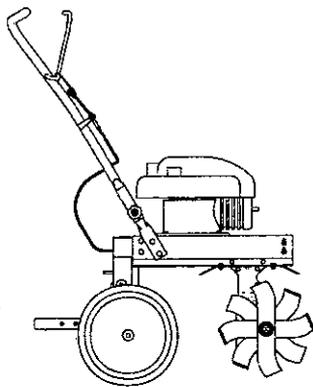


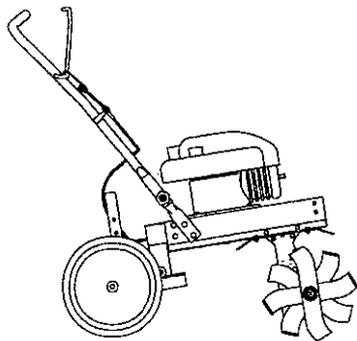
# Earthquake<sup>®</sup>

## Front Tine Rototiller

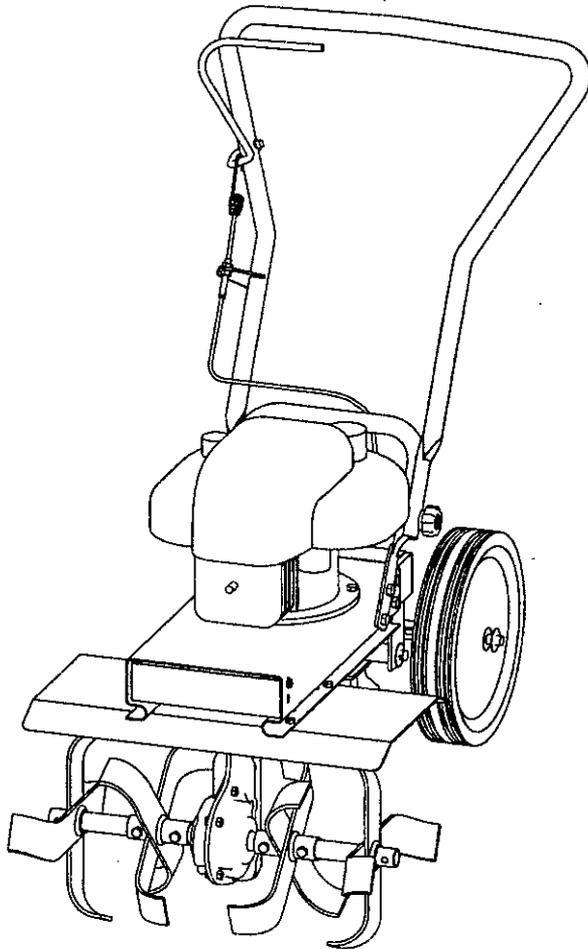
### Operator's Manual



**Transport Position**

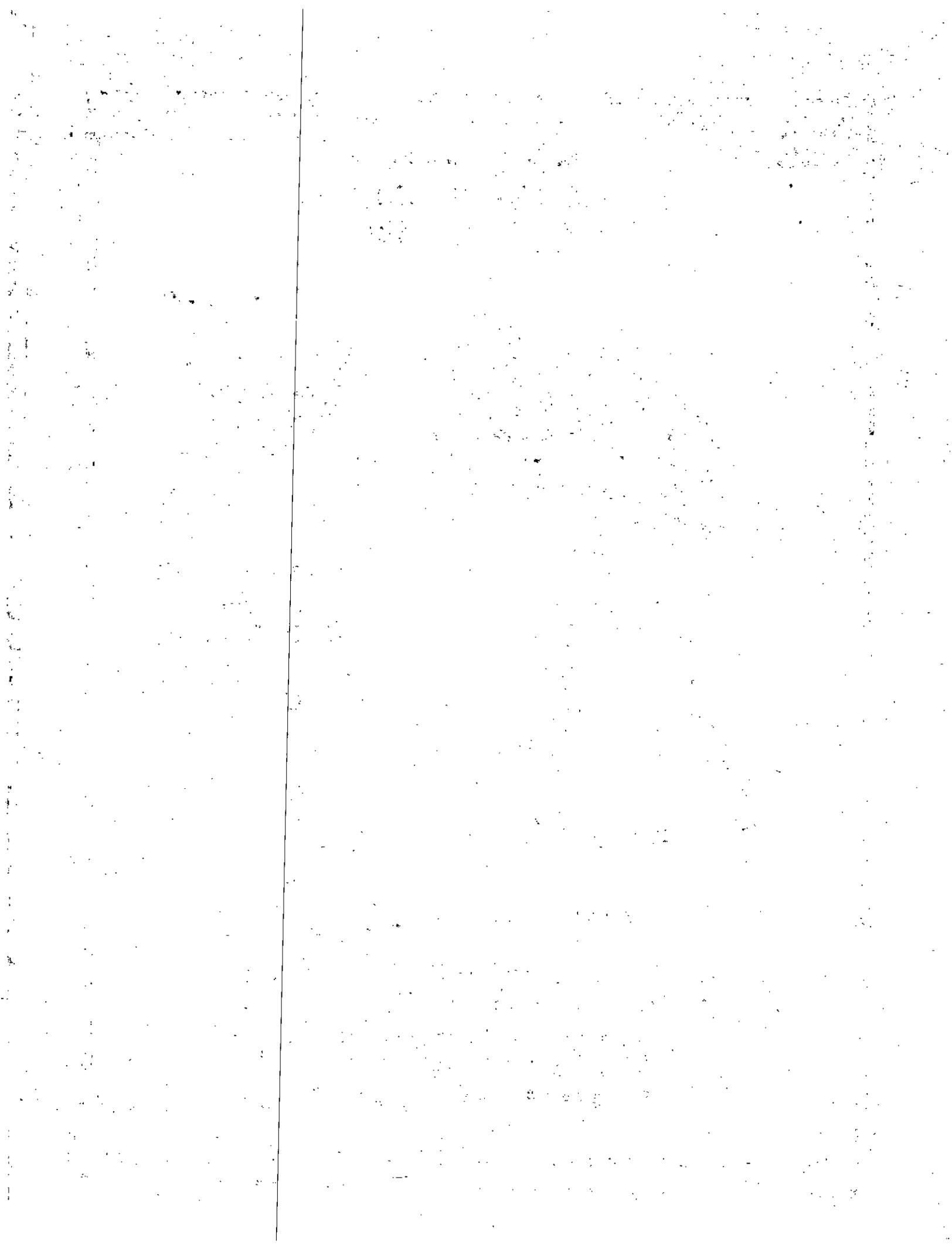


**Operating Position**



**Includes Models**  
**3100, 3200, 3201**  
**Badger Series**

OM3200  
Rev. 02/02  
© Copyright 2002 Ardisam, Inc.  
All Rights Reserved. Printed in USA.





# MODEL IDENTIFICATION

<b>MODEL IDENTIFICATION</b> .....	3	<b>ADJUSTMENTS</b> .....	12
<b>WARRANTY</b> .....	4	Handlebar Height Adjustment .....	12
<b>SAFETY RULES</b> .....	5	Belt Tension Adjustment .....	12
Owner's Responsibility .....	5	Depth Regulator Lever .....	13
General .....	5	<b>OPERATION</b> .....	14
Preparation .....	5	Pre-Start Inspection .....	14
Operation .....	6	Start-up .....	14
Maintenance and Storage .....	6	Shutting Down .....	15
Safety Decals .....	7	Tilling .....	15
<b>FEATURES</b> .....	8	<b>NORMAL CARE</b> .....	16
<b>UNPACKING AND ASSEMBLY</b> .....	9	Schedule .....	16
Unpack Tiller .....	9	Servicing The Rototiller .....	17
Install the Depth Regulator Lever .....	10	<b>STORAGE</b> .....	20
Fill Engine Crankcase .....	10	Prepare For Storage .....	20
<b>CONTROLS</b> .....	11	<b>TROUBLESHOOTING AND REPAIR</b> .....	21
Drive Safety Control Lever .....	11	Troubleshooting Guide .....	21
		Parts Listings .....	22
		Notes .....	25

## MODEL IDENTIFICATION

Record your model number, manufacturer number and serial number in the space provided for easy reference. The model and manufacturer numbers can be found on the unit I.D. plate located on the unit's left engine mount. Refer to the Engine Owner's Manual for location of engine serial number.

ROTOTILLER REFERENCE DATA	
Model Description/Number	
M/N (Manufacturer's Number)	S/N (Serial Number)
Dealer Name	Date Purchased
Engine Make/Model	Engine ID/Serial Number

### WARNING

You must read, understand and comply with all safety and operating instructions in this manual before attempting to setup and operate your rototiller.

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.

### WARNING

Engine exhaust from this product contains chemicals known, in certain quantities, to cause cancer, birth defects, or other reproductive harm.



# WARRANTY

## Thank You . . .

for purchasing an Earthquake® Badger™ front tine rototiller. We guarantee that this front tine rototiller conforms to applicable North American safety standards, and have worked to ensure that it will meet your exacting standards for usability and durability. With proper care, your rototiller will provide many years of service.

Please take time to read this manual carefully to learn how to operate and service your rototiller correctly. Failure to do so could result in personal injury or equipment damage. This manual should be considered a permanent part of your rototiller. Congratulations on your investment in quality.

## ONE YEAR LIMITED WARRANTY

The Ardisam, Inc., Manufacturing Company warrants this rototiller to be free from defects in material or workmanship. Conditions of this warranty include:

### **What is covered under warranty:**

For the first year from the date of purchase, Ardisam will furnish 100% parts and labor to correct any defect caused by faulty material or workmanship. All repairs made under warranty must have prior approval from Ardisam, Inc. Items subject to normal wear and tear, such as belts, batteries, tines, shear bolts and tires, due to the nature of their function are not covered under this warranty. Any unit used in a commercial application is covered for a period of 90 days after purchase. The engine is covered under a separate warranty issued by the engine manufacturer as stated in the engine manual.

### **What is not covered under warranty:**

This warranty applies only to products which have not been repaired or altered outside our factory. It covers only defects resulting from normal use, and does not cover defects arising from misuse, alteration, negligence, or accident. This warranty applies only to the original purchaser, and is not transferrable.

*This warranty supersedes all other warranties either expressed or implied and all other obligations or liabilities on our part. Ardisam, Inc., does not assume, and does not authorize any other person to assume for us, any liability in connection with the sale of our products. This guarantee is void unless the warranty card is properly filled out and returned to Ardisam, Inc., Cumberland, Wisconsin, within two weeks of the purchase date.*



### **ARDISAM, INC.**

1360 1st Avenue; P.O. Box 666  
Cumberland, Wisconsin 54829  
(715) 822-2415 Fax (715) 822-4180

**1-800-3456-007**

[www.ardisam.com](http://www.ardisam.com)



# SAFETY RULES

## OWNER'S RESPONSIBILITY

*Safe and effective use of the rototiller is the owner's responsibility.*

1. Read and follow all safety instructions.
2. Maintain the tiller according to directions and schedule included.
3. Ensure that anyone who uses the tiller is familiar with all controls and safety precautions.

## GENERAL

 The Safety Alert symbol shown here is used to alert you to important safety information that must be read, fully understood, and followed at **all** times when handling, transporting, operating, servicing, or storing your rototiller unit.

Each safety alert symbol is followed by a "signal word" that advised you of the relative intensity, or level, of the hazard the safety alert instructions pertain to.

The following list of signal words is being provided to help you understand the intensity levels associated with each signal word used in this manual.

### DANGER

The signal word "DANGER" is used when a serious injury or fatality will result if the safety instructions that follow this signal word are not obeyed.

### WARNING

The signal word "WARNING" is used when a serious injury or fatality could result if the safety instructions that follow this signal word are not obeyed.

### CAUTION

The signal word "CAUTION" is used when personal injury, or property or equipment damage could result if the safety instructions that follow this signal word are not obeyed.

### IMPORTANT

Provides helpful information for proper assembly, operation, or maintenance of your rototiller.

- **CAREFULLY READ THIS MANUAL AND FOLLOW ALL INSTRUCTIONS.**
- Be familiar with all controls before operating the tiller. Your tiller is equipped with a safety device that enables you to stop the tines quickly in an emergency. Learn how the drive safety control lever works and how to control the tiller at all times.
- Never allow children to operate the tiller. Keep small children away from the area being tilled. Do not allow adults to operate the tiller without proper instruction.
- Do not operate the tiller under the influence of alcohol or drugs.

## 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.
- 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 drive safety control lever before starting the engine.
- Handle fuel with care; it is highly flammable.
  - a. Use an approved fuel container.
  - b. Never add fuel to a running engine or hot engine.
  - c. Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors.
  - d. Replace gasoline cap securely and clean up spilled fuel before restarting.
- Never attempt to make any adjustments while the engine is running.

### IMPORTANT

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



# SAFETY RULES

## OPERATION

- Never operate the tiller without guards, covers, and hoods in place.
- Keep hands, feet, and clothing away from rotating parts. Keep clear of tiller tines at all times.
- Tines rotate when tiller is engaged in **forward**-- in **forward**, tines rotate when the drive safety control lever is pulled down. Releasing the drive safety control lever to **neutral** stops the tines.
- Exercise extreme caution when operating on or crossing gravel drives, walks, or roads. Stay alert for hidden hazards or traffic.
- After striking a foreign object, stop the engine, remove the wire from the spark plug and secure, thoroughly inspect the tiller for any damage, and repair the damage before restarting and operating the tiller.
- If vegetation clogs the tines, **STOP THE ENGINE AND DISCONNECT THE SPARK PLUG WIRE** before removing vegetation by hand.
- Engine muffler will be hot from operation. Do not touch it with bare skin or a severe burn may result.
- If the unit should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
- Do not run the engine indoors; exhaust fumes are dangerous.
- Do not overload the machine capacity by attempting to till too deep at too fast a rate.

- Never allow bystanders near the unit.
- Never operate the tiller without good visibility or light.
- Take all possible precautions when leaving the machine unattended. Disengage drive control lever, stop the engine, wait for all moving parts to stop, and make certain guards and shields are in place.
- When leaving the operating position for any reason:
  - shut off the engine.
  - wait for all moving parts to stop.

## 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 the spark plug wire from the spark plug before performing tiller maintenance.
- Never run the engine indoors. Exhaust fumes are deadly.
- Always allow muffler to cool before filling fuel tank.
- Never store equipment with gasoline in the tank inside a closed building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any building.
- Always refer to the operator's guide instructions for important details if the tiller is to be stored for an extended period.



# SAFETY RULES

## SAFETY DECALS

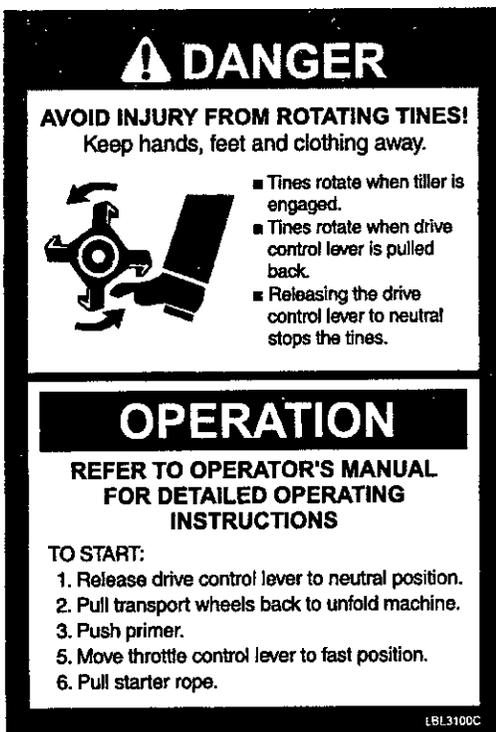
This rototiller unit has been designed and manufactured to provide you with the safety and reliability you would expect from an industry leader in outdoor power equipment manufacturing.

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.

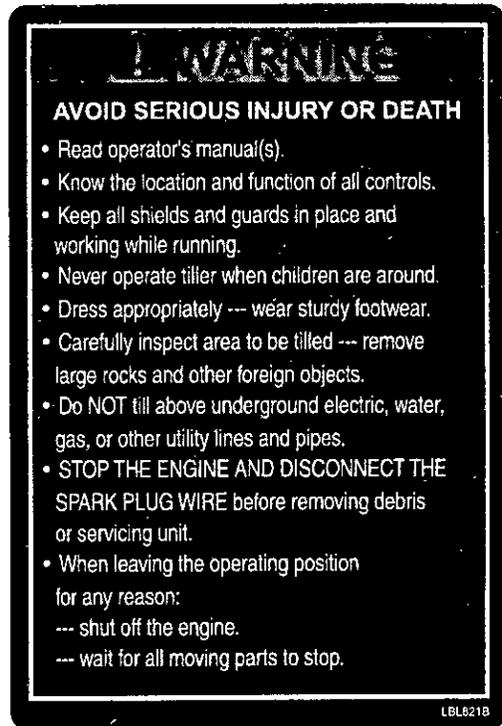
These important safety labels are illustrated below, and are shown here to help familiarize you with the location and content of the safety messages you will see as you perform normal tilling operations. Please review these labels now, and if you have any questions regarding their meaning or how to comply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

Should any of these labels become unreadable because of being worn, faded, or otherwise damaged during the use of your tiller, please use the part number information provided to order a replacement label from your local authorized dealer.

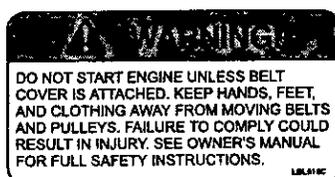
These labels are easily applied, and will act as a constant visual reminder to you, and others who may use the equipment, to follow the safety instructions necessary for safe, effective operation of your rototiller.



Part No. LBL3100C  
TINES DANGER/OPERATION  
Hood Decal



Part No. LBL821B  
HOOD WARNING  
Hood Decal



Part No. LBL516C  
WARNING  
Belt Cover Decal



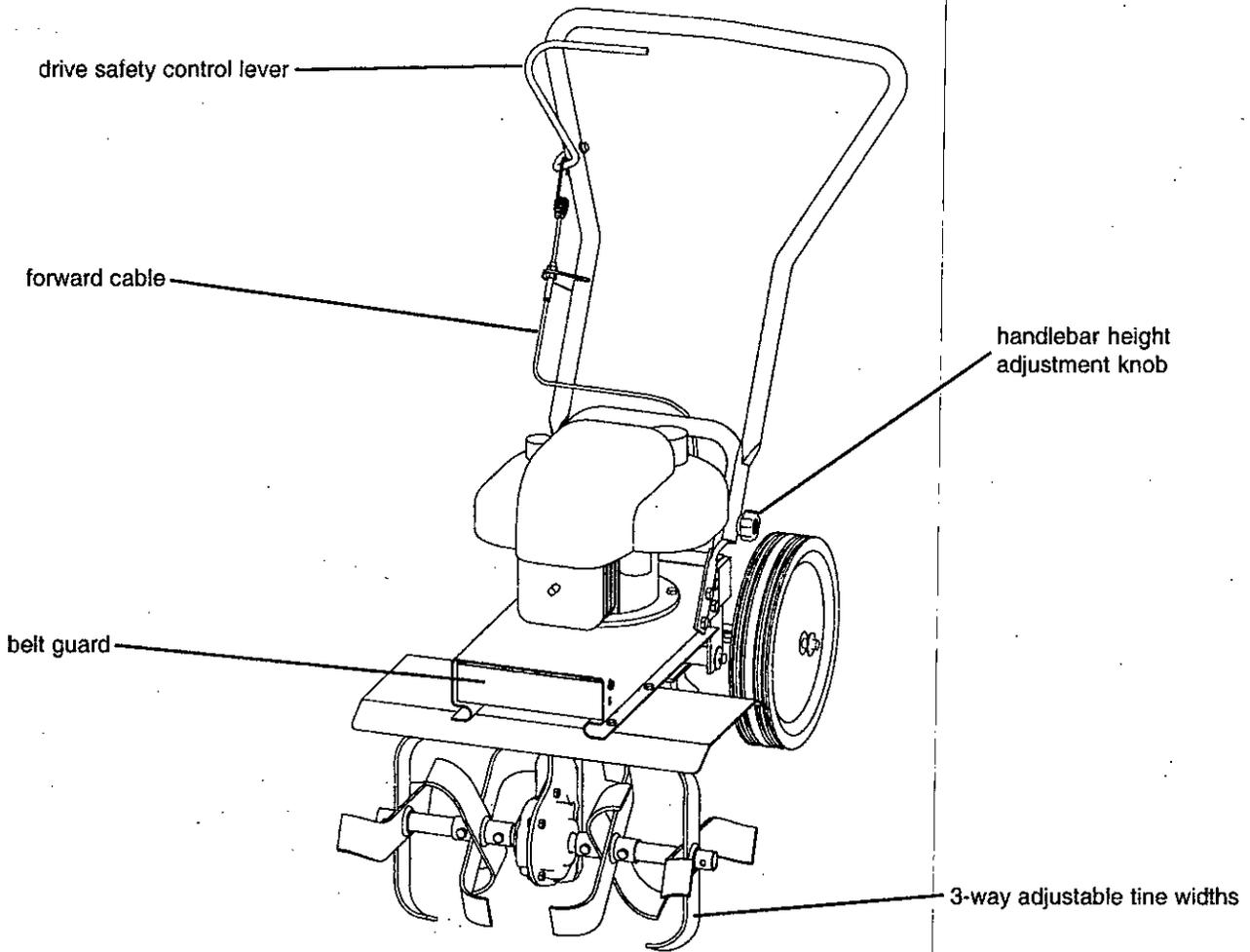
Part No. LBL3100H  
WARNING  
Pivot Mount Decal



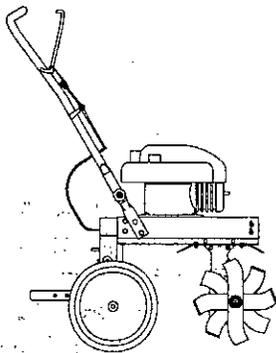
Part No. LBL3100D  
CLUTCH ENGAGE  
Handlebar Decal



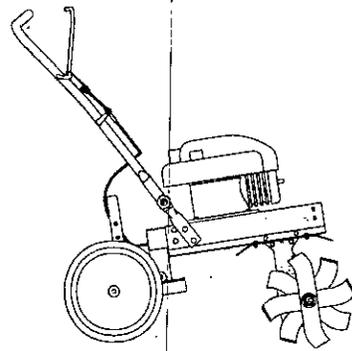
# FEATURES



The *advantage* of the **EARTHQUAKE® BADGER™ gear drive rototiller** over other front tine tillers, is the exclusive unfolding and flexible drag bar. This gives the **Earthquake® Badger™ gear drive tiller** its stability and its versatility. For easy transport, fold the wheels under the engine. During operation, the wheels unfold back and the drag bar folds down. The long length between the tines and the drag bar make this the most comfortable front tine tiller on the market.



**Transport Position**



**Operating Position**

# UNPACKING AND ASSEMBLY



## UNPACK TILLER

1. Open top of carton and remove handlebar assembly.



### CAUTION

Do not try to lift the rototiller from the carton.

2. Find parts packet. Parts packet contains:

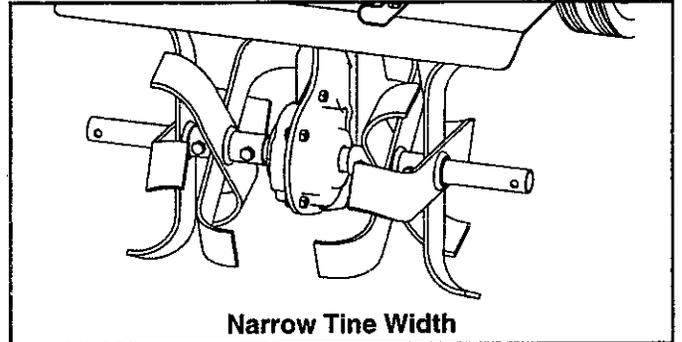
- 6- 5/16-18 x 1-3/4" bolts
- 6- 5/16" spring lockwashers
- 2- hand knobs
- 4- locknuts
- 2- 1/2" push nuts
- 1- detent pin

3. Cut open end of carton and remove machine:

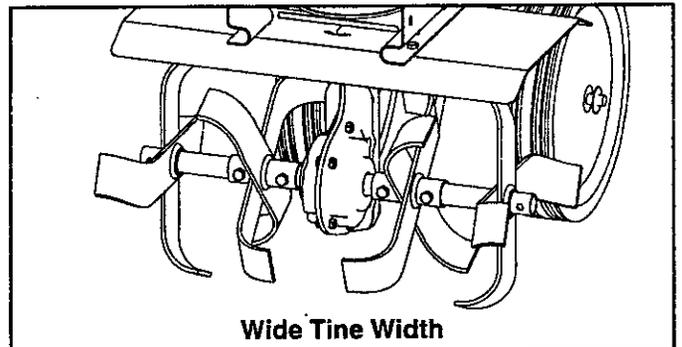
- a. Install wheels on each end of axle, tap on push nuts with a hammer.
- b. Assemble tines to unit, inside tines first. Sharp edge of tine will be away from operator at top or face down at front of machine.
- c. Outside tines have two positions- wide 21" & narrow 16". For narrow width - assemble with short side of tine holder pipe towards center of machine.
- d. For wide width - move left tine to right side and right to left side. Assemble with long half of tine pipe towards machine.
- e. Slide top handle of handlebar over lower loop. Put 5/16-18 x 1-3/4" bolts thru both holes from inside out, put on 5/16" spring lockwashers and tighten with height adjustment knobs.
- f. Add and check engine oil.

**IMPORTANT**

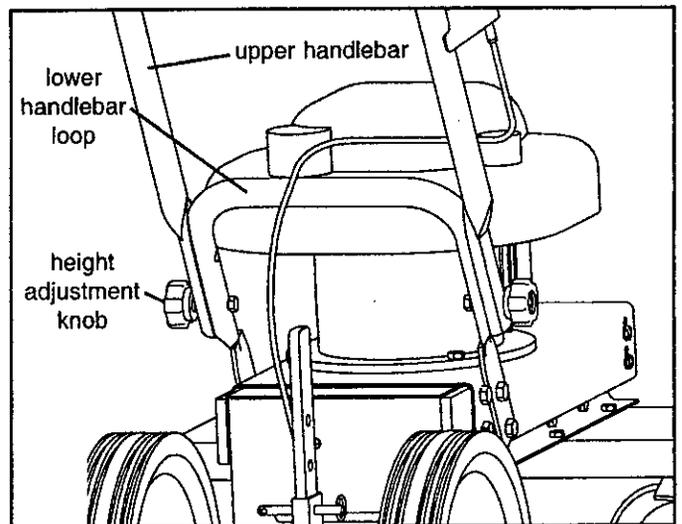
The right and left sides of your rototiller are determined from the operating position as you face the direction of forward travel.



Narrow Tine Width



Wide Tine Width

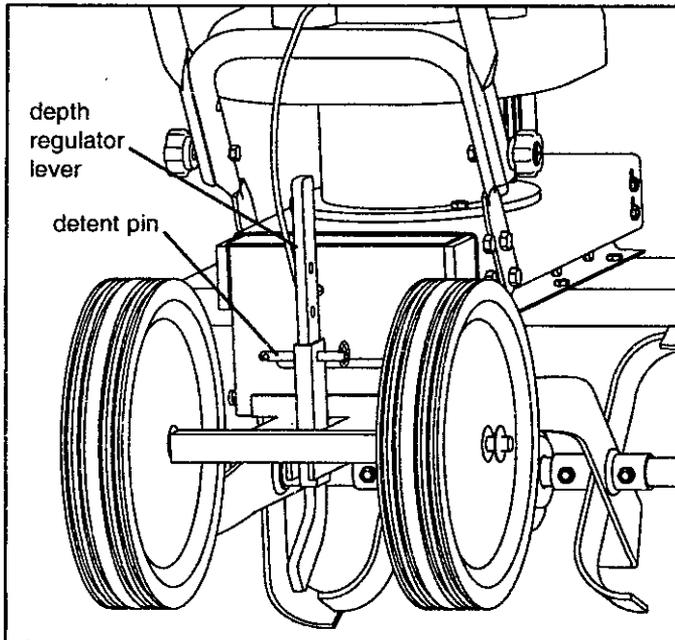




# UNPACKING AND ASSEMBLY

## INSTALL THE DEPTH REGULATOR LEVER

1. Install the depth regulator lever through hole in bracket from the bottom up with curve to rear of unit and secure with detent pin.



## 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. Container must be marked A.P.I. Service SF - SJ. Use no special additives with recommended oils. **Do not mix oil with gasoline.** Oil level must be full. Check the oil level by removing the oil fill plug. Oil level should be up to the bottom of the fill plug opening.
2. Always check oil level before starting engine. Refer to engine manual for capacity and type of oil to use.

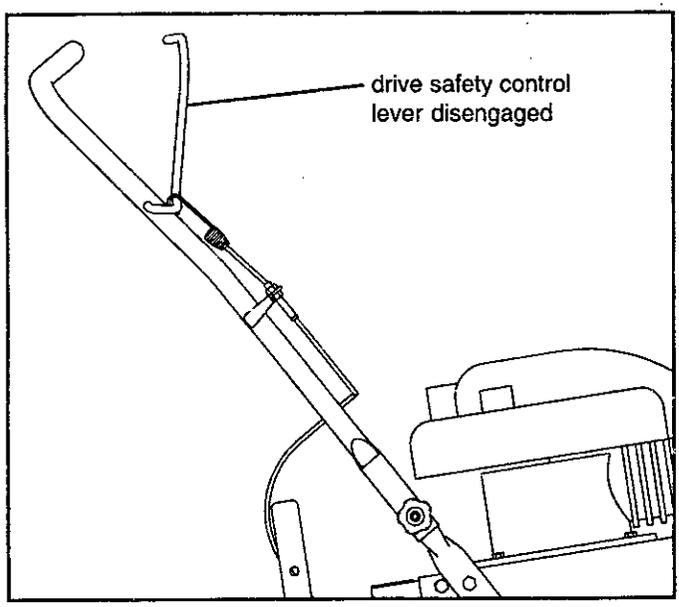


# CONTROLS

## DRIVE SAFETY CONTROL LEVER

Engage tines into forward, releasing returns machine to neutral.

Pulling down on drive safety control lever engages the tines. Releasing the drive safety control lever disengages the tines to a neutral position.



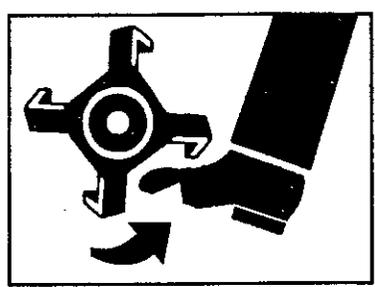
**CAUTION**  
This information is provided here only to introduce the controls. **DO NOT START THE ENGINE AT THIS TIME.** Starting and operating instructions are given on page 11. Please read this section and all operating and safety instructions before starting your tiller.

**WARNING**  
Engine should be off before adjusting any controls.

**CAUTION**

- ◆ As a safety precaution, the drive safety control levers will not lock in the forward position.
- ◆ To stop the wheels and tines at any time release the drive safety control levers.

**WARNING**  
Extreme caution should be used when operating rototiller in the forward direction.



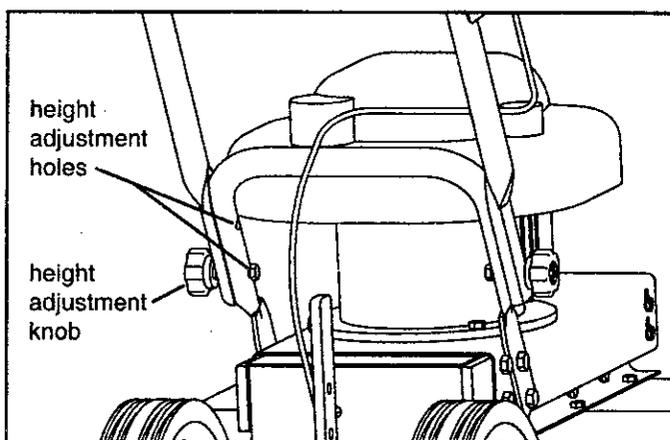


## HANDLEBAR HEIGHT ADJUSTMENT

*Adjust handlebar height.*

There are two handlebar adjustments. The ideal height of the handlebar varies with operator height and the depth of tilling. To adjust handlebar height:

1. Unscrew knobs and remove bolts.
2. Slide handlebar up or down to raise or lower.
3. Reinsert bolts through height adjustment holes and put washer on end of bolt.
4. Tighten with height adjustment knob.



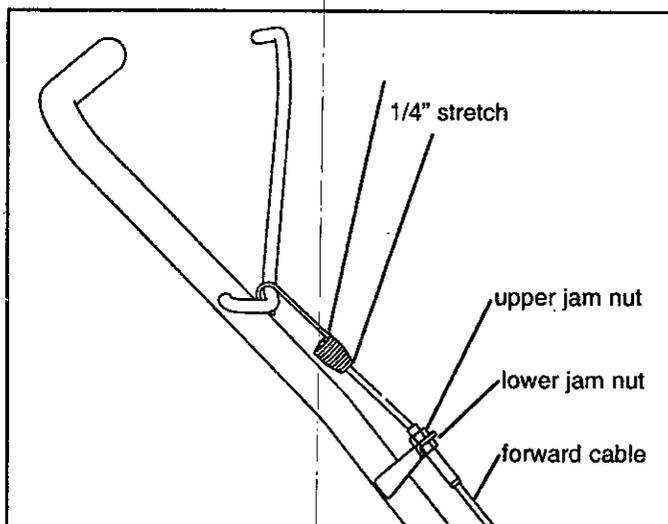
## BELT TENSION ADJUSTMENT

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.

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





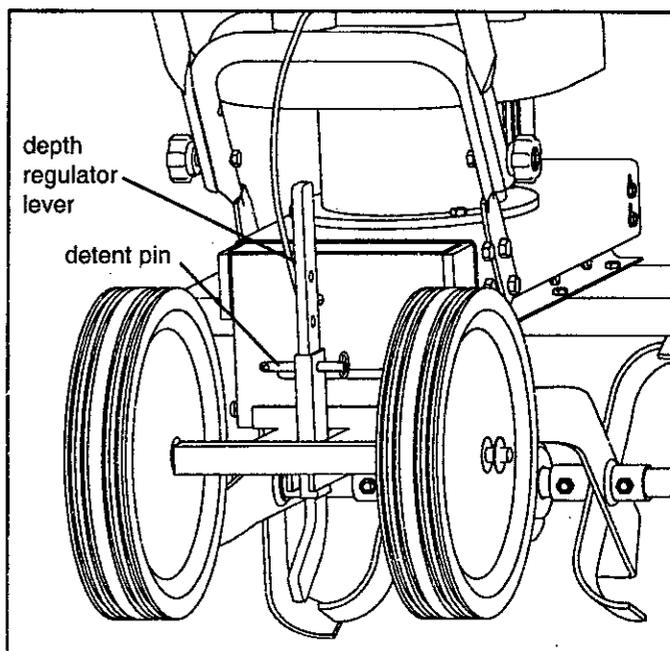
# ADJUSTMENTS

## DEPTH REGULATOR LEVER

*Tilling depth is controlled by the height of the depth regulator lever.*

To adjust tilling depth.

1. Remove detent pin.
2. Raise the depth regulator lever to position tines at chosen tilling depth.
3. Align hole in depth regulator lever with hole in depth regulator bracket and replace detent pin.



### CAUTION

**Do not adjust tilling depth unless drive safety control lever is released to the neutral position.**



## 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. Check depth regulator lever position.

### CAUTION

Please do not start your tiller until you have read the Manual that came with your engine, and the sections in this manual titled 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 the tank.

### IMPORTANT

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

## START-UP

The controls required to start and run the rototiller are located on the engine and are marked "Choke" and "Throttle".

A more detailed description of engine operation and all related precautions and procedures can be found in the engine manufacturer's manual that accompanies each tiller.

### Cold Starts

1. Move choke lever to full choke position.
2. Move throttle lever to "start".
3. Pull starting rope out slowly one time and allow to return normally.
4. Pull starting rope out rapidly, and allow rope to return normally.
5. When engine starts, gradually move choke lever to "no choke" position and increase throttle speed.

### Restarting A Warm Engine

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

1. Move throttle lever to "start" position.
2. Pull starting rope out rapidly until engine starts. Allow rope to return normally.
3. Adjust throttle speed to "high" for best tiller action.

### Idle Speed

Use the "low" position on the throttle lever to reduce stress on the engine when tilling is not being performed. Lowering the engine speed to "idle" the engine will help extend the life of the motor, as well as conserve fuel and reduce the noise level of the equipment.

### Operating Speed

For normal tilling, set the throttle lever to "fast".

### DANGER

Always keep hands and feet clear of rotating machine parts.

# OPERATION



**⚠ WARNING**

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

**⚠ WARNING**

Do not move choke control to **CHOK** to stop engine. Backfire or engine damage may occur.

## SHUTTING DOWN

**⚠ DANGER**

Engine and surrounding parts become extremely hot during normal use, and will cause serious burn injuries if touched before the engine has cooled.

Allow engine to cool completely before touching these hot surfaces.

**⚠ WARNING**

To stop the engine at any time, move throttle control to the off position. To stop wheels and tines at any time, release drive safety control levers to neutral position.

**⚠ CAUTION**

Do not move choke control to **CHOK** to stop engine. Backfire or engine damage may occur.

**IMPORTANT**

To stop the engine at any time, move throttle control to the off position. To stop tines at any time, release drive safety control lever to the neutral position.

## TILLING

1. Adjust the depth regulator lever to desired tilling depth.

**NOTE:** Raise depth regulator lever up one hole at a time, testing tiller operation after each raise. Raising depth regulator lever too high can result in loss of control of tiller!

2. Move the throttle control to *fast*.
3. Place the tiller in *forward* by pushing down on the drive control lever--this will engage the tines.

**⚠ CAUTION**

To stop the tines at any time, release drive safety control lever to the neutral position.

**⚠ CAUTION**

Always release drive safety control lever to the neutral position before adjusting the depth regulator lever.



# NORMAL CARE

## SCHEDULE

Your rototiller has been designed and produced by the industry's leading manufacturer of outdoor power equipment to provide you with years of reliable operation.

Keeping your tiller in top running condition will prolong its life, and help you obtain optimum performance whenever you wish to till your garden.

Please read this normal care schedule, and observe these recommended care operating intervals to extend the life of your unit.

<i>Maintenance Operation</i>	<i>Page</i>	<i>Before Each Use</i>	<i>50 hrs or Every Season</i>
<i>Check belt tension</i>	<i>17</i>	<i>X</i>	
<i>Change forward belt</i>	<i>17</i>		<i>X</i>
<i>Engine maintenance</i>	<i>18</i>	<i>X</i>	<i>X</i>
<i>Check or fill engine oil</i>	<i>18, EM</i>	<i>X</i>	<i>2</i>
<i>Check tiller transmission grease</i>	<i>19</i>	<i>X</i>	
<i>Clean tine axle shaft</i>	<i>19</i>	<i>X</i>	
<i>Check throttle control adjustment</i>	<i>EM</i>		<i>1</i>

EM = See engine manual

- 1 Adjust throttle control after first 3 hours of operation or if engine is hard to start or run-on occurs.
- 2 Change oil after first 5-8 hours of use, then after every 50 hours or every season. Change oil every 25 hours when operating under heavy load or in high temperatures.



## SERVICING THE ROTOTILLER

### General

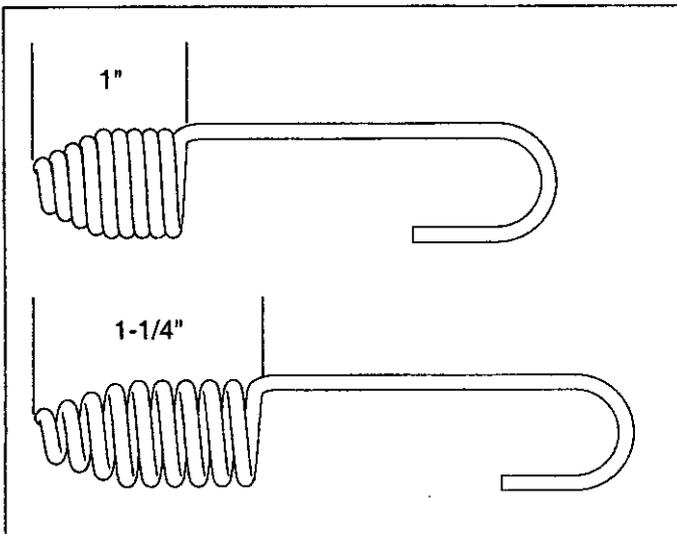
The following information will help you make the necessary checks and perform the procedures required to follow the normal care recommendations made for your rototiller unit.

If you prefer, your local authorized dealer can make these checks and perform the required procedures for you.

### Check Belt Tension

Belt tension may decrease over time. It must be adjusted within the first half hour of operation, and checked after every two hours of operation. Proper adjustment will assure long belt life. Too much or too little belt tension will cause premature belt failure. To check and adjust the forward belt tension:

1. Turn off engine. Engine must be cool.
2. Remove spark plug wire from spark plug and secure.
3. With drive safety control lever in the neutral position, measure length of spring when compressed.
4. Pull down on drive safety control lever and measure length of spring when stretched out. Ideal length would be 1/4" longer.

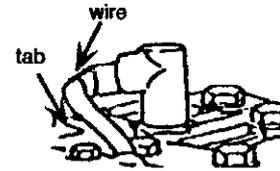


### WARNING

Check forward belt tension regularly. Too much or too little tension will cause premature belt failure.

### WARNING

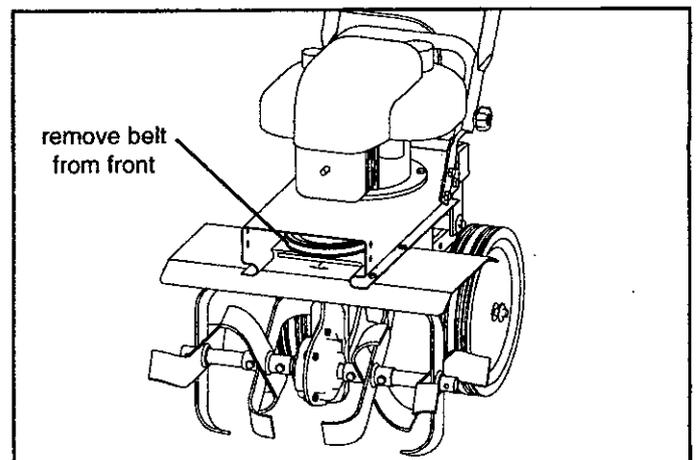
To prevent accidental starting:



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 Forward Belt

1. Turn off engine. Engine must be cool.
2. Remove spark plug wire from spark plug and secure.
3. Remove belt guard.
  - ★ remove the belt from the engine pulley:
    - gently pull the engine recoil rope to rotate the pulley.
    - with the pulley turning, force the belt out of the V-groove.
    - slide the belt free of the engine pulley.
    - pull the belt down and out of the way.
    - push the bolt forward and out front of machine.
  - ★ install new belt:
    - place belt in transmission pulley groove.
    - gently pull the engine recoil rope to rotate the pulley while forcing the belt into the V-groove.
4. Replace belt guard.
5. Attach spark plug wire.



### BELT REPLACEMENT PART #:

727A (forward)



## NORMAL CARE

### CAUTION

Do not operate tiller before reading the engine manual provided in the parts packet.

### WARNING

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

### IMPORTANT

Engine can overheat and become damaged if debris blocks the cooling system or rotating screen.

### IMPORTANT

Never run engine without complete air cleaner installed on engine.

### IMPORTANT

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

### Check or Fill Engine Oil

1. Add oil according to engine manual. **Do not overfill.** Use a clean, high quality detergent oil. Container must be marked A.P.I. Service SF - SJ. Use no special additives with recommended oils. **Do not mix oil with gasoline.** Oil level must be full. Check the oil level by removing oil fill plug. Oil level should be up to the bottom of the fill plug opening.
2. Always check oil level before starting engine. Refer to engine manual for capacity and type of oil to use.

### 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.
4. Check spark plug yearly or every 100 hours of operation.
5. Service air cleaner.
6. Keep engine and parts clean.
7. Check engine and equipment often for loose nuts and bolts, keep these items tightened.

# NORMAL CARE

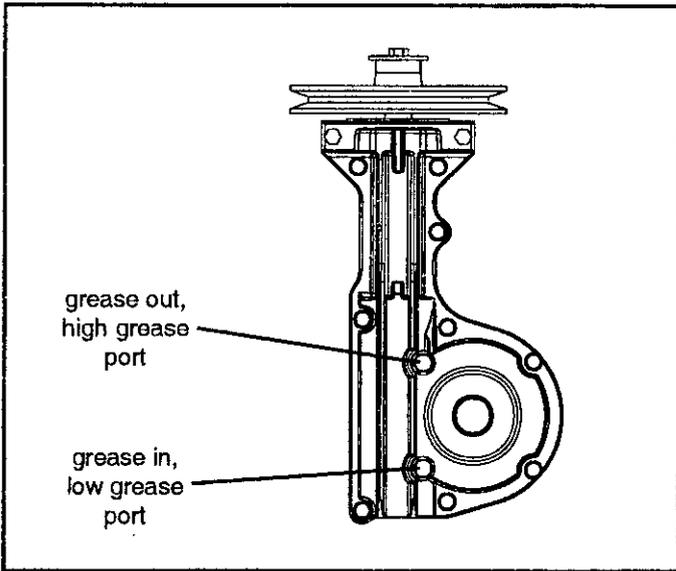


## Check Tiller Transmission Grease

**IMPORTANT**

Tiller transmission is shipped from factory with the proper amount of grease.

To add grease, remove both high and low grease ports. Inject grease in bottom until you see some at top hole, transmission is now full.



## Clean Tine Axle Shaft

1. Turn off engine. Engine must be cool.
2. Remove spark plug wire from spark plug and secure.
3. Remove all vegetation, string, wire, and other material that may have accumulated on the axle between the inside set of tines and the seal on the transmission housing.
4. Replace spark plug wire.



## 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.

1. Protect wheels and axles from rust:
  - Coat the axles lightly with axle grease.
2. Run with gas stabilizer in fuel.
3. Drain the fuel tank. Run the engine until it stops.
4. While engine is still warm, drain the oil from the engine. Refill with fresh oil of the recommended grade.
5. Remove spark plug, pour one-half ounce of clean engine oil into cylinder. Pull starter handle slowly several times to distribute oil. Replace spark plug.
6. Clean entire tiller.
7. Store your tiller in a clean, dry building.

### CAUTION

**Do not store tiller in a non-ventilated area where fuel fumes may reach flame, sparks, pilot lights or an ignited object. Drain fuel outdoors away from any ignition sources. Use only approved fuel containers.**

# 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.

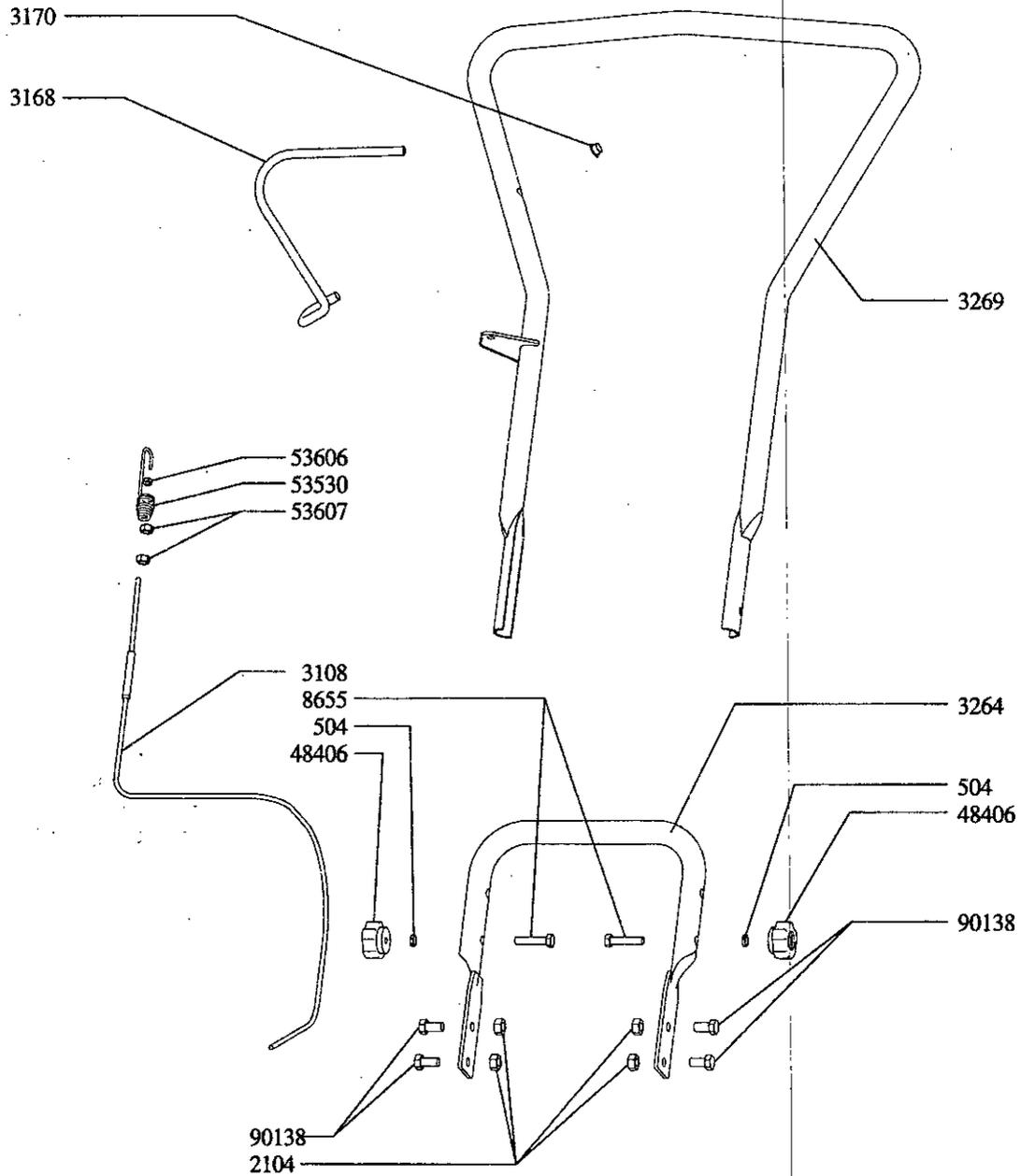
### CAUTION

**Practice safety at all times. Engine must be turned off and allowed to cool, and spark plug wire must be disconnected and secured before attempting any maintenance or repair.**

PROBLEM	REMEDY/ACTION
Engine will not start	<ul style="list-style-type: none"> <li>• Connect spark plug wire to spark plug</li> <li>• Throttle must be positioned at choke for a cold start</li> </ul>
Engine runs rough, floods during operation	<ul style="list-style-type: none"> <li>• Clean or replace air cleaner</li> </ul>
Engine is hard to start	<ul style="list-style-type: none"> <li>• Drain old fuel and replace with fresh. Use gas stabilizer at end of season</li> <li>• Make sure spark plug wire is securely attached to spark plug</li> <li>• Drive control safety lever must be released to <i>neutral</i> to start the engine</li> </ul>
Engine misses or lacks power	<ul style="list-style-type: none"> <li>• Clean or replace air cleaner</li> <li>• Improper carburetor adjustment, take to authorized engine service center</li> <li>• Replace spark plug and adjust gap</li> <li>• Drain and refill gas tank and carburetor</li> </ul>
Engine will not stop when throttle control is positioned at stop	<ul style="list-style-type: none"> <li>• See engine manual to check and adjust throttle linkage</li> </ul>
Tiller moves forward during starting	<ul style="list-style-type: none"> <li>• Drive safety control lever must be released to <i>neutral</i> to start the engine</li> </ul>
Tiller is difficult to control when tilling (machine jumps or lurches forward)	<ul style="list-style-type: none"> <li>• Raise the tines for shallower tilling by raising the depth regulator lever, see page 10</li> <li>• Lower engine speed in hard ground</li> </ul>
Belts squeal in neutral	<ul style="list-style-type: none"> <li>• Adjust belt guide:                             <ul style="list-style-type: none"> <li>- turn engine off and allow muffler to cool</li> <li>- disconnect spark plug wire from spark plug</li> <li>- pull down on drive safety control lever</li> <li>- manually bend belt guide so there is 1/16 inch or less clearance between belt guide and belt</li> <li>- replace spark plug wire</li> </ul> </li> </ul>
Belts squeal in forward operation	<ul style="list-style-type: none"> <li>• Turn engine off and allow muffler to cool</li> <li>• Disconnect spark plug wire from spark plug</li> <li>• Release drive safety control lever to <i>neutral</i></li> <li>• Adjust engage cable</li> <li>• Replace spark plug wire</li> </ul>

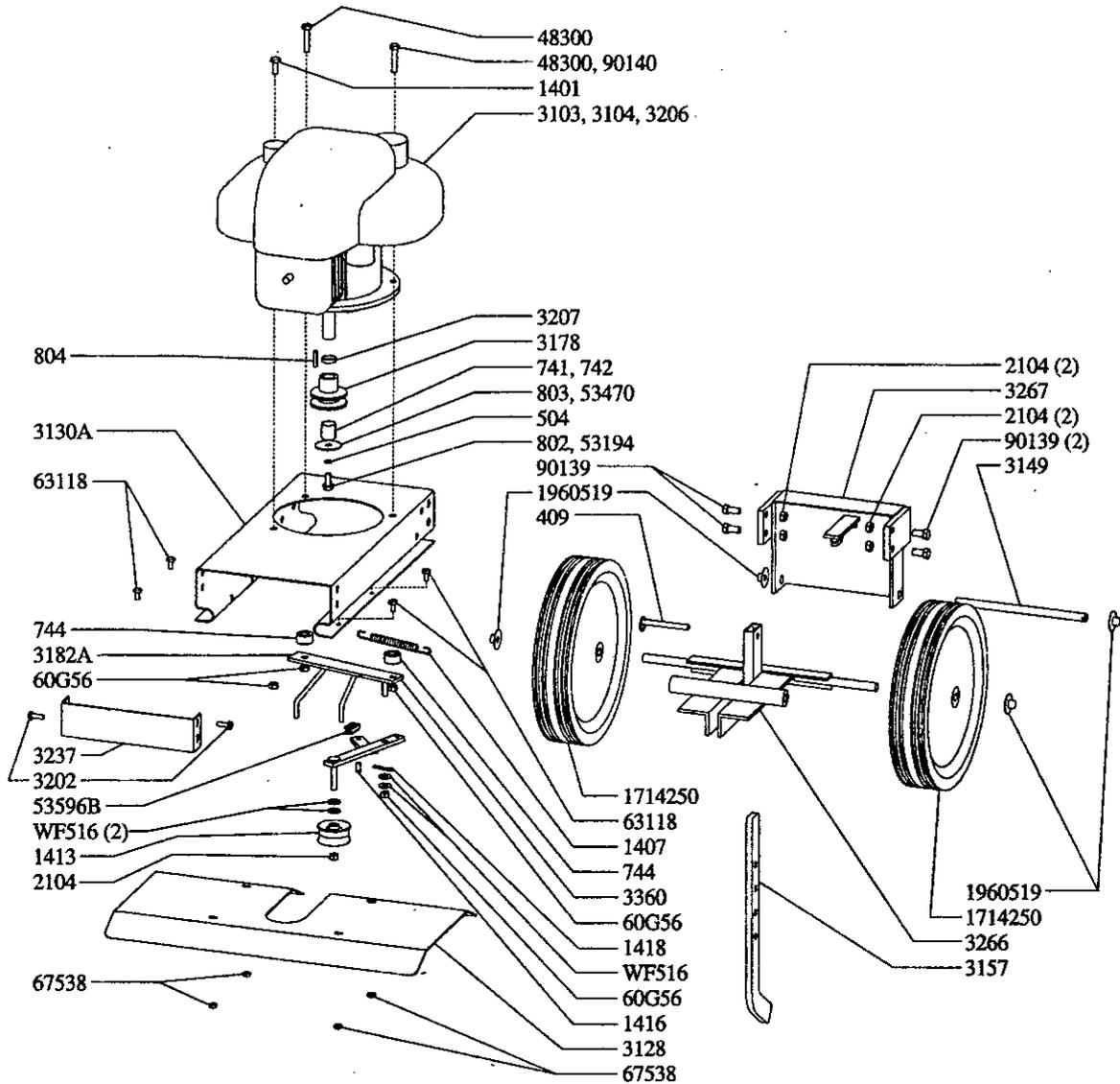


# 3100/3200/3201 Handlebar Assembly



<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
504	LOCKWASHER-Spring, 5/16"	2
2104	NUT-Hex, 3/8"-16	4
3108	CABLE ASSEMBLY	1
3168	DRIVE SAFETY CONTROL LEVER	1
3170	PUSH NUT, 3/8" Dia.	1
3264	BOTTOM HANDLE	1
3269	TOP HANDLE	1
8655	BOLT-Hex Hd, 5/16-18 x 1-3/4"	2
48406	KNOB-Five Star Black, 5/16-18	2
53530	SPRING-Bee Hive, Forward Cable Adjust	1
53606	NUT-Nyloc, #10	1
53607	NUT-Jam, 5/16"-24	2
90138	BOLT-Hex Hd, 3/8"-16 x 1", Grade 5	4

# 3100/3200/3201 Motor Mount & Hood Assembly



<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
60G56	NUT-Biway Lock, 5/16-18	4	3178	PULLEY-2 Groove, Engine, 3/4" ID	1
409	DETENT PIN, 5/16"	1	3182A	BELT GUIDE & MOUNT	1
504	LOCKWASHER-Spring, 5/16"	1	3202	SCREW-Sheet Metal, 1/4" x 3/4"	2
741	SPACER, Crankshaft (Tec)	1	3206	ENGINE, 4-hp Briggs & Stratton (3201)	1
742	SPACER, Crankshaft (Briggs)	1	3207	SPACER-Engine	1
744	SPACER	2	3237	FRONT BELT COVER	1
802	CAPSCREW-Hex Hd, 5/16-24 x 3/4" (Briggs)	1	3266	DRAG BAR MOUNT	1
803	WASHER, 5/16" ID x 1-5/8" OD, Eng. Pulley	1	3267	REAR COVER & MOUNT,	1
804	KEY-Square, 3/16" x 1"	1	3360	IDLER ARM-Forward	1
1401	CAPSCREW-Hex Hd, 5/16-18 x 1-1/4"	1	48300	BOLT-Hex Hd, 5/16-18 x 2-1/4"	2
1407	SPRING-Idler Arm	1	53194	BOLT-Hex, 3/8-24 x 1" Full Thrd. (Tec)	1
1413	PULLEY-Forward Idler	1	53470	WASHER, 3/8" ID x 1-5/8" OD	1
1416	LINK PIN	1	53596B	CABLE YOKE	1
1418	COTTER PIN	1	63118	BOLT-HHCS, 1/4-20 x 1/2"	4
2104	NUT-Hex, 3/8-16 Two-Way	5	67538	NUT-Nyloc, 1/4"	4
3103	ENGINE, 5.5-hp Tecumseh (3100)	1	90139	BOLT-Serrated Flange, 3/8-16 x 1"	4
3104	ENGINE, 5-hp Briggs & Stratton (3200)	1	90140	BOLT-Hex Hd, 5/16-18 x 3-1/4"	1
3128	SHIELD-Tine	1	1714250	WHEEL & TIRE ASSEMBLY	2
3130A	FRAME-Engine Mount	1	1960519	PUSH NUT, 1/2" Dia.	4
3149	WHEEL SHAFT, 1/2" Hinge	1	WF516	WASHER-Flat, 5/16"	4
3157	DEPTH REGULATOR LEVER	1			









**Ardisam, Inc.**  
**1360 1st Avenue, Cumberland, Wisconsin 54829**  
**(715)822-2415 • Fax (715)822-4180**  
**1-800-345-6007**  
**[www.ardisam.com](http://www.ardisam.com)**