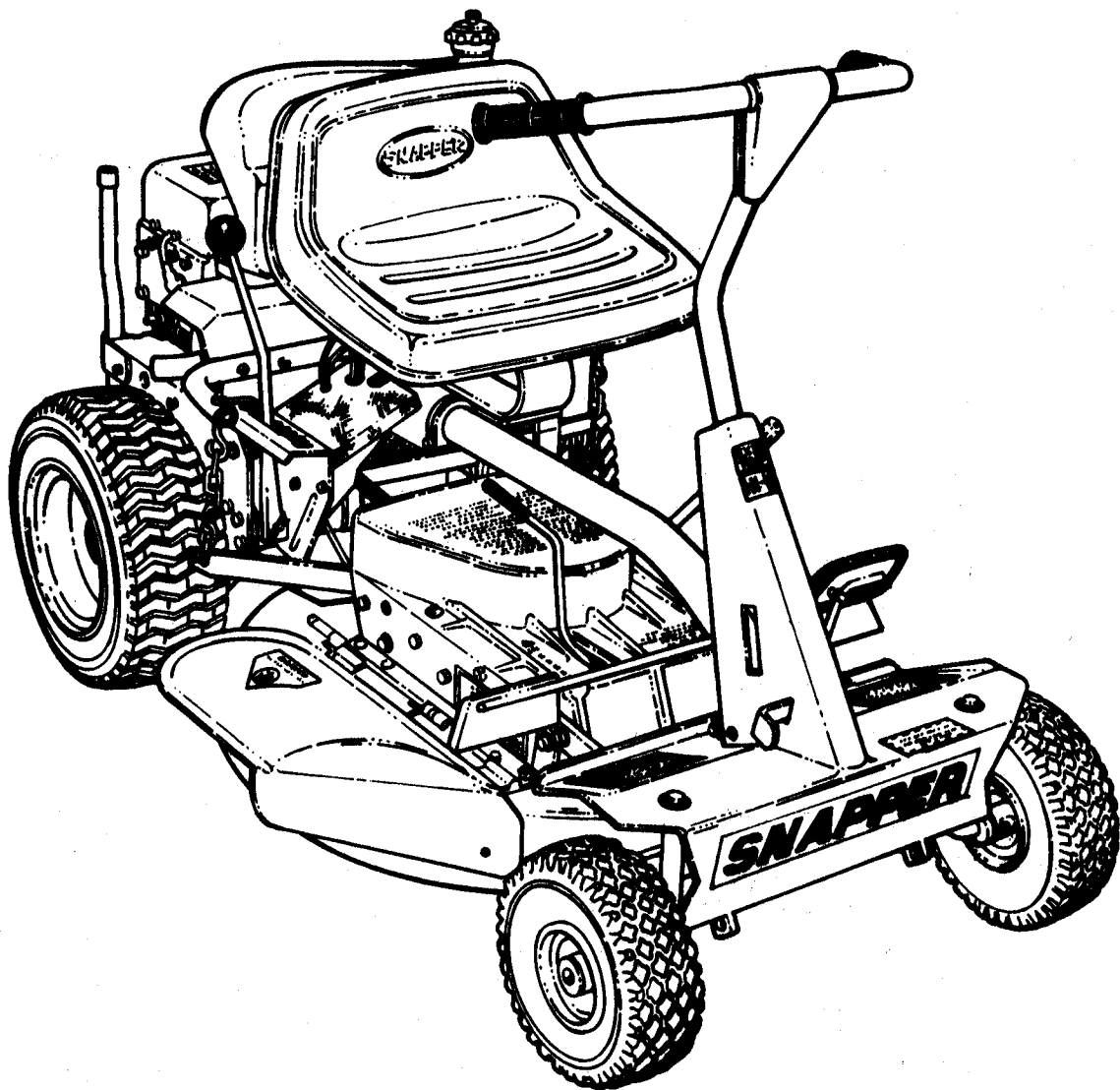


Service Manual for

SNAPPER[®]

**REAR ENGINE
RIDING MOWERS
SERIES 4,5,6 (& Later)**



SNAPPER POWER EQUIPMENT

McDonough, Georgia 30253

A Division of Fuqua Industries



(IR 8/88) MANUAL NO. 07012

INTRODUCTION

This manual covers the **SNAPPER Series 4, 5, 6** and later **Rear Engine Riding Mowers**. The series number is the last numeral in the model number and advances with each major design change. **Series 3** and earlier models are covered in Service Manual #07002.

The Automatic Blade Stop (ABS) feature was introduced on **Series 4 Mowers**. This feature automatically brings the blade (or blades) to a stop after the blade pedal is released.

Series 5 Models featured Smooth Start Clutches (SSC) which provides smoother starts, especially when starting off in high speed conditions. The SSC feature can be added to earlier models with a conversion kit.

Series 6 Models feature a foot-operated parking brake.

TOOL REQUIREMENTS: The normal complement of U.S. Standard tools found in most repair shops are all that will normally be needed to repair **SNAPPER Rear Engine Riders**. Several special tools are available to aid in pulling wheel hubs and drive discs. Refer to the parts manuals for these tools and for correct replacement parts for the particular model series being repaired.

CONTENTS: This manual contains six sections. The first section covers some of the routine operational service and adjustment information as found in the operator's manual which accompanies each unit. This information is repeated here for general reference only. Refer to the appropriate Operator's Manual for specific details. The sections are listed below.

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SAFETY FIRST!

Most major service procedures on the **SNAPPER 4, 5, 6 & EXTRA TOUGH REAR ENGINE RIDING MOWERS** require that the mower be stood on its rear bumpers for extended periods of time. This being the case, it is imperative that the following **SAFETY PRECAUTIONS** be adhered to:

FUEL TANK - DRAIN FUEL FROM TANK, CLOSE FUEL SHUT-OFF VALVE(S) & CLOSE VENT ON FUEL FILLER CAP BY TURNING CLOCKWISE.

SPARK PLUG - DISCONNECT SPARK PLUG WIRE.

BATTERY - TURN IGNITION KEYSWITCH "OFF" AND REMOVE KEY. DISCONNECT POSITIVE (+) CABLE FIRST, THEN NEGATIVE (-) CABLE FROM BATTERY. REMOVE BATTERY AND STORE IN A PLACE, THAT IS COOL, DRY AND WELL VENTILATED.

Always wear SAFETY GLASSES when compressing or extending springs, or when using a hammer and drift pin to remove locking collars, drive disc or other components. Use SAFETY GLASSES when pressing bearings IN or OUT. Always wear PROTECTIVE GLOVES when handling sharpened blades.

Section I - OPERATION & ROUTINE SERVICE

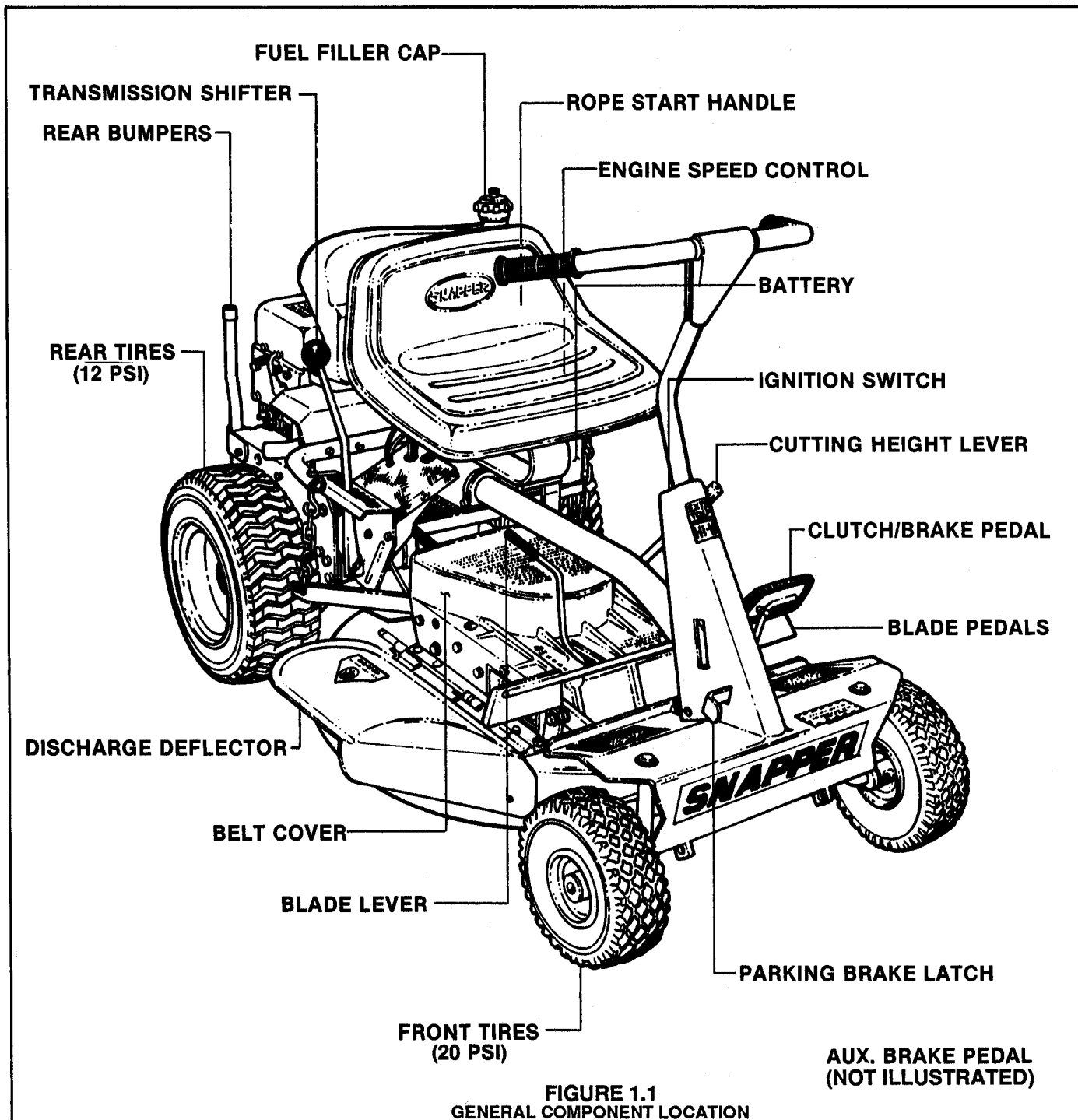
INTRODUCTION

This section covers general operation and routine service procedures for the **SNAPPER Series 4, 5, 6 & Extra Tough Rear Engine Riding Mowers**.

These procedures are listed for reference only, included are; general component location, pre-start checks & services, starting & stopping engine, starting & stopping motion, service assistance & replacement parts, starting & stopping blade, lubrication

schedule, fuel filter, operator's seat, tire pressure and storage procedure.

It should be noted that some components may differ in appearance and function. Therefore, should in-depth operation and general service instructions be necessary, consult the Safety Instructions & Operators Manual for the specific Rear Engine Rider being serviced. See Figure 1.1. GENERAL COMPONENT LOCATION.



Section I - OPERATION & ROUTINE SERVICE

1.1 PRE-START CHECKS & SERVICES

Perform the following checks and services (as needed) before each start-up.

A. TIRE PRESSURE

Tire pressure should be 20 psi in front tires and 12 psi in rear tires.

B. GUARDS, DEFLECTORS & COVERS

Make certain all are in place and securely tightened.

C. BLADE CONTROLS

Insure BLADE CONTROLS work freely. Blade lever must snap from ON to OFF when blade pedal is released.

D. OPERATOR'S SEAT

Make sure operator's seat is secure. Tighten if needed.

E. CLEAN EXTERIOR SURFACES

Cutting deck and engine should be free of dirt, grass, oil, etc. Keep engine air intake screens and cooling fins clear at all times.

F. ENGINE OIL

Add oil to engine as needed to bring level up to (but not over) the full mark. (Refer to engine manual for oil specifications).

G. FUEL

Push Rider outside where fumes can dissipate. Make sure fuel filler cap is tightened after refueling. (Refer to engine manual for fuel specifications).

1.2 STARTING & STOPPING ENGINE

The engine can be stopped by moving the ENGINE IGNITION keyswitch on steering column to "OFF" and also, by moving the ENGINE (Speed) CONTROL on left rear lift arm rearward to "STOP" position. Start engine as follows:

A. SHIFT BLADE OFF & TRANSMISSION TO

NEU (neutral) so that interlocks will allow engine to start. Let up on clutch/brake pedal to reduce shifting force.

B. CAP VENT & FUEL VALVE OPEN:

Turn valve on top of tank filler cap all the way counterclockwise to open. If your machine has a fuel shut-off valve, make sure it is open.

C. CHOKER ENGINE for cold starting by moving ENGINE CONTROL to CHOKER position.

D. MANUAL START engine by turning key to "ON", then pull rope starter handle until the engine starts.

E. ELECTRIC START engine by moving ignition key to START, then hold in this position until engine starts. If the engine fails to start after being cranked about 5 seconds, release the key and allow the starter motor to cool off before attempting to start again.

F. WHEN ENGINE FIRES move the ENGINE CONTROL rearward, out of CHOKER position until engine runs smoothly. Set desired speed. Best cutting and bagging performance is obtained with engine at, or near, top speed.

G. STOP ENGINE by moving the keyswitch to "OFF" or by moving ENGINE CONTROL to "OFF".

1.3 STARTING & STOPPING MOTION

A. CONTROLS:

Motions of the Series 4 & 5 are controlled by two foot pedals at the base of the steering column. Motions of the Series 6 are controlled by one pedal at the base of the steering column. The transmission shift lever is located to the right of the operator's seat. The cutter is control by the engage-disengage lever on the right side of the deck. It is necessary to become thoroughly familiar with the control and function of each before operations. Depress the clutch/brake pedal to stop motion of the mower. Move the cutter lever into "OFF" position to stop blades.

B. FORWARD MOTION: (Series 4 & 5)

Depress both foot pedals, shift transmission into forward speed position 1. Slowly release left (CLUTCH/BRAKE) foot pedal, then, as machine starts moving, release the right foot pedal. NOTE: Always start forward motion on No. 1 position, then shift into desired higher speed. The clutch/brake pedals does not have to be depressed to shift from 2 thru 5 speeds. Stop forward motion by pushing clutch/brake pedal all the way down. NOTE: The Auxiliary Brake will not stop the mower when under power. Use the Lift Pedal to stop. Excessive pressure on clutch/brake pedal will make shifting harder. Release pedal part way after stopping to ease shifting. The clutch/brake pedal must be depressed whenever machine is shifted out of neutral.

C. FORWARD MOTION: (Series 6)

The CLUTCH/BRAKE functions as a clutch when partially depressed. It allows shifting out of neutral into forward or reverse. Shifting force may be reduced by letting up slightly on the clutch/brake pedal. When fully depressed, it provides braking and can be set for parking by sliding the PARK BRAKE LATCH to the left until it engages the rod of the pedal. To release the latch, depress pedal so that the spring can return it. The pedal must be depressed in order to shift into 1st speed. Once machine is in motion, it is not necessary to depress the pedal to shift from 1 thru 5 speeds.

NOTE

IF THE BATTERY IS TOO WEAK TO START ELECTRICALLY, MANUAL START AND RUN ENGINE AT FULL SPEED FOR ABOUT AN HOUR TO ALLOW THE ENGINE ALTERNATOR TIME TO RESTORE BATTERY CHARGE.

Section I - OPERATION & ROUTINE SERVICE

- D. **REVERSE MOTION:** Fully depress clutch/brake to bring machine to STOP before shifting to reverse. Partially raise pedal, shift to reverse and release pedal. The shift lever will automatically shift out of reverse into NEU/PARK when the clutch/brake is fully depressed.

NOTE

THE MOWER WILL ROLL IF THE PARKING BRAKE IS NOT SET AND THE SHIFTER IS IN NEUTRAL.

1.4 SERVICE ASSISTANCE - REPLACEMENT PARTS

To retain the quality of your mower, use genuine **SNAPPER** Replacement Parts ONLY. Contact your local **SNAPPER** Dealer for parts and service assistance. For the correct part or information for your particular mower, always mention model and serial number. We recommend returning your mower to an authorized **SNAPPER** Dealer on a yearly basis for inspection and addition of any new devices which might upgrade the safety of your mower. For the nearest **SNAPPER** Dealer, check the yellow pages under the heading, LAWN MOWERS. For engine parts and service, look for the engine manufacturer's dealers under the heading, ENGINES-gasoline.

ALL SNAPPER REAR ENGINE RIDING

MOWERS can be stood on their back bumpers for servicing, provided the following steps are taken beforehand.

- (1) The fuel filler cap on the tank must be tight to prevent leakage.
- (2) Valve on top of the cap must be turned closed.
- (3) **SNAPPER** low-maintenance batteries on Electric Start models will not spill acid if fluid level in each cell covers each plate, but is no higher than bottom of fill ring.
- (4) Remove battery to prevent damage if unit is to be stood on end more than 2 hours.

1.5 STARTING-STOPPING BLADE

The **AUTOMATIC BLADE STOP CONTROLS** should stop blade in less than 3 seconds after the **BLADE PEDAL** is released. Two separate actions are required to start and keep blade turning. The **BLADE LEVER** is blocked from forward movement if the **BLADE PEDAL** is depressed. **BLADE LEVER** must be shifted forward before **BLADE PEDAL** is depressed. Start and Stop blade as follows:

- A. Shift **BLADE LEVER** forward to "ON" and hold, then push **BLADE PEDAL** down. Keep heel(s) on **BLADE PEDAL** to lock **BLADE** to keep on mowing.

NOTE

BLADE WILL ROTATE WHENEVER THE BLADE LEVER IS ON WITH ENGINE RUNNING.

- B. Stop **BLADE** by removing heel(s) from **BLADE PEDAL**. This allows the spring-loaded **BLADE LEVER** to snap rearward to "OFF". The **BLADE LEVER** can also be forced "OFF" with **BLADE PEDAL** depressed by pushing **LEVER** inward, then pulling rearward to "OFF".

NOTE

IF **BLADE LEVER** MOVES SLOWLY REARWARD, RATHER THAN SNAPPING BACK AS IT SHOULD WHEN **BLADE PEDAL** IS RELEASED, BELT MAY BE TOO SLACK. CHECK BELT IF THE TIME EXCEEDS 3 SECONDS. REFER TO SECTION III, 3.1 thru 3.5.

1.6 LUBRICATION SCHEDULE

- ☐ LUBRICATE EVERY 25 OPERATING HOURS

- A. **FRONT WHEEL BEARINGS:** Lubricate through fittings with bearing grease from a pressure gun. See Figure 1.2.

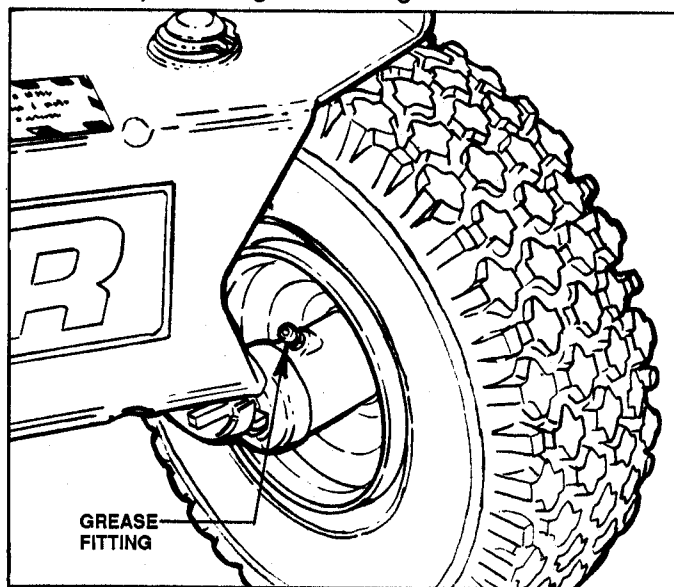


FIGURE 1.2

- B. **ENGINE:** Change oil per instructions in Engine Manual. Check oil before each use.
- C. **REAR LEFT AXLE BEARING:** (Std. models) Lubricate through fitting with 2 shots of bearing grease from a pressure gun. Right hand bearing is lubricated by transmission. See Figure 1.3.

Section I - OPERATION & ROUTINE SERVICE

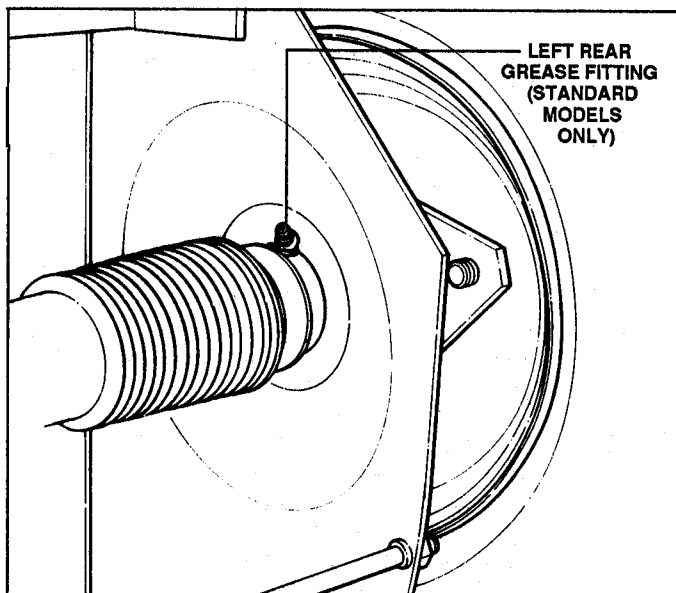


FIGURE 1.3

- D. MAIN TUBE PIVOT: Lubricate through fitting with 2 shots of grease. See Figure 1.4.

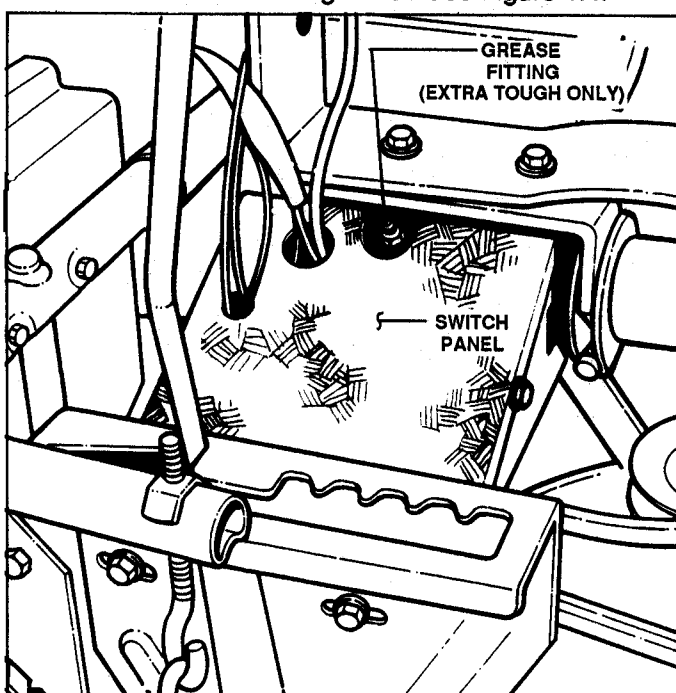


FIGURE 1.4

□ TWICE YEARLY

- E. SHIFT LEVER: Lubricate through fitting located inside case on end of mechanism with 2 shots of grease from pressure gun. See Figure 1.5.

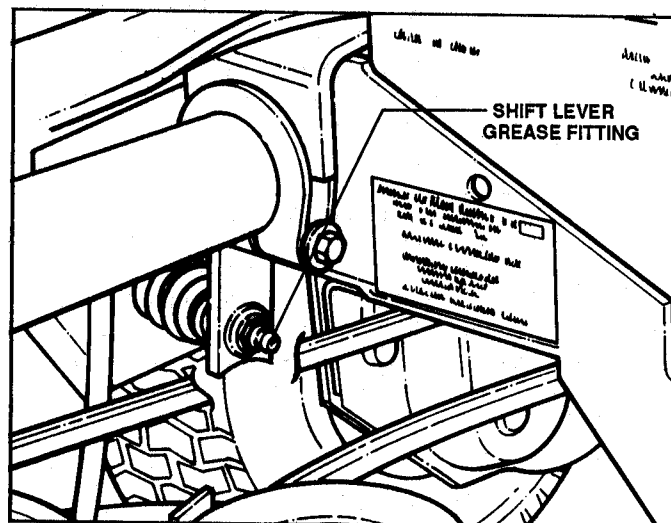


FIGURE 1.5

- F. CUTTING HEIGHT LEVER: Remove belt cover from deck and apply small amount of medium grade cup grease to top surface of adjusting cams on both sides. Before replacing cover, lubricate idler arm.
- G. BLADE ENGAGEMENT LEVER: Lubricate IDLER ARM and ENGAGEMENT LEVER at each wear point with a few drops of oil.
- H. BLADE PEDAL: Lubricate all pivoting and sliding surfaces where motion occurs when pedals are moved with a few drops of oil. Reinstall SPINDLE COVER after lubricating BLADE LEVER and PEDALS.

□ END OF SEASON

- I. BLADE SPINDLE: Two shots of grease needed only once yearly.
- J. DIFFERENTIAL: After standing mower on rear bumpers, remove plug from differential housing and check level of grease. Add **SNAPPER 0** grease as needed to bring level up to bottom edge of hole. Install new plug after servicing. See Figure 1.6.

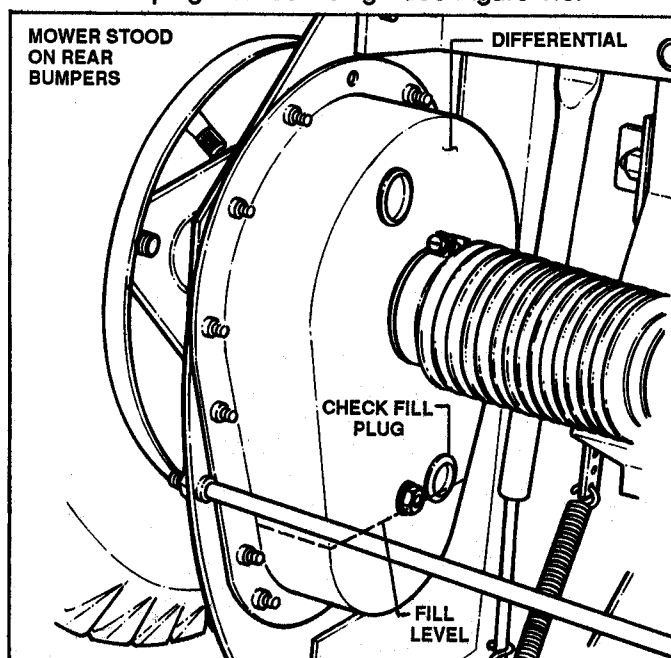


FIGURE 1.6

Section I - OPERATION & ROUTINE SERVICE

- K. **CHAIN CASE:** With mower standing on end, remove plug and add about 1 ounce of **SNAPPER 0** grease to case. Avoid over-filling. Total capacity must not exceed 2 ounces. Install new plug after servicing.

1.8 FUEL FILTER

An in-line fuel filter is provided between the fuel tank and carburetor to protect engine against damage from impurities in the gasoline. Check for leakage, especially around hose clamp areas. Replace filter if clogged with sediment. Make sure replacement filter is installed with side marked **IN** toward tank and **OUT** toward carburetor. See Figure 1.7.

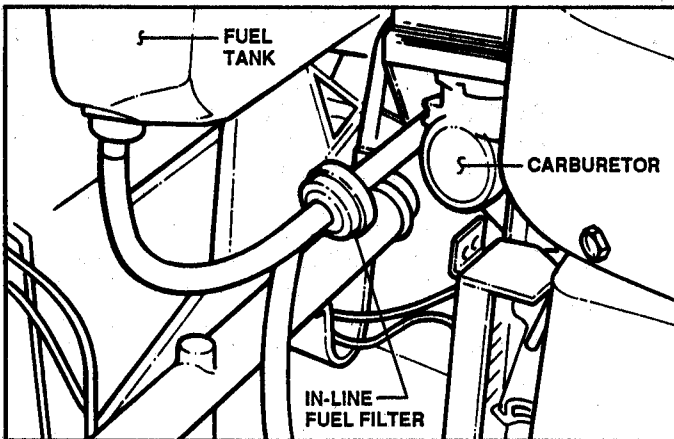


FIGURE 1.7

1.9 OPERATOR'S SEAT

- A. Check and retighten the capscrew on underside seat at frequent intervals to assure that seat remains securely attached to seat spring.
- B. Seat can be moved forward or backward by repositioning retaining capscrew in either of three holes provided in seat spring.
- C. After repositioning seat, insure that seat retaining capscrew is securely tightened. (50-75 Ft. Lbs. specified). See Figure 1.8.

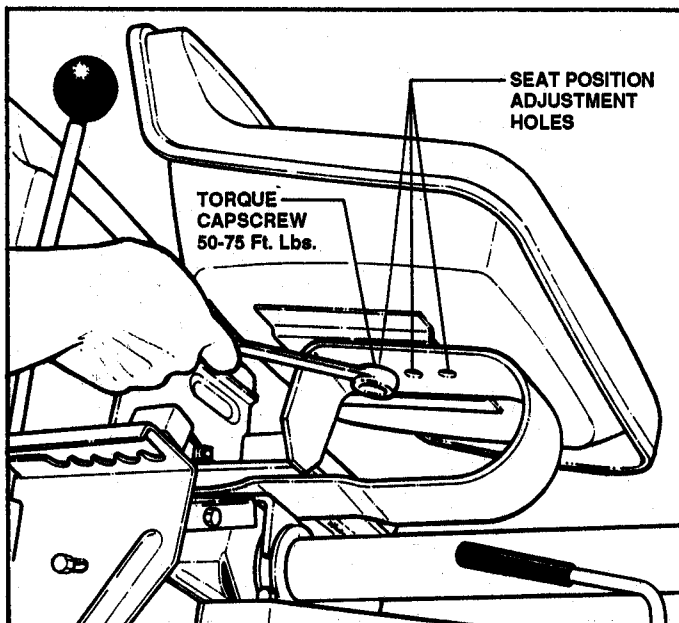


FIGURE 1.8

WARNING

DO NOT OPERATE MOWER IF SEAT IS LOOSE.

1.10 TIRE PRESSURE

- A. Tire pressure should be checked before adjusting deck.
- B. Place mower so that all four wheels make contact with a flat, level surface.
- C. Inflate front tires to 20 psi and rear tires to 12 psi.
- D. Inspect tires for defects such as lumps, knots or uneven wear.

1.11 STORAGE PROCEDURE

If desired, stand mower on end during off-season storage, provided the following steps are taken beforehand.

- A. Remove wet cell type battery. (See **BATTERY STORAGE**).
- B. Thoroughly clean surfaces and lubricate machine. (See **LUBRICATION SERVICES**).
- C. Drain fuel from tank and close vent on fuel filler cap.
- D. Service engine for storage as described in the Engine Owner's manual.

NOTE

AFTER STORING ON END, THE FOLLOWING STEPS ARE REQUIRED TO PREPARE ENGINE FOR OPERATION AGAIN. TURN IGNITION SWITCH "OFF" AND PULL ROPE START HANDLE SLOWLY. IF EXCESSIVE RESISTANCE IS FELT, OR IF ENGINE REFUSES TO ROTATE, REMOVE SPARK PLUG AND PULL ROPE START AGAIN TO CLEAR CYLINDER OF OIL. CLEAN AND REINSTALL SPARK PLUG.

Section II - TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	PROBABLE SOLUTION	REFERENCES
2.1 Engine will not start	<ul style="list-style-type: none"> a. Transmission interlock prevents starting b. Cutter interlock prevents starting c. Throttle Control not in starting position d. Fuel Related e. Ignition Related starting problems f. Interlock switches g. Battery too weak to start engine 	<ul style="list-style-type: none"> a. Shift into NEU/PARK and attempt to start a. Shift cutter into OUT position c. Move to CHOKE or START d. Tank empty, vent cap closed, fuel shut-off valve closed e. Spark plug lead loose or disconnected from plug. Faulty spark plug or bad breaker points requiring service f. Check for disconnected wires. Check continuity of interlock g. Charge battery Test Battery 	<ul style="list-style-type: none"> Section VI, 6.1-6.2 Section VI, 6.1 and 6.6, K. Section I, 1.1-1.2 Section VI, 6.1 Section I, 1.1 ENGINE MANUAL Section VI, 6.3 Section VI, 6.6 Section VI, 6.7, B-D Section VI, 6.7, B-D
2.2 Engine stall after running	<ul style="list-style-type: none"> a. Throttle control left in full choke b. Fuel Shut-off valves on tank filler cap and/or tank outlet closed c. Fuel Tank run dry, fuel line or filter blocked d. Engine speed too slow for starting conditions e. Engine carburetor problems f. Engine air cleaner clogged causing over-rich mixture g. Interlock module faulty and shutting off engine 	<ul style="list-style-type: none"> a. Move to run position b. Open Valves c. Unclog line or refill tank d. Adjust throttle to increase speed e. Readjust carburetor main fuel setting to specifications in engine manual f. Service air cleaner g. Test module and replace if necessary 	<ul style="list-style-type: none"> Section I, 1.1-1.2 Section I, 1.1-1.2 Section I, 1.8 OWNERS MANUAL OWNERS MANUAL ENGINE OWNERS MANUAL OWNERS MANUAL Section VI, 6.6, H-1
2.3 Grease leaking from chain case	<ul style="list-style-type: none"> a. Cup insert plugs faulty b. Case overfilled, leaking grease c. Paint drain hole not closed d. Case Housing screws loose or missing e. Case gasket broken or faulty 	<ul style="list-style-type: none"> a. Replace with new plugs b. Drain all grease and add 2 ozs. of SNAPPER 00 grease c. Tap tab closed with a hammer and apply sealer d. Replace missing screws and/or tighten all screws e. Replace gasket 	<ul style="list-style-type: none"> Section IV, 4.11, B OWNERS MANUAL Section IV, 4.11, B
2.4 Grease leaking from differential	<ul style="list-style-type: none"> a. Cup insert plugs faulty b. Drain hole not closed c. Case housing screws loose or missing d. Fender gasket faulty and not sealing properly e. Oil seal leaking f. Seal Cap on outside leaking or not installed properly 	<ul style="list-style-type: none"> a. Replace with new plug b. Tap tab closed with hammer and/or apply sealer c. Replace missing screws and/or tighten all screws d. Replace gasket e. Replace oil seal f. Replace with new cup or reinstall existing cap 	<ul style="list-style-type: none"> Section IV, INTRODUCTION Section IV, 4.13, E-J Section IV, 4.10, E, 12 Section IV, 4.10, E, 12
2.5 Excessive noise and/or vibration when in drive	<ul style="list-style-type: none"> a. Clutch brake chattering against metal rim of driven disc producing rattling sound b. Wheel bearings dry, producing dragging sound c. Driven disc with missing pieces of rubber producing thumping sounds and speed surging d. Drive disc will produce roaring sound when warped or out of alignment due to bent crankshaft e. Rough gears in transmission may cause excessive noise 	<ul style="list-style-type: none"> a. Check clutch brake mtg. bolt to insure tightness b. Lubricate with grease c. Replace disc d. Replace drive disc if warped. See engine service manual if crankshaft is bent e. Check to see if gears need replacement or lubrication 	<ul style="list-style-type: none"> Section IV, 4.3 Section I, 1.6, A and C and J Section IV, 4.7 Section IV, 4.87 Section I, 1.6, J Section IV, 4.10, E-F

Section II - TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	PROBABLE SOLUTION	REFERENCE
2.6 Excessive vibration	a. Blade tips striking rolled lips of deck b. Drive belt improperly tensioned causing slapping of inside spans in idler pulley area c. Spindle bearings dry or worn out d. Air lifters improperly installed e. Blade unbalanced or pulley halves separated causing vibration and noise	a. Straighten blade and/or align spindle b. Correct tension. Replace if belt is excessively worn c. Lubricate with grease or replace d. Install properly e. Balance blade and/or repair pulley	Section III,3.8-3.10 Section III,3.1-3.3 Section I,1.6,I Section III,3.12 Section III,3.7 Section III,3.12,B and C
2.7 Mows Improperly	a. Blade dull producing ragged, brown cut edges on grass b. Uneven tire pressure causing uneven side to side cut c. Deck level uneven causing improper cut d. Drive belt slippage causing poor cut e. Speed improper for conditions	a. Sharpen blade or replace if necessary b. Inflate tires to specifications c. Make necessary adjustments d. Make necessary adjustments to correct tension or replace e. Increase engine speed and/or lower ground speed to suit conditions	Section III,3.8 Section I,1.1,A Section III,3.12 Section III,3.1-3.3 Section I,1.2,F OWNERS MANUAL
2.8 Will not pull in gear or slips when clutch is released	a. Drive disc rubber badly worn or improper clearance causing poor or no contact b. Clutch brake cable too tight causes declutching when pedal is released c. Clutch pedal hanging up against center column d. Shift detent out of adjustment - not completely in gear e. Clutch spring disconnected, broken or missing f. Lift yoke sticking or groove worn in slot g. Axle Bolt sheared h. Wheel hub weld broken i. Input shaft key sheared on input shaft to driven disc j. Chain case or differential components damaged	a. Replace disc or readjust clutch link guide b. Reposition ferrules on cable in order to adjust c. Bend pedal away from column d. Readjust detent e. Replace or reconnect spring f. Lubricate friction points, replace worn yoke g. Replace with new tapered bolt h. Replace hub i. Replace key j. Requires overhaul	Section IV,4.1-4.7 Section IV,4.3 Section IV,4.6 Section IV,4.5 Section IV,4.14 Section IV,4.10,E,1-5 Section IV,4.10,#,5 Section IV,4.10-4.11

MOWING GUIDE

2.9 ENGINE

ENGINE H.P.	ENGINE RPM	SLOW RPM CAUSE(S)
6	3600	1. Chute Clogging 2. Overloaded Engine 3. Generally Poor Performance
8	3400	
10	3400	
12	3400	

A. Refer to Engine Owners Manual.

2.10 BLADE

- A. Keep blade(s) in top condition for maximum performance and Safety. Refer to Section III, 3.6 thru 3.11 for proper maintenance and adjustments to blade(s).

2.11 BELTS

- A. Make certain belts are always properly adjusted and maintained in top running condition. Replace belts as necessary. Refer to Section III, 3.1 thru 3.3 for proper belt tension, adjustment and replacement.

Section II - TROUBLESHOOTING

2.12 BLADE TO GROUND

- A. In order to maintain the best cut possible, maintain blades and belts as described above. Also, maintain proper deck level. Refer to Section III, 3.12 for proper deck adjustments.

2.13 TIRES

- A. Even if the blade(s), belts and deck are in top running condition, uneven cutting can be caused from tires not being inflated properly. Refer to Section I, 1.1, A for proper tire pressures. Always replace tires with the correct size and height tire. Consult Parts Manual.

NOTE

Under some grass conditions the front lip of a HV deck will prevent the blade from having good access to grass. As the mower moves forward, the grass is pushed down by front lip of deck. The direction of rotation of blade causes the blade to be traveling with grain of

grass on L.H. side of deck and against grass on R.H. side. See Figure 2.1. This causes cut to be somewhat ragged on L.H. side of mower. Lowering rear of deck approximately 3/8" lower than front will eliminate this problem.

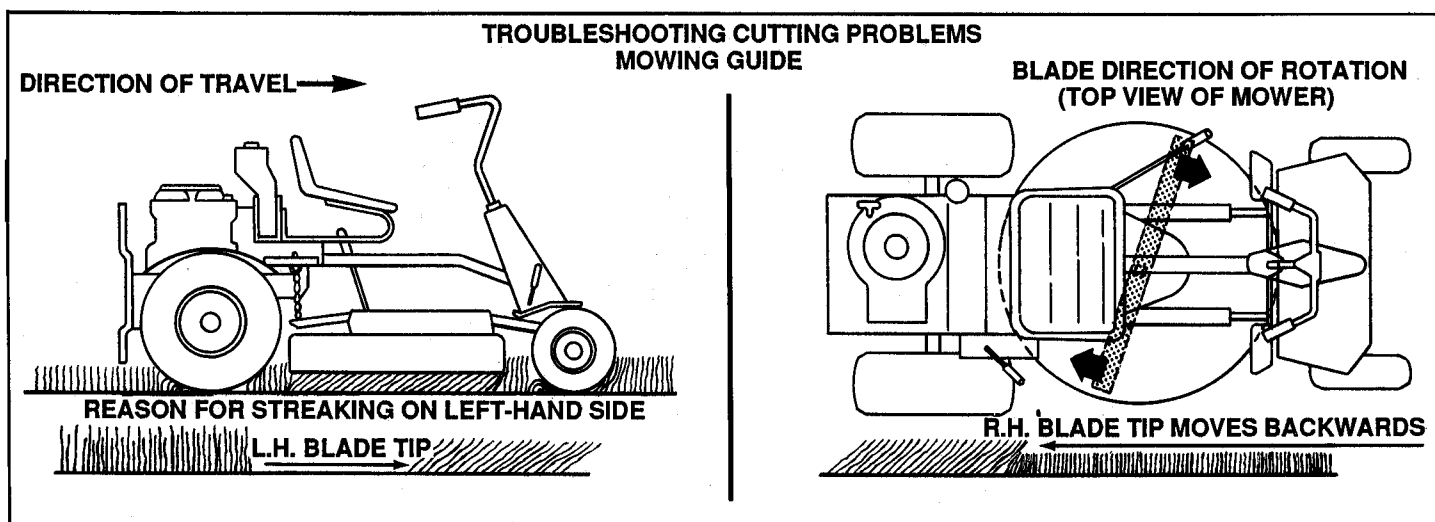


FIGURE 2.1

Section III - CUTTER UNITS

INTRODUCTION

This section covers procedures for the adjustment, disassembly and repair of those cutter deck components used on **SNAPPER Series, 4, 5, 6 & Extra Tough Rear Engine Riding Mowers**.

These cutter deck components include the drive belts, blades, splindles, brakes, lift arms and rail assemblies for both the single blade and two blade cutter units.

It should be noted that 1983 and later mower decks include the **SNAPPER AUTOMATIC BLADE STOP (ABS)** feature which functions to stop the blade in less than 3 seconds after release of the blade pedal. Replace-

ment decks with the ABS feature are available or the feature can be added to earlier decks using the **SNAPPER #6-0571 ABS kit**. Complete, step by step installation instructions are included in each ABS kit.

Also, 1982 and earlier mower decks have spindle brakes designed to stop blade rotation within 5 seconds after the cutter blade lever was shifted off. Both ABS and the earlier spindle brake models require readjustment of blade or spindle brakes to keep brakes functioning properly. Refer to adjustment procedures later in this section. See Figure 3.1.

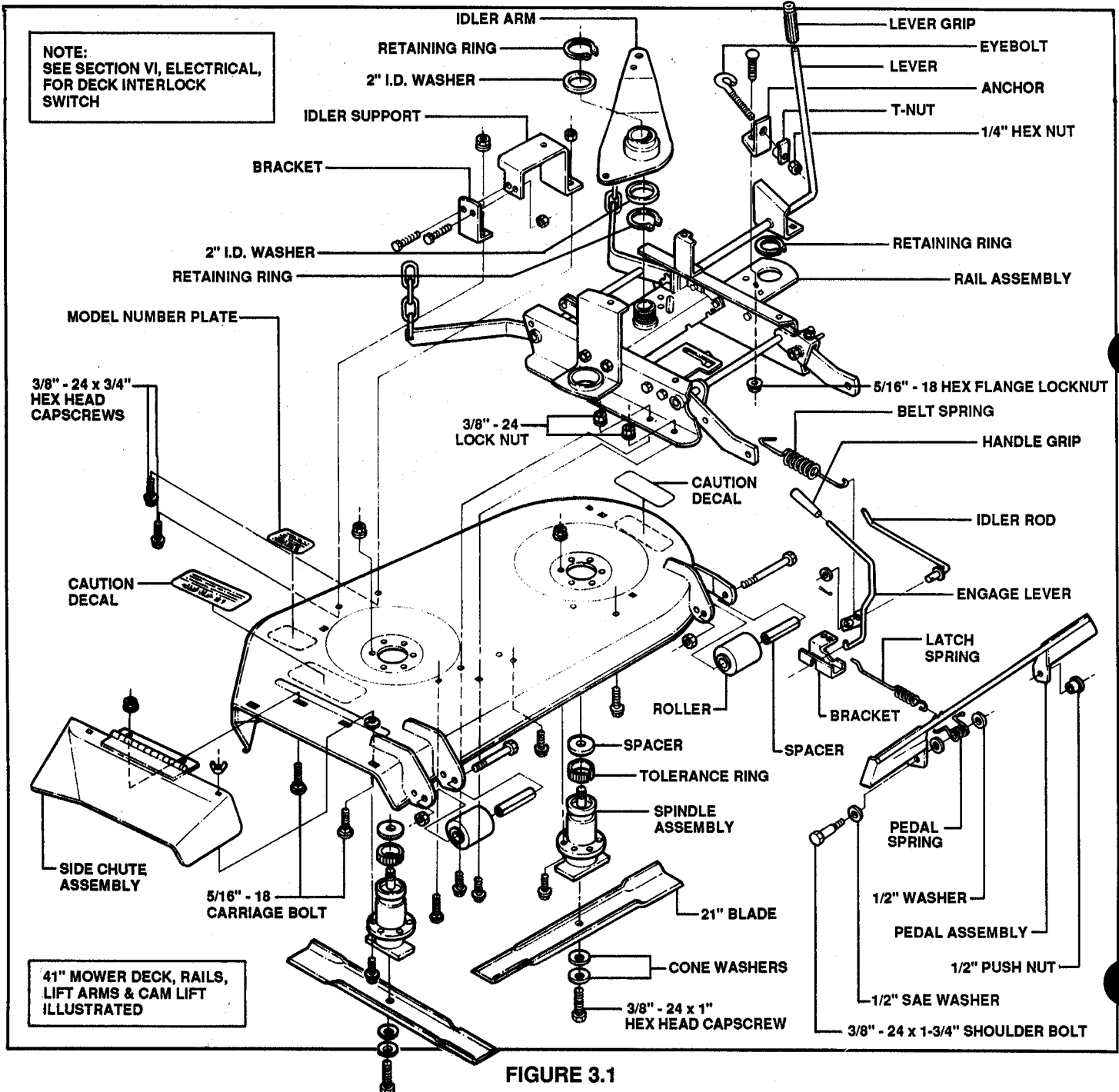


FIGURE 3.1

Section III - CUTTER UNITS

1 BELT TENSION CHECK

Check belt tension as follows with engine stopped.

- Shift cutting deck to #5 height position.
- Shift cutter blade to "ON" position and pull starter rope to seat belt in pulleys.
- Measure distance between inside span of belt at closest edge of idler pulley. Proper tension should be 1" clearance for single blade or 1 1/2" for two blade. See Figure 3.2.

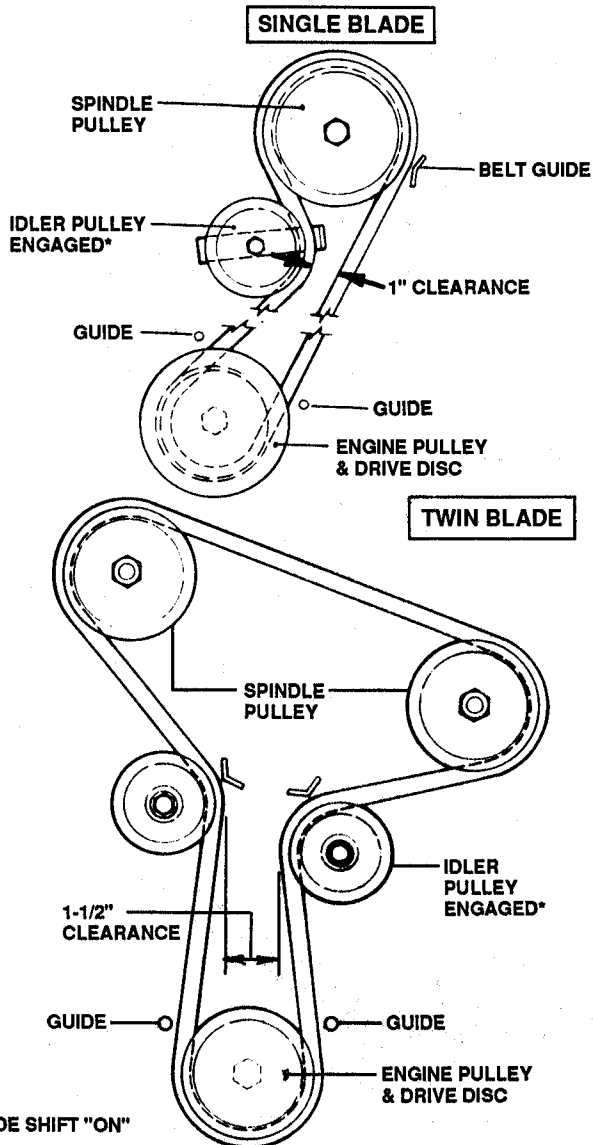


FIGURE 3.2

3.2 BELT TENSION ADJUSTMENT

- Place mower on all four wheels on level surface and shift cutting deck to #5 position.
- Loosen main tube clamp. See Figure 3.3.

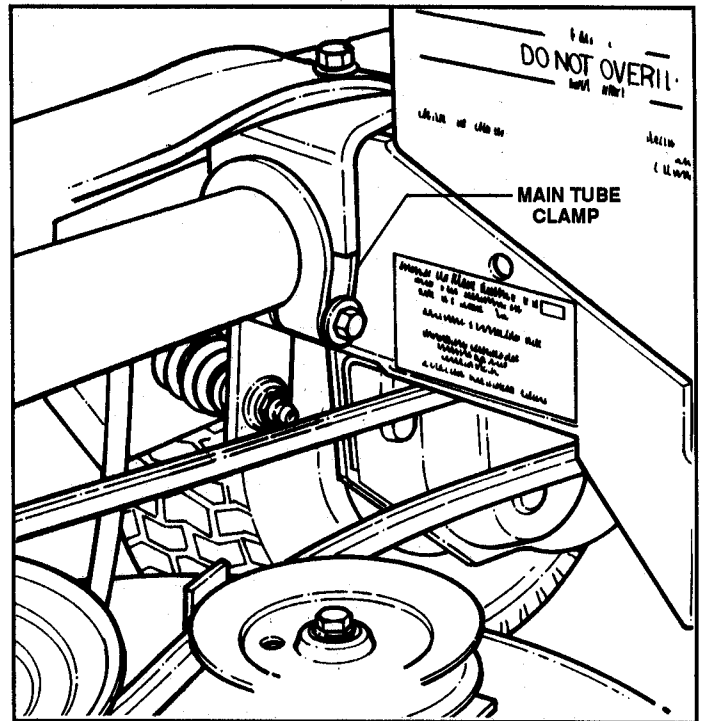


FIGURE 3.3

- Increase belt tension by pulling tube axle structure FORWARD.
- Decrease belt tension by pushing tube axle structure REARWARD.
- After belt is properly tensioned, retighten tube clamp.

NOTE

IF TUBE AXLE STRUCTURE DISTANCE CHANGED CONSIDERABLY DURING BELT TENSIONING, IT MAY BECOME NECESSARY TO READJUST CLUTCH AND BRAKE CABLES TO MAINTAIN PEDAL SLACK.

3.3 BELT REPLACEMENT

Replace belt if badly worn, cracked or frayed. Use the following procedure to install a new drive belt.

- Remove spindle cover. On single blade models, lower deck, remove spindle cover retaining screws. Remove cover by swinging to side and lifting over cutter ON-OFF lever. On multi-blade, remove top cover only.
- Loosen idler pulley bolt. Cut and remove old belt.

Section III - CUTTER UNITS

NOTE

DO NOT CUT WARRANTY BELTS. THEY MAY BE NEEDED FOR TESTING BY FACTORY.

- C. Stand mower on rear bumpers. Remove battery beforehand on electric start models (if required).
- D. Shift transmission to NEU/ROLL position and use a screwdriver to pivot yoke to move rubber disc away from metal drive disc.
- E. Feed replacement belt thru opening in front of rear main case and twist belt between discs.
- F. Shift transmission into 5th speed position to force belt over edge of metal drive disc. Position belt around drive disc.
- G. Route belt between belt guides of rear main case and around deck spindle pulley. Force belt guard near pulley outward until belt drops into groove on spindle pulley.
- H. Position belt between restrictor and around grooves of idler pulley. Lock restriction tab in position, then tighten idler pulley bolts. See Figure 3.4.

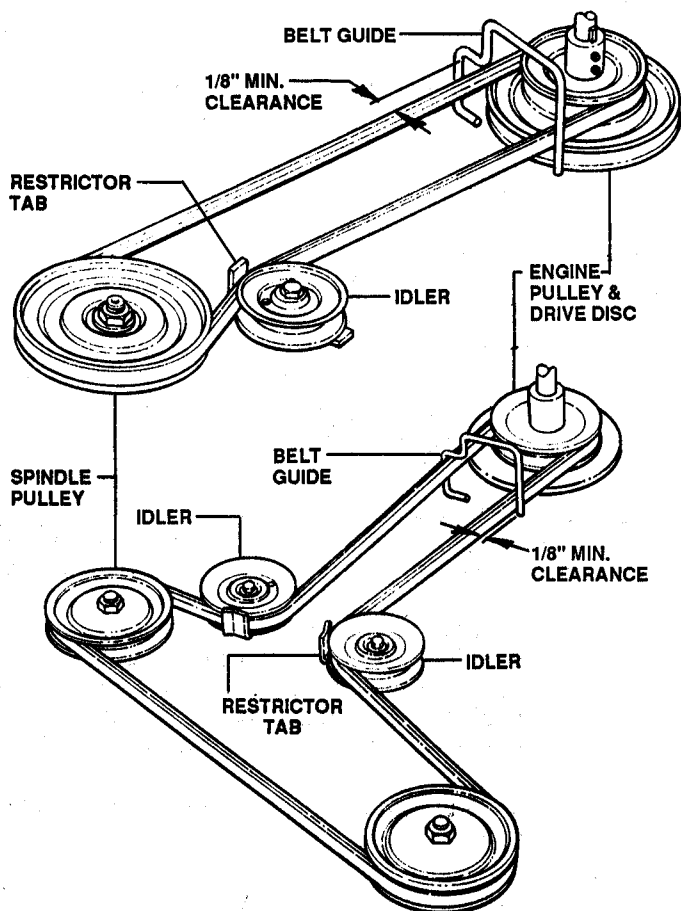


FIGURE 3.4

- I. Check and adjust belt tension if required.

NOTE

WITH BELT ENGAGED, THERE MUST BE A MINIMUM OF 1/8\"

3.4 AUTOMATIC BLADE STOPS (ABS)

1983 and later model mowers are equipped with an AUTOMATIC BLADE STOP (ABS). They are easily identified by the BLADE STOP PEDALS which are not found on earlier models unless converted to ABS. Refer to Figure 3.1.

A. BLADE STOP CHECK

Remove spindle cover and shift transmission into NEUTRAL. Proceed as follows:

- 1. Start engine and sit in operator's seat. Allow brief warm-up period then move throttle to "FAST" position.
- 2. Shift CUTTER "ON" and depress BLADE STOP PEDAL(S). Release BLADE STOP PEDAL(S) and time how long it takes blade to stop. If more than 3 seconds, stop engine and readjust brake as follows:

B. BLADE BRAKE ADJUSTMENT

The BLADE BRAKE compensates for wear. As the brake band wears, the BLADE CONTROL LEVER will gradually stop further to the rear of the cover slot. Brake adjustment is required when lever comes within 1/16" of rear of slot or when blade takes more than 3 seconds to stop. Adjust as follows:

- 1. Lower cutting deck and remove belt cover. (Remove top belt cover on 41" models).
- 2. Hold BLADE CONTROL LEVER to rear and loosen jam-nut on end of eyebolt. See Figure 3.4.

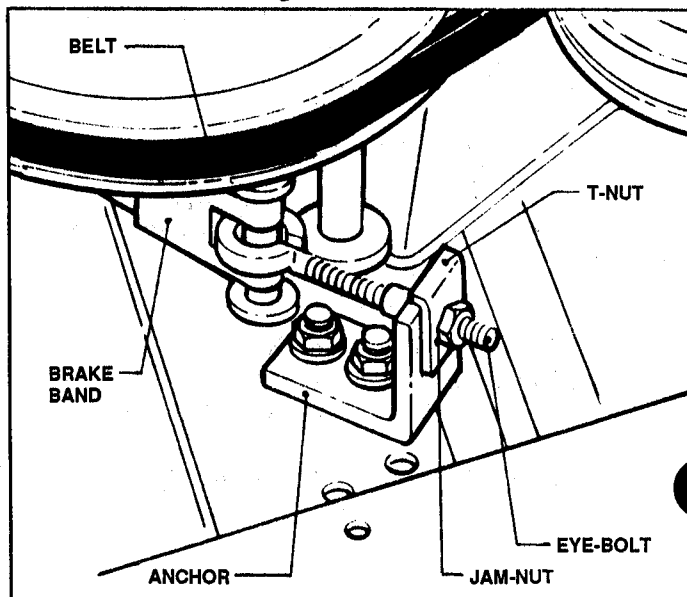


FIGURE 3.4

Section III - CUTTER UNITS

3. Move BLADE CONTROL LEVER to "ON" position. Turn T-nut on end of eyebolt, clockwise, several turns, making sure flanged lip on T-nut is positioned vertically to fit over top edge of anchor.
4. Release BLADE STOP PEDAL(S) and allow BLADE CONTROL LEVER to move to "OFF" position. Depress BLADE PEDAL(S) again and measure clearance between rear edge of latch plate and front of blade lever. Clearance should measure from 1/8" to 1/4". See Figure 3.5.

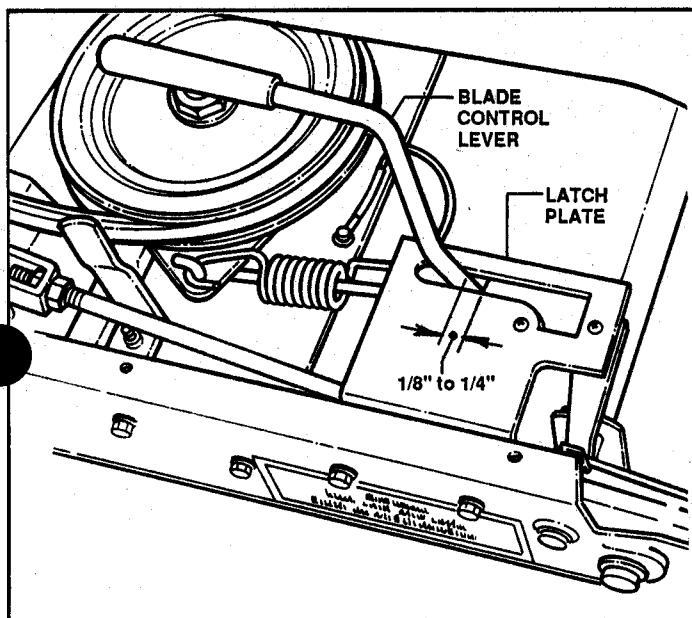


FIGURE 3.5

NOTE

IF REQUIRED, REPEAT STEP 2 TO OBTAIN CORRECT CLEARANCE. WHEN CORRECT, HOLD BLADE LEVER TO REAR AND TIGHTEN JAM-NUT.

5. Replace brake band if BLADE STOP cannot be adjusted to stop blade within 3 seconds. See following:

3.5 BLADE BRAKE BAND REPLACEMENT

- A. Remove spark plug wire and spindle cover. (REMOVE TOP COVER ONLY ON 41" MODELS).
- B. Loosen idler pulley(s) and remove blade belt from spindle pulley.
- C. Remove jam-nut and spindle pulley. See Figure 3.6.

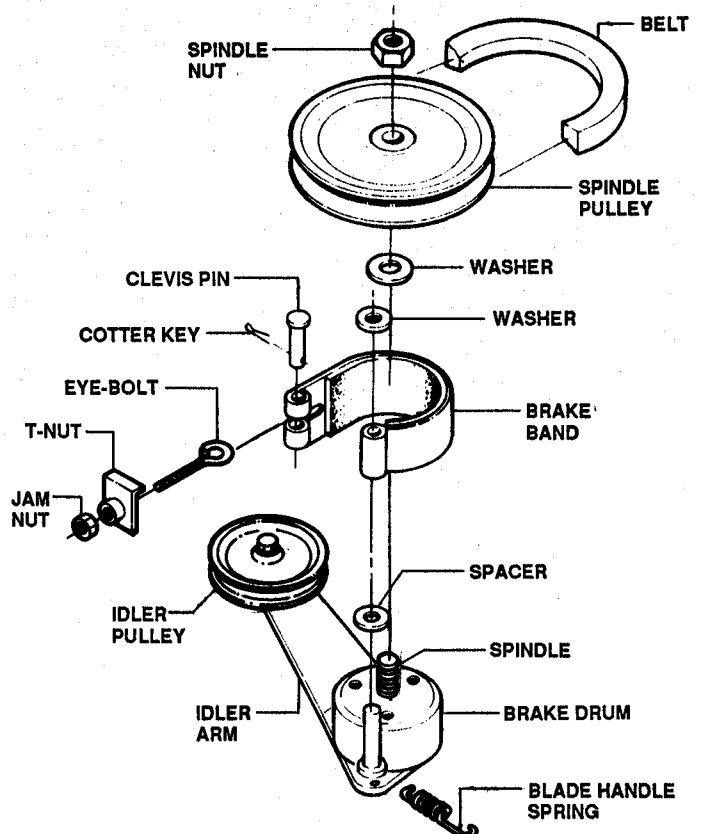


FIGURE 3.6

- D. Remove cotter pin and 3/8" washer from idler arm post.
- E. Remove clevis pin from Eyebolt.
- F. Remove BLADE BRAKE BAND ASSEMBLY from brake drum.
- G. Disassemble BLADE BRAKE BAND ASSEMBLY and replace brake band.
- H. Reinstall in reverse order and adjust blade brake to correct stopping time.

NOTE

ON 41" MODELS, BLADE BRAKE ASSEMBLY IS LOCATED UNDER L.H. SPINDLE PULLEY. DISASSEMBLE AND REPAIR AS ABOVE.

Section III - CUTTER UNITS

3.6 CUTTING BLADE(S)

Inspect blade(s) for wear. Replace blade(s) if badly chipped, bent or notched. See Figure 3.7 for BLADE WEAR LIMITS.

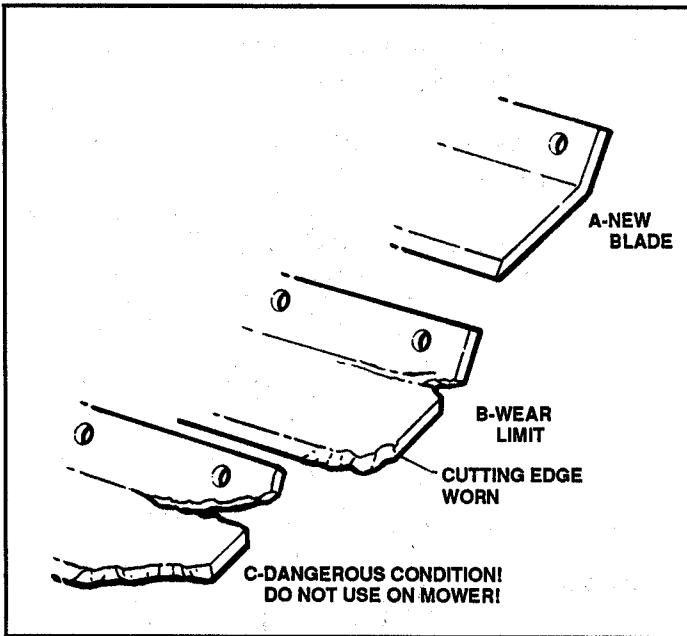


FIGURE 3.7

WARNING!

NEVER RELEASE TO CUSTOMER A MOWER WITH BLADE WORN TO EXTENT SHOWN IN VIEW C AS THE TIP COULD FLY OFF CAUSING PERSONAL INJURY OR PROPERTY DAMAGE.

- Remove battery (if required) and stand mower on rear bumpers.
- Disconnect spark plug wire.
- Inspect blade condition.
- If blades are in good condition, sharpen at an angle of 22-28 degrees in about 2-1/2" from tips. See Figure 3.8.

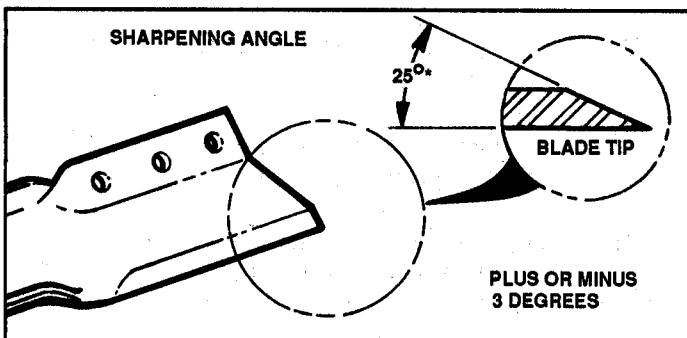


FIGURE 3.8

CAUTION

AVOID CUTTING YOURSELF ON CUTTING BLADE! PROTECT YOUR HANDS FROM CUTS WHILE HANDLING BLADE.

- After sharpening, check blades for proper balance. If required, correct balance to prevent excessive vibration.

- Use 2 **SNAPPER 21" BLADES** on **41" TWIN BLADE Models**. Secure blades as shown in Figure 3.9 and torque capscrew to 20-30 ft. lbs.

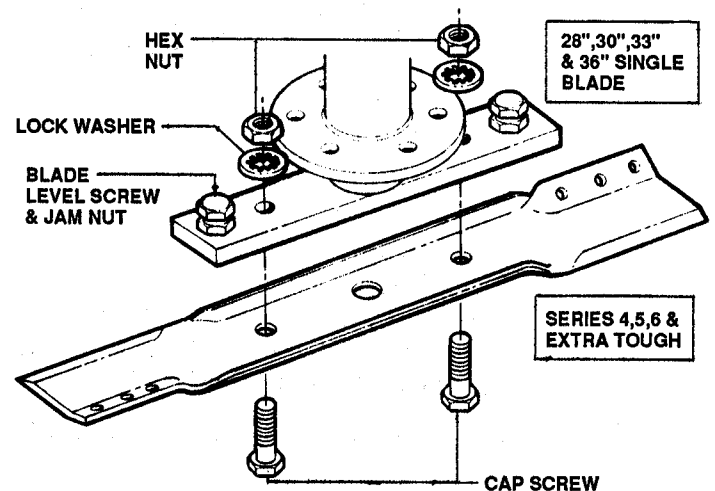
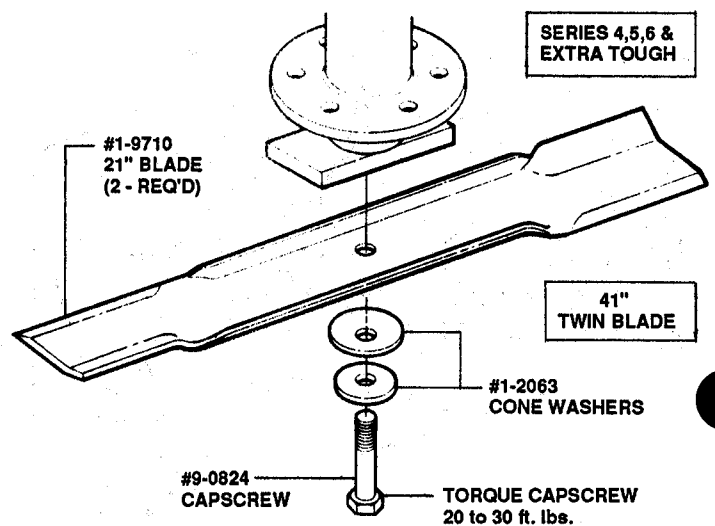


FIGURE 3.9

- Use appropriate **SNAPPER BLADE** on **28", 30", 33" and 36" SINGLE BLADE Models**. Secure blade as shown in Figure 3.9 and torque capscrews to 70-80 ft. lbs.

Section III - CUTTER UNITS

3.7 AIR LIFTERS

Air lifters are designed for use on mowers to increase their vacuuming efficiency when using grass catchers.

- A. Install air lifters on INSIDE TOP flange of blade with 5/16" screws, lockwashers and nuts. See Figure 3.10.
- B. Torque nuts to 20-25 Ft. Lbs.

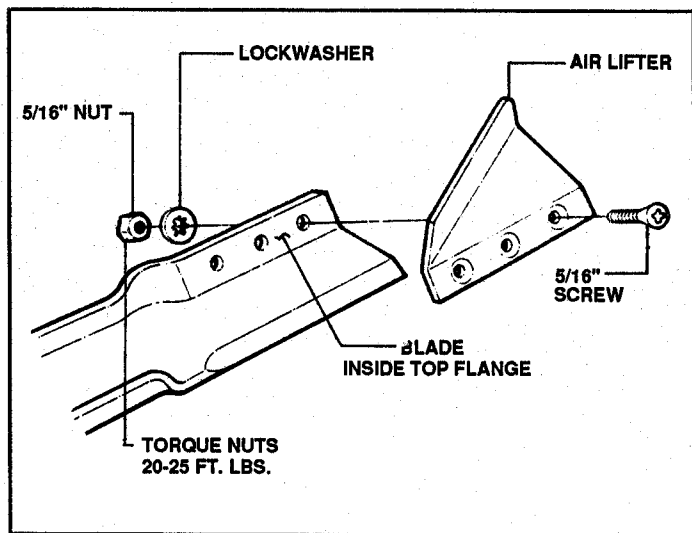


FIGURE 3.10

3.8 BLADE STRAIGHTNESS CHECK

Check sharpened or replacement blade(s) for straightness as follows:

- A. Mark one blade tip "A" and the other tip "B".
- B. Select one point on deck lip and mark as reference.
- C. Turn blade tip "A" to reference mark and measure distance between deck lip and blade. See Figure 3.11.

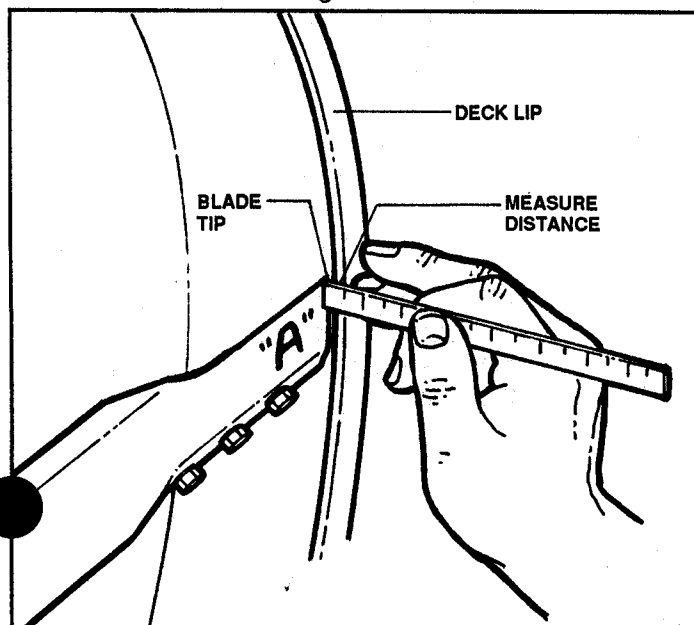


FIGURE 3.11

- D. Turn blade tip "B" to same reference point and measure distance as above.
- E. The blade is straight if both measurements are within 1/16" of each other.
- F. If blade tip measurements differ more than 1/16", straighten blade as follows:

3.9 PROCEDURE FOR STRAIGHTENING BLADE

A. SINGLE BLADE

1. Loosen jam-nuts on top of adjustable blade bar. Refer to Figure 3.9.
2. Adjust jack screws "IN" or "OUT" until blade tips are within correct tolerance.
3. Tighten jam-nuts.

B. TWIN BLADE (41" MODEL)

1. If one blade (or both) on the 41" TWIN BLADE Model exceeds the 1/16" measurement differential, then replacement of the Blade may be required.
2. Check BLADE and SPINDLE ALIGNMENT, 3.10, before replacing Blade.

3.10 BLADE & SPINDLE ALIGNMENT - HI-VAC MOWERS

(After Insuring Blade Straightness)

- A. With mower standing on rear bumpers, rotate blade 360 degrees and measure the tip-to-lip clearance at four equal point around the deck.
- B. If tip-to-lip measurements vary more than 1/8", spindle is misaligned.

NOTE

THE SPINDLE HOUSING HAS OVERSIZED HOLES FOR ALIGNMENT PURPOSES. THESE HOLES WILL NOT NECESSARILY BE CENTERED WHEN CORRECT ALIGNMENT IS ATTAINED.

NOTE

BEFORE ATTEMPTING TO ALIGN SPINDLE, MAKE CERTAIN TOLERANCE RING IS PROPERLY ALIGNED IN SPINDLE HOUSING GROOVE.

Section III - CUTTER UNITS

C. PROCEDURE FOR MAKING BLADE PARALLEL IN DECK

1. Loosen nuts on the three spindle flange screws. See Figure 3.12.

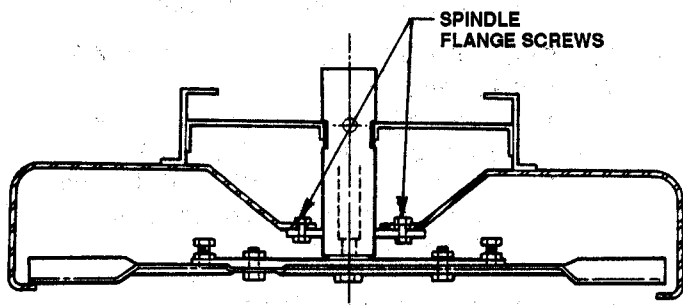


FIGURE 3.12

2. While holding blade, shift spindle until both blade tips are the same distance from the deck lips: 180 degrees across from each other.
3. Lightly tighten the top capscrew and check alignment front to rear and side to side.
4. Secure spindle capscrews when alignment is corrected.

3.11 PROCEDURE FOR ADJUSTING BLADE BAR

A. SINGLE BLADE

1. Using procedures described in 3.9, measure to determine that the cutting edges of the blade are at the following specified distances inside the deck lip:

MODEL	DIMENSION - BLADE EDGE TO LIP
25" & 28"	1/4" TO 3/8"
26" & 30"	1/8" TO 1/4"
33" HI-VAC	3/8"

NOTE

MAKE SURE THAT EACH BLADE TIP MEASUREMENT IS TAKEN FROM THE SAME POINT ON THE INSIDE DECK LIP.

2. To correct measurement, loosen blade bar jam nuts and adjust screws in or out. Refer to Figure 3.9.

B. IF PROPER TIP CLEARANCE CANNOT BE OBTAINED:

1. Remove blade and blade bar.
2. Clamp blade bar at center in a vise. Bow bar approximately 1/4" at each end.
3. Replace bar on spindle with bowed ends turned up.
4. Reinstall blade and adjust to dimension shown in above chart.

NOTE

THE BLADE HAS NOW BEEN STRAIGHTENED, POSITIONED PARALLEL TO THE DECK LIP AND WITH THE TIPS AT THE CORRECT DISTANCE INSIDE THE DECK LIP.

3.12 MOWER DECK ADJUSTMENTS

NOTE

BEFORE MAKING DECK ADJUSTMENTS, INSURE THAT TIRES ARE PROPERLY INFLATED. FRONT (20 PSI), REAR (12 PSI)

A. SIDE TO SIDE LEVEL ADJUSTMENT (33" & 41" ONLY)

1. Raise mower deck to highest level.
2. Place a piece of angle iron under center rear of deck.
3. Disconnect chains from hooks and allow deck to rest on angle iron.
4. On 33" Models, measure between the floor and outside center edges of the deck. On 41" Models, turn blades to outside and measure from floor to outside cutting tip of blades.

NOTE

A DECK IS CONSIDERED LEVEL IF MEASUREMENTS ARE WITHIN 1/8" FROM SIDE-TO-SIDE.

5. Adjust side-to-side level of mower deck by loosening shoulder screw on side of lift arm adjusting knuckle. See Figure 3.13.

Section III - CUTTER UNITS

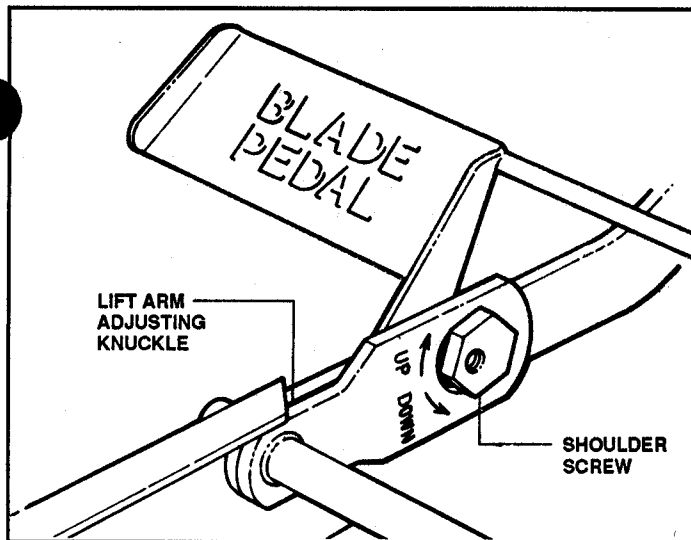


FIGURE 3.13

6. Turn the ECCENTRIC BOLT UP or DOWN to level deck within 1/8" side-to-side.
7. When deck is level, tighten shoulder-screw.
8. Re-attach chains to hooks.
9. If either chain is slack, adjust eyebolt until both chains have equal tension. Recheck deck level. See Figure 3.14.

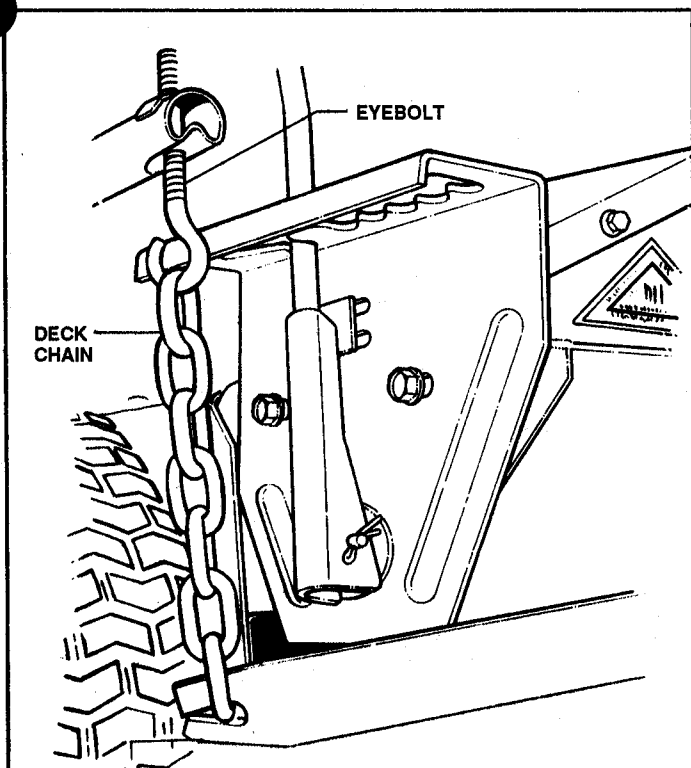


FIGURE 3.14

B. FRONT TO REAR LEVEL ADJUSTMENT

1. HI-VAC MOWERS

Measure distance between floor and front and rear edges of mower deck. Measurements should be same or 1/8"

- lower at rear.
2. **30" MOWERS**
Center blade tip at front and measure from tip to floor. Rotate tip 180° to rear and measure again. Rear should be 5/8" higher.
3. **ADJUSTMENT (ALL)**
Adjust chain eyebolts the same number of turns to raise or lower rear of deck. Adjust until properly leveled. Refer to Figure 3.14.

3.12 SPINDLE ASSEMBLY - OVERHAUL & REPLACEMENT

Spindles can be replaced as a unit or rebuilt with individual replacement parts. Symptoms of wear are usually loud rattling or grinding sounds or blade wobble causing excessive vibration.

A. SPINDLE UNIT REPLACEMENT - SINGLE BLADE

1. Remove spindle cover.
2. Remove pulley, brake drum and washers. See Figure 3.15.

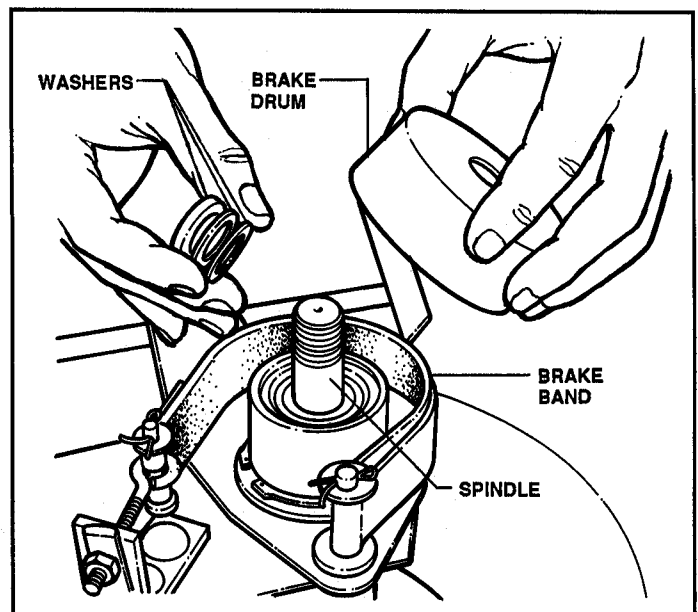


FIGURE 3.15

3. Remove idler arm retaining ring. See Figure 3.16.
4. Leave brake connected and remove idler arm from spindle. Rotate and place out of the way.

Section III - CUTTER UNITS

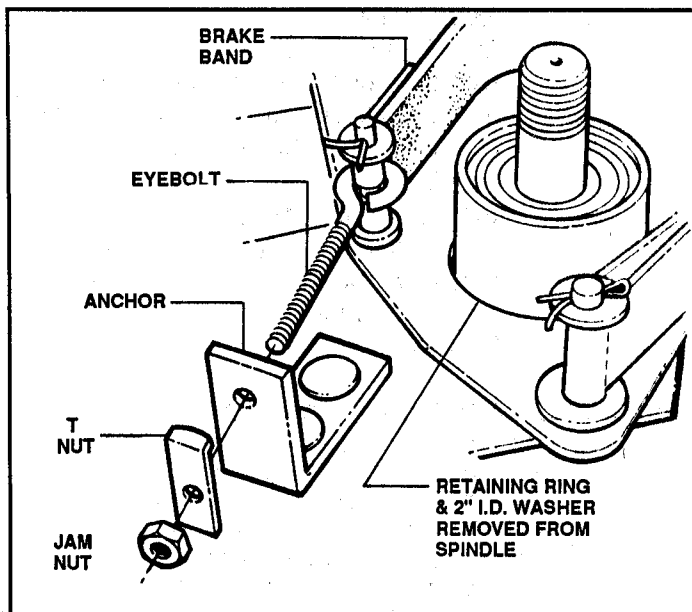


FIGURE 3.16

NOTE

REMOVAL OF EYE-BOLT AND T-NUT ASSEMBLY WILL RESULT IN BLADE BRAKE READJUSTMENT.

5. Remove idler arm (with brake arm attached) from spindle housing.
6. Remove retaining ring from spindle housing underneath idler arm.
7. Shut off fuel, close fuel vent, remove battery (if required) and stand mower on rear bumpers.
8. Remove the three nuts and capscrews securing spindle housing flange to mower deck.
9. Remove spindle assembly from underside deck.

NOTE

ON HI-VAC MODELS, REMOVE BLADE FIRST.

10. Reverse the above steps to install spindle housing.

CAUTION

MAKE CERTAIN THAT PROPERLY SIZED TOLERANCE RING IS INSTALLED IN GROOVE ON SPINDLE HOUSING. VIBRATION PROBLEMS WILL OCCUR IF TOLERANCE RING IS OMITTED.

B. SPINDLE OVERHAUL - SINGLE BLADE

1. Remove spindle cover.
2. Wedge block of wood under deck to hold blade while removing spindle pulley nut.
3. Remove spindle pulley, brake drum and spacer washers.
4. Shut off fuel, close fuel vent, remove battery (if required) and stand mower on rear bumpers.
5. Remove blade from blade bar. See Figure 3.17.

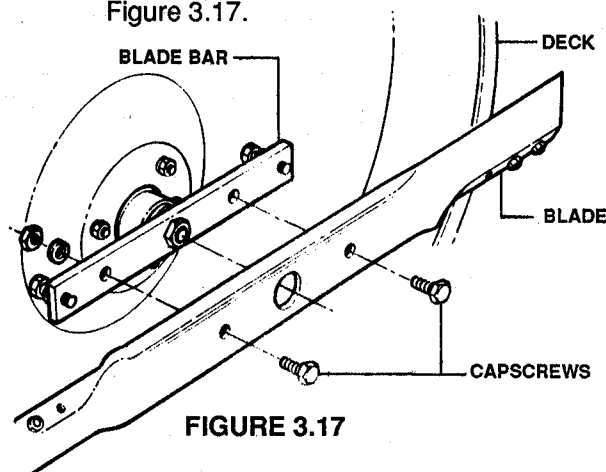


FIGURE 3.17

6. Block blade bar from turning and remove retaining nut from spindle shaft.
7. Using soft-faced mallet, strike blade bar in clockwise direction to loosen. Remove from spindle shaft.
8. Remove spindle washer. See Figure 3.18.

NOTE

IF BLADE BAR CANNOT BE REMOVED, PROCEED TO NEXT STEP. REMOVE SPINDLE WITH BLADE BAR INSTALLED, THEN PLACE IN VISE TO REMOVE BLADE BAR AND LOWER BEARING.

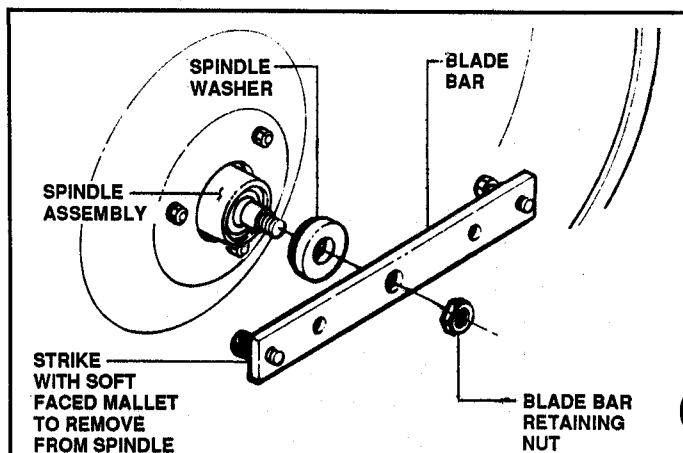


FIGURE 3.18

Section III - CUTTER UNITS

9. Screw pulley jam-nut on spindle shaft until flush with top of shaft.
10. Using soft-faced mallet, tap spindle shaft downward until shaft and lower bearing are free of housing.
11. Remove lower bearing from spindle shaft.
12. To remove top bearing, remove top retaining ring and insert spindle shaft (without lower bearing) into housing from underside until it contacts center of top bearing. Tap shaft lightly until bearing is free of housing. See Figure 3.19 for overall assembly.

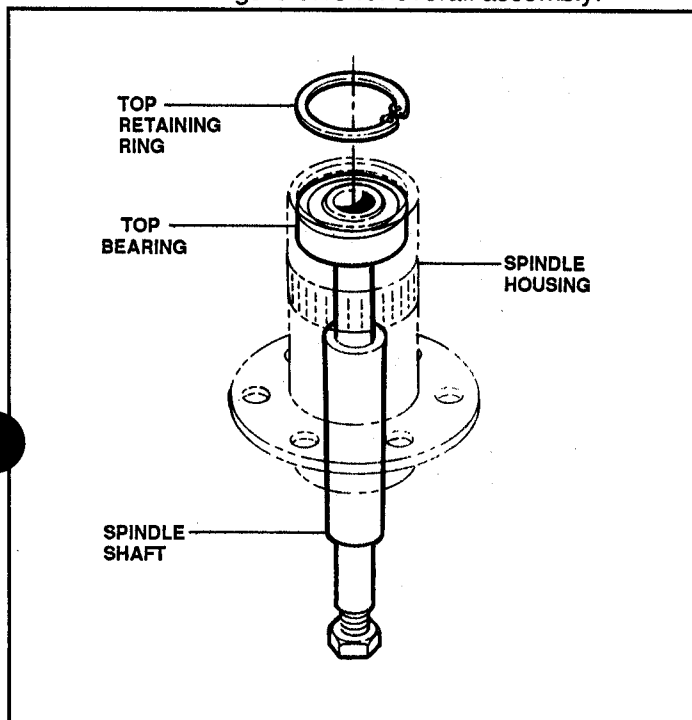


FIGURE 3.19

13. To reassemble, install top bearing and retaining ring in housing. Clamp spindle in vise and install Lower Bearing Washer, Blade Bar and Jam Nut. Drive spindle shaft (with lower bearing installed) into position in housing. Grease lower bearing to keep moisture out. Grease spindle bearings through fitting on housing with one shot of grease yearly. Realign as described earlier in this section.

B. SPINDLE OVERHAUL & REPLACEMENT - 41" DECK

1. Block blade from turning and remove spindle pulley lock nut. Remove pulley.
2. Thread lock nut onto spindle shaft until flush with top. Using soft-faced mallet, tap down on shaft until free from housing.
3. Clamp spindle shaft in vise and remove capscrew, washer, blade, blade holder, spindle washer and lower bearing.
4. Remove top bearing from housing by removing top retaining ring and inserting spindle through bottom of housing and tapping with mallet until bearing is free.

NOTE

INSPECT SPINDLE HOUSING FOR INTERNAL WEAR. IF BADLY WORN, REPLACE WITH NEW HOUSING.

5. Install new top bearing. Secure with retaining ring.
6. Grease top of new lower bearing and install on spindle shaft. Add spindle washer and secure with blade holder.
7. Attach blade to shaft with existing hardware and insert shaft through bottom of housing.
8. Attach pulley to spindle top. Block blade while tightening lock nut.

C. SPINDLE HOUSING & REPLACEMENT 41" DECK

1. Block blade from turning and remove spindle pulley lock nut. Remove pulley.
2. While holding blade engage lever "ON", remove brake drum, washers and spacer from spindle shaft. Remove T-nut and hex nut from eyebolt. Release lever.
3. Disconnect link from idler arm by removing nut, screw, spacer and washer. See Figure 3.20.

Section III - CUTTER UNITS

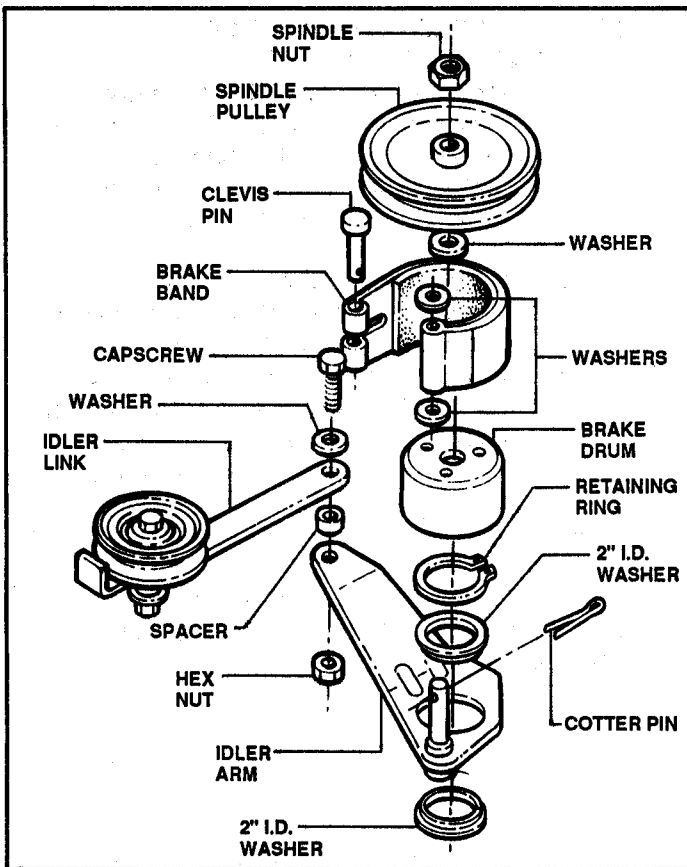


FIGURE 3.20

4. Remove outside retaining ring from spindle housing.
5. Remove nylon washer and idler arm from around spindle housing.
6. Remove lower nylon washer and bottom retaining ring from housing.
7. Remove blade and blade holder.
8. Remove spindle assembly.
9. When installing spindle assembly, make sure that grease fitting is positioned towards rear of machine.

NOTE

DO NOT INSTALL SPINDLE HOUSING MOUNTING HARDWARE IN HOLE DIRECTLY IN FRONT OF GREASE FITTING. SEE FIGURE 3.21.

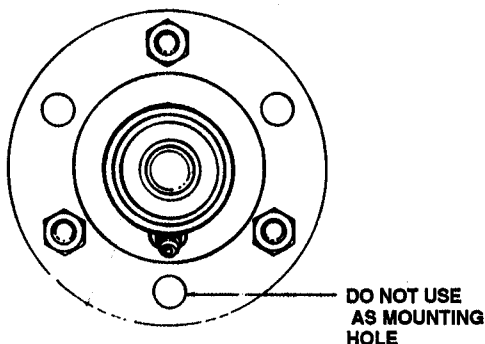


FIGURE 3.21

10. Install replacement spindle housing assembly in mower deck.
11. Position blade on blade holder and block it from turning. Install blade retention hardware.
12. Re-connect idler arm and link using existing hardware.
13. While holding blade engage lever "ON", install flat washers, spacer and brake drum on spindle. Re-attach eyebolt to anchor using T-nut and jam nut. Release lever.
14. Block blade from turning and attach spindle pulley to shaft.
15. Readjust Blade Brake.

3.13 LIFT ARM & LEVER REPLACEMENT (SINGLE BLADE)

The deck has to be separated from the mower for access to the lift arms. It won't be necessary to remove the side rails from the deck to replace front or rear lift arms or deck height control lever. After removing deck, proceed as follows:

A. FRONT LIFT ARM REPLACEMENT

1. Pull cotter pin and detach timing rod from front lift arm.
2. Pry (1) nylon spacer from front lift arm using (2) screwdrivers.
3. Slide lift arm towards side spacer which was removed, until other end clears the side rail.
4. Push rail outward while guiding front lift arm out from between rails.
5. Reverse procedure to reinstall front lift arm. See Figure 3.22.

B. REAR LIFT ARM

1. Pull cotter pin and clevis pin, then separate timing arm from rear lift arm.
2. Pry nylon spacer from rear lift arm on discharge side of deck using (2) screwdrivers.
3. Slide lift arm toward side spacer was removed from, until other end clears the rail.
4. Push against rail on discharge side outward, while tilting arm backward, until it separates from rails.
5. Reverse previous steps to install rear lift arm.
5. Reverse previous steps to reinstall.

Section III - CUTTER UNITS

3.14 LIFT LEVER REPLACEMENT

The lift lever may ratchet down if the cams aren't welded. If this problem occurs, one cam on the Lift Lever can be blocked and the Lever twisted to align cams. If this procedure does not work, then the Lift Handle must be replaced. The procedure for the **Single Blade Deck** and the **41" Two Blade Deck** are as follows:

1. Disconnect lift handle spring from cotter pin in the cams of the lever. See Figure 3.22.

NOTE

REMOVE HEIGHT INDICATOR BRACKET FROM DECK AND REMOVE LIFT HANDLE.

2. Pry the nylon spacer from left side of lift lever structure using (2) screwdrivers.
3. Remove handle grip, then angle lever rearward until right end is free from rail.
4. Twist lever toward right rear and pull until it is clear of left rail.
5. Reverse previous steps to reinstall.

NOTE

BEFORE REMOVING THE BRACKET FROM THE LIFT HANDLE, THE GRIP MUST FIRST BE REMOVED.

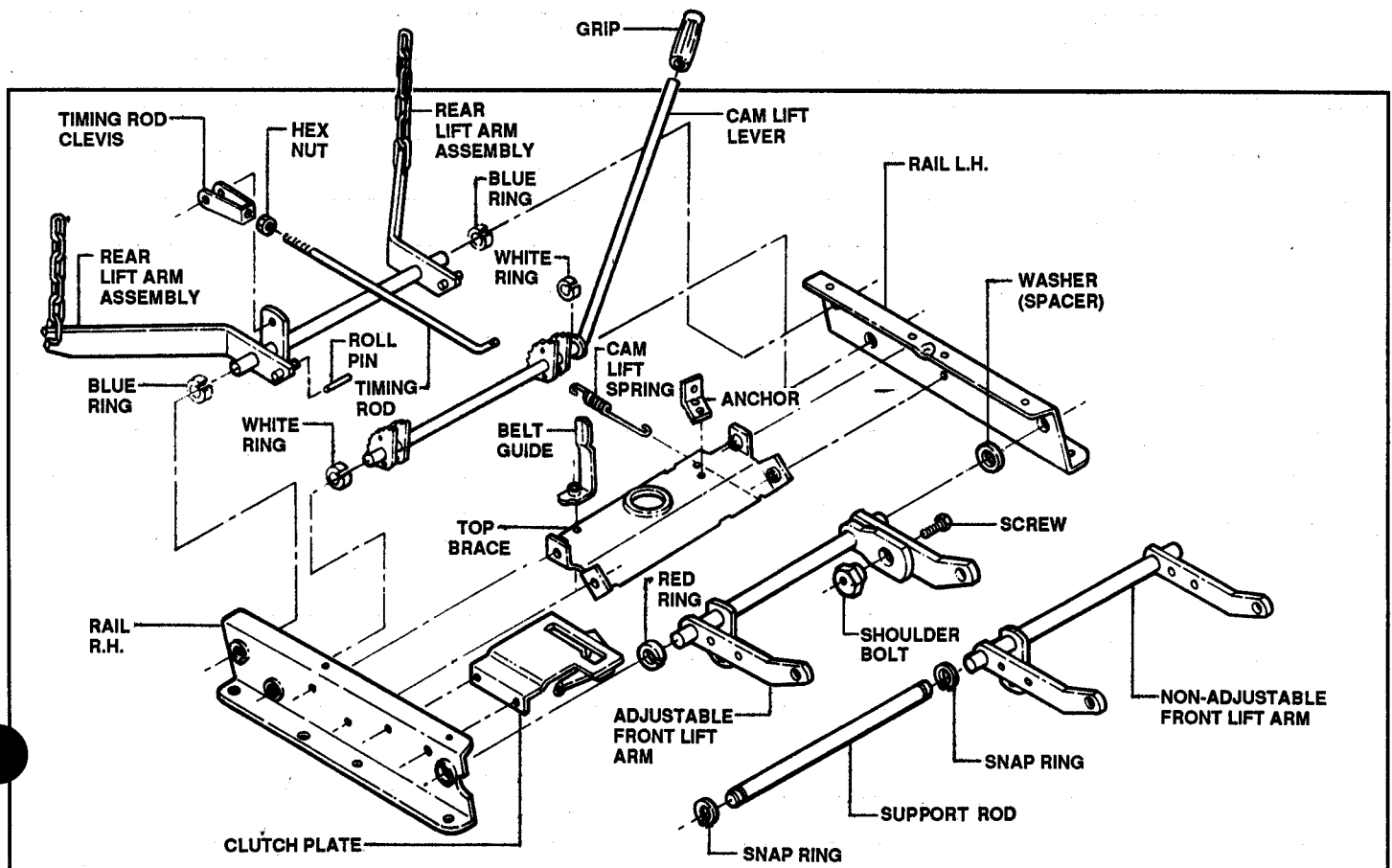


FIGURE 3.22

NOTES

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Section IV - TRANSMISSION & DRIVE SYSTEM

INTRODUCTION

This sections covers procedures for the disassembly and repair of those traction drive components used on **SNAPPER Series 4,5,6 & Extra Tough Rear Engine Riding Mowers**.

These drive components include the engine drive disc, driven disc, primary chain case, axles and differential. They transmit engine power thru the drive disc to the driven disc, which in turn powers the primary chain case, differential and axles.

It should be noted that the Smooth Start Clutch (SSC) will be found on all models after 1984 - previous models may be converted to Smooth Start Clutch with Kit #6-0601. 1987 and later models feature a parking brake mechanism which eliminates the auxiliary brake components found on earlier models. These and other differences are pointed out whenever pertinent to the procedure being described. See Figure 4.1.

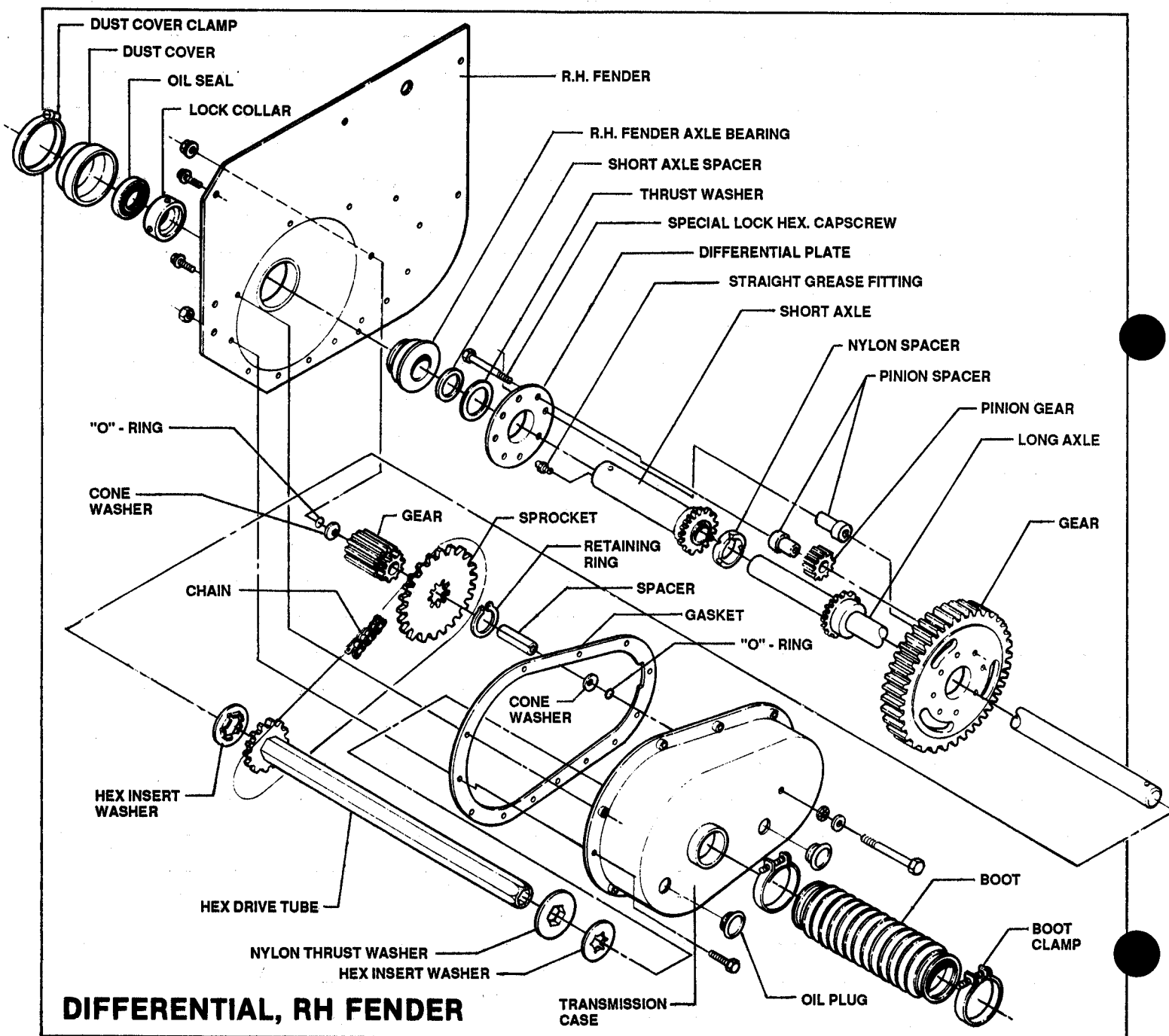


FIGURE 4.1

Section IV - TRANSMISSION & DRIVE SYSTEM

ADJUSTMENTS

1 DRIVEN DISC ADJUSTMENT

See 4.2, DRIVE DISC ADJUSTMENT, for proper adjustment of rubber-tired driven disc.

4.2 DRIVE DISC ADJUSTMENT

- A. A loose or improperly set drive disc may cause drive problems. The smooth surface of the drive disc must be set 3-3/4" to 3-13/16" from the underside of the main case to make proper contact with the driven disc. This can be accurately measured using the **SNAPPER #3-2392 gauge tool (SPECIAL SMOOTH CLUTCH TOOL)**. See Figure 4.2.
- B. To adjust, loosen the two setscrews securing the drive disc to the engine crankshaft and move disc up or down to correct setting. See Figure 4.2.

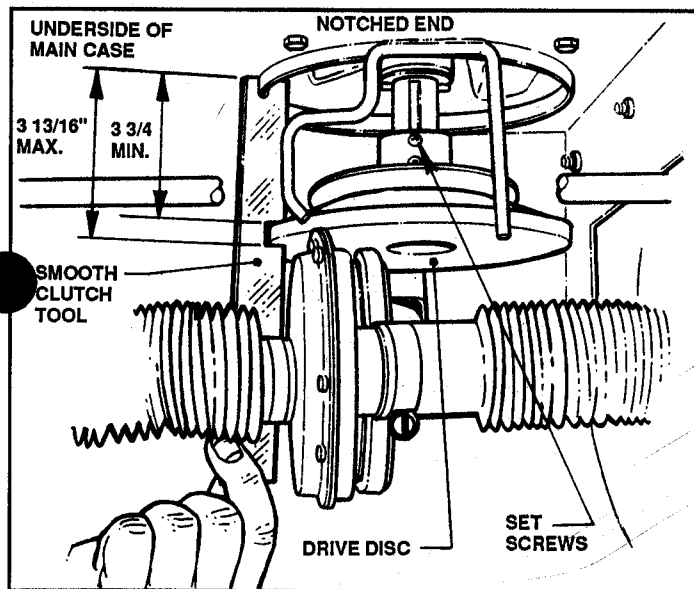


FIGURE 4.2

4.3 CLUTCH/BRAKE CABLE ADJUSTMENT

- A. If the clutch/brake cable is too tight, it could cause de-clutching when the pedal is released.
- B. The clutch/brake cable should have a slight amount of slack (approx. 1/4") with clutch/brake pedal released and with the shift in neutral or roll position.
- C. To allow more slack, reposition one of the adjusting ferrules from the underside of the pedal to the inside of the center column. To do this, pull the rubber pad off the pedal, slide the spacer thru the larger portion of the slot, slide the spacer out of the way through the opening in the column, then reinstall the pad to the pedal. Test wheel braking action

after repositioning spacer to insure that the riding mower will stop from full forward speed within about two feet after the clutch/brake pedal has been depressed. See Figure 4.3.

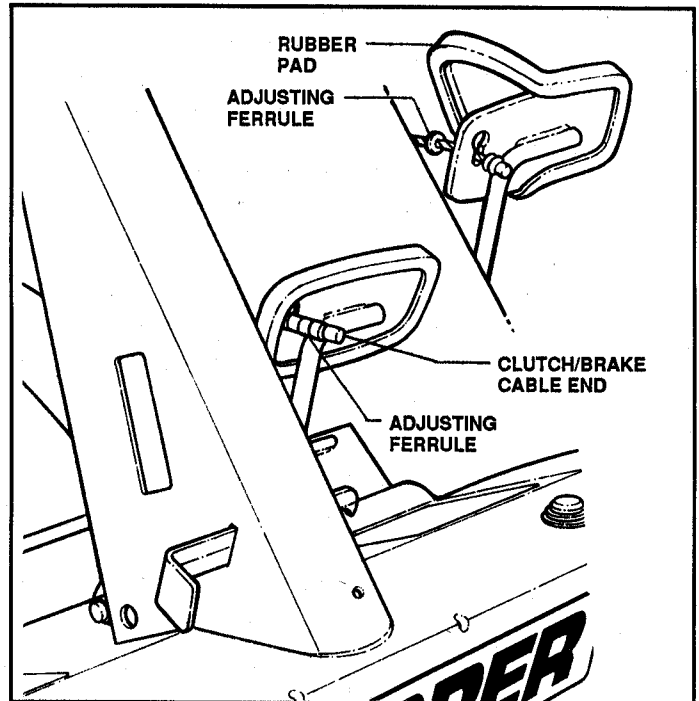


FIGURE 4.3

4.4 SMOOTH START CLUTCH - PRELIMINARY CHECKS & ADJUSTMENTS

- A. Check to make sure engine drive disc is 3-3/4" to 3-13/16" below the underside of the main case. See Figure 4.2.
- B. Check yoke lift to make sure it pivots freely. Correct if binding.
- C. Check clutch/brake pedal and cable for free operation with no binding or drag. Make sure cable length is properly set and that cables are not crossed inside the tube. See 4.3 for adjustments.

Section IV - TRANSMISSION & DRIVE SYSTEM ADJUSTMENTS

D. OPERATIONAL TESTS

Perform tests on dry level turf or sealed concrete shop floor. Check for proper tire inflation. Operate machine with blade off and engine at full speed.

E. TRACTION TEST

Shift the Rider being tested into second gear and attempt to push another **SNAPPER** Rider (with engine off and without anyone on the machine) across the turf or shop floor. If it pushes the other rider with wheels sliding, it passes the traction test and is ready for the **SMOOTH OPERATION TEST** below. If it does not pass the traction test, take the following steps to improve traction.

1. Move hook end of the yoke spring to top hole in the clutch link. If additional traction is required, move Z end of the spring into the bottom hole in yoke lift. See Figure 4.4.

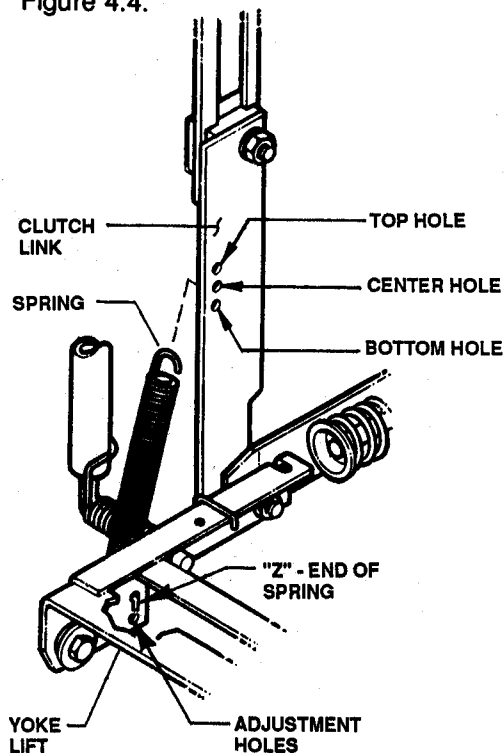


FIGURE 4.4

2. Make a closer inspection of the yoke lift and roller on the primary chain case. Replace if bent or worn.
3. Recheck to make sure that the guide is set properly. See Figure 4.5.
4. Readjust shift detent. Refer to Figure 4.8.
5. Perform the traction test again. If the rider passes, then perform the following smooth operation test.

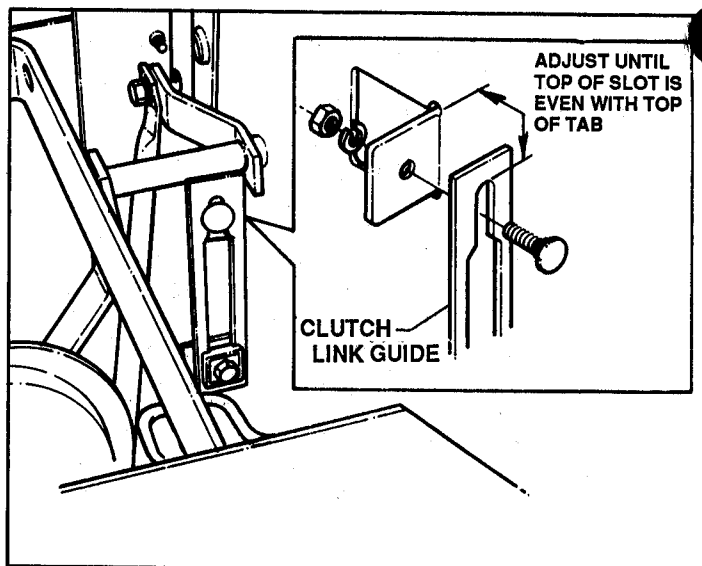


FIGURE 4.5

F. SMOOTH OPERATION TEST

Shift to 5th speed and release clutch. Front tires must not lift off ground. If the rider passes this test, it is ready for delivery. If the wheels do lift off the ground, take the following steps to improve smooth start capabilities.

1. Burnish clutch by driving machine against post or wall for about two or three seconds, then repeat the smooth operation test. If it fails again, proceed with Step 2.
2. Hook the yoke spring into bottom hole of the clutch link and repeat test. Proceed with Step 3 if Step 2 fails to correct condition.
3. Check smooth clutch assembly for free rotation of the rubber ring. Disassembly of clutch may be necessary to correct binding problem.

ADJUSTMENTS (FOR MOWERS WITH STANDARD CLUTCH-NOT SMOOTH CLUTCH)

4.5 CLUTCH/DRIVE LINKAGE ADJUSTMENT

- A. Check to make sure that DRIVE DISC is properly adjusted. Refer to 4.2.

NOTE

MAKE SURE THAT CLUTCH/BRAKE CONTROL CABLE IS PROPERLY ADJUSTED BEFORE ADJUSTING CLUTCH/DRIVE LINKAGE.

- B. Remove DRIVEN DISC.
- C. Using a worn out or discarded DRIVEN DISC, make an adjusting gauge by removing half (180°) of the rubber tire.
- D. Install adjusting gauge with metal side toward drive wheel. See Figure 4.6.

Section IV - TRANSMISSION & DRIVE SYSTEM ADJUSTMENTS

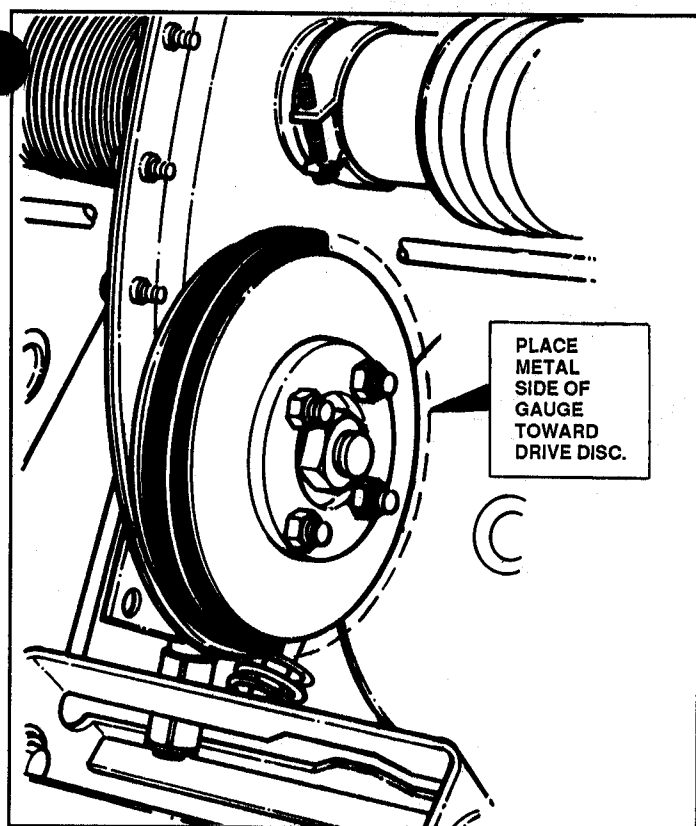


FIGURE 4.6

- E. Depress clutch pedal and shift to any forward speed.
- F. Adjust clutch link guide until the metal radius of the gauge clears the drive disc by .005"-.010". See Figure 4.7.

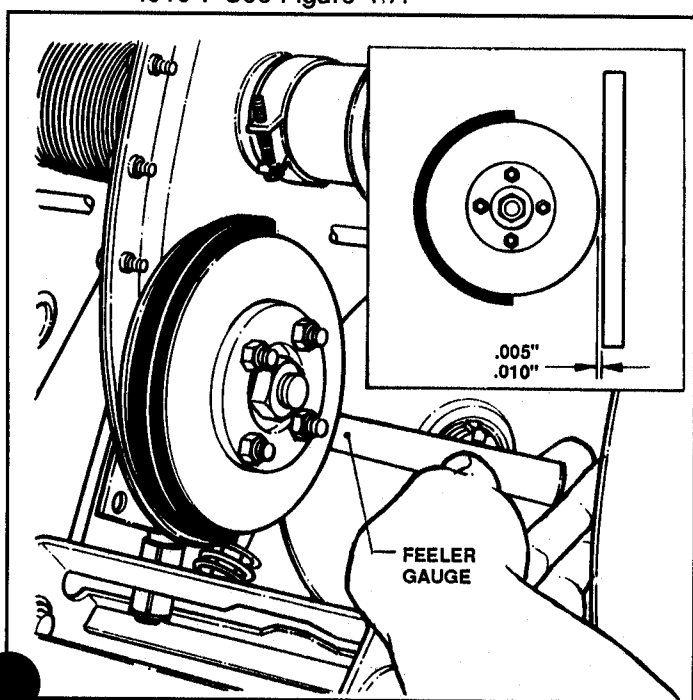


FIGURE 4.7

- G. Rotate gauge 180° and fully depress clutch pedal until brakes are applied.

- H. Insure that the 3" radius clears the driven disc by 1/32" minimum with the sliding chain case pushed lightly against yoke lift.

4.6 SHIFT DETENT ADJUSTMENT (SMOOTH START AND STANDARD CLUTCHES)

A weak first or reverse gear (which can also cause premature wear on driven disc) may be caused by the shift detent being improperly adjusted. To adjust, proceed as follows:

- A. Stand mower on rear bumpers and move shift lever into FIRST speed position.
- B. Loosen the two capscrews attaching the shift detent to the main case. Move the detent until the driven disc contacts the drive disc 1/16" outside of center hole of drive disc. Then retighten screws in shift detent. Now, shift to reverse to make sure that driven disc contacts drive disc outside of NEUTRAL (center hole). See Figure 4.8.

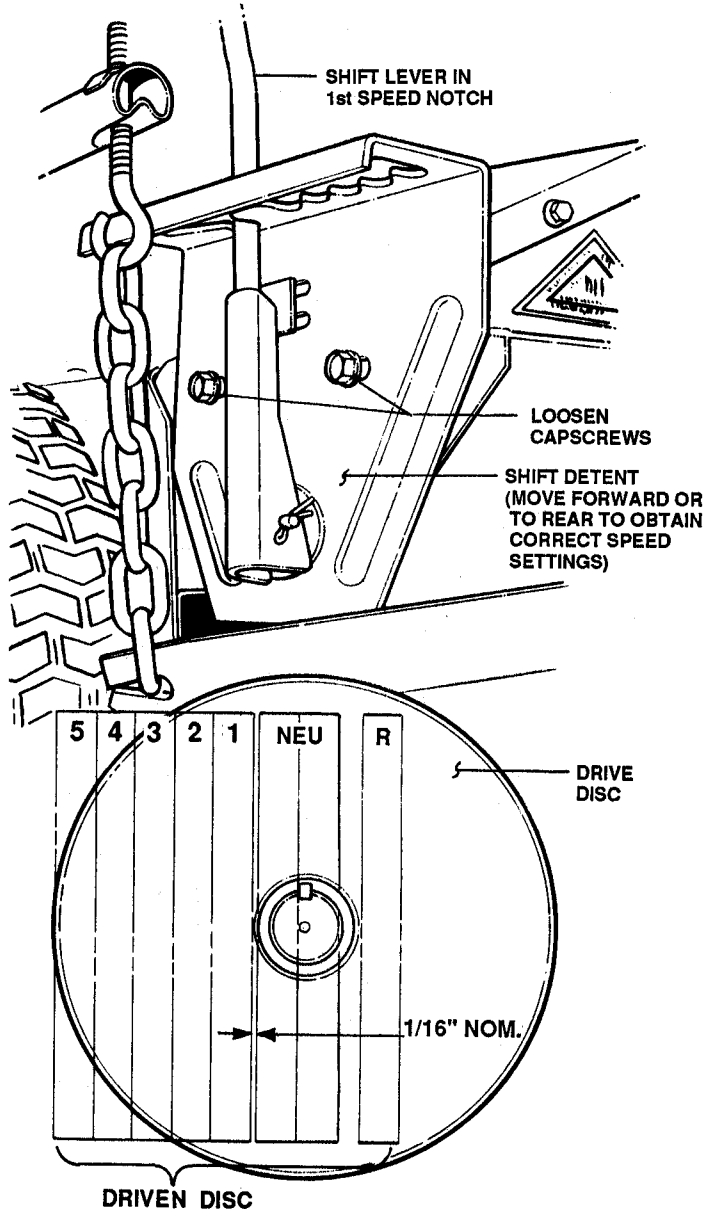


FIGURE 4.8

Section IV - TRANSMISSION & DRIVE SYSTEM

- C. As a final check, drive mower with shift lever in FIRST speed notch. Release clutch to begin forward motion. Without touching clutch pedal, turn engine OFF with ignition key. Stand mower on rear bumpers and check position of driven disc in relation with center hole in drive disc. If position is incorrect, readjust shift detent as described above. (This will compensate for any play in linkage).

REPAIR

NOTE

WHEN IN ROLL OR NEU POSITION, THE DRIVE DISC SHOULD BE IN THE NEUTRAL POSITION IN CENTER OF DRIVE DISC WITH NO CONTACT BETWEEN THE DRIVEN DISC AND THE DRIVE DISC. IF THE DRIVE DISC IS SET TOO LOW, THE MOWER WILL ROLL WITH DIFFICULTY - READJUST THE DRIVE DISC AS DESCRIBED IN 4.2.

4.7 DRIVEN DISC REPLACEMENT

If the Riding Mower will not drive when the transmission is shifted into drive and the clutch pedal is released, the first thing to check for is a worn driven disc. Poor contact between the drive and driven disc may be caused by a worn yoke lift structure, the drive disc set too high on crankshaft, or an excessively worn driven disc. Replace the disc if the rubber is worn down to $1/32"$ to $1/16"$ of the metal surface, or if it is badly chunked. See Figure 4.9. Grease or oil on the surface of the discs will also cause slippage. The driven disc is easily replaced with the mower standing on its rear bumpers as follows:

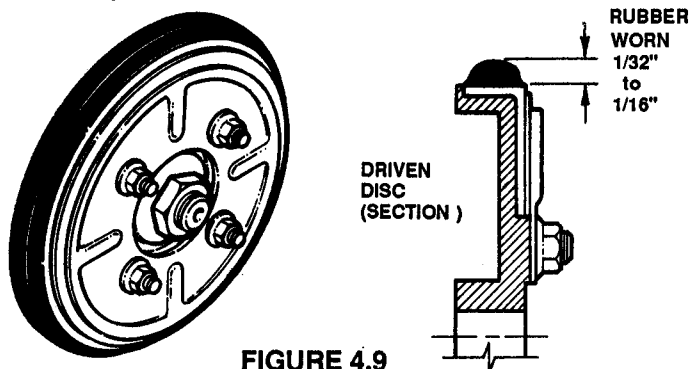


FIGURE 4.9

- A. Use a $1/2"$ socket wrench to remove the retaining nuts and split lockwashers. Turn nuts counterclockwise to remove. Use #3-2392 SPECIAL SMOOTH CLUTCH TOOL to hold the driven disc to prevent its turning while removing or installing retaining nuts. See Figure 4.10.

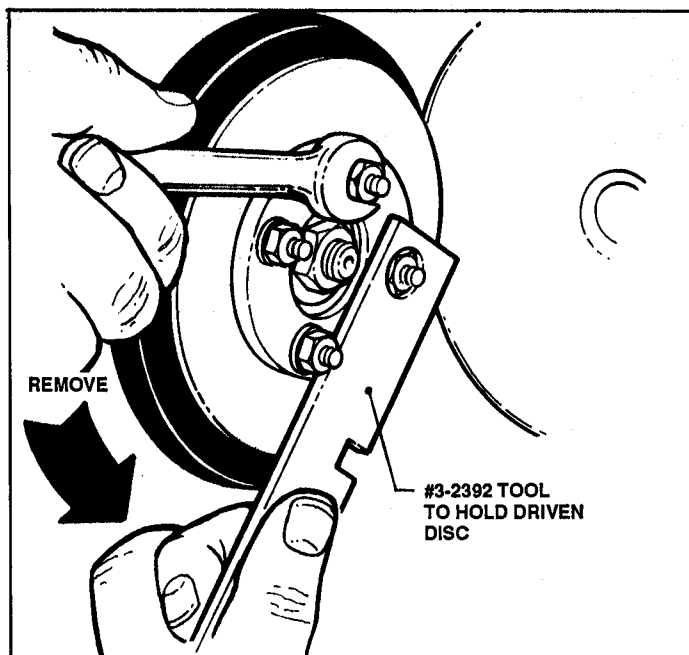


FIGURE 4.10

- B. When installing new driven disc on SMOOTH CLUTCH, make certain that fiber washer is centered over boss on center of driven disc hub. See Figure 4.11.

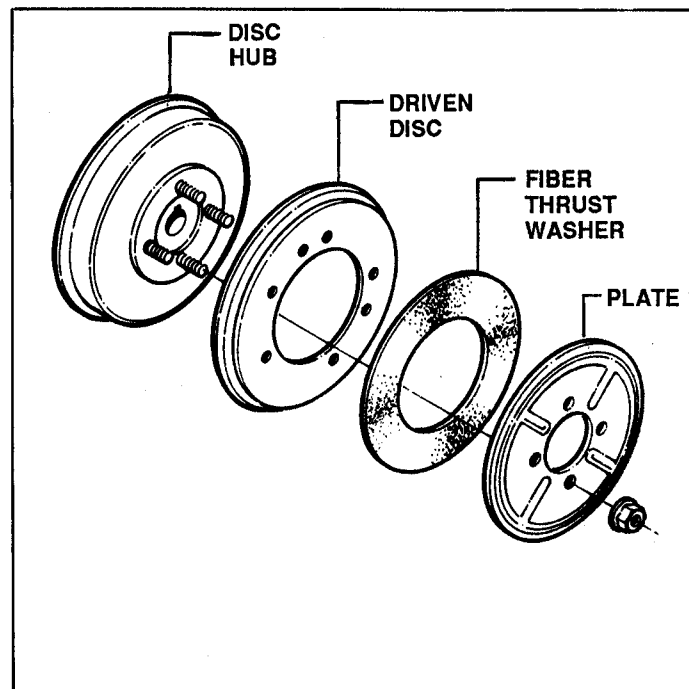


FIGURE 4.11

NOTE

IF THE FIBER WASHER IS NOT FREE TO "FLOAT" AROUND BOSS ON CENTER OF DRIVEN DISC HUB, IT CAN CAUSE BINDING OF THE SMOOTH CLUTCH.

Section IV - TRANSMISSION & DRIVE SYSTEM REPAIR

4.8 DRIVE DISC REPLACEMENT

Roaring sounds are often caused by a warped drive disc. Use a dial indicator to check for variance in the surface. If the surface varies more than .020", replace the drive disc as follows, using a **SNAPPER** #6-0325 or #6-0747 puller.

NOTE
EXCESSIVE RUN-OUT CAN CAUSE PREMATURE YOKE WEAR.

- Stand mower on bumpers and remove the driven disc and hub, then shift transmission into fifth speed to gain maximum clearance.
- Loosen or remove the two setscrews securing the pulley hub to the engine crankshaft.
- Remove disc with the **SNAPPER** drive disc puller. Pivot the yoke as necessary to allow the edge of the disc to clear when removing.
- To separate the drive disc from the pulley and hub, clamp hub in vise and lightly tap until disc turns free, then remove. See Figure 4.12.

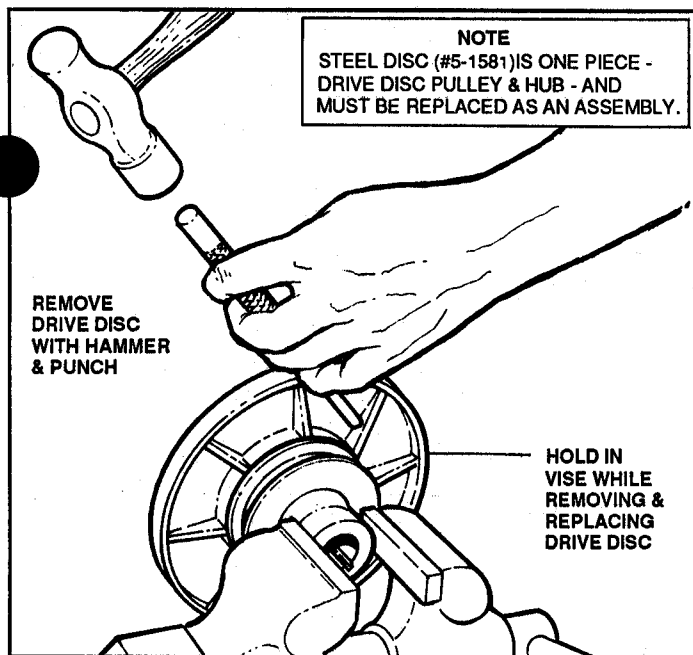


FIGURE 4.12

- Before installing replacement disc, check for warp by placing straight edge across surface. Don't use if warped.
- Reverse procedure to reinstall drive disc. Position disc so that flat surface is 3-13/16" from main case as shown in Figure 4.4. Check replacement disc with dial indicator after installation.

SHIFT HANDLE REPLACEMENT

CAUTION
SHIFT HANDLE IS SPRING LOADED. REMOVE WITH CARE TO AVOID POSSIBLE INJURY.

- Compress the shift spring with a "C" clamp, vise grip pliers or other safe, suitable means.
- Remove the cotter key and pin from the shaft handle. See Figure 4.13.

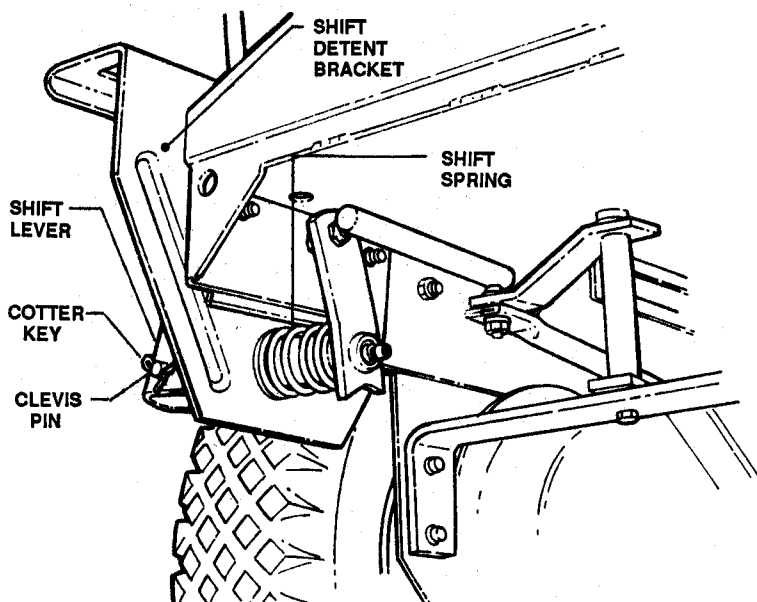


FIGURE 4.13

- Release spring tension slowly when removing the shift handle arm.
- REINSTALLING SHIFT HANDLE COMPONENTS:**
Insure proper placement of hardened washers: one between the shift arm and spring, and the other between the shift handle and detent to prevent component wear.

4.10 DIFFERENTIAL DISASSEMBLY & REPAIR

The **SNAPPER** transmission contains two main components: The Differential Assembly and The Primary Chain Case.

The Differential Assembly drives the rear wheels of the mower.

The Primary Chain Case Assembly transfers power from the engine through the hex tube to the differential.

To test the transmission when the mower will not pull, stand mower on back bumpers and turn both wheels in the same direction and observe driven disc. If disc does not turn, a broken axle bolt, differential gears or broken chains in differential or primary chain case may be the cause.

If the driven disc does turn when testing for no-drive condition, check for the following:

- Clutch link guide set too high - driven disc not contacting drive disc. Adjust per instructions in Section 4.4.
- Clutch spring missing, broken or disconnected. Reconnect or replace.
- Remove the driven disc hub from sprocket shaft and check for sheared key.

Section IV - TRANSMISSION & DRIVEN SYSTEM

REPAIR

- D. To check for problems in primary chain case, loosen clamp on one of the boots, slide boot back and observe hex shaft while turning both rear wheels in same direction. If shaft does not turn, the primary chain case can be eliminated as the cause of the no-drive condition.
- E. If the no-drive problem is caused by the differential or primary chain case, overhaul and repair using the following procedure:
1. Stand mower on rear bumpers.
 2. Using 3/4" socket, remove both rear wheels from hubs.
 3. Remove nuts from tapered axle bolts on both drive hubs. Use 1/2" socket and pliers for removal. See Figure 4.14.

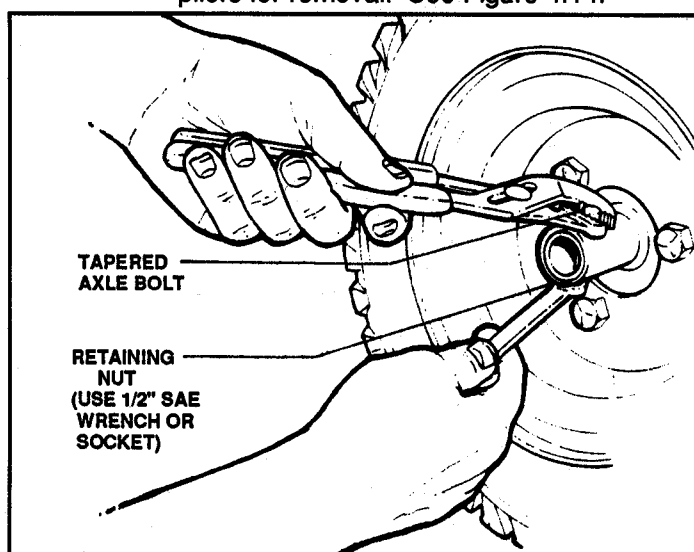


FIGURE 4.14

4. Remove tapered axle bolts by tapping with a soft-faced hammer.
5. Pull wheel hubs using **SNAPPER** #60237 Hub Puller. See Figure 4.15.

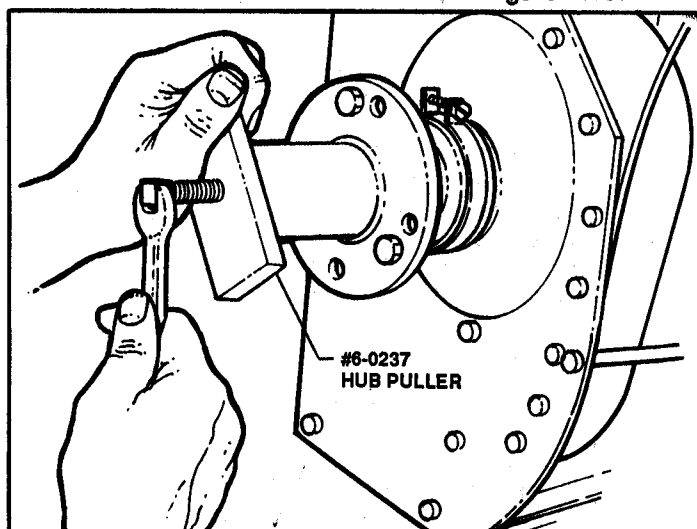


FIGURE 4.15

6. On **EXTRA TOUGH Models**, remove lock collars in opposite direction of wheel rotation on both L.H. and R.H. sides.
7. Remove six self-tapping screws which secure right fender to main case.
8. Remove nut from R.H. side of cross tie rod.
9. Slide left boot away from fender and catch spacers on this side as differential is removed so they will not fall unnoticed inside left boot.
10. Remove differential from mower and place in a 2" diameter hole drilled in workbench or either a fabricated 2" x 4" wooden holder. See Figure 4.16.

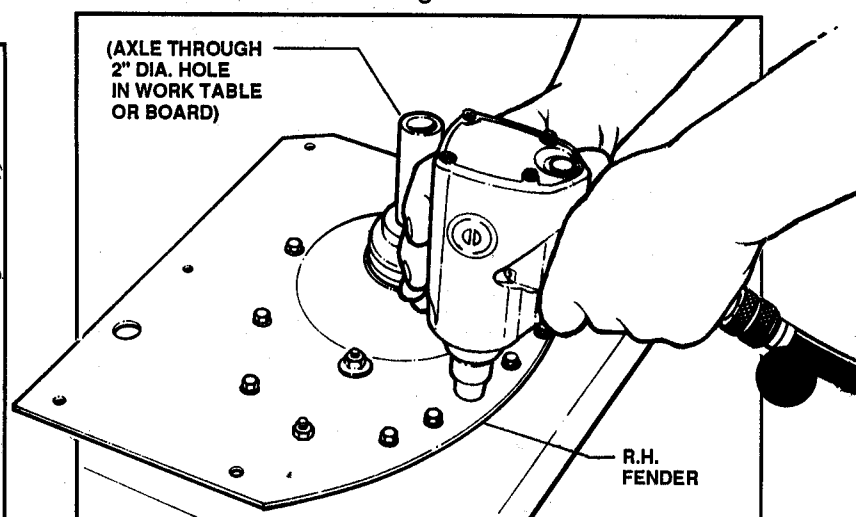


FIGURE 4.16

11. Remove the 11 self-tapping screws. Remove the nuts from the two aligning bolts and the idler bolt. Refer to Figure 4.16.
12. Remove clamp, dust cover and seal. Remove collar on **EXTRA TOUGH Models**. See Figure 4.17.

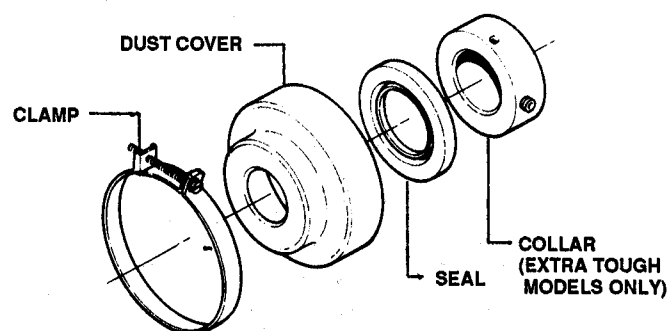


FIGURE 4.17

NOTE
(**EXTRA TOUGH Models ONLY**)
USING CENTER PUNCH AND HAMMER, TURN LOCKING COLLAR IN OPPOSITE DIRECTION OF WHEEL ROTATION ON BOTH L.H. AND R.H. SIDES - THEN REMOVE.

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REPAIR

13. Remove right fender from housing.
14. While holding the hex shaft down, pull the bull gear assembly up and out of the way of the hex shaft. Lay aside.
15. Remove the "O" ring and cone washer from idler bolt.
16. Remove chain, sprocket, eleven tooth gear and spacer from idler bolt.
17. Remove lower cone washer and "O" ring. See Figure 4.18.

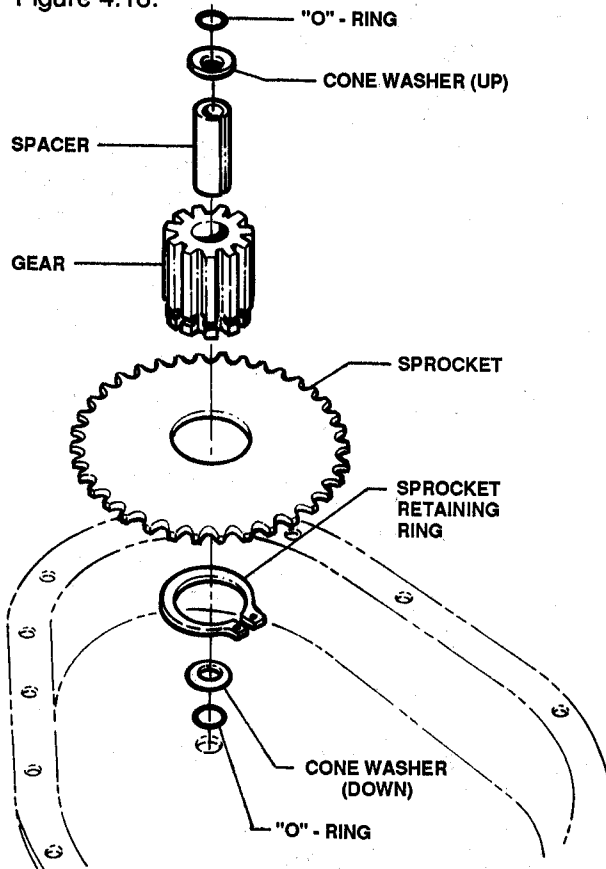


FIGURE 4.18

18. Remove hex drive tube.
19. Remove hex washer from top end of hex tube. See Figure 4.19.
20. Remove nylon hex insert washer. See Figure 4.19.
21. Inspect bronze bushings in both ends of hex drive tube. If excessively worn, replace hex drive tube assembly. Refer to Figure 4.19.

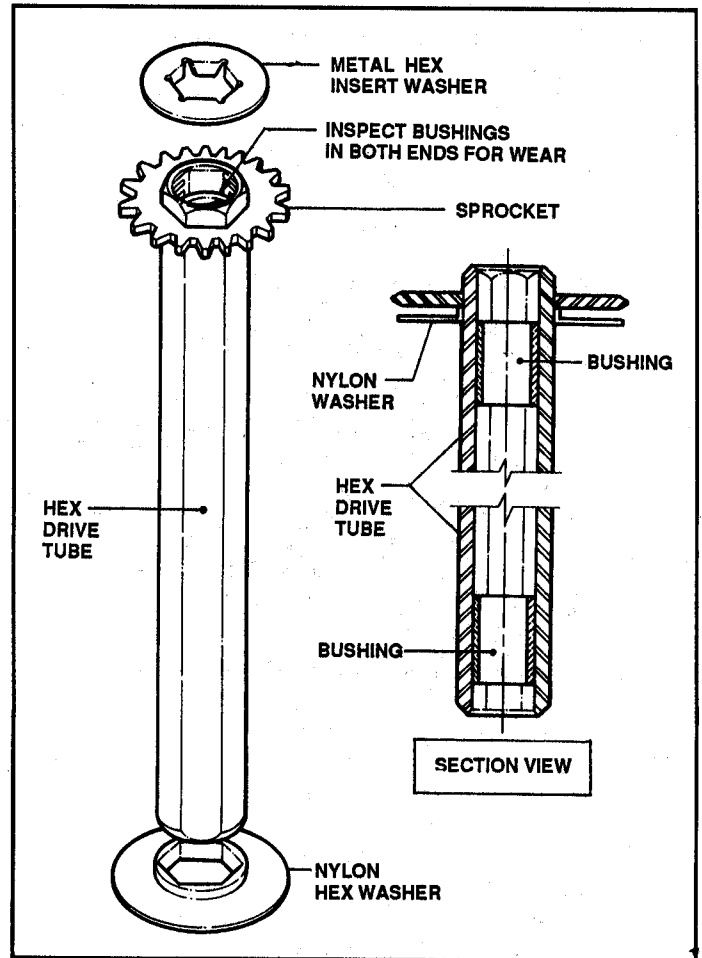


FIGURE 4.19

22. Insert the bull gear assembly in the 2" x 4" wooden holder.
23. Remove the self-locking capscrews from differential plate and discard - they cannot be reused. Replace with new #1-2333 capscrews during reassembly. See Figure 4.20.

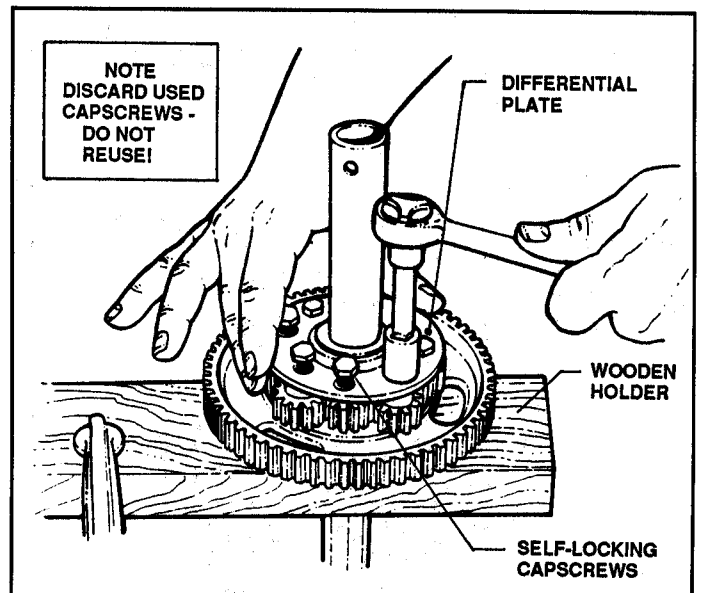


FIGURE 4.20

Section IV - TRANSMISSION & DRIVE SYSTEM

REPAIR

24. Remove the thrust washer and differential plate. See Figure 4.21.

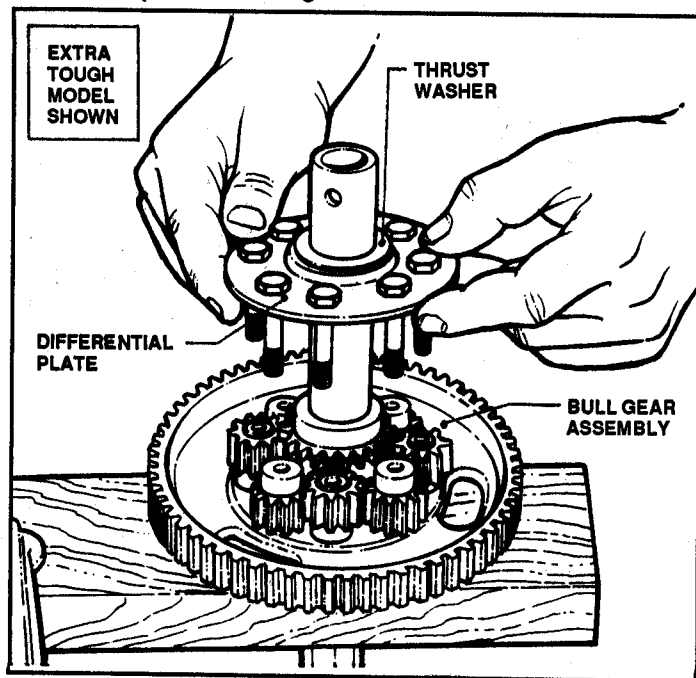


FIGURE 4.21

25. Remove short axle.
26. Thoroughly clean and carefully inspect each component of the bull gear assembly. Replace any damaged or worn parts.

F. DIFFERENTIAL REASSEMBLY PROCEDURE

1. Center the bull gear over the hole in the 2 x 4 wooden holder or table.
2. Insert the long axle in the bull gear.
3. Install the nylon spacer on the long axle around the weld. (This spacer establishes proper position of the long and short axles. Replace spacer if damaged or worn). See Figure 4.22.

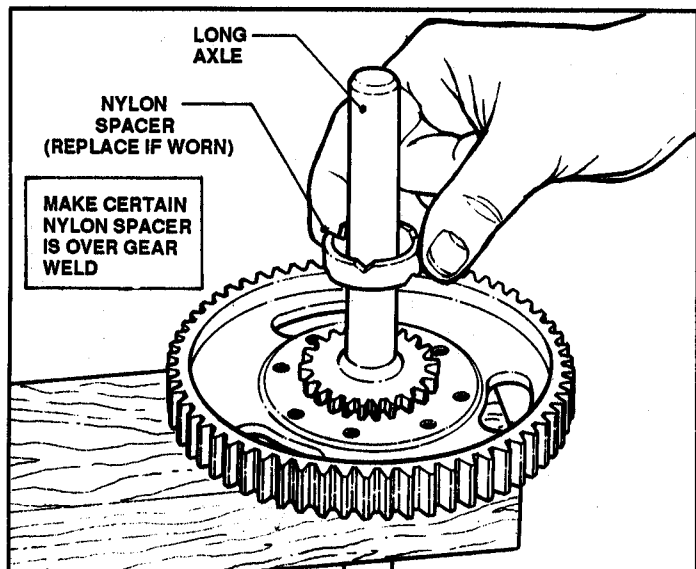


FIGURE 4.22

4. Inspect bushing in short axle for wear. If worn excessively, replace short axle assembly. See Figure 4.22A.

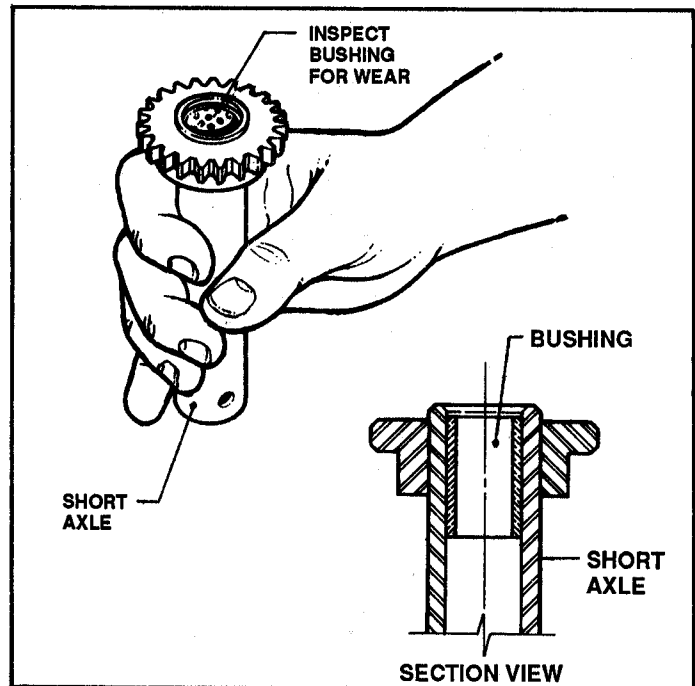


FIGURE 4.22A

5. Prelubricate short axle bushings with **SNAPPER "O" Grease**.
6. Install short axle over long axle, insuring that the nylon spacer fits down over the weld of the long axle. See Figure 4.22B.

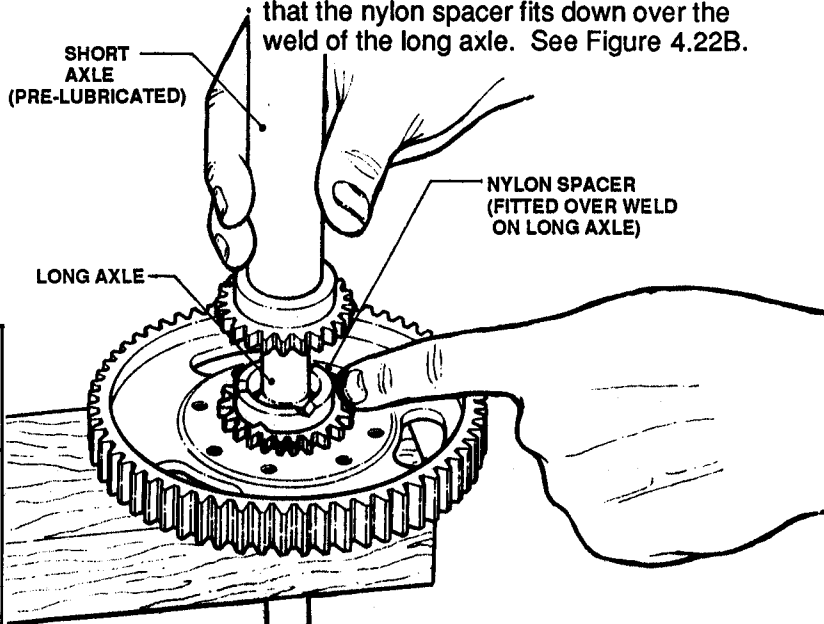


FIGURE 4.22B

7. EXTRA TOUGH MODELS

- (a) Prelubricate pinion spacers before installing.
- (b) Install eight twelve-tooth pinion gears and spacers in staggered position - spacer below one gear and above on the next. See Figure 4.23.

Section IV - TRANSMISSION & DRIVE SYSTEM REPAIR

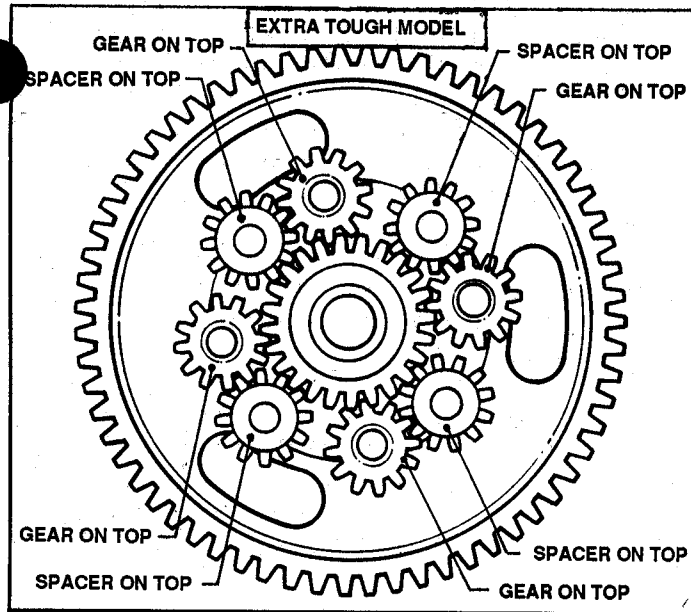


FIGURE 4.23

NOTE

PINION GEARS AND SPACERS MUST BE OPPOSITE ACROSS FROM EACH OTHER AND THE SAME DIAGONALLY AFTER INSTALLATION IS COMPLETE.

- (c) Insert new **SNAPPER #12333** capscrews in differential plate and install over pinion plate. See Figure 4.24.

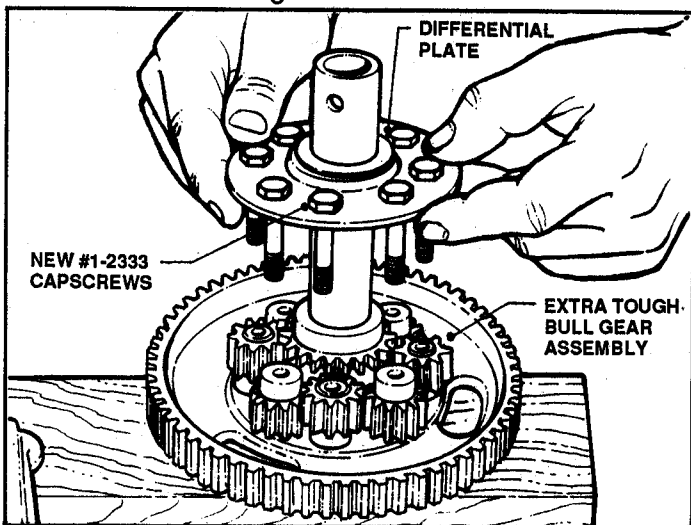


FIGURE 4.24

CAUTION

THE **SNAPPER #12333** CAPSCREWS ARE MISALIGNING THREAD-TYPE LOCKING SCREWS AND INTENDED FOR ONE-TIME USE ONLY! **DO NOT RE-USE REMOVED CAPSCREWS! REPLACE WITH NEW, UNUSED SNAPPER #12333 CAPSCREWS ONLY!**

- (d) Alternately tighten capscrews to 18-25 Ft. Lbs. with torque wrench.

8. STANDARD MODELS

- (a) Prelubricate pinion spacers before installing.
(b) Install four twelve-tooth pinion gears and spacers on bullwheel in staggered position - spacer below one gear and above on the next. See Figure 4.25.

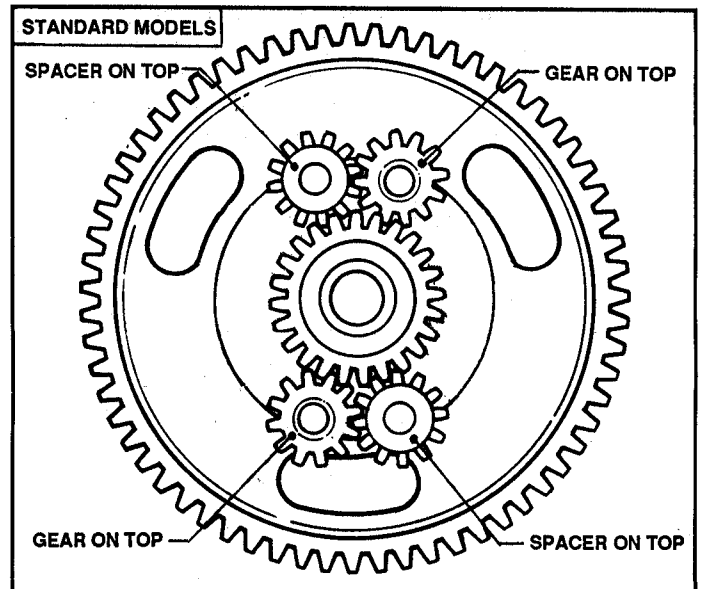


FIGURE 4.25

- (c) See NOTE after Figure 4.23 and CAUTION after Figure 4.24.
(d) Insert **NEW SNAPPER #12333** capscrews in differential plate and install over pinion plate. Refer to Figure 4.24.
(e) Alternately tighten capscrews to 18-25 Ft. Lbs. with torque wrench.
9. Remove bullgear assembly from wooden holder (or table).
 10. Install flat washer and external tooth lockwasher on idler bolt.
 11. Insert idler bolt into transmission case from outside. Install "O" ring over idler bolt from inside. See Figure 4.26.

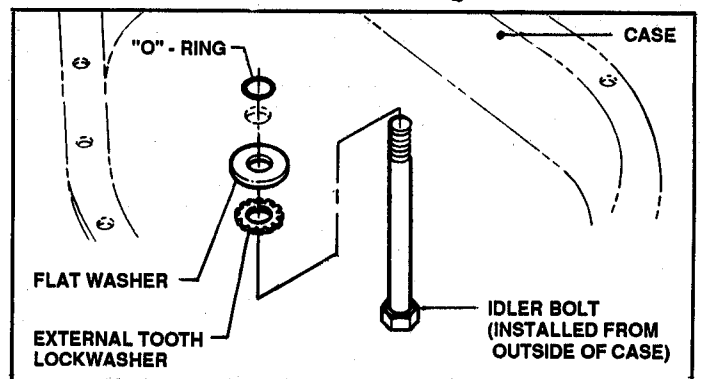


FIGURE 4.26

Section IV - TRANSMISSION & DRIVE SYSTEM REPAIR

12. Place transmission case on wooden holder or table. Align holes in case and holder.
13. Inspect the hex insert washer for wear before installing hex shaft. Replace if required. (The hex insert washer, being nylon, serves as a bearing surface and also prevents grease from being splashed off the chain into the boot). Also, check the bushings in each end of the hex shaft for wear and placement. Replace hex shaft assembly if bushings are worn. See Figure 4.27.

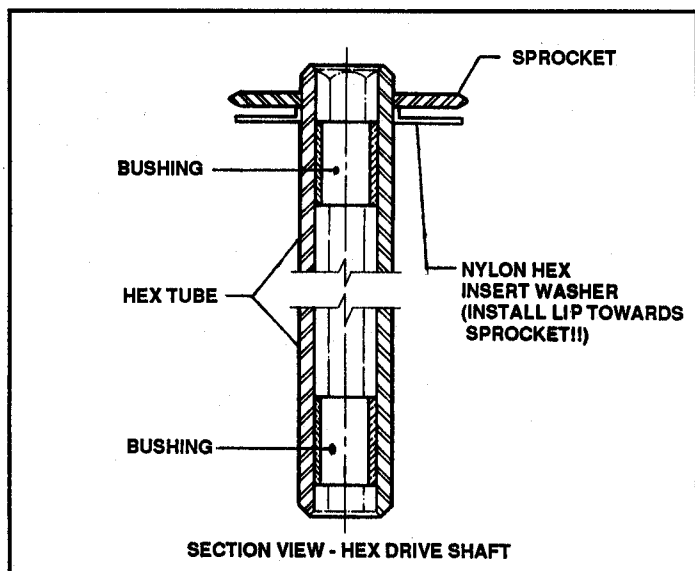


FIGURE 4.27

14. Install hex shaft in transmission case and lubricate internally with grease.
15. Install metal thrust washer on both ends of hex shaft. See Figure 4.28.

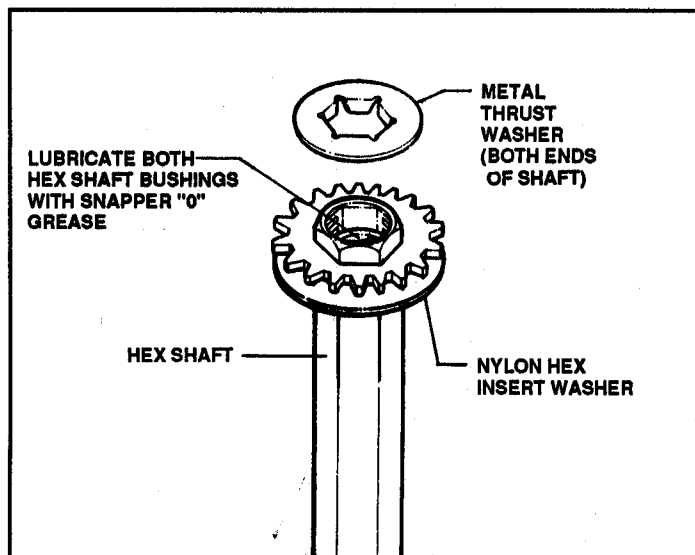


FIGURE 4.28

CAUTION

THE THRUST WASHER SHOWN IN FIGURE 4.28 SERVES AS A BEARING SURFACE BETWEEN THE BULLGEAR ASSEMBLY AND HEX SHAFT; IF OMITTED DURING ASSEMBLY, IT CAN CAUSE EXCESSIVE WEAR OF THE HEX SHAFT AND MAY CAUSE THE SPROCKET TO FALL OFF!

16. Place one cone washer (cup DOWN) over "O" ring on idler bolt and press firmly against case.
17. Assemble spacer, sprocket and chain, and install as a unit in case. (There is not enough clearance to install the chain and sprocket individually). Make sure the hole in the 11-tooth gear is clean - this allows lubrication to reach the bearing race. See Figure 4.29.

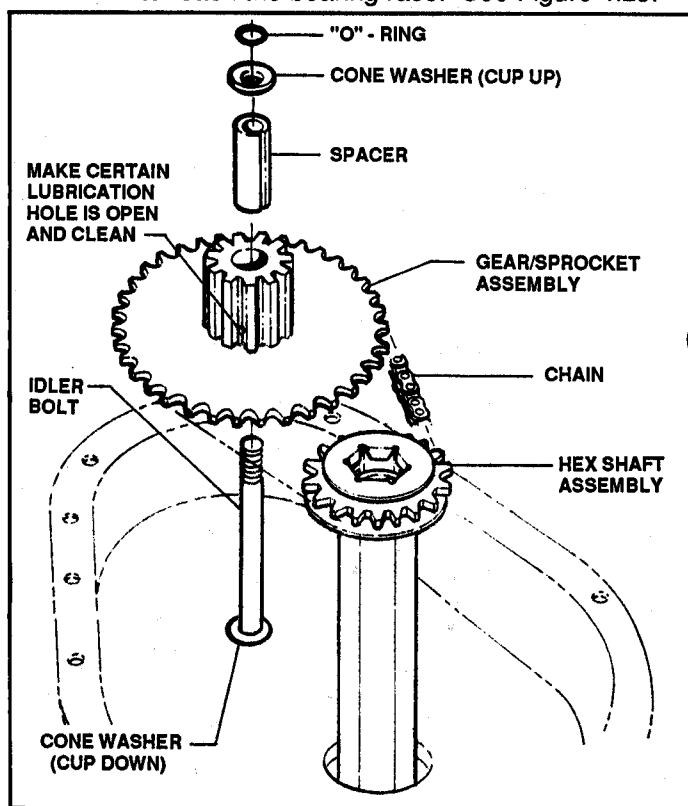


FIGURE 4.29

18. Place cone washer (cup UP) on idler bolt then press "O" ring over bolt and against washer.
19. Thoroughly grease long axle and insert it into hex tube.
20. Install thrust washer over end of short axle (This washer serves as a bearing surface between the bullgear assembly and the bearing in the R.H. fender). Refer to Figure 4.21.

NOTE

BEFORE PROCEEDING FURTHER, LUBRICATE THE OUTSIDE OF THE SHORT AXLE WITH GREASE.

Section IV - TRANSMISSION & DRIVE SYSTEM REPAIR

21. Install new **SNAPPER #1-8060** gasket on case.
22. Reinstall fender to case.
23. Install lock nut on idler bolt. **DO NOT TIGHTEN.**
24. Insert the two aligning capscrews through end holes from case side. Fit with lock nuts and tighten.
25. Install and tighten eleven self-tapping screws then tighten idler lock nut to 18-20 Ft. Lbs. with torque wrench.

NOTE

IT IS IMPERATIVE THAT THE IDLER BOLT NUT BE PROPERLY TIGHTENED. IF LOOSE, THE CHAIN AND SPROCKET ARE THROWN OUT OF ALIGNMENT WHICH COULD RESULT IN UNEVEN WEAR ON THE BULL GEAR AND ELEVEN-TOOTH GEAR AND MISALIGNMENT OF THE CHAIN AND SPROCKET. THIS COULD CAUSE THE CHAIN TO BREAK AND JUMP OFF THE SPROCKET.

26. Install **NEW** oil fill and oil check plugs in case.
27. The differential is now completely rebuilt and ready for reinstallation into the main case. After installing, fill transmission case to proper level with **SNAPPER 0 GREASE.**

NOTE

MAKE SURE TO SPACE END PLAY PROPERLY, THEN ON **EXTRA TOUGH Models**, TIGHTEN LOCKING COLLARS IN DIRECTION OF WHEEL ROTATION. Refer to Figure 4.34.

4.11 PRIMARY CHAIN CASE DIS- ASSEMBLY PROCEDURE

A. CHAIN CASE REMOVAL

1. Close fuel cap vent and remove battery if required.
2. Stand mower on back bumpers and remove L.H. wheel and hub. Disconnect L.H. oil seal boot and cross-tie rod and remove fender. See Figure 4.30.

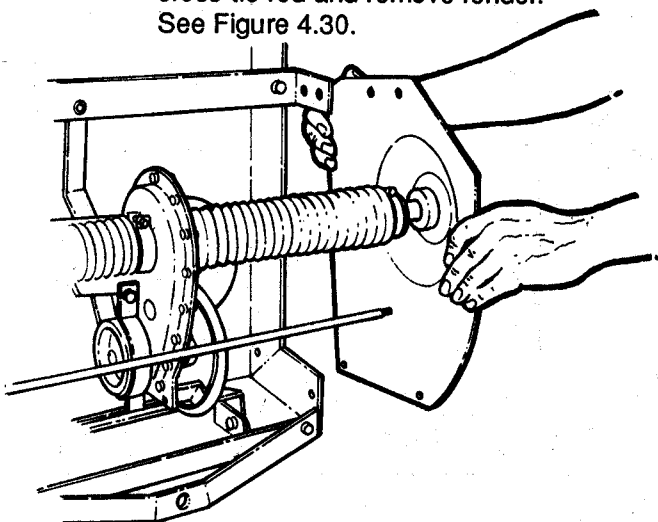


FIGURE 4.30

NOTE

ON **EXTRA TOUGH Models**, LOOSEN LOCK COLLAR BY USING CENTER PUNCH AND HAMMER TO TURN COLLAR IN CLOCKWISE DIRECTION.

3. Disconnect the short shift link (and auxiliary brake band, if applicable) from primary chain case. See Figure 4.31.

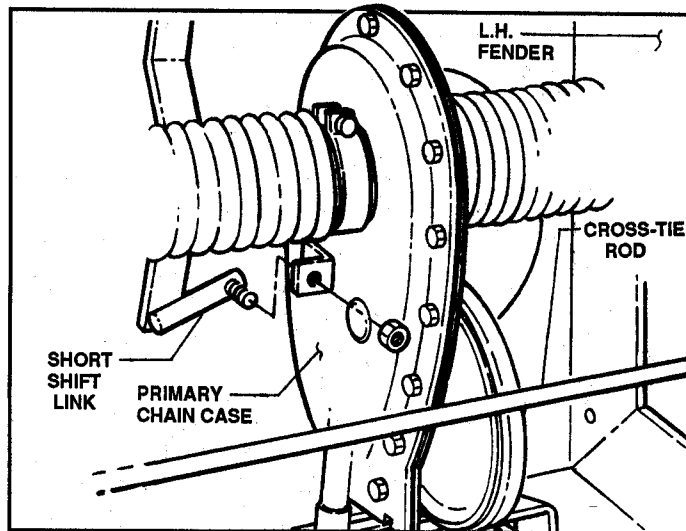


FIGURE 4.31

4. Disconnect R.H. boot clamp from chain case. **MODELS 4 & 5 ONLY** - Remove brake cable housing from clip on chain case. See Figure 4.32.

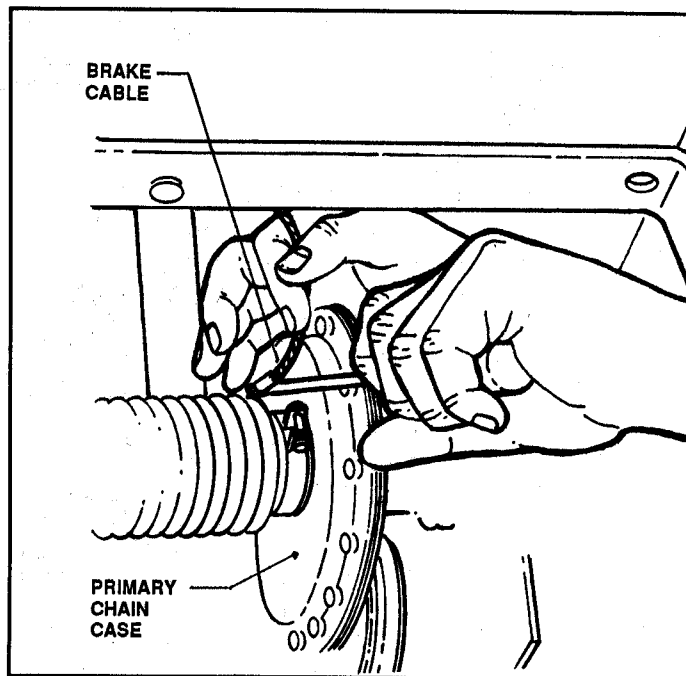


FIGURE 4.32

5. Slide the primary chain case out of the yoke lift notch and off end of long axle.

Section IV - TRANSMISSION & DRIVE SYSTEM REPAIR

B. CHAIN CASE DISASSEMBLY & REASSEMBLY

1. Remove auxiliary brake hub (MODELS 4 & 5), driven disc hub, washers, woodruff key, brake lever and the 10 self-tapping screws. See Figure 4.33.

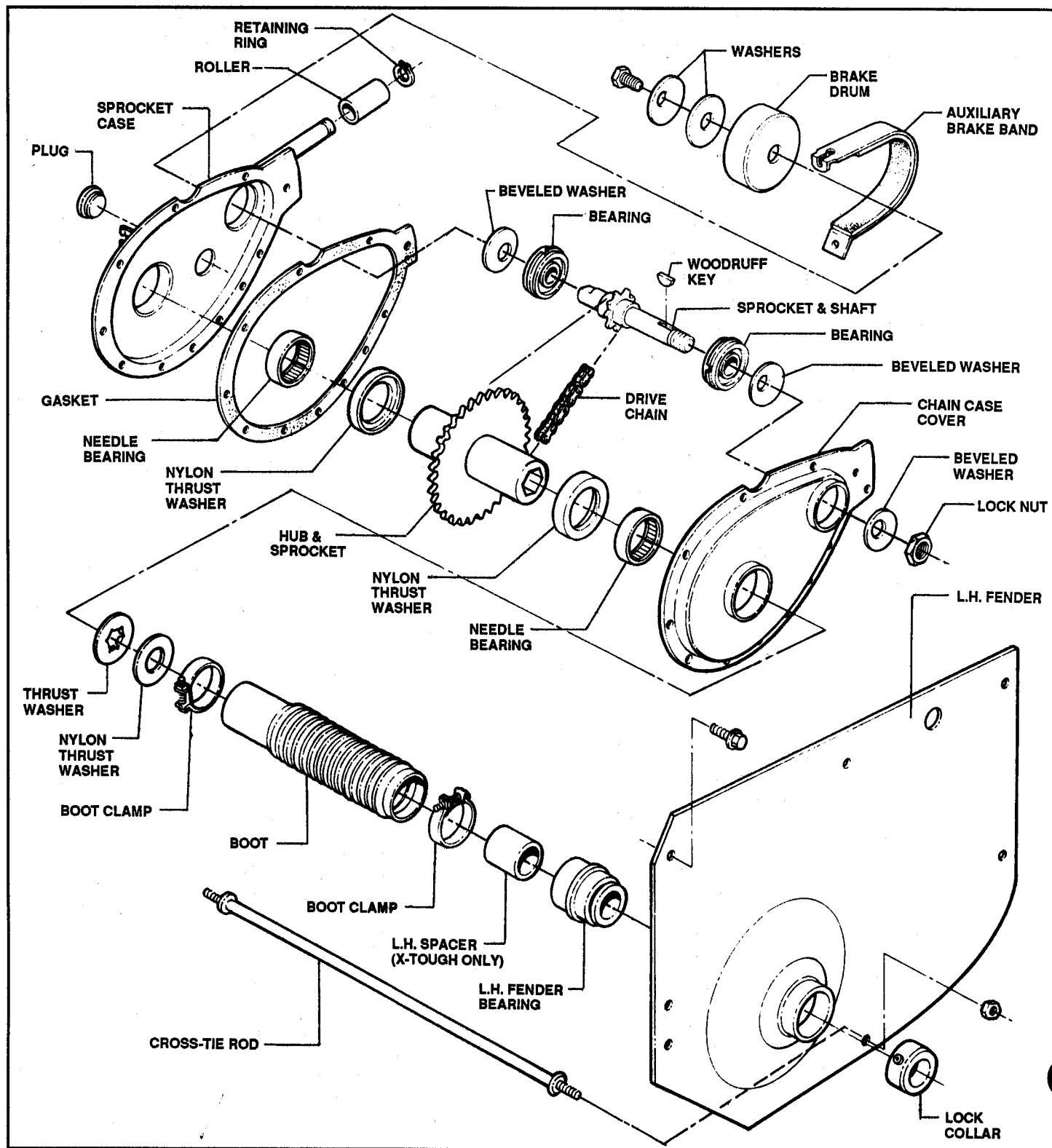


FIGURE 4.33
38

Section IV - TRANSMISSION & DRIVE SYSTEM REPAIR

NOTE

NOTICE POSITION OF BEVELED WASHERS WHEN DISASSEMBLING. INSURE THEY ARE CUPPED AWAY FROM BEARING WHEN RE-ASSEMBLING. NOTE THAT KEY-WAY END OF SHAFT IS INSERTED THROUGH CASE HALF WITH SMOOTH SIDE TO ALLOW FOR DRIVEN DISC CLEARANCE.

1. Separate chain case halves.
2. Remove hub sprocket, chain and sprocket shaft. Inspect these items for excessive wear or damage. Replace if required.
3. Remove the **SNAPPER #1-0756** ball bearings by forcing out to inside of case. Inspect bearings for wear and replace if required. *Replacing bearings will not solve a grease leak problem caused by overfilling.*

NOTE

WHEN INSTALLING #1-0756 BALL BEARINGS, MAKE CERTAIN LOCK RING SEATS AGAINST INSIDE OF CASE HALF TO ASSURE PROPER POSITIONING OF BEARINGS.

4. Remove old needle bearings by forcing out to insides of case.
5. Press new needle bearings into case halves from inside. MAKE SURE TO PRESS ON SIDE OF BEARING STAMPED WITH NUMBERS AND LETTERS.

NOTE

NEEDLE BEARINGS MUST BE FLUSH WITH INSIDE SURFACE OF CASE.

6. Reinstall chain and sprocket arrangement.
7. Install **NEW SNAPPER #1-8059** Case-Cover Gasket.
8. Reinstall and replace components in reverse order.

4.12 LEFT HAND SEAL AND FENDER BEARING REPLACEMENT

- A. Stand mower on rear bumpers.
- B. Remove wheel and hub.
- C. Remove clamp, boot and seal (on **EXTRA TOUGH Models**, remove lock collar, also).
- D. Remove fender bolts.
- E. Remove cross-tie rod nut.
- F. Loosen boot clamp.
- G. Slide off fender.
- H. Press out old bearing to inside.
- I. Press in new bearing.

NOTE

LATER MODEL MOWERS FEATURE A L.H. FENDER BEARING DESIGN WHICH ELIMINATES THE END PLAY PROBLEMS OF EARLIER MACHINES. THE NEW BEARING DOES NOT HAVE THE GREASE CUP AREA WHICH ALLOWED THE END OF THE HEX SHAFT TO SHIFT IF THE FLANGE WASHER FLEXED OR WAS BROKEN.

- D. Place new seal cap over fender flange.
- E. Tap seal cap into place. (Caps may become brittle in cold weather - soaking in water will help installation).

NOTE

A SEAL INSTALLATION TOOL CAN BE MADE FROM A 6" LENGTH OF PIPE HAVING A 1 3/8" I.D.

F. CHECKING END PLAY

1. Loosen boot clamp from L.H. fender and slide boot back, exposing end of hex tube.
2. Measure clearance - there should be no more than 3/32" end play between end of hex tube and bearing.

G. CORRECTING END PLAY

1. INSTALL SPLIT NYLON SPACERS UNTIL 3/32" CLEARANCE IS ATTAINED. See Figure 4.34.

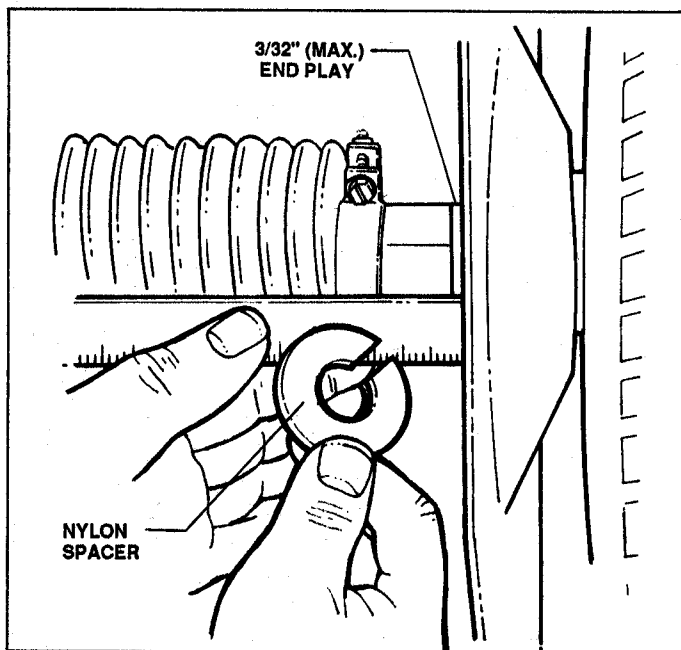


FIGURE 4.34

4.13 RIGHT HAND SEAL & FENDER BEARING REPLACEMENT

- A. Drain grease from differential.
- B. Stand mower on rear bumpers.
- C. Remove wheel and hub.
- D. Remove clamp, boot and seal (on **Extra Tough Models**, remove lock collar, also).
- E. Remove bolts attaching differential to R.H. fender.

Section IV - TRANSMISSION & DRIVE SYSTEM REPAIR

- F. Remove cross-tie rod nut.
- G. Remove fender bolts.
- H. Using putty knife (or similar tool), separate differential case from fender.
- I. Slowly remove fender while holding differential case in position.
- J. Remove and discard differential case gasket.
- K. Press out old bearing to inside.

NOTE

AN ARBOR PRESS SHOULD BE USED TO REMOVE AND INSTALL RIGHT HAND FENDER BEARING. IF ONE IS NOT AVAILABLE, FABRICATE A GUIDE PUNCH OF APPROPRIATE SIZE AND USE A PIECE OF PIPE TO SUPPORT THE FENDER WHILE DRIVING OUT THE BEARING.

- L. Press in new bearing from inside. (If applicable, position bearing grooves vertically to allow for proper bearing and axle lubrication).

NOTE

THE NEW R.H. FENDER BEARINGS ARE LONGER THAN OLDER BEARINGS. IF INSTALLED ON OLDER MACHINES, IT MAY BE NECESSARY TO SAW APPROXIMATELY 1/2" OFF THE BACK OF THE WHEEL HUB TO ALLOW CLEARANCE FOR NEW BEARING. NEVER SAW THE BEARING.

- M. Place new differential case gasket in position and install new "O" ring on end of idler bolt.
- N. Reinstall fender (make sure that "O" ring and gasket are kept in proper position).
- O. Reinstall remaining components in reverse order of removal.

NOTE

DO NOT USE A SHORT SEAL CAP WITH THE NEW, LONGER BEARINGS. THE SHORT CAP WILL NOT PROVIDE AN ADEQUATE SEAL AROUND THE FENDER BEARING FLANGE AND WILL INCREASE LEAKAGE PROBABILITY.

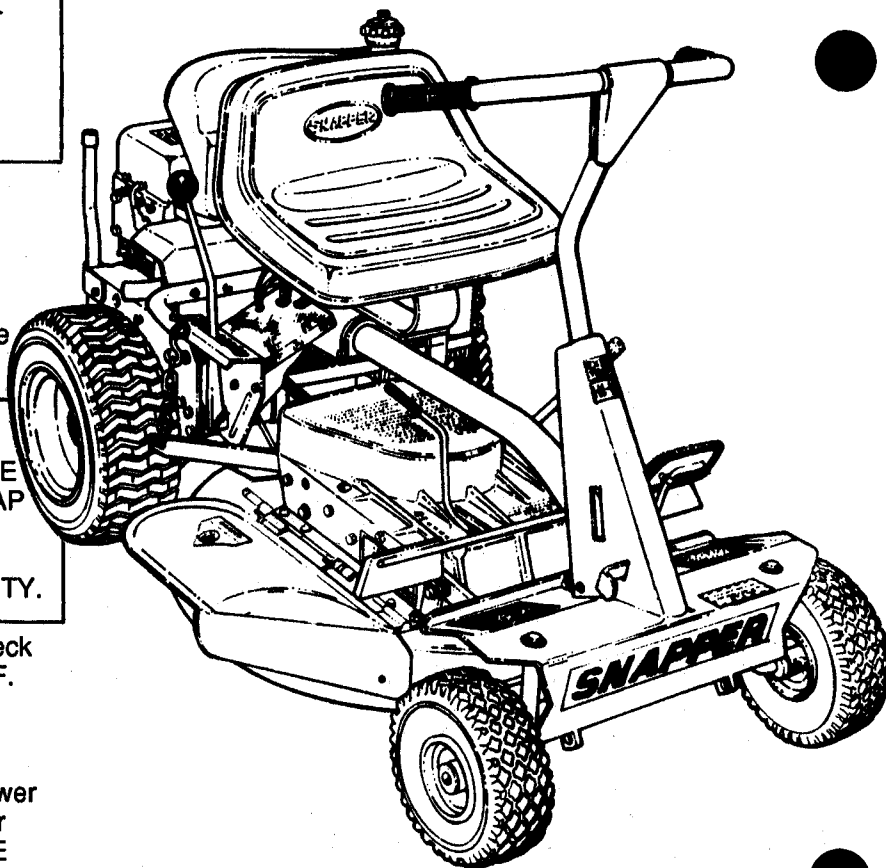
- P. After installation has been completed, check L.H. axle for proper end play. See 4.12, F. and G. Fill transmission case to proper level with **SNAPPER O GREASE**.

4.14 LIFT YOKE REPLACEMENT

A badly worn LIFT YOKE may prevent the mower from pulling when placed in gear. If the mower will not pull, check first to see if the LIFT YOKE needs lubricating and, if not, replace LIFT YOKE as follows:

- A. Remove nut securing tube to shifter arm. See Figure 4.35. Page 41.

- B. Remove tube, spring and rod as a unit by turning rod 45° and withdrawing from lift yoke.
- C. While holding shift lever in REVERSE, push lift yoke down and to the left in order to disengage from sprocket case.
- D. Remove clutch brake spring from clutch link and lift yoke.
- E. Remove cotter pin from clutch link stud.
- F. Remove washers, clutch link and spring bracket from clutch link stud.
- G. Remove lock nuts, nylon bearings and capscrews from yoke. Remove yoke.
- H. Remove clutch link stud from lift yoke.
- I. Install new LIFT YOKE in reverse order of removal.
- J. Refer to Figure 4.3 for proper adjustment procedures.



Section IV - TRANSMISSION & DRIVE SYSTEM REPAIR

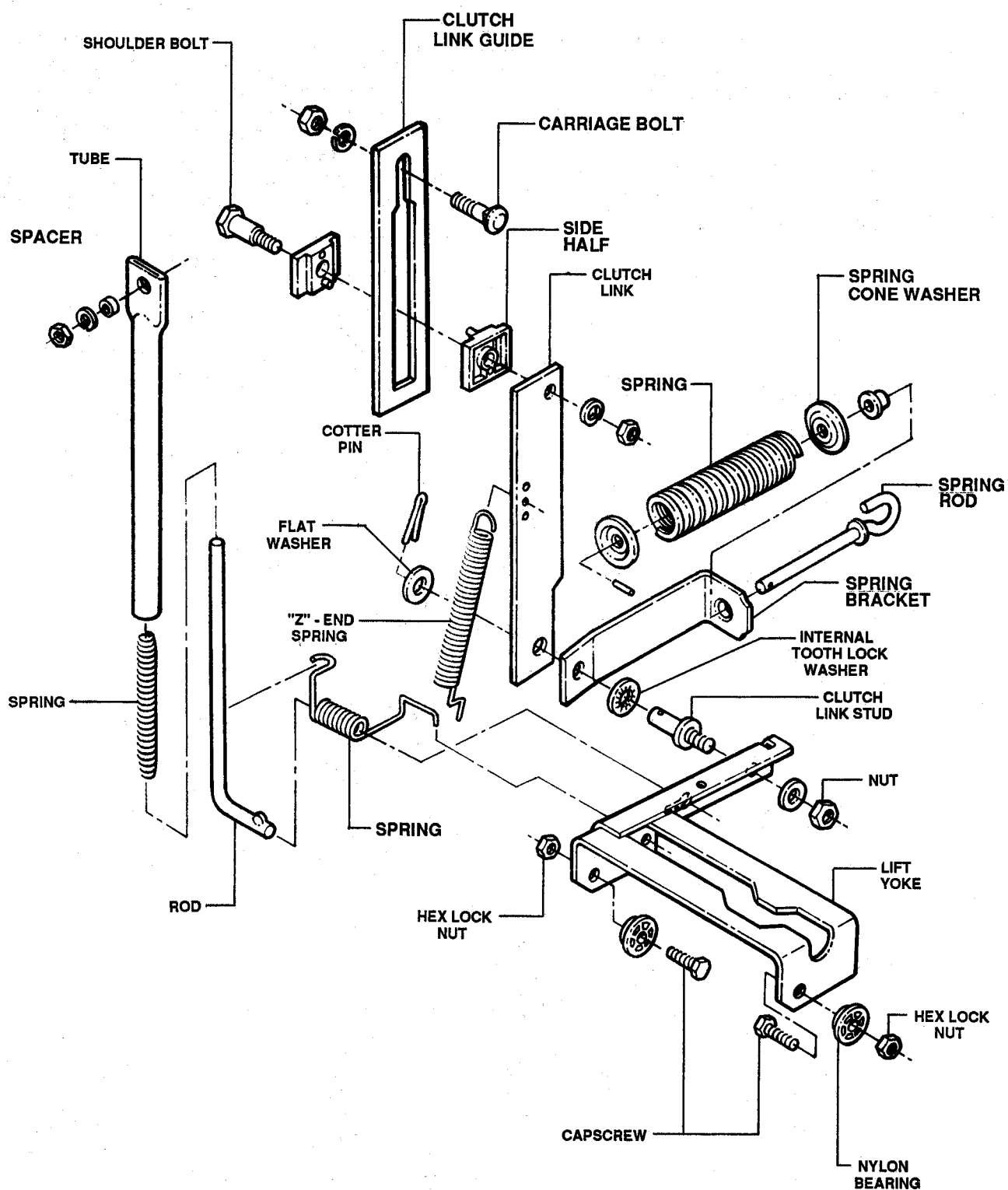


FIGURE 4.35

Section V - FRONT END REPAIR

INTRODUCTION

This section covers procedures for the removal and replacement of those front end components used on **SNAPPER Series 4, 5, 6 & Extra Tough Rear Engine Riding Mowers**.

These front end components include the tube axle structure, steering mechanism, clutch/brake controls, parking brake and front wheels.

It should be noted that while the **Series 4 & 5 Mowers** have two pedals (R.H. Aux. Brake & L.H. Clutch/Brake), the **Series 6 Mower** has only one (L.H. Clutch/Brake). 1987 and later models feature a parking brake mechanism which eliminates the auxiliary brake components found on earlier models. This and other differences are pointed out whenever pertinent to the procedure being described. See Figure 5.1.

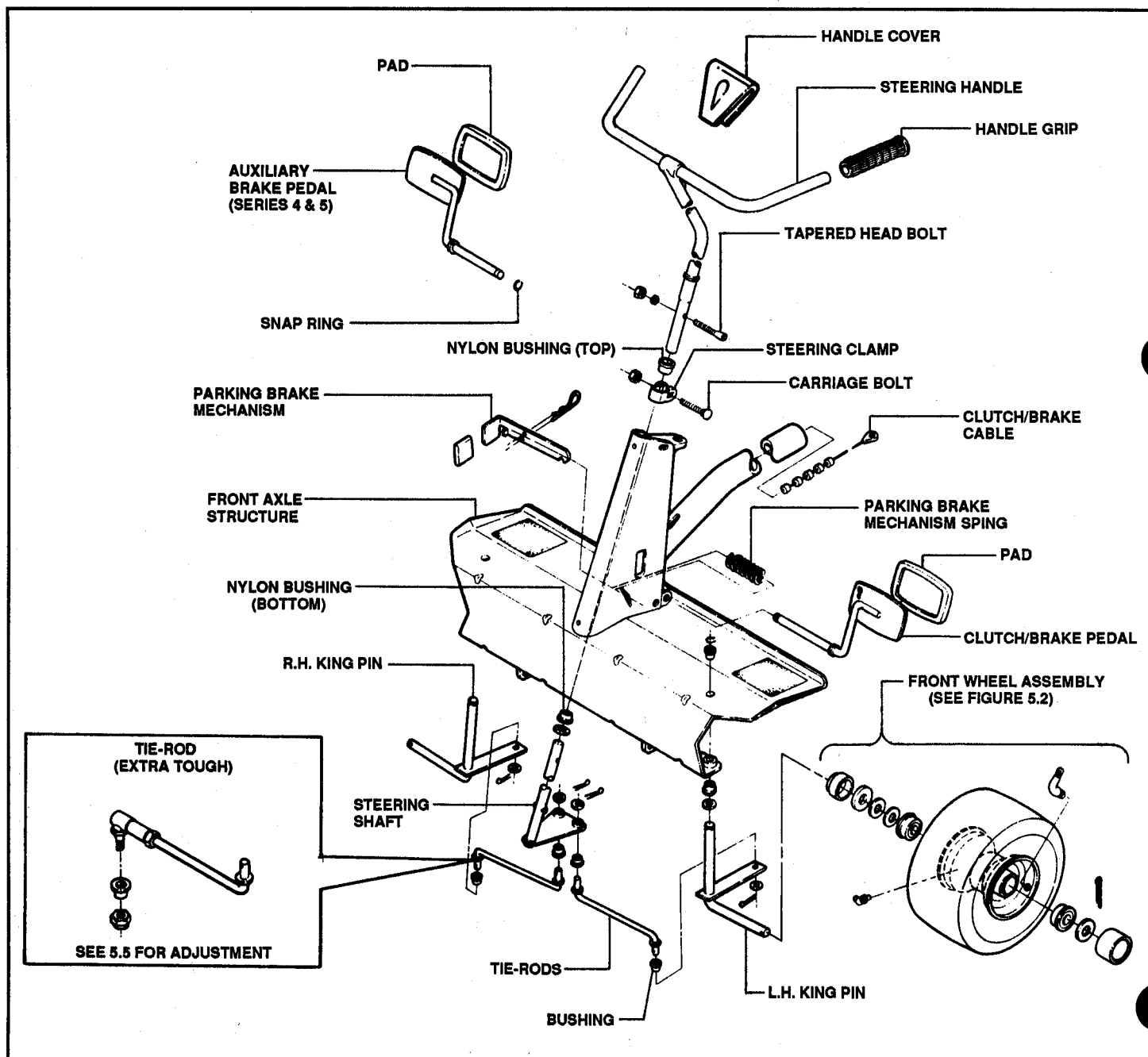


FIGURE 5.1

Section V - FRONT END REPAIR

5.1 FRONT WHEEL & BEARING REPLACEMENT

Some rider models use semi-pneumatic tires on the front wheels. If worn, replace this type wheels and tire as a unit. Should rim leakage occur on models with fully-pneumatic tires, install optional inner tube. Replace front wheels and bearings as follows:

- A. Stand mower on rear bumpers and remove hub cap.

CAUTION
IF REQUIRED, CLOSE CAP VENT AND REMOVE BATTERY BEFORE STANDING MOWER ON REAR BUMPERS.

- B. Remove cotter pin and flat washer. Slide wheels off front spindle. Inspect wheel and tire assembly. Replace as required. See Figure 5.2.

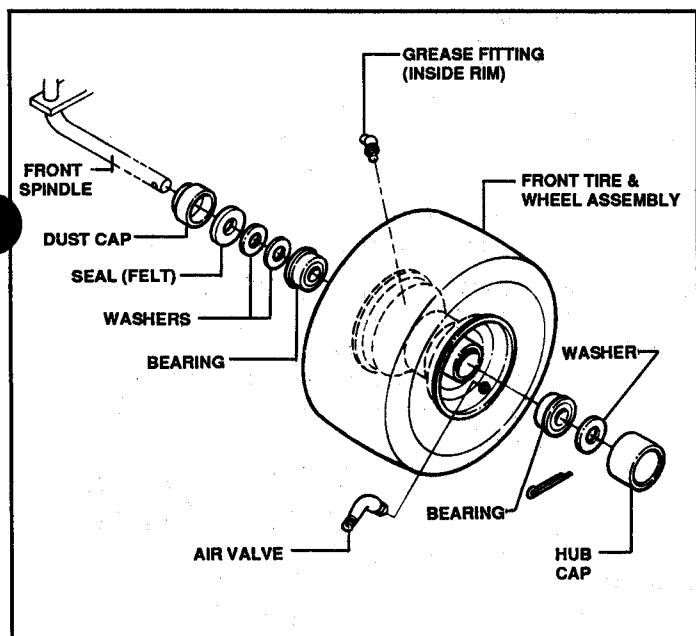


FIGURE 5.2

- C. To replace wheel bearings, drive each out from inside of rim with drift punch. Pack replacement bearings with grease and lightly tap into position.
- D. If necessary, remove inner flat washer (or washers), felt washer and dust cap. Replace as required.
- E. Reinstall wheel and bearing assembly as shown in Figure 5.2.

5.2 KING PIN (INCLUDES SPINDLE) AND BUSHING REPLACEMENT

- A. Stand mower on rear bumpers and remove wheel components from spindle. See Figure 5.3.

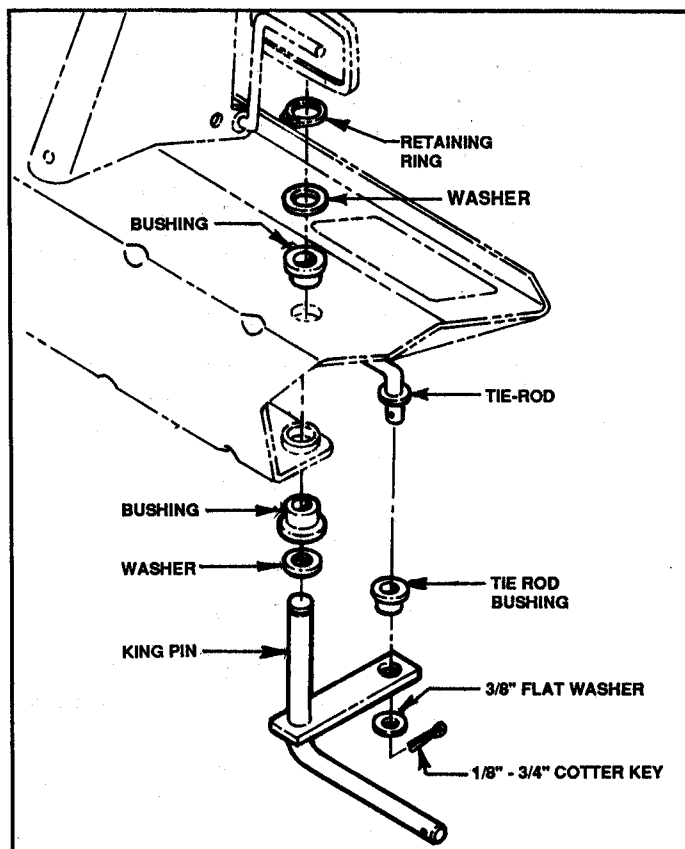


FIGURE 5.3

- B. Disconnect tie rod from arm of king pin.
- C. Remove retaining ring from end of king pin protruding above front end.
- D. Slide king pin out of bushings.
- E. Inspect bushings at top and bottom. If worn, replace.
- F. Reverse procedure to install king pin.

Section V - FRONT END REPAIR

5.3 STEERING HANDLES AND SHAFT

- A. Stand mower on rear bumpers. Remove nut and drive tapered bolt(s) out of handle and shaft. See Figure 5.4.

NOTE

IF UNIT HAS TWO TAPERED BOLTS, RE-INSTALL IN OPPOSITE DIRECTIONS. ON ALL MODELS, INSTALL INTERNAL TOOTH LOCKWASHER AND TIGHTEN NUT. TAP HEAD OF BOLT TO SEAT BOLT, THEN TIGHTEN NUT UNTIL HEAD OF BOLT IS DRAWN DOWN TO WITHIN 1/8" OF HANDLE SHAFT.

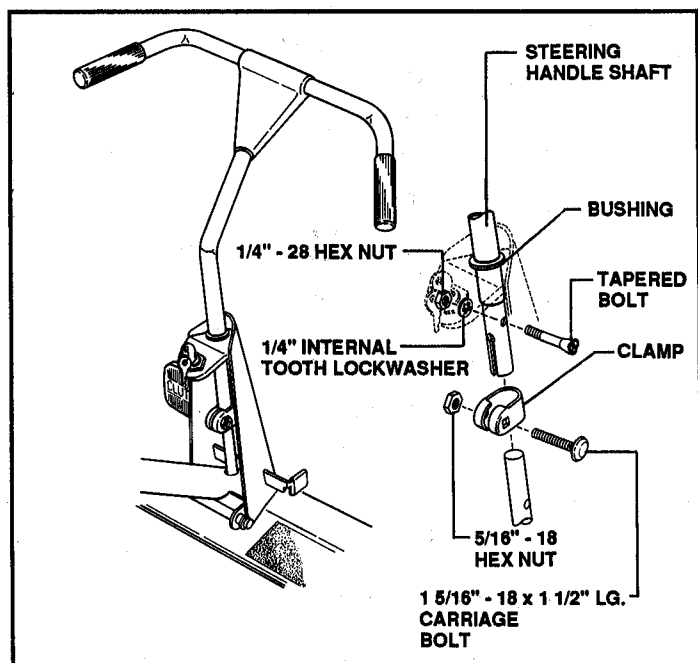


FIGURE 5.4

- B. Remove clamp (if applicable) and separate handle from steering shaft.
- C. Remove steering shaft by disconnecting tie-rods from link and pulling shaft out from underside.
- D. Inspect steering shaft bushings for wear. Replace as required.

5.4 TIE ROD AND BUSHING REPLACEMENT - STANDARD MODELS

- A. Stand mower on rear bumpers.

- B. Remove cotter pins and flat washers from each end of tie rod. See Figure 5.5.

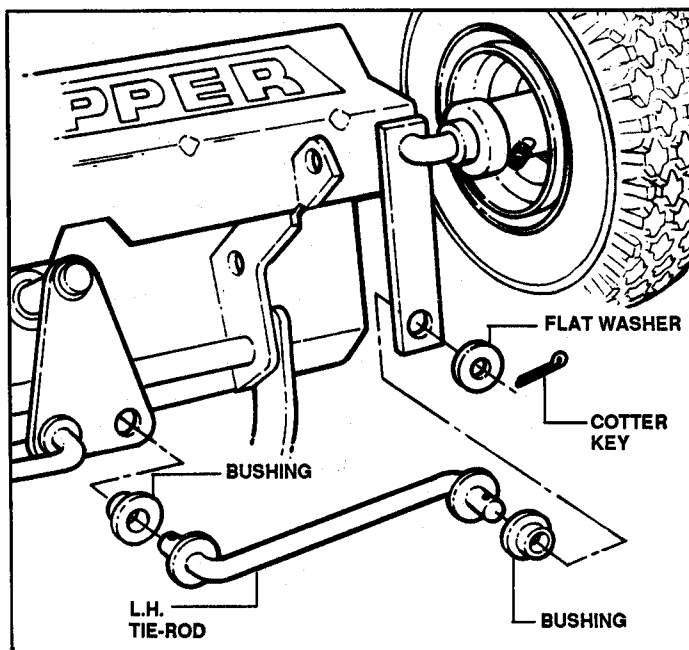


FIGURE 5.5

- C. Inspect tie rods and bushings for wear. Replace if required.

5.5 TIE ROD AND BUSHING REPLACEMENT - EXTRA TOUGH MODEL

- A. Stand mower on rear bumpers.
- B. Remove cotter pins and flat washers from ends of tie rod at steering shaft link. See Figure 5.6.

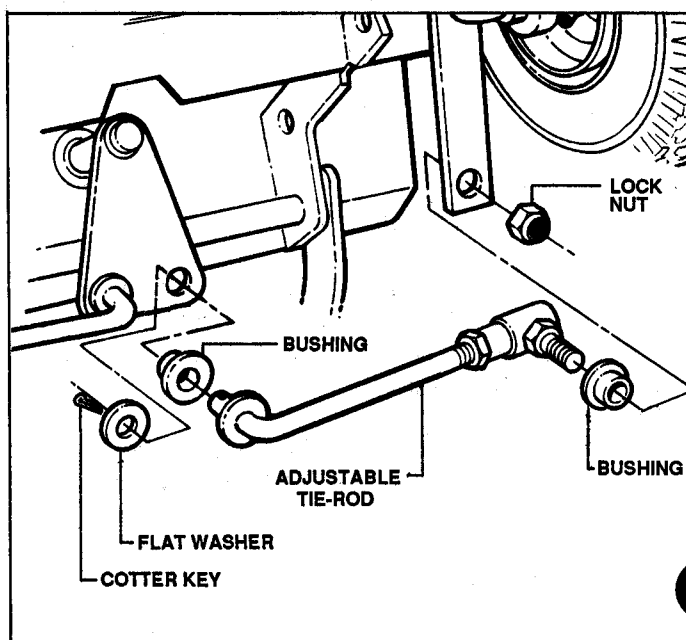


FIGURE 5.6

Section V - FRONT END REPAIR

- C. Remove lock nuts from adjustable ends of tie rods.
- D. Inspect tie rods and bushings for wear. Replace if required.

NOTE

AFTER INSTALLING NEW TIE RODS ON **EXTRA TOUGH MODEL**, FRONT END MUST BE ALIGNED BY ADJUSTING TIE ROD ENDS "IN" OR "OUT". AFTER PROPERLY ALIGNING FRONT END, TIGHTEN JAM NUTS SECURELY.

5.5 FRONT AXLE STRUCTURE REPLACEMENT

If replacement of the FRONT AXLE STRUCTURE becomes necessary, stand mower on rear bumpers and remove items such as wheel pedal(s), kingpins, etc., that are fitted to new structure, then proceed as follows:

- A. Remove ignition switch (throttle control, if applicable) from center plate. See Figure 5.7.

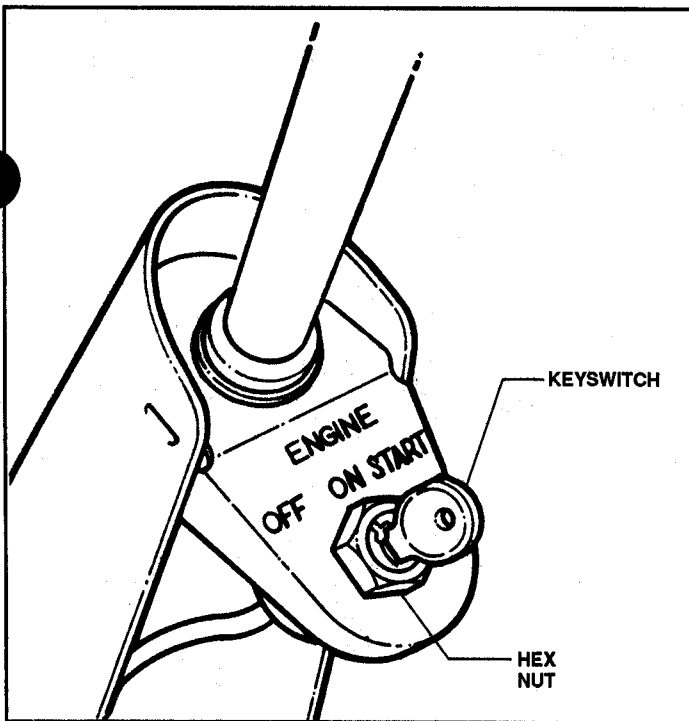


FIGURE 5.7

- B. Disconnect cable(s) from pedal(s), and from rear connection points. Pull cables thru tube frame from front.
- C. Remove retaining ring from one end of deck support rod. Remove support rod to detach deck from front end.

- D. Loosen nut on main tube clamp and pull FRONT AXLE STRUCTURE out until free of main case.
- E. Install new FRONT AXLE STRUCTURE and related components in reverse order.
- F. Reinstall pedal cable(s) by feeding cable(s) thru front end of tube frame.
- G. Reattach cable(s) to rear connection points and to pedal(s).
- H. Make any necessary cable adjustments for proper pedal operation.

Section VI - ELECTRICAL

INTRODUCTION

This section covers procedures for the testing, removal and repair of those electrical components used on **SNAPPER Series 4, 5, 6 & Extra Tough Rear Engine Riding Mowers.**

These electrical components include the keyswitch (Manual & Electric Start), solenoid (Electric Start Models Only), interlock module, shift detent switch, deck switch, and battery (Electric Start Models Only).

It should be noted that while the manual start models use a single terminal keyswitch, the electric start models incorporate a three terminal keyswitch and solenoid to accommodate the engine's electric starter/charging system. This and other differences are pointed out whenever pertinent to the procedure being described. See Figure 6.1.

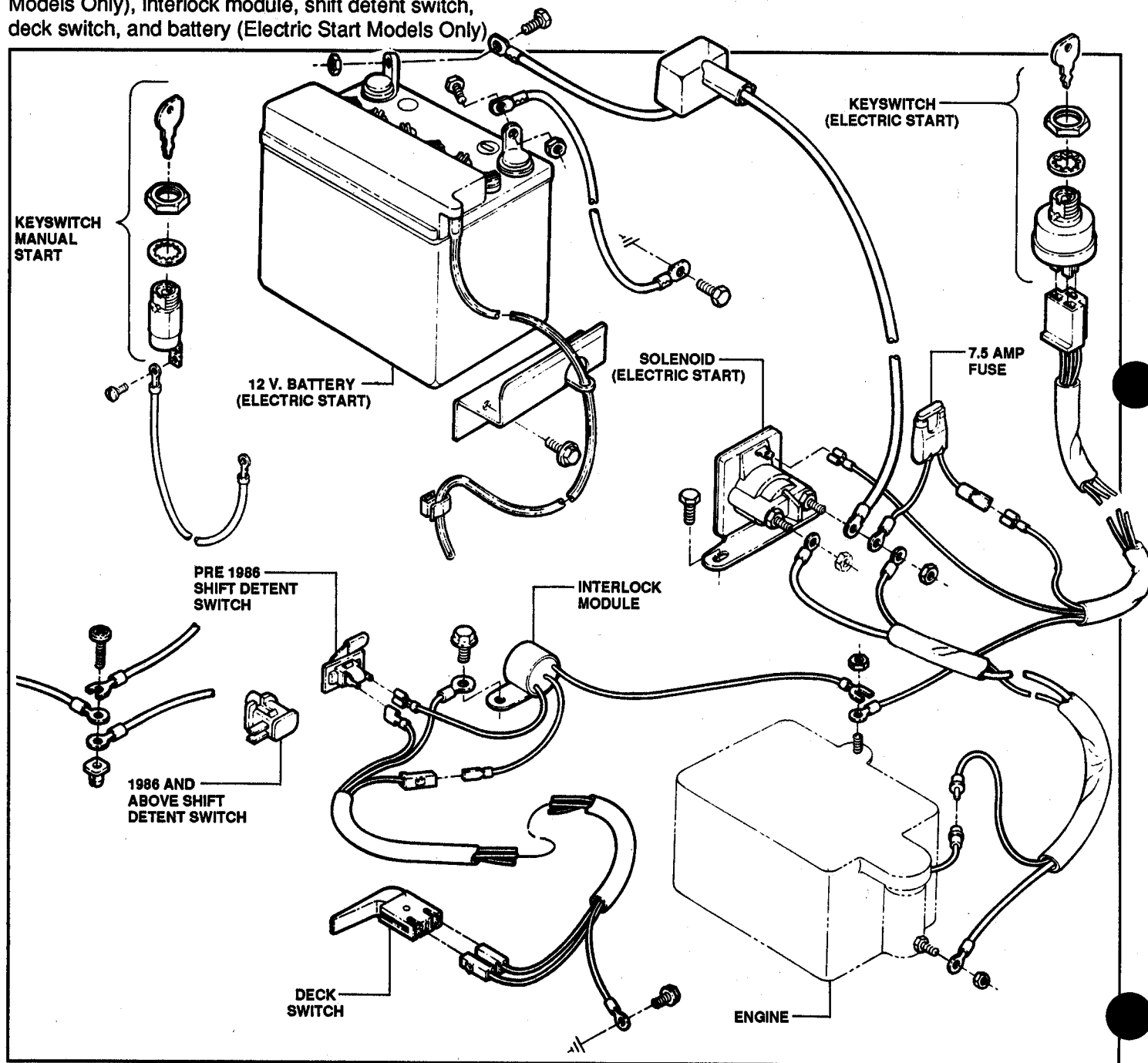
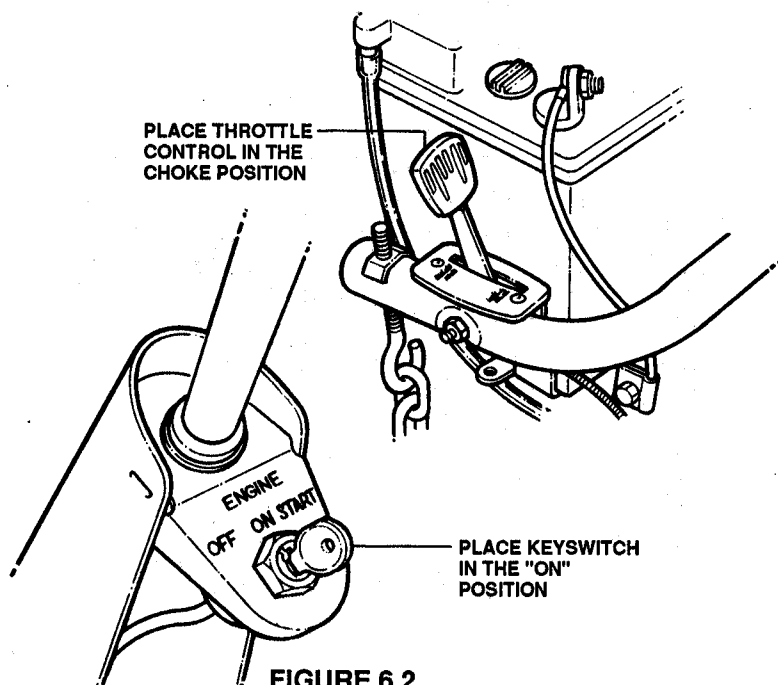


FIGURE 6.1

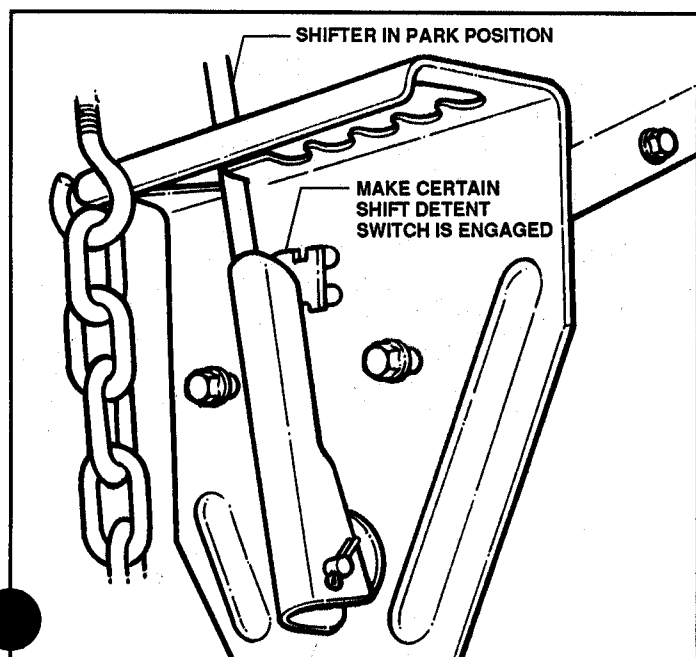
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6.1 PRELIMINARY CHECKS

- A. Be certain ignition switch is in the "ON" (START) position and the throttle control is in the START position. See Figure 6.2



- B. Place the blade engaging lever in the DISENGAGED position.
- C. Make certain the Shifter is in the PARK position and the shift detent switch engaged. See Figure 6.3.



- D. Check fuel level in fuel tank, refill with fresh fuel if necessary.

- E. After checking the above Steps A thru C, attempt to start the engine.

1. On manual start engines, pull starter rope with a smooth, even motion until engine starts.
2. On electric start engines, starting attempts should not exceed 5 seconds per attempt until engine starts.

- F. Should engine fail to start, proceed with the following to check for engine or electrical failure.

6.2 ENGINE FAILS TO START

After following the steps as listed in 6.1 PRELIMINARY CHECKS and engine insists on not starting, use the following procedures for checking the engine as the problem.

A. BRIGGS & STRATTON ENGINE MODELS

1. Disconnect the interlock wire at the grounding stud on the carburetor linkage plate. See Figure 6.4.

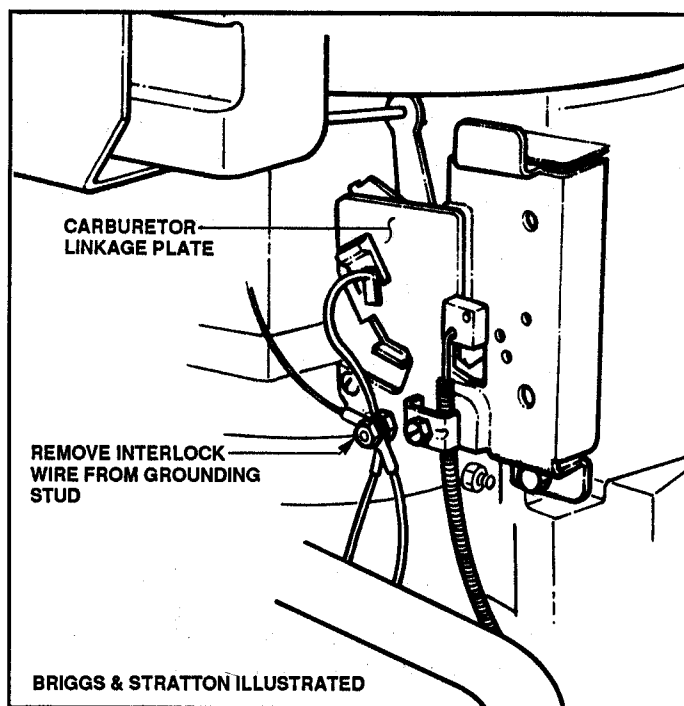


FIGURE 6.4

2. Attempt to start engine.
3. If engine fails to start, most likely the problem is within the engine. Consult engine repair manual.

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B. TECUMSEH ENGINE MODELS

1. On TECUMSEH, (Manual Start Models), disconnect the interlock wire from the engine on the carburetor grounding tab.
2. Follow steps 2 and 3 of BRIGGS & STRATTON Engine Models.

C. WISCONSIN ROBIN ENGINE MODELS

1. On the WISCONSIN ROBIN Models, disconnect the blue wire from the stud on the throttle linkage plate.
2. Follow steps 2 and 3 of BRIGGS & STRATTON Engine Models.

D. ENGINE STARTS

If, after following the steps in paragraphs A, B, or C, the engine starts, the problem is not the engine. Proceed with the following information for proper checking of the electrical system and components.

6.3 GROUNDING OF THE INTERLOCK SYSTEM

- A. Most problems associated with the electrical system is a result of poor grounding between switches, screws and switch plate contact points.

Always, before attempting in-depth component testing, check the ground connections, listed below, of the interlock system for proper contact. Refer to Figure 6.1 Electrical Schematic for grounding points.

GROUNDING CHECK POINTS

- BATTERY GROUND CABLE (ELECTRIC START)
- KEYSWITCH TO MOUNTING PLATE
- KEYSWITCH TO ENGINE (ELECTRIC START)
- SHIFT DETENT SWITCH TO INTERLOCK MOUNTING TAB
- DECK SWITCH TO DECK
- INTERLOCK MODULE TO ENGINE
- SOLENOID MOUNTING SCREWS (ELECTRIC START)

1. After checking the grounding points, attempt to start engine. If engine fails to start, proceed with the following component adjustment procedures.

6.4 SHIFT DETENT SWITCH ADJUSTMENT

- A. Check the proper adjustment of the shifter arm and the shift detent switch. Proper alignment will allow the shift detent switch to be fully depressed when the shifter is in the PARK position. If the switch is not fully depressed

pressed by the shift lever when in the PARK position, adjust the switch as follows:

1. **DETENT SWITCH ADJUSTMENT - 1986 & LATER**
See Figure 6.5.

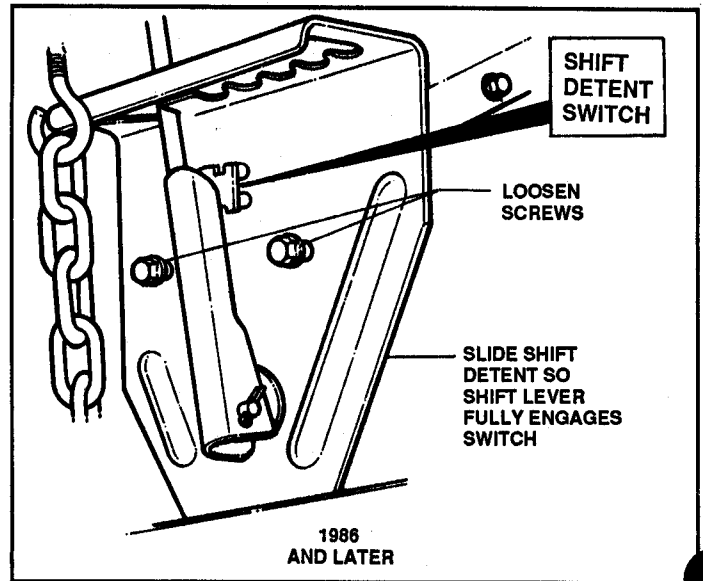


FIGURE 6.5

2. **DETENT SWITCH ADJUSTMENTS - Pre 1986**

- (a) Bend the switch tongue outward to allow the shift lever to contact switch sooner. See Figure 6.6.

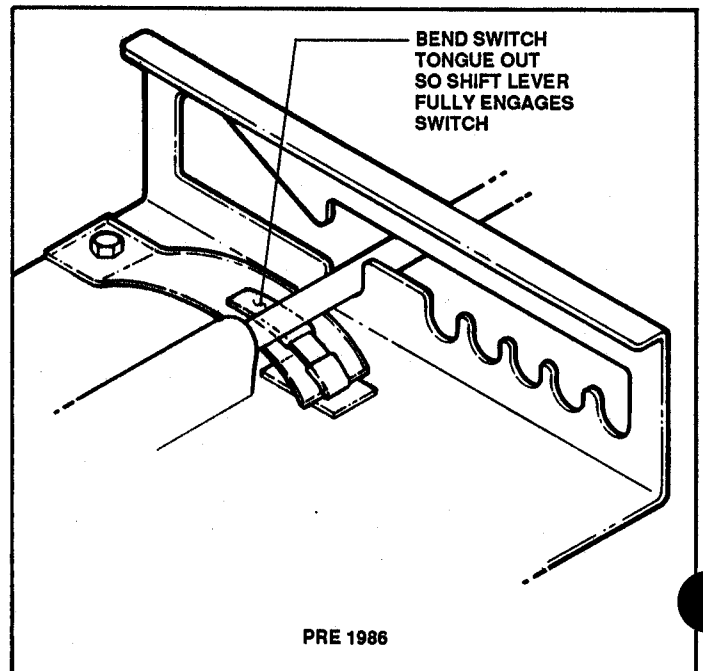


FIGURE 6.6

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6.5 INTERLOCK MODULE

- A. The most common problem that will cause the Interlock Module to malfunction, is overheating as a result of missing heat shields, broken mufflers and/or corroded exhaust pipes. Make certain all heat shields are in place and check the engine exhaust system for broken, missing or corroded components. Refer to engine manual and/or Operator's Manual for proper condition of the exhaust system.
- B. After making exhaust repairs, (if necessary) allow enough time for module to cool if engine is hot. An overheated module may function properly after it cools.

6.6 INTERLOCK SYSTEM COMPONENT TESTING

For proper testing of all the components of the Interlock System components, use and OHM meter in conjunction with the following procedures for proper diagnosis of defective components.

A. KEY SWITCH TEST (MANUAL START MODELS)

The **SNAPPER MANUAL START REAR ENGINE RIDERS** incorporate a single terminal KEY SWITCH. Should a defective key switch be suspected, use the following test procedures for proper diagnosis.

1. Disconnect the terminal lead from the bottom of the Key Switch.
2. With the Red (+) lead of the tester, connect to the terminal of the Key Switch.
3. With the Black (-) lead of the tester, make a good ground contact with the mounting bracket of the Key Switch.
4. Turn Key Switch to the "ON" and "OFF" position. With Key Switch in the "OFF" position, the indicator on the tester should indicate continuity. See Figure 6.7.

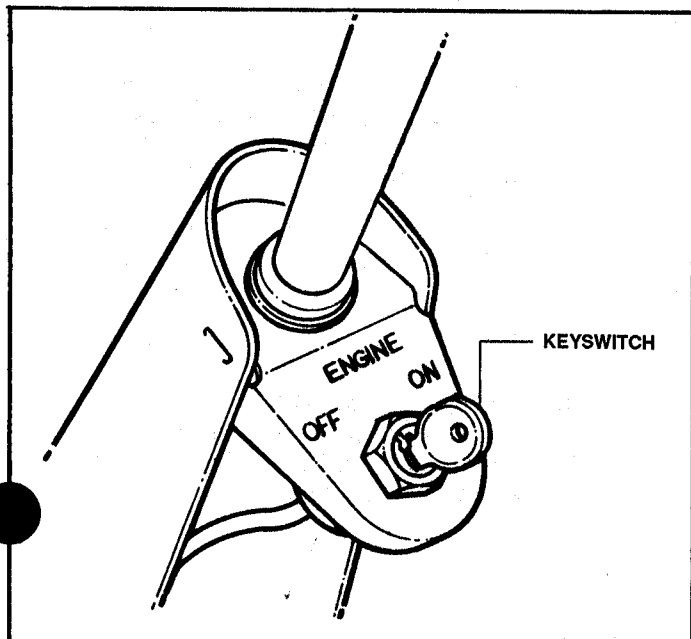


FIGURE 6.7

5. If the tester does not show continuity, with the key in the "OFF" position, check connections of the tester and try again. If still no continuity, replace the Key Switch with NEW part.

B. KEY SWITCH REPLACEMENT (MANUAL START MODELS)

1. Remove terminal lead from Key Switch.
2. Remove Key Switch mounting nut and remove Key Switch. Replace in reverse order. See Figure 6.8.

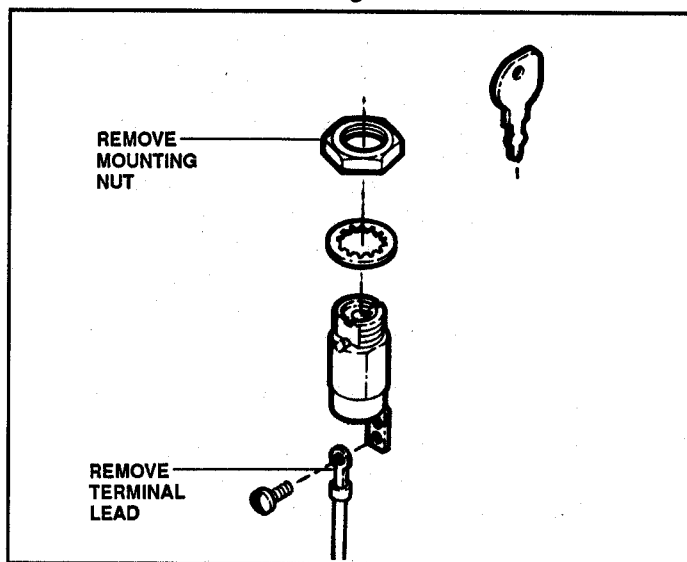


FIGURE 6.8

C. KEY SWITCH TEST (ELECTRIC START MODELS)

The **SNAPPER ELECTRIC START REAR ENGINE RIDERS** incorporate a three terminal Key Switch which controls ON, OFF and STARTING of the engine. Should a defective Switch be suspected, use the following information for proper testing and diagnosis of the Key Switch.

1. Before testing, be certain of the function of each terminal. See Figure 6.9.
 - (a) Terminal B - BATTERY
 - (b) Terminal S - STARTER
 - (c) Terminal M - IGNITION GROUND (MOTOR)

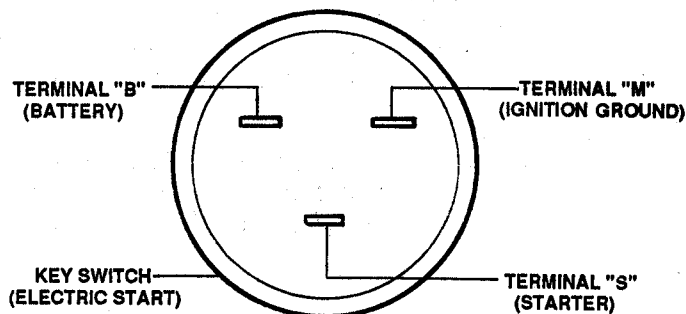


FIGURE 6.9

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2. Disconnect the terminal lead block from the Key Switch.
3. Connect the Red (+) lead of the tester to the "B" (BATTERY) terminal.
4. Connect the Black (-) lead to the "S" terminal.
5. Turn Key to "ON", "START" and "OFF" positions.
6. The tester should show continuity only in the "START" position.
7. With the Red (+) lead connected to the "B" (BATTERY) terminal, connect the Black (-) tester lead to the "M" (MOTOR) terminal.
8. The tester should show no continuity when the Key Switch is in all its positions, "ON", "START" and "OFF".
9. Connect the Red (+) lead to the "M" terminal.
10. Connect the Black (-) lead to mounting nut at front of switch plate.
11. There should be continuity only when key is in the "OFF" position.
12. Connect the Black (-) lead to ground.
13. Connect the Red (+) lead to the "B" terminal.
14. There should be continuity to all key positions.
15. Move the Red (+) lead from the "B" terminal to the "S" terminal.
16. Indicator should NOT flash in any key position.

NOTE

THE FOLLOWING TEST WILL DETECT ANY BATTERY CURRENT BLEED TO ENGINE WHICH MAY CAUSE ENGINE COIL AND IGNITION DAMAGE.

17. Connect the Red (+) lead to the "S" terminal.
18. Connect the Black (-) lead to the "M" terminal.
19. There should be NO continuity in any key position.
20. Should the Key Switch fail any of the above tests, it should be considered defective and replaced with new part.

D. KEY SWITCH REPLACEMENT (ELECTRIC START MODELS)

1. Refer to B. KEY SWITCH REPLACEMENT (MANUAL START MODELS).

E. FUSE

1. Should the Key Switch (Electric Start Models) pass all the Key Switch tests, check the in-line fuse. See Figure 6.10.

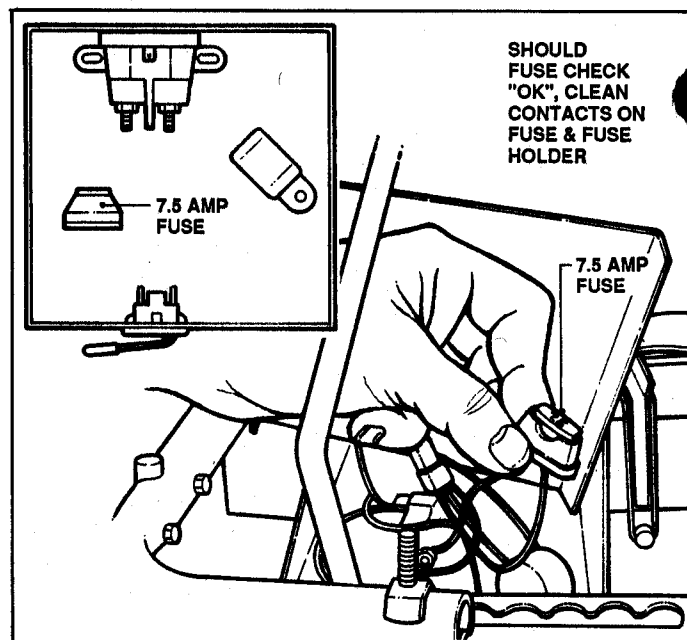


FIGURE 6.10

2. If the fuse is found to be defective, replace.
3. Should the fuse be in good condition, clean the contacts within the fuse holder and replace fuse. If engine fails to start, move on to the solenoid for testing.

F. SOLENOID TEST

The following solenoid test should be performed using an OHM meter.

1. Remove solenoid cover.
2. Remove the "+" (POS.) battery cable from solenoid.
3. Set OHM meter leads to highest resistance setting.
4. Connect OHM meter leads to the solenoid BATTERY and STARTER terminals.
5. Install either a new or good battery on mower. Attach the "+" (POS.) cable to the small, push-on terminal on the solenoid. You should hear a "CLICK" and the meter should read "0" (ZERO) resistance - or absolute continuity.
6. If meter reads otherwise, solenoid is defective. Replace with new solenoid.

G. SOLENOID REPLACEMENT

1. Remove solenoid cover plate.
2. Remove all wire connections from the solenoid. See Figure 6.11.

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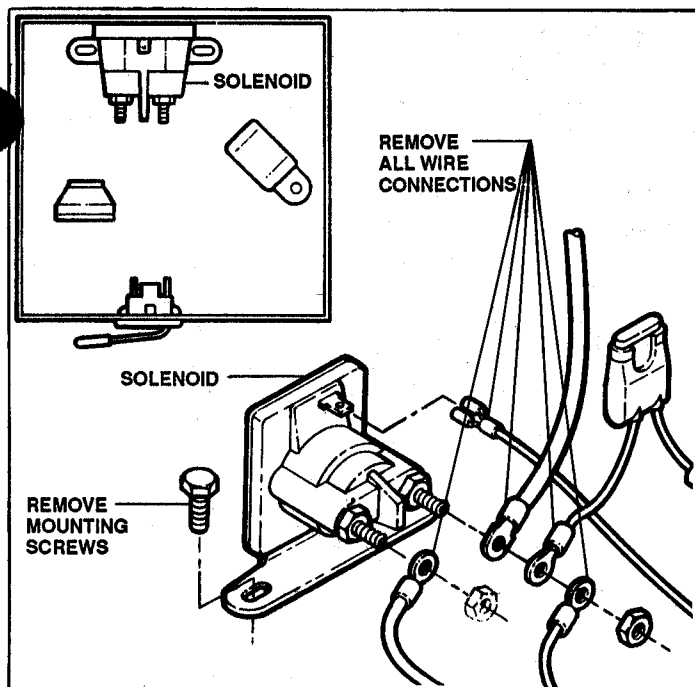


FIGURE 6.11

3. Remove the two (2) solenoid mounting screws and remove solenoid.
4. Replace with new solenoid. See Figure 6.12 for proper wire connections.

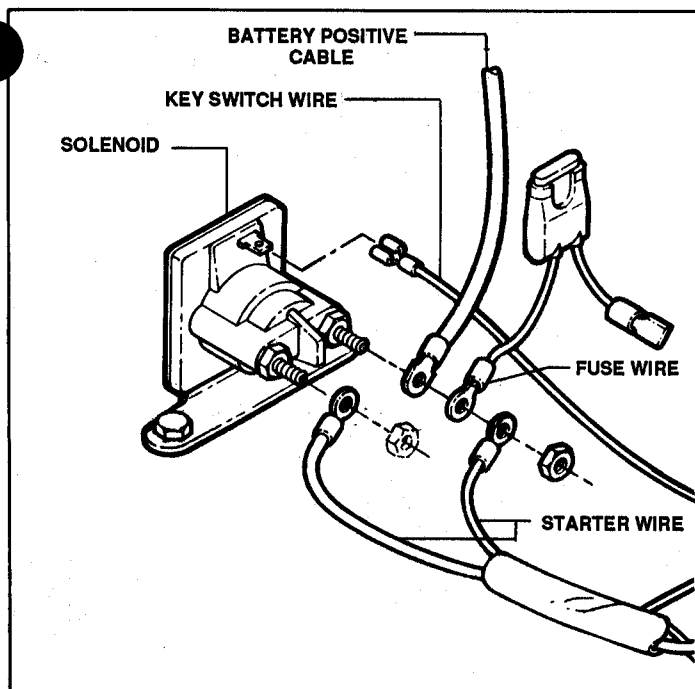


FIGURE 6.12

5. Replace cover plate.
6. Should the solenoid prove to be in good condition, carry on with test of the Interlock Module.

H. INTERLOCK MODULE TEST (MANUAL & ELECTRIC START MODELS)

Two types of INTERLOCK MODULES are used on the **SNAPPER REAR ENGINE RIDERS** to accommodate the type engine used on a particular mower.

(a) Type B - Briggs & Stratton and Wisconsin-Robin

(b) Type T-K - Tecumseh

The INTERLOCK MODULE is stamped as to which type it is. The INTERLOCK MODULE serves as the control center or "Brain" of the entire interlock system. Should a defective INTERLOCK MODULE be suspected, follow the test procedures below for proper diagnosis of the INTERLOCK MODULE.

CAUTION

IF TYPE "B" INTERLOCK MODULE IS USED ON A TECUMSEH ENGINE, OR A TYPE T-K IS USED ON A BRIGGS & STRATTON OR WISCONSIN--ROBIN ENGINE, IT WILL DEFEAT THE PURPOSE OF THE SHIFT DETENT SWITCH AND THE DECK SWITCH, ALLOWING THE ENGINE TO START WHEN THE TRANSMISSION AND BLADE LEVERS ARE ENGAGED.

I. RER INTERLOCK SYSTEM TEST PROCEDURE

1. Disconnect red interlock module wire from engine and start engine (run under load for length of time the customer says it takes for problem to occur).
2. Touch interlock module red wire to engine connector. (It should kill the engine. If it doesn't, the interlock is bad or is not properly grounded).
3. With engine "OFF", reconnect the interlock module red wire to engine, disconnect yellow, brown, or black interlock module wires from deck switch wire and detent switch. With these two module wires disconnected, the engine should not start. Touch these two module wires together and the engine should start. (After starting, disconnect these two wires and the engine should continue to run).
4. Now, disconnect the deck wire from the detent switch, connect a continuity tester to the two switch terminals. (You should have continuity when handle is in PARK or NEUTRAL position and NO continuity in any other position - move handle repeatedly to check this).
5. Connect continuity tester to deck wire terminals and shift the blade handle repeatedly. (You should have continuity with handle disengaged and NO continuity when engaged).
6. Connect continuity tester terminal to a good frame ground and the other tester to both deck wire terminals at the same

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time. Engage and disengage blade handle at least 25 times. (At no time should you get continuity. If you do, then the switch insulator is worn thru or the wire is shorted and should be replaced).

7. You should have found the problem by now. Replace the bad part and reconnect the components. See Figure 6.13.

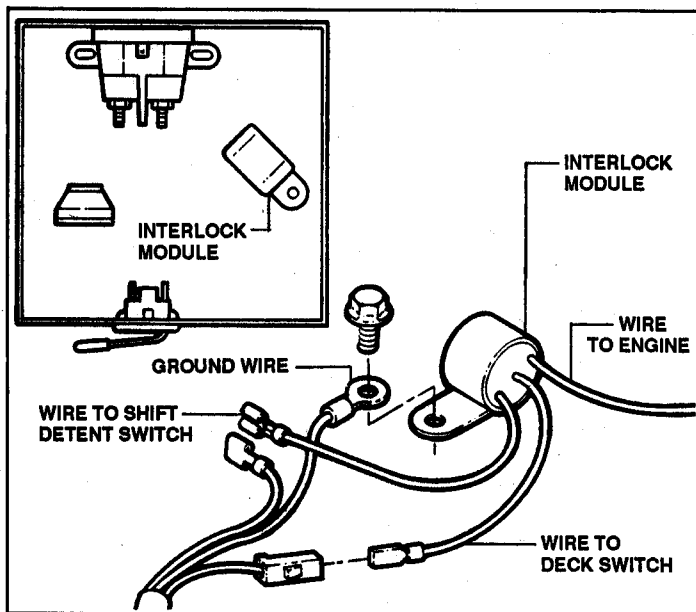


FIGURE 6.13

NOTE

IF YOU DID NOT FIND THE PROBLEM, MORE THAN LIKELY, IT HAD A POOR GROUND OR CONTACT FROM A SWITCH TERMINAL TO THE WIRE TERMINAL AND THEY SHOULD BE SANDED, BRUSHED OR REPLACED TO GET GOOD CONTACTS. REFER TO FIGURE 6.1 FOR GROUNDING CONTACTS.

J. SHIFT DETENT SWITCH TEST

Should a defective SHIFT DETENT be suspected, perform the following tests:

1. Pre-1986 models of the **SNAPPER 4,5, 6** and **Extra Tough Rear Engine Riders** incorporate a different SHIFT DETENT SWITCH than 1986 and above models. See Figure 6.14.

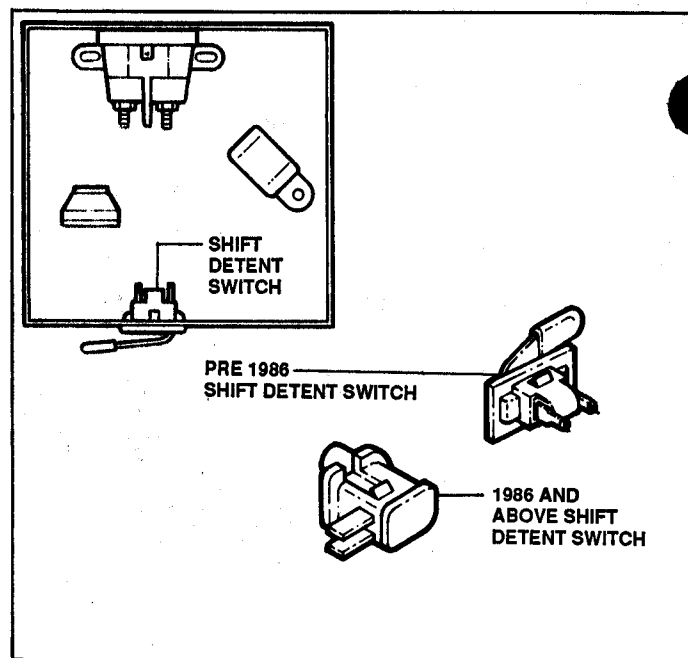


FIGURE 6.14

2. On the pre-1986 models, the plastic switch protector and rubber switch cover should be inspected for signs of excessive wear, allowing a metal to metal contact with the shift lever and/or frame of the mower. A metal to metal contact will allow the switch to "GROUND-OUT" and cause malfunction of the SHIFT DETENT SWITCH when the SHIFT LEVER is in the "PARK" position.
3. Should the switch protector show signs of excessive wear, replace with new part. See Figure 6.15.

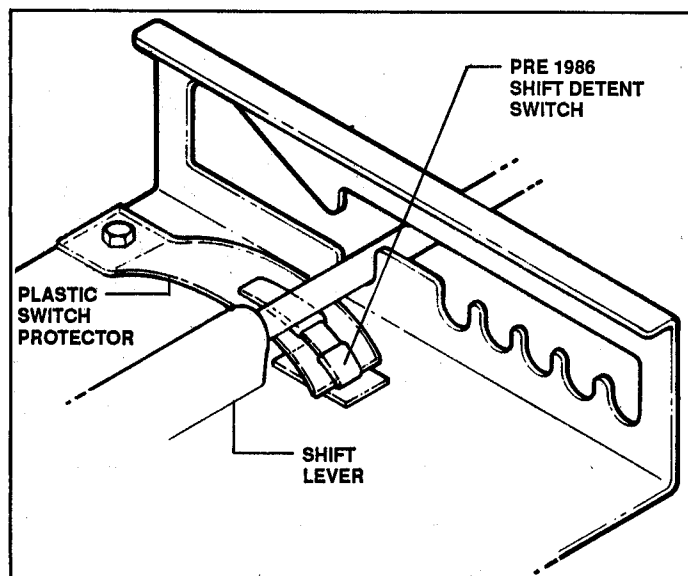


FIGURE 6.15

NOTE

1986 AND ABOVE MODELS DO NOT USE THE PLASTIC SWITCH PROTECTOR OR THE RUBBER SWITCH COVER.

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4. Remove the switch panel. See Figure 6.16.

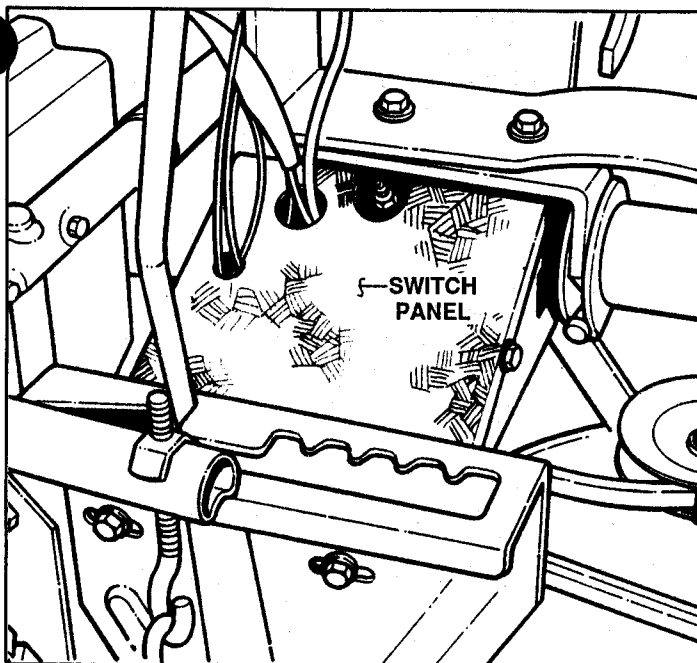


FIGURE 6.16

5. Disconnect the terminal wires from the SHIFT DETENT SWITCH.
 - (a) YELLOW STRIPED and BLACK WIRES - BRIGGS & STRATTON Models
 - (b) YELLOW STRIPED AND YELLOW WIRES - TECUMSEH and WISCONSIN ROBIN Models
6. Using the OHM meter, connect one tester lead to each terminal.
7. Place the tester switch in the OHM position.
8. With the SHIFT LEVER in the "PARK" position, the DETENT SWITCH should be engaged, the meter should show continuity.
9. Move the shifter to any speed position. The meter should not show continuity.
10. Should the SHIFT DETENT SWITCH prove defective, the switch lever may be corroded or bent. If cleaning or re-forming doesn't help, replace with new part.

NOTE

IT IS RECOMMENDED ON PRE-1986 MODELS, WHEN THE SHIFT DETENT SWITCH IS REPLACED, ALSO REPLACE THE SWITCH PROTECTOR.

K. DECK SERVICE

1. While under the shift detent switch panel disconnect DECK SWITCH wires from the shift detent switch and an interlock wire. See Figure 6.17.

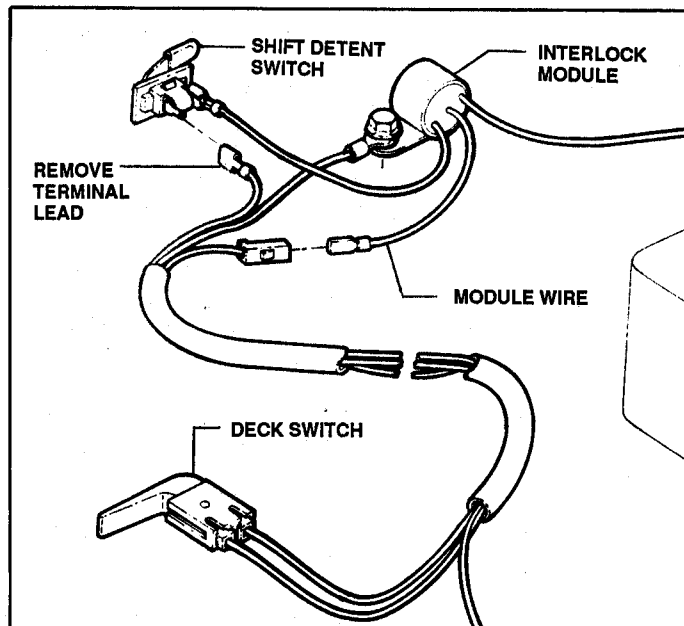


FIGURE 6.17

2. Shift BLADE ENGAGE LEVER to its "DISENGAGE" position.
3. Connect the BLACK (-) OHM METER lead to the BROWN lead to DECK SWITCH.
4. Connect the RED (+) OHM METER lead to the yellow-striped lead to DECK SWITCH.
5. The meter should show continuity with BLADE ENGAGE LEVER in its "DISENGAGE" position.
6. Move BLADE ENGAGE LEVER to its "ENGAGE" position. (Meter should show NO CONTINUITY).
7. To check for a worn protector cover, attach one OHM METER lead to FRAME GROUND, attach the other lead to BOTH DECK SWITCH WIRES at the same time. Now, move the BLADE ENGAGE LEVER to its "ENGAGE" and "DISENGAGE" positions, the meter should show NO CONTINUITY in either position.

6.7 BATTERY

A. NEW BATTERY ACTIVATION

1. Remove BATTERY from Rear Engine Riders.

CAUTION

NEVER ATTEMPT POURING ELECTROLYTE (ACID) IN A NEW BATTERY WHILE MOUNTED ON THE MOWER.

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2. Set battery on a level surface.
3. Remove VENT CAPS from BATTERY and make certain VENT HOLES are open to allow gas to escape while charging BATTERY.

NOTE
BATTERY AND ELECTROLYTE (ACID) TEMPERATURE SHOULD BE AT LEAST 70° F. BEFORE FILLING BATTERY CELLS.

4. Wearing approved rubber gloves and face shield, fill each CELL of the BATTERY with 1.265 ± .05 specific gravity, battery grade electrolyte (acid). Fill each CELL to 3/16" above CELL PLATES or between full lines on clear batteries. See Figure 6.18.

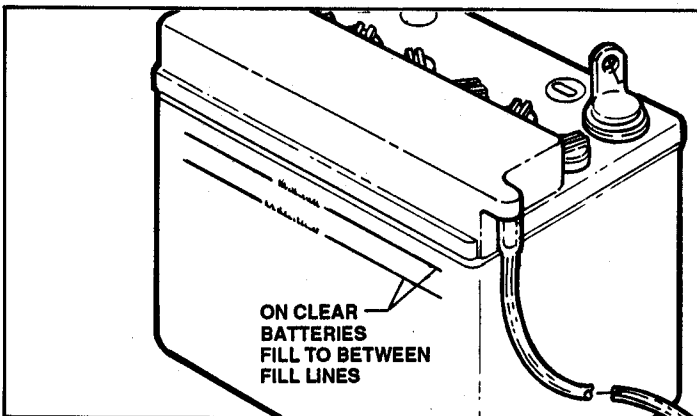


FIGURE 6.18

WARNING
NEVER OVERFILL BATTERY CELLS!

5. After filling, allow the BATTERY to set for at least thirty (30) minutes. Check electrolyte (acid) level and refill CELLS to 3/16" above CELL PLATES if necessary. Refer to Figure 6.18.
6. After achieving proper fill level, SLOW CHARGE the battery at one (1) amp for ten (10) hours, or three (3) amp for four (4) hours.

WARNING
WHEN CHARGING BATTERY, THE ELECTROLYTE (ACID) PRODUCES HIGHLY EXPLOSIVE HYDROGEN GAS. MAKE CERTAIN THERE ARE NO SPARKS, FIRE OR FLAMES IN THE AREA WHILE BATTERY IS CHARGING!

7. Do not rely on the engine's charging system for the initial charge of BATTERY.

WARNING
NEVER USE BOOST CHARGERS TO CHARGE BATTERY!

8. After proper electrolyte (acid) level and charging have been achieved, inspect BATTERY for leaks.
9. Clean outside of BATTERY and install on mower.
(a) Using appropriate hardware, securely strap BATTERY into position.

NOTE
SOME MODELS OF THE SNAPPER REAR ENGINE RIDERS MAY USE A BATTERY ENCLOSURE BOX FOR MOUNTING BATTERY.

10. Connect the POSITIVE (+) CABLE first to the BATTERY POSITIVE (+) TERMINAL.
11. Connect the NEGATIVE (-) CABLE to the BATTERY NEGATIVE (-) TERMINAL.
12. Coat the BATTERY terminals with a thin coat of PETROLEUM JELLY or G.P. GREASE to prevent corrosion.
13. Place COVER over the POSITIVE (+) terminal.
14. When removing BATTERY, always remove the NEGATIVE (-) CABLE first, to prevent arcing from accidental grounding while removing the POSITIVE (+) CABLE.

B. BATTERY MAINTENANCE

1. Check electrolyte (acid) level. If below the 3/16" above plates level, refill with distilled water until 3/16" level above plates is achieved in each cell.

WARNING
DO NOT OVERFILL. OVERFILLING OF BATTERY CELLS CAN LEAD TO ELECTROLYTE (ACID) SPILLAGE, CAUSING LOSS OF ELECTRICITY AND/OR SEVER CORROSION OF TERMINALS AND METAL COMPONENTS OF MOWER.

2. Remove BATTERY and clean with a solution of BAKING SODA and WATER for removal of dirt and corrosion. Refer to Step 14 above for cable removal.

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3. Clean BATTERY TERMINALS and CABLES with wire brush until TERMINALS, CABLES and MOUNTING BOLTS are shiny.
4. Check the BATTERY VOLTAGE with an ohmmeter (VOM) set on DC volts. Place the Red (+) lead of the tester to the POSITIVE (+) terminal and the Black (-) tester lead to the NEGATIVE terminal on the BATTERY. See chart below.

BATTERY VOLTAGE TEST	
12 Volt Reading	<ol style="list-style-type: none">a. BATTERY OK for Cranking System Tests.b. Test BATTERY CABLES for continuity.
Less Than 12 V Reading	<ol style="list-style-type: none">a. Battery discharged or defective.b. Perform BATTERY maintenance and HYDROMETER TEST. See below.

5. Should BATTERY check OK, reinstall according to Steps 9 thru 13 of Part A.
6. If battery check indicates a discharged or defective BATTERY, clean, refill to proper level and recharge or replace with new part **SNAPPER #6-0753 Dry Charge Battery Kit**.

C. HYDROMETER TEST

1. The HYDROMETER FLOATS generally are calibrated to give proper readings when the BATTERY and ELECTROLYTE (ACID) are at a temperature of 80° F. (26.7° C) ± 0°. Should the temperature of the BATTERY and ELECTROLYTE (ACID) be different from 80° F. (26.7° C), a correction factor must be used to compensate for temperature differences.
 - (a) For each 10° F. ABOVE 80° F., ADD 4 points (.004 specific gravity).
 - (b) For each 10° F. BELOW 80° F., SUBTRACT 4 points (.004 specific gravity).
2. Insert tip of HYDROMETER into CELL.
3. Draw in only enough ELECTROLYTE (ACID) to keep the HYDROMETER FLOAT off the HYDROMETER BARREL with bulb released.
4. Hold HYDROMETER in a vertical position and take reading.

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D. BATTERY TESTING CHART

Hydrometer Test 80° F. (26.7° C)	State of Charge or Battery Condition	Correction or Remedy
(1) 1.215 Sp. Gr. *	(1) Probably good.	(1) No correction required if variation among cells not over .050 Sp. Gr. Give high rate discharge capacity test. If test OK, check operation and setting of voltage regulator. Make a thorough check of the electrical system for short circuits, loose connections, corroded terminals, etc.
(2) Less than 1.215 Sp. Gr. *	(2) Questionable	(2) Battery should be recharged. After recharge, repeat step No.1
(3) Cells showing more than 50 Points (.050) Sp. Gr. variation in in gravity	(3) A. Short Circuit in Low Cell. B. Loss of electrolyte by leakage. C. Improper addition of acid or contaminants. D. Natural or premature failure. E. Cracked box partition.	(3) Try to recharge battery. If .050 Sp. Gr. variation persists, battery should be replaced. If battery accepts recharge and variation does not persist, repeat Step 1.
Open Circuit Voltage Test	State of Charge or Battery Condition	Correction or Remedy
(4) Battery of cells showing more than 1/2 charge.	(4) Probably good.	(4) Apply remedy given for No. 1 above.
(5) Battery showing less than 1/2 charge or cells showing less than 1/2 charge, but not more than .05 volts variation.	(5) Questionable.	(5) Apply remedy given for No. 2 above.
(6) If cell connectors are accessible, cells showing more than .05 variation	(6) See No. 3 above.	(6) Apply remedy given for No. 3 above.
* Use correction factor for temperatures other than 80° F. (26.7° C).		
1. SPECIFIC GRAVITY	1.265 = 100% Full Charge 1.225 = 75% Low - Should be charged. 1.190 = 50% Unsafe (Prolonged time will damage plates) 1.155 = 25% Unsafe (Prolonged time will damage plates) 1.120 = DISCHARGED	

MAINTENANCE RECORD

[illegible]

Service Manual for **SNAPPER**[®]

REAR ENGINE RIDING MOWERS SERIES 4,5,6 (& Later)



SNAPPER POWER EQUIPMENT
McDonough, GA • 30253

