

TORO®MODEL NO. 30402 – 70001 thru
90001 & UP**OPERATOR'S
MANUAL****QUADFLOAT 126**
For Groundsmaster® 455D

To understand this product, and for safety and optimum performance, read this manual before starting the engine. Pay special attention to **SAFETY INSTRUCTIONS** highlighted by this symbol.



It means **CAUTION**, **WARNING** or **DANGER** – personal safety instruction. Failure to comply with the instruction may result in personal injury.

TOROTHIS UNIT CONFORMS TO
ANSI / OPEI B71.4-1990

FOREWORD

This operator's manual has instructions on safety, proper set-up and operation, adjustments and maintenance. Therefore, anyone involved with the product, including the operator, should read and understand this manual. Major sections are:

- Safety Instructions
- Before Operating
- Operating Instructions
- Maintenance
- Schematics
- Seasonal Storage

This manual emphasizes safety, mechanical and general product information. **DANGER**, **WARNING** and **CAUTION** identify safety messages. Whenever the triangular safety alert symbol appears, understand the safety message that follows. For complete safety instructions, read pages 4 – 5. **IMPORTANT** highlights special mechanical information and **NOTE** emphasizes general product information worthy of special attention.

Whenever you have questions or need service, contact your local authorized Toro Distributor. In addition to having a complete line of accessories and professional turf care service technicians, the distributor has a complete line of genuine TORO replacement parts to keep your machine operating properly. Keep your TORO all TORO. Buy genuine TORO parts and accessories.

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SAFETY INSTRUCTIONS

The **GROUNDMASTER 455-D** was tested and certified by **TORO** for compliance with the **B71.4-1990** specifications of the American National Standards Institute. Although hazard control and accident prevention partially are dependent upon the design and configuration of the machine, these factors are also dependent upon the awareness, concern, and proper training of the personnel involved in the operation, transport, maintenance, and storage of the machine. Improper use or maintenance of the machine can result in injury or death. To reduce the potential for injury or death, comply with the following safety instructions.

BEFORE OPERATING

1. Read and understand the contents of this manual before starting and operating the machine. Become familiar with the controls and know how to stop the machine and engine quickly. A free replacement manual is available by sending the complete model and serial number to:

The Toro Company
8111 Lyndale Avenue South
Minneapolis, Minnesota 55420.

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

5. Always wear substantial shoes. Do not operate machine while wearing sandals, tennis shoes, sneakers or when barefoot. Do not wear loose fitting clothing that could get caught in moving parts and possibly cause personal injury. Wearing safety glasses, safety shoes, long pants and a helmet is advisable and required by some local ordinances and insurance regulations.

6. Assure interlock switches are adjusted correctly so engine cannot be started unless traction pedal is in **NEUTRAL** and cutting unit is **DISENGAGED**.

7. Remove all debris or other objects that might be picked up and thrown by the blades or fast moving components from other attached implements. Keep all bystanders away from operating area.

8. Since diesel fuel is highly flammable, handle it carefully:

- A. Use an approved fuel container.
- B. Do not remove fuel tank cap while engine is hot or running.
- C. Do not smoke while handling fuel.
- D. Fill fuel tank outdoors and only to within an inch from the top of the tank, not the filler neck. Do not overfill.
- E. Wipe up any spilled fuel.

WHILE OPERATING

9. Sit on the seat when starting and operating the machine.

10. Before starting the engine:

- A. Engage the parking brake.
- B. Make sure traction pedal is in **NEUTRAL** and cutting decks are **DISENGAGED**. Move axle shift to **HI** or **LO** 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. Refer to **Adjusting Traction Drive for Neutral**, page 30.

11. Seating capacity is one person. Therefore, never carry passengers.

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

13. Check interlock switches daily for proper operation. Do not rely entirely on safety switches - use common sense. 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.

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

- A. Operate only in daylight or when there is good artificial light.
- B. Drive slowly. Avoid sudden stops and starts.
- C. Watch for holes or other hidden hazards.
- D. Look behind machine before backing up.
- E. Do not drive close to a sand trap, ditch, creek or other hazard.
- F. Reduce speed when making sharp turns and turning on a hillside.

15. Traverse slopes carefully. Do not start or stop suddenly when traveling uphill or downhill. Never shift axle when moving. Machine must be on a flat surface and / or brakes must be engaged to prevent freewheeling.



SAFETY INSTRUCTIONS

16. Operator must be skilled and trained in how to drive on hillsides. Failure to use caution on slopes or hills may cause loss of control and vehicle to tip or roll possibly resulting in personal injury or death.

17. 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.

18. When operating 4 wheel drive machine, always use the seat belt and ROPS together and have seat pivot retaining pin installed.

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

20. Raise cutting decks and latch securely in transport position before driving from one work area to another.

21 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.

22. Do not touch engine, muffler or exhaust pipe while engine is running or soon after it is stopped. These areas could be hot enough to cause burns.

23. If cutting deck strikes a solid object or vibrates abnormally, stop immediately, turn engine off, set parking brake and wait for all motion to stop. Inspect for damage. If damaged, repair or replace any components before operating.

24. Before getting off the seat:

- A. Set parking brake.
- B. Move traction pedal to neutral and axle shift to HI or LO position.
- C. Disengage cutting decks and wait for blades to stop.
- D. Stop engine and remove key from switch.
- E. Do not park on slopes unless wheels are chocked or blocked.

25. Use only a rigid tow bar if it becomes necessary to tow machine. Use trailer for normal transport.

MAINTENANCE

26. Before servicing or making adjustments, stop engine and remove key from the switch.

27. Make sure machine is in safe operating condition by keeping all nuts, bolts and screws tight.

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 or nozzles 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 lowering cutting units to the ground and stopping engine.

31. If major repairs are ever needed or assistance is desired, contact an Authorized Toro Distributor.

32. To reduce potential fire hazard, keep engine area free of excessive grease, grass, leaves and dirt. Clean protective screen on back of machine frequently. Never wash a warm engine or electrical connections with water.

33. If engine must be running to perform maintenance or an adjustment, keep hands, feet, clothing and other parts of the body away from cutting units and other moving parts. Keep all bystanders away.

34. Do not overspeed the engine by changing governor setting. To assure safety and accuracy, have an Authorized Toro Distributor check maximum engine speed.

35. Shut engine off before checking or adding oil to the crankcase.

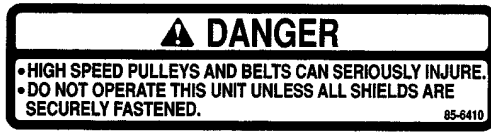
36. Disconnect battery before servicing the machine. If battery voltage is required for troubleshooting or test procedures, temporarily connect the battery.

37. At the time of manufacture, the machine conformed to the safety standards for riding mower. Ballast weight, mounted to rear of traction unit, is required for machine to conform to safety standard. DO NOT remove ballast weight at any time. To assure optimum performance and continued safety certification of the machine, use genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers may result in non-conformance with the safety standards, and the warranty may be voided.

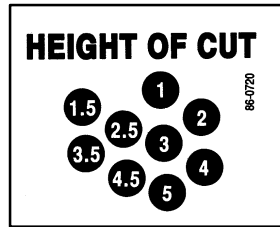


SAFETY AND INSTRUCTION DECALS

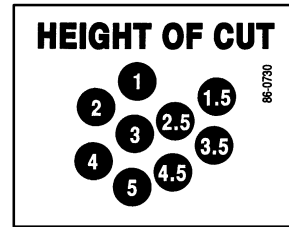
The following safety and instruction decals are affixed to the cutting unit. If any decal becomes illegible or damaged, install a new decal. Part numbers are listed below and in your Parts Catalog.



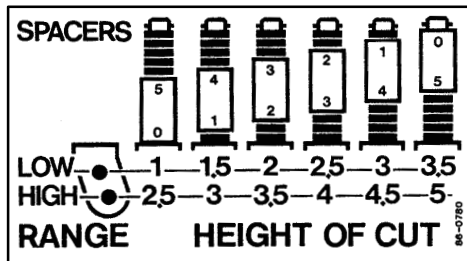
UNDER DECK COVERS (3)
(Part No. 85-6410)
Replace Cover Before Operating



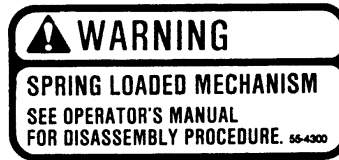
ON LEFT CASTOR ARM
(Part No. 86-0720)
Height-of-cut Adjusting Procedure



ON RIGHT CASTOR ARM
(Part No. 86-0730)
Height-of-cut Adjusting Procedure



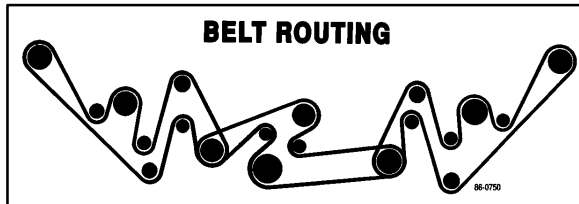
ON LEFT CASTOR ARM
(Part No. 86-0780)
Height-of-cut Adjusting Procedure



ON CUTTING DECKS (5)
(Part No. 55-4300)
Spring Loaded



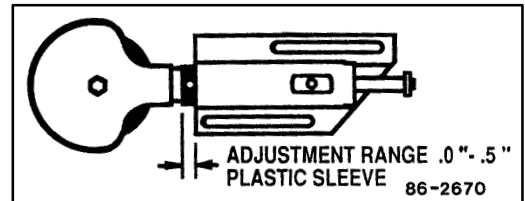
ON CENTER CUTTING DECK
(Part No. 68-8340)
Blade Bolt Torque



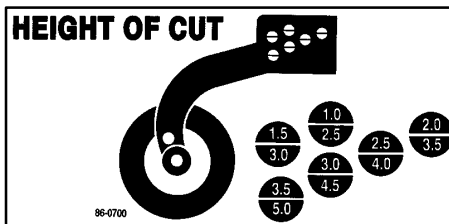
ON EACH CUTTING UNIT
(Part No. 86-0740) Center Deck
(Part No 86-0760) R.H. Wing Deck
(Part No. 86-0750) L.H. Wing Deck
Belt Routing



ON WING DECKS (2)
(Part No. 66-1340)
Keep Hands & Feet Away From
Rotating Blades



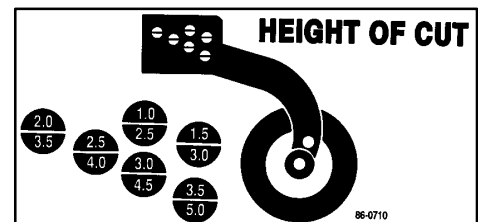
ON BELT TENSION ADJUSTERS
(Part No. 86-2670)
Belt Adjusting Procedure



ON RIGHT WING DECK
(Part No. 86-0700)
Height-of-cut Adjusting Procedure



ON CUTTING DECK (5)
(Part No. 43-8480)
Keep Hands & Feet Away



ON LEFT WING DECK
(Part No. 86-0710)
Height-of-cut Adjusting Procedure

SPECIFICATIONS

Type: 126" width of cut, seven blade, front mounted rotary. 54" width of cut, three blade center section. Two 36" width of cut wings; 90" width of cut with one wing up. Rear discharge with even dispersion over the entire width of cut.

Mowing Rate: Mows up to 8 acres/hr. at 6.5 mph.

Trimability: Trims on both sides.

Height—of—Cut: Adjustable from 1" to 5" in 1/2" increments.

Construction: Housings are 12 gauge high strength steel, 5.5" deep, welded construction and reinforced with 10 gauge channel. Covers are impact resistant, molded plastic.

Blades: Seven 19" long, 1/4" thick, and 2—1/2" wide, heat treated steel blades.

Belt Idlers: Self—tensioning permanently lubricated idlers.

Wing Decks: Wings can be hydraulically raised from the operator's seat for transport or cutting with either wing and center deck or center deck only. Wings cut from level to 15° up and down. Further lift disengages the blade and applies a blade brake.

Suspension / Caster Wheels: Four front and two rear pneumatic castor tires with ball bearings. Center deck tires: 10.25" x 3.25". Wing deck tires: 8" x 3.25". Anti—scalp cup located on each blade. Three anti—scalp rollers on center deck. Deck is hydraulically counterbalanced.

OPTIONAL EQUIPMENT

Gear Box Pulley (Tip Speed 14,500), Part No. 86—3100

Mulcher Kit, Model No. 30475

Specifications and design subject to change without notice.

LOOSE PARTS CHART

Deck Straps	2	Mount Deck Straps to Deck
Wear Plate	2	
Capscrew	4	
Locknut	4	
Operator's Manual	2	Read before operating machine.
Parts Catalog	1	
Registration Card	1	Fill out and return to Toro

SET-UP INSTRUCTIONS

MOUNTING CUTTING UNIT TO TRACTION UNIT (Fig. 1-4)

Note: Before installing cutting unit on a used traction unit, inspect lift arm ball joints to make sure they are not worn or damaged. Replace, if necessary.

1. With cutting unit on a level surface, move traction unit into position, aligning drive shaft yoke with gear box input shaft and lift arm ball joints with mounting holes in castor arms. Shut engine off.
2. Secure ball joint mounts to castor arms with capscrews, flatwashers and flangenuts. Tighten capscrews and flangenuts to 100–110 ft–lb.

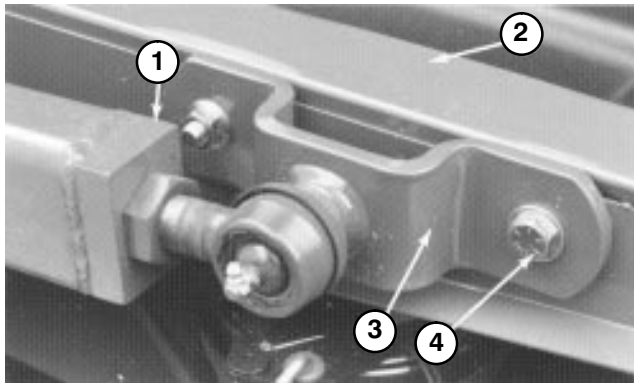


Figure 1

- | | |
|---------------|------------------------|
| 1. Push Arm | 3. Ball Joint Mount |
| 2. Castor Arm | 4. Capscrews & Washers |

3. Line up holes in yoke and input shaft of gear box. Slide yoke onto shaft and secure together with socket head screws. Torque screws to 20–25 ft–lb.

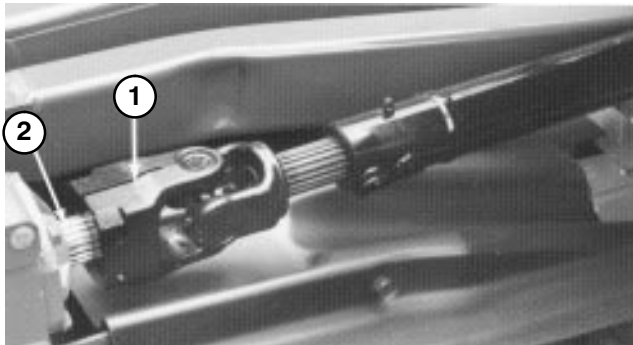


Figure 2

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|-------------------------|
| 1. Drive Shaft Yoke |
| 2. Gear Box Input Shaft |

4. Start engine, raise center cutting unit slightly, so rear deck straps can be mounted on lift arm brackets. Stop engine after cutting unit is raised.

5. Mount a wear plate inside of each rear deck strap with (2) capscrews and locknuts (Fig. 3). Capscrew head to be positioned inward as shown in figure 3.

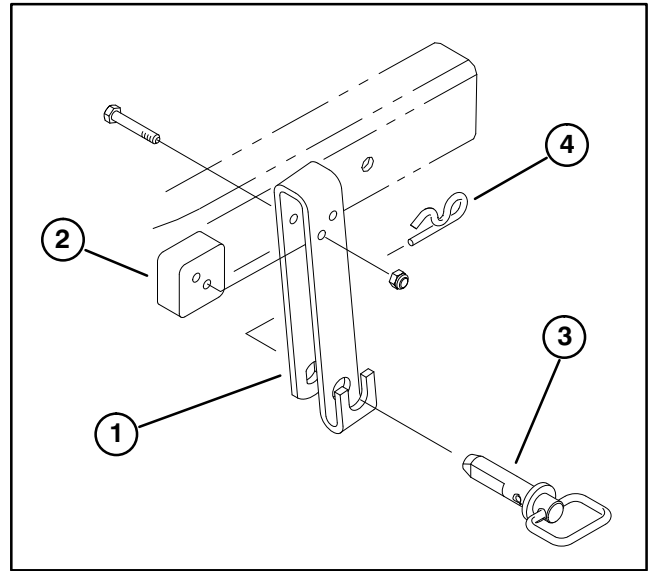


Figure 3

- | |
|--------------------|
| 1. Rear Deck Strap |
| 2. Wear Plate |
| 3. H.O.C. Pin |
| 4. Hair Pin Cotter |

6. Secure rear deck straps to H.O.C. brackets on deck with hair pin cotter and H.O.C. pins. Start engine and lower center cutting unit completely to floor. Assure all lift levers are in the float position and stop engine.

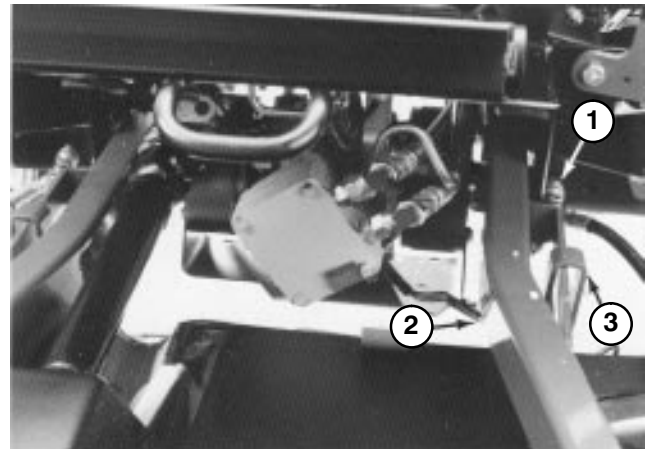


Figure 4

- | |
|----------------------------|
| 1. Hydraulic Line Couplers |
| 2. Wire Harness |
| 3. Rear Deck Straps |

7. Connect wire harness and (3) hydraulic lines couplers at rear of deck.

BEFORE OPERATING

CHECK LUBRICANT IN GEAR BOX (Fig. 5)

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, initially, check the level before operating the cutting unit and every 50 hours thereafter. Check daily for signs of oil loss.

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.

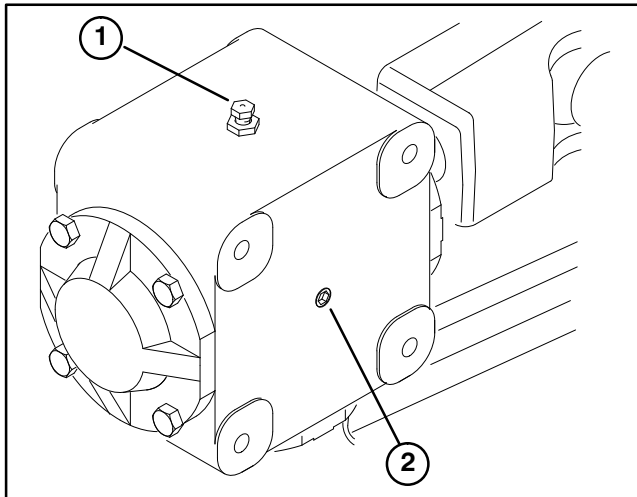


Figure 5

1. Filler Plug/Pressure Relief Valve
2. Check Plug

ADJUSTING HEIGHT-OF-CUT (Fig. 6–8)

The height-of-cut is adjustable from 1 to 5 inches in 1/2 inch increments. Positioning the castor wheel axles in the top holes of the castor forks or pivots (See charts) allows low range height-of-cut settings from 1 to 3–1/2 in.; positioning the castor wheel axles in the lower holes of the front castor forks or rear castor pivots (See charts) allows high range height-of-cut settings from 2–1/2 to 5 in.

1. Start the engine and raise the cutting unit so height-of-cut can be changed. Stop engine after cutting unit is raised.
2. Position all castor wheel axles in the same holes in the castor forks or pivots.

FRONT CASTOR WHEELS

1. Remove H.O.C. cap from spindle shaft and slide spindle out of front castor arm. Slide spacers onto spindle shaft to get desired height-of-cut.
2. Push castor spindle through front castor arm install remaining spacers onto spindle and install HOC cap to secure assembly.

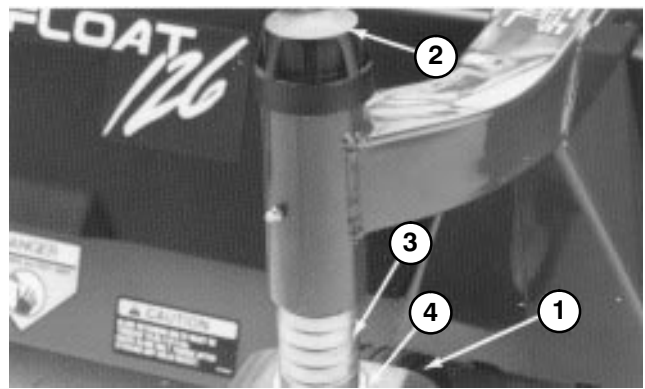
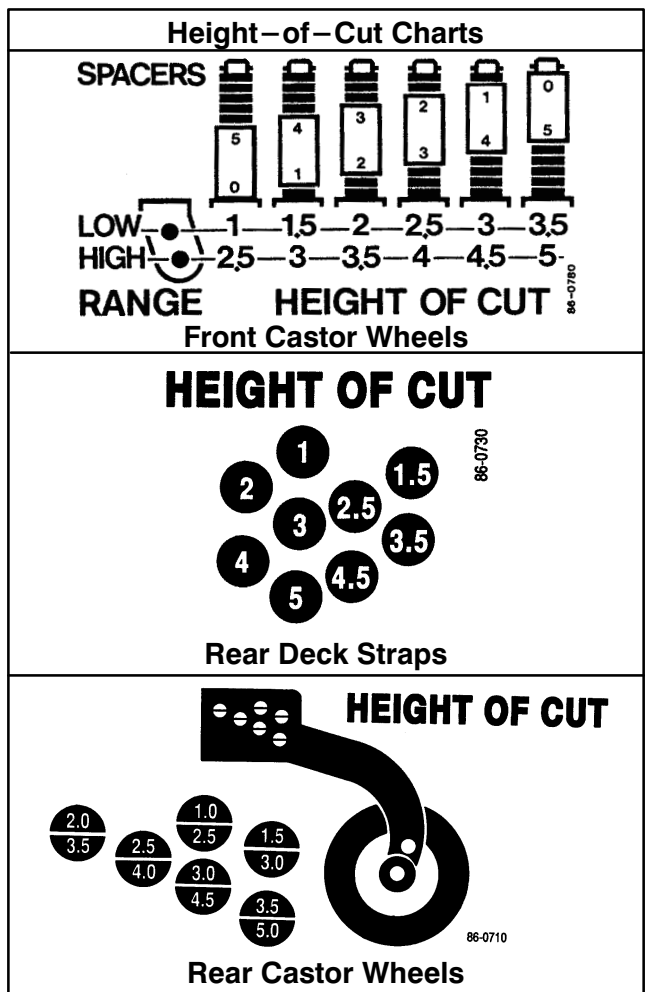


Figure 6

1. Front Castor Wheel
2. HOC Cap
3. Spacers
4. Washer (center deck only)

Note: On Center deck only, make sure washer remains on bottom of spindle shaft.



REAR CASTOR WHEELS

1. Remove hairpin cotter and H.O.C. pin securing rear castor pivot arm to deck bracket.

BEFORE OPERATING

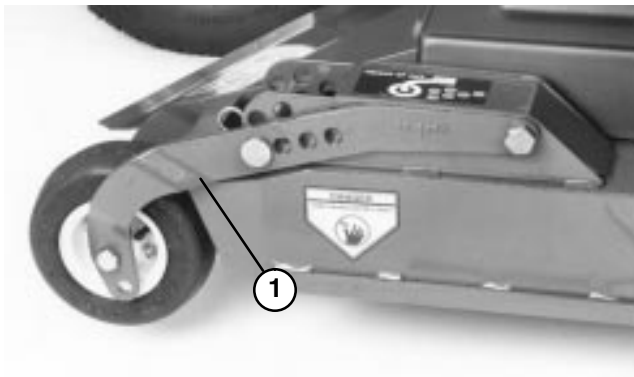


Figure 7
1. Rear Castor Pivot

2. Align the pivot arm holes with selected height-of-cut bracket holes in the deck frame, install H.O.C. pin and secure with hairpin cotter.

REAR DECK STRAPS

1. Lower center and wing cutting units to the ground: then raise center cutting unit slightly, until rear deck straps hang freely on wear blocks of lift arm brackets. Stop engine after cutting unit is raised.

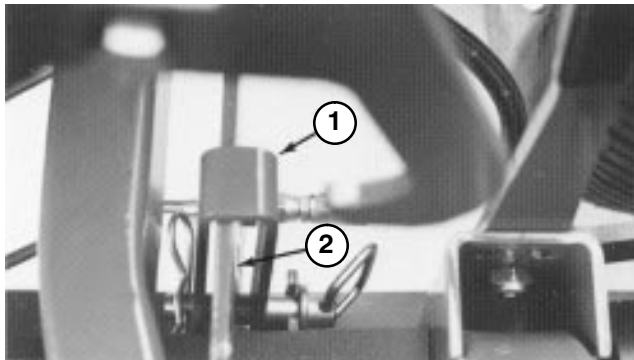


Figure 8
1. Rear Deck Straps
2. Lift Arm Brackets

2. Remove hairpin cotter and H.O.C. pin securing rear deck strap to H.O.C. bracket on deck.

3. Slide deck strap forward or backward until holes in strap are aligned with selected height-of-cut bracket holes in the deck frame, install H.O.C. pin and secure with hairpin cotter.

SAFETY DOORS (Fig. 9)

On each side of the center deck is a safety door that opens and closes as the wing decks are lowered and raised (Fig. 9). The doors open to provide overlap of the cutting blades when the wing units are down. The doors close to provide safety and protection when the wing units are raised. Check to make sure the forward, lower edge of door is even or 1/4" higher than lower edge of door guide when wing decks are in the fully raised, transport position. If an adjustment to the door is required, refer to Adjusting Safety Door, page 36.



CAUTION

Check operation of safety doors daily and each time the deck is cleaned. Repair as needed.

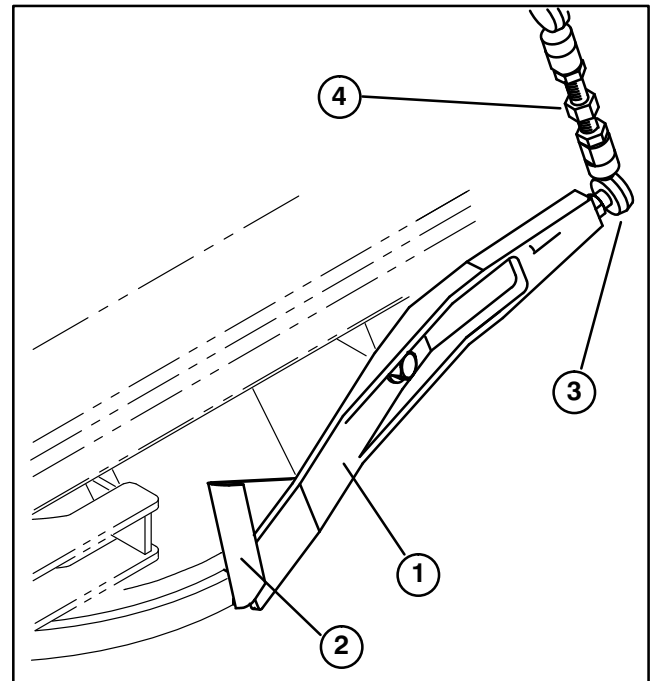


Figure 9

1. Safety Door
2. Door Guide
3. Ball Joint
4. Threaded Rod

OPERATING INSTRUCTIONS

OPERATING CHARACTERISTICS

Familiarization – Before mowing grass, practice operating machine in an open area. Start and stop the engine. Operate in forward and reverse. When you feel familiar with the machine, practice operating around trees and obstacles. Also drive up and down slopes at different speeds.

WARNING: When operating 4 wheel drive machine, always use the seat belt and ROPS together and have seat pivot retaining pin installed.

Another characteristic to consider is the operation of the brake pedals. The brakes can be used to assist in turning the machine. However, use them carefully, especially on soft or wet grass because the turf may be torn accidentally. Another benefit of the brakes is to maintain traction. For example: When operating on a sidehill, the uphill wheel slips and loses traction. If this situation occurs, depress uphill brake pedal gradually and intermittently until the uphill wheel stops slipping, thus, increasing traction on the downhill wheel.

Warning System – If a warning light comes on during operation, stop the machine immediately and correct the problem before continuing operation. Serious damage could occur if the machine is operated with a malfunction.

Mowing – When you are at the area to be mowed, release cutting unit transport latches. Move axle shift lever rearward to Mow position and throttle to FAST so engine is running at maximum speed. Lift engagement switch and move forward to engage cutting units.

Curbside Mowing – To reduce the possibility of foreign debris escaping from under the cutter deck while mowing at or near a road or walkway curb, always keep the outside edge of the cutter deck inside the curb. The cutter deck caster wheels should not be guided along the top of the curb; this could cause the cutter deck to hang over the edge of the curb. Never allow the edge of the cutter deck to extend over the edge of the curb while the blades are turning. Always stop mowing and disengage the mower blades when encountering pedestrians or other bystanders/passers-by.

Note: Cutting deck is equipped with a breakaway system to prevent wing decks from being damaged if a solid object is struck. If a wing deck strikes a solid object and unlatches from center cutting deck, raise and lower wing deck to reset in operating position.

WARNING: Cutting deck breakaway system is equipped with a highly compressed spring. If spring removal or repair is required, contact your local authorized Toro Distributor for assistance.

Transport – When mowing is complete, disengage cutting unit and raise it by pulling back on cutting unit lift control levers. Hold levers back until cutting unit is fully raised. **Never raise cutting deck when engaged.** Lock cutting unit in place with transport latches. Move axle shift lever forward to HI position. When driving from one area to another, always shift axle to LO position before encountering a slope. Never shift from HI to LO position while on a slope. Stop machine on a flat surface, engage brakes and shift before climbing the slope. Be careful when driving between objects so you do not accidentally damage the machine or cutting unit.

Use extra care when operating machine on slopes. Drive slowly and avoid sharp turns on slopes to prevent roll overs. The cutting unit must be lowered when going downhill for steering control.

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.

Pushing Or Towing Traction Unit – Use only a rigid tow bar if it becomes necessary to tow machine. Make sure axle shift lever is in NEUTRAL position and only tow the machine forward. Use trailer for normal transport. Move axle shift lever to LO position before loading machine on a trailer.

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 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.

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.

Clippings Discharge – Although the deck has rear discharge, some clippings are discharged toward the left side. To avoid discharging undesirable clippings onto pathways, roads, or other non—turf surfaces, mow with the right side of the deck next to the pathway, road, or other non—turf surface

OPERATING INSTRUCTIONS

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

height setting.

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

After Operating – To assure optimum performance, clean underside of mower housings and under belt covers after each use. Use low psi compressed air only. Do Not Use Water. If residue is allowed to build up in mower housings, cutting performance will decrease.

LUBRICATION

GREASING (Fig. 10–14)

The cutting unit has grease fittings that must be lubricated regularly with No. 2 General Purpose Lithium Base Grease. If machine is operated under normal conditions, lubricate all grease fittings after every 25 hours of operation. Lubricate all grease fittings immediately after every washing, regardless of interval listed.

The grease fittings that must be lubricated are: blade spindles (7), lift cylinder ball joints (4) and Wing Deck Pivot pins (4) (Fig. 10); Castor fork shaft (4) (Fig. 11); PTO to gear box drive shaft assembly (3) (Fig. 12); Wing Deck Ball Joints (4) (Fig. 13) and Lift arm ball joints (2) (Fig. 14).

1. Wipe grease fittings clean before lubricating.
2. Pump grease into fitting.
3. Wipe up excess grease.

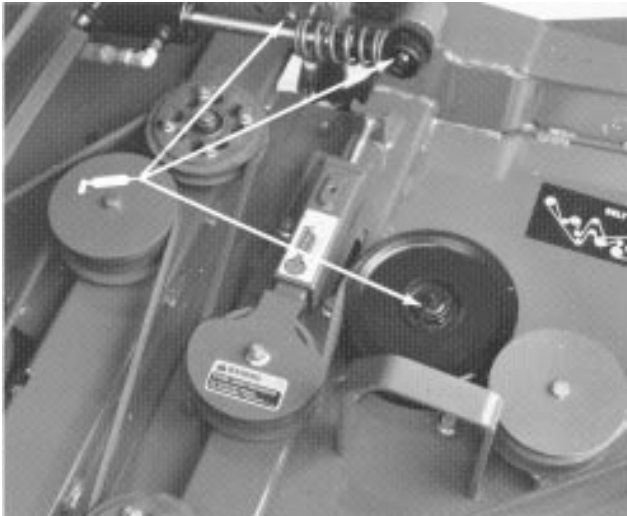


Figure 10



Figure 11

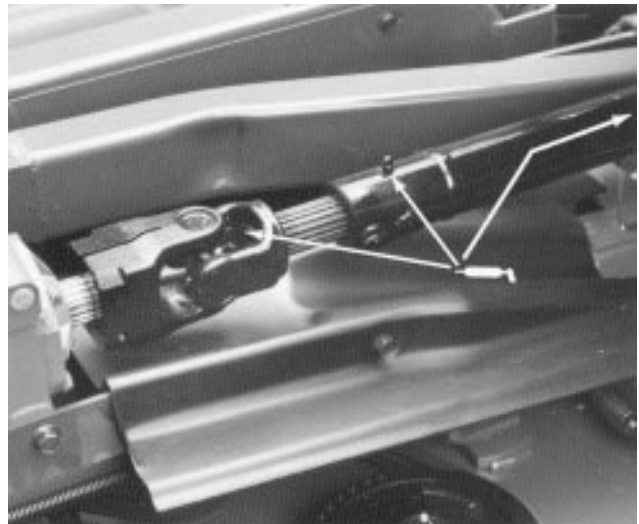


Figure 12

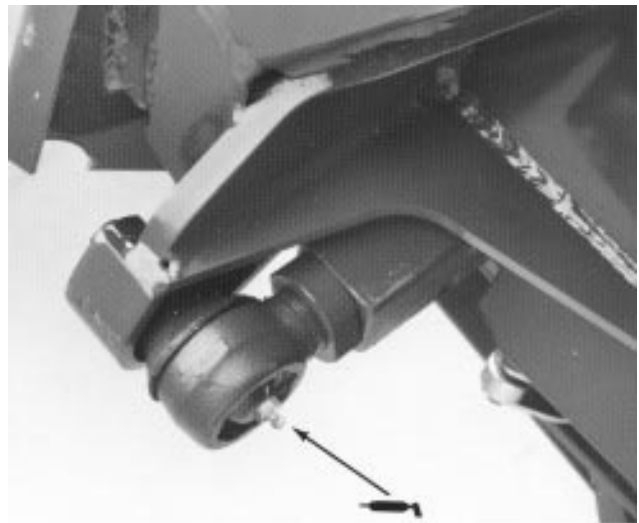


Figure 13



Figure 14

MAINTENANCE



CAUTION

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

GENERAL MAINTENANCE

Note: Although not required for normal maintenance procedures, the cutting unit may be pivoted (tilted) to a upright position. Should you desire to tilt the cutting unit, use the following procedure:

To Pivot (Tilt) Cutting Unit Upright:

1. Drive machine onto ramps to raise front of machine.
2. Lower center and wing cutting units to the ground: then raise center cutting unit slightly, until rear deck straps hang freely on lift arm brackets. Stop engine after cutting unit is raised. Set parking brake.
2. Disconnect (3) hydraulic lines (quick couplers) and wire harness at rear of deck (Fig. 15).

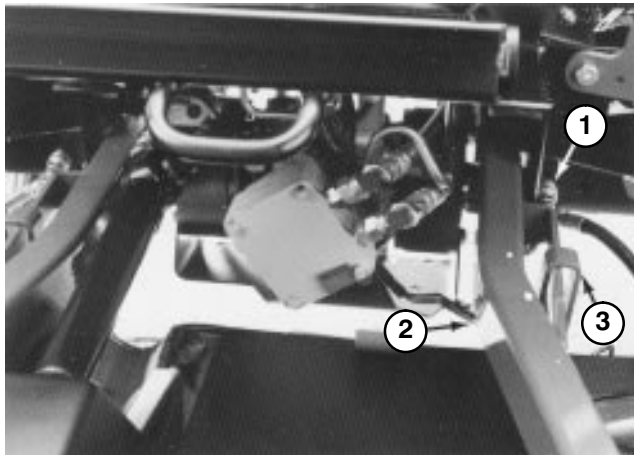


Figure 15

1. Hydraulic Line Couplers
2. Wire Harness
3. Rear Deck Straps

3. Remove hairpin cotters and H.O.C. pins securing rear deck straps to H.O.C. brackets on deck (Fig. 15).
4. Start engine and lower center cutting unit to the ground. Stop engine after cutting unit is lowered.
5. Remove socket head screws securing drive shaft yoke gear box input shaft. Slide yoke off shaft (Fig. 16).



DANGER

Do not start the engine and engage the PTO switch 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.

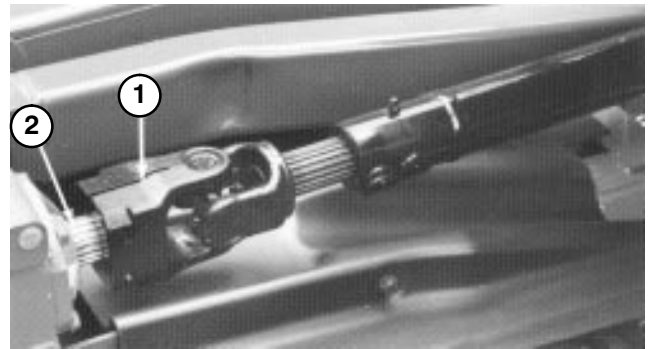


Figure 16

1. Drive Shaft Yoke
2. Gear Box Input Shaft

6. Sit on seat, start the engine and slowly raise the center cutting unit allowing cutting unit to pivot upright. Stop the engine and remove the key from the ignition switch.

To Pivot Cutting Unit down into Operating Position:

1. Sit on seat, start the engine and slowly lower the cutting units to the ground: then raise center cutting unit slightly, so rear deck straps can be mounted to lift arm brackets. Stop engine after cutting unit is raised. Set parking brake.
2. Line up holes in yoke and input shaft of gear box. Slide yoke onto shaft and secure together with socket head screws. Torque screws to 20–25 ft–lb.
3. Secure rear deck straps to H.O.C. brackets on deck with hair pin cotters and H.O.C. pins. Start engine and lower center cutting unit completely to floor. Assure all lift levers are in the float position and stop engine.
4. Connect wire harness and (3) hydraulic lines couplers at rear of deck.

SEPARATING CUTTING UNIT FROM TRACTION UNIT (Fig. 17–18)

1. Lower center and wing cutting units to the ground: then raise center cutting unit slightly, until rear deck straps hang freely on lift arm brackets. Stop engine after cutting unit is raised. Set parking brake.
2. Remove hairpin cotters and H.O.C. pins securing rear deck straps to H.O.C. brackets on deck. Start engine and lower center cutting unit completely to floor. Stop engine after cutting unit is lowered.
3. Disconnect (3) hydraulic lines (quick couplers) and wire harness at rear of deck.
4. Remove socket head screws securing drive shaft yoke to gear box input shaft. Slide yoke off shaft.

MAINTENANCE

5. Remove (4) capscrews, flatwashers and flange nuts securing ball joint mounts to castor arms on cutting unit.

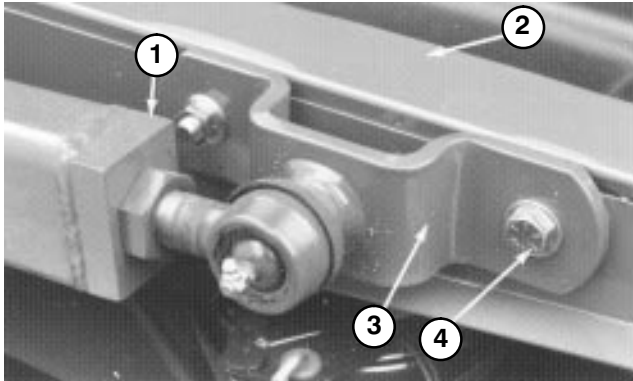


Figure 17

- | | |
|---------------|------------------------|
| 1. Push Arm | 3. Ball Joint Mount |
| 2. Castor Arm | 4. Capscrews & Washers |

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

Alternate Method

1. Lower center and wing cutting units to the ground, set parking brake and stop engine.
2. Disconnect (3) hydraulic lines (quick couplers) and wire harness at rear of deck.
3. Remove socket head screws securing drive shaft yoke to gear box input shaft. Slide yoke off shaft.
4. Remove (2) capscrews and locknuts securing cutting unit carrier frames to traction unit lift arms (Fig. 18).

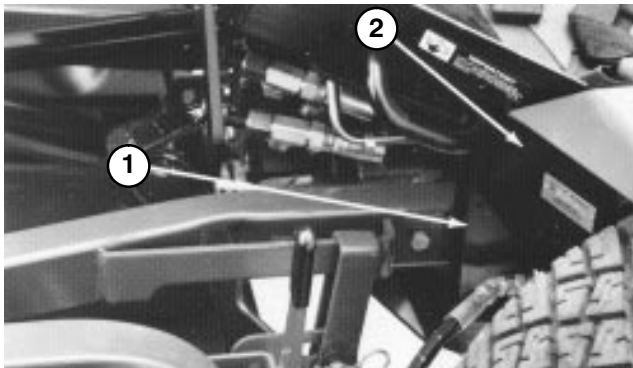


Figure 18

- | |
|--------------------------------|
| 1. Cutting Unit Carrier Frames |
| 2. Traction Unit Lift Arms |

5. Slowly back traction unit away from cutting unit.

MOUNTING CUTTING UNIT TO TRACTION UNIT (Fig. 17–18)

1. With cutting unit on a level surface, move traction unit into position, aligning drive shaft yoke with gear box input shaft and lift arm ball joints with mounting holes in castor arms. Shut engine off.

2. Secure ball joint mounts to castor arms with capscrews, flatwashers and flangenuts. Tighten capscrews and flangenuts to 100–110 ft–lb.

3. Line up holes in yoke and input shaft of gear box. Slide yoke onto shaft and secure together with socket head screws. Torque screws to 20–25 ft–lb.

4. Start engine, raise center cutting unit slightly, so rear deck straps can be mounted on lift arm brackets. Stop engine after cutting unit is raised.

5. Secure rear deck straps to H.O.C. brackets on deck with hair pin cotters and H.O.C. pins. Start engine and lower center cutting unit completely to floor. Assure all lift levers are in the float position and stop engine.

6. Connect wire harness and (3) hydraulic lines couplers at rear of deck.

SAFETY DOOR ADJUSTMENT (Fig. 19)

On each side of the center deck is a safety door that opens and closes as the wing decks are lowered and raised (Fig. 19). The doors open to provide overlap of the cutting blades when the wing units are down. The doors close to provide safety and protection when the wing units are raised. Check to make sure the forward, lower edge of door (Fig. 19) is even or 1/4" higher than lower edge of door guide when wing decks are in the fully raised, transport position. If an adjustment to the door is required, proceed as follows:

1. Loosen jam nuts securing ball joints to threaded rod.

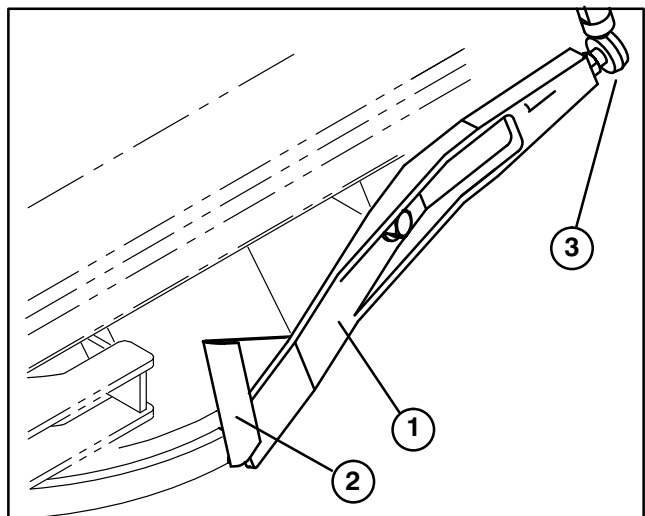


Figure 19

- | | | |
|----------------|---------------|---------------|
| 1. Safety Door | 2. Door Guide | 3. Ball Joint |
|----------------|---------------|---------------|

2. Rotate threaded rod to raise or lower edge of door until is even or 1/4" higher than lower edge of door guide when wing decks are in the fully raised, transport position.

3. Tighten jams nuts to lock adjustment.

CUTTING UNIT MAINTENANCE



CAUTION

Check for proper operation of the safety doors each time the deck is cleaned and repair as needed.

BLADE ADJUSTMENT (Fig. 20–21)

To assure proper operation of the cutting unit, there must be $.25 \pm .12$ " clearance between the tips of the wing and center cutting unit blades.

1. Raise cutting unit so blades are visible and block center deck section so it cannot fall accidentally. Wing decks must be horizontal to center cutting unit.
2. Rotate a center and adjoining wing blade so there blade tips are aligned. Measure distance between blade tips, distance should be approximately $.25 \pm .12$.

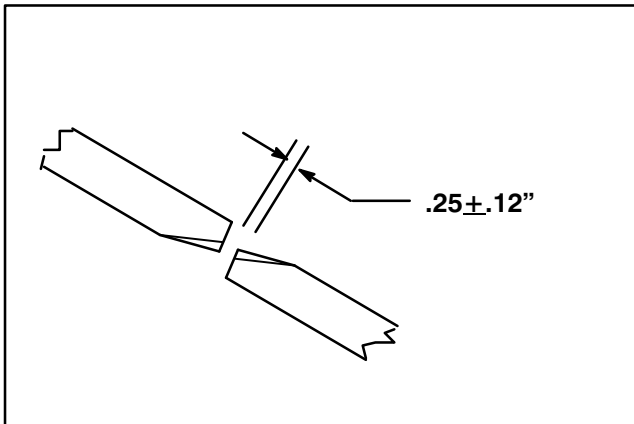


Figure 20

3. To adjust distance, locate adjuster bolt on rear outside corner of center cutting unit. Loosen jam nut on adjuster bolt. Loosen or tighten adjuster bolts until $.25 \pm .12$ clearance is attained, then tighten jam nut.
4. Repeat procedure on opposite side of cutting deck.

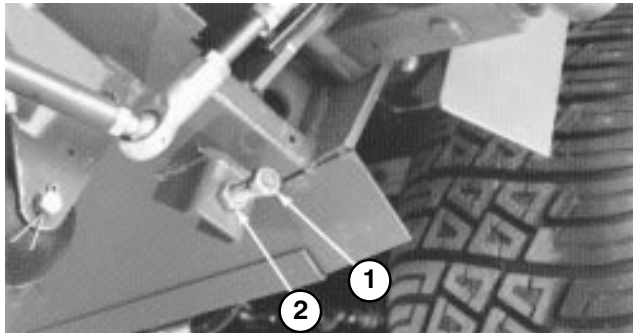


Figure 21
1. Adjuster Bolt
2. Jam Nut

IMPORTANT: Blade plane is adjusted at the factory and should not need further adjustment.

ADJUSTING BELT TENSION (Fig. 22)

Each cutting unit drive belt is individually tensioned by a self tensioning spring loaded idler. When the idlers are properly adjusted, the black plastic sleeve should be flush (even) with the edge of the idler support. When $1/2$ " of the plastic sleeve is exposed, an adjustment is required. To assure proper operation of the cutting unit, check adjustment of spring loaded idler after first 10 hours of operation and every time maintenance on the belt is required.

1. Lower cutting unit to the shop floor. Remove belt covers from center and wing cutting units.
2. Measure the length of the exposed black plastic sleeve. If distance is 0 to $1/2$ ", spring loaded idler is properly adjusted and belt tension is correct. If dimension is not correct, proceed to next step.

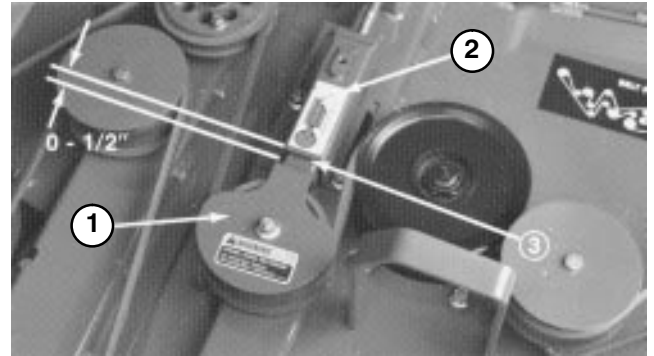


Figure 22

1. Spring Loaded Idler
2. Idler Support
3. Black, Plastic Sleeve

3. Loosen (2) flange head nuts securing idler adjuster tube to top of cutting deck.
4. Loosen jam nut on adjusting screw and rotate screw until the black plastic sleeve is flush (even) with the edge of idler support.
5. When distance is attained, tighten jam nut on adjusting screw and (2) flange head nuts securing idler adjuster tube to top of cutting deck.
6. Check adjustment on other adjusters and repeat procedure if required.

REPLACING DRIVE BELTS (Fig. 23– 26)

The blade drive belts are very durable, but after many hours of use, the belts 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 a belt if any of these conditions are evident.

1. Lower cutting unit to the shop floor. Remove belt covers from center and wing cutting units.

CUTTING UNIT MAINTENANCE

To Remove Wing Deck Belts



WARNING

Idler pulley spring loaded, use caution when relieving spring tension on wing belt.

2. To relieve tension on wing belt, pull back on idler pulley until holes in idler adjustor tube and tube sleeve are aligned. Thread a 5/16–18 capscrew into holes retaining parts.

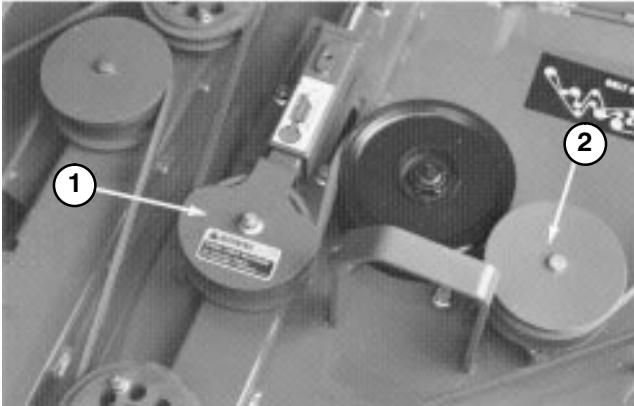


Figure 23

- 1. Spring Loaded Idler Pulley
- 2. Stationary Idler Pulley

3. Remove hair pin cotter securing clutch rod to front of cutting deck and disconnect rod from deck. Unplug clutch wire from harness.

4. To ease wing belt removal, loosen or remove stationary idler pulley next to wing's inner spindle pulley.

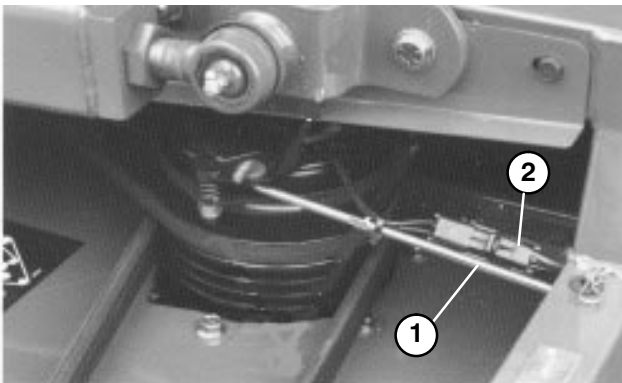


Figure 24

- 1. Clutch Rod
- 2. Clutch Wire

To Remove Center Deck Belt



WARNING

Idler pulley spring loaded, use caution when relieving spring tension on center belt.

5. To relieve tension on center deck belt, pull back on idler pulley until holes in idler adjustor tube and tube sleeve are aligned. Thread a 5/16–18 capscrew into holes retaining parts.

6. Wing deck belts must be removed before center deck belt can be removed, repeat steps 1 – 3.

7. Remove (2) flange head screws securing drive shaft cover to gear box support and remove cover.

8. Remove capscrews and nuts securing front of gear box support to deck channels and loosen capscrews securing rear of gear box support to deck channels.

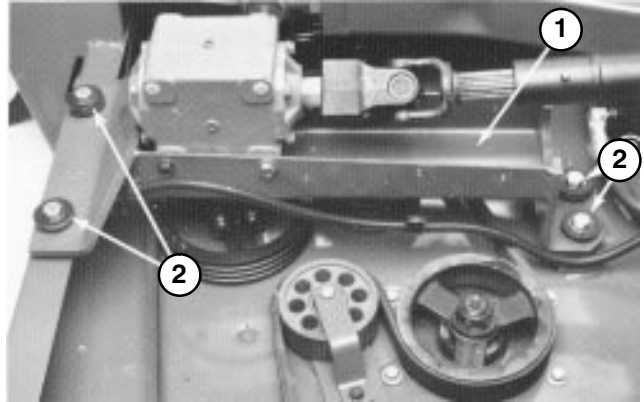


Figure 25

- 1. Gear Box Support
- 2. Capscrews & Nuts

9. Raise front of gear box support and remove old belt from around gear box pulley and remaining pulleys.

10. Route new belt around appropriate pulleys as shown in figure 26.

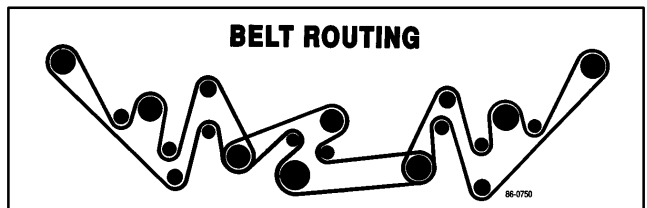


Figure 26

11. Remount gear box support to deck channels with capscrews and nuts previously removed.

12. Reinstall drive shaft cover to gear box support with (4) flange head screws previously removed.

13. Remount clutch rod to deck with hair pin cotter and plug clutch connector into harness.

14. While holding idler pulley adjustor in position, carefully remove capscrew securing idler adjustor tube to tube sleeve. Allow idler pulley to release, tensioning belt.

15. Check idler pulley adjustment, refer to Adjusting Belt Tension, page 37.

16. Reinstall belt covers.

CUTTING UNIT MAINTENANCE

ADJUSTING DECK CLUTCH (Fig. 27)

The deck clutches are adjustable to ensure proper engagement and blade braking. Check clutch adjustment after the first 50 hours of operation, thereafter; every 200 hours. Adjust if required.

1. To adjust clutch, tighten or loosen locknuts on flange studs.
2. Check adjustment by inserting feeler gauge thru slots next to flange studs.
3. The proper disengaged clearance between the clutch plates is .011 – .021 inches. It will be necessary to check this clearance at each of the three slots to ensure the plates are parallel to each other.

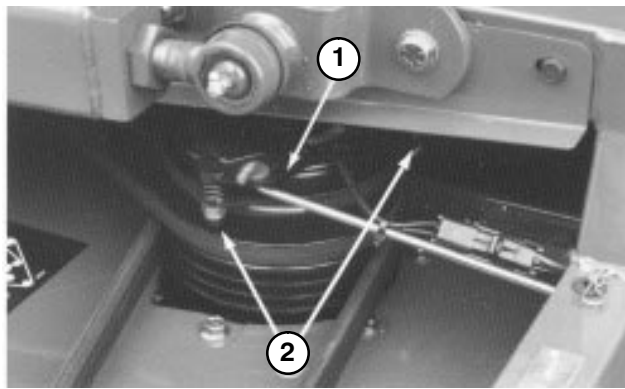


Figure 27

1. Clutch
2. Flange studs

SERVICING FRONT BUSHINGS IN CASTOR ARMS (Fig. 28)

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 HOC cap and spacer(s) from top of castor spindle.
3. Pull castor spindle out of mounting tube. Allow 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.
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 spacer(s) onto spindle. Install HOC cap on castor spindle to retain all parts in place.

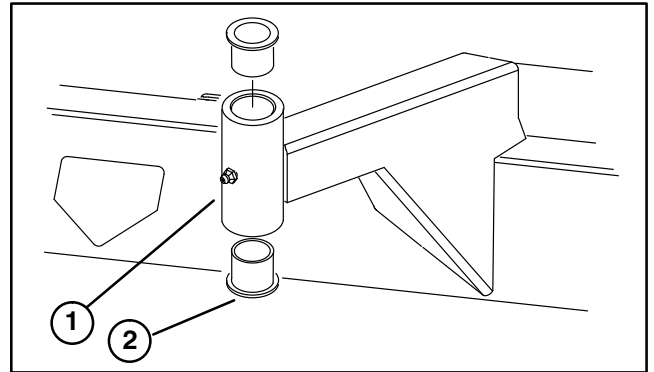


Figure 28

1. Front Castor Arm Tube
2. Bushings

SERVICING CASTOR WHEELS AND BEARINGS (Fig. 29–30)

1. Remove locknut from capscrew holding castor wheel assembly between front castor fork (Fig. 29) or rear castor pivot arm (Fig. 30). Grasp castor wheel and slide capscrew out of fork or pivot arm.

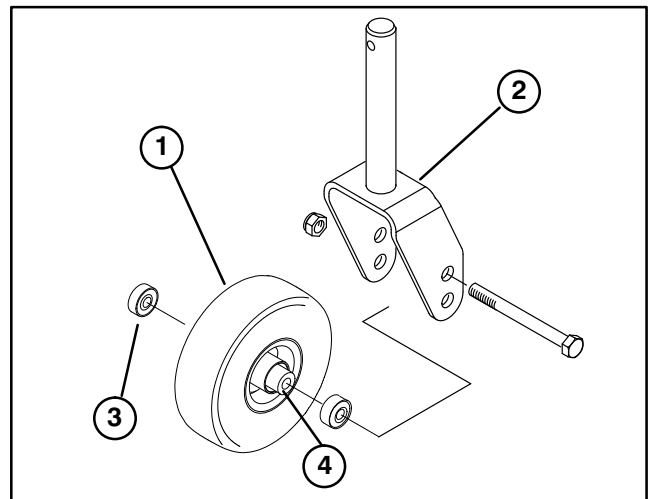


Figure 29

1. Castor wheel
2. Front Castor Fork
3. Bearing
4. Bearing Spacer

2. Remove bearing from wheel hub and allow bearing spacer to fall out. Remove bearing from opposite side of wheel hub.
3. Check the bearings, spacer and inside of wheel hub for wear. Replace defective parts.
4. To assemble the castor wheel, push bearing into wheel hub. Slide bearing spacer into wheel hub. Push other bearing into open end of wheel hub to captivate the bearing spacer inside the wheel hub.

CUTTING UNIT MAINTENANCE

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

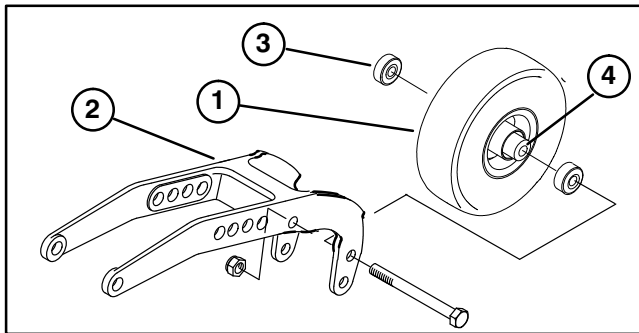


Figure 30

- | | |
|--------------------------|-------------------|
| 1. Castor wheel | 3. Bearing (2) |
| 2. Rear Caster Pivot Arm | 4. Bearing Spacer |

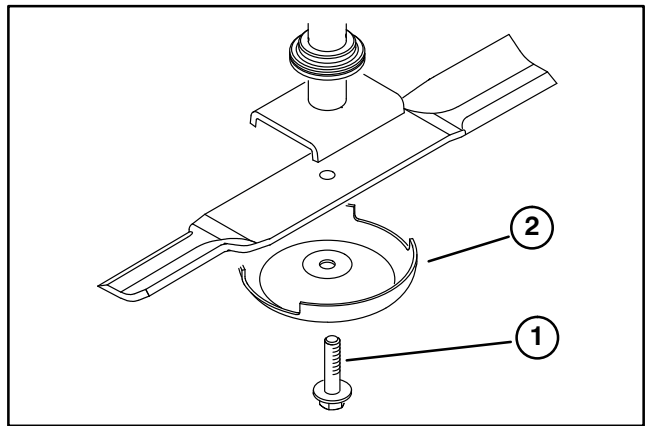


Figure 31

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

BLADE REMOVAL AND INSTALLATION

(Fig. 31)

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



WARNING

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

1. Raise cutting unit to highest position, shut the engine off and engage the parking brake. Engage transport latches to prevent cutting unit from falling accidentally.
2. Grasp end of blade using a rag or thickly padded glove. Remove blade bolt, anti-scalp cup and blade from spindle shaft.
3. Install blade—sail facing toward cutting unit with anti-scalp cup and blade bolt. Tighten blade bolt to 85–110 ft-lb.

INSPECTING AND SHARPENING BLADE

(Fig. 32)

1. Raise cutting unit to highest position, shut the engine off and engage the parking brake. Engage transport latches to prevent cutting unit from falling accidentally.
2. Examine cutting ends of the blade carefully, especially where the flat and curved parts of the blade meet (Fig. 32–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. 32–B), replace the blade: refer to Blade Removal and Installation, page 40.

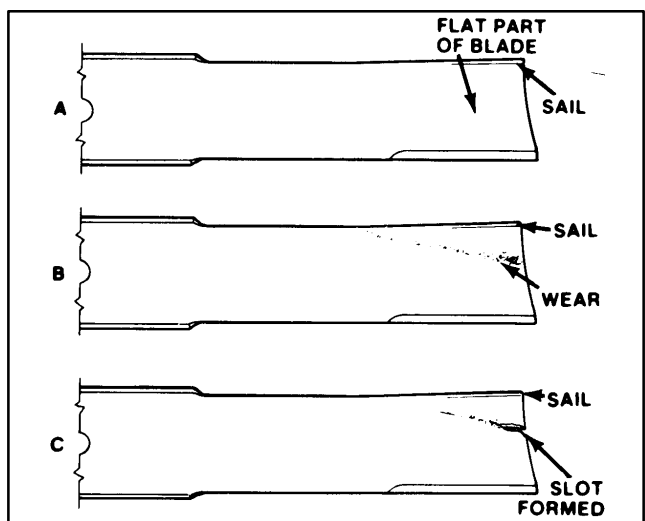


Figure 32

2. 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. 33). The blade will remain balanced if same amount of metal is removed from both cutting edges.

CUTTING UNIT MAINTENANCE

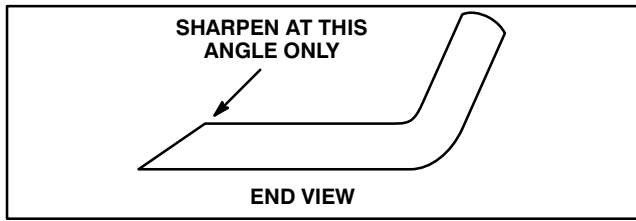


Figure 33

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.

PREPARATION FOR SEASONAL STORAGE

1. Check blades and tighten blade bolts to 85–110 ft–lb.
2. Check and lubricate caster arm bushings.
3. Check and lubricate caster wheel bearings (if so equipped). Tighten caster wheel nuts to 140–165 ft–lb.
4. Check all fasteners for looseness; tighten as necessary.
5. Grease or oil all grease fittings and pivot points. Wipe up any excess lubricant.
6. Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted.
7. Check and relieve tension on drive belts.
8. Clean thoroughly top and underside.
9. Store machine with wing decks lowered.

IDENTIFICATION AND ORDERING

MODEL AND SERIAL NUMBER

The model and serial number is on a plate that is mounted on top front of the center cutting unit. Use model and serial number in all correspondence and when ordering parts.

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.