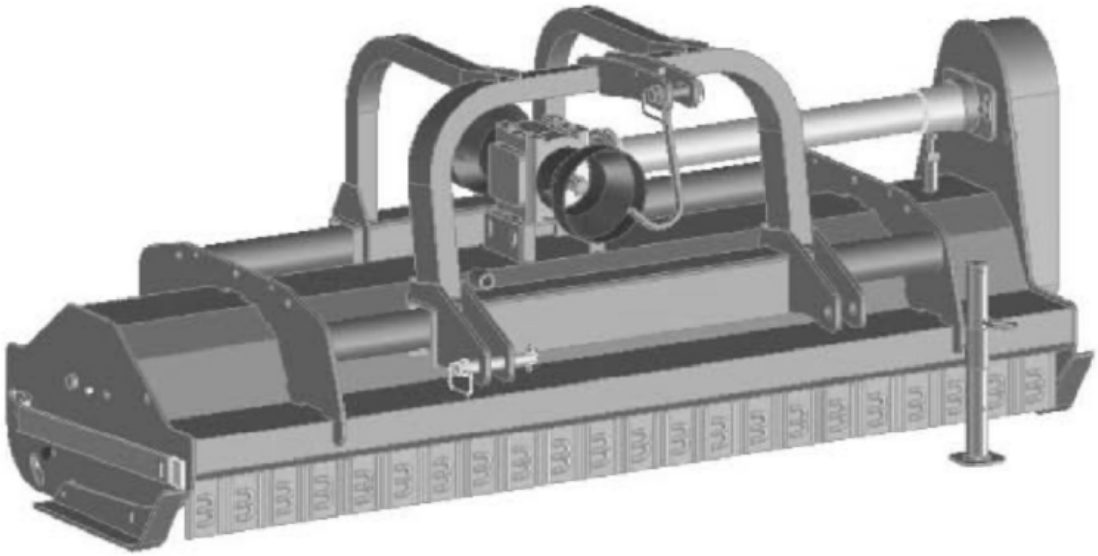
BERTI MACCHINE AGRICOLE



*Mod.* ***EKR - S****, Trinciatrice -* *Libretto d'uso e manutenzione*

*Mod.* ***EKR - S****, Mulcher - Operating and maintenance manual*

*Mod.* ***EKR - S****, Häcksler - Bedienungs- und Wartungsanleitung*

*Mod.* ***EKR - S****, Broyeur -* *Notice d'emploi et de maintenance*

**NOTES**

**NOTES**

# Table of contents

# 1.0 Guarantee

Check, upon receipt of the machine, that it has not been damaged during shipment and that all accessories are present.

### 1.0.1 GUARANTEE TERMS

- The manufacturer guarantees its products for a period of 12 months from the date of delivery on the condition that the herein attached form is fully compiled in all its parts and sent to the manufacturer within 15 days of date of delivery.
- The manufacturer, in accordance with the aforementioned terms, agrees to supply under guarantee coverage all components to be replaced according to its own decision or to the opinion of its own authorized representatives regarding parts that have material or manufacturing defects. Shipping and labor costs in this regard shall in any case be charged to the customer.
- Guarantee coverage does not include payment for damages caused by improper use of the machine by the machine operator and for parts normally subject to wear and tear and breakage such as hammers, blades, belts, etc.
- The manufacturer is not responsible for accidents to the operator or to third parties caused by improper use of the machine.
- This guarantee is not valid whenever:
  a) assistance and repairs were done by unauthorized individuals or companies;
  b) the machine has been previously repaired or modified using non-original spare parts;
  c) whenever there has been a mistake when maneuvering the machine;
  d) there has been insufficient maintenance and/or lubrication;
  e) when permissible power limits have been exceeded;
  f) whenever the instructions in this manual are not duly complied with;
  g) whenever unauthorized modifications have been brought to the machine.
- Machine breakdowns during or after the guarantee period shall not give rise to any right to interrupt payments for the goods that has already been delivered. No breakage or malfunction can be used as a pretext for delaying payments.
- The manufacturer reserves the right, at all times, to bring all due changes with the object of improving its own product and is not obligated to add these changes to previously manufactured machines that have already been delivered or are undergoing manufacture.
- These general guarantee terms replace and cancel all previous explicit or implicit guarantee conditions.

### 1.0.2 GUARANTEE CERTIFICATE

**CERTIFICATO DI GARANZIA**
GUARANTEE CERTIFICATE
GARANTIESCHEIN
CERTIFICAT DE GARANTIE

FAC-SIMILE

Si conferma di aver ricevuto il libretto uso e manutenzione e di essere stati informati circa il trattamento dei dati personali in base al Decreto Lgs. 196/03.

We confirm to have received the instructions manual and that we have acquired all the information of the article 13 of the Legislative Decree n. 196/03 about the treatment of personal information.

Wir bestätigen, dass wir das Betriebs- und Wartungshandbuch erhalten haben und dass wir alle Informationen über die Verarbeitung unserer persönlicher Daten (Verordnung 196/03) gelesen haben.

Nous confirmons d'avoir reçu la notice d'emploi et d'entretien de l'appareil et d'être informés notamment le traitement de nos coordonnées selon le décret législatif n° 196/2003.

Firma dell'acquirente / Purchaser's signature / Unterschrift des Kaufers / Signature de l'acheteur

Nome dell'acquirente / Purchaser's name / Name des Kaufers / Nom de l'acheteur

……

Indirizzo / Address / Anschrift / Adresse

……

La casa costruttrice garantisce i suoi prodotti per un periodo di 12 mesi dalla data della consegna all'utilizzatore, se la cartolina viene compilata e spedita entro 15 gg. dalla data di consegna / The manufacturer guarantees its products for a period of 12 months from the date of delivery on the condition that the attached form is fully compiled in all its parts and sent to the manufacturer within 15 days of date of delivery / Der Hersteller garantiert die eigenen Produkte für einen Zeitraum von 12 Monaten ab dem Datum der Auslieferung unter der Voraussetzung, dass der beiliegende Garantieschein in allen Teile ausgefüllt innerhalb von 15 Tagen nach dem Datum der Auslieferung an den Hersteller gesandt wird / La firme constructrice garantit ses produits pendant un délai de 12 mois à compter de la date de livraison, à charge d'expédier le formulaire ci-dessous, entièrement rempli, à la firme constructrice dans les 15 jours de la date de livraison.

# 2.0 Introduction

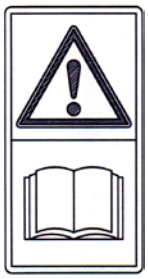
## 2.1 FOREWORD

This manual describes all instructions for operating and maintaining the machine in question as well as accident prevention standards.
We recommend reading it with care and attentively complying with all the procedures described in it before starting up, using or maintaining the machine because:

**THE MANUFACTURER DECLINES ALL RESPONSIBILITY FOR DAMAGE CAUSED BY FAILURE TO COMPLY WITH THE STANDARDS AND GUIDELINES CONTAINED IN THIS MANUAL.**

A series of pictograms are given in the manual to make it easier to read and to quickly attract the reader's attention to hazard situations and guidelines that cannot be avoided or sufficiently limited through use of technical protection systems or work organization measures and methods.
These pictograms, in other words, give information on objects and situations that may represent a specific danger.

**WARNING:**



The machine, during its use, can present danger situations: read this manual with care before using the machine.

What is described regards your safety and the safety of all employees and persons who may find themselves in the vicinity of this machine.
Whenever the machine is used by more than one person it is absolutely necessary for each user to examine this manual prior to using the machine.

This manual contains various pictograms that are used to attract your attention to the importance of the subject being dealt with.

**WARNING:**
It is dangerous to bring your hands or feet near to the tool when the rotor is in movement wait until the rotor has completely stopped before working on the machine! Always remember that the high inertia of the rotor means that it needs a few minutes before it stops.


**WARNING:**
In certain work situations the machine may project shredded material: always respect safety distances and make sure they are respected!

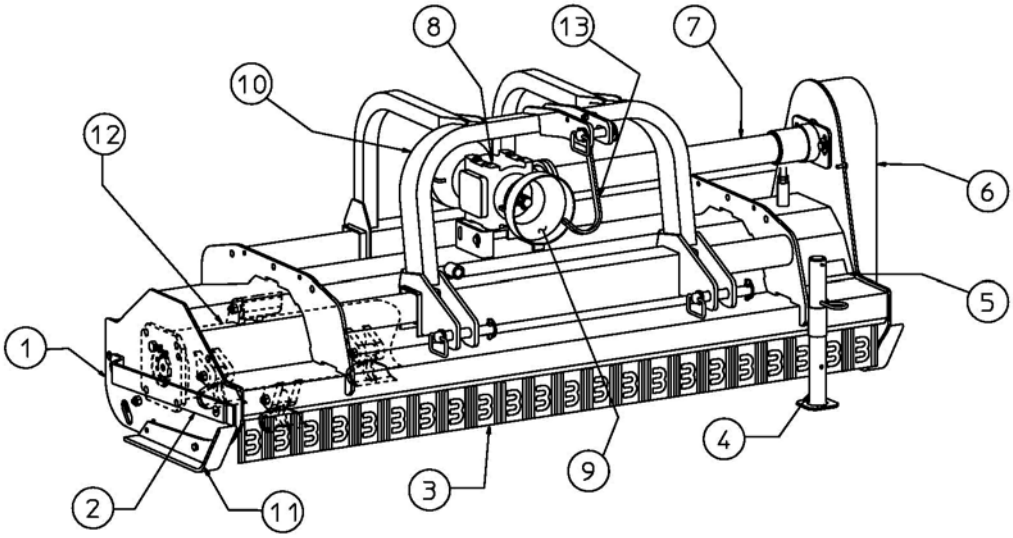
**CODIFICATION SYSTEM:**
This manual has an identification code for each machine component.

THIS IDENTIFICATION CODE MUST BE USED FOR:

1. ORDERING THE MACHINE ITSELF
2. ORDERING SPARE PARTS
3. REQUESTING TECHNICAL INFORMATION

# 3.0 Machine model and basic components

### 3.1 MACHINE BASIC COMPONENTS




**NAME OF MARKED PARTS**

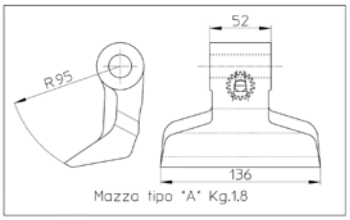
| Pos. | Description |
|---|---|
| 1 | Levelling roller |
| 2 | Lateral protection for trees |
| 3 | Front flaps |
| 4 | Standing park |
| 5 | CE inscription plate unit |
| 6 | Cover |
| 7 | Extension |
| 8 | Gearbox |
| 9 | PTO cone |
| 10 | 3° Point linkage |
| 11 | Skids |
| 12 | Rotor |
| 13 | Hook for PTO drive shaft |

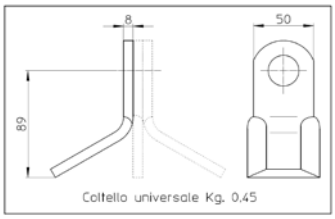
### 3. 2 STANDARD TOOLS

Our original tools are the result of careful research and lengthy experience: they are made out of high quality steel that undergoes special thermal treatments to guarantee great toughness and wear resistance.
Dimensions and weights are strictly controlled: rotors do not need to be newly dynamically balanced if tools are partially or totally replaced.
Broken or excessively worn tools can transmit vibrations to the machine. When this happens immediately stop working and only start up again after you have replaced the tools.
If vibrations are still present after replacing the tools then the rotor must be newly dynamically balanced.

Fastening screws are made of class 10.9 (UNI 3740) strength steel to guarantee a secure anchorage and a working life equal to that of the tools.

**WARNING:**
**ONLY INSTALL ORIGINAL TOOLS ON THE ROTOR.**



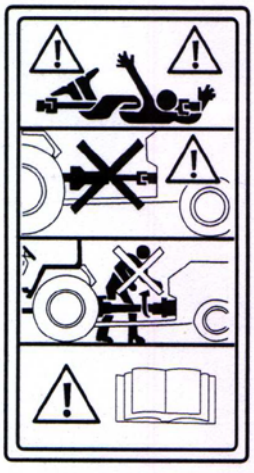

# 4.0 Cardan shaft

### 4.1 CARDAN SHAFT SPECIFICATIONS

The cardan shaft is the drive component that powers the shredder: It must be selected based on specific criteria that define its dimensions and length.

| DIMENSION OF THE CARDAN SHAFT | | | | |
|---|---|---|---|---|
| **Model** | **Absorbed power** | | **Power that can be transmitted by the PTO drive shaft at 540/ 1000 RPM** | |
| | **kw** | **HP** | **kw** | **HP** |
| **EKR - S 180** | 29 - 33 | 40 - 45 | 37 | 50 |
| **EKR - S 200** | 33 - 37 | 45 - 50 | 37 | 50 |
| **EKR - S 220** | 37 - 40 | 50 - 55 | 44 | 60 |
| **EKR - S 250** | 40 - 44 | 55 - 60 | 44 | 60 |
| **EKR - S 270** | 48 - 51 | 65 - 70 | 51 | 70 |
| **EKR - S 285** | 55 - 58 | 75 - 80 | 51 | 70 |
| **EKR - S 300** | 58 - 62 | 80 - 85 | 58 | 80 |

**WARNING**



The cardan shaft, when it operates, can create hazard and danger situations.

Machine operators must:
- read and preserve the operating and maintenance booklet attached with the cardan shaft;
- check that the cardan shaft is suitable for transmitting the required power;
- use exclusively the cardan shaft supplied with the machine;
- check that guards are properly installed, whole and effective;
- replace worn, broken or missing guards;
- turn the tractor motor off before working on the cardan shaft or on the machine itself;
- never let children or extraneous persons come near to the machine when it is at work and/or undergoing maintenance;
- set the cardan shaft on its specific support when it is not in use;
- wear suitable garments (that cannot be caught by the machine or pulled into it), especially close-fitting garments (such as work overalls with safety wrists and ankles);

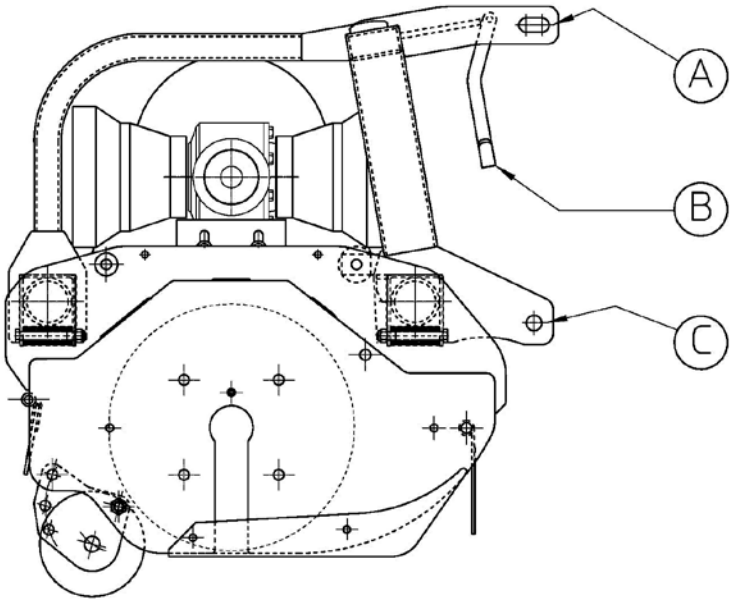
# 5.0 Installing the machine

### 5.1 CONNECTION TO THE THREE-POINT HITCH

**WARNING:**
**THESE PROCEDURES ARE VERY HAZARDOUS:**
**AVOID STANDING IN FRONT OF THE MACHINE WHEN IT IS APPROACHED BY THE TRACTOR.**
**AVOID THE PRESENCE OF EXTRANEOUS PERSONS.**
**THE P.T.O. MUST BE DISENGAGED DURING THESE INSTALLATION PROCEDURES.**

Before installing the machine make sure it is in perfect condition, resting on the ground and level and that lubricants are at proper levels and all components subject to wear and/or deterioration are perfectly efficient.
Also check that the size and weight of the tractor is suitable for carrying the machine.

The three-point hitch is equipped with 2nd category gudgeon pins. Check that these are compatible with the tractor's hoist.



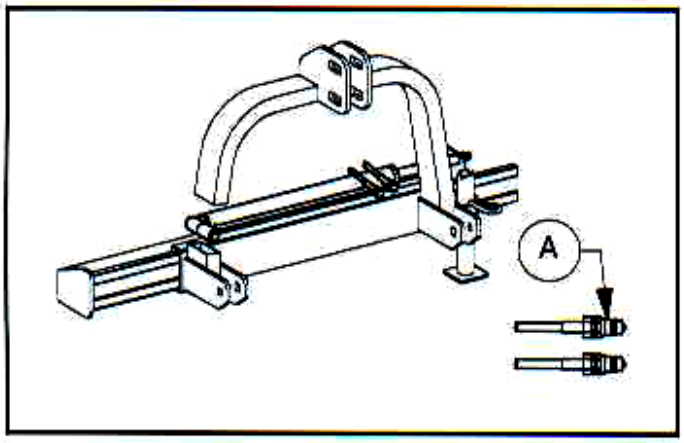

Proceed as follows after making these checks:

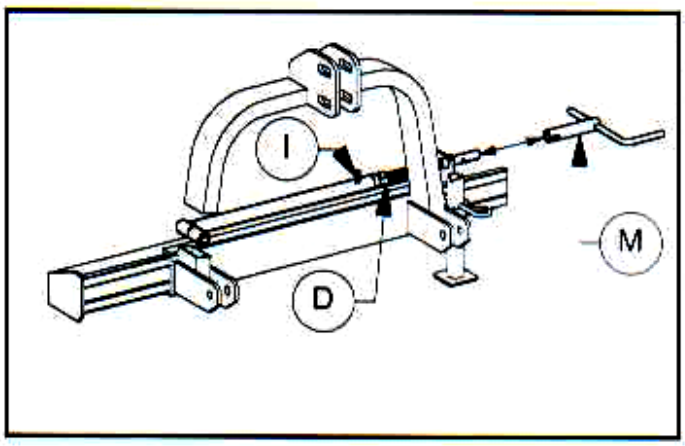
1- remove the safety pins and pull out the gudgeon pins of the top link **A** and of the low links **C**;
2- carefully bring the tractor close to the hitch until it centers the holes on the connections parallel with those on the drawbar;
3- brake the tractor and turn it off;
4- thread the gudgeon pins into the parallel connections C and insert the related safety pins;
5- adjust the arm tie-rods in order to prevent the machine from oscillating to the right and left;
6- turn the cardan support bracket backward B;
7- mount the cardan shaft, making sure the push-buttons are properly inserted in the specific slots (see paragraph 5. 5);
8- mount the third point tie-rod A, insert the gudgeon pin supplied, the washer and the related safety pin;
9- adjust the length of the third hitch point so that the gudgeon pin is located in the center of the slot;;
10- block the third hitch point tie-rod in place.
11- lift the support foot.
12- hook-up the side shift movement hoses (if the machine is equipped with hydraulic side shift movement).

**WARNING:**
**CHECK THAT SAFETY PINS A ARE PROPERLY INSERTED AND THAT CHAINS C ARE IN EFFICIENT WORKING ORDER.**
**MAKE SURE YOU HAVE PUT THE ANTI-EXIT DEVICES INTO THE HITCH PINS**

### 5.2 SIDE SHIFT

The machine has a side shift system that can be mechanically or hydraulically powered



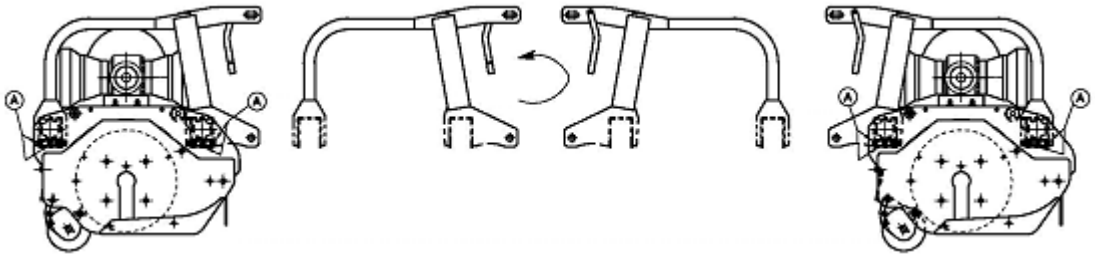




| Side shift with hydraulic cylinder | Side shft with manual system |
|---|---|
| This type of side shift can be applied on all tractors equipped with a supplementary double-acting distributor with 140 - 160 bar operating pressure. | This type of side shift moves the machine by turning the crank M. |

### 5.3 FRONT AND REAR HITCH OF THE MACHINE

The reversible 3-point linkage permits to the machine to be used either at the rear ( the machine is pulled) and at the front (the machine is pushed) of the tractor, as well as by reverse-drive tractors. In order to switch the machine from one direction to the other, it is necessary to conform the machine as displayed below.

**POSITION 1** **POSITION 2**



**WARNING**

THESE PROCEDURES ARE VERY HAZARDOUS: THE P.T.O. OF THE TRACTOR MUST BE DISENGAGED DURING THESE INSTALLATION PROCEDURES (see paragraph DISCONNECTING FROM THE MACHINE n° 5.6 ).

Proceed as follows:

1- Low the parking stand and set the machine on the level;
2- Unhook the tractor from the machine, move it away and turn it off;
3- Remove the PTO shaft;
4- Take off the components of the hydraulic or mechanical side shifts;
5- Remove the bolts **A** , the little rollers and the spacers;
6- Use a suitable hoist (see the weight declared on the serial no. plate) to lift the machine and remove the reversible linkage with the pins, turn it of 180°, and fit it again on the tubes but on the opposite side (see the above);
7- Re-mount the screws **A** with the spacers and the little rollers;
8- Re-mount the components of the hydraulic or mechanical side shift on the opposite side;
9- Re-mount the PTO shaft fixing it on the opposite side of the previous position;
10- Fit the machine to the tractor (see INSTALLING THE MACHINE paragraph 5.1).

**MAKE SURE OF THE LENGHT OF THE DRIVE SHAFT, THE RPM AND THE DIRECTION OF THE ROTATION OF THE PTO (see the Paragraph 5.4) BEFORE TO START UP THE MACHINE.**

**IMPORTANT**
- **POS. 1: position of the hitch with the machine at the REAR of the tractor (PULLED);**
- **POS. 2: position of the hitch when the machine is PUSHED (front linkage or on reverse drive tractors);**

**5.4 SWITCHING THE PTO FROM 540 TO 1000 RPM.**

It is possible to switch from 540 to 1000 (or vice versa from 1000 to 540 rpm) by simply inverting both the pulleys that, by means of the belts, transmit the power to the mulching rotor. The pulleys are located in the transmission cover beside the machine.

WARNING
THESE PROCEDURES ARE VERY HAZARDOUS:
THE P.T.O. OF THE TRACTOR MUST BE DISENGAGED DURING THESE INSTALLATION PROCEDURES.

Proceed as follows:

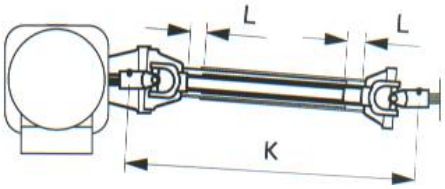
1- remove the transmission cover;
2- loosen the belts inverting the procedure described in the paragraph 7.4;
3- remove the belts;
4- remove the centre locks which fix the pulleys to the relevant shafts;
5- invert the positions of the pulleys (from the top position to the bottom and vice versa), and fix them with the centre locks. Make sure that the pulleys are perfectly aligned;
6- Re-mount the belts;
7- Follow the procedures described in the paragraph 7.4 for the correct tension of the belts.

**5.5 INSTALLING THE CARDAN SHAFT**

THE MANUFACTURER GUARANTEES THAT THE CARDAN SHAFT, SUPPLIED WITH THE MACHINE, IS SUITABLE FOR SAFELY SUPPORTING POWER ABSORPTION LEVELS DURING WORK PROCESSES AS LONG AS ALL OPERATING AND USE CONDITIONS ARE COMPLIED WITH.

WHEN THE CARDAN SHAFT IS REPLACED IT CAN BE REPLACED BY ANOTHER THAT MEETS EC STANDARDS AND THAT IS SUITABLE FOR TRANSMITTING THE POWER RATINGS INDICATED IN THE TABLE AT PARAGRAPH 4.1.
CAREFULLY READ THE INSTRUCTION BOOKLET THAT COMES WITH THE CARDAN SHAFT BEFORE PERFORMING THESE PROCEDURES.

WHEN FIRST INSTALLING THE CARDAN SHAFT:
Measure the distance K between the races of the P.T.O. push-buttons with the machine rested on the ground and level and with the overgear axially aligned with the tractor's P.T.O.: if the length of the cardan shaft that is supplied needs to be modified make sure that the telescoping tubes overlap for a length that permits between 40 and 50 mm of play L at their ends.




IMPORTANT: THIS PROCEDURE MUST BE DONE THE FIRST TIME THE SHAFT IS INSTALLED, EVERY TIME IT IS REPLACED AND EVERY TIME THE MACHINE IS INSTALLED ON ANOTHER TRACTOR.

WARNING: AFTER INSTALLING THE CARDAN SHAFT FASTEN THE ANTI-ROTATION CHAINS OF THE GUARDS ON THE TRACTOR SIDE AND ON THE MACHINE SIDE.

When the machine is put away for storage always set the cardan shaft on its specific support bracket S provided on the three-point drawbar to avoid build-up of dirt or deformation or breakage of the protective guard.

IMPORTANT: GREASE THE CARDAN SHAFT ACCORDING TO THE RECOMMENDATIONS GIVEN IN THE CARDAN SHAFT'S MANUAL.

IMPORTANT: NEVER WORK WITH CARDAN SHAFTS WITHOUT THEIR SAFETY GUARDS
READ THE INSTRUCTION BOOKLET THAT COMES WITH THE CARDAN SHAFT WITH CARE.

### 5.6 DISCONNECTING FROM THE MACHINE

WARNING:
THE PROCEDURES DESCRIBED BELOW CAN CREATE DANGER SITUATIONS: KEEP EXTRANEOUS PERSONS AWAY FROM WHERE THE MACHINE WILL BE POSITIONED AND FROM ITS IMMEDIATE VICINITY.

Carefully comply with the following instructions when disconnecting the machine from the tractor. For more information you can also consult paragraph 5.1 “INSTALLING THE MACHINE”.

Proceed as follows to disconnect the machine:

1- disengage the P.T.O;
2- rest the machine on the levelling roller and with the parking stand completely down;
3- put the tractor’s brake on;
4- turn off the tractor;
5- disconnect the top link of the drawbar;
6- turn forward the support **B** of the PTO shaft;
7- disconnect the PTO shaft from the tractor and rest it on the support **B**;
8- disconnect the low links of the drawbar.

Put the links’ pins and tripping pins on the relevant housings on the drawbar, in order to find them easily at the time you will use the machine again.

### 5. 7 TRANSPORT ON ROAD

WARNING:
ON-ROAD TRANSPORT MUST BE DONE WITH MAXIMUM CARE AND ATTENTION TO AVOID DANGER TO PERSONS AND VEHICLES IN TRANSIT.

Before performing on-road travel make sure that all the machine’s parts are whole and in goof conditions..

Then proceed as follows

1- disengage the P.T.O. and wait until the rotors is completely stopped;
2- lift the machine with the inferior links of the tractor;
3- Always follow the local regulations for transport on road.

WARNING:
DURING ROAD-TRANSPORT OPERATIONS, THE PTO MUST BE ALWAYS TAKEN OFF!!

# 6.0 Operating instructions

### 6.1 GENERAL INSTRUCTIONS

The machine Mod. **EKR-S** has been designed and built to mulch grass and pruning up to 2-3 cm of diameter.
The machine is equipped with the double hitch that permits to be driver either on the back and on the front of tractors as well as on the back of the reverse drive tractors (see paragraph 5.3 **FRONT AND REAR HITCH OF THE MACHINE**)

They can be used:
- to shred grass
- to shred pruning branches in vineyards and orchards in general with branches with maximum 2-3 cm. Diameters;
- to shred forest-floor residue;
- to shred nursery and garden residue;
- to shred in fields with little stones.

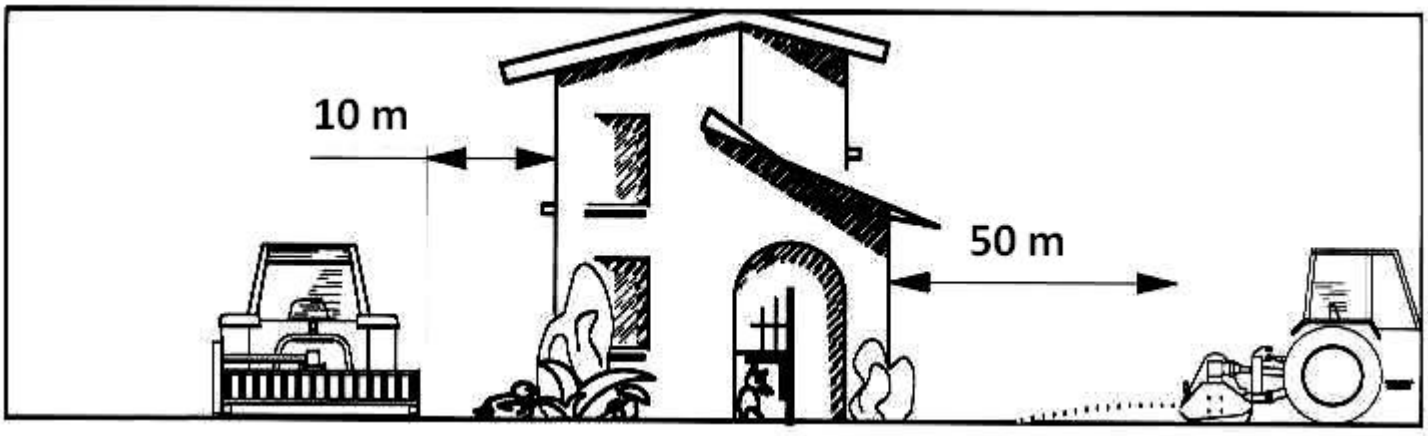
It is prohibited to use them:
- if they are coupled with undersized tractors;
- if there are medium or big stones on the surface of the terrain;
- if terrains do not permit stable tractor operation, such as steep rising or descending slopes, the vicinity of ditches or cliffs, very uneven terrain, etc.
- to shred branches with diameters greater than 3-4 cm;
- in situations that require sharp turns
- in reverse gear

**IMPORTANT:**
**REMEMBER THAT YOUR OWN VISIBILITY AND THAT OF OTHER VEHICLES MAY BE IMPAIRED WHEN WORKING ON DUSTY TERRAIN.**

### 6.2 INSTRUCTIONS FOR USE IN THE FIELD

This paragraph gives instructions for safely using the machine in its work area:

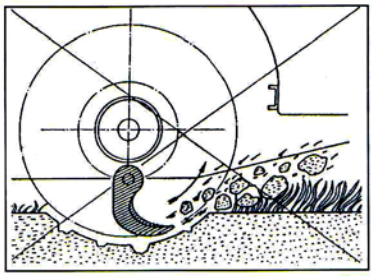
a. carefully check that the machine operates properly before using it for the first time in the field: do this by rotating the rotor for a few minutes without any load, applying the instructions illustrated in paragraph 7.6 Perform this same check every time you start using the machine again;
b. whenever turning around when working always disengage the tractor's P.T.O., wait until the rotor stops, lift the machine and then reverse your direction of operation;
c. always make sure, when working, that nobody is present in the machine's residual risk zone;
d. disengage the P.T.O. before lifting the machine, do not operate the machine while it is lifted and always stop the machine before descending from the tractor;
e. respect safe distances when working near houses or roads:
   - 10 meters on the side;
   - 50 meters to the rear;



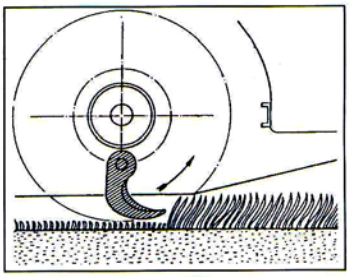
### 6.3 USE ON THE FIELD

Approach the work zone with the machine correctly hitched to the tractor and then proceed as follows::

1- act on hoist controls to lower the machine until the rear roller rests on the terrain and the tools come near the terrain without touching it;
2- engage the P.T.O. and gradually accelerate the tractor until you reach the P.T.O.'s standard operating speed ( 540 or 1 000 RPM depending on the information on the label on the protective cowling);
3- put the tractor in gear and start to work;
4- use the hoist to adjust working height as necessary. Avoid having cutting tools (hammers or blades) come in contact with the terrain;
5- adjust the tractor's forward speed as necessary: paragraph 6.4 gives several recommended guideline speeds;
6- adjust the position of the roller to increase or decrease cutting height above the terrain (minimum cutting height is 30 mm). See the instructions in paragraphs 8.1.



**NO**



**YES**

### 6.4 FORWARD SPEED

Remember that the forward speed of the tractor must adapt to the type and quantity of material being shredded. EXCESS SPEEDS put excessive stresses on drive components, wearing them out ahead of time.
This will produce poor-quality shredded material, the possible expulsion of large pieces of material which, because of their greater inertia may be projected beyond forecast safety limits.

The following table contains speeds we recommend to get maximum performance from the machine:

| RECOMMENDED FORWARD SPEED (km/h) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TYPE OF MATERIAL** | **0,5** | **1** | **1,5** | **2** | **2,5** | **3** | **3,5** | **4** | **4,5** | **5** | **5,5** | **6** | **6,5** | **7** | **8** |
| Thin grass | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | |
| Grass that has not been cut for months | | | | | | ■ | ■ | ■ | ■ | | | | | | |
| Very tough grass or grass that has not been cut for years | | ■ | ■ | ■ | ■ | | | | | | | | | | |
| Vineyard pruning (max. Ø 3 cm.) | | | | ■ | ■ | ■ | ■ | | | | | | | | |
| Apple-pear branches (max. Ø 3 cm.) | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | |
| Olive-peach branches (max. Ø 2 cm.) | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | |
| Brushwood (max. Ø 2 cm.) | | ■ | ■ | ■ | ■ | | | | | | | | | | |

# 7.0 Machine maintenance

**7.1 IMPORTANT WARNINGS AND OPERATING INSTRUCTIONS**

The structure, design and efficiency of this machine may cause operators to underestimate risks that can arise during maintenance and/or repair procedures.
Scrupulously comply with the guidelines described in this manual for all maintenance and/or repair procedures in order to avoid any risks inherent to these tasks.
Here we list a few general precautions:
- read the operating and maintenance manual with care;
- perform all maintenance and/or repair in suitable work sites;
- prepare a suitable storage site for the machine;
- collect recovered oil in specific disposal containers;
- use suitable tools with the proper skill;
- employ personal protection devices (DPI).

READ THIS MANUAL WITH CARE.
This manual must be read with care in order to prevent all risks when performing specific operations, whether when working with the machine or during maintenance and/or repair.
Turn to specialists to do everything that is not specifically indicated in this operating and maintenance manual.
WARNING:
IT IS VERY DANGEROUS TO WORK ON THE MACHINE WITHOUT SUFFICIENT INFORMATION ON WORK PROCEDURES.

PERFORM MAINTENANCE AND/OR REPAIR IN SUITABLE WORK SITES.
Suitable work sites include a flat, paved and well illuminated support surface that is sufficiently large and, if possible, located inside a building. It must always be possible, when working on the machine, to keep it in a stable position. It may, if necessary, be sustained by special support devices designed to guarantee stability even when the machine is subjected to stresses.

PREPARE A SUITABLE STORAGE SITE FOR THE MACHINE.
Store the machine in a covered area. Remember that:
- the machine must be safely positioned so that it will not fall over and so that hook-up and release procedures are simple and easy;
- entryways must permit easy passage;
- the tractor engine must only operate inside the storage site the amount of time necessary for entering and exiting and for maneuvering: avoid build-up of exhaust gases;
- keep the storage site orderly to make machine movements as easy as possible.

COLLECT RECOVERED OIL IN SPECIFIC DISPOSAL CONTAINERS.
Used oil is harmful to the environment and to health. Use all necessary precautions when disposing of used oils.
Comply with currently valid legislation in your own country regarding environmental protection and waste disposal legislation.

It is good practice, when changing oil, to wear protective gloves. Carefully wash body parts of the skin comes in contact with the used oil.

USE SUITABLE TOOLS WITH PROPER SKILL
Appropriate tools must be used even for the simplest tasks: improper use or incorrect tools can cause serious risks and hazards for persons. In this regard you should also use personal protection devices (DPI).

It is also good practice to keep tools in good shape and transport them with care

EMPLOY PERSONAL PROTECTION DEVICES (DPI).
Personal protection devices must be used in accordance with current standards in your own country and depending on the type of task being performed.
We give all the relative specifications on the “Working in Safe Conditions” chapter.

### 7.2 PREVENTIVE GUIDELINES

Follow these guidelines to best use and maintain the machine:

a. After the first 4 work hours and subsequently at 50 hour work intervals:
   1. check that all bolts are tight
   2. check the tension of drive belts;
   3. check lubricant levels;

b. If the machine will be inactive for a long time period:
   1. clean the machine with care;
   2. check its condition and take all necessary measures so it will be ready for prompt use;
   3. keep the machine indoors during the winter where temperatures do not drop much below 0°C (zero degrees Centigrade)

c. The first time the machine is used again:
   1. grease all bearings;
   2. check lubricant levels;
   3. check the condition of the transmission;
   4. before reinstalling the cardan shaft make sure it is the one supplied with the machine and that all protective devices are complete and in proper operating order;

d. Periodically check the state of all protective devices: replace those that are deformed, broken or missing.

### 7.3 ROUTINE MAINTENANCE

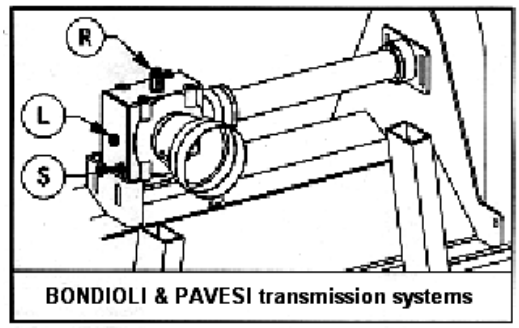
Moving parts must be protected according to current law to prevent the hazards of contact, catching, pulling and crushing of body parts. Always check that:
   a) moving parts are protected and that their protective devices are sound and efficient;
   b) protective devices are always put back in position whenever they are removed in order to perform maintenance;
   c) always wear suitable clothing according to specified Personal Protection Measures.

WARNING:
THE P.T.O. MUST BE DISENGAGED AND THE TRACTOR OFF AND PROPERLY BRAKED OR DISCONNECTED BEFORE BEGINNING ANY MAINTENANCE PROCEDURES

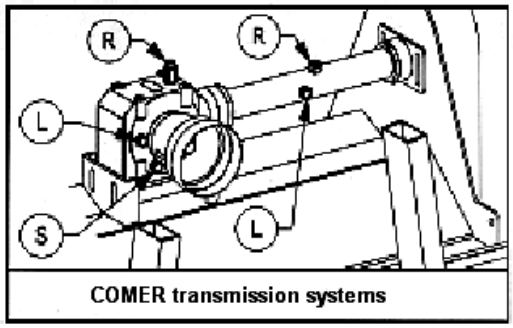
Here are several maintenance phases that must be periodically carried out in order for the machine to always be in good condition.

#### 7.3.1 GREASING AND LUBRICATION

Systematic and periodic machine greasing and lubrication keep it performing well and prolong its working life



BONDIOLI & PAVESI transmission systems



COMER transmission systems

**TRANSMISSION SYSTEMS:**

Carefully clean components around plugs before working on transmission systems: this prevents dirt from penetrating into these systems.

Transmission systems require the following checks:

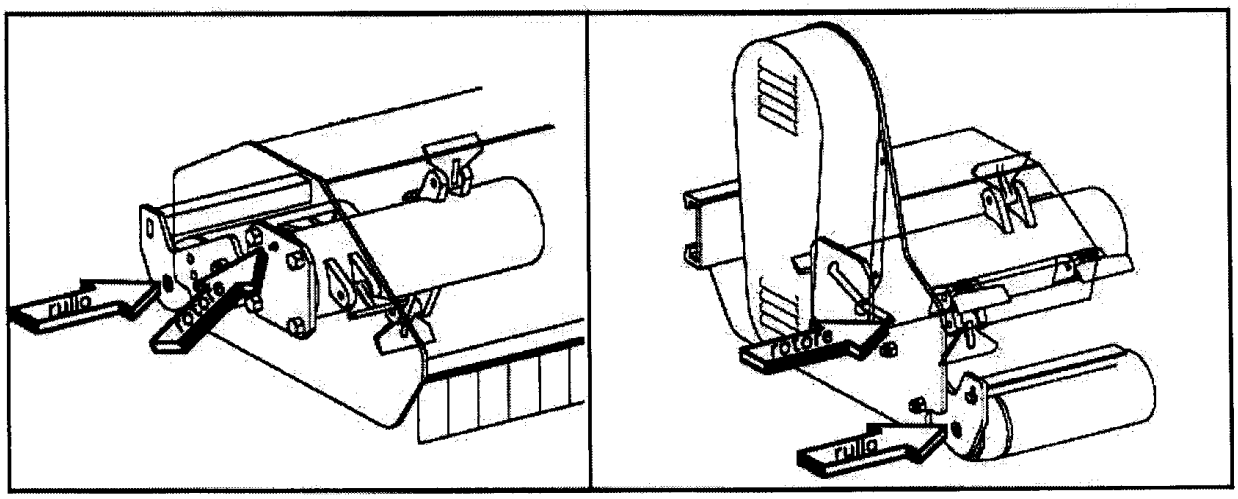
1- check the oil levels in the gearbox and the extension during the first 20 work hours: oil must come up to the level hole. Add oil as required. Perform the next oil level checks at 50 hour intervals

2- totally replace the oil in the gearbox and the extension after the first 40 work hours. Subsequently replace oil every 250 work hours;

There are various points for filling and checking oil levels depending on the type of transmission systems that are installed. Follow their instructions for performing an exact check.
The protective bowling must be removed in order to drain oil from COMER transmission systems.

**R**: oil refill hole
**L**: oil level hole
**S**: oil drain hole

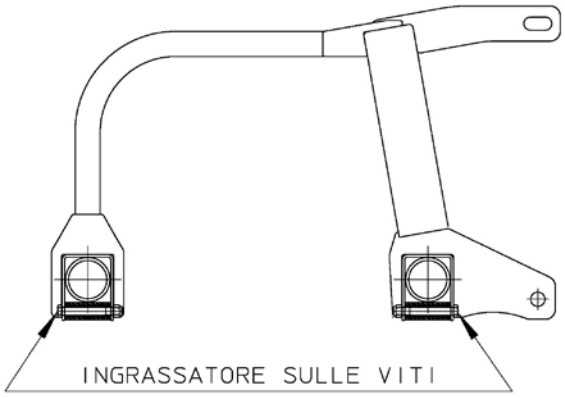
**ROTOR, ROLLER**




**ROTOR:** Grease every 8 work hours, giving a maximum of 1 - 2 pumps to avoid damage to internal bearing seals.

**ROLLER:** Grease every 8 work hours (every 4 work hours on sandy terrain), pumping in grease until it exits.

**3° POINT LINKAGE** Grease every 8 work hours, giving a maximum of1 - 2 pumps , on the greasers that are on the fixing screws of the little rollers (2 front and 2 rears).

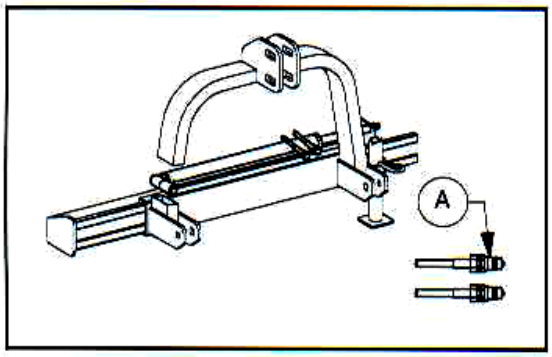


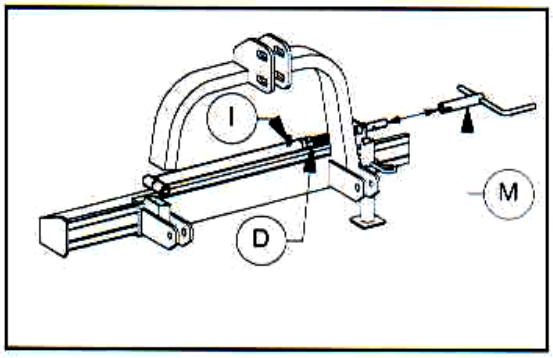

| **LUBRICANTS TO BE USED** |
|---|

| | |
|---|---|
| Gearbox | SAE 90 - 140 gearbox oil |
| Rotor - levelling roller - drawbar slide guides | EP2 grease |
| Hydraulic circuits | ISO - 46 NO FOAM hydraulic oil |

**SIDESHIFT MOVEMENT**

We now describe adjustment procedures for both mechanical or hydraulic side-shift movement

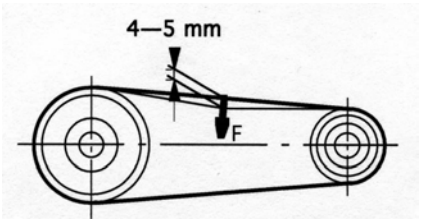



| Side shift movement with hydraulic jack | Mechanical side shift movement with screw and crank |
|---|---|
| Check, before connecting up the side shift system:<br>1- 1. that quick connection fittings **A** are perfectly clean;<br>2- 2. that hydraulic hoses are in good condition; | Periodically grease at point **I**. |

**7.4 BELT TENSIONS**

Belts are properly stretched when they deflect about 4-5 mm when an approximate 4-5 Kg. force F is applied in the center between the two pulleys



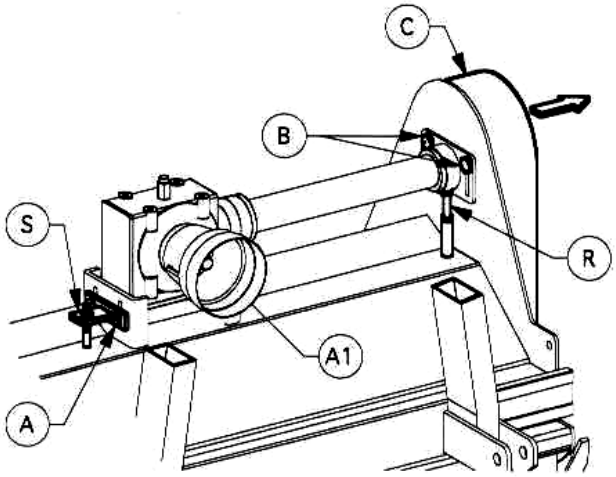

It is very important to check belt tension:
make all necessary adjustments so that deflection agrees with the above-indicated value.

Check and adjustment must be done after the first 4 work hours and subsequently at 50 hour intervals

WARNING:
MAKE SURE THE P.T.O. IS DISENGAGED AND THE TRACTOR IS BRAKED AND OFF OR DISCONNECTED FROM THE MACHINE WHEN PERFORMING THE ABOVE-DESCRIBED PROCEDURES.

Proceed as follows to adjust belt tension:

1. remove transmission cover casing **C**;
2. loosen screws **A** and **A1** on the sides of the gearbox support;
3. loosen screws **B** on the flank side;
4. re-tight the belts using tightening screw **R**;
5. regulate the adjustment screw on plate **S** until the extension shaft of the gearbox is parallel to the frame: the pulleys must become aligned also;
6. use a rule to check that they are aligned; use the two adjustment screws to correct alignment if the pulleys are not aligned;
7. tighten the screws;
8. tighten screws **A**, **A1** and **B;**
9. reinstall casing **C**, fastening it in place with the screws.




WARNING:
DO NOT WORK WITHOUT THE BELT PROTECTION CASING

**Systematic and periodic machine greasing and lubrication keep it performing well and prolong its working life !!**

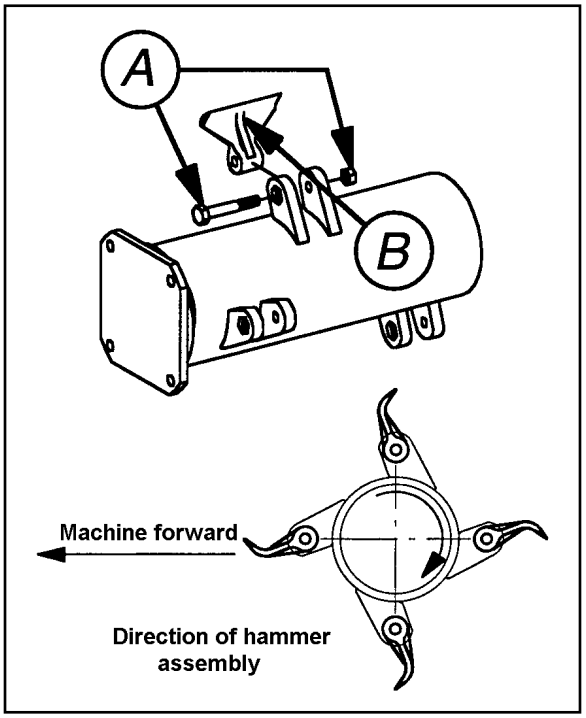
### 7.5 REPLACING THE HAMMERS

**WARNING:**
**TO PERFORM THESE PROCEDURES MAKE SURE THE P.T.O. IS DISENGAGED AND THAT THE TRACTOR IS BRAKED AND OFF OR DISCONNECTED FROM THE MACHINE.**

Perform the following procedures:

1- Set the machine on the level;
2- Brake and turn the tractor off or disconnect it;
3- Use a suitable hoist hooked to a suitably large beam, Hook up the machine on the lateral brackets of the levelling roller and lift it in vertical position; then put the machine on the flat.
4- Loosen and remove the screws **A**;
5- Replace hammer B and install a new bolt, being sure to insert the head of the screw into the hexagon machined on the support. Tighten strongly;
6- Low the machine;

IMPORTANT : SHOULD YOU HAVE NOT A SUITABLE HOIST, YOU MUST REFER TO AN EQUIPPED WORKSHOP TO PERFORM THE OPERATIONS.



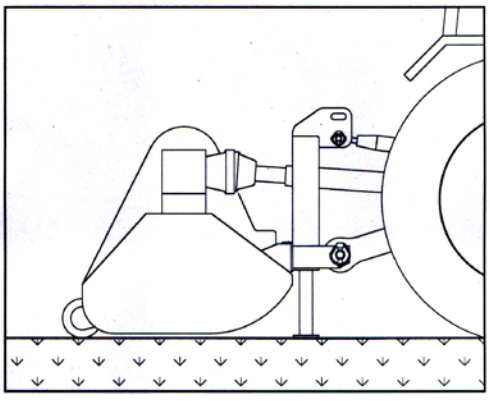

OUR ORIGINAL SPARE PARTS GUARANTEE COMPLETE AND CORRECT MACHINE OPERATION

### 7.6 POST-MAINTENANCE OPERATING TEST

It is good practice, after performing maintenance and/or repairs on the machine, to make a test to check that maintenance and/or repairs are effective and that the machine operates well..

Proceed as follows:

1- if necessary connect the machine to the tractor (see paragraphs 5.1 and 5.2);
2- if necessary lower the support foot
3- lower the machine until it sits on the levelling roller and on the foot;
4- make sure no extraneous persons are within 10 meters of the machine;
5- engage the P.T.O. and gradually accelerate until you reach operating speed (540 or 1000 RPM).



Check the tools if the machine vibrates during this test (see paragraph 3.2 and 7.5)
The rotor will have to be dynamically balanced again if you still note vibrations after having checked or replaced the shredding tools.

Turn to your authorized retailer to do this

# 8.0 Adjustments

**WARNING:**
**WHEN PERFORMING THE PROCEDURES DESCRIBED BELOW MAKE SURE THE P.T.O. IS DISENGAGED. THE TRACTOR MUST BE BRAKED AND OFF OR DISCONNECTED.**

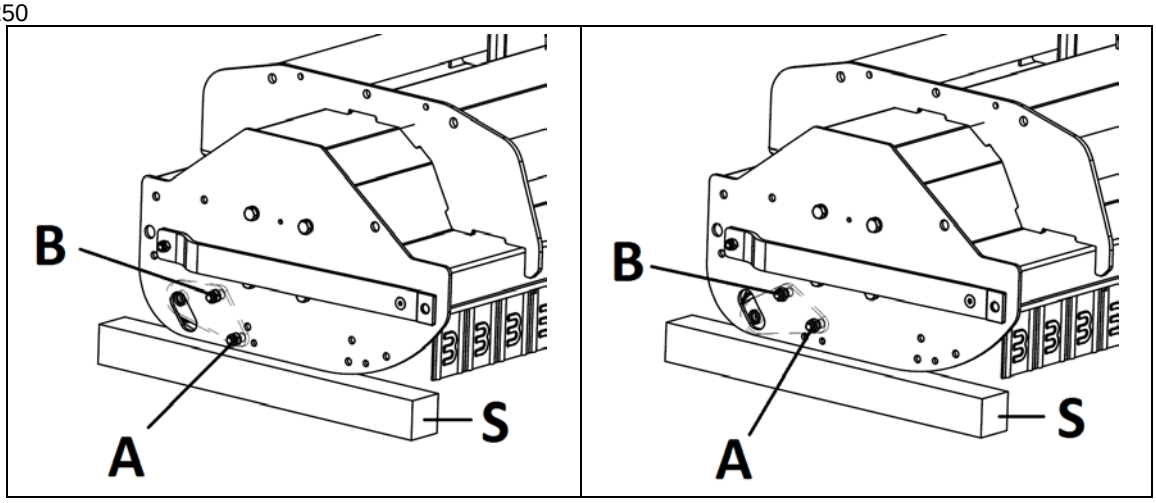
## 8.1 HOW TO ADJUST THE LEVELLING ROLLER

Please proceed as described below:

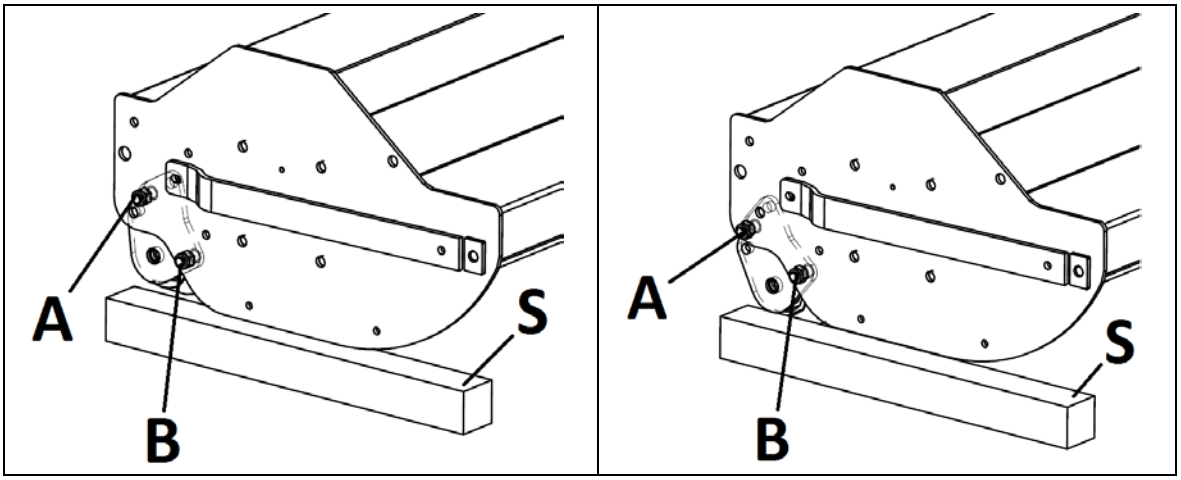
1. set the machine on the flat with an approx. 8 cm shim **S** under its sides;
2. make sure the P.T.O. is disengaged. Brake the tractor and turn it off;
3. totally unscrew and remove bolt **A**;
4. loosen bolt **B**;
5. turn the support plate **R** until a hole on the plate is centred with the hole on the side;
6. reinstall bolts A and tighten them well;
7. tighten bolt **B**

The above operations have to be performed on both the roller's sides

EKR/S 180-250




EKR/S 270-300



# 9.0 Safe working conditions

### 9.1 GENERAL PRECAUTIONS

1. Check that the machine has not been damaged during shipment. Immediately notify the manufacturer or the retailer if this is the case.
2. Make sure, before using the machine, that all protective devices are properly in place and in good condition. Replace protective devices immediately whenever they are broken or damaged.
3. Check the tightness of all bolts prior to use.
4. Never use the machine without its safety devices.
5. Keep the machine clean, eliminating all foreign matter that could damage operation or cause harm to the machine operator.
6. Always brake the tractor and turn its engine off before working on the machine's moving parts.
7. Be sure you are on flat terrain when disconnecting the machine from the tractor. Make sure the machine rests firmly on the ground.
8. Avoid jolts and blows that could jeopardize the stability of the machine when it is being installed.
9. Permit only authorized persons with driver's licenses for the tractor to use the machine.
10. Make sure there are not extraneous persons in the work and manoeuvring areas.
11. It is prohibited to stand within the working range of the machine when it is operating. Keep at a safe distance as indicated in this operating and maintenance manual.
12. Never transport persons, animals or property on the machine.
13. Use exclusively original spare parts.
14. WARNING: Never wear garments that could get caught in moving parts.
15. Always turn to the manufacturer or to authorized retailers for all clarifications you may require on operating and maintaining the machine.

### 9.2 SAFE OPERATION AND MAINTENANCE OF THE MACHINE

All due precautionary measures have been taken during design and manufacture of this machine to eliminate all risks for the machine operator. Residual risks, hazards and dangers may remain however regarding operation, use and maintenance and/or repair.
The following section gives all the instructions and information that is necessary or must be adopted to prevent the main risks connected with use of the machine in accordance with current safety regulations. These regard, in particular::
- connection between tractor and operating machine;
- protection of moving drive parts;
- projection of materials;
- noise;
- personal protection devices (DPI);
- stability.

#### 9.2.1 CONNECTION BETWEEN TRACTOR AND OPERATING MACHINE

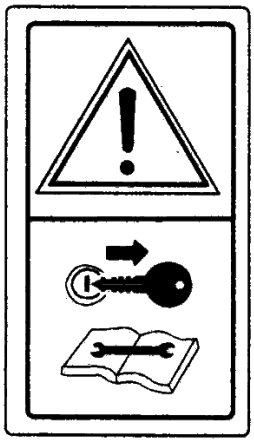
A common cause of injury regards procedures for hooking-up and releasing the machine from the tractor. Injuries are mainly caused by crushing or torn or injured muscles caused by exerting excess forces.
It is necessary for:
- all adjustments to be done with the machine on the level, the PTO disengaged and with the tractor braked and off;
- always make sure the machine is securely blocked and positioned in place when it is disconnected: this will prevent accidental movements or tipping over which can have serious consequences for persons or property in the vicinity of the machine;
- the tractor operator and the ground-level operator must coordinate their connection and release procedures;
- it is best to employ quick-connection systems or use a specific connection jack.

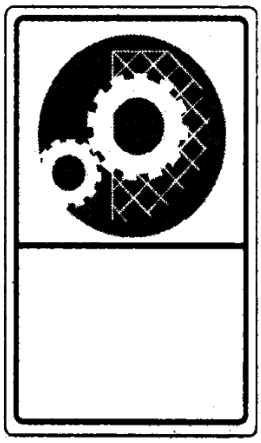
NO STOP BETWEEN THE TRACTOR AND THE MACHINE

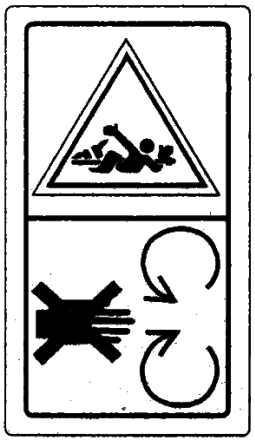
**9.2.2 PROTECTION OF MOVING DRIVE PARTS**

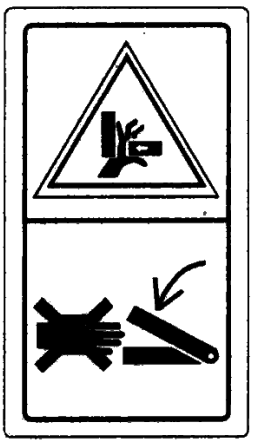
Injuries caused by being caught and pulled by moving drive parts are often very severe. They are caused both by inefficient protection due to broken or worn safety devices or by wearing unsuitable garments.

It is necessary for the P.T.O., cardan shaft, and all moving parts:
- to check the presence and condition of all safety guards and devices;
- to replace worn and/or broken safety devices;
- to avoid working in the vicinity of moving parts;
- to turn the tractor engine off before working on the transmission and the machine;
- to always prevent children or extraneous persons from approaching the machine when it is at work;
- to wear suitable close-fitting garments;



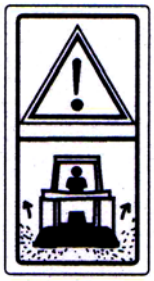






| | | | |
|---|---|---|---|
| BEFORE DOING ANY WORK ON THE MACHINE ALWAYS READ THE OPERATING AND MAINTENANCE MANUAL WITH CARE, STOP THE TRACTOR'S ENGINE AND PULL THE KEYS OUT FROM ITS DASHBOARD. | MAKE SURE SAFETY GUARDS AND DEVICES ARE IN EFFICIENT OPERATING ORDER. | DANGER OF BEING CAUGHT AND PULLED IN. WARNING! DO NOT APPROACH MOVING PARTS. | DANGER OF CRUSHING. WARNING! DO NOT APPROACH REMOVABLE MACHINE PARTS. |

**9.2.3 PROJECTION OF MATERIALS**



Materials can be projected by the machine in certain work situations. Pay particular attention to:
- make sure machine tool guards are efficient;
- perform proper routine cleaning and maintenance on the machine;
- check that there are no persons, animals or things within the working range of the machine.

**9.2.4 NOISE**

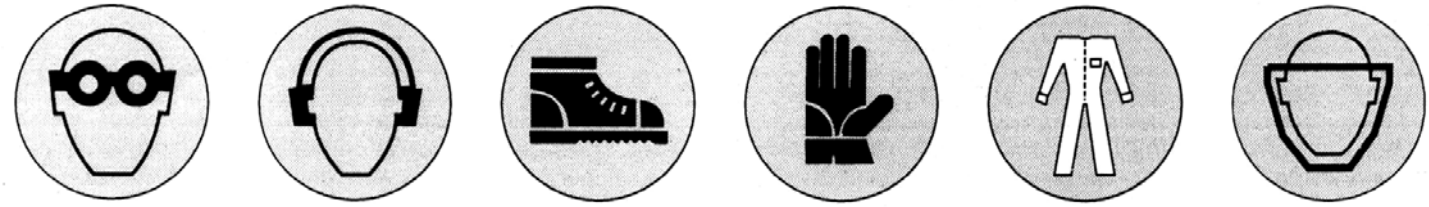
Protect your hearing from the noise generated when working with the machine: wear earmuffs or earplugs.

#### 9.2.5 PERSONAL PROTECTION DEVICES

Personal protection devices that comply with current standards in your country must be used in function of the type of job being performed.

A Personal Protection Device is any equipment destined to be worn or held by the operator in order to protect him against one or more risks. Keep in mind, when selecting personal protection devices, that:
- Personal Protection Devices must be suited for the work conditions;
- they must not generate risks that are greater than the risk they should prevent;
- they must take the worker's ergonomic and physiological needs into account;
- they must adapt to the needs of each single user;
- if multiple Personal Protection Devices must be used at the same time because of the presence of multiple risks then they must be used in such a way that they are compatible with each other.

It is always good practice, when using operating machines, to wear suitable work garments. Avoid any garments that are loose or flappy,
Use the following Personal Protection Devices when performing routine or extraordinary maintenance and/or repairs:
- glasses or visors protecting against projection of splinters or objects;
- leather safety gloves protecting against punctures, cuts, burns, etc.;
- reinforced leather aprons or the like;
- safety shoes;



| MANDATORY EYE PROTECTION | MANDATORY HEARING PROTECTION | MANDATORY SAFETY SHOES | MANDATORY SAFETY GLOVES | MANDATORY BODY PROTECTION | MANDATORY FACE PROTECTION |
|---|---|---|---|---|---|

#### 9.2.6 STABILITY

Machines for processing terrain are generally large and massive and have irregular shapes. They can, as a consequence, have stability problems both when they are alone and when they are connected to the tractor.

Stability problems can be avoided by carefully positioning them on flat surfaces and leaving sufficient room around them to perform all necessary manoeuvres.
When the machine is coupled to a tractor and becomes an integral part of it from the road circulation point of view it can alter the stability of the tractor or cause driving and working problems.

Remember, to work safely, that the formula given in the highway code to check vehicle stability is also applicable to the tractor/machine combination when it is at work.

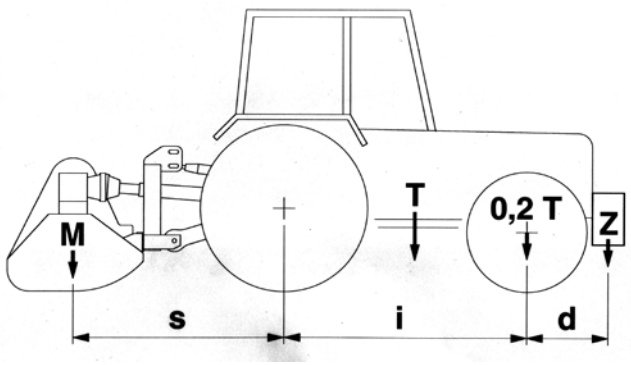
$$M \times s \leq 0{,}2\,T \times i + Z\,(d+i)$$

M ≤0,3 (prudential value)

$$Z \geq \frac{(Mxs) - (0{,}2Txi)}{(d+i)}$$ (to calculate the ballast)

where:
i = tractor wheel c/c distance (m)
d = distance of the front axle from the front ballasts (m)
s = equipment overhang from the rear axle (m)
T = tractor mass (kg) (art. 275 D.P.R. 495/92)
Z = ballast mass (kg)
M = equipment mass (kg)

At least 20% of the total tractor operating machine mass must bear on the front axle of the tractor when it is in working order.



EKRS rev00 2011/01

**BERTI ® MACCHINE AGRICOLE S.p.A.**
Via Musi, 1/ A - 3
37042 CALDIERO (VERONA) - ITALY
Tel. +39.045.6139711 - Fax +39.045.6150251
www.bertima.it - info@bertima.it

*RIVENDITORE AUTORIZZATO*

*AUTHORIZED DEALER*

*AUTORISIERTER HÄNDLER*

*REVENDEUR AGREE*