Form No. 3310-307

TORO

MODEL 07071 - 20001 (ENGINE)
MODEL 07172 - 20001 (P.T. O.)

OWNER'S MANUAL

66" RAKE-O-VAC SWEEPER

Operating and Safety Instructions

CAUTION: **The following operating and safety instructions are suggested by The TORO Company.**

These Sweepers are designed, engineered and tested to offer reasonably safe and effective service, provided it is operated in strict accordance with these instructions. FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY.

TRAINING

1. Know the controls and how to stop the sweeper quickly – READ THE OWNER'S MANUAL.

PREPARATION

2. Wear substantial shoes while using this sweeper.
3. Fill gas tank outdoors, never while engine is running. Avoid spilling.

OPERATION

4. Do not carry passengers on prime mover or allow anyone to ride on sweeper.
5. Give complete and undivided attention to the job at hand.
6. Disengage clutch before starting sweeper engine (motor).
7. Shift into neutral, stop prime mover and engage parking brake before leaving operator position.
8. Disengage power to sweeper implement and stop engine (motor) before making repairs or adjustments.
9. Disengage power to sweeper implement and shut engine (motor) off when transporting or not in use.
10. Take precautions, such as disengaging sweeper implement, lowering implement, shutting sweeper engine off, shifting prime mover into neutral and setting parking brake when leaving operator position.
11. Never allow anyone but operator near the prime mover and sweeper while in operation.
12. Reduce speed on side hills and in sharp turns to prevent tipping or loss of control.
13. Stay alert for holes in terrain and other hidden hazards.
14. Look behind the sweeper before backing up.
15. Do not drive close to a ditch or creek.
16. Never dismount while prime mover is in motion.
17. Use extreme caution when crossing or near roadways and traffic.
18. Keep sweeper implement(s) and blower in good operating condition. Keep all guards and safety devices in place.
19. Prime mover and sweeper should be stopped and inspected for damage after striking a foreign object. Repair damage before re-starting and operating the prime mover and implement.
20. Check prime mover brake periodically to be sure brake, when applied, will hold firmly.
21. When operating on uneven terrain, use extreme caution and maintain good vehicle traction.
22. Never place hands or feet under or into moving parts or concealed areas. Keep hands and feet clearly away from sweeper implements, belts, chains, pulleys, blower impeller, gears, etc., while sweeper engine is running.
23. Open doors if engine is run in a garage. Exhaust gases are extremely dangerous.
24. Shut sweeper blower off when dumping contents of hopper. Always stand to extreme right or left side of hopper when opening tailgate.

MAINTENANCE

25. Follow maintenance instructions as outlined in this manual.
26. Have a competent Toro Service Distributor inspect and repair the sweeper and implement(s) each year.
27. Disengage clutch and shut off ignition switch before making any adjustment or repair.
28. Keep engine and impeller free of debris build-up.
29. Safety and performance levels can be assured only by use of specified Toro replacement parts.
30. Maximum sweeper engine speed must not exceed 3400 RPM.

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(MODEL-07071)

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P.T.O. DRIVEN SWEEPER (only)
(Model-07172)

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SPECIFICATIONS

Engine: 18 H.P. engine with four (4) gallon capacity gas tank.

Overall Dimensions: Width: 76½"
Height: 67½"
Length: 12' 10"
Empty Weight: 2070 lbs.
Maximum Capacity: 4,100 lbs.

Frame: All welded structural rectangular tubing; 2 x 4 and 4 x 4; 11 gauge.

Hitch: Heavy duty – 2-1/8" ball type; vertically adjustable in 1-inch increments.

Fan – Type: Centrifugal type – double inlet; 4-blade, 16" wide, 23-1/4" diameter, 3/16" high tensile steel – individually replaceable; shaft – 1-9/16" fatigue proof steel – mounted in self-aligning, sealed ball bearings; blower inlet area – 286 sq. in., blower discharge area – 255 sq. in.

Fan – Drive: Belted 2B83 drive direct from engine to fan; with Kohler engine – 3.6" PD pulley, fan pulley – 7.4 PD. Fan – 1360 RPM (tip speed – 8,300 ft./min. with 2800 Kohler engine RPM.

Fan Hood: Twin construction for uniform air distribution; 4½" deep x 63" wide (inlet area – 283 sq. in.); variable position from weighted rubber flap.

Hopper: 4½ cu. yd. volume; 18 gauge top section with 16 gauge bottom section – rib reinforced; fullwidth self-cleaning semi-automatic dumping.

Flex Tip Reel – Type: Forward sweeping – 6 rows of teeth; all steel construction with replaceable 3/16" extruded nylon teeth; each row containing 11 individually spring-loaded flexible sets, 552 teeth total; 18-3/4" dia., 61" wide; 1-1/8" shaft set in self-aligning sealed bearings.

Flex Tip Reel – Support: Reel supported by adjustable counter balance springs and adjustable gauge wheels. Gauge wheels steel construction with non-scuffing rubber tires operating on sealed ball bearings; infinitely adjustable vertically.

Flex Tip Reel – Drive: Belted – 2B53 drive from engine to reduction shaft; with Kohler engine – 3.6" PD pulley, reduction shaft pulley – 11" PD; No. 40 roller chain drive from reduction shaft to reel; reduction shaft with 14 tooth sprocket, reel with 54 tooth sprocket; reel – 236 RPM (tip speed – 1,160 ft./min.) with 2800 Kohler engine RPM.

Tires: High-speed – high flotation type L70x15 – 4 ply; for turf, tire set at 8 to 14 PSI; for hard surface traveling, set at 14 to 28 PSI.

OPTIONAL EQUIPMENT:

Hard surface Brush Kit (Model #07076): Forward sweeping, continuous polypropylene bristle (.060 in.); floating action with spring counter balance and gauge wheel height adjustment; kit includes self-aligning bearings and sprocket (54 tooth); 19" O.D. x 62" wide, 1-1/8" shaft brush – 236 RPM with 2800 RPM engine (tip speed – 1,170 ft./min.) Weight: 76 lbs.

Thatcher Reel Kit (Model #07177): Forward cutting centrifugally activated; all steel construction; 30 blades – hardened 1/8" steel – spaced every 2 inches; 16-3/4" O.D. x 61" wide, 1-1/2" shaft – ends machined to 1-1/8"; kit includes self-aligning bearings, both drive sprocket (32 tooth) and reel sprocket (19 tooth); heavy duty No. 60 roller chain and idler; reel – 1700 RPM with 3100 RPM engine (tip speed 7420 ft./min.). Weight – 158 lbs.

FOREWORD

TO THE TORO OWNER . . . . .

Toro knows how important proper turf equipment is for lawn care, and Toro designers have, over the years, strived for and achieved the finest in turf care products. You, as a Toro owner, share the most advanced methods and machines available today. Give it the proper care, and it will repay you with precision service.

The more you know about the operation and mechanics of your 66" Sweeper the better job it will do for you. That's why it is important to read your Owner's Manual from cover to cover before attempting to operate the machine. Compare the illustrations to your sweeper so as to familiarize yourself with locations of controls, lubrication points, and adjustment sites.

Study the operating and safety instructions thoroughly to insure proper functioning and to prevent injury to yourself and others.

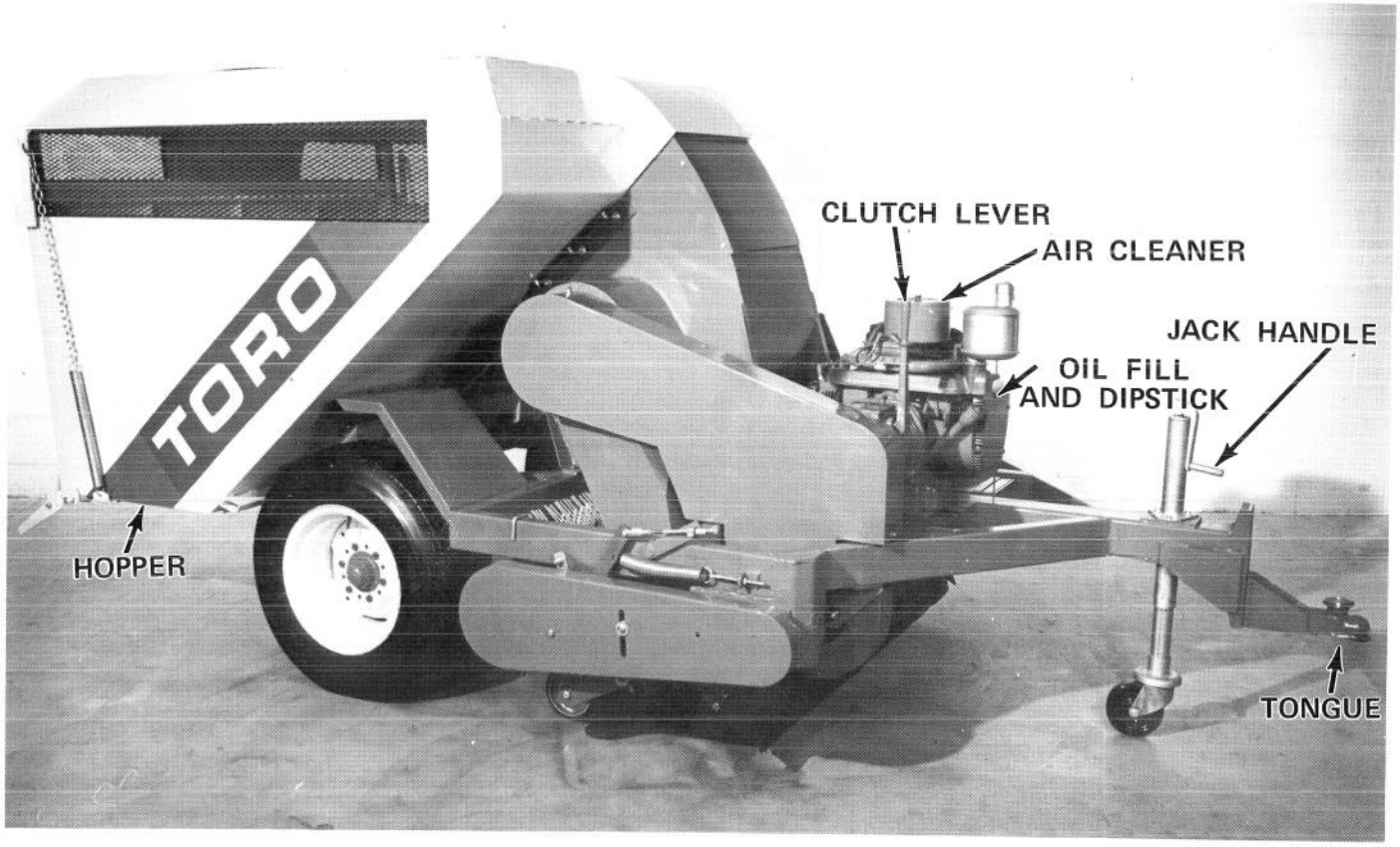
At times minor changes are made in Toro products to improve their efficiency. Should you notice a variation in your sweeper that is not reflected in the Owner's Manual, see your Toro distributor or his authorized Toro Service Dealer for information and parts numbers.

KNOW YOUR SWEEPER

(ENGINE DRIVEN)



66" Rake-O-Vac Sweeper Viewed From Left Side



66" Rake-O-Vac Sweeper Viewed From Rigth Side

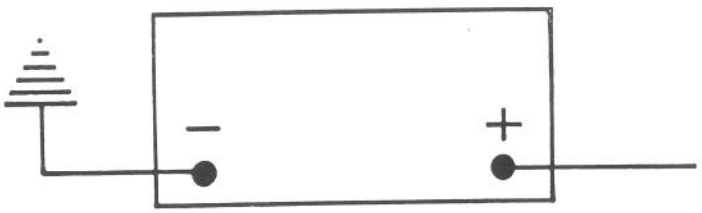
GENERAL ASSEMBLY INSTRUCTIONS

MOUNTING BATTERY

IMPORTANT: When activating the battery, refer to the manufacturer's recommendations.

1. Always add the electrolyte to the battery before installing.
2. Locate battery in proper position with positive (+) terminal away from engine.
3. Hook the ground wire to the negative (–) terminal and attach ground to middle bolt on engine block.
4. The positive wire running from the ignition switch should be connected to the positive (+) terminal.
5. Coat the battery terminals with a petroleum jelly to prevent corrosion.
6. See storage of battery, page 12.

NOTE: Use a 12-volt type 24 battery, a 36" positive (+) and a 36" negative (–) cable.



IMPORTANT BATTERY ACTIVATION

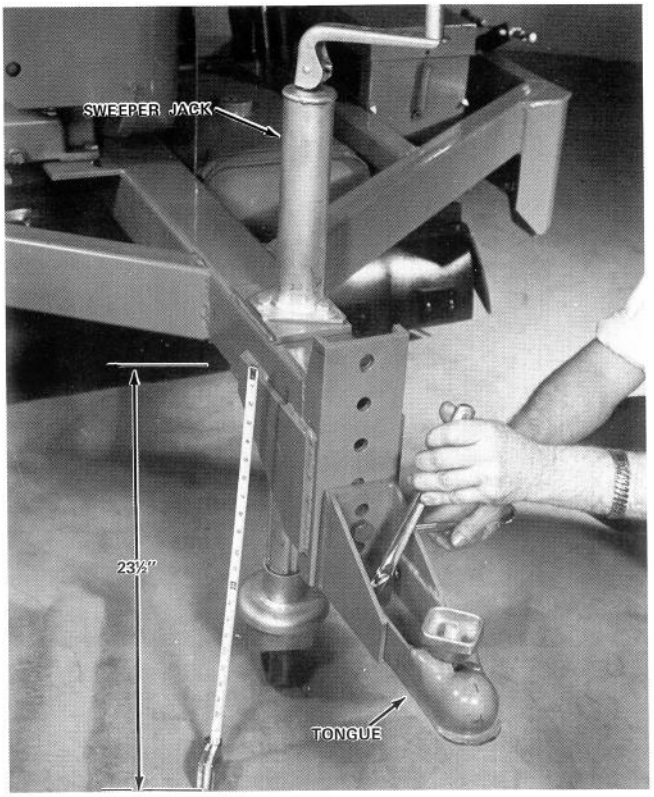
Carefully remove the battery and acid containers from the carton. Study all the instructions on the acid containers and those enclosed in the carton, until you thoroughly understand the instructions.

Battery acid should be added to the battery in a place where there is ample light and sufficient water for flushing purposes.

Wearing rubber gloves, handle acid with extreme caution to avoid spilling. It can burn the skin, damage clothing and other materials on contact. **We strongly recommend the wearing of safety glasses to avoid eye damage when actually pouring acid into battery. Avoid inhaling the acid fumes as they may cause nausea.**

TO OPEN CARTON CONTAINING BATTERY ACID: Break perforation at arrow on carton, then pull up this half of the carton top. Do not remove acid bag from carton. Using scissors only, snip off a small corner to form pencil size opening for pouring.

The levels may drop after filling (wait at least 20 minutes). Then inspect each cell after completing the filling operation and add acid as required. There will be no difficulty in properly apportioning the acid if care is exercised in filling each cell to the proper level.



MOUNTING HITCH TONGUE

Tongue should be mounted to the sweeper on a flat, level surface. Equip prime mover with a 2-1/8" ball. To mount tongue, proceed as follows:

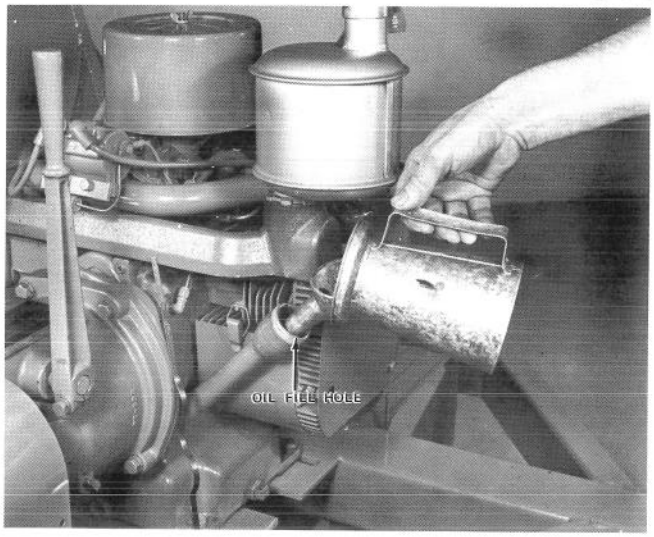
1. Adjust sweeper jack so that top of frame is approximately 23-1/2" from ground. A parallel should be evident between sweeper frame and ground.
2. Back prime mover up to sweeper.
3. Adjust sweeper hitch to same level as ball hitch of prime mover and fasten securely. Attach sweeper to prime mover.
4. Raise caster wheel tube up to frame and fold sweeper jack handle down.
5. Place caster wheel next to battery for convenience and secure.

IMPORTANT: An approximate parallel should still be evident between sweeper frame and ground. If frame is not parallel to ground, improper debris pickup could result.

6. To remove sweeper from prime mover, raise sweeper jack handle, attach caster wheel to caster wheel tube and lower to the ground. Continue downward movement until sweeper disengages from prime mover.

IMPORTANT: After initial ten (10) hours of operation, ensure that bolts securing tongue to frame are tight.

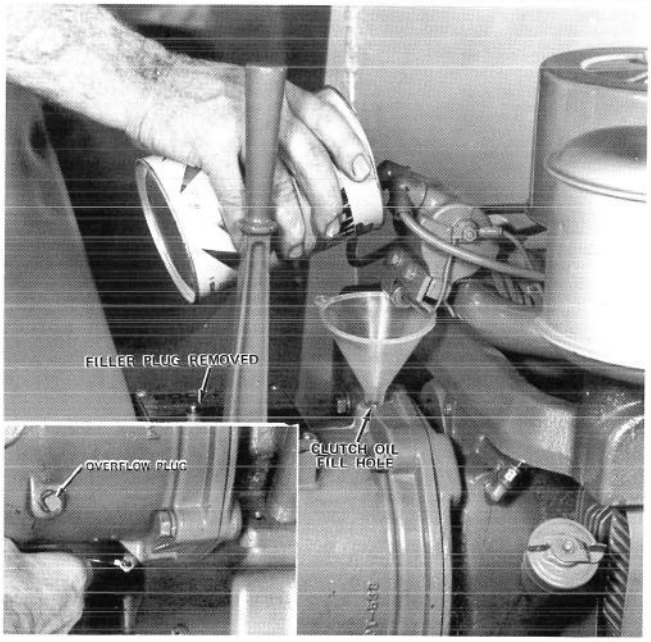
PREPARATION BEFORE STARTING



FILLING ENGINE WITH OIL

1. Place sweeper on a level surface.
2. Remove dipstick.
3. Pour sufficient amount of SAE 30 weight MS oil into engine crankcase to raise to full level marking on dipstick. DO NOT OVERFILL.
4. Check oil level and replace dipstick.

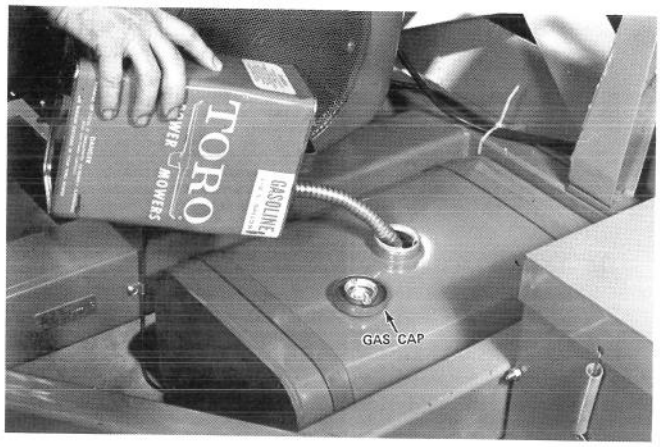
NOTE: For the frequency of changing oil and checking the level of oil, refer to the Kohler Engine Manual.



FILLING CLUTCH HOUSING WITH OIL

1. Remove filler plug on top of clutch housing.
2. Remove overflow plug.
3. Fill clutch housing to the point where oil comes out overflow hole.
4. Replace plugs.

NOTE: Use same weight oil to fill clutch housing as used in engine. (See Filling Engine with Oil, above.)

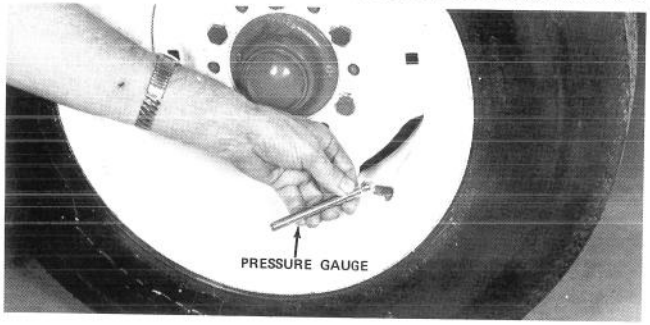


FILLING GAS TANK

Fill gas tank with a fresh supply of regular grade leaded or non-leaded gasoline.

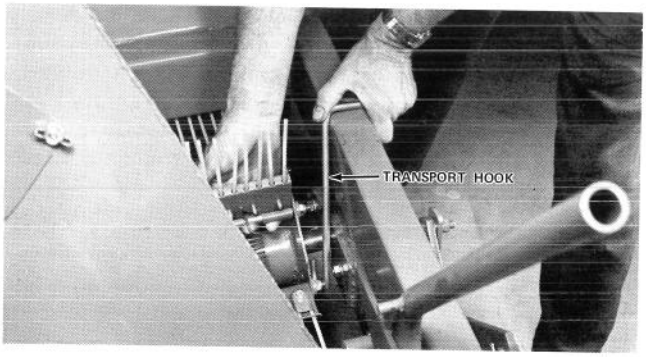
IMPORTANT

Handle gas with care – it is highly flammable. Never add gas to your sweeper in an enclosed area such as a garage or building. Fill gas tank out-of-doors and wipe up spilled gas. Never add gas to your sweeper when engine is running.



TIRE PRESSURE

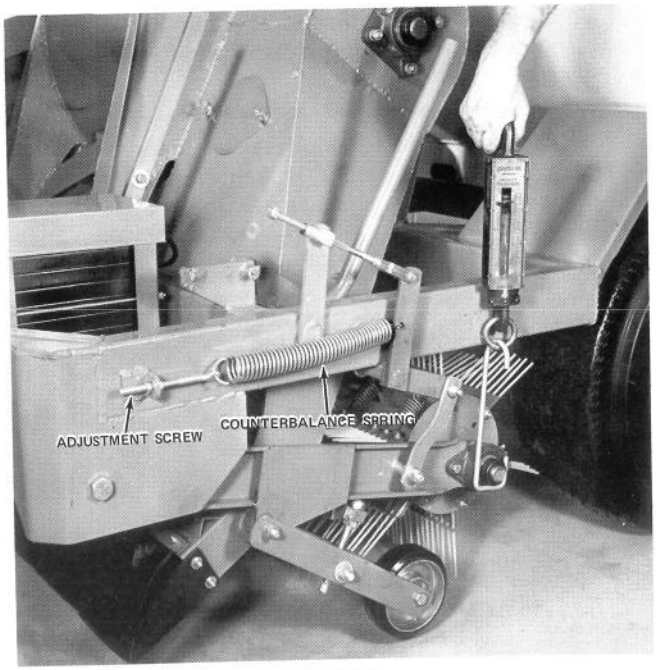
The tire pressure can vary depending upon turf conditions. For most operating conditions a minimum of 8 PSI to a maximum of 14 PSI of pressure should be used. For transporting over the road, a pressure of 14 PSI to 28 PSI may be used.



TRANSPORT HOOKS

1. The flex tip rake is supported by transport hooks when transporting sweeper to and from the job. (See Photo)
2. Remove hooks before operation by lifting reel upward.
3. Remove hooks from both sides of the machine.

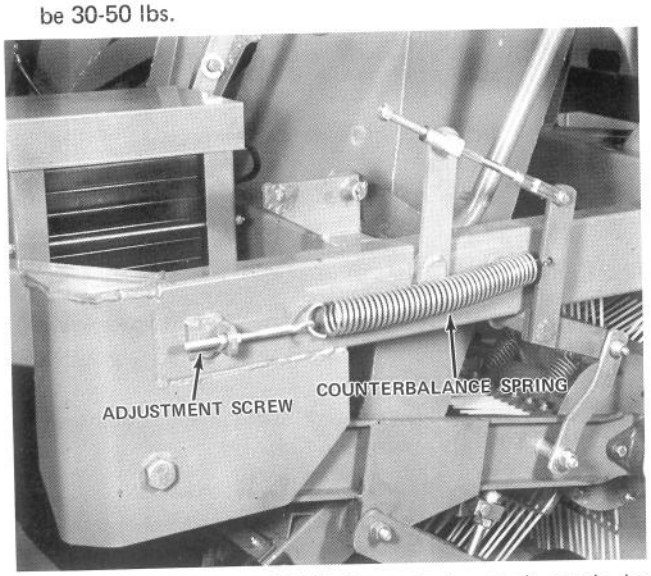
PREPARATION BEFORE STARTING (CONTINUED)



ADJUST REEL SUPPORT ARM

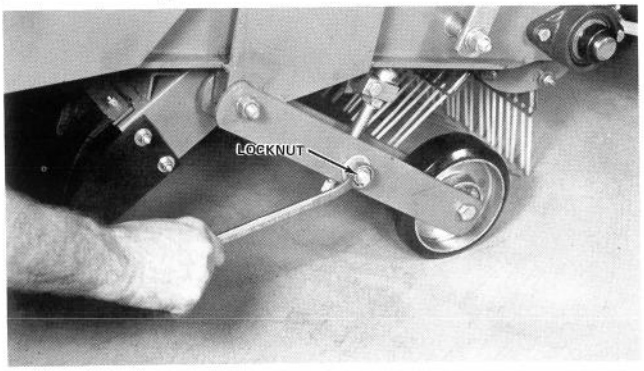
When unit is operated, gauge wheel should ride over turf evenly. If reel support arm has a tendency to bounce, spring setting is too light. If gauge wheel scars turf, spring setting is too heavy. To adjust reel support arm, proceed as follows:

1. Lower flex tip rake by pulling rake lever to the rear. (See rake lever, page 8).
2. Position spring scale on reel support arm and lift up. (See Photo).
3. Tension necessary to lift gauge wheel off ground should be 30-50 lbs.



4. If tension is not 30-50 lbs, adjustment is made by tightening or loosening adjustment screw on counterbalance spring.
5. Perform this procedure on both sides of the sweeper.

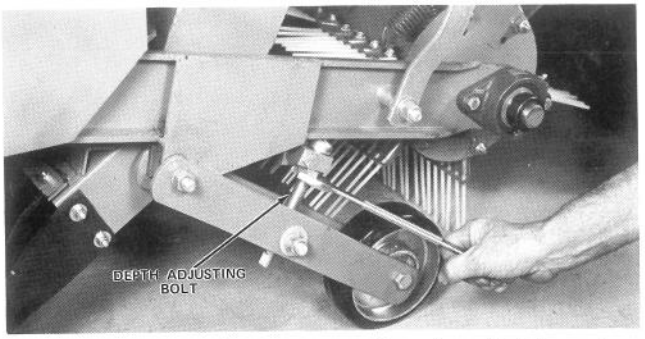
NOTE: Because of the added weight of the drive components, the R.H. spring will require a tighter setting than the L.H. spring.



ADJUST RAKE DEPTH

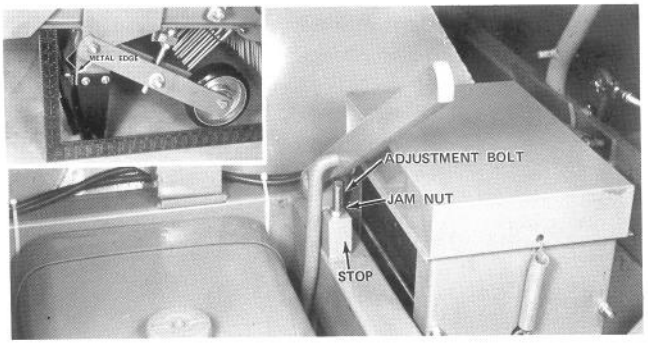
IMPORTANT: The following procedure should be performed on a level turf area to insure all rake tips slightly touch surface.

1. Loosen locknut so depth adjustment bolt can be turned.



2. Turn depth adjustment until rake slightly misses surface.
3. Perform same operation on opposite side of sweeper.
4. Retighten adjustment lock nut.

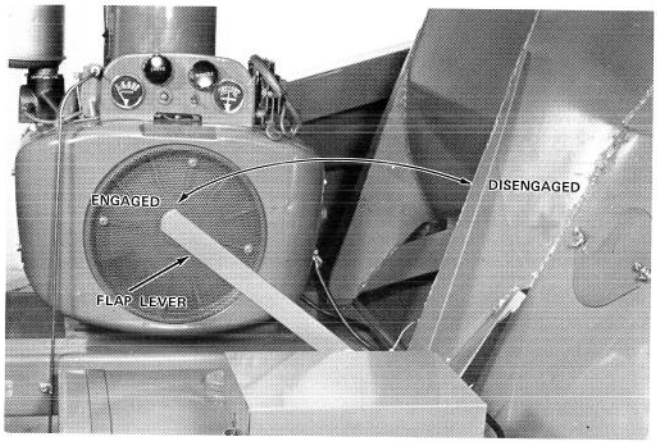
IMPORTANT: If rake tips penetrate turf too deeply, improper debris pickup could result.



RUBBER FLAP ADJUSTMENT

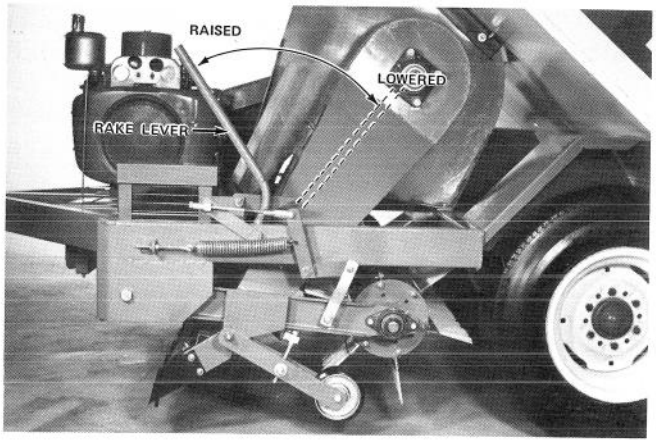
1. Metal portion of front flap should be vertical to ground. (See insert).
2. Place flap in lowered position. (See flap lever, page 8).
3. Loosen jam nut on top of stop and turn adjustment bolt up or down until flap is vertical to ground.
4. Tighten down jam nut securely to stop.

KNOW YOUR CONTROLS



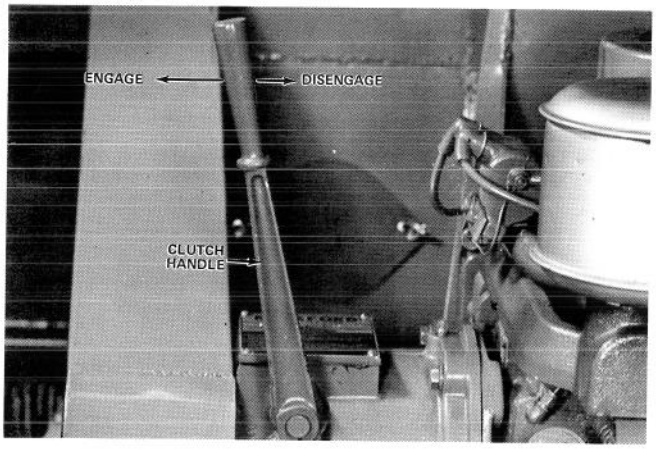
FLAP LEVER

1. The flap lever is engaged in a downward position.
2. Flap lever is disengaged in an upward position.
3. The flap lever should be in an upward position for transporting.



RAKE LEVER

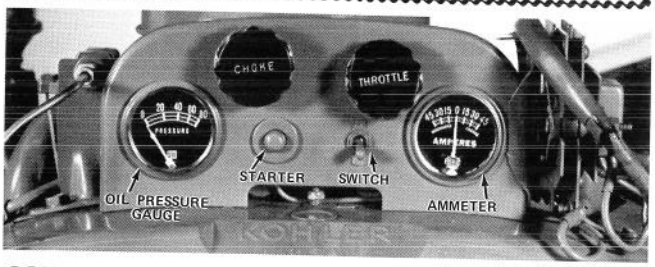
1. The rake lever raises the flex tip rake by pushing lever as far forward as possible; To lower, push rake lever forward until catch releases. Push to rear until lever hits STOP.
2. The rake lever should be raised when transporting sweeper to and from work area. The raised position is also used when the sweeper is not in operation or when stored.



CLUTCH HANDLE

The clutch handle is located on the clutch housing. To engage, push outward on the clutch handle; to disengage, push inward.

IMPORTANT: When rake lever is lowered and clutch handle engaged, it is important that the sweeper be moved as quickly as possible.



CONTROL PANEL

CHOKE

The choke is located on the side of the control panel. To start engine, pull choke out as far as possible. When engine starts, push choke fully inward.

IGNITION SWITCH

The ignition switch is located underneath the throttle control knob. Ignition switch must be in UP position to start engine. Switch should remain in an UP position while engine is running. To stop engine, push ignition switch down.

AMMETER

Located at the right of the throttle control is the ammeter. The ammeter indicates the rate of battery charge or discharge. During normal operation there will be little or no movement of the ammeter needle.

OIL PRESSURE GAUGE

The Oil Pressure Gauge indicates the oil pressure within the engine at different RPM's. Check your Kohler Engine Manual for correct pressure readings at certain engine RPM's.

THROTTLE CONTROL

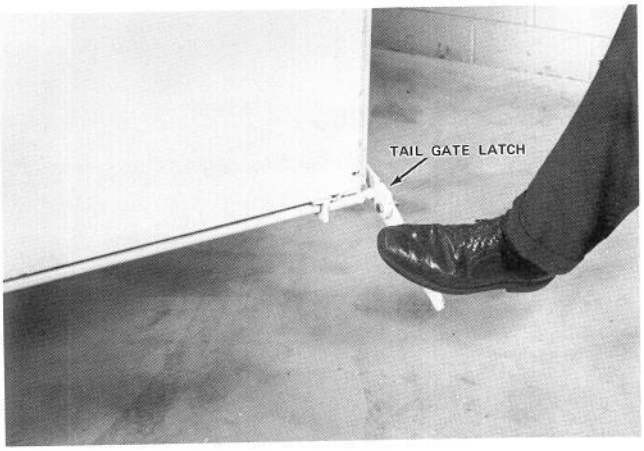
1. To increase speed, lift and pull out throttle control.
2. The throttle control has eight (8) notched segments for different speed variations.
3. When desired engine speed is obtained, push throttle control down to secure in notch.

NOTE: Turning the throttle control knob to the left or right will ensure a finer engine adjustment for smoother engine operation.

4. To decrease engine speed, lift throttle control knob and push in.

NOTE: The engine should not be stopped by use of the throttle control.

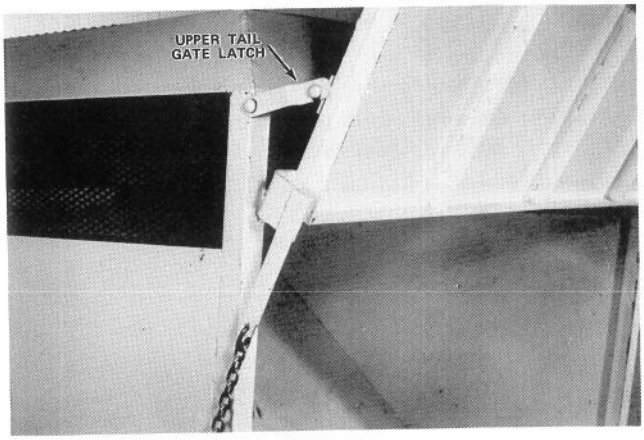
KNOW YOUR CONTROLS (CONTINUED)



TAIL GATE CATCH

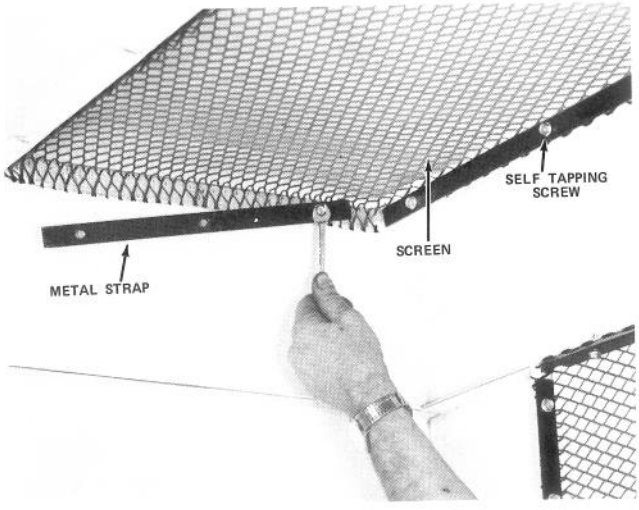
To release tail gate catch, stand to the extreme right of left side of hopper. Push down on lever with foot. When tail gate starts to open, remove foot.

CAUTION: Do not stand directly behind hopper when releasing the tail gate. Tail gate will swing up and may cause personal injury.



UPPER TAIL GATE LATCH

The upper tail gate latch is located on the upper left rear of hopper. It is used to support the tail gate when hopper is cleaned or aired out. It is not necessary to hold tail gate in open position when dumping debris.



INNER SCREEN REMOVAL

1. Open tail gate and secure with upper tail gate latch.
2. Remove self tapping screws and metal straps securing inner screens.
3. Remove inner screens.

NOTE: Removal of inner screens will increase suction of sweeper. However, removal of inner screens when sweeping fine debris will cause some debris to fly out of hopper through larger holed outer screens. Use caution when inner screens are removed.

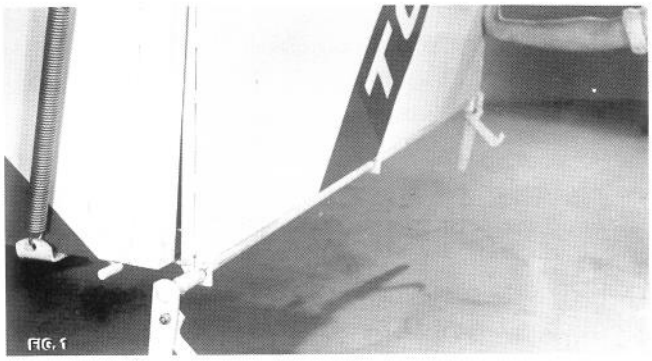


FIG. 1

TAIL GATE LATCHING

1. Hold tail gate in a closed position. See Fig. 1.

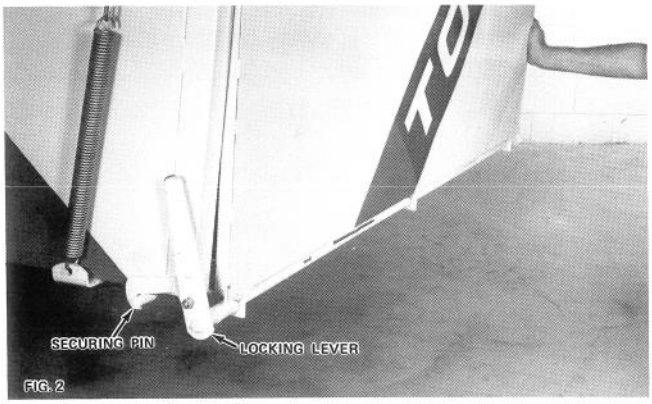


FIG. 2

2. Flip locking lever over securing pin. See Fig. 2.

NOTE: Both sides of tail gate should be latched at this point.

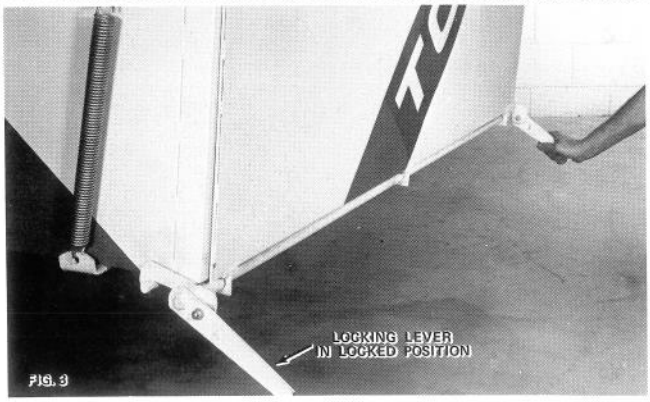


FIG. 3

3. Close tail gate by securing locking lever in a downward position. See Fig. 3.

STARTING INSTRUCTIONS

BREAK-IN PERIOD

See your Kohler engine manual for changing oil and maintenance during break-in period.

STARTING INSTRUCTIONS

1. Place all controls in disengaged or off position (rake in raised position).
2. Turn ignition switch on (in an upward position).
3. Lift up and pull out throttle control to third or fourth notch.
4. Pull choke out as far as possible.
5. Push starter button until engine starts. When engine has started, push choke fully inward.
6. After engine has started, the following procedure should be followed:
   A. Move throttle control to the desired engine speed necessary for the job at hand.
   B. Pull flap lever as far forward as possible.
   C. Push rake lever to the rear as far as possible.
   D. Engage rake by engaging clutch handle.

NOTE: Do not allow sweeper to stand still with rake engaged. Scarring of the turf may take place.

STOPPING INSTRUCTIONS

1. Disengage power to rake by disengaging clutch lever.
2. Lift throttle control and push in.
3. Flip ignition switch down to an off position.

IMPORTANT: To stop the sweeper in an emergency, flip ignition switch off.

IMPORTANT: If engine has been running hard for a prolonged period and is hot, do not stop it abruptly. Remove load and allow engine to run at 1000 to 1200 RPM for three (3) to five (5) minutes. This procedure will reduce internal engine temperature, external temperature, and will minimize valve warping.

NOTE: Nominal operating conditions will require throttle opening from the fourth to eighth notch.

INSTRUCTION FOR SWEEPING

Before starting to sweep, survey the area to determine the best direction to sweep.

NOTE: To maintain a straight line, sight off an object in the foreground.

Always try to make a long, continuous run with a slight overlap with each return run.

On turf areas, the rake will pick up twigs, clippings, leaves, pine needles and cones, small debris (beverage cans, small bottles, paper plates, etc.).

The rake teeth are made of flexible nylon and easily changed. To prevent damage, the rake is protected from solid obstructions by spring action. The nylon teeth will not mar bronze, stone markers, sidewalks or pavement.

Because of its unique design, the sweeper also grooms the turf. The flex-tip reel combs through and lifts grass for a uniform cut when mowed. As it cleans, the light scarifying action increases water and pesticide penetration, thus reducing the need for renovation.

IMPORTANT: Do not make sharp turns when using the renovator; sharp turn will cause renovator to uproot turf.

IMPORTANT: Do not pull sweeper while reel is turning and in the raised position. Possible damage to rake may result if teeth come in contact with tire.



INSPECTION AND CLEANUP AFTER SWEEPING

When sweeping has been completed, thoroughly clean the machine and air out hopper. After cleaning, it is recommended that the machine be inspected for possible damage to mechanical components and blower. These procedures will assure that the machine will perform satisfactorily during next sweeping operation.

IMPORTANT: When towing the sweeper for long distances, securely fasten the gauge wheel arm to the sweeper frame with transport hooks. Should gauge wheel arm fall to ground, possible damage to the sweeper may result.



MAINTENANCE

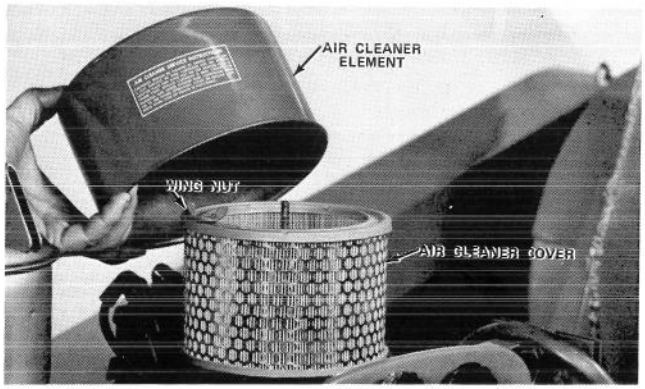
CAUTION: Before performing any maintenance, disengage clutch, and depress ignition switch.

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 25 operating hours or every 30 days.
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 clamps and terminals separately. Coat terminals with petroleum jelly and connect cables.

BATTERY STORAGE

The simplest instruction 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 sweeper is stored for more than 30 days.



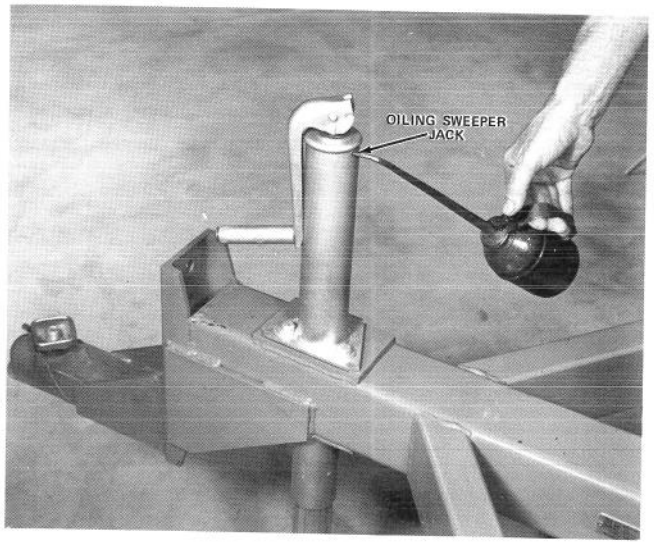
REMOVAL OF AIR CLEANER ELEMENT

1. Unscrew and remove wing nut.
2. Lift air cleaner cover off of element.
3. Replace element.

NOTE: Under normal conditions air cleaner element should be replaced every 100 hours.

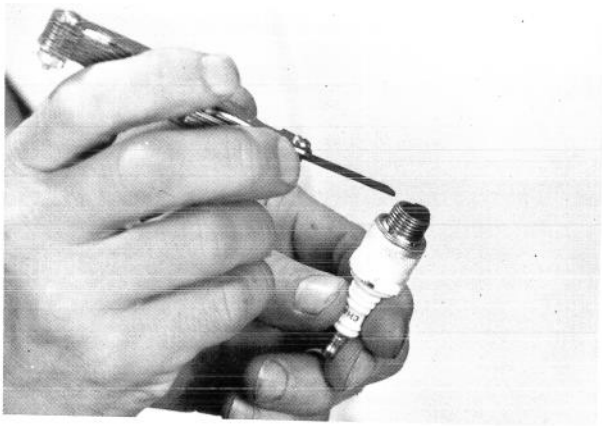
4. Replace air cleaner cover over element and secure with wing nut.

NOTE: Do Not attempt to clean dry type elements in any liquid or with compressed air as this will damage filter. Check your Kohler Engine Manual for air cleaner service.



OILING SWEEPER JACK

1. Sweeper jack should be oiled every time engine oil is changed. (See Page 13). This will ensure proper operation.

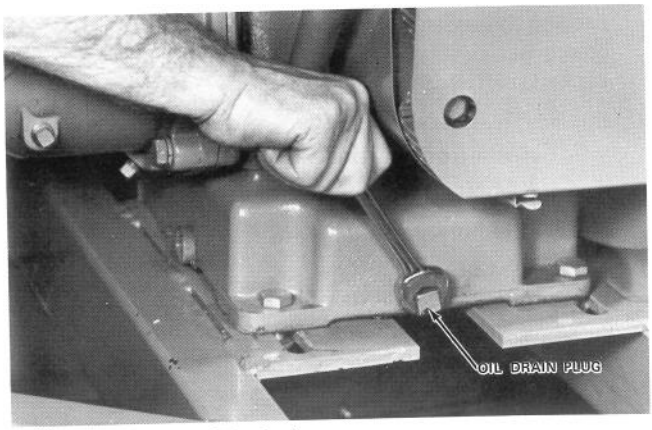


CHANGING SPARK PLUG

Remove spark plugs every 100 hours or sooner as conditions dictate. Clean, regap or replace if necessary. Gap the spark plugs at .025 inches.

NOTE: Do Not sandblast, wire brush, scrape or otherwise service plug in poor condition. Best results are obtained with a new plug.

MAINTENANCE (CONTINUED)

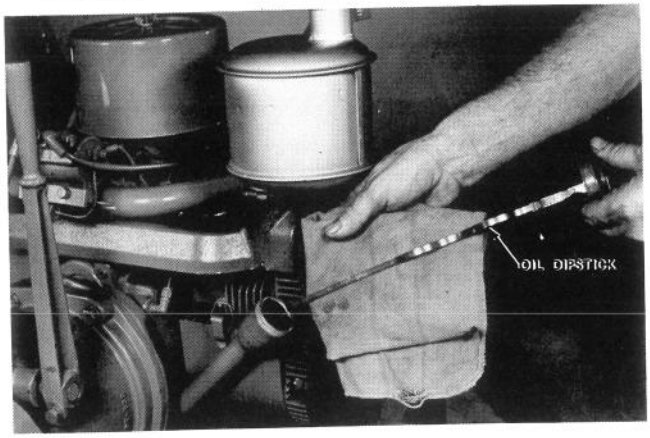


CHANGING OIL (Engine)

1. Remove oil drain plug and allow all oil to drain out.

NOTE: A warm engine will hasten draining.

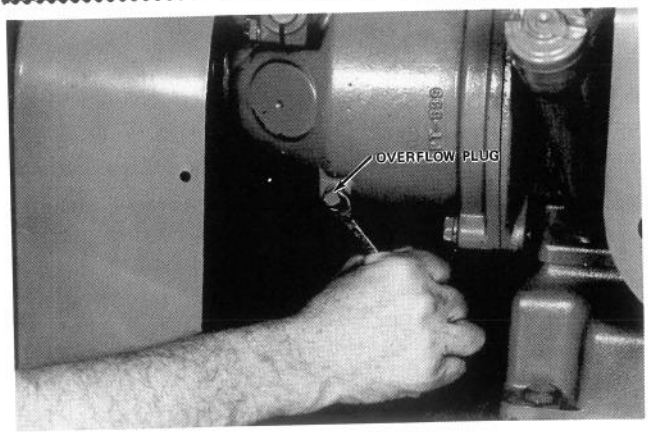
2. After all oil has drained out, replace oil drain plug.
3. On a new engine change oil after first 5 hours of operation. Change oil every 50 hours of operation thereafter.



CHECKING OIL

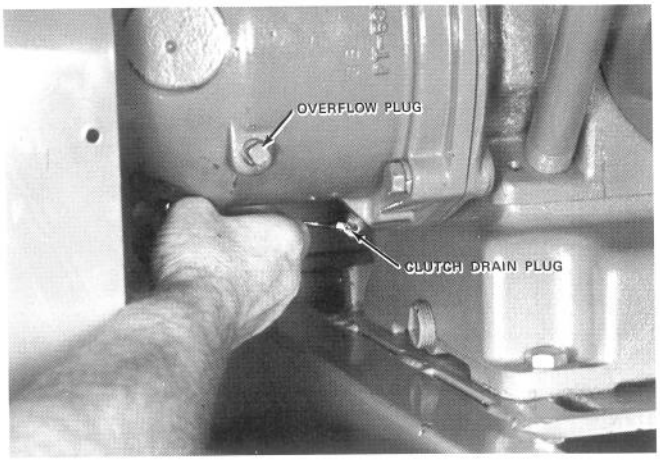
IMPORTANT: Check oil level daily and add oil as necessary, to keep oil at full line on dipstick.

NOTE: Check your Kohler Engine Manual for proper oil requirements.



CHECKING CLUTCH HOUSING OIL

1. Remove overflow plug on side of clutch housing.
2. If oil drips from overflow hole, there is a sufficient amount of oil in clutch housing.
3. Replace overflow plug.



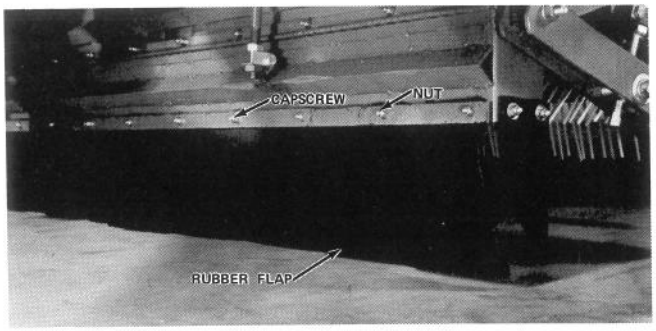
CHANGING OIL (Clutch Housing)

1. To drain oil from clutch housing, remove drain plug at bottom of housing.
2. Allow all oil to drain out.

NOTE: Removal of filler plug will hasten oil drainage. (See page 6).

3. Replace drain plug.
4. Refill with SAE 30 oil as instructed on Page 4.

NOTE: Oil from clutch housing should be changed once per year, or every 200 hours of operation, whichever comes first.



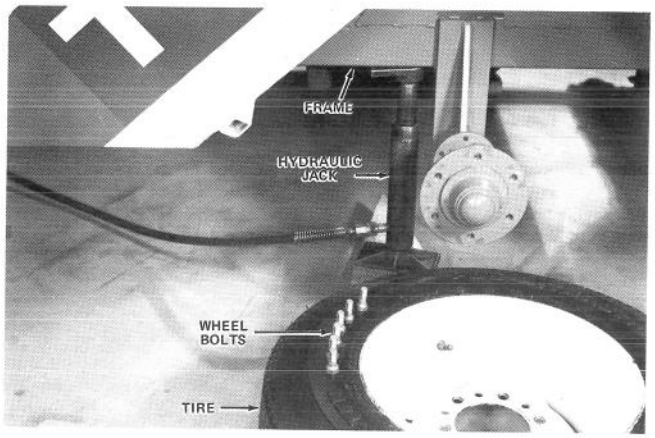
CHANGING RUBBER FLAP

When rubber flap becomes worn or damaged, replace as follows:

1. Remove ten (10) bolts, washers, and nuts.
2. Replace with new rubber flap and fasten securely.

CAUTION: Change flap on a flat, level surface and block wheels to prevent sweeper from rolling. Failure to do so may result in personal injury.

MAINTENANCE (CONTINUED)



CHANGING TIRE

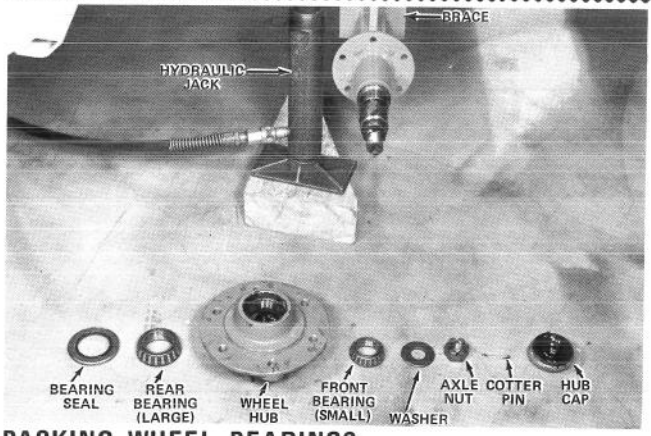
IMPORTANT: Remove tire on a flat, level surface.

To remove tire proceed as follows:

1. Place jack behind wheel on frame or axle shaft and jack up to point of contact.
2. Break resistance on all lug bolts and continue to jack up until tire can be removed.
3. Reverse above procedure to install tire.

IMPORTANT: Lug bolts must be tightened 70 to 90 ft. lbs. of torque when installing wheel on sweeper.

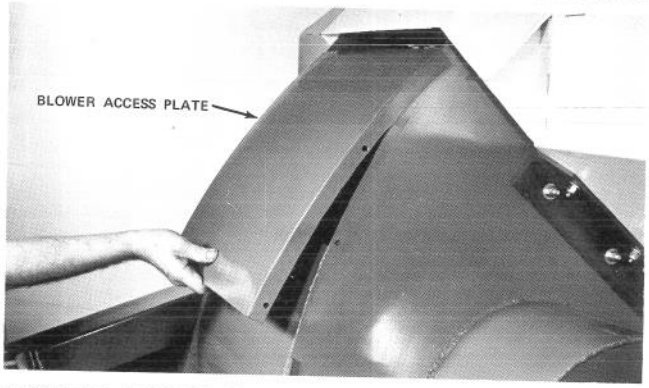
WARNING: It is recommended that a 2000 lb. capacity hydraulic jack be used when changing a tire. Block the other tire to prevent rolling or injury.



PACKING WHEEL BEARINGS

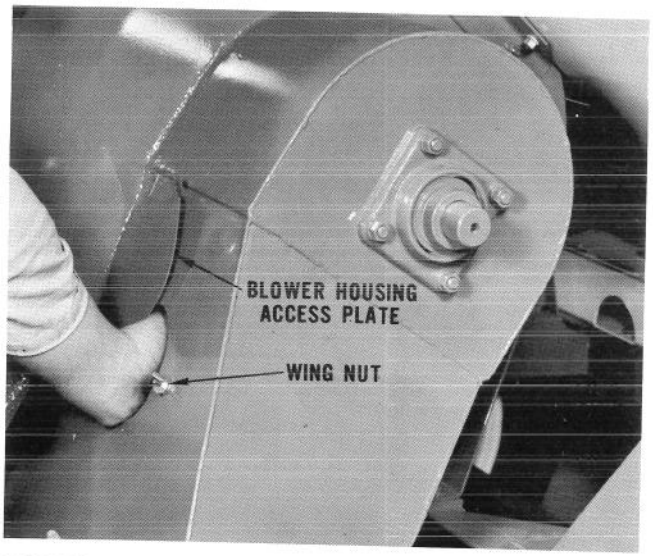
1. Remove wheel. (See above)
2. Remove hub cap by prying with a screwdriver.
3. Pull cotter pin from axle shaft and remove axle nut and washer. Back nut off to cotter pin when replacing.
4. Remove wheel hub from axle; Pull front bearing. (Small).
5. Remove bearing seal and pull rear bearing. (Large). Hand pack each bearing by placing a small amount of wheel bearing grease in palm of hand. Force grease into bearing by pushing bearing down into grease. When grease has been pushed through the bearing, bearing is packed sufficiently.
6. Replace rear bearing and secure by installing bearing seal. Replace front bearing.
7. Pack wheel hub until filled to capacity.
8. Slide wheel hub onto axle shaft.
9. To reassemble, reverse steps 3, 2 and 1.

NOTE: To seat bearings properly, axle nut must be tightened moderately. Back off axle nut until first opportunity to insert cotter pin.



BLOWER ACCESS PLATE REMOVAL

1. Remove four (4) screws and lockwashers.
2. Pull down and out (see photo) to remove blower access plate.



DEBRIS REMOVAL

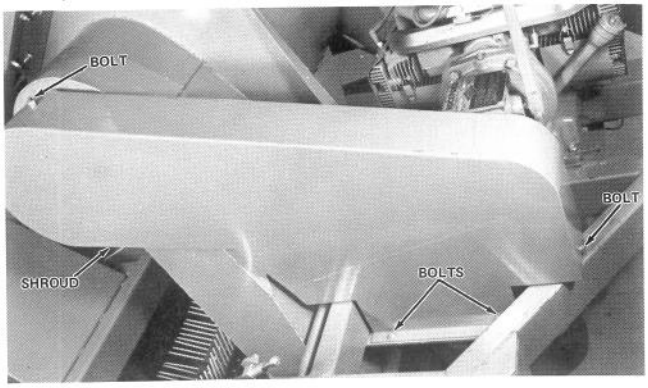
CAUTION: Before removing debris, disengage clutch, disengage P.T.O. drive, turn off ignition switch, and make certain all moving parts have stopped.

1. Loosen the two (2) wing nuts.
2. Swing blower housing access plate to one side. (See photo)
3. After debris has been removed, lower access plate and secure with wing nuts.

MAINTENANCE (CONTINUED)

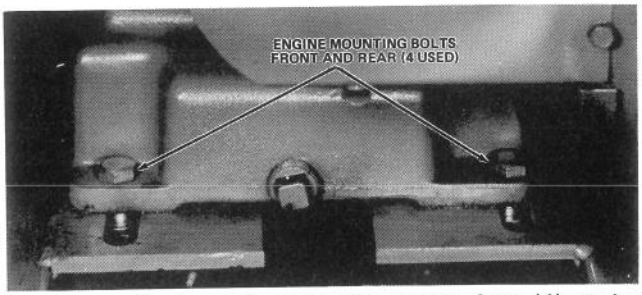
IMPELLER BELT ADJUSTMENT

To adjust the impeller belt, proceed as follows:

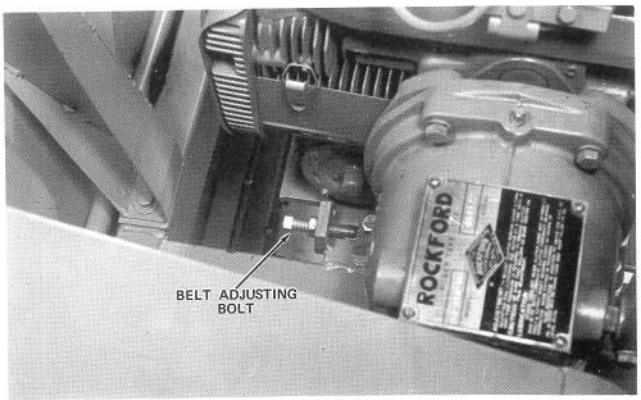


NOTE: It is not necessary to remove the shroud to check belt tension. If for some reason shroud has to be removed, remove four (4) bolts, washers and nuts. Never operate sweeper without shrouds in place. (See Photo above).

CAUTION: Before proceeding with the following steps make absolutely sure all moving parts are stopped. Make sure engine switch is in "off" position, disengage clutch and remove spark plug wire. Failure to do so may result in personal injury.



2. If an adjustment is necessary, loosen four (4) engine mounting bolts.



3. Turn belt adjusting bolt until desired belt tension is obtained. Retighten engine mounting bolts. Reorient engine to make sure engine is parallel with frame. Retighten engine mounting bolts.

NOTE: Belt tension and wear should be checked after every twenty (20) hours of operation.

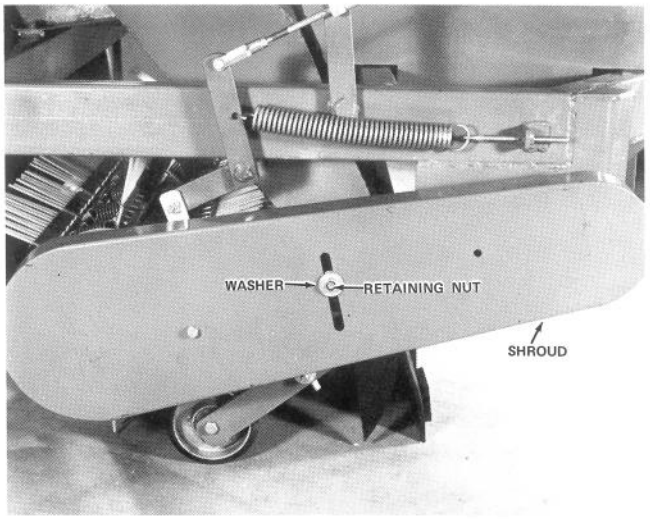
4. Whenever impeller belt is adjusted it is necessary to readjust jackshaft belt (engine drive) or chain. (PTO drive).



JACKSHAFT BELT ADJUSTMENT

1. Remove shroud by taking off four (4) bolts, washers and nuts. (See page 15). Belt tension should not be so tight as to promote undue belt wear.
2. If belt has too much slack, loosen idler pulley nut, press forward on idler pulley until desired tension is obtained and retighten idler pulley nut.
3. If belt is too tight, loosen idler pulley nut, pull rearward on idler pulley until desired tension is obtained and retighten idler pulley nut.

NOTE: Belt tension and wear should be checked after every twenty (20) hours of operation.



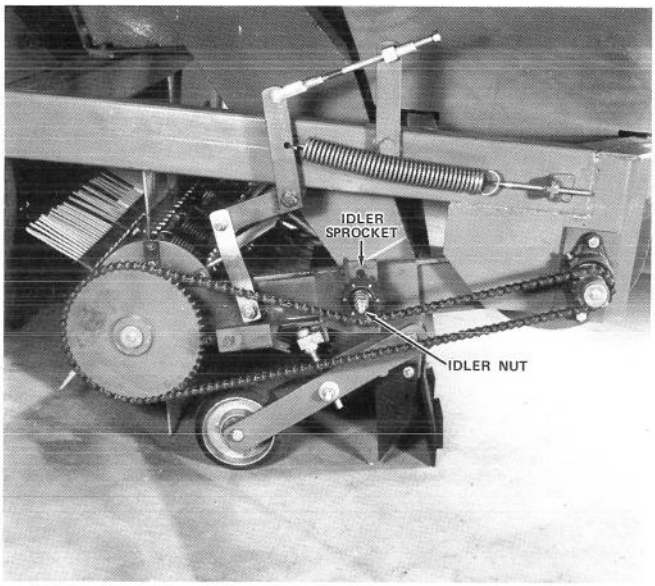
REEL DRIVE CHAIN ADJUSTMENT

To adjust reel drive chain, proceed as follows:

1. Remove center shroud retaining nut and washer.
2. Remove bolt and lockwasher. Lift off shroud.
3. Upon inspection, chain should not be so tight as to create binding between idler and sprockets.

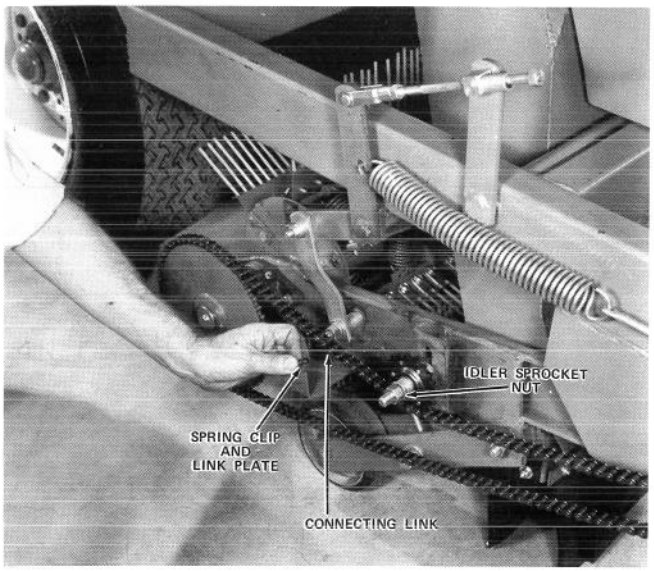
MAINTENANCE (CONTINUED)

REEL DRIVE CHAIN ADJUSTMENT (Cont'd.)



4. If chain has too much slack, loosen idler nut, press down on idler sprocket until desired tension is obtained and retighten idler nut.
5. Replace shroud by reversing procedure in Steps 2 and 1. Ensure that clearance is evident between chain and chain shroud.

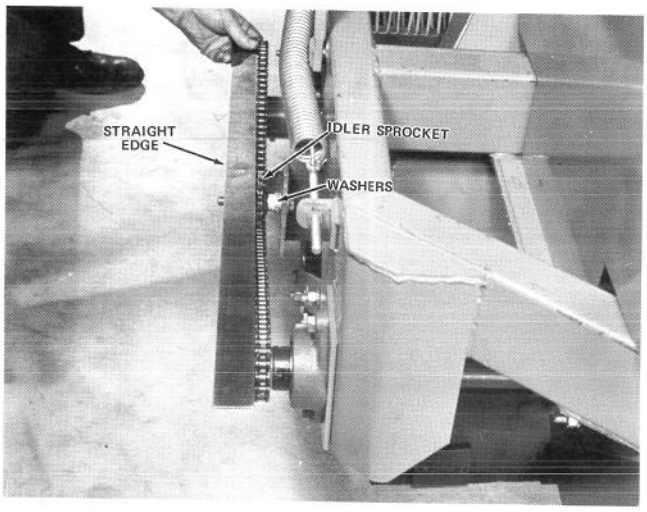
NOTE: Chain tension and wear should be checked and oiled after every twenty (20) hours of operation.



REEL DRIVE CHAIN REMOVAL

To remove Reel Drive Chain, Proceed as follows:

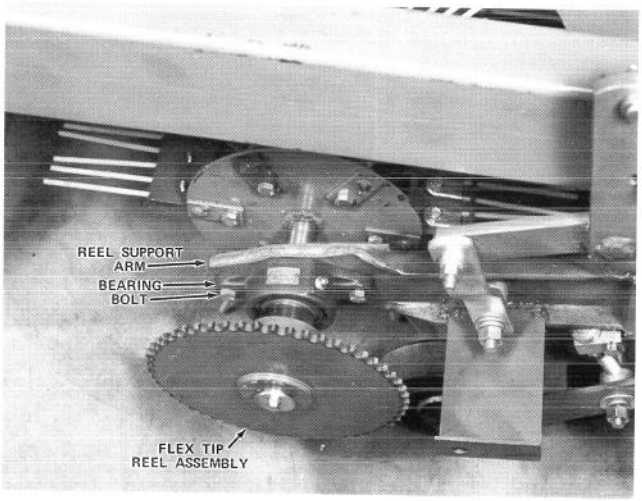
1. Remove reel drive chain shroud (see page 15).
2. Loosen idler sprocket nut, remove spring clip and link plate from chain.
3. Pull out connecting link and chain will fall apart.
4. Make necessary repairs and reverse procedure in Steps 3, 2 and 1.



IDLER SPROCKET ALIGNMENT

To Align Idler Sprocket, proceed as follows:

1. Remove reel drive chain shroud. (See Page 15).
2. Loosen nut on idler sprocket.
3. Lay straight edge across hub of the two (2) outer sprockets. (See photo).
4. Add or delete washers behind idler sprocket necessary to align idler sprocket with straight edge.
5. Adjust idler sprocket for proper chain tension and tighten lock nut.
6. Install reel drive chain shroud back on machine. (See Page 16).

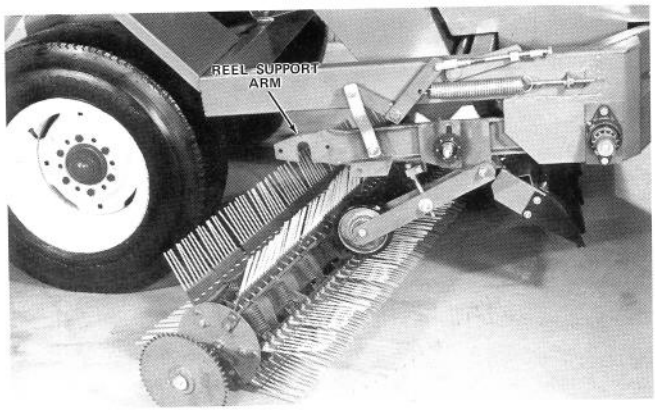


FLEX TIP REEL REMOVAL

Remove flex tip reel on a hard, level surface with reel raised and proceed as follows:

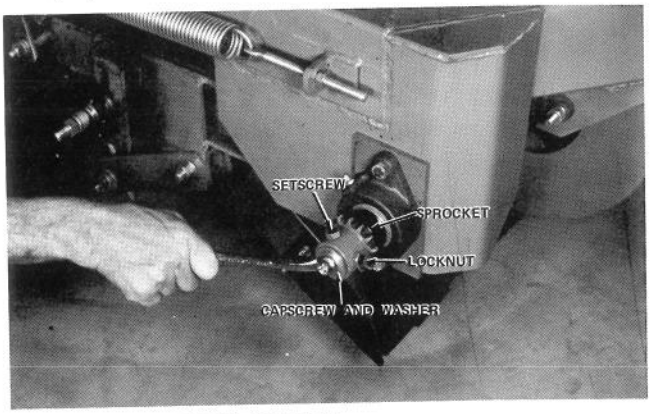
1. Raise front of sweeper as high as possible by lowering jack.
2. Remove reel drive chain shroud and drive chain. (See Page 16).
3. Remove nut, bolt, and lockwashers holding bearings to the reel support arms. Perform this operation on both sides of sweeper.
4. Removal of these four (4) bolts will permit flex tip reel to be lower to the ground.

MAINTENANCE (CONTINUED)



FLEX TIP REEL REMOVAL (Cont'd.)

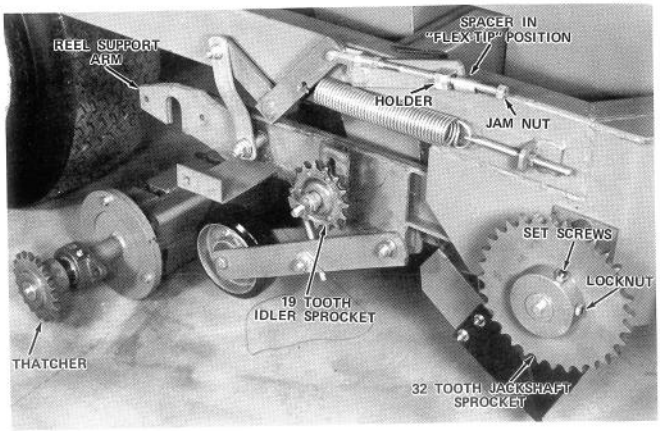
5. Lift reel support arms to uppermost position. (See Page 8).
6. Slide end of rake rearward and pull out from under machine.
7. To install flex tip rake, reverse procedure in Steps 6, 5, 4, 3, 2 and 1.



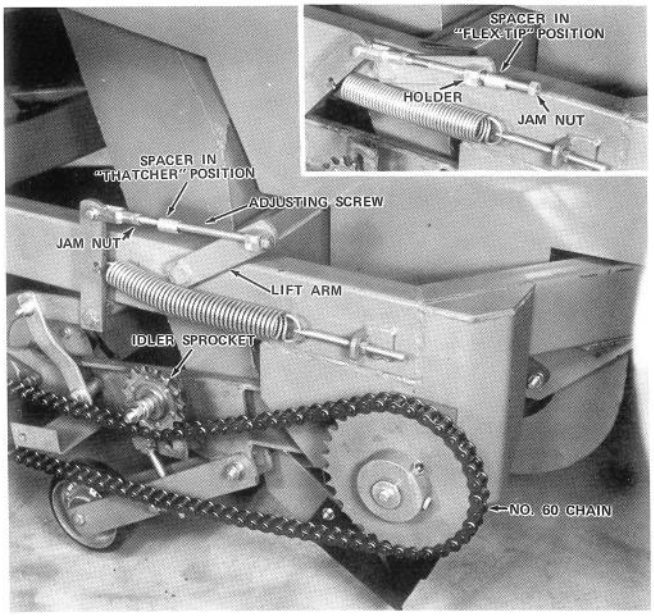
THATCHER INSTALLATION

NOTE: A large 32 tooth jackshaft sprocket, a 19 tooth idler sprocket and a No. 60 chain make up the Thatcher Kit Drive Components.

1. Remove shroud and chain. (See Page 15).
2. Remove capscrew and washer from end of jackshaft.
3. Loosen locknuts and set screws in sprocket hub.
4. Pull sprocket from jackshaft.



5. Slide 32 Tooth Jackshaft sprocket onto jackshaft.
6. Secure by tightening two (2) set screws and lock nuts on sprocket hub.
7. Remove idler sprocket presently on machine and replace it with 19 tooth (#60) idler sprocket found in Renovator Kit.
8. Slide Thatcher into position and secure to reel support arms. (See Photo).
9. Align idler sprocket with jackshaft sprocket and thatcher sprocket. (See Page 16 for correct procedure).



10. Install No. 60 chain (found in kit) and push down on idler sprocket until desired chain tension is obtained. (See Page 16).
11. Fasten idler sprocket securely.

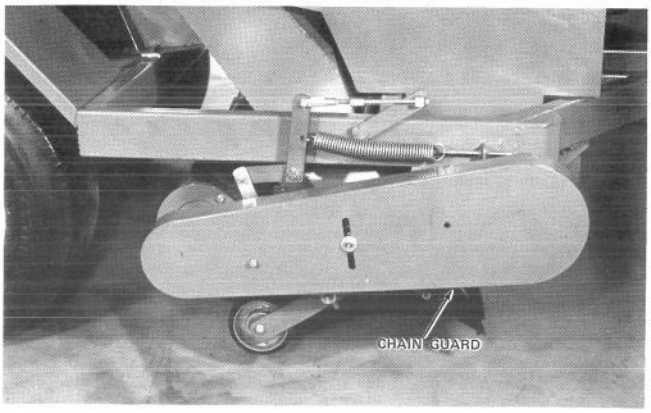
NOTE: The spacers mounted on the adjusting screws of the lift mechanism must be removed when thatcher is installed on machine. (See photo).

Remove Spacers as follows:

12. Put reel support arms in a lowered position. (See Page 8).
13. Remove jam nut and adjusting screw. Slide spacer off. (See Insert). Reassemble as shown in above photo. (Thatcher position).
14. Repeat procedure on other side of sweeper.

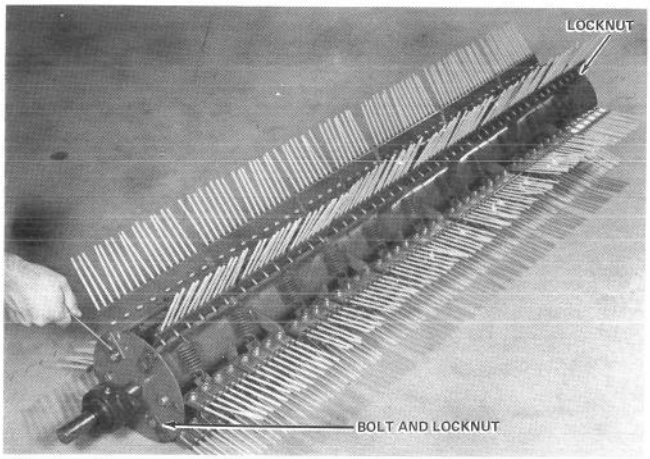
NOTE: This ensures a safekeeping place where spacers won't become lost.

NOTE: Spacers should be re-installed whenever the thatcher is removed and either the brush or flex tip reel is mounted to sweeper.



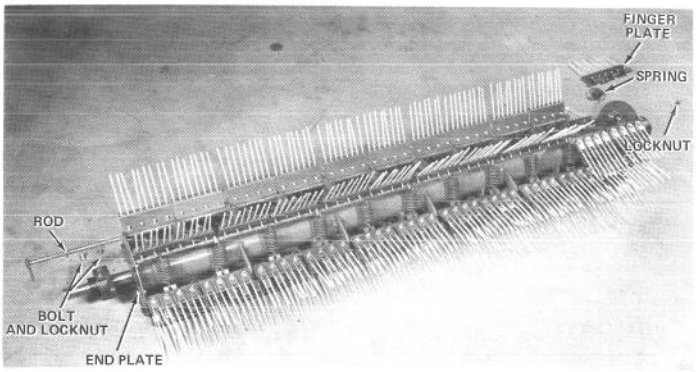
THATCHER INSTALLATION (Cont'd.)

15. Replace chain guard to sweeper opposite from original assembly. Broad end should face front of sweeper. (See Photo).
16. Ensure that clearance is evident between chain and chain guard.
17. Adjust as necessary.

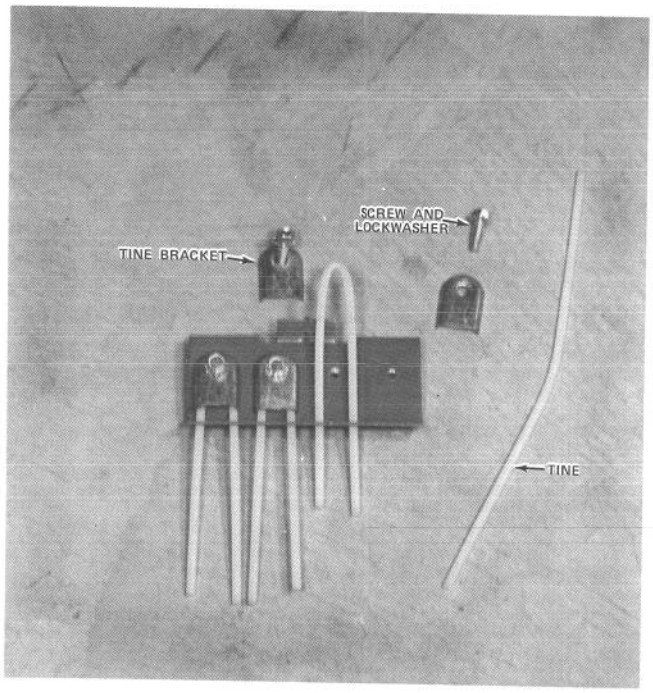


FLEX TIP RAKE ROD OR FINGER PLATE REPLACEMENT

1. Remove bolt and locknut from one end of reel.
2. Remove locknut only from opposite end of reel.



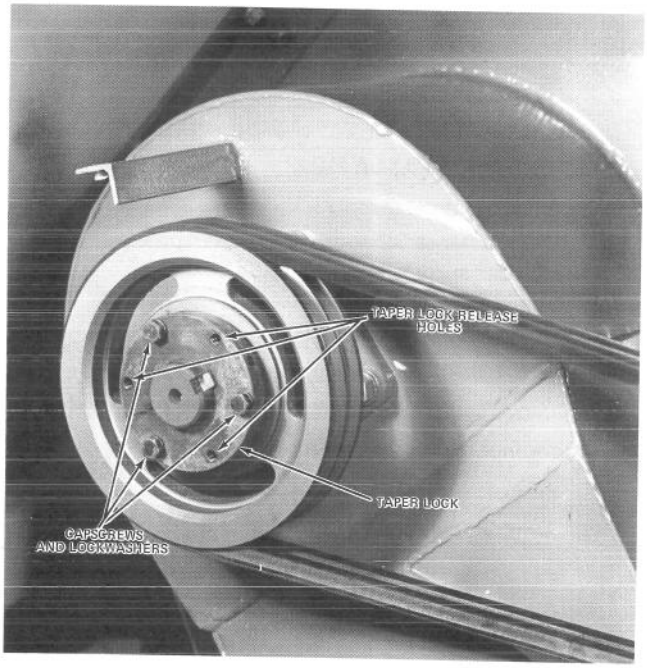
3. Drive rod from end plate. Drive rod from end without the tab welded to it.
4. Remove finger plates or rods as required and replace.
5. Line up finger plate with rod and drive rod back through end plate.
6. Attach bolt and locknuts and hook up springs.



FLEX TIP RAKE TINE REPLACEMENT

To replace a tine, proceed as follows:

1. Remove tine bracket and slide damaged tine out.
2. Bend new tine in half and slide into position.
3. Place tine bracket over curved end of tine and fasten securely with bolt and lockwasher.

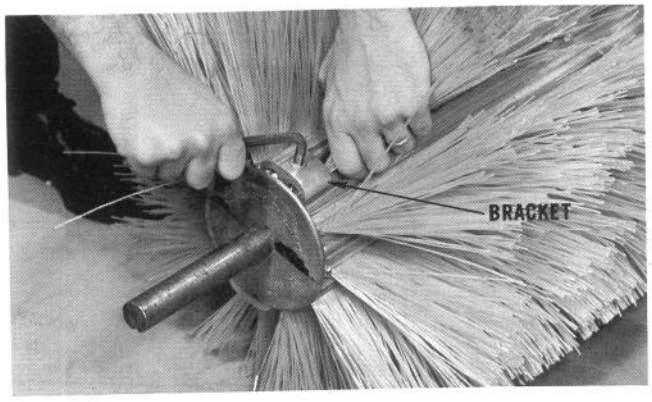


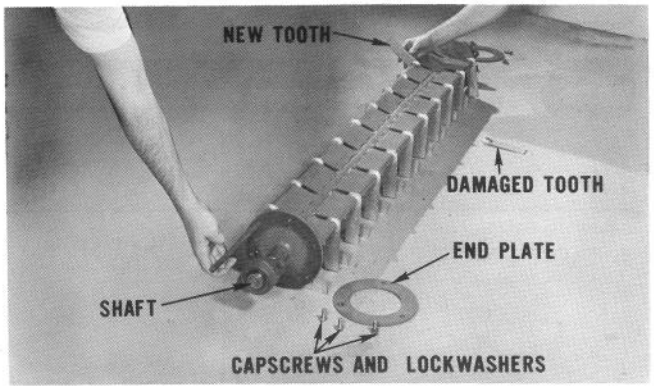
PULLEY AND SPROCKET REMOVAL

To remove any pulley or sprocket secured by a taper lock, proceed as follows:

1. Remove capscrews and lockwashers one at a time and screw into adjoining holes.
2. Turn each capscrew the same number of times until lock separates. Pulley or sprocket will now slide off shaft.

MAINTENANCE (CONTINUED)

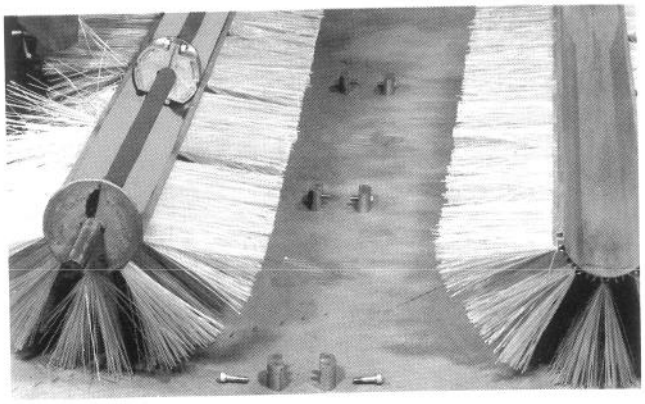




BRUSH HALF REPLACEMENT

To replace brush half, remove brush from unit.

1. Loosen all brackets with allen wrench and remove from brush halves.
2. Separate brush halves and discard damaged section(s).

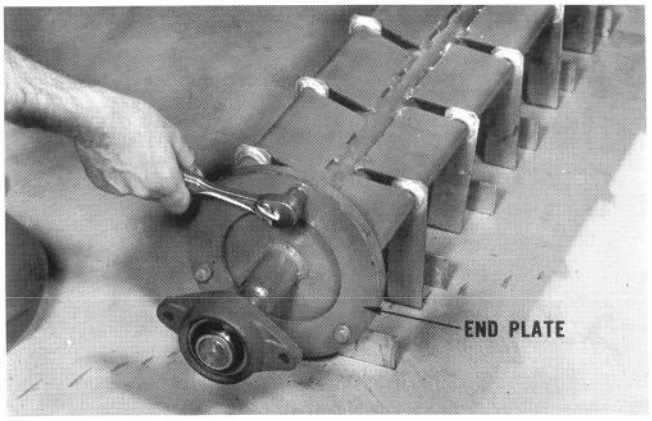


3. Install new brush section(s) by pushing together and secure both ends with brush clamps. When ends have been secured, fasten brush with remaining clamps.

THATCHER TOOTH REPLACEMENT

To replace thatcher tooth, remove thatcher from unit:

1. Remove capscrews and lockwashers from both ends.
2. Remove end plate from thatcher assembly on both ends.



3. Drive necessary shaft out and replace damaged tooth.
4. Attach end plates and secure with lockwashers and capscrews.

66" RAKE-O-VAC SWEEPER P.T.O. MODEL 07172

NOTE: All information found in the engine powered Sweeper (Model 07071) pages 1 to 19 is pertiment to the P.T.O. Sweeper (Model 07172) with the exception of information pertaining to the engine.

NOTE: Pages 20 to 26 contain information pertinent to the P.T.O. Sweeper (Model 07172) only.

Operating and Safety Instructions

CAUTION: **The following operating and safety instructions are suggested by The TORO Company.**

These Sweepers are designed, engineered and tested to offer reasonably safe and effective service, provided it is operated in strict accordance with these instructions. FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY.

TRAINING

1. Know the controls and how to stop the sweeper quickly – READ THE OWNER'S MANUAL.

PREPARATION

2. Wear substantial shoes while using this sweeper.
3. If any safety shields become damaged in any way, they should be replaced immediately before operation of sweeper.

OPERATION

4. Do not carry passengers on prime mover or allow anyone to ride on sweeper.
5. Give complete and undivided attention to the job at hand.
6. Make sure all moving parts have stopped before servicing machine.
7. Shift into neutral, stop prime mover and engage parking brake before leaving operator position.
8. Disengage power to sweeper implement before making repairs or adjustments.
9. Disengage power to sweeper implement when transporting or not in use.
10. Take precautions, such as disengaging power to sweeper implement, lowering implement, shifting prime mover into neutral and setting parking brake when leaving operator position.
11. Make sure prime mover engine is shut off and P.T.O. shaft disconnected from prime mover before servicing sweeper.
12. Do not wear loose fitting clothes when servicing or operating sweeper.
13. Do not step over P.T.O. shaft to get to other side of sweeper. WALK around sweeper.
14. Never allow anyone but operator near the prime mover and sweeper while in operation.
15. Reduce speed on side hills and in sharp turns to prevent tipping or loss of control.
16. Stay alert for holes in terrain and other hidden hazards.
17. Look behind the sweeper before backing up.
18. Do not drive close to a ditch or creek.
19. Never dismount while prime mover is in motion.
20. Keep hands away from all moving parts on sweeper while prime mover is running.
21. Use extreme caution when mounting the prime mover while engine is running.
22. Never get on or off of prime mover with P.T.O. shaft engaged.
23. Use extreme caution when crossing or near roadways and traffic.
24. Keep sweeper implement(s) and blower in good operating condition. Keep all guards and safety devices in place.
25. Prime mover and sweeper should be stopped and inspected for damage after striking a foreign object. Repair damage before re-starting and operating the prime mover and implement.
26. Check prime mover brake periodically to be sure brake, when applied, will hold firmly.
27. When operating on uneven terrain, use extreme caution and maintain good vehicle traction.
28. Never place hands or feet under or into moving parts or concealed areas. Keep hands and feet clearly away from sweeper implements, belts, chains, pulleys, blower impeller, gears, etc., while sweeper is running.
29. Always disengage P.T.O., shift into neutral, and apply brakes before dismounting prime mover.
30. Shut sweeper blower off when dumping contents of hopper. Always stand to extreme right or left side of hopper when opening tailgate.

MAINTENANCE

31. Follow maintenance instructions as outlined in this manual.
32. Have a competent Toro Service Distributor inspect and repair the sweeper and implement(s) each year.
33. Safety and performance levels can be assured only by use of specified Toro replacement parts.

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(Model-07172)

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SPECIFICATIONS

Overall Dimensions: Width: 76½"
Height: 67½"
Length: 13'6½"
Weight: 1920 lbs.

Frame: All-welded structural rectangular tubing; 2 x 4 and 4 x 4; 11 gauge

Hitch: Pin-type, 3/4" dia.; three vertical positions for tractor hitches ranging from 7½" to 16" in height.

Fan – Type: Centrifugal type – double inlet; 4-bladed, 16" wide, 23¼" diameter, 3/16 high tensile steel – individually replaceable; shaft – 1-9/16" fatigue-proof steel – mounted in self-aligning sealed ball bearings; blower inlet area – 286 sq. in., blower discharge area – 255 sq. in.

Fan – Drive: Belted – 2B83 Drive – Direct from side shaft to fan; side shaft with 9.4 P.D. pulley, fan with 4.6 P.D. pulley; fan runs at 1490 RPM (tip speed = 9,100 ft/min).

Fan Hood: Twin construction for uniform air distribution; 4½" deep x 63" wide (inlet area – 283 sq. in.). Variable position, front-weighted rubber flap.

Hopper: 4½ cu. yd. volume; 18-gauge top section with 16-gauge bottom section – rib reinforced; full-width, self-cleaning, semi-automatic dumping.

Flex Tip Reel – Type: Forward sweeping – 6 rows of teeth; all-steel construction with replaceable 3/16" extruded nylon teeth; each row containing 11 individually spring-loaded flexible sets, 552 teeth total; 18" diameter 61" side; 1-1/8" shaft set in self-aligning sealed bearings.

Flex Tip Reel – Support: Reel supported by adjustable counterbalance springs and adjustable-gauge wheels. Gauge wheels steel construction with non-scuffing rubber tires operating on sealed ball bearings; infinitely adjustable vertically.

Flex Tip Reel – Drive: All-chain drive; #60 roller chain from side shaft sprocket of 40 teeth to reduction shaft sprocket of 29 teeth; #40 roller chain drive from reduction shaft to reel; reduction shaft with 14-tooth sprocket, reel with 54-tooth sprocket. Flex tip reel runs at 260 RPM (Tip speed – 1,230 ft/min).

Tires: High-Speed – high-flotation type; L70 x 15 – 4-ply; for turf, tire set at 8 to 14 PSI; for hard-surface traveling, set at 14 to 28 PSI.

Basic Machine Drive: Machine to be powered by Power Take Off Drive from prime mover – 540 RPM; front universal shaft expandable type L14R series; rear universal shaft expandable type (for hitch adjustment) 35R series; 1.35:1 ratio rt. – angle gear box #400 series; Heavy Duty #50 series chain-type shaft coupling from gear box to side shaft; side shaft – 730 RPM.

OPTIONAL EQUIPMENT

Hard Surface Brush Kit (Model #07076): Forward sweeping continuous polyproylene bristle (.060 in.): Floating action with spring counterbalance and gauge wheel height adjustment; kit includes self-aligning bearings and sprocket (54-tooth); 19" O.D. x 62" wide, 1-1/8" shaft; (76 lbs.) Brush – 260 RPM (Tip speed – 1,290 ft/min).

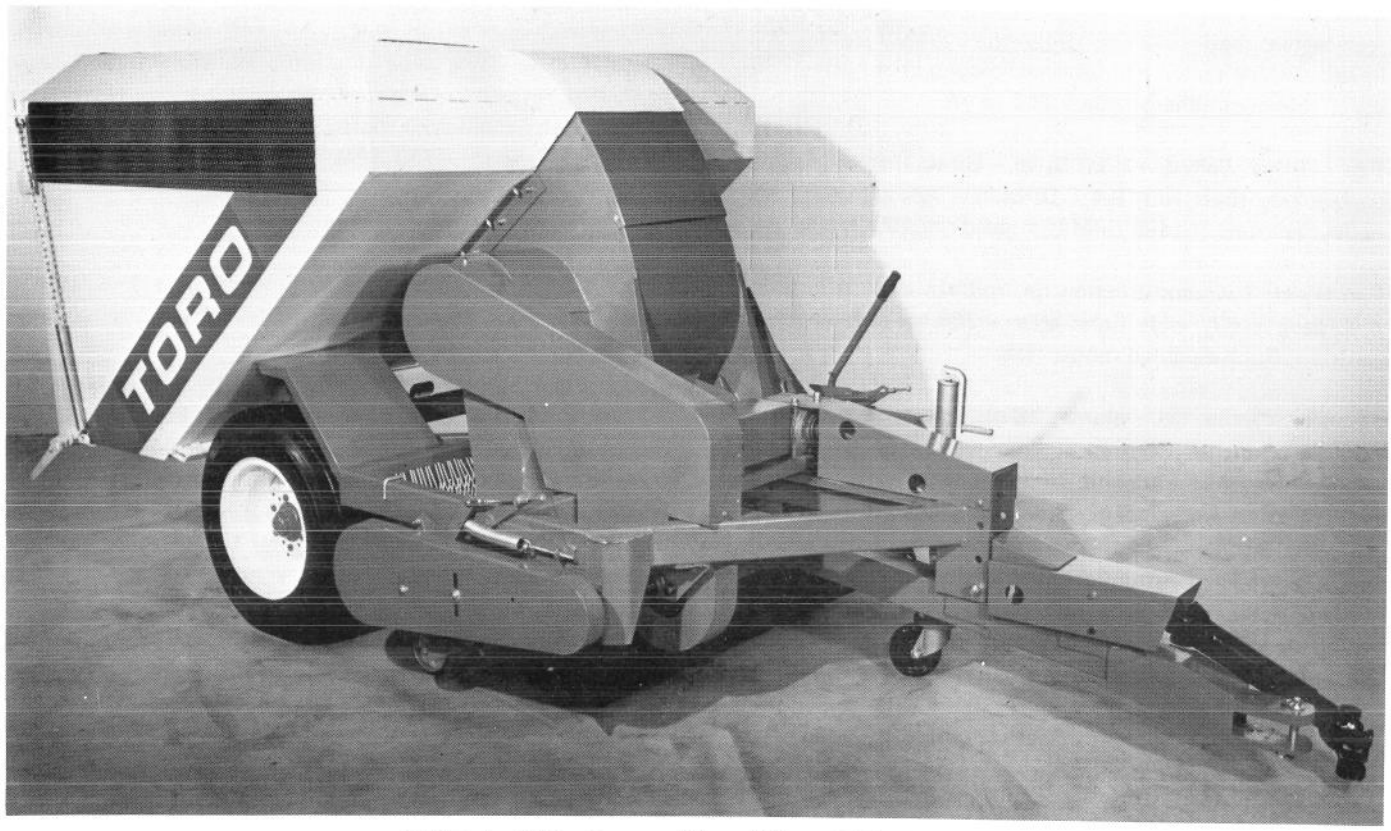
Thatching Reel Kit (Model #07078): Forward cutting centrifugally activated; all-steel construction; 30 blades – hardened 1/8" steel – spaced every 2 inches; 16-3/4" O.C. x 61" wide, 1-1/2" shaft – ends machined to 1-1/8"; kit includes self-aligning bearings, both drive sprocket (32-tooth) and reel sprocket (19-tooth), heavy-duty no. 60 roller chain and idler; (158 lbs. reel – 1690 RPM (Tip speed – 7,350 ft/min).

KNOW YOUR SWEEPER

(P.T.O. DRIVEN)

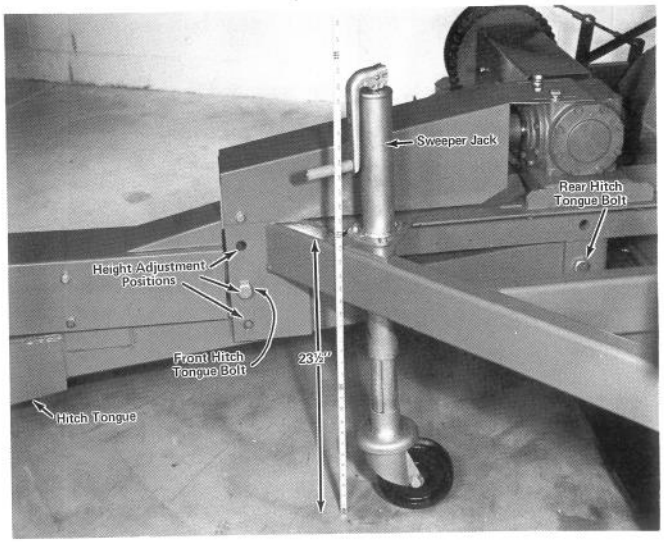


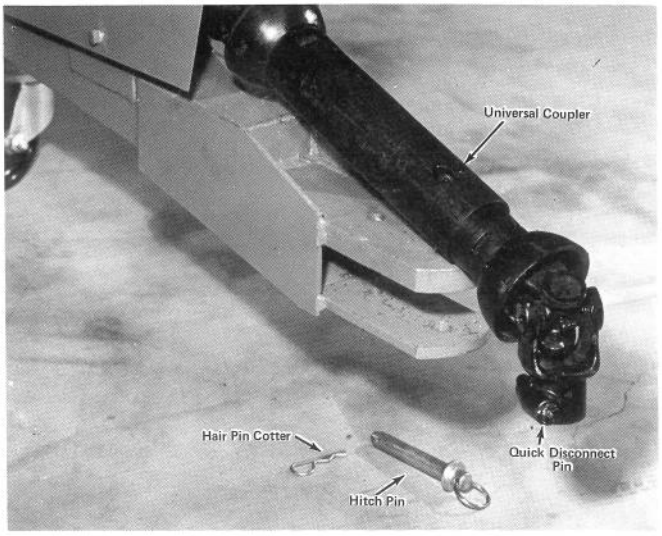
66" Rake-O-Vac Sweeper Viewed From Left Side



66" Rake-O-Vac Sweeper Viewed From Right Side

PREPARATION BEFORE SWEEPING





HITCH TONGUE ADJUSTMENT

1. Remove front and rear bolts on hitch tongue.
2. Raise or lower hitch tongue to one of three (3) height adjustment positions desired. (See Photo)
3. Insert bolts and secure with locknuts.

CAUTION: Height adjustment of the hitch should be performed by two (2) persons. Failure to do this may result in personal injury.

NOTE: An approximate parallel of 23-1/2" should be evident between the sweeper frame and ground. (See Photo) The operator must adjust hitch tongue to see that this parallel is maintained.

TRACTOR TO SWEEPER HOOK-UP

IMPORTANT: Mating tractor must have the following dimensions. Do not operate sweeper with tractor of different dimensions.

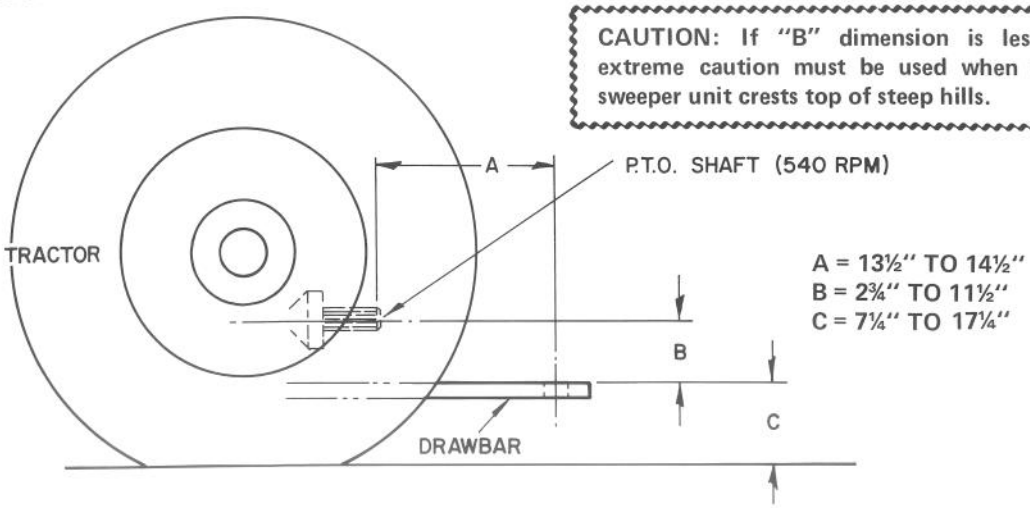
MOUNTING HITCH TONGUE:

1. Back prime mover up to sweeper.
2. Adjust hitch tongue by turning sweeper jack to same level as hitch of prime mover.
3. Attach to prime mover and secure with hitch pin and hair pin cotter.
4. Raise caster wheel tube up to frame and fold sweeper jack handle down.
5. Place caster wheel in frame cutout for convenience.
6. Attach universal coupler to P.T.O. shaft of prime mover. This is done very simply with the use of a quick disconnect on the universal coupler.

IMPORTANT: The distance between the hole in the tractor hitch and the point where the universal coupler attaches to the prime mover P.T.O. shaft must be 14" plus or minus 1/2". If fourteen inches (14") is not evident, adjustments must be made to tractor hitch before operating sweeper.

CAUTION: This sweeper is designed for 540 RPM P.T.O. shaft only. Do not operate with 1000 P.T.O. tractor.

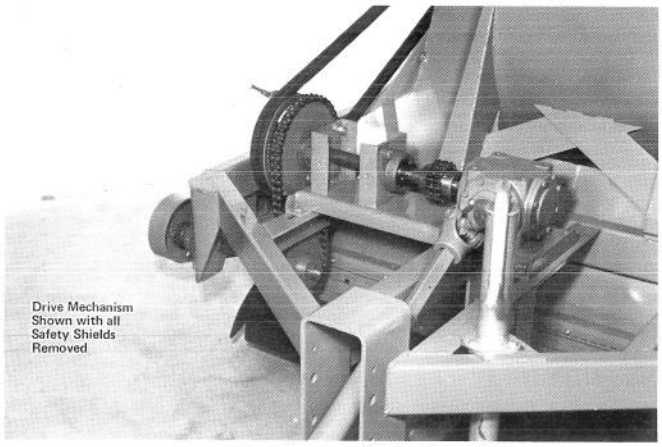
CAUTION: If "B" dimension is less than 3", extreme caution must be used when tractor and sweeper unit crests top of steep hills.



A = 13½" TO 14½"
B = 2¾" TO 11½"
C = 7¼" TO 17¼"

MAINTENANCE

NOTICE: Before performing any service on the sweeper, make sure the prime mover engine is shut off and the P.T.O. shaft is disengaged and removed from prime mover.

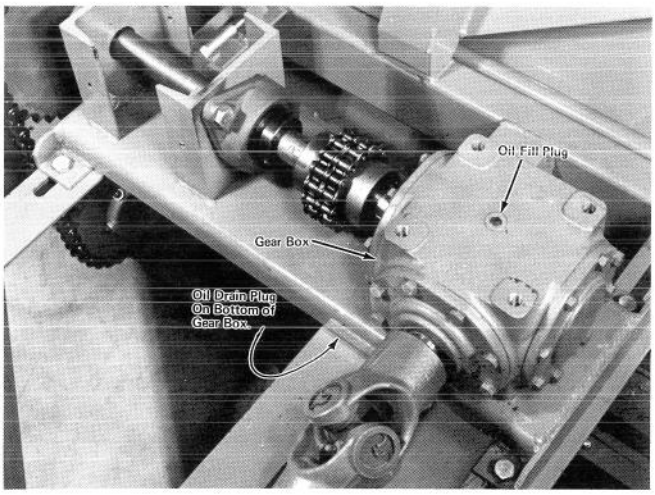


SHIELD REMOVAL

CAUTION: DO NOT OPERATE SWEEPER WITH SAFETY SHIELDS REMOVED.

NOTE: Most all adjustments to the drive mechanism can be accomplished without the removal of safety shields.

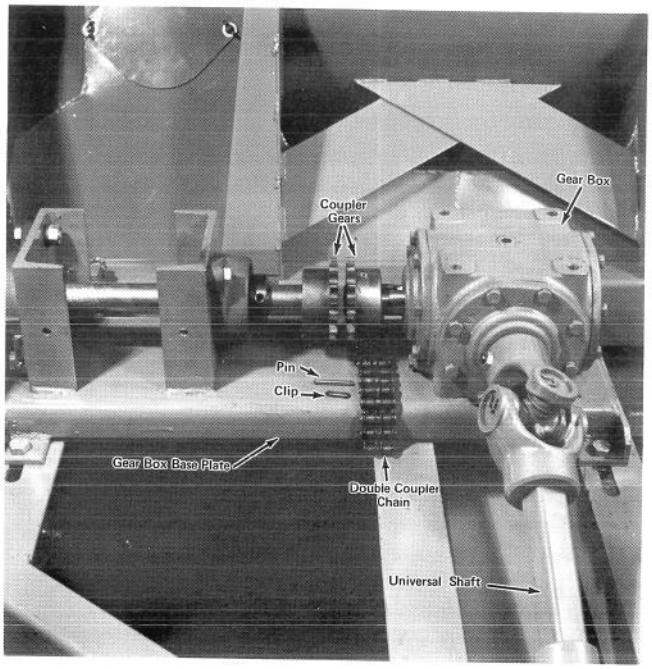
CAUTION: When safety shields are removed from sweeper and maintenance is being performed, make sure universal coupler is disconnected from prime mover P.T.O. shaft.



CHANGING GEAR BOX OIL

1. Place a pan on the ground beneath gear box.
2. Remove oil drain plug from bottom of gear box and allow all oil to drain out.
3. When all oil has drained out of gear box secure oil drain plug.
4. Remove plug on top of gear box and insert funnel.
5. Fill gear box with 1-1/2 pints of 80 or 90 weight oil.
6. Insert oil fill plug back in hole and secure.

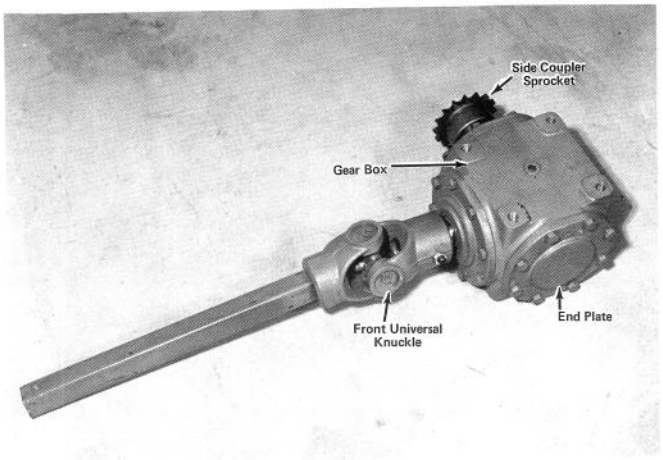
NOTE: Change oil in gear box every 200 hours of operation.



GEAR BOX REMOVAL:

1. Remove four (4) capscrews on bottom of gear box holding gear box to gear box base plate.
2. Disconnect double coupler chain by removing clip and pin and remove from coupler gears. (See Photo)
3. Pull gear box to the rear of sweeper until universal shaft pulls out of its housing. (See Photo)

MAINTENANCE (CONTINUED)

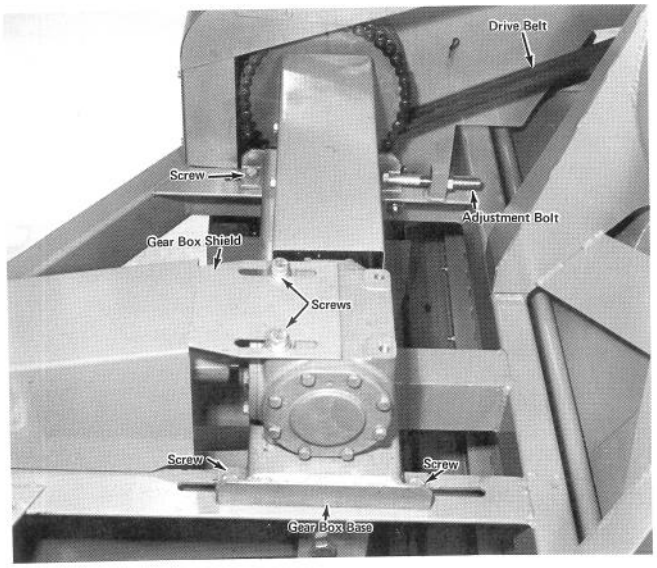


GEAR BOX REMOVAL (Cont'd.)

4. Lift gear box from sweeper and perform maintenance. To mount gear box back on sweeper reverse steps 4 through 1.

NOTE: When gear box is set back on gear box base make sure it is squared up as close as possible.

CAUTION: If the side coupler sprocket and the front universal knuckle are removed from gear box make sure they are replaced in the same orientation on the bear box. (Note there is an end plate on the opposite side of the coupler sprocket, but there is no end plate on opposite side of universal knuckle) (See Photo) Failure to do this will cause extreme high speed operation of the sweeper and may cause personal injury.



BELT ADJUSTMENT

NOTE: For any belt adjustment, the chain idler sprocket must be loosened and backed off completely.

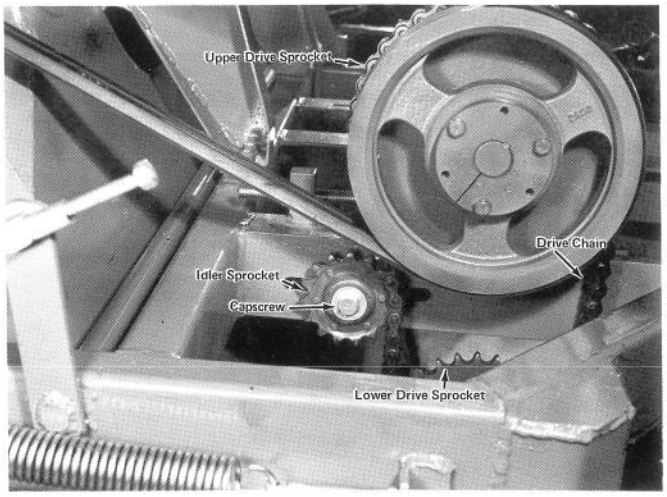
TO ADJUST BELT PROCEED AS FOLLOWS:

To adjust belt proceed as follows:

1. Loosen four (4) capscrews on gear box base and two (2) capscrews on gear box shields.
2. Turn adjustment bolt on back on gear box base for proper belt tension. (See page 15 for proper belt tension)
3. Square up gear box base parallel to frame by moving L.H. end (gear box end) to required position.
4. Tighten all capscrews.

NOTE: Make sure gear box base is square on frame and not set on an angle when adjusting belt tension.

NOTE: After drive belt has been adjusted it is necessary to retighten idler sprocket on drive chain. (See page 15)



DRIVE CHAIN ADJUSTMENT

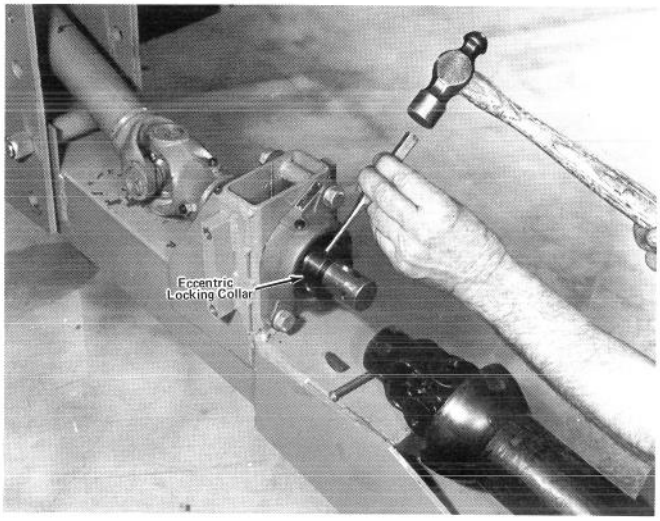
To adjust drive chain proceed as follows:

1. For proper drive chain alignment remove capscrew from idler sprocket.
2. Add or delete spacers behind idler sprocket until alignment with upper drive sprocket and lower drive sprocket is evident.
3. To increase chain tension push idler sprocket toward chain. To decrease chain tension push idler sprocket away from chain.

NOTE: Make sure all sprockets are in alignment. Failure to do this could result in throwing of chains, plugging sweeper, and may result in personal injury.

NOTE: For removal of drive chain see page 16.

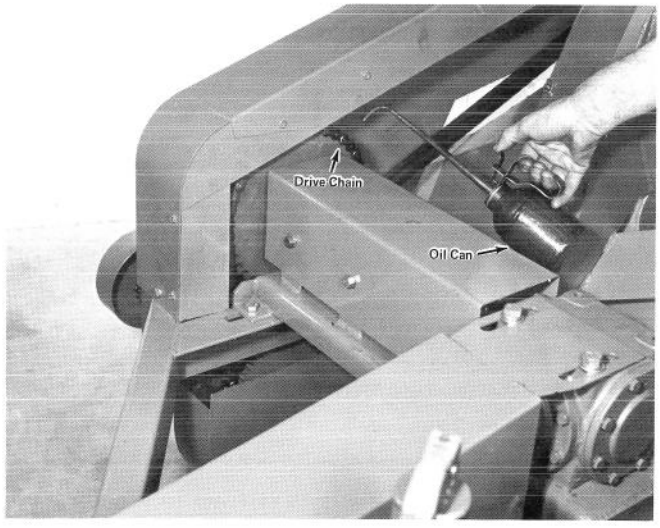
MAINTENANCE (CONTINUED)



LOCKING COLLAR REMOVAL

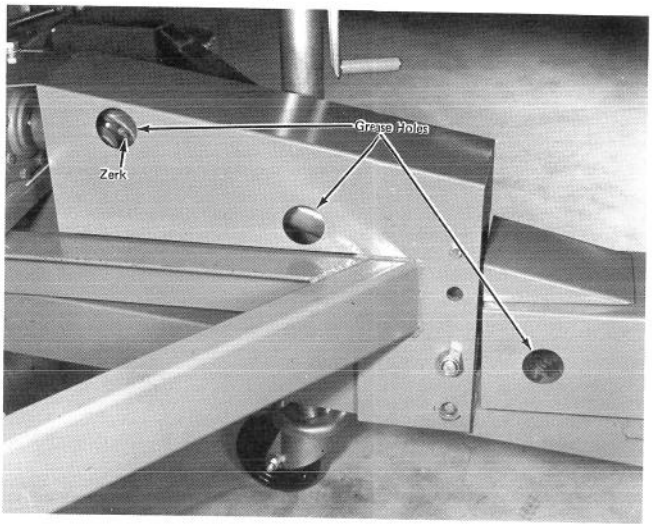
If it becomes necessary to replace the bearings or shaft, the eccentric locking collars must be removed, proceed as follows:

1. Remove protective shields.
2. To loosen eccentric locking collar place punch in cutout on collar. Take hammer and drive collar in opposite direction of the shafts rotation.
3. Slide collar off of shaft and replace necessary parts.
4. Slide collar back on shaft and snug it up tight against bearing.
5. Taking the hammer and punch, drive eccentric locking collar in the direction of the shafts rotation. This tightens collar. (See photo)
6. Pull all shields back in place.



OILING DRIVE CHAIN

NOTE: Entire length of all chains must be oiled every 30 hours of operation. (See photo)

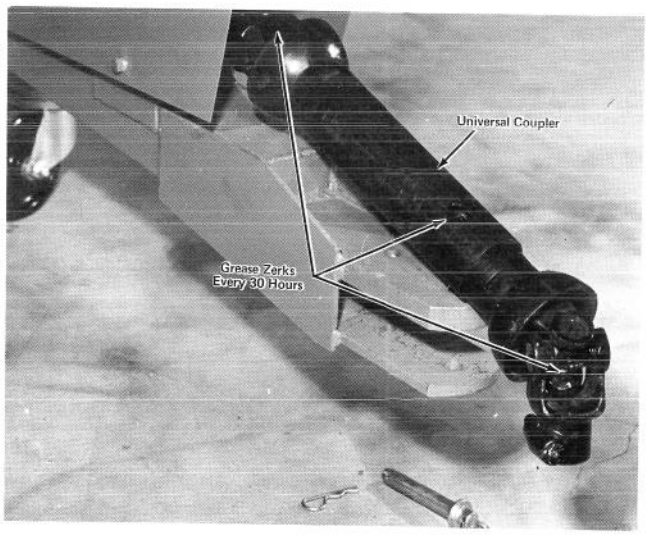


GREASING DRIVE SHAFTS

NOTE: It is not necessary to remove any shields to lubricate sweeper.

1. Disconnect sweeper from P.T.O. shaft on prime mover.
2. Rotate shafts by hand until you can see the zerks through the three holes in sides of shields.

NOTE: Grease these areas every 30 hours of operation. However, if operating in extremely dusty conditions, it is advisable to grease more often.



GREASING UNIVERSAL COUPLER

Grease the three (3) zerks on the universal coupler every 30 hours of operation. (See photo)

MAINTENANCE RECORD

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 sweeper 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.