



**ROTARY HOES
UM-SERIES
UM60 (150CM) – UM72 (180CM)**



**OPERATOR'S MANUAL
& PART'S INFORMATION**

Congratulations for purchasing your new COSMO BULLY Rotary Hoe.

This Rotary Hoe 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 allow you to understand this new piece of equipment and will provide you all the tools needed to use it safely.

Proper maintenance and knowledge of the safety rules of use will ensure the best performance and extend the life of the machine.



The Safety Alert Symbol used throughout this manual and on safety decals of the machine 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 Signal 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 ROTARY HOE. 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 implement, 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 implement may need new parts to replace those are worn or broken. If so, go to nearest COSMO BULLY dealer and provide him with 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 implement, as well as for obtaining optimum performance from the machine.

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

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

The Manufacturer reserve the right to make design improvements or changes in specifications without incurring 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. IDENTIFICATION

Each Rotary Hoe has a plate for unique identification. Any request for assistance or information regarding the machine must be directed to the Manufacturer, Importer or Dealer always referring to the model and serial number as shown on the nameplate affixed to the machine:



2.2. INTENDED USE

The U-series are designed to be used uniquely for horticultural, agricultural, or commercial applications, to till soil for seedbed and planting preparation.

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

The tractors used to operate the U-series Rotary Hoes must have the following requirements:

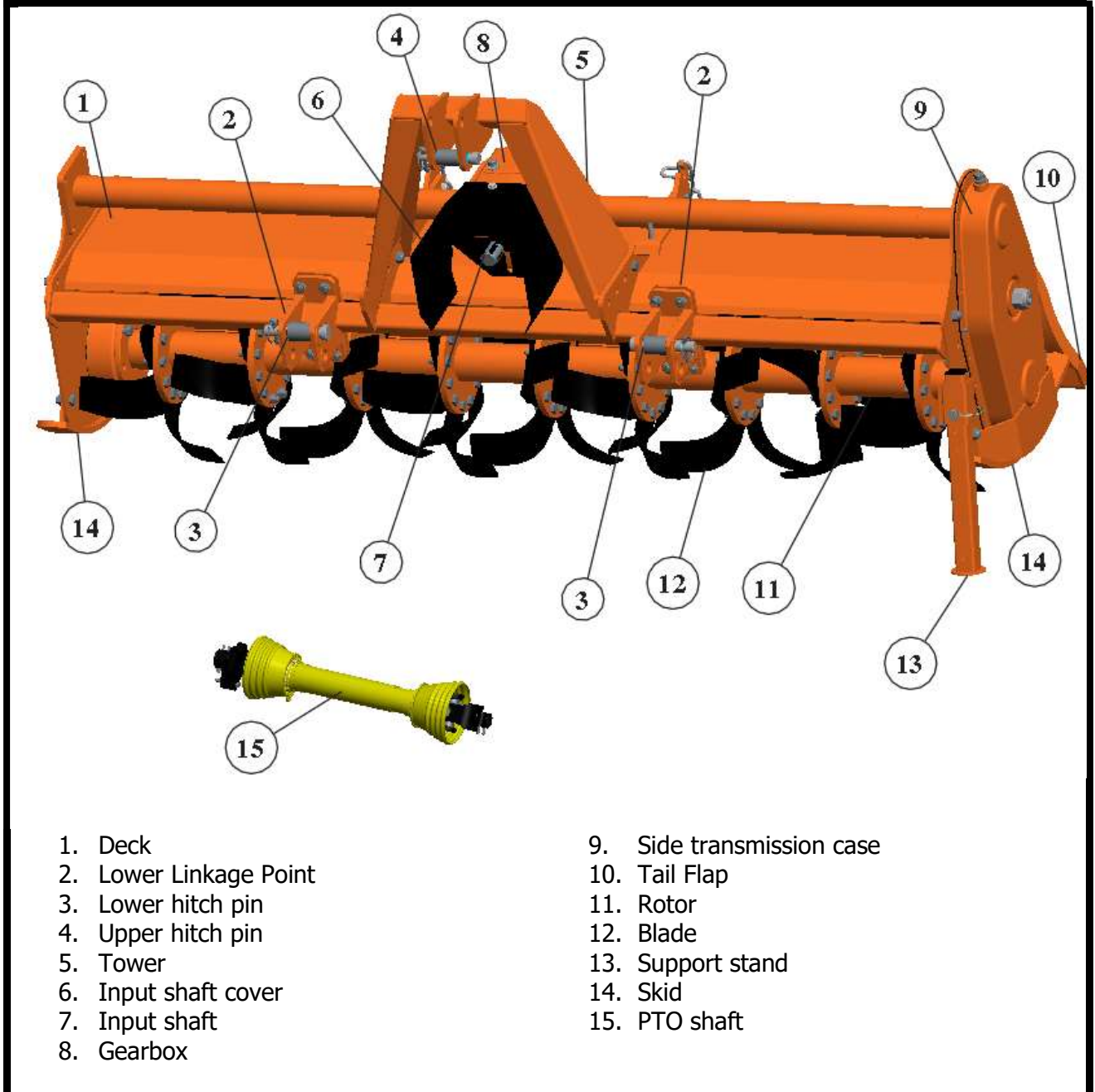
Hitch Category:	3-point Cat. I standard
PTO:	540 RPM, 6-spline, 1 3/8 Z6
Horsepower:	35-50 HP

 **DANGER**

U-Series UM Rotary Hoe

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

2.3. MAIN PARTS DESCRIPTION



U-Series UM Rotary Hoe

2.4. ROTARY HOE SPECIFICATIONS

		UM60 (150CM)	UM72 (180CM)
Overall dimensions	mm	1775 x 940 x 720	1970 x 940 x 720
Working width	in	65"	72"
	cm	164	183
Recommended Tractor HP range	HP	30-45	35-50
3-point Hitch type	-	Cat. I, Compatible Quick Hitch I Cat. ASAE	Cat. I, Compatible Quick Hitch I Cat. ASAE
Number of flanges on the rotor	No.	8	9
Number of blades on the rotor	No.	48	54
PTO Input speed	rpm	540	540
Rotor Shaft Speed	rpm @540	241	241
Standard Tine Construction	-	curved	curved
Transmission type	-	gear	gear
Max. working depth	cm	18	18
Rotor tube diameter	mm	76	76
Rotor Diameter	mm	434	434
Driveline safety device	-	slip clutch	slip clutch
Weight (driveline excluded)	lbs	627	683
	kg	285	310

3. SAFETY

Safety is a primary concern in the design and manufacturing of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said, "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

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

3.1 GENERAL SAFETY INSTRUCTION

DANGER

The machine must be used only by authorised and well-trained operators. The operator must have read and understood the instructions of this manual. They must make adequate preparation for the proper use of the machine and in case of doubt about the use of the machine and/or the interpretation of this manual the operator must contact the Manufacturer or the Dealer.

WARNING

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

WARNING

Follow strictly the rules prescribed by the safety pictograms applied to the machine.

WARNING

Be sure that all safety pictograms are legible. If pictograms 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 machine, make sure that all safety devices are installed and in good working conditions. In case of damages of shields, replace them immediately.

DANGER

Is forbidden to remove or alter safety devices.

DANGER

Before starting, and during operation of the implement make sure there are no people or animals in the operation area: the machine 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 machine.

DANGER

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

 DANGER

Do not operate the implement while wearing loose-fitting clothing that can give rise to entanglement in parts of the machine.

 DANGER

Do not operate the implement when tired, not in good condition or under the influence of alcohol or drugs.

 CAUTION

If the use of the machine 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 INSTRUCTIONS

 WARNING

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

 DANGER

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

 WARNING

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

 WARNING

Before using the machine, familiarise yourself with its controls and its working capacity.

 WARNING

Do not leave the implement unattended with tractor engine running.

 WARNING

Do not operate implement on unstable (muddy or sandy) or rocky ground.

 WARNING

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

 WARNING

Do not use the machine if the category of the connecting pins of the Rotary Hoe does not match that of the tractor hitch system.

 WARNING

Do not use the machine with missing bolts, screws, pins or safety pins.

 WARNING

Never use the machine 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 this implement (540 rpm). Do not over speed PTO or machine breakage may result.

 DANGER

Do not operate the implement if the driveshaft is damaged. The driveshaft could break during operation, causing serious injury or death. Remove the driveshaft and repair or replace it before continuing operation.

3.3 OPERATING SAFETY INSTRUCTIONS

 WARNING

Before using the machine, be sure to have cleared the operating area from obstacles (stones, branches, debris, etc.). Mark all the obstacles that cannot be removed (e.g., by means flags).

 DANGER

Never engage the tractor PTO in the presence of people close to the driveshaft. The body, hair or clothing of a person 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 the immediate area of action of the machine. Never use the Rotary Hoe if people are in his working area.

 DANGER

It's forbidden to stand near an implement like this when parts are moving.

 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 implement off the ground after disengaging the power take-off, to avoid damage to the machine.

 DANGER

In the presence of steep slopes (greater than 15 degrees) the action of this machine may cause instability of the tractor with a risk of tipping off which a consequence may be serious injury or death hazard. Consult the manual for the tractor to determine the maximum slope that the tractor can handle.

 DANGER

Always disengage the PTO before raising the implement and never engage the PTO with the implement raised. The machine 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 Rotary Hoe to the ground, disengage the PTO, insert the parking brake, stop the engine and remove the key from the control panel.

 DANGER

The PTO shields of the tractor and implement side, the driveshaft shielding and the driveshaft retaining chains must be properly installed and in good condition, to avoid the risk of entanglement with serious injury or death.

 DANGER

Before engaging the PTO of the tractor, always make sure that the drive shaft is mounted in the correct direction, and that its clamping elements are properly connected both to tractor side and to Rotary Hoe 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 driveshaft exceed an angle of 10 degrees up or down while operating. An excessive angle with driveshaft rotating can break the driveshaft and cause flying projectiles.

 CAUTION

Avoid clutch's overheating caused by too long or frequent slipping of the clutch, since it can damage the clutch components. Before checking slip clutch, make sure it has cooled. Clutch could be extremely hot and cause a severe burn.

 CAUTION

Prolonged use of the implement can cause overheating of the gearbox. Do not touch the gearbox during use and immediately after, it could be extremely hot and cause a severe burn.

 WARNING

All repairs to the implement must be performed by qualified and trained operators, with the tractor engine off; the PTO disengaged, the implement lowered to the ground or on security stands, the ignition key off and the parking brake set.

3.4 TRANSPORTING SAFETY INSTRUCTIONS

 WARNING

Before transporting, 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 lifting hydraulics locked so that the Rotary Hoe 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.

 DANGER

In the case of lifting this implement, make sure that any lifting device is suitable to operate safely, and use only the lifting points prescribed on Rotary Hoe.

3.5 MAINTENANCE SAFETY INSTRUCTIONS

 WARNING

All maintenance and repair operations must be performed by qualified and trained operators, with the tractor engine off; the PTO disengaged, the Rotary Hoe lowered to the ground or on security stands, the ignition key off and the parking brake set.

 WARNING

Perform repairs and replacements part should only be original spare parts provided by the manufacturer, importer or your dealer.

 DANGER

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

 CAUTION

Before any maintenance operation, make sure that the parts which become hot during use (friction clutch, gearbox, etc.) have cooled.

 WARNING

Do not perform repairs that you do not know. 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 implement in the lifted position. Accidental operation of lifting lever or a hydraulic failure may cause a sudden drop in the unit which may result in injury/death.

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

⚠ CAUTION

Store the unit in an area away from human activity.

3.7 SAFETY LABELS

The safety labels applied on the machine give fundamental information for using the machine safely.

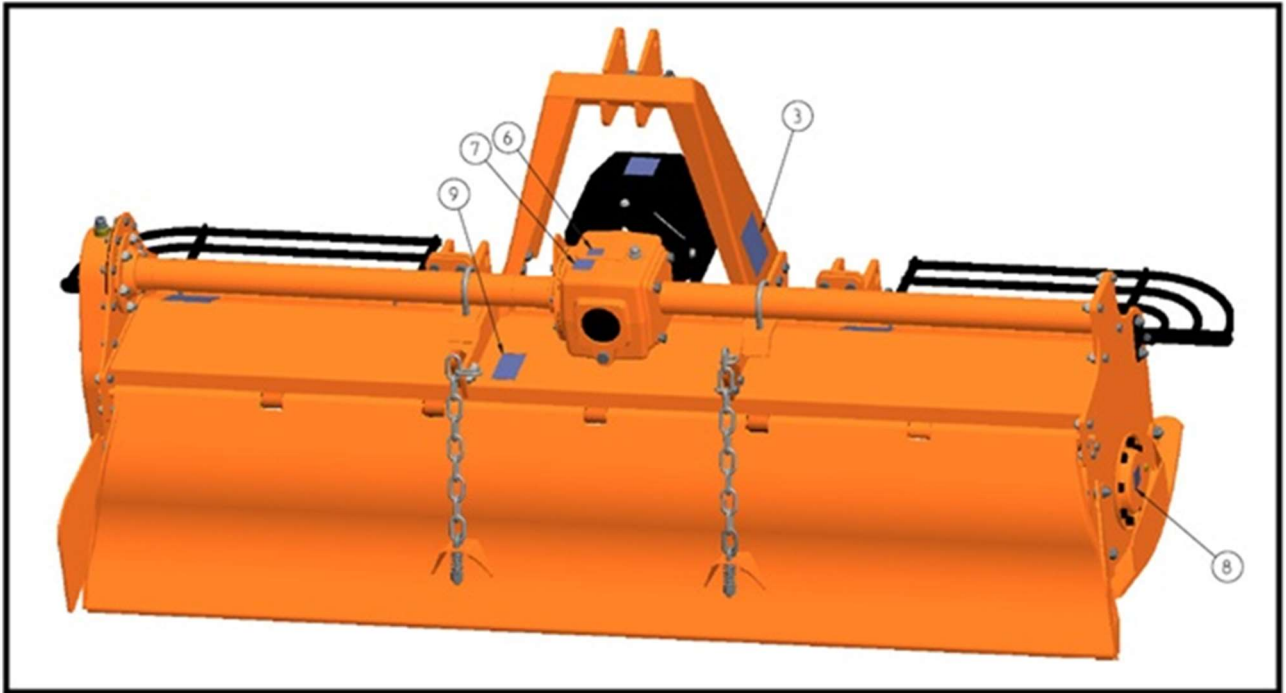
Make sure safety labels are in good conditions. If pictograms are worn, they must be replaced with others obtained from the Manufacturer and placed in the position indicated by this manual.

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

SAFETY LABELS POSITION AND DESCRIPTION









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1	D1077		<p>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</p>
2	D1082		<p>Safety Wear</p>
3	D1080		<p>Crushing hazards & Thrown or Flying objects hazards.</p>

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4	D1081		Operate only with 540 rpm PTO.
5	D1079		Rotating Gears
6	D1007		Oil filling point
7	D1083		Lifting point
8	D1008		Grease filling point
9	D1078		Hand Hazard

4. SET UP

The implement is delivered fully assembled and equipped with a driveshaft with friction clutch (clutch discs) and related operating manual.

When the machine is delivered, check that there is no damage to the implement and driveshaft. In case of damage or missing parts immediately notify the manufacturer, importer or your dealer.

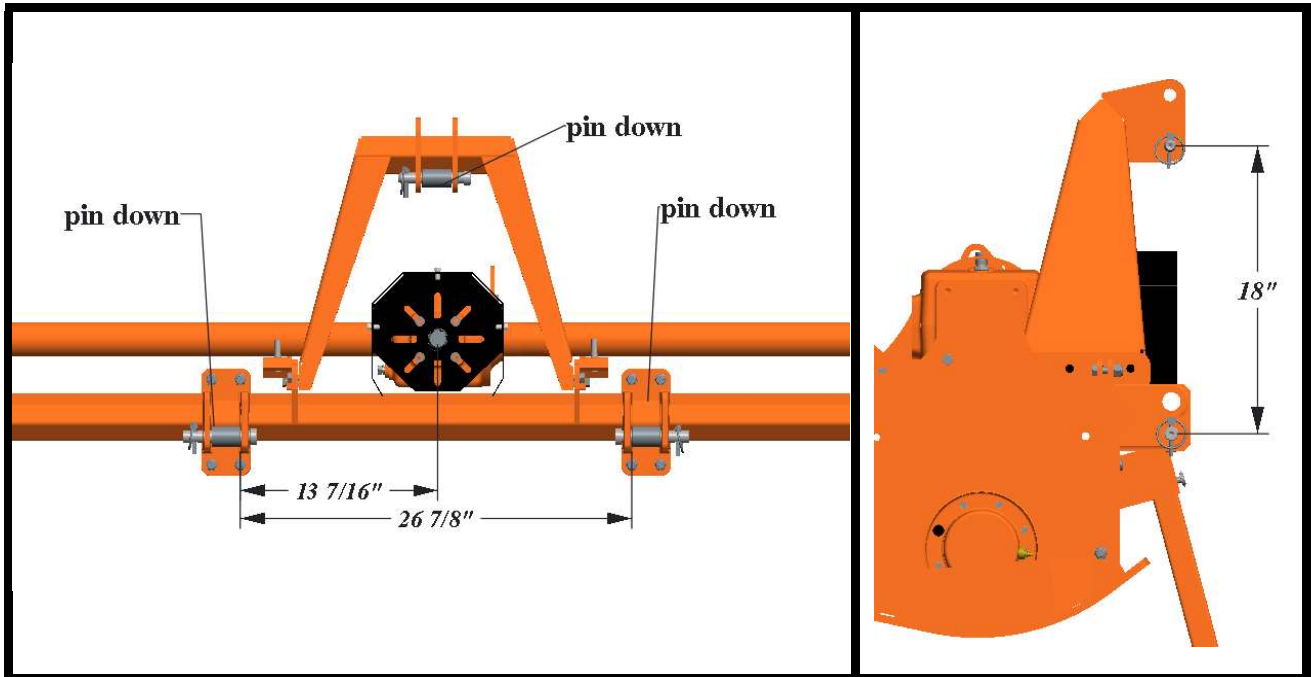
4.1. LOWER HITCHES POSITIONING

The UM-series Rotary Hoe is designed to be mounted on tractors equipped with:

- 3-point Hitch Category I (ISO 730 standard);
- Quick Hitch Category I (ASABE Standard).

The position of the lower hitches must be adjusted accordingly.

If the tractor is equipped with a 3-point Hitch Category I (ISO 730 standard), verify that the top link pin is on the lower hole (in the tower), and the lower links are also positioned in the lower holes (see figure) so that the distance between upper and lower pins is 18" (460 mm approx).

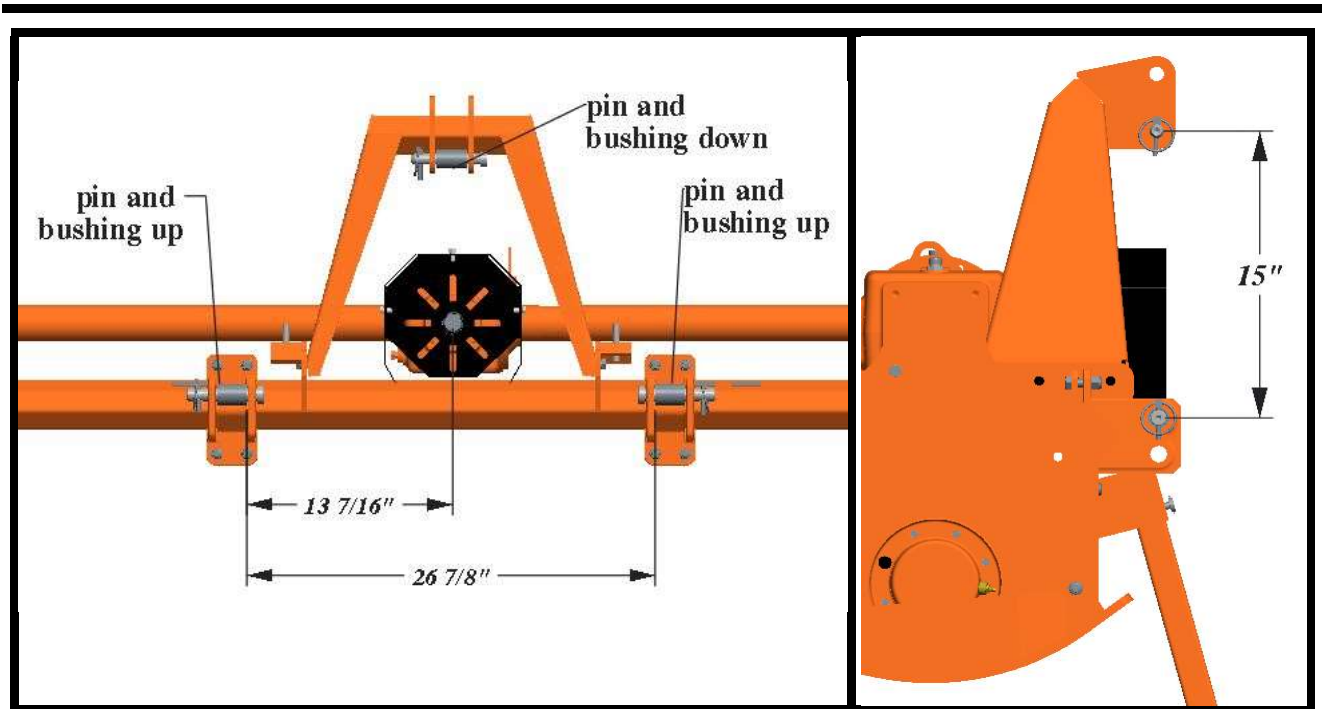


If this not occurs, proceed as follows:

- Remove the pin from the upper hole of the tower, through the extraction of the pins and remove bushing provided for connecting the Quick Hitch. Reposition the pin through the lower hole. Replace the pins when finished. Store the bushing for possible future use;
- remove the U-bolt and the Lower Linkage Point from the square tube;
- Invert the Lower Linkage Point orientation and reposition it on the square tube at distance of 13 7/16" from the centre of implement PTO. At the end of the operation the lower Linkage point should be positioned symmetrically respect to the implement input shaft at distance of 26 7/8" (683 mm);
- Re-tighten the U-bolt, referring to the tightening table of this manual.
- Remove from lower pins the bushings provided for coupling with Quick Hitch, through the extraction of pins. Replace the pins when finished. Store the bushings for possible future use.

If the tractor is equipped with a Quick Hitch Category I (ASABE Standard), verify that the upper pin in the tower is oriented down, and that lower links are showing the pins oriented up (see figure), so that the distance between upper and the lower pins is 15" (381 mm).

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If not, then proceed as follows:

- Remove the pin from the upper hole of the tower, through the extraction of the pins, and reposition the pin through the lower hole. Be sure the pin is provided with bushing for coupling with Quick Hitch. Replace the pins when finished;
- remove the U-bolts clamping the Lower Linkage Point to the square tube;
- Invert the Lower Linkage Point orientation and reposition them on the square tube at distance of 13 7/16" from the centre of implement input shaft. At the end of the operation the Lower Linkage Point shall be positioned symmetrically respect to implement input shaft at distance of 26 7/8" (683 mm);
- re-tighten the U-bolts, referring to the tightening table of this manual. Be sure the pins are provided with bushing for coupling with Quick Hitch.

NOTE

The upper hole of the tower provides the implement with the additional possibility of adaptation to tractors with 3-point hitch Category I.

4.2. CONNECTING TO THE TRACTOR

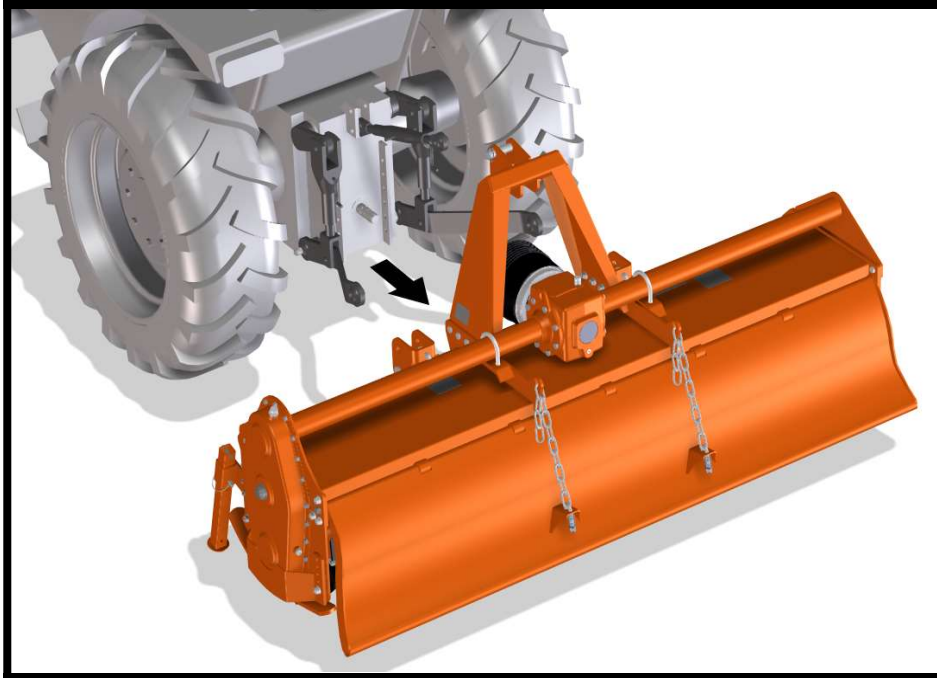
To connect the implement to the tractor, the operator must do the following:

- drive the tractor in reverse, up to align the rear lifting arms to lower hitches of the implement in parking;
- set the tractor's parking brake, stop the engine, remove the ignition key and get off the tractor;
- connect the lifting arms of the tractor to the lower hitches of the implement through the use of the pins and the relative safety split pins;
- connect the tractors rigid top link to implement tower;
- raise the implement until PTOs of tractor and machine are at the same height, then adjust the 3-point top link so that the front of the machine is level to the back (the axis of the Rotary Hoe PTO

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must be parallel to the ground). This will limit the friction transmitted to the implement through the cardan shaft;

- make sure that left side of the Rotary Hoe is levelled with the right, by adjusting the tractor lifting arms, then lock the arms to prevent swinging that could compromise the stability of tractor and machine;
- finally adjust the support stand, placing it at the highest point using the related pin.



4.3. DRIVELINE INSTALLATION

Before installing the driveshaft, the operator must read the manuals of driveshaft 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 the manufacturer, importer or your dealer.

To connect the driveshaft 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 device on the implement driveshaft and tractor are in good condition, otherwise, provide for their replacement;
- position the driveshaft clutch turned towards the implement side.
- 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 clutch hub on the Rotary Hoe PTO, then ensure its tightening onto shaft through its fastener;
- insert the driveshaft yoke on the tractor PTO, then ensure its tightening onto shaft through its fastener;
- if the PTO shaft has chains to stop, the covers spinning, hook one to the tractor and one to the implement.

DRIVELINE LENGTH CHECK

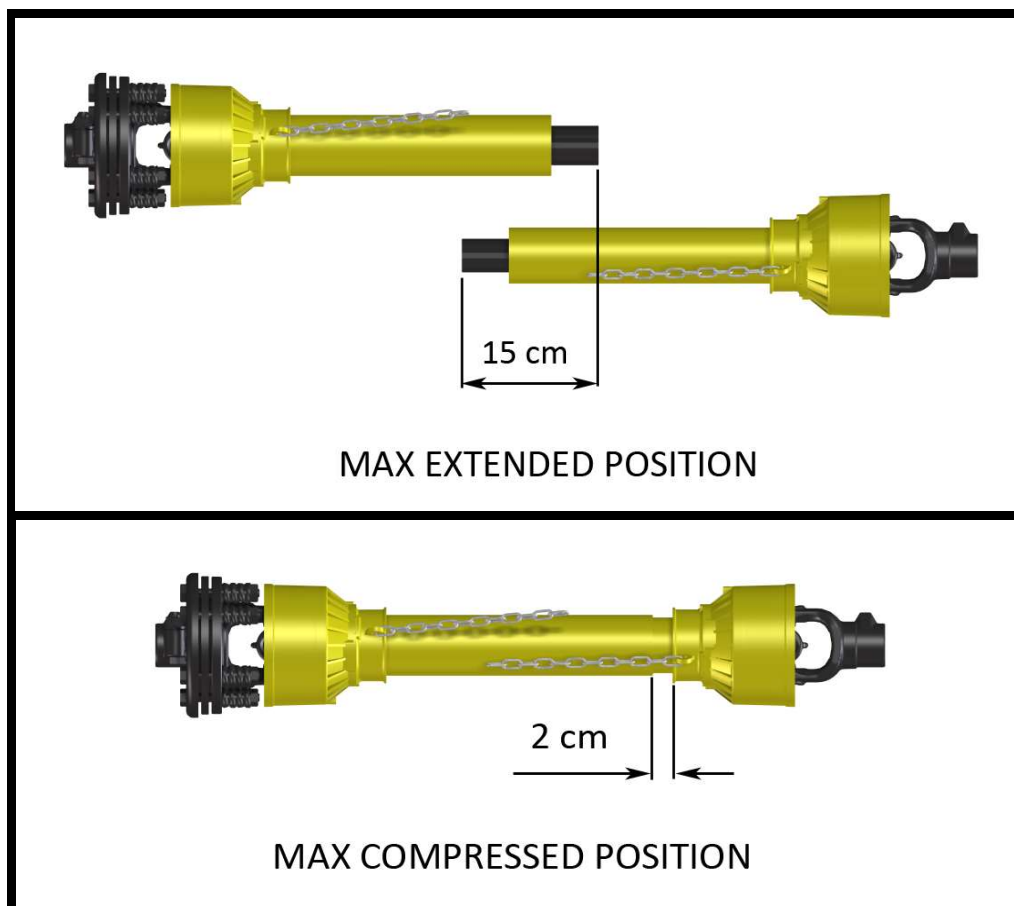
Before operating the implement ensure that the size of the driveshaft is adequate. The driveshaft supplied with the machine comes in a standard length. Therefore it may need to be shortened depending on your tractor and implement.

The length of the driveshaft must be such to:

- avoid bottom out of the transmission tubes, when the driveshaft is in a compressed position (when Rotary Hoe is raised up off the ground);
- ensure an overlapping of the transmission tubes enough to transmit the torque required, when the driveshaft is in max extension (when Rotary Hoe is in its lowest position in the ground).

When the driveshaft 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.

When the driveshaft is at its maximum operational extension, there must be an overlap between the tubes profiles of 15 cm at least.



A driveshaft too long may cause structural damages to the tractor and machine. If the driveshaft 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 driveshaft too short can cause disengage of the tubes during operation, with severe hazard for the operator and structural damage to the tractor and machine. If the driveshaft 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 driveshaft is lubricated in accordance with how indicated in the instruction booklet;
- before operating the implement the first time, and after long periods of inactivity, make sure that the driveline clutch has not seized. It may be necessary to 'slip' the clutch and reset due to possible oxidation of the components that may compromise the correct slipping during the usage (see also section "Maintenance");
- always engage the tractor PTO at low rpm to minimise the effect of the peak torque on the driveline and the machine.

4.4. TRACTOR-IMPLEMENT STABILITY

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

The front axle of the tractor should always load with at least 20% of the overall weight of the system tractor-implement.

CAUTION

Check the lifting capacity and stability of the tractor and, if necessary, applying the front ballast. To determine the appropriate characteristics of the ballast, refer to the manual of the tractor.

5. OPERATING

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

DANGER

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

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

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

5.1. START UP

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

- check that the implement has no damaged functional parts and has all mechanical parts are good condition. Repair and / or replace the damaged parts;
- check that the implement has no missing parts (pins, safety pins, plugs oil, etc.). Restore the missing parts;
- check that all guards and safety devices have no damages and are properly positioned. Repair and / or replace the damaged shields, restore the correct position;
- verify that the PTO driveshaft is properly installed (see section: Connection of the drive shaft);
- check that the driveshaft clutch is in good condition, and that its components are not subject to "sticking" (see section: Maintenance / Driveline);
- check the presence of lubricant in all greasing points of the implement (driveshaft, supports...) (see sect. Maintenance / Driveline and Maintenance / Support rotor);
- check for oil leaks from the gearbox or the transmission side cover. Identify the reason of loss, then repair and / or replace the damaged components;

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- check the correct oil level in the gearbox and in transmission side box (see section maintenance);
- check that blades are not excessively worn and the relating hardware is correctly tightened (see sect. Maintenance);
- check that all hardware (nuts, bolts, etc.) are properly tightened. Refer to the tightening table in the manual for proper torque values;
- check that all safety decals are correctly positioned, in good condition and legible. Replace any damaged decals;
- check that there is no constraints that may prevent the movement of equipment. Remove any constraint.

Before the start up and before each use, make the following checks on the operating area you intend to operate:

- check that area is clear of foreign objects (rocks, branches or debris). Remove any obstacle and visibly highlight obstacles that cannot be removed (e.g. with flags);
- make sure that in the area you intend to operate there are no people or animals;
- make sure the soil to be worked is not too grassy, muddy, sandy or rocky.

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.

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

- start the tractor and engage the tractor PTO at low rpm, making sure that the implement is NOT in the raised position but close to the ground, then increase speed engine until to 540 rpm;
- lower the implement on the ground and simultaneously start driving the tractor forward at low speed. Subsequently, increase the ground speed depending on ground conditions;
- If the outside temperature is very cold, it's recommended to engage the PTO and have the implement operate at low speed (with the tractor stationary) to warm oil and lubricate parts;
- drive for a while operating the implement then stop the tractor to check the quality of the work performed. If you need to get off the tractor, lift the implement just out of the ground, reduce engine speed and disengage PTO, set the parking brake, stop engine and remove the ignition key;

If the working depth and/or soil texture are not as desired, correct them by adjusting the skids and/or the rear cover (see section Adjustments).

5.2. OPERATING INSTRUCTIONS

During operations:/ OPERATE ACCORDING TO FOLLOWING INSTRUCTION

- always keep the tractor engine at a speed that delivers 540 rpm to the implement. Failure to do so will affect the performance to the implement;
- always keep a tractor speed suitable to conditions of the soil (from 2 to 10 km/h approx.). Reduce speed in the case of hard or stony soils;
- choose a driving pattern that provides the maximum pass length and minimizes turning;
- when working in the hills, always work up and down the hill. NEVER work across hills;
- when changing directions or reversing, disengage the PTO and slightly lift the implement from the ground to avoid damage to the machine;

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- periodically check for foreign objects wrapped around the rotor shaft and remove them, after disengaging PTO, turning off tractor engine, and removing ignition key;
- if the blades strike a foreign object, or in case of excessive friction clutch slippage, stop operating immediately, idle the engine speed and disengage the PTO. Wait for all rotating parts to come to a stop, then raise the implement and proceed to inspect damage, after stopped the tractor, set the parking brake, stopped engine and removed the ignition key. Repair any damage immediately, and make sure rotor and blades are in good condition before restarting operation;
- avoid friction clutch overheating. This is caused by operating in heavy conditions or incorrectly adjusted clutch. If you clutch overheats, it can damage clutch components which will then not operate correctly which may then result in damage to your implement.

Typical problems that may occur operating the implement are described in the Troubleshooting section, together with their solutions.

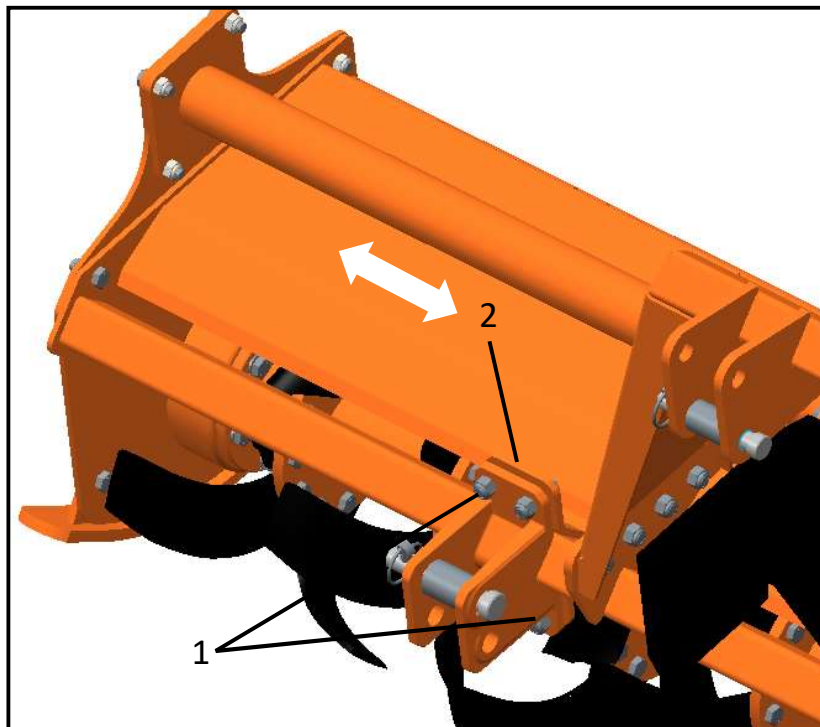
5.3. ADJUSTMENTS

⚠ WARNING

All adjustment operations must be performed with the tractor engine off; the PTO disengaged, the implement lowered to the ground or on security stands, the parking brake set and the ignition key off.

LOWER LINKAGE ADJUSTMENT

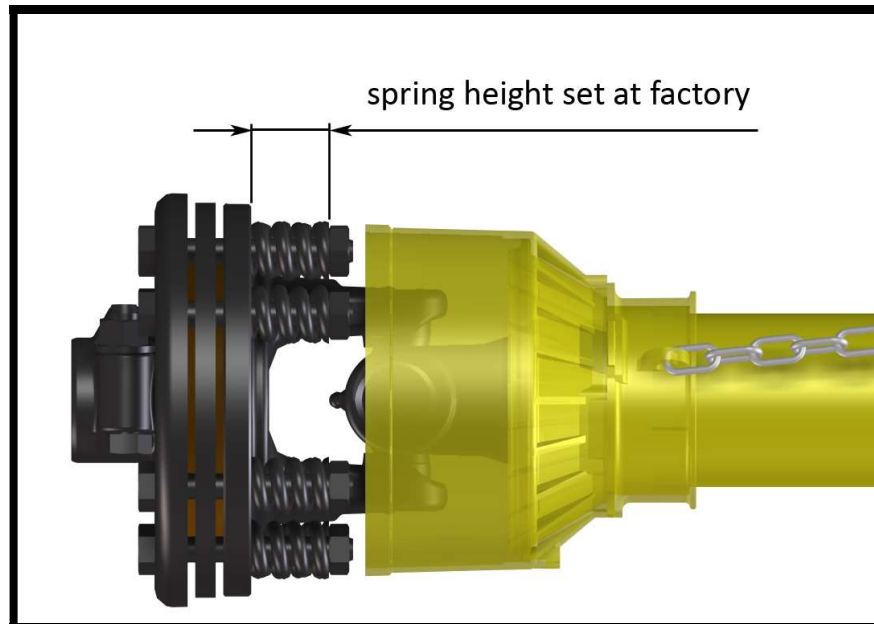
It is possible to adjust the lower hitch position loosening the U-bolts 1 (see picture) and sliding the Lower Linkage Point (No.2) on the square tube. Tighten the U-bolts after making any adjustment required.



FRICITION CLUTCH ADJUSTMENT

The PTO driveshaft and friction clutch are designed to transmit adequate power to the implement.

The clutch preserves the machine from overloads, through the slipping of friction discs, and limits the max torque transmissible to a calibrated value set at the factory. It is recommended, therefore, to set the clutch and regularly adjust to avoid damages to the machine or the driveshaft.



Friction clutches are designed to be adjusted. If slipping is too frequent, it means that the calibration is too low and the clutch needs to be adjusted (tightened).

In this case, the tightening of the nuts will compress the springs which will increase the drive to the implement.

On the contrary, a loosening of the nuts will decrease the drive to the implement.

IMPORTANT

For details about clutch adjustment, refer to the user manual of the manufacturer of the driveshaft installed.

The manufacturer is not liable for damages resulting from a wrong modification of the clutch calibration.

NOTE

Excessive tightening of the springs can prevent the clutch from slipping and to protect the machine from overload.

Make sure that the height of all the compressed springs is equal to prevent the clutch malfunctioning.

SKIDS ADJUSTMENT

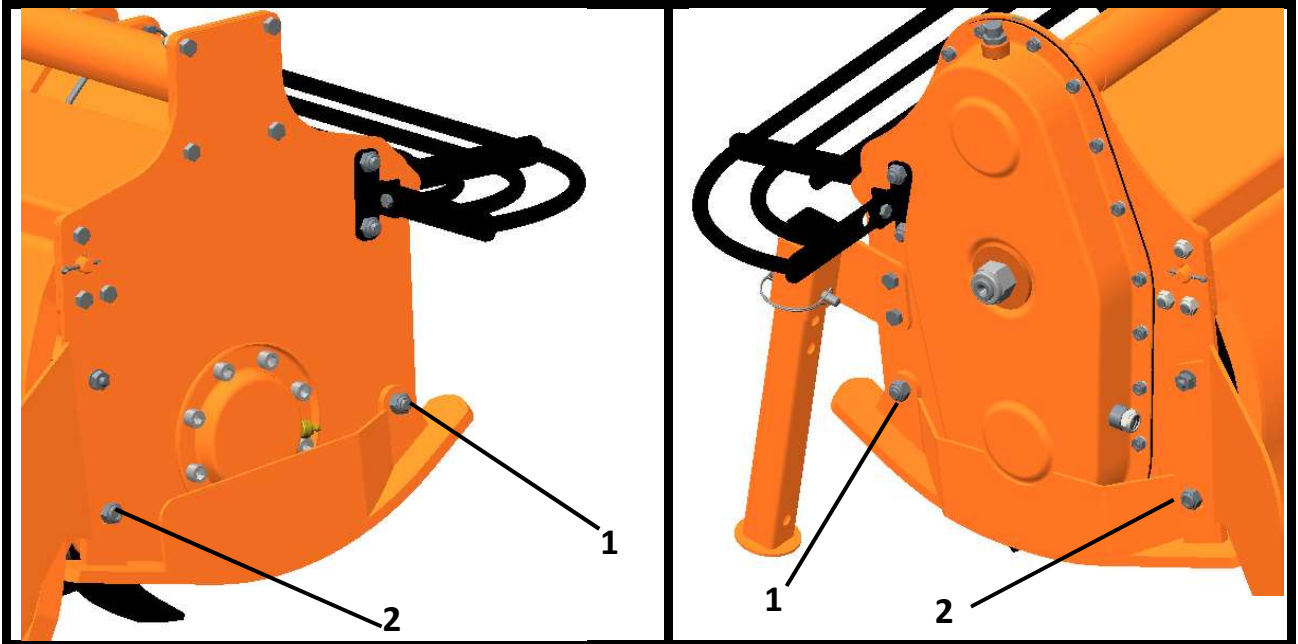
The working depth of the implement is determined by the position of the side skids: it may be increased by raising the skids and decreased by lowering them. It's important that both skids are adjusted at the same height.

To adjust the working depth, perform the following steps:

- lift the machine, put it safely on security stands, then switch the tractor engine off, disengage PTO, set the parking brake and off the ignition key;

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- loosen the bolt in the front of the skid (bolt 1 - see picture);
- unscrew and remove the bolt on the rear of the skid (bolt 2 - see picture);
- adjust the height of the skid through the holes, as desired;
- reinstall the bolt 2 (refer to the tightening table of this manual for proper torque values);
- tighten the bolt 1 (refer to the tightening table of this manual for proper torque value).

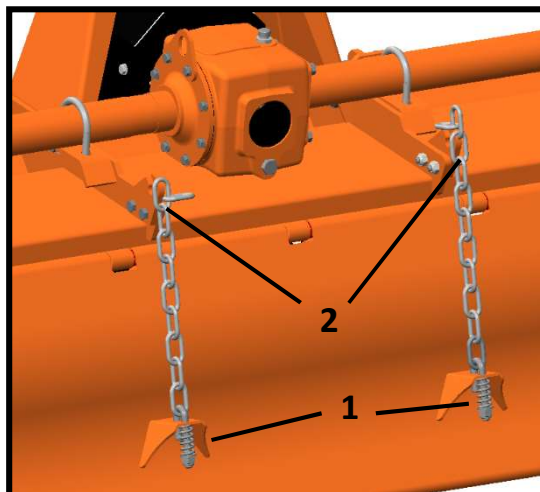


When finished, verify that both skids are at same level, and check if the front of the implement is levelled to the back, when lowered to the ground. Adjust with the 3-point top link if necessary.

TAIL FLAP ADJUSTMENT

The UM-Series Rotary Hoes are equipped with a Tail Flap with two (2) chain.

The position of the tail flap is adjustable by varying the number of chain links included between distance XY, which remain tensioned under the weight of the flap (i.e. links between the rear flap U-bolt 1 and the slot of the frame 2).



- to raise the tail flap, reduce the number of chain links in tension. This operation, together with the increase of the tractor ground speed, allows to have a coarser soil texture;
- to lower the tail flap, increase the number of chain links in tension. This operation, together with the reduction of the ground speed will result in finer soil texture.

 WARNING

To avoid the risk of crushing or cutting off fingers, raise or lower the tail flap only from the lower edge, not from the sides.

5.4. STOPPING AND DISCONNECTION

To stop the implement 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 machine ready for later use (see Section Maintenance).

 WARNING

Never leave the tractor unattended with the implement in the lifted position.

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

- adjust the skids to their lowest position (see Section Adjustments);
- adjust the support stand to the lowest position, through the use of relative retaining pin;
- park the tractor on a dry and level surface;
- reduce the engine speed, then disengage 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;
- place safety blocks under implement to prevent the unit from tipping over onto a child and/or an adult. An implement that tips over can result in injury or death;
- disconnect the driveline from the tractor PTO and rest it on the provided support of the implement;
- disconnect the top link and rear lifting arms of the tractor from the implement hitches;
- check the implement stability. If needed, place additional safety blocks;
- get on the tractor, start the engine and move away from the implement slowly;
- make sure the implement remains stored in a protected area, to prevent that unauthorized personnel can approach it.

If you do not intend to use your implement for a long period of time, (e.g. at the end of the season), do cleaning and maintenance operations as specified in Sections MAINTENANCE and STORAGE.

5.5. TRANSPORTING

To set the implement for transportation, perform the following steps:

- idle tractor engine, disengage tractor PTO, and wait for stopping of all rotating parts;
- lift the implement far enough off the ground to clear objects BUT not to a point where the PTO shaft comes in contact with the tractor or implement. A minimum gap of 2 cm should be left between the tubes and tractor and Rotary Hoe (see also Section Driveline installation);
- lock the tractor lifting hydraulics, turn off the engine, set the parking brake, remove ignition key and get off the tractor;
- adjust the support stand to the highest position, through the use of the retaining pin, to prevent its possible damage during transport.

When driving on public roads, the operator must follow 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 faster moving vehicles may pass you safely.

6. MAINTENANCE

Proper and regular maintenance ensures a long life of the implement, avoids failures and saves time and repair costs.

Periodic inspections and maintenance operations described in this section must be performed by the operator in the times and terms prescribed. Failure to comply with maintenance prescriptions can compromise the functioning and duration of the machine, and consequently invalidate the warranty.

The frequency of maintenance indicated refers to normal conditions of use: it must be intensified in severe 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. Manufacturer, as the case, may give the authorisation to proceed with the repair together with all necessary instructions.

Wrong or inappropriate repairs or maintenance may generate abnormal operating conditions, equipment damage and generate risks for the operator.

WARNING

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

IMPORTANT

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

6.1. BLADE REPLACEMENT

Frequently check the wear condition of blades through visual inspection. The wear of blades is very variable depending on the type of soil.

Replacement of the blades is necessary when the operator notices increase of power absorption during operation or when the blade dimension is significantly reduced compared to the original.

The use of the machine with blades in bad condition compromises the quality of work.

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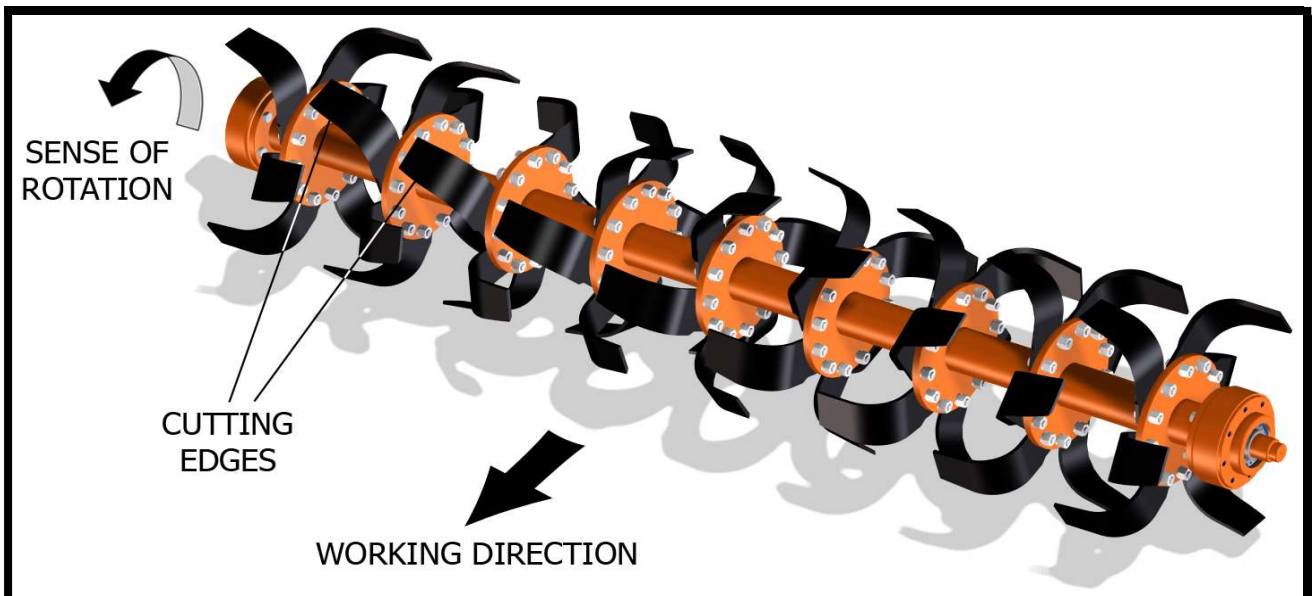
Before performing replacement of the blades:

- idle tractor engine, set the parking brake, disengage tractor PTO, and wait for all moving parts to come to a complete stop;
- slightly raise the implement from the ground or place on safety blocks or mechanical stands;
- lock the height control lever of tractor's hydraulics;
- turn off the tractor and remove the key.

To perform the replacement of blades:

- remove the two bolts and washers clamping the blade to the rotor flange, then remove the blade;
- position the new blade exactly where the worn blade was, then tighten the bolts, referring to the tightening table of this manual for proper torque values. Be sure to install the blade with cutting edge in front of the direction of rotation;
- repeat the same procedure for all the other blades.

At the end of the replacement, make sure the blades have the right helical arrangement, as shown in the figure:



Periodically check the tightness of screws and nuts, and tighten if necessary.

IMPORTANT

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

Replace worn blades only with original parts.

⚠ CAUTION

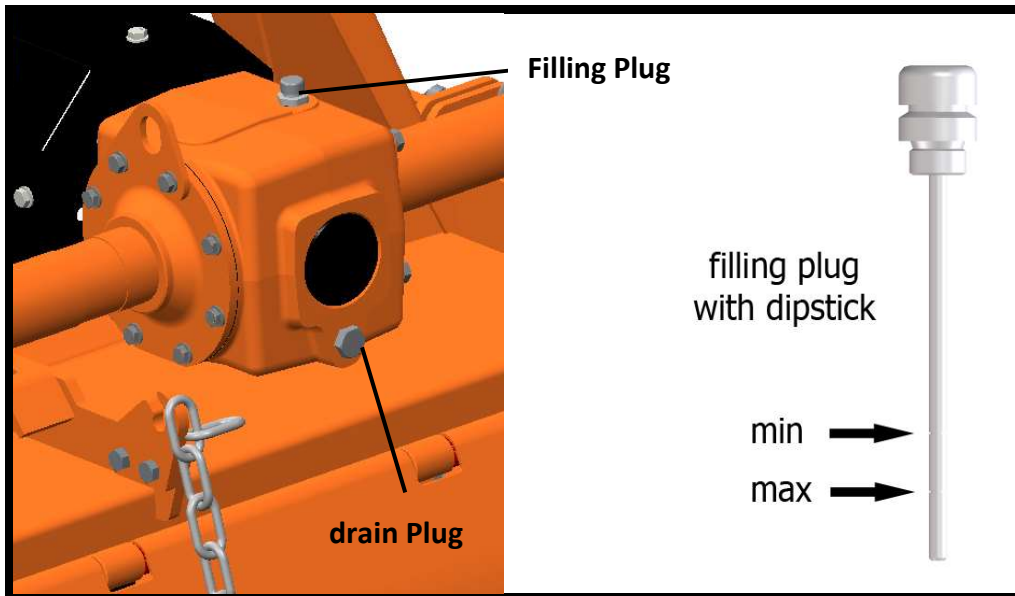
Worn blades may be very sharp!

1.1. GEARBOX LUBRICATION

Lubricant: SAE EP 80W90 gear oil

Check the oil level every 50 hours, making sure the oil mark left on the dipstick of the filling plug (top of the gearbox) is located between the two reference marks (minimum and maximum).

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If the oil is below the minimum, fill up to restore the correct level.

An oil change must be performed:

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

To carry out an oil change:

- place a tank under the oil drain plug (bottom of the gearbox) ;
- unscrew the oil drain plug and drain the oil completely into the tank;
- retighten the drain plug;
- unscrew the oil filling plug;
- fill with oil to achieve the correct level (between the two reference dipstick marks) ;
- retighten the filling plug;
- dispose the discharged oil into containers for used oil.

⚠ CAUTION

Before touching the gearbox wait until it has cooled.

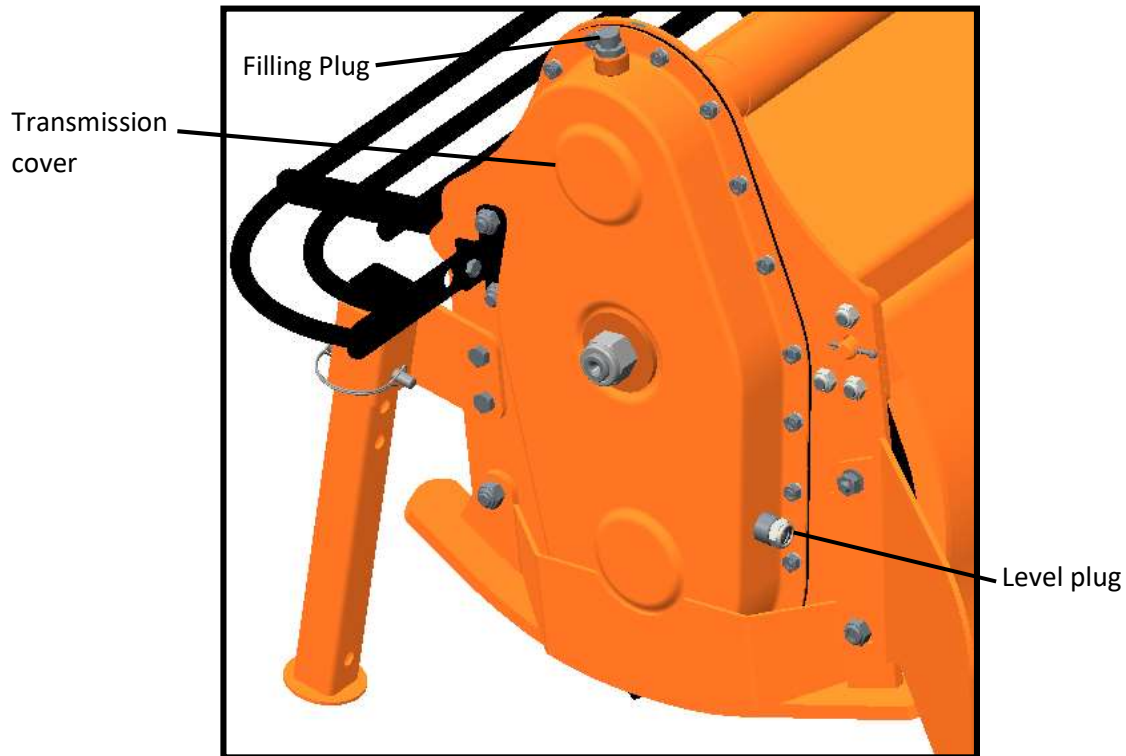
IMPORTANT

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

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

6.2. SIDE CASE LUBRICATION

Lubricant: SAE EP 80W90 gear oil



Check the oil level every 50 hours. Make sure it reaches the level plug on the transmission cover. If the oil is below this level, fill up to restore the correct level.

The oil change must be performed every 500 working hours.

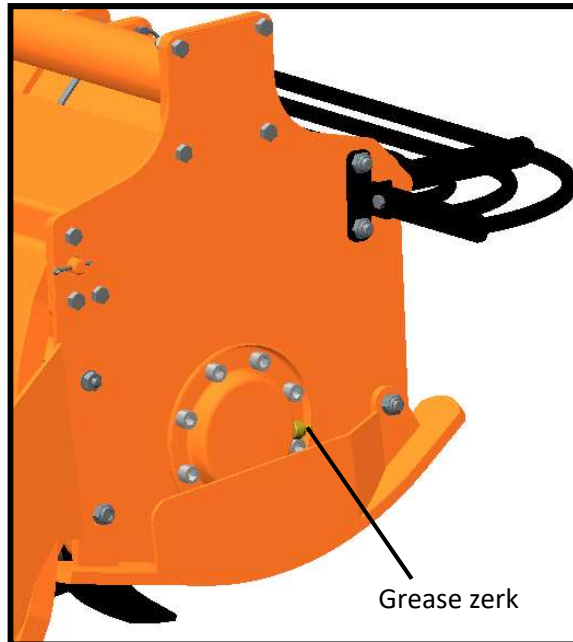
To make the oil change:

- remove the skid from the transmission side;
- place a tank under the oil level plug;
- unscrew the oil level plug and drain the oil completely into the tank;
- retighten the level plug;
- unscrew the oil filling plug (top of transmission cover);
- fill up to the correct level (until level plug);
- retighten the filling plug;
- replace the side skid;
- dispose the discharged oil into containers for used oil.

6.3. BEARING HOUSING LUBRICATION

Lubricant: SAE multi-purpose lithium-type grease

Grease the rotor hub support every eight (8) working hours, through a suitable grease gun.



IMPORTANT

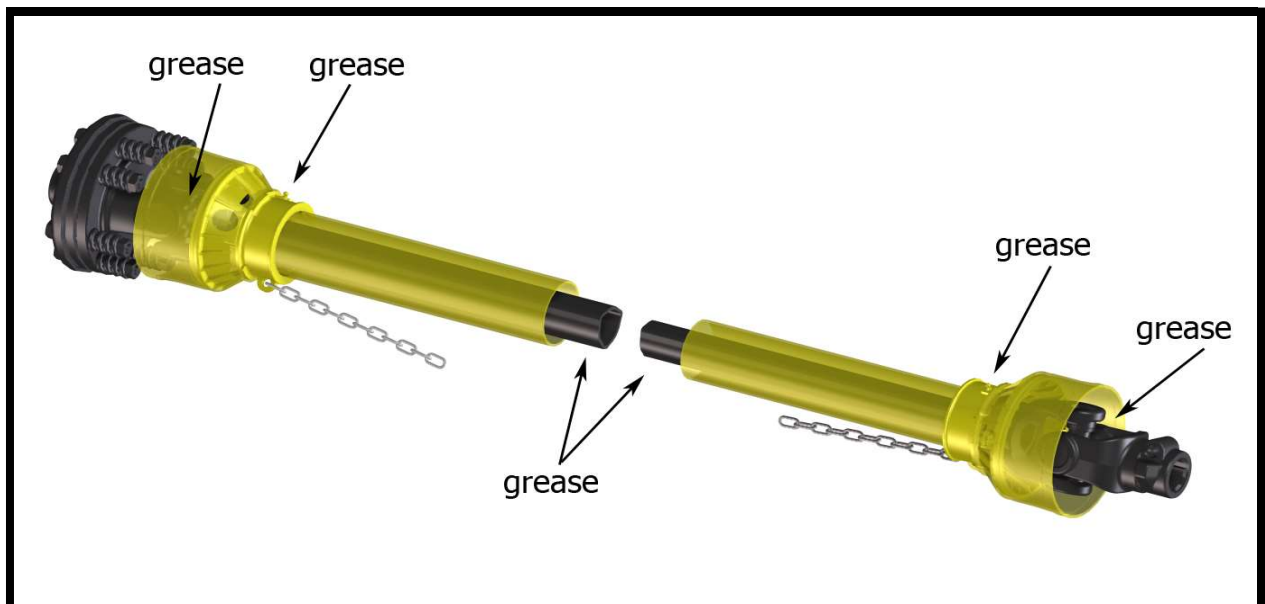
Make sure you clean the gear nipple before using a grease gun.

Do not let excess grease collect on or around these parts especially when operating in sandy areas.

6.4. DRIVESHAFT MAINTENANCE

Lubricant: SAE multi-purpose lithium-type grease

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



IMPORTANT

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

Driveshaft clutch:

Exposure of the implement and driveshaft to environmental elements, as well as a long period of inactivity, generally results in oxidation (rust) of some clutch components. This can result in a seized clutch which will offer no protection to the implement.

To avoid a seized clutch, the operator must perform a short "run-in" of the clutch, as follows:

- take note of the height of the compressed springs;
- loosen the nuts of the compress the springs;
- connect the implement to the tractor (see section connecting to the tractor) ;
- connect the driveshaft (see section Driveline installation);
- start the tractor and engage PTO for few seconds. You should hear and/or see the clutch slip. If not, turn off the tractor, remove the key and wait for all components are stopped before dismounting from the tractor and loosen a little more;
- turn off the tractor, remove the key and wait for all components are stopped before dismounting from the tractor;
- tighten the nuts (gradually) to compress springs and re-establish torque (drive) to the implement as per instructions on page 18-19.

7.STORAGE

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

- park the implement on a flat surface, in a dry place protected from exposition to the elements;
- thoroughly clean the machine, removing from the rotor all residues due to tillage, in order to avoid damage from grass and stagnant water;
- carefully inspect the machine, checking for worn and/or damaged parts. Perform immediately all repairs and/or replacements needed, in order to make the machine ready for restarting;
- in case of abrasion of painted surfaces, provide restoring the surface protection through the touch-up paint to prevent rust;
- make sure the safety decals are in their original positions, intact and legible. When required, replace the decals immediately;
- lubricate properly all grease points, and restore the oil levels as indicated in the Maintenance Section. Use protective oil to coat the exposed mechanical components and to protect them against rust.

If the implement driveshaft is equipped with a friction clutch, it is suggested to take note of the height of the compressed springs and loosen the bolts that compress the springs, to prevent the discs from "sticking" effect due to moisture, that may cause the clutch failure at restart of the activities (see also Driveshaft maintenance).

Before restarting the operations, reset the clutch.

8. SCRAPPING

In case of scrapping, the machine must be disposed in appropriate and authorised sites, according to local legislation.

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

Recover and dispose any exhausted oils to authorised centres for oil collecting.

9. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Gearbox/transmission case noise noticeable and constant	Low oil level. Worn gears.	Add oil to the gearbox/transmission case. Replace gears
Intermittent noise from implement	Loose blades. Gear tooth damaged.	Tighten blades hardware Replace damaged gear
Noise and/or vibration from the implement	Blades worn or damaged. Bearings damaged. The front of the implement is not levelled to the back. Rotor damaged. Hard soil.	Replace blades. Replace bearings. Adjust 3-point top link of tractor making implement PTO parallel to the ground. Repair/replace rotor Reduce ground speed
Driveline vibration	Worn driveshaft. Machine lifted too high. Debris wrapped on the rotor.	Replace driveshaft. Lower machine and readjust tractor lift stop. Remove debris.
Rotor stops turning	Slip clutch is slipping. Broken chain in chain box.	Reduce load to implement or adjust slip clutch. Repair broken link.
Machine skip or leaves crop residue	Badly worn blades. Slip clutch is slipping. Ground speed too fast for conditions.	Replace worn blades. Adjust slip clutch or reduce load. Reduce ground speed.
Smoke and/or hot smell from the implement	Debris wrapped around in blades and/or rotor. Low oil level in the gearbox. Slip clutch is slipping.	Remove debris. Add oil Reduce load to machine or adjust slip clutch.
Gearbox overheating	Low oil level. Hard soil.	Add oil. Reduce ground speed.
Blades wear frequently	Muddy or sandy soil.	Reduce ground speed.

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Blades break frequently	Stony soil.	Reduce ground speed.
Oil leaking from gearbox/ transmission case	Gearbox/transmission case overfilled. Loose filling/drain plug. Damaged breather plug. Damaged seals.	Drain to the proper level. Tighten filling/drain plug. Replace breather plug. Replace seals.
Implement depth insufficient	The implement is carried by a tractor. Tractor has insufficient power. Skids need adjusting. Blades worn or bent. Blades incorrectly installed. Debris entangled in blades and/or rotor.	Lower tractor 3-point arms. Increase PTO speed Adjust skids. Replace blades. Install tines correctly. Clear rotor and/or blades
Soil texture too coarse	Tail flap too high. PTO speed too slow. Ground speed too fast.	Lower tail flap. Increase PTO speed. Reduce ground speed.
Soil texture too fine	Tail flap too low. Ground speed too slow.	Raise tail flap Increase ground speed.
Implement choking up with soil	Blades worn or bent. Blades incorrectly installed. Tail flap too low. Soil too wet.	Replace blades. Install tines correctly. Raise tail flap. Wait until the soil dries.
Implement 'skipping' on the ground or leaving crop residue	Blades incorrectly installed (wrong helical arrangement, cutting edge in the wrong direction...) Debris entangled in blades and/or rotor. Ground speed too fast. Soil too hard.	Install blades correctly (replace right helical arrangement, position cutting edge in front of rotation direction...) Clear rotor and/or blades. Reduce ground speed. Reduce ground speed and make tilling in more steps.
Soil not uniform	Blades worn or damaged. Skids not aligned. Left side not level with the right side.	Replace blades. Align skids. Adjust tractor 3-point arms.
Tractor struggling (under too much load)	Excessive working depth. Excessive PTO speed.	Lower skids. Reduce PTO speed.

10. TORQUE TABLE

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

BOLT SIZE (METRIC)	8.8 grade		10.9 grade	
	N m	Ft lb	N m	Ft lb
M6	11	8	15	11
M8	26	19	36	27
M10	52	39	72	53
M12	91	67	125	93
M14	145	105	200	150
M16	225	165	315	230
M18	310	230	405	300
M20	440	325	610	450

11. WARRANTY

Tirth Agro Technology Pvt. Ltd. offers the following warranty to the purchaser of COSMO BULLY ROTARY HOE mentioned herein above subject to the conditions set out herein after provided the COSMO BULLY ROTARY HOE 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 14 Tarmac Way, PAKENHAM, Victoria, Australia, 3810.

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 unauthorised 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

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- warranty for those goods will be considered void if any damage to the implement is caused by operator abuse, neglect, or if any unauthorised 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 14 Tarmac Way Pakenham, Victoria, Australia, 3810, or via email at sales@farmimplements.com.au or phone +61 3 9706 5166.

THIS CONTRACT WILL BE INEFFECTIVE AND INOPERATIVE IF:

- a. The COSMO BULLY ROTARY HOE has not been delivered, assembled, started and put into operation by the company, or it's Authorized, Representative.
 - b. The warranty card has not been returned within 30 days of the date of purchase.
 - c. The COSMO BULLY ROTARY HOE parts thereof are 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 ROTARY HOE in transportation.
-

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- d. The original numbers are removed, obliterated or altered from the unit.
- e. Any attempt is made to have the repairs executed by a person or persons, other than the company or its authorised representative.
- f. Any defect is not informed immediately to the company or its authorised representative, any alteration in warranty card is made.
- g. Any change in the location of the COSMO BULLY ROTARY HOE or 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.
- h. Damage to the COSMO BULLY ROTARY ROTARY HOE or any part thereof caused, during shifting or transportation is not covered by this warranty.
- i. 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:

- 1. Blade**
- 2. Universal Joint Cross**
- 3. Paint**
- 4. Bearing**
- 5. Rubber Parts**
- 6. Gaskets**
- 7. Fasteners**

❖ 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 given in the technical data chart.
- When following repairs made by the customer without authorisation from the manufacturer or owing to the installation of non-genuine spare parts, the machine is subjected to variations, and the damage can be ascribed to these variations.
- Whenever the user or anyone else on his behalf apply 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.

12. SPARE PARTS

All repairs and replacements on the machine must be performed only by using original spare parts, which must be obtained/provided by the manufacturer or your dealer.

This section contains the information needed to identify the parts of U-series Rotary Hoe that may be ordered from the manufacturer.

When request spare parts to the manufacturer, always give following indications:

- type of machine;
- Rotary Hoe serial number;
- description and p/number of the spare parts;
- quantities.

NOTE

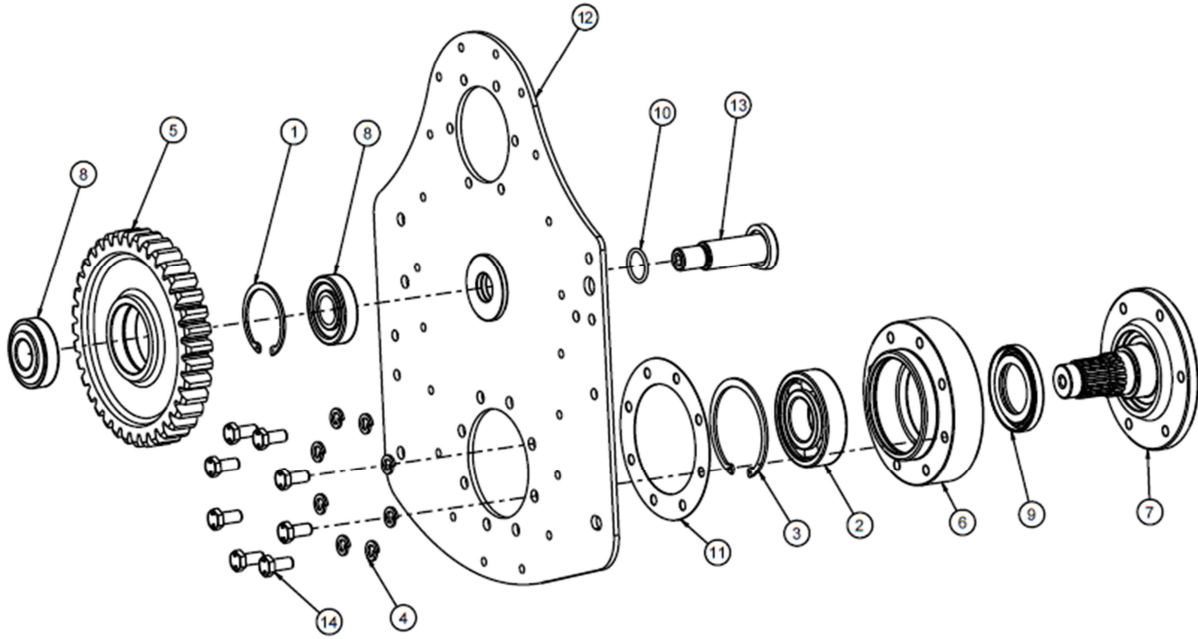
For identification of p/numbers and description of safety, decals refer to the Section Safety labels.

For identification of p/numbers and description of PTO driveline parts, refer to the manual of the driveshaft manufacturer.

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

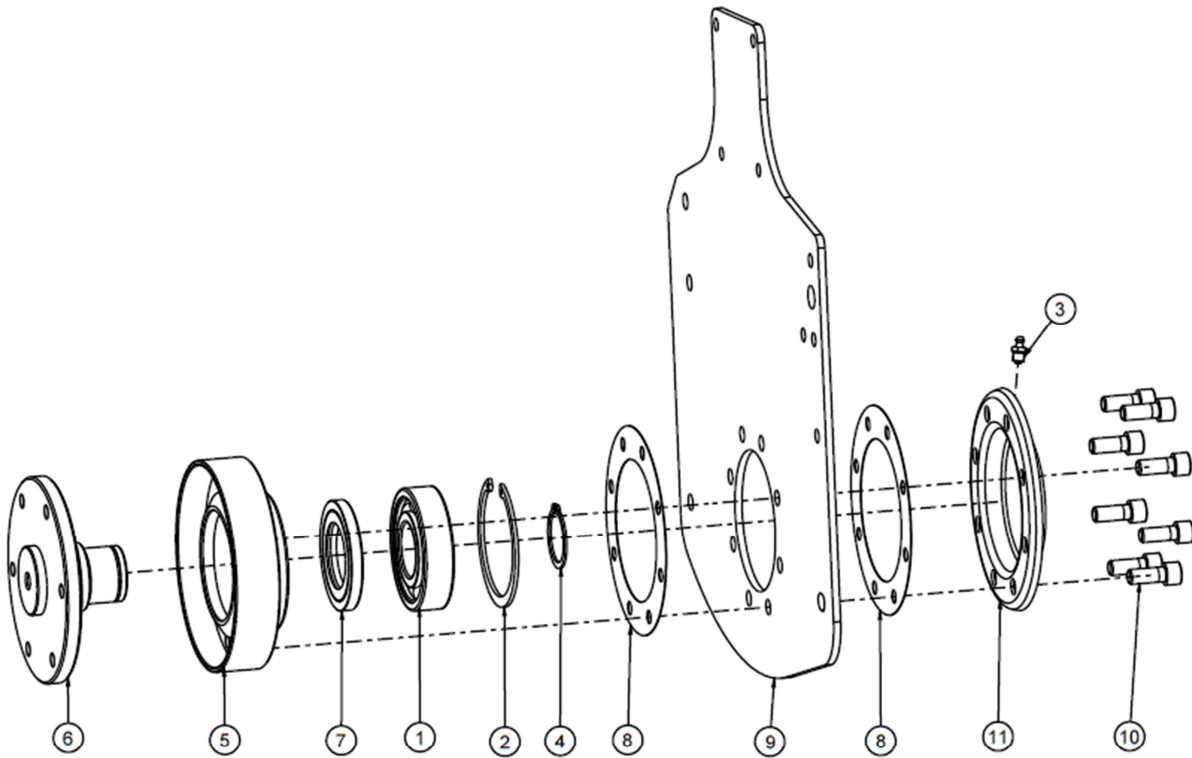
UM SERIES ROTARY HOE SPARE PARTS TABLE

R D PLATE ASSEMBLY (UM-SERIES)



RD PLATE ASSEMBLY (UM) SPARE PARTS LIST			
ITEM	P/NUMBER	QTY.	PART NAME
1	1002	1	CIRCLIP INTERNAL 72mm
2	1073	1	BEARING 6309 LU
3	1074	1	CIRCLIP INTERNAL 100MM
4	1306	8	SPRING WASHER 12mm
5	14109	1	GEAR 36 TEETH (U/M-SERIES)
6	14114	1	RD SHAFT HOUSING GEAR SIDE (U/M-SERIES)
7	14115	1	RD SHAFT GEAR SIDE (U/M-SERIES)
8	14127	2	BEARING 30306
9	14122	1	OIL SEAL 55 x 90 x 10
10	14131	1	O RING 30 x 3.50
11	14135	1	R D HOUSING GASKET (U/M-SERIES)
12	14094	1	R D PLATE GD COMP (U/M-SERIES)
13	14096	1	R D SHAFT MIDDLE (U/M-SERIES)
14	17474	8	HEX BOLT M12 X 1.75 X 25(FT)(8.8) DIN933

S D PLATE ASSEMBLY (UM-SERIES)

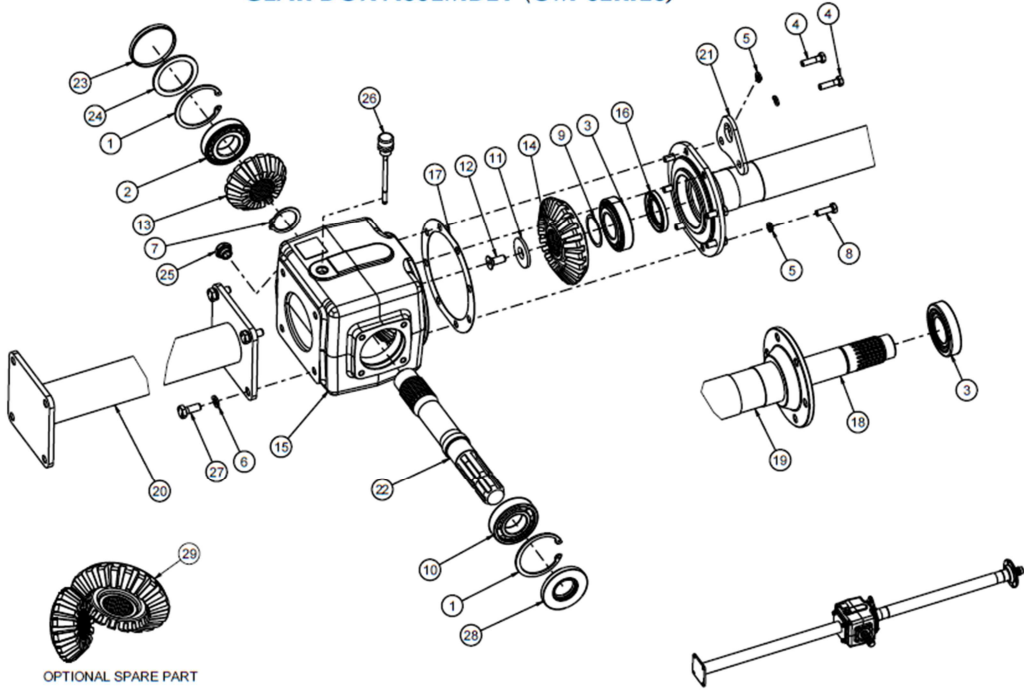


S D ASSEMBLY SPARE PARTS LIST

ITEM	P/NUMBER	QTY.	PART NAME
1	14023	1	S D PLATE (U-SERIES)
2	14019	1	ROTOR SHAFT HOUSING (U-SERIES)
3	14021	1	STUB AXLE SHAFT (U-SERIES)
4	14051	1	OIL SEAL 55 X 72 X 10
5	8036	1	BEARING 6308
6	8027	1	CIRCLIP EXTERNAL 40MM
7	3027	1	CIRCLIP INTERNAL 90MM
8	14256	1	SD PLATE END COVER COMP. (U-SERIES)
9	2833	6	ALLEN BOLT M10 X 1.50 X 25
10	1253	1	1/8 BSP GREASE NIPPLE 7.5MM
11	14018	2	S D PLATE END COVER GASKET (U-SERIES)

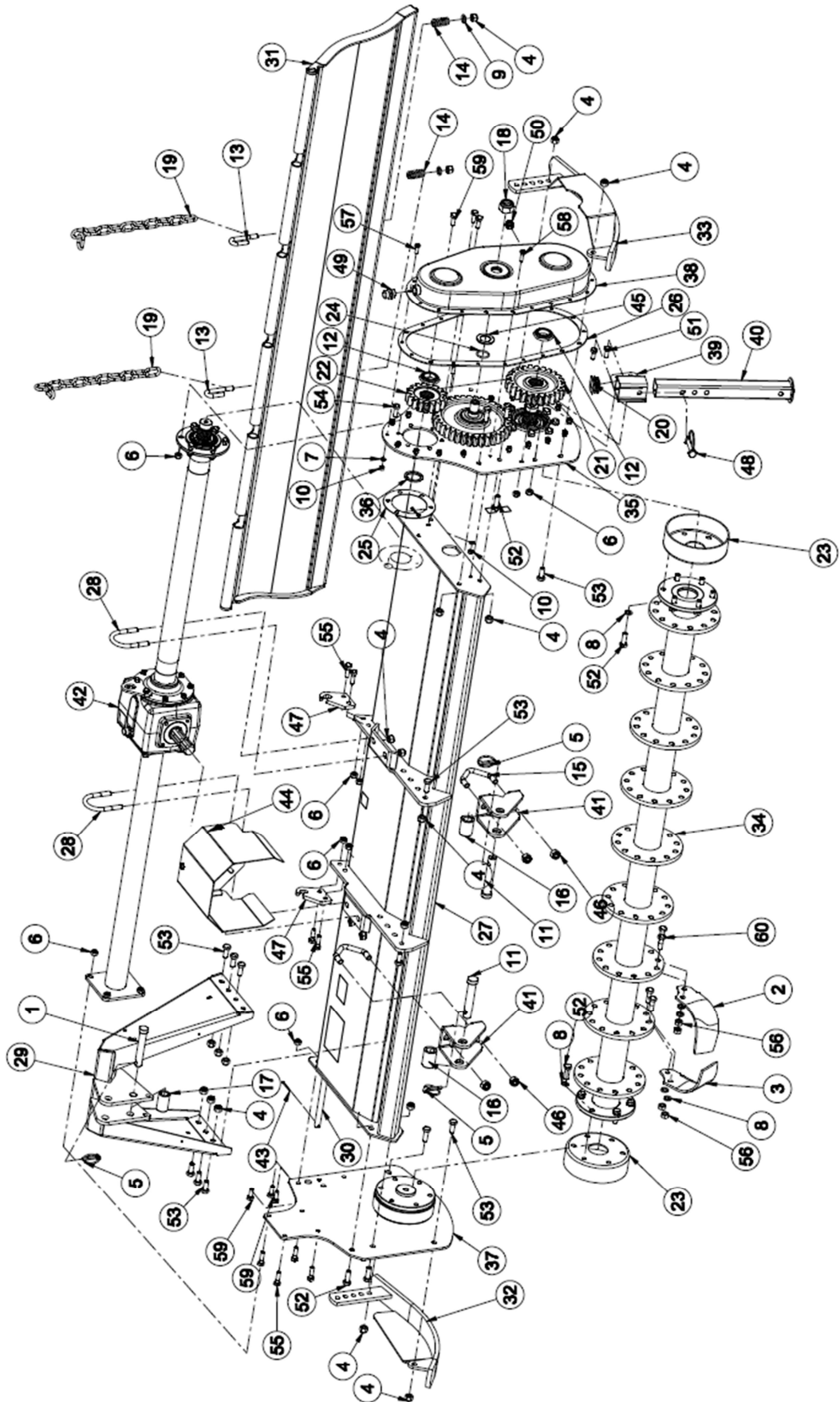
U-Series UM Rotary Hoe

GEAR BOX ASSEMBLY (UM-SERIES)



GEAR BOX ASSEMBLY SPARE PARTS LIST				
ITEM	P/NUMBER	QTY.	PART NAME	REMARKS
1	1002	2	CIRCLIP INTERNAL 72mm	
2	1003	1	BEARING 30207	
3	1022	2	BEARING 30208	
4	6072	2	HEX BOLT M8 X 1.25 X 30	
5	1303	8	SPRING WASHER 8mm	
6	1304	4	SPRING WASHER 10mm	
7	8027	1	CIRCLIP EXTERNAL 40MM	
8	8171	6	HEX BOLT M8 X 1.25 X 25	
9	1426	1	SIMS (DIA 50 X 42)(0.20MM)	
10	10143	1	BEARING 6207	
11	14049	1	CROWN WASHER (U-SERIES)	
12	14058	1	CSK BOLT M10 X 1.5 X 25	
13	14112	1	PINION 15 TEETH (U/M-SERIES)	
14	14113	1	CROWN 22 TEETH (U/M-SERIES)	
15	14118	1	GEAR BOX (U/M-SERIES)	
16	14121	1	OIL SEAL 40 x 62 x 7	
17	14132	2	HOU FLANGE BIG GASKET (U/M-SERIES) 0.4MM	
18	14082	1	JACK SHAFT 946MM (U/M-SERIES)	UM 1.8
	14240	1	JACK SHAFT 848mm (U/M-SERIES)	UM 1.5
	14345	1	JACK SHAFT 705MM (U/M-SERIES)	UM 1.35
19	14083	1	J/S HOUSING COMP (J-946) (U/M-SERIES)	UM 1.8
	14244	1	J/S HOUSING COMP (J-848) (U/M-SERIES)	UM 1.5
	14343	1	J/S HOUSING COMP (J-705) (U/M-1.35M/540)	UM 1.35
20	14084	1	FULL HOUSING COMP (J-944) (U/M-1.8M/540)	UM 1.8
	14245	1	FULL HOUSING COMP.(J-848) (U/M-1.5M/540)	UM 1.5
	14344	1	FULL HOUSING COMP (J-705)(U/M-1.35M/540)	UM 1.35
21	14085	1	GEAR BOX LIFTING HOOK (U/M-SERIES)	
22	14106	1	INPUT SHAFT 540 (U/M-SERIES)	
23	14119	1	OIL SEAL 72 x 8	
24	14120	1	SPACER 71.50 x 56 x 3	
25	14312	1	DRAIN CAP 3/8" BSP (1GTC02UW)	
26	14316	1	DIPSTICK 106MM (M16 X 1.5) (1MLSR202)	
27	17270	4	HEX BOLT M10 X 1.50 X 25 (8.8) DIN931	
28	14309	1	OIL SEAL 35 X 72 X 8 (SPECIAL)	
29	14369	1	CROWN T22,PINION T15 PAIR (U/M-SERIES)	OPTIONAL PART

MACHINE ASSEMBLY (UM-SERIES)



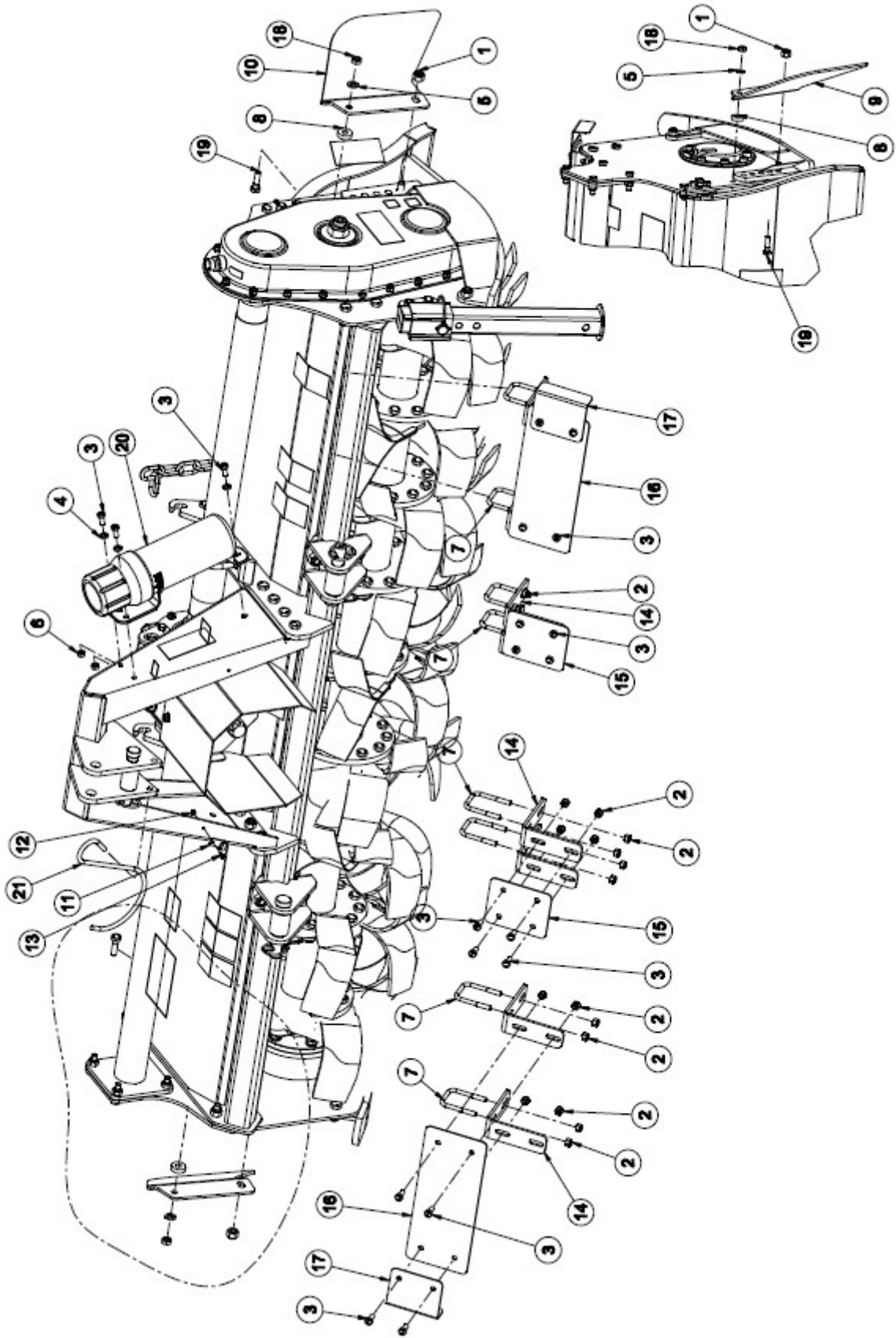
U-Series UM Rotary Hoe

MACHINE ASSEMBLY (UM) SPARE PARTS LIST				
ITEM	P/NUMBER	QTY.	PART NAME	REMARKS
1	1214	1	HINCH PIN TOP CAT-I (DIA- 19 X 126)	
2	4724	27	BLADE C - TYPE RH (70X7) (REG)	UM-1.8
		24		UM-1.5
		21		UM-1.35
3	4723	27	BLADE C - TYPE LH (70X7) (REG)	UM-1.8
		24		UM-1.5
		21		UM-1.35
4	1209	30	NYLOCK NUT M12X1.75 (DIN-982)	
5	1218	3	LINCH PIN	
6	1298	22	NYLOCK NUT M10X1.50 (DIN-982)	
7	1303	20	SPRING WASHER 8mm	
8	14339	120	SPRING WASHER 12 MM ASME B18.21.1	UM-1.8
		108		UM-1.5
		96		UM-1.35
9	8126	2	PLAIN WASHER 12mm	
10	8181	20	HEX NUT M8 X 1.25	
11	1216	2	HITCH PIN BOTTOM CAT-I (DIA-22 X 129)	
12	1449	2	NYLOCK NUT M35X1.50	
13	14004	2	J-BOLT M12 x 1.75 x 24 x 87.5 x 25TL	
14	14005	2	U-BOLT SPRING (U-SERIES)	
15	14014	2	V-BOLT M14 x 2 x 90 x 83.2 x 26TL	
16	14016	2	BUSH (DIA. 36.5 X 22.5 X 50 L)	
17	14038	1	BUSH (DIA. 19.5 X 31.5 X 52 L)	
18	14065	1	NYLOCK NUT M24X2.00 (DIN-982)	
19	14073	2	LIFTING CHAIN TB	
20	4657	1	SQ. PIPE PLASTIC CAP 40MM	
21	14110	1	GEAR 26 TEETH (U/M-SERIES)	
22	14111	1	GEAR 17 TEETH (U/M-SERIES)	
23	14130	2	DUST COVER (U/M-SERIES)	
24	14131	1	O RING 30 x 3.50	
25	14134	1	HOUSING FLANGE SMALL GASKET (U/M-SERIES)	
26	14136	1	CHAIN COVER GASKET (U/M-SERIES)	
27	14080	1	HULL COMP 1.8M (U/M-SERIES)	UM-1.8
	14242	1	HULL COMP 1.5M (U/M-SERIES)	UM-1.5
	14342	1	HULL COMP 1.35M (U/M-SERIES)	UM-1.35
28	14081	2	U-BOLT M12 X 1.75 X 73 X 99.5 X 32TL	
29	14087	1	TOP MAST COMP (U/M-SERIES)	
30	14088	1	TRAILING BOARD ROD 1.8M(U/M-SERIES)	UM-1.8
	14241	1	TRAILING BOARD ROD 1.5M (U/M-SERIES)	UM-1.5
	14349	1	TRAILING BOARD ROD 1.35M(U/M-SERIES)	UM-1.35

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31	14089	1	TRAILING BOARD COMP 1.8M (U/M-SERIES)	UM-1.8
	14247	1	TRAILING BOARD COMP 1.5M (U/M-SERIES)	UM-1.5
	14348	1	TRAILING BOARD COMP 1.35M (U/M-SERIES)	UM-1.35
32	14090	1	DEPTH SKID COMP RH (U/M-SERIES)	
33	14091	1	DEPTH SKID COMP LH (U/M-SERIES)	
34	14092	1	ROTOR COMP 1.8M (U/M-SERIES)	UM-1.8
	14246	1	ROTOR COMP 1.5M (U/M-SERIES)	UM-1.5
	14347	1	ROTOR COMP 1.35M (U/M-SERIES)	UM-1.35
35	14095	1	R D PLATE ASSEMBLY (U/M-SERIES)	
36	14098	1	SPACER DIA-52 x 40.15 x 5.5 MM	
37	14101	1	S D PLATE ASSEMBLY (U/M-SERIES)	
38	14103	1	CHAIN COVER GD COMP (U/M-SERIES)	
39	14104	1	SIDE STAND OUTER COMP (U/M-SERIES)	
40	14105	1	SIDE STAND INNER COMP (U/M-SERIES)	
41	14107	1	HITCHING BRACKET COMP (U/M-SERIES)	
42	14108	1	GEAR BOX ASSEMBLY (U/M-SERIES)(1.8M/540)	UM-1.8
	14243	1	GEAR BOX ASSEMBLY (U/M-SERIES)(1.5M/540)	UM-1.5
	14346	1	GEAR BOX ASSEMBLY(U/M-SERIES)(1.35M/540)	UM-1.35
43	19018	2	COTTER PIN (DIA 4 X 35)	
44	1547	1	PTO SHAFT GUARD ASSEMBLY	
45	14161	1	SPACER 30x50x4	
46	1574	4	NYLOCK NUT M14X2.00 (DIN-982)	
47	14259	2	CHAIN LIFTING HOOK (UM-SERIES)	
48	14267	1	SQ. SNAPPER PIN D10 X L70	
49	14310	1	AIR BREATHER 1/2" BSP (1GTSR38)	
50	14314	1	OIL LEVEL GAUGE-3/8" BSP (1GTLA210)	
51	17270	2	HEX BOLT M10 X 1.50 X 25 (8.8) DIN931	
52	17274	18	HEX BOLT M12 X 1.75 X 35 (8.8) DIN931	
53	17275	10	HEX BOLT M12 X 1.75 X 30 (8.8) DIN931	
54	3340	6	HEX BOLT M10 X 1.50 X 30 (8.8) DIN933	
55	3345	8	HEX BOLT M10 X 1.50 X 35 (8.8) DIN931	
56	14336	108	HEX NUT M12 X 1.25 (10.9) DIN 934	UM-1.8
		96		UM-1.5
		84		UM-1.35
57	14321	18	HEX BOLT M8 X 1.25 X 23 (8.8)(HT)	
58	14322	2	HEX BOLT M8 X 1.25 X 28 (8.8)(HT)	
59	14323	6	HEX BOLT M10 X 1.50 X 28 (8.8) DIN931	
60	4822	108	HEX BOLT M12 X 1.25 X 35(HT-10.9)DIN 960	UM-1.8
		96		UM-1.5
		84		UM-1.35

"CE" KIT ASSEMBLY (UM-SERIES)



U-Series UM Rotary Hoe

CE KIT ASSEMBLY (UM) SPARE PARTS LIST				
ITEM	P/NUMBER	QTY.	PART NAME	REMARKS
1	1209	2	NYLOCK NUT M12X1.75 (DIN-982)	SKID NUT
2	1297	32	NYLOCK NUT M8X1.25 (DIN-982)	FOR UM-1.8
		16		FOR UM-1.5
				FOR UM-1.35
3	8040	19	HEX BOLT M8 X 1.25 X 20	FOR UM-1.8
		11		FOR UM-1.5
		11		FOR UM-1.35
4	8064	3	PLAIN WASHER 8mm	
5	8078	2	PLAIN WASHER 10mm	
6	8181	3	HEX NUT M8 X 1.25	
7	14190	8	U-BOLT M8 X 1.25 X 77 X 60 X 28TL	FOR UM-1.8
		4		FOR UM-1.5
		4		FOR UM-1.35
8	14194	2	SPACER DIA-28 x 11 x 8 MM	
9	14228	1	TB GAURD PLATE LH (UM-SERIES)	
10	14229	1	TB GAURD PLATE RH (UM-SERIES)	
11	23147	1	PLATE,HOOK HOLDING (JUMBO)	
12	23028	1	HEX NUT M4 X 0.75	
13	23029	1	HEX BOLT M4 X 0.75 X 10	
14	4731	8	BRACKET,FRONT BARRIER (REG + & L)	FOR UM-1.8
		4		FOR UM-1.5
		4		FOR UM-1.35
15	4739	2	PLATE,FRONT BARRIER (L=100) (REG +)	ONLY FOR UM-1.8
16	4740	2	PLATE,FRONT BARRIER (L=300) (REG +)	FOR UM-1.8 & UM-1.5
	14350	2	PLATE,FRONT BARRIER (L=150) (U/M SERIES)	FOR UM-1.35
17	4741	2	PLATE,END,FRONT BARRIER (REG +)	
18	17272	2	HEX NUT M10 X 1.50 DIN 934	
19	3345	2	HEX BOLT M10 X 1.50 X 35 (8.8) DIN931	
20	26030	1	MANUAL BOX COVER 1/2(SMMSD)	
21	14340	1	DRIVELINE HOOK 250MM	

13. EC DECLARATION OF CONFORMITY

In accordance with the EC Machinery 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 machine:

Type: COSMO BULLY Rotary Hoe
Model: U-Series UM Type

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

Harmonized standards used:

EN ISO 12100:2010

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

EN ISO 4254-1:2009

Agricultural machinery - Safety - Part 1: General requirements

EN ISO 4254-5:2009

Agricultural machinery - Safety - Part 5: Power-driven soil-working machines

EN ISO 13857:2008

Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs

Other technical standard used:

ISO 11684:1995

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

Rajkot,

Ashwin Gohil / Hasmukh Gohil
Chairman / Managing Director



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

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