



Grooming Reel Kit Greensmaster® 3150 and 3250-D

Model No. 04630

Model No. 04631

Form No. 3353-600 Rev. A

Installation Instructions

Note: The Grooming Reel Kit can be installed on cutting unit models 04610 and 04611.

Note: The left-hand groomer drives are shown in the figures.

Setup Instructions

Loose Parts

Description	Qty. 04630	Qty. 04631
L.H. Drive Assembly	3	2
Capscrew	6	6
Shoulder Nut	6	6
Shim	3	3
R.H. Side Plate	0	1
Groomer Shaft Assembly	3	3
Driven Pulley	3	3
Key	3	3
Flange Lock Nut	3	3
Bearing	6	6
Cap Plug	3	3
Flange Lock Nut	3	3
Bushings	6	6
Drive Pulley	3	3
Screw	3	3
Washer	3	3
L.H. Adjuster Arm	3	3
R.H. Adjuster Arm	3	3
Belleville Washer	6	6
Lock Nut	6	6
Screw	6	6
Spring	3	3
Belt	3	3
L.H. Cover	3	2
R.H. Cover	0	1
Lock Nut	6	6
Installation Instructions	1	1
Parts Catalog	1	1

Important Read these instructions thoroughly before setting up or operating the groomer. Failure to follow setup or operating instructions in this manual may result in damage to the cutting unit and/or the groomer or the turf.

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

1. Separate the cutting unit from the traction unit. Refer to Operator's Manual for procedure.
2. Loosen the screws securing each end of the front roller to the height-of-cut arms (Fig. 1).

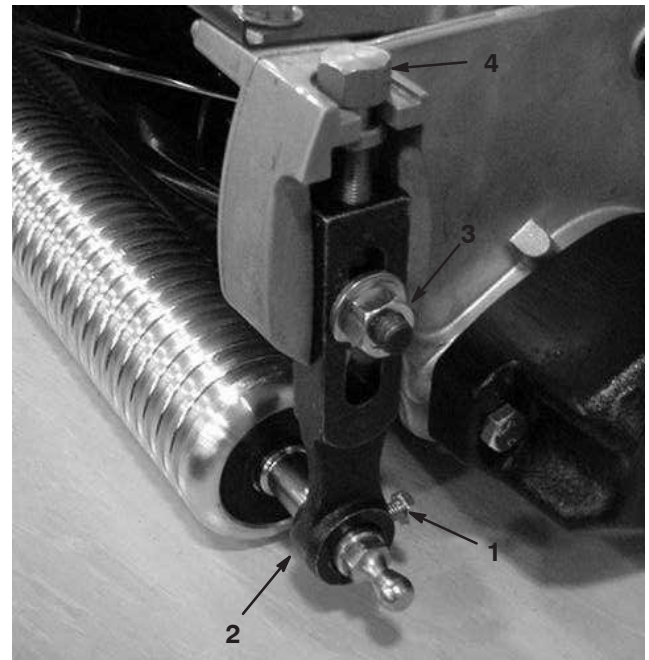


Figure 1

- | | |
|---------------------------|------------------------------------|
| 1. Roller mounting screws | 3. Carriage bolt, washer & locknut |
| 2. Height-of-cut arm | 4. Adjusting screw |

3. Remove the carriage bolts, washers and locknuts securing the height-of-cut arms to each end of cutting unit (Fig. 1). Remove the height-of-cut arms and roller assembly.

Note: Retain all parts for use if groomer is ever removed.

4. Remove the height-of-cut adjusting screws from the height-of-cut arms (Fig. 1).

5. Remove the (2) bolts and nuts securing the counterweight to the left end of the cutting unit. Remove the counterweight (Fig. 2).

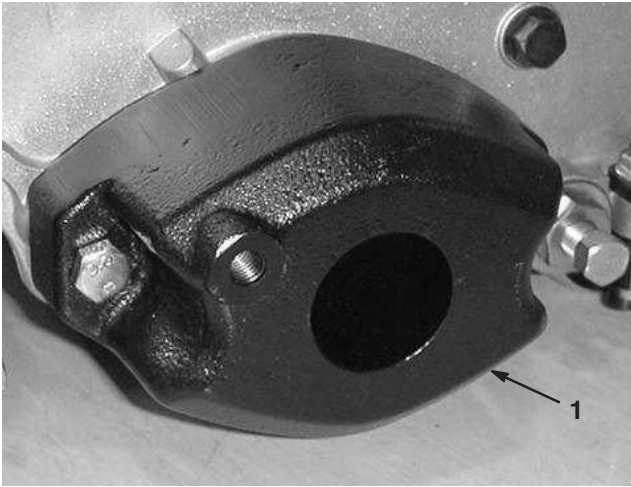


Figure 2

1. Counterweight

6. Remove the (2) allen head screws securing the motor mount to the right end of the cutting unit. Remove the motor mount (Fig. 3).

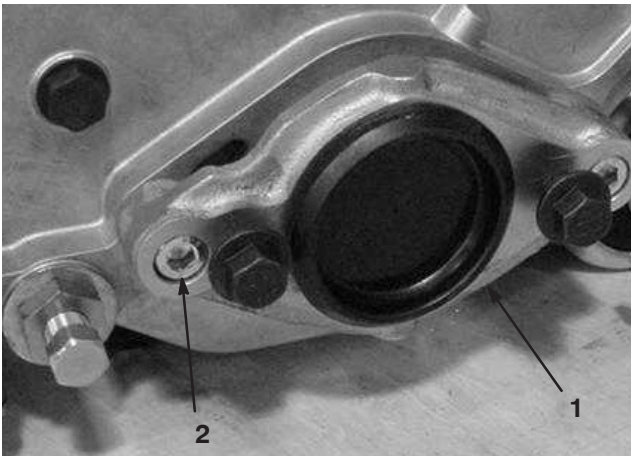


Figure 3

1. Motor mount 2. Allen head screw (2)

7. Install (2) M8 capscrews thru left sideplate as shown in figure 4.

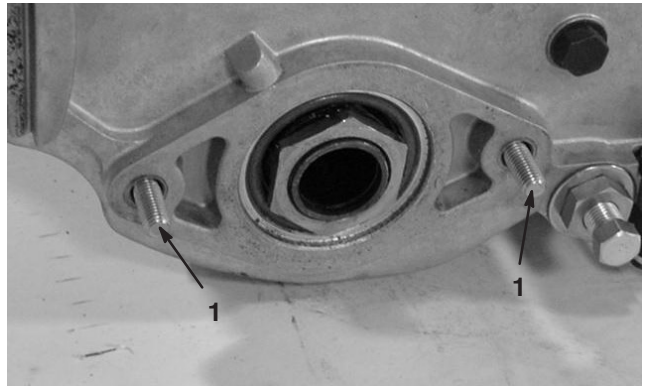


Figure 4

1. Capscrew (2)

8. Insert the shim onto the capscrews positioning as shown in figure 5.

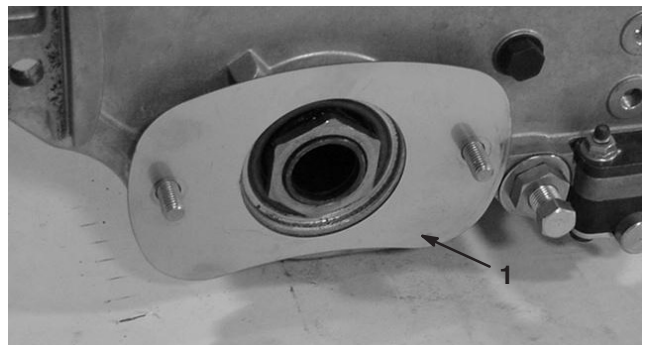


Figure 5

1. Shim

9. Insert the left-hand drive assembly onto the capscrews and secure with (2) shoulder nuts (Fig. 6). Make sure the side plate rotates freely.

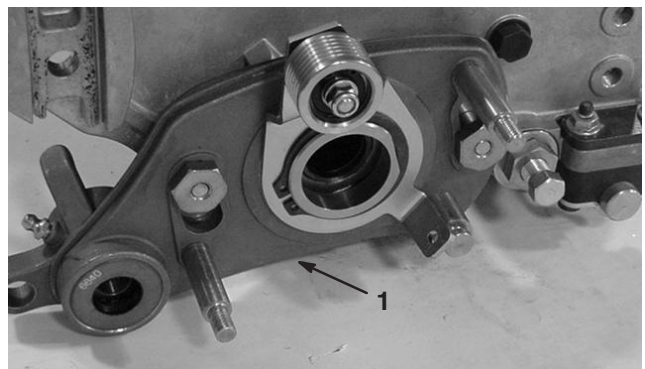


Figure 6

1. L.H. Drive assembly

10. Apply grease to seal in drive assembly bearing support and to end of groomer shaft (Fig. 7).

11. Slide one end of groomer shaft into drive assembly bearing support (Fig. 7).

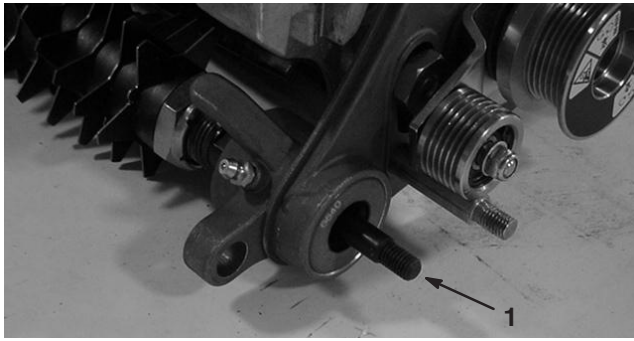


Figure 7

1. Groomer shaft

12. Insert a square key into keyway of groomer shaft (Fig. 8).

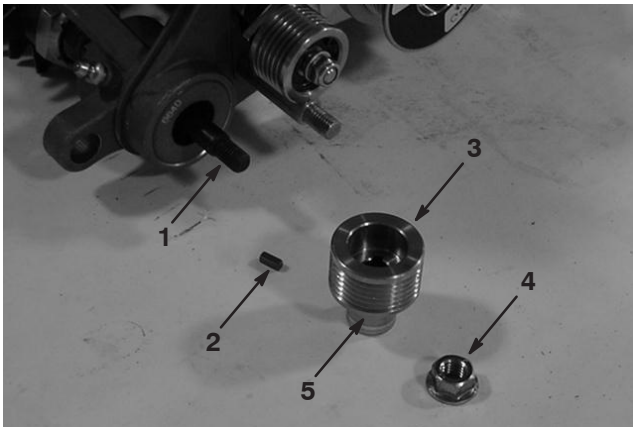


Figure 8

- | | |
|------------------|----------------------|
| 1. Groomer shaft | 4. Flange lock nut |
| 2. Square key | 5. Apply grease here |
| 3. Driven pulley | |

13. Apply grease to outer surface of drive pulley, as shown in figure 8. Do not put grease on area where the belt will ride.

14. Align slot in driven pulley with key and slide pulley onto groomer shaft (Fig. 8).

15. Secure pulley to shaft with a flange lock nut (Fig. 8).

16. Apply grease to seal in drive assembly bearing support and to end of groomer shaft (Fig. 9).

17. Insert other end of groomer shaft into R.H. side plate bearing support (Fig. 9). No key is required in this end.

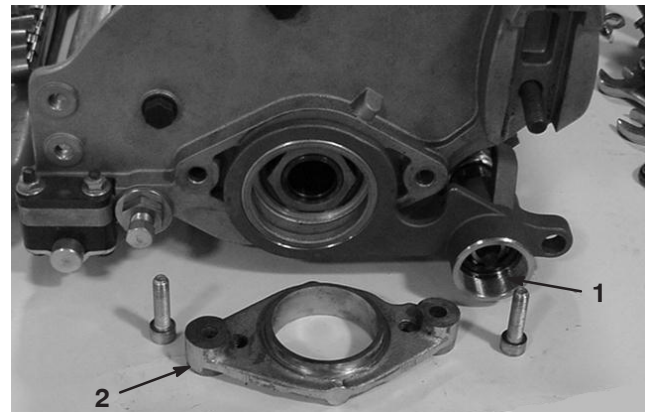


Figure 9

- | | |
|------------------------------------|----------------|
| 1. R.H. Side plate bearing support | 2. Motor mount |
|------------------------------------|----------------|

18. Insert motor mount onto side plate. Secure motor mount and side plate to right end of cutting unit with (2) socket head screws and nuts previously removed (Fig. 9). Make sure the side plate rotates freely.

19. Insert the bearings onto the groomer shaft in groomer housing (Fig. 10). The extended bearing races should contact each other when installed to create a 1/4" gap between the bearings. Support the groomer shaft to reduce misalignment through the bearings.

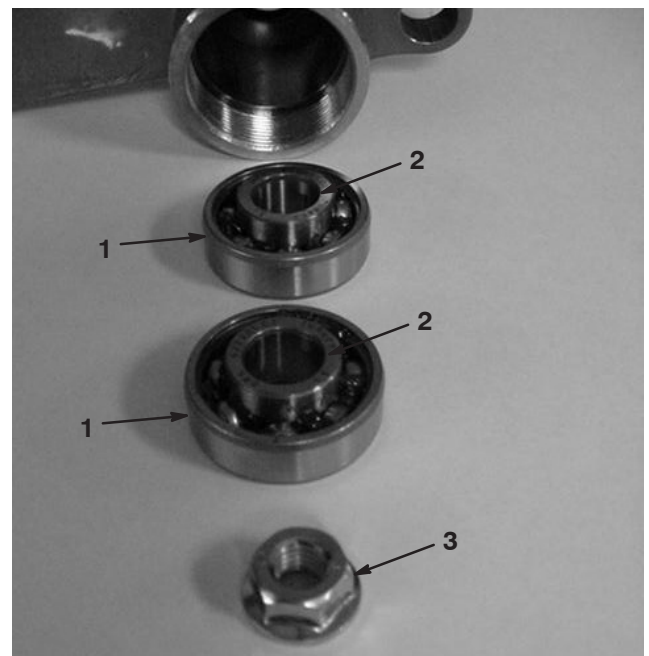


Figure 10

- | | |
|-----------------|--------------------|
| 1. Bearing | 3. Flange lock nut |
| 2. Bearing race | |

20. Secure groomer shaft to the groomer housing assembly with a flange nut (Fig. 10). While holding the flange lock nut on the other end of the groomer shaft, torque the nuts to 17–21 ft.-lb. (23–28 N·m). Do not overtighten the nuts.
21. Apply Loctite to the threads on the cap plug (Fig. 11). Thread the cap plug into the groomer housing. Torque the cap plug to 60–80 ft.-lbs.

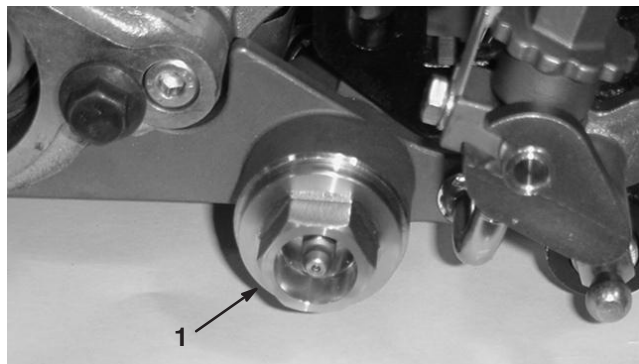


Figure 11

1. Cap plug

22. Apply grease to the internal spline and outer surface of drive pulley, as shown in figure 12.
23. Secure groomer drive pulley to reel shaft with a washer and flangehead capscrew. Apply Anti-seize to capscrew threads before installation. Torque to 100 in.-lbs. (11.3 N·m) (Fig. 12).

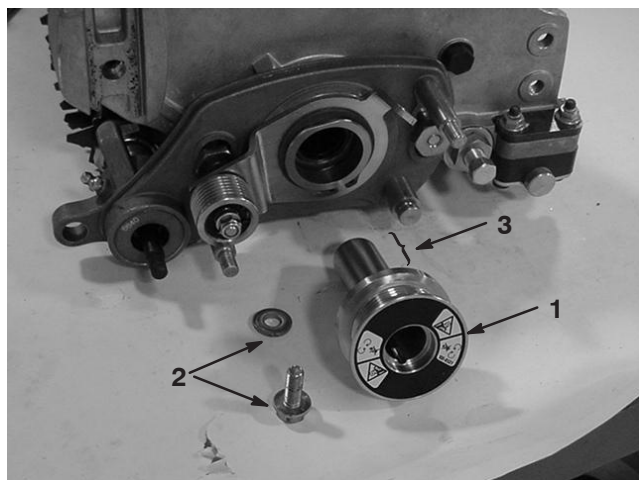


Figure 12

1. Drive pulley
2. Flangehead capscrew & washer
3. Apply grease here

24. Insert a bushing into the hole in the L.H. groomer drive assembly (Fig. 13).

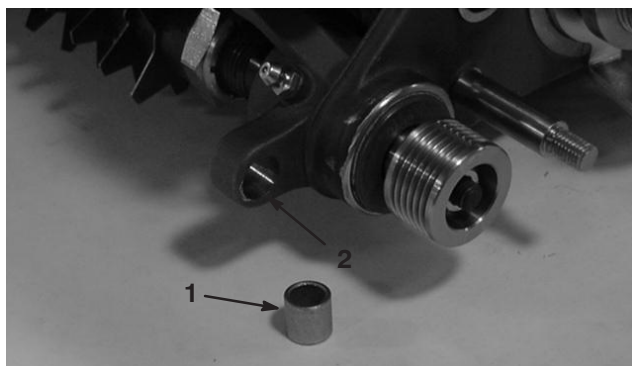


Figure 13

1. Bushing
2. Hole in groomer drive

25. Thread the height of cut adjusting screw into top of left-hand adjuster arm assembly (Fig. 14).

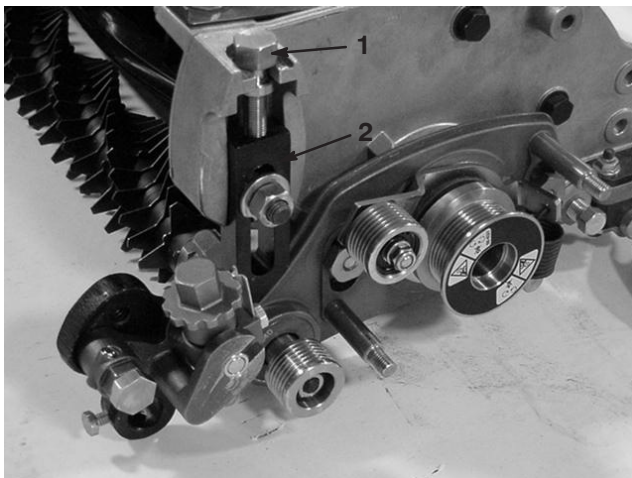


Figure 14

1. Height of cut screw
2. Left adjuster arm assembly

26. Install the left-hand adjuster arm assembly to the cutting unit side plate using the existing carriage bolt, nut, and washer. Make sure that the rod end of the height-of-cut arm assembly slides into the bushing in the hole in the groomer drive assembly (Fig. 14).

27. Secure adjuster arm assembly rod end to groomer drive assembly with a Belleville washer and locknut (Fig. 15). Do not overtighten locknut. Washer should be compressed but the arm must be free to pivot.

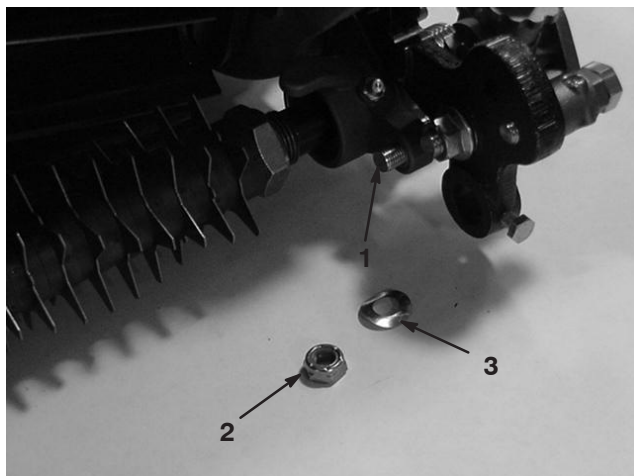


Figure 15

1. Rod end of height of cut assembly 2. Locknut
3. Spring washer

28. Insert roller shaft into left adjuster arm and loosely secure with bolt (Fig. 16).

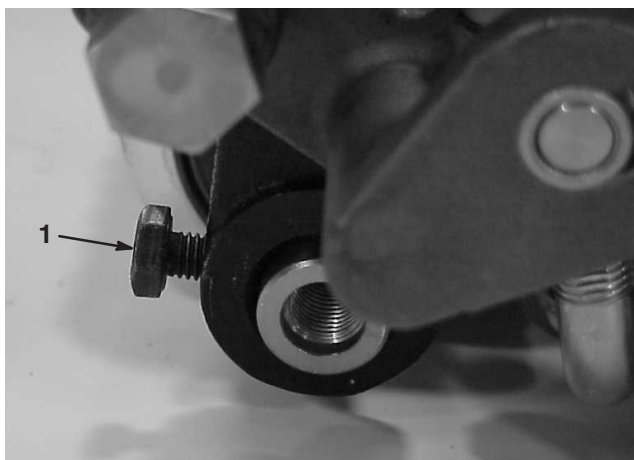


Figure 16

1. Roller shaft bolt

29. Thread the height of cut adjusting screw into top of right-hand adjuster arm assembly (Fig. 14).
30. Insert roller shaft into right adjuster arm. Do not tighten bolt at this time.
31. Install the right-hand adjuster arm assembly to the cutting unit side plate using the existing carriage bolt, nut, and washer (Fig. 14). Make sure that the rod end slides into the bushing in the hole in the groomer drive assembly.

32. Secure adjuster arm assembly rod end to groomer drive assembly with a Belleville washer and locknut (Fig. 15).
33. Rotate the idler pulley until shift lever spring can be hooked into the hole in the pulley bracket and onto the stud as shown in figure 17.

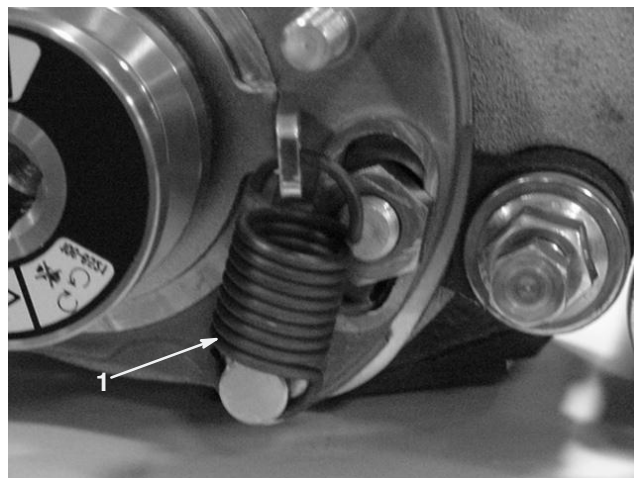


Figure 17

1. Shift lever spring

34. Insert belt onto driver pulley, idler pulley and driven pulley routing as shown in figure 18. Make sure belt is riding correctly in the grooves.

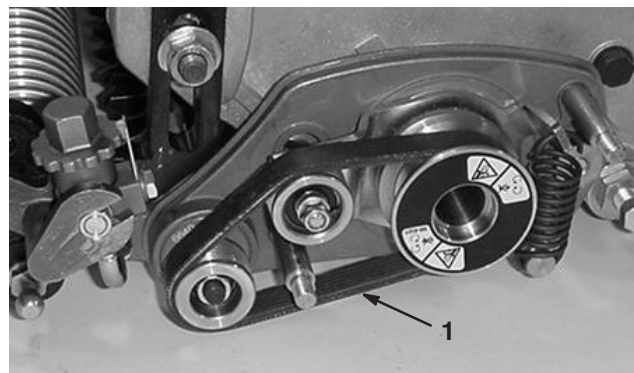


Figure 18

1. Drive belt

35. Mount cover to groomer housing assembly with (2) lock nuts (Fig. 19).

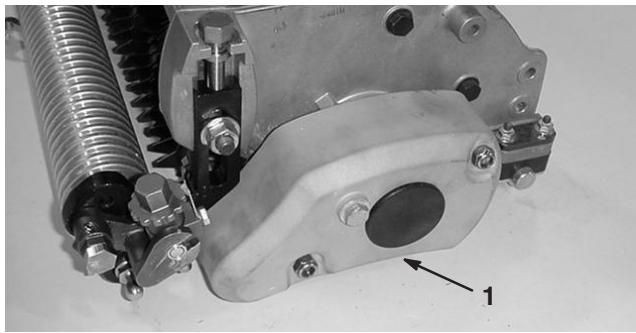


Figure 19

1. Cover

36. Center roller between adjuster arms and tighten mounting bolts (Fig. 16).

37. Lubricate the groomer bearings (Fig. 20 & 21) weekly or after every 10 operating hours, before extended periods of non use and immediately after every washing. Pump grease into fittings until grease is purged onto groomer shaft. Wipe excess grease from seals and shaft.

Note: Operate groomer for 30 seconds after greasing. Disengage cutting unit and wipe excess grease from seals and shaft.

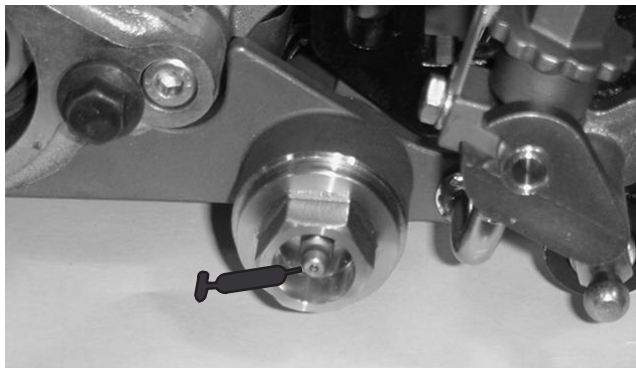


Figure 20

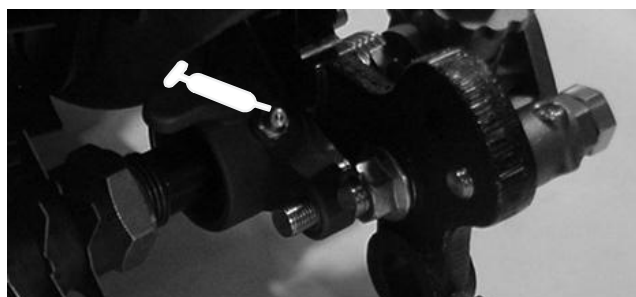


Figure 21

Operation

Introduction

Grooming is performed above the soil level. Grooming promotes vertical growth of the grass by cutting runners (stolons), removing thatch, standing grass blades up and encouraging denser growth and deeper rooting. This can, in effect, yield a more even grass with less “grain” for faster and truer action of the golf ball.

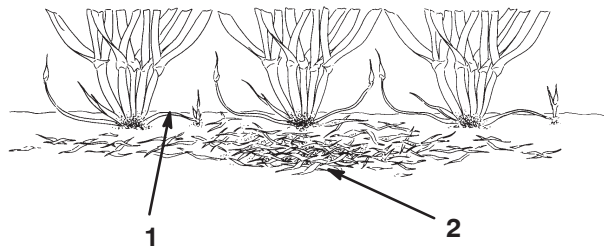


Figure 22

1. Grass runners

2. Thatch

Grooming is similar to verti-cutting in its runner cutting action. Grooming blades however, should never penetrate the soil like verti-cutting or dethatching. Groomer blades are spaced closer together and are used more often than verti-cutters so that they are more effective in cutting runners and removing thatch. Verti-cutters are used primarily for greens renovation while groomers are used for ongoing greens upkeep.

It is difficult to make precise recommendations on use of grooming reels because so many variables affect the performance of grooming, including:

- The time of the year (i.e., the growing season) and weather pattern
- The general condition of each green
- The frequency of grooming/cutting—both how many cuttings per week and how many passes per cutting
- The height-of-cut setting on the main reel
- The height/depth setting on the grooming reel
- How long the grooming reel has been in use on this green
- The type of grass on the green
- The overall greens management program (i.e. irrigation, fertilizing, spraying, coring, over seeding, etc.)
- Traffic
- Stress periods (i.e., high temperatures, high humidity, unusually high traffic)

These factors can vary from golf course to golf course and from green to green. It is important, therefore, to inspect the greens frequently and vary the grooming practice in accordance with the need.

The groomer is set at the factory with 1/2 in. (13 mm) blade spacing. By removing spacers and adding blades or adding spacers and removing blades the groomer can be changed to 1/4 in. (6 mm) or 3/4 in. (19 mm) spacing.

Grooming with 1/4 in. (6 mm) blade spacing is recommended for fast growth periods (spring through early summer). Grooming with 3/4 in. (19 mm) blade spacing is recommended for slower growth periods (late summer through fall and winter). During high stress periods it may be desirable to not use the grooming reel.

Note: Grooming with 1/4 in. (6 mm) blade spacing will tend to remove more grass blades and thatch and cut more runners than grooming with 1/2 in. (13 mm) or 3/4 in. (19 mm) blade spacing. If you are grooming with 1/4 in. (6 mm) blade spacing, one or two groomings per week will probably be sufficient except during maximum growth periods.

Note: The practice of changing the direction of cut each time the green is cut should be continued when a groomer is used. This rotation will enhance the effects of the grooming.

Raising and Lowering Groomer

To raise or lower the grooming reel:

- Loosen the bolts on the right and left groomer arms (Fig. 23).

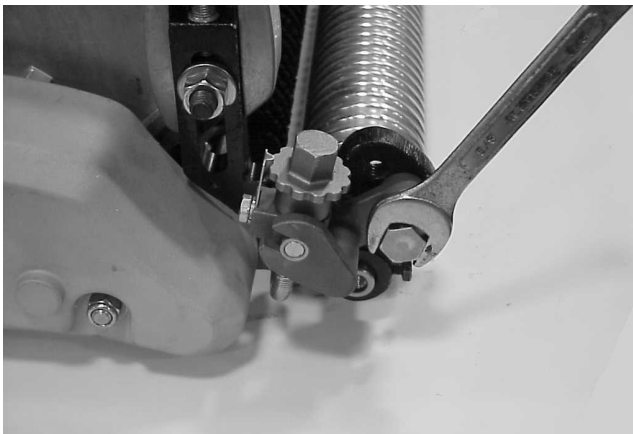


Figure 23

- Rotate the arms up or down (Fig. 24).
- Tighten the bolts securing the adjustment.

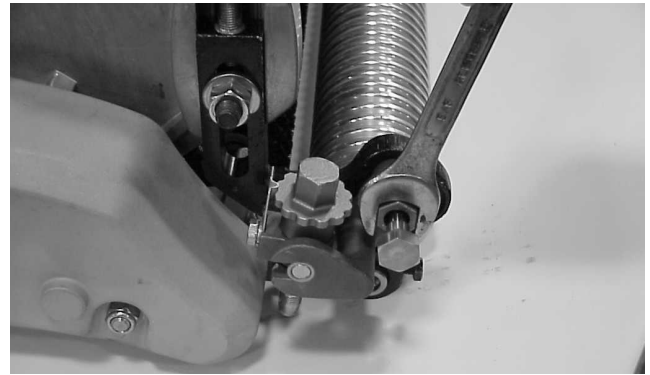


Figure 24

1. Raised position (Transport)

Height/Depth of Groomer Setting

The groomer blade height/depth of grooming can be set using the following procedure:

1. Make sure the rollers are clean and main reel is set to desired height of cut. Position machine on a flat, level work surface.
2. Lower the grooming reel into the grooming position. Refer to Raising and Lowering groomer, page 7.
3. On one end of groomer shaft, measure the distance from the lowest tip of a groomer blade to work surface. Turn the groomer height adjusting knob (Fig. 25) to raise or lower blade tip to the desired grooming height. Each notch on the adjusting knob is approximately equal to .003 inch of groomer depth.

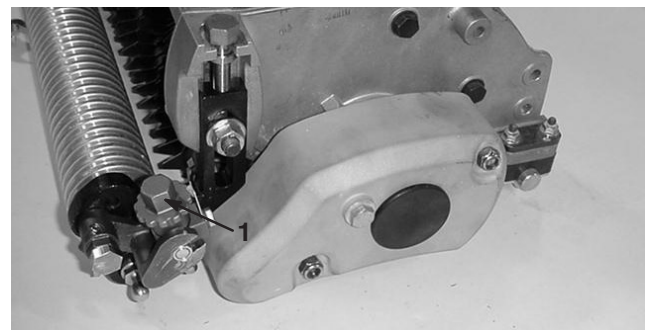


Figure 25

1. Groomer height adjusting knob

4. Repeat procedure on opposite end of groomer, then recheck setting on first side. Readjust as required.
5. If grooming mode is not going to be used, raise the grooming reel into the transport position. Refer to Raising and Lowering groomer, page 7.

Note: At higher grooming heights, the grooming reel may have to be set in the raised (transport) position, thus making the raise/lower feature unavailable.

Testing Groomer Performance

Important Improper or over-aggressive use of the grooming reel (i.e., too deep or too frequent grooming) may cause unnecessary stress on the turf leading to severe greens damage. Use the groomer cautiously.

It is important to determine the performance of the groomer before putting it into regular use on greens. We strongly suggests that a formal test procedure be used. The following is a practical way of determining the proper height/depth setting:

1. Set the cutting reel to the height of cut that would normally be used without the grooming reel. Use a Wiehle roller and scraper for the front roller.
2. Set the groomer reel 1/2 the height of cut setting above the roller level. (e.g. for 1/8" (.125) H.O.C setting , set the groomer at 1/16" (.063) above roller).
3. Make a pass over the test green, then lower the groomer flush with the roller level and make another pass over the test green.
4. Compare the results. The first groomed area when the setting was 1/2 the height of cut setting above the roller level will have removed significantly less grass and thatch than the second setting.

Check the test green 2 or 3 days after the first grooming for general condition/damage. If the groomed areas are turning yellow/brown, and the non-groomed areas are green, then the grooming was too aggressive.

Note: The color of the grass will change when the grooming reel is used. This can be observed with the first grooming and will continue over time. Experience will allow the greens superintendent to judge by color of the turf (along with close examination) if the current grooming practice is appropriate for the particular green. Because the grooming reel stands up more grass and removes thatch, the quality of the cut will not be the same as without the groomer. This effect is most noticeable the first few times a groomer is used on a green.

Note: On multiple passes (i.e., double and triple cutting), the groomer will continue to penetrate deeper on each successive pass. Multiple passes are not recommended.

5. After testing the performance of the groomer on a test green and satisfactory results are obtained, grooming on the playing greens can begin. It is important to realize, however, that each green may respond differently to grooming. In addition, growing conditions are constantly changing. Inspect the groomed greens frequently and make adjustments to the grooming procedure as often as necessary.

Transport Mode

Important When transporting the machine, be sure to disengage the cutting unit and raise the grooming reel into its transport (raised) position.

Maintenance

Cleaning

Hose off the grooming reel after use. Do not permit the grooming reel to stand in water so that the components rust.

Greasing

Lubricate the groomer bearings (Fig. 26 & 27) weekly or after every 10 operating hours, before extended periods of non use and immediately after every washing. Pump grease into fittings until grease is purged onto groomer shaft. Wipe excess grease from seals and shaft.

Note: Operate groomer for 30 seconds after greasing. Disengage cutting unit and wipe excess grease from seals and shaft.

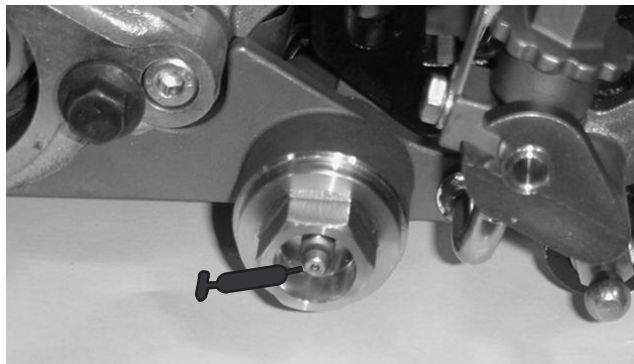


Figure 26

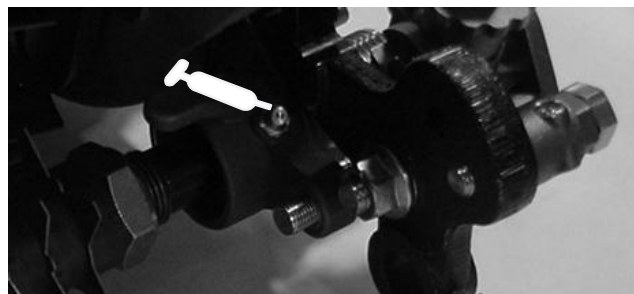


Figure 27

Blade Inspection

Inspect the grooming reel blades frequently for damage and wear. Bent blades may be straightened with a pliers. Worn blades can be replaced or the grooming reel shaft reversed to put the sharpest edge of the blade forward. When inspecting the blades, check to see that the right and left blade shaft end nuts are tight.

Note: Because the groomer may introduce more debris (i.e., dirt and sand) into the cutting unit than what the reel would normally be exposed to, the bedknife and main reel should be checked for wear more frequently. This is especially important in sandy soil and/or when the groomer is set for penetration.

Grooming Reel Replacement

The grooming reel can be removed to replace individual blades, the entire shaft, or to reverse the shaft so that the sharpest edge of the blades are forward. Remove and replace the grooming reel shaft using the following procedure:

1. Remove belt cover from groomer housing (Fig. 28).

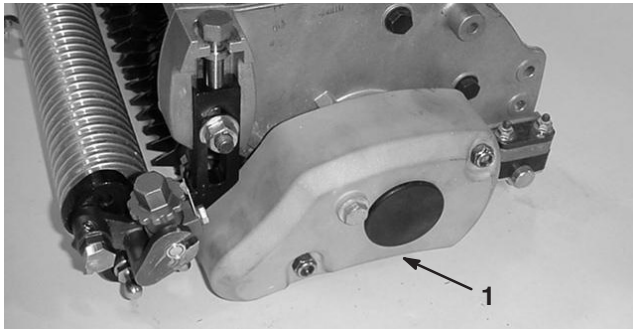


Figure 28

1. Belt cover

2. Remove the belt from driver pulley, idler pulley and driven pulley (Fig. 29).

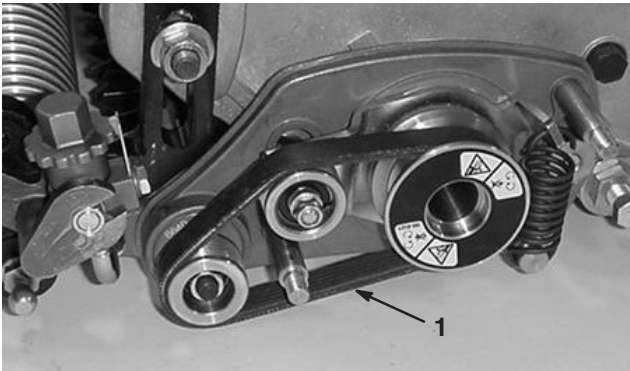


Figure 29

3. Loosen the bolt securing the roller shaft to the height-of-cut arm (Fig. 30).

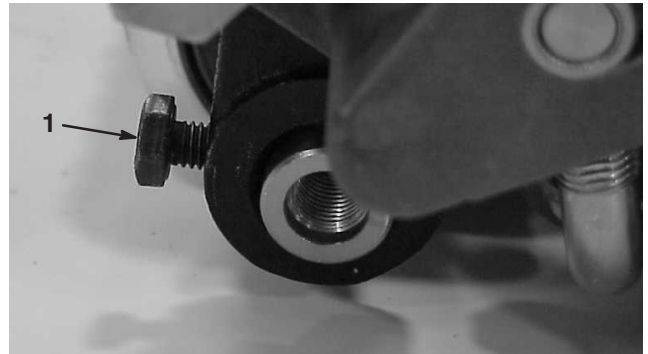


Figure 30

1. Roller shaft bolt

4. Remove the locknut and spring washer securing the height-of-cut arm assembly rod end to the groomer drive assembly (Fig. 31).

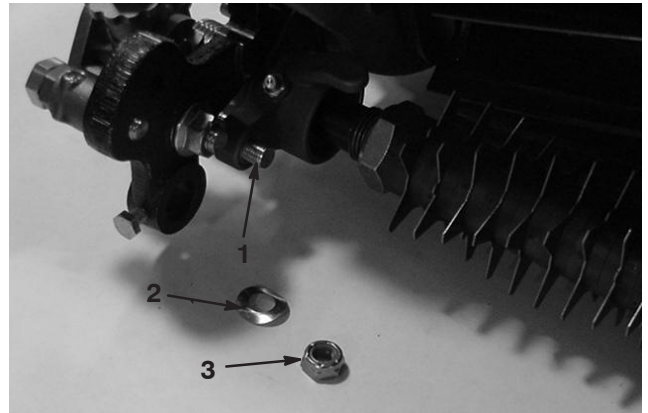


Figure 31

- | | |
|--------------------------------------|------------------|
| 1. Rod end of height of cut assembly | 2. Spring washer |
| | 3. Locknut |

5. Remove carriage bolt, nut, and washer securing height-of-cut arm assembly to side plate (Fig. 32).

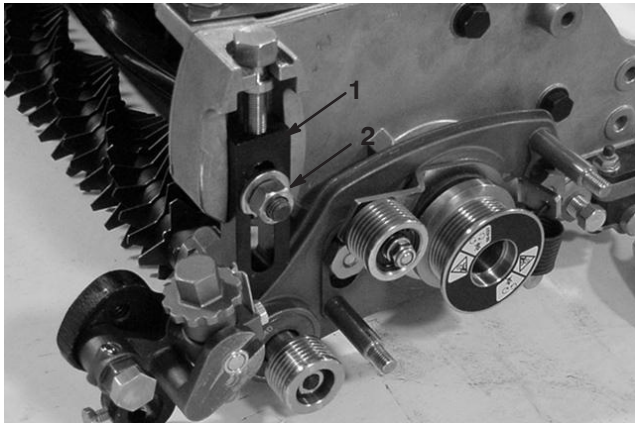


Figure 32

1. Left adjuster arm assembly
2. Belleville washer & locknut

6. Remove the flange lock nut and square key securing the driven pulley to the end of the groomer shaft (Fig. 33). Remove the pulley.

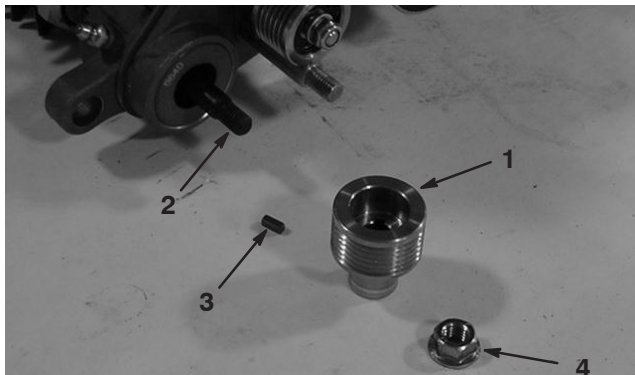


Figure 33

1. Groomer driven pulley
2. Grooming reel shaft
3. Square key
4. Flange head nut

7. Remove the groomer drive pulley from the reel shaft (Fig. 34).

Note: The nut has left-hand threads.

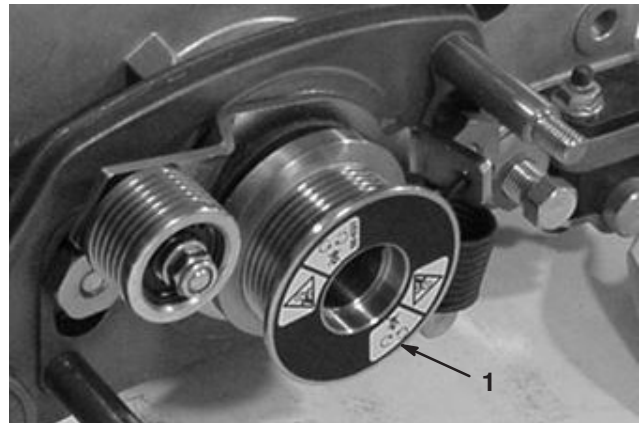


Figure 34

1. Groomer drive pulley

8. Remove the (2) shoulder nuts securing the groomer drive assembly to the side plate adapters (Fig. 35).

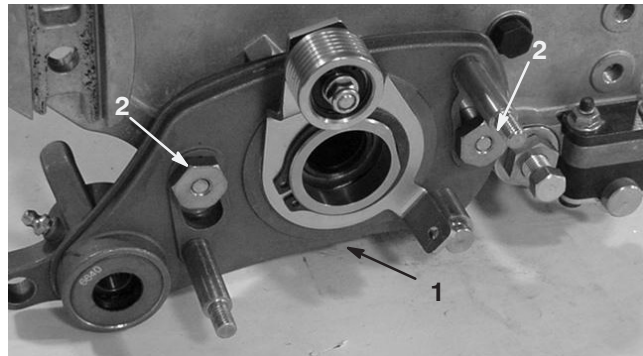


Figure 35

1. Right hand groomer drive assembly
2. Shoulder nuts

9. Remove the groomer drive assembly from the capscrews.

10. Remove the cap plug from the groomer housing (Fig. 36).

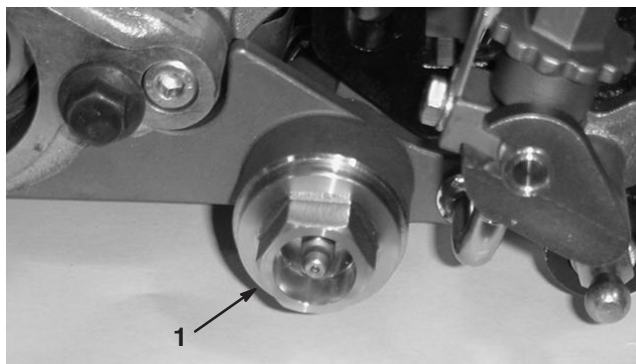


Figure 36

1. Cap plug

11. Remove the nut securing the groomer shaft to the groomer housing.
12. Remove the groomer shaft.
13. Assemble the shaft in reverse order. Using the location marks on each blade as a guide, assemble each blade so that the location mark is offset one flat on the hexagonal shaft.

Note: The location marks on each blade are offset so that they can be used to achieve proper grooming reel setup. Stack the blades and match the location marks before installing them on the grooming reel shaft.

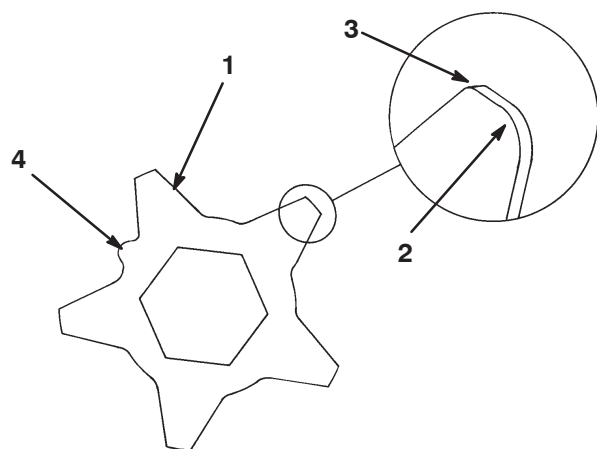


Figure 37

- | | |
|------------------------|------------------|
| 1. Grooming blade | 3. Sharp edge |
| 2. Dull (rounded) edge | 4. Location mark |

14. Torque the lock nuts to 200–250 in.-lb. (22.6–28.3 N·m).
15. Check the grooming reel height/depth setting.

