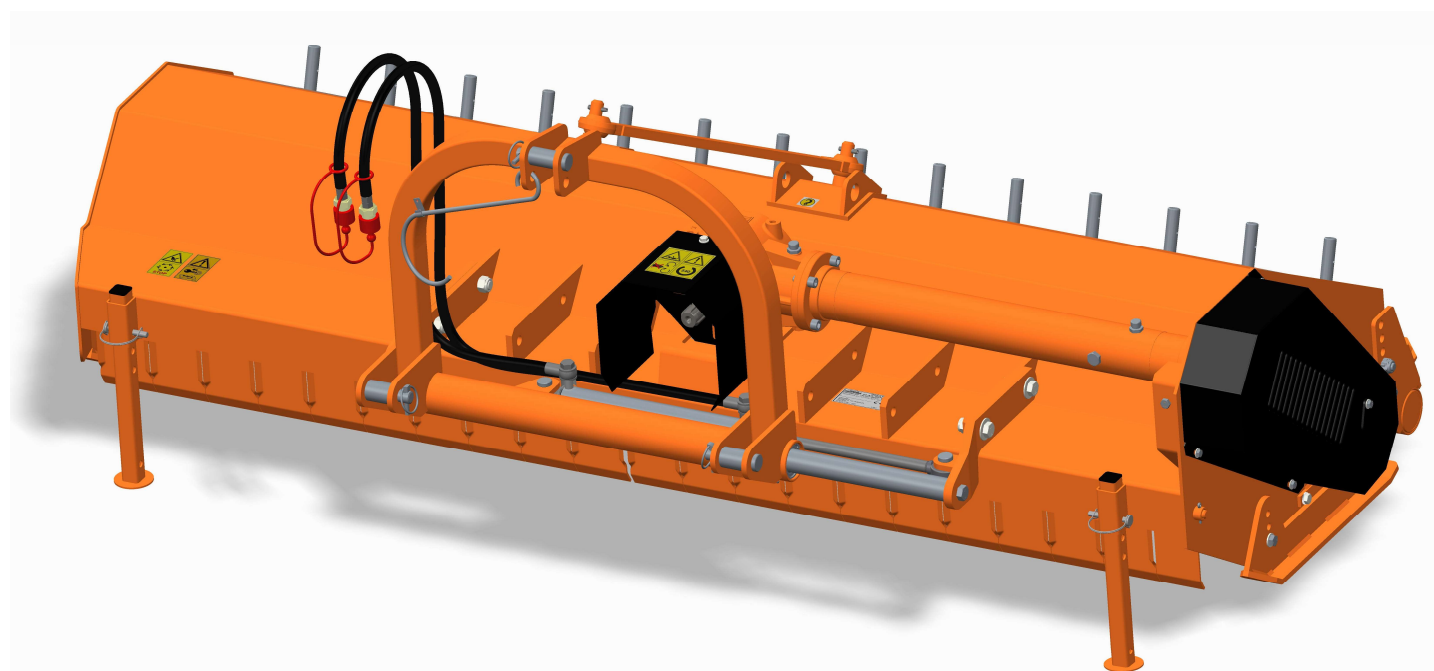


Cosmo Bully



Cosmo Bully

FLAIL MULCHER SFM SERIES 130-145-160-175-205-220



OPERATOR'S MANUAL & PARTS INFORMATION

Congratulation for purchasing your new COSMO BULLY Flail Mulcher!

This implement has been designed and manufactured following all safety and quality requirements needed for a safe and satisfactory use over time.

A careful reading of this manual will permit you to familiarize with your new implement, and will provide you all the blade/hammer needed to use it safely.

A proper maintenance and knowledge of the safety rules of use will allow you to obtain the best performance and a long service life of the implement.



The Safety Alert Symbol used throughout this manual and on safety decals of the implement indicates the presence of potential hazard to the operator. When you see this symbol be alert and carefully read the message that follows it.

The Safety Alert Symbol is used in conjunction with following Signal Words, according to the degree of possible injuries that may result operating the implement:



DANGER

Indicates an imminently hazardous situation that if not avoided will result in death or serious injury.



WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



CAUTION

Indicates a potentially hazardous situation that if not avoided may result in minor or moderate injury. It may also be used to alert against unsafe practices.

IMPORTANT

Indicates instructions or procedures that if not observed can cause damage to equipment or environment.

NOTE

Indicates helpful information

READ, UNDERSTAND, and FOLLOW the safety messages following the Safety Alert Symbol and words. Failure to comply with safety messages could result in serious bodily injury or death.

TO THE PURCHASER

This manual contains valuable information about COSMO BULLY FLAIL MULCHER. It has been carefully prepared to give you helpful suggestions for operating, adjusting, servicing repair parts.

Keep this manual in a convenient place for quick and easy reference. Study it carefully. You have purchased a dependable and sturdy Mulcher, but only by proper care and operation can you expect to get the service and long life designed and built into it.

RIGHT-HAND AND LEFT-HAND sides are determined by watching from the tractor side.

Sometime in the future your Mulcher may need new parts to replace those are worn or broken. If so, go to nearest COSMO BULLY dealer and provide him the model and part number.

Customer information

Name _____

Purchased from _____

Purchased date _____

Model No. _____

Serial No. _____

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1. ABOUT THIS MANUAL

The operator must read the manual for a correct understanding of the hazards that may present when operating the Flail Mulcher, as well as for obtain optimum performance from the implement.

The manual is part of the implement, it must be kept in good condition and remain with the implement even in case of resale, until its demolition. In case of loss or damage, request a new copy to the Manufacturer or your Dealer.

The information, descriptions and illustrations in this manual describe the state of the product at the time it was published, and may not reflect the product in the future.

The Manufacturer reserve the right to make design improvements or changes in specifications without any obligation to install them on units previously sold.

Text, illustrations and drawings of this manual cannot be disclosed or transmitted, in whole or in part, to third parties without the written permission of the Manufacturer. All rights are reserved.

2. INTRODUCTION

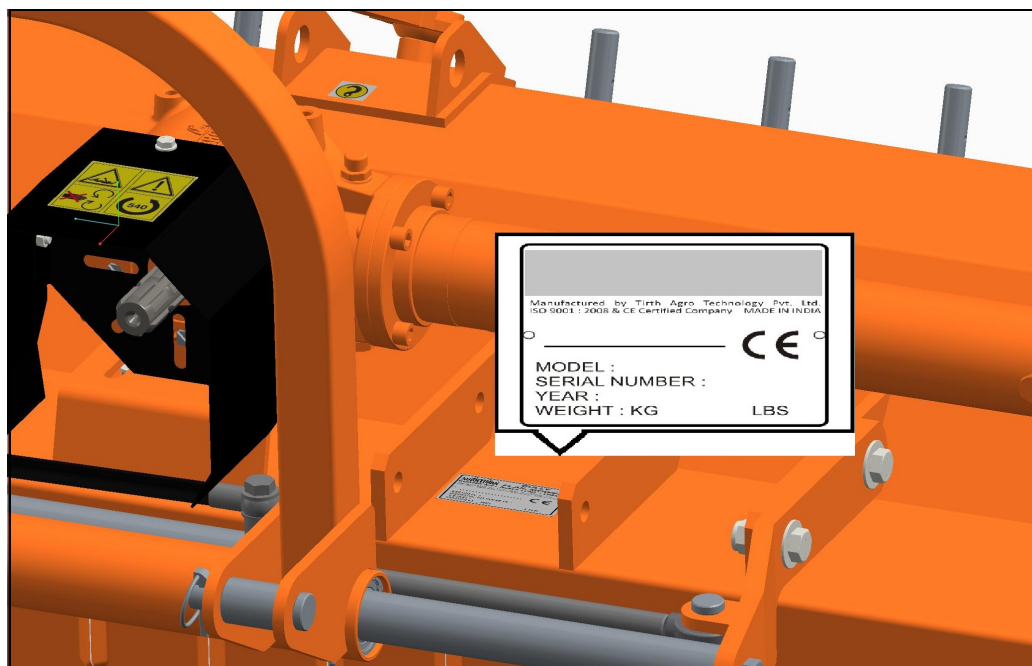
2.1. IMPLEMENT IDENTIFICATION

Each Flail Mulcher is provided with a plate for unique identification (see position in picture below), showing the CE marking together with following information:

- Manufacturer name and address
- Type of implement ("TYPE")
- Model of implement ("MODEL")
- Serial number ("SERIAL No.")
- Construction year ("YEAR")
- Implement weight ("MASS")
- Speed required at Implement Input Connection ("INPUT").

It's recommended to note down all data shown on the plate.

Any request for assistance or information regarding the implement must be directed to the Manufacturer or Dealer always referring to the model and serial number as shown on the plate affixed to the implement.



2.2. INTENDED USE

The FLAIL MULCHER is designed specifically for cutting grass and for shredding fibrous wood stalks, corn and branches up to a diameter of 8 cm (depends on the type of blade fitted).

The Flail Mulchers are designed to be mounted on tractors equipped with hydraulic lift and universal three point hitch that can support the implement weight, and driven by the power of the tractor through the PTO Shaft.

The tractors used to operate the FLAIL MULCHER must have the following requirements:

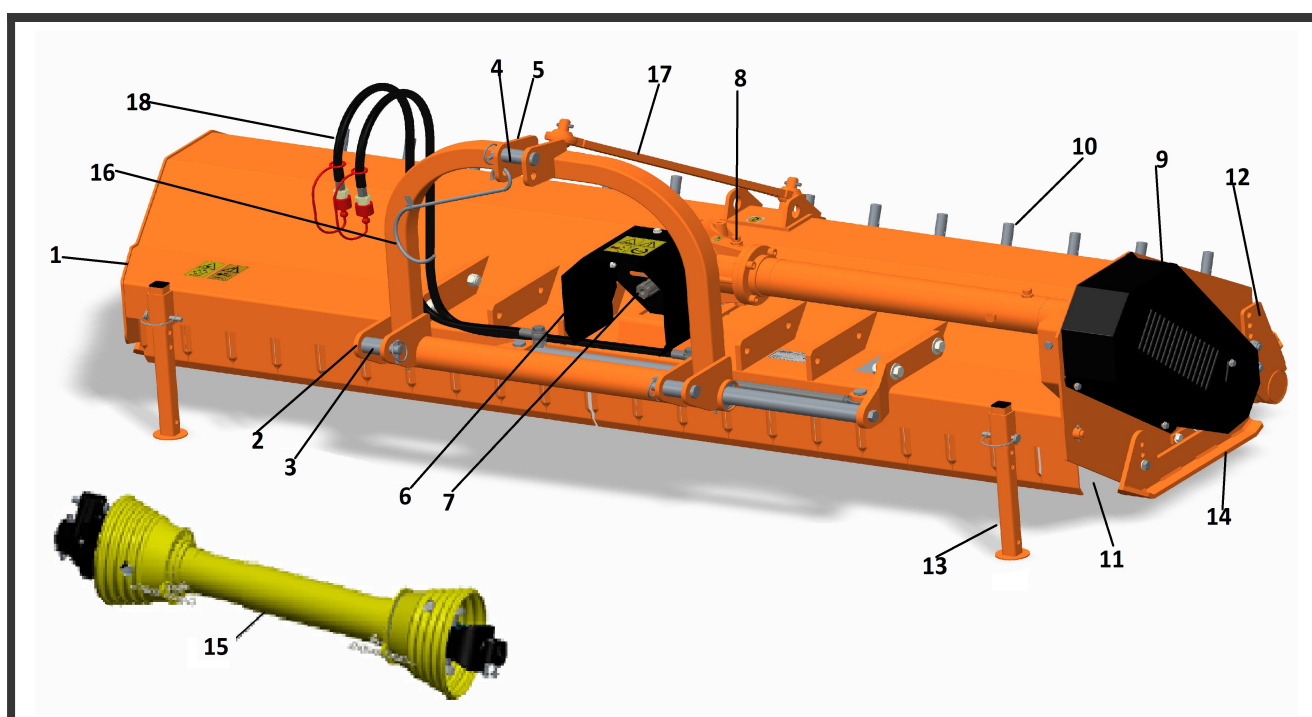
Hitch Category:	3-point hitch, I/II Category standard
PTO:	540 RPM, 6-spline, 1 3/8 Z6
Horsepower:	30-70 HP



DANGER

Any use of the implement other than the intended use is non-intended use, and is to be considered as unauthorized and dangerous. The manufacturer assumes no liability for damage resulting from non-intended use.

2.3. MAIN PARTS DESCRIPTION



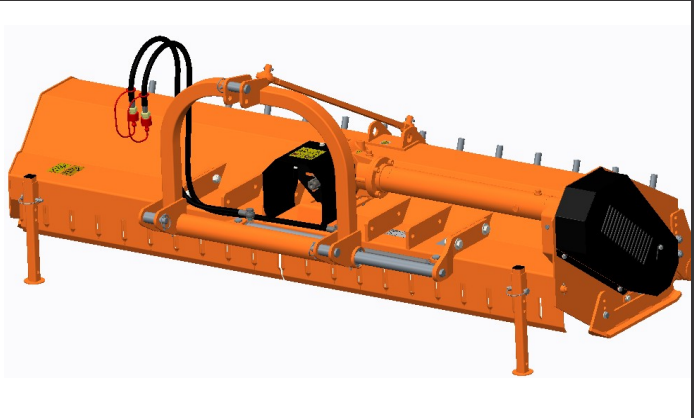
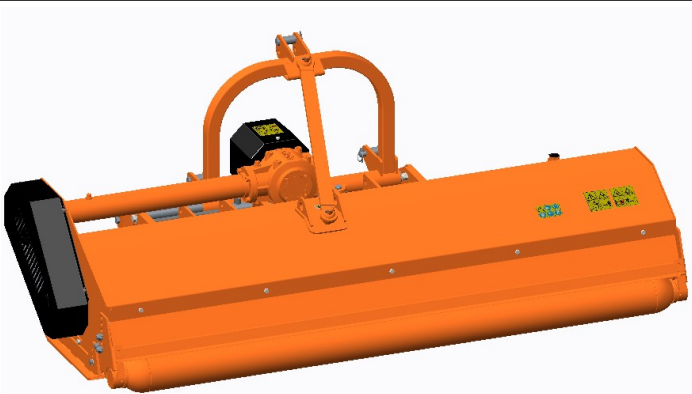
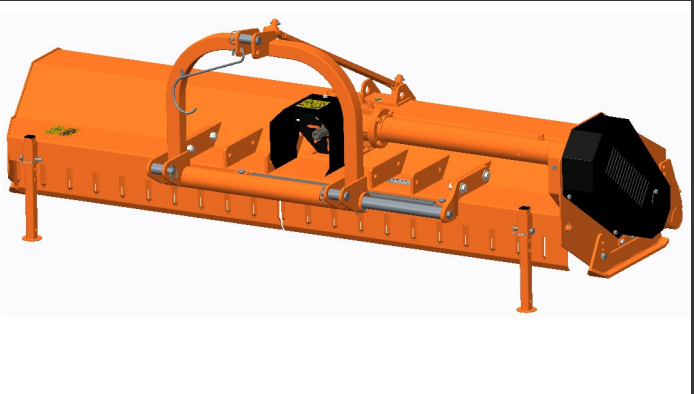
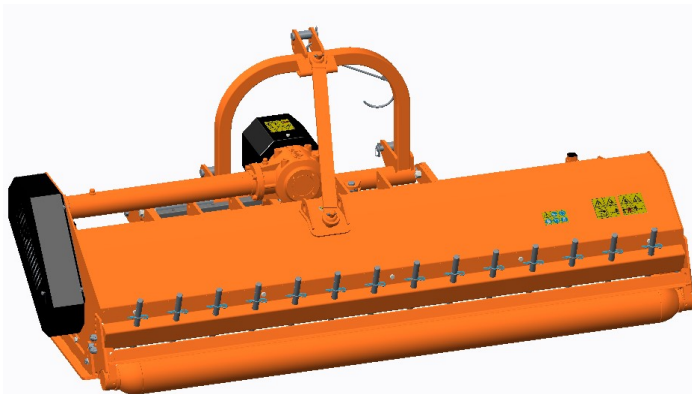
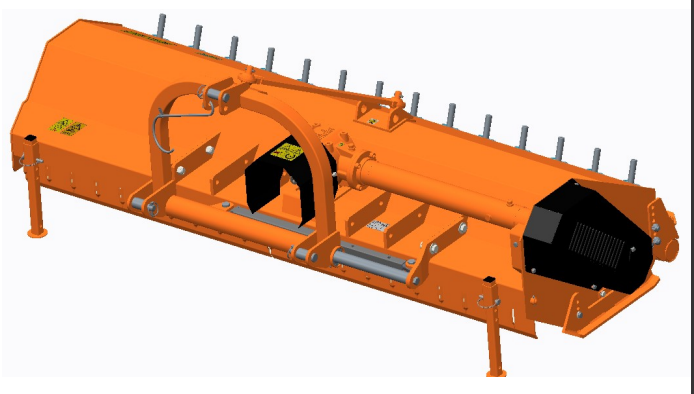
1. Flail Mulcher body	10. Rear Rakes
2. Lower linkage point	11. Shredding Chamber
3. Lower linkage pin	12. Roller
4. Top link pin	13. Implement stand
5. Top linkage point	14. Side skid
6. Input shaft cover	15. PTO shaft
7. Input shaft	16. PTO shaft support
8. Gearbox (built in free wheel)	17. Rear Support Stay
9. Belt Cover	18. Hydraulic hoses

NOTE

To make the illustrations more clear, some images in this manual may picture implements with some safety guards removed. NEVER use a implement without all safety guards correctly fitted.

2.4. CONFIGURATIONS

The FLAIL MULCHER can be purchased in different configurations.
The standard configuration can be changed applying one or more optional parts, listed below:

STANDARD CONFIGURATION	
	
• Mobile arc with hydraulic cylinder • Rear roller • Standard rear cover • "Y" blades or hammers	
OPTIONAL	
	
• Mechanical shifting device (instead of hydraulic cylinder)	
	
• Rear cover with rakes (instead of standard rear cover)	

2.5. TECHNICAL SPECIFICATIONS

Technical specification of all models is as per the table on page 8.

SPECIFICATION								
MODEL SPECIFICATION		130	145	160	175	205	220	
Working width	Cm	145x85x113	162x85x113	177x85x113	192x85x113	222x85x113	237x85x113	
	cm	130	145	160	175	205	220	
	inches	51"	57"	63"	69"	80"	87"	
Recommended tractor HP	HP	30-60	30-60	30-70	30-70	30-70	30-70	
3-point hitch type	-	Cat. I/II	Cat. I/II	Cat. I/II	Cat. I/II	Cat. I/II	Cat. I/II	
Number of blades	N.	32	36	40	44	52	56	
Number of hammers	N.	16	18	20	22	26	28	
PTO input speed	rpm	540	540	540	540	540	540	
Rotor speed	rpm	2083	2083	2083	2083	2083	2083	
Side transmission	-	3 belts	4 belts	4 belts	4 belts	4 belts	4 belts	
		BX type	BX type	BX type	BX type	BX type	BX type	
Side shift (max)	cm	30	30	30	30	30	30	
	inches	6.25"	6.25"	6.25"	6.25"	6.25"	6.25"	
Rotor diameter	mm	159	159	159	159	159	159	
Rotor swing diameter	mm	378	378	378	378	378	378	
Approx Weight (PTO not included)	Kg	366	388	412	434	482	506	

3. SAFETY

Proper use of the equipment, a strict observance of the safety messages listed below and application of all reasonable practices to avoid any risks, prevents accidents or injury, allows the implement to function better, increases longevity and minimizes failures.

The manufacturer assumes no liability for any damage resulting from not applying the behavioral rules indicated into the manual.

3.1. GENERAL SAFETY INSTRUCTION



DANGER

The implement must be used only by authorized and well trained operators. The operator must have read and understood the instructions in this manual. It must make adequate preparation for the proper use of the implement and should hold a driving license. In case of doubt about the use of the implement and/or the interpretation of this manual, the operator must contact the Manufacturer or the Dealer.



WARNING

The manual must always remain with the implement. In case of loss or damage, request a new copy from the Manufacturer or your Dealer.



WARNING

Follow strictly the rules prescribed by the safety decals applied to the implement.



WARNING

Be sure that all safety decals are legible. If decals are worn, they must be replaced with others obtained from the Manufacturer, and placed in the position indicated by this manual.



DANGER

Before using the implement, make sure that all safety devices are installed and in good working conditions. In case of damages to shields or covers, replace them immediately.



DANGER

Is absolutely forbidden to remove or alter safety devices.



DANGER

Before starting, and during operation of the Flail Mulcher, make sure there are no people or animals in the operation area: the implement can project material from the back, with risks of serious injury or death.



DANGER

Pay maximum attention to avoid any accidental contact with rotating parts of the implement.



DANGER

During operation, adjustment, maintenance, repairing or transportation of the implement, the operator must always wear appropriate Personal Protective Equipment (PPE).

**DANGER**

Do not operate the implement while wearing loose fitting clothing that may become entangled in the moving parts of the implement.

**DANGER**

Do not operate the implement when tired or unwell or under the influence of alcohol or drugs.

**CAUTION**

If the use of the implement is required at night or in conditions of reduced visibility, use the lighting system of the tractor and possibly an auxiliary lighting system.

3.2. EQUIPMENT SAFETY INSTRUCTION

**WARNING**

Use the Flail Mulcher for its intended purpose only. Improper use can damage the Flail Mulcher and cause serious injury to persons, animals, or death.

**DANGER**

The implement should be used by a single operator driving the tractor.

**WARNING**

Any unauthorized modification of the implement may cause problems in safety and relieves the Manufacturer of any liability for damages or injuries that may result to operators, third parties and objects.

**WARNING**

Before using the implement, familiarize yourself with its controls and its working capacity.

**WARNING**

Do not leave the Flail Mulcher unattended with tractor engine running.

**WARNING**

Keep the implement clean from debris and foreign objects which may damage functioning or cause injury.

**WARNING**

Do not use the implement if the category of the connecting pins of the Flail Mulcher does not match that of the tractor hitch system.

**WARNING**

Do not use the implement with missing bolts, screws, pins or safety pins, safety guards etc.

**WARNING**

Never use the implement to transport or lift people, animals or objects.

**WARNING**

Make certain, by adding front ballast that at least 20% of the total weight (tractor, implement and ballast) is on the front axle of the tractor, to ensure stability.

**WARNING**

Before engaging the tractor PTO, make sure the tractor PTO speed is set as required for the Flail Mulcher (540 rpm). Do not use any other PTO speed other than the speed it has been designed.

**DANGER**

Do not operate the Flail Mulcher if the PTO shaft is damaged. A damaged PTO shaft can cause serious injury or death. Remove the PTO shaft and repair or replace before continuing operations.

**WARNING**

With Flail Mulcher disconnected from tractor, rest the PTO Shaft on the provided support of the Flail Mulcher.

3.3. OPERATING SAFETY INSTRUCTION

**WARNING**

Before using the implement, be sure to have cleared the operating area from obstacles (stones, branches, debris, etc...). Mark all the obstacles that cannot be removed (e.g. use flags or other suitable marker).

**DANGER**

Never engage the tractor PTO in the presence of people close to the PTO shaft. Body parts, hair or clothing can get caught in rotating parts, causing serious injury or death.

**DANGER**

Before engaging the PTO and during all operations, make sure that no person or animal is in immediate area of action of the implement. Never use the Flail Mulcher if people are in the operating area.

**DANGER**

It's absolutely forbidden to stand near the Flail Mulcher with moving parts.

**WARNING**

The operator must operate implement lifting/lowering only from the driving seat of the tractor. Do not perform lifting maneuvers on the side or behind the tractor.

**WARNING**

Before making changes in direction, turns or going in reverse, slightly lift the Flail Mulcher off the ground. Disengage the PTO shaft before lifting the Mulcher for transport or in any situation that requires the Mulcher to be lifted well off the ground.

 DANGER

On steep slopes the angle can cause instability of the tractor with a risk of serious injury or death hazard. Consult the manual for the tractor to determine the maximum slope that the tractor is able to deal with. Always operate up and down (NEVER across) a steep slope.

 DANGER

Always disengage the PTO before raising the Flail Mulcher, and never engage the PTO with the Flail Mulcher in the raised position. The implement might throw objects at high speed, causing serious injury or death.

 WARNING

Never leave the driver's seat when the tractor is turned on. Before leaving the tractor, lower the Flail Mulcher to the ground, disengage the PTO, insert the parking brake, stop engine and remove the key from the ignition.

 DANGER

Safety guards and covers on the tractor, implement and the PTO shaft must be properly installed and in good condition, to avoid risk of entanglement with serious injury or death. Stop all operations until all safety guards/covers are replaced.

 DANGER

Before engaging the PTO of the tractor, ~~always~~ make sure that the PTO Shaft is locked in the angular groove of the input/output shaft and the spring pins are back to their original position. Be sure to check both to tractor output side and the Flail Mulcher side.

 WARNING

Stop operating immediately if blades strike a foreign object. Repair all damage and make certain rotor and blades are in good condition before resuming operation.

 WARNING

Always disengage the tractor PTO when the PTO Shaft looks like it will exceed an angle of 10 degrees. An excessive angle with the PTO Shaft rotating can break the PTO Shaft and cause flying projectiles.

 CAUTION

Prolonged use of the Flail Mulcher can cause the gearbox to become hot. Do not touch the gearbox during use and immediately after, it could be extremely hot and cause severe burn.

 WARNING

All adjustment operations on the Flail Mulcher must be performed by qualified and trained operators, with the tractor engine off, the PTO disengaged, the Flail Mulcher lowered to the ground or on support stands, the ignition off and the parking brake set.

3.4. TRANSPORTING SAFETY INSTRUCTION



WARNING

Before transporting the implement, determine the stopping characteristics of the tractor and implement.



WARNING

Transport only at speeds where you can maintain control of the equipment.



WARNING

When driving on roads, the implement must be in transport position adequately raised from the road surface, with tractor lower linkage arms locked so that the Flail Mulcher cannot be lowered accidentally.



DANGER

The implement may be wider than the tractor. Pay attention during transporting to persons, animals or obstacles exposed.



WARNING

When turning, use extreme care and reduce tractor speed.



WARNING

Do not operate the tractor with weak or faulty brakes or worn tires.



CAUTION

Always use tractor lighting system and auxiliary lighting system for an adequate warning to operators of other vehicles, especially when transporting at night or in conditions of reduced visibility.



CAUTION

In case is required the lifting of the implement, make sure that the lifting device chosen is suitable to perform the operation safely, and use only the lifting points prescribed on Flail Mulcher.

3.5. MAINTENANCE SAFETY INSTRUCTION



WARNING

All maintenance and repairing operations must be performed by qualified and trained operators, with the tractor engine off, the PTO disengaged, the Flail Mulcher lowered to the ground or on support stands, the ignition off and the parking brake set.



WARNING

Perform repairs and replacements necessary to the implement using only original spare parts provided by the manufacturer or your Dealer.



DANGER

Perform maintenance operations wearing appropriate Personal Protective Equipment (protective eye glasses, hard hat, hearing protection, safety shoes, overall and work gloves, filter mask).

**CAUTION**

Before carrying out maintenance, make sure all parts have come to a stop and have cooled (gear box).

**WARNING**

Do not perform repairs that you are not familiar with. Always follow the manual instructions and in case of doubt contact the Manufacturer or your Dealer.

**DANGER**

Do not swallow fuels or lubricants. In case of accidental contact with eyes, rinse well with water and consult a doctor.

3.6 STORAGE SAFETY INSTRUCTIONS

**WARNING**

Never leave the tractor unattended with the Mulcher in lifted position. Accidental operation of lifting lever or a hydraulic failure may cause sudden drop of unit with injury or death by crushing.

**DANGER**

Following operation, or before unhooking the Mulcher, stop the tractor, set the brakes, disengage the PTO, lower the attached Mulcher to the ground, shut off the engine, remove the ignition key and wait for all moving parts to stop.

**DANGER**

Make sure all parked implements are on a hard, level surface and engage all safety devices.

**CAUTION**

Place support blocks under Mulcher as needed to prevent unit from tipping over onto a child and/or an adult. A Mulcher that tips over can result in injury or death.

**CAUTION**

Store the unit in an area away from human activity.

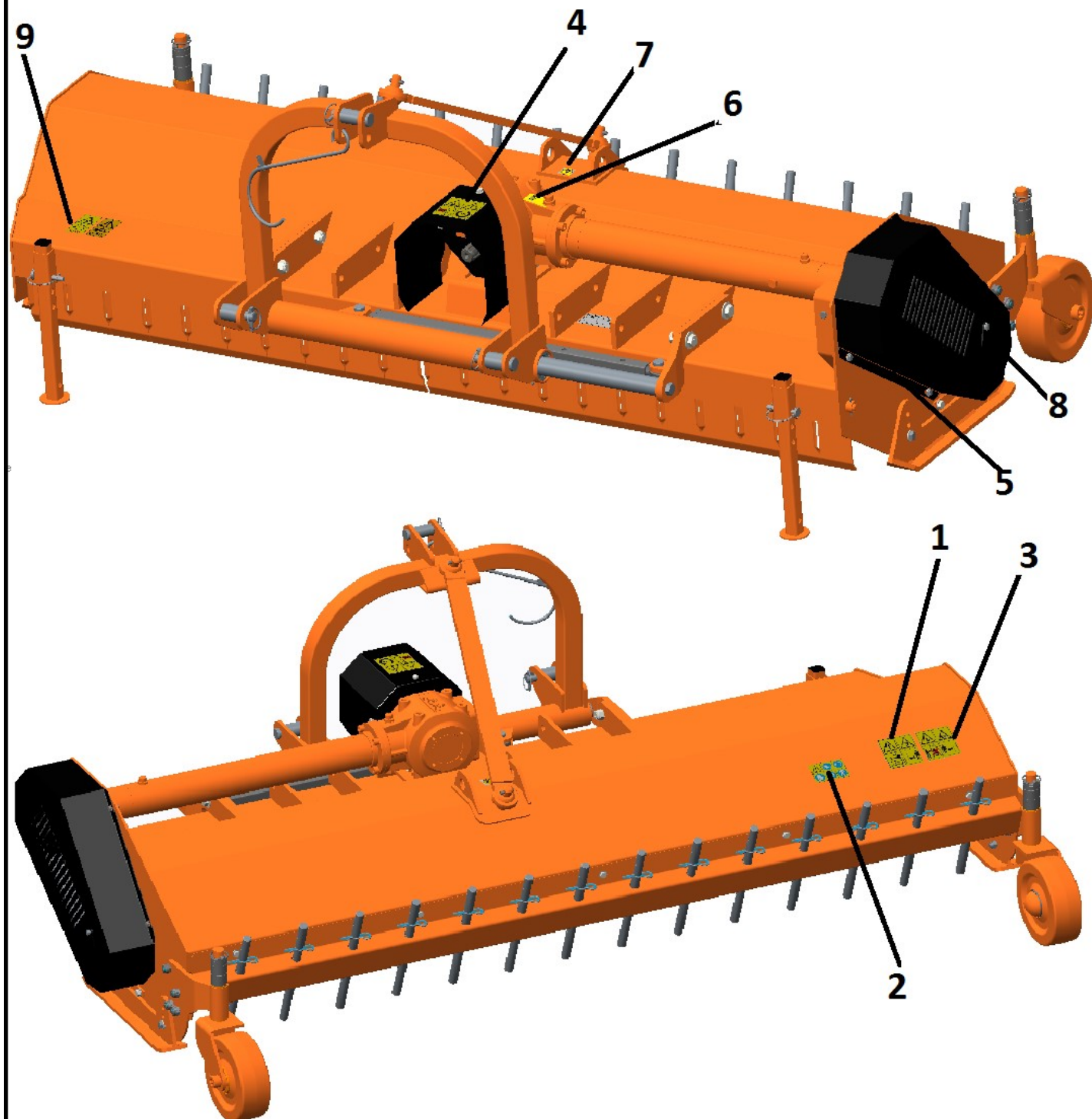
3.7 SAFETY DECALS

The safety decals applied to the implement give fundamental information for using the implement safely.

Make sure safety decals are in good conditions. If decals are worn, they must be replaced with others obtained from the manufacturer and placed in the position indicated by this manual.

Make sure the safety decals are legible. If necessary, wipe them by a cloth, with soap and water.

SAFETY DECALS POSITION AND DESCRIPTION



1		Disengage the PTO, turn off the tractor engine, remove the key and ensure that all rotating parts have stopped before approaching the implement. Read the operator's manual before performing any maintenance operation. Thrown or flying objects hazard
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2		Safety Wear
3		Crushing hazards & Thrown or Flying objects hazards.
4		Operate only with 540 rpm PTO.
5		Rotating Gears
6		Oil filling point
7		Lifting point
8		Grease filling point
9		Hand Hazard

4. SET UP

The Flail Mulcher is delivered equipped with a PTO Shaft and related operating manual.

When the implement is delivered, check that there is no damage to the Flail Mulcher or PTO Shaft. In case of damage or missing parts immediately notify the Manufacturer or your Dealer.

Because of its size, the implement may require some be assembly. In this case, the assembly of such parts is the responsibility of the dealer and must be performed carefully with reference to the tables (spare parts and torque) in this manual.



WARNING

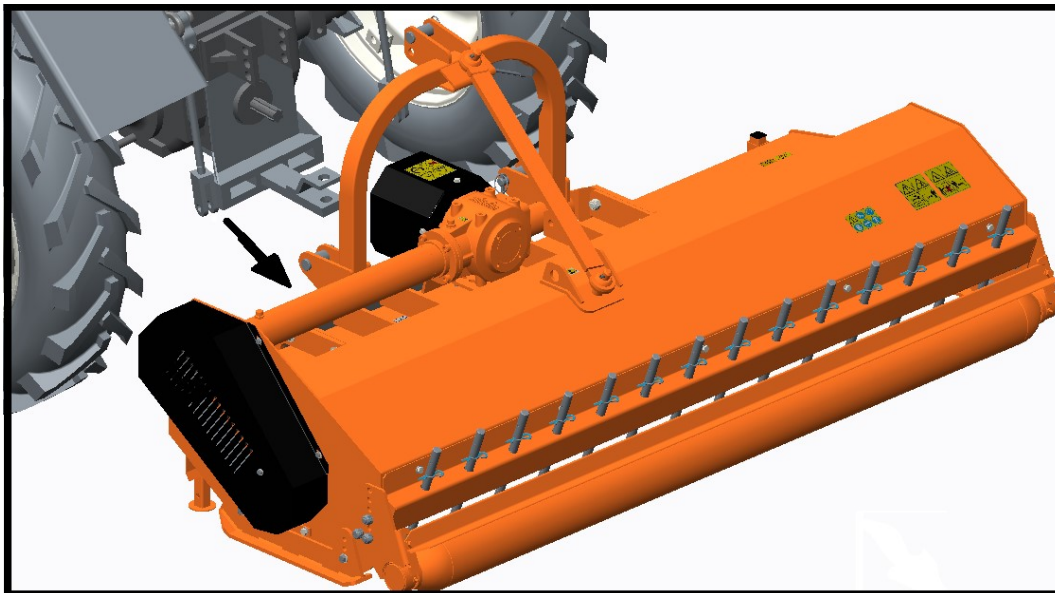
For proper tightening torques of bolts and screws, refer to the table in this manual.

4.1. CONNECTING TO THE TRACTOR

The FLAIL MULCHER is designed to be mounted on tractors equipped with 3-point Hitch Category I (ISO 730 standard).

To connect the Flail Mulcher to the tractor the operator must do the following:

- reverse the tractor up to the implement and align the rear lower linkage arms to lower linkage points of the Flail Mulcher then stop.
(see picture below);



- set the tractor's parking brake, stop engine, remove the ignition key and get off the tractor;
- connect the lower linkage arms of the tractor to the lower linkage points of the Flail Mulcher and secure with pin and clip. Connect the top link to the top linkage point and secure with pins and clips;
- Fit PTO Shaft.
- Raise the Flail Mulcher so the PTO shaft is parallel to the ground. Now adjust the top link to the deck of the Flail Mulcher is parallel to the ground looking front to back. This will limit the forces that that the PTO shaft can transfer to your Mulcher.
- Next, adjust the lower linkage arms of the tractor to ensure the Mulcher is level left to right (looking from the back). May sure to lock the lower linkage arms once you have the Mulcher level and straight. If not, the moment could compromise the stability of tractor and implement;
- Raise support stand to its highest point and secure with pin and clip.



WARNING

Before connect the Flail Mulcher to the tractor, make sure that tractor and Flail Mulcher are on a flat, stable and dry surface

4.2. PTO SHAFT INSTALLATION

Before installing the PTO shaft, the operator must read the manuals of PTO shaft and tractor, checking in particular that rpm and direction of rotation of the tractor PTO match those of the implement.

If the direction of rotation of the PTO tractor does not match that of the implement contact your dealer.

To connect the PTO shaft to the tractor and implement, the operator must:

- park tractor and implement on a flat surface, with parking brake set, engine off, and ignition key removed;
- check that safety devices on the implement PTO shaft and tractor are in good condition, otherwise provide for their replacement;
- position the PTO shaft between tractor and implement.

NT – you may need to remove the Input Shaft Cover to fit the PTO shaft. If you do, always remember to replace this cover:

- insert the PTO shaft yoke on the tractor's PTO output shaft, then ensure its locking into the angular groove;
- insert the PTO shaft yoke on the Implement's input shaft, then ensure its locking into the angular groove

NT – if the PTO shaft has chains to stop the covers spinning, hook one to the tractor and one to the implement.

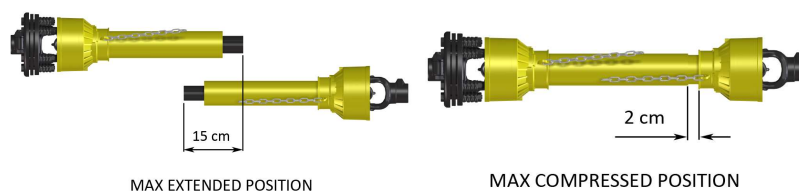
PTO SHAFT LENGTH CHECK

Before operating the implement ensure that the size of PTO shaft is adequate. The PTO shaft supplied with the implement comes in a standard length. Therefore it may need to be shortened depending on you tractor and implement.

The length of the PTO shaft must be such that it:

- avoid bottoming out of the transmission tubes, when the PTO shaft is in compressed position, when Mulcher is raised up off the ground;
- ensure there is sufficient overlapping of the transmission tubes, enough to transmit the torque required, when the PTO shaft is in max extension, with the Mulcher at its lowest position on the ground.

When the PTO shaft is at its maximum operational extension, there must be an overlap between the tubes profiles of at least 15 cm (see below). When the PTO shaft is at its minimum length (max compressed position), there must be at least a 2 cm of distance between the ends of each transmission tube and the yokes side.



A PTO shaft that is too long may cause structural damages to the tractor and implement. If the PTO shaft is too long, it may be adapted by removing it and shortening the tubes according to the instructions provided by the manufacturer in its use and maintenance manual.

A PTO shaft that is too short can cause disengage of the tubes during operation, with severe hazard for the operator and structural damage to the tractor and implement. If the PTO shaft is too short, it must be replaced with a longer one. In this case contact the manufacturer or your dealer.

IMPORTANT

- before operating the implement the first time, make sure that the PTO shaft is lubricated in accordance with how indicated in the instruction booklet;
- always engage the tractor PTO at low rpm to minimize the effect of the peak torque on the PTO Shaft and the implement

4.3. TRACTOR-FLAIL MULCHER STABILITY

The weight of the implement modifies the stability of the system tractor-Flail Mulcher, resulting in loss of steering control and braking.

The front axle of the tractor should always loaded with at least 20% of the overall weight of the system tractor-Flail Mulcher.

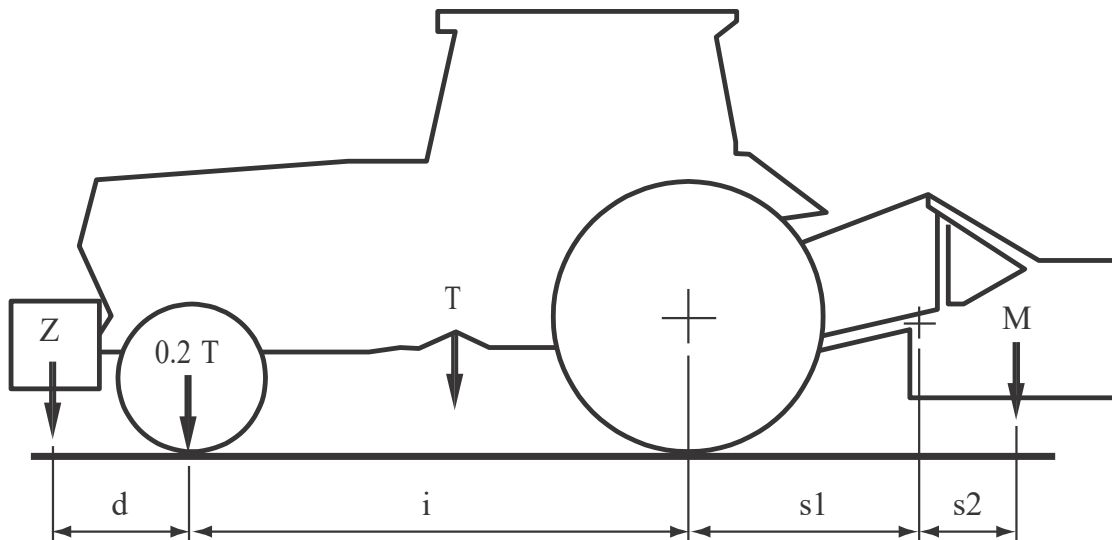


CAUTION

Check the lifting capacity and stability of the tractor making sure the following relations are complied with (see table below for definitions):

- $M \times (S1+S2) \leq 0.2 \times T \times i + Z \times (d+i)$
- $M \leq 0.3T$

If this not occurs, apply the front ballast required. To determine the appropriate characteristics of the ballast, refer to the manual of the tractor.



i = Tractor wheelbase (cm)

d = Distance between front axle and ballast center of mass (cm)

T = Weight of tractor + operator (75 kg)

Z = Ballast weight (kg)

M = Implement weight (kg)

s1 = Distance between rear axle and lower hitch points (cm)

s2 = Distance between lower hitch points and implement center of mass = 61 cm

5. OPERATING

Before operate the Flail Mulcher, make sure you have read and understood the operating manuals of the Flail Mulcher, tractor and PTO shaft, and followed what is described in the section "Set Up".



DANGER

During operation, adjustment, maintenance, repairing or transportation of the implement, the operator must always wear appropriate Personal Protective Equipment (PPE).

Before starting work, ensure that all implement guards are in good conditions and fully functional.

During operation, the implement can throw material from the back: prevent people and animals to approach the operational area.

5.1. START-UP



WARNING

Before conducting the above inspections and service, make sure the tractor engine is off, all rotation parts are completely stopped and the tractor is in park with the parking brake engaged. Make sure the implement is resting on the ground or securely blocked up and the tractor lifting hydraulics locked.

Before the start up and before each use, perform the following pre-operation inspections and service of the implement:

- check that the implement is not damaged and all mechanical parts are in good condition. Repair and/or replace any damaged parts;
- check that the implement has all the required pins, clips and safety guards fitted. Replace any damaged guards, covers, safety decals, etc. before operating;
- verify that the PTO Shaft is properly installed (see section: Connection of the drive shaft);
- verify that the PTO Shaft is the correct length for the tractor you are using.
- check the presence of lubricant in all greasing points of the implement and PTO Shaft (see sections: Maintenance / PTO Shaft and Maintenance / Support rotor);
- check for oil leaks from the gearbox. Identify the cause and repair and/or replace the damaged components before commencing operations;
- check the oil level in the gearbox is correct (see section maintenance);
- check that blades are not excessively worn and the relating hardware to secure them is correctly tightened (see section Maintenance);
- check that all hardware is properly tightened. Refer to the tightening table in the manual for proper torque values;
- check that all safety decals are in good condition and legible. Replace any damaged decals;
- check that rotor is spinning freely and there is no material wrapped around the rotor

Before the start up and before each use, make sure you carry out a visual inspection of the operating area identifying that:

- the area is clear of foreign objects (rocks, branches or debris).
- foreign object have been remove or that immoveable obstacles have been marked with flags or other suitable visible markers;
- there are no people or animals in the operating area.

Once all the checks above have been done, start the tractor and the Flail Mulcher as follows:

- start the tractor and engage the PTO at low rpm, making sure that the Flail Mulcher is NOT in the raised position but close to the ground, then increase the speed engine until to 540 rpm;
- lower the implement on the ground and simultaneously start driving the tractor at low speed. Subsequently increase the ground speed depending on ground conditions;
- if the environmental temperature is extremely cold, it's recommended to wait a few minutes with the PTO of the tractor at low rate before lowering the Flail Mulcher completely on the ground;

If the cutting height and/or the quality of the shredding are not as desired, correct them by adjusting the roller or the wheels (see sections "Adjustments") making sure you reduce engine speed, disengage PTO, set the parking brake, stop engine, remove key and lift the Flail Mulcher just off the ground BEFORE carry out the adjustment.

5.2. OPERATING INSTRUCTIONS

During operations:

- always maintain tractor engine so rpm rate is as stated so that the Mulcher has sufficient power to carry out the job it has been designed to do;
- always keep a tractor speed adequate to working conditions (from 2 to 10 km/h approx.);
- where possible, drive in a manner that allows for long passes and minimizes turning;
- when working on slopes, always operate up and down the slope NEVER across.
- always perform severe charges in direction (i.e. forward to reverse, hard left/right) with PTO disengaged and/or the Flail Mulcher slightly lifted from the ground to avoid damage to the implement;
- periodically check for foreign objects that may have become wrapped around the rotor. Remove them immediately BUT ONLY after disengaging PTO, turning off tractor engine, and waiting for all moving parts to come to a complete stop;
- if you feel the rotor or blades strike a foreign object, stop operating IMMEDIATELY by reducing ground/engine speed and disengaging the PTO. Wait for all rotating parts to come to a complete stop, set the parking brake, stopped engine and removed the ignition key. Raise and block the implement and proceed to carry out a visual check of blades and moving parts. Repair any damages immediately and make sure rotor is in good condition before restarting operation;
- Visually inspect the area just cut and identify what could have caused the impact. Mark with flags.
- In heavy thick operation conditions it is important to monitor the temperature of the gearbox and ensure that it does not overheat.

Typical problems that may occur operating the Flail Mulcher are described into Troubleshooting section, together with their solutions.

5.3. ADJUSTMENTS



WARNING

All adjustment operations must be performed with the tractor engine off, the PTO disengaged, the Flail Mulcher lowered to the ground or on rated support stands, the parking brake set and the ignition key off.

CUTTING HEIGHT ADJUSTMENT

The cutting height of the Flail Mulcher is determined by the vertical position of the rear roller, the rear wheels (if fitted in lieu of a roller) or the skid skids (if roller and/or wheels are not fitted).

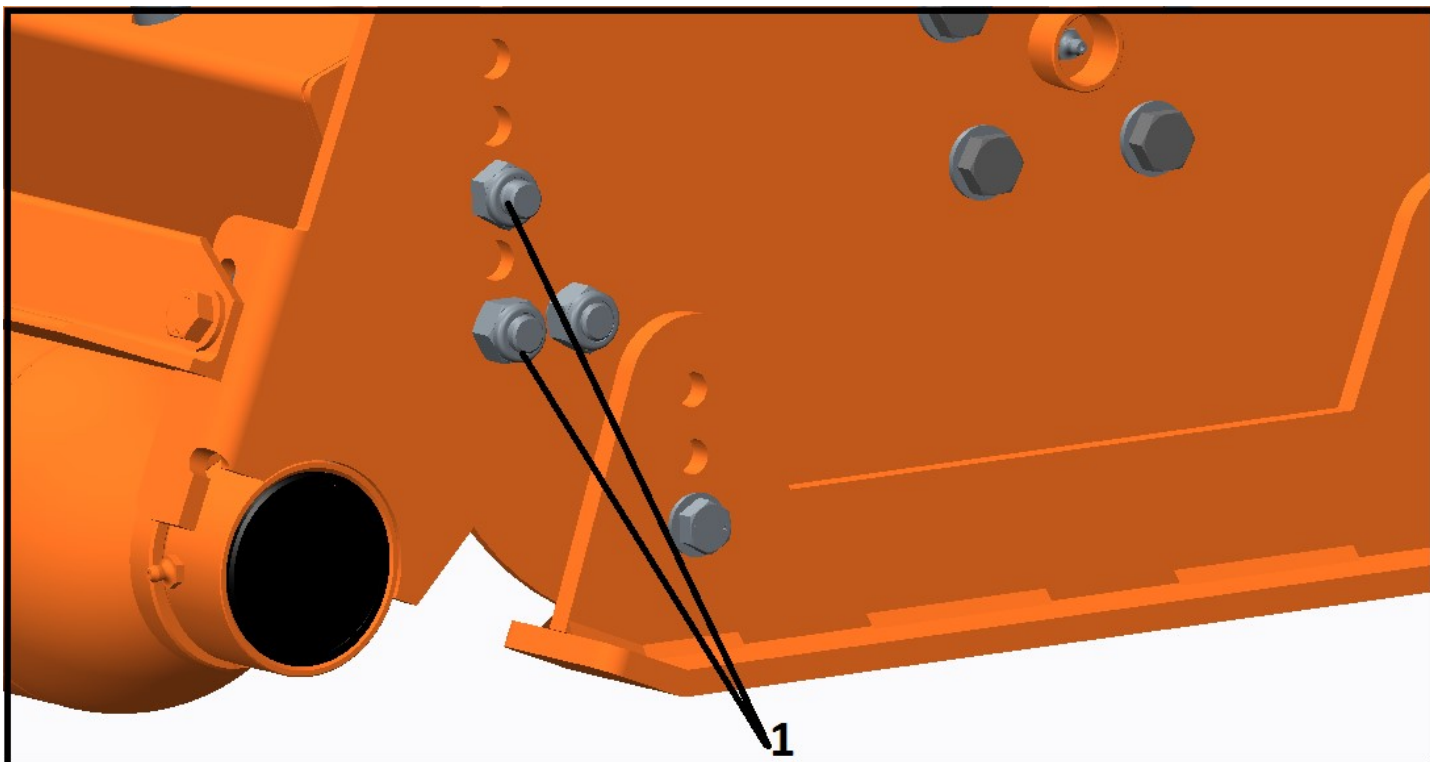
Raising the roller (or the wheels) will result in the blade/hammers becoming closer to the ground which will result in a reduced the cutting height.

On the contrary, lowering the roller (or the wheels) will increase the distance the blades/hammers are from the ground increasing the cutting height.

After a changing the cutting height make sure that the blades/hammers of the rotor are not touching the ground. Direct contact with the ground will result in the rapid wearing of the blades/hammers and excessive loads being placed on the Mulcher which will reduce its longevity.

If the Flail Mulcher is provided with a roller, adjust the cutting height as follows:

- Lift the Flail Mulcher onto rated safety stands. Turn off the tractor engine, disengage the PTO, set the parking brake and remove the key from the panel.
- Remove the bolts (1) that secure the roller supports to the frame on the both sides;
- Position the roller according to the height required;
- Replace and tighten the bolts (for the correct torque value refer to the torque table of the manual).

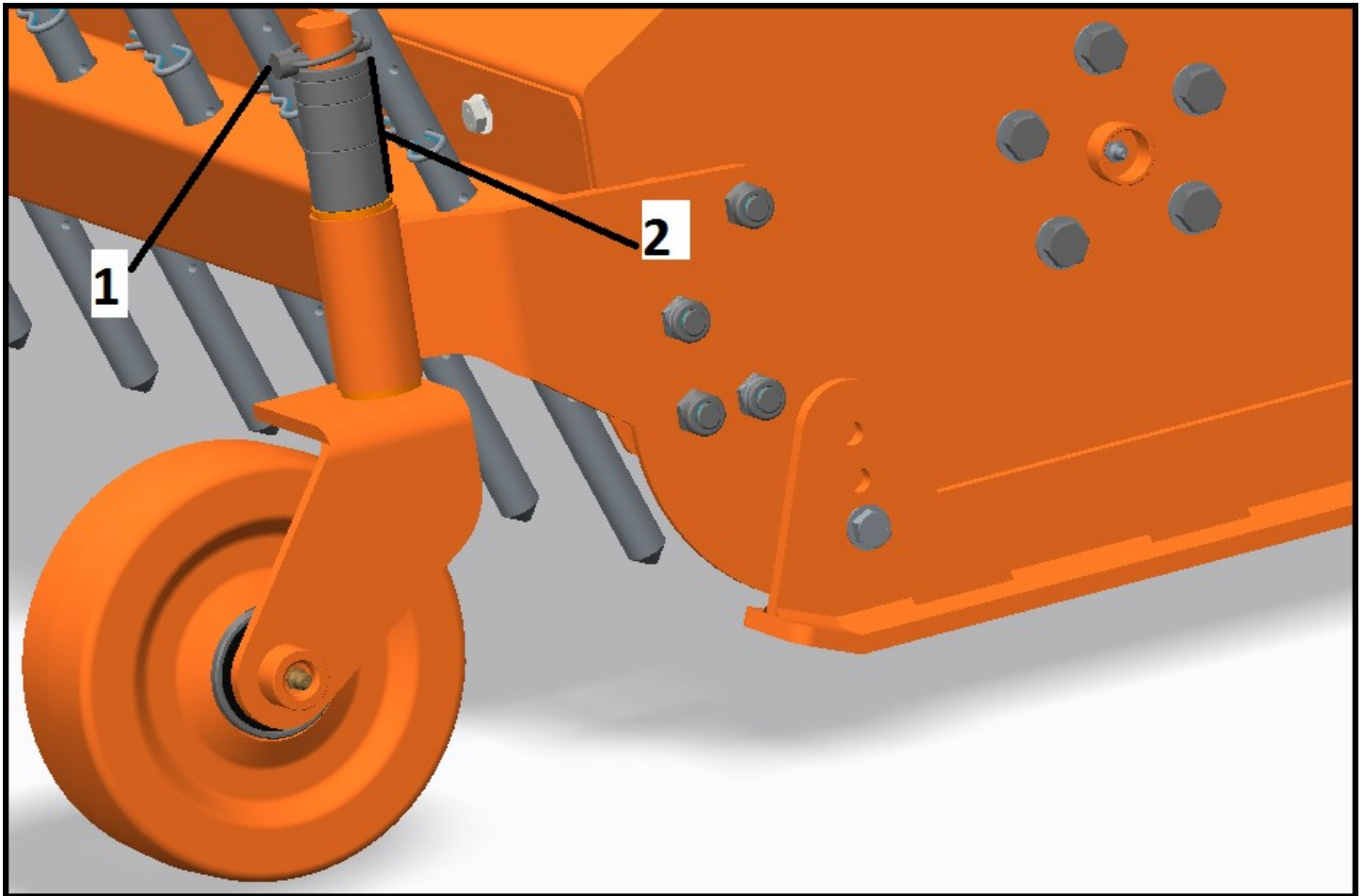


Depending on the different roller positions, it is possible to set four different cutting heights of approx. 30mm, 60mm, 80mm and 105mm.

Make sure that the roller supports are positioned at the same height on BOTH side with the Flail Mulcher resting on the ground. Check that the front of the implement is leveled (front to back and left to right). If necessary adjust the levels via the adjustable top link or the lower linkage arms of the tractor.

If the Flail Mulcher is provided with depth wheels (see picture) adjust cutting height as follows:

- lift the Flail Mulcher onto rated support stands. Turn off the tractor engine, disengage the PTO, set the parking brake and remove the key from the panel;
- while supporting the weight of the wheel/fork, remove the clip (1);
- remove the wheel/fork from the bracket paying careful attention to the spacers (2) (required to determine the cutting height);
- insert one or more spacers onto the lower part of the shaft of the wheel fork. The number of the spacers placed on the lower part of the wheel fork shaft will increase the cutting height;
- insert the wheel fork into the bracket and place remaining spacers on top of the shaft;
- fix the wheel fork in place with the clip (1);
- repeat the same procedure to the opposite wheel, making sure the same number and sized spacers are as per the first wheel.



Depending on the different position of the spacers on the shaft, it is possible achieve five (5) different cutting heights of approx. 70mm, 75mm, 90mm, 115mm and 145mm.

Before commencing operations make sure that the depth wheels are positioned at the same height with the Flail Mulcher resting on the ground. That the front of the implement is leveled with the back and it is level left to right as well. If not, adjust using the tractors adjustable top link or lower linkage arms.

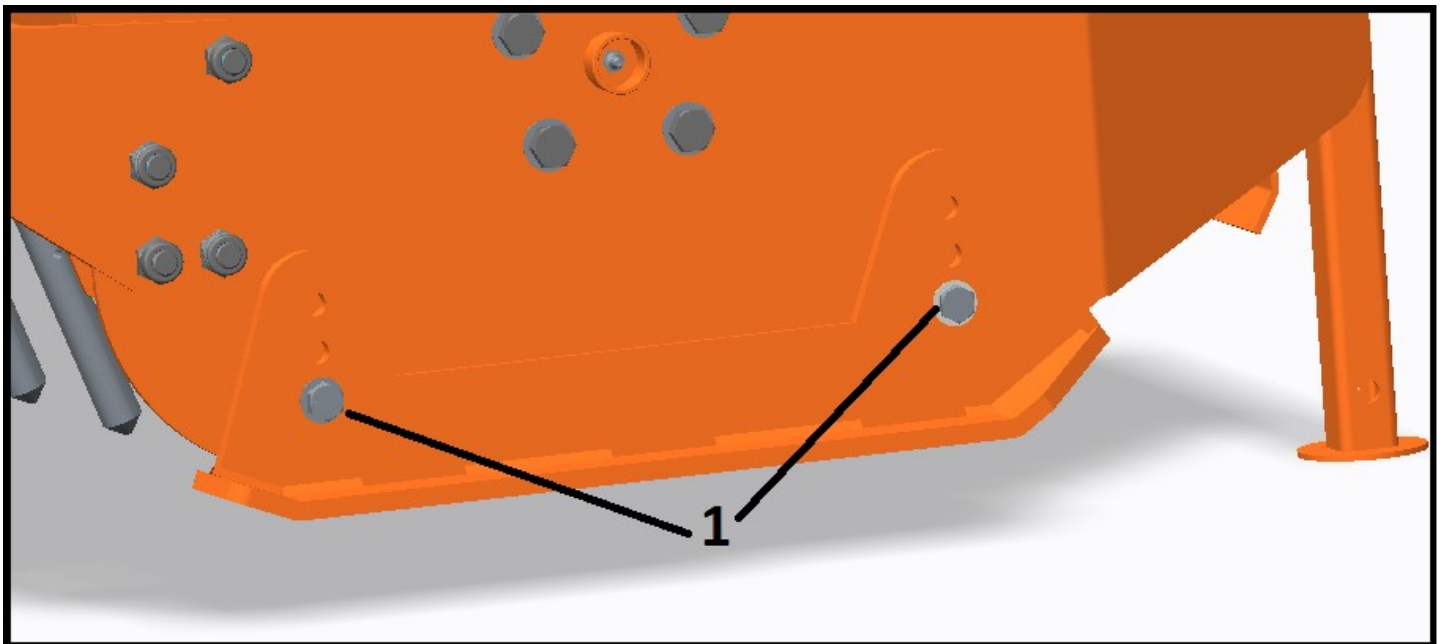
SKID ADJUSTMENT

The position of the skids can be adjusted by:

- Loosening and removing the bolts (1) that clamp the skids to the side plates of the frame,
- Reposition the skids according to the needs, and
- Retightening the bolts (1).

The skids can be placed in 3 different positions. HOWEVER, when there is a roller or depth wheels fitted to your Mulcher the skids are there to act as a secondary height stop protecting the Flail Mulcher from bottoming out and the rotor/side walls coming in direct contact with the ground.

The skids should NEVER be position below that of the roller or depths wheels. If they are, the roller or depth wheels will not be functioning as they are design as a result of the skids acting as the primary height setting device lifting the Mulcher off the ground.

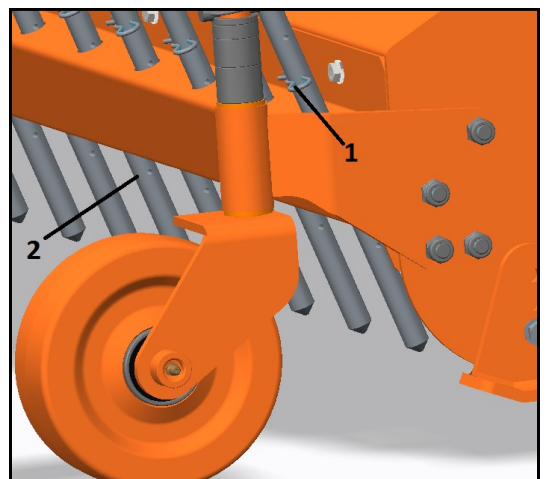


RAKE ADJUSTMENT

The function of the rear rakes is to hold cut material inside the Mulcher to obtain a fine finish. It is therefore recommend to set the rake height immediately after the cutting height.

To set the rake height, follow the following procedure:

- remove the upper and lower cotter pins (1) from one of the rakes;
- push the rake downwards in order to retain more material inside the shredding chamber and obtain a more fine crushing. Vice-versa, pull the rake upwards to retain less material inside the shredding chamber and to obtain a more coarse crushing;
- insert the split pins (1) on the holes of the rake closest to rear bar;
- repeat the procedures adjusting all other rakes to the same height of the first one.

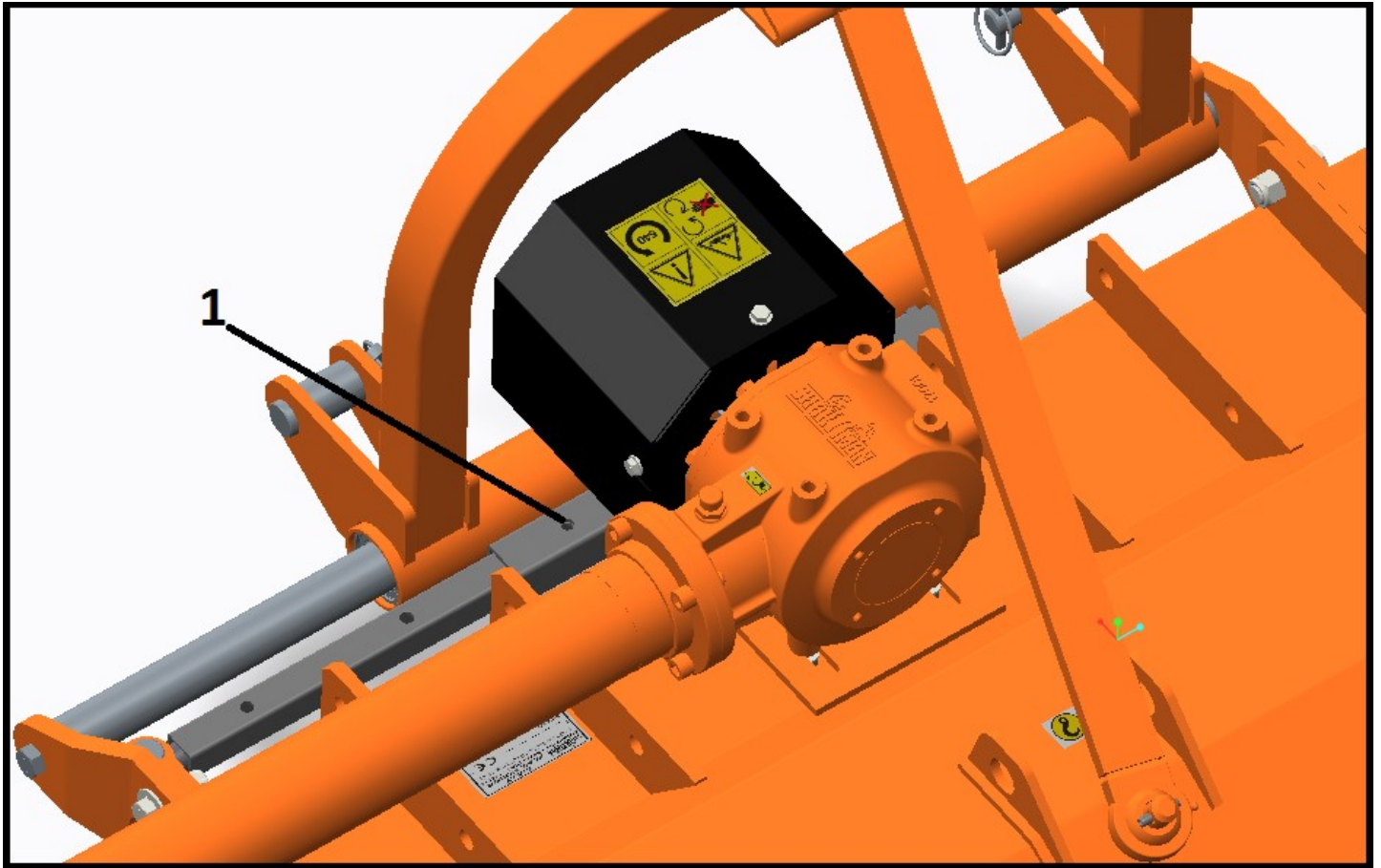


SIDE SHIFTING ADJUSTMENT

The Flail Mulchers can be purchased with either mechanical or hydraulically shifting tower.

In case of a mechanical shifting tower, the tower is bolted to the body. Adjust the position of the tower for a mechanical tower as follows:

- Raise implement slightly off the ground, turn off the tractor engine, disengage the PTO, set the parking brake and remove the key from the ignition;
- Unscrew and remove the bolt (1);
- Manually move the body of the Flail Mulcher by pushing it from one side, until the desired offset is reached and the holes are in alignment in the mechanical jack;
- Reinsert the bolt removed earlier and tighten.



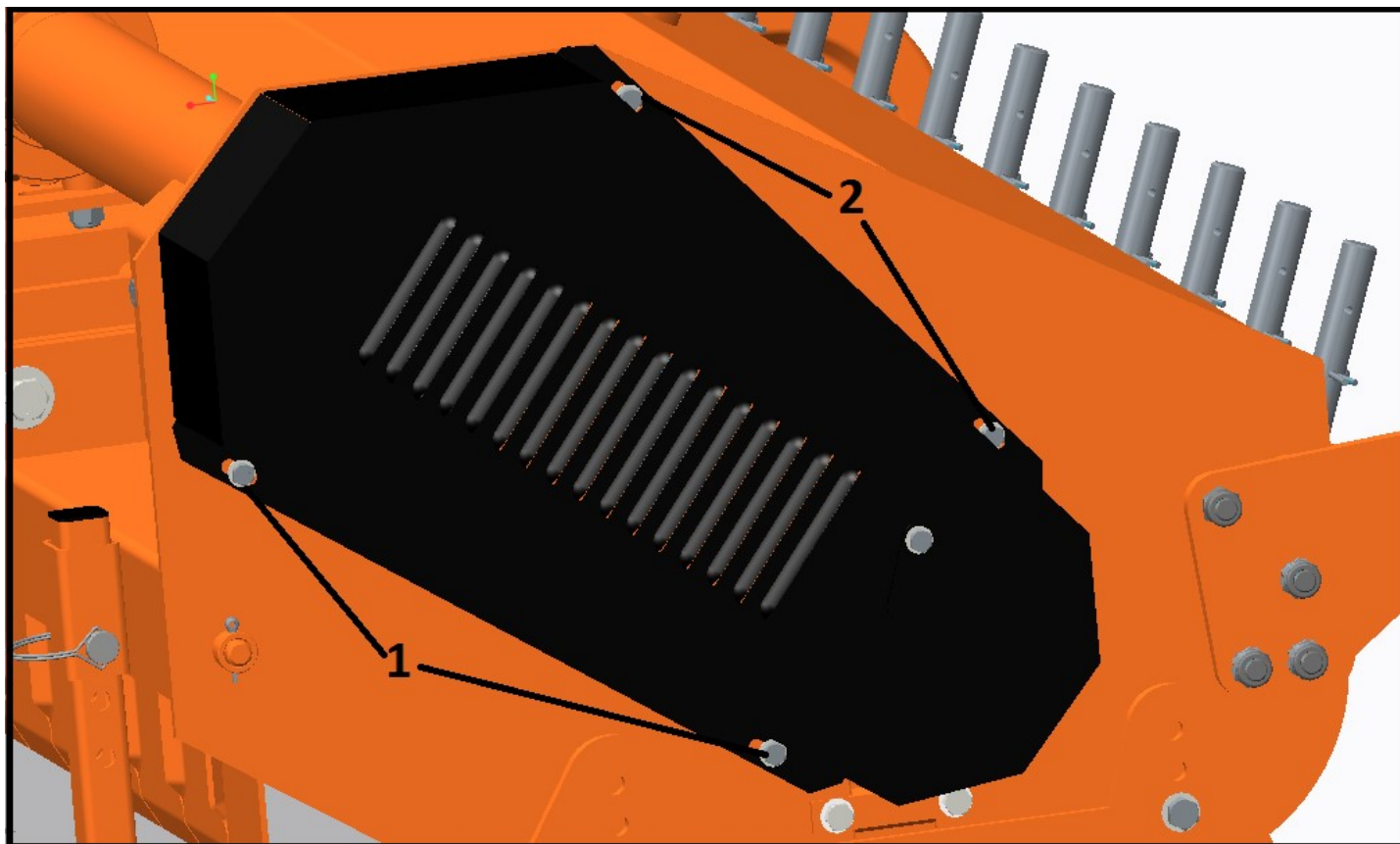
In cases where the offset feature is controlled by a hydraulic cylinder, the adjustment is controlled from the tractor using the tractors hydraulics to activate the hydraulic cylinder attached to the Mulcher.

NT – The hydraulic hoses must be fitted correctly to a tractor with working hydraulics to adjust the offset.

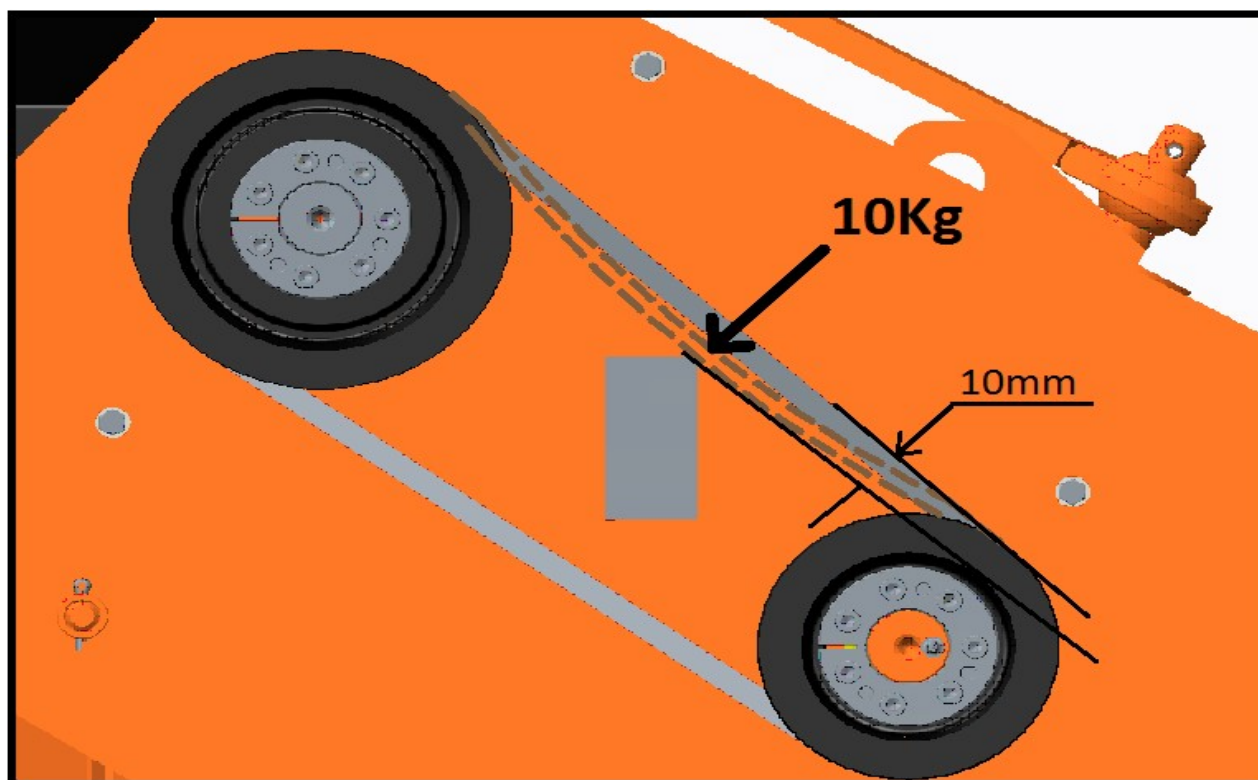
For more information on how to control the hydraulics of your tractor, please refer to the tractor manual.

BELT TENSIONING ADJUSTMENT

To check the correct belt tensioning of the side transmission, remove the safety cover of the belts by loosening the four (4) bolts (1) that secure it to the side wall of the Mulcher (see picture):



Apply a force of about **10-15 kg** half way between the two (2) pulleys and record the movement of the belts (see picture):



If the deflection is about 10 mm, the tension is correct.

If is more than 10mm then you will need to proceed with an adjustment as follows (see pictures below):

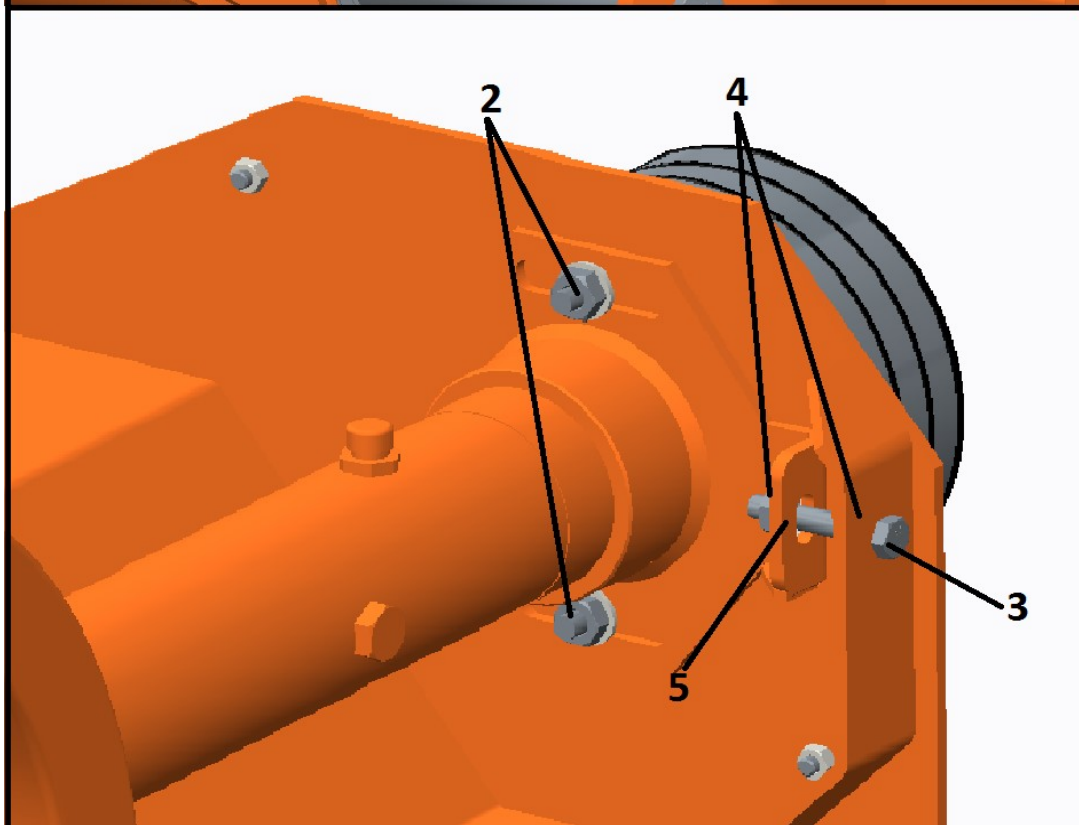
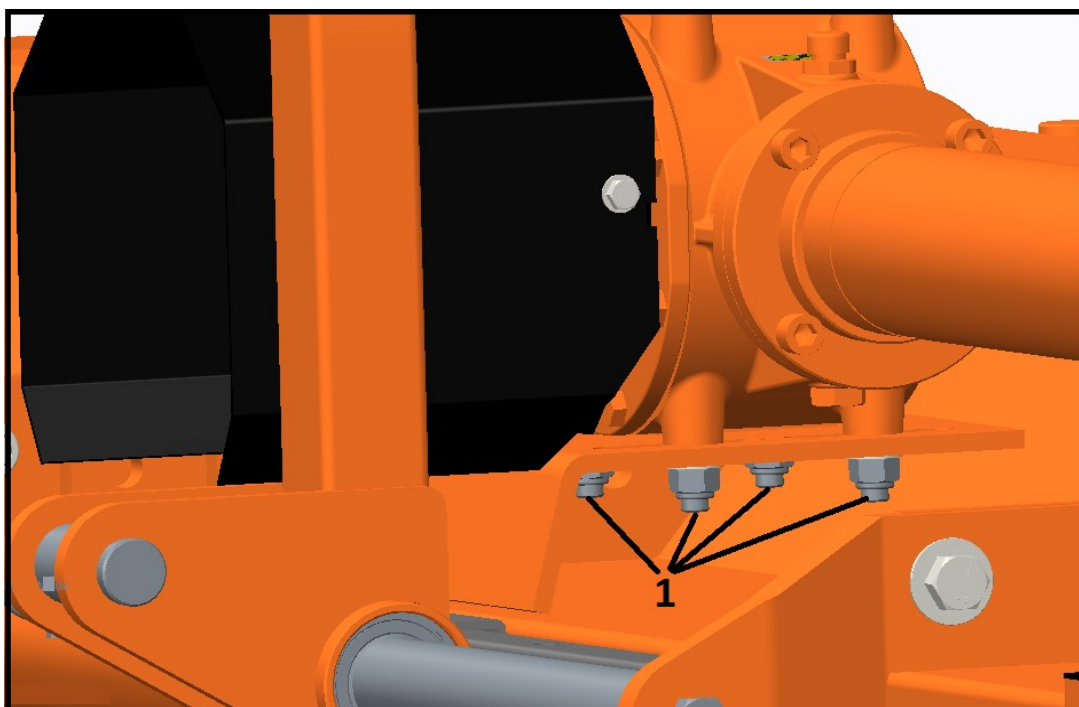
- loosen the four nuts (1) under the gearbox that secure it to the body;
- loosen the two bolts (2) fixing the extension tube to the side plate of the body;
- while holding the screw (3), loosen the lock nuts (4);
- Adjust the tension on the plate (5).

If the tension was too low (belts had more than 10mm of movement) tighten the screw (3).

If the tension was too tight (belts has less than 10mm of movement) loosen the screw (3).

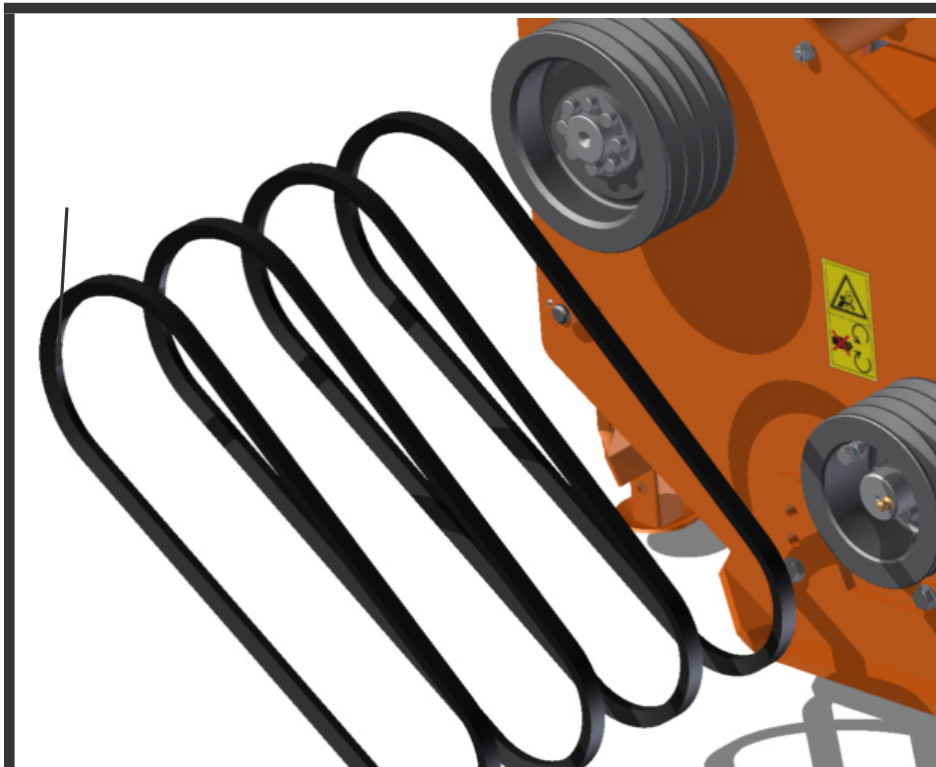
Once the correct belt tension has been achieved tighten the lock nuts (4).

- retighten the two bolts (2) fixing the extension tube to the side plate of the frame;
- adjust the gearbox so that the extension tube is perpendicular to the side plate of the Mulcher;
- retighten the four nuts (1) under the gearbox;
- reattached the belt cover as original fitted.



If the belts are worn or damaged and need to be replaced:

- remove the safety cover of the belts by loosening the four bolts that secure it to the frame;
- loosen the four nuts (1) under the gearbox which lock it to the frame;
- loosen the two bolts (2) fixing the extension tube to the side plate of the frame;
- loosen the lock nuts (4) and the tension nut (5) until the belts can be unseat from the grooves in the pulley. Always starting with the external belt (position (a));
- reinsert the new belts in reverse order to the way the old belts were removed;
- adjust the belt tension according to the instructions above;
- retighten the two bolts (2) fixing the extension tube to the side plate of the frame;
- adjust the gearbox so that the extension tube is perpendicular to the side plate of the Mulcher;
- retighten the four nuts (1) under the gearbox;
- reattached the belt cover as original fitted.



5.4. STOPPING AND DISCONNECTION

To stop the Flail Mulcher at the end of a working session:

- bring the tractor to a complete stop;
- place the transmission in park or neutral;
- reduce the engine speed then disengage the PTO;
- wait for stopping of all rotating parts;
- lower the implement to the ground;
- set the parking brake;
- shut down the engine and remove the key before exiting the tractor;
- do the cleaning and maintenance required to make the implement ready for later use (see section maintenance).



WARNING

Never leave the tractor unattended with the implement raised.

To disconnect the Flail Mulcher from the tractor (e.g. to make a change of implement):

- Park the tractor on a dry and level surface;
- Reduce the engine speed, then disengage PTO;
- Wait for stopping of all rotating parts;
- Adjust the support stand to the lowest position use the pin and clip;
- Lower the implement to the ground;
- Set the parking brake;
- Shut down the engine and remove the key before exiting the tractor;
- Disconnect the PTO Shaft from the tractor PTO and rest it on the provided support of the Flail Mulcher;
- Disconnect the top link and rear lifting arms of the tractor from the Flail Mulcher hitches;
- Check the Flail Mulcher stability. If needed, place additional safety blocks;
- Get on the tractor, start the engine and move away from the Flail Mulcher slowly;
- Make sure the Flail Mulcher remains stored in a protected area, to prevent that unauthorized personnel can approach it.

Before a long term storage (e.g. at seasonal end), do cleaning and maintenance operations as specified in the MAINTENANCE and STORAGE sections of this manual.

5.5. TRANSPORTING

To set the Flail Mulcher for transportation, perform the following steps:

- reduce tractor engine to idle, disengage, or make sure tractor PTO is disengaged and wait for moving parts to come to a complete stop;
- lift the Flail Mulcher until it is high enough to transport making sure the tubes of PTO Shaft do not contact the body of the Flail Mulcher and the Flail Mulcher cannot touch the tractor.

NT – The minimum gap should be 2 cm (see also section PTO Shaft installation);

- lock the tractors lower linkage arms so that the implement cannot lower during transport.

When driving on public roads, follow strictly all local laws and traffic regulations.



WARNING

When driving on public roads, reduce your speed, be aware of traffic around you and proceed in such a way that complies with local laws ensuring faster moving vehicles may pass you safely.

If commencing work, setup Mulcher as per the instruction in section 5.1. START-UP.

At the end of the day shut down and store Mulcher as per instructions as per MAINTENANCE and STORAGE sections of this manual

6. MAINTENANCE

Proper and regular maintenance ensures longevity and avoids failures which can be time consuming and costly.

Periodic inspections and maintenance described in this section must be performed by the operator at all times as per the terms prescribed.

Failure to comply with maintenance prescriptions can compromise the functioning and duration of the implement, and consequently void the warranty.

The frequency of maintenance refers to average conditions and use. Service interval frequency must be increased based on use and operating conditions (frequent stops and starts, prolonged winter season etc.).

Repairs, maintenance and modifications other than those mentioned in this paragraph should NOT be performed without consulting the Manufacturer or your Dealer.

The manufacturer may, on a case by case basis, authorize repairs with strict instructions.

Wrong or inappropriate repairs or maintenance may result in equipment damage and increase the risks to the operator.



WARNING

For safety reasons, all maintenance operations must be performed with tractor PTO disengaged, Flail Mulcher stopped and completely lowered to the ground or onto rated support blocks, parking brake set, tractor engine shut off, and ignition key removed.

IMPORTANT

Respect the environment. Store or dispose of unused chemicals and fluids as specified by the manufacturer.

6.1. BLADE REPLACEMENT

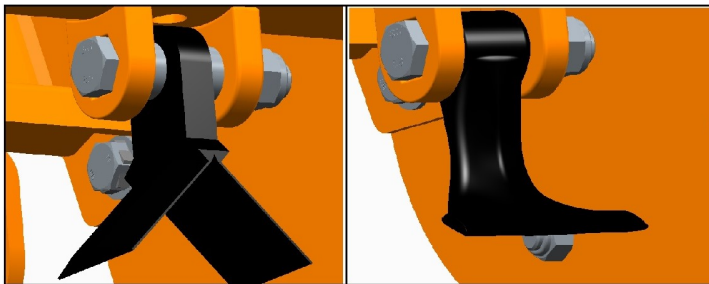
Frequently check the condition and wear of the blade/hammer on the rotor through visual inspection. The wear will vary depending on the type of material being cut, abrasiveness of the soil, moisture, etc. Operators should notice an increase of power absorption during operations when the blades or hammers are worn. The quality of the material being cut will reduce as the blades/hammers wear.

Before changing blades/hammers:

- Reduce tractor engine to idle, set the parking brake, disengage tractor PTO, and wait for all moving parts to come to a complete stop;
- place the implement slightly lifted from the ground on rated safety blocks or mechanical stands;
- lock the control lever of the hydraulic lift of the tractor;
- turn off the tractor and remove the key from ignition.

To replace blades/hammers:

- remove the bolt that locks the two (2) blades (will look like a 'Y') or the hammer in the holders on the rotor.
NT - For the Y blades, two bushing are placed on the bolt to fill the gap between the blades and the holders of the rotor;
- place the new blade(s) or hammer in the place of the worn parts, refit bolt and tighten. Make sure any washers are replaced and tension is as per the torque values shown in "Torque Table" in this manual.
NT – If fitting hammers be sure to install the cutting edge facing the direction of rotation.
- repeat this process for all the blade/hammer.



IMPORTANT

Remove and install one blade/hammer at a time to ensure blades/hammers are correctly oriented when installed.

Replace worn blades only with original parts.



WARNING

When the blades/hammers are worn out it is necessary to replace the full set of blade/hammer. Replacing only some of the blade/hammer is certainly cause of the rotor unbalance, implement vibrations and can compromise the reliability of the Flail Mulcher and generates risks to the operator.



CAUTION

Worn blades and hammers may be very sharp!

6.2. GEARBOX LUBRICATION

Lubrificant: AGIP ROTRA MP SAE 85W/140 oil gear or equivalent

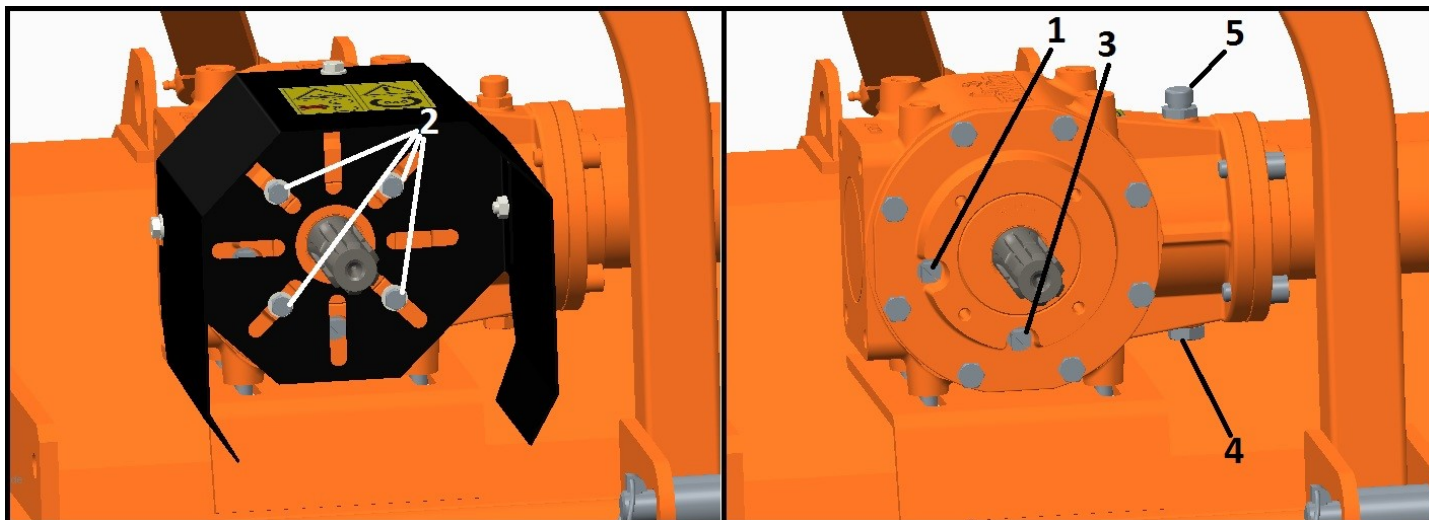


CAUTION

Before touching the gearbox, check that it is cool. Gearboxes can become very hot during operation.

Check the oil level every 50 hours, making sure the level is aligned with the level plug (1).

To perform the check, it is necessary to remove the screws (2) holding the Input Shaft Cover on the gearbox, which prevents access to the plug.



If the oil level is below the line of the level plug, it will require a top up to restore the correct level.

The oil change must be performed:

- after the first 50 working hours;
- each 500 working hours.

To make the oil change:

- unscrew the level plug (1);
- place a tank under the oil drain plugs (3) and (4);
- unscrew the oil drain plugs (3) and (4) and drain oil completely into the tank;
- retighten the drain plug (4);
- unscrew the oil filling plug (5) on the top of gearbox;
- fill up with oil till the level reach the hole of the level plug (1);
- retighten level plug (1) and the filling plug (5);
- replace the safety cover retightening the screws (2);
- dispose the discharged oil into containers for used oil.

IMPORTANT

Frequently check possible oil leaks from the Flail Mulcher through visual inspection, and in case of leakage provide immediately proper maintenance.

Avoid oil leaks on the ground when restoring oil level or making oil change.

6.3. ROTOR BEARINGS LUBRICATION

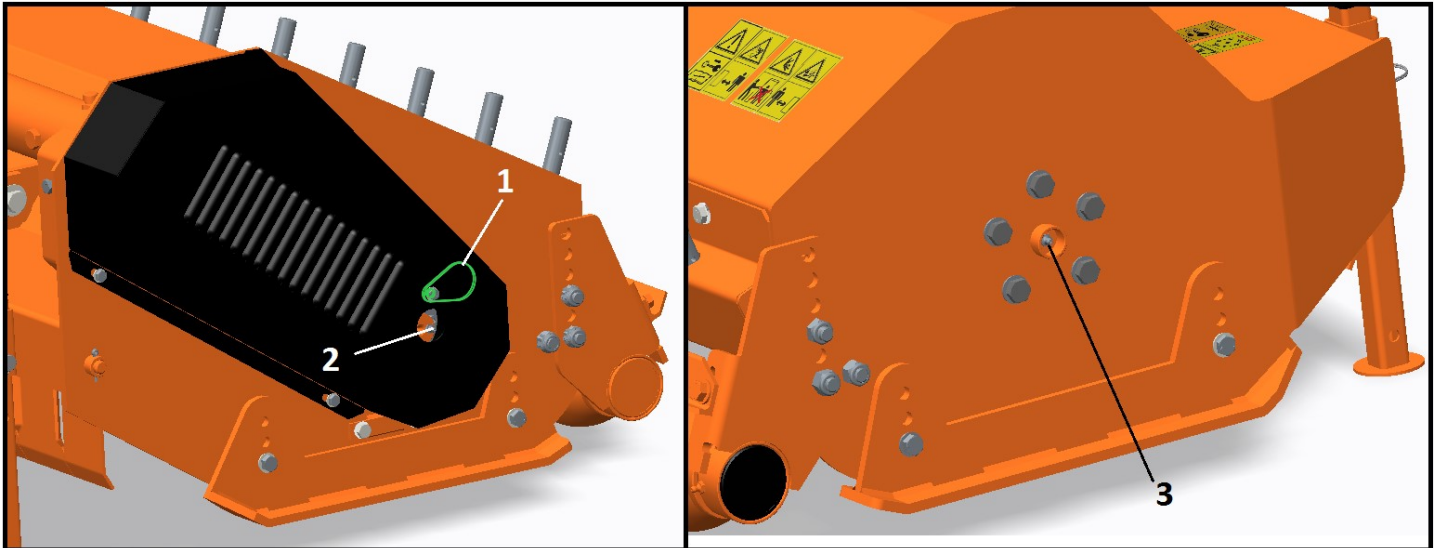
Lubricant: AGIP GREASE MU EP 2 lithium-type grease (or equivalent)
Frequency: each 20 working hours

To perform lubrication (see pictures):

- turn the cover (1) and inject grease through the nipple (2);
- inject grease through the nipple (3).

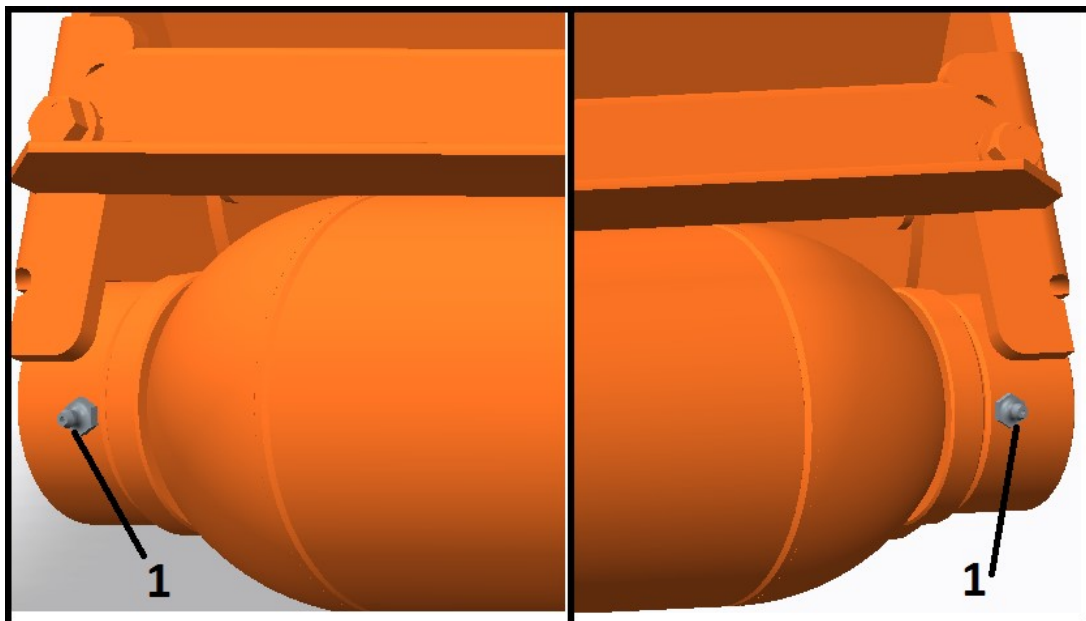
IMPORTANT

Make sure to clean the grease nipple before using the grease gun.
Do not let excess grease collect on or around parts, particularly when operating in sandy areas.



6.4. ROLLER BEARINGS LUBRICATION

Lubricant: AGIP GREASE MU EP 2 lithium-type grease (or equivalent)
Frequency: each 20 working hours



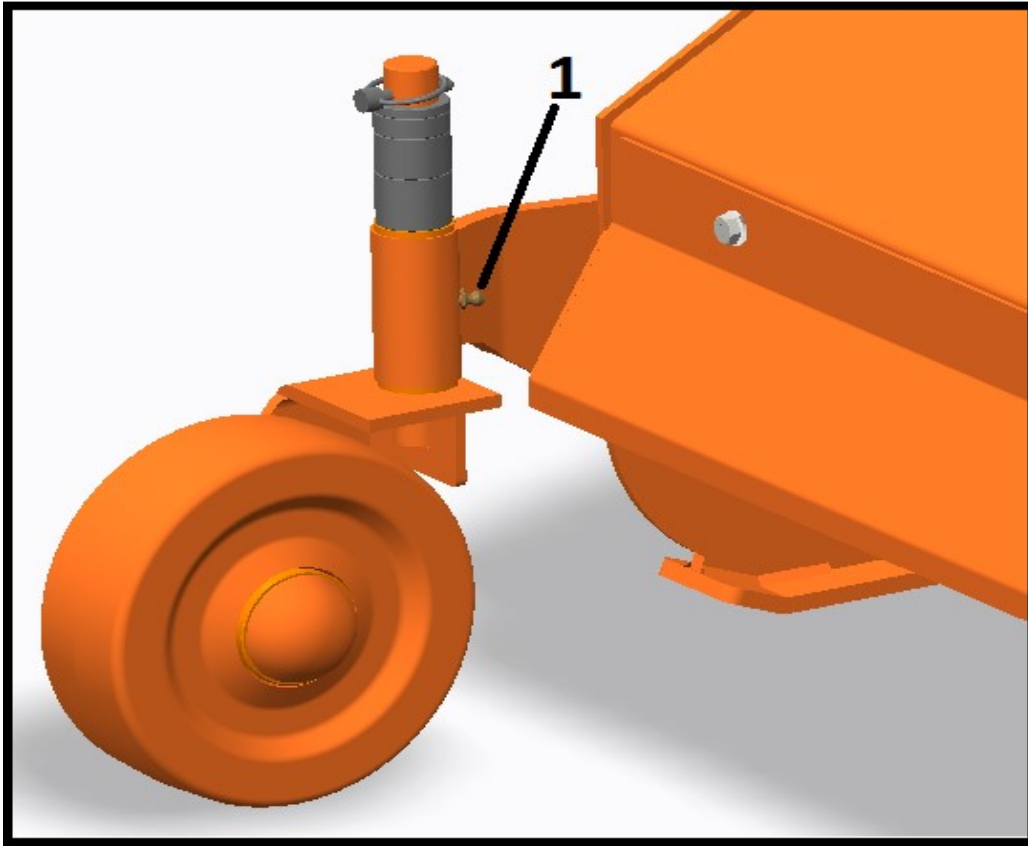
To perform lubrication, inject grease into the nipples (1) and (2), located on the upper part of the roller bearing supports (see pictures).

6.5. WHEELS BRACKETS LUBRICATION

Lubricant: AGIP GREASE MU EP 2 lithium-type grease (or equivalent)

Frequency: each 20 working hours

To perform lubrication, inject grease into the nipple (1), located on the inner part of the wheel bracket (see picture).



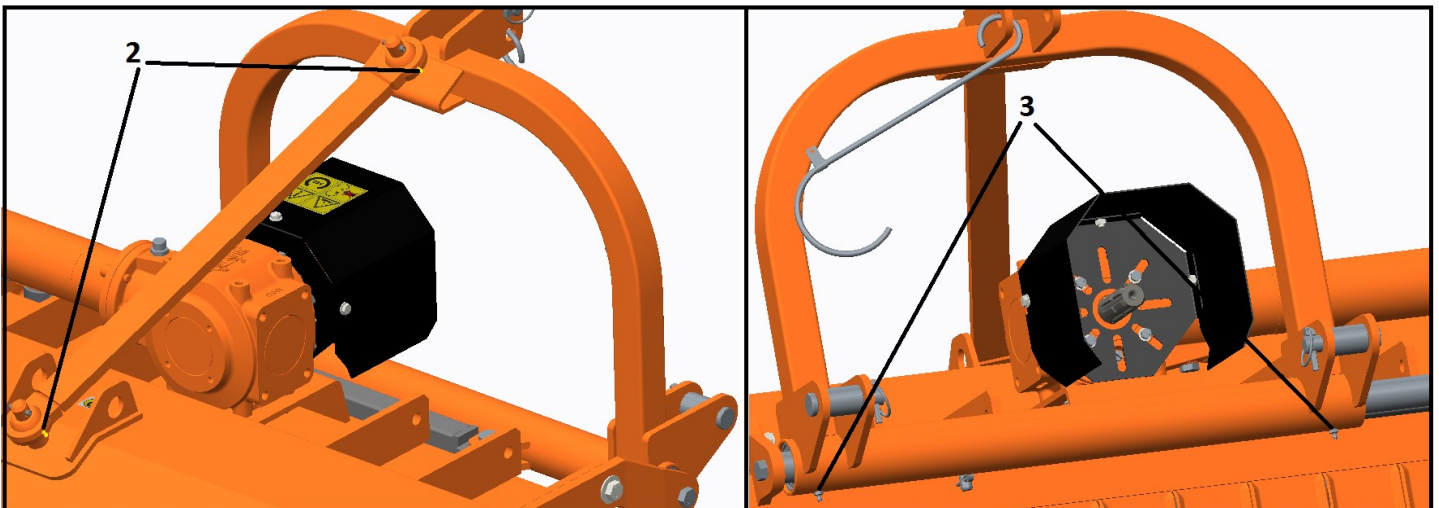
6.6. 3-POINT HITCH LUBRICATION

Lubricant: AGIP GREASE MU EP 2 lithium-type grease (or equivalent)

Frequency: each 20 working hours

To perform lubrication of the shifting parts of the 3-point hitch (see pictures):

- inject grease into the nipples (2), located on the lower part of the shifting tube of the hitch;
- inject grease into the nipples (3), located on the rod-tie of the hitch.



6.7. DRIVE BELTS REPLACEMENT

Frequently check the wear of the belts, and if one or more of these appears worn replace the full set. To replace the drive belts, refer to the section "Belts tensioning adjustment".

6.8. PTO SHAFT MAINTENANCE

Lubricant: AGIP GREASE MU EP 2 lithium-type grease (or equivalent)
Frequency: each 20 working hours

Grease crosses, sliding parts of protective shielding and PTO Shaft transmission tubes.

IMPORTANT

For details about maintenance and lubrication of the PTO Shaft, refer to the user manual of the PTO Shaft manufacturer.

NOTE

For the PTO Shaft service parts, refer to the user manual of the PTO Shaft Manufacturer.

7. STORAGE

Before leaving the Mulcher unused for long periods of time, it's necessary to perform following tasks to preserve the appearance and functionality of the implement, and to make easier the restart at later use:

- park the Flail Mulcher on a flat surface, in a place dry and protected from exposition to the elements, Optimum storage temperature is between 0-50°C (see section Stopping and disconnection);
- thoroughly clean the implement, removing any material from the rotor which will help prevent rust;
- inspect carefully the implement, checking for worn and/or damaged parts. Perform repairs immediately
- in case of damage to painted surfaces, restoring the surface with touchup paint to prevent rust;
- make sure the safety decals are in their original positions, intact and legible. Replace if damaged;
- lubricate all grease points and restore the oil levels as indicated in the Maintenance section.
In extreme environments, use oil as a protective coat to the exposed mechanical components to protect them against rust.

8. SCRAPPING

In a situation where the implement is beyond repair and going to be scrapped, the implement must be disposed in appropriate and authorized sites, according to local legislation.

Before scrapping, separate plastic parts from rubber parts, aluminum, steel, etc.

Recover and dispose any exhausted oils to authorized centers for oil collecting.

9. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Oil leaking from gearbox/transmission case	• Gearbox overfilled • Loose filling/drain/level plug • Damaged breather plug • Damaged seals	• Drain to proper level • Replace breather plug • Tighten filling/drain/level plug • Replace seals
Cut not uniform	• Worn blades/hammers • Roller/wheels set in wrong way • Debris wrapped on rotor	• Replace blades/hammers • Set the roller/wheels correctly • Reduce the ground speed • Clean the shredding room
Gearbox overheating	• Low oil level • Materiale di diffi cile	• Add oil • Reduce the ground speed
Blades/hammers wear frequently	• Hard trash • Cutting height too low	• Check the soil in advance • Increase the cutting height
Flail Mulcher noise and vibration noticeable and Constant	• Unbalanced roller • Worn bearings • Blades/hammers worn, damaged or missing	• Balance the roller in authorized shop • Replace bearings • Replace blades/hammers

10. TORQUE VALUES TABLE

Check frequently Flail Mulcher hardware to make sure that screws and bolts are tightened according to torque values listed in following table:

	8.8 GRADE	10.9 GRADE
BOLT SIZE (METRIC)	N	N
M	1	1
M	2	3
M	5	7
M	9	1
M	1	2
M	2	3
M	3	4
M	4	6

11. SPARE PARTS

All replacement of parts must be original spare parts obtained from the Manufacturer or your Dealer. This section contains the information needed to identify the parts of FLAIL MULCHER that may be ordered to Manufacturer.

When request spare parts to Manufacturer, always give following indications:

- Type of Implement
- Serial number
- Description and part number of the part required
- Quantity required

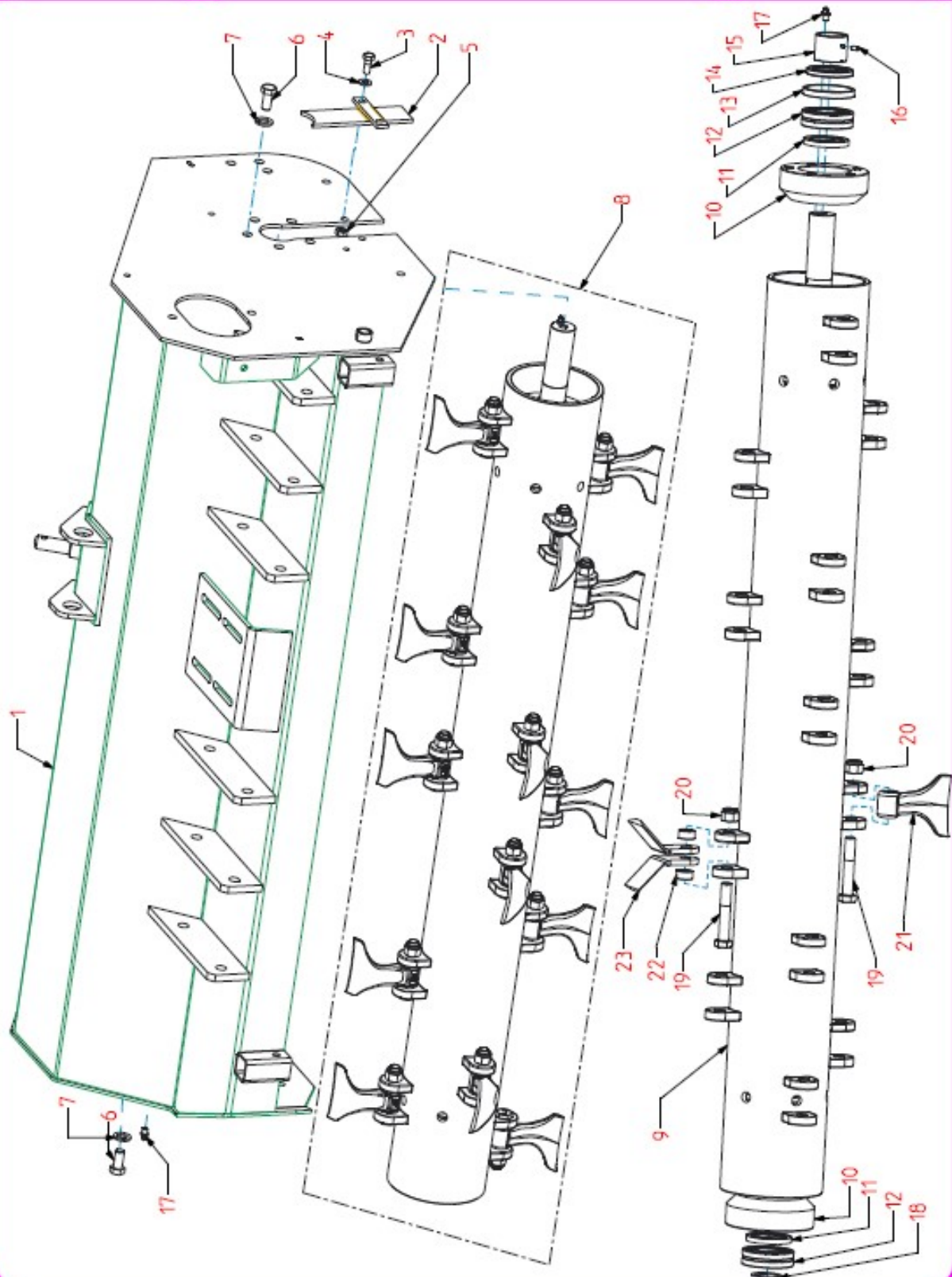
NOTE

For identification of p/numbers and description of safety decals refer to the Section Safety decals. For identification of p/numbers and description of PTO Shaft parts, refer to the manual of the PTO Shaft Manufacturer.

The Manufacturer reserves the right to substitute a required part with an equivalent part, if applicable.

		MAIN FRAME & ROTOR ASSEMBLY PARTS	CHAPTER 1
Sr No.	PART CODE	Part Description	Qty.
1	17137	FRAME WELDMENT, FLAIL MOWER 145 (SFM)	1
	17138	FRAME WELDMENT, FLAIL MOWER 160 (SFM)	1
	17139	FRAME WELDMENT, FLAIL MOWER 175 (SFM)	1
	17140	FRAME WELDMENT, FLAIL MOWER 205 (SFM)	1
	17141	FRAME WELDMENT, FLAIL MOWER 220 (SFM)	1
2	17142	CLOSING PLATE, WELDMENT (SFM)	1
3	10180	HEX BOLT M10 X 1.50 X 25	2
4	8078	PLAIN WASHER 10mm	2
5	1299	M10X1.5 HEX NUT	2
6	17143	HEX BOLT M14 X 2 X 30	10
7	1272	PLAIN WASHER 14mm	10
8	17247	ROTOR ASSEMBLY 1.45M (Y-BLADE) (SFM)	1
	17248	ROTOR ASSEMBLY 1.60M (Y-BLADE) (SFM)	1
	17249	ROTOR ASSEMBLY 1.75M (Y-BLADE) (SFM)	1
	17250	ROTOR ASSEMBLY 2.05M (Y-BLADE) (SFM)	1
	17251	ROTOR ASSEMBLY 2.20M (Y-BLADE) (SFM)	1
	17252	ROTOR ASSEMBLY 1.45M (HAMMER BLADE)(SFM)	1
	17253	ROTOR ASSEMBLY 1.60M (HAMMER BLADE)(SFM)	1
	17254	ROTOR ASSEMBLY 1.75M (HAMMER BLADE)(SFM)	1
	17255	ROTOR ASSEMBLY 2.05M (HAMMER BLADE)(SFM)	1
9	17256	ROTOR ASSEMBLY 2.20M (HAMMER BLADE)(SFM)	1
	17144	ROTOR WELDMENT, 145 (SFM)	1
	17145	ROTOR WELDMENT, 160 (SFM)	1
	17146	ROTOR WELDMENT, 175 (SFM)	1
	17147	ROTOR WELDMENT, 205 (SFM)	1
	17148	ROTOR WELDMENT, 220 (SFM)	1
10	17149	ROTOR HUB, TRANSMISSION SIDE (SFM)	2
11	17150	OIL SEAL 47 X 70 X 8	2
12	17151	BEARING 22208 (SKF)	2
13	17152	RING, ROTARY SEAL	1
14	17153	OIL SEAL 50 X 72 X 8	1
15	17154	SPACER, DRIVEN PULLEY (SFM)	1
16	12090	GRUB SCREW M6 X 1 X 10	1
17	1253	1/8 BSP GREASE NIPPLE 7.5MM	2
18	8027	EXTERNAL CIRCLIP 40MM	1
19	11073	HEX BOLT M16 X 2 X 90	18/20/22/26/28
20	1231	M16X2 NYLOCK NUT	18/20/22/26/28
21	17232	HAMMER BLADE (95 X 40) (SFM)	18/20/22/26/28
22	17229	BLADE SPACER (SFM)	36/40/44/52/56
23	17228	KNIFE (SFM)	36/40/44/52/56

NOTE: PART 17232 Can use in place of Part 17228 & 17229



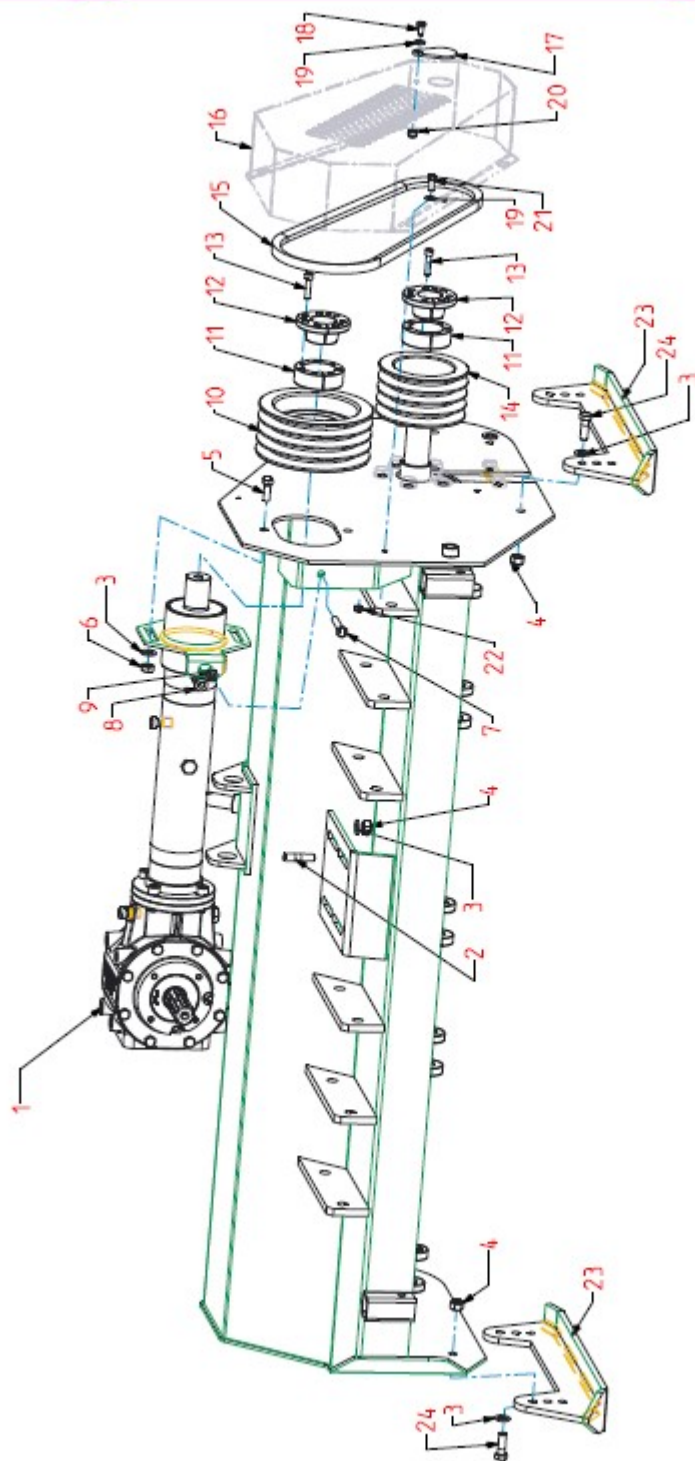
2.

 TRANSMISSION AND SKID PARTS			CHAPTER 2
Sr No.	PART CODE	Part Description	Qty.
1	17155	GEAR BOX ASSEMBLY (445MM) 540 RPM (SFM)	1
	17156	GEAR BOX ASSEMBLY (470MM) 540 RPM (SFM)	1
	17157	GEAR BOX ASSEMBLY (545MM) 540 RPM (SFM)	1
	17158	GEAR BOX ASSEMBLY (695MM) 540 RPM (SFM)	1
	17159	GEAR BOX ASSEMBLY (770MM) 540 RPM (SFM)	1
2	7018	STUD M12 X 1.75 X 50	4
3	8126	PLAIN WASHER 12mm	4
4	1209	M12X1.75 NYLOCK NUT	8
5	10192	HEX BOLT M12 X 1.75 X 30	2
6	1301	M12X1.75 HEX NUT	2
7	17160	HEX BOLT M10 X 1.50 X 60(FT)(8.8)	1
8	8078	PLAIN WASHER 10mm	1
9	1299	M10X1.5 HEX NUT	2
10	17161	SPB TYPE PULLEY-PITCH DIA 180, 4 GROOVES	1
11	17037	CLAMP OUTER (SRM)	2
12	17036	CLAMP INNER (SRM)	2
13	17035	ALLEN BOLT M8 X 1.25 X 35 (FT)(8.8)	14
14	17162	SPB TYPE PULLEY-PITCH DIA 140, 4 GROOVES	1
15	17163	BELT BX 47 TYPE (DATUM LENGTH=1237MM)	4
16	17164	GUARD, BELT TRASMISSION (SFM)	1
17	17165	PLATE, PROTECTION GREASE ZERK (SFM)	1
18	8190	HEX BOLT M8 X 1.25 X 15	1
19	8064	PLAIN WASHER 8mm	5
20	1297	M8X1.25 NYLOCK NUT	1
21	8040	HEX BOLT M8 X 1.25 X 20	4
22	8181	HEX NUT M8 X 1.25	4
23	17166	SKID WELDMENT (SFM)	2
24	10194	HEX BOLT M12 X 1.75 X 35	4

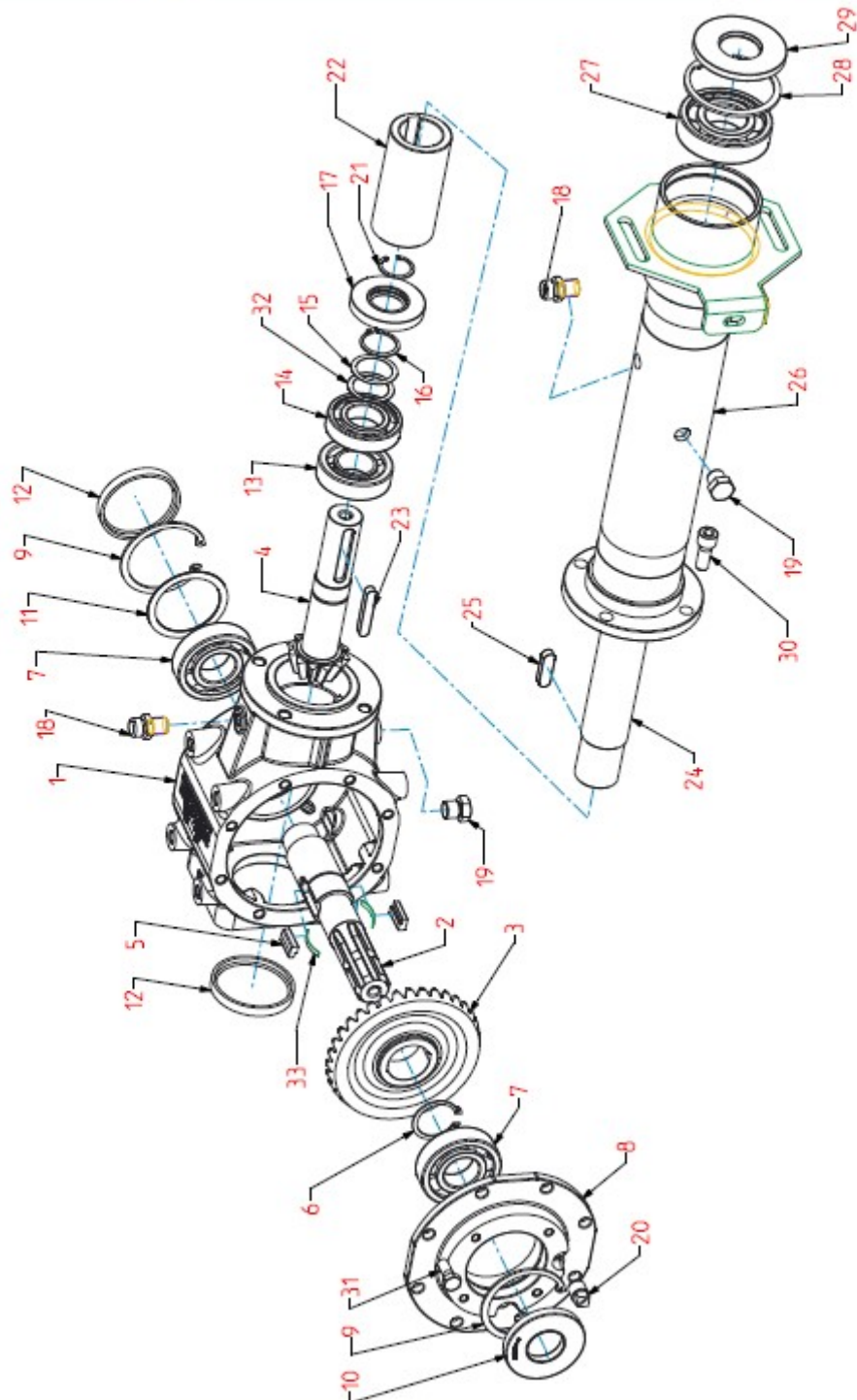


TRANSMISSION & SKID PARTS

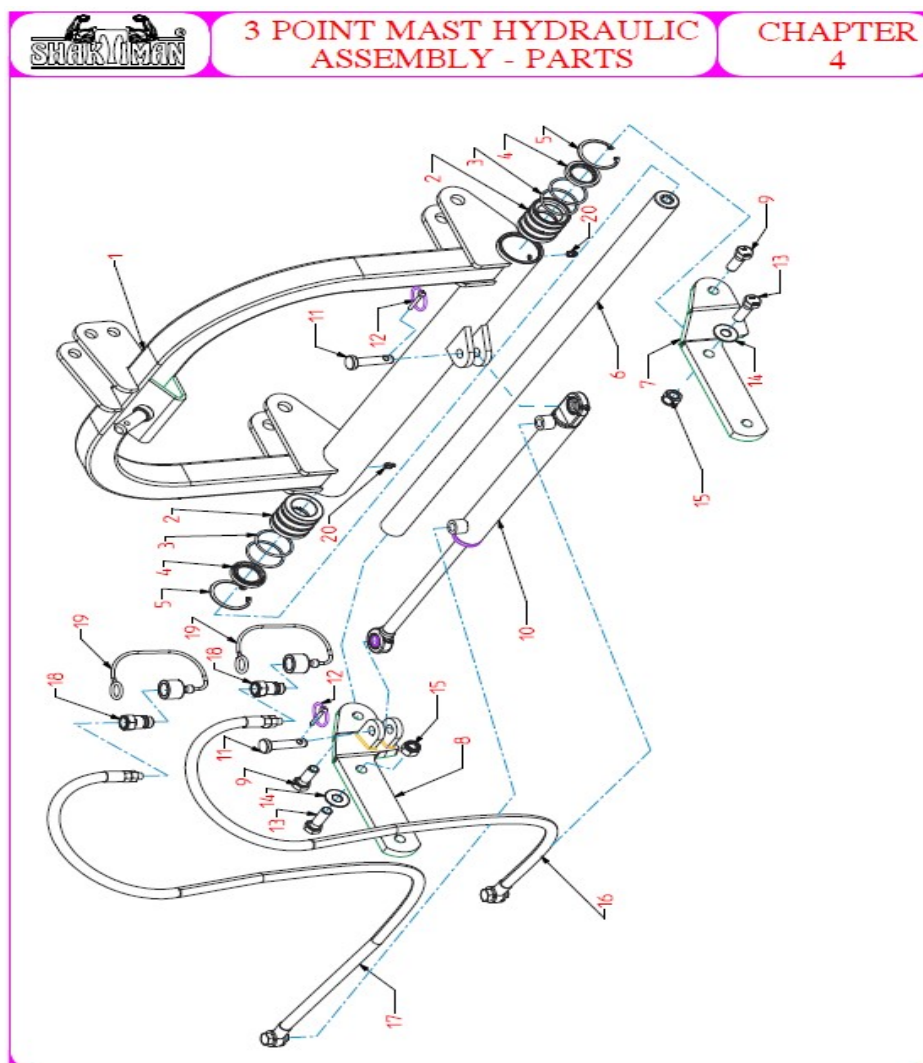
CHAPTER 2



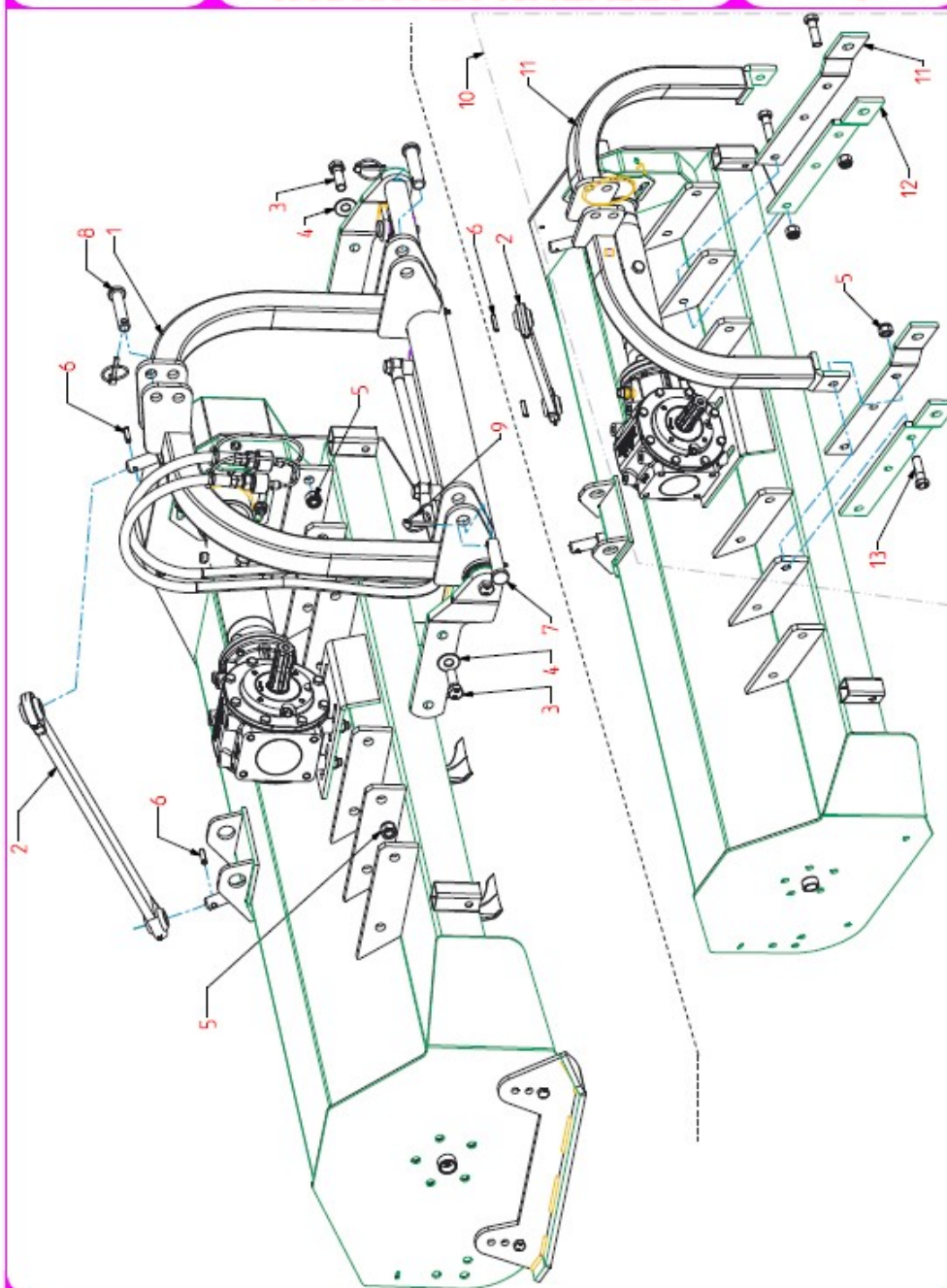
 GEAR BOX PARTS			CHAPTER 3
Sr No.	PART CODE	Part Description	Qty.
1	17001	GEAR BOX 540 RPM (SRM) 50HP	1
2	17244	INPUT SHAFT (SRM) 540 RPM	1
3	17231	CROWN 36 TEETH - FREE WHEEL	1
4	17003	PINION SHAFT 12 TEETH (SRM) 50HP	1
5	17230	RATCHET 28MM	2
6	8027	CIRCLIP EXTERNAL 40MM	1
7	1131	BEARING 6307	2
8	17002	GEAR BOX FLANGE 540 RPM (SRM) 50HP	1
9	1130	CIRCLIP INTERNAL 80MM	2
10	2003	OIL SEAL 35 X 80 X 10	1
11	17167	SIMS (DIA 80 X 65)(0.5MM)	6
12	8224	OIL SEAL 80 X 10	2
13	17054	BEARING 32207B	1
14	10143	BEARING 6207	1
15	1424	SIMS (DIA 44.5 X 35.7)(0.50mm)	2
16	6024	CIRCLIP EXTERNAL 35MM	1
17	10229	OIL SEAL 35 x 72 x 8	1
18	17168	AIR BREATHER 3/8" BSP	2
19	10179	3/8" BSPT PLUG WITH SQ. HEAD	2
20	17169	3/8 BSPT DRAIN PLUG SLOTED	2
21	17083	CIRCLIP INTERNAL 32MM	1
22	17025	SHAFT CONNECTOR (SRM)	1
23	11077	PARALLEL KEY 10 X 8 X 56	1
24	17170	JACK SHAFT 445MM (SFM)	1
	17171	JACK SHAFT 470MM (SFM)	1
	17172	JACK SHAFT 545MM (SFM)	1
	17173	JACK SHAFT 695MM (SFM)	1
	17174	JACK SHAFT 770MM (SFM)	1
25	11076	PARALLEL KEY 12 X 8 X 40	1
26	17175	JACK SHAFT HOUSING WELDMENT 445MM (SFM)	1
	17176	JACK SHAFT HOUSING WELDMENT 470MM (SFM)	1
	17177	JACK SHAFT HOUSING WELDMENT 545MM (SFM)	1
	17178	JACK SHAFT HOUSING WELDMENT 695MM (SFM)	1
	17179	JACK SHAFT HOUSING WELDMENT 770MM (SFM)	1
27	8036	BEARING 6308	1
28	3027	CIRCLIP INTERNAL 90MM	1
29	17026	OIL SEAL 90 X 40 X 8 (SKF)	1
30	17027	ALLEN BOLT M12 X 1.75 X 30 (FT)(8.8)	4
31	10180	HEX BOLT M10 X 1.50 X 25	8
32	1425	SIMS (DIA 45 X 35)(1.0MM)	1
33	17076	LEAF SPRING (SRM)	2



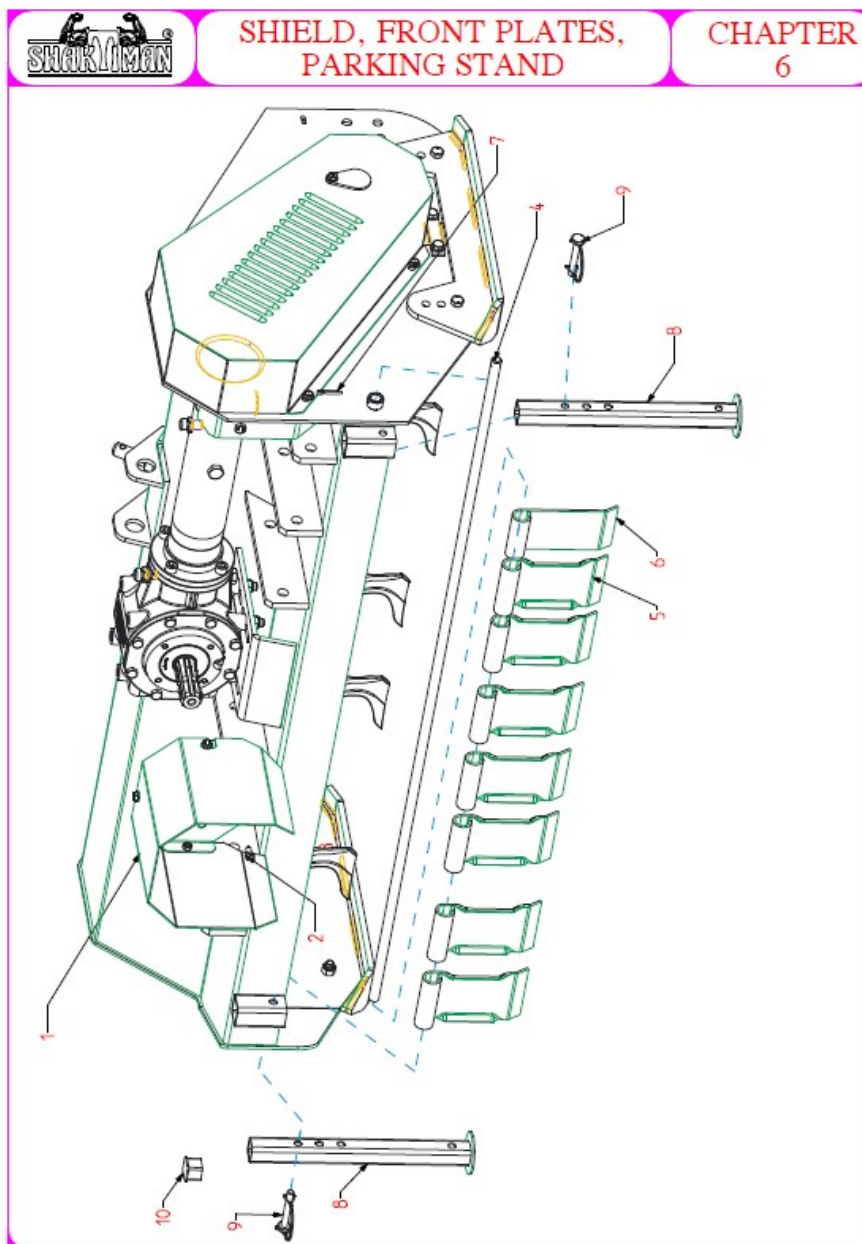
 3 POINT MAST HYDRAULIC - PARTS			CHAPTER 4
Sr No.	PART CODE	Part Description	Qty.
1	17180	MAST WELDMENT, HYDRAULIC (SFM)	1
2	17181	BUSHING (DI=40, DE=60, L=60) (SFM)	2
3	12127	O RING 52 X 3.5	4
4	17182	OIL SEAL 40 X 55 X 7	2
5	8120	CIRCLIP INTERNAL 62mm	2
6	17183	GUIDE BAR (L=1080MM) (SFM)	1
7	17184	BRACKET, LH (SFM)	1
8	17185	BRACKET WELDMENT (SFM)	1
9	11074	HEX BOLT M16 X 1.50 X 45	2
10	17186	HYDRAULIC JACK (STROKE-300)	1
11	17187	PIN, CYLINDER FIXING (SFM)	2
12	8204	LINCH PIN SMALL (CHO)	2
13	7108	HEX BOLT M16 X 2 X 50	4
14	1078	PLAIN WASHER 16MM	4
15	1231	NYLOCK NUT M16 X 2	4
16	17188	HYDRAULIC PIPE COMP - 2000MM	1
17	17189	HYDRAULIC PIPE COMP - 2400MM	1
18	8290	QUICK COUPLING 1/2" MALE	2
19	18269	QRC PLASTIC CAP (1/2 BSP) FEMALE	2
20	19203	1/8 BSP GREASE NIPPLE 4MM	2



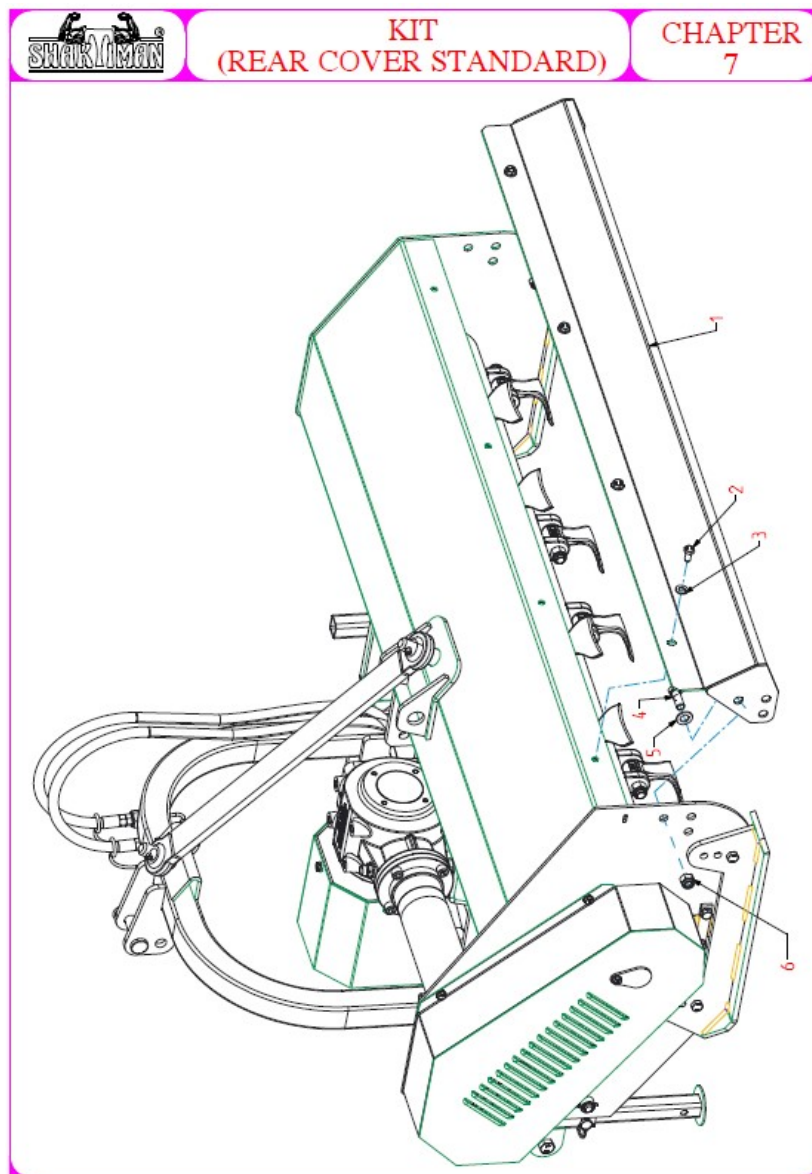
Sr No.	PART CODE	Part Description	Qty.
1	17233	3 POINT MAST HYDRAULIC ASSEMBLY	1
2	17190	TIE-ROD WITH BALL-JOINTS (SFM)	1
3	7108	HEX BOLT M16 X 2 X 50	4
4	1078	PLAIN WASHER 16mm	4
5	1231	M16X2 NYLOCK NUT	4/6
6	17191	DOWEL PIN DIA 8 X 36	2
7	14015	HITCH PIN BOTTOM CAT-I (DIA-22 X 99)	2
8	14037	HINCH PIN TOP CAT-I (DIA- 19 X 98)	1
9	1218	LINCH PIN	3
10	17257	3 POINT MAST ASSEMBLY-FIX TYPE (SFM)	1
11	17234	MAST WELDMENT, FIXED TYPE (SFM)	1
12	17235	BRACKET-LOWER 3RD POINT ATTACHMENT (SFM)	4
13	18446	HEX BOLT M16 X 2 X 55 (8.8)	6



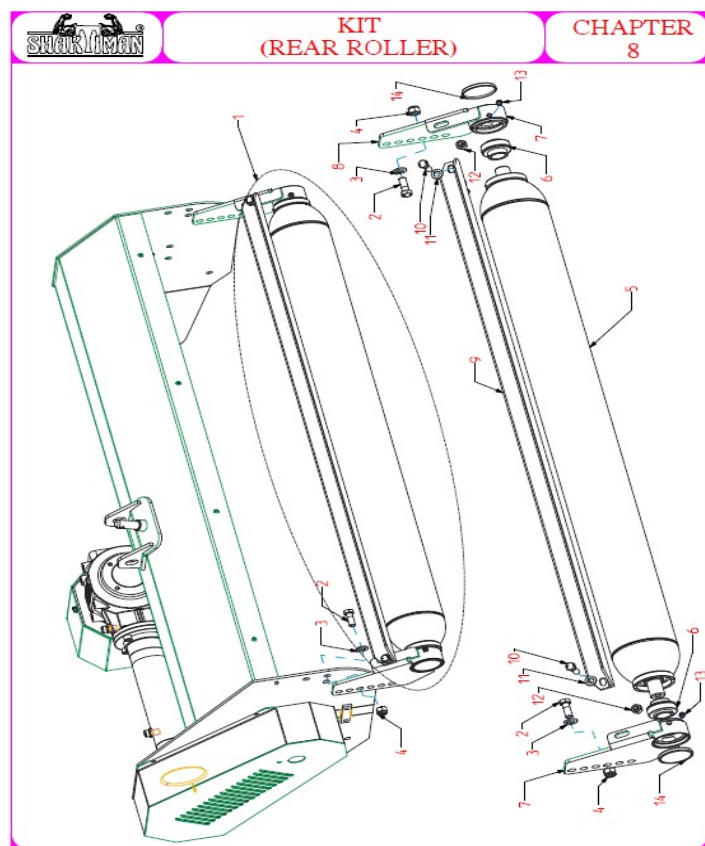
SHIELD, FRONT PLATES, PARKING STAND			CHAPTER 6
Sr No.	PART CODE	Part Description	Qty.
1	1547	SHIELD, IMPLEMENT INPUT CONNECTION	1
2	8190	HEX BOLT M8 X 1.25 X 15	4
3	8064	PLAIN WASHER 8mm	4
4	17192	ROD, FRONT PLATES, 145 (SFM)	1
	17193	ROD, FRONT PLATES, 160 (SFM)	1
	17194	ROD, FRONT PLATES, 175 (SFM)	1
	17195	ROD, FRONT PLATES, 205 (SFM)	1
	17196	ROD, FRONT PLATES, 220 (SFM)	1
5	17197	FRONT PLATE, L=100 (SFM)	13/14/16/19/20
6	17198	FRONT PLATE, L=85 (SFM)	0/1/0/0/1
7	19017	COTTER PIN (DIA 5 X 40)	1
8	14013	M/C STAND PIPE COMP (U-SERIES)	2
9	14267	SQ. SNAPPER PIN D10 X L70	2
10	14266	SQ. PIPE PLASTIC CAP 32MM	2



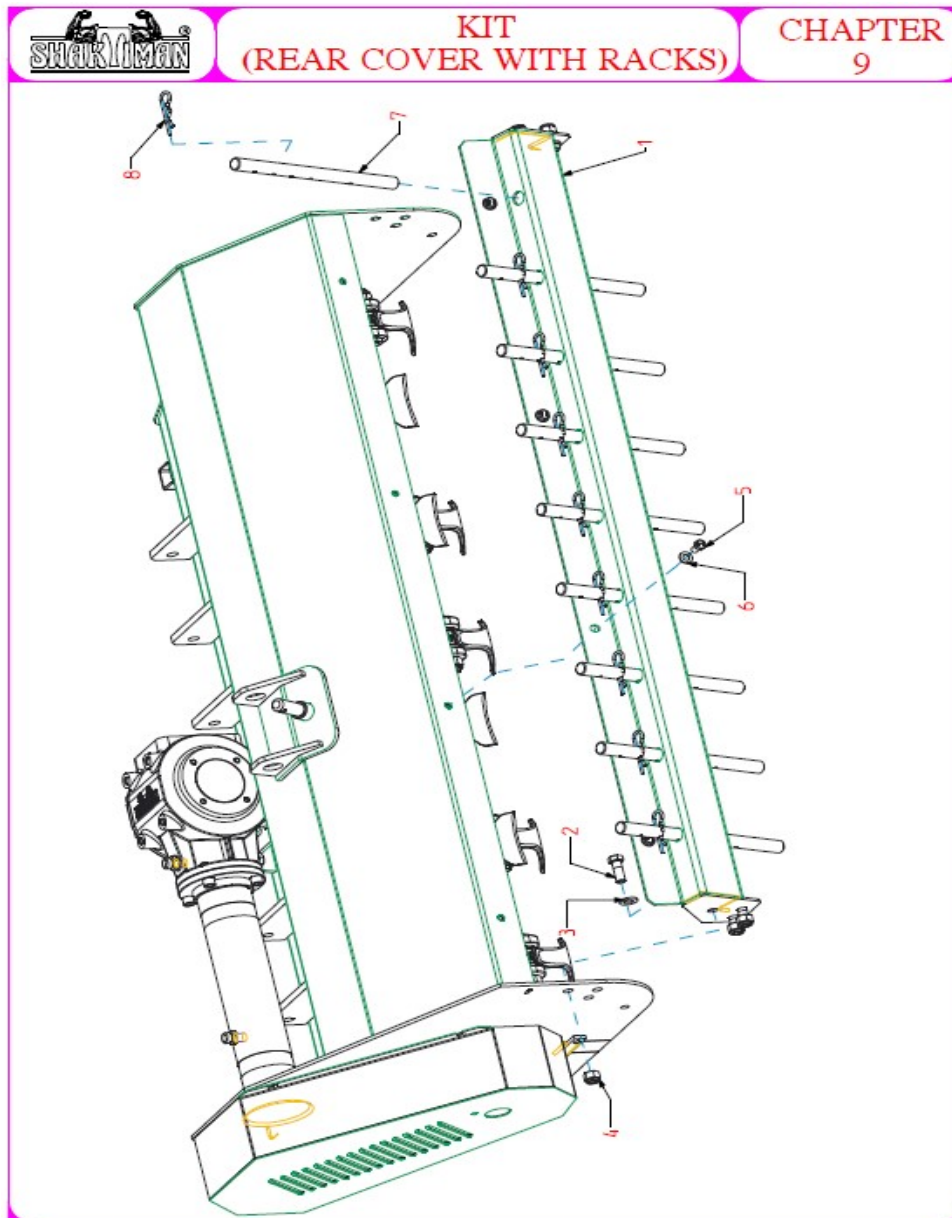
 KIT - REAR COVER STANDARD			CHAPTER 7
Sr No.	PART CODE	Part Description	Qty.
1	17199	STANDARD REAR COVER WELDMENT, 145 (SFM)	1
	17200	STANDARD REAR COVER WELDMENT, 160 (SFM)	1
	17201	STANDARD REAR COVER WELDMENT, 175 (SFM)	1
	17202	STANDARD REAR COVER WELDMENT, 205 (SFM)	1
	17203	STANDARD REAR COVER WELDMENT, 220 (SFM)	1
2	8010	HEX BOLT M10 X 1.50 X 20	4/5
3	8078	PLAIN WASHER 10mm	4/5
4	2202	HEX BOLT M14 X 1.50 X 37	6
5	1272	PLAIN WASHER 14mm	6
6	1302	M14X1.5 NYLOCK NUT	6



Sr No.	PART CODE	Part Description	Qty.
1	17204	REAR ROLLER ASSEMBLY 145 (SFM)	1
	17205	REAR ROLLER ASSEMBLY 160 (SFM)	1
	17206	REAR ROLLER ASSEMBLY 175 (SFM)	1
	17207	REAR ROLLER ASSEMBLY 205 (SFM)	1
	17208	REAR ROLLER ASSEMBLY 220 (SFM)	1
2	2202	HEX BOLT M14 X 1.50 X 37	6
3	1272	PLAIN WASHER 14mm	6
4	1302	M14X1.5 NYLOCK NUT	6
5	17209	REAR ROLLER WELDMENT, 145 (SFM)	1
	17210	REAR ROLLER WELDMENT, 160 (SFM)	1
	17211	REAR ROLLER WELDMENT, 175 (SFM)	1
	17212	REAR ROLLER WELDMENT, 205 (SFM)	1
	17213	REAR ROLLER WELDMENT, 220 (SFM)	1
6	17214	BEARING-UC 206MM	2
7	17215	ROLLER MOUNT WELDMENT, LH (SFM)	1
8	17216	ROLLER MOUNT WELDMENT, RH (SFM)	1
9	17217	SCRAPER, 145 (SFM)	1
	17218	SCRAPER, 160 (SFM)	1
	17219	SCRAPER, 175 (SFM)	1
	17220	SCRAPER, 205 (SFM)	1
	17221	SCRAPER, 220 (SFM)	1
10	10194	HEX BOLT M12 X 1.75 X 35	2
11	8126	PLAIN WASHER 12mm	2
12	1209	M12X1.75 NYLOCK NUT	2
13	1253	1/8 BSP GREASE NIPPLE 7.5MM	2
14	14119	OIL SEAL 72 x 8	2



 KIT - REAR COVER WITH RACKS			CHAPTER 9
Sr No.	PART CODE	Part Description	Qty.
1	17222	RACKS REAR COVER, WELDMENT, 145 (SFM)	1
	17223	RACKS REAR COVER, WELDMENT, 160 (SFM)	1
	17224	RACKS REAR COVER, WELDMENT, 175 (SFM)	1
	17225	RACKS REAR COVER, WELDMENT, 205 (SFM)	1
	17226	RACKS REAR COVER, WELDMENT, 220 (SFM)	1
2	2202	HEX BOLT M14 X 1.50 X 37	6
3	1272	PLAIN WASHER 14mm	6
4	1302	M14X1.5 NYLOCK NUT	6
5	8010	HEX BOLT M10 X 1.50 X 20	4/5
6	8078	PLAIN WASHER 10mm	4/5
7	17227	RACK D22 L350 (SFM)	9/10/11/13/14
8	15055	R-CLIP WIRE DIA 4.00MM	9/10/11/13/14



WARRANTY

Tirth Agro Technology Pvt. Ltd. offer the following warranty to the purchaser of COSMO BULLY FLAIL MULCHER mentioned herein above subject to the conditions set out herein after provided the COSMO BULLY FLAIL MULCHER shall be in the possession of and used by such purchaser as from the date of delivery. Tirth Agro Technology Pvt. Ltd. warrants its products for a period of twelve (12) months against defective parts. This warranty shall not apply to implements or parts that have been subjected to negligence, of accident, or that have been altered or repaired or used with non-genuine parts.

CONDITIONS

If you wish to make a warranty claim you must first contact the supplier of your goods to begin the claim process.

The following are the warranty terms and conditions for new goods sold in Australia by Farm Implements P/L in conjunction with the manufacture Tirth Agro Technology Pvt. Ltd ("We", "Our" or "Us"), both of 16 Cahill Street, Dandenong, Victoria, Australia, 3175.

1. To the extent that any goods or services supplied by Us are supplied to a 'consumer' as defined in the Australian Consumer Law, We will comply with any applicable consumer guarantees and the following statement will apply: "Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure."
2. 'Australian Consumer Law' means Schedule 2 of the Competition and Consumer Act 2010 (Cth).
3. The warranties provided in this document are in addition to any other rights or remedies available to you under the law, and do not limit the consumer guarantees for 'consumers' under the Australian Consumer Law.
4. Goods presented for repair may be replaced by refurbished goods of the same type rather than being repaired. Refurbished parts may be used to repair the goods.
5. Any warranty claim that is the result of operator abuse, neglect or unauthorized modifications being made to the good will not be considered valid, subject to the Australian Consumer Laws. The warranty does not cover costs of claiming under this warranty; depreciation, damage, malfunction or failure caused by normal wear and tear; lack of reasonable maintenance or improper servicing; failure to follow operating instructions; misuse or lack of proper protection during storage. The expected normal working conditions and maintenance requirements are outlined in the relevant operator's manual.
6. All new Implements are provided with a 12 month comprehensive warranty from the date of invoice against faulty workmanship or materials, under normal working conditions and service, as outlined in the relevant operational manual for the particular good. Your warranty for those goods will be considered void if any damage to the implement is caused by operator abuse, neglect, or if any unauthorized modifications have been made.
7. If you wish to make a warranty claim, you must immediately report the defect to the supplier within the warranty or consumer guarantee claim period, including a written statement of your claim, along with photos of the current condition of the goods by mail (or if possible, email) to the address of the place from which you purchased the good. You will be required to present valid proof of purchase, and at your expense promptly provide the goods to the supplier immediately after notification of a service issue.
8. Please note that We require an assessment of the condition of the goods to be conducted by either the supplier, Us or the manufacturer, as well as obtaining a history of use of the good, before We can determine whether a consumer guarantee or manufacturer's warranty is applicable. We are not responsible for any transportation cost incurred in the repair or replacement of parts not covered by the warranty.
9. To the maximum extent permitted by law, and except in circumstances where the consumer guarantee provisions under the Australian Consumer Law apply and are inconsistent with the following, Our liability for the supply of the goods is limited, at Our discretion, to 1) replacement of the goods or the supply of equivalent goods; 2) repair of the goods; 3) payment of the cost of replacing the goods or acquiring equivalent goods; or 4) payment of the cost of having the goods repaired.

10. You acknowledge that use of the goods is inherently dangerous and agree that to the maximum extent permitted by law, We are not liable in any event for consequential loss, damage or injury, including loss of crops, loss of profits, or personal injury or death howsoever caused.
11. Farm Implements Dealers have no authority to make any representation, promise or admission on behalf of Us or to modify the terms or limitations of these Warranty Conditions in any way. Nothing in these Warranty Conditions constitutes a partnership between Us and any Farm Implements Dealer, or constitutes any Authorised Dealer as an agent or employee of Ours for any purpose at all. Our Dealers have no authority or power to bind Us, to contract in the name of Farm Implements P/L or to create a liability against Us in any way or for any purpose at all, including but not limited to representations regarding performance or fitness for any purpose of the goods.

If you have specific queries regarding the warranties or consumer guarantees provided by Farm Implements P/L in conjunction with the manufacture Tirth Agro Technology Pvt. Ltd please send details of your claim to Our attention at 16 Cahill Street, Dandenong, Victoria, Australia, 3175, or via email at kanga@farmimplements.com.au or phone 03-9706-5166.

THIS CONTRACT WILL BE INEFFECTIVE AND INOPERATIVE IF:

- i. The COSMO BULLY FLAIL MULCHER has not been delivered, assembled, started and put into operation by the company or it's Authorized Representative.
- ii. The warranty card has not been returned within 30 days of date of purchase.
- iii. The COSMO BULLY FLAIL MULCHER parts thereof is subjected to neglect, fire, flood or other acts of God or if in the company's opinion any damage has caused to the COSMO BULLY FLAIL MULCHER in transportation.
- iv. The original numbers are removed, obliterated or altered from the unit.
- v. Any attempt is made to have the repairs executed by a person or persons, other than the company or its authorized representative.
- vi. Any defect is not informed immediately to the company or its authorized representative, any alteration in warranty card is made.
- vii. Any change in the location of the COSMO BULLY FLAIL MULCHER or in its ownership during the warranty period must be intimated in writing to the company or its Authorized Representative ten days before the change. Failure to do so will absolve the company from the obligation under this warranty.
- viii. Damage to the COSMO BULLY FLAIL MULCHER or any part thereof caused, during shifting or transportation is not covered by this warranty.
- ix. This warranty is given in lieu of all other guarantees and condition expressed or implied by law or by any person purporting to act on behalf of the COMPANY and excludes every condition, warranty or guarantee not herein expressly set out.

NT – Parts/materials that are not covered by the warranty are as follows:

- | | |
|-------------------------|---|
| • Blade | • Rubber components |
| • Universal Joint Cross | • Gaskets |
| • Paint | • Hardware/fasteners (nuts, bolts, chains, etc.). |
| • Bearings | |

WHEN THE WARRANTY BECOMES VOID

Besides the cases specified in the supply agreement, the warranty shall in any case become void:

- Should there have been a maneuvering error, use of an inadequate safety bolt on the cardan shaft torque limiter or when the cardan shaft clutch has been damaged through improper maintenance.
- When the implement has been used beyond the specified power limit as stated in the technical data chart.
- When following repairs made by the customer without authorization from the manufacturer or the instillation of spurious spare parts, the machine is subjected to variations and the damage can be attributed to these variations.
- Whenever the user or anyone else on his behalf applies equipment to the machine that has not been expressly approved by the manufacturer.
- When the user failed to comply with the instructions in this manual book.

EC DECLARATION OF CONFORMITY

In accordance with the EC Implementry Directive 2006/42/EC

The company

COSMO S.r.l. in conjunction with **Tirth Agro Technology Pvt. Ltd.**

(An ISO 9001:2008 Certified Company)

National Highway – 27, Nr. Bharudi Toll Plaza,
Gondal Road At.: Bhunava – 360311 Ta. Gondal,
Dist.: Rajkot. State: Gujarat- INDIA.

hereby declares that the implement:

Type: COSMO BULLY Flail Mulcher

Model: SFM - Series

satisfies the basic safety and health requirements established by European Directive 2006/42/EC.

Harmonized standards used:

EN ISO 12100

Safety of implementry - General principles for design - Risk assessment and risk reduction

EN ISO 4254-1

Agricultural implementry - Safety - Part 1: General requirements

EN ISO 4254-12

Agricultural implementry - Safety - Part 12: Rotary disc and drum Mulchers and flail Mulchers

Other technical standard used:

ISO 11684

Tractors, implementry for agriculture and forestry, powered lawn and garden equipment - Safety signs and hazard pictorials - General principles

Ashwin Gohil / Hasmukh Gohil
Chairman / Managing Director

Rajkot, 10 October 2014



Manufactured by:

Tirth Agro Technology Pvt. Ltd.

“COSMO BULLY”, Survey No.-108/1,
Plot No. B, NH-27, Nr. Bharudi Toll Plaza,
Bhunava (Village), Taluka: Gondal,
Dist.: Rajkot – 360311,
State: Gujarat- INDIA

Distributed by:

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