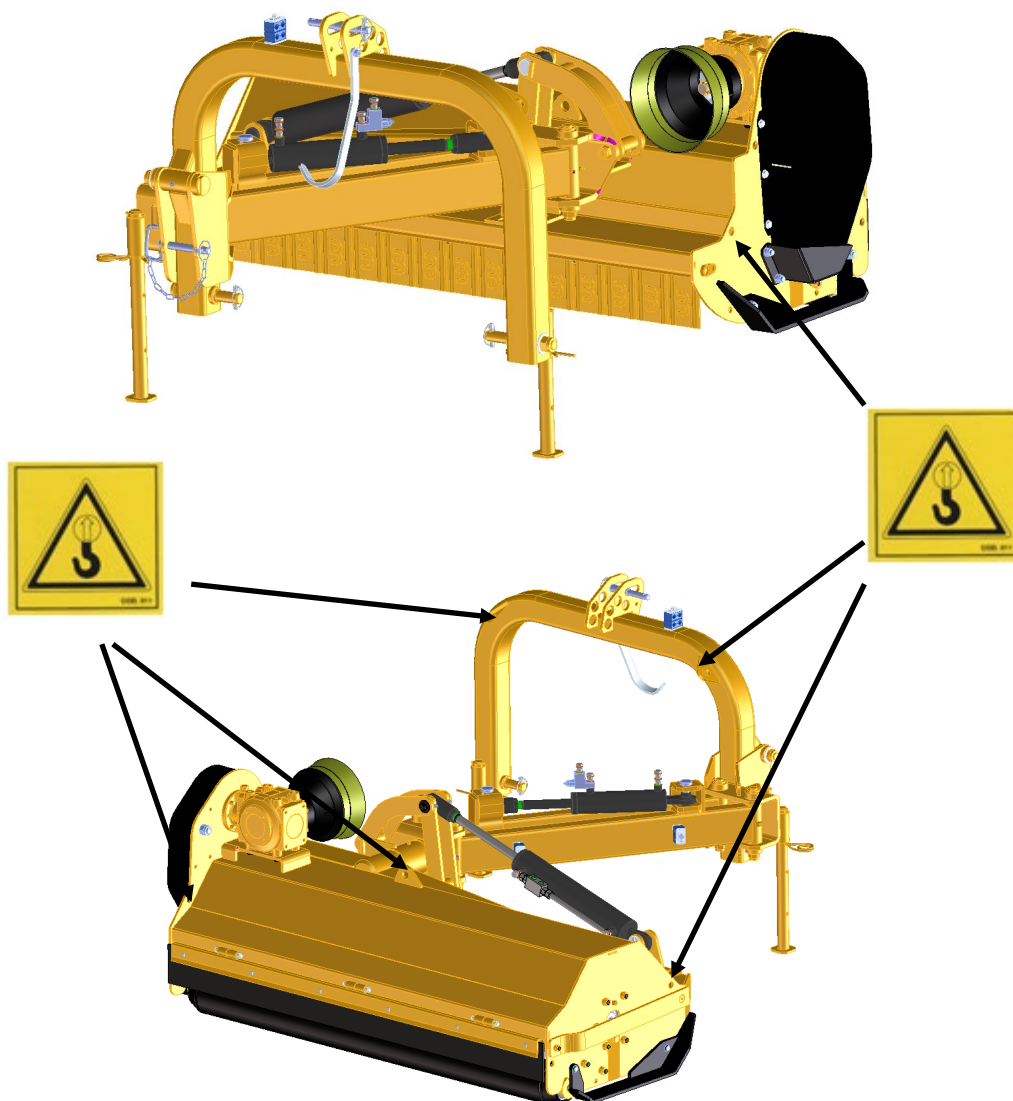


Figure 16



The machine is delivered half-disassembled to limit the dimensions in transportation: 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. Place the machine in a stable manner on a flat surface;
2. Remove the three-point tiller from the packaging and lay it on the ground;
3. With caution and care move the parallelogram arms until they are re-entered on the related holes, then secure them with the pin (figure 17);

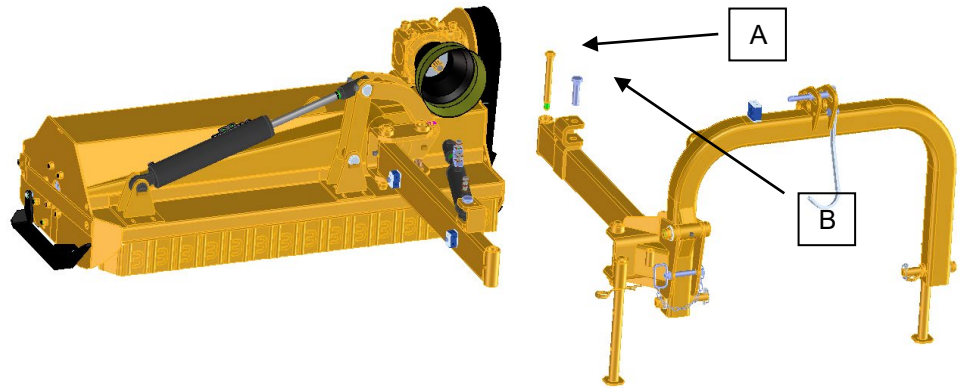


Figure 17

4. Move the jack and secure it with the relative pin B (figure 17);
5. The machine is ready for connection to the tractor (figure 18).

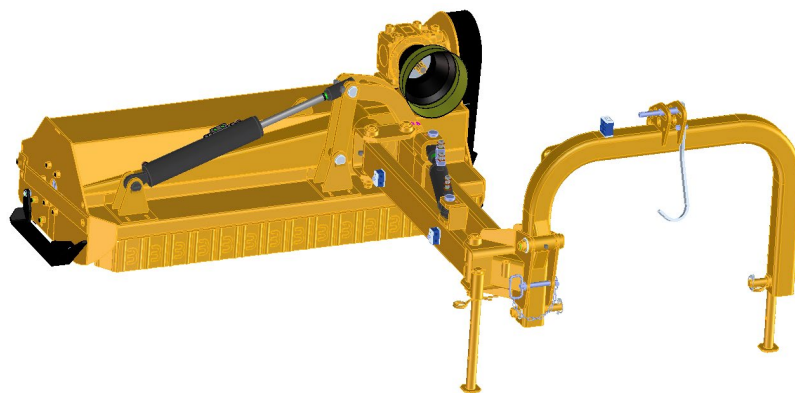


Figure 18

3.2.1. 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.



ATTENZIONE

During the transport on the road, the mulcher must be kept in transportation position and the PTO of the tractor must be switched off.

3.2.2. MACHINE TRANSPORT PROCEDURE

	Before being transported, all machine parts must be in optimal status.
	1. Disengage the P.T.O. and wait for the rotor to stop completely;
	2. By acting on the valve that controls the movement jack, close the machine behind the tractor;
	3. Lift the machine off the ground far enough to be able to rotate it vertically;
	4. By acting on the valve that controls the articulation jack, turn the machine into vertical position;
	5. Attach the safety chain C in the appropriate hook S (figure 19);
	Figure 19
	6. If necessary, lift the machine further so that the transmission elements 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 axle 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.

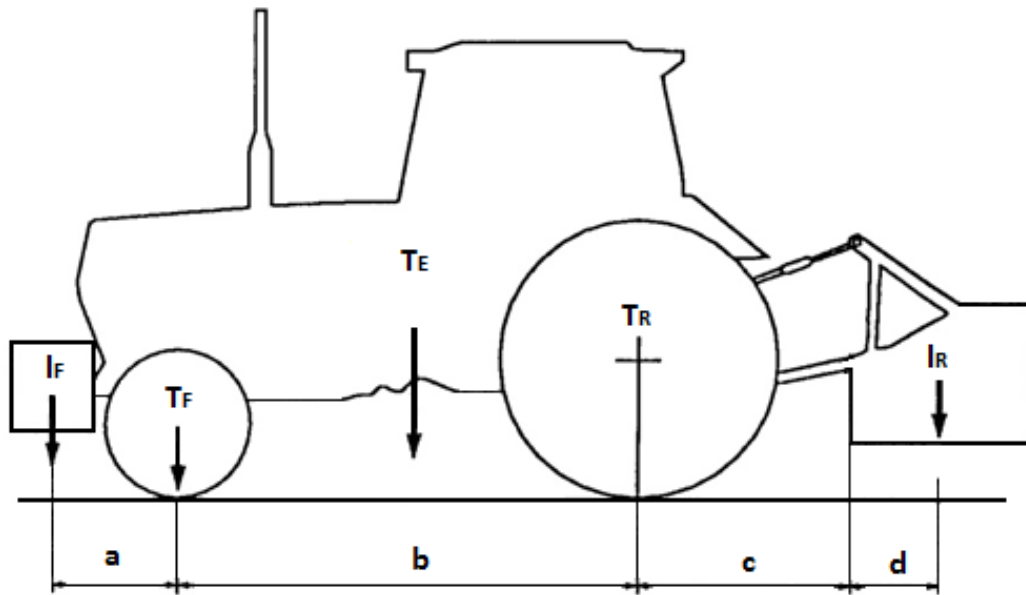


Figure 20

$$I_{F, \min} = \frac{(I_R \times (c + d)) - (T_F \times b) + (0,2 \times T_E \times b)}{a + b}$$

- T_E** = Weight of the tractor (empty)
T_F = Front axle load (empty tractor)
T_R = Rear axle load (empty tractor)
I_R = Rear mulcher weight/rear ballast
I_F = 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 parallels of the tractor
d = Distance from the centre of the ball of the parallels of the tractor to the centre of gravity of the rear mulcher/rear ballast

N.B.: if the machine is mounted on certified agricultural tractors and registered before the 6th May 1997, the following relation should also be checked: **M < 0.3XT**.



ATTENZIONE

The road transportation must be performed paying maximum attention 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.

	While moving in reverse, dark areas may be created that cannot be seen using the rear view mirrors.
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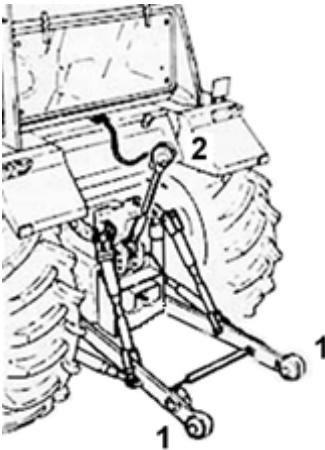
3.4. CONNECTION OF THE MACHINE TO THE TRACTOR

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.

	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.
	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	The user must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases. 
 ATTENZIONE	The following operations are very hazardous. Avoid standing in front of the machine during the approach of the working vehicle. Avoid the presence of uninvolved persons. During the installation phases, the PTO of the machine should be disengaged.
 PERICOLO	1. Remove the safety pin and the pins from the connection inlets 1 of the machine (figure 22); 2. With the tractor in reverse and activating the elevator, make the lower arms 1 match to the lower corresponding connection inlets 1 of the mulcher (figure 21-22);  Figure21
	3. Use the tractor parking brake, turn the engine off, remove the keys from the dashboard and get off the machine;
	4. Insert the pins and lock them with the relating safety pins; 5. Connect the third point of the tractor in the same way 2, with the corresponding inlet 2 on the machine;
	6. Adjust the third point so as the machine stands horizontally as regards the ground;
	7. Lift and fix every supporting foot of the machine;

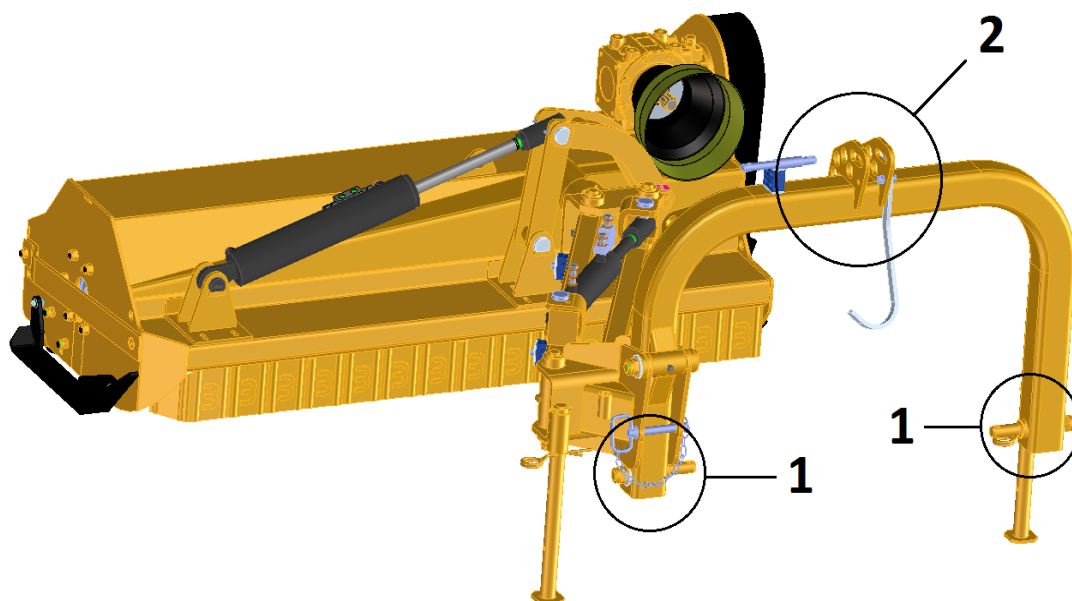


Figure22



ATTENZIONE

ATTENTION: BE SURE OF HAVING INSERTED THE SAFETY PINS INTO THE PINS OF THE CONNECTION INLETS 1 AND 2.

The following operations are very hazardous.

Avoid standing in front of the mulcher during the approach of the working vehicle.

Avoid the presence of uninvolved persons.

During the installation phases, the PTO of the mulcher should be disengaged.

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

9. 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 "clack". If you do not hear the "clack", repeat the procedure;

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



ATTENZIONE

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 size and length.

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 with the machine is of appropriate size 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	Maximum absorbed power		Power transmitted from the cardan shaft at 540 rpm	
	kw	HP	kw	HP
TA/M145	18 - 22	25 - 30	48	65
TA/M 160	22 - 26	30 - 35	48	65
TA/M 180	26 - 29	35 - 40	48	65
TA/M 200	29 - 33	40 - 45	48	65

Table 3

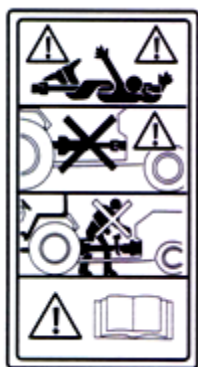


Model	Maximum absorbed power		Power transmitted from the cardan shaft at 540 rpm	
	kw	HP	kw	HP
TA/S 145	18 - 22	25 - 30	48	65
TA/MI 160	22 - 26	30 - 35	48	65
TA/MI 180	26 - 29	35 - 40	48	65
TA/MI 200	29 - 33	40 - 45	48	65

Table 4



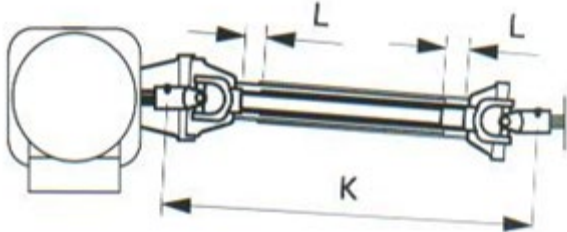
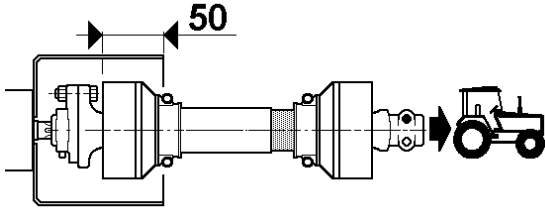
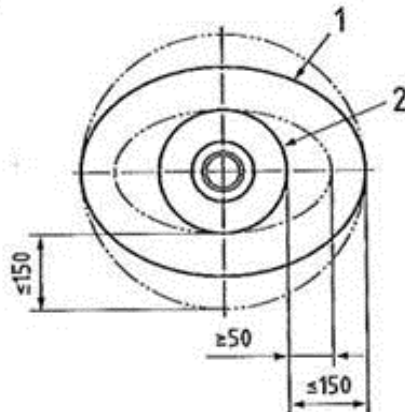
Before performing any operation, carefully read the instruction booklet attached to the cardan shaft.

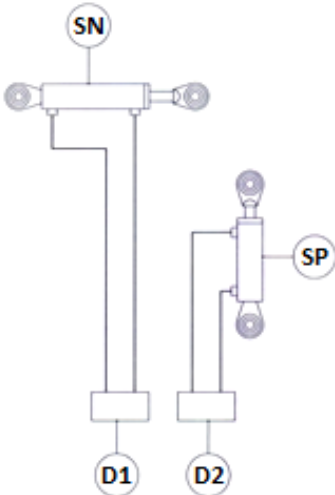


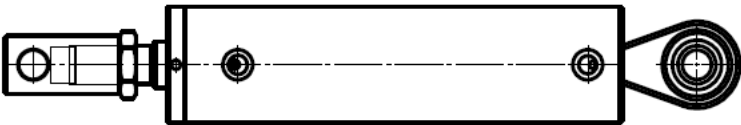
During operation, the cardan shaft may generate dangerous situations.

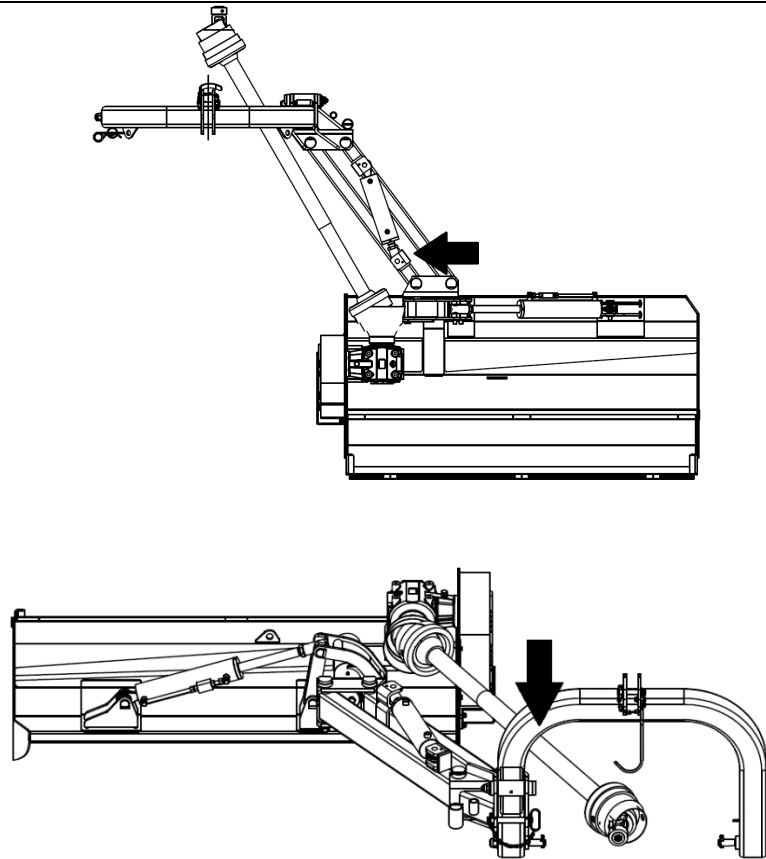
Therefore you should:

- 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 appropriate support;
- Wear appropriate clothing (non-resistance, not loose), especially tight clothes (e.g. : overalls with wrist and ankle protection).

 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 (figure 23).  Figure 23
	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	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.  Figure 24
 ATTENZIONE	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.  Figure 25 1 - Machine protective cap 2 - Cardan shaft protective cap

 ATTENZIONE	Check the rotating direction of the PTO of the cardan, on the tractor, looking from the rear side, it should rotate in clockwise.  Figure 26
 ATTENZIONE	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.
	11. Connect the transmission tubes of the jacks (figure 27);  Figure 27 SN: articulation jack SP: movement jack D1: double effect distributor D2: double effect distributor The machine is equipped with a jack that triggers the movement and articulation; the machine is supplied from the tractor hydraulic system via the quick coupling tubes. the tractor must be provided with two double effect distributors with operating pressure of 130 bar.
	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 an 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 in pairs on the distributors.
 ATTENZIONE	Check that all safety pins are properly inserted and that they are functioning correctly. Make sure that you inserted the anti-threading devices in the coupling pin. Make sure that the quick couplings are properly inserted.

 ATTENZIONE	The movement jack is equipped with pressure relief valve (figure 28), which allows the machine to retract partially when it encounters an obstacle during lateral movement. The resistance of the machine against the obstacle can be adjusted by turning the screw that adjusts the calibration of the valve: • Tightening the screw the resistance on the obstacle increases; • By loosening the screw the resistance on the obstacle decreases. ATTENTION: Tighten the locknut after adjustment.  Figure 28
 ATTENZIONE	The articulation jack is equipped with a valve with auto lock (parachute) that prevents uncontrolled lowering of the machine in the event of breakage of a line (figure 29).  Figure 29
 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.
	12. NOTA: Alla prima installazione, controllare che l'albero cardano non tocchi sull'arco del timone, a macchina tutta aperta. Se così fosse, agire sul terminale del martinetto dello spostamento mediante apposito filetto. 



13. The machine is ready to be started.

2.5. STARTING THE MACHINE



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

- 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 50 m.

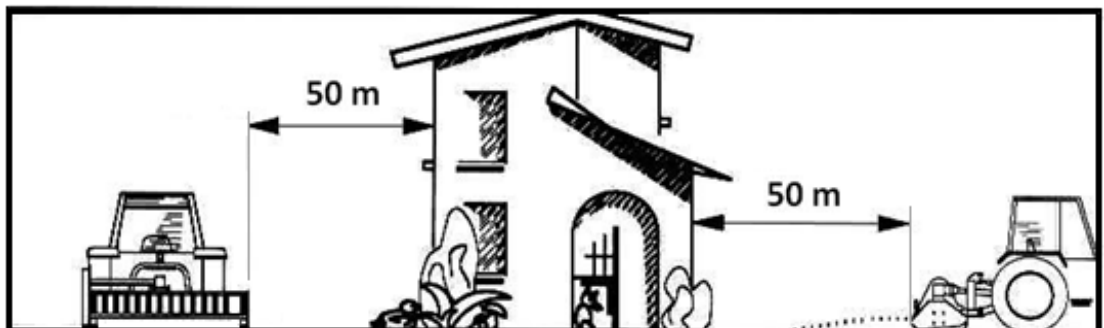
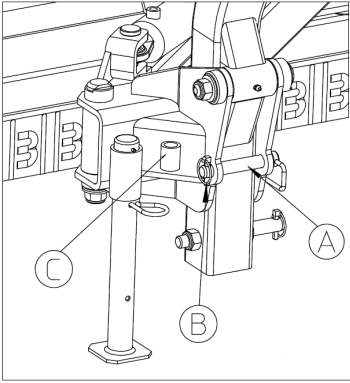


Figure 30

- Do not allow any persons, animals or things to get close and to stand in the machine operating radius.
- Before using the machine, the operator must know the commands and the features of the machine.

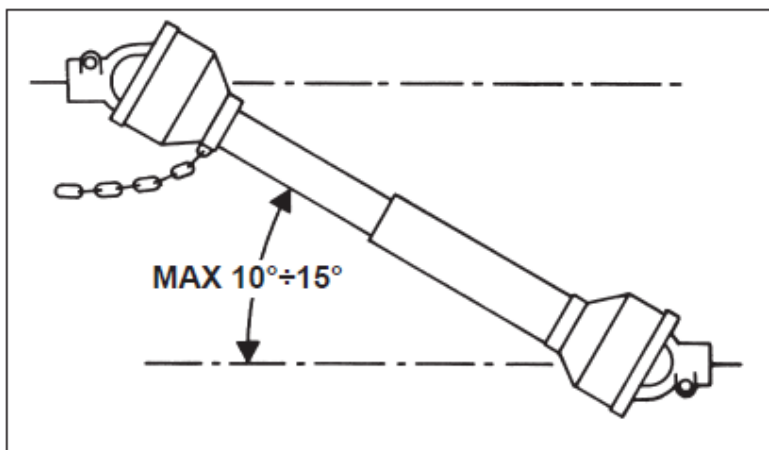
 ATTENZIONE	The user must use all the safety devices and personal protection equipment (P.P.E.) during machine use, adjustment, repair and handling phases. 
	- Always keep the guards in perfect state, properly placed and effective.
	- The engine of the tractor must be stopped, the parking brake engaged, 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 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, move the machine until it reaches the 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 tiller and reposition it in the appropriate pin holder (figure 31);  Figure 31 The locking pin of the tiller is composed of: - A- Pin; - B- Safety pin - C- Pin holder.

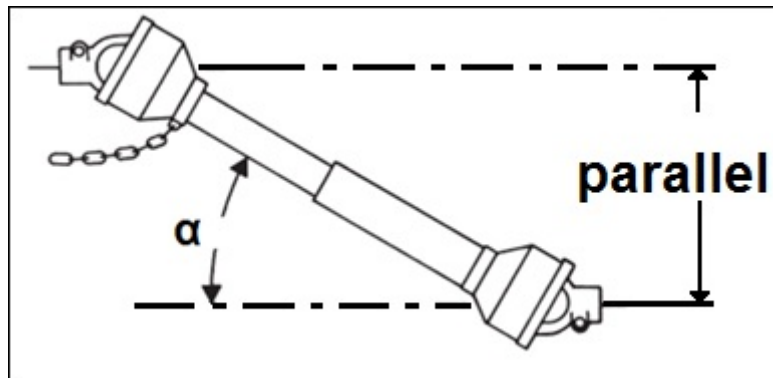
	This pin is used to increase the safety of the machine when it is disconnected and stored or during its transportation so that there is no risk of the floating tiller moving which would otherwise compromise the stability of the same (paragraph 3.2.2). During the work phase the pin (A) must be removed and placed in the appropriate pin holder (C) such that the tiller through its movement ensures that the forage harvester perfectly follows the trend of the soil, especially in cases where the soil is not flat.
 PERICOLO  ATTENZIONE	4. By acting on the controls of the elevator, lower the machine until the levelling roll rests on 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;
	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 work 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.

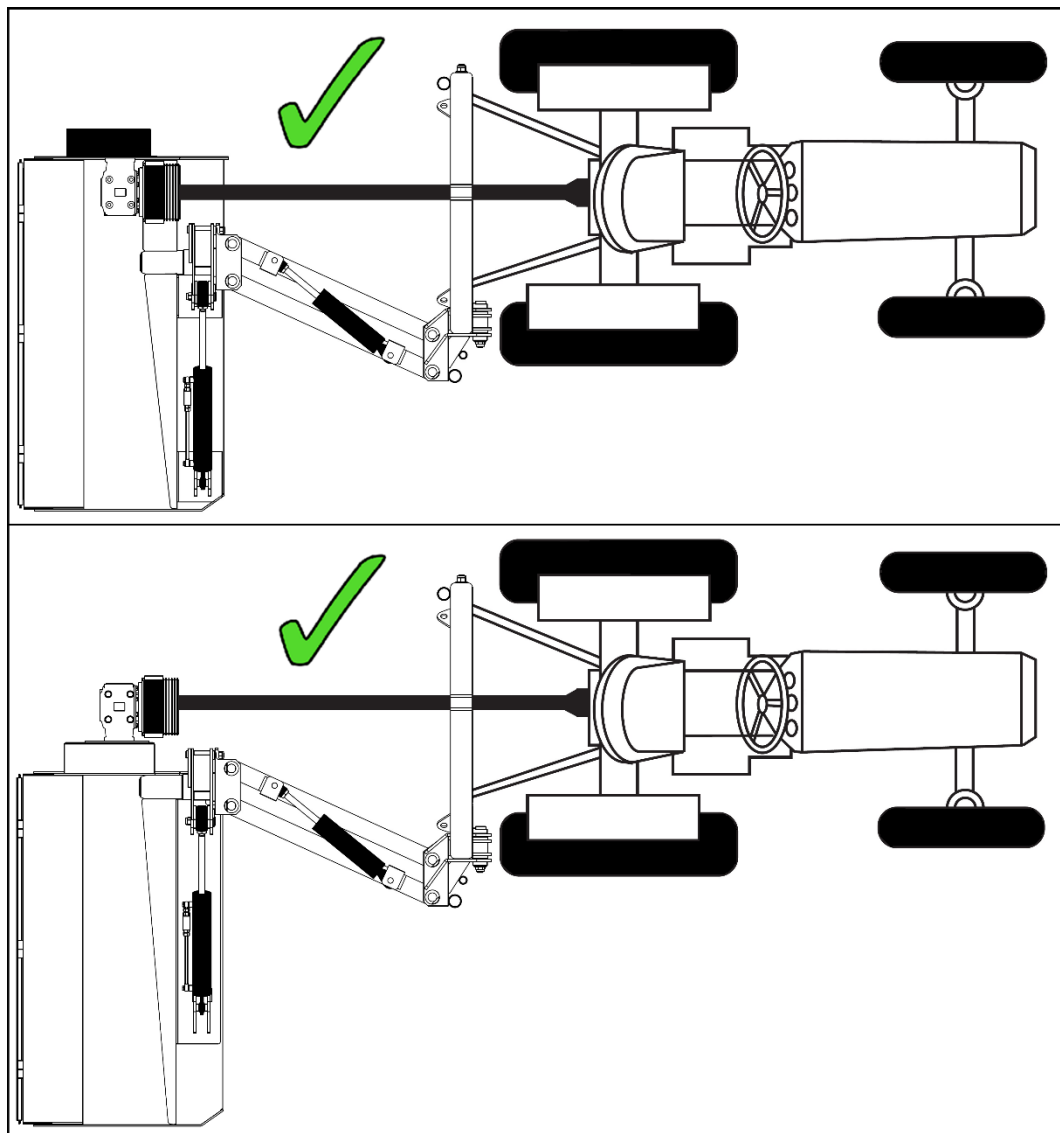


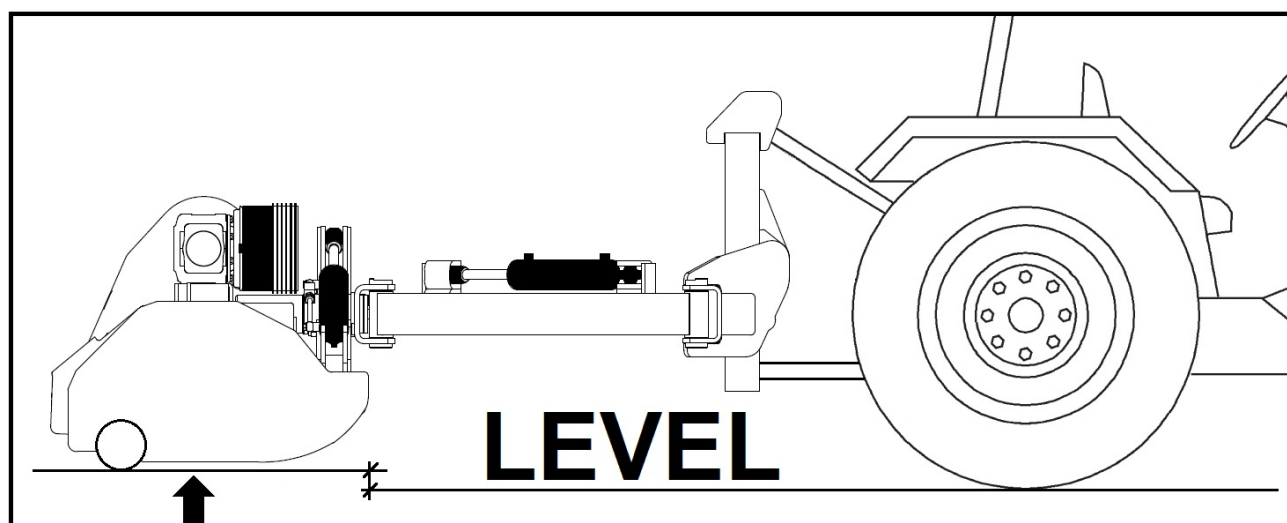
- Clean and grease the cardan shaft only when the power take-off is disengaged, the engine is off, the parking brake is applied and the key is removed.
- When the machine is disconnected, rest the cardan shaft on the support provided.
- Prolonged use of the machine may result in the secondary effect 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 ADJUSTMENTS

3.5.1.1. RECOMMENDED SPEEDS

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.

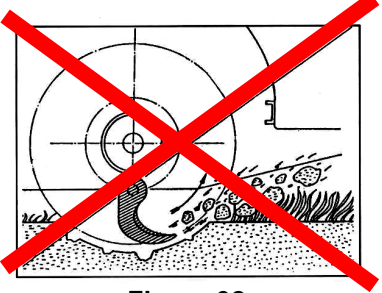
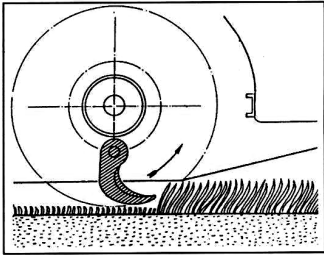
	Excessive speed stresses the mobile components of the machine, reducing their lifetime. In this case the amount of shredded material will be poor; it may cause the machine to throw large pieces of material that may put the operator in danger.
--	---

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.															
General pruning															
Bushes															

Table 5

3.5.1.2. CUTTING HEIGHT ADJUSTMENT

 	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 (figure 32-33).
	 Figure 32 NO  Figure 33 YES

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



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.

1. Level the machine leaving a thickness E of about 8 cm under the sides;
2. Make sure that the PTO is disengaged, brake and turn off the tractor;
3. Loosen bolt A and remove bolt B;
4. Rotate the plate of the roll, until centring the slot in the desired position of the plate with that of the side;
5. Remount bolt B;
6. Check for any damage/breakage and proceed to immediate repair of the same using original spare parts.
7. Tighten bolts A and B

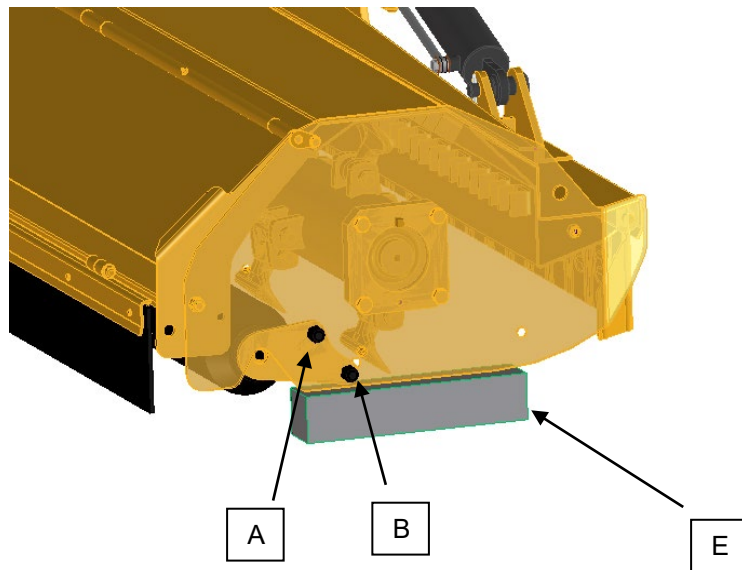


Figure 34

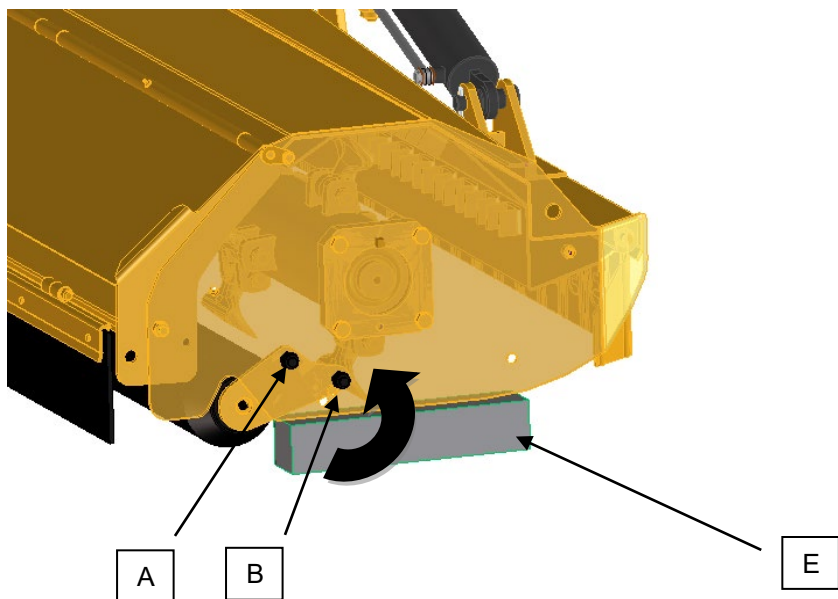


Figure 35

	8. Once all the operations have been finished, repeat the procedure of "Connection and Start up of the machine" described in paragraph 3.4. to 3.5.
	The adjustment operations must be performed both on the left and on the right side of the machine.

3.6. MACHINE IN WORK STAGE

 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.
 PERICOLO	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.
 PERICOLO	When operating on the roadside, 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.
 PERICOLO	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.
 PERICOLO	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 it 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.
 ATTENZIONE	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.
 PERICOLO	Make sure that all machine parts function regularly when operating. 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.

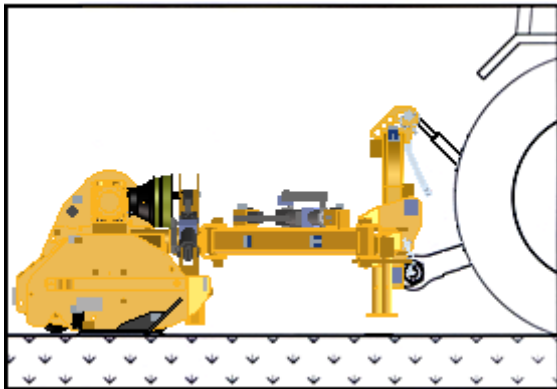
 PERICOLO	It is strictly forbidden to remove and/or change the guards installed on the machine.
 ATTENZIONE	In the operations of change of direction, turn and reverse, slightly raise the head from the ground, after switching off the power to the machine, in order to avoid damage to the structure.
 PERICOLO	Pay attention to the risk of accidental ignition of the electric arc machine with overhead power lines.
 PERICOLO	It is strictly forbidden to adopt configurations that prevent the user working on the tractor from seeing the machine.
 PERICOLO	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 damage caused due to any incorrect assessment.
 ATTENZIONE	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.
 ATTENZIONE	Never lean or press the rotor on logs, 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.
 PERICOLO	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 relevant authorities and move away, if possible, the tractor-mulcher assembly, taking it to a safe area, follow the procedure in paragraph 3.7. and go to a safe place.
 PERICOLO	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 to make sure that the rotor and relative tools completely stop.

	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

	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 until reaching a 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.
	 → Tractor reverse direction Figure 36

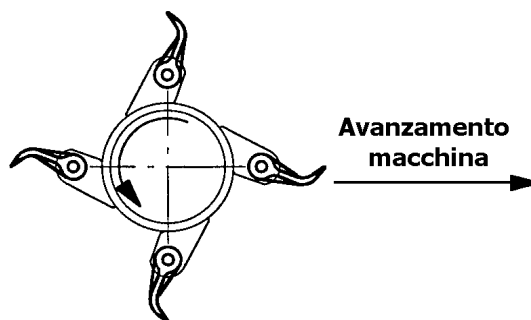


Figure37

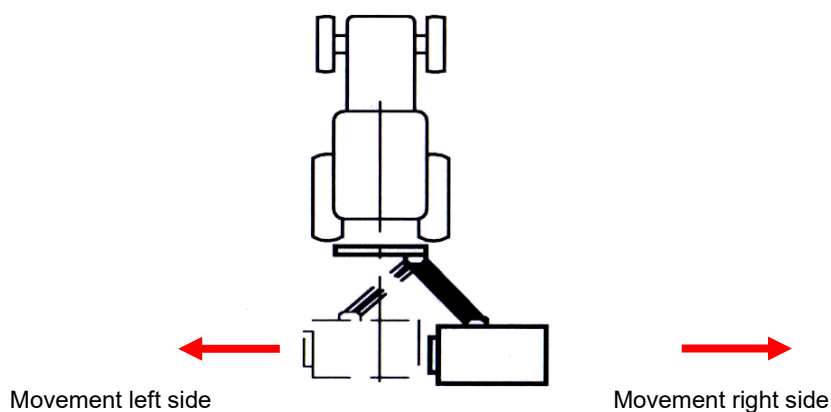


Figure 38

When cutting grass at the side of a road it is possible to move forward with the tractor at a suitable speed (see paragraph 4.2.2 . "Forward speed adjustment") and to let the machine follow the shape of the ground.

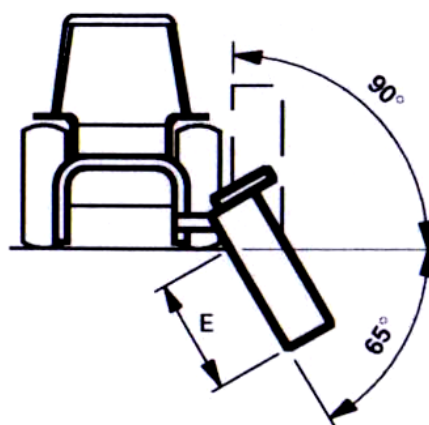


Figure 39

When working on a tilt with respect to the ground ensure that the machine does not exceed 90° upwards and the 65° downwards (figure 39). Pay attention to the projection of material that could cause damage to persons, animals and property.



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.

	Always remain inside the cab during operations and make sure there are no persons, animals or objects within the work range of the machine. Any intervention on the machine must be performed with the parking brake engaged, the engine stopped, the ignition key removed from the dashboard and kept 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:

	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;
	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 form approaching.

3.9. CLOGGING

	Before removing the machine clogs, carefully read and fully understand the instruction manual.
 ATTENZIONE	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.
 ATTENZIONE	If the machine clogs, follow the indications in paragraph 3.8 "MACHINE DISCONNECTION" and bring the machine to an authorised workshop.

At the workshop:

	1. Hook the machine, turn it over and place it on appropriate supports;
 PERICOLO	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 resume work 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 about 5 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 operation, implement the following precautions:

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

 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.
 ATTENZIONE	The specialised staff must use the safety devices and personal protection devices (PPD) during use, maintenance, regulation, repairs and handling of the machine. 
 ATTENZIONE	Any maintenance operation can be performed only after the temperature of the oil and other hot parts of the machine is below 60 °C.
 PERICOLO	Do not carry out repairs of which you have no knowledge. Always follow instructions and contact the manufacturer if they are not available.
 ATTENZIONE	Do not use lifting points different to those prescribed.
 ATTENZIONE	Make sure that the lifting equipment is suitable to carry out the operations in compliance with Safety Standards in the country of use.
 ATTENZIONE	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.
 ATTENZIONE	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 potentially hot parts have dropped to a temperature below 60°C.

Pay extreme attention to:

- Drive sump;
- Gearbox;
- Pulleys, belts and belts adjuster;
- Hydraulic tubes.

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

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

4.2.1. COUPLING TORQUES TABLES

Table tightening torques for steel screws 8.8

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

Table tightening torques for steel screws 10.9

Coarse thread screw	M8	M10	M12	M14	M16	M20	M24
Coupling torque Nm	35	69	120	190	295	580	1000
Fine pitch screw	M8x1	M10x1.25	M12x1.25	M14x1.5	M16x1.5	M20x1.5	M24x2
Coupling 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

Periodic and systematic greasing and lubrication of the machine maintain its performance and increase its useful life span. 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 check the oil level in the gearbox: the oil should reach 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/MI

The oil is introduced into the gear box S via the hole closed by the lid R.

The level is given from the hole closed by the cap L.

To access the plug L it is necessary to remove the protective cap C (fig. 40)

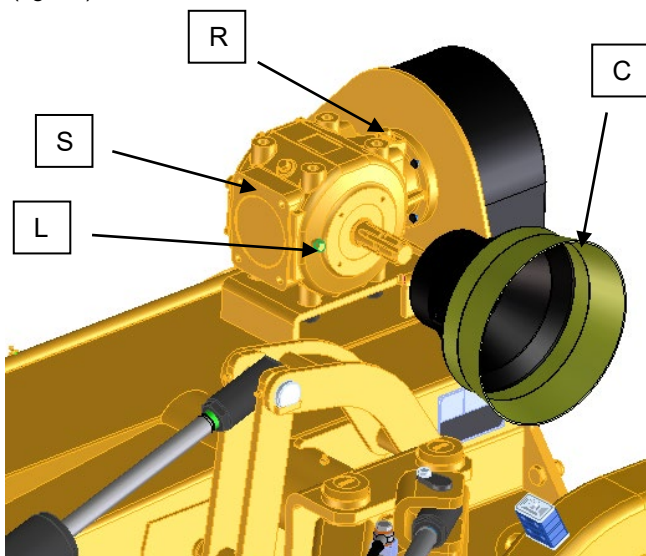


Figure 40

MODEL TA/M

The oil is introduced into the gear box S via the hole closed by the lid R.

The level is given from the hole closed by the cap L (figure 41)..

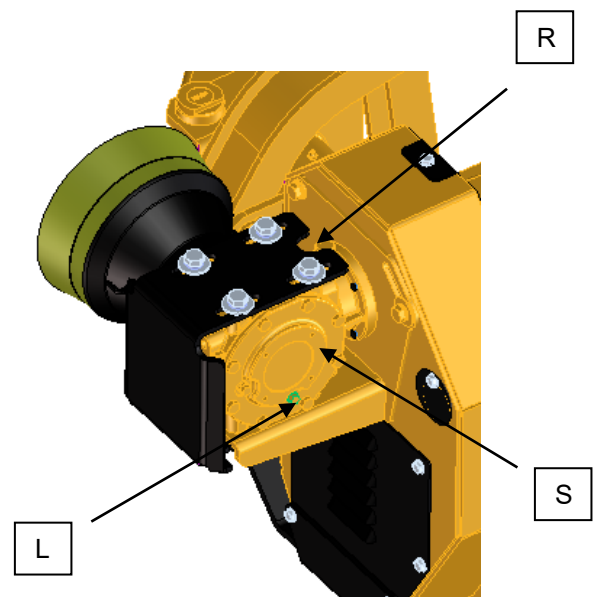


Figure 41

OVERALL GREASING:

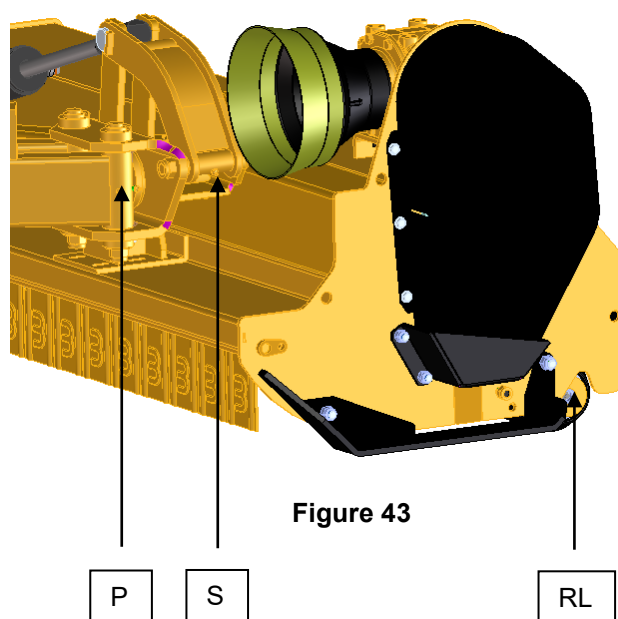
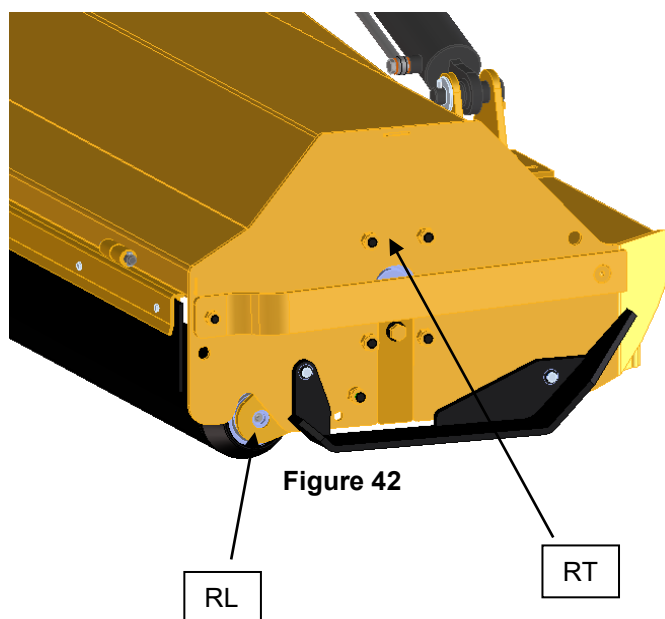


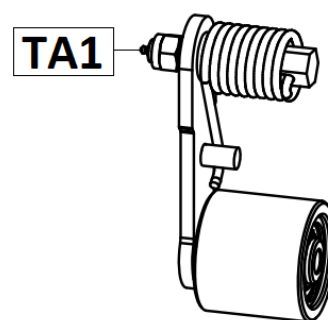
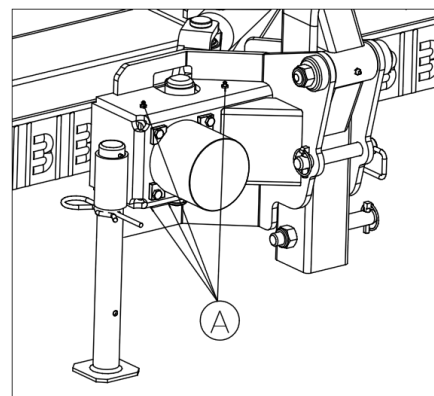
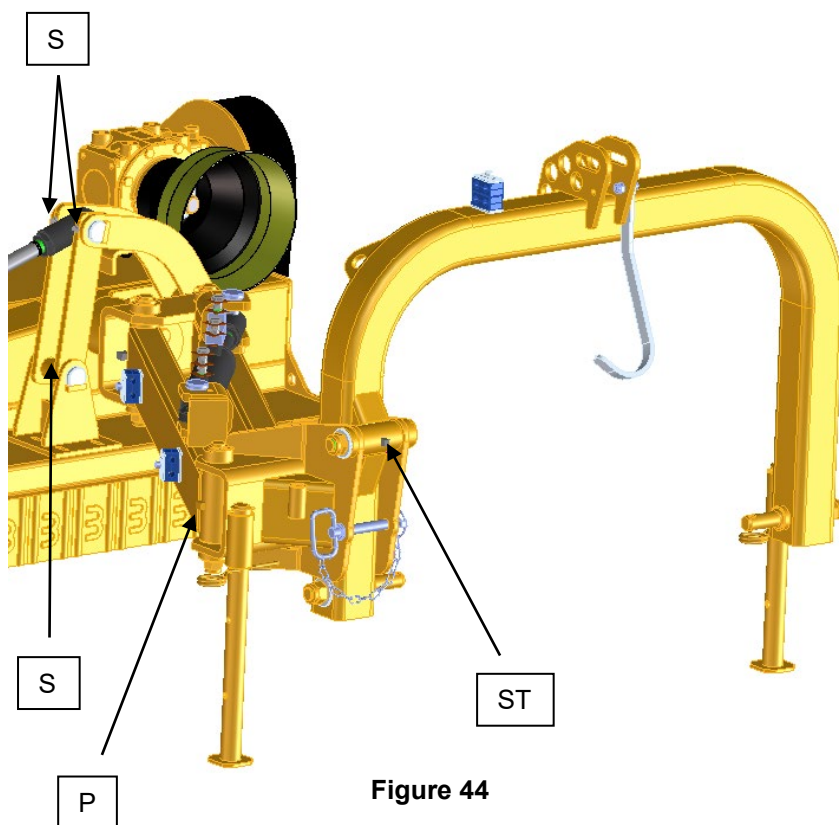
Before taking any action on the machine greasing points, properly clean the areas around the caps, to avoid any dirt intrusion inside the points.

	Periodic and systematic greasing and lubrication of the machine maintain its performance and increase its useful life span.
	Only use a manual greasing pump in order to prevent laceration of the bearing seals and the grease passage piping.

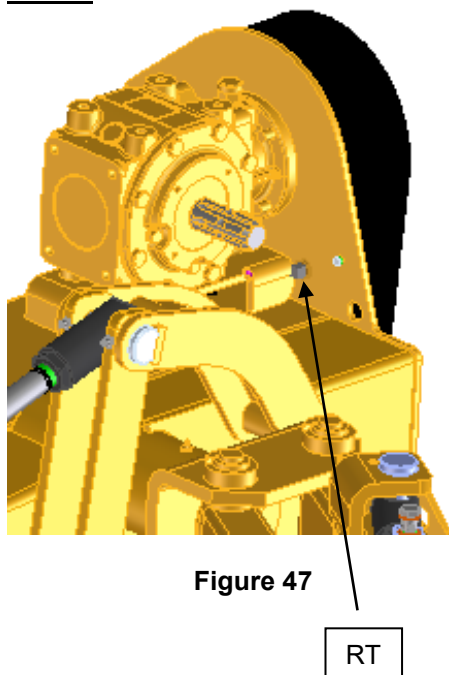
Pos.	Name	Lubrication intervals	Notes
RT	Rotor	8 hours	Grease by activating the manual pump 1-2 times to prevent damage to the internal seals of the supports.
RL	Roll	8 hours	Grease on both sides of the roll, operating 1-2 times the manual pump to avoid the grease escaping.
S	Case articulation	20 hours	Grease using the manual pump 1-2 times on all the grease fittings of the articulation.
TA1	Automatic belt tensioner	8 hours	Grease it using the manual pump 1-2 times.
P	Parallelogram	20 hours	Grease it using the manual pump 1-2 times on the 4 grease fittings of the parallelogram arms.
ST	Tiller articulation	20 hours	Grease it using the manual pump 1-2 times on all the grease fittings of the tiller articulation.
A	Anti-shock (optional)	20 hours	Grease it operating the manual pump 1-2 times on the 4 grease fittings (A) of the anti-shock safety system (figure 45).

Table 6

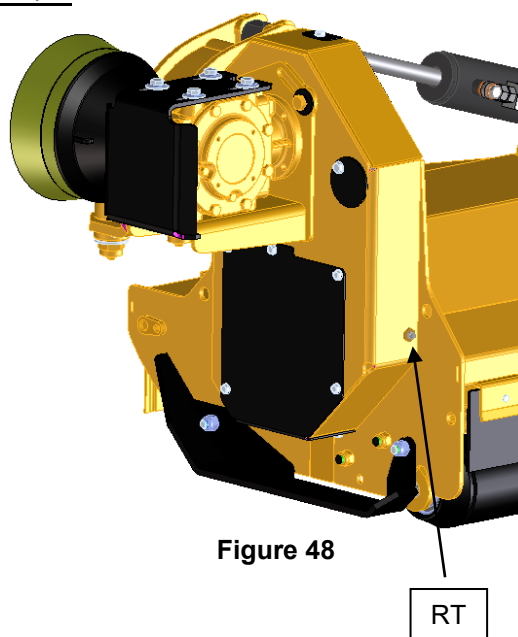




TA/MI



TA/M



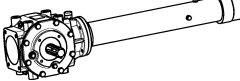
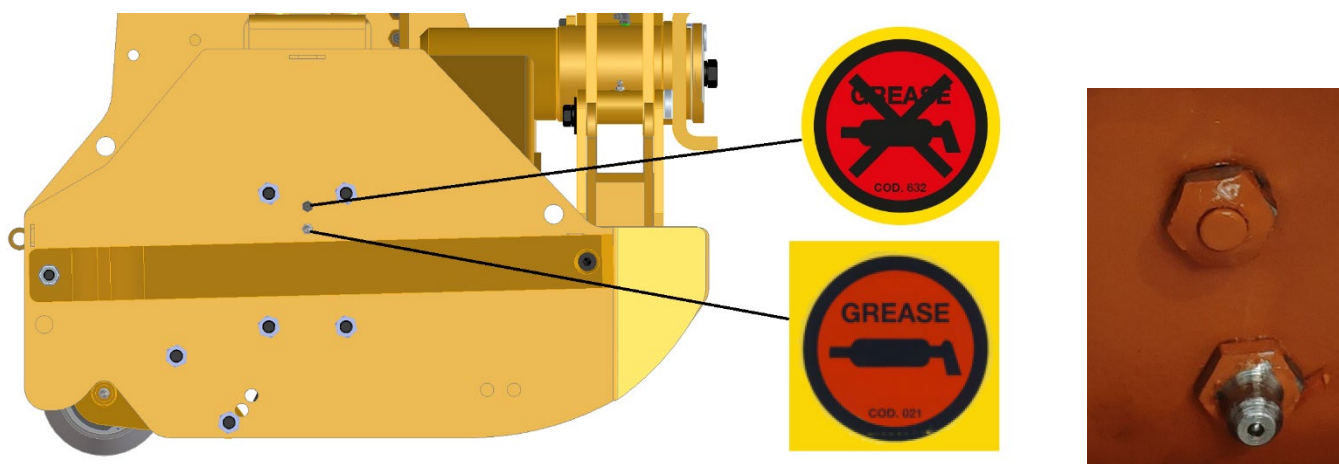
 LUBRIFICANTI RACCOMANDATI - recommended lubricant empfohlenen Schmiermittel - lubrifiant recommandé							
	PETRONAS	ENI	BP	MOBIL	SHELL	TAMOIL	TOTAL
	GEAR MEP 320	BLASIA 320	ENERGOL GR-XP 320	MOBILGEAR 632	OMALA S2 GX 320	CARTER EP 320	CARTER SP 320
GREASE 	AMBRA GRS PLUS EP2	GREASE MU EP 2	GREASE LTX EP 2	MOBILPLEX EP 2	GADUS S2 V220 2	TAMLITH EXTRA BLU EP2	MULTIS EP 2

Table 7

ATTENZIONE: Valvola di sfiato grasso presente su entrambi i lati del rotore. Ingrassare solo dov'è presente l'ingrassatore!



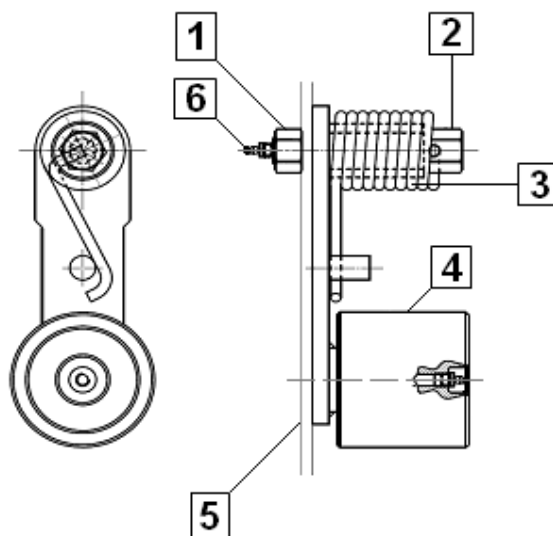
4.2.3. ADJUSTMENT OF TRANSMISSION BELT TENSION

	Before adjusting the tension of the belts, carefully read and fully understand the instruction manual.
	All adjustment operations must be performed at authorised workshops by specialised personnel.
	 PERICOLO Place the machine on levelled 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. There is no need to intervene on belt tension with the automatic belt-tensioner. An intervention of the belts tension may be necessary only in case of: • Mechanical breakage of the automatic tensioner spring (figure 49); • Loosening of the nuts that fasten the tensioner.

BELTS TENSION ADJUSTMENT PROCEDURE MODEL TA/MI:

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

	1. Remove the under crankcase and the crankcase of transmission cover;
	2. After replacing the spring or any other damaged part, take the tensioning unit (figure 49) and place it on the side of the mulcher, inserting the hex bolt 30 as shown in figure 50;



Pos.	Name
1	Self-locking nut M20
2	Hex bolt of 30
3	Tensioning spring
4	Sliding point
5	Machine side
6	Greaser

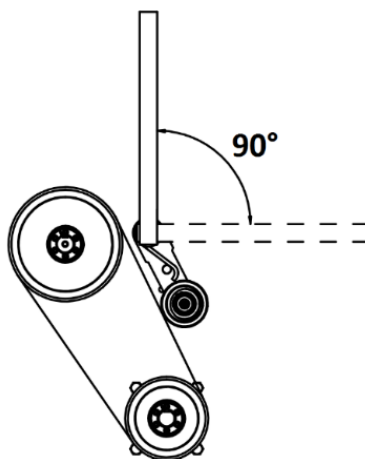
Table 8

Figure 49

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. Apply pressure to the roll, move it a few centimetres from the belts and release it. The roll must run freely;

7. Remount the crankcase using the appropriate screws.

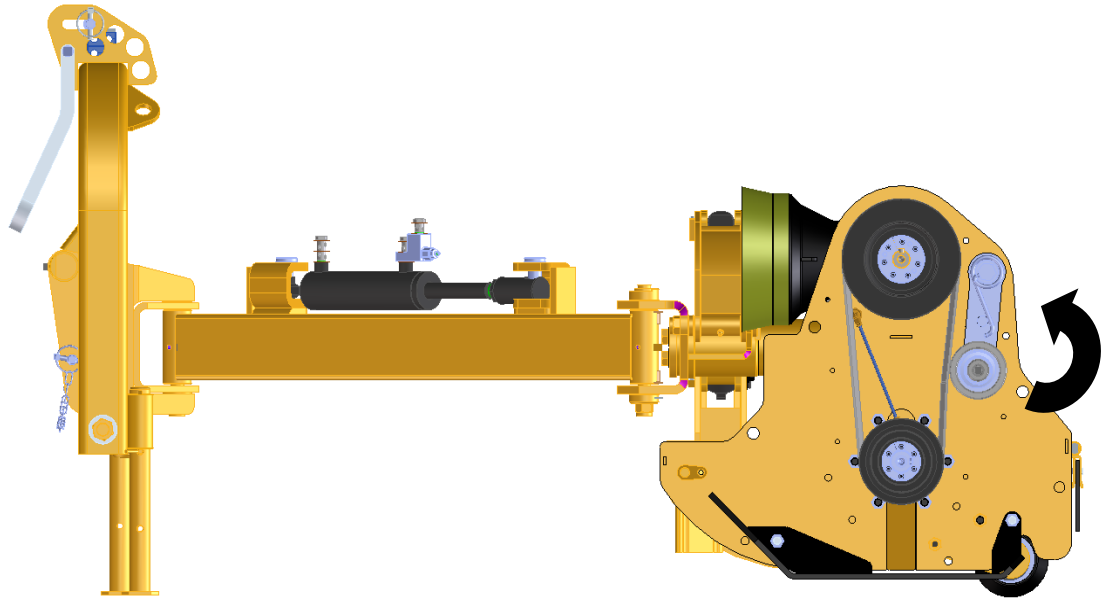


Figure 50



Do not work without belts protection casing.

BELTS TENSION ADJUSTMENT PROCEDURE MODEL TA/MI:

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

1. Remove the small cap C, the lower crankcase CI and the upper crankcase CS of the transmission cover (figure 51);

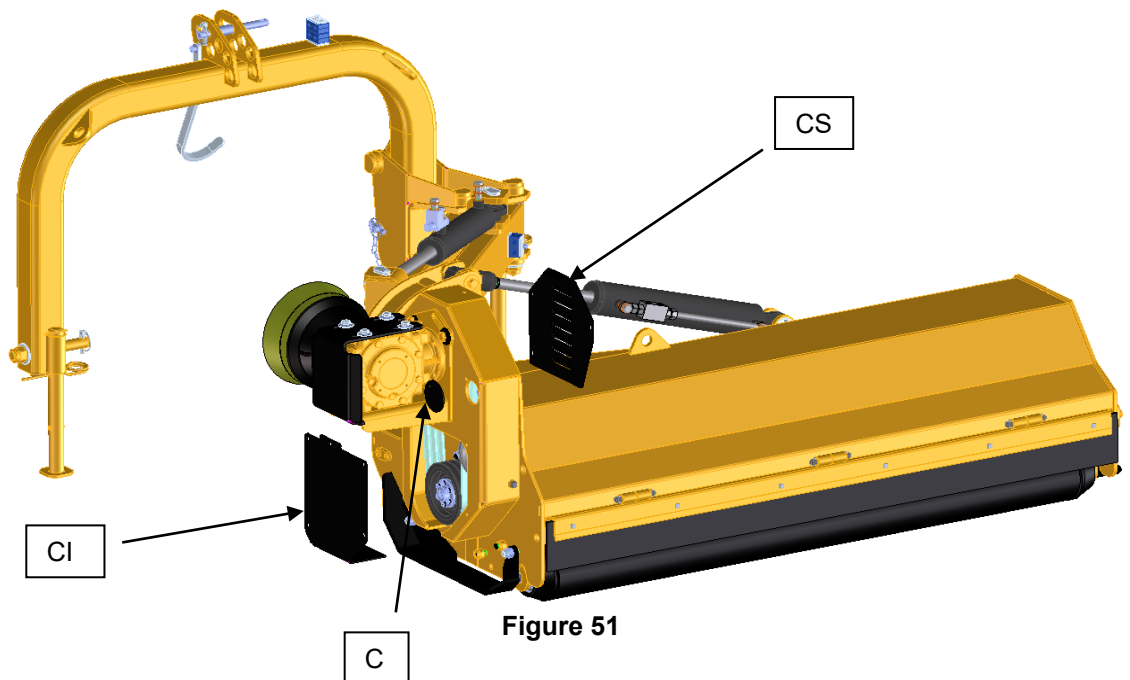


Figure 51

2. After replacing the spring or any other damaged part, take the tensioning unit (figure 49) and place it on the side of the mulcher, inserting the hex bolt 30 as shown in figure 52;

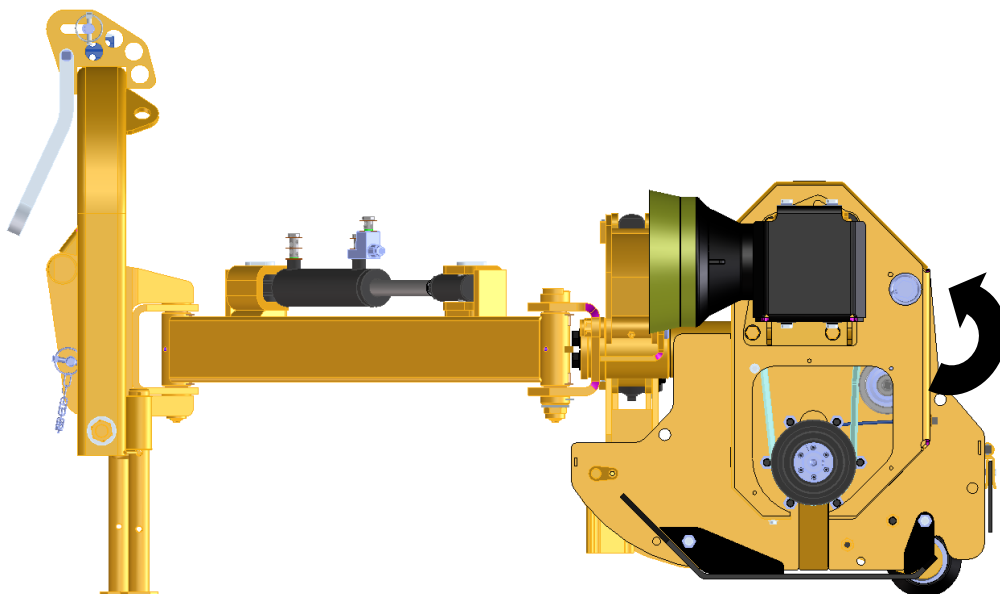


Figure 52

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;



ATTENZIONE

The bolt must be turned at 90° (1/4 of a turn) with 2 or 3 belts, at 180 ° (half a turn) with 4 or 5 belts. Giving the correct PRE-LOAD of the spring, means the belts have the correct tension!

5. Lock the counter-nut M20;
6. Now, after properly tensioning the belts, check that the belt tensioning unit may rotate freely. Apply pressure to the roll, move it a few centimetres from the belts and release it. The roll must run freely;
7. Reinstall the cover C, the lower crankcase CI and the upper crankcase CS of transmission cover with appropriate screws.



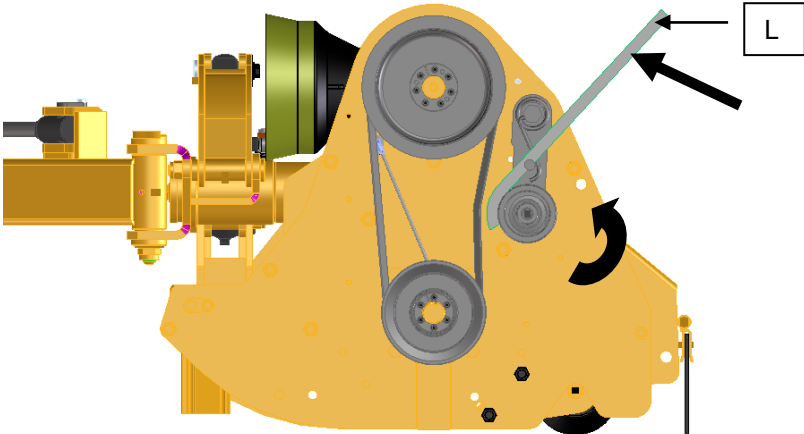
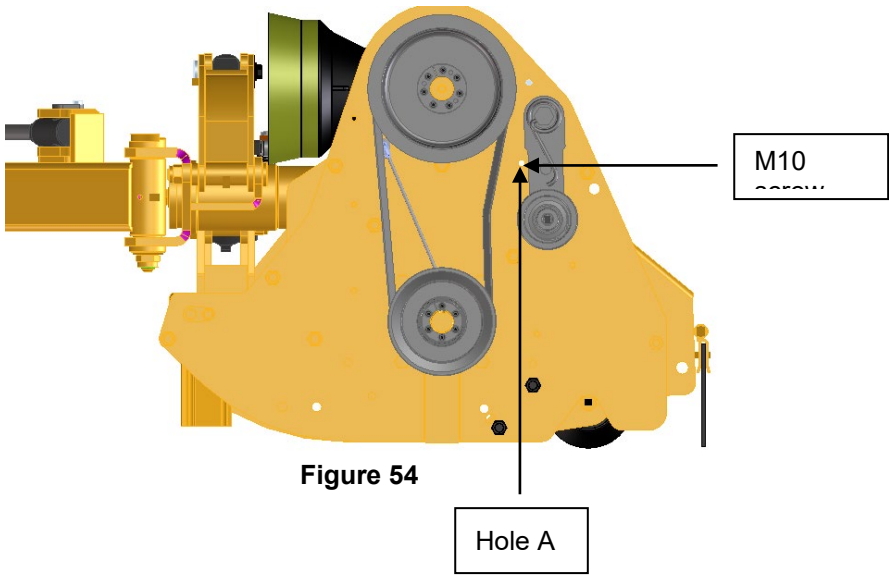
ATTENZIONE

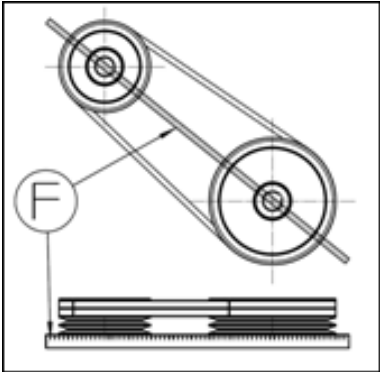
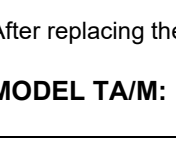
Do not work without belts protection casing.

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.

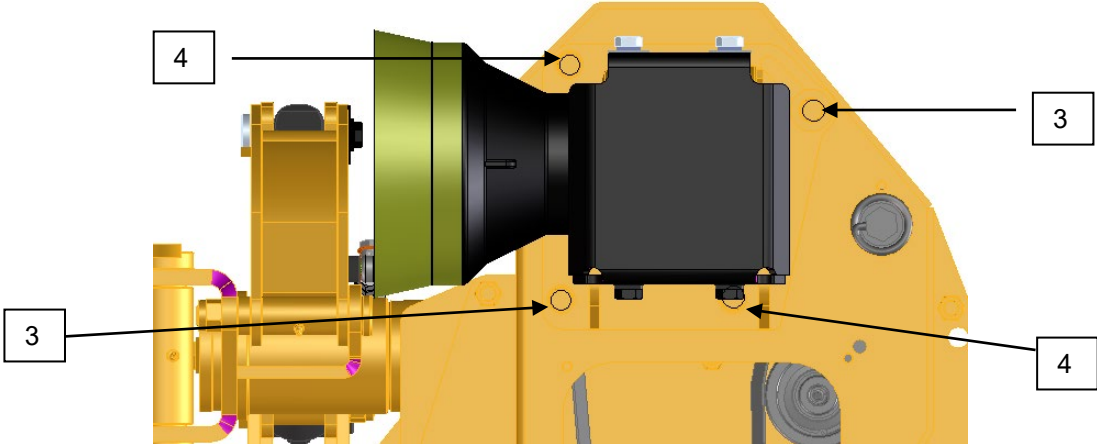
MODEL TA/MI:

	1. Remove the under crankcase and the crankcase of transmission cover;
	2. Using a counterbalanced lever, put pressure on the roll pulling it outside until managing to insert a screw M10 x30/40 in hole A, then release it, slowly leaning the belt tensioner plate on the screw inserted in hole A;
	 Figure 53  Figure 54
	3. Now there should be no more pressure on the belts, thus allowing the operator to replace them;
 CAUTELA	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, exert greater 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;

 ATTENZIONE	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 with each other: use a ruler F to check that this occurs.  Figure 55
	5. Remount the crankcase using the appropriate screws.
 ATTENZIONE	Do not work without belts protection casing.

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

MODEL TA/M:

	1. Remove the small cap C, the lower crankcase CI and the upper crankcase CS of the transmission cover (figure 51);
	2. Loosen the screws (3) (figure 56); 3. Loosen and remove the screws (4); 4. Rotate the support (5) of the fixing of the gear box resting on the opposite side of the slot of the same support; at this point, the belts are much more slack.
	 Figure 56

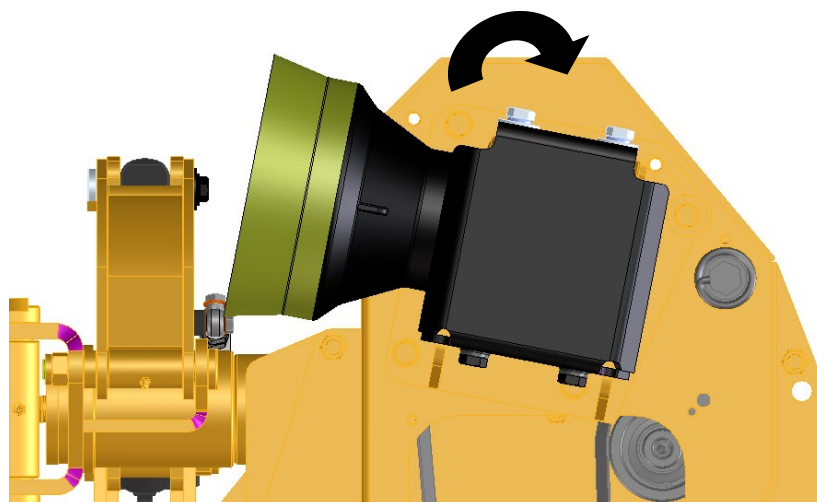


Figure 57

5. Using a counterbalanced lever, put pressure on the roll pulling it outside until managing to insert a screw M10 x30/40 in hole A, then release it, slowly leaning the belt tensioner plate on the screw inserted in hole A;

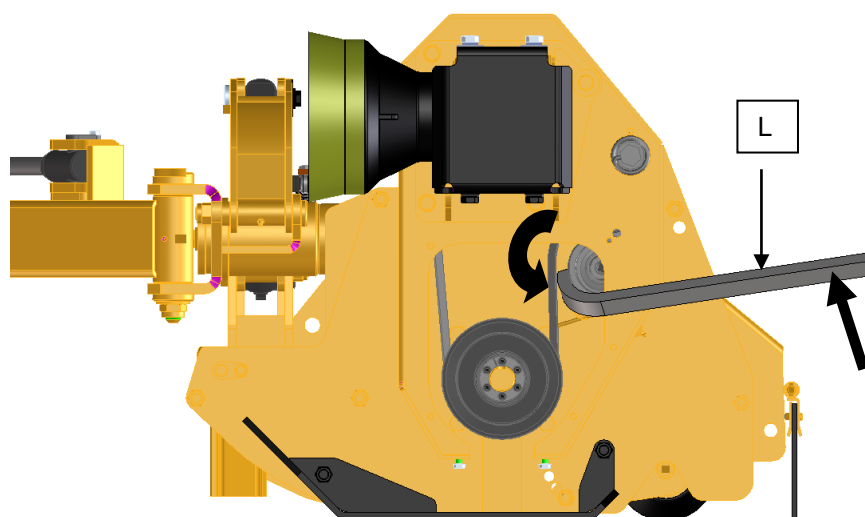


Figure58

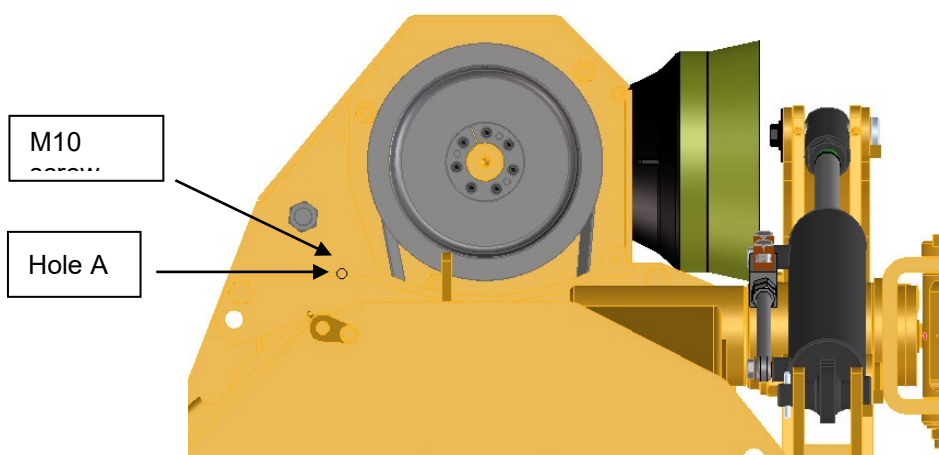
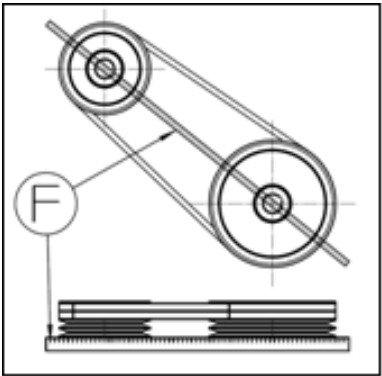


Figure 59

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

 CAUTELA	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, exert greater 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;
 ATTENZIONE	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 with each other: use a ruler F to check that this occurs.  Figure 60
	8. Remount the crankcase using the appropriate screws.
 ATTENZIONE	Do not work without belts protection casing.

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

4.2.5. HYDRAULIC PLANT

 ATTENZIONE	Check the machine visually to make sure that there are no loose fittings, piping with scratches, cuts or other signs of wear. Tighten the loosened fittings and replace the worn or damaged pipes.
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The hydraulic system diagram is indicated in figure 61 and is made of:

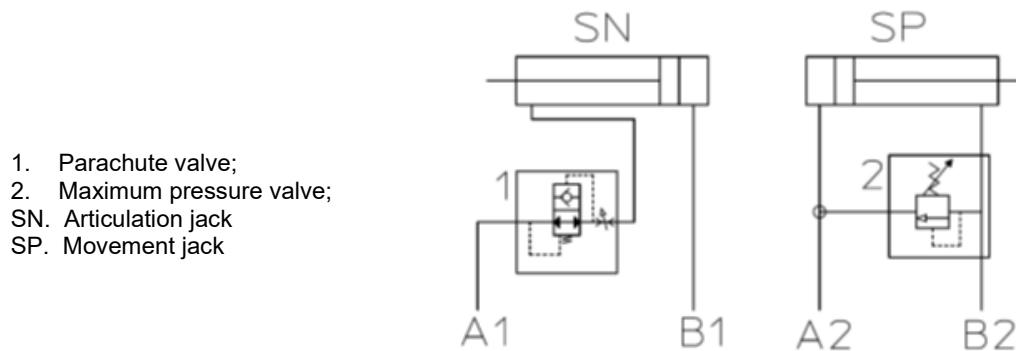


Figure 61

In order to connect the machine consult chapter 3 paragraph 3.4

HYDRAULIC TUBING REPLACEMENT PROCEDURE

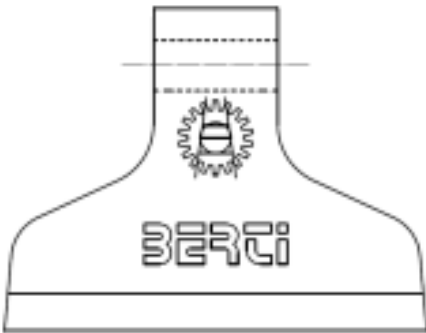
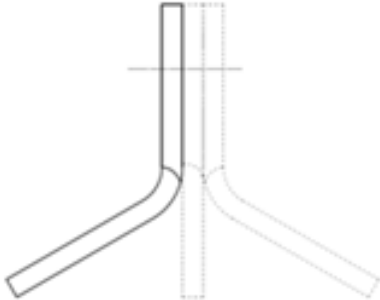
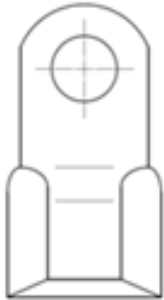
 ATTENZIONE	1. Before removing a hydraulic tube, make sure that any residual pressure was discharged from the system;
	2. Precisely identify the damaged tube and loosen using an appropriate key the two connection points, paying attention to any possible leakages of hydraulic fluid;
 ATTENZIONE	3. Replace 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 so as not to ruin the threading on the fittings.
 ATTENZIONE	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.
 ATTENZIONE	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.

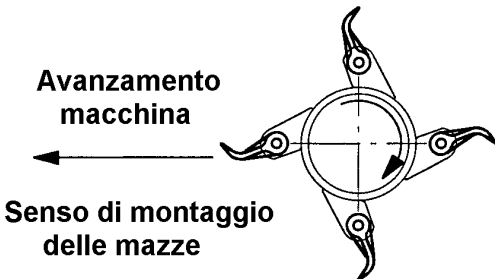
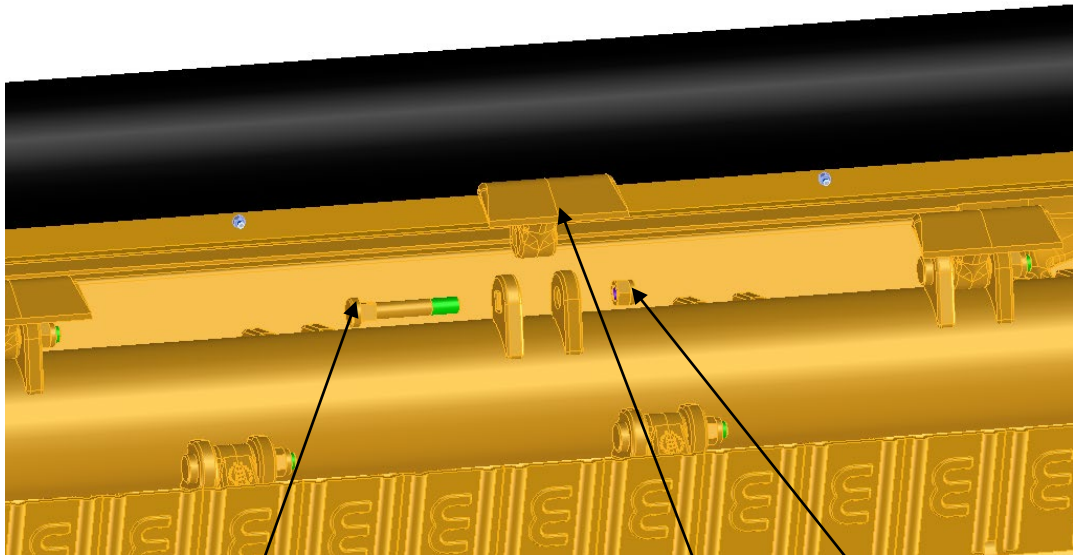
The dimensions and the weights of the tools are strictly controlled: if they are replaced completely, the rotor might not require a new dynamic balancing (refer to: "TOOLS REPLACEMENT PROCEDURE")

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

	Replace the worn and/or damaged tools with original tools distinguished by the Berti mark.
	Hammer type "P":  Figure 62  Universal blade "Y":  Figure 63 

Duration of the tools depends on the type of use and type of land worked. They should be fully replaced after about 200 working hours.

4.2.6.1. TOOLS REPLACEMENT PROCEDURE

 ATTENZIONE	If an individual tool must be replaced, it is recommended to replace the entire range. Not using original spare parts can cause the machine to vibrate anomalously. Pay attention to the direction in which you assemble the tools.  Avanzamento macchina Senso di montaggio delle mazze Figure64
 PERICOLO	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:
	Unscrew nut D, pick up hammer P and remove screw V (Figure 65). After removing the hammer, check the wear condition of the supports, paying particular attention to the oval holes, the squared housing of the screw head. If any of the described phenomena are present, contact the manufacturer and request further indications.  V P D Figure 65
	Replace the new hammer P placing it between the rotor supports, insert the new screw paying attention to match the square head of the screw with the square housing on the support.
	Mount the new nut and fasten it.
	IF THE MACHINE ROTOR USES BLADES, PROCEED AS FOLLOWS:

Unscrew the nut D, pick up the knives C and remove the screw V (Figure 66) taking care that the spacers and the bushing B do not fall to the ground. With the blades removed check the state of wear of the supports, in particular the ovalisation of the holes, of the square seat of the head of the screw and the device wear. If any of the described phenomena are present, contact the manufacturer and request further indications.

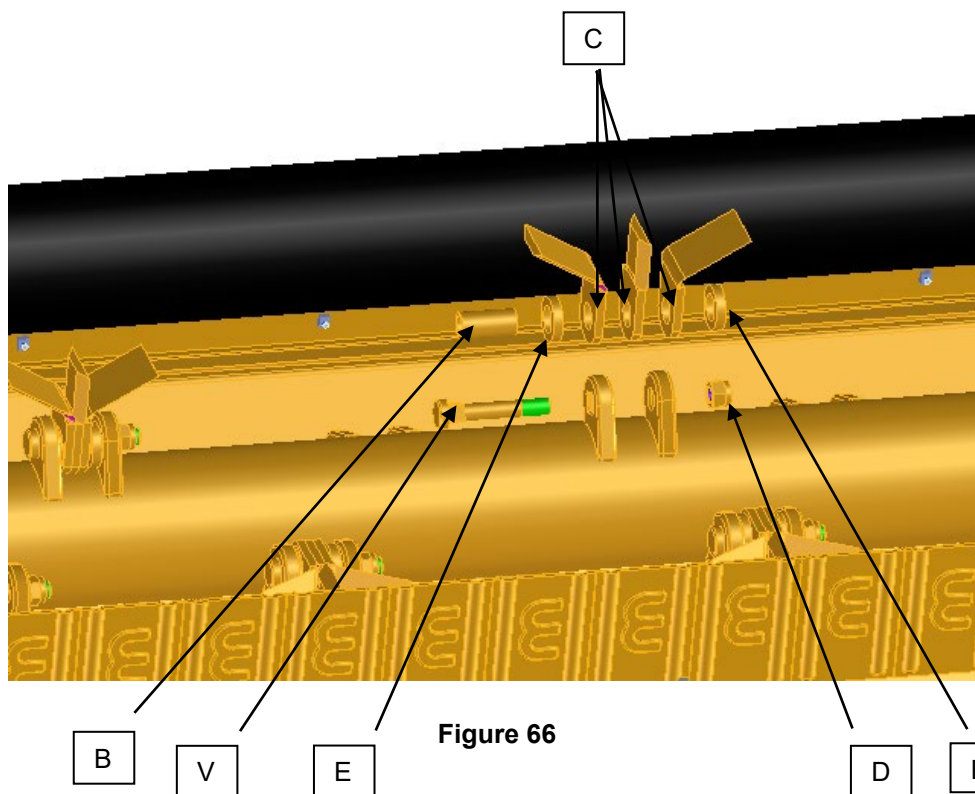


Figure 66

Replace the new blades C placing them between the rotor supports, insert the new screw paying attention to match the square head of the screw with the square housing on the support.

Mount the new nut and fasten it.

After completing all the 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.



ATTENZIONE

Pay attention to the direction in which you assemble the tools. If they are mounted in the wrong direction they cannot cut.



PERICOLO

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



ATTENZIONE

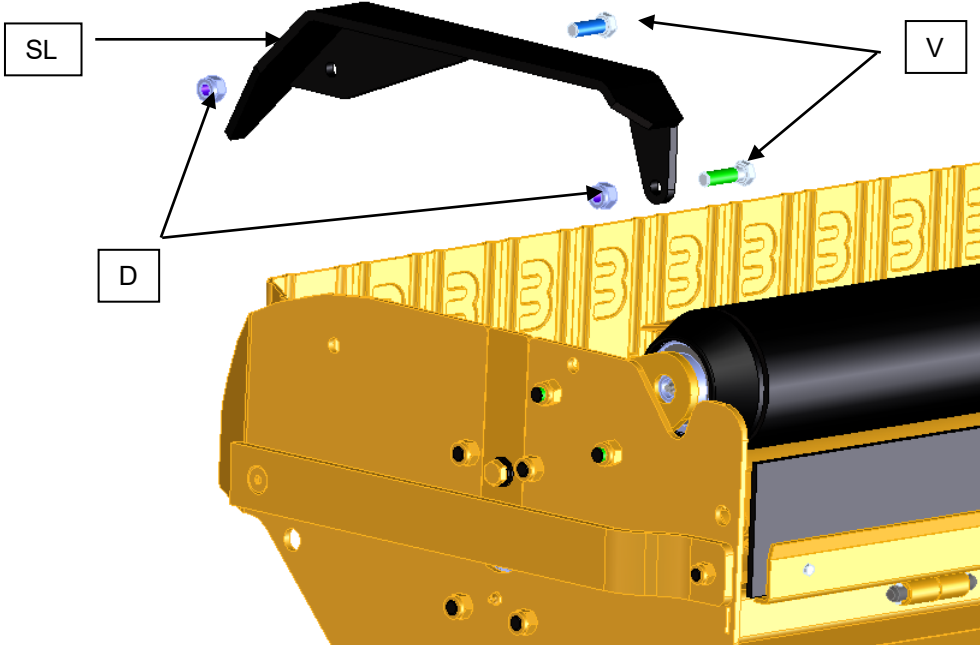
Periodically check the hammers screws and nuts fastening; if they are loose, the rotor may get damaged and dangerous ejections may occur.



Our spare parts guarantee complete and correct use of your machine again.

4.2.7. SUPPORT SLIDES REPLACEMENT

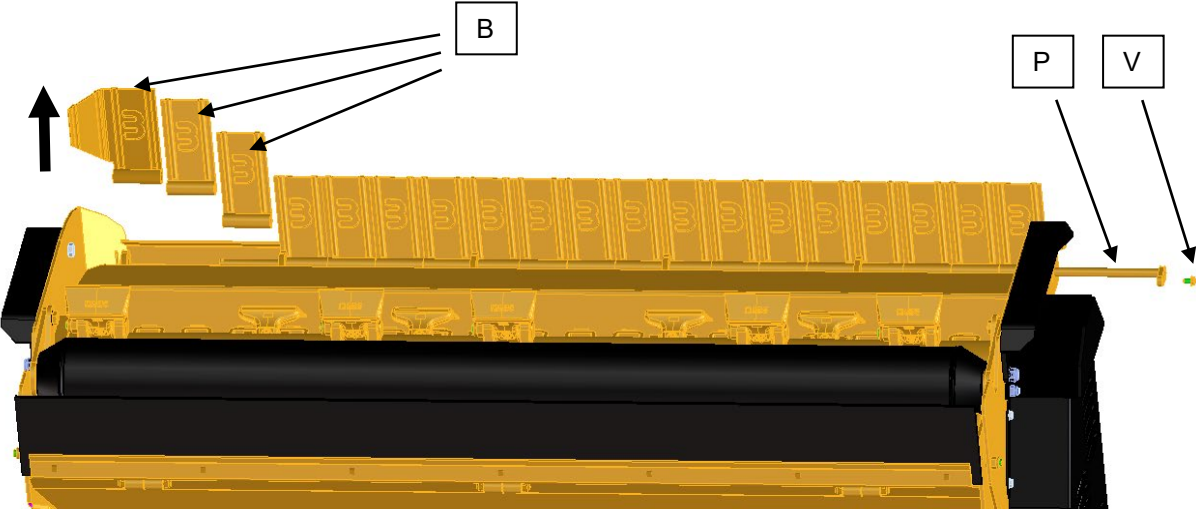
The machine is equipped with anti-wear slides that can be replaced in the following mode:

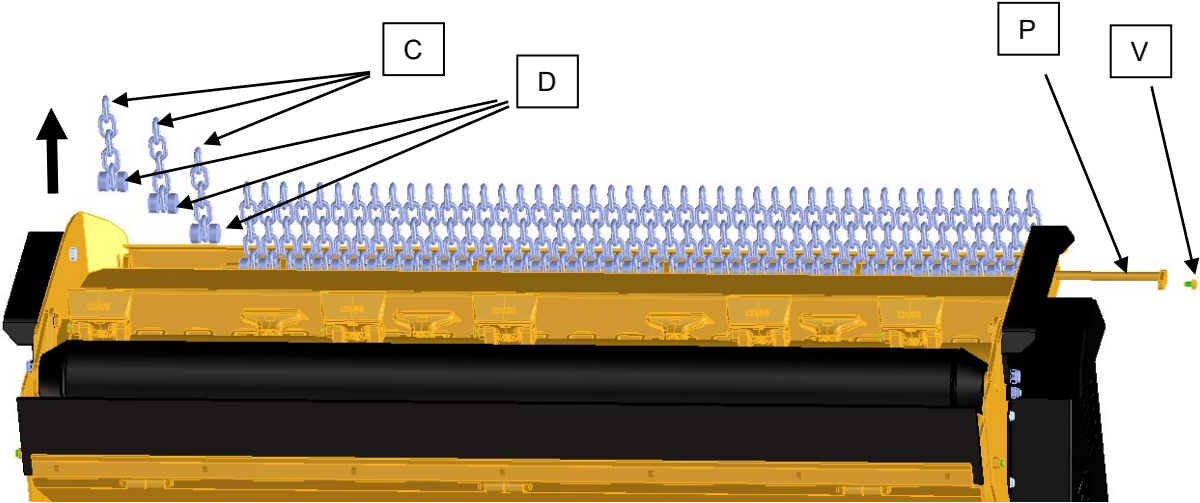
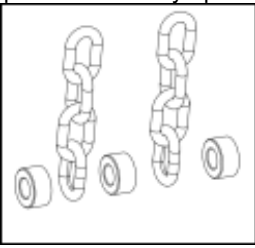
	1. Turn the machine over and place it on appropriate supports;
	In the workshop, use suitable equipment to handle and support the machine especially in terms of liftable and sustainable weight (see table 1 paragraph 1.5.3), in compliance with the Laws in force in the country of use.
	2. Unscrew the nuts D and remove the screws V as shown in figure 67;
	 Figure 67
	3. Replace the anti-wear slides SL both from the right and from the left side of the machine;
	4. Mount the screws V using the appropriate nuts D;
	5. After completing all the 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.

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	
	the panels must be properly stored. 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.
	1. Hook the machine, turn it over and place it on appropriate supports;

 PERICOLO	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.
	2. Remove the screw V (figure 68);  Figure 68
 ATTENZIONE	3. Gradually unscrew the front protection pin P, making sure that the panels B do not fall to the ground;
	4. Check for any damages; if any, proceed to immediate repair;
	5. Replace the panels (the first in the series must be notched), introducing them into the through-pin P; near the supports of the through-pin thread introduce the notched panels leaving no gap between these panels.  Figure 69
	6. Tighten the screw V.
	Reposition the machine on the ground and repeat the "Connection and start-up" procedure described in paragraphs 3.4. and 3.5.
	Our spare parts guarantee complete and correct use of your machine again.
FRONT GUARDS - CHAINS	

 PERICOLO	The panels 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.
	1. Hook the machine, turn it over and place it on appropriate supports;
 PERICOLO	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.
	2. Remove the screw V (figure 70);  Figure 70
 ATTENZIONE	3. Gradually unscrew the front protection pin P, making sure that the chains C and the spacers D do not fall to the ground;
	4. Check for any damages; if any, proceed to immediate repair;
	5. Replace the chains A and spacers D, inserting the inside the through-axe pin P; Respect the order of the chains and spacers assembly operations as indicated in figure 71.  Figure 71
	6. Tighten the screw V.
	Reposition the machine on the ground and repeat the connection and start-up procedure described in paragraphs 3.4. and 3.5.



Our spare parts guarantee complete and correct use of your machine again.

4.2.9. REPLACEMENT OF THE REAR GUARD OF THE MACHINE

The machine has a rear guard consisting of a rubber fabric sheet fixed on a suitable support by means of bolts.



In the workshop, use suitable equipment to handle and support the machine especially in terms of liftable and sustainable weight (see table 1 paragraph 1.5.3), in compliance with the Laws in force in the country of use.

1. Disconnect the machine from the tractor;
2. Turn the rubber support S by about 90°, then proceed by unscrewing the nuts D and by removing the screws V as in figure 68, taking care that the rubber fabric sheet G and the bolted support F do not fall to the ground;

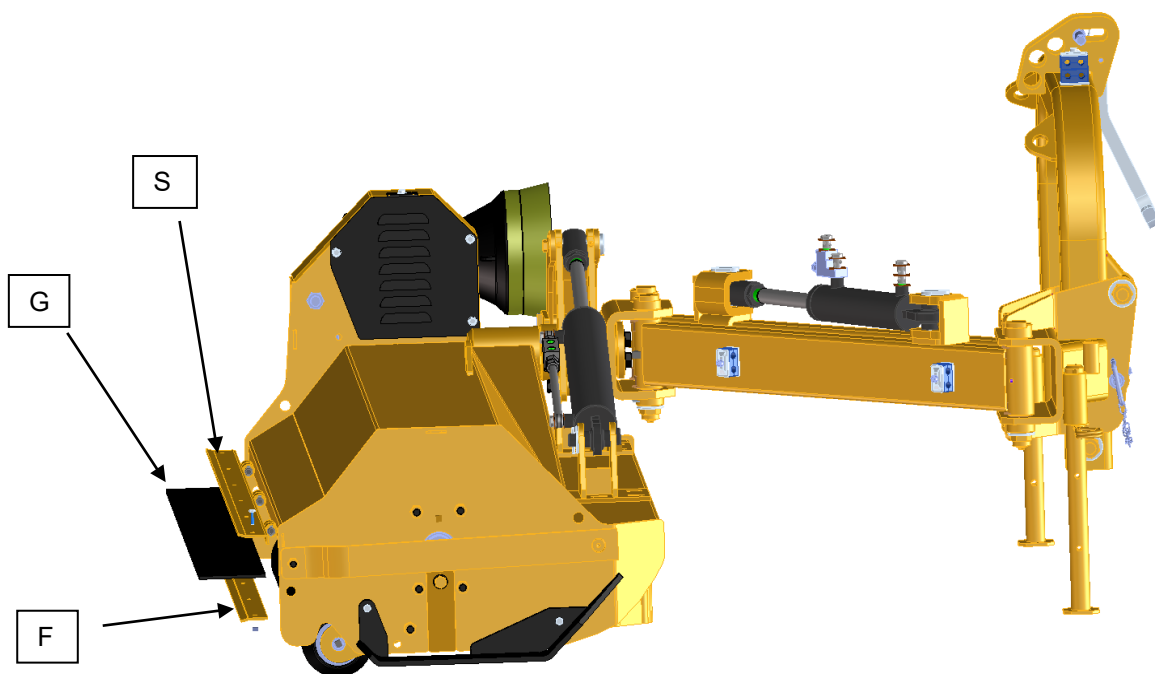


Figure 72

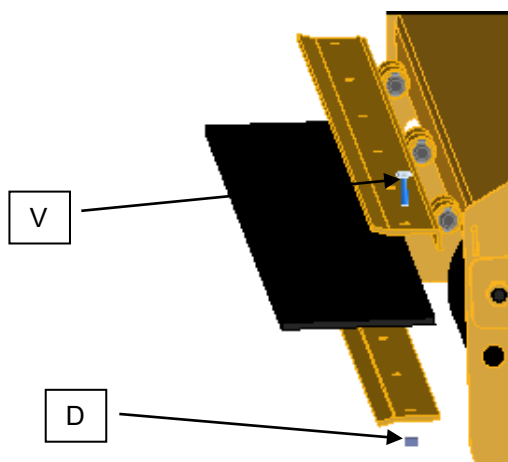
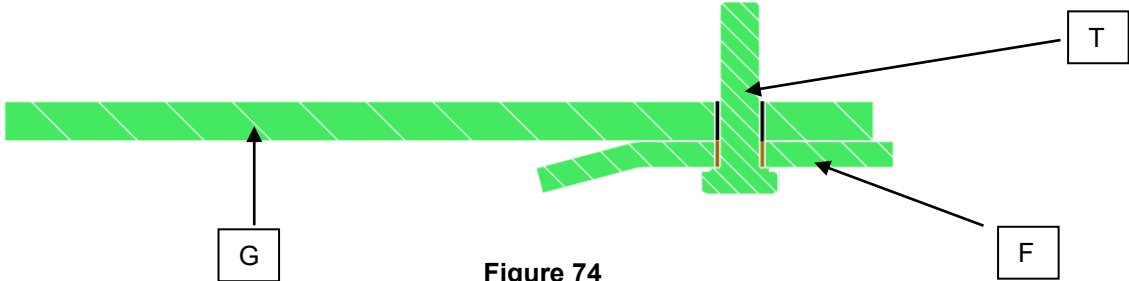


Figure 73

	3. Check for any damage to the support S which must be immediately repaired to restore the original state;
	4. Replace the rubber fabric sheet G;
	5. Support the new rubber fabric sheet G in support F, taking care to position it well in its housing. Pierce the rubber at the holes T (figure 74);
	 Figure 74
	6. Secure the new rubber G to support S by tightening the nuts of the screws V;
	7. Reposition the support S with the rubber mounted in the initial position;
	8. Once all the operations have been finished, repeat the procedure of "Connection and Start up of the machine" described in 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. Ensure that the hot parts of the machine are free of straw, hay or residues of flammable materials.

4.3. STORAGE - WINTERING

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

Before any garaging, it is good practice to operate as follows:

- Free the rotor and the tools from shredder 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.



Check 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

If the machine is scrapped, it must be disposed of in the appropriate waste sites in accordance with the laws in force in the country of use.

Before scrapping, separate the plastic and rubber parts, electrical and electronic parts (if present).

Recover any used oil and discard at the appropriate collection centres.

Parts consisting only of plastic, aluminium or steel may be recycled if collected by the appropriate centres.

4.5. SCHEDULED MAINTENANCE TABLE

Description	Controls
GENERAL MACHINE CHECKS	
Rotor greasing	Every 8 working hours
Roll greasing	Every 8 working hours
Articulation greasing	Every 20 working hours
Automatic belt tensioner greasing	Every 8 working hours
Tiller articulation greasing	Every 20 working hours
Parallelogram greasing	Every 20 working hours
Anti-shock greasing	Every 20 working hours
Check machine bolt tightness	After the first 4 hours and then every 50 hours
Check belts tensioning	After the first 4 hours and then every 50 hours
Check wear and fixing of tools	Before every job
Replace tools, screws and nuts	Every 200 operating hours or when damaged or no longer sharp
Replace transmission belts	Every 400 hours or when too worn
Replace pulleys	Every 400 hours or when too worn
Rotor balancing	Every partial or total replacement of the tools
Support slides replacement	Every 400 hours or when too worn
Check guards integrity	Every machine start-up. Restore the guards if worn and/or damaged.
Check pictograms	Every machine start-up. Restore if worn and/or damaged.
HYDRAULIC SYSTEM	
Check tightness of hydraulic hoses	At every start-up and every seepage of liquid
Check the hydraulic hoses	Check at every start-up. Replace immediately in the event of damage, seepage

4.6. TROUBLESHOOTING TABLE

ANOMALY	CAUSE	SOLUTION
Uneven 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 belt tension, the oil flow rate and the machine feed pressure • Replace the roll support • Replace the slides • Make more working passages
Premature wear of the tools	• Stony/sandy land • 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 • Constrictions on the machine feed lines • 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. • Make more passings 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 bearings	• The machine frame is folded • No bearings lubrication • 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
Rotor does not turn	• 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

Sealing rings broken/worn	• Excessive lubrication • High rotor rotation speed • Incorrect seals assembly	• Change the seal rings • Check the machine adjustment • Ask the manufacturer for further information
Chassis broken/unwelded	• Sheet steel worn • 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. Please note that the presence of spare parts should be properly accompanied by the following indications:

- machine type;
- serial number;
- spare part code that can be found in the Spare Parts Catalogue.

Since this is a particular part of a main group (rotor, multiplier unit, guards), it will be necessary to also specify the model and the serial number of the group.

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 ensures 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. Shipping and labour costs shall in any case be charged to 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 malfunction can be used as a pretext for delaying 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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