



MODEL NO. 30716 – 60511 thru
80001 & UP

OPERATOR'S
MANUAL

GUARDIAN® 72" RECYCLER®
FOR GROUNDMASTER 300 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.



The Groundmaster 300 Series Traction unit with a GUARDIAN 72" RECYCLER Deck conforms to the American National Standards Institute's for Riding Mowers when weights are installed according to chart on page 10.



FOREWORD

The Guardian® 72" 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 | 3. Before Operating | 5. Lubrication |
| 2. Set-up Instructions | 4. Operation | 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.

TABLE OF CONTENTS

	Page		Page
SAFETY INSTRUCTIONS	3-4	Adjusting Skids	12
SAFETY AND INSTRUCTION DECALS	5	OPERATING INSTRUCTIONS	12
SPECIFICATIONS	6	Operating Tips	12
LOOSE PARTS	6	LUBRICATION	13
SET-UP INSTRUCTIONS	7-10	Grease Bearings, Bushings and Gear Box ...	13
Install Castor Wheel Assemblies	7	MAINTENANCE	14-19
Install New Drive Shaft to Traction Unit	7	Trouble Shooting	14
Connect R.H. Push Arm to Cutting Unit	8	Separating Cutting Unit from Traction Unit ...	15
Connect L.H. Push Arm to Cutting Unit	8	Mounting Cutting Unit to Traction Unit	16
Connect Drive Shaft to Cutting Unit Gear Box .	9	Replacing Drive Belt	16
Install Lift Chains	9	Servicing Front Bushings in Castor Arms	17
Grease Cutting Unit	9	Servicing Castor Wheels and Bearings	17
Install Rear Weight	10	Removing Cutter Blades	18
BEFORE OPERATING	10	Inspecting and Sharpening Blades	18
Check Lubricant in Gear Box	10	Correcting Cutting Unit Mismatch	19
Adjusting Height-of-Cut	11	IDENTIFICATION AND ORDERING	19
Adjusting Rollers	12	THE TORO PROMISE	Back Cover

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.

WARNING: Engine exhaust contains carbon monoxide which is an odorless, deadly poison. Carbon monoxide is also known to the State of California to cause birth defects. Do not run engine indoors or in an enclosed area.

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
Minneapolis, 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 lever 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.

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

SAFETY INSTRUCTIONS

- 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.
- 23.** 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.

MAINTENANCE

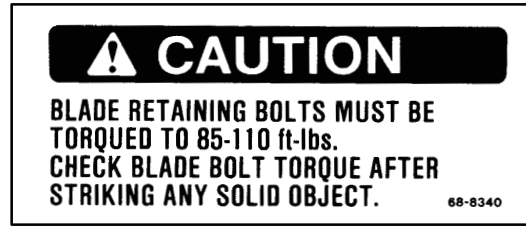
- 24.** Remove key from ignition switch to prevent accidental starting of the engine when servicing, adjusting or storing the machine.
- 25.** Perform only those maintenance instructions described in this manual. If major repairs are ever needed or assistance is desired, contact an Authorized Toro Distributor.
- 26.** To reduce potential fire hazard, keep the engine free of excessive grease, grass, leaves and accumulations of dirt.
- 27.** 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.
- 28.** Make sure all hydraulic line connectors are tight, and all hydraulic hoses and lines are in good condition before applying pressure to the system.
- 29.** 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.
- 30.** 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.
- 31.** 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.
- 32.** 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.
- 33.** Engine must be shut off before checking oil or adding oil to the crankcase.
- 34.** 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.



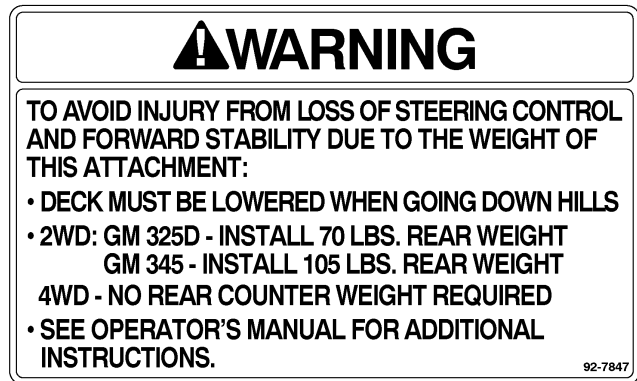
ON EACH CORNER OF CUTTING UNIT
(Part No. 43-8480)



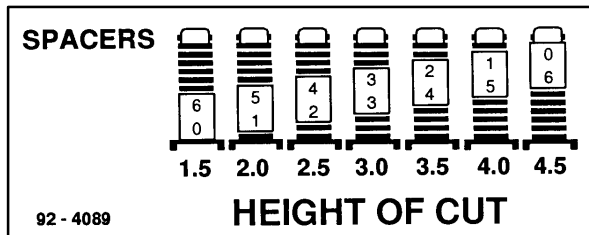
ON GEAR BOX PLATE
(Part No. 68-8340)



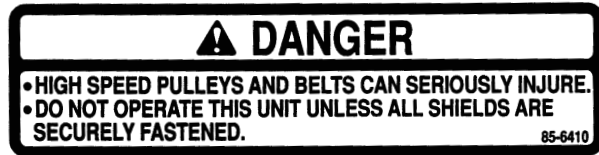
NEAR GEAR BOX
(Part No. 70-2560)



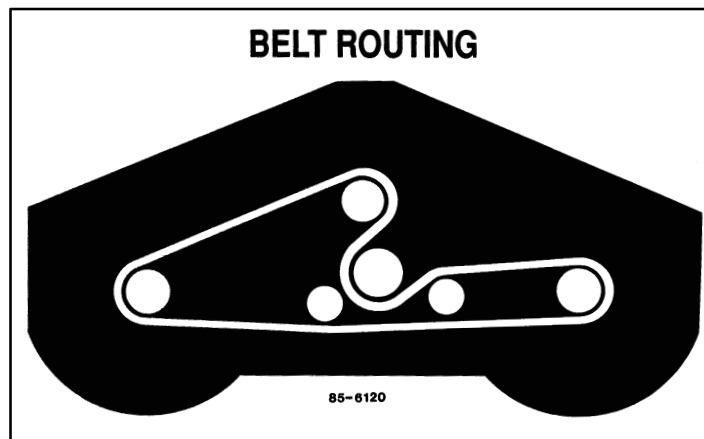
ON GEAR BOX PLATE
(Part No. 92-7847)



ON GEAR BOX PLATE
(Part No. 92-4089)



ON DECK CHANNELS, UNDER COVERS
(Part No. 85-6410)



ON CENTER OF DECK, UNDER COVERS
(Part No. 85-6120)

SPECIFICATIONS

Width of Cut: 72 in.

Height-of-Cut: Adjustable from 1-1/2" to 4-1/2" in 1/2" increments.

Cutter Housing: Housing is made of 12 gauge steel and reinforced with 2-1/2" x 10 gauge channel.

Cutting Unit Drive: Gear box mounted on cutting unit is driven by PTO shaft. Power is transmitted to the blades by one hex B section belt. Spindle shafts are 1-1/4 inch diameter and supported by two externally sealed, greaseable, tapered roller bearings.

Castor Wheels: Two front castor wheels have roller bearings with 10.25 in x 3.25 in. hard rubber tires. Rear wheels have roller bearings and 8 in. x 3.50 in. hard rubber tires.

Blade Tip Speed: At 3200 engine rpm, blade tip speed is 15,800 ft/min.

Cutting Unit Lift: Cutting unit is lifted by a hydraulic cylinder that has a 2-1/2 in. bore and 3-1/4 in. stroke.

Dimensions and Weights:

Width: 75 in.

Weight: 460 lb.

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
Large Castor Wheel Assembly Small Castor Wheel Assembly	2 2	Install Castor Wheel Assemblies.
Drive Shaft Capscrews 5/16 – 18 x 1-3/4" lg. Locknuts 5/16 – 18 Roll Pin 3/16 x 1-1/2" lg.	1 2 2 2	Mount Drive Shaft.
Capscrews 7/16 – 14 x 3" lg. Flatwasher 15/32 I.D. x 59/64" O.D. Flange Nuts 7/16 – 14	2 2 2	Connect Right Hand Push Arm to Cutting Unit.
Operator's Manual Parts Catalog Registration Card	1 1 1	Read Before Operating Machine. Fill Out And Return To Toro.

SET-UP INSTRUCTIONS

INSTALL CASTOR WHEEL ASSEMBLIES

(Fig. 1 & 2)

The thrust washers, spacers and tensioning caps have been installed on the castor wheel spindles for shipping.

1. Remove tensioning caps from spindle shafts and slide off spacers and thrust washers.
2. Slide spacers onto castor spindle to get desired height-of-cut: refer to Height-of-Cut Chart, Page 11. Slide a thrust washer onto spindle, push large castor spindle through front castor arm and small castor spindle through rear castor arm. Install another thrust washer and remaining spacers onto spindle and install tensioning cap to secure assembly.

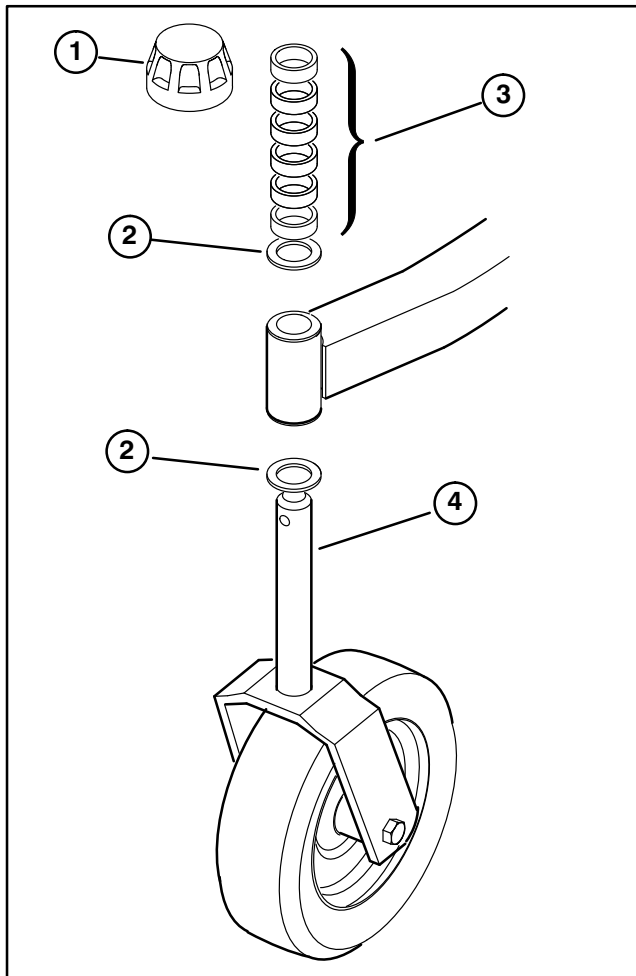


Figure 1

- | | |
|-------------------|---------------------------------|
| 1. Tensioning cap | 3. Spacers |
| 2. Thrust washers | 4. Large (front) castor spindle |

IMPORTANT: Thrust washers – not the spacers – must contact the top and bottom of the castor arm.

3. Assure all four castor wheels are set at same height-of-cut and roll cutting unit off wooden pallet.

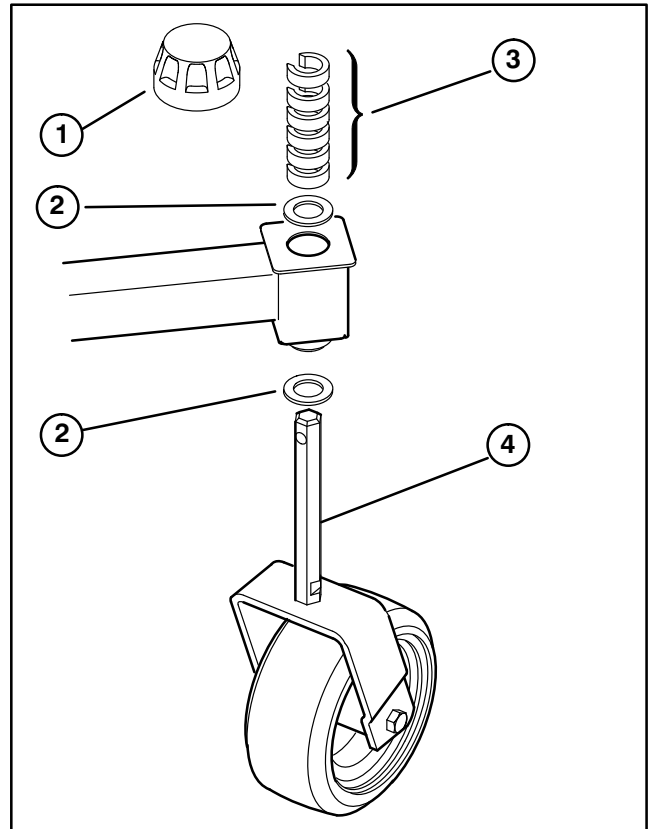


Figure 2

- | | |
|-------------------|--------------------------------|
| 1. Tensioning cap | 3. Spacers |
| 2. Thrust washers | 4. Small (rear) castor spindle |

INSTALL NEW DRIVE SHAFT TO TRACTION UNIT (Fig. 3)

1. Remove band securing drive shaft to underside of traction unit.
2. Remove roll pin securing drive shaft yoke to traction unit PTO shaft and remove drive shaft. Retain drive shaft for other cutting unit applications.
3. Slide smaller yoke end of new drive shaft onto traction unit PTO shaft while aligning mounting holes. Secure with roll pin. Do not install front end of drive shaft at this time

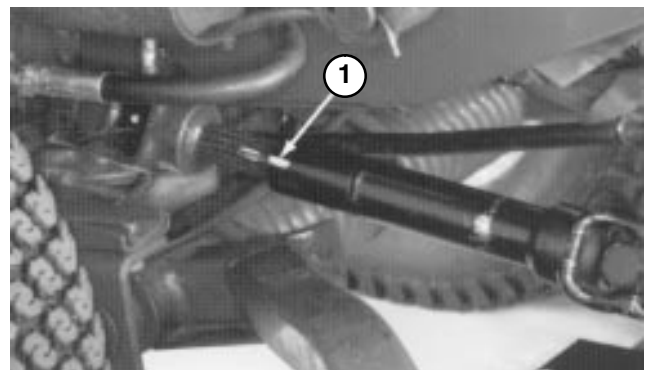


Figure 3

1. Drive shaft

SET-UP INSTRUCTIONS

CONNECT RIGHT HAND PUSH ARM TO CUTTING UNIT (Fig. 4 & 5)



WARNING

Since the right hand push arm is spring loaded to about 100 pounds, a helper is needed to push the arm down. Sudden release of the push arm could cause injury.

1. Remove two self-tapping screws securing PTO shield to top of cutting unit gear box mounting plate and remove shield.

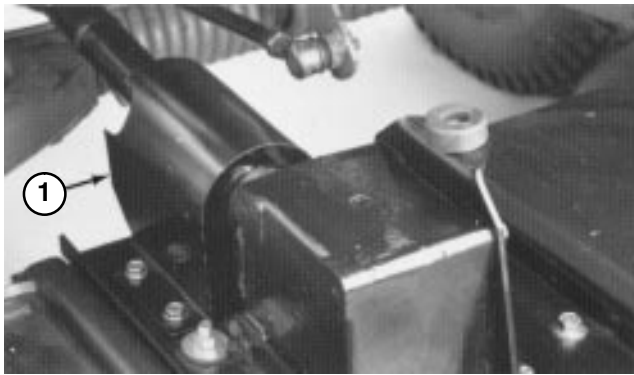


Figure 4
1. PTO shield

2. Move cutting unit into position in front of traction unit.
3. Measure distance from end of right hand push arm to center of ball joint (grease fitting). Distance should be 2.75". If distance is not 2.75", loosen jam nut securing ball joint to push arm and rotate ball joint in or out until distance is attained. Do not tighten jam nut at this time.

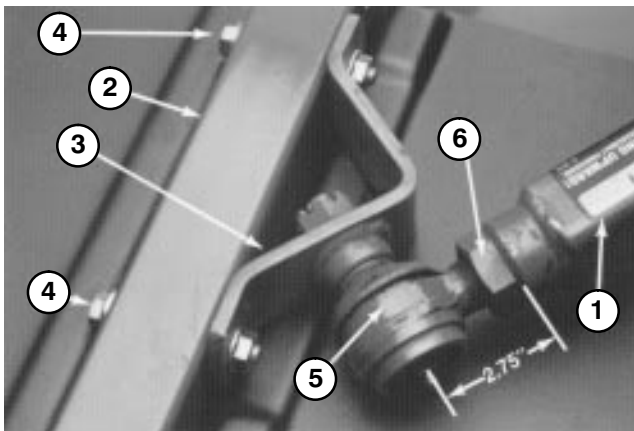


Figure 5


1. R.H. Push Arm	4. Capscrews & Washers
2. Castor Arm	5. Ball Joint
3. Ball Joint Mount	6. Jam Nut

4. Have a helper carefully push down on the push arm until holes in ball joint mount line up with holes in castor arm. Immediately slide a 4 x 4 in. block of wood between top of push arm and underside of chassis.

5. Secure ball joint mount to castor arm with (2) 7/16 – 14 x 3" lg. capscrews, 15/32" I.D. x 59/64" O.D. flatwashers and 7/16 – 14 flange nuts. Flatwashers to be positioned to outside of castor arm.

6. Tighten large jam nut securing ball joint to push arm (Fig. 5). When tightening jam nut, hold ball joint straight to permit proper oscillation during raising and lowering of cutting unit. Carefully remove wood block holding push arm down.

CONNECT LEFT HAND PUSH ARM TO CUTTING UNIT (Fig. 6)



WARNING

Since the left hand push arm is spring loaded to about 150 pounds, a helper is needed to push the arm down. Sudden release of the push arm could cause injury.

1. Remove (2) capscrews, flatwashers and flange nuts securing left hand ball joint mount and chain bracket to left hand castor arm. Remove ball joint mount and chain bracket.

2. Remove cotter pin and castle nut securing left hand ball joint mount to left hand push arm on traction unit. Install ball joint mount (removed from castor arm) to push arm with castle nut and cotter pin previously removed.

3. Measure distance from end of left hand push arm to center of ball joint (grease fitting). Distance should be 2.50". If distance is not 2.50", loosen jam nut securing ball joint to push arm and rotate ball joint in or out until distance is attained. Do not tighten jam nut at this time.

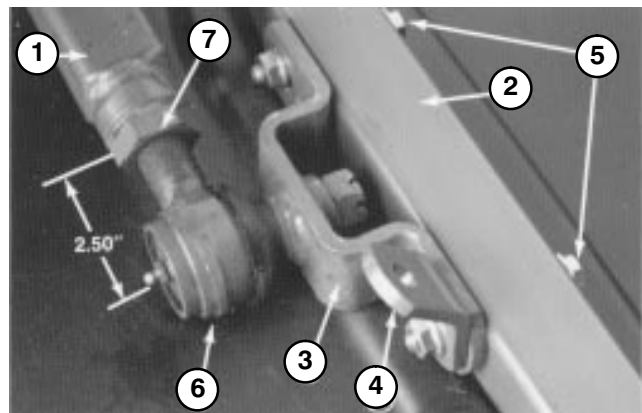


Figure 6

1. L.H. Push Arm	5. Capscrews & Washers
2. Castor Arm	6. Ball Joint
3. Ball Joint Mount	7. Jam Nut
4. Chain Mount	

SET-UP INSTRUCTIONS

4. Have a helper carefully push down on the push arm until holes in ball joint mount line up with holes in castor arm. Immediately slide a 4 x 4 in. block of wood between top of push arm and underside of chassis.



WARNING

Make sure the wooden block does not slip out accidentally. Sudden release of the push arm could cause injury.

5. Secure ball joint mount and chain bracket to castor arm with capscrews, flatwashers and flange nuts previously removed. Flatwashers to be positioned to outside of castor arm. Chain bracket to be mounted in forward set of holes.

6. Tighten large jam nut securing ball joint to push arm. When tightening jam nut, hold ball joint straight to permit proper oscillation during raising and lowering of cutting unit. Carefully remove wood block holding push arm down.

CONNECT DRIVE SHAFT TO CUTTING UNIT GEAR BOX (Fig. 7)

IMPORTANT: The drive shaft yokes must be exactly in line with each other when outer yoke is installed on gear box splined PTO shaft. Remove sleeve and change yoke position if alignment is not correct. Misalignment of the two yokes will shorten the life of the drive shaft and cause unnecessary vibration when cutting unit is operated.

1. Line up holes in yoke and input shaft of gear box. Slide yoke onto shaft and secure together with a roll pin and (2) 5/16 – 18 x 1-3/4" lg. capscrews and 5/16 – 18 locknuts.

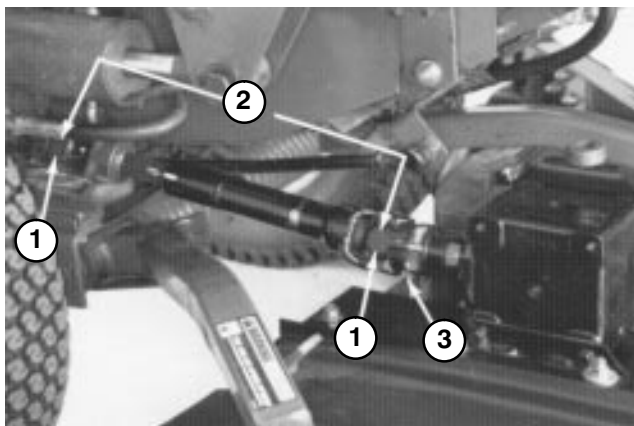


Figure 7

1. Drive Shaft Yokes
2. Yokes in Phase
3. Roll Pin & Capscrews

2. Mount PTO shield to top of cutting unit gear box mounting plate with two self-tapping screws previously removed.

INSTALL LIFT CHAINS (Fig. 8)

1. Connect lift chains to lift arm and cutting unit chain brackets with (6) shackles, (3/8 x 1-1/2" lg.) shackle pins and (1/8 x 3/4" lg.) cotter pins. To assure cutting unit lifts properly, secure chains to the following links when connecting:

Front Left – 11th link

Front Right – 8th link

Rear – 7th link

Check operation to assure chains lift deck tight against stops when lift arm is raised.

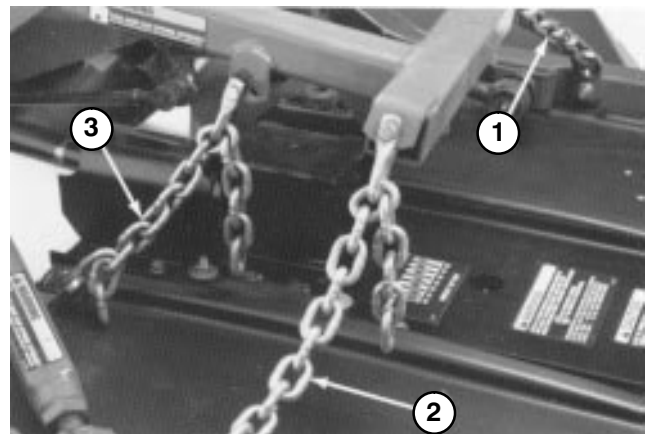


Figure 8

1. Front Left Lift Chain
2. Front Right Lift Chain
3. Rear Lift Chain

GREASE CUTTING UNIT

Before the cutting unit is operated, it must be greased to assure proper lubricating characteristics: refer to Lubrication, page 13. Failure to properly grease the cutting unit will result in premature failure of critical parts.

SET – UP INSTRUCTIONS

INSTALL REAR WEIGHT

Two Wheel Drive Groundsmaster 300 Series Traction Units comply with ANSI B71.4–1990 Standard when equipped with rear weight. Use chart below to determine combinations of weight required. Order parts from your local Authorized Toro Distributor.

Four Wheel Drive Groundsmaster 300 Series Traction Units do not need additional rear weight to comply with ANSI B71.4–1990 Standard.

Traction Unit Description	Rear Weight Required	Weight Part Number	Weight Description	Qty.
Groundsmaster 325–D (30788 / 30739)	70 lb.	24–5780	Rear Weight Kit (includes two 35 lb. weights and mounting hardware)	1
Groundsmaster 345 (30789)	105 lb.	24–5780	Rear Weight Kit (includes two 35 lb. weights and mounting hardware)	1
		24–5790	& Rear Weight Kit (includes one 35 lb. weight and mounting hardware)	1
Groundsmaster 325–D 4 Wheel Drive (30795 / 30741)	0 lb.	–	–	–

BEFORE OPERATING

CHECK LUBRICANT IN GEAR BOX

(Fig. 9)

The gear box is designed to operate on 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 on top of gear case and add enough lubricant to bring it up to bottom of hole in side.

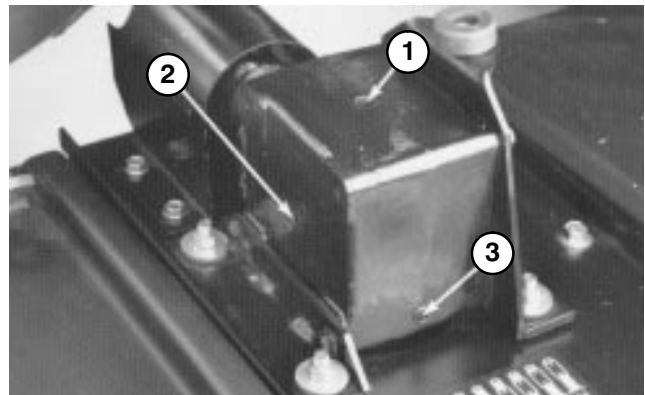


Figure 9

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

BEFORE OPERATING

ADJUSTING HEIGHT-OF-CUT

(Fig. 10-11)

The height-of-cut is adjustable from 1-1/2 to 4-1/2 inches in 1/2 inch increments, by adding or removing an equal number of spacer from the front and rear castor forks. The height-of-cut chart below gives the combinations of spacers to use for all height-of-cut settings.

Height-of-Cut Chart

Height-of-Cut Setting	Spacers Below Castor Arm	
	Front	Rear
1-1/2 inch	0	0
2 inch	1	1
2-1/2 inch	2	2
3 inch	3	3
3-1/2 inch	4	4
4 inch	5	5
4-1/2 inch	6	6

1. Start the engine and raise the cutting unit so height-of-cut can be changed. Stop engine after cutting unit is raised.

Note: 1" height-of-cut can be attained by modifying the castor forks as follows:

A. Remove front and rear castor forks from cutting deck and remove wheels from forks.

B. Drill out .438" dia. holes (Fig. 10 & 11) in each side of castor forks to .500" or .516" dia.

C. Using new holes, reinstall castor wheels to forks and install forks to deck.

Note: Height-of-cut decal will now be off by 1/2" for spacer placement and height-of-cut will be 1" to 4".

FRONT CASTOR WHEELS

1. Remove tensioning cap from spindle shaft and slide spindle out of front castor arm. Remove washer from spindle shaft. Slide spacers onto spindle shaft to get desired height-of-cut, then slide washer onto shaft.

2. Push castor spindle through front castor arm, install other thrust washer and remaining spacers onto spindle and install tensioning cap to secure assembly .

REAR CASTOR WHEELS

1. Remove tensioning cap from spindle shaft.

Note: Rear castor fork assembly does not need to be removed from castor arm to change height-of-cut.

2. Remove or add "C" shaped spacers at the narrow portion of the spindle shaft, below castor arm, to get desired height-of-cut. Make sure thrust washers – not the spacers – contact the top and bottom of the castor arm.

3. Install tensioning cap to secure assembly .

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

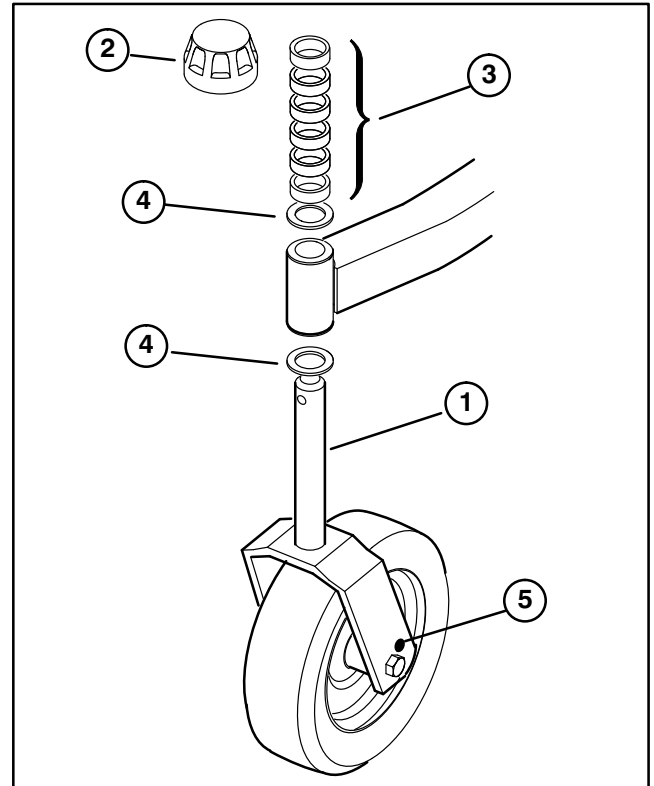


Figure 10

- 1. Front Castor Wheel
- 2. Tensioning cap
- 3. Spacers
- 4. Thrust Washers
- 5. .438" dia. hole

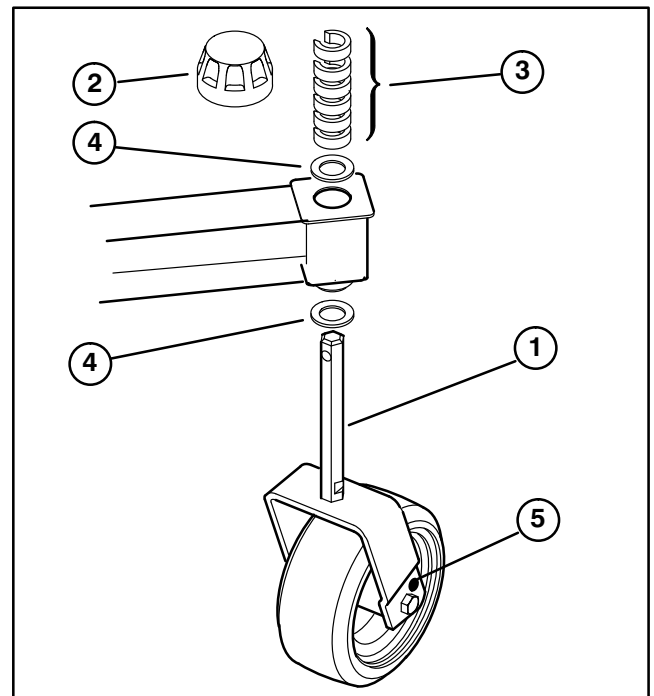


Figure 11

- 1. Rear Castor Wheel
- 2. Tensioning cap
- 3. Spacers
- 4. Thrust Washers
- 5. .438" dia. hole

BEFORE OPERATING

ADJUSTING ROLLERS

Note: If cutting unit is to be used in the 1" or 1-1/2" height-of-cut setting, cutting unit rollers must be repositioned in the top bracket holes.

To adjust front and rear rollers:

1. Remove cotter pins securing roller shafts to underside of deck.
2. Slide shafts out of lower bracket holes, align rollers with top holes and install shafts.
3. Install cotter pins to secure assemblies.

ADJUSTING SKIDS (Fig. 12)

1. Adjust skids by loosening flange nuts, positioning as desired and re-tightening flange nuts.

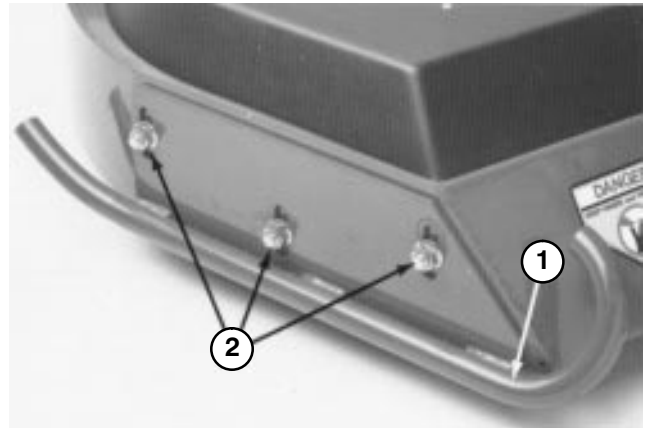


Figure 12

1. Skid
2. Flange Nuts

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 setting another notch. When cutting in 1" or 1-1/2" height-of-cut, add a second washer between rear castor forks and bottom of castor arm housings to increase blade rake.
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. **ALWAYS START MOWING 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. Make sure blade is in good condition and a full sail is present.

5. **CHECK CONDITION OF DECK** — Make sure cutting chambers are in good condition. Straighten any bends in chamber components to assure correct blade tip/chamber clearance.

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. **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.

LUBRICATION

GREASE BEARINGS, BUSHINGS AND GEAR BOX (Fig. 13–16)

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.

1. The cutting unit has bearings and bushings that must be lubricated, and these lubrication points are: front castor spindle bushings (Fig. 13); castor wheel bearings (Fig. 13 & 14); blade spindle bearings (Fig. 15); idler arm pivot (Fig. 15) and right and left push arm ball joints (Fig. 15).

Also, remove rear castor spindle shaft from castor arm and coat hex shaft with No. 2 general purpose lithium base grease or molybdenum base grease every 50 hours (Fig. 14).

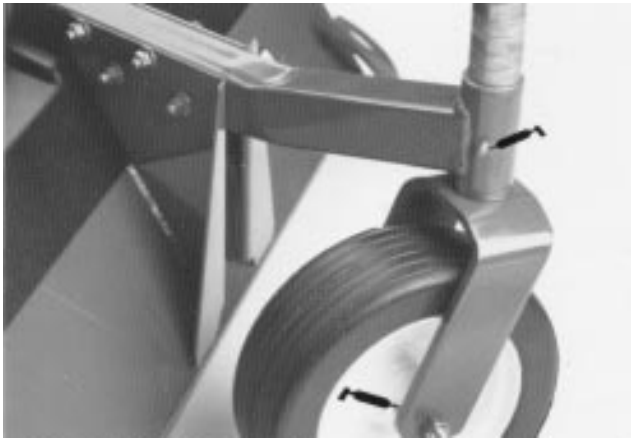


Figure 13



Figure 14

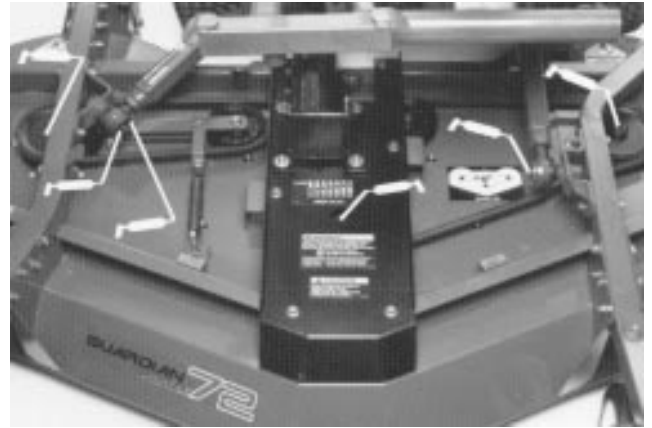


Figure 15

2. Position the machine and cutting unit on a level surface and lower cutting unit. Remove check plug from side of gear box (Fig. 16) and make sure lubricant is up to bottom of hole. If level of lubricant is low, remove fill plug on top of gear case and add SAE 80–90 wt. gear lube until level is up to bottom of hole in side.

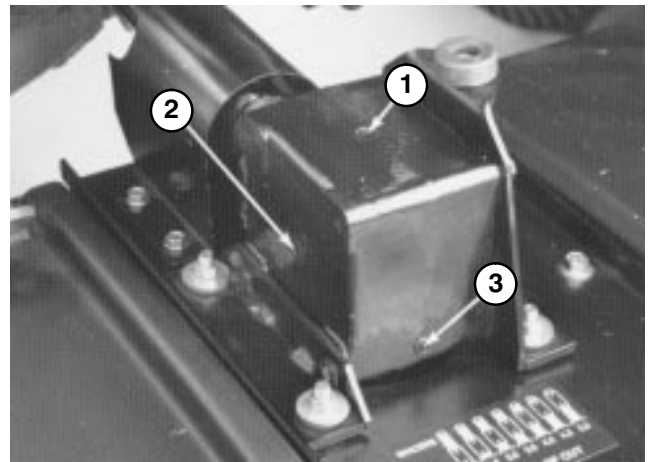
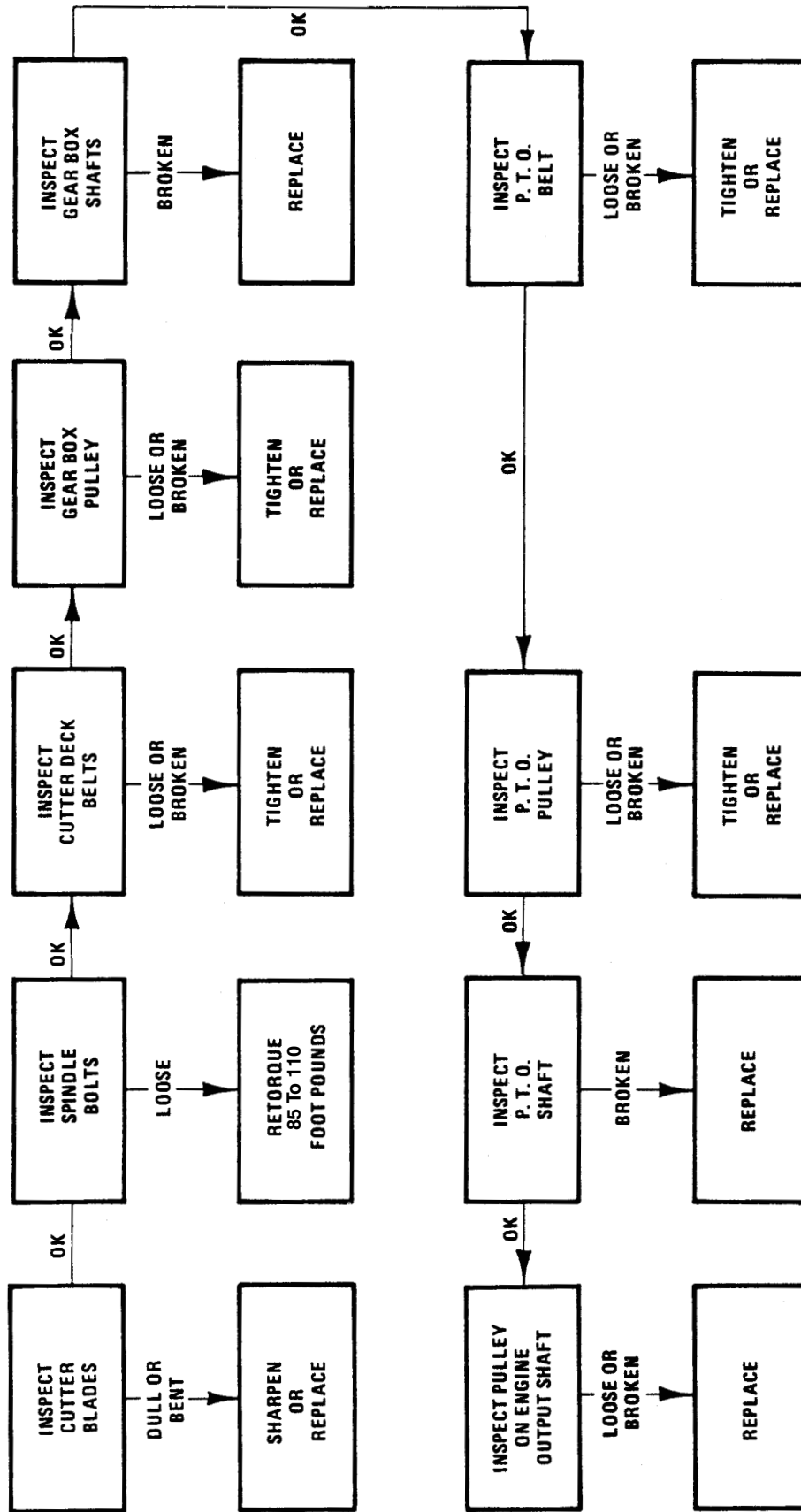


Figure 16

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

MAINTENANCE TROUBLE SHOOTING

UNIT WILL NOT CUT OR CUTS POORLY



MAINTENANCE



CAUTION

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

SEPARATING CUTTING UNIT FROM TRACTION UNIT (Fig. 17–19)

1. Position machine on level surface, lower cutting unit to floor, shut engine off and engage parking brake.
2. Remove self tapping screws securing shield to top of cutting unit and set shield aside.
3. Drive out roll pin securing drive shaft yoke to input shaft of gear box. Loosen capscrews and locknuts and slide yoke off input shaft. If traction unit will be used without the cutting unit, drive roll pin out of yoke at traction unit PTO shaft and remove entire drive shaft from traction unit.

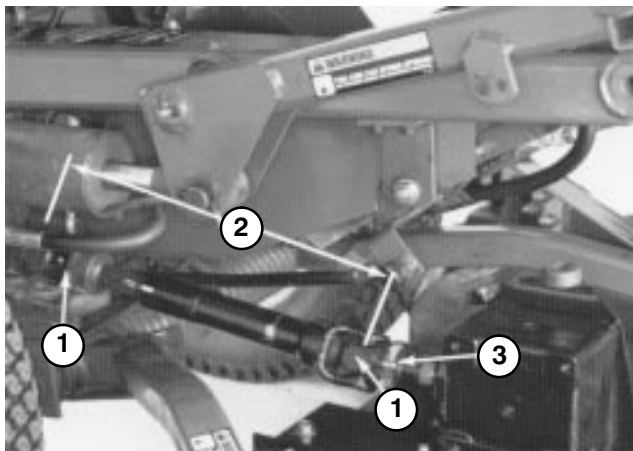


Figure 17

1. Drive Shaft Yokes
2. Yokes in Phase
3. Roll Pin & Capscrews



DANGER

Do not start the engine and engage the PTO lever when PTO shaft is not connected to gear box on cutting unit. If engine is started and PTO shaft is allowed to rotate, serious injury could result.

4. Disconnect cotter pins and clevis pins securing lift chains to lift arms.



WARNING

Since the right hand push arm is spring loaded to about 100 pounds and the left hand push arm is spring loaded to about 150 pounds, a helper is needed to push the arm down. Sudden release of the push arm could cause injury.

5. Have a helper push down on the right push arm while you remove the capscrews, flatwashers and locknuts securing the ball joint mount to castor arm on cutting unit. Now the helper can carefully allow push arm to move upward, which will gradually release the 100 pounds of spring load.

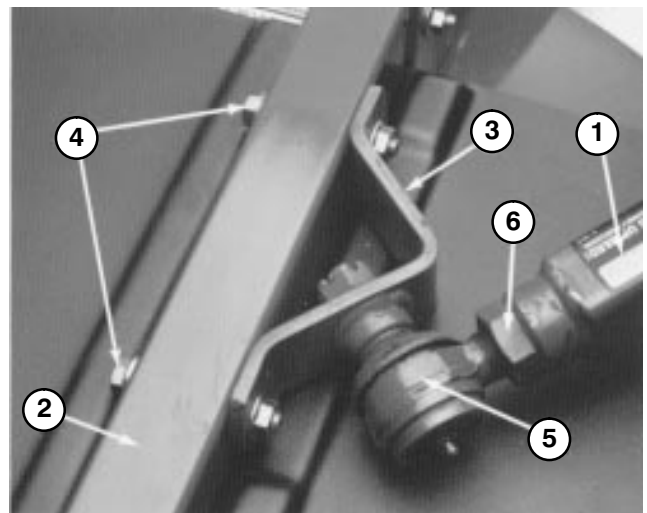


Figure 18

1. R.H. Push Arm
2. Castor Arm
3. Ball Joint Mount
4. Capscrews & Washers
5. Ball Joint
6. Jam Nut

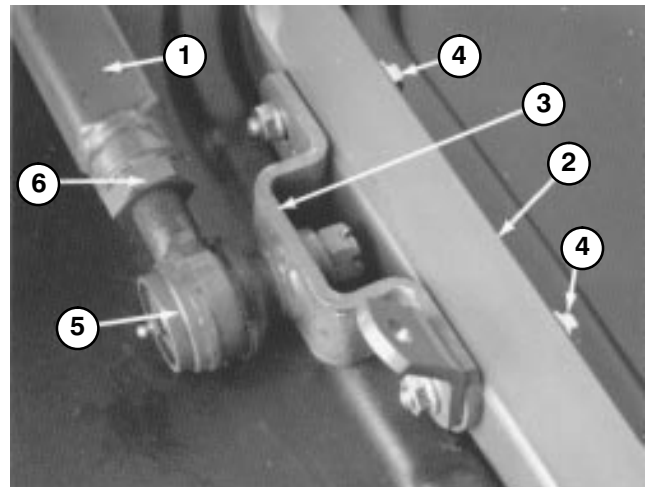


Figure 19

1. L.H. Push Arm
2. Castor Arm
3. Ball Joint Mount
4. Capscrews & Washers
5. Ball Joint
6. Jam Nut

MAINTENANCE

6. Have a helper push down on the left push arm while you remove the capscrews, flatwashers and locknuts securing the ball joint mount and chain bracket to castor arm on cutting unit. Now the helper can carefully allow push arm to move upward, which will gradually release the 150 pounds of spring load.
7. Roll the cutting unit away from the traction unit.

MOUNTING CUTTING UNIT TO TRACTION UNIT (Fig. 17–19)

1. Position machine on a level surface and shut engine off.
2. Move cutting unit into position in front of traction unit.



WARNING

Since the right hand push arm is spring loaded to about 100 pounds and the left hand push arm is spring loaded to about 150 pounds, a helper is needed to push the arm down. Sudden release of the push arm could cause injury.

3. Have a helper carefully push down on the right push arm until holes in ball joint mount line up with holes in castor arm.
4. Secure ball joint mount to castor arm with capscrews, flatwashers and flange nuts. Flatwashers to be positioned to outside of castor arm.
5. Have a helper carefully push down on the left push arm until holes in ball joint mount line up with holes in castor arm. Immediately slide a 4 x 4 in. block of wood between top of push arm and underside of chassis



WARNING

Make sure the wooden block does not slip out accidentally. Sudden release of the push arm could cause injury.

6. Secure ball joint mount and chain bracket to castor arm with capscrews, flatwashers and flange. Flatwashers to be positioned to outside of castor arm. Chain bracket to be mounted in forward set of holes.
7. Carefully remove wood block holding push arm down.
8. Line up holes in yoke and input shaft of gear box. Slide yoke onto shaft and secure together with a roll pin and (2) 5/16 – 18 x 1–3/4” lg. capscrews and 5/16 – 18 locknuts.

REPLACING DRIVE BELT (Fig. 20–22)

The blade drive belt, tensioned by the spring loaded idler, is very durable. However, 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 the belt if any of these conditions are evident.

1. Lower cutting unit to the shop floor. Remove belt covers from top of cutting unit and set covers aside.
2. Unhook spring from idler arm bracket to release belt tension. Remove cotter pin and clevis pin securing idler arm bracket to idler arm.

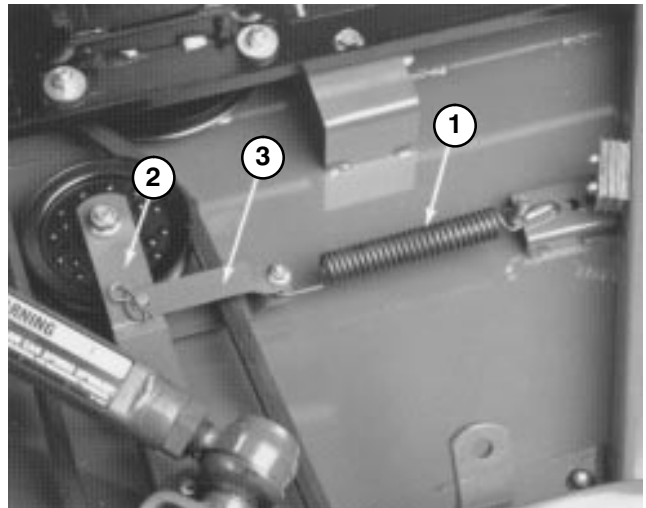


Figure 20

1. Spring
2. Idler Arm
3. Idler Arm Bracket

3. Remove capscrews and nuts securing gear box plate to deck channels. Lift gear box plate and gear box off deck channels and lay it on top of deck.

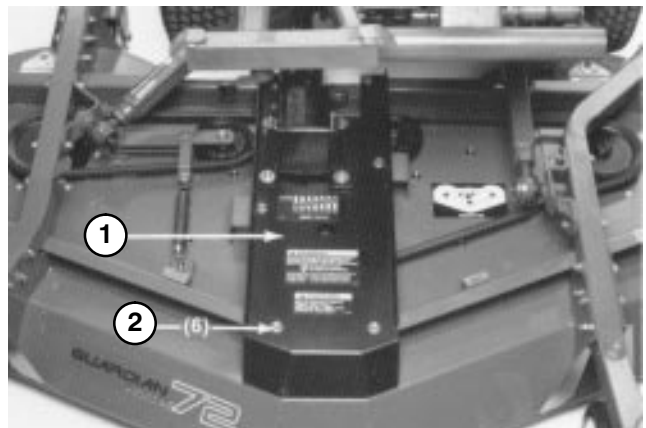


Figure 21

1. Gear Box Plate
2. Capscrews & Nuts

MAINTENANCE

4. Remove old belt from around spindle pulleys and thru idler pulley assembly.
5. Route new belt around spindle pulleys and thru idler pulley assembly, as shown in figure 22.

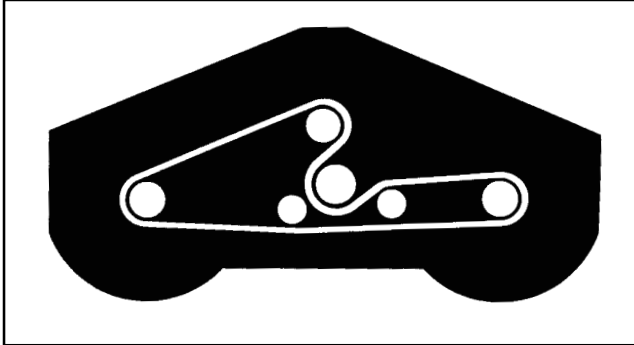


Figure 22

6. Reposition gear box plate on deck channels while routing belt around gear box pulley. Mount gear box plate to deck channels with capscrews and nuts previously removed.
7. Reinstall idler arm bracket to idler arm with cotter pin and clevis pin. Hook spring onto idler arm bracket. To assure there is proper tension on drive belt, spring should be extended to a length of approximately 7.00". If spring is not extended to this length, relocate spring rod to a new mounting holes further away from from belt.
8. Reinstall belt covers.

SERVICING FRONT BUSHINGS IN CASTOR ARMS (Fig. 23)

The castor arms have bushings pressed into the top and bottom of the tube 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 inside the bushings, bushings are worn and must be replaced.

1. Raise cutting unit so wheels are off floor and block it so it cannot fall accidentally.
2. Remove tensioning cap, spacer(s) and thrust washer from top of castor spindle.
3. Pull castor spindle out of mounting tube. Allow thrust washer and spacer(s) to remain on bottom of spindle.
4. Insert pin punch into top or bottom of mounting tube and drive bushing out of tube. Also drive other bushing out of tube. Clean inside of tubes to remove dirt.

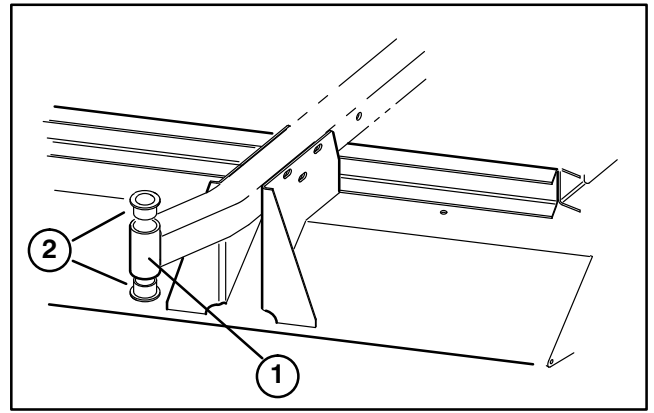


Figure 23

1. Front Castor Arm Tube
2. Bushings

5. Apply grease to inside and outside of new bushings. Using a hammer and flat plate, drive bushings into mounting tube.
6. Inspect castor spindle for wear and replace it if damaged.
7. Push castor spindle through bushings and mounting tube. Slide thrust washer and spacer(s) onto spindle. Install tensioning cap on castor spindle to retain all parts in place.

SERVICING CASTOR WHEELS AND BEARINGS (Fig. 24)

The castor wheel rotates on a high-quality roller bearing and is supported by a spanner bushing. 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.
2. Pull spanner bushing out of wheel hub.
3. Remove bushing from wheel hub and allow bearing to fall out. Remove bushing from opposite side of wheel hub.
4. Check the bearing, spanner and inside of wheel hub for wear. Replace defective parts.
5. To assemble the castor wheel, push bushing into wheel hub. Slide bearing into wheel hub. Push other bushing into open end of wheel hub to captivate the bearing inside the wheel hub.
6. Carefully slide spanner through the bushings and the wheel hub.
7. Install castor wheel assembly between castor fork and secure in place with capscrew, washers and locknut.
8. Lubricate castor wheel bearing through grease fitting, using No. 2 general purpose lithium base grease.

MAINTENANCE

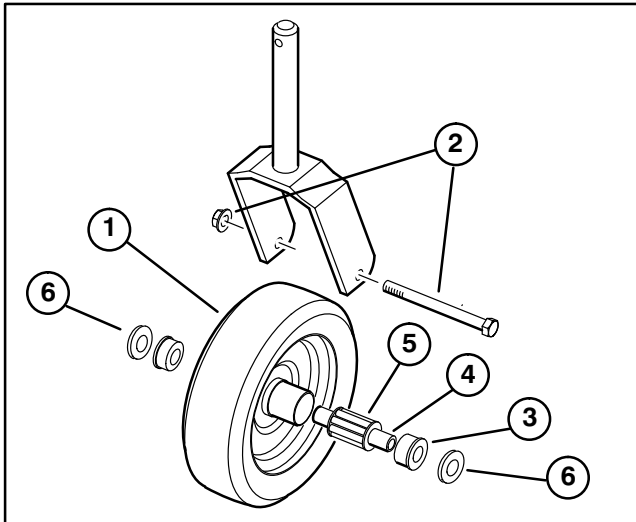


Figure 24

- | | |
|-----------------------|--------------------|
| 1. Castor wheel | 4. Spanner Bushing |
| 2. Capscrew & Locknut | 5. Roller Bearing |
| 3. Bushing (2) | 6. Washer (2) |

REMOVING CUTTER BLADE (Fig. 25)

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.

1. Raise cutting unit to highest position, shut the engine off and engage the parking brake. Block cutting unit to prevent it from falling accidentally.
2. Grasp end of blade using a rag or thickly padded glove. Remove blade bolt, lockwasher, anti-scalp cup and blade from spindle shaft.

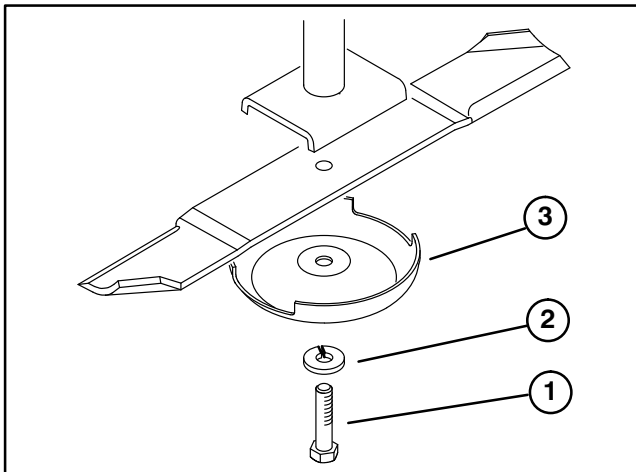


Figure 25

1. Blade bolt
2. Lockwasher
3. Anti-Scalp Cup

2. Install blade—sail facing toward cutting unit with anti-scalp cup, lockwasher and blade bolt. Tighten blade bolt to 85–110 ft-lb.



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.

INSPECTING AND SHARPENING BLADE

(Fig. 26–27)

1. Raise cutting unit to highest position, shut the engine off and engage the parking brake. Block cutting unit to prevent it from falling accidentally.
2. Examine cutting ends of the blade carefully, especially where the flat and curved parts of the blade meet (Fig. 26–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. 26–B), replace the blade: refer to Removing Cutter Blade.

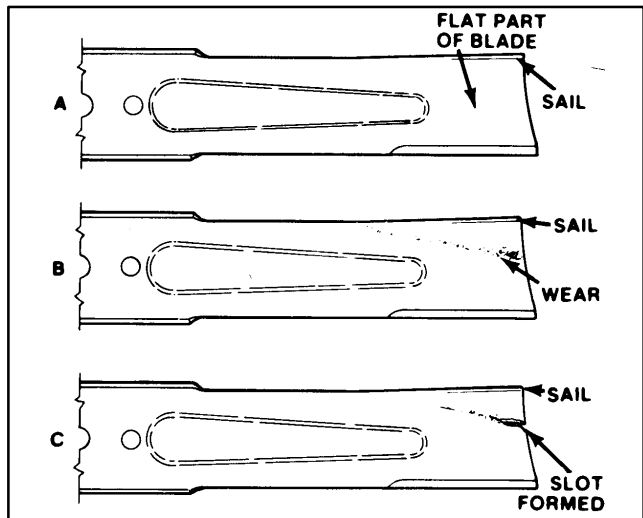


Figure 26



DANGER

If blade is allowed to wear, a slot will form between the sail and flat part of the blade (Fig. 26–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.

3. 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 to make sure of sharpness (Fig. 27). The blade will remain balanced if same amount of metal is removed from both cutting edges.

MAINTENANCE

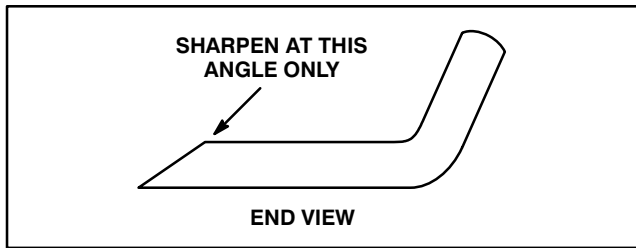


Figure 27

4. 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.

5. Install blade—sail facing toward cutting unit with anti-scalp cup, lockwasher 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. Using a 3 foot long carpenters level, find a level surface on the shop floor.
2. Raise height-of-cut to the highest position: refer to Adjusting Height-Of-Cut, page 11.

3. Lower cutting unit onto flat surface. Remove covers from top of cutting unit.

4. Unhook spring from idler arm bracket to release belt tension.

5. Rotate blades until the ends face forward and backward. Measure from floor to front tip of cutting edge and remember this dimension. Then rotate same blade so opposite end is forward and measure again. The difference between dimensions must not exceed 1/8 of an inch. If dimension exceeds 1/8 of an inch, replace the blade because it is bent. Make sure to measure all blades.

6. Compare measurements of outer blades with the center blade. Center blade must not be more than 3/8 of an inch lower than the outer blades. If center blade is more than 3/8 of an inch lower than the outer blades, proceed to step 7 and add shims between spindle housing and bottom of cutting unit.

7. 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.

8. Hook spring onto idler arm bracket. Reinstall 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 rear 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.