

Earthquake®

Groundbreaking Power Equipment

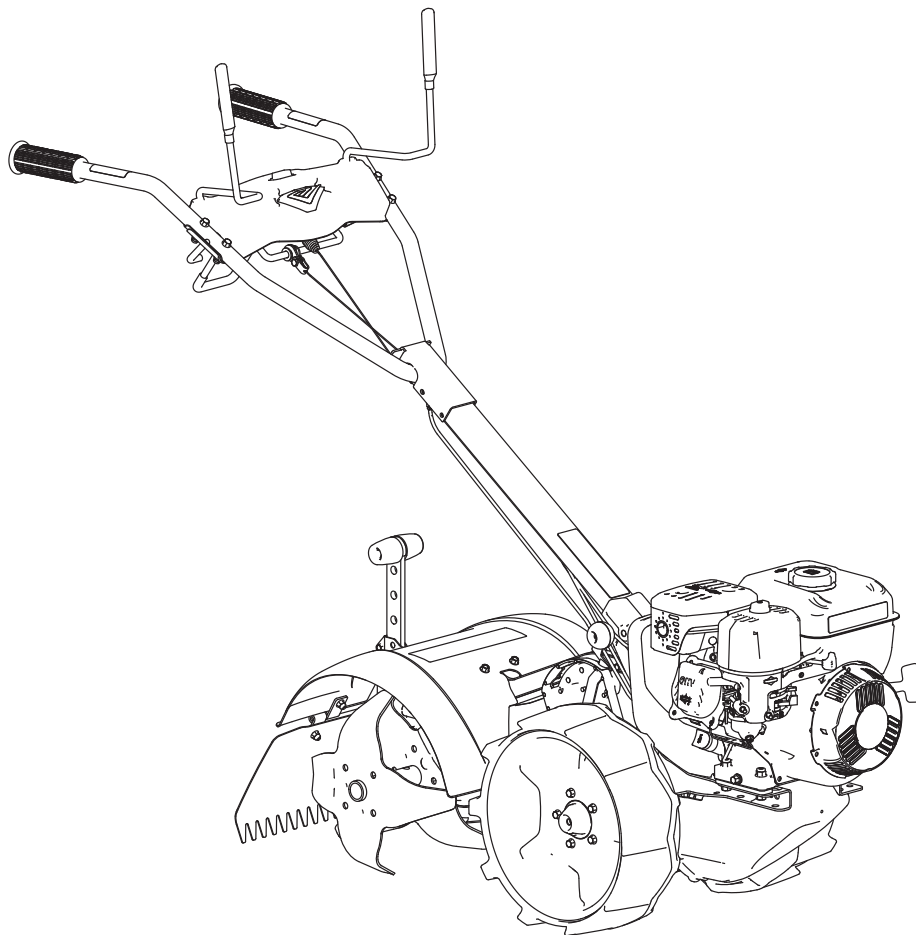
Operator Manual
Manuel de l'utilisateur

Pioneer™
Dual Direction Rear Tine Tiller

Model Number, Numéros de modèle :
46059

ENGLISH

FRANÇAIS



Get parts or technical assistance online at
www.getearthquake.com or call (800) 345-6007
Pièces détachées et assistance technique en ligne à
www.getearthquake.com ou composer le (800) 345-6007

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THIS INSTRUCTION BOOKLET CONTAINS IMPORTANT SAFETY INFORMATION. PLEASE READ AND KEEP FOR FUTURE REFERENCE.
CE LIVRET D'INSTRUCTIONS CONTIENT DES INFORMATIONS IMPORTANTES SUR LA SÉCURITÉ. VEUILLEZ LE LIRE ET LE CONSERVER POUR TOUTE CONSULTATION EXTÉRIEURE.



ACTIVATE YOUR WARRANTY BEFORE USE

All products must be registered within 30 days from the date of purchase in order to be covered under warranty. For more information regarding Warranty and Registration please review the Warranty and Registration terms and conditions expressed in the warranty insert.

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INTRODUCTION

Thank you for purchasing your product from Earthquake®. We have worked to ensure that this product meets the highest standards for usability and durability. With proper care, your purchase will provide many years of service.

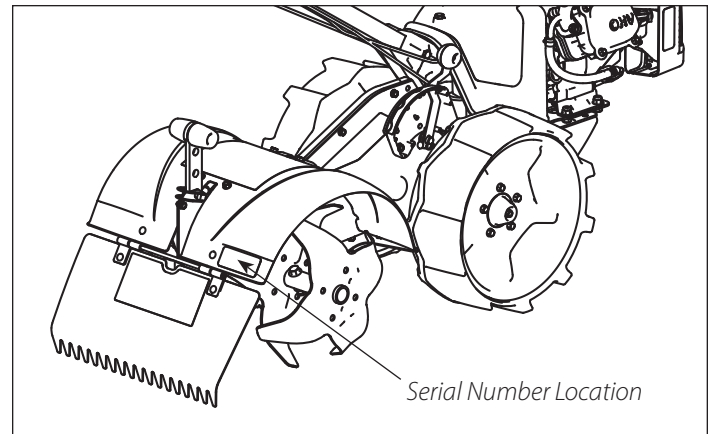
Please read this entire manual before installation and use. Earthquake® reserves the right to change, alter or improve the product and this document at any time without prior notice. Due to continuous product improvements, product images may not be exact. Some assembly may be required.

Read and keep this manual for future reference. This manual contains important information regarding safety, assembly, operation and maintenance. The owner must be certain that all the product information is included with the unit. This information includes the manual, the replacement parts and the

warranties. This information must be included to make sure state laws and other laws are followed. All persons to whom rent/loan this unit must have access to and understand this information. This manual should remain with the product even if it is resold.

REGISTRATION & SERVICE

Record the product model number and serial number in the space provided for easy reference when ordering parts or requesting technical support. Excluding emissions-related warranty items, the warranty is valid only if the completed registration is received by Ardisam within 30 days of purchase. You can register your warranty online by visiting [www. GetEarthquake.com](http://www.GetEarthquake.com), or by mailing it to: Ardisam, 1730 Industrial Avenue, Cumberland, WI 54829. You may also call our Customer Service department at (800) 345-6007 Mondays through Fridays from 8 a.m. to 4:30 p.m. CST.



Serial Number

Date of Purchase

WARNINGS & SAFETY PRECAUTIONS

OWNER'S RESPONSIBILITY

Accurate assembly and safe and effective use of the machine is the owner's responsibility.

- Read and follow all safety instructions.
- Carefully follow all assembly instructions.
- Maintain the machine according to directions and schedule included in this Earthquake® operator's manual.
- Ensure that anyone who uses the machine is familiar with all controls and safety precautions.

SPECIAL MESSAGES

Your manual contains special messages to bring attention to potential safety concerns, machine damage as well as helpful operating and servicing information. Please read all the information carefully to avoid injury and machine damage.

NOTE: General information is given throughout the manual that may help the operator in the operation or service of the machine.

▲ This symbol points out important safety instructions which if not followed could endanger your personal safety. Read and follow all instructions in this manual before attempting to operate this equipment.

BEFORE OPERATING EQUIPMENT:

PLEASE READ THIS SECTION CAREFULLY. Read entire operating and maintenance instructions for this product. Failure to follow instructions could result in serious injury or death. Operate the machine according to the safety instructions outlined here and inserted throughout the text. Anyone who uses this machine must read the instructions and be familiar with the controls.

INTENDED USE / FORESEEABLE MISUSE

IMPORTANT: This is a motorized rotary tiller that works the soil by means of rotating tines. It is pedestrian-controlled, with a gasoline-fueled internal combustion engine to power the tines. It shall not be used for any other purpose.

▲ DANGER

**KEEP AWAY FROM ROTATING TINES.
ROTATING TINES WILL CAUSE INJURY.**



NOTICE

NOTICE INDICATES YOUR EQUIPMENT CAN BE DAMAGED IF THE SAFETY INSTRUCTIONS THAT FOLLOW THIS SIGNAL WORD ARE NOT OBEYED.

IMPORTANT

IMPORTANT INDICATES HELPFUL INFORMATION FOR PROPER ASSEMBLY, OPERATION OR MAINTENANCE OF YOUR EQUIPMENT.

▲ CAUTION

▲ CAUTION INDICATES A HAZARD WHICH, IF NOT AVOIDED, COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE.

▲ WARNING

▲ WARNING INDICATES A HAZARD WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY AND/OR PROPERTY DAMAGE.

▲ DANGER

▲ DANGER INDICATES A HAZARD WHICH, IF NOT AVOIDED, CERTAINLY WILL RESULT IN DEATH OR SERIOUS INJURY AND/OR PROPERTY DAMAGE.

▲ WARNING

▲ YOU MUST READ, UNDERSTAND AND COMPLY WITH ALL SAFETY AND OPERATING INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO SETUP AND OPERATE YOUR MACHINE. FAILURE TO COMPLY WITH ALL SAFETY AND OPERATING INSTRUCTIONS CAN RESULT IN LOSS OF MACHINE CONTROL, SERIOUS PERSONAL INJURY TO YOU AND/OR BYSTANDERS, AND RISK OF EQUIPMENT AND PROPERTY DAMAGE. THE TRIANGLE IN THE TEXT SIGNIFIES IMPORTANT CAUTIONS OR WARNINGS WHICH MUST BE FOLLOWED.

GENERAL SAFETY RULES

- Read, understand, and follow all instructions on the machine and in the manual(s). Be thoroughly familiar with the controls and the proper use of the machine before starting. Know how to stop the machine and disengage the controls quickly.
- Use this equipment for its intended purpose only.
- Familiarize yourself with all of the safety and operating decals on this equipment and on any of its attachments or accessories.
- Do not put hands or feet near or under rotating parts.
- Only allow responsible individuals who are familiar with the instructions to operate the machine. Never allow children to operate this machine. Never allow adults to operate the machine without proper instruction.
- Thoroughly inspect the area where the machine is to be used and remove all foreign objects. Your equipment can propel small objects at high speed causing personal injury or property damage. Stay away from breakable objects, such as house windows, automobiles, greenhouses, etc.
- Keep the area of operation clear of all persons, particularly small children and pets.
- Do not operate in shorts or open toed shoes. Wear proper Personal Protective Equipment (PPE) at all times, such as gloves, proper footwear, and eye protection.
- Do not wear loose clothing or jewelry. They can get caught in moving parts. Always keep hands, feet, hair and loose clothing away from any moving parts on engine and machine.
- Always wear safety goggles or safety glasses with side shields when operating the machine to protect your eyes from foreign objects which can be thrown from the unit. Always wear a protective hearing device.
- Always wear work gloves and sturdy footwear. Wear footwear that will improve footing on slippery surfaces. Leather work shoes or short boots work well for most people. These will protect the operator's ankles and shins from small sticks, splinters, and other debris.
- Do not operate product when fatigued or under the influence of alcohol, drugs or other medication which can cause drowsiness or affect your ability to operate this machine safely.

- Temperature of muffler and nearby areas may exceed 150° F (65° C). Allow muffler and engine areas to cool before touching. Never pick up or carry the machine while the engine is running.
- Prolonged exposure to noise and vibration from gasoline engine-powered equipment should be avoided. Take intermittent breaks and/or wear ear protection from engine noise as well as heavy work gloves to reduce vibration in the hands.
- When moving the packaged machine, always do so with a partner.
- Check local regulations for age restrictions on use of this machine.
- Never attempt to make any adjustment while the engine (motor) is running (except where specifically recommended by the manufacturer).
- The tines of the tiller should not rotate when either drive control lever is released into the neutral position. If it does rotate when in neutral, contact Earthquake® Customer Service for instruction.

ENGINE SAFETY PRECAUTIONS

This product comes with a separate engine manual, be sure to read and follow all safety and warning precautions outlined there, in addition to any in this manual.

PREVENTING CARBON MONOXIDE POISONING

- Always start and run engine outdoors. Do not start or run engine in an enclosed area, even if doors or windows are open. Never try to ventilate engine exhaust indoors. Carbon monoxide can reach dangerous levels very quickly.
- Never run engine outdoors where exhaust fumes may be pulled into a building.
- Never run engine outdoors in a poorly ventilated area where the exhaust fumes may be trapped and not easily taken away. (Examples include: in a large hole or areas where hills surround your working area.)
- Never run engine in an enclosed or partially enclosed area. (Examples include: buildings that are enclosed on one or more sides, under tents, car ports or basements.)
- Always run the engine with the exhaust and muffler pointed in the direction away from the operator.

- Never point the exhaust muffler towards anyone. People should always be many feet away from the operation of the engine and its attachments.
- Do not change the engine governor settings or over-speed the engine.

PREPARATION

- Dress appropriately when operating the tiller. Always wear sturdy footwear. Never wear sandals, sneakers or open shoes, and never operate the tiller with bare feet. Do not wear loose clothing that might get caught in moving parts. Wear proper Personal Protective Equipment (PPE) at all times, such as gloves, proper footwear, and eye protection.
- Carefully inspect the area to be tilled and remove all foreign objects. Do not till above underground water lines, gas lines, electric cables, or pipes. Do not operate the tiller in soil with large rocks and foreign objects which can damage the equipment.
- Disengage all clutches and leave control lever in the neutral position before starting the engine (motor).

WARNING

▲ ENGINES GIVE OFF CARBON MONOXIDE, AN ODORLESS, COLORLESS, POISONOUS GAS. CARBON MONOXIDE MAY BE PRESENT EVEN IF YOU DO NOT SMELL OR SEE ANY ENGINE EXHAUST. BREATHING CARBON MONOXIDE CAN CAUSE NAUSEA, FAINTING OR DEATH, IN ADDITION TO DROWSINESS, DIZZINESS AND CONFUSION.

▲ IF YOU EXPERIENCE ANY OF THESE SYMPTOMS, SEEK FRESH AIR AND MEDICAL ATTENTION IMMEDIATELY.

▲ HOT GASES ARE A NORMAL BY-PRODUCT OF A FUNCTIONING INTERNAL COMBUSTION ENGINE. FOLLOW ALL SAFETY INSTRUCTIONS TO PREVENT BURNS AND FIRES.

▲ DO NOT ALTER/MODIFY ENGINE: NEVER ALTER OR MODIFY THE ENGINE FROM THE FACTORY. SERIOUS INJURY OR DEATH MAY OCCUR IF ENGINE IS MODIFIED OR ALTERED. WHEN WORKING ON OR REPLACING PARTS FOR THE ENGINE OR PRODUCT, YOU MUST ALWAYS PUT THE ON/OFF SWITCH TO THE OFF POSITION.

SAFE HANDLING OF GASOLINE

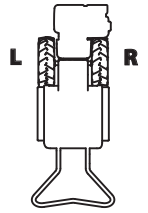
- Use extra care in handling gasoline and other fuels. They are extremely flammable and vapors are explosive.
- Extinguish all cigarettes, cigars, pipes and other sources of ignition.
- Never remove gas cap or add fuel with the engine running.
- Allow engine to cool before refueling.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light such as on a water heater or on other appliances.
- Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.
- Remove gas powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment with a portable container, rather than from a gasoline dispenser nozzle.
- Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock open device.
- If fuel is spilled on clothing, change clothing immediately.
- Never overfill fuel tank. Replace gas cap and tighten securely.
- If fuel is spilled do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
- Prevent fire and explosion caused by static electric discharge. Use only nonmetal, portable fuel containers approved by the Underwriter's Laboratory (U.L.) or the American Society for Testing & Materials (ASTM).
- Always fill fuel tank outside in a well ventilated area. Never fill your fuel tank with fuel indoors. (Examples include: basement, garage, barn, shed, house, porch, etc.).
- Test the fuel cap for proper installation before starting and using engine.
- Always run the engine with fuel cap properly installed on the engine.

OPERATION

- Do not allow hands, feet, or other body parts, or clothing near the rotating tines or any other moving part. The tines begin to rotate once the engine/motor is started and the activating device is engaged. The tines may momentarily rotate after the activating device is released.
- Exercise extreme caution when crossing gravel surfaces. Stay alert for hidden hazards or traffic.
- If an object becomes lodged in the tines, flip the ON/OFF switch to the OFF position, allow to cool before attempting to remove the foreign object.
- After striking a foreign object, stop the engine (motor), remove the wire from the spark plug (or disconnect the cord for electric products), thoroughly inspect the machine for any damage, and repair the damage before restarting and operating the machine.
- Exercise caution to avoid slipping or falling.
- If the machine should start to vibrate abnormally, stop the engine (motor) and check immediately for the cause. Vibration is generally a warning sign of trouble.
- Stop the engine (motor) when leaving the operating position, before unclogging the tines, and when making any repairs, adjustments and inspections.
- Stop the engine (motor) when leaving the machine unattended.
- Before cleaning, repairing or inspecting, shut off the engine and make certain all moving parts have stopped. Disconnect the spark plug wire, and keep the wire away from the plug to prevent accidental starting. Disconnect the cord on electric motors.
- Do not operate tiller under the influence of alcohol or drugs.
- Never operate tiller without guards, covers, and hoods in place.
- Do not overload the machine capacity by attempting to till or cultivate too deep at too fast a rate.
- Never operate the machine at high transport speeds on hard or slippery surfaces.
- Never allow bystanders near the machine, especially small children.
- Use only attachments and accessories approved by the manufacturer of the machine (such as wheel weights, counterweights, and the like).
- Never operate the tiller without good visibility or light.
- Be careful when tilling in hard ground. The tines may catch in the ground and propel the tiller forward. If this occurs, let go of the handlebars and do not restrain the machine.
- Use extreme caution when reversing or pulling the machine towards you. To avoid getting pinned against a structure, ensure

NOTICE

THE RIGHT AND LEFT SIDES OF YOUR ROTOTILLER ARE DETERMINED FROM THE OPERATING POSITION AS YOU FACE THE DIRECTION OF FORWARD TRAVEL. ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.



adequate distance before reversing near a wall or fence.

- Do not change the engine governor settings or over speed the engine.
- Start the engine or switch on the motor carefully according to instructions and with feet away from the tines.
- Never pick up or carry a machine while the engine (motor) is running.
- Do not operate the tiller while under the influence of alcohol or drugs.
- Powered walk-behind tiller work is strenuous. You must be in good physical condition and mentally alert. If you have any condition that might be aggravated by strenuous work, check with your doctor before operating a powered walk-behind tiller.

MAINTENANCE AND STORAGE

- Keep machine, attachments and accessories in safe working condition.
- Check shear bolts, engine mounting bolts and other bolts at frequent intervals for proper tightness to be sure the equipment is in safe working condition.
- To prevent accidental starting, always disconnect and secure the spark plug wire from the spark plug before performing tiller maintenance.
- Pulleys and belts should be kept free of oil or other moisture for efficient operation.
- Never store equipment with gasoline in the tank inside a closed building where ignition sources are present, such as hot water and space heaters, clothes dryers and the like. Allow engine to cool before storing in any enclosure.
- Always refer to the operator's guide instructions for important details if the tiller is to be stored for an extended period. If the fuel tank has to be drained, do this outdoors. Follow manufacturer's recommendations for safe loading, unloading, transport and storage of machine.

SAFETY DECALS

This rototiller unit has been designed and manufactured to provide you with the safety and reliability you would expect from an industry leader in outdoor power equipment manufacturing.

Although reading this manual and the safety instructions it contains will provide you with the necessary basic knowledge to operate this equipment safely and effectively, we have placed several safety labels on the tiller to remind you of this important information while you are operating the unit.

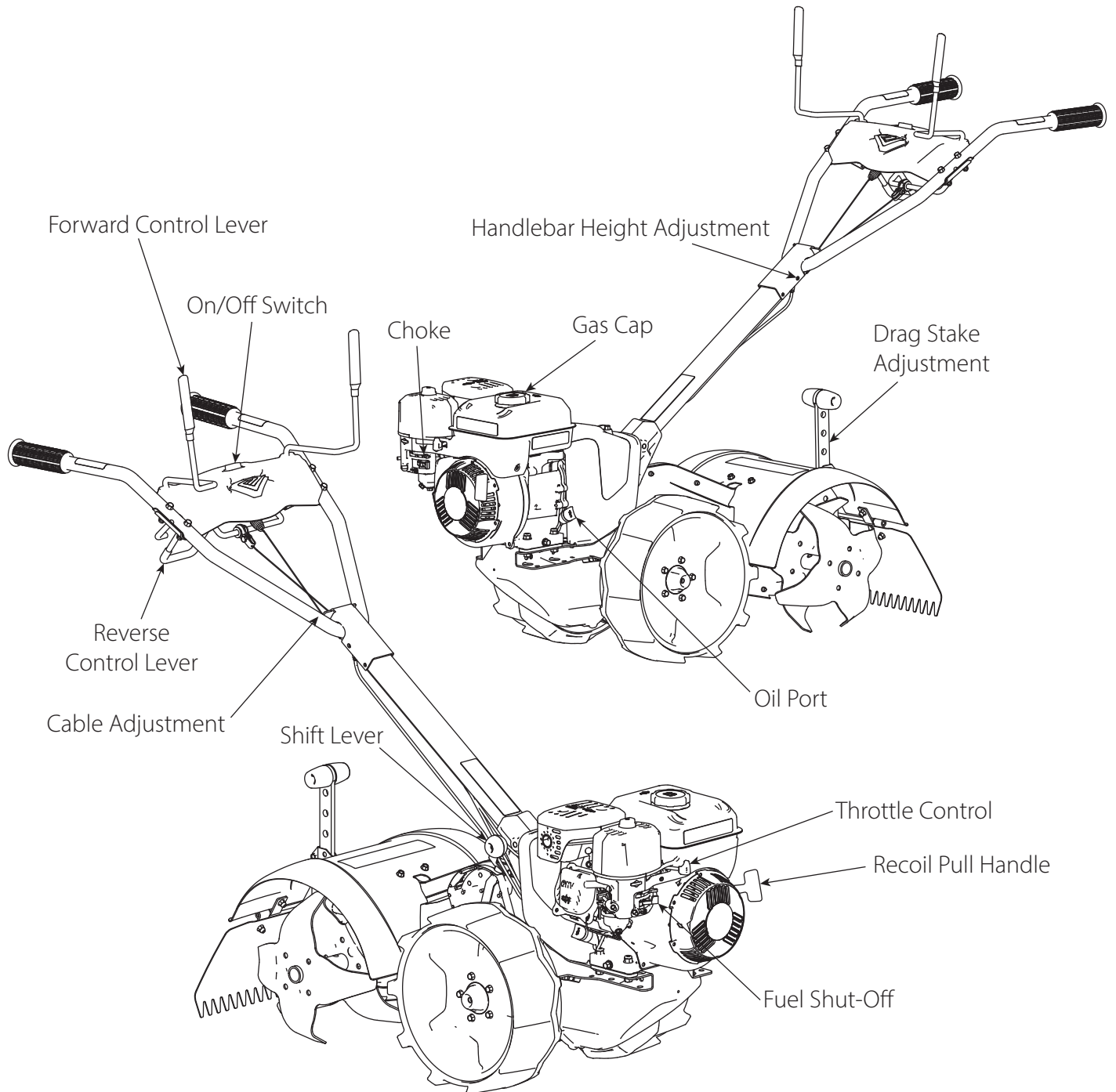
Please review these decals now, and if you have any questions regarding its meaning or how to comply with these instructions, reread the complete safety instruction text in this manual. For additional questions call Earthquake®Customer Service.

HAZARD SYMBOLS AND MEANINGS

- A: Warning!
- B: Avoid Injury From Rotating Tines.
- C: Read Owner's Manual Before Operating Machine.
- D: Remove Objects that Could Be Thrown By This Machine.
- E: Dangerous Moving Parts.
- F: Be Aware of Moving and Rotating Parts.
- G: Wear Ear and Eye Protection At All Times.
- H: Do Not Service or Adjust Moving Parts Unless Engine is Stopped and Spark Plug Wire is Disconnected.
- I: Dress Appropriately And Wear Sturdy Footwear.
- J: Toxic Fumes—Do Not Operate in Unventilated Areas.
- K: Hot Surfaces.
- L: Fire Hazards.
- M: Do Not Use In Thunderstorms--For severe weather, stop operation of this machine and seek shelter.
- N: Team Lift--For your safety, always have at least two people when lifting this machine.
- O: Do Not Till Above Underground Utility Lines And Pipes.
- P: Do Not Operate When Children Or Others Are Around.



FEATURES



OPERATION

CONTROLS:

TRANSMISSION DRIVE MODE SELECTOR

Pull the drive mode selector arm (shift lever) to the desired drive mode to shift the transmission. Do not shift the drive mode selector arm with the forward or reverse control lever engaged.

DRIVE MODES: SEE FIGURE 1

NEUTRAL: Wheels and tines are disengaged from engine. Use this mode for storage and non-powered transportation.

CRT: Wheels and tines are engaged with engine. Tines spin in the opposite direction of wheels. Use this mode when breaking new ground or tilling in compacted soil conditions.

DRIVE: Wheels are engaged with engine. Tines are disengaged with engine. Use this mode for powered transportation when driving up steep inclines.

SRT: Wheels and tines are engaged with engine. Tines spin in the same direction as wheels. Use this mode for established garden beds and tilling in soft soil conditions. Use this mode when tilling with a hiller furrower accessory to create hill and trenches.

DRIVE CONTROL LEVERS: SEE FIGURE 2

FORWARD: Pull down on the forward lever to engage the transmission in the FORWARD direction. Release the forward lever to disengage the transmission to stop.

REVERSE: Pull up on the reverse lever to engage the transmission in the REVERSE direction. Release the reverse lever to disengage the transmission to stop.

NOTE: Never attempt to engage the forward and reverse levers at the same time.

HANDLEBAR HEIGHT ADJUSTMENT

The handlebar can be adjusted to three height positions to accommodate varying user heights. During normal tilling operation the actual handlebar position will drop about ten (10) inches from normal height, therefore keep this in mind when adjusting the handlebar height position. To change height position, remove the hardware from the handlebar assembly and rotate to match the holes at the desired position.

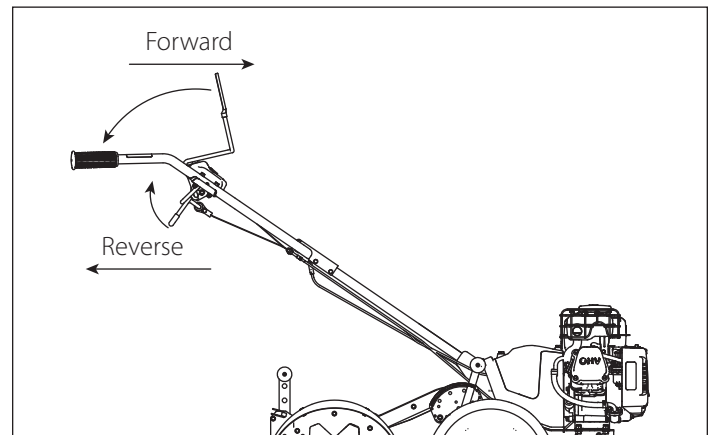


Figure 2

DRIVE MODES:

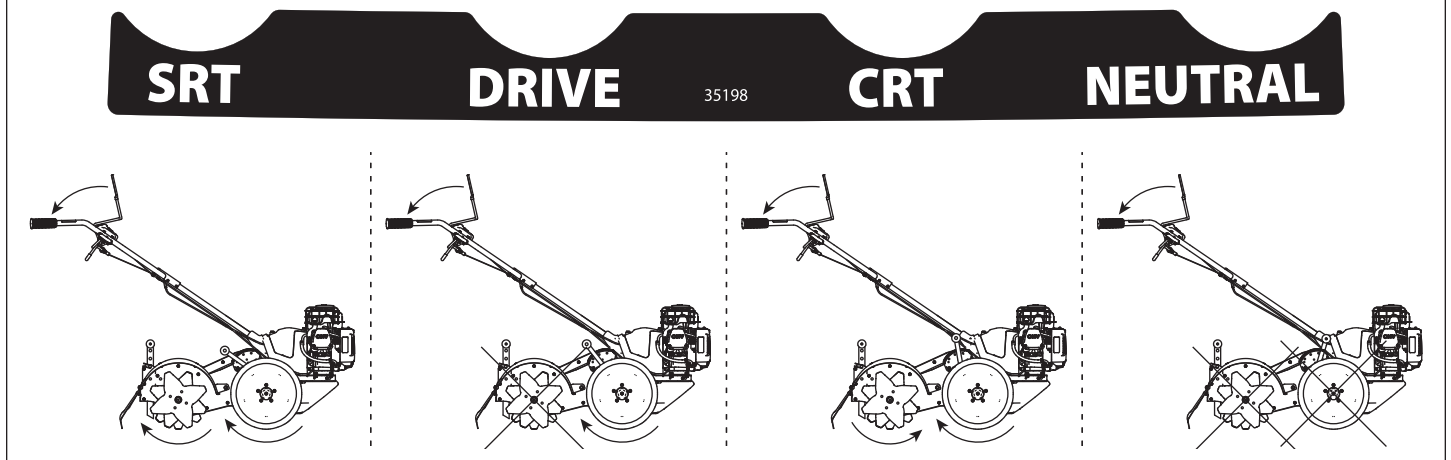


Figure 1

HEIGHT POSITIONS: SEE FIGURE 3

LOW: Install handlebar assembly using holes B & C.

MIDDLE: Install handlebar assembly using holes C & D.

HIGH: Install handlebar assembly using holes A & D.

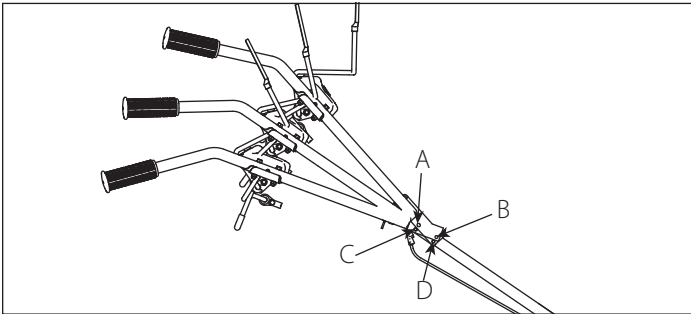


Figure 3

DRAG STAKE: SEE FIGURE 4

CRT: In CRT (counter-rotating tines) the drag stake limits the depth of cut, therefore the lower the drag stake, the less depth of till. If the drag stake is placed in the upper most position, the depth of cut will be deepest.

SRT: In SRT (standard (forward)-rotating tines) the drag stake is a speed limiter. The lower the drag stake, the slower the machine will propel itself forward. Therefore, if the machine lurches or moves forward faster than desired, lower the drag stake.

TRANSPORT: Raise drag stake all the way when transporting tiller.

BELT TENSION ADJUSTMENT

Proper belt tension is critical to good performance. A properly tensioned belt ensures that the belt will be fully engaged and won't slip or squeal. Also, exposed cables between the engagement levers and the handlebar tube will not sag. After 1/2 hour of operation, both cables may need to be adjusted due to initial belt stretch. After initial adjustment, check the tension every ten (10) hours of operation, and after long term storage.

To increase forward belt tension, do as follows:

1. Loosen upper jam nut at handlebar assembly. SEE FIGURE 5
2. Tighten the lower jam nut in 1/8 inch increments until the beehive spring stretches 3/16" (5mm) longer when the forward engagement lever is fully engaged.

Reverse belt tension adjustment: If the reverse function ceases to operate, adjust the jam nuts on the reverse cable one turn at a time until reverse function works.

NOTE: This procedure can be repeated until no more adjustments can be made. If fully adjusted and belt tension is not satisfactory, the belt may need to be replaced.

PRE-START INSPECTION:

1. Make sure all safety guards are in place and all hardware is secure.
2. Check oil level in engine crankcase. Refer to engine manual for proper procedure.
3. Inspect air cleaner for cleanliness. Refer to engine manual for proper procedure.
4. Check fuel supply. Refer to engine manual for proper procedure and fuel recommendations.
5. Examine underneath and around engine for signs of oil or fuel leaks.
6. Inspect fuel hoses for tightness and leaks.
7. Inspect for signs of engine damage.
8. Remove excessive debris from muffler area and recoil starter.
9. Turn fuel shutoff valve to the ON position if equipped. Refer to engine manual for procedure.
10. Check that spark plug is securely installed, and spark plug wire is attached.

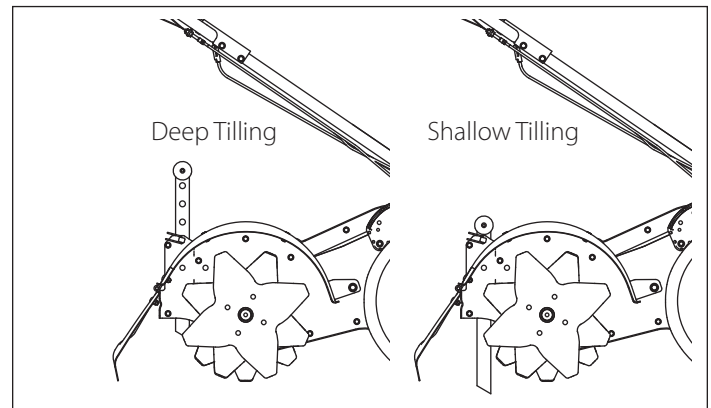


Figure 4

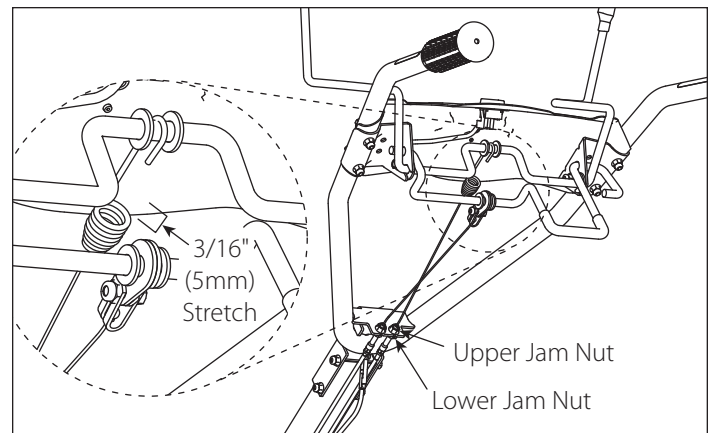


Figure 5

START-UP:

The controls required to start the engine (choke lever, throttle lever, recoil starting rope, and ON/OFF switch) are located on the engine and handlebar. Refer to engine manual for choke lever, throttle lever, and recoil starting rope locations and proper starting positions. The ON/OFF switch is located on the handlebar dash panel at the user position. SEE FEATURES ON PAGE 8

COLD STARTS

1. Turn ON/OFF switch to the ON position.
2. Move choke lever to CHOKE position.
3. Move throttle lever to half-way between SLOW and FAST.
4. Pull recoil starting rope out slowly one time and allow to return normally.
5. Pull recoil starting rope out rapidly and allow rope to return normally.
 - a. Repeat until engine starts.
6. When engine starts, gradually move choke lever to RUN position and move throttle lever to FAST position.

RESTARTING A WARM ENGINE

Restarting an engine that is already warm from previous operation does not normally require use of the choke.

1. Turn ON/OFF switch to the ON position.
2. Move throttle lever to half-way between SLOW and FAST.
3. Pull recoil starting rope out rapidly and allow rope to return normally.
 - a. Repeat until engine starts.
4. When engine starts, move throttle lever to FAST position.

IDLE SPEED

Use the SLOW position or a position between SLOW and FAST on the throttle lever to reduce stress on the engine when tilling is not being performed. Lowering the engine speed to idle will help

extend the life of the engine, as well as conserve fuel and reduce the noise level of the tiller.

OPERATING SPEED

For tilling, set the throttle lever at anywhere from 'half-way' to 'fast' throttle position.

SHUTTING DOWN:

To stop the engine at any time, move the ON/OFF switch to the OFF position. To stop wheels and tines at any time, release the drive control levers to the NEUTRAL position.

TILLING:

1. Set the drag stake to the desired tilling depth.
2. Start the engine and set the throttle lever to the FAST position.
3. Select the desired drive mode.
4. Engage the forward lever to start tilling.

TILLING TIPS

The key to successful tilling is to begin with a shallow cut on the first pass, and then work an inch or two deeper on each successive path to the desired depth. Plant rows 20-22 inches apart to allow for ease of turning at the end of each row.

CRT (Counter Rotating Tines - Tines rotate backward)

- When tilling in unbroken soil, compacted soil, or extremely dense soil, use the CRT drive mode.

SRT (Standard Rotating Tines - Tines rotate forward)

- When tilling in an established garden bed or in soft soil, use the SRT drive mode.
- In SRT, the drag stake is used as a speed control. The deeper the drag stake, the slower the tiller will move forward.
- If tiller jumps or skids uncontrollably, lower the drag stake.

Maintenance Operation	Page	Before Each Use	10 Hours	Every Season	50 Hours
Check/adjust belt tension	10		X	X	
Replace belts	12-13				X
Lubricate moving parts	14		X		
Clean tine shaft	14	X			
Clean wheel shaft	14	X			
Engine maintenance	n/a	Refer to engine manual			

Figure 6

- Hold firmly to handlebars to control sudden lurches.
- In SRT mode lifting up on the handlebars slows the unit down.
- If drag stake adjustment does not solve control issues, change to CRT mode.

TRANSPORTATION:

To easily transport the rototiller, the DRIVE mode is included to allow for engine-assisted wheel transport without engaging the tines. This allows the tiller to be moved to and from your garden without damaging plants, grass, sidewalks, driveways, etc. To engage the tiller in DRIVE mode, simply move the shift lever to the DRIVE mode position and use the forward and reverse control levers to maneuver the tiller.

MAINTENANCE

MAINTENANCE SCHEDULE:

Your rototiller has been designed and produced to provide you years of reliable operation. Keeping your tiller in top running condition will prolong its life and help you obtain optimum performance. Please read this normal care schedule and note the recommended maintenance operations to extend the life of your unit.

Refer to the maintenance schedule (FIGURE 6) for normal tilling operation. If you operate your tiller under unusual conditions, such as sustained high-load or high-temperature operation, or use in usually wet or dusty conditions, consult your servicing dealer for recommendations to suit your individual needs.

To help you properly care for your tiller, the following pages include routine inspection and maintenance procedures using basic hand tools. Other service tasks that are more difficult or require special tools are best handled by professionals and are normally performed by a technician or qualified mechanic. View all Repair Centers in your area using our location finder: getearthquake.com/Locations/ServiceCenter

NOTE: Refer to the engine manual included with your tiller for engine maintenance schedule.

SERVICING THE ROTOTILLER:

The following information will help you make the necessary checks and perform the procedures required to follow the normal care recommendations for your unit. If you prefer, your local authorized dealer can make these checks and perform the required procedures for you.

BELT MAINTENANCE:

CHECK BELT TENSION

Belt tension may decrease over time. It may need to be adjusted within the first half hour of operation and should be checked after every ten hours of operation. Proper adjustment will assure long belt life. Too much or too little belt tension will cause premature belt failure.

An indication that the belt may need to be adjusted can be heard as a continuous squealing sound when the engagement lever is used, or the belt slips and the wheels and tines won't turn. If the belt requires adjustment, refer to the Belt Tension Adjustment instructions on page 10.

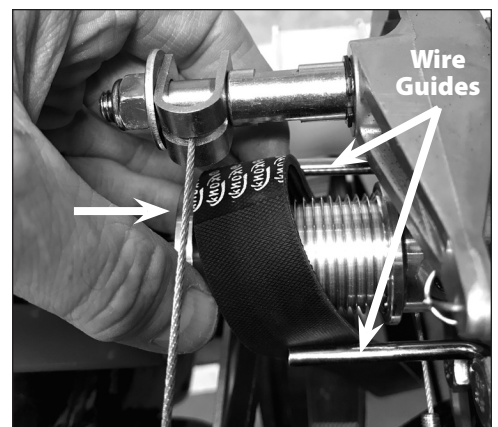
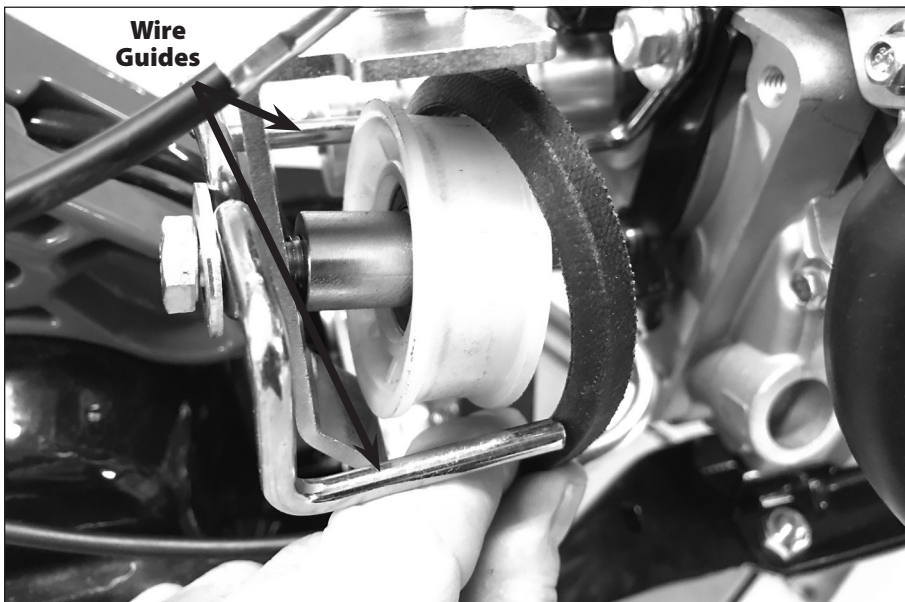
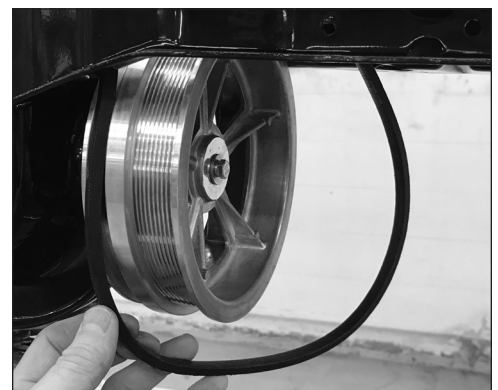
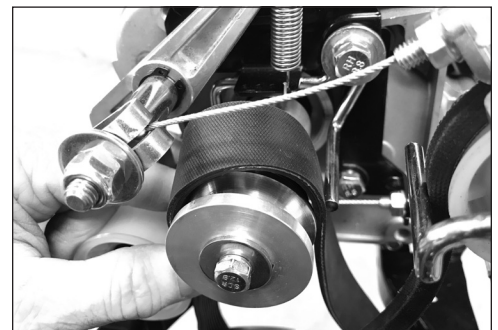
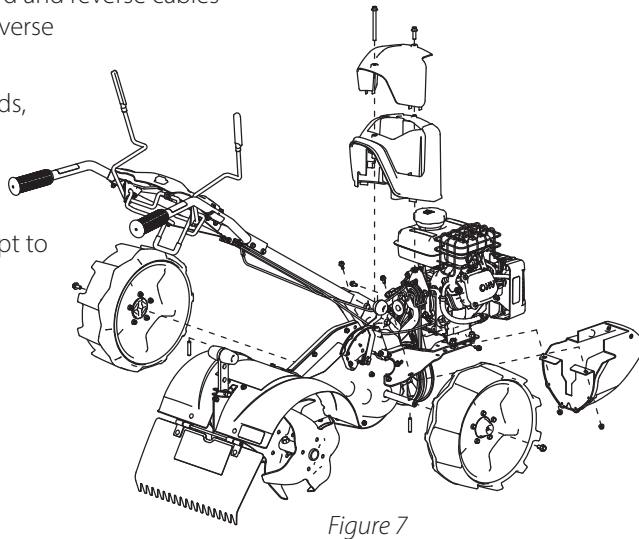
REPLACING FORWARD AND REVERSE BELTS

REMOVING FORWARD/REVERSE BELTS

1. Turn off engine. Engine must be cool prior to performing maintenance tasks.
2. Remove spark plug wire and secure from spark plug.
3. Shift transmission into NEUTRAL position.
4. Remove wheels, upper pulley shrouds, and lower pulley guards. SEE FIGURE 7
5. Detach forward and reverse cables from drive control levers.
6. Pull reverse arm away from engine pulley. Loosen the reverse idler pulley from the reverse arm enough to free up the reverse belt for removal using two 13mm wrenches. SEE FIGURE 8
7. Gently rotate the transmission pulley and force the forward belt out of the forward groove and away from pulley. SEE FIGURE 9
8. Push up on forward belt and pull off and away from engine pulley. SEE FIGURE 10
9. Remove reverse belt from transmission pulley. SEE FIGURE 11

INSTALLING FORWARD/REVERSE BELTS

1. Place reverse belt around transmission pulley in reverse groove. SEE FIGURE 11
 2. Place forward belt around engine pulley in forward groove between the wire guides. SEE FIGURE 12
 3. Gently rotate transmission pulley and force the forward belt into the forward groove. SEE FIGURE 9
 4. Slide reverse belt onto reverse arm idler pulley between wire guides and rest against engine pulley reverse groove. SEE FIGURE 8
 5. Tighten the reverse idler pulley with two 13mm wrenches so the wire guides don't touch the belt when the reverse drive lever is engaged.
 6. Reconnect the forward and reverse cables to the forward and reverse drive control levers.
 7. Reinstall upper shrouds, lower pulley guards, and wheels. SEE FIGURE 7
- NOTE:** Do not attempt to install wheels before installing lower pulley guard.
8. Attach spark plug wire.



LUBRICATION:

Proper lubrication of moving mechanical parts is critical for proper care and maintenance. Oil the following moving parts at 10 hour intervals using a white lithium grease:

1. Forward and reverse arm assemblies.
2. Forward and reverse engagement levers.
3. Forward and reverse cables.

CLEAN TINE SHAFT:

1. Turn off engine. Engine must be cool.
2. Remove spark plug wire and secure from spark plug.
3. Tip the tiller towards the engine and block it in position so that it rests on the lower pulley guard and the tines are exposed.
4. Remove all vegetation, string, wire, and other foreign material that may have accumulated on the axle between the tines and transmission housing.
 - a. It may be helpful to remove tines to ensure all debris is cleared for optimal performance.
 - b. To remove tines, loosen and remove bolt and nut on tine shaft and slide tines off.
5. Tip the tiller back to a level position.

CLEAN WHEEL SHAFT:

1. Turn off engine. Engine must be cool.
2. Remove spark plug wire and secure from spark plug.
3. Remove all vegetation, string, wire, and other foreign material that may have accumulated on the axles between the wheels and transmission housing.
 - a. It may be helpful to remove wheels to ensure all debris is cleared for optimal performance.
 - b. To remove wheels, loosen bolt on wheel shaft and slide wheels off, making sure not to lose the wheel pin on the shaft.
 - c. If wheels are difficult to remove, thread a 25mm length (or longer) M10x1.5 bolt into the wheel hub and rotate clockwise until the wheel releases from the shaft.
SEE FIGURE 13
4. Tip the tiller back to a level position.

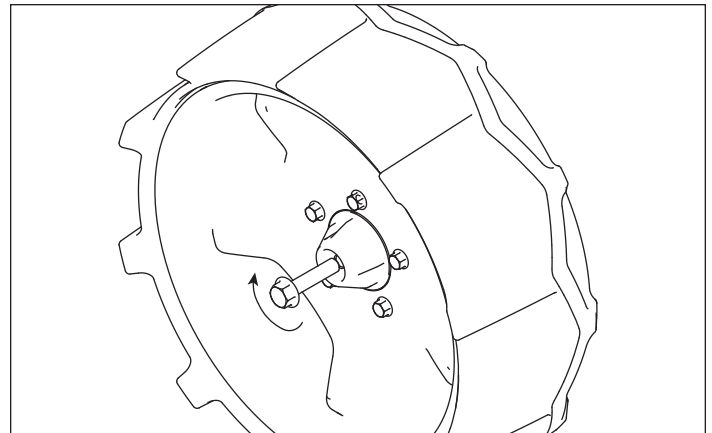


Figure 13

ENGINE MAINTENANCE

Refer to the engine manual included for information on engine maintenance. Your engine manual provides information and a maintenance schedule specific to your engine.

PERFORM THE FOLLOWING TASKS

1. Always check oil level before starting engine. Refer to engine manual for capacity and type of oil to use.
2. Change oil after first 5-8 hours of operation. Change oil while engine is warm. Refill with new oil of recommended grade.
3. Check spark plug yearly or every 50 hours of operation.
4. Service air cleaner after use in dusty or extreme conditions.
5. Keep engine and parts clean.
6. Check engine and equipment often for loose nuts and bolts; keep these items tightened.

STORAGE

PREPARE FOR STORAGE

Follow the steps below to prepare your tiller for storage. Read your engine manual for detailed instructions on preparing the engine for storage.

TO PREPARE YOUR TILLER FOR STORAGE:

1. Protect shafts from rust:
 - a. Remove tines from their shafts.
 - b. Coat the shafts lightly with axle grease.
 - c. Replace tines and secure.

2. Drain fuel system completely, following engine manufacturer's instructions, or add fuel stabilizer to prevent fuel from gumming up during extended storage period.
3. While engine is still warm, drain the oil from the engine. Refill with fresh oil of the recommended grade.
4. Clean all external surfaces of tiller and engine, including cooling fins and cooling fan.
5. Spark plug preparation.
 - a. Remove spark plug, pour one ounce of SAE 10W30 oil into spark plug hole.
 - b. Plug hole and pull recoil rope slowly to distribute oil evenly in cylinder head area.
 - c. Reinstall spark plug.
6. Transport unit to a suitable storage location. If you have chosen to use a fuel stabilizer and have not drained the fuel system, follow all safety instructions and storage precautions in this manual and your engine manual to prevent the possibility of fire from the ignition of gasoline fumes. Remember, gasoline fumes can travel to distant sources of ignitions and ignite, causing risk of explosion and fire.
7. Once the tiller is in the storage location, shift the transmission into the SRT position.
8. If there is any possibility of unauthorized use or tampering, remove the spark plug and store it in a safe place before storing the tiller. Be sure to plug the spark plug hole to prevent foreign material from entering the engine.

TROUBLESHOOTING AND REPAIR

TROUBLESHOOTING GUIDE:

While normal care and routine maintenance will extend the life of your rototiller, prolonged or constant use may eventually require that service be performed to allow it to continue operating properly. The troubleshooting guide below lists the most common problems, causes and remedies.

PROBLEM	REMEDY / ACTION
Engine will not start	<ul style="list-style-type: none"> • Add gas to gas tank • Connect spark plug wire to spark plug • Throttle must be positioned at choke for cold start
Engine runs rough, floods during operation	<ul style="list-style-type: none"> • Clean or replace air cleaner
Engine is hard to start	<ul style="list-style-type: none"> • Drain old fuel and replace with fresh. Use fuel stabilizer at the end of the season • Make sure spark plug wire is securely attached to spark plug • Drive control levers must be released to neutral positions to start the engine
Engine misses or lacks power	<ul style="list-style-type: none"> • Raise the tines for shallow tilling by lowering the drag stake • Remove and clean fuel tank • Clean or replace air filter • Clean carburetor jet • Replace spark plug and adjust gap • Drain and refill gas tank and carburetor
Tiller moves forward or backward during starting	<ul style="list-style-type: none"> • Drive control levers must be released to disengaged position to start the engine • Transmission should be set to neutral position to start the engine
Tiller is difficult to control when tilling (machine jumps or lurches forward)	<ul style="list-style-type: none"> • Raise tines for shallower tilling by lowering the drag stake lever • Shift to CRT mode
Tines turn, wheels turn, tiller does not move	<ul style="list-style-type: none"> • Raise the tines for shallower tilling by lowering the drag stake lever • Lift slightly on handlebars to allow wheels to gain traction • Shift to SRT mode
Belt(s) squeal when not engaged	<ul style="list-style-type: none"> • Check and adjust belt tension • Adjust belt guides
Excessive heat build-up in transmission and tine area during tilling	<ul style="list-style-type: none"> • Remove vegetation and debris by following instructions in CLEAN TINE SHAFT of Maintenance section of this manual
Wheels cannot be removed from shaft	<ul style="list-style-type: none"> • Remove wheels by following instructions in CLEAN WHEEL SHAFT of Maintenance section of this manual