FORM NO. 3312-285 Rev. A

TORO®

SIDE DISCHARGE MODEL:
30721 – 40001 thru 50001 & UP
REAR DISCHARGE MODEL:
30710 – 40001 thru 50001 & UP

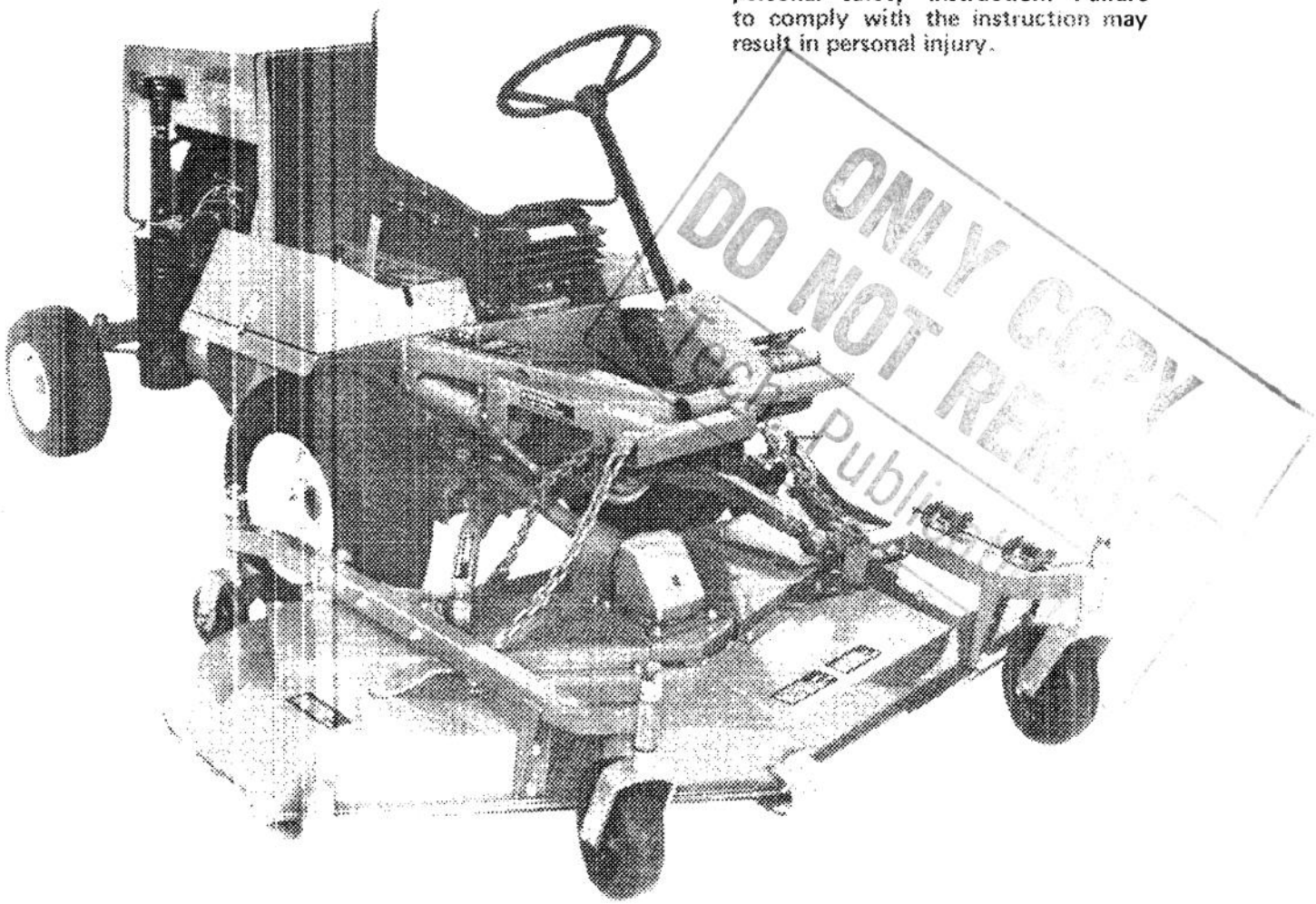
OPERATOR'S MANUAL

72" CUTTING UNITS

TORO®
THIS UNIT CONFORMS TO ANSI B71.1b-1977

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

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



FOREWORD

The cutting units have advanced concepts in engineering, design and safety; and if maintained properly, they will give excellent service.

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

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

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

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SAFETY INSTRUCTIONS

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 cutting units have been tested and certified for compliance with the B71.1b — 1977 specifications of the American National Standards Institute. However, improper use or maintenance of the machine can result in injury. To reduce the potential for injury, comply withth the following safety instructions.

BEFORE OPERATING

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

   The Toro Company
   8111 Lyndale Avenue South
   Minneapolis, Minnesota 55420

2. Do not allow children to operate the machine. Do not allow adults to operate the machine without proper instruction.

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

The Toro Company — 1983, Rev. 1984
MINNEAPOLIS, MN 55420 — U.S.A.

SAFETY INSTRUCTIONS

4. 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.

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

6. Make sure interlock switches are adjusted correctly so engine cannot be started unless traction pedal is released — neutral position — and PTO lever is in DISENGAGE position.

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

A. Use an approved fuel container.

B. Do not fill fuel tank when engine is hot or running.

C. Do not smoke while handling fuel.

D. Fill fuel tank outdoors and up to about one inch (25 mm) from the top of the tank, not the filler neck.

E. Wipe up any spilled fuel.

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

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

11. Before starting the engine:

A. Engage parking brake.

B. Ensure traction pedal is in neutral and PTO is in OFF, disengage 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.

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 a sand trap, ditch, creek or other hazard.

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

E. Avoid sudden stops and starts.

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

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

13. The grass deflector must always be installed and in down position on the side discharge cutting unit. If the cutting unit discharge area ever plugs, disengage PTO and shut engine off before removing the obstruction.

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

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

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

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

18. Before getting off the seat:

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

B. Set the parking brake and disengage the PTO.

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

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

MAINTENANCE

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

SAFETY INSTRUCTIONS

21. Perform only those maintenance instructions described in this manual. If major repairs are ever needed or assistance is desired, contact an Authorized Toro Distributor. Ask about Red Wagon Maintenance.

22. To reduce potential fire hazard, keep the engine free of excessive grease, grass, leaves and accumulations of dirt.

23. Assure machine is in safe operating condition by keeping nuts, bolts and screws tight. Check the blade mounting bolt frequently to assure it is tight (75 to 100 ft-lb) (102 to 136 N·m).

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

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

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

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

Genuine TORO® PARTS & ACCESSORIES

SAFETY AND INSTRUCTION DECALS

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

⚠CAUTION
ROTATING BLADES UNDER
ENTIRE MOWER DECK.
KEEP HANDS AND FEET AWAY.

ON CUTTING UNIT
(Part No. 26-7970)

BLADE LINE

ON LEFT SIDE OF HOUSING
(Part No. 26-7120)
(MODEL 30721 ONLY)

⚠WARNING
THROWN OBJECTS CAN BE DANGEROUS.
OPERATE UNIT ONLY WHEN DEFLECTOR
CHUTE IS IN PLACE.

ON CUTTING UNIT
(Part No. 51-1560)
(MODEL 30721 ONLY)

⚠CAUTION
BLADE RETAINING BOLTS MUST BE
TORQUED TO 75-100 ft/lbs.
CHECK BLADE BOLT TORQUE AFTER
STRIKING ANY SOLID OBJECT.

ON CUTTER DECK (TOP CENTER)
(Part No. 26-7960)

SPECIFICATIONS

Width of Cut: Models 30721 and 30710 have a 71-1/2 inch (1.816 m) width of cut.

Height-of-Cut: Adjustable from 1 to 4 in. (25 to 102 mm) in 1/2 in. (13 mm) increments.

Cutter Housing: Both cutter housings are made from 11 gauge (13 mm) steel and reinforced with 3-1/2 inch (89 mm) x 7 gauge (4.76 mm) channel iron.

Cutting Unit Drive: Gear box mounted on cutting unit is driven by PTO shaft. Power is transmitted to the blades by three B section belts. Spindle shafts are 1-1/4 inch (32 mm) in diameter and supported by two externally sealed, greaseable, tapered roller bearings.

Cutting Unit: Front mounted cutting units have front and rear caster wheels, three heat-treated steel blades 25 inches (0.63 m) long and 1/4 inch (6 mm) thick.

Caster Wheels: Two front caster wheels have ball bearings with 10.25 in. (260.4 mm) x 3.25 in. (82.55 mm) semi-pneumatic tires. Rear wheels have roller bearings and 6 in. (152.8 mm) x 2.50 in. (63.5 mm) hard plastic tires.

Blade Tip Speed: At 3200 engine rpm, blade tip speed is 15,000 ft/min. (76.2 m/sec.).

Cutting Unit Lift: Cutting units are lifted by hydraulic cylinder that has 2-1/2 in. (64 mm) bore and 3-1/4 in. (82 mm) stroke.

Dimensions and Weights (approx):

Model 30721 Width: 85-1/2 in. (2.17 m)
Weight: 400 lb (181.4 Kg)

Model 30710 Width: 76 in. (1.93 m)
Weight: 415 lb (188.2 Kg)

Optional Equipment:

High Sail Blade, Toro Part No. 23-2410.
23 x 10.5 x 12 Tire and Wheel, Toro Part No. 36-1050 (Model 30721 only)

LOOSE PARTS

Note: Use this chart as a checklist to assure all parts necessary for assembly have been shipped. Without any of these parts, total set-up cannot be completed.

DESCRIPTION	QTY.	USE
Operator's Manual	1	
Registration Card	1	
Large Caster Wheel Assembly	2	Install Caster Wheel Assembly, page 6.
Small Caster Wheel Assembly	2	
Belly Shield	1	Install Belly Shield, page 7. (Model 30710 only)
Belly Shield Hook	2	
Locknut - 5/16	4	
Belly Shield Hanger	2	
Capscrew - 3/8 NC x 1-1/4	2	
Hairpin Cotter	2	
Clevis Pin - 3/8 x 1-7/8	2	
Belly Shield Spacer	2	(Diesel only)
Flatwasher 1/2 I.D. x 1-1/4 O.D.	2	Connect Right Hand Push Arm to Cutting Unit, page 7.
Capscrew 7/16-14 x 3	2	
Flatwasher 15/32 I.D. x 59/64 O.D.	1	
Lockwasher 7/16 Med	2	
Nut 7/16-14	2	
Flatwasher 15/32 I.D. x 59/64 O.D. (On Cutting Unit Model 30721)	2	Connect Left Hand Push Arm to Cutting Unit, page 8.
Capscrew 7/16-14 x 3 (On Cutting Unit Model 30721)	2	
Lockwasher 7/16 Med (On Cutting Unit Model 30721)	2	
Nut 7/16-14 (On Cutting Unit Model 30721)	2	
Flatwasher 1/2 I.D. x 1-1/4 O.D. (On Cutting Unit Model 30721)	2	

SET-UP INSTRUCTIONS

INSTALL CASTER WHEEL ASSEMBLIES

The thrust washers and spacers have been installed on caster wheel spindles and secured in place by the lynch pins. Remove these parts from the caster spindles.

1. Cut front and sides of carton and remove caster assemblies from carton. Squeeze back of wire on lynch pin, rotate wire and pull pins out of caster spindles.

2. Slide spacers and thrust washers off spindle.

3. Slide spacers onto caster spindle to get desired height-of-cut: refer to Height-of-Cut Chart, page 10. Slide thrust washer onto spindle, push large caster spindle through front caster arm and small caster spindle through rear caster arm, install remaining spacers onto spindle and install lynch pin to secure assembly (Fig. 1, 2).

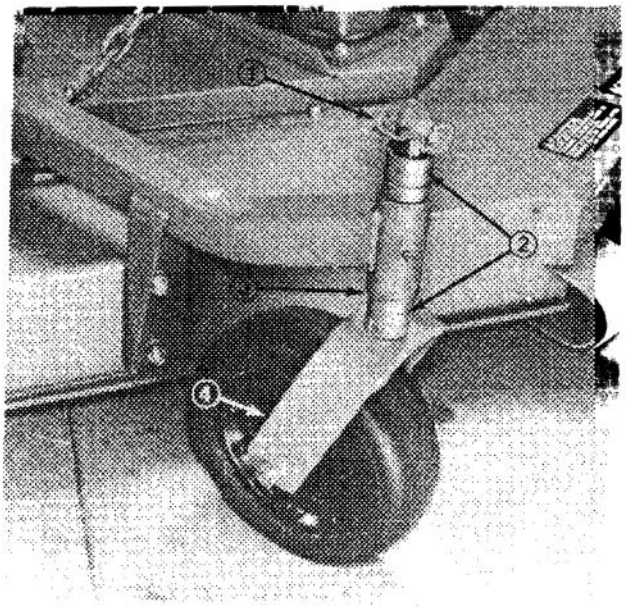


Figure 1

1. Lynch pin
2. Spacers
3. Thrust washer
4. Large (front) caster spindle

IMPORTANT: Thrust washer – not the spacers – must contact the bottom of the caster arm (Fig. 1, 2).

Note: Insert lynch pin in front side of spindle with caster wheels pointed in a forward direction (Fig. 1, 2).

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

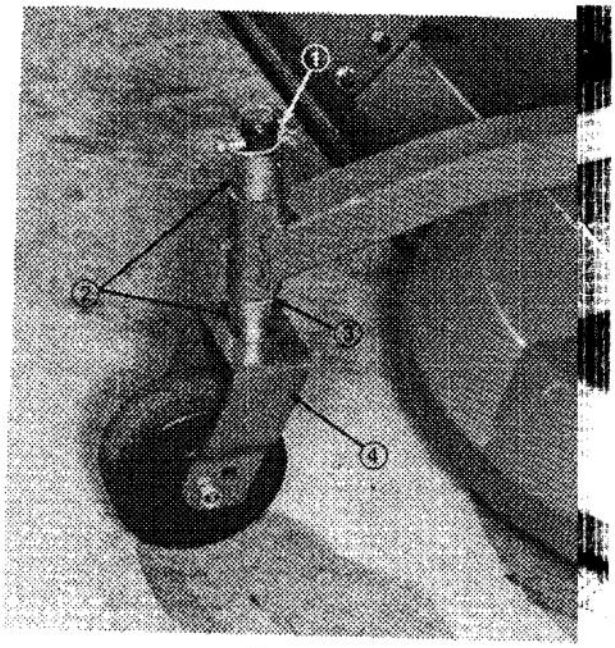


Figure 2

1. Lynch pin
2. Spacers
3. Thrust washer
4. Small (rear) caster spindle

GRASS DEFLECTOR (MODEL 30721)

1. Remove shipping bands allowing deflector to be lowered.

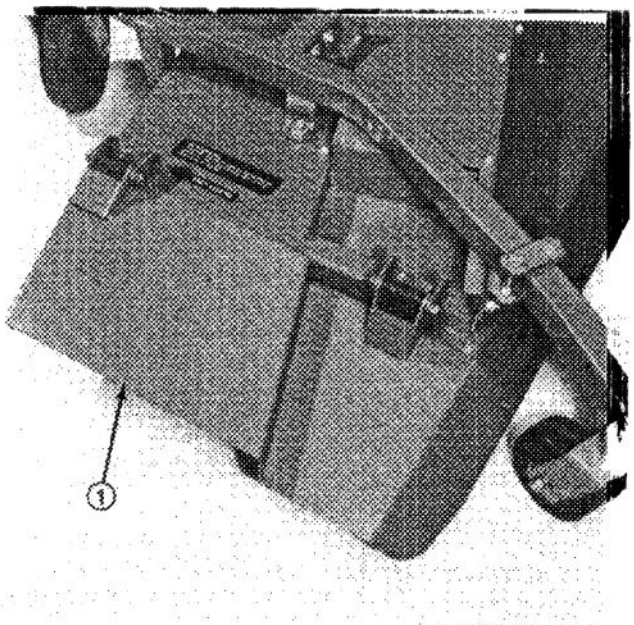


Figure 3

1. Deflector – lowest position

SET-UP INSTRUCTIONS

INSTALL BELLY SHIELD (MODEL 30710)

1. Position traction unit on level surface, shut engine off and engage parking brake.

2. Block up the forward end of engine to prevent it from shifting during disassembly.

3. Remove capscrew and flangenut securing front engine support to frame. Secure Belly Shield hanger and engine support to frame with 3/8 x 1-1/4 capscrew and flangenut. Repeat procedure on opposite side of machine (Fig. 4). Discard 3/8" x 1" long capscrew removed (gas units only).

Note: On diesel units a 3/8" thick spacer must be inserted between shield hanger and frame.

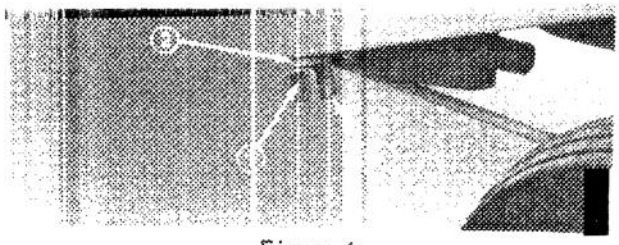


Figure 4

1. *Capscrew and flangenut*
2. *Engine support or spacer (diesel only)*
3. *Shield hanger*

4. Position Belly Shield mounting hooks over hub of push arm mounting brackets (Fig. 5).

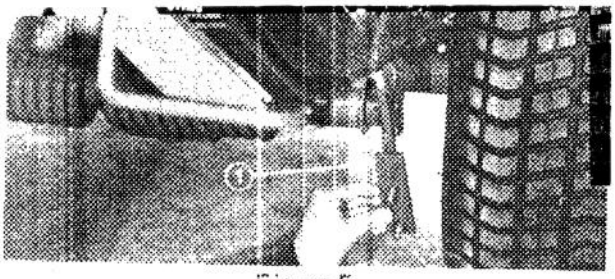


Figure 5

1. *Belly shield mounting hooks*

5. Secure Belly Shield to Belly Shield hooks with (2) 5/16 locknuts on each side (Fig. 6).

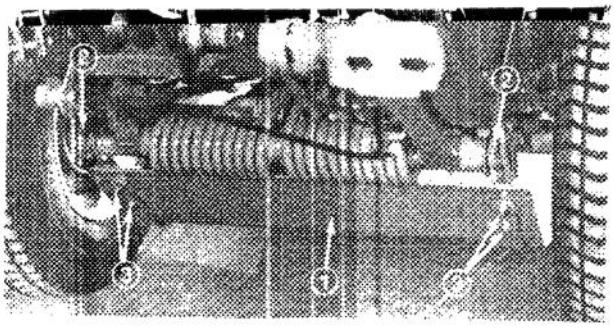


Figure 6

1. *Belly shield*
2. *Belly shield hook*
3. *Locknuts*

6. Raise rear of Belly Shield and secure to Belly Shield hangers with a clevis pin and hairpin cotter on each side (Fig. 7). Push hairpin cotter all the way to loop, to prevent loss.

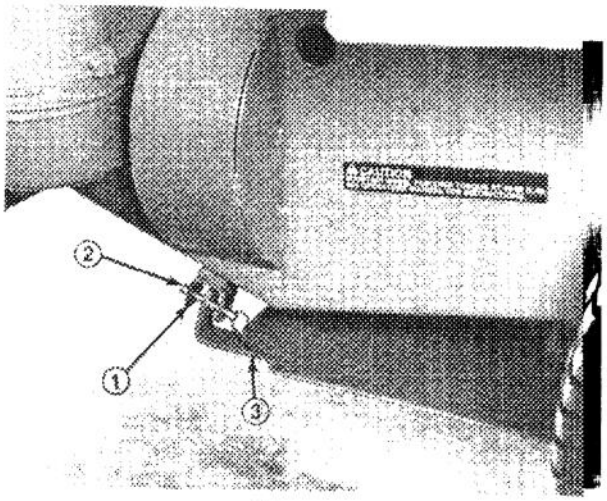


Figure 7

1. *Belly shield hanger*
2. *Clevis pin*
3. *Hairpin cotter*

CONNECT RIGHT HAND PUSH ARM TO CUTTING UNIT

1. Remove bands securing PTO shaft to underside of traction unit.

2. Remove two self-tapping screws holding PTO shield to top of gear box mounting plate (Fig. 8). Move cutting unit into position in front of traction unit.

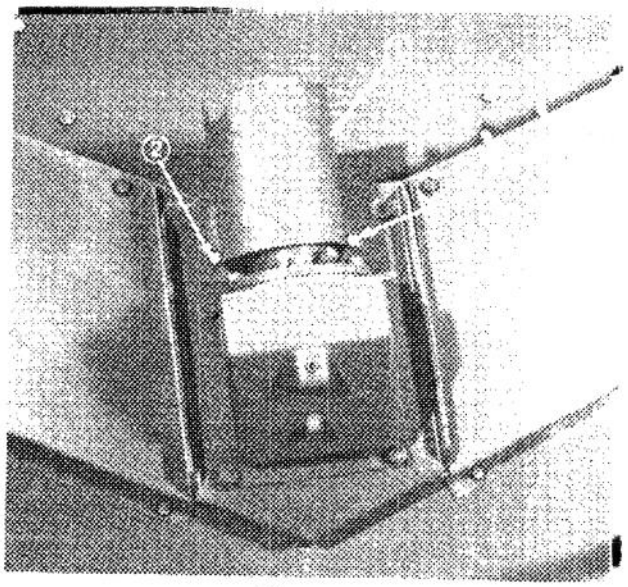


Figure 8

1. *PTO shield*
2. *Self tapping screw*

SET-UP INSTRUCTIONS

WARNING

Since the right hand push arm is spring-loaded to about 100 pounds (445 N), a helper is needed to push the push arm down. Sudden release of the push arm could cause injury.

3. Slide large flatwasher (1/2 x 1-1/4 in. O.D.) onto two capscrews (7/16 – 14 x 3 in. (76 mm).

4. Have a helper carefully push down on the push arm until holes in ball joint mount line up with holes in caster arm.

5. Secure ball joint mount to caster arm (Fig. 9) with two capscrews w/flatwashers, one flatwasher (15/32 I.D. x 59/64 in. O.D.), lockwashers and nuts (7/16 – 14). Head of capscrew and the large flatwasher must be on outside of caster arm.

Note: Flatwasher 15/32 I.D. x 59/64 in. O.D.) must be used on slotted hole.

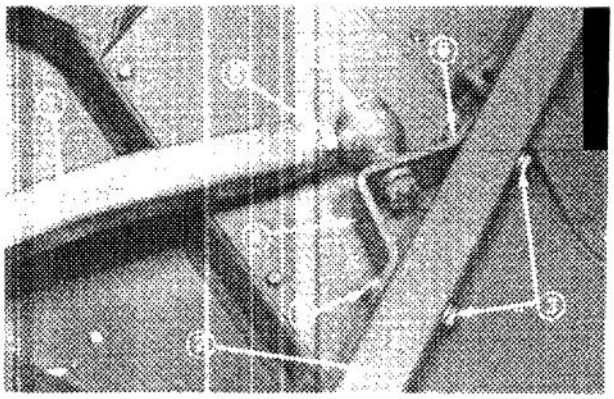


Figure 9

1. *R.H. push arm*
2. *Caster arm*
3. *Capscrews and large flatwashers*
4. *Ball joint mount*
5. *Nut, lockwasher and small flatwasher*
6. *Lockwasher and nut*
7. *Ball joint*
8. *Jam nut*

6. Tighten large jam nut against front of right push arm (Fig. 9). When tightening jam nut, hold ball joint straight to permit proper oscillation during raising and lowering of the cutting unit.

CONNECT LEFT HAND PUSH ARM TO CUTTING UNIT

1. Remove capscrews, nuts, lockwashers and flatwashers from push arm mount holes in left hand caster arm. (Model 30721) (Parts to install Model 30710 are in loose parts bag.)

WARNING

Since left hand push arm is spring loaded to about 150 pounds (667 N) a helper is needed to push down on the push arm. Sudden release of the push arm could cause injury.

2. Have a helper carefully push down on the push arm until ball joint mount contacts front of mount bracket on cutting unit. Immediately slide 4 x 4 in. (102 x 102 mm) block of wood between top of push arm and underside of chassis.

⚠ Make sure the wooden block does not slip out accidentally.

Note: If holes in ball joint mount do not line up with holes in mount bracket, turn ball joint until correct alignment results.

3. Secure ball joint mount (Fig. 10) to mount bracket with two capscrews w/flatwashers, lockwashers and nuts (7/16 – 14). Head of capscrews and flatwashers must contact ball joint mount.

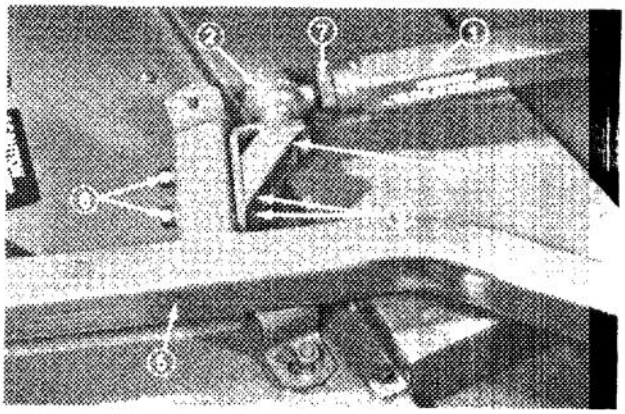


Figure 10

1. *L.H. push arm*
2. *Ball joint*
3. *Ball joint mount*
4. *Capscrew and small flatwasher*
5. *Caster arm*
6. *Nut, lockwasher and large flatwasher*
7. *Jam nut*

4. Tighten large jam nut against front of left push arm (Fig. 10). When tightening jam nut, hold ball joint straight to permit proper oscillation during raising and lowering of cutting unit.

5. Carefully remove block holding push arm down.

SET-UP INSTRUCTIONS

CONNECT PTO SHAFT AND INSTALL LIFT CHAINS

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

1. Line up holes in yoke and input shaft of gear box. Slide yoke onto shaft (Fig. 11) and secure parts together with roll pin (3/16 x 1-1/2 in.) (38 mm).

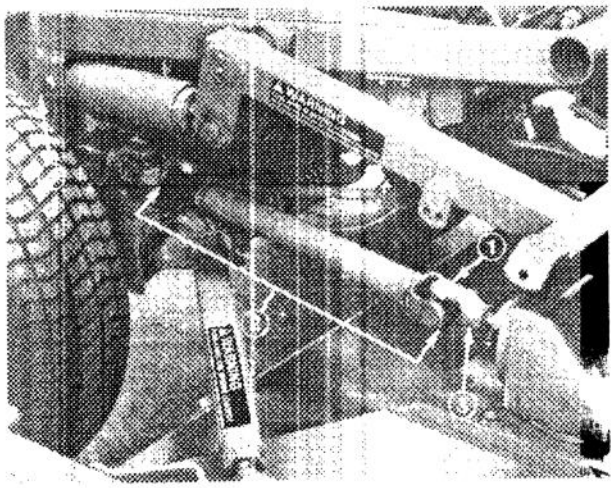


Figure 11

1. PTO yoke
2. Yokes in phase
3. Roll pin
4. Cotter pin

2. Mount PTO shield over input shaft and onto gear box mounting plate with two self-tapping screws (Fig. 12).

3. Attach lift chains to lift arm and cutting unit (Fig. 12) with six shackles, shackle pins (3/8 x 1-1/2 in.) (38 mm) and cotter pins (1/8 x 3/4 in.) (19 mm). Adjust chain length so both become tight at the same time when lifting lift arm.

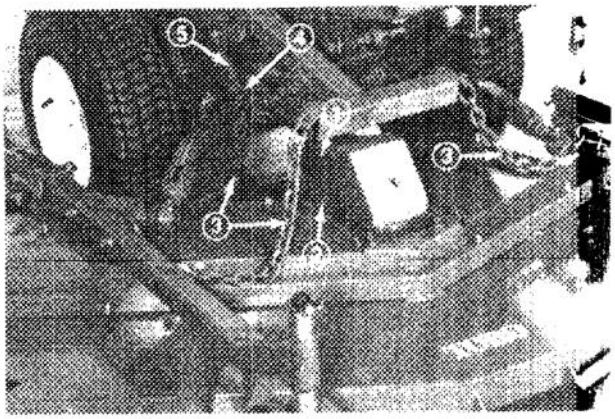


Figure 12

1. PTO shield
2. Self-tapping screws
3. Lift chain
4. Spring in 4th link
5. Spring in cotter pin

4. Connect ends of tension spring between fourth link of rear chain and eye of cotter pin that holds cylinder pin in place (Fig. 12). Adjust length of chain so rear caster wheels are off the ground in transport position.

GREASE CUTTING UNIT

Before the machine is operated, it must be greased to assure proper lubricating characteristics: refer to Lubrication, page 11. Failure to grease the machine will result in premature failure of critical parts.

BEFORE OPERATING

CHECK LUBRICANT IN GEAR BOX

The gear box is designed to operate on SAE 10W-30 or 10W-40 SE or SF engine oil. Although the gear box is shipped with lubricant from the factory, check the level before operating the cutting unit.

1. Position machine and cutting unit on a level surface. Lower cutting unit onto level surface.

2. Remove filler plug from front of gear box (Fig. 13) and make sure lubricant is up to bottom of hole. If level of lubricant is low, add enough lubricant to bring it up to bottom of filler hole.

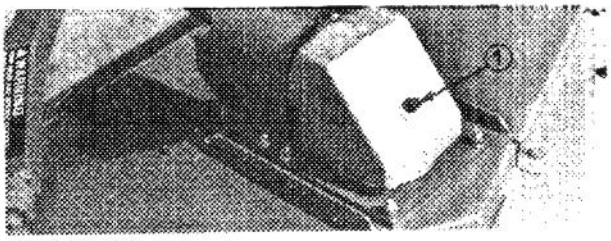


Figure 13

1. Filler plug

3. Wipe any metal particles attracted to magnetic filler plug away and install filler plug.

OPERATING INSTRUCTIONS

ADJUSTING HEIGHT-OF-CUT

The height-of-cut is adjustable from 1 to 4 inches (25 to 102 mm) in 1/2 inch (13 mm) increments, by adding or removing an equal number of spacers on the front and rear caster forks. The height-of-cut chart below gives the combinations of spacers to use for all height-of-cut settings.

Note: 1/4 inch (6 mm) spacers are available and can be ordered from your Toro distributor by Toro Part No. 27-1040. (Quantity - 8).

Height-of-Cut Chart

Height-of-Cut Setting	Spacers Below Caster Arm	
	Front	Rear
1 (25 mm)	0	0
1-1/2 (38 mm)	1	1
2 (51 mm)	2	2
2-1/2 (64 mm)	3	3
3 (76 mm)	4	4
3-1/2 (89 mm)	5	5
4 (102 mm)	6	6

Note: A more optimum cutting appearance of the turf can be achieved in the lower heights-of-cut by lowering the rear of the cutting unit. Accomplish this by relocating the rear caster wheel axles in the upper hole of the caster forks (Fig. 15). Replace the axles into the lower caster fork holes for higher height-of-cut settings where optimum cutting appearance is not required.

IMPORTANT: Do not attempt to cut off more than one inch (25 mm) of the grass blades in the one (1) inch (25 mm) height-of-cut setting with the rear of the cutting unit lowered, as this may cause the engine to labor excessively.

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

2. Squeeze back of wire and rotate wire on lynch pin. Pull pin out of caster spindle. Slide spacers onto the caster spindle to get desired height-of-cut (Fig. 14 and 15). Then slide washer (Fig. 14 and 15) onto spindle.

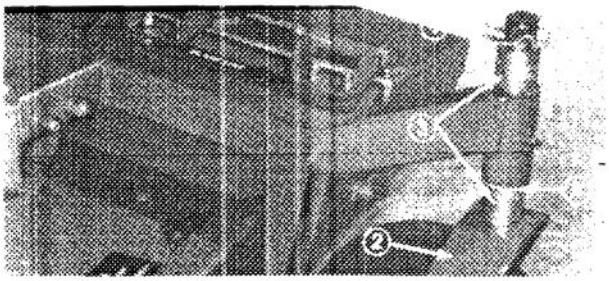


Figure 14

1. Lynch pin
2. Large (front) caster
3. Spacers
4. Washer

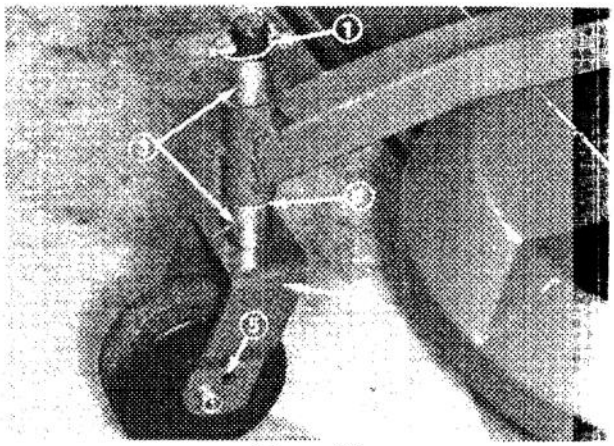


Figure 15

1. Lynch pin
2. Small (rear) caster
3. Spacers
4. Washer
5. For 1 in. (25 mm) H.O.C. only

3. Push caster spindle through caster arm. Slide any remaining spacers onto spindle (Fig. 14 and 15). Install lynch pin to retain parts in place.

GRASS DEFLECTOR

CAUTION

The grass deflector (Fig. 16) is a safety device that diverts grass and other foreign objects being discharged downward. Without deflector mounted in place on the cutting unit, the blades could hurl grass and foreign objects out the discharge opening with enough force to cause injury or property damage. If the grass deflector is damaged, repair or replace the affected part(s). Never operate cutting unit without deflector mounted on the cutting unit. Always keep the deflector chute in the lowest possible position.

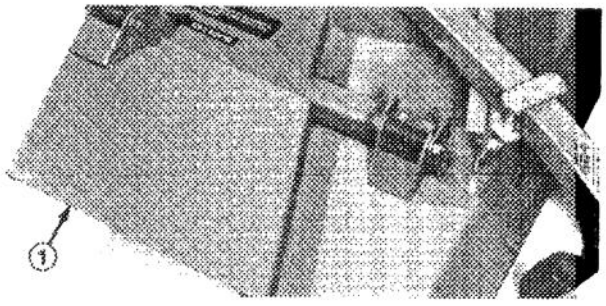


Figure 16

1. Deflector in lowest position

IMPORTANT: If your traction unit is to be used with a Rear Discharge Cutting Unit and is not already equipped with the Donaldson air cleaner, it should be equipped by installing Air Cleaner Kit 27-7090.

LUBRICATION MAINTENANCE

GREASING BEARINGS, BUSHINGS AND GEAR BOX

The cutting unit must be lubricated regularly. If machine is operated under normal conditions, lubricate caster bearings and bushings with No. 2 general purpose lithium grease or molybdenum base grease, after every 8 hours of operation or daily, whichever comes first. All other bearings, bushings and the gear box must be lubricated after every 50 hours of operation.

1. The cutting unit has bearings and bushings that must be lubricated, and these lubrication points are: caster spindle bushings (Fig. 17 and 18); caster wheel bearings (Fig. 18 and 19); blade spindle bearings (Fig. 20); right and left push arm ball joints (Fig. 21).

2. Lower cutting unit so caster wheels are on a level surface. Remove filler plug (Fig. 22) from gear box and check level of lubricant. If level of lubricant is low, add SAE 10W-30 or 10W-40 SE or SF engine oil until level is up to bottom of filler hole. Wipe any metal particles off filler plug and install filler plug.

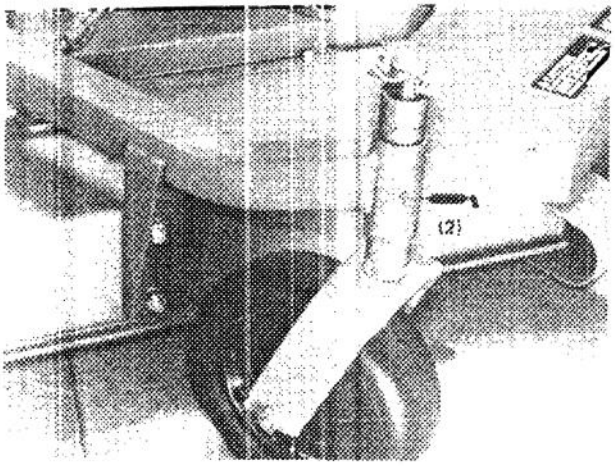


Figure 17

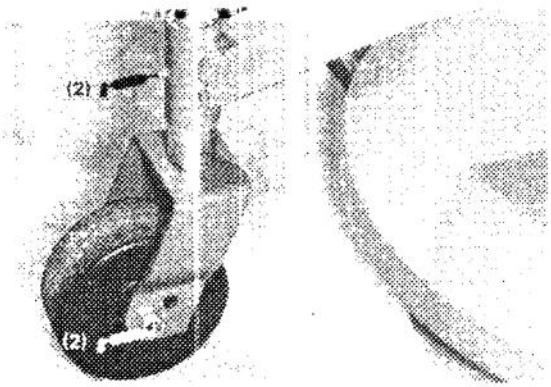


Figure 18

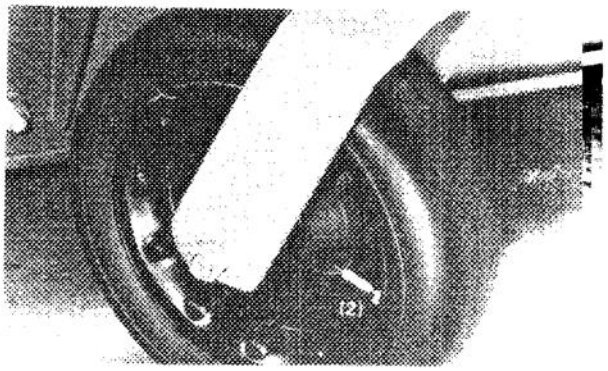


Figure 19

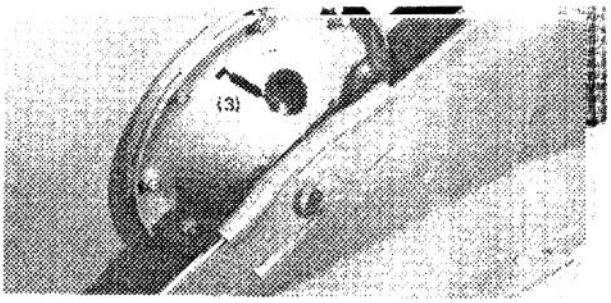


Figure 20

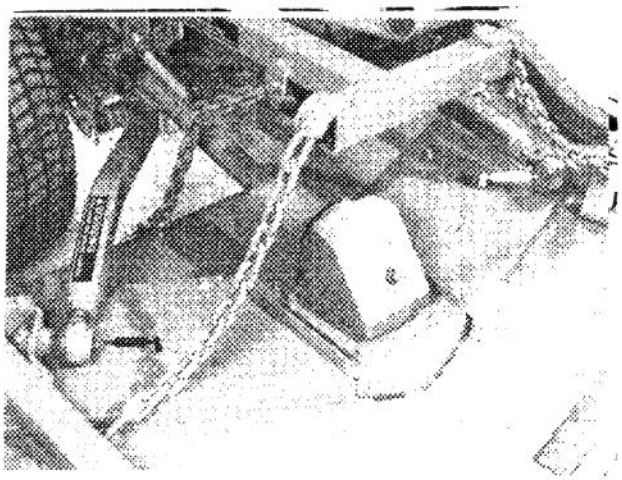


Figure 21

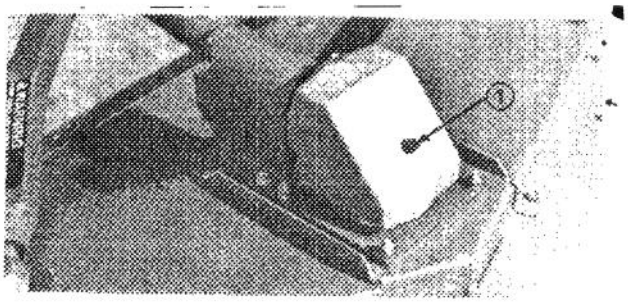
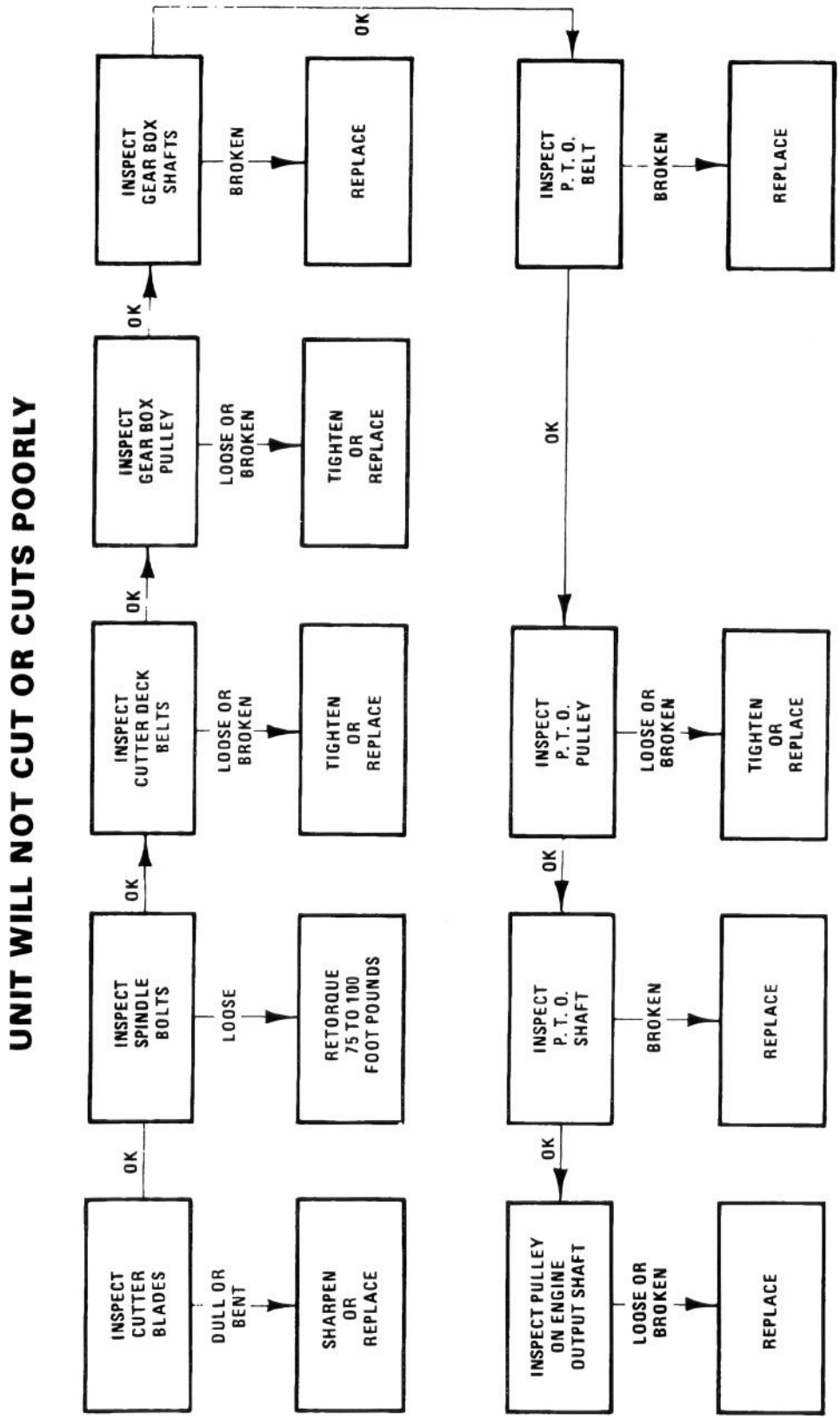


Figure 22

1. Filler plug

CUTTING UNIT MAINTENANCE TROUBLESHOOTING



CUTTING UNIT MAINTENANCE

SEPARATING CUTTING UNIT FROM TRACTION UNIT

1. Position machine on level surface, lower cutting unit to the shop floor, shut engine off and engage parking brake.

2. Remove self-tapping screws securing shield to top of cutting unit and set shield aside.

3. Drive roll pin out of yoke and input shaft of gear box (Fig. 23). Slide yoke off the input shaft. If traction unit will be used without the cutting unit, drive roll pin out of yoke at PTO pivot shaft and remove entire universal shaft from traction unit.

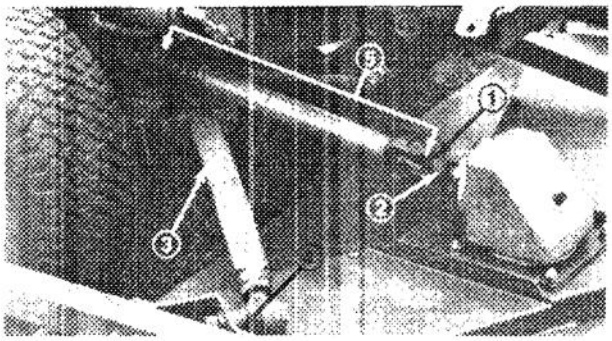


Figure 23

1. *PTO yoke*
2. *Roll pin*
3. *R.H. push arm*
4. *Ball joint mount*
5. *Yokes in phase*

DANGER

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

4. Disconnect spring from lift cylinder cotter pin. Remove cotter pins and clevis pins securing lift chains to lift arm.

WARNING

Since the right hand push arm is spring-loaded to about 100 pounds (445 N) and left hand push arm is spring-loaded to about 150 pounds (667 N), a helper is needed to release push arms from cutting unit. Sudden release of the push arms could cause injury.

5. Have a helper push down on the right push arm while you remove the capscrews, flatwashers, lockwashers and nuts securing ball joint mount to caster arm on cutting unit (Fig. 23). Now the helper can carefully allow push arm to move upward, which will gradually release the 100 pounds (445 N) of spring load.

6. Have a helper push down on the left push arm while you remove the capscrews, flatwashers, lockwashers and nuts securing ball joint mount to mount bracket on cutting unit (Fig. 24). Now the helper can carefully allow push arm to move upward which will gradually release the 150 pounds (667 N) of spring load.

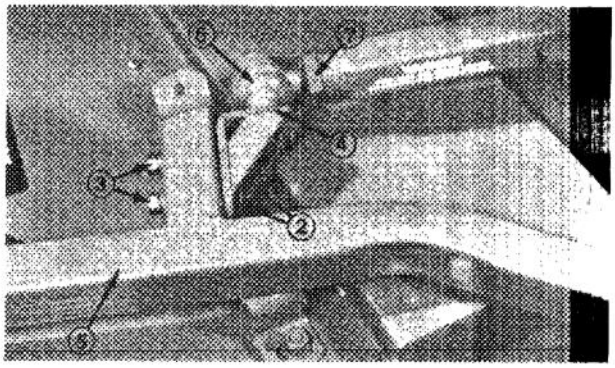


Figure 24

1. *L.H. push arm*
2. *Capscrew and flatwasher*
3. *Nut, lockwasher and large flatwasher*
4. *Ball joint mount*
5. *Caster arm*
6. *Ball joint*
7. *Jam nut*

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

MOUNTING CUTTING UNIT TO TRACTION UNIT

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

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

WARNING

Since the right hand push arm is spring-loaded to about 100 pounds (445 N) and left hand push arm is spring-loaded to about 150 pounds (667 N), a helper is needed to push the push arm down. Sudden release of the push arm could cause injury.

3. Slide a large flatwasher (1/2 I.D. x 1-1/4 in. (32 mm) O.D.) onto both capscrews (7/16 14 x 3 in.) (76 mm).

4. Have a helper carefully push down on right hand push arm until holes in ball joint mount line up with holes in caster arm. Secure ball joint mount to caster arm with two capscrews w/large flatwashers, one flatwasher (15/32 I.D. x 59/64 in. (23.4 mm) O.D.), two lockwashers and nuts (7/16 - 14). Heads of capscrews and large flatwashers must be on outside of caster arm.

5. Slide flatwashers (15/32 I.D. x 59/64 in. (23.4 mm) O.D.) onto two capscrews (7/16 - 14 x 3 in.) (76 mm).

6. Have a helper carefully push down on left hand push arm until holes in ball joint mount are in line with holes in mount bracket on cutting unit. Immediately slide 4 x 4 in. (102 x 102 mm) block of wood between top of push arm and underside of chassis.

⚠ Make sure wooden block does not slip out accidentally.

7. Secure ball joint mount to mount bracket with two capscrews w/small flatwashers, lockwashers, two large flatwashers and nuts (7/16 - 14). Heads of capscrews and small flatwashers must contact ball joint mount.

8. Connect PTO shaft to gear box with roll pin, install shield, and connect lift chains to lift arm: refer to Connect PTO Shaft and Install Lift Chains, page 9.

REPLACING BLADE DRIVE BELTS

1. Lower cutting unit to the shop floor. Remove self-tapping screws holding covers to top of cutting unit, and set covers aside. Loosen idler pulleys to release tension of belts.

2. Remove carriage bolts, lockwashers and nuts holding gear box in place. Lift gear box off mounting plate and lay it on top of cutting unit.

3. Remove belts from spindle pulleys.

4. Mount a belt on lower pulley groove of left spindle, slide belt under belt idler mount plate and install around center spindle pulley. Tension belt by levering idler pulley against belt and tighten idler pulley flange nut (Fig. 25).

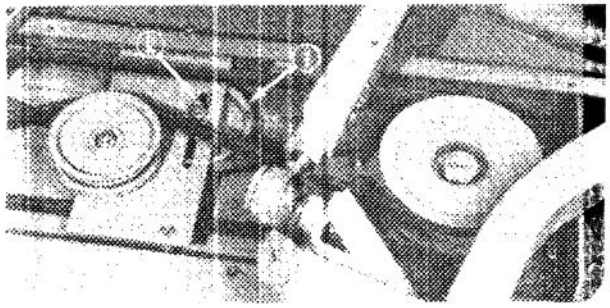


Figure 25

1. Lower belt idler
2. Flange nut

5. Place the right spindle belt under the gear box mount plate and the opposite end on top of the right spindle pulley. Place the left spindle belt under the gear box mount plate and the opposite end on top of the left spindle pulley. Mount the gear box and loop the belts around the gear box pulley.

6. Feed the right and left spindle belts over the pulleys by rotating the cutter blades. Tighten the gear box mounting fasteners.

7. Tension idler pulleys against both belts. Install covers on top of cutting unit with self-tapping screws.

SERVICING BUSHINGS IN CASTER ARMS

The caster arms have bushings pressed into the top and bottom portion of the tube and after many hours of operation, the bushings will wear. To check the bushings, move caster fork back and forth and from side-to-side. If caster spindle is loose inside the bushings, bushings are worn and must be replaced.

1. Raise cutting unit and block it so it cannot fall accidentally.

2. Remove lynch pin and spacers from top of caster spindle.

3. Pull caster spindle out of mounting tube. Allow spacer(s) and thrust washer to remain on bottom of spindle to assure same height-of-cut when caster spindle is reinstalled.

4. Insert pin punch into top or bottom of mounting tube and drive bushing out of tube (Fig. 26). Also drive other bushing out of tube. Clean inside of tubes to remove dirt.

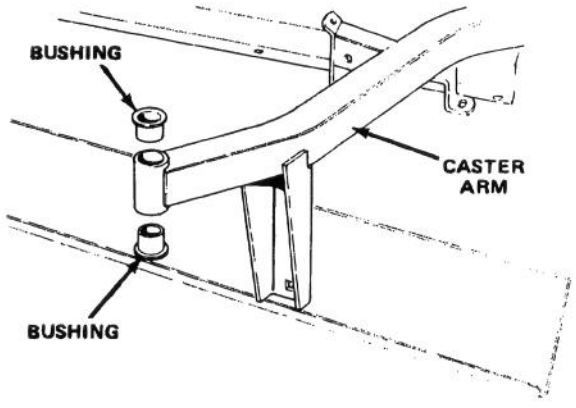


Figure 26

5. Apply grease to inside and outside of new bushings. Using a hammer and flat plate, drive bushings into mounting tube.

6. Inspect caster spindle for wear and replace it if damaged.

7. Push caster spindle through bushings and mounting tube. Slide spacers onto spindle. Install lynch pin through caster spindle to retain all parts in place.

SERVICING REAR CASTER WHEEL AND BEARING

The rear caster wheels rotate on high-quality roller bearings which are supported by spanner bushings. Even after many hours of use, provided that the bearing was kept well-lubricated, bearing wear will be minimal. However, failure to keep bearings lubricated will cause rapid wear. A wobbly caster wheel usually indicates a worn bearing.

1. Remove rear wheel bolt, and locknut holding caster wheel between caster fork (Fig. 27).

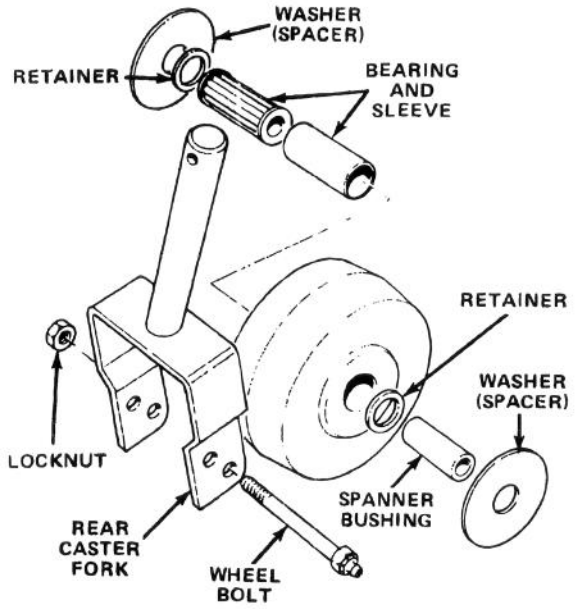


Figure 27

2. Pull spanner bushing out of wheel hub (Fig. 27).

3. Remove retainer from wheel hub and allow bearing and bearing sleeve to fall out (Fig. 27). Remove retainer from opposite side of wheel hub.

4. Check the bearing, bearing sleeve, spanner and inside of wheel hub for wear. Replace defective parts.

5. To assemble the caster wheel, push retainer into wheel hub. Slide bearing sleeve over bearing and insert both parts into wheel hub. Push other retainer into open end of wheel hub to captivate the bearing inside the wheel hub.

6. Carefully slide spanner through the retainers and wheel hub.

7. Install caster wheel assembly between caster fork, and secure all parts in place with wheel bolt, and locknut.

Note: Install extra spacer if more than .080 end play occurs (Fig. 27).

8. Lubricate caster wheel bearing through grease fitting at end of wheel bolt, using No. 2 general purpose lithium grease.

SERVICING FRONT WHEEL CASTER BEARING

The front caster wheels rotate on two ball bearings that are separated by a long spacer. Even after many hours of use, provided that the bearings were kept well-lubricated, bearing wear will be minimal. However, failure to keep bearings lubricated will cause rapid wear. A wobbly caster wheel usually indicates worn bearings.

1. Remove capscrew and locknut holding front caster wheel between caster fork (Fig. 28).

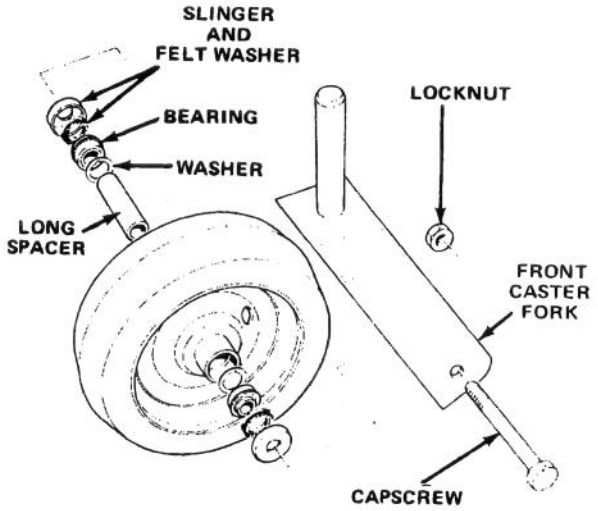


Figure 28

2. Pull slingers and felt washers off both bearings (Fig. 28).

CUTTING UNIT MAINTENANCE

3. Pry old bearings out of wheel hub (Fig. 28). Also remove the washers and long spacer from inside the wheel hub. Clean grease and dirt out of wheel hub.

4. To assemble caster wheel, insert washer into one end of the wheel hub and press a new bearing into the same end of the hub. From opposite end of wheel hub, install long spacer, another washer and another new bearing.

Note: It is recommended to use an arbor press to install the bearings. Press only against the outer bearing race.

5. Place felt washers and slingers against bearings. Install caster wheel assembly between caster fork, and secure all parts in place with capscrew and locknut.

6. Lubricate caster wheel bearings through grease fitting in wheel hub, using no. 2 general purpose lithium grease.

7. Tighten caster wheel nut to 45 ft-lb (61.2 N·m) and spin the caster wheel. If wheel spins freely it is operating correctly. If wheel does not spin, support side of caster fork opposite head of capscrew. Then hit head of capscrew with a brass or steel hammer to seat bearing in caster wheel hub. Retighten the nut to 45 ft-lb (61.2 N·m) and spin the wheel again. If wheel still does not spin freely, continue to hit head of capscrew and tighten the nut until the bearings seat and the wheel does spin freely.

REMOVING CUTTER BLADE

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

CAUTION

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

1. Raise cutting unit to highest position, shut the engine off and engage parking brake. Block cutting unit to prevent it from falling accidentally.

2. Grasp end of blade using a rag or thickly padded glove. Remove special screw, belleville washer and blade from spindle assembly (Fig. 29).

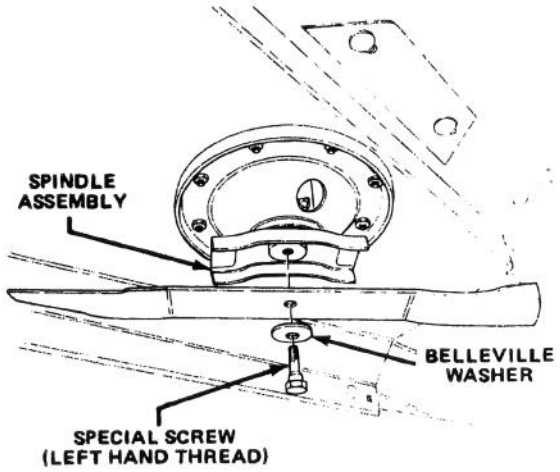


Figure 29

Note: The special screw has left hand thread.

3. To install the blade, assemble parts in reverse order, and make sure the blade sail is facing up. Tighten special screw to 75 to 100 ft-lb (102 to 136 N·m).

INSPECTING AND SHARPENING BLADE

1. Raise cutting unit to highest position, shut the engine off and engage parking brake. Block cutting unit to prevent it from falling accidentally.

2. Examine cutting ends of the blade carefully, especially where the flat and curved parts of the blade meet (Fig. 30A). 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 any wear is noticed (Fig. 30B), replace the blade: refer to Removing Cutter Blade, page 16.

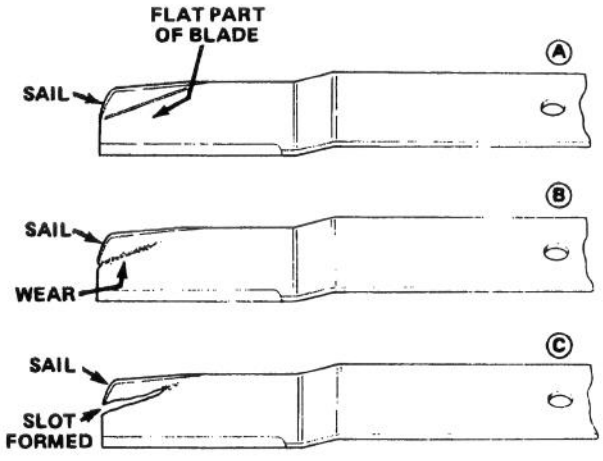


Figure 30

CUTTING UNIT MAINTENANCE

WARNING

If the blade is allowed to wear, a slot will form between the sail and flat part of the blade (Fig. 30 C). Eventually, a piece of the blade may break off and be thrown from under the housing, possibly resulting in serious injury to yourself or bystander.

3. Examine cutting edges of all blades. Sharpen the cutting edges if they are dull or nicked. Sharpen only the top side of the cutting edge and maintain the original cutting angle to assure sharpness (Fig. 31). The blade will remain balanced if same amount of metal is removed from both cutting edges.

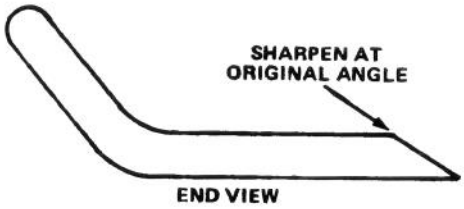


Figure 31

4. To check blade for being straight and parallel, lay blade on level surface and check its ends. Ends of blade must be slightly lower than the center, and cutting edge must be lower than 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 cutting edge higher than the heel of the blade is warped or bent and must be replaced.

5. To install the blade, assemble parts in reverse order, and make sure the blade sail is facing up. Tighten special screw to 75 to 100 ft-lb (102 to 136 N·m).

CHECKING AND CORRECTING MISMATCH OF BLADES

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

1. Use a 3 foot (0.914 m) long carpenters level and find a flat surface on the shop floor.

2. Set rear caster wheels in the upper hole of caster forks and adjust height-of-cut so all six height-of-cut spacers are below the caster arm.

3. Lower cutting unit onto flat surface. Remove self-tapping screws holding covers on top of cutting unit. Loosen idler pulleys to release tension against all three belts.

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

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

6. Rotate blades so tips line up with one another (Fig. 32). Tips of the adjacent blades must be within 1/8 inch (3 mm) of each other. If tips are not within 1/8 inch (3 mm) of each other, proceed to step 7 and add shims between spindle housing and bottom of cutting unit.

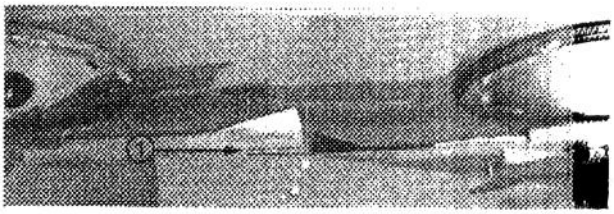


Figure 32

1. 1/8 in. (3 mm)

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

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

8. Tension idler pulleys against all three belts. Also install covers on top of cutting unit with self-tapping screws.

9. Set rear caster wheels in lower holes in caster forks if height-of-cut is above one (1) inch (25 mm) and adjust height-of-cut.

10. Mount cutting unit to traction unit: refer to Mounting Cutting Unit To Traction Unit, page 13.

CUTTING UNIT MAINTENANCE

REMOVING SPINDLE AND BEARINGS FROM SPINDLE HOUSING

Note: As bearings are press-fit onto spindle shafts, it is recommended an arbor press be used.

1. Lower cutting unit, stop the engine and remove key from switch.

2. Remove capscrews securing deck cover on top of spindle housing to be serviced. Slide cover out under caster arm.

3. Loosen idler and remove belt from spindle to be serviced.

4. Raise cutting unit, stop the engine and remove key from switch. Block cutting unit so it cannot fall accidentally.

5. Remove eight flange bolts and flange nuts holding spindle housing assembly against cutting unit (Fig. 33). Slide spindle housing assembly out bottom of cutting unit. (Watch for blade alignment shims between spindle housing and cutting unit).

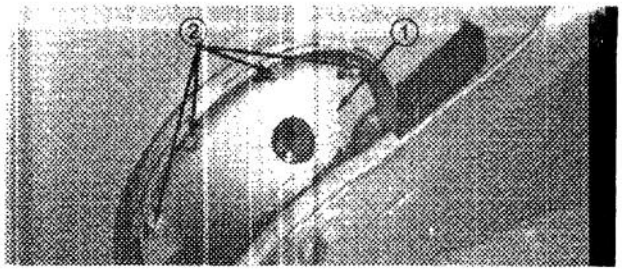


Figure 33

1. *Spindle housing*
2. *Flange nuts and flange bolts*

6. Remove nut and flatwasher retaining spindle pulley on spindle shaft. Slide pulley off shaft.

Note: All three spindle housing assemblies are different from one another. A spacer is located beneath the right hand pulley (Fig. 34, 35).

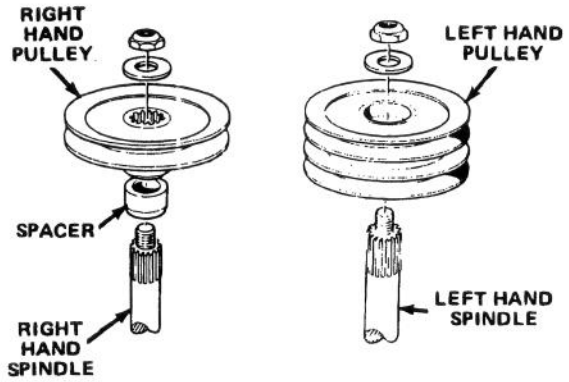


Figure 34

7. If spindle shaft will be replaced, remove special screw, belleville washer and blade from spindle shaft (Fig. 35). Otherwise, the blade and its other associated parts may be left on the spindle shaft.

Note: The blade mounting screw has left hand thread.

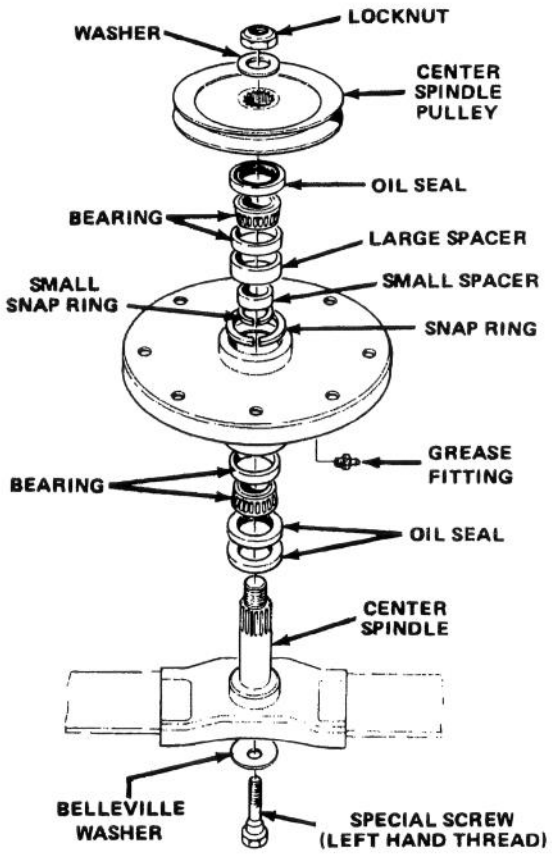


Figure 35

8. Press spindle shaft out of spindle housing (Fig. 35), using an arbor press. Bearing, small spacer and snap ring (Fig. 35) will remain on spindle shaft as shaft is being removed. The two lower oil seals may also remain on shaft.

9. The seals (Fig. 35) will be removed next; however, notice the lip of the seal. The lip faces outward, and this is normal. Therefore, new seals must always be installed with the lip facing outward, not toward the spindle housing. Now remove seals from spindle housing.

10. Remove remaining bearing from spindle housing (Fig. 35).

11. Using a punch and hammer, drive both bearing cups (Fig. 35) out of spindle housing. Also remove large spacer (Fig. 35) from housing.

12. A large snap ring is still inside the spindle housing. Remove the grease fitting from housing, rotate ring inside housing until split end of ring lines up with fitting hole and remove ring with drift punch and screw driver (Fig. 36).

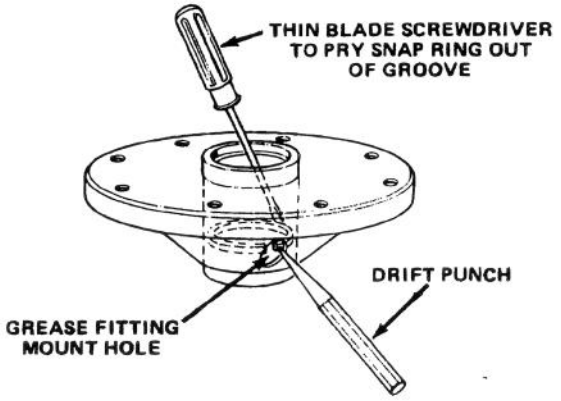


Figure 36

13. Press bearing off spindle shaft with arbor press.

INSTALLING SPINDLE, BEARINGS AND SEALS INTO SPINDLE HOUSING

IMPORTANT: New bearings with matched snap rings must always be installed when spindle housing or bearings are being replaced. Replacement bearings are sold only with a matched snap ring set. The parts cannot be purchased separately. Matched spacers are also used and also must be replaced as a set.

1. Install large snap ring into groove in bore of spindle housing (Fig. 38). Assure snap ring is seated in the groove.

2. Insert the large spacer into top of spindle housing and tightly against the snap ring (Fig. 35). Spacer must contact snap ring to ensure correct assembly of parts (Fig. 37).

3. Apply lubricating oil to bearing cups and using an arbor press, push bearing cups – smallest ID first – into top and bottom of spindle housing (Fig. 35). Top bearing cup must contact spacer that was installed in step 2, and bottom bearing cup must contact snap ring. To ensure correct assembly of parts (Fig. 37), support the first cup and press the second against it (Fig. 38).

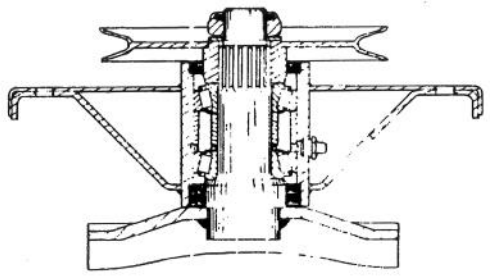


Figure 37

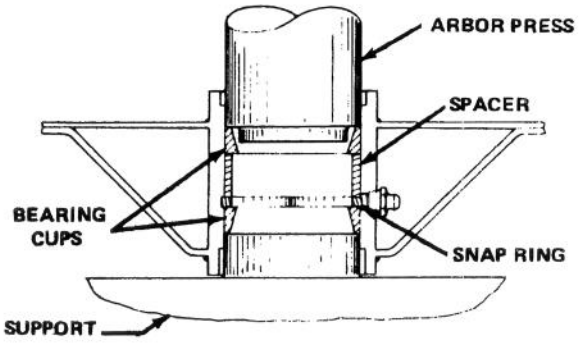


Figure 38

4. Place lower bearing into housing, apply a film of grease on lip of both lower seals; then install seals into bottom of spindle housing (Fig. 37). Remember though, the bottom seals must have the lip facing outward (Fig. 37), not toward inside of spindle housing.

5. Check spindle shaft and make sure it is free of burrs and nicks that could possibly cut the seals.

6. Liberally oil spindle shaft and press it into the spindle housing with an arbor press. Insure lower bearing is supported and not housing as bearing damage will result.

7. Slide small snap ring and small spacer onto spindle shaft (Fig. 35).

8. Oil top bearing and press it onto shaft. Support bottom of spindle shaft to assure snap rings stay in place (Fig. 38).

9. Lubricate top oil seal and install in top of spindle housing. Install the spacer on the shaft if right hand spindle assembly is being repaired (Fig. 34). Push pulley onto splines of spindle shaft, and retain parts together with large flat washer and nut. Tighten nut to 140-160 ft-lb (190-217 N·m). Check to be sure spindle rotates freely.

10. Install grease fitting and pump entire spindle housing cavity full of molybdenum base grease.

11. Slide pulley end of spindle assembly through hole in cutting unit. Mount spindle assembly in place with eight flange bolts and flange nuts (Fig. 33). Check mismatch of blades; refer to Checking and Correcting Mismatch of Blades, page 17.

12. Reinstall V-belt and tension by levering idle pulley against belt and tighten flange nut.

13. Reinstall cover on top of cutting unit and secure with self tapping screws.

CUTTING UNIT MAINTENANCE

REMOVING GEAR BOX AND REPLACING PULLEY

1. Lower cutting unit to the shop floor and shut engine off. Remove self-tapping screws holding covers to top of cutting unit and set covers aside.

2. Loosen both idler pulleys to release tension against belts mounted on gear box pulley.

3. Remove PTO shield (Fig. 39). Drive roll pin out of PTO yoke and input shaft. Slide yoke off gear box input shaft (Fig. 39). Remove carriage bolts, lockwashers and nuts holding gear box on mounting plate (Fig. 39). Lift gear box and pulley assembly off mounting plate.

DANGER

Do not start the engine and engage the PTO lever when PTO shaft is not connected to cutting unit gear box because the PTO shaft will rotate with enough force to cause serious injury.

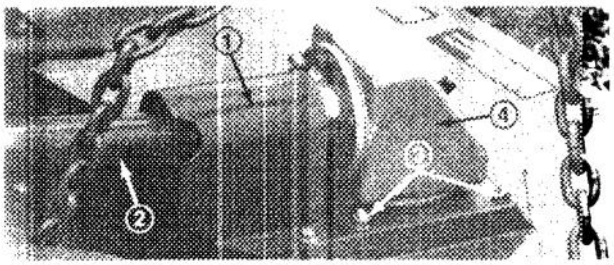


Figure 39

1. PTO shield
2. PTO driveshaft
3. Gearbox mounting fasteners
4. Gear box

4. Remove set screws from taper lock bushing. Install one set screw into hole that is threaded on side of taper lock. Tighten set screw until taper lock is loose on inside of pulley hub.

Note: Only one set screw is used to loosen the taper lock.

5. Slide gear box pulley and taper lock off output shaft. Account for the woodruff key that held pulley on shaft, and remove set screw from side of taper lock.

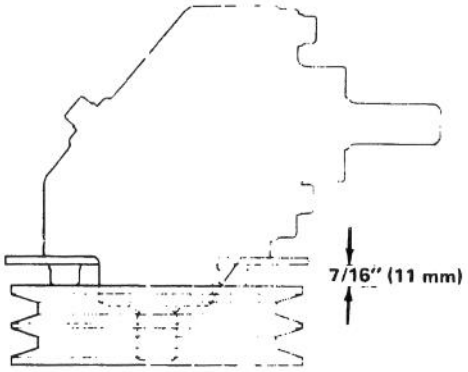


Figure 40

INSTALLING GEAR BOX AND PULLEY

1. Insert taper lock into tapered bore in pulley. Install woodruff key into keyway in shaft. Slide pulley w/taper lock onto output shaft and over the key. Top face of pulley must be 7/16 inch (11 mm) below bottom of gear box (Fig. 41).

2. Rotate pulley to get non-threaded holes in taper lock to line up with two threaded holes in hub of gear box pulley. Start threading set screws into the two holes and tighten them alternately and evenly until both set screws are tight.

3. Using a brass dowel or sleeve and hammer, hit the taper lock firmly. Now tighten set screws to 175 in.-lb (19.77 N·m). Continue to hit the taper lock and tighten set screws until 175 in.-lb (19.77 N·m) of torque will not turn the set screws.

4. Fill recessed socket head in set screws and the other taper lock holes with grease to prevent dirt from packing into the holes.

5. Mount gear box assembly to cutter unit and loop both belts around the pulley.

Note: To ease belt installation, remove belts from spindle pulleys and first mount them to gear box pulley. Belts can then be slipped over spindle pulleys by rotating cutter blades. Refer to Replacing Blade Drive Belts, page 14.

6. Secure gear box in place with carriage bolts, lockwashers and nuts. Be sure belts are installed around all pulleys, and tension the idler pulleys against the belts.

7. Mount the driveshaft onto the gearbox and install covers on top of cutting unit with self-tapping screws.

REPAIRING CUTTING UNIT GEAR BOX DISASSEMBLY:

1. Remove gear box assembly from cutting unit. Refer to Removing Gear Box and Replacing Pulley, page 20.

2. Remove pipe plug from gear box and drain oil out of gear box (Fig. 41).

INPUT AND OUTPUT SHAFT REMOVAL:

1. Remove five (5) capscrews securing input housing assembly; tap input housing with soft-faced hammer and pull on input shaft to remove from gear box (Fig. 41).

2. Remove five (5) capscrews securing mount plate and output bearing housing to gear box, tap housing with soft-faced hammer and pull on output shaft to remove assembly from gear box (Fig. 41).

CUTTING UNIT MAINTENANCE

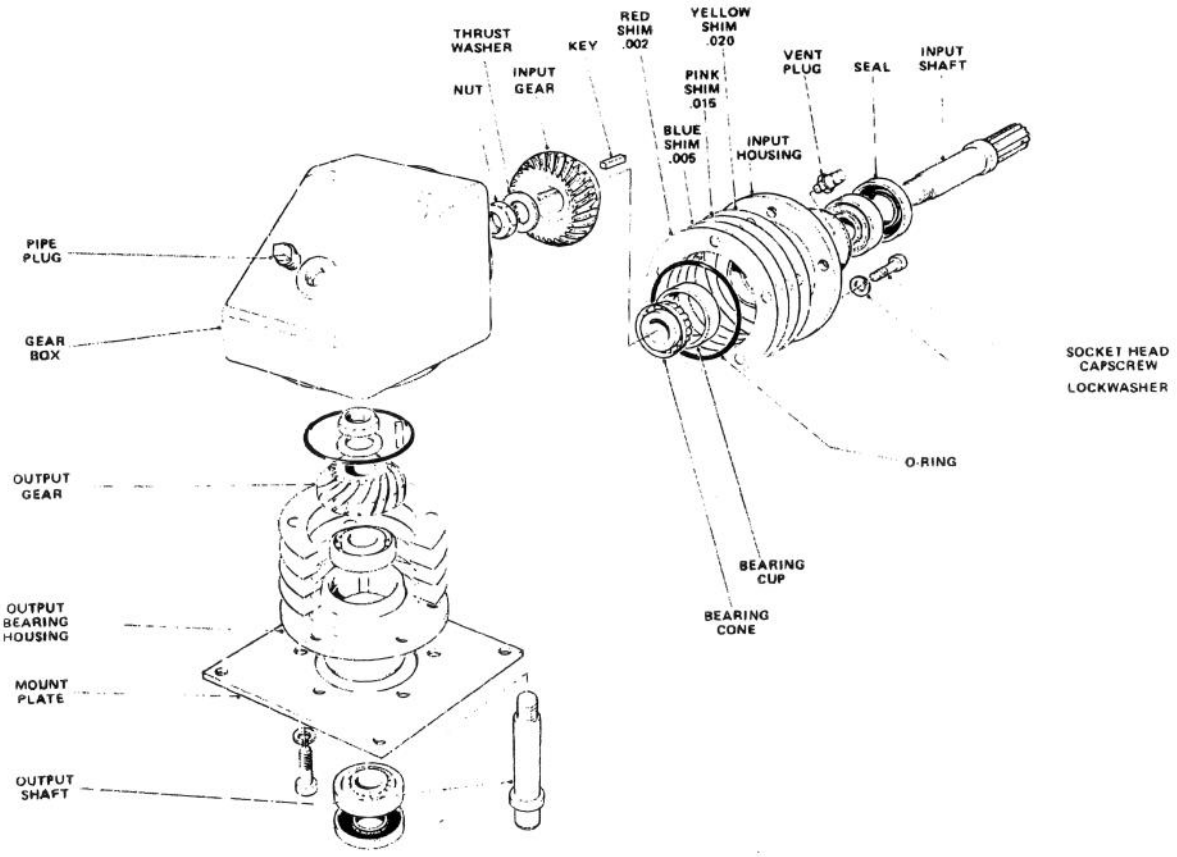


Figure 41

Note: Remember position of vent plug and gear box mount plate to assure input housing and plate is in correct position during re-assembly. Keep track of number and color of shims used in each assembly.

IMPORTANT: Input and output housing capscrews are of different lengths. Do not mix them up.

3. Mount input shaft in soft-jawed vise, remove nut and thrust washer.

4. Use a bearing separator to remove gear from shaft. Remove square key (Fig. 41).

5. Support mount flange of input housing in arbor press, remove shaft seal and press shaft, threaded end up, out of housing (Fig. 41).

6. One complete bearing and one bearing cup will remain in housing. Remove remaining bearing cone and drive both cups out of housing with drift punch and hammer. Press the other bearing cone off the shaft.

7. Use procedures 3 through 6 to disassemble the output shaft assembly (Fig. 41).

8. Discard and replace the shaft nut, shaft seal and housing O-ring for both assemblies (Fig. 41). Discard and replace all worn and damaged parts.

ASSEMBLY OF INPUT AND OUTPUT SHAFT ASSEMBLIES:

Use the following procedures with an arbor press to install both shaft assemblies.

1. Press bearing cups into bearing housings with smaller I.D. of cups toward inside of housing (Fig. 41).

2. Press a bearing cone onto shaft and insert shaft into housing.

3. Press the remaining bearing cone onto the shaft. Install square key, press on gear, install thrust washer and nut (Fig. 41).

CUTTING UNIT MAINTENANCE

Note: Use Loc-tite 242 or 601 on shaft and gear before assembling together.

4. Clamp the shaft end into a soft-jawed vise and rotate the housing while tightening the nut to insure bearings are matched with races. Tighten until shaft has .001 to .005 inch (0.0254 to 0.1270 mm) end play.

5. Oil the shaft, apply Permatex to O.D. of seal and press new seal into housing with seal lips facing inward (Fig. 41).

ASSEMBLING INPUT AND OUTPUT SHAFT ASSEMBLIES TO GEAR BOX:

IMPORTANT: It is recommended to replace the shims. However, if only the bearings, shafts or gears have been replaced use the same number and size shims as were used originally. If gear box or bearing housings have been replaced, install a .020 inch (0.508 mm) shim as a beginning alignment dimension.

1. Install shims on housing (Fig. 41).

2. Oil O-rings, install on housing (Fig. 41) and insert both assemblies into gear box (Fig. 41).

3. Install the mounting plate, insert the mounting capscrews and torque them to 20-25 ft-lb (27.2 - 34 N·m) in both assemblies.

4. Check input gear backlash with a dial indicator (Fig. 42). Backlash should be .005 - .010 inch at 1-1/2 inch (38 mm) radius (Fig. 42). If backlash is not within .005 - .010 inch (0.1270 - 0.2540 mm) remove input housing assembly and add or subtract shims as necessary. Repeat procedures until .005 - .010 inch (0.1270 - 0.2540 mm) is attained. .002, .005, .015 and .020 inch (0.0508, 0.127, 0.381 and 0.508 mm) shims are available (Fig. 41).

5. Check input and output gear pattern. Remove input and output gear assemblies from gear box and coat both gear teeth with DyKem steel blue or equivalent gear pattern compound. Install both assemblies into gear box. Be sure to use the same number and size shim as determined in step 4.

6. Rotate the shafts to establish a wear pattern in the steel blue on the gear teeth and disassemble

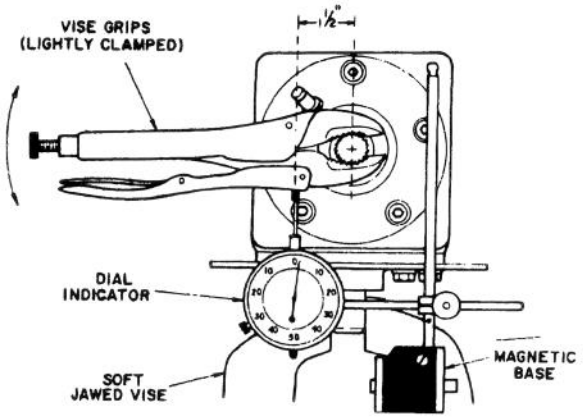


Figure 42

the input shaft and housing assembly from the gear box.

7. Inspect the wear pattern on the gear teeth, compare them to the patterns indicated in figure 43. Add or remove shims from output housing to correct any misalignment.

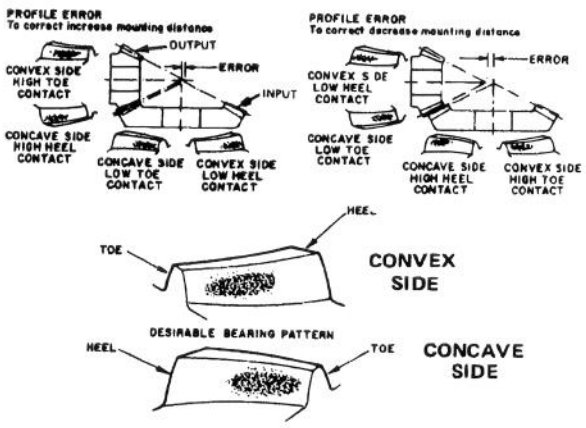


Figure 43

8. Repeat steps 1 through 6 until desirable wear pattern is established, re-assemble assembly into the gear box, torque the capscrews to 20-25 ft-lb (27.2-34 N·m) and fill the gear box to the bottom of the gear box plug hole with SAE 10W-30 or 10W-40 engine oil.

9. Install gear box pulley. Refer to Installing Gear Box and Pulley, page 20.

IDENTIFICATION AND ORDERING

MODEL AND SERIAL NUMBERS

The cutting unit has two identification numbers: a model number and a serial number. These numbers are stamped into a plate. The cutting unit identification plate is located just ahead of the left rear caster wheel (Fig. 44). In any correspondence concerning the cutting unit, supply the model and serial numbers to assure 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 cutting unit.

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

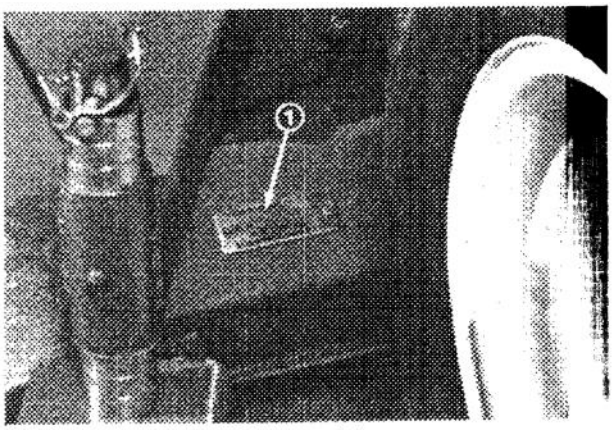


Figure 44

1. Cutting unit model and serial number

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

SERVICE INTERVAL CHART

Date									
Hour Meter Reading									
Service Interval ↓		Daily	10	50	100	150	200	250	300
Check Blades	Daily								
Lubricate Caster Arm Bushings	Daily								
Lubricate Caster Wheel Bearings	Daily								
Tighten Castor Wheel Nuts (Tighten after 2 & 10 hrs. initially)	50								
Torque Blade Bolts (Tighten after 10 hrs. initially)	50								
Lubricate Grease Fittings	50								
Clean Cutting Unit	50								
Check Blade Drive Belts	50								
Check Gear Box Oil	50								
Change Gear Box Oil	500								

SERVICE SPECIFICATIONS:

Cutting Unit Gear Box Oil – SAE 10W-30 or 10W-40

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.

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