FORM NO. 3322-218 Rev A

TORO®

MODEL 03857—90001 AND UP
MODEL 03858—90001 AND UP
MODEL 03859—90001 AND UP

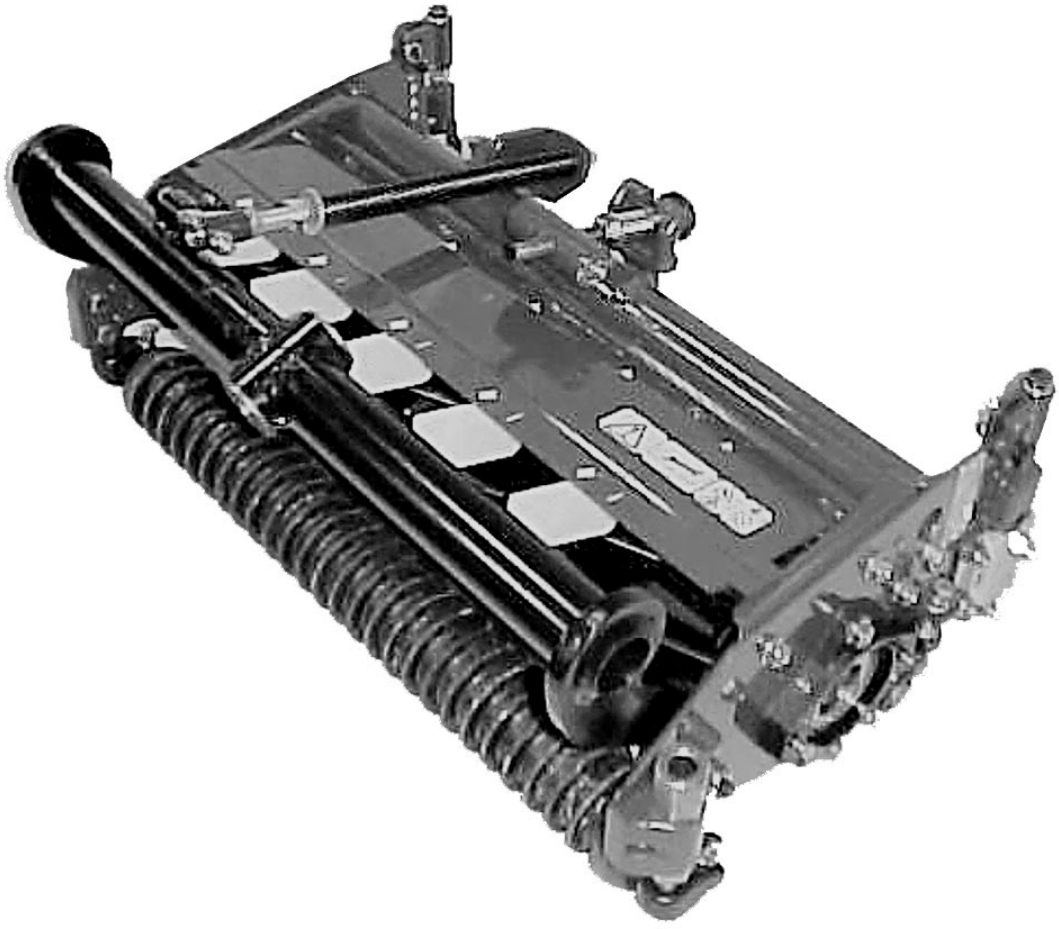
OPERATOR'S MANUAL

# 5, 7 & 11 BLADE REELS

## REELMASTER 6000 SERIES

To assure maximum safety, optimum performance, and to gain knowledge of the product, it is essential that you or any other operator of the machine and cutting units read and understand the contents of this manual before the engine is ever started. Pay particular attention to the SAFETY INSTRUCTIONS highlighted by this symbol:

The safety alert symbol means CAUTION, WARNING or DANGERópersonal safety instruction. Failure to comply with the instruction may result in personal injury.



This operator's manual has instructions on safety, operation, and maintenance.

This manual emphasizes safety, mechanical and general product information. DANGER, WARNING and CAUTION identify safety messages. Whenever the triangular safety alert symbol appears, understand the safety message that follows. “IMPORTANT” highlights special mechanical information and “NOTE” emphasizes general product information worthy of special attention.

# Table of Contents

# IDENTIFICATION AND ORDERING

## MODEL AND SERIAL NUMBERS

The cutting unit has two identification numbers: a model number and a serial number. The two numbers are stamped into a plate that is located on left side plate of the cutting unit (Fig. 1). In any correspondence concerning the cutting unit, supply the model and serial numbers to assure that correct information and replacement parts are obtained.

To order replacement parts from an authorized TORO Distributor, supply the following information:

**1.** Model and serial numbers of the machine.

**2.** Part number, description and quantity of parts desired.

**Note:** Do not order by reference number if a parts catalog is being used; use the part number.

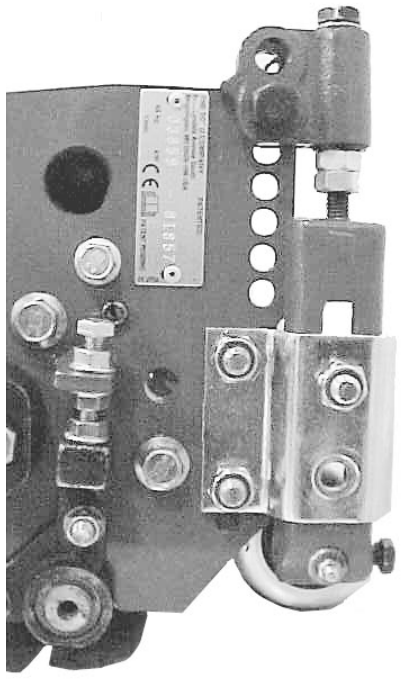


**figure 1**
1. Model & serical number plate

# Safety Instructions

The safety alert symbol means CAUTION, WARNING or DANGER - “personal safety instruction”. Read and under stand the instruction because it has to do with safety. Failure to comply with the instruction may result in personal injury.

**1.** Read and understand the contents of this Operator’s Manual before operating the cutting unit. A free replacement manual is available by sending complete Model and Serial Number to:

The Toro Company
8111 Lyndale Avenue South
Bloomington, Minnesota 55420-1196

**2.** Never allow children to operate the cutting units. Do not allow adults to operate traction unit or cutting units without proper instruction. Only trained operators who have read this manual should operate the cutting units.

**3.** Never operate the cutting units when under the influence of drugs or alcohol.

**4.** 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 assure the cutting unit is in safe operating condition.

**5.** Always wear substantial shoes. Do not operate the cutting unit while wearing sandals, tennis shoes, sneakers or shorts. Also, do not wear loose-fitting clothing that 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.

**6.** Remove all debris or other objects that might be picked up and thrown by the cutting unit’s reel blades. Keep all bystanders away from the mowing area.

**7.** If the cutting blades strike a solid object or the cutting unit vibrates abnormally, stop and shut the engine off. Check the cutting unit for damaged parts. Repair any damage before restarting and operating the cutting unit.

**8.** Lower the cutting units to the ground and remove the key from the ignition switch whenever the machine is left unattended.

**9.** Be sure cutting units are in safe operating condition by keeping nuts, bolts and screws tight.

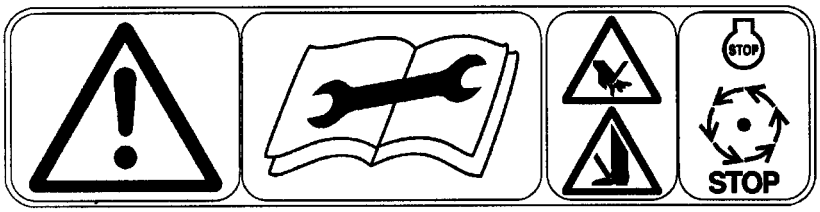
**10.** Remove the key from the ignition switch to prevent accidental starting of the engine when servicing, adjusting or storing the machine.

**11.** Perform only those maintenance instructions described in this manual. If major repairs are ever needed or assistance is desired, contact an Authorized TORO Distributor.

**12.** 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 INSTRUCTION DECALS

The following decal is installed on the cutting uit. If it becomes damaged or illegible, replace it. The decal part number is listed below and in your parts catalog. Replacement can be ordered from your Authorized Toro Distributor.




**ON FRONT SHIELD OF THE CUTTING UNIT**
**(Part No. 93-6688)**

**Danger! The rotating reel will cut hands and feet. Never place your hands or feet in reel area while the engine is running. Read the operator manual for maintenance procedures.**

# Specifications

**Reel Construction:** Fairway reels. All welded. 5, 7 or 11 blades.

**Height-Of-Cut Range:** 5 Blade - 3/4” to 1-1/2” (19ñ38 mm) 7 Bladeñ1/2” to 1ñ1/8” (13ñ29 mm) 11 Bladeó3/8” to 3/4” (10ñ19 mm)

**NOTE:** Use bedknife Part No. 93-9774 for height of cuts below 1/2” (13 mm).

**Reel Diameter:** 7 in. (178 mm)

**Power Attachment:** Reel motors feature quick disconnect for removal or installation onto the cutting unit. Cutting units can be driven from either end.

**Height-of-cut & Roller Adjustment:** Height-of-cut adjustment is made at the rear roller with the quick locating pin and/or the threaded micro adjustment. Front roller position is adjustable to set cutting unit attitude.

**Bedknife And Bedbar Adjustment:** Single-point adjustment mechanism.

**Clip Frequency:** .375”ñ1.25” (10ñ32 mm).

**Automatic Clip Control:** The Reelmaster 6000D series traction unit is equipped with an electronic controller that is programmed to achieve automatic clip control.

As the traction unit speed varies, the controller will automatically adjust the hydraulic flow to the reel motors to vary reel speed and maintain proper clip. For proper clip, the controller needs to know what cutting units are installed (5, 7 or 11 blade) and the height of cut.

**NOTE:** Refer to the traction unit operatorís manual for proper set-up procedure.

**Rollers:** The front roller is a 3” (76 mm) diameter cast Wiehle roller. The rear roller is a 3” (76 mm) diameter steel full roller. Both rollers use the same heavy-duty ball bearings with two conventional single-lip seals and a Toro labyrinth seal to provide four sealing surfaces to protect the bearings.

## Optional Equipment

| | |
|---|---|
| Dethatching Cutting Unit | Model No. 03871 |
| Grass Basket Kit | Model No. 03882 |
| High Torque Reel Motor | Part No. 98-2448 |
| Shoulder Wiehle Roller | Part No. 99-8675 |
| Full Front Roller | Part No. 93-3040 |
| Wiehle Roller Scraper | Part No. 95-7729 |
| Rear Roller Scraper Kit | Part No. 99-5730 |
| Shoulder Wiehle Scraper | Part No. 99-8670 |
| Full Front Roller Scraper | Part No. 99-8668 |
| Low Height of Cut Bedknife | Part No. 93-9774* |
| Gauge Bar Assembly | Part No. 98-1852 |
| Angle Indicator | Part No. 99-3503 |
| Backlapping Brush Assembly | Part No. TOR299100 |
| Bedknife Screw Too[ | Part No. TOR510880 |
| Cutting Unit Tool Kit | Part No. TOR4070 |
| Reel Drive Shaft | Part No. TOR4074 |

* For height of cut below 0.5” (13 mm)

# Set-Up Instructions

**IMPORTANT: Read this operator's manual thoroughly before operating the cutting unit. Failure to do so may result in damage to the cutting unit or an unsatisfactory quality of cut.**

**NOTE:** Right and left ends of the cutting unit are determined by standing with the rear roller in front of you (Fig. 2).

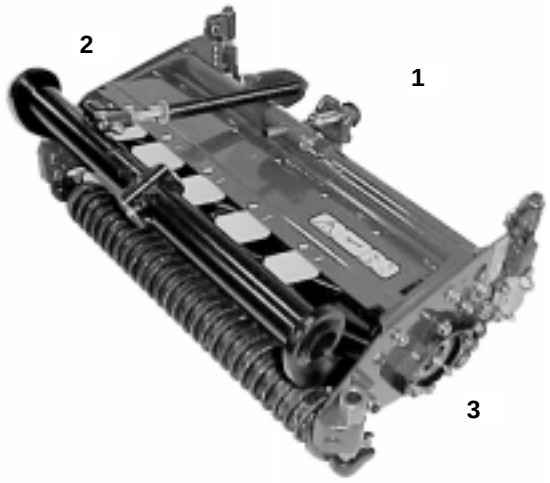



**Figure 2**

1. Operator
2. Right
3. Left

After you unbox the cutting unit, inspect the following:

**1.** Check each end of the reel for grease. Grease should be visibly evident in the reel bearings and internal splines of the reel shaft.

**2.** Insure that all nuts and bolts are securely fastened.

**3.** Make sure the carrier frame suspension operates freely and does not bind when moved back and forth.

## ADJUST THE FRONT SHIELD AND FINS

Adjust the front shield and/or shield fin angle for desired dispersion of grass clippings.

**1.** Position the cutting unit on a flat level surface.

**2.** To adjust fins (Fig. 3), unhook and move the front mounting tab to the straight-ahead or angled position slot

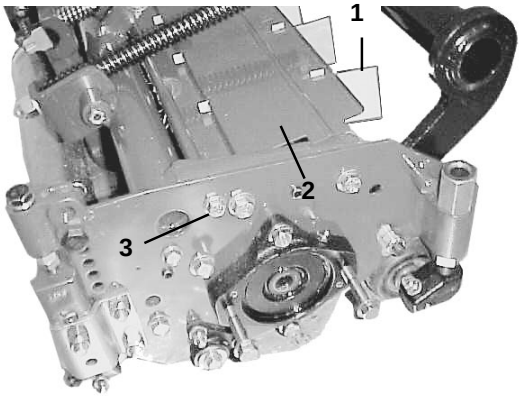



**Figure 3**

1. Shield fin
2. Front grass shield
3. Front capscrew location

**3.** To change the front shield angle, loosen the flange head capscrew securing the shield to the right side plate, move the shield to the desired angle and tighten the screw.

## ADJUST THE REAR SHIELD

Under most conditions, best dispersion is attained when the rear shield is closed (front discharge). When conditions are heavy or wet, the rear shield may be opened.

**1.** To open the rear shield (Fig. 4), loosen the flange head capscrew securing the shield to the left side plate, rotate the shield to the open position and tighten the capscrew.

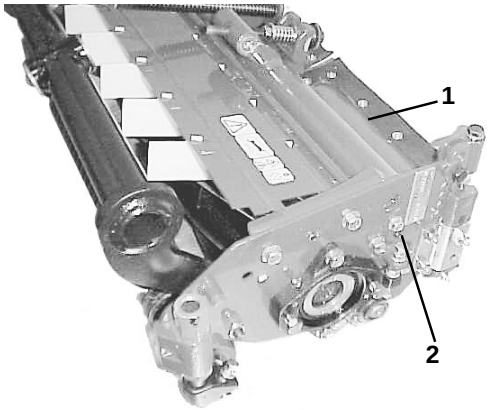



**Figure 4**

1. Rear grass shield
2. Rear capscrew

# ADJUST THE TURF COMPENSATION SPRING

The turf compensation spring (Fig. 5), connecting the carrier frame to the cutting unit controls the amount of fore-aft rotation available, and the amount of ground clearance in transport and turn around.

The turf compensation spring also transfers weight from the front to the rear roller. This helps reduce a wave pattern in the turf.

**IMPORTANT: Make spring adjustments with the cutting unit mounted to the traction unit and lowered to the shop floor. Refer to the traction unit operator's manual for mounting instructions.**

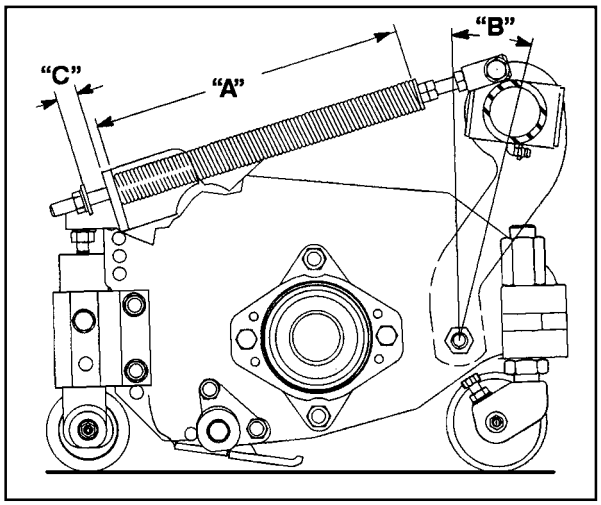



**Figure 5**

**1.** Tighten the lock nut on the rear of the spring rod until the gap (C) between the rear of the spring bracket and front of the washer is 1/2" (13 mm) (Fig. 5).

**2.** Tighten the hex nuts on the front end of the spring rod until the compressed length (A) of the spring is 8" (203 mm) (Fig. 5).

**NOTE:** When cutting rough or undulating turf, increase the compressed length (A) of the spring to B=1/2" (216 mm) and the gap (C) between the rear of the spring bracket and the front of the washer to 1-1/4" (32 mm) (Fig. 5).

**NOTE:** As the compressed spring length (A) DECREASES, weight transfer from the front roller to the rear roller INCREASES and the carrier frame/cutting unit rotation angle (B) DECREASES.

**NOTE:** As the gap (C) between the spring bracket and washer INCREASES, cutting unit ground clearance DECREASES and the carrier frame/cutting unit rotation angle (B) INCREASES.

# Setting Height of Cut

**IMPORTANT. To insure proper setting of height of cut, these procedures must be followed in this order:**

**A. Adjusting (Parallel) the bedknife to the reel**
**B. Setting cutting unit attitude**
**C. Leveling the front roller**
**D. Finalizing height of cut**

**IMPORTANT: Each cutting unit must be set consistently. Minor differences in either 1) height of cut, 2) attitude, 3) bedknife wear or 4) Reel blade wear, between cutting units, may result in negative after-cut appearance.**

**NOTE**: The cutting unit has been set at the factory at 1.59 cm (5/8”) height of cut and with a cutting unit attitude of 2 degrees. Also, the bedknife has been retracted from the reel to prevent shipping damage. Verity the setting to ensure changes did not occur during shipment.

## A. ADJUSTING (PARALLEL) THE BEDKNIFE TO THE REEL

**IMPORTANT. The reel and bedknife must be parallel to an even cut of grass, and that the reel and bedknife wear evenly.**

**NOTE:** Toro recommends light contact between the reel and bedknife. However, for dry and/or sparse conditions a .001–.002” (.03–05 mm) clearance may be required to prevent heat buildup, which can cause uneven wear in the reel and bedknife.

**NOTE:** A 3/4-inch (19 mm) wrench is needed to rotate the bedknife adjustment knob. Each notch on the knob will move the bedknife 0.0005 inches (.013 mm) closer to the reel (Fig. 6).

**1.** Rotate the cutting unit backward to gain access to reel and bedknife (Fig. 7).

**2.** While slowly rotating the reel in the mowing direction, turn the bedknife adjusting knob clockwise until you hear light contact between the reel and bedknife.

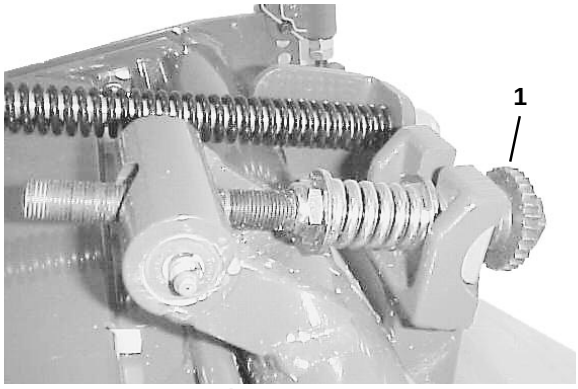



**Figure 6**
1. Bedknife adjusting knob

**3.** Insert a 3-cm wide piece of newspaper perpendicular to the bedknife, and then turn the reel slowly in the mowing direction to see if the reel cuts the paperódo this on both ends of the bedknife (Fig. 7).

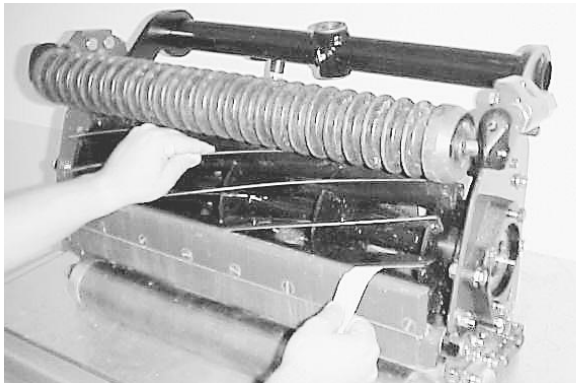


**Figure 7**

**4.** If paper is cut on both ends, the bedknife is parallel to the reel. If not go to steps 5 through 8.

**NOTE:** If the reel makes contact on both sides of the bedknife but still does not cut paper, the cutting unit may need to be backlapped (refer to Backlapping) and/or reel and bedknife may need to be reground (refer to Toro manual for Sharpening Reel and Rotary Mowers, Form No. 80-30OPT).

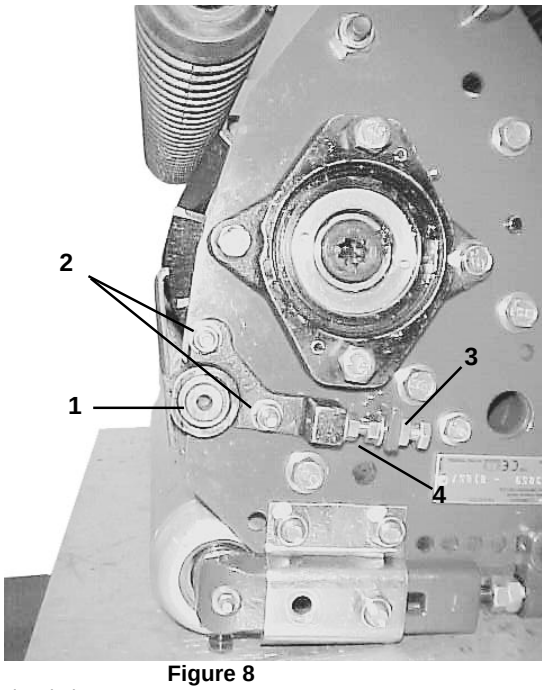



**Figure 8**

1. Pivot hub
2. Pivot hub locknuts
3. Top adjusting nut
4. Bottom adjusting nut

**5.** Loosen the pivot hub lock nuts to allow movement of the pivot hub (Fig. 8).

**6.** If the paper was not cut on the left side: loosen the bottom adjusting nut on the pivot hub, then turn the top adjusting nut clockwise to pull the pivot hub up. OR If paper was not cut on the right side: loosen the top adjusting nut on the pivot hub, then turn the bottom adjusting nut counterclockwise to push the pivot hub down (Fig. 8).

**NOTE:** To reduce thread play, always tighten the bottom adjusting nut last.

**7.** Recheck the reel-to-bedknife contact on both ends of the bedknife, and repeat step 6 as necessary.

**NOTE:** Reel-to-bedknife contact may become too tight or too loose after the previous adjustment, therefore, turn the bedknife adjustment knob, accordingly, for lighter contact.

**8.** Retighten the pivot hub lock nuts.

**NOTE:** Recheck whether the paper still cuts on both ends of the reel to insure the bedknife did not move when tightening the pivot hub lock nuts.

## B. SETTING CUTTING UNIT ATTITUDE

**IMPORTANT: Cutting unit "attitude" has a significant impact on the performance of the cutting unit. Attitude refers to the angle of the knife relative to the ground (Fig. 8). Adjustable front and rear brackets allow for variable adjustment of the cutting unit attitude within the height-of-cut range. All cutting units on a machine must be set to the same attitude. If they arenít, the after-cut appearance will be negatively affected.**

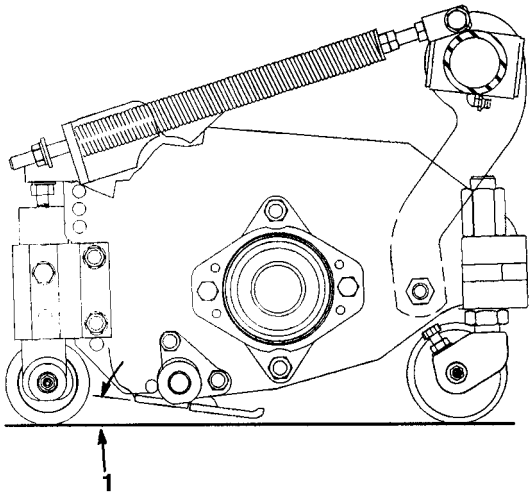



**Figure 9**

1. Attitude

The best cutting unit attitude depends on your turf conditions and desired results. Experience with the cutting unit on your turf will determine the best setting to use. Cutting unit attitude can be adjusted throughout the cutting season to allow for various turf conditions.

In general, less aggressive attitudes (example: 2 degrees) are more appropriate for warm season grasses while cool season grasses may require more aggressive attitudes (example: 6 degrees). More aggressive attitudes cut more grass off by allowing the spinning reel to pull more grass up into the bedknife. An angle that is too flat (attitude less than 1 degree) may allow the bedbar or other parts of the cutting unit to drag in the turf causing tufting. Therefore, minimum recommended attitude is 1 degree.

For setting consistent cutting unit attitude, Toro strongly recommends using a two-screw gauge bar, Toro part no.

98-1852 (Fig. 10). The first screw is set for height of cut, and the second screw is set for cutting unit attitude. The second screw setting is an easy method of transferring cutting unit attitude to all cutting units on a machine.

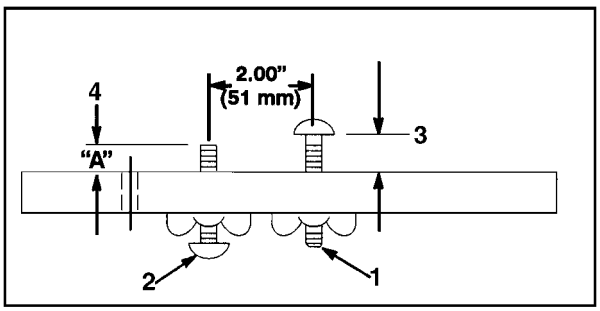



**Figure 10**

1. 1st screw
2. 2nd screw
3. Height-of-cut setting
4. Attitude

**NOTE:** The third hole is not used for RM6000 cutting units.

## SETTING ATTITUDE FOR NEW CUTTING UNITS:

Table 1 lists dimensions for setting up a new cutting unit with attitudes of 2, 4, 6 and 8 degrees.

**NOTE:** The second screw setting will change throughout the life of the bedknife and reel due to wear even if the height of cut is not changed. Therefore, after initial set up use Checking and Adjusting Attitude for Used Cutting Unit procedure.

**1.** Using a two-screw gauge bar, Toro part no. 98-1852, set the first screw to the desired height of cut. This setting is from the bar face to the underside of the screw head (Fig. 10).

**2.** Set the front bracket height “B” using the approximate dimension given by Table 1. This measurement is between the bottom surface of the middle casting and the top surface of the rod casting (Fig. 11).

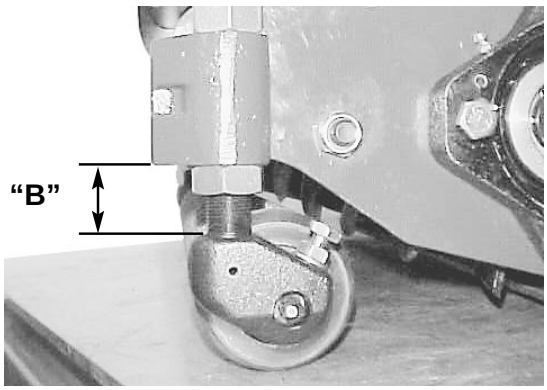



**Figure 11**

**3.** Set the rear support bracket and side plate using the approximate dimensions given by Table 1. The rear support bracket is either in the top or bottom location, and the side plate location can be in holes 1 through 4, with 1 being the top hole (Fig. 12).

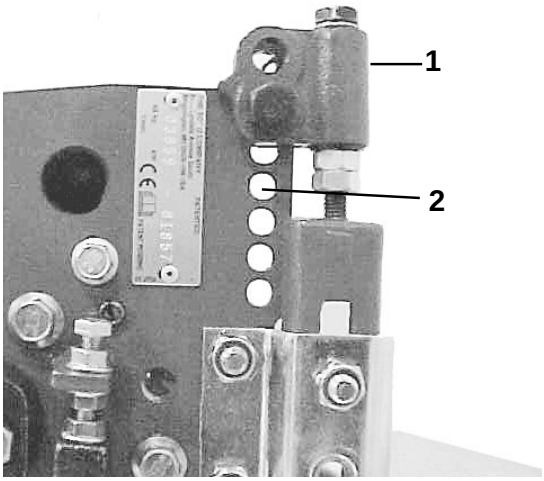



**Figure 12**

1. Rear support bracket
2. Side plate holes

**4.** With the cutting unit rotated vertical, place gauge bar across front and rear rollers. The first screw head should fit snugly over the edge of the bedknife. The end of the second screw should contact the bottom of the bedknife (Fig. 13). If there is a gap between the front roller and the gauge bar, lower the front roller until it contacts the gauge bar. Verify front roller (attitude) at each end of the bedknife.

**NOTE:** At this time leave a small gap between the rear roller and gauge bar.

## TABLE 1—NEW CUTTING UNIT SET-UP GUIDE

| Desired Height of Cut | | Desired Attitude | 2nd Screw "A" (Fig. 14) | | Front Roller "B" (Fig. 11) | | Rear Support Bracket Hole (Fig. 12) | Side Plate Hole (fig. 11) |
|---|---|---|---|---|---|---|---|---|
| Height-of-Cut (HOC) | | Attitude | A (Fig. 13) | | B (Fig. 10) | | Bracket Hole (Fig. 11) | Hole (Fig. 11) |
| (in) | (mm) | (degrees) | (in) | (mm) | (in) | (mm) | (location) | (location) |
| 0.375 | (10) | 2* | 0.180 | 4.6 | 0.901 | 22.9 | Bottom | 1st |
| | | 4* | 0.231 | 5.9 | 0.696 | 17.7 | Bottom | 1st |
| | | 6* | – | – | – | – | – | – |
| | | 8* | – | – | – | – | – | – |
| 0.500 | (13) | 2* | 0.299 | 7.6 | 1.020 | 25.9 | Bottom | 1st |
| | | 4* | 0.356 | 9.0 | 0.820 | 20.8 | Bottom | 2nd |
| | | 6* | 0.414 | 10.5 | 0.621 | 15.8 | Bottom | 2nd |
| | | 8* | – | – | – | – | – | – |
| | | 2 | 0.228 | 5.8 | 1.109 | 28.2 | Bottom | 1st |
| | | 4 | 0.285 | 7.2 | 0.909 | 23.1 | Bottom | 1st |
| | | 6 | 0.342 | 8.7 | 0.707 | 18.0 | Bottom | 2nd |
| | | 8 | – | – | – | – | – | – |
| 0.625 | (16) | 2 | **0.353** | **9.0** | **1.233** | **31.3** | **Bottom** | **1st** |
| | | 4 | 0.410 | 10.4 | 1.034 | 26.3 | Bottom | 2nd |
| | | 6 | 0.467 | 11.9 | 0.832 | 21.1 | Bottom | 2nd |
| | | 8 | – | – | – | – | – | – |
| 0.750 | (19) | 2 | 0.478 | 12.1 | 1.358 | 34.5 | Bottom | 1st |
| | | 4 | 0.535 | 13.6 | 1.158 | 29.4 | Bottom | 2nd |
| | | 6 | 0.592 | 15.0 | 0.957 | 24.3 | Top | 1st |
| | | 8 | 0.650 | 16.5 | 0.756 | 19.2 | Top | 1st |
| 0.875 | (22) | 2 | 0.603 | 15.3 | 1.482 | 37.6 | Bottom | 2nd |
| | | 4 | 0.660 | 16.8 | 1.283 | 32.6 | Bottom | 2nd |
| | | 6 | 0.717 | 18.2 | 1.082 | 27.5 | Top | 1st |
| | | 8 | 0.775 | 19.7 | 0.881 | 22.4 | Bottom | 3rd |
| 1.000 | (25) | 2 | 0.728 | 18.5 | 1.606 | 40.8 | Bottom | 2nd |
| | | 4 | 0.785 | 19.9 | 1.408 | 35.8 | Top | 1st |
| | | 6 | 0.842 | 21.4 | 1.207 | 30.7 | Bottom | 3rd |
| | | 8 | 0.900 | 22.9 | 1.006 | 25.6 | Bottom | 3rd |
| 1.125 | (29) | 2 | 0.853 | 21.7 | 1.731 | 44.0 | Bottom | 2nd |
| | | 4 | 0.910 | 23.1 | 1.533 | 38.9 | Top | 1st |
| | | 6 | 0.967 | 24.6 | 1.332 | 33.8 | Bottom | 3rd |
| | | 8 | 1.025 | 26.0 | 1.131 | 28.7 | Top | 2nd |
| 1.250 | (32) | 2 | 0.978 | 24.8 | 1.855 | 47.1 | Bottom | 2nd |
| | | 4 | 1.035 | 26.3 | 1.657 | 42.1 | Top | 1st |
| | | 6 | 1.092 | 27.7 | 1.457 | 37.0 | Bottom | 3rd |
| | | 8 | 1.150 | 29.2 | 1.256 | 31.9 | Top | 2nd |
| 1.375 | (35) | 2 | 1.103 | 28.0 | 1.980 | 50.3 | Top | 1st |
| | | 4 | 1.160 | 29.5 | 1.782 | 45.3 | Bottom | 3rd |
| | | 6 | 1.217 | 30.9 | 1.582 | 40.2 | Top | 2nd |
| | | 8 | 1.275 | 32.4 | 1.381 | 35.1 | Top | 2nd |
| 1.500 | (38) | 2 | 1.228 | 31.2 | 2.104 | 53.4 | Top | 1st |
| | | 4 | 1.285 | 32.6 | 1.907 | 48.4 | Bottom | 3rd |
| | | 6 | 1.342 | 34.1 | 1.707 | 43.4 | Top | 2nd |
| | | 8 | 1.400 | 35.6 | 1.506 | 38.3 | Top | 4th |
| 1.625 | (41) | 2 | – | – | – | – | – | – |
| | | 4 | 1.410 | 35.8 | 2.032 | 51.6 | Top | 2nd |
| | | 6 | 1.427 | 36.2 | 1.832 | 46.5 | Bottom | 4th |
| | | 8 | 1.525 | 38.7 | 1.631 | 41.4 | Bottom | 4th |
| 1.750 | (45) | 2 | – | – | – | – | – | – |
| | | 4 | 1.535 | 39.0 | 2.156 | 54.8 | Top | 2nd |
| | | 6 | 1.592 | 40.4 | 1.957 | 49.7 | Bottom | 4th |
| | | 8 | 1.650 | 41.9 | 1.756 | 44.6 | Top | 3rd |

•Optional Low-Cut Bedknife, Toro part no. 93-9774, is required for a height of cut below 13mm

NOTE: For front roller distances ("B") greater than 38 mm, switch the long and short adjusting nut locations for better support (fig. 11)

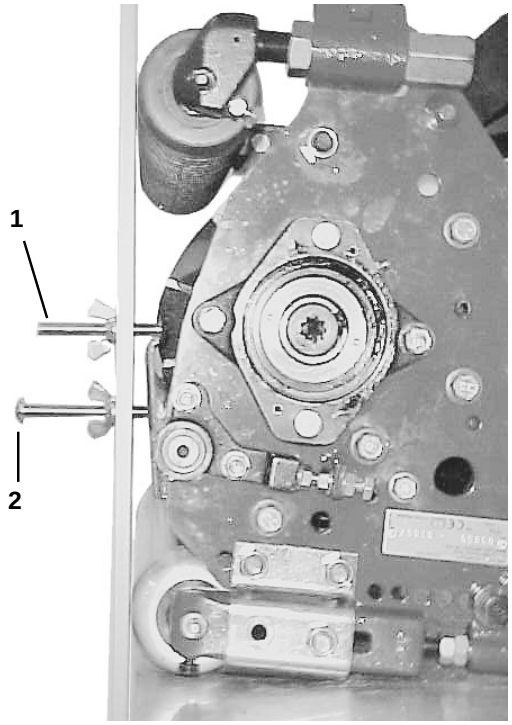



**Figure 13**

1. 1st screw
2. 2nd screw

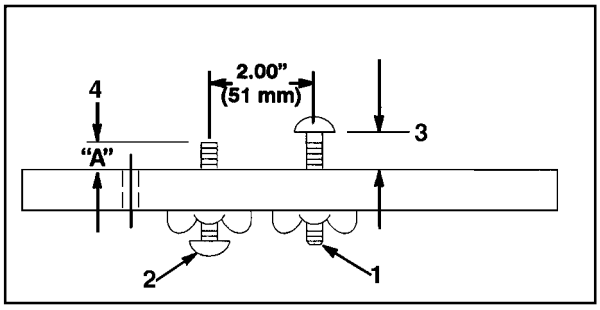



**Figure 14**

1. 1st screw
2. 2nd screw
3. Height-of-cut setting
4. Attitude

## CHECKING OR ADJUSTING ATTITUDE FOR USED CUTTING UNITS

**NOTE:** As a starting point for adjusting cutting unit attitude, the cutting unit may be set up using the dimensions from TABLE 1. However, because of wear on the bedknife and reel, either the First or Second Method must be used to insure the correct setting of the attitude.

### FIRST METHOD (Angle Indicator):

**1.** Rotate the cutting unit backward to gain access to the reel and bedknife.

**2.** Place an angle indicator, Toro part no. 99-3503, on the bedknife and record the bedknife angle (Fig. 15).

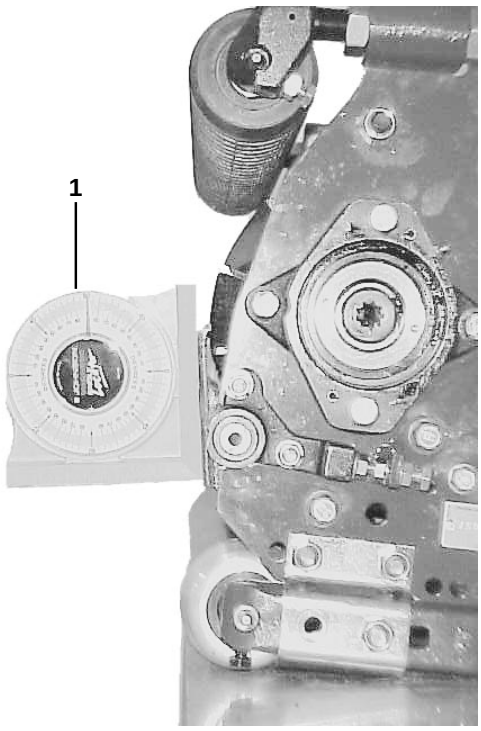



**Figure 15**

1. Bedknife angle

**3.** Using a two-screw gauge bar, Toro part no. 98-1852, set the first screw to desired height of cut.

**4.** Place the gauge bar across the front and rear rollers. The first screw head needs to fit snugly over the edge of the bedknife, while the gauge bar contacts the front roller (Fig. 16).

**NOTE:** The rear roller does not have to contact the gauge bar.

**5.** Place an angle indicator on the gauge bar and record the gauge bar angle (Fig. 16).

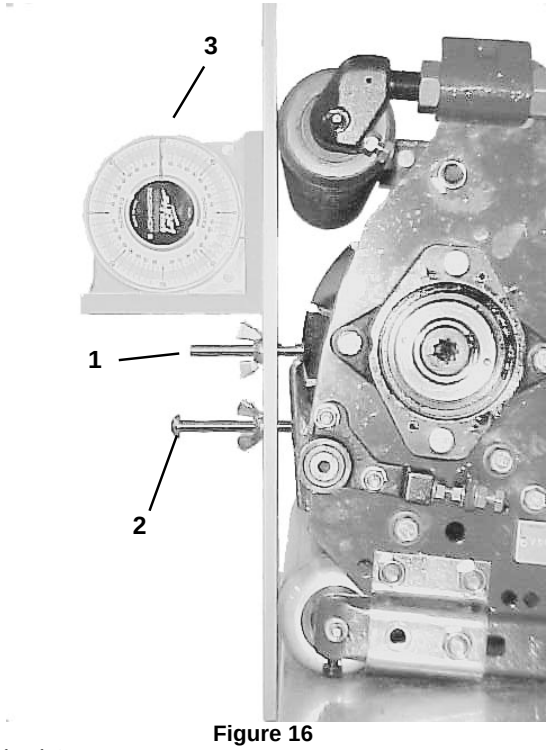



**Figure 16**

1. 1st screw
2. 2nd screw
3. Gauge bar angle

6. **Bedknife Angle (step 2)**
   **– Gauge Bar Angle (step 5)**
   **= Cutting Unit Attitude (degrees)**

7. Adjust the front roller to your desired cutting unit attitude.

   **NOTE:** Moving the front roller down will decrease your cutting unit attitude, while moving the front roller up will increase cutting unit attitude.

8. Set the second screw to transfer your desired cutting unit attitude to the remaining cutting units on the machine.

## SECOND METHOD (Screw Height Difference):

1. Rotate the cutting unit backwards to gain access to reel and bedknife.

2. Using a two-screw gauge bar, Toro part no. 98-1852, set the first screw to the desired height of cut.

3. Place the gauge bar across the front and rear rollers. The first screw head needs to fit snugly over the edge of the bedknife, while the gauge bar contacts the front roller (Fig. 17).

   **NOTE:** The rear roller does not have to contact the gauge bar.

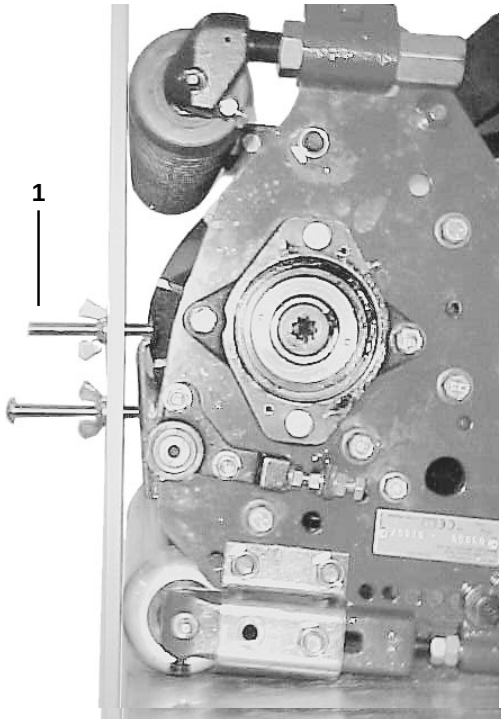



**Figure 17**

1. 1st screw

4. Switch first screw on the gauge bar so both screw heads are pointed in the same direction (Fig. 18).

5. Place the gauge bar on the bedknife so both screws contact the bedknife while the gauge bar contacts the front and rear rollers (Fig. 18).

   **NOTE:** Both screws must contact the flat surface of the bedknife.

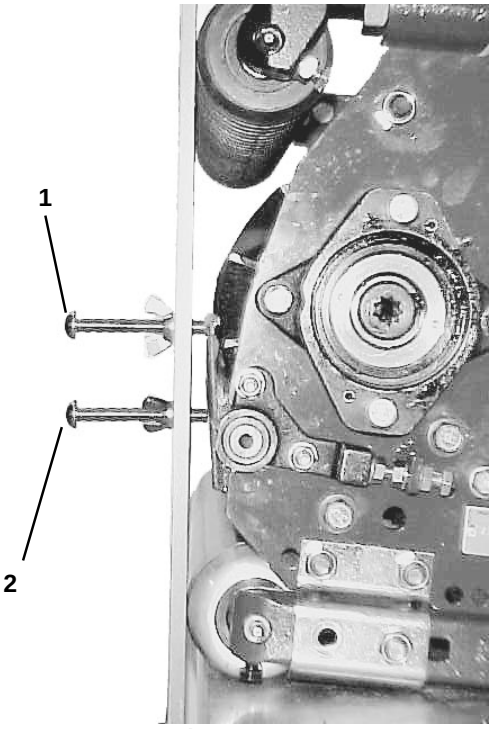



**Figure 18**

1. 1st screw
2. 2nd screw

**6.** Using a vernier caliper, measure the height of the first and second screw. This measurement is from the bar face to the end of the screw (Fig. 19).

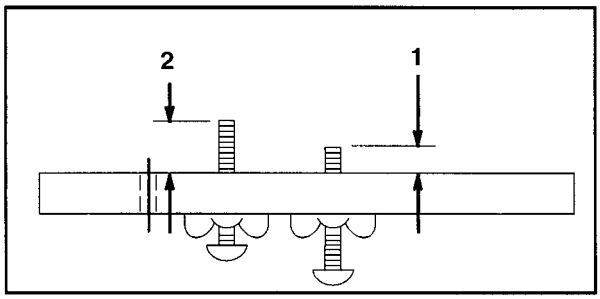



**Figure 19**

1. 1st screw height
2. 2nd screw height

**7.** **Second Screw Height**
**– First Screw Height**
**= Screw Height Difference**

**8.** Using Table 2, adjust the second screw to your desired cutting unit attitude.

**TABLE 2—USED CUTTING UNIT SET UP GUIDE**

| Attitude (degrees) | Screw Height Difference (in) | (mm) |
|---|---|---|
| 1 | 0.028 | 0.72 |
| 2 | 0.057 | 1.44 |
| 3 | 0.085 | 2.16 |
| 4 | 0.114 | 2.89 |
| 5 | 0.142 | 3.61 |
| 6 | 0.171 | 4.34 |
| 7 | 0.200 | 5.07 |
| 8 | 0.228 | 5.80 |

**9.** Put the first screw back to the normal position (screw head hooks over bedknife) and set to desired height cut (Fig. 17)

**10.** Place the gauge bar across front and rear rollers. While the first screw head fits snugly over edge of the bedknife and the second screw contacts the bedknife, adjust the front roller until contacts the gauge bar (Fig. 17).

**11.** Use your gauge bar to set the cutting unit attitude to of the remaining cutting units on the machine.

## C. LEVELING THE FRONT ROLLER

**IMPORTANT: Toro strongly recommends the use of a leveling plate when setting up or adjusting any reel-type cutting unit. The leveling plate will help to ensure accurate and consistent adjustments. Contact your local Toro Distributor to order a leveling plate.**

**1.** Position the cutting unit on a flat surface.

**2.** Position a 1/2” (13 mm) or thicker bar under the reel blades and against the cutting edge of the bedknife. Make sure the bar covers the full length of the reel blades. The rear roller should not contact the surface (Fig. 20).

CONTACT ALONG FULL LENGTH OF FRONT ROLLER AND REEL BLADE LEVELS FRONT ROLLER TO REEL

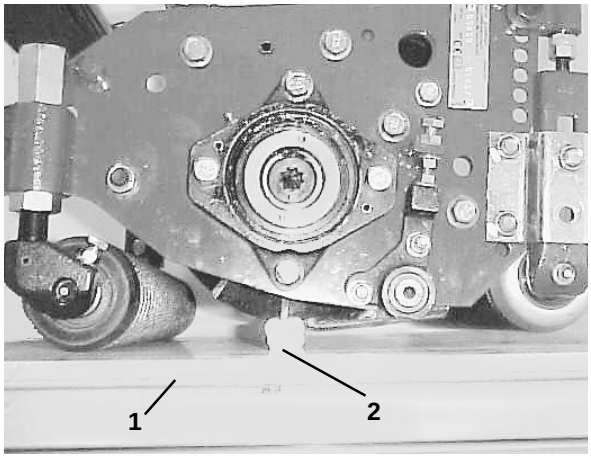



**Figure 20**

1. REF. FLAT SURFACE (1 " X 20" X 30" FLAT STOCK SUGGESTED)
2. BAR STOCK (11 " X 3/4" STOCK SUGGESTED)

**3.** Rock the cutting unit forward (on the reel blades and steel bar) until the front roller contacts the flat surface. The reel blades and bedknife must maintain contact with the bar (Fig. 20).

**4.** Adjust the front brackets until both ends of the roller are in contact with the level surface. Use a piece of newspaper or visually check whether any gap exists between the roller ends and the flat surface (Fig. 21).

**5.** Tighten the top and bottom nuts of the front roller brackets to 55–65 ft-lbs. (75-88 Nm).

**6.** Recheck roller contact with newspaper to ensure roller has not changed position and is parallel with the reel and bedknife.

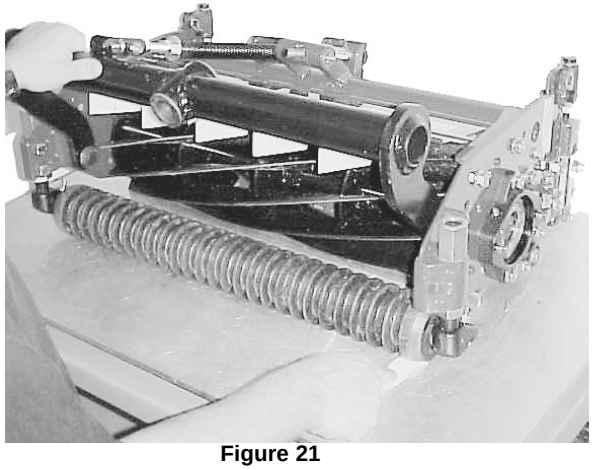


**Figure 21**

## D. FINALIZING HEIGHT OF CUT

**IMPORTANT. Adjusting (Parallel) the bedknife to the reel, setting the cutting unit attitude, and leveling the front roller must be completed before finalizing height of cut.**

**1.** Using a two-screw gauge bar, Toro part no. 98-1852, set the first screw to the desired height of cut. This setting is from the bar face to the underside of the screw head (Fig. 22).

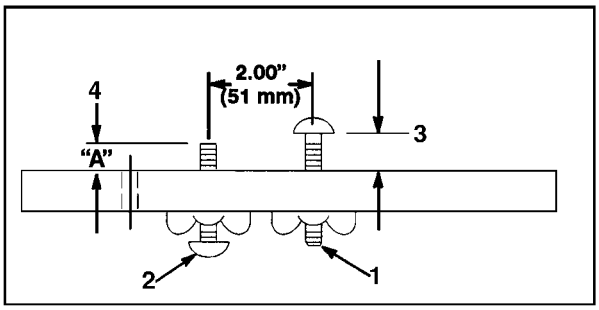



**Figure 22**

1. 1st screw
2. 2nd screw
3. Height-of-cut setting
4. Attitude

**2.** With the cutting unit rotated backward, place the gauge bar across the front and rear rollers. The first screw head should fit snugly over the edge of the bedknife and the end of second screw should contact the bottom of the bedknife (Fig. 23). Verify the rear roller (height of cut) at each end of the

bedknife.

**NOTE:** The second screw height was determined in section B: Setting Cutting Unit Attitude.

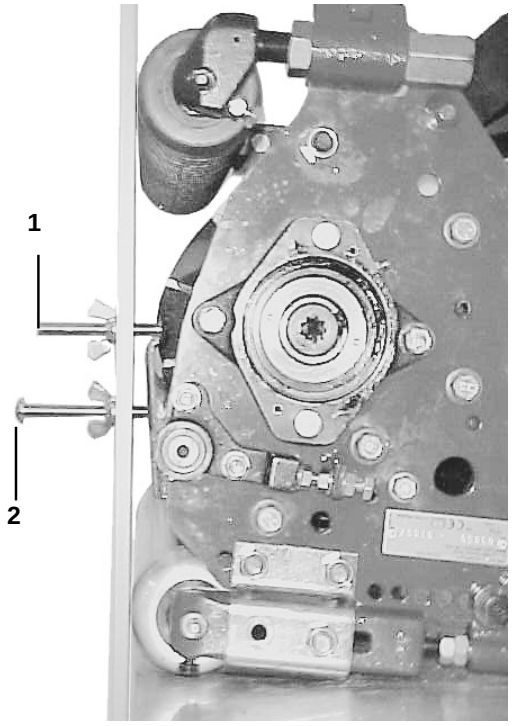



**Figure 23**

1. 1stscrew
2. 2nd screw

**3.** If there is a gap between the rear roller and the gauge bar, or if the rear roller will not let you put the gauge bar on the bedknife, proceed as follows:

**4.** Loosen the lock nuts on the rear side brackets (Fig. 24).

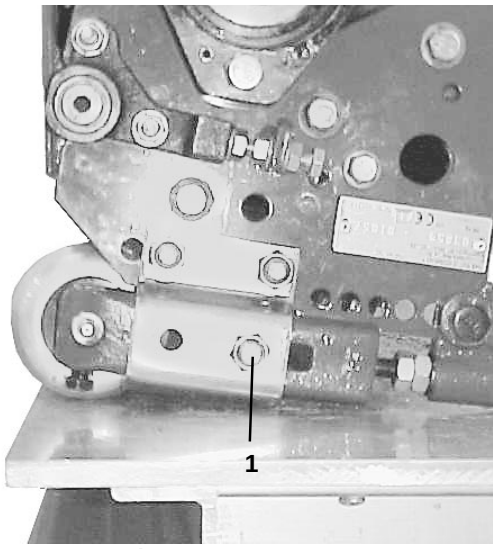



**Figure 24**

1. Locknut (both sides)

**5.** To reduce thread play, turn the rear adjusting screw clockwise until a slight gap exists between the rear roller and gauge bar. Then turn the rear adjusting screw counterclockwise until the rear roller contacts the gauge bar. After adjustment, verify that the gauge bar contacts the rear roller on both ends of the bedknife.

**NOTE:** Make sure the gauge bar is in contact with the front roller at all times to keep correct cutting unit attitude.

**6.** Slide the gauge bar toward the end of the cutting unit to remove it. The gauge bar can now be useed to set the remaining cutting units on the machine.

# Backlapping

**DANGER**

REELS MAY STALL WHILE BACKLAPPING. DO NOT ATTEMPT TO RESTART REELS BY HAND OR TOUCH REELS WHILE BACKLAPPING. STOP THE ENGINE AND TURN the height-of-cut KNOB ONE POSITION TOWARD “A’.

**NOTE:** When backlapping, the front units all operate together, and the rear units operate together.

1. Position the machine on a level surface, lower the cutting units, stop the engine, engage the parking brake, and move the Enable/Disable switch to the disable position.

2. Unlock and raise the seat to expose controls.

3. Open the control cover and turn the height-of-cut selection knob to position “P” (Fig. 25).


**Figure 25**

1. Height-of-cut Selector Knob

**NOTE:** Backlapping speed may be increased by moving the height-of-cut selection knob toward “A’. Each position will increase speed approximately 60 rpm. After changing selector, wait 30 seconds for the system to respond to the new speed target.

4. Make initial reel-to-bedknife adjustments appropriate for backlapping on all cutting units that are to be backlapped.

5. Start the engine and run it at idle speed.

**DANGER:** To avoid personal injury, never your place hands or feet in the reel area while the engine is running. Changing engine speed while backlapping may cause reels to stall. Never change engine speed while backlapping. Only backlap at idle engine speed. Never attempt to turn reels by hand or foot while the engine is running.

6. Select either the front or rear on the backlap switch to backlap either the front or rear reels.

**DANGER:** To avoid personal injury, be certain that you are clear of the cutting units before proceeding.

7. Move the Enable/Disable switch to the Enable position. Move the Lower Mow / Lift control forward to start backlapping operation on designated reels.

8. Apply lapping compound with a long-handle brush (Toro Part No. 29-9100). Never use a short handled brush (Fig. 26).

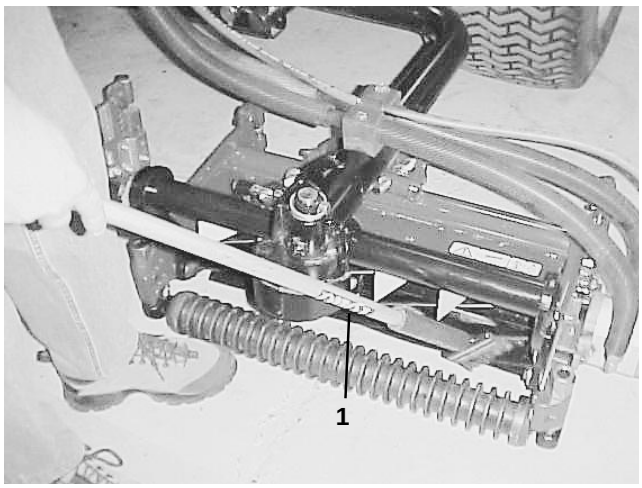



**Figure 26**

1. Long handle brush

9. If reels stall or become erratic while backlapping, the reel control light will begin to blink and the reels will turn off. If this occurs, turn the height-of-cut selection knob one position closer to “A’. Then, toggle the Enable/Disable switch to the disable position followed by the enable position. To resume backlapping, move the Lower Mow/Lift control lever forward.

10. To make an adjustment to the cutting units while

backlapping, turn reels OFF by moving the Lower Mow/Raise lever rearward; move the Enable/Disable switch to Disable and turn the engine OFF. After adjustments have been completed, repeat steps 5–9.

**11.** Backlap until a small burr develops across the entire front edge of the bedknife.

**12.** Repeat the procedure for all cutting units to be backlapped.

**13.** When backlap operation has been completed, return the backlap switch to OFF, lower the seat and wash all lapping compound off the cutting units. Adjust the cutting unit reel-tobedknife contact as needed.

**IMPORTANT. If the backlap switch is not returned to the OFF position after backlapping, the cutting units will not raise or function properly.**

# Maintenance

## LUBRICATION

Each cutting unit has (7) grease fittings (Fig. 26) that must be lubricated regularly with No. 2 General Purpose Lithium Base Grease.

The lubrication points are front roller (2), rear roller (2), reel bearing (2) and bedknife 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 cloth.

**2.** Apply grease until pressure is felt against the handle.

**NOTE:** Apply grease to reel-bearing cavities until a small amount is evident at the inboard reel seal.

**3.** Wipe away excess grease.

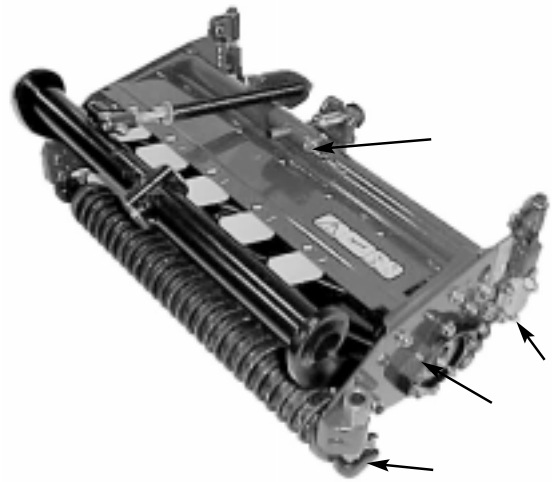


**Figure 27**

## REEL BEARING ADJUSTMENT

To insure long life of the reel bearings, periodically check if reel end play exits. The reel bearings can be checked and adjusted as follows:

**1.** Loosen reel-to-bedknife contact by turning the bedknife adjusting knob (Fig. 28) counter -clockwise until no contact exists.

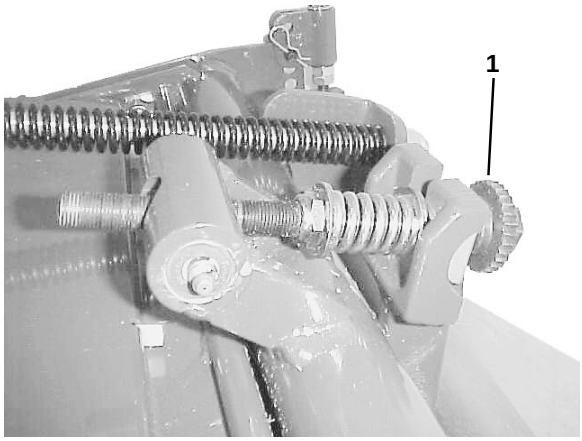



**Figure 28**

1. Bedknife adjusting knob

**2.** Hold on to the reel shaft and try to move the reel assembly side to side (Fig. 29).

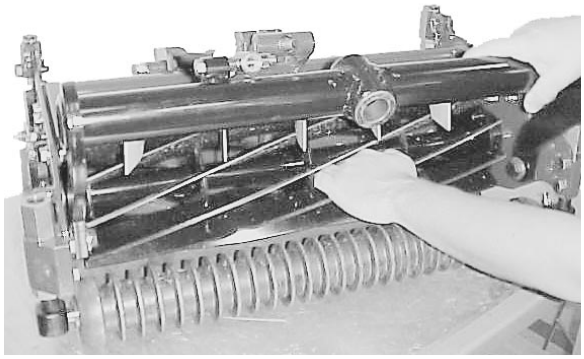


**Figure 29**

**3.** If end play exists, proceeded as follows:

**A.** Loosen the set screw securing the bearing adjusting nut to the bearing housing located on the left side of the cutting unit (Fig. 30).

**B.** Using a spanner wrench, slowly tighten the reel bearing adjustment nut until no end play of the reel exists. If the adjusting nut does not eliminate reel end play, replace the reel bearings.

**NOTE:** Reel bearings do not require pre-load. Over tightening the reel bearing adjuster nut will damage the reel bearings.

**C.** Retighten the set screw securing the bearing adjusting nut to the bearing housing.

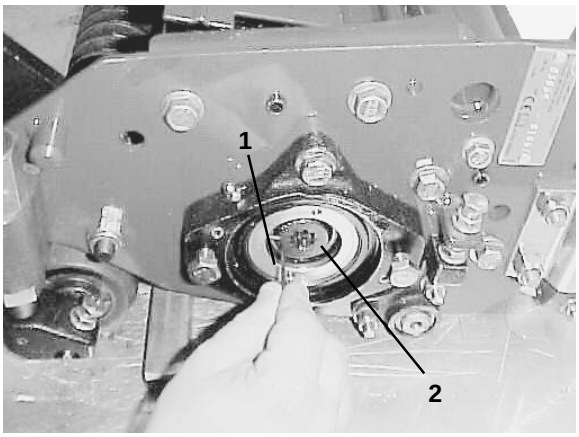



**Figure 30**

1. Set screw
2. Bearing adjusting nut

## Single-Point Spring Adjustment

If the single-point adjustment assembly (Fig. 31) is removed for servicing, make sure the spring is compressed to a length of 1.25” (32 mm). This adjustment is attained by tightening the nut on knob shaft.

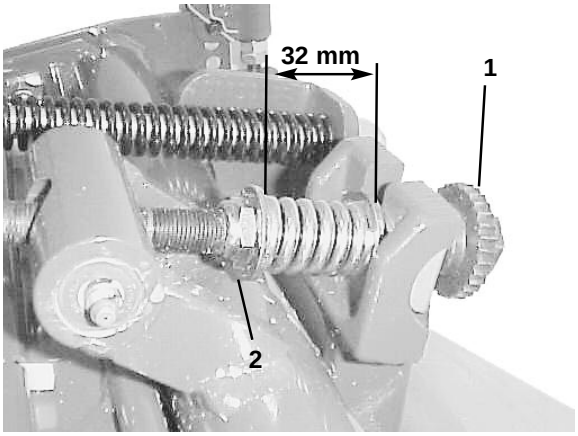



**Figure 31**

1. Single-point adjust assembly
2. Adjusting nut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