

TORO®

MODEL NO. 01065-40001 & UP (5 BLADE)
MODEL NO. 01067-40001 & UP (7 BLADE)
MODEL NO. 01069-40001 & UP (9 BLADE)

**OWNER'S AND
SERVICE MANUAL**

SPARTAN 5, 7 AND 9 FAIRWAY MOWERS

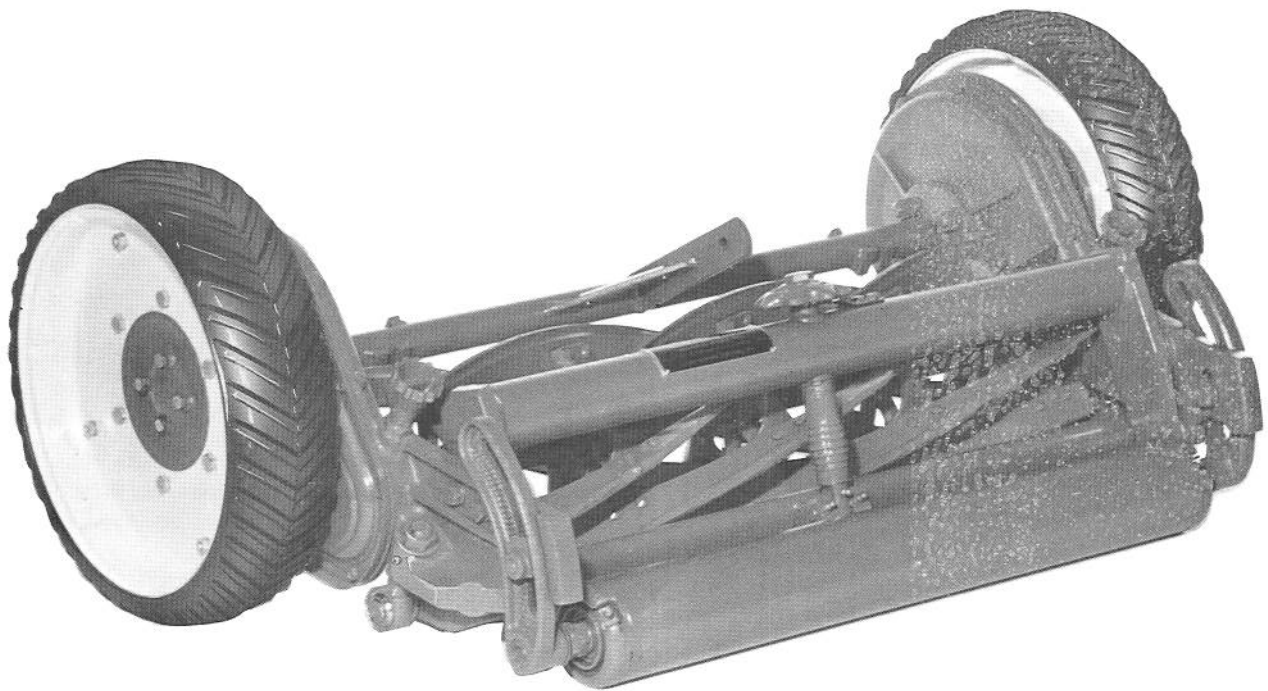


TABLE OF CONTENTS

	Page		Page
Specifications	2	Grinding	8
Know Your Cutting Unit	3	Back Lapping	8
Setting-Up Instructions	4 & 5	Bedknife Replacement or Reversing	8
Gear Case Oil Level Check	5	Mower Servicing Procedure (Disassembly)	9-12
Height-Of-Cut Adjustment	5	Reel Disassembly	12
Bedknife Reel Relationship (Shop)	5	Roller Disassembly	12
Operating Instructions	6 & 7	Roller Assembly	13
Reel Engage/Disengage	6	Gear Case and Frame Assembly	13-15
Bedknife-To-Reel Adjustment	6	Bedknife and Bed Bar Assembly	14
Mowing Procedures	7	Important Ordering Instructions	16
Maintenance	7-15	The Toro Promise	16
Lubrication	7		

SPECIFICATIONS

REEL DRIVE: Reel driven by wheels 75T ring gear to 10T pinion through 14T disengaging idler gear.

REDUCTION, REEL TO WHEELS: 7.5:1

REEL: 8-1/4" diameter with chrome-moly hardened blades double riveted to malleable cast iron spiders, with each spider pinned. 1-1/8" diameter ground reel shaft on tapered roller bearings with adjustment nut to compensate for bearing wear.

BEDKNIFE & BAR: Double edge high carbon steel knife attached to a fabricated steel bar; single screw adjustment on adjustable spherical rod ends.

BEDKNIFE TO REEL ADJUSTMENT: Bedknife adjusts against reel, with positive adjustment control knob located at center of rear cross tube. Adjustment knob contains detent with .001 inch movement of bedknife for each indexed position. All pivot points are relubricatable.

WHEELS AND TIRES: 16" diameter pneumatic wheels with tire and tube, studded tread, stamped steel wheel and cast iron hubs; 16" diameter semi-pneumatic tires with stamped steel wheels and cast iron hubs; 16" diameter cast iron wheels — one-piece construction; 14" diameter cast iron wheels — one-piece construction; 16" diameter low profile semi-pneumatic tires with stamped steel wheels and cast iron hubs.

DIFFERENTIAL: Disengaging over-running idler gear in gear train.

WIDTH OF CUT: 29-1/2"

HEIGHT OF CUT: .75 to 2.25 with 16" dia. wheel.
.50 to 2.18 with 14" dia. wheel.

CLIP:	Clip	Wheel Diameter	Number of Blades
	.74	16	9
	.65	14	9
	.95	16	7
	.84	14	7
	1.34	16	5
	1.17	14	5

CHASSIS: Ribbed cast iron gear cases with tubular cross members. Front cross member provides easy attachment for the Spartan to all Toro frames. Rear cross member provides frame rigidity.

ROLLER: 3-1/2" O.D. Iron pipe running on taper bearings double lip oil seal with wear sleeves. Grease fittings provided.

DIMENSIONS:

Width: 40-3/8" with iron wheels
44" with pneumatic tires
Height: 16-1/2"

WEIGHT: 205 lbs. without drawbars & wheels.

OPTIONAL EQUIPMENT:

3 section rubber rollers
14" cast iron wheel Model #01343
16" cast iron wheel Model #01336
16" semi-pneumatic tires Model #01300
16" pneumatic tires Model #03123
16" semi-pneumatic low profile Model #01304

FOREWORD

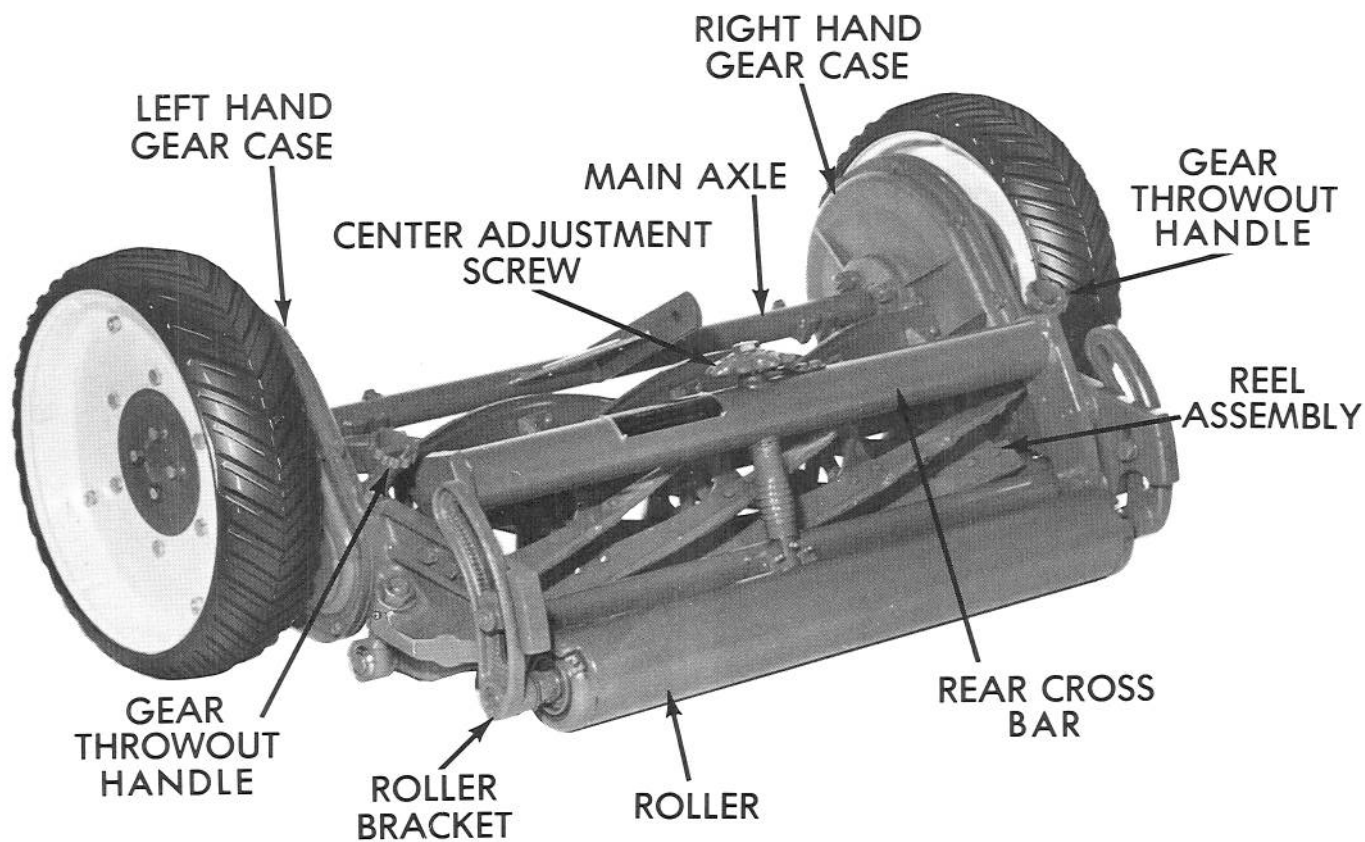
TO THE TORO OWNER . . .

The Toro Spartan Fairway Mower is manufactured by an organization of mowing machinery specialists. Each mower is carefully inspected and tested before leaving the factory. For best performance from your Toro mower, study this manual for regular maintenance and service procedures.

This Owner's and Service Manual has been especially prepared for your information and guidance in the operation and care of your new Toro Spartan Mower.

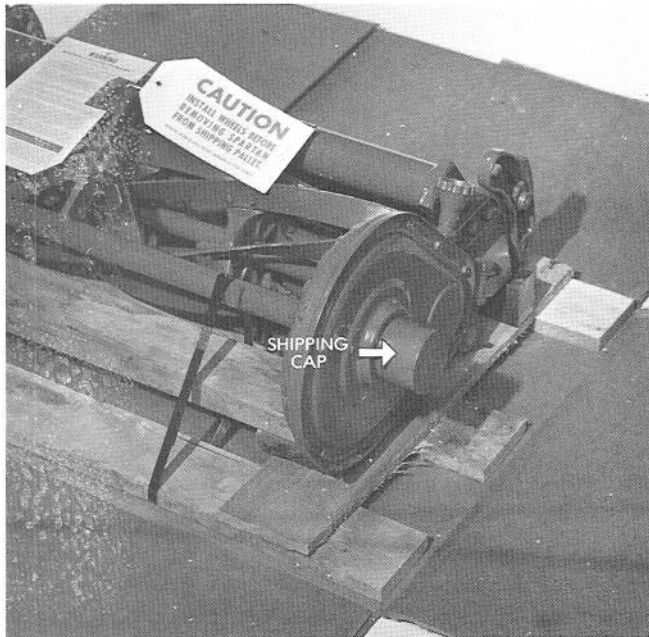
Properly adjusted, operated and maintained, this Toro mower will give years of reliable service.

KNOW YOUR CUTTING UNIT



SETTING UP INSTRUCTIONS

1. Remove banding from carton and lift off top of carton.
2. Slit the four (4) corners of the carton to enable the sides to lie flat. Remove banding securing mower.
3. Remove the caps that have been installed at the factory for shipping purposes. Discard shipping caps.



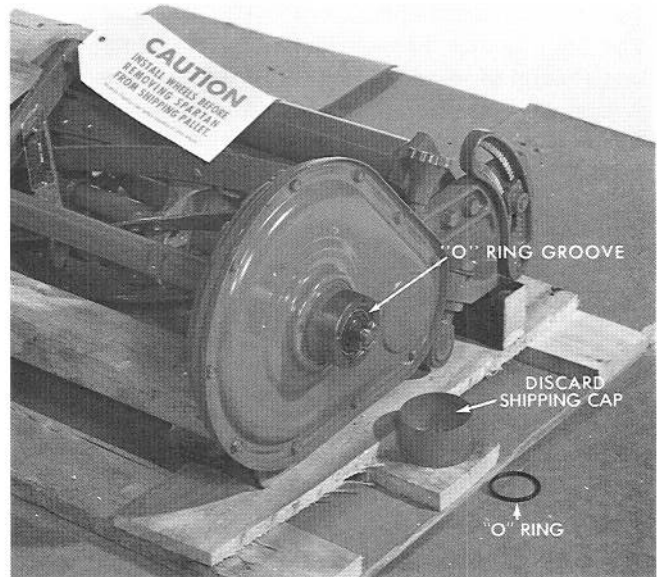
4. Check the wheel hub for proper bearing adjustment. Rotate the hub. A slight drag must be evident as the hub is rotated. If necessary, remove the cotter pin and tighten the wheel hub nut until a slight drag is felt. Reinstall the cotter pin.

IMPORTANT: DO NOT OVER-TIGHTEN THE NUT.



5. Insure that "O" ring has not been damaged and that it is properly installed prior to mounting the wheels. Proper "O" ring position is in the inside diameter recess of the wheel hub.

NOTE: If the "O" ring is not installed properly or is damaged, oil leakage from the gear case may result.

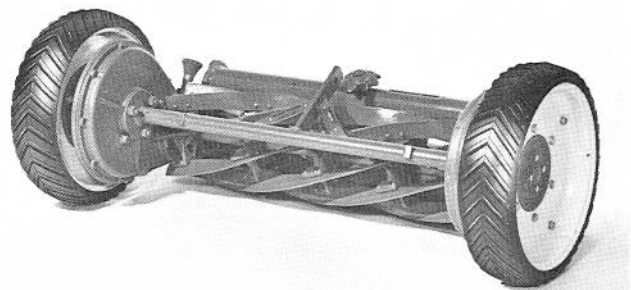


6. With the Spartan still positioned on the shipping pallet, install drive wheels using capscrews and lockwashers.

NOTE: Do not attempt to install drive wheels over the shipping caps.



7. After the wheels have been installed on the hubs and fastened with the mounting bolts, roll Spartan off shipping pallet. Insure that Spartan is positioned on a flat level surface.

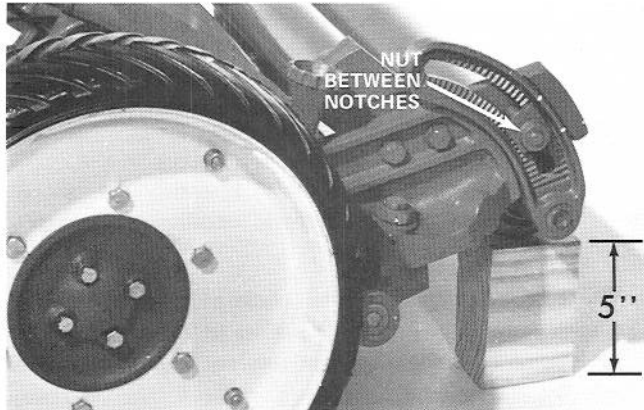


8. Proper assembly of the Spartan is shown above.

SETTING UP INSTRUCTIONS (Continued)

GEAR CASE OIL LEVEL CHECK

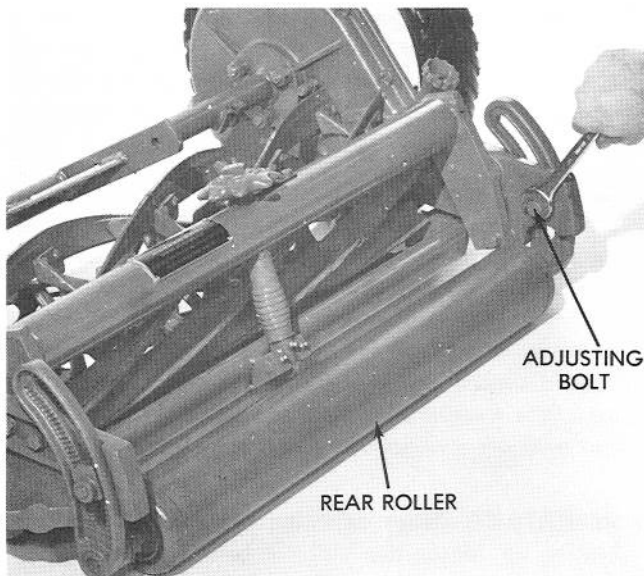
9. Check the oil level in the gear cases using the following procedure:
 - A. Position the rear roller so that the adjusting nut is centered between the notches indicated.
 - B. With the wheels mounted and the machine on a level surface, place a 5-inch thick block under each end of the roller.



- C. Remove the filler plug from the inside of each gear case.
 - D. The gear lubricant should be level with the bottom of the filler hole.
 - E. If additional oil is needed, visually check for possible leakage due to improperly installed "O" rings, gaskets, or loose side plate bolts.
 - F. If no leakage is evident, fill the gear case to the proper level using SAE 140 gear lubricant.

HEIGHT-OF-CUT ADJUSTMENT

10. After the gear lubricant has been checked, adjust the cutting height by raising or lowering the rear roller. To adjust, proceed as follows:
 - A. Loosen the adjusting bolt on each roller bracket.



- B. Adjust the roller until the desired height of cut is obtained.
 - C. Adjust each side of the roller equally. Verify the setting by measuring the distance between the level surface and the cutting edge of the bedknife at each end of the mower.

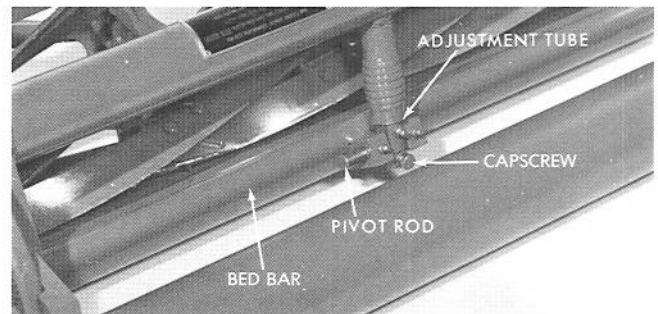
IMPORTANT: To maintain a constant height of cut, the roller will periodically require an adjustment to compensate for bedknife and reel wear.

11. Check for looseness in the reel bearings. If lateral or axial movement is detected, an adjustment is necessary (See Reel Bearing Adjustment, page 14).
12. Inspect the mower and tighten any loose fasteners.

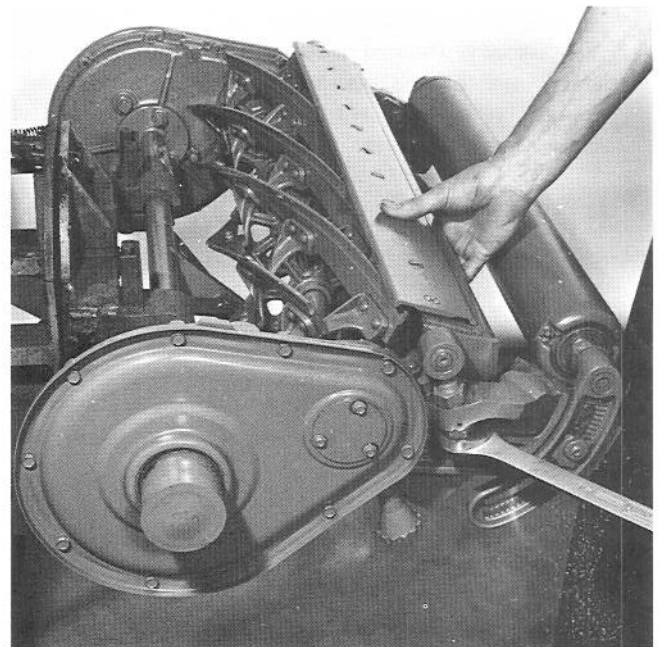
BEDKNIFE/REEL RELATIONSHIP (SHOP)

Important: Before checking bedknife to reel relationship clean all paint and grease from reel blades and bedknife.

1. Disconnect the center adjustment tube assembly from the bedbar by loosening the capscrew and driving the pivot rod completely out.



2. Turn the Spartan upside down. Exert light hand pressure on the bedknife and insure that contact is evident between the bedknife and all reel blades. Rotate the reel and check this alignment at two or three reel locations.



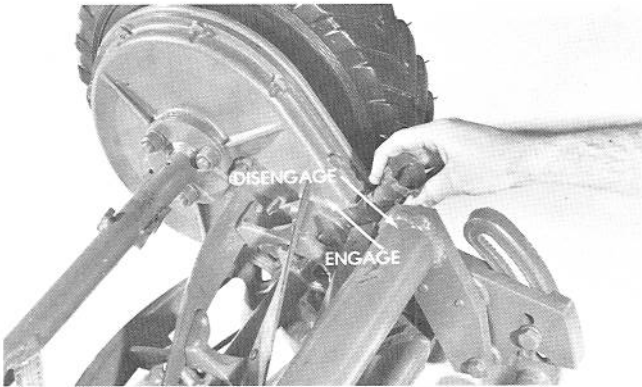
3. If contact is evident across the bedknife, turn Spartan right side up and replace center pivot rod and tighten capscrews. Turn center adjustment tube counterclockwise until there is no contact between the reel and bedknife.
4. If contact is not evident, refer to Rod End Bearing Adjustment, page 15, No. 50.

OPERATING INSTRUCTIONS

IMPORTANT: After the preceding Setting Up Instructions have been satisfactorily completed, attach the Spartan mowers to the appropriate frame. Adjustment of the bedknife to the reel should only be performed in the turf. Mowers should be transported with no contact between the bedknife and reel. For final bedknife-to-reel adjustment procedures see Bedknife to Reel Adjustment below.

REEL ENGAGE/DISENGAGE

Reel drive gears are engaged or disengaged by means of a gear-throwout knob on each side of the mowers.



1. To engage reel drive, turn both knobs away from the center of the reel when standing behind the mower.
2. To disengage the reel drive, turn both knobs toward the center of the reel when standing behind the mower. It is important that both knobs be either engaged or disengaged.

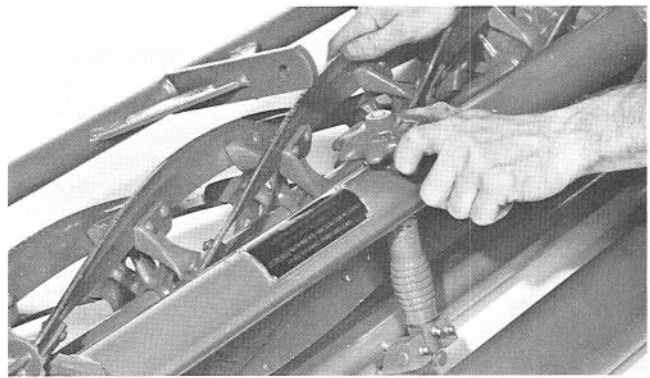
BEDKNIFE TO REEL ADJUSTMENT PROCEDURE

When to Adjust — Adjust the bedknife to reel for light contact every four hours, or less, even though the quality of cut is acceptable. Continuous light contact helps maintain sharp cutting edges on the reel and bedknife. Adjust only after the mowers have been run and have reached normal operating temperature.

Where to Adjust — The mowers should be adjusted on the turf to be cut.

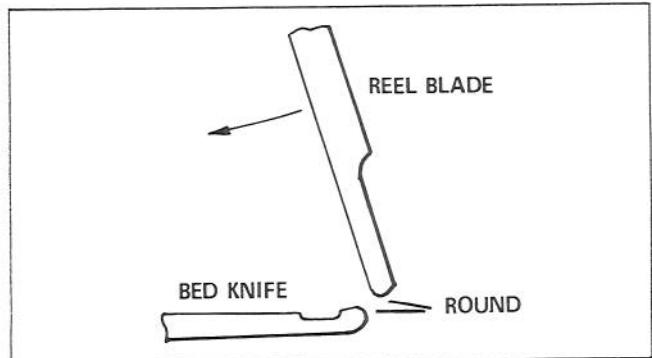
How to Adjust —

1. Disengage the reel throwout knobs.
2. Rotate the bedknife adjustment knob counterclockwise until the bedknife is completely away from the reel.
3. Spin the reel and at the same time turn the adjusting knob until light contact is felt. The reel should give a whispering sound at this point.



If this procedure does not result in a quality cut, one or more of the following abnormal† conditions probably occurred and must be corrected:

† The bedknife edge and reel blade edges have become rounded and dull. Restore the edges to a sharp condition by lapping or if the edges are severely rounded by both grinding and lapping.



† Uneven bedknife wear pattern, mower gives off a clicking sound. The mower has been operated with too heavy a contact between the bedknife and reel. Correct by regrounding the bedknife and, if severe, also regrounding the reel.

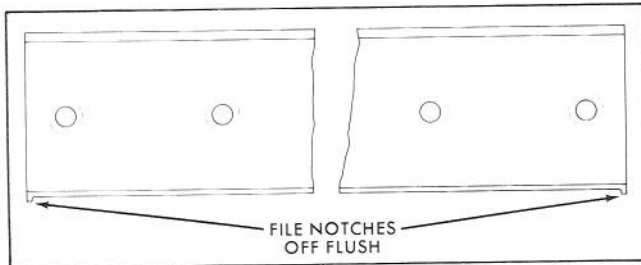
† Damaged bedknife and/or reel caused by hitting a foreign object, mower gives off a clicking sound. Correct immediately by filing out the damage, if any, and if the mower still doesn't cut across the full width of the bedknife, re-level the bedknife. When re-leveling the bedknife in the field, adjust the rod end pivot bearing upward on the end of the bedknife that is not cutting until it is level with the reel and the mower again cuts and gives off a whispering sound when the reel is spun.

IMPORTANT: When adjusting the rod end pivot bearing up, loosen the bedknife to reel adjustment. This allows a free rod end pivot bearing adjustment.

† Loose reel bearings. Correct by adjusting the bearings until they are slightly preloaded. See page 14, "Reel Bearing Adjustment," steps 31 through 33.

OPERATING INSTRUCTIONS (Continued)

† After prolonged use, a notch may develop at each end of the bedknife. This may result in a clicking noise if the end of the reel hits the notches. File the notches off FLUSH.



CAUTION: Heavy contact between the bedknife and reel causes undue rapid wear of all components. This improper adjustment will result in an uneven or wavy surface on the bedknife after a short period, caused by hammering or burnishing action between the bedknife and the reel blade. The wavy surface can also result from: excessive speed, uneven adjustment on either end of the bedknife, or loose reel bearings. If uneven wear patterns do occur, the bedknife and possibly the reel should be reground.

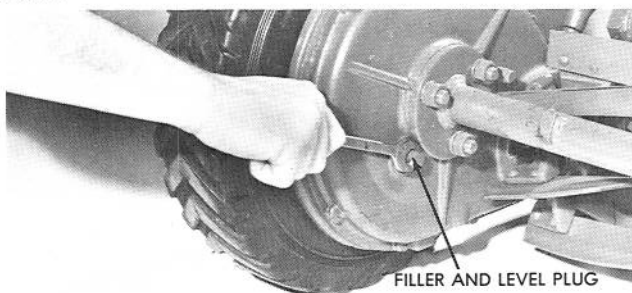
MOWING PROCEDURES

1. The Spartan mower is designed to provide excellent service when operated at proper cutting speeds. The mower will cut well at any speed between 1 - 6 MPH, depending upon turf conditions. The most efficient cutting speed, under most conditions, is between 4 - 6 MPH. Frequency of cut (clip) of the mower is not altered by a change in ground speed.
2. Caution should be exercised in the form of reduced cutting speeds when mowing sparse grass, extremely dry grass, or in trimming conditions where the grass is being "topped off". The mower is dependent upon the grass for lubrication between bedknife and reel. Any lack of or reduction in lubrication at this point might damage these two components. Therefore, it is recommended that the operating speed be reduced when these adverse conditions are present.
3. When transporting the mowers from one turf area to another with a frame unit, it is necessary that the reel be disengaged (See Reel Engage/Disengage, page 6). It is desirable to equip mowers with pneumatic tires if mowers are to be transported for long over hard surfaces. The recommended tire inflation pressure for pneumatic tires is 35 PSI. This will provide uniform deflection in the tires and a uniform height-of-cut. Under normal mowing conditions and short transport distances over hard surfaces, steel wheels prove satisfactory.

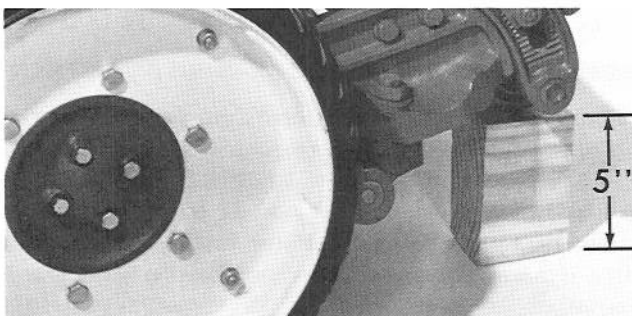
MAINTENANCE

LUBRICATION

Your Spartan has been fully lubricated at the factory. Once each season drain, flush and refill the right and left gear cases.

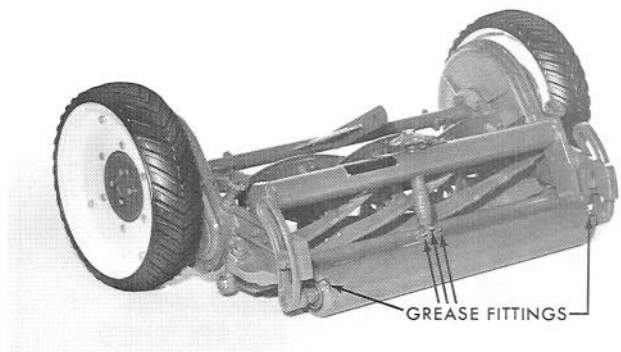


To fill the Gear Case, see Gear Case Oil Level Check, page 5, no. 9.



Greasing

The mowers should be greased every 8 hours of operation with Texaco Marfak Heavy Duty 2 wheel bearing grease or equivalent, to obtain maximum life. This grease can be used on all greasing points on the SPARTANS.

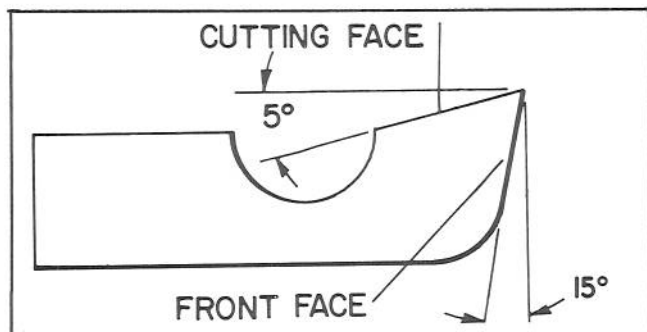


IMPORTANT: If high pressure hose is used to clean the Spartan, grease the mower immediately after cleaning. Failure to do so may cause damage to rod end bearings and other components.

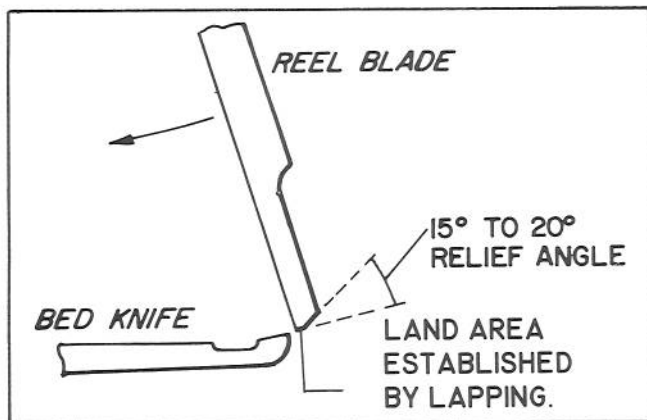
MAINTENANCE (Continued)

GRINDING

New and old bedknives should be ground attached to the bedbar; this ensures rigidity during grinding and insures a true knife. Refer to the illustration when grinding the knives and obtain as near as possible the relief angles indicated. Always grind the front face of the knife, then the top face. By following this procedure, grinding flash from the cutting edge will be removed. In grinding, avoid a hard contact between knife and grinding wheel. If hard contact occurs, excessive heat buildup will take place, causing premature wearing of the grinding wheel and reduced life of the knife.



The land area and relief angle of reel blade are pointed out in illustration below. The land area is that part of the reel blade that actually comes in contact with the bedknife and cuts the grass in a scissors action. The relief or back grind angle is ground into reel blade to provide clearance or relief behind contacting edges to reduce drag or friction. Recommended relief angle for all Toro reel blades is 15 degrees. After reel and bedknife have been ground, adjust bed bar-knife so it is parallel with reel. Refer to page 15, No. 50 for Rod End Bearing Adjustment that will facilitate Bedknife/Reel Relationship as described on page 5. For detailed sharpening information, refer to the new Toro Sharpening Manual, Form Number 492-0147.



BACK LAPPING

Spartan mowers are set up as follows:

1. Remove the right hand wheel.
2. Place wheel under gear case for support.

3. Remove the reel pinion cover.
4. Disengage the reel.
5. Connect the lapping machine coupler to the nut on the end of the reel shaft.

When lapping, use a good grade of commercial lapping compound. A medium grit should be for initial lapping and a fine grit for finishing. A solution of one part liquid detergent and two parts lapping compound is recommended. The liquid detergent greatly eases washing away the compound when finished. Water soluble oil may also be used as a compound carrier.

NOTE: Lapping solution must be kept in free flowing condition to get even distribution on bed knife and reel.

The lapping procedure is as follows:

1. Adjust bedknife to reel so light contact is evident.
2. Operate the lapping machine so the reel turns in a reverse direction. Apply lapping solution continuously and maintain light bedknife to reel contact.
3. Stop lapping machine periodically to check cutting surfaces for sharpness. Continue lapping until sharp cutting edges have been restored.

NOTE: If the cutting edges are severely rounded, both sharpening and lapping may be required.

4. Wash off all lapping solution. Using paper, check for sharpness along entire length of each reel blade. If paper cannot be cut cleanly along entire length of each reel blade, grinding is necessary.

BEDKNIFE REPLACEMENT OR REVERSING

A reversible bedknife is standard equipment which doubles the life of this part of the mower.

1. To replace or reverse the bedknife, remove the eleven (11) screws holding the knife to the bed bar; replace or reverse the knife and reinstall the screws. All screws should be lubricated with oil and tightened to 250-300 in./lbs. torque. The screws should be tightened by starting at center of the bedknife and alternating until all screws are secured.
2. True the bedknife attached to the bedbar by grinding. Refer to Toro Sharpening Manual Form Number 492-0147.
3. Perform Bedknife/Reel Relationship (shop) Adjustment as described on page 5.

REEL, ROLLER AND WHEEL BEARING ADJUSTMENT

After the initial 30 operating hours, check the reel bearing, roller bearing, and wheel bearing after every 200-250 operating hours. If necessary, adjust the reel bearing (See Adjust Reel Bearing, page 14, nos. 32 & 33). If necessary, adjust the roller bearing (See Roller Assembly, page 13, no. 12). If necessary, adjust the wheel bearing (See page 4, no. 4).

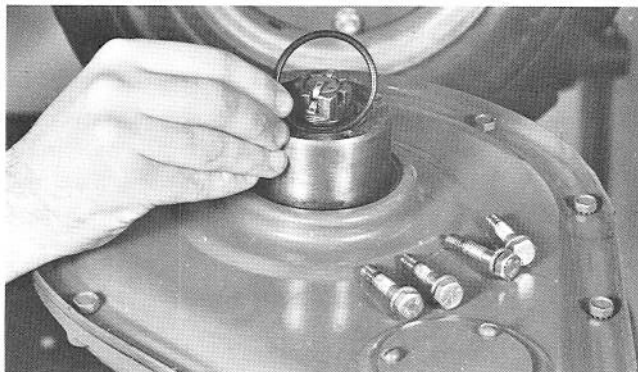
MAINTENANCE (Continued)

IMPORTANT: While performing the following maintenance procedures, keep all parts in order as they are removed, so they can be reinstalled in their original positions.

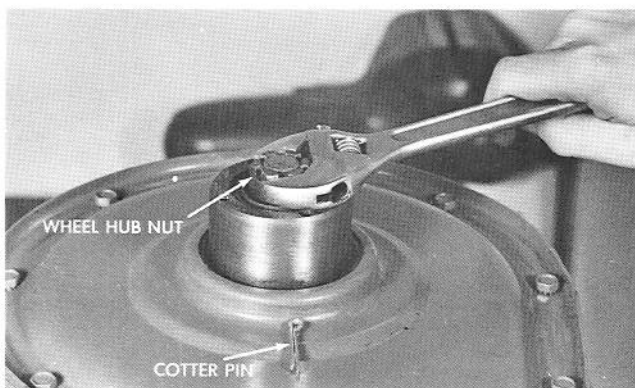
MOWER SERVICING PROCEDURE DISASSEMBLY



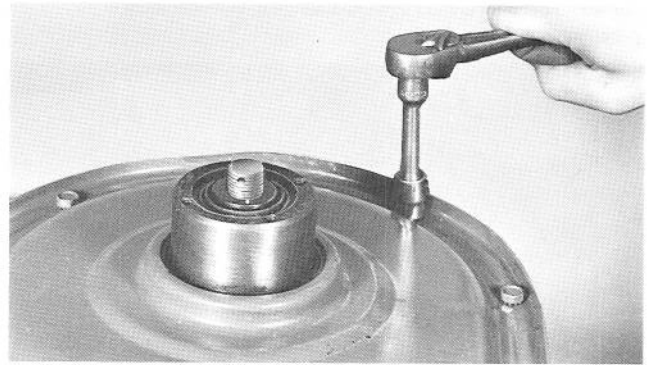
1. Remove four (4) cap screws securing wheel to wheel hub. Remove wheel from hub.



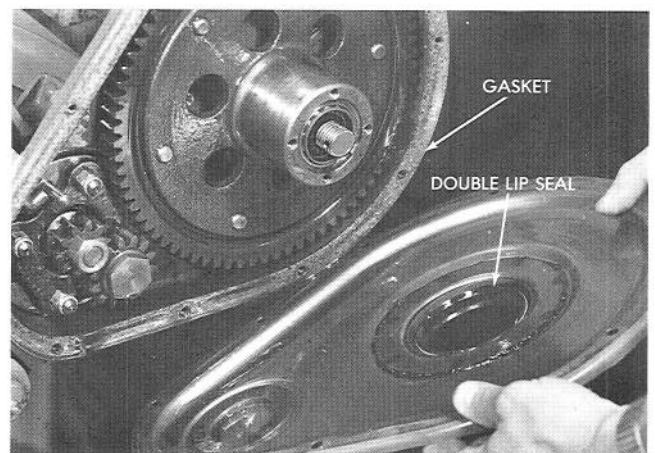
2. Remove "O" ring from inside of hub.



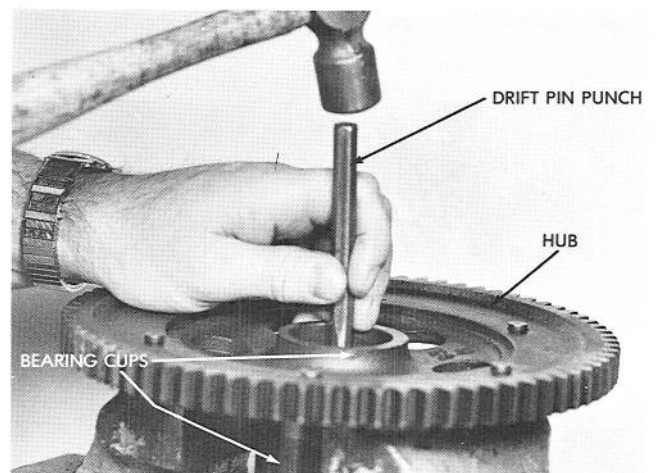
3. Remove cotter pin and slotted nut from axle shaft.



4. Place oil pan under gear case assembly. Loosen the ten (10) cap screws securing cover to gear case.



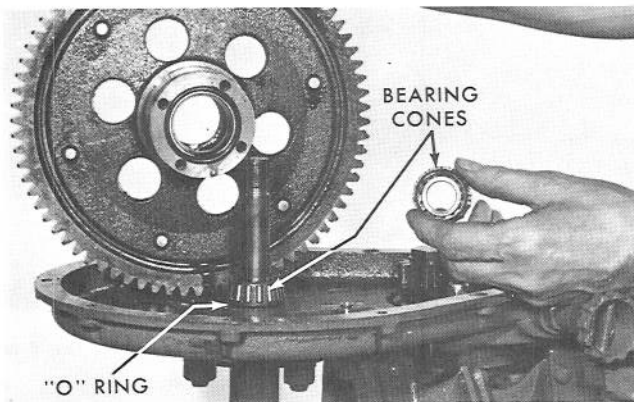
5. Separate cover from gearcase and allow oil to drain. Remove cover and discard gear case gasket.
6. Remove double lip seal from cover if worn or damaged. The ring gear hub and gear assembly can be removed from axle shaft as soon as gear case cover is removed.



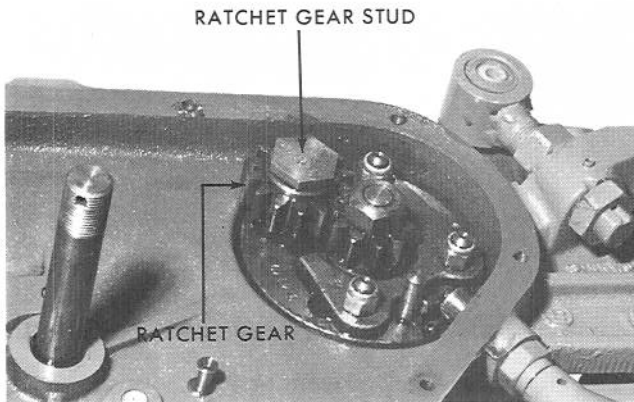
7. Use a drift pin punch to remove bearing cups from hub. Note: Access is provided in the bore for drift pin punch.

MAINTENANCE (Continued)

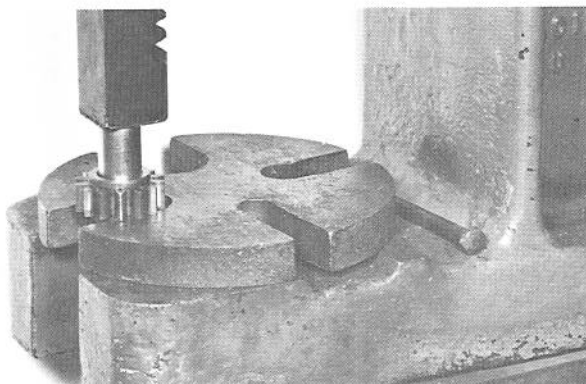
MOWER SERVICING PROCEDURE (Continued) DISASSEMBLY



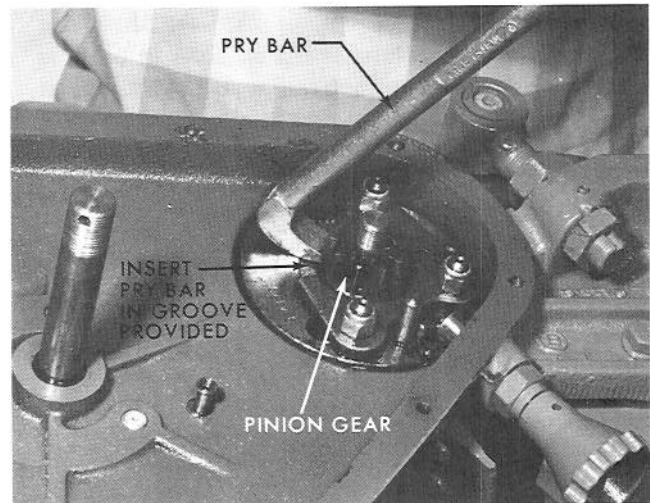
8. Remove inner cone and "O" ring from axle shaft; a breakdown of parts is shown above.



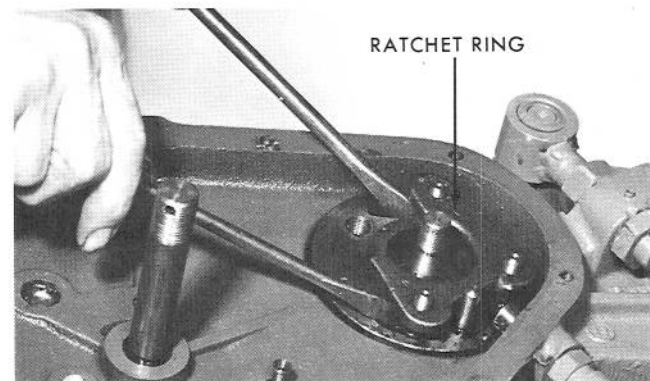
9. To prevent the reel from turning, place a wooden block between reel blades and axle shaft. Using a socket wrench, remove ratchet gear stud securing ratchet gear. Remove left-hand ratchet gear stud by rotating it clockwise. Remove right-hand ratchet gear stud by rotating it counterclockwise. Removal of the ratchet gear stud will free ratchet gear.



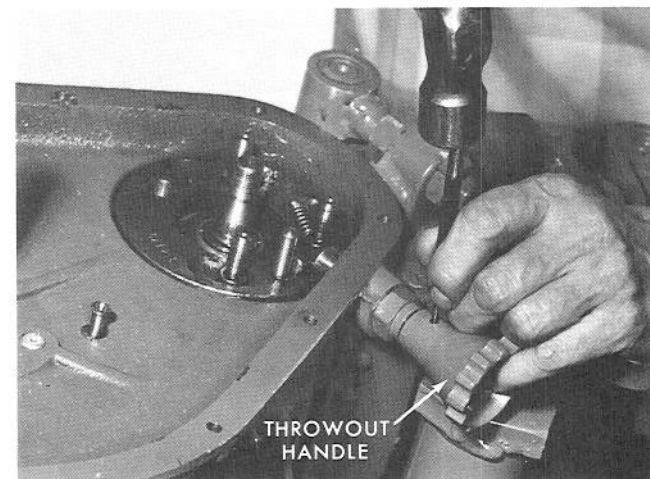
10. Remove needle bearing from ratchet gear by use of a sleeve and arbor press.



11. Remove nut securing pinion gear. Insert a pry bar in groove provided and pry off reel drive gear. Remove Woodruff key from keyway in reel shaft.



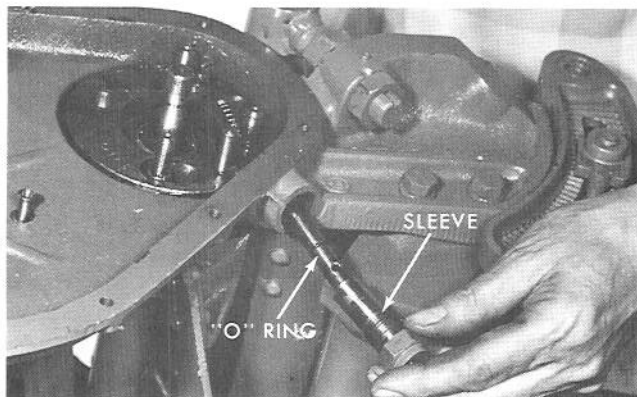
12. Remove the lower compression spring. Disassemble the ratchet ring from the ratchet gear ring by removing three (3) locknuts and prying equally around the ratchet ring. Be extremely careful to prevent damage to the mating surfaces.



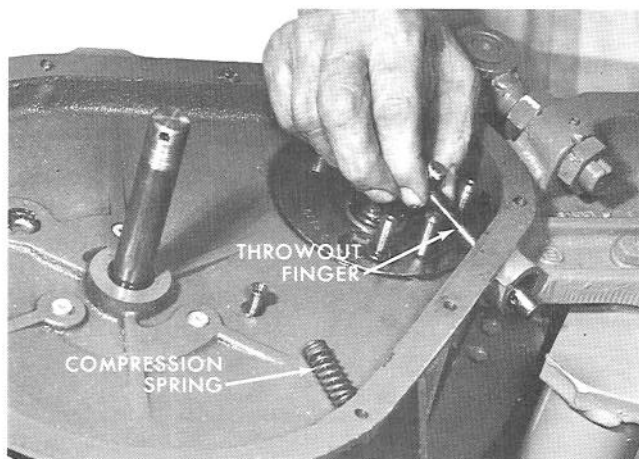
13. For removal of the throwout handle, "O" ring and finger, drive pin from throwout handle. Remove throwout sleeve by turning counterclockwise.

MAINTENANCE (Continued)

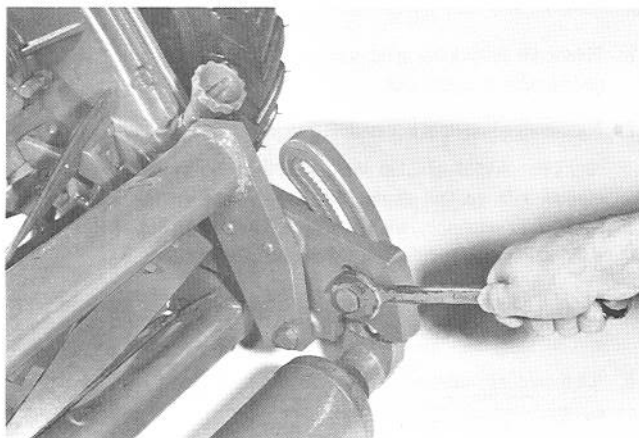
MOWER SERVICING PROCEDURE (Continued) DISASSEMBLY



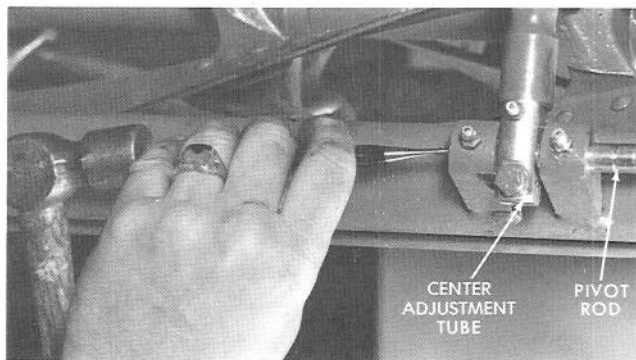
NOTE: When replacing "O" ring, sleeve must be removed. Throwout sleeve need only be loosened for removal of ratchet gear ring.



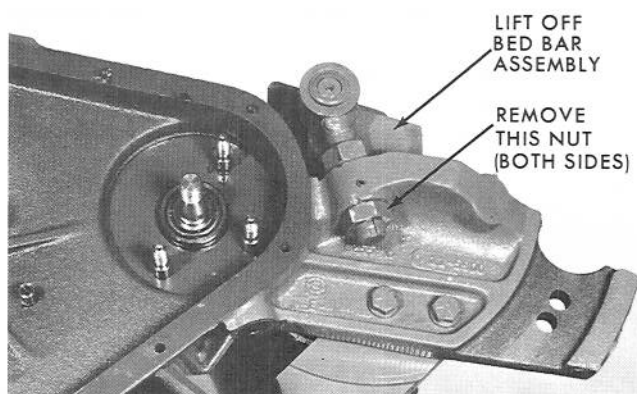
14. Lift out the upper compression spring. Remove ratchet gear ring from gear case.



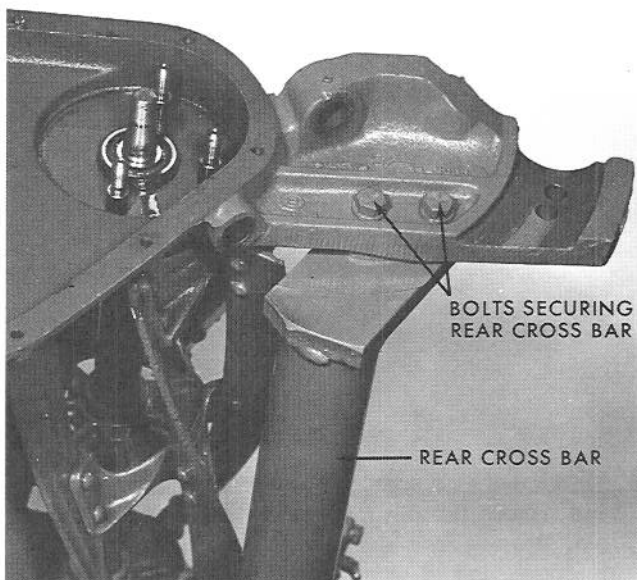
15. Remove roller adjustment bolts and nuts from each side of roller. Slide complete roller assembly from the roller adjusting brackets.



16. Loosen capscrew at bottom of center adjustment tube and tap out pivot rod.



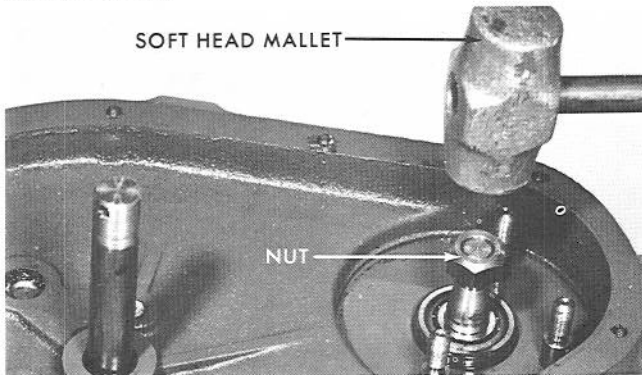
17. Remove upper jam nut from each rod end bearing. Remove bedknife and bedbar assembly from gear case. If pivots are damaged, grind or burn off weld, and remove from bedbar.



18. Remove nuts and lockwashers securing rear cross bar.

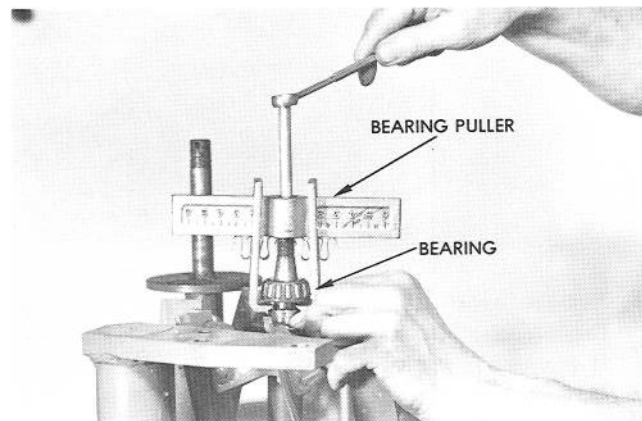
MAINTENANCE (Continued)

MOWER SERVICING PROCEDURE (Continued) DISASSEMBLY

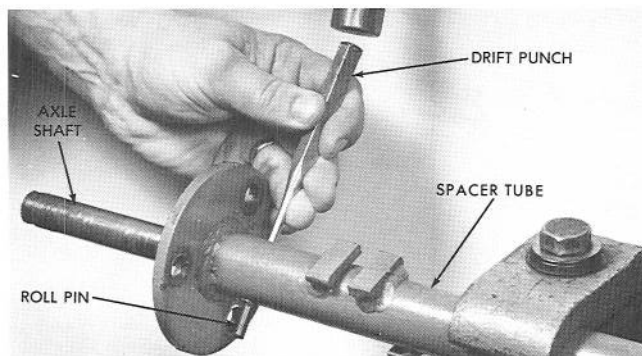


19. Reinstall nut on end of reel shaft. Using a soft head mallet, rap end of reel shaft and lift up on gear case to remove nut from reel shaft if bearing cup remains in gear case.

NOTE: Remove any rust from axle shaft to prevent binding. Clean gear case with solvent. If studs have been removed, apply Permatex No. 2 to threads.

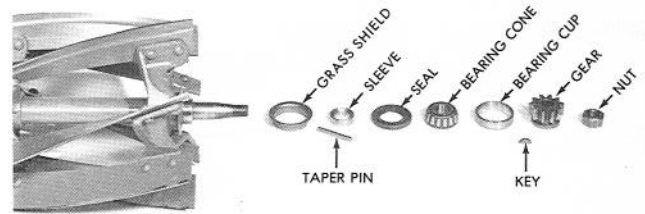


20. Using a bearing puller, remove bearing cone and seal from reel shaft. Discard seal and "O" ring in the adjusting nut. Examine bearing cone carefully; discard if damaged.

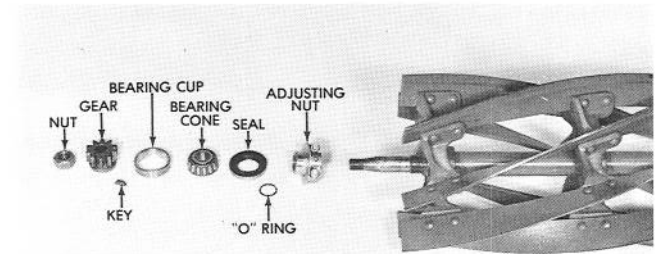


21. To remove axle shaft, use a drift punch and hammer and remove roll pin from cross tube and discard roll pin. Remove axle shaft from cross tube. To replace bushings, use a long shaft, somewhat smaller in diameter than axle shaft, and drive bushings from opposite ends.

REEL DISASSEMBLY



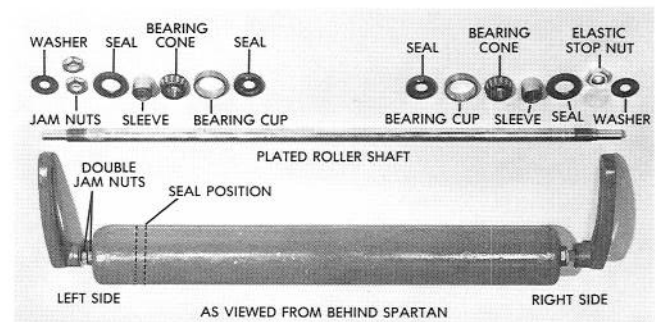
RIGHT END



LEFT END

22. If the reel assembly is being removed, remove the remaining components from both ends of the reel shaft. Inspect for damage and replace if necessary. Reassemble in reverse order of disassembly.

ROLLER DISASSEMBLY



1. Remove brackets and washers from each end of roller and inspect bushings.
2. Remove elastic stop nut.

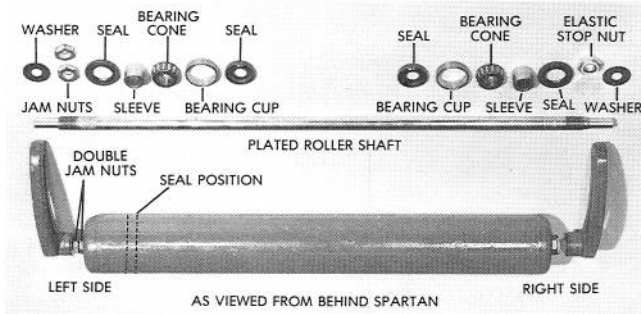
NOTE: After elastic stop nut has been removed, slide sleeve off roller shaft. Point end of roller shaft downward into a container, at the same time pulling roller shaft out, allowing lubricant to drain from roller.

3. If roller shaft is to be replaced, remove double jam nuts.
4. Remove remaining sleeve and seals from both ends of roller.
5. Remove bearing cones from each end of roller.
6. Remove bearing cups with caution.
7. Remove inner seals by using a seal remover.

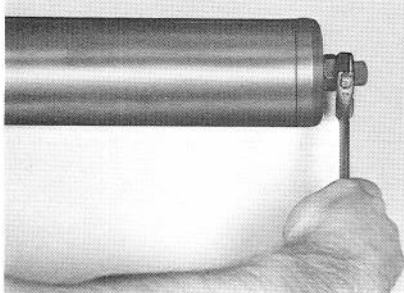
MAINTENANCE (Continued)

MOWER SERVICING PROCEDURE (Continued)

ROLLER ASSEMBLY



1. Lightly oil lips of inner seals. Install inner seals on each end of roller, making sure that garter springs face inboard.
 2. Replace bearing cups and insert bearing cones into roller.
 3. Lightly oil lips of outer seals. Install outer seals on each end of roller, making sure that garter springs face inboard.
 4. Slide one (1) sleeve onto roller shaft against double jam nuts.
 5. Wrap threaded area of roller shaft with cellophane tape to protect seals, and carefully slide shaft through right-hand side of the roller. Slide roller shaft into roller until it penetrates the innermost oil seal on the right-hand side.
 6. Pour approximately one (1) pint (16 ounces) of SAE 90 or 140 gear oil into the roller housing.
 7. After oil has been added, carefully push roller shaft through the entire roller assembly. Remove cellophane tape.
 8. Install sleeve on roller shaft and slide up against bearing cone.
 9. Install elastic stop nut and secure by holding double jam nuts. Tighten elastic stop nut.
- NOTE: Tighten elastic stop nut until all axial and radial motion has been removed from the roller shaft and bearings. Ensure that roller rotates freely on shaft.**
10. Grease bearings with Texaco Marfak Heavy Duty 2 wheel bearing grease or equivalent.
 11. Reinstall washers and install left and right-hand bracket and bushing assemblies.



CAUTION: Do not overtighten elastic stop nut because it will overload bearings. The roller is installed with the jam nuts on the left side (see photo opposite). If shaft turns while tightening stop nut, grip double nuts securely.

GEAR CASE AND FRAME ASSEMBLY

1. Insert a bushing into each end of spacer tube. Align hole in bushing with hole in tube. Slide axle shaft through spacer tube. Secure bushings and shaft to tube with roll pins.
2. Install seal in right-hand gear case. Mount right-hand gear case to the tube, securing with three (3) lockwashers and mounting nuts. Install "O" ring on axle shaft.
3. Mount rear cross bar to right-hand gear case, using one capscrew and lockwasher from the inside, and two (2) capscrews and lockwashers through outside of gear case.
4. Insert new "O" ring in groove inside adjusting nut. Coat "O" ring with heavy oil or grease. Thread adjusting nut onto left end of shaft.
5. Position right side of reel assembly into right-hand side plate.
6. Press seal into left-hand gear case. Mount gear case to spacer tube and reel shaft. Secure with three (3) lockwashers and nuts. Install "O" ring on axle shaft.
7. Secure rear cross bar to gear case using capscrews and lockwashers. Install capscrews and lockwashers through rear cross bar and into gear case.
8. At this time, ensure that all fasteners are secure on both sides.
9. Install bearing cone over left-hand reel shaft and seat with a driver and hammer.
10. Assemble Woodruff key to left-hand reel shaft.
11. On the left side, assemble ratchet gear ring over the reel shaft and insert two (2) compression springs.
12. Install bearing cup in left-hand ratchet ring and seat properly.
13. Assemble left-hand ratchet ring over the ratchet gear ring and seat with a driver and hammer. Secure entire assembly with three (3) stop nuts. Nuts should be drawn up evenly and gradually to 14-22 ft./lbs. to prevent breakage of the ratchet ring.

NOTE: Ensure that assembly will ratchet. If assembly does not ratchet, back nuts off slightly.

14. Place "O" ring into groove on left-hand throw-out finger, coat ring with heavy oil or grease, and slide through side plate, making sure that "O" ring does not get damaged. Install throw-out sleeve over throw-out finger and tighten securely in gear case.

MAINTENANCE (Continued)

MOWER SERVICING PROCEDURE (Continued) GEAR CASE AND FRAME ASSEMBLY

15. Slide throw-out handle over finger and secure in place with a drive-lock pin.
16. Slide bearing cone over right-hand reel shaft and seat with a driver and a hammer.
17. Insert Woodruff key in keyway.
18. On the right side, assemble the ratchet gear ring over the reel shaft and insert two (2) compression springs.
19. Install bearing cup in right-hand ratchet ring and seat properly.
20. Assemble right-hand ratchet ring over ratchet gear ring and seat with a driver and hammer. Secure entire assembly with three (3) stop nuts. Nuts should be drawn up evenly and gradually to 14-22 ft./lbs. to prevent breaking the ratchet ring.

NOTE: Ensure that assembly will ratchet. If assembly does not ratchet, back nuts off slightly.

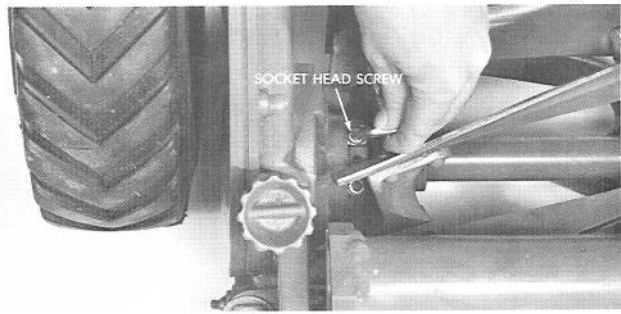
21. Place "O" ring into groove on right-hand throw-out finger, coat ring with heavy oil or grease, and slide through side plate, making sure that "O" ring does not get damaged. Install throw-out sleeve over throw-out finger and tighten securely in gear case.
22. Slide throw-out handle over finger and secure in place with a drive-lock pin.
23. Assemble reel pinion gear over right-hand reel shaft and seat over Woodruff key.
24. Secure nut (left-hand thread) on right-hand reel shaft.
25. Assemble the ratchet gear and bearing assembly to right-hand ratchet gear ring and secure with right-hand ratchet gear stud.
26. Assemble reel pinion gear over left-hand reel shaft and seat over Woodruff key.
27. Secure nut (right-hand thread) on left-hand reel shaft.
28. Assemble the ratchet gear and bearing assembly to the left-hand reel ratchet gear ring and secure with the left-hand ratchet gear stud.
29. Position roller bracket assembly in slots of gear case.
30. Position right-hand and left-hand roller adjusting nuts on roller bracket assemblies. Secure in place with capscrews and lockwashers.

REEL BEARING ADJUSTMENT

31. Loosen socket head set screws in reel bearing adjusting nuts with a 7/32" Allen wrench. Tighten adjusting nut to remove all end play from the reel.
32. When end play is removed, tighten nut 1/4 turn further to pre-load the bearings.
33. Tighten the set screws in adjusting nut to 150 in./lbs.

34. BEDKNIFE AND BED BAR Assembly

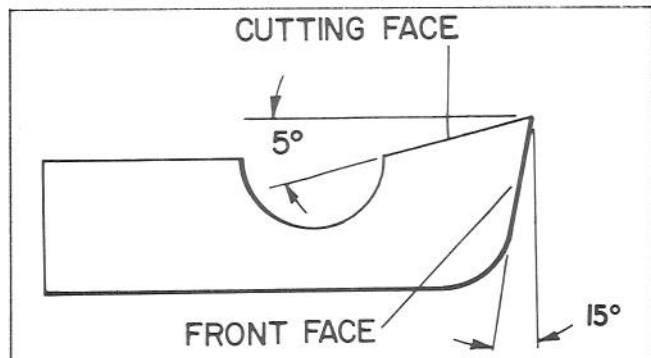
- A. Inspect and clean all mounting surfaces on bedknife, bed bar, and spacer plate.
- B. Replace bedknife screws if damaged. Oil screws prior to installation and secure center screws first.



Work outboard in both directions until all screws are tightened securely. Proper installation torque is 250-300 in./lbs.

- C. Grind bedknife if knife has been reversed, turned, or new knife has been installed. Both the front edge and top edge should be ground. Proper angle for front edge is 15 degrees and top edge is 5 degrees.

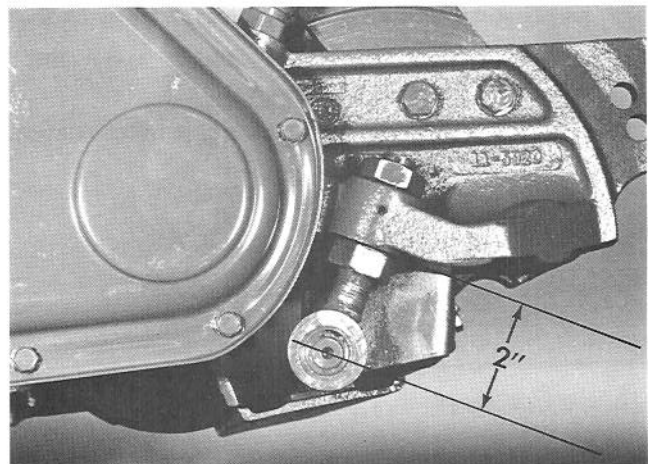
35. Thread bed bar pivots into bed bar. Tack weld one (1) hex of each pivot to the bed bar to hold in place.



36. Install both rod end bearings and lower jam nuts to pivots on bed bar.

IMPORTANT: The offset rod ends must be installed with the short side toward the bed bar.

37. Install the bed bar between the gear cases and secure with the upper jam nuts.
38. As a guide, position the midpoint of rod end bushings 2 inches from boss of each gear case. Lock in place with jam nuts. Torque to 60-80 ft./lbs.

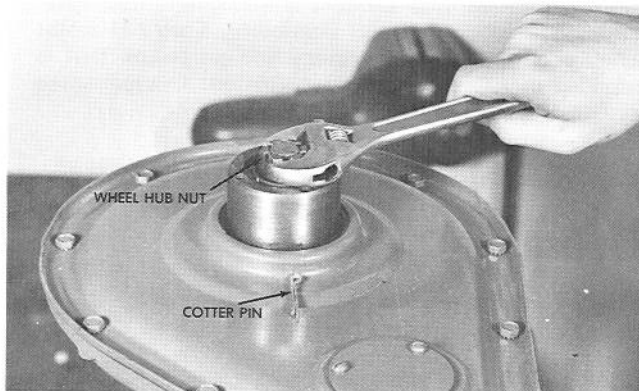


MAINTENANCE (Continued)

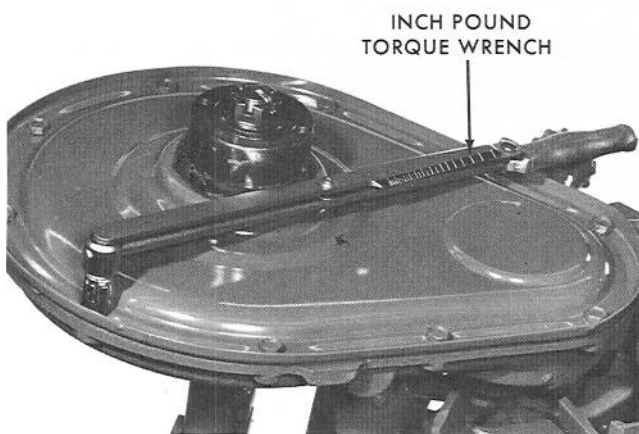
MOWER SERVICING PROCEDURE (Continued) GEAR CASE AND FRAME ASSEMBLY

NOTE: As diameter of reel decreases (due to wear), distance between midpoint of rod end bearing and boss should be decreased.

39. Press bearing cups in ring gear hub. Assemble bearing cone to left side of axle shaft. Place large ring gear and hub assembly over axle shaft and bearing cone.
40. Place another bearing over axle shaft and into ring gear hub.
41. Position wheel hub nut on axle shaft and run down with an open-end wrench. Adjust bearing by tightening nut until slight drag is felt when wheel hub is rotated. Back off one slot and install cotter pin through slotted nut and axle shaft.
42. Press seal into gear case cover. Position gasket on gear case. Lightly lubricate wheel hub double lip seal in gear case cover.
43. Position left-hand gear case cover and secure with ten (10) self-tapping screws. Torque screws to approximately 125 in./lbs.



44. Add sufficient amount (20 ounces) of SAE 140 gear lubricant to gear case (see Gear Case Oil Level Check, No. 9, page 5).
45. Place oil seal on wheel hub.

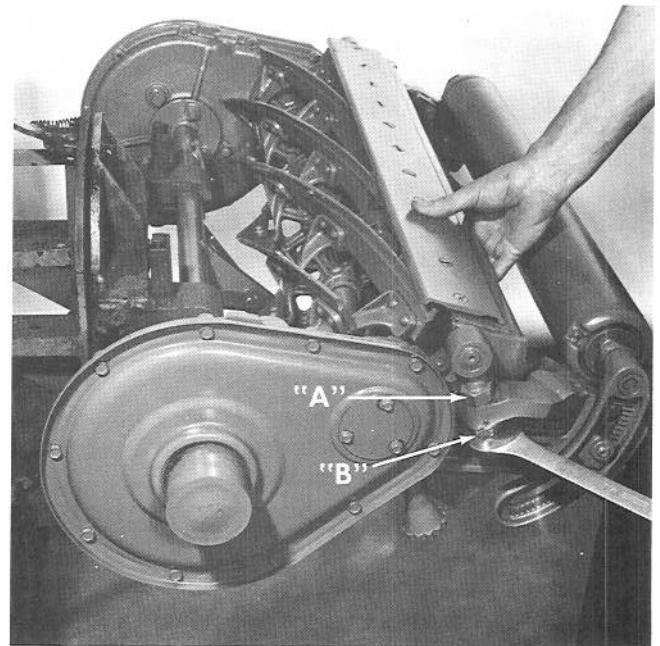


46. Secure the wheel to the wheel hub with four (4) capscrews.
47. Repeat steps 40 through 46 on opposite side.
48. Turn the Spartan upside down. Exert light hand pressure on the bedknife and insure that contact is evident all across the bedknife and reel blades. Rotate the reel and check this alignment at two or three reel locations. **NOTE:** Bed bar pivot rod should not be installed.
49. If contact is evident across the bed knife, turn Spartan right side up and reinstall center pivot rod and tighten capcrew.
50. If contact is not evident across the bedknife, adjust the rod end bearings as follows:
 - A. Loosen nut "A" and tighten nut "B".
 - B. When bedknife to reel relationship is established secure nut "A".

NOTE: Slight contact should be maintained between bedknife and reel at all cutting points.

C. Position center adjusting screw assembly to bedknife assembly and secure in place with pivot pin. **TIGHTEN CAPSCREW AT BOTTOM OF HEIGHT-OF-CUT ADJUSTMENT ROD.**

D. Turn Spartan right side up.



IMPORTANT: After the Spartan has been completely assembled, perform steps 9, 10, 11, and 12 of the Setting Up Instructions, page 5. When these steps have been completed, move the Spartan to a turf area and adjust the bedknife to reel (See Bedknife to Reel Adjustment Procedure, page 6).

PRODUCT CHANGES

In an effort to make improvements available to TORO owners as quickly as possible, minor changes are incorporated into Toro's products from time to time that do not become immediately shown in the Parts Catalog. If such a change apparently has been made in your unit, which is not reflected in your manual, see your TORO distributor or his Authorized TORO Service Dealer for information and part numbers.

IMPORTANT ORDERING INSTRUCTIONS

Repair parts are available from your Authorized TORO Service Dealer. To insure getting correct parts without delay, furnish the following information:

1. Serial number of your mower as shown on the name plate.
2. Part number, description, and quantity of each part required.
3. State whether parts should be shipped by mail or express. All repair parts are shipped F.O.B. Factory.
4. Name and address where parts are to be shipped.
5. Do not order by reference number; use part number only.

THE TORO PROMISE

It is Toro's policy to design and produce TORO products to provide our customers with a high level of performance and durability in normal operation. Our products, however, are produced in high volume, and it is inevitable that occasionally a unit will reach a customer with a defect in materials or workmanship which causes that unit to fall below the normal high

level of TORO performance. Invariably, such a defect will be noticed in a residential product within one year, and in an institutional product within ninety days after purchase. Recognizing this possibility, Toro has established a simple guarantee policy and procedure that is intended to assure customer satisfaction. This guarantee statement is as follows:

The Toro Promise

The Toro Company promises to repair any TORO product for the original purchaser if defective in materials or workmanship. The following time periods from the date of purchase apply:

Residential products	1 year
Residential products used commercially	45 days
Institutional products	90 days

The costs of parts and labor are included, but the customer pays the transportation costs. Just return any residential product to an Authorized TORO Service Dealer, or any institutional product to a TORO distributor.

Should you feel that a product is defective, and wish to rely on The Toro Promise, the following procedure is recommended:

1. Contact any TORO dealer or distributor, but preferably the dealer or distributor from whom you purchased the product.
2. He will instruct you to either return the product to him, or tell you the name and address of your nearest Authorized TORO Service Dealer if the product is to be returned to such dealer.
3. Take the product and your original sales slip, or other evidence of purchase date, to the servicing dealer.

4. The servicing dealer will inspect the unit, advise you whether the product is defective and, if so, make all repairs necessary to correct the defect without extra charge to you.

If for any reason you are dissatisfied with the dealer's analysis of the defect or the service he performs, we urge you to contact us. Write:

TORO "Customer Care" Department
8111 Lyndale Avenue South
Bloomington, Minnesota 55420