



**Count on it.**

# Operator's Manual

## Verticutter

### Reelmaster® 6500 & 6700 Series Cutting Units

Model No. 03877—Serial No. 270000001 and Up

# Introduction

Read this information carefully to learn how to operate and maintain your product properly and to avoid injury and product damage. You are responsible for operating the product properly and safely.

You may contact Toro directly at [www.Toro.com](http://www.Toro.com) for product and accessory information, help finding a dealer, or to register your product.

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready. Write the numbers in the space provided.

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

This manual identifies potential hazards and has safety messages identified by the safety alert symbol (Figure 1), which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.



Figure 1

- 1. Safety alert symbol

This manual uses 2 other words to highlight information. **Important** calls attention to special mechanical information and **Note** emphasizes general information worthy of special attention.

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# Safety

Hazard control and accident prevention are dependent upon the awareness, concern, and proper training of the personnel involved in the operation, transport, maintenance, and storage of the machine. Improper use or maintenance of the machine can result in injury or death. To reduce the potential for injury or death, comply with the following safety instructions.

- Read, understand, and follow all instructions in the traction unit operators manual before operating the verticutters.
  - Read, understand, and follow all instructions in this operators manual before operating verticutters.
  - Never allow children to operate the verticutters. Do not allow adults to operate traction unit or verticutters without proper instruction. Only trained operators who have read this manual should operate the verticutters.
  - Never operate the cutting units when under the influence of drugs or alcohol.
  - Keep all shields and safety devices in place. If a shield, safety device or decal is illegible or damaged, repair or replace it before operation is commenced. Also tighten any loose nuts, bolts, and screws to ensure verticutter is in safe operating condition.
  - Always wear substantial shoes. Do not operate verticutters while wearing sandals, tennis shoes, sneakers or shorts. Also, do not wear loose fitting clothing which could get caught in moving parts. Always wear long pants and substantial shoes.
- Wearing safety glasses, safety shoes and a helmet is advisable and required by some local ordinances and insurance regulations.
  - Remove all debris or other objects that might be picked up and thrown by the verticutters. Keep all bystanders away from the working area.
  - If the verticutter blades strike a solid object or the unit vibrates abnormally, stop and shut the engine off. Check cutting unit for damaged parts. Repair any damage before restarting and operating the verticutters.
  - Lower the verticutters to the ground and remove key from ignition switch whenever machine is left unattended.
  - Be sure cutting units are in safe operating condition by keeping nuts, bolts and screws tight.
  - Remove key from ignition switch to prevent accidental starting of the engine when servicing, adjusting or storing the machine.
  - Perform only those maintenance instructions described in this manual. If major repairs are ever needed or assistance is desired, contact an Authorized Toro Distributor.
  - To ensure optimum performance and safety, always purchase genuine Toro replacement parts and accessories to keep the Toro all TORO. **Never use "will-fit" replacement parts and accessories made by other manufacturers.** Look for the Toro logo to assure genuineness. Using unapproved replacement parts and accessories could void the warranty of The Toro Company.

## Safety and Instructional Decals



Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.



93-6688

1. Warning—read the instructions before servicing or performing maintenance.
2. Cutting hazard of hand or foot—stop the engine and wait for moving parts to stop.

# Setup

## Loose Parts

Use the chart below to verify that all parts have been shipped.

| Procedure | Description   | Qty.                       | Use                                 |
|-----------|---|----------------------------|-------------------------------------|
| <b>1</b>  | No parts required   | –                          | Inspect the verticutter.            |
| <b>2</b>  | Transport roller assembly<br>Cotter pin                         | 2<br>2                     | Install the transport rollers.      |
| <b>3</b>  | No parts required   | –                          | Adjust the blade depth.             |
| <b>4</b>  | No parts required   | –                          | Adjust the rear grass shield.       |
| <b>5</b>  | No parts required   | –                          | Adjust the roller scrapers.         |
| <b>6</b>  | No parts required   | –                          | Adjust the transport rollers.       |
| <b>7</b>  | Lift chain<br>Chain bracket<br>U-bolt<br>Nut<br>Washer<br>Screw | 1<br>1<br>1<br>3<br>1<br>1 | Mount the lift brackets and chains. |
| <b>8</b>  | No parts required   | –                          | Mount the counter weights.          |
| <b>9</b>  | Screw<br>O-ring   | 1<br>1                     | Install the verticutter reels.      |

## Media and Additional Parts

| Description       | Qty. | Use   |
|-------------------|------|---|
| Parts catalog     | 1    | Review the material and save in an appropriate place: |
| Operator's Manual | 1    |   |

**Important:** Without these parts, total setup cannot be completed.

**Note:** Determine the left and right sides of the machine from the normal operating position.

**Note:** Whenever the verticutter has to be tipped to expose the verticutter blades, use the kick stand (supplied with traction unit) (Figure 2).

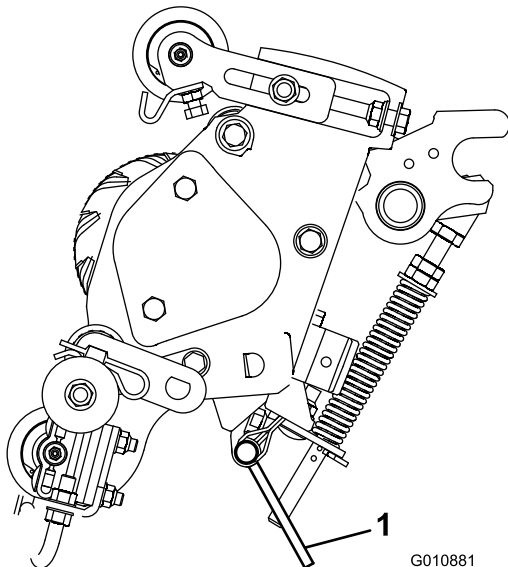


Figure 2

1. Kick stand

# 1

## Inspecting the Verticutter

### No Parts Required

#### Procedure

After the verticutter is unboxed, inspect the following:

1. Check each end of the reel for grease.

**Note:** Grease should be visibly evident in the reel bearings and internal splines of the reel shaft.

2. Ensure that all nuts and bolts are securely tightened.
3. Ensure that the carrier frame suspension operates freely and does not bind when moved back and forth.

# 2

## Installing the Transport Rollers

### Parts needed for this procedure:

|   |                           |
|---|---------------------------|
| 2 | Transport roller assembly |
| 2 | Cotter pin                |

#### Procedure

Secure a transport roller bracket to each side plate pin with a cotter pin (Figure 3).

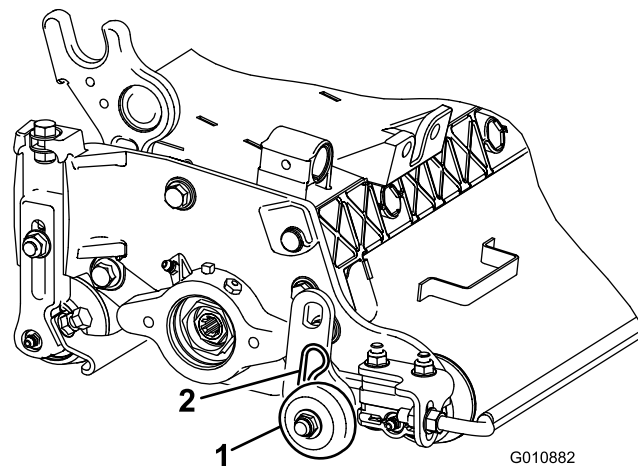


Figure 3

1. Transport roller assembly 2. Cotter pin

**Note:** The roller should be positioned to the rear of the verticutter.

# 3

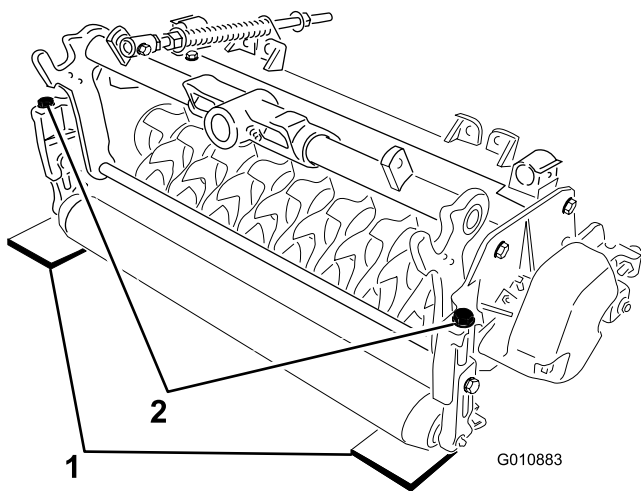
## Adjusting the Blade Depth

### No Parts Required

#### Procedure

**Note:** The maximum recommended blade penetration depth is 1/4 inch (6 mm).

1. Place the verticutter reel on a level surface.
2. Place 2 gauge bars, which have the desired depth of blade penetration below the ground, under the front and rear rollers of the verticutter reel (on each end of the reel) (Figure 4).



**Figure 4**

1. Gauge bar (1/4 inch)
2. Adjusting bolt

**Note:** The verticutter blades must not touch the gauge bars.

3. Turn the adjusting bolt on each height-of-cut bracket (Figure 4) so that the reel blades come in contact with the level surface on both ends.

**Note:** As the verticutter blades wear, the diameter of the reel will decrease and the depth setting will change. Check the depth setting periodically to ensure that the desired setting is achieved.

## 4

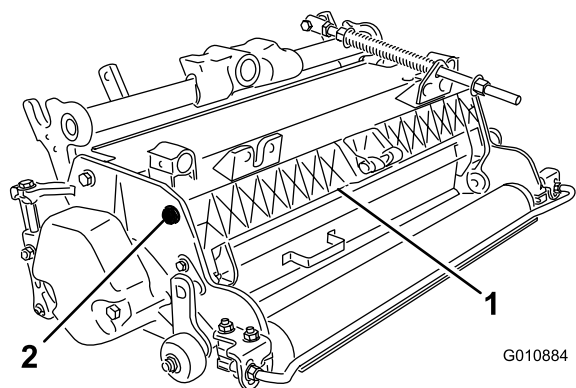
### Adjusting the Rear Grass Shield

#### No Parts Required

#### Procedure

**Note:** When operating in turf conditions where much debris or unusually heavy thatch is encountered, open the rear discharge shield to help allow the debris to discharge from the reel.

1. Loosen the capscrews on the pivot of the grass shield (Figure 5).



**Figure 5**

1. Rear grass shield
2. Pivot cap screw

2. Rotate the grass shield to the desired setting, and tighten the capscrews (Figure 5).



**Do not open the rear shield so that it is higher than level to ground.**

**Thrown debris could cause personal injury.**

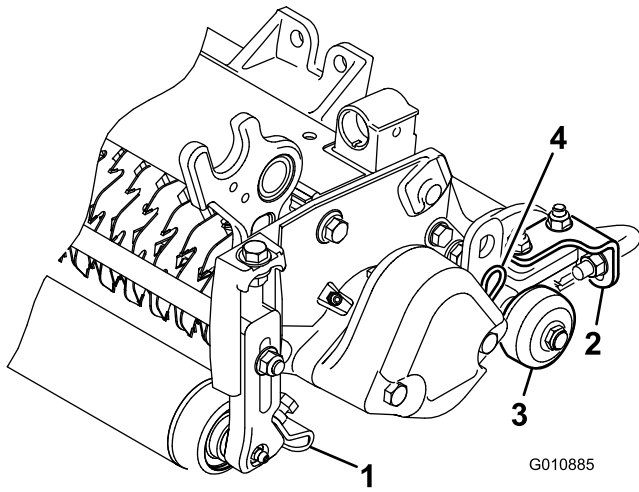
## 5

### Adjusting the Roller Scrapers

#### No Parts Required

#### Procedure

1. Loosen the flange nuts that secure the roller scrapers (Figure 6).



**Figure 6**

- |                         |                     |
|-------------------------|---------------------|
| 1. Front roller scraper | 3. Transport roller |
| 2. Rear roller scraper  | 4. Cotter pin       |

2. Move the scraper rods in or out to attain 0.0 to 0.03 in. (0.0 to 0.75 mm) clearance between the scraper and roller.
3. Ensure that the scraper rod is parallel to the roller and to the level surface.
4. Tighten the flange nuts to lock the adjustment.

## 6

### Adjusting the Transport Rollers

#### No Parts Required

#### Procedure

Before the verticutters are lowered to the shop floor or removed from the traction unit, lower the transport rollers (Figure 6) to protect the blades from hard surface contact.

1. Remove the cotter pin that secures the transport roller bracket to the side plate pin.
2. Position the transport roller as follows:
  - Lower the roller bracket before the verticutter is lowered to the shop floor.
  - Raise the roller bracket after the verticutter is raised to the operating position.
3. Secure the transport roller bracket to the side plate pin with the cotter pin.
4. Repeat the procedure on the opposite end of the verticutter.

## 7

### Mounting the Lift Brackets and Chains

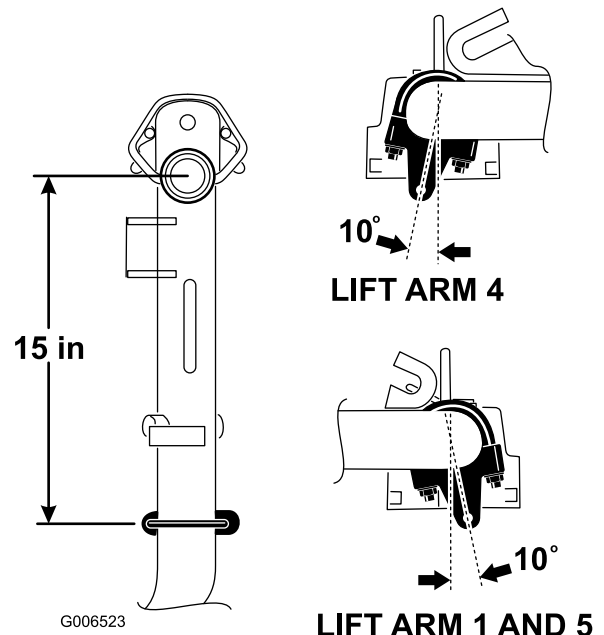
#### Parts needed for this procedure:

|   |               |
|---|---------------|
| 1 | Lift chain    |
| 1 | Chain bracket |
| 1 | U-bolt        |
| 3 | Nut           |
| 1 | Washer        |
| 1 | Screw         |

#### Procedure

Mount a chain bracket to each lift arm with a U-bolt and 2 nuts. Position the brackets as follows:

1. On lift arms 1, 4, and 5, position the chain brackets and U-bolts 15 inches (38 cm) behind the center line of the pivot knuckle (Figure 7).

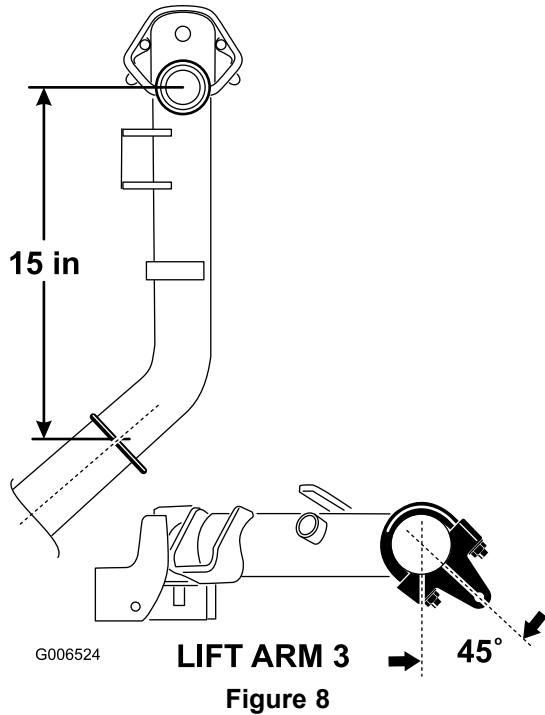


**Figure 7**

**Note:** On lift arms 1 and 5, the brackets should be rotated to the right 10° from vertical (Figure 7).

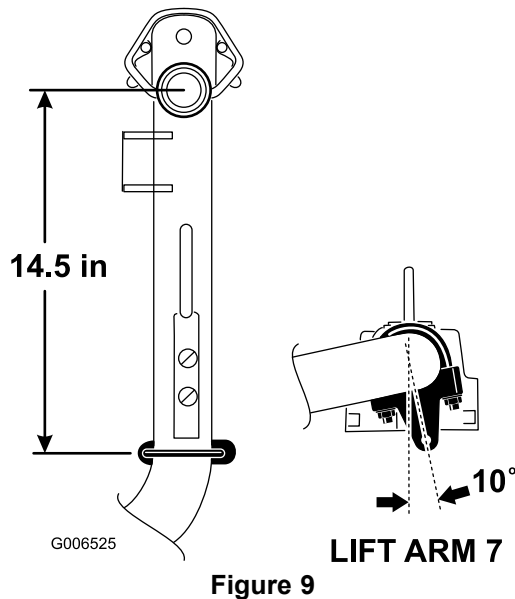
**Note:** On lift arm 4, the bracket should be rotated to the left 10° from vertical (Figure 7).

- On lift arms 2 and 3, position the brackets and U-bolts 15 inches behind the center line of the pivot knuckle (Figure 8).



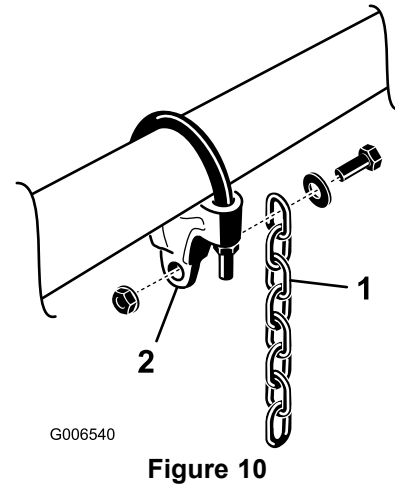
**Note:** Rotate the brackets 45° to the outboard side of the machine.

- On lift arms 6 and 7, position the brackets and U-bolts 14.5 inches behind the center line of the pivot knuckle (Figure 9).



**Note:** Rotate the brackets 10° to the outboard side of the machine.

- Tighten all the U-bolt nuts to 38 to 48 ft-lbs.
- Mount a lift chain to each chain bracket with a screw, washer, and nut, positioning as shown in Figure 10.



1. Lift chain

2. Chain bracket

## 8

### Mounting the Counter Weights

#### No Parts Required

#### Procedure

**Important:** When lowering verticutter reels, take care to prevent damage to the reel blades due to contact with a concrete floor or a paved surface. Lower the transport rollers before lowering the verticutters to a concrete floor or a paved surface.

The verticutters can be installed at any of the seven locations on the traction unit. Figure 11 shows the orientation of the hydraulic drive motor for each of the locations. For any of the locations requiring the motor to be mounted on the right end of the verticutters, install a counterweight on the left end of the verticutters. For the locations requiring the motor to be mounted on the left end, install a counterweight on the right end of the verticutters.



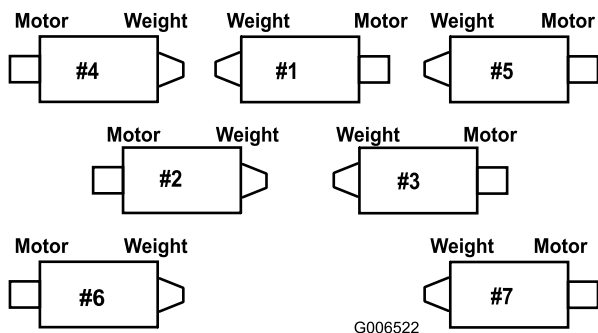


Figure 11

**Note:** The counterweights are shipped installed to the left end of the verticutters. The 2 capscrews, shipped in the loose parts bag, are to be used for securing the hydraulic motor.

# 9

## Installing the Verticutter Reels

### Parts needed for this procedure:

|   |        |
|---|--------|
| 1 | Screw  |
| 1 | O-ring |

### Procedure

1. Insert a thrust washer onto horizontal shaft of pivot knuckle as shown in Figure 12.

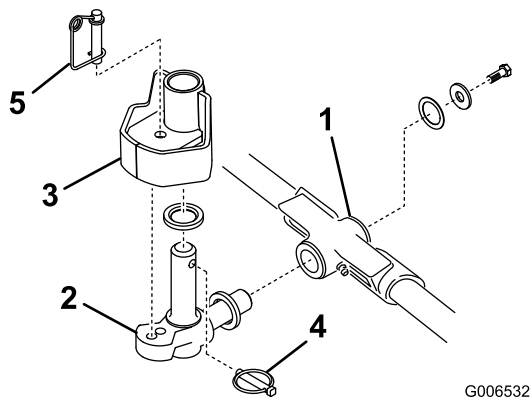


Figure 12

1. Carrier frame
2. Pivot knuckle
3. Lift arm steering plate
4. Lynch pin
5. Steering locking pin

2. Insert the horizontal shaft of the pivot knuckle into the mounting tube of the carrier frame (Figure 12).

3. Secure pivot knuckle to carrier frame with a thrust washer, a flat washer, and a flange head capscrew (Figure 12).
4. Insert a thrust washer onto vertical shaft of pivot knuckle (Figure 12).
5. If removed, insert the vertical shaft of the pivot knuckle into the lift arm pivot hub (Figure 12).

**Note:** Guide the pivot knuckle in place between the two rubber centering bumpers in the under side of the lift arm steering plate.

6. Insert the lynch pin into the cross hole on the pivot knuckle shaft (Figure 12).
7. Secure the lift arm chain to the cutting unit chain bracket (Figure 13) with the snapper pin as follows:

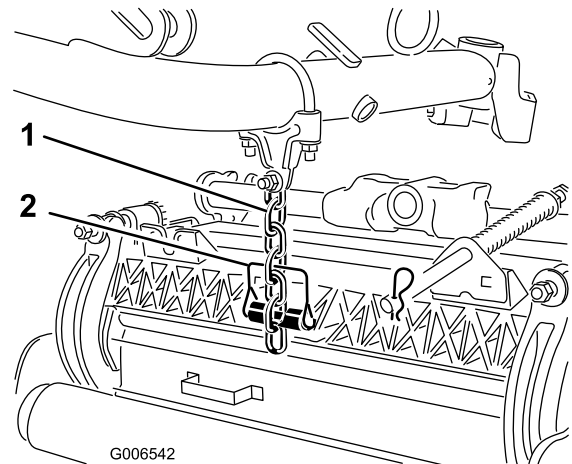
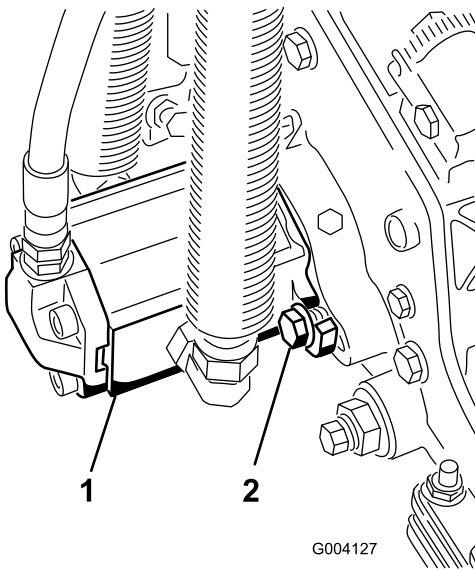


Figure 13

1. Lift chain
2. Snapper pin

- On cutting units 1, 4, 5, 6 and 7, only use 6 of the chain links.
  - On cutting units 2 and 3, use all 7 of the chain links.
8. Coat the spline of the reel motor with clean grease.
  9. Oil the reel motor O-ring and install it onto the motor flange.
  10. Install the motor by rotating it clockwise so that the motor flanges clear the cap screws (Figure 14).



**Figure 14**

1. Reel drive motor                      2. Capscrew

**Note:** Rotate the motor counterclockwise until the flanges encircle the capscrews then tighten the capscrews.

**Important:** Ensure that the reel motor hoses are not twisted, kinked or in the risk of being pinched.

**Note:** If a fixed cutting unit position is required, insert the steering locking pin into the pivot knuckle mounting hole.

11. Hook the spring wire around the bottom of the steering locking pin (Figure 12).

# Operation

## Training Period

Before operating the verticutter reels, evaluate the performance of the reel at the desired setting. Operate them in a clear, unused area to determine if they will achieve the desired results. Adjust them as desired.

## Operating Tips

1. Operate the traction unit at full throttle, full reel speed (setting 11) and between 3 to 5 mph (5 to 8 km/h).
2. The maximum recommended blade penetration depth is 1/4 inch (6 mm).
3. Power requirements to operate the verticutter reels will vary with turf and soil conditions. Travel speed may need to be reduced in some conditions.
4. When operating in turf conditions where much debris or unusually heavy thatch is encountered, open the rear discharge shield to help allow the debris to discharge from the reel.



**Do not open the rear shield so that it is higher than level to ground.**

**Thrown debris could cause personal injury.**

# Maintenance

## Lubricating the Verticutter

Each cutting unit has 7 grease fittings (Fig. 14) that must be lubricated weekly with No. 2 General Purpose Lithium Base Grease.

The lubrication points are the front roller (2), the rear roller (2), the reel bearing (2) and the bed knife adjuster.

**Important:** Lubricating cutting units immediately after washing helps purge water out of bearings and increases bearing life.

1. Wipe each grease fitting with a clean rag.
2. Apply grease until clean grease is seen coming out of the roller seals and the bearing relief valve (Figure 15).

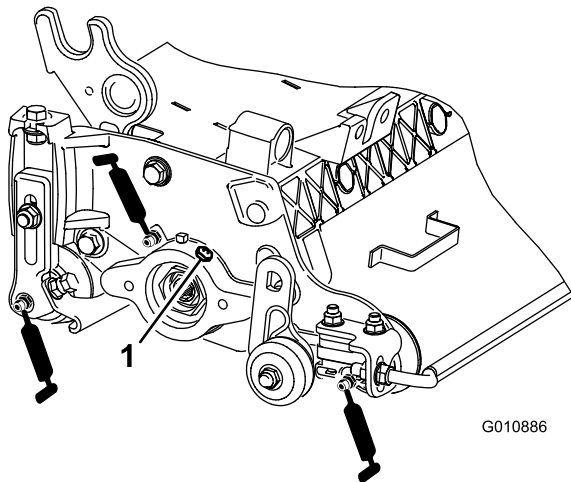


Figure 15

1. Relief valve

3. Wipe any excess grease away.

## Adjusting the Reel Bearings

To ensure long life of the reel bearings, periodically check if there is any reel end play. The reel bearings can be checked and adjusted as follows:

1. Hold on to the reel shaft and try to move the reel assembly side to side (Figure 16).

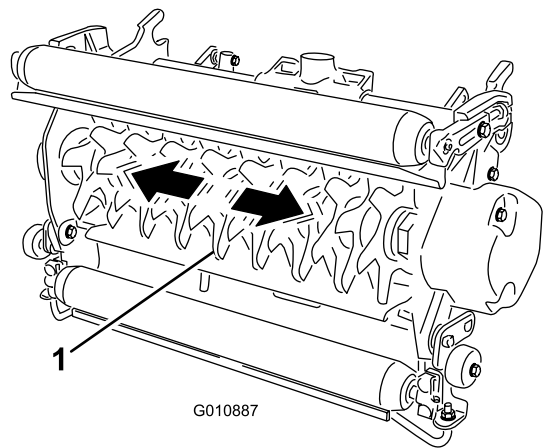


Figure 16

1. Reel shaft

2. If there is any end play, proceed as follows:
  - A. Loosen the external set screw that secures the bearing adjusting nut to the bearing housing located on the left side of the cutting unit (Figure 17).

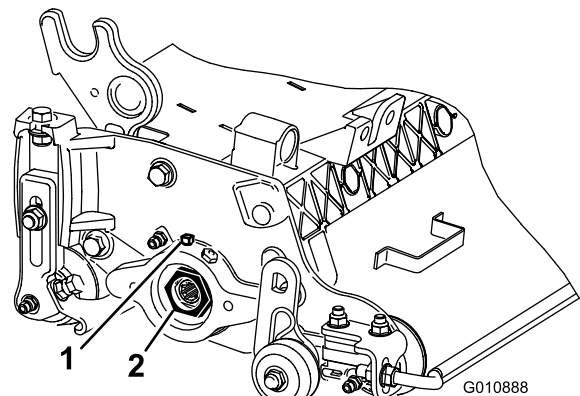


Figure 17

1. Set screw
2. Bearing adjusting nut

- B. Use a 1-3/8 inch socket wrench to slowly tighten the reel bearing adjustment nut until there is no end play in the reel. If adjusting the nut does not eliminate reel end play, replace the reel bearings.

**Note:** Reel bearings **do not** require pre-load. Overtightening the reel bearing adjuster nut will damage the reel bearings.

3. Tighten the set screw that secures the bearing adjusting nut to the bearing housing. Torque the set screw to 12–15 in-lbs.

## Removing the Verticutter Blades from the Shaft

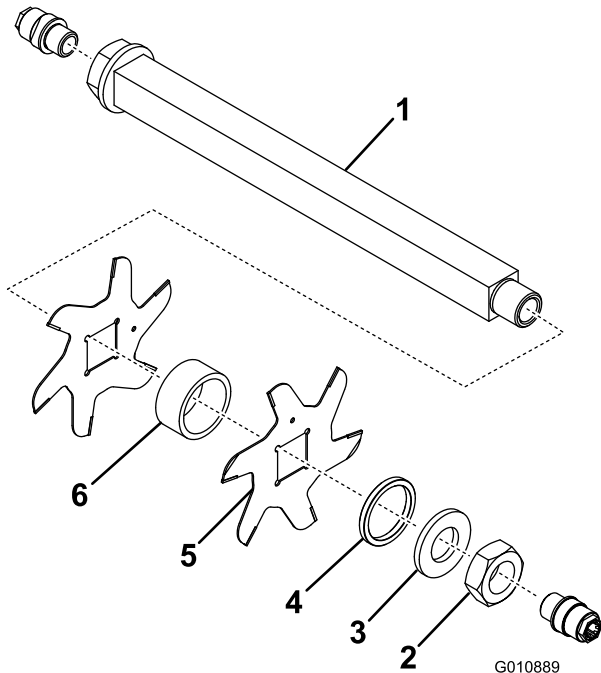
1. Secure the end of the verticutter shaft, which has only one washer and nut, in a vise.
2. On other end of shaft, rotate the nut counter-clockwise and remove the nut.



**The blades are extremely sharp and may have burrs that will cut your hands.**

**Use caution when removing the blades from the shaft.**

3. Remove the small spacer, the washer, the blades and the large spacers. Clean and lubricate the square shaft with a light coating of grease to simplify the assembly (Figure 18).



**Figure 18**

- |           |                      |
|-----------|----------------------|
| 1. Shaft  | 4. Small spacer      |
| 2. Nut    | 5. Blade (16)        |
| 3. Washer | 6. Large spacer (15) |

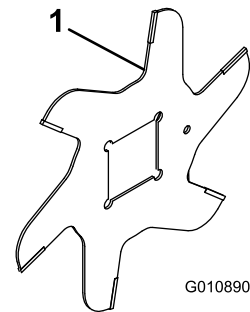
**Important:** Do not invert the verticutter reel blades. The order of disassembly is extremely important. Do not invert the verticutter reel blades when disassembling or reverse the order when assembling them. Note the verticutter blades index hole. The index hole is provided for assembly in order to obtain the proper helix for the verticutter reel.

## Install Verticutter Blades

1. Assemble a reel blade (Figure 12).
2. Assemble a large spacer.
3. Do not invert the reel blades when reassembling on reel shaft.

**Note:** If the blades are inverted, the blades that are in use, (rounded) will be mixed with the sharp ends of the blades which were not in use. This will cause unsatisfactory performance in the verticutter reel unit. Attention should always be taken when disassembling the verticutter blades from reel.

4. Install the next blade clockwise so that the index reference hole (Figure 19) is not aligned with the first blade hole by one flat of the shaft.



**Figure 19**

1. Index reference hole

5. Continue to install spacers and blades in this manner until the full complement of blades have been installed.

**Note:** When properly assembled, the blades will be staggered in such a manner as to appear like a helix.

6. Install the small spacer to the shaft.
7. Apply Blue Loctite 242 to the nut. Install the nut onto the shaft, (machined side of nut toward spacer) and tighten it to 80 to 100 ft-lb.

**Notes:**

**Notes:**

**Notes:**



## Toro General Commercial Products Warranty

### A Two-Year Limited Warranty

#### Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant your Toro Commercial Product ("Product") to be free from defects in materials or workmanship for two years or 1500 operational hours\*, whichever occurs first. This warranty is applicable to all products with the exception of Aerators (refer to separate warranty statements for these products). Where a warrantable condition exists, we will repair the Product at no cost to you including diagnosis, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.

\* Product equipped with hour meter

#### Instructions for Obtaining Warranty Service

You are responsible for notifying the Commercial Products Distributor or Authorized Commercial Products Dealer from whom you purchased the Product as soon as you believe a warrantable condition exists. If you need help locating a Commercial Products Distributor or Authorized Dealer, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Toro Commercial Products Service Department  
Toro Warranty Company  
8111 Lyndale Avenue South  
Bloomington, MN 55420-1196  
952-888-8801  
E-mail: commercial.warranty@toro.com

#### Owner Responsibilities

As the Product owner, you are responsible for required maintenance and adjustments stated in your *Operator's Manual*. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim.

#### Items and Conditions Not Covered

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. This warranty does not cover the following:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, or modified non-Toro branded accessories and products. A separate warranty may be provided by the manufacturer of these items.
- Product failures which result from failure to perform recommended maintenance and/or adjustments. Failure to properly maintain your Toro product per the Recommended Maintenance listed in the *Operator's Manual* can result in claims for warranty being denied.
- Product failures which result from operating the Product in an abusive, negligent or reckless manner.
- Parts subject to consumption through use unless found to be defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, brakes pads and linings, clutch linings, blades, reels, bed knives, tines, spark plugs, castor wheels, tires, filters, belts, and certain sprayer components such as diaphragms, nozzles, and check valves, etc.
- Failures caused by outside influence. Items considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved coolants,

lubricants, additives, fertilizers, water, or chemicals, etc.

- Normal noise, vibration, wear and tear, and deterioration.
- Normal "wear and tear" includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows, etc.

#### Parts

Parts scheduled for replacement as required maintenance are warranted for the period of time up to the scheduled replacement time for that part. Parts replaced under this warranty are covered for the duration of the original product warranty and become the property of Toro. Toro will make the final decision whether to repair any existing part or assembly or replace it. Toro may use remanufactured parts for warranty repairs.

#### Note Regarding Deep Cycle Battery Warranty:

Deep cycle batteries have a specified total number of kilowatt-hours they can deliver during their lifetime. Operating, recharging, and maintenance techniques can extend or reduce total battery life. As the batteries in this product are consumed, the amount of useful work between charging intervals will slowly decrease until the battery is completely worn out. Replacement of worn out batteries, due to normal consumption, is the responsibility of the product owner. Battery replacement may be required during the normal product warranty period at owner's expense.

#### Maintenance is at Owner's Expense

Engine tune-up, lubrication cleaning and polishing, replacement of filters, coolant, and completing Recommended Maintenance are some of the normal services Toro products require that are at the owner's expense.

#### General Conditions

Repair by an Authorized Toro Distributor or Dealer is your sole remedy under this warranty.

**Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. Except for the Emissions warranty referenced below, if applicable, there is no other express warranty. All implied warranties of merchantability and fitness for use are limited to the duration of this express warranty.**

Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, 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.

#### Note regarding engine warranty:

The Emissions Control System on your Product may be covered by a separate warranty meeting requirements established by the U.S. Environmental Protection Agency (EPA) and/or the California Air Resources Board (CARB). The hour limitations set forth above do not apply to the Emissions Control System Warranty. Refer to the Engine Emission Control Warranty Statement printed in your *Operator's Manual* or contained in the engine manufacturer's documentation for details.

#### Countries Other than the United States or Canada

Customers who have purchased Toro products exported from the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer.