FORM NO. 3323-703

TORO®

Model No. 30384—200000001 & Up

Operator's Manual

Guardian® 84" Recycler®

for Groundsmaster® 3000 Series Traction Units

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

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

TORO®
THIS UNIT CONFORMS TO ANSI/OPEI B71.4–1990

The Groundsmaster 3000 Series Traction unit with a GUARDIAN 84" RECYCLER Deck conforms to the American National Standards Institute's for Riding Mowers.

FOREWORD

The Guardian® 84" Recycler® Cutting Deck has advanced concepts in engineering, design and safety; and if maintained properly, will give excellent service.

Since this is a high−quality product, Toro is concerned about the future use of the machine and safety of the user. Therefore, read this manual to familiarize yourself with proper set−up, operation and maintenance instructions. The major sections of the manual are:

1. Safety Instructions
2. Set−up Instructions
3. Before Operating
4. Operating Instructions
5. Lubrication
6. Maintenance

Certain information in this manual is emphasized. DANGER, WARNING and CAUTION identify personal safety related information. IMPORTANT identifies mechanical information demanding special attention. Be sure to read this directive because it deals with the possibility of damaging a part or parts of the machine. NOTE identifies general information worthy of special attention.

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SAFETY INSTRUCTIONS

The safety alert symbol means CAUTION, WARNING or DANGER — "personal safety instruction". Read and understand the instruction because it has to do with safety. Failure to comply with the instruction may result in personal injury.

Hazard control and accident prevention are dependent upon the awareness, concern, and proper training of the personnel involved in the operation, transport, maintenance, and storage of the machine. Improper use or maintenance of the machine can result in injury or death. To reduce the potential for injury or death, comply with the following safety instructions.

BEFORE OPERATING

1. Read and understand the contents of this Operator's Manual before operating the machine. Become familiar with all controls and know how to stop quickly. A free replacement manual is available by sending complete Model and Serial Number to:

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

2. Never allow children to operate the machine. Do not allow adults to operate machine without proper instruction. Only trained operators who have read this manual should operate this machine.

3. Never operate the machine when under the influence of drugs or alcohol.

4. Remove all debris or other objects that might be picked up and thrown by the cutter blades. Keep all bystanders away from the mowing area.

5. Keep all shields and safety devices in place. If a shield, safety device or decal is illegible or damaged, repair or replace it before operation is commenced. Also tighten any loose nuts, bolts and screws to assure machine is in safe operating condition.

6. Do not operate machine while wearing sandals, tennis shoes, sneakers or shorts. Also, do not wear loose fitting clothing which could get caught in moving parts. Always wear long pants and substantial shoes. Wearing safety glasses, safety shoes and a helmet is advisable and required by some local ordinances and insurance regulations.

7. Check interlock switches daily for proper operation (Refer To Section in Traction Unit Operator's Manual on Checking Interlock Switches). Do not rely entirely on safety switches -shut off engine before getting off seat. If a switch fails, replace it before operating the machine. The interlock system is for your protection, so do not bypass it. Replace all interlock switches every two years. Interlock switches should be adjusted so:

A. Engine cannot be started unless traction pedal is released (neutral position) and PTO switch is DISENGAGED (off position).

B. Engine stops if operator gets off seat when traction pedal is depressed.

C. Engine stops if operator gets off seat when PTO lever is ENGAGED (on position).

8. Fill fuel tank before starting the engine. Avoid spilling any fuel. Since fuel is flammable, handle it carefully.

A. Use an approved fuel container.

B. Do not fill tank while engine is hot or running.

C. Do not smoke while handling gasoline.

D. Fill fuel tank outdoors and up to about one inch from top of the tank, not the filler neck.

E. Wipe up any spilled gasoline.

WHILE OPERATING

9. Do not run the engine in a confined area without adequate ventilation. Exhaust fumes are hazardous and could possibly be deadly.

10. Maximum seating capacity is one person. Never carry passengers.

11. Sit on the seat when starting the engine and operating the machine.

12. This product may exceed noise levels of 85 dB(A) at the operator position. Ear protectors are recommended for prolonged exposure to reduce the potential of permanent hearing damage.

13. Before starting the engine:

A. Engage the parking brake.

B. Ensure traction pedal is in neutral and PTO is in the OFF, disengaged position.

C. After engine is started, release parking brake and keep foot off traction pedal. Machine must not move. If movement is evident, the neutral return mechanism is adjusted incorrectly; therefore, shut engine off and adjust until machine does not move when traction pedal is released.

14. Using the machine demands attention, and to prevent loss of control:

A. Mow only in daylight or when there is good artificial light.

B. Drive slowly and watch for holes or other hidden hazards.

SAFETY INSTRUCTIONS

C. Do not drive close to a sand trap, ditch, creek or other hazard.

D. Reduce speed when making sharp turns and when turning on hillsides.

E. Avoid sudden starts and stops.

F. Before backing up, look to the rear and assure no one is behind the machine.

G. Watch out for traffic when near or crossing roads. Always yield the right−of −way.

15. If engine stalls or machine loses headway and cannot make it to the top of a slope, do not turn machine around. Always back slowly straight down the slope.

16. DON'T TAKE AN INJURY RISK! When a person or pet appears unexpectedly in or near the mowing area, **STOP MOWING**. Careless operation, combined with terrain angles, ricochets, or improperly positioned guards can lead to thrown object injuries. Do not resume mowing until area is cleared.

17. Never raise the cutting unit while the blades are rotating.

18. If the cutting blades strike a solid object or the machine vibrates abnormally, disengage PTO, move throttle to SLOW, set parking brake and shut engine off. Remove key from switch to prevent possibility of accidental starting. Check cutting unit and traction unit for damage and malfunctioning parts. Repair any damage before restarting the engine and operating the cutting unit. Be sure blades are in good condition and blade bolts are tight.

19. Cut grass slopes carefully. Do not start, stop, or turn suddenly.

20. Do not touch engine or muffler while engine is running or soon after it is stopped. These areas could be hot enough to cause a burn.

21. Before getting off the seat:

A. Move traction pedal to neutral position and remove foot from pedal.

B. Set the parking brake and disengage the PTO.

C. Shut the engine off and remove the key from the ignition switch. Wait for all movement to stop before getting off the seat.

22. Lower the cutting unit to the ground and remove key from ignition switch whenever machine is left unattended.

MAINTENANCE

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

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

25. To reduce potential fire hazard, keep the engine free of excessive grease, grass, leaves and accumulations of dirt. Never wash a warm engine or any electrical parts with water.

26. Be sure machine is in safe operating condition by keeping nuts, bolts and screws tight. Check the blade mounting bolts and nuts frequently to be sure they are tightened to specification.

27. Make sure all hydraulic line connectors are tight, and all hydraulic hoses and lines are in good condition before applying pressure to the system.

28. Keep body and hands away from pin hole leaks in hydraulic lines that eject high pressure hydraulic fluid. Use cardboard or paper to find hydraulic leaks. Hydraulic fluid escaping under pressure can penetrate skin and cause injury. Fluid accidentally injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

29. Before disconnecting or performing any work on the hydraulic system, all pressure in system must be relieved by stopping engine and lowering cutting unit to the ground.

30. If the engine must be running to perform a maintenance adjustment, keep hands, feet, clothing and other parts of the body away from the cutting unit blades and other moving parts.

31. Do not overspeed the engine by changing governor settings. To be sure of safety and accuracy, have an Authorized TORO Distributor check maximum engine speed with a tachometer.

32. Engine must be shut off before checking oil or adding oil to the crankcase.

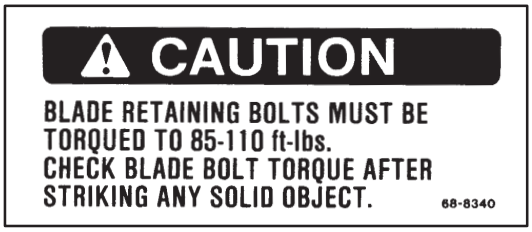
33. At the time of manufacture the cutting unit conformed to safety standards in effect for riding mowers. Therefore, to ensure optimum performance and safety, always purchase genuine TORO replacement parts and accessories to keep the Toro all TORO. NEVER USE "WILL−FIT" REPLACEMENT PARTS AND ACCESSORIES MADE BY OTHER MANUFACTURERS. Look for the TORO logo to assure genuineness. Using unapproved replacement parts and accessories could void the warranty of The Toro Company.

SAFETY AND INSTRUCTION DECALS

The following decals are installed on the machine. If any become damaged or illegible, replace it. The decal part number is listed below and in your parts catalog. Replacements can be ordered from your Authorized Toro Distributor.

On Each Corner Of Cutting Unit (Part No. 43−8480)

On Right & Left Covers (Part No. 93−0299)

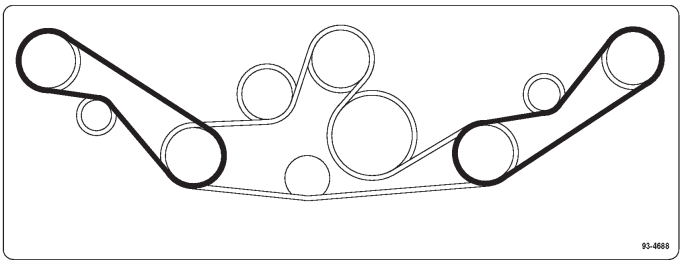


On Front of Cutting Unit (Part No. 68−8340)

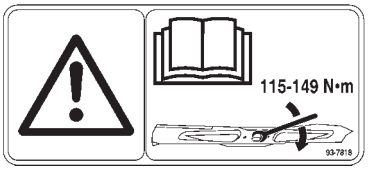
On Gearbox Base (Part No. 93−6697)

On Front of Deck (Part No. 88−1270)

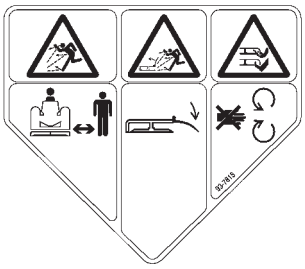
On Deck Channels, Under Covers (Part No. 85−6410)



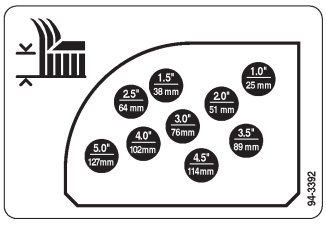
On Right Rear Top of Deck Under Cover (Part No. 93−4688)



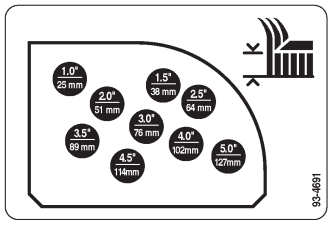
On Front of Cutting Unit (Part No. 93−7818)
Replaces Decal Part No. 68−8340 for CE



On Each Corner Of Cutting Unit (Part No. 93−7815)
Replaces Decal Part No. 43−8480 for CE



On Right Rear Top of Deck (Part No. 94−3392)

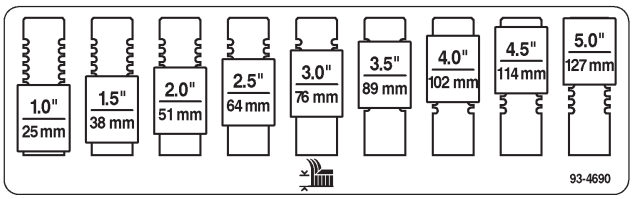


On left Rear Top of Deck (Part No. 93−4691)

SAFETY AND INSTRUCTION DECALS

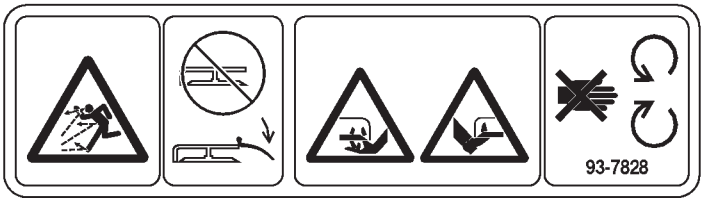
On Front of Deck
(Part No. 66−1340)

On Front Of Deck
(Part No. 93−7824)
Replaces Decal Part No.
66−1340 for CE



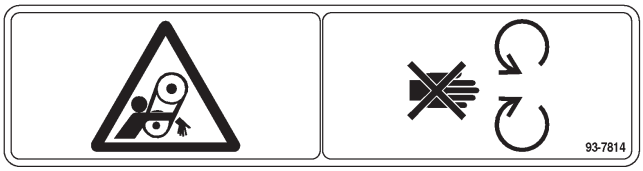
On Each Castor Arm
(Part No. 93−4690)

On Rear of Deck
(Part No. 66−6380)



On Rear Of Deck
(Part No. 93−7828)
Replaces Decal Part No.
66−6380 for CE

On Each Castor Arm
(Part No. 93−4894)



On Deck Channels, Under Covers
(Part No. 93−7814)
Replaces Decal Part No. 85−6410 for CE

SPECIFICATIONS

Type: 84” width of cut, 5 blades, 3 blade center section, and 2 one blade wings. Toro Recycler technology.

Mowing Rate: Mows up to 4.7 acres/hr at 5.5 mph.

Trimming Ability: Deck is centered on tractor with 15.5 inches of over hang on each side. Uncut circle is 24.0 inches on both left and right with no brakes.

Height Of Cut: 1−5 inches adjustable in 1/2 inch increments. Front adjustment is with snapper pin and grooves in castor shaft. Rear adjustment is with hanger brackets and pin.

Construction: 12 gauge steel, 4.25 inches deep, welded construction and reinforced with 10 gauge steel channels. Bolt−in 12 gauge steel recycling chambers.

Cutter Drive: Isolation mount PTO driven gearbox with 1:1.35 spiral bevel gears. One ”BB” section belt on center section. One ”B” section belt on each wing. Fixed idler on main deck with spring adjustment. Self−tensioning idler pulleys on each wing. 1.25” diameter spindle shafts, turn on two greaseable tapered roller bearings (greaseable from top of deck). A positive splined connection attaches pulleys to spindle shafts for high torque capacity.

Blades: Five 19” long, .25” thick, heat−treated steel.

Suspension & Castor Wheels: Two front castors, consisting of 10” pneumatic wheel and tire assembly with sealed ball bearings. Rear of deck is suspended from lift arms with adjustable deck rake. Hydraulic counter balance and lift system designed integral with deck for maximum flotation.

Anti-scalp Features: Anti-scalp cup located on each blade. Three anti-scalp rollers on center deck. Anti-scalp wheel and adjustable skid on each wing. Wings flex 0−15 degrees up.

Deck Covers: High impact plastic covers.

Quick Attach System: Tapered joint with over center adjustable tensioning latch.

Weight: 625 lbs.

Specifications and design subject to change without notice.

LOOSE PARTS

NOTE: Use this chart as a checklist to assure all parts have been received. Without these parts, total set−up cannot be completed.

Description	Qty.	Use
Castor Wheel Assembly	2	Install Castor Wheel Assemblies.
Lift Arm Assembly	2	Mount to Traction Unit and Cutting Unit
Drive Shaft Cover Capscrews 1/4−20 x .75” lg.	1 4	Mount Drive Shaft Cover
Clevis Pin Hair Pin Cotter	2 2	Secure Height-of-Cut Chains
Decals	14	Apply for CE applications
Operator’s Manual	1	Read Before Operating Machine.
Parts Catalog	1	
Registration Card	1	Fill Out And Return To Toro.

SET–UP INSTRUCTIONS

INSTALL CASTOR WHEEL ASSEMBLIES (Fig. 1)

The snapper pins have been installed in castor arms for shipping.

1. Remove snapper pins shipped on each castor arm.

2. Slide castor wheel assembly into castor arm to desired height-of-cut.

3. Insert snapper pin through holes in castor arm and groove in castor shaft to secure assembly. Lock snapper pin.

4. Assure both castor wheels are set at same height-of-cut.

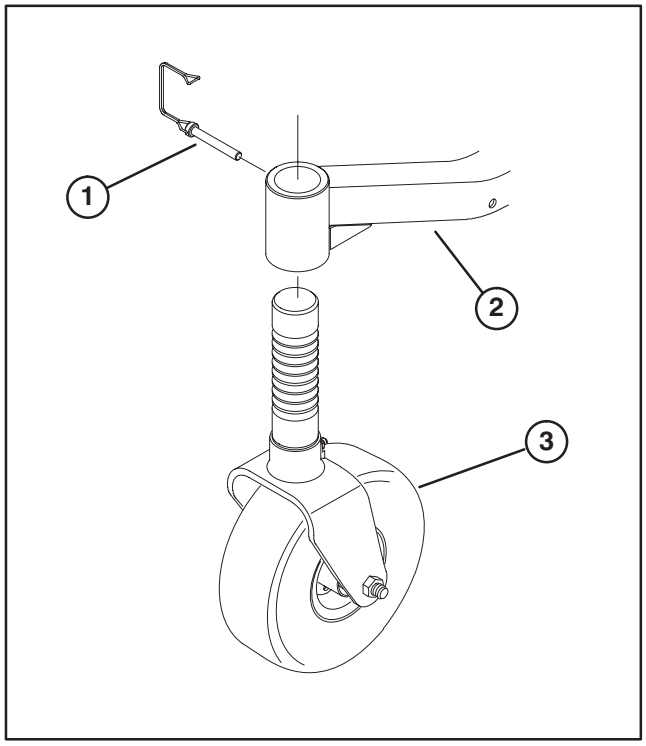


Figure 1
1. Snapper pin
2. Castor arm
3. Castor wheel

INSTALL DRIVE SHAFT COVER TO CUTTING UNIT (Fig. 2)

1. Mount drive shaft cover shield to top of cutting unit gear box mounting plate with (4) self–tapping screws previously removed.

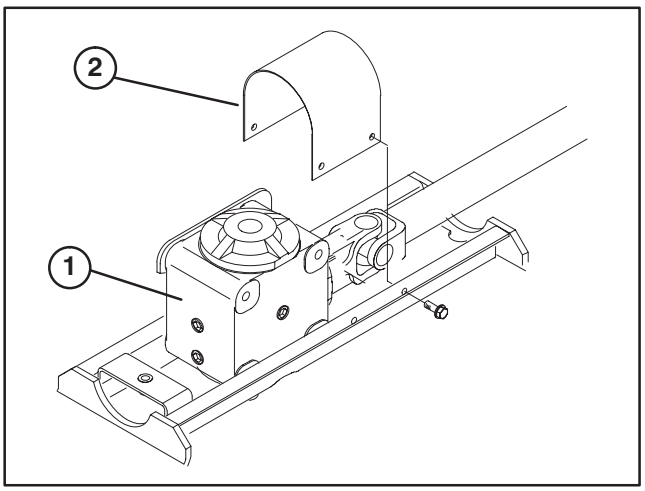


Figure 2
1. Gear Box
2. PTO shield

INSTALL LIFT ARMS TO CUTTING UNIT AND TRACTION UNIT (Fig. 3–5)

1. Remove (2) capscrews and locknuts securing ball joint mount assemblies to each cutting unit castor arm.

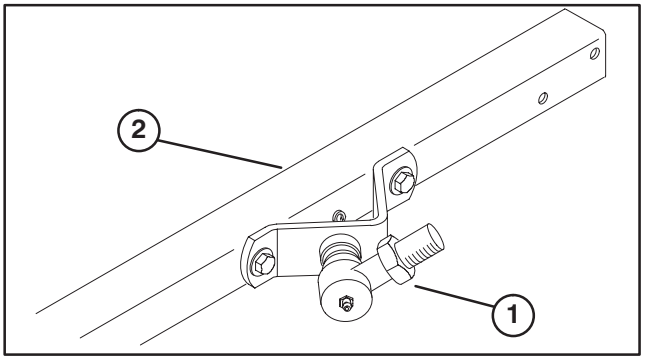


Figure 3
1. Ball Joint Mount Assembly
2. Castor Arm

2. Thread ball joint into each lift arm assembly until a dimension of 2.50 inches from end of lift arm to center of ball joint is attained. Do not tighten jam nut.

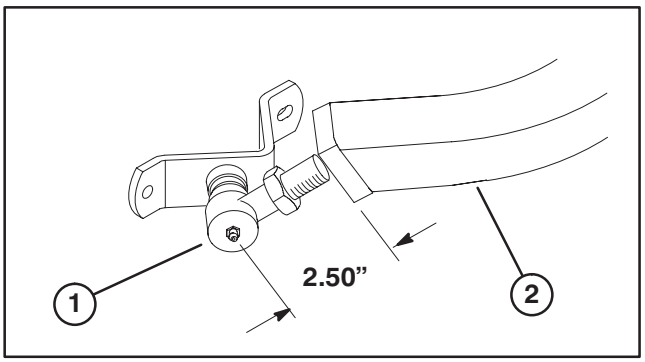


Figure 4
1. Ball Joint
2. Lift Arm

SET–UP INSTRUCTIONS

3. Secure lift arm assembly to traction unit as follows:

A. With engine off, raise seat and open needle valve. This allows lift arms to float freely.

B. Remove hair pin cotter and clevis pin securing latch cover to lift arm.

C. Pivot release lever upward.

D. Slide cutting unit lift arm onto traction unit lift arm, inserting shaft latch into slot in traction unit lift arm.

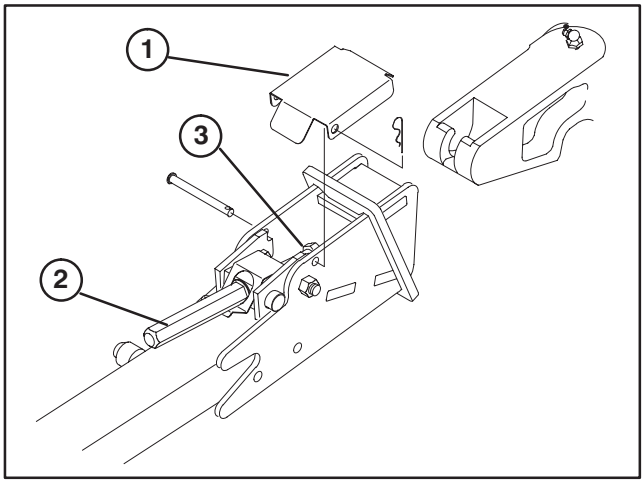


Figure 5
1. Latch Cover
2. Release Lever
3. Shaft latch

E. Pivot release lever downward and hand tighten by rotating clockwise.

F. Repeat installation on other lift arm.

4. Move cutting unit in front of traction unit so ball joint brackets align with mounting holes in castor arms. Adjust ball joint brackets in or out equally until they easily line up with deck mounting holes.

5. Mount ball joint brackets to castor arms with capscrews and lock nuts previously removed.

6. Tighten ball joint jam nuts.

7. Tighten release lever with a 3/4" (19mm) wrench.

8. Re–install latch cover to lift arm with clevis pin and hair pin cotter previously.

9. Close needle valve. Lower seat.

CONNECT DRIVE SHAFT TO TRACTION UNIT (Fig. 6)

IMPORTANT: The drive shaft yokes must be exactly in line.

1. Rotate shaft until splines line up. To rotate drive shaft, insert screw driver into universal joint.

2. Slide coupler onto tractor PTO shaft until it clicks.

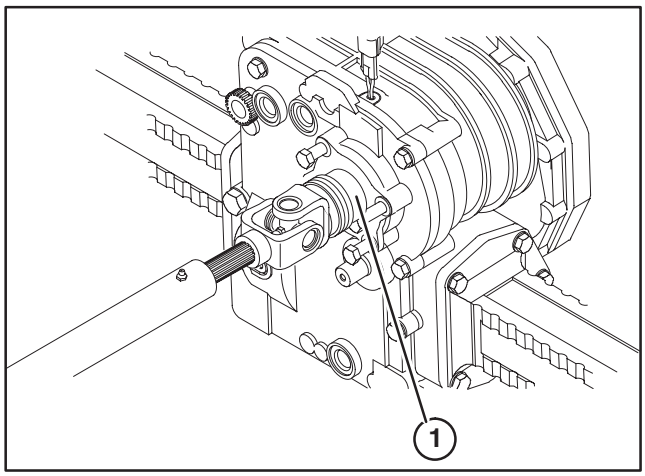


Figure 6
1. Drive Shaft Coupler

MOUNT HEIGHT-OF-CUT CHAINS (Fig. 7)

1. Remove hair pin cotter and clevis pin from height-of-cut chain.

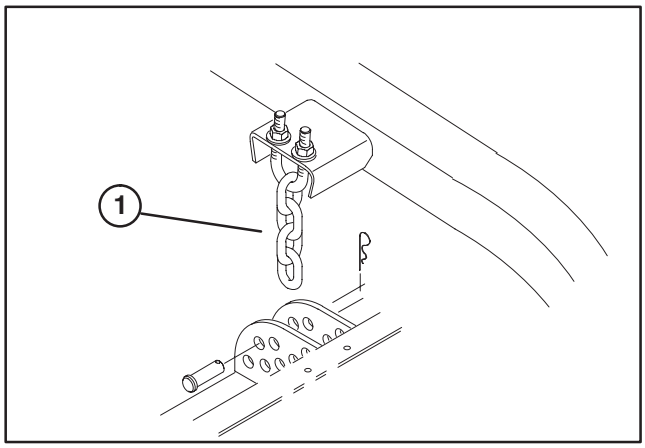


Figure 7
1. Height-of-Cut Chain

2. Start tractor and raise deck to highest possible position and turn off engine.

3. Align height-of-cut chain with hole for desired height-of-cut, install clevis pin and secure with hair pin cotter.

ADJUST TRANSPORT LATCH (Fig. 8)

1. Start tractor and raise deck to highest possible position and turn off engine.

2. Loosen (2) flange head capscrews securing latch plate to side of gearbox.

3. Rotate latch rod downward from front of traction unit.

4. Insert latch rod into rear hole (transport position) in latch plate.

5. Tighten flange head capscrews securing latch plate to gearbox.

SET−UP INSTRUCTIONS

6. Remove hair pin cotters and clevis pins securing height-of-cut chains to rear of deck.

7. Remove latch rod from rear hole in latch plate.

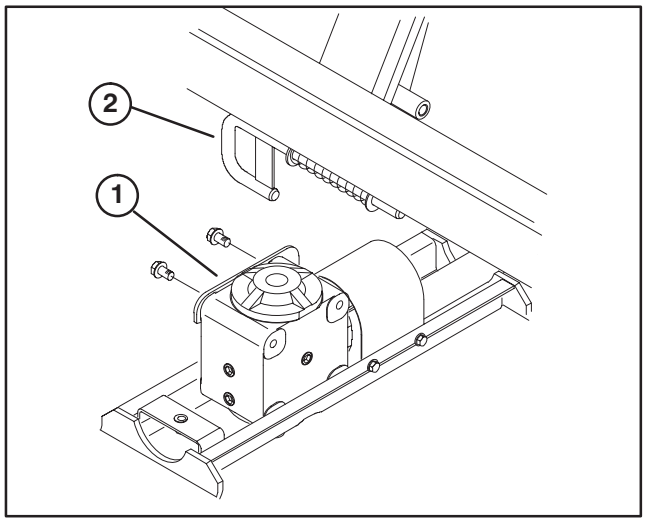


Figure 8
1. **Latch Plate**
2. **Latch Rod**

8. Rotate front of deck upward and insert latch rod into front hole (service position) in latch plate.

9. Loosen latch plate flange head capscrews and adjust latch plate position if required.

GREASE CUTTING UNIT

Before the cutting unit is operated, it must be greased to assure proper lubricating characteristics: refer to Lubrication section of manual. Failure to properly grease the cutting unit will result in premature failure of critical parts.

INSTALL REAR WEIGHT

To comply with ANSI/OPEI B71.4−1990 Standard, rear weight must be added to rear of traction unit and counter balance pressure increased. Use chart below to determine weight and counter balance pressure requirements. Order parts from your local Authorized Toro Distributor.

Traction Unit Description	Counter Balance Pressure	Weight Part Number	Weight Description	Qty.
Groundsmaster 3000/2wd (Model 30300)	220 psi	93−5996	Rear Weight Kit (includes 3 plates and mounting hardware)	1
Groundsmaster 3000D/2wd (Model 30301)	220 psi	93−5996	Rear Weight Kit (includes 3 plates and mounting hardware)	1
Groundsmaster 3000D/4wd (Model 30302)	220 psi	No Additional Weights Required		

*** Models 30301 and 30300 are shipped from the factory equipped with (3) weight plates (Part No. 93−5996).**

BEFORE OPERATING

CHECK LUBRICANT IN GEAR BOX (Fig. 9)

The gear box is designed to operate with SAE 80−90 wt. gear lube. Although the gear box is shipped with lubricant from the factory, check the level before operating the cutting unit.

1. Position the machine and cutting unit on a level surface.

2. Remove check plug from side of gear box and make sure lubricant is up to bottom of hole. If level of lubricant is low, remove fill plug at end of gear case and add enough lubricant to bring it up to bottom of hole in side.

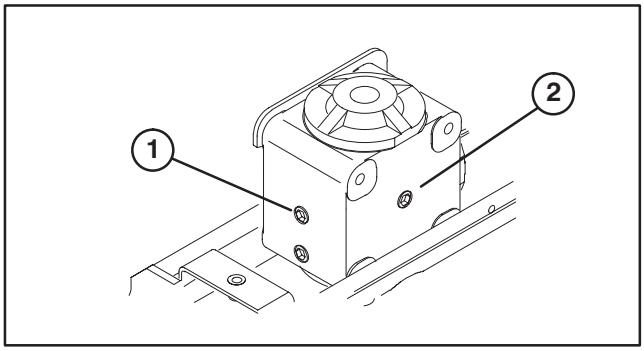


Figure 9
1. Filler Plug
2. Check Plug

ADJUSTING HEIGHT-OF-CUT (Fig. 10−13)

The height-of-cut is adjustable from 1 to 5 inches in 1/2 inch increments.

1. Start engine and raise cutting. Stop engine after cutting unit is raised.

2. Remove front snapper pins from castor arms and slide castor wheel assembly up or down.

3. Insert snapper pin into castor arm and through groove in castor shaft to get desired height-of-cut.

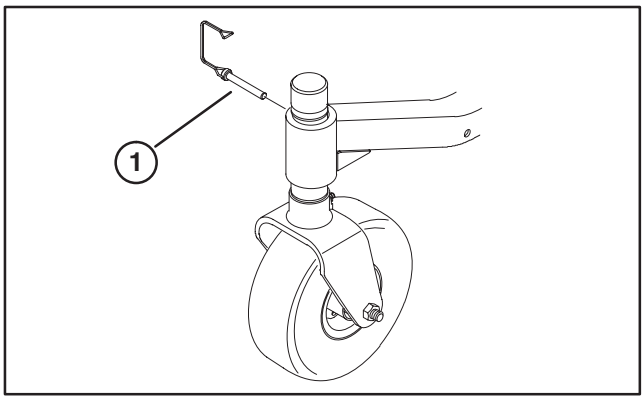


Figure 10
1. Snapper Pin

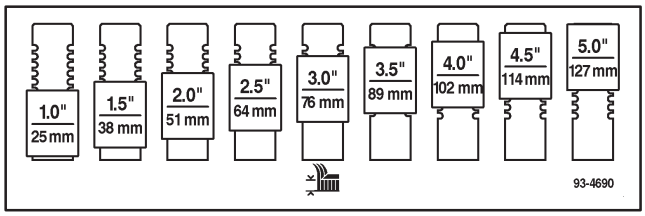


Figure 11

4. Remove hair pin cotter and clevis pin securing height-of-cut chain to rear of deck.

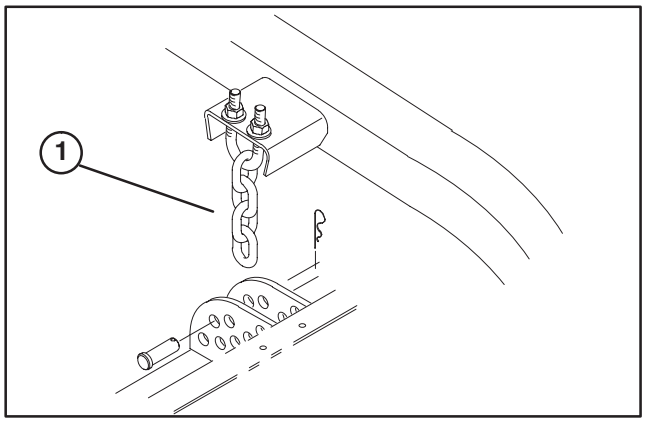


Figure 12
1. Height-of-Cut chain

5. Mount height-of-cut chain to desired height-of-cut hole with clevis pin and hair pin cotter.

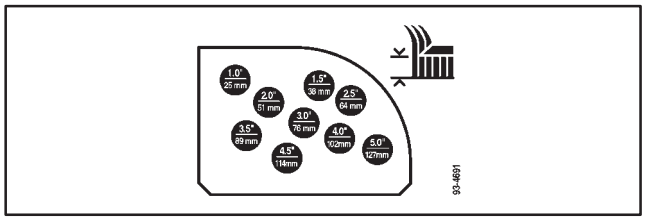


Figure 13

6. When using 1 inch height-of-cut, move skids, anti-scalp rollers, and wings wheels to the highest holes.

ADJUSTING SKIDS (Fig. 14)

Skids should be located in upper holes for 1 and 1−1/2 inch heights-of-cut and lower holes for 2 to 5 inch heights-of-cut.

1. Adjust skids by removing flange nuts, positioning as desired and re−installing flange nuts.

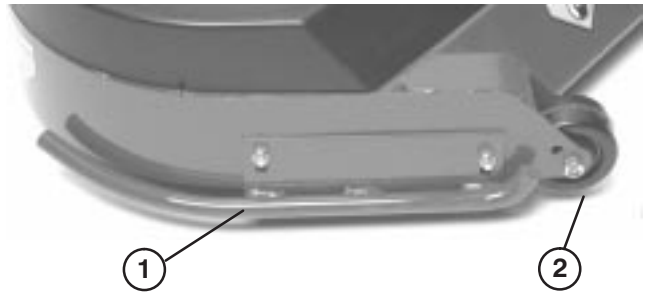


Figure 14
1. Skid
2 Anti-scalp Roller

ADJUSTING ANTI-SCALP ROLLERS

(Fig. 14)

Anti-scalp rollers should be located in upper holes for 1 and 1−1/2 inch heights-of-cut and lower holes for 2 to 5 inch heights-of-cut. Five rollers are located on the deck, three under the main deck and one on each wing.

1. Adjust anti-scalp rollers by removing lock nut and bolt, positioning as desired and reinstalling lock nut and bolt.

ADJUSTING DECK PITCH (Fig. 15)

Deck pitch is the difference in height-of-cut from the front of the blade plane to the back of the blade plane. TORO recommends a blade pitch of .32 inches. That is the back of the blade plane is .32 inches higher than the front.

1. Position machine on a level surface on shop floor.

2. Set deck to the desired height-of-cut.

3. Rotate (1) blade so it points straight forward.

4. Using a short ruler, measure from floor to front tip of blade. Then, measure from floor to rear tip of blade.

5. Subtract the front dimension from rear dimension to calculate your pitch.

6. To adjust pitch, start traction unit and raise deck to highest possible position and turn off engine.

7. Loosen jam nuts on top or bottom of Height-of-Cut chain U−bolt.

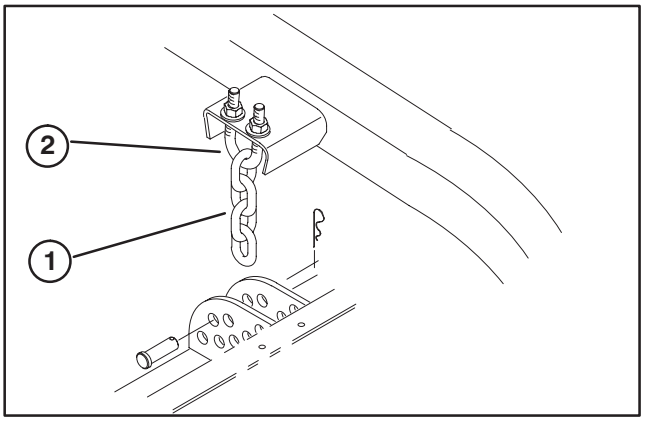


Figure 15

1. **Height-of-Cut chain**
2. **U−bolt**

8. Adjust other set of nuts to raise or lower rear of deck and attain correct deck pitch.

9. Tighten jam nuts.

10. Lower deck.

CUTTING UNIT BREAK−IN

When engaging PTO for the first time, the engine may kill due to excess drag in the spindle grease seals. This situation will decrease as cutting unit breaks−in. To break−in cutting unit:

- Make sure engine is at high idle before engaging PTO.
- If deck is very tight, remove wing belts and operate center deck spindles until deck warms up; then replace wing belts.

OPERATING INSTRUCTIONS

OPERATING TIPS

1. Mow When Grass Is Dry—Mow either in the late morning to avoid the dew, which causes grass clumping or in late afternoon to avoid the damage that can be caused by direct sunlight on the sensitive, freshly mowed grass.

2. Select The Proper Height-of-cut Setting To Suit Conditions – Remove approximately one inch or no more than 1/3 of the grass blade when cutting. In exceptionally lush and dense grass you may have to raise your height-of-cut to the next setting.

3. Mowing In Extreme Conditions – Air is required to cut and recut grass clippings in mower housing, so do not set height-of-cut too low or totally surround housing by uncut grass. Always try to have one side of the mower housing free from uncut grass, allowing air to be drawn into housing. When making an initial cut thru center of uncut area, operate machine slower and back up if mower starts to clog.

4. Mow At Proper Intervals – Under most normal conditions you'll need to mow approximately every 4—5 days. But remember, grass grows at different rates at different times. This means that in order to maintain the same height-of-cut, which is a good practice, you'll need to cut more frequently in early spring; as the grass growth rate slows in mid summer, cut only every 8—10 days. If you are unable to mow for an extended period due to weather conditions or other reasons, mow first with the height-of-cut at a high level; then mow again 2—3 days later with a lower height setting.

5. Always Mow With Sharp Blades – A sharp blade cuts cleanly and without tearing or shredding the grass blades like a dull blade. Tearing and shredding causes the grass to turn brown at the edges which impairs growth and increases susceptibility to diseases.

CAUTION: This product may exceed noise levels of 85 dB(A) at the operator position. Ear protectors are recommended for prolonged exposure to reduce the potential of permanent hearing damage.

6. Stopping – If forward motion has to be stopped while cutting, a clump of grass clippings may be deposited on lawn. Follow this procedure for stopping while cutting:

A. With deck engaged, move onto a previously cut area.

B. Shift to neutral, move throttle control lever to SLOW position and rotate ignition key to OFF.

7. Transporting – Use transport latch when transporting over long distances or rough terrain.

8. Trailering – When loading or unloading machine from a trailer, disconnect rear height-of-cut chains, to allow maximum deck rotation.

9. After Operating – To assure optimum performance, clean underside of mower housing, especially around inserts (kickers) after each use. If residue is allowed to build up in mower housing and on inserts, cutting performance will decrease.

10. Deck Pitch – Toro recommends a blade pitch of .32 inches. A pitch larger than .32 inches will result in less power required, larger clippings and a poorer quality of cut. A pitch less than .32 inches will result in more power required, smaller clippings and a better quality of cut.

LUBRICATION

GREASE BEARINGS, BUSHINGS AND GEAR BOX (Fig. 18)

The cutting unit must be lubricated regularly. If machine is operated under normal conditions, lubricate castor bearings and bushings with No. 2 general purpose lithium base grease or molybdenum base grease, after every 8 hours of operation or daily, whichever comes first. Lubricate fittings immediately after every washing, regardless of the interval listed.

1. The cutting unit has bearings and bushings that must be lubricated, and these lubrication points are: anti-scalp roller (Fig. 16), front castor shaft bushings (2), blade spindle bearings (5), idler arm pivots (2), drive shaft (3), Wing deck pivots (2) and right and left push arm ball joints (Fig. 18).

Figure 16

2. Position machine and cutting unit on a level surface and lower cutting unit. Remove check plug from side of gear box (Fig. 17) and make sure lubricant is up to bottom of hole. If level of lubricant is low, remove fill plug at end of gear case and add SAE 80–90 wt. gear lube until level is up to bottom of hole in side.

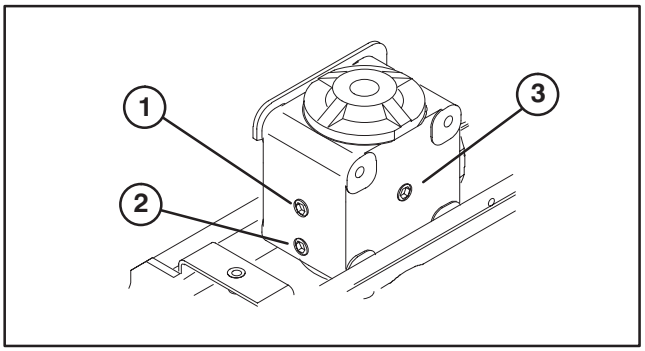


Figure 17

1. **Filler Plug**
2. **Check Plug**
3. **Drain Plug**

Figure 18

MAINTENANCE

CAUTION

To prevent accidental starting of the engine, while performing maintenance, shut engine off and remove key from ignition switch.

DISCONNECT CUTTING UNIT FROM TRACTION UNIT (Fig. 19–21)

Note: Implements are heavy and may require two people to handle.

1. Start tractor and raise deck to highest possible position and turn off engine.

2. Remove hair pin cotter and clevis pin securing height-of-cut chains to rear height-of-cut brackets.

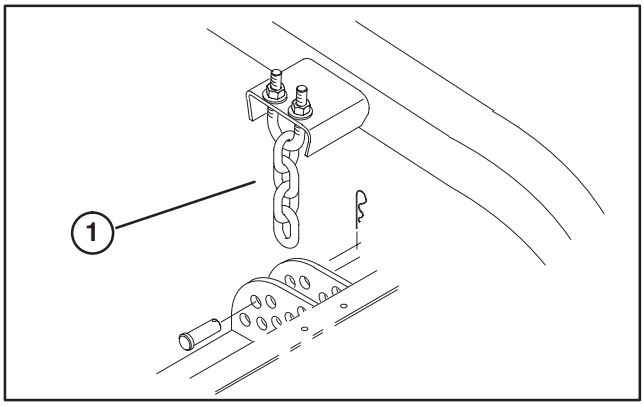


Figure 19
1. Height-of-Cut chain

3. Rotate ignition key to run position and move lift lever forward to lower cutting unit.

4. Raise seat and open needle valve. This allows lift arms to float freely.

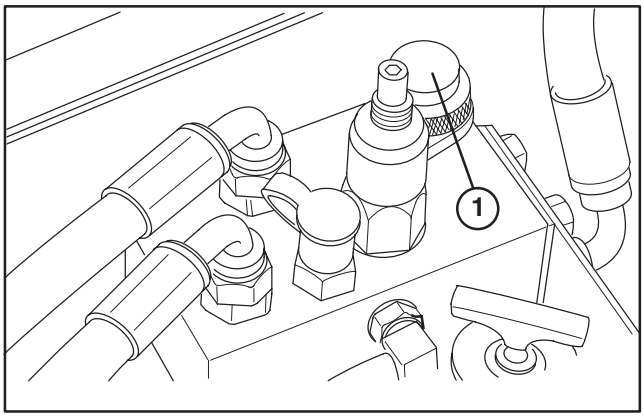


Figure 20
1. Needle Valve

5. Remove hair pin cotter and clevis pin securing latch cover to lift arm .

6. Loosen release lever by rotating it counterclockwise.

7. Pivot release lever upward and remove shaft latch from slot in traction unit lift arm.

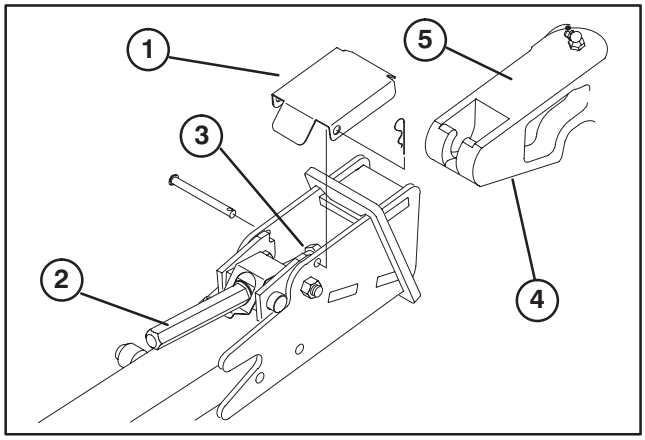


Figure 21
1. Latch Cover
2. Release Lever
3. Shaft latch
4. Traction Unit Lift Arm
5. Machined Surface

8. Pull rearward on lock collar to release drive shaft coupler from tractor.

9. Stay clear of lift arms and move deck away from tractor allowing lift arms to fall.

10. Secure hair pin cotter and clevis pin to height-of-cut chains for storage.

11. Close needle valve

CONNECT CUTTING UNIT TO TRACTION UNIT (Fig. 19–21)

1. Center traction unit in front of cutting unit on any flat hard surface.

2. Raise seat and open needle valve. This allows lift arms to float freely.

3. Adjust lift arms heights making sure that the machined surface on top of each traction unit lift arm is parallel to ground (Fig. 21). (Raise or lower lift arm casting by pushing up or down from behind the front tires or using wrench in front of tractor)

4. Check for dirt and debris on mating parts and clean as required.

5. Turn castor wheels so they point straight forward.

6. Secure first lift arm assembly to traction unit as follows:

A. Remove hair pin cotter and clevis pin securing latch cover to lift arm.

B. Pivot release lever upward.

C. Slide cutting unit lift arm onto traction unit lift arm, inserting shaft latch into slot in traction unit lift arm.

Note: If latch does not fall into slot in traction unit lift arm, raise or lower lift arm casting by pushing up or down from behind the front tires.

D. Pivot release lever downward and tighten securely by rotating clockwise.

7. Install other lift arm on tractor by rotating deck towards tractor, aligning lift arm to tractor arm and repeating step 5. If latch does not fall into slot in traction unit lift arm the arms are not lined up.

A. If lift arms on traction unit are not at the correct height for deck arms to slide on, push up or down on lift arm castings from behind the front tires until deck arm line up and slide on.

B. If lift arms on deck do not line up side to side. Rotate castor wheels side ways so deck moves side to side easier. Move deck side to side until lift arms line up and slide on.

8. Move deck from side to side to check for tightness and re−tighten latches, if required.

9. Install latch covers to lift arms and secure with clevis pins and hair pin cotters.

10. Connect drive shaft to traction unit.

11. Close needle valve and lower seat.

12. Start tractor and raise deck to highest possible position and turn off engine.

13. Align height-of-cut chains with hole for desired height-of-cut, install clevis pin and secure with hair pin cotter.

CHANGING GEAR BOX LUBRICANT

(Fig. 22)

The gear box lubricant must be changed initially, after the first 400 hours of operation, and thereafter every 1600 hours of operation.

1. Position the machine and cutting unit on a level surface.

2. Loosen fixed idler pulley locking nut.

3. Loosen spring tensioning nut as required and remove belt.

4. Remove (4) locknuts securing gearbox mount to deck.

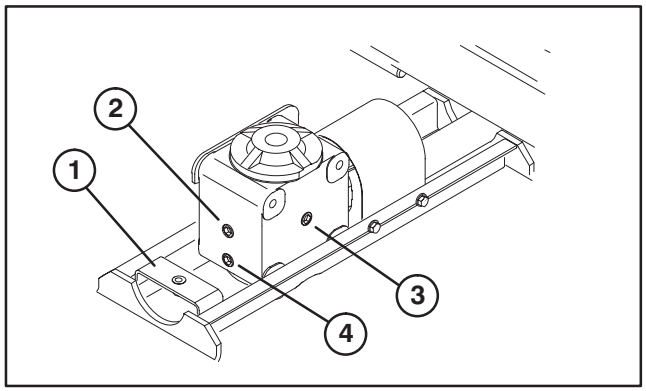


Figure 22

1. **Gear Box Mount**
2. **Filler Plug**
3. **Check Plug**
4. **Magnetic Drain Plug**

5. Remove belt from pulley.

6. Remove drain plug from end of gear box and tip gear box assembly allowing lubricant to drain from gear box.

7. Reinstall belt to pulley.

8. Reinstall gear box assembly to deck

9. Remove fill plug on end of gear case and check plug from side of gear case. Add SAE 80−90 wt. gear lube until level is up to bottom of hole in side.

10. Reinstall check plug to side of gear box and fill plug on end of gear case.

11. Re−tension belt. Refer to Replacing Drive Belts.

REPLACING DRIVE BELTS (Fig. 23−24)

The blade drive consists of three belts, one main drive belt and two wing belts. The main drive belt is tensioned by a fixed idler with a spring adjustment. The wing belts have spring loaded idlers. All belts are very durable but after many hours of use, the belt will show signs of wear. Signs of a worn belt are: squealing when belt is rotating, blades slipping when cutting grass, frayed edges, burn marks and cracks. Replace any belt if any of these conditions are evident. Adjust belt tension on main belt after first 5 hours of operation to assure maximum durability and thereafter, check tension every 50 hours.

1. Lower cutting unit to the shop floor. Remove belt covers from top of cutting unit and set covers aside.

2. Pull on spring loaded idlers and remove wing belts.

3. Loosen fixed idler pulley locking nut.

4. Loosen spring tensioning nut as required and remove belt.

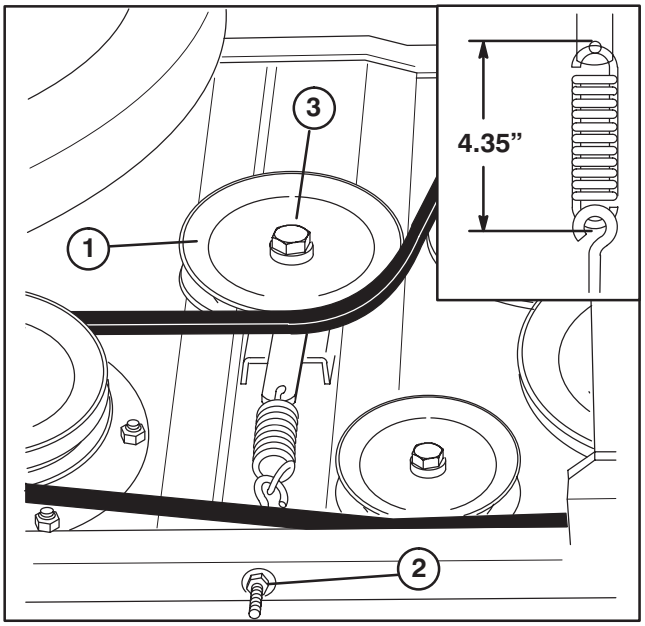


Figure 23

1. **Idler Pulley**
2. **Spring Tensioning Nut**
3. **Idler Pulley Locking Nut**

5. Route new belts around spindle pulleys and thru idler pulley assemblies as shown in figure 24.

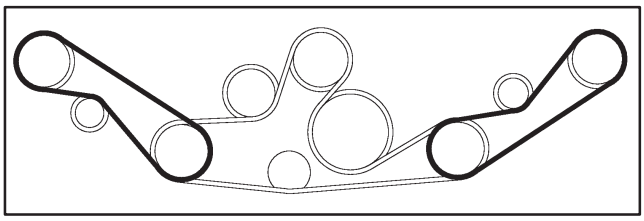


Figure 24

6. Tighten spring tensioning nut until spring length is 4.35 inches outside spring loops (Fig. 23).

7. Tighten idler pulley locking nut.

8. Pull on spring loaded idlers and install wing belts.

9. Install belt covers to top of cutting unit.

SERVICING FRONT BUSHINGS IN CASTOR FORKS (Fig. 25)

The castor forks have bushings pressed into the top and bottom of the casting and after many hours of operation, the bushings will wear. To check the bushings, move castor fork back and forth and from side to side. If castor spindle is loose around the bushings, bushings are worn and must be replaced.

1. Start tractor and raise deck to highest possible position and turn off engine.

2. Remove front snapper pins from castor arms and slide castor wheel assembly out of castor arm tube.

3. Remove locknut from capscrew holding castor wheel assembly between castor fork. Grasp castor wheel and slide capscrew out of fork.

4. Remove retaining ring, washer and wavey washer securing castor shaft to castor fork. Remove shaft from fork.

5. Insert pin punch into top or bottom of castor fork and drive bushing out of fork. Repeat for other bushing. Clean inside of forks to remove dirt.

6. Apply grease to inside and outside of new bushings. Using a hammer and flat plate, drive bushings into fork.

7. Inspect castor shaft and fork for wear and replace if damaged.

8. Push castor shaft through bushings and fork and secure with wavey washer, washer and retaining ring.

9. Insert snapper pin into castor arm and through groove in castor shaft at desired height-of-cut.

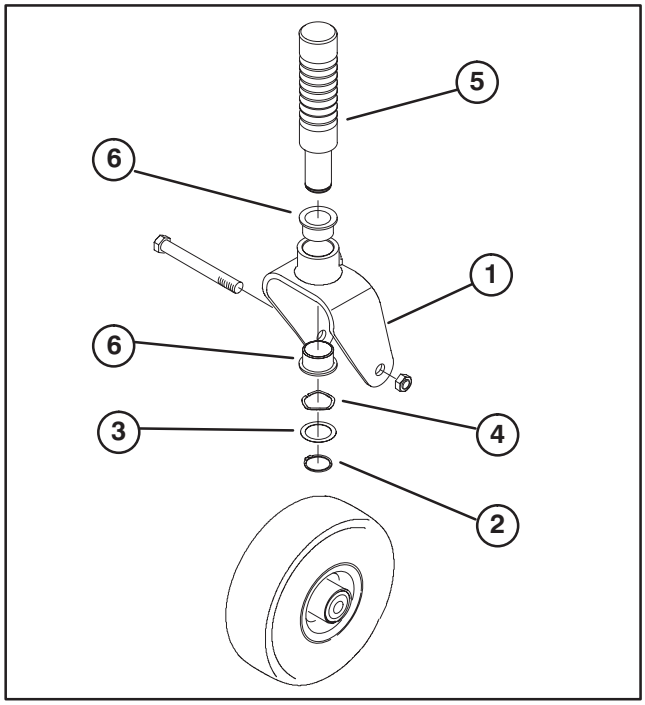


Figure 25

1. Front Castor Fork
2. Retaining Ring
3. Washer
4. Wavey Washer
5. Castor Shaft
6. Bushings

SERVICING CASTOR WHEELS AND BEARINGS (Fig. 26)

The castor wheel rotates on a high−quality roller bearing. Even after many hours of use, provided that the bearing was kept well−lubricated, bearing wear will be minimal. However, failure to keep bearing lubricated will cause rapid wear. A wobbly castor wheel usually indicates a worn bearing.

1. Remove locknut from capscrew holding castor wheel assembly between castor fork. Grasp castor wheel and slide capscrew out of fork.

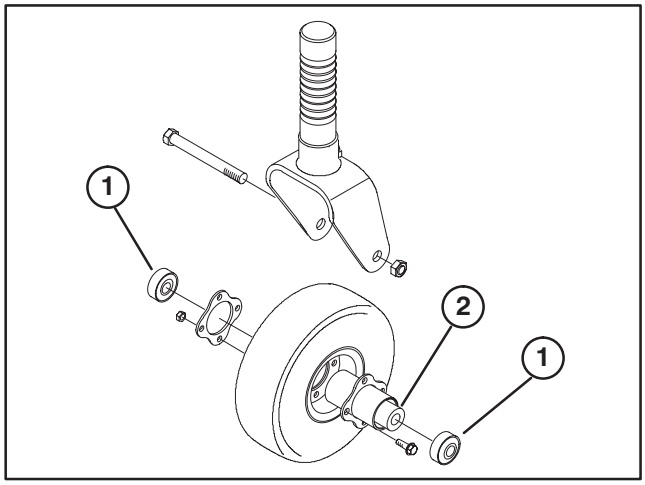


Figure 26

1. Bearing
2. Spacer

2. Remove bearing from wheel hub and allow spacer to fall out. Remove bearing from opposite side of wheel hub.

3. Check the bearings, spacer and inside of wheel hub for wear. Replace defective parts as required.

4. To assemble the castor wheel, push bearing into wheel hub. Slide spacer into wheel hub. Push other bearing into open end of wheel hub to captivate the spacer inside the wheel hub.

5. Install castor wheel assembly between castor forks and secure in place with capscrew and locknut.

REMOVING CUTTER BLADES (Fig. 27)

The blade must be replaced if a solid object is hit, the blade is out−of−balance or if the blade is bent. Always use genuine TORO replacement blades to be sure of safety and optimum performance. Never use replacement blades made by other manufacturers because they could be dangerous.

WARNING

Do not try to straighten a blade that is bent, and never weld a broken or cracked blade. Always use a new blade to assure continued safety certification of the product.

1. Raise cutting unit to highest position, shut the engine off and engage the parking brake.

2. Remove hair pin cotters and clevis pins securing height-of-cut chains to rear of deck.

3. Rotate front of deck upward and insert latch rod into front hole (service position) in latch plate.

4. Grasp end of blade using a rag or thickly padded glove. Remove blade bolt, anti-scalp cup and blade from spindle shaft.

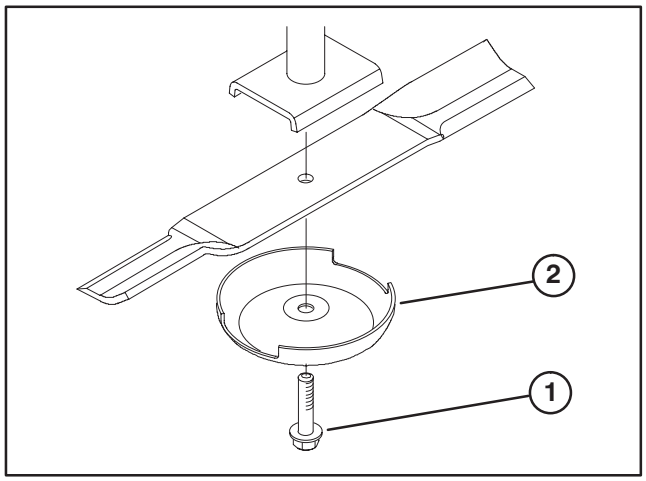


Figure 27

1. **Blade bolt**
2. **Anti-Scalp Cup**

5. Install blade−sail facing (up) toward cutting unit−with anti-scalp cup and blade bolt. Tighten blade bolt to 85−110 ft-lb.

INSPECTING AND SHARPENING BLADE (Fig. 28 − 29)

1. Raise cutting unit to highest position, shut the engine off and engage the parking brake.

2. Remove hair pin cotters and clevis pins securing height-of-cut chains to rear of deck.

3. Rotate front of deck upward and insert latch rod into front hole (service position) in latch plate.

4. Examine cutting ends of the blade carefully, especially where the flat and curved parts of the blade meet (Fig. 28−A). Since sand and abrasive material can wear away the metal that connects the flat and curved parts of the blade, check the blade before using the machine. If wear is noticed (Fig. 28−B), replace the blade: refer to Removing Cutter Blade.

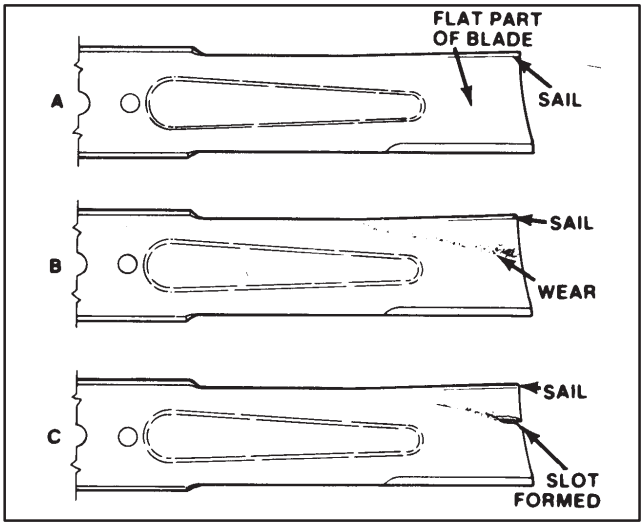


Figure 28

DANGER

If blade is allowed to wear, a slot will form between the sail and flat part of the blade (Fig. 28−C). Eventually a piece of the blade may break off and be thrown from under the housing, possibly resulting in serious injury to yourself or bystander.

MAINTENANCE

5. Inspect cutting edges of all blades. Sharpen the cutting edges if they are dull or nicked. Sharpen only the top of the cutting edge and maintain the original cutting angle for best performance (Fig. 29). The blade will remain balanced if same amount of metal is removed from both cutting edges.

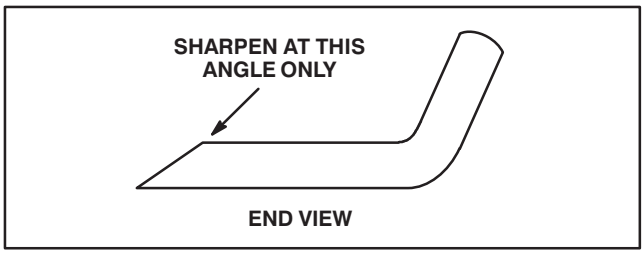


Figure 29

6. To check blade for being straight and parallel, lay blade on a level surface and check its ends. Ends of blade must be slightly lower than the center, and cutting edge must be lower than the heel of the blade. This blade will produce good quality of cut and require minimal power from the engine. By contrast a blade that is higher at the ends than the center, or if cutting edge is higher than the heel, the blade is bent or warped and must be replaced.

7. Install blade—sail facing (up) toward cutting unit—with anti-scalp cup and blade bolt. Tighten blade bolt to 85–110 ft-lb.

CORRECTING CUTTING UNIT MISMATCH

If there is mismatch between the blades, the grass will appear streaked when it is cut. This problem can be corrected by making sure the blades are straight and all blades are cutting on the same plane.

1. Position machine on a level surface on the shop floor.

2. Release belt tension on belts.

3. Raise deck to transport position and lock transport latch.

4. Position the tip of an outer blade and adjacent blade tip as close together as possible at the intersection of the two cutting chambers. Note the height of the outer blade tip with respect to the adjacent blade tip.

5. Rotate outer blade 180° and note the height of the outer blade tip with respect to the adjacent blade tip. If the relative height changed by more than 1/8" after rotating blade, then outer blade is bent and should be replaced.

6. Repeat steps 4 and 5 until all pairs of adjacent blades have been checked at both blade tips. Note the relative difference in blade height at each blade intersection after replacing any bent blades. This height difference should be less than 1/8" for all adjacent blades.

7. Raise the height-of-cut to the highest position and lower deck to the floor.

8. Rotate an outer blade until the tip is positioned nearest to the skid on the side of the deck housing. Measure the distance from the bottom of the blade to the floor. Repeat the measurement on the opposite side of the deck. If the two distances differ by more than 1/4" proceed to step 9 and add shims as instructed.

9. Remove capscrews, flatwashers, lockwashers and nuts from outer spindle in the area where shims must be added. To raise or lower the blade, add a shim, Part No. 3256–24, between spindle housing and bottom of cutting unit. Continue to check alignment of blades and add shims until tips of blades are within the required dimension.

IMPORTANT: Do not use more than three shims at any one hole location. Use decreasing numbers of shims in adjacent holes if more than one shim is added to any one hole location.

10. Re–tension belts. Re–install belt covers.

IDENTIFICATION AND ORDERING

MODEL AND SERIAL NUMBERS

The cutting deck has two identification numbers: a model number and a serial number. The two numbers are stamped into a plate on front channel of the mower deck, under cover. In any correspondence concerning the mower, supply the model and serial numbers to assure that correct information and replacement parts are obtained.

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

1. Model and serial numbers of the machine.

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

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

The Toro Commercial Products Two Year Limited Warranty

The Toro Company warrants your 1996 or newer Toro Commercial Product ("Product") purchased after January 1, 1997, to be free from defects in materials or workmanship for the period of time listed below. Where a warrantable condition exists, Toro will repair the Product at no cost to you including diagnosis, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.

Warranty Duration: Two years or 1500 operational hours*, whichever occurs first.
***Product equipped with hour meter**

Owner Responsibilities:

As the Product owner, you are responsible for required maintenance and adjustments stated in your Owner's Manual. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim.

Instructions for Obtaining Warranty Service:

You are responsible for notifying the Commercial Products Distributor or Authorized Commercial Products Dealer from whom you purchased the Product as soon as you believe a warrantable condition exists.

If you need help locating a Commercial Products Distributor or Authorized Dealer, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Toro Commercial Products Service Department
8111 Lyndale Avenue South
Minneapolis, MN, 55420−1196
Telephone: (612) 888−8801
Facsimile: (612) 887−8258
E−Mail: Commercial.Service@Toro.Com

Maintenance Parts:

Parts scheduled for replacement as required maintenance ("Maintenance Parts"), are warranted for the period of time up to the scheduled replacement time for that part.

Items/Conditions Not Covered:

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. The items / conditions listed below are not covered by this warranty:

- Product failures which result from the use of non−Toro replacement parts, or from installation and use of add−on, modified, or unapproved accessories are not covered.
- Product failures which result from failure to perform required maintenance and/or adjustments are not covered.
- Product failures which result from operating the Product in an abusive, negligent or reckless manner are not covered.
- This warranty does not apply to parts subject to consumption through use unless found to be defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, blades, reels, bedknives, tines, spark plugs, castor wheels, tires, filters, belts, etc.
- This warranty does not apply to failures caused by outside influence. Items considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved coolants, lubricants, additives, or chemicals, etc.
- This warranty does not apply to normal "wear and tear" items. Normal "Wear and Tear" includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows, etc.

Other Legal Disclaimers:

The above remedy of product defects through repair by an authorized distributor or dealer is the purchaser's sole remedy for any defect. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Except for the Emissions warranty referenced below, if applicable, there is no other express warranty. All implied warranties of merchantability and fitness for use are limited to the duration of the express warranty.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

The Toro Company is not liable for indirect, incidental or consequential damages in connection with the use of the Product, including any cost or expense of providing substitute Product or service during periods of malfunction or non−use.

Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

Note to California residents: The Emissions Control System on your Product may be covered by a separate warranty meeting requirements established by the U.S. Environmental Protection Agency (EPA), or the California Air Resources Board (CARB). The hour limitations set forth above do not apply to the Emissions Control System Warranty. Refer to the California Emission Control Warranty Statement printed in your Owner's Manual or contained in the engine manufacturer's documentation for details.