1973

FORM NO. 3310-476

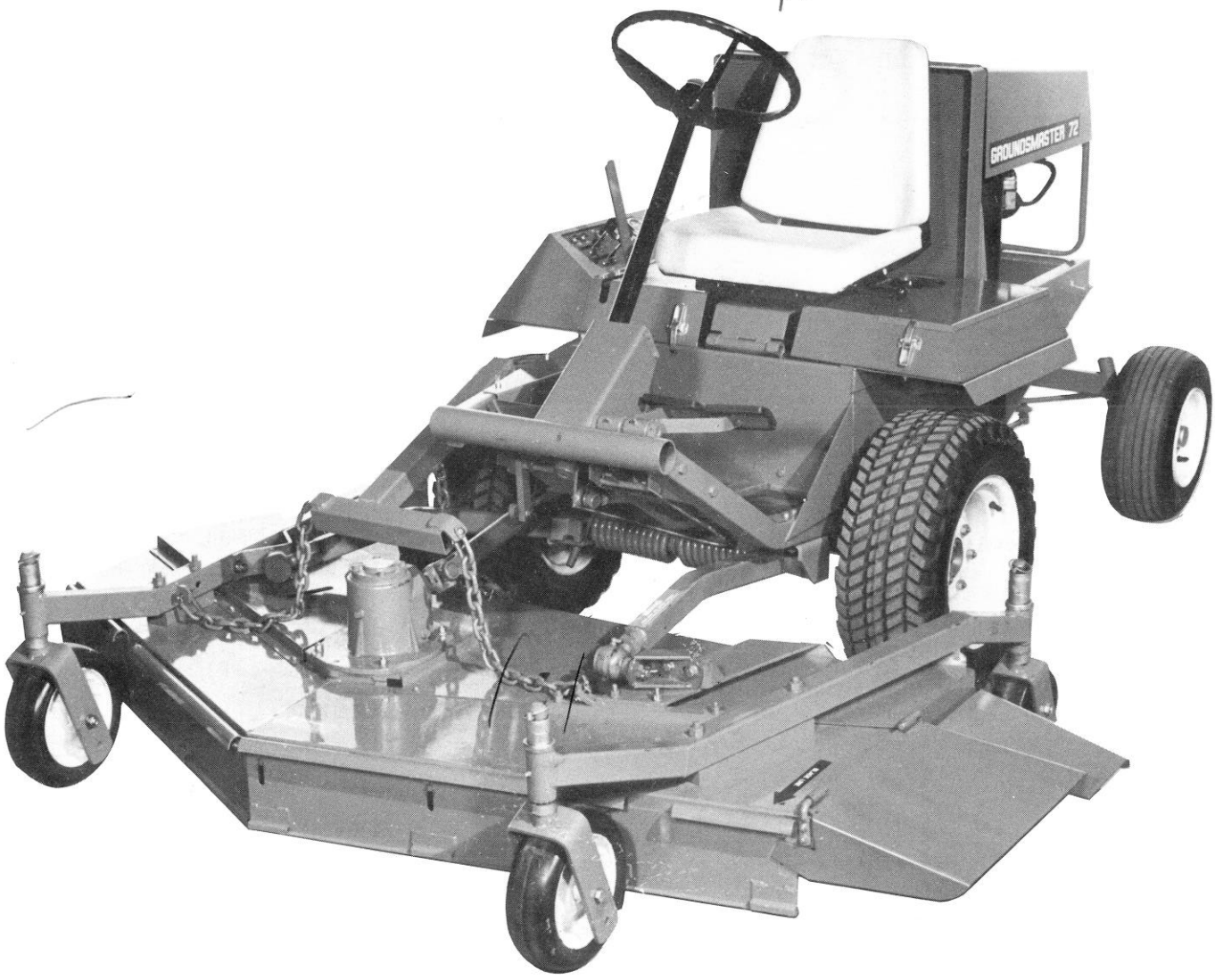
TORO®

MODEL NO. 30773-30001 & UP—TRACTION UNIT
MODEL NO. 30720-30001 & UP—CUTTING UNIT

OWNER'S AND SERVICE MANUAL

72" GROUNDSMASTER

SPARK Plug
AC-44F
Prestolite 14E4



Price $1.00

FOREWORD

The Groundsmaster 72 was developed to fill the need for a fast, highly maneuverable, intermediate size riding mower, with capabilities for optional attachments.

We know you will find this machine a high quality, precise and exacting tool. It utilizes the most advanced concepts in engineering and design and with proper care will give years of trouble-free service. Please take the time to read this manual before operating your new GROUNDSMASTER. The better you understand the operation of the machine the better the job it will do for you. While reading the manual, compare the illustrations with the actual machine to familiarize yourself with the location of controls and adjustments.

A study of the operating instructions will insure proper function of the unit, and will help promote safe operation. Please save this manual for future reference and information.

Use this Owner's Manual in conjunction with the engine Operator's Manual and the Overhaul Manual that were supplied with the unit.

If additional assistance is needed, your local Authorized TORO Distributor will be glad to help.

TABLE OF CONTENTS

SPECIFICATIONS

PRIME MOVER:

Engine: CONTINENTAL Model R839-46, 4 cylinder, water cooled, forced recirculating system. 19.8 net hp @ 3,450 RPM, 12 volt electrical system with generator. 47.8 cu. in. displacement, 8.5:1 compression ratio. Oil system full pressure–10 PSI gear driven oil pump. Replaceable oil filter. Forged steel connecting rods. Cylinder liners–wet type–cast iron–easily replaceable. Fuel system–down draft type carburetor. Governor–mechanical.

Battery: 12 volt, 54 plate, 50 Ampere hour capacity.

Steering: Ross Gear Steering Gear Assembly. 15" steering wheel.

Fuel Capacity: 8 hour fuel supply.

Weight: 1,600 lbs, dry weight with cutter deck.

Ground Speed: 0-10 m.p.h., infinitely variable.

Brakes: Individual wheel brakes and parking brakes with dynamic braking through propulsion system.

Gauges: Hour Meter, Amp Meter, Water Temperature–safety light and buzzer, Oil Pressure–safety light and buzzer.

Controls: Hand operated throttle and choke.

Tires: (2) Rear Steering Tires–16 x 6.50 x 8 - 2 Ply, Rib. (2) Front Traction Drive Tires–23 x 8.50 x 12 - 2 Ply, Xtr. Demountable drop-center rims.

Propulsion: Infinitely variable Vickers T66ZH hydrostatic transmission. Mounted on GT 20 Dana Axle–20.9:1 ratio. Ground speed 0-10 m.p.h.–infinitely variable. Single foot pedal control of ground speed and forward-reverse.

Seat: High back, replaceable molded foam back and seat cushions. 5" fore-aft slide adjustment.

Overall Dimension with Cutter Deck: Height–50" to top of steering wheel. Width–75". Length–111". Wheel base–48". Tread width–Front & Wheels–37"; Rear & Wheels–36".

Accessory Drive: Splined-universal PTO shaft.

MOWER ATTACHMENT:

Height of Cut: 1½-6" adjustable front and rear, ¾" increments.

Width of Cut: 72".

Cutter Housing: 11 Gauge steel, 6" deep with a 2" step. Reinforced with 2" x 2" x 3/16" angle iron.

Cutter Drive: PTO Driven Gear Box with 1.45:1 spiral bevel gears on center spindle. "B" section drive belts to end spindles.

Cutter Spindles: 1" diameter shafts turning on two externally sealed greasable ball bearings.

Blades: Three 25" long, heat-treated steel, suction-lift blades.

Lift: Hydraulic.

Cutter Wheels: 4 Gauge wheels for maximum contour following ability. Torsion spring for counter balance. Rear caster–6" x 2½". Front caster–10.25" x 3.25".

Optional Equipment: 60" hard surface broom and wheel weights.

*Specifications and Trim Subject to Change Without Notice.

SAFETY

This Safety Alert Symbol is intended to call your attention to a message concerning your personal safety. It means . . .

ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!

The Groundsmaster 72 is as safe as good, practical design can make it. Keep the Operating and Safety instructions in mind while using it.

SAFETY DECALS

These decals are located in an area easily visible to the operator, or near an area of potential danger. If these decals become damaged or illegible, install new decals.

⚠CAUTION
For safety reasons, do not operate the implement in the transport position.

FLOAT

TRANSPORT

LIFT ⬇

NEAR LIFT LEVER

STARTING INSTRUCTIONS

1. Disengage power take-off to the implement.
2. Neutralize foot control pedal for traction drive and remove foot.
3. Depress brake pedal.
4. Set choke and throttle controls as required. (See owners manual)
5. Turn key to start position.

To stop, turn key to off position and remove key.

ON SHROUD

LOOSE PARTS CHART

LOOSE PART	QUANTITY
Steering Wheel Cap & Decal	1
Lift Chain	3
Shackle	6
Tension Spring	1
Pin	6
Capscrew 5/16 - 18 x 1"	4
7/16 - 14 x 1½"	2
7/16 - 14 x 3"	2
Hex Nut 7/16 - 14	4
Lockwasher 7/16 Med	4
5/16 Ext	4
SAE washer 7/16	3
5/16	2
Cotter Pin 1/8 x 3/4"	6
Battery	1
Ball Joint Assembly (R.H.)	1
Maintenance Schedule	1
Operator's Manual (Engine)	1
Overhaul Manual (Engine)	1
Service Parts Catalog (Engine)	1
Owner's Manual	1
Parts Catalog	1
Warranty Card	1

⚠CAUTION
For safety reasons:
1. **Do not remove deflector chute.**
2. **Keep the deflector chute in the lowest possible position to permit discharge.**

ON DEFLECTOR

WARNING
PUSH ARMS ARE SPRING LOADED!
See owners manual for disassembly procedure.

ON PUSH ARMS

⚠CAUTION
For safety reasons, keep the front shields in the lowest possible position to permit cutting.

ON FRONT SHIELD

BLADE LINE

ON LEFT SIDE OF HOUSING

GENERAL ASSEMBLY INSTRUCTIONS

The Groundsmaster 72 traction unit and cutting unit are shipped in separate crates. Disassemble the crates carefully, to avoid damage and losing any parts. Remove the top first, then remove any components that are banded to the sides. Remove the sides and remove all remaining banding. The traction unit is shipped on blocks so there is no weight on the tires. Jack up each corner one at a time, and remove the blocks.

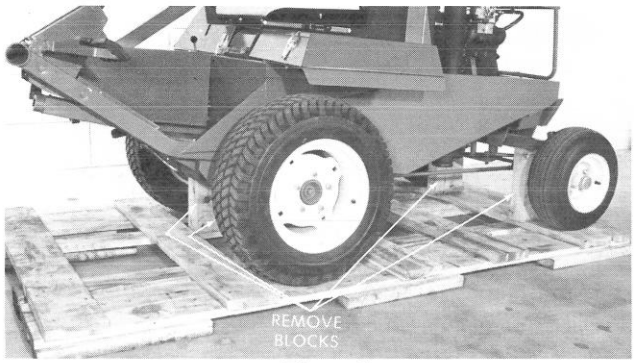


Figure 1

Install the steering wheel and secure with the large nut. Install the steering wheel cap.

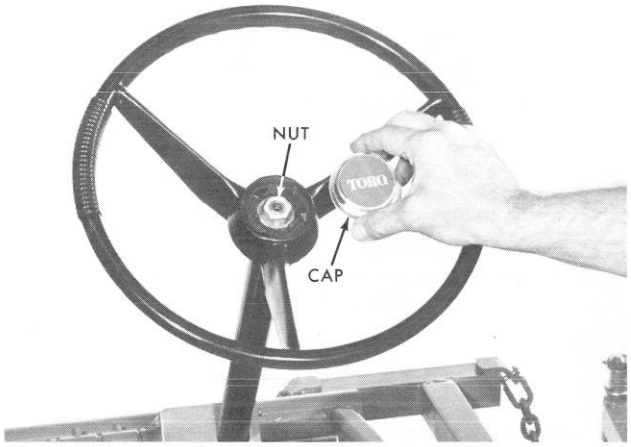


Figure 2

Install the seat with the two capscrews as shown in Figure 3.

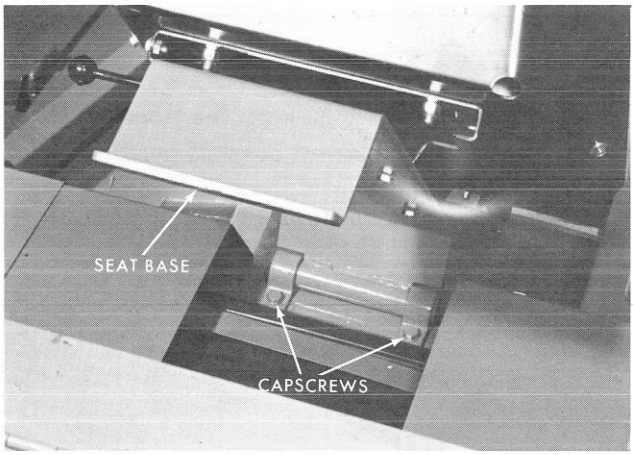


Figure 3

Tilt the seat forward, unhook the two latches and remove the instrument panel shroud.

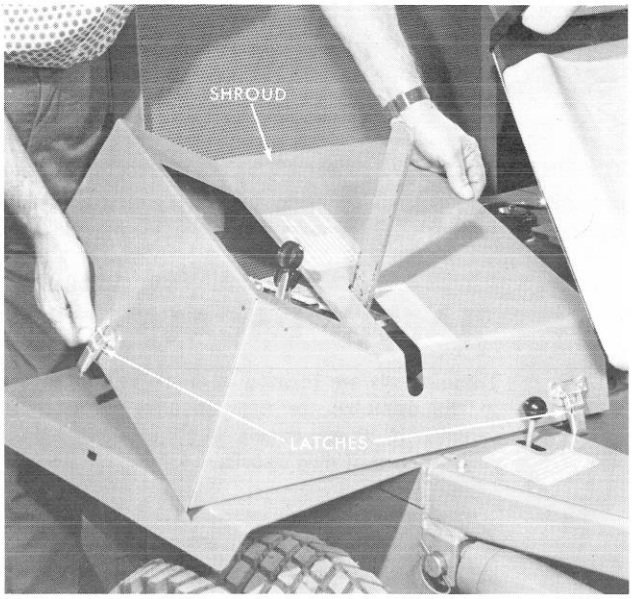


Figure 4

Activate the battery and install as shown with the negative (ground) post to the front.

IMPORTANT: Make sure the clamps are in the grooves in the battery. This is necessary to prevent the battery from shifting sideways. Tighten the wing nuts.

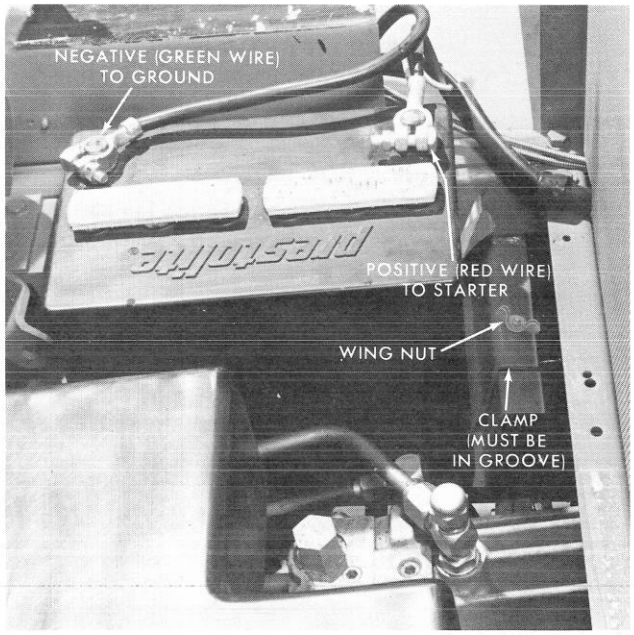


Figure 5

Hold in the disengaging knob (see Figure 24) and push the Groundsmaster off the crate.

GENERAL ASSEMBLY INSTRUCTIONS (Continued)

Install the right hand ball joint and mount assembly to the right hand push arm to the dimension shown in Figure 6. Leave the jam nut loose.

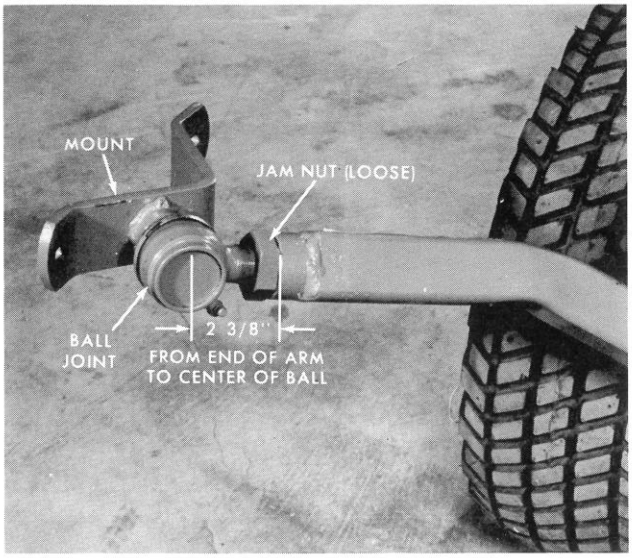


Figure 6

Rotate the lift arm forward and connect the cylinder to the arm. The cylinder pin must be secured with the spring pin to the inside, and the cotter pin to the outside.

Figure 7

WARNING: The left hand push rod is spring-loaded with approximately 150 pounds tension. Use care to avoid damage or personal injury.

Pry the arm downward and block it securely as shown in Figure 8.

⚠ MAKE SURE THE BLOCKS CANNOT SLIP OUT ACCIDENTALLY.

Install the ball joint and mount assembly to the same dimension as shown in Figure 8. Leave the jam nut loose and rotate the bracket upward as shown, to provide clearance when attaching the cutting unit.

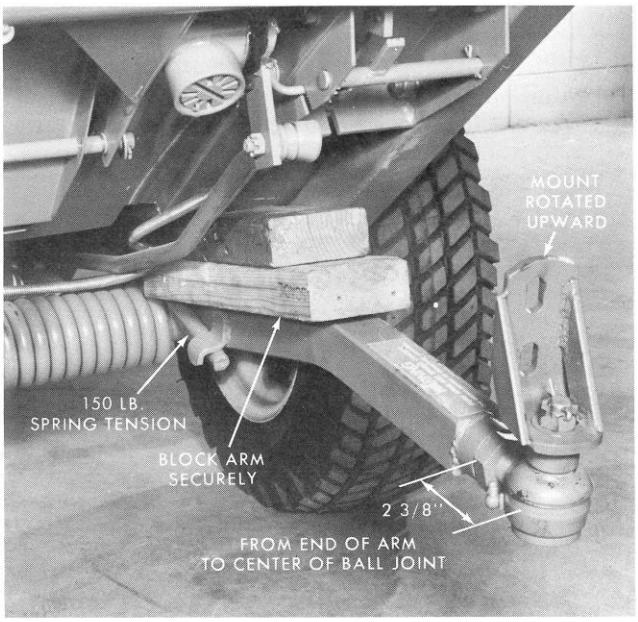


Figure 8

Attach the caster wheels to the cutting unit as shown in Figure 9. Refer to the chart on page 11 for the spacer placement for the desired height-of-cut.

IMPORTANT: The thrust washer must be next to the bushing on the underside of the caster arm; the dust cap must be over the bushing on the top of the arm.

Install the deflector as shown. Remove the front pivot pin, slide the deflector in place, and reinstall the front pivot pin. Secure the deflector in the lowest position (See Figure 28).

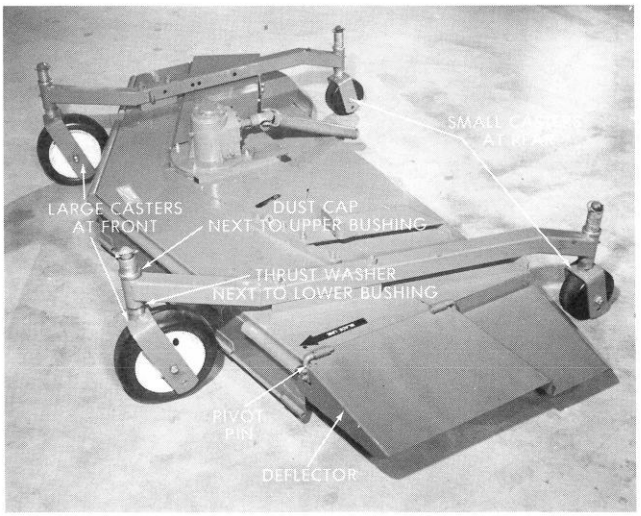


Figure 9

GENERAL ASSEMBLY INSTRUCTIONS (Continued)

Move the cutting unit in front of the traction unit, lined up as nearly as possible. Remove any banding and protective covering from the splined end of the shaft. Push the cutting unit into place, guiding the splined portion of the shaft into the cutting unit portion. It is desirable to have a helper hold the right hand push arm down out of the way of the splined shaft.

IMPORTANT: The drive shaft must be assembled with the yokes exactly in line. If the splines are off even one tooth, the life and performance of the drive shaft will be affected.

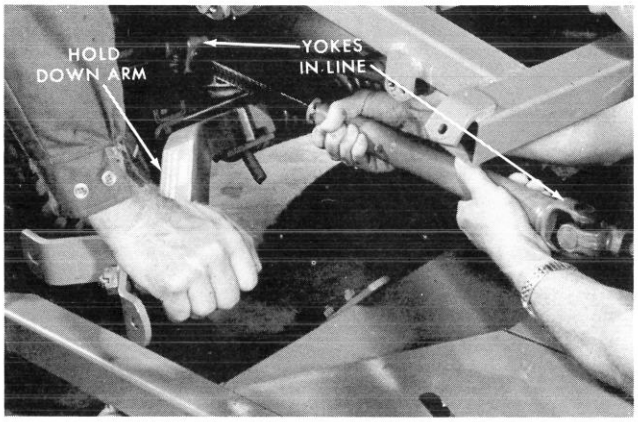


Figure 10

WARNING: The right hand push arm is also spring-loaded, with about 100 pounds tension. Have an assistant hold the arm in position.

Attach the right hand ball joint mount to the caster arm as shown, with the large washers to the outside. The smaller flat washer goes over the slot in the mount. Tighten the large nut to secure the ball joint.

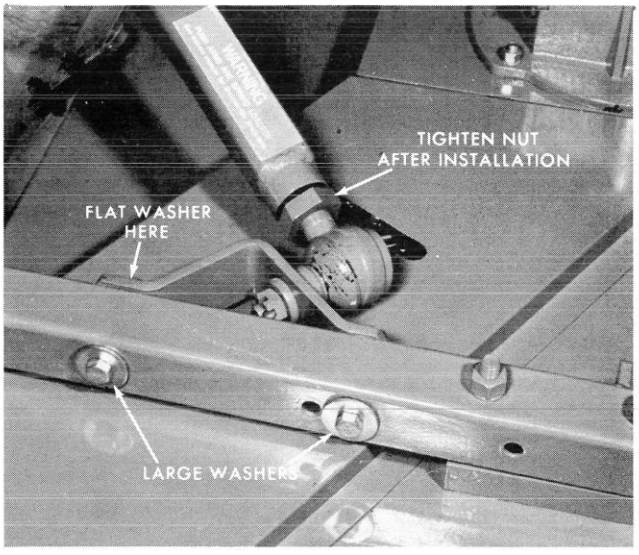


Figure 11

Rotate the left hand ball joint into position, and attach the mount to the bracket on the cutting unit. Use a flat washer under the capscrew heads. Tighten the large nut to secure the ball joint. Remove the blocks holding the push arm down.

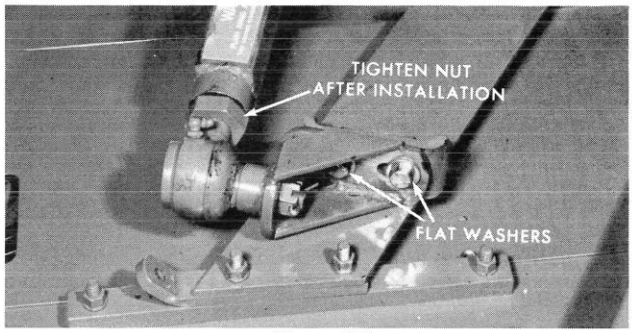


Figure 12

Connect the lift chains as shown in Figure 13. Install the spring between the third link on the rear chain and the loop on the cotter pin.

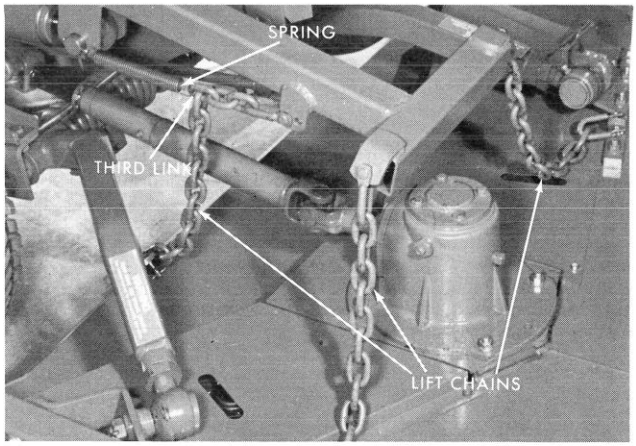


Figure 13

Check off the various items on the Warranty Registration and Pre-Delivery Check List Card as you review the Groundsmaster prior to use. This will insure that important adjustments and lubrication points are not overlooked. Figure 14 shows the complete Groundsmaster 72 assembly.

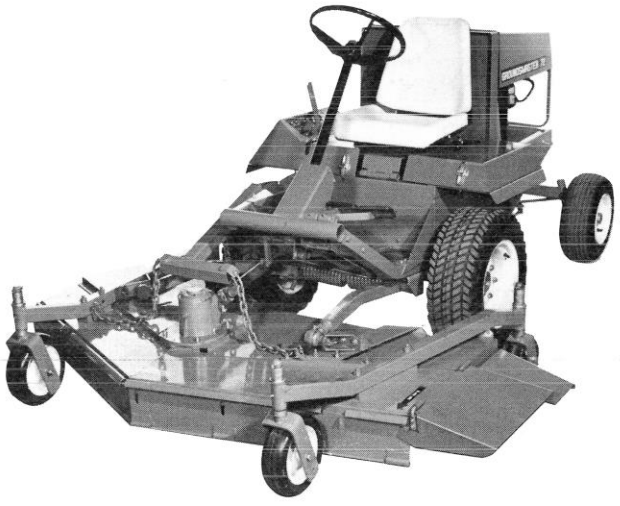


Figure 14

CONTROLS

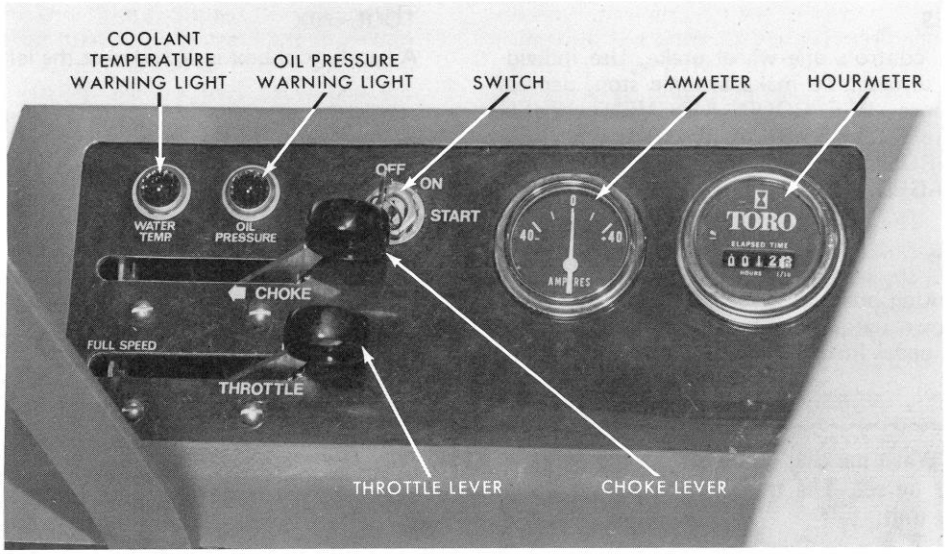


Figure 15

TEMPERATURE WARNING LIGHT

This warning light will glow and a buzzer will sound if the temperature of the cooling fluid exceeds a safe limit. Stop the unit and determine the cause of overheating and make corrections before restarting the engine.

OIL PRESSURE WARNING LIGHT

This light will glow and a buzzer will sound if the engine oil pressure drops below safe operating limits. Stop the engine immediately and determine the cause of low oil pressure and make any corrections necessary before restarting the engine.

IGNITION START SWITCH

Turn the ignition key clockwise to start the engine. Release the key as soon as the engine starts. If the engine does not start immediately, do not re-engage the starting motor while the flywheel is turning.

IMPORTANT: Do not keep the starter engaged for more than 15 seconds at a time. Wait 10 or 15 seconds before trying again.

Remove the key when the tractor is unattended.

AMMETER

The ammeter should show a slight charge unless the engine is idling slowly. If the battery if fully charged, the needle may appear to remain centered on the gauge. If the gauge shows a continuous discharge when the engine is running above idle speed, stop the engine and determine the cause. Make any corrections necessary to avoid discharging the battery.

HOURMETER

The hourmeter registers actual hours of engine operation. Use the hourmeter readings to determine the proper intervals for lubrication and maintenance procedures.

CHOKE LEVER

Push the choke lever forward as required for starting the engine. A cold engine will normally require full choke, a warm engine may not require any choking. Operate the engine without choking as soon as possible after starting.

THROTTLE LEVER

Moving the lever forward will increase the engine speed (and blade speed). The throttle lever, in conjunction with the foot pedal, determines the ground speed.

PTO LEVER

This lever engages or disengages the drive to the cutting blades. Push forward to engage; pull rearward to disengage. KEEP THE DRIVE DISENGAGED AT ALL TIMES EXCEPT WHEN THE CUTTING UNIT IS LOWERED, AND IN ACTUAL OPERATING POSITION.

LIFT LEVER

Push the lever forward to lower the cutting unit; pull back to raise.

⚠ DO NOT RAISE THE CUTTING UNIT WHEN THE BLADES ARE TURNING.

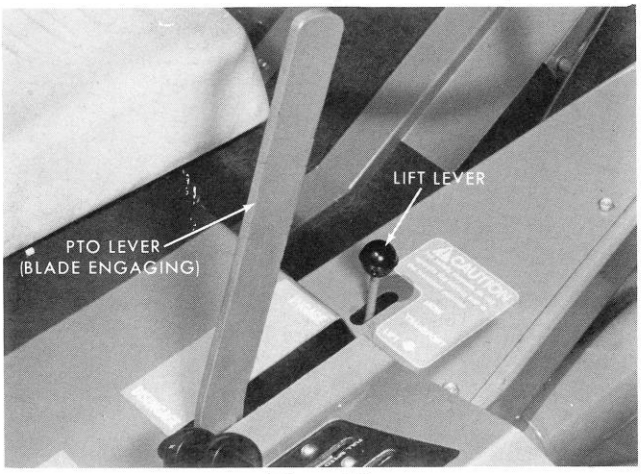


Figure 16

CONTROLS (Continued)

SERVICE BRAKES

Each brake pedal controls one wheel brake. Use individually to assist in turning. To make a panic stop, depress both pedals at once. USE GOOD JUDGMENT WHEN USING THE BRAKE TO ASSIST IN MAKING A SHARP TURN. IF THE GROUND IS SOFT OR WET, THE TURF COULD BE DAMAGED.

PARKING BRAKE

To engage the parking brake, depress the right hand brake pedal and press down the parking brake handle. To release, depress the brake pedal further and the parking brake will snap off.

IMPORTANT: When parking on an incline the parking brake must be set. The transmission cannot be used to hold the unit.

TRACTION PEDAL

This is a heel-toe type pedal. Depress the front end of the pedal with the toe to move forward; depress the rear of the pedal with the heel to move to the rear. Ground speed can be varied from 0 to the maximum determined by the throttle setting. For maximum speed the throttle lever must be fully forward, and the foot pedal fully depressed. (Maximum speed is approximately 10 MPH).

IMPORTANT: Use the maximum ground speed only when transporting the unit. We do not recommend maximum ground speed when actually mowing.

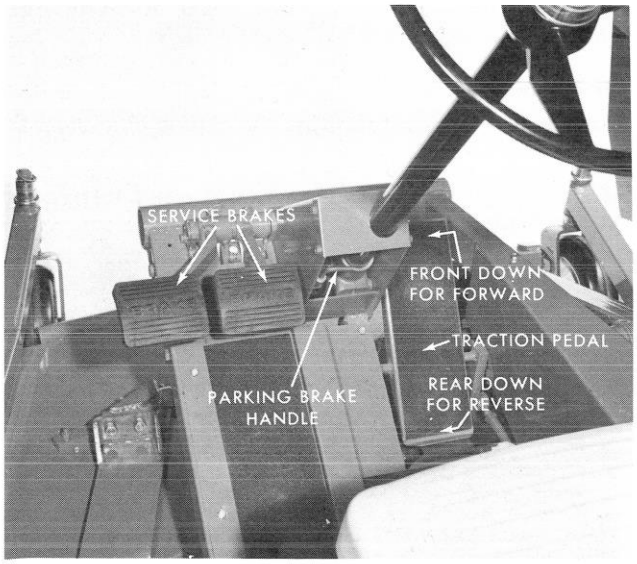


Figure 17

TOOL BOX

A handy tool box is provided at the left of the seat.

Figure 18

SEAT ADJUSTMENT

The seat can be moved forward or backward for the convenience of the operator. Pull out the lever and slide the seat to the desired position.

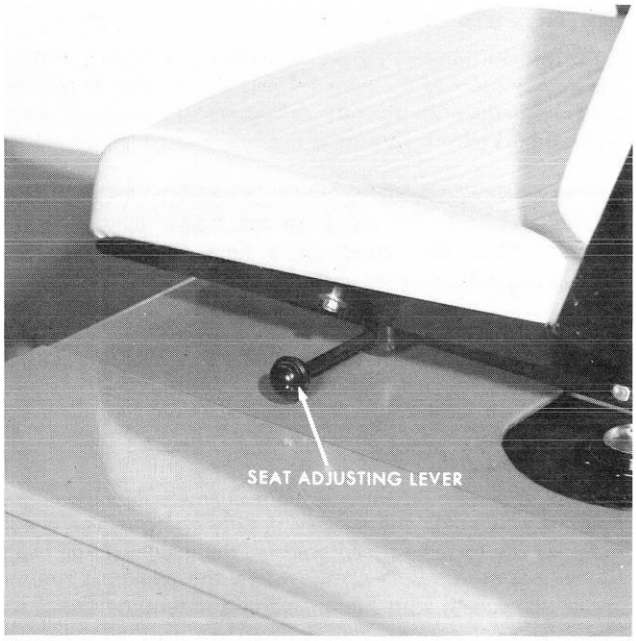


Figure 19

PREPARATION BEFORE STARTING

FILLING GASOLINE TANK

1. Rotate seat forward to gain access to the gasoline tank.
2. Fill gasoline tank with a fresh supply of regular gasoline.

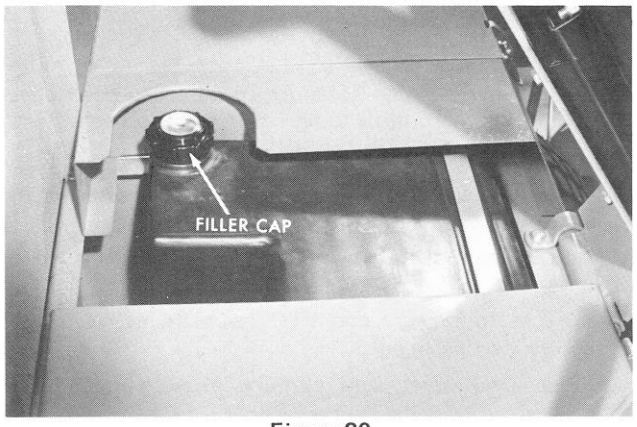


Figure 20

IMPORTANT: Handle gasoline with care – it is highly flammable. Do not add gasoline to your Groundsmaster in an enclosed area such as a garage or other building. Do not smoke while filling the tank. Do not add gasoline while the engine is running. Fill gasoline tank out-of-doors and wipe up any spilled gasoline.

3. Make sure the fuel shut-off valve on the sediment bowl is open. Check the sediment bowl occasionally for water or other impurities. Close the shut-off valve and drain the bowl. Open the shut-off valve.

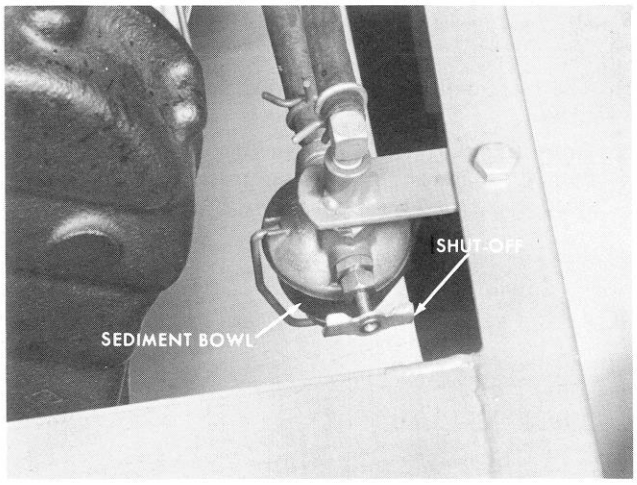


Figure 21

ENGINE OIL

1. Place the Groundsmaster on a level surface.
2. The engine is shipped with oil in the crankcase. Check the oil and replenish if necessary to bring the level to the high mark on the dipstick. DO NOT OVERFILL.
3. Use API Service SE-SC 10W-40 oil for above 0° F., operation; below 0° F., use 5W-20. Capacity is 3 U.S. quarts with filter.

CAUTION: After starting a new engine, run it at idle for 5 minutes, then stop engine and recheck oil level; bring oil level to high mark on dipstick. Wipe up any spilled oil.

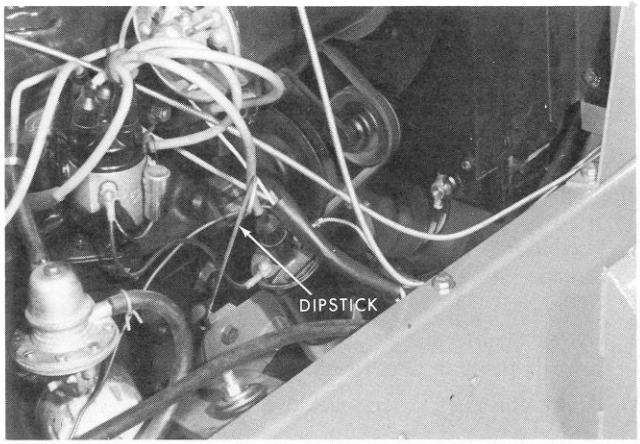


Figure 22

HYDRAULIC SYSTEM

1. The hydraulic system holds approximately 5 U.S. quarts. Use SAE 10W-40 SE-SC engine oil. THE HYDRAULIC SYSTEM HAS BEEN FILLED AT THE FACTORY. However, the fluid level should be checked before starting and periodically thereafter. Check as follows:
   A. The level plug is located on the front side of the differential housing, just behind the large spring. (See Figure 35, page 13). Be sure the Groundsmaster is on a level surface, and remove the level plug. The oil should be up to the bottom of the hole.
   B. If the oil level is low, tilt the seat forward and remove the cap plug shown in Figure 23. Add a high quality SE-SC 10W-40 oil until the level is up to the bottom of the check plug hole in the differential housing. When adding oil to the system, pour it through a funnel with a fine wire screen (200 mesh or better). Keep funnel and containers immaculately clean.

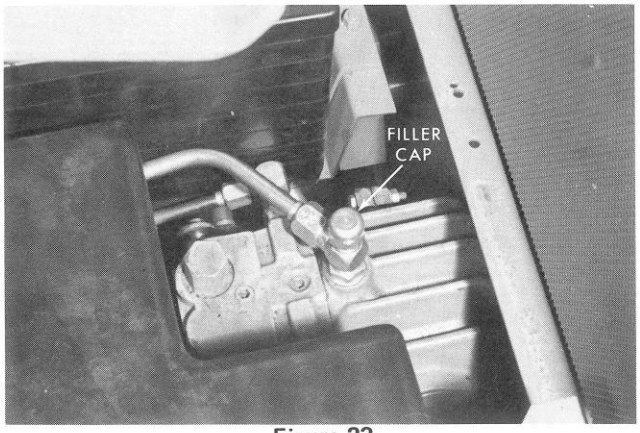


Figure 23

STARTING AND SAFETY INSTRUCTIONS

BREAK-IN PERIOD

1. See your engine Operator's Manual for changing oil and maintenance during the break-in period.
2. Approximately 20 hours of operation at ¾ load are required for proper break-in.
3. Perform the adjustments listed on page 7 of the engine Owner's Manual after the first 50 hours of operation.
4. Change the hydraulic filter after the first 10 hours of operation. See "Hydraulic Oil Filter," page 14.

STARTING PROCEDURE

1. Move the throttle control to the mid-range position and push the choke control forward.
2. Insert ignition key and turn clockwise to start. DO NOT KEEP THE STARTER MOTOR ENGAGED FOR LONGER THAN 15 SECONDS AT A TIME. When engine starts, operate without choking as soon as possible.
3. After engine starts, raise and lower the cutter deck several times to check response of hydraulic lift.
4. Raise the cutter deck and operate the Groundsmaster in forward and reverse for several minutes.
5. Turn the rear wheels fully to the left and right to check steering response.
6. After operating the Groundsmaster for several minutes, stop engine and check for oil leaks. If leaks appear, take necessary corrective measures.

PUSHING OR TOWING GROUNDSMASTER

If it is necessary to push or tow the Groundsmaster with the engine not running, HOLD in the knob shown in Figure 24. This opens a by-pass in the pump, and allows the hydraulic fluid to circulate so the unit can be moved. The knob will return to its normal operating position when released.

IMPORTANT: Do not wedge in the knob or damage to hydraulic components could result if the Groundsmaster was operated with the knob in.

⚠ OPERATING SAFETY INSTRUCTIONS

1. Know your controls and how to stop quickly – READ THIS OWNER'S MANUAL THOROUGHLY.
2. Do not raise the cutting assembly while the blades are turning.
3. Look behind you before backing up.
4. Stay alert for hidden hazards.
5. Beware of steep slopes; reduce speed on all side slopes and during sharp turns to prevent loss of control.
6. Do not drive close to a ditch or creek.
7. Do not attempt to operate the Groundsmaster when you are not in the operator's seat.
8. Do not attempt to get off the Groundsmaster when it is moving.
9. Be sure foot pedal and PTO lever are in "Neutral" before starting engine.
10. Keep hands, feet, and clothing away from moving parts.
11. Do not operate Groundsmaster with any of the shields removed.
12. Stop the engine before leaving the operator's position.
13. Take precautions when leaving the Groundsmaster unattended to prevent accidental starts, rolling away, etc.
14. Remove the key when the Groundsmaster is not it use.
15. After striking a foreign object, stop the engine, inspect and repair damaged parts before starting the engine.
16. Lower the cutting deck when the Groundsmaster is unattended.
17. Do not add gasoline when the engine is hot or running.
18. Do not add or check engine oil when the engine is running.
19. Do not make any adjustments while the engine is running.
20. Do not operate the mower in the vicinity of other persons or pets.
21. The grass deflector must be fastened when operating mower.
22. When transporting Groundsmaster, lower the cutting unit to maintain steering control when descending steep slopes.

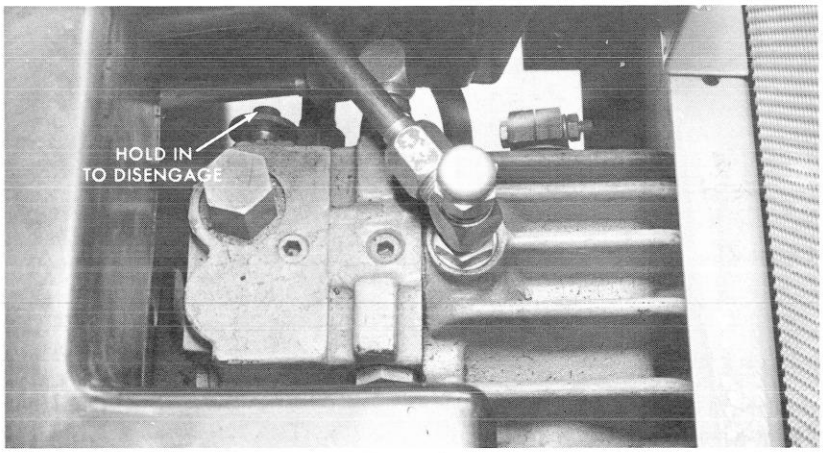


Figure 24

OPERATING INSTRUCTIONS

CUTTER DECK LIFT CHAINS

To gain additional clearance at the rear of the cutter deck when it is raised, the rear lift chain can be moved to the front hole in the bracket on the lift arm.

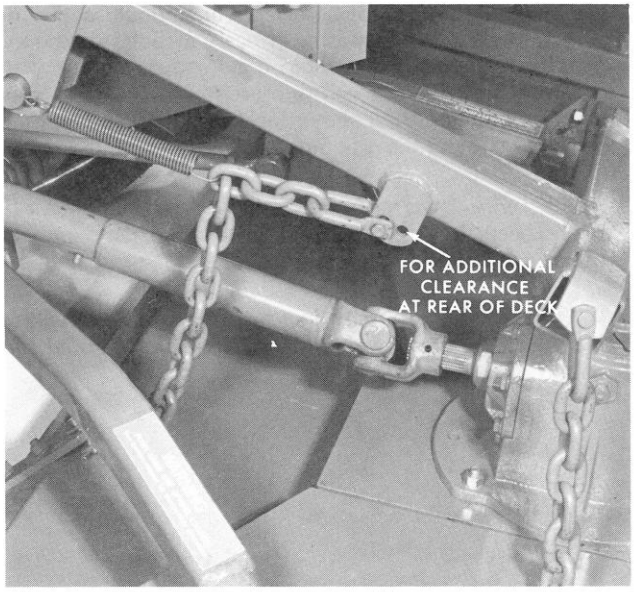


Figure 25

FRONT SHIELD

The front shields are adjustable up and down. Keep them as low as is practical for good cutting and safety.

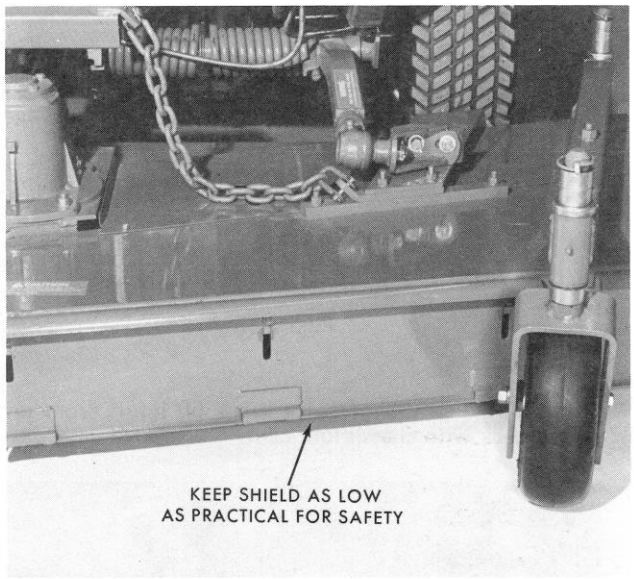


Figure 26

HEIGHT-OF-CUT

Height-of-cut is adjustable from 1½ to 6 inches in ¾ inch increments by means of spacers on the caster wheel spindles. The caster wheels can also be located in two separate positions in the wheel forks for an additional combination of heights. The front casters can be raised or lowered three inches in the front forks; the rear casters can be raised or lowered 2¼ inches in the rear forks.

For the 1½ inch setting, the casters must be in the lowest position (upper holes in forks), and all spacers above the caster arm. For the 6 inch setting, the casters must be in the high position (lower holes in forks), and all spacers below the caster arms.

IMPORTANT: The dust cap must be located on the top of the caster arm, next to the bushing, and the thrust washer below the arm, next to the bushing.

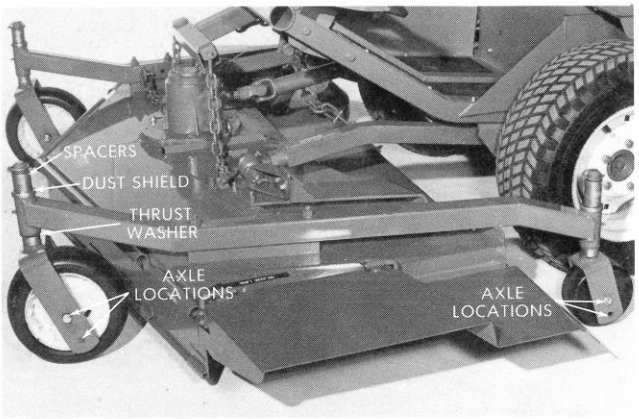


Figure 27

The following chart gives the caster wheel and spacer placement to obtain each setting.

Desired Height of Cut	Axle Position	Number of Spacers Below Caster Arms	
		Front Caster	Rear Caster
1½"	Upper	0	0
2¼"	Upper	1	1
3"	Upper	2	2
3¾"	Upper	3	3
4½"	Lower	1	2
5¼"	Lower	2	3
6"	Lower	3	4

DEFLECTOR

The deflector can be secured in either of two positions.

⚠ WE STRONGLY RECOMMEND THAT THE DEFLECTOR BE IN THE LOWEST POSITION WHENEVER THE GROUNDSMASTER IS USED NEAR BUILDINGS OR WHEN THERE ARE PEOPLE OR ANIMALS IN THE AREA. THE BLADES CAN THROW DEBRIS A CONSIDERABLE DISTANCE WITH SUFFICIENT FORCE TO CAUSE PERSONAL INJURY OR DAMAGE TO PROPERTY. THE ONLY TIME THE DEFLECTOR SHOULD BE IN THE UPPER POSITION IS WHEN THERE IS NO

OPERATING INSTRUCTIONS (Continued)

DEFLECTOR (Continued)

POSSIBILITY OF INJURY OR DAMAGE. DO NOT CHANGE DEFLECTOR HEIGHT WHEN THE BLADES ARE TURNING.

Figure 28

CUTTING

Satisfactory cutting depends on the proper combination of blade speed and ground speed. The blade speed is controlled by the throttle setting (engine speed). The ground speed is controlled by the foot pedal, and is variable from 0 MPH to the maximum determined by the throttle setting. A recommendation cannot be given which would apply in all areas and all types of grasses or even all times of the year. As a general rule, lush, damp grass should be cut with a relatively slow blade speed to prevent mulching and clumps in the discharge. Vary the ground speed depending on the height of cut and the ground condition.

Sparse, wiry grass is usually tougher and requires a high blade speed. Again, the ground speed will depend on height-of-cut and the ground condition.

A little experimentation in an inconspicuous area will soon give the operator the confidence and skill required for all conditions.

MAINTENANCE

LUBRICATION AND PREVENTIVE MAINTENANCE

ENGINE

See engine Operator's Manual for additional Lubrication and Maintenance recommendations.

DAILY SERVICE

Blades (3) – Check daily. Tighten and sharpen as needed.

50 HOUR SERVICE

Repeat Daily Service

Power Take-off Bearings (2) – Service every 50 hours from under right side of unit with chassis lubricant.

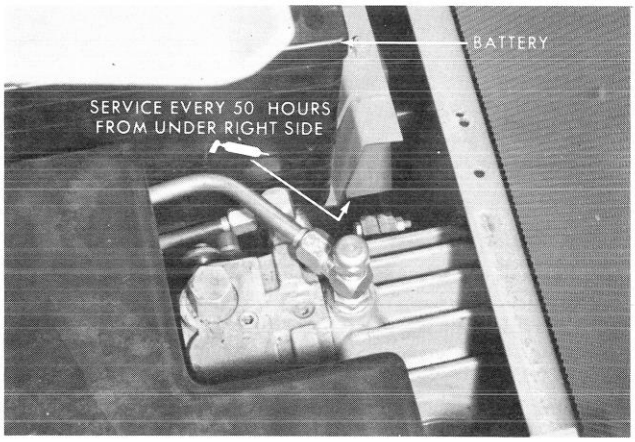


Figure 29

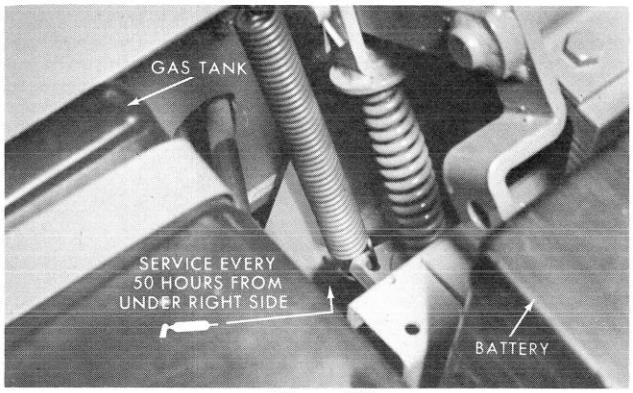


Figure 30

Cutter Spindles (3) – Service every 50 hours from under side of deck with chassis lubricant.

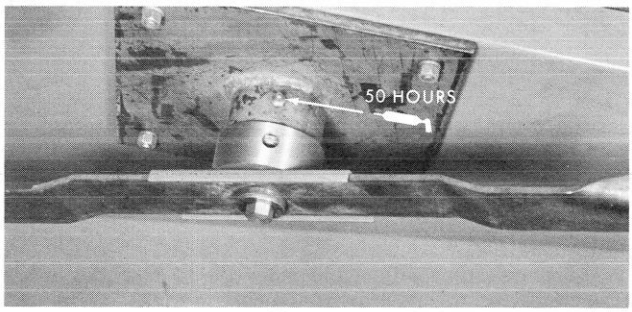


Figure 31

MAINTENANCE (Continued)

50 HOUR SERVICE (Continued)

Cutter Idler Pulleys (2) – Service every 50 hours through slots in deck covers with chassis lubricant.

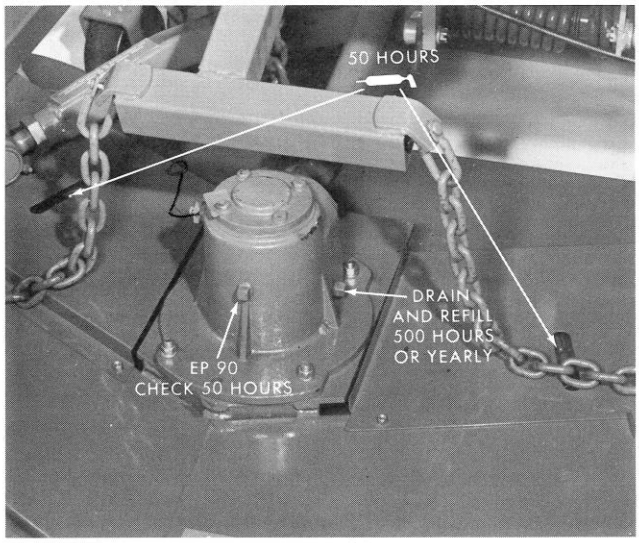


Figure 32

Universal Shaft & Joints (3) – Service every 50 hours with chassis lubricant. (See Figure 33).

Figure 33

Gear Box – Lower cutting deck so caster wheels are on level surface. Remove level plug (front) and check oil level. Replenish if necessary with SAE 90 EP gear oil. See Figure 32.

Steering Gear (1) – Service every 50 hours with chassis lubricant.

Brake Pedals (2) – Service every 50 hours with chassis lubricant.

Caster Wheels and Pivot Shafts (8) – Service every 50 hours with chassis lubricant.

Push Arms (4) – Service every 50 hours with chassis lubricant.

Rear Axle (4) – Service every 50 hours with chassis lubricant.

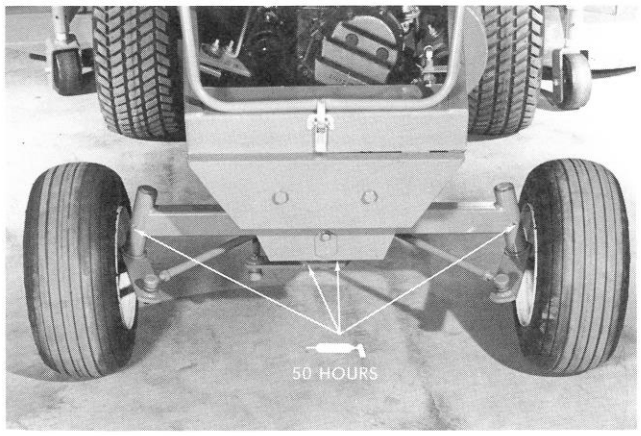


Figure 34

Hydraulic Pump & Differential – The hydraulic pump and differential assembly have a common oil supply. Change the hydraulic filter after the first 10 hours of operation. See Figure 36. Every 50 hours, place the unit on a level surface and check the oil level. The level plug is on the front side of the differential case just behind the large spring. The oil should be level with the check plug hole. If necessary, replenish with SAE 10W-40 Grade SE-SC oil.

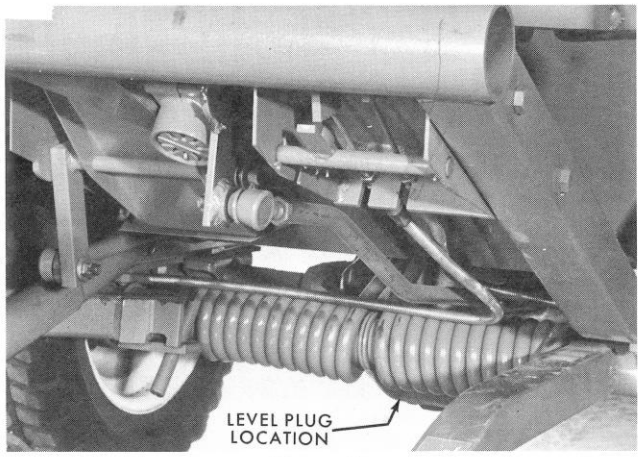


Figure 35

Battery – Check every 50 hours and add distilled water as needed to maintain proper electrolyte level.

Tire Pressure – Check pressure every 50 hours of operation. Maintain pressure on all four tires at 10 to 12 PSI.

250 HOUR SERVICE

Repeat the Daily and 50-Hour Service

Valve Tappet Clearance – The engine Operator's Manual lists Valve Tappet Adjustment under the 500 hour schedule. Because of the off-highway application, The TORO Company recommends that the valves be adjusted every 250 hours of operation. See page 16 in the engine Operator's Manual.

MAINTENANCE (Continued)

250 HOUR SERVICE (Continued)

Hydraulic Oil Filter – Change the filter after the first 10 hours of operation, and thereafter every 250 hours of operation, or yearly, whichever comes first. Fill the filter with 10W-40 SE-SC oil before installing. Run the engine for a few minutes to purge any air from the system. Check the hydraulic oil level (See Figure 35) and replenish if necessary.

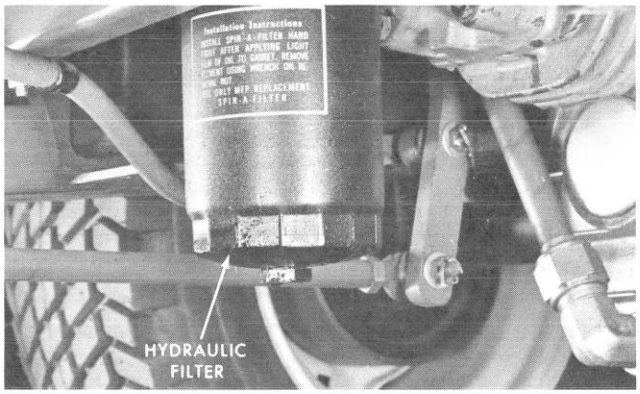


Figure 36

500 HOUR OR YEARLY SERVICE

Repeat the Daily, 50 Hour, and 250 Hour Service

Hydraulic Pump & Differential – Drain and refill every 500 hours, or yearly, whichever comes first. The drain plug is on the back of the differential case. Use SAE 10W-40 Grade SE-SC. The capacity is approximately 5 U.S. quarts.

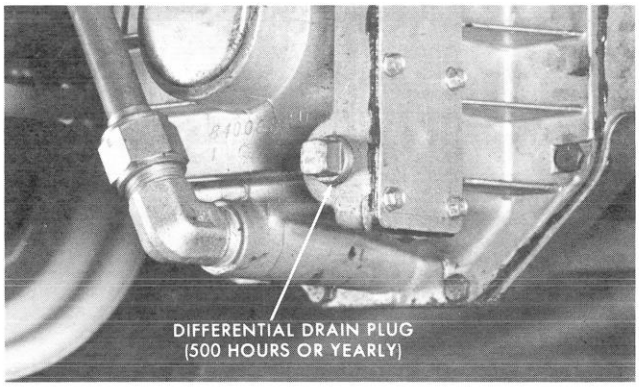


Figure 37

Rear Wheel Bearings – Every 500 hours, or yearly (whichever comes first) remove the rear wheels and pack the bearings with #2 wheel bearing grease.

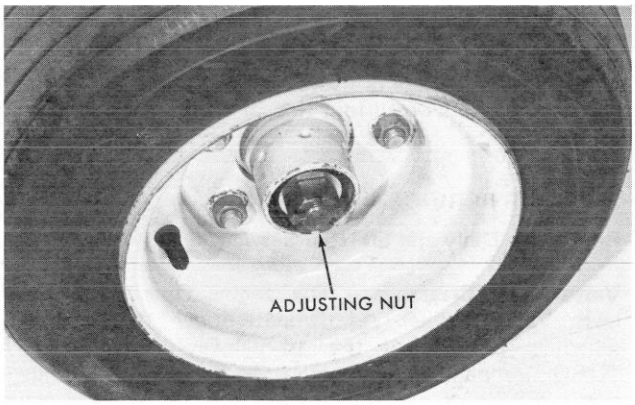


Figure 38

Gear Box – Every 500 hours, or yearly (whichever comes first) drain the gear box and refill to level plug opening with SAE 90 EP Gear Oil. The capacity of the gear box is approximately one pint. See Figure 32.

ENGINE GOVERNOR

The governor is properly adjusted at the factory, and should not require adjustment unless the components are damaged or replaced. Make adjustments in small increments and allow time for the engine to react to the new setting. Do not continue the adjustments unless there is a change in engine speed or operation.

1. Place throttle lever in the full speed position.
2. Disconnect throttle rod.
3. Hold carburetor lever 1/32 to 1/16 inch from stop. See Figure 39.
4. Adjust length of throttle rod to fit freely between ball joints.
5. Tighten lock nuts securely.

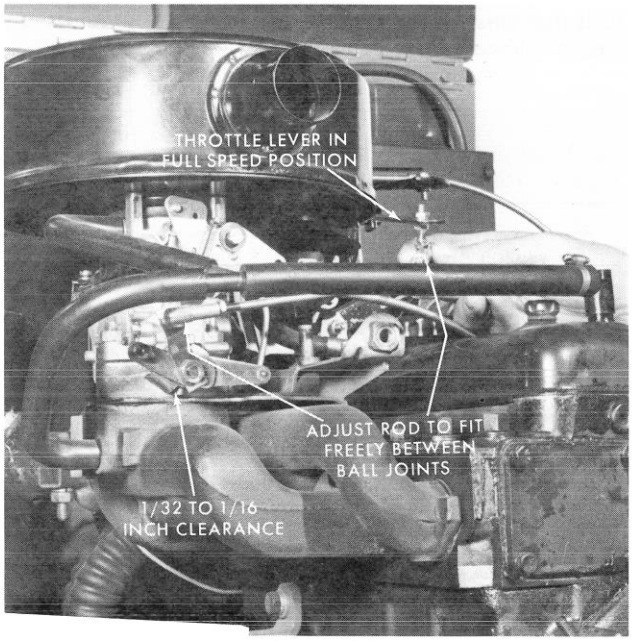


Figure 39

6. Start engine and allow it to reach normal operating temperature. Increase speed to desired RPM (not full throttle).
7. To eliminate hunting, or to increase the spread of RPM between no-load and full load, reduce the tension on the spring by loosening the lock nuts on the eyebolt, and shortening the spring 1/32". (See Figure 40).
8. Bring engine back to original speed with throttle lever.

MAINTENANCE (Continued)

ENGINE GOVERNOR (Continued)

9. Repeat steps 7 and 8 alternately until desired regulation is reached.

IMPORTANT: If these adjustments do not improve operation, there is a possibility that a plugged jet in the carburetor can cause symptoms similar to "hunting".

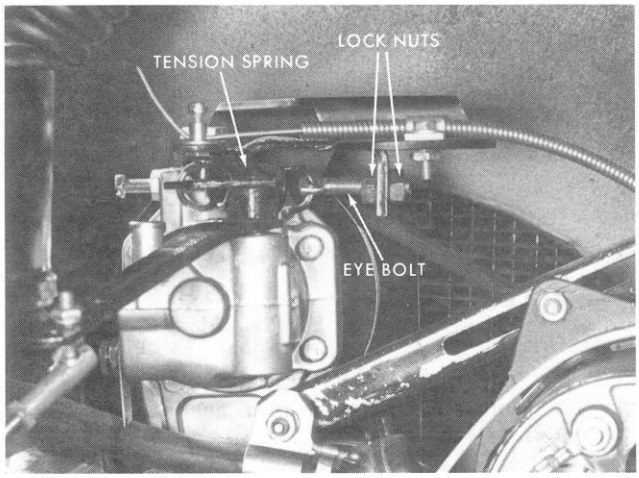


Figure 40

10. Adjust high speed stop screw to limit maximum speed at 3450±100 RPM.

CAUTION: The engine speed must not exceed the above maximum under any conditions. Excess engine speed could result in serious damage to the hydrostatic transmission.

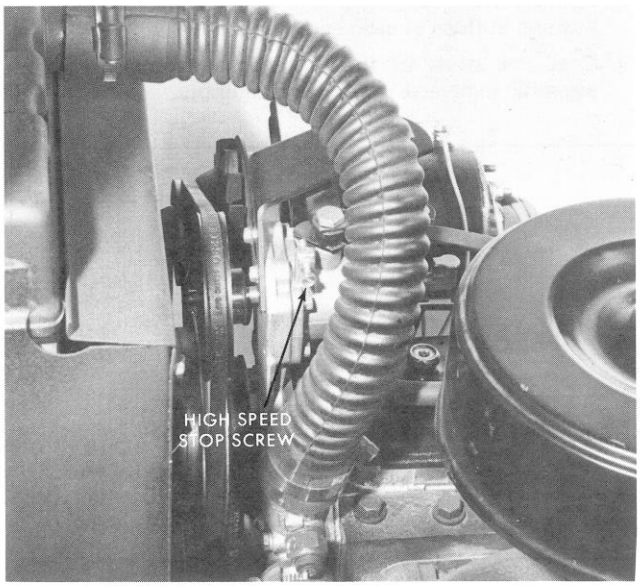


Figure 41

11. After the unit is in the field, it may be necessary to make slight adjustments.
12. If the drop in speed between no-load and full load is too great, loosen the lock nuts and add tension to the spring (Figure 40) by lengthening the spring 1/32". Bring engine back to original speed with throttle lever. Repeat this procedure as required.
13. If necessary, adjust the carburetor as described in the engine Overhaul Manual.

COOLING SYSTEM

The type of coolant used in the system depends on climatic conditions. If no danger of cooling exists, use a solution of clean soft water and a rust inhibitor. If there is a danger of freezing, use a solution of permanent type anti-freeze. Follow the recommendations of the anti-freeze manufacturer to obtain a solution that will provide the desired protection for the lowest anticipated temperature.

NOTE: Do note add rust inhibitor to anti-freeze solutions. This could cause a chemical reaction which would damage the system.

The capacity of the cooling system is approximately 6 U.S. quarts.

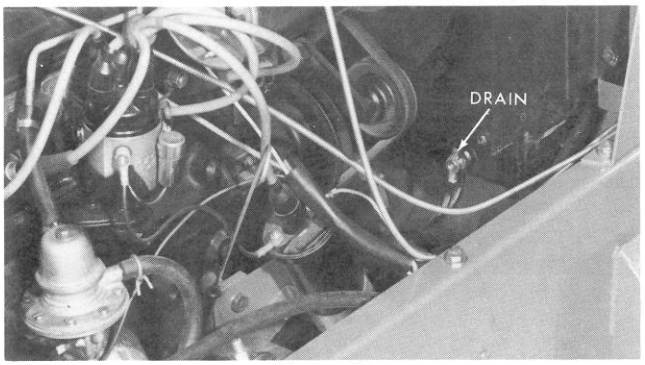


Figure 42

BRAKE ADJUSTMENT

The service brakes should be adjusted whenever the pedals have more than 1 inch of free travel, or when the brakes are ineffective. Jack up one front wheel at a time.

To tighten brakes (reduce free travel), loosen front nut, move cable housing forward by turning rear nut back on cable, then tighten front nut.

When new linings have been installed readjust as necessary to obtain 1/2" ± 1/8" free travel on brake pedal.

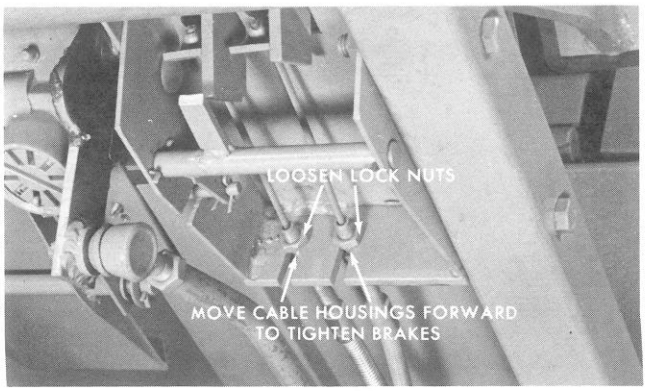


Figure 43

MAINTENANCE (Continued)

DRIVE PEDAL LINKAGE ADJUSTMENT

It should not be necessary to adjust the drive pedal linkage unless new components have been installed. If so, proceed as follows:

1. Disconnect the tapered socket from the arm on the pedal shown in Figure 44.
2. Move the arm on the pump fully to the rear. This will insure full stroke of the pump.
3. Hold the pedal assembly in the position shown in Figure 44, with 1/4" clearance between the bottom of the pedal and the frame.
4. Loosen lock nut and adjust the length of the linkage to fit, with the pump arm fully to the rear, and the pedal in the position shown.
5. Adjusting in this manner will assure full pump delivery by preventing the pedal from bottoming out before the pump has reached full stroke.

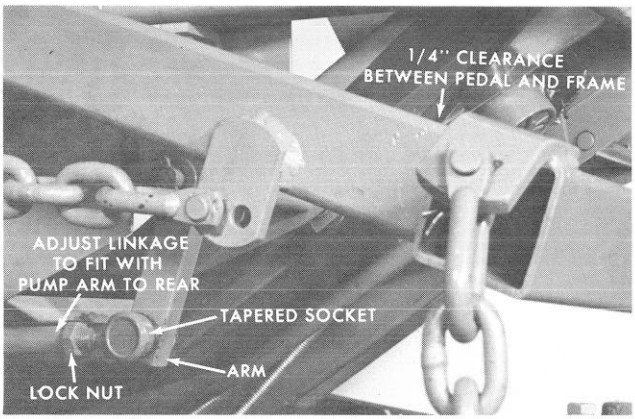


Figure 44

REMOVING HYDRAULIC CYLINDER

If the cylinder must be removed, proceed as follows:

1. Lower the cutting unit.
2. Disconnect and cap the hydraulic line.
3. Remove pins and remove cylinder.
4. Reassemble in reverse order of disassembly.

Figure 45

TOE-IN

With wheels in the straight-ahead position, there should be 1/8" toe-in. Measure the center-to-center distance at both the front and rear of the tires. (Measure at wheel hub height.) Adjust the tie rods EVENLY until the center-to-center distance at the front is 1/8" less than at the rear.

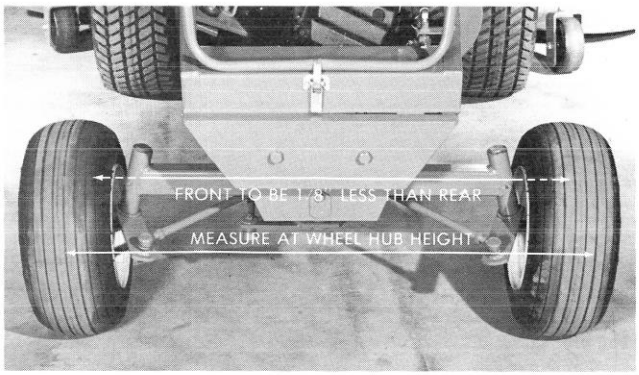


Figure 46

REAR AXLE

If excessive play develops between the rear axle and the spindles, the bushings must be replaced. Proceed as follows:

1. Jack up the rear end (under the frame) as required and block it up solidly.
2. Disconnect the tie rod at the wheel end.
3. Remove retaining ring and thrust washer, and drop entire spindle and wheel assembly out of the axle.
4. Remove the worn bushings from the axle housing, and press a new bushing in each end, until it is flush with the housing.
5. Coat the inside of the bushings with grease and re-assemble in reverse order of disassembly.
6. If there is excessive play in the axle pin, block the unit up as required, so the axle assembly will not drop when the pin is removed.
7. Remove capscrew and drive pin out to the rear.
8. Remove worn bushings from housing and press a new bushing in flush at each end of the housing.
9. Coat the inside of the bushings with grease and re-assemble in reverse order of disassembly.

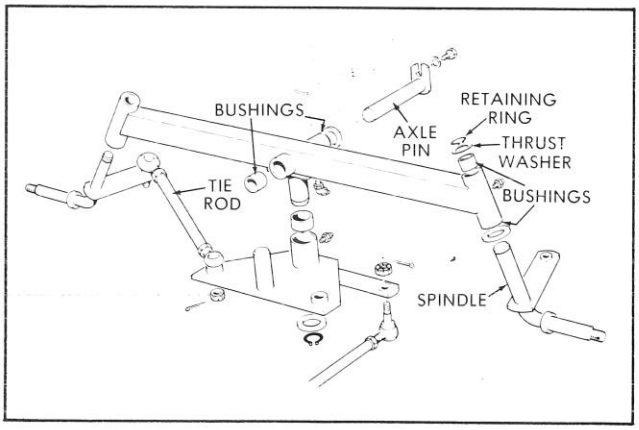


Figure 47

MAINTENANCE (Continued)

REAR WHEEL BEARINGS

Adjust the rear wheel bearings as follows:

1. Jack the rear end up and block it solidly.
2. Remove the dust cap. Remove cotter pin from slotted nut.
3. Tighten nut until bearings bind slightly when rotating wheel by hand.
4. Back off nut to nearest slot and secure with cotter pin. Reinstall dust cap.

Figure 48

To replace bearings or oil seal, proceed as follows:

1. Jack rear end up and block it solidly.
2. Remove dust cap, cotter pin, and slotted nut.
3. Remove flat washer and outer bearing cone.
4. Remove entire hub and wheel assembly from spindle.
5. Remove oil seal and inner bearing cone.
6. If cups are worn or pitted, tap them out of the hub.
7. Inspect all components carefully and discard any that are unserviceable.
8. Press in bearing cups until they bottom against the seats in the hub.
9. Pack bearings with a good grade of wheel bearing grease.
10. Place bearing cone in inner bearing cup.
11. Press oil seal into inner end of hub, with the lip of the seal toward the bearings. Press seal in flush with hub.
12. Grease seal lip and install the assembly on the spindle.
13. Install outer bearing, flat washer, and slotted nut. Adjust bearings as described above.

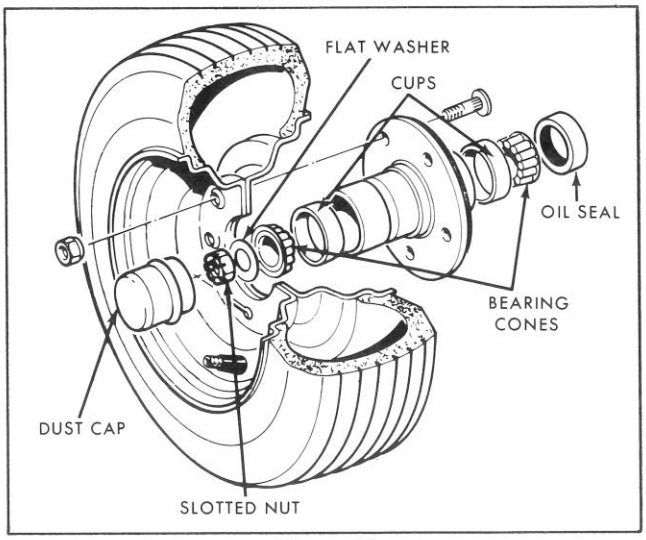


Figure 49

STEERING LINKAGE

The steering linkage is properly adjusted at the factory, and should require no adjustment unless new components are installed.

Loosen the jam nuts at both ends of the rear steering drag link. Lengthen or shorten the assembly by turning the tube until the stop on the rear axle pivot contacts the support when the steering wheel is turned fully in both directions. When the proper adjustment is attained, tighten the jam nuts. If full adjustment cannot be attained without new components, make sure that a full right can be attained, since the right side is the trimming side.

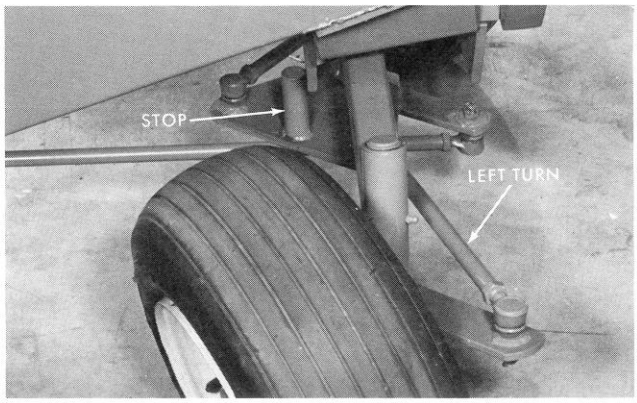


Figure 50

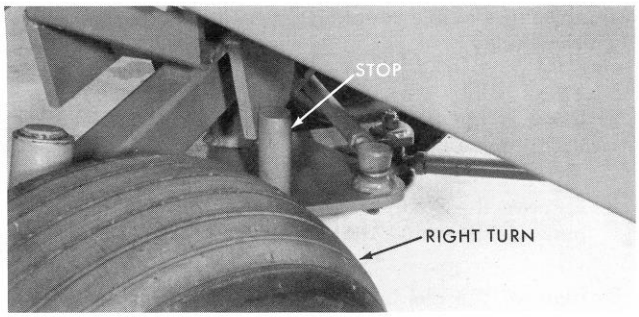


Figure 51

MAINTENANCE (Continued)

STEERING LINKAGE (Continued)

If the steering ever gets completely out of adjustment due to a bent or broken tie rod, drag link, etc., a starting adjustment for the linkage is as follows:

1. Disconnect the rear drag link from the rear steering pivot.
2. Turn the steering wheel fully from stop to stop, and then center the steering wheel.
3. Position the rear wheels so the pivot arm is parallel to the rear axle as shown in Figure 52.
4. Adjust the length of the drag link to fit easily between the rear pivot and the front pivot.

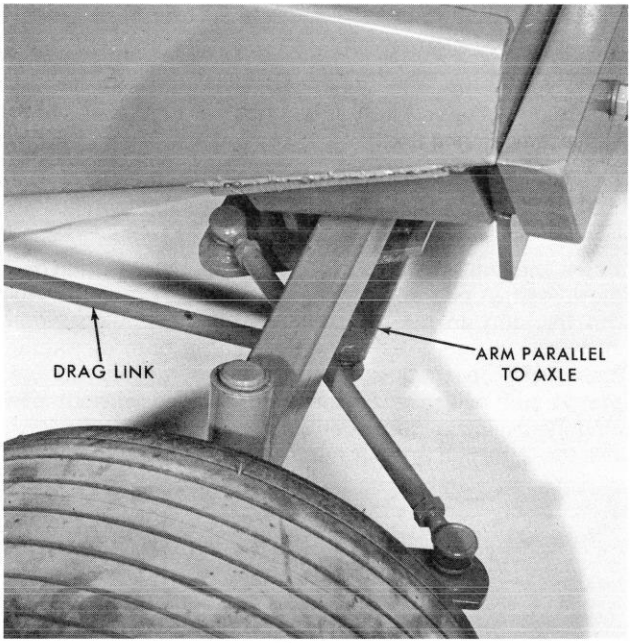


Figure 52

5. Make final adjustments as described on page 17.

REPLACING PTO DRIVE BELT

To replace the PTO drive belt, it will be necessary to disassemble the flexible coupling between the power shaft and the drive pulley.

1. Remove the 3 capscrews through the shaft flange and the rubber coupling.
2. Remove the 3 capscrews attaching the coupling to the pulley, and remove the spacers.
3. Remove the old belt and apply the new belt over the pulleys.
4. Reassemble in reverse order of disassembly.

IMPORTANT: When installing capscrews through flange and coupling, hold nuts and tighten capscrews evenly and gradually to 20-26 ft-lbs., to avoid distorting the coupling.

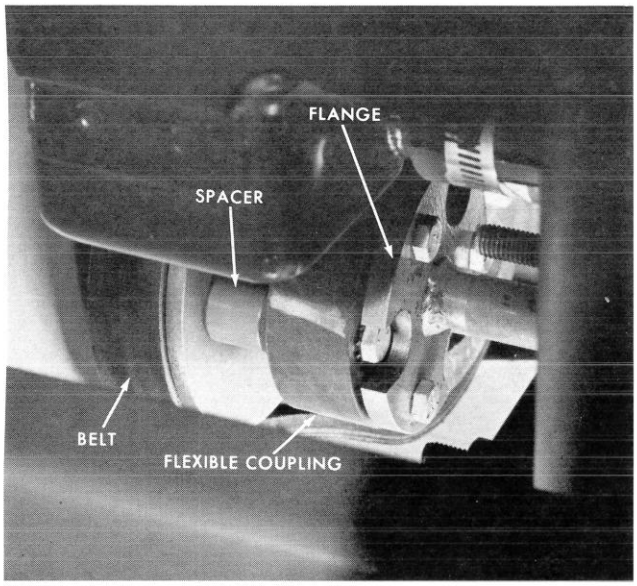


Figure 53

CUTTER BELTS

To tension the cutter belts, first remove the self-tapping screws and slide the deck covers aside to expose the tightener pulleys.

Adjust tightener pulleys as required.

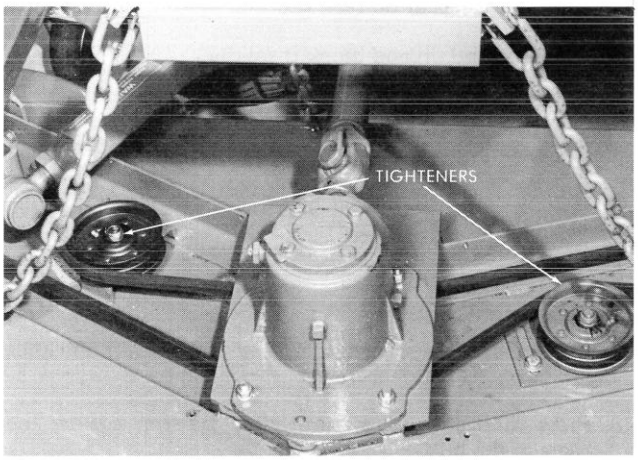


Figure 54

To replace the belts, remove the deck covers. Raise the lift arm to provide clearance over the gear housing. Remove all tension from the belts by moving the tightener pulleys. Remove the nuts from the 3 carriage bolts and one capscrew and lift the gear housing straight up and lay it to the side. Use care to prevent separating the drive shaft.

MAINTENANCE (Continued)

CUTTER BELTS (Continued)

Install the new belts with the right hand belt uppermost, as shown in Figure 55. Reinstall the gear box, feeding the belts into the pulley grooves.

NOTE: The capscrew is used in the right front corner.

Adjust the belt tension as described above, and reinstall the deck covers.

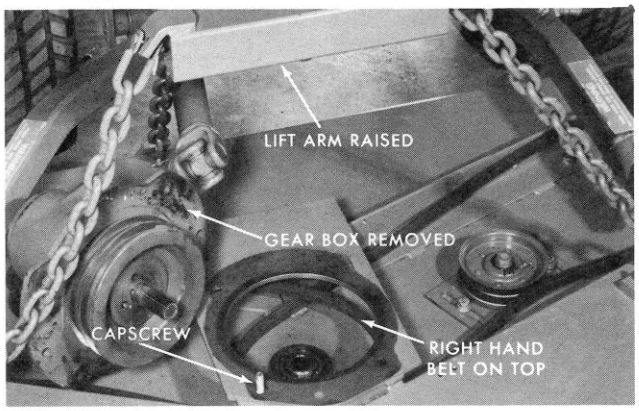


Figure 55

CUTTER DECK SPINDLE ASSEMBLY

To disassemble the outside spindles, proceed as follows:

1. Remove the deck covers and loosen the belt tighteners.
2. Raise the cutting unit and block it up so it cannot drop accidentally.
3. Remove the capscrew and washer and lift off the pulley.
4. Remove the left hand thread blade capscrew, shakeproof washer, "D" washer, blade, and retainer.
5. Remove the 4 capscrews and remove the spindle housing from the underside of the cutter deck.
6. Remove the end cap from the spindle with a puller and remove the key from the shaft.
7. Remove the bearing retainer and remove the bearings from the housing.
8. Reassemble in reverse order of disassembly.

To disassemble the center spindle assembly, proceed as follows:

1. Remove the gear box as described in Figure 55 and the accompanying text.

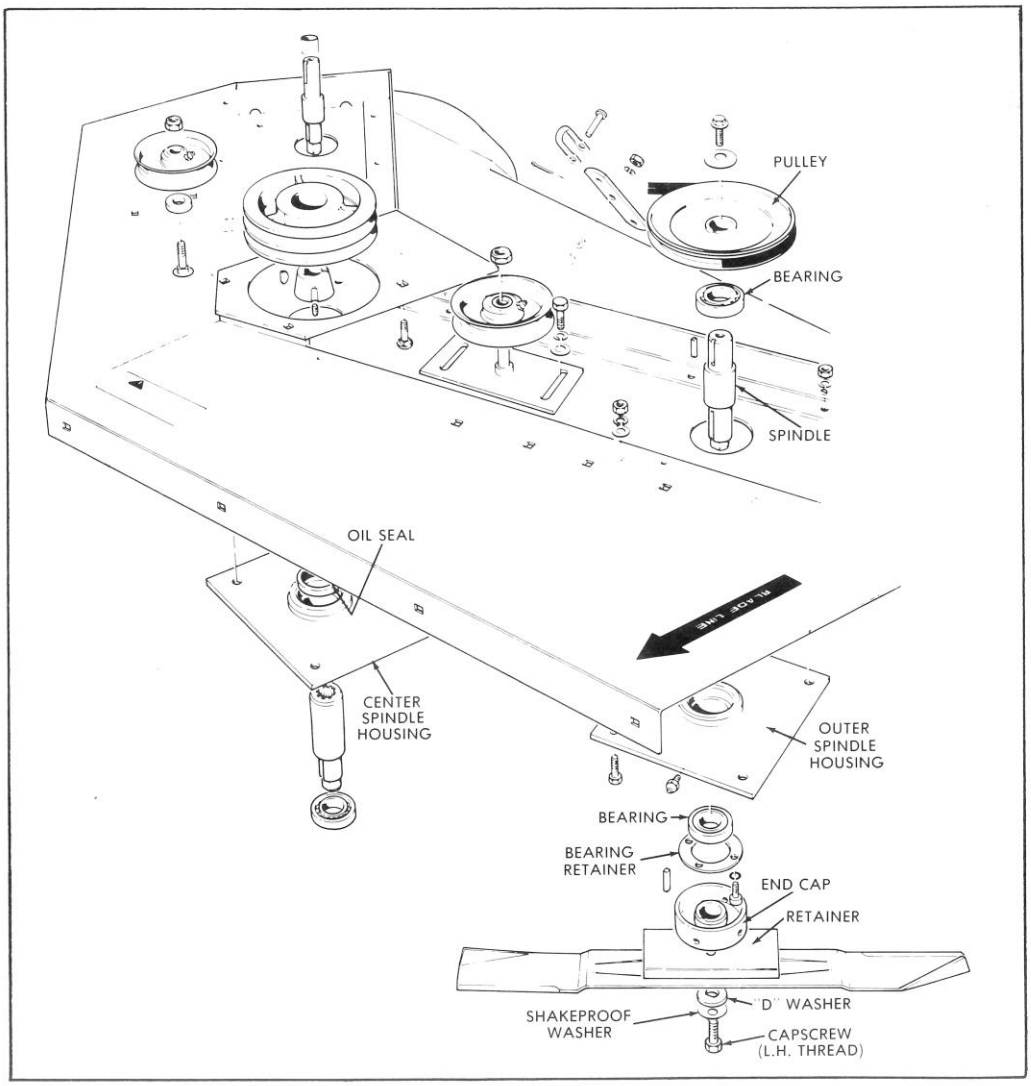


Figure 56

CUTTER DECK SPINDLE ASSEMBLY (Continued)

2. Remove the left hand thread blade capscrew, shake-proof washer, "D" washer, blade, and retainer.
3. Remove the 4 capscrews and remove the spindle housing from the underside of the deck.
4. Remove the end cap from the spindle and remove the key.
5. Remove the bearing retainer, bearing, and oil seal.
6. Reassemble in reverse order of disassembly.

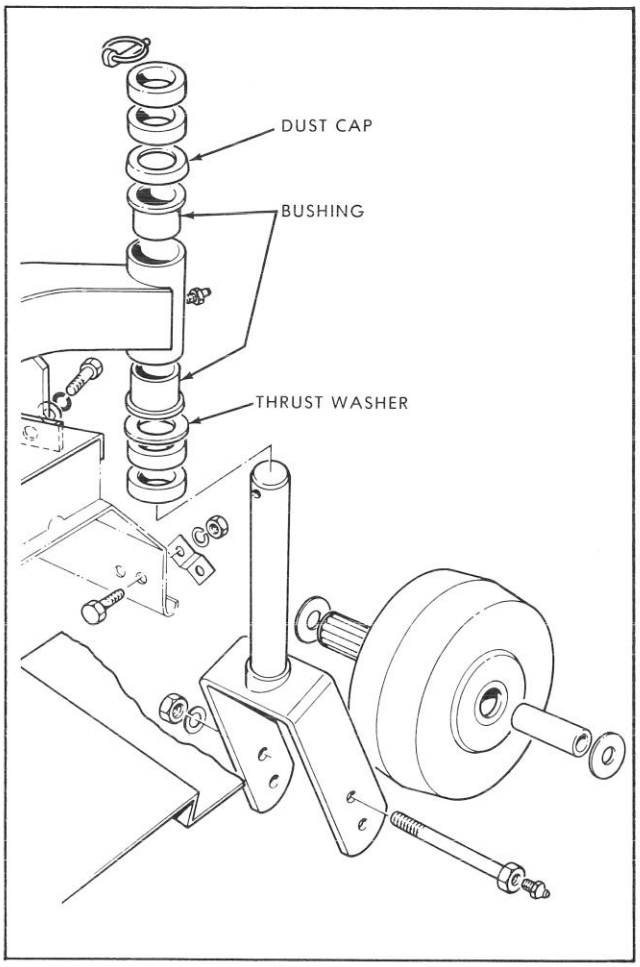


Figure 57

CASTER ARM BUSHINGS

If the caster arm bushings become worn to the extent that the fork spindle is loose inside the bushings, remove the caster wheel assembly from the arm. Remove the old bushings and press in the new. See Figure 57.

FRONT CASTER WHEEL BEARINGS

If the front caster wheel bearings become worn to the extent that the wheels wobble, remove the wheel from the fork. Remove the slingers and felt seals. Remove the bearings and press the new ones into the hub. See Figure 58.

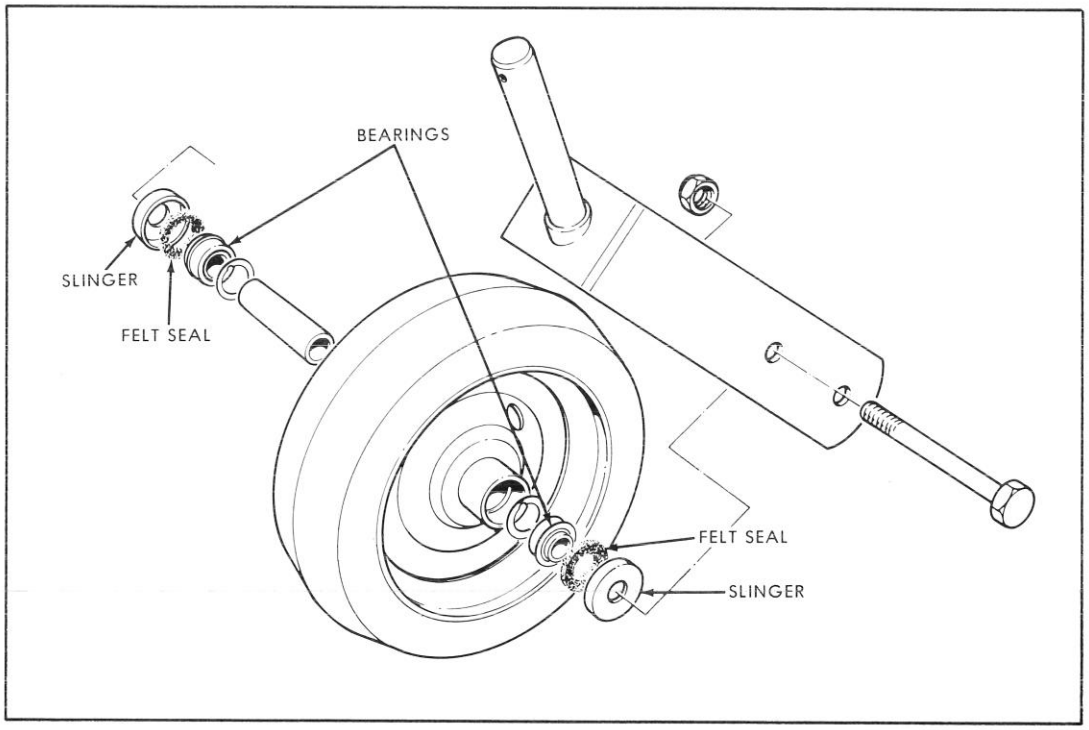


Figure 58

MAINTENANCE (Continued)

REMOVING CUTTING UNIT

WARNING: The push arms are under strong spring tension. When removing the cutting unit, precautions must be taken before disconnecting the push arms to prevent damage or personal injury.

1. Lower the cutting unit to the floor.
2. Place 2 x 4's or similar blocking between the left hand push arm and the frame.

   ⚠ This spring arm is under approximately 150 pounds tension, so make certain the blocking cannot slip out.

3. Remove the two capscrews holding the ball joint mount to the cutter unit frame. DO NOT REMOVE THE SLOTTED NUT FROM THE BALL JOINT END.

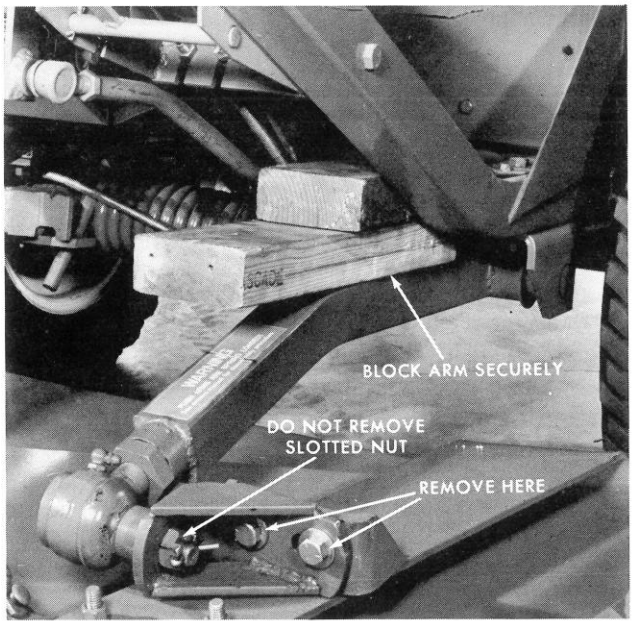


Figure 59

4. The spring tension on the right hand push arm is approximately 100 pounds, so have a helper stand on the push rod end while removing the two capscrews holding the ball joint mount to the frame. When the capscrews are removed, allow the arm to spring up slowly.

⚠ Be extremely careful when holding down the arm to prevent personal injury.

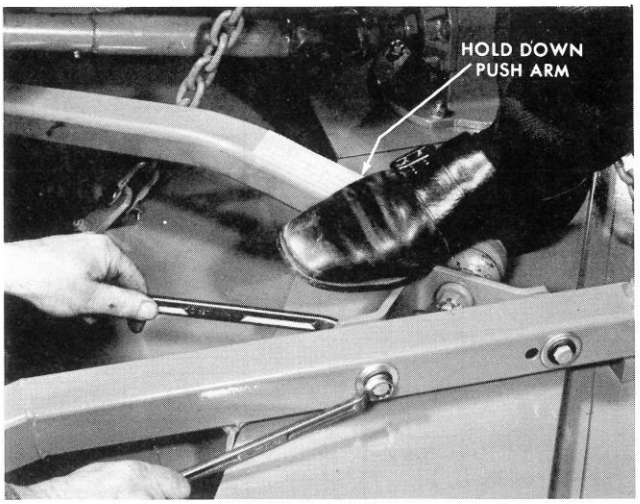


Figure 60

5. Rotate the left hand ball joint mount upward away from the frame.
6. Disconnect lift chains.
7. Roll cutting unit forward, being extremely careful to avoid damaging the universal shaft assembly.

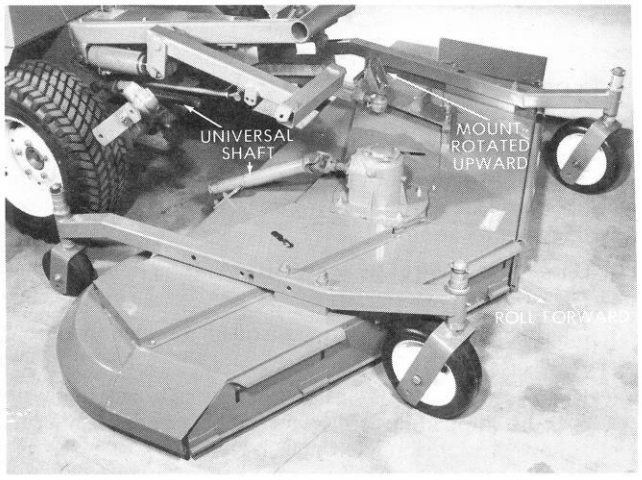


Figure 61

8. Reassemble in reverse order of disassembly.

IMPORTANT: The universal shaft must be assembled 'in phase' as shown in Figure 10, with the yokes in line.

WIRING DIAGRAM

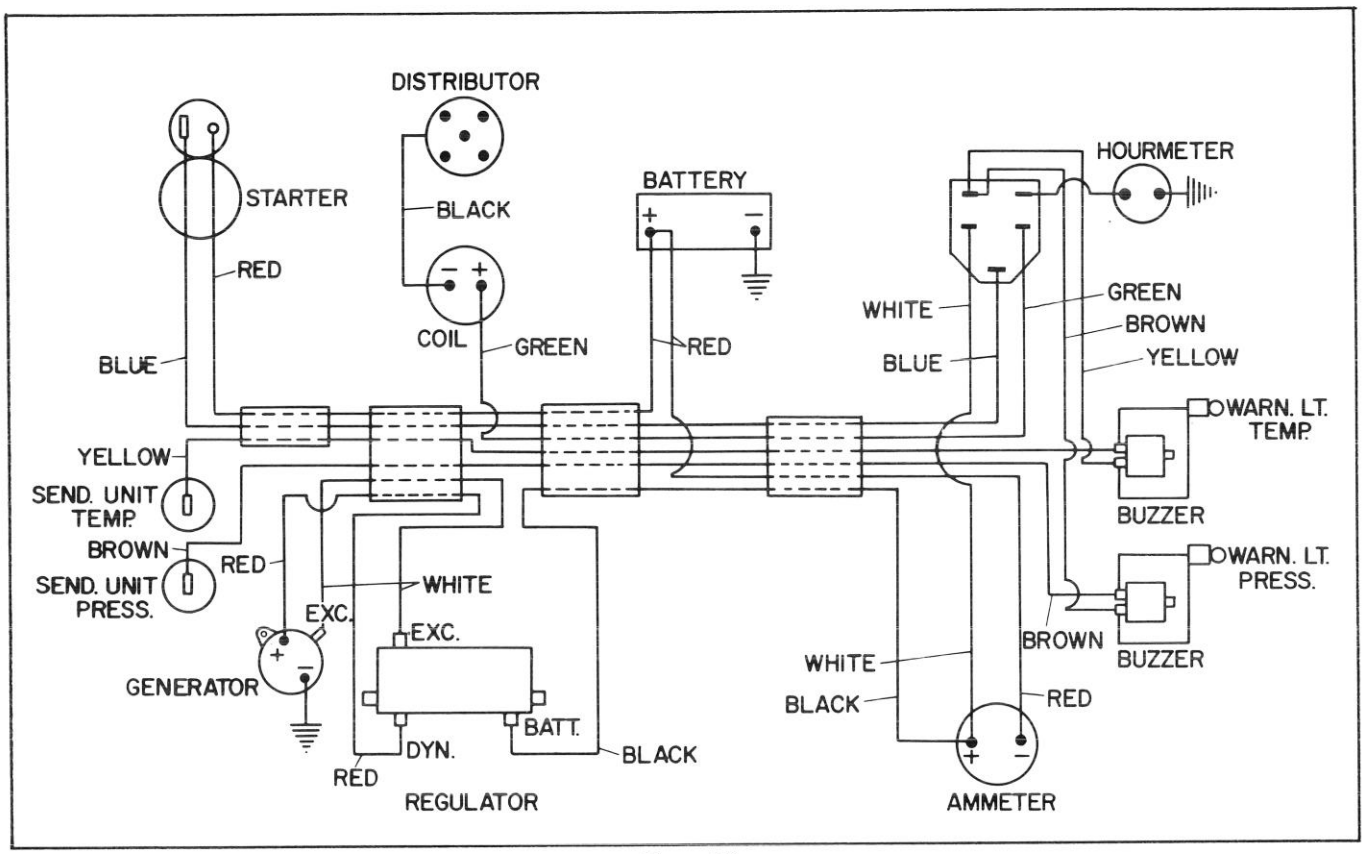


Figure 62

BATTERY CARE

1. Battery water level must be properly maintained and the top of the battery must be kept clean. If the battery is in a very hot place between periods of engine operation, it will run down more rapidly than if stored in a cool location.
2. Check the electrolyte every 50 operating hours or once per week.
3. Maintain cell level with distilled or demineralized water. Avoid overfilling.
4. Keep top of battery clean by periodically washing with a brush dipped in ammonia or bicarbonate of soda, followed by flushing with clean water.
5. Battery cables must be tight on terminals to provide good electrical contact.
6. If corrosion occurs at terminals, disconnect cables and scrape cable ends and terminals separately. Coat terminals with petroleum jelly and connect cables.

BATTERY STORAGE

The simplest instructions for the storage of a battery between seasons are that it be charged when stored, and then stored in a cool place, but not where it will be subject to zero temperatures. Storage at 20° to 50° is ideal. Battery should be disconnected from the electrical circuit if Groundsmaster is stored for more than 30 days.

WINTER STORAGE

1. Prepare the engine for storage as described in the engine Operator's Manual.
2. Remove the battery and prepare for storage as described above.
3. Clean the Groundsmaster thoroughly and lubricate completely as described in this manual.
4. Jack up the unit to take the weight off the tires.

MAINTENANCE RECORD

Date	Hours Used	Engine Oil Change	Oil Filter Change	Air Cleaner Service	Lubrication	Sharpen Blades	Hydraulic Oil Change	Hydraulic Filter Change

PRODUCT CHANGES

In an effort to make improvements available to TORO owners as quickly as possible, minor changes are incorporated into Toro's products from time to time that do not become immediately shown in the Parts Catalog. If such a change apparently has been made in your unit, which is not reflected in your manual, see your TORO distributor or his Authorized TORO Service Dealer for information and part numbers.

IMPORTANT ORDERING INSTRUCTIONS

Repair parts are available from your Authorized TORO Service Dealer. To insure getting correct parts without delay, furnish the following information:

1. Serial number of your tractor as shown on the name plate.
2. Part number, description, and quantity of each part required.
3. State whether parts should be shipped by mail or express. All repair parts are shipped F.O.B. Factory.
4. Name and address where parts are to be shipped.
5. Do not order by reference number; use part number only.

THE TORO PROMISE

It is Toro's policy to design and produce TORO products to provide our customers with a high level of performance and durability in normal operation. Our products, however, are produced in high volume, and it is inevitable that occasionally a unit will reach a customer with a defect in materials or workmanship which causes that unit to fall below the normal high level of TORO performance. Invariably, such a defect will be noticed in a residential product within one year, and in an institutional product within ninety days after purchase. Recognizing this possibility, Toro has established a simple guarantee policy and procedure that is intended to assure customer satisfaction. This guarantee statement is as follows:

The Toro Promise

The Toro Company promises to repair any TORO product for the original purchaser if defective in materials or workmanship. The following time periods from the date of purchase apply:

Residential products	1 year
Residential products used commercially	45 days
Institutional products	90 days

The costs of parts and labor are included, but the customer pays the transportation costs. Just return any residential product to an Authorized TORO Service Dealer, or any institutional product to a TORO distributor.

Should you feel that a product is defective, and wish to rely on The Toro Promise, the following procedure is recommended:

1. Contact any TORO dealer or distributor, but preferably the dealer or distributor from whom you purchased the product.
2. He will instruct you to either return the product to him, or tell you the name and address of your nearest Authorized TORO Service Dealer if the product is to be returned to such dealer.
3. Take the product and your original sales slip, or other evidence of purchase date, to the servicing dealer.
4. The servicing dealer will inspect the unit, advise you whether the product is defective and, if so, make all repairs necessary to correct the defect without extra charge to you.

If for any reason you are dissatisfied with the dealer's analysis of the defect or the service he performs, we urge you to contact us. Write:

TORO "Customer Care" Department
8111 Lyndale Avenue South
Bloomington, Minnesota 55420

Litho in U.S.A.