



Operator's Manual Front Tine Rotary Tiller

MODEL No. PFTT140

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IMPORTANT:

Thank you for purchasing this Powermate® Tiller.

This manual provides complete instructions for safely operating and maintaining your Tiller. Read and save these instructions. Refer to this manual each time before using your Tiller.

Record the following for future reference:

Mfg. Date Code: _____

Date of Purchase: Attach a copy of your sales receipt.

Consumer Toll Free Number: 1-800-737-2112

Refer to the website for electronic manual and parts book.
www.powermateoutdoor.com

WARNING CALIFORNIA PROPOSITION 65 WARNING

Engine exhaust, some of its constituents, and certain product components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.



If you have a question or problem...

CALL TOLL FREE: 1-800-737-2112

KEEP THIS MANUAL FOR FUTURE REFERENCE




Safety Definitions

• Save these instructions

Important Safety Information











Safety Alert Symbols

The following symbols are used on the product and in this manual to alert the operator of potential safety hazards. Read them carefully, and understand their meaning.





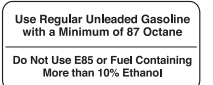

 DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor/moderate injury or equipment/property damage.

The following symbols may be found on your tiller. Carefully read and understand their meaning.

Safety Warning Symbols

	Indicates WARNING, DANGER, or CAUTION.		Wear eye protection complying with ANSI Z87.1 and hearing protection.
	Read operator's manual before operating this machine. Failure to follow directions could result in serious injury.		Disconnect spark plug wire when not in use or before servicing, cleaning, or performing maintenance on the unit.
	Thrown objects. Remove all rocks, stones, and foreign objects which could be thrown by machine		Engine exhaust contains carbon monoxide, an odorless and deadly gas. NEVER run unit indoors or in a poorly ventilated area.
	Do not use if children or bystanders are present.		Do NOT touch hot muffler or cylinder. These parts are extremely hot from operation and may remain hot for a short time after operation.
	Rotating parts can cause serious injury. Keep hands, feet and clothing away.		To reduce risk of fire, clean spilled gas and oil and keep unit free from debris. Gasoline is extremely flammable. Allow machine to cool before refueling.

Control and Operating Symbols

	Oil Fill Location Do Not Overfill		Push primer 3 times before starting a cold engine. Important: Do not prime to restart a warm engine.
	Clutch Lever Depressing the lever engages the tines.		Ignition Switch Move switch position to start/stop engine.
	Only use 87 Octane minimum gasoline.		Place free hand on handle bar before pulling recoil starter handle with other hand.

Important Safety Information

• Save all instructions

RESPONSIBILITY OF OPERATOR

1. Carefully read and follow these safety instructions. Failure to do so can result in serious injury.
2. Know your product. Read and understand this manual before use. Compare the illustrations to unit. Learn location and function of all controls. Thoroughly understanding the unit before use will result in the best performance and safety.
3. Follow all instructions when assembling the unit. If the unit was purchased in assembled condition, the operator must check the unit carefully to make sure it was assembled according to the instructions in the manual before use.
4. Regularly inspect the tiller. Make sure parts are not bent, damaged, or loose.
5. Use this equipment for its intended purpose only.
6. Operate the unit only with guards, shields, and other safety items in place and working correctly.
7. Service the unit only with authorized or approved replacement parts.
8. Complete all unit maintenance and adjustments according to the instruction in this manual.

WARNING

Look for this symbol to point out important safety precautions. It means: “Attention! Become Alert! Your Safety Is Involved.”

WARNING

Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

WARNING

To prevent accidental starting when setting up, transporting, adjusting or making repairs, always disconnect spark plug wire and put wire where it cannot contact the spark plug.

PREPARATION SAFETY

WARNING

- Read, understand, and follow all instructions on the machine and in this manual. Be thoroughly familiar with the controls and the proper use of the tiller before starting. Know how to stop the engine quickly.
- Familiarize yourself with all the safety and operating decals on this equipment.

WARNING

- Thoroughly inspect the area where the tiller 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, auto glass, greenhouses, etc.
- Check that all nuts and bolts are tight and equipment is in good condition before each use.

OPERATION SAFETY

- Never allow children or young teenagers to operate the tiller.

WARNING

- Keep area of operation clear of all bystanders, particularly small children and pets.
- Only allow responsible individuals, who are familiar with the instructions, to operate the tiller.

WARNING

- Do not operate the tiller while under the influence of alcohol, drugs, or other medication which can cause drowsiness or affect your ability to operate this machine safely.
- Do not use this machine if you are mentally or physically unable to operate the machine safely.
- Always wear ANSI compliant safety goggles or safety glasses with side shields when operating tiller to protect your eyes from foreign objects, which can be thrown from the unit.
- Wear appropriate clothing such as a long sleeved shirt or jacket. Also wear long trousers or slacks. Do NOT wear shorts. Do NOT wear loose clothing, which could get caught in this equipment.
- Always wear work gloves and sturdy footwear such as leather work shoes or short boots. These will protect ankles

Important Safety Information (Continued)

• Save all instructions

- and shins from small sticks, splinters, and other flying debris, and improve traction.
- It is advisable to wear protective headgear to protect against being struck by small flying particles, or being struck by low hanging branches, twigs, or other objects, which may be unnoticed by the operator.

⚠ WARNING

- Do not put hands or feet near or under rotating parts.
- Exercise extreme caution when operating on or crossing gravel drives, walks, or roads. Stay alert for hidden hazards or traffic.

⚠ WARNING

- Exercise caution to avoid slipping or falling. Always be sure of your footing; keep a firm hold on the handle and walk; never run. Never operate the tiller at high transport speeds on slippery surfaces.
- Never operate the tiller without good visibility or light.

⚠ DANGER

- Do not run the engine indoors or inside a closed area. The exhaust fumes are dangerous, containing CARBON MONOXIDE, an ODORLESS AND DEADLY GAS.
- Never leave the tiller unattended when the engine is running. Stop the engine and make sure all moving parts have stopped. Remove the wire from the spark plug.
- Watch for holes, ruts, bumps, or other rough ground. Tall grass can hide obstacles.
- Always look behind and down and use caution when using reverse or pulling the tiller towards you.
- Never attempt to start the tiller unless both wheels are in the locked position. This acts as a brake for the tiller. Always start the tiller on the level surface.

⚠ WARNING

- Disengage clutch lever and stop engine before leaving the tiller in operating position. Wait until the tines come to a complete stop before removing debris or making any adjustments to the tiller.

⚠ CAUTION

- Do not attempt to till hard soil, till too deep or till at too fast a rate that can overload the tiller.
- If the tiller should start to vibrate abnormally, stop the engine, disconnect the spark plug wire and prevent it from touching the spark plug. Check immediately for the cause. Vibration is generally a warning of trouble.

FUEL SAFETY

⚠ WARNING

- Gasoline is extremely flammable, and gasoline vapors can explode if ignited. Handle with care.
- Use an approved container.
- Check fuel supply before each use, allowing space for expansion as the heat of the engine and/or sun can cause fuel to expand.
- Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors.
- Never remove gas cap or add fuel with the engine running. Allow engine to cool before refueling.

⚠ WARNING

- Do not smoke while refueling.
- After refueling, replace fuel tank cap securely and wipe up spilled fuel.
- Never store fuel or tiller with fuel in the tank inside a building where fumes may reach an open flame.
- Never fill gasoline containers or the tiller fuel tank inside of a vehicle or in a truck bed. Accidental electrical static discharge can ignite fuel vapors which could result in serious injury or death.

Important Safety Information (Continued)

- **Save all instructions**

STORAGE SAFETY

- Always refer to the operator's manual instructions for important details if the tiller is to be stored for an extended period.
- Never store the tiller with fuel in the fuel tank inside a building where ignition sources are present such as water heaters, space heaters, clothes dryers, etc.
- To reduce fire hazard, keep tiller free of grass, leaves, or other debris build-up.
- Allow the engine to cool before storing in any enclosure.

REPAIR, MAINTENANCE, AND ADJUSTMENT SAFETY

- After striking a foreign object, stop the engine. Remove the wire from the spark plug and keep the wire away from the plug to prevent accidental starting. Thoroughly inspect the tiller for any damage. If damaged, have the equipment repaired by a trained technician before restarting and operating.

⚠ WARNING

- Stop the engine before cleaning, repairing, or inspecting the unit. Make sure all moving parts have stopped. Let the engine cool, disconnect the spark plug wire and move it away from the spark plug.
- Never attempt to make any adjustments while the engine is running except when specifically recommended by the manufacturer.
- Keep the tiller in safe working condition. Check all fasteners at frequent intervals for proper tightness.
- When servicing or repairing the tiller, do not tip the machine over or up unless specifically instructed to do so in this manual. Service and repair procedures can be done with the tiller in an upright position. Some procedures will be easier if the machine is lifted on a raised platform or working surface.
- Use only original equipment or authorized replacement parts.

⚠ WARNING

- Never tamper with safety devices. Check their proper operation regularly.
- Do not change the engine governor setting or over-speed engine.
- Clean and replace safety and instruction decals as necessary.
- To guard against engine over-heating, always have engine debris filter mounted and clean.

CHILDREN SAFETY

⚠ WARNING

- Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the tiller and the tilling activity.
- Keep children out of the tilling area and under the watchful care of a responsible adult.
- Never assume that children will remain where you last saw them.
- Be alert and turn tiller off if children enter the area.
- Before and while moving backwards, look behind and down for small children.
- Never allow children to operate the tiller.
- Use extra care when operating near blind corners, shrubs, trees, or other objects that may obstruct vision.

Product Specifications

• Save all instructions

Unit Weight	100 lb (45kg)	Engine Oil Capacity	15-1/2 oz (450 ml)
Tilling Width	up to 21in (533mm)	Engine Type	OHV 4-stroke
Tilling Depths	up to 8"	Engine Displacement	139cc (EPA)
Tine Diameter	11 in (279mm)	Engine Speed	3400rpm
Gasoline Type	Regular Unleaded/87 Octane (min.)	Torque Rating	5.0 ft-lbs (EPA)
Gasoline Capacity	1.06 qt. (1 L)		gross torque per SAE J1940
Engine Oil Type (API SG-SL)		Wheel Size	8"
10W-30 is recommended for all service temperatures.		Transmission Oil Type	90W140 Gear Oil
See page (10) for additional information.		Transmission Capacity	6-1/2 oz (0.2 L)

REFER TO ENGINE MANUAL FOR DETAILED ENGINE SPECS.

Parts & Features

1. Tines
2. Swing Plate
3. Wheels
4. Wheel Bolts
5. Muffler
6. Air Filter
7. Recoil Starter Handle
8. Spark Plug / Spark Plug Wire
9. Drag Bar
10. Primer Bulb
11. Fuel Tank Cap
12. Oil Dipstick
13. Clutch Lever
14. Tine Shield
15. Outside Tine Shield

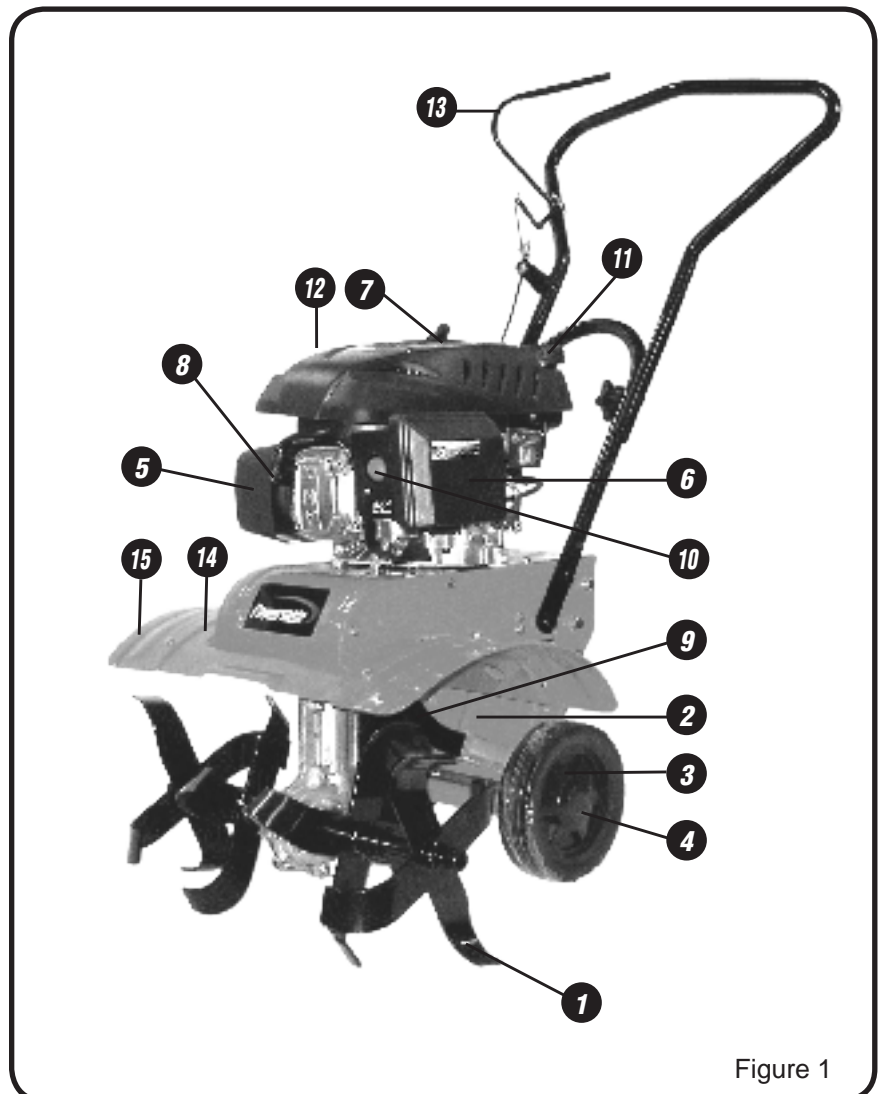


Figure 1

Safety Decals

• Save all instructions





This tiller 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.

These important safety labels are illustrated below, and are shown here to help familiarize you with the location and content of the safety messages you will see as you perform normal tilling operations. Please review these labels now. If you have any questions regarding their meaning or how to comply with these instructions, reread the complete safety instruction text on the preceding pages, or contact your local dealer.

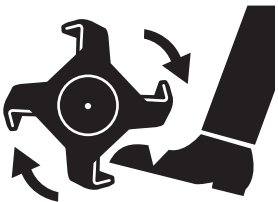
Should any of the safety labels become unreadable because of being worn, faded, or otherwise damaged during the use of your tiller, please contact your local authorized dealer to order replacement label.

The safety labels are easily applied, and will act as a constant visual reminder to you and others who may use the equipment. Following the safety instructions is necessary for safe, effective operation of your tiller.

⚠ WARNING	
AVOID SERIOUS INJURY OR DEATH.	
 <ul style="list-style-type: none">• Read and follow operator's manual.• Know location and functions of all controls.• Keep all safety devices and shields in place and working.	 <ul style="list-style-type: none">• Keep away from rotating parts.• Use extreme caution when reversing / pulling the machine towards you.
 <ul style="list-style-type: none">• Never allow children or uninstructed adults to operate machine.• Keep bystanders away from machine.	 <ul style="list-style-type: none">• Shut off engine before manually unclogging tines or making repairs.

⚠ WARNING 
<ul style="list-style-type: none">• Gasoline is flammable. Allow engine to cool at least 2 minutes before refueling.• Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

⚠ WARNING	
	PINCH POINT KEEP HANDS AND FINGERS AWAY

⚠ WARNING	
	<ul style="list-style-type: none">• Keep away from rotating tines.• Contact will result in injury.

Assembly

• Save all instructions



If you need assistance or find any parts missing, CALL
TOLL FREE: 1-800-737-2112.

Read and follow the assembly instructions. Do not discard any parts or materials until the unit is assembled. References to the right or left side of the tiller are from the viewpoint of the operator's position behind the tiller.

WARNING

Do not operate tiller if it is damaged or not completely and correctly assembled.

WARNING

Before doing any assembly or maintenance to the unit, remove the wire from the spark plug.

WARNING

Always wear ANSI compliant safety glasses with side shields while assembling the tiller.

The following components will be found in the carton.
Quantities shown in ().

1. (1) Tiller
2. (1) Upper Handle Assembly
3. (1) Lower Handle
4. (4) Tines
5. (2) Wheels
6. (1) Drag bar
7. (2) Outside Tine Shields
7. (1) Tiller Operator's Manual
8. (1) Engine Manual
9. (1) Bottle of Engine Oil
10. (1) Parts bag containing the following
 - a. (2) Combination wrenches
 - b. (4) M10 x 25 bolts, flat washers for assembling lower handle
 - c. (4) M8x50mm saddle bolts and washers for assembling upper and lower handles
 - d. (4) Handle knobs
 - e. (2) M8 x 20mm bolts and 30mm flat washers for installing wheels
 - f. (2) M8x50mm bolts and lock nuts for assembling outside tines
 - g. (2) M10x50mm bolts and lock nuts for assembling inside tines
 - h. (1) Pin for drag bar
 - i. (6) M6 x 16 bolts, lock nuts, and washers for installing outside tine shields

A **How to Remove Tiller from Carton**

1. Remove all parts and packaging components.
2. Use a utility knife to cut all 4 vertical edges and lay the side panels flat around the tiller.
3. Remove any remaining packaging.

Assembly (Continued)

• Save all instructions



If you need assistance or find any parts missing, CALL TOLL FREE: 1-800-737-2112.

B Assembly Instructions

The tiller comes fully assembled except for a few parts. The following instructions will help you complete the tiller assembly.

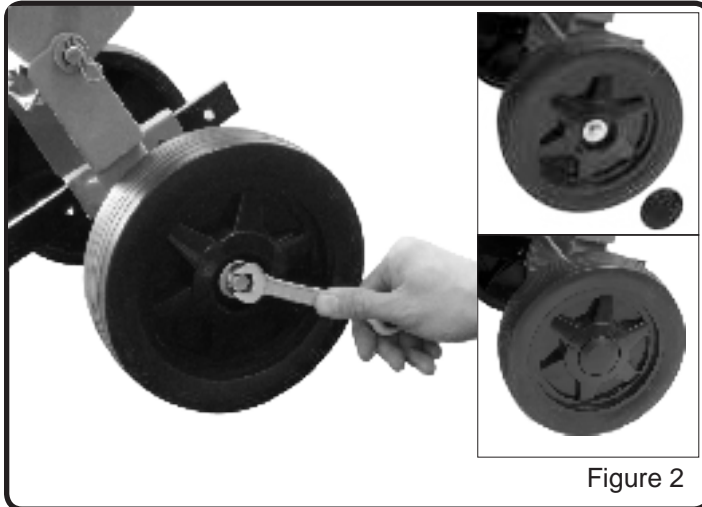


Figure 2

INSTALL THE WHEELS (See Figure 2)

1. Slide the wheel hub onto the wheel axle.
2. Install M8 x 20mm bolt with 30 mm flat washer.
3. Snap hubcap into place.

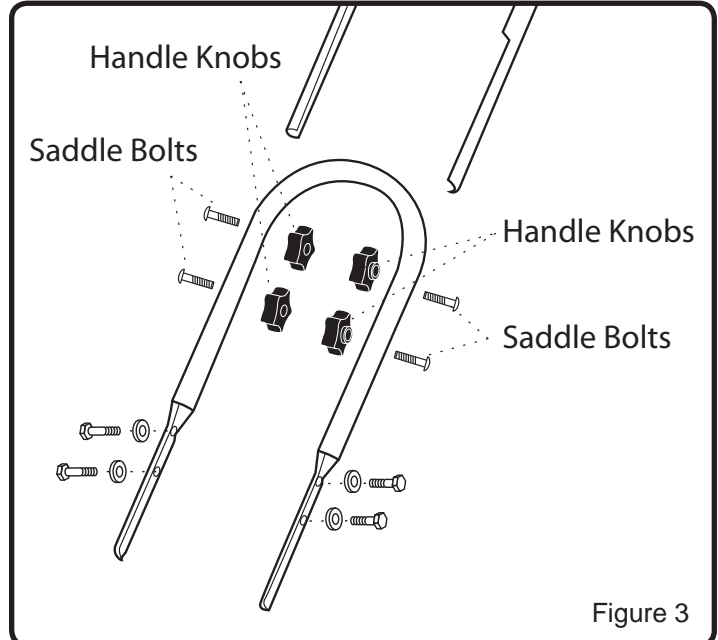


Figure 3

ATTACH UPPER HANDLE (See Figure 3)

1. Slide the upper handle down over the lower handle and align the holes.
2. Insert the saddle bolts into the holes as shown and secure with the handle knobs.
3. Tighten the handle knobs securely.

INSTALL LOWER HANDLE (See Figure 3)

1. Install lower handle to frame using M10 x 25 bolts and washers.



Figure 4a



Figure 4b

INSTALL THE DRAG BAR (See Figure 4a and 4b)

1. Insert the drag bar into the bottom of the swing plate bracket.
2. Insert the pin thru the bracket and drag bar.

Assembly (Continued)

• Save all instructions



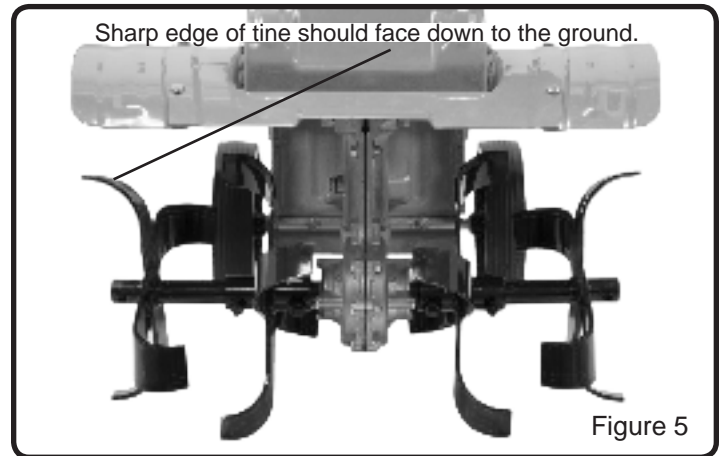
If you need assistance or find any parts missing, CALL
TOLL FREE: 1-800-737-2112.

INSTALL THE TINES (See Figure 5)

1. Slide the tines onto the tine axle. Install the internal tines first. Sharp edge of the front and top tines should face down and forward to till the ground. Tighten the M10 x 50 bolt with lock nut provided to secure the inside tines.
2. For wide 21" tilling, install the outside tines in the way that the long half of the tine pipe faces towards the inside tines. For narrow 16" tilling, install the outside tines in a way that the short tine pipe faces towards inside the tines.
3. Tighten the M8 x 50 bolt with the locknut provided to secure the outside tines.

INSTALL THE OUTSIDE TINE SHIELDS (See Figure 5)

1. Each outside tine shield can be installed on either side of the main tine shield.
2. Place the outside tine shield underneath the main tine shield and align the holes.
3. Secure the outside tine shield to the main tine shield with (3) M6 x 16 bolts washers and lock nuts.



Engine Preparation (Continued)

• Save all instructions

A Engine Oil

CAUTION

Engine shipped without oil. Failure to add oil will result in serious engine damage.

A bottle of engine oil is included with your tiller. Refer to the chart on the right for alternative oil types to use at different temperatures. Always use a high quality detergent oil classified "For Service, SG, SH, SJ" or higher. Do not use special additives.

CAUTION

Always use recommended oil type. Using dirty oil or incorrect oil type such as 2-stroke engine oil will damage the engine.

NOTE: Engine Oil Capacity is 450 ml (15.5 oz).

HOW TO CHECK OIL LEVEL AND FILL TO PROPER LEVEL

WARNING

Before checking oil, make sure engine is off, and spark plug wire has been disconnected from spark plug.

1. Place the tiller on a level surface and make sure the drag bar is set so the main frame of the tiller is level. (See Figure 6)
2. Remove the oil fill cap/dipstick and wipe with clean cloth.
3. Insert dipstick into fill spout but do NOT screw in. Remove dipstick and check oil level.
4. When oil level is full, the oil will be at upper limit on dipstick. If oil level is near or below the lower limit, oil must be added. (See Figure 7)
5. Add oil slowly until the oil level reaches the upper limit of the dipstick. Use a funnel or nozzle to reduce spillage.

CAUTION

Frequently check oil level while filling. DO NOT OVERFILL. DO NOT UNDERFILL. Running engine at improper oil level will seriously damage engine.

6. Replace and tighten dipstick.
7. Clean up any spilled oil.

NOTE: The transmission case comes from the factory with the proper amount and type of gear oil.

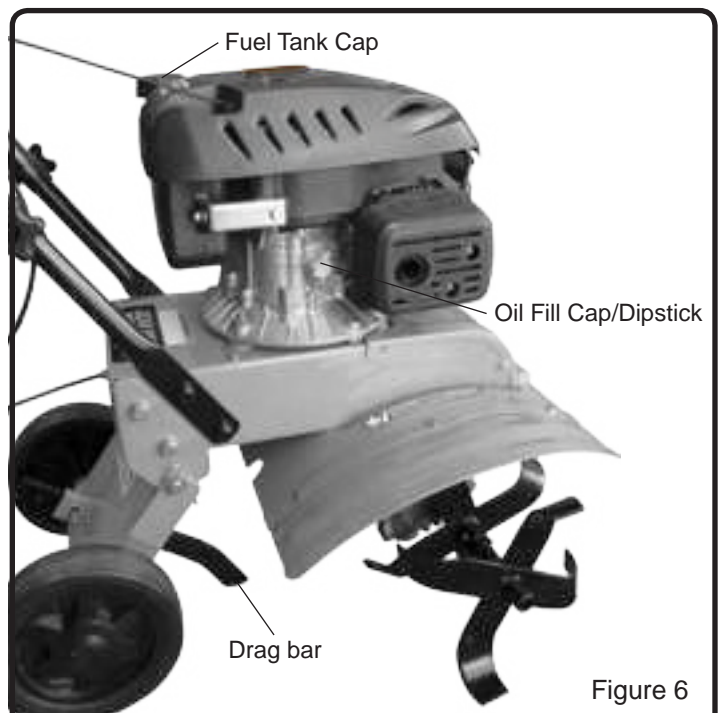
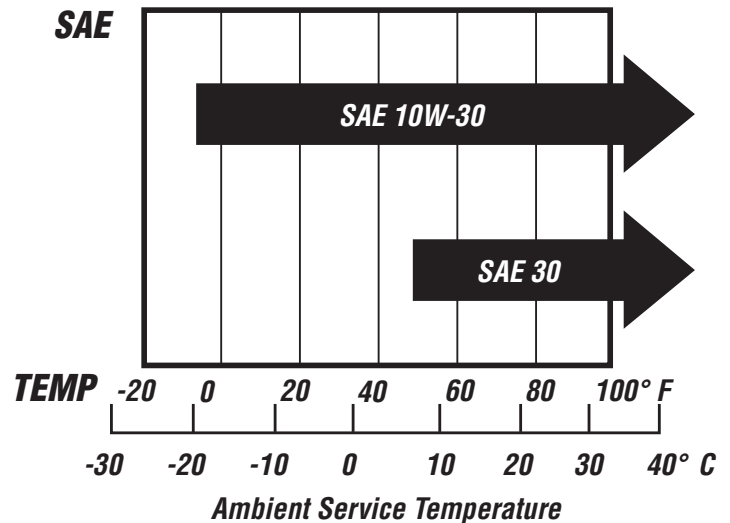


Figure 6

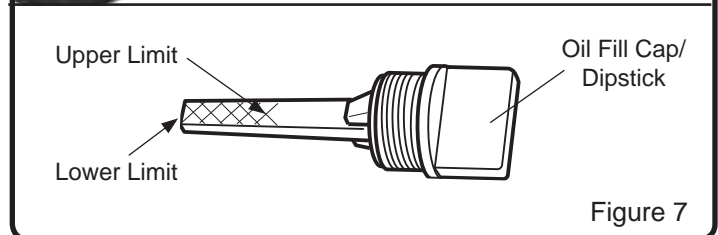


Figure 7

Operation

• Save all instructions

A Pre-Start Inspection

1. Make sure all safety guards are in place and all nuts and bolts are secure.
2. Check oil level in engine crankcase. See your engine manual for procedure and specifications.
3. Inspect air cleaner for cleanliness. See your engine manual for procedure.
4. Check the fuel supply. Fill the fuel tank no closer than 1 inch from top of tank to provide space for expansion. See your engine manual for fuel recommendations.
5. Be sure spark plug wire is attached and spark plug is tightened securely.
6. Examine underneath and around engine for signs of oil or fuel leaks.
7. Inspect fuel hoses for tightness and fuel seepage.
8. Look for signs of engine damage.
9. Remove excessive debris from muffler area and recoil starter.
10. Remove any debris from tines and tine shafts.
11. Move the tiller to the area of operation.
12. Check position of wheels swing plate should be in the tilling mode position.
13. Check drag bar position.

IMPORTANT: Engine is shipped from factory without oil. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.

CAUTION

Please do not start your tiller until you have read the manual that came with your engine, and the sections in this manual title controls, adjustments and safety. If you have read these, follow the steps below to start your tiller. Always perform this pre-start checklist before starting the engine.

WARNING

Gasoline is highly flammable and must be handled with care. Never fill the tank when the engine is hot or running. Always move outdoors to fill tank.

WARNING

Always keep hands and feet clear of rotating machine parts.

B Start the Engine

1. Press ON/OFF switch to ON position. (See Figure 10)
2. Push primer bulb 3 times. Wait 2 seconds between each push. (See Figure 8)
3. Place left hand on upper handle. (See Figure 9)
4. Grasp starter handle and pull out slowly, until you feel tension in the starter rope. (See Figure 9)
5. Pull rope with a rapid full arm stroke until engine starts.
6. Do not allow the starter rope to snap back. Let the starter rope slowly rewind.



Figure 8

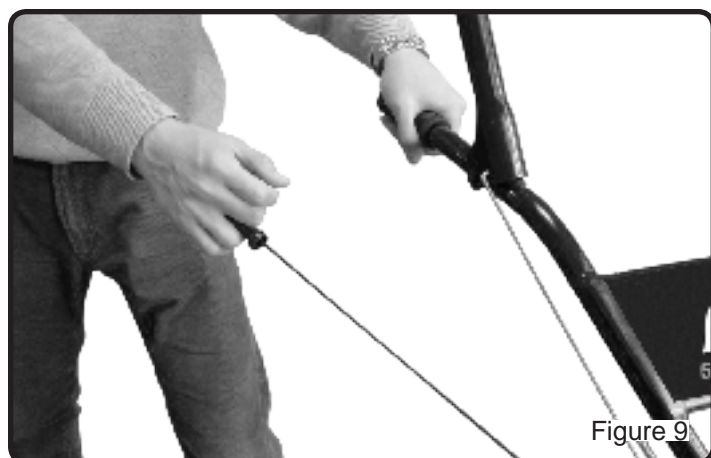


Figure 9

Operation (Continued)

• Save all instructions

C Stop the Engine

1. Press ON/OFF switch to OFF position.



D Operating Speed

This tiller is equipped with a fixed throttle that is set for optimum tilling performance.

E Shutting Down

To stop the engine at any time, release the clutch lever and press ON/OFF switch to OFF position. To stop tines at any time, release clutch lever.

F Transport Mode and Tilling Mode (See Figure 11 and 12)

Transport Mode

Fold the wheel under the engine for convenient transport.

Tilling Mode

Unfold the wheel back for tilling operation.

G Tilling

1. Adjust the drag bar to desired tilling depth.

WARNING

NOTE: Lower the drag bar one hole at a time testing tiller operation after each adjustment. Lowering drag bar down too low can result in loss of control of tiller!

2. Pushing down on the clutch lever will engage the tines to move tiller forward.

CAUTION

Always press clutch lever down completely onto the handle bar grip. Failure to do so may result in excessive drive belt wear and premature drive belt failure.

WARNING

Temperature of muffler and nearby areas may exceed 150°F. Avoid these areas.

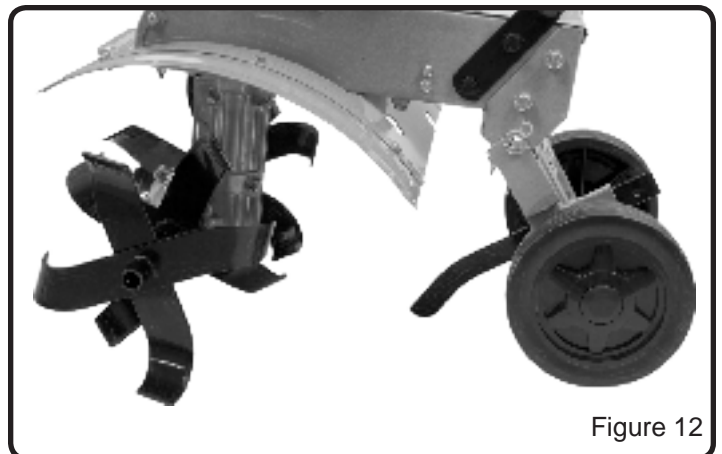
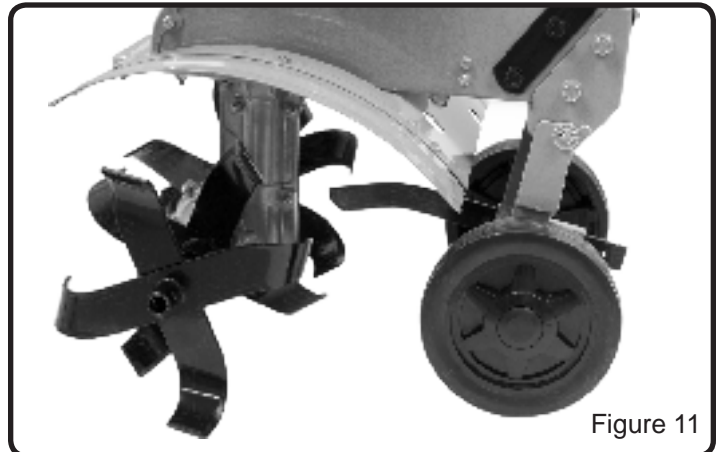
To stop tines at any time, release CLUTCH LEVER to neutral position.

Always release CLUTCH lever to neutral position AND STOP THE ENGINE before adjusting the depth of the drag bar.

DANGER

Engine, transmission and surrounding parts become extremely hot during normal use and CAN cause serious burn injuries if touched before the engine has cooled. Allow engine to cool completely before touching these hot surfaces.

IMPORTANT: Practice operating the controls and tiller with tines out of ground before beginning to till. It is important that you know how to use the tiller properly, keep control at all times, stop the tines, and stop the engine if necessary. If you do not know how to do these things, read the controls, adjustments and safety sections before proceeding.



Operation (Continued)

• Save all instructions

H Clutch Lever

⚠ CAUTION

This information is provided here only to introduce the controls. Do not start the engine at this time. Starting and operating instructions are given on page 11. Please read this section and all operating and safety instructions before starting your tiller.

⚠ WARNING

Do not fix the clutch lever in drive position by any other means than manually using your hand. DO NOT tie or otherwise secure the levers in drive position.

- To stop the tines at any time release the clutch levers.

CLUTCH LEVER (See Figure 13)

Engages tines into forward. Pushing down the clutch lever toward the handle bar engages the tines. Releasing the lever stops the tines and brings the tiller to a complete stop.

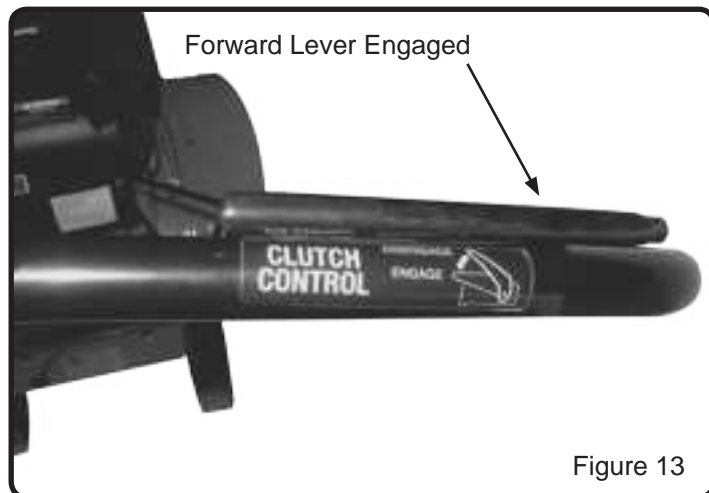


Figure 13

I Adjustments

⚠ WARNING

Engine should be off before adjusting any controls.



DRAG BAR (See Figure 2)

Tilling depth is controlled by the height of the drag bar. To adjust tilling depth:

1. Remove pin.
2. Adjust the drag bar to position tines at chosen tilling depth.
3. Align hole in drag bar with hole in drag bar and replace pin.

Drag Bar Up = Shallower tilling.

Place the pin in the bottom hole of the depth regulator lever for shallowest tilling.

Drag Bar Down = Deeper tilling.

Place the pin in the top hole of the depth regulator lever for deepest tilling.

⚠ WARNING

Do not adjust tilling depth unless clutch lever is released and engine is turned off.

Operation (Continued)

• Save all instructions

I Adjustments (Cont.)

BELT TENSION ADJUSTMENT (See Figure 14)

Proper belt tension is critical to good performance. After 1/2 hour of operation, all cables may have to be adjusted due to initial stretch. Thereafter, check tension after every 2 hours of operation.

TO INCREASE BELT TENSION

1. Loosen upper jam nut. Turn nut up cable in 1/8" increments.
2. Tighten lower jam nut.
3. Check adjustment. With clutch lever engaged, spring length should be 0.8 inches (20 mm).

TO DECREASE BELT TENSION

1. Loosen lower jam nut. Turn nut down cable in 1/8" increments.
2. Tighten upper jam nut.
3. Check adjustment.

This procedure can be repeated until conduit adjustment bolts are fully adjusted. If no more adjustment can be made, belt may have to be replaced.

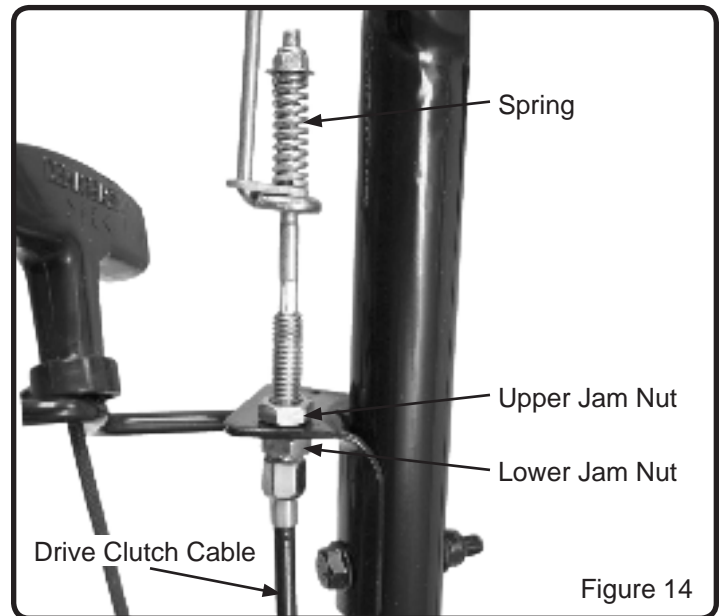


Figure 14

J 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 pass.

- Tilling depth will vary with ground conditions.
- When beginning to till in unbroken ground or in extremely hard soil, set the pin in the highest hole of the depth regulator lever (follow instructions under Tilling section). This will allow for shallow tilling. With the drag stake in this position, make several light passes over the area to be tilled. Reset for deeper depths with successive passes.
- If tiller jumps or skids uncontrollably, lower the drag stake by placing the pin in a higher hole. This will allow for shallower tilling. Hold firmly to the handlebars to control sudden lurches.
- If weeds, tall grasses, vines, or other materials clog or jam the tines, reverse the tiller to unwind vegetation.

⚠ WARNING

Immediately release the drive control levers if the tines jam or you strike a foreign object. With drive control levers in neutral position, stop the engine. Disengage the spark plug wire. When tines have stopped, remove foreign objects and check for damage.

K Cultivating Tips

If you plan to use your tiller for cultivating:

- Plant rows on 20" - 22" centers for ease of turning.
- Set the depth regulator lever with the pin in one of the higher holes. This will allow for shallow cultivation necessary to turn over weeds, and break up and aerate the soil.

⚠ WARNING

Extreme caution must be taken in selecting tilling depth. If you attempt to till too deeply for soil conditions, that is, with the depth regulator lever in too high a position, loss of control could result.

When removing material from the tines, stop engine and remove spark plug wire first.

Maintenance

• Save all instructions

A Maintenance Schedule

⚠ WARNING

Before performing any maintenance, turn engine off and remove the wire from the spark plug to prevent accidental starting and serious injury.

IMPORTANT: The warranty on this tiller does not cover items that have been subjected to operator abuse or negligence. To receive full value from the warranty, the operator must maintain the tiller as instructed in this manual, and only use genuine replacement parts. The following table lists required periodic maintenance.

PERIODIC MAINTENANCE SCHEDULE TABLE

Service Records- Fill in dates as you complete regular service	Before Each Use	After Every 10 Hours of Use	After Every 25 Hours of Use	After Every 50 Hours of Use	After Every 100 Hour of Use	Before Each Season	Before Storage	See Note Below
Check Engine Oil Level, Fill to Proper Level	✓					✓		
Clean Debris From Unit	✓					✓	✓	
Lubricate All Pivot Points		✓				✓	✓	
Check Fasteners for Tightness		✓				✓		1
Check Drive Belts Replace if Necessary		✓				✓		
Check Tines for Wear or Damage Replace if Necessary		✓				✓		
Check Fuel Line Replace if Necessary			✓			✓		
Lubricate Wheel Axles			✓			✓	✓	
Check Spark Plug Replace if Necessary			✓			✓		
Change Engine Oil				✓		✓	✓	2,3
Clean Air Filter Replace if Necessary			✓			✓		4
Replace Spark Plug					✓			
Clean Combustion Deposits from Cylinder, Piston, and Valves					✓			
Check transmission Oil Level			✓			✓		

⚠ CAUTION

IMPORTANT NOTES about Maintenance schedule

1. Re-check tightness of all fasteners after first 2 hours of initial use
2. Change engine oil after first 5-8 hours of initial use
3. Change oil every 25 hours if operating under heavy load or in high temperatures
4. Clean air filter every 10 hours if operating under dusty conditions.

⚠ WARNING

Use only GENUINE replacement parts. Other parts may damage the unit or result in injury.

Maintenance (Continued)

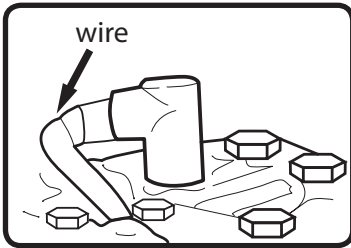
• Save all instructions

B Servicing the Tiller

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

⚠ WARNING

To prevent accidental starting:



Engine must be turned off and cool, and spark plug wire must be removed and secured from spark plug before checking and adjusting engine or equipment.

CHANGE BELTS

1. Turn off engine. Engine must be cool completely before proceeding.
2. Remove spark plug wire and secure from spark plug.

C Engine Maintenance

ENGINE MAINTENANCE

Refer to the engine manual included in your parts packet for information on engine maintenance. Your engine manual provides detailed information and a maintenance schedule for performing the following tasks:

1. Check oil level before each use or after every 8 hours of operation.
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 100 hours of operation.
4. Service air cleaner.
5. Keep engine and parts clean.
6. Check engine and equipment often for loose nuts and bolts, keep these items tightened.

CHECK OR FILL ENGINE CRANKCASE

IMPORTANT: Engine is shipped from factory without oil. You must add engine oil before starting engine.

1. Add oil according to engine manual. **Do not overfill.** Use a clean, high quality detergent oil. **Do not mix oil with gasoline.** Oil level must be full. Check the oil level by removing oil fill plug.
2. Always check oil level before starting engine. Refer to engine manual for capacity and type of oil to use.

3. Reduce the belt tension by loosening the cable upper jam nut.
4. Remove the front and rear belt cover.
 - Remove the belt from the engine pulley:
 - Loosen the three engine mounting bolts.
 - Slide the belt free of the engine pulley.
 - Pull the belt down and out of the way.
 - Install new belt:
 - Loosen the engine mounting bolts.
 - Place belt around transmission pulley in groove.
 - Place belt onto engine pulley in groove.
 - Place backside of belt around idler pulley.
 - Tighten engine mounting bolts.
5. Tighten the upper jam nut.
6. Attach spark plug wire.
7. Follow Operating Instructions- start the engine and operate the clutch lever. Check for proper cable adjustment. Adjust as required.

⚠ WARNING

The tines should not rotate with the engine running, the depth regulator set at transport mode and the drive lever not engaged.

D Transmission Maintenance

TRANSMISSION MAINTENANCE

1. Check transmission oil level at the beginning of each season.
2. Remove upper oil plug on side of transmission.
3. Add 90W140 gear oil until oil flows out.
4. Replace plug.

LUBRICATION

Proper lubrication of moving mechanical parts is critical for proper care and maintenance. Oil the moving parts at 10 hour intervals using a 30 weight oil.

CLEAN TINE AXLE SHAFT

1. Turn off engine. Engine must be cool.
2. Remove spark plug wire and secure from spark plug.
3. Tip the tiller backward. Block the tiller in position so that it rests on the upper handle and the tines are exposed.
4. Remove all vegetation, string, wire, and other material that may have accumulated on the axle between the inside set of tines and the seal cover on the transmission housing.
5. Tip the tiller back to a level position.
6. Replace spark plug wire.

Maintenance *(Continued)*

• Save all instructions

E How to Prepare for Storage

⚠ WARNING

Never store the tiller indoors with fuel in the fuel tank. Never store in an enclosed, poorly ventilated area where fumes could reach an open flame, a spark or a pilot light as on a furnace, water heater or clothes dryer. Allow engine to cool before storing unit.

⚠ WARNING

Do not remove gasoline while inside a building, near a fire, or while you smoke. Gasoline fumes can cause an explosion or a fire.

NOTE: A yearly checkup or tune-up at an authorized service center will make sure that the tiller will provide maximum performance for the next season.

When the tiller is put in storage for thirty days or more, the following steps should be followed to make sure the tiller is in good condition the next season.

1. Let the engine run until it is out of gasoline.
2. Change the oil by following instructions under "How to Change the Oil."
3. Remove the spark plug from the cylinder. Pour one ounce of oil into the cylinder. Slowly pull the recoil-start grip so that the oil will protect the cylinder. Install a new spark plug in the cylinder. Pull starter handle slowly a few times to distribute oil. Pull recoil slowly until resistance is felt. This will close the cylinder valves.

⚠ WARNING

DO NOT attach spark plug wire to spark plug when storing unit.

4. Clean tiller. Remove all dirt, leaves, debris, grease, etc. from the tiller - including cylinder cooling fans, recoil starter cover holes, under fuel tank, and under muffler.
5. Check the tiller for worn or damaged parts. Have damaged parts replaced if necessary.
6. Tighten any loose hardware.
7. Apply lubrication as directed in Maintenance section.
8. Put the unit in a building that has good ventilation.
9. Cover the tiller with a breathing material.

Technical Service

You may have further questions about assembling, operating, or maintaining this TILLER. If so, you can contact our Technical Service Department at 1-800-737-2112 (English only).

You may also write to:

METL Corporate Office - CORRESPONDENCE ONLY
ATTN: Technical Service – METL
213 Industrial Drive
Jackson, TN 38301

When contacting the Technical Service Department, have ready:

- Your Name
- Your Address
- Your Phone Number
- Model Number of Product
- Date of Purchase (include copy of receipt for written requests)
- Date Code on Product



If you need assistance or have any questions, CALL TOLL FREE: 1-800-737-2112.

Maintenance *(Continued)*

• Save all instructions

PROBLEM	POSSIBLE CAUSE(S)	SOLUTION(S)
Engine difficult to start	<ol style="list-style-type: none"> 1. Out of fuel 2. Engine Switch Off 3. Engine is not primed. 4. Spark plug wire disconnected 5. Fouled spark plug 6. Dirty Carburetor 7. Clogged air filter 8. Contaminated Fuel 	<ol style="list-style-type: none"> 1. Add fresh fuel 2. Turn engine switch on 3. Turn choke on 4. Attach spark plug wire to spark plug 5. Remove spark plug. Inspect. Replace if necessary 6. Take unit to an authorized service center for Carburetor cleaning 7. Remove and clean air filter 8. Drain fuel tank. Clean fuel tank. Fill with fresh fuel
<u>Engine Problems</u> Engine smokes excessively Engine runs very "rough" Engine runs erratically Engine cannot maintain full speed	<ol style="list-style-type: none"> 1. No Engine Oil 2. Engine oil not at proper level 3. Fouled spark plug 4. Clogged air filter 5. Contaminated Fuel 6. Carburetor out of adjustment 	<ol style="list-style-type: none"> 1. Add engine oil 2. Check engine oil. Add or drain engine oil if necessary 3. Remove spark plug. Inspect. Replace if necessary 4. Remove and clean air filter 5. Drain fuel tank. Clean fuel tank. Fill with fresh fuel 6. Take unit to an authorized service center for Carburetor adjustment
Excessive vibration / noise	<ol style="list-style-type: none"> 1. Loose parts 2. Engine problems (above) 	<ol style="list-style-type: none"> 1. Tighten all fasteners 2. Refer to engine solutions (above)
Tines will not rotate	<ol style="list-style-type: none"> 1. Debris interfering with tines 2. Tines loose 3. Improper drive cable adjustment 4. Damaged drive belts 	<ol style="list-style-type: none"> 1. Remove debris from around tines 2. Replace tine bolts and nuts 3. Refer to "Belt Tension Adjustment" Section to decrease belt tension 4. Replace drive belts
Tines continue to rotate when drive lever not engage	<ol style="list-style-type: none"> 1. Improper drive cable adjustment 2. Damaged drive belts 	<ol style="list-style-type: none"> 1. Refer to "Belt Tension Adjustment" Section to decrease belt tension 2. Replace drive belts
Engine will not stop	Faulty switch	Replace switch
Tine will not cut properly	<ol style="list-style-type: none"> 1. Damaged or worn tines 2. Tines assembled incorrectly 	<ol style="list-style-type: none"> 1. Replace tines 2. Refer to "Install the Tines" Section
Frequent engine stalling	<ol style="list-style-type: none"> 1. Excessive tilling speed / depth 2. Engine problems (above) 	<ol style="list-style-type: none"> 1. Till at a moderate pace. Make multiple passes. 2. Refer to engine solutions (above)

Warranty

• Save all instructions

A Powermate® ROTARY TILLER Limited Warranty

Always specify model number when contacting the factory.

We reserve the right to amend these specifications at any time without notice. The only warranty applicable is our standard written warranty. We make no other warranty, expressed or implied. MAT Engine Technologies, LLC warrants this Tiller and any parts thereof, to be free from defects in material and workmanship for two years (90 days for commercial use or for reconditioned unit) from the date of first purchase from an authorized dealer, provided that the product has been properly maintained and operated in accordance with all applicable instructions. This warranty is extended only to the original retail purchaser. The bill of sales or proof of purchase must be presented at the time a claim is made under this warranty. This warranty does not cover commercial, industrial, or rental usage, nor does it apply to parts that are not in original condition because of normal wear and tear, or parts that fail or become damaged as a result of misuse, accident, lack of proper maintenance, tampering, or alteration. Exceptions to the standard warranty period would be normal wear items such as cutting blades, string heads, earth auger blades, air filter, and spark plugs which are only covered for 60 days against defects in material or workmanship. Travel, handling, transportation, and incidental costs associated with warranty repairs are not reimbursable under this warranty and are the responsibility of the owner. To the full extent allowed by the law of the jurisdiction that governs the sale of the product, this express warranty excludes any and all other expressed warranties and limits the duration of any and all implied warranties, including warranties of merchantability and fitness for a particular purpose to two years from the date of first purchase, and MAT Engine Technologies, LLC's liability is hereby limited to the purchase price of the product and MAT Engine Technologies, LLC shall not be liable for any other damages whatsoever including indirect, incidental, or consequential damages. Some states do not allow limitation of how long an implied warranty lasts or an exclusion or limitation of incidental or consequential damages, so the above limitation of damages may not apply to you. This warranty provides the original purchaser with specific rights.

For information regarding those rights, please consult the applicable state laws.

METL Corporate Office - CORRESPONDENCE ONLY

ATTN: Technical Service – METL

213 Industrial Drive

Jackson, TN 38301

Warranty (Continued)

• Save all instructions

B Emission Control System Warranty

This **MAT Engine Technologies, LLC (METL)** outdoor power equipment engine complies with the emissions regulations of:

Powermate® Model No.	Regulatory Agency
PFTT140	United States Environmental Protection Agency ("U.S. EPA") and State of California

To the extent there is any conflict between this Emissions Control System Warranty and the equipment manufacturer's warranty, this Emissions Control System Warranty shall apply except where the equipment manufacturer's warranty may provide a longer warranty period. Please read your warranty rights and obligations carefully. Some sections of the warranty may not apply to the specific equipment model you purchased. Unless specifically noted otherwise, the terms of the Emission Control System Warranty shall apply to all product engines covered within this manual.

Your Warranty Rights and Obligations:

The California Air Resources Board, U.S. EPA and **MAT Engine Technologies, LLC (METL)** are pleased to explain the Emission Control System Warranty on your new outdoor power equipment engine.

California

In California, new spark-ignited small off-road equipment engines must be designed, built and equipped to meet the State's stringent anti-smog standards.

Other States, U.S. Territories

In other areas of the United States, your engine must be designed, built and equipped to meet the U.S. EPA emission standards for spark-ignited engines at or below 19 kilowatts.

All of the United States

MAT Engine Technologies, LLC (METL) must warrant the emissions control system on your power equipment engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your power equipment engine. Where a warrantable condition exists, **METL** will repair your power equipment engine at no cost to you including diagnosis, parts and labor.

Manufacturer's Warranty Coverage:

The emissions control system is warranted for two years. If any emissions-related part on your engine is defective, the part will be repaired or replaced by **METL**.

Owner's Warranty Responsibility

As the power equipment engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. **METL** recommends that you retain all receipts covering maintenance on your power equipment engine, but **METL** can not deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the power equipment engine owner, you should however be aware that **METL** may deny your warranty coverage if your power equipment engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your power equipment engine to a distribution center or service center authorized by **METL** as soon as the problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact

MAT Engine Technologies, Inc.
213 Industrial Drive
Jackson, TN 38301
Tel: 1-800-737-2112

Warranty (Continued)

• Save all instructions

Warranty Coverage:

METL warrants that the product engine is free from defects in materials and workmanship which cause such engine to fail to conform with the U.S. EPA or State of California emissions standards for small spark-ignited nonroad (off-road) engines – as applicable to your **METL** product. Small spark-ignited off-road engines manufactured after January 1, 1995 and sold in the State of California and U.S. EPA-certified small spark-ignited nonroad engines manufactured in model year 1997 or later and sold in all of the United States are covered by this Emission Control System Warranty for a period of two years from the date of delivery to the original purchaser. This Emission Control System Warranty is transferable to each subsequent purchaser for the duration of the warranty period. Emission Control System Warranty repairs or replacements will be made without charge for diagnosis, parts or labor. A list of warranted parts is provided below. Normal maintenance items, such as spark plugs, air filters and fuel filters that are included on the list of warranted parts are warranted only up to the first scheduled required replacement interval for such item, as set forth in the Operator's Manual. If any emission control system part is repaired or replaced under the Emission Control System Warranty, it shall be warranted for the remainder of the applicable warranty period. **METL** will also repair or replace other engine components damaged by a failure of any part covered by the Emission Control System Warranty during the Emission Control System Warranty Period. Only parts authorized and approved by **METL** may be used in the performance of any Emission Control System Warranty repairs or replacements and will be provided without charge to the owner. Unapproved, add-on, modified, counterfeit and/or "gray market" parts may not be used to modify or repair the **METL** engine. If such a part has been used in the repair or maintenance of your engine, and an **METL Authorized Service Center** determines it is defective or causes a failure of a part covered under the Emission Control System Warranty, your claim for repair of your engine or product may be disallowed. **METL** shall not be held liable hereunder for failures of any warranted parts caused by the use of such an unapproved, add-on, modified, counterfeit and/or "gray market" part.

Exclusions:

You must take your power equipment engine or the product on which it is installed, along with evidence of the date of the sale to the original purchaser, at your expense, to any **METL Authorized Service Center** during its normal business hours. To locate your nearest **METL Authorized Service Center**, call (800) 737-2112. The product owner shall be responsible for any expenses or charges incurred for service calls or transportation of the product or equipment engine to and from the **METL Authorized Service Center**, including any and all damages or losses incurred during such transportation or shipment.

How to Obtain Warranty Service:

Failures other than those resulting from defects in material or workmanship are not covered by this Emission Control System Warranty. This Emission Control System Warranty does not extend to emission control systems or parts which are affected or damaged by owner abuse, neglect, improper maintenance, misuse, mis-fueling, improper storage, accident and/or collision, the incorporation of, or any use of, any unapproved, add-on, modified, "graymarket" or counterfeit parts, unsuitable attachments, or the unauthorized alteration of any part. This Emission Control System Warranty does not cover the regular replacement of normal maintenance items made in connection with required maintenance services after the item's first scheduled replacement, as set forth in the Operator's Manual (e.g. spark plugs, air filters, fuel filters, etc...).

Limitations of Liability:

METL disclaims any responsibility for loss of time or use of the engine, or the equipment in which the engine is installed, transportation, commercial loss, or any other incidental or consequential damage. Any implied warranties are limited to the duration of this written limited warranty. Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusions and limitations may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Warranty (Continued)

• Save all instructions

Limitation of Liability (Cont.):

SYSTEMS COVERED BY THIS WARRANTY:	PARTS DESCRIPTION:
Fuel Metering System	Carburetor assembly (if so equipped) and its internal components; fuel filter (if so equipped), carburetor gaskets, fuel pump (if so equipped)
Air Induction System	Intake pipe/ manifold, air cleaner
Ignition System	Ignition module / coil
Exhaust System	Catalytic muffler assembly (if so equipped), muffler gasket, exhaust manifold
Crankcase Breather Assembly	Breather connection tube
Miscellaneous Parts Used in Above Systems	Hoses, belts, connectors and assemblies
Evaporative Emissions Components ¹	Fuel line, fuel line fittings, clamps, fuel tank, carbon canister, canister mounting brackets, carburetor purge port connector
¹ As applicable to your product engine emissions certifications	