

TARTER®

FARM AND RANCH EQUIPMENT

ROTARY TILLER

OPERATION AND ASSEMBLY MANUAL



For more information and questions, please contact:
Tarter Customer Service
1-800-RED-GATE (1-800-733-4283)

Tarter products are sold through Authorized Retailers.

INTRODUCTION

THANK YOU FOR PURCHASING THIS PRODUCT

Thank you for choosing Tarter – congratulations on your purchase. Tarter Farm and Ranch Equipment has been improving life on your land since 1945. You have purchased one of our dependable 3-point implements. Through proper care and operation you can expect to receive many years of service when maintained and used in accordance within the capabilities of this implement.

TO THE OWNER:

Read this manual before operating your Tarter product. Keep this manual handy for reference. Require all operators to read this manual carefully and become acquainted with all adjustments and operating procedures before attempting to operate the equipment.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Please observe all safety information in this manual and safety decals on the equipment. Use only genuine Tarter service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation.

CUSTOMER INFORMATION

Name _____

Purchased From _____

Date Purchased _____

Model _____

Serial # _____

PREPARATION CHECKLIST

Verify the following before operating your Rotary Tiller

- | | |
|---|--|
| <input type="checkbox"/> 1. Implement is completely assembled. | <input type="checkbox"/> 6. Check PTO driveline. Make sure it is the correct length to operate rotary tiller with intended tractor. |
| <input type="checkbox"/> 2. Gearbox is filled with oil and checked for possible leaks. | <input type="checkbox"/> 7. All decals in place and legible. |
| <input type="checkbox"/> 3. All fittings are lubricated. | <input type="checkbox"/> 8. Overall condition good (i.e. paint, welds) |
| <input type="checkbox"/> 4. All shields in place and in good condition. | <input type="checkbox"/> 9. Operator's manual has been given to owner and the owner has been instructed on the safe and proper use of the Rotary Tiller. |
| <input type="checkbox"/> 5. All fasteners torqued to specifications in torque chart. (Pg. 27) | |

For more information and questions, please contact:

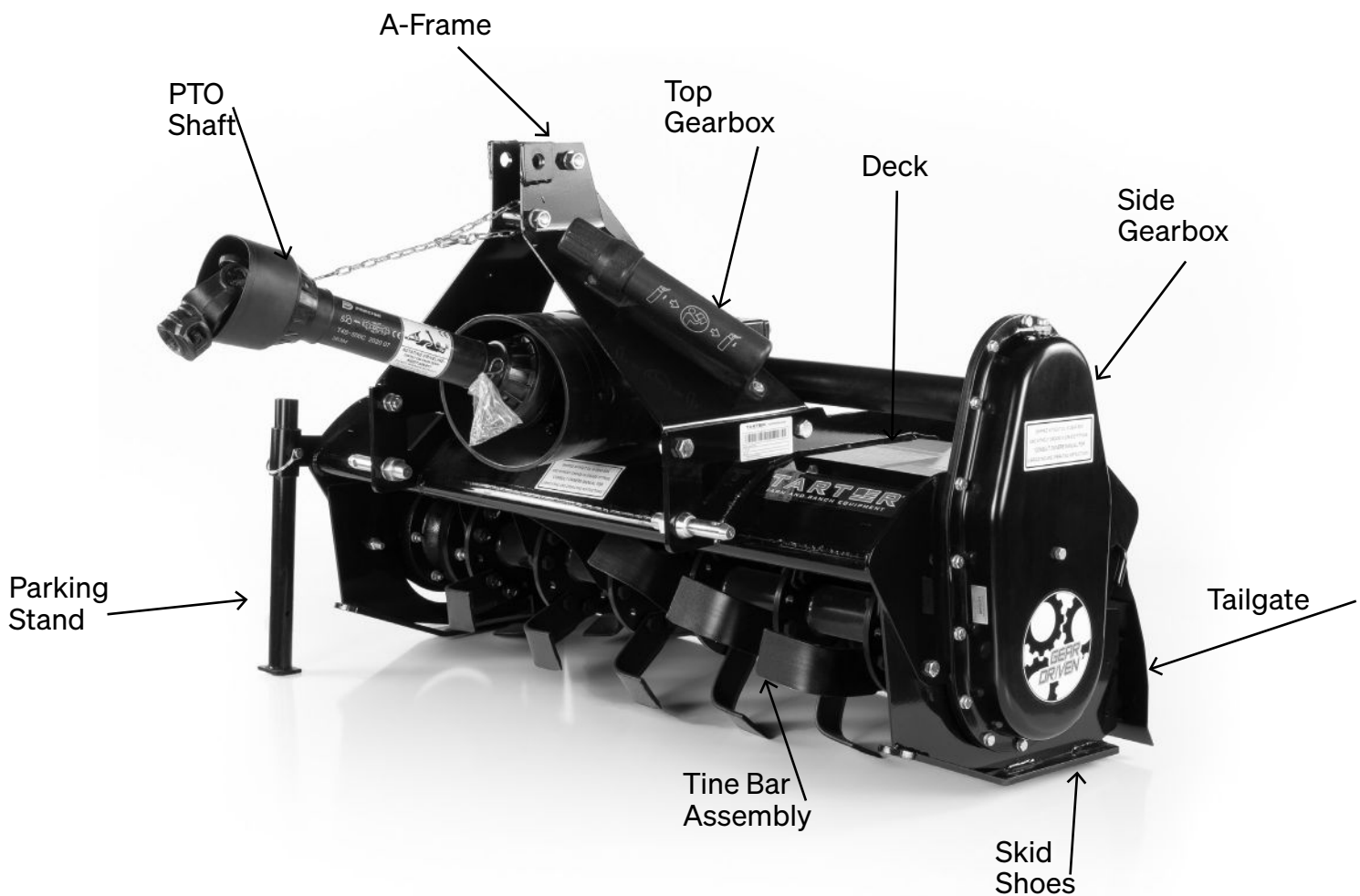
Tarter Customer Service

1-800-RED-GATE (1-800-733-4283)

GENERAL DESCRIPTION

Your Rotary Tiller has been carefully designed for cultivating and stirring up soil for gardens, food plots and other tillage needs. This manual is provided to give you the necessary operation and maintenance instructions for keeping your rotary tiller in excellent operating condition. Please read this manual thoroughly. Understand the purpose of the controls and how to use them. Observe all safety precautions on the machine and as noted throughout this manual. If any assistance or additional information is needed, contact us at 1-800-RED-GATE.

Major Components



NOTICE

All information, illustrations, and specifications in this manual are based on the latest information available at the time of publication. Because we are always striving to improve our products, the images could differ slightly from actual equipment. Specifications are subject to change without notice. We also reserve the right to make changes at any time without notice.

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

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgment, 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.

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe procedures can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.



This Safety-Alert Symbol indicates a hazard and means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

 **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.

 **CAUTION**

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

IMPORTANT

Indicates that failure to observe can cause damage to equipment.

NOTE

Indicates helpful information.

SAFETY AND INSTRUCTIONAL DECALS

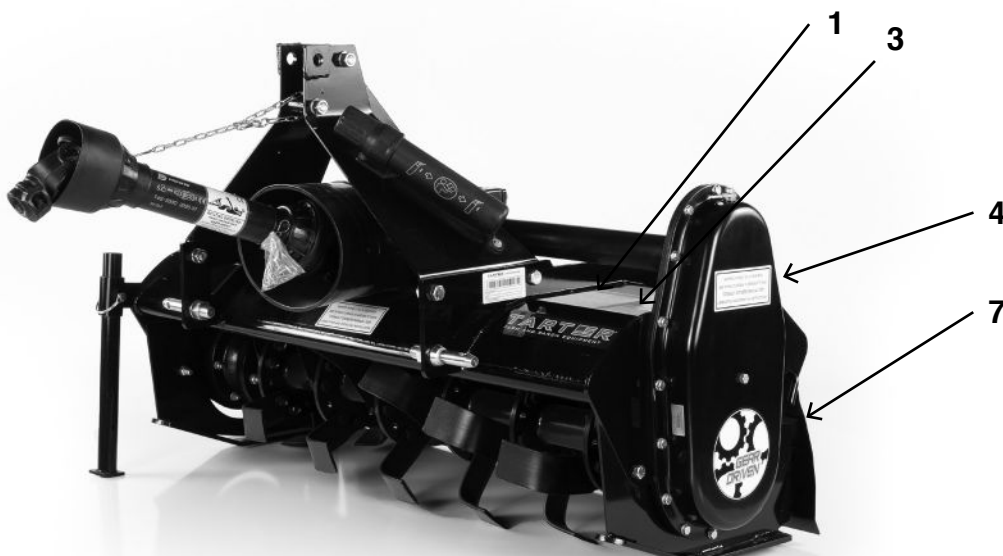
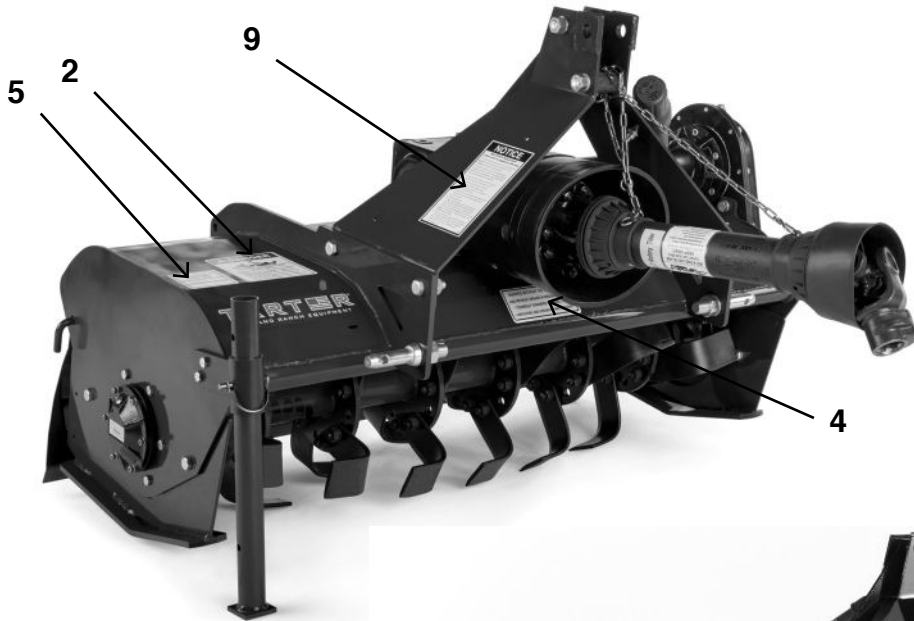


SAFETY and INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Replace Immediately if Damaged!





SAFETY and INSTRUCTIONAL DECALS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Replace Immediately if Damaged!

⚠ WARNING

To prevent serious injury or death:
Sino lee ingles, pida ayuda a alguien que si lo lee para que le traduzca las medidas de seguridad.

- Read and understand Operator's Manual before using. Review annually.
- Do not permit riders on the tractor or tiller, including children
- Do not allow children to operate tiller.
- Operate only with guards installed and in good condition.
- Keep away from moving parts.
- Operate only with tractor equipped with ROPS and seatbelts.
- Use extra care when operating on rough terrain or when rocks or debris are present.
- Do not operate in the raised position.
- Stop engine, lower tiller, set brake and wait for all moving parts to stop before dismounting.
- Support tiller securely before working beneath unit.
- Transport with clean reflectors, SMV and working lights as required by federal, state, and local laws.
- Keep yourself, others, and clothing away from the rotating PTO.
- Operate only at a safe distance from bystanders.
- Do not stand between tractor and tiller.
- Be careful on uneven terrain. Decrease speed when turning.
- Locate underground utility lines before tilling.
- Do not exceed a safe transport speed.

ITEM 1

⚠ DANGER

ROTATING TINES HAZARD

- Keep away from rotating tines.
- Rotating tines may cause serious injury or death.

ITEM 6

LIFT HERE →

ITEM 8

NOTICE

Slip Clutch Adjustment (when unit is supplied with one)

The Slip Clutch is designed to slip so that the gearbox and driveline are protected if the implement strikes an obstruction.

A new slip clutch or one that has been in storage over the winter may seize. Before operating the implement, make sure it will slip by performing the following:

1. Turn off tractor engine and remove key.
2. Remove driveline from tractor PTO.
3. Loosen the cap screws to remove all tension from the spring plate.
4. Hold clutch hub solid and turn shaft to make sure clutch slips.
5. If clutch does not slip freely, disassemble and clean the thrust plate faces, flange yoke, and clutch hub.
6. Reassemble clutch.
7. Finger tighten spring until it is against the thrust plate of the clutch and then tighten each of the nuts by 1 1/2 - 2 full rotations. Try the Implement and watch for clutch to slip. Adjust nuts another 1/2 turn as needed until clutch stops slipping.
8. If clutch continues to slip when the spring is compressed check friction disc for excessive wear. Discs are 1/8" when new. Replace discs after 1/16" wear. Minimum disc thickness is 1/16".

305L

ITEM 9

⚠ DANGER

**ROTATING DRIVELINE HAZARD
KEEPAWAY**

To prevent serious injury or death from rotating driveline:

- Keep all guards in place when operating.
- Operate only at 540 RPM.
- Keep hands, feet, hair and clothing away from moving parts.
- Do not operate without driveline securely attached at both ends.
- Do not operate without driveline shields that turn freely on driveline.

ITEM 2

Operators Manuals are available from your dealer, or

www.tarterusa.com

ITEM 5

⚠ WARNING

TO PREVENT SERIOUS INJURY OR DEATH

- Keep hands and body out of hitch area when attaching tiller to tractor.
- Keep body clear of crush point between tractor and tiller.

ITEM 3

SHIPPED WITHOUT OIL IN GEAR BOX AND WITHOUT GREASE IN GREASE FITTINGS.

"CONSULT OWNERS MANUAL FOR LUBRICATING AND OPERATING INSTRUCTIONS."

ITEM 4



ITEM 7

TARTER

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1-800-RED-CATE
TARTERUSA.COM

ITEM 10

SAFETY GUIDELINES

At Tarter, we care about your safety. Most accidents can be avoided by a few seconds of thought and a careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions and insist those working with you follow them too.

If you need assistance or a replacement manual and safety decals, go to Tarterusa.com or call 1-800-RED-GATE.

PLEASE READ YOUR TRACTOR/AUV/UTV (POWER UNIT) MANUAL BEFORE ASSEMBLING OR OPERATING YOUR TARTER IMPLEMENT.

In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, a Tarter implement should never be operated in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.

Replace any safety decal that is illegible or missing. Location of such safety decals are indicated in this manual.

Never use alcoholic beverages or drugs that can hinder alertness or coordination while operating the power unit or the Tarter implement. Consult your doctor about operating this machine while taking prescription medications.

Under no circumstances should children under the age of 18 be allowed to operate the power unit or the Tarter implement. Do not allow persons to operate or assemble the Tarter implement until they have read this manual and have developed a thorough understanding of the safety precautions and how it works. Review the safety instructions with all users annually.

This Tarter implement can be dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person familiar with farm machinery and trained in this Tarter implement's operations.

Always use a power unit equipped with a Roll Over Protective System and seat belts (ROPS). Keep your seat belt securely fastened because falling off can result in your death from being run over or crushed.

Always keep a foldable ROPS system in the "locked up" position at all times.

Never exceed the limits of any piece of machinery, whether the power unit of the Tarter implement. If its ability to perform a job safely is in question **DO NOT TRY IT.**

Do not modify the Tarter implement in any way. Unauthorized modification could result in serious injury or death and may impair the function and life of the implement.

In addition to the design of this implement, including safety signs and safety 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 the Tarter implement. Refer also to safety messages and operation instruction in each of the appropriate sections of the power unit and Tarter implement manuals. Heed the safety signs affixed to both the power unit and Tarter implement.



DANGER: Failure to follow instructions or safety rules can result in serious injury or death.

Follow all safety rules and safety decal information.

Your Tarter implement is attached to a power unit. You must know the controls of your power unit and how to stop the engine and implement quickly in an emergency. All operators must be capable to safely operate the power unit, its attachments, and all controls.



DANGER: DO NOT allow anyone to operate the power unit or the Tarter implement without proper instruction.

PREPARATION

Always wear relatively tight and belted clothing to avoid getting caught in any moving part. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, ears, and head. Wear respirator or filter mask when appropriate.

Before using the Tarter implement, check all driveline guards for damage and replace any damaged guards. Make sure all guards rotate freely on all drivelines. Inspect chain or rubber guards before each use and replace any that are damaged.

Check that all hardware is properly installed.

Always tighten to torque chart specifications unless instructed otherwise in this manual.

Make sure the Tarter implement is properly secured, adjusted and in good operating condition.

Before using the Tarter implement, check and adjust PTO driveline length as instructed in this manual. The driveline must not bottom out or pull apart throughout the full range of the tractor hitch.



IMPORTANT: DO NOT operate PTO until driveline length is correct.

Make sure PTO driveline shield safety chain is attached as shown in this manual and replace if damaged or broken. Make sure collar slides freely and is seated firmly in tractor PTO spline groove.

A minimum of 20% of tractor weight must be on the tractor's front wheels when Tarter implements are in use. Without this weight, the tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and Tarter implement. **DO NOT ESTIMATE.**

STARTING AND STOPPING

Check the Tarter implement master shield over the PTO stub shaft. Make sure it is in good condition and fastened securely to the power unit. Purchase a new shield if old shield is damaged or missing.

All power units that are not equipped with a "live" power takeoff (PTO) must be equipped with an over-running PTO clutch. These are available through most farm equipment stores.



NOTE: The addition of an over-running PTO clutch may change the length of the PTO driveline required. Be sure to refer to the instructions on the PTO driveline installation. Be sure that the driveline system guarding is adequate.

The Tarter implement is operated from power supplied from the power unit PTO. Refer to the power unit manual for PTO engagement and disengagement instructions.

Understand how to stop the power unit and Tarter implement quickly in case of an emergency.

When engaging the PTO, the engine RPM should always be at idle speed. Once engaged and ready to start, raise PTO speed to 540-RPM and maintain throughout operation.

TRANSPORTATION

Never transport the power unit or the Tarter implement while under the influence of alcohol or drugs.

Always comply with all federal, state and local laws regarding lighting, marking requirements and transportation of farm equipment on a public roadway.

Transport only in daylight or satisfactory artificial light.

Be aware of overhead utility lines.

Never allow riders on the power unit or Tarter implement. Do not operate PTO during transport.

Watch for hidden hazards on the terrain during transport.

Do not operate or transport on steep slopes.

Do not stop, start or change directions suddenly on slopes.

Use extreme care and reduce ground speed on slopes and rough terrain. When encountering rough terrain during transport, reduce the power unit speed to minimize the horizontal movement of the Tarter implement.

Stabilizer bars should be used during transport to reduce lateral movement of the Tarter implement.

Ensure the towing vehicle and trailer are safely capable of transporting the Tarter implement and that everything is properly secured.

OPERATION

Never operate the power unit or the Tarter implement while under the influence of alcohol or drugs.

Operate only in daylight or satisfactory artificial light.

Do not allow bystanders in the area when operating, attaching, removing, assembling or servicing the power unit or Tarter implement.

Never discharge directly toward people, animals or property.

Ensure the rear-guard assembly is in place to reduce the possibility of objects being thrown.

This Tarter implement is intended for agricultural applications only. Do not operate within 300 feet of bystanders or public roads or highways.

Keep hands, feet, hair and clothing away from the power unit and Tarter implement while the power unit engine is running. Stay clear of all moving parts.

Always sit in the power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake and ensure all other controls are disengaged before starting the power unit engine.

DO NOT EXCEED the power unit PTO at 540 RPM.

Look down and to the rear and make sure area is clear before operating in reverse. **REVERSE OPERATION IS NOT RECOMMENDED.**

Be aware that turning the power unit tightly may cause the Tarter implement to come in contact with the rear wheels of the power unit and cause damage or injury.

Watch for hidden hazards on the terrain during operation.

Do not operate on steep slopes.

Do not stop, start or change directions suddenly on slopes.

Use extreme care and reduce ground speed on slopes and rough terrain. When encountering rough

terrain, reduce the power unit speed to minimize the horizontal movement of the Tarter implement.

Stop the power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.

MAINTENANCE

Make certain all movement of the power unit and Tarter implement components has stopped before approaching for service.

Before detaching the power unit from the Tarter implement or performing any service or maintenance, follow these steps: disengage power to the power unit, lower the 3-point hitch and all raised components to the ground, set parking brake, stop engine, remove key and unfasten seat belt. Before performing any service or maintenance, disconnect driveline from tractor PTO.

Before working underneath the power unit or a Tarter implement, carefully read this manual's instructions, disconnect driveline, raise implement, securely block up all corners with jack stands, and check stability. Secure blocking prevents a Tarter implement from dropping due to hydraulic leak down, hydraulic system failures or mechanical component failures.

Never go underneath a Tarter implement (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath the power unit or a Tarter implement or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause a Tarter implement to drop or rotate unexpectedly and cause severe injury or death. Follow the power unit and Tarter implement manual for working underneath and blocking procedures.

Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, ears, and head. When appropriate wear a respirator or filter mask.

Keep all persons away from you while performing adjustments, service or maintenance.

Frequently check blades/tines/shanks. They should be sharp, free of nicks and cracks and securely fastened. Do not handle blades/tines/shanks with bare hands. Careless or improper handling may result in serious injury.

Do not modify, alter, or permit anyone else to modify or alter the power unit, the Tarter implement or any of their components in any way, except as outlined in this manual.

STORAGE



WARNING: Never attempt to move Tarter implement by hand.

Always use a power unit to position a Tarter implement for storage.

Block the Tarter implement securely for storage.

Keep children and bystanders away from storage area.

OPERATING INSTRUCTIONS

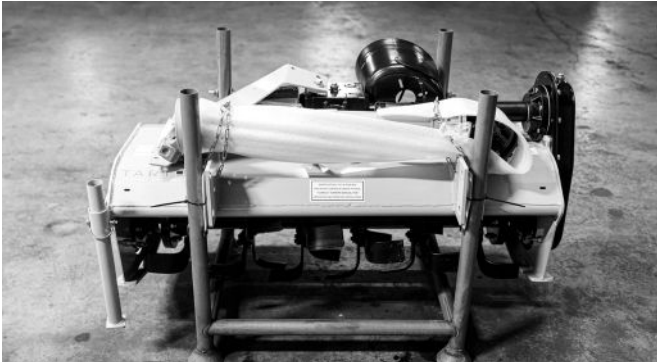
1. Before each use, perform all necessary maintenance described in the maintenance section.
2. Read, understand and follow the safety information pertaining to training, preparation, starting and stopping, operation, transportation, maintenance and storage at the beginning of this manual.

ASSEMBLY

TOOLS REQUIRED

- TIN SNIPS
- SOCKETS AND WRENCHES: 9/16", 3/4", 15/16", AND 1-1/4". (Impact wrench is preferred)

1. With rotary tiller still in the rack, set it on a level spot for assembly.



2. Remove the PTO shaft, leaving the chains attached to the PTO, and set aside.



3. Cut the zip ties to the PTO shield and manual holder and set aside.



4. Using a 3/4" wrench, remove the bolt that holds the A-Arms on. Discard nut and bolt.



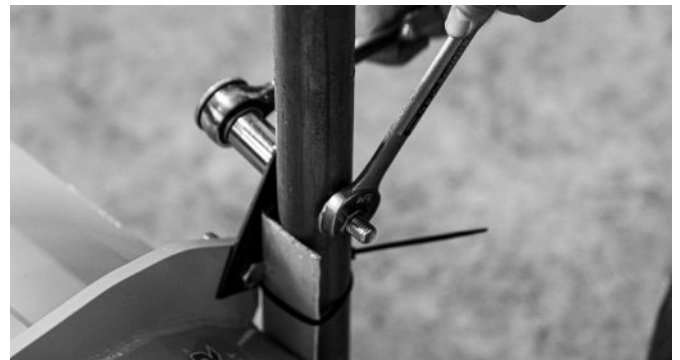
5. Remove the hardware box and set aside.



6. Using a lift strap, place it around the top gearbox. Raise slightly to relieve pressure from the shipping rack.

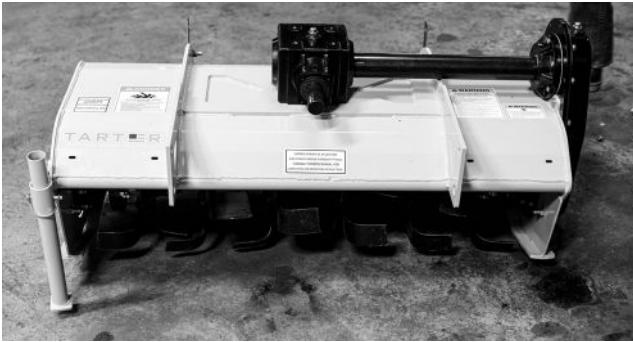


7. With pressure relieved from the shipping rack, using a 3/4" wrench and socket, remove hardware on the shipping rack. Discard the hardware



8. Remove the tiller from the shipping rack and set on level ground.

** Remove and discard brackets and hardware*



9. Remove and discard plastic shield on the gearbox shaft.



10. Using the following:
- 1/4"-20 bolts
 - 1/4" flat washers
- Attach the slip clutch shield to the gearbox.



11. Using the following:
- 1/2"- 13 x 3/4" hex bolts
 - Split lock washers
- Attach the top link support to the top of the gearbox hand tighten.



12. Using the following:
- 5/8" x 1-3/4" hex bolt
 - Split lock washers
- Attach the A-Arm on the inside of the deck brace. Repeat on the opposite side, hand tighten.



13. Using the following:
- 5/8" x 3-1/2" hex bolt
 - Lock washer
 - Nut
- Attach the right and left A-Arms to the top link support.



14. Using the following:
- 5/8" x 3-1/2" hex bolt
 - Lock washer
 - Nut
- Place the quick attach spacer in the lower holes of the A-Arm.

*Tighten all hardware, using 15/16" wrench and socket, on the Lift Arms and Top Link.



ASSEMBLY

15. Using the following:
- 1/4"-20 x 3/4" hex bolt
 - Nylon Lock Nut
 - Flat washer

Remove the cap on the manual holder. Using a 7/16" wrench and socket, attach the manual holder to the left lift Arm. Tighten and place the cap back on the manual holder.



16. Place the chain and shackle on the back of the tailgate and set to desired setting.



17. Place the lift pins in the lower holes of the lug. Use an adjustable wrench and large screw driver to tighten.



18. Using bolt, split lock washer, and nut, provided with PTO Shaft, attach the PTO Shaft to the input shaft of the gearbox.



19. Using 3/4" wrench and socket, tighten through the access hole. (Angled ratchet wrench)
20. Attach chain on the gearbox end of the PTO shaft.



21. Assembly of your Rotary Tiller is now complete.

BEFORE PUTTING YOUR ROTARY TILLER INTO SERVICE



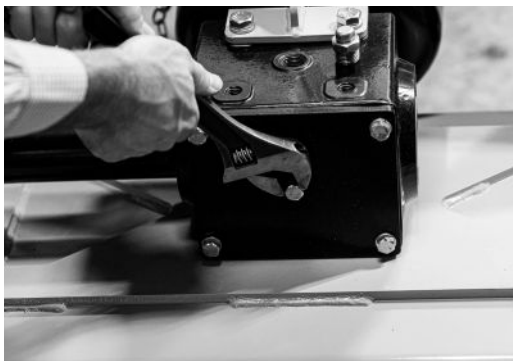
IMPORTANT: This tiller was shipped without oil in the gearboxes and without grease in the the grease fittings.
UNIT MUST BE SERVICED BEFORE USE.

NOTE: Fill the gearboxes using 85W90 gear oil. For all grease fittings use TYPE/Grade II tube grease.

1. Please ensure that your Rotary Tiller is secure and level.
2. Using a 7/8" wrench, remove the vented pipe plug located on front of the gearbox, above the PTO shaft.



3. Using a 9/16" wrench remove the check plug, located on the back of the gearbox.



4. Fill the gearbox, the front, using specified gear oil, until oil begins to overflow from the check plug hole in the rear. (Holds approx. 1-1/2 quarts.)



5. Replace and tighten the check plug.



IMPORTANT: DO NOT overfill gearbox. This could cause damage to oil seals and can cause permanent damage to the gearbox. This issue will not be covered under warranty.

6. Replace and tighten the 1/2" vented pipe plug and clean away any excess oil.
7. Using a 7/8" wrench, remove the pipe plug located at the top of the side gearbox and using a 9/16" wrench, remove the check plug located on the side of the side gearbox.



8. Fill the side gearbox using specified gear oil until the oil begins to overflow from the check plug hole. (Holds approx. 2-1/2 quarts.)



IMPORTANT: DO NOT overfill gearbox. This could cause damage to oil seals and can cause permanent damage to the gearbox. This issue will not be covered under warranty.

9. Replace and tighten the vented pipe plug and the check plug. Clean away any excess oil.
10. Grease the grease fitting on the outboard hub.



ASSEMBLY

11. Grease the two grease fittings on the PTO universal joints.



12. Grease the two grease fittings on the PTO safety shield.



13. Separate the PTO shaft and grease the inner surface.

ATTACHING TO A TRACTOR

1. Place tiller and tractor on level ground.
2. Back tractor into position by lining up lift arms and Category I pins on the tiller. Attach lift arms to Category I pins and secure with lynch pins.
3. Attach top link using Category I lift pin and lynch



pin.



4. Attach PTO driveline and secure anti-rotation chains.
5. Once everything is securely attached, raise tiller off the ground and adjust the top link so the tiller sets level from front to back.
6. Determine if the PTO shaft needs to be shortened.



IMPORTANT: driveline that is too long to fit between tractor and tiller will bottom out causing structural damage to the tractor and tiller.

7. Always check driveline 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 driveline may be required to fit all applications.
8. Make sure driveline is properly installed and level before checking driveline collapsible length.

9. With driveline level, measure 1" back from universal joint shield to end of outer driveline shield as shown in. If measurement is less than 1", then shorten driveline using instructions provided in section "Sizing The PTO Shaft".

MODIFYING PTO

Final Inspection and Adjustments

IMPORTANT: PTO driveline may be too long for some tractor models, causing tractor transaxle damage. Modify driveline if necessary.

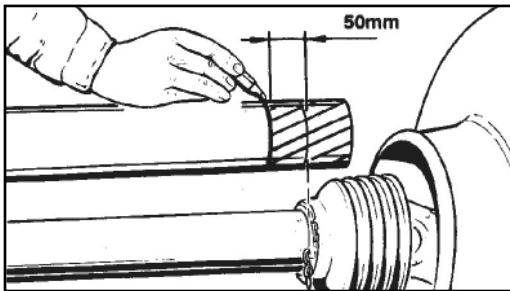
Attach Rotary Tiller to tractor and check tiller-to-tractor driveline telescoping length clearance.

(See MAINTENANCE BEFORE EACH USE in Lubrication and Maintenance section.)

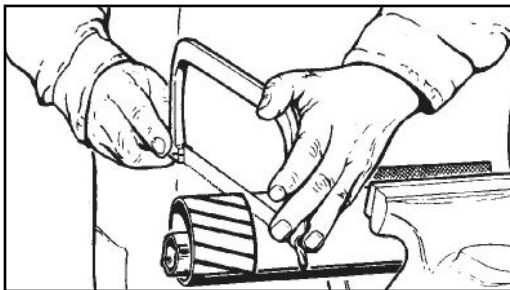
MODIFY PTO DRIVELINE

Modify PTO Driveline (If Necessary)

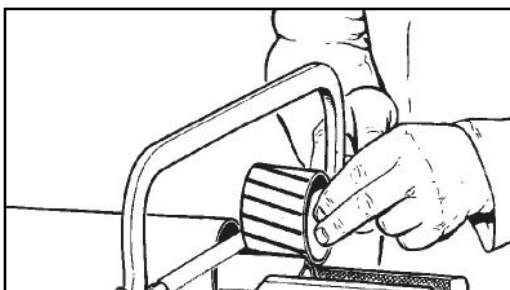
1. To adjust the length, hold the half-shafts next to each other in the shortest working position and mark them.
4. Round off all sharp edges and remove burrs. Grease sliding profiles. No other changes may be made to PTO drive shaft and guard.



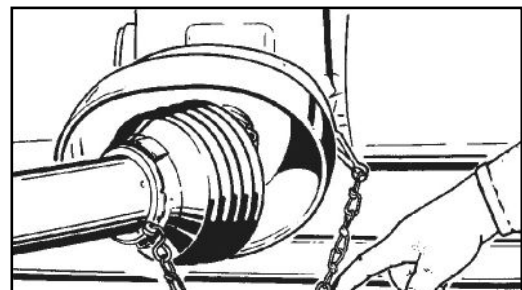
2. Shorten inner and outer guard tubes equally.



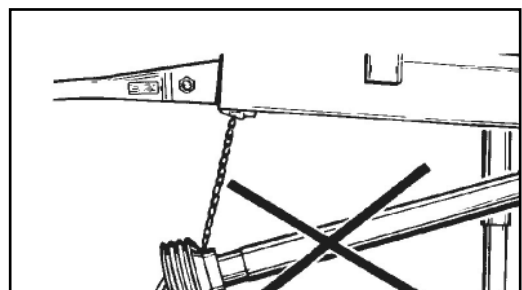
3. Shorten inner and outer sliding profiles by the same length as the guard tubes.



5. Chains must be fitted so as to allow sufficient articulation of the shaft in all working positions.



6. The PTO drive shaft must not be suspended from the chains.



SIZING THE PTO SHAFT

Refer to Figure 1

1. Detach the driveline from tractor PTO shaft and pull outer and inner drivelines apart.
2. Reattach outer driveline to tractor PTO shaft. Pull on inner and outer drivelines to ensure universal joints are properly secured.
3. Hold inner and outer drivelines parallel to each other:
 - a. Measure 1" ("B" dimension) back from outer driveline universal joint shield and make a mark at this location on the inner driveline shield.
 - b. Measure 1" ("B" dimension) back from inner driveline universal joint shield and make a mark at this location on the outer driveline shield.
4. Remove driveline from tractor and gearbox shafts.
5. 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).
6. 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).
7. Remove all burrs.
8. Continue with "Check Driveline Maximum Length".

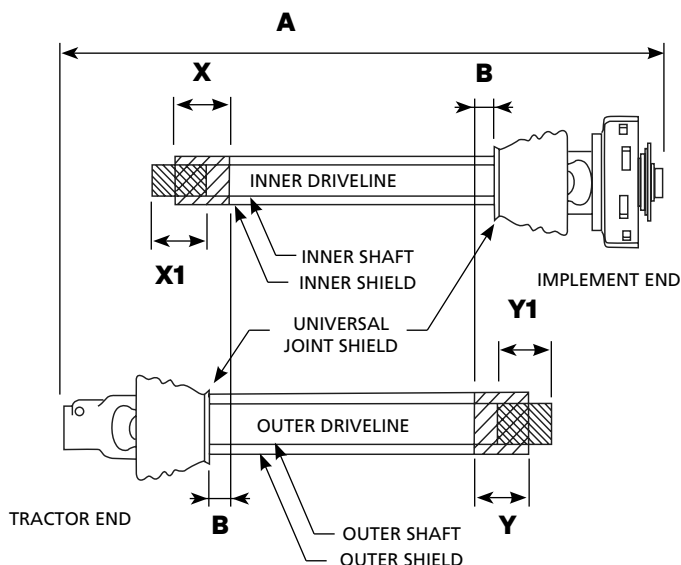


Figure 1 - Driveline Shortening

CHECK DRIVELINE MAXIMUM LENGTH

Refer to Figure 2

Make sure driveline's collapsible length is acceptable.

The driveline 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.

1. Apply multi-purpose grease to the inside of the outer shaft and reassemble the driveline.
2. Assemble the two driveline profiles together with 1/3 of the profile tubes overlapping as shown below. Once assembled, measure and record the maximum allowable length for future reference.
3. Attach inner driveline yoke to the tiller's gearbox shaft. Attach outer driveline yoke to the tractor's PTO shaft.

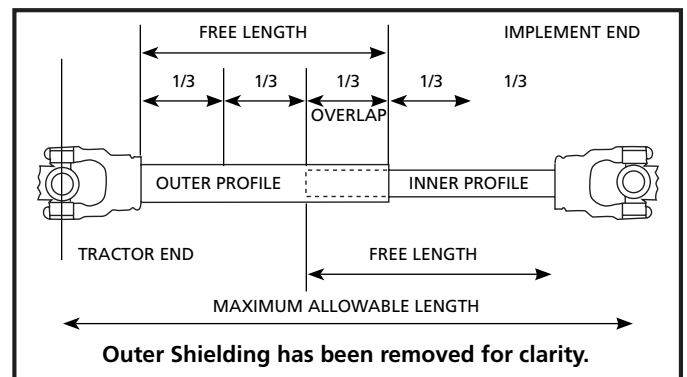


Figure 2 - Driveline Maximum Extended Length

4. Move yoke ends of driveline back and forth to insure they are secured to the tractor and tiller shafts. Reattach any end that is loose.



IMPORTANT: Small chains are supplied with the driveline. They must be attached to the inner and outer driveline shields and to the tiller and tractor to restrict shield rotation.

5. Hook driveline safety chain on the tractor end of driveline to tiller frame. Re-latch safety chain to the driveline shield.
6. Hook driveline safety chain on the Rotary Tiller end of driveline to the tiller frame. Re-latch safety chain to driveline shield.

MODIFYING PTO

7. Start tractor and raise Rotary Tiller just enough to remove support blocks.
8. Slowly engage tractor hydraulic 3-point control lever to lower the tiller while checking for sufficient drawbar clearance. Move drawbar in, aside or remove if required.
9. Raise and lower implement to find maximum extended driveline length. Check to make certain the driveline does not exceed maximum allowable length recorded in step 2.
10. If needed, set tractor 3-point lift height to stop driveline from exceeding maximum allowable length.
11. Continue with "Check Driveline Maximum Angle" below.

CHECK DRIVELINE MAXIMUM ANGLE

Refer to Figure 3



IMPORTANT: To avoid premature driveline breakdown, do not exceed an angle of 25° up or down with the driveline while driveline is rotating. If needed, set tractor 3-point left lever to limit driveline angle at a maximum of 25° up.

1. Raise and lower implement to find maximum driveline angle. Check to make certain the driveline does not exceed 25° up or down.
2. If needed, set tractor 3-point lift height to keep driveline from exceeding 25° up.

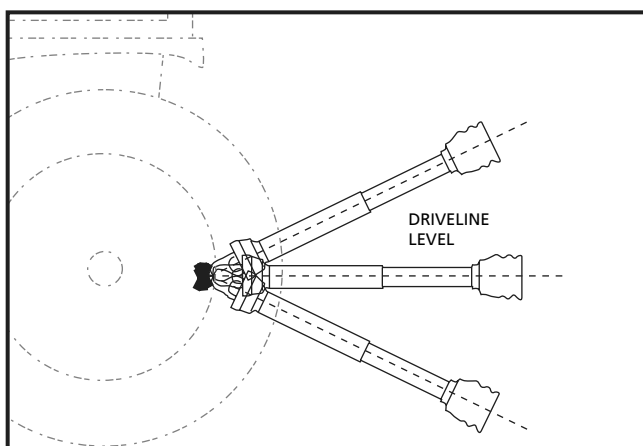


Figure 3 - Check Driveline Maximum Angle

OPERATING INSTRUCTIONS

1. With the Rotary Tiller positioned on level ground, adjust the tractor lift arms so that when lifted, the rotor bar remains parallel to the ground.
2. With the Rotary Tiller attached to the tractor, raise and support the tiller with suitable blocks. Adjust the skids, located on the sides of the tiller. The adjustment bolts for both right and left sides should be adjusted in the same hole. This allows the tiller to till the same depth on each side. Adjust the rear guard assembly, with regulating chain, until the desired mulching effect is found.
3. Raise the tiller and remove the blocks.
4. With the tractor at idle RPM and the tiller lifted off the ground, engage the PTO and slowly advance throttle to 540 PTO RPM.
5. Select a low gear for the tractor and begin to move forward. Tractor ground speed is to be controlled by gear selection only and not engine speed. As the tractor moves forward, slowly lower the tiller down. Allow the tiller tines to gradually engage the ground.



IMPORTANT: 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.

6. After each use clean all debris from the tiller tines. Replace any missing or illegible safety decals. Inspect for any damaged or worn parts and replace before next use. Store Rotary Tiller in a dry environment.

MAINTENANCE

1. Periodically check and maintain proper gear oil level.
2. Every 8 hours, grease: (1) outboard hub, (2) PTO shaft universal joints, (3) PTO shaft safety shield and (4) PTO telescoping surface.
3. Check tiller tines for cracks and breaks before every use.

4. Slip clutch operational check. After the implement has been stored for thirty days or more perform the following operational check.
 - a. Loosen bolts and lock nuts progressively until tension is relieved.
 - b. To aid in determining slippage, scribe/mark a line across clutch plate and Belleville Spring.
 - c. With tractor at idle speed, engage tractor PTO drive 2-3 seconds. Clutch should slip without turning blades.
 - d. To retighten the slip clutch, tighten the torque spring bolts until the nut makes contact with the flange yoke and further tighten one and a (1-1/2) half turns.



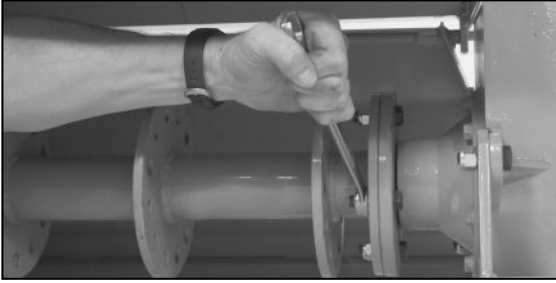
IMPORTANT: Slip clutch components must be free to rotate when necessary. After thirty days or more, linings of slip clutch may draw moisture. Linings may bond to metal parts causing slip clutch to be ineffective, resulting in machine damage.




NOTE: While this is a good starting point, further adjustments may need to be made based on soil conditions.

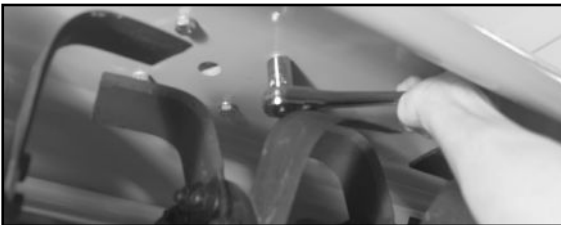
REVERSING TILLER TINE DIRECTION

1. Detach tiller from tractor.
2. Make sure tiller is securely blocked and level.
3. Remove PTO shaft from tiller.
4. The tines must be reversed on the tiller before reverse operation.

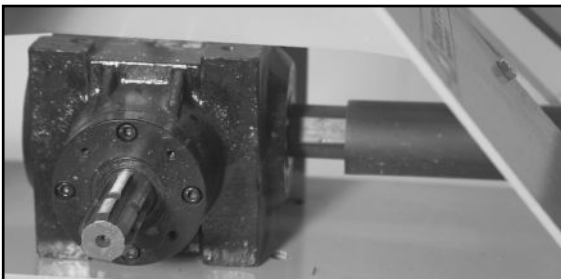



 CAUTION: The bar assembly is heavy and contains sharp edges. Handle carefully!

5. Remove four (4) bolts in each end of tine carrier
6. Carefully remove tine bar assembly and turn 180° and place in front of the tiller. Before reattaching the tines, remove gearbox.



7. Loosen and remove a total of (6) bolts, (2) on top of gear box and (4) underneath.

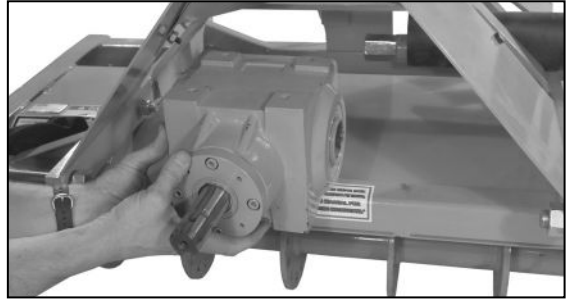


 CAUTION: Gearbox is extremely heavy. Handle with care.

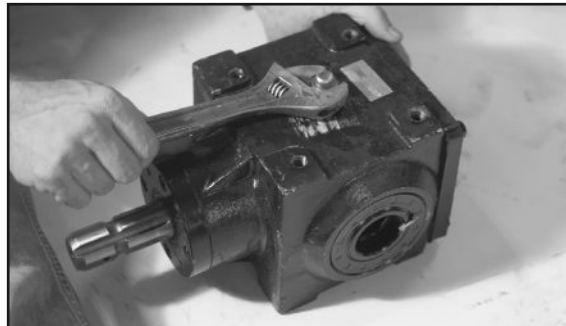
8. Slide gearbox to left approximately 5". Side hex shaft should drop out of gearbox on right hand side.



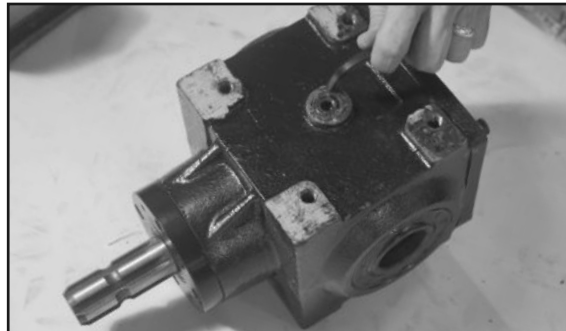
NOTE: If hex shaft does not come out of gearbox, simply slide hex shaft out of side gearbox first and then remove it from main gearbox.



9. Slide gearbox forward and out.



10. Remove vent plug from top of gear box.

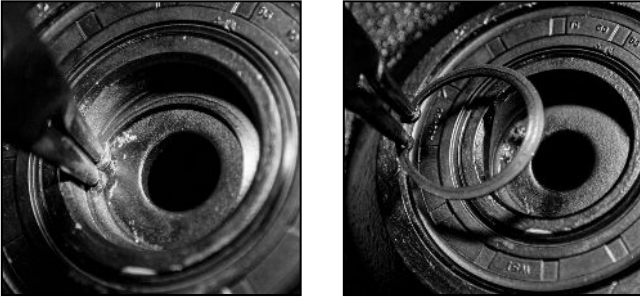


11. Remove flat plug from bottom of gear box. Switch the vent plug from top of gearbox to bottom and flat plug from bottom to top.



REVERSING TILLER TINE DIRECTION

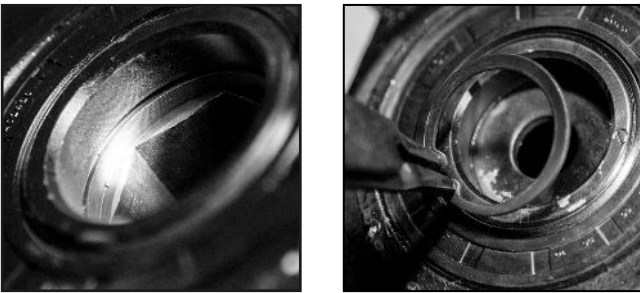
12. On the side opposite where hex shaft was inserted, find washer held in by snap ring.



13. Using snap ring pliers, carefully remove snap ring.

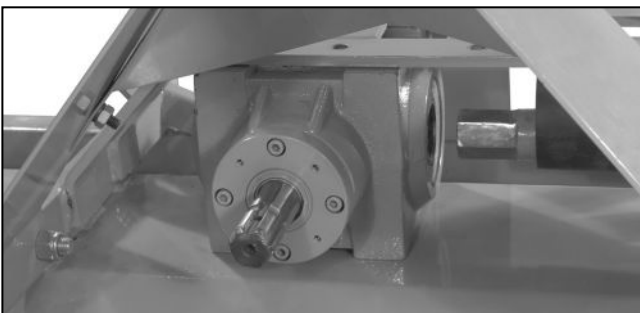


14. Remove washer from hex shaft hole as well.



15. Put washer and snap ring back into the hole where the hex shaft was just removed.

16. Flip gearbox over and re-insert into frame.



17. Slide hex shaft into the now opened hex shaft hole on opposite side of the gearbox.

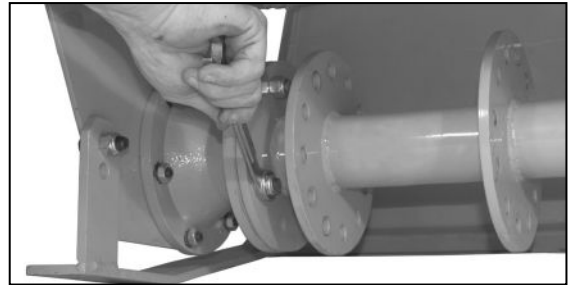
18. Slide gearbox back to center of tiller.

19. Reinsert 6 bolts (2 top, 4 bottom).



NOTE: DO NOT tighten any of the six gearbox bolts until all six have been threaded and started.

20. Once hex shaft is successfully reinserted and all 6 bolts are started by hand, tighten all 6 bolts on gearbox.



Carefully reattach the tine bar assembly to each hub.



CAUTION: Tine bar assembly is heavy and contains sharp edges. Handle carefully!



NOTE: Instructions made with tines partially removed for instructional clarity only.

21. Your tiller unit should now turn and will with reverse direction.

STORAGE



IMPORTANT: When the unit is going to be stored for an extended amount of time, please perform the following steps to keep the oil seals from deteriorating.

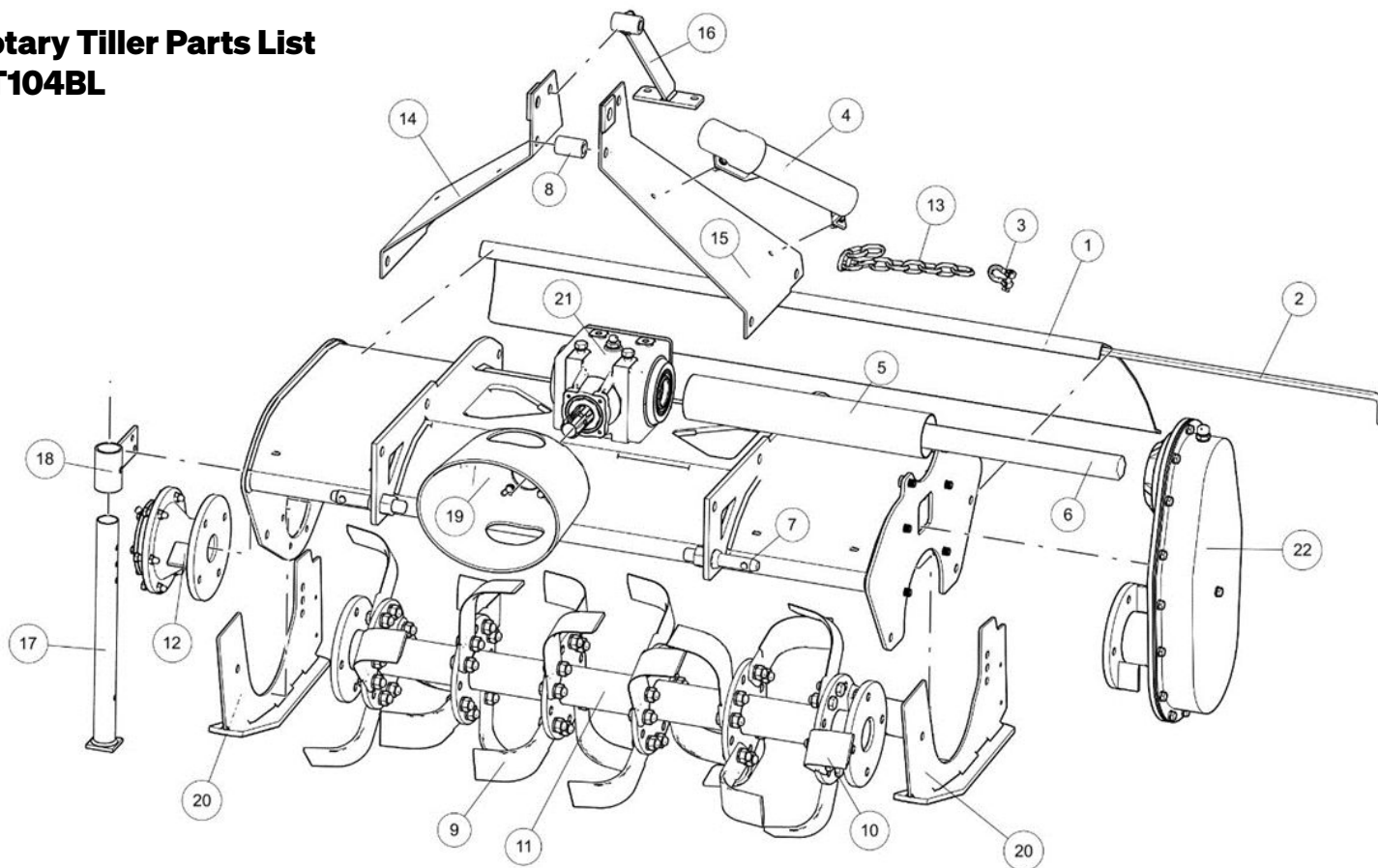
- Spray shaft extensions with a suitable dry film or similar preservative.
- Pack grease around the seal to prevent drying or cracking.
- Fill gearboxes with enough oil so that it covers the top of the input seal.
- Remove the breather and replace with an airtight plug.
- Remember to drain the oil back to the correct level before using again and put breather plug back in.

PRODUCT SPECIFICATIONS

Recommended Tractor PTO Horsepower	15-35
Weight	470 lbs.
Working Depth	7"
Working Width	46.5"
Overall Width	51.5"
Hitch	Limited Cat 1/ Quick Hitch Compatible
Driveline	540 RPM Slip Clutch Protection
Number of Flanges on Rotor	6
Number of Tines per Flange	4
Rotor Rotation	Reversible (FWD/ REV)
Rotor Shaft Speed	211 rpm @ 540 rpm PTO
Skid Shoes	Adjustable (0.4", 1.4", 2.4")
Top Gearbox Construction	Cast Iron Housing, Precision Forged Steel Gears
Side Drive Construction	Formed Steel Housing, Hardened Steel Gears
Top Gearbox Lubrication	EP 80-90W gear oil
Side Drive Lubrication	EP 80-90W gear oil

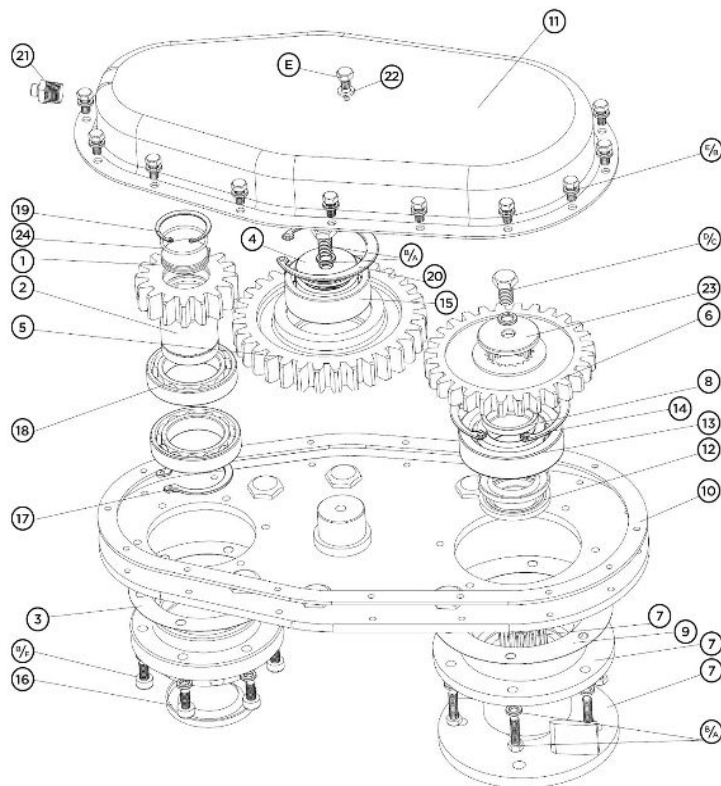
PARTS

Rotary Tiller Parts List RT104BL



Item	Part Number	Description
1	9000380	Rear Guard Assembly (black) (4')
2	9000381	Rear Guard Steel Hinge w/ Hardware (black) (4')
3	P-P1827	1/4" Chain Shackle
4	P-P1870	Tiller Manual Holder w/ Hardware
5	P-P1824	Driveline Shaft Guard (4')
6	P-P1825	Hexagon Drive Shaft (4')
7	C1L	Tiller Category 1 Lift Pin (4',5',6')
8	9000382	Top Link Spacer (black)
9	9000012	Right Hand Tine Package w/ Hardware
10	9000013	Left Hand Tine Package w/ hardware
11	9000134	4' Light Duty Assembled Rotor w/ Tines
12	9000019	Tiller Outboard Hub Assembly Assembly w/ Hardware
13	1000783	Rear Tailgate Chain (11 Links)
14	9000383	RT4LD RH A-ARM (black)
15	9000384	RT4LD LH A-ARM (black)
16	9000385	RT4LD Hitch Support Weldment (black)
17	9000386	Tiller Parking Stand Weldment (black)
18	9000387	Tiller Parking Stand Mount Weldment (black)
19	36-040	Black Gearbox Shield
20	9000388	RT4LD Universal Skid Shoe (black)
21	2000169	RT4LD Top Gearbox
22	2000170	RT4LD Side Gearbox
Not Shown	4-30QDTL	Tiller PTO shaft Assembly
Not Shown	I12TPTO	Implement Half Tiller PTO Shaft
Not Shown	T12TPTO	Tractor Half Tiller PTO Shaft
Not Shown	FF0.3	PTO Shaft Friction Discs (2pk)

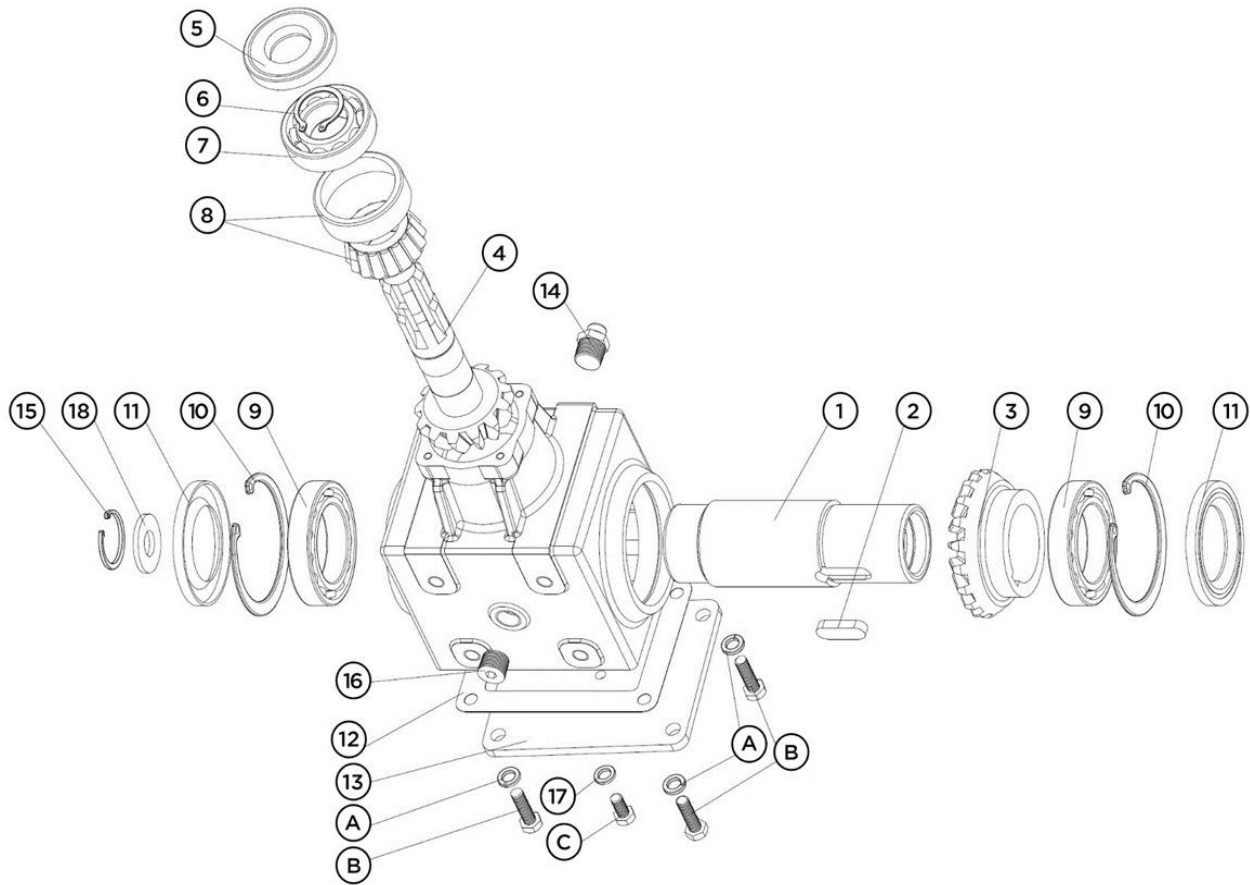
RT104BL
Side Gearbox
2000170



Item Number	Part Number	Description
1	H-C0245	Tiller Agriculture Side Input Shaft Sealed Cap
2	H-C0221	Tiller Side Gearbox Gear Shaft-Input
3	2000016	Tiller Side Gearbox Input Gasket 0.5mm
4	H-C0253	*416M* Tiller Ring
5	2000179	Center Idle Gear (H-C8008-02)
6	H-C0224	Tiller Side Gearbox Gear-Output
7	2000180	Lower Output Shaft assembly
8	H-C0252	*417M* Tiller Side Gearbox Spacer 2
9	2000018	Tiller Side Gearbox Output Gasket 0.5mm
10	2000019	Main Seal Ring
11	2000181	Side Gearbox Cover (H-C0215)
12	S-211	RTS Output Shaft Seal
13	S-133	Bearing
14	S-410	Tiller Side Agriculture Output Shaft Retaining Ring
15	S-126	Tiller Ball Bearing
16	S-212	Tiller Seal
17	S-411	Tiller Side Agriculture Output Shaft Retaining Ring
18	S-124	Agriculture Tiller Output Shaft Bearing
19	S-412	Tiller Side Agriculture Output Shaft Retaining Ring
20	2000182	Retaining Ring 90mm (S-417)
21	S-502	Tiller Agriculture Side Output Shaft Plug Pressure Relief
22	S-509	Seal Ring
23	H-C0255	Washer
24	2000183	Spacer ring (S-513)
A	Non-Service	3/8"-16 × 1" bolt
B	Non-Service	3/8" Washer
C	Non-Service	1/2"-13 × 1-1/4" Bolt
D	Non-Service	1/2" lock washer
E	Non-Service	3/8-16 × 5/8" bolt
F	Non-Service	3/8"-16 × 1" socket cap screw

PARTS

RT104BL Top Gearbox 2000169



Item	Part Number	Description
1	2000173	Output Shaft (H-C8007-01)
2	S-122	Agriculture Top Tiller Output Shaft Key
3	2000174	Output Gear (H-C8007-02)
4	2000175	Input Gear Shaft (H-C8007-04)
5	2000176	Input Shaft Seal 72×35×11 (S-218)
6	S-403	Agriculture Tiller Top Output Shaft Retaining Ring
7	S-102	Output Shaft Bearing
8	S-123	Agriculture Top Tiller Output Shaft Bearing 33207
9	S-124	Agriculture Tiller Output Shaft Bearing
10	S-406	Tiller Agriculture Output Shaft Retaining Ring
11	S-209	Tiller Agriculture Top Output Shaft Seal
12	2000177	Rear Cover Gasket (H-C8007-05)
13	2000178	Rear Cover (H-C8007-06)
14	S-502	Tiller Agriculture Side Output Shaft Plug Pressure Relief
15	S-407	Standard Tiller Top Output Retaining Ring
16	S-504	Tiller Agriculture Top Output Shaft Pipe Plug-Inner 6f
17	S-509	Seal Ring
18	1G150-45	Standard Tiller Top Agriculture Output Shaft Washer
A	Non-Service	3/8" Split Lock Washer
B	Non-Service	3/8"-16 × 1" bolt
C	Non-Service	3/8"-16 × 5/8" bolt

**RT104BL Hardware Kit
(9000250)**

Description	
1/4" Plated Proof Coil Chain x 13" (11 links)	1
5"x5" Box	1
1/4" Screw Pin Chain Shackle	1
1/4"-20 x 1" Grd 5 Hex Bolt	2
1/4"-20 Nylon Insert Lock Nut	2
1/4" Flat Washer	6
1/2" X 3/4" Grd 5 Hex Cap Screw (coarse thread)	2
1/2" - Split Lock Washer	2
5/8" - 11 x 1-1/2" Hex Bolt GR5	4
5/8" Split Lock Washer	6
5/8" - 11 Hex Nut	6
5/8"-11 x 3-1/2" Grd 5 Hex Bolt	2
1/4"-20 x 1/2" Grd 2 Hex Bolt	4
Pin, Category 1 Plated 4" (P728)	2

TORQUE SPECIFICATIONS

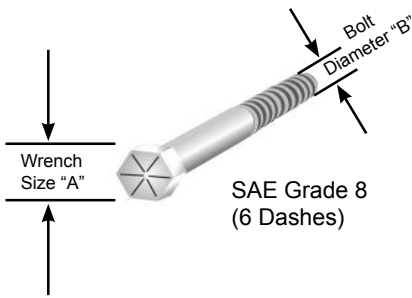
AMERICAN Bolt Head Markings



SAE Grade 2
(No Dashes)



SAE Grade 5
(3 Dashes)

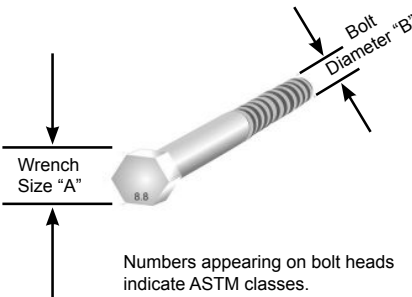


SAE Grade 8
(6 Dashes)

Proper torque for American fasteners used on manufactured implement.
Recommended Torque in Foot Pounds (Newton Meters).*

WRENCH SIZE (IN.) "A"	BOLT DIAMETER (IN.) "B" AND THREAD SIZE	SAE GRADE 2	SAE GRADE 5	SAE GRADE 8
7/16	1/4 - 20 UNC	6 (7)	8 (11)	12 (16)
7/16	1/4 - 24 UNF	6 (8)	10 (13)	14 (18)
1/2	5/16 - 18 UNC	11 (15)	17 (23)	25 (33)
1/2	5/16 - 24 UNF	13 (17)	19 (26)	27 (37)
9/16	3/8 - 16 UNC	20 (27)	31 (42)	44 (60)
9/16	3/8 - 24 UNF	23 (31)	35 (47)	49 (66)
5/8	7/16 - 14 UNC	32 (43)	49 (66)	70 (95)
5/8	7/16 - 20 UNF	36 (49)	55 (75)	78 (106)
3/4	1/2 - 13 UNC	49 (66)	76 (103)	106 (144)
3/4	1/2 - 20 UNF	55 (75)	85 (115)	120 (163)
7/8	9/16 - 12 UNC	70 (95)	109 (148)	153 (207)
7/8	9/16 - 18 UNF	79 (107)	122 (165)	172 (233)
15/16	5/8 - 11 UNC	97 (131)	150 (203)	212 (287)
15/16	5/8 - 18 UNF	110 (149)	170 (230)	240 (325)
1-1/8	3/4 - 10 UNC	144 (195)	266 (360)	376 (509)
1-1/8	3/4 - 16 UNF	192 (260)	297 (406)	420 (569)
1-5/16	7/8 - 9 UNC	166 (225)	430 (583)	606 (821)
1-5/16	7/8 - 14 UNF	184 (249)	474 (642)	668 (905)
1-1/2	1 - 8 UNC	250 (339)	644 (873)	909 (1232)
1-1/2	1 - 12 UNF	274 (371)	705 (955)	995 (1348)
1-1/2	1-14 UNF	280 (379)	721 (977)	1019 (1381)
1-11/16	1-1/8 - 7 UNC	354 (480)	795 (1077)	1288 (1745)
1-11/16	1-1/8 - 12 UNF	397 (538)	890 (1206)	1444 (1957)
1-7/8	1-1/4 - 7 UNC	500 (678)	1120 (1518)	1817 (2462)
1-7/8	1-1/4 - 12 UNF	553 (749)	1241 (1682)	2013 (2728)
2-1/16	1-3/8 - 6 UNC	655 (887)	1470 (1992)	2382 (3228)
2-1/16	1-3/8 - 12 UNF	746 (1011)	1672 (2266)	2712 (3675)
2-1/4	1-1/2 - 6 UNC	870 (1179)	1950 (2642)	3161 (4283)
2-1/4	1-1/2 - 12 UNF	979 (1327)	2194 (2973)	3557 (4820)

METRIC



Numbers appearing on bolt heads indicate ASTM classes.

Proper torque for metric fasteners used on manufacturer implement.
Recommended Torque in Foot Pounds (Newton Meters).*

WRENCH SIZE (mm) "A"	BOLT DIA. (mm) "B"	ASTM 4.6	ASTM 8.8	ASTM 9.8	ASTM 10.9
8	5	1.8 (2.4)		5.1 (6.9)	6.5 (8.8)
10	6	3 (4)		8.7 (12)	11.1 (15)
13	8	7.3 (10)		21.1 (29)	27 (37)
16	10	14.5 (20)		42 (57)	53 (72)
18	12	25 (34)	74 (100)	73 (99)	93 (126)
21	14	40 (54)	118 (160)	116 (157)	148 (201)
24	16	62 (84)	167 (226)	181 (245)	230 (312)
30	20	122 (165)	325 (440)		449 (608)
33	22		443 (600)		611 (828)
36	24	211 (286)	563 (763)		778 (1054)
31	27		821 (1112)		138 (1542)
46	30	418 (566)	1119 (1516)		1547 (2096)

*Use 75% of the specified torque value for plated fasteners. Use 85% of the specified torque values for lubricated fasteners.

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Cannot attach PTO shaft to the tractor	PTO shaft is too long, PTO yoke attachment pin is seized.	Cut PTO shaft per OM instructions, lubricate attachment pin.
Tillage depth insufficient	Tractor is holding tiller up, Tractor has insufficient power, skid shoes preventing lowering, tines are worn, ground is too hard.	Adjust lift arm settings on tractor, increase tractor PTO speed, adjust tiller skidshoes, replace tines, make multiple passes.
Soil is not tilled fine enough	Ground speed too fast, PTO speed too slow, tines assembled incorrectly.	Slow tractor ground speed, Increase tractor PTO speed, check tine assembly.
Driveline vibrates	Universal joint is worn, debris wrapped around tine bar, driveline is at extreme angle	Replace universal joint/cross bearing, remove debris, lower tiller and adjust tractor lift stop.
Constant abnormal gearbox noise	Low oil level, worn gears, gearbox bearings.	Check oil level, replace gears/gearbox, replace bearings.
Tiller makes intermittent/abnormal noise	Tines are loose, gearbox has damaged tooth, debris is wrapped around tine bar.	Tighten tines, replace damaged gear, clear debris.
Gearbox is overheating	Oil level is low, gearbox needs service, ventplug is seized, tiller load is too great.	Check oil level, replace old oil, replace ventplug, reduce ground speed/tilling depth.
Oil Leaking from gearbox	Seals and or gaskets are damaged, gearbox is overfilled with oil.	Replace seals or gaskets, drain oil to correct level.
Rotor will not turn	Tractor PTO is not engaged, gear drive has damage, friction clutch not adjusted properly.	Engage tractor PTO, inspect and repair gears, reduce tiller load or adjust clutch.
Tiller shaking	Ground is compacted and or dry, debris entangled in tines	Make multiple passes with shorter tilling depth, irrigate soil, clear debris.
Rear tailgate impacts tines	Tailgate adjustment chain in wrong position.	Adjust tailgate adjustment chain to hold tailgate higher.

MANUFACTURER'S LIMITED WARRANTY

Tarter Farm and Ranch Equipment warrants to the original purchaser that the purchased product is free from defects in material and workmanship for a period of one (1) year commencing on the date of original purchase, as evidenced by the original receipt, and will, at its option, repair, replace or issue credit for any product or part found to be defective.

This limited warranty shall only apply if this product has been operated and maintained in accordance with the Operator's Manual furnished with the product, and has not been subject to misuse, abuse, commercial or industrial use, neglect, improper maintenance, alteration, or accident or which has been used for a purpose for which the product was not designed. Damage resulting from the installation or use of any part, accessory, or attachment not approved by Tarter Farm and Ranch Equipment, for use with the product covered by the Operator's Manual, shall void the warranty as to any resulting damage.

This limited warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this warranty does not transfer to the third party in any manner.

HOW TO MAKE A CLAIM:

To obtain warranty service through a local authorized retailer, a customer must present the following within thirty (30) days of implement failure:

1. Proof of purchase within one (1) year of purchase date.
2. Photographs of or return of the actual product in question.
3. Photograph of UPC label.

After receipt of the above information, if the product is alleged to be defective, Tarter Farm and Ranch Equipment will process the claim and issue a Return Manufacturers Authorization number (RMA). Once an RMA number is issued, Tarter Farm and Ranch Equipment will pick up the product from the authorized retailer and return to its facility for inspection. Tarter Farm and Ranch Equipment will replace, repair, or issue credit for any product after examination which is determined to be defective due to defects in material and workmanship.

For additional Warranty questions, please call 1-800-RED-GATE or email warranty@tarterusa.com for assistance.

WARRANTY DISCLAIMER:

This limited warranty is in lieu of, and Tarter Farm and Ranch Equipment disclaims and excludes any express and implied warranties with respect to the product including, without limitation, merchantability, and fitness for a particular purpose. No other express warranty, whether written or oral, given by any person or entity, including a retailer, with respect to any product, shall bind Tarter Farm and Ranch Equipment.

Tarter Farm and Ranch Equipment's exclusive liability for breach of the limited warranty, as set forth above, on the product shall be to repair or replace the implement within the warranty period in accordance with the terms of this limited warranty. The choice of remedy shall belong solely to Tarter Farm and Ranch Equipment. In no event shall Tarter Farm and Ranch Equipment be liable for any loss or damages of any other kind, whether direct, incidental, consequential including lost profits, exemplary, special, or otherwise, including without limitation, expenses incurred for substitute or replacement implement or for rental expenses to temporarily replace a warranted product.

Under no circumstance shall recovery, of any kind, be greater than the amount of the purchase price of the product purchased. Customer assumes all risk and liability for loss, damage, or injury to customer or customer's property and/or the property of others arising out of the misuse or inability to use the product.

LEGAL RIGHTS

This limited warranty gives you specific legal rights, and you may also have other rights which may vary from state to state. Some states do not allow any limitation on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

KEEP FOR YOUR RECORDS

Record the model number, serial number, and the date of purchase with the original sales receipt. This information will be helpful to the retailer if parts or service are required.

Model Number _____

Serial Number _____

Date of Purchase _____

Retailer _____

TARTER[®]
FARM AND RANCH EQUIPMENT

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