



Customer Service Bulletin Commercial Business Group

Greensmaster® Flex 21 cutting units

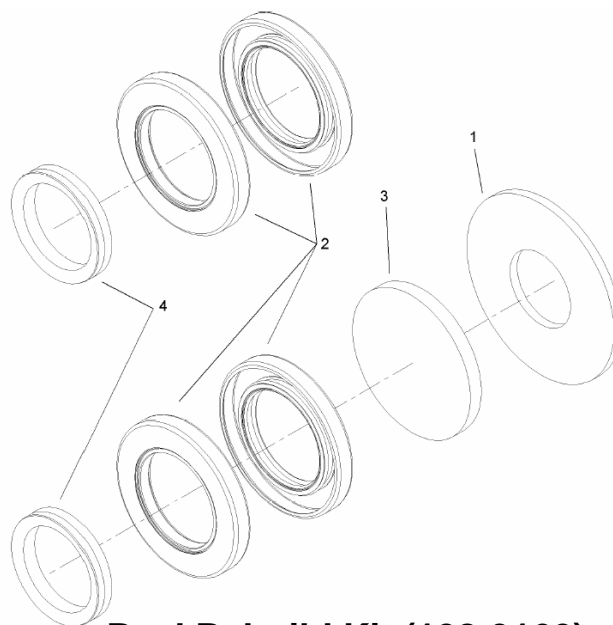
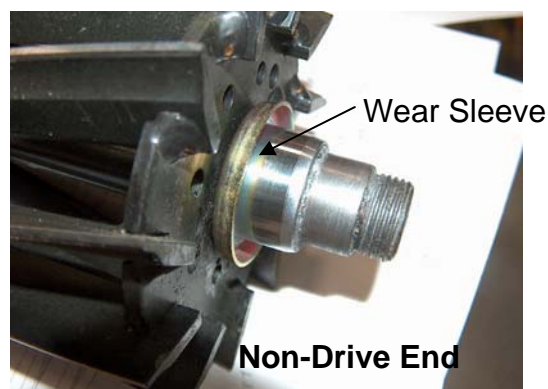
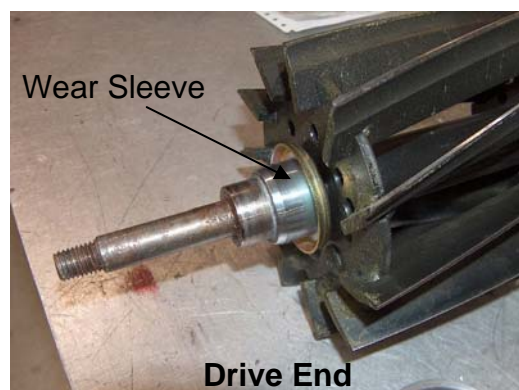
Date: January 20, 2005

Model/Serial Range: **Model Number:** **Serial Numbers:**
 04021 210000101-240000999
 04200 210000101-240000999

Subject: Upgrading Reel Seals During Service Rebuild

Reel Seal Rebuild Kit (108-3160) and some conversion parts are available to convert a unit with the original canister type seals to accept the later V-ring seal configuration. The V-ring seal configuration features reduced seal drag for improved fuel efficiency and easier installation for more successful repair results.

Installation instructions are included with the seal rebuild kit and attached to this bulletin. Nut (107-3227) and Spacer (107-3228) are needed to match the 1 ¼ inch (31.75mm) inside diameter of the new seals (was 1 ⅝ inch [28.58 mm]). Wear Sleeve (108-3150) is added over both ends of the reel shaft as shown. Install the sleeve using Sleeve Driver (TOR 4107) or a suitable tool to prevent the seal running surface from becoming damaged. This special tool is available through SPX/OTC Tool Company separately, or as part of Seal Driver and Bearing Installer Kit (TOR 4108). Note that replacement Reel 107-7635 (11 blade) and Reel 107-7634 (8 blade) already include Wear Sleeve 108-3150. Further information on this topic is available through your Toro Commercial Products Distributor.



Reel Rebuild Kit (108-3160)

Item #	Description
1	Assembly Washer
2	Seal
3	Assembly Spacer
4	V-Ring Seal



Reel Seal Rebuild Kit

Greensmaster® Flex 21

Part No. 108-3160

Form No. 3351-933 Rev. A

Installation Instructions

1. Position the mower on a flat, level work surface. Make sure the engine is OFF. Remove the spark plug wire from the spark plug.

2. Separate the cutting unit from the traction unit. Refer to the Operator's Manual for the procedure.

Note: If a grooming reel kit is installed to the cutting unit, remove the grooming reel. Refer to the Grooming Reel Operator's Manual for the procedure.

3. Remove the bedbar from the cutting unit. Refer to the Operator's Manual for the removal procedure.

4. Remove the belt cover and the reel drive belt from the left side of the cutting unit. Refer to the Operator's Manual for the procedure.

5. Block the reel with a piece of wood to prevent it from turning. Remove the flange nut securing the drive pulley to the reel shaft (Fig. 1). Remove the pulley from the shaft. Remove the woodruff key and the spacer from the reel shaft.

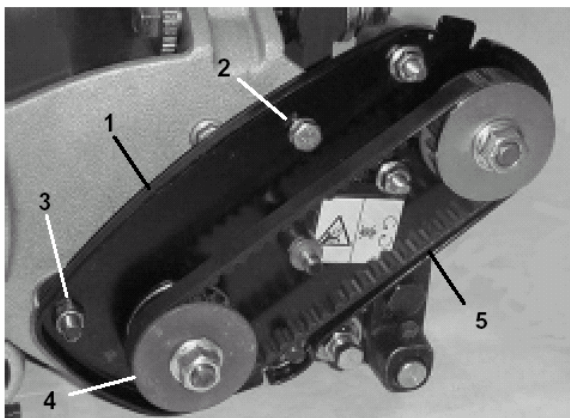


Figure 1

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|------------------------------|----------------------|
| 1. Reel drive plate assembly | 4. Reel drive pulley |
| 2. Capscrew w/lockwasher | 5. Reel drive belt |
| 3. Locknut | |
6. Loosen and remove the two locknuts, capscrew and lockwasher securing the reel drive plate assembly to the left side of the cutting unit (Fig. 1). Remove the assembly from cutting unit sideplate. Remove the spacer from behind the reel drive plate.
 7. Remove the front roller. Refer to the Operator's Manual for the removal procedure.

8. Remove the two locknuts securing the counterweight to the right end of the cutting unit (Fig. 2). Remove the counterweight.

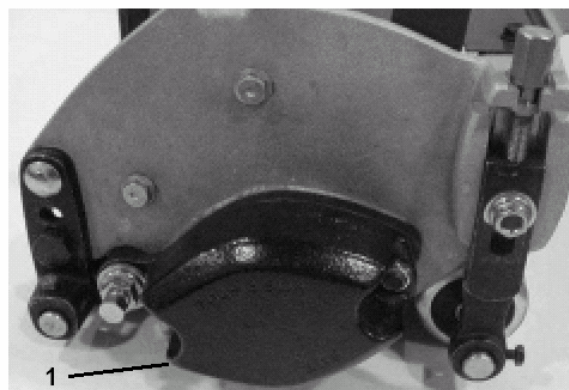


Figure 2

1. Counterweight

9. Remove the reel bearing lock nut from the right side of the reel (Fig. 3). The reel bearing lock nut has left hand threads.
10. Remove the two tapered nuts and plow bolts securing each reel bearing housing to the cutting unit side plates (Fig. 3).



Caution



Contact with the reel, bedknife, or any other cutting unit parts may result in personal injury. Use heavy gloves when handling the cutting unit.

Important

Support the reel to prevent it from falling when bearing housings are removed.

11. Remove both the oil seals from each bearing housings (Fig. 3).

12. Remove both of the bearing housings from the frame and reel. Remove the reel from the mower.

Note: If the reel bearings (Fig. 3) are worn or need replacement, refer to the Service Manual for bearing replacement instructions.

Note: When converting serials 210000101-240000999 to accept this seal kit, the following parts are also required. Previously converted units and units outside this serial range only require Reel Seal Rebuild Kit (108-3160) to service the reel.

Item 6 107-3227 Nut-Bearing, Lock
 Item 4 107-3228 Spacer-Seal
 Item 16 108-3150 Sleeve ASM (two required)

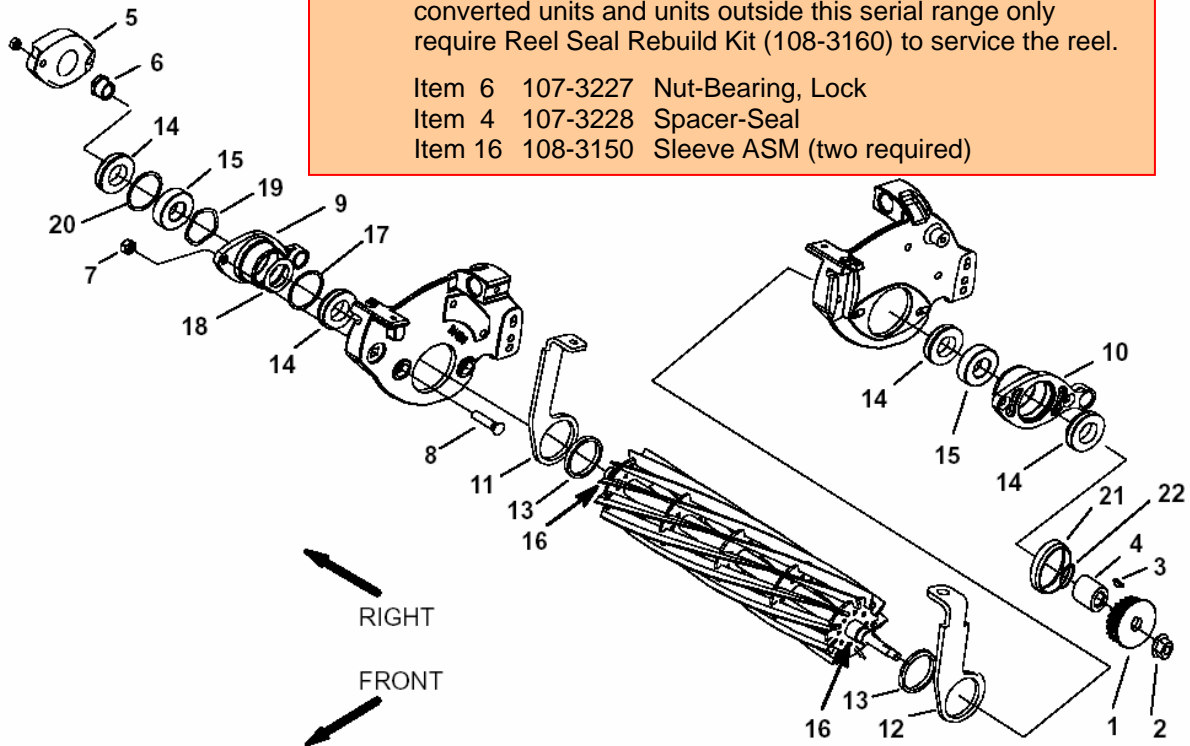


Figure 3

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|-------------------------|--------------------------|----------------------|--------------------------|
| 1. Reel drive pulley | 7. Tapered nut | 13. Bushing | 18. Washer (if required) |
| 2. Flange nut | 8. Plow bolt | 14. Oil seal | 19. Wave washer |
| 3. Woodruff key | 9. R.H. Bearing housing | 15. Reel bearing | 20. Retaining ring |
| 4. Spacer | 10. L.H. Bearing housing | 16. Bearing journals | 21. Spacer |
| 5. Counterweight | 11. R.H. Pitch arm | 17. Retaining ring | 22. Retaining ring |
| 6. Reel bearing locknut | 12. L.H. Pitch arm | | |

Note: Make sure each bearing housing cavity is approximately half full of multi-purpose grease.

13. Install the new oil seals into the bearing housings as follows:

- Insert an oil seal into each side of the bearing housing positioning them flat side out (Fig. 5).
- On bearing housings with a bore length of 1.578 inches (Fig. 4), use the large washer (included in the kit) to press each seal into the bearing housing until the washer is flush with the outer edge of the bearing housing.

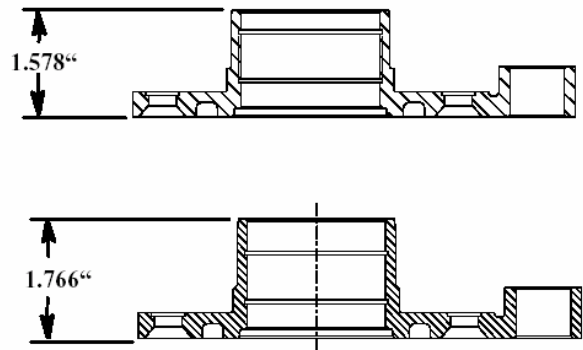


Figure 4

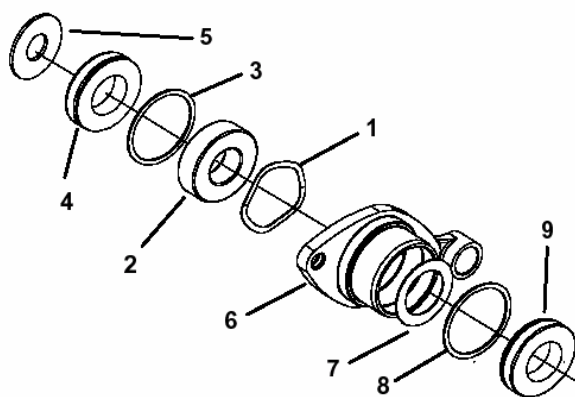


Figure 5

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|-------------------|-------------------------|
| 1. Wave washer | 6. Bearing housing |
| 2. Reel bearing | 7. Washer (if required) |
| 3. Retaining ring | 8. Retaining ring |
| 4. Oil seal | 9. Oil seal |
| 5. Large washer | |

- On bearing housings with a bore length of 1.766 inches (Fig. 4), press the inner seal into the bearing housing an additional .188" using the spacer and the large washer included in the kit (Fig. 6). The spacer is .188" thick. Remove the spacer when it is flush with the outer edge of the bearing housing.

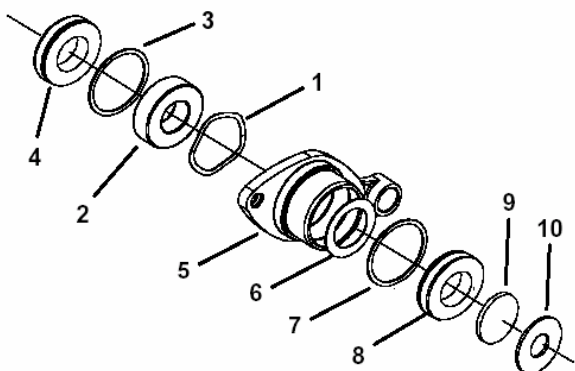


Figure 6

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|---------------------|-------------------------|
| 1. Wave washer | 6. Washer (if required) |
| 2. Reel bearing | 7. Retaining ring |
| 3. Retaining ring | 8. Oil seal (inner) |
| 4. Oil seal (outer) | 9. Spacer |
| 5. Bearing housing | 10. Large washer |

- Remove the V-ring from the sleeve on each end of the reel shaft (Fig. 7).

Note: Inspect the sleeves and replace as required. A special sleeve driver is available, contact your Toro Distributor to obtain this tool. Press a new sleeve onto the end of each reel shaft until the sleeve is flush with the step in the shaft.

Note: If replacing the reel, order part no. 107-7635 (11 blade) or 107-7634 (8 blade) which have factory installed sleeves.

- Install a new V-ring, flat side first, onto each end of reel shaft until it is completely inserted into sleeve.

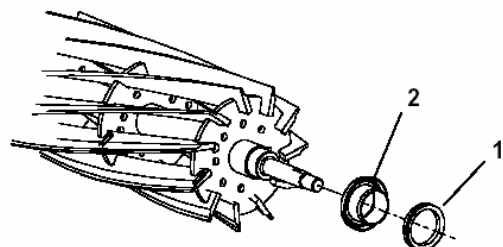


Figure 7

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|-----------|-----------|
| 1. V-Ring | 2. Sleeve |
|-----------|-----------|

- Apply anti-seize lubricant to the bearing journals of the cutting reel (Fig. 3). Position the reel with the pitch arms and the bushings in the frame to accept the bearing housings. The reel shaft end with the keyway should be on the left side of the frame.

Caution	
<p>Contact with the reel, bedknife, or any other cutting unit parts may result in personal injury. Use heavy gloves when handling the cutting unit.</p>	

- Insert both the bearing housings (Fig. 3) through the frame onto the reel shaft.

- Push the housing onto the reel shaft. If necessary, tap it into position with a soft hammer.
- Attach the bearing housing to the side plate of the cutting unit with the two plow bolts and tapered nuts. Tighten the fasteners.

Note: The reel bearing lock nut has left hand threads.

- Apply anti-seize lubricant to the internal threads of the bearing lock nut (Fig. 3). Block the reel with a piece of wood to prevent it from turning. Install and tighten the bearing lock nut to the reel shaft.

- Install the counterweight to the right side of the cutting unit with two lock nuts (Fig. 2).

20. Install the spacer in the left side reel bearing housing (Fig. 3). Mount the reel drive plate assembly to the side of cutting unit with two locknuts, capscrew, and lockwasher. Tighten the fasteners to secure the assembly.
 21. Install the spacer and woodruff key to the reel shaft (Fig. 3). Apply anti-seize lubricant to the internal bore of the drive pulley and position the pulley onto the reel shaft. Install and tighten the flange nut that secures the pulley to the reel shaft.
 22. Check for free movement of the reel assembly by rotating the pulley. If binding is noted, identify and correct the problem.
- Note:** The Flex 21 will have slightly greater reel drag, than other Toro greens mowers, due to the reel seal design.
23. Reinstall the reel drive belt to the pulley and drive assembly (Fig. 1). Adjust the drive belt tension and install the belt cover. Refer to the Operator's Manual for the adjustment procedure.
 24. Install the front roller.
 25. Reinstall the bedbar to the cutting unit.
 26. Install the cutting unit to the traction unit.