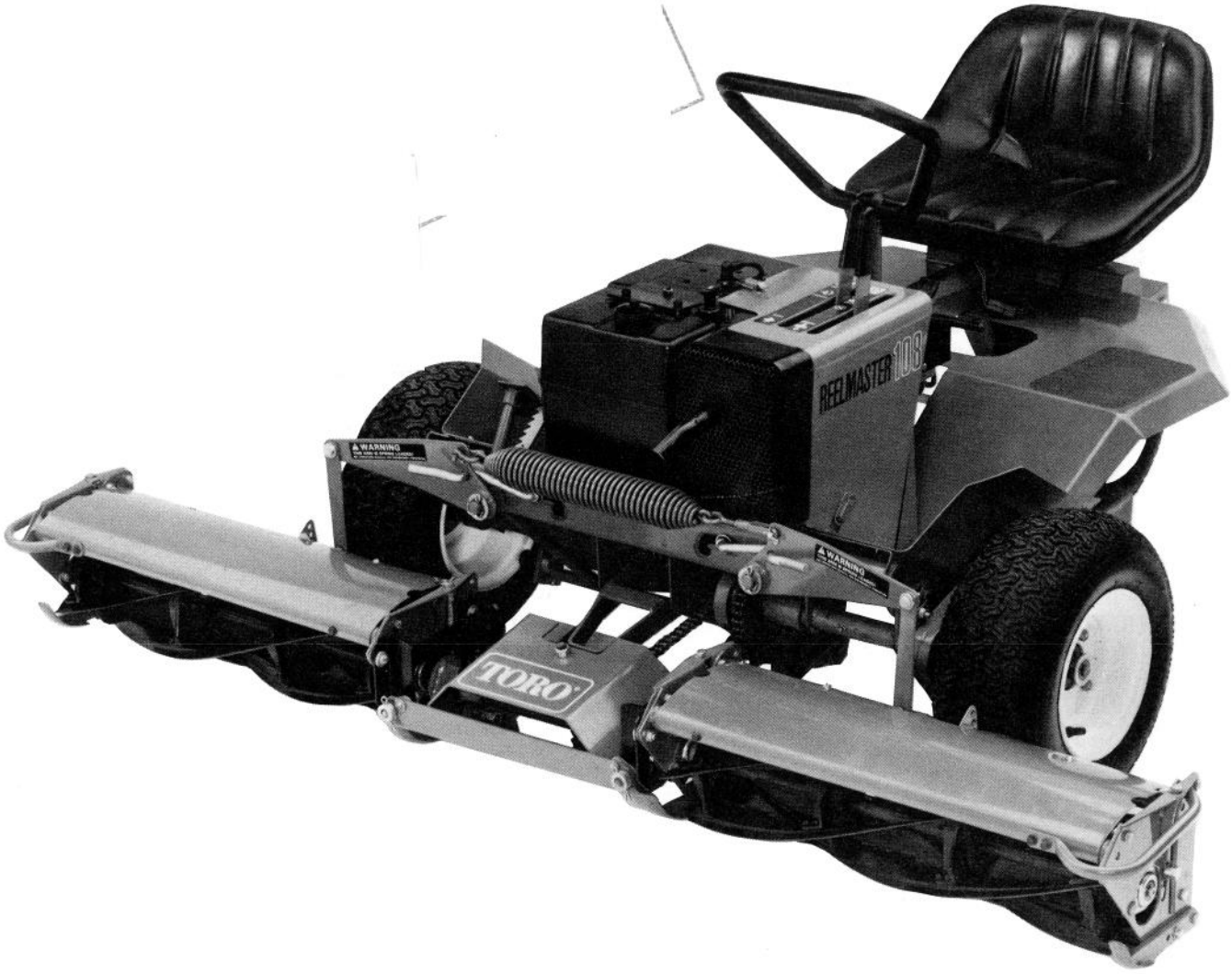
FORM NO. 3313-246 Rev. A

TORO®

MODEL NO. 03204
(5 BLADE) — 80001 & UP
MODEL NO. 03219
(6 BLADE) — 80001 & UP

OPERATOR'S MANUAL

REELMASTER® 108



FOREWORD

Your new REELMASTER® 108 was developed to provide an efficient, reliable and time-saving method of mowing high quality turf. The latest concepts in engineering and design have been incorporated into this machine along with the highest quality parts and workmanship. Excellent service will be derived if proper operation and maintenance practices are followed.

We know, since you have purchased the industry leader in mowing excellence, that future performance and dependability are of prime importance. TORO also is concerned about future use of the machine and of safety to the user. Therefore, this manual should be read by you and those involved with the REELMASTER® 108 to ensure that safety, proper set-up, operation and maintenance procedures are followed at all times. The major sections of the manual are:

1. Safety Instructions
2. Set-up Instructions
3. Before Operating Instructions
4. Operating Instructions
5. Maintenance

Safety, mechanical and some general information in this manual is emphasized. DANGER, WARNING and CAUTION identify safety messages. Whenever the triangular safety alert symbol appears, it is followed by a safety message that must be read and understood. For more complete details concerning safety, read the safety instructions on pages 3 and 4. IMPORTANT identifies special mechanical information and NOTE identifies general information worthy of special attention.

OPTIONAL SPARK ARRESTOR

In some areas there are local, state or federal regulations requiring that a spark arrestor be used on the engine of this mower. If a spark arrestor is required, order the following parts from your Authorized Toro Distributor:

(1) 62-8910 Spark Arrestor Muffler

These parts are approved by the United States Department of Agriculture and Forestry.

CAUTION

When mower is used or operated on any California forest, brush or grass covered land, a working order spark arrestor must be attached to muffler. If not, the operator is violating state law, Section 4442 Public Resources Code.

TABLE OF CONTENTS

SAFETY INSTRUCTIONS

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

The REELMASTER® 108 is designed and tested to offer safe service. However, improper use or maintenance by the operator or owner of the machine can still result in injury. To reduce the potential for any injury, comply with the following safety instructions.

This unit complies with ANSI B71.4-1984 Standard when equipped with rear weight kit, Toro Part No. 62-9790. Order Kit from your Authorized Toro Distributor.

BEFORE OPERATING

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

The Toro Company
8111 Lyndale Avenue South
Minneapolis, Minnesota 55420

SAFETY INSTRUCTIONS

2. Never allow children to operate the machine or adults to operate it without proper instructions.

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

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

5. Be sure interlock switches are adjusted correctly so engine cannot be started unless traction and cutting unit levers are in NEUTRAL position.

6. Be sure work area is clear of objects which might be picked up and thrown by the cutting units.

7. Fill fuel tank with gasoline before starting the engine. Avoid spilling any gasoline. Since gasoline is highly flammable, handle it carefully – DO NOT SMOKE.

A. Use an approved gasoline container.

B. Fill fuel tank outdoors not over one inch (25 mm) from the top of the tank, not the filler neck and only when engine is not running. Do not overfill. Engine must be cool to prevent a potential fire hazard.

C. Wipe up any gasoline that spilled, and install gasoline container cap and machine fuel tank cap securely before starting the engine.

D. Do not remove cap from fuel tank when engine is hot or running.

WHILE OPERATING

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

9. Do not carry passengers on the machine, and keep everyone, especially children and pets, away from the areas of operation.

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

11. To start the engine:

A. Sit on the seat.

B. Verify that traction lever is in NEUTRAL.

C. Verify that cutting unit lever is in the DISENGAGE position.

D. Turn key to RUN position.

E. Proceed to start engine.

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

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

B. Watch for holes or other hidden hazards.

C. Do not drive close to sand traps, ditches, creeks or other hazards.

D. Reduce speed when making sharp turns. Avoid sudden stops and starts.

E. Before backing up, look to the rear and make sure no one is behind the machine.

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

G. Slow engine speed when going downhill to keep forward speed slow and to maintain control of the machine. Work slopes from side to side, never up and down.

H. Check to make sure service brake and parking brake are operating properly.

13. Keep hands, feet and clothing away from moving parts and the cutting unit discharge area.

14. Raise the cutting units when driving from one work area to another.

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

16. If a cutting unit strikes a solid object or vibrates abnormally, stop immediately, turn engine off, wait for all motion to stop and inspect for damage. A damaged reel or bedknife must be repaired or replaced before operation is continued.

17. Before getting off the seat:

A. Move traction lever to NEUTRAL position.

B. Move cutting unit lever to DISENGAGE position.

C. Stop the engine by turning key to OFF and wait for all moving parts to stop.

D. Engage parking brake.

SAFETY INSTRUCTIONS

MAINTENANCE

18. Before servicing or making adjustments to the machine, stop the engine and pull high tension wire off spark plug to prevent accidental starting of the engine.

19. Be sure machine is in safe operating condition by keeping nuts, bolts and screws tight and chains properly tightened. Check operation and adjustment of service and parking brakes.

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

21. To reduce potential fire hazard, keep the engine area free of excessive grease, grass, leaves and accumulation of dirt.

22. 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 and any moving parts. Keep everyone away.

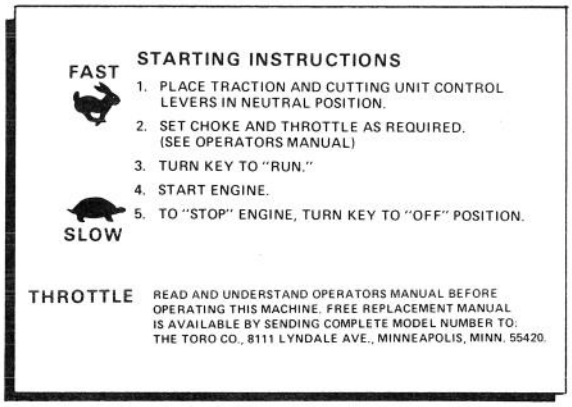
23. Do not overspeed the engine by changing governor settings. Maximum engine speed is 3250 rpm. To assure safety and accuracy, have an Authorized Toro Distributor check maximum engine speed with a tachometer.

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

25. To be sure of optimum performance and safety, always purchase genuine TORO replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous. Such use could void the product warranty of The Toro Company.

SAFETY INSTRUCTIONS DECALS

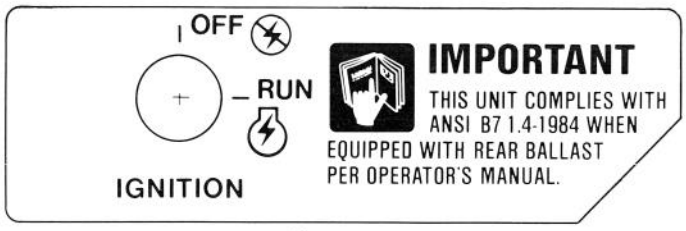
The following safety and instruction decals are installed on the unit. If any become damaged or illegible, replace them. Decals part numbers are listed under decals and also in your Parts Catalog. Order replacements from your Authorized Toro Distributor.



ON IGNITION SWITCH PANEL
(Part No. 36-8580)

ON LIFT ARMS
(Part No. 44-0760)

ON CUTTING UNITS
(Part No. 62-5070)



AROUND IGNITION SWITCH
(Part No. 62-9940)

ON SHROUD
(Part No. 62-9630)

ON SHROUD
(Part No. 62-9640)

SPECIFICATIONS

Engine: 8 horsepower (6 kw) engine with 5 quart (4.7 l) capacity gas tank. Champion RCJ-8 spark plug or equivalent with recommended gap of 0.030 in. (0.76 mm).

Engine Interlock Circuit: Contains switches which:

A. Prevents engine start up when cutting lever is engaged.

B. Prevents engine start up when traction lever is engaged.

C. Shuts off engine if operator leaves the seat with cutting or traction lever engaged.

D. Shuts engine off if unattended machine's traction or cutting unit lever is accidentally bumped into engaged position.

Construction: Welded Steel frame consisting of 1-3/4 in. (45 mm) square tubing. Engine base and other supporting members are formed sheet steel. Cutting units consist of welded flat and tubular steel.

Wheels: Drive wheels and sulky. #14 gauge (18.97 mm) steel discs. Steel hubs.

Tires: 16 x 6.50 x 8 tubeless Terra-tire.

Differential: Stamped steel case with roll formed hardened spur gears.

Reduction: Engine to reel 4.03:1
Traction Wheel Drive-Forward 35.06:1
Traction Wheel Drive-Reverse 36.33:1

Traction Drive Forward: Poly-V "J10-section" belt. 1.75 P.D. and 5.00 P.D. pulleys (2.86:1 reduction) from engine to first countershaft. 1/2 in. (13 mm) pitch x .312 (7.92 mm) roller diameter (#40) chain on 10 and 30 tooth sprockets, (3:1 reduction) from first countershaft to second countershaft. 1/2 in. (13 mm) pitch x .312 (7.92 mm) roller diameter (#40) chain on 11 tooth and 45 tooth sprockets (4.09:1 reduction) from second countershaft to differential.

Traction Drive Reverse: 1.66 P.D. Poly-V friction pulley operating against 4.91 P.D. cast iron pulley (2.96:1 reduction) from engine to first countershaft. 1/2 in. (13 mm) pitch x .312 (7.92 mm) #40 roller diameter chain on 10 tooth and 30 tooth sprockets, (3:1 reduction) from first countershaft to second countershaft. 1/2 in. (13 mm) pitch x .312 (7.92 mm) roller diameter chain on 11 tooth and 45 tooth sprockets (4.09:1 reduction) from second countershaft to differential.

Traction Clutch: Tight-slack Poly-V belt.

Ground Speed: Forward 3.91 m.p.h. (6.3 Km/hr) @ 3150 r.p.m.
Reverse 3.87 m.p.h. (6.2 Km/hr) @ 3150 r.p.m.

Width of Cut: 70 in. (1.778 m).

Clip: .88 in. (22 mm) — 6 blade reel.
1.06 in. (26 mm) — 5 blade reel.

Height-Of-Cut: 1/2 in. to 2-1/4 in. (13 to 57 mm). Raise or lower skids to change height.

Reel Clutch: Tight-slack Poly-V belt.

Reel Drive: Poly—V "J-10-section" belt 1.75 P.D. and 5.00 P.D. pulleys (2.86:1) from engine to reel drive countershaft. 1/2 in. (13 mm) pitch x .312 (7.92 mm) roller diameter (#40) chain on 17 tooth sprockets and 24 tooth sprockets (1.4:1 reduction) reel drive countershaft to reels.

Reels: 7 in. (17.8 cm) diameter with blades double riveted to malleable cast steel spiders. 1 in. (25 mm) diameter steel shaft on sealed ball bearings.

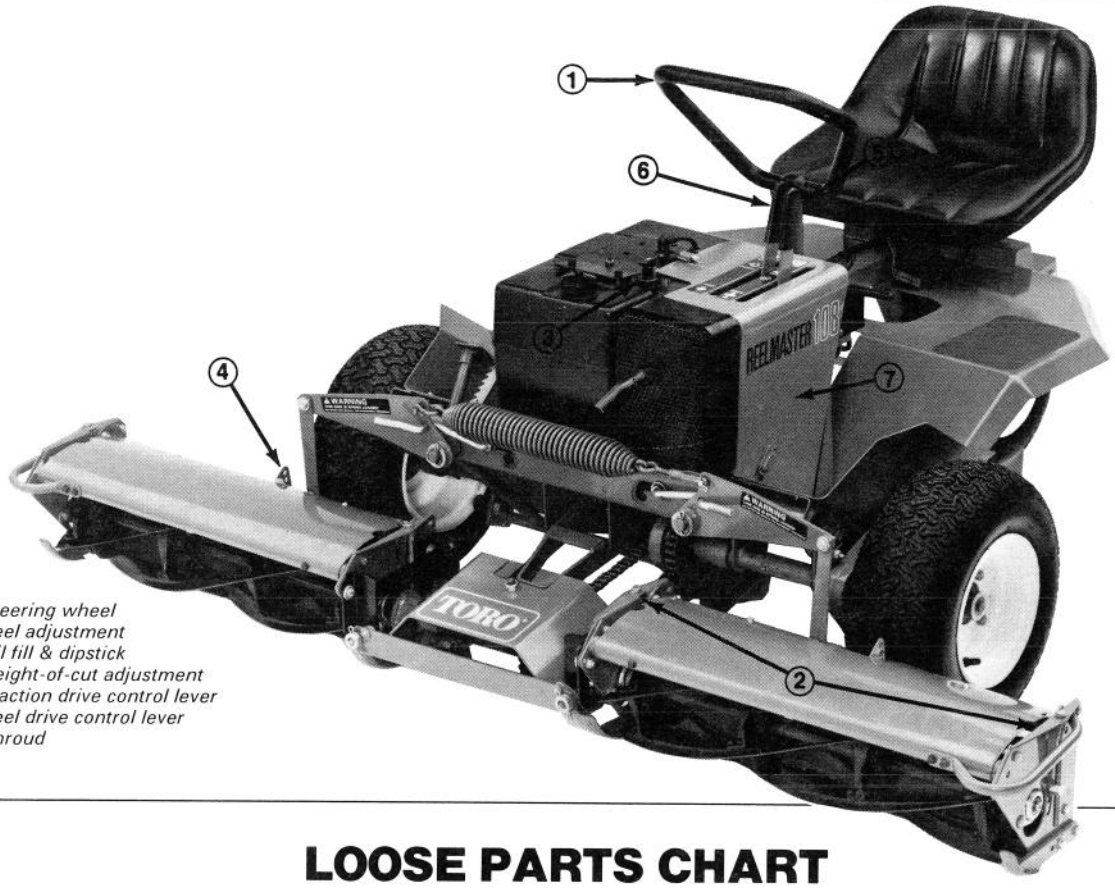
Bedknife: #10 gauge (3.41 mm) HRPO formed section with stellite hard surface cutting edge.

Dimensions: Operating —
Width: 74-1/2 in. (1.892 m)
Height: 33-1/2 in. (0.851 m)
Length: 64-1/8 in. (1.629 m)
Storage —
Width: 52-1/2 in. (1.334 m)
Height: 33-1/2 in. (0.851 m)
Length: 38-7/8 in. (0.987 m)

Weight: 588 pounds (2615 N). — 5 blade
592 pounds (2633 N). — 6 blade

Optional Equipment:
Coated Rear Roller Kit #4-5279
Rear Roller Kit #4-8349
Anti-Scalp Roller Kit #4-7379
Spark Arrestor Muffler #62-8910
Basket Kit #4-7479
Weight Kit #62-9790

KNOW YOUR MOWER



1. *Steering wheel*
2. *Reel adjustment*
3. *Oil fill & dipstick*
4. *Height-of-cut adjustment*
5. *Traction drive control lever*
6. *Reel drive control lever*
7. *Shroud*

LOOSE PARTS CHART

Loose Parts	Qty.	Where Used
Carriage Bolt 3/8-16 x 2-1/2 in.	1	Secure sulky frame into position.
Flange Nut — 3/8-16	1	
Wheel Assembly	1	Mount to sulky.
Steering Wheel	1	Mount to steering column.
Seat Assembly	1	Mount to frame.
Capscrew 5/16-18 x 5/8" lg.	4	Use to mount seat to base.
Lockwasher 5/16"	4	
R.H. Fender	1	Mount Fenders
L.H. Fender	1	
Self Tapping Screw	4	
Capscrew — 3/8-16 x 2-1/2 in.	1	
Flatwasher	2	
Locknut — 3/8-16	1	
Machine Screw — 5/16-18 x 3/4" lg.	1	
Locknut — 5/16-18	1	
Flat Washer 9/16 x .032 in.	8	Use to mount cutting units to machine.
Collar	4	
Cotter Pin 5/32 x 1-1/4 in.	4	
Cotter Pin 1/8 x 3/4 in.	2	Secure transport links to cutting units.
Key	2	Insert into key switch.
Operator's Manual	1	
Product Set-up Report Card	1	
Engine Manual	1	
Parts Catalog	1	
Registration Card	1	

SET-UP INSTRUCTIONS

INSTALL SULKY WHEEL

1. As soon as top and sides are removed from carton, remove all loose materials and set aside. Clip all bands securing machine to pallet.

2. Rotate sulky out until it contacts the stop and install carriage bolt and flange nut to secure sulky into proper position (Fig. 1).

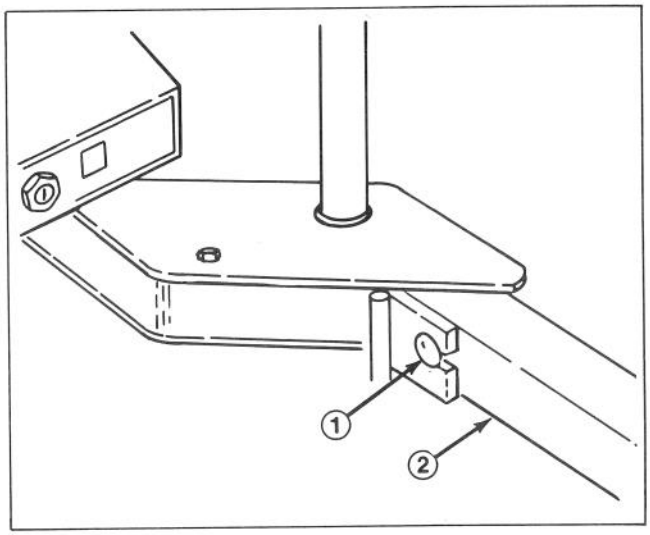


Figure 1

1. Carriage bolt and flange nut
2. Sulky

3. Install rear wheel into caster fork and secure with flatwashers, lockwashers and capscrews on both sides of fork (Fig. 2).

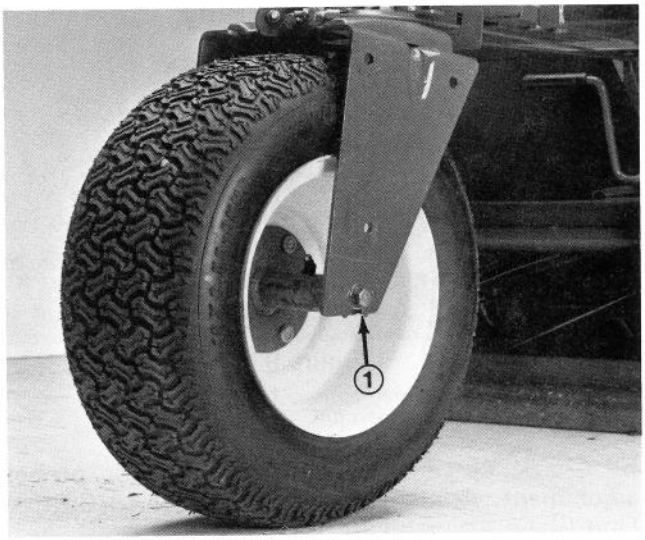


Figure 2

1. Flatwasher, lockwasher and capscrew

INSTALL STEERING WHEEL AND SEAT ASSEMBLY

1. Remove roll pin at top of steering shaft, mount steering wheel over shaft and secure with pin (Fig. 3).

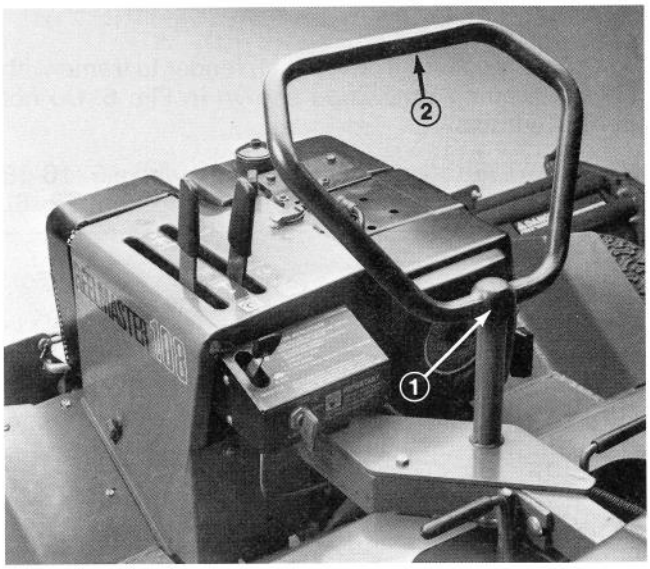


Figure 3

1. Roll pin *2. Steering wheel*

2. Position seat onto seat channel aligning mounting holes. Secure seat to channel with (4) 5/16-18 x 5/8" lg. capscrews and lockwashers (Fig. 4). Adjust seat to a comfortable operating position. Refer to Seat Adjustment, page 24.

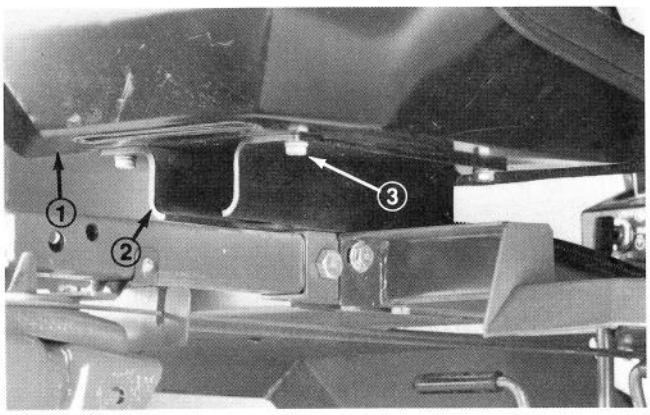


Figure 4

1. Seat *3. Capscrew and lockwasher*
2. Seat channel

3. Connect switch cable to interlock cable (Fig. 5).

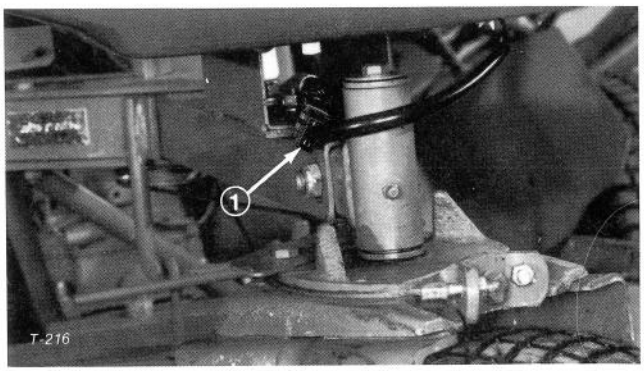


Figure 5

1. Cable connectors

SET UP INSTRUCTIONS

INSTALL FENDERS

1. Loosely secure front of each fender to frame with (2) self tapping screws as shown in Fig. 6. Do not tighten screws.

2. Secure left fender to chain guard with a 5/16-18 x 3/4" lg. machine screw, washer and locknut (Fig. 6).

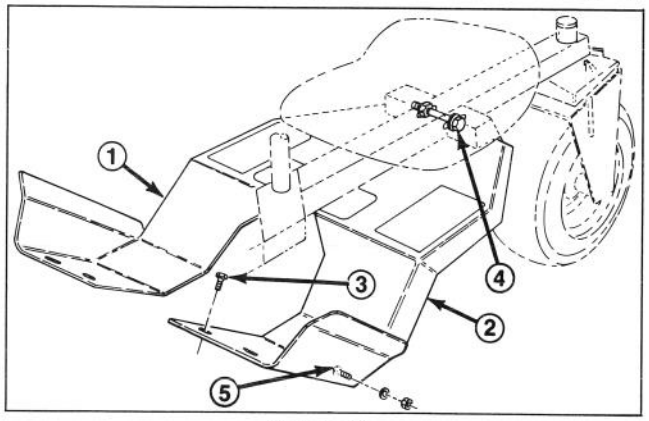


Figure 6

1. *R.H. fender*
2. *L.H. fender*
3. *Self tapping screw*
4. *Capscrew, flatwasher & locknut*
5. *Machine screw, washer & locknut*

3. Secure rear of fenders to sulky tube with a 3/8-16 x 2-1/2" lg. capscrew, flatwasher and locknut.

4. Tighten front screws.

INSTALL FRONT CUTTING UNITS

1. Roll machine off pallet, remove cutting units from cartons and clean excess paint off mounting pivot studs.

2. Check each end of reel drive shaft to be sure reel drive pads are installed, mount a washer onto each pivot stud (two per unit), align pivot studs with intermediate frame holes, drive ball with drive shaft and attach each cutting unit to the frame (Fig. 7).

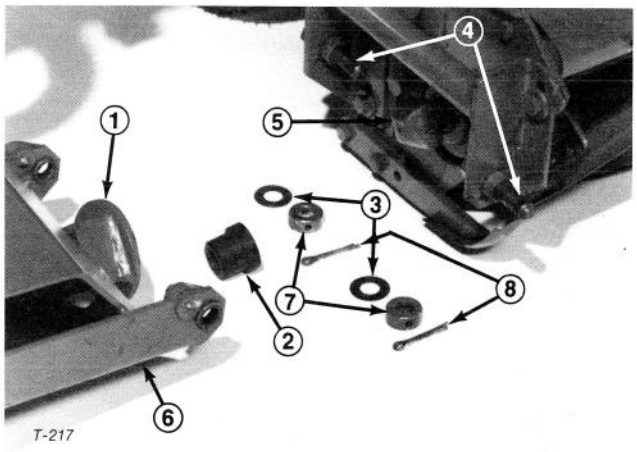


Figure 7

1. *Reel drive shaft*
2. *Reel drive pad*
3. *Washers*
4. *Pivot studs*
5. *Drive ball*
6. *Intermediate frame*
7. *Collars*
8. *Cotter pins*

3. Mount collars onto pivot studs and insert cotter pins to secure cutting units to frame (Fig. 7, 8).

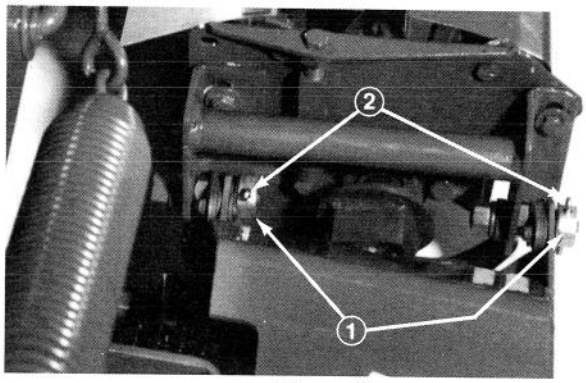


Figure 8

1. *Collars*
2. *Cotter pins*

4. Firmly grasp support arms, push arm down, slip transport links over link pins and secure with cotter pins (Fig. 9).

CAUTION

FRONT COUNTERBALANCE SPRING is under extreme tension when arms are extended. GRASP SUPPORT ARMS when installing or removing transport links from cutting units.

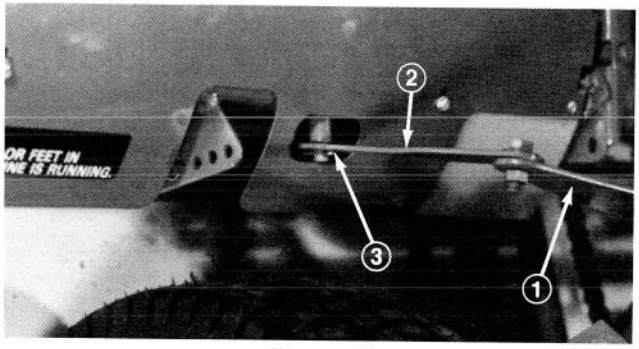


Figure 9

1. *Support arm*
2. *Transport link*
3. *Cotter pin*

5. Check cutting unit drive chains for proper adjustment. Adjust, if necessary; refer to Cutting Unit Chain Adjustments, page 21.

6. To achieve proper cutting performance, adjust reel to bedknife on each cutting unit; refer to Reel Adjustment, page 18.

7. Mower height-of-cut is factory set at 1-3/32 in. (27.8 mm). Adjust height if different setting is required; refer to Height-of-Cut Adjustment, page 17.

SET UP INSTRUCTIONS

REAR WEIGHT KIT INSTALLATION

This unit complies with ANSI B71.4-1984 Standard when equipped with rear weight kit, Toro Part No. 62-9790.

1. Mount a weight to each side of caster fork with fasteners supplied in kit. Order kit from your Authorized Toro Distributor.

BEFORE OPERATING

FILL CRANKCASE OIL

The engine is shipped without oil in the crankcase.

1. Position machine on a level surface.

2. Remove filler cap and pour 2-1/2 pints of oil having the API "service classification" SE or SF into the filler neck. Oil viscosity — weight — is selected according to anticipated ambient temperature. Temperature/viscosity recommendations are:

   A. Above +32°F (0°C) — Use SAE 30, and if it is not available, 10W-30 or 10W-40 are acceptable substitutes.

   B. Below 32°F (0°C) — Use SAE 5W-20 or 5W-30, and if they are not available, 10W-30 or 10W-40 are acceptable substitutes.

3. Check oil and make sure level is up to the FULL mark on dipstick. Add more oil if level is low; however, DO NOT OVERFILL.

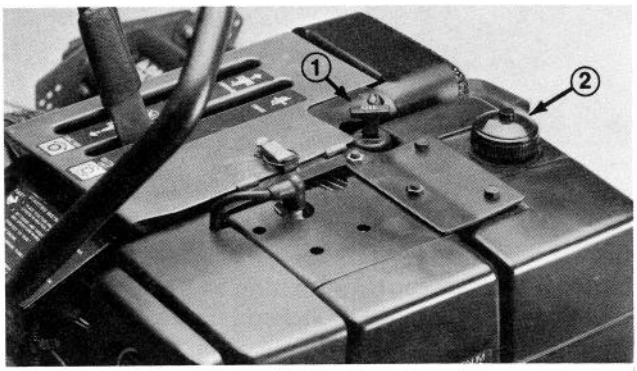


Figure 10

1. Oil fill & dipstick 2. Fuel cap

FILL FUEL TANK WITH GASOLINE

THE TORO COMPANY STRONGLY RECOMMENDS THE USE OF FRESH CLEAN, UNLEADED REGULAR GRADE GASOLINE IN TORO GASOLINE POWERED PRODUCTS. UNLEADED GASOLINE BURNS CLEANER, EXTENDS ENGINE LIFE, AND PROMOTES GOOD STARTING BY REDUCING THE BUILD-UP OF COMBUSTION CHAMBER DEPOSITS.

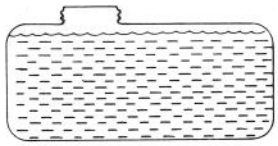
Note: Do not mix oil with gasoline. Never use methanol, gasoline containing methanol, gasohol, gasoline additives, premium gasoline, or white gas because engine/fuel system damage could result.

1. Remove fuel cap and fill tank to a level 1 in. (25 mm) below the bottom of the fill hole with a good grade of clean, fresh unleaded gasoline (Fig. 10).

2. Wipe up any spilled fuel and replace fuel cap (Fig. 10).

DANGER

Because gasoline is flammable, caution must be used when storing or handling it. Do not fill fuel tank while engine is running, hot or when machine is in an enclosed area. Vapors may build up and be ignited by a spark or flame source many feet away. DO NOT SMOKE while filling the fuel tank to prevent the possibility of an explosion. Always fill fuel tank outside and wipe up any spilled gasoline before starting engine. Use a funnel or spout to prevent spilling gasoline, and fill fuel tank to no more than 1 inch (25 mm) from top of tank, not filler neck.



Store gasoline in a clean, approved container and keep the cap in place on the container. Keep gasoline in a cool, well-ventilated place; never in the house. To assure volatility, do not buy more than a 30 day supply of gasoline. Gasoline is a fuel for internal combustion engines; therefore, do not use it for any other purpose. Since many children like the smell of gasoline, keep it out of their reach because the fumes are explosive and dangerous to inhale.

TIRE PRESSURE

All tires are over inflated for shipment. Reduce tire pressure to 12 psi (82.7 kpa).

LUBRICATE UNIT

Grease all fittings and oil all points where required; refer to Lubrication, page 13.

CONTROLS

1. Choke (Fig. 12) — To start a cold engine, close carburetor choke by moving choke control upward to the ON position.After engine starts, regulate choke to keep engine running smoothly. As soon as possible, open the choke by pulling it downward to the OFF position. A warm engine requires little or no choking.

2. Ignition Switch (Fig. 11) — On control panel at left of engine. Turn key to RUN position before pulling recoil starter handle to start engine. Turn key to OFF position to stop engine.

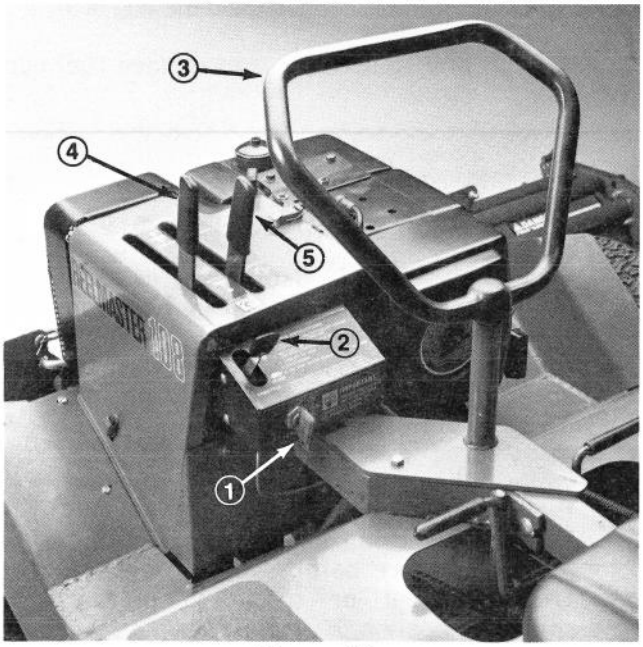


Figure 11

1. Ignition switch
2. Throttle control
3. Steering wheel
4. Traction control lever
5. Reel drive control lever

3. Throttle Lever (Fig. 11) — In control panel, left side of engine. Move between FAST and SLOW positions to regulate speed of engine and control speed of mower.

4. Recoil Starter (Fig. 12) — Pull starter handle to start engine.

5. Steering Wheel (Fig. 11) — Use to guide machine in proper direction.

6. Traction Control Lever (Fig. 11) — Push forward for forward traction; pull rearward and hold firmly for reverse operation. Return lever neutral before stopping engine and leaving machine.

7. Cutting Unit Control Lever (Fig. 11) — Push forward to ENGAGE reels. Pull rearward to DISENGAGE cutting units.

8. Brake Pedal (Fig. 12) — Foot operated brake pedal is used to slow down or stop machine.

9. Parking Brake (Fig. 12) — Parking brake must be used in conjunction with brake pedal. Depress brake pedal and engage parking brake to hold brake pedal in engaged position. Brake is automatically released when traction control lever is is pushed forward. To manually release, depress brake pedal and move lever to disengaged position.

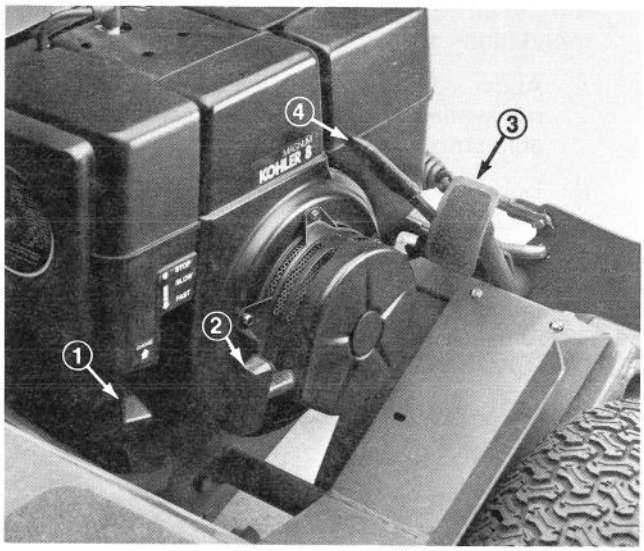


Figure 12

1. Choke lever
2. Recoil starter
3. Brake pedal
4. Parking brake

Note: When leaving the machine on a hill or slope, or transporting machine, chalks and/or tie downs must be used.

10. Fuel Shut-off Valve (located under fuel tank) — Close fuel shut-off valve when storing machine.

OPERATING INSTRUCTIONS

STARTING/STOPPING ENGINE (Fig. 11 & 12)

1. Engage parking brake, make sure traction drive lever is in "N" (NEUTRAL) and cutting unit lever is in DISENGAGE position.

2. Close choke, if engine is cold, place throttle control lever midway between FAST and SLOW and turn ignition switch key to RUN position.

3. Pull recoil starter handle out until positive engagement results, then pull handle vigorously to start engine. When engine starts, open choke and place throttle control lever in desired running position.

4. To stop engine, be sure traction control lever is in "N" (NEUTRAL) position, cutting unit control lever is in DISENGAGE, return throttle control to SLOW position and turn ignition key to OFF.

STOPPING MACHINE (Braking)

To stop machine during normal operation, simply move traction lever to NEUTRAL.

To stop machine quicker, move traction lever to NEUTRAL and then depress brake pedal.

Emergency stops can be accomplished by pulling traction lever out of forward and into REVERSE.

CHECKING OPERATION OF INTERLOCK SWITCHES

The machine has interlock switches mounted in the electrical system. These switches are designed to stop the engine when the operator gets off the seat while either the traction or cutting unit lever is engaged. (Except reverse — lever returns to "N", neutral when released.)

CAUTION

Do not disconnect the safety switches because they are for the operator's protection. Check operation of the switches daily to be sure the interlock system is operating correctly. If a switch is defective, replace it before operating the machine. Be sure the machine is in an open area, free of obstructions and bystanders.

1. Move cutting unit lever to DISENGAGE position and traction lever to N (NEUTRAL) position.

2. Try to start the engine. When engine starts, proceed to step 3. If engine does not start, there may be a defect in the interlock system: refer to Electrical Troubleshooting, page 27.

3. Raise off the seat and engage the cutting unit lever while the engine is running. The engine should stop. If engine stops, the switch is operating correctly; thus, proceed to step 4. If engine does not stop, there is a defect in the interlock system: refer to Electrical Troubleshooting, page 27.

CAUTION

Keep feet on footrests and use steering column for leverage to raise off seat to avoid personal injury.

4. Slow engine down to moderate speed, raise off the seat and move the traction lever to F (FORWARD) position while engine is running and cutting unit lever is in DISENGAGED position. The engine should stop. If engine stops the switch is operating correctly; thus, continue operation. If engine does not stop, there is a defect in the interlock system: refer to Electrical Troubleshooting, page 27.

TRAINING PERIOD

Before mowing, find a clear area and practice starting and stopping, turning, etc. This training period will be beneficial to the operator in gaining confidence. Insure long belt life by always engaging the traction and cutting unit levers slowly at minimal engine speed. Pull traction lever back into REVERSE and hold firmly while in reverse traction operation to minimize wear of the reverse pulley.

TRANSPORT OPERATION

To raise units:

1. Stop machine on level surface, return cutting unit control lever to DISENGAGE, traction control lever to "N" (NEUTRAL) position, Throttle control to SLOW position, turn ignition key to OFF and engage parking brake.

2. Sit on seat, and grasp ends of transport hook, lift cutting unit up and slide transport hooks over transport bar on sulky (Fig. 13).

3. Get off seat, stand at end of each front cutting unit, grasp reel guard and lift end of unit up until transport latch drops into locking slot in transport arm bracket (Fig. 14).

IMPORTANT: Do not engage cutting unit drive with cutting units in transport position.

OPERATING INSTRUCTIONS

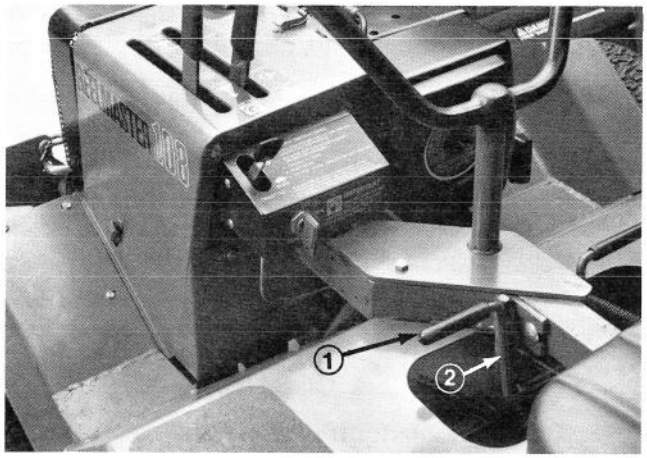


Figure 13

1. Transport hook
2. Transport bar

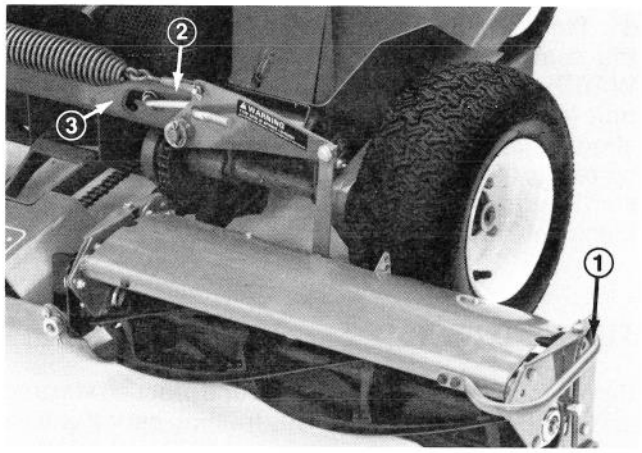


Figure 14

1. Reel guard
2. Transport latch handle
3. Transport arm bracket

To lower units:

1. Stop machine on level surface, place throttle control in SLOW position and turn ignition key to OFF and engage parking brake.

2. Get off seat, stand at end of each front cutting unit, lift up on reel guard, press down on transport latch handle until it comes out of locking slot and lower cutting unit (Fig. 14).

3. Sit on seat, lift up on transport hook and lower cutting unit (Fig. 13).

EVALUATING QUALITY OF CUT

FREQUENCY OF MOWING: The frequency of mowing is as important as the height-of-cut. Lawn grasses should be cut often enough so that never more than 1/3, preferably 1/4, of leaf surface is removed. If excessive clippings are removed at one mowing, the plant is "shocked" and will not grow properly until it recovers.

MOWER: To maintain a well-groomed appearance, the lawn must always be cut with a sharp, properly adjusted mower. Dull, improperly adjusted cutting units leave the lawn ragged and often the grass will turn gray and brown-off the leaf tips. Keep Your Mower Operating Properly.

1. Examine cutting units for the following:
   a. Blades and bed bar sharp.
   b. Skids adjusted to same hole, mounting clips not bent, adjusting links same length.
   c. Pivot points free, no binding, proper lubrication.
   d. Reels properly adjusted to the bed knives. Correct any deficiencies.

2. Place mower on a hard, level surface with cutting units in cutting position, stop the engine and check the following:
   a. Attitude of mowers — top flange of side plates parallel to ground.
   b. Both ends of cutting units on ground.
   c. Counterbalance springs properly adjusted.
   d. Height-of-cut of each unit approximately the same — within 1/16 in. (1.6 mm).
   e. Chain tightness.
   f. Axis of cutting units parallel to axle.
   g. Check push rods and frame for bent or broken parts and correct any deficiencies.

3. Start the engine. Make trial cut in the grass on a level area and examine for the following:
   a. Each unit cutting clean. A few stragglers are not uncommon — look for bruised grass as evidence of improper cutting.
   b. Units cutting the same height on each end. If there is evidence that one end of a unit is cutting higher than the other, re-examine skid for damage — if none, re-check pivots for free motion — if correct, re-check length of counterbalance spring. Increased tension on front spring will raise the inside end of units and lower outside ends. Reducing the tension has opposite effect. Increasing compression on rear spring will raise left end of unit and lower right end. Reducing compression has opposite effect.

4. If an adjustment has been made per above paragraphs, make a new trial run. Adjust minor variations in cutting height of units by turning adjusting link in shackle — shorten to lower cut and lengthen to raise cut; refer to Height-of-Cut Adjustment, page 19.

SERVICE INTERVAL CHART

Fig. No.	Location	Service Part	No. of Fittings	Frequency of Sv. 8 hr.	20 hr.	40 hr.	Type of Lubricant
*	*	All chains & sprockets		*			
	1	Links, arm pivots — 6 points				*	
	2	Counterbalance spring yoke and shackle — 2 points				*	
	2	Transport handles — 4 points				*	A few drops of lubricating oil (Recommended) SAE #30).
Fig. 15	3	Front pivot yoke — 2 points				*	
	4	Cutting unit pivot pins — 4 points†		*			
	5	Steering shaft — 1 point				*	
Fig. 16	1	Traction lever assembly (under shroud) — 4 points				*	
	2	Reel drive lever assembly (under shroud) — 3 points				*	
Fig. 17	1	Rear yoke — 2 points				*	
Fig. 15	6	Reel bearings	2/Cut. Unit			*	
Fig. 16	3	Traction pulley bearings (under shroud)	1		*		
Fig. 17	2	Reel drive pulley assembly	1			*	No. 2 Multi-pupose Lithium base grease.
Fig. 18	1	Differential assembly	1			*	
Fig. 19	1	Rear wheel hub	1			*	
Fig. 20	1	Caster fork shaft	1			*	
Fig. 21	1	Traction countershaft	1		*		
	2	Axle assembly	1			*	

†**IMPORTANT:** The cutting unit pivot pins must be lubricated every 8 hours of operation or the pins will cause the units to "hang up" affecting the quality of cut.

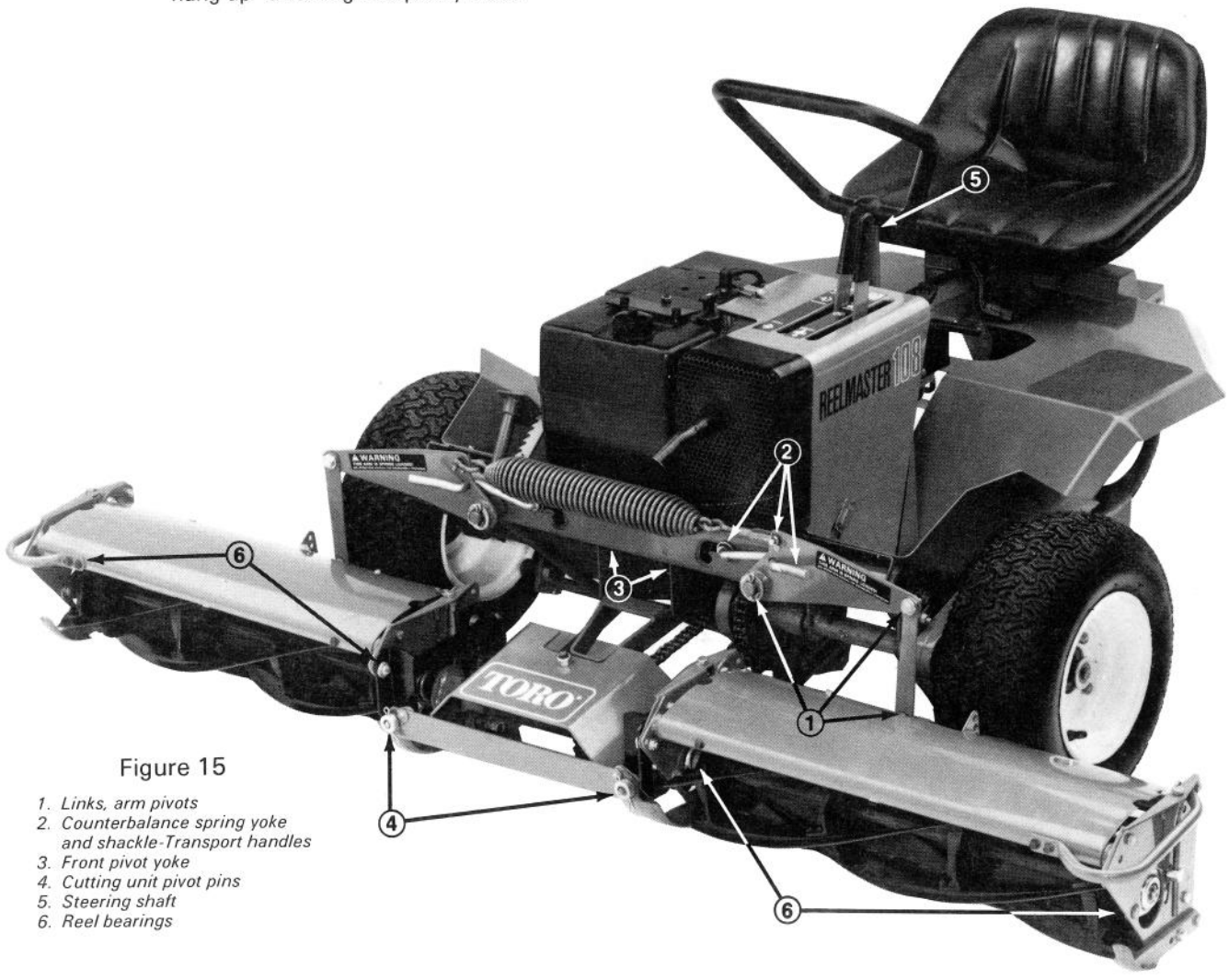


Figure 15

1. *Links, arm pivots*
2. *Counterbalance spring yoke and shackle-Transport handles*
3. *Front pivot yoke*
4. *Cutting unit pivot pins*
5. *Steering shaft*
6. *Reel bearings*

SERVICE INTERVAL CHART

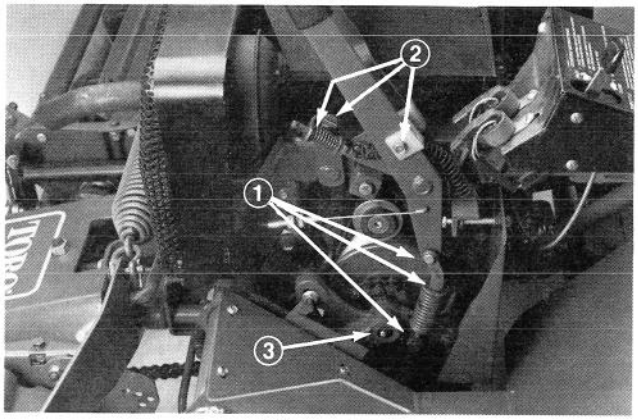


Figure 16

1. Traction lever assembly
2. Reel drive lever assembly
3. Traction pulley bearings

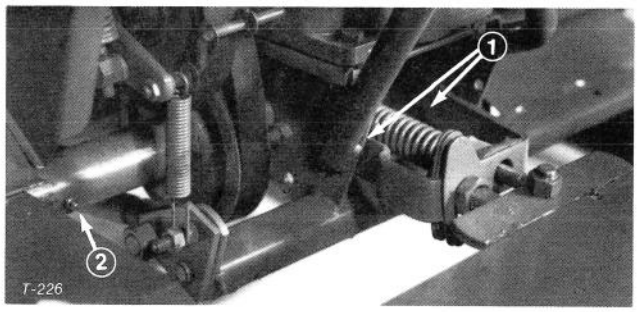


Figure 17

1. Rear yoke
2. Reel drive pulley assembly

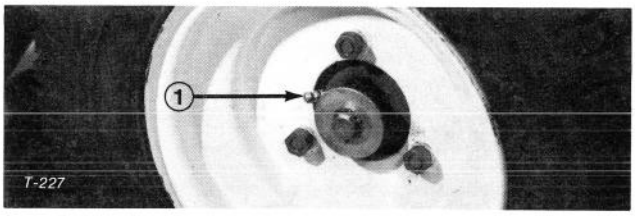


Figure 18

1. Differential assembly

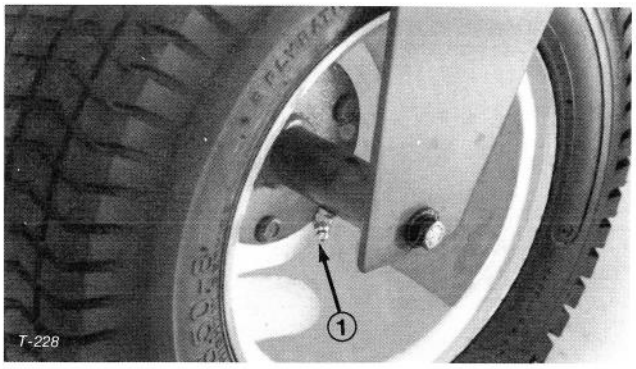


Figure 19

1. Rear wheel hub

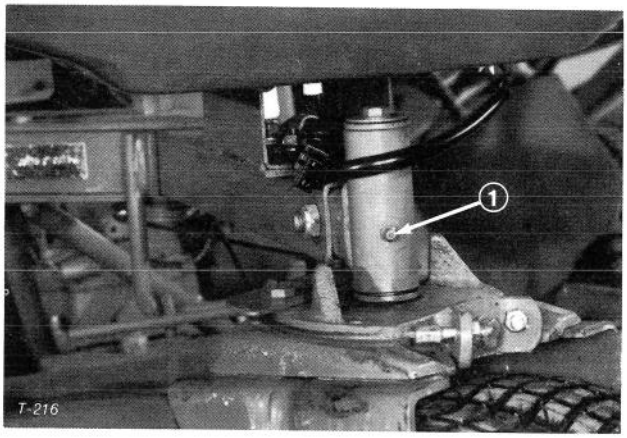


Figure 20

1. Caster fork shaft

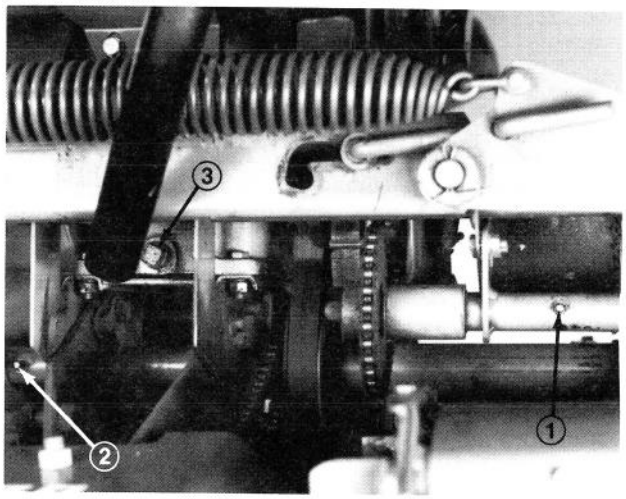


Figure 21

1. Traction countershaft
2. Axle assembly
3. Engine oil drain

LUBRICATION MAINTENANCE

Use the Service Interval Chart, page 13, as a guide to proper locations, materials and recommended service intervals. It may be necessary to service your machine more frequently under extreme conditions so that performance is kept at an acceptable level.

LUBRICATING WITH OIL

1. Lubricate with SAE 30 oil at all points which must be kept moving freely.

2. Avoid using excess oil; it will only attract contaminants which cause excessive wear and could also get onto drive belts affecting unit performance.

LUBRICATING WITH GREASE

1. Be sure to use the grease recommended in the Service Interval Chart so proper lubrication is achieved.

2. Wipe each grease fitting with a clean rag before applying grease. Wipe any excess grease away to prevent contaminant build-up after grease is applied.

3. A hand operated grease gun is best used in areas where seals are used to hold the lubricant. This allows the serviceman to get a feel for when the enclosed area is filled and prevents the seals from being damaged.

MAINTENANCE

CHANGING CRANKCASE OIL

For new engines, change oil after first 5 operating hours. Thereafter, under normal conditions, change oil after every 25 hours of engine operation. However, an engine operated in dusty or dirty conditions requires more frequent oil changes. If possible, run engine must before changing oil. Warm oil flows more freely and carries more contaminants than cold oil.

1. Place an oil drain pan below the drain plug on front of crankcase (Fig. 22). Clean area around drain plug.

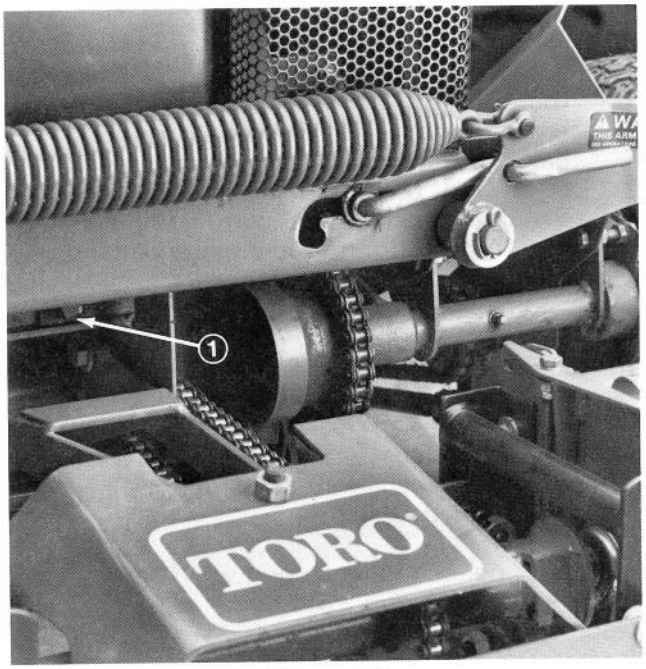


Figure 22

1. Crankcase drain oil

2. Remove drain plug and allow oil to flow into drain pan. After oil is drained, reinstall oil drain plug.

3. Remove filler cap and pour 2-1/2 pints of oil having the API "service classification" SE or SF into the filler neck. Oil viscosity — weight — is selected according to anticipated ambient temperature. Temperature/viscosity recommendations are:

   A. Above +32°F (0°C) — Use SAE 30, and if it is not available, 10W-30 or 10W-40 are acceptable substitutes.

   B. Below 32°F (0°C) — Use SAE 5W-20 or 5W-30, and if they are not available, 10W-30 or 10W-40 are acceptable substitutes.

4. Check oil and make sure level is up to the FULL mark on dipstick. Add more oil if level is low; however, DO NOT OVERFILL.

SERVICING AIR CLEANER

The foam pre-cleaner must be cleaned and re-oiled after every 25 hours engine operation if engine is operated in clean air conditions. However, air cleaner must be cleaned every few hours if operating conditions are extremely dusty or sandy.

1. Remove wing nut and cover (Fig. 23).

2. Remove foam pre-cleaner by sliding it off the paper element.

3. a. Wash foam pre-cleaner in detergent and warm water. Rinse in clean water.

   b. Wrap foam pre-cleaner in cloth and squeeze dry. Do not wring pre-cleaner.

   c. Saturate foam pre-cleaner in engine oil. Squeeze to remove excess oil.

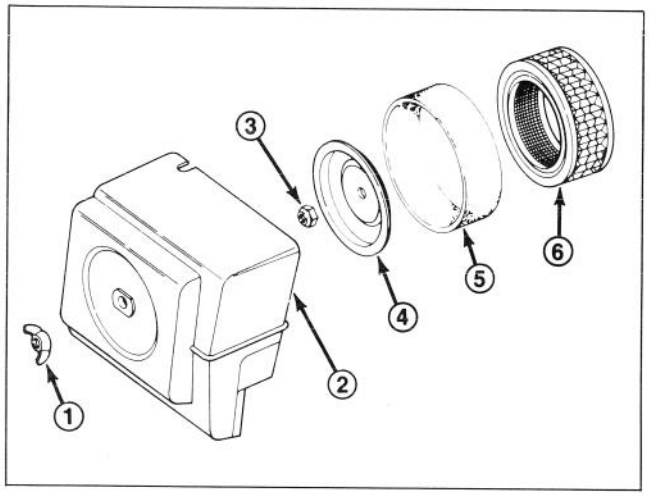


Figure 23

1. *Wing nut*
2. *Air cleaner cover*
3. *Nut*
4. *Element cover*
5. *Foam pre-cleaner*
6. *Paper element*

4. Reinstall on paper cartridge.

Inspect paper element every 50 hours of operation and replace when dirty or damaged. Do not wash paper element or do not clean with compressed air as damage will occur.

Note: With air cleaner disassembled, check air cleaner components for damage. Replace if necessary. Make sure rubber tube in base plate is securely in place or severe engine damage may occur.

5. Reinstall element with pre-cleaner, element cover seal, air cleaner element cover, nut, air cleaner cover and wing nut.

6. Tighten wing nut 1/2 to1 turn after nut contacts cover. Do not overtighten.

ADJUSTING CARBURETOR

Lack of power accompanied by black sooty exhaust smoke is usually caused by a rich carburetor setting. Since a dirty air cleaner element causes the same conditions, check it before adjusting carburetor.

IMPORTANT: Check to make sure the choke is operating correctly before the carburetor is adjusted.

1. Main fuel screw (Fig. 24) — Close screw by gently rotating it clockwise.

IMPORTANT: Do not close the screw too tight because the screw will likely be damaged.

2. Rotate — open — the main fuel screw 2 turns counterclockwise.

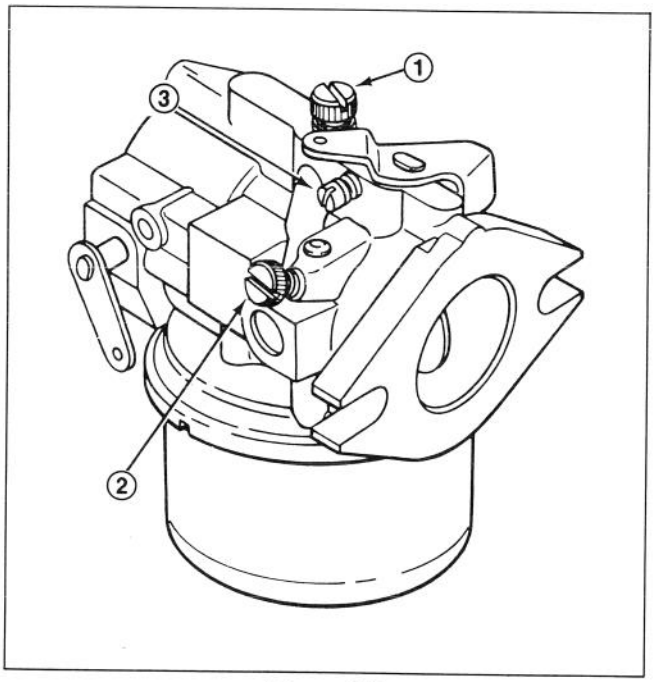


Figure 24

1. *Main fuel screw*
2. *Idle fuel adjusting screw*
3. *Idle speed screw*

3. Idle fuel adjusting screw (Fig. 24) — Close screw by gently rotating it clockwise. Open screw by rotating it 1-1/4 turns counterclockwise.

CAUTION

Engine must be running so final adjustment of the carburetor can be performed. To guard against possible personal injury, keep hands, feet, face and other parts of the body away from the muffler, other hot parts of the engine, and other moving or rotating parts of the engine. Assure cutting unit lever and traction lever are in DISENGAGE position and cutting units are on the shop floor. Also engage parking brake.

IMPORTANT: Do not close the screw too tightly because the screw will likely be damaged.

Note: These settings are approximate; however, the settings will allow engine to be started so carburetor can be fine tuned — steps 4-7.

4. Start engine and let it run for 5-10 minutes at half throttle to warm up. Engine must be warm before making final adjustments.

5. Move throttle to FAST position. Turn main fuel screw in until speed decreases and note position of

screw. Now turn screw out — the engine speed may first increase, then it will decrease as screw is turned. Note the position of screw when engine speed starts to decrease. Set the screw at the midpoint of the two positions noted.

6. To adjust idle fuel adjusting screw, follow same procedure as for main fuel but move throttle to SLOW after 5-10 minute warm up and make adjustment.

7. Idle Speed Setting (Fig. 24) — Run engine at half-throttle for 5-10 minutes to warm up. Move throttle to SLOW and set engine speed to 1200 RPM by turning the idle speed adjusting screw clockwise or counterclockwise.

CHECKING AND REPLACING SPARK PLUG

Since air gap between center and side elecrodes increases gradually during normal engine operation, check condition of electrodes at 100 hour intervals. The correct spark plug to use in the engine is Champion RH-10 or equivalent. Set air gap at .025 in.

1. Clean area around spark plug so dirt does not fall into cylinder when plug is removed.

2. Pull wire off spark plug and remove plug from cylinder head.

3. Check condition of center and side electrodes to determine operating temperature of engine.

   A. Light brown insulator tip indicates correct spark plug and heat range.

   B. Black or oily insulator tip indicates an excessively rich fuel mixture, possibly caused by a dirty air cleaner element or a carburetor that is set too rich.

   C. Light gray or blistered-white insulator indicates overheating caused by a lean carburetor setting or incorrect spark plug (heat range too high).

IMPORTANT: A cracked, fouled or dirty spark plug must be replaced. Do not sandblast, scrape or clean electrodes by using a wire brush because grit may release from the plug and enter combustion chamber resulting in engine damage.

4. After setting air gap at .025", install spark plug in cylinder head. Tighten the plug to 10-15 ft-lb. Push wire onto spark plug.

CLEANING CYLINDER HEAD FINS

To avoid overheating and possible engine damage, cooling fins on cylinder head must be kept clean.

REPLACING FUEL FILTER

An in-line filter is incorporated into the fuel line. Use the following procedures should replacement become necessary:

1. Close fuel shut-off valve.

2. Clamp both fuel lines that connect to the fuel filter so gasoline cannot drain when lines are removed.

CAUTION

Since gasoline is highly flammable, drain it outdoors and make sure engine is cool to prevent a potential fire hazard. Wipe up any gasoline that may have spilled. Do not drain gasoline near any open flame or where gasoline fumes may be ignited by a spark. Do not smoke a cigar, cigarette, or a pipe when handling gasoline.

3. Loosen the hose clamps at both ends of the filter and pull fuel lines off filter.

4. Slide hose clamps onto ends of fuel lines. Push fuel lines onto fuel filter and secure them with hose clamps. Be sure arrow on side of filter points toward the fuel carburetor.

TRACTION DRIVE CONTROL

The clevis has been adjusted at the factory for proper position when belts and pulleys are new. As these parts wear, the clevis will position itself closer to roll pin. Contact between the inner surface of clevis and roll pin in the engage position will result in loss of traction. When this occurs, proceed as follows:

1. Remove shroud.

2. Remove cotter pin and clevis pin and swing clevis rearward to disengage from casting (Fig. 25).

3. Turn clevis counter clockwise three turns.

4. Reinstall clevis and fasten with clevis pin and cotter pin (Fig. 25).

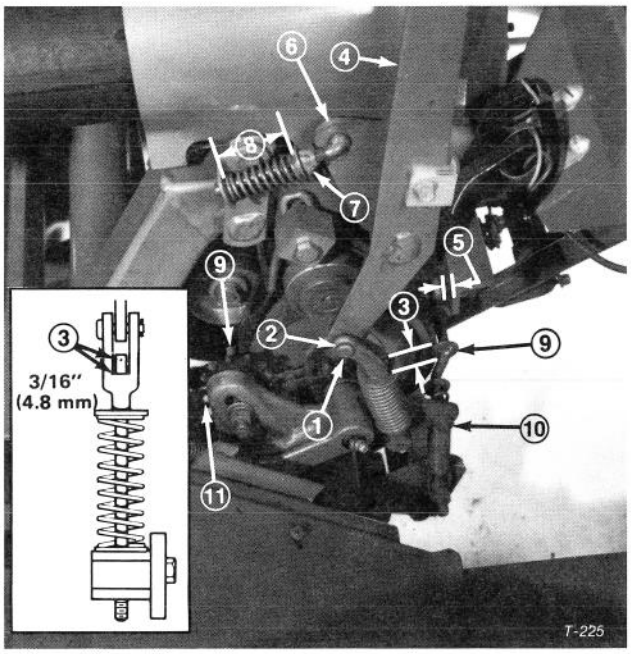


Figure 25

1. *Cotter & clevis pin*
2. *Clevis*
3. *3/16 in. (4.8 mm)*
4. *Traction control lever*
5. *11/32 in. (8.73 mm)*
6. *Cuting unit control lever*
7. *Nut*
8. *1-1/8 in. (28.6 mm)*
9. *Belt guides*
10. *Belt guide nuts*
11. *Chain idler sprocket*

5. This will provide original 3/16 in. (4.76 mm) clearance between pin and clevis with traction control lever in forward position with bolt length 11/32 in. (8.73 mm) for proper over center condition of lever (Fig. 25).

6. Install shroud.

CUTTING UNIT DRIVE BELT ADJUSTMENT

1. Remove shroud.

2. Move cutting unit lever to ENGAGED position (Fig. 25).

3. Adjust nut until spring length is 1-1/8 in. (28.6 mm) (Fig. 25).

4. Move cutting unit lever to DISENGAGED position and install shroud.

BELT GUIDES

To prevent belt from misaligning, adjust guides as follows:

1. Remove shroud.

2. Place cutting unit and traction control levers in ENGAGED positions (Fig. 25).

3. Loosen nuts securing guides (Fig. 25). Take care when loosening front nut so chain sprocket does not change position (Fig. 25).

4. Adjust each guide until there is between 0.050-0.070 in. (1.27-1.78 mm) clearance (thin dime) between belt and guide.

5. Hold guides in position and tighten nuts to secure adjustment (Fig. 25).

6. Move cutting unit and traction control levers to the DISENGAGED position and install shroud.

CUTTING UNIT ADJUSTMENTS

CAUTION

DO NOT ADJUST CUTTING UNITS WHILE REELS AND ENGINE ARE OPERATING. Stop reels and shut engine off when adjustment is necessary.

Reel Adjustment:

1. To adjust reel toward bedknife for proper cutting, turn hex head bolt on each end of cutting unit counterclockwise no more than 1/6 turn (one flat of bolt head) (Fig. 26).

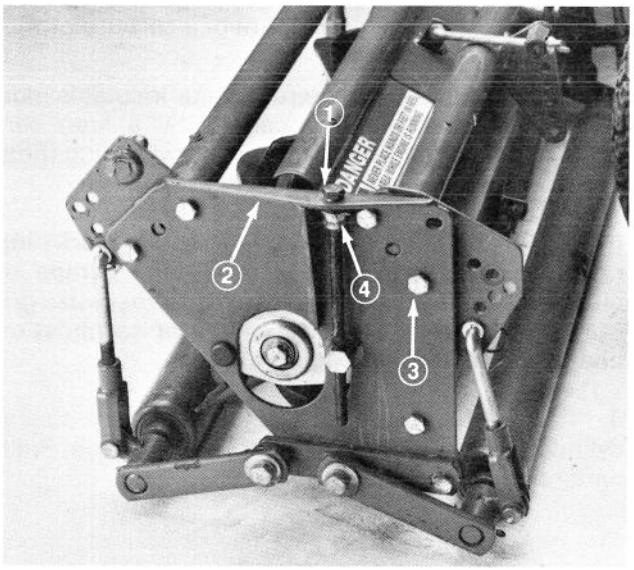


Figure 26

1. *Reel adjustment bolt (2)*
2. *Side plate flange*
3. *Adjusting block (locknut on opposite side)*
4. *Spring washer and jam nuts*

2. Tap, with soft-headed hammer, on bolt head to insure seating of bolt head against side plate flange. A 1/6 turn of bolt will lower the reel approximately 0.004 in. (0.102 mm).

3. Turn reel over by hand (using play between drive ball and drive shaft) to check for proper adjustment. Adjust locknut securing adjusting block on inside of side plate to eliminate any clearances (Fig. 26).

Height-of-Cut: Height of cut is adjustable from 1/2 to 2-1/4 in. (13 to 57 mm) (Fig. 27).

1. To set height-of-cut, remove hairpin cotter from links on each cutting unit and move links (Fig. 27).

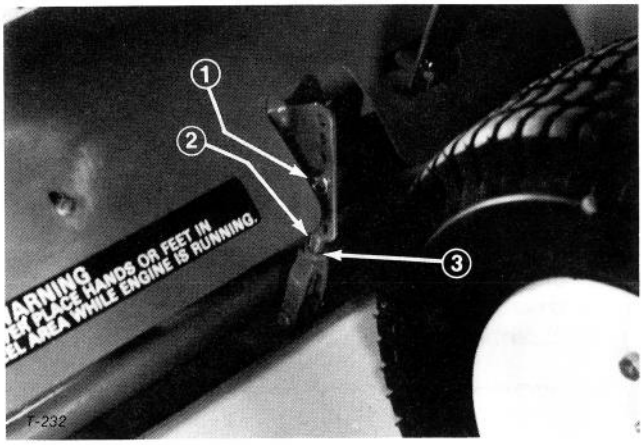


Figure 27

1. *Hairpin cotter*
2. *Adjustment link*
3. *Jam nut*

2. Make sure all links are in same hole position to maintain same relative height-of-cut position between cutting units.

3. Cutting units can be more finely adjusted to either level a unit, more closely match height setting with the other units or adjust to an intermediate setting. Loosen jam nut on links, remove hairpin cotter and remove link from hole (Fig. 27).

4. Turn link either in or out to achieve desired setting, install link into hole and tighten jam nut (Fig. 27).

5. Compare height-of-cut of cutting units by setting units on a level surface and measuring from level surface to cutting edge of bedknife at each end of the unit.

INDIVIDUAL CUTTING UNIT ATTITUDE ADJUSTMENT

The top flange of the side plates of the cutting units should be parallel with a flat level surface or cutting performance will be deteriorated (Fig. 28). Also, due to normal wear of the reel and bedknife, the drive balls on reel shafts of the front units will drop below the centerline of the pivots. This affects pivot action of the balls and causes excessive wear on the drive balls. If this condition is allowed to continue, the reel drive shaft will come into contact with the intermediate frame. Periodically check for this condition and readjust as follows:

1. Reposition flange of units by:

   A. Loosen nut at front of unit and capscrews at rear securing pivot frame (Fig. 28).

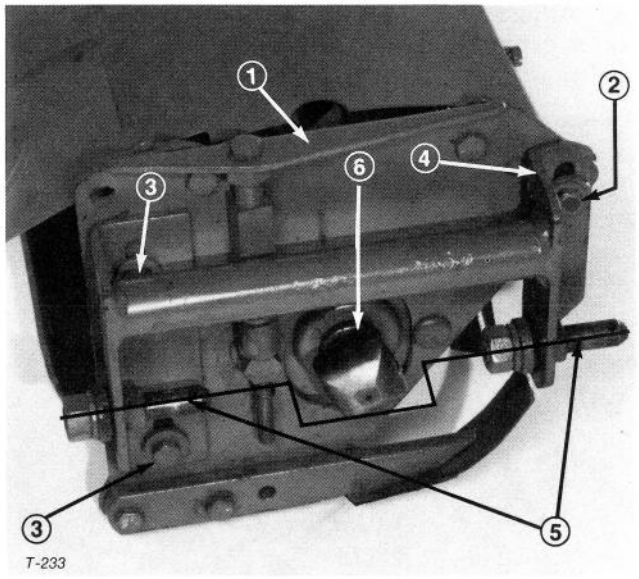


Figure 28

1. *Cutting unit flange*
2. *Nut*
3. *Capscrews*
4. *Pivot frame*
5. *Pivot pins*
6. *Reel shaft drive ball — must be aligned with centerline of pivot pins*

   B. Adjust pivot frame until flange is parallel, placing unit at proper attitude (Fig. 28).

   C. Tighten capscrews and nut to secure adjustment (Fig. 28).

2. To align drive ball with pivot pins:

   A. Be sure unit is on a level surface.

   B. Loosen nut and capscrews securing pivot frame and adjust pivot frame until pivot pins centerlines are aligned with center of drive ball (Fig. 28).

   C. Tighten capscrews and nut to secure adjustment (Fig. 28).

CUTTING UNIT ATTITUDE

The attitude of each machine is factory set and should never have to be reset. However, if replacement of cutting units or adjustment of pivot frame is needed, the attitude must be reset as follows:

1. Place cutting units in height-of-cut position most often used.

2. Disconnect front and rear cutting unit drive chains.

3. Adjust cutting unit attitude by lengthening or shortening center ball joints in front and rear yokes (Fig. 29, 30).

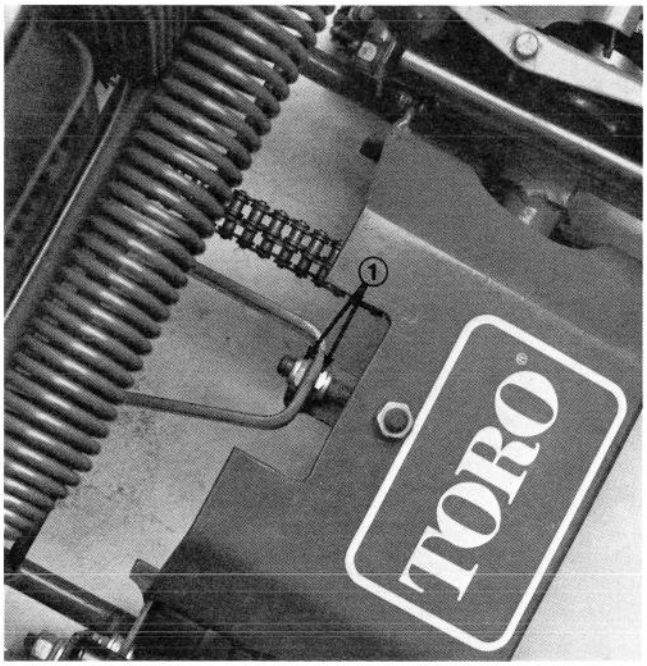


Figure 29

1. Front ball joint adjusting nuts

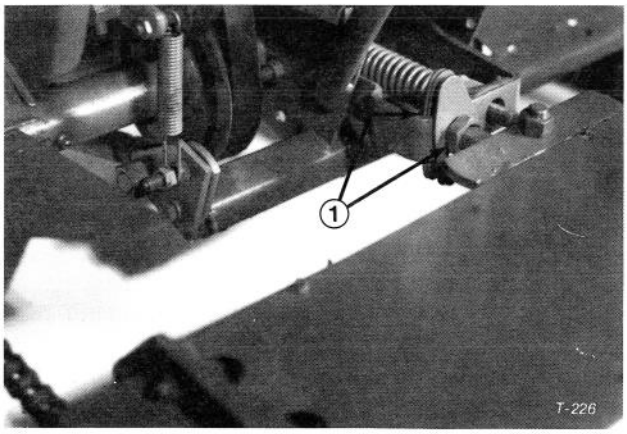


Figure 30

1. Rear ball joint adjusting nuts

4. Tighten nuts securely on both front and rear yokes.

5. Connect front and rear drive chains. Check chain tension and adjust, if necessary; refer to Cutting Unit Chain Adjustments, page 21.

FRONT COUNTERBALANCE SPRING

Adjust the front spring to equalize weight across the cutting units, to fit turf conditions, mowing speed, operator technique and height-of-cut changes.

CAUTION

FRONT COUNTERBALANCE SPRING is under extreme tension when arms are extended. GRASP SUPPORT ARMS when releasing links from cutting units (Fig. 31).

REAR COUNTERBALANCE SPRING — Turn adjusting nut (Fig. 32) counterclockwise to release tension when disassembling counterbalance spring assembly.

If inside end of No. 2 or 3 cutting unit is riding too light:

1. Decrease spring tension; loosen jam nut securing hook eye (Fig. 31).

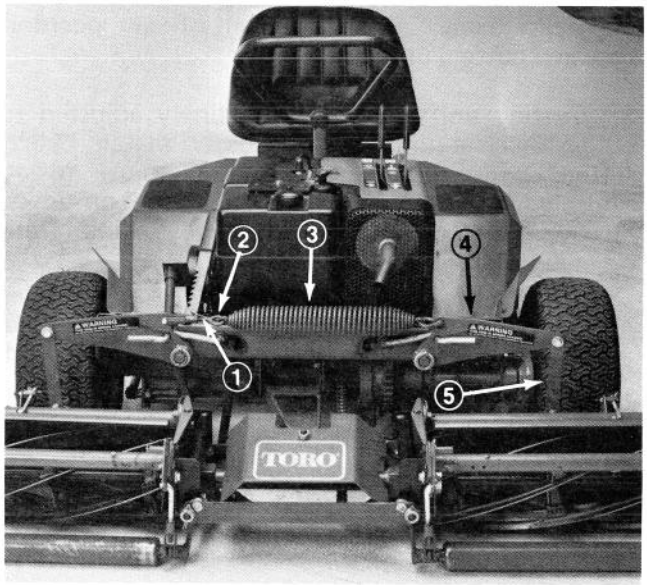


Figure 31

1. *Jam nut*
2. *Hook eye*
3. *Counterbalance spring*
4. *Support arm*
5. *Link*

2. Turn hook eye clockwise (Fig. 31).

3. Adjust in small increments, tightening jam nut and mowing with unit between adjustments until machine is performing acceptably.

If inside end of No. 2 or 3 cutting unit is riding too heavy or hugging the ground:

1. Increase spring tension; loosen jam nut securing hook eye (Fig. 31).

2. Turn hook eye counterclockwise (Fig. 31).

3. Adjust in small increments, tightening jam nut and mowing with unit between adjustments until machine is performing acceptably.

Note: Under most conditions, the cutting units will perform best when spring length is 4-1/4 in. (10.8 cm) extended from its relaxed position. To measure differential:

A. Remove cotter pins securing links to cutting units (Fig. 31).

B. Grasp each support arm firmly and remove links from cutting units (Fig. 31).

C. Measure length of spring in relaxed position, note length and install and secure links back onto cutting units (Fig. 31).

D. Measure spring length. If increase in length is less than 4-1/4 in. (10.8 cm), increase length; refer to procedures outlining corrections for units riding too heavy or hugging ground.

If increase in length is more than 4-1/4 in. (10.8 cm), decrease length; refer to corrective procedures if No. 2 or 3 cutting unit is riding too light on inside end of unit.

REAR COUNTERBALANCE SPRING

The rear counterbalance spring length is factory set at 4-1/4 in. (10.8 cm), which is the measurement from washer to washer (Fig. 32). This measurement is usually adequate for most conditions. Should an adjustment be necessary, use the following procedures:

If left end of rear cutting unit is cutting lower than right end:

1. Turn adjusting nut counterclockwise to decrease spring tension (Fig. 32). Turn until both ends are equal in height.

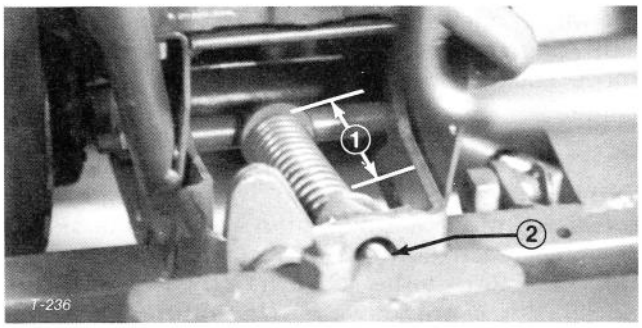


Figure 32

1. 4-1/4 in. (10.8 cm)
2. Adjusting nut

2. Mow with unit to check adjustment. Adjust further, if necessary.

If left end of cutting unit is cutting higher than right end:

1. Turn adjusting nut clockwise to increase spring tension (Fig. 32). Turn until both ends are equal in height.

2. Mow with unit to check adjustment. Adjust further, if necessary.

CUTTING UNIT CHAIN ADJUSTMENTS

Chain adjustments should be made when chains can be squeezed together with fingers and come within 1/2 in. (13 mm) of touching. At this point, moving one set of shims should sufficiently tighten chain.

Adjust as follows:

Front Cutting Unit Drive

1. Remove screws, washers and locknuts securing shims to intermediate frame at each corner of frame (Fig. 33).

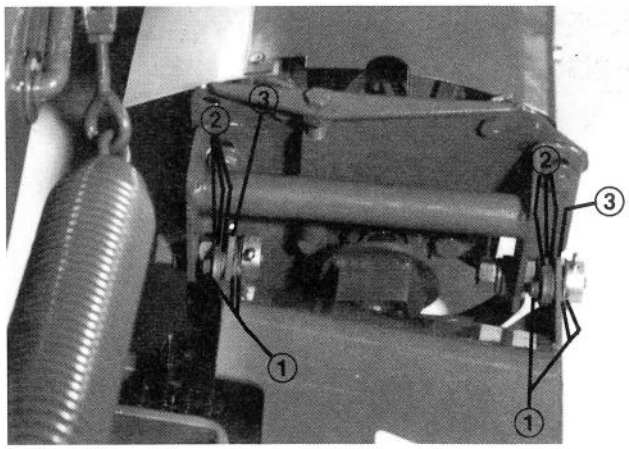


Figure 33

1. Screws, washers & locknuts
2. Shims
3. Intermediate frame

2. Move one shim at each corner from original side of frame to the opposite side. This will move each cutting unit forward and tighten the chain.

3. Check chain tension. If chain still comes within 1/2 in. (13 mm) of touching when squeezed, move another shim to opposite side of frame at each corner and recheck chain tension. Continue until either chain is properly tensioned or all shims are moved to opposite side. If all shims are on opposite side, but tension is still too slack, chain must be shortened; refer to Shortening Chain, page 22.

If tension is correct, install screws, washers and locknuts and continue operation (Fig. 33).

Rear Cutting Unit Drive

1. Remove screws and locknuts securing rear center and rear side shims (Fig. 34, 35).

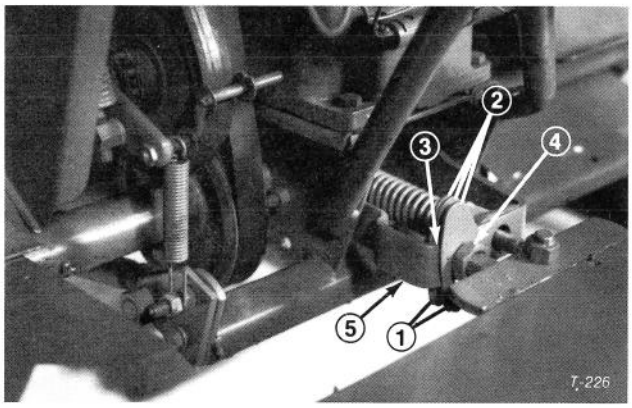


Figure 34

1. Screws & locknuts 4. Locknut
2. Shims 5. Yoke
3. Jam nut

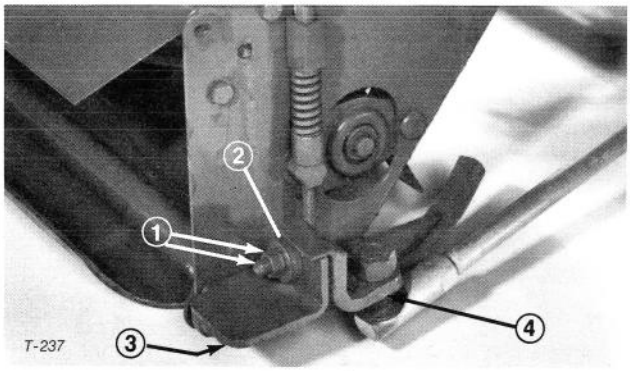


Figure 35

1. Screw & locknut 3. Hanger
2. Shims 4. Support

2. Move one shim from spring side of yoke to opposite side (Fig. 34).

3. Insert shim between locknut and yoke (Fig. 34). Locknut may be slightly loosened during this procedure and then tightened. However, be sure jam nut does not rotate or cutting unit attitude will be affected and height-of-cut slightly changed (Fig. 34).

4. Insert a shim between the hanger and support on each side of the cutting unit (Fig. 35).

5. Check chain tension. If chain still comes within 1/2 in. (13 mm) of touching, add another shim at each of the three points and recheck tension. Continue until chain is properly tensioned or all shims have been moved. If all shims have been moved, but chain is still too slack, chain must be shortened; refer to Shortening Chain, page 21. If tension is correct, install screws and locknuts and continue operation (Fig. 34, 35).

Shortening Chain

Front:

1. Move shims back to original side of intermediate frame (Fig. 33).

2. Remove chain from mower and remove (1) one chain link.

3. Install (1) one offset link. Offset link may be obtained from your Toro Distributor.

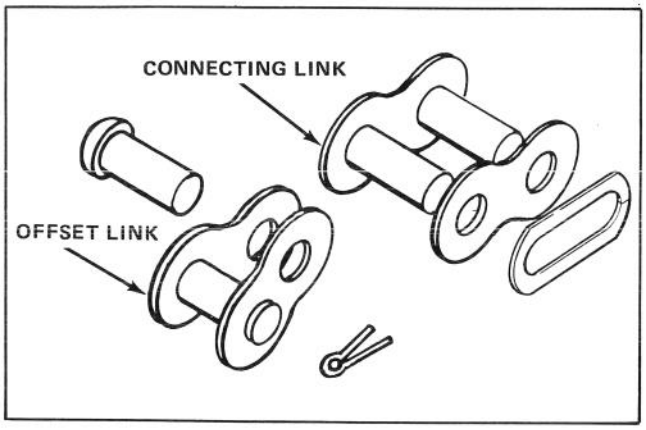


Figure 38

4. Install chain and check tension. If tension is incorrect, move shims to opposite side of intermediate frame at all four corners; refer to Front Cutting Unit Drive, page 21. If tension is correct, secure shims with screw, washers and locknut and continue operation.

Rear:

1. Move shims back to original position at all three points (Fig. 34, 35).

2. Remove chain from mower and remove (1) one chain link.

3. Install (1) one offset link. Offset link may be obtained from your Toro Distributor.

4. Install chain and check tension. If tension is incorrect, move shims to opposite side of center yoke and between hanger and support at each side of cutting unit; refer to Rear Cutting Unit Drive, page 22. If tension is correct, secure shims with screws and locknuts and continue operation (Fig. 34, 35).

TRACTION DRIVE CHAIN ADJUSTMENT

1. Remove shroud.

2. Loosen nut securing sprocket and belt guide (Fig. 37).

3. Slide sprocket down in slot until chain is snug (Fig. 37).

4. Hold sprocket in position and tighten nut.

5. Check belt guide for proper clearance with belt; refer to Belt Guides, page 16.

6. Install shroud.

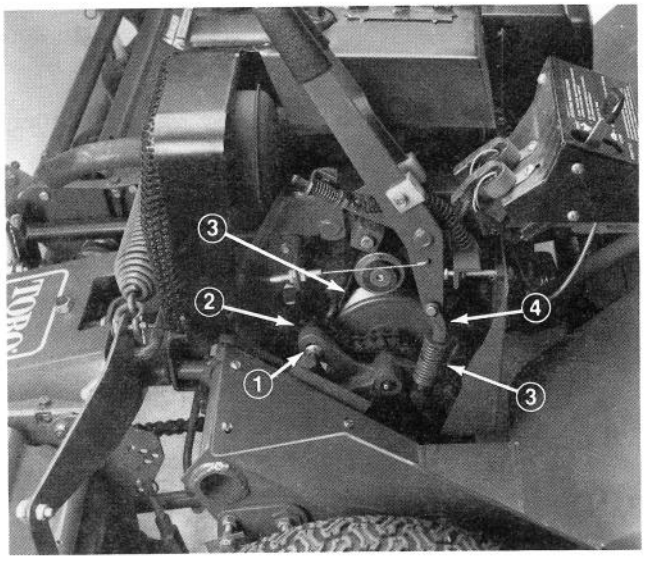


Figure 37

1. Nut
2. Sprocket
3. Belt guides
4. Traction belt

TRACTION BELT REPLACEMENT

1. Remove Shroud.

2. Loosen belt guides (Fig. 37).

3. Either cut belt or work it off end of engine and traction drive pulleys and slide it edgewise between traction and reel drive pulleys (Fig. 37).

4. Slide replacement belt between traction and reel drive pulleys, work it onto traction and engine pulleys and align grooves in belt with grooves in pulleys.

5. Adjust belt guides; refer to Belt Guides, page 18.

6. Check belt tension and readjust if required, refer to Traction Drive Control, page 17.

7. Install shroud.

DIFFERENTIAL DRIVE CHAIN ADJUSTMENT

1. Place machine on a level surface, raise left wheel and place blocks under machine.

2. Remove left wheel assembly (Fig. 38).

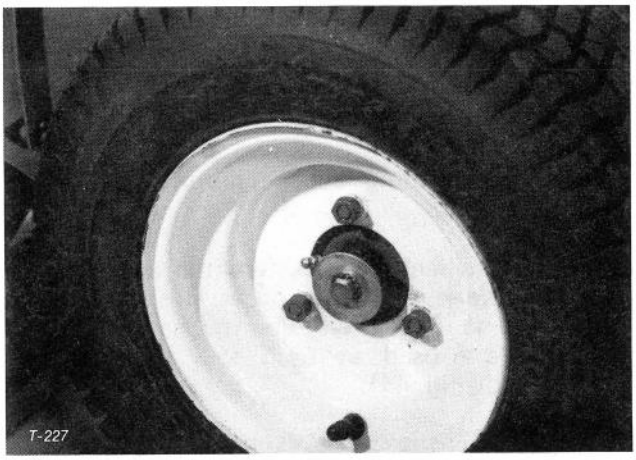


Figure 38

3. Remove chain guard (Fig. 39).

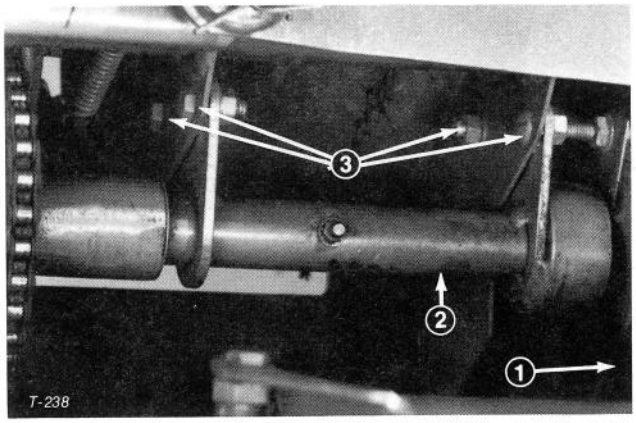


Figure 39

1. Chain guard
2. Traction countershaft
3. Capscrews, locknuts, truss head screw

4. Loosen capscrews, locknuts and truss head screw securing traction countershaft to frame (Fig. 39).

5. Rotate countershaft in a forward direction until chain is snug, but not taut.

6. Make sure chain sprockets are in alignment and tighten fasteners (Fig. 39).

7. Install chain guard and wheel and remove blocks from under machine.

CUTTING UNIT DRIVE BELT REPLACEMENT

1. Place machine on a level surface, raise wheels and place blocks under frame members.

2. Remove the traction belt; refer to Traction Belt Replacement, page 23, items 1-3.

3. Remove capscrew, hub cap and lockwasher from right hand axle and remove wheel and hub assembly from axle shaft. Also remove key and thrust washer.

4. Remove differential chain guard from left side of machine (Fig. 39).

5. Locate connecting link in differential chain and disconnect chain.

6. Pull left wheel, hub, differential and axle out (Fig. 40). Keep track of spacer washers used at each end of reel drive countershaft so exact quantities are used at each end when unit is re-assembled (Fig. 41).

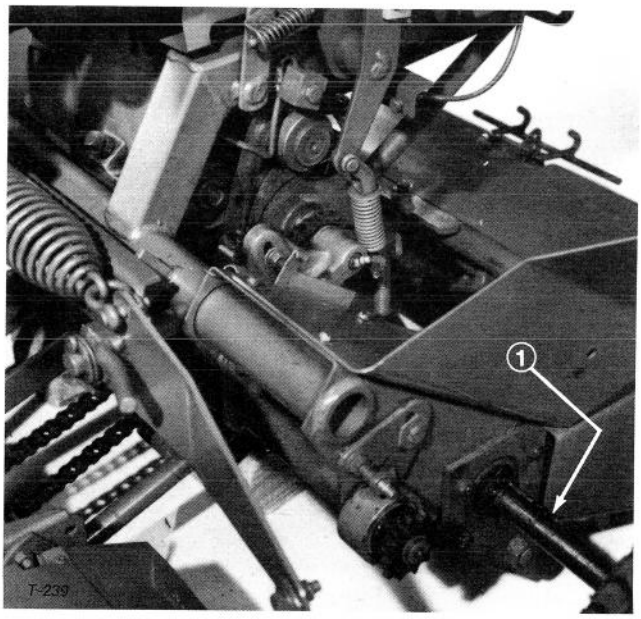


Figure 40

1. Left wheel, hub, differential & axle

7. Disconnect front cutting unit drive chain, remove and replace cutting unit drive belt (Fig. 41).

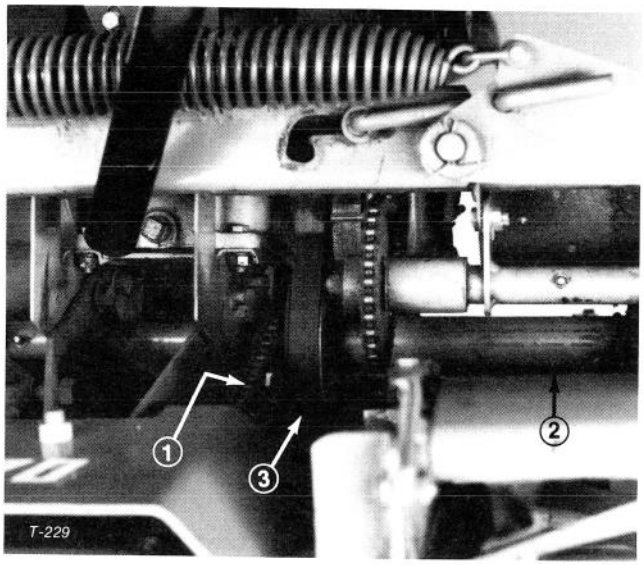


Figure 41

1. Front cutting unit drive chain
2. Reel drive countershaft
3. Reel drive belt

8. Assemble machine in reverse order. Make sure all belts and chains are in alignment. If all are misaligned, an improper number of spacer washers have been installed at each end of reel drive countershaft. Remove countershaft and correct, if necessary.

9. Readjust belt tension if required; refer to Cutting Unit Drive Belt Adjustment, page 18.

SEAT ADJUSTMENT

1. Remove two flange nuts and capscrews securing seat base to sulky frame.

2. Move seat forward or rearward to desired position, align seat base and sulky frame holes and install capscrews in from bottom.

3. Install wire harness clamp over forward capscrew, install and tighten flange nuts to secure seat base to frame.

STEERING CABLE ADJUSTMENT

Steering cable tension should be adjusted whenever play is felt in the steering wheel. A loose steering cable will make it difficult to steer a straight line. However, overtightening cables will cause undue wear to pulleys and cause the cable to stretch and fail prematurely. To adjust cable:

1. Secure cable end hex with open end wrench (Fig. 42).

2. Turn nut on cable end until slack is removed. Repeat procedure on remaining cable end (Fig. 42).

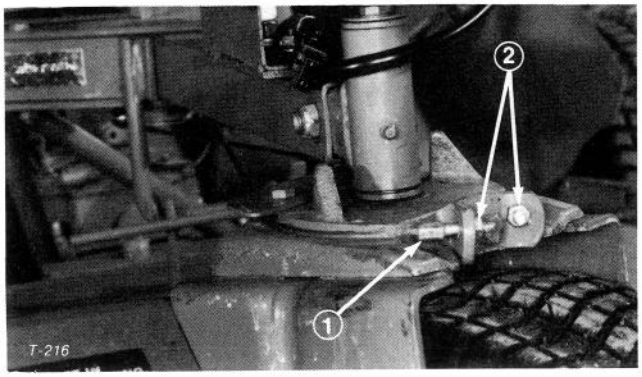


Figure 42

1. Cable hex
2. Adjusting nuts

CUTTING UNIT SHARPENING

Backlap Operation

Backlap when reel blade and bedknife edges are slightly rounded and do not cut the grass cleanly with a light reel to bedknife adjustment. Also backlap after a reel and bedknife have been reground to establish a land area and assure a perfect match between reel and bedknife cutting edges. Backlapping will not correct nicked or severely rounded reel blades or uneven bedknife wear. Correct these conditions by repairing, replacing or regrinding the components.

1. Using a fine-tooth file, remove high spots from reel blades. If any blade is bent, straighten by placing a hammer on one side of blade and tapping on opposite side.

2. Adjust the reel to bedknife to obtain a light contact; refer to Reel Adjustment, page 18.

3. Connect a lapping machine to the cutting unit.

4. Use a good grade of medium grit (80) commercial lapping compound with a water soluble carrier to assure the compound will be easily washed away at the completion of the backlapping operation. Dry lapping compound should be mixed with liquid detergent (soap) until the material is of free flowing consistency.

Note: Paste-type pre-mixed lapping compound is also sold in some areas. This is generally used in its original composition and therefore is not free flowing.

5. Operate the lapping machine so the reel turns in a reverse direction for about three minutes. Apply lapping solution continuously with a paint brush across the full width of the reel.

CAUTION

Be careful when lapping the reel because contact with the reel or other moving parts can result in personal injury.

6. Again, lightly adjust the bedknife and reel. Then, lap for approximately two additional minutes. Apply lapping solution continuously.

Wash off all lapping solution.

7. Using newspaper, check for sharpness along the entire length of each reel blade. If the newspaper cannot be cut cleanly along the entire length of each blade, grinding or re-grinding is necessary; refer to Reel and Bedknife Grinding, page 25.

REEL AND BEDKNIFE GRINDING

Bedknife Grinding

Your Reelmaster 108 is equipped with hard coated bed knives. This hard coating process is a very hard layer of stellite material applied to the front face of the knife. This will help keep your Reelmaster 108 sharper longer. DO NOT GRIND THE HARD COATED FACE OF THE KNIFE. If the bed knife is ever replaced, it may be necessary to grind the reel.

An aluminum oxide grinding stone such as Norton's grade 23A46-N5B5 is recommended. This is a medium grit stone which will not "load up" as quickly as a hard stone. A silicone carbide stone will wear out quickly and is not recommended.

Reel Grinding

For detailed sharpening information, order the TORO REEL and ROTARY MOWER SHARPENING MANUAL, Form no. 80-300-PT, from the Commercial Service Department.

ADJUSTING INTERLOCK SWITCHES

Use the following procedures should a switch need adjustment or replacement:

1. Remove shroud from around traction and cutting unit levers and position traction lever in N (NEUTRAL) and cutting unit lever is DISENGAGE position (Fig. 43).

2. Loosen the nuts securing the mounting cap-screws for the control panel and adjust control panel

so both switch levers contact the insulation blocks and are deflected 3/8 in. (10 mm). Tighten the nuts and capscrews (Fig. 43).

3. Loosen round head screw securing reel drive lever switch (Fig. 43). Move cutting unit lever switch in slotted hole in control panel to further deflect switch lever. Adjust until contact is lost between switch and cutting unit lever when top of lever (handle end) is moved 1/2 - 3/4 in. (13 - 19 mm) and tighten round head screw.

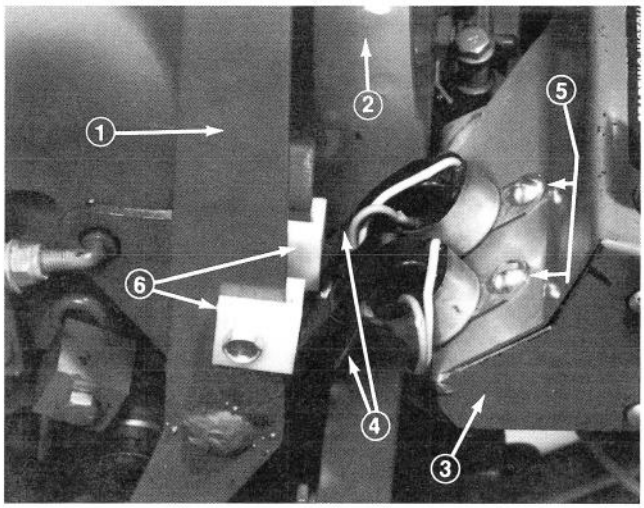


Figure 43

1. Traction drive lever
2. Cutting unit lever
3. Control panel
4. Switch levers
5. Round head screws
6. Insulation blocks

4. Check interlock system: refer to Checking Operation of Interlock Switches, page 10. Re-adjust as necessary.

5. Install shroud.

PARKING BRAKE ADJUSTMENT

If parking brake lever does not disengage from brake pedal when traction control is engaged, an adjustment is required.

1. Remove shroud.

2. Engage traction control lever.

3. Cable connected to traction control lever should be tight but not pulling lever away from stop screw (Fig. 44).

4. Adjust jam nuts until desired cable tension is attained. Recheck adjustment.

ADJUSTING SERVICE BRAKES

Adjust the service brake when there is more than one inch of "free travel" of the brake pedal, or when the brake does not work effectively. Free travel is the distance the brake pedal moves before braking resistance is felt. This adjustment can be performed by adjusting the brake lever adjusting screw.

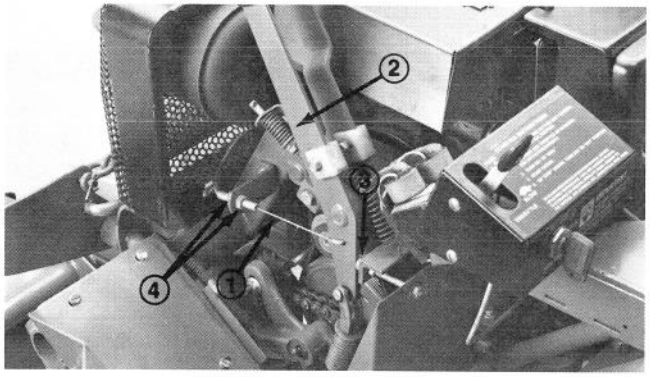


Figure 44

1. Cable
2. Traction control lever
3. Stop screw
4. Jam nuts

1. Locate adjusting screw below brake lever assembly (Fig. 45).

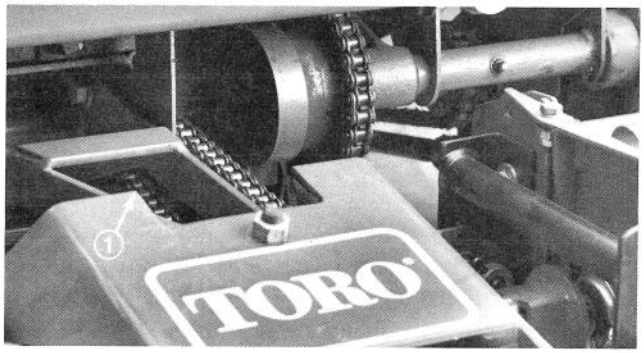


Figure 45

1. Adjusting screw location

2. Hold jam nut above spring and rotate screw into clevis to reduce free travel of brake pedal (Fig. 46). Reverse procedure to increase pedal free travel.

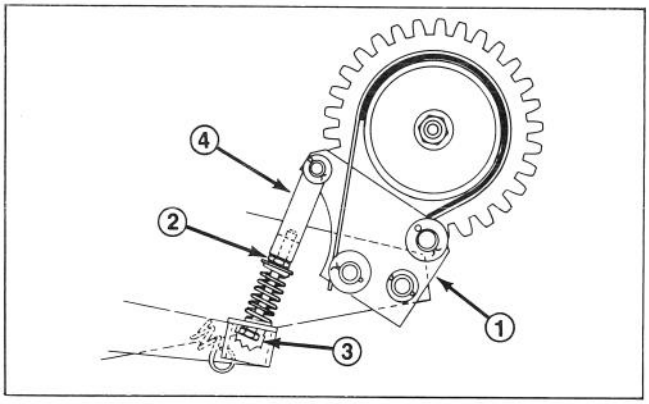


Figure 46

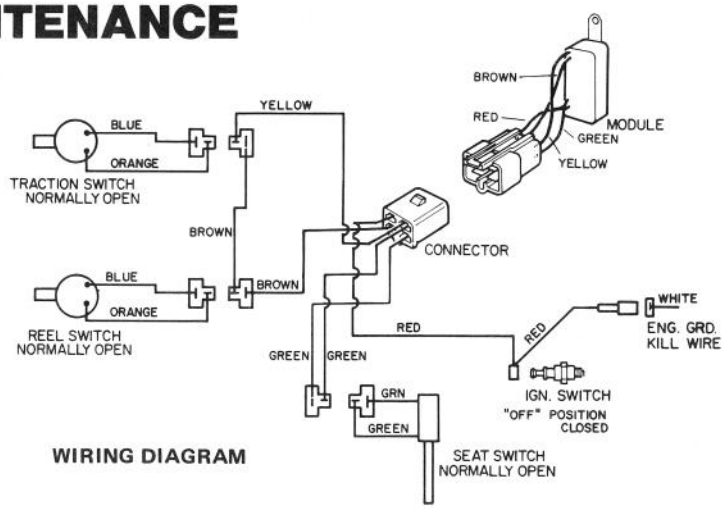
1. Brake lever assembly
2. Jam nut
3. Adjusting screw
4. Clevis

3. Check brake operation and readjust if required.

Note: To avoid drag on drum, do not overtighten.

ELECTRICAL TROUBLE SHOOTING

IMPORTANT: Before troubleshooting interlock system, assure all wires are connected correctly and making good contact. Check for short circuits between wires and other parts. Repair short circuits before troubleshooting any problem.



WIRING DIAGRAM

Condition	Cause	Correction
Engine fails to start or run.	1. Defective key switch 2. Electrical wire grounded to vehicle 3. Switches incorrectly positioned at control levers for traction or cutting unit drive. 4. Connectors for switches not making contact because of corrosion or disconnected. 5. Engine trouble or out of fuel. 6. Defective interlock module.	1. Replace switch. 2. Check wires for damaged, exposed, or pinched condition. 3. Adjust so that switches are "closed" when controls are in neutral position: refer to Adjusting Interlock Switches, pg. 26 4. Remove corrosion, protect terminals with skin-over grease. Make connection. 5. Determine problem and correct. 6. Replace.
Engine does not stop with control levers engaged and operator off seat. (Except reverse which is deadman control.)	1. Interlock module not grounded to frame. 2. Wire disconnected between interlock module, key switch and engine terminal. 3. Defective seat switch. 4. Defective or deteriorated seat cushion. 5. Switches at control levers for traction and cutting units not adjusted properly. 6. Defective interlock module.	1. Remove paint or other obstruction, at attachment fastener, to insure electrical ground. 2. Check for broken or damaged wires. Check all connectors for electrical contact. 3. Check electrical continuity of switch. Should be "normally open" with operator off seat, "normally closed" when activated. Replace switch if necessary. 4. Examine cavity in seat cushion to make certain operation of switch is not impaired. 5. Adjust so that switches are "closed" when controls are in neutral position: refer to Adjusting Interlock Switches, pg. 26. 6. Replace.
Engine stops regardless of control lever positions	1. Switches at control levers for traction and cutting units not adjusted properly. 2. Defective interlock module. 3. Defective key switch. 4. Engine trouble or out of fuel.	1. Adjust so that switches are "closed" when controls are in neutral position: refer to Adjusting Interlock Switches, pg. 26 2. Replace. 3. Replace. 4. Determine problem and correct.
Engine "cuts-out" when operator is on seat.	1. Operator not seated on seat correctly. 2. Seat is not positioned properly for operator. 3. Operator traveling too fast on rough terrain.	1. Instruct operator to sit back in seat. 2. Reposition seat. 3. Slow vehicle speed so that operator remains seated.
Engine does not stop when key is rotated to "OFF" position.	1. Key switch not properly grounded. 2. Wire disconnected between interlock module, key switch and engine terminal.	1. Remove paint or foreign material to insure ground. 2. Check for broken or damaged wires. Check all connectors for electrical contact.

STORAGE INSTRUCTIONS

If you wish to store the Reelmaster 108 for a long period of time, the following steps should be accomplished prior to storage:

1. Remove accumulations of dirt and old grass clippings. Sharpen reels and bedknives, if necessary: refer to Cutting Unit Sharpening, page 23. Use a rust preventive on bedknives and reel blades. Grease and oil all lubrication points: refer to Lubrication, page 15.

2. Block up wheels to remove tire weight.

3. Relieve tension on all belts and springs.

4. All fuel should be removed from fuel tank; run the engine until it stops from lack of fuel.

5. While engine is still warm, drain oil from crankcase. Refill with fresh oil.

6. Remove spark plug, pour 1 ounce (30 ml) of SAE-30 oil into cylinder and crank slowly to distribute oil. Replace spark plug.

7. Clean dirt and chaff from cylinder, cylinder head fins and blower housing.

8. If possible, store in a warm, dry location.

IDENTIFICATION AND ORDERING

MODEL AND SERIAL NUMBERS

The Reelmaster 108 has two identification numbers: a model number and a serial number. These numbers are stamped into a plate. The identification plate is located on the frame to the left of the steering post. In any correspondence concerning the machine, supply the model and serial numbers to be sure correct information and replacement parts are obtained.

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

1. Model and serial numbers of the machine.

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

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

MAINTENANCE RECORD

Date	Hours Used	Oil Change	Air Cleaner Service	Lubrication	Cutting Unit Maintenance	Winter Storage	Spring Service	Spark Plug

MAINTENANCE RECORD

Date	Hours Used	Oil Change	Air Cleaner Service	Lubrication	Cutting Unit Maintenance	Winter Storage	Spring Service	Spark Plug

MAINTENANCE RECORD

Date	Hours Used	Oil Change	Air Cleaner Service	Lubrication	Cutting Unit Maintenance	Winter Storage	Spring Service	Spark Plug

The Toro Promise

A ONE YEAR LIMITED WARRANTY ON COMMERCIAL PRODUCTS OTHER THAN TRIMMERS AND BLOWERS.

The Toro Company promises to repair your TORO Product if defective in materials or workmanship. The following time periods from the date of purchase apply:

Commercial Products	1 Year
Trimmers and Blowers	90 Days

The costs of parts and labor are included, but the customer pays the transportation costs on walk rotary mowers, trimmers and blowers.

If you feel your TORO product is defective and wish to rely on The Toro Promise, the following procedure is recommended:

1. Contact your Authorized TORO Distributor or Commercial Dealer (the Yellow Pages of your telephone directory is a good reference source).
2. The TORO Distributor or Commercial Dealer will advise you on the arrangements that can be made to inspect and repair your product.
3. The TORO Distributor or Commercial Dealer will inspect the product and advise you whether the product is defective and, if so, make all repairs necessary to correct the defect without an extra charge to you.

If for any reason you are dissatisfied with the distributor's analysis of the defect or the service performed, you may contact us.

Write:

TORO Commercial Products Service Department
8111 Lyndale Avenue South
Minneapolis, Minnesota 55420

The above remedy of product defects through repair by an Authorized TORO Distributor or Commercial Dealer is the purchaser's sole remedy for any defect.

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.

This Warranty applies only to parts or components which are defective and does not cover repairs necessary due to normal wear, misuse, accidents, or lack of proper maintenance. Regular, routine maintenance of the unit to keep it in proper condition is the responsibility of the owner.

All warranty repairs reimbursable under the Toro Promise must be performed by an Authorized TORO Commercial Dealer or Distributor using Toro approved replacement parts.

Repairs or attempted repairs by anyone other than an Authorized TORO Distributor or Commercial Dealer are not reimbursable under the Toro Promise. In addition, these unauthorized repair attempts may result in additional malfunctions, the correction of which is not covered by warranty.

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 EQUIPMENT OR SERVICE DURING PERIODS OF MALFUNCTION OR NON-USE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion 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.

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 The Toro Company.

Compliance with Radio Interference Regulations Certified.
Certifie Conforme au Reglement sur le Brouillage Radioelectrique.

Litho in U.S.A.