

## OPERATIONS & PARTS MANUAL

**FOR MODELS:**

- BE-RTH100
- BE-RTH120
- BE-RTH140
- BE-RTH160
- BE-RTH180

PURCHASE DATE	MODEL NO.	SERIAL NUMBER
DEALER		

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## **CONGRATULATIONS**

You have invested in one of the best implements of its type in the market today.

The care you give your BE AG & INDUSTRIAL implement will greatly determine your satisfaction with its performance and its service life. A careful study of this manual will give you a thorough understanding of your new implement before operating.

If your manual is lost or destroyed, BE AG & INDUSTRIAL will be glad to provide you a new copy. Visit to nearest dealership & get a copy.

As an authorized BE AG & INDUSTRIAL dealer, we stock genuine parts which are manufactured with the same precision and skill as our original equipment. Our trained service persons are well informed on methods required to service BE AG & INDUSTRIAL equipment and are ready to help you.

Should you require additional information or assistance, please contact us.

## **TO THE PURCHASER**

This manual contains valuable information about your new BE AG & INDUSTRIAL mini rotary tiller. It has been carefully prepared to give you helpful suggestions for operating, adjusting, servicing and ordering spare parts.

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

Sometime in the future your mini rotary tiller may need new parts to replace which are worn out or broken. If so, go to your dealer and provide him equipment's detail like model and part number.

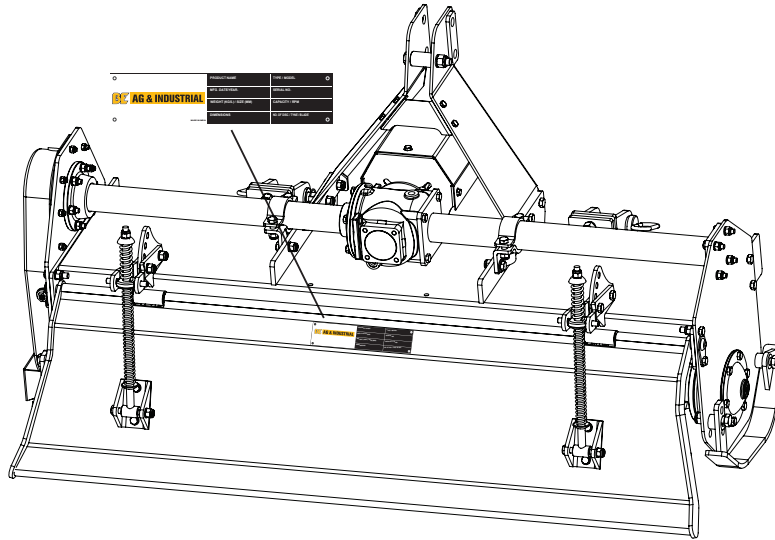
## **USER RESPONSIBILITY**

1. Read and understand the information contained in this manual.
2. Operate, lubricate, assemble and maintain the equipment in accordance with all instructions and safety procedures in this manual.
3. Inspect the equipment and replace or repair any parts that are damaged or worn out which under continued operation would cause damage, wear to other parts, or cause a safety hazard.
4. Return the equipment or parts to the authorized dealer, from where it was purchased, for service or replacement of defective parts that are covered by warranty. (The BE AG & INDUSTRIAL Factory may inspect equipment or parts before warranty claims are honored.)
5. All costs incurred by the dealer for traveling to or transporting the equipment for warranty inspection and claims will be borne by the customer.

## 1. INTRODUCTION

### 1.1 Tiller Identification

Each tiller has a plate for unique identification. Any request for assistance or information regarding the machine must be directed to the Manufacturer or Dealer always referring to the model and serial number as shown on the Serial Number Plate affixed to the machine.



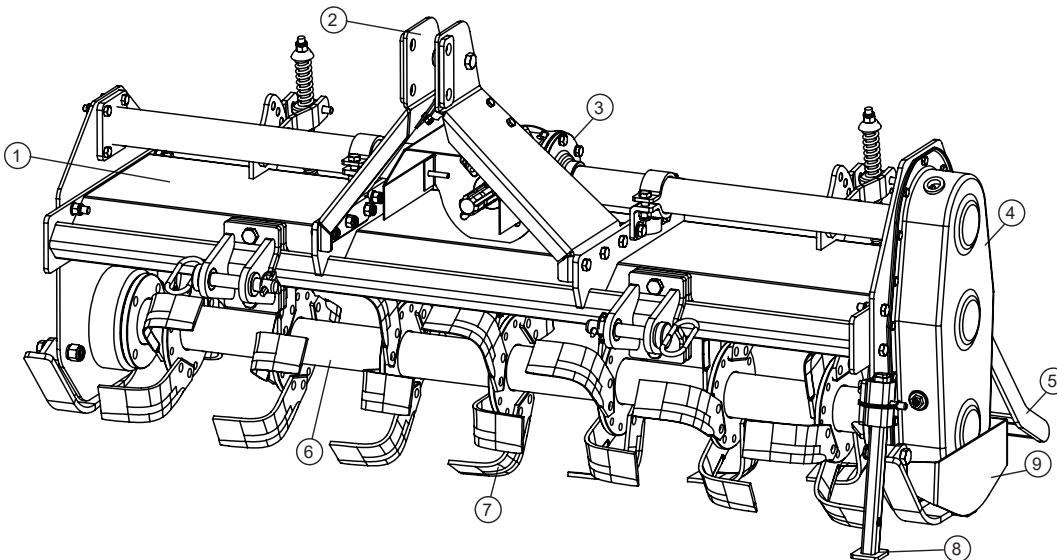
### 1.2. Intended Use

The Hobby Medium Series Rotary Tiller 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 hydraulic lift and universal three point hitch that can support the implement weight and driven by the power of the tractor through the PTO drive shaft.

### **⚠ DANGER**

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

### 1.3 Main Parts Description



REF	DESCRIPTION
1	Frame Assembly
2	3-Point Linkage
3	Gear Box
4	Side Gear Drive
5	Plank Board
6	Rotor Assembly
7	Blade
8	RT Parking Stand
9	Depth Skid

## 2. SAFETY

Careful operation is your best insurance against an accident. All operators, no matter how much experience they may have, should carefully read this manual and other related manual before operating the power machine and this implement. It is the owner's obligation to instruct all operators in safe operation.

### 2.1. General Safety Instruction

- Do not operate the equipment while under the influence of drugs or alcohol as they impair the ability to safely and properly operate the equipment.
- The operator should be familiar with all functions of the tractor and attached implement, and be able to handle emergencies quickly.
- Make sure all guards and shields are in place and secured before operating implement.
- Keep all bystanders away from equipment and work area.
- Start tractor from the driver's seat with hydraulic controls in neutral.
- Operate tractor and controls from the driver's seat only.
- Never dismount from a moving tractor or leave tractor unattended with engine running.
- Do not allow anyone to stand between tractor and implement while backing up to implement.
- Keep hands, feet, and clothing away from power-driven parts.
- While transporting and operating equipment, watch out for objects overhead and along side such as fences, trees, buildings, wires, etc.
- Do not turn tractor so tight as to cause hitched implement to ride up on the tractor's rear wheel.
- Store implement in an area where children normally do not play.

### 2.2. Equipment Safety Guidelines

**⚠ Failure to follow all safety instructions could result in serious injury or death.**

Safety of the operator and bystanders is one of the main concerns in designing and developing a tiller. However, every year accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions and insist those working with you, or for you, follow them.

- Read safety instructions for both the tractor and this tiller before use.
- Never exceed the advised limits of the tractor or the tiller.
- This equipment is dangerous to children and those unfamiliar with its operation
- Use the tiller for its intended purpose only. Improper use can damage the tiller and cause serious injury to persons, animals, or death.
- Any unauthorized modification of the machine may cause problems in safety and relieves the manufacturer from any liability for damages or injuries that may result to operators, third parties and objects.
- Before using the machine, familiarize yourself with its controls and its working capacity.
- Do not leave the tiller unattended with tractor engine running. Shut off the power whenever going near the machine for repairing or lubrication purpose.
- Do not use the machine if the category of the connecting pins of the tiller does not match that of the tractor hitch system.

### 2.3. Operating Safety Instructions

**⚠ Failure to follow all safety instructions could result in serious injury or death**

- Never engage the tractor PTO in the presence of people close to the PTO Shaft. The body, hair or clothing of a person can get caught in rotating parts, causing serious injury or death.
- Before engaging the PTO and during all operations, make sure that no person or animal is in immediate area of action of the machine. Never use the tiller if people are in his working area.
- Before using the machine, be sure to have cleared the operating area from obstacles
- Before making changes in direction, turns or going in reverse, slightly lift the tiller from the ground after disengaging the power take-off, to avoid damage to the machine.

- The operator must operate tiller lifting/lowering only from the driving seat of the tractor. Do not perform lifting manoeuvres on side or behind the tractor.
- Never leave the driver's seat when the tractor is turned on. Before leaving the tractor, lower the tiller to the ground, disengage the PTO, insert the parking brake, stop engine and remove the key from the control panel.
- Keep all Shields / Guards in place and in good condition to avoid risk of entanglement with serious injury or death. Replace all damaged/broken shields immediately.
- Prolonged use of the tiller can cause overheating of the gearbox. Do not touch the gearbox during use and immediately after, it could be extremely hot and cause severe burn.

#### **2.4. Transporting Safety Instructions**

##### **⚠ Failure to follow all safety instructions could result in serious injury or death**

- Comply with state and local laws.
- Use towing vehicle and trailer of adequate size and capacity. Secure equipment towed on a trailer with tie downs and chains.
- Sudden braking can cause a towed trailer to swerve and upset. Reduce speed if towed trailer is not equipped with brakes.
- Avoid contact with any over head utility lines or electrically charged conductors.
- Always drive with load on end of loader arms low to the ground.
- Always drive straight up and down steep inclines with heavy end of a tractor with loader attachment on the "uphill" side.
- Engage Park brake when stopped on an incline.
- 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 tiller cannot be lowered accidentally.
- The implement may be wider than the tractor. Pay attention during transporting to persons, animals or obstacles exposed.
- 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.

#### **2.5. Maintenance Safety Instructions**

- All maintenance and repairing operations must be performed by qualified and trained operators, with the tractor engine off, the PTO disengaged, the tiller lowered to the ground or on security stands, the ignition key off and the parking brake set.
- Perform repairs and replacements necessary to the machine using only Genuine BE AG & INDUSTRIAL Spare parts provided by the manufacturer or your dealer.
- Perform maintenance operations always using appropriate Personal Protective Equipment (protective eye glasses, hard hat, hearing protection, safety shoes, overall and work gloves, filter mask).
- Wear protective clothing and equipment appropriate for the job such as safety shoes, safety glasses, hard hat, and ear plugs.

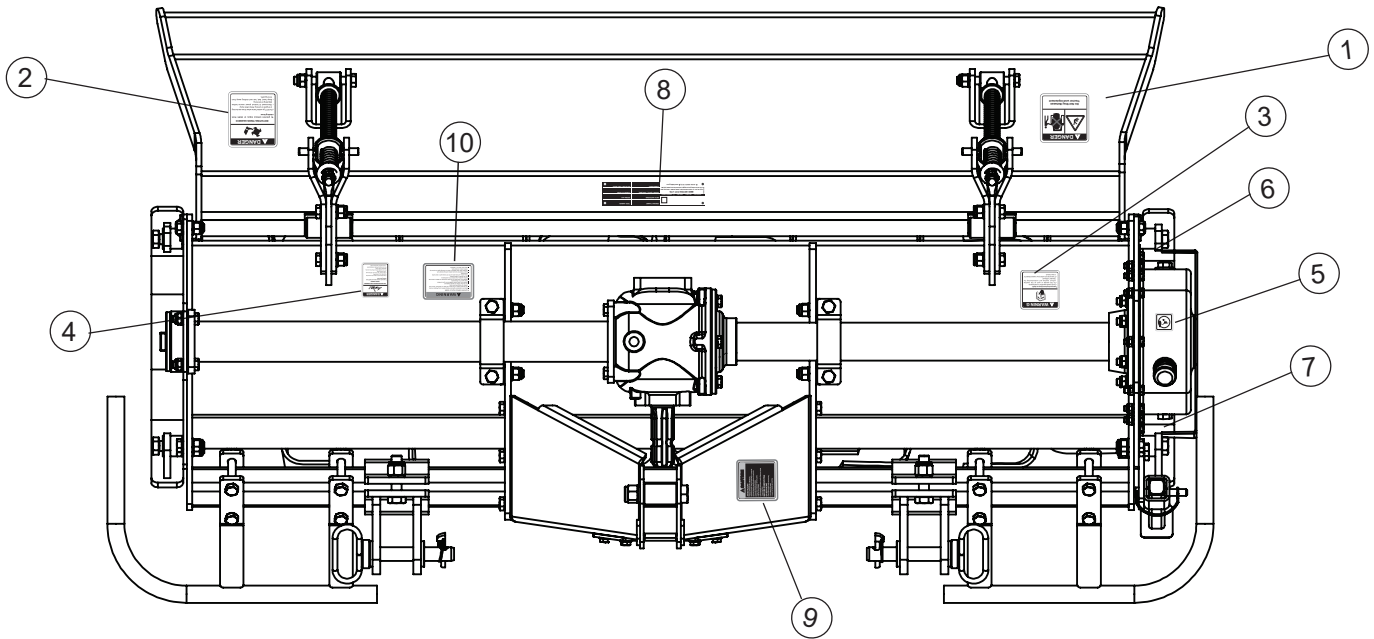
#### **2.6. Storage Safety Instructions**

- Never leave the tractor unattended with the tiller in lifted position. Accidental operation of lifting lever or a hydraulic failure may cause sudden drop of unit with injury or death by crushing.
- Following operation, or before unhooking the tiller, stop the tractor, set the brakes, disengage the PTO, lower the attached tiller to the ground, shut off the engine, remove the ignition key and wait for all moving parts to stop.
- Make sure all parked machines are on a hard, level surface and engage all safety devices.
- Place support blocks under tiller as needed to prevent unit from tipping over onto a child and/or an adult. A tiller that tips over can result in injury or death.
- Store the unit in an area away from human activity.

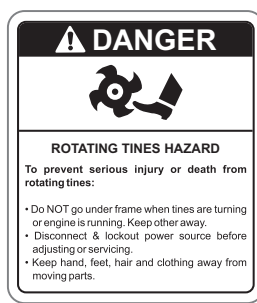
## 2.7. Safety Labels

Your Rotary Tiller comes equipped with all safety labels in place. They are designed to help you safely operate your equipment. Read and follow their directions.

- Keep all safety labels clean and legible.
- Refer to this section for proper label placement. Replace all damaged or missing labels. Order new labels from your nearest BE AG & INDUSTRIAL dealer.
- Some new equipment installed during repair requires safety labels to be affixed to the replaced component as specified by BE AG & INDUSTRIAL. When ordering new components make sure the correct safety labels are included in the request.
- Refer to this section for proper label placement. To install new labels:
  1. Clean surface area where label is to be placed.
  2. Spray soapy water onto the cleaned area.
  3. Peel backing from label and press label firmly onto the surface.
  4. Squeeze out air bubbles with edge of a credit card or with a similar type of straight edge.



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<b>BE AGRI EASE</b> AG & INDUSTRIAL	PRODUCT NAME	TYPE / MODEL
	MFG. DATE/YEAR	SERIAL NO.
	WEIGHT (KGS.) / SIZE (MM)	CAPACITY / RPM
	DIMENSIONS	NO. OF DISC / TYNE / BLADE

8



9

### 3. ASSEMBLY AND SET UP

The Rotary Tiller is delivered fully assembled and equipped with a driveshaft with torque limiter (clutch discs) and related operating manual.

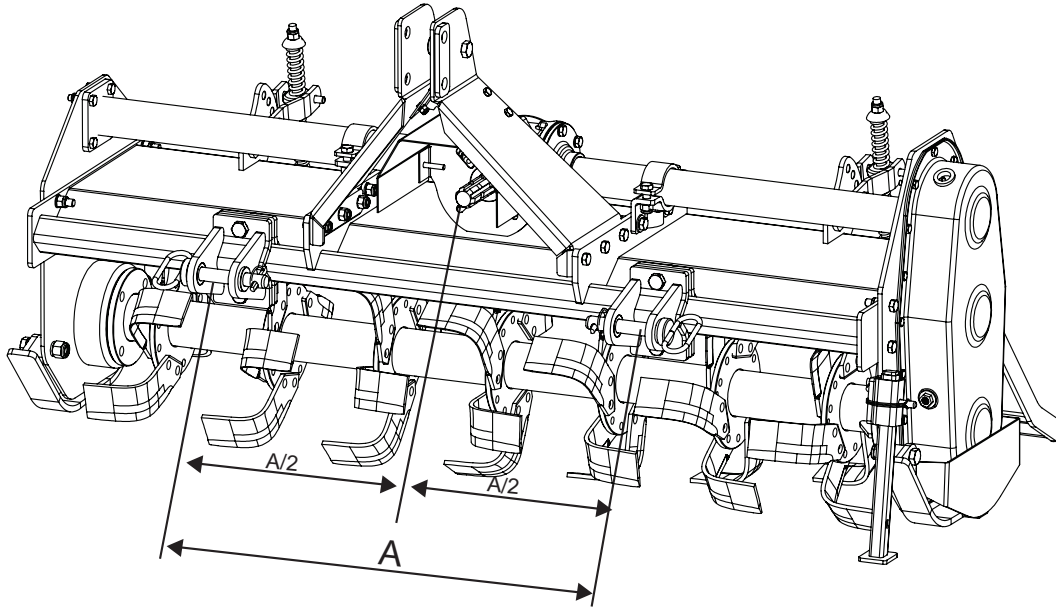
When the machine is delivered, check that there is no damage to the tiller or driveshaft. In case of damage or missing parts immediately notify the manufacturer or your dealer.

#### 3.1. Lower Hitches Positioning

The Hobby Medium Series Rotary Tillers are designed to be mounted on tractors equipped with:

- 3-point Hitch Category Cat-I (IS:4468)
- Quick Hitch Category Cat-I (ASABE Standard).

The position of the lower hitches must be equiv-spaced from main drive shaft of Gearbox.



#### 3.2. Connecting to The Tractor

**⚠ Never stand between tractor and rotary tiller while backing up tractor to the hitch.**

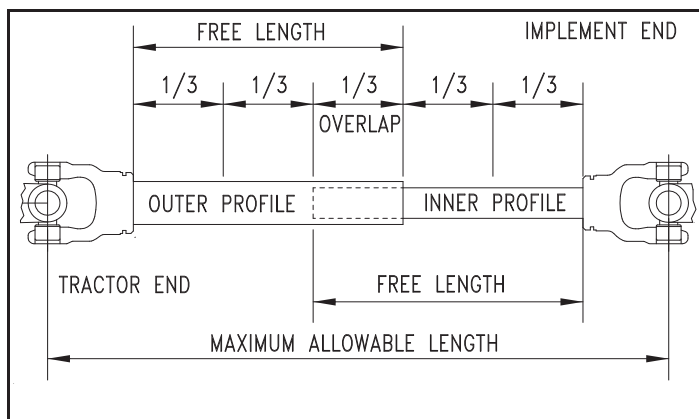
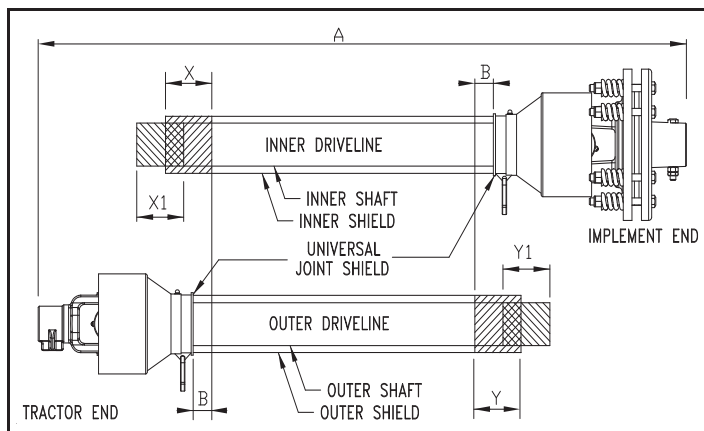
- Place tiller and tractor on level ground.
- Back tractor into position by lining up lift arms and Hitch bracket of the tiller linkage pins. Attach lift arms to linkage pins and secure with lynch pins.
- Attach top link using upper linkage pin and lynch pin.
- Attach PTO shaft/drive shaft and secure anti-rotation chains.
- Once everything is securely attached, raise tiller off the ground and adjust the top link so the tiller sets level from front to back.
- Determine if the PTO shaft length suits tractor and tiller linkage.
- Make sure PTO shaft is properly installed and level before checking shaft collapsible length.

**IMPORTANT: A PTO shaft that is too long to fit between tractor and tiller will bottom out causing structural damage to the tractor and tiller. Always check PTO shaft collapsible length during initial setup, when connecting to a different tractor and when alternating between using a quick hitch and a standard 3-point hitch. More than one PTO shaft may be required to fit all applications.**

#### 3.3. Sizing The PTO Shaft

- Un-hook shaft from tractor PTO shaft and pull outer and inner shaft apart.
- Reattach outer shaft to tractor PTO shaft. Pull on inner and outer shaft to be sure universal joints are properly secured.

- Hold inner and outer shaft parallel to each other:
  1. Measure 1" ("B" dimension) back from outer shaft universal joint shield to make a mark at this location on the inner shaft shield.
  2. Measure 1" ("B" dimension) back from the inner shaft universal joint shield and make a mark at this location on the outer shaft shield.
- Remove shaft from tractor and gearbox shaft.
- Measure from end of inner shield to scribed mark ("X" dimension). Cut off inner shield at the mark. Cut same amount off the inner shaft ("X1" dimension).
- Measure from end of outer shield to scribed mark ("Y" dimension). Cut off outer shield at the mark. Cut same amount off the outer shaft ("Y1" dimension).



The PTO shaft maximum allowable length must, when fully extended, have a minimum overlap of the profile tubes by not less than 1/3 the free length with both inner and outer profile tubes being of equal length. For minimum PTO shaft length, measure 1" ("B" dimension) back from universal joint shield to end of outer PTO shaft shield.

#### 4. OPERATING

Before operate the tiller, make sure you have read and understood the operating manuals of the tiller, tractor and PTO shaft.

#### **⚠ DANGER**

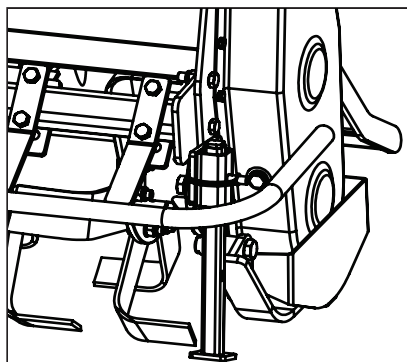
During operation, adjustment, maintenance, repairing or transportation of the machine, the operator must always use appropriate Personal Protective Equipment (PPE).

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

**NOTE:** Never attempt to adjust the rotary tiller while the tractor is running. Do not allow the tractor engine or rotary tiller to bog down or stall. This causes undue wear and tear on the tiller and tractor. If this continues to happen reduce ground speed and raise tilling depth of rotary tiller. Never attempt to remove objects from the rotor bar until the tractor has been shut down and the tiller tines have completely stopped.

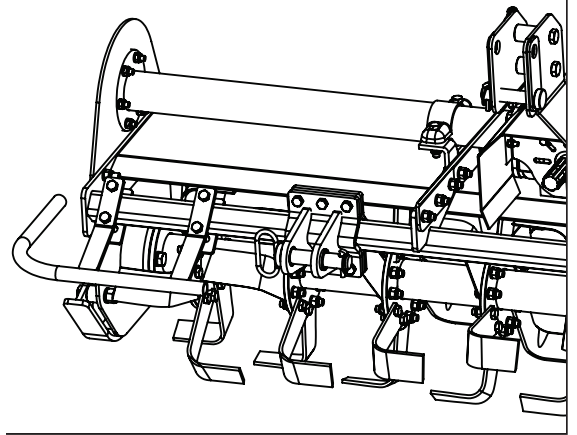
#### 4.1 Raising parking stand

1. Remove spring locking pin.
2. Slide parking stand and way up on tiller bracket.
3. Fasten with spring locking pin.



## 4.2. Lower Clevises Adjustment

It is possible to adjust the lower hitch position loosening the bolts and sliding the clevis. Tighten the bolts after making any adjustment required.

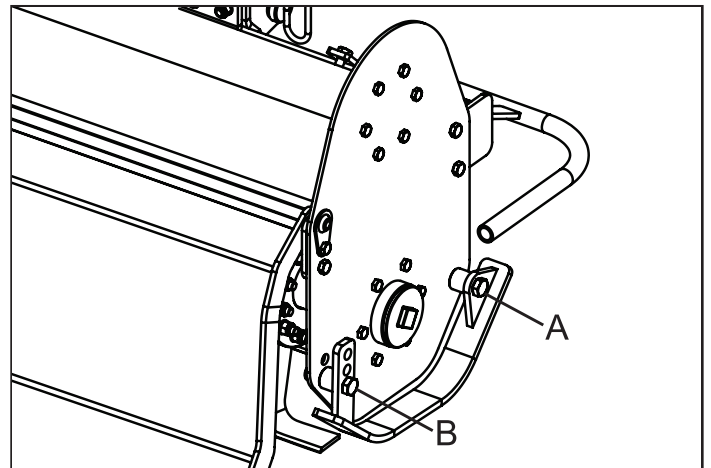
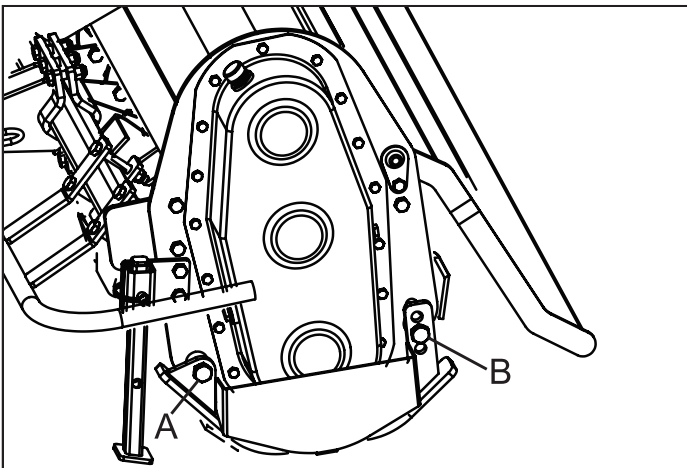


## 4.3 SKIDS ADJUSTMENT

The working depth of the tiller is determined by the position of the side skids. It may be increased by raising the skids, and decreased by lowered 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 parking brake and off the ignition key.
- Loosen the bolt A in the front of the skid.
- Loosen the bolt B and remove the bolt on the rear of the skid.
- Adjust the height of the skid through the holes, as desired.
- Tighten the bolts.



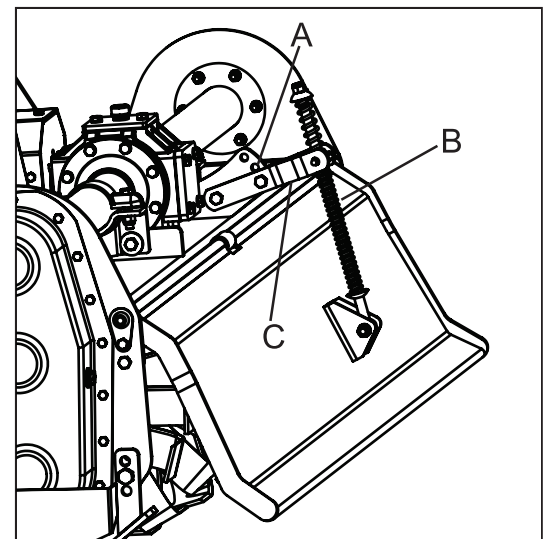
When finished, verify that both skids are at same level, and check if the front of the tiller is leveled to the back, when lowered to the ground. Adjust with the 3-point top link if necessary.

## 4.4. Rear Board Adjustment

The position of plank board is adjustable by varying the hole position on shocker mounting plate (A). lowering the hole will increase pressure of tension shocker assembly (B) on plank board which result soil level compaction while upper hole position will reduce the pressure.

To adjust the plank board position, perform the following steps:

Loosen and remove the bolt and nut of shocker holding clamp (C) adjust the clamp upper and lower against shocker mounting plate (A) as required.



## 5. TRANSPORTING

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

- Idle tractor engine, disengage tractor PTO, and wait for stopping of all rotating parts;
- Lift the tiller until the transport position, making sure the PTO shaft does not contact tractor or tiller. A minimum gap of 2 cm should be leaved between the tubes and tractor and tiller.
- Lock the tractor lifting hydraulics, turn off the engine, set the parking brake, remove ignition key and get off the tractor.
- Adjust the parking stand to the highest position, through the use of relative retaining pin, to prevent its possible damage during transport. When driving on public roads, follow strictly all local laws and traffic regulations.

## 6. MAINTENANCE

### 6.1 Service Lubrication

#### CAUTION

- The given frequencies are indicative and refer to normal conditions of use. They may therefore be subjected to variations in relation to the type of service, in more or less dusty environment, seasonal factors, etc.
- In the case of heavy-duty condition, the maintenance operation should obviously be more frequent.
- Before injecting grease into the lubricators, the greasing points must be thoroughly cleaned to prevent mud, dust or foreign bodies from mixing with the lubricants, thus reducing or even annulling its lubricating effect.
- When topping up or changing the lubricant, always ensure that the oil is of the same type as that used previously.
- Always keep oil and greases well away from children's reach. Always thoroughly read the warnings and precautions indicated on the containers.
- Avoid contact with the skin.
- Always thoroughly and fully wash after use. The utilized oils should be treated in compliance with the current anti-pollution laws.

It is advisable to use SAE 140 EP Grade OIL or equivalent for the gear box unit and side transmission. It is advisable to use high quality grease for all greasing points.

#### Every 8 Work Hours

- Grease the PTO Shaft cross journals.
- Check that the bolts fixing the hoe blades are well tightened.

#### Every 50 Work Hours

- Check the level of the oil in the gearbox or in the reduction unit and top up to the level mark on the rod as necessary.
- Transmission lateral part chain: check the level of the oil in the side casing of the transmission unit.
- Add oil through the fill plug if necessary. It should flow from the level plug.

#### Every 200 Work Hours

- Change the oil in the gearbox or in the reduction unit and transmission casing by completely draining of the old oil through the drain plug, under the reduction unit and through the transmission drain plug.

### 6.2 Blades Replacement

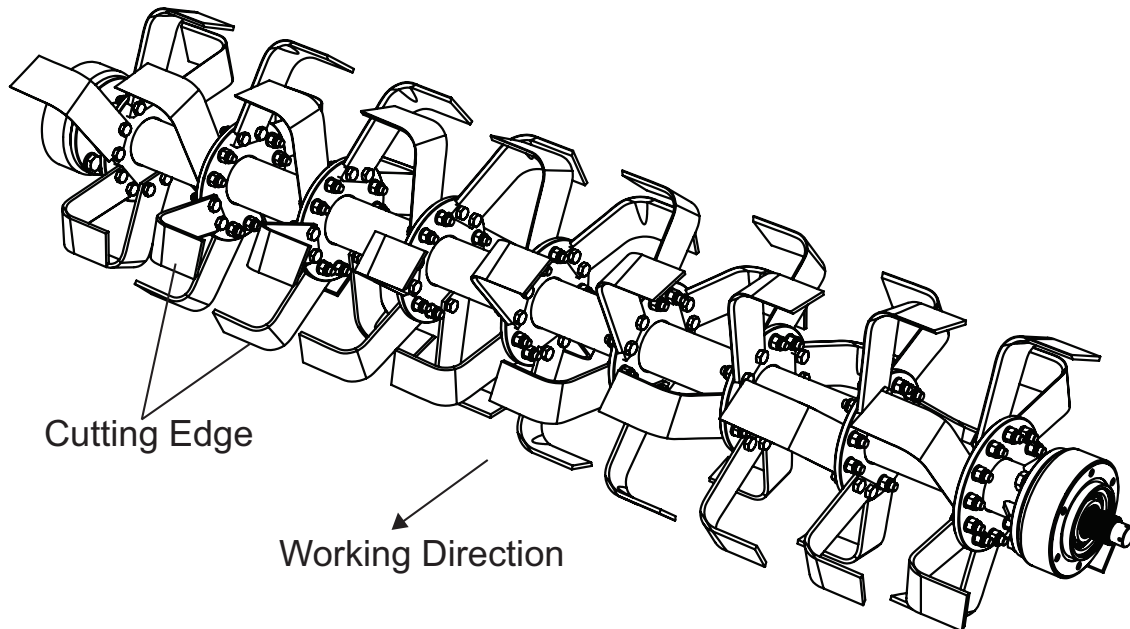
The Blades with which the rotary tiller is equipped can work soils of normal conformation. Check the degree of wear and condition of the Blades each day. If the blades should accidentally bend (or break) during work, they must be immediately replaced.

### First - Identify Blades:

Remember to mount the new Blade in exactly the same position as the old one. If several Blades must be replaced, it is advisable to remove and assemble one Blade at a time in order to prevent positioning errors. The tillers are normally equipped with 6 blades per flange.

### Second - Install New Blades:

1. Raise tiller with a safe lifting device.
2. Put safety stands or blocks under tiller.
3. Stand facing rear of tiller and study placement of Blades.
4. Remove bolts, lock washers, and nuts.



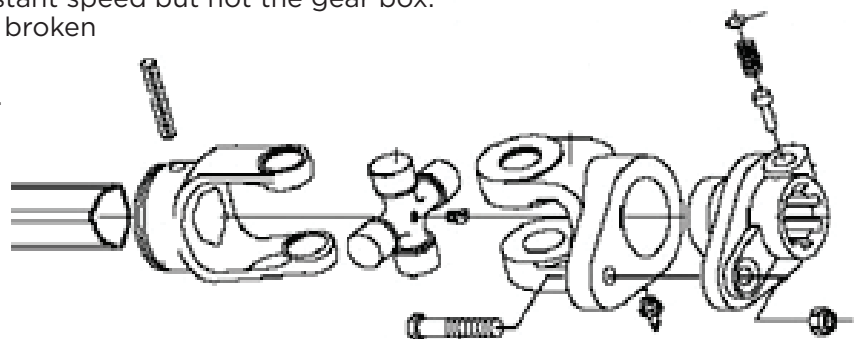
## 7. STORAGE

It is advisable to proceed in the following way at the end of the season or if the machine is to remain inactive for a long period of time:

- Wash the implement, particularly removing any fertilizer and/or chemical products, and then thoroughly dry it.
- Carefully check for any damaged or worn parts and replace these if necessary.
- Fully check screws or bolts, particularly those fixing the hoe blades.
- Thoroughly lubricate the implement and lastly protect it with a plastic sheet. Store it in a dry place.
- Careful compliance with these instructions will be all to the advantage of the user who will be sure to use an implement in perfect conditions when work begins again. Remember that the manufacturer is always at your disposal for any assistance or spare parts as may be required.

## 8. SERVICING TIPS

1. Problem-- P.T.O shaft is rotating with constant speed but not the gear box.  
Cause of problem -- Safety bolt might be broken  
Solution - Replace the safety bolt.
  - Remove the P.T.O shaft from the R.T side.
  - Dislodge the safety bolt and replace it.



2. Problem—P.T.O shaft is making noise/ vibration.

Cause of problem - P.T.O cross is broken.

Solution -Change the P.T.O cross.

- Take the P.T.O shaft and check the cross of both side by rotating it.
- Remove the lock of the cross which is broken.
- Take out the cross by using hammer gently.
- Insert the new one properly then lock it.
- Rotate the yoke, it should rotate properly.
- Make the greasing properly.

3. Problem—Yoke is not fitting on the pinion shaft.

Cause of problem - Yoke pin is broken.

Solution -Replace the yoke pin.

- Clear the head of the pin push it with hammer and remove it
- Replace it with new one.
- Take care of proper cleaning and greasing.

4. Problem—Rotary tiller is not taking proper depth.

Cause of problem— Side depth skids need to be adjusted.

Solution -

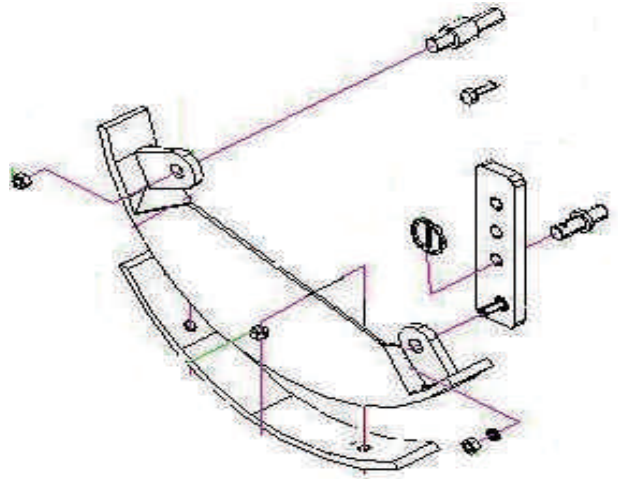
- Lose the side skid bolt.
- Shift the hole to the upper side.

5. Problem—R.T. is taking on one side more depth.

Cause of problem -linkage is not proper

Solution -Linkage adjustment should be proper.

- Tractor linkage should be tight.
- There should not be any play more then 1.5" (38MM).
- At the time of attaching the rotary tiller the R.T should be in proper leveled position.
- Both side skids should be in same bolt position.

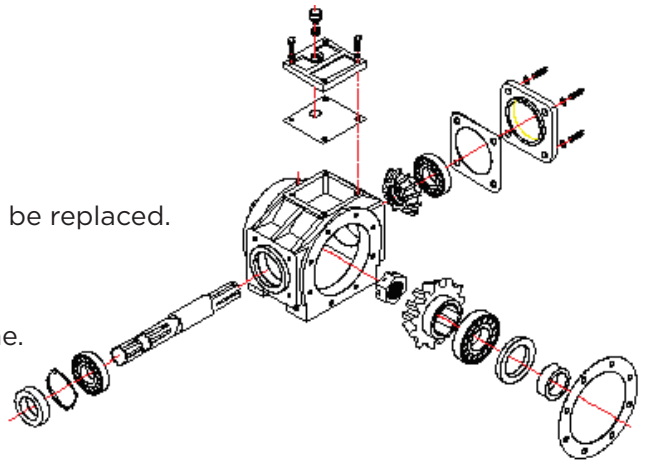


6. Problem—Gear box is noisy.

Cause of problem -Play in bearing or teeth broken.

Solution -Replace the bearing or bevel gear.

- Open the top cover to see the wear of the teeth
- If the teeth of the gear is broken the bevel set needs to be replaced.
- Pull out the gear box and open the big flange.
- Then remove the back plate
- Pull out the pinion shaft using hammer or press machine.
- Replace the bearing, gear and seals.
- Make the fitment in the same way using new gasket.
- The gear should rotate freely.
- Assemble it back the breather valve should be clean and oiling should be checked.



7. Problem—Gear shafts are rotating but not the chain/rotor

Cause of problem -Transmission shaft / chain/ RD shaft is broken

Solution -Open the chain cover and replace the part which is broken.

- First remove the lock & loose the check nut.
- Pull out the sprocket assembly with chain.
- If the transmission shaft is broken, follow the same process as above and replace the shaft then assemble the gear box with rotary tiller.

- If chain is broken then replace the chain and assemble the sprockets together with chain & then tighten the check nuts.

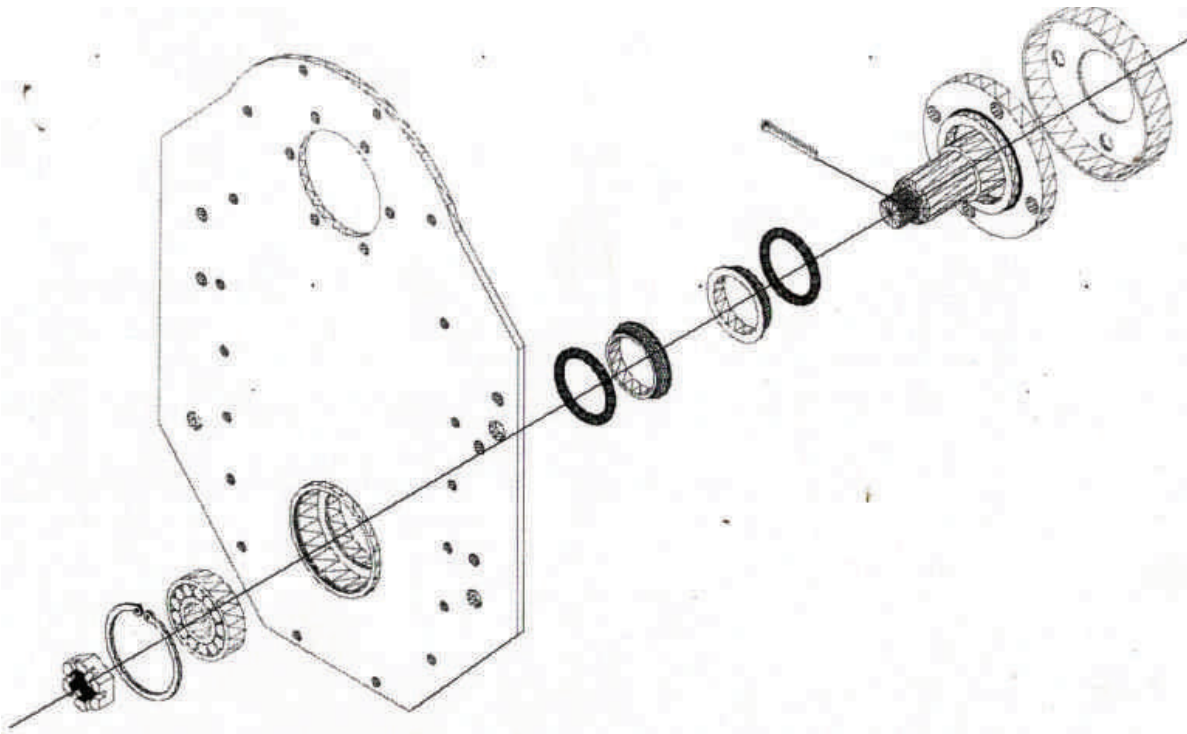
For RD shaft the process will be different

- First open the flange bolt of the rotor on both side (RD shaft and Dead shaft) and remove the rotor.
- Loosen the check nut of RD shaft and hammer it till it gets out from the RD shaft hub & then replace the RD shaft and tight the check nut. Take care of the seal as it should not be harmed with this replacement.

The same process be followed for dead shaft replacement.

8. Problem—Oil leakage from the RD shaft hub or dead hub.  
Cause of problem -Seal is wearing out needs to be replaced it.  
Solution - Open the hub assembly as before

- Take out the hub from the plate by loosening the bolts
- Remove the lock and pull out the shaft.
- Pull out the seal from both shaft and hub then replace it with new one
- Inspect the position of bearing and hub if it is ok. Clean it and assemble as before.
- Proper greasing is very necessary in assembly processes.



## 9. TORQUE VALUES TABLE

Torque Values Chart for Common Bolt Sizes													
Bolt Size (inches)	Bolt Head Identification						Bolt Size (Metric)	Bolt Head Identification					
	Grade 2		Grade 5		Grade 8			Class 5.8		Class 8.8		Class 10.9	
in-tpi <sup>1</sup>	N · m <sup>2</sup>	ft-lb <sup>3</sup>	N · m	ft-lb	N · m	ft-lb	mm x pitch <sup>4</sup>	N · m	ft-lb	N · m	ft-lb	N · m	ft-lb
1/4" - 20	7.4	5.6	11	8	16	12	M 5 X 0.8	4	3	6	5	9	7
1/4" - 28	8.5	6	13	10	18	14	M 6 X 1	7	5	11	8	15	11
5/16" - 18	15	11	24	17	33	25	M 8 X 1.25	17	12	26	19	36	27
5/16" - 24	17	13	26	19	37	27	M 8 X 1	18	13	28	21	39	29
3/8" - 16	27	20	42	31	59	44	M10 X 1.5	33	24	52	39	72	53
3/8" - 24	31	22	47	35	67	49	M10 X 0.75	39	29	61	45	85	62
7/16" - 14	43	32	67	49	95	70	M12 X 1.75	58	42	91	67	125	93
7/16" - 20	49	36	75	55	105	78	M12 X 1.5	60	44	95	70	130	97
1/2" - 13	66	49	105	76	145	105	M12 X 1	90	66	105	77	145	105
1/2" - 20	75	55	115	85	165	120	M14 X 2	92	68	145	105	200	150
9/16" - 12	95	70	150	110	210	155	M14 X 1.5	99	73	155	115	215	160
9/16" - 18	105	79	165	120	235	170	M16 X 2	145	105	225	165	315	230
5/8" - 11	130	97	205	150	285	210	M16 X 1.5	155	115	240	180	335	245
5/8" - 18	150	110	230	170	325	240	M18 X 2.5	195	145	310	230	405	300
3/4" - 10	235	170	360	265	510	375	M18 X 1.5	220	165	350	260	485	355
3/4" - 16	260	190	405	295	570	420	M20 X 2.5	280	205	440	325	610	450
7/8" - 9	225	165	585	430	820	605	M20 X 1.5	310	230	650	480	900	665
7/8" - 14	250	185	640	475	905	670	M24 X 3	480	355	760	560	1050	780
1" - 8	340	250	875	645	1230	910	M24 X 2	525	390	830	610	1150	845
1" - 12	370	275	955	705	1350	995	M30 X 3.5	960	705	1510	1120	2100	1550
1-1/8" - 7	480	355	1080	795	1750	1290	M30 X 2	1060	785	1680	1240	2320	1710
1-1/8" - 12	540	395	1210	890	1960	1440	M36 X 3.5	1730	1270	2650	1950	3660	2700
1-1/4" - 7	680	500	1520	1120	2460	1820	M36 X 2	1880	1380	2960	2190	4100	3220
1-1/4" - 12	750	555	1680	1240	2730	2010							
1-3/8" - 6	890	655	1990	1470	3230	2380							
1-3/8" - 12	1010	745	2270	1670	3680	2710							
1-1/2" - 6	1180	870	2640	1950	4290	3160							
1-1/2" - 12	1330	980	2970	2190	4820	3560							

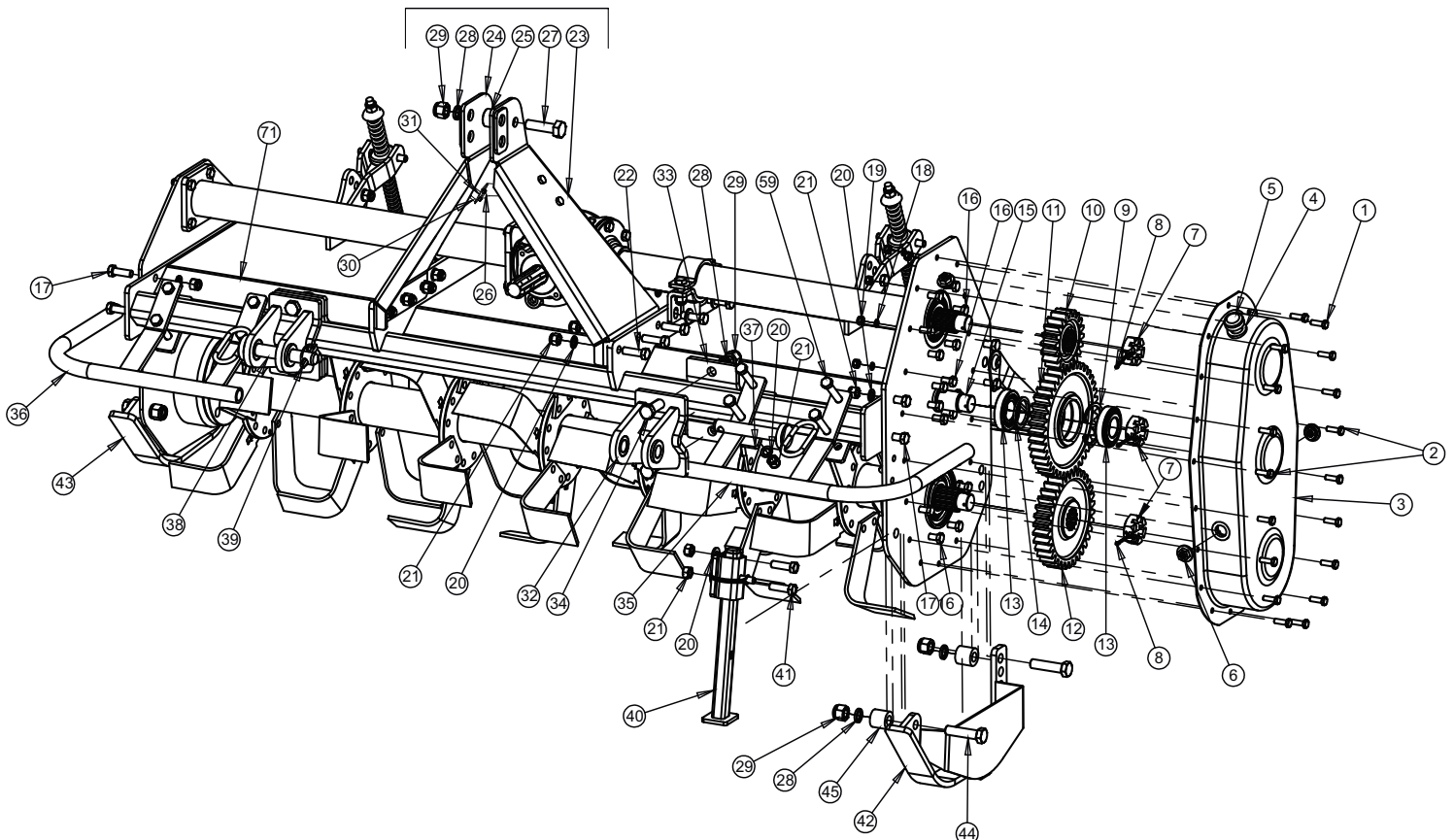
<sup>1</sup> in-tpi = nominal thread diameter in inches-threads per inch  
<sup>2</sup> N · m = newton-meters  
<sup>3</sup> ft-lb = foot pounds  
<sup>4</sup> mm x pitch = nominal thread diameter in millimeters x thread pitch

## 10. EXPLODED VIEW & PARTS LISTS

### MEDIUM SERIES ROTARY TILLER COMPLETE ASSEMBLY

REF	DESCRIPTION	QTY	PART NUM
1	HEX HEAD BOLT M8X30X1.25P	2	107.101C.001
2	HEX HEAD BOLT M8X25X1.25P	16	107.101C.002
3	CHAIN COVER	1	107.101C.003
4	BREATHER NUT M22X1.5	1	107.101C.004
5	BREATHER VALVE	1	107.101C.005
6	DRAIN PLUG	1	107.101C.006
7	CASTLE NUT M30X1.5	2	107.101C.007
8	SPLIT PIN 1/8X2.5 INCH	2	107.101C.008
9	INTERNAL CIRCLIP-72MM	1	107.101C.009
10	SPUR GEAR 20T-14S	1	107.101C.010
11	SPUR GEAR 40T	1	107.101C.011
12	SPUR GEAR 34T-14S	1	107.101C.012
13	BEARING 30207	2	107.101C.013
14	SPACER 50 OD X 40 ID X 5 MM	1	107.101C.014
15	IDLER PIN	1	107.101C.015
16	HEX HEAD BOLT M10X35X1.5	18	107.101C.016
17	HEX HEAD BOLT M12X35X1.75	6	107.101C.017
18	SPRING WASHER 10MM	18	107.101C.018
19	NYLOCK NUT M10X1.5	18	107.101C.019
20	SPRING WASHER 12MM	12	107.101C.020
21	NYLOCK NUT M12X1.75	12	107.101C.021
22	HEX HEAD BOLT M12X40X1.75	6	107.101C.022
23	TPL PLATE RHS	1	107.101C.023
24	TPL PLATE LHS	1	107.101C.024

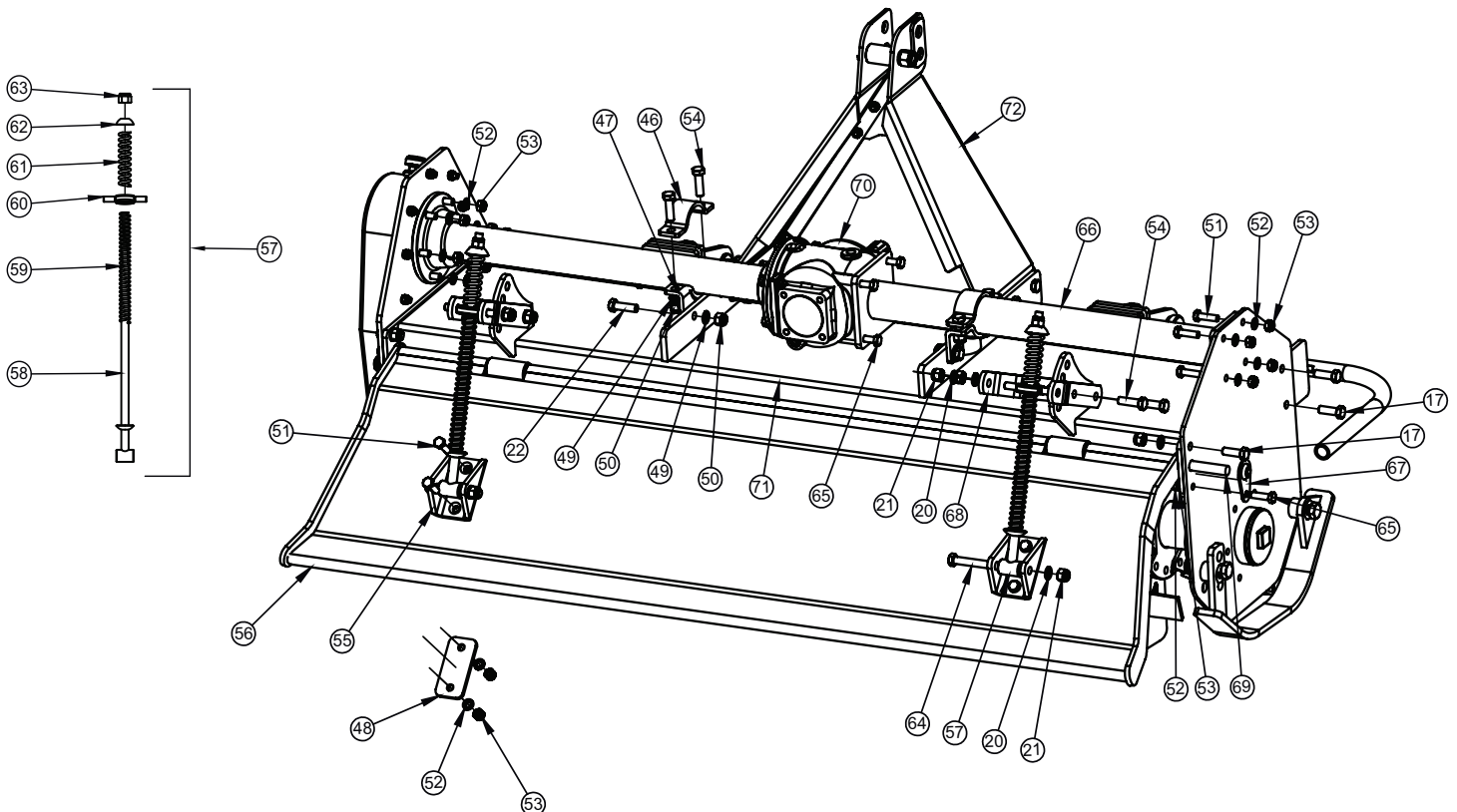
REF	DESCRIPTION	QTY	PART NUM
25	TOP LINK BUSH	1	107.101C.025
26	MIDDLE SUPPORT PLATE	1	107.101C.026
27	HEX HEAD BOLT M16X95X2P	1	107.101C.027
28	SPRING WASHER 16MM	5	107.101C.028
29	NYLOCK NUT M16X2P	5	107.101C.029
30	HEX HEAD BOLT M8X30X1.25P	4	107.101C.030
31	PLAIN WASHER 8MM	4	107.101C.031
32	FRONT LINK BRACKET UPPER	2	107.101C.032
33	FRONT LINK BRACKET LOWER	2	107.101C.033
34	HEX HEAD BOLT M16X65X2	4	107.101C.034
35	FRONT SAFETY GUARD RHS	1	107.101C.035
36	FRONT SAFETY GUARD LHS	1	107.101C.036
37	SUPPPORT FLAT	2	107.101C.037
38	TILLER PIN 22X145 CAT-1	2	107.101C.038
39	LINCH PIN 10	2	107.101C.039
40	RT STAND	1	107.101C.040
41	HEX HEAD BOLT M12X40X1.75	2	107.101C.041
42	DEPTH SKID ASSEMBLY (RHS)	1	107.101C.042
43	DEPTH SKID ASSEMBLY (LHS)	1	107.101C.043
44	HEX HEAD BOLT M16X65X2	4	107.101C.044
45	DEPTH SKID BUSH	4	107.101C.045
46	PTO SAFETY COVER SUPPORT PLATE		107.101C.191
47	PTO SAFETY COVER		107.101C.192



# MEDIUM SERIES ROTARY TILLER COMPLETE ASSEMBLY

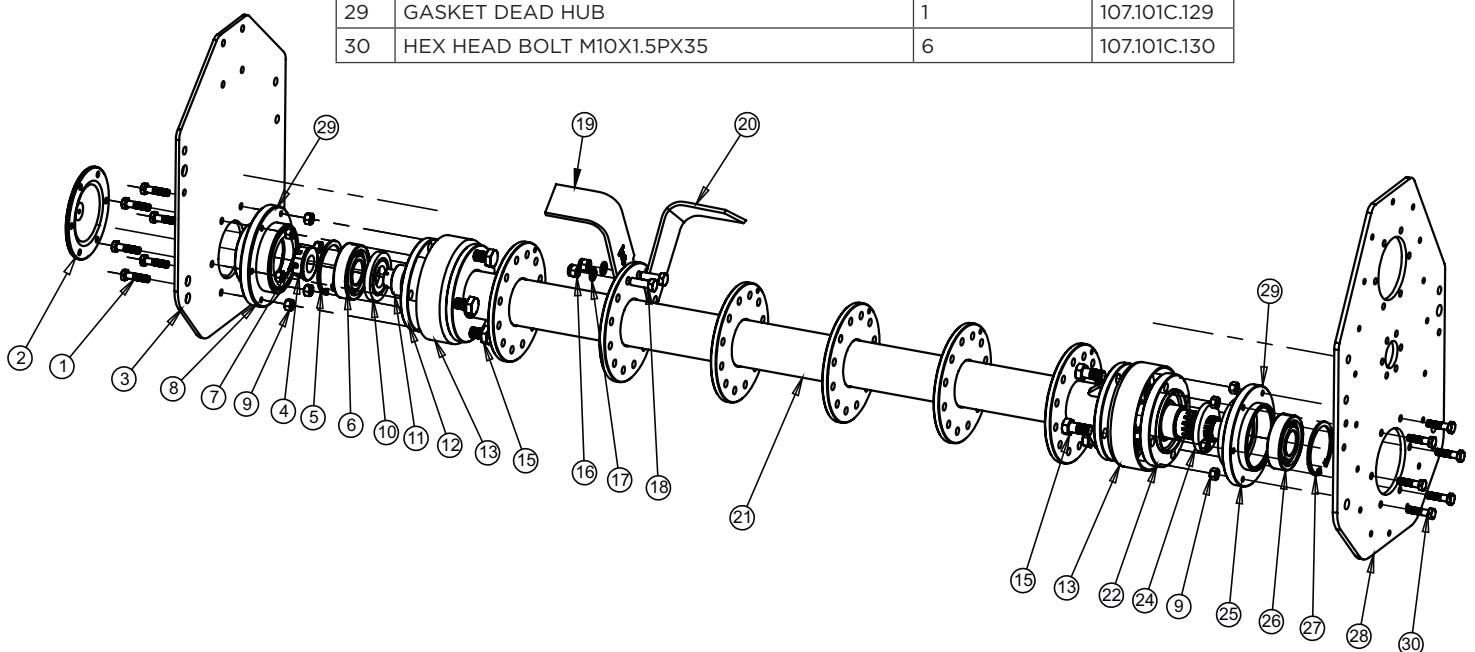
REF	DESCRIPTION	QTY	PART NUM
46	TRANSMISSION PIPE CLAMP LOWER MINI RT	2	107.101C.047
47	TRANSMISSION PIPE CLAMP UPPER MINI RT	2	107.101C.048
48	PLANK INNER SUPPORT FLAT	2	107.101C.049
49	SPRING WASHER 12MM	4	107.101C.050
50	NYLOCK NUT M12X1.75	4	107.101C.051
51	HEX HEAD BOLT M10X35X1.5	4	107.101C.052
52	SPRING WASHER 10 MM	10	107.101C.053
53	NYLOCK NUT M10X1.5MM	10	107.101C.054
54	HEX HEAD BOLT M12X50X1.75	8	107.101C.055
55	SHOCKER PLANK ATTACHMENT U CLAMP	2	107.101C.056
56	PLANK ASSEMBLY RTH100	1	107.101C.057
56	PLANK ASSEMBLY RTH120	1	107.101C.058
56	PLANK ASSEMBLY RTH140	1	107.101C.059
56	PLANK ASSEMBLY RTH160	1	107.101C.060
56	PLANK ASSEMBLY RTH180	1	107.101C.061
57	SHOCKER ASSEMBLY	2	107.101C.062
58	SHOCKER ROD WITH LOWER CUP (MINI)	1	107.101C.063
59	SOCKER BIG SPRING (MINI)	1	107.101C.064
60	SHOCKER ROD BUSH (MINI)	1	107.101C.065
61	SHOCKER SMALL SPRING (MINI)	1	107.101C.066
62	SHOCKER SPRING CUP UPPER NEW	1	107.101C.067
63	NYLOCK NUT M12X1.75 MM	1	107.101C.068
64	HEX HEAD BOLT M12X90X1.75	2	107.101C.069
65	HEX HEAD BOLT M10X35X1.5	4	107.101C.070

REF	DESCRIPTION	QTY	PART NUM
66	GEARBOX SIDE SUPPORT PIPE ASSEMBLY-RTH100	1	107.101C.071
	GEARBOX SIDE SUPPORT PIPE ASSEMBLY-RTH120	1	107.101C.072
	GEARBOX SIDE SUPPORT PIPE ASSEMBLY-RTH140	1	107.101C.073
	GEARBOX SIDE SUPPORT PIPE ASSEMBLY-RTH160	1	107.101C.074
	GEARBOX SIDE SUPPORT PIPE ASSEMBLY-RTH180	1	107.101C.075
67	PLANK ROD SUPPORT PLATE	2	107.101C.076
68	FRAME SHOCKER HOLDING CLAMP	4	107.101C.077
69	PLANK ROD RTH100	2	107.101C.078
	PLANK ROD RTH120	2	107.101C.079
	PLANK ROD RTH140	2	107.101C.080
	PLANK ROD RTH160	2	107.101C.081
70	GEAR BOX ASSEMBLY RTH100	1	107.101C.083
	GEAR BOX ASSEMBLY RTH120	1	107.101C.084
	GEAR BOX ASSEMBLY RTH140	1	107.101C.085
	GEAR BOX ASSEMBLY RTH160	1	107.101C.086
	GEAR BOX ASSEMBLY RTH180	1	107.101C.087
71	FRAME ASSEMBLY COMPLETE- RTH100	1	107.101C.088
	FRAME ASSEMBLY COMPLETE- RTH120	1	107.101C.089
	FRAME ASSEMBLY COMPLETE- RTH140	1	107.101C.090
	FRAME ASSEMBLY COMPLETE- RTH160	1	107.101C.091
	FRAME ASSEMBLY COMPLETE- RTH180	1	107.101C.092
72	3-POINT LINKAGE ASSEMBLY COMPLETE	1	107.101C.093



## SIDE PLATE & ROTOR ASSEMBLY

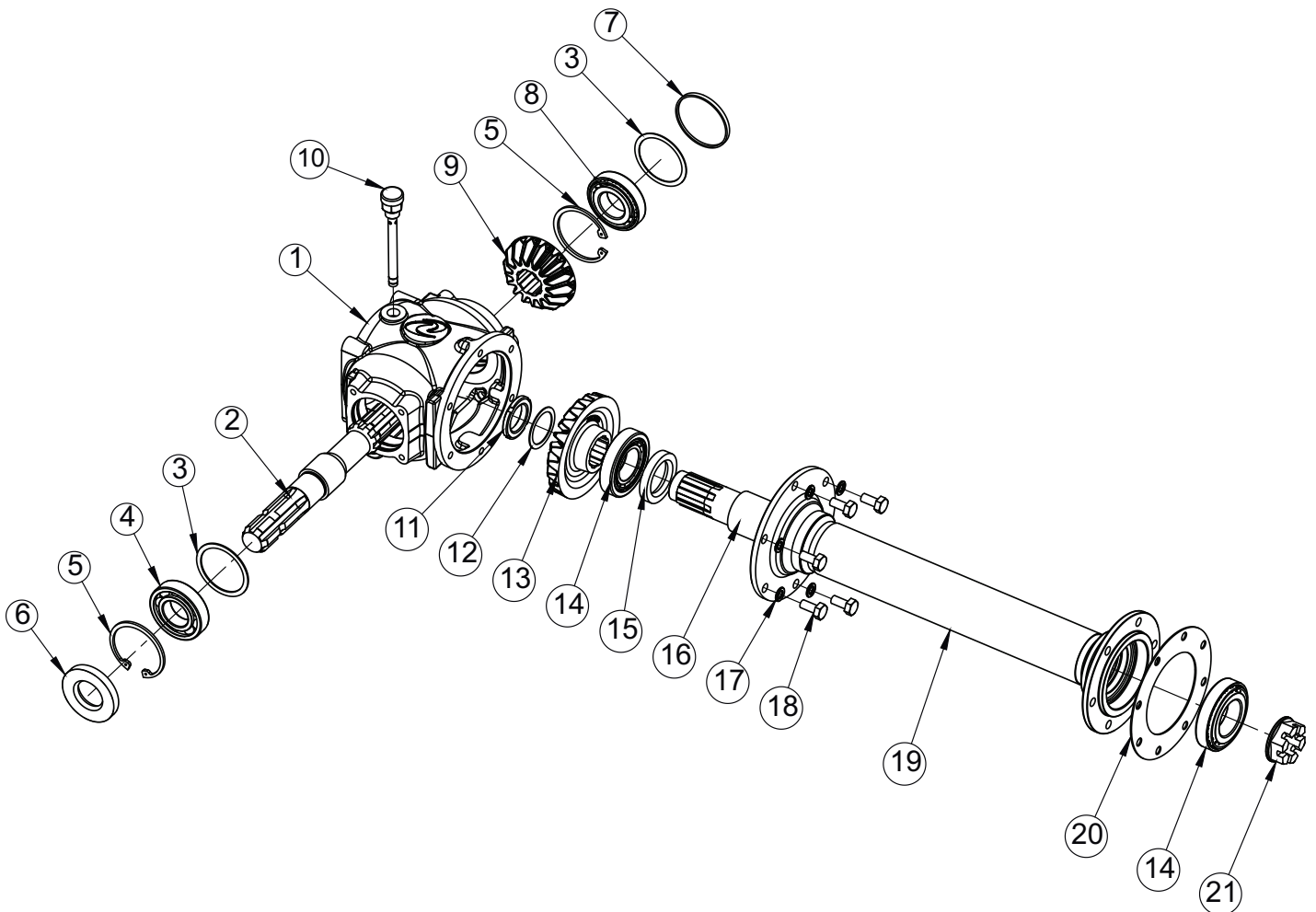
REF	DESCRIPTION	QTY	PART NUM
1	HEX HEAD BOLT M10X1.5PX45	6	107.101C.095
2	DEAD HUB COVER	1	107.101C.096
3	RT SIDE PLATE DEAD SIDE 514X400X6 MM	1	107.101C.097
4	CASTLE NUT M30X1.5P	1	107.101C.098
5	INTERNAL CIRCLIP B80	1	107.101C.099
6	BEARING 6307	1	107.101C.100
7	SPLIT PIN 1/8"X2.5 INCH	1	107.101C.101
8	DEAD HUB	1	107.101C.102
9	PLAIN NUT M10X1.5P	6	107.101C.103
10	OIL SEAL 50X75X15	1	107.101C.104
11	DEAD SHAFT BUSH	1	107.101C.105
12	DEAD AXLE SHAFT	1	107.101C.106
13	ROTOR COVER	2	107.101C.107
14	SPRING WASHER	8	107.101C.108
15	HEX HEAD BOLT M16X1.5PX35 (12MM THREAD)	8	107.101C.109
16	NYLOCK NUT M12X1.75P	12 PER FLANGE	107.101C.110
17	SPRING WASHER 12MM	12 PER FLANGE	107.101C.111
18	HEX HEAD BOLT M12X35X1.75P	12 PER FLANGE	107.101C.112
19	HOE LHS (L TYPE)	3 PER FLANGE	107.101C.113
	HOE LHS (C TYPE)	3 PER FLANGE	107.101C.114
20	HOE RHS (L TYPE)	3 PER FLANGE	107.101C.115
	HOE RHS (C TYPE)	3 PER FLANGE	107.101C.116
21	ROTOR ASSEMBLY COMPLETE RTH100	1	107.101C.117
	ROTOR ASSEMBLY COMPLETE RTH120	1	107.101C.118
	ROTOR ASSEMBLY COMPLETE RTH140	1	107.101C.119
	ROTOR ASSEMBLY COMPLETE RTH160	1	107.101C.120
	ROTOR ASSEMBLY COMPLETE RTH180	1	107.101C.121
22	RD SHAFT 14S	1	107.101C.122
23	RD SHAFT BUSH	1	107.101C.123
24	OIL SEAL 65X85X16	1	107.101C.124
25	RD HUB	1	107.101C.125
26	BEARING 6309	1	107.101C.126
27	CIRCLIP 100 MM	1	107.101C.127
28	RT SIDE PLATE DRIVE SIDE 600X400X8 MM	1	107.101C.128
29	GASKET DEAD HUB	1	107.101C.129
30	HEX HEAD BOLT M10X1.5PX35	6	107.101C.130



## GEAR BOX ASSEMBLY

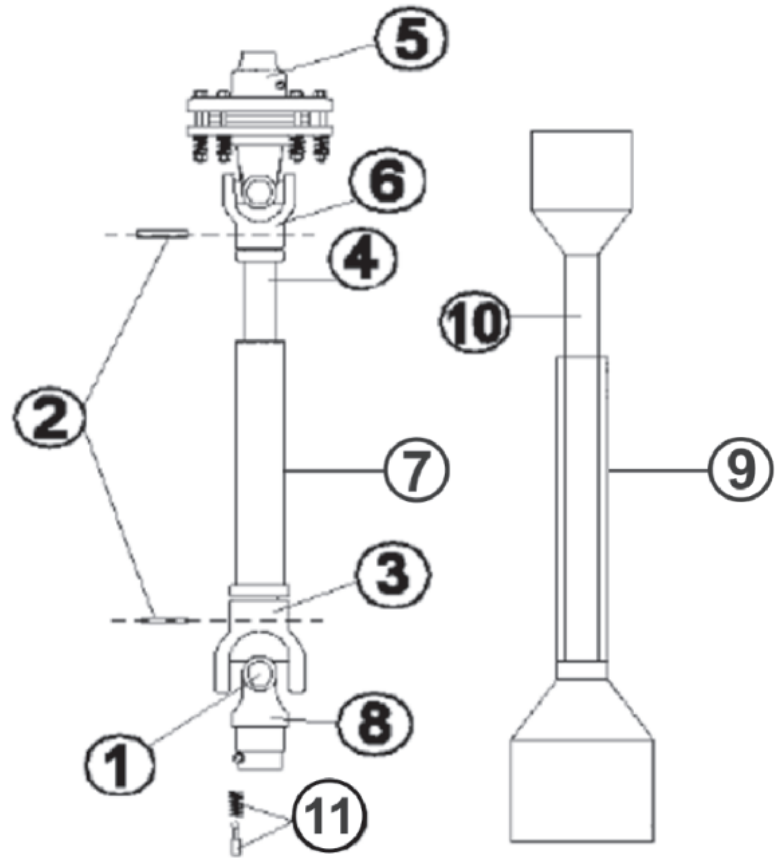
REF	DESCRIPTION	QTY	PART NUM
1	GEAR BOX HOUSING	1	107.101C.132
2	PINION SHAFT	1	107.101C.133
3	SHIM 71 MM	2	107.101C.134
4	BEARING 6207	1	107.101C.135
5	CIRCLIP 72 MM	2	107.101C.136
6	OIL SEAL 35x72x10	1	107.101C.137
7	CUP SEAL 72X10	1	107.101C.138
8	BEARING 30207	1	107.101C.139
9	PINION GEAR 15T	1	107.101C.140
10	DIP STICK	1	107.101C.141
11	RING NUT M30x1.5	1	107.101C.142
12	SHIM 40MM	1	107.101C.143
13	BEVEL GEAR 22T	1	107.101C.144
14	BEARING 30208	2	107.101C.145
15	OIL SEAL 40x62x10	1	107.101C.146
16	TRANSMISSION SHAFT RTH100	1	107.101C.147
	TRANSMISSION SHAFT RTH120	1	107.101C.148
	TRANSMISSION SHAFT RTH140	1	107.101C.149
	TRANSMISSION SHAFT RTH160	1	107.101C.150
	TRANSMISSION SHAFT RTH180	1	107.101C.151

REF	DESCRIPTION	QTY	PART NUM
17	SPRING WASHER 10MM	6	107.101C.152
18	HEX HEAD BOLT M10x20x1.5MM	6	107.101C.153
19	TRANSMISSION PIPE ASSEMBLY RTH100	1	107.101C.154
	TRANSMISSION PIPE ASSEMBLY RTH120	1	107.101C.155
	TRANSMISSION PIPE ASSEMBLY RTH140	1	107.101C.156
	TRANSMISSION PIPE ASSEMBLY RTH160	1	107.101C.157
	TRANSMISSION PIPE ASSEMBLY RTH180	1	107.101C.158
20	SMALL FLANGE GASKET TRANSMISSION PIPE	1	107.101C.159
21	CASTLE NUT M30x1.5	1	107.101C.160



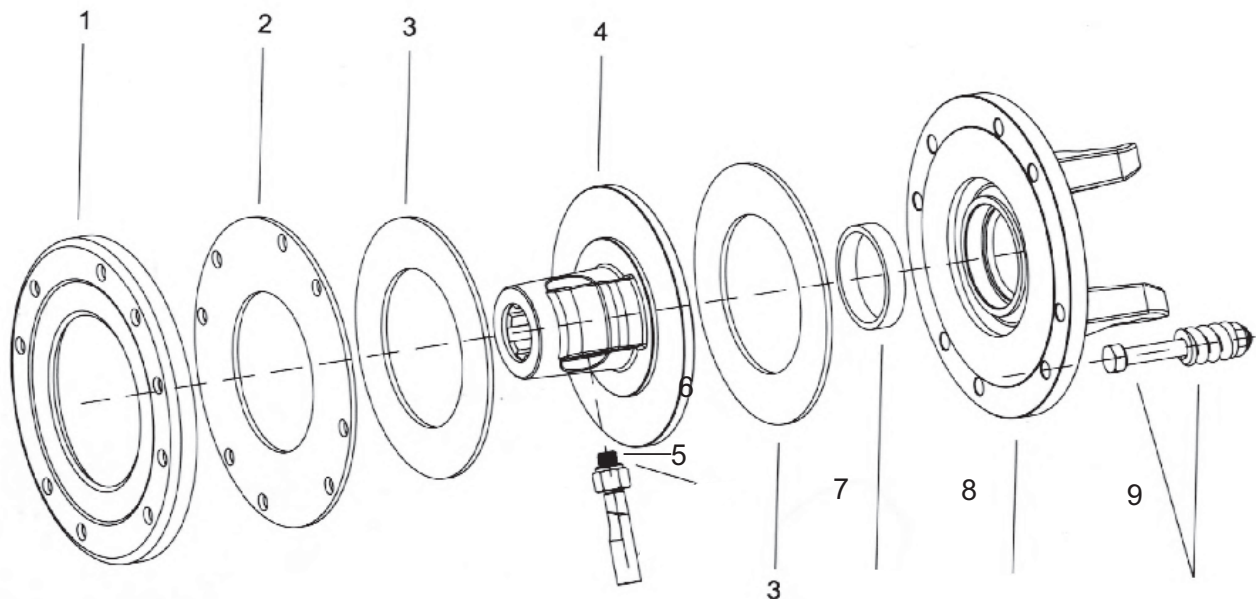
## PTO SHAFT ASSEMBLY - SLIP CLUTCH TYPE

REF	DESCRIPTION	QTY	PART NUM
1	CROSS JOURNAL SET	2	107.101C.162
2	SPRING DOWEL PIN SET (SLIP CLUTCH PTO)	2	107.101C.163
3	OUTER TUBE YOKE	1	107.101C.164
4	INNER TUBE	1	107.101C.165
5	SLIP CLUTCH ASSEMBLY	1	107.101C.166
6	INNER TUBE YOKE	1	107.101C.167
7	OUTER TUBE	1	107.101C.168
8	PUSH PIN YOKE WITH PIN (6 SPLINES)	1	107.101C.169
9	HALF FEMALE GUARD ASSEMBLY	1	107.101C.170
10	HALF MALE GUARD ASSEMBLY	1	107.101C.171
11	PUSH PIN SET	1	107.101C.172



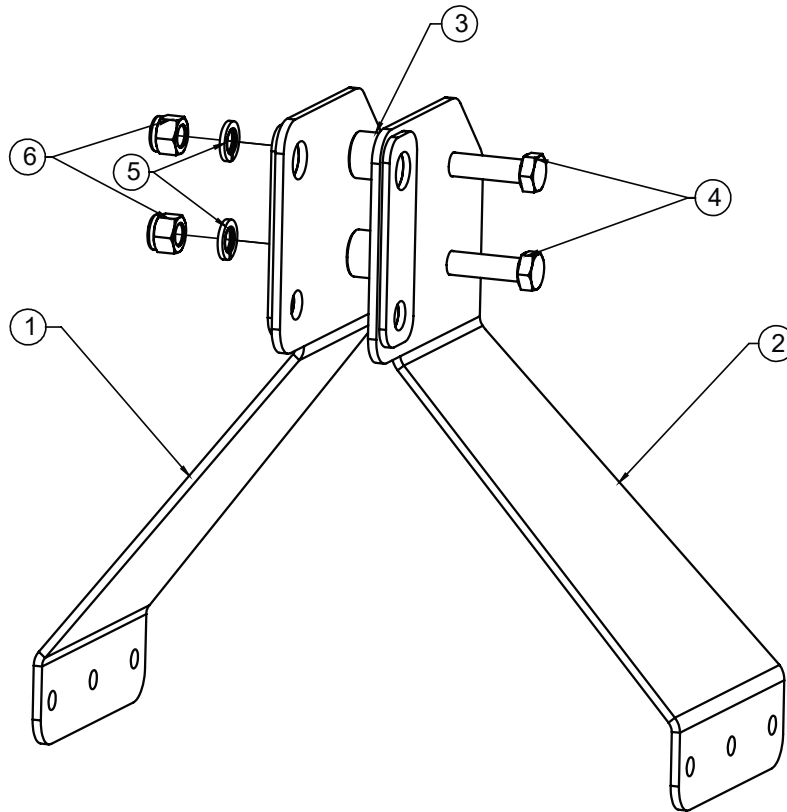
## SLIP CLUTCH ASSEMBLY

REF	DESCRIPTION	QTY	PART NUM
1	PRESSURE PLATE	1	107.101C.174
2	INTERNAL DISC	1	107.101C.175
3	FRICITION LINING	2	107.101C.176
4	HUB	1	107.101C.177
5	HUB BOLT M12X70X1.75P	2	107.101C.178
6	NYLOCK NUT M12X1.75P	2	107.101C.179
7	BUSHING	1	107.101C.180
8	FLANGED SPLINE	1	107.101C.181
9	COMPLETE BOLT AND SPRING	8	107.101C.182



## PTO SHAFT ASSEMBLY - SLIP CLUTCH TYPE

REF	DESCRIPTION	QTY	PART NUM
1	MINI RT FRONT LEVER PLATE (LHS) (QUICK HITCH TYPE)	1	107.101C.184
2	MINI RT FRONT LEVER PLATE (RHS) (QUICK HITCH TYPE)	1	107.101C.185
3	BUSH 17X32X64MM (L)	2	107.101C.186
4	HEX HEAD BOLT 12X110X1.75MM	2	107.101C.187
5	SPRING WASHER 12MM	2	107.101C.188
6	NYLOCK NUT M12X1.75 (P)	2	107.101C.189





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