

IDENTIFICATION

Owner:.....

.....

Address

..... No

City State

Machine Model

Serial Number

Year of Manufacture

Invoice No

Date / /

Authorized Distributor

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WARRANTY CERTIFICATE

1. JUSTINO DE MORAIS, IRMÃOS S/A - JUMIL, guarantees that the agricultural instruments and their respective parts, manufactured by Jumil itself, herein simply referred to as **PRODUCT**, are free of manufacturing or material quality defects.

2. The issues pertaining to the granting of Warranty shall be ruled by the following principles:

2.1. The warranty contained in this Certificate will be valid:

a) For the period of 6 (six) months, beginning from the date of the effective delivery of the **PRODUCT** to the farmer;

b) Only for a brand new **PRODUCT** directly purchased by the farmer from an Authorized Dealer or **JUMIL**, with the exception of what is defined in item 2.3

2.2. With the exception of the following subitem, the warranty granted to the farmer will be provided through an Authorized **JUMIL** Dealer.

2.3. If the **PRODUCT** is sold to the farmer by a dealer that is not an Authorized Jumil Dealer, the Warranty right shall subsist, and therefore be directly claimed before **JUMIL**, pursuant to the terms of this Certificate

2.4. The warranty shall not be granted in the event of any damage to the product or its performance caused by:

a) operator negligence, imprudence or lack of skill;

b) failure to obey use and maintenance instructions and recommendations contained in the Instructions Manual.

2.5. Likewise, the Warranty shall not be granted if the **PRODUCT**, after sold, undergoes any transformation or modification, or is employed for any purposes other than the ones for which the **PRODUCT** is originally destined.

2.6. The **PRODUCT**, when changed or substituted under this Warranty shall be of the property of **JUMIL**, and must be surrendered, upon fulfillment of the applicable legal requirements

2.7. In the fulfillment of its policy toward permanent evolution, **JUMIL** subjects its products to constant improvements or modifications, without such fact constituting in **JUMIL'S** obligation to extend said improvements / modifications to previously sold products or models.

2.8. JUMIL will not be liable to pay indemnities of any kind in respect to harvest losses resulting from the inadequate setting of devices comprising the product in relation to the distribution of seeds or fertilizer.

Note.) Upon detection of bad use of equipment, manufacturer warranty will be cancelled.

TABLE OF CONTENTS

1	- INTRODUCTION	4
2	- PRODUCT PRESENTATION	5
3	- SAFETY NORMS	6
4	- TECHNICAL SPECIFICATIONS	8
6	- PRODUCT COMPOSITION	10
7	- PRODUCT ASSEMBLY	10
5	- OPTIONAL ITEMS	10
8	- PREPARATION FOR USE	11
8.1	- PREPARING THE MACHINE	11
8.1.1	- TIRE PRESSURE	11
8.3	- COUPLING THE MACHINE TO THE TRACTOR	12
8.2	- PREPARING THE TRACTOR	12
8.3.1	- ADJUSTING THE CARDAN TO THE TRACTOR AND THE MACHINE	15
8.4	- CARDAN ASSEMBLY	16
8.5	- CARDAN SHAFT COUPLING	17
8.5.1	- SIDE CARDAN	17
9	- ADJUSTMENTS	18
9.1	- LEVELING THE MACHINE	18
9.2	- CUTTING HEIGHT ADJUSTMENT	20
9.3	- POSITION OF THE SPINNING WHEEL - JM TR-C 4500.	22
9.4	- ADJUSTING BELT TENSION	23
10	- OPERATION	25
10.1	- BALANCING THE ROTOR SHAFTS	25
10.2	- LIFTING SYSTEM (REMOTE CONTROL)	25
10.3	- WORK SPEED	27
10.4	- PROCEDURES FOR CHANGING KNIVES	27
10.5	- KNIFE WEAR	28
10.6	- SIDE TRANSPORT JM TR-C 4500	29
11	- MAINTENANCE	35
11.1	- HYDRAULIC CYLINDER	35
11.2	- CHANGING REPAIR KITS	35
11.3	- INSTALLING THE PISTON GASKET	35
11.4	- INSTALLING THE ROD GUIDE GASKET	36
11.5	- INSTALLING THE GUIDE AND PISTON ON THE ROD	36
11.6	- FINAL INSTALLATION	36
12	- LUBRICATION	37
12.1	- LUBRICATION OBJECTIVES	37
12.2	- LUBRICATION SYMBOLS	37
12.3	- TABLE OF LUBRICANTS	38
13	- INCIDENTS AND TROUBLESHOOTING	43

1 - INTRODUCTION

Congratulations, you have purchased an implement manufactured with the latest technology and efficiency available in the market, guaranteed by the renowned brand **JUMIL**.

The purpose of this manual is to guide you in the correct operation of this product, allowing you to obtain the best performance and benefits from the equipment. It is for this reason that we recommend you read this manual attentively before starting to use it.

Keep this manual in a secure place for it to be easily consulted.

JUMIL and its dealer network will always be ready to provide you with the required technical clarifications and orientations needed for your equipment.

2 - PRODUCT PRESENTATION

For long had the market requested it and **JUMIL** did its research with the farmers of the most varied regions to develop and proudly present the new **TRIMAX CRUZADOR** machines.

A machine especially developed to fulfill the needs of medium and large-scale farmers using tractors in the range of 90 to 120 HP.

Various concerns were observed during its development in order to fulfill the many requirements of design:

The **TRIMAX CRUZADOR** choppers and disintegrators are supplied with a work width of 4,200 mm, 5,200 mm, and 3,400 mm, being ideal for disintegrating the remains of cultures and stubbles such as hay, foliage, corn fibers, harvest leftovers, baccharis rufescens, Angolan grass, brachiaria, cotton stubbles and others

Types of Razor: **Curved Razor** with a 50° angle, used in the grinder. **Straight Razors** equipped with blades in-between the knives, which work as a fan, used for dry fodder. **Straight Razors** for use in the cutting of materials with much fiber

Our Research and Development, Product and Processes departments employed the most modern design elaboration and bi and tri-dimensional (2D and 3D) structural analysis techniques, and the most advanced CAD and CAE software.

After several tests conducted in the most varied types of soils and conditions, we are certain that this equipment will fulfill all of your needs.

In case of any doubts, contact our **TECHNICAL SERVICES** department through the telephone number 55- 16 - 3660-1061, or through our website: **www.jumil.com.br**

3 - SAFETY NORMS

JUMIL, by building its Agricultural Machines and Equipment, has the main objective of assisting MANKIND in developing a better QUALITY OF LIFE. However, at the use of these machines, there are two main cares to be RESPECTED:

DO NOT DESTROY THE UNIVERSAL BIOLOGICAL BALANCE BY EXECUTING INCORRECT AGRICULTURAL JOBS.

DO NOT CONSENT TO THE MACHINE DESTROYING IT. STRICTLY FOLLOW THE SAFETY NORMS. DO NOT NEGLECT THEM!

- 1) Always use the foot boards to climb up or down the tractor;
- 2) Upon putting the engine into operation, be properly seated on the operator's seat and **ABSOLUTELY AWARE** of the full knowledge of managing the tractor and the equipment. Always leave the gear on neutral position, disconnect the power socket and place the hydraulic commands on neutral position;
- 3) Do not run the engine in closed spaces as the exhaust fumes are toxic;
- 4) When maneuvering the tractor to interlock with implements or machines, ensure that there is enough space and that no person is close by; execute the maneuvers at **IDLING SPEED** and be prepared to brake in an emergency;
- 5) When operating machines **ACTUATED BY THE POWER SOCKET**, (couple, uncouple, or regulate) **TURN OFF THE POWER SOCKET, STOP THE ENGINE AND REMOVE THE KEY FROM THE IGNITION. NEVER FAIL TO OBSERVE THESE NORMS!**
- 6) Demand from your Dealer the **CARDAN SHAFT PROTECTIVE COVERS**;
- 7) When using slack or loose clothing, do not go too near the **MOVING CARDAN SHAFT, BELTS, CHAINS OR GEARS**;
- 8) Do not conduct adjustments while the machine is in motion;
- 9) When working with implements or machines, it is expressly prohibited to transport anyone other than the operator on both the tractor and the implement, except in the existence of a suitable seat or platform for such purpose;
- 10) When working in slopy terrain, proceed with extra caution, seeking to always maintain the required stability; and in case of an unbalance setting in, reduce acceleration, keep the equipment on the ground and turn the tractor's wheel toward the direction of descent;
- 11) On descents, keep the truck on gear always, using the gear you would use when going up;

12) Except on specific occasions, the brake pedals should be interconnected (not independent);

13) If after coupling an implement onto the three-point system of the tractor's hydraulic, see if its front is too light, close to being lifted up (tilting), place the necessary weights on the front;

14) When leaving the tractor, leave the gear on neutral position, lower the implements that are lifted, place the commands of the hydraulic system on neutral position and apply the parking brake;

15) When leaving the tractor inactive for a long period, in addition to the procedures of the previous item, stop the engine and engage first gear if facing slope-up, and reverse gear if facing slope-down;

16) STRICTLY OBEY ALL SAFETY NORMS ELABORATED BY THE TRACTOR'S MANUFACTURER;

17) OBSERVE EXTREME CAUTION WHEN HANDLING TREATED SEEDS, REQUESTING THE ASSISTANCE OF AN AGRONOMIST. DO NOT HANDLE TREATED SEEDS BARE HANDED;

17.1) WASH YOUR HANDS AND EXPOSED PARTS OF YOUR BODY WITH PLENTY OF WATER AND SOAP AT THE END OF EACH WORK SHIFT, ESPECIALLY BEFORE EATING, DRINKING OR SMOKING;

17.2) Do not throw treated seed and/or pesticide leftovers close to drinking water wells, waterways, rivers and lakes;

17.3) Destroy empty packs;

17.4) Keep the original packs always closed and somewhere dry, ventilated and of difficult reach of children, negligent persons, and animals;

17.5) Avoid skin contact;

17.6) Before using pesticides, READ THE LABEL AND FOLLOW THE INSTRUCTIONS.

18) When driving the machine on roads/highways, observe the following additional caution:

a) If the machine is equipped with line markers, the arms should be lifted and fastened, with the disks turned inward.

b) The machines with width below or equal to 3 meters may circulate on roads as long as carrying the proper signaling devices - consult the Road Traffic Authority or Highway Police Department of your state.

c) Machines that cover the rear signaling lights of the tractor should have their own alternative rear lights

ATTENTION

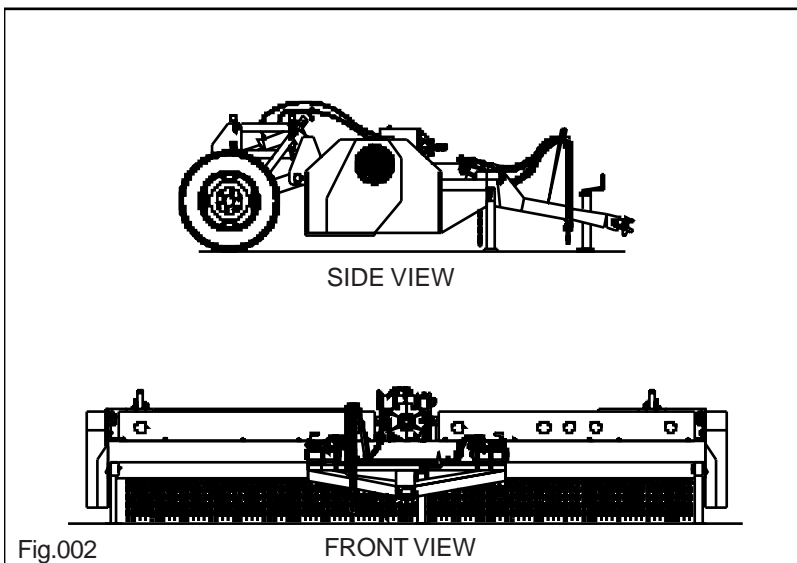
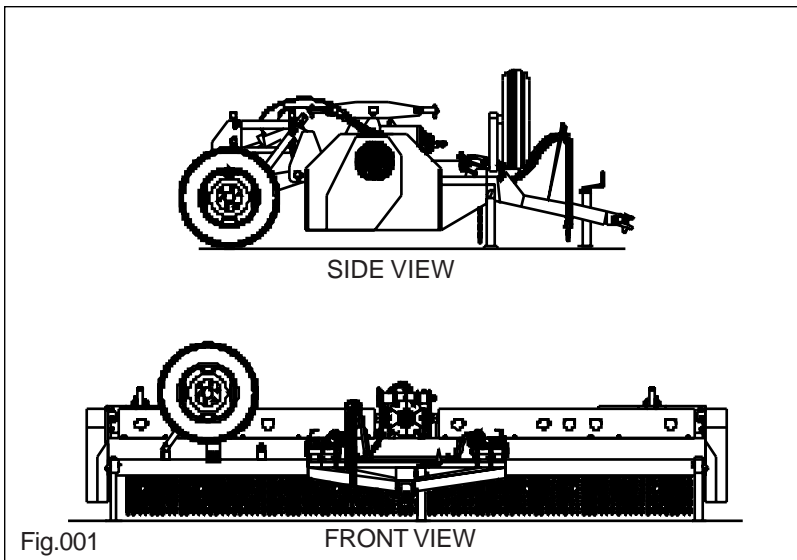
When you receive your Jumil Implement, attentively check for the components that accompany the machine and attentively read the warranty certificate on the first page of the instructions manual.

4 - TECHNICAL SPECIFICATIONS

MODEL	CUTTING WIDTH (MM)	CUTTING HEIGHT (MINIMUM AND MAXIMUM) (MM)	EFFECTIVE FIELD CAPACITY	QTY OF RAZORS	MACHINE WEIGHT (KG)	REQUIRED POWER (HP)
JM TR-C 3400	3400	50-250	2.0	112	1810	90
JM TR-C 4500	4500		3.0	152	2100	110

OBSERVATION: TRIMAX CRUZADOR 4500 with side transport (optional), transport width of 2300X4900

Total Dimension (mm)	
	JM TR-C 3400
Height	1400
Width	5200
Height	1800



5 - OPTIONAL ITEMS

JM TRIMAX CRUZADOR 4500 Transporter Header

6 - PRODUCT COMPOSITION

Attentively verify the following items that come with your machine:

DESCRIPTION	CODE	QTY
FRONT CARDAN CC 5044/1	43.02.872	1
STANDBY JACK	43.02.175	1
SUPPORT FOOT	43.02.968	2

7 - PRODUCT ASSEMBLY

The machine leaves the plant already assembled and only requires following the preparation procedures to begin operation.

8 - PREPARATION FOR USE

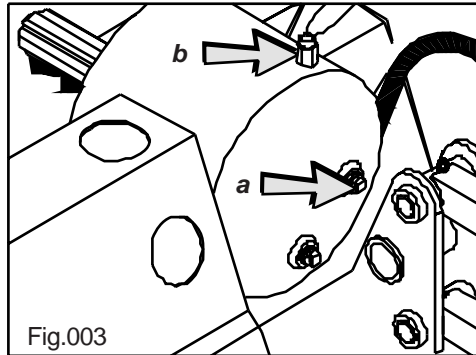
To put your **TRIMAX CRUZADOR** into operation you must fulfill the following requirements:

8.1 - Preparing The Machine

a) Check Oil Level

To check the oil level in the transmission box, remove the plug ("a" Fig. 001), in case the oil is below the indicated level (plug), complete it. To do that, just remove the vent ("b" Fig. 003).

Use the following oil specification - **AGMA 680/8 EP OIL.**



ATTENTION

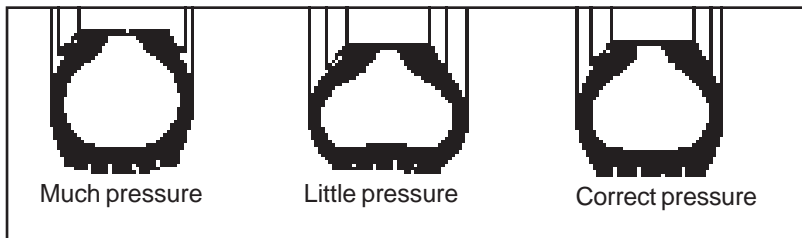
It is necessary to check the oil level after about 100 work hours and change every 500 hours.

8.1.1 - Tire Pressure

For a lasting service life, the tires should contain the correct pressure. Lack or excess of pressure lead to premature tire wear. Check if the tires of the **TRIMAX CRUZADOR** are with their pressure within the range of:

Military Tire 7.00-16F - 70 pounds/inch.

Military Tire 7.00-12F - 80 pounds/inch.



8.2 - Preparing The Tractor

Conduct a general revision of the tractor in order to work without interruptions, giving special attention to the engine, and the hydraulic system which will be required for using the remote control (leakage, commands, quick coupling of pressure hoses, etc).

Check the pressure of the tractor's tires according to the manufacturer's recommendation, and if necessary, ballasting the rear tires with water as traction effort in some cases is great

8.3 - Coupling The Machine To The Tractor

The header leaves the factory in vertical position for transport with the header driving pistons out of working position as shown in Fig. 004), and thus, to begin operation, the header must be put on horizontal position (Fig. 005), which is attained by removing the lock pin ("a" Fig. 004) and the installation of the abovementioned pistons and their respective telescopes (condensers), fixing them through the fixing pin ("a" Fig. 005), and having done that, couple the hydraulic hoses onto the tractor's hydraulic system and remove the support, inverting the position (Fig. 005), and finally, connect the cardan shaft through the pressure buttons on the crampons destined for the tractor and the machine.

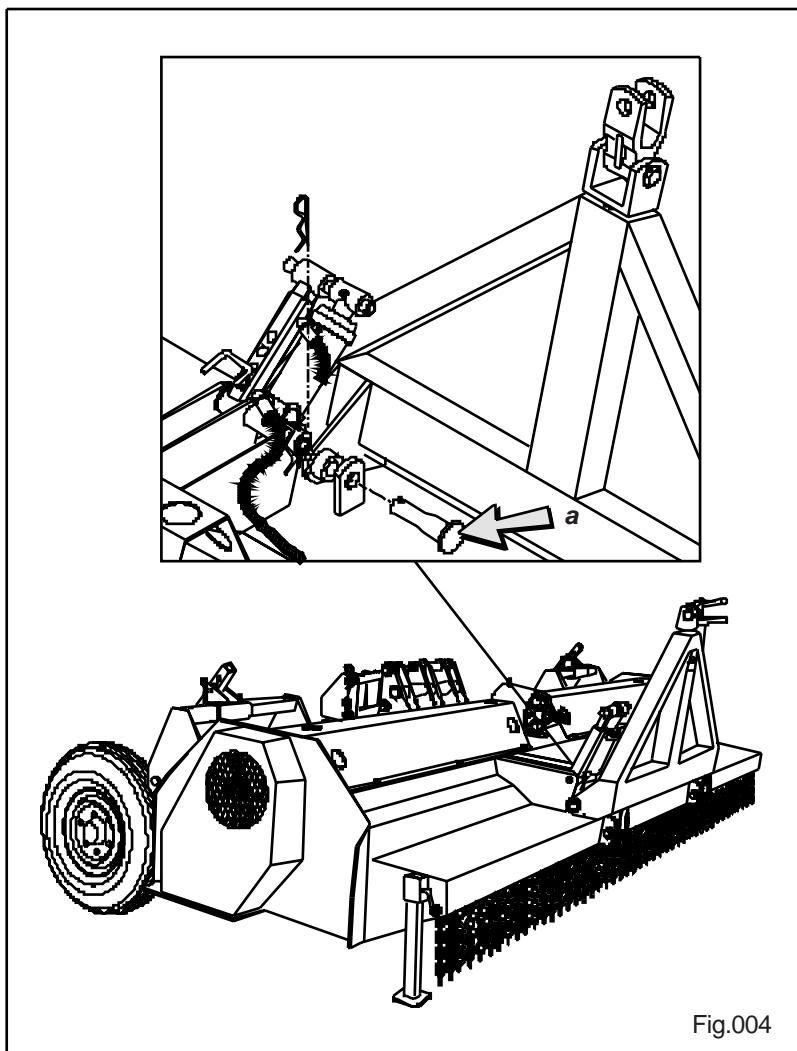


Fig.004

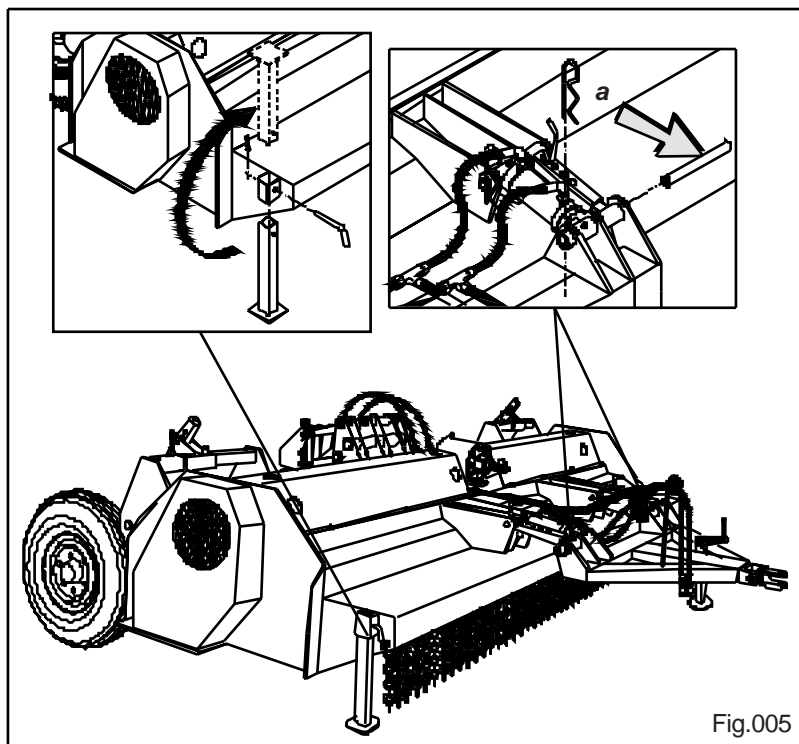


Fig.005

⚠ ATTENTION

Before coupling the cardan between the tractor and the machine, make the necessary adjustments on the cardan.

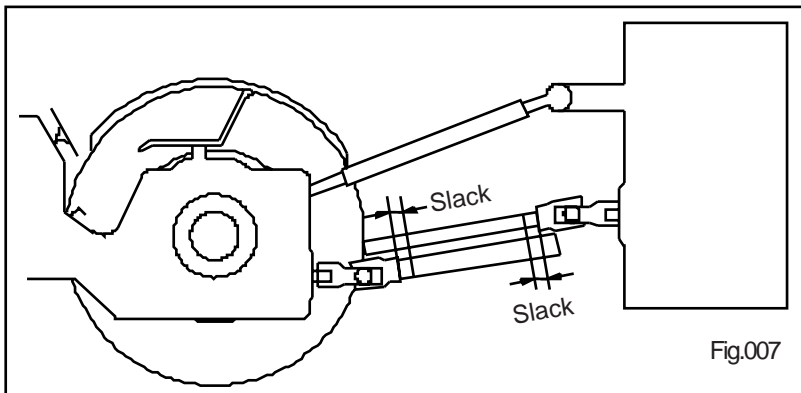
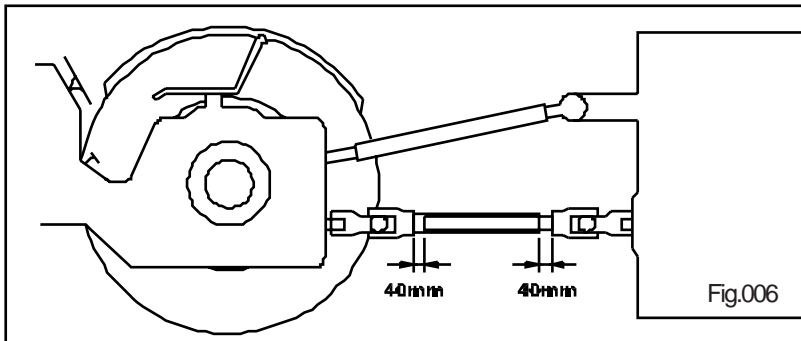
8.3.1 - Adjusting the cardan to the tractor and the machine

For the proper functioning of the cardan, we recommend following the instructions below before starting the job:

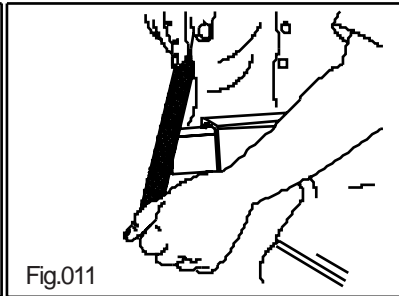
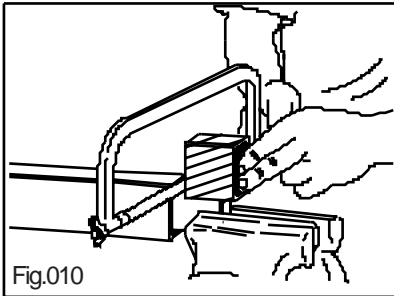
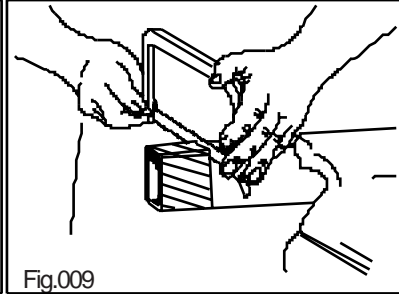
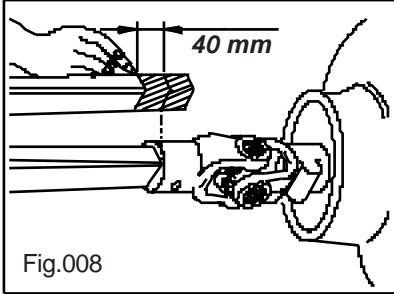
1- With the machine installed on the tractor, detach the shaft from the cardan pipe. By means of the respective pressure buttons, fasten the corresponding ends on the tractor and the machine.

2- Overlap one on the other and mark each to delimit the excess to be cutoff. In addition to this marking, consider a 40 mm slack (Fig. 006). Do not cut yet.

3- Raise and lower the machine with the cardan disarmed (pipe and shaft overlapped) through the tractor's hydraulic system, verifying if the marked slack - 40mm does not exceed the limit established, causing interference on the fork bodies, i.e. it should maintain a slack in any working position of the machine (Fig. 007).



4- After defining the spots to cut, shorten the internal and external protective pipes equally. Shorten the internal and external sliding profiles by the same length as of the protective pipes. Remove all tips and rough edges and grease the sliding profiles.



8.4 - Cardan assembly

For the installation of the cardan (pipe and sliding profile), observe that the internal and external forks always remain aligned in the same plan. Otherwise, the cardan will be subjected to vibration, leading to premature wear of the crosspieces

ATTENTION

The size of the cardan should be verified and/or adjusted if required, whenever the tractor model and/or brand is changed. Failure to observe this may damage the machine and/or cardan.

8.5 - Cardan Shaft Coupling

To couple the cardan shaft into the tractor's power socket (TDP), firstly clean the cardan and grease the implement's shaft.

8.5.1 - Side Cardan

Check the tightness of the bolt fixing the side cardan sleeves, ensuring that it does not come loose when the implement is running ("a" Fig. 012).

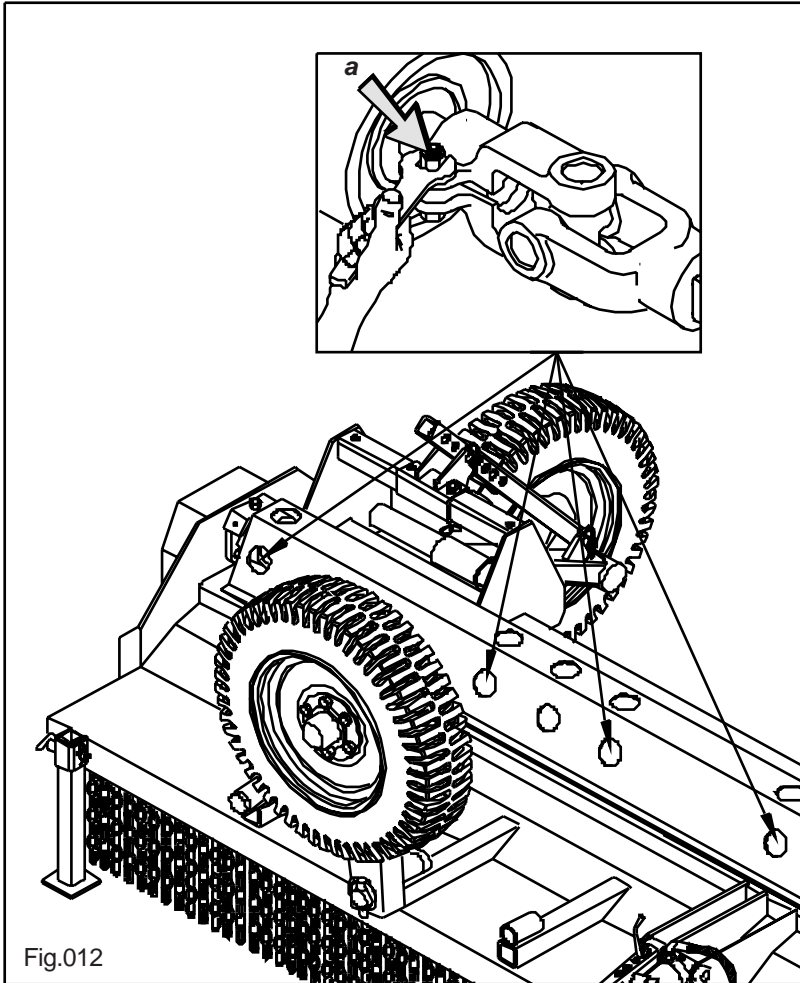


Fig.012

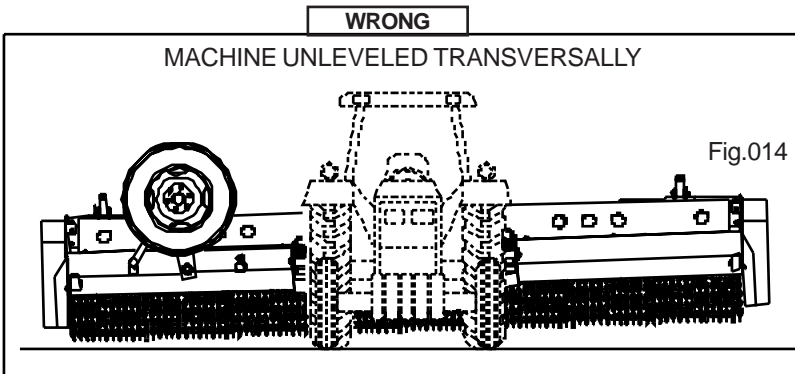
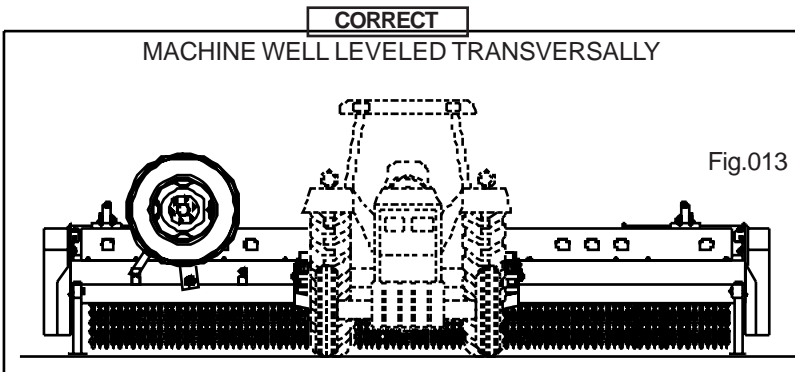
9 - ADJUSTMENTS

9.1 - Leveling The Machine

For the perfect running of the Trimax Cruzador it is important and essential that it is transversally and longitudinally leveled on the floor (Fig. 13), (Fig. 15).

To ensure the effectiveness of the longitudinal leveling, it is necessary that the telescopes ("c" Fig. 018) be in the same working position.

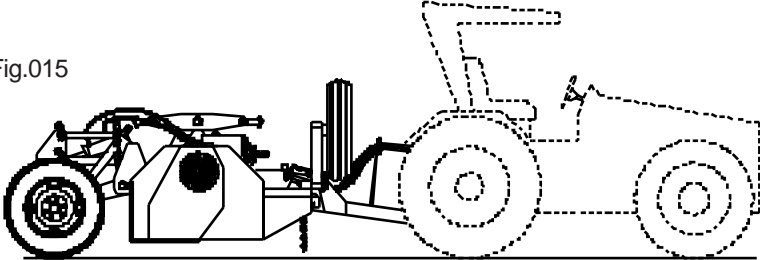
Transversal leveling is obtained by means of a regulation bar ("a" Fig. 017), provided in the sideways movement.



CORRECT

MACHINE WELL LEVELED TRANSVERSALLY

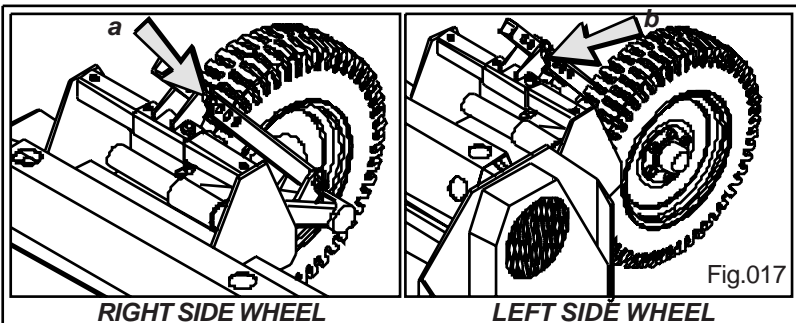
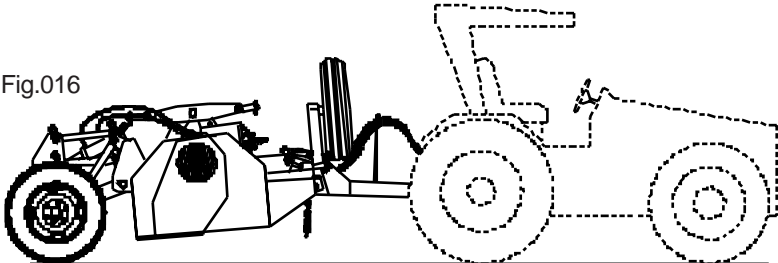
Fig.015



WRONG

MACHINE UNLEVELED LONGITUDINALLY

Fig.016



RIGHT SIDE WHEEL

LEFT SIDE WHEEL

9.2 - Cutting Height Adjustment

- 1) Remove pins "b" from telescopes "c" (Fig. 018).
- 2) Actuate piston by retreating or driving forward until attaining the desired height. The cutting height can vary from 50 to 200mm according to working need.

Note) The last telescope hole ("c" Fig. 018), obtains a height of 400mm that is used only for transport.

- 3) Upon reaching the desired height, put the telescope pins back into the holes matching them (FIG. 018) .

Note) The three telescope pins should be in the same adjustment position (hole) (Fig 018).

- 4) Do not forget to keep the longitudinal leveling through the lateral wheeling (Fig. 017)

IMPORTANT

Always turn on the equipment with the engine at 1200 RPM at most, throttle up until 540 RPM in the TDP at least.

Check on the tractor coupled to the TRIMAX CRUZADOR for the rotation ratio between the motor and TDP. Never work below 540 RPM and do not exceed 700 RPM in the TDP.

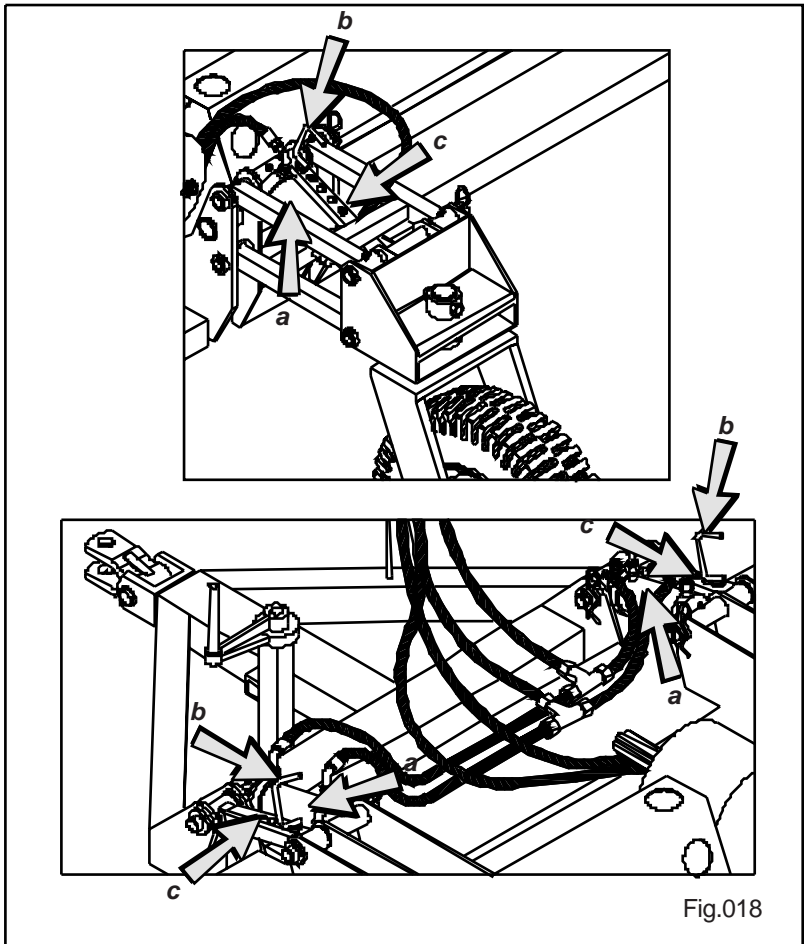


Fig.018

9.3 - Position of the spinning wheel - JM TR-C 4500.

This implement, due to its characteristics in given cultures (E.g. cotton), the spinning wheel that comes from the factory in the central position will work on top of the line, leading to serious damage on the tire and therefore, this implement has an auxiliary working position that allows for its dislocation of the spinning wheel from central to side position. (Fig. 019).

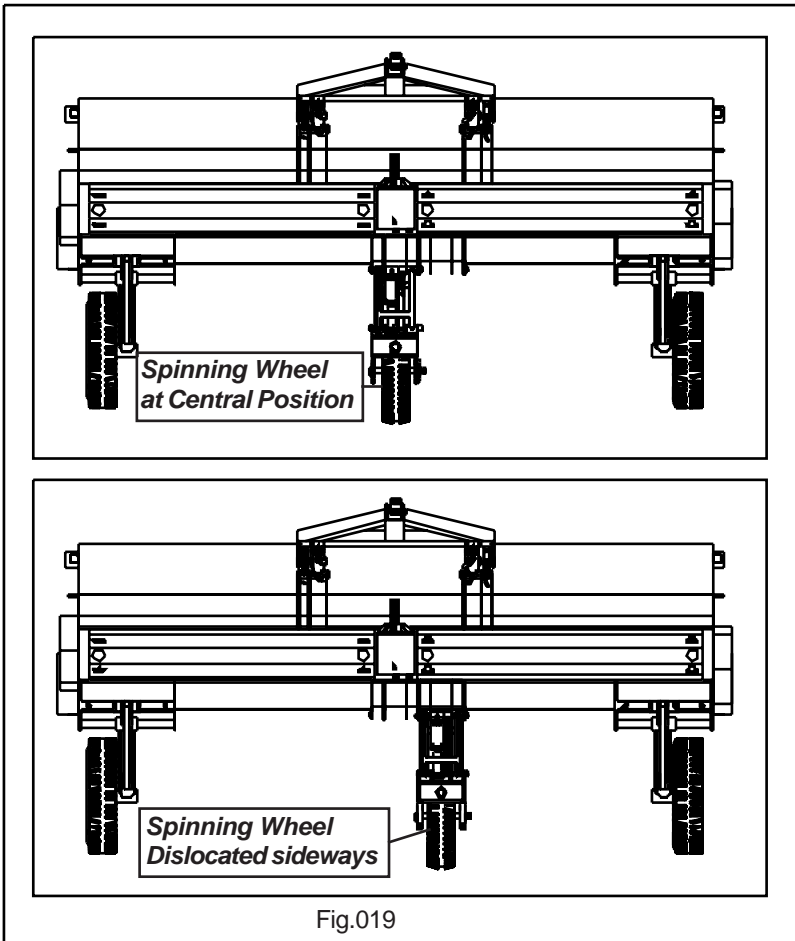


Fig.019

IMPORTANT

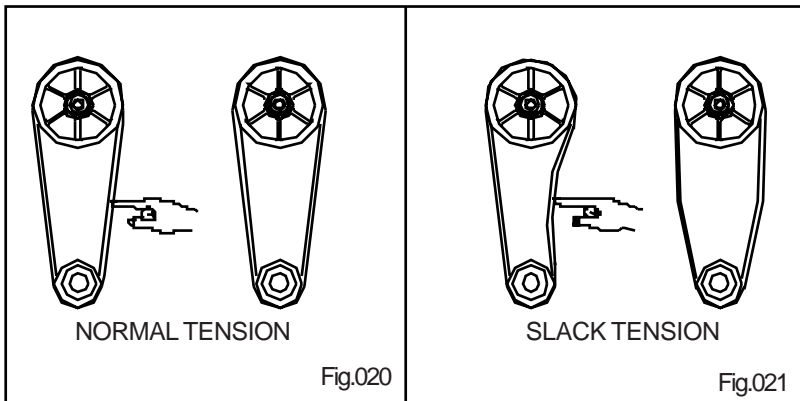
Keep the central wheel slightly raised in relation to the side wheels. Making the central wheel work supporting the weight only on level slope and curves.

9.4 - Adjusting Belt Tension

IMPORTANT

Before adjusting the belt, ensure that the implement is not running.

It is of extreme importance that the tension of the belts be verified after 100 working hours and to do so, one should remove the hood covering the belts ("a" Fig.022). If the tension of the belts is as shown on the Figure below (Fig.021), it is necessary to correct it, and this will only require weakening the bolts fixing the transmission bearing ("c" Fig. 022) and through the strainer bolt, as shown in the Figure ("b" Fig.022), adjust the belt as shown in the Figure (Fig. 020).



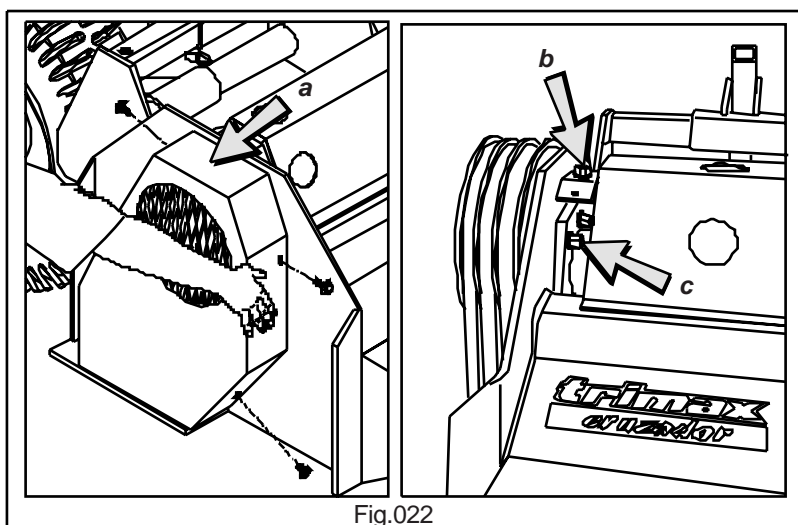


Fig.022

⚠ ATTENTION

Check belt tension periodically and keep it well stretched.

10 - OPERATION

10.1 - Balancing The Rotor Shafts

Occasional accidents while working may occur, breaking the knives. When such occurs, immediately interrupt the job and substitute the knives to maintain the rotor shaft's balancing as the breakage of knives unbalances the rotor shaft and will possibly cause permanent damage to your implements.

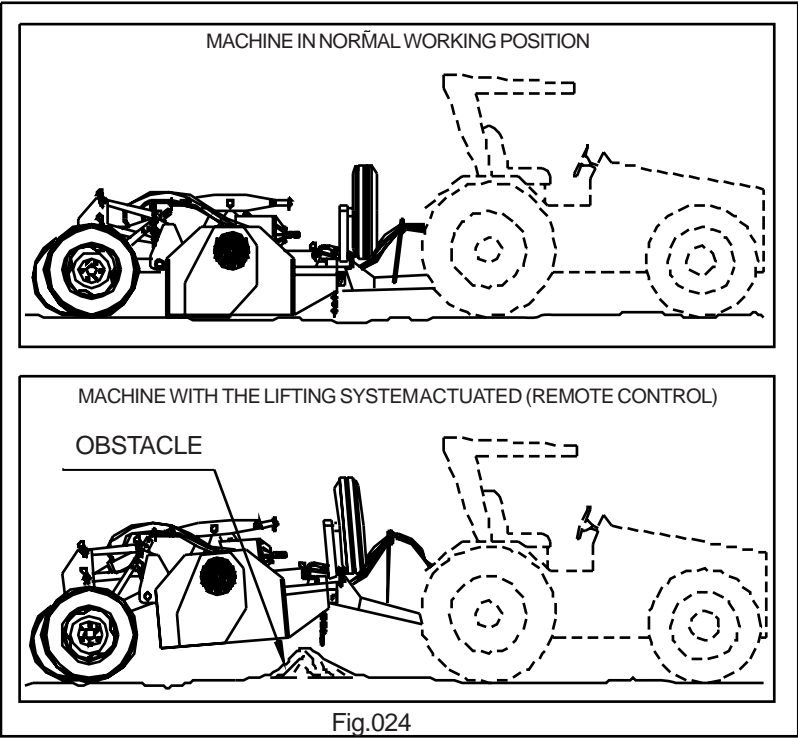
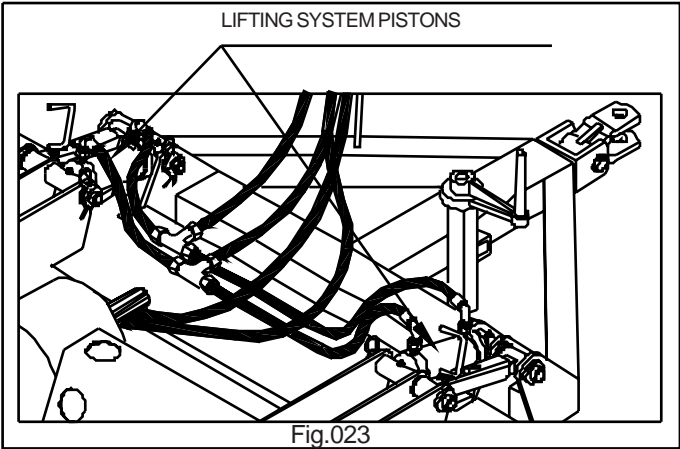
10.2 - Lifting system (Remote Control)

The implements of the **Trimax Cruzador** line have a remote control actuated lifting system that allows for the execution of maneuvers for transposing obstacles and the transversal transport of the implements (Fig. 024).

What is important in this system is that by actuating the lifting system through the pistons installed on the header (Fig. 23), it is necessary to run the inverse operation to return to the initial position, requiring just returning the hydraulic command (motor) lever to neutral and actuate it otherwise only to open the escape valve

ATTENTION

When the knives break, the job must be interrupted immediately.



10.3 - Work Speed

The speed of 4 to 6 km/h is recommended in order not to compromise the implement's service life

⚠ ATTENTION

Failing to follow the above instructions will lead to damages such as:

- Cracking of the TRIMAX CRUZADOR structure
- Transmission belt breakage.
- Cardan tubular bars torsion, among other damages.

Obs.) Upon detection of improper use of equipment, manufacturer warranty will be cancelled.

10.4 - Procedures For Changing Knives

- 1 - Locate the damaged knives
- 2 - Remove them even if just one is damaged ("a" Fig.025).
- 3 - Remove the knife pair immediately opposite the damaged ones (180°), according to "b", Fig. 025) even if the set of knives is not damaged.
- 4 - Substitute with original knives

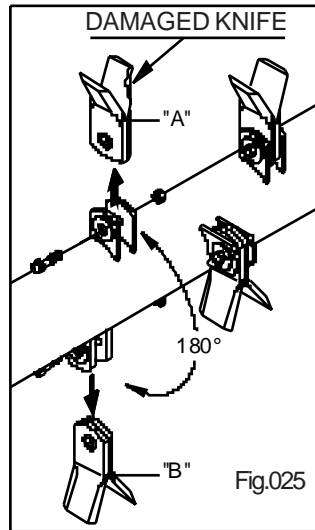
NOTE:

1) The above procedures are the same ones applied for the changing of **straight knives**.

2) When the knife pair is installed with blades in-between the knives there is no need to change the blades if they are not damaged. They do not interfere in the balancing of the rotor shafts

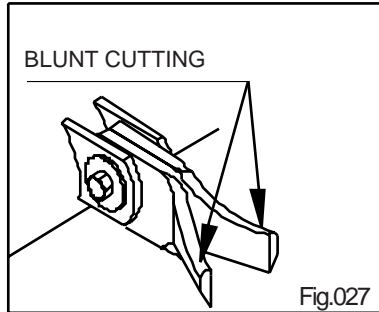
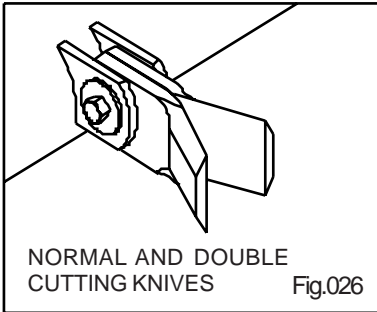
IMPORTANT:

Correctly change the knives to keep the rotor shaft balanced.



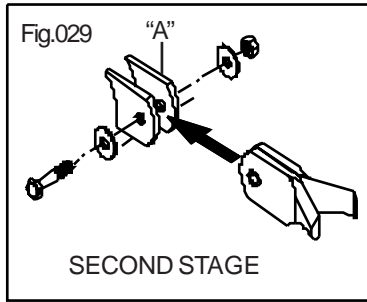
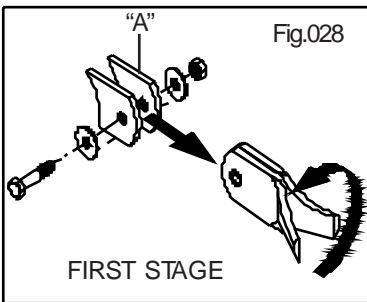
10.5 - Knife Wear

The knives of this implement are interchangeable, having double cutting (Fig. 026), whereas during the work, natural wear occurs with consequent cutting loss (fig. 027). When that occurs, invert the cutting side, doing so for each knife (set pair) (Fig. 028), keeping it on the same support ("A" Fig 029).



INVERSION ON BLUNT CUTTING KNIVES

- 1ST - Disassemble the blunt knives and invert the cutting side
- 2ND - Install back on the support

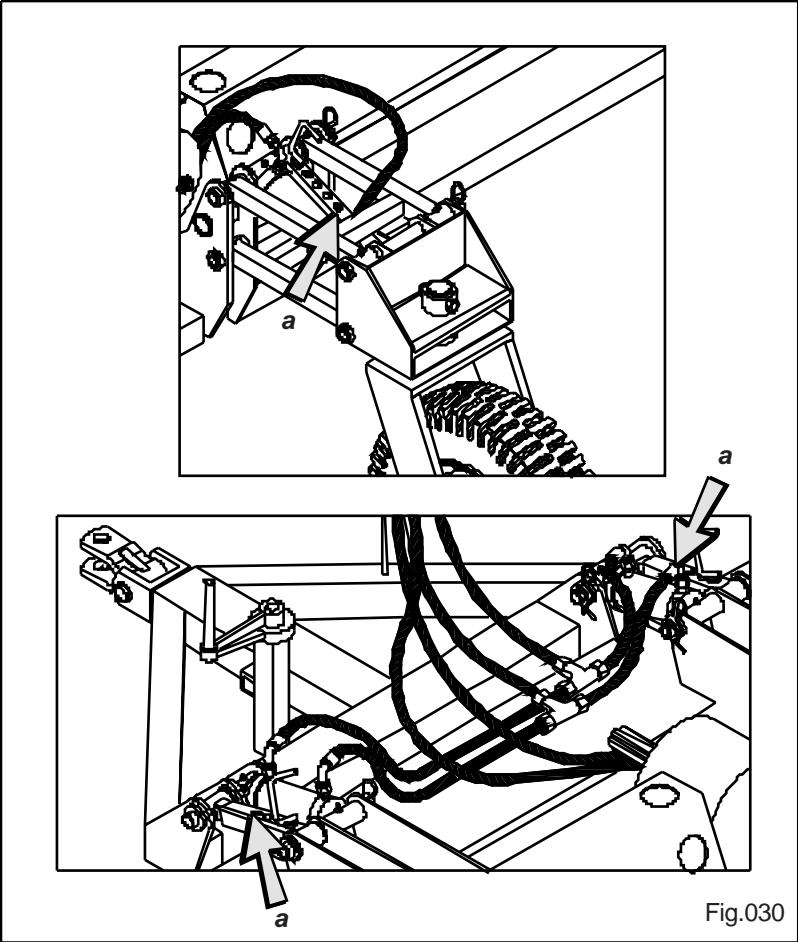


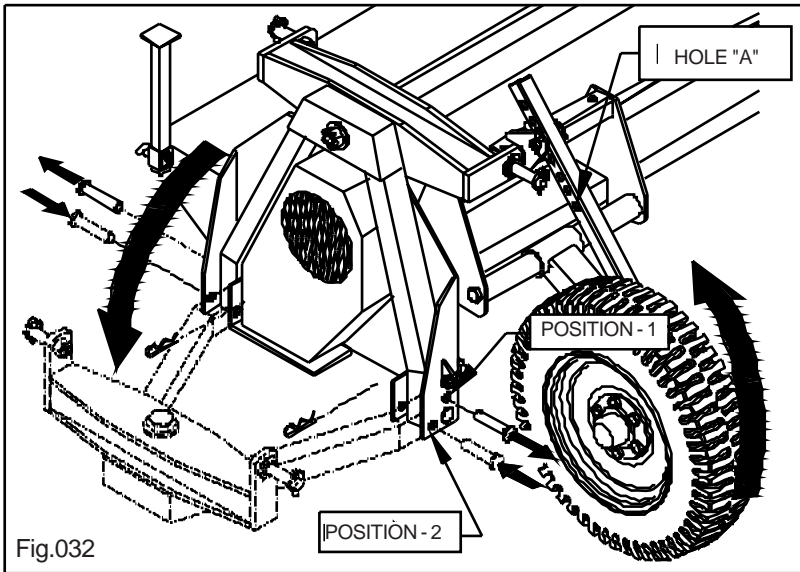
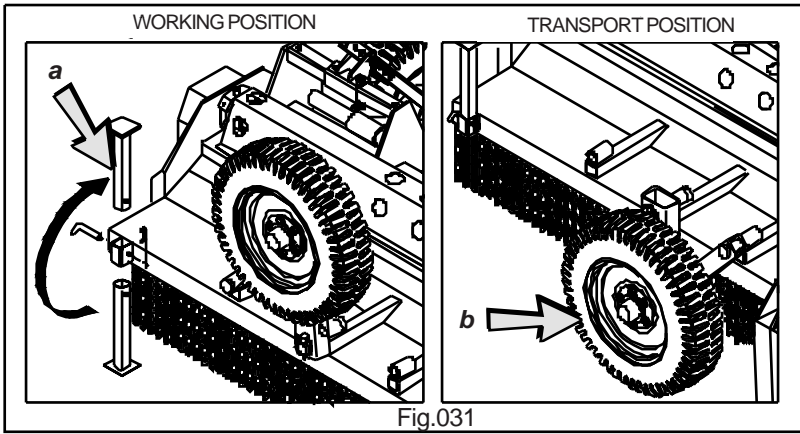
10.6 - - Side Transport JM TR-C 4500

Due to the large transversal extension of these implements there is the need to carry out the transport over large sideway distances and thus, this implement disposes of a transporter head vertically installed on the left side.

To carry out the side transport, we should obey the following steps:

- 1) Actuate the pistons until they reach the transport height (last adjustment hole), ("a" Fig. 030)
 - 2) Lower the transport wheel anti-clockwise according to ("b" Fig. 031). and place the support foot on the opposite end ("a" Fig. 031).
 - 3) Raise the side wheels at the transport position on the hole ("a" Fig. 032)
 - 4) Uncouple the articulated coupling from the tractor's tail, the hydraulic hoses and front cardan ("a" Fig. 033).
 - 5) Remove the frontal lock pin from the piston and telescope ("b" Fig. 033).
 - 6) Raise the header to vertical position and fix it with the lock pin ("a" Fig. 034).
 - 7) Move the transporter header from vertical to horizontal position. Through the dislocation of the pin from position 1 to position 2 (Fig. 032).
 - 8) Engage the transporter header onto the hydraulic bars (Fig. 35).
 - 9) Remove the support foot and invert it on the support ("a" Fig. 031)
- Observation) The side transport system in the TR-C 4500 is optional.





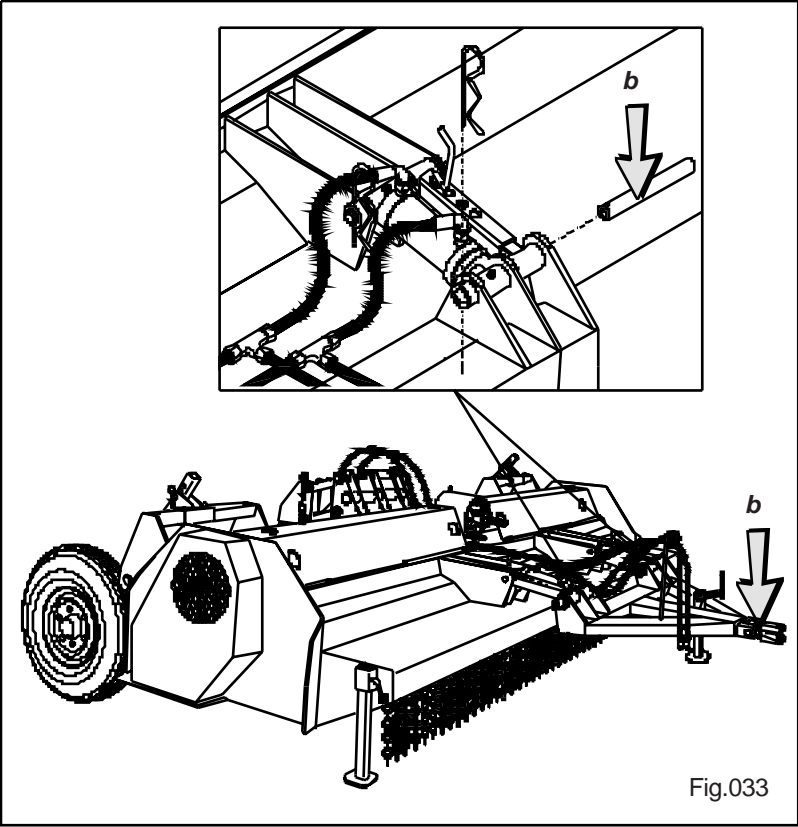
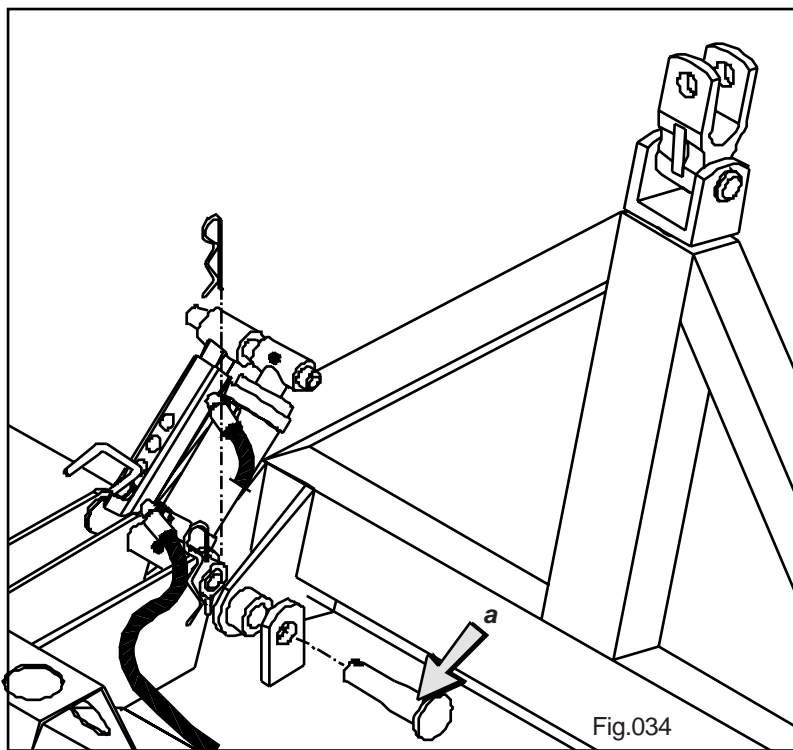


Fig.033



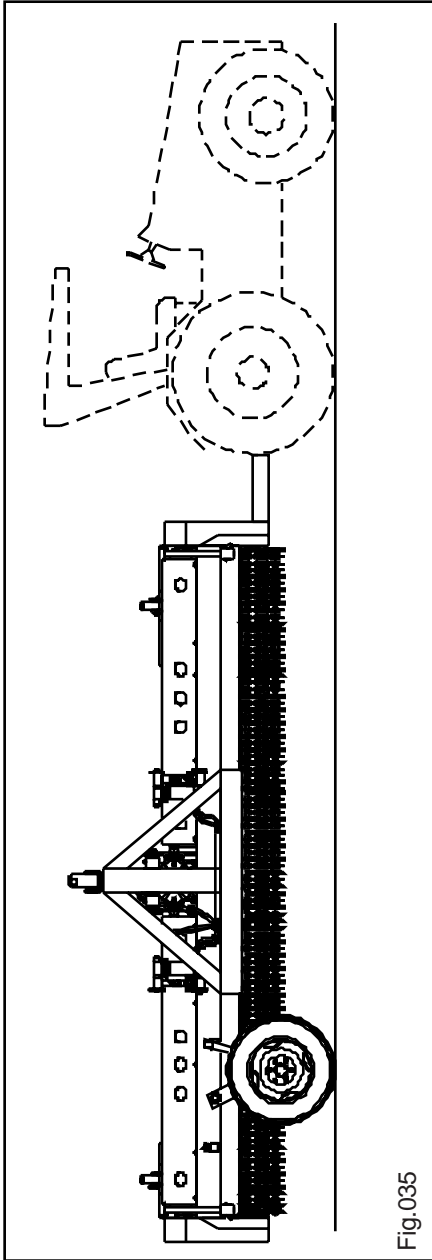


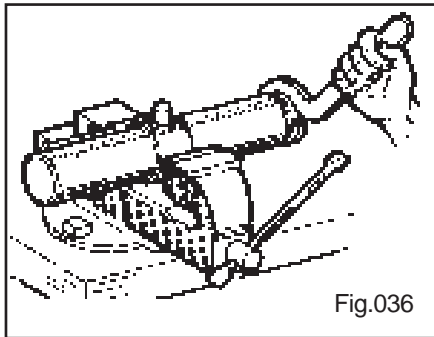
Fig.035

11 - MAINTENANCE

11.1 - Hydraulic Cylinder

11.2 - Changing Repair kits

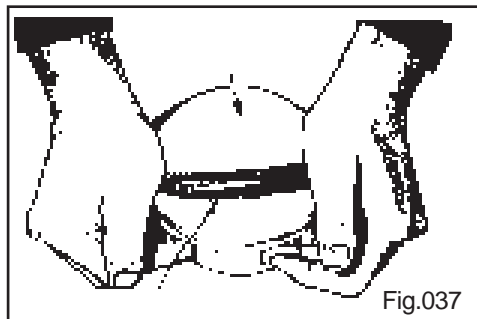
- a) Fix the cylinder on a vise and dismount the guide nut with a special wrench, removing the stem guide with the piston and disassembling it.
- b) Remove the obstructed kits from the piston and the stem guide.
- c) Conduct the general cleaning of the parts with gasoline, and with the help of a brush (avoid the use of cotton waste).



11.3 - Installing the Piston Gasket

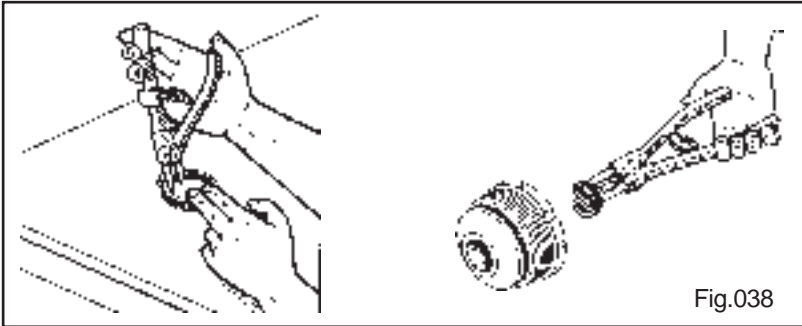
- a) Slightly lubricate the edges and housing of the piston and install the gasket. For this installation, see Fig. 037.

OBSERVATION: Never use a screwdriver or tools that can damage them



11.4 - Installing the Rod Guide Gasket

a) For the installation of the gasket, use a special set of pliers, lubricating its edges in order to facilitate its extraction. Put the gasket with its lips facing downward over the table and press the pliers until the gasket is in the installation position, then introduce into the hole of the guide up to the housing height and release the gasket, accommodating it into place. Afterwards, place the scraper and the oil ring manually.



11.5 - Installing the Guide and Piston on the Rod

⚠ ATTENTION

To install, first of all put the rod guide passing it on the piston housing side, never on the larger threading side where it will destroy the gasket. Then, put the piston and the fastening nut.

11.6 - Final Installation

Lubricate the sleeve before the installation and introduce the rod with the piston until reaching the condition to twist the guide nut, tightening with the special wrench.

12 - LUBRICATION

12.1 - Lubrication objectives

Lubrication is the best assurance of the equipment's proper running and performance. This practice extends the service life of moving parts and assists in maintenance costs economy.

Before beginning operations, ensure that the equipment is properly lubricated, following the Lubrication Plan's instructions.

In this Lubrication Plan, we consider the equipment running under normal working conditions, while in heavy-duty services we recommend reducing the lubrication intervals.

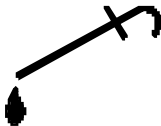
ATTENTION

Before beginning lubrication, clean the grease fittings and replace the damaged one.

12.2 - Lubrication Symbols



Lubricate with lithium soap based grease, NLGI-2 consistence in the recommended hour-intervals.



Check the oil level every 100-work hours and use AGMA 680/8 EP lubricating oil, or equivalent.

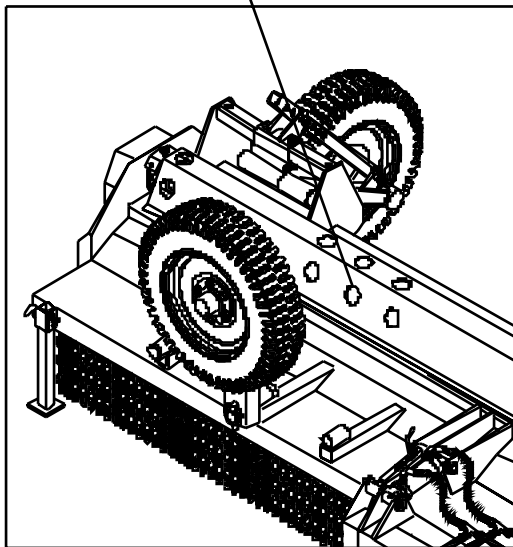
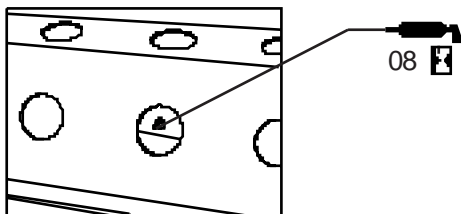


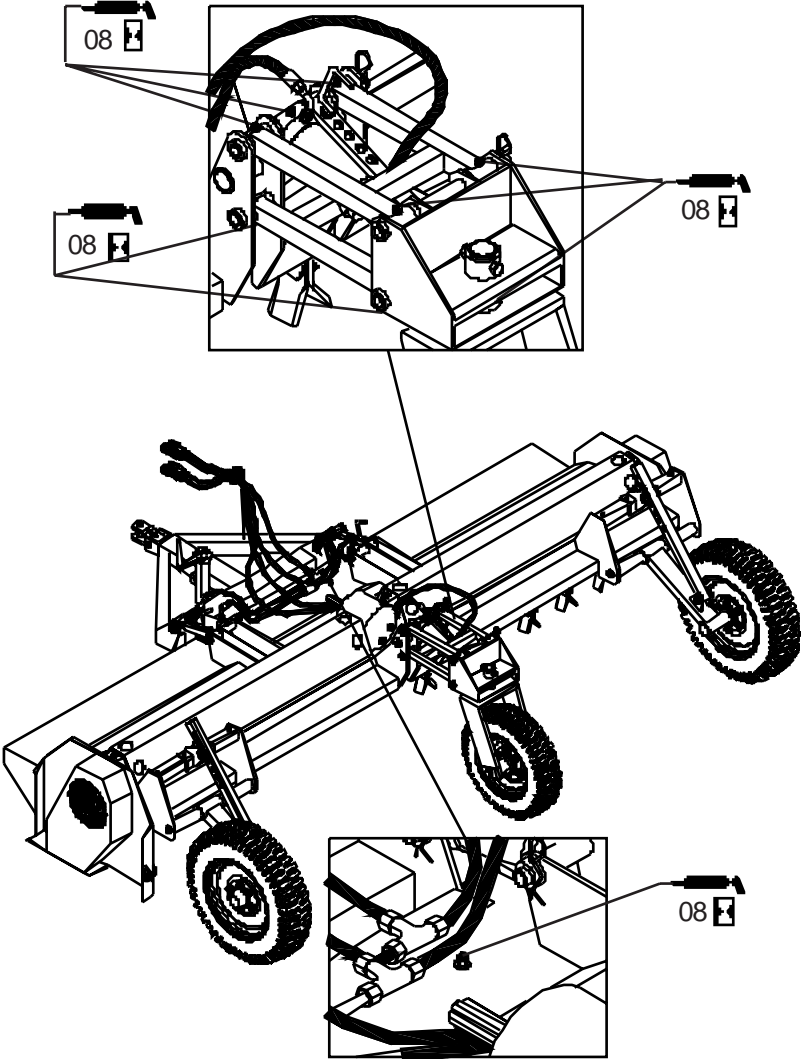
Lubrication intervals in worked hours.

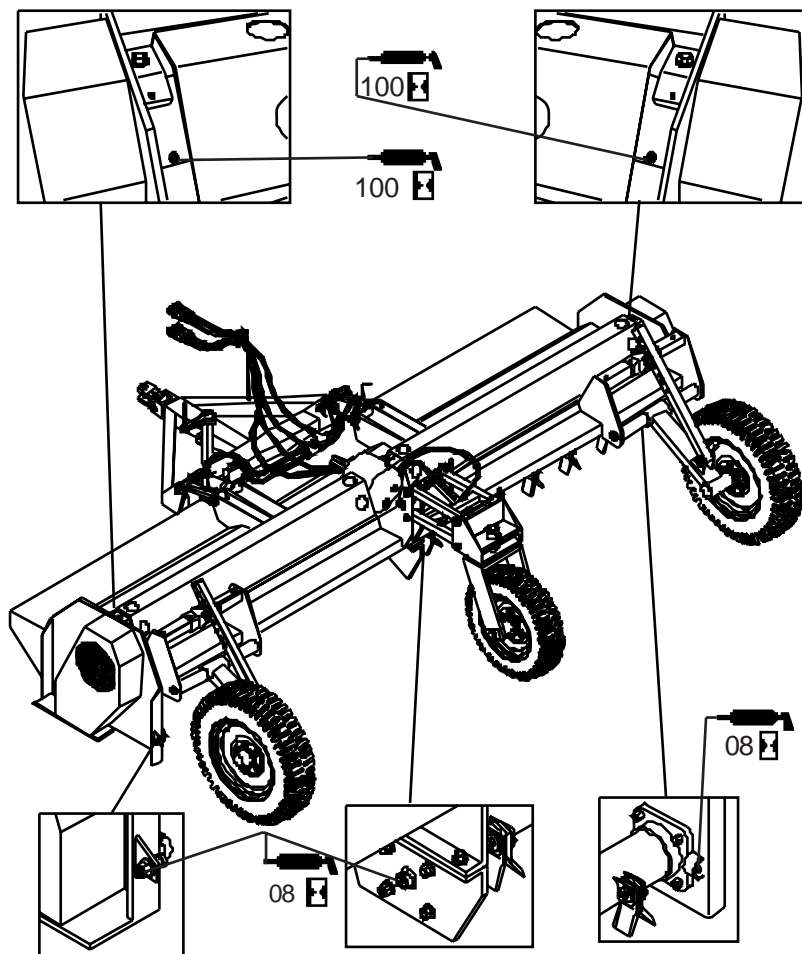
12.3 - Table of Lubricants

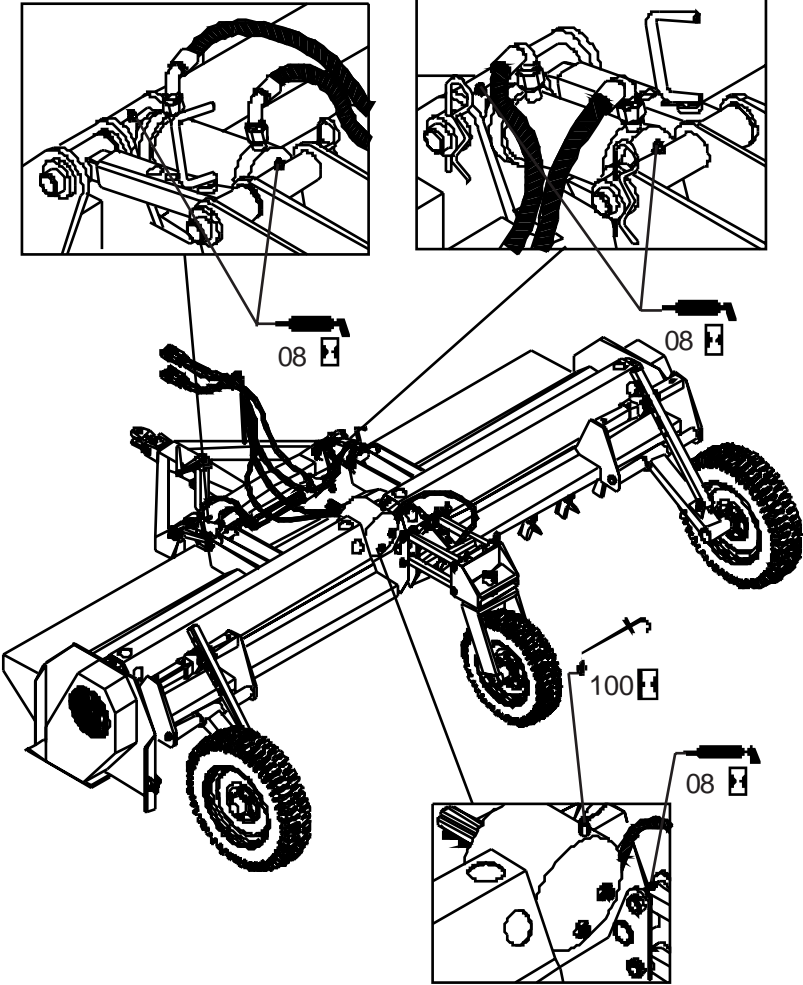
RECOMMENDED LUBRICATION	EQUIVALENCE									
	PETROBRÁS	CASTROL	SHELL	TEXACO	PIRANGA	BARDAHL	ESSO	MOBIL OIL		
GREASE CONTAINING LITHIUM SOAP NLGI-2	LUBRAX GMA-2	LM-2	ALVANIA EP-2	MARFAK MP-2	ISAFLEX 2	MAXLUB APG-2EP	ESSO MULTI 2	MOBIL GREASE TT		
AGMA 68/08 EP OIL	LUBRAX INDUSTRIAL EGF-680-OS	**	OMALA 680	MEROPA 680	SP-680	MA XLUB MA-250 EP	ESSO GX 140	MOBILGEAR 636		

Present in the Trimax Cruzador 5200 Model only









13 - INCIDENTS AND TROUBLESHOOTING** ATTENTION**

Before requesting for technical services, check the following items:

<i>ROTOR SHAFT NOT WORKING</i>	
<i>LIKELY CAUSES</i>	<i>SOLUTIONS</i>
1 - Damaged transmission box	1 - Replace damaged transmission box
2 - Inadequate belt tension	2 - Adjust Belt Tension
3 - Rotor shaft bearing broken	3 - Replace Rotor shaft bearing

<i>DIFFICULTY IN MOVING AT THE WHEEL POSITION OF THE TRANSPORT</i>	
<i>LIKELY CAUSES</i>	<i>SOLUTIONS</i>
Spinning the wheel clockwise	Spin the wheel anticlockwise

NOTES