Form No. 3326-913

TORO®

Guardian 72″ Recycler®

Groundsmaster® 300 Series

Model No. 30716—Serial No. 220000001 and Up

Model No. 30716TE—Serial No. 220000001 and Up

Operator's Manual

CE

Domestic English (EN)

Contents

Introduction

Read this manual carefully to learn how to operate and maintain your product properly. The information in this manual can help you and others avoid injury and product damage. Although Toro designs and produces safe products, you are responsible for operating the product properly and safely.

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready. The numbers are stamped into a plate on the rear of the mower deck, under the cover.

Write the product model and serial numbers in the space below:

Model No. _____

Serial No. _____

This manual identifies potential hazards and has special safety messages that help you and others avoid personal injury and even death. ***Danger***, ***Warning***, and ***Caution*** are signal words used to identify the level of hazard. However, regardless of the hazard, be extremely careful.

Danger signals an extreme hazard that *will* cause serious injury or death if you do not follow the recommended precautions.

Warning signals a hazard that *may* cause serious injury or death if you do not follow the recommended precautions.

Caution signals a hazard that may cause minor or moderate injury if you do not follow the recommended precautions.

This manual uses two other words to highlight information. **Important** calls attention to special mechanical information and **Note:** emphasizes general information worthy of special attention.

Safety

This machine meets or exceeds the B71.4 1999 specifications of the American National Standards Institute, in effect at time of production, when weights are installed according to the chart in Traction Unit Operator's Manual.

Improper use or maintenance by the operator or owner can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety alert ⚠ symbol, which means

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CAUTION, WARNING, or DANGER—"personal safety instruction." Failure to comply with the instruction may result in personal injury or death.

Safe Operating Practices

The following instructions are from ANSI standard B71.4—1999.

Training

- Read the Operator's Manual and other training material. If the operator(s) or mechanic(s) can not read English it is the owner's responsibility to explain this material to them.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- All operators and mechanics should be trained. The owner is responsible for training the users.
- Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to himself or herself, other people or property.

Preparation

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Wear appropriate clothing including hard hat, safety glasses and ear protection. Long hair, loose clothing or jewelry may get tangled in moving parts.
- Inspect the area where the equipment is to be used and remove all objects such as rocks, toys and wire which can be thrown by the machine.
- Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
  - Use only an approved container.
  - Never remove fuel cap or add fuel with engine running. Allow engine to cool before refueling. Do not smoke.
  - Never refuel or drain the machine indoors.
- Check that operator's presence controls, safety switches and shields are attached and functioning properly. Do not operate unless they are functioning properly.

Operation

- Never run an engine in an enclosed area.
- Only operate in good light, keeping away from holes and hidden hazards.
- Be sure all drives are in neutral and parking brake is engaged before starting engine. Only start engine from the operator's position. Use seat belts if provided.
- Slow down and use extra care on hillsides. Be sure to travel in the recommended direction on hillsides. Turf conditions can affect the machine's stability. Use caution while operating near drop-offs.
- Slow down and use caution when making turns and when changing directions on slopes.
- Never raise deck with the blades running.
- Never operate with guards not securely in place. Be sure all interlocks are attached, adjusted properly, and functioning property.
- Do not change the engine governor setting or overspeed the engine.
- Stop on level ground, lower the cutting units, disengage drives, engage parking brake (if provided), shut off engine before leaving the operator's position for any reason.
- Stop equipment and inspect the blades after striking objects or if an abnormal vibration occurs. Make necessary repairs before resuming operations.
- Keep hands and feet away from the cutting units.
- Look behind and down before backing up to be sure of a clear path.
- Never carry passengers and keep pets and bystanders away.
- Slow down and use caution when making turns and crossing roads and sidewalks. Stop blades if not mowing.
- Do not operate the mower under the influence of alcohol or drugs.
- Use care when loading or unloading the machine into a trailer or truck.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
- The operator shall turn on flashing warning lights, if provided, whenever traveling on a public road, except where such use is prohibited by law.

Maintenance and Storage

- Disengage drives, lower the cutting units, move traction pedal to Neutral, set parking brake, stop engine and remove key and disconnect spark plug wire. Wait for all movement to stop before adjusting, cleaning or repairing.
- Clean grass and debris from cutting units, drives, mufflers, and engine to help prevent fires. Clean up oil or fuel spillage.
- Let engine cool before storing and do not store near flame.
- Shut off fuel while storing or transporting. Do not store fuel near flames or drain indoors.
- Park machine on level ground. Never allow untrained personnel to service machine.
- Use jack stands to support components when required.
- Carefully release pressure from components with stored energy.
- Disconnect battery or remove spark plug wire before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
- Use care when checking blades. Wrap the blades or wear gloves, and use caution when servicing them. Only replace blades. Never straighten or weld them.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Charge batteries in an open well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.
- Keep all parts in good working condition and all hardware tightened. Replace all worn or damaged decals.

Toro Mower Safety

The following list contains safety information specific to Toro products or other safety information that you must know that is not included in the ANSI standards.

This product is capable of amputating hands and feet and throwing objects. Always follow all safety instructions to avoid serious injury or death.

Use of this product for purposes other than its intended use could prove dangerous to user and bystanders.

Operation

- Always wear substantial shoes. Do not operate the machine while wearing sandals, tennis shoes, or sneakers.
- Wearing safety shoes and long pants is advisable and required by some local ordinances and insurance regulations.
- Fill the fuel tank until the level is 1 in. (25 mm) below the bottom of the filler neck. Do not overfill. Wipe up any spilled fuel.
- Check the safety interlock switches daily for proper operation. If a switch should fail, replace the switch before operating the machine. After every two years, replace all three interlock switches in the safety system, **regardless** if they are working properly or not.
- Pay attention when using the machine. To prevent loss of control:
  - Do not drive close to sand traps, ditches, creeks, or other hazards.
  - Reduce speed when making sharp turns. Avoid sudden stops and starts.
  - Watch for traffic when near or crossing roads. Always yield the right-of-way.
- If a cutting blade strikes a solid object or vibrates abnormally, stop immediately, turn the engine off, wait for all motion to stop, and inspect the machine for damage. Repair or replace any damaged parts before operating.
- if the engine stalls or the machine loses headway and cannot make it to the top of a slope, do not turn the machine around. Always back slowly straight down the slope.
- 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 the area is cleared.
- Never raise the cutting unit while the blades are rotating.
- Do not touch the engine or muffler while the engine is running or soon after it is stopped. These areas could be hot enough to cause a burn.
- Lower the cutting unit to the ground and remove the ignition key whenever the machine is left unattended.

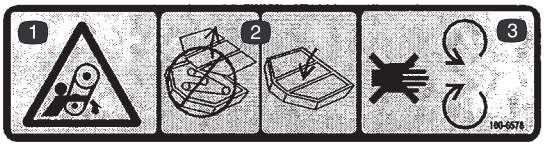
Maintenance and Storage

- Before servicing or making adjustments, lower the cutting unit to the ground, stop the engine, and remove the ignition key. Wait for all movement to stop before getting off of the seat.

- Ensure that the entire machine is properly maintained and in good operating condition. Frequently check all nuts, bolts, and screws.
- Make sure all hydraulic line connectors are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.
- Keep your body and hands away from pin hole leaks or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, not your hands, to search for leaks. Hydraulic fluid escaping under pressure can have sufficient force to penetrate the skin and cause serious injury.
- Before disconnecting or performing any work on the hydraulic system, all pressure in the system must be relieved by stopping the engine and lowering the cutting units to the ground.
- If the engine must be running to perform a maintenance adjustment, keep hands, feet, clothing, and any parts of the body away from the cutting units, attachments, and any moving parts. Keep everyone away.
- Check the blade mounting bolts and nuts frequently to be sure that they are tightened to specification.
- Do not overspeed the engine by changing governor settings. To ensure safety and accuracy, have an Authorized Toro Distributor check the maximum engine speed with a tachometer.
- The engine must be shut off before checking the oil or adding oil to the crankcase.
- If major repairs are ever needed or if assistance is desired, contact an Authorized Toro Distributor.
- To make sure of optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

Safety and Instruction Decals

Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.

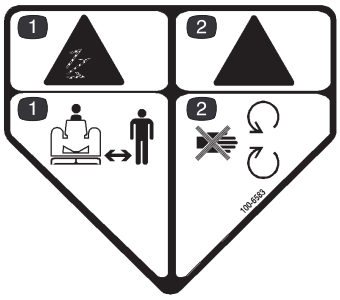


100-6578

1. Entanglement hazard
2. Keep the cutting unit covers in place.
3. Stay away from moving parts.

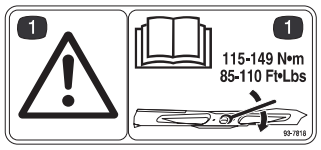
100-6582

1. Warning—cutting of fingers or hand hazard.



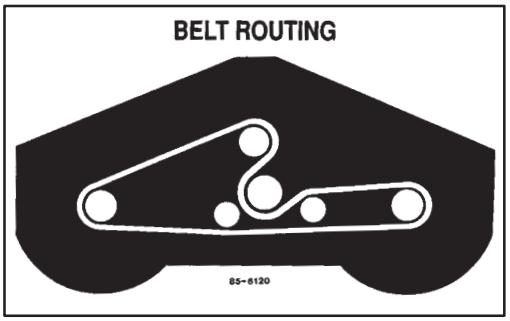
100-6583

1. Thrown object hazard—keep bystanders away.
2. Warning—stay away from moving parts.

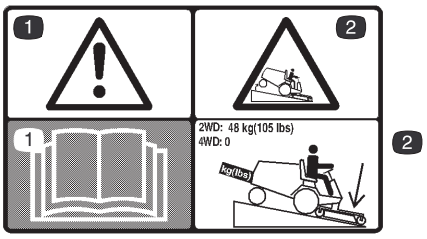


93-7818

1. Warning—torque the blade bolt. Read the operator's manual for further instructions.



85-6120

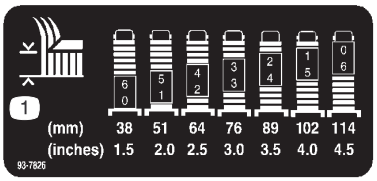


105–7844

1. Warning—read the operator's manual.
2. Rear wheel weight is required when operating a two-wheel drive Groundsmaster 328–D or Groundsmaster 345.

93-6697

1. Change the oil every 50 hours. Read the operator's manual for further instructions.



93-7826

1. Height-of-cut adjustment

Specifications

General Specifications

Width of cut	72 in. (183 cm)
Height of cut	Adjustable from 1-1/2 to 4-1/2 in. (38 to 114 mm) in 1/2 in. (13 mm) increments
Cutter housing	The housing is made of 12 gauge steel and reinforced with 2-1/2 in. x 10 gauge channel.
Cutting unit drive	A gear box mounted on the cutting unit is driven by a PTO shaft. Power is transmitted to the blades by one hex B section belt. The spindle shafts are 1-1/4 in. in diameter and supported by two externally sealed and greaseable tapered roller bearings.
Castor wheels	The two front castor wheels have roller bearing with 10-1/4 x 3-1/4 in. hard rubber tires. The rear wheels have roller bearings and 8 x 3-1/2 in. hard rubber tires.
Blade tip speed	At 3200 engine RPM, the blade tip speed is 15,800 ft/min. (4816 m/min.)
Cutting unit lift	The cutting unit is lifted by a hydraulic cylinder that has a 2-1/2 in. bore and 3-1/4 in. (83 mm) stroke.
Width	75 in. (191 cm)
Weight	460 lb. (209 kg)

Note: Specifications and design subject to change without notice.

Setup

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

Loose Parts

Note: Use this chart as a checklist to ensure that all parts have been received. Without these parts, total setup cannot be completed.

Description	Qty.	Use
Large castor wheel assembly	2	Installing the castor wheels
Small castor wheel assembly	2	
Drive shaft	1	Mounting the drive shaft
Capscrew, 5/16 x 1-3/4 in.	2	
Locknut, 5/16 in.	2	
Roll pin, 3/16 x 1-1/2 in.	2	
Capscrew, 7/16 x 3 in.	2	Connecting the right-hand push arm to the cutting unit
Flat washer, 7/16 in.	2	
Flange nut, 7/16 in.	2	
Parts catalog	1	
Operator's manual	1	Read before operating the machine.
Registration card	1	Fill out and return to Toro.

Installing the Castor Wheel Assemblies

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

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

Important The thrust washers, not the spacers, must contact the top and bottom of the castor arm.

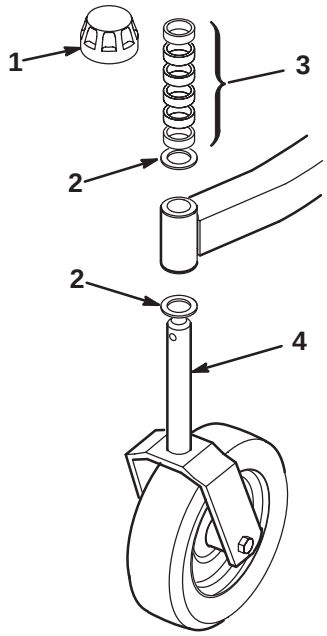


Figure 1

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

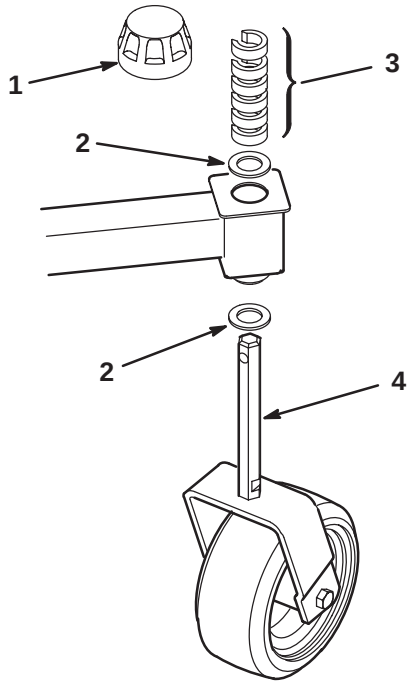


Figure 2

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

3. Ensure that all four castor wheels are set at the same height-of-cut; then roll the cutting unit off of the wooden pallet.

Installing the Drive Shaft to the Traction Unit

Slide the smaller yoke end of the drive shaft onto the traction unit PTO shaft while aligning the mounting holes (Fig. 3). Secure them with a roll pin. Do not install the front end of the drive shaft at this time.

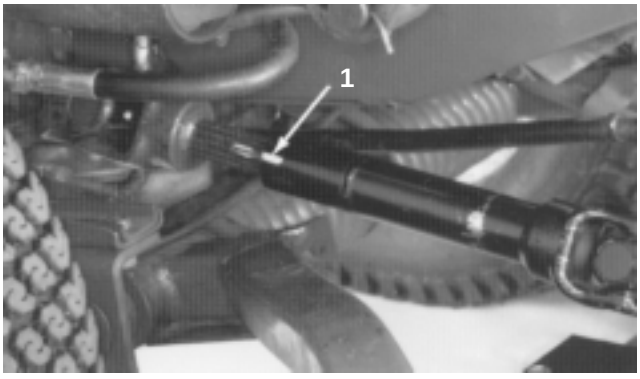


Figure 3

1. Drive shaft

Connecting the Right-Hand Push Arm to the Cutting Unit

Warning

The right-hand push arm is spring loaded to about 100 lb. (45 kg). Sudden release of the push arm could cause injury.

Another person is needed to push the arm down during this procedure.

1. Remove the 2 self-tapping screws securing the PTO shield to the top of the cutting unit gear box mounting plate and remove the shield (Fig. 4).

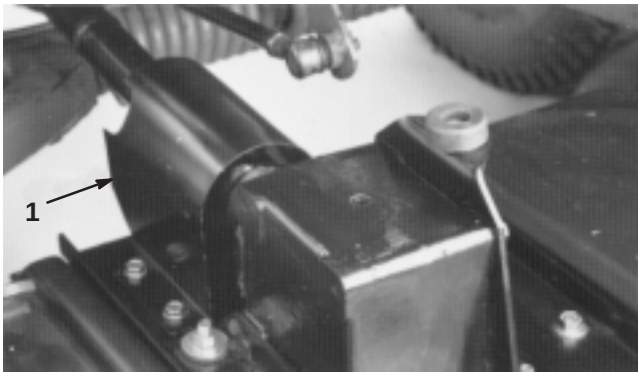


Figure 4

1. PTO shield

2. Move the cutting unit into position in front of the traction unit.

3. Measure the distance from the end of the right-hand push arm to the center of the ball joint (grease fitting) (Fig. 5). The distance should be 2-3/4 in. (70 mm). If the distance is not 2-3/4 in. (70 mm), loosen the jam nut securing the ball joint to the push arm and rotate the ball joint in or out until the correct distance is attained (Fig. 5). Do not tighten the jam nut at this time.

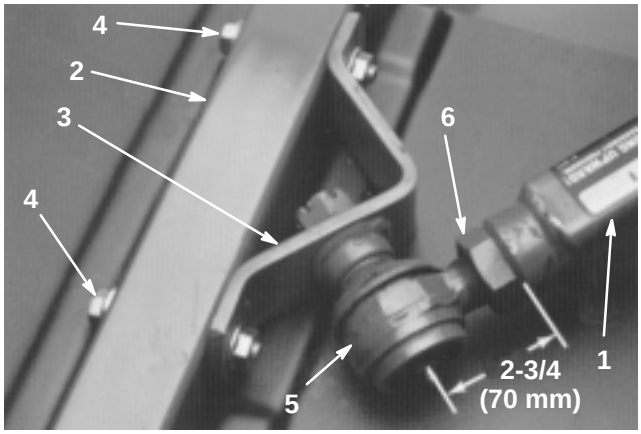


Figure 5

1. Right-hand push arm
2. Castor arm
3. Ball joint mount
4. Capscrews and washers
5. Ball joint
6. Jam nut

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

5. Secure the ball joint mount to the castor arm with 2 capscrews (7/16 x 3 in.), flat washers (7/16 in.), and flange nuts (7/16 in.). Position the flat washers to the outside of the castor arm.

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

Connecting the Left-Hand Push Arm to the Cutting Unit

Warning

The left-hand push arm is spring loaded to about 150 lb. (68 kg). Sudden release of the push arm could cause injury.

Another person is needed to push the arm down during this procedure.

1. Remove the 2 capscrews, flat washers, and flange nuts securing the left-hand ball joint mount and chain bracket to the left-hand castor arm (Fig. 6). Remove the ball joint mount and chain bracket.

2. Remove the cotter pin and castle nut securing the left-hand ball joint mount to the left-hand push arm on the traction unit. Install the ball joint mount (removed from the castor arm) to the push arm with the castle nut and cotter pin previously removed (Fig. 6).

3. Measure the distance from the end of the left-hand push arm to the center of the ball joint (grease fitting) (Fig. 6). The distance should be 2-1/2 in. (64 mm). If the distance is not 2-1/2 in. (64 mm), loosen the jam nut securing the ball joint to the push arm and rotate the ball joint in or out until the distance is attained (Fig. 6). Do not tighten the jam nut at this time.

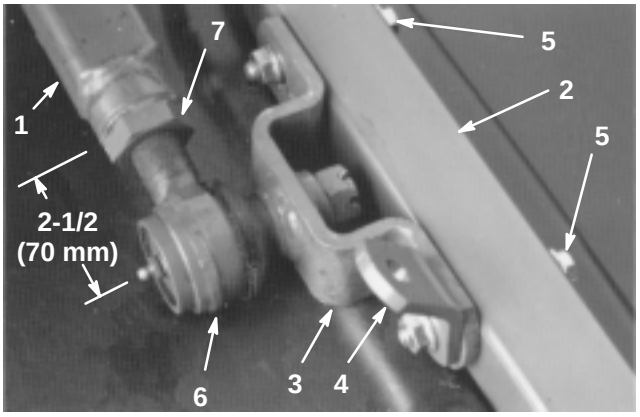


Figure 6

1. Left-hand push arm
2. Castor arm
3. Ball joint mount
4. Chain mount
5. Capscrews and washers
6. Ball joint
7. Jam nut

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

Warning

Sudden release of the push arm could cause injury.

Make sure that the wooden block does not slip out.

5. Secure the ball joint mount and chain bracket to the castor arm with the capscrews, flat washers, and flange nuts previously removed. Position the flat washers to the outside of the castor arm. Mount the chain bracket in the forward set of holes.

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

Connecting the Drive Shaft to the Cutting Unit Gear Box

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

1. Line up the holes in the yoke and input shaft of the gear box. Slide the yoke onto the shaft and secure them together with a roll pin and 2 capscrews (5/16 x 1-3/4 in.) and locknuts (51/6 in.) (Fig. 7).

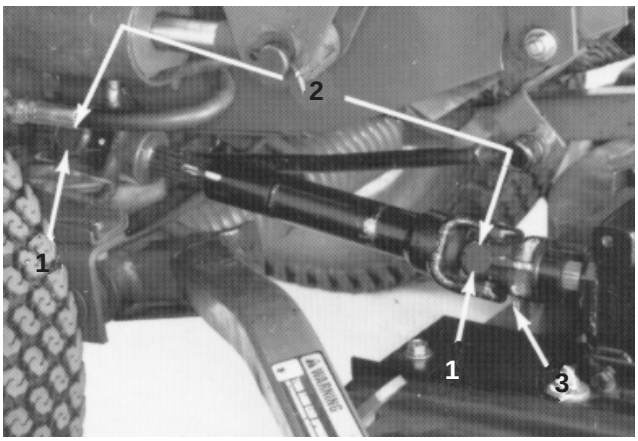


Figure 7

1. Drive shaft yokes
2. Yokes in phase
3. Roll pin and capscrews

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

Installing the Lift Chains

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

- Front left—11th link
- Front right—8th link
- Rear—7th link

2. Check the operation to ensure that the chains lift the deck tight against the stops when the lift arm is raised.

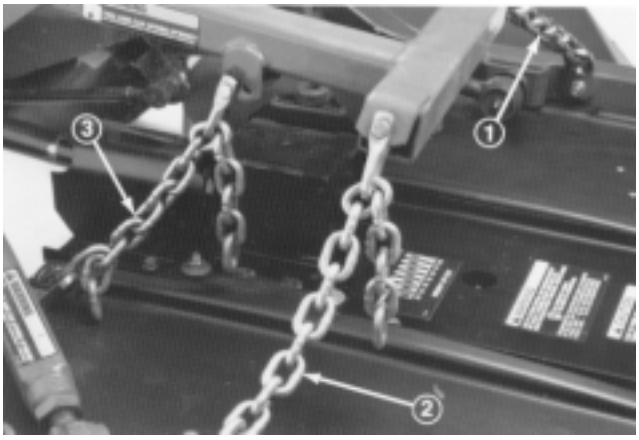


Figure 8

1. Front left lift chain
2. Front right lift chain
3. Rear lift chain

Greasing the Cutting Unit

Before the cutting unit is operated, it must be greased to ensure proper lubricating characteristics; refer to Greasing the Bearings, Bushings, and Gear Box, page 15. Failure to properly grease the cutting unit will result in premature failure of critical parts.

Installing Rear Weight

Two Wheel Drive Groundsmaster 300 Series Traction Units comply with the ANSI B71.4-1999 Standard when equipped with rear weight. Refer to chart in Traction Unit Operator's Manual to determine the 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 the ANSI B71.4-1999 Standard.

Before Operating

Checking the Lubricant in the Gear Box

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 the fill/check plug from the side of the gear box (Fig. 9) and make sure that the lubricant is up to the bottom of the hole. If the level of lubricant is low, add enough lubricant to bring it up to the bottom of the hole.

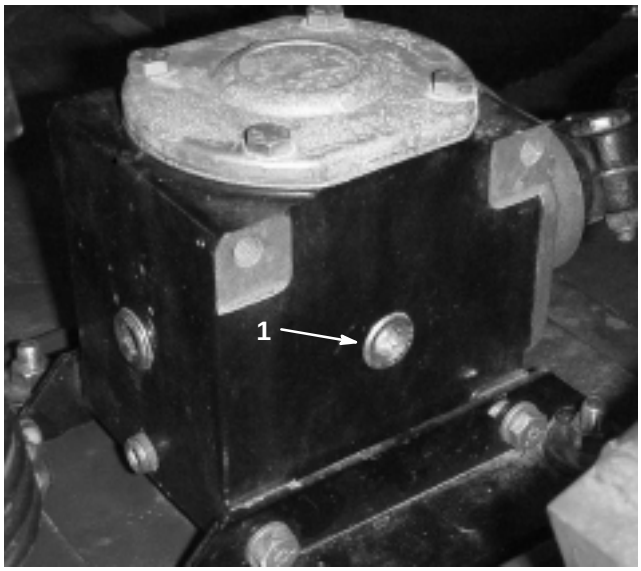


Figure 9

1. Fill/check plug

Adjusting the Height-of-Cut

The height of cut is adjustable from 1-1/2 to 4-1/2 in. (38 to 114 mm) in 1/2 inch (13 mm) increments, by adding or removing an equal number of spacers 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 Setting (inches)	Spacers Below Castor Arm	
	Front	Rear
1-1/2	0	0
2	1	1
2-1/2	2	2
3	3	3
3-1/2	4	4
4	5	5
4-1/2	6	6

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

A 1 in. (25 mm) height-of-cut can be attained by modifying the castor forks as follows:

1. Remove the front and rear castor forks from the cutting deck and remove the wheels from the forks.
2. Drill out the 0.438 in. diameter holes (Fig. 10 and 11) in each side of the castor forks to 0.50 in. or 0.516 in. diameter.
3. Using the new holes, install the castor wheels on the forks and install the forks on the deck.

Note: The height-of-cut decal will now be off by 1/2 in. (13 mm) for spacer placement and the height-of-cut will be 1 to 4 in. (25 to 102 mm).

Front Castor Wheels

1. Remove the tensioning cap from the spindle shaft and slide the spindle out of the front castor arm. Remove the washer from the spindle shaft. Slide the spacers onto the spindle shaft to get desired the height-of-cut, then slide the washer onto the shaft (Fig. 10).
2. Push the castor spindle through the front castor arm, install the other thrust washer and remaining spacers onto the spindle, and install the tensioning cap to secure the assembly (Fig. 10).

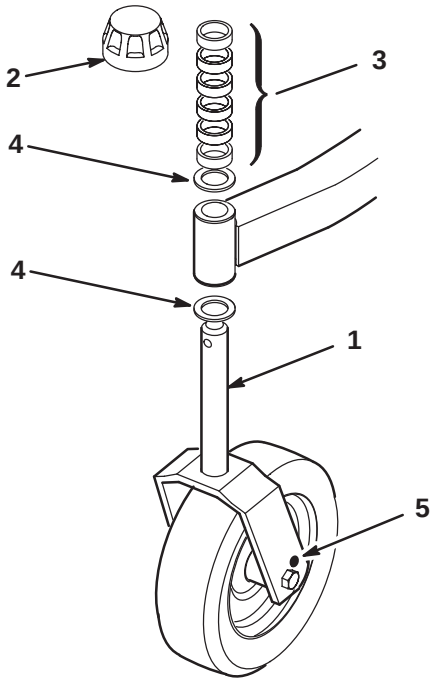


Figure 10

1. Front castor wheel
2. Tensioning cap
3. Spacers
4. Thrust washers
5. 0.438 in. diameter hole

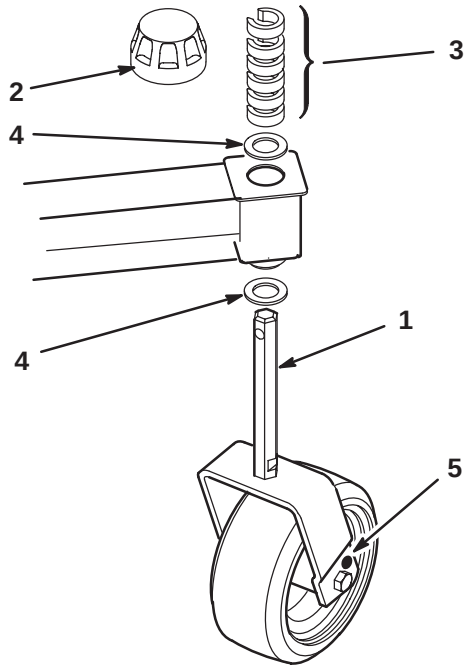


Figure 11

1. Rear castor wheel
2. Tensioning cap
3. Spacers
4. Thrust washers
5. 0.438 diameter hole

Rear Castor Wheels

1. Remove the tensioning cap from the spindle shaft (Fig. 11).

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

2. Remove or add the C-shaped spacers at the narrow portion of the spindle shaft, below the castor arm, to get the desired height-of-cut (Fig. 11). Make sure that the thrust washers—not the spacers—contact the top and bottom of the castor arm.

3. Install the tensioning cap to secure the assembly (Fig. 11).

4. Ensure that all four castor wheels are set at the same height-of-cut.

Adjusting the Rollers

Note: If the cutting unit is to be used in the 1 or 1-1/2 in. (25 or 38 mm) height-of-cut setting, the cutting unit rollers must be repositioned in the top bracket holes.

1. Remove the cotter pins securing the roller shafts to the underside of the deck.

2. Slide the shafts out of the lower bracket holes, align the rollers with the top holes, and install the shafts.

3. Install the cotter pins to secure the assemblies.

Adjusting the Skids

Adjust the skids by loosening the flange nuts, positioning the skids as desired, and tightening the flange nuts (Fig. 12).

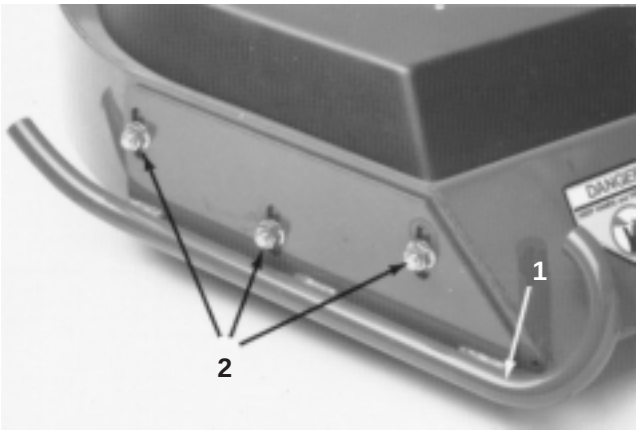


Figure 12

1. Skid
2. Flange nuts

Operation

The use of protective equipment, such as but not limited to, for eyes, ears, feet, and head is recommended.

Caution

This machine produces sound levels in excess of 85 dBA at the operator's ear and can cause hearing loss through extended periods of exposure.

Wear hearing protection when operating this machine.

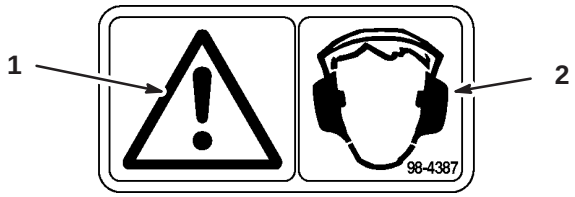


Figure 13

1. Caution
2. Wear hearing protection

Operating Tips

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.

Select the Proper Height-of-Cut Setting to Suit Conditions

Remove approximately 1 in. (26 mm) or no more than 1/3 of the grass blade when cutting. In exceptionally lush and dense grass you may have to raise the height-of-cut setting another notch. When cutting in 1 or 1-1/2 in. (25 or 38 mm) height-of-cut, add a second washer between the rear castor forks and the bottom of the castor arm housings to increase the blade rake.

Mowing in Extreme Conditions

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

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 that the blade is in good condition and a full sail is present.

Check the Condition of the Deck

Make sure that the cutting chambers are in good condition. Straighten any bends in the chamber components to ensure correct blade tip/chamber clearance.

Stopping

If the machine has to be stopped while cutting, a clump of grass clippings may be deposited on the lawn. Follow this procedure for stopping while cutting:

1. With the deck engaged, move onto a previously cut area.
2. Shift to neutral, move the throttle control lever to the Slow position, and rotate the ignition key to Off.

After Operating

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

Maintenance

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

Caution

If you leave the key in the ignition switch, someone could accidently start the engine and seriously injury you or other bystanders.

Remove the key from the ignition before you do any maintenance.

Greasing the Bearings, Bushings, and Gear Box

The cutting unit must be lubricated regularly. If the machine is operated under normal conditions, lubricate the 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.

The cutting unit has bearings and bushings that must be lubricated. These lubrication points are:

- front castor spindle bushings (Fig. 14)
- castor wheel bearings (Fig. 14 and 15)
- blade spindle bearings (Fig. 16)
- idler arm pivot (Fig. 16)
- right and left push arm ball joints (Fig. 16).

Also remove the rear castor spindle shaft from the castor arm and coat the hex shaft with No. 2 general purpose lithium base grease or molybdenum base grease every 50 hours (Fig. 15).

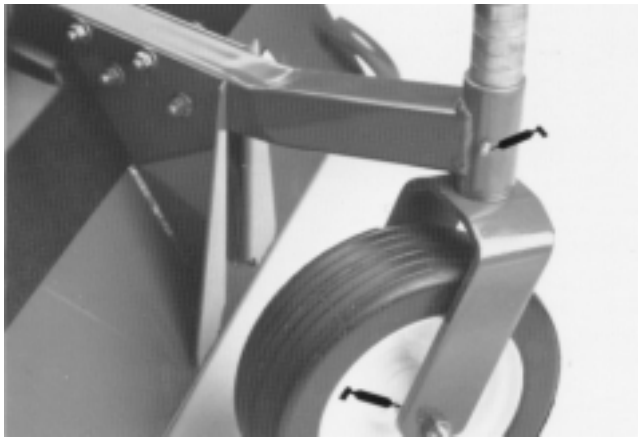


Figure 14

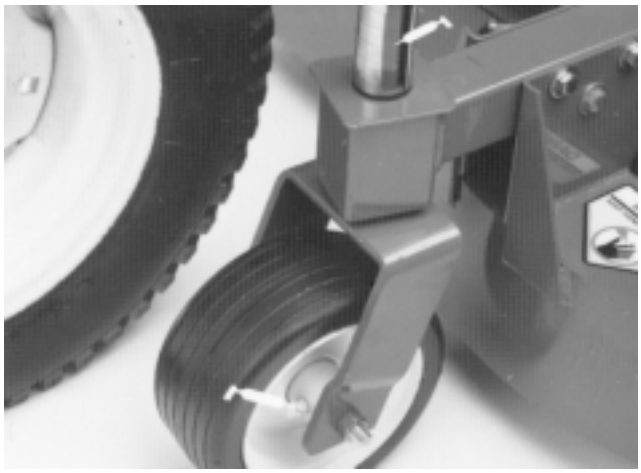


Figure 15

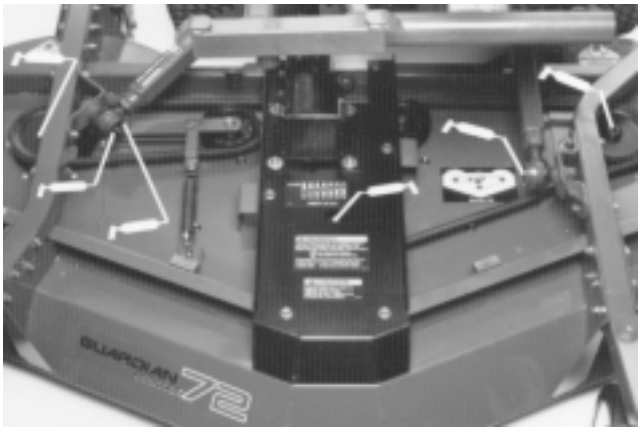


Figure 16

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

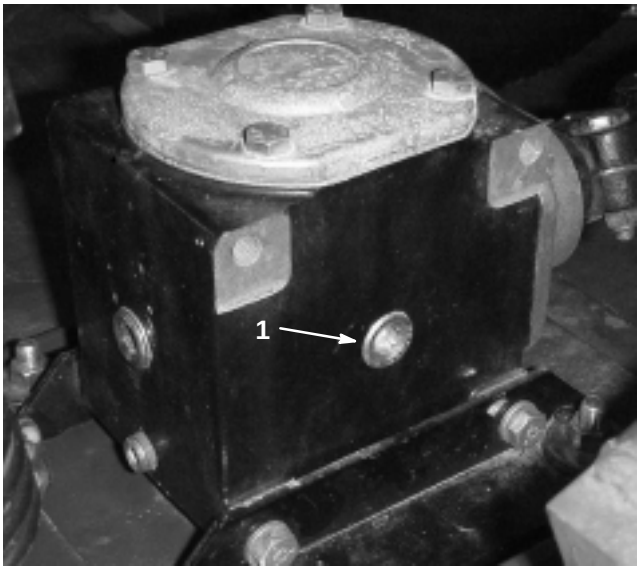


Figure 17

1. Fill/check plug

Separating the Cutting Unit from the Traction Unit

1. Position the machine on level surface, lower the cutting unit to the floor, shut the engine off, and engage the parking brake.
2. Remove the self-tapping screws securing the shield to the top of the cutting unit and set the shield aside.
3. Drive out the roll pin securing the drive shaft yoke to the input shaft of the gear box (Fig. 18). Loosen the capscrews and locknuts and slide the yoke off of the input shaft. If the traction unit will be used without the cutting unit, drive the roll pin out of the yoke at traction unit PTO shaft and remove the entire drive shaft from the traction unit.

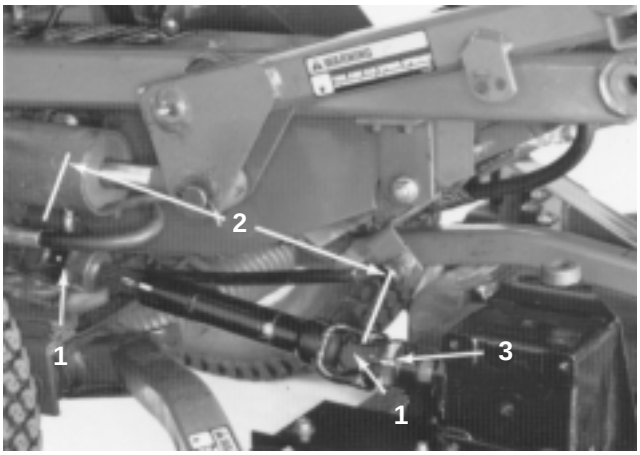


Figure 18

1. Drive shaft yokes
2. Yokes in phase
3. Roll pin and capscrews

Danger

If the engine is started and the PTO shaft is allowed to rotate, serious injury could result.

Do not start the engine and engage the PTO lever when the PTO shaft is not connected to the gear box on the cutting unit.

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

Warning

The right-hand push arm is spring loaded to about 100 lb. (45 kg) and the left-hand push arm is spring loaded to about 150 lb. (68 kg). Sudden release of the push arm could cause injury.

Another person is needed to push the arm down during this procedure.

5. Have another person push down on the right push arm while you remove the capscrews, flat washers, and locknuts securing the ball joint mount to the castor arm on the cutting unit (Fig. 19). Now the helper can carefully allow the push arm to move upward, which will gradually release the 100 pounds (45 kg) of spring load.

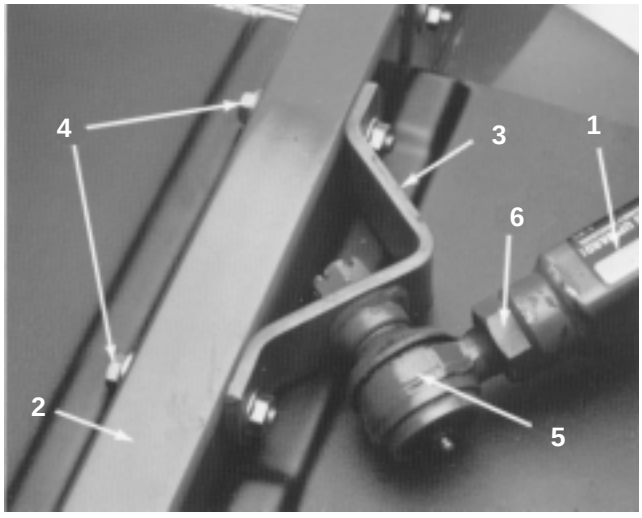


Figure 19

1. Right-hand push arm
2. Castor arm
3. Ball joint mount
4. Capscrews and washers
5. Ball joint
6. Jam nut

6. Have another person push down on the left push arm while you remove the capscrews, flat washers, and locknuts securing the ball joint mount and chain bracket to the castor arm on the cutting unit (Fig. 20). Now the helper can carefully allow the push arm to move upward, which will gradually release the 150 pounds (68 kg) of spring load.

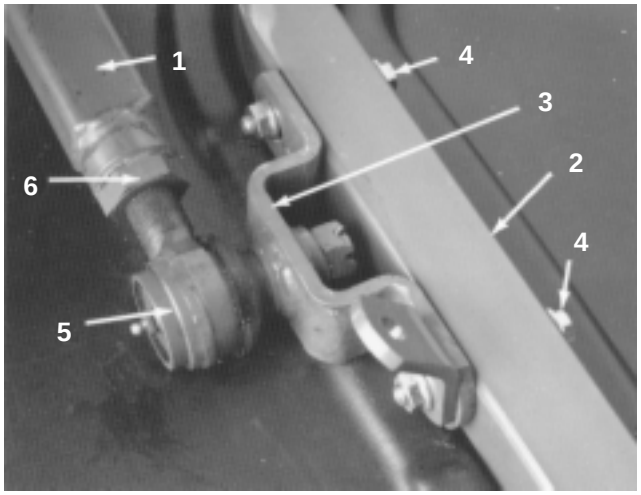


Figure 20

1. Left-hand push arm
2. Castor arm
3. Ball joint mount
4. Capscrews and washers
5. Ball joint
6. Jam nut

7. Roll the cutting unit away from the traction unit.

Mounting the Cutting Unit to the Traction Unit

1. Position the machine on a level surface and shut the engine off.

2. Move the cutting unit into position in front of the traction unit.

Warning

The right-hand push arm is spring loaded to about 100 lb. (45 kg) and the left-hand push arm is spring loaded to about 150 lb. (68 kg). Sudden release of the push arm could cause injury.

Another person is needed to push the arm down during this procedure.

3. Have another person carefully push down on the right push arm until the holes in the ball joint mount line up with the holes in the castor arm (Fig. 19).

4. Secure the ball joint mount to the castor arm with the capscrews, flat washers, and flange nuts. Position the flat washers to the outside of the castor arm.

5. Have another person carefully push down on the left push arm until the holes in the ball joint mount line up with the holes in the castor arm (Fig. 20). Immediately slide a 4 x 4 in. block of wood between the top of the push arm and the underside of the chassis.

Warning

Sudden release of the push arm could cause injury.

Make sure that the wooden block does not slip out.

6. Secure the ball joint mount and chain bracket to the castor arm with the capscrews, flat washers, and flange nuts. Position the flat washers to the outside of the castor arm. Mount the chain bracket in the forward set of holes.

7. Carefully remove the wood block holding the push arm down.

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

Replacing the Drive Belt

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

2. Unhook the spring from the idler arm bracket to release the belt tension (Fig. 21). Remove the cotter pin and clevis pin securing the idler arm bracket to the idler arm.

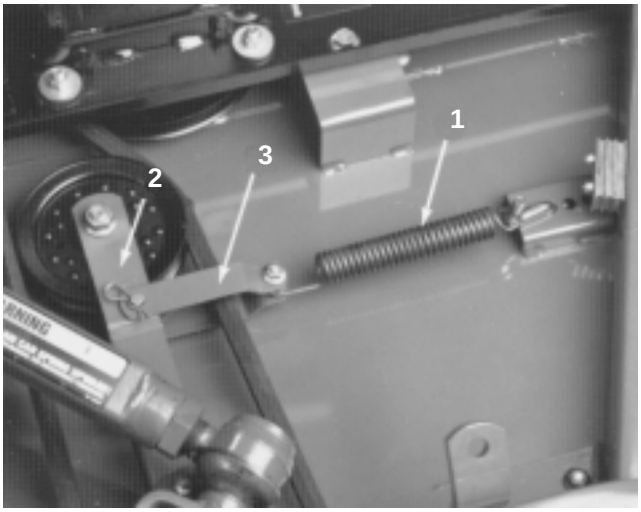


Figure 21

1. Spring
2. Idler arm
3. Idler arm bracket

3. Remove the capscrews and nuts securing the gear box plate to the deck channels (Fig. 22). Lift the gear box plate and gear box off of the deck channels and lay it on top of the deck.

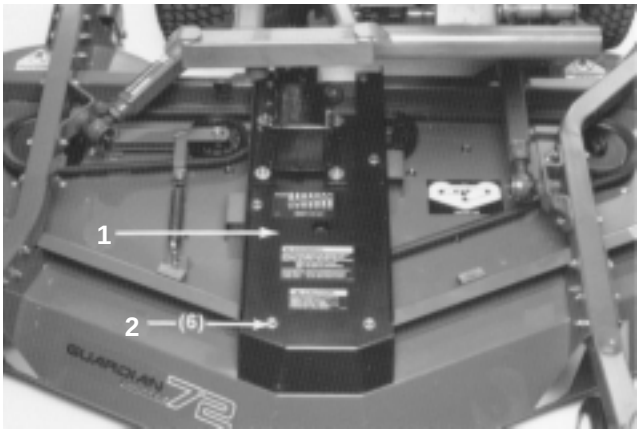


Figure 22

1. Gear box plate
2. Capscrews and nuts

4. Remove the old belt from around the spindle pulleys and through the idler pulley assembly.

5. Route the new belt around the spindle pulleys and through the idler pulley assembly as shown in Figure 23.

Figure 23

6. Reposition the gear box plate on the deck channels while routing the belt around the gear box pulley. Mount the gear box plate to the deck channels with the capscrews and nuts previously removed.
7. Install the idler arm bracket to the idler arm with the cotter pin and clevis pin (Fig. 21). Hook the spring onto the idler arm bracket. To ensure that there is proper tension on the drive belt, the spring should be extended to a length of approximately 7 in. (18 cm). If the spring is not extended to this length, relocate the spring rod to a new mounting hole further away from the belt.
8. Install the belt covers.

Servicing the Front Bushings in the Castor Arms

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 the castor fork back and forth and from side to side. If the castor spindle is loose inside the bushings, the bushings are worn and must be replaced.

1. Raise the cutting unit so that the wheels are off of the floor and block it so it cannot accidentally fall.
2. Remove the tensioning cap, spacer(s), and thrust washer from the top of the castor spindle.
3. Pull the castor spindle out of the mounting tube. Allow the thrust washer and spacer(s) to remain on the bottom of the spindle.
4. Insert a pin punch into the top or bottom of the mounting tube and drive the bushing out of the tube (Fig. 24). Also drive the other bushing out of the tube. Clean the inside of the tubes to remove dirt.

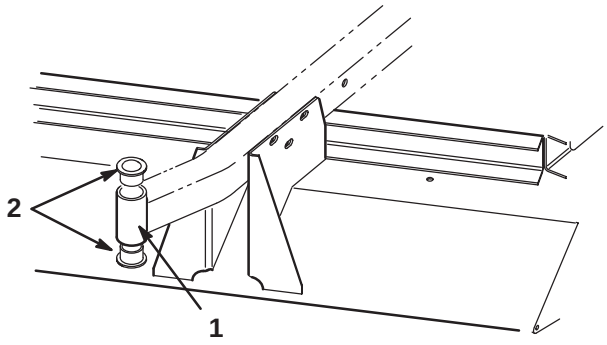


Figure 24

1. Front castor arm tube
2. Bushings

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

Servicing the Castor Wheels and Bearings

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, the bearing wear will be minimal. However, failure to keep the bearing lubricated will cause rapid wear. A wobbly castor wheel usually indicates a worn bearing.

1. Remove the locknut from the capscrew holding the castor wheel assembly between the castor fork (Fig. 25). Grasp the castor wheel and slide the capscrew out of the fork.
2. Pull the spanner bushing out of the wheel hub (Fig. 25).
3. Remove the bushing from the wheel hub and allow the bearing to fall out (Fig. 25). Remove the bushing from the opposite side of the wheel hub.
4. Check the bearing, spanner, and inside of the wheel hub for wear. Replace damaged parts.
5. To assemble the castor wheel, push the bushing into the wheel hub. Slide the bearing into the wheel hub. Push the other bushing into the open end of the wheel hub to captivate the bearing inside the wheel hub.
6. Carefully slide the spanner through the bushings and the wheel hub (Fig. 25).
7. Install the castor wheel assembly between the castor fork and secure it in place with the capscrew, washers, and locknut.
8. Lubricate the castor wheel bearing through the grease fitting, using No. 2 general purpose lithium base grease.

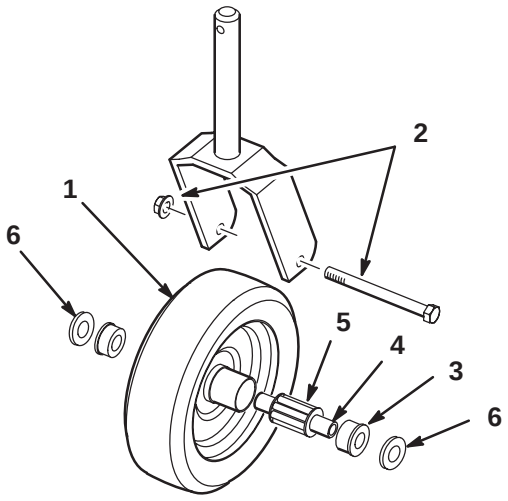


Figure 25

1. Castor wheel
2. Capscrew and locknut
3. Bushing (2)
4. Spanner bushing
5. Roller bearing
6. Washer (2)

Removing the Cutter Blade

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 the cutting unit to the highest position, shut the engine off, and engage the parking brake. Block the cutting unit to prevent it from accidentally falling.
2. Grasp the end of the blade using a rag or thickly padded glove. Remove the blade bolt, lock washer, anti-scalp cup, and blade from the spindle shaft (Fig. 26).

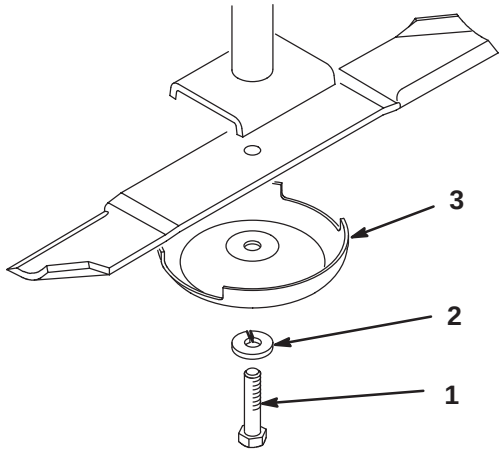


Figure 26

1. Blade bolt
2. Lock washer
3. Anti-scalp cup

3. Install the blade—sail facing toward the cutting unit—with the anti-scalp cup, lock washer, and blade bolt. Tighten the blade bolt to 85–110 ft.-lb. (115–149 N·m).

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 ensure continued safety certification of the product.

Inspecting and Sharpening the Blade

1. Raise the cutting unit to the highest position, shut the engine off, and engage the parking brake. Block the cutting unit to prevent it from accidentally falling.
2. Examine the cutting ends of the blade carefully, especially where the flat and curved parts of the blade meet (Fig. 27-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. 27-B), replace the blade; refer to Removing the Cutter Blade, page 20.

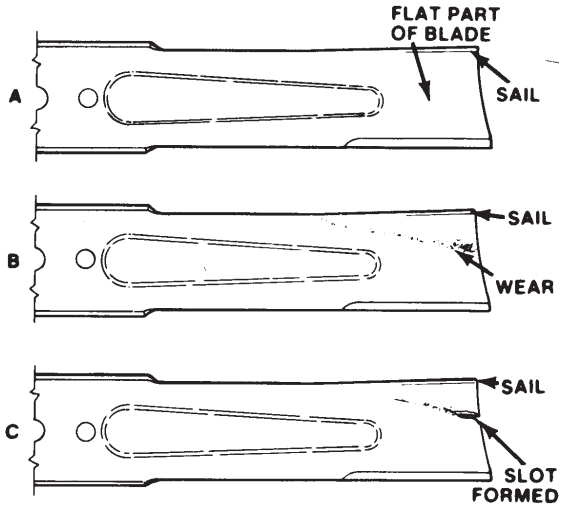


Figure 27

Danger

If the blade is allowed to wear, a slot will form between the sail and flat part of the blade (Fig. 27-C). Eventually a piece of the blade may break off and be thrown from under the housing, possibly resulting in serious injury to you or bystanders.

Do not allow the blade to wear.

3. Inspect the cutting edges of all of the 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. 28). The blade will remain balanced if the same amount of metal is removed from both cutting edges.

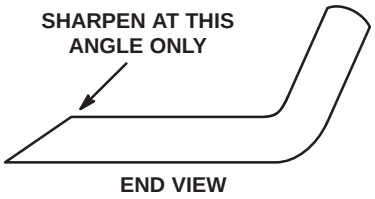


Figure 28

4. To check the blade for being straight and parallel, lay the blade on a level surface and check the ends. The ends of the blade must be slightly lower than the center, and the cutting edge must be lower than the heel of the blade. This blade will produce a 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 the cutting edge is higher than the heel, the blade is bent or warped and must be replaced.
5. Install the blade; refer to Removing the Cutter Blade, page 20.

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 that the blades are straight and all of the 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 the height-of-cut to the highest position; refer to Adjusting the Height-of-Cut, page 11.
3. Lower the cutting unit onto a flat surface. Remove the covers from the top of the cutting unit.
4. Unhook the spring from the idler arm bracket to release the belt tension.

5. Rotate the blades until the ends face forward and backward. Measure from the floor to the front tip of the cutting edge and remember this dimension. Then rotate the same blade so that the opposite end is forward and measure again. The difference between the dimensions must not exceed 1/8 in. (3 mm). If the dimension exceeds 1/8 in. (3 mm), replace the blade because it is bent. Make sure to measure all of the blades.

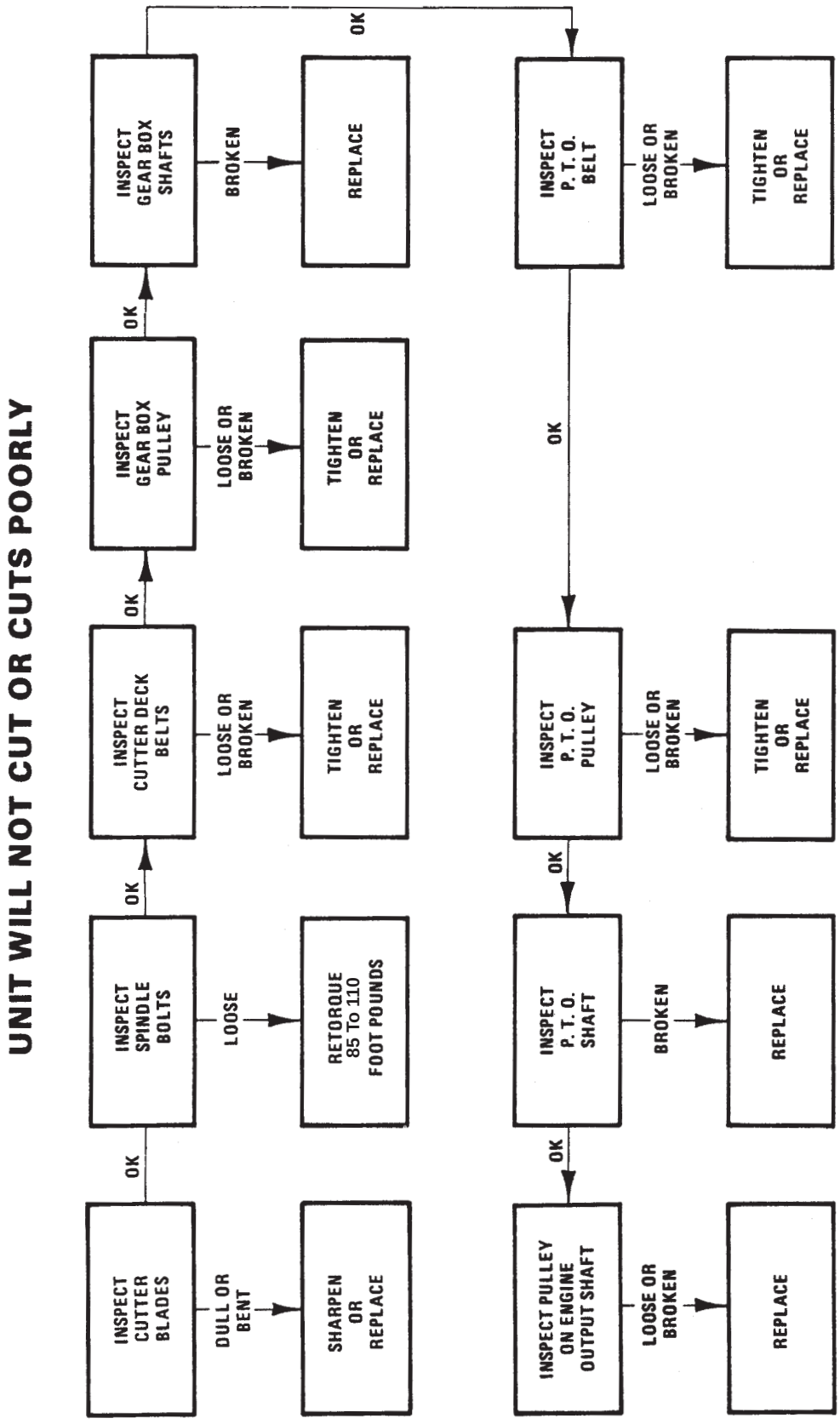
6. Compare the measurements of the outer blades with the center blade. The center blade must not be more than 3/8 in. (10 mm) lower than the outer blades. If the center blade is more than 3/8 in. (10 mm) lower than the outer blades, proceed to step 7 and add shims between the spindle housing and bottom of the cutting unit.

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

Important Do not use more than 3shims 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 the spring onto the idler arm bracket. Install the belt covers.

Troubleshooting



The Toro General Commercial Products Warranty

A Two-Year Limited Warranty

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant your 1996 or newer Toro Commercial Product ("Product") purchased after January 1, 1997, to be free from defects in materials or workmanship for two years or 1500 operational hours*, whichever occurs first. Where a warrantable condition exists, we 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.

* Product equipped with hour meter

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
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
952-888-8801 or 800-982-2740
E-mail: commercial.service@toro.com

Owner Responsibilities

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

Items and Conditions Not Covered

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. This express warranty does not cover the following:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, modified, or unapproved accessories
- Product failures which result from failure to perform required maintenance and/or adjustments
- Product failures which result from operating the Product in an abusive, negligent or reckless manner
- 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.
- 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.
- 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.

Parts

Parts scheduled for replacement as required maintenance are warranted for the period of time up to the scheduled replacement time for that part.

Parts replaced under this warranty become the property of Toro. Toro will make the final decision whether to repair any existing part or assembly or replace it. Toro may use factory remanufactured parts rather than new parts for some warranty repairs.

General Conditions

Repair by an Authorized Toro Distributor or Dealer is your sole remedy under this warranty.

Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. 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 this express warranty.

Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Note regarding engine warranty: 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) and/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 Engine Emission Control Warranty Statement printed in your operator's manual or contained in the engine manufacturer's documentation for details.

Countries Other than the United States or Canada

Customers who have purchased Toro products exported from the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer. If all other remedies fail, you may contact us at Toro Warranty Company.

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