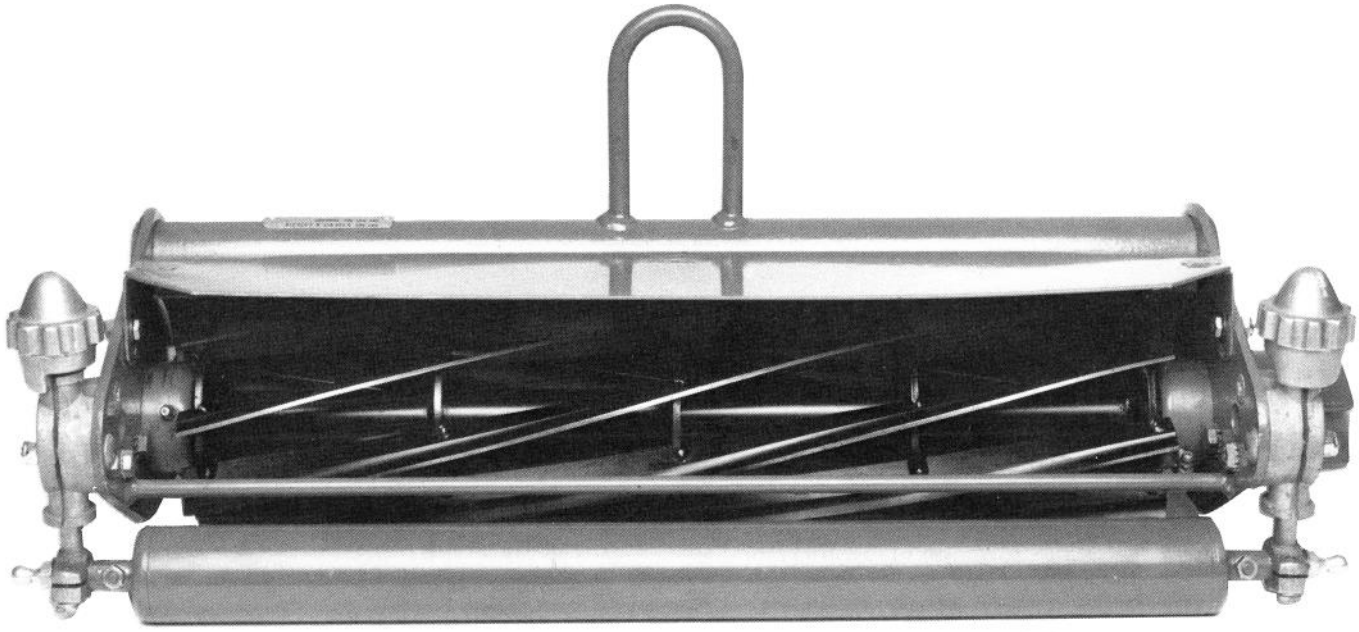
FORM NO. 3314-855

TORO®

MODEL NO. 04409 — 20001 & UP

OPERATOR'S MANUAL

GREENSMASTER® 3000 CUTTING UNIT



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LOOSE PARTS

DESCRIPTION	QTY.	USE
Ball Stud External Tooth Lockwasher — 3/8	2 2	Mount Front Roller.
Scraper/Comb Hex Nut Internal Tooth Lockwasher	1 4 4	Mount to Front Roller.
Flange Locknut	2	Mount Reel Drive Motor to Cutting Unit.
Shipment Trace Card Registration Card	1 1	

SPECIFICATIONS

CUTTING UNIT

REEL DIAMETER: 5 in. (2.7 cm).

HEIGHT OF CUT: 3/16 in. (4.76 mm) to 11/16 in. (17 mm).

REEL CONSTRUCTION: 8 blades welded to 5 spiders.

POWER: Hydraulic motor splined to reel shaft.

ROLLER ADJUSTMENT:

Front: Micrometer hand adjustment with bolted clamp lock (1 turn = 0.025 in. (0.635 mm) height of cut change).

Rear: Pivot arm change on slot in side plate with locking screw for roller/reel parallelism.

BEARINGS: timken tapered roller.

KNIFE ADJUSTMENT: Opposing screw.

OPTIONS:

Swagged Roller Kit: Model No. 04414.

Full Roller Kit: Model No. 04412.

Wiehle Roller Kit: Model No. 04423.

Rear Roller Cleaner: Part No. 42-4820.

Basket Reinforcement Kit: Part No. 26-0900.

Variable Quick Height-of-Cut Kit: Part No. 24-9400.

Quick Height-of-Cut Kit: Part No. 29-5910.

Scraper Brush Assembly: Part No. 33-1000.

Bearing Replacement Tool Kit: Part No. 23-8900.

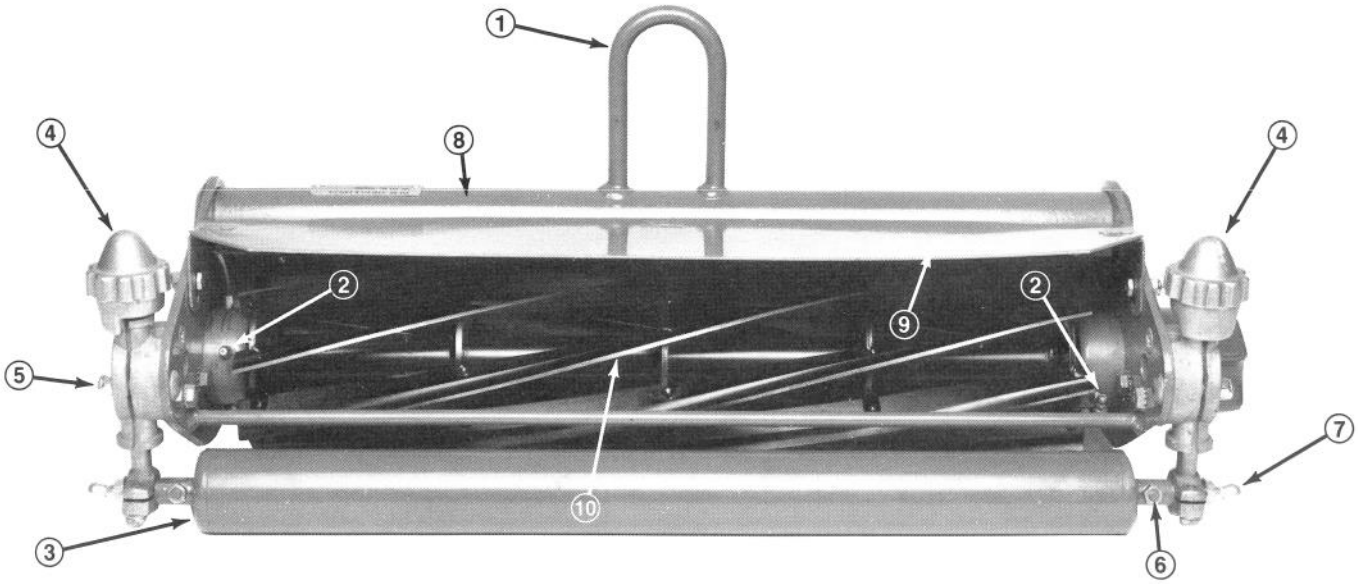
Tournament Bedknife: Part No. 63-8550.

Lo-Cut Bedknife: Part No. 63-8500.

Hi-Cut Bedknife: Part No. 62-2510.

Fairway Bedknife: Part No. 63-8610.

KNOW YOUR CUTTING UNIT



1. *Lift Bail*
2. *Grease Fittings — Reel Bearings*
3. *Grease Fittings — Roller*
4. *Height of Cut Adjustment Knob (2)*
5. *Height of Cut Adjustment Locknut*
6. *Scraper Adjusting Nut (4)*
7. *Pull Rod Studs (2)*
8. *Grass Shield*
9. *Adjustable Grass Shield Bar*
10. *Reel Assembly*

SETTING UP INSTRUCTIONS

IMPORTANT

Read the Operator's Manual thoroughly for setting up instructions. Failure to do so may result in damage to the cutting unit.

Note: Left and right sides of cutting unit refer to normal operating position.

1. The cutting unit is shipped without a front roller. Install roller using loose parts supplied with cutting unit and instructions included with roller.

2. Retain (2) flange nuts supplied in loose parts for mounting reel drive motor to cutting unit.

CHECK LIST:

1. Check for looseness in the bearings between the end plate and reel. Check looseness of bearings by moving reel laterally or axially on each end of cutting unit (see page 7, "Servicing And Adjusting The Reel Bearings").

2. Check drive end of the reel for grease. Grease to be visibly evident.

3. Insure that all nuts and bolts are securely fastened.

4. Check level of rear roller to reel: refer to Leveling Rear Roller Assembly to Reel, page 8.

ADJUSTING BEDKNIFE TO REEL

1. Adjustment of bedknife to reel is accomplished by first, loosening bottom screw on each side of cutting unit (Fig. 1), then tightening the top adjustment screw on each side of cutting unit (Fig. 2). This adjustment will position the bedknife closer to the reel blades.

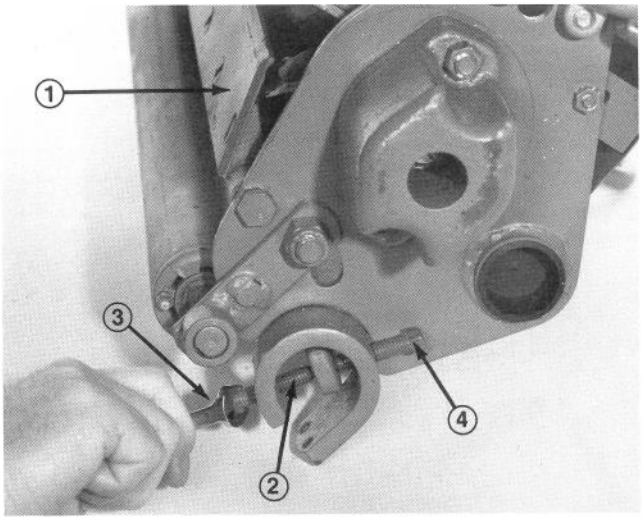


Figure 1

1. *Bedknife*
2. *Bottom Adjustment Screw*
3. *3/8 Inch Wrench*
4. *Top Adjustment Screw*

SETTING UP INSTRUCTIONS

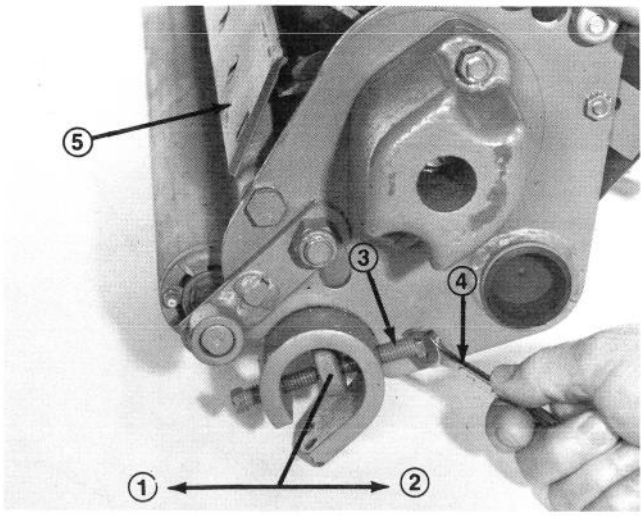


Figure 2

1. *Bedknife Closer To Reel*
2. *Bedknife Further From Reel*
3. *Top Adjustment Screw*
4. *3/8 Inch Wrench*
5. *Bedknife*

IMPORTANT: Use only a 3/8 open end wrench 3 in. to 6 in. (7.6 to 15.2 cm) in length for adjusting bedknife to reel. A longer wrench will provide too much leverage and may cause distortion of the mounting plate for the adjustment screws.

2. After adjusting bedknife to reel, make sure that both the top and the bottom adjustment screws are secured on both ends of the cutting unit (Fig. 1, 2).

3. After the adjustment is accomplished, check to see if reel can pinch paper when inserted from the front and cut paper when inserted at a right angle (Fig. 3). It should be possible to cut paper with minimum contact between the bedknife and the reel blades. Should excessive reel drag be evident (more than 7 inch pounds [0.8 N•m]) **it will** be necessary to either back lap or regrind the cutting unit to achieve the sharp edges needed for precision cutting (see Toro reel sharpening manual, Form No. 80-300PT).

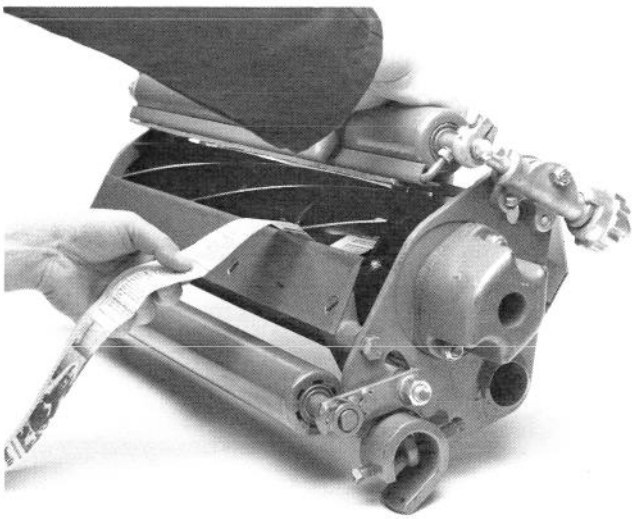


Figure 3

ADJUSTING SHIELD HEIGHT

Adjust shield to assure proper grass clipping discharge into basket:

1. Set cutting unit in normal cutting position and measure distance from top of front crossbar to shield at each end of cutting unit (Fig. 4).

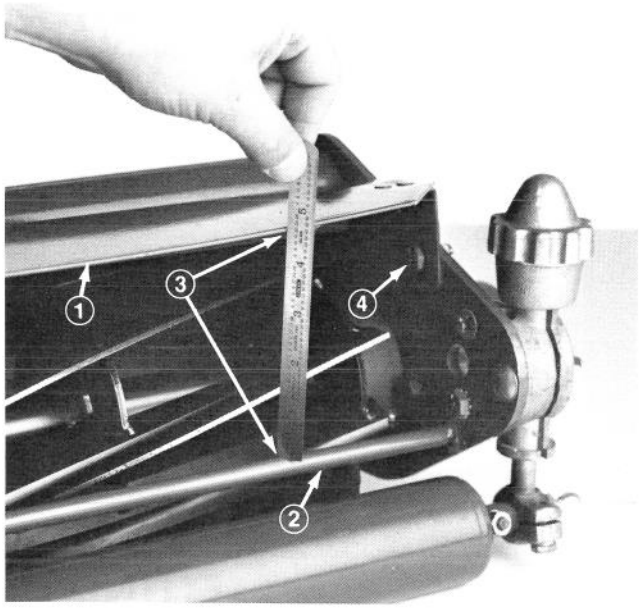


Figure 4

1. *Shield*
2. *Front Crossbar*
3. *4-3/4 Inches (12.1 cm)*
4. *Shield Fasteners*

2. Height of shield from crossbar for normal cutting conditions should be 4-3/4 inches (12.1 cm). Loosen capscrews and nuts securing shield to each side-plate, adjust shield to correct height and tighten fasteners (Fig. 4).

3. Repeat adjustment on remaining cutting units and adjust top bar: refer to Adjusting Top Bar, page 4.

NOTE: Shield can be lowered in dry grass conditions (clippings fly over top of baskets) or raised to allow for heavy wet grass conditions (clippings build up on rear edge of baskets).

ADJUSTING TOP BAR

Adjust top bar to assure clippings are cleanly discharged from reel area:

1. Loosen screws securing top bar (Fig. 5). Insert 0.060 inch (1.5 mm) feeler gauge between top of reel and bar and tighten screws (Fig. 5). Assure bar and reel are equal distance apart across complete reel.

2. Repeat settings on remaining cutting units.

NOTE: Bar is adjustable to compensate for changes in turf conditions. Bar should be adjusted closer to reel when turf is extremely wet. By contrast, adjust bar further away from reel when turf conditions are dry. Bar should be parallel to reel to assure optimum performance and should be adjusted whenever shield height is adjusted or whenever reel is sharpened on a reel grinder.

SETTING UP INSTRUCTIONS

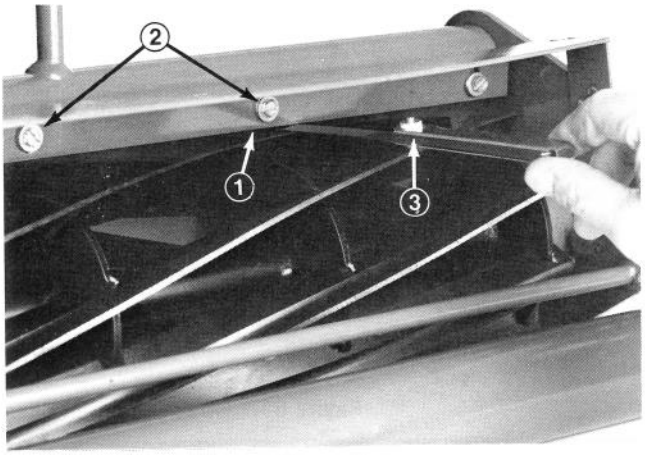


Figure 5

1. Top Bar
2. Bar Mounting Screws
3. Feeler Gauge

ADJUSTING HEIGHT OF CUT

1. For adjusting cutting unit height-of-cut 1/4 in. (6 mm) or below, set rear roller in the lowest height-of-cut position: refer to Levelling Rear Roller Assembly To Reel, page 8. To adjust the height of cut, the cutting unit should be turned over and the locknuts on each end of the cutting unit securing the height of cut adjusting knob loosened (Fig. 6).

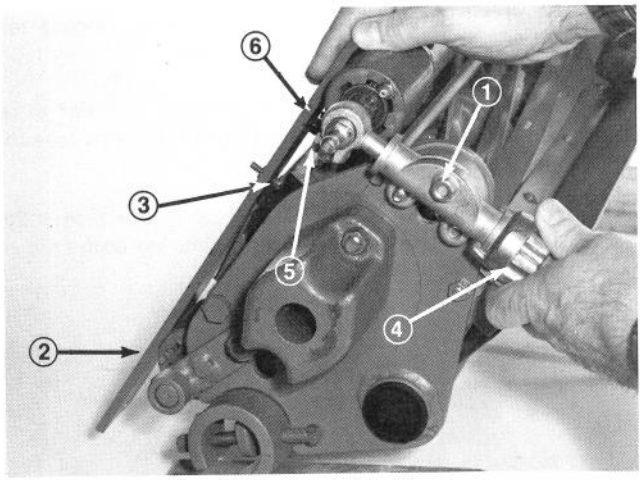


Figure 6

1. Height of Cut Knob Locknut
2. Gauge Bar (1-8789)
3. Gauge Bar Screwhead
4. Height of Cut Knob
5. Roller Shaft Clamp Bolt
6. Comb Assembly

2. On gauge bar (Part no. 1-8789), set head of screw to desired height of cut. This measurement is from bar face to underside of screw head.

3. Place the bar across the front and rear rollers and adjust the height of cut knob until the underside of the screw head engages the bedknife cutting edge (Fig. 6).

IMPORTANT: Do procedure No. 3 on each end of the bedknife. Retighten height of cut adjustment locknuts on both ends.

ADJUSTING COMB ASSEMBLY

To adjust the comb assembly, proceed as follows:

1. Assure rear roller is in the desired height-of-cut position. Loosen the bolts anchoring the front roller shaft. Rotate the shaft (Fig. 6).

2. To adjust the aggressiveness of the comb teeth, proceed as follows:
   A. Teeth touching the adjusting gauge bar gives you an aggressive setting (Fig. 6).
   B. Adjustment of the comb assembly so it is midway between the adjusting gauge bar and the cutting edge of the bedknife will provide a medium setting.
   C. Adjusting the comb assembly so it is even with the cutting edge of the bedknife will provide a light setting.

NOTE: Securing one end of the comb assembly at a time simplifies the above procedure.

3. Tighten the roller shaft bolts (Fig. 6).

FRONT ROLLER SCRAPER ADJUSTMENT

The front roller scraper should be adjusted so there is a clearance of approximately 1/32 of an inch (0.8 mm) between the scraper and roller.

LUBRICATION

There are six (6) grease fittings on each cutting unit (Fig. 7, 8). Which should be greased at least once every two weeks. Lubricate using a No. 2 multi-purpose lithium base grease. A hand operated grease gun is recommended for best results.

1. Wipe each grease fitting with a clean rag.
2. Grease reel bearings as follows:
   A. Hydraulic motor end; apply grease until pressure is felt against handle.
   B. Counterbalance end; apply grease until it starts to come through seal inside counter balance hole.
3. Apply grease to front and rear roller bearings until it begins to show around seal lips.

IMPORTANT: Do not apply too much pressure or grease seals will be permanently damaged.

4. Wipe excess grease away.

LUBRICATION

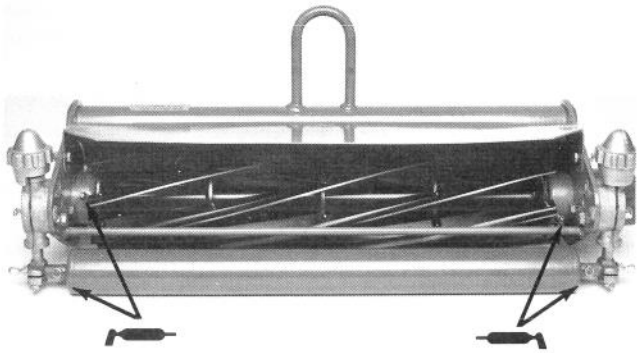


Figure 7

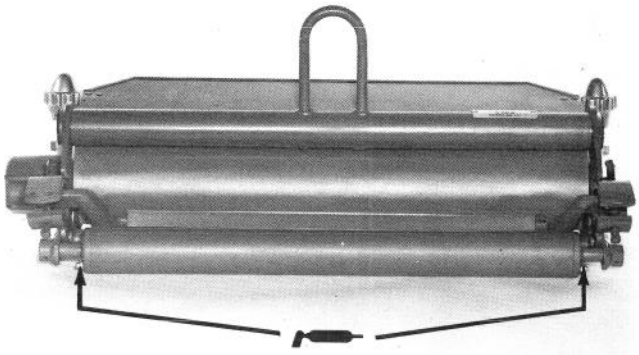


Figure 8

MAINTENANCE & ADJUSTMENTS

IMPORTANT: Reel motors must be removed before removing the cutting units to prevent hose damage due to twisting, bending, and kinking.

REEL LAPPING

Connect a lapping machine to the cutting unit with an extension coupler, and a 9/16 socket. The 9/16 socket can be positioned onto the capscrew on the reel shaft inside the counter-balance weight on the end of the cutting unit (Fig. 9). Backlap according to procedures in the TORO Sharpening Reel & Rotary Mowers Manual Form No. 80-300PT.

IMPORTANT: To assure reliable cutting performance, it is essential that the special, highly hardened reel blades and bedknives be backlapped frequently. Backlapping will be required after every 4 to 6 hours of mowing or more frequently, depending on conditions.

Note: Failure to comply with these instructions may result in excessive backlapping or even grinding being required.

CAUTION

Be careful when lapping the reel because contact with the reel or other moving parts can result in personal injury.

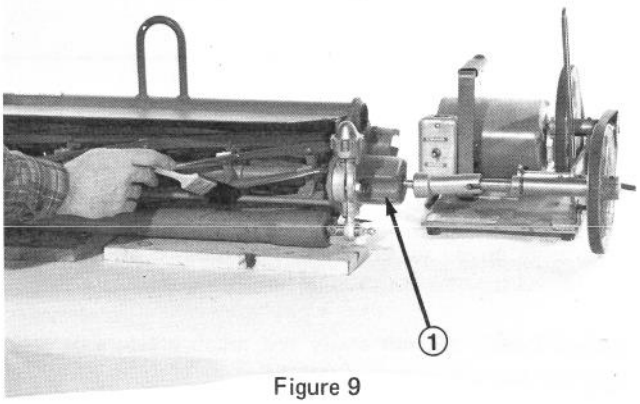


Figure 9

1. Counter Balance Weight

NOTE: For a better cutting edge, run a file across the front face of the bedknife when the lapping operation is completed. This will remove any burrs or rough edges that may have built up on the cutting edge.

REMOVING BEDKNIFE FOR GRINDING

IMPORTANT: Before removing cutting unit, remove reel motors to prevent damaging hydraulic hoses.

The rear roller assembly must be removed in order to remove the bedknife assembly for sharpening. To remove the rear roller proceed as follows:

1. Remove capscrew and nut anchoring the rear roller height-of-cut bracket to the side plate on both ends of the cutting unit (Fig. 10).

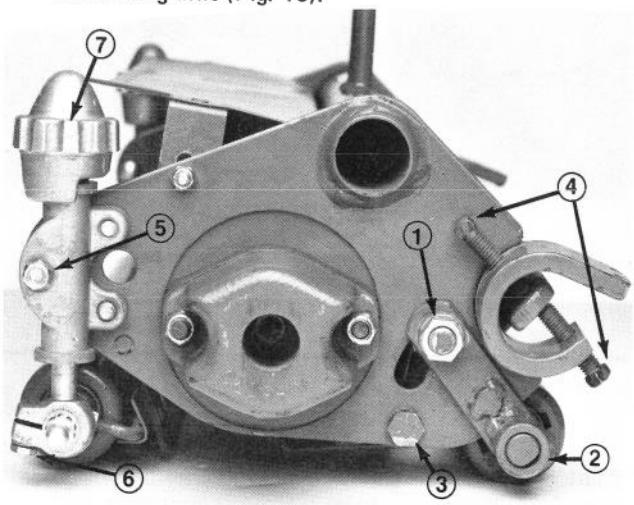


Figure 10

1. Rear Roller Height of Cut Bracket
2. Allen Set Screw
3. Bedbar Mounting Bolts
4. Bedknife Adjusting Screws
5. Height of Cut Rod Locknuts
6. Roller Shaft Clamp Bolts
7. Height of Cut Adjustment Knob

2. Loosen Allen set screws anchoring the roller shaft (Fig. 10).

MAINTENANCE & ADJUSTMENTS (Cont'd.)

REMOVING BEDKNIFE FOR GRINDING (Continued)

3. Remove the rear roller height-of-cut brackets from both side plates.

4. Remove the bedbar mounting bolts from each end of the cutting unit (Fig. 10). Then loosen the bedknife adjusting screws at each end of the cutting unit (Fig. 10). The bedknife assembly can then be removed by rotating it away from the reel.

IMPORTANT: When reinstalling the bedbar assembly, be sure to position the center portion of the grass shield over the rear edge of the bedbar (Fig. 11). Securely seat the (2) bedbar pivot bolts to a maximum of 40 ft-lbs. Always recheck bearing adjustment after reassembling bedbar.

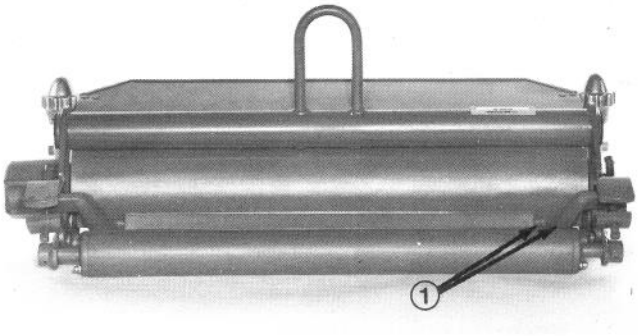


Figure 11

1. Bedbar Under Lip of Shield

NOTE: For proper grinding of bedknife, grind in accordance with procedures in the TORO Sharpening Reel & Rotary Mowers Manual Form No. 80-300PT.

PREPARING REEL FOR GRINDING

IMPORTANT: Before removing cutting unit, remove reel motors to prevent damaging hydraulic hoses.

The front roller may have to be removed so that the reel can be sharpened. To accomplish this, proceed as follows:

IMPORTANT: Some reel grinders may require that the rear roller assembly be mounted to the cutting unit for proper support in the reel grinder.

1. Loosen the locknuts securing the height of cut adjusting rods at both ends of the cutting unit and the roller shaft clamp bolts (Fig. 10).

2. Turn the height of cut adjustment knobs until they are disconnected from the height of cut adjusting rods (Fig. 10). The knobs are captivated on the upper washer face of height of cut clamp.

3. The roller assembly can then be removed from the cutting unit by pulling evenly on both sides.

4. For proper grinding of reel, grind in accordance with procedures in TORO Sharpening Reel & Rotary Mowers Form No. 80-300PT.

IMPORTANT: After grinding operation is complete, reassemble cutting unit, check bearing adjustment and adjust top shield and bar; refer to Adjusting Shield Height and Adjust Top Bar, page 4. Back lap the cutting unit to complete sharpening operation.

SERVICING AND ADJUSTING THE REEL BEARINGS

IMPORTANT: Before removing cutting unit, remove reel motors to prevent damaging hydraulic hoses.

It is recommended that a check be made periodically of the drag on the reel bearings. The reel bearings can be checked and adjusted in the following manner:

1. First, adjust the bedknife so it is not in contact with the reel.

2. The reel bearing drag should be from 7 to 11 inch pounds. This can be measured with a torque wrench (Fig. 12).

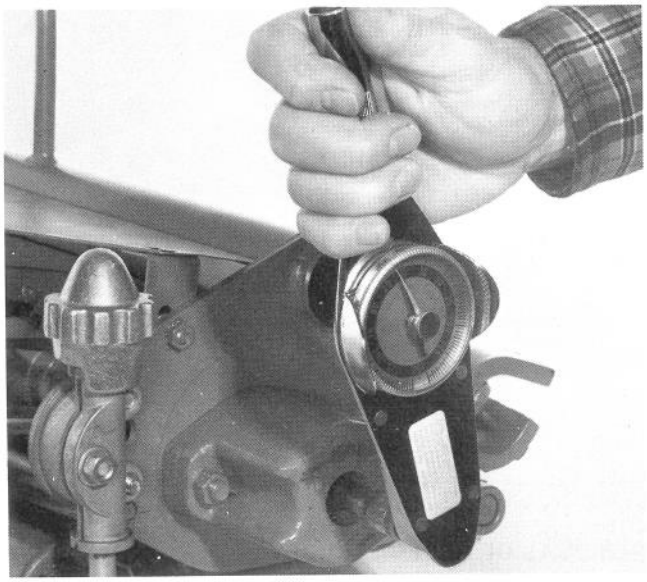


Figure 12

Should you find the bearing drag does not meet the above specification, the procedure to adjust the reel bearing drag is as follows:

1. Remove the mounting nuts from the counterbalance end cap and remove end cap from the mounting studs (Fig. 13).

2. Remove bolt mounted on the end of reel shaft. This will make it possible for a large socket wrench to be mounted on the reel bearing adjusting nut inside the side plate.

SERVICING AND ADJUSTING THE REEL BEARINGS (Continued)

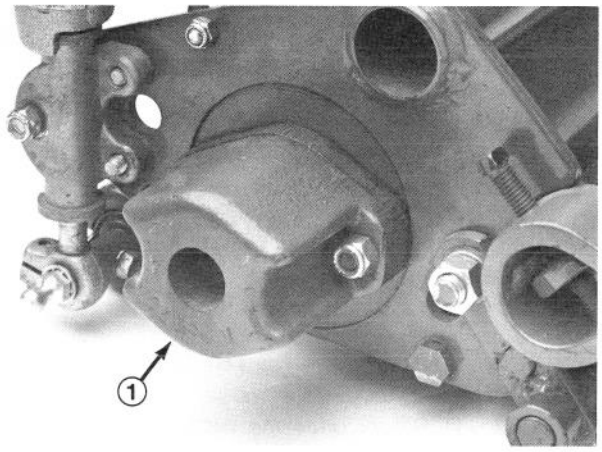


Figure 13

1. Counterbalance End Cap

3. With the wrench mounted, hold the reel and tighten the large reel bearing adjustment nut (Fig. 14). Tighten until the drag on the reel meets 7 to 11 inch-pound specification.

4. Reinstall bolt into end of the reel shaft and check the torque with an inch/pound torque wrench (Fig. 14).

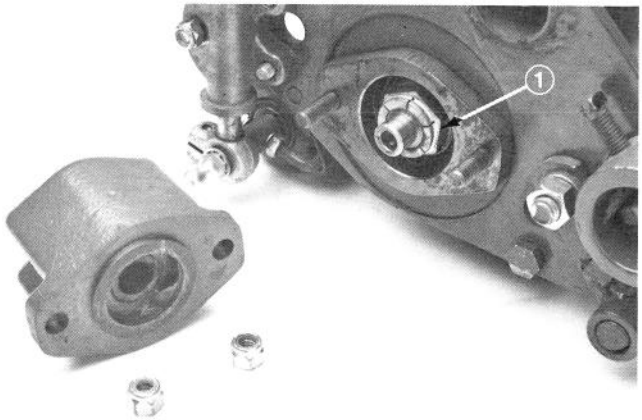


Figure 14

1. Reel bearing adjustment nut

REMOVAL OF REEL ASSEMBLY

IMPORTANT: Before removing cutting unit, remove reel motors to prevent damaging hydraulic hoses.

To remove the reel assembly, proceed as follows:

1. Remove the front and rear roller assembly.
2. Remove counterbalance End Cap (Fig. 13).
3. Remove the large bearing adjustment nut from one end of the reel shaft (Fig. 13) and the special spline nut at the opposite end of the reel shaft.
4. Remove the mounting bolts from the bearing housing; both ends of cutting unit.

IMPORTANT: Remove grease fittings from the bearing housing at each end of the cutting unit. Note that the straight fitting is on the right end, and the 90° fitting at the left end (when viewed in the direction of travel).

5. Using a plastic headed hammer, rotate bearing housing slightly, install bearing housing bolts from outside housing, turn bolts alternately against side plate and use this method to remove bearing housing (Fig. 15).

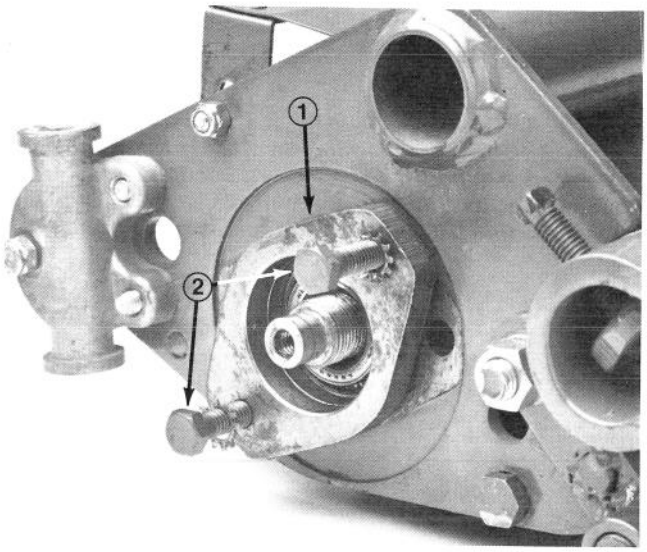


Figure 15

1. Bearing Housing - Rotate Slightly
2. Bearing Housing Mount Bolts - Thread Against Side Plate to Remove Housing

6. The bearing housing will slip out of the side plates and the reel assembly can be removed as soon as the bearing housings are disassembled from the side plates.

LEVELING REAR ROLLER ASSEMBLY TO REEL

1. Mount rear roller and height-of-cut brackets onto cutting unit. For height-of-cut settings 1/4 inch (6 mm) or below, set one bracket in the side plate to 1/8 inch (3 mm) from bottom of the slot and tighten nut on the capscrew. Leave bracket on the other side mounted loosely (Fig. 16). Above 1/4 inch (6 mm) height-of-cut, center bracket in slot and tighten nut.

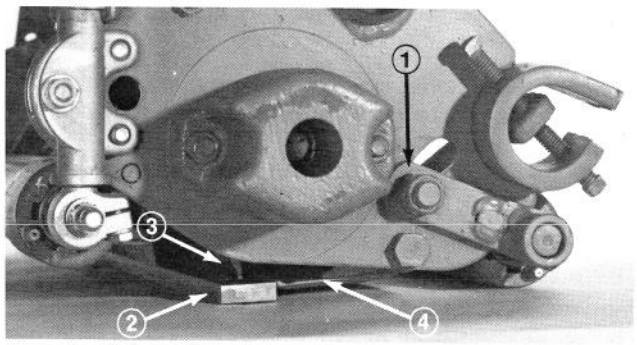


Figure 16

1. Rear Roller Bracket
2. 1/4 Inch (6 mm) Steel Plate
3. Reel Blades
4. Bedknife

MAINTENANCE & ADJUSTMENTS (Cont'd.)

LEVELING REAR ROLLER ASSEMBLY TO REEL (Cont'd)

2. Place a 1/4 inch (6 mm) or thicker plate under the reel blades and against the cutting edge of the bedknife (Fig. 16).

NOTE: Be sure the plate covers the full length of reel blades.

3. With the Cutting Unit reel blades positioned on the plate, hold Cutting Unit securely and push down on the rear roller assembly until it contacts the working surface across the full length of the roller (Fig. 17).

NOTE: This adjustment should be made on a flat working surface. If roller does not fully contact surface because bracket is bottomed out in slot, therefore hindering leveling of roller, loosen nut on roller bracket and move bracket up in slot to level roller on flat surface. Re-tighten nut and proceed to item 4.

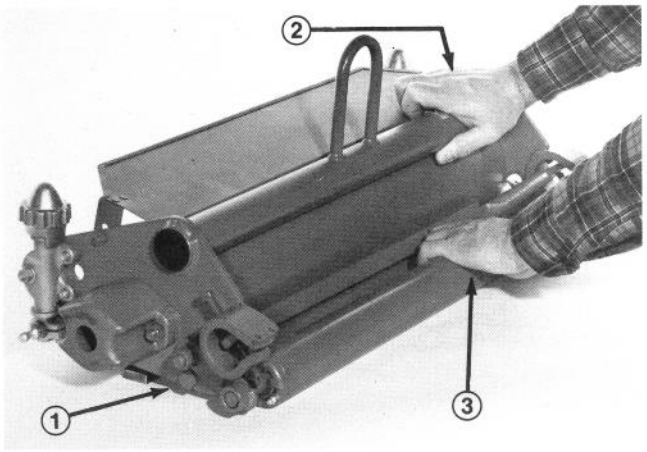


Figure 17

1. *Unit on Level Surf*
2. *Hold Unit Securely*
3. *Push Down on Roller*

4. Secure nut on outside of rear roller height-of-cut bracket to lock roller in place.

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. If all other remedies fail, you may contact us at The Toro Company.

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